



5MHz
16QAM

9.3. OUT OF BAND EMISSIONS

RULE PART(S)

FCC: §2.1051, §22.901, §22.917, and §27.53

LIMITS

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.

(g) For operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, 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 = 100KHz for emission below 1GHz and 1MHz for emissions above 1GHz
(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(GSM, 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

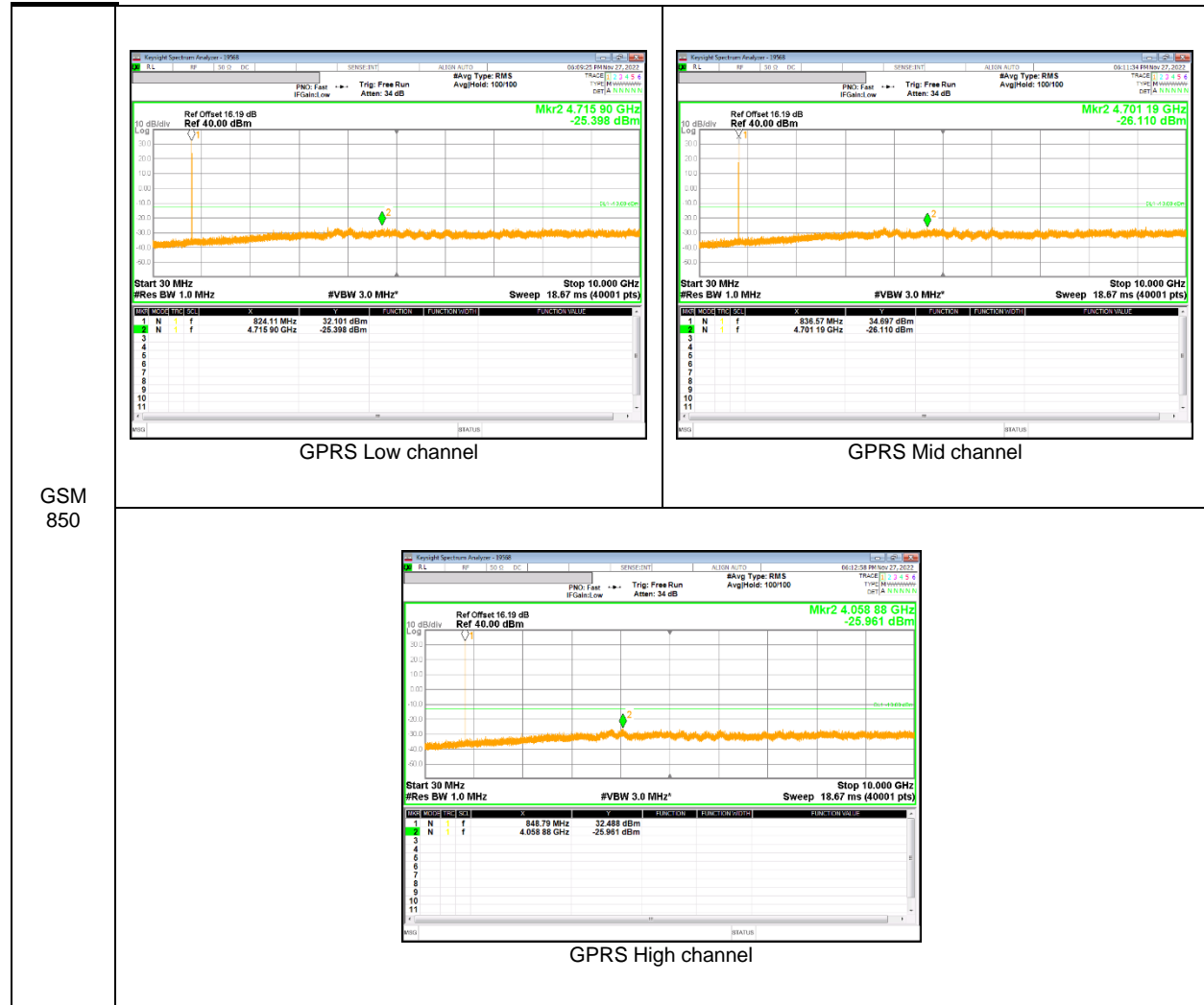
Please refer to section 5.4 for bandwidth and RB setting about LTE, 5G NR bands.

RESULTS

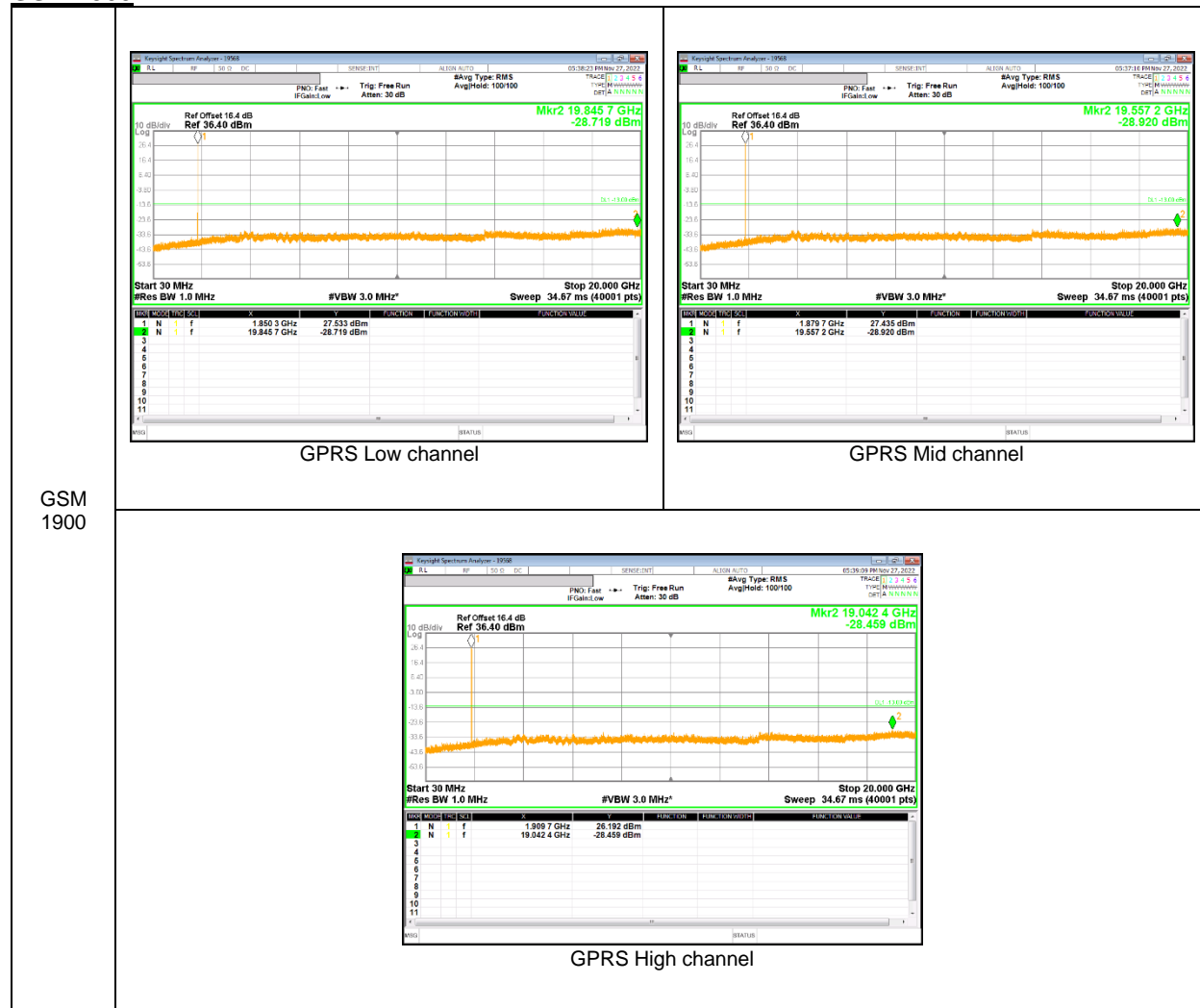
See the following pages.

9.3.1. OUT OF BAND EMISSIONS RESULT

GSM 850

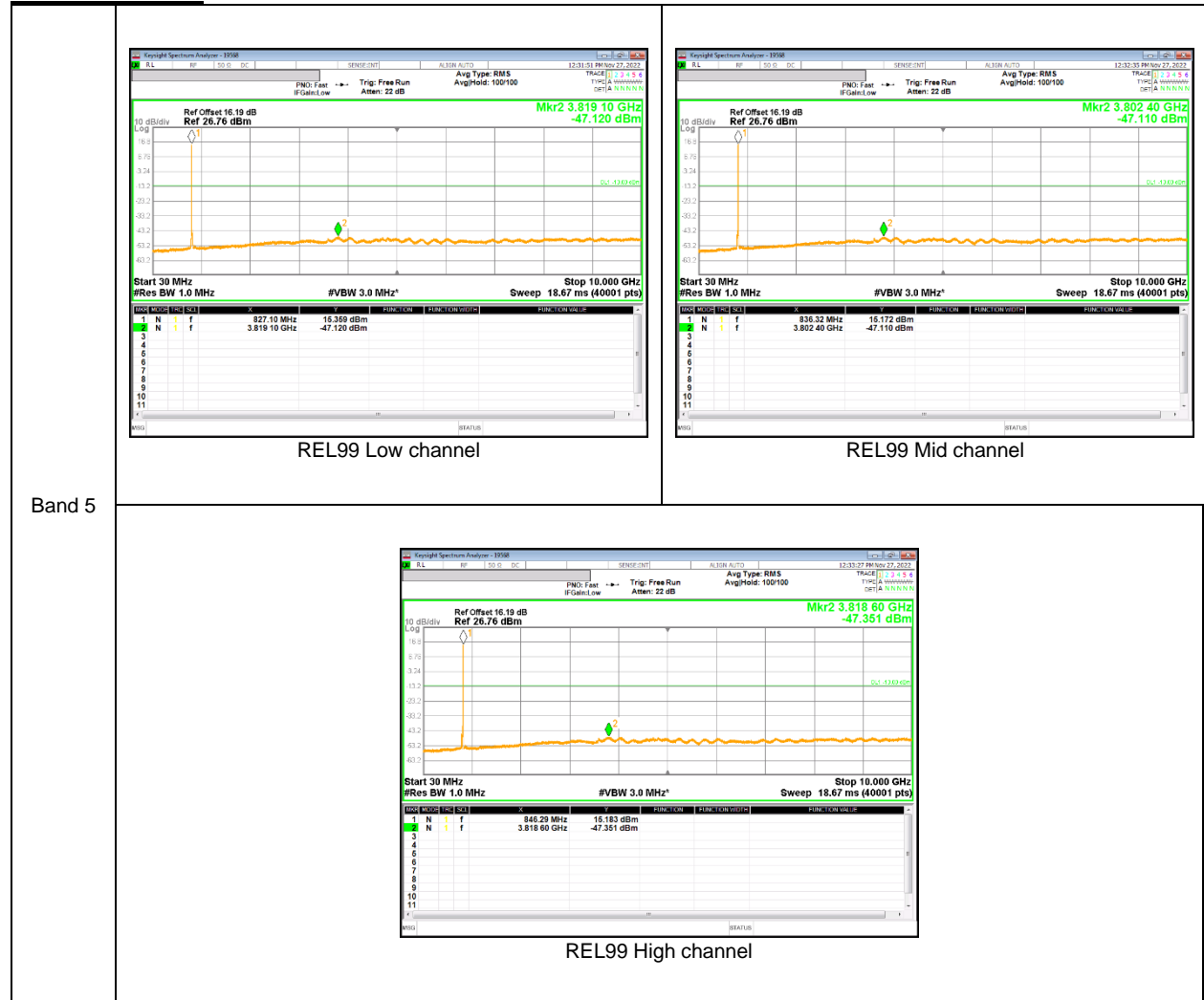


GSM 1900



GSM
1900

WCDMA Band 5



Band 5

WCDMA Band 2



Band 2

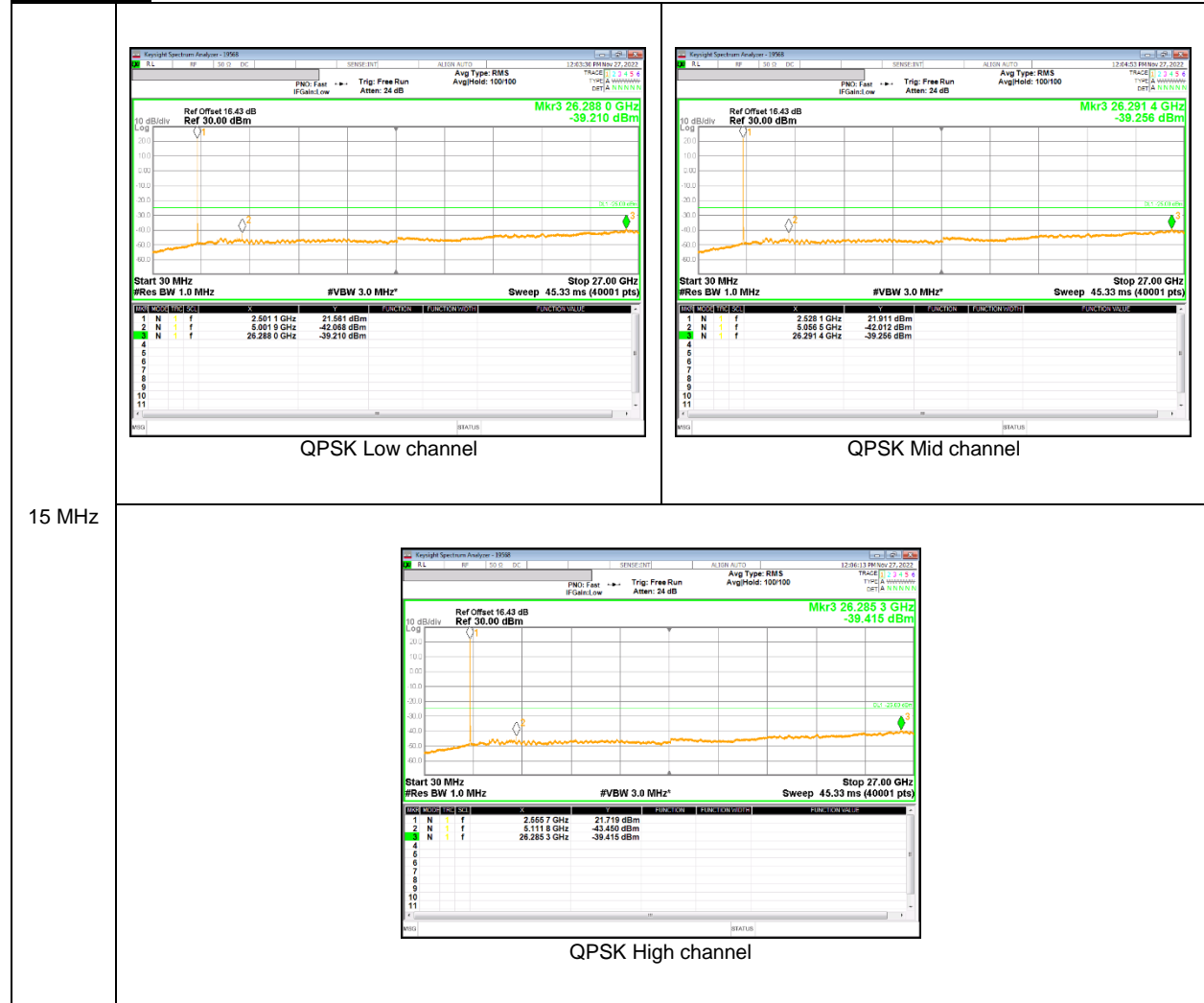
LTE Band 2



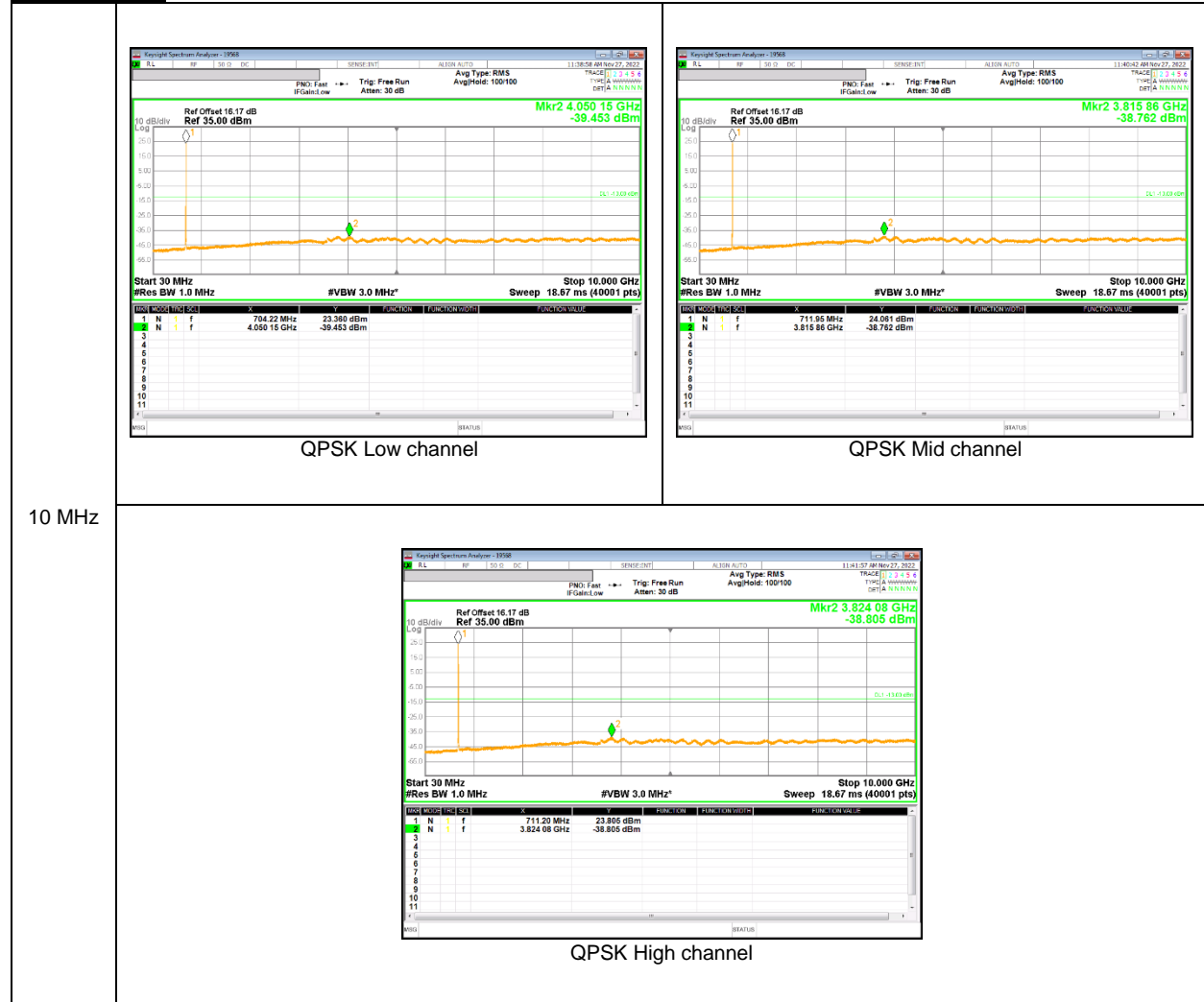
LTE Band 5



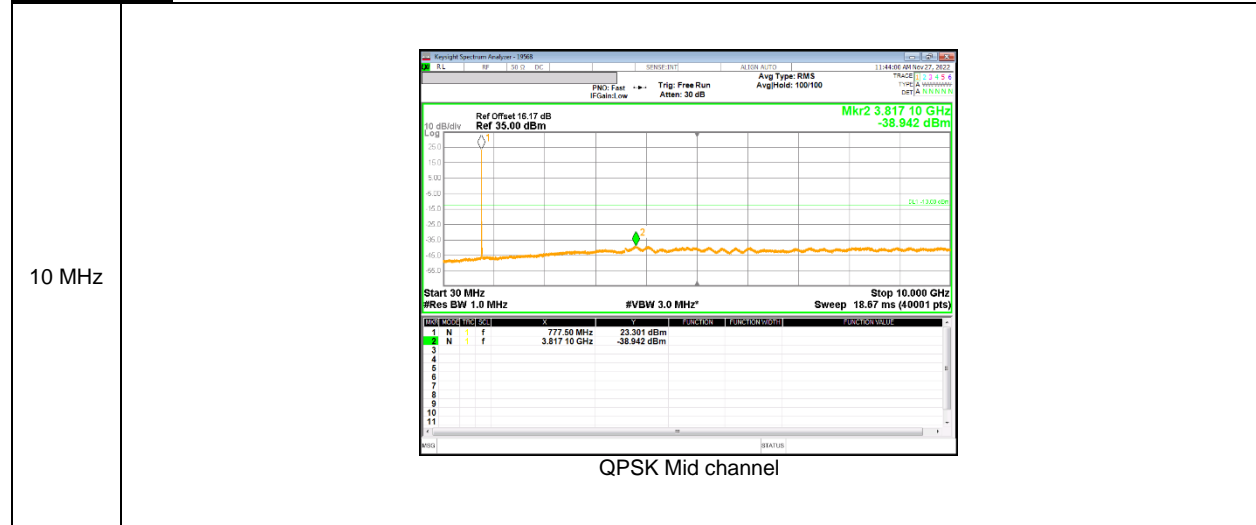
LTE Band 7



LTE Band 12



LTE Band 13



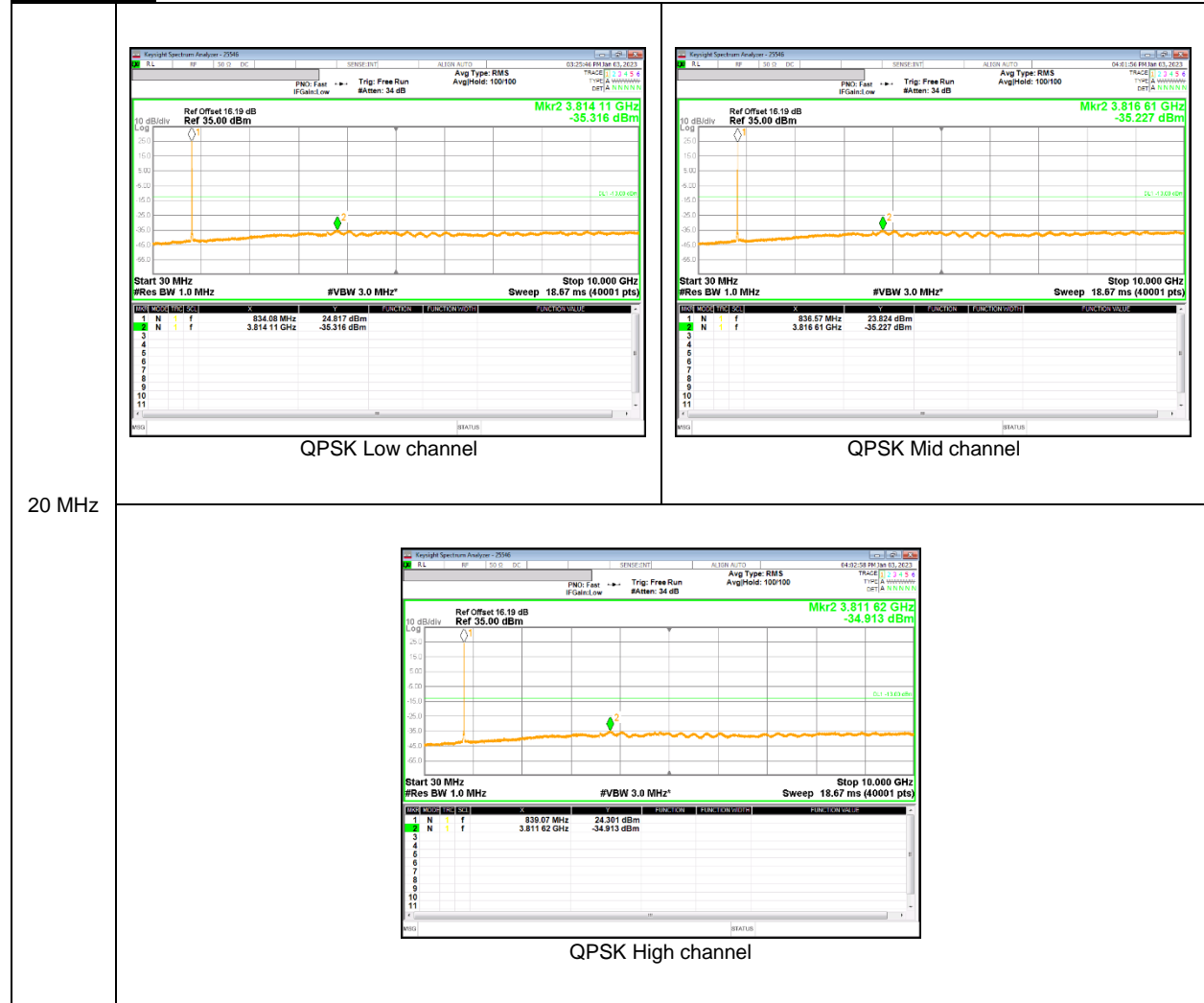
LTE Band 66



NR Band n2



NR Band n5



NR Band n66



NR Band n77(PC2,3450-3550 MHz)



NR Band n77(PC2,3700-3980 MHz)



9.4. FREQUENCY STABILITY

RULE PART(S)

FCC: §2.1055, §22.355, §24.235, and §27.54

LIMITS

§22.355 - The carrier frequency shall not depart from the reference frequency in excess of ± 2.5 ppm for mobile stations.

§24.235 - The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

§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)

9.4.1. FREQUENCY STABILITY RESULTS

GSM 850, Channel 128/251, Frequency 824.2/848.8 MHz

Test Date	2022-12-02					
Test Engineer	19568					
Reference Frequency : GSM850 Low Channel 824.2 MHz / High Channel 848.8 MHz @ 20°C						
Limit: +- 2.5 ppm =	Low Channel	2060.500	Hz	High Channel	2122.000	Hz
Power Supply [Vdc]	Environment Temperature [°C]	Frequency Deviation Measured with Time Elapse				Limit [ppm]
		Low Channel		High Channel		
		[MHz]	Delta [ppm]	[MHz]	Delta [ppm]	
3.88	50	824.20002723	0.004	848.80002933	-0.002	2.5
3.88	40	824.20001787	0.015	848.80001811	0.011	2.5
3.88	30	824.20002059	0.012	848.80001932	0.009	2.5
3.88	20	824.20003023	0.000	848.80002721	0.000	2.5
3.88	10	824.20001140	0.023	848.80001274	0.017	2.5
3.88	0	824.20002329	0.008	848.80002134	0.007	2.5
3.88	-10	824.20002610	0.005	848.80002699	0.000	2.5
3.88	-20	824.20002847	0.002	848.80002801	-0.001	2.5
3.88	-30	824.20003340	-0.004	848.80003275	-0.007	2.5
Reference Frequency : GSM850 Low Channel 824.2 MHz / High Channel 848.8 MHz @ 20°C						
Limit: +- 2.5 ppm =	Low Channel	2060.500	Hz	High Channel	2122.000	Hz
Power Supply [Vdc]	Environment Temperature [°C]	Frequency Deviation Measured with Time Elapse				Limit [ppm]
		Low Channel		High Channel		
		[MHz]	Delta [ppm]	[MHz]	Delta [ppm]	
3.86	20	824.20003023	0	848.80002721	0	2.5
4.20	20	824.20002239	0.010	848.80002318	0.005	2.5
3.75	20	824.20001711	0.016	848.80002034	0.008	2.5

GSM 1900, Channel 512/810, Frequency 1850.0/1910.0 MHz (Lowest Frequency:GPRS / Highest Frequency: GPRS)

Test Date	2022-12-02
Test Engineer	19568

Limit		1850	1910	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	1850.0783	1909.9245		
Extreme (50C)		1850.0784	1909.9246	17.2	0.009
Extreme (40C)		1850.0784	1909.9246	20.9	0.011
Extreme (30C)		1850.0784	1909.9246	21.4	0.011
Extreme (10C)		1850.0784	1909.9246	27.7	0.015
Extreme (0C)		1850.0784	1909.9246	19.3	0.010
Extreme (-10C)		1850.0784	1909.9246	13.2	0.007
Extreme (-20C)		1850.0784	1909.9246	12.0	0.006
Extreme (-30C)		1850.0784	1909.9246	19.5	0.010
20C		15%	1850.0784	1909.9246	22.2
	-15%	1850.0784	1909.9246	19.5	0.010
	End Point	1850.0784	1909.9246	19.1	0.010

WCDMA Band 5

Test Date	2022-12-03
Test Engineer	19568

Reference Frequency : WCDMA Band 5 Low Channel 826.4 MHz / High Channel 846.6 MHz @ 20°C						
Limit: +/- 2.5 ppm =	Low Channel	2066.000	Hz	High Channel	2116.500	Hz
Power Supply [Vdc]	Environment Temperature [°C]	Frequency Deviation Measured with Time Elapse				Limit [ppm]
		Low Channel		High Channel		
		[MHz]	Delta [ppm]	[MHz]	Delta [ppm]	
3.88	50	826.40003329	-0.015	846.60003532	-0.019	2.5
3.88	40	826.40002032	0.000	846.60002248	-0.004	2.5
3.88	30	826.40001785	0.003	846.60001933	0.000	2.5
3.88	20	826.40002059	0.000	846.60001949	0.000	2.5
3.88	10	826.40001538	0.006	846.60001274	0.008	2.5
3.88	0	826.40002248	-0.002	846.60002035	-0.001	2.5
3.88	-10	826.40002765	-0.009	846.60002541	-0.007	2.5
3.88	-20	826.40003129	-0.013	846.60003041	-0.013	2.5
3.88	-30	826.40003236	-0.014	846.60003017	-0.013	2.5

Reference Frequency : WCDMA Band 5 Low Channel 826.4 MHz / High Channel 846.6 MHz @ 20°C						
Limit: +/- 2.5 ppm =	Low Channel	2066.000	Hz	High Channel	2116.500	Hz
Power Supply [Vdc]	Environment Temperature [°C]	Frequency Deviation Measured with Time Elapse				Limit [ppm]
		Low Channel		High Channel		
		[MHz]	Delta [ppm]	[MHz]	Delta [ppm]	
3.86	20	826.40002059	0	846.60001949	0	2.5
4.20	20	826.40001954	0.001	846.60002249	-0.004	2.5
3.75	20	826.40001842	0.003	846.60001941	0.000	2.5

WCDMA Band 2 (Lowest Frequency: Rel99 / Highest Frequency: HSDPA)

Test Date	2022-12-03
Test Engineer	19568

Limit		1850	1910	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW (MHz)	F high @ End of OBW (MHz)		
Temperature	Voltage				
Normal (20C)	Normal	1850.3135	1909.6889		
Extreme (50C)		1850.3135	1909.6889	16.2	0.009
Extreme (40C)		1850.3135	1909.6889	15.3	0.008
Extreme (30C)		1850.3135	1909.6889	20.3	0.011
Extreme (10C)		1850.3135	1909.6889	17.4	0.009
Extreme (0C)		1850.3135	1909.6889	21.3	0.011
Extreme (-10C)		1850.3135	1909.6889	23.5	0.012
Extreme (-20C)		1850.3135	1909.6889	20.1	0.011
Extreme (-30C)		1850.3135	1909.6889	17.3	0.009
20C	15%	1850.3135	1909.6889	16.5	0.009
	-15%	1850.3135	1909.6889	19.2	0.010
	End Point	1850.3135	1909.6889	20.4	0.011

LTE Band 2 (Lowest Frequency: 16QAM / Highest Frequency: QPSK)

Test Date	2022-12-05
Test Engineer	19568

Limit		1850	1910	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	1850.1525	1909.8477	15.7	0.008
Extreme (50C)		1850.1525	1909.8477		
Extreme (40C)		1850.1525	1909.8477		
Extreme (30C)		1850.1525	1909.8477		
Extreme (10C)		1850.1525	1909.8477		
Extreme (0C)		1850.1525	1909.8477		
Extreme (-10C)		1850.1525	1909.8477		
Extreme (-20C)		1850.1525	1909.8477		
Extreme (-30C)		1850.1525	1909.8477		
20C	15%	1850.1525	1909.8477	17.0	0.009
	-15%	1850.1525	1909.8477	19.5	0.010
	End Point	1850.1525	1909.8477	20.5	0.011

LTE Band 5

Test Date	2022-12-05
Test Engineer	19568

Reference Frequency : LTE Band 5 Low Channel 824.7 MHz / High Channel 848.3 MHz @ 20°C						
Limit: +- 2.5 ppm =	Low Channel	2061.750	Hz	High Channel	2120.750	Hz
Power Supply [Vdc]	Environment Temperature [°C]	Frequency Deviation Measured with Time Elapse				Limit [ppm]
		Low Channel		High Channel		
		[MHz]	Delta [ppm]	[MHz]	Delta [ppm]	
3.88	50	824.70001932	0.001	848.30002245	-0.001	2.5
3.88	40	824.70002356	-0.004	848.30002647	-0.006	2.5
3.88	30	824.70001295	0.009	848.30001541	0.007	2.5
3.88	20	824.70002023	0.000	848.30002147	0.000	2.5
3.88	10	824.70001965	0.001	848.30002316	-0.002	2.5
3.88	0	824.70001811	0.003	848.30002574	-0.005	2.5
3.88	-10	824.70001341	0.008	848.30001184	0.011	2.5
3.88	-20	824.70002040	0.000	848.30001814	0.004	2.5
3.88	-30	824.70002384	-0.004	848.30002147	0.000	2.5

Reference Frequency : LTE Band 5 Low Channel 824.7 MHz / High Channel 848.3 MHz @ 20°C						
Limit: +- 2.5 ppm =	Low Channel	2061.750	Hz	High Channel	2120.750	Hz
Power Supply [Vdc]	Environment Temperature [°C]	Frequency Deviation Measured with Time Elapse				Limit [ppm]
		Low Channel		High Channel		
		[MHz]	Delta [ppm]	[MHz]	Delta [ppm]	
3.86	20	824.70001680	0	848.30000845	0	2.5
4.20	20	824.70001865	-0.002	848.30002041	-0.014	2.5
3.75	20	824.70002342	-0.008	848.30002541	-0.020	2.5

LTE Band 7 (Lowest Frequency: 16QAM / Highest Frequency: QPSK)

Test Date	2022-12-06				
Test Engineer	19568				
Limit		2500	2570	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	2500.2483	2569.7502		
Extreme (50C)		2500.2483	2569.7502	11.3	0.004
Extreme (40C)		2500.2483	2569.7502	10.5	0.004
Extreme (30C)		2500.2483	2569.7502	15.4	0.006
Extreme (10C)		2500.2483	2569.7502	17.9	0.007
Extreme (0C)		2500.2483	2569.7502	20.4	0.008
Extreme (-10C)		2500.2483	2569.7502	21.5	0.008
Extreme (-20C)		2500.2483	2569.7502	14.7	0.006
Extreme (-30C)		2500.2483	2569.7502	13.2	0.005
20C	15%	2500.2483	2569.7502	11.3	0.004
	-15%	2500.2483	2569.7502	13.5	0.005
	End Point	2500.2483	2569.7502	9.4	0.004

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

Test Date	2022-12-06				
Test Engineer	19568				
Limit		699	716	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	699.1543	715.8442		
Extreme (50C)		699.1543	715.8442	11.3	0.016
Extreme (40C)		699.1543	715.8442	13.7	0.019
Extreme (30C)		699.1543	715.8442	19.5	0.028
Extreme (10C)		699.1543	715.8442	23.5	0.033
Extreme (0C)		699.1543	715.8442	22.1	0.031
Extreme (-10C)		699.1543	715.8442	10.4	0.015
Extreme (-20C)		699.1543	715.8442	11.8	0.017
Extreme (-30C)		699.1543	715.8442	16.3	0.023
20C	15%	699.1543	715.8442	9.5	0.013
	-15%	699.1543	715.8442	11.4	0.016
	End Point	699.1543	715.8442	15.2	0.022

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

Test Date	2022-12-07
Test Engineer	19568

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	777.2498	786.7501		
Extreme (50C)		777.2498	786.7501	27.4	0.035
Extreme (40C)		777.2498	786.7501	30.7	0.039
Extreme (30C)		777.2498	786.7501	21.6	0.028
Extreme (10C)		777.2498	786.7501	25.7	0.033
Extreme (0C)		777.2498	786.7501	19.5	0.025
Extreme (-10C)		777.2498	786.7501	22.4	0.029
Extreme (-20C)		777.2498	786.7501	26.8	0.034
Extreme (-30C)		777.2498	786.7501	30.3	0.039
20C	15%	777.2498	786.7501	31.3	0.040
	-15%	777.2498	786.7501	29.4	0.038
	End Point	777.2498	786.7501	30.5	0.039

LTE Band 66 (Lowest Frequency: QPSK / Highest Frequency: 16QAM)

Test Date	2022-12-08
Test Engineer	19568

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	1710.1538	1779.8459		
Extreme (50C)		1710.1538	1779.8459	11.3	0.006
Extreme (40C)		1710.1538	1779.8459	15.7	0.009
Extreme (30C)		1710.1538	1779.8459	27.4	0.016
Extreme (10C)		1710.1538	1779.8459	21.0	0.012
Extreme (0C)		1710.1538	1779.8459	21.4	0.012
Extreme (-10C)		1710.1538	1779.8459	15.5	0.009
Extreme (-20C)		1710.1538	1779.8459	16.0	0.009
Extreme (-30C)		1710.1538	1779.8459	17.4	0.010
20C	15%	1710.1538	1779.8459	23.5	0.013
	-15%	1710.1538	1779.8459	20.8	0.012
	End Point	1710.1538	1779.8459	21.6	0.012

5G NR Band n2 (Lowest Frequency:QPSK / Highest Frequency: 16QAM)

Test Date	2022-12-08
Test Engineer	19568

Limit		1850	1915	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	1850.2519	1914.7472		
Extreme (50C)		1850.2519	1914.7472	13.7	0.007
Extreme (40C)		1850.2519	1914.7472	15.7	0.008
Extreme (30C)		1850.2519	1914.7472	20.7	0.011
Extreme (10C)		1850.2519	1914.7472	21.9	0.012
Extreme (0C)		1850.2519	1914.7472	11.7	0.006
Extreme (-10C)		1850.2519	1914.7472	12.2	0.006
Extreme (-20C)		1850.2519	1914.7472	19.4	0.010
Extreme (-30C)		1850.2519	1914.7472	22.4	0.012
20C		15%	1850.2519	1914.7472	20.7
	-15%	1850.2519	1914.7472	16.9	0.009
	End Point	1850.2519	1914.7472	18.2	0.010

5G NR Band n5

Test Date	2022-12-09
Test Engineer	19568

Reference Frequency : n5 Low Channel 826.5 MHz / High Channel 846.5 MHz @ 20°C						
Limit: +- 2.5 ppm =	Low Channel	2066.250	Hz	High Channel	2116.250	Hz
Power Supply [Vdc]	Environment Temperature [°C]	Frequency Deviation Measured with Time Elapse				Limit [ppm]
		Low Channel		High Channel		
		[MHz]	Delta [ppm]	[MHz]	Delta [ppm]	
3.88	50	826.50002314	-0.004	846.50002571	-0.009	2.5
3.88	40	826.50002432	-0.005	846.50003248	-0.017	2.5
3.88	30	826.50001934	0.001	846.50002541	-0.009	2.5
3.88	20	826.50002015	0.000	846.50001773	0.000	2.5
3.88	10	826.50001663	0.004	846.50002243	-0.006	2.5
3.88	0	826.50001541	0.006	846.50002123	-0.004	2.5
3.88	-10	826.50002047	0.000	846.50002169	-0.005	2.5
3.88	-20	826.50002247	-0.003	846.50001665	0.001	2.5
3.88	-30	826.50002295	-0.003	846.50001965	-0.002	2.5

Reference Frequency : n5 Low Channel 826.5 MHz / High Channel 846.5 MHz @ 20°C						
Limit: +- 2.5 ppm =	Low Channel	2066.250	Hz	High Channel	2116.250	Hz
Power Supply [Vdc]	Environment Temperature [°C]	Frequency Deviation Measured with Time Elapse				Limit [ppm]
		Low Channel		High Channel		
		[MHz]	Delta [ppm]	[MHz]	Delta [ppm]	
3.86	20	826.50002015	0	846.50001773	0	2.5
4.20	20	826.50001635	0.005	846.50002333	-0.007	2.5
3.75	20	826.50001957	0.001	846.50001765	0.000	2.5

5G NR Band n66 (Lowest Frequency: QPSK / Highest Frequency: 16QAM)

Test Date	2022-12-12
Test Engineer	19568

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	1710.2493	1779.7492		
Extreme (50C)		1710.2493	1779.7492	19.6	0.011
Extreme (40C)		1710.2493	1779.7492	20.7	0.012
Extreme (30C)		1710.2493	1779.7492	21.8	0.012
Extreme (10C)		1710.2493	1779.7492	24.0	0.014
Extreme (0C)		1710.2493	1779.7492	29.7	0.017
Extreme (-10C)		1710.2493	1779.7492	27.4	0.016
Extreme (-20C)		1710.2493	1779.7492	22.7	0.013
Extreme (-30C)		1710.2493	1779.7492	20.7	0.012
20C	15%	1710.2493	1779.7492	19.3	0.011
	-15%	1710.2493	1779.7492	20.7	0.012
	End Point	1710.2493	1779.7492	22.8	0.013

NR Band n77(PC2) 3450 – 3550 MHz (Lowest Frequency: QPSK / Highest Frequency: 16QAM)

Test Date	2022-12-12
Test Engineer	19568

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	3450.7040	3549.3124		
Extreme (50C)		3450.7040	3549.3124	15.7	0.004
Extreme (40C)		3450.7040	3549.3124	19.7	0.006
Extreme (30C)		3450.7040	3549.3124	20.4	0.006
Extreme (10C)		3450.7040	3549.3124	22.5	0.006
Extreme (0C)		3450.7040	3549.3124	17.2	0.005
Extreme (-10C)		3450.7040	3549.3124	15.5	0.004
Extreme (-20C)		3450.7040	3549.3124	13.7	0.004
Extreme (-30C)		3450.7040	3549.3124	11.9	0.003
20C	15%	3450.7040	3549.3124	20.4	0.006
	-15%	3450.7040	3549.3124	23.5	0.007
	End Point	3450.7040	3549.3124	24.7	0.007

NR Band n77(PC2) 3700 – 3980 MHz
(Lowest Frequency: 16QAM / Highest Frequency: 16QAM)

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	3700.6936	3979.3087		
Extreme (50C)		3700.6936	3979.3087	20.1	0.005
Extreme (40C)		3700.6936	3979.3087	19.7	0.005
Extreme (30C)		3700.6936	3979.3087	17.6	0.005
Extreme (10C)		3700.6936	3979.3087	23.5	0.006
Extreme (0C)		3700.6936	3979.3087	22.7	0.006
Extreme (-10C)		3700.6936	3979.3087	17.3	0.005
Extreme (-20C)		3700.6936	3979.3087	15.5	0.004
Extreme (-30C)		3700.6936	3979.3087	13.5	0.004
20C	15%	3700.6936	3979.3087	22.7	0.006
	-15%	3700.6936	3979.3087	25.4	0.007
	End Point	3700.6936	3979.3087	23.2	0.006

9.5. RADIATED POWER (ERP & EIRP)

RULE PART(S)

FCC: §2.1046, §22.913, §24.232, and §27.50

LIMITS

22.913(a) - The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

24.232(c) - Mobile/portable stations are limited to 2 watts e.i.r.p. peak power and the equipment must employ means to limit the power to the minimum necessary for successful communications.

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.

(c) (10) - Portable stations (hand-held devices) in the 600 MHz uplink band and the 698-746 MHz band, and fixed and mobile stations in the 600 MHz uplink band 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.

In addition, when the transmitter power is measured in terms of average value, the peak-to-average ratio of the power shall not exceed 13dB.

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(GSM, WCDMA), average(LTE, 5G NR);

TEST RESULTS

See the following pages.

9.5.1. ERP/EIRP Results

GSM

Band	Mode	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	ERP (mW)	Limit (dBm)	Delta (dB)
GSM 850	GPRS	824.20	36.80	V	3.11	-0.82	32.87	1936.42	38.50	-5.63
		824.20	18.81	H	3.11	-0.82	14.89	30.83	38.50	-23.61
		836.60	36.42	V	3.13	-0.93	32.36	1721.87	38.50	-6.14
		836.60	20.30	H	3.13	-0.93	16.24	42.07	38.50	-22.26
		848.80	35.04	V	3.15	-1.04	30.85	1216.19	38.50	-7.65
	EGPRS	848.80	20.84	H	3.15	-1.04	16.65	46.24	38.50	-21.85
		824.20	31.30	V	3.11	-0.82	27.37	545.76	38.50	-11.13
		824.20	13.34	H	3.11	-0.82	9.42	8.75	38.50	-29.08
		836.60	31.28	V	3.13	-0.93	27.22	527.23	38.50	-11.28
		836.60	14.51	H	3.13	-0.93	10.45	11.09	38.50	-28.05
GSM 1900	GPRS	1850.20	18.98	V	4.62	9.52	23.88	244.34	33.00	-9.12
		1850.20	24.61	H	4.62	9.52	29.51	893.31	33.00	-3.49
		1880.00	20.32	V	4.65	9.29	24.95	312.61	33.00	-8.05
		1880.00	26.19	H	4.65	9.29	30.83	1210.60	33.00	-2.17
		1909.80	20.27	V	4.68	9.00	24.59	287.74	33.00	-8.41
	EGPRS	1909.80	26.70	H	4.68	9.00	31.02	1264.74	33.00	-1.98
		1850.20	17.62	V	4.62	9.52	22.52	178.65	33.00	-10.48
		1850.20	22.71	H	4.62	9.52	27.61	576.77	33.00	-5.39
		1880.00	18.49	V	4.65	9.29	23.12	205.12	33.00	-9.88
		1880.00	24.31	H	4.65	9.29	28.95	785.24	33.00	-4.05
		1909.80	17.43	V	4.68	9.00	21.75	149.62	33.00	-11.25
		1909.80	25.32	H	4.68	9.00	29.64	920.45	33.00	-3.36

WCDMA

Band	Mode	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	ERP (mW)	Limit (dBm)	Delta (dB)
Band 5	REL99	826.40	23.44	V	3.11	-0.84	19.50	89.13	38.50	-19.00
		826.40	9.11	H	3.11	-0.84	5.17	3.29	38.50	-33.33
		836.60	23.96	V	3.13	-0.93	19.90	97.72	38.50	-18.60
		836.60	8.57	H	3.13	-0.93	4.51	2.82	38.50	-33.99
		846.60	25.25	V	3.14	-1.02	21.08	128.23	38.50	-17.42
	HSDPA	846.60	9.81	H	3.14	-1.02	5.65	3.67	38.50	-32.85
		826.40	22.84	V	3.11	-0.84	18.90	77.62	38.50	-19.60
		826.40	7.88	H	3.11	-0.84	3.94	2.48	38.50	-34.56
		836.60	23.38	V	3.13	-0.93	19.32	85.51	38.50	-19.18
		836.60	7.61	H	3.13	-0.93	3.55	2.26	38.50	-34.95
Band 2	REL99	846.60	22.84	V	3.14	-1.02	18.67	73.62	38.50	-19.83
		846.60	6.90	H	3.14	-1.02	2.74	1.88	38.50	-35.76
		1852.40	11.42	V	4.62	9.51	16.30	42.66	33.00	-16.70
		1852.40	17.66	H	4.62	9.51	22.55	179.89	33.00	-10.45
		1880.00	12.98	V	4.65	9.29	17.61	57.68	33.00	-15.39
	HSDPA	1880.00	19.40	H	4.65	9.29	24.04	253.51	33.00	-8.96
		1907.60	13.51	V	4.68	9.03	17.85	60.95	33.00	-15.15
		1907.60	20.37	H	4.68	9.03	24.71	295.80	33.00	-8.29
		1852.40	10.32	V	4.62	9.51	15.20	33.11	33.00	-17.80
		1852.40	16.23	H	4.62	9.51	21.12	129.42	33.00	-11.88
		1880.00	11.85	V	4.65	9.29	16.48	44.46	33.00	-16.52
		1880.00	18.51	H	4.65	9.29	23.15	206.54	33.00	-9.85
		1907.60	12.26	V	4.68	9.03	16.60	45.71	33.00	-16.40
		1907.60	19.62	H	4.68	9.03	23.96	248.89	33.00	-9.04

LTE Band 2

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
1.4	QPSK	1850.70	20.05	H	4.62	9.52	24.95	312.61	33.00	-8.05	1/3
		1880.00	21.68	H	4.65	9.29	26.32	428.55	33.00	-6.68	1/5
		1909.30	22.15	H	4.68	9.00	26.47	443.61	33.00	-6.53	1/3
	16-QAM	1850.70	19.15	H	4.62	9.52	24.05	254.10	33.00	-8.95	1/3
		1880.00	20.74	H	4.65	9.29	25.38	345.14	33.00	-7.62	1/5
		1909.30	21.16	H	4.68	9.00	25.48	353.18	33.00	-7.52	1/3
3	QPSK	1851.50	18.72	H	4.62	9.51	23.60	229.09	33.00	-9.40	1/8
		1880.00	21.52	H	4.65	9.29	26.16	413.05	33.00	-6.84	1/8
		1908.50	21.46	H	4.68	9.02	25.80	380.19	33.00	-7.20	1/8
	16-QAM	1851.50	18.25	H	4.62	9.51	23.13	205.59	33.00	-9.87	1/8
		1880.00	20.95	H	4.65	9.29	25.59	362.24	33.00	-7.41	1/8
		1908.50	21.04	H	4.68	9.02	25.38	345.14	33.00	-7.62	1/8
5	QPSK	1852.50	19.75	H	4.62	9.50	24.63	290.40	33.00	-8.37	1/24
		1880.00	20.80	H	4.65	9.29	25.44	349.95	33.00	-7.56	1/24
		1907.50	21.92	H	4.69	9.03	26.27	423.64	33.00	-6.73	1/12
	16-QAM	1852.50	19.35	H	4.62	9.50	24.23	264.85	33.00	-8.77	1/12
		1880.00	20.32	H	4.65	9.29	24.96	313.33	33.00	-8.04	1/12
		1907.50	20.79	H	4.69	9.03	25.14	326.59	33.00	-7.86	1/10
10	QPSK	1855.00	20.24	H	4.62	9.48	25.10	323.59	33.00	-7.90	1/25
		1880.00	21.00	H	4.65	9.29	25.64	366.44	33.00	-7.36	1/10
		1905.00	21.85	H	4.68	9.06	26.23	419.76	33.00	-6.77	1/25
	16-QAM	1855.00	19.43	H	4.62	9.48	24.29	268.53	33.00	-8.71	1/25
		1880.00	20.36	H	4.65	9.29	25.00	316.23	33.00	-8.00	1/49
		1905.00	21.34	H	4.68	9.06	25.72	373.25	33.00	-7.28	1/10
15	QPSK	1857.50	19.78	H	4.63	9.47	24.61	289.07	33.00	-8.39	1/37
		1880.00	21.14	H	4.65	9.29	25.78	378.44	33.00	-7.22	1/37
		1902.50	21.55	H	4.68	9.10	25.98	396.28	33.00	-7.02	1/37
	16-QAM	1857.50	18.74	H	4.63	9.47	23.58	228.03	33.00	-9.42	1/37
		1880.00	20.01	H	4.65	9.29	24.65	291.74	33.00	-8.35	1/37
		1902.50	20.61	H	4.68	9.10	25.04	319.15	33.00	-7.96	1/37
20	QPSK	1860.00	20.81	H	4.63	9.45	25.63	365.59	33.00	-7.37	1/99
		1880.00	21.82	H	4.65	9.29	26.46	442.59	33.00	-6.54	1/10
		1900.00	22.41	H	4.67	9.13	26.87	486.41	33.00	-6.13	1/49
	16-QAM	1860.00	20.10	H	4.63	9.45	24.92	310.46	33.00	-8.08	1/49
		1880.00	20.89	H	4.65	9.29	25.53	357.27	33.00	-7.47	1/10
		1900.00	21.79	H	4.67	9.13	26.25	421.70	33.00	-6.75	1/10

LTE Band 5

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
1.4	QPSK	824.70	23.38	V	3.11	-0.82	19.45	88.10	38.50	-19.05	1/5
		836.50	24.65	V	3.13	-0.93	20.60	114.82	38.50	-17.90	1/3
		848.30	25.18	V	3.15	-1.03	21.00	125.89	38.50	-17.50	1/5
	16-QAM	824.70	22.94	V	3.11	-0.82	19.01	79.62	38.50	-19.49	1/5
		836.50	23.28	V	3.13	-0.93	19.23	83.75	38.50	-19.27	1/5
		848.30	23.52	V	3.15	-1.03	19.34	85.90	38.50	-19.16	1/3
3	QPSK	825.50	24.20	V	3.10	-0.83	20.27	106.41	38.50	-18.23	1/8
		836.50	25.07	V	3.13	-0.93	21.02	126.36	38.50	-17.48	1/8
		847.50	25.20	V	3.15	-1.03	21.03	126.77	38.50	-17.47	1/14
	16-QAM	825.50	23.64	V	3.10	-0.83	19.71	93.54	38.50	-18.79	1/10
		836.50	23.81	V	3.13	-0.93	19.76	94.62	38.50	-18.74	1/8
		847.50	23.92	V	3.15	-1.03	19.75	94.41	38.50	-18.75	1/10
5	QPSK	826.50	23.31	V	3.11	-0.84	19.36	86.30	38.50	-19.14	1/12
		836.50	24.54	V	3.13	-0.93	20.49	111.94	38.50	-18.01	1/12
		846.50	24.56	V	3.14	-1.02	20.40	109.65	38.50	-18.10	1/12
	16-QAM	826.50	23.01	V	3.11	-0.84	19.06	80.54	38.50	-19.44	1/10
		836.50	23.50	V	3.13	-0.93	19.45	88.10	38.50	-19.05	1/12
		846.50	23.23	V	3.14	-1.02	19.07	80.72	38.50	-19.43	1/10
10	QPSK	829.00	22.95	V	3.11	-0.86	18.98	79.07	38.50	-19.52	1/25
		836.50	24.40	V	3.13	-0.93	20.35	108.39	38.50	-18.15	1/10
		844.00	24.61	V	3.14	-1.00	20.48	111.69	38.50	-18.02	1/10
	16-QAM	829.00	22.67	V	3.11	-0.86	18.70	74.13	38.50	-19.80	1/25
		836.50	23.13	V	3.13	-0.93	19.08	80.91	38.50	-19.42	1/25
		844.00	23.04	V	3.14	-1.00	19.91	97.95	38.50	-19.59	1/10

LTE Band 7

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
5	QPSK	2502.50	17.61	H	5.37	10.00	22.23	167.11	33.00	-10.77	1/12
		2535.00	18.06	H	5.41	9.93	22.58	181.13	33.00	-10.42	1/24
		2567.50	17.12	H	5.45	9.91	21.58	143.88	33.00	-11.42	1/12
	16-QAM	2502.50	16.64	H	5.37	10.00	21.26	133.66	33.00	-11.74	1/12
		2535.00	16.77	H	5.41	9.93	21.29	134.59	33.00	-11.71	1/12
		2567.50	16.20	H	5.45	9.91	20.66	116.41	33.00	-12.34	1/0
10	QPSK	2505.00	17.56	H	5.38	9.99	22.18	165.20	33.00	-10.82	1/25
		2535.00	17.77	H	5.41	9.93	22.29	169.43	33.00	-10.71	1/25
		2565.00	17.30	H	5.43	9.91	21.78	150.66	33.00	-11.22	1/25
	16-QAM	2505.00	16.44	H	5.38	9.99	21.06	127.64	33.00	-11.94	1/25
		2535.00	16.92	H	5.41	9.93	21.44	139.32	33.00	-11.56	1/25
		2565.00	16.31	H	5.43	9.91	20.79	119.95	33.00	-12.21	1/25
15	QPSK	2507.50	16.81	H	5.39	9.99	21.41	138.36	33.00	-11.59	1/0
		2535.00	18.08	H	5.41	9.93	22.60	181.97	33.00	-10.40	1/0
		2562.50	17.94	H	5.44	9.91	22.41	174.18	33.00	-10.59	1/0
	16-QAM	2507.50	15.94	H	5.39	9.99	20.54	113.24	33.00	-12.46	1/0
		2535.00	17.13	H	5.41	9.93	21.65	146.22	33.00	-11.35	1/0
		2562.50	16.99	H	5.44	9.91	21.46	139.96	33.00	-11.54	1/0
20	QPSK	2510.00	17.31	H	5.38	9.98	21.91	155.24	33.00	-11.09	1/0
		2535.00	17.67	H	5.41	9.93	22.19	165.58	33.00	-10.81	1/0
		2560.00	17.82	H	5.44	9.91	22.28	169.04	33.00	-10.72	1/0
	16-QAM	2510.00	16.56	H	5.38	9.98	21.16	130.62	33.00	-11.84	1/0
		2535.00	16.67	H	5.41	9.93	21.19	131.52	33.00	-11.81	1/49
		2560.00	16.93	H	5.44	9.91	21.39	137.72	33.00	-11.61	1/0

LTE Band 12

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
1.4	QPSK	699.70	21.04	V	2.87	-0.80	17.36	54.45	34.77	-17.41	1/5
		707.50	21.68	V	2.89	-0.79	18.01	63.24	34.77	-16.76	1/3
		715.30	22.56	V	2.90	-0.77	18.89	77.45	34.77	-15.88	1/0
	16-QAM	699.70	20.15	V	2.87	-0.80	16.47	44.36	34.77	-18.30	1/3
		707.50	20.94	V	2.89	-0.79	17.27	53.33	34.77	-17.50	1/5
		715.30	21.24	V	2.90	-0.77	17.57	57.15	34.77	-17.20	1/3
3	QPSK	700.50	23.62	V	2.88	-0.80	19.94	98.63	34.77	-14.83	1/8
		707.50	23.13	V	2.89	-0.79	19.46	88.31	34.77	-15.31	1/8
		714.50	23.27	V	2.90	-0.77	19.60	91.20	34.77	-15.17	1/14
	16-QAM	700.50	22.71	V	2.88	-0.80	19.03	79.98	34.77	-15.74	1/8
		707.50	22.14	V	2.89	-0.79	18.47	70.31	34.77	-16.30	1/8
		714.50	22.65	V	2.90	-0.77	18.98	79.07	34.77	-15.79	1/8
5	QPSK	701.50	23.70	V	2.88	-0.80	20.03	100.69	34.77	-14.74	1/12
		707.50	23.04	V	2.89	-0.79	19.37	86.50	34.77	-15.40	1/12
		713.50	23.14	V	2.90	-0.77	19.46	88.31	34.77	-15.31	1/12
	16-QAM	701.50	22.74	V	2.88	-0.80	19.07	80.72	34.77	-15.70	1/0
		707.50	21.99	V	2.89	-0.79	18.32	67.92	34.77	-16.45	1/0
		713.50	22.24	V	2.90	-0.77	18.56	71.78	34.77	-16.21	1/12
10	QPSK	704.00	23.85	V	2.88	-0.79	20.18	104.23	34.77	-14.59	1/25
		707.50	23.84	V	2.89	-0.79	20.17	103.99	34.77	-14.60	1/49
		711.00	23.28	V	2.89	-0.78	19.61	91.41	34.77	-15.16	1/0
	16-QAM	704.00	22.69	V	2.88	-0.79	19.02	79.80	34.77	-15.75	1/25
		707.50	21.89	V	2.89	-0.79	18.22	66.37	34.77	-16.55	1/25
		711.00	22.16	V	2.89	-0.78	18.49	70.63	34.77	-16.28	1/0

LTE Band 13

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
5	QPSK	779.50	25.13	V	3.02	-0.64	21.47	140.28	34.77	-13.30	1/12
		782.00	25.00	V	3.02	-0.64	21.34	136.14	34.77	-13.43	1/12
		784.50	24.72	V	3.04	-0.63	21.05	127.35	34.77	-13.72	1/12
	16-QAM	779.50	24.09	V	3.02	-0.64	20.43	110.41	34.77	-14.34	1/12
		782.00	23.91	V	3.02	-0.64	20.25	105.93	34.77	-14.52	1/12
		784.50	23.73	V	3.04	-0.63	20.06	101.39	34.77	-14.71	1/12
10	QPSK	782.00	25.19	V	3.02	-0.64	21.53	142.23	34.77	-13.24	1/0
	16-QAM	782.00	23.84	V	3.02	-0.64	20.18	104.23	34.77	-14.59	1/25

LTE Band 66

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
1.4	QPSK	1710.70	17.68	V	4.43	9.50	22.75	188.36	30.00	-7.25	1/5
		1745.00	18.96	V	4.47	9.66	24.14	259.42	30.00	-5.86	1/5
		1779.30	18.08	V	4.52	9.68	23.24	210.86	30.00	-6.76	1/3
	16-QAM	1710.70	16.90	V	4.43	9.50	21.97	157.40	30.00	-8.03	1/5
		1745.00	18.52	V	4.47	9.66	23.70	234.42	30.00	-6.30	1/0
		1779.30	17.69	V	4.52	9.68	22.85	192.75	30.00	-7.15	1/0
3	QPSK	1711.50	17.45	V	4.44	9.51	22.52	178.65	30.00	-7.48	1/8
		1745.00	19.02	V	4.47	9.66	24.20	263.03	30.00	-5.80	1/8
		1778.50	18.48	V	4.52	9.68	23.64	231.21	30.00	-6.36	1/8
	16-QAM	1711.50	17.07	V	4.44	9.51	22.14	163.68	30.00	-7.86	1/8
		1745.00	18.25	V	4.47	9.66	23.43	220.29	30.00	-6.57	1/8
		1778.50	17.68	V	4.52	9.68	22.84	192.31	30.00	-7.16	1/8
5	QPSK	1712.50	18.67	V	4.44	9.51	23.75	237.14	30.00	-6.25	1/24
		1745.00	19.45	V	4.47	9.66	24.63	290.40	30.00	-5.37	1/12
		1777.50	18.74	V	4.52	9.68	23.90	245.47	30.00	-6.10	1/24
	16-QAM	1712.50	17.21	V	4.44	9.51	22.29	169.43	30.00	-7.71	1/12
		1745.00	18.44	V	4.47	9.66	23.62	230.14	30.00	-6.38	1/12
		1777.50	17.62	V	4.52	9.68	22.78	189.67	30.00	-7.22	1/24
10	QPSK	1715.00	17.89	V	4.44	9.52	22.98	198.61	30.00	-7.02	1/25
		1745.00	19.32	V	4.47	9.66	24.50	281.84	30.00	-5.50	1/25
		1775.00	18.88	V	4.51	9.68	24.05	254.10	30.00	-5.95	1/25
	16-QAM	1715.00	16.91	V	4.44	9.52	22.00	158.49	30.00	-8.00	1/25
		1745.00	18.38	V	4.47	9.66	23.57	227.51	30.00	-6.43	1/25
		1775.00	18.32	V	4.51	9.68	23.48	222.84	30.00	-6.52	1/25
15	QPSK	1717.50	17.69	V	4.44	9.53	22.78	189.67	30.00	-7.22	1/37
		1745.00	18.79	V	4.47	9.66	23.97	249.46	30.00	-6.03	1/37
		1772.50	18.73	V	4.51	9.68	23.90	245.47	30.00	-6.10	1/37
	16-QAM	1717.50	17.06	V	4.44	9.53	22.15	164.06	30.00	-7.85	1/37
		1745.00	18.17	V	4.47	9.66	22.35	171.79	30.00	-6.65	1/74
		1772.50	18.12	V	4.51	9.68	23.29	213.30	30.00	-6.71	1/37
20	QPSK	1720.00	18.15	V	4.44	9.55	23.25	211.35	30.00	-6.75	1/99
		1745.00	19.20	V	4.47	9.66	24.38	274.16	30.00	-5.62	1/49
		1770.00	18.89	V	4.51	9.68	24.07	255.27	30.00	-5.93	1/49
	16-QAM	1720.00	17.57	V	4.44	9.55	22.67	184.93	30.00	-7.33	1/49
		1745.00	18.52	V	4.47	9.66	23.70	234.42	30.00	-6.30	1/99
		1770.00	17.83	V	4.51	9.68	23.01	199.99	30.00	-6.99	1/99

5G NR n2

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
5	BPSK	1852.50	17.37	H	4.62	9.50	22.25	167.88	33.00	-10.75	1/23
		1880.00	19.04	H	4.65	9.29	23.68	233.35	33.00	-9.32	1/1
		1907.50	19.27	H	4.69	9.03	23.62	230.14	33.00	-9.38	1/23
	16-QAM	1852.50	16.82	H	4.62	9.50	21.70	147.91	33.00	-11.30	1/23
		1880.00	18.48	H	4.65	9.29	23.12	205.12	33.00	-9.88	1/1
		1907.50	18.75	H	4.69	9.03	23.10	204.17	33.00	-9.90	1/23
10	BPSK	1855.00	16.69	H	4.62	9.48	21.55	142.89	33.00	-11.45	1/1
		1880.00	18.53	H	4.65	9.29	23.17	207.49	33.00	-9.83	1/26
		1905.00	18.55	H	4.68	9.06	22.93	196.34	33.00	-10.07	1/50
	16-QAM	1855.00	16.26	H	4.62	9.48	21.12	129.42	33.00	-11.88	1/1
		1880.00	17.92	H	4.65	9.29	22.56	180.30	33.00	-10.44	1/26
		1905.00	18.08	H	4.68	9.06	22.46	176.20	33.00	-10.54	1/50
15	BPSK	1857.50	18.55	H	4.63	9.47	23.39	218.27	33.00	-9.61	1/1
		1880.00	18.45	H	4.65	9.29	23.09	203.70	33.00	-9.91	1/1
		1902.50	20.35	H	4.68	9.10	24.78	300.61	33.00	-8.22	1/77
	16-QAM	1857.50	18.04	H	4.63	9.47	22.88	194.09	33.00	-10.12	1/1
		1880.00	17.74	H	4.65	9.29	22.38	172.98	33.00	-10.62	1/1
		1902.50	19.79	H	4.68	9.10	24.22	264.24	33.00	-8.78	1/77
20	BPSK	1860.00	18.14	H	4.63	9.45	22.96	197.70	33.00	-10.04	1/53
		1880.00	18.86	H	4.65	9.29	23.50	223.87	33.00	-9.50	1/1
		1900.00	18.32	H	4.67	9.13	22.78	189.67	33.00	-10.22	1/1
	16-QAM	1860.00	17.51	H	4.63	9.45	22.33	171.00	33.00	-10.67	1/53
		1880.00	18.24	H	4.65	9.29	22.88	194.09	33.00	-10.12	1/1
		1900.00	18.05	H	4.67	9.13	22.51	178.24	33.00	-10.49	1/1
25	BPSK	1862.50	18.91	H	4.63	9.43	23.70	234.42	33.00	-9.30	1/131
		1880.00	19.99	H	4.65	9.29	24.63	290.40	33.00	-8.37	1/131
		1897.50	19.68	H	4.67	9.15	24.16	260.62	33.00	-8.84	1/1
	16-QAM	1862.50	18.23	H	4.63	9.43	23.02	200.45	33.00	-9.98	1/131
		1880.00	18.95	H	4.65	9.29	23.58	228.03	33.00	-9.42	1/131
		1897.50	19.20	H	4.67	9.15	23.68	233.35	33.00	-9.32	1/1
30	BPSK	1865.00	18.20	H	4.63	9.41	22.97	198.15	33.00	-10.03	1/1
		1880.00	19.68	H	4.65	9.29	24.32	270.40	33.00	-8.68	1/1
		1895.00	20.15	H	4.67	9.17	24.66	292.42	33.00	-8.34	1/80
	16-QAM	1865.00	17.58	H	4.63	9.41	22.35	171.79	33.00	-10.65	1/1
		1880.00	19.01	H	4.65	9.29	23.65	231.74	33.00	-9.35	1/1
		1895.00	19.55	H	4.67	9.17	24.06	254.68	33.00	-8.94	1/80
40	BPSK	1870.00	16.41	H	4.64	9.37	21.14	130.02	33.00	-11.86	1/1
		1880.00	18.94	H	4.65	9.29	23.58	228.03	33.00	-9.42	1/1
		1890.00	19.18	H	4.66	9.21	23.73	236.05	33.00	-9.27	1/1
	16-QAM	1870.00	15.89	H	4.64	9.37	20.62	115.35	33.00	-12.38	1/214
		1880.00	18.16	H	4.65	9.29	22.80	190.55	33.00	-10.20	1/1
		1890.00	18.48	H	4.66	9.21	23.03	200.91	33.00	-9.97	1/1

5G NR n5

BW (MHz)	Modulation	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	ERP (mW)	Limit (dBm)	Delta (dB)	RB
5	QPSK	826.50	23.06	V	3.11	-0.84	19.11	81.47	38.50	-19.39	1/23
		836.50	24.13	V	3.13	-0.93	20.08	101.86	38.50	-18.42	1/1
		846.50	24.28	V	3.14	-1.02	20.12	102.80	38.50	-18.38	1/1
	16-QAM	826.50	20.99	V	3.11	-0.84	17.04	50.58	38.50	-21.46	1/23
		836.50	22.56	V	3.13	-0.93	18.51	70.96	38.50	-19.99	1/1
		846.50	22.93	V	3.14	-1.02	18.77	75.34	38.50	-19.73	1/1
10	QPSK	829.00	23.39	V	3.11	-0.86	19.42	87.50	38.50	-19.08	1/26
		836.50	24.32	V	3.13	-0.93	20.27	106.41	38.50	-18.23	1/26
		844.00	24.41	V	3.14	-1.00	20.28	106.66	38.50	-18.22	1/26
	16-QAM	829.00	21.25	V	3.11	-0.86	17.28	53.46	38.50	-21.22	1/26
		836.50	22.86	V	3.13	-0.93	18.81	76.03	38.50	-19.69	1/26
		844.00	23.15	V	3.14	-1.00	19.02	79.80	38.50	-19.48	1/26
15	QPSK	831.50	23.17	V	3.11	-0.88	19.17	82.60	38.50	-19.33	1/77
		836.50	24.08	V	3.13	-0.93	20.03	100.69	38.50	-18.47	1/1
		841.50	24.38	V	3.13	-0.97	20.27	106.41	38.50	-18.23	1/1
	16-QAM	831.50	21.35	V	3.11	-0.88	17.35	54.33	38.50	-21.15	1/77
		836.50	22.55	V	3.13	-0.93	18.50	70.79	38.50	-20.00	1/1
		841.50	23.12	V	3.13	-0.97	19.01	79.62	38.50	-19.49	1/1
20	QPSK	834.00	23.28	V	3.12	-0.91	19.25	84.14	38.50	-19.25	1/53
		836.50	24.08	V	3.13	-0.93	20.03	100.69	38.50	-18.47	1/53
		839.00	24.63	V	3.13	-0.95	20.55	113.50	38.50	-17.95	1/53
	16-QAM	834.00	22.01	V	3.12	-0.91	17.98	62.81	38.50	-20.52	1/53
		836.50	22.78	V	3.13	-0.93	18.73	74.64	38.50	-19.77	1/53
		839.00	23.37	V	3.13	-0.95	19.29	84.92	38.50	-19.21	1/53

5G NR n66

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
5	QPSK	1712.50	17.37	V	4.44	9.51	22.45	175.79	30.00	-7.55	1/1
		1745.00	18.30	V	4.47	9.66	23.48	222.84	30.00	-6.52	1/23
		1777.50	16.81	V	4.52	9.68	21.97	157.40	30.00	-8.03	1/23
	16-QAM	1712.50	16.90	V	4.44	9.51	21.98	157.76	30.00	-8.02	1/1
		1745.00	17.83	V	4.47	9.66	23.01	199.99	30.00	-6.99	1/23
		1777.50	16.27	V	4.52	9.68	21.43	139.00	30.00	-8.57	1/23
10	QPSK	1715.00	18.64	V	4.44	9.52	23.73	236.05	30.00	-6.27	1/1
		1745.00	18.67	V	4.47	9.66	23.85	242.66	30.00	-6.15	1/50
		1775.00	18.71	V	4.51	9.68	23.88	244.34	30.00	-6.12	1/1
	16-QAM	1715.00	17.81	V	4.44	9.52	22.90	194.98	30.00	-7.10	1/1
		1745.00	17.49	V	4.47	9.66	22.67	184.93	30.00	-7.33	1/50
		1775.00	17.81	V	4.51	9.68	22.98	198.61	30.00	-7.02	1/1
15	QPSK	1717.50	16.73	V	4.44	9.53	21.82	152.05	30.00	-8.18	1/1
		1745.00	18.57	V	4.47	9.66	23.75	237.14	30.00	-6.25	1/77
		1772.50	18.00	V	4.51	9.68	23.17	207.49	30.00	-6.83	1/1
	16-QAM	1717.50	15.98	V	4.44	9.53	21.07	127.94	30.00	-8.93	1/1
		1745.00	17.55	V	4.47	9.66	22.73	187.50	30.00	-7.27	1/77
		1772.50	17.25	V	4.51	9.68	22.42	174.58	30.00	-7.58	1/1
20	QPSK	1720.00	18.01	V	4.44	9.55	23.11	204.64	30.00	-6.89	1/104
		1745.00	17.12	V	4.47	9.66	22.30	169.82	30.00	-7.70	1/104
		1770.00	16.50	V	4.51	9.68	21.68	147.23	30.00	-8.32	1/104
	16-QAM	1720.00	17.47	V	4.44	9.55	22.57	180.72	30.00	-7.43	1/104
		1745.00	16.51	V	4.47	9.66	21.69	147.57	30.00	-8.31	1/104
		1770.00	15.74	V	4.51	9.68	20.91	123.31	30.00	-9.09	1/104
25	QPSK	1722.50	17.68	V	4.45	9.56	22.79	190.11	30.00	-7.21	1/1
		1745.00	17.67	V	4.47	9.66	22.85	192.75	30.00	-7.15	1/131
		1767.50	18.91	V	4.51	9.68	24.08	255.86	30.00	-5.92	1/1
	16-QAM	1722.50	17.15	V	4.45	9.56	22.26	168.27	30.00	-7.74	1/1
		1745.00	16.97	V	4.47	9.66	22.16	164.44	30.00	-7.84	1/131
		1767.50	17.70	V	4.51	9.68	22.87	193.64	30.00	-7.13	1/1
30	QPSK	1725.00	17.27	V	4.45	9.57	22.39	173.38	30.00	-7.61	1/158
		1745.00	18.13	V	4.47	9.66	23.31	214.29	30.00	-6.69	1/158
		1765.00	18.57	V	4.50	9.68	23.75	237.14	30.00	-6.25	1/80
	16-QAM	1725.00	16.66	V	4.45	9.57	21.78	150.66	30.00	-8.22	1/158
		1745.00	17.49	V	4.47	9.66	22.67	184.93	30.00	-7.33	1/158
		1765.00	17.90	V	4.50	9.68	23.08	203.24	30.00	-6.92	1/80
40	QPSK	1730.00	19.26	V	4.46	9.59	24.40	275.42	30.00	-5.60	1/214
		1745.00	18.47	V	4.47	9.66	23.65	231.74	30.00	-6.35	1/214
		1760.00	18.32	V	4.49	9.68	23.51	224.39	30.00	-6.49	1/108
	16-QAM	1730.00	18.53	V	4.46	9.59	23.67	232.81	30.00	-6.33	1/214
		1745.00	17.89	V	4.47	9.66	23.07	202.77	30.00	-6.93	1/214
		1760.00	17.69	V	4.49	9.68	22.88	194.09	30.00	-7.12	1/108

5G NR n77(PC2,3450-3550 MHz)

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
10	QPSK	3455.01	20.70	H	6.31	10.61	25.01	316.71	30.00	-4.99	1/22
		3499.98	19.81	H	6.36	10.67	24.12	258.35	30.00	-5.88	1/22
		3544.98	20.19	H	6.40	10.75	24.54	284.27	30.00	-5.46	1/1
	16-QAM	3455.01	19.67	H	6.31	10.61	23.98	249.84	30.00	-6.02	1/22
		3499.98	18.77	H	6.36	10.67	23.08	203.34	30.00	-6.92	1/22
		3544.98	19.19	H	6.40	10.75	23.54	225.80	30.00	-6.46	1/1
15	QPSK	3457.50	20.38	H	6.31	10.62	24.68	293.87	30.00	-5.32	1/36
		3499.98	19.69	H	6.36	10.67	24.00	251.31	30.00	-6.00	1/36
		3542.49	20.23	H	6.40	10.74	24.58	287.17	30.00	-5.42	1/1
	16-QAM	3457.50	19.49	H	6.31	10.62	23.79	239.42	30.00	-6.21	1/36
		3499.98	18.63	H	6.36	10.67	22.94	196.89	30.00	-7.06	1/36
		3542.49	19.36	H	6.40	10.74	23.71	235.04	30.00	-6.29	1/1
20	QPSK	3460.01	20.31	H	6.32	10.62	24.61	289.17	30.00	-5.39	1/49
		3499.98	20.11	H	6.36	10.67	24.42	276.83	30.00	-5.58	1/49
		3540.00	20.74	H	6.39	10.74	25.09	322.70	30.00	-4.91	1/1
	16-QAM	3460.01	19.43	H	6.32	10.62	23.73	236.13	30.00	-6.27	1/49
		3499.98	19.23	H	6.36	10.67	23.54	226.06	30.00	-6.46	1/49
		3540.00	19.70	H	6.39	10.74	24.05	253.98	30.00	-5.95	1/1
25	QPSK	3462.51	19.62	H	6.33	10.62	23.92	246.34	30.00	-6.08	1/32
		3499.98	19.29	H	6.36	10.67	23.60	229.20	30.00	-6.40	1/32
		3537.48	20.35	H	6.38	10.74	24.70	295.16	30.00	-5.30	1/32
	16-QAM	3462.51	18.42	H	6.33	10.62	22.72	186.87	30.00	-7.28	1/32
		3499.98	18.47	H	6.36	10.67	22.78	189.77	30.00	-7.22	1/32
		3537.48	19.25	H	6.38	10.74	23.60	229.11	30.00	-6.40	1/32
30	QPSK	3465.00	20.37	V	6.32	10.63	24.67	293.07	30.00	-5.33	1/76
		3499.98	19.96	V	6.36	10.67	24.27	267.42	30.00	-5.73	1/76
		3535.02	20.02	H	6.38	10.73	24.37	273.83	30.00	-5.63	1/1
	16-QAM	3465.00	19.64	V	6.32	10.63	23.94	247.72	30.00	-6.06	1/76
		3499.98	18.99	V	6.36	10.67	23.30	213.89	30.00	-6.70	1/76
		3535.02	19.09	H	6.38	10.73	23.44	221.04	30.00	-6.56	1/1
40	QPSK	3470.01	20.37	H	6.33	10.63	24.67	293.19	30.00	-5.33	1/53
		3499.98	19.82	H	6.36	10.67	24.13	258.95	30.00	-5.87	1/104
		3529.98	19.49	H	6.39	10.72	23.82	241.05	30.00	-6.18	1/1
	16-QAM	3470.01	19.48	H	6.33	10.63	23.78	238.86	30.00	-6.22	1/53
		3499.98	18.87	H	6.36	10.67	23.18	208.07	30.00	-6.82	1/104
		3529.98	18.59	H	6.39	10.72	22.92	195.93	30.00	-7.08	1/1
50	QPSK	3475.02	20.27	H/V	6.34	10.64	24.57	286.69	30.00	-5.43	1/67
		3499.98	19.94	H	6.36	10.67	24.25	266.21	30.00	-5.75	1/131
		3525.00	18.42	H	6.37	10.71	22.76	188.76	30.00	-7.24	1/67
	16-QAM	3475.02	19.28	H	6.34	10.64	23.58	228.25	30.00	-6.42	1/67
		3499.98	19.12	H	6.36	10.67	23.43	220.40	30.00	-6.57	1/131
		3525.00	17.49	H	6.37	10.71	21.83	152.37	30.00	-8.17	1/67
60	QPSK	3480.00	20.63	H	6.34	10.65	24.93	311.48	30.00	-5.07	1/160
		3499.98	21.04	H	6.36	10.67	25.35	342.94	30.00	-4.65	1/160
		3519.99	21.17	H	6.37	10.70	25.50	354.77	30.00	-4.50	1/81
	16-QAM	3480.00	19.48	H	6.34	10.65	23.78	239.02	30.00	-6.22	1/160
		3499.98	20.08	H	6.36	10.67	24.39	274.93	30.00	-5.61	1/160
		3519.99	20.24	H	6.37	10.70	24.57	286.38	30.00	-5.43	1/81
70	QPSK	3485.01	19.69	H	6.35	10.65	24.00	251.21	30.00	-6.00	1/95
		3499.98	19.52	H	6.36	10.67	23.83	241.44	30.00	-6.17	1/95
		3514.98	19.89	H	6.37	10.69	24.21	263.84	30.00	-5.79	1/95
	16-QAM	3485.01	18.67	H	6.35	10.65	22.98	198.58	30.00	-7.02	1/95
		3499.98	18.75	H	6.36	10.67	23.06	202.50	30.00	-6.94	1/95
		3514.98	18.94	H	6.37	10.69	23.26	212.05	30.00	-6.74	1/95
80	QPSK	3490.02	19.75	H	6.35	10.66	24.06	254.83	30.00	-5.94	1/215
		3499.98	19.40	H	6.36	10.67	23.71	235.13	30.00	-6.29	1/109
		3510.00	19.48	H	6.37	10.69	23.80	239.68	30.00	-6.20	1/109
	16-QAM	3490.02	18.83	H	6.35	10.66	23.14	206.04	30.00	-6.86	1/215
		3499.98	18.43	H	6.36	10.67	22.74	187.85	30.00	-7.26	1/109
		3510.00	18.63	H	6.37	10.69	22.94	196.85	30.00	-7.06	1/109
90	QPSK	3495.00	19.32	H	6.35	10.66	23.64	231.00	30.00	-6.36	1/123
		3499.98	19.69	H	6.36	10.67	24.01	251.60	30.00	-5.99	1/243
		3504.99	19.32	H	6.37	10.68	23.64	230.96	30.00	-6.36	1/123
	16-QAM	3495.00	18.26	H	6.35	10.66	22.58	180.93	30.00	-7.42	1/123
		3499.98	18.15	H	6.36	10.67	22.46	176.24	30.00	-7.54	1/243
		3504.99	18.39	H	6.37	10.68	22.70	186.27	30.00	-7.30	1/123
100	QPSK	3499.98	19.21	H	6.36	10.67	23.52	225.07	30.00	-6.48	1/137
	16-QAM	3499.98	18.32	H	6.36	10.67	22.63	183.32	30.00	-7.37	1/137

5G NR n77(PC2,3450-3550 MHz, SRS1)

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	1.53	H	6.31	10.61	5.84	3.83	30.00	-24.16
	3499.98	1.34	H	6.36	10.67	5.65	3.67	30.00	-24.35
	3544.98	3.01	H	6.40	10.75	7.36	5.44	30.00	-22.64
15	3457.50								
	3499.98								
	3542.49								
20	3460.02								
	3499.98								
	3540.00								
25	3462.51								
	3499.98								
	3537.48								
30	3465.00								
	3499.98								
	3535.02								
40	3470.01								
	3499.98								
	3529.98								
50	3475.02								
	3499.98								
	3525.00								
60	3480.00								
	3499.98								
	3519.99								
70	3485.01								
	3499.98								
	3514.98								
80	3490.02								
	3499.98								
	3510.00								
90	3495.00								
	3499.98								
	3504.99								
100	3499.98								

5G NR n77(PC2,3450-3550 MHz, SRS2)

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								
	3499.98								
	3544.98								
15	3457.50								
	3499.98								
	3542.49								
20	3460.02								
	3499.98								
	3540.00								
25	3462.51								
	3499.98								
	3537.48								
30	3465.00								
	3499.98								
	3535.02								
40	3470.01								
	3499.98								
	3529.98								
50	3475.02								
	3499.98								
	3525.00								
60	3480.00	17.38	H	6.34	10.65	21.68	147.38	30.00	-8.32
	3499.98	17.14	H	6.36	10.67	21.45	139.71	30.00	-8.55
	3519.99	16.87	H	6.37	10.70	21.20	131.81	30.00	-8.80
70	3485.01								
	3499.98								
	3514.98								
80	3490.02								
	3499.98								
	3510.00								
90	3495.00								
	3499.98								
	3504.99								
100	3499.98								

5G NR n77(PC2,3450-3550 MHz, SRS3)

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								
	3499.98								
	3544.98								
15	3457.50								
	3499.98								
	3542.49								
20	3460.02								
	3499.98								
	3540.00								
25	3462.51								
	3499.98								
	3537.48								
30	3465.00								
	3499.98								
	3535.02								
40	3470.01								
	3499.98								
	3529.98								
50	3475.02	3.58	H	6.34	10.64	7.88	6.14	30.00	-22.12
	3499.98	3.50	H	6.36	10.67	7.81	6.04	30.00	-22.19
	3525.00	4.46	H	6.37	10.71	8.80	7.58	30.00	-21.20
60	3480.00								
	3499.98								
	3519.99								
70	3485.01								
	3499.98								
	3514.98								
80	3490.02								
	3499.98								
	3510.00								
90	3495.00								
	3499.98								
	3504.99								
100	3499.98								

5G NR n77(PC2,3700-3980 MHz)

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
10	QPSK	3705.00	21.02	H	6.54	10.74	25.23	333.21	30.00	-4.77	1/22
		3840.00	24.55	H	6.65	10.58	28.47	703.74	30.00	-1.53	1/22
		3975.00	25.04	H	6.77	10.46	28.73	746.32	30.00	-1.27	1/1
	16-QAM	3705.00	20.01	H	6.54	10.74	24.22	264.07	30.00	-5.78	1/22
		3840.00	23.59	H	6.65	10.58	27.51	564.17	30.00	-2.49	1/22
		3975.00	24.25	H	6.77	10.46	27.94	622.19	30.00	-2.06	1/1
15	QPSK	3707.52	21.30	V	6.55	10.74	25.49	354.24	30.00	-4.51	1/36
		3840.00	24.60	H	6.65	10.58	28.52	711.89	30.00	-1.48	1/36
		3972.48	24.91	H	6.78	10.46	28.60	724.07	30.00	-1.40	1/1
	16-QAM	3707.52	20.39	V	6.55	10.74	24.58	287.28	30.00	-5.42	1/36
		3840.00	23.21	H	6.65	10.58	27.13	516.91	30.00	-2.87	1/36
		3972.48	23.56	H	6.78	10.46	27.25	530.61	30.00	-2.75	1/1
20	QPSK	3710.01	21.08	V	6.54	10.74	25.27	336.55	30.00	-4.73	1/49
		3840.00	24.67	H	6.65	10.58	28.59	723.45	30.00	-1.41	1/49
		3969.99	24.98	H	6.77	10.46	28.68	737.27	30.00	-1.32	1/1
	16-QAM	3710.01	20.17	V	6.54	10.74	24.36	272.93	30.00	-5.64	1/49
		3840.00	23.40	H	6.65	10.58	27.32	540.02	30.00	-2.68	1/49
		3969.99	23.80	H	6.77	10.46	27.50	561.86	30.00	-2.50	1/1
25	QPSK	3712.50	21.38	H	6.55	10.74	25.57	360.78	30.00	-4.43	1/32
		3840.00	24.46	H	6.65	10.58	28.38	689.30	30.00	-1.62	1/64
		3967.50	24.99	H	6.76	10.46	28.68	738.60	30.00	-1.32	1/1
	16-QAM	3712.50	20.18	H	6.55	10.74	24.37	273.68	30.00	-5.63	1/32
		3840.00	23.06	H	6.65	10.58	26.98	499.36	30.00	-3.02	1/64
		3967.50	23.89	H	6.76	10.46	27.58	573.34	30.00	-2.42	1/1
30	QPSK	3715.02	21.06	H	6.55	10.73	25.25	334.87	30.00	-4.75	1/76
		3840.00	24.71	H	6.65	10.58	28.63	730.15	30.00	-1.37	1/76
		3964.98	25.10	H	6.77	10.46	28.79	756.71	30.00	-1.21	1/1
	16-QAM	3715.02	20.21	H	6.55	10.73	24.40	275.35	30.00	-5.60	1/76
		3840.00	22.89	H	6.65	10.58	26.81	480.19	30.00	-3.19	1/76
		3964.98	23.24	H	6.77	10.46	26.93	493.10	30.00	-3.07	1/1
40	QPSK	3720.02	21.85	H	6.55	10.73	26.02	400.10	30.00	-3.98	1/53
		3840.00	23.65	H	6.65	10.58	27.57	572.02	30.00	-2.43	1/104
		3960.00	23.91	H	6.77	10.47	27.61	576.15	30.00	-2.39	1/53
	16-QAM	3720.02	20.93	H	6.55	10.73	25.10	323.72	30.00	-4.90	1/53
		3840.00	22.77	H	6.65	10.58	26.69	467.10	30.00	-3.31	1/104
		3960.00	23.10	H	6.77	10.47	26.80	478.12	30.00	-3.20	1/53
50	QPSK	3725.01	21.29	H	6.56	10.72	25.45	351.09	30.00	-4.55	1/67
		3840.00	23.61	H	6.65	10.58	27.54	567.17	30.00	-2.46	1/131
		3954.99	24.61	H	6.75	10.47	28.33	680.27	30.00	-1.67	1/67
	16-QAM	3725.01	20.39	H	6.56	10.72	24.55	285.31	30.00	-5.45	1/67
		3840.00	22.81	H	6.65	10.58	26.74	471.64	30.00	-3.26	1/131
		3954.99	23.54	H	6.75	10.47	27.26	531.72	30.00	-2.74	1/67
60	QPSK	3730.02	21.63	H	6.56	10.72	25.79	378.93	30.00	-4.21	1/81
		3840.00	23.83	H	6.65	10.58	27.75	595.81	30.00	-2.25	1/160
		3949.98	24.47	H	6.75	10.47	28.19	659.65	30.00	-1.81	1/81
	16-QAM	3730.02	20.67	H	6.56	10.72	24.82	303.57	30.00	-5.18	1/81
		3840.00	22.78	H	6.65	10.58	26.71	468.50	30.00	-3.29	1/160
		3949.98	23.46	H	6.75	10.47	27.18	522.41	30.00	-2.82	1/81
70	QPSK	3735.00	21.46	H	6.57	10.71	25.60	362.91	30.00	-4.40	1/95
		3840.00	23.30	H	6.65	10.58	27.22	527.49	30.00	-2.78	1/95
		3945.00	24.43	H	6.75	10.47	28.15	653.40	30.00	-1.85	1/95
	16-QAM	3735.00	20.51	H	6.57	10.71	24.65	291.81	30.00	-5.35	1/95
		3840.00	22.36	H	6.65	10.58	26.28	424.73	30.00	-3.72	1/95
		3945.00	23.43	H	6.75	10.47	27.16	519.85	30.00	-2.84	1/95
80	QPSK	3740.01	21.44	H	6.58	10.70	25.57	360.70	30.00	-4.43	1/1
		3840.00	24.03	H	6.65	10.58	27.95	623.75	30.00	-2.05	1/215
		3939.99	24.45	H	6.74	10.47	28.18	657.26	30.00	-1.82	1/109
	16-QAM	3740.01	20.43	H	6.58	10.70	24.55	285.39	30.00	-5.45	1/1
		3840.00	23.19	H	6.65	10.58	27.11	514.41	30.00	-2.89	1/215
		3939.99	23.48	H	6.74	10.47	27.21	525.94	30.00	-2.79	1/109
90	QPSK	3745.02	21.51	H	6.57	10.70	25.65	366.94	30.00	-4.35	1/1
		3840.00	24.05	H	6.65	10.58	27.97	627.06	30.00	-2.03	1/243
		3934.98	24.62	H	6.75	10.48	28.35	683.90	30.00	-1.65	1/243
	16-QAM	3745.02	20.52	H	6.57	10.70	24.65	291.67	30.00	-5.35	1/1
		3840.00	23.15	H	6.65	10.58	27.07	509.11	30.00	-2.93	1/243
		3934.98	23.72	H	6.75	10.48	27.45	555.64	30.00	-2.55	1/243
100	QPSK	3750.00	21.61	H	6.58	10.69	25.73	373.78	30.00	-4.27	1/1
		3840.00	24.02	H	6.65	10.58	27.94	622.46	30.00	-2.06	1/271
		3930.00	24.51	H	6.75	10.48	28.23	665.99	30.00	-1.77	1/271
	16-QAM	3750.00	20.68	H	6.58	10.69	24.80	301.73	30.00	-5.20	1/1
		3840.00	23.08	H	6.65	10.58	27.01	501.89	30.00	-2.99	1/271
		3930.00	23.55	H	6.75	10.48	27.28	534.89	30.00	-2.72	1/271

5G NR n77(PC2,3700-3980 MHz, SRS1)

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	3705.00								
	3840.00								
	3975.00								
15	3707.52								
	3840.00								
	3972.48								
20	3710.01								
	3840.00								
	3969.99								
25	3712.50								
	3840.00								
	3967.50								
30	3715.02								
	3840.00								
	3964.98								
40	3720.00								
	3840.00								
	3960.00								
50	3725.01								
	3840.00								
	3954.99								
60	3730.02								
	3840.00								
	3949.98								
70	3735.02	12.23	H	6.57	10.71	16.37	43.32	30.00	-13.63
	3840.00	10.84	H	6.65	10.58	14.76	29.95	30.00	-15.24
	3944.98	8.84	H	6.75	10.47	12.56	18.04	30.00	-17.44
80	3740.01								
	3840.00								
	3939.99								
90	3745.02								
	3840.00								
	3934.98								
100	3750.00								
	3840.00								
	3930.00								

5G NR n77(PC2,3700-3980 MHz, SRS2)

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	3705.00								
	3840.00								
	3975.00								
15	3707.52								
	3840.00								
	3972.48								
20	3710.01								
	3840.00								
	3969.99								
25	3712.50								
	3840.00								
	3967.50								
30	3715.02	13.64	H	6.55	10.73	17.83	60.66	30.00	-12.17
	3840.00	12.96	H	6.65	10.58	16.88	48.80	30.00	-13.12
	3964.98	12.82	H	6.77	10.46	16.51	44.76	30.00	-13.49
40	3720.00								
	3840.00								
	3960.00								
50	3725.01								
	3840.00								
	3954.99								
60	3730.02								
	3840.00								
	3949.98								
70	3735.02								
	3840.00								
	3944.98								
80	3740.01								
	3840.00								
	3939.99								
90	3745.02								
	3840.00								
	3934.98								
100	3750.00								
	3840.00								
	3930.00								

5G NR n77(PC2,3700-3980 MHz, SRS3)

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	3705.00								
	3840.00								
	3975.00								
15	3707.52								
	3840.00								
	3972.48								
20	3710.01								
	3840.00								
	3969.99								
25	3712.50								
	3840.00								
	3967.50								
30	3715.02								
	3840.00								
	3964.98								
40	3720.00								
	3840.00								
	3960.00								
50	3725.01								
	3840.00								
	3954.99								
60	3730.02								
	3840.00								
	3949.98								
70	3735.02								
	3840.00								
	3944.98								
80	3740.01								
	3840.00								
	3939.99								
90	3745.02	7.25	V	6.57	10.70	11.39	13.76	30.00	-18.61
	3840.00	4.98	V	6.65	10.58	8.90	7.76	30.00	-21.10
	3934.98	3.66	V	6.75	10.48	7.39	5.48	30.00	-22.61
100	3750.00								
	3840.00								
	3930.00								

9.6. FIELD STRENGTH OF SPURIOUS RADIATION

RULE PART(S)

FCC: §2.1053, §22.917, §24.238, and §27.53

LIMIT

Part 22.917(a) & Part 24.238(a) & 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.

(g) For operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, 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 1GHz and 1MHz for emissions above 1GHz
- 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(GSM, LTE TDD, 5G NR TDD);

RESULTS

See the following pages.

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.

9.6.1. SPURIOUS RADIATION PLOTS

GSM850

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
Company:		Samsung							
Project #:		4790632299							
Date:		2022-11-22							
Test Engineer:		26087							
Configuration:		EUT / AC Adapter, Z-Position							
Location:		Chamber 1							
Mode:		GPRS 850 MHz 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, 824.2MHz									
1648.40	18.3	V	3.0	46.4	1.0	-27.1	-13.0	-14.1	
2472.60	4.7	V	3.0	46.9	1.0	-41.1	-13.0	-28.1	
3296.80	10.3	V	3.0	46.6	1.0	-35.3	-13.0	-22.3	
4121.00	-6.1	V	3.0	45.7	1.0	-50.8	-13.0	-37.8	
4945.20	-3.3	V	3.0	46.2	1.0	-48.5	-13.0	-35.5	
1648.40	16.5	H	3.0	46.4	1.0	-28.9	-13.0	-15.9	
2472.60	3.7	H	3.0	46.9	1.0	-42.2	-13.0	-29.2	
3296.80	7.8	H	3.0	46.6	1.0	-37.8	-13.0	-24.8	
4121.00	-4.8	H	3.0	45.7	1.0	-49.5	-13.0	-36.5	
4945.20	-0.1	H	3.0	46.2	1.0	-45.3	-13.0	-32.3	
Mid Ch, 836.6MHz									
1673.20	17.9	V	3.0	46.4	1.0	-27.5	-13.0	-14.5	
2509.80	-1.0	V	3.0	46.9	1.0	-46.8	-13.0	-33.8	
3346.40	4.2	V	3.0	46.6	1.0	-41.3	-13.0	-28.3	
4183.00	-3.9	V	3.0	45.7	1.0	-48.6	-13.0	-35.6	
5019.60	-2.9	V	3.0	46.2	1.0	-48.1	-13.0	-35.1	
1673.20	16.9	H	3.0	46.4	1.0	-28.6	-13.0	-15.6	
2509.80	-2.2	H	3.0	46.9	1.0	-48.1	-13.0	-35.1	
3346.40	4.9	H	3.0	46.6	1.0	-40.6	-13.0	-27.6	
4183.00	-2.6	H	3.0	45.7	1.0	-47.3	-13.0	-34.3	
5019.60	-1.7	H	3.0	46.2	1.0	-46.9	-13.0	-33.9	
High Ch, 848.8MHz									
1697.60	18.5	V	3.0	46.5	1.0	-26.9	-13.0	-13.9	
2546.40	6.3	V	3.0	46.9	1.0	-39.6	-13.0	-26.6	
3395.20	6.3	V	3.0	46.5	1.0	-39.2	-13.0	-26.2	
4244.00	-1.0	V	3.0	45.8	1.0	-45.8	-13.0	-32.8	
5092.80	-3.4	V	3.0	46.2	1.0	-48.5	-13.0	-35.5	
1697.60	14.1	H	3.0	46.5	1.0	-31.4	-13.0	-18.4	
2546.40	5.1	H	3.0	46.9	1.0	-40.8	-13.0	-27.8	
3395.20	7.7	H	3.0	46.5	1.0	-37.8	-13.0	-24.8	
4244.00	1.1	H	3.0	45.8	1.0	-43.6	-13.0	-30.6	
5092.80	-2.2	H	3.0	46.2	1.0	-47.4	-13.0	-34.4	

GSM850
GPRS

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
Company:		Samsung							
Project #:		4790632299							
Date:		2022-11-23							
Test Engineer:		26087							
Configuration:		EUT / AC Adapter, Z-Position							
Location:		Chamber 1							
Mode:		EGPRS 850 MHz 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, 824.2MHz									
1648.40	8.0	V	3.0	46.4	1.0	-37.4	-13.0	-24.4	
2472.60	-1.1	V	3.0	46.9	1.0	-47.0	-13.0	-34.0	
3296.80	-3.8	V	3.0	46.6	1.0	-49.4	-13.0	-36.4	
4121.00	-6.9	V	3.0	45.7	1.0	-51.6	-13.0	-38.6	
4945.20	-5.7	V	3.0	46.2	1.0	-50.9	-13.0	-37.9	
1648.40	12.1	H	3.0	46.4	1.0	-33.3	-13.0	-20.3	
2472.60	-0.5	H	3.0	46.9	1.0	-46.4	-13.0	-33.4	
3296.80	-3.6	H	3.0	46.6	1.0	-49.2	-13.0	-36.2	
4121.00	-7.2	H	3.0	45.7	1.0	-51.9	-13.0	-38.9	
4945.20	-5.4	H	3.0	46.2	1.0	-50.6	-13.0	-37.6	
Mid Ch, 836.6MHz									
1673.20	5.2	V	3.0	46.4	1.0	-40.3	-13.0	-27.3	
2509.80	0.0	V	3.0	46.9	1.0	-45.9	-13.0	-32.9	
3346.40	-3.3	V	3.0	46.6	1.0	-48.9	-13.0	-35.9	
4183.00	-6.8	V	3.0	45.7	1.0	-51.5	-13.0	-38.5	
5019.60	-6.0	V	3.0	46.2	1.0	-51.3	-13.0	-38.3	
1673.20	3.2	H	3.0	46.4	1.0	-42.3	-13.0	-29.3	
2509.80	-2.8	H	3.0	46.9	1.0	-48.7	-13.0	-35.7	
3346.40	-2.5	H	3.0	46.6	1.0	-48.0	-13.0	-35.0	
4183.00	-7.1	H	3.0	45.7	1.0	-51.8	-13.0	-38.8	
5019.60	-5.9	H	3.0	46.2	1.0	-51.1	-13.0	-38.1	
High Ch, 848.8MHz									
1697.60	5.9	V	3.0	46.5	1.0	-39.6	-13.0	-26.6	
2546.40	1.1	V	3.0	46.9	1.0	-44.8	-13.0	-31.8	
3395.20	-2.2	V	3.0	46.5	1.0	-47.7	-13.0	-34.7	
4244.00	-6.7	V	3.0	45.8	1.0	-51.4	-13.0	-38.4	
5092.80	-5.4	V	3.0	46.2	1.0	-50.5	-13.0	-37.5	
1697.60	7.7	H	3.0	46.5	1.0	-37.8	-13.0	-24.8	
2546.40	-3.7	H	3.0	46.9	1.0	-49.6	-13.0	-36.6	
3395.20	-3.2	H	3.0	46.5	1.0	-48.6	-13.0	-35.6	
4244.00	-6.1	H	3.0	45.8	1.0	-50.9	-13.0	-37.9	
5092.80	-5.4	H	3.0	46.2	1.0	-50.6	-13.0	-37.6	

GSM850
EGPRS

GSM1900

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
Company:		Samsung							
Project #:		4790632299							
Date:		2022-12-02							
Test Engineer:		26087							
Configuration:		EUT / AC Adapter, X-Position							
Location:		Chamber 1							
Mode:		GPRS 1900 MHz 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, 1850.2MHz									
3700.40	19.7	V	3.0	46.0	1.0	-25.4	-13.0	-12.4	
5550.60	14.2	V	3.0	45.8	1.0	-30.5	-13.0	-17.5	
7400.80	6.1	V	3.0	45.5	1.0	-38.5	-13.0	-25.5	
9251.00	0.3	V	3.0	45.5	1.0	-44.2	-13.0	-31.2	
11101.20	2.6	V	3.0	46.5	1.0	-43.0	-13.0	-30.0	
3700.40	26.1	H	3.0	46.0	1.0	-18.9	-13.0	-5.9	
5550.60	16.1	H	3.0	45.8	1.0	-28.7	-13.0	-15.7	
7400.80	2.2	H	3.0	45.5	1.0	-42.3	-13.0	-29.3	
9251.00	-0.8	H	3.0	45.5	1.0	-45.4	-13.0	-32.4	
11101.20	2.6	H	3.0	46.5	1.0	-42.9	-13.0	-29.9	
Mid Ch, 1880MHz									
3760.00	24.9	V	3.0	46.0	1.0	-20.1	-13.0	-7.1	
5640.00	16.4	V	3.0	45.7	1.0	-28.3	-13.0	-15.3	
7520.00	9.1	V	3.0	45.5	1.0	-35.4	-13.0	-22.4	
9400.00	3.0	V	3.0	45.5	1.0	-41.6	-13.0	-28.6	
11280.00	4.6	V	3.0	46.7	1.0	-41.1	-13.0	-28.1	
3760.00	25.9	H	3.0	46.0	1.0	-19.1	-13.0	-6.1	
5640.00	18.9	H	3.0	45.7	1.0	-25.8	-13.0	-12.8	
7520.00	4.9	H	3.0	45.5	1.0	-39.6	-13.0	-26.6	
9400.00	1.7	H	3.0	45.5	1.0	-42.8	-13.0	-29.8	
11280.00	4.7	H	3.0	46.7	1.0	-41.0	-13.0	-28.0	
High Ch, 1909.8MHz									
3819.60	22.7	V	3.0	45.9	1.0	-22.1	-13.0	-9.1	
5729.40	16.7	V	3.0	45.6	1.0	-27.9	-13.0	-14.9	
7639.20	11.8	V	3.0	45.6	1.0	-32.7	-13.0	-19.7	
9549.00	3.7	V	3.0	45.5	1.0	-40.9	-13.0	-27.9	
11458.80	3.1	V	3.0	46.8	1.0	-42.8	-13.0	-29.8	
3819.60	28.4	H	3.0	45.9	1.0	-16.5	-13.0	-3.5	
5729.40	21.5	H	3.0	45.6	1.0	-23.1	-13.0	-10.1	
7639.20	6.9	H	3.0	45.6	1.0	-37.6	-13.0	-24.6	
9549.00	1.6	H	3.0	45.5	1.0	-43.0	-13.0	-30.0	
11458.80	3.0	H	3.0	46.8	1.0	-42.8	-13.0	-29.8	

GSM1900
GPRS

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
Company:		Samsung							
Project #:		4790632108							
Date:		2022-12-05							
Test Engineer:		26087							
Configuration:		EUT / AC Adapter, X-Position							
Location:		Chamber 1							
Mode:		EGPRS 1900 MHz 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, 1850.2MHz									
3700.40	2.0	V	3.0	46.0	1.0	-43.0	-13.0	-30.0	
5550.60	0.0	V	3.0	45.8	1.0	-44.7	-13.0	-31.7	
7400.80	2.2	V	3.0	45.5	1.0	-42.3	-13.0	-29.3	
9251.00	-0.9	V	3.0	45.5	1.0	-45.4	-13.0	-32.4	
11101.20	4.9	V	3.0	46.5	1.0	-40.6	-13.0	-27.6	
Mid Ch, 1880MHz									
3760.00	14.5	V	3.0	46.0	1.0	-30.4	-13.0	-17.4	
5640.00	9.1	V	3.0	45.7	1.0	-35.5	-13.0	-22.5	
7520.00	4.5	V	3.0	45.5	1.0	-40.1	-13.0	-27.1	
9400.00	-0.2	V	3.0	45.5	1.0	-44.8	-13.0	-31.8	
11280.00	3.7	V	3.0	46.7	1.0	-41.9	-13.0	-28.9	
3760.00	15.1	H	3.0	46.0	1.0	-29.9	-13.0	-16.9	
5640.00	2.9	H	3.0	45.7	1.0	-41.8	-13.0	-28.8	
7520.00	-1.7	H	3.0	45.5	1.0	-46.2	-13.0	-33.2	
9400.00	-0.1	H	3.0	45.5	1.0	-44.7	-13.0	-31.7	
11280.00	4.3	H	3.0	46.7	1.0	-41.3	-13.0	-28.3	
High Ch, 1909.8MHz									
3819.60	0.9	V	3.0	45.9	1.0	-44.0	-13.0	-31.0	
5729.40	7.4	V	3.0	45.6	1.0	-37.2	-13.0	-24.2	
7639.20	5.5	V	3.0	45.6	1.0	-39.1	-13.0	-26.1	
9549.00	2.3	V	3.0	45.5	1.0	-42.3	-13.0	-29.3	
11458.80	4.4	V	3.0	46.8	1.0	-41.5	-13.0	-28.5	
3819.60	13.0	H	3.0	45.9	1.0	-31.8	-13.0	-18.8	
5729.40	7.8	H	3.0	45.6	1.0	-36.8	-13.0	-23.8	
7639.20	-0.5	H	3.0	45.6	1.0	-45.0	-13.0	-32.0	
9549.00	0.2	H	3.0	45.5	1.0	-44.3	-13.0	-31.3	
11458.80	4.2	H	3.0	46.8	1.0	-41.6	-13.0	-28.6	

GSM1900
EGPRS

WCDMA Band 5

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
Company:		Samsung							
Project #:		4790632299							
Date:		2022-12-02							
Test Engineer:		25770							
Configuration:		EUT / AC Adapter, Z-Position							
Location:		Chamber 2							
Mode:		Rel99 Band 5 Harmonics							
Test Votage:		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, 826.4MHz									
1652.80	-11.5	V	3.0	40.9	1.0	-51.4	-13.0	-38.4	
2479.20	-12.9	V	3.0	41.6	1.0	-53.4	-13.0	-40.4	
3305.60	-10.0	V	3.0	42.3	1.0	-51.3	-13.0	-38.3	
1652.80	-13.4	H	3.0	40.9	1.0	-53.3	-13.0	-40.3	
2479.20	-13.3	H	3.0	41.6	1.0	-53.9	-13.0	-40.9	
3305.60	-10.1	H	3.0	42.3	1.0	-51.4	-13.0	-38.4	
Mid Ch, 836.6MHz									
1673.20	-13.0	V	3.0	40.9	1.0	-52.9	-13.0	-39.9	
2509.80	-13.0	V	3.0	41.6	1.0	-53.6	-13.0	-40.6	
3346.40	-9.8	V	3.0	42.3	1.0	-51.1	-13.0	-38.1	
1673.20	-14.1	H	3.0	40.9	1.0	-54.0	-13.0	-41.0	
2509.80	-13.2	H	3.0	41.6	1.0	-53.8	-13.0	-40.8	
3346.40	-9.7	H	3.0	42.3	1.0	-51.0	-13.0	-38.0	
High Ch, 846.6MHz									
1693.20	-11.9	V	3.0	40.9	1.0	-51.8	-13.0	-38.8	
2539.80	-12.8	V	3.0	41.6	1.0	-53.4	-13.0	-40.4	
3386.40	-9.7	V	3.0	42.3	1.0	-51.0	-13.0	-38.0	
1693.20	-13.9	H	3.0	40.9	1.0	-53.9	-13.0	-40.9	
2539.80	-13.1	H	3.0	41.6	1.0	-53.7	-13.0	-40.7	
3386.40	-9.4	H	3.0	42.3	1.0	-50.7	-13.0	-37.7	

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
Company:		Samsung							
Project #:		4790632299							
Date:		2022-12-02							
Test Engineer:		25770							
Configuration:		EUT / AC Adapter, Z-Position							
Location:		Chamber 2							
Mode:		HSDPA Band 5 Harmonics							
Test Votage:		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, 826.4MHz									
1652.80	-13.9	V	3.0	40.9	1.0	-53.9	-13.0	-40.9	
2479.20	-13.0	V	3.0	41.6	1.0	-53.6	-13.0	-40.6	
3305.60	-10.1	V	3.0	42.3	1.0	-51.4	-13.0	-38.4	
1652.80	-15.7	H	3.0	40.9	1.0	-55.6	-13.0	-42.6	
2479.20	-13.4	H	3.0	41.6	1.0	-53.9	-13.0	-40.9	
3305.60	-10.0	H	3.0	42.3	1.0	-51.3	-13.0	-38.3	
Mid Ch, 836.6MHz									
1673.20	-14.7	V	3.0	40.9	1.0	-54.6	-13.0	-41.6	
2509.80	-12.9	V	3.0	41.6	1.0	-53.5	-13.0	-40.5	
3346.40	-9.7	V	3.0	42.3	1.0	-51.0	-13.0	-38.0	
1673.20	-15.6	H	3.0	40.9	1.0	-55.5	-13.0	-42.5	
2509.80	-13.2	H	3.0	41.6	1.0	-53.8	-13.0	-40.8	
3346.40	-10.4	H	3.0	42.3	1.0	-51.7	-13.0	-38.7	
High Ch, 846.6MHz									
1693.20	-15.2	V	3.0	40.9	1.0	-55.1	-13.0	-42.1	
2539.80	-12.7	V	3.0	41.6	1.0	-53.3	-13.0	-40.3	
3386.40	-9.5	V	3.0	42.3	1.0	-50.8	-13.0	-37.8	
1693.20	-15.2	H	3.0	40.9	1.0	-55.1	-13.0	-42.1	
2539.80	-13.1	H	3.0	41.6	1.0	-53.7	-13.0	-40.7	
3386.40	-9.7	H	3.0	42.3	1.0	-51.0	-13.0	-38.0	

WCDMA Band 2

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
Company:		Samsung							
Project #:		4790632299							
Date:		2022-12-02							
Test Engineer:		26087							
Configuration:		EUT / AC Adpater, X-Position							
Location:		Chamber 1							
Mode:		Rel99 Band 2 Harmonics							
Test Votage:		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, 1852.4MHz									
3704.80	-0.3	V	3.0	46.0	1.0	-45.4	-13.0	-32.4	
5557.20	-7.7	V	3.0	45.8	1.0	-52.4	-13.0	-39.4	
7409.60	-5.1	V	3.0	45.5	1.0	-49.6	-13.0	-36.6	
3704.80	1.7	H	3.0	46.0	1.0	-43.3	-13.0	-30.3	
5557.20	-6.4	H	3.0	45.8	1.0	-51.2	-13.0	-38.2	
7409.60	-5.1	H	3.0	45.5	1.0	-49.6	-13.0	-36.6	
Mid Ch, 1880MHz									
3760.00	0.6	V	3.0	46.0	1.0	-44.3	-13.0	-31.3	
5640.00	-6.3	V	3.0	45.7	1.0	-51.0	-13.0	-38.0	
7520.00	-5.2	V	3.0	45.5	1.0	-49.7	-13.0	-36.7	
3760.00	4.0	H	3.0	46.0	1.0	-41.0	-13.0	-28.0	
5640.00	-6.7	H	3.0	45.7	1.0	-51.4	-13.0	-38.4	
7520.00	-5.2	H	3.0	45.5	1.0	-49.7	-13.0	-36.7	
High Ch, 1907.6MHz									
3815.20	0.5	V	3.0	45.9	1.0	-44.4	-13.0	-31.4	
5722.80	-3.6	V	3.0	45.6	1.0	-48.2	-13.0	-35.2	
7630.40	-4.8	V	3.0	45.6	1.0	-49.4	-13.0	-36.4	
3815.20	5.5	H	3.0	45.9	1.0	-39.4	-13.0	-26.4	
5722.80	-2.0	H	3.0	45.6	1.0	-46.7	-13.0	-33.7	
7630.40	-4.8	H	3.0	45.6	1.0	-49.4	-13.0	-36.4	

Band 2
REL99

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
Company:		Samsung							
Project #:		4790632299							
Date:		2022-12-02							
Test Engineer:		26087							
Configuration:		EUT / AC Adpater, X-Position							
Location:		Chamber 1							
Mode:		HSDPA Band 2 Harmonics							
Test Votage:		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, 1852.4MHz									
3704.80	-3.6	V	3.0	46.0	1.0	-48.6	-13.0	-35.6	
5557.20	-7.6	V	3.0	45.8	1.0	-52.4	-13.0	-39.4	
7409.60	-5.1	V	3.0	45.5	1.0	-49.6	-13.0	-36.6	
3704.80	0.0	H	3.0	46.0	1.0	-45.0	-13.0	-32.0	
5557.20	-7.2	H	3.0	45.8	1.0	-51.9	-13.0	-38.9	
7409.60	-5.1	H	3.0	45.5	1.0	-49.7	-13.0	-36.7	
Mid Ch, 1880MHz									
3760.00	-2.1	V	3.0	46.0	1.0	-47.1	-13.0	-34.1	
5640.00	-6.7	V	3.0	45.7	1.0	-51.4	-13.0	-38.4	
7520.00	-5.2	V	3.0	45.5	1.0	-49.8	-13.0	-36.8	
3760.00	-0.5	H	3.0	46.0	1.0	-45.4	-13.0	-32.4	
5640.00	-6.0	H	3.0	45.7	1.0	-50.7	-13.0	-37.7	
7520.00	-5.3	H	3.0	45.5	1.0	-49.8	-13.0	-36.8	
High Ch, 1907.6MHz									
3815.20	-2.4	V	3.0	45.9	1.0	-47.3	-13.0	-34.3	
5722.80	-7.1	V	3.0	45.6	1.0	-51.7	-13.0	-38.7	
7630.40	-4.8	V	3.0	45.6	1.0	-49.4	-13.0	-36.4	
3815.20	2.1	H	3.0	45.9	1.0	-42.8	-13.0	-29.8	
5722.80	-5.5	H	3.0	45.6	1.0	-50.1	-13.0	-37.1	
7630.40	-4.9	H	3.0	45.6	1.0	-49.4	-13.0	-36.4	

Band 2
HSDPA

LTE Band 2

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
Company:		Samsung							
Project #:		4790632299							
Date:		2022-12-02							
Test Engineer:		25770							
Configuration:		EUT / AC Adapter, Z-Position							
Location:		Chamber 2							
Mode:		LTE_QPSK Band 2 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
Low Ch, 1860MHz									
3720.00	3.3	V	3.0	42.3	1.0	-38.1	-13.0	-25.1	
5580.00	-0.3	V	3.0	43.1	1.0	-42.5	-13.0	-29.5	
7440.00	-6.5	V	3.0	42.7	1.0	-48.2	-13.0	-35.2	
20MHz									
3720.00	4.3	H	3.0	42.3	1.0	-37.0	-13.0	-24.0	
5580.00	-0.1	H	3.0	43.1	1.0	-42.2	-13.0	-29.2	
7440.00	-6.6	H	3.0	42.7	1.0	-48.3	-13.0	-35.3	
QPSK									
Mid Ch, 1880MHz									
3760.00	3.7	V	3.0	42.3	1.0	-37.6	-13.0	-24.6	
5640.00	0.0	V	3.0	43.2	1.0	-42.2	-13.0	-29.2	
7520.00	-6.3	V	3.0	42.7	1.0	-48.0	-13.0	-35.0	
3760.00	6.4	H	3.0	42.3	1.0	-34.9	-13.0	-21.9	
5640.00	-0.1	H	3.0	43.2	1.0	-42.3	-13.0	-29.3	
7520.00	-6.4	H	3.0	42.7	1.0	-48.1	-13.0	-35.1	
High Ch, 1900MHz									
3800.00	5.3	V	3.0	42.3	1.0	-36.0	-13.0	-23.0	
5700.00	3.6	V	3.0	43.2	1.0	-38.5	-13.0	-25.5	
7600.00	-6.3	V	3.0	42.6	1.0	-47.9	-13.0	-34.9	
3800.00	7.3	H	3.0	42.3	1.0	-34.0	-13.0	-21.0	
5700.00	3.1	H	3.0	43.2	1.0	-39.1	-13.0	-26.1	
7600.00	-6.5	H	3.0	42.6	1.0	-48.1	-13.0	-35.1	

LTE Band 5

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
Company:		Samsung							
Project #:		4790632299							
Date:		2022-12-14							
Test Engineer:		25770							
Configuration:		EUT / AC Adapter, Z-Position							
Location:		Chamber 2							
Mode:		LTE_QPSK Band 5 Harmonics, 3MHz 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, 825.5MHz									
1651.00	-0.8	V	3.0	40.9	1.0	-40.7	-13.0	-27.7	
2476.50	-11.3	V	3.0	41.5	1.0	-51.9	-13.0	-38.9	
3302.00	-9.4	V	3.0	42.3	1.0	-50.7	-13.0	-37.7	
4127.50	-10.8	V	3.0	42.4	1.0	-52.2	-13.0	-39.2	
4953.00	-9.2	V	3.0	43.0	1.0	-51.2	-13.0	-38.2	
1651.00	1.8	H	3.0	40.9	1.0	-38.1	-13.0	-25.1	
2476.50	-12.5	H	3.0	41.5	1.0	-53.1	-13.0	-40.1	
3302.00	-9.1	H	3.0	42.3	1.0	-50.4	-13.0	-37.4	
4127.50	-10.5	H	3.0	42.4	1.0	-51.9	-13.0	-38.9	
4953.00	-9.0	H	3.0	43.0	1.0	-51.0	-13.0	-38.0	
Mid Ch, 836.5MHz									
1673.00	-3.3	V	3.0	40.9	1.0	-43.2	-13.0	-30.2	
2509.50	-11.6	V	3.0	41.6	1.0	-52.2	-13.0	-39.2	
3346.00	-9.6	V	3.0	42.3	1.0	-50.9	-13.0	-37.9	
4182.50	-10.6	V	3.0	42.5	1.0	-52.1	-13.0	-39.1	
5019.00	-9.0	V	3.0	43.0	1.0	-51.0	-13.0	-38.0	
1673.00	-1.4	H	3.0	40.9	1.0	-41.3	-13.0	-28.3	
2509.50	-12.7	H	3.0	41.6	1.0	-53.3	-13.0	-40.3	
3346.00	-9.3	H	3.0	42.3	1.0	-50.6	-13.0	-37.6	
4182.50	-10.3	H	3.0	42.5	1.0	-51.8	-13.0	-38.8	
5019.00	-8.8	H	3.0	43.0	1.0	-50.8	-13.0	-37.8	
High Ch, 847.5MHz									
1695.00	0.0	V	3.0	40.9	1.0	-40.0	-13.0	-27.0	
2542.50	-10.6	V	3.0	41.6	1.0	-51.3	-13.0	-38.3	
3390.00	-9.1	V	3.0	42.3	1.0	-50.4	-13.0	-37.4	
4237.50	-10.5	V	3.0	42.5	1.0	-52.0	-13.0	-39.0	
5085.00	-9.0	V	3.0	43.0	1.0	-51.0	-13.0	-38.0	
1695.00	1.0	H	3.0	40.9	1.0	-38.9	-13.0	-25.9	
2542.50	-11.3	H	3.0	41.6	1.0	-51.9	-13.0	-38.9	
3390.00	-9.5	H	3.0	42.3	1.0	-50.8	-13.0	-37.8	
4237.50	-10.2	H	3.0	42.5	1.0	-51.7	-13.0	-38.7	
5085.00	-8.9	H	3.0	43.0	1.0	-51.0	-13.0	-38.0	

LTE
Band 5
3MHz
QPSK

LTE Band 7

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
Company:		Samsung							
Project #:		4790632299							
Date:		2022-11-23							
Test Engineer:		26087							
Configuration:		EUT / AC Adapter, Z-Position							
Location:		Chamber 1							
Mode:		LTE_QPSK Band 7 Harmonics, 15MHz 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, 2507.5MHz									
5015.00	-3.6	V	3.0	46.2	1.0	-48.8	-25.0	-23.8	
7522.50	-9.0	V	3.0	45.5	1.0	-53.5	-25.0	-28.5	
10030.00	-10.9	V	3.0	45.6	1.0	-55.5	-25.0	-30.5	
15MHz									
5015.00	1.5	H	3.0	46.2	1.0	-43.7	-25.0	-18.7	
7522.50	-7.2	H	3.0	45.5	1.0	-51.8	-25.0	-26.8	
10030.00	-11.1	H	3.0	45.6	1.0	-55.7	-25.0	-30.7	
QPSK									
Mid Ch, 2535MHz									
5070.00	4.1	V	3.0	46.2	1.0	-41.1	-25.0	-16.1	
7605.00	-8.6	V	3.0	45.6	1.0	-53.1	-25.0	-28.1	
10140.00	-10.9	V	3.0	45.7	1.0	-55.6	-25.0	-30.6	
5070.00	5.9	H	3.0	46.2	1.0	-39.3	-25.0	-14.3	
7605.00	-6.7	H	3.0	45.6	1.0	-51.2	-25.0	-26.2	
10140.00	-11.1	H	3.0	45.7	1.0	-55.8	-25.0	-30.8	
High Ch, 2562.5MHz									
5125.00	1.1	V	3.0	46.1	1.0	-44.0	-25.0	-19.0	
7687.50	-8.2	V	3.0	45.6	1.0	-52.8	-25.0	-27.8	
10250.00	-10.8	V	3.0	45.8	1.0	-55.6	-25.0	-30.6	
5125.00	5.8	H	3.0	46.1	1.0	-39.3	-25.0	-14.3	
7687.50	-5.1	H	3.0	45.6	1.0	-49.6	-25.0	-24.6	
10250.00	-10.9	H	3.0	45.8	1.0	-55.7	-25.0	-30.7	

LTE Band 12

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement												
LTE Band 12 10MHz QPSK		Company: Samsung Project #: 4790632299 Date: 2022-11-23 Test Engineer: 25770 Configuration: EUT / AC Adapter, Y-Position Location: Chamber 2 Mode: LTE_QPSK Band 12 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, 704MHz										
		1408.00	-16.8	V	3.0	41.0	1.0	-56.7	-13.0	-43.7		
		2112.00	-14.5	V	3.0	41.0	1.0	-54.5	-13.0	-41.5		
		2816.00	-11.8	V	3.0	42.0	1.0	-52.8	-13.0	-39.8		
		1408.00	-17.6	H	3.0	41.0	1.0	-57.6	-13.0	-44.6		
		2112.00	-15.0	H	3.0	41.0	1.0	-55.0	-13.0	-42.0		
		2816.00	-11.9	H	3.0	42.0	1.0	-53.0	-13.0	-40.0		
		Mid Ch, 707.5MHz										
1415.00	-15.2	V	3.0	41.0	1.0	-55.2	-13.0	-42.2				
2122.50	-14.4	V	3.0	41.0	1.0	-54.4	-13.0	-41.4				
2830.00	-11.6	V	3.0	42.0	1.0	-52.7	-13.0	-39.7				
1415.00	-17.0	H	3.0	41.0	1.0	-56.9	-13.0	-43.9				
2122.50	-14.9	H	3.0	41.0	1.0	-54.9	-13.0	-41.9				
2830.00	-11.9	H	3.0	42.0	1.0	-52.9	-13.0	-39.9				
High Ch, 711MHz												
1422.00	-15.3	V	3.0	41.0	1.0	-55.2	-13.0	-42.2				
2133.00	-14.4	V	3.0	41.1	1.0	-54.5	-13.0	-41.5				
2844.00	-11.6	V	3.0	42.1	1.0	-52.7	-13.0	-39.7				
1422.00	-17.1	H	3.0	41.0	1.0	-57.0	-13.0	-44.0				
2133.00	-14.7	H	3.0	41.1	1.0	-54.8	-13.0	-41.8				
2844.00	-11.8	H	3.0	42.1	1.0	-52.9	-13.0	-39.9				

LTE Band 13

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement												
LTE Band 13 10 MHz QPSK		Company: Samsung Project #: 4790632299 Date: 2022-11-28 Test Engineer: 19568 Configuration: EUT / AC Adapter, Y-Position Location: Chamber 2 Mode: LTE_QPSK Band 13 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	
		Mid Ch, 782MHz										
		1564.00	-21.9	V	3.0	40.9	1.0	-61.8	-40.0	-21.8		
		2346.00	-29.0	V	3.0	41.4	1.0	-69.3	-13.0	-56.3		
		3128.00	-27.0	V	3.0	42.3	1.0	-68.3	-13.0	-55.3		
		1564.00	-14.6	H	3.0	40.9	1.0	-54.5	-40.0	-14.5		
		2346.00	-29.4	H	3.0	41.4	1.0	-69.7	-13.0	-56.7		
		3128.00	-27.1	H	3.0	42.3	1.0	-68.4	-13.0	-55.4		

LTE Band 66

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement										
		Company:	Samsung							
		Project #:	4790632299							
		Date:	2022-11-22							
		Test Engineer:	26087							
		Configuration:	EUT / AC Adapter, Y-Position							
		Location:	Chamber 1							
		Mode:	LTE_QPSK Band 66 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, 1712.5MHz										
LTE Band 66	3425.00	-5.1	V	3.0	46.4	1.0	-50.6	-13.0	-37.6	
	5137.50	-8.7	V	3.0	46.1	1.0	-53.8	-13.0	-40.8	
	6850.00	-5.5	V	3.0	45.5	1.0	-49.9	-13.0	-36.9	
5MHz	3425.00	-6.7	H	3.0	46.4	1.0	-52.2	-13.0	-39.2	
	5137.50	-8.7	H	3.0	46.1	1.0	-53.8	-13.0	-40.8	
QPSK	6850.00	-5.6	H	3.0	45.5	1.0	-50.0	-13.0	-37.0	
Mid Ch, 1745MHz										
	3490.00	-3.3	V	3.0	46.3	1.0	-48.6	-13.0	-35.6	
	5235.00	-8.3	V	3.0	46.0	1.0	-53.3	-13.0	-40.3	
	6980.00	-5.4	V	3.0	45.5	1.0	-49.9	-13.0	-36.9	
	3490.00	-0.9	H	3.0	46.3	1.0	-46.3	-13.0	-33.3	
	5235.00	-8.2	H	3.0	46.0	1.0	-53.2	-13.0	-40.2	
	6980.00	-5.5	H	3.0	45.5	1.0	-50.0	-13.0	-37.0	
High Ch, 1777.5MHz										
	3555.00	0.0	V	3.0	46.3	1.0	-45.3	-13.0	-32.3	
	5332.50	-8.0	V	3.0	46.0	1.0	-52.9	-13.0	-39.9	
	7110.00	-5.3	V	3.0	45.5	1.0	-49.8	-13.0	-36.8	
	3555.00	0.3	H	3.0	46.3	1.0	-44.9	-13.0	-31.9	
	5332.50	-8.0	H	3.0	46.0	1.0	-52.9	-13.0	-39.9	
	7110.00	-5.2	H	3.0	45.5	1.0	-49.7	-13.0	-36.7	

NR Band n2

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement										
		Company:	Samsung							
		Project #:	4790632299							
		Date:	2023-01-02							
		Test Engineer:	25770							
		Configuration:	EUT, Y-Position							
		Location:	Chamber 1							
		Mode:	5G NR_BPSK NR n2 Harmonics, 15MHz Bandwidth							
		Test Votage:	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, 1857.5MHz										
3715.00	-9.3	V	3.0	46.0	1.0	-54.3	-13.0	-41.3		
5572.50	-6.3	V	3.0	45.7	1.0	-51.1	-13.0	-38.1		
7430.00	-2.8	V	3.0	45.5	1.0	-47.3	-13.0	-34.3		
3715.00	-9.3	H	3.0	46.0	1.0	-54.3	-13.0	-41.3		
5572.50	-6.3	H	3.0	45.7	1.0	-51.0	-13.0	-38.0		
7430.00	-2.5	H	3.0	45.5	1.0	-47.1	-13.0	-34.1		
Mid Ch, 1880MHz										
3760.00	-9.2	V	3.0	46.0	1.0	-54.2	-13.0	-41.2		
5640.00	-6.0	V	3.0	45.7	1.0	-50.7	-13.0	-37.7		
7520.00	-3.1	V	3.0	45.5	1.0	-47.6	-13.0	-34.6		
3760.00	-9.2	H	3.0	46.0	1.0	-54.2	-13.0	-41.2		
5640.00	-6.0	H	3.0	45.7	1.0	-50.7	-13.0	-37.7		
7520.00	-1.8	H	3.0	45.5	1.0	-46.4	-13.0	-33.4		
High Ch, 1902.5MHz										
3805.00	-8.9	V	3.0	45.9	1.0	-53.8	-13.0	-40.8		
5707.50	-5.8	V	3.0	45.6	1.0	-50.5	-13.0	-37.5		
7610.00	-2.9	V	3.0	45.6	1.0	-47.4	-13.0	-34.4		
3805.00	-9.0	H	3.0	45.9	1.0	-53.9	-13.0	-40.9		
5707.50	-6.0	H	3.0	45.6	1.0	-50.6	-13.0	-37.6		
7610.00	-2.2	H	3.0	45.6	1.0	-46.7	-13.0	-33.7		

15MHz
BPSK

NR Band n5

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement										
		Company:	Samsung							
		Project #:	4790632299							
		Date:	2023-01-10							
		Test Engineer:	25770							
		Configuration:	EUT, Y-Position							
		Location:	Chamber 1							
		Mode:	5G NR_QPSK NR n5 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	
Low Ch, 834MHz										
1668.00	-13.1	V	3.0	46.4	1.0	-58.5	-13.0	-45.5		
2502.00	-11.4	V	3.0	46.9	1.0	-57.2	-13.0	-44.2		
3336.00	-9.1	V	3.0	46.6	1.0	-54.7	-13.0	-41.7		
1668.00	-14.8	H	3.0	46.4	1.0	-60.3	-13.0	-47.3		
2502.00	-11.8	H	3.0	46.9	1.0	-57.7	-13.0	-44.7		
3336.00	-9.1	H	3.0	46.6	1.0	-54.6	-13.0	-41.6		
Mid Ch, 836.5MHz										
1673.00	-13.3	V	3.0	46.4	1.0	-58.7	-13.0	-45.7		
2509.50	-11.3	V	3.0	46.9	1.0	-57.2	-13.0	-44.2		
3346.00	-9.1	V	3.0	46.6	1.0	-54.6	-13.0	-41.6		
1673.00	-14.9	H	3.0	46.4	1.0	-60.4	-13.0	-47.4		
2509.50	-11.8	H	3.0	46.9	1.0	-57.7	-13.0	-44.7		
3346.00	-9.0	H	3.0	46.6	1.0	-54.5	-13.0	-41.5		
High Ch, 839MHz										
1678.00	-13.6	V	3.0	46.4	1.0	-59.0	-13.0	-46.0		
2517.00	-11.2	V	3.0	46.9	1.0	-57.1	-13.0	-44.1		
3356.00	-8.9	V	3.0	46.5	1.0	-54.4	-13.0	-41.4		
1678.00	-15.0	H	3.0	46.4	1.0	-60.5	-13.0	-47.5		
2517.00	-11.5	H	3.0	46.9	1.0	-57.4	-13.0	-44.4		
3356.00	-8.9	H	3.0	46.5	1.0	-54.4	-13.0	-41.4		

NR Band n66

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement										
		Company:	Samsung							
		Project #:	4790632299							
		Date:	2022-12-14							
		Test Engineer:	26087							
		Configuration:	EUT / AC Adapter, X-Position							
		Location:	Chamber 1							
		Mode:	5G NR_QPSK NR n66 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	
Low Ch, 1730MHz										
3460.00	-4.8	V	3.0	46.4	1.0	-50.2	-13.0	-37.2		
5190.00	-6.9	V	3.0	46.1	1.0	-52.0	-13.0	-39.0		
6920.00	-3.7	V	3.0	45.5	1.0	-48.2	-13.0	-35.2		
3460.00	-2.3	H	3.0	46.4	1.0	-47.7	-13.0	-34.7		
5190.00	-6.7	H	3.0	46.1	1.0	-51.8	-13.0	-38.8		
6920.00	-4.0	H	3.0	45.5	1.0	-48.5	-13.0	-35.5		
Mid Ch, 1745MHz										
3490.00	8.9	V	3.0	46.3	1.0	-36.4	-13.0	-23.4		
5235.00	-6.8	V	3.0	46.0	1.0	-51.9	-13.0	-38.9		
6980.00	-3.7	V	3.0	45.5	1.0	-48.2	-13.0	-35.2		
3490.00	9.8	H	3.0	46.3	1.0	-35.6	-13.0	-22.6		
5235.00	-6.7	H	3.0	46.0	1.0	-51.7	-13.0	-38.7		
6980.00	-3.9	H	3.0	45.5	1.0	-48.4	-13.0	-35.4		
High Ch, 1760MHz										
3520.00	-4.4	V	3.0	46.3	1.0	-49.7	-13.0	-36.7		
5280.00	-6.7	V	3.0	46.0	1.0	-51.7	-13.0	-38.7		
7040.00	-3.8	V	3.0	45.5	1.0	-48.3	-13.0	-35.3		
3520.00	-0.1	H	3.0	46.3	1.0	-45.5	-13.0	-32.5		
5280.00	-6.8	H	3.0	46.0	1.0	-51.8	-13.0	-38.8		
7040.00	-3.8	H	3.0	45.5	1.0	-48.3	-13.0	-35.3		

40 MHz
QPSK

NR Band n77(PC2,3450-3550 MHz)

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement										
		Company:	Samsung							
		Project #:	4790632299							
		Date:	2023-01-04							
		Test Engineer:	25770							
		Configuration:	EUT / AC Adapter, Y-Position							
		Location:	Chamber 1							
		Mode:	5G NR_QPSK NR n77 LO 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	
Low Ch, 3480MHz										
6960.00	0.5	V	3.0	45.5	1.0	-44.0	-13.0	-31.0		
10440.00	4.5	V	3.0	45.9	1.0	-40.4	-13.0	-27.4		
13920.00	7.1	V	3.0	46.6	1.0	-38.5	-13.0	-25.5		
6960.00	0.3	H	3.0	45.5	1.0	-44.2	-13.0	-31.2		
10440.00	4.8	H	3.0	45.9	1.0	-40.1	-13.0	-27.1		
13920.00	7.0	H	3.0	46.6	1.0	-38.5	-13.0	-25.5		
Mid Ch, 3499.98MHz										
6999.96	2.7	V	3.0	45.5	1.0	-41.8	-13.0	-28.8		
10499.94	4.5	V	3.0	46.0	1.0	-40.5	-13.0	-27.5		
13999.92	7.1	V	3.0	46.5	1.0	-38.5	-13.0	-25.5		
6999.96	1.2	H	3.0	45.5	1.0	-43.3	-13.0	-30.3		
10499.94	5.2	H	3.0	46.0	1.0	-39.8	-13.0	-26.8		
13999.92	6.9	H	3.0	46.5	1.0	-38.6	-13.0	-25.6		
High Ch, 3519MHz										
7038.00	1.5	V	3.0	45.5	1.0	-43.0	-13.0	-30.0		
10557.00	5.2	V	3.0	46.0	1.0	-39.8	-13.0	-26.8		
14076.00	7.0	V	3.0	46.5	1.0	-38.5	-13.0	-25.5		
7038.00	-0.1	H	3.0	45.5	1.0	-44.6	-13.0	-31.6		
10557.00	4.7	H	3.0	46.0	1.0	-40.3	-13.0	-27.3		
14076.00	7.2	H	3.0	46.5	1.0	-38.3	-13.0	-25.3		

NR Band n77(PC2,3450-3550 MHz, SRS1)

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
		Company: Samsung Project #: 4790632299 Date: 2023-01-13 Test Engineer: 26087 Configuration: EUT, X-Position Location: Chamber 2 Mode: 5G NR_QPSK NR n77 LO 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, 3455MHz									
6910.00	-3.5	V	3.0	43.0	1.0	-45.5	-13.0	-32.5	
10365.00	1.9	V	3.0	41.3	1.0	-38.4	-13.0	-25.4	
13820.00	5.9	V	3.0	43.2	1.0	-36.2	-13.0	-23.2	
6910.00	-3.2	H	3.0	43.0	1.0	-45.2	-13.0	-32.2	
10365.00	2.2	H	3.0	41.3	1.0	-38.0	-13.0	-25.0	
13820.00	6.4	H	3.0	43.2	1.0	-35.8	-13.0	-22.8	
Mid Ch, 3499.98MHz									
6999.96	-3.5	V	3.0	42.9	1.0	-45.4	-13.0	-32.4	
10499.94	2.3	V	3.0	41.3	1.0	-38.0	-13.0	-25.0	
13999.92	5.9	V	3.0	43.3	1.0	-36.3	-13.0	-23.3	
6999.96	-3.3	H	3.0	42.9	1.0	-45.2	-13.0	-32.2	
10499.94	2.7	H	3.0	41.3	1.0	-37.6	-13.0	-24.6	
13999.92	6.1	H	3.0	43.3	1.0	-36.2	-13.0	-23.2	
High Ch, 3544MHz									
7088.00	-5.3	V	3.0	42.9	1.0	-47.1	-13.0	-34.1	
10632.00	1.1	V	3.0	41.4	1.0	-39.3	-13.0	-26.3	
14176.00	5.0	V	3.0	43.4	1.0	-37.4	-13.0	-24.4	
7088.00	-5.0	H	3.0	42.9	1.0	-46.9	-13.0	-33.9	
10632.00	1.3	H	3.0	41.4	1.0	-39.1	-13.0	-26.1	
14176.00	5.0	H	3.0	43.4	1.0	-37.4	-13.0	-24.4	

NR Band n77(PC2,3450-3550 MHz, SRS2)

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
Company:		Samsung							
Project #:		4790632299							
Date:		2023-01-13							
Test Engineer:		26087							
Configuration:		EUT, X-Position							
Location:		Chamber 2							
Mode:		5G NR_QPSK NR n77 LO 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
Low Ch, 3480MHz									
6960.00	-5.5	V	3.0	42.9	1.0	-47.5	-13.0	-34.5	
10440.00	0.4	V	3.0	41.3	1.0	-39.9	-13.0	-26.9	
13920.00	4.6	V	3.0	43.2	1.0	-37.6	-13.0	-24.6	
6960.00	-5.2	H	3.0	42.9	1.0	-47.2	-13.0	-34.2	
10440.00	0.5	H	3.0	41.3	1.0	-39.7	-13.0	-26.7	
13920.00	4.8	H	3.0	43.2	1.0	-37.4	-13.0	-24.4	
Mid Ch, 3499.98MHz									
6999.96	-5.1	V	3.0	42.9	1.0	-47.0	-13.0	-34.0	
10499.94	1.8	V	3.0	41.3	1.0	-38.5	-13.0	-25.5	
13999.92	4.6	V	3.0	43.3	1.0	-37.7	-13.0	-24.7	
6999.96	-5.1	H	3.0	42.9	1.0	-47.0	-13.0	-34.0	
10499.94	0.9	H	3.0	41.3	1.0	-39.4	-13.0	-26.4	
13999.92	4.6	H	3.0	43.3	1.0	-37.7	-13.0	-24.7	
High Ch, 3519MHz									
7038.00	-5.2	V	3.0	42.9	1.0	-47.1	-13.0	-34.1	
10557.00	0.8	V	3.0	41.3	1.0	-39.5	-13.0	-26.5	
14076.00	4.8	V	3.0	43.3	1.0	-37.5	-13.0	-24.5	
7038.00	-5.1	H	3.0	42.9	1.0	-47.0	-13.0	-34.0	
10557.00	1.1	H	3.0	41.3	1.0	-39.2	-13.0	-26.2	
14076.00	5.3	H	3.0	43.3	1.0	-37.1	-13.0	-24.1	

NR Band n77(PC2,3450-3550 MHz, SRS3)

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
Company:		Samsung							
Project #:		4790632299							
Date:		2023-01-13							
Test Engineer:		26087							
Configuration:		EUT							
Location:		Chamber 2							
Mode:		5G NR_QPSK NR n77 LO 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
Low Ch, 3475MHz									
6950.00	-3.7	V	3.0	42.9	1.0	-45.6	-13.0	-32.6	
10425.00	1.7	V	3.0	41.3	1.0	-38.6	-13.0	-25.6	
13900.00	6.2	V	3.0	43.2	1.0	-36.0	-13.0	-23.0	
6950.00	-3.9	H	3.0	42.9	1.0	-45.9	-13.0	-32.9	
10425.00	1.7	H	3.0	41.3	1.0	-38.6	-13.0	-25.6	
13900.00	6.2	H	3.0	43.2	1.0	-36.0	-13.0	-23.0	
Mid Ch, 3499.98MHz									
6999.96	-3.7	V	3.0	42.9	1.0	-45.6	-13.0	-32.6	
10499.94	2.7	V	3.0	41.3	1.0	-37.6	-13.0	-24.6	
13999.92	6.0	V	3.0	43.3	1.0	-36.2	-13.0	-23.2	
6999.96	-3.4	H	3.0	42.9	1.0	-45.3	-13.0	-32.3	
10499.94	2.4	H	3.0	41.3	1.0	-38.0	-13.0	-25.0	
13999.92	6.3	H	3.0	43.3	1.0	-35.9	-13.0	-22.9	
High Ch, 3524MHz									
7048.00	-3.2	V	3.0	42.9	1.0	-45.1	-13.0	-32.1	
10572.00	2.0	V	3.0	41.3	1.0	-38.3	-13.0	-25.3	
14096.00	6.2	V	3.0	43.3	1.0	-36.1	-13.0	-23.1	
7048.00	-3.7	H	3.0	42.9	1.0	-45.6	-13.0	-32.6	
10572.00	2.1	H	3.0	41.3	1.0	-38.3	-13.0	-25.3	
14096.00	6.9	H	3.0	43.3	1.0	-35.5	-13.0	-22.5	

50MHz

NR Band n77(PC2,3700-3980 MHz)

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement										
		Company:	Samsung							
		Project #:	4790632299							
		Date:	2023-01-03							
		Test Engineer:	26087							
		Configuration:	EUT / AC Adapter, Y-Position							
		Location:	Chamber 1							
		Mode:	5G NR_QPSK NR n77 UP 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, 3715MHz										
7430.00	3.2	V	3.0	45.5	1.0	-41.3	-13.0	-28.3		
11145.00	6.0	V	3.0	46.5	1.0	-39.5	-13.0	-26.5		
14860.00	7.5	V	3.0	46.2	1.0	-37.7	-13.0	-24.7		
Mid Ch, 3840MHz										
7430.00	8.2	H	3.0	45.5	1.0	-36.4	-13.0	-23.4		
11145.00	6.1	H	3.0	46.5	1.0	-39.4	-13.0	-26.4		
14860.00	7.7	H	3.0	46.2	1.0	-37.5	-13.0	-24.5		
High Ch, 3965MHz										
7680.00	14.5	V	3.0	45.6	1.0	-30.0	-13.0	-17.0		
11520.00	6.0	V	3.0	46.9	1.0	-39.9	-13.0	-26.9		
15360.00	8.1	V	3.0	46.0	1.0	-36.9	-13.0	-23.9		
7680.00	17.3	H	3.0	45.6	1.0	-27.2	-13.0	-14.2		
11520.00	6.2	H	3.0	46.9	1.0	-39.6	-13.0	-26.6		
15360.00	8.3	H	3.0	46.0	1.0	-36.7	-13.0	-23.7		
High Ch, 3965MHz										
7930.00	18.9	V	3.0	45.6	1.0	-25.7	-13.0	-12.7		
11895.00	6.4	V	3.0	47.2	1.0	-39.8	-13.0	-26.8		
15860.00	8.9	V	3.0	45.7	1.0	-35.8	-13.0	-22.8		
7930.00	22.4	H	3.0	45.6	1.0	-22.2	-13.0	-9.2		
11895.00	6.9	H	3.0	47.2	1.0	-39.3	-13.0	-26.3		
15860.00	9.3	H	3.0	45.7	1.0	-35.4	-13.0	-22.4		

30MHz
QPSK

NR Band n77(PC2,3700-3980 MHz, SRS1)

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
Company:		Samsung							
Project #:		4790632299							
Date:		2023-01-13							
Test Engineer:		26087							
Configuration:		EUT, Z-Position							
Location:		Chamber 1							
Mode:		5G NR_QPSK NR n77 UP Harmonics, 70MHz 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, 3735MHz									
7470.00	-0.6	V	3.0	45.5	1.0	-45.1	-13.0	-32.1	
11205.00	-8.4	V	3.0	46.6	1.0	-54.0	-13.0	-41.0	
14940.00	-11.3	V	3.0	46.2	1.0	-56.5	-13.0	-43.5	
7470.00	-0.6	H	3.0	45.5	1.0	-45.2	-13.0	-32.2	
11205.00	-8.7	H	3.0	46.6	1.0	-54.3	-13.0	-41.3	
14940.00	-9.6	H	3.0	46.2	1.0	-54.8	-13.0	-41.8	
Mid Ch, 3840MHz									
7680.00	8.4	V	3.0	45.6	1.0	-36.2	-13.0	-23.2	
11520.00	6.1	V	3.0	46.9	1.0	-39.7	-13.0	-26.7	
15360.00	-9.4	V	3.0	46.0	1.0	-54.4	-13.0	-41.4	
7680.00	6.2	H	3.0	45.6	1.0	-38.3	-13.0	-25.3	
11520.00	6.1	H	3.0	46.9	1.0	-39.7	-13.0	-26.7	
15360.00	-9.9	H	3.0	46.0	1.0	-54.8	-13.0	-41.8	
High Ch, 3945MHz									
7890.00	18.1	V	3.0	45.6	1.0	-26.5	-13.0	-13.5	
11835.00	6.5	V	3.0	47.1	1.0	-39.6	-13.0	-26.6	
15780.00	8.4	V	3.0	45.7	1.0	-36.4	-13.0	-23.4	
7890.00	18.1	H	3.0	45.6	1.0	-26.5	-13.0	-13.5	
11835.00	6.6	H	3.0	47.1	1.0	-39.5	-13.0	-26.5	
15780.00	8.3	H	3.0	45.7	1.0	-36.4	-13.0	-23.4	

70MHz

NR Band n77(PC2,3700-3980 MHz, SRS2)

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
Company:		Samsung							
Project #:		4790632299							
Date:		2023-01-13							
Test Engineer:		26087							
Configuration:		EUT, Y-Position							
Location:		Chamber 1							
Mode:		5G NR_QPSK NR n77 UP 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, 3715MHz									
7430.00	-0.9	V	3.0	45.5	1.0	-45.5	-13.0	-32.5	
11145.00	5.7	V	3.0	46.5	1.0	-39.9	-13.0	-26.9	
14860.00	7.3	V	3.0	46.2	1.0	-37.9	-13.0	-24.9	
7430.00	-0.8	H	3.0	45.5	1.0	-45.4	-13.0	-32.4	
11145.00	6.0	H	3.0	46.5	1.0	-39.5	-13.0	-26.5	
14860.00	7.7	H	3.0	46.2	1.0	-37.5	-13.0	-24.5	
Mid Ch, 3840MHz									
7680.00	-1.1	V	3.0	45.6	1.0	-45.7	-13.0	-32.7	
11520.00	6.4	V	3.0	46.9	1.0	-39.5	-13.0	-26.5	
15360.00	7.9	V	3.0	46.0	1.0	-37.1	-13.0	-24.1	
7680.00	-1.1	H	3.0	45.6	1.0	-45.7	-13.0	-32.7	
11520.00	6.5	H	3.0	46.9	1.0	-39.4	-13.0	-26.4	
15360.00	8.0	H	3.0	46.0	1.0	-37.0	-13.0	-24.0	
High Ch, 3965MHz									
7930.00	-0.7	V	3.0	45.6	1.0	-45.3	-13.0	-32.3	
11895.00	6.9	V	3.0	47.2	1.0	-39.3	-13.0	-26.3	
15860.00	8.7	V	3.0	45.7	1.0	-36.0	-13.0	-23.0	
7930.00	-0.7	H	3.0	45.6	1.0	-45.3	-13.0	-32.3	
11895.00	6.6	H	3.0	47.2	1.0	-39.5	-13.0	-26.5	
15860.00	8.7	H	3.0	45.7	1.0	-36.0	-13.0	-23.0	

NR Band n77(PC2,3700-3980 MHz, SRS3)

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
Company:		Samsung							
Project #:		4790632299							
Date:		2023-01-13							
Test Engineer:		26087							
Configuration:		EUT, Y-Position							
Location:		Chamber 1							
Mode:		5G NR_QPSK NR n77 UP Harmonics, 90MHz 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, 3745MHz									
7490.00	-0.9	V	3.0	45.5	1.0	-45.4	-13.0	-32.4	
11235.00	5.9	V	3.0	46.6	1.0	-39.7	-13.0	-26.7	
14980.00	7.5	V	3.0	46.2	1.0	-37.6	-13.0	-24.6	
7490.00	-1.2	H	3.0	45.5	1.0	-45.7	-13.0	-32.7	
11235.00	5.7	H	3.0	46.6	1.0	-39.9	-13.0	-26.9	
14980.00	7.7	H	3.0	46.2	1.0	-37.4	-13.0	-24.4	
Mid Ch, 3840MHz									
7680.00	-1.0	V	3.0	45.6	1.0	-45.6	-13.0	-32.6	
11520.00	5.9	V	3.0	46.9	1.0	-40.0	-13.0	-27.0	
15360.00	7.8	V	3.0	46.0	1.0	-37.1	-13.0	-24.1	
7680.00	-1.1	H	3.0	45.6	1.0	-45.6	-13.0	-32.6	
11520.00	6.1	H	3.0	46.9	1.0	-39.8	-13.0	-26.8	
15360.00	8.1	H	3.0	46.0	1.0	-36.8	-13.0	-23.8	
High Ch, 3935MHz									
7870.00	-1.0	V	3.0	45.6	1.0	-45.6	-13.0	-32.6	
11805.00	6.5	V	3.0	47.1	1.0	-39.6	-13.0	-26.6	
15740.00	8.6	V	3.0	45.8	1.0	-36.2	-13.0	-23.2	
7870.00	-0.9	H	3.0	45.6	1.0	-45.5	-13.0	-32.5	
11805.00	6.5	H	3.0	47.1	1.0	-39.6	-13.0	-26.6	
15740.00	8.5	H	3.0	45.8	1.0	-36.3	-13.0	-23.3	

90MHz

END OF REPORT