

Spectrum Roadmap for Mobile Communications in Norway

Frequency bands for mobile communications and 5G

February 5th 2019

English abstract of the 2nd edition ["Frekvenskompass" \(Norwegian\)](#)

Summary

The Spectrum Roadmap presents the Norwegian Communications Authority's (Nkom) strategic plan for the frequency bands identified for mobile communications in Norway. The document provides information about assessments in regards to upcoming awards and the introduction of next generation mobile networks (5G) in Norway.

In the coming years, large spectrum resources will become available and awarded in Norway. The established frequency bands¹ for mobile communication accounts for approximately 550 MHz of spectrum. By 2023, additional frequency bands, such as the 700 MHz, 1500 MHz (SDL²), 2300 MHz and 3400-3800 MHz bands, which in total amounts to over 650 MHz of spectrum, will become available. When including the 26 GHz frequency band, at least another 1000 MHz is anticipated made available for mobile communication in the coming years.

The European Union (EU) and the Radio Spectrum Policy Group (RSPG) have identified the 700 MHz, 3400-3800 MHz and the 26 GHz frequency bands as pioneer bands for early introduction of 5G. Making these spectrum resources available will be vital, also in Norway, for the introduction of 5G. The current use of the pioneer bands has to be changed and prepared for awarding procedures. For some bands, Nkom will consider new awarding methodologies such as regional limited licenses and pooling of several bands into one award (multi-band award). Nkom will consult the industry and follow international harmonization closely in order to provide and arrange the best possible foundation for introducing 5G. The international 5G-standardization and technical conditions are expected to be completed within 2020.

Nkom's opinion is that there might be positive synergies in awarding the 2300 MHz frequency band together with the 2600 MHz, 3400-3800 MHz and 26 GHz frequency bands where the existing licenses expire approximately at the same time (end of 2022). Such a multi-band award can be efficient and beneficial for both the interested parties and the authorities. This could also enable parties to acquire large contiguous spectrum resources, in which Nkom believes is key for introduction of 5G. Similar synergies will correspondingly also be applicable for a multi-band award of the supplemental downlink (SDL³) in the 700 MHz and 1500 MHz frequency bands, given the availability of equipment supporting these bands.

International harmonization of technical conditions is important for national assessments and regulatory framework. Nkom will implement the European framework and contribute to

¹ 450 MHz, 800 MHz, 900 MHz, 1800 MHz, 2100 MHz and 2600 MHz

² Supplemental Downlink

³ Nkom has not determined the application of the center gap in the 700 MHz-band, but provisional assessment is that the center gap can be used for SDL

harmonized conditions across Europe. It is also important to consider national circumstances and requirements in conjunction with the awarding of these bands, in order to maximize benefits for the Norwegian consumers and society in general.

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1 Introduction

The Spectrum Roadmap published by the Norwegian Communications Authority (Nkom) presents Nkom's strategic plan for the frequency bands identified for mobile communications in Norway. The document includes information about Nkom's assessments in regards to the upcoming awards and the introduction of next generation mobile networks (5G).

The roadmap lists all frequency bands identified for mobile communication, their current usage and their anticipated future application. Information regarding these bands, including the awarding schedule, is made public to provide transparency and increased predictability for interested parties.

Nkom will use the Spectrum Roadmap in the assessment and management of future spectrum awards. Further assessments will also take into account national requirements and interests, identification and harmonization of frequency bands for mobile communications (IMT) internationally, standardization and availability of equipment (ecosystem).

Please send any comments or general feedback regarding the contents of the Spectrum Roadmap to firmapost@nkom.no.

The Spectrum Roadmap is an English abstract of ["Frekvenskompass" \(Norwegian only\)](#).

1.1 5G and strategic pioneer bands in Europe

The European Commission (EC) launched the [5G for Europe: An Action Plan](#) in 2016. The plan entailed each member state preparing a national timetable for the implementation of 5G, encouraging and facilitating testing of 5G, making spectrum available in a timely manner, having at least one 5G-ready city by 2020 and deploying widespread 5G-coverage in several big cities and main roads by 2025.

Norway will follow the goals set forth in the Action Plan, among other through the [Nordic-Baltic 5G strategy](#) and with this roadmap.

The RSPG published the report [Strategic roadmap towards 5G for Europe](#) where the group identified and recommended the following pioneer bands for 5G:

- 700 MHz (3GPP band 28 and 67)
- 3400-3800 MHz (3GPP band 42, 43 and n78)
- 24,25-27,5 GHz (3GPP band n258)

[Nkom has previously announced the possibilities for testing of 5G](#), and interested parties are invited to contact Nkom for more information.

2 Frequency bands for mobile communication

2.1 Current state in Norway

In Norway, operators use the 450 MHz, 800 MHz, 900 MHz, 1800 MHz, 2100 MHz and 2600 MHz frequency bands for public mobile communication. The bandwidth of these bands constitutes roughly 550 MHz, and are used for GSM (2G), UMTS (3G), LTE (4G) and internet of things (IoT). Table 1 shows the specific usage of each frequency band. Operators with support for UMTS (3G) have announced that 3G will be phased out by the end of 2020. These available frequencies can then be used for other technologies such as LTE (4G) or 5G.

Band	Licensee	Amount [MHz]	Percent of total	Used technology
450		10 MHz	1.8 %	LTE (4G)
	ICE	10 MHz	1.8 %	
800		60 MHz	10.9 %	LTE (4G) IoT
	ICE	20 MHz	3.6 %	
	Telenor	20 MHz	3.6 %	
	Telia	20 MHz	3.6 %	
900		70 MHz	12.8 %	GSM (2G) UMTS (3G) LTE (4G) IoT
	ICE	10 MHz	1.9 %	
	Telenor	30 MHz	5.5 %	
	Telia	30 MHz	5.4 %	
1800		150 MHz	27.3 %	LTE (4G)
	ICE	40 MHz	7.3 %	
	Telenor	60 MHz	10.9 %	
	Telia	50 MHz	9.1 %	
2100		120 MHz	21.6 %	UMTS (3G) LTE (4G)
	[Unused]	30 MHz	5.4 %	
	ICE	10 MHz	1.8 %	
	Telenor	40 MHz	7.2 %	
	Telia	40 MHz	7.2 %	
2600		140 MHz	25.5 %	LTE (4G)
	NextNet	20 MHz	3.6 %	
	Telenor	80 MHz	14.6 %	
	Telia	40 MHz	7.3 %	
Total		550 MHz	100 %	

Table 1: Distribution of today's spectrum resources used in public mobile communication

Mobile communication is in the next few years expected to use also the 700 MHz, 1500 MHz, 2300 MHz, 3400-3800 MHz and parts of the 26 GHz frequency band. Below 6 GHz this constitutes around 650 MHz in total, which doubles the current amount of spectrum used for mobile communication in Norway. A total bandwidth of 1200 MHz will then be available for mobile communication below 6 GHz. Including the 26 GHz band the available bandwidth for mobile communication would increase even further. Table 2 shows the licensees and distribution of future bands for mobile communication below 6 GHz.

Band	Licensee	Amount [MHz]	Percent of total	Comment
700		60 MHz	4.6 %	Up- and downlink (FDD)
	NTV	60 MHz	4.6 %	
700-SDL³		20 MHz	3.1 %	Downlink (FDD)
	NTV	20 MHz	3.1 %	
1500-SDL	[Unused]	61 MHz	9.3 %	Downlink (FDD)
	Fixed links	30 MHz	4.6 %	
2300	NextGenTel	22 MHz	3.4 %	Up- and downlink (TDD)
	Norkring	20 MHz	3.1 %	
	NRK	10 MHz	1.5 %	
	SBS Discovery	10 MHz	1.5 %	
	TV2	10 MHz	1.5 %	
	Bandgap	12 MHz	1.8 %	
	General use	16 MHz	2.4 %	
2600-TDD		50 MHz	7.7 %	Up- and downlink (TDD)
	Cayman Spectrum	50 MHz	7.7 %	
3500	[Unused]	14 MHz	5.9 %	Up- and downlink (TDD)
	Broadnet	39 MHz	3.7 %	
	Ceragon Networks	25 MHz	3.2 %	
	Get	21 MHz	5.2 %	
	NextGenTel	34 MHz	3.2 %	
	Telenor	21 MHz	3.1 %	
	Vestlink	20 MHz	2.1 %	

3700		190 MHz	29.1 %	Up- and downlink (TDD)
	Telenor	90 MHz	13.8 %	
	Telia	100 MHz	15.3 %	
Total		653 MHz	100 %	

Table 2: Distribution of future frequency bands for mobile communications below 6 GHz

2.2 Preliminary award schedule

Table 3 shows the preliminary schedule for upcoming awards for frequency bands assigned to mobile communication in Norway.

Year Band	2017	2018	2019	2020	2021	2022	2023	2024
450	■	■	A	E				
700			A	E				
700-SDL ³				E	A	■		
800								
900	A	E						
1500-SDL		■	E	A	■			
1800								
2100	■	■	A					
2300	■	■	■	A	■	E		
2600				A	■	E		
3400-3800				A	■	E		
26 GHz	E		E	A	■	■	■	E

Table explanation:

Awarding process ■

A – Preliminary timeframe of the award

E – Expiration of existing license (In case of several Es, different expiration dates exists)

Table 3: Preliminary schedule for awarding bands assigned for mobile communication in Norway

2.2.1 Completed awards

Since the beginning of 2000, Nkom has mainly used auctions to award blocks of spectrum. Table 4 lists all auctions in frequency bands identified for mobile communication.

Band (MHz)	Year	Title	MHz	Price (MNOK)
900	2001	Auction #1 (900 MHz)	14.90	11.5
1800	2001	Auction #2 (1800 MHz)	51.30	0.1
2100	2003	Auction #3 (2 GHz)	30.00	62.0
450	2004	Auction #4 (453-457.5 / 463-467.5 MHz)	4.50	1.1
3500	2004	Auction #5 (3413.5-3500.0 / 3513.5-3600.0 MHz)	86.50	49.9
2300	2006	Auction #7 (2-3 GHz)	22.00	7.0
2600	2007	Auction #8 (2500-2690 MHz and 2010-2025 MHz)	205.00	228.9
2600	2008	Auction #9 (2680-2690 MHz)	10.00	2.7
1800	2008	Auction #12 (1790-1800 MHz)	10.00	0.1
800, 900, 1800	2013	Auction #14 (800 MHz, 900 MHz and 1800 MHz)	100.00	1784.7
2100	2012	Auction #18 (2 GHz)	44.60	45.0
900	2013	Auction #21 (900 MHz-band offshore)	15.10	7.5
800	2014	Auction #22 (800 MHz-band offshore)	30.00	16.0
1800	2015	Auction #23 (1800 MHz)	15.00	878.0
900	2017	Auction #24 (900 MHz)	19.90	790.2
26000	2016	Auction #26 (26 GHz)		
700, 2100	2019	Auction #28 (700 MHz and 2.1 GHz-bands)	44.80	
700, 900	2019	Auction #29 (700 MHz- and 900 MHz-bands offshore)	49.90	

Table 4: Summary of completed awards in Norway

2.3 450 MHz

Key facts Frequency range: <ul style="list-style-type: none">- Uplink: 452.5 – 457.5 MHz- Downlink: 462.5-467.5 MHz Bandwidth: 5 MHz Band plan: 1 block of 5 MHz Duplex mode: FDD	Current state in Norway Used for mobile communications Part of the band awarded: 100% Awards: 2004 - Auction #4 (453-457.5 / 463-467.5 MHz) Part of established mobile spectrum: 2% Type of usage: LTE (4G), mobile broadband Current license expiration: 31. December 2019
Nkom's assessment Nkom plans awarding the band in 2019	
Preliminary award schedule 2018: Prepare award procedure 2019: Awarding of the resources 2020: New licenses will come into force 2020	

2.4 700 MHz (5G pioneer band)

Key facts Frequency range: <ul style="list-style-type: none">- Uplink: 703-733 MHz- Downlink: 758-788 MHz- Preliminary assessment (SDL): 738-758 MHz Bandwidth: <ul style="list-style-type: none">- 30 MHz- 20 MHz SDL Band plan: <ul style="list-style-type: none">- 6 blocks of 5 MHz- 4 blocks of 5 MHz (SDL) Duplex mode: FDD	Current state in Norway Used for broadcasting services until 1 st of November 2019. Started reallocating from DTT to mobile services Part of the band awarded: 100% Awards: 2006 - DTT in Norway Part of established mobile spectrum: 9% + 3% (SDL) Type of usage: DTT, reallocation to LTE (4G), 5G (NR) Current license expiration: 1. November 2019
Nkom's assessment RSPG has identified the 700 MHz band together with the 3400-3800 MHz and 26 GHz bands as pioneer bands for early introduction of 5G. Nkom has made an assessment on what kind of usage that will provide the most effective utilization and highest socioeconomic benefits, and the conclusion is that awarding the complete 700 MHz-band (3GPP band 28) for mobile communications would provide the highest socioeconomic benefits compared to setting aside spectrum for PPDR. For the center gap in the 700 MHz-band, Nexia have published a socioeconomic analysis with recommendations for supplemental downlink (SDL ³) (3GPP-band 67). Nkom considers it beneficial to award this part together with the 1500 MHz-band if there are availability of equipment supporting these bands, and market demand.	
Preliminary award schedule 2018: Prepare award procedure 2019: Auction and awarding of the resources 2019: New issued licenses valid from 1. November 2019 (SDL) (3GPP band 67): 2019: Prepare award procedure 2020: Auction (if chosen) and awarding of the resources, licenses will come into force from 2020	

2.5 800 MHz

Key facts Frequency range: <ul style="list-style-type: none">- Uplink: 832-862 MHz- Downlink: 791-821 MHz Bandwidth: 30 MHz Band plan: 6 blocks of 5 MHz Duplex mode: FDD	Current state in Norway Used for mobile communications Part of the band awarded: 100% Awards: 2013 - Auction #14 (800 MHz, 900 MHz and 1800 MHz) Part of established mobile spectrum: 11% Type of usage: LTE (4G), IoT Current license expiration: 31. December 2033
Nkom's assessment Nkom awarded the 800 MHz-band in 2013 with 20 years duration on service and technology neutral conditions. Nkom's further work with the band will include following international harmonization and in particular WRC-23 where the band is preliminary on the agenda. Including a complete review of 470-960 MHz if treated at the conference.	
Preliminary award schedule 2030: Expected start of award procedure 2034: New licenses will come into force in 2034	

2.6 900 MHz

<p>Key facts</p> <p>Frequency range:</p> <ul style="list-style-type: none">- Uplink: 880-915 MHz- Downlink: 925-960 MHz <p>Bandwidth: 35 MHz</p> <p>Band plan: 7 blocks of 5 MHz</p> <p>Duplex mode: FDD</p>	<p>Current state in Norway</p> <p>Used for mobile communications</p> <p>Part of the band awarded: 100%</p> <p>Awards:</p> <ul style="list-style-type: none">- 2013 - Auction #14 (800 MHz, 900 MHz and 1800 MHz)- 2017 - Auction #24 (900 MHz) <p>Part of established mobile spectrum: 13%</p> <p>Type of usage: GSM (2G), UMTS (3G), LTE (4G), IoT, MTC</p> <p>Current license expiration: 31. December 2033</p>
<p>Nkom's assessment</p> <p>Nkom awarded parts of the 900 MHz band in 2013 and the remaining parts in 2017 with a duration until 2033 on service and technology neutral terms. European regulation of the band was updated in 2018 with support for IoT. Nkom's further work with the band will follow the international harmonization and in particular WRC-23 where the band is preliminary on the agenda.</p>	
<p>Preliminary award schedule</p> <p>2030: Prepare awarding process</p> <p>2034: New licenses will come into force 2034</p>	

2.7 1500 MHz (1.5 GHz-band, L-band)

Key facts Frequency range: - Downlink: 1427-1518 MHz Bandwidth: 90 MHz Band plan: 18 blocks of 5 MHz Duplex mode: FDD	Current state in Norway Not used for mobile communications Part of the band awarded: Individual fixed link licenses Part of established mobile spectrum: 14% Type of usage: Fixed link, reassigned to mobile broadband (LTE (4G), 5G (NR)) Current license expiration: 31. December 2019/2020
Nkom's assessment The harmonization of the 1500 MHz-band in Europe is finished in 2018 and 2019. Nkom plans to award the whole band, 90 MHz, in an multi-band award together with the SDL part of the 700 MHz-band (3GPP band 67), if there are availability of equipment supporting these bands. Nkom prepares the award process in 2019 with the actual award finalized in 2020.	
Preliminary award schedule 2018: Whole band harmonized in CEPT and Europe for mobile broadband 2019: Prepare awarding process 2020: Auction (if chosen) and awarding of the resources, new licenses will come into force 2020	

2.8 1800 MHz

<p>Key facts</p> <p>Frequency range:</p> <ul style="list-style-type: none">- Uplink: 1710-1785 MHz- Downlink: 1805-1880 MHz <p>Bandwidth: 75 MHz</p> <p>Band plan: 15 blocks of 5 MHz</p> <p>Duplex mode: FDD</p>	<p>Current state in Norway</p> <p>Used for mobile communications</p> <p>Part of the band awarded: 100%</p> <p>Awards:</p> <ul style="list-style-type: none">- 2013 - Auction #14 (800 MHz, 900 MHz and 1800 MHz)- 2015 - Auction #23 (1800 MHz) <p>Part of established mobile spectrum: 27%</p> <p>Type of usage: LTE (4G), IoT</p> <p>Current license expiration:</p> <ul style="list-style-type: none">- 31. December 2028 (26%, 20 MHz)- 31. December 2033 (74%, 55 MHz)
<p>Nkom's assessment</p> <p>Nkom awarded 55 MHz of the 1800 MHz-band in 2013 and 2015 with a duration until 2033 on service and technology neutral terms. European regulation of the band was updated in 2018 with support for IoT. Nkom's further work with the band will follow the international harmonization.</p>	
<p>Preliminary award schedule</p> <p>2025: Prepare awarding process for licenses with expiration date 31. December 2028</p>	

2.9 2100 MHz

Key facts Frequency range: <ul style="list-style-type: none">- Uplink: 1920-1980 MHz- Downlink: 2110-2170 MHz Bandwidth: 60 MHz Band plan: 12 blocks of 5 MHz Duplex mode: FDD	Current state in Norway Used for mobile communications Part of the band awarded: 75% Awards: 2012 - Auction #18 (2 GHz) Part of established mobile spectrum: 22% Type of usage: UMTS (3G), LTE (4G) Current license expiration: 31. December 2032
Nkom's assessment Based on an assessment and consultation on better indoor mobile reception which was completed in January 2018, Nkom concluded that the parts of the band previously not awarded (2 x 15 MHz,) should be used for more capacity for mobile communication. Vacant spectrum (2x15 MHz) will be awarded together with the 700 MHz-band (3GPP band 28) in 2019.	
Preliminary award schedule 2018: Prepare award procedure 2019: Award together with the 700 MHz-band (3GPP band 28), new issued licenses will come into force after the award.	

2.10 2300 MHz

<p>Key facts</p> <p>Frequency range:</p> <ul style="list-style-type: none">- Uplink: 2300-2400 MHz- Downlink: 2300-2400 MHz <p>Bandwidth: 100 MHz</p> <p>Band plan: 20 blocks of 5 MHz</p> <p>Duplex mode: TDD</p>	<p>Current state in Norway</p> <p>Used for video PMSE</p> <p>Part of the band awarded: 88%</p> <p>Awards: 2006 - Auction #7 (2,3 GHz)</p> <p>Part of established mobile spectrum: 15%</p> <p>Type of usage: Broadband, video PMSE (mobile video links) and radio links</p> <p>Current license expiration: 31. December 2019</p>
<p>Nkom's assessment</p> <p>Based on the consultation on the use of the band in 2017, Nkom has decided that the band will be allocated to mobile communication from 1st of January 2023. Licenses with short duration (3 years) are made available in the band for PMSE.</p> <p>The 2300 MHz-band is an important band for mobile communication outside Europe, hence there is an established equipment ecosystem available.</p> <p>In our opinion, there might be positive synergies in awarding the 2300 MHz frequency band together with the 2600 MHz, 3400-3800 MHz and 26 GHz frequency bands where the currently issued licenses expire approximately at the same time (end of 2022). Such a multi-band award can be efficient and beneficial for both the interested parties and the authorities. It could also enable parties to acquire large contiguous spectrum resources, in which Nkom believes is key for the introduction of 5G.</p>	
<p>Preliminary award schedule</p> <p>2018: Award of today's services until 31 December 2022</p> <p>2019: Prepare award procedure for mobile communication</p> <p>2020: Auction (if chosen) and awarding of the resources</p> <p>2023: New licenses will come into force 2023</p>	

2.11 2600 MHz

<p>Key facts</p> <p>Frequency range:</p> <ul style="list-style-type: none">- Uplink: 2500-2570 MHz- Downlink: 2620-2690 MHz- TDD: 2570-2620 MHz <p>Bandwidth: 70 MHz (FDD) + 50 MHz (TDD)</p> <p>Band plan: 14 blocks of 5 MHz + 10 blocks of 5 MHz</p> <p>Duplex mode: FDD/TDD</p>	<p>Current state in Norway</p> <p>Used for mobile communications</p> <p>Part of the band awarded: 100%</p> <p>Awards: 2007 - Auction #8 (2500-2690 MHz and 2010-2025 MHz)</p> <p>Part of established mobile spectrum: 25% (FDD)</p> <p>Type of usage: LTE (4G)</p> <p>Current license expiration: 31 December 2022</p>
<p>Nkom's assessment</p> <p>In our opinion, there might be positive synergies in awarding the 2600 MHz frequency band together with the 2300 MHz, 3400-3800 MHz and 26 GHz frequency bands where the currently issued licenses expire approximately at the same time (end of 2022). Such a multi-band award can be efficient and beneficial for both the interested parties and the governmental authorities. It could also enable parties to acquire large contiguous spectrum resources, in which Nkom believes is key for the introduction of 5G.</p>	
<p>Preliminary award schedule</p> <p>2019: Prepare awarding process</p> <p>2020: Auction (if chosen) and awarding of the resources</p> <p>2023: New licenses will come into force 2023</p>	

2.12 3400-3800 MHz (5G pioneer band)

<p>Key facts</p> <p>Frequency range:</p> <ul style="list-style-type: none">- Uplink: 3400-3800 MHz- Downlink: 3400-3800 MHz <p>Bandwidth: 400 MHz</p> <p>Band plan:</p> <ul style="list-style-type: none">- 80 blocks of 5 MHz with TDD in entire 3400-3800 MHz-band <p>Duplex mode: TDD</p>	<p>Current state in Norway</p> <p>Not used for mobile communications</p> <p>Part of the band awarded: 100%</p> <p>Awards:</p> <ul style="list-style-type: none">- 2004 - Auction # 5 (3413.5-3500.0 / 3513.5-3600.0 MHz)- 2016 - TeliaSonera (now Telia Norge AS) and Telenor Norge AS acquires spectrum in the 3600-3800 MHz band <p>Part of established mobile spectrum: 19% + 21%</p> <p>Type of usage:</p> <ul style="list-style-type: none">- 3400-3600 MHz: FWA (WiMax) (Awarded as service and technology neutral licenses)- 3600-3800 MHz: 4G (LTE), 5G <p>Current license expiration: 31 December 2022</p>
<p>Nkom's assessment</p> <p>RSPG has identified the 3400-3800 MHz band together with the 700 MHz and 26 GHz bands as pioneer bands for early introduction of 5G. In our opinion, there might be positive synergies in awarding the 3400-3800 MHz frequency band together with the 2300 MHz, 2600 MHz and 26 GHz frequency bands where the currently issued licenses expire approximately at the same time (end of 2022). Such a multi-band award can be efficient and beneficial for both the interested parties and the governmental authorities. It could also enable parties to acquire large contiguous spectrum resources, in which Nkom believe is key for the introduction of 5G.</p>	
<p>Preliminary award schedule</p> <p>2019: Prepare awarding process</p> <p>2020: Auction (if chosen) and awarding of the resources</p> <p>2023: New licenses will come into force 2023</p>	

2.13 24.25-27.50 GHz (26 GHz-band) (5G pioneer band)

<p>Key facts</p> <p>Frequency range:</p> <ul style="list-style-type: none">- Uplink: 24250-27500MHz- Downlink: 24250-27500 MHz <p>Bandwidth: 3250 MHz</p> <p>Band plan:</p> <ul style="list-style-type: none">- 3GPP standardizes block sizes of 50, 100, 200 and 400 MHz- Preliminary harmonization suggests 16 blocks of 200 MHz <p>Duplex mode: TDD</p>	<p>Current state in Norway</p> <p>Not allocated for mobile communications, adopting ECC decisions</p> <p>Part of the band awarded: ~43%</p> <p>Awards: Awaits WRC-19</p> <p>Part of established mobile spectrum: 85%</p> <p>Type of usage: Radio links in the band 24,5-26,5 GHz, reassigns to mobile broadband 5G (NR)</p> <p>Current license expiration: 31. December 2019 and 31. December 2024</p>
<p>Nkom's assessment</p> <p>RSPG has identified the 26 GHz band together with the 700 MHz and 3400-3800 MHz bands as pioneer bands for early introduction of 5G. In our opinion, there might be positive synergies in awarding the 26 GHz frequency band together with the 2300 MHz, 2600 MHz and 3400-3800 MHz frequency bands where the currently issued licenses expire approximately at the same time (end of 2022). Such a multi-band award can be efficient and beneficial for both the interested parties and the governmental authorities. It could also enable parties to acquire large contiguous spectrum resources, in which Nkom believes is key for the introduction of 5G.</p>	
<p>Preliminary award schedule</p> <p>2019: Prepare awarding process</p> <p>2020: Auction (if chosen) and awarding of the resources</p> <p>2023: New licenses will come into force 2023</p>	