Federal Network Agency

Decisions

of the President's Chamber

of the Federal Network Agency for Electricity, Gas, Telecommunications, Post and Railways of 7 April 2008

on the order and choice of allocation proceedings and on the detailed definitions and rules for allocating spectrum in the 1.8 GHz, 2 GHz and 2.6 GHz bands for wireless network access for providing telecommunication services

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TRANSLATION[1]

GENERAL ORDER

Decisions of the President's Chamber of the Bundesnetzagentur (BNetzA / Federal Network Agency for Electricity, Gas, Telecommunications, Post and Railways) of 7 April 2008 on the order and choice of allocation proceedings and on the detailed definitions and rules for allocating spectrum in the 1.8 GHz, 2 GHz and 2.6 GHz bands for wireless network access for providing telecommunication services in accordance with sections 55 (9), section 61 (1, 2, 4 and 5 sentence 2), 132 (1 and 3) of the TKG (Telecommunications Act).

- File reference: BK 1- 07/003

The Bundesnetzagentur für Elektrizität, Gas, Telekommunikation, Post und Eisenbahnen (BNetzA / Federal Network Agency for Electricity, Gas, Telecommunications, Post and Railways) shall issue via the President's Chamber, by virtue of section 55(9), section 61(1), (2), (4) and (5) sentence 2, section 132 (1) and (3) of the Telecommunications Act (TKG) dated 22 June 2004 (BGBl. I, p. 1190) (BundesGesetzBlatt / Federal Law Gazette) the following decisions on the allocation of spectrum for wireless network access in the 1.8 GHz, 2.0 GHz and 2.6 GHz bands:

I. Order for the allocation proceedings

File reference: BK 1- 07/003-1

It is ordered in accordance with Section 55 (9) TKG that award proceedings under Section 61 TKG are to precede the assignment for wireless network access for the provision of telecommunication services in the 1.8 GHz, 2.0 GHz and 2.6 GHz bands.

II. Choice of allocation proceedings

File reference: BK 1- 07/003-2

The procedure under section 61 (1) TKG shall be conducted as an auction procedure in accordance with section 61 (4) and (5) TKG.

III. Definition and rules of the allocation proceedings

File reference: BK 1- 07/003-3

1. Conditions for being admitted to the auction procedure in accordance with section 61(4) sentence 2 No. 1 TKG

1.1 The entitlement to take part in the auction procedure is not limited within the framework of the specialist and objective minimum conditions in the sense of section 61(4) sentence 2 No. 1 TKG.

[1] In case of divergent interpretation of the German and English text, the German text shall prevail.

1.2 Each company can be admitted only once. This also applies to admission to the auction procedure as part of consortia. Companies that have been amalgamated in accordance with section 37 of the restraint of competition act (GWB) count as one company. If companies amalgamate for the purpose of applying, the applicant is to prove by a certificate from the Federal Cartel Office that there are no objections to this organisational form in terms of the GWB.

1.3 In the application it must be shown that the conditions for admission to the auction procedure have been met in accordance with section 61(4) sentence 2 No. 1 TKG (cf. the application conditions in detail in annex 1).

2. Determination of the objectively and geographically relevant market in which the spectrum to be allocated can be used in accordance with section 61(4) sentence 2 No. 2 TKG

2.1 The objectively relevant market in which the specturm to be allocated may be used in accordance with the frequency usage plan (FUP) is the market for wireless network access for providing telecommunication services.

2.2 The geographically relevant market in which the spectrum to be allocated may be used in accordance with the FUP is the Federal Republic of Germany.

3. Basic set of frequencies, section 61(4) sentence 2 No. 3 TKG

A basic set of frequencies in accordance with section 61(4) sentence 2 No. 3 TKG has not been defined.

4. Spectrum usage regulations including the degree of coverage when using the spectrum, see section 61(4) sentence 2 No. 4 TKG

4.1 The purpose of use of the spectrum to be allocated in the 1.8 GHz, 2 GHz and 2.6 GHz bands is the wireless network access for providing telecommunication services. There will be no restriction on the use of specific technologies. All available technologies can be used, with the usage conditions serving as the basis.

The available spectrum shall be put up for allocation as follows:

Frequency band	**Available frequency spectrum**	**Allocation**
1.8 GHz	1730.1-1735.1 MHz and 1825.1-1830.1 MHz 1758.1-1763.1 MHz and 1853.1-1858.1 MHz	2 x 5 MHz (paired) 2 x 5 MHz (paired)
2 GHz	1900.1-1905.1 MHz 1930,2-1935.15 MHz and 2120.2-2125.15 MHz 1935.15-1940.1 MHz and 2125.15-2130.1 MHz 1950.0-1954.95 MHz and 2140.0-2144.95 MHz 1954.95-1959.9 MHz and 2144.95-2149.9 MHz 2010,5-2024.7 MHz	5 MHz (unpaired) 2 x 4.95 MHz (paired) 2 x 4.95 MHz (paired) 2 x 4.95 MHz (paired) 2 x 4.95 MHz (paired) 14.2 MHz (unpaired)
2.6 GHz	2500-2570 MHz and 2620-2690 MHz 2570-2620 MHz	14 blocks each of 2 x 5 MHz (paired) 10 blocks of 5 MHz

		(unpaired)

4.2 The spectrum usage conditions contained in annex 2 apply to the spectrum usages.

The spectrum assignment holders may deviate from these provisions if they have made the appropriate mutual agreements and the spectrum usage rights of third parts are not impaired. The BNetzA is to be informed in advance in writing of this.

The spectrum usage conditions can be amended later, especially if this becomes necessary to secure efficient and interference-free usage or because of international harmonisation agreements.

4.3 The spectrum assignments have a time limit of 31 December 2025.

4.4 A spectrum assignment holder is obliged to achieve a degree of population coverage of no less than 25% from 1 January 2013 onwards and no less than 50% from 1 January 2015 onwards when using the spectrum. The parameters to be fulfilled in this process will be defined later taking into account the technology used.

The spectrum assignment holder is to inform the BNetzA on 31 December of each year after assignment of the status of the spectrum usages and of the network structure as well as the expansion of the network.

The obligation under paragraph 1 applies to spectrums that were the subject of administrative legal proceedings at the time these decisions were taken, but provided that the stipulated degrees of coverage can be achieved within three or five years after expiry of the year in which the legal force becomes valid. This only applies in the event that the respective administrative legal proceedings are concluded as final and conclusive after the time when the respective frequency assignment is announced.

4.5 The assignment of frequencies that were the subject of pending administrative legal proceedings at the time of the assignment at the time of these decisions were taken will have a condition subsequent added, meaning that the spectrum assignment becomes void if the legal assignment conditions can be regarded as not being valid at the time of the assignment because of the legally binding decision of a court. The formulation of this subsidiary provision is reserved for the respective spectrum assignment ruling.

4.6 Spectrum assignment holders shall not have any obligation imposed to offer service providers non-discriminatory access to services.

5. Minimum bid in accordance with section 61 (5) sentence 2 TKG

5.1 The minimum bid for a spectrum block of 2 x 5 MHz (paired) and a spectrum block of 2 x 4.95 MHz (paired) will be set at 2,500,000 Euro.

5.2 The minimum bid for a spectrum block of 1 x 5 MHz (unpaired) is 1,250,000 Euro.

5.3 The minimum bid for the spectrum block of 1 x 14.2 MHz (unpaired) (2010.5 MHz to 2024.7 MHz) will be set at 3,550,000 Euro.

Reasons

In the 1.8 GHz, 2 GHz and 2.6 GHz bands there is a total of 270 MHz available for allocation.

In principle, there is a total of 2 x 10 MHz (paired) available in the 1.8 GHz frequency band to be awarded. However, these frequencies are currently in litigation. As part of the implementation of the initial raft of actions relating to the GSM concept (order 88/2005, OJ BNetzA 23/2005, page 1852 ff) these frequencies were vacated by the E network operators in return for the assignment of spectrum in the so-called E-GSM-band (see communication 78/2006, OJ BNetzA 4/2006, page 702). Proceedings were initiated against these frequency shifts, but they were rejected by the Administrative Court as the court of first instance. The proceedings are still pending, all plaintiffs have sought permission to appeal. Therefore the E network operators gave up the usage rights of the frequencies vacated in the 1.8 GHz band on condition that the assignments of the spectrums from the so-called E-GSM band will continue to exist even after the administrative court proceedings. If the proceedings against the reallocations are successful contrary to the BNetzA's expectations, the dispensation declarations would be invalid and the frequencies in the 1.8 GHz band no longer available.

In principle, there is a total of 2 x 20 MHz (paired) and 4 blocks each of 5 MHz (unpaired) available in the 2.0 GHz band. 2 x 10 MHz (paired) and 1 x 5 MHz (unpaired) are available without restriction to be re-allocated following the return of the spectrum assigned in 2000 to MobilCom Multimedia GmbH as part of the auction procedure. The frequencies originally assigned to Quam GmbH totalling 2 x 10 MHz (paired) and 1 x 5 MHz (unpaired) were revoked by the BNetzA; proceedings were initiated against this revocation, which was rejected in a first legal process by the Cologne administrative court in a ruling on 25 April 2007. However, this decision is not yet final and conclusive since an appeal has been lodged against it by the plaintiff with the result that the frequencies are still in litigation at the time of this decision.

The 2.6 GHz frequency band encompasses a total spectrum of 190 MHz. This frequency band, also allocated in the spectrum usage allocation plan to the fixed service usage to run out on 31 December 2007, was allocated primarily in the sense of section 3 (3) FreqBAPO (FreqBZPV / Frequency band allocation planning order) exclusively to the mobile communication service with effect from 1 January 2008. A large part of the spectrum is currently not used and available as a result. But it should be pointed out that by 31 December 2007 up to 56 MHz had been assigned regionally to the fixed service usage. The BNetzA rejected the requested extension of these spectrum assignments, and the spectrum assignment holders had lodged appeals against the rejection of the extension. In an informal discussion of the case on 02 March 2007, within the framework of the summary proceedings, a court settlement was proposed at the initiative of the court; according to this settlement the plaintiff can continue to use the spectrum usage rights in the 2.6 GHz band beyond 31 December 2007 until proceedings on the main issue are final and conclusive, and at most until use is made of them by a different assignment holder. As a result of the informal hearing on 15 June 2007, the Cologne administrative court rightly recognised that the BNetzA is obliged to extend the current spectrum assignments for fixed radio service uses in the 2.6 GHz band for the period from 1 January 2008 to 31 December 2016. The decisions are not yet final and conclusive. The BNetzA has appealed against the decisions. In the meantime, the appeal of the senior administrative court for the Land of North Rhine-Westphalia has been allowed.

At present it cannot be foreseen when these court decisions on all the above mentioned legal disputes will be issued or will become final and conclusive. If it was requested by some parties to wait for the outcome of the court proceedings as the first legal process, the chamber points out that waiting for the ruling of the court of first instance will not necessarily bring about legal force and also not the legal and investment certainty demanded by some commentators. This can be done only by a final and conclusive decision that concludes the court proceedings, a fact also advanced by some commentators. Waiting for decisions from

the court of last instance that are legal and binding in all proceedings could delay the allocation and also the possibility of using the frequencies for many years to come.

The fact that individual spectrum blocks are in litigation will be shown in concrete terms for the decision by means of an abstract or concrete award of the frequencies within the framework of the decision taken later in time on the rules for the implementation of the auction procedure in detail (auction rules) in accordance with section 61(5) TKG.

On 19 June 2007 the Chamber decided that assignment proceedings in accordance with section 61 TKG is to precede the allocation of spectrum for digital cellular mobile communications in the 1.8 GHz, 2.0 GHz and 2.6 GHz bands. It also decided that the procedure under section 61 (1) TKG shall be conducted as an auction procedure in accordance with section 61 (4) and (5) TKG. The decisions are hereby amended to the extent that the frequencies are made available for wireless network access for providing telecommunication services in accordance with the allocations in the spectrum usage plan (cf. section On I on this matter).

Following on from these decisions, the Chamber must decide which definitions and rules in detail are to be used in the meaning of section 61(4) sentence 2 Nos. 1 to 4, section 61(5) TKG as the basis for the procedure for auctioning frequencies in the 1.8 GHz, 2 GHz and 2.6 GHz bands for wireless network access for providing telecommunication services (award conditions).

The decisions in accordance with section 61(4) sentence 2 Nos. 2 and 4 TKG were made in accordance with section 132 (1) and (3) TKG in consultation with the Advisory Council at the BNetzA. The consultation with the Advisory Council at the BNetzA has been established in the 61st Meeting of the Advisory Council on 7 April 2008.

The decision on the rules for implementing the auction procedure in detail (auction rules) in accordance with section 61(5) TKG will be issued later after consultation with the groups involved. The admission procedure for the auction shall be opened after publication of the decision on the auction rules.

The decisions are based in detail on the following considerations:

On I. Order of the allocation proceedings

The Chamber ordered in its decision of 19 June 2007 that the assignment of spectrum from the 1.8 GHz, 2 GHz and 2.6 GHz bands is to be preceded by allocation proceedings. It was stated in this decision that the frequencies are to be made available for digital cellular mobile communications. The designation “digital cellular mobile communications” is changed to “wireless network access for providing telecommunication services” in accordance with the definitions of the spectrum usage plan (cf. the Justification under III. 2.1 for details of this point). The decision of 19 June 2007 is amended to this extent.

On II. Choice of allocation proceedings

The tenor of the decision on 19 June 2007 on the choice of allocation proceedings remains unchanged and was included here only for the sake of completeness.

On III. Allocation conditions

On 1. Conditions for being admitted to the auction procedure in accordance with section 61(4) sentence 2 No. 1 TKG

On 1.1: no restriction on participation

The following was argued on this point:

A majority of commentators welcome the unrestricted participation in principle to the auction proceedings. A conscientious and consistent admission review was very important for the lasting success of the allocation proceedings.

The possibility – expressed by the BNetzA – of restricting the bidding rights of individual bidders to frequency packets that are still the subject of private legal proceedings brought by these bidders or those from associated companies, is supported. Otherwise this could lead to unreasonable advantages for individual bidders. So the individual applications for admission to the allocation proceedings were to be reviewed to establish whether the non-discriminatory nature of the proceedings might be jeopardised by the participation of the respective interested party.

Concerns relating to the announced review of each case in order to exclude bidders for spectrum blocks in litigation were also expressed by several commentators. This approach was arbitrary – there was no legal basis for it in the TKG. Excluding participants was allowed only under the tight conditions of section 61 (3) TKG and in consultation with the Federal Cartel Office (BKA). The BNetzA was assuming by itself that the conditions of section 61 (3) TKG do not apply. A factual justification of the subsequent exclusion on a case-by-case basis could also not be identified.

The announced exclusion of bidders for spectrum blocks in litigation amounts to sanctioning the exercise of legal remedies. The imminent exclusion of participants from the spectrum that is in litigation as a result of their own appeals would also put the affected participant in a position of restraint in which he would be able to pursue the frequency assignment only alternatively by bringing an action or by taking part in the auction.

In addition, the consideration that a bidder would be unreasonably advantaged over other bidders if he pursued, by recourse to law and by bidding simultaneously, his goal of being able to use certain frequencies, is also considered as erroneous. For this type of bidder participation in the auction was only a fallback position compared to his primary goal of gaining by recourse to law his spectrum usage right independent of the auction. This bidder's "advantage" over other auction participants lay in the fact that he had the opportunity of winning his lawsuit. But this opportunity was the result of the legal position that this bidder had reached independent of the auction that he was now trying to enforce judicially and that ought not to be taken from him by the arrangement of the auction proceedings.

Other commentators are demanding a restriction on the participation of the established network operators. The TKG stipulates that individual market participants can be excluded from award proceedings if successful participation by these companies could lead to distortion of competition in the market. It was suspected that the participation of established mobile communication operators was to acquire these frequencies in order to prevent the entry to the market of potential competitors.

The Chamber rules as follows on this point:

In principle, everybody and every company should be able to submit an application for admission to the auction procedure. This applies to the applicants who have already submitted applications as part of the consultation on the draft decisions on the order and choice of the allocation proceedings for allocation spectrum in the 1.8 GHz, 2 GHz and 2.6

GHz bands for digital cellular mobile communications (comm. 219/2007, OJ BNetzA 7/2007, p. 1113) and also to new interested parties.

Exclusion of applicants from participation in the auction procedure in accordance with section 61(3) TKG to ensure equal competition on the objectively and geographically relevant market is not advisable.

If it is argued in this context that the existing mobile network operators are to be excluded from the award proceedings, then this cannot be understood:

in accordance with section 61(3) TKG, an applicant can be excluded from taking part in allocation proceedings if it is anticipated that equal competition in the objectively and geographically relevant market in which the frequencies to be awarded may be used in accordance with the spectrum usage plan is at risk because of his successful bid or by a successful application. It should also be ensured that the occupation possibilities of successful bidders are not disproportionately restricted by the entry to the market of other, superior competitors. For this reason, superior competitors can be excluded from the allocation proceedings to ensure equal competition. However, companies with a market-dominating position cannot be excluded from using new technologies (BT-Drs. 15/2316, p. 70 of section 59 TKG-E).

The abstract risk or the simple assertion of a distortion of competition cannot justify exclusion under section 61 (3) TKG. Stringent requirements must be placed on exclusion under section 61 (3) TKG because of the irreversible effects of competition associated with it. In the view of the Chamber it cannot be expected that equal competition on the market for wireless network access for providing telecommunication services is at risk solely due to the successful bids from existing mobile network operators. If and to the extent that competition on the market for wireless network access for providing telecommunication services is not actually at risk, excluding one or more companies from the allocation proceedings is disproportionate. The fact alone that mobile network operators are already active in the market cannot therefore justify exclusion of these companies from participating in the proceedings.

Moreover, it must be pointed out that, according to the legislation, even market-leading companies cannot be excluded from allocation proceedings from the outset. According to section 61 (3) sentence 2 TKG, the justified interests of an applicant in using new technologies must also be reasonably taken into account. This means that the possibility of exclusion must not result in a company being excluded from the technical development. This applies in the case of established market domination.

Furthermore, your attention is drawn to the following:

even if the possibility of participating in the auction procedure is not limited overall, consideration, on a case-by-case basis using the actual applications in the admission proceedings, may be given to excluding certain bidders from the possibility of exercising their bidding rights to certain frequencies. Especially with regard to the spectrum blocks in litigation, the question as to whether this represents an inappropriate advantage for bidders in that they can bid on spectrum in litigation with a possibly lower risk than their co-bidders would have to be checked on a case-by-case basis. It does not follow from this, as noted by some commentators, that such a bidder, who would like to bid for spectrum, would have to dispense with exercising his legal remedies. Restricting bidding rights can refer only to the spectrum in litigation and for this reason does not represent exclusion from the proceedings in the meaning of section 61 (3) TKG. It continues to be left up to bidders to decide whether or not to take part in the proceedings. So they also have the possibility of acquiring spectrum. Bidders do not have to give up their legal redress, as noted by some commentators, in order to be able to acquire spectrum as part of the allocation proceedings.

Restricting the exercise of bidding rights assumes that, in an individual case, this represents an inappropriate advantage for a bidder if he can bid on spectrum in litigation and he is given the facility of risk-free bidding by doing so. In accordance with section 61 (5) sentence 1 TKG the rules for the implementation of the proceedings are to be defined prior to the auction

proceedings. They must be objective, understandable and non-discriminatory. But restricting the bidding rights of a specific bidder can only be considered in consequence if the non-discriminatory nature of the procedure is actually endangered by this. This can be checked only by using an individual application for admission to the auction procedure.

The Chamber points out that the assignment of spectrum in litigation shall be placed under a condition subsequent. The risks of the substantiated facts are transparent and open for all bidders and are thus equally available for individual risk assessments.

On 1.2: competitive independence

The following was argued on this point:

In addition to accepting this provision it was explicitly demanded that the requirement for the competitive independence of the bidders should also continue to apply to the entire period of usage of the spectrum since speculative intentions could be reduced in this way.

The Chamber rules as follows on this point:

If there are not enough frequencies available for the assignment, then, in accordance with previous regulatory practice, the assignment shall be made to companies that are independent of each other in terms of competition. The regulatory goal of ensuring equal and functioning competition (section 2 (2) No. 2 TKG) demands the competitive independence of the assignment holders or network operators. For this reason, multiple applications are excluded. As part of the licensing application, the applicant must present a certificate of non-impediment under cartel law if the conditions below apply.

If companies amalgamate for the purpose of applying that had not been amalgamated beforehand with the applicant or with each other in the sense of section 37(1), (2) of the act on restraint of competition (GWB), or are considered as amalgamated, the applicant must prove by means of a certificate from the relevant cartel authority that there are no objections to this organisational form in accordance with the GWB. The proof is not required if the factual conditions of section 35(1) GWB do not exist.

The fact that a state of merger exists or not can be checked in accordance with the criteria described in detail in section 37(1) GWB. Merger means primarily the acquisition of assets or the controlling acquisition and acquisition of the shares in a company of a certain order of magnitude and other corporate links by means of which one or more companies can directly or indirectly exercise considerable influence in terms of competition on another company.

The same applies if there is between applicants a business link below the merger boundary of section 37 GWB that can influence the competitive independence of the applicants in the allocation proceedings and can negatively affect the secret bidding competition in particular.

In this process it is irrelevant whether the merger exists with native or foreign companies. The ownership conditions of the applicant’s company are to be shown in the application (cf. annex 1, point 3.B on this subject).

If it was required as part of the comments that the validity of the requirement for competitive independence should be expanded to the entire period of use, it must be pointed out that this comes directly from the Telecommunications Act and for this reason does not need a rule on the part of the Chamber. In accordance with section 63 (2) No. 4 TKG, a spectrum assignment can be revoked if a distortion of competition on the objectively and geographically relevant market is to be feared due to a change in the ownership conditions in the person of the holder of the spectrum assignment.

Consequently it has been ensured that the requirement for competitive independence applies seamlessly from the time of application for admission to the auction up to the time when the spectrum assignment runs out.

On 1.3: showing the admission conditions

The following was argued on this point:

The arguments were welcomed in principle by all commentators. In view of the volume of application documents to be submitted it is requested that the time planning and the scheduled date for applications be announced as early as possible so that interested parties have adequate time to prepare their application documents,

The Chamber rules as follows on this point:

According to item 1.1 of this decision, entitlement to take part in the auction procedure is not limited. But the entitlement to apply only provides the facility to take part in abstract terms. Participation in the auction procedure assumes that individual permission to take part has been granted by the BNetzA. This will be issued in a separate decision (licensing ruling). Permission to take part assumes that bidders meet certain technical and objective minimum conditions that will be checked. Consequently, an auction procedure must be preceded by a procedure in which the existence of the statutory conditions for admission to the auction procedure is established.

The applicants that have submitted applications for spectrum assignments as part of the comments on the previous draft decisions on the order and choice of the allocation proceedings must also submit applications for admission to the auction procedure in accordance with section 61 (4) sentence 2 No. 1 TKG and provide appropriate illustrations and evidence that they meet the above mentioned criteria.

To fulfil the technical and objective minimum requirements for admission to the auction procedure in the sense of section 61 (4) sentence 2 No. 1 TKG, an applicant must illustrate and prove (see annex 1 on this subject in detail)

- that he fulfils the statutory assignment conditions in the sense of section 55(4), (5) TKG,
- that he has the funding to buy the available spectrum at auction,
- that he has a serious intention to bid and
- how the equity structure and ownership relationships are set up in his company.

This is in line with the deliberation reason 13 of Directive 2002/20/EEC of the European Parliament and Council dated 7 March 2002 on the approval of electronic communication networks and services (Approval directive) (EC OJ No. 108, p. 21) that gives Member States explicitly the option of a personal aptitude test. The technical and objective minimum conditions to be set in accordance with section 61(4) sentence 2 No. 1 TKG for admission to the auction procedure are aimed at the statutory spectrum assignment conditions. According to section 55(4) TKG, a spectrum assignment assumes that compliance with the subjective conditions in terms of an efficient and interference-free spectrum usage has been shown. Consequently, meeting the subjective conditions of reliability, efficiency and expertise must be shown in the applications for admission to the auction procedure – just as it is in the applications for spectrum assignment.

In this case, reliability is aimed at compliance with the relevant legal regulations. The subject of efficiency is in particular the availability of the necessary technical and financial assets for the setting up and expansion and operation of the appropriate communications network. In addition, it must be shown in terms of efficiency that the financial assets for purchasing the relevant spectrum usage rights at auction are available. Expertise demands the knowledge, experience and skills required for the planning, setting up and operation of the appropriate communications network.

Compliance with these subjective conditions must be demonstrated and proved by applicants within the framework of the application for admission to the auction procedure. According to

section 55(4) sentence 2 TKG, the applicant must regularly demonstrate the subjective conditions in view of efficient and interference-free spectrum usage and other conditions under Part B of the annex of the approval directive. Spectrum assignment to the applicant is done on the basis of section 55 (5) sentence 1 No. 4 TKG only if efficient and interference-free spectrum usage is guaranteed by the applicant. The details required in this context are suitably and objectively justified and are thus in line not just with the provisions of the TKG, but also with Article 11 paragraph 1, sub-paragraph 1 letter c. of the approval directive.

The guarantee of funding must be shown by supporting documents, such as written financial declarations from the parent company, from other associated companies or from banks to prove efficiency. Simple declarations of intent or promises of effort will not be recognised as proof of guarantee. If funding promises are given by the parent company or other associated companies, then they are to be submitted in the form of “hard letters of awareness”. The choice of the form of proof of efficiency is left to the applicant. Simply presenting a balance sheet does not release the applicant from his obligation to show proof. Applicants must submit complete admission applications that must contain all the details on the subjective assignment conditions as well.

The obligation to show proof goes beyond the subjective conditions in the narrower sense, i.e. the person-related characteristics of reliability, efficiency and expertise. According to section 55 (5) sentence 1 No. 4 TKG, it must also be guaranteed in the sense of the assignment condition that efficient and interference-free use will be made of the spectrum by the applicant. Consequently, it will also be necessary to submit a separate logical spectrum usage concept in order to obtain information on the current and future spectrum requirement as well as the medium and long-term network setup and expansion planning of the applicant (cf. annex 1 for details on this point).

Applicants must show as part of the FUP that they really need the frequencies in order to realise certain business models and how they intend to meet the coverage obligations bundled with the assignment (cf. section 61(4) sentence 2 No. 4 TKG). The business plan, the network planning for the setting up and expansion of the relevant communication network, plus the number of anticipated subscribers, with reference to theoretical factors on traffic, must be shown in particular (cf. annex 1 for details on this point).

In addition, the ownership relationships – even indirect ones – of the applicant’s company must also be shown in the application. The regulatory goal of ensuring an equal and functioning competition under section 2 (2) No. 2 TKG requires network operators that are independent of one another in terms of competition. For this reason multiple applications are excluded.

Furthermore, an applicant must declare in his application that he agrees with the public announcement of his admission to the auction procedure and with the publication of any subsequent decision on award of contract to him.

Furthermore, your attention is drawn to the following:

Prior to the start of the auction, a deposit is to be paid to document the seriousness of the desire to take part in the auction. The details on this point will be set out in the decision on the rules for conducting an auction procedure for wireless network access for providing telecommunication services.

As regards the submission of applications for admission to the auction procedure, details will be requested separately in accordance with section 61(5) TKG in conjunction with the decision of the President’s Chamber on the auction rules. As part of this, applicants – as also requested by commentators - will be given a suitable period for drafting and submission of their application documents.

On 2. Determination of the objectively and geographically relevant market in which the frequencies can be used in accordance with section 61(4) sentence 2 No. 2 TKG

On 2.1: objectively relevant market

The following was argued on this point:

Some commentators agree with the definition of the market for wireless network access as the objectively relevant market in the sense of section 61 (4) sentence 2 No. 2 TKG and also with the technology-neutral allocation in the FUP. This will allow the network operators to develop offers based on the mobile communications technology introduced in each case to meet the demand of their customers. The BNetzA is thus taking account of the growing convergence of the technologies and markets and is giving room to mobile communications to develop new offers.

On the other hand, it must be pointed out that the term market has been expressed in terms that are too broad for the wireless network access. Moreover, in accordance with section 61 (4) sentence 2 No. 2 TKG, the FUP must be taken into account when defining the objectively relevant market. However, in the working document dated September 2007 for the 1.8 GHz, 2 and 2.6 GHz bands in question, they are to be used for digital cellular mobile communications. This would mean that the term “digital cellular mobile communications” at least should be chosen to define the objectively relevant market.

On the other hand, the broad definition of the objectively relevant market and the intention of the BNetzA to implement the WAPECS concept and not to exclude any business models as a result, is welcomed. But it must be noted that the working ruling presented contained considerable restrictions that were not in line with the WAPECS concept. Applications of the fixed usage service were to be excluded from the use of the available frequency bands, a fact that would block the development of convergence. Neither mobile communication operators would be able to offer services based on fixed or nomadic usage, nor would the fixed network operators be able to offer hybrid services linking fixed and mobile services in the assigned frequency bands. Affordable broadband offers based on innovative, alternative infrastructures that are limited to fixed or roaming uses would be prevented from the outset by the targeted exclusion of offers of the fixed usage service.

The Chamber rules as follows on this point:

The objectively relevant market in which the frequencies to be awarded may be used in accordance with the FUP is the market for wireless network access for providing telecommunication services. The designation of the objectively relevant market provided in the working decision submitted for consultation is specified as the market for wireless network access.

According to Section 61 (4) sentence 2 No. 2 of the TKG, the objectively relevant market is to be determined for the market in which the frequencies to be awarded can be used in accordance with the FUP.

The decision of the Chamber reproduced above is in harmony with the FUP that has been amended in the intervening time. It now covers the allocation of the spectrum up for award here for the “wireless network access for providing telecommunication services”. The Chamber regards it below as correct not only to explain the definition of the objectively relevant market, but also to illustrate at this point the motives for the important changes at the level of the FUP.

The following can be stated on the allocation in the FUP:

In the spectrum usage, the 1.8 GHZ, 2 GHz and 2.6 GHz frequency bands have been allocated for wireless network access for providing telecommunication services.

The draft of this decision, which was submitted for consultation, followed on from the initially planned allocation to “digital cellular mobile communications”. This designation of the allocation in the FUP in accordance with section 54 TKG has been adjusted in the meantime without any change to content being required.

The earlier allocations provided for the following: in the 1.8 GHz band, use had been specified for digital cellular mobile communications in accordance with the GSM standard and its further developments. In the 2.0 GHz band, the uses had been specified for digital cellular mobile communications using UMTS/IMT-2000. For the 2.6 GHz band, there was already a note that the 2500 MHz to 2690 MHz band is reserved for terrestrial IMT mobile communications applications from 1 January 2008 onwards.

Because of the thinking about a more flexible arrangement of the frequency regulation, the BNetzA decided to expand these allocations in the FUP and to dispense with naming a standard. It was initially considered using the designation “digital cellular mobile communications” for the spectrum usages in the 1.8 GHz, 2 GHz and 2.6 GHz bands. Digital cellular mobile communications was described in the general section of the draft of a FUP as follows: “used to connect mainly mobile terminal equipment to public digital communication networks via static base stations that cover one or more communication cells (sectors). Changes of communication cells regularly occur without loss of the communication link (e.g. GSM, UMTS/IMT 2000)“.

The fact that the designation was perceived as a restriction can be noted as the outcome of the evaluation of the comments on both this decision and also on the draft FUP (cf. Order 56/2007, OJ BNetzA 19/2007, p. 3699). It was argued in particular that this was not in line with the WAPECS concept and, in addition, did not agree with the definition of the objectively relevant market as the market for wireless network access.

The viewpoints received as part of the consultations show that the originally considered designation of allocating the frequencies to “digital cellular mobile communications” had lead to misunderstandings in relation to the possible uses and the definition of the objectively relevant market.

Against this background, the allocation of these frequency bands had to be adjusted accordingly. Consequently, the frequency bands have been allocated to wireless network access for providing telecommunication services in the FUP. This means that the spectrum for wireless network access for providing telecommunication services can be used in accordance with the exclusive allocation to mobile communications in the frequency band allocation plan (FBAP), which was defined in accordance with section 4 No. 22 Frequency Band Assignment Planning Order (FBAPO / FreqBZPV) as a communication service between mobile and static sites or between mobile communication sites.

It is pointed out by way of clarification that the earlier allocation to digital cellular mobile communications followed on from the “Changes of communication cells occur regularly without loss of the communication link (e.g. GSM, UMTS/IMT 2000)“. Since the naming of specific technologies can be dispensed with for reasons of technology-neutrality, this description can also be dispensed with. The wireless network access for providing telecommunication services can be described as follows: “used to connect terminal equipment to communication networks via static stations that cover one or more communication cells (sectors)”.

The procedure for a corresponding modification of the spectrum usage sub-plans in accordance with the FUP Establishment Order (FUPEO / FreqNPAV) dated 26 April 2001 (BGBl I, page 827) has already been concluded. On completion of the FUP, the BNetzA, in accordance with section 8 (2) sentence 1 FUPEO, will publish a communication on the conclusive completion of the plan in the OJ of the BNetzA and in the Federal Bulletin (Bundesanzeiger).

The following can be stated on the objective market in accordance with section 61 (4) TKG:

The objectively relevant market in which the frequencies to be awarded can be used is the market for wireless network access for providing telecommunication services and is in line with the allocations of the frequency bands in accordance with the FUP. The designation of the objectively relevant market, provided in the working decision submitted for consultation, was amended to the market for wireless network access and has now been specified as the market for the wireless network access for providing telecommunication services.

The allocation of the frequency bands and the definition of the objectively relevant market as the market for wireless network access for providing telecommunication services are also in line with the draft decision of the European Commission that was passed on 2 April 2008 in the Radio Spectrum Committee (RSC). A decision of the European Commission is also to be issued shortly in accordance after the proceedings in accordance with Art. 4 of decision No. 676/2002/EC of the European Parliament and Council on 7 March 2002 on a legal framework for the radio spectrum policy in the European Community (frequency decision) (EC OJ No. L 108, p. 1). This decision will become binding for the Member States immediately after it comes into force without any latitude for conversion into national law.

The Commission's working decision envisages that the frequencies from the 2.6 GHz band are to be made available for terrestrial systems capable of providing electronic communications services. The allocation of this band in Germany to wireless network access for providing telecommunication services complies with this stipulation. According to section 3 No. 24 TKG telecommunication services are "as a rule services provided for payment that exist entirely or predominantly for the transmission of signals via telecommunications networks […]". This definition of the term complies with Art. 2 letter c of Directive 2002/21/EC of the European Parliament and Council dated 7 February 2002 on a common legal framework for electronic communication networks and services (outline directive) (OJ EC No. L 108, p. 33) in which the electronic communication services have been defined accordingly.

Even if the European Commission's draft decision only takes the 2.6 GHz band as its subject, it is useful from the point of view of the BNetzA to allocate the 900 MHz, 1.8 GHz and 2 GHz bands accordingly even at this point in time. The draft recommendation of the European Commission "on the non-technical conditions for spectrum usage rights in accordance with the legal framework of the electronic communication in conjunction with the policy for wireless access to electronic communication services (WAPECS)" (COCOM08-07 dated 06.02.2008) envisages that the allocation of the 1.8 GHz, 2 GHz and 2.6 GHz bands up for award here along with the 900 MHz band should be handled uniformly as far as possible in the interest of a uniform procedure. Since the allocation of the entire spectrum in these frequency bands up for award is to be done to avoid regulatory-induced shortage, it is also advisable to undertake a uniform allocation of the frequency bands.

So there will be no restriction of services to mobile "applications" – as noted by commentators. It is not necessary or appropriate to name explicitly specified technologies with which the frequencies can be used or to exclude other technologies provided the user keeps to the set spectrum usage conditions. A network operator will be able in principle to provide to his customers, in line with demand, all services that can be provided on the basis of the communications technology chosen by him.

The objective market has been made very wide as a result. To clarify the situation, the originally planned designation of the objectively relevant market as the market for wireless network access has been amended in documents in accordance with the above mentioned working decision of the Commission as the market for the wireless network access for providing telecommunication services. So the objectively relevant market is the market for wireless network access for providing telecommunication services, i.e. mainly for the wireless connection of subscribers. Other applications, such as infrastructure links, are therefore not ruled out in principle. As part of this broad wording of the objectively relevant market, network operators will be able to offer customers all offers based on the communication technology used in each case to meet their demand.

On 2.2: geographically relevant market

The following was argued on this point:

Some commentators agree with the definition of the geographically relevant market as the Federal-wide market since regionalisation does not appear appropriate.

In contrast, some commentators are demanding regionalisation.

In the comments on communication 219/2007 there was great interest in regional applications. The experience of awarding the frequencies in the 3.5 GHz band also supports the fact that there is a high demand for regional spectrum usages.

The reference to other frequency bands in the 3.4 GHz to 3.8 GHz or 5.8 GHz band to realise regional business models is not understandable since these bands were not earmarked for mobile communications and are also not suitable for mobile communications. The 5.8 GHz band was assigned in general and not suitable for commercial operator models. Moreover, the move to technically and economically unattractive frequency bands would mean that these business models would have almost no chance of getting established.

It was noted by several commentators that, as regards the geographical market, the market definition and intended use were mixed up to the extent that the intended use of the “digital cellular mobile communications” would be used to justify a Federal-wide market. It is pointed out that the market for broadband wireless access (BWA), almost identical in designation, had been considered as regional with a detailed and fitting justification. The regional demarcation also included Federal-wide offers/providers too.

According to section 61 (5) p. 1 TKG the BNetzA was obliged to take account of the interests of smaller and medium-sized enterprises. In view of this obligation of consideration, there was no room for discretion. This obligation referred to the rules for the auction process. On the other hand, the inclusion of the interests of small and medium-sized enterprises in the auction process would be going nowhere if the participation conditions specified in accordance with section 61 (4) TKG did not take these interests into account. It was the question of regional market demarcation that would lead to a decision in relation to the specified minimum offers if and to what extent small and medium-sized providers, typically also only regionally active providers, could be considered at all as participants in the auction. A Federal-wide market with the funding minimum offers and the expansion costs to be funded and coverage clauses would have the effect of excluding such companies from the outset.

The Chamber rules as follows on this point:

In accordance with section 61 (4) sentence 2 No. 2 TKG, the relevant market for which the frequencies can be used in accordance with the FUP is to be defined not just objectively, but geographically also. The geographically relevant market encompasses the territory of the Federal Republic of Germany.

The stated frequency bands are available throughout the Federal Republic. As a result, the frequencies can be assigned throughout Federal territory and are also to be assigned throughout Federal territory. Regionalisation does not seem to be appropriate.

The frequencies up for award here have been allocated to wireless network access for providing telecommunication services within the framework of the change of the FUP.

It has been demonstrated in the 900 MHz / 1800 MH and 2 GHz frequency bands that user coverage, and consumer coverage especially, can be provided most efficiently of all by Federal-wide providers. Accordingly, the assignments already made in these bands have been made on a national basis. Even if some commentators have announced an interest in regional assignments, the Chamber has to take into account the much greater demand for Federal-wide assignments. On the one hand, the existing mobile communication network

operators require federal-wide frequency assignments to further develop their federal-wide business models and have already announced a frequency requirement in factual terms. On the other hand, there is a requirement for federal-wide assignments for potential newcomers that is shown from the comments received. The spectrum up for award here are also predestined for a federal-wide assignment because of the technical conditions of use and the propagation properties that are particularly good for mobile communications.

In addition, it cannot be seen how regional business models would have realistic chances of succeeding in the existing mobile communications market (in the 900 MHz/1800 MHz and 2 GHz frequency bands). Possible promotion of competition with reference to the interests of small and medium sized enterprises can – if at all – happen only under the proviso of economic sustainability of regional business models. But there are considerable doubts as to whether preference is to be given to the regionalisation of the spectrum being discussed here since a regional spectrum allocation does not meet the requirement of ensuring an efficient spectrum planning or use to the same level. A regional spectrum allocation would mean in the final analysis that other guard channels and guard separations would have to be set up or a correspondingly increased coordination effort would be needed. For this reason, in the view of the Chamber it is not advisable to make a portion of the frequencies available on a regional basis.

In this context it should also be pointed out that the European Commission currently intends to put into force a decision, a working document of which was approved by the Radio Spectrum Committee/RSC) on 2 April 2008, to harmonise the 2500 MHz to 2690 MHz frequency band for use by electronic communication services. The European Commission also demands a flexible and technology-neutral use of the frequency spectrum. This is in line with the demands in the views on WAPECS (“Wireless Access Policy for Electronic Communications Services”) dated 23 November 2005 of the group for frequency policy (Radio Spectrum Policy Group / RSPG) set up by Article 1 of the decision 2002/622/EC of the European Commission dated 26 July 2002 to establish a group for frequency policy (OJ EC No. L 198, p. 49). The offers to be created in this frequency band by systems should – starting with national, non-regionalised markets – provide primarily broadband communication for the end users in all Member States of the European Union.

It is also to be borne in mind that other frequency bands are available for realising regional business models for wireless network access, such as the frequencies in the 2.4 GHz, 3.4 GHz to 3.8 GHz, 5 GHz and 5.8 GHz bands. These frequency bands, in contrast to the opinion expressed by some commentators, are suitable for realising regional business models for wireless network access and are already being used for this purpose.

The experience from the auctioning of frequencies in the 3.5 GHz band in December 2006 also showed that, despite the regionalisation undertaken in this assignment, the assignment was made fundamentally to operators with federal-wide business models.

The Chamber fully appreciates that the interests of small and medium-sized enterprises must be taken into account in accordance with section 61 (5) TKG within the framework of the auction process. In accordance with the ruling of section 61 (5) TKG, the auction rules must be arranged in such a way in order to take into account the interest of these enterprises that they are objective, non-discriminatory and understandable. The legal stipulations will be taken into account when defining the auction rules. Consequently, it was specified within the framework of this decision that participation in the auction procedure is not limited with the result that any company can take part in the auction process in principle. And even when specifying the minimum bid, the principles of section 61 (5) TKG – and thus the interests of the small and medium-sized enterprises – were taken into account and consequently the minimum bid was determined by using the fee policy of administrative laws as the basis. This is the reason why the level of the minimum bids is at the lower end of the statutory fee framework.

It should also be pointed out that the realisation of regional business models is not excluded by defining the federal-wide market. The realisation of such regional business models is

possible by leasing on a regional basis the spectrum usage rights of the federal-wide spectrum assignment holder. Companies with an interest in regional spectrum usage will not be prevented from obtaining the appropriate frequency spectrum as part of a frequency transfer or frequency leasing from the holder of a Federal-wide spectrum assignment.

On 3. Basic set of frequencies, section 61(4) sentence 2 No. 3 TKG

The following was argued on this point:

Several commentators agreed with the approach of specifying a basic set of frequencies in a non-abstract manner. Also, the announcement in the justification is welcomed to take into account individual minimum requirements of bidders by means of safeguards in the auction process so that auction participants do not need to run the risk of leaving the auction with fewer frequencies than they actually need to realise their business models.

A group of commentators also welcomes the abandonment of spectrum cap. The danger of a concentration of large chunks of spectrum on individual bidders is estimated as low because of the volume of spectrum and the level of the bids that will be reached with the high demand. As regards newcomers, there was agreement with the views of the BNetzA that the actual spectrum requirement of each individual case can be estimated only by the bidder himself. Any capping in the run-up does not make any sense since this may contravene efficient use of the available spectrum.

It is pointed out that abandoning specifying a minimum amount or licensing smaller number of frequencies within the framework of the auction could lead to a greater fragmentation of the spectrum and to a lower efficiency of use. In this context you are referred to the UMTS auction in 2000. It was also pointed out during the GSM 1800 auction in 1999 that the amount of available spectrum (2 x 10 MHz (paired)) was not enough to set up a federal-wide cellular mobile communication network. This estimate was up-to-date both then and now.

On the other hand, reserving spectrum for newcomers would demand up to 100 MHz at least or a “spectrum cap” (e.g. 30 MHz) in order to ease entry to the market for the newcomers. Reserving a minimum spectrum for newcomers could also be specified since the BNetzA was able to determine in discussions with network equippers and potential interested parties what was considered as a minimum set of frequencies for entry to the market. Reserving spectrum for newcomers did not also need to take account of every conceivable business model, but could in fact be limited to the minimum required for entry to the market. As for the matter of the alleged discrimination of current mobile communication providers, it should be borne in mind that the network operators in the market had obtained spectrum largely without an auction. A spectrum cap for established network operators or reserving frequencies for newcomers was only a compensation for this in the eyes of a newcomer. If newcomers require additional frequencies for their business intentions, then they can compete with the other bidders for more frequencies in the remaining spectrum that is to be auctioned.

Alternatively, it is proposed, after a legal and binding conclusion of all related proceedings, that the frequency bands at 1.8 GHz and 2 GHz (e.g. 5 MHz) and parts of the extension band at 2.6 GHz (e.g. 15 MHz FDD spectrum each) are allocated to the established network operators on request, or the frequency bands at 1.8 GHz and 2 GHz are distributed among the existing network operators while limiting their bidding rights. The remaining spectrum (including 10 MHz FDD and 50 MHz TDD in the 2.6 GHz band) could be made available to the other interest parties. It is pointed out at this point that a symmetrical breakdown of the 2 GHz band would be necessary in particular to ensure equal competition. A two-stage auction procedure could be used for this purpose. In a first bidding round a limit of one spectrum block per bidder should be specified, in the second round any spectrum blocks left over could then be auctioned without any restriction on bidders. In addition, the BNetzA also has the following to take into account: Awarding frequencies in the 2 GHz and 2.6 GHz bands means granting growth opportunities to the already licensed market participants who have invested billions. The opportunities in competition for newcomers to the market would be only a

theoretical option. As for the 2.6 GHz band, it must be borne in mind that this involves the UMTS extension band. In the medium term, it would also be suitable for the introduction of broadband transmission technologies in particular, such as LTE (Long Term Evolution) with channel bandwidths of up to 20 MHz. To avoid asymmetries for this market, it would be necessary to limit the bidding rights to a maximum of four spectrum blocks per applicant.

The thought of limiting the bidding rights of every bidder is regarded as questionable. The statement that the BNetzA is not able to estimate spectrum requirements would then give the established market participants the opportunity to acquire frequencies irrespective of requirement in order to prevent potential competitors from entering the market or make it very difficult for them at least. This also contradicts the statement that the authorities can review the concrete spectrum requirements by means of the usage concepts submitted in the procedure for admission to the auction. If a concrete review were possible, then an abstract review ought also to be possible. A concrete review in the admission process would also involve the risk, in addition to the loss of transparency that would contravene section 61 (5) TKG and Art. 9 (1) of the framework directive and Art. 6 (1) of the approval directive, that applicants, who were not admitted to the auction to the full extent of their application, would appeal against this and would thus delay the allocation proceedings.

The assumption that spectrum would remain available for newcomers even if bidding rights were not limited is regarded as too optimistic. It is argued that the established mobile communication businesses could make bids with a predatory intention. It is suggested setting a spectrum cap of 30 MHz (unpaired) or 2 x 15 MHz (paired) at least in an initial stage to prevent a destructive competition.

Specifying a spectrum reserved for newcomers or a spectrum cap would also be advisable since the amount of spectrum specified for the auction process would not remain static for ever as the later transfer or leasing and any trade in frequencies would also be allowed.

The Chamber rules as follows on this point:

A basic set of frequencies will not be specified. In accordance with section 61 (4) sentence 2 No. 3 TKG, the Chamber shall determine, before the holding of allocation proceedings, the basic set of frequencies required to offer the telecommunication service, if this is necessary.

The setting of the necessary basic set of frequencies is not necessary in this case. The widest range of telecommunication services can be offered with the frequencies up for award here, with the result that a minimum frequency set that is standard for all conceivable business models above the smallest awarded unit of 5 MHz cannot be specified abstractly.

Within the framework of the UMTS/IMT 2000 allocation proceedings, the Chamber made this type of specification. In the decision on the award rules dated 18 February 2000 the Chamber ruled that the minimum set of frequencies for a UMTS/IMT-2000 licence was 10 MHz (paired). This stipulation was made against the background that third generation mobile communications (UMTS/IMT 2000) were delimited as an independent objective relevant market. The frequency set of 10 MHz (paired) was the necessary minimum set for taking up these telecommunication services.

The frequencies up for award here will be for wireless network access for providing telecommunication services and hence provided on a much wider based objectively relevant market (cf. under On III on this point). 2.1). This means that a range of different business models can be implemented with the result that a basic standard set of frequencies cannot be specified.

If a bidder has a larger requirement for the necessary basic set of frequencies than the smallest unit of 5 MHZ for award here for his business model and states this as a minimum requirement, then it must be ensured, using the appropriate safeguards in the decision (still to be taken) on the rules for holding the auction procedure in accordance with section 61 (5) TKG, that a bidder cannot be granted the frequency packets until their total number complies at least with the individual minimum required registered. In this way it can be ensured that

bidders do not receive less than the minimum spectrum they determined themselves and are also not dependent on obtaining additional spectrum after the auction – e.g. by transfer – in order to be able to offer their intended telecommunication service.

The Chamber points out the following on the partial requested limitation of bidding rights, about which the Chamber still has to take a decision in detail on the auction rules in accordance with section 61(5) TKG:

Limiting the amount of spectrum (spectrum cap) that can be bought at auction by each bidder will not be implemented.

If, as was illustrated in the initial thinking (see order 89/2005, BNetzA OJ 24/2005, page 1909 ff.), it was thought that the requirement for spectrum might be limited to a total of 2 x 20 MHz (paired) per bidder, this was based on the additional requirements for spectrum stated at that time by the mobile communications network operators. The actual spectrum requirement of a network operator already active in the market or of a new interested party is the product of his individual business model and cannot be estimated in advance by the Chamber.

As part of the UMTS auction in 2000 the bidding rights were limited (see order 13/2000, Reg TP OJ 4/2000, page 516 ff). As a justification it was pointed out that in the first round only 2 x 60 MHz were available and so a maximum of six federal-wide networks could be created because of the specified basic set of frequencies of 10 MHz. To ensure equal competition in the sense of section 2 (2) No. 2 TKG, the creation of extremely differing framework conditions should be avoided in the starting phase of opening up an actual market.

When providing the spectrum now up for award, unlike the UMTS auction in 2000, it can be specified that the frequencies are not being used to open up a concrete market segment, but are being used overall for a much broader market in which competition already exists and that allows for a range of additional different business models. The overall amount of available spectrum is also much higher. This means that the starting conditions in the coming procedure are completely different.

The Chamber fully appreciates that limiting the bidding rights per bidder might be suitable in principle for easing the entry to the market of potential interested parties. Since an excessively small dimensioned spectrum cap brings with it the risk of excluding business models with a higher spectrum requirement, it would be necessary for the Chamber to estimate the spectrum requirement of the individual interested parties.

For companies already active in the market, the frequencies will be used as expansion spectrum in order to offset capacity bottlenecks for existing applications and also to make possible the development of new services. A newcomer will require frequencies to start the business and for the sustainable implementation of the business model. Depending on the business planning or objectives on which the acquisition of spectrum is based, the spectrum requirement can be relatively small or high. In view of the many possibilities for using the spectrum and of the different business strategies, the Chamber is not able to assess in abstract terms which spectrum requirement is suitable as an upper limit. If the spectrum cap is dimensioned such that it is too small, then the spectrum would be artificially reduced in the view of the individual bidders with the result that their business models could not be implemented.

With the claim of excluding business models from the outset due to the arrangement of the spectrum cap, a concrete assessment of requirement before the auction would lead to a spectrum cap that would be geared to the highest requirement expressed, as suggested by some commentators. This would then be so high that the intended effect could not be achieved.

In addition, a too narrowly dimensioned spectrum cap could also mean that spectrum is not awarded as part of the auction although individual bidders have an additional spectrum requirement. A second auction stage could indeed be arranged for this event, but with a non-

simultaneous award of the same types of auction objects there is the danger that very inhomogeneous prices may well have to be paid for the same types of spectrum blocks.

A spectrum cap to ease the market entry of potential interested parties also hides the danger of a distortion of the competition. Granting preferential treatment to potential newcomers automatically puts existing network operators at a disadvantage due to the effect of the spectrum cap in which they cannot satisfy their actual spectrum requirement because of the restriction imposed.

In addition, the Chamber assumes that the spectrum to be awarded here of 270 MHz offers enough space to allow newcomers to acquire spectrum. Setting a spectrum cap to prevent newcomers from having difficulty in acquiring spectrum is not considered necessary by the Chamber. The probability of such a strategic bidding behaviour is regarded as low for the following reasons: assuming that the spectrum blocks are awarded – as was the case in previous auctions - in an auction over several rounds, the price increase of one block will lead to the increase in the price of the other (same types of) blocks. For a bidder with an interest in preventing others from acquiring spectrum, this would mean that he would automatically increase the price of the absolutely required spectrum by his strategic “price driving”. To this can be added the fact that he would have to acquire the not absolutely necessary spectrum at correspondingly high prices if he intends to successfully prevent other bidders from acquiring spectrum or from entering the market. This effect becomes all the greater the bigger the amount of spectrum to be awarded is. The envisaged very high costs for this strategic bidding behaviour should reduce the incentives for this type of behaviour.

Against this background the Chamber estimates the opportunities arising directly from the auction as allocation proceedings for the acquisition of spectrum to be awarded as equal for both existing network operators and possible newcomers with the result that a special regulatory protection for possible newcomers to ensure equal opportunity with existing spectrum assignment holders does not appear pertinent.

Notwithstanding this fact, there is the extremely unlikely possibility, especially in view of the amount of spectrum coming up for award, that one bidder buys all the spectrum at the auction if the bidding rights are not restricted. This outcome would conflict in particular with the regulatory goal of permanently promoting competition oriented telecommunication markets in accordance with section 2(2) No. 2 TKG. Although the Chamber estimates this outcome as extremely unlikely, the consequences would be serious for the competition and hence also for the end consumer.

For this reason, consideration might be given to setting a limit to bidding rights for each bidder in the meaning of a “safety cap”, but one that would have to be high enough not to prevent the frequency efficient provision of different services. This is why the British regulatory authority (Office of Communications / Ofcom) is considering imposing a “safety cap” of 80 MHz per bidder for the planned award of the 2.6 GHz band in order to prevent only one bidder from being successful.

From the Chamber’s point of view, the setting of such a “safety cap” is not necessary since it is not obvious that an interested party can enforce the requirement for the entire spectrum or a large part of it. No such requirements have been presented to the Chamber so far. The only interest expressed to date was in the comments on the imminent award, which was for a maximum of 2 x 40 MHz (paired). Against this background the chamber does not currently anticipate that a much larger spectrum requirement will be brought by individual interested parties.

In addition, it should be pointed out that the bidding rights must be applied for by the individual interested parties within the framework of the admission to the auction. A usage plan, which will be checked by the BNetzA, must be submitted in order to verify the frequency requirement put forward. As regards the objection put forward by commentators on the verification of the requirements for the usage concept to be submitted, the Chamber points out that individual requirements are to be illustrated conclusively by means of concrete planning and will be reviewed. If indicated in points of view that the concrete review of the

spectrum requirements in the admission process involves the risk of delaying the process by the possibility of triggering appeals, it must be noted that the admission procedure is provided by law and so its implementation cannot be dispensed with.

The Chamber also sticks to its view that, against the background of the WAPECS concept and the result of the consultations conducted to date, reserving frequency spectrum is not advisable from a regulatory point of view for existing UMTS network operators or for new comers. Reserving frequencies is not advisable in both cases in order to assert the principle of a non-discriminatory, understandable and objective procedure in accordance with section 55 (1) sentence 3 and section 61 (5) sentence 1 TKG.

It should be remembered here that the auction procedure in accordance with section 61 (5) TKG is a suitable permissible selection procedure under constitutional law. The highest bid will typically substantiate the willingness and the ability to deploy in the most optimum manner possible the frequency to be assigned in the free market competition of service provision and will strive to use the spectrum economically and sparingly (cf. BT-Drs. 15/2316, p. 80 of section 59 TKG-E). If interest businesses meet the conditions of admission to the auction procedure, then they must be allowed in principle into the auction without restriction.

A reservation for so-called “newcomers” – as is requested by some commentators in order to offset the competitive advantages of the existing network operators – is not advisable. The Chamber has doubts about whether the competitive advantages of the existing network operators can be effectively compensated at all by the rules governing the allocation of spectrum. The allocation rules should ensure non-discriminatory access to scarce frequencies in an understandable and objective process. Knock-on effects on the actual development of the competition can virtually not be influenced since they depend on a range of factors that are outside the control of the BNetzA.

Protection of newcomers in the meaning of a preferred spectrum acquisition as a compensation for disadvantages vis-à-vis existing network operators is not necessary in the eyes of the Chamber since the spectrum to be awarded in this case is especially big. As was stated above, the probability of strategic (predatory) bidding competition to the detriment of newcomers is extremely low.

On the other hand, sole reservation of the entire (paired) spectrum at 2.0 GHz and 2.6 GHz for existing network operators is also not advisable. In the Chamber’s view it is not obvious that there is a need to protect existing mobile communication network operators from the possibility of a newcomer entering the market. If it should turn out – as noted by some commentators – that no other network operator intends to enter the market, then the possibility by itself of potential newcomers taking part would not bring any disadvantages for existing network operators in the auction and would be reflected in the outcome of the auction.

The Chamber points out in this context that the requirements of potential newcomers were put forward. In accordance with section 61 (5) TKG, the BNetzA is obliged to hold objective, understandable and non-discriminatory auction procedures. This includes the non-discriminatory and equal opportunity of all market players to participate in the process. For this reason this then forbids in principle preventing or limiting potential newcomers from the opportunities to enter the market.

Reserving spectrum for existing network operators is not advisable in view of the decision of the Chamber on 18 February 2000 (Order 13/2000, OJ Reg TP 4/2000, p. 516 (552)). In that document the chamber stated the following on the issue of awarding spectrum in the 2.6 GHz frequency band:

> “The forecasts or studies available on the market today assume to an overwhelming degree that the market for UMTS/IMT-2000 services will not develop in leaps and bounds from 2002 onwards but will grow successively. The actual “breakthrough” is anticipated between 2007 and 2010. […]

If it is assumed that, on the basis of the significantly higher demand for UMTS/IMT-2000 services that is not anticipated until between 2007 and 2010, there will also be an increased spectrum requirement from that time onwards among network operators/licensees, it seems appropriate if other frequencies can also be made available to the licensees within the framework of the planned availability of the UMTS/IMT-2000 extension bands (see Mandate to CEPT for the development of a common plan to identify additional frequency spectrum for a terrestrial third-generation mobile and wireless communications system (UMTS) in the community (3) dated 26 July 99 LC/99/15/Final). This is all the more so if it is expected by including forecasts from the above mentioned market studies that the growth of mobile communications sales will be based primarily on data use only after 2005.

In the decision of the President's Chamber dated 18 February 2000 UMTS network operators were promised in principle the opportunity of acquiring additional spectrum. It was pointed out that "frequencies from the 2.6 GHz band could also be made available to UMTS licence holders". This clarified the fact that UMTS network operators will not be excluded from the award of additional spectrum. But reserving this spectrum or granting a preferential position was not planned. Against this background, the investments made in the procedure in 2000 as part of the allocation of the UMTS/IMT-2000 frequencies do not justify any preference in terms of allocation of the available 2.6 GHz band.

For the same reasons, in the Chamber's view, reserving the 2 GHz frequencies for existing network operators is also not advisable.

For the same reasons the symmetrical distribution of spectrum in the 2 GHz and 2.6 GHz band among existing network operators, as requested by some commentators, is being ruled out.

In addition, the same arguments apply to the reservation as apply to the question of a spectrum cap, especially as regards estimating spectrum requirements. A reservation would also require the BNetzA to estimate the requirements for spectrum to be reserved. In respect of the implementation opportunities of the various business models in the frequency bands up for award here, concrete estimates of requirement that do justice to all possible business models are not possible.

On 4. Spectrum usage provisions in accordance with section 61 (4) sentence 2 No. 4 TKG

In accordance with section 61(4) sentence 2 No. 4 TKG, the Chamber shall determine the spectrum usage conditions including the degree of coverage of spectrum usage and its implementation within a time frame before an auction procedure is held. Spectrum usage conditions in this sense are details on the type and volume (e.g. position in the frequency band, block size) of the spectrum to be allocation, in addition to the technical specifications.

On 4.1 Purpose of use

The following was argued on this point:

Agreement is partly given to the statements on technology neutrality and on the deployability of all available technologies.

The award of the unpaired spectrum of the 2.6 GHz band as one block, in which the guard bands to the adjacent FDD technologies will need to be implemented by the licence holder, is explicitly supported. The shift in use of the frequencies in litigation in the 2.6 GHz band into the area of the unpaired spectrum is also welcomed. As for the 1.8 GHz and 2 GHz, the division of the bands into approximate 5 MHz wide blocks is supported.

The originally planned allocation of the spectrum for digital cellular mobile communications was also agreed to.

The information from the BNetzA, according to which, on completion of the auction, there may be a possibility of transferring spectrum usage rights wholly or partly in accordance with the provisions of the TKG, is welcomed. The instrument of the exchange of frequencies would make it possible to reduce the pressure to achieve the largest possible connected blocks in the auction. This means that the auction costs would be reduced for bidders and the funds saved used for network expansion.

The application of the ECC Decision ECC/DEC/(05)05, which intends to create the appropriate guards bands in the TDD area, is advisable.

It is argued in contrast that the intended use of “digital cellular mobile communications” has not been defined and that its meaning remains unclear for this reason. Giving the intended use of the frequencies as “digital cellular mobile communications” was incorrect since it did not conform to the market demarcation. All frequencies to be counted as part of the market of “wireless access” should also be allocated uniformly to this end in the intended use. This would result in a congruence of the allocation purposes of the frequencies and the market addressed with their use which would simultaneously create symmetrical market conditions for all participants by avoiding friction caused by different allocation purposes and limits of the frequencies use in each case.

The following should be noted on the intention of allowing a “largely technology-neutral use” in these frequency bands:

The three frequency bands would have different conditions physically and also in terms of the existing frequency usage. This would justify different treatment of these frequency bands in terms of the frequency usage conditions and also the block sizes to be auctioned.

The 1.8 GHz and 2 GHz bands will be used for GSM and W-CDMA in Europe. Coexistence studies are already in progress for the 1.8 GHz band (and for the 900 MHz band) to see how W-CDMA could be operated in these bands in addition to GSM technology. For other technologies, whose operation would be made possible by a technology-neutral usage, coexistence studies of technologies already used in these bands should remain a prerequisite for the operation of alternative communication technologies. The approaches currently being discussed in the CEPT ECC SE42 should also be taken into account. In the 2.6 GHz band bigger frequency bands would be available from the outset. This situation would seem to be ideal for the application of innovative broadband technologies (such as HSPA+, 3G-LTE and WiMAX-TDD). Consequently, such technologies should be promoted in particular in this frequency band. Although the allocation conditions would not exclude use of the bands in the above mentioned meaning, there would be the risk, due to a technology-neutral use, that efficient use of these harmonised bands could be jeopardised in the medium to long term within the framework of the IMT-2000 family for instance.

From a technical point of view, it must be ensured in terms of the intended technology-neutral possible uses that the existing specturm usages of digital cellular mobile communications do not suffer interference from the use of new technologies. The guard separations and power limits that may be required should be imposed to the detriment of the respective frequency users who had acquired the spectrum usage rights in the bands up for award and who intended to introduce new technologies. Compliance with the spectrum usage conditions was also to be ensured by appropriate measures on the part of the BNetzA.

It is recommended that the band plans of the appropriate ECC decisions (e.g. ECCDEC(05)05) are stringently complied with and technology neutrality licensed only within the duplex procedure specified for each frequency band.

Awarding the 1800 MHz spectrum as technology-neutral would mean unequal treatment of the existing GSM-1800 licences (limited to GSM). Even if the licences in the GSM 1800 were adapted later, the 900 MHz bands would also be immediately affected by this type of adaptation. This means that the planned award of the 1800 MHz spectrum would be directly related to a future “spectrum refarming”. For this reason, an overall concept on the subject of

“spectrum refarming” needs to be drafted by the BNetzA before a technology-neutral award of the 1800 MHz spectrum.

As for the plans to award the TDD centre gap at 2570 – 2620 MHz as one block, it is feared that free competition of these services in this band will be prevented since the future licensee could operate alone in this band. Similar broadband TDD bands are no longer available in this form. From a technical point of view, a guard band is needed between the TDD and FDD band at 2.6 GHz. The BNetzA’s working document contains only inadequate statements on this matter.

As for the guard bands to be created in the TDD area, it is demanded, based on the CEPT studies (ECC PT1) currently running on the coexistence between TDD and FDD at 2.6 GHz, that the necessary guard bands are specified and taken from the spectrum that is available for award.

It is requested that the free unpaired bands at 2 GHz are allocated as blocks of about 5 MHz for TDD or also for FDD solutions (external pairing).

It is also proposed to split the band at 2.6 GHz encompassing 50 MHz (unpaired) into sub-units with widths of about 5 MHz in order to increase the flexibility and efficiency of the allocation and the usability of the spectrum. Because of the guard separations that must be provided, it is also conceivable, as an alternative, to halve the unpaired 50 MHz block at 2.6 GHz and then to award it as 20 to 25 MHz unit.

There would be no reason to prohibit FDD usage for the unpaired frequency bands. On the one hand, the current mobile communications world is dominated by the use of FDD technologies, although TDD technologies are also available. The FDD expansion requirement would be equally great. On the other hand, the technological development in the TDD area is also advancing, with the result that the requirement for this band could also increase. For this reason it seems correct to allow the use of both technology variants to obtain maximum flexibility for the unpaired spectrum.

In the context of the possibility of “external pairing”, your attention is directed to the existing litigation surrounding the paired frequency bands at 2 GHz and 2.6 GHz. It would increase the bid pressure on the frequency bands not affected by it (litigation). “External pairing“ options might reduce in the auction the bid pressure on the paired frequency bands by bidders who are planning to introduce FDD technology and increase the efficiency of the auction outcome.

It is argued that TDD would have considerable advantages for data applications. The ECC 2.6 GHz band plan (2x70 MHz + 50 MHz) had been designed unilaterally in favour of FDD. TDD should also be allowed in the paired parts of the 2.6 GHz band and an award concept should be developed that supports this. The ”out of band pairing” (1900-1920/2010-2025 MHz paired with parts of 2500-2690 MHz) would be more of an artificial construct, but could be allowed on condition that full flexibility was allowed for TDD/FDD in the entire 2.6 GHz band.

It is argued that future developments of digital cellular mobile communications would allow data transfer speeds of up to 100 Mbit/s to be reached, which in turn require channel broadband widths of up to 20 MHz. These broadband widths can be achieved at present exclusively in the 2.6 GHz band. To take account of this fact, the planned splitting of the spectrum should support the formation of connected bands of 2 x 20 MHz (paired).

It is requested that the award of the spectrum in the 2.6 GHz band should be provided in 10 MHz blocks at least in order to earmark this band from the outset for use by innovative broadband services and in order to avoid fragmentation into 5 MHz broad spectrum bands of different operators. The planned abstract award would not offer sufficient protection against fragmentation.

It is argued that more than two thirds of the frequency band has been assigned for explicit FDD use without having shown the requirement. Furthermore, it is demanded that the TDD

user maps all the required guard bands separating him from FDD allocation holders – without it being described in more detail – in his own band. To take fully into account the technology neutrality demanded by the European Commission and the proportion of the overall requirement taken up FDD and TDD, a requirement that cannot be estimated at present, an open arrangement of TDD/FDD use – similar to the arrangement within the framework of the BWA spectrum assignment – is also considered as sensible in the paired frequencies of the 2.6 GHz band. Also connected to this is the requirement on adjacent assignment holders to define and comply with the necessary guard bands by mutual agreement.

The provision of more spectrum for TDD (20 MHz or 40 MHz) is demanded. Paired and unpaired spectrum can be used alongside each other in the same frequency band without any problems. The auction in Norway was a good example of this and also showed the higher demand, as the unpaired spectrum was sold for an even higher amount at auction than the paired spectrum. If the BNetzA considers itself prevented from making another bigger block available for TDD as a result of the ECC decision (05)05, then it would be possible, as it was in Norway, to auction the paired spectrum in 2 x 5 MHz blocks and the unpaired spectrum in 10 MHz blocks.

As regards the allocation of the spectrum blocks in an abstract award of spectrum, it is suggested that the bidder who has acquired the most blocks with a correspondingly high commitment is allocated the blocks in an ascending order starting from block 1. The allocation of blocks 13 and 14, the ones to be used with restrictions, should be allocated to the bidder acquiring the blocks with the lowest prices or, if the price is the same, the decision should be made by a lottery.

The Chamber rules as follows on this point:

The purpose of use of the frequencies to be awarded in the 1.8 GHz, 2 GHz and 2.6 GHz bands is wireless network access for providing telecommunication services. The originally planned allocation to digital cellular mobile communications was amended (cf. III 2.1 on this point).

The designation “digital cellular mobile communications” conveyed the impression in the eyes of commentators that the allocation of the frequency bands up for award here was not in line with the WAPECS concept and the definitions of the objectively relevant market as the market for wireless network access.

Since the frequencies in all the above mentioned bands can be used for wireless network access for providing telecommunication services, the designation also had to be amended accordingly.

There will be no restriction on the use of specific technologies. All available technologies can be used, with the usage conditions serving as the basis. In the meaning of section 1 TKG, the BNetzA must make the regulations and the spectrum usage as technology-neutral as possible.

Insofar as noted by some commentators that different spectrum usage conditions were justified because of the differences in the frequency bands, it should be pointed out that the Chamber took account of the existing physical differences and the existing spectrum usages to be protected in the different frequency bands when specifying the spectrum usage conditions. It cannot be argued against the technology-neutral provision of frequencies that efficient spectrum usage is at risk because certain technologies – such as specifying the IMT family – have not been specified. Even within the IMT family such different technologies have been agreed that a completely harmonised usage could not be guaranteed even if these technologies were stipulated. The Chamber fully appreciates that the use of a frequency band with a standard technology could resolve greatly the matter about efficiency to the extent that the need for coordination and guard separations could be minimised. But the technology-neutral provision of frequency bands for each individual frequency user provides an individual opportunity to choose the technology deployed by him. This means that every

user, within the framework of the stipulated usage conditions, can deploy the technology that is best suited for the service offered by him and guarantees the best possible use of the frequency resource in the actual case in question. In the eyes of the Chamber, the efficiency gains generated in this way outweigh greatly any possible efficiency losses that may arise as a result of the range of deployed technologies and the coordination and decoupling effort resulting from this. This applies in particular since, within the framework of the spectrum usage conditions, so-called frequency masks have been specified that are intended to ensure interference-free usage between adjacent operators.

A technology-neutral definition of the spectrum usage conditions for the 1800 MHz band also does not represent inequality of treatment of existing assignment holders in this band and can also be considered independent of matters to do with the so-called refarming of frequencies already assigned. The technology-neutral arrangement of the spectrum usage conditions applies only to the frequencies that are to be assigned within the framework of this procedure. The question as to whether and how frequencies already issued in the past from the frequency bands being discussed here are to be dealt with in terms of technology neutrality is not the subject of this decision and shall remain the subject of a separate decision.

Spectrum usage conditions shall be set in accordance with international framework conditions.

For the frequencies up for award here, there is already a series of technical reports, recommendations and decisions available in the international domain that need to be taken into account when setting spectrum usage conditions.

The 1.8 GHz band has already been allocated to mobile communications use in those countries at the initiative of some European countries at the World Administrative Radiocommunications Conference (WARC) WARC MOB 87. This frequency band was allocated primarily to mobile communications by WARC 92. Between 1992 and 1994 these initiatives were further developed at European level. The European Telecommunications Standards Institute (ETSI) expanded the GSM-900 standard by the frequency band covering 1710 MHz to 1785 MHz and 1805 MHz to 1880 MHz. More work to avoid interference and for border coordination was done by the Conférence européenne des Administrations des postes et des télécommunications (CEPT). With decision (95)03 of the CEPT's European Radiocommunications Committee (ERC), the frequency band was identified for the DCS-1800 or GSM-1800 standard in the area of the CEPT Member States. The entire GSM frequency band along with other bands was identified for IMT 2000 by the World Radiocommunications Conference (WRC) in 2000. In the meantime, the CEPT has approved the ECC decision (06)13 in which the entire GSM frequency band is scheduled for the harmonised IMT-2000 application.

As early as the WARC in 1992, a total of 230 MHz of spectrum was identified for third generation mobile communications (1885 to 2025 MHz and 2110 to 2200 MHz) for the 2.0 GHz band. At that point in time, these bands were still used by the fixed radio service (radio relay). Radio relay was removed from this frequency band into higher frequency bands by the activities of several countries, thus creating space for third generation mobile communications. In 1997 the first ERC decision was approved, meaning that bands 1900 MHz to 1980 MHz, 2010 MHz to 2025 MHz and 2110 MHz to 2170 MHz were identified for UMTS, but only 2 x 40 MHz were to be made available by 1 February 2002. The technical framework conditions (guard bands, distribution of paired/unpaired, SPA spectrum) was then defined by ERC decision (99)25. The ERC decision (00)01 then expanded the ERC decision (97)07 in that it stated that the entire 155 MHz was to be available by 1 February 2002. With ECC decision (06)01 the reserving of the band between 2010 MHz and 2025 MHz for SPA applications was revoked. At the same time, the rules of the previous ERC decisions (97)07, (99)25 and (00)01 were incorporated into this new ECC decision. The old ERC decisions were cancelled.

For the 2.6 GHz band, the 2500 to 2690 MHz band was identified along with other bands for IMT 2000 by the WRC 2000 (the sub-bands 2500 to 2520 MHz and 2670 to 2690 MHz were allocated to mobile communications via satellite). In 2002 the 2500 to 2690 MHz frequency band was identified for IMT 2000 in the ECC decision, but only the 2520 MHz to 2670 MHz frequency band for the terrestrial components of IMT 2000. It was not until ECC decision (05)05 was approved that the remaining 2 x 20 MHz was allocated to the terrestrial component of IMT 2000. The fundamental technical framework conditions governing frequency were also set in this ECC decision. According to this decision, 2 x 70 MHZ are scheduled for paired use (2500 MHz to 2570 MHz and 2620 MHz to 2690 MHz), with two options planned for the centre gap (2570 MHz to 2620 MHz): TDD or FDD (downlink) externally paired. However, these options can be deployed only alternatively in the same area. ETSI is currently working on a solution for the external pairing that will probably pair bands 1900 MHz to 1920 MHz (uplink) and 2010 MHz to 2025 MHz (uplink) with the 2585 MHz to 2620 MHz band (downlink).

The CEPT drafted CEPT report 019, which was published in December 2007, based on the WAPENCS mandate. The report describes the technical parameters and guidelines for the use of the 2500 MHz to 2690 MHz frequency band which is intended to provide a usage that is both as flexible and interference-free as possible.

The concept of block edge masks (BEM) was introduced in accordance with these principles. These masks refer to the spectrum blocks assigned to the operators (operator block). An operator block is described by the appropriate parameters and can contain several 5 MHz channels, irrespective of the technology used. The block edge masks describe both the permissible emissions inside the operator blocks as well as the emissions outside the operator blocks. These are requirements to do with frequency regulation that are intended to reduce the probability of harmful interference between users with adjacent frequencies. To achieve compatibility between the operator blocks of users with adjacent frequencies, a frequency separation of 5 MHz is required between the edges of the outer spectrum blocks of the operators provided these are FDD to TDD or TDD to FDD (unsynchronised) configurations.

As a result of the introduction of this BEM, TDD can now be used in certain conditions in deviation from the stipulations of the ECC decision (05)05 in the paired frequency bands of the 2.6 GHz band.

To harmonise the 2500 MHz to 2690 MHz frequency band for electronic communication services, the European Commission intends to bring into force a decision that will incorporate the technical aspects of the frequency definitions of CEPT report 019. A draft was passed by the RSC in April 2008. The European Commission also demands a flexible and technology-neutral use of the frequency spectrum. This is in line with the demands in the RSPG opinions on WAPECS dated 23 November 2005. According to the WAPECS concept, all spectrum usages should be offered with all technologies, provided this is technically possible, in the frequency bands identified for WAPECS, which also include the frequencies up for award here.

The offers to be implemented by systems in this frequency band should provide above all broadband communication for the end user.

Accordingly, the available frequencies shall be put up for award as follows:

Frequency band	**Available frequency spectrum**	**Award**
1.8 GHz	1730.1-1735.1 MHz and 1825.1-1830.1 MHz 1758.1-1763.1 MHz and 1853.1-1858.1 MHz	2 x 5 MHz (paired) 2 x 5 MHz (paired)
2 GHz	1900.1-1905.1 MHz	5 MHz (unpaired)

	1930,2-1935.15 MHz and 2120.2-2125.15 MHz 1935.15-1940.1 MHz and 2125.15-2130.1 MHz 1950.0-1954.95 MHz and 2140.0-2144.95 MHz 1954.95-1959.9 MHz and 2144.95-2149.9 MHz 2010,5-2024.7 MHz	2 x 4.95 MHz (paired) 2 x 4.95 MHz (paired) 2 x 4.95 MHz (paired) 2 x 4.95 MHz (paired) 14.2 MHz (unpaired)
2.6 GHz	2500-2570 MHz and 2620-2690 MHz 2570-2620 MHz	14 blocks each of 2 x 5 MHz (paired) 10 blocks of 5 MHz (unpaired)

In principle, the spectrum available in all three frequency bands will be put up for award in 5 MHz blocks. The allocation is in line with the international channel plan that provides a rasterisation of 5 MHz. With the allocation of 5 MHz blocks, the greatest possible flexibility is also ensured for bidders to allow them to realise their various planned business models. This arrangement also allows bidders to acquire quantities of spectrum of 5 MHz and any multiples thereof. Against this background, the allocation of larger blocks, such as a 10 MHz block, does not appear appropriate since bidders with a demand for 5 MHz or 15 MHz for instance cannot have their requirement met. The need by bidders for connected spectrum will be taken into account by the Chamber when it compiles the auction rules.

Moreover, there is also the possibility of transferring frequency usage rights totally or partially in accordance with the rules of the TKG on completion of the auction (cf. communication 152/2005, OJ Reg TP 12/2005, p. 1021 ff for details on this point).

The paired spectrum to be awarded in the 2 GHz band - used to belong to Quam or MobilCom spectrum of 2 x 9.9 MHz (paired) - will be provided in four blocks of 2 x 4.95 MHz (paired).

If this method of dividing up 5 MHz blocks is not appropriate in certain frequency bands, then a different block size will be set. This applies to the frequency band from 2010.5 MHz to 2024.7 MHz.

For instance, there is only 9.2 MHz available in the 2010.5 to 2019.7 MHz band (former SPA frequencies) if the guard separations of 9.2 MHz are retained. The adjacent frequency block (2019.7 – 2024.7 MHz) is currently assigned to E-Plus Mobilfunk GmbH & Co. KG (hereafter known as E-Plus). It is planned to shift E-Plus' spectrum usage rights into the 1905.1 – 1910.1 MHz frequency band (used to be MobilCom GmbH spectrum). The 2019.7 – 2024.7 MHz spectrum block that then becomes free following this shift is to be put up for award as part of the approaching auction together with the 2010.5 – 2019.7 MHz as one block. This will mean that one block totalling 14.2 MHz (unpaired) can be made available. The proposal to split this band into 5 MHz blocks will not be taken up. It must be taken into account that the spectrum for safety separations would also be needed if such a division of spectrum were implemented. Since only 14.2 MHz are available in this band, the Chamber regards the allocation of the frequency in a single block as advisable for reasons of frequency efficiency. Even with this division, it will also be possible to use this band for external pairing.

In the draft of this decision it was intended to put the unpaired 2570.0 – 2620.0 MHz frequency band in the 2.6 GHz frequency up for award as a connected 50 MHz block. Because of international standards, in this case ECC decision (05)05, the necessary guard bands between FDD and TDD applications were to be provided in the unpaired band without this being further specified. In the planning of the band the Chamber took as its basis a guard band of 10 MHz at least that was to be generated by each user in the unpaired area at the edges of the spectrum assigned to him. Splitting this frequency band into individual blocks would demand additional guard bands if several network operators were to use it. In this condition, in the eyes of the Chamber, the award of this spectrum in the form of a connected

50 MHz block was correct in order to provide the user with an adequate amount of usable spectrum.

In CEPT report 019, which was incorporated into the draft decision of the European Commission, the concept of the block edge mask (BEM) has been introduced. These masks refer to the spectrum blocks assigned to the operators. It was possible to reduce the necessary guard separations between the individual users as a result of introducing these masks. To achieve compatibility between the operator blocks of users with adjacent frequencies, a frequency separation of 5 MHz is required between the edges of the spectrum blocks of the operators provided these are FDD to TDD or TDD to FDD (unsynchronised) configurations.

The smaller guard separations now make it possible to further sub-divide the 2570 – 2620 MHz frequency band. As regards the actual formation of blocks, there is a range of possibilities for splitting them that has also been suggested by commentators. In addition to splitting them into 25 MHz, 20 MHz and/or 10 MHz blocks, 5 MHz blocks can also be specified. To increase the flexibility and the efficiency of the award and usability of the spectrum, the Chamber decided to split the unpaired area of the 2.6 GHz band into 5 MHz blocks, as was requested by some commentators. With the award of 5 MHz blocks, the greatest possible flexibility is also ensured for bidders to allow them to realise their various planned business models. This arrangement also allows bidders to acquire quantities of spectrum of 5 MHz and any multiples thereof. Against this background, the award of larger blocks, such as a 10 MHz or 25 MHz blocks, as suggested by commentators, does not appear appropriate since bidders with a demand for 15 MHz for instance cannot have their requirement met. Also, business models that are based on an external pairing with this spectrum can have their requirement met with this division. The need by bidders for connected spectrum will be taken into account by the Chamber when it compiles the auction rules.

The explicit earmarking of guard bands – as requested by commentators – will not be implemented. The flexibility achieved with the award of 5 MHz blocks would not be possible by specifying guard channels in advance since in this case explicit frequency packets would have to be created that would not meet the actual requirement in every case. The award of spectrum including safety separations allows operators to acquire frequencies in accordance with their respective requirements and to minimise the safety separation required in each case by means of an agreement with adjacent operators.

A stipulation by the BNetzA in the sense of limiting it to TDD applications cannot be done even if this spectrum is particularly suitable for this type of application. The BNetzA is pursuing the goal of allowing different technologies to be used. FDD applications based on external pairings are also not excluded.

It must be pointed out that the frequency usages in the paired 2.6 GHz band are also not limited to FDD applications and, for this reason, TDD applications are also possible in this band.

Of course, the uses of these spectrum blocks at the upper band boundary are subject to restrictions. If blocks 13 and 14 in the 2680 – 2690 MHz band are used, it must be borne in mind that the radio-astronomy stations in Effelsberg (Eifel, Germany) and Westerbork (Netherlands) must be protected. The BNetzA shall also take this fact into account when it later comes to allocate the blocks from the 2.6 GHz band bought at auction – if the successful bidders do not agree by themselves.

Furthermore, your attention is drawn to the following:

It is planned to shift the spectrum usage rights in litigation in the 2.6 GHz band into the unpaired band and, by doing so, to restrict the litigation to this band.

In the 2.6 GHz band the spectrum should be awarded abstractly as far as possible. In contrast to awarding concrete spectrum blocks, awarding abstract spectrum blocks offers advantages for the bidders and the procedure in that the sale by auction of connected

spectrum is made easier. For this reason, the BNetzA is keen to make as many frequencies as possible available for an abstract award.

The decision on the abstract or concrete award of the individual spectrum blocks of the entire spectrum available in the 1.8 GHz, 2 GHz and 2.6 GHz bands is the subject of the decision of the President's Chamber on the rules for the implementation of the auction procedure in accordance with section 61 (5) TKG, a decision that will be issued later. The fact that some frequencies are in litigation will also be taken into account when deciding on the abstract or concrete award of individual frequency blocks. The fact of being in litigation will also affect the estimated value of the individual spectrum blocks with the result that it will be necessary for the bidders to know the physical position of these frequencies.

On 4.2: spectrum usage conditions

The following was argued on this point:

The alignment of the working document on the allocation with the CEPT band plans in the bands to be awarded is supported. No unidirectional technologies in bidirectional bands are to be allowed, since this might otherwise lead to quality impairments of existing applications in adjacent bands, possible increased boundary coordination requirements and the reduction of returns of scale in the production of systems and terminal equipment.

The possibility allowed for by the CEPT of external pairing with spectrum from the unpaired frequency bands at 2 GHz and 2.6 GHz is supported.

As regards the guard bands listed in annex 2 under 3. (Explanations of channel plans), it was pointed out by one commentator in relation to the 1930.2 MHz to 1940.1 MHz and 2120.2 MHz to 2130.1 MHz bands and the corresponding download bands that compliance with the conditions of the GSM spectrum mask has obviously been put forward here by error.

The 3 GPP based masks of the spectrum usage conditions would apply to UMTS emissions with a 5 MHz bandwidth. This means that they were very suitable for the 1.8 GHz and 2 GHz bands. As for the expectation that the 2.6 GHz band would be used in particular for innovative broadband technologies (e.g. 3G-LTE in the paired spectrum, WiMAX-TDD in the unpaired spectrum), these spectrum masks appear to be too restrictive. For these systems, the proposed spectrum masks would be something of a challenge. It ought to be possible to also use higher channel bandwidths in this band.

This subject was still being intensively discussed in the European committee CEPT ECC SE42 with the result that it was recommended waiting for the results of the SE42 for the 2.6 GHz band in terms of the so-called block edge masks, and then incorporating them into the spectrum usage conditions.

As for the out-of-block emissions listed, 5 MHz spectrum masks could be specified, whereas there were no standards for the use of GSM technology with 200 kHz channel bandwidth in the 1.8 GHz band.

It is argued that too low a power limit of 24 dBm EIRP has been set in the actual band for FDD and TDD end customer terminals in the 2.6 GHz band. This was a severe limitation for nomadic (roaming) and static devices since these devices normally used a higher output power (> 24 dBm) and also antenna gains of up to 8 dBi. In this context you are referred to the SE42 answer to the EU mandate that takes account of these usages when limiting power in the bands.

The spectrum masks given in annex 2 would comply with the masks as specified by 3GPP for the appropriate bands. The exclusive stipulation of these spectrum masks would appear inadequate to ensure interference-free, adjacent operation of FDD and TDD in a manner that could be expected in the 2.6 GHz band in particular. To this end, the spectrum usage conditions should be expanded by additional criteria, as stated in the appropriate 3GPP specifications on the coexistence of base stations and on spurious emissions.

It is argued that there could be interference due to new technologies not covered so far in the band plans. As long as the freedom from interference of new systems has not been conclusively proved, their use in the spectrum bands up for award should be limited exclusively to the basis of spectrum masks of the technologies already used here (GSM) or internationally coordinated (UMTS/IMT-2000).

As regards the restrictions very generally described in annex 2 under 4.3, it should be noted that the absence of any reliable information on the degree of restrictions in border areas would cause great uncertainty in terms of usability and value of the spectrum to be awarded.

The Chamber rules as follows on this point:

The spectrum usage conditions shall be set in detail on the basis of international recommendations and decisions.

The spectrum usage conditions for wireless network access for providing telecommunication services shall be based on the framework conditions and channel plans laid down in the CEPT decisions ERC/DEC/(95)03, ECC/DEC/(06)13, ECC/DEC/(06)01 and ECC/DEC/(05)05. In addition, the definitions of the draft decision of the European Commission that was accepted on 2 April 2008 in the RSC also apply to the 2.6 GHz frequency band.

The use of the fundamental framework conditions of the relevant CEPT and Commission decisions shall also form the necessary basis for an international efficient and interference-free use of the available spectrum.

The spectrum usage conditions listed in annex 2 should ensure the interference-free coexistence of different applications in the adjacent frequency bands. In principle, the usage provisions, such as spectrum masks and block edge masks (BEM), enclosed at section 1 / annex 2, to ensure interference-free coexistence must be complied with. In addition, special rules (section 1 annex 2) also apply to the 1710 - 1785 MHz / 1805 – 1880 MHz bands to ensure compatibility with the existing GSM mobile communication networks that are to be protected (cf. ECC Report 82 on this) and to the 1920 – 1980 MHz / 2110 – 2170 MHz bands to ensure protection of the usages that exist here (UMTS).

The spectrum usage conditions listed in annex 2 were changed from the draft submitted for comments as follows:

In the 2 GHz band the incorrectly inserted reference to the conditions of the GSM spectrum mask – as noted by one commentator – was amended in the document and replaced with a reference to the UMTS spectrum mask.

In the 2.6 GHz band the spectrum usage conditions were amended. The European Commission intends to bring into force shortly a decision to harmonise the 2500 – 2690 MHz frequency band. The European Commission also supports a flexible and technology-neutral use of the radio spectrum.

On the basis of the WAPECS mandate, the CEPT drafted CEPT Report 19 that describes the frequency-based technical parameters and guidelines for the application of conditions on the 2500 to 2690 MHz frequency band that are as flexible as possible and yet also suitable for coping with the risk of harmful interference inside and outside international borders. No specific technology is to be stipulated and parameters should be optimised for the most likely usages. These conditions were incorporated in the working document of the European Commission decision.

In accordance with these principles, the concept of block edge masks (BEM) will now be introduced within the framework of this decision. These masks refer to the spectrum blocks assigned to the frequency users. An operator block is described by the appropriate parameters and can contain several channels, irrespective of the technology used. The block edge masks describe both the permissible emissions inside the blocks as well as the

emissions outside the blocks. These are regulatory-based spectrum requirements that are intended to reduce the probability of harmful interference between adjacent networks.

To reduce interference between adjacent frequency users, a frequency separation of 5 MHz is required between the edges of the spectrum blocks provided these are FDD to TDD or TDD to FDD (unsynchronised) configurations. All use of these 5 MHz bands would considerably increase the risk of the appearance of harmful interference.

In this context the Chamber points out that both the paired frequency bands from 2500 to 2570 MHz and 2606 MHz to 2690 MHz, as well as the unpaired frequency band from 2570 MHz to 2620 MHz can be used for both FDD and TDD Applications. This free use of the available frequencies does not apply without restriction however. This may be the case when using of TDD systems alongside FDD systems since attention must be paid to ensure proper decoupling that will restrict the liberal use of adjacent channels. The protection of the adjacent usages that must be guaranteed must be provided by the assignment holders who deploy the TDD systems. This does not apply to the case of changes made at a later date to the system technology used (duplex procedure). In this case the protection must be provided by the frequency user who caused the increased protection requirement.

If it was requested by commentators that TDD applications should not be allowed in the paired frequency bands in order to prevent increased frequency coordination effort with adjacent countries and the reduction of returns of scale in the production of systems and terminal equipment, then this cannot be accepted. Here the Chamber must take into account the Commission’s decision on the 2.6 GHz band that will come into force shortly and will then tie down Member States to this extent. The increased border coordination effort that may be required will just have to be accepted. In view of the increased flexibility inside and beyond state borders for spectrum usage, at this time no more accurate details can be given in terms of the possible usage restrictions in the border areas. They will not be available until the actual coordination of the intended spectrum usages takes place and cannot be specified in abstract terms in advance.

To the extent requested by commentators that channel bandwidths greater than 5 MHz were allowed in the 2.6 GHz band, this aspect has also been catered for by the implementation of the contents of the above mentioned decision of the European Commission. Any channel bandwidths are possible in principle based on 5 MHz units due to the principle of block edge masks. Also, an output power of up to 35 dBm EIRP is also possible due to the frequency block edge masks for the terminal equipment in the 2.6 GHz band. This removes the limit of 24 dBm EIRP noted by some commentators.

The facility to use a 5 MHz channel in the 1.8 GHz band because of the use by GSM of the adjacent channels, which are to be protected, may also be subject to restrictions to achieve the necessary decoupling.

If it was noted by some commentators that other standards for the deployment of GSM technologies are required for the 1.8 GHz band, it must be made clear that the use of 200 kHz GSM systems is possible with the specified 5 MHz spectrum masks. The spectrum usage conditions described in annex 2 take particular account of the framework conditions of broadband radio applications (5 MHz). If GSM technology (200 kHz) is to be used in the 1710 to 1785 MHz and 1805 to 1880 MHz bands, the parameters of the harmonised standards critical for GSM are to be applied.

The spectrum assignment holders may deviate from these provisions if they have made the appropriate mutual agreements and the spectrum usage rights of third parts are not impaired. The spectrum assignment holders shall receive great flexibility during actual spectrum usage. The BNetzA is to be informed in writing about this in order to deal promptly and properly with fault messages.

The spectrum usage provisions can be amended later, if this becomes necessary to secure efficient and interference-free usage or because of international harmonisation agreements.

On 4.3: setting a time limit for usage rights

The following was argued on this point:

Setting a time limit for the spectrum assignments of 31 December 2025 is welcomed by several commentators.

On the other hand, it is asked for an extension of the period of usage to 20 years at least. This was how the investment risks of companies not yet established on the market were illustrated against a funding background. This would be in line with the conditions of the UMTS/IMT 2000 auction in 2000.

The term used as the basis for the award of the GSM and UMTS frequencies would not be reached even if the term were increased to the end of 2025. In addition, according to the information from the authorities, a frequency term shortened to 10 years could be implemented since there would be no investment and planning certainty until the final and absolute conclusion of the current court proceedings.

The Chamber rules as follows on this point:

The spectrum assignments have a time limit of 31 December 2025. In accordance with section 55(8) sentence 1 TKG frequencies shall be assigned as a rule for a fixed term. The time limit must be appropriate to the service concerned in accordance with section 55(8) sentence 2 TKG.

To dimension the time limit, the Chamber took into account when setting the term the interest of the spectrum assignment holders in a suitable period for redeeming the investments made. On the other hand, allowance was made for the fact that the freedom of arrangement for the BNetzA should not be inappropriately limited in terms of spectrum planning that the time limit should not exceed a proportionate period of time in the meaning of a control function.

In the mobile communication sector terms of between 15 and 20 years have been set to date. In 2000, the terms of the UMTS/IMT-2000 licences were set at about 20 years. In addition, in 2006 the term of the spectrum assignments for broadband wireless access (BWA in the 3.6 GHz band) was set at 15 years.

In view of the consideration of a suitable period of time to redeem the investments to be made, the setting of the term in this procedure to the end of 2025 seems appropriate and necessary. In this process the Chamber took account of the fact that the fixed term does not start running until the frequency is assigned, a fact that cannot yet be determined unambiguously at this point in time. Spectrum assignment holders – especially also network operators coming new to the market – are to be granted an adequate period of time to set up the network, to implement the business model and to redeem the investments made. The term of about 17 years resulting from this time limit until 31 December 2025 appears adequate against this background. Even if a term of 20 years at least was demanded by commentators, such an extended term is not advisable in view of the fast technological change and future developments that cannot be envisaged at present. This applies in particular against the background of the option provided under the law of an extension in accordance with section 55 (8) TKG. Also, in view of the planning and investment uncertainty noted by commentators because of the current litigation hanging over specific spectrums, the Chamber points out that there is the possibility of extending the usage rights.

This time limit applies to the entire spectrum available for allocation. No distinction will be made in terms of whether this spectrum is bought at auction by network operators already active in the market or by newcomers since different terms for newcomers and existing network operators in a procedure would influence in a regulatory-induced manner the values of the spectrums.

On 4.4: coverage obligation

The following was argued on this point:

Several commentators agree with the coverage requirements. But a clear ruling is necessary to ensure that disregard of the coverage obligation (even if there is a reference to existing customer conditions) would lead to a revocation of the spectrum assignment.

In contrast, it is argued that, in view of a GSM usage of the 1800 MHz frequencies, a coverage obligation of 75 percent of the population should be imposed on existing mobile communication operators in accordance with the standards since distortions of competition to the detriment of the existing mobile communication network operators might be expected.

On the other hand, a reduction of the required level of coverage to 10 percent or 25 percent is requested. This would be advisable because of the already existing comprehensive coverage with mobile communication services and for competition reasons in view of the existing infrastructure of the mobile communication network operators involved in the market.

It is suggested that the coverage obligation should be specified “by the” relevant date in each case in accordance with the formulation of the coverage obligations in the previous award procedures for digital cellular mobile communications (GSM, UMTS/IMT 2000):

The time limits for meeting the coverage obligation of 2013 and 2015 are considered as too long by some. This population coverage should be achieved after three or five years, as was the case for the UMTS licences awarded in 2000.

It is argued that existing network operators should not be excluded from the coverage obligation, but that it should apply only per “licence” and not per frequency packet bought at auction. If a network operator had already complied with his UMTS coverage obligation for example with the spectrum awarded in 2000, it would not be correct to oblige him to meet the obligation coverage again with the new spectrum to be acquired by auction. The procedure described by the BNetzA would lead more to unequal treatment of newcomers. This would also be in line with the regulatory practice to date in the GSM market. No new coverage obligation was imposed with the auctioning of the frequencies in the 1800 MHz band to existing network operators in 1999.

It is argued in contrast that the proposed coverage obligation should only apply to newcomers in practice. Such a discriminatory award condition to the detriment of newcomers would have a competition distorting effect. A market access hurdle would be raised for newcomers and destructive bidding strategies without usage intentions made easier.

It is requested that the coverage requirement is stated so precisely that a bidder who acquires 2.6 GHz spectrum as part of the auction also has to use this spectrum single-handedly to maintain the coverage obligation. The possible uses of the 2.6 GHz band would differ from those of the other IMT frequency bands. This is why the coverage requirements apply separately to both these complexes. Otherwise the existing mobile communication network operators could use a part of the 2 GHz spectrum without any additional expenditure for broadband infrastructure and hence automatically meet all coverage obligations without having to set up a single 2.6 GHz base station. The newcomers, who would have only the 2.6 GHz band available, would be challenged by many difficulties, e.g. by the limited availability of the antenna locations, limited ranges, having to build up their customer base from new.

In view of the coverage with wireless network already provided by means of mobile communications, the coverage obligation would no longer be appropriate here for the allocation of additional spectrum. The obligation coverage would be relevant in practice only if they caused the assignment holders to expand the communication networks more throughout the area than would be the case if they did not exist. If it were financially worthwhile for the spectrum assignment holders to expand their networks greatly, then they would do so independent of a coverage obligation. A network expansion undertaken only

because of the coverage obligation would not promote efficient infrastructure, but would bring about economically unstable and hence inefficient infrastructure investments. The regulatory goal of section 2 (2) No. 3 TKG would be undone as a result. The coverage obligation would also not be suitable for improving the mobile communications coverage in the interest of users. Efficient, interference-free spectrum usage would also not be served by the coverage goals.

The coverage obligations would also work against the intention to make spectrum usage more flexible in order to make possible a range of business models. There would be conceivable business models based on a coverage of regionally limited focal points. The realisation of these types of models would be made difficult or even impossible with the coverage obligations.

If the existing network operators used their infrastructures to meet their coverage obligations, this would be, in the opinion of commentators, an infringement of the principle of equal opportunity in the meaning of Articles 3 and 12 of the Basic Law, which was also expressed as a regulatory goal in section 2 (2) No. 2 TKG. In view of their existing infrastructures, the incumbents would have a very considerable competitive advantage over newcomers. It follows from this that a non-discriminatory arrangement of coverage obligations can be best achieved by not imposing them.

The Chamber rules as follows on this point:

A spectrum assignment holder is obliged to achieve a degree of population coverage of no less than 25% from 1 January 2013 onwards and no less than 50% from 1 January 2015 onwards when using the spectrum.

According to section 61(4) sentence 2 No. 4 TKG, the BNetzA shall determine, prior to holding allocation proceedings, the spectrum usage conditions including the degree of coverage during spectrum usage and its implementation within a time frame. In accordance with section 61(7) TKG the imposed coverage obligation shall become an integral part of the spectrum assignment.

The imposition of the coverage obligation is based on the following considerations:

The imposition of such an obligation should ensure on the one hand that the building of the networks is started promptly, and on the other that the network construction is continued continuously. The aim is to achieve a quick provision of telecommunication networks and services in the interest of consumers. It can also mean that the assigned frequencies are deployed and used efficiently as quickly as possible.

The imposition of a coverage obligation can thus be used to realise the regulatory goals arising from the Federal government’s infrastructure guarantee mandate in the sphere of telecommunications (Art. 87f Basic Law). The regulatory goals of maintaining user, and especially consumer interests in the sphere of telecommunications (section 2 (2) No. 1 TKG), the promotion of sustainably competition-oriented telecommunication markets in the sphere of telecommunication services and networks, and of the related installations and services (section 2 (2) No. 2 TKG), the promotion of efficient infrastructure investments (section 2 (2) No. 3 TKG) and the safeguarding of an efficient and interference-free usage of spectrum (section 2 (2) No. 7 TKG) are implemented.

An appropriate coverage obligation takes account of these regulatory goals with the result that it cannot be dispensed with here – as requested by some commentators. This was implemented by the legislator with section 61(4) sentence 2 No. 4 TKG according to which the BNetzA is to determine not only the spectrum usage conditions, but also explicitly the degree of coverage during spectrum usage and its implementation in time before an auction procedure is held. Under section 61(7) TKG this coverage obligation shall become an integral part of the spectrum assignment in accordance with section 55 TKG.

Accordingly, the currently issued spectrum usage rights in these frequency bands are generally tied to coverage obligations. This was how it could be ensured that the building of the networks was started promptly and will be continued without interruption, and that services will be developed at the earliest possible time.

The usage rights for UMTS/IMT-2000 issued in 2000 came with coverage obligations (cf. order 13/2000, Reg TP OJ 4/2000, page 516 (539 ff)): spectrum assignment holders are obliged to create a level of coverage for the population of no less than 25% by 31 December 2003 and no less than 50% by 31 December 2005 for the provision of UMTS/IMT-2000 mobile communications services.

In this case too the Chamber is sticking to the goal of meeting the coverage requirements in three or five years after assignment. The chosen timing for implementing these coverage obligations has been adequately catered for with a period of five years after assignment allowed to give the assignment holders the required flexibility in relation to market and technological development. But the additional stipulation of a coverage obligation of 25% inside three years after assignment was advisable in order to promote the early and continuous building of the network. In view of the current status of the proceedings, the Chamber is assuming that assignments can be made in 2009 at the earliest. Accordingly, this means a three year time limit until 31 December 2012 and a five year limit until 31 December 2014, as demanded by some commentators.

With the frequencies up for award here, the Chamber also considers the arrangement of such a time-staggered coverage obligation, providing a population coverage of 25% initially and 50% later, to be the correct and appropriate choice for achieving the goals set under the coverage obligation. The wording now selected “with effect from” should make clear in contrast to the formulation used to date and demanded by commentators of “until..” that a corresponding coverage of the population must also be ensured beyond the time stated in the coverage obligation.

A reduction of the degree of coverage to 10% or 25% for example, given the already existing coverage with mobile communication services, is not appropriate in the view of the Chamber. In the opinion of the Chamber, the coverage obligation cannot be set too low since the implementation of the regulatory goals pursued with the coverage requirement can only be achieved with a minimum level of actual coverage. This applies in particular to the infrastructure competition in accordance with section 2 (2) No.3 TKG and the safeguarding of user interests in accordance with section 2 (2) No. 1 TKG. But it must be pointed out at this point that imposing a population coverage of 25% or 50% affects only a small part of the Federal Republic of Germany and does not disproportionately burden any of the assignment holders.

In view of the information from commentators that in view of a GSM usage of the 1800 MHz frequencies, a coverage obligation of 75 percent of the population should be imposed on existing mobile communication network operators to ensure equal competition, the following should be noted: The imposition of the coverage obligation in the 1800 MHz band came from the invitation to tender (ITT) procedures in which the level of coverage is a selection criterion. Applicants undertook to provide appropriate coverage as part of the ITT procedure. The details of the coverage obligation of the successful applicant were incorporated into the assignments (licences). The actual level of the coverage obligation beyond the stipulated minimum amount was done on the basis of voluntary self-obligation on the part of the applicant and not – as happened in this case of the auction procedure in accordance with section 61 (4) sentence 2 No. 4 TKG – ex officio.

If the Chamber’s arguments were understood in its initial considerations in the sense that existing network operators are excluded from the imposition of a coverage obligation, then it is explicitly pointed out that this is not the case.

In accordance with section 61(4) sentence 2 No. 4 TKG, the coverage obligation is imposed when the frequencies are awarded and linked to the awarded usage rights. This coverage obligation becomes a component of the relevant spectrum assignment and applies without

restriction to each spectrum assignment holder. To this extent it is irrelevant if the spectrum assignment holder is already a mobile communication network operator or not. This means that the coverage requirements, as noted by some commentators, do not only apply to newcomers, but shall become an integral part of each and every spectrum assignment in accordance with section 61 (7) TKG.

But the imposition of the coverage obligation in the respective spectrum assignment does not mean that the coverage obligation would have to be met with every single one of the spectrum blocks acquired. The frequency assignment holder must of course use all the assigned spectrum in principle, but all that is necessary is for the stipulated degree of coverage to be achieved with the newly acquired overall spectrum assigned for the objectively and geographically relevant market, but not with every single spectrum block. So the objectively relevant market is the market for wireless network access for providing telecommunication services, i.e. mainly for the wireless connection of subscribers. Other applications are ruled out in principle as a result. As part of this broad wording of the objectively relevant market, network operators will be able to offer customers all offers based on the communication technology used in each case to meet their demand. Against the background of this broad definition of the objectively relevant market, then existing markets, such as GSM and UMTS, are also included. So it is fitting if the population coverage already provided in these markets is counted towards compliance with the coverage obligation imposed in this concrete procedure. So things do not depend on the frequencies actually used. It is also not correct to distinguish between the 2.6 GHz band and the other frequency bands, as was requested by one commentator.

To the extent commented by commentators that a coverage obligation ought to apply in isolation also to existing network operators for newly acquired spectrum, since a barrier to market entry would be erected for newcomers and destructive bidding strategies without usage intentions would be facilitated otherwise, the Chamber is of the opinion that selling the frequencies at an auction will not lead by itself to destructive intentions. On the one hand, the successful bid in the auction substantiates the willingness to deploy the frequencies in the free enterprise market of service provision as optimally and efficiently as possible. The probability of strategic bidding behaviour to prevent newcomers from acquiring spectrum is also regarded as low (cf. III. 3. on this point). On the other hand, it must be borne in mind that the existing network operators must submit as part of the admission procedure a spectrum usage plan in which the actual spectrum requirement is to be outlined.

In the eyes of the Chamber, the planned coverage requirement also does not represent a barrier to market entry for newcomers. The coverage demanded in the requirement of at least 25% or 50% of the population is necessary and appropriate, and the regulatory goals linked to the coverage requirement are also actually implemented as a result. This means that the actual area to be covered under the coverage obligation is only 8% of the surface area of the Federal Republic of Germany. The Chamber is also of the opinion that this surface area also represents the minimum surface area for building an infrastructure since otherwise there is no way of knowing how a network operator can exist in the competition on the federal-wide market. Possible disadvantages for newcomers caused by later entry to the market also do not justify not imposing a coverage obligation.

The parameters to be fulfilled in terms of coverage obligation will be defined later taking into account the technology used. The spectrum assignment holders will be consulted accordingly on this matter.

The imposition of a reporting obligation is used to ensure compliance with the imposed coverage obligation. Even if the coverage obligations do not have to be met until 1 January 2013 or 1 January 2015 onwards, it is appropriate for the BNetzA to be continually informed about the status of spectrum usage.

The Chamber points to the regulation of section 63 (2) No. 2 TKG, a ruling that the BNetzA has already used, to support clear regulation relating to the revocation of the spectrum assignment in the event of disregarding the coverage obligation.

As regards the spectrum in litigation, the Chamber is aware that the existing legal uncertainty, and the accompanying risk that the spectrum assignments may be quashed following the appropriate court rulings, represents an obstacle to investments in the infrastructure. This is especially true for the spectrum assignment holders who do not yet have any appropriate network infrastructure. If the coverage obligation were also to apply equally to these frequencies, this would then mean that the spectrum assignment holders would be obliged to make these – in some cases futile – investments. So the Chamber regards it as correct that the stipulated deadline for meeting the coverage obligation (3 or 5 years after assignment) for spectrums that were in litigation on the day the auction procedure was arranged (19 June 2007), does not start until after a legally binding conclusion of the court proceedings in question has been reached. In accordance with the regular coverage obligation, the expiry of the year in which the legal force comes into being is also critical here.

On 4.5: condition subsequent for spectrums in litigation

The following was argued on this point:

This provision met with general agreement in the comments. In particular, with reference to the justification of the definition under 5 (minimum offer), the fact that amount of the charge would be reimbursed when the condition was applied was welcomed. In this context it was suggested that this statement be adopted into the tenor of the decision of the President's chamber or the subsequent decision on auction rules to create legal certainty.

The Chamber rules as follows on this point:

The assignments of the spectrums in litigation have had a condition subsequent added in the event that the BNetzA is obliged by a court decision to extend or to re-award the usage rights to other companies. These subsidiary provisions are indispensable for compliance with the court's decisions.

In the justification of the decisions of the President's Chamber dated 19 June 2007, the following was argued (Order 34/2007, OJ BNetzA No. 14/2007, p. 3115):

> „Firstly, it must be noted that these spectrums in litigation are also still available in the sense of section 55(5) sentence 1 No. 2 TKG since they have not yet been assigned to other assignees (see official justification on section 53 of the government draft, BR-Drs 755/03, page 105). The TKG allows in principle for available spectrums to be made available to the market if the assignments were to come with the proviso that they can be revoked. This also applies to spectrums whose usage rights were indeed valid, but that have not yet been cancelled finally and absolutely. […]
>
> The BNetzA must take account of the legal task entrusted to it by section 52(1) TKG to assign spectrums to ensure an efficient and interference-free use in the meaning of section 2(2) No. 7 TKG and with reference to the other regulatory goals stated in section 2(2) TKG. If available frequencies were withheld from the market by regulations, the inevitable consequence would be the non-use of the frequencies and hence of a public resource. But this consequence could not be reconciled with the principle of providing an efficient spectrum usage and would run contrary to the legal task".

The Chamber is sticking to these arguments. It also came to the option that a condition subsequent in accordance with section 36(2) No. 2 VwVfg (administrative order) for the (re-)granting imposed by a court of spectrum usage rights of former spectrum assignment holders is the more appropriate legal instrument. The imposition of a condition subsequent can mean that, when the condition comes into force, the spectrum assignment expires without any additional administrative action, whereas additional administrative action, which

can be attacked by legal instruments, is needed to exercise a reserved right of revocation. Consequently, for reasons of legal certainty, it is advisable to add a condition subsequent to the spectrum assignment. The actual arrangement of the condition subsequent will be done as part of the assignment.

If it was suggested in the comments that an explicit definition of the reimbursement of the amount of the fee is to be provided, the President's Chamber will examine in the course of its decision on the auction rules in accordance with section 61 (5) sentence 1 TKG whether the proposal can be implemented.

On 4.6: no service provider obligation

The following was argued on this point:

A section of the commentators welcomed the abandonment of a service provider obligation and agreed fully with the position adopted by the BNetzA that there was no legal basis for imposing a service provider obligation. In addition, the opinion of the BNetzA is also welcomed that states that the service provider obligations of existing mobile communication network operators also apply to the spectrum assignments up for award here, as different obligations of one network operator were not practicable, depending on the spectrum.

It was also requested that the existing service provider obligations on existing network operators are lifted. A corresponding obligation under EU law was not admissible. To this extent, reference is also made to the opinion of the European Commission dated 21 May 2007 (DE/2007/0627) within the framework of the market analysis No. 15 of recommendation 2003/11/EC on the relevant product and service markets of the electronic communication sector.

However, other commentators are in favour of imposing this type of service provider obligation:

There would be a legal consequence, meaning that the new spectrum assignments could come with the service provider obligation added as a subsidiary provision. The authorisation basis for this would be section 60 (2) in conjunction with section 61 (4) sentence 2 No. 4 TKG and section 61 (4) sentence 2 No. 4 in conjunction with section 61 (7) TKG.

The service provider obligation would be a subsidiary provision in the sense of section 60 (2) TKG since it would contribute to the efficient spectrum usage due to the range of providers provided by it and the customer acquisition and product development potential resulting from this, and could prevent hoarding, would take account of the regulatory goals in addition and would satisfy annex B of the approval directive.

Neither section 21 (2) No. 3 TKG or section 19 (4) GWB would prevent the adoption of the service provider obligation in accordance with section 61 (4) sentence 2 No. 4 TKG. For this case of usage of a scarce resource (frequency), the TKG and the relevant EU directives did not allow any exception from the regulation aimed at businesses with considerable market power. A service provider obligation could be provided as a subsidiary provision within the framework of the award of frequencies also for operators that were not powerful on the market. In addition, the existing service provider obligation and a service provider obligation as a subsidiary obligation of the new spectrum assignments in accordance with section 61 TKG were aiming at goals other than those of a service provider obligation under section 21 (2) No. 3 TKG. The GWB also took a different approach in principle to the possible arrangement of spectrum usage conditions within the framework of the sector specific telecommunication law.

Also, the objections under constitutional law would not be shared. The service provider obligation as a ruling on vocational practice did not limit the choice of vocation of the mobile communication network operator or intrude into his existing property since the position under

property law associated with a spectrum usage right came with a service provider obligation from the outset.

Also, for reasons of equal treatment, the service provider obligation would have to be imposed on all spectrum assignment holders.

In conjunction with the question of the service provider obligation it was requested that "national roaming" be facilitated with the UMTS services of the existing network operators. On this point it was argued that companies new to the market be given the opportunity to enter the market in the network expansion phase as service providers of mobile communication services of the companies already established, as was intended under the decision of the President's Chamber on the award of UMTS licences (Order 13/2000, OJ RegTP 4/2000, p. 516, 530 ff.). In the sense of a market entry, this also includes a so-called "national roaming" with UMTS services provided by the "incumbents".

The Chamber rules as follows on this point:

Spectrum assignment holders shall not have any obligation imposed to offer service providers non-discriminatory access to services.

The Chamber is not legally empowered in the procedure in accordance with section 61 TKG to impose obligations under which the spectrum assignment holders have to offer access to services to service providers in a non-discriminatory manner.

Until now, all the spectrum usage rights allocated so far for digital cellular mobile communications (GSM and UMTS/IMT-2000) came with a service provider obligation. The mobile communications network operators active in the market entered into the obligation as part of the earlier allocation proceedings of approving service providers in a non-discriminatory way. This obligation is an integral part of the respective licences or spectrum assignments, and continues to apply now as it did in the past (see section 150(4) TKG).

To maintain a standard regulatory framework for the mobile communications market, consideration was initially given to creating standard conditions for all market participants. Even if the Chamber is of the same opinion as it was before that, to achieve the regulatory goals in section 2 (2) TKG, to set the same regulatory framework conditions for all participants in one market, the Chamber sees it itself prevented by legal reasons from imposing such an obligation in allocation proceedings in accordance with the spectrum order.

Section 61(4) sentence 2 No. 4 TKG is not an adequate authorisation basis for this type of obligation. Before holding an auction procedure, the BNetzA shall determine the spectrum usage conditions, including the degree of coverage during spectrum usage and its implementation in time. Spectrum usage provisions in this sense are not just technical standard to ensure efficient and interference-free usage, but can also be regulations to bring about other regulatory goals in accordance with section 2(2) TKG. But the Chamber is of the opinion that an interpretation of section 61(4) sentence 2 No. 4 TKG does not provide the authority to issue a service provider obligation.

Firstly it must be stated that section 21(2) No. 3 of the Telecommunications Act (TKG) contains an explicit authorisation basis for the legal consequence being discussed here. But this legal consequence cannot be pronounced because of this form of authorisation since the condition of the considerable market power has not been met. This was laid down in the market definition and analysis proceedings BK1-06/001 on the considerable market 15 in accordance with the annex of the Commission's recommendation dated 11 February 2003 on the relevant product and service markets of the electronic communication sector that were to be considered on the basis of the European Parliament's and Council's directive 2002/21/EU on a common legal framework for electronic communication networks and services as a preliminary regulation.

It cannot be objectively recognised that the legislator intended to empower the BNetzA in excess of section 21(2) No. 3 TKG to impose a market independent service provider

obligation. What must be borne in mind here is that the service provider obligation represents an intrusion into the private autonomy of the spectrum assignment holder that is protected by constitutional rights. According to the legal system, the private autonomy can be restricted in accordance with section 21(2) No. 3 TKG if the network operator dominates the relevant market. The right on the use of a scarce public resource such as frequencies might also be considered in principle as a further justification for the detraction of the private autonomy since the holder of the scarce right would have an advantage over the public. This advantage could be offset in the sense of public welfare in that the network operator was subject to a special obligation in the public interest. The question of whether this justification is adequate for intrusion into the positions of the network operators protected by the basic law can be settled in a positive manner by the legislator as he did in section 21 (2) No. 3 TKG.

If it is argued by commentators that section 21 (2) No. 3 TKG would systematically not go against a service provider obligation by means of section 61 (4) sentence 2 No, 4 TKG since other goals were being pursued with the access obligations within the framework of the market regulations than was the case with the spectrum order, the Chamber is of the view that this question can remain open. In the end, the fact that the legislator codified a service provider obligation in section 21 (2) No. 3 TKG is also important for the imposition of section 61 (4) sentence 2 No. 4.

Something else to be considered in this context is the fact that the legislator also set an explicit ruling on access to fundamental facilities in section 19 (4) No. 4 of the Act on Restraint of Competition (GWB). Here the appraisal of the legislator is expressed that access obligations can be imposed on a business that controls access to fundamental network or other infrastructure facilities, if it abuses its market-dominating position. It is not important for the imposition of section 61 (4) sentence 2 No. 4 TKG if this provision is applied in accordance with section 21 (2) No.3 and section 2 (3) TKG or not. What is more important is the fact that the legislator inserted in section 21 (2) No. 3 TKG and in section 19 (4) No. 4 GWB an explicit authorisation for the imposition by the authorities of access obligations on network operators to take account of the question of whether a comparable authorisation can be deduced from a standard during interpretation. In the eyes of the Chamber, drastic methodical misgivings (rules and limits of legal interpretation) under law and misgivings under constitutional law (reservation of the law; essentiality theory) do not support this view.

Being mindful of the fact that the legislator adopted into section 150 (4) TKG an explicit regulation for service provider obligations in grants made to protect vested rights in accordance with section 2 FAG and licences in accordance with section 6 TKG 1996 for transfer into the legal framework of the telecommunications act currently in force, there might be something in the fact that the legislator wanted to state that these obligations can no longer be imposed in conjunction with measures under the spectrum order.

Against this background, there is, in the appraisal of the legislator and the current legal position based on it, no infringement of the principle of equality or the ban on discrimination since businesses that have protected vested rights and obligations from transferred law are not comparable legally with those businesses without these rights and obligations. In other words, according to the legal view, unequal groups in law will also be unequally treated.

If the fact was referred to by commentator that the relevant EU directives explicitly allow an exception from the requirement of substantial market power for companies to whom scarce frequency resources are assigned, the chamber shares this view. But it can also not be deduced from the fact that this type of national obligation is possible within the framework of national implementation of the directive that the national legislator has actually used the facility. The Telecommunications Act undoubtedly does not contain an appropriate explicit provision. For this reason, such a power can be ascertained only during the interpretation of a legal provision. As shown above, the Chamber is of the view that such an interpretation would contradict the rules of legal interpretation.

Insofar as noted by commentators that they do not share any misgivings under constitutional law held by the Chamber, it must be clarified that the Chamber did not bring any arguments

on the compatibility under material law of a service provider obligation with basic rights in the working document of the decision submitted for consultation. It was more the case that the Chamber argued that the imposition of a service provider obligation would require an adequate legal authorisation basis for reasons to do with constitutional law.

For these reasons, the Chamber does not recognise any adequate authorisation basis for service provider obligations in section 61(4) sentence 2 No. 4 TKG.

Section 60(2) sentence 1 TKG can also not be considered as a basis for authorisation for the same reasons. If it is argued by commentators that the service provider obligation is a permissible subsidiary provision in accordance with section 60 (2) sentence 1 TKG because it is used to ensure an efficient and interference-free usage of the frequencies, then this also applies to this form of authorisation that it does not contain either explicitly or after interpretation an authorisation for the imposition of a service provider obligation.

In this context the Chamber points out that the GSM and UMTS/IMT-2000 licences contain service provider obligations that are valid both now and in the past. This follows in particular from section 150(4) TKG. Since these service provider obligations are a component of person-based licences, whose regulations create legal effects now and in the past, they continue to be valid irrespective of the spectrum assigned in each case.

To the extent requested by commentators that the existing service provider obligations of existing network operators are lifted, the Chamber points out that this issue has a different subject, from a legal point of view, than these allocation proceedings and the obligations to be imposed during it. Moreover, the Chamber is sticking to the fact that the BNetzA will carefully examine the arguments of the European Commission on the role of the service provider obligation in the mobile communication licences (opinion of the European Commission dated 21 May 2007 (DE/2007/0627) as part of the market analysis No. 15 of recommendation 2002/11/EC on relevant product and service markets of the electronic communication sector (cf. communication 942/2007, OJ BNetzA 24/2007, p. 4923 (4959)).

It should be pointed in relation to the provision of “national roaming” addressed in the context of the service provider obligation that there are in principle no misgivings in terms of frequency regulations among network operators against the agreement on “national roaming”. But it should be made clear that the frequency assignment holders are subject to a coverage obligation on the one hand, and coverage by means of “national roaming” cannot be included as a way of meeting it, and on the other to the obligation on the use of the frequencies arising from section 63 (1) TKG. To this extent the Chamber is sticking to the arguments in the decision BK-1b-98/005-1 dated 14 February 2000 (Order 13/2000, OJ Reg TP 4/2000, p. 516 (530 ff)).

On 5. minimum bid, section 61 (5) TKG

The following was argued on this point:

The definitions of a minimum bid are accepted by the majority.

On the other hand it is argued that the equivalence principle should be taken into account when deciding the level of charges. How a quid pro quo is to be defined and expressed in figures in view of the risks in conjunction with the frequencies in litigation was unclear – as the BNetzA discovered for itself – since the litigation in particular reduced the value of the frequencies. For this reason, it was unfair in view of the litigation to demand the legal assignment fee. In its place only the actual administrative expenditure should be charged to determine the minimum bid.

It is pointed out that the Frequency Fee Ordinance (Frequenzgebührenverordnung /FGV) does not contain any facts on fees for the assignment of spectrum for digital cellular mobile communications and that the GSM mobile communications are not to be equated with digital cellular mobile communications. For this reason, determining a minimum bid based on the

definitions of fees is illegal for assigning GSM frequencies. Also the basis for discounting guard channels was not explained or understandable.

The Chamber rules as follows on this point:

The minimum bids shall be set for paired and unpaired 5 MHz blocks and for the 14.2 MHz block.

In accordance with section 61(5) sentence 2 TKG, a minimum bid can be set for participation in the auction procedure.

Setting a minimum bid is already justified for reasons of procedural economy. It means that the number of individual bidding rounds is reduced and the time sequence of the auction accelerated.

The setting of a minimum bid can also be used to promote the submission of serious and suitable bids in the auction procedure.

When determining the level of the minimum bids the Chamber was guided by the following considerations:

The level of the minimum bids is based on the statutory assignment fees. Determining the amount will not be influenced by differences for each frequency band.

In accordance with section 142(5) TKG, the statutory assignment fee must be paid by a successful bidder in the auction procedure. So the Chamber takes the statutory assignment fee to set the minimum bids (cf. order 42/2006, OJ BNetzA 20/2006, p. 3051 [3111]).

Setting the minimum bid above the simple spectrum assignment fee does not appear expedient against the background of the different business models. In addition, a higher minimum bid could make participation in the auction procedure difficult for small and medium-sized enterprises especially (cf. order 42/2006 OJ BNetzA 20/2006, p. 3051 [3111]).

The basis for setting the amount of the minimum offer is the Frequency Fee Ordinance (Frequenzgebührenverordnung) with the result that the minimum offer is based on the amount set by this fee. Following this basic line of thinking, the Chamber also set the minimum offers for the frequency auction in the 3.5 GHz band for BWA (order 42/2006, BNetzA OJ 20/2006, page 3051 (3111)).

The Frequency Fee Ordinance dated 21 May 1997 (Federal Law Gazette I, page 1226), last amended by the Fifth Ordinance to amend the Frequency Fee Ordinance dated 23 November 2006 (Federal Law Gazette I, page 2661), currently contains a fee framework for the assignment of spectrum in a GSM network. Fee position B.1.1 of the Frequency Fee Ordinance and evaluation of the legislator on which it is based has been included as a reference size for determining the minimum bid. This fee position provides a fee framework of 100,000 to 2,000,000 Euros for the assignment of spectrum in a GSM network (reference bandwidth up to 200 kHz). This produces a fee framework between 2,500,000 and 50,000,000 Euros for a spectrum block of 2 x 5MHz (paired).

When setting the minimum bids, the Chamber was guided by the lower figure of the fee framework in order to set only a price for entry to the auction procedure.

Insofar as argued that using the frequency fee ordinance to set the minimum bid was not legal, the following should be noted: Section 61 (5) sentence 2 TKG does not contain any rules on setting the level of the minimum bid. The minimum bid is the entry bid in the auction procedure and so represents a way of accelerating the procedure. The minimum bid does not represent any quid pro quo for the later assignment of spectrum by the BNetzA, like the spectrum assignment fee in accordance with section 142 (1) sentence 1 No. 1 TKG and the Frequency Fee Ordinance. But since this is not about an assignment fee, the principles of the Fee Act (Gebührenrecht / GR) and of the Administrative Cost Act (Verwaltungskostenrecht / VKR) cannot be applied to determining the minimum bid.

Using the lower value of the fee framework when setting the minimum bids is also correct when assigning a spectrum in the 900 MHz / 1800 MHz band (GSM network). The operation of a GSM network or of a digital cellular mobile communication network is possible with the spectrums to be allocated here.

Since the setting of a minimum bid is intended to accelerate the auction procedure overall, the Chamber could also have set a much higher minimum bid for reasons to do with economy of procedure. As part of the UMTS/IMT-2000 auction in 2000, the minimum bid was set at approximately 50 million Euro for a 5 MHz block (paired). As shown above, it is correct to be guided by the lowest fee framework when assigning a frequency in a GSM network in order not to set an excessively high minimum bid. It cannot be recognised that this approach can be disadvantageous for bidders, it is more the case that this procedure has nothing but advantages in contrast to using the economic value of the spectrums to be allocated for all parties involved – especially for the small and medium-sized enterprises.

A preliminary decision on the level of the assignment fee for the spectrums to be allocated now has not been taken, with the result that the objection about the setting of a minimum bid based on the fee details used for the assignment of GSM frequencies was illegal does not hold here.

The individual concrete amounts of the minimum bids will be set as follows:

The minimum bid for a 5 MHz duplex block or a 4.95 MHz duplex block is set at 2,500,000 Euro. The minimum bid for a spectrum block of 1 x 5 MHz (unpaired) is 1,250,000 Euro.

The minimum bid for the spectrum block from 2010.5 MHz to 2024.7 MHz (14.2 MHz) will be set at 3,550,000 Euro

The same minimum bids were planned for the frequencies in litigation since they have been set so low in the Chamber's view that any reductions in value arising from the litigation have been included. It should be pointed in this context that the contract amount will be reimbursed in the event that the spectrum has to be handed back following a court decision.

Instructions about the right to appeal

Proceedings can be initiated against this decision within one month after its promulgation, to the Verwaltungsgericht in Köln (Cologne Administrative Court), Appellhofplatz, 50667 Köln, in writing or to be recorded by the document clerk of the court office. The proceedings must name the plaintiff, the defendant and the subject of litigation. It should contain a specific motion. The facts and evidence to be used as justification should also be given. In accordance with section 137(1) TKG, the proceedings have no delaying effect.

An adequate number of copies of the proceedings and attachments must be provided so that all parties involved can receive a copy.

Bundesnetzagentur für Elektrizität, Gas,
Telekommunikation, Post und Eisenbahnen

The President's Chamber

Bonn, 7 April 2008

Dr. Henseler-Unger	Kurth	Kindler
Associate judge	Presiding judge	Associate judge

Annex 1

Conditions for admission to the auction procedure in accordance with section 61(4) sentence 2 No. 1 TKG

Participation in the auction procedure assumes that individual permission to take part has been granted by the BNetzA. Before the auction is held, an application for admission to the auction procedure is to be submitted.

To fulfil the technical and objective minimum requirements for admission to the auction procedure in the sense of section 61 (4) sentence 2 No. 1 TKG, an applicant must illustrate and prove

- that he fulfils the statutory assignment conditions in the sense of section 55(4), (5) TKG,
- that he has the funding to buy the available frequencies at auction,
- that he has a serious intention to bid and
- how the equity structure and ownership relationships are set up in his business.

The application documents for admission to the auction procedure are to be submitted in German, with 7 copies and as a soft copy also (word or pdf format).

The application is to be laid out in accordance with the format:

A. Details of the applicant

The applicant must provide the following details on his person and the persons authorised to act for him:

1. Name and address of the applicant
2. Legal form of the applicant
3. Applicant's registered office
4. Extract from the commercial register
5. Particulars of a contact person authorised to represent the applicant, including telephone and fax number and email address
6. Details of a registered agent for service of process, including delivery address (street, number, place)

B. Equity structure of the applicant / certificate of non-impediment from the cartel authorities

In addition, the ownership relationships – even indirect ones – of the applicant's business must also be shown in the application. In the event of an application by a consortium, this applies to all consortia. The presentation is to be expanded with the shares in the consortium.

If there are companies who have acquired an interest in the applicant and who are not considered as merged beforehand with him or with one another in the meaning of section 37 GWB, the applicant must prove by means of a certificate from the cartel authorities that there are no objections to this organisational form in accordance with the GWB.

C. Details of reliability

The applicant is to show if

- a spectrum assignment was withdrawn from him in the past,

- conditions were imposed on him due to non-compliance with obligations arising from a licence or spectrum assignment,
- legal action was taken against him because of an infringement of the telecommunication or data protection law, or
- an action is pending against him on matters to do with the above mentioned cases, and if this is the case, the authority involved.

D. Details of efficiency

The applicant is to show and prove that he has the funding to buy the available spectrum at auction.

In addition, the applicant must show and prove that he has the necessary funds for setting up and operating of the network, and how the funding is to be provided.

Security of funding must be shown by supporting documents, such as written financial declarations from the parent company, from other associated companies or from banks. Simple declarations of intent or promises of effort will not be recognised as proof of guarantee. If funding promises are given by the parent company or other associated businesses, then they are to be submitted in the form of “hard letters of awareness”. This type of letter of awareness must contain declarations by the parent company in particular that there is the unlimited obligation on the part of the parent company to ensure that the applicant is equipped in such a way that

- all the funds needed to meet the submitted bid for the acquisition of a spectrum in the auction procedure are available to him;
- all the funds necessary for the apparent investments, arising from the application for admission to the auction, in the setup and expansion and the operation of the communication network will be permanently available to him.

Presenting a balance sheet does not release the applicant from his obligation to show proof.

The applicant must show his efficiency logically and comprehensibly in relation to his business project (medium-term planning). The proof of the required funds for setting up the network is to be based on the planning and setup costs, taking the coverage obligation and its time frames as its basis, and on the costs for keeping the operation running.

Furthermore, your attention is drawn to the following:

The applicant must pay a deposit to cover his intended purchase at auction of spectrum usage rights into an account **still to be determined** by the BNetzA no later than 14 working days before the start of the auction. The deposit will be counted towards the successful bid, or paid back otherwise. The paying of a deposit is intended to record the seriousness of the desire to take part in the auction.

E. Details of expertise

It must be demonstrated that the persons involved in the setting up and operation of the communications network have the necessary knowledge, experience and skills. The applicant must demonstrate the expertise logically and comprehensibly.

As part of doing so, curriculum vitae with certificates and final examination certificates or records of previous employment (references) in the telecommunications sector can be provided. As regards the planned technology, the applicant must show the knowledge, experience and skills the persons scheduled to run the transmission paths possess.

If a consortium submits an application, the appropriate details about the consortia supplying the respective expertise are to be given. In addition, it must be shown how the expertise of the consortia is transferred to the applicant.

E.1. Expertise in the communications sector

The applicant must show the knowledge, experience and skills that are required to set up and operate his communications network and to market the corresponding services, or are advantageous, and that qualify him to exercise the spectrum usage rights.

E.2. Expertise in other telecommunications areas

The experiences in terms of planning and the setting up of networks and services in other telecommunications networks must be shown here.

E.3. Coverage obligation and degree of coverage

The applicant must describe the degree of coverage that he is contemplating providing to the population.

In addition, he must state the planned coverage focal points and locations. The levels of population coverage stipulated in the procedural regulations on the allocation of spectrum for wireless network access for providing telecommunication services must be provided in the time frames laid down for this at least.

F. Spectrum usage concept

The applicant must show, in the form of a spectrum usage concept how he intends to ensure an efficient and interference-free spectrum usage. The spectrum usage concept must be logical and comprehensible. Assumptions and forecasts must be based on auditable facts.

F.1. Approach during technical planning

The details on technical planning should show that the applicant controls the planned approach and is able to use the planning instruments available to him. The applicant must provide details

- on the concrete approach (e.g. system concept, network structure)
- on the planning instruments (individual design of the network expansion plan, time-lines of the network expansion)
- on area and population coverage
- on optimising the network
- on the subscriber and traffic forecast
- on the operating and maintenance concept (e.g. efficiency of the network, fail-safety, network and fault management)

in this approach. The assumptions on which the technical planning is based must be logical and comprehensible.

The forecast of the increase in subscribers is to be shown in the form of a time differentiated representation of the next five years. Theoretical traffic assumptions and the planned traffic handling are to be shown as part of the traffic forecast.

F.2. Representation of the spectrum requirement in terms of the business model

As part of the licensing application, the applicant must show that he actually requires the spectrum applied for in order to implement his business models. This applies in particular in the cases where the applicants already have suitable spectrum available. The applicant must show the intended spectrum usage in terms of the planned technology.

F.3. Planned services concept

The applicant must show what type of services he plans to offer on the basis of the communications technology chosen by him and the time frame in which he intends to implement this range of services.

F.4. Business planning and its implementation

The business planning is to be outlined in an investment plan for the next five years. The applicant should indicate the target group and the market potential he is anticipating for the competing radio networks.

G. Declaration of agreement on publication

Furthermore, an applicant must declare in his application that he agrees with the public announcement of his admission to the auction procedure and with the publication of any subsequent decision on award of contract to him.

Annex 2

Spectrum usage conditions

The usage provisions of this annex are intended to ensure the interference-free coexistence of different applications in the frequency bands listed below and those adjacent to them. In principle, the spectrum masks and block edge masks (BEM) enclosed at Section 1 / annex 2 must be complied with to ensure interference-free coexistence. These are based on broadband radio applications that are currently under discussion in the context of these frequency bands. If radio applications with smaller channel bandwidth are used, deviations may be necessary. In addition, special rules apply to the 1710 - 1785 MHz and 1805 – 1880 MHz bands and to the 1920 – 1980 MHz and 2110 – 2170 MHz bands to ensure radio compatibility with the existing GSM and UMTS/IMT-2000 applications and to safeguard their rights (see section 2 annex 2) The rules listed below may also be amended by divergent agreements between the different frequency users concerned for the term of these operator agreements. Agreements deviating from the rules made within the framework of border coordination must be approved by the responsible regulatory authorities.

1. Frequency bands

The following frequency bands are available for award for wireless network access for providing telecommunication services:

Frequency band	**Available frequency spectrum**	**Award**
1.8 GHz	1730.1-1735.1 MHz and 1825.1-1830.1 MHz 1758.1-1763.1 MHz and 1853.1-1858.1 MHz	2 x 5 MHz (paired) 2 x 5 MHz (paired)
2 GHz	1900.1-1905.1 MHz 1930,2-1935.15 MHz and 2120.2-2125.15 MHz 1935.15-1940.1 MHz and 2125.15-2130.1 MHz 1950.0-1954.95 MHz and 2140.0-2144.95 MHz 1954.95-1959.9 MHz and 2144.95-2149.9 MHz 2010.5-2024.7 MHz	5 MHz (unpaired) 2 x 4.95 MHz (paired) 2 x 4.95 MHz (paired) 2 x 4.95 MHz (paired) 2 x 4.95 MHz (paired) 14.2 MHz (unpaired)
2.6 GHz	2500-2570 MHz and 2620-2690 MHz 2570-2620 MHz	14 blocks each of 2 x 5 MHz (paired) 10 blocks of 5 MHz (unpaired)

The provisions listed below and set out in the enclosed channel plans will be used to form the basis for the use of these frequencies for wireless network access for providing telecommunication services. The channel plans are in line with the relevant decisions of the European Commission and the ECC decisions (if there are differences between ECC decisions and those of the European Commission, those of the European Commission will be applied) and should ensure efficient use of the available spectrum. The use of different communication systems and access procedures is possible provided the channel plan and the associated spectrum usage conditions are complied with.

The use of the fundamental framework conditions of the relevant European Commission decisions and of the ECC decisions shall form the necessary basis for an international and

efficient use of the available spectrum. A common European regulation, based on harmonised framework conditions, is what is being aimed for in the sense of a user-friendly, Europe-wide availability of spectrum for the wireless network access for providing telecommunication services.

2. Channel plans for the three frequency bands

The channel plans for the three bands 1.8 GHz, 2 GHz and 2.6 GHz are attached at annex 2.

3. Explanations of the channel plans

The following guard bands are required:

a)

- 1930.2 MHz to 1940.1 MHz;
- 2120.2 MHz to 2130.1 MHz;
- 1950.0 MHz to 1959.9 MHz; and
- 2140.0 MHz to 2149.9 MHz.

These sub-bands are not located at the band limits. For this reason, only the peripheral conditions on coexistence with UMTS/IMT-2000 (UMTS/IMT-2000 spectrum mask) need to be complied with in these sub-bands.

b)

- 1900.1 MHz to 1905.1 MHz.

A guard separation to the adjacent frequency band has already been provided for cordless telephones (DECT) (1900.0 MHz to 1900.1 MHz). A bigger guard band may be required depending on the technology deployed by the user in the future and the geographic coverage. This may make restrictions on the use of the 1900.1 MHz to 1905.1 MHz band necessary. The fact that the spectrum masks attached at section 1 annex 2 must be complied with shall apply to TDD in the 1900.1 MHz to 1905.1 MHz band.

c)

- 2010.5 MHz to 2024.7 MHz.

The fact that the spectrum masks attached at section 1 annex 2 must be complied with shall apply to TDD (Time Division Duplex) in the 2010.5 MHz to 2024.7 MHz band.

d)

- 2500 MHz to 2690 MHz.

The frequencies will be assigned in packets of whole multiples of 5 MHz. The bottom band limit is at 2500.0 MHz. Additional conditions apply to blocks 13 and 14 in the upper band limit (2690.0 MHz) to protect the radio-astronomy facilities adjacent to this band at Effelsberg (Eifel) and Westerbork (Netherlands, south of Groningen) in compliance with the definitions of the ITU Recommendation RA.769-2 and the ECC Report 045.

In general, a guard separation of 5 MHz must be set up between a frequency block of one network operator used with TDD technology and the spectrum block of a different network operator. Deviations from this require bilateral or multilateral agreements between the communication network operators in question. The corresponding agreements are to be shown to the BNetzA before they are put into use.

4. Other provisions

4.1 Permissible out of block emissions

The definitions attached at section 1 annex 2 (spectrum masks and block edge masks/BEM) for the use of the spectrum by FDD (Frequency Division Duplex) / TDD terminal equipment and base stations will also be stipulated for the out-of-block emissions. Deviations from this require bilateral or multilateral agreements between the frequency users in question. The corresponding agreements are to be shown to the BNetzA before they are put into use.

4.2 HAPS platforms as base stations

The use of High Altitude Platform Systems (HAPS) as base stations for the wireless network access for providing telecommunication services is only possible if radio compatibility with the adjacent mobile communication networks and radio services in the spectrum has been clearly demonstrated and requires a preliminary amendment of the spectrum usage conditions and location-related spectrum assignments that are based on the spectrum usage conditions.

Note: More information can be found in

- ITU Recommendation M.1456 “Minimum performance characteristics and operational conditions for high altitude platform stations providing IMT-2000 in the bands 1885-1980 MHz, 2010-2025 MHz and 2110-2170 MHz in Regions 1 and 3 and 1885-1980 MHz and 2110-2160 MHz in Region 2”,
- ITU Recommendation M.1641 entitled “A methodology for co-channel interference evaluation to determine separation distance from a system using high-altitude platform stations to a cellular system to provide IMT-2000 service” and
- Resolution 221 (Rev. WRC-07) “Use of high altitude platform stations providing IMT in the bands 1885-1980 MHz, 2010-2025 MHz and 2110-2170 MHz in Regions 1 and 3 and 1885-1980 MHz and 2110-2160 MHz in Region 2”.

on the HAPS radio sites.

4.3 Frequency coordination for radio sites in border areas

Frequencies for wireless network access for providing telecommunication services are available only to a limited degree in border areas and some other geographical areas of the Federal Republic of Germany because of the need for frequency coordination with neighbouring countries.

Restrictions vary in terms of frequency and numbers from area to area, depending on whether two, three or even four countries need to be involved in the coordination process. Moreover, the restrictions still depend on the transmission procedures facing each other at the borders.

4.4 Protection of stationary reception facilities of the BNetzA’s Radio Monitoring Service

The location-based technical parameters used during spectrum assignment will be defined on the basis of the following points (protection concept). The protection concept refers to the protection of the BNetzA’s reception facilities against desensitisation and overmodulation effects:

- To protect the radio reception facilities operated and planned in Germany of the BNetzA's Radio Monitoring Service (PMD), the field strength generated by emissions in the 1800 – 2700 MHz frequency band must not exceed a maximum value of 90 dBµV/m at PMD locations.

- This applies in particular to the PMD's antenna sites that are to be used by frequency users together with the PMD.
- Existing protection shall apply to the PMD reception stations that were coordinated as part of the spectrum assignment for GSM 1800 and UMTS/IMT 2000 with 96 dBµV/m.

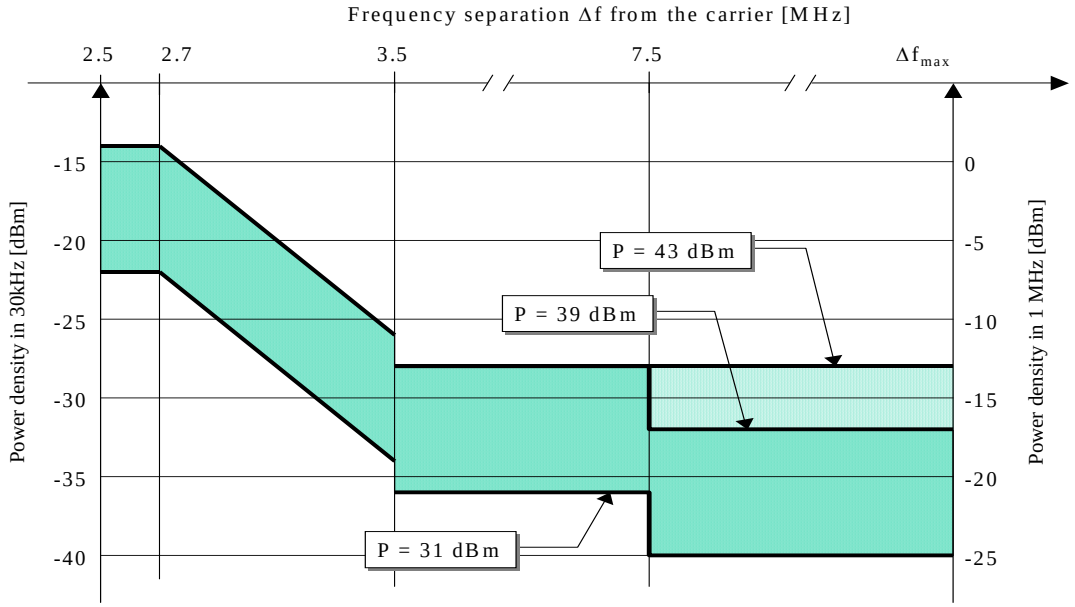
Section 1

Spectrum usage conditions for FDD/TDD terminal equipment and base stations

A. Spectrum usage conditions for FDD base stations in the 1805.0 – 1880.0 MHz, 2110.0 – 2170.0 MHz frequency bands:

The spectrum usage conditions described here take particular account of the framework conditions of broadband radio applications (5 MHz). If GSM technology (200 kHz) is to be used, especially in the 1805 – 1880 MHZ band, the parameters for the harmonised standard vital for GSM are to be applied.

Spectrum mask for FDD base stations:



Illustrative diagram of spectrum emission mask

Permissible out-of-block emissions of the base stations with a maximum output power of P ≥ 43 dBm

Frequency offset of -3dB point of measurement filter, Δf	**Frequency offset of centre frequency of measurement filter, f_offset**	**Minimum requirement band III, VII**	**Measurement bandwidth (comment 2)**
2.5 MHz ≤ Δf < 2.7 MHz	2.515MHz ≤ f_offset < 2.715 MHz	-14 dBm	30 kHz
2.7 MHz ≤ Δf < 3.5 MHz	2.715MHz ≤ f_offset < 3.515 MHz	$-14dBm - 15 \cdot \left(\frac{f\_offset}{MHz} - 2.715 \right) dB$	30 kHz
(see comment 1)	3.515MHz ≤ f_offset < 4.0 MHz	-26 dBm	30 kHz
3.5 MHz ≤ Δf ≤ Δf_{max}	4.0 MHz ≤ f_offset < f_offset_{max}	-13 dBm	1 MHz

- Δf is the distance between the carrier frequency and the nominal -3dB point of the measurement filter with the smallest distance to the carrier frequency.
- F_offset is the distance between the carrier frequency and the middle of the measurement filter.
- f_offset_{max} is either 12.5 MHz or the offset compared to the set edge of the Tx-band, whatever is the greater value.

- Δf_{max} is equal to f_offset$_{max}$ minus half the bandwidth of the measurement filter.

Permissible out-of-block emissions of the base stations with a maximum output power of 39 ≤ P < 43 dBm

Frequency offset of -3dB point of measurement filter, Δf	**Frequency offset of centre frequency of measurement filter, f_offset**	**Minimum requirement band III, VII**	**Measurement bandwidth (comment 2)**
2.5 MHz ≤ Δf < 2.7 MHz	2.515 MHz ≤ f_offset < 2.715 MHz	-14 dBm	30 kHz
2.7 MHz ≤ Δf < 3.5 MHz	2.715 MHz ≤ f_offset < 3.515 MHz	$-14dBm - 15 \cdot \left(\frac{f\_offset}{MHz} - 2.715 \right) dB$	30 kHz
(see comment 1)	3.515 MHz ≤ f_offset < 4.0 MHz	-26 dBm	30 kHz
3.5 MHz ≤ Δf < 7.5 MHz	4.0 MHz ≤ f_offset < 8.0 MHz	-13 dBm	1 MHz
7.5 MHz ≤ Δf ≤ Δf_{max}	8.0 MHz ≤ f_offset < f_offset$_{max}$	P - 56 dB	1 MHz

Permissible out-of-block emissions of the base stations with a maximum output power of 31 ≤ P < 39 dBm

Frequency offset of -3dB point of measurement filter, Δf	**Frequency offset of centre frequency of measurement filter, f_offset**	**Minimum requirement band III, VII**	**Measurement bandwidth (comment 2)**
2.5 MHz ≤ Δf < 2.7 MHz	2.515 MHz ≤ f_offset < 2.715 MHz	P - 53 dB	30 kHz
2.7 MHz ≤ Δf < 3.5 MHz	2.715 MHz ≤ f_offset < 3.515 MHz	$P - 53dB - 15 \cdot \left(\frac{f\_offset}{MHz} - 2.715 \right) dB$	30 kHz
(see comment 1)	3.515 MHz ≤ f_offset < 4.0 MHz	P - 65 dB	30 kHz
3.5 MHz ≤ Δf < 7.5 MHz	4.0 MHz ≤ f_offset < 8.0 MHz	P - 52 dB	1 MHz
7.5 MHz ≤ Δf ≤ Δf_{max}	8.0 MHz ≤ f_offset < f_offset$_{max}$	P - 56 dB	1 MHz

Permissible out-of-block emissions of the base stations with a maximum output power of P < 31 dBm:

Frequency offset of -3dB point of measurement filter, Δf	**Frequency offset of centre frequency of measurement filter, f_offset**	**Minimum requirement band III, VII**	**Measurement bandwidth (comment 2)**
2.5 MHz ≤ Δf < 2.7 MHz	2.515 MHz ≤ f_offset < 2.715 MHz	-22 dBm	30 kHz
2.7 MHz ≤ Δf < 3.5 MHz	2.715 MHz ≤ f_offset < 3.515 MHz	$-22dBm - 15 \cdot \left(\frac{f\_offset}{MHz} - 2.715 \right) dB$	30 kHz
(see comment 1)	3.515 MHz ≤ f_offset < 4.0 MHz	-34 dBm	30 kHz
3.5 MHz ≤ Δf < 7.5 MHz	4.0 MHz ≤ f_offset < 8.0MHz	-21 dBm	1 MHz
7.5 MHz ≤ Δf ≤ Δf_{max}	8.0 MHz ≤ f_offset < f_offset$_{max}$	-25 dBm	1 MHz

COMMENT 1: This frequency band ensures that the band of the f_offset values is continuous.

COMMENT 2: In general, the resolution bandwidth of the measurement equipment should correspond to the measurement bandwidth. To improve accuracy, sensitivity and efficiency of measurement, the resolution

bandwidth can also be smaller than the measurement bandwidth. In this case, the result should be integrated via the measurement bandwidth in order to obtain the equivalent noise bandwidth of the measurement bandwidth.

B. Spectrum usage conditions for FDD terminal equipment in the 1710.0 – 1785.0 MHz, 1920.0 – 1980.0 MHz frequency bands:

The spectrum usage conditions described here take particular account of the framework conditions of broadband radio applications (5 MHz). If GSM technology (200 kHz) is to be used, especially in the 1710 – 1785 MHZ band, the parameters for the harmonised standard vital for GSM are to be applied.

Spectrum mask for FDD terminal equipment:

Requirement in relation to the emissions' spectrum mask:

Δf in MHz (comment 1)	**Minimum requirement (comment 2)**		**Measurement bandwidth (comment 6)**
	Relative requirement	**Absolute requirement**	
2.5 – 3.5	$\left\{-35-15\cdot\left(\frac{\Delta f}{MHz}-2.5\right)\right\}dBc$	-71.1 dBm	30 kHz (comment 4)
3.5 – 7.5	$\left\{-35-1\cdot\left(\frac{\Delta f}{MHz}-3.5\right)\right\}dBc$	-55.8 dBm	1 MHz (comment 5)
7.5 – 8.5	$\left\{-39-10\cdot\left(\frac{\Delta f}{MHz}-7.5\right)\right\}dBc$	-55.8 dBm	1 MHz (comment 5)
8.5 – 12.5	-49 dBc	-55.8 dBm	1 MHz (comment 5)

Comment 1: Δf is the distance between the carrier frequency and the middle of the measurement bandwidth.
Comment 2: The minimum requirement is calculated from the relative requirement or from the absolute requirement, whatever is the higher value.
Comment 4: the first and last measurement position with a 30 kHz filter if Δf is equal to 2.515 MHz and 3.485 MHz.
Comment 5: the first and last measurement position with a 1 MHz filter if Δf is equal to 4 MHz and 12 MHz.
Comment 6: In general, the resolution bandwidth of the measurement equipment should correspond to the measurement bandwidth. To improve accuracy, sensitivity and efficiency of measurement, the resolution bandwidth can also be smaller than the measurement bandwidth. In this case, the result should be integrated via the measurement bandwidth in order to obtain the equivalent noise bandwidth of the measurement bandwidth.

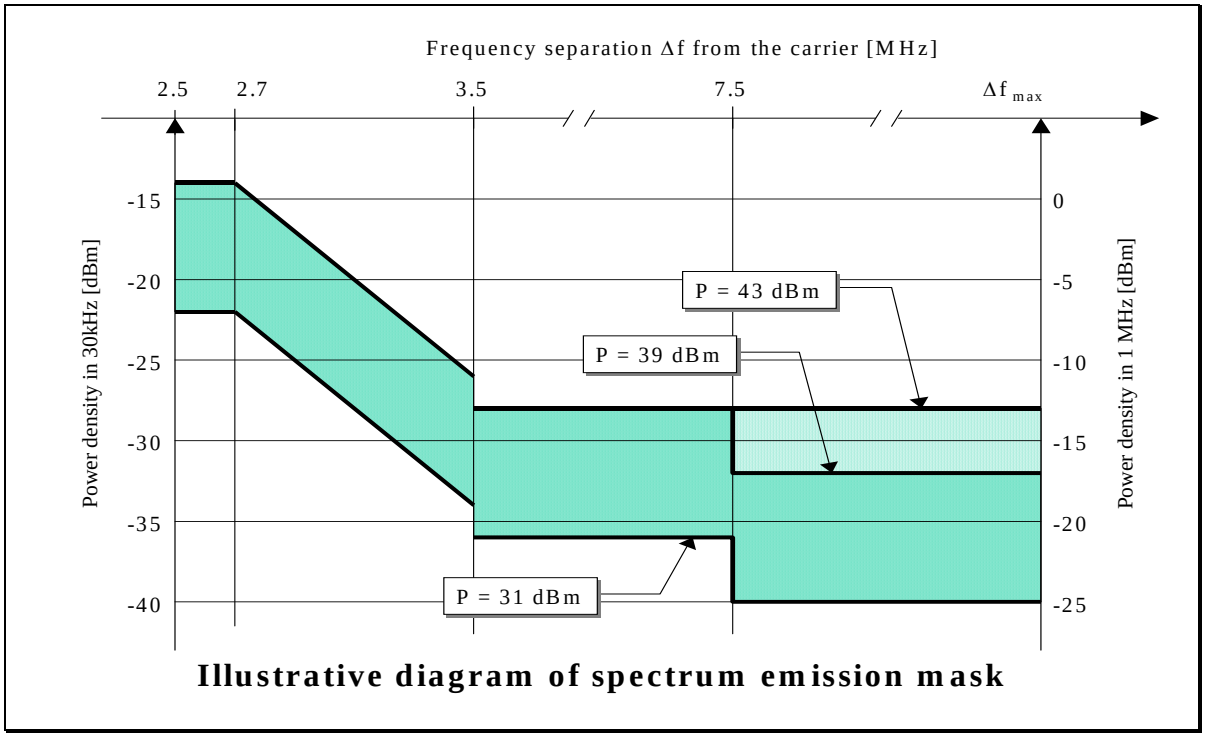
Comment: The out-of-block and spurious emissions of the 4.95 MHz channels have the same pattern as the spectral masks shown. It must be taken into account that these unwanted emissions start not with the frequency marks $\pm\frac{5{,}00MHz}{2}$ but as early as $\pm\frac{4{,}95MHz}{2}$. The rest of the form of the limit curve remains unchanged.

Duplex procedure Subscriber station	**Frequency band**	**Max. permissible EIRP (uplink) for one channel**
FDD	**1710 – 1785 MHz**	**24 dBm**
FDD	**1920 – 1980 MHz**	**24 dBm**

In applications with a channel bandwidth of less than 1 MHz, the maximum permissible radiated power is 30 dBm EIRP.

C. Spectrum usage conditions for TDD base stations in the 1900.0 – 1920.0 MHz, 2010.0 – 2025.0 MHz frequency bands:

Spectrum mask for TDD base stations:



Illustrative diagram of spectrum emission mask

Permissible out-of-block emissions of the base stations with a maximum output power of P ≥ 43 dBm

Frequency offset of -3dB point of measurement filter, Δf	**Frequency offset of centre frequency of measurement filter, f_offset**	**Maximum level**	**Measurement bandwidth**
2.5 MHz ≤ Δf < 2.7 MHz	2.515 MHz ≤ f_offset < 2.715 MHz	-14 dBm	30 kHz
2.7 MHz ≤ Δf < 3.5 MHz	2.515 MHz ≤ f_offset < 3.515MHz	$-14dBm - 15 \cdot \left(\frac{f\_offset}{MHz} - 2.715 \right) dB$	30 kHz
(see comment)	3.515 MHz ≤ f_offset < 4.0 MHz	-26 dBm	30 kHz
3.5 MHz ≤ Δf ≤ Δf_{ma}	4.0 MHz ≤ f_offset < f_offset_{max}	-13 dBm	1 MHz

Permissible out-of-block emissions of the base stations with a maximum output power of 39 ≤ P < 43 dBm

Frequency offset of -3dB point of measurement filter, Δf	**Frequency offset of centre frequency of measurement filter, f_offset**	**Maximum level**	**Measurement bandwidth**
2.5 MHz ≤ Δf < 2.7 MHz	2.515 MHz ≤ f_offset < 2.715 MHz	-14 dBm	30 kHz
2.7 MHz ≤ Δf < 3.5 MHz	2.715 MHz ≤ f_offset < 3.515 MHz	$-14dBm - 15 \cdot \left(\frac{f\_offset}{MHz} - 2.715 \right) dB$	30 kHz
(see comment)	3.515 MHz ≤ f_offset < 4.0 MHz	-26 dBm	30 kHz
3.5 MHz ≤ Δf < 7.5 MHz	4.0 MHz ≤ f_offset < 8.0MHz	-13 dBm	1 MHz
7.5 MHz ≤ Δf ≤ Δf_{max}	8.0 MHz ≤ f_offset < f_offset_{max}	P - 56 dB	1 MHz

Permissible out-of-block emissions of the base stations with a maximum output power of 31 ≤ P < 39 dBm

Frequency offset of -3dB point of measurement filter, Δf	**Frequency offset of centre frequency of measurement filter, f_offset**	**Maximum level**	**Measurement bandwidth**
2.5 MHz ≤ Δf < 2.7 MHz	2.515MHz ≤ f_offset < 2.715MHz	P - 53 dB	30 kHz
2.7 MHz ≤ Δf < 3.5 MHz	2.515 MHz ≤ f_offset < 3.515 MHz	$P - 53dB - 15 \cdot \left(\frac{f\_offset}{MHz} - 2.715 \right) dB$	30 kHz
(see comment)	3.515 MHz ≤ f_offset < 4.0 MHz	P - 65 dB	30 kHz
3.5 MHz ≤ Δf < 7.5 MHz	4.0 MHz ≤ f_offset < 8.0MHz	P - 52 dB	1 MHz
7.5 MHz ≤ Δf ≤ Δf_{max}	8.0 MHz ≤ f_offset < f_offset_{max}	P - 56 dB	1 MHz

Permissible out-of-block emissions of the base stations with a maximum output power of P < 31 dBm

Frequency offset of -3dB point of measurement filter, Δf	**Frequency offset of centre frequency of measurement filter, f_offset**	**Maximum level**	**Measurement bandwidth**
2.5 MHz ≤ Δf < 2.7 MHz	2.515 MHz ≤ f_offset < 2.715 MHz	-22 dBm	30 kHz
2.7 MHz ≤ Δf < 3.5 MHz	2.715MHz ≤ f_offset < 3.515MHz	$-22dBm-15\cdot\left(\frac{f\_offset}{MHz}-2.715\right)dB$	30 kHz
(see comment)	3.515 MHz ≤ f_offset < 4.0 MHz	-34 dBm	30 kHz
3.5 MHz ≤ Δf < 7.5 MHz	4.0 MHz ≤ f_offset < 8.0 MHz	-21 dBm	1 MHz
7.5 MHz ≤ Δf ≤ Δf_{max}	8.0 MHz ≤ f_offset < f_offset_{max}	-25 dBm	1 MHz

- Δf is the distance between the carrier frequency and the nominal -3dB point of the measurement filter with the smallest distance to the carrier frequency.
- F_offset is the distance between the carrier frequency and the middle of the measurement filter.
- f_offset_{max} is either 12.5 MHz or the offset compared to the set edge of the Tx-band, whatever is the greater value.
- Δf_{max} is equal to f_offset_{max} minus half the bandwidth of the measurement filter.

D. Spectrum usage conditions for TDD terminal equipment in the 1900.0 – 1920.0 MHz, 2010.0 – 2025.0 MHz frequency bands:

Spectrum mask for TDD terminal equipment:

Requirement in relation to the emissions' spectrum mask (TDD option)

Δf* in MHz	**Minimum requirement**	**Measurement bandwidth**
2.5 – 3.5	$\left\{-35-15\cdot\left(\frac{\Delta f}{MHz}-2.5\right)\right\}dBc$	30 kHz **
3.5 – 7.5	$\left\{-35-1\cdot\left(\frac{\Delta f}{MHz}-3.5\right)\right\}dBc$	1 MHz ***
7.5 – 8.5	$\left\{-39-10\cdot\left(\frac{\Delta f}{MHz}-7.5\right)\right\}dBc$	1 MHz ***
8.,5 – 12.5	-49 dBc	1 MHz ***

* Δf is the distance between the carrier frequency and the middle of the measurement filter.

** the first and last measurement position with a 30 kHz filter if Δf is equal to 2.515 MHz and 3.485 MHz.

*** the first and last measurement position with a 1 MHz filter if Δf is equal to 4 MHz and 12 MHz. In general, the resolution bandwidth of the measurement equipment should correspond to the measurement bandwidth. To improve accuracy, sensitivity and efficiency of measurement, the resolution bandwidth can also deviate from the measurement bandwidth. If the resolution bandwidth is smaller than the measurement bandwidth, then the result should be integrated via the measurement bandwidth in order to obtain the equivalent noise bandwidth of the measurement bandwidth.

Comment: The lower limit value is around -50dBm/3.84 MHz or at the minimum requirement stated in this table, or whichever is the higher value.

Duplex procedure Subscriber station	**Frequency band**	**Max. permissible EIRP (uplink) for one channel**
TDD	**1900 – 1920 MHz**	**24 dBm**

TDD	**2010 – 2025 MHz**	**24 dBm**

E. Spectrum usage conditions for FDD (Frequency Division Duplex) and TDD (Time Division Duplex) operation in the 2500.0 – 2690.0 MHz band:

E.1. General parameters:

1. The assigned spectrum blocks contain whole multiples of 5 MHz.
2. Inside the 2500 – 2690 MHz frequency band, the duplex separation for frequency division duplex operation (FDD) is 120 MHz, whereby the terminal equipment or subscriber stations (uplink) send in the bottom band, starting at 2500 MHz (expandable to 2570 MHz), and the base stations (downlink) send in the upper band, starting at 2620 MHz.
3. The 2570 – 2620 MHz sub-band can be used for time division duplex operation (TDD) or other operational modes that comply with the block edge masks (BEM) described here. Use of time duplex mode (TDD) or other operational modes that comply with the block edge masks described here is also possible even outside the 2570 – 2620 MHz sub-band provided if this is done in equal amounts in the upper band (frequency descending starting from 2690 MHz) and in the bottom band (frequency descending starting from 2570 MHz).
4. In the block edge masks listed below, a 5 MHz guard separation has been assumed to exist between blocks of a TDD network and those of another TDD or FDD network. This guard separation is to be created in their own spectrum by the assignment holders deploying the TDD systems. This does not apply to the case of changes made at a later date to the system technology used (duplex procedure). In this case the protection must be provided by the frequency user who caused the increased protection requirement.

E.2. Unrestricted BEM for base stations:

The block edge masks for unrestricted spectrum blocks consist of a combination of the parameters contained in tables E1, E2 and E3, in that the relevant limit value is created by the higher value that is critical in relation to the baseline requirements and the block specific requirements.

Table E1: baseline requirements (base station out-of-block EIRP BEM):

Frequency range in which out-of-block emissions are received	**Maximum EIRP**
Frequencies for FDD downlink and +/- 5 MHz outside the range of the spectrum blocks for FDD downlink	+ 4 dBm / MHz
Frequencies inside the 2500-2690 MHz band not covered by the definitions above.	– 45 dBm / MHz

Table E2: block specific requirements (base station in-block EIRP BEM)

Maximum in-block EIRP	+ 61 dBm / 5 MHz

Table E3: block specific requirements (base station out-of-block EIRP BEM):

Offset from relevant block edge	Maximum EIRP
Start of band (2500 MHz) to **-5 MHz** (bottom edge)	Baseline requirement level
– 5.0 to – 1.0 MHz (bottom edge)	+ 4 dBm / MHz
– 1.0 to –0.2 MHz (bottom edge)	+ 3 + 15(Δ_F + 0,2) dBm / 30 kHz
- 0.2 to 0.0 MHz (bottom edge)	+ 3 dBm / 30 kHz
0.0 to + 0.2 MHz (top edge)	+ 3 dBm / 30 kHz
+ 0.2 to + 1.0 MHz (top edge)	+ 3 – 15(Δ_F – 0,2) dBm / 30 kHz
+1.0 to + 5.0 MHz (top edge)	+ 4 dBm / MHz
+ 5.0 MHz (top edge) to the end of the band (2690 MHz)	Baseline requirement level
Where: Δ_F represents the frequency offset from the block edge in question (in MHz)	

E.3. Restricted BEM for base stations:

The block edge masks for restricted use consists of a combination of the parameters contained in tables E1 and E4, where the relevant limit value is created by the higher value that is critical in relation to the baseline requirements and the block specific requirements. Use of the 5 MHz wide guard separation is possible with this mask.

Table E4: block specific requirements (base station in-block EIRP BEM for restricted block)

Maximum EIRP inside the block	+ 25 dBm / 5 MHz

E.4. Limits for terminal / subscriber stations:

The EIRP limit value should be used for fixed or installed terminal / subscriber stations and the total radiated power (TRP) limit value should be used for the mobile or nomadic terminal / subscriber stations. TRP is a measure of how much power the antenna actually radiates. The TRP is defined as the integral of the power radiated in different directions over the entire radiation sphere.

Table E5: in-block power limits for terminal / subscriber stations:

Maximum EIRP inside the block	
TRP	31 dBm / 5 MHz
EIRP	35 dBm / 5 MHz

Section 2

Protection of spectrum usages in the 1710 – 1785 MHz / 1805 – 1880 MHz and 1920 – 1980 MHz / 2110 – 2170 MHz bands

The transmission process (access behaviour) used by the spectrum assignment holders is not given. This applies to all bands. The spectrum and block edge masks enclosed at Section 1 / annex 2 must be complied with as a minimum requirement to ensure interference-free coexistence.

The principle whereby protection of older usages takes priority over the right to introduce new usages continues to apply to the 1710 - 1785 MHz / 1805 - 1880 MHz and 1920 - 1980 MHz and 2110 - 2170 MHz bands.

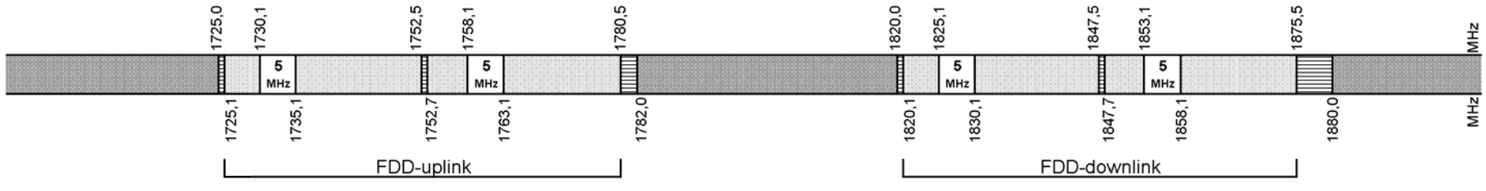
If GSM technology is deployed alongside older GSM applications in the 1710 - 1785 MHz and 1805 - 1880 MHz bands, one GSM channel is to be kept clear between the blocks of the different mobile communication networks as an operating channel. The channels to be kept free can be used as measurement channels.

For this reason, it is also the case for the mixed usage of GSM / UMTS (FDD) / GSM in the so-called sandwich process that mutual interference-free operation in the uncoordinated case (use of different locations for the base stations) is only possible if a 200 kHz guard band (one GSM channel) is inserted in each case in addition to the 5 MHz already provided on both sides of the UMTS channel (carrier spacing: 2.8 MHz). For the coordinated case, no additional guard channel needs to be inserted (carrier spacing: 2.6 MHz).

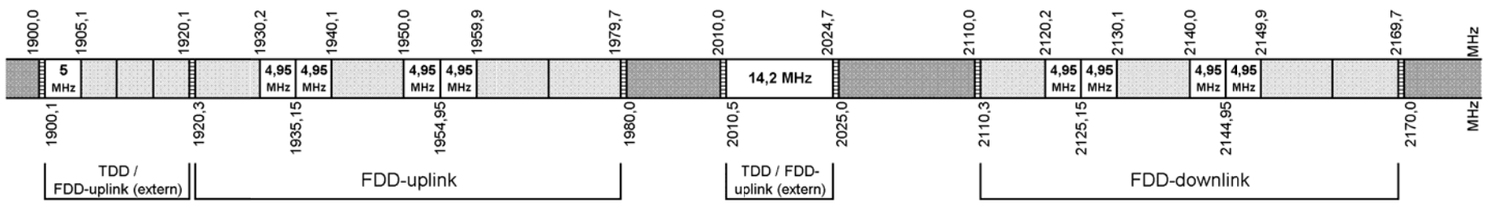
Additional studies must be carried out for all divergent transmission processes (access behaviour) in order to determine the optimum boundary conditions in each case to ensure protection of existing applications.

Kanalplan der zur Vergabe stehenden Frequenzen in den Bereichen bei 1,8 GHz, 2,0 GHz und 2,6 GHz

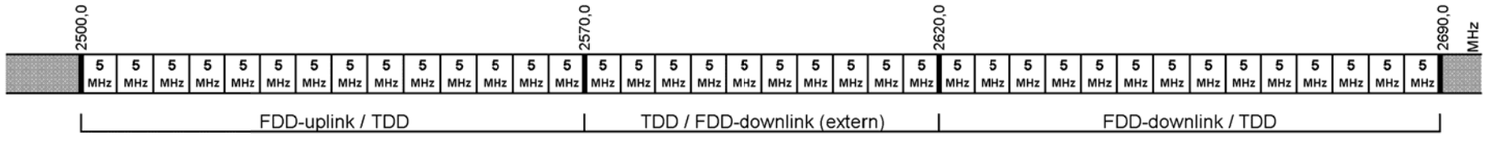
> Frequenzbereich bei 1,8 GHz



> Frequenzbereich bei 2,0 GHz



> Frequenzbereich bei 2,6 GHz



Schutzkanäle

... MHz verfügbares Frequenzspektrum

bereits zugeteiltes Frequenzspektrum

Channel plan of the spectrum to be allocated in the 1.8 GHz, 2 GHz and 2.6 GHz bands

Frequenzbereich bei 1.8 GHz / 2 GHz / 2, 6 GHz = 1.8 GHz (etc.) frequency band

Extern = external

Schutzkanäle = guard channels

Verfügbares Frequenzspektrum = available frequency spectrum

Bereits zugeteiltes Frequenzspektrum = frequency spectrum already allocated