

## **Questions and answers – Auction # 27 Award of frequencies in the low 10 GHz, high 10 GHz, 13 GHz, 18 GHz, 23 GHz, 28 GHz, 32 GHz and 38 GHz frequency bands**

Updated April 28<sup>th</sup> 2020

### **Question 1:**

In the document «foreløpig oversikt over ressurser for tildeling» the frequencies in High6 lower half band are divided into 6420-6460MHz, 6460-6500MHz, ..., 6700-6740MHz. We are not aware of equipment that follows this channel plan and according to CEPT ERC Rec. 14-02. the first channel starts on 6440-6480 MHz. What is the reason for choosing alternative channel plan? Is it possible to change for a more appropriate channel plan?

### **Answer 1:**

Nkom sees that the channel distribution in High 6 GHz for lower half band in the document «foreløpig oversikt over ressurser for tildeling» is not in accordance with harmonized channel plan CEPT ERC / REC14-02. Nkom wants use to be in accordance with a harmonized channel plan. Therefore, on November 15, 2017, the channel division was changed in the document «foreløpig oversikt over ressurser for tildeling» for the High band 6 GHz frequency band.

### **Question 2:**

What services will be allowed used in the auction frequency bands?

### **Answer 2:**

Frequency use within auction bands is not limited to a particular service or technology. An granted permit can be used for any service as long as the requirements/conditions in the permit and Norwegian regulations are met.

**Question 3:**

It can be challenging to obtain necessary mandates from the company management and board if the time between publishing final rules/conditions and auction start is scarce, but four (4) entire calendar months or more will typically be sufficient.

It will facilitate our planning if Nkom answer one or more of the following questions:

- Will the auction start February 1, 2020, or later?
- Will the auction start April 1, 2020 or later?
- How many months will it minimum between publishing final rules and auction start?

How many months will the minimum be between publication date of auction date and start of auction?

**Answer 3:**

- The radio line auction will start later than February 1, 2020
- From publication of final auction rules to auction, there will be a minimum of 3 months.

**Question 4:**

In the auction rules section 3.6 it is stated a spectrum cap of 370 MHz for lower bands and a spectrum cap of 2545 MHz over all. This is the maximum amount of spectrum an operator may acquire in the auction.

In section 6.2 in the overall framework there is a spectrum cap of 40 % over all and a spectrum cap of 40 % in low frequency bands. It is stated that this is 2545 MHz overall and 370 MHz in low bands. It is also stated that the operator's existing holdings are included in the cap.

We encourage Nkom to make a list with operators that is not allowed to acquire spectrum up to the caps of 370 MHz and 2545 MHz in the auction, and the exact spectrum caps in MHz that will be used for those operators in the auction in low bands and overall.

**Answer 4:**

Three companies holds spectrum portfolios that reduce caps of spectrum available to them in the auction. These companies and their respective caps are listed in the table below.

	≤ 13 GHz	≤ 38 GHz
Telia	370 MHz	1257 MHz
Telenor Norge AS	370 MHz	2433 MHz
GlobalConnect AS	370 MHz	2321 MHz
All other participants	370 MHz	2545 MHz

**Question 5:**

How do we decide on the amount for the bank guarantee we are to submit upon registration as bidders for the auction?

**Answer 5:**

It is important to notice that the amount of the bank guarantee do not correspond the total amount a bidder wish to make bids for in the auction.

The bank guarantee sets the bidders initial eligibility points, each 25 000 NOK qualify to one eligibility point cf. section 7.2 of the auction rules. Any package of lots hold a corresponding number of eligibility points. To bid on this package the bidder need an eligibility equal or higher to the eligibility points of the package. Hence, the bank guarantee, limits package content that a bidder can place his initial bids on.

Example:

A bidder wants to bid for blocks in both low 10 GHz, 18 GHz and 23 GHz.

<i>Band</i>	<i>Lot category</i>	<i>Eligibility points per lot</i>
Low 10 GHz	L10-1	1
	L10-2	4
	L10-3	1
	L10-4	2
18 GHz	18-1	1
	18-2	2
	18-3	8
23GHz	23-1	4
	23-2	4
	23-3	1
	23-4	4

*Table: Extract from table 6 in section 11.2.8.1 in the auction rules.*

The bidder wish to bid for a package of 6 blocks: 2 blocks in the lot category L10-2, 2 blocks in the lot category 18-3 and 2 blocks in the lot category 23-2. The bidder then need eligibility points: 2 x 4 for L10-2, 2 x 8 for 18-3 and 2 x 4 for 23-2, summed up to 32 eligibility points.

By calculating eligibility points needed to bid on a package with the wanted lots and multiply it by NOK 25 000, you determine the amount needed on bank guarantee. In this example a bank guarantee of 32 x 25 000 = NOK 800 000 is required.

### **Question 6**

A frequency cap of 40% (754 MHz) has been set for how much spectrum an operator can use between two transmit points in frequencies up to and including 13 GHz. The cap applies to spectrum allocated for individual transmitter licensees and that is not part of auction # 27. When both polarizations (XPIC) are used, it will not occupy a larger proportion of the frequency spectrum. We therefore assume that the use of XPIC will not be considered as dual use of spectrum when calculating the frequency cap. However, we would like to have this confirmed as Nkom's practice has previously been to charge extra for such use.

### **Answer 6**

Nkom experience, is that a high probability of uncorrelated neighbor channel operation if alternate polarization is used. With both polarizations in use, much greater antenna separation and/or difference in azimuth is required for neighboring channels to be operated by another user. This is why XPIC is invoiced at a double rate by Nkom.

However when determining the CAP it was decided that a channel counts as the sum of its duplex bandwidths, regardless if it use XPIC or not. An example: when calculating CAP, a 40 MHz duplex channel cost, is 80 MHz XPIC or not.

### **Question 7**

In the document "Tildeling til radiolinje Vurderinger etter høring av overordnet regulering" the last section of chapter 4.2 it says something like "For radio lines for which no other solutions have been found and which must be closed, a maximum of 30% can still remain operational after September 2021." Can it be confirmed that:

- a) 30% is calculated on a national basis of all lines that either break the frequency cap or where surplus demand means that existing lines cannot be continued?
- b) It is optional for the operator which lines will be closed first of all the lines on the country to be wound up?

### **Answer 7:**

- a) After a 6 months registration/application period, installations that break the frequency cap and/or where a surplus demand results in closure of existing lines. The sum of installations that shall be closed are calculated over the area that previously was included in the spectrum licenses initiating the transitional arrangements. After September 30, 2021, only 30 percent of these identified installations are allowed to remain operational. By the end of September 2022 they all need to be closed.
- b) As long as the restrictions above is met, Nkom hold no further guidelines to when specific lines are closed.

### **Question 8**

Will it be possible to use 80 MHz bandwidth in the high 6 GHz band?

Will it be possible to use 56 MHz bandwidth in the 8 GHz band?

Will it be possible to use 112 MHz bandwidth in the 8 GHz band?

**Answer 8**

Provided that the frequency cap and that competing demand permits it, transmitter permits will be issued with up to 80 MHz with channel width in high 6 GHz. The largest channel width issued in 8 GHz, will be 56 MHz.

**Question 9**

On the auction website it is stated that bidders have to deliver a registration form and a bank guarantee. However, in the auction rules dated 15 November 2019 page 15 more documents are listed, cf. description of ownership and organizational structure of the participant and written power of attorney for the bank issuing the bank guarantee. Which documents need to be submitted and what do you want specified when it comes to ownership and so on?

**Answer 9**

All documentation as described in the auction rules section 7.1 must be submitted for the bidder to be registered for the auction.

Nkom want specified who the owners of the company that wishes to register for the auction is, ownership interest etc. If a company i.e. is owned by another company, Nkom want information about ownership of the parent company. Nkom need enough information to consider whether or not more companies within the same company group register for the auction or whether the company has an owner with decisive influence of the company which originates from a country that Norway do not have a security agreement with.

Documentation that the persons signing the bank guarantee on behalf of the bank, must also be submitted, so that Nkom can verify that the guarantee is valid.

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**Question 10**

In the introduction video that registered bidders have received there seems to be some mistakes in the notation of eligibility for lot category 32-2 and of frequency blocks in the frequency assignment stage. Can you confirm that this was incorrect in the video?

**Answer 10**

The version of the auction software that was used for the instruction video was based on an old configuration that did contain some mistakes. This version of the auction software was used for demonstration purposes only.

The video contain an incorrect number of eligibility points for the lot category 32-2. The right number of eligibility points for this lot category is 4, cf. the auction rules section 11.2.8.1. The

notation of the upper end of the different frequency options in the frequency assignment stage in the video, was also incorrect. The correct notation of the frequency blocks is stated in the auction rules section 3.3.

The mock auctions and the real auction is configured in accordance with the auction rules.

**Question 11**

Could you please confirm that unsold spectrum is valued 0 when evaluating bid combinations in the auction?

**Answer 11**

Yes, in evaluating feasible combination of bids in the auction, unsold spectrum is valued at zero. In some auctions in other countries where CMRA has been used, unsold lots have been valued at reserve. This is not the case for auction # 27.

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**Question 12**

Frequency assignment stage. There might potentially be many different frequency positions to bid for across the various categories. It is therefore important to give winners time to prepare bids for this stage. Will the concrete positions to bid for in the frequency assignment stage be made available to bidders soon after the lot assignment stage has closed?

**Answer 12**

Bidders will be informed of the options available to them shortly after the lot assignment stage has ended.

**Question 13**

How much time will there be between the end of the lot assignment stage and the start of the frequency assignment stage? Will there be at least one working day in between?

**Answer 13**

Bidders will have minimum one working day to prepare for the frequency assignment stage after the lot assignment stage has ended.

**Question 14**

It seems possible to download (tsv) frequency assignment options when the frequency assignment schedule is released. Will it be possible for bidders to upload bids in the frequency assignment stage?

**Answer 14**

No, there is no upload option for this stage, as the information to be entered in this stage is relatively simple and there is no interaction between different bids in terms of validation.

**Question 15**

Discarding bids.

Consider e.g. a bidder who has submitted 1 eligibility reducing bid, 1 headline bid (in addition to the eligibility-reducing bid) and 48 additional ("other") bids (i.e. 50 bids in total). All the bids are higher than 90% of the relevant package cost at the clock-round price.

Do we understand it correctly that this bidder can discard any of the 48 Additional bids (max 10 in a round, though), as long as the same number of new bids are submitted (i.e. total number of bids maintained at 50)?

**Answer 15**

This is correct as in this example none of those 48 additional bids would determine the relative cap on other bids.

**Question 16**

Do we understand it correctly that the bidder that have reached the 50 bid limit, would not need to discard a bid in order to submit a "Zero"-bid?

**Answer 16**

This is correct – the cap on the number of eligible bids only applies to bids for non-empty packages.

**Question 17**

Continuing from the example in the questions above; suppose the bidder continues bidding for the headline bid, but does not submit any new additional bids. Do we understand it correctly that the auction system will automatically discard (and not take into account) any of the "other" bids that fall below 90% of the package cost at the clock-round price (i.e. total valid bids would then go below 50)? In principle, all "other" bids could be discarded if clock-round prices increase sufficiently? The eligibility-reducing bid could never be discarded, though.

**Answer 17**

This is correct, bids falling below 90% of the package cost at the clock-round price are automatically discarded except for eligibility-reducing bids where 90% of clock-round price does not apply to packages, as these determine relative caps on other packages.

**Question 18**

Discarding bids.

Consider a bidder submitting a headline bid for a package Z. In a later round the bidder submits a headline bid for a different package (without reducing eligibility). According to section 11.2.3.3 in the auction rules the minimum additional bid offer for package Z is the greatest of

- i) 90% of cost at clock-round price, and
- ii) the highest bid the bidder has already made for that package.

Suppose the bidder has reached the limit of 50 eligible bids and that the minimum offer is equal to ii) the highest bid the bidder has already made for that package. According to the auction rules section 11.2.4 it is "[...] not possible to discard bids that [...] are for a package for which the bidder has made one or more headline bids and are at least at the minimum offer for the package [...]". Do we understand it correctly that the headline bid for package Z cannot be discarded unless the highest historical bid for that package falls below 90% of the cost at the clock-round price? If not, please clarify.

**Answer 18**

This is correct.

**Question 19**

Minimum offer for a constraining package.

Consider a round where the cost at the clock-round price is 80 for package Y. Y is the constraining package of package X. In order to bid the minimum bid for package X, the bidder must increase the bid for the constraining package Y. Do we understand it correctly that the bid for the constraining package Y can be strictly lower than 72 (i.e. lower than 90% of the 80 in cost at the clock-round price for this package, as long as it is higher than any previous bid for that package)?

**Answer 19**

This is correct – the minimum of 90% of clock price does not apply to packages for which the bidder has made eligibility-reducing bids, as these determine relative caps on other packages. Therefore, the bidder can make an additional bid for Y that is below 90% of clock prices, cf. the auction rules section 11.2.8.3.



**Question 20**

Minimum offer for a package.

With reference to auction rules section 11.2.3.3. Do we understand it correctly that the minimum offer for a package for which the bidder has not submitted a bid is the maximum of

- a) 90% of the clock-round price of the package, and
- b) the reserve price of the package?

In particular, in the first round b) is the minimum for any package. Part b) is not mentioned in the text.

**Answer 20**

This is correct. The definition of reserve prices set the minimum price for any frequency lot.

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**Question 21**

Should one or more of the auction participants have their team members placed in isolation or quarantine due to the ongoing COVID-19 pandemic, how will the execution of the auction be affected? From our point of view, the auction teams being small in size means that the auction participants are vulnerable to having more than one of their employees indisposed at the same. Under normal circumstances it would be reasonable to expect that one of the team members can be indisposed in the duration of an auction. In this ongoing situation however, more than one team member may be rendered indisposed, for instance due to COVID-19 contagion.

We may also experience a situation where one or more team members are prohibited from meeting in the auction room due to isolation or quarantine, despite being healthy enough to participate in the auction. Technology wise, it is possible to execute and complete the auction whilst having team members working from separate locations. However, we feel that such a set up entails a significant level of risk, considering that we need to be able to feel 100% secure that the network connection and communication software functions sufficiently well. In a situation where one or more of the auction teams are affected by illness, isolation or quarantine, will Nkom consider postponing the auction, alternatively pausing the auction? Will Nkom put into effect other measures in a situation where one of the participants experience issues carrying out and completing the auction?

**Answer 21**

Nkom are planning to carry out the upcoming “Radiolinje”-auction in a manner as predictable as possible, and it is our view that starting the auction according to schedule on May 6<sup>th</sup> is justifiable. At the same time, these are challenging times. The ongoing situation necessitates a continuous evaluation of the situation by both Nkom and the auction participants, and it may necessitate that adjustments are made to the auction process by all participants.

In preparation for the auction, Nkom has considered several different alternatives and solutions, both in planning the preparation stages of the auction, the carrying out and execution of the auction, and in planning for having to make necessary adjustments while carrying out the auction process. One of the questions we have considered is how to carry out and continue an auction in a situation where one or more of the auction participants, or Nkoms own auction team, are infected or affected by COVID-19. Nkom are aware of the risk of members of one or more of the auction teams being infected by the virus, alternatively that the teams are affected by quarantine and isolation regulations. Depending on the specific situation, Nkom will be prepared to consider measures which ensure that all auction participants are given adequate opportunity to participate in and complete the auction on level terms.

At the same time, Nkom encourages all auction participants to take every available precaution when preparing for, and participating, in the auction, and to examine, consider and implement preventive measures and solutions that contribute to reducing the risk of contagion. Nkom encourages all auction participants to follow governmental advice and guidelines for preventing the spread of disease.

*Published Tuesday April 28<sup>th</sup>*

**Question 22**

Can you confirm that delaying payment will not entail any disadvantages, for instance in the form of accrued interest?

Will we have to make a choice regarding time of payment, or will all winning bidders in the auction automatically be given November 10<sup>th</sup> 2020 as a new payment deadline?

**Answer 22**

Auction Rules article 12.1 dictates that winning bidders shall pay the lot assignment and/or frequency assignment prices in full within 10 business days of Nkom notifying them of the results of the auction. Registered bidders have received information regarding an option to delay payment of the auction prices until November 10<sup>th</sup> 2020. No interest will accrue on auction prizes until the expiration of the extended payment deadline on November 10<sup>th</sup> 2020.

Winning bidders are free to decide when to complete payment of auction prizes, before end of November 10<sup>th</sup> at the latest. Nkom notes that winning bidders will be free to complete payment of auction prices immediately following notification of the results of the auction, in accordance with Auction Rules section 12.1. Lack of complete payment from winning bidders within 10 days of having received notification will be interpreted as a decision to delay payment.

Winning bidders that make use of the option to delay payment, and who wishes to complete payment at a date prior to November 10<sup>th</sup> 2020, are requested to notify Nkom of plans of payment in advance.

Auction Rules sections 7.1 number 4 and 7.2 states that a bank guarantee is required to participate in auction #27. The bank guarantee must be valid until November 30<sup>th</sup> 2020. Nkom notes that winning bidders must cover any costs incurred from the their bank guarantee until complete payment of the auction prices has taken place, and Nkom return the bank guarantee in accordance with Auction Rules section 12.4.