5G Terms and Conditions

Consultation Paper

November, 2020



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Summary



Next Generation Mobile Technologies (5G) is a major pillar of digital transformation, as 5G offers huge potential for innovation and industrial development. With this in mind, a year ago the Communications Commission published a document (5G.gov.ge) within the framework of the consultation regime, which aimed to review 5G technology, practical examples of its introduction, frequency allocation for 5G services based on the experience of European countries. The main purpose of the document was to acquaint the stakeholders with the plans, vision and goals of the Commission.

Summary

During the consultation process, the Commission answered a number of questions. Furthermore, the Commission has taken significant steps in the past to ensure timely access to the frequency resource. The Commission has announced a tender to calculate the reserve price for the frequencies allocated for 5G services under the above strategy. The tender was won by Ernst & Young (Ernst & Young Business Representative Spolka Komanditova, Poland) and, with the help of their experts, the reserve price for frequencies for 5G services was calculated. The mentioned document was also published within the framework of the consultation regime and a meeting was held between the operators and experts operating in the market.

The Commission strongly believes, that the development of 5G technology and services will play a vital role in the development of the digital economy and various industries. Accordingly, the Commission continues to take active steps and prepares for the auction. The Commission's vision has been developed regarding the obligations and licensing conditions for 5G service frequencies. It is these visions and approaches that are presented in this consultation paper.

Auction Terms

Auction - Available Radio Specrum



Based on European experience and the experience of peer regulators, the Commission has defined frequencies for 5G services. The Communications Commission plans to make available the frequencies in 700 MHz, 800 MHz, 3400 - 3800 MHz frequency bands.

703–733 / 758–788 MHz (2 x 30 MHz - 700 MHz band)
816-826 / 852-862 MHz (2 x 10 MHz - 800 MHz band)
3400-3800 MHz (5 x 50 MHz, 1 x 40 MHz, 1 x 30 MHz, 3400-3800 MHz)

A total of 400 MHz will be available under the auction.
The entire territory of Georgia will be defined as geographical area (geographic coverage).

Auction - Reserve Price

As already pointed out, to ensure timely access to the Radio frequencies, the Commission, with the help of Ernst & Young's experts, calculated the reserve price for the frequencies allocated for 5G services.

The Reserve price for the frequencies is as follows:

Radio Spectrum	Reserve Price (thousand GEL/1 MHz
700 MHz	363
800 MHz	741
3.4-3.8 GHz	52

Auction - offered lots

From the abovementioned frequencies, several types of auction lots have been defined for the frequency spectrum auction, which will be available to bidders.

Part of the Radio Spectrum frequencies available at the auction will be offered in abstract lots, part - in the particular lots. In particular: 700 MHz band - in full and 3400-3800 MHz band in 250 MHz will be offered as abstract lots, while 800 MHz frequency band and part of 3400-3800 MHz band in 70 MHz will be offered as specific band.

Auction - offered lots

The Commission believes that taking into account the current situation, the reserve price calculated for each frequency band and the foreseen obligations, the auction lots should be structured as follows:

Category A lots, which will be viewed as abstract lots, are a kind of bundled lots. It consists of two different spectrum bands, namely:

700 MHz frequency band - 2x5 MHz spectrum range
3.4 GHz -3.8 GHz frequency band – 50 MHZ spectrum range

In total 4 lots of category A will be offered during the auction.

Type	Category	Radio Spectrum	Lot	Frequnecy range	Number of Lots
Bundle	A	700 MHz	1	2x5MHz	4
		3.4 GHz -3.8 GHz		50 MHz	

Auction - offered lots

Category B presents a total of 7 lots, from three different frequency bands. In particular:

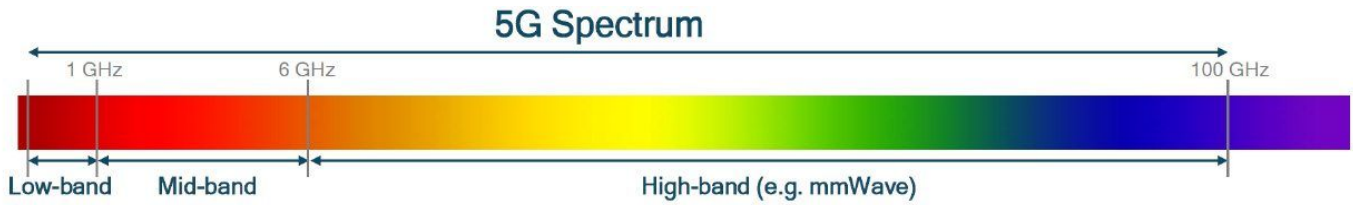
· 2 lots in 700 MHz frequency band.
· 2 lots in 800 MHz frequency band.
· 3 lots in 3.4 GHz -3.8 GHz frequency band.

Of these, the 700 MHz band will be offered in the abstract lots, while the 800 MHz frequency band and the 3.6-3.8 GHz band will be offered as specific lots

Type	Category	Radio Spectrum	Lot	Frequnecy range	Number of Lots	Total MHz
Standalone	**B1**	700 MHz	1	2x5 MHz	2	20
Standalone	**B2**		1	2x5 MHz		
Standalone	**B3**	3.4 GHz -3.8 GHz	3600-3650	50 MHz	1	120
Standalone	**B4**	3.4 GHz -3.8 GHz	3650-3690	40 MHz	1	
Standalone	**B5**	3.4 GHz -3.8 GHz	3770-3800	30 MHz	1	
Standalone	**B6**	800 MHz	816-821/852-857	2x5 MHz	2	20
Standalone	**B7**		821-826/857-862	2x5 MHz		

Auction - spectrum cap

It should be noted that 700 MHz, 800 MHz frequencies have better propagation properties, while the 3400-3800 MHz range provides a wider range of frequencies for the development of high-capacity base stations that will be able to handle traffic in densely populated areas. The high bandwidth offered by the 3400-3800 MHz bandwidth is essential for taking full advantage of the new functionalities provided by 5G technology. Therefore, in order to provide high quality, comprehensive 5G services, it is important for the mobile service providers to have frequencies under 1 GHz, as well as a frequencies in the upper 3.4-3.8 GHz range.



Auction - spectrum cap

Also, the exhaustive nature of the radio spectrum frequencies should be taken into account, as well as the competitive advantage and factors hindering the development of competition, in case any provider becomes holder of usage rights for significant part of the mentioned resources.

Also, having technically similar characteristics in the 700 MHz and 800 MHz bands makes it reasonable to determine the spectrum cap for the radio frequency resources offered within the upcoming auction.
The following spectrum cap is considered to be imposed within the framework of the mentioned auction:

Radio Spectrum band	Spectrum Cap
700 MHz	2x10 MHz
800 MHz	2x10 MHz
3.4-3.8 GHz	100 MHz

The spectrum cap in the 800 MHz band also includes already allocated frequencies.

License duration and start of activity

According to the Law of Georgia on Electronic Communications, the validity period of licenses issued within the framework of the auction is 15 years from the date of issue.

As for the commencement of activities, the license holder is obliged to start practical activities no later than 6 months after receiving the license. The commencement of practical activities is the activation of one or more transmitters within the present radio frequency bands and the provision of services to one or more commercial subscribers.



Coverage Obligations

Coverage Obligations



In developing the coverage obligations, the Communications Commission was guided by the National Broadband Network Development Strategy of 2020-2025 and the Action Plan for its implementation.

Commitments include coverage data rates for settlements as well as highways, airports, ports and railways.
The document also discusses the level of service / speed that should be provided within a specific geographical area.

Coverage obligations

Commitments are presented for the so-called bundle/package lots and are presented as relevant points of the Georgian National Broadband Network Development Strategy 2020-2025, as well as thematically by years, in order to make it easier to see a unified picture.



Coverage Obligations

Georgia's National Broadband Development Strategy for 2020-2025 - 3 municipalities to have 5G pilot by 2025.

From obtaining license	Territories to be covered	Minimum mean speed (Mbps)
2 years	**Borjomi municipallity**, amongst them: Bakuriani, Borjomi city, Likani	≥ 100 Mbps
5 years	Mestia Municipality, Kazbegi Municipality	≥ 100 Mbps

Coverage Obligations

Settlements

From obtaining license	% of territories covered with services for settlements with (≥15,000 inhabitants)	Minimum mean speed (Mbps)
2 years	**30%**	≥ 100 Mbps
3 years	50%	≥ 100 Mbps
5 years	75%	≥ 100 Mbps
7 years	90%	≥ 100 Mbps

From obtaining license	% of territories covered with services for settlements with (≥**10000** და <**15000 inhabitants**):	Minimum mean speed (Mbps)
5 years	50% -ᲖᲔ	≥ 100 Mbps
7 years	75% -ᲖᲔ	≥ 100 Mbps

Coverage Obligations

Important Territories

From obtaining license	Territories covered with serivces	Minimum mean speed (Mbps)
2 years	Tbilisi International Airport	≥50 Mbps Inside the Airports and Indoors
	Kutaisi Airport	
	Batumi International Airport	
	Batumi Sea Port	
	Gudauri, Telavi city, Signagi, Tsnori, Tsinandali	
3 years	Poti Sea Port	≥50 Mbps
	Oni, Ambrolauri, Gurjaani, Vardzia	
5 years	Shovi, Sairme, Tusheti, Shatili, Kvareli, Sagarejo	≥50 Mbps

Within three years after receiving the license, the holder is obliged to provide access to mobile/wireless broadband services on the ≥90% of the distance along the Georgian Railway so that the minimum mean speed obtained as the result of measurements (Indoor) is ≥50 Mbps and the latency is ≤10 milliseconds.

Coverage Obligations

Motorways:

The license holder is obliged to provide ≥90% coverage of the following Georgian main road distances, with an average speed of ≥50 Mbps and a latency of not more than ≤10 milliseconds in the following sections:

From obtaining license	90% of road distance covered with services:	Minimum mean speed (Mbps); Latency (ms)
2 years	Tbilisi-Sagarejo-Lagodekhi	≥50 Mbps; ≤10 ms
	Tbilisi-Marneuli-Sadakhlo	
	Tbilisi-Rustavi-Tsiteli Khidi	
	Tbilisi-Gudauri-Stepantsminda	
	Senaki-Zugdidi	
	Senaki-Poti	
	Telavi-Eniseli-Kvareli	
5 years	Tbilisi-Sarpi	≥50 Mbps; ≤10 ms
	Tbilisi-Akhaltsikhe	
	Akhaltsikhe-Vale	
	Akhaltsikhe-Vardzia	
	Tbilisi-Signagi-Tsnori-Telavi	
7 years	Terjola-Tkibuli	≥50 Mbps; ≤10 ms
	Ambrolauri-Oni	
	Oni-shovi	
	Kutaisi-Baghdati-Sairme	
	Zhinvali-Shatili	

Data rate obligations apply both in stationary/static position, as well as when traveling along the road (regardless of the lane and direction, within the maximum speed allowed for passenger vehicles).

Coverage Obligations

The license holder is required to periodically present (twice a year) report on the development of the wireless access network implemented, which must be public and published on the company's website in the form of text and graphics (geographical map). The Commission reserves the right to conduct permanent monitoring to determine the accuracy of the published information and, if necessary, to request additional information. The information published by the operator must include at least the following data:

- Location of commissioned stations;
- Location of stations under construction;
- Location of planned base stations;
- Signal coverage map (including speed);
- List of communities with access to the service.

Technical Terms

Technical Terms

700 MHz Frequency band

The standard technical specifications for the use of the spectrum are based on the specifications in the COMMISSION IMPLEMENTING DECISION (EU) 2016/687 for a network operating in 700 MHz LTE technology network:

- the mode of operation - FDD (Frequency Division Duplex) -Uplink 703-733 MHz; Downlink 758-788 MHz
- In-Block - Maximum mean EIRP for base station should not exceed 64 dBm/5 MHz per antenna.

Out -of -block requirements:

Base station baseline power limit:

Frequency range	Maximum mean EIRP	Measurement band-width
Uplink frequencies in the range of 698-736 MHz	- 50 dBm per cell	5 MHz
FDD uplink frequencies in the range of 832-862 MHz	- 49 dBm per cell	5 MHz
Downlink frequencies in the range of 738-791 MHz	- 16 dBm per cell	5 MHz
FDD downlink frequencies in the range of 791-821 MHz	- 16 dBm per cell	5 MHz

In a multi-sector site, the value per 'cell' corresponds to the value for one of the sectors.

Technical Terms

700 MHz Frequency band

Base station transitional power limits in the range 733 – 788 MHz

Frequency range	Maximum mean EIRP	Measurement band-width
- 10 to – 5 MHz from lower block edge	18 dBm per antenna	5 MHz
- 5 to – 0 MHz from lower block edge	22 dBm per antenna	5 MHz
0 to + 5 MHz from upper block edge	22 dBm per antenna	5 MHz
+5 to + 10 MHz from upper block edge	18 dBm per antenna	5 MHz

Base station transitional power limits above 788 MHz

Frequency range	Maximum mean EIRP	Measurement band-width
788-791 MHz for a block with upper edge at 788 MHz	21 dBm per antenna	5 MHz
788-791 MHz for a block with upper edge at 783 MHz	16 dBm per antenna	5 MHz
791-796 MHz for a block with upper edge at 788 MHz	19 dBm per antenna	5 MHz
791-796 MHz for a block with upper edge at 783 MHz	17 dBm per antenna	5 MHz
796-801 MHz for a block with upper edge at 788 MHz	17 dBm per antenna	5 MHz

Technical Terms

700 MHz Frequency band

Base station power limits for the part of the duplex gap not used for downlink-only or PPDR radio communications or M2M radio communications

Frequency range	Maximum mean EIRP	Measurement band-width
- 10 to 0 MHz offset from FDD downlink lower band edge or lower edge of the lowest downlink-only block, but above FDD uplink upper band edge	16 dBm per antenna	5MHz
More than 10 MHz offset from FDD downlink lower band edge or lower edge of the lowest downlink-only block, but above FDD uplink upper band edge	-4 dBm per antenna	5 MHz

Base station out-of-block power limits for the part of guard bands not used for PPDR radio communications or M2M radio communications:

Frequency range	Maximum mean EIRP	Measurement band-width
Spectrum 694 -703 MHz	-32 dBm per cell	1 MHz
Spectrum 788-791 MHz	14 dBm per antenna	3 MHz

Technical Terms

700 MHz Frequency band



For base station out-of-block baseline power limits for spectrum below 694 MHz, where digital terrestrial television broadcasting is present – maximum mean EIRP should not exceed -23 dBm/8 MHz per cell.

Terminal station in-block power limit should not exceed 23 dBm.

Technical Terms

3400-3800 MHz Frequency band

The standard technical specifications for the use of the spectrum are based on the specifications in the COMMISSION IMPLEMENTING DECISION (EU) 2019/235 for a network operating on LTE technology in the 3400-3800 MHz range:

· mode of operation - TDD (Time Division Duplex)

· The license holder is obliged to provide the appropriate staff structure (Frame structure) to ensure compatibility with the LTE-TDD network structure, as well as to be able to coordinate networks with 5G NR structure (including staff structure) in the regions bordering Georgia - according to ECC Recommendation (20) 03 23-10-2020.

These Technical Specifications define the technical requirements for both active (AAS) and non-active (non-AAS) antenna systems.

Technical Terms

3400-3800 MHz Frequency band

Baseline power limits for non-AAS and AAS base stations with synchronized network operation:

Frequency range	Non-ASS EIRP limit	AAS TRP limit
Below – 10 MHz offset from lower block edge Above 10 MHz offset from upper block edge	Min (Pmax-43,13) dBm/(5 MHz) per antenna	Min($P_{Max'}$ – 43, 1) dBm/(5 MHz) per cell

Transitional region power limits, for non-AAS base stations with synchronized WBB ECS network operation, out-of-block:

Frequency range	Non-ASS EIRP limit	Measurement band-width
– 10 to – 5 MHz offset from lower block edge or 5 to 10 MHz offset from upper block edge	Min(P_{Max} – 43, 15) dBm per antenna	5 MHz
– 5 to 0 MHz offset from lower block edge or 0 to 5 MHz offset from upper block edge	Min(P_{Max} – 40, 21) dBm per antenna	5 MHz

When using non-AAS antenna systems EIRP. Limit for unsynchronized and semi synchronized blocks, below the lower block edge and above the upper block edge, within 3 400 -3 800 MHz is -34 dBm/5 MHz per cell.

Technical Terms

3400-3800 MHz Frequency band

Transitional region power limits, for AAS base stations with synchronized WBB ECS network operation, out-of-block:

Frequency range	ASS EIRP. limit	Measurement band-width
– 10 to – 5 MHz offset from lower block edge or 5 to 10 MHz offset from upper block edge	Min(P_{Max} – 43, 12) dBm per cell	5 MHz
– 5 to 0 MHz offset from lower block edge or 0 to 5 MHz offset from upper block edge	Min(P_{Max} – 40, 16) dBm per cell	5 MHz

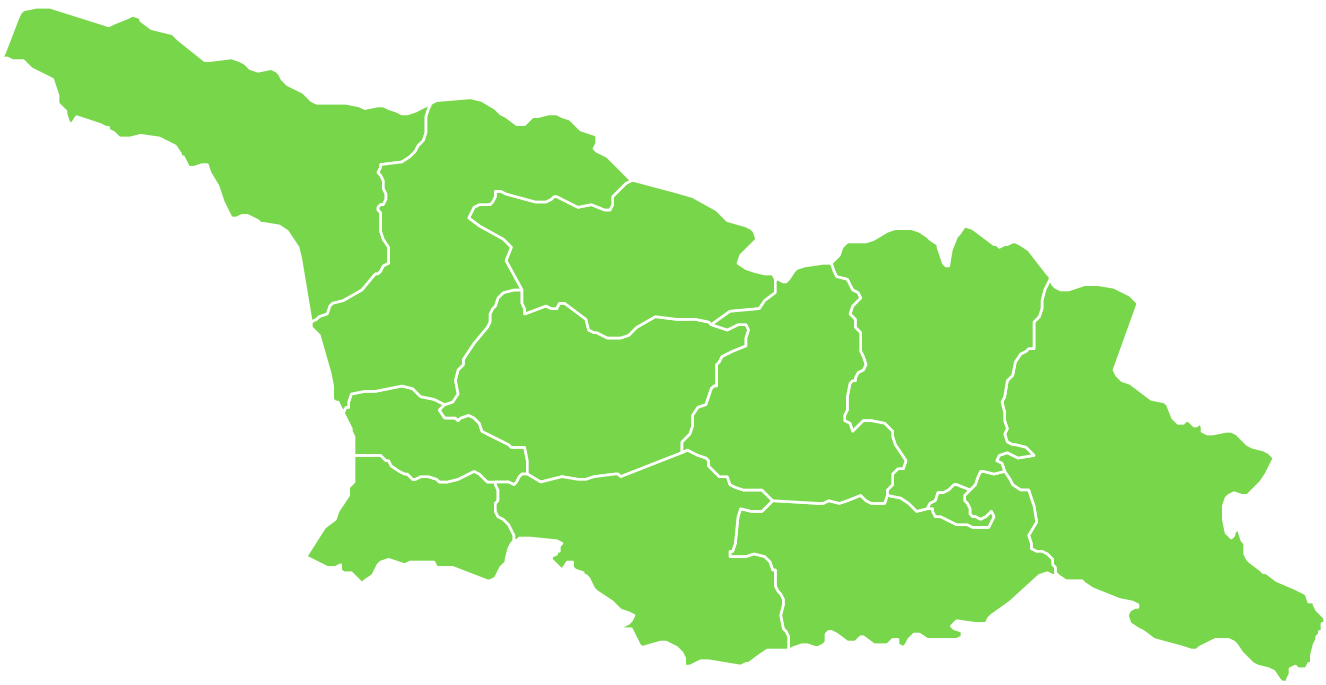
When using AAS antenna systems, AAS TRP limit for unsynchronized and semi synchronized blocks, below the lower block edge and above the upper block edge, within 3 400 -3 800 MHz is 43 dBm/5 MHz per cell.

The maximum (mean) in-block power for the terminal station 28 dBm TRP.

Cross-Border Frequency Usage

In order to fully manage the international coordination process, which is carried out in accordance with ECC Recommendation (15) 01, the license holder is obliged to provide the Commission with detailed information available on stations/transmitters, which are planned to be located (positioned) within ≤30 km from the Georgian border.

The use of frequencies in cross-border areas is usually influenced by international coordination and monitoring processes and its outcomes.



Consultation Process

The Commission welcomes active stakeholder engagement and feedback to ensure that all issues related to 5G service are covered and all parties' views are explored and analyzed. Please, in your response, also reflect your views on the topics listed below.

- Whether the access to national roaming and / or local roaming should be considered within the framework of the mentioned licenses and in what form
- Whether additional obligations for the standalone lots should be determined
- Whether there should be one bundled lot reserved for a new entrant
- Whether coverage commitments for the newcomer and the existing MNOs should be different
- Whether the so called MVNO access for 5G network should be regulated
- Present your vision infrastructure sharing and joint venture possibilities (Unified 5G Network)

Consultation Process

The consultation process of the document includes 4 (four) weeks from the date of publication. Deadline for submitting comments / questions to the commission: December 22, 2020 (18:00). Comments / questions are submitted electronically to the following e-mail address: post@comcom.ge.

Comments/questions received on this issue and relevant answers will be taken into account during the preparation of the auction decision and will be published on the Commission's website www.comcom.ge, 5g.gov.ge.

Normative Acts and Recommendations

- COMMISSION IMPLEMENTING DECISION (EU) 2016/687
- CEPT Report 60
- ECC Decision (15)01
- COMMISSION IMPLEMENTING DECISION (EU) 2019/235
- ECC Report 281
- ECC Decision (11)06
- ECC Recommendation (15)01

Glossary

MHz - Mega Herz
GHz - Giga Herz

FDD - Frequency Division Duplex -

BEM -Block Edge Mask

EIRP - Equivalent Isotropic Radiated Power

TDD - Time Division Duplex

AAS - Active Antenna Systems

non-AAS - non-active antenna systems

TRP - Total Radiated Power

Minimum mean speed - for a subscriber, registered in the standard operating mode, on the cell (mode in which the cell serves 2 or more subscribers)

PMAX - Maximum mean carrier power measured as "Equivalent Isotropically Rated Power" (e.i.r.p.) per Transmitter / Antenna

QMAX - Maximum mean value measured as "Total Radiated Power" per Transmitter, on a specific cell

Spectrum cap - maximum amount of radio spectrum frequnecy

5G - 5th Generation

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