



# **ECO INFORMATION DOCUMENT**

**on**

# **THE USE OF MOBILE BANDS<sup>1</sup> in CEPT**

<sup>1</sup> - Mobile bands are those bands addressed in ECC Decisions (06)01 and (06)13

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**This document summarizes the information collected from administrations and operators concerning the use of mobile bands in CEPT.**

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## Albania (January 2010)

**Bands: 880-915 MHz / 925-960 MHz and (1710-1785)/(1805-1880) MHz**

<b>GSM Subscriber</b>	<b>Total E-GSM</b>	<b>Total GSM-900</b>	<b>Total GSM-1800</b>	<b>Technology used</b>	<b>GSM Penetration</b>	<b>Licence duration, tradability</b>
4161655	(880- 890) / (925-935) MHz  (2x10) MHz	(890-915 ) / (935-960) MHz  (2 x 25) MHz	(1710 1785 ) / (1805 – 1880) MHz  (2x75)MHz		129%	
<b>Operator</b>	<b>Frequencies ( Down Link/ Up Link)</b>				<b>No. of Subscriber (%)</b>	
Albanian Mobile Communications (AMC)	0	(890.1-898.10)/ (935.1-943.1) ( 2 X 8 MHz)	(1719.9-1728.9) / (1814.9-1823.9) (2x9) MHz	GSM	1,908,987 (45.89%)	May 96-19 Aug. 2014 Not tradable
Vodafone Albania	0	(906.9-914.9)/ (951.9-959.9) ( 2 X 8 MHz)	(1750.7-1759.7)/ (1845.7-1854.7) (2x9) MHz	GSM	1,651,511 (39.67%)	2001-2016 Not tradable
Eagle Mobile	0	(898.3-906.3)/ (943.3-951.3) ( 2 X 8 MHz)	(1710.1-1719.7)/ (1805.1-1814.1) (2x9) MHz	GSM	601,117 (14.44%)	2008 -2019 Not tradable
Mobile 4 AL	(881.9-889.9)/ (926.9-934.9) MHz (2x8)MHz	0	(1729.1-1738.1)/ (1824.1-1833.1) (2x9) MHz	GSM	0 ( 0%)	June 2009 – June 2024
Anologe	None	None	None		-	
Average	Each operator has in using ( 2x8) MHz at GSM900 MHz and ( 2x9) MHz at GSM1800 MHz					

## Andorra (January 2001)

<b>GSM Subscribers</b>	<b>Total E-GSM</b>		<b>Total GSM-900</b>	<b>Total GSM-1800</b>	<b>GSM Penetration</b>
26 000	0		2 x 25.0 MHz	0	40.0 %
<b>Operator</b>	<b>Service start</b>	<b>License expiry</b>	<b>Frequencies</b>		<b>No. of Subscribers</b>
STA (Mobiland)	1993	unlimited	890.0 – 915.0 / 935.0-960.0 MHz (2 x 25.0 MHz)		26 000
<b>Average</b>			<b>2 x 25.0 MHz</b>		
<b>Analogue:</b>			None		

The Andorran government is planning to grant a 1800 MHz license to STA.

## Austria (August 2008)

### 880-915 MHz / 925-960 MHz<sup>2</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
mobilkom austria AG	935.0-937.6 MHz 928.6-937,6 MHz 943.2-950.8 MHz	GSM	Dec. 1992- Dec. 2015 tradeable
One GmbH	925.2-928.2 MHz	GSM	Sept. 1998 – Dec. 2017 tradeable
T-Mobile Austria GmbH	938.0-942.8 MHz 951.2-958.8. MHz	GSM	Oct. 1996 – Dec. 2015 tradeable

<sup>2</sup> – In this band duplex separation is 45 MHz, uplink and downlink bands are equal in size

Note: Frequencies given are center frequencies of GSM-channels used by operators

### 1710-1785 MHz / 1805-1880 MHz<sup>3</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
mobilkom austria AG	1807.4-1817.4 MHz 1826.6-1828.8 MHz 1836.4-1837.4 MHz 1850.4-1851.4 MHz	GSM	Dec. 1992- Dec. 2015 tradeable
One GmbH	1829.2-1834.6 MHz 1853.2-1876.4 MHz	GSM	Sept. 1998 – Dec. 2017 tradeable
T-Mobile Austria GmbH	1805.2-1807,0 MHz 1817.8-1826.2 MHz 1835.0-1836.0 MHz 1837.8--1850.0 MHz 1851.8-1852.8 MHz	GSM	Oct. 1996 – Dec. 2015 tradeable

<sup>3</sup> – In this band duplex separation is 95 MHz, uplink and downlink bands are equal in size

Note: Frequencies given are center frequencies of GSM-channels used by operators

### 1900-1920 MHz / 2010-2025 MHz

Operator	Frequencies	Technology used (optional)	Licence duration, tradability
Hutchison 3G Austria GmbH	1915,1 – 1920,1 MHz		Nov. 2000 – Dec. 2020 tradeable
Mobilkom austria AG	1900,1 – 1910,1 MHz		Nov. 2000 – Dec. 2020 tradeable
T-Mobile Austria GmbH	1910,1-1915,1 MHz 2019,9-2024,7 MHz		Nov. 2000 – Dec. 2020 tradeable

Note: This band is currently not in use.

### 1920-1980 MHz / 2110-2170 MHz<sup>4</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
Hutchison 3G Austria GmbH	2120,1 - 2134,9 MHz	UTRA FDD	Nov. 2000 – Dec. 2020 tradeable
Mobilkom austria AG	2110,3-2120,1 MHz 2149,7/2154,7 MHz	UTRA FDD	Nov. 2000 – Dec. 2020 tradeable
One GmbH	2134,9-2149,7 MHz	UTRA FDD	Nov. 2000 – Dec. 2020 tradeable
T-Mobile Austria GmbH	2154,7-2169,7 MHz	UTRA FDD	Nov. 2000 – Dec. 2020 tradeable

<sup>4</sup> – In this band duplex separation is 190 MHz, uplink and downlink bands are equal in size

## Azerbaijan (December 2005)

GSM Subscriber	Total E-GSM	Total GSM-900	Total GSM-1800	GSM Penetration
	-	Two operators	-	1 %
Operator	Service Start	License expires	Frequencies	No. of Subscriber
Bakcell			880-888; 890-902.5; 925-933; 935-947	
Azercell			902.5-915; 947.5-960	
<b>Average</b>			<b>2 x 20.8 MHz</b>	-

### *IMT-2000/UMTS 2 GHz Bands*

Operator	License start	License expiry (for duration)	Frequencies	Comments
Datacell			1900-1910 MHz	

## Belgium (January 2010)

### 880-915 MHz / 925-960 MHz<sup>2</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
Belgacom Mobile (Proximus)	935.1-941.1 MHz 947.1-953.1 MHz	GSM (UTRA FDD allowed)	08/04/1995-08/04/2015 Tradable
Mobistar	941.1-947.1 MHz 953.1-959.1 MHz	GSM (UTRA FDD allowed)	27/11/1995-27/11/2015 Tradable
KPN Belgium (Base)	925.1-935.1 MHz 959.1-959.9 MHz	GSM (UTRA FDD allowed)	02/07/1998-02/07/2013 Tradable

<sup>2</sup> – In this band duplex separation is 45 MHz, uplink and downlink bands are equal in size

### 1710-1785 MHz / 1805-1880 MHz<sup>3</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
Belgacom Mobile (Proximus)	1805.1-1820.1 MHz	GSM	08/04/1995-08/04/2015 Tradable
Mobistar	1820.1-1835.1 MHz	GSM	27/11/1995-27/11/2015 Tradable
KPN Belgium (Base)	1853.1-1875.1 MHz	GSM	02/07/1998-02/07/2013 Tradable

<sup>3</sup> – In this band duplex separation is 95 MHz, uplink and downlink bands are equal in size

### 1900-1920 MHz / 2010-2025 MHz

Operator	Frequencies	Technology used (optional)	Licence duration, tradability
Belgacom Mobile (Proximus)	1914.9-1920.3 MHz	UTRA TDD	15/03/2001-15/03/2021 Tradable
Mobistar	1909.9-1914.9 MHz	UTRA TDD	15/03/2001-15/03/2021 Tradable
KPN Belgium (Base)	1899.9-1904.9 MHz	UTRA TDD	15/03/2001-15/03/2021 Tradable

### 1920-1980 MHz / 2110-2170 MHz<sup>4</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
Belgacom Mobile (Proximus)	2110.3-2125.3 MHz	UTRA FDD	15/03/2001-15/03/2021 Tradable
Mobistar	2154.9-2169.7 MHz	UTRA FDD	15/03/2001-15/03/2021 Tradable
KPN Belgium (Base)	2125.3-2140.1 MHz	UTRA FDD	15/03/2001-15/03/2021 Tradable

<sup>4</sup> – In this band duplex separation is 190 MHz, uplink and downlink bands are equal in size

## Bosnia and Herzegovina (April 2010)

### 880-915 MHz / 925-960 MHz<sup>2</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
Telekom Srpske	935.20 – 943.00	[GSM 900]	12.10.2004 – 12.10.2019
BH Telecom	951.20 – 959.00	[GSM 900]	12.10.2004 – 12.10.2019
HT Mostar	943.2 – 951.00	[GSM 900]	12.10.2004 – 12.10.2019

<sup>2</sup> – In this band duplex separation is 45 MHz, uplink and downlink bands are equal in size

### 1710-1785 MHz / 1805-1880 MHz<sup>3</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
Telekom Srpske	1842.80 – 1.854.60	[GSM 1800]	31.12.2004 – 12.10.2019
BH Telecom	1805.20 – 1.817.00	[GSM 1800]	11.02.2005 – 12.10.2019
HT Mostar	1823.00 – 1830.80	[GSM 1800]	28.12.2004 – 12.10.2019

<sup>3</sup> – In this band duplex separation is 95 MHz, uplink and downlink bands are equal in size

### 1900-1920 MHz/2010-2025 MHz

Operator	Frequencies	Technology used (optional)	Licence duration, tradability
Telekomunikacije RS	1910 – 1915 MHz	UTRA TDD	01.04.2009. -31.03.2024, non-tradable
BH Telecom	1900 – 1905 MHz	UTRA TDD	01.04.2009. -31.03.2024, non-tradable
HT Mostar	1905 – 1910 MHz	UTRA TDD	01.04.2009. -31.03.2024, non-tradable

### 1920-1980 MHz/2110-2175 MHz

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
Telekomunikacije RS	2140 – 2155 MHz	UTRA FDD	01.04.2009. -31.03.2024, non-tradable
BH Telecom	2110 – 2125 MHz	UTRA FDD	01.04.2009. -31.03.2024, non-tradable
HT Mostar	2125 – 2140 MHz	UTRA FDD	01.04.2009. -31.03.2024, non-tradable

- In this band duplex separation is 190 MHz, uplink and downlink bands are equal in size

## Bulgaria (February 2010)

### 880-915 MHz / 925-960 MHz<sup>2</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
Mobiltel EAD	925.1-926.9 MHz 940.7-950.1 MHz	GSM	08.06.1994 - 08.06.2014, transferable
Cosmo Bulgaria Mobile EAD	927.1-928.9 MHz 950.5-959.9 MHz	GSM	11.01.2001 - 23.01.2021, transferable
Bulgarian Telecommunications Company AD	929.1-930.9 MHz 930.9-940.3 MHz	GSM	07.06.2004 - 07.06.2024, transferable

<sup>2</sup> – In this band duplex separation is 45 MHz, uplink and downlink bands are equal in size

### 1710-1785 MHz / 1805-1880 MHz<sup>3</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
Mobiltel EAD	1805.1-1815.1 MHz	GSM	08.06.1994 - 08.06.2014, transferable
Cosmo Bulgaria Mobile EAD	1815.5-1825.5 MHz	GSM	11.01.2001 - 23.01.2021, transferable
Bulgarian Telecommunications Company AD	1825.9-1835.9 MHz	GSM	07.06.2004 - 07.06.2024, transferable

<sup>3</sup> – In this band duplex separation is 95 MHz, uplink and downlink bands are equal in size

### 1900-1920 MHz / 2010-2025 MHz

Operator	Frequencies	Technology used (optional)	Licence duration, tradability
Mobiltel EAD	2010-2015 MHz	UTRA TDD	25.04.2005 - 25.04.2025, transferable
Cosmo Bulgaria Mobile EAD	2020-2025 MHz	UTRA TDD	25.04.2005 - 25.04.2025, transferable
Bulgarian Telecommunications Company AD	2015-2020 MHz	UTRA TDD	25.04.2005 - 25.04.2025, transferable

### 1920-1980 MHz / 2110-2170 MHz<sup>4</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
Mobiltel EAD	2110-2120 MHz	UTRA FDD	25.04.2005 - 25.04.2025, transferable
Cosmo Bulgaria Mobile EAD	2125-2130 MHz	UTRA FDD	25.04.2005 - 25.04.2025, transferable
Bulgarian Telecommunications Company AD	2120-2125 MHz	UTRA FDD	25.04.2005 - 25.04.2025, transferable

<sup>4</sup> – In this band duplex separation is 190 MHz, uplink and downlink bands are equal in size

## Croatia (January 2010)

### 880-915 MHz / 925-960 MHz<sup>2</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
T-Mobile	930.400 – 932.600, 941.200 - 953.000 MHz	GSM, UMTS*	SEP 2009 – OCT 2024, not tradable
VIPnet	932.800 - 940.800, 953.400 - 959.400 MHz	GSM, UMTS*	JUL 2009 – OCT 2024, not tradable
Tele 2	925.400 – 930.200 MHz	GSM, UMTS*	APR 2008 – DEC 2024, not tradable

<sup>2</sup> – In this band duplex separation is 45 MHz, uplink and downlink bands are equal in size

\* – Technology neutral licenses, operators have possibility to use both technologies

### 1710-1785 MHz / 1805-1880 MHz<sup>3</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
Tele 2	1805.2 – 1817.0 MHz	GSM, UMTS*	DEC 2004 – DEC 2024, not tradable
T-Mobile	1835.2 – 1843.4 MHz	GSM, UMTS*	SEP 2009 – OCT 2024, not tradable

<sup>3</sup> – In this band duplex separation is 95 MHz, uplink and downlink bands are equal in size

\* – Technology neutral licenses, operators have possibility to use both technologies

### 1900-1920 MHz / 2010-2025 MHz

Operator	Frequencies	Technology used (optional)	Licence duration, tradability
T-Mobile	1900 - 1905 MHz	TDD	OCT 2004 – OCT 2024, Not tradable
Tele 2	1905-1910 MHz	TDD	DEC 2004 – DEC 2024, not tradable
VIPnet	1910-1915 MHz	TDD	OCT 2004 – OCT 2024, not tradable

### 1920-1980 MHz / 2110-2170 MHz<sup>4</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
T-Mobile	2110 - 2125/1920 - 1935 MHz	FDD	OCT 2004 – OCT 2024, Not tradable
Tele 2	2125 - 2140/1935 - 1950 MHz	FDD	DEC 2004 – DEC 2024, not tradable
VIPnet	2140 - 2155/1950 - 1965 MHz	FDD	OCT 2004 – OCT 2024, not tradable

<sup>4</sup> – In this band duplex separation is 190 MHz, uplink and downlink bands are equal in size

## Cyprus (June 2010)

### 900 MHz Mobile Band

880-915 MHz / 925-960 MHz (paired frequency arrangement)

Operator	Frequency band licensed, uplink	Frequency band licensed, downlink	Technology used (optional)	Licence duration, tradability
CYTA	902,6-914,8 MHz	947,6-959,8 MHz	GSM	1995 – February 2024, non-tradable
MTN	890,2-902,4 MHz	935,2-947,4 MHz	GSM	December 2003 – December 2023, non-tradable

### 1800 MHz Mobile Band

1710-1785 MHz / 1805-1880 MHz (paired frequency arrangement)

Operator	Frequency band licensed, uplink	Frequency band licensed, downlink	Technology used (optional)	Licence duration, tradability
CYTA	1710,2-1735 MHz	1805,2-1830 MHz	GSM	1995 – February 2024, non-tradable
MTN	1735,2-1760 MHz	1830,2-1855 MHz	GSM	December 2003–December 2023, non-tradable

### 2 GHz Mobile Band

1920-1980 MHz / 2110-2170 MHz (paired frequency arrangement)

Operator	Frequency band licensed, uplink	Frequency band licensed, downlink	Technology used (optional)	Licence duration, tradability
CYTA	1920-1935 MHz	2110-2125 MHz	UMTS	September 2005–February 2024, non-tradable
MTN	1935-1950 MHz	2125-2140	UMTS	December 2004–December 2023, non-tradable

1900-1920 MHz and 2010-2025 MHz (unpaired frequency arrangement)

Operator	Frequency band licensed	Technology used (optional)	Licence duration, tradability
CYTA	1900-1905 MHz	UMTS	September 2005-February 2024, non-tradable
MTN	1905-1910 MHz	UMTS	December 2004–December 2023, non-tradable

## Czech Republic (February 2010)

### 880-915 MHz / 925-960 MHz<sup>2</sup>

Operator	Frequencies (downlink) [MHz]	Technology used (optional) <sup>x)</sup>	Licence duration, tradability <sup>xx)</sup>
Telefonica O2	880.1–881.9/925.1–926.9 885.5–886.9/930.5–931.9 897.1–899.9/942.1–944.9 902.1–904.1/947.1–949.1 906.1–909.3/951.1–954.3 911.7–912.9/956.7–957.9	GSM	07. 02. 2016
T-Mobile	886.9–889.9/931.9–934.9 894.3–897.1/939.3–942.1 899.9–902.1/944.9–947.1 904.1–906.1/949.1–951.1 909.3–911.7/954.3–956.7	GSM	22. 10. 2024
Vodafone	881.9–885.5/926.9–930.5 889.9–894.3/934.9–939.3 912.9–914.9/957.9–959.9	GSM	15. 01. 2021

<sup>2</sup> – In this band duplex separation is 45 MHz, uplink and downlink bands are equal in size

### 1710-1785 MHz / 1805-1880 MHz<sup>3</sup>

Operator	Frequencies (downlink) [MHz]	Technology used (optional) <sup>x)</sup>	Licence duration, tradability <sup>xx)</sup>
Telefonica O2	1711.3-1721.9/1806.3-1816.9 1723.9-1727.3/1818.9-1822.3	GSM	07. 02. 2016
T-Mobile	1729.3-1747.3/1824.3-1842.3	GSM	22. 10. 2024
Vodafone	1762.9-1780.9/1857.9-1875.9	GSM	15. 01. 2021

<sup>3</sup> – In this band duplex separation is 95 MHz, uplink and downlink bands are equal in size

### 1900-1920 MHz / 2010-2025 MHz

Operator	Frequencies [MHz]	Technology used (optional)	Licence duration, tradability <sup>xx)</sup>
Telefonica O2	1900.1-1905.1	IMT/UMTS, TDD	01. 01. 2022
T-Mobile	1910.1-1915.1	IMT/UMTS, TDD	22. 10. 2024
Vodafone	1905.1-1910.1	IMT/UMTS, TDD	23. 02. 2025

### 1920-1980 MHz / 2110-2170 MHz<sup>4</sup>

Operator	Frequencies (downlink) [MHz]	Technology used (optional)	Licence duration, tradability <sup>xx)</sup>
Telefonica O2	1920.3-1940.1/2110.3-2130.1	IMT/UMTS, FDD	01. 01. 2022
T-Mobile	1959.9-1979.7/2149.9-2169.7	IMT/UMTS, FDD	22. 10. 2024
Vodafone	1940.1-1959.1/2130.1-2149.9	IMT/UMTS, FDD	23. 02. 2025

<sup>4</sup>) In this band duplex separation is 190 MHz, uplink and downlink bands are equal in size

<sup>x)</sup> Note 1: Technological neutrality implemented.

<sup>xx)</sup> Note 2: Licenses are conditionally transferable.

## Denmark (June 2010)

### 880-915 MHz / 925-960 MHz<sup>2</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
Telenor	905.0-913.8/950.0-958.8 MHz	GSM	Until Mar 2012
TDC	896.0-904.8/941.0-949.8 MHz	GSM	Until Mar 2012
Teliasonera	880.2-881.6/925.2-926.6 MHz	GSM	Until Feb 2011
	882.8-885.4/927.8-930.4 MHz	GSM	Until Feb 2011
	885.6-892.8/930.6-937.8 MHz	GSM	Until Feb 2011
	893.0-895.8/938.0-940.8 MHz	GSM	Until Feb 2011

<sup>2</sup> – In this band duplex separation is 45 MHz, uplink and downlink bands are equal in size

- NITA has issued decisions on redistribution of the licenses in the 900 MHz band, which enter into effect on 1 January 2011. The redistribution frees 2 x 5 MHz to a new entrant from 1 January 2011. The existing licenses are revoked on 31 December 2010.

### 1710-1785 MHz / 1805-1880 MHz<sup>3</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
Telenor	1710.2-1717.2/1805.2-1812.2 MHz	GSM	Until Jun 2017
	1717.4-1729.4/1812.4-1824.4 MHz	GSM	Until Jan 2011
TDC	1729.6-1731.6/1824.6-1826.6 MHz	GSM	Until Jan 2011
	1731.8-1746.0/1826.8-1841.0 MHz	GSM	Until Jun 2017
	1775.0-1784.8/1870.0-1879.8 MHz	GSM	Until Jan 2011
Teliasonera	1746.2-1760.4/1841.2-1855.4 MHz	GSM	Until Jun 2017
	1760.6-1774.8/1855.6-1869.8 MHz	GSM	Until Jun 2017

<sup>3</sup> – In this band duplex separation is 95 MHz, uplink and downlink bands are equal in size

- NITA has issued decisions on redistribution of the licenses in the 1800 MHz band, which enter into effect on 1 January 2011. The redistribution frees 2 x 10 MHz to a new entrant from 1 January 2011. The existing licenses are revoked on 12 June 2010.

### 1900-1920 MHz / 2010-2025 MHz

Operator	Frequencies	Technology used (optional)	Licence duration, tradability
TDC	1900-1905 MHz		Until Oct 2021
Telenor	1910-1915 MHz		Until Oct 2021
3	1915-1920 MHz		Until Oct 2021
Telia	1905-1910 MHz		Until Oct 2021

### 1920-1980 MHz / 2110-2170 MHz<sup>4</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
TDC	1935-1950/2125-2140 MHz		Until Oct 2021
Telenor	1965-1980/2155-2170 MHz		Until Oct 2021
3	1920-1935/2110-2125 MHz		Until Oct 2021
Telia	1950-1965/2140-2155 MHz		Until Oct 2021

<sup>4</sup> – In this band duplex separation is 190 MHz, uplink and downlink bands are equal in size

## Estonia (February 2010)

### 880-915 MHz / 925-960 MHz<sup>2</sup>

Operator	Frequencies	Technology used (optional)	Licence duration, tradability
EMT AS	880.2-883.2 / 925.2-928.2 MHz (2 x 3.2 MHz) 898.2-905.8 / 943.2-950.8 MHz (2 x 7.8 MHz)	Neutral	1995-2010 (the validity of licence shall be extended once a year); Non-tradable
Elisa Eesti AS ...	883.6-886.6 / 928.6-931.6 MHz (2 x 3.2 MHz) 906.2-913.8/951.2-958.8 MHz (2x7.8 MHz)	Neutral	1995-2010 (the validity of licence shall be extended once a year); Non-tradable
Tele2 Eesti AS	887.0-890.0 / 932.0-935.0 MHz (2 x 3.2 MHz) 890.2-897.8 / 935.2-942.8 MHz (2 x 7.8 MHz)	Neutral	2003-2008 (the validity of licence shall be extended once a year); Non-tradable

<sup>2</sup> – In this band duplex separation is 45 MHz, uplink and downlink bands are equal in size

### 1710-1785 MHz / 1805-1880 MHz<sup>3</sup>

Operator	Frequencies	Technology used (optional)	Licence duration, tradability
EMT AS	1759.4-1759.8 / 1854.4-1854.8 MHz 1770.0-1784.8 / 1865.0-1879.8 MHz (2 x 15.6 MHz)	Neutral	1995-2010 (the validity of licence shall be extended once a year); Non-tradable
Elisa Eesti AS	1736.0-1736.8 / 1831.0-1831.8 MHz 1753.4-1758.6 / 1848.4-1853.6 MHz 1760.2-1769.6 / 1855.2-1864.6 MHz (2 x 16 MHz)	Neutral	1995-2010 (the validity of licence shall be extended once a year); Non-tradable
Tele2 Eesti AS	1737.2 -1753.0 / 1832.2 -1848.0 MHz (2 x 15.8 MHz)	Neutral	2003-2010 (the validity of licence shall be extended once a year); Non-tradable

<sup>3</sup> – In this band duplex separation is 95 MHz, uplink and downlink bands are equal in size

### 1900-1920 MHz / 2010-2025 MHz

Operator	Frequencies	Technology used (optional)	Licence duration, tradability
EMT AS	1905.2-1910.0 MHz	TDD	2003-2013 Non-tradable
Elisa Eesti AS ...	1900.2-1905.0 MHz	TDD	2003-2013 Non-tradable
Tele2 Eesti AS	1910.2-1915.0 MHz	TDD	2003-2013 Non-tradable
ProGroup Holding OÜ	1915.2-1920.0 MHz	TDD	2007-2017 Non-tradable

**1920-1980 MHz / 2110-2170 MHz<sup>4</sup>**

<b>Operator</b>	<b>Frequencies</b>	<b>Technology used (optional)</b>	<b>Licence duration, tradability</b>
EMT AS	1950.1-1964.9 / 2140.1-2154.9 MHz	FDD	2003-2013 Non-tradable
Elisa Eesti AS	1964.9-1979.7 / 2154.9-2169.7 MHz	FDD	2003-2013 Non-tradable
Tele2 Eesti AS	1935.3-1950.1 / 2125.3-2140.1 MHz	FDD	2003-2013 Non-tradable
ProGroup Holding OÜ	1920.3-1935.3 / 2110.3-2125.3 MHz	FDD	2007-2017 Non-tradable

<sup>4</sup> – In this band duplex separation is 190 MHz, uplink and downlink bands are equal in size

## Finland (February 2010)

In these tables the term licence means a radio licence.

### 880-915 MHz / 925-960 MHz<sup>2</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
DNA Finland Ltd.	925.100 - 938.300 MHz (Nationwide except Province of Åland)	GSM UTRA FDD	1.11.2007- 31.12.2015
TeliaSonera Finland Corp.	938,500 - 949,100 MHz (Nationwide except Province of Åland) 930.100 - 947.300 MHz (Province of Åland)	GSM UTRA FDD  GSM	1.11.2007- 31.12.2015
Elisa Corp.	949,300 - 959,900 MHz (Nationwide except Province of Åland)	GSM UTRA FDD	1.11.2007- 31.12.2015
Ålands Mobiltelefon Ab	925,100 - 929,900 MHz (Province of Åland) 947.500 - 959.900 MHz (Province of Åland)	GSM  GSM	- 31.12.2015  - 31.12.2015

<sup>2</sup> – In this band duplex separation is 45 MHz, uplink and downlink bands are equal in size.  
In this table the term licence means a radio licence.

### 1710-1785 MHz / 1805-1880 MHz<sup>3</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
TeliaSonera Finland Corp.	1805.100 - 1829.900 MHz (Nationwide)	GSM UTRA FDD LTE	- 31.12.2015
DNA Finland Ltd.	1830.100 - 1854.900 MHz (Nationwide except Province of Åland)	GSM UTRA FDD LTE	- 31.12.2015
Elisa Corp.	1855.100 - 1879.900 MHz (Nationwide except Province of Åland)	GSM UTRA FDD LTE	- 31.12.2015

<sup>3</sup> – In this band duplex separation is 95 MHz, uplink and downlink bands are equal in size.  
In this table the term licence means a radio licence.

### 1900-1920 MHz / 2010-2025 MHz

Operator	Frequencies	Technology used (optional)	Licence duration, tradability
TeliaSonera Finland Corp.	1900.000 - 1904.800 MHz (Nationwide)	UTRA TFF	- 18.3.2019
DNA Finland Ltd.	1905.000 - 1909.800 MHz (Nationwide except Province of Åland)	UTRA TDD	- 18.3.2019
Elisa Corp.	1910.000 - 1914.800 MHz (Province of Åland) 1915.000 - 1919.800 MHz (Nationwide except Province of Åland)	UTRA TDD	- 31.12.2011  - 18.3.2019
Ålands Mobiltelefon Ab	1915.000 - 1919.800 MHz (Province of Åland)	UTRA TDD	- 31.12.2011

– In this table the term licence means a radio licence.

**1920-1980 MHz / 2110-2170 MHz<sup>4</sup>**

<b>Operator</b>	<b>Frequencies (downlink)</b>	<b>Technology used (optional)</b>	<b>Licence duration, tradability</b>
Ålands Mobiltelefon Ab	2110.300 - 2125.300 MHz (Provence of Åland)	UTRA FDD	- 31.12.2011
Elisa Corp.	2110.300 - 2130.100 MHz (Nationwide except Provence of Åland) 2125.300 - 2140.100MHz (Provence of Åland)	UTRA FDD	- 18.3.2019
DNA Finland Ltd.	2130.100 - 2149.900 MHz (Nationwide except Provence of Åland)	UTRA FDD	- 31.12.2011
TeliaSonera Finland Corp.	2149.900 - 2169.700 MHz (Nationwide)	UTRA FDD	- 18.3.2019

<sup>4</sup> – In this band duplex separation is 190 MHz, uplink and downlink bands are equal in size. In this table the term licence means a radio licence.

**2500-2570 MHz / 2620-2690 MHz\* and 2570-2620 MHz**

<b>Operator</b>	<b>Frequencies (downlink)</b>	<b>Technology used (optional)</b>	<b>Licence duration, tradability</b>
DNA Finland Ltd	2620.000 - 2640.000 MHz (Nationwide except Provence of Åland)	LTE	- 16.12.2029 Limited tradability.
TeliaSonera Finland Corp.	2640.000 - 2665.000 MHz (Nationwide except Provence of Åland)	LTE	- 16.12.2029 Limited tradability.
Elisa Corp.	2665.000 - 2690.000 MHz (Nationwide except Provence of Åland)	LTE	- 16.12.2029 Limited tradability.
Pirkanmaan Verkko Ltd.	2570.000 - 2620.000 MHz (Nationwide except Provence of Åland)	tbd.	- 16.12.2029 Limited tradability.

\* – In this band duplex separation is 120 MHz, uplink and downlink bands are equal in size. In this table the term licence means a radio licence and concession.

## France (May 2010)

### Preliminary notes:

1 – The frequency plans listed below are only for metropolitan France. The frequency plans in the French overseas territories are not documented hereafter.

2 – The 880-915/925-960 MHz and 1710-1785/1805-1880 MHz frequency plans in the very dense areas are different from the frequency plans outside these areas. The very dense areas consist of 8 areas located around major cities: Paris, Lille, Strasbourg, Lyon, Nice, Marseille, Toulouse and Bayonne. ARCEP decision 2006-0140 provides with a detailed definition of these areas.

3 – In the 880-915/925-960 MHz frequency plan, the areas „around the military bases“ are defined as the areas within 20 kilometers from 13 military bases, the locations of which are defined in ARCEP decision 2002-0401.

### 880-915 MHz / 925-960 MHz<sup>2</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
Free Mobile	<b>From 12 Jul 2011 to 31 Dec 2012</b> Other areas: 944.9 – 949.9 MHz <b>From 1 January 2013</b> 944.9 – 949.9 MHz	UMTS	12 January 2010-11 January 2030 ; spectrum rights of use (SRU) are not tradable
Bouygues Télécom	<b>Until 11 July 2011</b> Very dense areas: 925.1 – 934.9 MHz Other areas: 925.1 – 934.9 MHz (except the 25 first channels which cannot be used around military bases) and 945.1 – 949.9 MHz <b>From 12 July 2011</b> 925.1 – 934.9 MHz (except the 25 first channels which cannot be used around military bases)	GSM or UMTS (GSM currently deployed)	9 December 2009 – 8 December 2024, SRU not tradable
Orange France	<b>Until 11 July 2011</b> Very dense areas: 935.1 – 947.5 MHz Other areas: 935.1 – 945.1 MHz <b>From 12 Jul 2011 to 31 Dec 2012</b> Very dense areas: 935.1 – 947.5 MHz Other areas: 934.9 – 944.9 MHz <b>From 1 January 2013</b> 934.9 – 944.9 MHz	GSM or UMTS (GSM currently deployed)	25 March 2006 – 24 March 2021, SRU not tradable
Société Française du Radiotéléphone	<b>Until 31 December 2012</b> Very dense areas: 947.5 – 959.9 MHz Other areas: 949.9 – 959.9 MHz <b>From 1 January 2013</b> 949.9 – 959.9 MHz	GSM or UMTS (GSM currently deployed)	25 March 2006 – 24 March 2021, SRU not tradable

<sup>2</sup> – In this band duplex separation is 45 MHz, uplink and downlink bands are equal in size

### 1710-1785 MHz / 1805-1880 MHz<sup>3</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
Bouygues Télécom	Very dense areas: 1853.3 – 1879.9 MHz Other areas: 1858.3 – 1879.9 MHz	DCS	9 December 2009 – 8 December 2024, SRU not tradable
Orange France	1808.1 – 1831.9 MHz	DCS	25 March 2006 – 24 March 2021, SRU not tradable
Société Française du Radiotéléphone	1805.1 – 1807.9 MHz and 1832.1 – 1853.1 MHz	DCS	25 March 2006 – 24 March 2021, SRU not tradable

<sup>3</sup> – In this band duplex separation is 95 MHz, uplink and downlink bands are equal in size

**1900-1920 MHz / 2010-2025 MHz**

<b>Operator</b>	<b>Frequencies</b>	<b>Technology used (optional)</b>	<b>Licence duration, tradability</b>
Bouygues Télécom	1900.1 – 1905.1 MHz	UMTS – TDD (not deployed)	12 December 2002 – 11 December 2022, SRU not tradable
Orange France	1910.1 – 1915.1 MHz	UMTS – TDD (not deployed)	21 August 2001 – 20 August 2021, SRU not tradable
Société Française du radiotéléphone	1915.1 – 1920.1 MHz	UMTS – TDD (not deployed)	21 August 2001 – 20 August 2021, SRU not tradable

**1920-1980 MHz / 2110-2170 MHz<sup>4</sup>**

<b>Operator</b>	<b>Frequencies (downlink)</b>	<b>Technology used (optional)</b>	<b>Licence duration, tradability</b>
Free Mobile	2144,9 – 2149,9 MHz	UMTS-FDD	12 January 2010-11 January 2030 ; SRU not tradable
Bouygues Télécom	2125.3 – 2140.1 MHz	UMTS – FDD	12 December 2002 – 11 December 2022, SRU not tradable
Orange France	2154.9 – 2169.7 MHz	UMTS – FDD	21 August 2001 – 20 August 2021, SRU not tradable
Société Française du Radiotéléphone	2110.5 – 2125.3 MHz	UMTS – FDD	21 August 2001 – 20 August 2021, SRU not tradable

<sup>4</sup> – In this band duplex separation is 190 MHz, uplink and downlink bands are equal in size

At the end of February 2010, ARCEP launched a call for tender for the two remaining FDD blocks : 2140,1 – 2144,9 MHz, and 2149,9 – 2154,9 MHz (downlinks). The license will be granted before Autumn 2010. The results of the tender can be found at:

[http://www.arcep.fr/index.php?id=8571&L=1&tx\\_gsactualite\\_pi1\[uid\]=1278&tx\\_gsactualite\\_pi1\[annee\]=&tx\\_gsactualite\\_pi1\[theme\]=&tx\\_gsactualite\\_pi1\[motscle\]=&tx\\_gsactualite\\_pi1\[backID\]=26&cHash=360be91214](http://www.arcep.fr/index.php?id=8571&L=1&tx_gsactualite_pi1[uid]=1278&tx_gsactualite_pi1[annee]=&tx_gsactualite_pi1[theme]=&tx_gsactualite_pi1[motscle]=&tx_gsactualite_pi1[backID]=26&cHash=360be91214)

**Georgia (June, 2010)****800 MHz Mobile Band (the UHF band)****791-821 MHz / 832-862 MHz (paired frequency arrangement)**

<b>Operator</b>	<b>Frequency band, uplink</b>	<b>Frequency band, downlink</b>	<b>Technology used (optional)</b>	<b>Licence duration, tradability</b>
“Magticom” Ltd.	838.365-842.055 MHz	883.365-887.055 MHz	CDMA – 2000/800	June 2005 – June 2015; tradable
“Silkneti” Ltd.	827.955-831.645 MHz	872.955-876.645 MHz	CDMA – 2000/800	May 2006 – July 2013; tradable

**900 MHz Mobile Band****880-915 MHz / 925-960 MHz (paired frequency arrangement)**

<b>Operator</b>	<b>Frequency band, uplink</b>	<b>Frequency band, downlink</b>	<b>Technology used (optional)</b>	<b>Licence duration, tradability</b>
“Mobitel” Ltd.	880.335-883.365 MHz	925.335-928.365 MHz	GSM	January 2008 – January 2018; tradable
“Mobitel” Ltd.	887.055-889.515 MHz	932.055-934.515 MHz	GSM	January 2008 – January 2018; tradable
“Geocell” Ltd.	890.000-891.800 MHz	935.000-936.800 MHz	GSM	August 2009 – August 2019; tradable
“Magticom” Ltd.	891.800-895.000 MHz	936.800-940.000 MHz	GSM	July 2006 – July 2016; tradable
“Geocell” Ltd.	895.000-905.000 MHz	940.000-950.000 MHz	GSM	April 2007 – April 2017; tradable
“Magticom” Ltd.	905.000-915.000 MHz	950.000-960.000 MHz	GSM	July 2006 – July 2016; tradable

**1800 MHz Mobile Band****1710-1785 MHz / 1805-1880 MHz (paired frequency arrangement)**

<b>Operator</b>	<b>Frequency band, uplink</b>	<b>Frequency band, downlink</b>	<b>Technology used (optional)</b>	<b>Licence duration, tradability</b>
“Geocell” Ltd.	1710.000-1725.000 MHz	1805.000-1820.000 MHz	GSM	October, 2009 – October, 2019; tradable
“Geocell” Ltd.	1725.100-1740.000 MHz	1820.100-1835.000 MHz	GSM	August, 2003 – August, 2013; tradable
“Mobitel” Ltd.	1740.400-1741.200 MHz	1835.400-1836.200 MHz	GSM	January, 2007 – January, 2017; tradable
“Magticom” Ltd.	1745.100-1760.000 MHz	1840.100-1855.000 MHz	GSM	December 2005 - December 2015 tradable
“Magticom” Ltd.	1760.000-1775.000 MHz	1855.000-1870.000 MHz	GSM	May 2009 – May 2019; tradable
“Mobitel” Ltd.	1775.200-1780.200 MHz	1870.200-1875.200 MHz	GSM	December 2005 – July 2013; Tradable
“Mobitel” Ltd.	1780.600-1784.800 MHz	1875.600-1879.800 MHz	GSM	January 2007 – January 2017; tradable

## 2 GHz Mobile Band

### 1920-1980 MHz / 2110-2170 MHz (paired frequency arrangement)

Operator	Frequency band, uplink	Frequency band, downlink	Technology used (optional)	Licence duration, tradability
“Magticom” Ltd.	1920.000-1935.000 MHz	2110.000-2125.000 MHz	UMTS-FDD	November 2006 – June, 2016 tradable
“Magticom” Ltd.	1935.000-1950.000 MHz	2125.000-2140.000 MHz	UMTS-FDD	September 2005 - September 2015 tradable
“Geocell” Ltd.	1950.000-1965.000 MHz	2140.000-2155.000 MHz	UMTS-FDD	June 2006 – June 2016; tradable
“GTC - Georgian Telephone Company” Ltd.	1894.375-1899.375 MHz	1974.375-1979.375 MHz	Licence to be modified	October 2005 – October 2015; tradable

### 1900-1920 MHz and 2010-2025 MHz (unpaired frequency arrangement)

Operator	Frequency band	Technology used (optional)	Licence duration, tradability
“Magticom” Ltd.	1910.000-1915.000 MHz	UMTS-TDD	November 2006 – November 2016 tradable
“Magticom” Ltd.	1915.000-1920.000 MHz	UMTS-TDD	September 2005 – September 2015, Tradable
“Geocell” Ltd.	2010.000-2015.000 MHz	UMTS-TDD	June 2006 – June 2016 tradable

## Germany (March 2010)

### 880-915 MHz / 925-960 MHz<sup>2</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
EPlus	925.1 to 930.1 MHz	GSM	December 2016
Telefonica O2	930.1 to 935.1 MHz	GSM	December 2016
Vodafone	935.1 to 937.5 MHz	GSM	December 2016
T-Mobile	937.5 to 944.9 MHz	GSM	December 2016
Vodafone	944.9 to 951.1 MHz	GSM	December 2016
T-Mobile	951.1 to 955.5 MHz	GSM	December 2016
Vodafone	955.5 to 959.3 MHz	GSM	December 2016
T-Mobile	959.3 to 959.9 MHz	GSM	December 2016

<sup>2</sup> – In this band duplex separation is 45 MHz, uplink and downlink bands are equal in size

### 1710-1785 MHz / 1805-1880 MHz<sup>3</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
T-Mobile	1820.1 to 1825.1 MHz	GSM	December 2016
Telefonica O2	1830.1 to 1847.5 MHz	GSM	December 2016
Vodafone	1847.7 to 1853.1 MHz	GSM	December 2016
E-Plus	1858.1 to 1875.5 MHz	GSM	December 2016

<sup>3</sup> – In this band duplex separation is 95 MHz, uplink and downlink bands are equal in size

### 1900-1920 MHz / 2010-2025 MHz

Operator	Frequencies	Technology used (optional)	Licence duration, tradability
E-Plus	1905.1 to 1910.1 MHz		December 2020
T-Mobile	1910.1 to 1915.1 MHz		December 2020
Vodafone	1915.1 to 1920.1 MHz		December 2020

### 1920-1980 MHz / 2110-2170 MHz<sup>4</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
Vodafone	2110.3 to 2120.2 MHz	UMTS, FDD	December 2020
E-Plus	2130.1 to 2140.0 MHz	UMTS, FDD	December 2020
Telefonica O2	2149.9 to 2159.8 MHz	UMTS, FDD	December 2020
T-Mobile	2159.8 to 2169.7 MHz	UMTS, FDD	December 2020

<sup>4</sup> – In this band duplex separation is 190 MHz, uplink and downlink bands are equal in size

## Greece (January 2001)

<b>GSM Subscribers</b>	<b>Total E-GSM</b>		<b>Total GSM-900</b>	<b>Total GSM-1800</b>	<b>GSM Penetration</b>
5932000	0		2 x 20 MHz	2 x 25 MHz	57 %
<b>Operator</b>	<b>Service start</b>	<b>License expiry</b>	<b>Frequencies</b>		<b>No. of Subscribers</b>
Panafon SA	JUL 93	SEP 2012	905-915 / 950-960 MHz (2 x 10 MHz)		2 226 000
TeleSTET	JUL 93	SEP 2012	890-900 / 935-945 MHz (2 x 10 MHz)		1 645 000
Cosmote	MAR 98	MAR 2023	1760-1785 / 1855-1880 MHz (2 x 25 MHz)		2 061 000
<b>Average</b>			<b>2 x 15 MHz</b>		
Analogue			none		

## Hungary (August 2008)

### 880-915 MHz / 925-960 MHz<sup>2</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
Vodafone	935,1—942,9 MHz 958,9—959,7 MHz	GSM	08 10 2014 Not tradable
Pannon GSM	942,9—950,9 MHz	GSM	04 05 2016 Not tradable
T-Mobil	950,9—958,9 MHz	GSM	04 05 2016 Not tradable]

<sup>2</sup> – In this band duplex separation is 45 MHz, uplink and downlink bands are equal in size

### 1710-1785 MHz / 1805-1880 MHz<sup>3</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
Vodafone	1805,1—1820,1 MHz	GSM	08 10 2014 Not tradable
Pannon GSM	1853,1—1868,1 MHz	GSM	07 10 2014 Not tradable
	1835,1—1838,1 MHz 1868,1—1879,9 MHz		07 10 2014 Tradable with UTRA TDD and FDD frequencies
T-Mobil	1868,1—1879,9 MHz	GSM	07 10 2014 Not tradable

<sup>3</sup> – In this band duplex separation is 95 MHz, uplink and downlink bands are equal in size

### 1900-1920 MHz / 2010-2025 MHz

Operator	Frequencies	Technology used (optional)	Licence duration, tradability
Pannon GSM	1905—1910 MHz	UTRA TDD	31 12 2019 Tradable with GSM1800 and UTRA FDD frequencies
Vodafone	1910—1915 MHz	UTRA TDD	31 12 2019 Tradable with UTRA FDD frequencies
T-Mobil	1915—1920 MHz	UTRA TDD	31 12 2019 Tradable with UTRA FDD frequencies

### 1920-1980 MHz / 2110-2170 MHz<sup>4</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
T-Mobil	2110—2125 MHz	UTRA FDD	31 12 2019 Tradable with UTRA TDD frequencies
Vodafone	2125—2140 MHz	UTRA FDD	31 12 2019 Tradable with UTRA TDD frequencies
Pannon GSM	2140—2155 MHz	UTRA FDD	31 12 2019 Tradable with GSM1800 and UTRA TDD frequencies

<sup>4</sup> – In this band duplex separation is 190 MHz, uplink and downlink bands are equal in size

## Iceland (June 2010)

### 880-915 MHz / 925-960 MHz<sup>2</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
Síminn hf	900.1-913.9/945.1-958.9 MHz	GSM/UMTS	1.2.2000-14.2.2011
Og fjarskipti ehf	885.1-900.1/930.1-945.1 MHz	GSM/UMTS	14.2.2001-14.2.2011
Nova ehf	880.1-885.1/925.1-930.1 Hz	UMTS	22.1.2009-30.3.2022

<sup>2</sup> – In this band duplex separation is 45 MHz, uplink and downlink bands are equal in size

### 1710-1785 MHz / 1805-1880 MHz<sup>3</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
Síminn hf	1710.1-1725.1/1805.1-1820.1 MHz	GSM/UMTS	1.2.2000-1.2.2011
Og fjarskipti ehf	1726.1-1741.5/1821.1-1836.5 MHz	GSM	5.6.2000-5.6.2010
IMC Ísland ehf	1766.3-1769.1/1861.3-1864.1 MHz	GSM	27.6.2000-27.6.2010
Icecell ehf	1758.7-1766.1/1853.7-1861.1 MHz	GSM	28.6.2007-28.6.2017
Nova ehf	1751.1-1758.5/1846.1-1853.5 MHz	GSM/UMTS	1.7.2009-30.3.2022

<sup>3</sup> – In this band duplex separation is 95 MHz, uplink and downlink bands are equal in size

### 1900-1920 MHz / 2010-2025 MHz

Operator	Frequencies	Technology used (optional)	Licence duration, tradability
Nova ehf	1900-1905 MHz	TDD	30.3.2007-30.3.2022
Síminn hf	1915-1920 MHz	TDD	30.3.2007-30.3.2022
Og fjarskipti ehf	1910-1915 MHz	TDD	3.4.2007-3.4.2022

### 1920-1980 MHz / 2110-2170 MHz<sup>4</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
Nova ehf	1940-1955/2130-2145 MHz	FDD	30.3.2007-30.3.2022
Síminn hf	1920-1935/2110-2125 MHz	FDD	30.3.2007-30.3.2022
Og fjarskipti ehf	1955-1970/2145-2160 MHz	FDD	3.4.2007-3.4.2022

<sup>4</sup> – In this band duplex separation is 190 MHz, uplink and downlink bands are equal in size

## Ireland (June 2010)

### 880-915 MHz / 925-960 MHz<sup>2</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
Vodafone Ireland Limited	900.1 – 907.3 MHz / 945.1 – 952.3 MHz	GSM	15 May 2011 Not tradeable
Telefónica O <sub>2</sub> Communications (Ireland) Limited	907.5 - 914.7 MHz / 952.5 - 959.7 MHz	GSM	15 May 2011 Not tradeable
Meteor Mobile Communications Limited	892.7 – 899.9 MHz / 937.7 – 944.9 MHz	GSM	12 July 2015 Not tradeable

<sup>2</sup> – In this band duplex separation is 45 MHz, uplink and downlink bands are equal in size

### 1710-1785 MHz / 1805-1880 MHz<sup>3</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
Vodafone Ireland Limited	1736.3 - 1750.7 / 1831.3 - 1845.7 MHz	GSM	31 December 2014 Not tradeable
Telefónica O <sub>2</sub> Communications (Ireland) Limited	1750.9 - 1765.3 MHz / 1845.9 - 1860.3 MHz	GSM	31 December 2014 Not tradeable
Meteor Mobile Communications Limited	1765.5 – 1779.9 MHz / 1860.5 – 1874.9 MHz	GSM	12 July 2015 Not tradeable

<sup>3</sup> – In this band duplex separation is 95 MHz, uplink and downlink bands are equal in size

### 1900-1920 MHz / 2010-2025 MHz

Operator	Frequencies	Technology used (optional)	Licence duration, tradability
Vodafone Ireland Limited	1905 – 1910 MHz	UTRA TDD	October 2002 – October 2022 Not tradeable
Telefónica O <sub>2</sub> Communications (Ireland) Limited	1910 – 1915 MHz	UTRA TDD	October 2002 – October 2022 Not tradeable
Meteor Mobile Communications Limited	1900 – 1905 MHz	UTRA TDD	March 2007 – March 2027 Not tradeable

### 1920-1980 MHz / 2110-2170 MHz<sup>4</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
Hutchison 3G Ireland Limited	1920 – 1935 MHz paired with 2110 – 2125 MHz	UTRA FDD	July 2002 – July 2022 Not tradeable
Meteor Mobile Communications Limited	1935 – 1950 MHz paired with 2125 – 2140 MHz	UTRA FDD	March 2007 – March 2027 Not tradeable
Vodafone Ireland Limited	1950 – 1965 MHz paired with 2140 – 2155 MHz	UTRA FDD	October 2002 – October 2022 Not tradeable
Telefónica O <sub>2</sub> Communications (Ireland) Limited	1965 – 1980 MHz paired with 2155 – 2170 MHz	UTRA FDD	October 2002 – October 2022 Not tradeable

<sup>4</sup> – In this band duplex separation is 190 MHz, uplink and downlink bands are equal in size

## Italy (May 2010)

### 880-915 MHz / 925-960 MHz<sup>1</sup>

Operator	Frequencies (uplink/downlink)	Technology used (optional)	Licence duration, tradability <sup>2</sup>
WIND	880,2 – 884,8 / 925,2 – 929,8 MHz	GSM	31 january 2015
TELECOM ITALIA (TIM)	885,2 – 897,6 / 930,2 – 942,6 MHz	GSM	31 january 2015
VODAFONE	898,0 – 909,8 / 943,0 – 954,8 MHz	GSM	31 january 2015
WIND	910,2 – 914,8 / 955,2 – 959,8 MHz	GSM	31 january 2015

<sup>1</sup> – In this band duplex separation is 45 MHz, uplink and downlink bands are equal in size

<sup>2</sup> – The tradability is possible according to “Decreto Legislativo 1 August 2003, n°259 - Codice delle Comunicazioni Elettroniche”

### 1710-1785 MHz / 1805-1880 MHz<sup>3</sup>

Operator	Frequencies (uplink/downlink)	Technology used (optional)	Licence duration, tradability <sup>2</sup>
TELECOM ITALIA	1735,2 – 1749,8 / 1830,2 – 1844,8 MHz	GSM	31 january 2015
WIND	1755,2 – 1769,8 / 1850,2 – 1864,8 MHz	GSM	31 january 2015
VODAFONE	1770,2 – 1784,8 / 1865,2 – 1879,8 MHz	GSM	31 january 2015

<sup>3</sup> – In this band duplex separation is 95 MHz, uplink and downlink bands are equal in size

### 1900-1920 MHz / 2010-2025 MHz

Operator	Frequencies	Technology used (optional)	Licence duration, tradability <sup>2</sup>
H3G	1900 – 1905 MHz	UMTS TDD	31 december 2021
VODAFONE	1905 – 1910 MHz	UMTS TDD	31 december 2021
TELECOM ITALIA	1910 – 1915 MHz	UMTS TDD	31 december 2021
WIND	1915 – 1920 MHz	UMTS TDD	31 december 2021

### 1920-1980 MHz / 2110-2170 MHz<sup>4</sup>

Operator	Frequencies (uplink/downlink)	Technology used (optional)	Licence duration, tradability <sup>2</sup>
WIND	1920 – 1925 / 2110 – 2115 MHz	UMTS FDD	31 december 2021
TELECOM ITALIA	1925 – 1930 / 2115 – 2120 MHz	UMTS FDD	31 december 2021
VODAFONE	1930 – 1935 / 2120 – 2125 MHz	UMTS FDD	31 december 2021
TELECOM ITALIA	1935 – 1945 / 2125 – 2135 MHz	UMTS FDD	31 december 2021
WIND	1945 – 1955 / 2135 – 2145 MHz	UMTS FDD	31 december 2021
H3G	1955 – 1970 / 2145 – 2160 MHz	UMTS FDD	31 december 2021
VODAFONE	1970 – 1980 / 2160 – 2170 MHz	UMTS FDD	31 december 2021

<sup>4</sup> – In this band duplex separation is 190 MHz, uplink and downlink bands are equal in size

## Latvia (April 2010)

### 880-915 MHz / 925-960 MHz<sup>2</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
Bite Latvija	925.2 – 934.8 MHz	GSM	June, 2020
Latvijas Mobilais Telefons (LMT)	935.0 – 948.2 MHz	GSM	January, 2016
Tele2	949.2 – 959.0 MHz	GSM	February, 2016

<sup>2</sup> – In this band duplex separation is 45 MHz, uplink and downlink bands are equal in size

### 1710-1785 MHz / 1805-1880 MHz<sup>3</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
Bite Latvija	1855.0 – 1880.0 MHz	GSM	June, 2020
Latvijas Mobilais Telefons (LMT)	1805.0 – 1829.8 MHz	GSM	January, 2016
Tele2	1830.2 – 1854.8 MHz	GSM	February, 2016

<sup>3</sup> – In this band duplex separation is 95 MHz, uplink and downlink bands are equal in size

### 1900-1920 MHz / 2010-2025 MHz

Operator	Frequencies	Technology used (optional)	Licence duration, tradability
Bite Latvija	1900 – 1905 MHz	UMTS/IMT-2000/ TDD	June, 2020
Latvijas Mobilais Telefons (LMT)	1915 – 1920 MHz	UMTS/IMT-2000/ TDD	December, 2017
Tele2	1905 – 1910 MHz	UMTS/IMT-2000/ TDD	December, 2017

### 1920-1980 MHz / 2110-2170 MHz<sup>4</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
Bite Latvija	2130 – 2150 MHz	UMTS FDD	June, 2020
Latvijas Mobilais Telefons (LMT)	2110 – 2130 MHz	UMTS FDD	December, 2017
Tele2	2150 – 2170 MHz	UMTS FDD	December, 2017

<sup>4</sup> – In this band duplex separation is 190 MHz, uplink and downlink bands are equal in size

## Liechtenstein (June 2007)

GSM Subscribers	Total E-GSM		Total GSM-900	Total GSM-1800	GSM Penetration
~20'500	2 x 1.6 MHz		2 x 8.4 MHz	2 x 12.2 MHz	~95 %
Operator	Service start	License expiry	Frequencies	No. of Subscribers	
MOBILKOM (LIECHTENSTEIN) AG	APR 00	DEC 09	889.2-889.8 / 934.2-934.8 MHz (E-GSM) 1747.8-1750.0 / 1842.8-1845.0 MHz and 1753.6-1755.0 / 1848.6-1850.0 MHz	---	
Tele2 Aktiengesellschaft	APR 00	DEC 09	897.6-899.8 / 942.6-944.8 MHz and 910.0-911.6 / 955.0-956.6 MHz	---	
Swisscom Mobile AG	APR 00	DEC 09	892.6-896.6 / 937.6-941.6 MHz and 1739.4-1740.0 / 1834.4-1835.0 MHz and 1750.2-1753.4 / 1845.2-1848.4 MHz	---	
Orange (Liechtenstein) AG	APR 00	DEC 09	888.4-889.0 / 933.4-934.0 MHz (E-GSM) 1717.8-1719.0 / 1812.8-1814.0 MHz and 1731.4-1733.8 / 1826.4-1828.8 MHz	---	
Analogue			none		

### IMT-2000/UMTS 2GHz Bands

(Time of update not known)

Operator	License expiry (or duration)	Frequencies	Comments
Tele2 Aktiengesellschaft	31 December 2016	Frequency assignment is on the way. It is envisaged to divide the spectrum into 4 equal packages (2x14.8 MHz FDD and 5 MHz TDD). For the time being 1 package is thought to be assigned to each operator.	
Orange (Liechtenstein) AG	31 December 2016	Frequency assignment is on the way. It is envisaged to divide the spectrum into 4 equal packages (2x14.8 MHz FDD and 5 MHz TDD). For the time being 1 package is thought to be assigned to each operator.	
MOBILKOM (LIECHTENSTEIN) AG	-	Frequency assignment is on the way. It is envisaged to divide the spectrum into 4 equal packages (2x14.8 MHz FDD and 5 MHz TDD). For the time being 1 package is thought to be assigned to each operator.	

## Lithuania (January 2010)

### 880-915 MHz / 925-960 MHz<sup>2</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
Omnitel, UAB	880.1-883.3 / 925.1-928.3 895.7-897.9 / 940.7-943.1 905.1-910.7 / 950.1-955.7	E-GSM GSM GSM	2005-01-01 – 2014-01-01 1995-03-16 – 2017-10-31 1995-03-16 – 2017-10-31
Bitė Lietuva, UAB	883.3-884.9 / 928.3-929.9 884.9-886.5 / 929.9-931.5 899.3-904.1 / 944.3-949.1 910.7-913.9 / 955.7-958.9	E-GSM E-GSM GSM GSM	2005-01-01 – 2017-10-31 2009-03-23 – 2017-10-31 1995-10-24 – 2017-10-31 1995-10-24 – 2017-10-31
Tele2, UAB	886.7-887.5 / 931.7-932.5 887.5-890.1 / 932.5-935.1 890.1-895.7 / 935.1-940.7 898.1-899.3 / 943.1-944.3	E-GSM E-GSM GSM GSM	2009-03-23 – 2017-10-31 2005-01-01 – 2014-01-01 2001-03-30 – 2017-10-31 2001-03-30 – 2017-10-31

<sup>2</sup> – In this band duplex separation is 45 MHz, uplink and downlink bands are equal in size

### 1710-1785 MHz / 1805-1880 MHz<sup>3</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
Omnitel, UAB	1741.5-1758.3/1836.5-1853.3	GSM-1800	1999-01-01 – 2017-10-31
Bitė Lietuva, UAB	1720.9-1736.1/1815.9-1831.1	GSM-1800	1999-01-04 – 2017-10-31
Tele2, UAB	1758.5-1775.3/1853.5-1870.3	GSM-1800	1999-12-10 – 2017-10-31

<sup>3</sup> – In this band duplex separation is 95 MHz, uplink and downlink bands are equal in size

### 1900-1920 MHz / 2010-2025 MHz

Operator	Frequencies	Technology used (optional)	Licence duration, tradability
<b>1900-1920 MHz / 2010-2025 MHz radio frequency bands are reserved. Permits are not issued.</b>			

### 1920-1980 MHz / 2110-2170 MHz<sup>4</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
Omnitel, UAB	1940.1-1959.9/2130.1-2149.9	UTRA FDD	2006-02-23 – 2026-02-23
Bitė Lietuva, UAB	1920.3-1940.1/2110.3-2130.1	UTRA FDD	2006-02-28 – 2026-02-28
Tele2, UAB	1959.9-1979.7/2149.9-2169.7	UTRA FDD	2006-03-06 – 2026-03-06

<sup>4</sup> – In this band duplex separation is 190 MHz, uplink and downlink bands are equal in size

## Luxembourg (June 2008)

### 880-915 MHz / 925-960 MHz<sup>2</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
VoxMobile SA	925.2-934.8 MHz	GSM	2021, not tradable
Entreprise des P&T	935.2-939.6 MHz 945.0-952.2 MHz	GSM	2012, not tradable
TANGO SA	939.8-944.8 MHz 952.4-959.8 MHz	GSM	2012, not tradable

<sup>2</sup> – In this band duplex separation is 45 MHz, uplink and downlink bands are equal in size

### 1710-1785 MHz / 1805-1880 MHz<sup>3</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
Entreprise des P&T	1865.4-1879.8 MHz	GSM	2012, not tradable
TANGO SA	1855.2-1865.0 MHz	GSM	2012, not tradable
VoxMobile SA	1805.2-1815.2 MHz	GSM	2019, not tradable

<sup>3</sup> – In this band duplex separation is 95 MHz, uplink and downlink bands are equal in size

### 1900-1920 MHz / 2010-2025 MHz

Operator	Frequencies	Technology used (optional)	Licence duration, tradability
Entreprise des P&T	1899.9-1904.9 MHz	UMTS	2017, not tradable
VoxMobile SA	1904.9-1909.9 MHz	UMTS	2018, not tradable
TANGO SA	1909.9-1914.9 MHz	UMTS	2017, not tradable
Asralis SA	1914.9-1920.3 MHz	UMTS	2023, not tradable

### 1920-1980 MHz / 2110-2170 MHz<sup>4</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
Entreprise des P&T	2110.3- 2125.3 MHz	UMTS	2017, not tradable
VoxMobile SA	2125.3-2140.1 MHz	UMTS	2018, not tradable
TANGO SA	2140.1-2154.9 MHz	UMTS	2017, not tradable
ASTRALIS SA	2164.7-2169.7 MHz	UMTS	2023, not tradable
Luxembourg Online SA	2154.9-2164.7 MHz	UMTS	2023, not tradable

<sup>4</sup> – In this band duplex separation is 190 MHz, uplink and downlink bands are equal in size

## Former Yugoslav Republic of Macedonia (March 2010)

### 880-915 MHz / 925-960 MHz<sup>2</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
T- Mobile	935 - 947.5 MHz	GSM	05.09.2008 – 05.09.2018 tradable
ONE	947.5 – 960 MHz	GSM	05.09.2008 – 05.09.2023 tradable
VIP	925 – 935 MHz	GSM	23.03.2007 – 23.03.2017 tradable

<sup>2</sup> – In this band duplex separation is 45 MHz, uplink and downlink bands are equal in size

### 1710-1785 MHz / 1805-1880 MHz<sup>3</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
VIP	1805 – 1815 MHz	GSM	23.03.2007 – 23.03.2017 tradable
T-Mobile	1825 – 1835 MHz	GSM	09.06.2009 – 09.06.2019 tradable

<sup>3</sup> – In this band duplex separation is 95 MHz, uplink and downlink bands are equal in size

### 1900-1920 MHz / 2010-2025 MHz

Operator	Frequencies	Technology used (optional)	Licence duration, tradability
ONE	1900 – 1905 MHz	UTRA TDD	11.02.2008 – 11.02.2018 tradable
T-Mobile	1910 – 1915 MHz	UTRA TDD	17.12.2008 – 17.12.2018 tradable

### 1920-1980 MHz / 2110-2170 MHz<sup>4</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
ONE	2110 – 2125 MHz	UTRA FDD	11.02.2008 – 11.02.2018 tradable
T-Mobile	2140 – 2155 MHz	UTRA FDD	17.12.2008 – 17.12.2018 tradable

<sup>4</sup> – In this band duplex separation is 190 MHz, uplink and downlink bands are equal in size

## Malta (March 2010)

### 880-915 MHz / 925-960 MHz<sup>2</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
Vodafone Malta Ltd.	938 – 958 MHz	GSM	Sept. 97 – July 10, not tradable
Mobisile Communications Ltd.	935 – 937.8 MHz	GSM	Sept. 00 – Sept. 10, not tradable

<sup>2</sup> – In this band duplex separation is 45 MHz, uplink and downlink bands are equal in size

### 1710-1785 MHz / 1805-1880 MHz<sup>3</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
Vodafone Malta Ltd.	1870 – 1874.6 MHz	GSM	Sept. 97 – July 10, not tradable
Mobisile Communications Ltd.	1805.2 - 1830 MHz	GSM	Sept. 00 – Sept. 10, not tradable

<sup>3</sup> – In this band duplex separation is 95 MHz, uplink and downlink bands are equal in size

### 1900-1920 MHz / 2010-2025 MHz

Operator	Frequencies	Technology used (optional)	Licence duration, tradability
Vodafone Malta Ltd.	1909.9 – 1914.9 MHz	UTRA TDD	Aug. 05 – Aug. 20, not tradable
Mobisile Communications Ltd.	1914.9 – 1919.9 MHz	UTRA TDD	Aug. 05 – Aug. 20, not tradable
Melita Mobile Ltd.	1904.9 – 1909.9 MHz	UTRA TDD	Aug. 07 – Aug. 22, not tradable

### 1920-1980 MHz / 2110-2170 MHz<sup>4</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
Vodafone Malta Ltd.	2149.9 – 2169.7 MHz	UTRA FDD	Aug. 05 – Aug. 20, not tradable
Mobisile Communications Ltd.	2110.3 – 2130.1 MHz	UTRA FDD	Aug. 05 – Aug. 20, not tradable
Melita Mobile Ltd.	2130.1 – 2149.9 MHz	UTRA FDD	Aug. 07 – Aug. 22, not tradable

<sup>4</sup> – In this band duplex separation is 190 MHz, uplink and downlink bands are equal in size

## Moldova (April 2007)

GSM penetration in Moldova is 41 per cent

<b>GSM Subscribers</b>	<b>Total E-GSM</b>		<b>Total GSM-900</b>	<b>Total GSM-1800</b>	<b>GSM Penetration</b>
<b>Operator</b>	<b>Service start</b>	<b>License expiry</b>	<b>Frequencies</b>		<b>No. of Subscribers</b>
Voxtel SA	1998	2013	50 per cent of GSM 900 MHz band (12.5 MHz) plus 2 MHz in GSM 1800 MHz		915,000
Moldcell SA	2000	2015	50 per cent of GSM 900 MHz band (12.5 MHz)		500,000
Eventis Mobile SA	2006		GSM network is under construction Eventis uses 22 channels of e-GSM band (4.4 MHz)		
<b>Average</b>					

### *IMT-2000/UMTS 2GHz Bands*

## Moldova (June 2007)

Spectrum available when market requires. No UMTS services offered yet

## Montenegro (March 2010)

### 880-915 MHz / 925-960 MHz<sup>2</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
Operator 1 (Promonte GSM)	939,5 – 949,1 MHz	GSM	01.01.2002. – 01.01.2017. /tradable if approved by the NRA
Operator 2 (T-Mobile Crna Gora)	949,3 – 958,9 MHz	GSM	01.01.2002. – 01.01.2017. / tradable if approved by the NRA
Operator 3 (MTEL)	925,1 – 934,7 MHz	GSM	21.04.2007. – 21.04.2022. / tradable if approved by the NRA

<sup>2</sup> – In this band duplex separation is 45 MHz, uplink and downlink bands are equal in size

### 1710-1785 MHz / 1805-1880 MHz<sup>3</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
Operator 1 (Promonte GSM)	1805,1 – 1825,1 MHz	GSM/DCS1800	01.01.2002. – 01.01.2017. / tradable if approved by the NRA
Operator 2 (T-Mobile Crna Gora)	1859,9 – 1879,9 MHz	GSM/DCS1800	01.01.2002. – 01.01.2017. / tradable if approved by the NRA
Operator 3 (MTEL)	1832,5 – 1852,5 MHz	GSM/DCS1800	21.04.2007. – 21.04.2022. / tradable if approved by the NRA

<sup>3</sup> – In this band duplex separation is 95 MHz, uplink and downlink bands are equal in size

### 1900-1920 MHz / 2010-2025 MHz

Operator	Frequencies	Technology used (optional)	Licence duration, tradability
Operator 1 (Promonte GSM)	1905 – 1910 MHz	UTRA TDD	13.04.2007. – 13.04.2022. / tradable if approved by the NRA
Operator 2 (T-Mobile Crna Gora)	1910 – 1915 MHz	UTRA TDD	11.04.2007. – 11.04.2022. / tradable if approved by the NRA
Operator 3 (MTEL)	1915 – 1920 MHz	UTRA TDD	21.04.2007. – 21.04.2022. / tradable if approved by the NRA

### 1920-1980 MHz / 2110-2170 MHz<sup>4</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
Operator 1 (Promonte GSM)	2140 – 2155 MHz	UTRA FDD	13.04.2007. – 13.04.2022. / tradable if approved by the NRA
Operator 2 (T-Mobile Crna Gora)	2125 – 2140 MHz	UTRA FDD	11.04.2007. – 11.04.2022. / tradable if approved by the NRA
Operator 3 (MTEL)	2110 – 2125 MHz	UTRA FDD	21.04.2007. – 21.04.2022. / tradable if approved by the NRA

<sup>4</sup> – In this band duplex separation is 190 MHz, uplink and downlink bands are equal in size

## The Netherlands (June 2010)

### 880-915 MHz / 925-960 MHz<sup>2</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
KPN	935,1 - 939,1 MHz 948,1 - 956,5 MHz	GSM	Until Febr. 2013, tradable
T- Mobile	925,1 - 935,1 MHz	GSM	Until Febr. 2013, tradable
Vodafone	939,1 - 948,1 MHz 956,5 - 958,9 MHz	GSM	Until Febr. 2013, tradable

<sup>2</sup> – In this band duplex separation is 45 MHz, uplink and downlink bands are equal in size

### 1710-1785 MHz / 1805-1880 MHz<sup>3</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
KPN	1807.7-1810.1 MHz 1812.7-1817.7 MHz 1820.1-1825.1 MHz 1830.1-1832.7 MHz 1865.1-1870.1 MHz	GSM	Until Febr. 2013, tradable
T- Mobile	1810.1-1812.7 MHz 1817.7-1820.1 MHz 1825.1-1830.1 MHz 1832.7-1850.1 MHz 1872.7-1877.1 MHz	GSM	Until Febr. 2013, tradable
Vodafone	1805.1-1807.7 MHz 1870.1-1872.7 MHz	GSM	Until Febr. 2013, tradable

<sup>3</sup> – In this band duplex separation is 95 MHz, uplink and downlink bands are equal in size

### 1900-1920 MHz / 2010-2025 MHz

Operator	Frequencies	Technology used (optional)	Licence duration, tradability
KPN	1909,9 - 1914,9 MHz		Until Dec. 2016, tradable
T-mobile	1904,9 - 1909,9 MHz 2019,7 - 2024,7 MHz		Until Dec. 2016, tradable
Vodafone	1914,9 - 1920,3 MHz		Until Dec. 2016, tradable]

### 1920-1980 MHz / 2110-2170 MHz<sup>4</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
KPN	2124,9 - 2139,7 MHz	UMTS FDD	Until Dec. 2016, tradable
T- Mobile	2139,7 - 2149,7 MHz 2159,7 - 2169,7 MHz	UMTS FDD	Until Dec. 2016, tradable
Vodafone	2110,3 - 2124,9 MHz	UMTS FDD	Until Dec. 2016, tradable

<sup>4</sup> – In this band duplex separation is 190 MHz, uplink and downlink bands are equal in size

## Norway (March 2010)

### 880-915 MHz / 925-960 MHz<sup>2</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
Mobile Norway AS	925,0 – 930,1	technology neutral	31-12-2013, <b>tradable</b>
NetCom AS	930,1 – 935,1	technology neutral	31-12-2013, <b>tradable</b>
NetCom AS	935,1 – 944,9	technology neutral	31-12-2017, <b>tradable</b>
Telenor ASA	944,9 – 949,9	technology neutral	31-12-2013, <b>tradable</b>
Telenor ASA	949,9 – 960,0	technology neutral	31-12-2017, <b>tradable</b>

<sup>2</sup> – In this band duplex separation is 45 MHz, uplink and downlink bands are equal in size

### 1710-1785 MHz / 1805-1880 MHz<sup>3</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
application received	1805,0 – 1825,0	technology neutral	Licensing procedure ongoing
NetCom GSM AS	1842,9 - 1849,3	GSM	31-12-2013, <b>tradable</b> (possible refarming and introduction of technology neutrality)
NetCom GSM AS	1849,5 – 1859,5	GSM	15-03-2010, <b>tradable</b> (technology neutral licensing procedure ongoing, refarming possible)
Telenor AS	1866,3 – 1876,3	GSM	15-03-2010, <b>tradable</b> (technology neutral licensing procedure ongoing, refarming possible)

<sup>3</sup> – In this band duplex separation is 95 MHz, uplink and downlink bands are equal in size

### 1900-1920 MHz / 2010-2025 MHz

Operator	Frequencies	Technology used (optional)	Licence duration, tradability
Mobile Norway AS	1900 – 1905	UMTS TDD	01-01-08 till 01-01-2020, <b>tradable</b>
Telenor ASA	1905 – 1910	UMTS TDD	19-01-01 till 01-12-2012, <b>tradable</b>
Hi3G Access Norway AS	1910-1915	UMTS TDD	19-11-03 till 19-09-2015, <b>tradable</b>
NetCom GSM AS	1915 – 1920	UMTS TDD	19-01-01 till 01-12-2012, <b>tradable</b>
Inquam Broadband GmbH	2010 – 2025	Flexible	21-12-07 till 31-12-2022, <b>tradable</b>

**1920-1980 MHz / 2110-2170 MHz<sup>4</sup>**

<b>Operator</b>	<b>Frequencies (downlink)</b>	<b>Technology used (optional)</b>	<b>Licence duration, tradability</b>
NetCom GSM AS	2110,3 – 2125,3	UMTS FDD	19-01-01 till 01-12-2012, <b>tradable</b>
Hi3G Access Norway AS	2125,3 – 2140,1	UMTS FDD	19-11-03 till 19-09-2015, <b>tradable</b>
Telenor ASA	2140,1 – 2154,9	UMTS FDD	19-01-01 till 01-12-2012, <b>tradable</b>
Mobile Norway AS	2154,9 – 2169,7	UMTS FDD	01-01-08 till 01-01-2020, <b>tradable</b>

<sup>4</sup> – In this band duplex separation is 190 MHz, uplink and downlink bands are equal in size

## Poland (June 2008)

### 880-915 MHz / 925-960 MHz<sup>2</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
POLKOMTEL SA	935.1 – 937.9 MHz (1 – 14) 942.3 – 948.5 MHz (45 – 67)	GSM	23.02.1996 – 23.02.2011 tradable
Polska Telefonía Cyfrowa Sp. Z o.o.	937.9 – 942.3 MHz (15 – 28) 948.5 – 953.1 MHz (68 – 90)	GSM	23.02.1996 – 23.02.2011 tradable
Polska Telefonía Komórkowa "Centertel" Sp. z o.o.	953.1 – 959.9 MHz (91 – 124)	GSM	05.07.1999 – 05.07.2014 tradable

<sup>2</sup> – In this band duplex separation is 45 MHz, uplink and downlink bands are equal in size

### 1710-1785 MHz / 1805-1880 MHz<sup>3</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
CenterNet S.A.	1805.1 – 1814.9 MHz (512 – 560)		30.11.2007 – 31.12.2022 tradable
Mobyland Sp. z o.o.	1815.1 – 1824.9 MHz (562 – 610)		30.11.2007 – 31.12.2022 tradable
POLKOMTEL S.A.	1852.5 – 1854.9 MHz (749 – 760) 1872.7 – 1879.9MHz (850 – 885)	GSM	13.09.1999 – 13.09.2014 tradable
Polska Telefonía Cyfrowa Sp. z o.o.	1849.9 – 1852.3 MHz (736 – 747) 1865.1 – 1872.3 MHz (812 – 847)	GSM	11.08.1999 – 11.08.2014 tradable
Polska Telefonía Komórkowa "Centertel" Sp. z o.o.	1855.3 – 1864.9 MHz (763 – 810)	GSM	21.08.1997 – 21.08.2012 tradable

<sup>3</sup> – In this band duplex separation is 95 MHz, uplink and downlink bands are equal in size

### 1900-1920 MHz / 2010-2025 MHz

Operator	Frequencies	Technology used (optional)	Licence duration, tradability
POLKOMTEL S.A.	1905.1 – 1910.1 MHz	UTRA TDD	20.12.2000 – 01.01.2023 tradable
Polska Telefonía Cyfrowa Sp. z o.o.	1910.1 – 1915.1 MHz	UTRA TDD	20.12.2000 – 01.01.2023 tradable
Polska Telefonía Komórkowa "Centertel" Sp. z o.o.	1915.1 – 1920.1 MHz	UTRA TDD	20.12.2000 – 01.01.2023 tradable]
P4 Sp. z o.o.	1900.1 – 1905.1 MHz	UTRA TDD	Date 1 – 31.12.2023 tradable

### 1920-1980 MHz / 2110-2170 MHz<sup>4</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
POLKOMTEL S.A.	2140.1 – 2154.9 MHz	UTRA FDD	20.12.2000 – 01.01.2023 tradable
Polska Telefonía Cyfrowa Sp. Z o.o.	2125.3 – 2140.1 MHz	UTRA FDD	20.12.2000 – 01.01.2023 tradable
Polska Telefonía Komórkowa "Centertel" Sp. z o.o.	2110.5 – 2125.3 MHz	UTRA FDD	20.12.2000 – 01.01.2023 tradable
P4 Sp. z o.o.	2154.9 – 2169.7 MHz	UTRA FDD	23.08.2005 – 31.12.2023 tradable

<sup>4</sup> – In this band duplex separation is 190 MHz, uplink and downlink bands are equal in size

## Portugal (March 2010)

### 880-915 MHz / 925-960 MHz<sup>2</sup>

Operator	Frequencies <sup>1</sup> (downlink)	Technology used (optional)	Licence duration, tradability*
Vodafone Portugal	935.1-943.1 MHz (2 x 8 MHz)	GSM 900	19/10/2006 – 19/10/2021
Optimus	943.1-950.9 MHz (2 x 7.8 MHz)	GSM 900	20/11/1997 – 20/11/2012
TMN	950.9-958.9 MHz (2 x 8 MHz)	GSM 900	19/10/2006 – 19/10/2021

<sup>2</sup> – In this band duplex separation is 45 MHz, uplink and downlink bands are equal in size

### 1710-1785 MHz / 1805-1880 MHz<sup>3</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability*
TMN	1858.5-1861.7 MHz and 1865.1-1867.9 MHz (2 x 6MHz)	GSM 1800	19/10/2006 – 19/10/2021
Vodafone Portugal	1854.9-1858.1 MHz and 1867.9-1870.7 (2 x 6 MHz)	GSM 1800	19/10/2006 – 19/10/2021
Optimus	1870.7-1876.7 MHz (2 x 6 MHz)	GSM 1800	20/11/1997 – 20/11/2012

<sup>3</sup> – In this band duplex separation is 95 MHz, uplink and downlink bands are equal in size

### 1900-1920 MHz / 2010-2025 MHz

Operator	Frequencies	Technology used (optional)	Licence duration, tradability*
Not assigned	1900,1 – 1910,1 MHz	UTRA TDD	-----
TMN	1910,1-1915,1 MHz	UTRA TDD	11/01/2001 - 11/01/2016
Vodafone	1915,1-1920,1 MHz	UTRA TDD	11/01/2001 - 11/01/2016
Not assigned	2010 – 2025 MHz	-----	-----

### 1920-1980 MHz / 2110-2170 MHz<sup>4</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability*
Vodafone	2110,3-2130,1 MHz	UTRA FDD	11/01/2001 - 11/01/2016
Optimus	2130,1-2149,9 MHz	UTRA FDD	11/01/2001 - 11/01/2016
TMN	2149,9-2169,7 MHz	UTRA FDD	11/01/2001 - 11/01/2016

<sup>4</sup> – In this band duplex separation is 190 MHz, uplink and downlink bands are equal in size

- The rights of use of spectrum set out in the NTFA (National Table of Frequency Allocations) are transferable in accordance with the regime set forth in article 37 of the Law of Electronic Communications (<http://www.anacom.pt/render.jsp?categoryId=97279#horizontalMenuArea>). However, a public consultation on spectrum trading is being prepared and is expected to be launched soon. A more specific policy with respect to the transmission of frequency usage rights, with the establishment of rules and relevant conditions, is expected to be discussed and adopted thereafter.

## Romania (June 2007)

GSM 900/1800 Subscribers	Total E-GSM	Total GSM-900	Total GSM-1800	GSM Penetration
16 985 000	2x10 MHz	2 x 25 MHz	2 x 37.5 MHz	78.7 %
Operator	Service start	License expiry	Frequencies	No. of Subscribers
Vodafone Romania	MAR 97	2011	890.0-902.5/935.0-947.5 MHz (2 x 12.5 MHz) 1735.1-1747.5/ 1830.1-1842.5 MHz (2 x 12.4 MHz)	
Orange Romania	JUN 97	2011	902.5-915.0/947.5-960.0 MHz (2 x 12.5 MHz) 1722.7-1735.1 / 1817.7-1830.1 MHz (2x 12.4 MHz)	
Cosmote RMT	APR 00	2009	880-890 / 925-935 MHz (2x 10 MHz) 1710.0 – 1722.7 / 1805.0 – 1817.7 MHz (2x 12.7 MHz)	
<b>Average</b>			<b>2 x 24.2 MHz</b>	
Analogue Telemobil CDMA 450	JULY 03	2012	None 453.000-457.475 / 463.000-467.475 MHz (2 x 4.475 MHz)	

Frequency Band	Other existing use in the GSM bands	License duration, Trends, When will band be available?
1747.5-1785 MHz 1842.5-1880 MHz	Military use	Shared band civil/military

### IMT-2000/UMTS 2GHz Bands

Updated June 2007

Operator	License start	License expiry (or duration)	Frequencies	Comments
Vodafone Romania	March 2005	March 2020	FDD: 1964.9-1979.7 / 2154.9-2169.7 MHz TDD: 1909.9-1914.9 MHz	
Orange Romania	March 2005	March 2020	FDD: 1950.1-1964.9 / 2140.1-2154.9 MHz TDD: 1904.9-1909.9 MHz	
Telemobil	January 2007	January 2022	FDD: 1935.3-1950.1 / 2125.3-2140.1 MHz TDD: 1899.9-1904.9 MHz	
RCS&RDS	January 2007	January 2022	FDD: 1920.3-1935.3 / 2110.3-2125.3 MHz TDD: 1914.9-1919.9 MHz	

## Russian Federation (September 2002)

GSM Subscribers	Total E-GSM		Total GSM-900	Total GSM-1800	GSM Penetration
12500000	2 x 1.6 MHz		2 x 25 MHz	2 x 75 MHz	8.5 %
Operator	Service start	License expiry	Frequencies	No. of subscribes	
Mobile TeleSystems	1994	2007	GSM 900: From 2 x 4.8 up to 2 x 11,4 MHz per operator (non-consecutive channels shared with ARNS) depending on EMC conditions and market demand within licensing area GSM 1800: From 2 x 8 up to 2 x 20.0 MHz per operator (non-consecutive channels shared with FS) depending on local EMC conditions and market demand within licensing area	4 685 000	
VypelCom	1997	2007	GSM 900: From 2 x 4.8 up to 2 x 10,0 MHz per operator (non-consecutive channels shared with ARNS) depending on EMC conditions and market demand within licensing area GSM 1800: From 2 x 8 up to 2 x 20.0 MHz per operator (non-consecutive channels shared with FS) depending on local EMC conditions and market demand within licensing area	3 630 000	
MegaFon	1997	2011	GSM 900: From 2 x 3.0 up to 2 x 12,0 MHz per operator (non-consecutive channels shared with ARNS) depending on EMC conditions and market demand within licensing area GSM 1800: From 2 x 8 up to 2 x 20.0 MHz per operator (non-consecutive channels shared with FS) depending on local EMC conditions and market demand within licensing area	1 880 000	
Regional operators	duration 10 years from licence issue		GSM 900: From 2 x 4.0 up to 2 x 10,0 MHz per operator (non-consecutive channels shared with ARNS) depending on EMC conditions and market demand within licensing area GSM 1800: From 2 x 8 up to 2 x 18 MHz per operator (non-consecutive channels shared with FS) depending on local EMC conditions and market demand within licensing area	2 305 000	
<b>Average</b>			<b>GSM900 - 2 x 7.6 MHz</b> <b>GSM1800 – 2 x 9 MHz</b>		
<b>Analogue:</b>			None		

Frequency Band	Other existing use in the GSM bands	License duration, Trends, When will band be available?
880-890/925-935	Aeronautical Radio Navigation Service	till the end of lifetime, regional reassignment in order to release GSM channels
890-915/935-960	Aeronautical Radio Navigation Service	till the end of lifetime, regional reassignment in order to release GSM channels
1710-1785/1805-1880	Fixed Service	till the end of lifetime, no new assignments

***IMT-2000/UMTS 2GHz Bands***

***Russian Federation Updated June 2007***

In April 2007 a contest on the licensing of frequency bands 1935-1980 MHz, 2010-2025 MHz и 2125-2170 MHz for IMT-2000 was concluded. There are 3 blocks of 2x15 MHz each of contiguous spectrum for FDD operation mode and 3 blocks of 5 MHz each for TDD mode licensed between 3 operators. The radiotechnology used - IMT-2000/UMTS (IMT-DS and IMT-TC). See the table for detailed information.

<b>Operator</b>	<b>License start</b>	<b>License expiry (or duration)</b>	<b>Frequencies</b>	<b>Subscriber numbers</b>
JSC «Megafon»	2007	2017	FDD: 1935-1950/2125-2140 MHz TDD: 2010-2015 MHz	N/A
JSC «Mobile TeleSystems»	2007	2017	FDD: 1950-1965/2140-2155 MHz TDD: 2015-2020 MHz	N/A
JSC «VimpelCom»	2007	2017	FDD: 1965-1980/2155-2170 MHz TDD: 2020-2025 MHz	N/A

## Serbia (March 2010)

### 880-915 MHz / 925-960 MHz<sup>2</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
TELEKOM SRBIJA	939.5 – 949.1 MHz	GSM	28.07.2006. – 28.07.2016., non-tradable
TELENOR	949.3 – 958.9 MHz	GSM	31.08.2006. – 31.08.2016., non-tradable
VIP MOBILE	935.1 – 939.3 MHz	GSM	10.11.2006. – 10.11.2016., non-tradable

<sup>2</sup> – In this band duplex separation is 45 MHz, uplink and downlink bands are equal in size

### 1710-1785 MHz / 1805-1880 MHz<sup>3</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
TELEKOM SRBIJA	1825.1 – 1834.9 MHz	GSM 1800	28.07.2006. – 28.07.2016., non-tradable
TELENOR	1805.1 – 1815.1 MHz	GSM 1800	31.08.2006. – 31.08.2016., non-tradable
VIP MOBILE	1835.1 – 1855.1 MHz	GSM 1800	10.11.2006. – 10.11.2016., non-tradable

<sup>3</sup> – In this band duplex separation is 95 MHz, uplink and downlink bands are equal in size

### 1900-1920 MHz / 2010-2025 MHz

Operator	Frequencies	Technology used (optional)	Licence duration, tradability
TELEKOM SRBIJA	1905 - 1910 MHz	UTRA TDD	28.07.2006. – 28.07.2016., non-tradable
TELENOR	1900 - 1905 MHz	UTRA TDD	31.08.2006. – 31.08.2016., non-tradable
VIP MOBILE	1910 - 1915 MHz	UTRA TDD	10.11.2006. – 10.11.2016., non-tradable

### 1920-1980 MHz / 2110-2170 MHz<sup>4</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
TELEKOM SRBIJA	2125 - 2140 MHz	UTRA FDD	28.07.2006. – 28.07.2016., non-tradable
TELENOR	2110 - 2125 MHz	UTRA FDD	31.08.2006. – 31.08.2016., non-tradable
VIP MOBILE	2140 - 2155 MHz	UTRA FDD	10.11.2006. – 10.11.2016., non-tradable

<sup>4</sup> – In this band duplex separation is 190 MHz, uplink and downlink bands are equal in size

## Slovak Republic (January 2010)

### 880-915 MHz / 925-960 MHz<sup>2</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
Telefónica O2 Slovakia, s.r.o.	928,0 – 934,8 MHz 953,2 – 953,8 MHz 954,6 – 955,2 MHz 956,0 – 956,6 MHz 957,4 – 958,0 MHz	GSM	07.09.2006 – 31.08.2026
Orange Slovensko, a.s.	935,2 – 941,0 MHz 947,2 – 950,0 MHz 954,0 – 954,2 MHz 957,2 MHz 958,2 – 958,6 MHz	GSM	06.09.2000 – 30.08.2011
T-Mobile Slovensko, a.s.	941,2 – 947,0 MHz 950,2 – 953,0 MHz 954,4 MHz 955,4 – 955,8 MHz 956,8 – 957,0 MHz	GSM	28.07.2000 – 30.08.2011

<sup>2</sup> – In this band duplex separation is 45 MHz, uplink and downlink bands are equal in size

Note: Frequencies given are center frequencies of GSM-channels used by operators

### 1710-1785 MHz / 1805-1880 MHz<sup>3</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
Orange Slovensko, a.s.	1811,4 – 1819,0 MHz 1833,6 – 1838,8 MHz 1843,0 – 1844,8 MHz	GSM	06.09.2000 – 30.08.2011
T-Mobile Slovensko a.s.	1820,2 – 1833,4 MHz 1841,2 – 1842,8 MHz	GSM	28.07.2000 – 30.08.2011
Telefónica O2 Slovakia, s.r.o.	1845,4 – 1860,4 MHz	GSM	07.09.2006 – 31.08.2026

<sup>3</sup> – In this band duplex separation is 95 MHz, uplink and downlink bands are equal in size

Note: Frequencies given are center frequencies of GSM-channels used by operators

### 1900-1920 MHz / 2010-2025 MHz

Operator	Frequencies	Technology used (optional)	Licence duration, tradability
Orange Slovensko, a.s.	1900 – 1905 MHz	TDD	19.07.2002 – 30.06.2022
T-Mobile Slovensko a.s.	1905 – 1910 MHz	TDD	16.07.2002 – 30.06.2022
Telefónica O2 Slovakia, s.r.o.	1910 -1915 MHz	TDD	07.09.2006 – 31.08.2026

Note: This band is currently not in use.

### 1920-1980 MHz / 2110-2170 MHz<sup>4</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
Orange Slovensko, a.s.	2110 – 2130 MHz	FDD	19.07.2002 – 30.06.2022
T-Mobile Slovensko a.s.	2130 – 2150 MHz	FDD	16.07.2002 – 30.06.2022
Telefónica O2 Slovakia, s.r.o.	2150 – 2170 MHz	FDD	07.09.2006 – 31.08.2026

<sup>4</sup> – In this band duplex separation is 190 MHz, uplink and downlink bands are equal in size.

## Slovenia (August 2008)

### 880-915 MHz / 925-960 MHz<sup>2</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
TUŠMOBIL	880.1 – 889.9 MHz 925.1 – 934.9 MHz	GSM	01.12.2006 – 03.01.2016
SI.MOBIL	890.1 – 902.5 MHz 935.1 – 947.5 MHz	GSM	06.09.2004 – 11.10.2013
MOBITEL	902.5 – 914.9 MHz 947.5 – 959.9 MHz	GSM	06.09.2004 – 11.10.2013

<sup>2</sup> – In this band duplex separation is 45 MHz, uplink and downlink bands are equal in size

### 1710-1785 MHz / 1805-1880 MHz<sup>3</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
TUŠMOBIL	1719.9 – 1725.1 MHz 1814.9 – 1820.1 MHz	GSM	01.12.2006 – 03.01.2016
SI.MOBIL	1725.1 – 1740.1 MHz 1820.1 – 1835.1 MHz	GSM	06.09.2004 – 03.01.2016
MOBITEL	1740.1 – 1755.1 MHz 1835.1 – 1850.1 MHz	GSM	06.09.2004 – 03.01.2016

<sup>3</sup> – In this band duplex separation is 95 MHz, uplink and downlink bands are equal in size

### 1900-1920 MHz / 2010-2025 MHz

Operator	Frequencies	Technology used (optional)	Licence duration, tradability
MOBITEL	1900 – 1905 MHz	UMTS / TDD	06.09.2004 – 27.11.2016
T-2	1910 – 1915 MHz	UMTS / TDD	21.09.2006 – 21.09.2021
SI.MOBIL	1915 – 1920 MHz	UMTS / TDD	21.09.2006 – 21.09.2021

### 1920-1980 MHz / 2110-2170 MHz<sup>4</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
SI.MOBIL	1920 – 1935 MHz 2110 – 2125 MHz	UMTS / FDD	21.09.2006 – 21.09.2021
T-2	1935 – 1950 MHz 2125 – 2140 MHz	UMTS / FDD	21.09.2006 – 21.09.2021
TUŠMOBIL	1950 – 1955 MHz 2140 – 2145 MHz	UMTS / FDD	08.04.2008 – 08.04.2023
MOBITEL	1965 – 1980 MHz 2155 – 2170 MHz	UMTS / FDD	06.09.2004 – 27.11.2016

<sup>4</sup> – In this band duplex separation is 190 MHz, uplink and downlink bands are equal in size

## Spain (June 2010)

### 880-915 MHz / 925-960 MHz<sup>2</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
Vodafone	947.9 – 959.9	GSM	Feb -'95 / Feb-'20
Telefónica	935.1 – 943.1 943.7 – 947.7	GSM	Feb -'95 / Feb-'15
Telefónica	931.1 – 935.1	GSM	Jul -'05 / Jul-'20
Orange	925.1 – 931.1	GSM	Jul -'05 / Jul-'20

<sup>2</sup> – In this band duplex separation is 45 MHz, uplink and downlink bands are equal in size

### 1710-1785 MHz / 1805-1880 MHz<sup>3</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
Vodafone	1830.1 – 1854.9	GSM	Jul-'98 / Jul-'23
Telefónica	1805.1 – 1829.9	GSM	Jul-'98 / Jul-'23
Orange	1855.1 - 1879.9	GSM	Jul-'98 / Jul-'23

<sup>3</sup> – In this band duplex separation is 95 MHz, uplink and downlink bands are equal in size

### 1900-1920 MHz / 2010-2025 MHz

Operator	Frequencies	Technology used (optional)	Licence duration, tradability
Vodafone	1905.1-1910.1 MHz	UMTS TDD	April-'00 / April-'20
Telefónica	1910.1 – 1915.1 MHz	„	„
Orange	1900.1-1905.1 MHz	„	„
Xfera	1915.1-1920.1 MHz	„	„

### 1920-1980 MHz / 2110-2170 MHz<sup>4</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
Vodafone	2140.1-2154.9 MHz	UMTS FDD	April-'00 / April-'20
Telefónica	2154.9-2169.7 MHz	„	„
Orange	2125.3-2140.1 MHz	„	„
Xfera	2110.5-2125.3 MHz	„	„

<sup>4</sup> – In this band duplex separation is 190 MHz, uplink and downlink bands are equal in size

## Sweden (June 2008)

### 880-915 MHz / 925-960 MHz<sup>2</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
TeliaSonera Sverige AB	936,9-944,1 MHz		31.12.2004 – 31.12.2010
TELE2	944,3-951,1 MHz		31.12.2004 – 31.12.2010
Telenor	951,7-958,9 MHz		31.12.2004 – 31.12.2010
Swefour	929,9-936,7 MHz		31.12.2004 – 31.12.2010

<sup>2</sup> – In this band duplex separation is 45 MHz, uplink and downlink bands are equal in size

### 1710-1785 MHz / 1805-1880 MHz<sup>3</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
TeliaSonera Sverige AB	1816,5 - 1819,5 MHz		31.12.2004 – 31.12.2010
TELE2	1810,1 - 1813,1 MHz		31.12.2004 – 31.12.2010
Telenor	1813,3 – 1816,3 MHz		31.12.2004 – 31.12.2010
Swefour	1806,9 – 1809,9 MHz		31.12.2004 – 31.12.2010

<sup>3</sup> – In this band duplex separation is 95 MHz, uplink and downlink bands are equal in size

### 1900-1920 MHz / 2010-2025 MHz

Operator	Frequencies	Technology used (optional)	Licence duration, tradability
Svenska UMTS Licens AB	1905,0 -1910,0 MHz	TDD	16.12.2000 – 31.12.2015
Hi3G	1910,0 – 1915,0 MHz	TDD	16.12.2000 – 31.12.2015
Telenor	1915,0 – 1920,0 MHz	TDD	16.12.2000 – 31.12.2015

### 1920-1980 MHz / 2110-2170 MHz<sup>4</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
Svenska UMTS Licens AB	2149,9 – 2169,7 MHz	FDD	16.12.2000 – 31.12.2015
Hi3G	2130,1 – 2149,9 MHz	FDD	16.12.2000 – 31.12.2015
Telenor	2110,3 – 2130,1 MHz	FDD	16.12.2000 – 31.12.2015

<sup>4</sup> – In this band duplex separation is 190 MHz, uplink and downlink bands are equal in size

## Switzerland (April 2010)

### 880-915 MHz / 925-960 MHz<sup>2</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
Orange Network AG	925.1 – 931.7 MHz Regions Geneva and Basle 925.1 – 930.1 MHz	GSM, UMTS	JUN 98 – DEC 2013 Not tradable
Sunrise Communications AG	931.9 – 934.9 MHz 947.5 – 959.9 MHz Regions Geneva and Basle 930.3 – 934.9 MHz 947.1 – 952.3 MHz 953.9 – 959.9 MHz	GSM, UMTS	JUN 98 – DEC 2013 Not tradable
Swisscom (Schweiz) AG	935.1 – 947.3 MHz Regions Geneva and Basle 935.1 – 946.9 MHz 952.5 – 953.7 MHz	GSM, UMTS	MAR 93 – DEC 2013 Not tradable

<sup>2</sup> – In this band duplex separation is 45 MHz, uplink and downlink bands are equal in size

### 1710-1785 MHz / 1805-1880 MHz<sup>3</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
In&Phone SA	1870.9 – 1876.7 MHz	GSM, UMTS	JAN 04 – DEC 13 Not tradable
Orange Networks AG	1805.1 – 1829.3 MHz 1857.3 – 1858.7 MHz Regions Geneva and Basle 1805.1 – 1829.9 MHz 1856.7 – 1858.7 MHz	GSM, UMTS	JUN 98 – DEC 13 Not tradable
Sunrise Communications AG	1846.9 – 1857.1 MHz 1858.9 – 1861.9 MHz 1876.9 – 1879.1 MHz Regions Geneva and Basle 1846.5 – 1856.5 MHz 1858.9 – 1861.9 MHz 1876.9 – 1879.1 MHz	GSM, UMTS	JUN 98 – DEC 13 Not tradable
Swisscom (Schweiz) AG	1829.5 – 1846.7 MHz Regions Geneva and Basle 1830.1 – 1846.3 MHz	GSM, UMTS	MAR 93 – DEC 13 Not tradable
Not used at the moment	1862.1 – 1870.7 MHz		

<sup>3</sup> – In this band duplex separation is 95 MHz, uplink and downlink bands are equal in size

**1900-1920 MHz / 2010-2025 MHz**

<b>Operator</b>	<b>Frequencies</b>	<b>Technology used (optional)</b>	<b>Licence duration, tradability</b>
Orange Networks AG	1905.5 – 1910.5 MHz	[UTRA TDD]	JAN 01 – DEC 16 Not tradable
Sunrise Communications AG	1910.5 – 1915.5 MHz	[UTRA TDD]	JAN 01 – DEC 16 Not tradable
Swisscom (Schweiz) AG	1915.5 – 1920.5 MHz	[UTRA TDD]	JAN 01 – DEC 16 Not tradable
Not used at the moment	1900.5 – 1905.5 MHz 2010.0 – 2025.0 MHz		

**1920-1980 MHz / 2110-2170 MHz<sup>4</sup>**

<b>Operator</b>	<b>Frequencies (downlink)</b>	<b>Technology used (optional)</b>	<b>Licence duration, tradability</b>
Orange Networks AG	2140.1 – 2154.9 MHz	UTRA FDD	JAN 01 – DEC 16 Not tradable
Sunrise Communications AG	2125.3– 2140.1 MHz	UTRA FDD	JAN 01 – DEC 16 Not tradable
Swisscom (Schweiz) AG	2110.5 – 2125.3 MHz	UTRA FDD	JAN 01 – DEC 16 Not tradable
Not used at the moment	2154.9 – 2169.7 MHz		

<sup>4</sup> – In this band duplex separation is 190 MHz, uplink and downlink bands are equal in size

## Turkey (January 2010)

### 880-915 MHz / 925-960 MHz<sup>2</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
VODAFONE	901.300-912.300/ 946.300-957.300 MHz	GSM	April 1998- April 2023 Not tradable
TURKCELL	890.100-901.100/ 935.100-946.100 MHz	GSM	April 1998- April 2023 Not tradable
AVEA	912.500-914.900/ 957.500-959.900 MHz	GSM	January 2001- January 2026 Not tradable

<sup>2</sup> – In this band duplex separation is 45 MHz, uplink and downlink bands are equal in size

### 1710-1785 MHz / 1805-1880 MHz<sup>3</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
AVEA	1710.100-1724.900/ 1805.100-1819.900 MHz	GSM	January 2001- January 2026 Not tradable

<sup>3</sup> – In this band duplex separation is 95 MHz, uplink and downlink bands are equal in size

### 1900-1920 MHz / 2010-2025 MHz

Operator	Frequencies	Technology used (optional)	Licence duration, tradability
VODAFONE	2010-2015 MHz	IMT/UMTS	30 April 2009-30 April 2029 Not tradable

### 1920-1980 MHz / 2110-2170 MHz<sup>4</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
VODAFONE	1940-1955/2130-2145 MHz	IMT/UMTS	30 April 2009-30 April 2029 Not tradable
TURKCELL	1920-1940/2110-2130 MHz	IMT/UMTS	30 April 2009-30 April 2029 Not tradable
AVEA	1955-1970/2145-2160 MHz	IMT/UMTS	30 April 2009-30 April 2029 Not tradable

<sup>4</sup> – In this band duplex separation is 190 MHz, uplink and downlink bands are equal in size

## Ukraine (March 2010)

### 880-915 MHz / 925-960 MHz<sup>2</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
Kyivstar	925-960 MHz*	GSM	Until 2023
Ukrainian Mobile Communication (MTS)	925-960 MHz*	GSM	Until 2023
Astelit (life)	925-960 MHz*	GSM	Until 2023
Ukrainian Radio Systems (Beeline)	925-960 MHz*	GSM	Until 2023

\* – Channels are distributed between operators according to regions of country. Each operator uses different channels in different country regions.

<sup>2</sup> – In this band duplex separation is 45 MHz, uplink and downlink bands are equal in size

### 1710-1785 MHz / 1805-1880 MHz<sup>3</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
Kyivstar	1805-1880 MHz*	GSM	Until 2023
Ukrainian Mobile Communication (MTS)	1805-1880 MHz*	GSM	Until 2023
Astelit (life)	1805-1880 MHz*	GSM	Until 2023
Ukrainian Radio Systems (Beeline)	1805-1880 MHz*	GSM	Until 2023
Golden Telecom	1805-1880 MHz*	GSM	Until 2023

\* – Channels are distributed between operators according to regions of country. Each operator uses different channels in different country regions.

<sup>3</sup> – In this band duplex separation is 95 MHz, uplink and downlink bands are equal in size

### 1900-1920 MHz / 2010-2025 MHz

Operator	Frequencies	Technology used (optional)	Licence duration, tradability
Ukrtelecom	2015-2020 MHz	IMT-2000 CDMA UMTS/WCDMA	Dec 2005 – Dec 2020

### 1920-1980 MHz / 2110-2170 MHz<sup>4</sup>

Operator	Frequencies (downlink)	Technology used (optional)	Licence duration, tradability
Ukrtelecom	2125 – 2140 MHz	IMT-2000 CDMA UMTS/WCDMA	Dec 2005 – Dec 2020

<sup>4</sup> – In this band duplex separation is 190 MHz, uplink and downlink bands are equal in size

## United Kingdom (May 2010)

### 880-915 MHz / 925-960 MHz<sup>2</sup>

Operator	Frequencies (downlink)	Technology used)	Licence duration, tradability
Telefónica O2 (UK) Ltd	930.1-935.1 MHz, 939.7 - 947.1 MHz 954.9 -959.9 MHz	GSM	1/1/1994 – no expiry date
Vodafone Limited	925.1-930.1 MHz 935.1-939.7 MHz 947.1-954.9 MHz	GSM	1/7/1992 – no expiry date

<sup>2</sup> – In this band duplex separation is 45 MHz, uplink and downlink bands are equal in size

### 1710-1785 MHz / 1805-1880 MHz<sup>3</sup>

Operator	Frequencies (downlink)	Technology used)	Licence duration, tradability
Telefónica O2 (UK) Ltd	1805.1-1810.9 MHz	GSM	1/1/1994 – no expiry date Not tradable
Vodafone Limited	1810.9-1816.7 MHz	GSM	1/7/1992 – no expiry date Not tradable
T-Mobile (UK) Limited	1816.7-1846.7 MHz	GSM	1/9/1993 – no expiry date Not tradable
Orange Personal Communication Services Ltd	1846.7-1876.7 MHz	GSM	1/4/1994 – no expiry date Not tradable
British Telecommunications PLC	1876.7 – 1880	Not specified	2/5/06 – no expiry date. Tradable
Cable & Wireless UK (England)	1876.7 – 1880	Not specified	2/5/06 – no expiry date. Tradable
COLT Mobile telecommunications Ltd	1876.7 – 1880	Not specified	2/5/06 – no expiry date. Tradable
Cyberpress Ltd	1876.7 – 1880	Not specified	2/5/06 – no expiry date. Tradable
FMS Solutions Ltd	1876.7 – 1880	Not specified	2/5/06 – no expiry date. Tradable
Mapesbury Communications Ltd	1876.7 – 1880	Not specified	2/5/06 – no expiry date. Tradable
OnePhone (UK) Ltd	1876.7 – 1880	Not specified	2/5/06 – no expiry date. Tradable
Opal Telecom Ltd	1876.7 – 1880	Not specified	2/5/06 – no expiry date. Tradable
Shyam Telecom UK Ltd	1876.7 – 1880	Not specified	2/5/06 – no expiry date. Tradable
PLDT (UK) Ltd	1876.7 – 1880	Not specified	2/5/06 – no expiry date. Tradable
Telefónica O2 (UK) Ltd	1876.7 – 1880	Not specified	2/5/06 – no expiry date. Tradable
Teleware PLC	1876.7 – 1880	Not specified	2/5/06 – no expiry date. Tradable

<sup>3</sup> – In this band duplex separation is 95 MHz, uplink and downlink bands are equal in size

**1900-1920 MHz / 2010-2025 MHz**

<b>Operator</b>	<b>Frequencies</b>	<b>Technology used</b>	<b>Licence duration, tradability</b>
Telefónica O2 (UK) Ltd	1909.9 – 1914.9 MHz	UTRA TDD	1/4/2000 – 31/12/2021 Not tradable
T-Mobile (UK) Limited	1899.9 – 1904.9 MHz	UTRA TDD	1/4/2000 – 31/12/2021 Not tradable
Orange Personal Communication Services Ltd	1904.9-1909.9 MHz	UTRA TDD	1/4/2000 – 31/12/2021 Not tradable
Hutchison 3G UK Ltd.	1914.9 - 1920.0 MHz	UTRA TDD	1/4/2000 – 31/12/2021 Not tradable

**1920-1980 MHz / 2110-2170 MHz<sup>4</sup>**

<b>Operator</b>	<b>Frequencies (downlink)</b>	<b>Technology used</b>	<b>Licence duration, tradability</b>
Telfónica O2 (UK) Ltd	2124.9 - 2134.9 MHz	UTRA FDD	1/4/2000 – 31/12/2021 Not tradable
Vodafone Ltd	2134.9 - 2149.7 MHz	UTRA FDD	1/4/2000 – 31/12/2021 Not tradable
T-Mobile (UK) Limited	2149.7 - 2159.7 MHz	UTRA FDD	1/4/2000 – 31/12/2021 Not tradable
Orange Personal Communication Services Ltd	2159.7 - 2169.7 MHz	UTRA FDD	1/4/2000 – 31/12/2021 Not tradable
Hutchison 3G UK Limited	2110.3 - 2124.9 MHz	UTRA FDD	1/4/2000 – 31/12/2021 Not tradable

<sup>4</sup> – In this band duplex separation is 190 MHz, uplink and downlink bands are equal in size