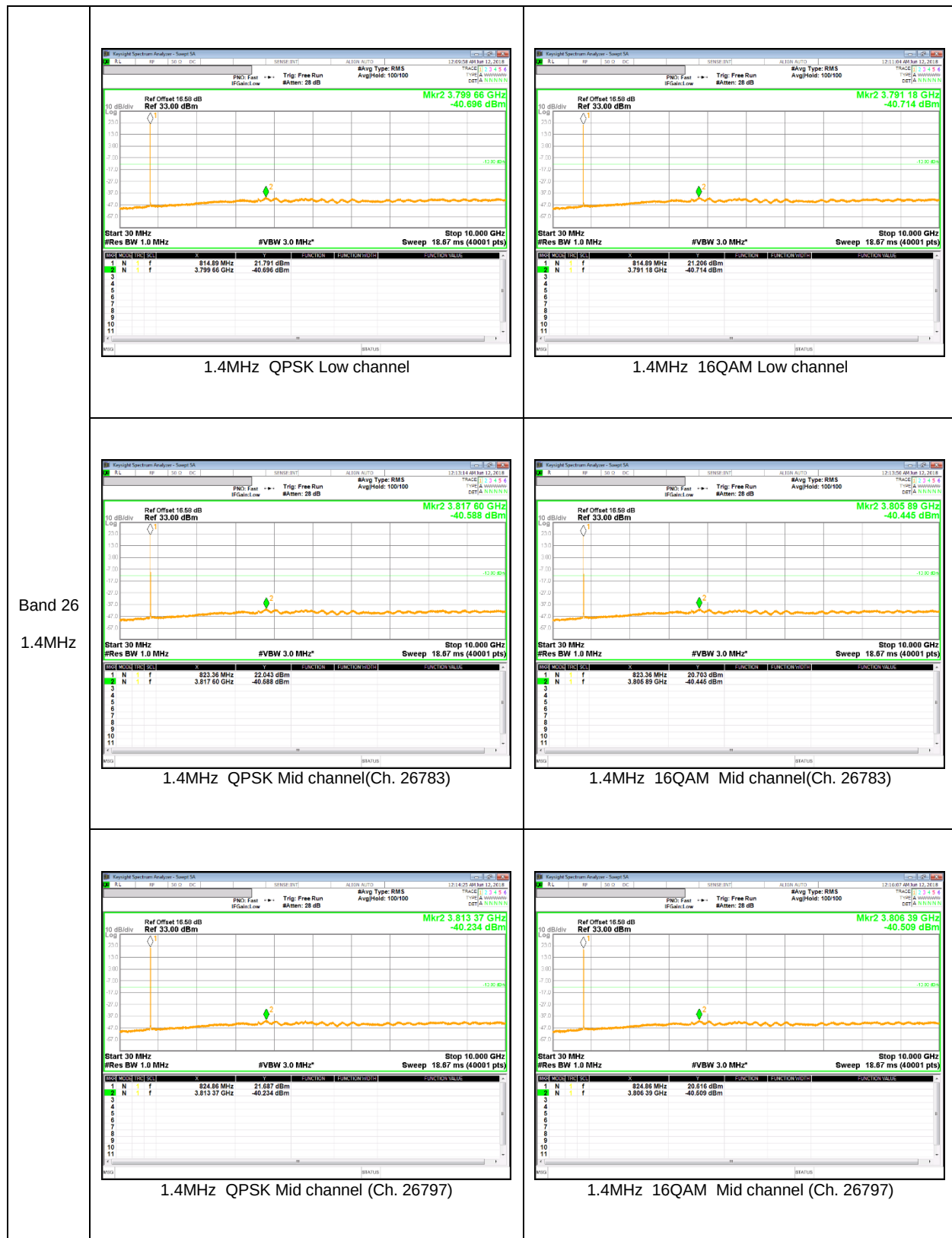
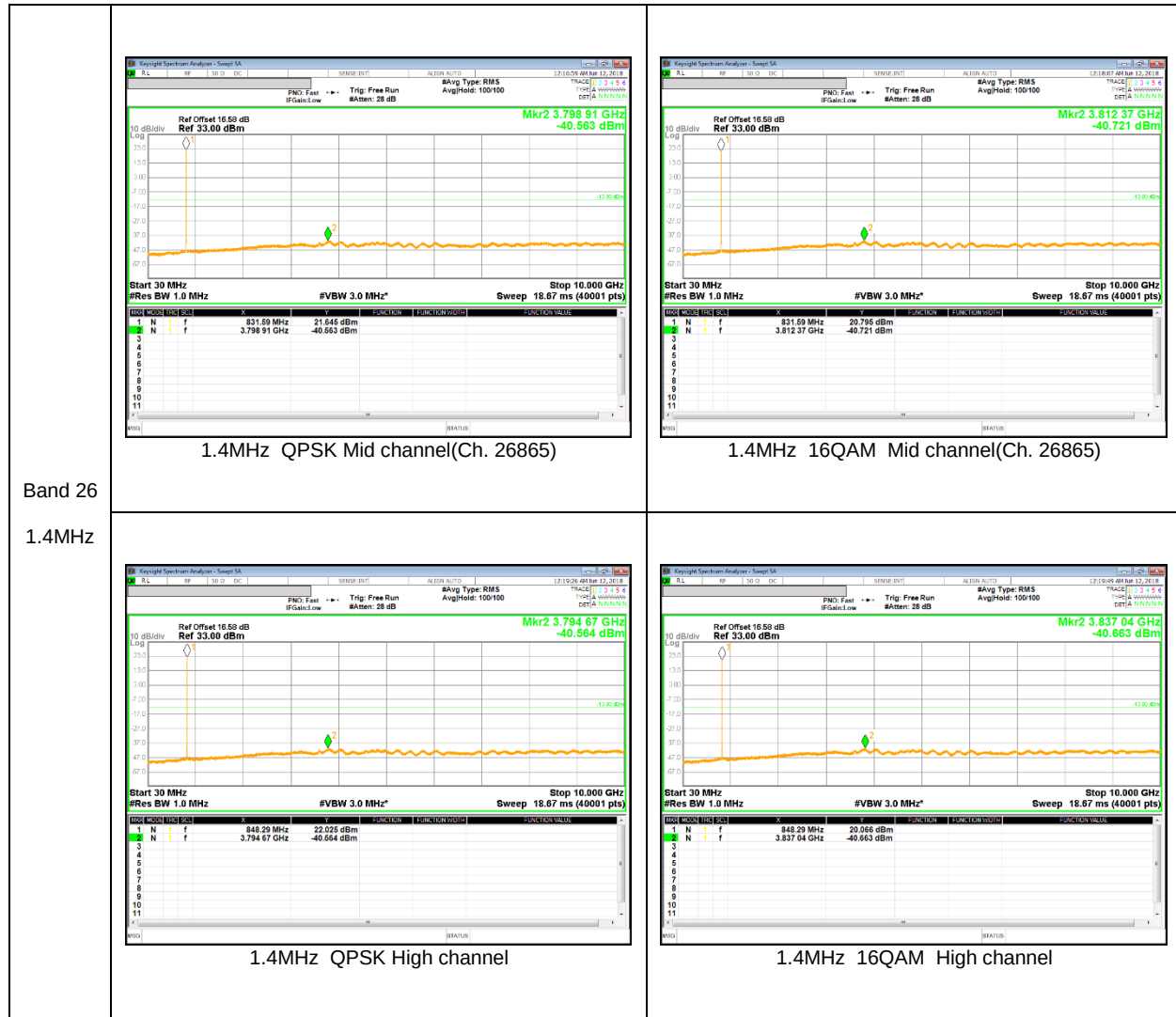
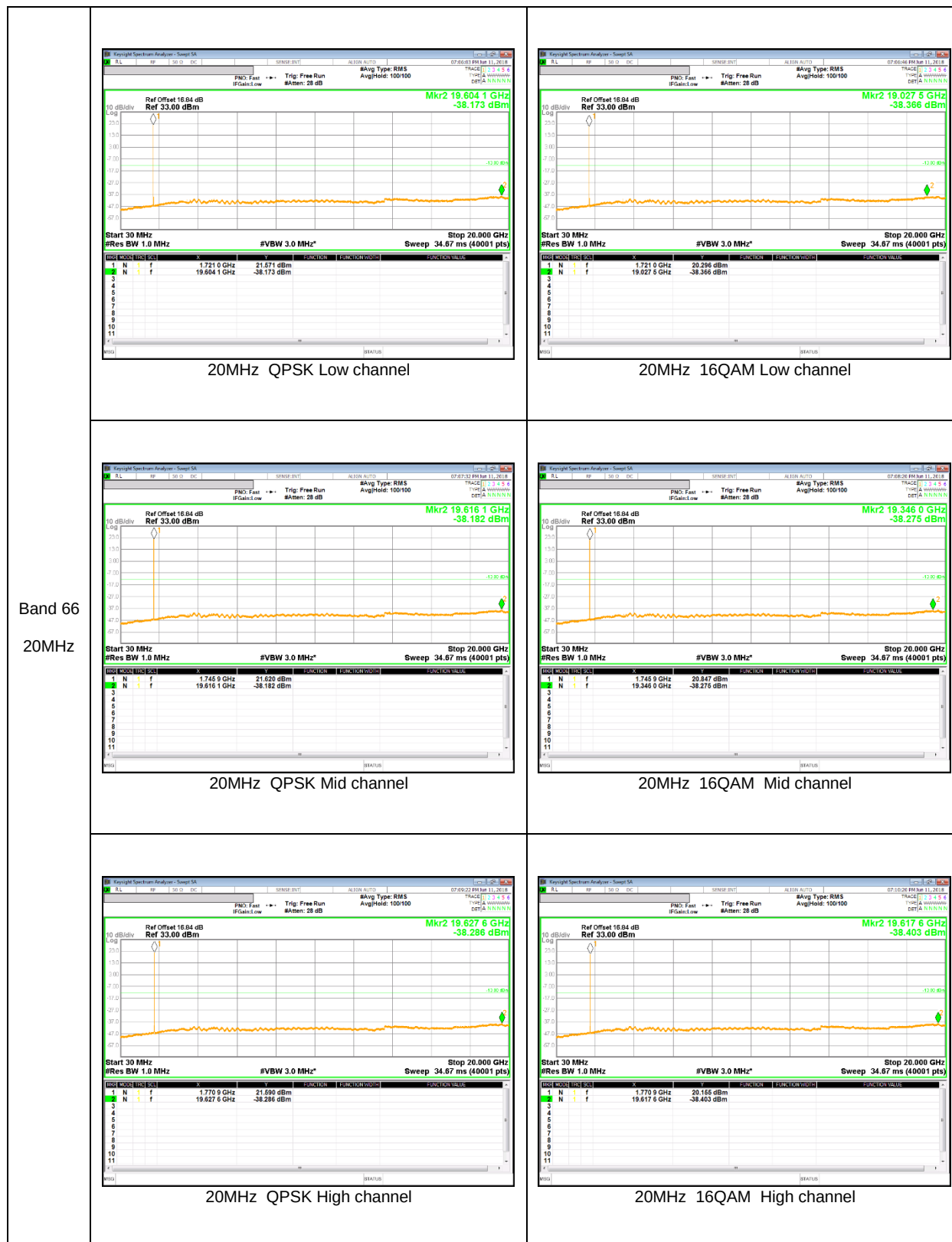
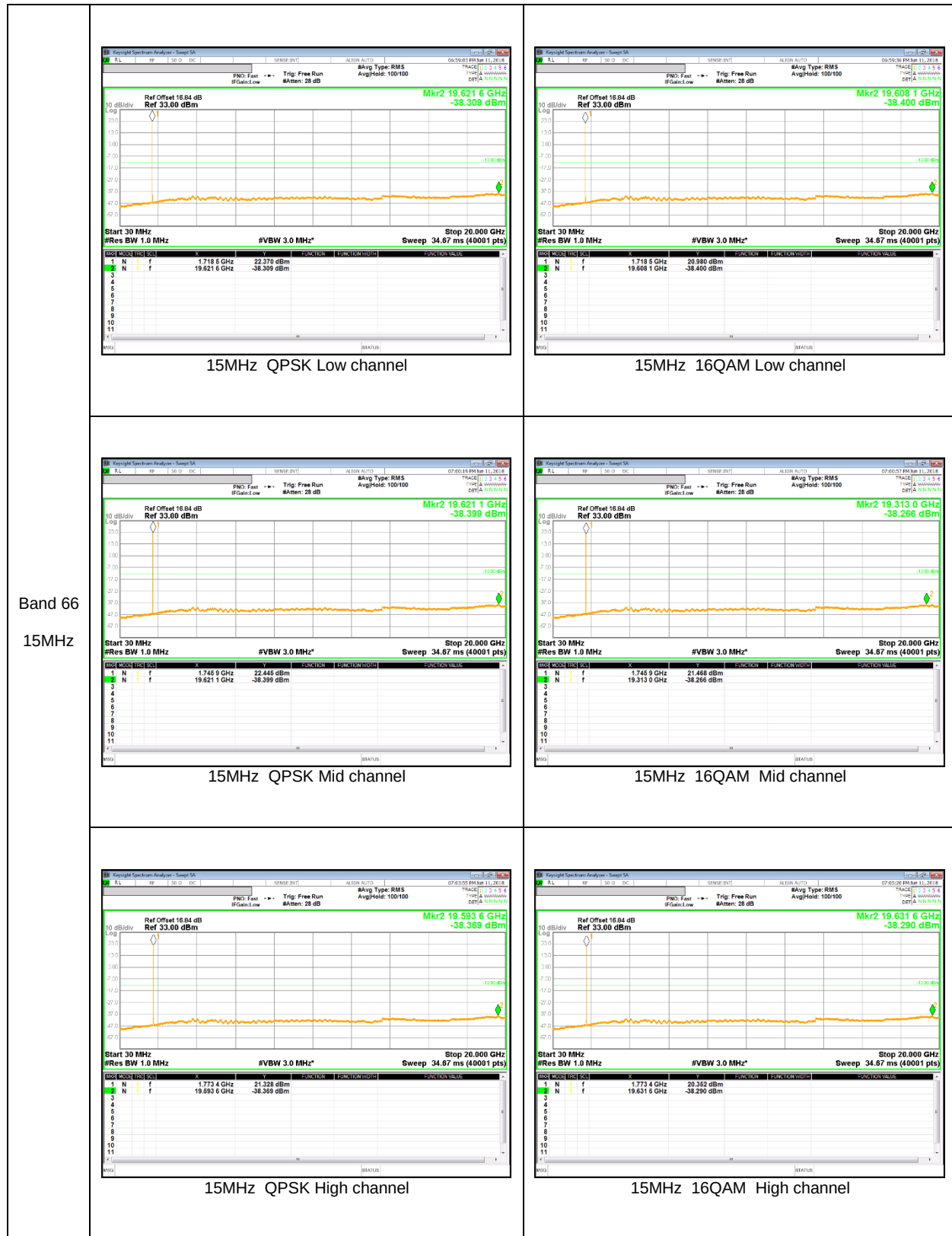


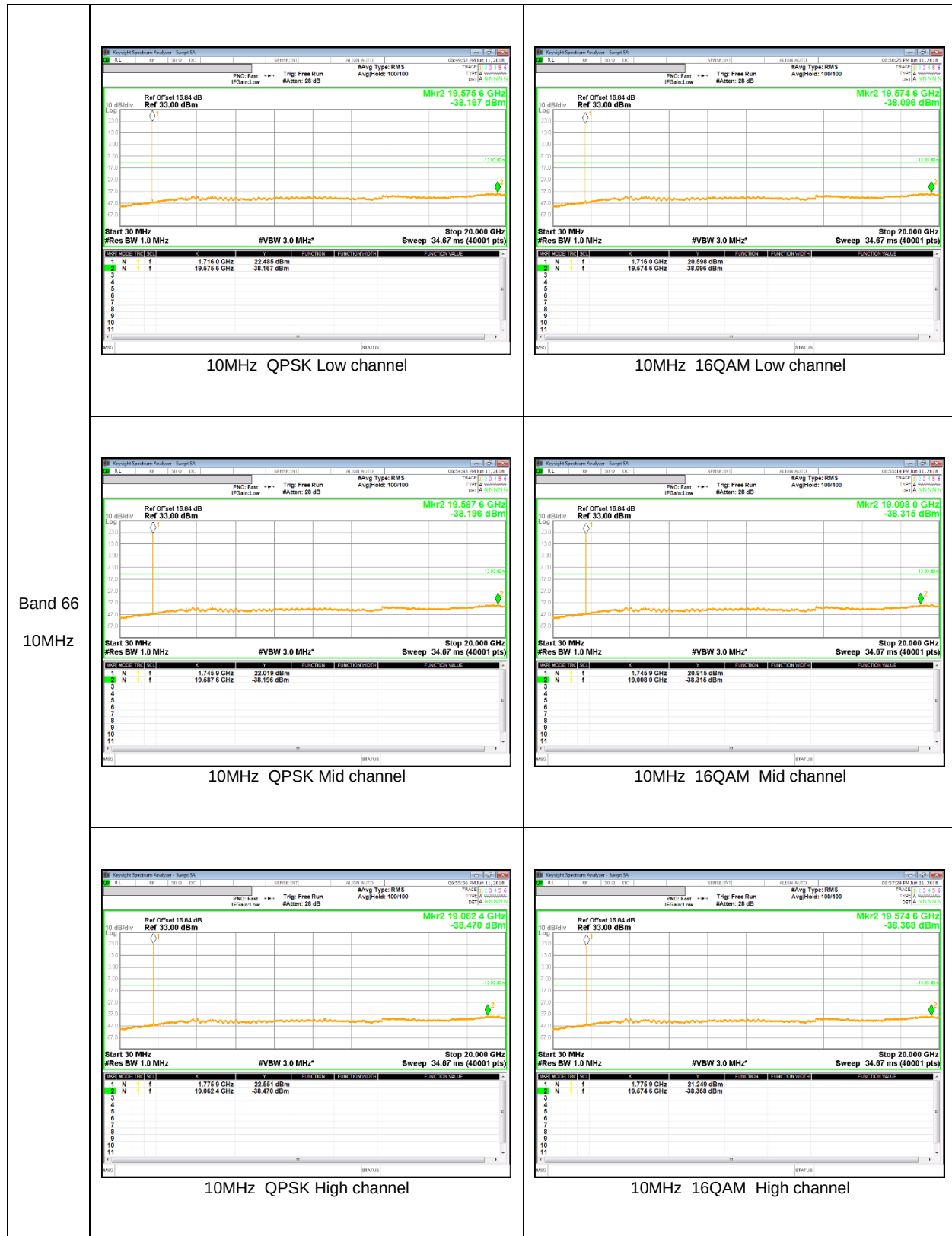


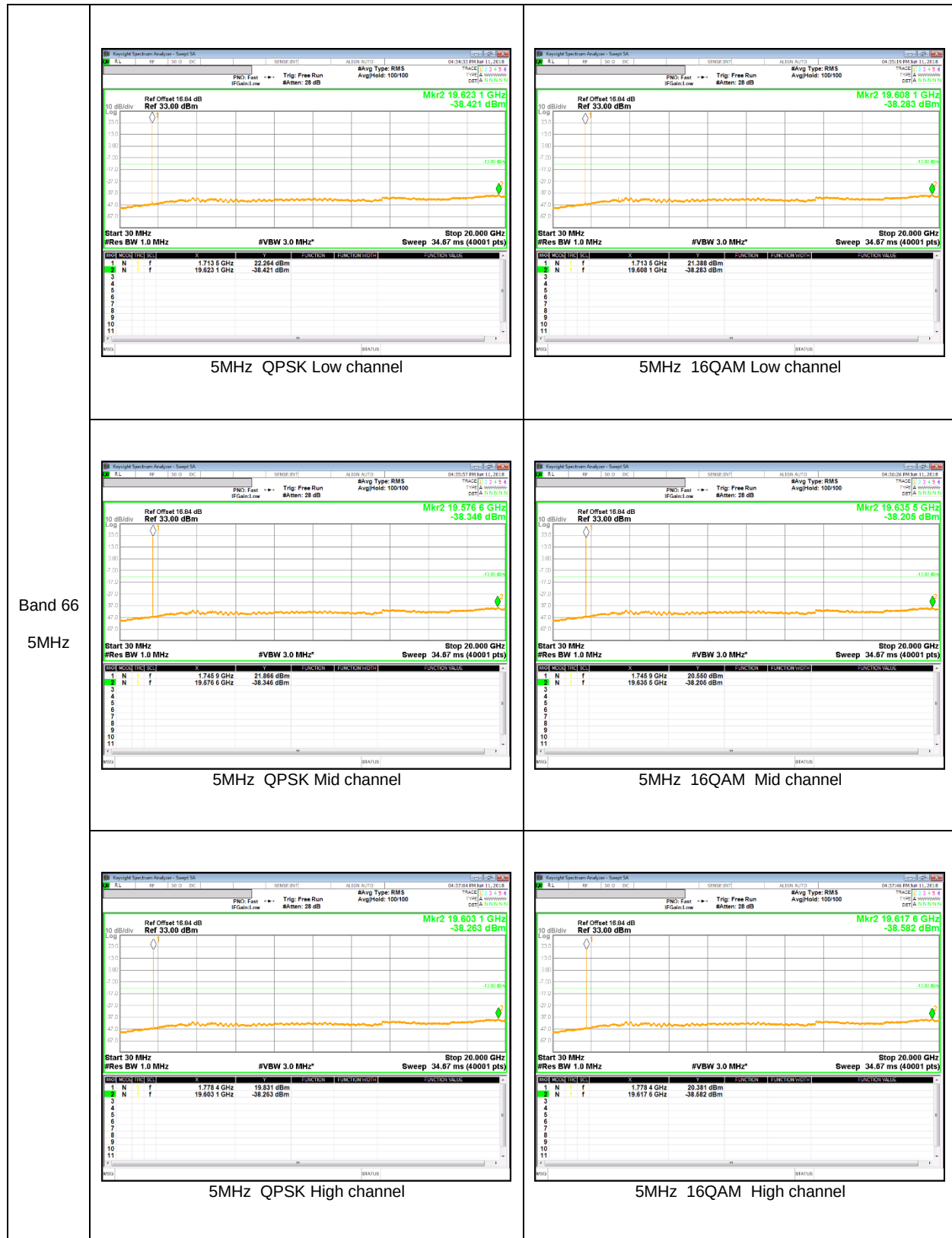


LTE Band 66

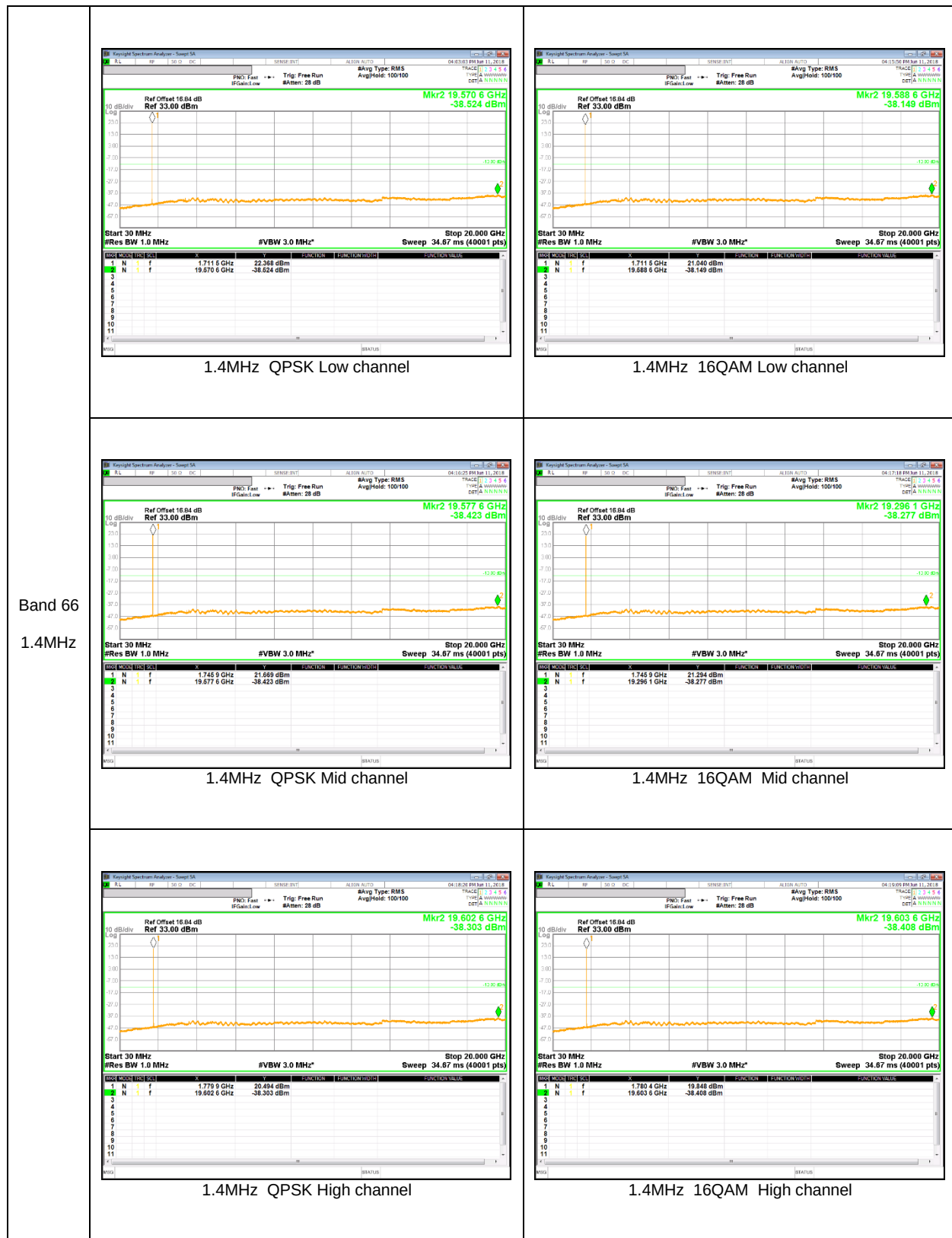












9.4. FREQUENCY STABILITY

RULE PART(S)

FCC: §2.1055, §22.355, §24.235, §27.54 and §90.213
RSS-130 (4.3), RSS-132 (5.3), RSS-133 (6.3), RSS-139 (6.4)

LIMITS

§22.355, §90.213 - 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.

9.4.1. FREQUENCY STABILITY RESULTS

WCDMA Band 5 (Rel 99)

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]		
3.85	50	826.39999032	-0.011	846.59999028	-0.004		2.5
3.85	40	826.39998316	-0.003	846.59998373	0.004		2.5
3.85	30	826.39998697	-0.007	846.59998270	0.005		2.5
3.85	20	826.39998084	0.000	846.59998671	0.000		2.5
3.85	10	826.39998444	-0.004	846.59998990	-0.004		2.5
3.85	0	826.39998444	-0.004	846.59998325	0.004		2.5
3.85	-10	826.39998524	-0.005	846.59998200	0.006		2.5
3.85	-20	826.39998169	-0.001	846.59998558	0.001		2.5
3.85	-30	826.39998942	-0.010	846.59998347	0.004		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					
		Low Channel		High Channel		Limit [ppm]	
		[MHz]	Delta [ppm]	[MHz]	Delta [ppm]		
3.85	20	826.39998084	0	846.59998671	0	2.5	
4.40	20	826.39998952	-0.011	846.59998885	-0.003	2.5	
3.60	20	826.39998467	-0.005	846.59998891	-0.003	2.5	

WCDMA Band 4 (Rel 99)

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	1712.3979	1752.6021		
Extreme (50C)		1712.3979	1752.6021	-20.7	-0.012
Extreme (40C)		1712.3979	1752.6021	-21.7	-0.013
Extreme (30C)		1712.3979	1752.6021	-23.9	-0.014
Extreme (10C)		1712.3979	1752.6021	-26.8	-0.015
Extreme (0C)		1712.3979	1752.6021	-26.4	-0.015
Extreme (-10C)		1712.3979	1752.6021	-27.1	-0.016
Extreme (-20C)		1712.3979	1752.6021	-25.9	-0.015
Extreme (-30C)		1712.3979	1752.6021	-18.9	-0.011
20C	15%	1712.3979	1752.6021	-19.7	-0.011
	-15%	1712.3979	1752.6021	-24.3	-0.014
	End Point	1712.3979	1752.6021	-26.9	-0.016

WCDMA Band 2 (Low Frequency: Rel 99 / High 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	1852.3979	1907.6021		
Extreme (50C)		1852.3979	1907.6021	-20.2	-0.011
Extreme (40C)		1852.3979	1907.6021	-20.3	-0.011
Extreme (30C)		1852.3979	1907.6021	-22.3	-0.012
Extreme (10C)		1852.3979	1907.6021	-20.9	-0.011
Extreme (0C)		1852.3979	1907.6021	-22.1	-0.012
Extreme (-10C)		1852.3979	1907.6021	-25.2	-0.013
Extreme (-20C)		1852.3979	1907.6020	-29.6	-0.016
Extreme (-30C)		1852.3979	1907.6021	-23.0	-0.012
20C	15%	1852.3979	1907.6021	-21.9	-0.012
	-15%	1852.3979	1907.6021	-28.0	-0.015
	End Point	1852.3979	1907.6021	-20.2	-0.011

LTE Band 12 (QPSK)

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	699.6995	715.3005		
Extreme (50C)		699.6994	715.3005	-14.4	-0.020
Extreme (40C)		699.6994	715.3005	-9.7	-0.014
Extreme (30C)		699.6994	715.3005	-14.4	-0.020
Extreme (10C)		699.6994	715.3005	-12.8	-0.018
Extreme (0C)		699.6994	715.3005	-15.5	-0.022
Extreme (-10C)		699.6994	715.3005	-14.5	-0.020
Extreme (-20C)		699.6994	715.3005	-7.7	-0.011
Extreme (-30C)		699.6994	715.3005	-7.4	-0.010
20C	15%	699.6994	715.3005	-10.6	-0.015
	-15%	699.6994	715.3005	-10.0	-0.014
	End Point	699.6994	715.3005	-9.4	-0.013

LTE Band 13 (Low Frequency: 16QAM / High 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	779.4978	784.5022		
Extreme (50C)		779.4977	784.5022	-13.4	-0.017
Extreme (40C)		779.4977	784.5022	-12.9	-0.017
Extreme (30C)		779.4977	784.5022	-8.5	-0.011
Extreme (10C)		779.4977	784.5022	-8.2	-0.010
Extreme (0C)		779.4977	784.5022	-16.4	-0.021
Extreme (-10C)		779.4977	784.5022	-17.0	-0.022
Extreme (-20C)		779.4977	784.5022	-8.2	-0.010
Extreme (-30C)		779.4977	784.5022	-11.5	-0.015
20C	15%	779.4977	784.5022	-12.5	-0.016
	-15%	779.4977	784.5022	-12.4	-0.016
	End Point	779.4977	784.5022	-13.8	-0.018

LTE Band 25 (16QAM)

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	1850.6995	1914.3005		
Extreme (50C)		1850.6994	1914.3005	-18.6	-0.010
Extreme (40C)		1850.6994	1914.3005	-19.9	-0.011
Extreme (30C)		1850.6994	1914.3005	-14.0	-0.007
Extreme (10C)		1850.6994	1914.3005	-19.1	-0.010
Extreme (0C)		1850.6994	1914.3005	-14.3	-0.008
Extreme (-10C)		1850.6994	1914.3005	-19.7	-0.010
Extreme (-20C)		1850.6994	1914.3005	-16.1	-0.009
Extreme (-30C)		1850.6994	1914.3005	-24.9	-0.013
20C	15%	1850.6994	1914.3005	-24.2	-0.013
	-15%	1850.6994	1914.3005	-19.7	-0.010
	End Point	1850.6994	1914.3005	-16.6	-0.009

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
		Frequency Deviation Measured with Time Elapse				
Power Supply [Vdc]	Environment Temperature [°C]	Low Channel		High Channel		Limit [ppm]
		[MHz]	Delta [ppm]	[MHz]	Delta [ppm]	
3.85	50	814.69998432	-0.004	848.29998945	-0.010	2.5
3.85	40	814.69998932	-0.011	848.29998417	-0.003	2.5
3.85	30	814.69998481	-0.005	848.29998108	0.000	2.5
3.85	20	814.69998075	0.000	848.29998123	0.000	2.5
3.85	10	814.69998716	-0.008	848.29998730	-0.007	2.5
3.85	0	814.69998297	-0.003	848.29998302	-0.002	2.5
3.85	-10	814.69998494	-0.005	848.29998850	-0.009	2.5
3.85	-20	814.69999056	-0.012	848.29998906	-0.009	2.5
3.85	-30	814.69998423	-0.004	848.29998953	-0.010	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
		Frequency Deviation Measured with Time Elapse				
Power Supply [Vdc]	Environment Temperature [°C]	Low Channel		High Channel		Limit [ppm]
		[MHz]	Delta [ppm]	[MHz]	Delta [ppm]	
3.85	20	814.69998075	0	848.29998123	0	2.5
4.40	20	814.69998410	-0.004	848.29998465	-0.004	2.5
3.60	20	814.69998060	0.000	848.29998585	-0.005	2.5

LTE Band 66

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	1710.6995	1779.3005		
Extreme (50C)		1710.6994	1779.3005	-16.0	-0.009
Extreme (40C)		1710.6994	1779.3005	-22.9	-0.013
Extreme (30C)		1710.6994	1779.3005	-17.9	-0.010
Extreme (10C)		1710.6994	1779.3005	-15.5	-0.009
Extreme (0C)		1710.6994	1779.3005	-16.7	-0.010
Extreme (-10C)		1710.6994	1779.3005	-12.5	-0.007
Extreme (-20C)		1710.6994	1779.3005	-22.7	-0.013
Extreme (-30C)		1710.6994	1779.3005	-18.4	-0.011
20C	15%	1710.6994	1779.3005	-12.3	-0.007
	-15%	1710.6994	1779.3005	-12.7	-0.007
	End Point	1710.6994	1779.3005	-16.0	-0.009

LTE Band 2

LTE Band 2 (Frequency range: 1850-1910 MHz) is covered by LTE Band 25 (Frequency range: 1850-1915 MHz) due to overlapping frequency range, same maximum tune-up limit and same channel bandwidth.

LTE Band 4

LTE Band 4 (Frequency range: 1710-1755 MHz) is covered by LTE Band 66 (Frequency range: 1710-1780 MHz) due to overlapping frequency range, same maximum tune-up limit and same channel bandwidth.

LTE Band 5

LTE Band 5 (Frequency range: 824-849 MHz) is covered by LTE Band 26 (Frequency range: 814-849 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, §27.50 and §90.635
IC RSS-132 (5.4), RSS-130 (4.4), RSS-133 (6.4), RSS-139 (6.5)

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.

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.

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

RSS-130 (4.4) – The e.i.r.p. shall not exceed 50 watts for mobile equipment or for outdoor fixed subscriber equipment, nor shall it exceed 5 watts for portable equipment or for indoor fixed subscriber equipment.

RSS-132 (5.4) - The equivalent isotropically radiated power (e.i.r.p.) for mobile equipment shall not exceed 11.5 watts.

RSS-133 (6.4) - The equivalent isotropically radiated power (e.i.r.p.) for transmitters shall not exceed the limits given in SRSP-510.(2 Watts)

RSS-139 (6.5) - The equivalent isotropically radiated power (e.i.r.p.) for mobile and portable transmitters shall not exceed one watt.

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(WCDMA), average(LTE);

TEST RESULTS

10.1.1. ERP/EIRP Results

WCDMA

Band	Mode	Channel	f [MHz]	ERP / EIRP	
				[dBm]	[mW]
Band 5	REL99	4132	826.4	9.68	9.29
		4183	836.6	9.13	8.18
		4233	846.6	9.49	8.89
	HSDPA	4132	826.4	8.62	7.28
		4183	836.6	8.52	7.11
		4233	846.6	8.98	7.91
Band 4	REL99	1312	1712.4	18.28	67.30
		1413	1732.6	18.64	73.11
		1513	1752.6	17.10	51.29
	HSDPA	1312	1712.4	17.96	62.52
		1413	1732.6	17.59	57.41
		1513	1752.6	16.73	47.10
Band 2	REL99	9262	1852.4	14.92	31.05
		9400	1880.0	14.79	30.13
		9538	1907.6	13.45	22.13
	HSDPA	9262	1852.4	14.89	30.83
		9400	1880.0	14.47	27.99
		9538	1907.6	14.06	25.47

Note: These data of Band 5 are ERP results.

(The EIRP conversion formula for IC : EIRP result (dBm) = ERP result (dBm) + 2.15 dB)

LTE Band 2

LTE Band 2 (Frequency range: 1850-1910 MHz) is covered by LTE Band 25 (Frequency range: 1850-1915 MHz) due to overlapping frequency range, same maximum tune-up limit and same channel bandwidth.

LTE Band 4

LTE Band 4 (Frequency range: 1710-1755 MHz) is covered by LTE Band 66 (Frequency range: 1710-1780 MHz) due to overlapping frequency range, same maximum tune-up limit and same channel bandwidth.

LTE Band 5

LTE Band 5 (Frequency range: 824-849 MHz) is covered by LTE Band 26 (Frequency range: 814-849 MHz) due to overlapping frequency range, same maximum tune-up limit and same channel bandwidth.

LTE Band 12

Band	BW	Mode	RB Size/	f [MHz]	ERP / EIRP	
	[MHz]		RB Offset		[dBm]	[mW]
Band 12	10	QPSK	1/0	704.0	5.59	3.62
			1/0	707.5	5.54	3.58
			1/0	711.0	5.02	3.18
		16QAM	1/0	704.0	4.04	2.54
			1/0	707.5	4.24	2.65
			1/0	711.0	3.99	2.51
	5	QPSK	1/0	701.5	4.51	2.82
			1/0	707.5	5.24	3.34
			1/24	713.5	5.42	3.48
		16QAM	1/12	701.5	3.39	2.18
			1/0	707.5	3.84	2.42
			1/24	713.5	3.84	2.42
	3	QPSK	1/0	700.5	4.73	2.97
			1/0	707.5	5.81	3.81
			1/14	714.5	5.45	3.51
		16QAM	1/14	700.5	3.85	2.43
			1/0	707.5	4.44	2.78
			1/14	714.5	4.32	2.70
	1.4	QPSK	1/5	699.7	5.06	3.21
			1/3	707.5	5.44	3.50
			1/5	715.3	5.48	3.53
		16QAM	1/5	699.7	3.41	2.19
			1/5	707.5	5.61	3.64
			1/5	715.3	4.64	2.91

Note: These data are ERP results.

(The EIRP conversion formula for IC : EIRP result (dBm) = ERP result (dBm) + 2.15 dB)

LTE Band 13

Band	BW	Mode	RB size / RB Offset	f [MHz]	ERP / EIRP	
	[MHz]				[dBm]	[mW]
Band 13	10	QPSK	1/0	782.0	10.06	10.14
		16QAM	1/0	782.0	8.58	7.21
	5	QPSK	1/0	779.5	8.47	7.03
			1/0	782.0	10.27	10.64
			1/0	784.5	9.71	9.35
		16QAM	1/0	779.5	7.52	5.65
			1/0	782.0	8.98	7.91
			1/0	784.5	8.84	7.66

Note: These data are ERP results.

(The EIRP conversion formula for IC : EIRP result (dBm) = ERP result (dBm) + 2.15 dB)

LTE Band 25

Band	BW	Mode	RB Size/	f [MHz]	ERP / EIRP	
	[MHz]		RB Offset		[dBm]	[mW]
Band 25	20	QPSK	1/0	1860.0	15.31	33.96
			1/0	1882.5	14.59	28.77
			1/49	1905.0	14.06	25.47
		16QAM	1/0	1860.0	13.99	25.06
			1/0	1882.5	13.53	22.54
			1/49	1905.0	13.13	20.56
	15	QPSK	1/0	1857.5	15.29	33.81
			1/0	1882.5	14.16	26.06
			1/37	1907.5	12.99	19.91
		16QAM	1/0	1857.5	13.64	23.12
			1/0	1882.5	12.48	17.70
			1/0	1907.5	11.75	14.96
	10	QPSK	1/0	1855.0	15.43	34.91
			1/49	1882.5	12.73	18.75
			1/0	1910.0	13.01	20.00
		16QAM	1/0	1855.0	14.31	26.98
			1/0	1882.5	11.64	14.59
			1/0	1910.0	11.48	14.06
	5	QPSK	1/0	1852.5	14.76	29.92
			1/12	1882.5	13.25	21.13
			1/0	1912.5	13.38	21.78
		16QAM	1/0	1852.5	13.53	22.54
			1/12	1882.5	11.60	14.45
			1/0	1912.5	12.03	15.96
	3	QPSK	1/0	1851.5	15.98	39.63
			1/0	1882.5	13.05	20.18
			1/8	1913.5	15.00	31.62
		16QAM	1/0	1851.5	14.51	28.25
			1/0	1882.5	11.59	14.42
			1/8	1913.5	13.99	25.06
	1.4	QPSK	1/3	1850.7	15.61	36.39
			1/5	1882.5	13.55	22.65
			1/5	1914.3	13.43	22.03
		16QAM	1/3	1850.7	14.41	27.61
			1/3	1882.5	12.99	19.91
			1/5	1914.3	12.13	16.33

LTE Band 26

Band	BW [MHz]	Mode	RB Size/ RB Offset	f [MHz]	ERP / EIRP	
					[dBm]	[mW]
Band 26	15	QPSK	1/0	821.5	8.60	7.24
			1/0	831.5	8.74	7.48
			1/0	841.5	8.36	6.85
		16QAM	1/0	821.5	7.83	6.07
			1/0	831.5	7.72	5.92
			1/0	841.5	7.94	6.22
	10	QPSK	1/0	819.0	8.44	6.98
			1/0	829.0	7.12	5.15
			1/0	831.5	8.95	7.85
			1/0	844.0	8.22	6.64
		16QAM	1/0	819.0	7.27	5.33
			1/0	829.0	6.26	4.23
			1/0	831.5	7.83	6.07
			1/0	844.0	6.98	4.99
	5	QPSK	1/0	816.5	7.41	5.51
			1/0	821.5	8.40	6.92
			1/0	826.5	8.84	7.66
			1/0	831.5	8.42	6.95
			1/0	846.5	7.03	5.05
		16QAM	1/0	816.5	6.26	4.23
			1/0	821.5	8.57	7.19
			1/0	826.5	7.19	5.24
			1/0	831.5	7.57	5.71
			1/24	846.5	5.28	3.37
	3	QPSK	1/8	815.5	7.76	5.97
			1/0	822.5	8.22	6.64
			1/0	825.5	8.59	7.23
			1/0	831.5	7.90	6.17
			1/0	847.5	6.42	4.39
		16QAM	1/0	815.5	6.42	4.39
			1/0	822.5	7.14	5.18
			1/0	825.5	7.17	5.21
			1/8	831.5	7.45	5.56
			1/14	847.5	5.22	3.33
	1.4	QPSK	1/0	814.7	6.76	4.74
			1/0	823.3	8.55	7.16
			1/0	824.7	9.07	8.07
			1/0	831.5	7.58	5.73
			1/0	848.3	6.83	4.82
		16QAM	1/0	814.7	6.33	4.30
			1/0	823.3	7.30	5.37
			1/0	824.7	7.39	5.48
			1/0	831.5	6.75	4.73
			1/0	848.3	4.62	2.90

Note: These data are ERP results.

(The EIRP conversion formula for IC : EIRP result (dBm) = ERP result (dBm) + 2.15 dB)

LTE Band 66

Band	BW	Mode	RB Size/	f [MHz]	ERP / EIRP	
	[MHz]		RB Offset		[dBm]	[mW]
Band 66	20	QPSK	1/49	1720.0	17.08	51.05
			1/99	1745.0	17.29	53.58
			1/49	1770.0	15.65	36.73
		16QAM	1/99	1720.0	15.22	33.27
			1/49	1745.0	17.29	53.58
			1/49	1770.0	14.53	28.38
	15	QPSK	1/37	1717.5	16.01	39.90
			1/74	1745.0	17.17	52.12
			1/37	1772.5	17.45	55.59
		16QAM	1/74	1717.5	15.28	33.73
			1/37	1745.0	16.44	44.06
			1/37	1772.5	16.10	40.74
	10	QPSK	1/0	1715.0	16.52	44.87
			1/0	1745.0	17.71	59.02
			1/0	1775.0	16.16	41.30
		16QAM	1/0	1715.0	15.25	33.50
			1/0	1745.0	16.40	43.65
			1/0	1775.0	15.00	31.62
	5	QPSK	1/0	1712.5	16.73	47.10
			1/24	1745.0	17.06	50.82
			1/12	1777.5	17.71	59.02
		16QAM	1/0	1712.5	16.44	44.06
			1/24	1745.0	16.51	44.77
			1/12	1777.5	16.69	46.67
	3	QPSK	1/14	1711.5	15.77	37.76
			1/0	1745.0	17.82	60.53
			1/8	1778.5	17.01	50.23
		16QAM	1/0	1711.5	14.60	28.84
			1/0	1745.0	16.85	48.42
			1/8	1778.5	16.10	40.74
	1.4	QPSK	1/3	1710.7	15.94	39.26
			1/0	1745.0	17.91	61.80
			1/3	1779.3	18.53	71.29
		16QAM	1/3	1710.7	17.25	53.09
			1/0	1745.0	17.18	52.24
			1/0	1779.3	17.73	59.29

10.1.2.ERP/EIRP DATA

WCDMA Band 5

WCDMA

Band 5

REL99

UL Verification Services, Inc.

High Frequency Substitution Measurement

Company:

Project #:

Date:

Test Engineer:

Configuration:

Location:

Mode:

Samsung

4788480978

2018-07-12

47989

EUT, Cradle, Adapter / Z-Position

Chamber 1

Rel99 Band 5 Fundamentals

Test Equipment:

Receiving: VULB9163-750, and Chamber 2 SMA Cables

Substitution: Dipole 3121_DB4, 3m N-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								
826.40	10.36	V	1.0	-1.5	7.94	38.5	-30.6	
826.40	12.10	H	1.0	-1.5	9.68	38.5	-28.8	
Mid Ch								
836.60	9.43	V	1.0	-1.4	7.05	38.5	-31.4	
836.60	11.51	H	1.0	-1.4	9.13	38.5	-29.4	
High Ch								
846.60	9.13	V	1.0	-1.4	6.78	38.5	-31.7	
846.60	11.84	H	1.0	-1.4	9.49	38.5	-29.0	

WCDMA

Band 5

HSDPA

UL Verification Services, Inc.

High Frequency Substitution Measurement

Company:

Project #:

Date:

Test Engineer:

Configuration:

Location:

Mode:

Samsung

4788480978

2018-07-12

47989

EUT, Cradle, Adapter / Z-Position

Chamber 1

HSDPA Band 5 Fundamentals

Test Equipment:

Receiving: VULB9163-750, and Chamber 2 SMA Cables

Substitution: Dipole 3121_DB4, 3m N-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								
826.40	9.71	V	1.0	-1.5	7.29	38.5	-31.2	
826.40	11.04	H	1.0	-1.5	8.62	38.5	-29.9	
Mid Ch								
836.60	8.71	V	1.0	-1.4	6.33	38.5	-32.2	
836.60	10.90	H	1.0	-1.4	8.52	38.5	-30.0	
High Ch								
846.60	9.01	V	1.0	-1.4	6.66	38.5	-31.8	
846.60	11.33	H	1.0	-1.4	8.98	38.5	-29.5	

WCDMA Band 4

WCDMA Band 4 REL99	UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 4788480978 Date: 2018-06-08 Test Engineer: 47989 Configuration: EUT / X-Position Location: Chamber 1 Mode: Rel99 Band 4 Fundamentals Test Equipment: Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00161451], 3m N-type Cable <table><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><tr><td>Low Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>1712.40</td><td>9.53</td><td>V</td><td>4.3</td><td>9.5</td><td>14.68</td><td>30.0</td><td>-15.3</td></tr><tr><td>1712.40</td><td>13.12</td><td>H</td><td>4.3</td><td>9.5</td><td>18.28</td><td>30.0</td><td>-11.7</td></tr><tr><td>Mid Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>1732.60</td><td>8.60</td><td>V</td><td>4.3</td><td>9.5</td><td>13.79</td><td>30.0</td><td>-16.2</td></tr><tr><td>1732.60</td><td>13.45</td><td>H</td><td>4.3</td><td>9.5</td><td>18.64</td><td>30.0</td><td>-11.4</td></tr><tr><td>High Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>1752.60</td><td>8.58</td><td>V</td><td>4.4</td><td>9.6</td><td>13.82</td><td>30.0</td><td>-16.2</td></tr><tr><td>1752.60</td><td>11.86</td><td>H</td><td>4.4</td><td>9.6</td><td>17.10</td><td>30.0</td><td>-12.9</td></tr></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	9.53	V	4.3	9.5	14.68	30.0	-15.3	1712.40	13.12	H	4.3	9.5	18.28	30.0	-11.7	Mid Ch								1732.60	8.60	V	4.3	9.5	13.79	30.0	-16.2	1732.60	13.45	H	4.3	9.5	18.64	30.0	-11.4	High Ch								1752.60	8.58	V	4.4	9.6	13.82	30.0	-16.2	1752.60	11.86	H	4.4	9.6	17.10	30.0	-12.9
	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	9.53	V	4.3	9.5	14.68	30.0	-15.3																																																																																		
	1712.40	13.12	H	4.3	9.5	18.28	30.0	-11.7																																																																																		
	Mid Ch																																																																																									
	1732.60	8.60	V	4.3	9.5	13.79	30.0	-16.2																																																																																		
	1732.60	13.45	H	4.3	9.5	18.64	30.0	-11.4																																																																																		
	High Ch																																																																																									
	1752.60	8.58	V	4.4	9.6	13.82	30.0	-16.2																																																																																		
1752.60	11.86	H	4.4	9.6	17.10	30.0	-12.9																																																																																			
WCDMA Band 4 HSDPA	UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 4788480978 Date: 2018-06-08 Test Engineer: 47989 Configuration: EUT / X-Position Location: Chamber 1 Mode: HSDPA Band 4 Fundamentals Test Equipment: Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00161451], 3m N-type Cable <table><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><tr><td>Low Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>1712.40</td><td>9.49</td><td>V</td><td>4.3</td><td>9.5</td><td>14.64</td><td>30.0</td><td>-15.4</td></tr><tr><td>1712.40</td><td>12.80</td><td>H</td><td>4.3</td><td>9.5</td><td>17.96</td><td>30.0</td><td>-12.0</td></tr><tr><td>Mid Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>1732.60</td><td>8.47</td><td>V</td><td>4.3</td><td>9.5</td><td>13.66</td><td>30.0</td><td>-16.3</td></tr><tr><td>1732.60</td><td>12.40</td><td>H</td><td>4.3</td><td>9.5</td><td>17.59</td><td>30.0</td><td>-12.4</td></tr><tr><td>High Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>1752.60</td><td>9.13</td><td>V</td><td>4.4</td><td>9.6</td><td>14.37</td><td>30.0</td><td>-15.6</td></tr><tr><td>1752.60</td><td>11.49</td><td>H</td><td>4.4</td><td>9.6</td><td>16.73</td><td>30.0</td><td>-13.3</td></tr></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	9.49	V	4.3	9.5	14.64	30.0	-15.4	1712.40	12.80	H	4.3	9.5	17.96	30.0	-12.0	Mid Ch								1732.60	8.47	V	4.3	9.5	13.66	30.0	-16.3	1732.60	12.40	H	4.3	9.5	17.59	30.0	-12.4	High Ch								1752.60	9.13	V	4.4	9.6	14.37	30.0	-15.6	1752.60	11.49	H	4.4	9.6	16.73	30.0	-13.3
	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	9.49	V	4.3	9.5	14.64	30.0	-15.4																																																																																		
	1712.40	12.80	H	4.3	9.5	17.96	30.0	-12.0																																																																																		
	Mid Ch																																																																																									
	1732.60	8.47	V	4.3	9.5	13.66	30.0	-16.3																																																																																		
	1732.60	12.40	H	4.3	9.5	17.59	30.0	-12.4																																																																																		
	High Ch																																																																																									
	1752.60	9.13	V	4.4	9.6	14.37	30.0	-15.6																																																																																		
1752.60	11.49	H	4.4	9.6	16.73	30.0	-13.3																																																																																			

WCDMA Band 2

WCDMA Band 2 REL99	UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 4788480978 Date: 2018-06-07 Test Engineer: 47989 Configuration: EUY / Y-Position Location: Chamber 1 Mode: Rel99 Band 2 Fundamentals Test Equipment: Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00161451], 3m N-type Cable <table><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><tr><td>Low Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>1852.40</td><td>7.88</td><td>V</td><td>4.5</td><td>9.5</td><td>12.87</td><td>33.0</td><td>-20.1</td></tr><tr><td>1852.40</td><td>9.93</td><td>H</td><td>4.5</td><td>9.5</td><td>14.92</td><td>33.0</td><td>-18.1</td></tr><tr><td>Mid Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>1880.00</td><td>8.15</td><td>V</td><td>4.5</td><td>9.2</td><td>12.83</td><td>33.0</td><td>-20.2</td></tr><tr><td>1880.00</td><td>10.11</td><td>H</td><td>4.5</td><td>9.2</td><td>14.79</td><td>33.0</td><td>-18.2</td></tr><tr><td>High Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>1907.60</td><td>9.11</td><td>V</td><td>4.6</td><td>8.9</td><td>13.45</td><td>33.0</td><td>-19.6</td></tr><tr><td>1907.60</td><td>8.72</td><td>H</td><td>4.6</td><td>8.9</td><td>13.06</td><td>33.0</td><td>-19.9</td></tr></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	7.88	V	4.5	9.5	12.87	33.0	-20.1	1852.40	9.93	H	4.5	9.5	14.92	33.0	-18.1	Mid Ch								1880.00	8.15	V	4.5	9.2	12.83	33.0	-20.2	1880.00	10.11	H	4.5	9.2	14.79	33.0	-18.2	High Ch								1907.60	9.11	V	4.6	8.9	13.45	33.0	-19.6	1907.60	8.72	H	4.6	8.9	13.06	33.0	-19.9
	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	7.88	V	4.5	9.5	12.87	33.0	-20.1																																																																																		
	1852.40	9.93	H	4.5	9.5	14.92	33.0	-18.1																																																																																		
	Mid Ch																																																																																									
	1880.00	8.15	V	4.5	9.2	12.83	33.0	-20.2																																																																																		
	1880.00	10.11	H	4.5	9.2	14.79	33.0	-18.2																																																																																		
	High Ch																																																																																									
	1907.60	9.11	V	4.6	8.9	13.45	33.0	-19.6																																																																																		
1907.60	8.72	H	4.6	8.9	13.06	33.0	-19.9																																																																																			
WCDMA Band 2 HSDPA	UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 4788480978 Date: 2018-06-07 Test Engineer: 47989 Configuration: EUY / Y-Position Location: Chamber 1 Mode: HSDPA Band 2 Fundamentals Test Equipment: Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00161451], 3m N-type Cable <table><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><tr><td>Low Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>1852.40</td><td>7.37</td><td>V</td><td>4.5</td><td>9.5</td><td>12.36</td><td>33.0</td><td>-20.6</td></tr><tr><td>1852.40</td><td>9.90</td><td>H</td><td>4.5</td><td>9.5</td><td>14.89</td><td>33.0</td><td>-18.1</td></tr><tr><td>Mid Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>1880.00</td><td>8.00</td><td>V</td><td>4.5</td><td>9.2</td><td>12.68</td><td>33.0</td><td>-20.3</td></tr><tr><td>1880.00</td><td>9.79</td><td>H</td><td>4.5</td><td>9.2</td><td>14.47</td><td>33.0</td><td>-18.5</td></tr><tr><td>High Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>1907.60</td><td>9.72</td><td>V</td><td>4.6</td><td>8.9</td><td>14.06</td><td>33.0</td><td>-18.9</td></tr><tr><td>1907.60</td><td>8.48</td><td>H</td><td>4.6</td><td>8.9</td><td>12.82</td><td>33.0</td><td>-20.2</td></tr></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	7.37	V	4.5	9.5	12.36	33.0	-20.6	1852.40	9.90	H	4.5	9.5	14.89	33.0	-18.1	Mid Ch								1880.00	8.00	V	4.5	9.2	12.68	33.0	-20.3	1880.00	9.79	H	4.5	9.2	14.47	33.0	-18.5	High Ch								1907.60	9.72	V	4.6	8.9	14.06	33.0	-18.9	1907.60	8.48	H	4.6	8.9	12.82	33.0	-20.2
	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	7.37	V	4.5	9.5	12.36	33.0	-20.6																																																																																		
	1852.40	9.90	H	4.5	9.5	14.89	33.0	-18.1																																																																																		
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	1880.00	8.00	V	4.5	9.2	12.68	33.0	-20.3																																																																																		
	1880.00	9.79	H	4.5	9.2	14.47	33.0	-18.5																																																																																		
	High Ch																																																																																									
	1907.60	9.72	V	4.6	8.9	14.06	33.0	-18.9																																																																																		
1907.60	8.48	H	4.6	8.9	12.82	33.0	-20.2																																																																																			

LTE Band 12

LTE

Band 12

10MHz

QPSK

UL Verification Services, Inc.

High Frequency Substitution Measurement

Company: Samsung

Project #: 4788480978

Date: 2018-07-12

Test Engineer: 47989

Configuration: EUT, Cradle, Adapter / Z-Position

Location: Chamber 1

Mode: LTE_QPSK Band 12 Fundamentals, 10MHz Bandwidth

Test Equipment:

Receiving: VULB9163-750, and Chamber 2 SMA Cables

Substitution: Dipole 3121_DB4, 3m N-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								
704.00	5.65	V	0.9	-1.6	3.18	34.8	-31.6	
704.00	8.06	H	0.9	-1.6	5.59	34.8	-29.2	
Mid Ch								
707.50	5.64	V	0.9	-1.6	3.17	34.8	-31.6	
707.50	8.01	H	0.9	-1.6	5.54	34.8	-29.3	
High Ch								
711.00	5.51	V	0.9	-1.6	3.04	34.8	-31.8	
711.00	7.50	H	0.9	-1.6	5.02	34.8	-29.8	

LTE

Band 12

10MHz

16QAM

UL Verification Services, Inc.

High Frequency Substitution Measurement

Company: Samsung

Project #: 4788480978

Date: 2018-07-12

Test Engineer: 47989

Configuration: EUT, Cradle, Adapter / Z-Position

Location: Chamber 1

Mode: LTE_16QAM Band 12 Fundamentals, 10MHz Bandwidth

Test Equipment:

Receiving: VULB9163-750, and Chamber 2 SMA Cables

Substitution: Dipole 3121_DB4, 3m N-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								
704.00	4.24	V	0.9	-1.6	1.77	34.8	-33.0	
704.00	6.51	H	0.9	-1.6	4.04	34.8	-30.8	
Mid Ch								
707.50	4.25	V	0.9	-1.6	1.78	34.8	-33.0	
707.50	6.71	H	0.9	-1.6	4.24	34.8	-30.6	
High Ch								
711.00	4.32	V	0.9	-1.6	1.85	34.8	-32.9	
711.00	6.47	H	0.9	-1.6	3.99	34.8	-30.8	

LTE

Band 12

5MHz

QPSK

UL Verification Services, Inc.

High Frequency Substitution Measurement

Company: Samsung

Project #: 4788480978

Date: 2018-07-12

Test Engineer: 45585

Configuration: EUT, Cradle, Adapter / Z-Position

Location: Chamber 1

Mode: LTE_QPSK Band 12 Fundamentals, 5MHz Bandwidth

Test Equipment:

Receiving: VULB9163-750, and Chamber 2 SMA Cables

Substitution: Dipole 3121_DB4, 3m N-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	4.91	V	0.9	-1.6	2.44	34.8	-32.4	
701.50	6.97	H	0.9	-1.6	4.51	34.8	-30.3	
Mid Ch								
707.50	5.64	V	0.9	-1.6	3.17	34.8	-31.6	
707.50	7.71	H	0.9	-1.6	5.24	34.8	-29.6	
High Ch								
713.50	5.92	V	0.9	-1.6	3.44	34.8	-31.4	
713.50	7.90	H	0.9	-1.6	5.42	34.8	-29.4	

LTE

Band 12

5MHz

16QAM

UL Verification Services, Inc.

High Frequency Substitution Measurement

Company: Samsung

Project #: 4788480978

Date: 2018-07-12

Test Engineer: 45585

Configuration: EUT, Cradle, Adapter / Z-Position

Location: Chamber 1

Mode: LTE_16QAM Band 12 Fundamentals, 5MHz Bandwidth

Test Equipment:

Receiving: VULB9163-750, and Chamber 2 SMA Cables

Substitution: Dipole 3121_DB4, 3m N-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	3.40	V	0.9	-1.6	0.93	34.8	-33.9	
701.50	5.85	H	0.9	-1.6	3.39	34.8	-31.4	
Mid Ch								
707.50	4.46	V	0.9	-1.6	1.99	34.8	-32.8	
707.50	6.31	H	0.9	-1.6	3.84	34.8	-31.0	
High Ch								
713.50	4.29	V	0.9	-1.6	1.81	34.8	-33.0	
713.50	6.32	H	0.9	-1.6	3.84	34.8	-31.0	

LTE Band 12 3MHz QPSK	UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 4788480978 Date: 2018-07-12 Test Engineer: 45585 Configuration: EUT, Cradle, Adapter / Z-Position Location: Chamber 1 Mode: LTE_QPSK Band 12 Fundamentals, 3MHz Bandwidth Test Equipment: Receiving: VULB9163-750, and Chamber 2 SMA Cables Substitution: Dipole 3121_DB4, 3m N-type Cable <table><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><tr><td>Low Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>700.50</td><td>5.26</td><td>V</td><td>0.9</td><td>-1.6</td><td>2.79</td><td>34.8</td><td>-32.0</td></tr><tr><td>700.50</td><td>7.19</td><td>H</td><td>0.9</td><td>-1.6</td><td>4.73</td><td>34.8</td><td>-30.1</td></tr><tr><td>Mid Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>707.50</td><td>5.73</td><td>V</td><td>0.9</td><td>-1.6</td><td>3.26</td><td>34.8</td><td>-31.5</td></tr><tr><td>707.50</td><td>8.28</td><td>H</td><td>0.9</td><td>-1.6</td><td>5.81</td><td>34.8</td><td>-29.0</td></tr><tr><td>High Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>714.50</td><td>6.01</td><td>V</td><td>0.9</td><td>-1.6</td><td>3.54</td><td>34.8</td><td>-31.3</td></tr><tr><td>714.50</td><td>7.93</td><td>H</td><td>0.9</td><td>-1.6</td><td>5.45</td><td>34.8</td><td>-29.3</td></tr></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								700.50	5.26	V	0.9	-1.6	2.79	34.8	-32.0	700.50	7.19	H	0.9	-1.6	4.73	34.8	-30.1	Mid Ch								707.50	5.73	V	0.9	-1.6	3.26	34.8	-31.5	707.50	8.28	H	0.9	-1.6	5.81	34.8	-29.0	High Ch								714.50	6.01	V	0.9	-1.6	3.54	34.8	-31.3	714.50	7.93	H	0.9	-1.6	5.45	34.8	-29.3
	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	5.26	V	0.9	-1.6	2.79	34.8	-32.0																																																																																		
	700.50	7.19	H	0.9	-1.6	4.73	34.8	-30.1																																																																																		
	Mid Ch																																																																																									
	707.50	5.73	V	0.9	-1.6	3.26	34.8	-31.5																																																																																		
	707.50	8.28	H	0.9	-1.6	5.81	34.8	-29.0																																																																																		
	High Ch																																																																																									
	714.50	6.01	V	0.9	-1.6	3.54	34.8	-31.3																																																																																		
714.50	7.93	H	0.9	-1.6	5.45	34.8	-29.3																																																																																			
LTE Band 12 3MHz 16QAM	UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 4788480978 Date: 2018-07-12 Test Engineer: 45585 Configuration: EUT, Cradle, Adapter / Z-Position Location: Chamber 1 Mode: LTE_16QAM Band 12 Fundamentals, 3MHz Bandwidth Test Equipment: Receiving: VULB9163-750, and Chamber 2 SMA Cables Substitution: Dipole 3121_DB4, 3m N-type Cable <table><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><tr><td>Low Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>700.50</td><td>4.31</td><td>V</td><td>0.9</td><td>-1.6</td><td>1.84</td><td>34.8</td><td>-33.0</td></tr><tr><td>700.50</td><td>6.31</td><td>H</td><td>0.9</td><td>-1.6</td><td>3.85</td><td>34.8</td><td>-31.0</td></tr><tr><td>Mid Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>707.50</td><td>4.19</td><td>V</td><td>0.9</td><td>-1.6</td><td>1.72</td><td>34.8</td><td>-33.1</td></tr><tr><td>707.50</td><td>6.91</td><td>H</td><td>0.9</td><td>-1.6</td><td>4.44</td><td>34.8</td><td>-30.4</td></tr><tr><td>High Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>714.50</td><td>4.82</td><td>V</td><td>0.9</td><td>-1.6</td><td>2.35</td><td>34.8</td><td>-32.5</td></tr><tr><td>714.50</td><td>6.80</td><td>H</td><td>0.9</td><td>-1.6</td><td>4.32</td><td>34.8</td><td>-30.5</td></tr></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								700.50	4.31	V	0.9	-1.6	1.84	34.8	-33.0	700.50	6.31	H	0.9	-1.6	3.85	34.8	-31.0	Mid Ch								707.50	4.19	V	0.9	-1.6	1.72	34.8	-33.1	707.50	6.91	H	0.9	-1.6	4.44	34.8	-30.4	High Ch								714.50	4.82	V	0.9	-1.6	2.35	34.8	-32.5	714.50	6.80	H	0.9	-1.6	4.32	34.8	-30.5
	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	4.31	V	0.9	-1.6	1.84	34.8	-33.0																																																																																		
	700.50	6.31	H	0.9	-1.6	3.85	34.8	-31.0																																																																																		
	Mid Ch																																																																																									
	707.50	4.19	V	0.9	-1.6	1.72	34.8	-33.1																																																																																		
	707.50	6.91	H	0.9	-1.6	4.44	34.8	-30.4																																																																																		
	High Ch																																																																																									
	714.50	4.82	V	0.9	-1.6	2.35	34.8	-32.5																																																																																		
714.50	6.80	H	0.9	-1.6	4.32	34.8	-30.5																																																																																			

LTE

Band 12

1.4MHz

QPSK

UL Verification Services, Inc.

High Frequency Substitution Measurement

Company: Samsung

Project #: 4788480978

Date: 2018-07-12

Test Engineer: 45585

Configuration: EUT, Cradle, Adapter / Z-Position

Location: Chamber 1

Mode: LTE_QPSK Band 12 Fundamentals, 1.4MHz Bandwidth

Test Equipment:

Receiving: VULB9163-750, and Chamber 2 SMA Cables

Substitution: Dipole 3121_DB4, 3m N-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	5.14	V	0.9	-1.6	2.67	34.8	-32.1	
699.70	7.53	H	0.9	-1.6	5.06	34.8	-29.7	
Mid Ch								
707.50	5.72	V	0.9	-1.6	3.25	34.8	-31.6	
707.50	7.91	H	0.9	-1.6	5.44	34.8	-29.4	
High Ch								
715.30	6.33	V	0.9	-1.6	3.85	34.8	-31.0	
715.30	7.95	H	0.9	-1.6	5.48	34.8	-29.3	

LTE

Band 12

1.4MHz

16QAM

UL Verification Services, Inc.

High Frequency Substitution Measurement

Company: Samsung

Project #: 4788480978

Date: 2018-07-12

Test Engineer: 45585

Configuration: EUT, Cradle, Adapter / Z-Position

Location: Chamber 1

Mode: LTE_16QAM Band 12 Fundamentals, 1.4MHz Bandwidth

Test Equipment:

Receiving: VULB9163-750, and Chamber 2 SMA Cables

Substitution: Dipole 3121_DB4, 3m N-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	3.79	V	0.9	-1.6	1.32	34.8	-33.5	
699.70	5.88	H	0.9	-1.6	3.41	34.8	-31.4	
Mid Ch								
707.50	6.08	V	0.9	-1.6	3.61	34.8	-31.2	
707.50	8.08	H	0.9	-1.6	5.61	34.8	-29.2	
High Ch								
715.30	5.09	V	0.9	-1.6	2.61	34.8	-32.2	
715.30	7.11	H	0.9	-1.6	4.64	34.8	-30.2	

LTE Band 13

LTE Band 13 10MHz QPSK	UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 4788480978 Date: 2018-07-14 Test Engineer: 45574 Configuration: EUT/Cradle/Adapter, Z-Position Location: Chamber 2 Mode: LTE_QPSK Band 13 Fundamentals, 10MHz Bandwidth Test Equipment: Receiving: VULB9163-749, and Chamber 2 SMA Cables Substitution: Dipole 3121_DB4, 3m N-type Cable <table><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><tr><td>Mid Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>782.00</td><td>5.49</td><td>V</td><td>0.9</td><td>-1.6</td><td>3.00</td><td>34.8</td><td>-31.8</td><td></td></tr><tr><td>782.00</td><td>12.55</td><td>H</td><td>0.9</td><td>-1.6</td><td>10.06</td><td>34.8</td><td>-24.7</td><td></td></tr></table>	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes	Mid Ch									782.00	5.49	V	0.9	-1.6	3.00	34.8	-31.8		782.00	12.55	H	0.9	-1.6	10.06	34.8	-24.7	
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes																													
Mid Ch																																					
782.00	5.49	V	0.9	-1.6	3.00	34.8	-31.8																														
782.00	12.55	H	0.9	-1.6	10.06	34.8	-24.7																														
LTE Band 13 10MHz 16QAM	UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 4788480978 Date: 2018-07-14 Test Engineer: 45574 Configuration: EUT/Cradle/Adapter, Z-Position Location: Chamber 2 Mode: LTE_16QAM Band 13 Fundamentals, 10MHz Bandwidth Test Equipment: Receiving: VULB9163-749, and Chamber 2 SMA Cables Substitution: Dipole 3121_DB4, 3m N-type Cable <table><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><tr><td>Mid Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>782.00</td><td>4.18</td><td>V</td><td>0.9</td><td>-1.6</td><td>1.69</td><td>34.8</td><td>-33.1</td><td></td></tr><tr><td>782.00</td><td>11.07</td><td>H</td><td>0.9</td><td>-1.6</td><td>8.58</td><td>34.8</td><td>-26.2</td><td></td></tr></table>	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes	Mid Ch									782.00	4.18	V	0.9	-1.6	1.69	34.8	-33.1		782.00	11.07	H	0.9	-1.6	8.58	34.8	-26.2	
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes																													
Mid Ch																																					
782.00	4.18	V	0.9	-1.6	1.69	34.8	-33.1																														
782.00	11.07	H	0.9	-1.6	8.58	34.8	-26.2																														

LTE Band 13 5MHz QPSK	UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 4788480978 Date: 2018-07-14 Test Engineer: 45574 Configuration: EUT/Cradle/Adapter, Z-Position Location: Chamber 2 Mode: LTE_QPSK Band 13 Fundamentals, 5MHz Bandwidth Test Equipment: Receiving: VULB9163-749, and Chamber 2 SMA Cables Substitution: Dipole 3121_DB4, 3m N-type Cable <table><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><tr><td>Low Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>779.50</td><td>5.36</td><td>V</td><td>0.9</td><td>-1.6</td><td>2.87</td><td>34.8</td><td>-31.9</td></tr><tr><td>779.50</td><td>10.97</td><td>H</td><td>0.9</td><td>-1.6</td><td>8.47</td><td>34.8</td><td>-26.3</td></tr><tr><td>Mid Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>782.00</td><td>5.52</td><td>V</td><td>0.9</td><td>-1.6</td><td>3.03</td><td>34.8</td><td>-31.7</td></tr><tr><td>782.00</td><td>12.76</td><td>H</td><td>0.9</td><td>-1.6</td><td>10.27</td><td>34.8</td><td>-24.5</td></tr><tr><td>High Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>784.50</td><td>6.33</td><td>V</td><td>0.9</td><td>-1.6</td><td>3.84</td><td>34.8</td><td>-30.9</td></tr><tr><td>784.50</td><td>12.21</td><td>H</td><td>0.9</td><td>-1.6</td><td>9.71</td><td>34.8</td><td>-25.1</td></tr></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								779.50	5.36	V	0.9	-1.6	2.87	34.8	-31.9	779.50	10.97	H	0.9	-1.6	8.47	34.8	-26.3	Mid Ch								782.00	5.52	V	0.9	-1.6	3.03	34.8	-31.7	782.00	12.76	H	0.9	-1.6	10.27	34.8	-24.5	High Ch								784.50	6.33	V	0.9	-1.6	3.84	34.8	-30.9	784.50	12.21	H	0.9	-1.6	9.71	34.8	-25.1	
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes																																																																																		
	Low Ch																																																																																										
	779.50	5.36	V	0.9	-1.6	2.87	34.8	-31.9																																																																																			
	779.50	10.97	H	0.9	-1.6	8.47	34.8	-26.3																																																																																			
	Mid Ch																																																																																										
	782.00	5.52	V	0.9	-1.6	3.03	34.8	-31.7																																																																																			
	782.00	12.76	H	0.9	-1.6	10.27	34.8	-24.5																																																																																			
	High Ch																																																																																										
	784.50	6.33	V	0.9	-1.6	3.84	34.8	-30.9																																																																																			
	784.50	12.21	H	0.9	-1.6	9.71	34.8	-25.1																																																																																			
	LTE Band 13 5MHz 16QAM	UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 4788480978 Date: 2018-07-14 Test Engineer: 45574 Configuration: EUT/Cradle/Adapter, Z-Position Location: Chamber 2 Mode: LTE_16QAM Band 13 Fundamentals, 5MHz Bandwidth Test Equipment: Receiving: VULB9163-749, and Chamber 2 SMA Cables Substitution: Dipole 3121_DB4, 3m N-type Cable <table><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><tr><td>Low Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>779.50</td><td>4.11</td><td>V</td><td>0.9</td><td>-1.6</td><td>1.62</td><td>34.8</td><td>-33.1</td></tr><tr><td>779.50</td><td>10.02</td><td>H</td><td>0.9</td><td>-1.6</td><td>7.52</td><td>34.8</td><td>-27.2</td></tr><tr><td>Mid Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>782.00</td><td>6.58</td><td>V</td><td>0.9</td><td>-1.6</td><td>4.09</td><td>34.8</td><td>-30.7</td></tr><tr><td>782.00</td><td>11.47</td><td>H</td><td>0.9</td><td>-1.6</td><td>8.98</td><td>34.8</td><td>-25.8</td></tr><tr><td>High Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>784.50</td><td>5.84</td><td>V</td><td>0.9</td><td>-1.6</td><td>3.35</td><td>34.8</td><td>-31.4</td></tr><tr><td>784.50</td><td>11.34</td><td>H</td><td>0.9</td><td>-1.6</td><td>8.84</td><td>34.8</td><td>-25.9</td></tr></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								779.50	4.11	V	0.9	-1.6	1.62	34.8	-33.1	779.50	10.02	H	0.9	-1.6	7.52	34.8	-27.2	Mid Ch								782.00	6.58	V	0.9	-1.6	4.09	34.8	-30.7	782.00	11.47	H	0.9	-1.6	8.98	34.8	-25.8	High Ch								784.50	5.84	V	0.9	-1.6	3.35	34.8	-31.4	784.50	11.34	H	0.9	-1.6	8.84	34.8	-25.9
		f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes																																																																																	
		Low Ch																																																																																									
		779.50	4.11	V	0.9	-1.6	1.62	34.8	-33.1																																																																																		
779.50		10.02	H	0.9	-1.6	7.52	34.8	-27.2																																																																																			
Mid Ch																																																																																											
782.00		6.58	V	0.9	-1.6	4.09	34.8	-30.7																																																																																			
782.00		11.47	H	0.9	-1.6	8.98	34.8	-25.8																																																																																			
High Ch																																																																																											
784.50		5.84	V	0.9	-1.6	3.35	34.8	-31.4																																																																																			
784.50		11.34	H	0.9	-1.6	8.84	34.8	-25.9																																																																																			

LTE
Band 13
5MHz
16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788480978
Date: 2018-07-14
Test Engineer: 45574
Configuration: EUT/Cradle/Adapter, Z-Position
Location: Chamber 2
Mode: LTE_16QAM Band 13 Fundamentals, 5MHz Bandwidth

Test Equipment:
Receiving: VULB9163-749, and Chamber 2 SMA Cables
Substitution: Dipole 3121_DB4, 3m N-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								
779.50	4.11	V	0.9	-1.6	1.62	34.8	-33.1	
779.50	10.02	H	0.9	-1.6	7.52	34.8	-27.2	
Mid Ch								
782.00	6.58	V	0.9	-1.6	4.09	34.8	-30.7	
782.00	11.47	H	0.9	-1.6	8.98	34.8	-25.8	
High Ch								
784.50	5.84	V	0.9	-1.6	3.35	34.8	-31.4	
784.50	11.34	H	0.9	-1.6	8.84	34.8	-25.9	

LTE Band 25

LTE

Band 25

20MHz

QPSK

UL Verification Services, Inc.

High Frequency Substitution Measurement

Company:

Project #:

Date:

Test Engineer:

Configuration:

Location:

Mode:

Samsung

4788480978

2018-06-07

47989

EUT / Y-Position

Chamber 1

LTE_QPSK Band 25 Fundamentals, 20MHz Bandwidth

Test Equipment:

Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables

Substitution: Horn 3115[00161451], 3m N-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	8.11	V	4.5	9.4	13.01	33.0	-20.0	
1860.00	10.41	H	4.5	9.4	15.31	33.0	-17.7	
Mid Ch								
1882.50	8.07	V	4.5	9.2	12.72	33.0	-20.3	
1882.50	9.93	H	4.5	9.2	14.59	33.0	-18.4	
High Ch								
1905.00	8.68	V	4.6	8.9	13.05	33.0	-19.9	
1905.00	9.68	H	4.6	8.9	14.06	33.0	-18.9	

LTE

Band 25

20MHz

16QAM

UL Verification Services, Inc.

High Frequency Substitution Measurement

Company:

Project #:

Date:

Test Engineer:

Configuration:

Location:

Mode:

Samsung

4788480978

2018-06-07

47989

EUT / Y-Position

Chamber 1

LTE_16QAM Band 25 Fundamentals, 20MHz Bandwidth

Test Equipment:

Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables

Substitution: Horn 3115[00161451], 3m N-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	6.92	V	4.5	9.4	11.82	33.0	-21.2	
1860.00	9.09	H	4.5	9.4	13.99	33.0	-19.0	
Mid Ch								
1882.50	7.30	V	4.5	9.2	11.95	33.0	-21.1	
1882.50	8.87	H	4.5	9.2	13.53	33.0	-19.5	
High Ch								
1905.00	7.94	V	4.6	8.9	12.31	33.0	-20.7	
1905.00	8.75	H	4.6	8.9	13.13	33.0	-19.9	

LTE

Band 25

20MHz

16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung

Project #: 4788480978

Date: 2018-06-07

Test Engineer: 47989

Configuration: EUT / Y-Position

Location: Chamber 1

Mode: LTE_16QAM Band 25 Fundamentals, 20MHz Bandwidth

Test Equipment:

Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables

Substitution: Horn 3115[00161451], 3m N-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	6.92	V	4.5	9.4	11.82	33.0	-21.2	
1860.00	9.09	H	4.5	9.4	13.99	33.0	-19.0	
Mid Ch								
1882.50	7.30	V	4.5	9.2	11.95	33.0	-21.1	
1882.50	8.87	H	4.5	9.2	13.53	33.0	-19.5	
High Ch								
1905.00	7.94	V	4.6	8.9	12.31	33.0	-20.7	
1905.00	8.75	H	4.6	8.9	13.13	33.0	-19.9	

LTE

Band 25

15MHz

QPSK

UL Verification Services, Inc.

High Frequency Substitution Measurement

Company: Samsung

Project #: 4788480978

Date: 2018-06-07

Test Engineer: 47989

Configuration: EUT / Y-Position

Location: Chamber 1

Mode: LTE_QPSK Band 25 Fundamentals, 15MHz Bandwidth

Test Equipment:

Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables

Substitution: Horn 3115[00161451], 3m N-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	5.93	V	4.5	9.4	10.86	33.0	-22.1	
1857.50	10.36	H	4.5	9.4	15.29	33.0	-17.7	
Mid Ch								
1882.50	6.03	V	4.5	9.2	10.68	33.0	-22.3	
1882.50	9.50	H	4.5	9.2	14.16	33.0	-18.8	
High Ch								
1907.50	8.65	V	4.6	8.9	12.99	33.0	-20.0	
1907.50	7.54	H	4.6	8.9	11.88	33.0	-21.1	

LTE

Band 25

15MHz

16QAM

UL Verification Services, Inc.

High Frequency Substitution Measurement

Company: Samsung

Project #: 4788480978

Date: 2018-06-07

Test Engineer: 47989

Configuration: EUT / Y-Position

Location: Chamber 1

Mode: LTE_16QAM Band 25 Fundamentals, 15MHz Bandwidth

Test Equipment:

Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables

Substitution: Horn 3115[00161451], 3m N-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	4.62	V	4.5	9.4	9.55	33.0	-23.5	
1857.50	8.71	H	4.5	9.4	13.64	33.0	-19.4	
Mid Ch								
1882.50	4.65	V	4.5	9.2	9.30	33.0	-23.7	
1882.50	7.82	H	4.5	9.2	12.48	33.0	-20.5	
High Ch								
1907.50	7.41	V	4.6	8.9	11.75	33.0	-21.3	
1907.50	6.28	H	4.6	8.9	10.62	33.0	-22.4	

LTE

Band 25

10MHz

QPSK

UL Verification Services, Inc.

High Frequency Substitution Measurement

Company: Samsung

Project #: 4788480978

Date: 2018-06-07

Test Engineer: 47989

Configuration: EUT / Y-Position

Location: Chamber 1

Mode: LTE_QPSK Band 25 Fundamentals, 10MHz Bandwidth

Test Equipment:

Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables

Substitution: Horn 3115[00161451], 3m N-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	5.29	V	4.5	9.5	10.24	33.0	-22.8	
1855.00	10.47	H	4.5	9.5	15.43	33.0	-17.6	
Mid Ch								
1882.50	8.08	V	4.5	9.2	12.73	33.0	-20.3	
1882.50	8.04	H	4.5	9.2	12.70	33.0	-20.3	
High Ch								
1910.00	8.71	V	4.6	8.9	13.01	33.0	-20.0	
1910.00	8.21	H	4.6	8.9	12.51	33.0	-20.5	

LTE

Band 25

10MHz

16QAM

UL Verification Services, Inc.

High Frequency Substitution Measurement

Company: Samsung

Project #: 4788480978

Date: 2018-06-07

Test Engineer: 47989

Configuration: EUT / Y-Position

Location: Chamber 1

Mode: LTE_16QAM Band 25 Fundamentals, 10MHz Bandwidth

Test Equipment:

Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables

Substitution: Horn 3115[00161451], 3m N-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	4.50	V	4.5	9.5	9.45	33.0	-23.5	
1855.00	9.35	H	4.5	9.5	14.31	33.0	-18.7	
Mid Ch								
1882.50	6.55	V	4.5	9.2	11.20	33.0	-21.8	
1882.50	6.98	H	4.5	9.2	11.64	33.0	-21.4	
High Ch								
1910.00	7.18	V	4.6	8.9	11.48	33.0	-21.5	
1910.00	7.17	H	4.6	8.9	11.47	33.0	-21.5	

LTE

Band 25

5MHz

QPSK

UL Verification Services, Inc.

High Frequency Substitution Measurement

Company: Samsung

Project #: 4788480978

Date: 2018-06-07

Test Engineer: 47989

Configuration: EUT / Y-Position

Location: Chamber 1

Mode: LTE_QPSK Band 25 Fundamentals, 5MHz Bandwidth

Test Equipment:

Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables

Substitution: Horn 3115[00161451], 3m N-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	5.56	V	4.5	9.5	10.55	33.0	-22.5	
1852.50	9.77	H	4.5	9.5	14.76	33.0	-18.2	
Mid Ch								
1882.50	7.63	V	4.5	9.2	12.28	33.0	-20.7	
1882.50	8.59	H	4.5	9.2	13.25	33.0	-19.8	
High Ch								
1912.50	9.12	V	4.6	8.8	13.38	33.0	-19.6	
1912.50	8.14	H	4.6	8.8	12.39	33.0	-20.6	

LTE

Band 25

5MHz

16QAM

UL Verification Services, Inc.

High Frequency Substitution Measurement

Company: Samsung

Project #: 4788480978

Date: 2018-06-07

Test Engineer: 47989

Configuration: EUT / Y-Position

Location: Chamber 1

Mode: LTE_16QAM Band 25 Fundamentals, 5MHz Bandwidth

Test Equipment:

Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables

Substitution: Horn 3115[00161451], 3m N-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	4.18	V	4.5	9.5	9.17	33.0	-23.8	
1852.50	8.54	H	4.5	9.5	13.53	33.0	-19.5	
Mid Ch								
1882.50	6.31	V	4.5	9.2	10.96	33.0	-22.0	
1882.50	6.94	H	4.5	9.2	11.60	33.0	-21.4	
High Ch								
1912.50	7.77	V	4.6	8.8	12.03	33.0	-21.0	
1912.50	6.59	H	4.6	8.8	10.84	33.0	-22.2	

LTE Band 25 3MHz QPSK	UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 4788480978 Date: 2018-06-07 Test Engineer: 47989 Configuration: EUT / Y-Position Location: Chamber 1 Mode: LTE_QPSK Band 25 Fundamentals, 3MHz Bandwidth Test Equipment: Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00161451], 3m N-type Cable <table><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><tr><td colspan="9">Low Ch</td></tr><tr><td>1851.50</td><td>7.46</td><td>V</td><td>4.5</td><td>9.5</td><td>12.46</td><td>33.0</td><td>-20.5</td><td></td></tr><tr><td>1851.50</td><td>10.98</td><td>H</td><td>4.5</td><td>9.5</td><td>15.98</td><td>33.0</td><td>-17.0</td><td></td></tr><tr><td colspan="9">Mid Ch</td></tr><tr><td>1882.50</td><td>7.96</td><td>V</td><td>4.5</td><td>9.2</td><td>12.61</td><td>33.0</td><td>-20.4</td><td></td></tr><tr><td>1882.50</td><td>8.39</td><td>H</td><td>4.5</td><td>9.2</td><td>13.05</td><td>33.0</td><td>-20.0</td><td></td></tr><tr><td colspan="9">High Ch</td></tr><tr><td>1913.50</td><td>10.76</td><td>V</td><td>4.6</td><td>8.8</td><td>15.00</td><td>33.0</td><td>-18.0</td><td></td></tr><tr><td>1913.50</td><td>7.87</td><td>H</td><td>4.6</td><td>8.8</td><td>12.11</td><td>33.0</td><td>-20.9</td><td></td></tr></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									1851.50	7.46	V	4.5	9.5	12.46	33.0	-20.5		1851.50	10.98	H	4.5	9.5	15.98	33.0	-17.0		Mid Ch									1882.50	7.96	V	4.5	9.2	12.61	33.0	-20.4		1882.50	8.39	H	4.5	9.2	13.05	33.0	-20.0		High Ch									1913.50	10.76	V	4.6	8.8	15.00	33.0	-18.0		1913.50	7.87	H	4.6	8.8	12.11	33.0	-20.9	
	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	7.46	V	4.5	9.5	12.46	33.0	-20.5																																																																																											
	1851.50	10.98	H	4.5	9.5	15.98	33.0	-17.0																																																																																											
	Mid Ch																																																																																																		
	1882.50	7.96	V	4.5	9.2	12.61	33.0	-20.4																																																																																											
	1882.50	8.39	H	4.5	9.2	13.05	33.0	-20.0																																																																																											
	High Ch																																																																																																		
	1913.50	10.76	V	4.6	8.8	15.00	33.0	-18.0																																																																																											
1913.50	7.87	H	4.6	8.8	12.11	33.0	-20.9																																																																																												
LTE Band 25 3MHz 16QAM	UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 4788480978 Date: 2018-06-07 Test Engineer: 47989 Configuration: EUT / Y-Position Location: Chamber 1 Mode: LTE_16QAM Band 25 Fundamentals, 3MHz Bandwidth Test Equipment: Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00161451], 3m N-type Cable <table><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><tr><td colspan="9">Low Ch</td></tr><tr><td>1851.50</td><td>5.82</td><td>V</td><td>4.5</td><td>9.5</td><td>10.82</td><td>33.0</td><td>-22.2</td><td></td></tr><tr><td>1851.50</td><td>9.51</td><td>H</td><td>4.5</td><td>9.5</td><td>14.51</td><td>33.0</td><td>-18.5</td><td></td></tr><tr><td colspan="9">Mid Ch</td></tr><tr><td>1882.50</td><td>6.54</td><td>V</td><td>4.5</td><td>9.2</td><td>11.19</td><td>33.0</td><td>-21.8</td><td></td></tr><tr><td>1882.50</td><td>6.93</td><td>H</td><td>4.5</td><td>9.2</td><td>11.59</td><td>33.0</td><td>-21.4</td><td></td></tr><tr><td colspan="9">High Ch</td></tr><tr><td>1913.50</td><td>9.75</td><td>V</td><td>4.6</td><td>8.8</td><td>13.99</td><td>33.0</td><td>-19.0</td><td></td></tr><tr><td>1913.50</td><td>6.70</td><td>H</td><td>4.6</td><td>8.8</td><td>10.94</td><td>33.0</td><td>-22.1</td><td></td></tr></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									1851.50	5.82	V	4.5	9.5	10.82	33.0	-22.2		1851.50	9.51	H	4.5	9.5	14.51	33.0	-18.5		Mid Ch									1882.50	6.54	V	4.5	9.2	11.19	33.0	-21.8		1882.50	6.93	H	4.5	9.2	11.59	33.0	-21.4		High Ch									1913.50	9.75	V	4.6	8.8	13.99	33.0	-19.0		1913.50	6.70	H	4.6	8.8	10.94	33.0	-22.1	
	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	5.82	V	4.5	9.5	10.82	33.0	-22.2																																																																																											
	1851.50	9.51	H	4.5	9.5	14.51	33.0	-18.5																																																																																											
	Mid Ch																																																																																																		
	1882.50	6.54	V	4.5	9.2	11.19	33.0	-21.8																																																																																											
	1882.50	6.93	H	4.5	9.2	11.59	33.0	-21.4																																																																																											
	High Ch																																																																																																		
	1913.50	9.75	V	4.6	8.8	13.99	33.0	-19.0																																																																																											
1913.50	6.70	H	4.6	8.8	10.94	33.0	-22.1																																																																																												

LTE

Band 25

1.4MHz

QPSK

UL Verification Services, Inc.

High Frequency Substitution Measurement

Company: Samsung

Project #: 4788480978

Date: 2018-06-07

Test Engineer: 47989

Configuration: EUT / Y-Position

Location: Chamber 1

Mode: LTE_QPSK Band 25 Fundamentals, 1.4MHz Bandwidth

Test Equipment:

Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables

Substitution: Horn 3115[00161451], 3m N-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	5.74	V	4.5	9.5	10.74	33.0	-22.3	
1850.70	10.60	H	4.5	9.5	15.61	33.0	-17.4	
Mid Ch								
1882.50	8.90	V	4.5	9.2	13.55	33.0	-19.5	
1882.50	8.69	H	4.5	9.2	13.35	33.0	-19.7	
High Ch								
1914.30	9.20	V	4.6	8.8	13.43	33.0	-19.6	
1914.30	7.11	H	4.6	8.8	11.34	33.0	-21.7	

LTE

Band 25

1.4MHz

16QAM

UL Verification Services, Inc.

High Frequency Substitution Measurement

Company: Samsung

Project #: 4788480978

Date: 2018-06-07

Test Engineer: 47989

Configuration: EUT / Y-Position

Location: Chamber 1

Mode: LTE_16QAM Band 25 Fundamentals, 1.4MHz Bandwidth

Test Equipment:

Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables

Substitution: Horn 3115[00161451], 3m N-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	4.56	V	4.5	9.5	9.56	33.0	-23.4	
1850.70	9.40	H	4.5	9.5	14.41	33.0	-18.6	
Mid Ch								
1882.50	8.34	V	4.5	9.2	12.99	33.0	-20.0	
1882.50	7.82	H	4.5	9.2	12.48	33.0	-20.5	
High Ch								
1914.30	7.90	V	4.6	8.8	12.13	33.0	-20.9	
1914.30	6.17	H	4.6	8.8	10.40	33.0	-22.6	

LTE Band 26

LTE Band 26 15MHz QPSK	UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samusung Project #: 4788480978 Date: 2018-07-12 Test Engineer: 47989 Configuration: EUT, Cradle, Adapter / Z-Position Location: Chamber 1 Mode: LTE_QPSK Band 26 Fundamentals, 15MHz Bandwidth Test Equipment: Receiving: VULB9163-750, and Chamber 2 SMA Cables Substitution: Dipole 3121_DB4, 3m N-type Cable <table><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><tr><td colspan="9">Low Ch</td></tr><tr><td>821.50</td><td>10.56</td><td>V</td><td>0.9</td><td>-1.5</td><td>8.13</td><td>38.5</td><td>-30.4</td><td></td></tr><tr><td>821.50</td><td>11.03</td><td>H</td><td>0.9</td><td>-1.5</td><td>8.60</td><td>38.5</td><td>-29.9</td><td></td></tr><tr><td colspan="9">Mid Ch</td></tr><tr><td>831.50</td><td>9.80</td><td>V</td><td>1.0</td><td>-1.4</td><td>7.40</td><td>38.5</td><td>-31.1</td><td></td></tr><tr><td>831.50</td><td>11.14</td><td>H</td><td>1.0</td><td>-1.4</td><td>8.74</td><td>38.5</td><td>-29.8</td><td></td></tr><tr><td colspan="9">High Ch</td></tr><tr><td>841.50</td><td>9.04</td><td>V</td><td>1.0</td><td>-1.4</td><td>6.67</td><td>38.5</td><td>-31.8</td><td></td></tr><tr><td>841.50</td><td>10.73</td><td>H</td><td>1.0</td><td>-1.4</td><td>8.36</td><td>38.5</td><td>-30.1</td><td></td></tr></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									821.50	10.56	V	0.9	-1.5	8.13	38.5	-30.4		821.50	11.03	H	0.9	-1.5	8.60	38.5	-29.9		Mid Ch									831.50	9.80	V	1.0	-1.4	7.40	38.5	-31.1		831.50	11.14	H	1.0	-1.4	8.74	38.5	-29.8		High Ch									841.50	9.04	V	1.0	-1.4	6.67	38.5	-31.8		841.50	10.73	H	1.0	-1.4	8.36	38.5	-30.1	
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes																																																																																										
	Low Ch																																																																																																		
	821.50	10.56	V	0.9	-1.5	8.13	38.5	-30.4																																																																																											
	821.50	11.03	H	0.9	-1.5	8.60	38.5	-29.9																																																																																											
	Mid Ch																																																																																																		
	831.50	9.80	V	1.0	-1.4	7.40	38.5	-31.1																																																																																											
	831.50	11.14	H	1.0	-1.4	8.74	38.5	-29.8																																																																																											
	High Ch																																																																																																		
	841.50	9.04	V	1.0	-1.4	6.67	38.5	-31.8																																																																																											
841.50	10.73	H	1.0	-1.4	8.36	38.5	-30.1																																																																																												
LTE Band 26 15MHz 16QAM	UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samusung Project #: 4788480978 Date: 2018-07-12 Test Engineer: 47989 Configuration: EUT, Cradle, Adapter / Z-Position Location: Chamber 1 Mode: LTE_16QAM Band 26 Fundamentals, 15MHz Bandwidth Test Equipment: Receiving: VULB9163-750, and Chamber 2 SMA Cables Substitution: Dipole 3121_DB4, 3m N-type Cable <table><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><tr><td colspan="9">Low Ch</td></tr><tr><td>821.50</td><td>9.34</td><td>V</td><td>0.9</td><td>-1.5</td><td>6.91</td><td>38.5</td><td>-31.6</td><td></td></tr><tr><td>821.50</td><td>10.26</td><td>H</td><td>0.9</td><td>-1.5</td><td>7.83</td><td>38.5</td><td>-30.7</td><td></td></tr><tr><td colspan="9">Mid Ch</td></tr><tr><td>831.50</td><td>8.76</td><td>V</td><td>1.0</td><td>-1.4</td><td>6.36</td><td>38.5</td><td>-32.1</td><td></td></tr><tr><td>831.50</td><td>10.12</td><td>H</td><td>1.0</td><td>-1.4</td><td>7.72</td><td>38.5</td><td>-30.8</td><td></td></tr><tr><td colspan="9">High Ch</td></tr><tr><td>841.50</td><td>7.57</td><td>V</td><td>1.0</td><td>-1.4</td><td>5.20</td><td>38.5</td><td>-33.3</td><td></td></tr><tr><td>841.50</td><td>10.31</td><td>H</td><td>1.0</td><td>-1.4</td><td>7.94</td><td>38.5</td><td>-30.6</td><td></td></tr></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									821.50	9.34	V	0.9	-1.5	6.91	38.5	-31.6		821.50	10.26	H	0.9	-1.5	7.83	38.5	-30.7		Mid Ch									831.50	8.76	V	1.0	-1.4	6.36	38.5	-32.1		831.50	10.12	H	1.0	-1.4	7.72	38.5	-30.8		High Ch									841.50	7.57	V	1.0	-1.4	5.20	38.5	-33.3		841.50	10.31	H	1.0	-1.4	7.94	38.5	-30.6	
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes																																																																																										
	Low Ch																																																																																																		
	821.50	9.34	V	0.9	-1.5	6.91	38.5	-31.6																																																																																											
	821.50	10.26	H	0.9	-1.5	7.83	38.5	-30.7																																																																																											
	Mid Ch																																																																																																		
	831.50	8.76	V	1.0	-1.4	6.36	38.5	-32.1																																																																																											
	831.50	10.12	H	1.0	-1.4	7.72	38.5	-30.8																																																																																											
	High Ch																																																																																																		
	841.50	7.57	V	1.0	-1.4	5.20	38.5	-33.3																																																																																											
841.50	10.31	H	1.0	-1.4	7.94	38.5	-30.6																																																																																												

LTE

Band 26

10MHz

QPSK

UL Verification Services, Inc.

High Frequency Substitution Measurement

Company: Samsung

Project #: 4788480978

Date: 2018-07-12

Test Engineer: 47989

Configuration: EUT, Cradle, Adapter / Z-Position

Location: Chamber 1

Mode: LTE_QPSK Band 26 Fundamentals, 10MHz Bandwidth

Test Equipment:

Receiving: VULB9163-750, and Chamber 2 SMA Cables

Substitution: Dipole 3121_DB4, 3m N-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								
819.00	10.59	V	0.9	-1.5	8.15	50.0	-41.9	Part 90
819.00	10.88	H	0.9	-1.5	8.44	50.0	-41.6	Part 90
Mid Ch								
831.50	10.10	V	1.0	-1.4	7.70	38.5	-30.8	
831.50	11.35	H	1.0	-1.4	8.95	38.5	-29.6	
High Ch								
844.00	9.43	V	1.0	-1.4	7.07	38.5	-31.4	
844.00	10.57	H	1.0	-1.4	8.22	38.5	-30.3	

UL Verification Services, Inc.

High Frequency Substitution Measurement

Company: Samsung

Project #: 4788480978

Date: 2018-07-12

Test Engineer: 47989

Configuration: EUT, Cradle, Adapter / Z-Position

Location: Chamber 1

Mode: LTE_QPSK Band 26 Fundamentals, 10MHz Bandwidth

Test Equipment:

Receiving: VULB9163-750, and Chamber 2 SMA Cables

Substitution: Dipole 3121_DB4, 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
829.00	9.53	V	1.0	-1.5	7.12	50.0	-42.9	Part 90
829.00	9.48	H	1.0	-1.5	7.07	50.0	-42.9	Part 90

LTE
Band 26
10MHz
16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samusing
Project #: 4788480978
Date: 2018-07-12
Test Engineer: 47989
Configuration: EUT, Cradle, Adapter / Z-Position
Location: Chamber 1
Mode: LTE_16QAM Band 26 Fundamentals, 10MHz Bandwidth

Test Equipment:

Receiving: VULB9163-750, and Chamber 2 SMA Cables
Substitution: Dipole 3121_DB4, 3m N-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								
819.00	8.74	V	0.9	-1.5	6.30	50.0	-43.7	Part 90
819.00	9.71	H	0.9	-1.5	7.27	50.0	-42.7	Part 90
Mid Ch								
831.50	9.09	V	1.0	-1.4	6.69	38.5	-31.8	
831.50	10.23	H	1.0	-1.4	7.83	38.5	-30.7	
High Ch								
844.00	8.21	V	1.0	-1.4	5.85	38.5	-32.7	
844.00	9.33	H	1.0	-1.4	6.98	38.5	-31.5	

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samusing
Project #: 4788480978
Date: 2018-07-12
Test Engineer: 47989
Configuration: EUT, Cradle, Adapter / Z-Position
Location: Chamber 1
Mode: LTE_16QAM Band 26 Fundamentals, 10MHz Bandwidth

Test Equipment:

Receiving: VULB9163-750, and Chamber 2 SMA Cables
Substitution: Dipole 3121_DB4, 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
829.00	8.67	V	1.0	-1.5	6.26	50.0	-43.7	Part 90
829.00	8.04	H	1.0	-1.5	5.63	50.0	-44.4	Part 90

LTE

Band 26

5 MHz

QPSK

UL Verification Services, Inc.

High Frequency Substitution Measurement

Company: Samsung

Project #: 4788480978

Date: 2018-07-12

Test Engineer: 47989

Configuration: EUT, Cradle, Adapter / Z-Position

Location: Chamber 1

Mode: LTE_QPSK Band 26 Fundamentals, 5MHz Bandwidth

Test Equipment:

Receiving: VULB9163-750, and Chamber 2 SMA Cables

Substitution: Dipole 3121_DB4, 3m N-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								
816.50	9.48	V	0.9	-1.5	7.04	50.0	-43.0	Part 90
816.50	9.86	H	0.9	-1.5	7.41	50.0	-42.6	Part 90
Mid Ch								
831.50	9.15	V	1.0	-1.4	6.75	38.5	-31.8	
831.50	10.82	H	1.0	-1.4	8.42	38.5	-30.1	
High Ch								
846.50	8.68	V	1.0	-1.4	6.33	38.5	-32.2	
846.50	9.38	H	1.0	-1.4	7.03	38.5	-31.5	

UL Verification Services, Inc.

High Frequency Substitution Measurement

Company: Samsung

Project #: 4788480978

Date: 2018-07-12

Test Engineer: 47989

Configuration: EUT, Cradle, Adapter / Z-Position

Location: Chamber 1

Mode: LTE_QPSK Band 26 Fundamentals, 5MHz Bandwidth

Test Equipment:

Receiving: VULB9163-750, and Chamber 2 SMA Cables

Substitution: Dipole 3121_DB4, 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
821.50	10.27	V	0.9	-1.5	7.84	50.0	-42.2	Part 90
821.50	10.83	H	0.9	-1.5	8.40	50.0	-41.6	Part 90
826.50	9.80	V	1.0	-1.5	7.38	38.5	-31.1	
826.50	11.26	H	1.0	-1.5	8.84	38.5	-29.7	

LTE

Band 26

5 MHz

16QAM

UL Verification Services, Inc.

High Frequency Substitution Measurement

Company: Samusung

Project #: 4788480978

Date: 2018-07-12

Test Engineer: 47989

Configuration: EUT, Cradle, Adapter / Z-Position

Location: Chamber 1

Mode: LTE_16QAM Band 26 Fundamentals, 5MHz Bandwidth

Test Equipment:

Receiving: VULB9163-750, and Chamber 2 SMA Cables

Substitution: Dipole 3121_DB4, 3m N-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								
816.50	7.71	V	0.9	-1.5	5.27	50.0	-44.7	Part 90
816.50	8.71	H	0.9	-1.5	6.26	50.0	-43.7	Part 90
Mid Ch								
831.50	7.79	V	1.0	-1.4	5.39	38.5	-33.1	
831.50	9.97	H	1.0	-1.4	7.57	38.5	-30.9	
High Ch								
846.50	7.63	V	1.0	-1.4	5.28	38.5	-33.2	
846.50	7.40	H	1.0	-1.4	5.05	38.5	-33.4	

UL Verification Services, Inc.

High Frequency Substitution Measurement

Company: Samusung

Project #: 4788480978

Date: 2018-07-12

Test Engineer: 47989

Configuration: EUT, Cradle, Adapter / Z-Position

Location: Chamber 1

Mode: LTE_16QAM Band 26 Fundamentals, 5MHz Bandwidth

Test Equipment:

Receiving: VULB9163-750, and Chamber 2 SMA Cables

Substitution: Dipole 3121_DB4, 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
821.50	9.02	V	0.9	-1.5	6.59	50.0	-43.4	Part 90
821.50	11.00	H	0.9	-1.5	8.57	50.0	-41.4	Part 90
826.50	8.50	V	1.0	-1.5	6.08	38.5	-32.4	
826.50	9.61	H	1.0	-1.5	7.19	38.5	-31.3	

LTE
Band 26
3MHz
QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samusung
Project #: 4788480978
Date: 2018-07-12
Test Engineer: 47989
Configuration: EUT, Cradle, Adapter / Z-Position
Location: Chamber 1
Mode: LTE_QPSK Band 26 Fundamentals, 3MHz Bandwidth

Test Equipment:
Receiving: VULB9163-750, and Chamber 2 SMA Cables
Substitution: Dipole 3121_DB4, 3m N-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								
815.50	9.42	V	0.9	-1.5	6.97	50.0	-43.0	Part 90
815.50	10.20	H	0.9	-1.5	7.76	50.0	-42.2	Part 90
Mid Ch								
831.50	8.38	V	1.0	-1.4	5.98	38.5	-32.5	
831.50	10.30	H	1.0	-1.4	7.90	38.5	-30.6	
High Ch								
847.50	8.44	V	1.0	-1.4	6.09	38.5	-32.4	
847.50	8.76	H	1.0	-1.4	6.42	38.5	-32.0	

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samusung
Project #: 4788480978
Date: 2018-07-12
Test Engineer: 47989
Configuration: EUT, Cradle, Adapter / Z-Position
Location: Chamber 1
Mode: LTE_QPSK Band 26 Fundamentals, 3MHz Bandwidth

Test Equipment:
Receiving: VULB9163-750, and Chamber 2 SMA Cables
Substitution: Dipole 3121_DB4, 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
822.50	9.96	V	1.0	-1.5	7.53	50.0	-42.5	
822.50	10.65	H	1.0	-1.5	8.22	50.0	-41.8	
825.50	9.81	V	1.0	-1.5	7.39	38.5	-31.1	
825.50	11.01	H	1.0	-1.5	8.59	38.5	-29.9	

LTE
Band 26
3MHz
16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung

Project #: 4788480978

Date: 2018-07-12

Test Engineer: 47989

Configuration: EUT, Cradle, Adapter / Z-Position

Location: Chamber 1

Mode: LTE_16QAM Band 26 Fundamentals, 3MHz Bandwidth

Test Equipment:

Receiving: VULB9163-750, and Chamber 2 SMA Cables

Substitution: Dipole 3121_DB4, 3m N-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								
815.50	7.87	V	0.9	-1.5	5.42	50.0	-44.6	Part 90
815.50	8.86	H	0.9	-1.5	6.42	50.0	-43.6	Part 90
Mid Ch								
831.50	7.88	V	1.0	-1.4	5.48	38.5	-33.0	
831.50	9.85	H	1.0	-1.4	7.45	38.5	-31.0	
High Ch								
847.50	7.25	V	1.0	-1.4	4.90	38.5	-33.6	
847.50	7.56	H	1.0	-1.4	5.22	38.5	-33.2	

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung

Project #: 4788480978

Date: 2018-07-12

Test Engineer: 47989

Configuration: EUT, Cradle, Adapter / Z-Position

Location: Chamber 1

Mode: LTE_16QAM Band 26 Fundamentals, 3MHz Bandwidth

Test Equipment:

Receiving: VULB9163-750, and Chamber 2 SMA Cables

Substitution: Dipole 3121_DB4, 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
822.50	8.50	V	1.0	-1.5	6.07	50.0	-43.9	
822.50	9.57	H	1.0	-1.5	7.14	50.0	-42.9	
825.50	8.94	V	1.0	-1.5	6.52	38.5	-31.9	
825.50	9.59	H	1.0	-1.5	7.17	38.5	-31.3	

LTE

Band 26

1.4MHz

QPSK

UL Verification Services, Inc.

High Frequency Substitution Measurement

Company: Samusung

Project #: 4788480978

Date: 2018-07-12

Test Engineer: 47989

Configuration: EUT, Cradle, Adapter / Z-Position

Location: Chamber 1

Mode: LTE_QPSK Band 26 Fundamentals, 1.4MHz Bandwidth

Test Equipment:

Receiving: VULB9163-750, and Chamber 2 SMA Cables

Substitution: Dipole 3121_DB4, 3m N-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								
814.70	8.59	V	0.9	-1.5	6.14	50.0	-43.9	Part 90
814.70	9.20	H	0.9	-1.5	6.76	50.0	-43.2	Part 90
Mid Ch								
831.50	8.97	V	1.0	-1.4	6.57	38.5	-31.9	
831.50	9.98	H	1.0	-1.4	7.58	38.5	-30.9	
High Ch								
848.30	7.83	V	1.0	-1.4	5.49	38.5	-33.0	
848.30	9.17	H	1.0	-1.4	6.83	38.5	-31.6	

UL Verification Services, Inc.

High Frequency Substitution Measurement

Company: Samusung

Project #: 4788480978

Date: 2018-07-12

Test Engineer: 47989

Configuration: EUT, Cradle, Adapter / Z-Position

Location: Chamber 1

Mode: LTE_QPSK Band 26 Fundamentals, 1.4MHz Bandwidth

Test Equipment:

Receiving: VULB9163-750, and Chamber 2 SMA Cables

Substitution: Dipole 3121_DB4, 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
823.30	9.47	V	1.0	-1.5	7.04	50.0	-43.0	
823.30	10.97	H	1.0	-1.5	8.55	50.0	-41.5	
824.70	9.77	V	1.0	-1.5	7.35	38.5	-31.1	
824.70	11.50	H	1.0	-1.5	9.07	38.5	-29.4	

LTE

Band 26

1.4MHz

16QAM

UL Verification Services, Inc.

High Frequency Substitution Measurement

Company: Samsung

Project #: 4788480978

Date: 2018-07-12

Test Engineer: 47989

Configuration: EUT, Cradle, Adapter / Z-Position

Location: Chamber 1

Mode: LTE_16QAM Band 26 Fundamentals, 1.4MHz Bandwidth

Test Equipment:

Receiving: VULB9163-750, and Chamber 2 SMA Cables

Substitution: Dipole 3121_DB4, 3m N-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								
814.70	8.02	V	0.9	-1.5	5.57	50.0	-44.4	Part 90
814.70	8.77	H	0.9	-1.5	6.33	50.0	-43.7	Part 90
Mid Ch								
831.50	7.48	V	1.0	-1.4	5.08	38.5	-33.4	
831.50	9.15	H	1.0	-1.4	6.75	38.5	-31.7	
High Ch								
848.30	6.96	V	1.0	-1.4	4.62	38.5	-33.8	
848.30	6.95	H	1.0	-1.4	4.61	38.5	-33.9	

UL Verification Services, Inc.

High Frequency Substitution Measurement

Company: Samsung

Project #: 4788480978

Date: 2018-07-12

Test Engineer: 47989

Configuration: EUT, Cradle, Adapter / Z-Position

Location: Chamber 1

Mode: LTE_16QAM Band 26 Fundamentals, 1.4MHz Bandwidth

Test Equipment:

Receiving: VULB9163-750, and Chamber 2 SMA Cables

Substitution: Dipole 3121_DB4, 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
823.30	8.20	V	1.0	-1.5	5.77	50.0	-44.2	
823.30	9.72	H	1.0	-1.5	7.30	50.0	-42.7	
824.70	8.60	V	1.0	-1.5	6.18	38.5	-32.3	
824.70	9.82	H	1.0	-1.5	7.39	38.5	-31.1	

LTE Band 66

LTE
Band 66
20MHz
QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788480978
Date: 2018-06-08
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 66 Fundamentals, 20MHz Bandwidth

Test Equipment:

Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables
Substitution: Horn 3115[00161451], 3m N-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	8.19	V	4.3	9.5	13.36	30.0	-16.6	
1720.00	11.91	H	4.3	9.5	17.08	30.0	-12.9	
Mid Ch								
1745.00	6.50	V	4.4	9.6	11.72	30.0	-18.3	
1745.00	12.07	H	4.4	9.6	17.29	30.0	-12.7	
High Ch								
1770.00	8.10	V	4.4	9.6	13.34	30.0	-16.7	
1770.00	10.42	H	4.4	9.6	15.65	30.0	-14.3	

LTE
Band 66
20MHz
16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788480978
Date: 2018-06-08
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 66 Fundamentals, 20MHz Bandwidth

Test Equipment:

Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables
Substitution: Horn 3115[00161451], 3m N-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	6.88	V	4.3	9.5	12.05	30.0	-18.0	
1720.00	10.05	H	4.3	9.5	15.22	30.0	-14.8	
Mid Ch								
1745.00	5.53	V	4.4	9.6	10.75	30.0	-19.2	
1745.00	12.07	H	4.4	9.6	17.29	30.0	-12.7	
High Ch								
1770.00	7.12	V	4.4	9.6	12.36	30.0	-17.6	
1770.00	9.30	H	4.4	9.6	14.53	30.0	-15.5	

LTE

Band 66

15MHz

QPSK

UL Verification Services, Inc.

High Frequency Substitution Measurement

Company: Samsung

Project #: 4788480978

Date: 2018-06-08

Test Engineer: 47989

Configuration: EUT / X-Position

Location: Chamber 1

Mode: LTE_QPSK Band 66 Fundamentals, 15MHz Bandwidth

Test Equipment:

Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables

Substitution: Horn 3115[00161451], 3m N-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	8.86	V	4.3	9.5	14.03	30.0	-16.0	
1717.50	10.84	H	4.3	9.5	16.01	30.0	-14.0	
Mid Ch								
1745.00	8.57	V	4.4	9.6	13.79	30.0	-16.2	
1745.00	11.95	H	4.4	9.6	17.17	30.0	-12.8	
High Ch								
1772.50	8.51	V	4.4	9.6	13.74	30.0	-16.3	
1772.50	12.21	H	4.4	9.6	17.45	30.0	-12.5	

LTE

Band 66

15MHz

16QAM

UL Verification Services, Inc.

High Frequency Substitution Measurement

Company: Samsung

Project #: 4788480978

Date: 2018-06-08

Test Engineer: 47989

Configuration: EUT / X-Position

Location: Chamber 1

Mode: LTE_16QAM Band 66 Fundamentals, 15MHz Bandwidth

Test Equipment:

Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables

Substitution: Horn 3115[00161451], 3m N-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	8.02	V	4.3	9.5	13.19	30.0	-16.8	
1717.50	10.11	H	4.3	9.5	15.28	30.0	-14.7	
Mid Ch								
1745.00	7.93	V	4.4	9.6	13.15	30.0	-16.8	
1745.00	11.22	H	4.4	9.6	16.44	30.0	-13.6	
High Ch								
1772.50	7.82	V	4.4	9.6	13.05	30.0	-16.9	
1772.50	10.86	H	4.4	9.6	16.10	30.0	-13.9	

LTE Band 66 10MHz QPSK	UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 4788480978 Date: 2018-06-08 Test Engineer: 47989 Configuration: EUT / X-Position Location: Chamber 1 Mode: LTE_QPSK Band 66 Fundamentals, 10MHz Bandwidth Test Equipment: Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00161451], 3m N-type Cable <table><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><tr><td colspan="9">Low Ch</td></tr><tr><td>1715.00</td><td>8.49</td><td>V</td><td>4.3</td><td>9.5</td><td>13.65</td><td>30.0</td><td>-16.4</td><td></td></tr><tr><td>1715.00</td><td>11.37</td><td>H</td><td>4.3</td><td>9.5</td><td>16.52</td><td>30.0</td><td>-13.5</td><td></td></tr><tr><td colspan="9">Mid Ch</td></tr><tr><td>1745.00</td><td>9.31</td><td>V</td><td>4.4</td><td>9.6</td><td>14.53</td><td>30.0</td><td>-15.5</td><td></td></tr><tr><td>1745.00</td><td>12.49</td><td>H</td><td>4.4</td><td>9.6</td><td>17.71</td><td>30.0</td><td>-12.3</td><td></td></tr><tr><td colspan="9">High Ch</td></tr><tr><td>1775.00</td><td>9.35</td><td>V</td><td>4.4</td><td>9.6</td><td>14.59</td><td>30.0</td><td>-15.4</td><td></td></tr><tr><td>1775.00</td><td>10.92</td><td>H</td><td>4.4</td><td>9.6</td><td>16.16</td><td>30.0</td><td>-13.8</td><td></td></tr></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									1715.00	8.49	V	4.3	9.5	13.65	30.0	-16.4		1715.00	11.37	H	4.3	9.5	16.52	30.0	-13.5		Mid Ch									1745.00	9.31	V	4.4	9.6	14.53	30.0	-15.5		1745.00	12.49	H	4.4	9.6	17.71	30.0	-12.3		High Ch									1775.00	9.35	V	4.4	9.6	14.59	30.0	-15.4		1775.00	10.92	H	4.4	9.6	16.16	30.0	-13.8	
	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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1775.00	10.92	H	4.4	9.6	16.16	30.0	-13.8																																																																																												
LTE Band 66 10MHz 16QAM	UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 4788480978 Date: 2018-06-08 Test Engineer: 47989 Configuration: EUT / X-Position Location: Chamber 1 Mode: LTE_16QAM Band 66 Fundamentals, 10MHz Bandwidth Test Equipment: Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00161451], 3m N-type Cable <table><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><tr><td colspan="9">Low Ch</td></tr><tr><td>1715.00</td><td>7.09</td><td>V</td><td>4.3</td><td>9.5</td><td>12.25</td><td>30.0</td><td>-17.8</td><td></td></tr><tr><td>1715.00</td><td>10.10</td><td>H</td><td>4.3</td><td>9.5</td><td>15.25</td><td>30.0</td><td>-14.7</td><td></td></tr><tr><td colspan="9">Mid Ch</td></tr><tr><td>1745.00</td><td>8.37</td><td>V</td><td>4.4</td><td>9.6</td><td>13.59</td><td>30.0</td><td>-16.4</td><td></td></tr><tr><td>1745.00</td><td>11.18</td><td>H</td><td>4.4</td><td>9.6</td><td>16.40</td><td>30.0</td><td>-13.6</td><td></td></tr><tr><td colspan="9">High Ch</td></tr><tr><td>1775.00</td><td>8.24</td><td>V</td><td>4.4</td><td>9.6</td><td>13.48</td><td>30.0</td><td>-16.5</td><td></td></tr><tr><td>1775.00</td><td>9.76</td><td>H</td><td>4.4</td><td>9.6</td><td>15.00</td><td>30.0</td><td>-15.0</td><td></td></tr></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									1715.00	7.09	V	4.3	9.5	12.25	30.0	-17.8		1715.00	10.10	H	4.3	9.5	15.25	30.0	-14.7		Mid Ch									1745.00	8.37	V	4.4	9.6	13.59	30.0	-16.4		1745.00	11.18	H	4.4	9.6	16.40	30.0	-13.6		High Ch									1775.00	8.24	V	4.4	9.6	13.48	30.0	-16.5		1775.00	9.76	H	4.4	9.6	15.00	30.0	-15.0	
	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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LTE Band 66 5MHz QPSK	UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 4788480978 Date: 2018-06-08 Test Engineer: 47989 Configuration: EUT / X-Position Location: Chamber 1 Mode: LTE_QPSK Band 66 Fundamentals, 5MHz Bandwidth Test Equipment: Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00161451], 3m N-type Cable <table><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><tr><td colspan="9">Low Ch</td></tr><tr><td>1712.50</td><td>6.83</td><td>V</td><td>4.3</td><td>9.5</td><td>11.98</td><td>30.0</td><td>-18.0</td><td></td></tr><tr><td>1712.50</td><td>11.58</td><td>H</td><td>4.3</td><td>9.5</td><td>16.73</td><td>30.0</td><td>-13.3</td><td></td></tr><tr><td colspan="9">Mid Ch</td></tr><tr><td>1745.00</td><td>7.53</td><td>V</td><td>4.4</td><td>9.6</td><td>12.75</td><td>30.0</td><td>-17.2</td><td></td></tr><tr><td>1745.00</td><td>11.84</td><td>H</td><td>4.4</td><td>9.6</td><td>17.06</td><td>30.0</td><td>-12.9</td><td></td></tr><tr><td colspan="9">High Ch</td></tr><tr><td>1777.50</td><td>9.27</td><td>V</td><td>4.4</td><td>9.6</td><td>14.50</td><td>30.0</td><td>-15.5</td><td></td></tr><tr><td>1777.50</td><td>12.47</td><td>H</td><td>4.4</td><td>9.6</td><td>17.71</td><td>30.0</td><td>-12.3</td><td></td></tr></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									1712.50	6.83	V	4.3	9.5	11.98	30.0	-18.0		1712.50	11.58	H	4.3	9.5	16.73	30.0	-13.3		Mid Ch									1745.00	7.53	V	4.4	9.6	12.75	30.0	-17.2		1745.00	11.84	H	4.4	9.6	17.06	30.0	-12.9		High Ch									1777.50	9.27	V	4.4	9.6	14.50	30.0	-15.5		1777.50	12.47	H	4.4	9.6	17.71	30.0	-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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	1777.50	9.27	V	4.4	9.6	14.50	30.0	-15.5																																																																																											
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LTE Band 66 5MHz 16QAM	UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 4788480978 Date: 2018-06-08 Test Engineer: 47989 Configuration: EUT / X-Position Location: Chamber 1 Mode: LTE_16QAM Band 66 Fundamentals, 5MHz Bandwidth Test Equipment: Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00161451], 3m N-type Cable <table><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><tr><td colspan="9">Low Ch</td></tr><tr><td>1712.50</td><td>5.97</td><td>V</td><td>4.3</td><td>9.5</td><td>11.12</td><td>30.0</td><td>-18.9</td><td></td></tr><tr><td>1712.50</td><td>11.29</td><td>H</td><td>4.3</td><td>9.5</td><td>16.44</td><td>30.0</td><td>-13.6</td><td></td></tr><tr><td colspan="9">Mid Ch</td></tr><tr><td>1745.00</td><td>7.06</td><td>V</td><td>4.4</td><td>9.6</td><td>12.28</td><td>30.0</td><td>-17.7</td><td></td></tr><tr><td>1745.00</td><td>11.29</td><td>H</td><td>4.4</td><td>9.6</td><td>16.51</td><td>30.0</td><td>-13.5</td><td></td></tr><tr><td colspan="9">High Ch</td></tr><tr><td>1777.50</td><td>8.44</td><td>V</td><td>4.4</td><td>9.6</td><td>13.67</td><td>30.0</td><td>-16.3</td><td></td></tr><tr><td>1777.50</td><td>11.45</td><td>H</td><td>4.4</td><td>9.6</td><td>16.69</td><td>30.0</td><td>-13.3</td><td></td></tr></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									1712.50	5.97	V	4.3	9.5	11.12	30.0	-18.9		1712.50	11.29	H	4.3	9.5	16.44	30.0	-13.6		Mid Ch									1745.00	7.06	V	4.4	9.6	12.28	30.0	-17.7		1745.00	11.29	H	4.4	9.6	16.51	30.0	-13.5		High Ch									1777.50	8.44	V	4.4	9.6	13.67	30.0	-16.3		1777.50	11.45	H	4.4	9.6	16.69	30.0	-13.3	
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LTE Band 66 3MHz QPSK	UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 4788480978 Date: 2018-06-08 Test Engineer: 47989 Configuration: EUT / X-Position Location: Chamber 1 Mode: LTE_QPSK Band 66 Fundamentals, 3MHz Bandwidth Test Equipment: Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00161451], 3m N-type Cable <table><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><tr><td>Low Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>1711.50</td><td>9.27</td><td>V</td><td>4.3</td><td>9.5</td><td>14.43</td><td>30.0</td><td>-15.6</td><td></td></tr><tr><td>1711.50</td><td>10.62</td><td>H</td><td>4.3</td><td>9.5</td><td>15.77</td><td>30.0</td><td>-14.2</td><td></td></tr><tr><td>Mid Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>1745.00</td><td>6.73</td><td>V</td><td>4.4</td><td>9.6</td><td>11.95</td><td>30.0</td><td>-18.0</td><td></td></tr><tr><td>1745.00</td><td>12.60</td><td>H</td><td>4.4</td><td>9.6</td><td>17.82</td><td>30.0</td><td>-12.2</td><td></td></tr><tr><td>High Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>1778.50</td><td>8.53</td><td>V</td><td>4.4</td><td>9.6</td><td>13.76</td><td>30.0</td><td>-16.2</td><td></td></tr><tr><td>1778.50</td><td>11.77</td><td>H</td><td>4.4</td><td>9.6</td><td>17.01</td><td>30.0</td><td>-13.0</td><td></td></tr></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									1711.50	9.27	V	4.3	9.5	14.43	30.0	-15.6		1711.50	10.62	H	4.3	9.5	15.77	30.0	-14.2		Mid Ch									1745.00	6.73	V	4.4	9.6	11.95	30.0	-18.0		1745.00	12.60	H	4.4	9.6	17.82	30.0	-12.2		High Ch									1778.50	8.53	V	4.4	9.6	13.76	30.0	-16.2		1778.50	11.77	H	4.4	9.6	17.01	30.0	-13.0	
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LTE Band 66 1.4MHz QPSK	UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samusung Project #: 4788480978 Date: 2018-06-12 Test Engineer: 47989 Configuration: EUT / Z-Position Location: Chamber 1 Mode: LTE_16QAM Band 26 Fundamentals, 1.4MHz Bandwidth Test Equipment: Receiving: VULB9163-750, and Chamber 2 SMA Cables Substitution: Dipole 3121_DB4, 3m N-type Cable <table><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><tr><td>Low Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>814.70</td><td>5.78</td><td>V</td><td>0.9</td><td>-1.5</td><td>3.33</td><td>50.0</td><td>-46.7</td><td>Part 90</td></tr><tr><td>814.70</td><td>0.40</td><td>H</td><td>0.9</td><td>-1.5</td><td>-2.04</td><td>50.0</td><td>-52.0</td><td>Part 90</td></tr><tr><td>Mid Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>831.50</td><td>5.24</td><td>V</td><td>1.0</td><td>-1.4</td><td>2.84</td><td>38.5</td><td>-35.7</td><td></td></tr><tr><td>831.50</td><td>0.78</td><td>H</td><td>1.0</td><td>-1.4</td><td>-1.62</td><td>38.5</td><td>-40.1</td><td></td></tr><tr><td>High Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>848.30</td><td>4.72</td><td>V</td><td>1.0</td><td>-1.4</td><td>2.38</td><td>38.5</td><td>-36.1</td><td></td></tr><tr><td>848.30</td><td>-1.42</td><td>H</td><td>1.0</td><td>-1.4</td><td>-3.76</td><td>38.5</td><td>-42.3</td><td></td></tr></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								814.70	5.78	V	0.9	-1.5	3.33	50.0	-46.7	Part 90	814.70	0.40	H	0.9	-1.5	-2.04	50.0	-52.0	Part 90	Mid Ch								831.50	5.24	V	1.0	-1.4	2.84	38.5	-35.7		831.50	0.78	H	1.0	-1.4	-1.62	38.5	-40.1		High Ch								848.30	4.72	V	1.0	-1.4	2.38	38.5	-36.1		848.30	-1.42	H	1.0	-1.4	-3.76	38.5	-42.3	
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10.2. FIELD STRENGTH OF SPURIOUS RADIATION

RULE PART(S)

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

IC: RSS-132 (5.5), RSS-133 (6.5), RSS-130 (4.6), RSS-139 (6.6)

LIMIT

Part 22.917(a) & Part 24.238(a) & Part 27.53(h) & RSS-132 (5.5) & RSS-133 (6.5) & RSS-139 (6.6)
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(f), RSS-130 (4.6) - For operations in the 746-758 MHz, 775-788 MHz, and 805-806 MHz bands, emissions in the band 1559-1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

Part 27.53(c) (2) - On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log (P)$ dB.

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.

Part 90: (a) (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)

TEST PROCEDURE

ANSI / TIA / EIA 603 E Clause 2.2.12; ESU40 setting reference to 971168 D01 v03

For peak power measurement with a ESU40:

- Set the RBW = 100 KHz for emission below 1GHz and 1MHz for emissions above 1GHz
- Set VBW $\geq 3 \times$ RBW;
- Set span ≥ 1.5 times the OBW;
- Sweep time = auto couple;
- Detector = rms;
- Ensure that the number of measurement points $\geq$ span/RBW;
- Trace mode = average(WCDMA, LTE);

NOTE : Radiated spurious emissions were investigated below 30MHz, 30MHz – 1GHz and above 1GHz. There were no emissions found on below 30MHz and 30MHz – 1GHz.

RESULTS

WCDMA Band 4

WCDMA Band 4 REL99	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
	Company: Samsung									
	Project #: 4788480978									
	Date: 2018-06-12									
	Test Engineer: 47989									
	Configuration: EUT / AC Adapter / Cradle, X-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
	Low Ch, 1712.4MHz									
	3424.80	-13.8	V	3.0	43.7	1.0	-56.4	-13.0	-43.4	
	5137.20	-19.4	V	3.0	43.8	1.0	-62.2	-13.0	-49.2	
	6849.60	-17.3	V	3.0	42.9	1.0	-59.1	-13.0	-46.1	
	3424.80	-13.7	H	3.0	43.7	1.0	-56.4	-13.0	-43.4	
	5137.20	-19.7	H	3.0	43.8	1.0	-62.4	-13.0	-49.4	
	6849.60	-15.9	H	3.0	42.9	1.0	-57.7	-13.0	-44.7	
	Mid Ch, 1732.6MHz									
	3465.20	-13.7	V	3.0	43.7	1.0	-56.4	-13.0	-43.4	
	5197.80	-17.8	V	3.0	43.8	1.0	-60.6	-13.0	-47.6	
	6930.40	-17.6	V	3.0	42.8	1.0	-59.4	-13.0	-46.4	
	3465.20	-14.1	H	3.0	43.7	1.0	-56.7	-13.0	-43.7	
	5197.80	-18.2	H	3.0	43.8	1.0	-61.0	-13.0	-48.0	
	6930.40	-17.0	H	3.0	42.8	1.0	-58.8	-13.0	-45.8	
	High Ch, 1752.6MHz									
	3505.20	-16.1	V	3.0	43.7	1.0	-58.8	-13.0	-45.8	
	5257.80	-17.0	V	3.0	43.8	1.0	-59.8	-13.0	-46.8	
7010.40	-18.4	V	3.0	42.7	1.0	-60.1	-13.0	-47.1		
3505.20	-17.0	H	3.0	43.7	1.0	-59.7	-13.0	-46.7		
5257.80	-17.1	H	3.0	43.8	1.0	-59.8	-13.0	-46.8		
7010.40	-17.9	H	3.0	42.7	1.0	-59.7	-13.0	-46.7		
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WCDMA Band 2

WCDMA Band 2 REL99	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
	Company: Samsung									
	Project #: 4788480978									
	Date: 2018-06-12									
	Test Engineer: 47989									
	Configuration: EUT / AC Adapter / Cradle, Y-Position									
	Location: Chamber 1									
	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
	Low Ch, 1852.4MHz									
	3704.80	-20.0	V	3.0	43.8	1.0	-62.8	-13.0	-49.8	
	5557.20	-16.8	V	3.0	43.7	1.0	-59.5	-13.0	-46.5	
	7409.60	-17.2	V	3.0	42.5	1.0	-58.7	-13.0	-45.7	
	3704.80	-20.3	H	3.0	43.8	1.0	-63.1	-13.0	-50.1	
	5557.20	-18.5	H	3.0	43.7	1.0	-61.2	-13.0	-48.2	
	7409.60	-17.5	H	3.0	42.5	1.0	-59.0	-13.0	-46.0	
	Mid Ch, 1880MHz									
	3760.00	-20.0	V	3.0	43.8	1.0	-62.8	-13.0	-49.8	
	5640.00	-16.5	V	3.0	43.7	1.0	-59.2	-13.0	-46.2	
	7520.00	-17.1	V	3.0	42.5	1.0	-58.6	-13.0	-45.6	
	3760.00	-19.8	H	3.0	43.8	1.0	-62.6	-13.0	-49.6	
	5640.00	-16.6	H	3.0	43.7	1.0	-59.3	-13.0	-46.3	
	7520.00	-16.8	H	3.0	42.5	1.0	-58.3	-13.0	-45.3	
	High Ch, 1907.6MHz									
	3815.20	-20.0	V	3.0	43.8	1.0	-62.8	-13.0	-49.8	
5722.80	-16.4	V	3.0	43.7	1.0	-59.1	-13.0	-46.1		
7630.40	-17.0	V	3.0	42.4	1.0	-58.4	-13.0	-45.4		
3815.20	-20.1	H	3.0	43.8	1.0	-62.9	-13.0	-49.9		
5722.80	-18.3	H	3.0	43.7	1.0	-61.0	-13.0	-48.0		
7630.40	-16.7	H	3.0	42.4	1.0	-58.1	-13.0	-45.1		
WCDMA Band 2 HSDPA	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
	Company: Samsung									
	Project #: 4788480978									
	Date: 2018-06-12									
	Test Engineer: 47989									
	Configuration: EUT / AC Adapter / Cradle, Y-Position									
	Location: Chamber 1									
	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
	Low Ch, 1852.4MHz									
	3704.80	-20.8	V	3.0	43.8	1.0	-63.6	-13.0	-50.6	
	5557.20	-18.3	V	3.0	43.7	1.0	-61.0	-13.0	-48.0	
	7409.60	-17.2	V	3.0	42.5	1.0	-58.7	-13.0	-45.7	
	3704.80	-20.5	H	3.0	43.8	1.0	-63.2	-13.0	-50.2	
	5557.20	-18.4	H	3.0	43.7	1.0	-61.2	-13.0	-48.2	
	7409.60	-17.5	H	3.0	42.5	1.0	-59.0	-13.0	-46.0	
	Mid Ch, 1880MHz									
	3760.00	-20.7	V	3.0	43.8	1.0	-63.5	-13.0	-50.5	
	5640.00	-18.1	V	3.0	43.7	1.0	-60.8	-13.0	-47.8	
	7520.00	-17.5	V	3.0	42.5	1.0	-59.0	-13.0	-46.0	
	3760.00	-20.6	H	3.0	43.8	1.0	-63.4	-13.0	-50.4	
	5640.00	-18.2	H	3.0	43.7	1.0	-60.9	-13.0	-47.9	
	7520.00	-17.1	H	3.0	42.5	1.0	-58.5	-13.0	-45.5	
	High Ch, 1907.6MHz									
	3815.20	-21.0	V	3.0	43.8	1.0	-63.8	-13.0	-50.8	
5722.80	-17.4	V	3.0	43.7	1.0	-60.1	-13.0	-47.1		
7630.40	-17.1	V	3.0	42.4	1.0	-58.5	-13.0	-45.5		
3815.20	-20.9	H	3.0	43.8	1.0	-63.7	-13.0	-50.7		
5722.80	-17.7	H	3.0	43.7	1.0	-60.4	-13.0	-47.4		
7630.40	-16.7	H	3.0	42.4	1.0	-58.1	-13.0	-45.1		

LTE Band 12

LTE Band 12 10MHz QPSK	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement Company: Samsung Project #: 4788480978 Date: 2018-06-11 Test Engineer: 47989 Configuration: EUT / AC Adapter / Cradle, Z-Position Location: Chamber 1 Mode: LTE_QPSK Band 12 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
LTE Band 12 10MHz 16QAM	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement Company: Samsung Project #: 4788480978 Date: 2018-06-11 Test Engineer: 47989 Configuration: EUT / AC Adapter / Cradle, Z-Position Location: Chamber 1 Mode: LTE_16QAM Band 12 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

LTE Band 12 5MHz QPSK	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
	Company: Samsung Project #: 4788480978 Date: 2018-06-11 Test Engineer: 47989 Configuration: EUT / AC Adapter / Cradle, Z-Position Location: Chamber 1 Mode: LTE_QPSK Band 12 Harmonics, 5MHz 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, 701.5MHz									
	1403.00	-14.9	V	3.0	43.8	1.0	-57.7	-13.0	-44.7	
	2104.50	-22.6	V	3.0	43.3	1.0	-65.0	-13.0	-52.0	
	2806.00	-21.2	V	3.0	43.5	1.0	-63.7	-13.0	-50.7	
	1403.00	-13.2	H	3.0	43.8	1.0	-56.0	-13.0	-43.0	
	2104.50	-22.3	H	3.0	43.3	1.0	-64.6	-13.0	-51.6	
	2806.00	-20.9	H	3.0	43.5	1.0	-63.4	-13.0	-50.4	
	Mid Ch, 707.5MHz									
	1415.00	-14.3	V	3.0	43.8	1.0	-57.1	-13.0	-44.1	
	2122.50	-21.0	V	3.0	43.3	1.0	-63.3	-13.0	-50.3	
	2830.00	-21.7	V	3.0	43.5	1.0	-64.2	-13.0	-51.2	
	1415.00	-13.7	H	3.0	43.8	1.0	-56.5	-13.0	-43.5	
	2122.50	-22.1	H	3.0	43.3	1.0	-64.4	-13.0	-51.4	
	2830.00	-21.5	H	3.0	43.5	1.0	-64.0	-13.0	-51.0	
	High Ch, 713.5MHz									
	1427.00	-8.1	V	3.0	43.8	1.0	-50.8	-13.0	-37.8	
	2140.50	-21.5	V	3.0	43.3	1.0	-63.9	-13.0	-50.9	
	2854.00	-21.8	V	3.0	43.5	1.0	-64.3	-13.0	-51.3	
	1427.00	-9.1	H	3.0	43.8	1.0	-51.9	-13.0	-38.9	
	2140.50	-22.4	H	3.0	43.3	1.0	-64.7	-13.0	-51.7	
2854.00	-21.4	H	3.0	43.5	1.0	-63.9	-13.0	-50.9		
LTE Band 12 5MHz 16QAM	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
	Company: Samsung Project #: 4788480978 Date: 2018-06-11 Test Engineer: 47989 Configuration: EUT / AC Adapter / Cradle, Z-Position Location: Chamber 1 Mode: LTE_16QAM Band 12 Harmonics, 5MHz 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, 701.5MHz									
	1403.00	-16.1	V	3.0	43.8	1.0	-58.9	-13.0	-45.9	
	2104.50	-22.5	V	3.0	43.3	1.0	-64.8	-13.0	-51.8	
	2806.00	-21.2	V	3.0	43.5	1.0	-63.7	-13.0	-50.7	
	1403.00	-13.8	H	3.0	43.8	1.0	-56.6	-13.0	-43.6	
	2104.50	-22.7	H	3.0	43.3	1.0	-65.0	-13.0	-52.0	
	2806.00	-20.7	H	3.0	43.5	1.0	-63.2	-13.0	-50.2	
	Mid Ch, 707.5MHz									
	1415.00	-15.8	V	3.0	43.8	1.0	-58.6	-13.0	-45.6	
	2122.50	-21.3	V	3.0	43.3	1.0	-63.7	-13.0	-50.7	
	2830.00	-21.9	V	3.0	43.5	1.0	-64.4	-13.0	-51.4	
	1415.00	-14.9	H	3.0	43.8	1.0	-57.7	-13.0	-44.7	
	2122.50	-22.7	H	3.0	43.3	1.0	-65.1	-13.0	-52.1	
	2830.00	-21.4	H	3.0	43.5	1.0	-63.9	-13.0	-50.9	
	High Ch, 713.5MHz									
	1427.00	-11.4	V	3.0	43.8	1.0	-54.1	-13.0	-41.1	
	2140.50	-21.9	V	3.0	43.3	1.0	-64.3	-13.0	-51.3	
	2854.00	-21.9	V	3.0	43.5	1.0	-64.4	-13.0	-51.4	
	1427.00	-11.9	H	3.0	43.8	1.0	-54.6	-13.0	-41.6	
	2140.50	-22.8	H	3.0	43.3	1.0	-65.2	-13.0	-52.2	
2854.00	-21.6	H	3.0	43.5	1.0	-64.1	-13.0	-51.1		

LTE Band 12 3MHz QPSK	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
	Company: Samsung Project #: 4788480978 Date: 2018-06-11 Test Engineer: 47989 Configuration: EUT / AC Adapter / Cradle, Z-Position Location: Chamber 1 Mode: LTE_QPSK Band 12 Harmonics, 3MHz 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, 700.5MHz									
	1401.00	-16.7	V	3.0	43.8	1.0	-59.5	-13.0	-46.5	
	2101.50	-21.4	V	3.0	43.3	1.0	-63.7	-13.0	-50.7	
	2802.00	-21.3	V	3.0	43.5	1.0	-63.7	-13.0	-50.7	
	1401.00	-12.1	H	3.0	43.8	1.0	-54.9	-13.0	-41.9	
	2101.50	-23.1	H	3.0	43.3	1.0	-65.4	-13.0	-52.4	
	2802.00	-20.6	H	3.0	43.5	1.0	-63.1	-13.0	-50.1	
	Mid Ch, 707.5MHz									
	1415.00	-10.6	V	3.0	43.8	1.0	-53.3	-13.0	-40.3	
	2122.50	-21.2	V	3.0	43.3	1.0	-63.6	-13.0	-50.6	
	2830.00	-21.6	V	3.0	43.5	1.0	-64.1	-13.0	-51.1	
	1415.00	-8.0	H	3.0	43.8	1.0	-50.8	-13.0	-37.8	
	2122.50	-22.5	H	3.0	43.3	1.0	-64.8	-13.0	-51.8	
	2830.00	-21.2	H	3.0	43.5	1.0	-63.7	-13.0	-50.7	
	High Ch, 714.5MHz									
	1429.00	-7.1	V	3.0	43.8	1.0	-49.9	-13.0	-36.9	
	2143.50	-21.1	V	3.0	43.3	1.0	-63.4	-13.0	-50.4	
	2858.00	-21.6	V	3.0	43.5	1.0	-64.1	-13.0	-51.1	
	1429.00	-8.5	H	3.0	43.8	1.0	-51.3	-13.0	-38.3	
	2143.50	-22.5	H	3.0	43.3	1.0	-64.9	-13.0	-51.9	
	2858.00	-21.4	H	3.0	43.5	1.0	-63.9	-13.0	-50.9	
LTE Band 12 3MHz 16QAM	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
	Company: Samsung Project #: 4788480978 Date: 2018-06-11 Test Engineer: 47989 Configuration: EUT / AC Adapter / Cradle, Z-Position Location: Chamber 1 Mode: LTE_16QAM Band 12 Harmonics, 3MHz 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, 700.5MHz									
	1401.00	-17.1	V	3.0	43.8	1.0	-59.9	-13.0	-46.9	
	2101.50	-21.7	V	3.0	43.3	1.0	-64.1	-13.0	-51.1	
	2802.00	-21.2	V	3.0	43.5	1.0	-63.7	-13.0	-50.7	
	1401.00	-13.8	H	3.0	43.8	1.0	-56.6	-13.0	-43.6	
	2101.50	-21.7	H	3.0	43.3	1.0	-64.0	-13.0	-51.0	
	2802.00	-20.8	H	3.0	43.5	1.0	-63.3	-13.0	-50.3	
	Mid Ch, 707.5MHz									
	1415.00	-13.2	V	3.0	43.8	1.0	-56.0	-13.0	-43.0	
	2122.50	-21.6	V	3.0	43.3	1.0	-64.0	-13.0	-51.0	
	2830.00	-21.8	V	3.0	43.5	1.0	-64.3	-13.0	-51.3	
	1415.00	-9.5	H	3.0	43.8	1.0	-52.3	-13.0	-39.3	
	2122.50	-22.9	H	3.0	43.3	1.0	-65.2	-13.0	-52.2	
	2830.00	-21.6	H	3.0	43.5	1.0	-64.1	-13.0	-51.1	
	High Ch, 714.5MHz									
	1429.00	-10.1	V	3.0	43.8	1.0	-52.9	-13.0	-39.9	
	2143.50	-21.9	V	3.0	43.3	1.0	-64.2	-13.0	-51.2	
	2858.00	-21.6	V	3.0	43.5	1.0	-64.1	-13.0	-51.1	
	1429.00	-11.5	H	3.0	43.8	1.0	-54.3	-13.0	-41.3	
	2143.50	-22.0	H	3.0	43.3	1.0	-64.4	-13.0	-51.4	
	2858.00	-21.2	H	3.0	43.5	1.0	-63.7	-13.0	-50.7	

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LTE Band 13

LTE Band 13 10MHz QPSK	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement Company: Samsung Project #: 4788480978 Date: 2018-06-09 Test Engineer: 47989 Configuration: EUT / AC Adapter / Cradle, Z-Position Location: Chamber 1 Mode: LTE_QPSK Band 13 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
	Mid Ch, 782MHz									
	1564.00	-22.4	V	3.0	43.7	1.0	-65.0	-40.0	-25.0	
	2346.00	-20.3	V	3.0	43.4	1.0	-62.7	-13.0	-49.7	
	3128.00	-20.8	V	3.0	43.6	1.0	-63.4	-13.0	-50.4	
	1564.00	-19.9	H	3.0	43.7	1.0	-62.6	-40.0	-22.6	
	2346.00	-20.9	H	3.0	43.4	1.0	-63.2	-13.0	-50.2	
	3128.00	-20.2	H	3.0	43.6	1.0	-62.8	-13.0	-49.8	
LTE Band 13 10MHz 16QAM	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement Company: Samsung Project #: 4788480978 Date: 2018-06-09 Test Engineer: 47989 Configuration: EUT / AC Adapter / Cradle, Z-Position Location: Chamber 1 Mode: LTE_16QAM Band 13 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
	Mid Ch, 782MHz									
	1564.00	-23.2	V	3.0	43.7	1.0	-65.8	-40.0	-25.8	
	2346.00	-20.8	V	3.0	43.4	1.0	-63.2	-13.0	-50.2	
	3128.00	-20.9	V	3.0	43.6	1.0	-63.5	-13.0	-50.5	
	1564.00	-21.6	H	3.0	43.7	1.0	-64.3	-40.0	-24.3	
	2346.00	-21.0	H	3.0	43.4	1.0	-63.4	-13.0	-50.4	
	3128.00	-20.3	H	3.0	43.6	1.0	-62.9	-13.0	-49.9	

LTE Band 13 5MHz QPSK	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
	Company: Samsung									
	Project #: 4788480978									
	Date: 2018-06-09									
	Test Engineer: 47989									
	Configuration: EUT / AC Adapter / Cradle, Z-Position									
	Location: Chamber 1									
	Mode: LTE_QPSK Band 13 Harmonics, 5MHz 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, 779.5MHz									
	1559.00	-19.9	V	3.0	43.7	1.0	-62.5	-40.0	-22.5	
	2338.50	-19.5	V	3.0	43.4	1.0	-61.9	-13.0	-48.9	
	3118.00	-21.3	V	3.0	43.6	1.0	-63.9	-13.0	-50.9	
	1559.00	-20.8	H	3.0	43.7	1.0	-63.5	-40.0	-23.5	
	2338.50	-20.9	H	3.0	43.4	1.0	-63.3	-13.0	-50.3	
	3118.00	-20.7	H	3.0	43.6	1.0	-63.3	-13.0	-50.3	
	Mid Ch, 782MHz									
	1564.00	-22.3	V	3.0	43.7	1.0	-65.0	-40.0	-25.0	
	2346.00	-20.4	V	3.0	43.4	1.0	-62.8	-13.0	-49.8	
	3128.00	-20.9	V	3.0	43.6	1.0	-63.5	-13.0	-50.5	
1564.00	-23.7	H	3.0	43.7	1.0	-66.3	-40.0	-26.3		
2346.00	-21.0	H	3.0	43.4	1.0	-63.4	-13.0	-50.4		
3128.00	-20.9	H	3.0	43.6	1.0	-63.5	-13.0	-50.5		
High Ch, 784.5MHz										
1569.00	-20.8	V	3.0	43.7	1.0	-63.5	-40.0	-23.5		
2353.50	-19.6	V	3.0	43.4	1.0	-62.0	-13.0	-49.0		
3138.00	-21.5	V	3.0	43.6	1.0	-64.1	-13.0	-51.1		
1569.00	-22.2	H	3.0	43.7	1.0	-64.9	-40.0	-24.9		
2353.50	-20.0	H	3.0	43.4	1.0	-62.4	-13.0	-49.4		
3138.00	-20.3	H	3.0	43.6	1.0	-62.9	-13.0	-49.9		
LTE Band 13 5MHz 16QAM	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
	Company: Samsung									
	Project #: 4788480978									
	Date: 2018-06-09									
	Test Engineer: 47989									
	Configuration: EUT / AC Adapter / Cradle, Z-Position									
	Location: Chamber 1									
	Mode: LTE_16QAM Band 13 Harmonics, 5MHz 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, 779.5MHz									
	1559.00	-20.6	V	3.0	43.7	1.0	-63.2	-40.0	-23.2	
	2338.50	-19.3	V	3.0	43.4	1.0	-61.7	-13.0	-48.7	
	3118.00	-21.1	V	3.0	43.6	1.0	-63.7	-13.0	-50.7	
	1559.00	-22.0	H	3.0	43.7	1.0	-64.7	-40.0	-24.7	
	2338.50	-20.8	H	3.0	43.4	1.0	-63.1	-13.0	-50.1	
	3118.00	-20.8	H	3.0	43.6	1.0	-63.3	-13.0	-50.3	
	Mid Ch, 782MHz									
	1564.00	-22.6	V	3.0	43.7	1.0	-65.3	-40.0	-25.3	
	2346.00	-20.6	V	3.0	43.4	1.0	-63.0	-13.0	-50.0	
	3128.00	-21.4	V	3.0	43.6	1.0	-63.9	-13.0	-50.9	
1564.00	-23.8	H	3.0	43.7	1.0	-66.5	-40.0	-26.5		
2346.00	-21.2	H	3.0	43.4	1.0	-63.6	-13.0	-50.6		
3128.00	-21.3	H	3.0	43.6	1.0	-63.9	-13.0	-50.9		
High Ch, 784.5MHz										
1569.00	-22.1	V	3.0	43.7	1.0	-64.7	-40.0	-24.7		
2353.50	-20.4	V	3.0	43.4	1.0	-62.8	-13.0	-49.8		
3138.00	-21.0	V	3.0	43.6	1.0	-63.6	-13.0	-50.6		
1569.00	-21.8	H	3.0	43.7	1.0	-64.5	-40.0	-24.5		
2353.50	-20.9	H	3.0	43.4	1.0	-63.3	-13.0	-50.3		
3138.00	-20.5	H	3.0	43.6	1.0	-63.0	-13.0	-50.0		

LTE Band 25

LTE Band 25 20MHz QPSK	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
	Company: Samsung Project #: 4788480978 Date: 2018-06-12 Test Engineer: 47989 Configuration: EUT / AC Adapter / Cradle, Y-Position Location: Chamber 1 Mode: LTE_QPSK Band 25 Harmonics, 20MHz 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, 1860MHz									
	3720.00	-20.3	V	3.0	43.8	1.0	-63.1	-13.0	-50.1	
	5580.00	-17.7	V	3.0	43.7	1.0	-60.4	-13.0	-47.4	
	7440.00	-17.8	V	3.0	42.5	1.0	-59.3	-13.0	-46.3	
	3720.00	-19.8	H	3.0	43.8	1.0	-62.5	-13.0	-49.5	
	5580.00	-17.9	H	3.0	43.7	1.0	-60.6	-13.0	-47.6	
	7440.00	-17.3	H	3.0	42.5	1.0	-58.8	-13.0	-45.8	
	Mid Ch, 1882.5MHz									
	3765.00	-19.7	V	3.0	43.8	1.0	-62.5	-13.0	-49.5	
	5647.50	-16.8	V	3.0	43.7	1.0	-59.5	-13.0	-46.5	
	7530.00	-17.6	V	3.0	42.4	1.0	-59.0	-13.0	-46.0	
	3765.00	-19.0	H	3.0	43.8	1.0	-61.8	-13.0	-48.8	
	5647.50	-17.4	H	3.0	43.7	1.0	-60.1	-13.0	-47.1	
	7530.00	-17.0	H	3.0	42.4	1.0	-58.4	-13.0	-45.4	
	High Ch, 1905MHz									
	3810.00	-20.7	V	3.0	43.8	1.0	-63.5	-13.0	-50.5	
	5715.00	-17.2	V	3.0	43.7	1.0	-59.8	-13.0	-46.8	
	7620.00	-18.2	V	3.0	42.4	1.0	-59.6	-13.0	-46.6	
	3810.00	-20.5	H	3.0	43.8	1.0	-63.3	-13.0	-50.3	
	5715.00	-17.5	H	3.0	43.7	1.0	-60.2	-13.0	-47.2	
	7620.00	-17.3	H	3.0	42.4	1.0	-58.7	-13.0	-45.7	
LTE Band 25 20MHz 16QAM	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
	Company: Samsung Project #: 4788480978 Date: 2018-06-12 Test Engineer: 47989 Configuration: EUT / AC Adapter / Cradle, Y-Position Location: Chamber 1 Mode: LTE_16QAM Band 25 Harmonics, 20MHz 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, 1860MHz									
	3720.00	-20.1	V	3.0	43.8	1.0	-62.9	-13.0	-49.9	
	5580.00	-17.5	V	3.0	43.7	1.0	-60.2	-13.0	-47.2	
	7440.00	-17.4	V	3.0	42.5	1.0	-58.9	-13.0	-45.9	
	3720.00	-21.1	H	3.0	43.8	1.0	-63.9	-13.0	-50.9	
	5580.00	-18.2	H	3.0	43.7	1.0	-60.9	-13.0	-47.9	
	7440.00	-17.0	H	3.0	42.5	1.0	-58.5	-13.0	-45.5	
	Mid Ch, 1882.5MHz									
	3765.00	-19.9	V	3.0	43.8	1.0	-62.7	-13.0	-49.7	
	5647.50	-17.1	V	3.0	43.7	1.0	-59.8	-13.0	-46.8	
	7530.00	-17.1	V	3.0	42.4	1.0	-58.6	-13.0	-45.6	
	3765.00	-19.1	H	3.0	43.8	1.0	-61.9	-13.0	-48.9	
	5647.50	-16.9	H	3.0	43.7	1.0	-59.6	-13.0	-46.6	
	7530.00	-16.7	H	3.0	42.4	1.0	-58.1	-13.0	-45.1	
	High Ch, 1905MHz									
	3810.00	-20.7	V	3.0	43.8	1.0	-63.5	-13.0	-50.5	
	5715.00	-16.9	V	3.0	43.7	1.0	-59.6	-13.0	-46.6	
	7620.00	-18.3	V	3.0	42.4	1.0	-59.7	-13.0	-46.7	
	3810.00	-20.4	H	3.0	43.8	1.0	-63.3	-13.0	-50.3	
	5715.00	-17.2	H	3.0	43.7	1.0	-59.8	-13.0	-46.8	
	7620.00	-17.7	H	3.0	42.4	1.0	-59.1	-13.0	-46.1	

LTE Band 25 15MHz QPSK	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
	Company: Samsung									
	Project #: 4788480978									
	Date: 2018-06-12									
	Test Engineer: 47989									
	Configuration: EUT / AC Adapter / Cradle, Y-Position									
	Location: Chamber 1									
	Mode: LTE_QPSK Band 25 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	-20.5	V	3.0	43.8	1.0	-63.2	-13.0	-50.2	
	5572.50	-17.5	V	3.0	43.7	1.0	-60.3	-13.0	-47.3	
	7430.00	-17.8	V	3.0	42.5	1.0	-59.3	-13.0	-46.3	
	3715.00	-20.0	H	3.0	43.8	1.0	-62.8	-13.0	-49.8	
	5572.50	-18.1	H	3.0	43.7	1.0	-60.8	-13.0	-47.8	
	7430.00	-17.3	H	3.0	42.5	1.0	-58.8	-13.0	-45.8	
	Mid Ch, 1882.5MHz									
	3765.00	-20.3	V	3.0	43.8	1.0	-63.1	-13.0	-50.1	
	5647.50	-18.0	V	3.0	43.7	1.0	-60.7	-13.0	-47.7	
	7530.00	-17.7	V	3.0	42.4	1.0	-59.1	-13.0	-46.1	
	3765.00	-19.3	H	3.0	43.8	1.0	-62.1	-13.0	-49.1	
	5647.50	-18.3	H	3.0	43.7	1.0	-61.0	-13.0	-48.0	
	7530.00	-17.0	H	3.0	42.4	1.0	-58.5	-13.0	-45.5	
	High Ch, 1907.5MHz									
3815.00	-20.8	V	3.0	43.8	1.0	-63.6	-13.0	-50.6		
5722.50	-17.4	V	3.0	43.7	1.0	-60.1	-13.0	-47.1		
7630.00	-18.1	V	3.0	42.4	1.0	-59.5	-13.0	-46.5		
3815.00	-20.9	H	3.0	43.8	1.0	-63.7	-13.0	-50.7		
5722.50	-17.2	H	3.0	43.7	1.0	-59.9	-13.0	-46.9		
7630.00	-17.4	H	3.0	42.4	1.0	-58.8	-13.0	-45.8		
LTE Band 25 15MHz 16QAM	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
	Company: Samsung									
	Project #: 4788480978									
	Date: 2018-06-12									
	Test Engineer: 47989									
	Configuration: EUT / AC Adapter / Cradle, Y-Position									
	Location: Chamber 1									
	Mode: LTE_16QAM Band 25 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	-20.5	V	3.0	43.8	1.0	-63.3	-13.0	-50.3	
	5572.50	-17.8	V	3.0	43.7	1.0	-60.5	-13.0	-47.5	
	7430.00	-17.8	V	3.0	42.5	1.0	-59.3	-13.0	-46.3	
	3715.00	-20.2	H	3.0	43.8	1.0	-63.0	-13.0	-50.0	
	5572.50	-17.8	H	3.0	43.7	1.0	-60.5	-13.0	-47.5	
	7430.00	-17.2	H	3.0	42.5	1.0	-58.7	-13.0	-45.7	
	Mid Ch, 1882.5MHz									
	3765.00	-20.5	V	3.0	43.8	1.0	-63.3	-13.0	-50.3	
	5647.50	-18.2	V	3.0	43.7	1.0	-60.9	-13.0	-47.9	
	7530.00	-17.9	V	3.0	42.4	1.0	-59.4	-13.0	-46.4	
	3765.00	-19.8	H	3.0	43.8	1.0	-62.6	-13.0	-49.6	
	5647.50	-18.2	H	3.0	43.7	1.0	-60.9	-13.0	-47.9	
	7530.00	-17.2	H	3.0	42.4	1.0	-58.7	-13.0	-45.7	
	High Ch, 1907.5MHz									
3815.00	-21.0	V	3.0	43.8	1.0	-63.9	-13.0	-50.9		
5722.50	-17.1	V	3.0	43.7	1.0	-59.8	-13.0	-46.8		
7630.00	-18.3	V	3.0	42.4	1.0	-59.7	-13.0	-46.7		
3815.00	-21.1	H	3.0	43.8	1.0	-63.9	-13.0	-50.9		
5722.50	-17.5	H	3.0	43.7	1.0	-60.2	-13.0	-47.2		
7630.00	-17.7	H	3.0	42.4	1.0	-59.1	-13.0	-46.1		

LTE Band 25 10MHz QPSK	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
	Company: Samsung									
	Project #: 4788480978									
	Date: 2018-06-11									
	Test Engineer: 47989									
	Configuration: EUT / AC Adapter / Cradle, Y-Position									
	Location: Chamber 1									
	Mode: LTE_QPSK Band 25 Harmonics, 10MHz Bandwidth									

LTE Band 25 5MHz QPSK	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
	Company: Samsung									
	Project #: 4788480978									
	Date: 2018-06-11									
	Test Engineer: 47989									
	Configuration: EUT / AC Adapter / Cradle, Y-Position									
	Location: Chamber 1									
	Mode: LTE_QPSK Band 25 Harmonics, 5MHz 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, 1852.5MHz									
	3705.00	-20.2	V	3.0	43.8	1.0	-63.0	-13.0	-50.0	
	5557.50	-17.9	V	3.0	43.7	1.0	-60.7	-13.0	-47.7	
	7410.00	-17.9	V	3.0	42.5	1.0	-59.4	-13.0	-46.4	
	3705.00	-20.0	H	3.0	43.8	1.0	-62.8	-13.0	-49.8	
	5557.50	-17.8	H	3.0	43.7	1.0	-60.6	-13.0	-47.6	
	7410.00	-17.4	H	3.0	42.5	1.0	-58.9	-13.0	-45.9	
	Mid Ch, 1882.5MHz									
	3765.00	-20.0	V	3.0	43.8	1.0	-62.8	-13.0	-49.8	
	5647.50	-17.9	V	3.0	43.7	1.0	-60.6	-13.0	-47.6	
	7530.00	-16.6	V	3.0	42.4	1.0	-58.1	-13.0	-45.1	
	3765.00	-20.1	H	3.0	43.8	1.0	-62.9	-13.0	-49.9	
	5647.50	-18.0	H	3.0	43.7	1.0	-60.7	-13.0	-47.7	
	7530.00	-16.9	H	3.0	42.4	1.0	-58.4	-13.0	-45.4	
	High Ch, 1912.5MHz									
	3825.00	-20.5	V	3.0	43.8	1.0	-63.4	-13.0	-50.4	
	5737.50	-17.1	V	3.0	43.7	1.0	-59.8	-13.0	-46.8	
7650.00	-17.8	V	3.0	42.4	1.0	-59.2	-13.0	-46.2		
3825.00	-20.6	H	3.0	43.8	1.0	-63.5	-13.0	-50.5		
5737.50	-17.3	H	3.0	43.7	1.0	-60.0	-13.0	-47.0		
7650.00	-17.4	H	3.0	42.4	1.0	-58.8	-13.0	-45.8		
LTE Band 25 5MHz 16QAM	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
	Company: Samsung									
	Project #: 4788480978									
	Date: 2018-06-11									
	Test Engineer: 47989									
	Configuration: EUT / AC Adapter / Cradle, Y-Position									
	Location: Chamber 1									
	Mode: LTE_16QAM Band 25 Harmonics, 5MHz 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, 1852.5MHz									
	3705.00	-20.3	V	3.0	43.8	1.0	-63.0	-13.0	-50.0	
	5557.50	-17.9	V	3.0	43.7	1.0	-60.6	-13.0	-47.6	
	7410.00	-17.9	V	3.0	42.5	1.0	-59.4	-13.0	-46.4	
	3705.00	-19.5	H	3.0	43.8	1.0	-62.3	-13.0	-49.3	
	5557.50	-17.0	H	3.0	43.7	1.0	-59.7	-13.0	-46.7	
	7410.00	-17.4	H	3.0	42.5	1.0	-58.9	-13.0	-45.9	
	Mid Ch, 1882.5MHz									
	3765.00	-20.3	V	3.0	43.8	1.0	-63.1	-13.0	-50.1	
	5647.50	-17.9	V	3.0	43.7	1.0	-60.6	-13.0	-47.6	
	7530.00	-17.3	V	3.0	42.4	1.0	-58.7	-13.0	-45.7	
	3765.00	-20.2	H	3.0	43.8	1.0	-63.0	-13.0	-50.0	
	5647.50	-20.9	H	3.0	43.7	1.0	-63.6	-13.0	-50.6	
	7530.00	-17.0	H	3.0	42.4	1.0	-58.4	-13.0	-45.4	
	High Ch, 1912.5MHz									
	3825.00	-20.7	V	3.0	43.8	1.0	-63.5	-13.0	-50.5	
	5737.50	-16.7	V	3.0	43.7	1.0	-59.4	-13.0	-46.4	
7650.00	-17.9	V	3.0	42.4	1.0	-59.3	-13.0	-46.3		
3825.00	-20.7	H	3.0	43.8	1.0	-63.5	-13.0	-50.5		
5737.50	-16.4	H	3.0	43.7	1.0	-59.1	-13.0	-46.1		
7650.00	-17.5	H	3.0	42.4	1.0	-58.9	-13.0	-45.9		

LTE Band 25 3MHz QPSK	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
	Company: Samsung									
	Project #: 4788480978									
	Date: 2018-06-11									
	Test Engineer: 47989									
	Configuration: EUT / AC Adapter / Cradle, Y-Position									
	Location: Chamber 1									
	Mode: LTE_QPSK Band 25 Harmonics, 3MHz 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, 1851.5MHz									
	3703.00	-19.0	V	3.0	43.8	1.0	-61.8	-13.0	-48.8	
	5554.50	-18.0	V	3.0	43.7	1.0	-60.7	-13.0	-47.7	
	7406.00	-17.4	V	3.0	42.5	1.0	-58.9	-13.0	-45.9	
	3703.00	-20.1	H	3.0	43.8	1.0	-62.9	-13.0	-49.9	
	5554.50	-18.1	H	3.0	43.7	1.0	-60.8	-13.0	-47.8	
	7406.00	-17.4	H	3.0	42.5	1.0	-58.9	-13.0	-45.9	
	Mid Ch, 1882.5MHz									
	3765.00	-20.0	V	3.0	43.8	1.0	-62.8	-13.0	-49.8	
	5647.50	-17.9	V	3.0	43.7	1.0	-60.6	-13.0	-47.6	
7530.00	-17.4	V	3.0	42.4	1.0	-58.9	-13.0	-45.9		
3765.00	-19.9	H	3.0	43.8	1.0	-62.7	-13.0	-49.7		
5647.50	-18.1	H	3.0	43.7	1.0	-60.8	-13.0	-47.8		
7530.00	-16.9	H	3.0	42.4	1.0	-58.4	-13.0	-45.4		
High Ch, 1913.5MHz										
3827.00	-20.1	V	3.0	43.8	1.0	-62.9	-13.0	-49.9		
5740.50	-17.1	V	3.0	43.7	1.0	-59.8	-13.0	-46.8		
7654.00	-17.0	V	3.0	42.4	1.0	-58.4	-13.0	-45.4		
3827.00	-20.6	H	3.0	43.8	1.0	-63.4	-13.0	-50.4		
5740.50	-17.4	H	3.0	43.7	1.0	-60.1	-13.0	-47.1		
7654.00	-17.5	H	3.0	42.4	1.0	-58.8	-13.0	-45.8		
LTE Band 25 3MHz 16QAM	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
	Company: Samsung									
	Project #: 4788480978									
	Date: 2018-06-11									
	Test Engineer: 47989									
	Configuration: EUT / AC Adapter / Cradle, Y-Position									
	Location: Chamber 1									
	Mode: LTE_16QAM Band 25 Harmonics, 3MHz 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, 1851.5MHz									
	3703.00	-19.3	V	3.0	43.8	1.0	-62.1	-13.0	-49.1	
	5554.50	-17.5	V	3.0	43.7	1.0	-60.2	-13.0	-47.2	
	7406.00	-18.1	V	3.0	42.5	1.0	-59.6	-13.0	-46.6	
	3703.00	-19.2	H	3.0	43.8	1.0	-62.0	-13.0	-49.0	
	5554.50	-18.2	H	3.0	43.7	1.0	-60.9	-13.0	-47.9	
	7406.00	-17.3	H	3.0	42.5	1.0	-58.8	-13.0	-45.8	
	Mid Ch, 1882.5MHz									
	3765.00	-20.1	V	3.0	43.8	1.0	-62.8	-13.0	-49.8	
	5647.50	-18.1	V	3.0	43.7	1.0	-60.8	-13.0	-47.8	
7530.00	-17.1	V	3.0	42.4	1.0	-58.6	-13.0	-45.6		
3765.00	-19.6	H	3.0	43.8	1.0	-62.4	-13.0	-49.4		
5647.50	-18.1	H	3.0	43.7	1.0	-60.8	-13.0	-47.8		
7530.00	-17.0	H	3.0	42.4	1.0	-58.4	-13.0	-45.4		
High Ch, 1913.5MHz										
3827.00	-20.5	V	3.0	43.8	1.0	-63.3	-13.0	-50.3		
5740.50	-17.0	V	3.0	43.7	1.0	-59.7	-13.0	-46.7		
7654.00	-18.0	V	3.0	42.4	1.0	-59.4	-13.0	-46.4		
3827.00	-20.6	H	3.0	43.8	1.0	-63.4	-13.0	-50.4		
5740.50	-17.1	H	3.0	43.7	1.0	-59.7	-13.0	-46.7		
7654.00	-17.5	H	3.0	42.4	1.0	-58.8	-13.0	-45.8		

LTE Band 25 1.4MHz QPSK	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
	Company: Samsung									
	Project #: 4788480978									
	Date: 2018-06-11									
	Test Engineer: 47989									
	Configuration: EUT / AC Adapter / Cradle, Y-Position									
	Location: Chamber 1									
	Mode: LTE_QPSK Band 25 Harmonics, 1.4MHz 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, 1850.7MHz									
	3701.40	-20.0	V	3.0	43.8	1.0	-62.8	-13.0	-49.8	
	5552.10	-17.2	V	3.0	43.7	1.0	-59.9	-13.0	-46.9	
	7402.80	-17.6	V	3.0	42.5	1.0	-59.1	-13.0	-46.1	
	3701.40	-19.9	H	3.0	43.8	1.0	-62.7	-13.0	-49.7	
	5552.10	-18.0	H	3.0	43.7	1.0	-60.7	-13.0	-47.7	
	7402.80	-16.8	H	3.0	42.5	1.0	-58.4	-13.0	-45.4	
	Mid Ch, 1882.5MHz									
	3765.00	-20.5	V	3.0	43.8	1.0	-63.3	-13.0	-50.3	
	5647.50	-18.0	V	3.0	43.7	1.0	-60.7	-13.0	-47.7	
	7530.00	-17.3	V	3.0	42.4	1.0	-58.8	-13.0	-45.8	
	3765.00	-20.2	H	3.0	43.8	1.0	-63.0	-13.0	-50.0	
	5647.50	-18.1	H	3.0	43.7	1.0	-60.8	-13.0	-47.8	
	7530.00	-16.8	H	3.0	42.4	1.0	-58.2	-13.0	-45.2	
	High Ch, 1914.3MHz									
3828.60	-20.1	V	3.0	43.8	1.0	-62.9	-13.0	-49.9		
5742.90	-16.7	V	3.0	43.7	1.0	-59.4	-13.0	-46.4		
7657.20	-18.1	V	3.0	42.4	1.0	-59.5	-13.0	-46.5		
3828.60	-20.7	H	3.0	43.8	1.0	-63.5	-13.0	-50.5		
5742.90	-17.4	H	3.0	43.7	1.0	-60.1	-13.0	-47.1		
7657.20	-17.4	H	3.0	42.4	1.0	-58.8	-13.0	-45.8		
LTE Band 25 1.4MHz 16QAM	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
	Company: Samsung									
	Project #: 4788480978									
	Date: 2018-06-11									
	Test Engineer: 47989									
	Configuration: EUT / AC Adapter / Cradle, Y-Position									
	Location: Chamber 1									
	Mode: LTE_16QAM Band 25 Harmonics, 1.4MHz 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, 1850.7MHz									
	3701.40	-20.3	V	3.0	43.8	1.0	-63.1	-13.0	-50.1	
	5552.10	-18.2	V	3.0	43.7	1.0	-60.9	-13.0	-47.9	
	7402.80	-18.0	V	3.0	42.5	1.0	-59.5	-13.0	-46.5	
	3701.40	-20.0	H	3.0	43.8	1.0	-62.8	-13.0	-49.8	
	5552.10	-17.2	H	3.0	43.7	1.0	-60.0	-13.0	-47.0	
	7402.80	-17.3	H	3.0	42.5	1.0	-58.9	-13.0	-45.9	
	Mid Ch, 1882.5MHz									
	3765.00	-20.5	V	3.0	43.8	1.0	-63.3	-13.0	-50.3	
	5647.50	-18.0	V	3.0	43.7	1.0	-60.7	-13.0	-47.7	
	7530.00	-17.5	V	3.0	42.4	1.0	-58.9	-13.0	-45.9	
	3765.00	-20.3	H	3.0	43.8	1.0	-63.1	-13.0	-50.1	
	5647.50	-18.2	H	3.0	43.7	1.0	-60.9	-13.0	-47.9	
	7530.00	-16.9	H	3.0	42.4	1.0	-58.3	-13.0	-45.3	
	High Ch, 1914.3MHz									
3828.60	-20.6	V	3.0	43.8	1.0	-63.4	-13.0	-50.4		
5742.90	-17.3	V	3.0	43.7	1.0	-60.0	-13.0	-47.0		
7657.20	-18.0	V	3.0	42.4	1.0	-59.4	-13.0	-46.4		
3828.60	-20.7	H	3.0	43.8	1.0	-63.5	-13.0	-50.5		
5742.90	-17.4	H	3.0	43.7	1.0	-60.0	-13.0	-47.0		
7657.20	-17.2	H	3.0	42.4	1.0	-58.6	-13.0	-45.6		

LTE Band 26

LTE Band 26 15MHz QPSK	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
	Company: Samsung Project #: 4788480978 Date: 2018-06-13 Test Engineer: 47989 Configuration: EUT / AC Adapter / Cradle, Z-Position Location: Chamber 1 Mode: LTE_QPSK Band 26 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, 821.5MHz									
	1643.00	-17.4	V	3.0	43.6	1.0	-59.9	-13.0	-46.9	
	2464.50	-21.3	V	3.0	43.4	1.0	-63.7	-13.0	-50.7	
	3286.00	-20.8	V	3.0	43.6	1.0	-63.4	-13.0	-50.4	
	1643.00	-17.7	H	3.0	43.6	1.0	-60.3	-13.0	-47.3	
	2464.50	-21.0	H	3.0	43.4	1.0	-63.4	-13.0	-50.4	
	3286.00	-20.3	H	3.0	43.6	1.0	-63.0	-13.0	-50.0	
	Mid Ch, 831.5MHz									
	1663.00	-16.3	V	3.0	43.6	1.0	-58.9	-13.0	-45.9	
	2494.50	-20.4	V	3.0	43.4	1.0	-62.8	-13.0	-49.8	
	3326.00	-21.3	V	3.0	43.6	1.0	-63.9	-13.0	-50.9	
	1663.00	-18.3	H	3.0	43.6	1.0	-60.9	-13.0	-47.9	
	2494.50	-20.6	H	3.0	43.4	1.0	-63.0	-13.0	-50.0	
	3326.00	-21.2	H	3.0	43.6	1.0	-63.8	-13.0	-50.8	
	High Ch, 841.5MHz									
	1683.00	-20.3	V	3.0	43.6	1.0	-62.9	-13.0	-49.9	
	2524.50	-20.5	V	3.0	43.4	1.0	-62.9	-13.0	-49.9	
	3366.00	-21.1	V	3.0	43.7	1.0	-63.8	-13.0	-50.8	
	1683.00	-19.8	H	3.0	43.6	1.0	-62.4	-13.0	-49.4	
	2524.50	-20.2	H	3.0	43.4	1.0	-62.6	-13.0	-49.6	
	3366.00	-20.7	H	3.0	43.7	1.0	-63.4	-13.0	-50.4	
LTE Band 26 15MHz 16QAM	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
	Company: Samsung Project #: 4788480978 Date: 2018-06-13 Test Engineer: 47989 Configuration: EUT / AC Adapter / Cradle, Z-Position Location: Chamber 1 Mode: LTE_16QAM Band 26 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, 821.5MHz									
	1643.00	-18.3	V	3.0	43.6	1.0	-60.9	-13.0	-47.9	
	2464.50	-20.9	V	3.0	43.4	1.0	-63.3	-13.0	-50.3	
	3286.00	-20.7	V	3.0	43.6	1.0	-63.4	-13.0	-50.4	
	1643.00	-17.7	H	3.0	43.6	1.0	-60.3	-13.0	-47.3	
	2464.50	-21.5	H	3.0	43.4	1.0	-63.9	-13.0	-50.9	
	3286.00	-19.8	H	3.0	43.6	1.0	-62.4	-13.0	-49.4	
	Mid Ch, 831.5MHz									
	1663.00	-17.7	V	3.0	43.6	1.0	-60.2	-13.0	-47.2	
	2494.50	-20.8	V	3.0	43.4	1.0	-63.2	-13.0	-50.2	
	3326.00	-21.6	V	3.0	43.6	1.0	-64.2	-13.0	-51.2	
	1663.00	-18.6	H	3.0	43.6	1.0	-61.1	-13.0	-48.1	
	2494.50	-20.8	H	3.0	43.4	1.0	-63.2	-13.0	-50.2	
	3326.00	-21.1	H	3.0	43.6	1.0	-63.8	-13.0	-50.8	
	High Ch, 841.5MHz									
	1683.00	-20.6	V	3.0	43.6	1.0	-63.1	-13.0	-50.1	
	2524.50	-21.0	V	3.0	43.4	1.0	-63.5	-13.0	-50.5	
	3366.00	-21.0	V	3.0	43.7	1.0	-63.6	-13.0	-50.6	
	1683.00	-20.4	H	3.0	43.6	1.0	-62.9	-13.0	-49.9	
	2524.50	-20.1	H	3.0	43.4	1.0	-62.5	-13.0	-49.5	
	3366.00	-20.7	H	3.0	43.7	1.0	-63.4	-13.0	-50.4	

LTE Band 26 10MHz QPSK	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement Company: Samusung Project #: 4788480978 Date: 2018-06-13 Test Engineer: 47989 Configuration: EUT / AC Adapter / Cradle, Z-Position Location: Chamber 1 Mode: LTE_QPSK Band 26 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, 819MHz										
	1638.00	-19.5	V	3.0	43.6	1.0	-62.1	-13.0	-49.1	
	2457.00	-22.3	V	3.0	43.4	1.0	-64.7	-13.0	-51.7	
	3276.00	-21.4	V	3.0	43.6	1.0	-64.0	-13.0	-51.0	
	1638.00	-21.4	H	3.0	43.6	1.0	-64.0	-13.0	-51.0	
	2457.00	-22.6	H	3.0	43.4	1.0	-65.0	-13.0	-52.0	
	3276.00	-20.9	H	3.0	43.6	1.0	-63.6	-13.0	-50.6	
Mid Ch, 831.5MHz										
	1663.00	-19.1	V	3.0	43.6	1.0	-61.6	-13.0	-48.6	
	2494.50	-22.2	V	3.0	43.4	1.0	-64.6	-13.0	-51.6	
	3326.00	-21.3	V	3.0	43.6	1.0	-63.9	-13.0	-50.9	
	1663.00	-17.9	H	3.0	43.6	1.0	-60.5	-13.0	-47.5	
	2494.50	-22.7	H	3.0	43.4	1.0	-65.2	-13.0	-52.2	
	3326.00	-20.9	H	3.0	43.6	1.0	-63.6	-13.0	-50.6	
High Ch, 844MHz										
	1688.00	-17.5	V	3.0	43.6	1.0	-60.0	-13.0	-47.0	
	2532.00	-21.7	V	3.0	43.4	1.0	-64.2	-13.0	-51.2	
	3376.00	-21.5	V	3.0	43.7	1.0	-64.1	-13.0	-51.1	
	1688.00	-18.8	H	3.0	43.6	1.0	-61.3	-13.0	-48.3	
	2532.00	-21.4	H	3.0	43.4	1.0	-63.8	-13.0	-50.8	
	3376.00	-21.2	H	3.0	43.7	1.0	-63.8	-13.0	-50.8	
	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement Company: Samusung Project #: 4788480978 Date: 2018-06-13 Test Engineer: 47989 Configuration: EUT / AC Adapter / Cradle, Z-Position Location: Chamber 1 Mode: LTE_QPSK Band 26 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
829MHz										
	1658.00	-18.3	V	3.0	43.6	1.0	-60.9	-13.0	-47.9	
	2487.00	-21.3	V	3.0	43.4	1.0	-63.8	-13.0	-50.8	
	3316.00	-21.7	V	3.0	43.6	1.0	-64.3	-13.0	-51.3	
	1658.00	-20.0	H	3.0	43.6	1.0	-62.6	-13.0	-49.6	
	2487.00	-22.7	H	3.0	43.4	1.0	-65.1	-13.0	-52.1	
	3316.00	-21.3	H	3.0	43.6	1.0	-64.0	-13.0	-51.0	

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LTE
Band 26
5 MHz
QPSK

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 4788480978
Date: 2018-06-14
Test Engineer: 47989
Configuration: EUT / AC Adapter / Cradle, Z-Position
Location: Chamber 1
Mode: LTE_QPSK Band 26 Harmonics, 5MHz 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, 816.5MHz									
1633.00	-18.2	V	3.0	43.6	1.0	-60.8	-13.0	-47.8	
2449.50	-22.2	V	3.0	43.4	1.0	-64.6	-13.0	-51.6	
3266.00	-21.6	V	3.0	43.6	1.0	-64.3	-13.0	-51.3	
1633.00	-18.5	H	3.0	43.6	1.0	-61.1	-13.0	-48.1	
2449.50	-22.2	H	3.0	43.4	1.0	-64.6	-13.0	-51.6	
3266.00	-21.2	H	3.0	43.6	1.0	-63.8	-13.0	-50.8	
Mid Ch, 831.5MHz									
1663.00	-20.5	V	3.0	43.6	1.0	-63.1	-13.0	-50.1	
2494.50	-21.9	V	3.0	43.4	1.0	-64.3	-13.0	-51.3	
3326.00	-21.5	V	3.0	43.6	1.0	-64.1	-13.0	-51.1	
1663.00	-21.2	H	3.0	43.6	1.0	-63.7	-13.0	-50.7	
2494.50	-22.2	H	3.0	43.4	1.0	-64.6	-13.0	-51.6	
3326.00	-20.9	H	3.0	43.6	1.0	-63.5	-13.0	-50.5	
High Ch, 846.5MHz									
1693.00	-23.2	V	3.0	43.6	1.0	-65.8	-13.0	-52.8	
2539.50	-22.6	V	3.0	43.4	1.0	-65.0	-13.0	-52.0	
3386.00	-21.7	V	3.0	43.7	1.0	-64.3	-13.0	-51.3	
1693.00	-23.0	H	3.0	43.6	1.0	-65.5	-13.0	-52.5	
2539.50	-21.6	H	3.0	43.4	1.0	-64.0	-13.0	-51.0	
3386.00	-20.6	H	3.0	43.7	1.0	-63.2	-13.0	-50.2	

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 4788480978
Date: 2018-06-14
Test Engineer: 47989
Configuration: EUT / AC Adapter / Cradle, Z-Position
Location: Chamber 1
Mode: LTE_QPSK Band 26 Harmonics, 5MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
821.5 MHz									
1643.00	-22.7	V	3.0	43.6	1.0	-65.3	-13.0	-52.3	
2464.50	-22.5	V	3.0	43.4	1.0	-64.9	-13.0	-51.9	
3286.00	-21.1	V	3.0	43.6	1.0	-63.8	-13.0	-50.8	
1643.00	-20.6	H	3.0	43.6	1.0	-63.2	-13.0	-50.2	
2464.50	-22.0	H	3.0	43.4	1.0	-64.4	-13.0	-51.4	
3286.00	-20.8	H	3.0	43.6	1.0	-63.4	-13.0	-50.4	
826.5 MHz									
1653.00	-17.4	V	3.0	43.6	1.0	-60.0	-13.0	-47.0	
2479.50	-22.8	V	3.0	43.4	1.0	-65.2	-13.0	-52.2	
3306.00	-21.3	V	3.0	43.6	1.0	-63.9	-13.0	-50.9	
1653.00	-15.4	H	3.0	43.6	1.0	-58.0	-13.0	-45.0	
2479.50	-22.2	H	3.0	43.4	1.0	-64.6	-13.0	-51.6	
3306.00	-20.8	H	3.0	43.6	1.0	-63.5	-13.0	-50.5	

LTE
Band 26
5 MHz
16QAM

UL Verification Services, Inc.

Above 1GHz High Frequency Substitution Measurement

Company:Samusing

Project #:4788480978

Date:2018-06-14

Test Engineer:47989

Configuration:EUT / AC Adapter / Cradle, Z-Position

Location:Chamber 1

Mode:LTE_16QAM Band 26 Harmonics, 5MHz 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, 816.5MHz									
1633.00	-18.5	V	3.0	43.6	1.0	-61.1	-13.0	-48.1	
2449.50	-22.5	V	3.0	43.4	1.0	-64.9	-13.0	-51.9	
3266.00	-21.7	V	3.0	43.6	1.0	-64.3	-13.0	-51.3	
1633.00	-19.0	H	3.0	43.6	1.0	-61.6	-13.0	-48.6	
2449.50	-22.5	H	3.0	43.4	1.0	-64.9	-13.0	-51.9	
3266.00	-21.2	H	3.0	43.6	1.0	-63.9	-13.0	-50.9	
Mid Ch, 831.5MHz									
1663.00	-21.7	V	3.0	43.6	1.0	-64.3	-13.0	-51.3	
2494.50	-22.3	V	3.0	43.4	1.0	-64.7	-13.0	-51.7	
3326.00	-21.7	V	3.0	43.6	1.0	-64.4	-13.0	-51.4	
1663.00	-21.7	H	3.0	43.6	1.0	-64.2	-13.0	-51.2	
2494.50	-22.3	H	3.0	43.4	1.0	-64.8	-13.0	-51.8	
3326.00	-21.7	H	3.0	43.6	1.0	-64.3	-13.0	-51.3	
High Ch, 846.5MHz									
1693.00	-20.4	V	3.0	43.6	1.0	-63.0	-13.0	-50.0	
2539.50	-22.6	V	3.0	43.4	1.0	-65.0	-13.0	-52.0	
3386.00	-21.7	V	3.0	43.7	1.0	-64.4	-13.0	-51.4	
1693.00	-20.7	H	3.0	43.6	1.0	-63.3	-13.0	-50.3	
2539.50	-22.1	H	3.0	43.4	1.0	-64.5	-13.0	-51.5	
3386.00	-21.4	H	3.0	43.7	1.0	-64.1	-13.0	-51.1	

UL Verification Services, Inc.

Above 1GHz High Frequency Substitution Measurement

Company:Samusing

Project #:4788480978

Date:2018-06-14

Test Engineer:47989

Configuration:EUT / AC Adapter / Cradle, Z-Position

Location:Chamber 1

Mode:LTE_16QAM Band 26 Harmonics, 5MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
821.5 MHz									
1643.00	-22.5	V	3.0	43.6	1.0	-65.1	-13.0	-52.1	
2464.50	-22.4	V	3.0	43.4	1.0	-64.8	-13.0	-51.8	
3286.00	-21.1	V	3.0	43.6	1.0	-63.7	-13.0	-50.7	
1643.00	-20.7	H	3.0	43.6	1.0	-63.3	-13.0	-50.3	
2464.50	-22.3	H	3.0	43.4	1.0	-64.7	-13.0	-51.7	
3286.00	-20.6	H	3.0	43.6	1.0	-63.2	-13.0	-50.2	
826.5 MHz									
1653.00	-18.3	V	3.0	43.6	1.0	-60.9	-13.0	-47.9	
2479.50	-22.5	V	3.0	43.4	1.0	-64.9	-13.0	-51.9	
3306.00	-21.3	V	3.0	43.6	1.0	-64.0	-13.0	-51.0	
1653.00	-16.9	H	3.0	43.6	1.0	-59.5	-13.0	-46.5	
2479.50	-22.4	H	3.0	43.4	1.0	-64.9	-13.0	-51.9	
3306.00	-21.0	H	3.0	43.6	1.0	-63.6	-13.0	-50.6	

LTE
Band 26

3MHz

QPSK

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 4788480978
Date: 2018-06-14
Test Engineer: 47989
Configuration: EUT / AC Adapter / Cradle, Z-Position
Location: Chamber 1
Mode: LTE_QPSK Band 26 Harmonics, 3MHz 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, 815.5MHz									
1631.00	-19.3	V	3.0	43.6	1.0	-61.9	-13.0	-48.9	
2446.50	-22.2	V	3.0	43.4	1.0	-64.6	-13.0	-51.6	
3262.00	-21.5	V	3.0	43.6	1.0	-64.1	-13.0	-51.1	
1631.00	-17.8	H	3.0	43.6	1.0	-60.4	-13.0	-47.4	
2446.50	-22.4	H	3.0	43.4	1.0	-64.8	-13.0	-51.8	
3262.00	-21.0	H	3.0	43.6	1.0	-63.7	-13.0	-50.7	
Mid Ch, 831.5MHz									
1663.00	-21.8	V	3.0	43.6	1.0	-64.4	-13.0	-51.4	
2494.50	-21.9	V	3.0	43.4	1.0	-64.3	-13.0	-51.3	
3326.00	-21.6	V	3.0	43.6	1.0	-64.3	-13.0	-51.3	
1663.00	-19.3	H	3.0	43.6	1.0	-61.9	-13.0	-48.9	
2494.50	-22.5	H	3.0	43.4	1.0	-64.9	-13.0	-51.9	
3326.00	-21.0	H	3.0	43.6	1.0	-63.6	-13.0	-50.6	
High Ch, 847.5MHz									
1695.00	-20.9	V	3.0	43.6	1.0	-63.4	-13.0	-50.4	
2542.50	-22.1	V	3.0	43.4	1.0	-64.5	-13.0	-51.5	
3390.00	-21.7	V	3.0	43.7	1.0	-64.4	-13.0	-51.4	
1695.00	-20.4	H	3.0	43.6	1.0	-62.9	-13.0	-49.9	
2542.50	-22.0	H	3.0	43.4	1.0	-64.4	-13.0	-51.4	
3390.00	-21.3	H	3.0	43.7	1.0	-64.0	-13.0	-51.0	

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 4788480978
Date: 2018-06-14
Test Engineer: 47989
Configuration: EUT / AC Adapter / Cradle, Z-Position
Location: Chamber 1
Mode: LTE_QPSK Band 26 Harmonics, 3MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
822.5 MHz									
1645.00	-18.0	V	3.0	43.6	1.0	-60.6	-13.0	-47.6	
2467.50	-22.5	V	3.0	43.4	1.0	-64.9	-13.0	-51.9	
3290.00	-20.3	V	3.0	43.6	1.0	-62.9	-13.0	-49.9	
1645.00	-15.3	H	3.0	43.6	1.0	-57.9	-13.0	-44.9	
2467.50	-22.6	H	3.0	43.4	1.0	-65.0	-13.0	-52.0	
3290.00	-20.7	H	3.0	43.6	1.0	-63.3	-13.0	-50.3	
825.5 MHz									
1651.00	-19.8	V	3.0	43.6	1.0	-62.4	-13.0	-49.4	
2476.50	-22.4	V	3.0	43.4	1.0	-64.8	-13.0	-51.8	
3302.00	-21.2	V	3.0	43.6	1.0	-63.9	-13.0	-50.9	
1651.00	-20.8	H	3.0	43.6	1.0	-63.4	-13.0	-50.4	
2476.50	-22.6	H	3.0	43.4	1.0	-65.0	-13.0	-52.0	
3302.00	-20.7	H	3.0	43.6	1.0	-63.4	-13.0	-50.4	

LTE
Band 26
3MHz
16QAM

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 4788480978
Date: 2018-06-14
Test Engineer: 47989
Configuration: EUT / AC Adapter / Cradle, Z-Position
Location: Chamber 1
Mode: LTE_16QAM Band 26 Harmonics, 3MHz 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, 815.5MHz									
1631.00	-20.0	V	3.0	43.6	1.0	-62.6	-13.0	-49.6	
2446.50	-22.5	V	3.0	43.4	1.0	-64.9	-13.0	-51.9	
3262.00	-21.1	V	3.0	43.6	1.0	-63.8	-13.0	-50.8	
1631.00	-17.1	H	3.0	43.6	1.0	-59.7	-13.0	-46.7	
2446.50	-22.3	H	3.0	43.4	1.0	-64.7	-13.0	-51.7	
3262.00	-21.0	H	3.0	43.6	1.0	-63.7	-13.0	-50.7	
Mid Ch, 831.5MHz									
1663.00	-22.3	V	3.0	43.6	1.0	-64.9	-13.0	-51.9	
2494.50	-22.2	V	3.0	43.4	1.0	-64.6	-13.0	-51.6	
3326.00	-21.4	V	3.0	43.6	1.0	-64.0	-13.0	-51.0	
1663.00	-22.1	H	3.0	43.6	1.0	-64.6	-13.0	-51.6	
2494.50	-22.5	H	3.0	43.4	1.0	-65.0	-13.0	-52.0	
3326.00	-20.9	H	3.0	43.6	1.0	-63.5	-13.0	-50.5	
High Ch, 847.5MHz									
1695.00	-19.4	V	3.0	43.6	1.0	-61.9	-13.0	-48.9	
2542.50	-22.4	V	3.0	43.4	1.0	-64.8	-13.0	-51.8	
3390.00	-21.5	V	3.0	43.7	1.0	-64.1	-13.0	-51.1	
1695.00	-20.6	H	3.0	43.6	1.0	-63.2	-13.0	-50.2	
2542.50	-22.0	H	3.0	43.4	1.0	-64.4	-13.0	-51.4	
3390.00	-21.3	H	3.0	43.7	1.0	-64.0	-13.0	-51.0	

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 4788480978
Date: 2018-06-14
Test Engineer: 47989
Configuration: EUT / AC Adapter / Cradle, Z-Position
Location: Chamber 1
Mode: LTE_16QAM Band 26 Harmonics, 3MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
822.5 MHz									
1645.00	-19.1	V	3.0	43.6	1.0	-61.7	-13.0	-48.7	
2467.50	-22.5	V	3.0	43.4	1.0	-64.9	-13.0	-51.9	
3290.00	-20.9	V	3.0	43.6	1.0	-63.6	-13.0	-50.6	
1645.00	-16.0	H	3.0	43.6	1.0	-58.6	-13.0	-45.6	
2467.50	-22.4	H	3.0	43.4	1.0	-64.8	-13.0	-51.8	
3290.00	-20.7	H	3.0	43.6	1.0	-63.3	-13.0	-50.3	
825.5 MHz									
1651.00	-20.7	V	3.0	43.6	1.0	-63.3	-13.0	-50.3	
2476.50	-22.1	V	3.0	43.4	1.0	-64.5	-13.0	-51.5	
3302.00	-21.1	V	3.0	43.6	1.0	-63.8	-13.0	-50.8	
1651.00	-21.5	H	3.0	43.6	1.0	-64.1	-13.0	-51.1	
2476.50	-22.8	H	3.0	43.4	1.0	-65.2	-13.0	-52.2	
3302.00	-20.8	H	3.0	43.6	1.0	-63.5	-13.0	-50.5	

LTE
Band 26
1.4MHz
QPSK

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 4788480978
Date: 2018-06-14
Test Engineer: 47989
Configuration: EUT / AC Adapter / Cradle, Z-Position
Location: Chamber 1
Mode: LTE_QPSK Band 26 Harmonics, 1.4MHz 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, 814.7MHz									
1629.40	-17.5	V	3.0	43.6	1.0	-60.1	-13.0	-47.1	
2444.10	-22.5	V	3.0	43.4	1.0	-64.9	-13.0	-51.9	
3258.80	-21.2	V	3.0	43.6	1.0	-63.8	-13.0	-50.8	
1629.40	-17.7	H	3.0	43.6	1.0	-60.3	-13.0	-47.3	
2444.10	-22.3	H	3.0	43.4	1.0	-64.7	-13.0	-51.7	
3258.80	-21.3	H	3.0	43.6	1.0	-63.9	-13.0	-50.9	
Mid Ch, 831.5MHz									
1663.00	-20.0	V	3.0	43.6	1.0	-62.6	-13.0	-49.6	
2494.50	-21.8	V	3.0	43.4	1.0	-64.2	-13.0	-51.2	
3326.00	-22.0	V	3.0	43.6	1.0	-64.7	-13.0	-51.7	
1663.00	-19.9	H	3.0	43.6	1.0	-62.5	-13.0	-49.5	
2494.50	-22.0	H	3.0	43.4	1.0	-64.5	-13.0	-51.5	
3326.00	-21.3	H	3.0	43.6	1.0	-64.0	-13.0	-51.0	
High Ch, 848.3MHz									
1696.60	-20.4	V	3.0	43.6	1.0	-63.0	-13.0	-50.0	
2544.90	-22.6	V	3.0	43.4	1.0	-65.0	-13.0	-52.0	
3393.20	-21.7	V	3.0	43.7	1.0	-64.4	-13.0	-51.4	
1696.60	-20.5	H	3.0	43.6	1.0	-63.0	-13.0	-50.0	
2544.90	-22.5	H	3.0	43.4	1.0	-64.9	-13.0	-51.9	
3393.20	-21.2	H	3.0	43.7	1.0	-63.9	-13.0	-50.9	

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 4788480978
Date: 2018-06-14
Test Engineer: 47989
Configuration: EUT / AC Adapter / Cradle, Z-Position
Location: Chamber 1
Mode: LTE_QPSK Band 26 Harmonics, 1.4MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
823.3 MHz									
1646.60	-19.7	V	3.0	43.6	1.0	-62.3	-13.0	-49.3	
2469.90	-21.8	V	3.0	43.4	1.0	-64.2	-13.0	-51.2	
3293.20	-20.7	V	3.0	43.6	1.0	-63.4	-13.0	-50.4	
1646.60	-18.5	H	3.0	43.6	1.0	-61.1	-13.0	-48.1	
2469.90	-22.3	H	3.0	43.4	1.0	-64.8	-13.0	-51.8	
3293.20	-20.7	H	3.0	43.6	1.0	-63.3	-13.0	-50.3	
824.7 MHz									
1649.40	-21.5	V	3.0	43.6	1.0	-64.1	-13.0	-51.1	
2474.10	-21.8	V	3.0	43.4	1.0	-64.2	-13.0	-51.2	
3298.80	-21.1	V	3.0	43.6	1.0	-63.8	-13.0	-50.8	
1649.40	-22.1	H	3.0	43.6	1.0	-64.7	-13.0	-51.7	
2474.10	-22.1	H	3.0	43.4	1.0	-64.5	-13.0	-51.5	
3298.80	-20.6	H	3.0	43.6	1.0	-63.2	-13.0	-50.2	

LTE
Band 26
1.4MHz
16QAM

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company:Samusing
Project #:4788480978
Date:2018-06-14
Test Engineer:47989
Configuration:EUT / AC Adapter / Cradle, Z-Position
Location:Chamber 1
Mode:LTE_16QAM Band 26 Harmonics, 1.4MHz 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, 814.7MHz									
1629.40	-18.4	V	3.0	43.6	1.0	-61.0	-13.0	-48.0	
2444.10	-22.1	V	3.0	43.4	1.0	-64.6	-13.0	-51.6	
3258.80	-21.6	V	3.0	43.6	1.0	-64.2	-13.0	-51.2	
1629.40	-19.2	H	3.0	43.6	1.0	-61.8	-13.0	-48.8	
2444.10	-22.8	H	3.0	43.4	1.0	-65.2	-13.0	-52.2	
3258.80	-21.4	H	3.0	43.6	1.0	-64.0	-13.0	-51.0	
Mid Ch, 831.5MHz									
1663.00	-18.9	V	3.0	43.6	1.0	-61.5	-13.0	-48.5	
2494.50	-22.0	V	3.0	43.4	1.0	-64.4	-13.0	-51.4	
3326.00	-21.8	V	3.0	43.6	1.0	-64.5	-13.0	-51.5	
1663.00	-20.2	H	3.0	43.6	1.0	-62.8	-13.0	-49.8	
2494.50	-22.5	H	3.0	43.4	1.0	-64.9	-13.0	-51.9	
3326.00	-20.7	H	3.0	43.6	1.0	-63.4	-13.0	-50.4	
High Ch, 848.3MHz									
1696.60	-21.3	V	3.0	43.6	1.0	-63.8	-13.0	-50.8	
2544.90	-22.7	V	3.0	43.4	1.0	-65.1	-13.0	-52.1	
3393.20	-21.3	V	3.0	43.7	1.0	-63.9	-13.0	-50.9	
1696.60	-21.3	H	3.0	43.6	1.0	-63.9	-13.0	-50.9	
2544.90	-22.6	H	3.0	43.4	1.0	-65.0	-13.0	-52.0	
3393.20	-21.2	H	3.0	43.7	1.0	-63.9	-13.0	-50.9	

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company:Samusing
Project #:4788480978
Date:2018-06-14
Test Engineer:47989
Configuration:EUT / AC Adapter / Cradle, Z-Position
Location:Chamber 1
Mode:LTE_16QAM Band 26 Harmonics, 1.4MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
823.3 MHz									
1646.60	-20.9	V	3.0	43.6	1.0	-63.5	-13.0	-50.5	
2469.90	-22.0	V	3.0	43.4	1.0	-64.4	-13.0	-51.4	
3293.20	-21.0	V	3.0	43.6	1.0	-63.7	-13.0	-50.7	
1646.60	-19.2	H	3.0	43.6	1.0	-61.8	-13.0	-48.8	
2469.90	-22.7	H	3.0	43.4	1.0	-65.1	-13.0	-52.1	
3293.20	-20.3	H	3.0	43.6	1.0	-63.0	-13.0	-50.0	
824.7 MHz									
1649.40	-21.6	V	3.0	43.6	1.0	-64.2	-13.0	-51.2	
2474.10	-21.9	V	3.0	43.4	1.0	-64.3	-13.0	-51.3	
3298.80	-20.4	V	3.0	43.6	1.0	-63.0	-13.0	-50.0	
1649.40	-21.9	H	3.0	43.6	1.0	-64.5	-13.0	-51.5	
2474.10	-21.9	H	3.0	43.4	1.0	-64.3	-13.0	-51.3	
3298.80	-20.8	H	3.0	43.6	1.0	-63.4	-13.0	-50.4	

LTE Band 66

LTE Band 66 20MHz QPSK	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
	Company: Samsung									
	Project #: 4788480978									
	Date: 2018-06-09									
	Test Engineer: 47989									
	Configuration: EUT / AC Adapter / Cradle, X-Position									
	Location: Chamber 1									
	Mode: LTE_QPSK Band 66 Harmonics, 20MHz 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, 1720MHz									
	3440.00	-6.7	V	3.0	43.7	1.0	-49.3	-13.0	-36.3	
	5160.00	-20.0	V	3.0	43.8	1.0	-62.8	-13.0	-49.8	
	6880.00	-17.6	V	3.0	42.8	1.0	-59.5	-13.0	-46.5	
	3440.00	-4.8	H	3.0	43.7	1.0	-47.5	-13.0	-34.5	
	5160.00	-20.6	H	3.0	43.8	1.0	-63.3	-13.0	-50.3	
	6880.00	-17.0	H	3.0	42.8	1.0	-58.9	-13.0	-45.9	
	Mid Ch, 1745MHz									
	3490.00	-10.3	V	3.0	43.7	1.0	-53.0	-13.0	-40.0	
	5235.00	-18.3	V	3.0	43.8	1.0	-61.0	-13.0	-48.0	
	6980.00	-17.9	V	3.0	42.7	1.0	-59.7	-13.0	-46.7	
3490.00	-9.7	H	3.0	43.7	1.0	-52.4	-13.0	-39.4		
5235.00	-18.8	H	3.0	43.8	1.0	-61.6	-13.0	-48.6		
6980.00	-17.8	H	3.0	42.7	1.0	-59.6	-13.0	-46.6		
High Ch, 1770MHz										
3540.00	-14.5	V	3.0	43.7	1.0	-57.3	-13.0	-44.3		
5310.00	-17.3	V	3.0	43.7	1.0	-60.1	-13.0	-47.1		
7080.00	-18.1	V	3.0	42.7	1.0	-59.7	-13.0	-46.7		
3540.00	-12.6	H	3.0	43.7	1.0	-55.4	-13.0	-42.4		
5310.00	-18.0	H	3.0	43.7	1.0	-60.7	-13.0	-47.7		
7080.00	-17.6	H	3.0	42.7	1.0	-59.3	-13.0	-46.3		
LTE Band 66 20MHz 16QAM	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
	Company: Samsung									
	Project #: 4788480978									
	Date: 2018-06-09									
	Test Engineer: 47989									
	Configuration: EUT / AC Adapter / Cradle, X-Position									
	Location: Chamber 1									
	Mode: LTE_16QAM Band 66 Harmonics, 20MHz 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, 1720MHz									
	3440.00	-6.8	V	3.0	43.7	1.0	-49.5	-13.0	-36.5	
	5160.00	-19.9	V	3.0	43.8	1.0	-62.7	-13.0	-49.7	
	6880.00	-17.9	V	3.0	42.8	1.0	-59.7	-13.0	-46.7	
	3440.00	-5.2	H	3.0	43.7	1.0	-47.9	-13.0	-34.9	
	5160.00	-20.6	H	3.0	43.8	1.0	-63.3	-13.0	-50.3	
	6880.00	-17.4	H	3.0	42.8	1.0	-59.2	-13.0	-46.2	
	Mid Ch, 1745MHz									
	3490.00	-10.9	V	3.0	43.7	1.0	-53.6	-13.0	-40.6	
	5235.00	-18.3	V	3.0	43.8	1.0	-61.0	-13.0	-48.0	
	6980.00	-18.2	V	3.0	42.7	1.0	-60.0	-13.0	-47.0	
3490.00	-9.8	H	3.0	43.7	1.0	-52.5	-13.0	-39.5		
5235.00	-18.6	H	3.0	43.8	1.0	-61.4	-13.0	-48.4		
6980.00	-17.7	H	3.0	42.7	1.0	-59.4	-13.0	-46.4		
High Ch, 1770MHz										
3540.00	-14.7	V	3.0	43.7	1.0	-57.5	-13.0	-44.5		
5310.00	-17.7	V	3.0	43.7	1.0	-60.4	-13.0	-47.4		
7080.00	-18.1	V	3.0	42.7	1.0	-59.8	-13.0	-46.8		
3540.00	-12.7	H	3.0	43.7	1.0	-55.4	-13.0	-42.4		
5310.00	-18.1	H	3.0	43.7	1.0	-60.9	-13.0	-47.9		
7080.00	-17.6	H	3.0	42.7	1.0	-59.3	-13.0	-46.3		

LTE Band 66 15MHz QPSK	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
	Company: Samsung Project #: 4788480978 Date: 2018-06-09 Test Engineer: 47989 Configuration: EUT / AC Adapter / Cradle, X-Position Location: Chamber 1 Mode: LTE_QPSK Band 66 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, 1717.5MHz									
	3435.00	-8.6	V	3.0	43.7	1.0	-51.2	-13.0	-38.2	
	5152.50	-19.8	V	3.0	43.8	1.0	-62.6	-13.0	-49.6	
	6870.00	-17.2	V	3.0	42.8	1.0	-59.0	-13.0	-46.0	
	3435.00	-6.1	H	3.0	43.7	1.0	-48.8	-13.0	-35.8	
	5152.50	-20.3	H	3.0	43.8	1.0	-63.1	-13.0	-50.1	
	6870.00	-16.8	H	3.0	42.8	1.0	-58.7	-13.0	-45.7	
	Mid Ch, 1745MHz									
	3490.00	-6.9	V	3.0	43.7	1.0	-49.6	-13.0	-36.6	
	5235.00	-18.7	V	3.0	43.8	1.0	-61.5	-13.0	-48.5	
	6980.00	-18.3	V	3.0	42.7	1.0	-60.1	-13.0	-47.1	
	3490.00	-6.1	H	3.0	43.7	1.0	-48.8	-13.0	-35.8	
	5235.00	-18.9	H	3.0	43.8	1.0	-61.6	-13.0	-48.6	
	6980.00	-17.9	H	3.0	42.7	1.0	-59.7	-13.0	-46.7	
	High Ch, 1772.5MHz									
	3545.00	-15.6	V	3.0	43.7	1.0	-58.3	-13.0	-45.3	
	5317.50	-17.9	V	3.0	43.7	1.0	-60.6	-13.0	-47.6	
	7090.00	-18.3	V	3.0	42.7	1.0	-60.0	-13.0	-47.0	
	3545.00	-15.0	H	3.0	43.7	1.0	-57.7	-13.0	-44.7	
	5317.50	-18.0	H	3.0	43.7	1.0	-60.8	-13.0	-47.8	
7090.00	-17.8	H	3.0	42.7	1.0	-59.5	-13.0	-46.5		
LTE Band 66 15MHz 16QAM	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
	Company: Samsung Project #: 4788480978 Date: 2018-06-09 Test Engineer: 47989 Configuration: EUT / AC Adapter / Cradle, X-Position Location: Chamber 1 Mode: LTE_16QAM Band 66 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, 1717.5MHz									
	3435.00	-8.4	V	3.0	43.7	1.0	-51.1	-13.0	-38.1	
	5152.50	-20.1	V	3.0	43.8	1.0	-62.8	-13.0	-49.8	
	6870.00	-17.5	V	3.0	42.8	1.0	-59.4	-13.0	-46.4	
	3435.00	-6.3	H	3.0	43.7	1.0	-49.0	-13.0	-36.0	
	5152.50	-20.4	H	3.0	43.8	1.0	-63.1	-13.0	-50.1	
	6870.00	-17.0	H	3.0	42.8	1.0	-58.9	-13.0	-45.9	
	Mid Ch, 1745MHz									
	3490.00	-6.9	V	3.0	43.7	1.0	-49.6	-13.0	-36.6	
	5235.00	-18.7	V	3.0	43.8	1.0	-61.5	-13.0	-48.5	
	6980.00	-18.3	V	3.0	42.7	1.0	-60.1	-13.0	-47.1	
	3490.00	-6.4	H	3.0	43.7	1.0	-49.1	-13.0	-36.1	
	5235.00	-19.0	H	3.0	43.8	1.0	-61.7	-13.0	-48.7	
	6980.00	-17.7	H	3.0	42.7	1.0	-59.5	-13.0	-46.5	
	High Ch, 1772.5MHz									
	3545.00	-16.2	V	3.0	43.7	1.0	-58.9	-13.0	-45.9	
	5317.50	-16.9	V	3.0	43.7	1.0	-59.7	-13.0	-46.7	
	7090.00	-18.2	V	3.0	42.7	1.0	-59.9	-13.0	-46.9	
	3545.00	-15.5	H	3.0	43.7	1.0	-58.2	-13.0	-45.2	
	5317.50	-17.8	H	3.0	43.7	1.0	-60.6	-13.0	-47.6	
7090.00	-16.9	H	3.0	42.7	1.0	-58.6	-13.0	-45.6		

LTE Band 66 10MHz QPSK	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
	Company: Samsung Project #: 4788480978 Date: 2018-06-09 Test Engineer: 47989 Configuration: EUT / AC Adapter / Cradle, X-Position Location: Chamber 1 Mode: LTE_QPSK Band 66 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	-8.5	V	3.0	43.7	1.0	-51.1	-13.0	-38.1	
	5145.00	-19.0	V	3.0	43.8	1.0	-61.8	-13.0	-48.8	
	6860.00	-17.5	V	3.0	42.9	1.0	-59.3	-13.0	-46.3	
	3430.00	-6.2	H	3.0	43.7	1.0	-48.9	-13.0	-35.9	
	5145.00	-20.1	H	3.0	43.8	1.0	-62.8	-13.0	-49.8	
	6860.00	-17.0	H	3.0	42.9	1.0	-58.8	-13.0	-45.8	
	Mid Ch, 1745MHz									
	3490.00	-9.7	V	3.0	43.7	1.0	-52.4	-13.0	-39.4	
	5235.00	-18.6	V	3.0	43.8	1.0	-61.4	-13.0	-48.4	
	6980.00	-18.2	V	3.0	42.7	1.0	-60.0	-13.0	-47.0	
	3490.00	-6.8	H	3.0	43.7	1.0	-49.5	-13.0	-36.5	
	5235.00	-18.8	H	3.0	43.8	1.0	-61.6	-13.0	-48.6	
	6980.00	-17.6	H	3.0	42.7	1.0	-59.4	-13.0	-46.4	
	High Ch, 1775MHz									
	3550.00	-15.6	V	3.0	43.7	1.0	-58.4	-13.0	-45.4	
	5325.00	-12.4	V	3.0	43.7	1.0	-55.1	-13.0	-42.1	
	7100.00	-17.7	V	3.0	42.7	1.0	-59.4	-13.0	-46.4	
	3550.00	-13.9	H	3.0	43.7	1.0	-56.6	-13.0	-43.6	
	5325.00	-17.4	H	3.0	43.7	1.0	-60.1	-13.0	-47.1	
	7100.00	-17.6	H	3.0	42.7	1.0	-59.3	-13.0	-46.3	
LTE Band 66 10MHz 16QAM	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
	Company: Samsung Project #: 4788480978 Date: 2018-06-09 Test Engineer: 47989 Configuration: EUT / AC Adapter / Cradle, X-Position Location: Chamber 1 Mode: LTE_16QAM Band 66 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	-8.9	V	3.0	43.7	1.0	-51.6	-13.0	-38.6	
	5145.00	-19.9	V	3.0	43.8	1.0	-62.7	-13.0	-49.7	
	6860.00	-17.6	V	3.0	42.9	1.0	-59.4	-13.0	-46.4	
	3430.00	-6.4	H	3.0	43.7	1.0	-49.1	-13.0	-36.1	
	5145.00	-20.1	H	3.0	43.8	1.0	-62.9	-13.0	-49.9	
	6860.00	-16.7	H	3.0	42.9	1.0	-58.5	-13.0	-45.5	
	Mid Ch, 1745MHz									
	3490.00	-11.0	V	3.0	43.7	1.0	-53.7	-13.0	-40.7	
	5235.00	-18.5	V	3.0	43.8	1.0	-61.3	-13.0	-48.3	
	6980.00	-18.3	V	3.0	42.7	1.0	-60.0	-13.0	-47.0	
	3490.00	-7.5	H	3.0	43.7	1.0	-50.2	-13.0	-37.2	
	5235.00	-18.9	H	3.0	43.8	1.0	-61.7	-13.0	-48.7	
	6980.00	-17.7	H	3.0	42.7	1.0	-59.5	-13.0	-46.5	
	High Ch, 1775MHz									
	3550.00	-16.2	V	3.0	43.7	1.0	-58.9	-13.0	-45.9	
	5325.00	-17.2	V	3.0	43.7	1.0	-60.0	-13.0	-47.0	
	7100.00	-17.9	V	3.0	42.7	1.0	-59.6	-13.0	-46.6	
	3550.00	-14.0	H	3.0	43.7	1.0	-56.7	-13.0	-43.7	
	5325.00	-17.8	H	3.0	43.7	1.0	-60.6	-13.0	-47.6	
	7100.00	-17.2	H	3.0	42.7	1.0	-58.9	-13.0	-45.9	

LTE Band 66 5MHz QPSK	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
	Company: Samsung									
	Project #: 4788480978									
	Date: 2018-06-09									
	Test Engineer: 47989									
	Configuration: EUT / AC Adapter / Cradle, X-Position									
	Location: Chamber 1									
	Mode: LTE_QPSK Band 66 Harmonics, 5MHz 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, 1712.5MHz									
	3425.00	-6.0	V	3.0	43.7	1.0	-48.7	-13.0	-35.7	
	5137.50	-19.2	V	3.0	43.8	1.0	-61.9	-13.0	-48.9	
	6850.00	-17.3	V	3.0	42.9	1.0	-59.2	-13.0	-46.2	
	3425.00	-4.1	H	3.0	43.7	1.0	-46.7	-13.0	-33.7	
	5137.50	-19.6	H	3.0	43.8	1.0	-62.3	-13.0	-49.3	
	6850.00	-16.2	H	3.0	42.9	1.0	-58.1	-13.0	-45.1	
	Mid Ch, 1745MHz									
	3490.00	-5.2	V	3.0	43.7	1.0	-47.9	-13.0	-34.9	
	5235.00	-17.8	V	3.0	43.8	1.0	-60.5	-13.0	-47.5	
6980.00	-17.5	V	3.0	42.7	1.0	-59.2	-13.0	-46.2		
3490.00	-6.1	H	3.0	43.7	1.0	-48.8	-13.0	-35.8		
5235.00	-18.7	H	3.0	43.8	1.0	-61.5	-13.0	-48.5		
6980.00	-17.5	H	3.0	42.7	1.0	-59.2	-13.0	-46.2		
High Ch, 1777.5MHz										
3555.00	-15.5	V	3.0	43.7	1.0	-58.2	-13.0	-45.2		
5332.50	-17.1	V	3.0	43.7	1.0	-59.9	-13.0	-46.9		
7110.00	-17.9	V	3.0	42.7	1.0	-59.5	-13.0	-46.5		
3555.00	-14.9	H	3.0	43.7	1.0	-57.6	-13.0	-44.6		
5332.50	-17.9	H	3.0	43.7	1.0	-60.6	-13.0	-47.6		
7110.00	-17.0	H	3.0	42.7	1.0	-58.6	-13.0	-45.6		
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LTE Band 66 3MHz QPSK	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
	Company: Samsung									
	Project #: 4788480978									
	Date: 2018-06-09									
	Test Engineer: 47989									
	Configuration: EUT / AC Adapter / Cradle, X-Position									
	Location: Chamber 1									
	Mode: LTE_QPSK Band 66 Harmonics, 3MHz 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, 1711.5MHz									
	3423.00	-4.1	V	3.0	43.7	1.0	-46.8	-13.0	-33.8	
	5134.50	-19.4	V	3.0	43.8	1.0	-62.1	-13.0	-49.1	
	6846.00	-17.3	V	3.0	42.9	1.0	-59.2	-13.0	-46.2	
	3423.00	-4.6	H	3.0	43.7	1.0	-47.3	-13.0	-34.3	
	5134.50	-19.7	H	3.0	43.8	1.0	-62.5	-13.0	-49.5	
	6846.00	-16.6	H	3.0	42.9	1.0	-58.4	-13.0	-45.4	
	Mid Ch, 1745MHz									
	3490.00	-9.7	V	3.0	43.7	1.0	-52.4	-13.0	-39.4	
	5235.00	-18.3	V	3.0	43.8	1.0	-61.1	-13.0	-48.1	
	6980.00	-18.0	V	3.0	42.7	1.0	-59.7	-13.0	-46.7	
	3490.00	-6.9	H	3.0	43.7	1.0	-49.6	-13.0	-36.6	
	5235.00	-18.2	H	3.0	43.8	1.0	-61.0	-13.0	-48.0	
	6980.00	-17.4	H	3.0	42.7	1.0	-59.2	-13.0	-46.2	
	High Ch, 1778.5MHz									
	3557.00	-15.9	V	3.0	43.7	1.0	-58.7	-13.0	-45.7	
5335.50	-17.8	V	3.0	43.7	1.0	-60.5	-13.0	-47.5		
7114.00	-17.5	V	3.0	42.7	1.0	-59.1	-13.0	-46.1		
3557.00	-16.0	H	3.0	43.7	1.0	-58.7	-13.0	-45.7		
5335.50	-18.0	H	3.0	43.7	1.0	-60.8	-13.0	-47.8		
7114.00	-17.1	H	3.0	42.7	1.0	-58.8	-13.0	-45.8		
LTE Band 66 3MHz 16QAM	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
	Company: Samsung									
	Project #: 4788480978									
	Date: 2018-06-09									
	Test Engineer: 47989									
	Configuration: EUT / AC Adapter / Cradle, X-Position									
	Location: Chamber 1									
	Mode: LTE_16QAM Band 66 Harmonics, 3MHz 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, 1711.5MHz									
	3423.00	-6.9	V	3.0	43.7	1.0	-49.6	-13.0	-36.6	
	5134.50	-19.6	V	3.0	43.8	1.0	-62.3	-13.0	-49.3	
	6846.00	-17.3	V	3.0	42.9	1.0	-59.2	-13.0	-46.2	
	3423.00	-5.1	H	3.0	43.7	1.0	-47.8	-13.0	-34.8	
	5134.50	-19.8	H	3.0	43.8	1.0	-62.6	-13.0	-49.6	
	6846.00	-16.8	H	3.0	42.9	1.0	-58.7	-13.0	-45.7	
	Mid Ch, 1745MHz									
	3490.00	-10.2	V	3.0	43.7	1.0	-52.9	-13.0	-39.9	
	5235.00	-18.4	V	3.0	43.8	1.0	-61.2	-13.0	-48.2	
	6980.00	-18.1	V	3.0	42.7	1.0	-59.8	-13.0	-46.8	
	3490.00	-7.7	H	3.0	43.7	1.0	-50.4	-13.0	-37.4	
	5235.00	-18.8	H	3.0	43.8	1.0	-61.6	-13.0	-48.6	
	6980.00	-17.7	H	3.0	42.7	1.0	-59.4	-13.0	-46.4	
	High Ch, 1778.5MHz									
	3557.00	-16.3	V	3.0	43.7	1.0	-59.0	-13.0	-46.0	
5335.50	-18.0	V	3.0	43.7	1.0	-60.7	-13.0	-47.7		
7114.00	-17.7	V	3.0	42.7	1.0	-59.4	-13.0	-46.4		
3557.00	-16.5	H	3.0	43.7	1.0	-59.2	-13.0	-46.2		
5335.50	-17.9	H	3.0	43.7	1.0	-60.7	-13.0	-47.7		
7114.00	-17.0	H	3.0	42.7	1.0	-58.7	-13.0	-45.7		

LTE Band 66 1.4MHz QPSK	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
	Company: Samsung Project #: 4788480978 Date: 2018-06-09 Test Engineer: 47989 Configuration: EUT / AC Adapter / Cradle, X-Position Location: Chamber 1 Mode: LTE_QPSK Band 66 Harmonics, 1.4MHz 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, 1710.7MHz									
	3421.40	-6.2	V	3.0	43.7	1.0	-48.9	-13.0	-35.9	
	5132.10	-19.5	V	3.0	43.8	1.0	-62.3	-13.0	-49.3	
	6842.80	-17.3	V	3.0	42.9	1.0	-59.2	-13.0	-46.2	
	3421.40	-4.7	H	3.0	43.7	1.0	-47.4	-13.0	-34.4	
	5132.10	-19.6	H	3.0	43.8	1.0	-62.4	-13.0	-49.4	
	6842.80	-16.9	H	3.0	42.9	1.0	-58.8	-13.0	-45.8	
	Mid Ch, 1745MHz									
	3490.00	-6.6	V	3.0	43.7	1.0	-49.3	-13.0	-36.3	
	5235.00	-18.3	V	3.0	43.8	1.0	-61.1	-13.0	-48.1	
	6980.00	-18.0	V	3.0	42.7	1.0	-59.8	-13.0	-46.8	
	3490.00	-7.1	H	3.0	43.7	1.0	-49.8	-13.0	-36.8	
	5235.00	-18.7	H	3.0	43.8	1.0	-61.5	-13.0	-48.5	
	6980.00	-17.4	H	3.0	42.7	1.0	-59.2	-13.0	-46.2	
	High Ch, 1779.3MHz									
	3558.60	-15.3	V	3.0	43.7	1.0	-58.0	-13.0	-45.0	
	5337.90	-17.8	V	3.0	43.7	1.0	-60.5	-13.0	-47.5	
	7117.20	-17.8	V	3.0	42.7	1.0	-59.5	-13.0	-46.5	
	3558.60	-14.2	H	3.0	43.7	1.0	-57.0	-13.0	-44.0	
	5337.90	-18.1	H	3.0	43.7	1.0	-60.8	-13.0	-47.8	
7117.20	-17.1	H	3.0	42.7	1.0	-58.8	-13.0	-45.8		
LTE Band 66 1.4MHz 16QAM	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
	Company: Samsung Project #: 4788480978 Date: 2018-06-09 Test Engineer: 47989 Configuration: EUT / AC Adapter / Cradle, X-Position Location: Chamber 1 Mode: LTE_16QAM Band 66 Harmonics, 1.4MHz 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, 1710.7MHz									
	3421.40	-6.6	V	3.0	43.7	1.0	-49.3	-13.0	-36.3	
	5132.10	-19.4	V	3.0	43.8	1.0	-62.2	-13.0	-49.2	
	6842.80	-17.4	V	3.0	42.9	1.0	-59.2	-13.0	-46.2	
	3421.40	-4.7	H	3.0	43.7	1.0	-47.4	-13.0	-34.4	
	5132.10	-19.7	H	3.0	43.8	1.0	-62.5	-13.0	-49.5	
	6842.80	-16.9	H	3.0	42.9	1.0	-58.7	-13.0	-45.7	
	Mid Ch, 1745MHz									
	3490.00	-7.2	V	3.0	43.7	1.0	-49.9	-13.0	-36.9	
	5235.00	-18.4	V	3.0	43.8	1.0	-61.2	-13.0	-48.2	
	6980.00	-18.2	V	3.0	42.7	1.0	-59.9	-13.0	-46.9	
	3490.00	-7.7	H	3.0	43.7	1.0	-50.4	-13.0	-37.4	
	5235.00	-18.7	H	3.0	43.8	1.0	-61.5	-13.0	-48.5	
	6980.00	-17.5	H	3.0	42.7	1.0	-59.2	-13.0	-46.2	
	High Ch, 1779.3MHz									
	3558.60	-14.7	V	3.0	43.7	1.0	-57.4	-13.0	-44.4	
	5337.90	-17.9	V	3.0	43.7	1.0	-60.6	-13.0	-47.6	
	7117.20	-17.5	V	3.0	42.7	1.0	-59.2	-13.0	-46.2	
	3558.60	-13.6	H	3.0	43.7	1.0	-56.4	-13.0	-43.4	
	5337.90	-18.2	H	3.0	43.7	1.0	-60.9	-13.0	-47.9	
7117.20	-17.1	H	3.0	42.7	1.0	-58.8	-13.0	-45.8		