

# 3GPP Spectrum bands



3GPP Release 16

# 3GPP Spectrum bands - 5G/NR



5G/NR - Operating in Frequency Range 1			
Band	Frequencies [MHz]	BW [MHz]	Duplex mode
n77	3300 - 4200	10 - 100	TDD
n78	3300 - 3800	10 - 100	TDD
n79	4400 - 5000	40 - 100	TDD
n80	1710 - 1785 / N/A	5 - 30	SUL
n81	880 - 915 / N/A	5 - 20	SUL
n82	832 - 862 / N/A	5 - 20	SUL
n83	703 - 748 / N/A	5 - 20	SUL
n84	1920 - 1980 / N/A	5 - 20	SUL
n86	1710 - 1780 / N/A	5 - 40	SUL
n90	2496 - 2690	10 - 100	TDD

5G/NR - Operating in Frequency Range 1			
Band	Identifier	Frequencies [MHz]	BW [MHz]
n1	IMT Core Band	1920 - 1980 / 2110 - 2170	5 - 20
n2	PCS 1900	1850 - 1910 / 1930 - 1990	5 - 20
n3	1800	1710 - 1785 / 1805 - 1880	5 - 30
n5	850	824 - 849 / 869 - 894	5 - 20
n7	IMT Extension	2500 - 2570 / 2620 - 2690	5 - 20
n8	900	880 - 915 / 925 - 960	5 - 20
n12	US 700 Lower A,B,C	699 - 716 / 729 - 746	5 - 15
n14	US 700 Upper D	788 - 798 / 758 - 768	5 - 10
n18	850 (Japan #4)	815 - 830 / 860 - 875	5 - 15
n20	CEPT 800	832 - 862 / 791 - 821	5 - 20
n25	PCS 1900 G	1850 - 1915 / 1930 - 1995	5 - 20
n28	APT 700	703 - 748 / 758 - 803	5 - 20
n30	LTE WCS	2305 - 2315 / 2350 - 2360	5 - 10
n34	TDD 2000 Upper	2010 - 2025	5 - 15
n38	IMT Extension Gap	2570 - 2620	5 - 20
n39	China TDD 1900	1880 - 1920	5 - 40
n40	TDD 2300	2300 - 2400	5 - 80
n41	TDD 2600	2496 - 2690	10 - 100
n48	US CBRS 3500	3550 - 3700	5 - 100
n50	TDD L-band	1432 - 1517	5 - 80
n51	TDD L-band, local	1427 - 1432	5
n65	2 GHz LTE	1920 - 2010 / 2110 - 2200	5 - 20
n66	AWS Extension	1710 - 1780 / 2110 - 2200	5 - 40
n70	AWS-3/4	1695 - 1710 / 1995 - 2020	5 - 25
n71	US 600	663 - 698 / 617 - 652	5 - 20
n74	FDD L-band	1427 - 1470 / 1475 - 1518	5 - 20
n75	Extended SDL L-band	N/A / 1432 - 1517	5 - 20
n76	Extended SDL L-band, local	N/A / 1427 - 1432	5

5G/NR - Operating in Frequency Range 2			
Band	Frequencies [GHz]	BW [MHz]	Duplex mode
n257	26.5 - 29.5	50 - 400	TDD
n258	24.25 - 27.5	50 - 400	TDD
n259	39.5 - 43.5	50 - 400	TDD
n260	37.0 - 40.0	50 - 400	TDD
n261	27.5 - 28.35	50 - 400	TDD

SUL = Supplementary Uplink  
 SDL = Supplementary Downlink

Reference: [3GPP Specification – FR1 \(sub 6 GHz\)](#)  
[3GPP Specification – FR2 \(mmWave\)](#)  
[3GPP Specification – CA & DC](#)

# 3GPP Spectrum bands - 4G/LTE



4G/LTE - FDD		
Band	Identifier	Frequencies [MHz]
1	IMT Core Band	1920 - 1980 / 2110 - 2170
2	PCS 1900	1850 - 1910 / 1930 - 1990
3	1800	1710 - 1785 / 1805 - 1880
4	AWS	1710 - 1755 / 2110 - 2155
5	850	824 - 849 / 869 - 894
7	IMT Extension	2500 - 2570 / 2620 - 2690
8	900	880 - 915 / 925 - 960
9	1700 (Japan #2)	1749.9 - 1784.9 / 1844.9 - 1879.9
10	3G Americas	1710 - 1770 / 2110 - 2170
11	1500 (Japan #3)	1427.9 - 1447.9 / 1475.9 - 1495.9
12	US 700 Low er A,B,C	699 - 716 / 729 - 746
13	US 700 Upper C	777 - 787 / 746 - 756
14	US 700 Upper D	788 - 798 / 758 - 768
17	US 700 Low er B,C	704 - 716 / 734 - 746
18	850 (Japan #4)	815 - 830 / 860 - 875
19	850 (Japan #5)	830 - 845 / 875 - 890
20	CEPT 800	832 - 862 / 791 - 821
21	1500 (Japan #6)	1447.9 - 1462.9 / 1495.9 - 1510.9
22	FDD 3500	3410 - 3490 / 3510 - 3590
23	US S-Band / AWS-4	2000 - 2020 / 2180 - 2200
24	US L-Band	1626.5 - 1660.5 / 1525 - 1559
25	PCS 1900 G	1850 - 1915 / 1930 - 1995
26	E850 Upper	814 - 849 / 859 - 894
27	E850 Low er LTE	807 - 824 / 852 - 869
28	APT 700	703 - 748 / 758 - 803
29	LTE DL FDD	N/A / 717 - 728
30	LTE WCS	2305 - 2315 / 2350 - 2360
31	LTE 450 Brazil	452.5 - 457.5 / 462.5 - 467.5
32	SDL L-band	N/A / 1452 - 1496

4G/LTE - FDD		
Band	Identifier	Frequencies [MHz]
65	2 GHz LTE	1920 - 2010 / 2110 - 2200
66	AWS Extension	1710 - 1780 / 2110 - 2200
67	European 700 SDL	N/A / 738 - 758
68	LTE 700 Arab Region	698 - 728 / 753 - 783
69	2.6 GHz SDL	N/A / 2570 - 2620
70	AWS-3/4	1695 - 1710 / 1995 - 2020
71	US 600	663 - 698 / 617 - 652
72	450 EU BB-PPDR	451 - 456 / 461 - 466
73	450 Region 3	450 - 455 / 460 - 465
74	FDD L-band	1427 - 1470 / 1475 - 1517
75	Extended SDL L-band	N/A / 1432 - 1517
76	Extended SDL L-band, local	N/A / 1427 - 1432
85	Extended band 12	698 - 716 / 728 - 746
87	PPDR PMR/PMAR in EU	410 - 415 / 420 - 425
88	PPDR PMR/PMAR in EU	412 - 417 / 422 - 427

4G/LTE - TDD		
Band	Identifier	Frequencies [MHz]
33	TDD 2000 Low er	1900 - 1920
34	TDD 2000 Upper	2010 - 2025
38	IMT Extension Gap	2570 - 2620
39	China TDD 1900	1880 - 1920
40	TDD 2300	2300 - 2400
41	TDD 2600	2496 - 2690
42	TDD 3500	3400 - 3600
43	TDD 3700	3600 - 3800
44	APT 700 TDD	698 - 806
45	China TDD 1400	1447 - 1467
46	LAA	5150 - 5925
47	V2X	5855 - 5925
48	US CBRS 3500	3550 - 3700
49	eLAA 3500	3550 - 3700
50	TDD L-band	1432 - 1517
51	TDD L-band, local	1427 - 1432
52	TDD 3300	3300 - 3400
53	2400 US	2483.5 - 2495

SDL = Supplementary Downlink

Reference: [3GPP Specification details](#)

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# 3GPP Spectrum bands – LTE-M (FDD)



LTE-M / Cat-M1&2		FDD (Half and full-duplex)
Band	Identifier	Frequencies [MHz]
1	IMT Core Band	1920 - 1980 / 2110 - 2170
2	PCS 1900	1850 - 1910 / 1930 - 1990
3	1800	1710 - 1785 / 1805 - 1880
4	AWS	1710 - 1755 / 2110 - 2155
5	850	824 - 849 / 869 - 894
7	IMT Extension	2500 - 2570 / 2620 - 2690
8	900	880 - 915 / 925 - 960
11	1500 (Japan #3)	1427.9 - 1447.9 / 1475.9 - 1495.9
12	US 700 Low er A,B,C	699 - 716 / 729 - 746
13	US 700 Upper C	777 - 787 / 746 - 756
14	US 700 Upper D	788 - 798 / 758 - 768
18	850 (Japan #4)	815 - 830 / 860 - 875
19	850 (Japan #5)	830 - 845 / 875 - 890
20	CEPT 800	832 - 862 / 791 - 821
21	1500 (Japan #6)	1447.9 - 1462.9 / 1495.9 - 1510.9
25	PCS 1900 G	1850 - 1915 / 1930 - 1995
26	E850 Upper	814 - 849 / 859 - 894
27	E850 Low er LTE	807 - 824 / 852 - 869
28	APT 700	703 - 748 / 758 - 803
31	LTE 450 Brazil	452.5 - 457.5 / 462.5 - 467.5
66	AWS Extension	1710 - 1780 / 2110 - 2200
71	US 600	663 - 698 / 617 - 652
72	450 EU BB-PPDR	451 - 456 / 461 - 466
73	450 Region 3	450 - 455 / 460 - 465
74	FDD L-band	1427 - 1470 / 1475 - 1517
85	Extended band 12	698 - 716 / 728 - 746
87	PPDR PMR/PMAR in EU	410 - 415 / 420 - 425
88	PPDR PMR/PMAR in EU	412 - 417 / 422 - 427

LTE-M / Cat-0		FDD (Half and full-duplex)
Band	Identifier	Frequencies [MHz]
2	PCS 1900	1850 - 1910 / 1930 - 1990
3	1800	1710 - 1785 / 1805 - 1880
4	AWS	1710 - 1755 / 2110 - 2155
5	850	824 - 849 / 869 - 894
8	900	880 - 915 / 925 - 960
13	US 700 Upper C	777 - 787 / 746 - 756
20	CEPT 800	832 - 862 / 791 - 821
25	PCS 1900 G	1850 - 1915 / 1930 - 1995
26	E850 Upper	814 - 849 / 859 - 894
28	APT 700	703 - 748 / 758 - 803

LTE-M / Cat-1bis		FDD (Full-duplex)
Band	Identifier	Frequencies [MHz]
1	IMT Core Band	1920 - 1980 / 2110 - 2170
2	PCS 1900	1850 - 1910 / 1930 - 1990
3	1800	1710 - 1785 / 1805 - 1880
4	AWS	1710 - 1755 / 2110 - 2155
5	850	824 - 849 / 869 - 894
7	IMT Extension	2500 - 2570 / 2620 - 2690
8	900	880 - 915 / 925 - 960
12	US 700 Low er A,B,C	699 - 716 / 729 - 746
13	US 700 Upper C	777 - 787 / 746 - 756
18	850 (Japan #4)	815 - 830 / 860 - 875
20	CEPT 800	832 - 862 / 791 - 821
26	E850 Upper	814 - 849 / 859 - 894
28	APT 700	703 - 748 / 758 - 803
31	LTE 450 Brazil	452.5 - 457.5 / 462.5 - 467.5
66	AWS Extension	1710 - 1780 / 2110 - 2200
72	450 EU BB-PPDR	451 - 456 / 461 - 466

Reference: [3GPP Specification details](#)

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# 3GPP Spectrum bands – LTE-M (TDD)



LTE-M / Cat-M1&2		TDD
Band	Identifier	Frequencies [MHz]
39	China TDD 1900	1880 - 1920
40	TDD 2300	2300 - 2400
41	TDD 2600	2496 - 2690

LTE-M / Cat-0		TDD
Band	Identifier	Frequencies [MHz]
39	China TDD 1900	1880 - 1920
40	TDD 2300	2300 - 2400
41	TDD 2600	2496 - 2690

LTE-M / Cat-1bis		TDD
Band	Identifier	Frequencies [MHz]
39	China TDD 1900	1880 - 1920
41	TDD 2600	2496 - 2690

# 3GPP Spectrum bands – NB-IOT (FDD & TDD)



NB-IOT / Cat-NB1&2		FDD (Half-duplex)
Band	Identifier	Frequencies [MHz]
1	IMT Core Band	1920 - 1980 / 2110 - 2170
2	PCS 1900	1850 - 1910 / 1930 - 1990
3	1800	1710 - 1785 / 1805 - 1880
4	AWS	1710 - 1755 / 2110 - 2155
5	850	824 - 849 / 869 - 894
8	900	880 - 915 / 925 - 960
11	1500 (Japan #3)	1427.9 - 1447.9 / 1475.9 - 1495.9
12	US 700 Lower A,B,C	699 - 716 / 729 - 746
13	US 700 Upper C	777 - 787 / 746 - 756
14	US 700 Upper D	788 - 798 / 758 - 768
17	US 700 Lower B,C	704 - 716 / 734 - 746
18	850 (Japan #4)	815 - 830 / 860 - 875
19	850 (Japan #5)	830 - 845 / 875 - 890
20	CEPT 800	832 - 862 / 791 - 821
21	1500 (Japan #6)	1447.9 - 1462.9 / 1495.9 - 1510.9
25	PCS 1900 G	1850 - 1915 / 1930 - 1995
26	E850 Upper	814 - 849 / 859 - 894
28	APT 700	703 - 748 / 758 - 803
31	LTE 450 Brazil	452.5 - 457.5 / 462.5 - 467.5
65	2 GHz LTE	1920 - 2010 / 2110 - 2200
66	AWS Extension	1710 - 1780 / 2110 - 2200
70	AWS-3/4	1695 - 1710 / 1995 - 2020
71	US 600	663 - 698 / 617 - 652
72	450 EU BB-PPDR	451 - 456 / 461 - 466
73	450 Region 3	450 - 455 / 460 - 465
74	FDD L-band	1427 - 1470 / 1475 - 1517
85	Extended band 12	698 - 716 / 728 - 746
87	PPDR PMR/PMAR in EU	410 - 415 / 420 - 425
88	PPDR PMR/PMAR in EU	412 - 417 / 422 - 427

NB-IOT / Cat-NB1&2		TDD
Band	Identifier	Frequencies [MHz]
41	TDD 2600	2496 - 2690

Reference: [3GPP Specification details](#)

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