

LTE Band 17

LTE Band 17 (Frequency range: 704-716 MHz) is covered by LTE Band 12 (Frequency range: 699-716 MHz) due to overlapping frequency range, same maximum tune-up limit and same channel bandwidth.

9.3. OUT OF BAND EMISSIONS

RULE PART(S)

FCC: §2.1051, §22.901, §22.917, §24.238 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.

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), Maxhold(GSM, LTE Band41);

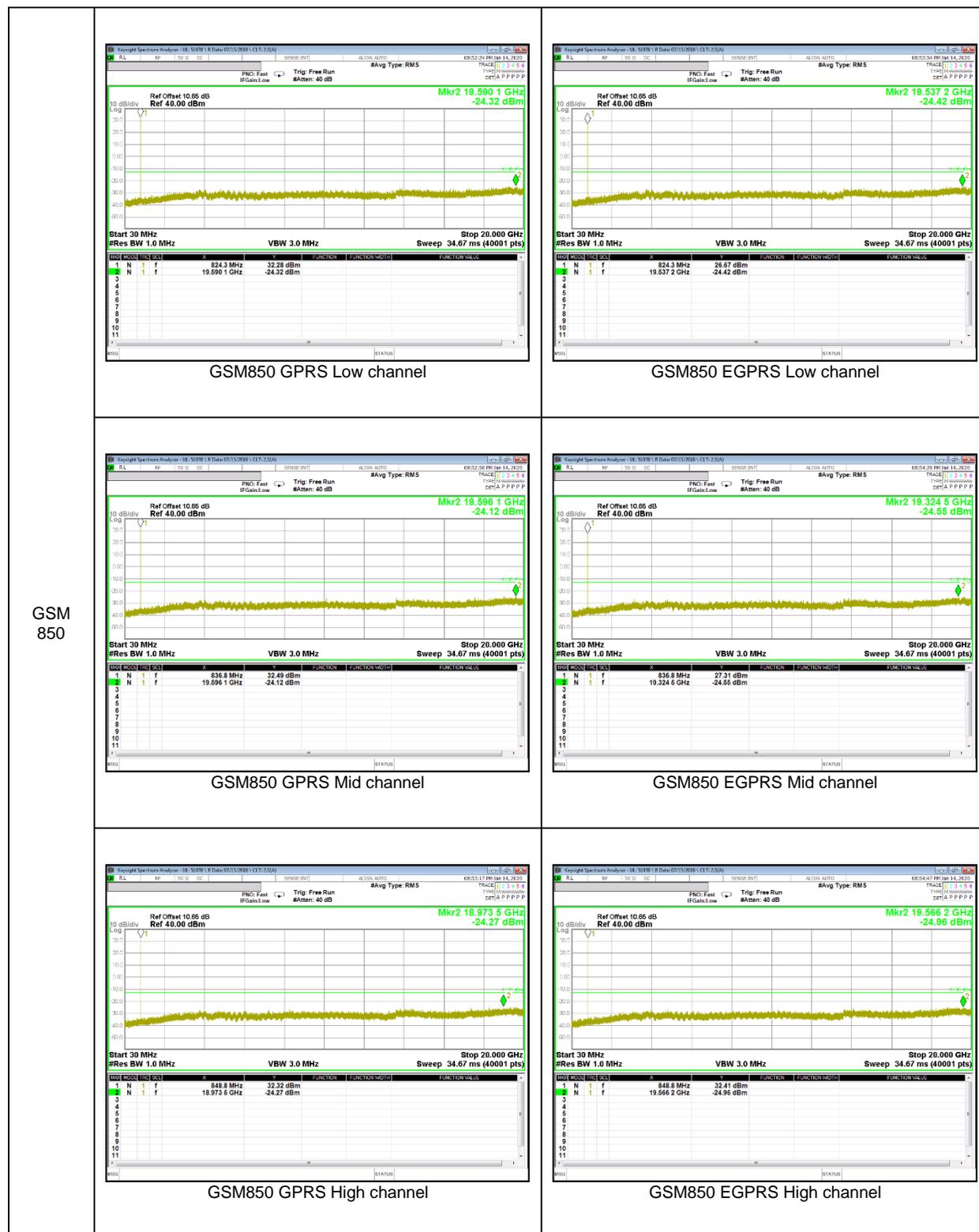
RESULTS

See the following pages.

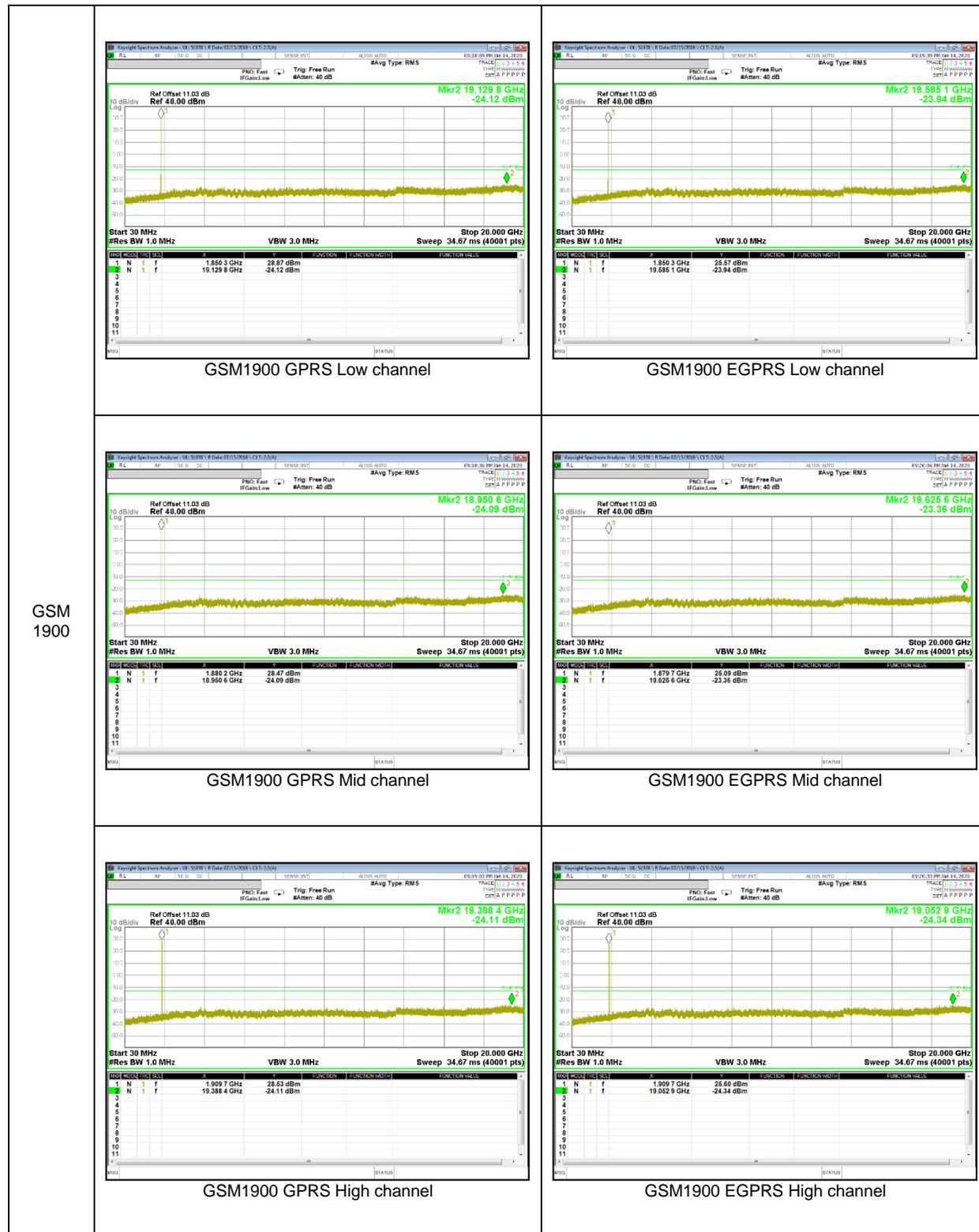
NOTE : Please refer to section 5.4 for bandwidth and RB setting about LTE bands.

9.3.1. OUT OF BAND EMISSIONS RESULT

GSM 850



GSM 1900

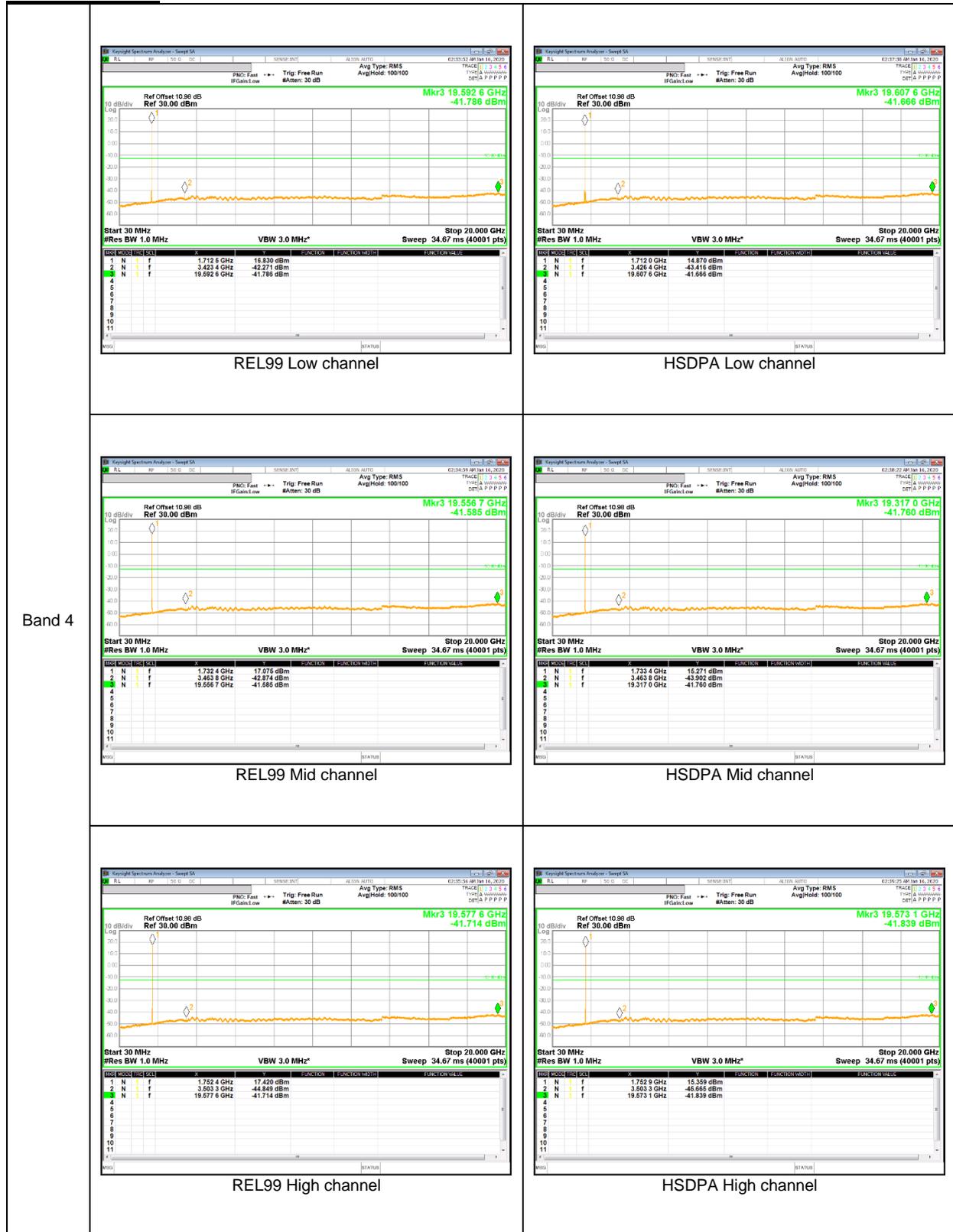


WCDMA Band 5



Band 5

WCDMA Band 4



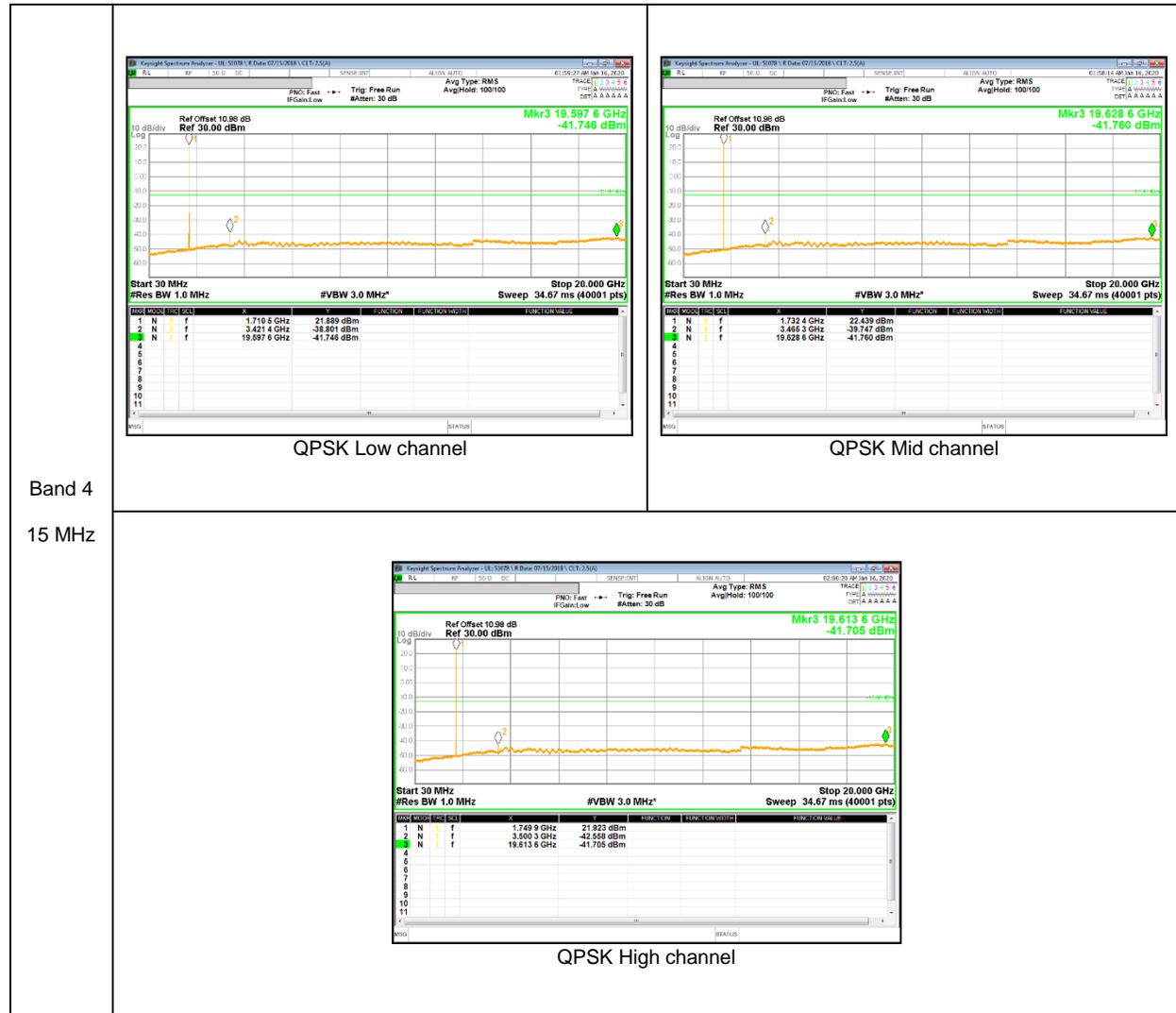
WCDMA Band 2



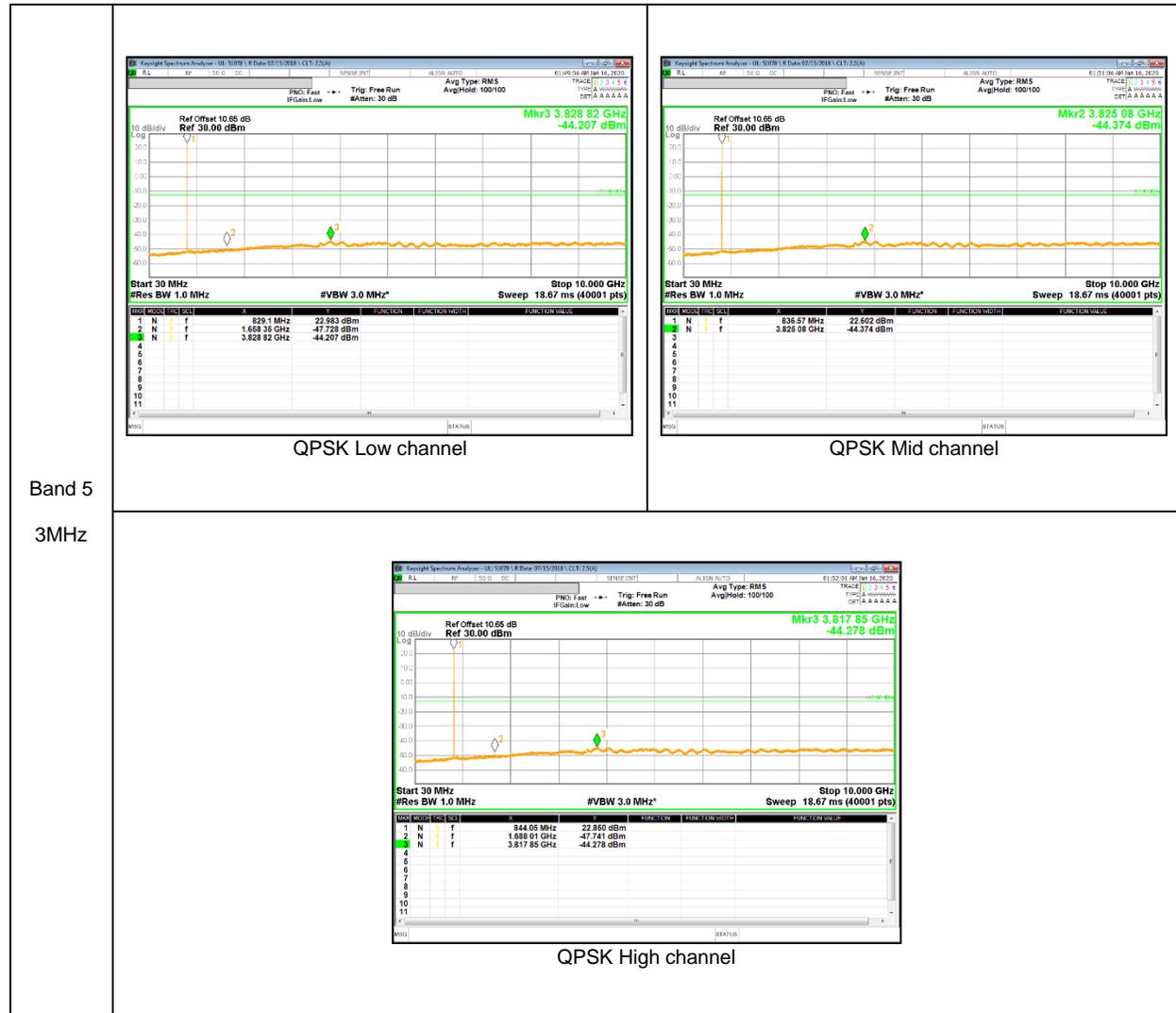
LTE Band 2



LTE Band 4



LTE Band 5



LTE Band 12



LTE Band 17

LTE Band 17 (Frequency range: 704-716 MHz) is covered by LTE Band 12 (Frequency range: 699-716 MHz) due to overlapping frequency range, same maximum tune-up limit and same channel bandwidth.

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

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	50	824.20003506	-0.002	848.80003254	-0.001	2.5	
3.80	40	824.20003422	-0.001	848.80003211	-0.001	2.5	
3.80	30	824.20003405	-0.001	848.80003196	0.000	2.5	
3.80	20	824.20003309	0.000	848.80003164	0.000	2.5	
3.80	10	824.20003403	-0.001	848.80003149	0.000	2.5	
3.80	0	824.20003404	-0.001	848.80003152	0.000	2.5	
3.80	-10	824.20003408	-0.001	848.80003151	0.000	2.5	
3.80	-20	824.20003403	-0.001	848.80003154	0.000	2.5	
3.80	-30	824.20003497	-0.002	848.80003135	0.000	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	824.20003309	0	848.80003164	0	2.5	
4.30	20	824.20003407	-0.001	848.80003146	0.000	2.5	
3.60	20	824.20003400	-0.001	848.80003145	0.000	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 (MHz)	F high @ End of OBW (MHz)		
Temperature	Voltage				
Normal (20C)	Normal	1850.0762	1909.9220		
Extreme (50C)		1850.0762	1909.9221	37.1	0.020
Extreme (40C)		1850.0762	1909.9221	36.2	0.019
Extreme (30C)		1850.0762	1909.9221	33.8	0.018
Extreme (10C)		1850.0762	1909.9221	33.1	0.018
Extreme (0C)		1850.0762	1909.9221	33.0	0.018
Extreme (-10C)		1850.0762	1909.9221	32.7	0.017
Extreme (-20C)		1850.0762	1909.9221	32.6	0.017
Extreme (-30C)		1850.0762	1909.9221	32.3	0.017
20C		15%	1850.0762	1909.9221	33.0
	-15%	1850.0762	1909.9221	32.6	0.017
	End Point	1850.0762	1909.9221	32.8	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]		
3.80	50	826.40000512	-0.010	846.59999469	0.003	2.5	
3.80	40	826.40000226	-0.007	846.59999545	0.002	2.5	
3.80	30	826.40000048	-0.004	846.59999683	0.001	2.5	
3.80	20	826.39999686	0.000	846.59999747	0.000	2.5	
3.80	10	826.39999722	0.000	846.59999779	0.000	2.5	
3.80	0	826.39999688	0.000	846.59999894	-0.002	2.5	
3.80	-10	826.39999712	0.000	846.59999996	-0.003	2.5	
3.80	-20	826.39999702	0.000	846.60000136	-0.005	2.5	
3.80	-30	826.39999733	-0.001	846.60000223	-0.006	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	826.39999686	0	846.59999747	0	2.5	
4.30	20	826.39999689	0.000	846.59999758	0.000	2.5	
3.60	20	826.39999684	0.000	846.59999754	0.000	2.5	

WCDMA Band 4 (Lowest Frequency:Rel99 / Highest Frequency: HSDPA)

Limit		1710	1755	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	1710.3325	1754.6607		
Extreme (50C)		1710.3325	1754.6607	19.3	0.011
Extreme (40C)		1710.3325	1754.6607	12.4	0.007
Extreme (30C)		1710.3325	1754.6607	3.7	0.002
Extreme (10C)		1710.3324	1754.6606	-4.1	-0.002
Extreme (0C)		1710.3324	1754.6606	-4.5	-0.003
Extreme (-10C)		1710.3324	1754.6606	-5.9	-0.003
Extreme (-20C)		1710.3324	1754.6606	-7.3	-0.004
Extreme (-30C)		1710.3324	1754.6606	-10.6	-0.006
20C		15%	1710.3325	1754.6606	-3.9
	-15%	1710.3325	1754.6606	-4.0	-0.002
	End Point	1710.3325	1754.6606	-3.9	-0.002

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	1850.3385	1909.6635		
Extreme (50C)		1850.3384	1909.6635	-3.6	-0.002
Extreme (40C)		1850.3384	1909.6635	-4.4	-0.002
Extreme (30C)		1850.3384	1909.6635	-4.2	-0.002
Extreme (10C)		1850.3384	1909.6635	-5.7	-0.003
Extreme (0C)		1850.3384	1909.6635	-3.3	-0.002
Extreme (-10C)		1850.3384	1909.6635	-0.9	0.000
Extreme (-20C)		1850.3385	1909.6635	1.4	0.001
Extreme (-30C)		1850.3385	1909.6635	3.8	0.002
20C		15%	1850.3384	1909.6635	-4.5
	-15%	1850.3384	1909.6635	-4.7	-0.003
	End Point	1850.3384	1909.6635	-4.3	-0.002

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

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	1850.6995	1909.3005		
Extreme (50C)		1850.6994	1909.3005	-7.6	-0.004
Extreme (40C)		1850.6994	1909.3005	-7.9	-0.004
Extreme (30C)		1850.6994	1909.3005	-8.4	-0.004
Extreme (10C)		1850.6994	1909.3005	-10.0	-0.005
Extreme (0C)		1850.6994	1909.3005	-10.0	-0.005
Extreme (-10C)		1850.6994	1909.3005	-9.1	-0.005
Extreme (-20C)		1850.6994	1909.3005	-8.6	-0.005
Extreme (-30C)		1850.6994	1909.3005	-7.6	-0.004
20C		15%	1850.6994	1909.3005	-10.2
	-15%	1850.6994	1909.3005	-10.3	-0.005
	End Point	1850.6994	1909.3005	-10.1	-0.005

LTE Band 4 (Lowest Frequency: 16QAM / Highest Frequency: QPSK)

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	1852.3995	1907.6005		
Extreme (50C)		1852.3995	1907.6006	4.9	0.003
Extreme (40C)		1852.3995	1907.6006	1.7	0.001
Extreme (30C)		1852.3995	1907.6005	-2.4	-0.001
Extreme (10C)		1852.3995	1907.6005	-6.4	-0.004
Extreme (0C)		1852.3995	1907.6005	-4.8	-0.003
Extreme (-10C)		1852.3995	1907.6005	-2.2	-0.001
Extreme (-20C)		1852.3995	1907.6006	2.8	0.002
Extreme (-30C)		1852.3995	1907.6006	5.1	0.003
20C		15%	1852.3995	1907.6005	-6.7
	-15%	1852.3995	1907.6005	-6.8	-0.004
	End Point	1852.3995	1907.6005	-6.1	-0.004

LTE Band 5 (Lowest Frequency: 16QAM / Highest Frequency: QPSK)

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]	
3.80	50	824.69999524	0.000	848.29999677	0.000	2.5
3.80	40	824.69999512	0.000	848.29999674	0.000	2.5
3.80	30	824.69999521	0.000	848.29999687	0.000	2.5
3.80	20	824.69999494	0.000	848.29999665	0.000	2.5
3.80	10	824.69999489	0.000	848.29999614	0.001	2.5
3.80	0	824.69999616	-0.001	848.29999656	0.000	2.5
3.80	-10	824.69999578	-0.001	848.29999604	0.001	2.5
3.80	-20	824.69999588	-0.001	848.29999600	0.001	2.5
3.80	-30	824.69999640	-0.002	848.29999587	0.001	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]	
3.80	20	824.69999494	0	848.29999665	0	2.5
4.30	20	824.69999489	0.000	848.29999678	0.000	2.5
3.60	20	824.69999492	0.000	848.29999652	0.000	2.5

LTE Band 12 (Lowest Frequency:16QAM / 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	699.1551	715.8423		
Extreme (50C)		699.1550	715.8423	-3.4	-0.005
Extreme (40C)		699.1550	715.8423	-3.4	-0.005
Extreme (30C)		699.1550	715.8423	-3.6	-0.005
Extreme (10C)		699.1550	715.8423	-3.8	-0.005
Extreme (0C)		699.1550	715.8423	-3.7	-0.005
Extreme (-10C)		699.1550	715.8423	-3.7	-0.005
Extreme (-20C)		699.1550	715.8423	-3.8	-0.005
Extreme (-30C)		699.1550	715.8423	-3.9	-0.005
20C	15%	699.1550	715.8423	-3.8	-0.005
	-15%	699.1550	715.8423	-3.9	-0.006
	End Point	699.1550	715.8423	-3.8	-0.005

LTE Band 17

LTE Band 17 (Frequency range: 704-716 MHz) is covered by LTE Band 12 (Frequency range: 699-716 MHz) due to overlapping frequency range, same maximum tune-up limit and same channel bandwidth.

10. RADIATED TEST RESULTS

10.1. 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(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.

27.50(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.(Band 4)

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; e) Detector = rms; f) Ensure that the number of measurement points \geq span/RBW; g) Trace mode = max hold(GSM, WCDMA), average(LTE);

TEST RESULTS

10.1.1. ERP/EIRP Results

GSM

Band	Mode	Channel	f [MHz]	ERP / EIRP	
				[dBm]	[mW]
GSM850	GPRS	512	824.2	26.59	456.04
		661	836.6	29.27	845.28
		810	848.8	29.82	959.40
	EGPRS	512	824.2	18.82	76.21
		661	836.6	21.65	146.22
		810	848.8	22.47	176.60
GSM1900	GPRS	512	1850.2	28.29	674.53
		661	1880	30.02	1004.62
		810	1909.8	29.54	899.50
	EGPRS	512	1850.2	23.81	240.44
		661	1880	23.39	218.27
		810	1909.8	25.35	342.77

WCDMA

Band	Mode	Channel	f [MHz]	ERP / EIRP	
				[dBm]	[mW]
Band 5	REL99	4132	826.4	18.27	67.14
		4183	836.6	19.39	86.90
		4233	846.6	20.27	106.41
	HSDPA	4132	826.4	16.63	46.03
		4183	836.6	17.63	57.94
		4233	846.6	18.41	69.34
Band 4	REL99	1312	1712.4	19.70	93.33
		1413	1732.6	20.00	100.00
		1513	1752.6	20.01	100.23
	HSDPA	1312	1712.4	18.21	66.22
		1413	1732.6	18.34	68.23
		1513	1752.6	18.55	71.61
Band 2	REL99	9262	1852.4	19.95	98.86
		9400	1880.0	20.66	116.41
		9538	1907.6	20.73	118.30
	HSDPA	9262	1852.4	18.71	74.30
		9400	1880.0	19.86	96.83
		9538	1907.6	19.45	88.10

LTE Band 2

Band	BW [MHz]	Mode	RB Size/	f [MHz]	ERP / EIRP	
			RB Offset		[dBm]	[mW]
Band 2	20	QPSK	1 / 49	1860.0	20.64	115.88
			1 / 49	1880.0	22.23	167.11
			1 / 99	1900.0	22.50	177.83
		16QAM	1 / 49	1860.0	19.90	97.72
			1 / 0	1880.0	20.61	115.08
			1 / 0	1900.0	22.61	182.39
	15	QPSK	1 / 37	1857.5	20.67	116.68
			1 / 0	1880.0	22.21	166.34
			1 / 37	1902.5	24.19	262.42
		16QAM	1 / 74	1857.5	20.18	104.23
			1 / 37	1880.0	20.43	110.41
			1 / 37	1902.5	22.68	185.35
	10	QPSK	1 / 49	1855.0	20.63	115.61
			1 / 25	1880.0	22.14	163.68
			1 / 25	1905.0	24.18	261.82
		16QAM	1 / 49	1855.0	19.30	85.11
			1 / 25	1880.0	21.71	148.25
			1 / 0	1905.0	22.78	189.67
	5	QPSK	1 / 12	1852.5	19.95	98.86
			1 / 12	1880.0	21.64	145.88
			1 / 12	1907.5	23.16	207.01
		16QAM	1 / 24	1852.5	19.70	93.33
			1 / 0	1880.0	20.14	103.28
			1 / 12	1907.5	22.39	173.38
	3	QPSK	1 / 14	1851.5	21.00	125.89
			1 / 8	1880.0	21.12	129.42
			1 / 14	1908.5	21.98	157.76
		16QAM	1 / 0	1851.5	19.55	90.16
			1 / 8	1880.0	19.61	91.41
			1 / 8	1908.5	21.13	129.72
1.4	QPSK	1 / 3	1850.7	20.68	116.95	
		1 / 3	1880.0	21.51	141.58	
		1 / 3	1909.3	23.22	209.89	
	16QAM	1 / 3	1850.7	20.02	100.46	
		1 / 3	1880.0	20.33	107.89	
		1 / 0	1909.3	21.43	139.00	

LTE Band 4

Band	BW [MHz]	Mode	RB Size/	f [MHz]	ERP / EIRP	
			RB Offset		[dBm]	[mW]
Band 4	20	QPSK	1 / 49	1720.0	21.50	141.25
			1 / 49	1732.5	20.39	109.40
			1 / 0	1745.0	21.19	131.52
		16QAM	1 / 0	1720.0	19.78	95.06
			1 / 49	1732.5	18.92	77.98
			1 / 99	1745.0	19.92	98.17
	15	QPSK	1 / 0	1717.5	20.71	117.76
			1 / 37	1732.5	20.71	117.76
			1 / 0	1747.5	21.06	127.64
		16QAM	1 / 37	1717.5	19.75	94.41
			1 / 37	1732.5	19.59	90.99
			1 / 74	1747.5	19.26	84.33
	10	QPSK	1 / 0	1715.0	20.43	110.41
			1 / 25	1732.5	20.55	113.50
			1 / 25	1750.0	21.55	142.89
		16QAM	1 / 25	1715.0	20.29	106.91
			1 / 25	1732.5	19.15	82.22
			1 / 49	1750.0	19.38	86.70
	5	QPSK	1 / 24	1712.5	20.48	111.69
			1 / 24	1732.5	20.32	107.65
			1 / 12	1752.5	21.42	138.68
		16QAM	1 / 0	1712.5	19.21	83.37
			1 / 12	1732.5	19.37	86.50
			1 / 12	1752.5	19.19	82.99
	3	QPSK	1 / 14	1711.5	20.42	110.15
			1 / 8	1732.5	20.17	103.99
			1 / 8	1753.5	21.27	133.97
		16QAM	1 / 8	1711.5	19.50	89.13
			1 / 8	1732.5	18.99	79.25
			1 / 8	1753.5	19.48	88.72
1.4	QPSK	1 / 3	1710.7	20.32	107.65	
		1 / 3	1732.5	20.56	113.76	
		1 / 3	1754.3	21.19	131.52	
	16QAM	1 / 3	1710.7	19.33	85.70	
		1 / 5	1732.5	19.65	92.26	
		1 / 3	1754.3	20.13	103.04	

LTE Band 5

Band	BW [MHz]	Mode	RB Size/	f [MHz]	ERP / EIRP	
			RB Offset		[dBm]	[mW]
Band 5	10	QPSK	1 / 25	829.0	18.36	68.55
			1 / 25	836.5	19.73	93.97
			1 / 25	844.0	20.34	108.14
		16QAM	1 / 25	829.0	17.17	52.12
			1 / 25	836.5	18.83	76.38
			1 / 0	844.0	18.73	74.64
	5	QPSK	1 / 24	826.5	17.92	61.94
			1 / 12	836.5	19.35	86.10
			1 / 12	846.5	19.77	94.84
		16QAM	1 / 12	826.5	16.22	41.88
			1 / 12	836.5	18.02	63.39
			1 / 0	846.5	18.98	79.07
	3	QPSK	1 / 8	825.5	17.53	56.62
			1 / 8	836.5	19.61	91.41
			1 / 14	847.5	19.59	90.99
		16QAM	1 / 0	825.5	16.39	43.55
			1 / 14	836.5	18.65	73.28
			1 / 8	847.5	18.90	77.62
	1.4	QPSK	1 / 3	824.7	17.78	59.98
			1 / 3	836.5	19.60	91.20
			1 / 5	848.3	20.17	103.99
		16QAM	1 / 3	824.7	16.87	48.64
			1 / 5	836.5	19.06	80.54
			1 / 0	848.3	18.29	67.45

LTE Band 12

Band	BW [MHz]	Mode	RB Size/ RB Offset	f [MHz]	ERP / EIRP	
					[dBm]	[mW]
Band 12	10	QPSK	1 / 25	704.0	16.71	46.88
			1 / 25	707.5	16.86	48.53
			1 / 0	711.0	17.17	52.12
		16QAM	1 / 25	704.0	15.40	34.67
			1 / 25	707.5	16.06	40.36
			1 / 25	711.0	15.90	38.90
	5	QPSK	1 / 24	701.5	16.55	45.19
			1 / 12	707.5	16.90	48.98
			1 / 12	713.5	17.01	50.23
		16QAM	1 / 24	701.5	15.67	36.90
			1 / 12	707.5	15.33	34.12
			1 / 12	713.5	15.72	37.33
	3	QPSK	1 / 8	700.5	16.79	47.75
			1 / 0	707.5	16.84	48.31
			1 / 8	714.5	17.22	52.72
		16QAM	1 / 8	700.5	15.87	38.64
			1 / 8	707.5	15.80	38.02
			1 / 0	714.5	15.91	38.99
	1.4	QPSK	1 / 3	699.7	16.73	47.10
			1 / 3	707.5	17.03	50.47
			1 / 3	715.3	17.25	53.09
		16QAM	1 / 3	699.7	15.82	38.19
			1 / 3	707.5	16.10	40.74
			1 / 3	715.3	16.30	42.66

LTE Band 17

LTE Band 17 (Frequency range: 704-716 MHz) is covered by LTE Band 12 (Frequency range: 699-716 MHz) due to overlapping frequency range, same maximum tune-up limit and same channel bandwidth.

10.1.2. ERP/EIRP DATA

GSM850

GSM850 GPRS		UL Verification Services, Inc. High Frequency Substitution Measurement							
		f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)
		Company: Samsung Project #: 4789294522 Date: 2020-01-15 Test Engineer: 20890 Configuration: EUT, Z-Position Location: Chamber 1 Mode: GPRS 850 MHz Fundamentals Test Equipment: Receiving: VULB9163-750, and Chamber 1 SMA Cables Substitution: Dipole 3121_DB4, 8.5m SMA-type Cable							
		Low Ch							
		824.20	30.56	V	3.0	-1.0	26.59	38.5	-11.9
		824.20	19.63	H	3.0	-1.0	15.66	38.5	-22.8
		Mid Ch							
		836.60	33.21	V	3.0	-0.9	29.27	38.5	-9.2
		836.60	21.49	H	3.0	-0.9	17.55	38.5	-20.9
		High Ch							
		848.80	33.73	V	3.1	-0.9	29.82	38.5	-8.7
		848.80	22.49	H	3.1	-0.9	18.58	38.5	-19.9

GSM850 EGPRS		UL Verification Services, Inc. High Frequency Substitution Measurement							
		f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)
		Company: Samsung Project #: 4789294522 Date: 2020-01-15 Test Engineer: 20890 Configuration: EUT, Z-Position Location: Chamber 1 Mode: EGPRS 850 MHz Fundamentals Test Equipment: Receiving: VULB9163-750, and Chamber 1 SMA Cables Substitution: Dipole 3121_DB4, 8.5m SMA-type Cable							
		Low Ch							
		824.20	22.79	V	3.0	-1.0	18.82	38.5	-19.7
		824.20	12.29	H	3.0	-1.0	8.32	38.5	-30.2
		Mid Ch							
		836.60	25.59	V	3.0	-0.9	21.65	38.5	-16.8
		836.60	13.73	H	3.0	-0.9	9.79	38.5	-28.7
		High Ch							
		848.80	26.38	V	3.1	-0.9	22.47	38.5	-16.0
		848.80	15.35	H	3.1	-0.9	11.44	38.5	-27.1

GSM1900

GSM1900 GPRS	UL Verification Services, Inc. High Frequency Substitution Measurement																																																																																									
	<p> Company: Samsung Project #: 4789294522 Date: 2020-01-15 Test Engineer: 20896 Configuration: EUT / X-Position Location: Chamber 1 Mode: GPRS 1900 MHz Fundamentals </p> <p> Test Equipment: Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00167211], 8.5m SMA-type Cable </p> <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBi)</th> <th>EIRP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td colspan="9">Low Ch</td> </tr> <tr> <td>1850.20</td> <td>20.63</td> <td>V</td> <td>4.5</td> <td>9.5</td> <td>25.64</td> <td>33.0</td> <td>-7.4</td> <td></td> </tr> <tr> <td>1850.20</td> <td>23.28</td> <td>H</td> <td>4.5</td> <td>9.5</td> <td>28.29</td> <td>33.0</td> <td>-4.7</td> <td></td> </tr> <tr> <td colspan="9">Mid Ch</td> </tr> <tr> <td>1880.00</td> <td>22.13</td> <td>V</td> <td>4.5</td> <td>9.3</td> <td>26.90</td> <td>33.0</td> <td>-6.1</td> <td></td> </tr> <tr> <td>1880.00</td> <td>25.25</td> <td>H</td> <td>4.5</td> <td>9.3</td> <td>30.02</td> <td>33.0</td> <td>-3.0</td> <td></td> </tr> <tr> <td colspan="9">High Ch</td> </tr> <tr> <td>1909.80</td> <td>21.33</td> <td>V</td> <td>4.6</td> <td>9.1</td> <td>25.82</td> <td>33.0</td> <td>-7.2</td> <td></td> </tr> <tr> <td>1909.80</td> <td>25.06</td> <td>H</td> <td>4.6</td> <td>9.1</td> <td>29.54</td> <td>33.0</td> <td>-3.5</td> <td></td> </tr> </tbody> </table>	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes	Low Ch									1850.20	20.63	V	4.5	9.5	25.64	33.0	-7.4		1850.20	23.28	H	4.5	9.5	28.29	33.0	-4.7		Mid Ch									1880.00	22.13	V	4.5	9.3	26.90	33.0	-6.1		1880.00	25.25	H	4.5	9.3	30.02	33.0	-3.0		High Ch									1909.80	21.33	V	4.6	9.1	25.82	33.0	-7.2		1909.80	25.06	H	4.6	9.1	29.54	33.0	-3.5
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WCDMA Band 5

		UL Verification Services, Inc. High Frequency Substitution Measurement								
		Company: Samsung Project #: 4789294522 Date: 2020-01-16 Test Engineer: 20896 Configuration: EUT, Z-Position Location: Chamber 1 Mode: Rel99 Band 5 Fundamentals <u>Test Equipment:</u> Receiving: VULB9163-750, and Chamber 1 SMA Cables Substitution: Dipole 3121_DB4, 8.5m SMA-type Cable								
WCDMA	Band 5 REL99	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
				Low Ch						
		826.40	22.23	V	3.0	-0.9	18.27	38.5	-20.2	
		826.40	9.43	H	3.0	-0.9	5.47	38.5	-33.0	
		Mid Ch								
		836.60	23.33	V	3.0	-0.9	19.39	38.5	-19.1	
		836.60	9.89	H	3.0	-0.9	5.95	38.5	-32.5	
		High Ch								
		846.60	24.19	V	3.1	-0.9	20.27	38.5	-18.2	
		846.60	10.71	H	3.1	-0.9	6.80	38.5	-31.7	

		UL Verification Services, Inc. High Frequency Substitution Measurement								
		Company: Samsung Project #: 4789294522 Date: 2020-01-16 Test Engineer: 20896 Configuration: EUT, Z-Position Location: Chamber 1 Mode: HSDPA Band 5 Fundamentals <u>Test Equipment:</u> Receiving: VULB9163-750, and Chamber 1 SMA Cables Substitution: Dipole 3121_DB4, 8.5m SMA-type Cable								
WCDMA	Band 5 HSDPA	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
				Low Ch						
		826.40	20.59	V	3.0	-0.9	16.63	38.5	-21.9	
		826.40	7.97	H	3.0	-0.9	4.01	38.5	-34.5	
		Mid Ch								
		836.60	21.57	V	3.0	-0.9	17.63	38.5	-20.9	
		836.60	8.65	H	3.0	-0.9	4.71	38.5	-33.8	
		High Ch								
		846.60	22.33	V	3.1	-0.9	18.41	38.5	-20.1	
		846.60	9.45	H	3.1	-0.9	5.54	38.5	-33.0	

WCDMA Band 4

WCDMA Band 4 REL99	<p style="text-align: center;">UL Verification Services, Inc. High Frequency Substitution Measurement</p> <p>Company: Samsung Project #: 4789294522 Date: 2020-01-16 Test Engineer: 20896 Configuration: EUT, X-Position Location: Chamber 1 Mode: Rel99 Band 4 Fundamentals</p> <p>Test Equipment: Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00167211], 8.5m SMA-type Cable</p> <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBi)</th> <th>EIRP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td colspan="9">Low Ch</td> </tr> <tr> <td>1712.40</td> <td>10.71</td> <td>V</td> <td>4.3</td> <td>9.4</td> <td>15.79</td> <td>30.0</td> <td>-14.2</td> <td></td> </tr> <tr> <td>1712.40</td> <td>14.62</td> <td>H</td> <td>4.3</td> <td>9.4</td> <td>19.70</td> <td>30.0</td> <td>-10.3</td> <td></td> </tr> <tr> <td colspan="9">Mid Ch</td> </tr> <tr> <td>1732.60</td> <td>11.20</td> <td>V</td> <td>4.3</td> <td>9.5</td> <td>16.33</td> <td>30.0</td> <td>-13.7</td> <td></td> </tr> <tr> <td>1732.60</td> <td>14.87</td> <td>H</td> <td>4.3</td> <td>9.5</td> <td>20.00</td> <td>30.0</td> <td>-10.0</td> <td></td> </tr> <tr> <td colspan="9">High Ch</td> </tr> <tr> <td>1752.60</td> <td>11.80</td> <td>V</td> <td>4.4</td> <td>9.5</td> <td>16.98</td> <td>30.0</td> <td>-13.0</td> <td></td> </tr> <tr> <td>1752.60</td> <td>14.83</td> <td>H</td> <td>4.4</td> <td>9.5</td> <td>20.01</td> <td>30.0</td> <td>-10.0</td> <td></td> </tr> </tbody> </table>								f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes	Low Ch									1712.40	10.71	V	4.3	9.4	15.79	30.0	-14.2		1712.40	14.62	H	4.3	9.4	19.70	30.0	-10.3		Mid Ch									1732.60	11.20	V	4.3	9.5	16.33	30.0	-13.7		1732.60	14.87	H	4.3	9.5	20.00	30.0	-10.0		High Ch									1752.60	11.80	V	4.4	9.5	16.98	30.0	-13.0		1752.60	14.83	H	4.4	9.5	20.01	30.0	-10.0	
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1752.60	11.80	V	4.4	9.5	16.98	30.0	-13.0																																																																																											
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WCDMA Band 4 HSDPA	<p style="text-align: center;">UL Verification Services, Inc. High Frequency Substitution Measurement</p> <p>Company: Samsung Project #: 4789294522 Date: 2020-01-16 Test Engineer: 20896 Configuration: EUT, X-Position Location: Chamber 1 Mode: HSDPA Band 4 Fundamentals</p> <p>Test Equipment: Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00167211], 8.5m SMA-type Cable</p> <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBi)</th> <th>EIRP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td colspan="9">Low Ch</td> </tr> <tr> <td>1712.40</td> <td>9.14</td> <td>V</td> <td>4.3</td> <td>9.4</td> <td>14.22</td> <td>30.0</td> <td>-15.8</td> <td></td> </tr> <tr> <td>1712.40</td> <td>13.13</td> <td>H</td> <td>4.3</td> <td>9.4</td> <td>18.21</td> <td>30.0</td> <td>-11.8</td> <td></td> </tr> <tr> <td colspan="9">Mid Ch</td> </tr> <tr> <td>1732.60</td> <td>9.44</td> <td>V</td> <td>4.3</td> <td>9.5</td> <td>14.57</td> <td>30.0</td> <td>-15.4</td> <td></td> </tr> <tr> <td>1732.60</td> <td>13.21</td> <td>H</td> <td>4.3</td> <td>9.5</td> <td>18.34</td> <td>30.0</td> <td>-11.7</td> <td></td> </tr> <tr> <td colspan="9">High Ch</td> </tr> <tr> <td>1752.60</td> <td>10.03</td> <td>V</td> <td>4.4</td> <td>9.5</td> <td>15.21</td> <td>30.0</td> <td>-14.8</td> <td></td> </tr> <tr> <td>1752.60</td> <td>13.37</td> <td>H</td> <td>4.4</td> <td>9.5</td> <td>18.55</td> <td>30.0</td> <td>-11.4</td> <td></td> </tr> </tbody> </table>								f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes	Low Ch									1712.40	9.14	V	4.3	9.4	14.22	30.0	-15.8		1712.40	13.13	H	4.3	9.4	18.21	30.0	-11.8		Mid Ch									1732.60	9.44	V	4.3	9.5	14.57	30.0	-15.4		1732.60	13.21	H	4.3	9.5	18.34	30.0	-11.7		High Ch									1752.60	10.03	V	4.4	9.5	15.21	30.0	-14.8		1752.60	13.37	H	4.4	9.5	18.55	30.0	-11.4	
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes																																																																																										
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1752.60	10.03	V	4.4	9.5	15.21	30.0	-14.8																																																																																											
1752.60	13.37	H	4.4	9.5	18.55	30.0	-11.4																																																																																											

WCDMA Band 2

WCDMA Band 2 REL99	<p>UL Verification Services, Inc. High Frequency Substitution Measurement</p> <p>Company: Samsung Project #: 4789294522 Date: 2020-01-15 Test Engineer: 20882 Configuration: EUT, X-Position Location: Chamber 2 Mode: Rel99 Band 2 Fundamentals</p> <p><u>Test Equipment:</u> Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 8.5m SMA-type Cable</p> <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBi)</th> <th>EIRP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td colspan="9">Low Ch</td> </tr> <tr> <td>1852.40</td> <td>12.52</td> <td>V</td> <td>4.5</td> <td>9.4</td> <td>17.42</td> <td>33.0</td> <td>-15.6</td> <td></td> </tr> <tr> <td>1852.40</td> <td>15.05</td> <td>H</td> <td>4.5</td> <td>9.4</td> <td>19.95</td> <td>33.0</td> <td>-13.1</td> <td></td> </tr> <tr> <td colspan="9">Mid Ch</td> </tr> <tr> <td>1880.00</td> <td>12.54</td> <td>V</td> <td>4.5</td> <td>9.2</td> <td>17.20</td> <td>33.0</td> <td>-15.8</td> <td></td> </tr> <tr> <td>1880.00</td> <td>16.00</td> <td>H</td> <td>4.5</td> <td>9.2</td> <td>20.66</td> <td>33.0</td> <td>-12.3</td> <td></td> </tr> <tr> <td colspan="9">High Ch</td> </tr> <tr> <td>1907.60</td> <td>14.15</td> <td>V</td> <td>4.6</td> <td>9.0</td> <td>18.54</td> <td>33.0</td> <td>-14.5</td> <td></td> </tr> <tr> <td>1907.60</td> <td>16.34</td> <td>H</td> <td>4.6</td> <td>9.0</td> <td>20.73</td> <td>33.0</td> <td>-12.3</td> <td></td> </tr> </tbody> </table>	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes	Low Ch									1852.40	12.52	V	4.5	9.4	17.42	33.0	-15.6		1852.40	15.05	H	4.5	9.4	19.95	33.0	-13.1		Mid Ch									1880.00	12.54	V	4.5	9.2	17.20	33.0	-15.8		1880.00	16.00	H	4.5	9.2	20.66	33.0	-12.3		High Ch									1907.60	14.15	V	4.6	9.0	18.54	33.0	-14.5		1907.60	16.34	H	4.6	9.0	20.73	33.0	-12.3	
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes																																																																																		
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1852.40	12.52	V	4.5	9.4	17.42	33.0	-15.6																																																																																				
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WCDMA Band 2 HSDPA	<p>UL Verification Services, Inc. High Frequency Substitution Measurement</p> <p>Company: Samsung Project #: 4789294522 Date: 2020-01-15 Test Engineer: 20882 Configuration: EUT, X-Position Location: Chamber 2 Mode: HSDPA Band 2 Fundamentals</p> <p><u>Test Equipment:</u> Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 8.5m SMA-type Cable</p> <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBi)</th> <th>EIRP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td colspan="9">Low Ch</td> </tr> <tr> <td>1852.40</td> <td>11.87</td> <td>V</td> <td>4.5</td> <td>9.4</td> <td>16.77</td> <td>33.0</td> <td>-16.2</td> <td></td> </tr> <tr> <td>1852.40</td> <td>13.81</td> <td>H</td> <td>4.5</td> <td>9.4</td> <td>18.71</td> <td>33.0</td> <td>-14.3</td> <td></td> </tr> <tr> <td colspan="9">Mid Ch</td> </tr> <tr> <td>1880.00</td> <td>12.57</td> <td>V</td> <td>4.5</td> <td>9.2</td> <td>17.23</td> <td>33.0</td> <td>-15.8</td> <td></td> </tr> <tr> <td>1880.00</td> <td>15.20</td> <td>H</td> <td>4.5</td> <td>9.2</td> <td>19.86</td> <td>33.0</td> <td>-13.1</td> <td></td> </tr> <tr> <td colspan="9">High Ch</td> </tr> <tr> <td>1907.60</td> <td>12.92</td> <td>V</td> <td>4.6</td> <td>9.0</td> <td>17.31</td> <td>33.0</td> <td>-15.7</td> <td></td> </tr> <tr> <td>1907.60</td> <td>15.06</td> <td>H</td> <td>4.6</td> <td>9.0</td> <td>19.45</td> <td>33.0</td> <td>-13.6</td> <td></td> </tr> </tbody> </table>	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes	Low Ch									1852.40	11.87	V	4.5	9.4	16.77	33.0	-16.2		1852.40	13.81	H	4.5	9.4	18.71	33.0	-14.3		Mid Ch									1880.00	12.57	V	4.5	9.2	17.23	33.0	-15.8		1880.00	15.20	H	4.5	9.2	19.86	33.0	-13.1		High Ch									1907.60	12.92	V	4.6	9.0	17.31	33.0	-15.7		1907.60	15.06	H	4.6	9.0	19.45	33.0	-13.6	
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes																																																																																			
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1852.40	11.87	V	4.5	9.4	16.77	33.0	-16.2																																																																																				
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1907.60	12.92	V	4.6	9.0	17.31	33.0	-15.7																																																																																				
1907.60	15.06	H	4.6	9.0	19.45	33.0	-13.6																																																																																				

LTE Band 2

LTE Band 2 20MHz QPSK	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4789294522 Date: 2020-01-09 Test Engineer: 20890 Configuration: EUT / X-Position Location: Chamber 1 Mode: LTE_QPSK Band 2 Fundamentals, 20MHz Bandwidth								
	Test Equipment: Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00167211], 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	1860.00	8.21	V	4.5	9.4	13.14	33.0	-19.9	
	1860.00	15.72	H	4.5	9.4	20.64	33.0	-12.4	
	Mid Ch								
	1880.00	14.56	V	4.5	9.3	19.33	33.0	-13.7	
	1880.00	17.46	H	4.5	9.3	22.23	33.0	-10.8	
High Ch									
1900.00	14.44	V	4.6	9.2	19.06	33.0	-13.9		
1900.00	17.88	H	4.6	9.2	22.50	33.0	-10.5		
LTE Band 2 20MHz 16QAM	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4789294522 Date: 2020-01-09 Test Engineer: 20890 Configuration: EUT / X-Position Location: Chamber 1 Mode: LTE_16QAM Band 2 Fundamentals, 20MHz Bandwidth								
	Test Equipment: Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00167211], 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	1860.00	7.33	V	4.5	9.4	12.26	33.0	-20.7	
	1860.00	14.98	H	4.5	9.4	19.90	33.0	-13.1	
	Mid Ch								
	1880.00	12.62	V	4.5	9.3	17.39	33.0	-15.6	
	1880.00	15.84	H	4.5	9.3	20.61	33.0	-12.4	
High Ch									
1900.00	13.76	V	4.6	9.2	18.38	33.0	-14.6		
1900.00	17.99	H	4.6	9.2	22.61	33.0	-10.4		

LTE Band 2 15MHz QPSK	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4789294522 Date: 2020-01-09 Test Engineer: 20890 Configuration: EUT / X-Position Location: Chamber 1 Mode: LTE_QPSK Band 2 Fundamentals, 15MHz Bandwidth								
	Test Equipment: Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00167211], 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	1857.50	13.67	V	4.5	9.5	18.62	33.0	-14.4	
	1857.50	15.72	H	4.5	9.5	20.67	33.0	-12.3	
	Mid Ch								
	1880.00	14.98	V	4.5	9.3	19.75	33.0	-13.2	
	1880.00	17.44	H	4.5	9.3	22.21	33.0	-10.8	
High Ch									
1902.50	15.43	V	4.6	9.1	20.01	33.0	-13.0		
1902.50	19.60	H	4.6	9.1	24.19	33.0	-8.8		
LTE Band 2 15MHz 16QAM	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4789294522 Date: 2020-01-09 Test Engineer: 20890 Configuration: EUT / X-Position Location: Chamber 1 Mode: LTE_16QAM Band 2 Fundamentals, 15MHz Bandwidth								
	Test Equipment: Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00167211], 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	1857.50	13.06	V	4.5	9.5	18.01	33.0	-15.0	
	1857.50	15.23	H	4.5	9.5	20.18	33.0	-12.8	
	Mid Ch								
	1880.00	12.91	V	4.5	9.3	17.68	33.0	-15.3	
	1880.00	15.66	H	4.5	9.3	20.43	33.0	-12.6	
High Ch									
1902.50	13.92	V	4.6	9.1	18.50	33.0	-14.5		
1902.50	18.09	H	4.6	9.1	22.68	33.0	-10.3		

LTE Band 2 10MHz QPSK	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4789294522 Date: 202-01-09 Test Engineer: 20890 Configuration: EUT / X-Position Location: Chamber 1 Mode: LTE_QPSK Band 2 Fundamentals, 10MHz Bandwidth								
	Test Equipment: Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00167211], 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	1855.00	7.29	V	4.5	9.5	12.26	33.0	-20.7	
	1855.00	15.66	H	4.5	9.5	20.63	33.0	-12.4	
	Mid Ch								
	1880.00	14.42	V	4.5	9.3	19.19	33.0	-13.8	
	1880.00	17.37	H	4.5	9.3	22.14	33.0	-10.9	
High Ch									
1905.00	15.18	V	4.6	9.1	19.73	33.0	-13.3		
1905.00	19.63	H	4.6	9.1	24.18	33.0	-8.8		
LTE Band 2 10MHz 16QAM	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4789294522 Date: 2020-01-09 Test Engineer: 20890 Configuration: EUT / X-Position Location: Chamber 1 Mode: LTE_16QAM Band 2 Fundamentals, 10MHz Bandwidth								
	Test Equipment: Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00167211], 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	1855.00	6.11	V	4.5	9.5	11.08	33.0	-21.9	
	1855.00	14.33	H	4.5	9.5	19.30	33.0	-13.7	
	Mid Ch								
	1880.00	13.48	V	4.5	9.3	18.25	33.0	-14.7	
	1880.00	16.94	H	4.5	9.3	21.71	33.0	-11.3	
High Ch									
1905.00	13.66	V	4.6	9.1	18.21	33.0	-14.8		
1905.00	18.23	H	4.6	9.1	22.78	33.0	-10.2		

LTE Band 2 5MHz QPSK	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4789294522 Date: 2020-01-09 Test Engineer: 20890 Configuration: EUT / X-Position Location: Chamber 1 Mode: LTE_QPSK Band 2 Fundamentals, 5MHz Bandwidth								
	Test Equipment: Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00167211], 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	1852.50	13.70	V	4.5	9.5	18.69	33.0	-14.3	
	1852.50	14.96	H	4.5	9.5	19.95	33.0	-13.1	
	Mid Ch								
	1880.00	13.37	V	4.5	9.3	18.14	33.0	-14.9	
	1880.00	16.87	H	4.5	9.3	21.64	33.0	-11.4	
High Ch									
1907.50	13.92	V	4.6	9.1	18.44	33.0	-14.6		
1907.50	18.64	H	4.6	9.1	23.16	33.0	-9.8		
LTE Band 2 5MHz 16QAM	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4789294522 Date: 202-01-09 Test Engineer: 20890 Configuration: EUT / X-Position Location: Chamber 1 Mode: LTE_16QAM Band 2 Fundamentals, 5MHz Bandwidth								
	Test Equipment: Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00167211], 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	1852.50	11.99	V	4.5	9.5	16.98	33.0	-16.0	
	1852.50	14.71	H	4.5	9.5	19.70	33.0	-13.3	
	Mid Ch								
	1880.00	12.54	V	4.5	9.3	17.31	33.0	-15.7	
	1880.00	15.37	H	4.5	9.3	20.14	33.0	-12.9	
High Ch									
1907.50	13.15	V	4.6	9.1	17.67	33.0	-15.3		
1907.50	17.87	H	4.6	9.1	22.39	33.0	-10.6		

LTE Band 2 3MHz QPSK	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4789294522 Date: 2020-01-10 Test Engineer: 20896 Configuration: EUT / X-Position Location: Chamber 1 Mode: LTE_QPSK Band 2 Fundamentals, 3MHz Bandwidth								
	Test Equipment: Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00167211], 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	1851.50	13.61	V	4.5	9.5	18.61	33.0	-14.4	
	1851.50	16.00	H	4.5	9.5	21.00	33.0	-12.0	
	Mid Ch								
	1880.00	13.95	V	4.5	9.3	18.72	33.0	-14.3	
	1880.00	16.35	H	4.5	9.3	21.12	33.0	-11.9	
High Ch									
1908.50	14.12	V	4.6	9.1	18.63	33.0	-14.4		
1908.50	17.47	H	4.6	9.1	21.98	33.0	-11.0		
LTE Band 2 3MHz 16QAM	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4789294522 Date: 2020-01-10 Test Engineer: 20896 Configuration: EUT / X-Position Location: Chamber 1 Mode: LTE_16QAM Band 2 Fundamentals, 3MHz Bandwidth								
	Test Equipment: Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00167211], 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	1851.50	12.11	V	4.5	9.5	17.11	33.0	-15.9	
	1851.50	14.55	H	4.5	9.5	19.55	33.0	-13.5	
	Mid Ch								
	1880.00	12.64	V	4.5	9.3	17.41	33.0	-15.6	
	1880.00	14.84	H	4.5	9.3	19.61	33.0	-13.4	
High Ch									
1908.50	12.83	V	4.6	9.1	17.34	33.0	-15.7		
1908.50	16.62	H	4.6	9.1	21.13	33.0	-11.9		

LTE Band 2 1.4MHz QPSK	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4789294522 Date: 2020-01-10 Test Engineer: 20896 Configuration: EUT / X-Position Location: Chamber 1 Mode: LTE_QPSK Band 2 Fundamentals, 1.4MHz Bandwidth								
	Test Equipment: Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00167211], 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	1850.70	12.69	V	4.5	9.5	17.69	33.0	-15.3	
	1850.70	15.68	H	4.5	9.5	20.68	33.0	-12.3	
	Mid Ch								
	1880.00	13.63	V	4.5	9.3	18.40	33.0	-14.6	
	1880.00	16.74	H	4.5	9.3	21.51	33.0	-11.5	
High Ch									
1909.30	14.21	V	4.6	9.1	18.70	33.0	-14.3		
1909.30	18.72	H	4.6	9.1	23.22	33.0	-9.8		
LTE Band 2 1.4MHz 16QAM	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4789294522 Date: 2020-01-10 Test Engineer: 20896 Configuration: EUT / X-Position Location: Chamber 1 Mode: LTE_16QAM Band 2 Fundamentals, 1.4MHz Bandwidth								
	Test Equipment: Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00167211], 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	1850.70	11.80	V	4.5	9.5	16.80	33.0	-16.2	
	1850.70	15.02	H	4.5	9.5	20.02	33.0	-13.0	
	Mid Ch								
	1880.00	12.71	V	4.5	9.3	17.48	33.0	-15.5	
	1880.00	15.56	H	4.5	9.3	20.33	33.0	-12.7	
High Ch									
1909.30	13.13	V	4.6	9.1	17.62	33.0	-15.4		
1909.30	16.93	H	4.6	9.1	21.43	33.0	-11.6		

LTE Band 4

LTE Band 4 20MHz QPSK	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4789294522 Date: 2020-01-13 Test Engineer: 20890 Configuration: EUT / X-Position Location: Chamber 2 Mode: LTE_QPSK Band 4 Fundamentals, 20MHz Bandwidth								
	Test Equipment: Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	1720.00	12.38	V	4.3	9.4	17.40	30.0	-12.6	
	1720.00	16.48	H	4.3	9.4	21.50	30.0	-8.5	
	Mid Ch								
	1732.50	11.95	V	4.3	9.4	17.00	30.0	-13.0	
	1732.50	15.34	H	4.3	9.4	20.39	30.0	-9.6	
High Ch									
1745.00	13.05	V	4.4	9.4	18.14	30.0	-11.9		
1745.00	16.10	H	4.4	9.4	21.19	30.0	-8.8		
LTE Band 4 20MHz 16QAM	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4789294522 Date: 2020-01-13 Test Engineer: 20890 Configuration: EUT / X-Position Location: Chamber 2 Mode: LTE_16QAM Band 4 Fundamentals, 20MHz Bandwidth								
	Test Equipment: Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	1720.00	10.77	V	4.3	9.4	15.79	30.0	-14.2	
	1720.00	14.76	H	4.3	9.4	19.78	30.0	-10.2	
	Mid Ch								
	1732.50	10.62	V	4.3	9.4	15.67	30.0	-14.3	
	1732.50	13.87	H	4.3	9.4	18.92	30.0	-11.1	
High Ch									
1745.00	10.10	V	4.4	9.4	15.19	30.0	-14.8		
1745.00	14.83	H	4.4	9.4	19.92	30.0	-10.1		

LTE Band 4 15MHz QPSK	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4789294522 Date: 2020-01-13 Test Engineer: 20890 Configuration: EUT / X-Position Location: Chamber 2 Mode: LTE_QPSK Band 4 Fundamentals, 15MHz Bandwidth								
	Test Equipment: Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	1717.50	11.66	V	4.3	9.3	16.68	30.0	-13.3	
	1717.50	15.69	H	4.3	9.3	20.71	30.0	-9.3	
	Mid Ch								
	1732.50	11.50	V	4.3	9.4	16.55	30.0	-13.4	
	1732.50	15.66	H	4.3	9.4	20.71	30.0	-9.3	
High Ch									
1747.50	12.75	V	4.4	9.5	17.85	30.0	-12.2		
1747.50	15.96	H	4.4	9.5	21.06	30.0	-8.9		
LTE Band 4 15MHz 16QAM	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4789294522 Date: 2020-01-13 Test Engineer: 20890 Configuration: EUT / X-Position Location: Chamber 2 Mode: LTE_16QAM Band 4 Fundamentals, 15MHz Bandwidth								
	Test Equipment: Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	1717.50	10.66	V	4.3	9.3	15.68	30.0	-14.3	
	1717.50	14.73	H	4.3	9.3	19.75	30.0	-10.3	
	Mid Ch								
	1732.50	10.65	V	4.3	9.4	15.70	30.0	-14.3	
	1732.50	14.54	H	4.3	9.4	19.59	30.0	-10.4	
High Ch									
1747.50	10.00	V	4.4	9.5	15.10	30.0	-14.9		
1747.50	14.16	H	4.4	9.5	19.26	30.0	-10.7		

LTE Band 4 10MHz QPSK	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4789294522 Date: 2020-01-13 Test Engineer: 20890 Configuration: EUT / X-Position Location: Chamber 2 Mode: LTE_QPSK Band 4 Fundamentals, 10MHz Bandwidth								
	Test Equipment: Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	1715.00	11.53	V	4.3	9.3	16.54	30.0	-13.5	
	1715.00	15.42	H	4.3	9.3	20.43	30.0	-9.6	
	Mid Ch								
	1732.50	11.15	V	4.3	9.4	16.20	30.0	-13.8	
	1732.50	15.50	H	4.3	9.4	20.55	30.0	-9.4	
High Ch									
1750.00	12.38	V	4.4	9.5	17.48	30.0	-12.5		
1750.00	16.44	H	4.4	9.5	21.55	30.0	-8.5		
LTE Band 4 10MHz 16QAM	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4789294522 Date: 2020-01-13 Test Engineer: 20890 Configuration: EUT / X-Position Location: Chamber 2 Mode: LTE_16QAM Band 4 Fundamentals, 10MHz Bandwidth								
	Test Equipment: Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	1715.00	10.70	V	4.3	9.3	15.71	30.0	-14.3	
	1715.00	15.28	H	4.3	9.3	20.29	30.0	-9.7	
	Mid Ch								
	1732.50	10.48	V	4.3	9.4	15.53	30.0	-14.5	
	1732.50	14.10	H	4.3	9.4	19.15	30.0	-10.8	
High Ch									
1750.00	9.84	V	4.4	9.5	14.94	30.0	-15.1		
1750.00	14.27	H	4.4	9.5	19.38	30.0	-10.6		

LTE Band 4 5MHz QPSK	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4789294522 Date: 2020-01-13 Test Engineer: 20890 Configuration: EUT / X-Position Location: Chamber 2 Mode: LTE_QPSK Band 4 Fundamentals, 5MHz Bandwidth								
	Test Equipment: Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	1712.50	11.53	V	4.3	9.3	16.53	30.0	-13.5	
	1712.50	15.48	H	4.3	9.3	20.48	30.0	-9.5	
	Mid Ch								
	1732.50	11.79	V	4.3	9.4	16.84	30.0	-13.2	
	1732.50	15.27	H	4.3	9.4	20.32	30.0	-9.7	
High Ch									
1752.50	12.16	V	4.4	9.5	17.27	30.0	-12.7		
1752.50	16.32	H	4.4	9.5	21.42	30.0	-8.6		
LTE Band 4 5MHz 16QAM	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4789294522 Date: 2020-01-13 Test Engineer: 20890 Configuration: EUT / X-Position Location: Chamber 2 Mode: LTE_16QAM Band 4 Fundamentals, 5MHz Bandwidth								
	Test Equipment: Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	1712.50	10.42	V	4.3	9.3	15.42	30.0	-14.6	
	1712.50	14.21	H	4.3	9.3	19.21	30.0	-10.8	
	Mid Ch								
	1732.50	10.17	V	4.3	9.4	15.22	30.0	-14.8	
	1732.50	14.32	H	4.3	9.4	19.37	30.0	-10.6	
High Ch									
1752.50	10.59	V	4.4	9.5	15.70	30.0	-14.3		
1752.50	14.09	H	4.4	9.5	19.19	30.0	-10.8		

LTE Band 4 3MHz QPSK	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4789294522 Date: 2020-01-16 Test Engineer: 20896 Configuration: EUT, X-Position Location: Chamber 2 Mode: LTE_QPSK Band 4 Fundamentals, 3MHz Bandwidth								
	Test Equipment: Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	1711.50	10.42	V	4.3	9.3	15.43	30.0	-14.6	
	1711.50	15.41	H	4.3	9.3	20.42	30.0	-9.6	
	Mid Ch								
	1732.50	11.32	V	4.3	9.4	16.37	30.0	-13.6	
	1732.50	15.12	H	4.3	9.4	20.17	30.0	-9.8	
High Ch									
1753.50	10.40	V	4.4	9.5	15.50	30.0	-14.5		
1753.50	16.17	H	4.4	9.5	21.27	30.0	-8.7		
LTE Band 4 3MHz 16QAM	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4789294522 Date: 2020-01-16 Test Engineer: 20896 Configuration: EUT, X-Position Location: Chamber 2 Mode: LTE_16QAM Band 4 Fundamentals, 3MHz Bandwidth								
	Test Equipment: Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	1711.50	9.39	V	4.3	9.3	14.40	30.0	-15.6	
	1711.50	14.49	H	4.3	9.3	19.50	30.0	-10.5	
	Mid Ch								
	1732.50	9.76	V	4.3	9.4	14.81	30.0	-15.2	
	1732.50	13.94	H	4.3	9.4	18.99	30.0	-11.0	
High Ch									
1753.50	9.43	V	4.4	9.5	14.53	30.0	-15.5		
1753.50	14.38	H	4.4	9.5	19.48	30.0	-10.5		

LTE Band 4 1.4MHz QPSK	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4789294522 Date: 2020-01-16 Test Engineer: 20896 Configuration: EUT, X-Position Location: Chamber 2 Mode: LTE_QPSK Band 4 Fundamentals, 1.4MHz Bandwidth								
	Test Equipment: Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	1710.70	10.37	V	4.3	9.3	15.37	30.0	-14.6	
	1710.70	15.32	H	4.3	9.3	20.32	30.0	-9.7	
	Mid Ch								
	1732.50	11.28	V	4.3	9.4	16.33	30.0	-13.7	
	1732.50	15.51	H	4.3	9.4	20.56	30.0	-9.4	
High Ch									
1754.30	12.19	V	4.4	9.5	17.30	30.0	-12.7		
1754.30	16.08	H	4.4	9.5	21.19	30.0	-8.8		
LTE Band 4 1.4MHz 16QAM	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4789294522 Date: 2020-01-16 Test Engineer: 20896 Configuration: EUT, X-Position Location: Chamber 2 Mode: LTE_16QAM Band 4 Fundamentals, 1.4MHz Bandwidth								
	Test Equipment: Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	1710.70	9.31	V	4.3	9.3	14.31	30.0	-15.7	
	1710.70	14.33	H	4.3	9.3	19.33	30.0	-10.7	
	Mid Ch								
	1732.50	10.36	V	4.3	9.4	15.41	30.0	-14.6	
	1732.50	14.60	H	4.3	9.4	19.65	30.0	-10.3	
High Ch									
1754.30	10.71	V	4.4	9.5	15.82	30.0	-14.2		
1754.30	15.02	H	4.4	9.5	20.13	30.0	-9.9		

LTE Band 5

LTE Band 5 10MHz QPSK	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4789294522 Date: 2020-01-10 Test Engineer: 20896 Configuration: EUT, Z-Position Location: Chamber 1 Mode: LTE_QPSK Band 5 Fundamentals, 10MHz Bandwidth								
	Test Equipment: Receiving: VULB9163-750, and Chamber 1 SMA Cables Substitution: Dipole 3121_DB4, 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	829.00	22.32	V	3.0	-0.9	18.36	38.5	-20.1	
	829.00	10.77	H	3.0	-0.9	6.82	38.5	-31.7	
	Mid Ch								
	836.50	23.67	V	3.0	-0.9	19.73	38.5	-18.8	
	836.50	11.10	H	3.0	-0.9	7.16	38.5	-31.3	
	High Ch								
	844.00	24.26	V	3.0	-0.9	20.34	38.5	-18.2	
	844.00	11.64	H	3.0	-0.9	7.72	38.5	-30.8	
LTE Band 5 10MHz 16QAM	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4789294522 Date: 2020-01-10 Test Engineer: 20896 Configuration: EUT, Z-Position Location: Chamber 1 Mode: LTE_16QAM Band 5 Fundamentals, 10MHz Bandwidth								
	Test Equipment: Receiving: VULB9163-750, and Chamber 1 SMA Cables Substitution: Dipole 3121_DB4, 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	829.00	21.13	V	3.0	-0.9	17.17	38.5	-21.3	
	829.00	9.53	H	3.0	-0.9	5.58	38.5	-32.9	
	Mid Ch								
	836.50	22.77	V	3.0	-0.9	18.83	38.5	-19.7	
	836.50	10.20	H	3.0	-0.9	6.26	38.5	-32.2	
	High Ch								
	844.00	22.65	V	3.0	-0.9	18.73	38.5	-19.8	
	844.00	10.29	H	3.0	-0.9	6.37	38.5	-32.1	

LTE Band 5 5MHz QPSK	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4789294522 Date: 2020-01-10 Test Engineer: 20896 Configuration: EUT, Z-Position Location: Chamber 1 Mode: LTE_QPSK Band 5 Fundamentals, 5MHz Bandwidth								
	Test Equipment: Receiving: VULB9163-750, and Chamber 1 SMA Cables Substitution: Dipole 3121_DB4, 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	826.50	21.88	V	3.0	-0.9	17.92	38.5	-20.6	
	826.50	10.37	H	3.0	-0.9	6.41	38.5	-32.1	
	Mid Ch								
	836.50	23.29	V	3.0	-0.9	19.35	38.5	-19.1	
	836.50	11.02	H	3.0	-0.9	7.08	38.5	-31.4	
High Ch									
846.50	23.69	V	3.0	-0.9	19.77	38.5	-18.7		
846.50	12.31	H	3.0	-0.9	8.39	38.5	-30.1		
LTE Band 5 5MHz 16QAM	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4789294522 Date: 2020-01-10 Test Engineer: 20896 Configuration: EUT, Z-Position Location: Chamber 1 Mode: LTE_16QAM Band 5 Fundamentals, 5MHz Bandwidth								
	Test Equipment: Receiving: VULB9163-750, and Chamber 1 SMA Cables Substitution: Dipole 3121_DB4, 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	826.50	20.18	V	3.0	-0.9	16.22	38.5	-22.3	
	826.50	8.69	H	3.0	-0.9	4.73	38.5	-33.8	
	Mid Ch								
	836.50	21.96	V	3.0	-0.9	18.02	38.5	-20.5	
	836.50	10.05	H	3.0	-0.9	6.11	38.5	-32.4	
High Ch									
846.50	22.90	V	3.0	-0.9	18.98	38.5	-19.5		
846.50	10.26	H	3.0	-0.9	6.34	38.5	-32.2		

LTE Band 5 3MHz QPSK	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4789294522 Date: 2020-01-10 Test Engineer: 20896 Configuration: EUT, Z-Position Location: Chamber 1 Mode: LTE_QPSK Band 5 Fundamentals, 3MHz Bandwidth								
	Test Equipment: Receiving: VULB9163-750, and Chamber 1 SMA Cables Substitution: Dipole 3121_DB4, 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	825.50	21.49	V	3.0	-0.9	17.53	38.5	-21.0	
	825.50	10.45	H	3.0	-0.9	6.49	38.5	-32.0	
	Mid Ch								
	836.50	23.55	V	3.0	-0.9	19.61	38.5	-18.9	
	836.50	11.22	H	3.0	-0.9	7.28	38.5	-31.2	
High Ch									
847.50	23.50	V	3.1	-0.9	19.59	38.5	-18.9		
847.50	11.40	H	3.1	-0.9	7.49	38.5	-31.0		
LTE Band 5 3MHz 16QAM	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4789294522 Date: 2020-01-10 Test Engineer: 20896 Configuration: EUT, Z-Position Location: Chamber 1 Mode: LTE_16QAM Band 5 Fundamentals, 3MHz Bandwidth								
	Test Equipment: Receiving: VULB9163-750, and Chamber 1 SMA Cables Substitution: Dipole 3121_DB4, 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	825.50	20.35	V	3.0	-0.9	16.39	38.5	-22.1	
	825.50	9.37	H	3.0	-0.9	5.41	38.5	-33.1	
	Mid Ch								
	836.50	22.59	V	3.0	-0.9	18.65	38.5	-19.8	
	836.50	9.76	H	3.0	-0.9	5.82	38.5	-32.7	
High Ch									
847.50	22.81	V	3.1	-0.9	18.90	38.5	-19.6		
847.50	11.88	H	3.1	-0.9	7.97	38.5	-30.5		

LTE Band 5 1.4MHz QPSK	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4789294522 Date: 2020-01-10 Test Engineer: 20896 Configuration: EUT, Z-Position Location: Chamber 1 Mode: LTE_QPSK Band 5 Fundamentals, 1.4MHz Bandwidth								
	Test Equipment: Receiving: VULB9163-750, and Chamber 1 SMA Cables Substitution: Dipole 3121_DB4, 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	824.70	21.75	V	3.0	-1.0	17.78	38.5	-20.7	
	824.70	10.42	H	3.0	-1.0	6.46	38.5	-32.0	
	Mid Ch								
	836.50	23.54	V	3.0	-0.9	19.60	38.5	-18.9	
	836.50	11.09	H	3.0	-0.9	7.15	38.5	-31.4	
High Ch									
848.30	24.08	V	3.0	-0.9	20.17	38.5	-18.3		
848.30	11.83	H	3.0	-0.9	7.92	38.5	-30.6		
LTE Band 5 1.4MHz 16QAM	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4789294522 Date: 2020-01-10 Test Engineer: 20896 Configuration: EUT, Z-Position Location: Chamber 1 Mode: LTE_16QAM Band 5 Fundamentals, 1.4MHz Bandwidth								
	Test Equipment: Receiving: VULB9163-750, and Chamber 1 SMA Cables Substitution: Dipole 3121_DB4, 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	824.70	20.84	V	3.0	-1.0	16.87	38.5	-21.6	
	824.70	9.75	H	3.0	-1.0	5.79	38.5	-32.7	
	Mid Ch								
	836.50	23.00	V	3.0	-0.9	19.06	38.5	-19.4	
	836.50	10.79	H	3.0	-0.9	6.85	38.5	-31.7	
High Ch									
848.30	22.20	V	3.0	-0.9	18.29	38.5	-20.2		
848.30	10.48	H	3.0	-0.9	6.57	38.5	-31.9		

LTE Band 12

LTE Band 12 10MHz QPSK	<p style="text-align: center;">UL Verification Services, Inc. High Frequency Substitution Measurement</p> <p>Company: Samsung Project #: 4789294522 Date: 2020-01-13 Test Engineer: 20896 Configuration: EUT, X-Position Location: Chamber 1 Mode: LTE_QPSK Band 12 Fundamentals, 10MHz Bandwidth</p> <p>Test Equipment: Receiving: VULB9163-750, and Chamber 1 SMA Cables Substitution: Dipole 3121_DB4, 8.5m SMA-type Cable</p> <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBd)</th> <th>ERP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td colspan="9">Low Ch</td> </tr> <tr> <td>704.00</td> <td>12.56</td> <td>V</td> <td>2.8</td> <td>-1.1</td> <td>8.72</td> <td>34.8</td> <td>-26.1</td> <td></td> </tr> <tr> <td>704.00</td> <td>20.55</td> <td>H</td> <td>2.8</td> <td>-1.1</td> <td>16.71</td> <td>34.8</td> <td>-18.1</td> <td></td> </tr> <tr> <td colspan="9">Mid Ch</td> </tr> <tr> <td>707.50</td> <td>12.40</td> <td>V</td> <td>2.8</td> <td>-1.1</td> <td>8.56</td> <td>34.8</td> <td>-26.2</td> <td></td> </tr> <tr> <td>707.50</td> <td>20.71</td> <td>H</td> <td>2.8</td> <td>-1.1</td> <td>16.86</td> <td>34.8</td> <td>-17.9</td> <td></td> </tr> <tr> <td colspan="9">High Ch</td> </tr> <tr> <td>711.00</td> <td>12.70</td> <td>V</td> <td>2.8</td> <td>-1.1</td> <td>8.84</td> <td>34.8</td> <td>-26.0</td> <td></td> </tr> <tr> <td>711.00</td> <td>21.03</td> <td>H</td> <td>2.8</td> <td>-1.1</td> <td>17.17</td> <td>34.8</td> <td>-17.6</td> <td></td> </tr> </tbody> </table>									f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes	Low Ch									704.00	12.56	V	2.8	-1.1	8.72	34.8	-26.1		704.00	20.55	H	2.8	-1.1	16.71	34.8	-18.1		Mid Ch									707.50	12.40	V	2.8	-1.1	8.56	34.8	-26.2		707.50	20.71	H	2.8	-1.1	16.86	34.8	-17.9		High Ch									711.00	12.70	V	2.8	-1.1	8.84	34.8	-26.0		711.00	21.03	H	2.8	-1.1	17.17	34.8	-17.6	
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes																																																																																										
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f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes																																																																																											
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711.00	11.05	V	2.8	-1.1	7.19	34.8	-27.6																																																																																												
711.00	19.76	H	2.8	-1.1	15.90	34.8	-18.9																																																																																												

LTE Band 12 5MHz QPSK	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4789294522 Date: 2020-01-13 Test Engineer: 20896 Configuration: EUT, X-Position Location: Chamber 1 Mode: LTE_QPSK Band 12 Fundamentals, 5MHz Bandwidth								
	Test Equipment: Receiving: VULB9163-750, and Chamber 1 SMA Cables Substitution: Dipole 3121_DB4, 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	701.50	12.39	V	2.8	-1.1	8.56	34.8	-26.2	
	701.50	20.39	H	2.8	-1.1	16.55	34.8	-18.3	
	Mid Ch								
	707.50	12.49	V	2.8	-1.1	8.65	34.8	-26.2	
	707.50	20.75	H	2.8	-1.1	16.90	34.8	-17.9	
High Ch									
713.50	12.25	V	2.8	-1.1	8.38	34.8	-26.4		
713.50	20.87	H	2.8	-1.1	17.01	34.8	-17.8		
LTE Band 12 5MHz 16QAM	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4789294522 Date: 2020-01-13 Test Engineer: 20896 Configuration: EUT, X-Position Location: Chamber 1 Mode: LTE_16QAM Band 12 Fundamentals, 5MHz Bandwidth								
	Test Equipment: Receiving: VULB9163-750, and Chamber 1 SMA Cables Substitution: Dipole 3121_DB4, 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	701.50	11.45	V	2.8	-1.1	7.62	34.8	-27.2	
	701.50	19.51	H	2.8	-1.1	15.67	34.8	-19.1	
	Mid Ch								
	707.50	10.97	V	2.8	-1.1	7.13	34.8	-27.7	
	707.50	19.18	H	2.8	-1.1	15.33	34.8	-19.5	
High Ch									
713.50	11.30	V	2.8	-1.1	7.43	34.8	-27.4		
713.50	19.58	H	2.8	-1.1	15.72	34.8	-19.1		

LTE Band 12 3MHz QPSK	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4789294522 Date: 2020-01-13 Test Engineer: 20896 Configuration: EUT, X-Position Location: Chamber 1 Mode: LTE_QPSK Band 12 Fundamentals, 3MHz Bandwidth								
	Test Equipment: Receiving: VULB9163-750, and Chamber 1 SMA Cables Substitution: Dipole 3121_DB4, 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	700.50	12.25	V	2.8	-1.1	8.42	34.8	-26.4	
	700.50	20.62	H	2.8	-1.1	16.79	34.8	-18.0	
	Mid Ch								
	707.50	12.50	V	2.8	-1.1	8.66	34.8	-26.1	
	707.50	20.69	H	2.8	-1.1	16.84	34.8	-18.0	
High Ch									
714.50	12.95	V	2.8	-1.1	9.09	34.8	-25.7		
714.50	21.08	H	2.8	-1.1	17.22	34.8	-17.6		
LTE Band 12 3MHz 16QAM	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4789294522 Date: 2020-01-13 Test Engineer: 20896 Configuration: EUT, X-Position Location: Chamber 1 Mode: LTE_16QAM Band 12 Fundamentals, 3MHz Bandwidth								
	Test Equipment: Receiving: VULB9163-750, and Chamber 1 SMA Cables Substitution: Dipole 3121_DB4, 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	700.50	11.32	V	2.8	-1.1	7.49	34.8	-27.3	
	700.50	19.70	H	2.8	-1.1	15.87	34.8	-18.9	
	Mid Ch								
	707.50	11.04	V	2.8	-1.1	7.20	34.8	-27.6	
	707.50	19.65	H	2.8	-1.1	15.80	34.8	-19.0	
High Ch									
714.50	11.73	V	2.8	-1.1	7.87	34.8	-26.9		
714.50	19.77	H	2.8	-1.1	15.91	34.8	-18.9		

LTE Band 12 1.4MHz QPSK	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4789294522 Date: 2020-01-13 Test Engineer: 20896 Configuration: EUT, X-Position Location: Chamber 1 Mode: LTE_QPSK Band 12 Fundamentals, 1.4MHz Bandwidth								
	Test Equipment: Receiving: VULB9163-750, and Chamber 1 SMA Cables Substitution: Dipole 3121_DB4, 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	699.70	11.99	V	2.8	-1.1	8.16	34.8	-26.6	
	699.70	20.57	H	2.8	-1.1	16.73	34.8	-18.1	
	Mid Ch								
	707.50	12.90	V	2.8	-1.1	9.06	34.8	-25.7	
	707.50	20.88	H	2.8	-1.1	17.03	34.8	-17.8	
High Ch									
715.30	12.87	V	2.8	-1.1	9.01	34.8	-25.8		
715.30	21.11	H	2.8	-1.1	17.25	34.8	-17.6		
LTE Band 12 1.4MHz 16QAM	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4789294522 Date: 2020-01-13 Test Engineer: 20896 Configuration: EUT, X-Position Location: Chamber 1 Mode: LTE_16QAM Band 12 Fundamentals, 1.4MHz Bandwidth								
	Test Equipment: Receiving: VULB9163-750, and Chamber 1 SMA Cables Substitution: Dipole 3121_DB4, 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	699.70	11.03	V	2.8	-1.1	7.20	34.8	-27.6	
	699.70	19.66	H	2.8	-1.1	15.82	34.8	-19.0	
	Mid Ch								
	707.50	11.95	V	2.8	-1.1	8.11	34.8	-26.7	
	707.50	19.95	H	2.8	-1.1	16.10	34.8	-18.7	
High Ch									
715.30	11.86	V	2.8	-1.1	8.00	34.8	-26.8		
715.30	20.16	H	2.8	-1.1	16.30	34.8	-18.5		

10.2. 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 (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.

Part 27.53 (h) AWS emission limits—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.

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), Maxhold(GSM, LTE Band41);;

RESULTS

See the following pages.

NOTE : Please refer to section 5.4 for bandwidth and RB setting about LTE bands.

10.2.1. SPURIOUS RADIATION PLOTS

GSM850

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement										
Company:		Samsung								
Project #:		4789294522								
Date:		2020-01-15								
Test Engineer:		20896								
Configuration:		EUT / AC Adapter / Earphone, X-Position								
Location:		Chamber 1								
Mode:		GPRS 850 MHz Harmonics								
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	-5.2	V	3.0	45.2	1.0	-49.4	-13.0	-36.4		
2472.60	-8.7	V	3.0	45.0	1.0	-52.7	-13.0	-39.7		
3296.80	-8.2	V	3.0	45.3	1.0	-52.4	-13.0	-39.4		
1648.40	0.5	H	3.0	45.2	1.0	-43.7	-13.0	-30.7		
2472.60	-6.8	H	3.0	45.0	1.0	-50.8	-13.0	-37.8		
3296.80	-8.3	H	3.0	45.3	1.0	-52.6	-13.0	-39.6		
Mid Ch, 836.6MHz										
1673.20	-5.4	V	3.0	45.2	1.0	-49.6	-13.0	-36.6		
2509.80	-2.3	V	3.0	45.0	1.0	-46.3	-13.0	-33.3		
3346.40	-5.1	V	3.0	45.3	1.0	-49.4	-13.0	-36.4		
1673.20	-0.3	H	3.0	45.2	1.0	-44.5	-13.0	-31.5		
2509.80	0.9	H	3.0	45.0	1.0	-43.2	-13.0	-30.2		
3346.40	-5.5	H	3.0	45.3	1.0	-49.8	-13.0	-36.8		
High Ch, 848.8MHz										
1697.60	-4.0	V	3.0	45.2	1.0	-48.1	-13.0	-35.1		
2546.40	5.6	V	3.0	45.1	1.0	-38.5	-13.0	-25.5		
3395.20	-8.0	V	3.0	45.3	1.0	-52.3	-13.0	-39.3		
1697.60	-0.1	H	3.0	45.2	1.0	-44.3	-13.0	-31.3		
2546.40	7.3	H	3.0	45.1	1.0	-36.7	-13.0	-23.7		
3395.20	-8.2	H	3.0	45.3	1.0	-52.5	-13.0	-39.5		

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement										
Company:		Samsung								
Project #:		4789294522								
Date:		2020-01-15								
Test Engineer:		20890								
Configuration:		EUT / AC Adapter / Earphone, X-Position								
Location:		Chamber 1								
Mode:		EGPRS 850 MHz Harmonics								
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	-15.3	V	3.0	45.2	1.0	-59.5	-13.0	-46.5		
2472.60	-11.8	V	3.0	45.0	1.0	-55.9	-13.0	-42.9		
3296.80	-9.6	V	3.0	45.3	1.0	-53.8	-13.0	-40.8		
1648.40	-14.2	H	3.0	45.2	1.0	-58.5	-13.0	-45.5		
2472.60	-11.1	H	3.0	45.0	1.0	-55.1	-13.0	-42.1		
3296.80	-9.6	H	3.0	45.3	1.0	-53.8	-13.0	-40.8		
Mid Ch, 836.6MHz										
1673.20	-14.1	V	3.0	45.2	1.0	-58.3	-13.0	-45.3		
2509.80	-11.8	V	3.0	45.0	1.0	-55.8	-13.0	-42.8		
3346.40	-9.4	V	3.0	45.3	1.0	-53.7	-13.0	-40.7		
1673.20	-14.0	H	3.0	45.2	1.0	-58.2	-13.0	-45.2		
2509.80	-11.4	H	3.0	45.0	1.0	-55.5	-13.0	-42.5		
3346.40	-9.6	H	3.0	45.3	1.0	-53.9	-13.0	-40.9		
High Ch, 848.8MHz										
1697.60	-11.6	V	3.0	45.2	1.0	-55.8	-13.0	-42.8		
2546.40	-10.9	V	3.0	45.1	1.0	-55.0	-13.0	-42.0		
3395.20	-8.0	V	3.0	45.3	1.0	-52.3	-13.0	-39.3		
1697.60	-11.9	H	3.0	45.2	1.0	-56.1	-13.0	-43.1		
2546.40	-10.5	H	3.0	45.1	1.0	-54.6	-13.0	-41.6		
3395.20	-9.1	H	3.0	45.3	1.0	-53.4	-13.0	-40.4		

GSM1900

		UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement								
		Company: Samsung Project #: 4789294522 Date: 2020-01-15 Test Engineer: 20896 Configuration: EUT / AC Adapter / Earphone, X-Position Location: Chamber 1 Mode: GPRS 1900 MHz Harmonics								
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	-8.0	V	3.0	45.4	1.0	-52.4	-13.0	-39.4		
5550.60	-5.7	V	3.0	45.3	1.0	-50.0	-13.0	-37.0		
7400.80	-3.0	V	3.0	44.1	1.0	-46.2	-13.0	-33.2		
3700.40	-8.4	H	3.0	45.4	1.0	-52.8	-13.0	-39.8		
5550.60	-5.4	H	3.0	45.3	1.0	-49.7	-13.0	-36.7		
7400.80	-3.0	H	3.0	44.1	1.0	-46.1	-13.0	-33.1		
Mid Ch, 1880MHz										
3760.00	-7.8	V	3.0	45.4	1.0	-52.2	-13.0	-39.2		
5640.00	-4.8	V	3.0	45.3	1.0	-49.1	-13.0	-36.1		
7520.00	-2.6	V	3.0	44.1	1.0	-45.7	-13.0	-32.7		
3760.00	-8.4	H	3.0	45.4	1.0	-52.8	-13.0	-39.8		
5640.00	-5.1	H	3.0	45.3	1.0	-49.4	-13.0	-36.4		
7520.00	-2.4	H	3.0	44.1	1.0	-45.5	-13.0	-32.5		
High Ch, 1909.8MHz										
3819.60	-8.0	V	3.0	45.4	1.0	-52.4	-13.0	-39.4		
5729.40	-5.1	V	3.0	45.3	1.0	-49.4	-13.0	-36.4		
7639.20	-2.6	V	3.0	44.0	1.0	-45.6	-13.0	-32.6		
3819.60	-8.5	H	3.0	45.4	1.0	-53.0	-13.0	-40.0		
5729.40	-5.2	H	3.0	45.3	1.0	-49.5	-13.0	-36.5		
7639.20	-2.7	H	3.0	44.0	1.0	-45.7	-13.0	-32.7		

		UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement								
		Company: Samsung Project #: 4789294522 Date: 2020-01-15 Test Engineer: 20896 Configuration: EUT / AC Adapter / Earphone, X-Position Location: Chamber 1 Mode: EGPRS 1900 MHz Harmonics								
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	45.4	1.0	-52.3	-13.0	-39.3		
5550.60	-5.5	V	3.0	45.3	1.0	-49.8	-13.0	-36.8		
7400.80	-2.5	V	3.0	44.1	1.0	-45.6	-13.0	-32.6		
3700.40	-8.2	H	3.0	45.4	1.0	-52.6	-13.0	-39.6		
5550.60	-5.9	H	3.0	45.3	1.0	-50.2	-13.0	-37.2		
7400.80	-2.9	H	3.0	44.1	1.0	-46.1	-13.0	-33.1		
Mid Ch, 1880MHz										
3760.00	-8.0	V	3.0	45.4	1.0	-52.5	-13.0	-39.5		
5640.00	-4.9	V	3.0	45.3	1.0	-49.2	-13.0	-36.2		
7520.00	-2.8	V	3.0	44.1	1.0	-45.8	-13.0	-32.8		
3760.00	-8.5	H	3.0	45.4	1.0	-52.9	-13.0	-39.9		
5640.00	-5.3	H	3.0	45.3	1.0	-49.6	-13.0	-36.6		
7520.00	-2.8	H	3.0	44.1	1.0	-45.9	-13.0	-32.9		
High Ch, 1909.8MHz										
3819.60	-8.3	V	3.0	45.4	1.0	-52.7	-13.0	-39.7		
5729.40	-5.3	V	3.0	45.3	1.0	-49.6	-13.0	-36.6		
7639.20	-2.8	V	3.0	44.0	1.0	-45.9	-13.0	-32.9		
3819.60	-8.4	H	3.0	45.4	1.0	-52.8	-13.0	-39.8		
5729.40	-5.6	H	3.0	45.3	1.0	-49.8	-13.0	-36.8		
7639.20	-2.5	H	3.0	44.0	1.0	-45.5	-13.0	-32.5		

WCDMA Band 5

		UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement								
		Company:	Samsung							
		Project #:	4789294522							
		Date:	2020-01-16							
		Test Engineer:	20896							
		Configuration:	EUT / AC Adapter / Earphone, Z-Position							
		Location:	Chamber 1							
		Mode:	Rel99 Band 5 Harmonics							
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	-14.8	V	3.0	45.2	1.0	-59.0	-13.0	-46.0		
2479.20	-11.6	V	3.0	45.0	1.0	-55.6	-13.0	-42.6		
3305.60	-9.3	V	3.0	45.3	1.0	-53.6	-13.0	-40.6		
1652.80	-13.8	H	3.0	45.2	1.0	-58.0	-13.0	-45.0		
2479.20	-11.0	H	3.0	45.0	1.0	-55.0	-13.0	-42.0		
3305.60	-9.5	H	3.0	45.3	1.0	-53.7	-13.0	-40.7		
Mid Ch, 836.6MHz										
1673.20	-14.8	V	3.0	45.2	1.0	-59.0	-13.0	-46.0		
2509.80	-11.7	V	3.0	45.0	1.0	-55.7	-13.0	-42.7		
3346.40	-9.3	V	3.0	45.3	1.0	-53.5	-13.0	-40.5		
1673.20	-13.8	H	3.0	45.2	1.0	-58.0	-13.0	-45.0		
2509.80	-11.1	H	3.0	45.0	1.0	-55.2	-13.0	-42.2		
3346.40	-9.4	H	3.0	45.3	1.0	-53.7	-13.0	-40.7		
High Ch, 846.6MHz										
1693.20	-14.6	V	3.0	45.2	1.0	-58.8	-13.0	-45.8		
2539.80	-11.6	V	3.0	45.0	1.0	-55.7	-13.0	-42.7		
3386.40	-9.1	V	3.0	45.3	1.0	-53.3	-13.0	-40.3		
1693.20	-13.4	H	3.0	45.2	1.0	-57.6	-13.0	-44.6		
2539.80	-11.1	H	3.0	45.0	1.0	-55.1	-13.0	-42.1		
3386.40	-9.2	H	3.0	45.3	1.0	-53.5	-13.0	-40.5		
		UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement								
		Company:	Samsung							
		Project #:	4789294522							
		Date:	2020-01-16							
		Test Engineer:	20896							
		Configuration:	EUT / AC Adapter / Earphone, Z-Position							
		Location:	Chamber 1							
		Mode:	HSDPA Band 5 Harmonics							
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	-14.8	V	3.0	45.2	1.0	-59.0	-13.0	-46.0		
2479.20	-11.5	V	3.0	45.0	1.0	-55.6	-13.0	-42.6		
3305.60	-9.3	V	3.0	45.3	1.0	-53.6	-13.0	-40.6		
1652.80	-13.5	H	3.0	45.2	1.0	-57.7	-13.0	-44.7		
2479.20	-10.9	H	3.0	45.0	1.0	-55.0	-13.0	-42.0		
3305.60	-9.5	H	3.0	45.3	1.0	-53.7	-13.0	-40.7		
Mid Ch, 836.6MHz										
1673.20	-14.9	V	3.0	45.2	1.0	-59.1	-13.0	-46.1		
2509.80	-11.7	V	3.0	45.0	1.0	-55.7	-13.0	-42.7		
3346.40	-9.3	V	3.0	45.3	1.0	-53.5	-13.0	-40.5		
1673.20	-13.7	H	3.0	45.2	1.0	-57.9	-13.0	-44.9		
2509.80	-11.1	H	3.0	45.0	1.0	-55.2	-13.0	-42.2		
3346.40	-9.4	H	3.0	45.3	1.0	-53.7	-13.0	-40.7		
High Ch, 846.6MHz										
1693.20	-14.6	V	3.0	45.2	1.0	-58.7	-13.0	-45.7		
2539.80	-11.6	V	3.0	45.0	1.0	-55.7	-13.0	-42.7		
3386.40	-9.1	V	3.0	45.3	1.0	-53.4	-13.0	-40.4		
1693.20	-12.9	H	3.0	45.2	1.0	-57.1	-13.0	-44.1		
2539.80	-11.1	H	3.0	45.0	1.0	-55.1	-13.0	-42.1		
3386.40	-9.2	H	3.0	45.3	1.0	-53.5	-13.0	-40.5		

WCDMA Band 4

		UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement								
		Company: Samsung Project #: 4789294522 Date: 2020-01-16 Test Engineer: 20896 Configuration: EUT / AC Adapter / Earphone, Y-Position Location: Chamber 1 Mode: Rel99 Band 4 Harmonics								
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes	
WCDMA Band 4 REL99										
Low Ch, 1712.4MHz										
3424.80	-2.5	V	3.0	45.3	1.0	-46.8	-13.0	-33.8		
5137.20	-8.3	V	3.0	45.3	1.0	-52.6	-13.0	-39.6		
6849.60	-6.0	V	3.0	44.5	1.0	-49.5	-13.0	-36.5		
3424.80	-1.3	H	3.0	45.3	1.0	-45.6	-13.0	-32.6		
5137.20	-8.7	H	3.0	45.3	1.0	-52.9	-13.0	-39.9		
6849.60	-5.9	H	3.0	44.5	1.0	-49.4	-13.0	-36.4		
Mid Ch, 1732.6MHz										
3465.20	-1.8	V	3.0	45.3	1.0	-46.1	-13.0	-33.1		
5197.80	-8.0	V	3.0	45.3	1.0	-52.3	-13.0	-39.3		
6930.40	-6.0	V	3.0	44.4	1.0	-49.4	-13.0	-36.4		
3465.20	-0.6	H	3.0	45.3	1.0	-44.9	-13.0	-31.9		
5197.80	-8.3	H	3.0	45.3	1.0	-52.6	-13.0	-39.6		
6930.40	-6.0	H	3.0	44.4	1.0	-49.4	-13.0	-36.4		
High Ch, 1752.6MHz										
3505.20	-4.9	V	3.0	45.3	1.0	-49.2	-13.0	-36.2		
5257.80	-8.0	V	3.0	45.3	1.0	-52.3	-13.0	-39.3		
7010.40	-5.6	V	3.0	44.4	1.0	-48.9	-13.0	-35.9		
3505.20	-3.9	H	3.0	45.3	1.0	-48.2	-13.0	-35.2		
5257.80	-8.4	H	3.0	45.3	1.0	-52.7	-13.0	-39.7		
7010.40	-5.6	H	3.0	44.4	1.0	-48.9	-13.0	-35.9		
		UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement								
		Company: Samsung Project #: 4789294522 Date: 2020-01-16 Test Engineer: 20896 Configuration: EUT / AC Adapter / Earphone, Y-Position Location: Chamber 1 Mode: HSDPA Band 4 Harmonics								
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes	
WCDMA Band 4 HSDPA										
Low Ch, 1712.4MHz										
3424.80	-3.6	V	3.0	45.3	1.0	-47.9	-13.0	-34.9		
5137.20	-8.4	V	3.0	45.3	1.0	-52.6	-13.0	-39.6		
6849.60	-6.0	V	3.0	44.5	1.0	-49.5	-13.0	-36.5		
3424.80	-2.4	H	3.0	45.3	1.0	-46.7	-13.0	-33.7		
5137.20	-8.7	H	3.0	45.3	1.0	-52.9	-13.0	-39.9		
6849.60	-6.0	H	3.0	44.5	1.0	-49.5	-13.0	-36.5		
Mid Ch, 1732.6MHz										
3465.20	-3.2	V	3.0	45.3	1.0	-47.5	-13.0	-34.5		
5197.80	-8.0	V	3.0	45.3	1.0	-52.3	-13.0	-39.3		
6930.40	-5.9	V	3.0	44.4	1.0	-49.4	-13.0	-36.4		
3465.20	-2.0	H	3.0	45.3	1.0	-46.3	-13.0	-33.3		
5197.80	-8.3	H	3.0	45.3	1.0	-52.6	-13.0	-39.6		
6930.40	-6.0	H	3.0	44.4	1.0	-49.4	-13.0	-36.4		
High Ch, 1752.6MHz										
3505.20	-5.4	V	3.0	45.3	1.0	-49.7	-13.0	-36.7		
5257.80	-8.0	V	3.0	45.3	1.0	-52.3	-13.0	-39.3		
7010.40	-5.6	V	3.0	44.4	1.0	-49.0	-13.0	-36.0		
3505.20	-4.7	H	3.0	45.3	1.0	-49.0	-13.0	-36.0		
5257.80	-8.4	H	3.0	45.3	1.0	-52.7	-13.0	-39.7		
7010.40	-5.7	H	3.0	44.4	1.0	-49.0	-13.0	-36.0		

WCDMA Band 2

		UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement								
		Company:	Samsung							
		Project #:	4789294522							
		Date:	2020-01-15							
		Test Engineer:	20882							
		Configuration:	EUT / AC Adapter / Earphone, Y-Position							
		Location:	Chamber 2							
		Mode:	Rel99 Band 2 Harmonics							
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes	
WCDMA Band 2 REL99										
Low Ch, 1852.4MHz										
3704.80	-9.9	V	3.0	42.0	1.0	-50.9	-13.0	-37.9		
5557.20	-8.3	V	3.0	42.9	1.0	-50.2	-13.0	-37.2		
7409.60	-6.7	V	3.0	42.5	1.0	-48.1	-13.0	-35.1		
3704.80	-6.0	H	3.0	42.0	1.0	-47.1	-13.0	-34.1		
5557.20	-8.2	H	3.0	42.9	1.0	-50.1	-13.0	-37.1		
7409.60	-6.6	H	3.0	42.5	1.0	-48.1	-13.0	-35.1		
Mid Ch, 1880MHz										
3760.00	-11.2	V	3.0	42.1	1.0	-52.2	-13.0	-39.2		
5640.00	-7.9	V	3.0	42.9	1.0	-49.8	-13.0	-36.8		
7520.00	-6.7	V	3.0	42.4	1.0	-48.1	-13.0	-35.1		
3760.00	-8.9	H	3.0	42.1	1.0	-49.9	-13.0	-36.9		
5640.00	-8.2	H	3.0	42.9	1.0	-50.0	-13.0	-37.0		
7520.00	-6.6	H	3.0	42.4	1.0	-48.0	-13.0	-35.0		
High Ch, 1907.6MHz										
3815.20	-11.3	V	3.0	42.1	1.0	-52.3	-13.0	-39.3		
5722.80	-7.7	V	3.0	42.9	1.0	-49.6	-13.0	-36.6		
7630.40	-6.6	V	3.0	42.4	1.0	-48.0	-13.0	-35.0		
3815.20	-8.6	H	3.0	42.1	1.0	-49.7	-13.0	-36.7		
5722.80	-8.0	H	3.0	42.9	1.0	-49.9	-13.0	-36.9		
7630.40	-6.8	H	3.0	42.4	1.0	-48.2	-13.0	-35.2		
		UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement								
		Company:	Samsung							
		Project #:	4789294522							
		Date:	2020-01-15							
		Test Engineer:	20882							
		Configuration:	EUT / AC Adapter / Earphone, Y-Position							
		Location:	Chamber 2							
		Mode:	HSDPA Band 2 Harmonics							
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes	
WCDMA Band 2 HSDPA										
Low Ch, 1852.4MHz										
3704.80	-10.2	V	3.0	42.0	1.0	-51.2	-13.0	-38.2		
5557.20	-8.4	V	3.0	42.9	1.0	-50.3	-13.0	-37.3		
7409.60	-6.8	V	3.0	42.5	1.0	-48.2	-13.0	-35.2		
3704.80	-8.0	H	3.0	42.0	1.0	-49.1	-13.0	-36.1		
5557.20	-8.4	H	3.0	42.9	1.0	-50.2	-13.0	-37.2		
7409.60	-6.6	H	3.0	42.5	1.0	-48.1	-13.0	-35.1		
Mid Ch, 1880MHz										
3760.00	-11.3	V	3.0	42.1	1.0	-52.3	-13.0	-39.3		
5640.00	-8.2	V	3.0	42.9	1.0	-50.1	-13.0	-37.1		
7520.00	-6.7	V	3.0	42.4	1.0	-48.1	-13.0	-35.1		
3760.00	-9.9	H	3.0	42.1	1.0	-51.0	-13.0	-38.0		
5640.00	-8.3	H	3.0	42.9	1.0	-50.2	-13.0	-37.2		
7520.00	-6.8	H	3.0	42.4	1.0	-48.2	-13.0	-35.2		
High Ch, 1907.6MHz										
3815.20	-11.2	V	3.0	42.1	1.0	-52.3	-13.0	-39.3		
5722.80	-8.3	V	3.0	42.9	1.0	-50.2	-13.0	-37.2		
7630.40	-6.9	V	3.0	42.4	1.0	-48.2	-13.0	-35.2		
3815.20	-8.8	H	3.0	42.1	1.0	-49.9	-13.0	-36.9		
5722.80	-8.1	H	3.0	42.9	1.0	-50.0	-13.0	-37.0		
7630.40	-6.8	H	3.0	42.4	1.0	-48.2	-13.0	-35.2		

LTE Band 2

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement										
		Company:	Samsung							
		Project #:	4789294522							
		Date:	2020-01-09							
		Test Engineer:	20890							
		Configuration:	EUT / AC Adapter / Earphone, Y-Position							
		Location:	Chamber 1							
		Mode:	LTE_QPSK Band 2 Harmonics, 15MHz Bandwidth							
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	-1.3	V	3.0	45.4	1.0	-45.7	-13.0	-32.7		
5572.50	-7.6	V	3.0	45.3	1.0	-51.8	-13.0	-38.8		
7430.00	-5.6	V	3.0	44.1	1.0	-48.7	-13.0	-35.7		
3715.00	0.2	H	3.0	45.4	1.0	-44.2	-13.0	-31.2		
5572.50	-8.0	H	3.0	45.3	1.0	-52.3	-13.0	-39.3		
7430.00	-5.3	H	3.0	44.1	1.0	-48.5	-13.0	-35.5		
Mid Ch, 1880MHz										
3760.00	-6.1	V	3.0	45.4	1.0	-50.5	-13.0	-37.5		
5640.00	-7.8	V	3.0	45.3	1.0	-52.1	-13.0	-39.1		
7520.00	-5.6	V	3.0	44.1	1.0	-48.7	-13.0	-35.7		
3760.00	-2.9	H	3.0	45.4	1.0	-47.4	-13.0	-34.4		
5640.00	-8.1	H	3.0	45.3	1.0	-52.3	-13.0	-39.3		
7520.00	-5.5	H	3.0	44.1	1.0	-48.6	-13.0	-35.6		
High Ch, 1902.5MHz										
3805.00	-4.9	V	3.0	45.4	1.0	-49.3	-13.0	-36.3		
5707.50	-7.5	V	3.0	45.3	1.0	-51.8	-13.0	-38.8		
7610.00	-5.5	V	3.0	44.0	1.0	-48.5	-13.0	-35.5		
3805.00	-2.5	H	3.0	45.4	1.0	-47.0	-13.0	-34.0		
5707.50	-8.0	H	3.0	45.3	1.0	-52.3	-13.0	-39.3		
7610.00	-5.4	H	3.0	44.0	1.0	-48.4	-13.0	-35.4		

LTE Band 4

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement										
		Company:	Samsung							
		Project #:	4789294522							
		Date:	2020-01-13							
		Test Engineer:	20890							
		Configuration:	EUT / AC Adapter / Earphone, Y-Position							
		Location:	Chamber 2							
		Mode:	LTE_QPSK Band 4 Harmonics, 10MHz Bandwidth							
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	-1.4	V	3.0	42.0	1.0	-42.5	-13.0	-29.5		
5145.00	-8.6	V	3.0	42.8	1.0	-50.4	-13.0	-37.4		
6860.00	-6.2	V	3.0	42.7	1.0	-47.9	-13.0	-34.9		
3430.00	-0.7	H	3.0	42.0	1.0	-41.7	-13.0	-28.7		
5145.00	-8.7	H	3.0	42.8	1.0	-50.4	-13.0	-37.4		
6860.00	-6.2	H	3.0	42.7	1.0	-47.9	-13.0	-34.9		
Mid Ch, 1732.5MHz										
3465.00	-0.6	V	3.0	42.0	1.0	-41.6	-13.0	-28.6		
5197.50	-8.3	V	3.0	42.8	1.0	-50.1	-13.0	-37.1		
6930.00	-6.3	V	3.0	42.7	1.0	-48.0	-13.0	-35.0		
3465.00	0.7	H	3.0	42.0	1.0	-40.3	-13.0	-27.3		
5197.50	-8.3	H	3.0	42.8	1.0	-50.1	-13.0	-37.1		
6930.00	-6.3	H	3.0	42.7	1.0	-48.0	-13.0	-35.0		
High Ch, 1750MHz										
3500.00	-3.3	V	3.0	42.0	1.0	-44.3	-13.0	-31.3		
5250.00	-8.7	V	3.0	42.8	1.0	-50.5	-13.0	-37.5		
7000.00	-6.3	V	3.0	42.7	1.0	-47.9	-13.0	-34.9		
3500.00	-1.9	H	3.0	42.0	1.0	-43.0	-13.0	-30.0		
5250.00	-8.6	H	3.0	42.8	1.0	-50.4	-13.0	-37.4		
7000.00	-6.1	H	3.0	42.7	1.0	-47.8	-13.0	-34.8		

LTE Band 5

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement										
		Company:	Samsung							
		Project #:	4789294522							
		Date:	2020-01-10							
		Test Engineer:	20890							
		Configuration:	EUT / AC Adapter / Earphone, Z-Position							
		Location:	Chamber 1							
		Mode:	LTE_QPSK Band 5 Harmonics, 10MHz Bandwidth							
LTE Band 5 10MHz QPSK	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch, 829MHz									
	1658.00	-11.1	V	3.0	45.2	1.0	-55.3	-13.0	-42.3	
	2487.00	-11.7	V	3.0	45.0	1.0	-55.7	-13.0	-42.7	
	3316.00	-9.2	V	3.0	45.3	1.0	-53.5	-13.0	-40.5	
	1658.00	-11.0	H	3.0	45.2	1.0	-55.2	-13.0	-42.2	
	2487.00	-11.1	H	3.0	45.0	1.0	-55.1	-13.0	-42.1	
	3316.00	-9.5	H	3.0	45.3	1.0	-53.8	-13.0	-40.8	
Mid Ch, 836.5MHz										
	1673.00	-13.5	V	3.0	45.2	1.0	-57.7	-13.0	-44.7	
	2509.50	-11.8	V	3.0	45.0	1.0	-55.8	-13.0	-42.8	
	3346.00	-9.5	V	3.0	45.3	1.0	-53.7	-13.0	-40.7	
	1673.00	-11.3	H	3.0	45.2	1.0	-55.5	-13.0	-42.5	
	2509.50	-11.2	H	3.0	45.0	1.0	-55.3	-13.0	-42.3	
	3346.00	-9.5	H	3.0	45.3	1.0	-53.8	-13.0	-40.8	
High Ch, 844MHz										
	1688.00	-10.9	V	3.0	45.2	1.0	-55.1	-13.0	-42.1	
	2532.00	-11.7	V	3.0	45.0	1.0	-55.7	-13.0	-42.7	
	3376.00	-9.0	V	3.0	45.3	1.0	-53.2	-13.0	-40.2	
	1688.00	-8.8	H	3.0	45.2	1.0	-53.0	-13.0	-40.0	
	2532.00	-11.0	H	3.0	45.0	1.0	-55.0	-13.0	-42.0	
	3376.00	-9.2	H	3.0	45.3	1.0	-53.5	-13.0	-40.5	

LTE Band 12

		UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement								
		Company: Samsung Project #: 4789294522 Date: 2020-01-13 Test Engineer: 20896 Configuration: EUT / AC Adapter / Earphone, X-Position Location: Chamber 1 Mode: LTE_QPSK Band 12 Harmonics, 5MHz Bandwidth								
LTE	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Band 12	Low Ch, 701.5MHz									
	1403.00	-15.4	V	3.0	45.4	1.0	-59.8	-13.0	-46.8	
5MHz	2104.50	-12.1	V	3.0	45.0	1.0	-56.1	-13.0	-43.1	
	2806.00	-10.8	V	3.0	45.1	1.0	-54.9	-13.0	-41.9	
QPSK	1403.00	-12.5	H	3.0	45.4	1.0	-56.9	-13.0	-43.9	
	2104.50	-10.7	H	3.0	45.0	1.0	-54.6	-13.0	-41.6	
	2806.00	-10.7	H	3.0	45.1	1.0	-54.8	-13.0	-41.8	
Mid Ch, 707.5MHz										
	1415.00	-11.2	V	3.0	45.4	1.0	-55.6	-13.0	-42.6	
	2122.50	-12.3	V	3.0	45.0	1.0	-56.2	-13.0	-43.2	
	2830.00	-10.9	V	3.0	45.1	1.0	-55.0	-13.0	-42.0	
	1415.00	-11.3	H	3.0	45.4	1.0	-55.7	-13.0	-42.7	
	2122.50	-10.8	H	3.0	45.0	1.0	-54.7	-13.0	-41.7	
	2830.00	-10.8	H	3.0	45.1	1.0	-54.9	-13.0	-41.9	
High Ch, 713.5MHz										
	1427.00	-15.6	V	3.0	45.4	1.0	-59.9	-13.0	-46.9	
	2140.50	-12.1	V	3.0	45.0	1.0	-56.1	-13.0	-43.1	
	2854.00	-10.8	V	3.0	45.1	1.0	-54.9	-13.0	-41.9	
	1427.00	-13.5	H	3.0	45.4	1.0	-57.9	-13.0	-44.9	
	2140.50	-10.8	H	3.0	45.0	1.0	-54.8	-13.0	-41.8	
	2854.00	-10.7	H	3.0	45.1	1.0	-54.9	-13.0	-41.9	

LTE Band 17

LTE Band 17 (Frequency range: 704-716 MHz) is covered by LTE Band 12 (Frequency range: 699-716 MHz) due to overlapping frequency range, same maximum tune-up limit and same channel bandwidth.

END OF REPORT