



8.5. CONDUCTED SPURIOUS EMISSIONS

RULE PART(S)

FCC: §27.53

LIMITS

Part 27.53:

(c)(2) On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log (P)$ dB.

(h) The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10} (P)$ dB.

(m) (4) For mobile digital stations, the attenuation factor shall be not less than $40 + 10 \log (P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log (P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and $55 + 10 \log (P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less than $43 + 10 \log (P)$ dB on all frequencies between 2490.5 MHz and 2496 MHz and $55 + 10 \log (P)$ dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

(l)(2) For mobile operations in the 3700-3980 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed -13 dBm/MHz. Compliance with this paragraph (l)(2) is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, the minimum resolution bandwidth for the measurement shall be either one percent of the emission bandwidth of the fundamental emission of the transmitter or 350 kHz. In the bands between 1 and 5 MHz removed from the licensee's frequency block, the minimum resolution bandwidth for the measurement shall be 500 kHz. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

(n)(2) For mobile operations in the 3450-3550 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed -13 dBm/MHz. Compliance with this paragraph (n)(2) is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed, but limited to a maximum of 200 kHz. In the bands between 1 and 5 MHz removed from the licensee's frequency block, the minimum resolution bandwidth for the measurement shall be 500 kHz. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

TEST PROCEDURE

Per KDB 971168 D01 Power Meas License Digital Systems v03r01

The RF output of the transmitter was connected to a spectrum analyzer through a calibrated coaxial cable. Sufficient scans were taken to show the out-of-band Emissions, if any, up to 10th harmonic. Multiple sweeps were recorded in maximum hold Mode using a peak detector to ensure that the worst-case emissions were caught.

- a) Set the RBW = 100 kHz for emission below 1 GHz and 1 MHz for emissions above 1 GHz
(Tests were performed 1MHz [Worst case], to sweep 1 time for all frequency range)
- b) Set VBW $\geq 3 \times$ RBW;
- c) Set span ≥ 1.5 times the OBW;
- d) Sweep time = auto couple;
- e) Detector = rms;
- f) Ensure that the number of measurement points = Max (40001);
- g) Trace Mode = average(WCDMA, LTE FDD, 5G NR FDD),
Max hold(LTE TDD, 5G NR TDD);

NOTE1

5G NR: All Waveforms (CP-OFDM vs DFT-s_OFDM) and modulations ($\pi/2$ BPSK, QPSK, 16QAM, 64QAM, 256QAM) were investigated to determine the worst case configuration. All Modes of operation were investigated and the worst case configuration results are reported in this section.

NOTE2

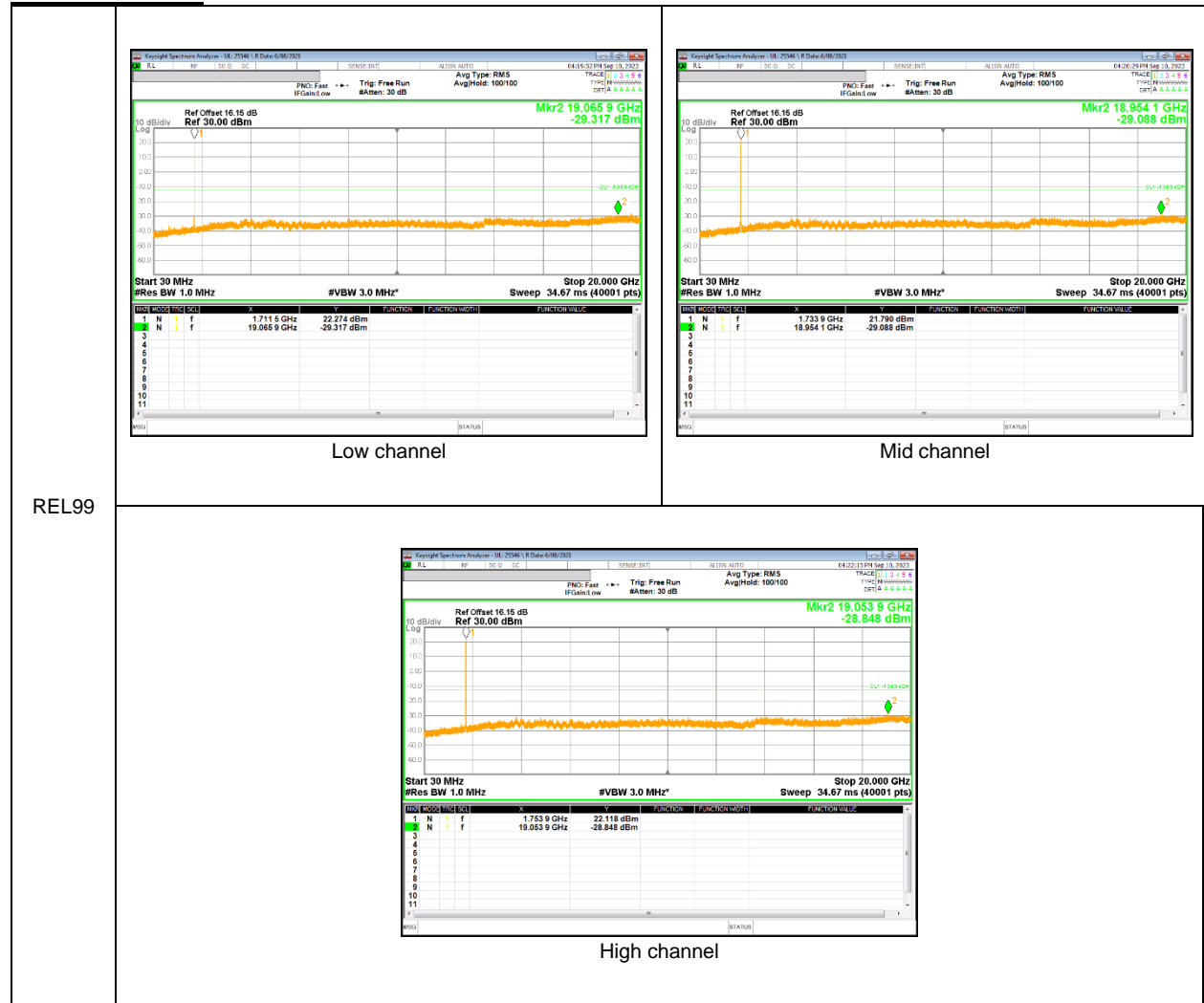
Please refer to section 5.4 for bandwidth and RB setting about LTE, 5G NR bands.

RESULTS

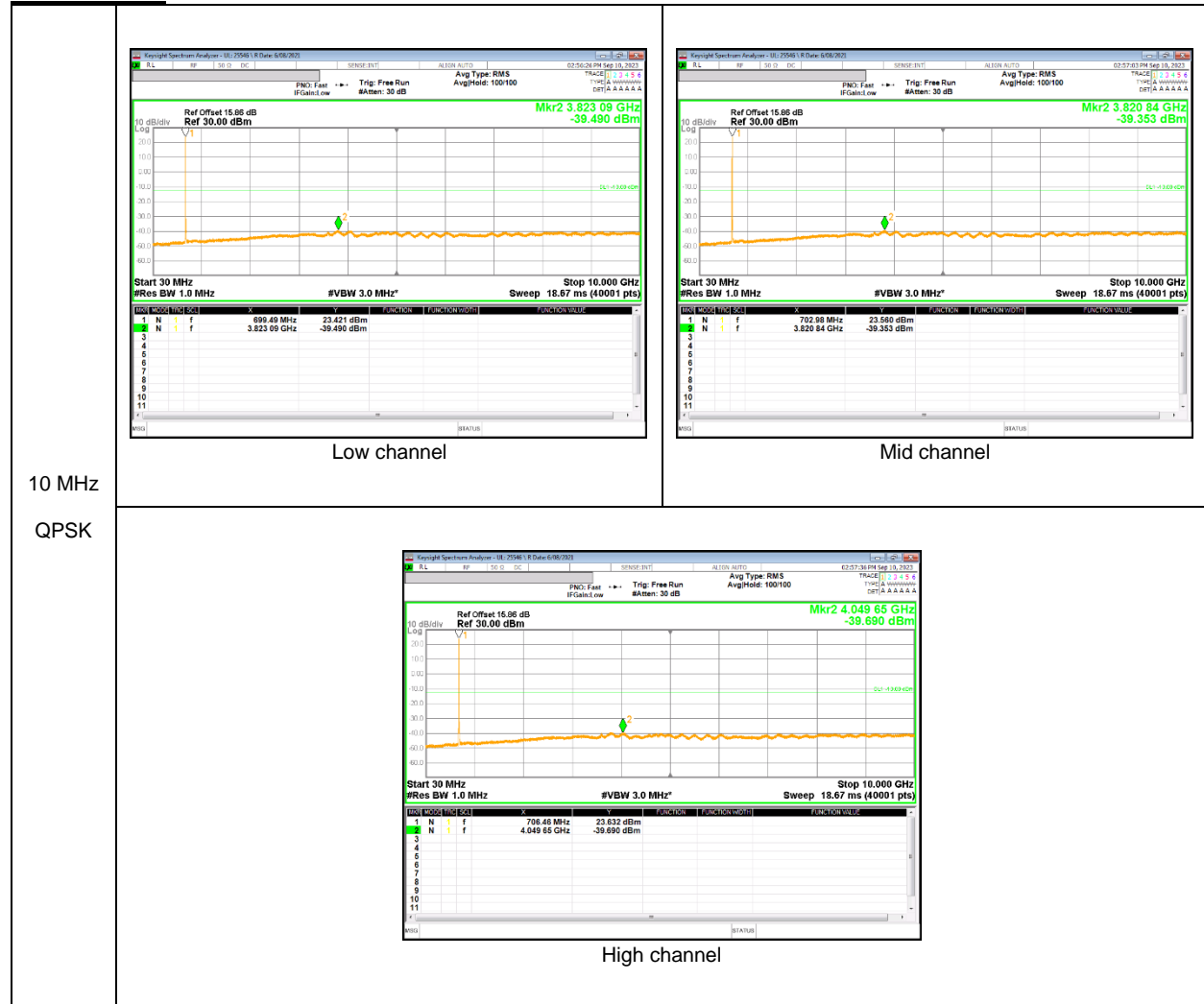
See the following pages.

8.5.1. OUT OF BAND EMISSIONS RESULT

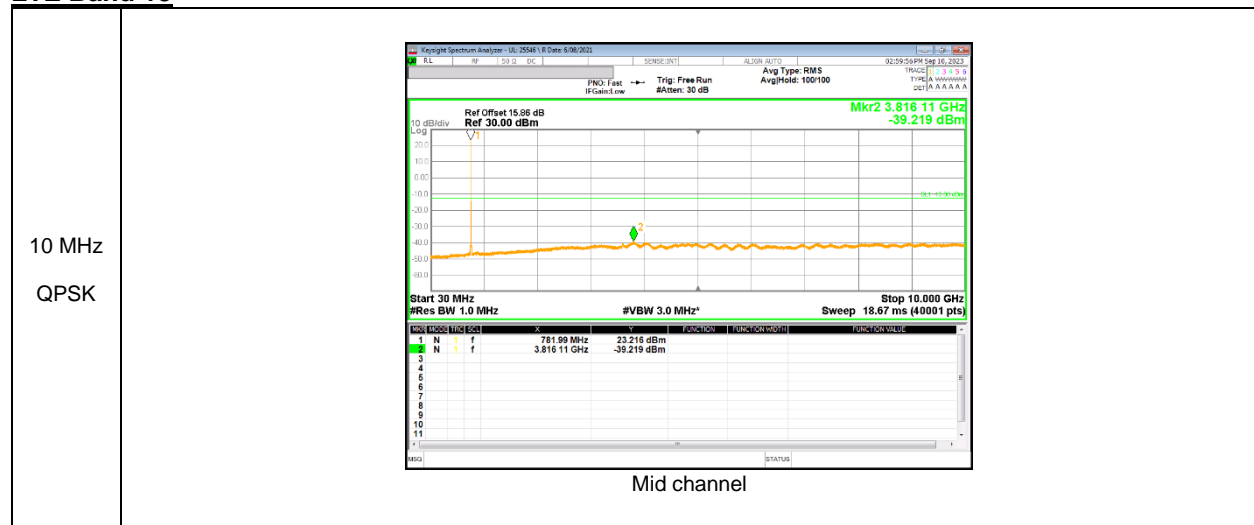
WCDMA Band 4



LTE Band 12



LTE Band 13



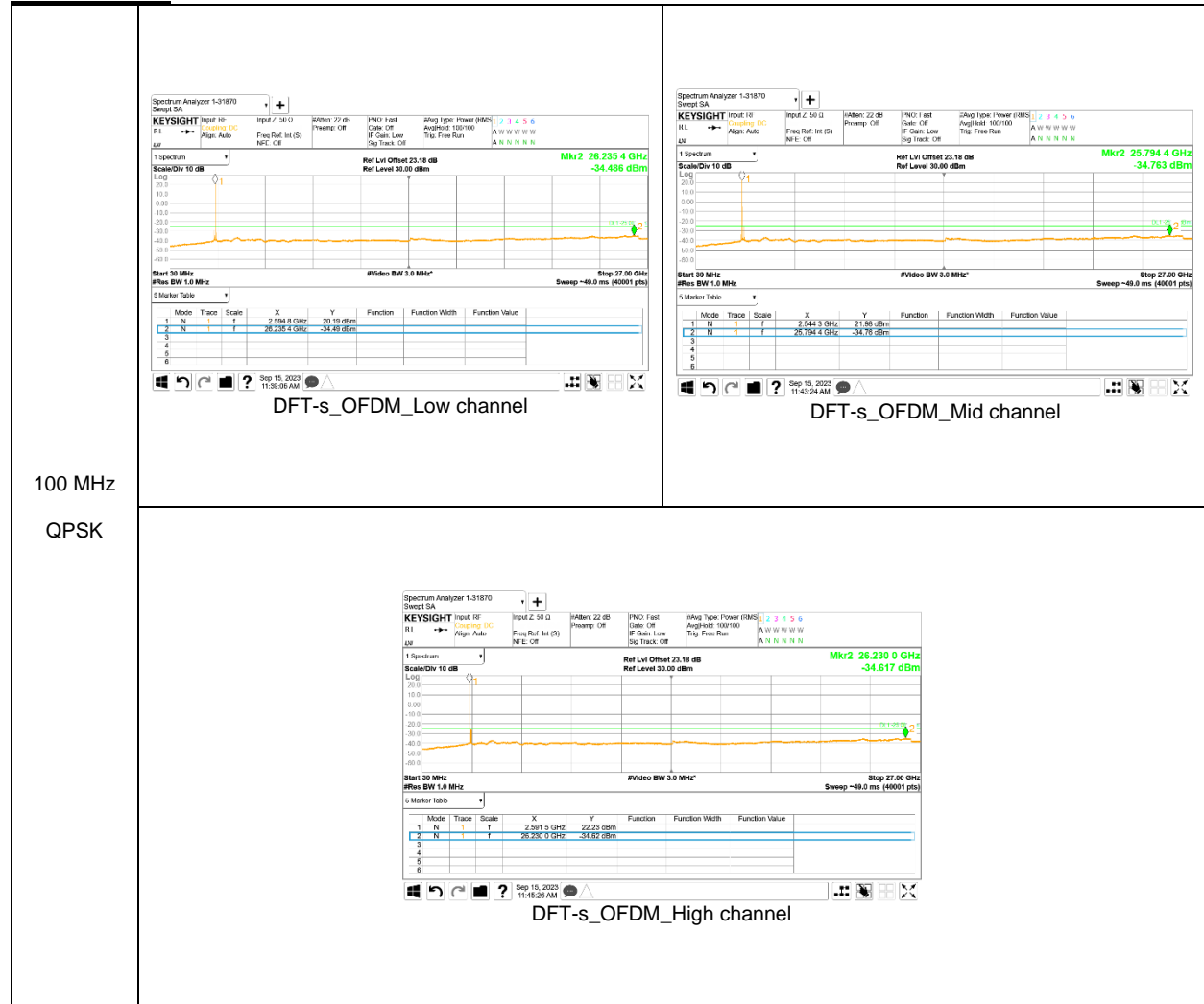
LTE Band 41(PC2)



LTE Band 66



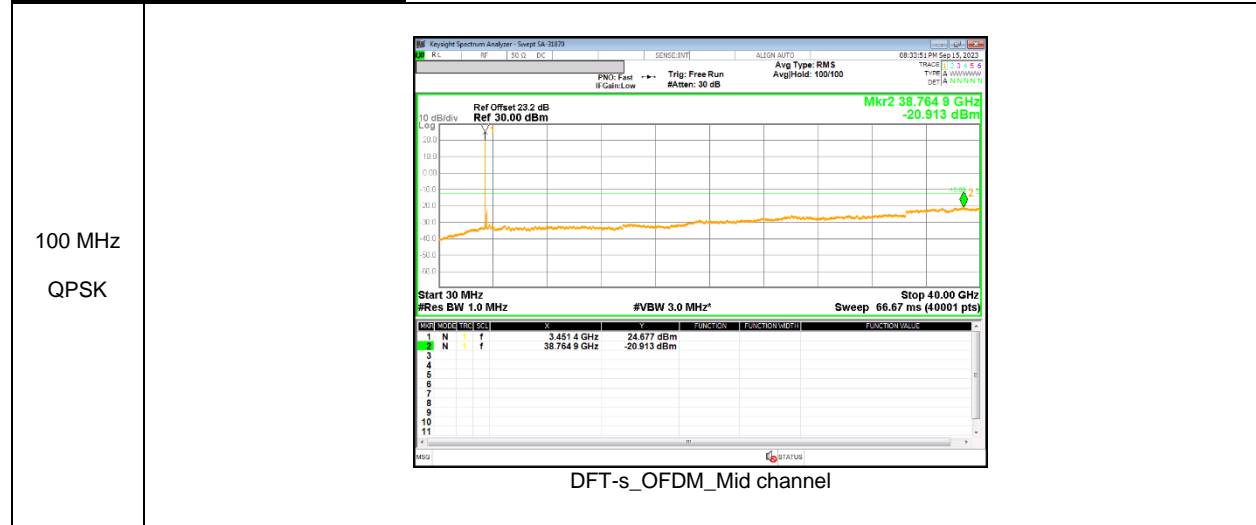
NR Band n41



NR Band n66



NR Band n77(3450 – 3550 MHz)



NR Band n77(3700 – 3980 MHz)



8.6. FREQUENCY STABILITY

RULE PART(S)

FCC: §2.1055, §27.54

LIMITS

§27.54 - The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

TEST PROCEDURE

Per KDB 971168 D01 Power Meas License Digital Systems v03r01

RESULTS

See the following pages.

NOTE

Test were performed each lowest or highest frequency on the modulation condition of more wide bandwidth.(Please refer to section 9.1.1 OBW results)

8.6.1. FREQUENCY STABILITY RESULTS

WCDMA Band 4 (Lowest Frequency: HSDPA/ Highest Frequency: HSDPA)

Test Date	2023-09-07
Test Engineer	47989

Limit		1710	1755	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	1710.3169	1754.6849		
Extreme (50C)		1710.3169	1754.6849	8.7	0.005
Extreme (40C)		1710.3169	1754.6849	10.5	0.006
Extreme (30C)		1710.3169	1754.6849	13.5	0.008
Extreme (10C)		1710.3169	1754.6849	13.1	0.008
Extreme (0C)		1710.3169	1754.6849	7.1	0.004
Extreme (-10C)		1710.3169	1754.6849	11.1	0.006
Extreme (-20C)		1710.3169	1754.6849	7.3	0.004
Extreme (-30C)		1710.3169	1754.6849	9.0	0.005
20C	15%	1710.3169	1754.6849	10.5	0.006
	-15%	1710.3169	1754.6849	10.0	0.006
	End Point	1710.3169	1754.6849	11.5	0.007

LTE Band 12 (Lowest Frequency: 16QAM / Highest Frequency: 16QAM)

Test Date	2023-09-13
Test Engineer	47989

Limit		699	716	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW (MHz)	F high @ End of OBW (MHz)		
Temperature	Voltage				
Normal (20C)	Normal	699.1553	715.8473		
Extreme (50C)		699.1553	715.8473	4.1	0.006
Extreme (40C)		699.1553	715.8473	3.4	0.005
Extreme (30C)		699.1553	715.8473	4.5	0.006
Extreme (10C)		699.1553	715.8473	4.1	0.006
Extreme (0C)		699.1553	715.8473	5.0	0.007
Extreme (-10C)		699.1553	715.8473	6.4	0.009
Extreme (-20C)		699.1553	715.8473	3.0	0.004
Extreme (-30C)		699.1553	715.8473	5.7	0.008
20C	15%	699.1553	715.8473	4.2	0.006
	-15%	699.1553	715.8473	5.5	0.008
	End Point	699.1553	715.8473	4.7	0.007

LTE Band 13 (Lowest Frequency: 16QAM / Highest Frequency: QPSK)

Test Date	2023-09-14
Test Engineer	47989

Limit		777	787	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	777.2434	786.7560		
Extreme (50C)		777.2434	786.7560	3.6	0.005
Extreme (40C)		777.2434	786.7560	4.4	0.006
Extreme (30C)		777.2434	786.7560	3.6	0.005
Extreme (10C)		777.2434	786.7560	2.9	0.004
Extreme (0C)		777.2434	786.7560	5.2	0.007
Extreme (-10C)		777.2434	786.7560	3.9	0.005
Extreme (-20C)		777.2434	786.7560	4.7	0.006
Extreme (-30C)		777.2434	786.7560	5.6	0.007
20C	15%	777.2434	786.7560	6.4	0.008
	-15%	777.2434	786.7560	3.9	0.005
	End Point	777.2434	786.7560	4.6	0.006

LTE Band 41(PC2) (Lowest Frequency: 16QAM / Highest Frequency: 16QAM)

Test Date	2023-09-22
Test Engineer	47989

Limit		2496	2690	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	2496.2565	2689.7481		
Extreme (50C)		2496.2565	2689.7481	15.7	0.006
Extreme (40C)		2496.2565	2689.7481	16.4	0.006
Extreme (30C)		2496.2565	2689.7481	25.5	0.010
Extreme (10C)		2496.2565	2689.7481	26.6	0.010
Extreme (0C)		2496.2565	2689.7481	18.2	0.007
Extreme (-10C)		2496.2565	2689.7481	19.5	0.008
Extreme (-20C)		2496.2565	2689.7481	22.3	0.009
Extreme (-30C)		2496.2565	2689.7481	20.7	0.008
20C	15%	2496.2565	2689.7481	19.4	0.007
	-15%	2496.2565	2689.7481	24.4	0.009
	End Point	2496.2565	2689.7481	22.7	0.009

LTE Band 66 (Lowest Frequency: QPSK / Highest Frequency: QPSK)

Test Date	2023-09-26
Test Engineer	47989

Limit		1710	1780	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	1710.1553	1779.8436		
Extreme (50C)		1710.1553	1779.8436	8.9	0.005
Extreme (40C)		1710.1553	1779.8436	9.6	0.006
Extreme (30C)		1710.1553	1779.8436	11.1	0.006
Extreme (10C)		1710.1553	1779.8436	7.9	0.004
Extreme (0C)		1710.1553	1779.8436	8.2	0.005
Extreme (-10C)		1710.1553	1779.8436	11.4	0.007
Extreme (-20C)		1710.1553	1779.8436	10.7	0.006
Extreme (-30C)		1710.1553	1779.8436	8.5	0.005
20C	15%	1710.1553	1779.8436	13.4	0.008
	-15%	1710.1553	1779.8436	11.7	0.007
	End Point	1710.1553	1779.8436	13.7	0.008

5G NR Band n41 (Lowest Frequency: QPSK / Highest Frequency: 16QAM)

Test Date	2023-10-11
Test Engineer	47989

Normal (20C)		2496	2690	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW (MHz)	F high @ End of OBW (MHz)		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	2496.7021	2689.3120		
Extreme (50C)		2496.7021	2689.3120	26.4	0.010
Extreme (40C)		2496.7021	2689.3120	27.6	0.011
Extreme (30C)		2496.7021	2689.3120	31.7	0.012
Extreme (10C)		2496.7021	2689.3120	28.4	0.011
Extreme (0C)		2496.7021	2689.3120	25.3	0.010
Extreme (-10C)		2496.7021	2689.3120	24.0	0.009
Extreme (-20C)		2496.7021	2689.3120	18.4	0.007
Extreme (-30C)		2496.7021	2689.3120	20.7	0.008
20C	15%	2496.7021	2689.3120	23.4	0.009
	-15%	2496.7021	2689.3120	21.7	0.008
	End Point	2496.7021	2689.3120	22.5	0.009

5G NR Band n66 (Lowest Frequency: QPSK / Highest Frequency: QPSK)

Test Date	2023-10-13
Test Engineer	47989

Limit		1710	1780	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	1710.2579	1779.7469		
Extreme (50C)		1710.2579	1779.7469	15.5	0.009
Extreme (40C)		1710.2579	1779.7469	18.3	0.011
Extreme (30C)		1710.2579	1779.7469	11.4	0.007
Extreme (10C)		1710.2579	1779.7469	16.3	0.009
Extreme (0C)		1710.2579	1779.7469	10.7	0.006
Extreme (-10C)		1710.2579	1779.7469	9.6	0.006
Extreme (-20C)		1710.2579	1779.7469	12.3	0.007
Extreme (-30C)		1710.2579	1779.7469	16.0	0.009
20C	15%	1710.2579	1779.7469	12.4	0.007
	-15%	1710.2579	1779.7469	11.5	0.007
	End Point	1710.2579	1779.7469	15.7	0.009

NR Band n77 3450 – 3550 MHz
(Lowest Frequency: QPSK / Highest Frequency: QPSK)

Test Date	2023-10-17
Test Engineer	47989

Limit		3450	3550	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	3450.7160	3549.3117		
Extreme (50C)		3450.7160	3549.3117	36.5	0.010
Extreme (40C)		3450.7160	3549.3117	33.4	0.010
Extreme (30C)		3450.7160	3549.3117	35.6	0.010
Extreme (10C)		3450.7160	3549.3117	28.7	0.008
Extreme (0C)		3450.7160	3549.3117	29.3	0.008
Extreme (-10C)		3450.7160	3549.3117	35.4	0.010
Extreme (-20C)		3450.7160	3549.3117	34.0	0.010
Extreme (-30C)		3450.7160	3549.3117	33.5	0.010
20C	15%	3450.7160	3549.3117	38.4	0.011
	-15%	3450.7160	3549.3117	35.7	0.010
	End Point	3450.7160	3549.3117	36.7	0.010

NR Band n77 3700 – 3980 MHz
(Lowest Frequency: QPSK / Highest Frequency: QPSK)

Test Date	2023-10-17
Test Engineer	47989

Limit		3700	3980	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	3700.7045	3979.3135		
Extreme (50C)		3700.7045	3979.3135	40.3	0.010
Extreme (40C)		3700.7045	3979.3135	38.4	0.010
Extreme (30C)		3700.7045	3979.3135	34.7	0.009
Extreme (10C)		3700.7045	3979.3135	36.4	0.009
Extreme (0C)		3700.7045	3979.3135	30.6	0.008
Extreme (-10C)		3700.7045	3979.3135	41.5	0.011
Extreme (-20C)		3700.7045	3979.3135	35.6	0.009
Extreme (-30C)		3700.7045	3979.3135	37.5	0.010
20C	15%	3700.7045	3979.3135	32.5	0.008
	-15%	3700.7045	3979.3135	33.7	0.009
	End Point	3700.7045	3979.3135	35.5	0.009

9. RADIATED RESULTS

9.1. RADIATED POWER (ERP & EIRP)

RULE PART(S)

FCC: §2.1046, §27.50

LIMITS

27.50:

(b)(10) Portable stations (hand-held devices) transmitting in the 746-757 MHz, 776-788 MHz, and 805-806 MHz bands are limited to 3 watts ERP.

(d)(4) Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP.

(h) The following power limits shall apply in the BRS and EBS:

(2) Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

(j)(3) Mobile and portable stations are limited to 1 Watt EIRP. Mobile and portable stations operating in these bands must employ a means for limiting power to the minimum necessary for successful communications.

(k)(3) Mobile devices are limited to 1Watt (30 dBm) EIRP. Mobile devices operating in these bands must employ a means for limiting power to the minimum necessary for successful communications.

TEST PROCEDURE

ANSI / TIA / EIA 603 E Clause 2.2.17; ESU40 setting reference to 971168 D01 v03r01

For radiated output power measurement with a ESU40:

- a) Set the RBW \geq OBW;
- b) Set VBW $\geq 3 \times$ RBW;
- c) Set span $\geq 2 \times$ RBW;
- d) Sweep time = auto couple or 1 second;
- e) Detector = rms;
- f) Ensure that the number of measurement points \geq span/RBW;
- g) Trace Mode = max hold(WCDMA), average(LTE, 5G NR);

TEST RESULTS

See the following pages.

9.1.1. ERP/EIRP Results

WCDMA (ANT A)

Band	Mode	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (dBm)	Delta (dB)
Band 4_ANT A	REL99	1712.40	18.63	H	4.31	9.51	23.83	241.72	30.00	-6.17
		1732.60	18.22	H	4.33	9.60	23.50	223.70	30.00	-6.50
		1752.60	18.23	H	4.36	9.68	23.56	227.06	30.00	-6.44
	HSDPA	1712.40	17.86	H	4.31	9.51	23.06	202.45	30.00	-6.94
		1732.60	17.23	H	4.33	9.60	22.51	178.10	30.00	-7.49
		1752.60	17.33	H	4.36	9.68	22.66	184.56	30.00	-7.34

LTE Band 12 (ANT A)

BW (MHz)	Modulation	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	ERP (mW)	Limit (dBm)	Delta (dB)	RB
10	QPSK	704.00	21.04	V	2.79	-1.34	16.91	49.09	34.77	-17.86	1/25
		707.50	21.29	V	2.79	-1.34	17.16	52.00	34.77	-17.61	1/25
		711.00	21.31	V	2.80	-1.33	17.18	52.27	34.77	-17.59	1/25
	16-QAM	704.00	19.79	V	2.79	-1.34	15.66	36.81	34.77	-19.11	1/25
		707.50	20.28	V	2.79	-1.34	16.15	41.21	34.77	-18.62	1/25
		711.00	19.93	V	2.80	-1.33	15.80	38.04	34.77	-18.97	1/25
5	QPSK	701.50	20.41	V	2.78	-1.35	16.28	42.51	34.77	-18.49	1/12
		707.50	21.14	V	2.79	-1.34	17.01	50.23	34.77	-17.76	1/12
		713.50	21.42	V	2.81	-1.32	17.30	53.65	34.77	-17.47	1/12
	16-QAM	701.50	19.41	V	2.78	-1.35	15.28	33.76	34.77	-19.49	1/12
		707.50	20.12	V	2.79	-1.34	15.99	39.72	34.77	-18.78	1/12
		713.50	20.27	V	2.81	-1.32	16.15	41.17	34.77	-18.62	1/12
3	QPSK	700.50	20.26	V	2.78	-1.35	16.13	41.00	34.77	-18.64	1/0
		707.50	21.14	V	2.79	-1.34	17.01	50.23	34.77	-17.76	1/0
		714.50	21.46	V	2.81	-1.32	17.33	54.10	34.77	-17.44	1/14
	16-QAM	700.50	19.26	V	2.78	-1.35	15.13	32.57	34.77	-19.64	1/0
		707.50	20.02	V	2.79	-1.34	15.89	38.81	34.77	-18.88	1/0
		714.50	20.40	V	2.81	-1.32	16.27	42.38	34.77	-18.50	1/0
1.4	QPSK	699.70	20.17	V	2.78	-1.35	16.04	40.19	34.77	-18.73	1/0
		707.50	21.40	V	2.79	-1.34	17.27	53.33	34.77	-17.50	1/0
		715.30	21.61	V	2.81	-1.32	17.48	56.01	34.77	-17.29	1/3
	16-QAM	699.70	18.84	V	2.78	-1.35	14.71	29.59	34.77	-20.06	1/3
		707.50	20.28	V	2.79	-1.34	16.15	41.21	34.77	-18.62	1/5
		715.30	20.78	V	2.81	-1.32	16.65	46.27	34.77	-18.12	1/3

LTE Band 13 (ANT A)

Modulation	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	ERP (mW)	Limit (dBm)	Delta (dB)	RB
QPSK	782.00	22.53	V	2.93	-1.19	18.41	69.32	34.77	-16.36	1/0
16-QAM	782.00	21.50	V	2.93	-1.19	17.38	54.69	34.77	-17.39	1/0
QPSK	779.50	22.40	V	2.93	-1.19	18.28	67.30	34.77	-16.49	1/12
	782.00	22.72	V	2.93	-1.19	18.60	72.42	34.77	-16.17	1/12
	784.50	23.08	V	2.94	-1.18	18.96	78.65	34.77	-15.81	1/12
16-QAM	779.50	21.32	V	2.93	-1.19	17.20	52.48	34.77	-17.57	1/12
	782.00	21.45	V	2.93	-1.19	17.33	54.06	34.77	-17.44	1/0
	784.50	21.98	V	2.94	-1.18	17.86	61.05	34.77	-16.91	1/12

LTE Band 41 (PC2, ANT B)

BW (MHz)	Modulation	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (dBm)	Delta (dB)	RB
20	QPSK	2506.00	19.34	H	5.25	10.07	24.16	260.35	33.00	-8.84	1/49
		2593.00	19.92	H	5.34	9.97	24.55	285.36	33.00	-8.45	1/49
		2680.00	19.87	H	5.43	10.04	24.48	280.41	33.00	-8.52	1/49
	16-QAM	2506.00	18.90	H	5.25	10.07	23.72	235.27	33.00	-9.28	1/49
		2593.00	19.42	H	5.34	9.97	24.05	254.33	33.00	-8.95	1/49
		2680.00	19.40	H	5.43	10.04	24.01	251.65	33.00	-8.99	1/49
15	QPSK	2503.50	19.05	H	5.24	10.07	23.88	244.25	33.00	-9.12	1/37
		2593.00	19.95	H	5.34	9.97	24.58	287.34	33.00	-8.42	1/37
		2682.50	19.99	H	5.43	10.05	24.61	288.82	33.00	-8.39	1/0
	16-QAM	2503.50	18.49	H	5.24	10.07	23.32	214.70	33.00	-9.68	1/37
		2593.00	18.69	H	5.34	9.97	23.32	214.98	33.00	-9.68	1/37
		2682.50	19.19	H	5.43	10.05	23.81	240.23	33.00	-9.19	1/37
10	QPSK	2501.00	19.51	H	5.24	10.07	24.34	271.87	33.00	-8.66	1/25
		2593.00	19.47	H	5.34	9.97	24.10	257.27	33.00	-8.90	1/49
		2685.00	19.44	H	5.43	10.05	24.06	254.60	33.00	-8.94	1/25
	16-QAM	2501.00	18.80	H	5.24	10.07	23.63	230.87	33.00	-9.37	1/49
		2593.00	18.73	H	5.34	9.97	23.36	216.97	33.00	-9.64	1/49
		2685.00	18.97	H	5.43	10.05	23.59	228.49	33.00	-9.41	1/49
5	QPSK	2498.50	19.99	H	5.23	10.07	24.83	303.95	33.00	-8.17	1/24
		2593.00	20.03	H	5.34	9.97	24.66	292.68	33.00	-8.34	1/0
		2687.50	20.59	H	5.44	10.06	25.20	331.18	33.00	-7.80	1/0
	16-QAM	2498.50	19.56	H	5.23	10.07	24.40	275.29	33.00	-8.60	1/12
		2593.00	19.17	H	5.34	9.97	23.80	240.10	33.00	-9.20	1/24
		2687.50	19.81	H	5.44	10.06	24.42	276.74	33.00	-8.58	1/12

LTE Band 66 (ANT A)

BW (MHz)	Modulation	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (dBm)	Delta (dB)	RB
20	QPSK	1720.00	18.01	H	4.32	9.55	23.24	210.72	30.00	-6.76	1/0
		1745.00	18.29	H	4.35	9.66	23.60	229.28	30.00	-6.40	1/0
		1770.00	17.25	H	4.38	9.68	22.56	180.21	30.00	-7.44	1/0
	16-QAM	1720.00	17.37	H	4.32	9.55	22.60	181.84	30.00	-7.40	1/0
		1745.00	17.59	H	4.35	9.66	22.90	195.15	30.00	-7.10	1/0
		1770.00	16.36	H	4.38	9.68	21.67	146.82	30.00	-8.33	1/0
15	QPSK	1717.50	17.88	H	4.31	9.53	23.10	204.28	30.00	-6.90	1/0
		1745.00	17.75	H	4.35	9.66	23.06	202.47	30.00	-6.94	1/37
		1772.50	16.11	H	4.38	9.68	21.41	138.25	30.00	-8.59	1/37
	16-QAM	1717.50	16.98	H	4.31	9.53	22.20	166.04	30.00	-7.80	1/37
		1745.00	16.97	H	4.35	9.66	22.28	169.19	30.00	-7.72	1/37
		1772.50	15.39	H	4.38	9.68	20.69	117.13	30.00	-9.31	1/37
10	QPSK	1715.00	17.64	H	4.31	9.52	22.85	192.92	30.00	-7.15	1/25
		1745.00	17.93	H	4.35	9.66	23.24	211.04	30.00	-6.76	1/0
		1775.00	16.74	H	4.38	9.68	22.04	159.87	30.00	-7.96	1/0
	16-QAM	1715.00	17.02	H	4.31	9.52	22.23	167.25	30.00	-7.77	1/0
		1745.00	17.15	H	4.35	9.66	22.46	176.35	30.00	-7.54	1/0
		1775.00	16.04	H	4.38	9.68	21.34	136.07	30.00	-8.66	1/0
5	QPSK	1712.50	17.93	H	4.31	9.51	23.14	205.99	30.00	-6.86	1/12
		1745.00	17.92	H	4.35	9.66	23.23	210.55	30.00	-6.77	1/12
		1777.50	16.42	H	4.39	9.68	21.72	148.43	30.00	-8.28	1/12
	16-QAM	1712.50	16.87	H	4.31	9.51	22.08	161.38	30.00	-7.92	1/12
		1745.00	17.32	H	4.35	9.66	22.63	183.39	30.00	-7.37	1/12
		1777.50	15.29	H	4.39	9.68	20.59	114.43	30.00	-9.41	1/12
3	QPSK	1711.50	17.78	H	4.31	9.51	22.98	198.72	30.00	-7.02	1/14
		1745.00	17.79	H	4.35	9.66	23.10	204.35	30.00	-6.90	1/8
		1778.50	16.22	H	4.39	9.68	21.51	141.52	30.00	-8.49	1/8
	16-QAM	1711.50	16.96	H	4.31	9.51	22.16	164.53	30.00	-7.84	1/8
		1745.00	16.98	H	4.35	9.66	22.29	169.58	30.00	-7.71	1/14
		1778.50	15.32	H	4.39	9.68	20.61	115.04	30.00	-9.39	1/8
1.4	QPSK	1710.70	17.77	H	4.31	9.50	22.97	198.12	30.00	-7.03	1/3
		1745.00	17.94	H	4.35	9.66	23.25	211.53	30.00	-6.75	1/5
		1779.30	16.66	H	4.39	9.68	21.95	156.75	30.00	-8.05	1/0
	16-QAM	1710.70	16.98	H	4.31	9.50	22.18	165.17	30.00	-7.82	1/3
		1745.00	17.16	H	4.35	9.66	22.47	176.75	30.00	-7.53	1/5
		1779.30	15.76	H	4.39	9.68	21.05	127.41	30.00	-8.95	1/5

LTE Band 66 (ANT F)

BW (MHz)	Modulation	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (dBm)	Delta (dB)	RB
20	QPSK	1720.00	13.62	H	4.32	9.55	18.85	76.68	30.00	-11.15	1/49
		1745.00	14.01	H	4.35	9.66	19.32	86.58	30.00	-10.68	1/49
		1770.00	13.92	H	4.38	9.68	19.23	83.71	30.00	-10.77	1/49
	16-QAM	1720.00	12.91	H	4.32	9.55	18.14	65.12	30.00	-11.86	1/49
		1745.00	13.27	H	4.35	9.66	18.58	72.17	30.00	-11.42	1/49
		1770.00	13.10	H	4.38	9.68	18.41	69.31	30.00	-11.59	1/49
15	QPSK	1717.50	13.61	H	4.31	9.53	18.83	76.42	30.00	-11.17	1/38
		1745.00	13.63	H	4.35	9.66	18.94	78.41	30.00	-11.06	1/38
		1772.50	13.61	H	4.38	9.68	18.91	77.74	30.00	-11.09	1/38
	16-QAM	1717.50	12.81	H	4.31	9.53	18.03	63.57	30.00	-11.97	1/38
		1745.00	12.80	H	4.35	9.66	18.11	64.77	30.00	-11.89	1/38
		1772.50	12.95	H	4.38	9.68	18.25	66.78	30.00	-11.75	1/38
10	QPSK	1715.00	13.79	H	4.31	9.52	19.00	79.50	30.00	-11.00	1/25
		1745.00	13.17	H	4.35	9.66	18.48	70.53	30.00	-11.52	1/25
		1775.00	13.69	H	4.38	9.68	18.99	79.21	30.00	-11.01	1/25
	16-QAM	1715.00	12.94	H	4.31	9.52	18.15	65.37	30.00	-11.85	1/25
		1745.00	12.34	H	4.35	9.66	17.65	58.26	30.00	-12.35	1/25
		1775.00	13.04	H	4.38	9.68	18.34	68.20	30.00	-11.66	1/25
5	QPSK	1712.50	13.15	H	4.31	9.51	18.36	68.53	30.00	-11.64	1/12
		1745.00	13.90	H	4.35	9.66	19.21	83.44	30.00	-10.79	1/12
		1777.50	13.77	H	4.39	9.68	19.07	80.64	30.00	-10.93	1/12
	16-QAM	1712.50	12.60	H	4.31	9.51	17.81	60.37	30.00	-12.19	1/12
		1745.00	12.99	H	4.35	9.66	18.30	67.67	30.00	-11.70	1/12
		1777.50	13.00	H	4.39	9.68	18.30	67.54	30.00	-11.70	1/12
3	QPSK	1711.50	13.78	H	4.31	9.51	18.98	79.11	30.00	-11.02	1/8
		1745.00	13.57	H	4.35	9.66	18.88	77.33	30.00	-11.12	1/8
		1778.50	13.49	H	4.39	9.68	18.78	75.48	30.00	-11.22	1/8
	16-QAM	1711.50	13.04	H	4.31	9.51	18.24	66.72	30.00	-11.76	1/8
		1745.00	12.66	H	4.35	9.66	17.97	62.67	30.00	-12.03	1/8
		1778.50	12.87	H	4.39	9.68	18.16	65.47	30.00	-11.84	1/8
1.4	QPSK	1710.70	13.80	H	4.31	9.50	19.00	79.42	30.00	-11.00	1/3
		1745.00	13.21	H	4.35	9.66	18.52	71.18	30.00	-11.48	1/3
		1779.30	13.75	H	4.39	9.68	19.04	80.21	30.00	-10.96	1/3
	16-QAM	1710.70	13.11	H	4.31	9.50	18.31	67.80	30.00	-11.69	1/3
		1745.00	12.55	H	4.35	9.66	17.86	61.15	30.00	-12.14	1/3
		1779.30	12.90	H	4.39	9.68	18.19	65.95	30.00	-11.81	1/3

5G NR n41(ANT F)

BW (MHz)	Modulation	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (dBm)	Delta (dB)	RB
100	QPSK	2546.01	18.68	H	5.29	9.91	23.31	214.10	33.00	-9.69	1/271
		2592.99	18.20	H	5.34	9.91	22.78	189.48	33.00	-10.22	1/137
		2640.00	19.04	H	5.39	9.88	23.52	224.92	33.00	-9.48	1/137
	16-QAM	2546.01	17.77	H	5.29	9.91	22.40	173.62	33.00	-10.60	1/271
		2592.99	17.15	H	5.34	9.91	21.73	148.79	33.00	-11.27	1/137
		2640.00	17.92	H	5.39	9.88	22.40	173.79	33.00	-10.60	1/137
90	QPSK	2541.00	19.77	H	5.28	9.92	24.41	276.08	33.00	-8.59	1/243
		2592.99	18.87	H	5.34	9.91	23.45	221.09	33.00	-9.55	1/243
		2644.98	20.73	H	5.40	9.87	25.21	331.87	33.00	-7.79	1/243
	16-QAM	2541.00	18.86	H	5.28	9.92	23.50	223.89	33.00	-9.50	1/243
		2592.99	18.13	H	5.34	9.91	22.71	186.45	33.00	-10.29	1/243
		2644.98	19.97	H	5.40	9.87	24.45	278.33	33.00	-8.55	1/243
80	QPSK	2536.02	18.35	H	5.28	9.93	23.01	199.83	33.00	-9.99	1/215
		2592.99	18.64	H	5.34	9.91	23.22	209.68	33.00	-9.78	1/215
		2649.99	18.81	H	5.41	9.87	23.27	212.41	33.00	-9.73	1/1
	16-QAM	2536.02	17.36	H	5.28	9.93	22.02	159.09	33.00	-10.98	1/215
		2592.99	17.47	H	5.34	9.91	22.05	160.16	33.00	-10.95	1/215
		2649.99	17.87	H	5.41	9.87	22.33	171.03	33.00	-10.67	1/1
70	QPSK	2531.02	19.14	H	5.28	9.94	23.81	240.25	33.00	-9.19	1/187
		2593.99	18.65	H	5.34	9.91	23.23	210.17	33.00	-9.77	1/95
		2654.98	20.77	H	5.41	9.87	25.22	332.99	33.00	-7.78	1/187
	16-QAM	2531.02	18.51	H	5.28	9.94	23.18	207.81	33.00	-9.82	1/187
		2593.99	17.72	H	5.34	9.91	22.30	169.65	33.00	-10.70	1/95
		2654.98	19.82	H	5.41	9.87	24.28	267.87	33.00	-8.72	1/187
60	QPSK	2526.00	18.78	H	5.27	9.95	23.46	221.83	33.00	-9.54	1/160
		2592.99	17.97	H	5.34	9.91	22.55	179.71	33.00	-10.45	1/160
		2659.98	19.02	H	5.41	9.87	23.47	222.45	33.00	-9.53	1/1
	16-QAM	2526.00	17.96	H	5.27	9.95	22.64	183.71	33.00	-10.36	1/160
		2592.99	17.05	H	5.34	9.91	21.63	145.53	33.00	-11.37	1/160
		2659.98	18.05	H	5.41	9.87	22.50	177.92	33.00	-10.50	1/1
50	QPSK	2521.01	19.00	H	5.26	9.96	23.70	234.33	33.00	-9.30	1/131
		2592.99	18.04	H	5.34	9.91	22.62	182.63	33.00	-10.38	1/131
		2665.00	19.29	H	5.42	9.87	23.73	236.26	33.00	-9.27	1/1
	16-QAM	2521.01	18.19	H	5.26	9.96	22.89	194.46	33.00	-10.11	1/131
		2592.99	16.97	H	5.34	9.91	21.55	142.88	33.00	-11.45	1/131
		2665.00	18.35	H	5.42	9.87	22.79	190.28	33.00	-10.21	1/1
40	QPSK	2516.01	19.06	H	5.26	9.97	23.77	237.99	33.00	-9.23	1/53
		2592.99	18.27	H	5.34	9.91	22.84	192.38	33.00	-10.16	1/53
		2670.00	19.46	H	5.43	9.87	23.91	245.78	33.00	-9.09	1/1
	16-QAM	2516.01	18.11	H	5.26	9.97	22.82	191.54	33.00	-10.18	1/53
		2592.99	17.24	H	5.34	9.91	21.81	151.83	33.00	-11.19	1/53
		2670.00	18.69	H	5.43	9.87	23.14	206.04	33.00	-9.86	1/1
30	QPSK	2511.00	19.08	H	5.25	9.98	23.81	240.49	33.00	-9.19	1/76
		2592.99	18.41	H	5.34	9.91	22.99	198.87	33.00	-10.01	1/39
		2675.00	20.97	H	5.43	9.87	25.41	347.73	33.00	-7.59	1/76
	16-QAM	2511.00	18.20	H	5.25	9.98	22.93	196.20	33.00	-10.07	1/76
		2592.99	17.40	H	5.34	9.91	21.97	157.53	33.00	-11.03	1/39
		2675.00	19.97	H	5.43	9.87	24.42	276.65	33.00	-8.58	1/76
20	QPSK	2506.02	17.80	H	5.25	9.99	22.54	179.50	33.00	-10.46	1/1
		2592.99	17.02	H	5.34	9.91	21.60	144.40	33.00	-11.40	1/1
		2679.99	19.20	H	5.43	9.87	23.64	231.04	33.00	-9.36	1/1
	16-QAM	2506.02	16.89	H	5.25	9.99	21.63	145.57	33.00	-11.37	1/1
		2592.99	16.19	H	5.34	9.91	20.77	119.28	33.00	-12.23	1/1
		2679.99	18.36	H	5.43	9.87	22.80	190.41	33.00	-10.20	1/1
15	QPSK	2503.50	17.68	H	5.24	9.99	22.43	175.03	33.00	-10.57	1/19
		2592.99	17.92	H	5.34	9.91	22.50	177.65	33.00	-10.50	1/36
		2682.48	19.59	H	5.43	9.87	24.03	253.08	33.00	-8.97	1/36
	16-QAM	2503.50	16.64	H	5.24	9.99	21.39	137.75	33.00	-11.61	1/19
		2592.99	17.01	H	5.34	9.91	21.59	144.07	33.00	-11.41	1/36
		2682.48	18.87	H	5.43	9.87	23.31	214.39	33.00	-9.69	1/36
10	QPSK	2501.01	18.10	H	5.24	10.00	22.86	193.20	33.00	-10.14	1/1
		2592.99	17.50	H	5.34	9.91	22.08	161.27	33.00	-10.92	1/22
		2685.00	19.66	H	5.43	9.87	24.10	257.02	33.00	-8.90	1/22
	16-QAM	2501.01	17.24	H	5.24	10.00	22.00	158.49	33.00	-11.00	1/1
		2592.99	16.63	H	5.34	9.91	21.21	132.00	33.00	-11.79	1/22
		2685.00	19.00	H	5.43	9.87	23.44	220.78	33.00	-9.56	1/22

5G NR n41(SRS1, ANT B)

BW (MHz)	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (dBm)	Delta (dB)
10	2501.01	17.65	H	5.24	10.00	22.40	173.94	33.00	-10.60
	2592.99	18.51	H	5.34	9.91	23.09	203.64	33.00	-9.91
	2685.00	18.37	H	5.43	9.87	22.81	190.97	33.00	-10.19

5G NR n41(SRS2, ANT E)

BW (MHz)	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (dBm)	Delta (dB)
10	2501.01	14.12	H	5.24	10.00	18.87	77.14	33.00	-14.13
	2592.99	14.88	H	5.34	9.91	19.46	88.26	33.00	-13.54
	2685.00	14.80	H	5.43	9.87	19.24	84.02	33.00	-13.76

5G NR n41(SRS3, ANT D)

BW (MHz)	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (dBm)	Delta (dB)
40	2516.01	7.68	H	5.26	9.97	12.39	17.32	33.00	-20.61
	2592.99	8.59	H	5.34	9.91	13.17	20.75	33.00	-19.83
	2670.00	6.52	H	5.43	9.87	10.96	12.48	33.00	-22.04

5G NR n66 (ANT A)

BW (MHz)	Modulation	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (dBm)	Delta (dB)	RB
20	QPSK	1720.00	18.99	H	4.32	9.55	24.22	263.96	30.00	-5.78	1/53
		1745.00	18.50	H	4.35	9.66	23.81	240.55	30.00	-6.19	1/1
		1770.00	18.28	H	4.38	9.68	23.59	228.54	30.00	-6.41	1/1
	16-QAM	1720.00	18.06	H	4.32	9.55	23.29	213.08	30.00	-6.71	1/53
		1745.00	17.52	H	4.35	9.66	22.83	191.96	30.00	-7.17	1/1
		1770.00	17.10	H	4.38	9.68	22.41	174.17	30.00	-7.59	1/1
15	QPSK	1717.50	19.19	H	4.31	9.53	24.41	275.91	30.00	-5.59	1/1
		1745.00	18.95	H	4.35	9.66	24.26	266.81	30.00	-5.74	1/1
		1772.50	17.91	H	4.38	9.68	23.22	209.69	30.00	-6.78	1/1
	16-QAM	1717.50	18.14	H	4.31	9.53	23.36	216.66	30.00	-6.64	1/1
		1745.00	17.96	H	4.35	9.66	23.27	212.42	30.00	-6.73	1/1
		1772.50	17.06	H	4.38	9.68	22.37	172.42	30.00	-7.63	1/1
10	QPSK	1715.00	18.97	H	4.31	9.52	24.18	262.11	30.00	-5.82	1/1
		1745.00	18.89	H	4.35	9.66	24.20	263.15	30.00	-5.90	1/1
		1775.00	17.76	H	4.38	9.68	23.06	202.38	30.00	-6.94	1/26
	16-QAM	1715.00	17.82	H	4.31	9.52	23.03	201.13	30.00	-6.97	1/1
		1745.00	17.68	H	4.35	9.66	22.99	199.16	30.00	-7.01	1/1
		1775.00	16.68	H	4.38	9.68	21.98	157.82	30.00	-8.02	1/26
5	QPSK	1712.50	18.63	H	4.31	9.51	23.83	241.54	30.00	-6.17	1/1
		1745.00	17.91	H	4.35	9.66	23.22	209.99	30.00	-6.78	1/1
		1777.50	17.80	H	4.39	9.68	23.09	203.65	30.00	-6.91	1/1
	16-QAM	1712.50	17.60	H	4.31	9.51	22.80	190.54	30.00	-7.20	1/1
		1745.00	16.85	H	4.35	9.66	22.16	164.51	30.00	-7.84	1/1
		1777.50	16.82	H	4.39	9.68	22.11	162.51	30.00	-7.89	1/1

5G NR n66 (ANT F)

BW (MHz)	Modulation	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (dBm)	Delta (dB)	RB
20	QPSK	1720.00	13.69	H	4.32	9.55	18.92	78.00	30.00	-11.08	1/1
		1745.00	13.11	H	4.35	9.66	18.42	69.56	30.00	-11.58	1/52
		1770.00	13.70	H	4.38	9.68	19.01	79.57	30.00	-10.99	1/52
	16-QAM	1720.00	12.76	H	4.32	9.55	17.99	62.92	30.00	-12.01	1/1
		1745.00	12.20	H	4.35	9.66	17.52	56.44	30.00	-12.48	1/52
		1770.00	12.84	H	4.38	9.68	18.14	65.17	30.00	-11.86	1/52
15	QPSK	1717.50	13.22	H	4.31	9.53	18.44	69.83	30.00	-11.56	1/1
		1745.00	13.48	H	4.35	9.66	18.80	75.78	30.00	-11.20	1/1
		1772.50	13.26	H	4.38	9.68	18.56	71.72	30.00	-11.44	1/77
	16-QAM	1717.50	12.26	H	4.31	9.53	17.48	55.95	30.00	-12.52	1/1
		1745.00	12.59	H	4.35	9.66	17.91	61.78	30.00	-12.09	1/1
		1772.50	12.31	H	4.38	9.68	17.61	57.63	30.00	-12.39	1/77
10	QPSK	1715.00	13.44	H	4.31	9.52	18.65	73.35	30.00	-11.35	1/26
		1745.00	13.31	H	4.35	9.66	18.62	72.84	30.00	-11.38	1/26
		1775.00	13.81	H	4.38	9.68	19.10	81.33	30.00	-10.90	1/26
	16-QAM	1715.00	12.57	H	4.31	9.52	17.78	60.03	30.00	-12.22	1/26
		1745.00	12.40	H	4.35	9.66	17.71	59.07	30.00	-12.29	1/26
		1775.00	12.87	H	4.38	9.68	18.17	65.58	30.00	-11.83	1/26
5	QPSK	1712.50	13.45	H	4.31	9.51	18.66	73.43	30.00	-11.34	1/1
		1745.00	13.60	H	4.35	9.66	18.91	77.87	30.00	-11.09	1/1
		1777.50	13.16	H	4.39	9.68	18.46	70.07	30.00	-11.54	1/23
	16-QAM	1712.50	12.65	H	4.31	9.51	17.85	60.95	30.00	-12.15	1/1
		1745.00	12.66	H	4.35	9.66	17.98	62.77	30.00	-12.02	1/1
		1777.50	12.10	H	4.39	9.68	17.40	54.89	30.00	-12.60	1/23

5G NR n77(3450-3550 MHz, ANT F)

BW (MHz)	Modulation	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (dBm)	Delta (dB)	RB
100	QPSK	3499.98	18.66	H	6.21	10.67	23.12	205.17	30.00	-6.88	1/1
	16-QAM	3499.98	17.81	H	6.21	10.67	22.27	168.70	30.00	-7.73	1/1
90	QPSK	3495.00	18.47	H	6.21	10.66	22.92	196.07	30.00	-7.08	1/1
		3499.98	18.14	H	6.21	10.67	22.60	182.01	30.00	-7.40	1/1
		3504.99	18.04	H	6.21	10.68	22.50	178.02	30.00	-7.50	1/1
	16-QAM	3495.00	17.64	H	6.21	10.66	22.09	161.96	30.00	-7.91	1/1
		3499.98	17.18	H	6.21	10.67	21.64	145.92	30.00	-8.36	1/1
		3504.99	17.35	H	6.21	10.68	21.81	151.87	30.00	-8.19	1/1
80	QPSK	3490.02	18.65	H	6.20	10.66	23.11	204.84	30.00	-6.89	1/1
		3499.98	17.93	H	6.21	10.67	22.39	173.42	30.00	-7.61	1/109
		3510.00	17.53	H	6.22	10.69	21.99	158.30	30.00	-8.01	1/109
	16-QAM	3490.02	17.62	H	6.20	10.66	22.08	161.59	30.00	-7.92	1/1
		3499.98	16.86	H	6.21	10.67	21.32	135.55	30.00	-8.68	1/109
		3510.00	16.78	H	6.22	10.69	21.24	133.19	30.00	-8.76	1/109
70	QPSK	3485.01	18.65	H	6.20	10.65	23.10	204.27	30.00	-6.90	1/1
		3499.98	17.86	H	6.21	10.67	22.32	170.65	30.00	-7.68	1/95
		3514.98	17.47	H	6.22	10.70	21.94	156.30	30.00	-8.06	1/95
	16-QAM	3485.01	17.68	H	6.20	10.65	22.13	163.38	30.00	-7.87	1/1
		3499.98	17.03	H	6.21	10.67	21.49	140.96	30.00	-8.51	1/95
		3514.98	16.68	H	6.22	10.70	21.15	130.30	30.00	-8.85	1/95
60	QPSK	3480.00	18.38	H	6.19	10.65	22.84	192.17	30.00	-7.16	1/1
		3499.98	18.00	H	6.21	10.67	22.46	176.24	30.00	-7.54	1/81
		3519.99	17.75	H	6.23	10.71	22.23	166.92	30.00	-7.77	1/1
	16-QAM	3480.00	17.40	H	6.19	10.65	21.86	153.35	30.00	-8.14	1/1
		3499.98	17.07	H	6.21	10.67	21.53	142.27	30.00	-8.47	1/81
		3514.98	17.09	H	6.23	10.71	21.57	143.39	30.00	-8.43	1/1
50	QPSK	3475.02	18.40	H	6.18	10.64	22.86	193.17	30.00	-7.14	1/1
		3499.98	17.85	H	6.21	10.67	22.31	170.26	30.00	-7.69	1/67
		3525.00	17.75	H	6.23	10.71	22.23	167.06	30.00	-7.77	1/1
	16-QAM	3475.02	17.50	H	6.18	10.64	21.96	157.01	30.00	-8.04	1/1
		3499.98	16.99	H	6.21	10.67	21.45	139.67	30.00	-8.55	1/67
		3525.00	16.86	H	6.23	10.71	21.34	136.17	30.00	-8.66	1/1
40	QPSK	3470.01	18.24	H	6.18	10.63	22.69	185.89	30.00	-7.31	1/1
		3499.98	17.85	H	6.21	10.67	22.31	170.26	30.00	-7.69	1/53
		3529.98	17.62	H	6.23	10.72	22.10	162.36	30.00	-7.90	1/1
	16-QAM	3470.01	17.32	H	6.18	10.63	21.77	150.40	30.00	-8.23	1/1
		3499.98	16.84	H	6.21	10.67	21.30	134.93	30.00	-8.70	1/53
		3529.98	16.91	H	6.23	10.72	21.39	137.88	30.00	-8.61	1/1
30	QPSK	3465.00	18.17	H	6.17	10.63	22.62	182.98	30.00	-7.38	1/1
		3499.98	17.87	H	6.21	10.67	22.33	171.04	30.00	-7.67	1/39
		3535.02	17.42	H	6.24	10.73	21.91	155.36	30.00	-8.09	1/39
	16-QAM	3465.00	17.22	H	6.17	10.63	21.67	147.03	30.00	-8.33	1/1
		3499.98	17.05	H	6.21	10.67	21.51	141.61	30.00	-8.49	1/39
		3535.02	16.56	H	6.24	10.73	21.05	127.45	30.00	-8.95	1/39
20	QPSK	3460.02	17.99	H	6.17	10.62	22.44	175.54	30.00	-7.56	1/1
		3499.98	17.44	H	6.21	10.67	21.90	154.92	30.00	-8.10	1/1
		3540.00	17.42	H	6.24	10.74	21.92	155.65	30.00	-8.08	1/1
	16-QAM	3460.02	17.03	H	6.17	10.62	21.48	140.73	30.00	-8.52	1/1
		3499.98	16.72	H	6.21	10.67	21.18	131.25	30.00	-8.82	1/1
		3540.00	16.68	H	6.24	10.74	21.18	131.26	30.00	-8.82	1/1
15	QPSK	3457.50	18.11	H	6.17	10.62	22.56	180.38	30.00	-7.44	1/1
		3499.98	17.57	H	6.21	10.67	22.03	159.63	30.00	-7.97	1/19
		3542.49	17.52	H	6.24	10.75	22.03	159.41	30.00	-7.97	1/1
	16-QAM	3457.50	17.32	H	6.17	10.62	21.77	150.38	30.00	-8.23	1/1
		3499.98	16.66	H	6.21	10.67	21.12	129.45	30.00	-8.88	1/19
		3542.49	16.66	H	6.24	10.75	21.17	130.77	30.00	-8.83	1/1
10	QPSK	3455.01	18.21	H	6.16	10.61	22.66	184.61	30.00	-7.34	1/1
		3499.98	17.68	H	6.21	10.67	22.14	163.72	30.00	-7.86	1/12
		3544.98	17.45	H	6.24	10.75	21.95	156.85	30.00	-8.05	1/12
	16-QAM	3455.01	17.30	H	6.16	10.61	21.75	149.71	30.00	-8.25	1/1
		3499.98	16.78	H	6.21	10.67	21.24	133.08	30.00	-8.76	1/12
		3544.98	16.59	H	6.24	10.75	21.09	128.67	30.00	-8.91	1/12

5G NR n77(3450-3550 MHz, SRS1, ANT C)

BW (MHz)	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (dBm)	Delta (dB)
10	3455.01	18.59	H	6.16	10.61	23.04	201.37	30.00	-6.96
	3499.98	17.72	H	6.21	10.67	22.19	165.46	30.00	-7.81
	3544.98	17.62	H	6.24	10.75	22.12	163.04	30.00	-7.88

5G NR n77(3450-3550 MHz, SRS2, ANT I)

BW (MHz)	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (dBm)	Delta (dB)
10	3455.01	12.68	H	6.16	10.61	17.13	51.68	30.00	-12.87
	3499.98	12.85	H	6.21	10.67	17.31	53.83	30.00	-12.69
	3544.98	13.58	H	6.24	10.75	18.09	64.39	30.00	-11.91

5G NR n77(3450-3550 MHz, SRS3, ANT D)

BW (MHz)	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (dBm)	Delta (dB)
10	3455.01	15.83	H	6.16	10.61	20.29	106.80	30.00	-9.71
	3499.98	15.16	H	6.21	10.67	19.62	91.69	30.00	-10.38
	3544.98	14.99	H	6.24	10.75	19.49	89.02	30.00	-10.51

5G NR n77(3700-3980 MHz, ANT F)

BW (MHz)	Modulation	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (dBm)	Delta (dB)	RB
100	QPSK	3750.00	19.16	H	6.43	10.69	23.42	219.94	30.00	-6.58	1/271
		3840.00	18.91	H	6.50	10.58	22.98	198.69	30.00	-7.02	1/1
		3930.00	19.89	H	6.58	10.48	23.79	239.20	30.00	-6.21	1/271
	16-QAM	3750.00	18.20	H	6.43	10.69	22.46	176.32	30.00	-7.54	1/271
		3840.00	18.00	H	6.50	10.58	22.07	161.13	30.00	-7.93	1/1
		3930.00	18.91	H	6.58	10.48	22.81	190.88	30.00	-7.19	1/271
90	QPSK	3745.02	18.40	H	6.43	10.70	22.68	185.20	30.00	-7.32	1/243
		3840.00	19.01	H	6.50	10.58	23.08	203.32	30.00	-6.92	1/1
		3934.98	19.58	H	6.59	10.48	23.47	222.41	30.00	-6.53	1/1
	16-QAM	3745.02	17.66	H	6.43	10.70	21.94	156.18	30.00	-8.06	1/243
		3840.00	18.10	H	6.50	10.58	22.17	164.89	30.00	-7.83	1/1
		3934.98	18.63	H	6.59	10.48	22.52	178.72	30.00	-7.48	1/1
80	QPSK	3740.01	18.13	H	6.42	10.70	22.42	174.55	30.00	-7.58	1/215
		3840.00	19.05	H	6.50	10.58	23.12	205.20	30.00	-6.88	1/1
		3939.99	19.74	H	6.59	10.47	23.62	230.16	30.00	-6.38	1/215
	16-QAM	3740.01	17.10	H	6.42	10.70	21.39	137.69	30.00	-8.61	1/215
		3840.00	18.20	H	6.50	10.58	22.27	168.73	30.00	-7.73	1/1
		3939.99	18.86	H	6.59	10.47	22.74	187.94	30.00	-7.26	1/215
70	QPSK	3735.00	18.01	H	6.41	10.71	22.30	169.84	30.00	-7.70	1/1
		3840.00	19.20	H	6.50	10.58	23.27	212.42	30.00	-6.73	1/1
		3945.00	19.79	H	6.60	10.47	23.67	232.69	30.00	-6.33	1/1
	16-QAM	3735.00	16.95	H	6.41	10.71	21.24	133.06	30.00	-8.76	1/1
		3840.00	18.42	H	6.50	10.58	22.49	177.49	30.00	-7.51	1/1
		3945.00	18.88	H	6.60	10.47	22.76	188.71	30.00	-7.24	1/1
60	QPSK	3730.02	17.88	H	6.41	10.72	22.19	165.47	30.00	-7.81	1/81
		3840.00	19.20	H	6.50	10.58	23.27	212.42	30.00	-6.73	1/1
		3949.98	19.91	H	6.60	10.47	23.78	238.63	30.00	-6.22	1/81
	16-QAM	3730.02	16.94	H	6.41	10.72	21.25	133.27	30.00	-8.75	1/81
		3840.00	18.22	H	6.50	10.58	22.29	169.51	30.00	-7.71	1/1
		3949.98	18.68	H	6.60	10.47	22.55	179.77	30.00	-7.45	1/81
50	QPSK	3725.01	17.64	H	6.41	10.72	21.96	156.95	30.00	-8.04	1/1
		3840.00	18.85	H	6.50	10.58	22.92	195.97	30.00	-7.08	1/1
		3954.99	19.43	H	6.60	10.47	23.29	213.54	30.00	-6.71	1/67
	16-QAM	3725.01	16.77	H	6.41	10.72	21.09	128.46	30.00	-8.91	1/1
		3840.00	17.94	H	6.50	10.58	22.01	158.92	30.00	-7.99	1/1
		3954.99	18.48	H	6.60	10.47	22.34	171.58	30.00	-7.66	1/67
40	QPSK	3720.02	17.85	H	6.40	10.73	22.17	165.00	30.00	-7.83	1/104
		3840.00	18.58	H	6.50	10.58	22.65	184.16	30.00	-7.35	1/1
		3960.00	19.30	H	6.60	10.47	23.16	207.20	30.00	-6.84	1/53
	16-QAM	3720.02	16.92	H	6.40	10.73	21.24	133.19	30.00	-8.76	1/104
		3840.00	17.46	H	6.50	10.58	21.53	142.29	30.00	-8.47	1/1
		3960.00	18.39	H	6.60	10.47	22.25	168.07	30.00	-7.75	1/53
30	QPSK	3715.02	17.56	H	6.40	10.73	21.89	154.51	30.00	-8.11	1/76
		3840.00	18.72	H	6.50	10.58	22.79	190.19	30.00	-7.21	1/1
		3964.98	19.53	H	6.61	10.46	23.38	217.92	30.00	-6.62	1/1
	16-QAM	3715.02	16.72	H	6.40	10.73	21.05	127.34	30.00	-8.95	1/76
		3840.00	17.82	H	6.50	10.58	21.89	154.59	30.00	-8.11	1/1
		3964.98	18.74	H	6.61	10.46	22.59	181.68	30.00	-7.41	1/1
20	QPSK	3710.01	16.91	H	6.39	10.74	21.25	133.49	30.00	-8.75	1/1
		3840.00	18.81	H	6.50	10.58	22.88	194.17	30.00	-7.12	1/1
		3969.99	19.58	H	6.61	10.46	23.43	220.32	30.00	-6.57	1/1
	16-QAM	3710.01	15.94	H	6.39	10.74	20.28	106.77	30.00	-9.72	1/1
		3840.00	17.83	H	6.50	10.58	21.90	154.95	30.00	-8.10	1/1
		3969.99	18.58	H	6.61	10.46	22.43	175.01	30.00	-7.57	1/1
15	QPSK	3707.52	17.26	H	6.39	10.74	21.60	144.61	30.00	-8.40	1/19
		3840.00	18.72	H	6.50	10.58	22.79	190.19	30.00	-7.21	1/1
		3972.48	19.12	H	6.62	10.46	22.97	198.00	30.00	-7.03	1/19
	16-QAM	3707.52	16.45	H	6.39	10.74	20.79	120.01	30.00	-9.21	1/19
		3840.00	17.89	H	6.50	10.58	21.96	157.10	30.00	-8.04	1/1
		3972.48	18.38	H	6.62	10.46	22.23	166.98	30.00	-7.77	1/19
10	QPSK	3705.00	17.18	H	6.39	10.74	21.54	142.45	30.00	-8.46	1/1
		3840.00	18.87	H	6.50	10.58	22.94	196.87	30.00	-7.06	1/1
		3975.00	19.49	H	6.62	10.46	23.32	215.01	30.00	-6.68	1/12
	16-QAM	3705.00	16.32	H	6.39	10.74	20.68	116.86	30.00	-9.32	1/1
		3840.00	17.95	H	6.50	10.58	22.02	159.29	30.00	-7.98	1/1
		3975.00	18.47	H	6.62	10.46	22.30	169.96	30.00	-7.70	1/12

5G NR n77(3700-3980 MHz, SRS1, ANT C)

BW (MHz)	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (dBm)	Delta (dB)
100	3750.00	21.90	H	6.43	10.69	26.16	413.33	30.00	-3.84
	3840.00	20.85	H	6.50	10.58	24.92	310.59	30.00	-5.08
	3930.00	20.90	H	6.58	10.48	24.80	301.83	30.00	-5.20

5G NR n77(3700-3980 MHz, SRS2, ANT I)

BW (MHz)	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (dBm)	Delta (dB)
50	3725.01	21.39	H	6.41	10.72	25.71	372.20	30.00	-4.29
	3840.00	21.07	H	6.50	10.58	25.14	326.73	30.00	-4.86
	3954.99	21.00	H	6.60	10.47	24.86	306.54	30.00	-5.14

5G NR n77(3700-3980 MHz, SRS3, ANT D)

BW (MHz)	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (dBm)	Delta (dB)
60	3730.02	21.52	H	6.41	10.72	25.82	381.76	30.00	-4.18
	3840.00	21.08	H	6.50	10.58	25.15	327.48	30.00	-4.85
	3949.98	21.28	H	6.60	10.47	25.15	327.10	30.00	-4.85

9.2. RADIATED SPURIOUS EMISSION

RULE PART(S)

FCC: §2.1053, §27. 53

LIMIT

Part 27.53(h) The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log (P)$ dB.

Part 27.53:

(c)(2) On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log (P)$ dB.

(h) The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10} (P)$ dB.

(m) (4) For mobile digital stations, the attenuation factor shall be not less than $40 + 10 \log (P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log (P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and $55 + 10 \log (P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less than $43 + 10 \log (P)$ dB on all frequencies between 2490.5 MHz and 2496 MHz and $55 + 10 \log (P)$ dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

(l)(2) For mobile operations in the 3700-3980 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed -13 dBm/MHz. Compliance with this paragraph (l)(2) is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, the minimum resolution bandwidth for the measurement shall be either one percent of the emission bandwidth of the fundamental emission of the transmitter or 350 kHz. In the bands between 1 and 5 MHz removed from the licensee's frequency block, the minimum resolution bandwidth for the measurement shall be 500 kHz. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

(n)(2) For mobile operations in the 3450-3550 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed -13 dBm/MHz. Compliance with this paragraph (n)(2) is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed, but limited to a maximum of 200 kHz. In the bands between 1 and 5 MHz removed from the licensee's frequency block, the minimum resolution bandwidth for the measurement shall be 500 kHz. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

TEST PROCEDURE

ANSI / TIA / EIA 603 E Clause 2.2.12; ESU40 setting reference to 971168 D01 v03r01

For peak power measurement with a ESU40:

- a) Set the RBW = 100 kHz for emission below 1 GHz and 1 MHz for emissions above 1 GHz
- b) Set VBW $\geq 3 \times$ RBW;
- c) Set span ≥ 1.5 times the OBW;
- d) Sweep time = auto couple;
- e) Detector = rms;
- f) Ensure that the number of measurement points \geq span/RBW;
- g) Trace Mode = average(WCDMA, LTE FDD, 5G NR FDD), Maxhold(LTE TDD, 5G NR TDD);

NOTE1

5G NR: All Waveforms (CP-OFDM vs DFT-s_OFDM) and modulations ($\pi/2$ BPSK, QPSK, 16QAM, 64QAM, 256QAM) were investigated to determine the worst case configuration. All Modes of operation were investigated and the worst case configuration results are reported in this section.

NOTE2

Please refer to section 5.4 for bandwidth and RB setting about LTE, 5G NR bands.

RESULTS

See the following pages.

9.2.1. SPURIOUS RADIATION PLOTS

WCDMA Band 4

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
Company:		Samsung							
Project #:		4790976555							
Date:		2023-09-06							
Test Engineer:		26087							
Configuration:		EUT / AC Adapter, X-Position							
Location:		Chamber 1							
Mode:		Rel99 Band 4 Harmonics							
Test Voltage:		AC 120 V, 60 Hz							
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1712.4MHz									
3424.80	-8.5	V	3.0	44.0	1.0	-51.5	-13.0	-38.5	
5137.20	-7.0	V	3.0	44.8	1.0	-50.8	-13.0	-37.8	
6849.60	-4.4	V	3.0	45.1	1.0	-48.6	-13.0	-35.6	
3424.80	-8.4	H	3.0	44.0	1.0	-51.4	-13.0	-38.4	
5137.20	-7.1	H	3.0	44.8	1.0	-50.9	-13.0	-37.9	
6849.60	-4.3	H	3.0	45.1	1.0	-48.4	-13.0	-35.4	
Mid Ch, 1732.6MHz									
3465.20	-8.3	V	3.0	44.0	1.0	-51.3	-13.0	-38.3	
5197.80	-6.8	V	3.0	44.8	1.0	-50.6	-13.0	-37.6	
6930.40	-4.3	V	3.0	45.1	1.0	-48.5	-13.0	-35.5	
3465.20	-8.0	H	3.0	44.0	1.0	-51.0	-13.0	-38.0	
5197.80	-6.8	H	3.0	44.8	1.0	-50.7	-13.0	-37.7	
6930.40	-4.2	H	3.0	45.1	1.0	-48.4	-13.0	-35.4	
High Ch, 1752.6MHz									
3505.20	-8.2	V	3.0	44.0	1.0	-51.2	-13.0	-38.2	
5257.80	-6.8	V	3.0	44.9	1.0	-50.7	-13.0	-37.7	
7010.40	-4.0	V	3.0	45.1	1.0	-48.2	-13.0	-35.2	
3505.20	-8.0	H	3.0	44.0	1.0	-51.0	-13.0	-38.0	
5257.80	-6.8	H	3.0	44.9	1.0	-50.7	-13.0	-37.7	
7010.40	-3.9	H	3.0	45.1	1.0	-48.0	-13.0	-35.0	

REL99

LTE Band 12

		UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement								
		Company:	Samsung							
		Project #:	4790976555							
		Date:	2023-09-07							
		Test Engineer:	26087							
		Configuration:	EUT / AC Adapter, Z-Position							
		Location:	Chamber 2							
		Mode:	LTE_QPSK Band 12 Harmonics, 1.4MHz Bandwidth							
		Test Voltage:	AC 120 V, 60 Hz							
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes	
1.4 MHz										
QPSK										
ANT A										
Low Ch, 699.7MHz										
1399.40	-16.4	V	3.0	40.9	1.0	-56.2	-13.0	-43.2		
2099.10	-13.1	V	3.0	40.9	1.0	-53.0	-13.0	-40.0		
2798.80	-10.9	V	3.0	41.9	1.0	-51.8	-13.0	-38.8		
1399.40	-17.5	H	3.0	40.9	1.0	-57.3	-13.0	-44.3		
2099.10	-13.8	H	3.0	40.9	1.0	-53.6	-13.0	-40.6		
2798.80	-10.2	H	3.0	41.9	1.0	-51.1	-13.0	-38.1		
Mid Ch, 707.5MHz										
1415.00	-16.3	V	3.0	40.9	1.0	-56.1	-13.0	-43.1		
2122.50	-13.1	V	3.0	40.9	1.0	-53.0	-13.0	-40.0		
2830.00	-10.6	V	3.0	41.9	1.0	-51.5	-13.0	-38.5		
1415.00	-17.3	H	3.0	40.9	1.0	-57.2	-13.0	-44.2		
2122.50	-13.6	H	3.0	40.9	1.0	-53.5	-13.0	-40.5		
2830.00	-10.0	H	3.0	41.9	1.0	-50.9	-13.0	-37.9		
High Ch, 715.3MHz										
1430.60	-16.2	V	3.0	40.9	1.0	-56.0	-13.0	-43.0		
2145.90	-13.0	V	3.0	41.0	1.0	-52.9	-13.0	-39.9		
2861.20	-10.4	V	3.0	42.0	1.0	-51.4	-13.0	-38.4		
1430.60	-17.3	H	3.0	40.9	1.0	-57.2	-13.0	-44.2		
2145.90	-13.6	H	3.0	41.0	1.0	-53.5	-13.0	-40.5		
2861.20	-9.7	H	3.0	42.0	1.0	-50.7	-13.0	-37.7		

LTE Band 13

		UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement								
		Company:	Samsung							
		Project #:	4790976555							
		Date:	2023-09-07							
		Test Engineer:	26087							
		Configuration:	EUT / AC Adapter, Z-Position							
		Location:	Chamber 2							
		Mode:	LTE_QPSK Band 13 Harmonics, 5MHz Bandwidth							
		Test Voltage:	AC 120 V, 60 Hz							
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes	
5 MHz										
QPSK										
ANT A										
Low Ch, 779.5MHz										
1559.00	-30.4	V	3.0	40.8	1.0	-70.2	-40.0	-30.2		
2338.50	-12.1	V	3.0	41.2	1.0	-52.3	-13.0	-39.3		
3118.00	-9.4	V	3.0	42.2	1.0	-50.6	-13.0	-37.6		
1559.00	-31.4	H	3.0	40.8	1.0	-71.2	-40.0	-31.2		
2338.50	-12.3	H	3.0	41.2	1.0	-52.6	-13.0	-39.6		
3118.00	-8.7	H	3.0	42.2	1.0	-49.8	-13.0	-36.8		
Mid Ch, 782MHz										
1564.00	-30.4	V	3.0	40.8	1.0	-70.2	-40.0	-30.2		
2346.00	-12.2	V	3.0	41.2	1.0	-52.5	-13.0	-39.5		
3128.00	-9.4	V	3.0	42.2	1.0	-50.6	-13.0	-37.6		
1564.00	-31.4	H	3.0	40.8	1.0	-71.2	-40.0	-31.2		
2346.00	-12.3	H	3.0	41.2	1.0	-52.6	-13.0	-39.6		
3128.00	-8.7	H	3.0	42.2	1.0	-49.9	-13.0	-36.9		
High Ch, 784.5MHz										
1569.00	-30.5	V	3.0	40.8	1.0	-70.3	-40.0	-30.3		
2353.50	-12.1	V	3.0	41.3	1.0	-52.4	-13.0	-39.4		
3138.00	-9.3	V	3.0	42.2	1.0	-50.5	-13.0	-37.5		
1569.00	-31.5	H	3.0	40.8	1.0	-71.3	-40.0	-31.3		
2353.50	-12.4	H	3.0	41.3	1.0	-52.6	-13.0	-39.6		
3138.00	-8.6	H	3.0	42.2	1.0	-49.8	-13.0	-36.8		

LTE Band 41(PC2)

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
Company:		Samsung							
Project #:		4790976555							
Date:		2023-09-25							
Test Engineer:		26087							
Configuration:		EUT / AC Adapter, X-Position							
Location:		Chamber 2							
Mode:		LTE_QPSK Band 41 Harmonics, 5MHz Bandwidth							
Test Voltage:		AC 120 V, 60 Hz							
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 2498.5MHz									
4997.00	2.5	V	3.0	42.9	1.0	-39.4	-25.0	-14.4	
7495.50	3.3	V	3.0	42.6	1.0	-38.3	-25.0	-13.3	
9994.00	-2.3	V	3.0	41.0	1.0	-42.3	-25.0	-17.3	
12492.50	-8.4	V	3.0	42.2	1.0	-49.6	-25.0	-24.6	
14991.00	-6.5	V	3.0	43.8	1.0	-49.3	-25.0	-24.3	
4997.00	4.3	H	3.0	42.9	1.0	-37.7	-25.0	-12.7	
7495.50	-0.7	H	3.0	42.6	1.0	-42.3	-25.0	-17.3	
9994.00	-10.6	H	3.0	41.0	1.0	-50.6	-25.0	-25.6	
12492.50	-9.9	H	3.0	42.2	1.0	-51.1	-25.0	-26.1	
14991.00	-6.6	H	3.0	43.8	1.0	-49.4	-25.0	-24.4	
Mid Ch, 2593MHz									
5186.00	-5.3	V	3.0	43.0	1.0	-47.3	-25.0	-22.3	
7779.00	-14.4	V	3.0	42.4	1.0	-55.8	-25.0	-30.8	
10372.00	-13.5	V	3.0	41.2	1.0	-53.7	-25.0	-28.7	
12965.00	-8.6	V	3.0	42.5	1.0	-50.1	-25.0	-25.1	
15558.00	-6.2	V	3.0	43.7	1.0	-48.9	-25.0	-23.9	
5186.00	-9.0	H	3.0	43.0	1.0	-51.0	-25.0	-26.0	
7779.00	-15.9	H	3.0	42.4	1.0	-57.4	-25.0	-32.4	
10372.00	-13.6	H	3.0	41.2	1.0	-53.7	-25.0	-28.7	
12965.00	-8.8	H	3.0	42.5	1.0	-50.3	-25.0	-25.3	
15558.00	-6.6	H	3.0	43.7	1.0	-49.2	-25.0	-24.2	
High Ch, 2687.5MHz									
5375.00	-3.7	V	3.0	43.0	1.0	-45.7	-25.0	-20.7	
8062.50	-11.0	V	3.0	42.3	1.0	-52.3	-25.0	-27.3	
10750.00	-9.8	V	3.0	41.3	1.0	-50.1	-25.0	-25.1	
13437.50	-8.5	V	3.0	42.8	1.0	-50.3	-25.0	-25.3	
16125.00	-6.0	V	3.0	43.5	1.0	-48.5	-25.0	-23.5	
5375.00	-6.2	H	3.0	43.0	1.0	-48.2	-25.0	-23.2	
8062.50	-13.3	H	3.0	42.3	1.0	-54.6	-25.0	-29.6	
10750.00	-13.1	H	3.0	41.3	1.0	-53.5	-25.0	-28.5	
13437.50	-8.6	H	3.0	42.8	1.0	-50.4	-25.0	-25.4	
16125.00	-6.4	H	3.0	43.5	1.0	-48.9	-25.0	-23.9	

5 MHz
QPSK
ANT B

LTE Band 66

		UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
		Company: Samsung Project #: 4790946555 Date: 2023-09-08 Test Engineer: 26087 Configuration: EUT / AC Adapter, Z-Position Location: Chamber 2 Mode: LTE_QPSK Band 66 Harmonics, 20MHz Bandwidth Test Voltage: AC 120 V, 60 Hz									
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes		
20 MHz											
QPSK											
ANT A											
Low Ch, 1720MHz											
3440.00	-8.5	V	3.0	42.2	1.0	-49.7	-13.0	-36.7			
5160.00	-8.9	V	3.0	42.9	1.0	-50.8	-13.0	-37.8			
6880.00	-5.9	V	3.0	42.9	1.0	-47.8	-13.0	-34.8			
3440.00	-8.2	H	3.0	42.2	1.0	-49.4	-13.0	-36.4			
5160.00	-9.0	H	3.0	42.9	1.0	-50.9	-13.0	-37.9			
6880.00	-6.3	H	3.0	42.9	1.0	-48.2	-13.0	-35.2			
Mid Ch, 1745MHz											
3490.00	-8.4	V	3.0	42.2	1.0	-49.6	-13.0	-36.6			
5235.00	-8.8	V	3.0	43.0	1.0	-50.8	-13.0	-37.8			
6980.00	-5.7	V	3.0	42.8	1.0	-47.6	-13.0	-34.6			
3490.00	-8.2	H	3.0	42.2	1.0	-49.4	-13.0	-36.4			
5235.00	-9.0	H	3.0	43.0	1.0	-51.0	-13.0	-38.0			
6980.00	-6.2	H	3.0	42.8	1.0	-48.0	-13.0	-35.0			
High Ch, 1770MHz											
3540.00	-8.1	V	3.0	42.2	1.0	-49.3	-13.0	-36.3			
5310.00	-8.4	V	3.0	43.0	1.0	-50.4	-13.0	-37.4			
7080.00	-5.6	V	3.0	42.8	1.0	-47.4	-13.0	-34.4			
3540.00	-8.1	H	3.0	42.2	1.0	-49.3	-13.0	-36.3			
5310.00	-8.5	H	3.0	43.0	1.0	-50.5	-13.0	-37.5			
7080.00	-6.1	H	3.0	42.8	1.0	-47.9	-13.0	-34.9			
		UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
		Company: Samsung Project #: 4790976555 Date: 2023-09-11 Test Engineer: 25546 Configuration: EUT / AC Adapter, X-Position Location: Chamber 2 Mode: LTE_QPSK Band 66 Harmonics, 20MHz Bandwidth Test Voltage: AC 120 V, 60 Hz									
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes		
20 MHz											
QPSK											
ANT F											
Low Ch, 1720MHz											
3440.00	-8.3	V	3.0	42.2	1.0	-49.6	-13.0	-36.6			
5160.00	-8.9	V	3.0	42.9	1.0	-50.9	-13.0	-37.9			
6880.00	-5.9	V	3.0	42.9	1.0	-47.8	-13.0	-34.8			
3440.00	-8.0	H	3.0	42.2	1.0	-49.2	-13.0	-36.2			
5160.00	-9.0	H	3.0	42.9	1.0	-51.0	-13.0	-38.0			
6880.00	-6.3	H	3.0	42.9	1.0	-48.2	-13.0	-35.2			
Mid Ch, 1745MHz											
3490.00	-8.4	V	3.0	42.2	1.0	-49.6	-13.0	-36.6			
5235.00	-8.8	V	3.0	43.0	1.0	-50.8	-13.0	-37.8			
6980.00	-5.7	V	3.0	42.8	1.0	-47.5	-13.0	-34.5			
3490.00	-8.2	H	3.0	42.2	1.0	-49.4	-13.0	-36.4			
5235.00	-9.0	H	3.0	43.0	1.0	-51.0	-13.0	-38.0			
6980.00	-6.1	H	3.0	42.8	1.0	-48.0	-13.0	-35.0			
High Ch, 1770MHz											
3540.00	-7.4	V	3.0	42.2	1.0	-48.6	-13.0	-35.6			
5310.00	-8.4	V	3.0	43.0	1.0	-50.4	-13.0	-37.4			
7080.00	-5.7	V	3.0	42.8	1.0	-47.5	-13.0	-34.5			
3540.00	-7.3	H	3.0	42.2	1.0	-48.5	-13.0	-35.5			
5310.00	-8.6	H	3.0	43.0	1.0	-50.5	-13.0	-37.5			
7080.00	-6.1	H	3.0	42.8	1.0	-47.9	-13.0	-34.9			

NR Band n41

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement												
30 MHz DFT-s OFDM QPSK ANT F		Company: Samsung Project #: 4790976555 Date: 2023-09-21 Test Engineer: 26087 Configuration: EUT / AC Adapter, X-Position Location: Chamber 1 Mode: 5G NR_QPSK NR n41 Harmonics, 30MHz Bandwidth Test Voltage: AC 120 V, 60 Hz										
		f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes	
		Low Ch, 2511.01MHz										
		5022.02	-10.6	V	3.0	44.8	1.0	-54.4	-25.0	-29.4		
		7533.03	-0.5	V	3.0	44.9	1.0	-44.5	-25.0	-19.5		
		10044.04	-8.6	V	3.0	43.6	1.0	-51.2	-25.0	-26.2		
		5022.02	-10.7	H	3.0	44.8	1.0	-54.5	-25.0	-29.5		
		7533.03	-2.2	H	3.0	44.9	1.0	-46.1	-25.0	-21.1		
		10044.04	-10.1	H	3.0	43.6	1.0	-52.7	-25.0	-27.7		
		Mid Ch, 2592.99MHz										
5185.98	-9.4	V	3.0	44.8	1.0	-53.3	-25.0	-28.3				
7778.97	-4.2	V	3.0	44.8	1.0	-48.0	-25.0	-23.0				
10371.96	-7.5	V	3.0	43.5	1.0	-50.1	-25.0	-25.1				
5185.98	0.0	H	3.0	44.8	1.0	-43.8	-25.0	-18.8				
7778.97	-7.6	H	3.0	44.8	1.0	-51.4	-25.0	-26.4				
10371.96	-8.8	H	3.0	43.5	1.0	-51.4	-25.0	-26.4				
High Ch, 2675MHz												
5350.00	-9.2	V	3.0	44.9	1.0	-53.1	-25.0	-28.1				
8025.00	-8.8	V	3.0	44.7	1.0	-52.6	-25.0	-27.6				
10700.00	-1.6	V	3.0	43.5	1.0	-44.1	-25.0	-19.1				
5350.00	-10.3	H	3.0	44.9	1.0	-54.2	-25.0	-29.2				
8025.00	-7.0	H	3.0	44.7	1.0	-50.8	-25.0	-25.8				
10700.00	-4.4	H	3.0	43.5	1.0	-46.9	-25.0	-21.9				

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement												
10 MHz ANT B SRS1		Company: Samsung Project #: 470976555 Date: 2023-10-12 Test Engineer: 24542 Configuration: EUT / AC Adapter, Z-Position Location: Chamber 2 Mode: 5G NR_QPSK NR n41 Harmonics, 10MHz Bandwidth Test Voltage: AC 120 V, 60 Hz										
		f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes	
		Low Ch, 2501.01MHz										
		5002.02	-12.6	V	3.0	42.9	1.0	-54.5	-25.0	-29.5		
		7503.03	-9.0	V	3.0	42.6	1.0	-50.6	-25.0	-25.6		
		10004.04	-11.1	V	3.0	41.0	1.0	-51.1	-25.0	-26.1		
		5002.02	-9.8	H	3.0	42.9	1.0	-51.7	-25.0	-26.7		
		7503.03	-8.5	H	3.0	42.6	1.0	-50.1	-25.0	-25.1		
		10004.04	-10.3	H	3.0	41.0	1.0	-50.3	-25.0	-25.3		
		Mid Ch, 2592.99MHz										
5185.98	-17.2	V	3.0	43.0	1.0	-59.2	-25.0	-34.2				
7778.97	-16.0	V	3.0	42.4	1.0	-57.5	-25.0	-32.5				
10371.96	-12.7	V	3.0	41.2	1.0	-52.8	-25.0	-27.8				
5185.98	-15.5	H	3.0	43.0	1.0	-57.5	-25.0	-32.5				
7778.97	-16.3	H	3.0	42.4	1.0	-57.8	-25.0	-32.8				
10371.96	-12.2	H	3.0	41.2	1.0	-52.4	-25.0	-27.4				
High Ch, 2685MHz												
5370.00	-11.9	V	3.0	43.0	1.0	-53.8	-25.0	-28.8				
8055.00	-15.6	V	3.0	42.3	1.0	-56.9	-25.0	-31.9				
10740.00	-9.1	V	3.0	41.3	1.0	-49.4	-25.0	-24.4				
5370.00	-11.8	H	3.0	43.0	1.0	-53.8	-25.0	-28.8				
8055.00	-16.3	H	3.0	42.3	1.0	-57.6	-25.0	-32.6				
10740.00	-8.3	H	3.0	41.3	1.0	-48.6	-25.0	-23.6				

		UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement								
		Company: Samsung Project #: 4790976555 Date: 2023-10-16 Test Engineer: 26460 Configuration: EUT / AC Adapter, Z-Position Location: Chamber 2 Mode: 5G NR n41(SRS) Harmonics, 10MHz Bandwidth Test Voltage: AC 120 V, 60 Hz								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
10 MHz ANT E SRS2	Low Ch, 2501.01MHz									
	5002.02	-18.8	V	3.0	42.9	1.0	-60.7	-25.0	-35.7	
	7503.03	-15.6	V	3.0	42.6	1.0	-57.2	-25.0	-32.2	
	10004.04	-11.3	V	3.0	41.0	1.0	-51.3	-25.0	-26.3	
	5002.02	-18.9	H	3.0	42.9	1.0	-60.8	-25.0	-35.8	
	7503.03	-15.8	H	3.0	42.6	1.0	-57.3	-25.0	-32.3	
	10004.04	-12.4	H	3.0	41.0	1.0	-52.3	-25.0	-27.3	
	Mid Ch, 2592.99MHz									
	5185.98	-18.5	V	3.0	43.0	1.0	-60.5	-25.0	-35.5	
	7778.97	-15.5	V	3.0	42.4	1.0	-56.9	-25.0	-31.9	
	10371.96	-10.4	V	3.0	41.2	1.0	-50.5	-25.0	-25.5	
	5185.98	-18.6	H	3.0	43.0	1.0	-60.6	-25.0	-35.6	
	7778.97	-16.6	H	3.0	42.4	1.0	-58.1	-25.0	-33.1	
	10371.96	-11.6	H	3.0	41.2	1.0	-51.8	-25.0	-26.8	
	High Ch, 2685MHz									
	5370.00	-17.9	V	3.0	43.0	1.0	-59.9	-25.0	-34.9	
	8055.00	-14.8	V	3.0	42.3	1.0	-56.1	-25.0	-31.1	
	10740.00	-11.1	V	3.0	41.3	1.0	-51.5	-25.0	-26.5	
	5370.00	-18.0	H	3.0	43.0	1.0	-60.0	-25.0	-35.0	
	8055.00	-15.4	H	3.0	42.3	1.0	-56.8	-25.0	-31.8	
	10740.00	-11.3	H	3.0	41.3	1.0	-51.6	-25.0	-26.6	
		UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement								
		Company: Samsung Project #: 4790976555 Date: 2023-10-12 Test Engineer: 24542 Configuration: EUT / AC Adapter, X-Position Location: Chamber 2 Mode: 5G NR_QPSK NR n41 Harmonics, 40MHz Bandwidth Test Voltage: AC 120 V, 60 Hz								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
40 MHz ANT D SRS3	Low Ch, 2516.01MHz									
	5032.02	-18.8	V	3.0	42.9	1.0	-60.7	-25.0	-35.7	
	7548.03	-15.8	V	3.0	42.6	1.0	-57.3	-25.0	-32.3	
	10064.04	-9.0	V	3.0	41.0	1.0	-49.0	-25.0	-24.0	
	5032.02	-18.7	H	3.0	42.9	1.0	-60.6	-25.0	-35.6	
	7548.03	-16.3	H	3.0	42.6	1.0	-57.8	-25.0	-32.8	
	10064.04	-12.0	H	3.0	41.0	1.0	-52.0	-25.0	-27.0	
	Mid Ch, 2592.99MHz									
	5185.98	-18.4	V	3.0	43.0	1.0	-60.3	-25.0	-35.3	
	7778.97	-15.9	V	3.0	42.4	1.0	-57.4	-25.0	-32.4	
	10371.96	-9.9	V	3.0	41.2	1.0	-50.0	-25.0	-25.0	
	5185.98	-18.4	H	3.0	43.0	1.0	-60.4	-25.0	-35.4	
	7778.97	-16.3	H	3.0	42.4	1.0	-57.7	-25.0	-32.7	
	10371.96	-11.5	H	3.0	41.2	1.0	-51.7	-25.0	-26.7	
	High Ch, 2670MHz									
	5340.00	-17.2	V	3.0	43.0	1.0	-59.2	-25.0	-34.2	
	8010.00	-15.3	V	3.0	42.3	1.0	-56.6	-25.0	-31.6	
	10680.00	-7.7	V	3.0	41.3	1.0	-47.9	-25.0	-22.9	
	5340.00	-17.7	H	3.0	43.0	1.0	-59.7	-25.0	-34.7	
	8010.00	-16.0	H	3.0	42.3	1.0	-57.3	-25.0	-32.3	
	10680.00	-9.7	H	3.0	41.3	1.0	-50.0	-25.0	-25.0	

NR Band n66

		UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement										
		Company: Samsung Project #: 4790976555 Date: 2023-09-14 Test Engineer: 26087 Configuration: EUT / AC Adapter, Y-Position Location: Chamber 1 Mode: 5G NR_QPSK NR n66 Harmonics, 15MHz Bandwidth Test Votage: AC 120 V, 60 Hz										
15 MHz	ANT A	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes	
		Low Ch, 1717.5MHz										
			3435.00	-8.5	V	3.0	44.0	1.0	-51.4	-13.0	-38.4	
		DFT-s OFDM	5152.50	-7.0	V	3.0	44.8	1.0	-50.8	-13.0	-37.8	
			6870.00	-4.3	V	3.0	45.1	1.0	-48.5	-13.0	-35.5	
		QPSK	3435.00	-8.3	H	3.0	44.0	1.0	-51.2	-13.0	-38.2	
			5152.50	-7.1	H	3.0	44.8	1.0	-50.9	-13.0	-37.9	
			6870.00	-4.2	H	3.0	45.1	1.0	-48.4	-13.0	-35.4	
		Mid Ch, 1745MHz										
			3490.00	-8.2	V	3.0	44.0	1.0	-51.2	-13.0	-38.2	
			5235.00	-6.5	V	3.0	44.8	1.0	-50.3	-13.0	-37.3	
			6980.00	-4.2	V	3.0	45.1	1.0	-48.4	-13.0	-35.4	
			3490.00	-7.8	H	3.0	44.0	1.0	-50.8	-13.0	-37.8	
			5235.00	-6.7	H	3.0	44.8	1.0	-50.5	-13.0	-37.5	
			6980.00	-4.1	H	3.0	45.1	1.0	-48.3	-13.0	-35.3	
		High Ch, 1772.5MHz										
			3545.00	-7.9	V	3.0	44.0	1.0	-51.0	-13.0	-38.0	
			5317.50	-6.7	V	3.0	44.9	1.0	-50.6	-13.0	-37.6	
			7090.00	-3.9	V	3.0	45.1	1.0	-48.0	-13.0	-35.0	
			3545.00	-7.7	H	3.0	44.0	1.0	-50.7	-13.0	-37.7	
	5317.50	-6.6	H	3.0	44.9	1.0	-50.5	-13.0	-37.5			
	7090.00	-3.8	H	3.0	45.1	1.0	-48.0	-13.0	-35.0			
		UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement										
		Company: Samsung Project #: 4790976555 Date: 2023-09-20 Test Engineer: 26087 Configuration: EUT, Y-Position Location: Chamber 2 Mode: 5G NR_QPSK NR n66 Harmonics, 10MHz Bandwidth Test Votage: AC 120 V, 60 Hz										
10 MHz	ANT F	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes	
		Low Ch, 1715MHz										
			3430.00	-8.4	V	3.0	42.2	1.0	-49.6	-13.0	-36.6	
		DFT-s OFDM	5145.00	-7.8	V	3.0	42.9	1.0	-49.8	-13.0	-36.8	
			6860.00	-5.7	V	3.0	42.9	1.0	-47.6	-13.0	-34.6	
		QPSK	3430.00	-8.1	H	3.0	42.2	1.0	-49.3	-13.0	-36.3	
			5145.00	-7.5	H	3.0	42.9	1.0	-49.4	-13.0	-36.4	
			6860.00	-6.1	H	3.0	42.9	1.0	-48.0	-13.0	-35.0	
		Mid Ch, 1745MHz										
			3490.00	-8.3	V	3.0	42.2	1.0	-49.5	-13.0	-36.5	
			5235.00	-7.2	V	3.0	43.0	1.0	-49.2	-13.0	-36.2	
			6980.00	-5.8	V	3.0	42.8	1.0	-47.6	-13.0	-34.6	
			3490.00	-8.0	H	3.0	42.2	1.0	-49.2	-13.0	-36.2	
			5235.00	-6.1	H	3.0	43.0	1.0	-48.1	-13.0	-35.1	
			6980.00	-6.2	H	3.0	42.8	1.0	-48.0	-13.0	-35.0	
		High Ch, 1775MHz										
			3550.00	-7.1	V	3.0	42.2	1.0	-48.3	-13.0	-35.3	
			5325.00	-6.0	V	3.0	43.0	1.0	-48.0	-13.0	-35.0	
			7100.00	-5.6	V	3.0	42.8	1.0	-47.4	-13.0	-34.4	
			3550.00	-7.0	H	3.0	42.2	1.0	-48.2	-13.0	-35.2	
	5325.00	-5.3	H	3.0	43.0	1.0	-47.2	-13.0	-34.2			
	7100.00	-6.0	H	3.0	42.8	1.0	-47.8	-13.0	-34.8			

NR Band n77(3450 - 3550 MHz)

100 MHz DFT-s OFDM QPSK ANT F	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
	Company: Samsung Project #: 4790976555 Date: 2023-09-13 Test Engineer: 26087 Configuration: EUT / AC Adapter, X-Position Location: Chamber 1 Mode: 5G NR_QPSK NR n77 LO Harmonics, 100MHz Bandwidth Test Voltage: AC 120 V, 60 Hz									
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamplifier (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Mid Ch, 3499.98MHz									
	6999.96	-1.4	V	3.0	45.1	1.0	-45.6	-13.0	-32.6	
	10499.94	3.1	V	3.0	43.5	1.0	-39.5	-13.0	-26.5	
	13999.92	4.9	V	3.0	44.3	1.0	-38.4	-13.0	-25.4	
	6999.96	-2.8	H	3.0	45.1	1.0	-46.9	-13.0	-33.9	
	10499.94	2.9	H	3.0	43.5	1.0	-39.6	-13.0	-26.6	
	13999.92	5.1	H	3.0	44.3	1.0	-38.2	-13.0	-25.2	
10 MHz ANT C SRS1	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
	Company: Samsung Project #: 4790976555 Date: 2023-10-05 Test Engineer: 24542 Configuration: EUT / AC Adapter, X-Position Location: Chamber 1 Mode: 5G NR n77 LO(SRS) Harmonics, 10MHz Bandwidth Test Voltage: AC 120 V, 60 Hz									
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamplifier (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch, 3455MHz									
	6910.00	-1.4	V	3.0	45.1	1.0	-45.5	-13.0	-32.5	
	10365.00	2.7	V	3.0	43.5	1.0	-39.8	-13.0	-26.8	
	13820.00	6.0	V	3.0	44.2	1.0	-37.2	-13.0	-24.2	
	6910.00	-1.2	H	3.0	45.1	1.0	-45.3	-13.0	-32.3	
	10365.00	2.9	H	3.0	43.5	1.0	-39.7	-13.0	-26.7	
	13820.00	6.7	H	3.0	44.2	1.0	-36.5	-13.0	-23.5	
	Mid Ch, 3499.98MHz									
	6999.96	-1.5	V	3.0	45.1	1.0	-45.7	-13.0	-32.7	
	10499.94	3.0	V	3.0	43.5	1.0	-39.6	-13.0	-26.6	
	13999.92	6.6	V	3.0	44.3	1.0	-36.7	-13.0	-23.7	
	6999.96	-1.4	H	3.0	45.1	1.0	-45.5	-13.0	-32.5	
	10499.94	3.1	H	3.0	43.5	1.0	-39.4	-13.0	-26.4	
	13999.92	6.6	H	3.0	44.3	1.0	-36.7	-13.0	-23.7	
	High Ch, 3544MHz									
	7088.00	-0.9	V	3.0	45.1	1.0	-45.0	-13.0	-32.0	
	10632.00	3.0	V	3.0	43.5	1.0	-39.5	-13.0	-26.5	
14176.00	6.6	V	3.0	44.4	1.0	-36.8	-13.0	-23.8		
7088.00	-0.8	H	3.0	45.1	1.0	-44.9	-13.0	-31.9		
10632.00	3.3	H	3.0	43.5	1.0	-39.2	-13.0	-26.2		
14176.00	6.9	H	3.0	44.4	1.0	-36.5	-13.0	-23.5		

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement											
		Company:	Samsung								
		Project #:	4790976555								
		Date:	2023-10-06								
		Test Engineer:	24542								
		Configuration:	EUT / AC Adapter, Z-Position								
		Location:	Chamber 1								
		Mode:	5G NR n77 LO(SRS) Harmonics, 10MHz Bandwidth								
		Test Voltage:	AC 120 V, 60 Hz								
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes		
10 MHz											
ANT I											
SRS2											
Low Ch, 3455MHz											
6910.00	-1.5	V	3.0	45.1	1.0	-45.7	-13.0	-32.7			
10365.00	2.6	V	3.0	43.5	1.0	-40.0	-13.0	-27.0			
13820.00	6.3	V	3.0	44.2	1.0	-36.9	-13.0	-23.9			
6910.00	-1.2	H	3.0	45.1	1.0	-45.4	-13.0	-32.4			
10365.00	2.7	H	3.0	43.5	1.0	-39.8	-13.0	-26.8			
13820.00	6.4	H	3.0	44.2	1.0	-36.8	-13.0	-23.8			
Mid Ch, 3499.98MHz											
6999.96	-1.5	V	3.0	45.1	1.0	-45.6	-13.0	-32.6			
10499.94	3.2	V	3.0	43.5	1.0	-39.3	-13.0	-26.3			
13999.92	6.3	V	3.0	44.3	1.0	-37.0	-13.0	-24.0			
6999.96	-1.4	H	3.0	45.1	1.0	-45.6	-13.0	-32.6			
10499.94	2.8	H	3.0	43.5	1.0	-39.7	-13.0	-26.7			
13999.92	6.7	H	3.0	44.3	1.0	-36.6	-13.0	-23.6			
High Ch, 3544MHz											
7088.00	-1.3	V	3.0	45.1	1.0	-45.4	-13.0	-32.4			
10632.00	3.0	V	3.0	43.5	1.0	-39.5	-13.0	-26.5			
14176.00	6.5	V	3.0	44.4	1.0	-36.8	-13.0	-23.8			
7088.00	-0.9	H	3.0	45.1	1.0	-45.0	-13.0	-32.0			
10632.00	3.3	H	3.0	43.5	1.0	-39.2	-13.0	-26.2			
14176.00	6.9	H	3.0	44.4	1.0	-36.5	-13.0	-23.5			

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement											
		Company:	Samsung								
		Project #:	4790976555								
		Date:	2023-10-06								
		Test Engineer:	24542								
		Configuration:	EUT / AC Adapter, Y-Position								
		Location:	Chamber 1								
		Mode:	5G NR n77 LO(SRS) Harmonics, 10MHz Bandwidth								
		Test Voltage:	AC 120 V, 60 Hz								
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes		
10 MHz											
ANT D											
SRS3											
Low Ch, 3455MHz											
6910.00	-1.4	V	3.0	45.1	1.0	-45.6	-13.0	-32.6			
10365.00	2.7	V	3.0	43.5	1.0	-39.8	-13.0	-26.8			
13820.00	6.3	V	3.0	44.2	1.0	-36.9	-13.0	-23.9			
6910.00	-1.3	H	3.0	45.1	1.0	-45.5	-13.0	-32.5			
10365.00	2.6	H	3.0	43.5	1.0	-40.0	-13.0	-27.0			
13820.00	6.7	H	3.0	44.2	1.0	-36.5	-13.0	-23.5			
Mid Ch, 3499.98MHz											
6999.96	-1.7	V	3.0	45.1	1.0	-45.9	-13.0	-32.9			
10499.94	3.2	V	3.0	43.5	1.0	-39.3	-13.0	-26.3			
13999.92	6.7	V	3.0	44.3	1.0	-36.6	-13.0	-23.6			
6999.96	-1.4	H	3.0	45.1	1.0	-45.6	-13.0	-32.6			
10499.94	3.1	H	3.0	43.5	1.0	-39.5	-13.0	-26.5			
13999.92	6.8	H	3.0	44.3	1.0	-36.5	-13.0	-23.5			
High Ch, 3544MHz											
7088.00	-1.2	V	3.0	45.1	1.0	-45.3	-13.0	-32.3			
10632.00	3.0	V	3.0	43.5	1.0	-39.5	-13.0	-26.5			
14176.00	6.8	V	3.0	44.4	1.0	-36.6	-13.0	-23.6			
7088.00	-1.1	H	3.0	45.1	1.0	-45.2	-13.0	-32.2			
10632.00	3.1	H	3.0	43.5	1.0	-39.4	-13.0	-26.4			
14176.00	6.8	H	3.0	44.4	1.0	-36.6	-13.0	-23.6			

NR Band n77(3700-3980 MHz)

		UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
		Company: Samsung Project #: 4790976555 Date: 2023-09-13 Test Engineer: 26087 Configuration: EUT / AC Adapter, Y-Position Location: Chamber 1 Mode: 5G NR_QPSK NR n77 UP Harmonics, 100MHz Bandwidth Test Votage: AC 120 V, 60 Hz									
100 MHz		f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
		Low Ch, 3750MHz									
	DFT-s OFDM	7500.00	-1.0	V	3.0	45.0	1.0	-45.0	-13.0	-32.0	
		11250.00	4.2	V	3.0	43.4	1.0	-38.2	-13.0	-25.2	
		15000.00	7.8	V	3.0	44.8	1.0	-36.0	-13.0	-23.0	
	QPSK	7500.00	-1.0	H	3.0	45.0	1.0	-44.9	-13.0	-31.9	
		11250.00	4.9	H	3.0	43.4	1.0	-37.5	-13.0	-24.5	
		15000.00	7.7	H	3.0	44.8	1.0	-36.2	-13.0	-23.2	
	ANT F	Mid Ch, 3840MHz									
		7680.00	-0.7	V	3.0	44.9	1.0	-44.6	-13.0	-31.6	
		11520.00	4.4	V	3.0	43.3	1.0	-37.9	-13.0	-24.9	
		15360.00	8.0	V	3.0	44.7	1.0	-35.7	-13.0	-22.7	
		7680.00	-0.5	H	3.0	44.9	1.0	-44.4	-13.0	-31.4	
		11520.00	4.8	H	3.0	43.3	1.0	-37.5	-13.0	-24.5	
		15360.00	7.9	H	3.0	44.7	1.0	-35.8	-13.0	-22.8	
		High Ch, 3930MHz									
		7860.00	-0.3	V	3.0	44.8	1.0	-44.1	-13.0	-31.1	
		11790.00	4.6	V	3.0	43.2	1.0	-37.6	-13.0	-24.6	
		15720.00	9.1	V	3.0	44.6	1.0	-34.5	-13.0	-21.5	
		7860.00	-0.4	H	3.0	44.8	1.0	-44.2	-13.0	-31.2	
		11790.00	5.4	H	3.0	43.2	1.0	-36.9	-13.0	-23.9	
		15720.00	9.0	H	3.0	44.6	1.0	-34.6	-13.0	-21.6	

		UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
		Company: Samsung Project #: 4790976555 Date: 2023-10-04 Test Engineer: 24542 Configuration: EUT / AC Adapter, Z-Position Location: Chamber 1 Mode: 5G NR n77 UP(SRS) Harmonics, 100MHz Bandwidth Test Votage: AC 120 V, 60 Hz									
100 MHz		f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
		Low Ch, 3750MHz									
	ANT C	7500.00	-0.3	V	3.0	45.0	1.0	-44.3	-13.0	-31.3	
		11250.00	4.0	V	3.0	43.4	1.0	-38.3	-13.0	-25.3	
		15000.00	7.7	V	3.0	44.8	1.0	-36.2	-13.0	-23.2	
	SRS1	7500.00	0.7	H	3.0	45.0	1.0	-43.2	-13.0	-30.2	
		11250.00	4.2	H	3.0	43.4	1.0	-38.2	-13.0	-25.2	
		15000.00	7.9	H	3.0	44.8	1.0	-36.0	-13.0	-23.0	
		Mid Ch, 3840MHz									
		7680.00	0.1	V	3.0	44.9	1.0	-43.8	-13.0	-30.8	
		11520.00	4.4	V	3.0	43.3	1.0	-37.9	-13.0	-24.9	
		15360.00	7.9	V	3.0	44.7	1.0	-35.8	-13.0	-22.8	
		7680.00	2.3	H	3.0	44.9	1.0	-41.6	-13.0	-28.6	
		11520.00	4.8	H	3.0	43.3	1.0	-37.5	-13.0	-24.5	
		15360.00	8.4	H	3.0	44.7	1.0	-35.3	-13.0	-22.3	
		High Ch, 3930MHz									
		7860.00	4.7	V	3.0	44.8	1.0	-39.1	-13.0	-26.1	
		11790.00	4.8	V	3.0	43.2	1.0	-37.4	-13.0	-24.4	
		15720.00	8.9	V	3.0	44.6	1.0	-34.7	-13.0	-21.7	
		7860.00	7.7	H	3.0	44.8	1.0	-36.2	-13.0	-23.2	
		11790.00	5.2	H	3.0	43.2	1.0	-37.1	-13.0	-24.1	
		15720.00	9.0	H	3.0	44.6	1.0	-34.6	-13.0	-21.6	

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement											
		Company:	Samsung								
		Project #:	4790976555								
		Date:	2023-10-05								
		Test Engineer:	24542								
		Configuration:	EUT / AC Adapter, Z-Position								
		Location:	Chamber 1								
		Mode:	5G NR n77 UP(SRS) Harmonics, 50MHz Bandwidth								
		Test Voltage:	AC 120 V, 60 Hz								
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes		
50 MHz											
ANT I											
SRS2											
Low Ch, 3725MHz											
7450.00	-0.7	V	3.0	45.0	1.0	-44.6	-13.0	-31.6			
11175.00	3.9	V	3.0	43.4	1.0	-38.4	-13.0	-25.4			
14900.00	7.5	V	3.0	44.8	1.0	-36.3	-13.0	-23.3			
7450.00	-0.7	H	3.0	45.0	1.0	-44.6	-13.0	-31.6			
11175.00	4.2	H	3.0	43.4	1.0	-38.2	-13.0	-25.2			
14900.00	7.5	H	3.0	44.8	1.0	-36.3	-13.0	-23.3			
Mid Ch, 3840MHz											
7680.00	-0.5	V	3.0	44.9	1.0	-44.4	-13.0	-31.4			
11520.00	4.0	V	3.0	43.3	1.0	-38.3	-13.0	-25.3			
15360.00	8.2	V	3.0	44.7	1.0	-35.5	-13.0	-22.5			
7680.00	-0.5	H	3.0	44.9	1.0	-44.4	-13.0	-31.4			
11520.00	4.4	H	3.0	43.3	1.0	-37.9	-13.0	-24.9			
15360.00	8.4	H	3.0	44.7	1.0	-35.3	-13.0	-22.3			
High Ch, 3955MHz											
7910.00	-0.4	V	3.0	44.8	1.0	-44.2	-13.0	-31.2			
11865.00	4.5	V	3.0	43.2	1.0	-37.7	-13.0	-24.7			
15820.00	8.7	V	3.0	44.6	1.0	-34.9	-13.0	-21.9			
7910.00	-0.5	H	3.0	44.8	1.0	-44.3	-13.0	-31.3			
11865.00	5.0	H	3.0	43.2	1.0	-37.2	-13.0	-24.2			
15820.00	8.8	H	3.0	44.6	1.0	-34.8	-13.0	-21.8			

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
Company:		Samsung							
Project #:		4790976555							
Date:		2023-10-04							
Test Engineer:		24542							
Configuration:		EUT, Z-Position							
Location:		Chamber 1							
Mode:		5G NR n77 UP(SRS) Harmonics, 60MHz Bandwidth							
Test Voltage:		AC 120 V, 60 Hz							
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
60 MHz									
ANT D									
SRS3									
Low Ch, 3730MHz									
7460.00	-0.1	V	3.0	45.0	1.0	-44.1	-13.0	-31.1	
11190.00	3.9	V	3.0	43.4	1.0	-38.4	-13.0	-25.4	
14920.00	7.4	V	3.0	44.8	1.0	-36.4	-13.0	-23.4	
18650.00	10.0	V	3.0	39.7	0.0	-29.7	-13.0	-16.7	
22380.00	11.9	V	3.0	35.3	0.0	-23.4	-13.0	-10.4	
7460.00	-0.1	H	3.0	45.0	1.0	-44.0	-13.0	-31.0	
11190.00	4.2	H	3.0	43.4	1.0	-38.1	-13.0	-25.1	
14920.00	7.7	H	3.0	44.8	1.0	-36.1	-13.0	-23.1	
18650.00	10.3	H	3.0	39.7	0.0	-29.4	-13.0	-16.4	
22380.00	12.3	H	3.0	35.3	0.0	-23.0	-13.0	-10.0	
Mid Ch, 3840MHz									
7680.00	-0.8	V	3.0	44.9	1.0	-44.7	-13.0	-31.7	
11520.00	4.0	V	3.0	43.3	1.0	-38.3	-13.0	-25.3	
15360.00	8.0	V	3.0	44.7	1.0	-35.7	-13.0	-22.7	
19200.00	9.8	V	3.0	38.9	0.0	-29.1	-13.0	-16.1	
23040.00	11.8	V	3.0	36.0	0.0	-24.1	-13.0	-11.1	
7680.00	-0.3	H	3.0	44.9	1.0	-44.2	-13.0	-31.2	
11520.00	4.1	H	3.0	43.3	1.0	-38.2	-13.0	-25.2	
15360.00	8.1	H	3.0	44.7	1.0	-35.7	-13.0	-22.7	
19200.00	9.8	H	3.0	38.9	0.0	-29.1	-13.0	-16.1	
23040.00	11.6	H	3.0	36.0	0.0	-24.4	-13.0	-11.4	
High Ch, 3950MHz									
7900.00	0.9	V	3.0	44.8	1.0	-42.9	-13.0	-29.9	
11850.00	4.8	V	3.0	43.2	1.0	-37.4	-13.0	-24.4	
15800.00	9.0	V	3.0	44.6	1.0	-34.5	-13.0	-21.5	
19750.00	9.9	V	3.0	38.1	0.0	-28.2	-13.0	-15.2	
23700.00	11.7	V	3.0	36.6	0.0	-24.9	-13.0	-11.9	
7900.00	2.4	H	3.0	44.8	1.0	-41.4	-13.0	-28.4	
11850.00	4.6	H	3.0	43.2	1.0	-37.6	-13.0	-24.6	
15800.00	9.0	H	3.0	44.6	1.0	-34.6	-13.0	-21.6	
19750.00	10.3	H	3.0	38.1	0.0	-27.8	-13.0	-14.8	
23700.00	12.1	H	3.0	36.6	0.0	-24.5	-13.0	-11.5	

END OF REPORT