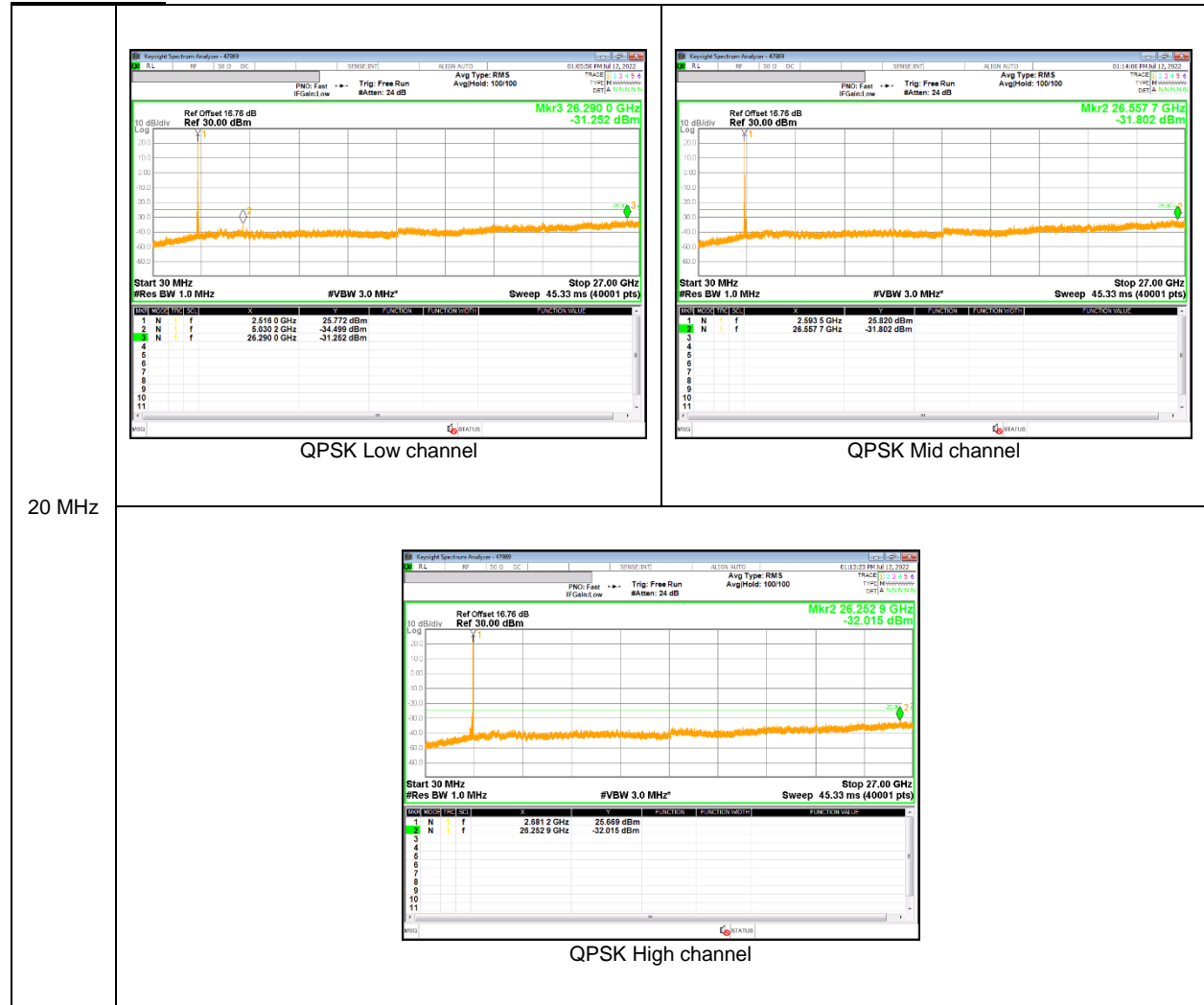


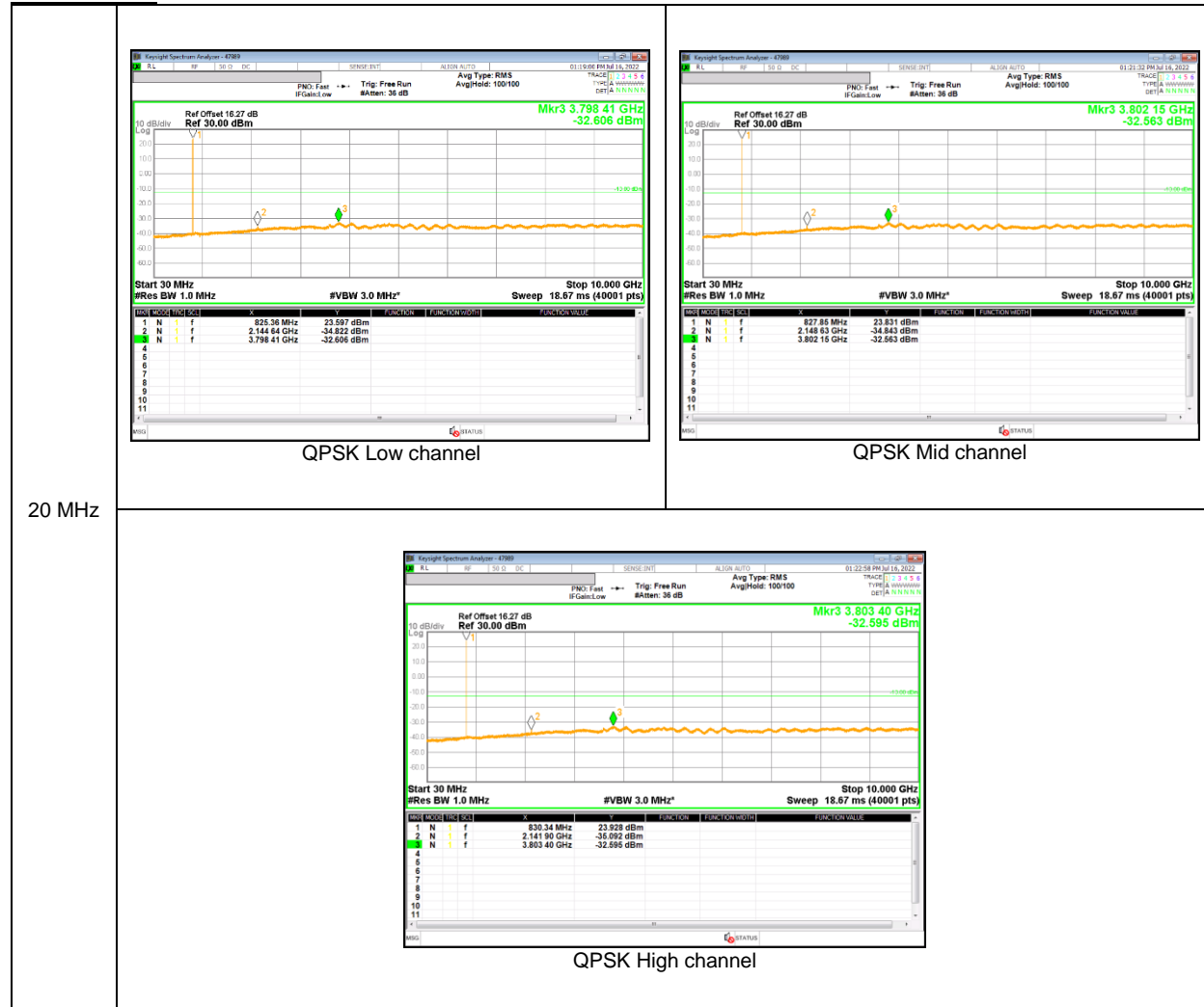
LTE Band 41



LTE Band 66



NR Band n5



NR Band n66



9.4. FREQUENCY STABILITY

RULE PART(S)

FCC: §2.1055, §22.355, §24.235, §27.54 and §90.213

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.

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

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

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	50	824.20004118	-0.002	848.80004426	-0.004	2.5	
3.86	40	824.20005568	-0.020	848.80005025	-0.011	2.5	
3.86	30	824.20004904	-0.012	848.80004780	-0.009	2.5	
3.86	20	824.20003914	0.000	848.80004052	0.000	2.5	
3.86	10	824.20004713	-0.010	848.80005212	-0.014	2.5	
3.86	0	824.20005496	-0.019	848.80004787	-0.009	2.5	
3.86	-10	824.20004721	-0.010	848.80005596	-0.018	2.5	
3.86	-20	824.20004855	-0.011	848.80004902	-0.010	2.5	
3.86	-30	824.20006920	-0.036	848.80005538	-0.018	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]		
3.80	20	824.20003914	0	848.80004052	0	2.5	
4.30	20	824.20002595	0.016	848.80002577	0.017	2.5	
3.40	20	824.20002678	0.015	848.80002479	0.019	2.5	

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

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	1850.0775	1909.9252		
Extreme (50C)		1850.0775	1909.9252	67.5	0.036
Extreme (40C)		1850.0775	1909.9252	71.9	0.038
Extreme (30C)		1850.0775	1909.9252	63.5	0.034
Extreme (10C)		1850.0775	1909.9252	68.6	0.036
Extreme (0C)		1850.0775	1909.9252	70.1	0.037
Extreme (-10C)		1850.0775	1909.9252	65.6	0.035
Extreme (-20C)		1850.0775	1909.9252	72.9	0.039
Extreme (-30C)		1850.0775	1909.9252	68.3	0.036
20C	15%	1850.0775	1909.9252	34.2	0.018
	-15%	1850.0775	1909.9252	30.6	0.016
	End Point	1850.0775	1909.9252	32.1	0.017

WCDMA Band 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	50	826.40001424	-0.001	846.60001288	0.003	2.5
3.86	40	826.40001368	0.000	846.60001352	0.002	2.5
3.86	30	826.40001431	-0.001	846.60001396	0.002	2.5
3.86	20	826.40001353	0.000	846.60001531	0.000	2.5
3.86	10	826.40001424	-0.001	846.60001606	-0.001	2.5
3.86	0	826.40000680	0.008	846.60001042	0.006	2.5
3.86	-10	826.40001143	0.003	846.60002041	-0.006	2.5
3.86	-20	826.40001501	-0.002	846.60001998	-0.006	2.5
3.86	-30	826.40001271	0.001	846.60001277	0.003	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]	
3.80	20	826.40001353	0	846.60001531	0	2.5
4.30	20	826.40000507	0.010	846.60000410	0.013	2.5
3.40	20	826.40000338	0.012	846.60000470	0.013	2.5

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

Limit		1710	1755	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	1710.3181	1754.6825		
Extreme (50C)		1710.3181	1754.6825	71.0	0.041
Extreme (40C)		1710.3181	1754.6825	70.8	0.041
Extreme (30C)		1710.3181	1754.6825	65.0	0.038
Extreme (10C)		1710.3181	1754.6825	64.7	0.037
Extreme (0C)		1710.3181	1754.6825	61.1	0.035
Extreme (-10C)		1710.3181	1754.6825	62.1	0.036
Extreme (-20C)		1710.3181	1754.6825	65.5	0.038
Extreme (-30C)		1710.3181	1754.6825	70.7	0.041
20C	15%	1710.3181	1754.6825	10.8	0.006
	-15%	1710.3181	1754.6825	11.2	0.006
	End Point	1710.3181	1754.6825	9.7	0.006

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

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	1850.3171	1909.6780		
Extreme (50C)		1850.3171	1909.6780	42.7	0.023
Extreme (40C)		1850.3171	1909.6780	35.9	0.019
Extreme (30C)		1850.3171	1909.6780	40.4	0.021
Extreme (10C)		1850.3171	1909.6780	36.2	0.019
Extreme (0C)		1850.3171	1909.6780	33.8	0.018
Extreme (-10C)		1850.3171	1909.6780	34.3	0.018
Extreme (-20C)		1850.3171	1909.6780	40.6	0.022
Extreme (-30C)		1850.3171	1909.6780	41.1	0.022
20C	15%	1850.3171	1909.6780	5.9	0.003
	-15%	1850.3171	1909.6780	6.4	0.003
	End Point	1850.3171	1909.6780	6.7	0.004

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

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	699.1539	715.8442		
Extreme (50C)		699.1539	715.8442	6.1	0.009
Extreme (40C)		699.1539	715.8442	5.4	0.008
Extreme (30C)		699.1539	715.8442	6.6	0.009
Extreme (10C)		699.1539	715.8442	6.5	0.009
Extreme (0C)		699.1539	715.8442	6.5	0.009
Extreme (-10C)		699.1539	715.8442	6.8	0.010
Extreme (-20C)		699.1539	715.8442	6.7	0.009
Extreme (-30C)		699.1539	715.8442	6.6	0.009
20C	15%	699.1539	715.8442	4.5	0.006
	-15%	699.1539	715.8441	-3.8	-0.005
	End Point	699.1539	715.8442	6.1	0.009

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

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	777.2573	786.7428	6.6	0.008
Extreme (50C)		777.2573	786.7428		
Extreme (40C)		777.2573	786.7428		
Extreme (30C)		777.2573	786.7428		
Extreme (10C)		777.2573	786.7428		
Extreme (0C)		777.2573	786.7428		
Extreme (-10C)		777.2573	786.7428		
Extreme (-20C)		777.2573	786.7428		
Extreme (-30C)		777.2573	786.7428		
20C		15%	777.2573		
	-15%	777.2573	786.7428	6.6	0.008
	End Point	777.2573	786.7428	6.3	0.008

LTE Band 25 (Lowest Frequency: 16QAM / Highest Frequency: QPSK)

Limit		1850	1915	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	1850.1593	1914.8462	29.0	0.015
Extreme (50C)		1850.1593	1914.8462		
Extreme (40C)		1850.1593	1914.8462		
Extreme (30C)		1850.1593	1914.8462		
Extreme (10C)		1850.1593	1914.8462		
Extreme (0C)		1850.1593	1914.8462		
Extreme (-10C)		1850.1593	1914.8462		
Extreme (-20C)		1850.1593	1914.8462		
Extreme (-30C)		1850.1593	1914.8462		
20C		15%	1850.1593		
	-15%	1850.1593	1914.8462	7.3	0.004
	End Point	1850.1593	1914.8462	-6.2	-0.003

LTE Band 26

Reference Frequency : LTE Band 26 Low Channel 814.7 MHz / High Channel 848.3 MHz @ 20°C							
Limit: +/- 2.5 ppm =		Low Channel	2036.750	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	50	814.70005042	0.000	848.30005605	-0.010	2.5	
3.86	40	814.70004935	0.002	848.30004930	-0.002	2.5	
3.86	30	814.70004424	0.008	848.30005138	-0.004	2.5	
3.86	20	814.70005074	0.000	848.30004781	0.000	2.5	
3.86	10	814.70013655	-0.105	848.30013593	-0.104	2.5	
3.86	0	814.70014171	-0.112	848.30012980	-0.097	2.5	
3.86	-10	814.70008797	-0.046	848.30012770	-0.094	2.5	
3.86	-20	814.70009663	-0.056	848.30012205	-0.088	2.5	
3.86	-30	814.70012726	-0.094	848.30012571	-0.092	2.5	

Reference Frequency : LTE Band 26 Low Channel 814.7 MHz / High Channel 848.3 MHz @ 20°C							
Limit: +/- 2.5 ppm =		Low Channel	2036.750	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]		
3.80	20	814.70005074	0	848.30004781	0	2.5	
4.30	20	814.70000477	0.056	848.30000649	0.049	2.5	
3.40	20	814.70000502	0.056	848.30000510	0.050	2.5	

LTE Band 41 (Lowest Frequency: QPSK / Highest Frequency: QPSK)

Limit		2496	2690	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	2496.2506	2689.7438		
Extreme (50C)		2496.2506	2689.7438	10.9	0.004
Extreme (40C)		2496.2506	2689.7438	11.7	0.005
Extreme (30C)		2496.2506	2689.7438	13.1	0.005
Extreme (10C)		2496.2506	2689.7438	12.6	0.005
Extreme (0C)		2496.2506	2689.7438	13.8	0.005
Extreme (-10C)		2496.2506	2689.7438	12.8	0.005
Extreme (-20C)		2496.2506	2689.7438	13.0	0.005
Extreme (-30C)		2496.2506	2689.7438	11.2	0.004
20C	15%	2496.2506	2689.7438	14.4	0.006
	-15%	2496.2506	2689.7438	13.9	0.005
	End Point	2496.2506	2689.7438	13.3	0.005

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

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	1710.1536	1779.8412		
Extreme (50C)		1710.1537	1779.8413	131.9	0.076
Extreme (40C)		1710.1537	1779.8413	120.4	0.069
Extreme (30C)		1710.1537	1779.8413	110.8	0.063
Extreme (10C)		1710.1537	1779.8413	129.1	0.074
Extreme (0C)		1710.1537	1779.8413	136.0	0.078
Extreme (-10C)		1710.1537	1779.8413	131.1	0.075
Extreme (-20C)		1710.1537	1779.8413	134.4	0.077
Extreme (-30C)		1710.1537	1779.8413	131.8	0.076
20C	15%	1710.1537	1779.8412	7.1	0.004
	-15%	1710.1537	1779.8412	6.6	0.004
	End Point	1710.1537	1779.8412	6.4	0.004

5G NR Band n5

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]		
3.80	50	826.50001250	0.003	846.50001294	-0.002	2.5	
3.80	40	826.50001314	0.003	846.50001560	-0.005	2.5	
3.80	30	826.50001492	0.000	846.50001436	-0.003	2.5	
3.80	20	826.50001523	0.000	846.50001158	0.000	2.5	
3.80	10	826.50001640	-0.001	846.50002206	-0.012	2.5	
3.80	0	826.50001715	-0.002	846.50002420	-0.015	2.5	
3.80	-10	826.50001680	-0.002	846.50002283	-0.013	2.5	
3.80	-20	826.50001720	-0.002	846.50002015	-0.010	2.5	
3.80	-30	826.50001951	-0.005	846.50002060	-0.011	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]		
3.80	20	826.50001523	0	846.50001158	0	2.5	
4.30	20	826.50001080	0.005	846.50001246	-0.001	2.5	
3.40	20	826.50001143	0.005	846.50001410	-0.003	2.5	

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

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	1710.2595	1779.7403		
Extreme (50C)		1710.2595	1779.7403	50.8	0.029
Extreme (40C)		1710.2595	1779.7403	66.1	0.038
Extreme (30C)		1710.2595	1779.7403	65.3	0.037
Extreme (10C)		1710.2595	1779.7403	46.9	0.027
Extreme (0C)		1710.2595	1779.7403	49.9	0.029
Extreme (-10C)		1710.2595	1779.7403	52.9	0.030
Extreme (-20C)		1710.2595	1779.7403	63.1	0.036
Extreme (-30C)		1710.2595	1779.7403	64.3	0.037
20C	15%	1710.2595	1779.7403	9.3	0.005
	-15%	1710.2595	1779.7403	9.1	0.005
	End Point	1710.2595	1779.7403	10.1	0.006

9.5. RADIATED POWER (ERP & EIRP)

RULE PART(S)

FCC: §2.1046, §22.913, §24.232, §27.50 and §90.635

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.

(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.

90.635(b) The maximum output power of the transmitter for mobile stations is 100 watts (20dBw).

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

9.5.1. ERP/EIRP Results

GSM

Band	Mode	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	ERP (mW)	Limit (dBm)	Delta (dB)
GSM 850	GPRS	824.20	36.69	V	3.11	-0.82	32.77	1892.34	38.50	-5.73
		824.20	26.71	H	3.11	-0.82	22.79	190.11	38.50	-15.71
		836.60	36.59	V	3.13	-0.93	32.53	1790.61	38.50	-5.97
		836.60	29.23	H	3.13	-0.93	25.18	329.61	38.50	-13.32
		848.80	36.46	V	3.15	-1.04	32.27	1686.55	38.50	-6.23
	848.80	29.67	H	3.15	-1.04	25.48	353.18	38.50	-13.02	
	EGPRS	824.20	31.21	V	3.11	-0.82	27.29	535.80	38.50	-11.21
		824.20	21.71	H	3.11	-0.82	17.79	60.12	38.50	-20.71
		836.60	31.26	V	3.13	-0.93	27.20	524.81	38.50	-11.30
		836.60	23.61	H	3.13	-0.93	19.56	90.36	38.50	-18.94
848.80		31.23	V	3.15	-1.04	27.04	505.82	38.50	-11.46	
848.80	23.91	H	3.15	-1.04	19.72	93.76	38.50	-18.78		

Band	Mode	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (dBm)	Delta (dB)
GSM 1900	GPRS	1850.20	24.93	V	4.62	9.60	29.91	979.49	33.00	-3.09
		1850.20	26.24	H	4.62	9.60	31.22	1324.34	33.00	-1.78
		1880.00	23.90	V	4.65	9.39	28.63	729.46	33.00	-4.37
		1880.00	25.77	H	4.65	9.39	30.50	1122.02	33.00	-2.50
		1909.80	24.28	V	4.68	9.13	28.72	744.73	33.00	-4.28
	1909.80	26.90	H	4.68	9.13	31.34	1361.44	33.00	-1.66	
	EGPRS	1850.20	22.09	V	4.62	9.60	27.07	509.33	33.00	-5.93
		1850.20	23.23	H	4.62	9.60	28.21	662.22	33.00	-4.79
		1880.00	20.80	V	4.65	9.39	25.53	357.27	33.00	-7.47
		1880.00	22.62	H	4.65	9.39	27.35	543.25	33.00	-5.65
1909.80		21.03	V	4.68	9.13	25.47	352.37	33.00	-7.53	
1909.80	23.84	H	4.68	9.13	28.28	672.98	33.00	-4.72		

WCDMA

Band	Mode	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	ERP (mW)	Limit (dBm)	Delta (dB)
Band 5	REL99	826.40	28.35	V	3.11	-0.84	24.41	276.06	38.50	-14.09
		826.40	19.85	H	3.11	-0.84	15.91	38.99	38.50	-22.59
		836.60	28.76	V	3.13	-0.93	24.70	295.12	38.50	-13.80
		836.60	20.77	H	3.13	-0.93	16.72	46.99	38.50	-21.78
		846.60	28.08	V	3.14	-1.02	23.92	246.60	38.50	-14.58
	846.60	21.34	H	3.14	-1.02	17.18	52.24	38.50	-21.32	
	HSDPA	826.40	26.55	V	3.11	-0.84	22.61	182.39	38.50	-15.89
		826.40	19.30	H	3.11	-0.84	15.36	34.36	38.50	-23.14
		836.60	25.88	V	3.13	-0.93	21.82	152.05	38.50	-16.68
		836.60	20.37	H	3.13	-0.93	16.32	42.85	38.50	-22.18
846.60		25.68	V	3.14	-1.02	21.52	141.91	38.50	-16.98	
846.60	20.95	H	3.14	-1.02	16.79	47.75	38.50	-21.71		

Band	Mode	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (dBm)	Delta (dB)
Band 4	REL99	1712.40	7.72	V	4.44	9.58	12.86	19.32	30.00	-17.14
		1712.40	20.42	H	4.44	9.58	25.56	359.75	30.00	-4.44
		1732.60	8.51	V	4.46	9.65	13.69	23.39	30.00	-16.31
		1732.60	20.71	H	4.46	9.65	25.90	389.05	30.00	-4.10
		1752.60	8.56	V	4.48	9.70	13.77	23.82	30.00	-16.23
	1752.60	20.33	H	4.48	9.70	25.54	358.10	30.00	-4.46	
	HSDPA	1712.40	7.23	V	4.44	9.58	12.37	17.26	30.00	-17.63
		1712.40	20.03	H	4.44	9.58	25.17	328.85	30.00	-4.83
		1732.60	8.00	V	4.46	9.65	13.18	20.80	30.00	-16.82
		1732.60	20.22	H	4.46	9.65	25.41	347.54	30.00	-4.59
1752.60		8.03	V	4.48	9.70	13.24	21.09	30.00	-16.76	
1752.60	19.89	H	4.48	9.70	25.10	323.59	30.00	-4.90		

Band	Mode	f (MHz)	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (dBm)	Delta (dB)
Band 2	REL99	1852.40	19.67	V	4.62	9.62	24.67	293.09	33.00	-8.33
		1852.40	10.89	H	4.62	9.62	15.90	38.90	33.00	-17.10
		1880.00	21.01	V	4.65	9.37	25.73	374.11	33.00	-7.27
		1880.00	10.61	H	4.65	9.37	15.33	34.12	33.00	-17.67
		1907.60	21.14	V	4.68	9.10	25.55	358.92	33.00	-7.45
	1907.60	9.65	H	4.68	9.10	14.06	25.47	33.00	-18.94	
	HSDPA	1852.40	19.27	V	4.62	9.62	24.27	267.30	33.00	-8.73
		1852.40	10.47	H	4.62	9.62	15.48	35.32	33.00	-17.52
		1880.00	20.61	V	4.65	9.37	25.33	341.19	33.00	-7.67
		1880.00	10.16	H	4.65	9.37	14.88	30.76	33.00	-18.12
1907.60		20.73	V	4.68	9.10	25.14	326.59	33.00	-7.86	
1907.60	9.23	H	4.68	9.10	13.64	23.12	33.00	-19.36		

LTE Band 12

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
1.4	QPSK	699.70	22.83	H	2.87	-0.80	19.15	82.22	34.77	-15.62	1/3
		707.50	22.72	H	2.89	-0.79	19.05	80.35	34.77	-15.72	1/0
		715.30	23.75	H	2.90	-0.77	20.08	101.86	34.77	-14.69	1/3
	16-QAM	699.70	21.84	H	2.87	-0.80	18.16	65.46	34.77	-16.61	1/3
		707.50	21.80	H	2.89	-0.79	18.13	65.01	34.77	-16.64	1/3
		715.30	22.59	H	2.90	-0.77	18.92	77.98	34.77	-15.85	1/3
3	QPSK	700.50	22.96	H	2.88	-0.80	19.29	84.92	34.77	-15.48	1/0
		707.50	23.05	H	2.89	-0.79	19.38	86.70	34.77	-15.39	1/0
		714.50	23.71	H	2.90	-0.77	20.04	100.93	34.77	-14.73	1/0
	16-QAM	700.50	21.93	H	2.88	-0.80	18.26	66.99	34.77	-16.51	1/0
		707.50	22.04	H	2.89	-0.79	18.37	68.71	34.77	-16.40	1/0
		714.50	22.64	H	2.90	-0.77	18.97	78.89	34.77	-15.80	1/0
5	QPSK	701.50	24.40	H	2.88	-0.80	20.73	118.30	34.77	-14.04	1/0
		707.50	25.10	H	2.89	-0.79	21.43	139.00	34.77	-13.34	1/12
		713.50	23.01	H	2.90	-0.77	19.33	85.70	34.77	-15.44	1/0
	16-QAM	701.50	21.86	H	2.88	-0.80	18.19	65.92	34.77	-16.58	1/12
		707.50	22.25	H	2.89	-0.79	18.58	72.11	34.77	-16.19	1/24
		713.50	22.43	H	2.90	-0.77	18.75	74.99	34.77	-16.02	1/0
10	QPSK	704.00	22.73	H	2.88	-0.79	19.06	80.54	34.77	-15.71	1/49
		707.50	23.03	H	2.89	-0.79	19.36	86.30	34.77	-15.41	1/49
		711.00	23.17	H	2.89	-0.78	19.50	89.13	34.77	-15.27	1/49
	16-QAM	704.00	22.18	H	2.88	-0.79	18.51	70.96	34.77	-16.26	1/25
		707.50	21.94	H	2.89	-0.79	18.27	67.14	34.77	-16.50	1/0
		711.00	22.37	H	2.89	-0.78	18.70	74.13	34.77	-16.07	1/25

LTE Band 13

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	779.50	25.67	H	3.02	-0.64	22.01	158.85	34.77	-12.76	1/24
		782.00	25.13	H	3.02	-0.64	21.47	140.28	34.77	-13.30	1/12
		784.50	25.48	H	3.04	-0.63	21.81	151.71	34.77	-12.96	1/0
	16-QAM	779.50	24.35	H	3.02	-0.64	20.69	117.22	34.77	-14.08	1/24
		782.00	24.11	H	3.02	-0.64	20.45	110.92	34.77	-14.32	1/12
		784.50	24.71	H	3.04	-0.63	21.04	127.06	34.77	-13.73	1/0
10	QPSK	782.00	25.60	H	3.02	-0.64	21.94	156.31	34.77	-12.83	1/25
	16-QAM	782.00	23.99	H	3.02	-0.64	20.33	107.89	34.77	-14.44	1/0

LTE Band 25

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	21.33	H	4.62	9.60	26.31	427.56	33.00	-6.69	1/3
		1882.50	20.73	H	4.65	9.37	25.44	349.95	33.00	-7.56	1/3
		1914.30	20.02	H	4.70	9.07	24.40	275.42	33.00	-8.60	1/3
	16-QAM	1850.70	20.47	H	4.62	9.64	25.49	354.00	33.00	-7.51	1/3
		1882.50	19.82	H	4.65	9.35	24.51	282.49	33.00	-8.49	1/3
		1914.30	19.05	H	4.70	9.01	23.37	217.27	33.00	-9.63	1/3
3	QPSK	1851.50	20.86	H	4.62	9.59	25.82	381.94	33.00	-7.18	1/14
		1882.50	20.72	H	4.65	9.37	25.43	349.14	33.00	-7.57	1/14
		1913.50	20.01	H	4.69	9.08	24.40	275.42	33.00	-8.60	1/14
	16-QAM	1851.50	19.83	H	4.62	9.59	24.79	301.30	33.00	-8.21	1/14
		1882.50	19.85	H	4.65	9.37	24.56	285.76	33.00	-8.44	1/8
		1913.50	19.05	H	4.69	9.08	23.44	220.80	33.00	-9.56	1/14
5	QPSK	1852.50	21.00	H	4.62	9.58	25.96	394.46	33.00	-7.04	1/24
		1882.50	20.74	H	4.65	9.37	25.45	350.75	33.00	-7.55	1/24
		1912.50	20.09	H	4.69	9.09	24.49	281.19	33.00	-8.51	1/24
	16-QAM	1852.50	20.23	H	4.62	9.58	25.19	330.37	33.00	-7.81	1/24
		1882.50	19.69	H	4.65	9.37	24.40	275.42	33.00	-8.60	1/24
		1912.50	19.30	H	4.69	9.09	23.70	234.42	33.00	-9.30	1/12
10	QPSK	1855.00	21.02	H	4.62	9.56	25.96	394.46	33.00	-7.04	1/25
		1882.50	20.71	H	4.65	9.37	25.42	348.34	33.00	-7.58	1/25
		1910.00	20.57	H	4.68	9.12	25.02	317.69	33.00	-7.98	1/0
	16-QAM	1855.00	20.11	H	4.62	9.56	25.05	319.89	33.00	-7.95	1/25
		1882.50	20.03	H	4.65	9.37	24.74	297.85	33.00	-8.26	1/25
		1910.00	19.53	H	4.68	9.12	23.98	250.03	33.00	-9.02	1/0
15	QPSK	1857.50	20.79	H	4.63	9.55	25.71	372.39	33.00	-7.29	1/37
		1882.50	20.73	H	4.65	9.37	25.44	349.95	33.00	-7.56	1/0
		1907.50	20.77	H	4.69	9.15	25.24	334.20	33.00	-7.76	1/0
	16-QAM	1857.50	20.09	H	4.63	9.55	25.01	316.96	33.00	-7.99	1/37
		1882.50	19.97	H	4.65	9.37	24.68	293.76	33.00	-8.32	1/37
		1907.50	19.98	H	4.69	9.15	24.45	278.61	33.00	-8.55	1/37
20	QPSK	1860.00	21.26	H	4.63	9.53	26.16	413.05	33.00	-6.84	1/0
		1882.50	21.14	H	4.65	9.37	25.85	384.59	33.00	-7.15	1/49
		1905.00	19.76	H	4.68	9.18	24.26	266.69	33.00	-8.74	1/0
	16-QAM	1860.00	20.50	H	4.63	9.53	25.40	346.74	33.00	-7.60	1/99
		1882.50	19.98	H	4.65	9.37	24.69	294.44	33.00	-8.31	1/49
		1905.00	18.68	H	4.68	9.18	23.18	207.97	33.00	-9.82	1/99

LTE Band 26

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	814.70	25.38	V	3.09	-0.73	21.56	143.22	50.00	-28.44	1/3	
		823.30	25.77	V	3.10	-0.81	21.86	153.46	50.00	-28.14	1/0	
		824.70	25.56	V	3.11	-0.82	21.63	145.55	38.50	-16.87	1/0	
		831.50	25.68	V	3.11	-0.88	21.69	147.57	38.50	-16.81	1/3	
		848.30	25.59	V	3.15	-1.03	21.41	138.36	38.50	-17.09	1/3	
	16-QAM	814.70	24.60	V	3.09	-0.73	20.78	119.67	50.00	-29.22	1/3	
		823.30	24.87	V	3.10	-0.81	20.96	124.74	50.00	-29.04	1/0	
		824.70	24.47	V	3.11	-0.82	20.54	113.24	38.50	-17.96	1/0	
		831.50	24.84	V	3.11	-0.88	20.85	121.62	38.50	-17.65	1/3	
		848.30	24.77	V	3.15	-1.03	20.59	114.55	38.50	-17.91	1/3	
3	QPSK	815.50	25.40	V	3.08	-0.74	21.58	143.88	50.00	-28.42	1/0	
		822.50	25.83	V	3.10	-0.80	21.93	155.96	50.00	-28.07	1/0	
		825.50	25.99	V	3.10	-0.83	22.05	160.32	38.50	-16.45	1/0	
		831.50	25.91	V	3.11	-0.88	21.92	155.60	38.50	-16.58	1/14	
		847.50	26.27	V	3.15	-1.03	22.10	162.18	38.50	-16.40	1/0	
	16-QAM	815.50	24.46	V	3.08	-0.74	20.64	115.88	50.00	-29.36	1/14	
		822.50	24.65	V	3.10	-0.80	20.75	118.85	50.00	-29.25	1/14	
		825.50	24.74	V	3.10	-0.83	20.80	120.23	38.50	-17.70	1/0	
		831.50	24.88	V	3.11	-0.88	20.89	122.74	38.50	-17.61	1/0	
		847.50	25.23	V	3.15	-1.03	21.06	127.64	38.50	-17.44	1/0	
5	QPSK	816.50	25.15	V	3.09	-0.75	21.32	135.52	50.00	-28.68	1/12	
		831.50	25.92	V	3.11	-0.88	21.93	155.96	50.00	-28.07	1/0	
		826.50	25.91	V	3.11	-0.84	21.96	157.04	38.50	-16.54	1/24	
		831.50	25.94	V	3.11	-0.88	21.95	156.68	38.50	-16.55	1/12	
		846.50	26.16	V	3.14	-1.02	22.00	158.49	38.50	-16.50	1/0	
	16-QAM	816.50	24.10	V	3.09	-0.75	20.27	106.41	50.00	-29.73	1/12	
		831.50	24.98	V	3.11	-0.88	20.99	125.60	50.00	-29.01	1/0	
		825.50	25.14	V	3.10	-0.83	21.20	131.83	38.50	-17.30	1/12	
		831.50	24.98	V	3.11	-0.88	20.99	125.60	38.50	-17.51	1/24	
		846.50	25.09	V	3.14	-1.02	20.93	123.88	38.50	-17.57	1/0	
10	QPSK	819.00	25.78	V	3.09	-0.77	21.91	155.24	50.00	-28.09	1/25	
		829.00	26.11	V	3.11	-0.86	22.13	163.31	38.50	-16.37	1/0	
		831.50	25.52	V	3.11	-0.88	21.53	142.23	38.50	-16.97	1/25	
		844.00	25.66	V	3.14	-1.00	21.52	141.91	38.50	-16.98	1/0	
	16-QAM	819.00	25.03	V	3.09	-0.77	21.16	130.62	50.00	-28.84	1/49	
		829.00	24.93	V	3.11	-0.86	20.95	124.45	38.50	-17.55	1/0	
		831.50	24.75	V	3.11	-0.88	20.76	119.12	38.50	-17.74	1/25	
		844.00	25.00	V	3.14	-1.00	20.86	121.90	38.50	-17.64	1/0	
	15	QPSK	821.50	25.56	V	3.10	-0.79	21.67	146.89	50.00	-28.33	1/74
			831.50	25.69	V	3.11	-0.88	21.70	147.91	38.50	-16.80	1/37
841.50			25.67	V	3.13	-0.97	21.56	143.22	38.50	-16.94	1/0	
16-QAM		821.50	24.68	V	3.10	-0.79	20.79	119.95	50.00	-29.21	1/74	
		831.50	24.67	V	3.11	-0.88	20.68	116.95	38.50	-17.82	1/74	
		841.50	24.84	V	3.13	-0.97	20.73	118.30	38.50	-17.77	1/0	

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	824.00	25.96	V	3.10	-0.82	22.04	159.96	38.50	-16.46	1/3
	16-QAM	824.00	25.01	V	3.10	-0.82	21.09	128.53	38.50	-17.41	1/3
3	QPSK	824.00	26.11	V	3.10	-0.82	22.19	165.58	38.50	-16.31	1/14
	16-QAM	824.00	25.18	V	3.10	-0.82	21.26	133.66	38.50	-17.24	1/0
5	QPSK	824.00	26.22	V	3.10	-0.82	22.30	169.82	38.50	-16.20	1/24
	16-QAM	824.00	25.14	V	3.10	-0.82	21.22	132.43	38.50	-17.28	1/0
10	QPSK	824.00	26.11	V	3.10	-0.82	22.19	165.58	38.50	-16.31	1/0
	16-QAM	824.00	24.98	V	3.10	-0.82	21.06	127.64	38.50	-17.44	1/0
15	QPSK	824.00	25.77	V	3.10	-0.82	21.85	153.11	38.50	-16.65	1/0
	16-QAM	824.00	25.10	V	3.10	-0.82	21.18	131.22	38.50	-17.32	1/0

LTE Band 41

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	2498.50	17.16	H	5.36	10.21	22.00	158.49	33.00	-11.00	1/12
		2593.00	18.52	H	5.47	10.12	23.16	207.01	33.00	-9.84	1/0
		2687.50	19.43	H	5.57	10.20	24.06	254.68	33.00	-8.94	1/0
	16-QAM	2498.50	16.43	H	5.36	10.21	21.27	133.97	33.00	-11.73	1/24
		2593.00	17.85	H	5.47	10.12	22.49	177.42	33.00	-10.51	1/0
		2687.50	18.86	H	5.57	10.20	23.49	223.36	33.00	-9.51	1/0
10	QPSK	2501.00	17.25	H	5.38	10.20	22.07	161.06	33.00	-10.93	1/0
		2593.00	18.38	H	5.47	10.12	23.02	200.45	33.00	-9.98	1/25
		2685.00	19.26	H	5.56	10.20	23.90	245.47	33.00	-9.10	1/25
	16-QAM	2501.00	16.50	H	5.38	10.20	21.32	135.52	33.00	-11.68	1/25
		2593.00	17.80	H	5.47	10.12	22.44	175.39	33.00	-10.56	1/25
		2685.00	18.47	H	5.56	10.20	23.11	204.64	33.00	-9.89	1/25
15	QPSK	2503.50	17.07	H	5.37	10.20	21.90	154.88	33.00	-11.10	1/0
		2593.00	18.28	H	5.47	10.12	22.92	195.88	33.00	-10.08	1/37
		2682.50	19.35	H	5.56	10.19	23.98	250.03	33.00	-9.02	1/74
	16-QAM	2503.50	16.34	H	5.37	10.20	21.17	130.92	33.00	-11.83	1/0
		2593.00	17.69	H	5.47	10.12	22.33	171.00	33.00	-10.67	1/37
		2682.50	18.68	H	5.56	10.19	23.31	214.29	33.00	-9.69	1/74
20	QPSK	2506.00	17.20	H	5.37	10.19	22.02	159.22	33.00	-10.98	1/99
		2593.00	18.13	H	5.47	10.12	22.77	189.23	33.00	-10.23	1/49
		2680.00	19.79	H	5.56	10.19	24.42	276.69	33.00	-8.58	1/49
	16-QAM	2506.00	16.24	H	5.37	10.19	21.06	127.64	33.00	-11.94	1/99
		2593.00	17.50	H	5.47	10.12	22.14	163.68	33.00	-10.86	1/49
		2680.00	18.17	H	5.56	10.19	22.80	190.55	33.00	-10.20	1/49

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	18.69	H	4.43	9.57	23.83	241.55	30.00	-6.17	1/3
		1745.00	19.45	H	4.47	9.68	24.65	291.74	30.00	-5.35	1/3
		1779.30	20.23	H	4.52	9.70	25.42	348.34	30.00	-4.58	1/3
	16-QAM	1710.70	17.98	H	4.43	9.57	23.12	205.12	30.00	-6.88	1/3
		1745.00	18.65	H	4.47	9.68	23.85	242.66	30.00	-6.15	1/3
		1779.30	19.21	H	4.52	9.70	24.40	275.42	30.00	-5.60	1/3
3	QPSK	1711.50	18.64	H	4.44	9.57	23.78	238.78	30.00	-6.22	1/0
		1745.00	19.43	H	4.47	9.68	24.63	290.40	30.00	-5.37	1/0
		1778.50	20.08	H	4.52	9.70	25.26	335.74	30.00	-4.74	1/0
	16-QAM	1711.50	18.04	H	4.44	9.57	23.18	207.97	30.00	-6.82	1/0
		1745.00	18.78	H	4.47	9.68	23.98	250.03	30.00	-6.02	1/0
		1778.50	19.49	H	4.52	9.70	24.67	293.09	30.00	-5.33	1/0
5	QPSK	1712.50	18.70	H	4.44	9.57	23.84	242.10	30.00	-6.16	1/12
		1745.00	19.19	H	4.47	9.68	24.39	274.79	30.00	-5.61	1/0
		1777.50	20.09	H	4.52	9.70	25.27	336.51	30.00	-4.73	1/0
	16-QAM	1712.50	18.20	H	4.44	9.57	23.34	215.77	30.00	-6.66	1/0
		1745.00	18.57	H	4.47	9.68	23.77	238.23	30.00	-6.23	1/0
		1777.50	19.18	H	4.52	9.70	24.36	272.90	30.00	-5.64	1/0
10	QPSK	1715.00	18.96	H	4.44	9.58	24.11	257.63	30.00	-5.89	1/25
		1745.00	19.04	H	4.47	9.68	24.24	265.46	30.00	-5.76	1/25
		1775.00	19.86	H	4.51	9.70	25.05	319.89	30.00	-4.95	1/25
	16-QAM	1715.00	18.05	H	4.44	9.58	23.20	208.93	30.00	-6.80	1/25
		1745.00	18.57	H	4.47	9.68	23.77	238.23	30.00	-6.23	1/25
		1775.00	19.44	H	4.51	9.70	24.63	290.40	30.00	-5.37	1/25
15	QPSK	1717.50	18.99	H	4.44	9.59	24.14	259.42	30.00	-5.86	1/37
		1745.00	19.42	H	4.47	9.68	24.62	289.73	30.00	-5.38	1/37
		1772.50	19.75	H	4.51	9.70	24.94	311.89	30.00	-5.06	1/0
	16-QAM	1717.50	18.07	H	4.44	9.59	23.22	209.89	30.00	-6.78	1/37
		1745.00	18.71	H	4.47	9.68	23.91	246.04	30.00	-6.09	1/37
		1772.50	19.24	H	4.51	9.70	24.43	277.33	30.00	-5.57	1/0
20	QPSK	1720.00	18.84	H	4.44	9.60	24.00	251.19	30.00	-6.00	1/49
		1745.00	18.95	H	4.47	9.68	24.15	260.02	30.00	-5.85	1/49
		1770.00	20.11	H	4.51	9.70	25.30	338.84	30.00	-4.70	1/0
	16-QAM	1720.00	18.07	H	4.44	9.60	23.23	210.38	30.00	-6.77	1/49
		1745.00	18.21	H	4.47	9.68	23.41	219.28	30.00	-6.59	1/49
		1770.00	19.28	H	4.51	9.70	24.47	279.90	30.00	-5.53	1/0

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	28.13	V	3.11	-0.84	24.18	261.82	38.50	-14.32	1/1
		836.50	27.77	V	3.13	-0.93	23.71	234.96	38.50	-14.79	1/1
		846.50	25.54	V	3.14	-1.02	21.38	137.40	38.50	-17.12	1/23
	16-QAM	826.50	26.87	V	3.11	-0.84	22.92	195.88	38.50	-15.58	1/1
		836.50	26.10	V	3.13	-0.93	22.04	159.96	38.50	-16.46	1/1
		846.50	24.61	V	3.14	-1.02	20.45	110.92	38.50	-18.05	1/23
10	QPSK	829.00	27.76	V	3.11	-0.86	23.79	239.33	38.50	-14.71	1/1
		836.50	28.05	V	3.13	-0.93	23.99	250.61	38.50	-14.51	1/1
		844.00	26.59	V	3.14	-1.00	22.45	175.79	38.50	-16.05	1/1
	16-QAM	829.00	27.40	V	3.11	-0.86	23.43	220.29	38.50	-15.07	1/1
		836.50	27.85	V	3.13	-0.93	23.79	239.33	38.50	-14.71	1/1
		844.00	26.15	V	3.14	-1.00	22.01	158.85	38.50	-16.49	1/1
15	QPSK	831.50	28.21	V	3.11	-0.88	24.21	263.63	38.50	-14.29	1/1
		836.50	27.91	V	3.13	-0.93	23.85	242.66	38.50	-14.65	1/1
		841.50	27.50	V	3.13	-0.97	23.39	218.27	38.50	-15.11	1/1
	16-QAM	831.50	28.07	V	3.11	-0.88	24.07	255.27	38.50	-14.43	1/1
		836.50	27.33	V	3.13	-0.93	23.27	212.32	38.50	-15.23	1/1
		841.50	27.31	V	3.13	-0.97	23.20	208.93	38.50	-15.30	1/1
20	QPSK	834.00	28.37	V	3.12	-0.91	24.34	271.64	38.50	-14.16	1/1
		836.50	28.17	V	3.13	-0.93	24.11	257.63	38.50	-14.39	1/1
		839.00	27.91	V	3.13	-0.95	23.83	241.55	38.50	-14.67	1/1
	16-QAM	834.00	25.63	V	3.12	-0.91	21.60	144.54	38.50	-16.90	1/104
		836.50	25.36	V	3.13	-0.93	21.30	134.90	38.50	-17.20	1/104
		839.00	26.97	V	3.13	-0.95	22.89	194.54	38.50	-15.61	1/1

5G NR n66

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	1712.50	21.49	H	4.44	9.57	26.63	460.26	30.00	-3.37	1/1
		1745.00	21.55	H	4.47	9.68	26.75	473.15	30.00	-3.25	1/1
		1777.50	20.73	H	4.52	9.70	25.91	389.94	30.00	-4.09	1/13
	16-QAM	1712.50	20.52	H	4.44	9.57	25.66	368.13	30.00	-4.34	1/1
		1745.00	20.59	H	4.47	9.68	25.79	379.31	30.00	-4.21	1/1
		1777.50	19.66	H	4.52	9.70	24.84	304.79	30.00	-5.16	1/13
10	QPSK	1715.00	21.47	H	4.44	9.58	26.62	459.20	30.00	-3.38	1/1
		1745.00	21.83	H	4.47	9.68	27.03	504.66	30.00	-2.97	1/26
		1775.00	20.60	H	4.51	9.70	25.79	379.31	30.00	-4.21	1/26
	16-QAM	1715.00	20.73	H	4.44	9.58	25.88	387.26	30.00	-4.12	1/1
		1745.00	20.77	H	4.47	9.68	25.97	395.37	30.00	-4.03	1/26
		1775.00	19.72	H	4.51	9.70	24.91	309.74	30.00	-5.09	1/26
15	QPSK	1717.50	21.73	H	4.44	9.59	26.88	487.53	30.00	-3.12	1/77
		1745.00	21.75	H	4.47	9.68	26.95	495.45	30.00	-3.05	1/40
		1772.50	21.03	H	4.51	9.70	26.22	418.79	30.00	-3.78	1/40
	16-QAM	1717.50	20.81	H	4.44	9.59	25.96	394.46	30.00	-4.04	1/77
		1745.00	20.79	H	4.47	9.68	25.99	397.19	30.00	-4.01	1/40
		1772.50	19.93	H	4.51	9.70	25.12	325.09	30.00	-4.88	1/40
20	QPSK	1720.00	19.96	H	4.44	9.60	25.12	325.09	30.00	-4.88	1/104
		1745.00	20.83	H	4.47	9.68	26.03	400.87	30.00	-3.97	1/53
		1770.00	21.18	H	4.51	9.70	26.37	433.51	30.00	-3.63	1/53
	16-QAM	1720.00	19.23	H	4.44	9.60	24.39	274.79	30.00	-5.61	1/104
		1745.00	20.17	H	4.47	9.68	25.37	344.35	30.00	-4.63	1/53
		1770.00	20.09	H	4.51	9.70	25.28	337.29	30.00	-4.72	1/53

9.6. FIELD STRENGTH OF SPURIOUS RADIATION

RULE PART(S)

FCC: §2.1053, §22.917, §24.238, §27.53 and §90.691

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:

(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.

Part 90.691(a):

(1) For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $116 \log_{10}(f/6.1)$ decibels or $50 + 10 \log_{10}(P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.

(2) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz. (NOTE : Use 100kHz reference bandwidth)

(b) When an emission outside of the authorized bandwidth causes harmful interference, the Commission may, at its discretion, require greater attenuation than specified in this section.

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 #:	4790406759								
		Date:	2022-07-18								
		Test Engineer:	25770								
		Configuration:	EUT / AC Adapter / Earphone, X-Position								
		Location:	Chamber 1								
		Mode:	GPRS 850 MHz 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, 824.2MHz											
1648.40	-2.0	V	3.0	45.6	1.0	-46.6	-13.0	-33.6			
2472.60	-4.2	V	3.0	45.4	1.0	-48.7	-13.0	-35.7			
3296.80	-4.5	V	3.0	45.7	1.0	-49.2	-13.0	-36.2			
1648.40	-6.6	H	3.0	45.6	1.0	-51.2	-13.0	-38.2			
2472.60	-6.4	H	3.0	45.4	1.0	-50.8	-13.0	-37.8			
3296.80	-4.4	H	3.0	45.7	1.0	-49.1	-13.0	-36.1			
Mid Ch, 836.6MHz											
1673.20	-1.2	V	3.0	45.6	1.0	-45.8	-13.0	-32.8			
2509.80	-4.7	V	3.0	45.5	1.0	-49.2	-13.0	-36.2			
3346.40	-4.6	V	3.0	45.7	1.0	-49.3	-13.0	-36.3			
1673.20	-6.3	H	3.0	45.6	1.0	-50.9	-13.0	-37.9			
2509.80	-5.4	H	3.0	45.5	1.0	-49.8	-13.0	-36.8			
3346.40	-4.7	H	3.0	45.7	1.0	-49.4	-13.0	-36.4			
High Ch, 848.8MHz											
1697.60	-2.4	V	3.0	45.6	1.0	-46.9	-13.0	-33.9			
2546.40	-5.2	V	3.0	45.5	1.0	-49.7	-13.0	-36.7			
3395.20	-4.1	V	3.0	45.7	1.0	-48.8	-13.0	-35.8			
1697.60	-7.3	H	3.0	45.6	1.0	-51.8	-13.0	-38.8			
2546.40	-6.4	H	3.0	45.5	1.0	-50.8	-13.0	-37.8			
3395.20	-4.2	H	3.0	45.7	1.0	-48.9	-13.0	-35.9			

GSM850
GPRS

UL Verification Services, Inc.										
Above 1GHz High Frequency Substitution Measurement										
Company:		Samsung								
Project #:		4790406759								
Date:		2022-07-18								
Test Engineer:		25770								
Configuration:		EUT / AC Adapter / Earphone, X-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	-7.9	V	3.0	45.6	1.0	-52.5	-13.0	-39.5		
2472.60	-5.1	V	3.0	45.4	1.0	-49.6	-13.0	-36.6		
3296.80	-4.7	V	3.0	45.7	1.0	-49.4	-13.0	-36.4		
1648.40	-9.3	H	3.0	45.6	1.0	-53.9	-13.0	-40.9		
2472.60	-7.5	H	3.0	45.4	1.0	-51.9	-13.0	-38.9		
3296.80	-4.7	H	3.0	45.7	1.0	-49.4	-13.0	-36.4		
Mid Ch, 836.6MHz										
1673.20	-7.2	V	3.0	45.6	1.0	-51.8	-13.0	-38.8		
2509.80	-6.8	V	3.0	45.5	1.0	-51.3	-13.0	-38.3		
3346.40	-4.8	V	3.0	45.7	1.0	-49.5	-13.0	-36.5		
1673.20	-9.2	H	3.0	45.6	1.0	-53.8	-13.0	-40.8		
2509.80	-7.3	H	3.0	45.5	1.0	-51.7	-13.0	-38.7		
3346.40	-4.9	H	3.0	45.7	1.0	-49.6	-13.0	-36.6		
High Ch, 848.8MHz										
1697.60	-7.9	V	3.0	45.6	1.0	-52.5	-13.0	-39.5		
2546.40	-6.0	V	3.0	45.5	1.0	-50.4	-13.0	-37.4		
3395.20	-4.2	V	3.0	45.7	1.0	-48.9	-13.0	-35.9		
1697.60	-8.4	H	3.0	45.6	1.0	-52.9	-13.0	-39.9		
2546.40	-6.8	H	3.0	45.5	1.0	-51.3	-13.0	-38.3		
3395.20	-4.7	H	3.0	45.7	1.0	-49.4	-13.0	-36.4		

GSM850
EGPRS

GSM1900

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
Company:		Samsung							
Project #:		4790406759							
Date:		7/21/2022							
Test Engineer:		26087							
Configuration:		EUT / Earphone, X-Position							
Location:		Chamber 1							
Mode:		GPRS 1900 MHz 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, 1850.2MHz									
3700.40	-6.9	V	3.0	45.8	1.0	-51.8	-13.0	-38.8	
5550.60	-4.2	V	3.0	45.7	1.0	-49.0	-13.0	-36.0	
7400.80	4.2	V	3.0	44.6	1.0	-39.3	-13.0	-26.3	
3700.40	-5.9	H	3.0	45.8	1.0	-50.7	-13.0	-37.7	
5550.60	-4.7	H	3.0	45.7	1.0	-49.4	-13.0	-36.4	
7400.80	1.1	H	3.0	44.6	1.0	-42.4	-13.0	-29.4	
Mid Ch, 1880MHz									
3760.00	-6.7	V	3.0	45.8	1.0	-51.5	-13.0	-38.5	
5640.00	-4.3	V	3.0	45.7	1.0	-49.0	-13.0	-36.0	
7520.00	5.3	V	3.0	44.5	1.0	-38.2	-13.0	-25.2	
3760.00	-6.3	H	3.0	45.8	1.0	-51.1	-13.0	-38.1	
5640.00	-4.3	H	3.0	45.7	1.0	-49.1	-13.0	-36.1	
7520.00	2.6	H	3.0	44.5	1.0	-40.9	-13.0	-27.9	
High Ch, 1909.8MHz									
3819.60	-7.4	V	3.0	45.8	1.0	-52.2	-13.0	-39.2	
5729.40	-4.1	V	3.0	45.7	1.0	-48.8	-13.0	-35.8	
7639.20	4.4	V	3.0	44.4	1.0	-39.1	-13.0	-26.1	
3819.60	-7.0	H	3.0	45.8	1.0	-51.8	-13.0	-38.8	
5729.40	-4.7	H	3.0	45.7	1.0	-49.4	-13.0	-36.4	
7639.20	0.6	H	3.0	44.4	1.0	-42.8	-13.0	-29.8	

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
Company:		Samsung							
Project #:		4790406759							
Date:		7/21/2022							
Test Engineer:		26087							
Configuration:		EUT / Earphone, X-Position							
Location:		Chamber 1							
Mode:		EGPRS 1900 MHz 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, 1850.2MHz									
3700.40	-7.9	V	3.0	45.8	1.0	-52.7	-13.0	-39.7	
5550.60	-4.9	V	3.0	45.7	1.0	-49.7	-13.0	-36.7	
7400.80	0.6	V	3.0	44.6	1.0	-43.0	-13.0	-30.0	
3700.40	-6.3	H	3.0	45.8	1.0	-51.2	-13.0	-38.2	
5550.60	-5.3	H	3.0	45.7	1.0	-50.1	-13.0	-37.1	
7400.80	-0.1	H	3.0	44.6	1.0	-43.6	-13.0	-30.6	
Mid Ch, 1880MHz									
3760.00	-4.4	V	3.0	45.8	1.0	-49.2	-13.0	-36.2	
5640.00	-4.8	V	3.0	45.7	1.0	-49.6	-13.0	-36.6	
7520.00	1.6	V	3.0	44.5	1.0	-41.9	-13.0	-28.9	
3760.00	-7.4	H	3.0	45.8	1.0	-52.2	-13.0	-39.2	
5640.00	-4.9	H	3.0	45.7	1.0	-49.7	-13.0	-36.7	
7520.00	1.3	H	3.0	44.5	1.0	-42.2	-13.0	-29.2	
High Ch, 1909.8MHz									
3819.60	-6.7	V	3.0	45.8	1.0	-51.6	-13.0	-38.6	
5729.40	-4.8	V	3.0	45.7	1.0	-49.5	-13.0	-36.5	
7639.20	0.8	V	3.0	44.4	1.0	-42.6	-13.0	-29.6	
3819.60	-7.9	H	3.0	45.8	1.0	-52.8	-13.0	-39.8	
5729.40	-4.9	H	3.0	45.7	1.0	-49.6	-13.0	-36.6	
7639.20	-0.3	H	3.0	44.4	1.0	-43.7	-13.0	-30.7	

WCDMA Band 5

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
Company:		Samsung							
Project #:		4790406759							
Date:		2022-07-18							
Test Engineer:		25770							
Configuration:		EUT / Earphone, Z-Position							
Location:		Chamber 1							
Mode:		Rel99 Band 5 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, 826.4MHz									
1652.80	-15.6	V	3.0	45.6	1.0	-60.2	-13.0	-47.2	
2479.20	-11.6	V	3.0	45.5	1.0	-56.1	-13.0	-43.1	
3305.60	-9.9	V	3.0	45.7	1.0	-54.5	-13.0	-41.5	
1652.80	-16.7	H	3.0	45.6	1.0	-61.3	-13.0	-48.3	
2479.20	-12.5	H	3.0	45.5	1.0	-56.9	-13.0	-43.9	
3305.60	-9.9	H	3.0	45.7	1.0	-54.6	-13.0	-41.6	
Mid Ch, 836.6MHz									
1673.20	-15.6	V	3.0	45.6	1.0	-60.2	-13.0	-47.2	
2509.80	-9.4	V	3.0	45.5	1.0	-53.8	-13.0	-40.8	
3346.40	-9.7	V	3.0	45.7	1.0	-54.4	-13.0	-41.4	
1673.20	-16.6	H	3.0	45.6	1.0	-61.2	-13.0	-48.2	
2509.80	-10.9	H	3.0	45.5	1.0	-55.4	-13.0	-42.4	
3346.40	-9.7	H	3.0	45.7	1.0	-54.4	-13.0	-41.4	
High Ch, 846.6MHz									
1693.20	-15.5	V	3.0	45.6	1.0	-60.1	-13.0	-47.1	
2539.80	-9.6	V	3.0	45.5	1.0	-54.0	-13.0	-41.0	
3386.40	-9.5	V	3.0	45.7	1.0	-54.2	-13.0	-41.2	
1693.20	-16.5	H	3.0	45.6	1.0	-61.1	-13.0	-48.1	
2539.80	-10.6	H	3.0	45.5	1.0	-55.1	-13.0	-42.1	
3386.40	-9.5	H	3.0	45.7	1.0	-54.2	-13.0	-41.2	

Band 5
REL99

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
Company:		Samsung							
Project #:		4790406759							
Date:		2022-07-18							
Test Engineer:		25770							
Configuration:		EUT / Earphone, Z-Position							
Location:		Chamber 1							
Mode:		HSDPA Band 5 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, 826.4MHz									
1652.80	-15.8	V	3.0	45.6	1.0	-60.4	-13.0	-47.4	
2479.20	-12.2	V	3.0	45.5	1.0	-56.7	-13.0	-43.7	
3305.60	-9.8	V	3.0	45.7	1.0	-54.5	-13.0	-41.5	
1652.80	-16.8	H	3.0	45.6	1.0	-61.4	-13.0	-48.4	
2479.20	-13.4	H	3.0	45.5	1.0	-57.9	-13.0	-44.9	
3305.60	-9.9	H	3.0	45.7	1.0	-54.6	-13.0	-41.6	
Mid Ch, 836.6MHz									
1673.20	-15.7	V	3.0	45.6	1.0	-60.3	-13.0	-47.3	
2509.80	-11.9	V	3.0	45.5	1.0	-56.3	-13.0	-43.3	
3346.40	-9.8	V	3.0	45.7	1.0	-54.5	-13.0	-41.5	
1673.20	-16.6	H	3.0	45.6	1.0	-61.2	-13.0	-48.2	
2509.80	-12.8	H	3.0	45.5	1.0	-57.2	-13.0	-44.2	
3346.40	-9.7	H	3.0	45.7	1.0	-54.4	-13.0	-41.4	
High Ch, 846.6MHz									
1693.20	-15.4	V	3.0	45.6	1.0	-60.0	-13.0	-47.0	
2539.80	-12.3	V	3.0	45.5	1.0	-56.7	-13.0	-43.7	
3386.40	-9.5	V	3.0	45.7	1.0	-54.2	-13.0	-41.2	
1693.20	-16.5	H	3.0	45.6	1.0	-61.1	-13.0	-48.1	
2539.80	-12.8	H	3.0	45.5	1.0	-57.2	-13.0	-44.2	
3386.40	-9.5	H	3.0	45.7	1.0	-54.2	-13.0	-41.2	

Band 5
HSDPA

WCDMA Band 4

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
Company:		Samsung							
Project #:		4790406759							
Date:		2022-07-18							
Test Engineer:		26087							
Configuration:		EUT / AC Adapter / Earphone, X-Position							
Location:		Chamber 1							
Mode:		Rel99 Band 4 Harmonics							
Test Voltage:		AC 120 V, 60 Hz							
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1712.4MHz									
3424.80	-8.9	V	3.0	45.7	1.0	-53.6	-13.0	-40.6	
5137.20	-9.1	V	3.0	45.8	1.0	-53.9	-13.0	-40.9	
6849.60	-5.7	V	3.0	44.9	1.0	-49.7	-13.0	-36.7	
3424.80	-8.8	H	3.0	45.7	1.0	-53.5	-13.0	-40.5	
5137.20	-9.0	H	3.0	45.8	1.0	-53.8	-13.0	-40.8	
6849.60	-6.1	H	3.0	44.9	1.0	-50.0	-13.0	-37.0	
Mid Ch, 1732.6MHz									
3465.20	-8.7	V	3.0	45.7	1.0	-53.5	-13.0	-40.5	
5197.80	-8.8	V	3.0	45.8	1.0	-53.6	-13.0	-40.6	
6930.40	-5.8	V	3.0	44.8	1.0	-49.7	-13.0	-36.7	
3465.20	-8.8	H	3.0	45.7	1.0	-53.5	-13.0	-40.5	
5197.80	-8.7	H	3.0	45.8	1.0	-53.5	-13.0	-40.5	
6930.40	-6.0	H	3.0	44.8	1.0	-49.8	-13.0	-36.8	
High Ch, 1752.6MHz									
3505.20	-8.6	V	3.0	45.7	1.0	-53.3	-13.0	-40.3	
5257.80	-8.6	V	3.0	45.8	1.0	-53.4	-13.0	-40.4	
7010.40	-5.8	V	3.0	44.8	1.0	-49.6	-13.0	-36.6	
3505.20	-8.6	H	3.0	45.7	1.0	-53.4	-13.0	-40.4	
5257.80	-8.5	H	3.0	45.8	1.0	-53.2	-13.0	-40.2	
7010.40	-5.8	H	3.0	44.8	1.0	-49.6	-13.0	-36.6	

Band 4
REL99

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
Company:		Samsung							
Project #:		4790406759							
Date:		2022-07-18							
Test Engineer:		26087							
Configuration:		EUT / AC Adapter / Earphone, X-Position							
Location:		Chamber 1							
Mode:		HSDPA Band 4 Harmonics							
Test Voltage:		AC 120 V, 60 Hz							
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1712.4MHz									
3424.80	-9.0	V	3.0	45.7	1.0	-53.7	-13.0	-40.7	
5137.20	-9.2	V	3.0	45.8	1.0	-54.0	-13.0	-41.0	
6849.60	-6.0	V	3.0	44.9	1.0	-49.9	-13.0	-36.9	
3424.80	-8.9	H	3.0	45.7	1.0	-53.7	-13.0	-40.7	
5137.20	-9.1	H	3.0	45.8	1.0	-53.9	-13.0	-40.9	
6849.60	-6.1	H	3.0	44.9	1.0	-50.0	-13.0	-37.0	
Mid Ch, 1732.6MHz									
3465.20	-8.8	V	3.0	45.7	1.0	-53.5	-13.0	-40.5	
5197.80	-8.8	V	3.0	45.8	1.0	-53.5	-13.0	-40.5	
6930.40	-5.7	V	3.0	44.8	1.0	-49.6	-13.0	-36.6	
3465.20	-8.7	H	3.0	45.7	1.0	-53.5	-13.0	-40.5	
5197.80	-8.7	H	3.0	45.8	1.0	-53.5	-13.0	-40.5	
6930.40	-6.0	H	3.0	44.8	1.0	-49.8	-13.0	-36.8	
High Ch, 1752.6MHz									
3505.20	-8.5	V	3.0	45.7	1.0	-53.3	-13.0	-40.3	
5257.80	-8.5	V	3.0	45.8	1.0	-53.3	-13.0	-40.3	
7010.40	-5.9	V	3.0	44.8	1.0	-49.6	-13.0	-36.6	
3505.20	-8.7	H	3.0	45.7	1.0	-53.4	-13.0	-40.4	
5257.80	-8.5	H	3.0	45.8	1.0	-53.3	-13.0	-40.3	
7010.40	-5.9	H	3.0	44.8	1.0	-49.7	-13.0	-36.7	

Band 4
HSDPA

WCDMA Band 2

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
Company:		Samsung							
Project #:		4790406759							
Date:		2022-07-15							
Test Engineer:		25770							
Configuration:		EUT / AC Adapter / Earphone, Y-Position							
Location:		Chamber 1							
Mode:		Rel99 Band 2 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, 1852.4MHz									
3704.80	-7.7	V	3.0	45.8	1.0	-52.5	-13.0	-39.5	
5557.20	-8.1	V	3.0	45.7	1.0	-52.9	-13.0	-39.9	
7409.60	-5.0	V	3.0	44.6	1.0	-48.5	-13.0	-35.5	
3704.80	-10.6	H	3.0	45.8	1.0	-55.4	-13.0	-42.4	
5557.20	-8.1	H	3.0	45.7	1.0	-52.9	-13.0	-39.9	
7409.60	-3.6	H	3.0	44.6	1.0	-47.1	-13.0	-34.1	
Mid Ch, 1880MHz									
3760.00	-8.4	V	3.0	45.8	1.0	-53.2	-13.0	-40.2	
5640.00	-7.9	V	3.0	45.7	1.0	-52.6	-13.0	-39.6	
7520.00	-4.2	V	3.0	44.5	1.0	-47.7	-13.0	-34.7	
3760.00	-10.5	H	3.0	45.8	1.0	-55.3	-13.0	-42.3	
5640.00	-7.7	H	3.0	45.7	1.0	-52.5	-13.0	-39.5	
7520.00	-3.8	H	3.0	44.5	1.0	-47.3	-13.0	-34.3	
High Ch, 1907.6MHz									
3815.20	-8.0	V	3.0	45.8	1.0	-52.9	-13.0	-39.9	
5722.80	-7.7	V	3.0	45.7	1.0	-52.4	-13.0	-39.4	
7630.40	-4.6	V	3.0	44.4	1.0	-48.0	-13.0	-35.0	
3815.20	-10.4	H	3.0	45.8	1.0	-55.2	-13.0	-42.2	
5722.80	-7.8	H	3.0	45.7	1.0	-52.5	-13.0	-39.5	
7630.40	-4.5	H	3.0	44.4	1.0	-47.9	-13.0	-34.9	

Band 2
REL99

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
Company:		Samsung							
Project #:		4790406759							
Date:		2022-07-18							
Test Engineer:		25770							
Configuration:		EUT / AC Adapter / Earphone, Y-Position							
Location:		Chamber 1							
Mode:		HSDPA Band 2 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, 1852.4MHz									
3704.80	-11.5	V	3.0	45.8	1.0	-56.3	-13.0	-43.3	
5557.20	-8.2	V	3.0	45.7	1.0	-52.9	-13.0	-39.9	
7409.60	-5.2	V	3.0	44.6	1.0	-48.7	-13.0	-35.7	
3704.80	-11.1	H	3.0	45.8	1.0	-55.9	-13.0	-42.9	
5557.20	-8.0	H	3.0	45.7	1.0	-52.7	-13.0	-39.7	
7409.60	-4.2	H	3.0	44.6	1.0	-47.8	-13.0	-34.8	
Mid Ch, 1880MHz									
3760.00	-8.7	V	3.0	45.8	1.0	-53.6	-13.0	-40.6	
5640.00	-7.9	V	3.0	45.7	1.0	-52.7	-13.0	-39.7	
7520.00	-5.1	V	3.0	44.5	1.0	-48.6	-13.0	-35.6	
3760.00	-10.8	H	3.0	45.8	1.0	-55.6	-13.0	-42.6	
5640.00	-7.9	H	3.0	45.7	1.0	-52.6	-13.0	-39.6	
7520.00	-4.5	H	3.0	44.5	1.0	-48.0	-13.0	-35.0	
High Ch, 1907.6MHz									
3815.20	-11.2	V	3.0	45.8	1.0	-56.1	-13.0	-43.1	
5722.80	-7.8	V	3.0	45.7	1.0	-52.5	-13.0	-39.5	
7630.40	-4.8	V	3.0	44.4	1.0	-48.3	-13.0	-35.3	
3815.20	-10.8	H	3.0	45.8	1.0	-55.7	-13.0	-42.7	
5722.80	-7.9	H	3.0	45.7	1.0	-52.6	-13.0	-39.6	
7630.40	-4.8	H	3.0	44.4	1.0	-48.3	-13.0	-35.3	

Band 2
HSDPA

LTE Band 12

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement											
LTE Band 12 5MHz QPSK		Company:		Samsung							
		Project #:		4790406759							
		Date:		7/1/2022							
		Test Engineer:		19568							
		Configuration:		EUT / AC Adapter / Earphone, X-Position							
		Location:		Chamber 1							
		Mode:		LTE_QPSK Band 12 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, 701.5MHz									
1403.00	-17.0	V	3.0	45.8	1.0	-61.8	-13.0	-48.8			
2104.50	-13.4	V	3.0	45.4	1.0	-57.8	-13.0	-44.8			
2806.00	-11.0	V	3.0	45.5	1.0	-55.5	-13.0	-42.5			
1403.00	-17.9	H	3.0	45.8	1.0	-62.7	-13.0	-49.7			
2104.50	-14.4	H	3.0	45.4	1.0	-58.7	-13.0	-45.7			
2806.00	-11.2	H	3.0	45.5	1.0	-55.7	-13.0	-42.7			
Mid Ch, 707.5MHz											
1415.00	-16.9	V	3.0	45.8	1.0	-61.7	-13.0	-48.7			
2122.50	-12.8	V	3.0	45.4	1.0	-57.1	-13.0	-44.1			
2830.00	-11.0	V	3.0	45.5	1.0	-55.5	-13.0	-42.5			
1415.00	-18.0	H	3.0	45.8	1.0	-62.8	-13.0	-49.8			
2122.50	-14.2	H	3.0	45.4	1.0	-58.6	-13.0	-45.6			
2830.00	-11.3	H	3.0	45.5	1.0	-55.8	-13.0	-42.8			
High Ch, 713.5MHz											
1427.00	-16.9	V	3.0	45.8	1.0	-61.7	-13.0	-48.7			
2140.50	-13.3	V	3.0	45.4	1.0	-57.7	-13.0	-44.7			
2854.00	-11.0	V	3.0	45.5	1.0	-55.6	-13.0	-42.6			
1427.00	-17.6	H	3.0	45.8	1.0	-62.4	-13.0	-49.4			
2140.50	-14.1	H	3.0	45.4	1.0	-58.5	-13.0	-45.5			
2854.00	-11.1	H	3.0	45.5	1.0	-55.7	-13.0	-42.7			

LTE Band 13

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
Company:		Samsung							
Project #:		4790406759							
Date:		2022-07-18							
Test Engineer:		25770							
Configuration:		EUT / AC Adapter / Earphone, X-Position							
Location:		Chamber 2							
Mode:		LTE_QPSK Band 13 Harmonics, 5MHz Bandwidth							
Test Voltage:		AC 120 V, 60 Hz							
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 779.5MHz									
1559.00	-16.3	V	3.0	40.9	1.0	-56.3	-13.0	-43.3	
2338.50	-13.4	V	3.0	41.4	1.0	-53.8	-13.0	-40.8	
3118.00	-10.6	V	3.0	42.3	1.0	-51.9	-13.0	-38.9	
5 MHz									
1559.00	-17.0	H	3.0	40.9	1.0	-57.0	-13.0	-44.0	
2338.50	-13.8	H	3.0	41.4	1.0	-54.2	-13.0	-41.2	
3118.00	-10.6	H	3.0	42.3	1.0	-51.9	-13.0	-38.9	
QPSK									
Mid Ch, 782MHz									
1564.00	-16.3	V	3.0	40.9	1.0	-56.2	-13.0	-43.2	
2346.00	-13.3	V	3.0	41.4	1.0	-53.7	-13.0	-40.7	
3128.00	-10.4	V	3.0	42.3	1.0	-51.7	-13.0	-38.7	
1564.00	-17.0	H	3.0	40.9	1.0	-56.9	-13.0	-43.9	
2346.00	-13.8	H	3.0	41.4	1.0	-54.1	-13.0	-41.1	
3128.00	-10.5	H	3.0	42.3	1.0	-51.8	-13.0	-38.8	
High Ch, 784.5MHz									
1569.00	-16.3	V	3.0	40.9	1.0	-56.2	-13.0	-43.2	
2353.50	-13.3	V	3.0	41.4	1.0	-53.7	-13.0	-40.7	
3138.00	-10.5	V	3.0	42.3	1.0	-51.8	-13.0	-38.8	
1569.00	-17.0	H	3.0	40.9	1.0	-56.9	-13.0	-43.9	
2353.50	-13.7	H	3.0	41.4	1.0	-54.1	-13.0	-41.1	
3138.00	-10.5	H	3.0	42.3	1.0	-51.8	-13.0	-38.8	

LTE Band 25

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
Company:		Samsung							
Project #:		4790406759							
Date:		7/18/2022							
Test Engineer:		26087							
Configuration:		EUT / Earphone, Y-Position							
Location:		Chamber 1							
Mode:		LTE_QPSK Band 25 Harmonics, 1.4MHz 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, 1850.7MHz									
3701.40	-4.2	V	3.0	45.8	1.0	-49.0	-13.0	-36.0	
5552.10	-7.0	V	3.0	45.7	1.0	-51.7	-13.0	-38.7	
7402.80	-2.8	V	3.0	44.6	1.0	-46.3	-13.0	-33.3	
3701.40	-9.8	H	3.0	45.8	1.0	-54.6	-13.0	-41.6	
5552.10	-7.4	H	3.0	45.7	1.0	-52.1	-13.0	-39.1	
7402.80	-0.8	H	3.0	44.6	1.0	-44.4	-13.0	-31.4	
Mid Ch, 1882.5MHz									
3765.00	-6.7	V	3.0	45.8	1.0	-51.5	-13.0	-38.5	
5647.50	-7.0	V	3.0	45.7	1.0	-51.7	-13.0	-38.7	
7530.00	-2.7	V	3.0	44.5	1.0	-46.2	-13.0	-33.2	
3765.00	-10.5	H	3.0	45.8	1.0	-55.4	-13.0	-42.4	
5647.50	-6.1	H	3.0	45.7	1.0	-50.8	-13.0	-37.8	
7530.00	0.0	H	3.0	44.5	1.0	-43.5	-13.0	-30.5	
High Ch, 1914.3MHz									
3828.60	-7.5	V	3.0	45.9	1.0	-52.3	-13.0	-39.3	
5742.90	-6.4	V	3.0	45.7	1.0	-51.1	-13.0	-38.1	
7657.20	-3.1	V	3.0	44.4	1.0	-46.5	-13.0	-33.5	
3828.60	-10.4	H	3.0	45.9	1.0	-55.2	-13.0	-42.2	
5742.90	-5.4	H	3.0	45.7	1.0	-50.1	-13.0	-37.1	
7657.20	-1.6	H	3.0	44.4	1.0	-45.1	-13.0	-32.1	

LTE
 Band 25
 1.4MHz
 QPSK

LTE Band 26 (Part 90)

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement										
LTE Band 26 3 MHz QPSK	Company:		Samsung							
	Project #:		4790406759							
	Date:		2022-07-18							
	Test Engineer:		25770							
	Configuration:		EUT / AC Adapter / Earphone, Y-Position							
	Location:		Chamber 2							
	Mode:		LTE_QPSK Band 26 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, 815.5MHz									
1631.00	-15.9	V	3.0	40.9	1.0	-55.8	-13.0	-42.8		
2446.50	-13.1	V	3.0	41.5	1.0	-53.6	-13.0	-40.6		
3262.00	-10.4	V	3.0	42.3	1.0	-51.7	-13.0	-38.7		
1631.00	-16.6	H	3.0	40.9	1.0	-56.6	-13.0	-43.6		
2446.50	-13.4	H	3.0	41.5	1.0	-53.9	-13.0	-40.9		
3262.00	-10.5	H	3.0	42.3	1.0	-51.8	-13.0	-38.8		
Mid Ch, 822.5MHz										
1645.00	-16.0	V	3.0	40.9	1.0	-56.0	-13.0	-43.0		
2467.50	-13.0	V	3.0	41.5	1.0	-53.5	-13.0	-40.5		
3290.00	-10.2	V	3.0	42.3	1.0	-51.5	-13.0	-38.5		
1645.00	-16.6	H	3.0	40.9	1.0	-56.6	-13.0	-43.6		
2467.50	-13.4	H	3.0	41.5	1.0	-54.0	-13.0	-41.0		
3290.00	-10.3	H	3.0	42.3	1.0	-51.6	-13.0	-38.6		

LTE Band 26 (Straddle)

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement										
LTE Band 26 5 MHz QPSK	Company:		Samsung							
	Project #:		4790406759							
	Date:		2022-07-18							
	Test Engineer:		25770							
	Configuration:		EUT / AC Adapter / Earphone, Y-Position							
	Location:		Chamber 2							
	Mode:		LTE_QPSK Band 26 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
	Straddle Ch, 824Mhz									
1648.00	-15.8	V	3.0	40.9	1.0	-55.7	-13.0	-42.7		
2472.00	-13.0	V	3.0	41.5	1.0	-53.5	-13.0	-40.5		
3296.00	-10.4	V	3.0	42.3	1.0	-51.7	-13.0	-38.7		
1648.00	-16.6	H	3.0	40.9	1.0	-56.5	-13.0	-43.5		
2472.00	-13.3	H	3.0	41.5	1.0	-53.9	-13.0	-40.9		
3296.00	-10.2	H	3.0	42.3	1.0	-51.5	-13.0	-38.5		

LTE Band 26 (Part 22)

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement										
		Company:	Samsung							
		Project #:	4790406759							
		Date:	2022-07-18							
		Test Engineer:	25770							
		Configuration:	EUT / AC Adapter / Earphone, Y-Position							
		Location:	Chamber 2							
		Mode:	LTE_QPSK Band 26 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	-16.0	V	3.0	40.9	1.0	-55.9	-13.0	-42.9		
2476.50	-13.0	V	3.0	41.5	1.0	-53.6	-13.0	-40.6		
3302.00	-10.2	V	3.0	42.3	1.0	-51.5	-13.0	-38.5		
3MHz										
1651.00	-16.7	H	3.0	40.9	1.0	-56.7	-13.0	-43.7		
2476.50	-13.4	H	3.0	41.5	1.0	-53.9	-13.0	-40.9		
3302.00	-10.1	H	3.0	42.3	1.0	-51.4	-13.0	-38.4		
QPSK										
Mid Ch, 831.5MHz										
1663.00	-16.0	V	3.0	40.9	1.0	-55.9	-13.0	-42.9		
2494.50	-13.1	V	3.0	41.6	1.0	-53.7	-13.0	-40.7		
3326.00	-10.0	V	3.0	42.3	1.0	-51.3	-13.0	-38.3		
1663.00	-16.7	H	3.0	40.9	1.0	-56.6	-13.0	-43.6		
2494.50	-13.4	H	3.0	41.6	1.0	-54.0	-13.0	-41.0		
3326.00	-10.0	H	3.0	42.3	1.0	-51.3	-13.0	-38.3		
High Ch, 847.5MHz										
1695.00	-16.0	V	3.0	40.9	1.0	-55.9	-13.0	-42.9		
2542.50	-12.8	V	3.0	41.6	1.0	-53.4	-13.0	-40.4		
3390.00	-9.8	V	3.0	42.3	1.0	-51.1	-13.0	-38.1		
1695.00	-16.6	H	3.0	40.9	1.0	-56.5	-13.0	-43.5		
2542.50	-13.1	H	3.0	41.6	1.0	-53.8	-13.0	-40.8		
3390.00	-9.7	H	3.0	42.3	1.0	-51.0	-13.0	-38.0		

LTE Band 41

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement										
		Company:	Samsung							
		Project #:	4790406759							
		Date:	7/1/2022							
		Test Engineer:	19568							
		Configuration:	EUT / Earphone, X-Position							
		Location:	Chamber 1							
		Mode:	LTE_QPSK Band 41 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, 2506MHz										
5012.00	-1.7	V	3.0	45.8	1.0	-46.5	-25.0	-21.5		
7518.00	-6.7	V	3.0	44.5	1.0	-50.2	-25.0	-25.2		
10024.00	-10.1	V	3.0	42.6	1.0	-51.7	-25.0	-26.7		
5012.00	-10.6	H	3.0	45.8	1.0	-55.4	-25.0	-30.4		
7518.00	-10.8	H	3.0	44.5	1.0	-54.3	-25.0	-29.3		
10024.00	-10.9	H	3.0	42.6	1.0	-52.5	-25.0	-27.5		
Mid Ch, 2593MHz										
5186.00	-1.8	V	3.0	45.8	1.0	-46.6	-25.0	-21.6		
7779.00	-10.6	V	3.0	44.4	1.0	-54.0	-25.0	-29.0		
10372.00	-10.8	V	3.0	42.7	1.0	-52.5	-25.0	-27.5		
5186.00	-9.6	H	3.0	45.8	1.0	-54.4	-25.0	-29.4		
7779.00	-12.4	H	3.0	44.4	1.0	-55.8	-25.0	-30.8		
10372.00	-10.8	H	3.0	42.7	1.0	-52.6	-25.0	-27.6		
High Ch, 2680MHz										
5360.00	-3.0	V	3.0	45.8	1.0	-47.8	-25.0	-22.8		
8040.00	-0.7	V	3.0	44.2	1.0	-43.9	-25.0	-18.9		
10720.00	-10.2	V	3.0	42.8	1.0	-52.0	-25.0	-27.0		
5360.00	-6.3	H	3.0	45.8	1.0	-51.1	-25.0	-26.1		
8040.00	-8.0	H	3.0	44.2	1.0	-51.2	-25.0	-26.2		
10720.00	-10.3	H	3.0	42.8	1.0	-52.1	-25.0	-27.1		

LTE
 Band 41
 20MHz
 QPSK

LTE Band 66

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
Company: Samsung Project #: 4790406759 Date: 2022-07-07 Test Engineer: 26087 Configuration: EUT, X-Position Location: Chamber 2 Mode: LTE_QPSK Band 66 Harmonics, 1.4MHz Bandwidth Test Voltage: AC 120 V, 60 Hz									
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1710.7MHz									
3421.40	-9.3	V	3.0	42.3	1.0	-50.6	-13.0	-37.6	
5132.10	-9.1	V	3.0	43.0	1.0	-51.1	-13.0	-38.1	
6842.80	-6.7	V	3.0	43.0	1.0	-48.7	-13.0	-35.7	
3421.40	-9.2	H	3.0	42.3	1.0	-50.5	-13.0	-37.5	
5132.10	-8.9	H	3.0	43.0	1.0	-51.0	-13.0	-38.0	
6842.80	-6.6	H	3.0	43.0	1.0	-48.5	-13.0	-35.5	
Mid Ch, 1745MHz									
3490.00	-8.3	V	3.0	42.3	1.0	-49.6	-13.0	-36.6	
5235.00	-8.8	V	3.0	43.1	1.0	-50.9	-13.0	-37.9	
6980.00	-6.4	V	3.0	42.9	1.0	-48.3	-13.0	-35.3	
3490.00	-8.3	H	3.0	42.3	1.0	-49.7	-13.0	-36.7	
5235.00	-8.7	H	3.0	43.1	1.0	-50.8	-13.0	-37.8	
6980.00	-6.3	H	3.0	42.9	1.0	-48.2	-13.0	-35.2	
High Ch, 1779.3MHz									
3558.60	-8.0	V	3.0	42.3	1.0	-49.3	-13.0	-36.3	
5337.90	-8.4	V	3.0	43.1	1.0	-50.5	-13.0	-37.5	
7117.20	-6.3	V	3.0	42.9	1.0	-48.2	-13.0	-35.2	
3558.60	-7.8	H	3.0	42.3	1.0	-49.1	-13.0	-36.1	
5337.90	-8.4	H	3.0	43.1	1.0	-50.5	-13.0	-37.5	
7117.20	-6.2	H	3.0	42.9	1.0	-48.0	-13.0	-35.0	

LTE
 Band 66
 1.4 MHz
 QPSK

NR Band n5

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement										
		Company:	Samsung							
		Project #:	4790406759							
		Date:	7/14/2022							
		Test Engineer:	25770							
		Configuration:	EUT / AC Adapter / Earphone, Y-Position							
		Location:	Chamber 2							
		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										
NR n5	1668.00	-15.9	V	3.0	40.9	1.0	-55.8	-13.0	-42.8	
	2502.00	-13.0	V	3.0	41.6	1.0	-53.6	-13.0	-40.6	
	3336.00	-9.9	V	3.0	42.3	1.0	-51.2	-13.0	-38.2	
20 MHz	1668.00	-16.5	H	3.0	40.9	1.0	-56.4	-13.0	-43.4	
	2502.00	-13.3	H	3.0	41.6	1.0	-53.9	-13.0	-40.9	
BPSK	3336.00	-9.9	H	3.0	42.3	1.0	-51.2	-13.0	-38.2	
Mid Ch, 836.5MHz										
	1673.00	-15.9	V	3.0	40.9	1.0	-55.8	-13.0	-42.8	
	2509.50	-13.1	V	3.0	41.6	1.0	-53.6	-13.0	-40.6	
	3346.00	-9.9	V	3.0	42.3	1.0	-51.2	-13.0	-38.2	
	1673.00	-16.6	H	3.0	40.9	1.0	-56.5	-13.0	-43.5	
	2509.50	-13.4	H	3.0	41.6	1.0	-54.0	-13.0	-41.0	
	3346.00	-9.8	H	3.0	42.3	1.0	-51.1	-13.0	-38.1	
High Ch, 839MHz										
	1678.00	-15.9	V	3.0	40.9	1.0	-55.8	-13.0	-42.8	
	2517.00	-13.0	V	3.0	41.6	1.0	-53.6	-13.0	-40.6	
	3356.00	-9.9	V	3.0	42.3	1.0	-51.2	-13.0	-38.2	
	1678.00	-16.5	H	3.0	40.9	1.0	-56.4	-13.0	-43.4	
	2517.00	-13.2	H	3.0	41.6	1.0	-53.8	-13.0	-40.8	
	3356.00	-9.8	H	3.0	42.3	1.0	-51.1	-13.0	-38.1	

NR Band n66

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
Company:		Samsung							
Project #:		4790406759							
Date:		7/19/2022							
Test Engineer:		26087							
Configuration:		EUT / Earphone, Y-Position							
Location:		Chamber 1							
Mode:		5G NR_QPSK NR n66 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, 1715MHz									
3430.00	-9.0	V	3.0	45.7	1.0	-53.7	-13.0	-40.7	
5145.00	-8.7	V	3.0	45.8	1.0	-53.5	-13.0	-40.5	
6860.00	-6.0	V	3.0	44.9	1.0	-49.9	-13.0	-36.9	
3430.00	-9.0	H	3.0	45.7	1.0	-53.7	-13.0	-40.7	
5145.00	-9.0	H	3.0	45.8	1.0	-53.8	-13.0	-40.8	
6860.00	-6.1	H	3.0	44.9	1.0	-50.0	-13.0	-37.0	
Mid Ch, 1745MHz									
3490.00	-8.6	V	3.0	45.7	1.0	-53.4	-13.0	-40.4	
5235.00	-7.5	V	3.0	45.8	1.0	-52.3	-13.0	-39.3	
6980.00	-6.0	V	3.0	44.8	1.0	-49.8	-13.0	-36.8	
3490.00	-8.6	H	3.0	45.7	1.0	-53.4	-13.0	-40.4	
5235.00	-8.2	H	3.0	45.8	1.0	-53.0	-13.0	-40.0	
6980.00	-6.1	H	3.0	44.8	1.0	-49.9	-13.0	-36.9	
High Ch, 1775MHz									
3550.00	-8.3	V	3.0	45.8	1.0	-53.0	-13.0	-40.0	
5325.00	-6.6	V	3.0	45.8	1.0	-51.3	-13.0	-38.3	
7100.00	-5.8	V	3.0	44.7	1.0	-49.5	-13.0	-36.5	
3550.00	-8.3	H	3.0	45.8	1.0	-53.1	-13.0	-40.1	
5325.00	-7.6	H	3.0	45.8	1.0	-52.4	-13.0	-39.4	
7100.00	-5.6	H	3.0	44.7	1.0	-49.3	-13.0	-36.3	

END OF REPORT