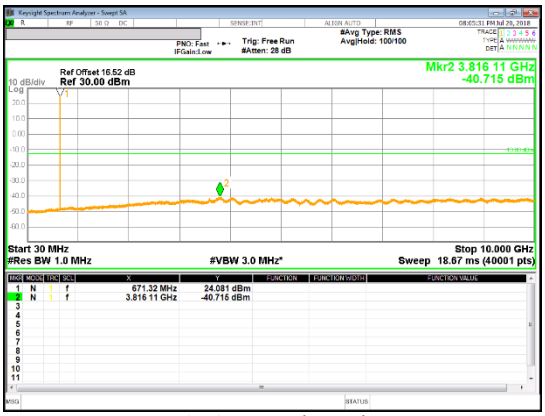
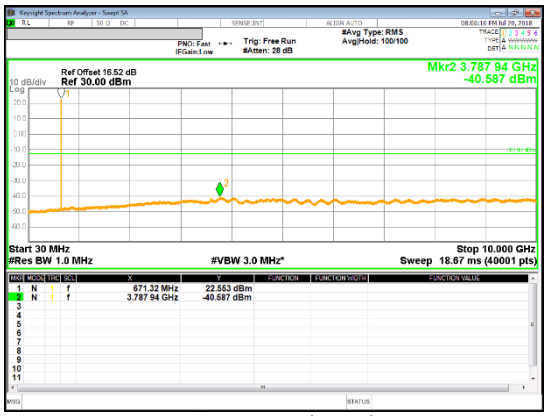
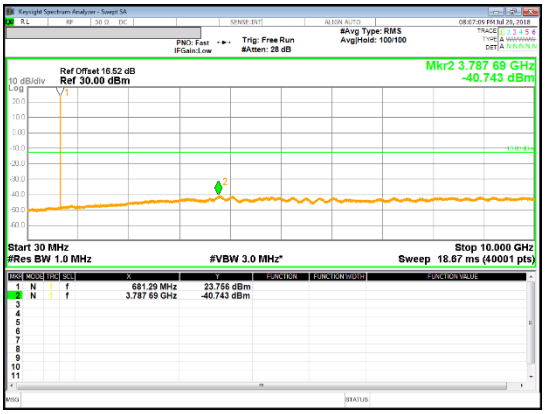
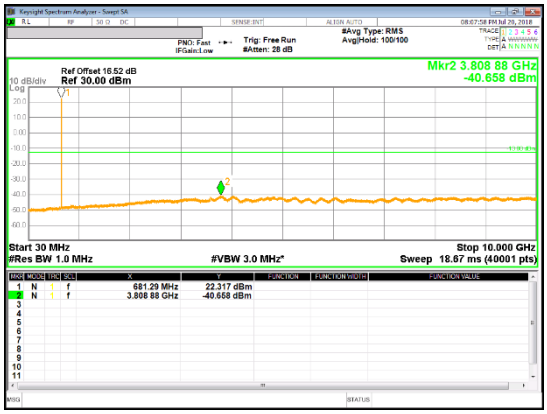
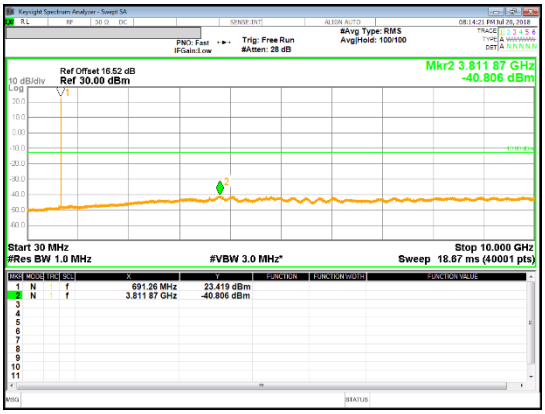
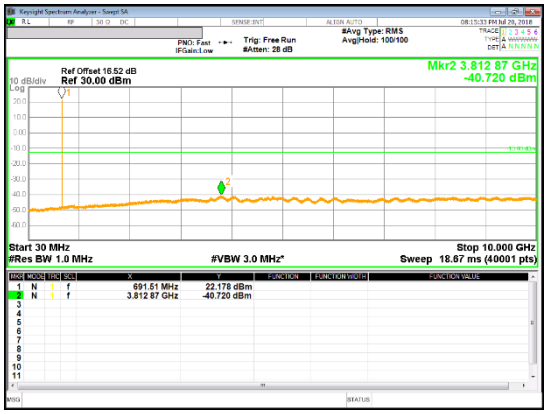
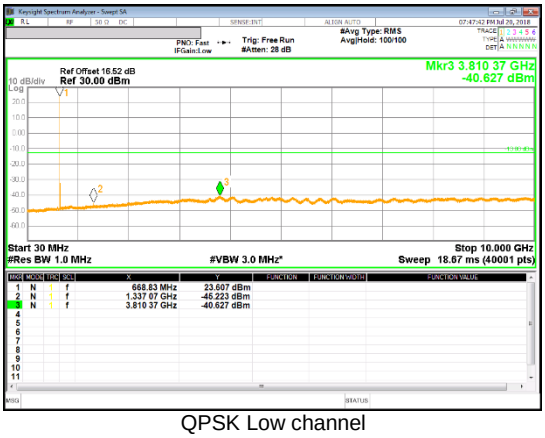
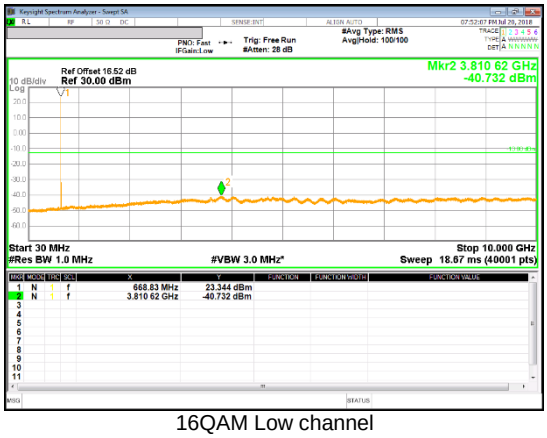
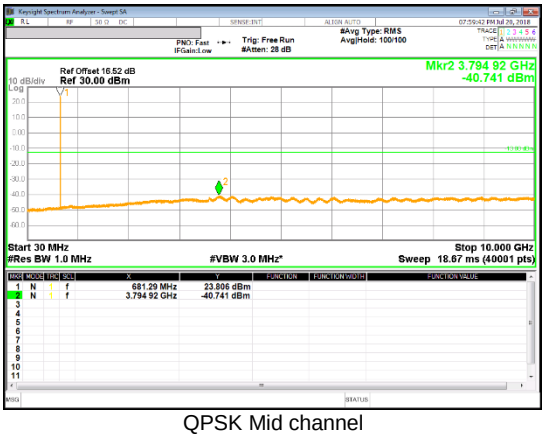
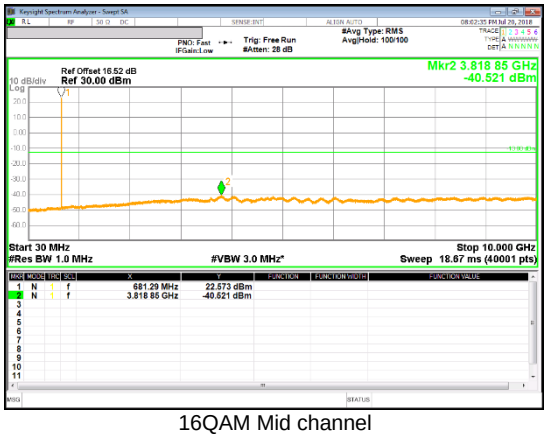
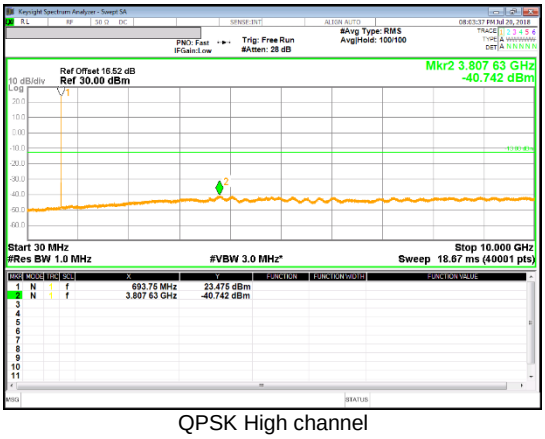
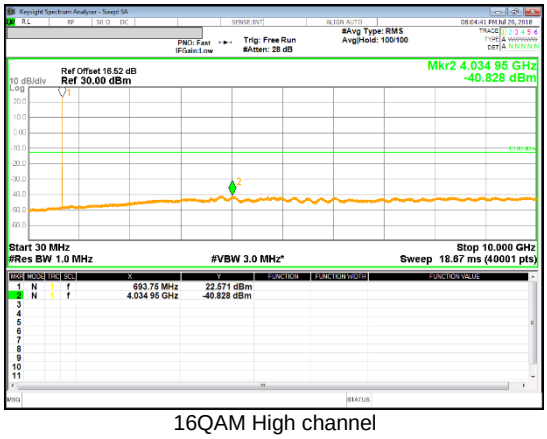
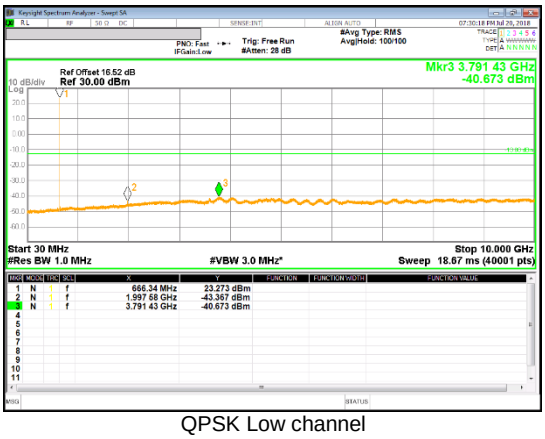
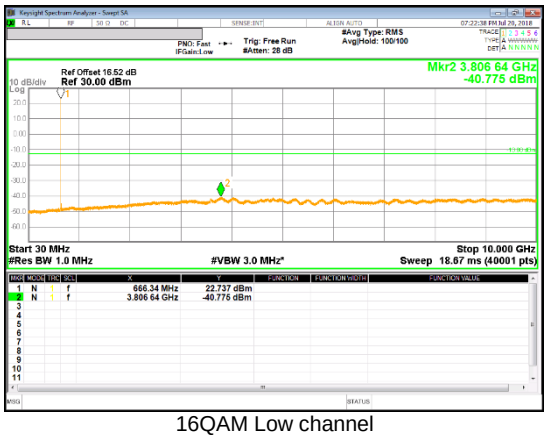
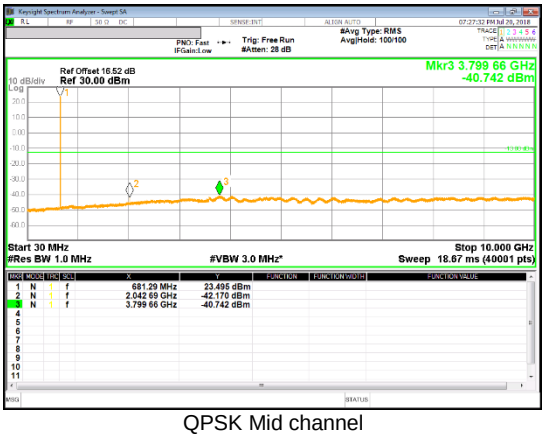
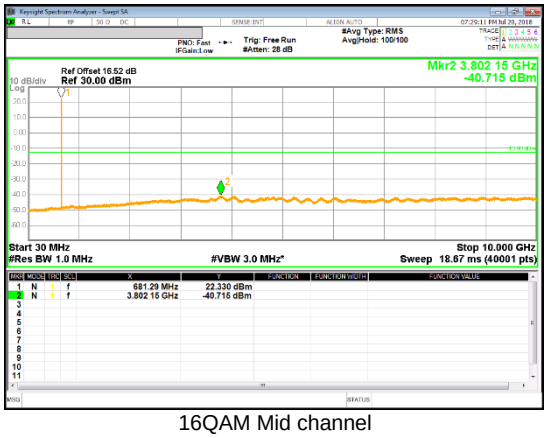
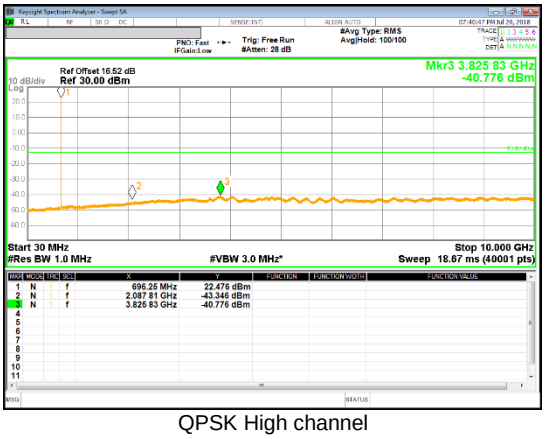
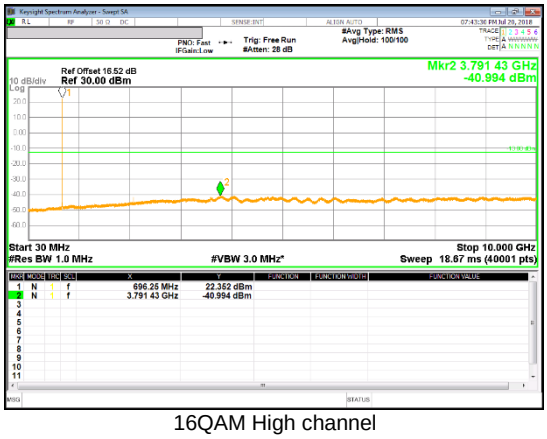
	 QPSK Low channel	 16QAM Low channel
Band 71 15MHz	 QPSK Mid channel	 16QAM Mid channel
	 QPSK High channel	 16QAM High channel

	 QPSK Low channel	 16QAM Low channel
Band 71 10MHz	 QPSK Mid channel	 16QAM Mid channel
	 QPSK High channel	 16QAM High channel

Band 71 5MHz	 QPSK Low channel	 16QAM Low channel
	 QPSK Mid channel	 16QAM Mid channel
	 QPSK High channel	 16QAM High channel

9.4. FREQUENCY STABILITY

RULE PART(S)

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

LIMITS

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

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

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

TEST PROCEDURE

Per KDB 971168 D01 Power Meas License Digital Systems v03r01

RESULTS

See the following pages.

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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 @ 20ºC						
Limit: +- 2.5 ppm =	Low Channel	2066.000	Hz	High Channel	2116.500	Hz

Power Supply [Vdc]	Environment Temperature [*C]	Frequency Deviation Measureed with Time Elapse				Limit [ppm]
		Low Channel		High Channel		
		[MHz]	Delta [ppm]	[MHz]	Delta [ppm]	
3.80	50	826.39999013	-0.006	846.59998963	0.002	2.5
3.80	40	826.39998925	-0.005	846.59998784	0.004	2.5
3.80	30	826.39998537	0.000	846.59998495	0.007	2.5
3.80	***20***	***826.39998524***	***0.000***	***846.59999094***	***0.000***	***2.5***
3.80	10	826.39998115	0.005	846.59998490	0.007	2.5
3.80	0	826.39999093	-0.007	846.59998599	0.006	2.5
3.80	-10	826.39998136	0.005	846.59998773	0.004	2.5
3.80	-20	826.39998507	0.000	846.59998240	0.010	2.5
3.80	-30	826.39998251	0.003	846.59999029	0.001	2.5

Reference Frequency : WCDMA Band 5 Low Channel 826.4 MHz / High Channel 846.6 MHz @ 20ºC						
Limit: +- 2.5 ppm =	Low Channel	2066.000	Hz	High Channel	2116.500	Hz

Power Supply [Vdc]	Environment Temperature [*C]	Frequency Deviation Measureed with Time Elapse				Limit [ppm]
		Low Channel		High Channel		
		[MHz]	Delta [ppm]	[MHz]	Delta [ppm]	
3.80	***20***	**826.39998524**	***0***	**846.59999094**	***0***	***2.5***
4.30	20	826.39999029	-0.006	846.59998914	0.002	2.5
3.40	20	826.39998195	0.004	846.59998481	0.007	2.5

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

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	1752.6020	-26.5	-0.015
Extreme (40C)		1712.3979	1752.6020	-20.3	-0.012
Extreme (30C)		1712.3979	1752.6020	-19.3	-0.011
Extreme (10C)		1712.3979	1752.6020	-26.2	-0.015
Extreme (0C)		1712.3979	1752.6020	-23.2	-0.013
Extreme (-10C)		1712.3979	1752.6020	-28.7	-0.017
Extreme (-20C)		1712.3979	1752.6020	-29.7	-0.017
Extreme (-30C)		1712.3979	1752.6020	-20.5	-0.012
20C	15%	1712.3979	1752.6020	-25.1	-0.015
	-15%	1712.3979	1752.6020	-24.5	-0.014
	End Point	1712.3979	1752.6020	-29.2	-0.017

WCDMA Band 2 (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	1907.6020	-28.7	-0.015
Extreme (40C)		1852.3979	1907.6021	-22.4	-0.012
Extreme (30C)		1852.3979	1907.6020	-29.9	-0.016
Extreme (10C)		1852.3979	1907.6020	-25.1	-0.013
Extreme (0C)		1852.3979	1907.6020	-27.2	-0.014
Extreme (-10C)		1852.3979	1907.6021	-21.9	-0.012
Extreme (-20C)		1852.3979	1907.6021	-22.5	-0.012
Extreme (-30C)		1852.3979	1907.6021	-19.3	-0.010
20C	15%	1852.3979	1907.6020	-26.5	-0.014
	-15%	1852.3979	1907.6020	-29.8	-0.016
	End Point	1852.3979	1907.6020	-23.8	-0.013

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

Limit		1850	1910	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	1850.6995	1909.3005		
Extreme (50C)		1850.6994	1909.3005	-24.3	-0.013
Extreme (40C)		1850.6994	1909.3005	-28.5	-0.015
Extreme (30C)		1850.6994	1909.3005	-19.2	-0.010
Extreme (10C)		1850.6994	1909.3005	-22.0	-0.012
Extreme (0C)		1850.6994	1909.3005	-22.4	-0.012
Extreme (-10C)		1850.6994	1909.3005	-28.3	-0.015
Extreme (-20C)		1850.6994	1909.3005	-27.1	-0.014
Extreme (-30C)		1850.6994	1909.3005	-28.0	-0.015
20C	15%	1850.6994	1909.3005	-20.7	-0.011
	-15%	1850.6994	1909.3005	-28.8	-0.015
	End Point	1850.6994	1909.3005	-22.7	-0.012

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

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	1852.3995	1907.6005		
Extreme (50C)		1852.3994	1907.6005	-20.5	-0.012
Extreme (40C)		1852.3994	1907.6005	-24.1	-0.014
Extreme (30C)		1852.3994	1907.6005	-22.8	-0.013
Extreme (10C)		1852.3994	1907.6005	-19.8	-0.011
Extreme (0C)		1852.3994	1907.6005	-16.3	-0.009
Extreme (-10C)		1852.3994	1907.6005	-19.6	-0.011
Extreme (-20C)		1852.3994	1907.6005	-22.7	-0.013
Extreme (-30C)		1852.3994	1907.6005	-21.8	-0.013
20C	15%	1852.3994	1907.6005	-24.6	-0.014
	-15%	1852.3994	1907.6005	-23.6	-0.014
	End Point	1852.3994	1907.6005	-18.4	-0.011

LTE Band 5 (QPSK)

Reference Frequency : LTE Band 5 Low Channel 824.7 MHz / High Channel 848.3 MHz @ 20ºC						
Limit: +- 2.5 ppm =	Low Channel	2061.750	Hz	High Channel	2120.750	Hz
Power Supply [Vdc]	Environment Temperature [*C]	Frequency Deviation Measureed with Time Elapse				Limit [ppm]
		Low Channel		High Channel		
		[MHz]	Delta [ppm]	[MHz]	Delta [ppm]	
3.80	50	824.69998846	-0.002	848.29998743	0.002	2.5
3.80	40	824.69999208	-0.006	848.29999382	-0.006	2.5
3.80	30	824.69998860	-0.002	848.29999243	-0.004	2.5
3.80	***20***	***824.69998718***	***0.000***	***848.29998876***	***0.000***	***2.5***
3.80	10	824.69998607	0.001	848.29999154	-0.003	2.5
3.80	0	824.69998590	0.002	848.29998302	0.007	2.5
3.80	-10	824.69999117	-0.005	848.29999046	-0.002	2.5
3.80	-20	824.69998633	0.001	848.29999399	-0.006	2.5
3.80	-30	824.69998938	-0.003	848.29998950	-0.001	2.5

Reference Frequency : LTE Band 5 Low Channel 824.7 MHz / High Channel 848.3 MHz @ 20ºC						
Limit: +- 2.5 ppm =	Low Channel	2061.750	Hz	High Channel	2120.750	Hz
Power Supply [Vdc]	Environment Temperature [*C]	Frequency Deviation Measureed with Time Elapse				Limit [ppm]
		Low Channel		High Channel		
		[MHz]	Delta [ppm]	[MHz]	Delta [ppm]	
3.80	***20***	**824.69998718**	***0***	**848.29998876**	***0***	***2.5***
4.30	20	824.69998446	0.003	848.29998947	-0.001	2.5
3.40	20	824.69999278	-0.007	848.29998742	0.002	2.5

LTE Band 7 (QPSK)

Limit		2500	2570	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	2502.4978	2567.5023		
Extreme (50C)		2502.4977	2567.5022	-27.4	-0.011
Extreme (40C)		2502.4977	2567.5022	-34.7	-0.014
Extreme (30C)		2502.4977	2567.5022	-29.3	-0.012
Extreme (10C)		2502.4977	2567.5022	-33.6	-0.013
Extreme (0C)		2502.4977	2567.5022	-25.6	-0.010
Extreme (-10C)		2502.4977	2567.5022	-30.0	-0.012
Extreme (-20C)		2502.4977	2567.5022	-24.7	-0.010
Extreme (-30C)		2502.4977	2567.5022	-25.9	-0.010
20C	15%	2502.4977	2567.5022	-30.3	-0.012
	-15%	2502.4977	2567.5022	-33.0	-0.013
	End Point	2502.4977	2567.5022	-32.0	-0.013

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

Limit		699	716	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	699.6995	715.3005		
Extreme (50C)		699.6994	715.3005	-10.6	-0.015
Extreme (40C)		699.6994	715.3005	-17.6	-0.025
Extreme (30C)		699.6994	715.3005	-14.4	-0.020
Extreme (10C)		699.6994	715.3005	-17.5	-0.025
Extreme (0C)		699.6994	715.3005	-13.9	-0.020
Extreme (-10C)		699.6994	715.3005	-9.4	-0.013
Extreme (-20C)		699.6994	715.3005	-14.6	-0.021
Extreme (-30C)		699.6994	715.3005	-12.0	-0.017
20C	15%	699.6994	715.3005	-12.5	-0.018
	-15%	699.6994	715.3005	-7.7	-0.011
	End Point	699.6994	715.3005	-9.1	-0.013

LTE Band 66 (16QAM)

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	-26.9	-0.015
Extreme (40C)		1710.6994	1779.3005	-26.7	-0.015
Extreme (30C)		1710.6994	1779.3005	-27.9	-0.016
Extreme (10C)		1710.6994	1779.3005	-24.0	-0.014
Extreme (0C)		1710.6994	1779.3005	-27.1	-0.016
Extreme (-10C)		1710.6994	1779.3005	-27.6	-0.016
Extreme (-20C)		1710.6994	1779.3005	-19.3	-0.011
Extreme (-30C)		1710.6994	1779.3005	-21.3	-0.012
20C	15%	1710.6994	1779.3005	-21.2	-0.012
	-15%	1710.6994	1779.3005	-19.3	-0.011
	End Point	1710.6994	1779.3005	-20.3	-0.012

LTE Band 71 (Lowest Frequency: QPSK / Highest Frequency: 16QAM)

Limit		663	698	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	665.4978	695.5022		
Extreme (50C)		665.4977	695.5022	-13.4	-0.020
Extreme (40C)		665.4977	695.5022	-10.0	-0.015
Extreme (30C)		665.4977	695.5022	-8.7	-0.013
Extreme (10C)		665.4977	695.5022	-9.6	-0.014
Extreme (0C)		665.4978	695.5022	-7.6	-0.011
Extreme (-10C)		665.4977	695.5022	-9.5	-0.014
Extreme (-20C)		665.4977	695.5022	-17.3	-0.025
Extreme (-30C)		665.4977	695.5022	-12.0	-0.018
20C	15%	665.4977	695.5022	-16.2	-0.024
	-15%	665.4977	695.5022	-10.7	-0.016
	End Point	665.4977	695.5022	-16.3	-0.024

10. RADIATED TEST RESULTS

10.1. RADIATED POWER (ERP & EIRP)

RULE PART(S)

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

LIMITS

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

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

27.50(c) (10) - Portable stations (hand-held devices) in the 600 MHz uplink band and the 698-746 MHz band, and fixed and mobile stations in the 600 MHz uplink band are limited to 3 watts ERP.

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

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

TEST PROCEDURE

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

For radiated output power measurement with a ESU40:

a) Set the RBW ≥ OBW; b) Set VBW ≥ 3 × RBW; c) Set span ≥ 2 x RBW; d) Sweep time = auto couple; e) Detector = rms; f) Ensure that the number of measurement points ≥ 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	**23.00**	**199.53**
		4183	836.6	22.58	181.13
		4233	846.6	22.21	166.34
	HSDPA	4132	826.4	**22.02**	**159.22**
		4183	836.6	21.43	139.00
		4233	846.6	20.96	124.74
Band 4	REL99	1312	1712.4	24.37	273.53
		1413	1732.6	**24.79**	**301.30**
		1513	1752.6	24.34	271.64
	HSDPA	1312	1712.4	23.10	204.17
		1413	1732.6	**23.51**	**224.39**
		1513	1752.6	23.15	206.54
Band 2	REL99	9262	1852.4	**24.38**	**274.16**
		9400	1880.0	23.82	240.99
		9538	1907.6	22.46	176.20
	HSDPA	9262	1852.4	**23.65**	**231.74**
		9400	1880.0	23.26	211.84
		9538	1907.6	21.09	128.53

LTE Band 2

Band	BW [MHz]	Mode	RB Size/ RB Offset	f [MHz]	ERP / EIRP [dBm]	ERP / EIRP [mW]
Band 2	20	QPSK	1/49	1860.0	**22.68**	**185.35**
			1/99	1880.0	22.33	171.00
			1/0	1900.0	22.41	174.18
		16QAM	1/49	1860.0	**21.69**	**147.57**
			1/99	1880.0	21.67	146.89
			1/0	1900.0	21.20	131.83
	15	QPSK	1/37	1857.5	**22.83**	**191.87**
			1/74	1880.0	22.37	172.58
			1/0	1902.5	21.55	142.89
		16QAM	1/37	1857.5	**21.96**	**157.04**
			1/74	1880.0	21.10	128.82
			1/37	1902.5	20.53	112.98
	10	QPSK	1/49	1855.0	**22.55**	**179.89**
			1/25	1880.0	22.46	176.20
			1/0	1905.0	20.85	121.62
		16QAM	1/49	1855.0	**21.46**	**139.96**
			1/25	1880.0	21.01	126.18
			1/25	1905.0	20.68	116.95
	5	QPSK	1/24	1852.5	**22.37**	**172.58**
			1/24	1880.0	22.06	160.69
			1/0	1907.5	21.36	136.77
		16QAM	1/24	1852.5	**21.48**	**140.60**
			1/24	1880.0	20.70	117.49
			1/0	1907.5	20.50	112.20
	3	QPSK	1/8	1851.5	**21.89**	**154.53**
			1/14	1880.0	21.88	154.17
			1/14	1908.5	21.38	137.40
		16QAM	1/14	1851.5	**21.34**	**136.14**
			1/14	1880.0	20.42	110.15
			1/0	1908.5	20.19	104.47
	1.4	QPSK	1/0	1850.7	21.60	144.54
			1/3	1880.0	**22.09**	**161.81**
			1/3	1909.3	21.41	138.36
		16QAM	1/3	1850.7	20.79	119.95
			1/3	1880.0	**21.23**	**132.74**
			1/3	1909.3	20.43	110.41

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LTE Band 4

Band	BW	Mode	RB Size/	f [MHz]	ERP / EIRP	
	[MHz]		RB Offset		[dBm]	[mW]
Band 4	20	QPSK	1/49	1720.0	24.35	272.27
			1/49	1732.5	**24.88**	**307.61**
			1/99	1745.0	24.75	298.54
		16QAM	1/99	1720.0	24.12	258.23
			1/99	1732.5	24.05	254.10
			1/49	1745.0	**24.24**	**265.46**
	15	QPSK	1/74	1717.5	24.52	283.14
			1/37	1732.5	24.62	289.73
			1/74	1747.5	**25.03**	**318.42**
		16QAM	1/74	1717.5	23.27	212.32
			1/37	1732.5	23.26	211.84
			1/74	1747.5	**23.58**	**228.03**
	10	QPSK	1/49	1715.0	**24.29**	**268.53**
			1/25	1732.5	23.78	238.78
			1/49	1750.0	23.70	234.42
		16QAM	1/0	1715.0	**23.03**	**200.91**
			1/49	1732.5	22.57	180.72
			1/49	1750.0	22.69	185.78
	5	QPSK	1/12	1712.5	21.99	158.12
			1/12	1732.5	24.14	259.42
			1/24	1752.5	**24.80**	**302.00**
		16QAM	1/0	1712.5	20.73	118.30
			1/12	1732.5	22.49	177.42
			1/24	1752.5	**23.72**	**235.50**
	3	QPSK	1/8	1711.5	**24.14**	**259.42**
			1/0	1732.5	23.37	217.27
			1/14	1753.5	23.57	227.51
		16QAM	1/8	1711.5	**23.75**	**237.14**
			1/0	1732.5	21.86	153.46
			1/14	1753.5	22.53	179.06
	1.4	QPSK	1/5	1710.7	25.26	335.74
			1/3	1732.5	24.89	308.32
			1/3	1754.3	**25.91**	**389.94**
		16QAM	1/3	1710.7	**24.16**	**260.62**
			1/0	1732.5	23.74	236.59
			1/3	1754.3	**24.16**	**260.62**

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LTE Band 5

Band	BW [MHz]	Mode	RB Size/ RB Offset	f [MHz]	ERP / EIRP [dBm]	ERP / EIRP [mW]
Band 5	10	QPSK	1/25	829.0	23.14	206.06
			1/25	836.5	23.02	200.45
			1/0	844.0	**23.16**	**207.01**
		16QAM	1/0	829.0	**22.37**	**172.58**
			1/0	836.5	21.57	143.55
			1/49	844.0	21.60	144.54
	5	QPSK	1/12	826.5	22.66	184.50
			1/12	836.5	**23.84**	**242.10**
			1/12	846.5	22.87	193.64
		16QAM	1/12	826.5	21.13	129.72
			1/0	836.5	**22.41**	**174.18**
			1/12	846.5	21.51	141.58
	3	QPSK	1/0	825.5	23.51	224.39
			1/0	836.5	**23.79**	**239.33**
			1/8	847.5	23.08	203.24
		16QAM	1/0	825.5	22.37	172.58
			1/0	836.5	**22.54**	**179.47**
			1/8	847.5	22.14	163.68
	1.4	QPSK	3/1	824.7	23.55	226.46
			3/3	836.5	**24.12**	**258.23**
			3/0	848.3	22.65	184.08
		16QAM	1/3	824.7	22.44	175.39
			3/3	836.5	**23.21**	**209.41**
			3/0	848.3	21.43	139.00

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LTE Band 7

Band	BW [MHz]	Mode	RB Size/ RB Offset	f [MHz]	ERP / EIRP [dBm]	ERP / EIRP [mW]
Band 7	20	QPSK	1/49	2510.0	**21.83**	**152.41**
			1/49	2535.0	20.48	111.69
			1/49	2560.0	20.32	107.65
		16QAM	1/0	2510.0	**19.76**	**94.62**
			1/49	2535.0	19.41	87.30
			1/49	2560.0	18.59	72.28
	15	QPSK	1/37	2507.5	**21.98**	**157.76**
			1/37	2535.0	20.17	103.99
			1/37	2562.5	19.61	91.41
		16QAM	1/0	2507.5	**20.24**	**105.68**
			1/37	2535.0	18.77	75.34
			1/37	2562.5	19.19	82.99
	10	QPSK	1/25	2505.0	**21.36**	**136.77**
			1/25	2535.0	20.35	108.39
			1/25	2565.0	19.56	90.36
		16QAM	1/25	2505.0	**20.20**	**104.71**
			1/25	2535.0	19.12	81.66
			1/25	2565.0	18.74	74.82
	5	QPSK	1/12	2502.5	**20.69**	**117.22**
			1/12	2535.0	**20.69**	**117.22**
			1/12	2567.5	19.30	85.11
		16QAM	1/0	2502.5	**19.82**	**95.94**
			1/12	2535.0	19.24	83.95
			1/12	2567.5	18.55	71.61

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LTE Band 12

Band	BW [MHz]	Mode	RB Size/ RB Offset	f [MHz]	ERP / EIRP [dBm]	ERP / EIRP [mW]
Band 12	10	QPSK	1/0	704.0	18.26	66.99
			1/49	707.5	**18.70**	**74.13**
			1/25	711.0	18.35	68.39
		16QAM	1/25	704.0	17.02	50.35
			1/25	707.5	**17.03**	**50.47**
			1/25	711.0	16.55	45.19
	5	QPSK	1/24	701.5	18.05	63.83
			1/12	707.5	**18.42**	**69.50**
			1/24	713.5	18.37	68.71
		16QAM	1/24	701.5	17.13	51.64
			1/24	707.5	17.15	51.88
			1/24	713.5	**17.52**	**56.49**
	3	QPSK	1/0	700.5	17.70	58.88
			1/0	707.5	**18.69**	**73.96**
			1/0	714.5	18.50	70.79
		16QAM	1/0	700.5	17.20	52.48
			1/8	707.5	16.81	47.97
			1/0	714.5	**17.51**	**56.36**
	1.4	QPSK	1/3	699.7	18.23	66.53
			1/3	707.5	18.50	70.79
			1/3	715.3	**19.84**	**96.38**
		16QAM	1/3	699.7	17.81	60.39
			1/3	707.5	17.20	52.48
			1/5	715.3	**19.32**	**85.51**

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LTE Band 66

Band	BW	Mode	RB Size/	f [MHz]	ERP / EIRP	
	[MHz]		RB Offset		[dBm]	[mW]
Band 66	20	QPSK	1/99	1720.0	24.69	294.44
			1/99	1745.0	**24.91**	**309.74**
			1/99	1770.0	24.70	295.12
		16QAM	1/49	1720.0	24.31	269.77
			1/0	1745.0	24.58	287.08
			1/0	1770.0	**25.35**	**342.77**
	15	QPSK	1/74	1717.5	24.76	299.23
			1/74	1747.5	**25.36**	**343.56**
			1/0	1772.5	24.55	285.10
		16QAM	1/37	1717.5	23.95	248.31
			1/74	1747.5	24.15	260.02
			1/74	1772.5	**24.64**	**291.07**
	10	QPSK	1/49	1715.0	24.81	302.69
			1/0	1745.0	**25.56**	**359.75**
			1/25	1775.0	24.14	259.42
		16QAM	1/49	1715.0	24.19	262.42
			1/25	1745.0	**24.36**	**272.90**
			1/25	1775.0	23.15	206.54
	5	QPSK	1/12	1712.5	**25.05**	**319.89**
			1/12	1745.0	24.79	301.30
			1/12	1777.5	24.74	297.85
		16QAM	1/12	1712.5	23.80	239.88
			1/12	1745.0	23.16	207.01
			1/12	1777.5	**23.84**	**242.10**
	3	QPSK	1/8	1711.5	25.11	324.34
			1/14	1745.0	**25.43**	**349.14**
			1/0	1710.7	25.07	321.37
		16QAM	1/0	1711.5	**24.43**	**277.33**
			1/8	1745.0	23.89	244.91
			1/0	1710.7	23.89	244.91
	1.4	QPSK	1/3	1710.7	25.15	327.34
			1/3	1745.0	**25.42**	**348.34**
			1/3	1779.3	24.89	308.32
		16QAM	1/3	1710.7	24.56	285.76
			1/3	1745.0	**24.63**	**290.40**
			1/3	1779.3	23.77	238.23

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LTE Band 71

Band	BW [MHz]	Mode	RB Size/ RB Offset	f [MHz]	ERP / EIRP [dBm]	ERP / EIRP [mW]
Band 71	20	QPSK	1/49	673.0	**17.84**	**60.81**
			1/49	680.5	17.67	58.48
			1/49	688.0	17.79	60.12
		16QAM	1/49	673.0	16.59	45.60
			1/0	680.5	**16.77**	**47.53**
			1/49	688.0	16.65	46.24
	15	QPSK	1/37	670.5	17.87	61.24
			1/0	680.5	**18.26**	**66.99**
			1/0	690.5	17.34	54.20
		16QAM	1/74	670.5	16.99	50.00
			1/37	680.5	**17.03**	**50.47**
			1/0	690.5	15.91	38.99
	10	QPSK	1/25	668.0	**17.74**	**59.43**
			1/0	680.5	17.58	57.28
			1/0	693.0	17.44	55.46
		16QAM	1/25	668.0	**16.79**	**47.75**
			1/25	680.5	16.34	43.05
			1/0	693.0	16.21	41.78
	5	QPSK	1/24	665.5	17.00	50.12
			1/0	680.5	17.26	53.21
			1/0	695.5	**17.34**	**54.20**
		16QAM	1/24	665.5	16.16	41.30
			1/0	680.5	16.03	40.09
			1/12	695.5	**16.73**	**47.10**

10.1.2. ERP/EIRP DATA

WCDMA Band 5

WCDMA

Band 5
REL99

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788481138
Date: 2018-06-19
Test Engineer: 45585
Configuration: EUT / X-Position
Location: Chamber 1
Mode: Rel99 Band 5 Fundamentals

Test Equpment:
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	19.41	V	1.0	-1.5	16.99	38.5	-21.5	
826.40	25.42	H	1.0	-1.5	23.00	38.5	-15.5	
Mid Ch								
836.60	18.09	V	1.0	-1.4	15.71	38.5	-22.8	
836.60	24.96	H	1.0	-1.4	22.58	38.5	-15.9	
High Ch								
846.60	17.24	V	1.0	-1.4	14.89	38.5	-23.6	
846.60	24.56	H	1.0	-1.4	22.21	38.5	-16.3	

WCDMA

Band 5
HSDPA

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788481138
Date: 2018-06-19
Test Engineer: 45585
Configuration: EUT / X-Position
Location: Chamber 1
Mode: HSDPA Band 5 Fundamentals

Test Equpment:
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	18.05	V	1.0	-1.5	15.63	38.5	-22.9	
826.40	24.44	H	1.0	-1.5	22.02	38.5	-16.5	
Mid Ch								
836.60	17.04	V	1.0	-1.4	14.66	38.5	-23.8	
836.60	23.81	H	1.0	-1.4	21.43	38.5	-17.1	
High Ch								
846.60	16.35	V	1.0	-1.4	14.00	38.5	-24.5	
846.60	23.31	H	1.0	-1.4	20.96	38.5	-17.5	

WCDMA Band 4

WCDMA

Band 4
REL99

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788549592
Date: 2018-07-23
Test Engineer: 45585
Configuration: EUT / X-Position
Location: Chamber 1
Mode: Rel99 Band 4 Fundamentals

Test Equpment:
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								
1712.40	13.59	V	4.3	9.5	18.74	30.0	-11.3	
1712.40	19.21	H	4.3	9.5	24.37	30.0	-5.6	
Mid Ch								
1732.60	15.78	V	4.3	9.5	20.97	30.0	-9.0	
1732.60	19.60	H	4.3	9.5	24.79	30.0	-5.2	
High Ch								
1752.60	15.67	V	4.4	9.6	20.91	30.0	-9.1	
1752.60	19.10	H	4.4	9.6	24.34	30.0	-5.7	

WCDMA

Band 4
HSDPA

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788549592
Date: 2018-07-23
Test Engineer: 45585
Configuration: EUT / X-Position
Location: Chamber 1
Mode: HSDPA Band 4 Fundamentals

Test Equpment:
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								
1712.40	12.48	V	4.3	9.5	17.63	30.0	-12.4	
1712.40	17.94	H	4.3	9.5	23.10	30.0	-6.9	
Mid Ch								
1732.60	14.38	V	4.3	9.5	19.57	30.0	-10.4	
1732.60	18.32	H	4.3	9.5	23.51	30.0	-6.5	
High Ch								
1752.60	14.43	V	4.4	9.6	19.67	30.0	-10.3	
1752.60	17.91	H	4.4	9.6	23.15	30.0	-6.9	

WCDMA Band 2

WCDMA

Band 2
REL99

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788481138
Date: 2018-06-18
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: Rel99 Band 2 Fundamentals

Test Equpment:
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								
1852.40	17.60	V	4.5	9.5	22.59	33.0	-10.4	
1852.40	19.39	H	4.5	9.5	24.38	33.0	-8.6	
Mid Ch								
1880.00	18.69	V	4.5	9.2	23.37	33.0	-9.6	
1880.00	19.14	H	4.5	9.2	23.82	33.0	-9.2	
High Ch								
1907.60	16.52	V	4.6	8.9	20.86	33.0	-12.1	
1907.60	18.12	H	4.6	8.9	22.46	33.0	-10.5	

WCDMA

Band 2
HSDPA

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788481138
Date: 2018-06-18
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: HSDPA Band 2 Fundamentals

Test Equpment:
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								
1852.40	16.96	V	4.5	9.5	21.95	33.0	-11.1	
1852.40	18.66	H	4.5	9.5	23.65	33.0	-9.4	
Mid Ch								
1880.00	17.13	V	4.5	9.2	21.81	33.0	-11.2	
1880.00	18.58	H	4.5	9.2	23.26	33.0	-9.7	
High Ch								
1907.60	16.03	V	4.6	8.9	20.37	33.0	-12.6	
1907.60	16.75	H	4.6	8.9	21.09	33.0	-11.9	

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

LTE Band 2

LTE Band 2 20MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788481138
Date: 2018-06-08
Test Engineer: 45585
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 2 Fundamentals, 20MHz Bandwidth

Test Equpment:
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	16.04	V	4.5	9.4	20.94	33.0	-12.1	
1860.00	17.78	H	4.5	9.4	22.68	33.0	-10.3	
Mid Ch								
1880.00	16.33	V	4.5	9.2	21.01	33.0	-12.0	
1880.00	17.65	H	4.5	9.2	22.33	33.0	-10.7	
High Ch								
1900.00	16.25	V	4.6	9.0	20.71	33.0	-12.3	
1900.00	17.95	H	4.6	9.0	22.41	33.0	-10.6	

LTE Band 2 20MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788481138
Date: 2018-06-08
Test Engineer: 45585
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 2 Fundamentals, 20MHz Bandwidth

Test Equpment:
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	15.06	V	4.5	9.4	19.96	33.0	-13.0	
1860.00	16.79	H	4.5	9.4	21.69	33.0	-11.3	
Mid Ch								
1880.00	15.92	V	4.5	9.2	20.60	33.0	-12.4	
1880.00	16.99	H	4.5	9.2	21.67	33.0	-11.3	
High Ch								
1900.00	15.06	V	4.6	9.0	19.52	33.0	-13.5	
1900.00	16.74	H	4.6	9.0	21.20	33.0	-11.8	

LTE

Band 2

15MHz

QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788481138
Date: 2018-06-08
Test Engineer: 45585
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 2 Fundamentals, 15MHz Bandwidth

Test Equpment:
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	15.42	V	4.5	9.4	20.35	33.0	-12.7	
1857.50	17.90	H	4.5	9.4	22.83	33.0	-10.2	
Mid Ch								
1880.00	16.35	V	4.5	9.2	21.03	33.0	-12.0	
1880.00	17.69	H	4.5	9.2	22.37	33.0	-10.6	
High Ch								
1902.50	13.87	V	4.6	9.0	18.29	33.0	-14.7	
1902.50	17.14	H	4.6	9.0	21.55	33.0	-11.4	

LTE

Band 2

15MHz

16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788481138
Date: 2018-06-08
Test Engineer: 45585
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 2 Fundamentals, 15MHz Bandwidth

Test Equpment:
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	14.43	V	4.5	9.4	19.36	33.0	-13.6	
1857.50	17.03	H	4.5	9.4	21.96	33.0	-11.0	
Mid Ch								
1880.00	15.41	V	4.5	9.2	20.09	33.0	-12.9	
1880.00	16.42	H	4.5	9.2	21.10	33.0	-11.9	
High Ch								
1902.50	13.60	V	4.6	9.0	18.02	33.0	-15.0	
1902.50	16.12	H	4.6	9.0	20.53	33.0	-12.5	

LTE

Band 2

10MHz

QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788481138
Date: 2018-06-08
Test Engineer: 45585
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 2 Fundamentals, 10MHz Bandwidth

Test Equpment:
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	15.84	V	4.5	9.5	20.79	33.0	-12.2	
1855.00	17.59	H	4.5	9.5	22.55	33.0	-10.5	
Mid Ch								
1880.00	15.48	V	4.5	9.2	20.16	33.0	-12.8	
1880.00	17.78	H	4.5	9.2	22.46	33.0	-10.5	
High Ch								
1905.00	13.77	V	4.6	8.9	18.14	33.0	-14.9	
1905.00	16.47	H	4.6	8.9	20.85	33.0	-12.2	

LTE

Band 2

10MHz

16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788481138
Date: 2018-06-08
Test Engineer: 45585
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 2 Fundamentals, 10MHz Bandwidth

Test Equpment:
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	15.13	V	4.5	9.5	20.08	33.0	-12.9	
1855.00	16.50	H	4.5	9.5	21.46	33.0	-11.5	
Mid Ch								
1880.00	14.47	V	4.5	9.2	19.15	33.0	-13.9	
1880.00	16.33	H	4.5	9.2	21.01	33.0	-12.0	
High Ch								
1905.00	14.05	V	4.6	8.9	18.42	33.0	-14.6	
1905.00	16.30	H	4.6	8.9	20.68	33.0	-12.3	

LTE

Band 2

5MHz

QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788481138
Date: 2018-06-08
Test Engineer: 45585
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 2 Fundamentals, 5MHz Bandwidth

Test Equpment:
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	15.16	V	4.5	9.5	20.15	33.0	-12.9	
1852.50	17.38	H	4.5	9.5	22.37	33.0	-10.6	
Mid Ch								
1880.00	15.35	V	4.5	9.2	20.03	33.0	-13.0	
1880.00	17.38	H	4.5	9.2	22.06	33.0	-10.9	
High Ch								
1907.50	14.78	V	4.6	8.9	19.12	33.0	-13.9	
1907.50	17.02	H	4.6	8.9	21.36	33.0	-11.6	

LTE

Band 2

5MHz

16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788481138
Date: 2018-06-08
Test Engineer: 45585
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 2 Fundamentals, 5MHz Bandwidth

Test Equpment:
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	14.27	V	4.5	9.5	19.26	33.0	-13.7	
1852.50	16.49	H	4.5	9.5	21.48	33.0	-11.5	
Mid Ch								
1880.00	13.76	V	4.5	9.2	18.44	33.0	-14.6	
1880.00	16.02	H	4.5	9.2	20.70	33.0	-12.3	
High Ch								
1907.50	14.03	V	4.6	8.9	18.37	33.0	-14.6	
1907.50	16.16	H	4.6	8.9	20.50	33.0	-12.5	

LTE

Band 2

3MHz

QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788481138
Date: 2018-06-08
Test Engineer: 45585
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 2 Fundamentals, 3MHz Bandwidth

Test Equpment:
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								
1851.50	15.29	V	4.5	9.5	20.29	33.0	-12.7	
1851.50	16.89	H	4.5	9.5	21.89	33.0	-11.1	
Mid Ch								
1880.00	15.84	V	4.5	9.2	20.52	33.0	-12.5	
1880.00	17.20	H	4.5	9.2	21.88	33.0	-11.1	
High Ch								
1908.50	14.66	V	4.6	8.9	18.99	33.0	-14.0	
1908.50	17.06	H	4.6	8.9	21.38	33.0	-11.6	

LTE

Band 2

3MHz

16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788481138
Date: 2018-06-08
Test Engineer: 45585
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 2 Fundamentals, 3MHz Bandwidth

Test Equpment:
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								
1851.50	14.12	V	4.5	9.5	19.12	33.0	-13.9	
1851.50	16.34	H	4.5	9.5	21.34	33.0	-11.7	
Mid Ch								
1880.00	14.56	V	4.5	9.2	19.24	33.0	-13.8	
1880.00	15.74	H	4.5	9.2	20.42	33.0	-12.6	
High Ch								
1908.50	13.77	V	4.6	8.9	18.10	33.0	-14.9	
1908.50	15.87	H	4.6	8.9	20.19	33.0	-12.8	

LTE

Band 2

1.4MHz

QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788481138
Date: 2018-06-08
Test Engineer: 45585
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 2 Fundamentals, 1.4MHz Bandwidth

Test Equpment:
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	14.24	V	4.5	9.5	19.24	33.0	-13.8	
1850.70	16.59	H	4.5	9.5	21.60	33.0	-11.4	
Mid Ch								
1880.00	15.30	V	4.5	9.2	19.98	33.0	-13.0	
1880.00	17.41	H	4.5	9.2	22.09	33.0	-10.9	
High Ch								
1909.30	15.06	V	4.6	8.9	19.37	33.0	-13.6	
1909.30	17.10	H	4.6	8.9	21.41	33.0	-11.6	

LTE

Band 2

1.4MHz

16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788481138
Date: 2018-06-08
Test Engineer: 45585
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 2 Fundamentals, 1.4MHz Bandwidth

Test Equpment:
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	13.23	V	4.5	9.5	18.23	33.0	-14.8	
1850.70	15.78	H	4.5	9.5	20.79	33.0	-12.2	
Mid Ch								
1880.00	14.12	V	4.5	9.2	18.80	33.0	-14.2	
1880.00	16.55	H	4.5	9.2	21.23	33.0	-11.8	
High Ch								
1909.30	14.27	V	4.6	8.9	18.58	33.0	-14.4	
1909.30	16.12	H	4.6	8.9	20.43	33.0	-12.6	

LTE Band 4

LTE Band 4 20MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788481138
Date: 2018-06-15
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 4 Fundamentals, 20MHz Bandwidth

Test Equpment:
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	16.76	V	4.3	9.5	21.93	30.0	-8.1	
1720.00	19.18	H	4.3	9.5	24.35	30.0	-5.7	
Mid Ch								
1732.50	17.13	V	4.3	9.5	22.32	30.0	-7.7	
1732.50	19.68	H	4.3	9.5	24.88	30.0	-5.1	
High Ch								
1745.00	17.39	V	4.4	9.6	22.61	30.0	-7.4	
1745.00	19.53	H	4.4	9.6	24.75	30.0	-5.2	

LTE Band 4 20MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788481138
Date: 2018-06-15
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 4 Fundamentals, 20MHz Bandwidth

Test Equpment:
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	15.44	V	4.3	9.5	20.61	30.0	-9.4	
1720.00	18.95	H	4.3	9.5	24.12	30.0	-5.9	
Mid Ch								
1732.50	16.40	V	4.3	9.5	21.59	30.0	-8.4	
1732.50	18.85	H	4.3	9.5	24.05	30.0	-6.0	
High Ch								
1745.00	16.47	V	4.4	9.6	21.69	30.0	-8.3	
1745.00	19.02	H	4.4	9.6	24.24	30.0	-5.8	

LTE

Band 4

15MHz

QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788481138
Date: 2018-06-15
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 4 Fundamentals, 15MHz Bandwidth

Test Equpment:
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	17.10	V	4.3	9.5	22.27	30.0	-7.7	
1717.50	19.35	H	4.3	9.5	24.52	30.0	-5.5	
Mid Ch								
1732.50	16.77	V	4.3	9.5	21.96	30.0	-8.0	
1732.50	19.44	H	4.3	9.5	24.64	30.0	-5.4	
High Ch								
1747.50	16.63	V	4.4	9.6	21.85	30.0	-8.1	
1747.50	19.80	H	4.4	9.6	25.03	30.0	-5.0	

LTE

Band 4

15MHz

16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788481138
Date: 2018-06-15
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 4 Fundamentals, 15MHz Bandwidth

Test Equpment:
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	16.13	V	4.3	9.5	21.30	30.0	-8.7	
1717.50	18.10	H	4.3	9.5	23.27	30.0	-6.7	
Mid Ch								
1732.50	15.52	V	4.3	9.5	20.71	30.0	-9.3	
1732.50	18.06	H	4.3	9.5	23.26	30.0	-6.7	
High Ch								
1747.50	16.02	V	4.4	9.6	21.24	30.0	-8.8	
1747.50	18.35	H	4.4	9.6	23.58	30.0	-6.4	

LTE

Band 4

10MHz

QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788481138
Date: 2018-06-15
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 4 Fundamentals, 10MHz Bandwidth

Test Equpment:
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								
1715.00	16.66	V	4.3	9.5	21.82	30.0	-8.2	
1715.00	19.14	H	4.3	9.5	24.29	30.0	-5.7	
Mid Ch								
1732.50	17.17	V	4.3	9.5	22.36	30.0	-7.6	
1732.50	18.58	H	4.3	9.5	23.78	30.0	-6.2	
High Ch								
1750.00	16.69	V	4.4	9.6	21.92	30.0	-8.1	
1750.00	18.47	H	4.4	9.6	23.70	30.0	-6.3	

LTE

Band 4

10MHz

16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788481138
Date: 2018-06-15
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 4 Fundamentals, 10MHz Bandwidth

Test Equpment:
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								
1715.00	15.58	V	4.3	9.5	20.74	30.0	-9.3	
1715.00	17.88	H	4.3	9.5	23.03	30.0	-7.0	
Mid Ch								
1732.50	15.34	V	4.3	9.5	20.53	30.0	-9.5	
1732.50	17.37	H	4.3	9.5	22.57	30.0	-7.4	
High Ch								
1750.00	16.48	V	4.4	9.6	21.71	30.0	-8.3	
1750.00	17.46	H	4.4	9.6	22.69	30.0	-7.3	

LTE

Band 4

5MHz

QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788481138
Date: 2018-06-15
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 4 Fundamentals, 5MHz Bandwidth

Test Equpment:
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								
1712.50	15.97	V	4.3	9.5	21.12	30.0	-8.9	
1712.50	16.84	H	4.3	9.5	21.99	30.0	-8.0	
Mid Ch								
1732.50	16.65	V	4.3	9.5	21.84	30.0	-8.2	
1732.50	18.94	H	4.3	9.5	24.14	30.0	-5.9	
High Ch								
1752.50	17.18	V	4.4	9.6	22.41	30.0	-7.6	
1752.50	19.56	H	4.4	9.6	24.80	30.0	-5.2	

LTE

Band 4

5MHz

16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788481138
Date: 2018-06-15
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 4 Fundamentals, 5MHz Bandwidth

Test Equpment:
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								
1712.50	15.04	V	4.3	9.5	20.19	30.0	-9.8	
1712.50	15.58	H	4.3	9.5	20.73	30.0	-9.3	
Mid Ch								
1732.50	15.18	V	4.3	9.5	20.37	30.0	-9.6	
1732.50	17.29	H	4.3	9.5	22.49	30.0	-7.5	
High Ch								
1752.50	16.33	V	4.4	9.6	21.56	30.0	-8.4	
1752.50	18.48	H	4.4	9.6	23.72	30.0	-6.3	

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LTE

Band 4

3MHz

QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788481138
Date: 2018-06-15
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 4 Fundamentals, 3MHz Bandwidth

Test Equpment:
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								
1711.50	15.68	V	4.3	9.5	20.84	30.0	-9.2	
1711.50	18.99	H	4.3	9.5	24.14	30.0	-5.9	
Mid Ch								
1732.50	16.80	V	4.3	9.5	21.99	30.0	-8.0	
1732.50	18.17	H	4.3	9.5	23.37	30.0	-6.6	
High Ch								
1753.50	16.60	V	4.4	9.6	21.84	30.0	-8.2	
1753.50	18.33	H	4.4	9.6	23.57	30.0	-6.4	

LTE

Band 4

3MHz

16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788481138
Date: 2018-06-15
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 4 Fundamentals, 3MHz Bandwidth

Test Equpment:
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								
1711.50	14.94	V	4.3	9.5	20.10	30.0	-9.9	
1711.50	18.60	H	4.3	9.5	23.75	30.0	-6.2	
Mid Ch								
1732.50	15.36	V	4.3	9.5	20.55	30.0	-9.4	
1732.50	16.66	H	4.3	9.5	21.86	30.0	-8.1	
High Ch								
1753.50	15.21	V	4.4	9.6	20.45	30.0	-9.5	
1753.50	17.29	H	4.4	9.6	22.53	30.0	-7.5	

LTE

Band 4

1.4MHz

QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788481138
Date: 2018-06-16
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 4 Fundamentals, 1.4MHz Bandwidth

Test Equpment:
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								
1710.70	16.67	V	4.3	9.5	21.82	30.0	-8.2	
1710.70	20.11	H	4.3	9.5	25.26	30.0	-4.7	
Mid Ch								
1732.50	16.66	V	4.3	9.5	21.85	30.0	-8.1	
1732.50	19.69	H	4.3	9.5	24.89	30.0	-5.1	
High Ch								
1754.30	17.32	V	4.4	9.6	22.56	30.0	-7.4	
1754.30	20.67	H	4.4	9.6	25.91	30.0	-4.1	

LTE

Band 4

1.4MHz

16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788481138
Date: 2018-06-16
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 4 Fundamentals, 1.4MHz Bandwidth

Test Equpment:
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								
1710.70	15.89	V	4.3	9.5	21.04	30.0	-9.0	
1710.70	19.01	H	4.3	9.5	24.16	30.0	-5.8	
Mid Ch								
1732.50	16.11	V	4.3	9.5	21.30	30.0	-8.7	
1732.50	18.54	H	4.3	9.5	23.74	30.0	-6.3	
High Ch								
1754.30	16.19	V	4.4	9.6	21.43	30.0	-8.6	
1754.30	18.92	H	4.4	9.6	24.16	30.0	-5.8	

LTE Band 5

LTE
Band 5
10MHz
QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788481138
Date: 2018-06-16
Test Engineer: 51072
Configuration: EUT / X-position
Location: Chamber 2
Mode: LTE_QPSK Band 5 Fundamentals, 10MHz Bandwidth

Test Equpment:
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								
829.00	19.74	V	1.0	-1.5	17.33	38.5	-21.2	
829.00	25.55	H	1.0	-1.5	23.14	38.5	-15.4	
Mid Ch								
836.50	19.71	V	1.0	-1.4	17.33	38.5	-21.2	
836.50	25.40	H	1.0	-1.4	23.02	38.5	-15.5	
High Ch								
844.00	19.40	V	1.0	-1.4	17.05	38.5	-21.5	
844.00	25.52	H	1.0	-1.4	23.16	38.5	-15.3	

LTE
Band 5
10MHz
16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788481138
Date: 2018-06-16
Test Engineer: 51072
Configuration: EUT / X-position
Location: Chamber 2
Mode: LTE_16QAM Band 5 Fundamentals, 10MHz Bandwidth

Test Equpment:
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								
829.00	19.60	V	1.0	-1.5	17.19	38.5	-21.3	
829.00	24.78	H	1.0	-1.5	22.37	38.5	-16.1	
Mid Ch								
836.50	17.88	V	1.0	-1.4	15.50	38.5	-23.0	
836.50	23.95	H	1.0	-1.4	21.57	38.5	-16.9	
High Ch								
844.00	18.52	V	1.0	-1.4	16.17	38.5	-22.3	
844.00	23.96	H	1.0	-1.4	21.60	38.5	-16.9	

LTE

Band 5

5MHz

QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788481138
Date: 2018-06-16
Test Engineer: 51072
Configuration: EUT , X-position
Location: Chamber 2
Mode: LTE_QPSK Band 5 Fundamentals, 1.4MHz Bandwidth

Test Equpment:
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								
824.70	19.27	V	1.0	-1.5	16.84	38.5	-21.7	
824.70	25.09	H	1.0	-1.5	22.66	38.5	-15.8	
Mid Ch								
836.50	20.66	V	1.0	-1.4	18.28	38.5	-20.2	
836.50	26.22	H	1.0	-1.4	23.84	38.5	-14.7	
High Ch								
848.30	19.96	V	1.0	-1.4	17.61	38.5	-20.9	
848.30	25.22	H	1.0	-1.4	22.87	38.5	-15.6	

LTE

Band 5

5MHz

16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788481138
Date: 2018-06-16
Test Engineer: 51072
Configuration: EUT / X-position
Location: Chamber 2
Mode: LTE_16QAM Band 5 Fundamentals, 5MHz Bandwidth

Test Equpment:
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								
826.50	17.90	V	1.0	-1.5	15.48	38.5	-23.0	
826.50	23.55	H	1.0	-1.5	21.13	38.5	-17.4	
Mid Ch								
836.50	19.35	V	1.0	-1.4	16.97	38.5	-21.5	
836.50	24.79	H	1.0	-1.4	22.41	38.5	-16.1	
High Ch								
846.50	18.52	V	1.0	-1.4	16.17	38.5	-22.3	
846.50	23.86	H	1.0	-1.4	21.51	38.5	-17.0	

LTE

Band 5

3MHz

QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788481138
Date: 2018-06-16
Test Engineer: 51072
Configuration: EUT , X-position
Location: Chamber 2
Mode: LTE_QPSK Band 5 Fundamentals, 3MHz Bandwidth

Test Equpment:
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								
825.50	21.26	V	1.0	-1.5	18.84	38.5	-19.7	
825.50	25.93	H	1.0	-1.5	23.51	38.5	-15.0	
Mid Ch								
836.50	20.73	V	1.0	-1.4	18.35	38.5	-20.2	
836.50	26.17	H	1.0	-1.4	23.79	38.5	-14.7	
High Ch								
847.50	20.36	V	1.0	-1.4	18.02	38.5	-20.5	
847.50	25.43	H	1.0	-1.4	23.08	38.5	-15.4	

LTE

Band 5

3MHz

16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788481138
Date: 2018-06-16
Test Engineer: 51072
Configuration: EUT / X-position
Location: Chamber 2
Mode: LTE_16QAM Band 5 Fundamentals, 3MHz Bandwidth

Test Equpment:
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								
825.50	19.98	V	1.0	-1.5	17.56	38.5	-20.9	
825.50	24.79	H	1.0	-1.5	22.37	38.5	-16.1	
Mid Ch								
836.50	19.13	V	1.0	-1.4	16.75	38.5	-21.8	
836.50	24.92	H	1.0	-1.4	22.54	38.5	-16.0	
High Ch								
847.50	19.56	V	1.0	-1.4	17.22	38.5	-21.3	
847.50	24.49	H	1.0	-1.4	22.14	38.5	-16.4	

LTE

Band 5

1.4MHz

QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788481138
Date: 2018-06-16
Test Engineer: 51072
Configuration: EUT / X-position
Location: Chamber 2
Mode: LTE_QPSK Band 5 Fundamentals, 1.4MHz Bandwidth

Test Equpment:
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								
824.70	21.08	V	1.0	-1.5	18.65	38.5	-19.8	
824.70	25.98	H	1.0	-1.5	23.55	38.5	-14.9	
Mid Ch								
836.50	18.99	V	1.0	-1.4	16.61	38.5	-21.9	
836.50	26.50	H	1.0	-1.4	24.12	38.5	-14.4	
High Ch								
848.30	20.28	V	1.0	-1.4	17.93	38.5	-20.6	
848.30	25.00	H	1.0	-1.4	22.65	38.5	-15.8	

LTE

Band 5

1.4MHz

16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788481138
Date: 2018-06-16
Test Engineer: 51072
Configuration: EUT / X-position
Location: Chamber 2
Mode: LTE_16QAM Band 5 Fundamentals, 1.4MHz Bandwidth

Test Equpment:
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								
824.70	20.09	V	1.0	-1.5	17.66	38.5	-20.8	
824.70	24.87	H	1.0	-1.5	22.44	38.5	-16.1	
Mid Ch								
836.50	17.77	V	1.0	-1.4	15.39	38.5	-23.1	
836.50	25.59	H	1.0	-1.4	23.21	38.5	-15.3	
High Ch								
848.30	18.41	V	1.0	-1.4	16.06	38.5	-22.4	
848.30	23.78	H	1.0	-1.4	21.43	38.5	-17.1	

LTE Band 7

LTE Band 7 20MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788481138
Date: 2018-06-18
Test Engineer: 45585
Configuration: EUT / Z-Position
Location: Chamber 1
Mode: LTE_QPSK Band 7 Fundamentals, 20MHz Bandwidth

Test Equpment:
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								
2510.00	14.67	V	5.3	10.3	19.59	33.0	-13.4	
2510.00	16.90	H	5.3	10.3	21.83	33.0	-11.2	
Mid Ch								
2535.00	14.44	V	5.4	10.2	19.28	33.0	-13.7	
2535.00	15.63	H	5.4	10.2	20.48	33.0	-12.5	
High Ch								
2560.00	13.71	V	5.4	10.2	18.48	33.0	-14.5	
2560.00	15.55	H	5.4	10.2	20.32	33.0	-12.7	

LTE Band 7 20MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788481138
Date: 2018-06-18
Test Engineer: 45585
Configuration: EUT / Z-Position
Location: Chamber 1
Mode: LTE_16QAM Band 7 Fundamentals, 20MHz Bandwidth

Test Equpment:
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								
2510.00	13.73	V	5.3	10.3	18.65	33.0	-14.3	
2510.00	14.83	H	5.3	10.3	19.76	33.0	-13.2	
Mid Ch								
2535.00	13.28	V	5.4	10.2	18.12	33.0	-14.9	
2535.00	14.56	H	5.4	10.2	19.41	33.0	-13.6	
High Ch								
2560.00	12.59	V	5.4	10.2	17.36	33.0	-15.6	
2560.00	13.82	H	5.4	10.2	18.59	33.0	-14.4	

LTE

Band 7

15MHz

QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788481138
Date: 2018-06-18
Test Engineer: 45585
Configuration: EUT / Z-Position
Location: Chamber 1
Mode: LTE_QPSK Band 7 Fundamentals, 15MHz Bandwidth

Test Equpment:
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								
2507.50	14.58	V	5.3	10.3	19.52	33.0	-13.5	
2507.50	17.04	H	5.3	10.3	21.98	33.0	-11.0	
Mid Ch								
2535.00	14.56	V	5.4	10.2	19.40	33.0	-13.6	
2535.00	15.32	H	5.4	10.2	20.17	33.0	-12.8	
High Ch								
2562.50	13.99	V	5.4	10.1	18.75	33.0	-14.2	
2562.50	14.85	H	5.4	10.1	19.61	33.0	-13.4	

LTE

Band 7

15MHz

16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788481138
Date: 2018-06-18
Test Engineer: 45585
Configuration: EUT / Z-Position
Location: Chamber 1
Mode: LTE_16QAM Band 7 Fundamentals, 15MHz Bandwidth

Test Equpment:
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								
2507.50	14.07	V	5.3	10.3	19.01	33.0	-14.0	
2507.50	15.30	H	5.3	10.3	20.24	33.0	-12.8	
Mid Ch								
2535.00	13.59	V	5.4	10.2	18.43	33.0	-14.6	
2535.00	13.92	H	5.4	10.2	18.77	33.0	-14.2	
High Ch								
2562.50	13.71	V	5.4	10.1	18.47	33.0	-14.5	
2562.50	14.43	H	5.4	10.1	19.19	33.0	-13.8	

LTE

Band 7

10MHz

QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788481138
Date: 2018-06-18
Test Engineer: 45585
Configuration: EUT / Z-Position
Location: Chamber 1
Mode: LTE_QPSK Band 7 Fundamentals, 10MHz Bandwidth

Test Equpment:
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								
2505.00	14.74	V	5.3	10.3	19.69	33.0	-13.3	
2505.00	16.41	H	5.3	10.3	21.36	33.0	-11.6	
Mid Ch								
2535.00	15.00	V	5.4	10.2	19.84	33.0	-13.2	
2535.00	15.50	H	5.4	10.2	20.35	33.0	-12.7	
High Ch								
2565.00	13.67	V	5.4	10.1	18.42	33.0	-14.6	
2565.00	14.81	H	5.4	10.1	19.56	33.0	-13.4	

LTE

Band 7

10MHz

16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788481138
Date: 2018-06-18
Test Engineer: 45585
Configuration: EUT / Z-Position
Location: Chamber 1
Mode: LTE_16QAM Band 7 Fundamentals, 10MHz Bandwidth

Test Equpment:
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								
2505.00	14.11	V	5.3	10.3	19.06	33.0	-13.9	
2505.00	15.25	H	5.3	10.3	20.20	33.0	-12.8	
Mid Ch								
2535.00	13.42	V	5.4	10.2	18.26	33.0	-14.7	
2535.00	14.27	H	5.4	10.2	19.12	33.0	-13.9	
High Ch								
2565.00	12.89	V	5.4	10.1	17.64	33.0	-15.4	
2565.00	13.99	H	5.4	10.1	18.74	33.0	-14.3	

LTE

Band 7

5MHz

QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788481138
Date: 2018-06-18
Test Engineer: 45585
Configuration: EUT / Z-Position
Location: Chamber 1
Mode: LTE_QPSK Band 7 Fundamentals, 5MHz Bandwidth

Test Equpment:
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								
2502.50	14.53	V	5.3	10.3	19.48	33.0	-13.5	
2502.50	15.73	H	5.3	10.3	20.69	33.0	-12.3	
Mid Ch								
2535.00	14.68	V	5.4	10.2	19.52	33.0	-13.5	
2535.00	15.84	H	5.4	10.2	20.69	33.0	-12.3	
High Ch								
2567.50	13.43	V	5.4	10.1	18.18	33.0	-14.8	
2567.50	14.56	H	5.4	10.1	19.30	33.0	-13.7	

LTE

Band 7

5MHz

16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788481138
Date: 2018-06-18
Test Engineer: 45585
Configuration: EUT / Z-Position
Location: Chamber 1
Mode: LTE_16QAM Band 7 Fundamentals, 5MHz Bandwidth

Test Equpment:
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								
2502.50	13.02	V	5.3	10.3	17.97	33.0	-15.0	
2502.50	14.86	H	5.3	10.3	19.82	33.0	-13.2	
Mid Ch								
2535.00	13.08	V	5.4	10.2	17.92	33.0	-15.1	
2535.00	14.39	H	5.4	10.2	19.24	33.0	-13.8	
High Ch								
2567.50	12.48	V	5.4	10.1	17.23	33.0	-15.8	
2567.50	13.81	H	5.4	10.1	18.55	33.0	-14.4	

LTE Band 12

LTE Band 12 10MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788549592
Date: 2018-07-23
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 12 Fundamentals, 10MHz Bandwidth

Test Equpment:
Receiving: VULB9163-750, and Chamber 1 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	15.85	V	0.9	-1.6	13.38	34.8	-21.4	
704.00	20.73	H	0.9	-1.6	18.26	34.8	-16.5	
Mid Ch								
707.50	15.80	V	0.9	-1.6	13.33	34.8	-21.5	
707.50	21.17	H	0.9	-1.6	18.70	34.8	-16.1	
High Ch								
711.00	15.74	V	0.9	-1.6	13.27	34.8	-21.5	
711.00	20.83	H	0.9	-1.6	18.35	34.8	-16.4	

LTE Band 12 10MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788549592
Date: 2018-07-23
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 12 Fundamentals, 10MHz Bandwidth

Test Equpment:
Receiving: VULB9163-750, and Chamber 1 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	14.38	V	0.9	-1.6	11.91	34.8	-22.9	
704.00	19.49	H	0.9	-1.6	17.02	34.8	-17.8	
Mid Ch								
707.50	14.62	V	0.9	-1.6	12.15	34.8	-22.7	
707.50	19.50	H	0.9	-1.6	17.03	34.8	-17.8	
High Ch								
711.00	14.66	V	0.9	-1.6	12.19	34.8	-22.6	
711.00	19.03	H	0.9	-1.6	16.55	34.8	-18.2	

LTE

Band 12

5MHz

QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788549592
Date: 2018-07-23
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 12 Fundamentals, 5MHz Bandwidth

Test Equpment:
Receiving: VULB9163-750, and Chamber 1 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	15.45	V	0.9	-1.6	12.98	34.8	-21.8	
701.50	20.51	H	0.9	-1.6	18.05	34.8	-16.8	
Mid Ch								
707.50	15.57	V	0.9	-1.6	13.10	34.8	-21.7	
707.50	20.89	H	0.9	-1.6	18.42	34.8	-16.4	
High Ch								
713.50	15.12	V	0.9	-1.6	12.64	34.8	-22.2	
713.50	20.85	H	0.9	-1.6	18.37	34.8	-16.4	

LTE

Band 12

5MHz

16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788549592
Date: 2018-07-23
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 12 Fundamentals, 5MHz Bandwidth

Test Equpment:
Receiving: VULB9163-750, and Chamber 1 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	14.75	V	0.9	-1.6	12.28	34.8	-22.5	
701.50	19.59	H	0.9	-1.6	17.13	34.8	-17.7	
Mid Ch								
707.50	13.93	V	0.9	-1.6	11.46	34.8	-23.3	
707.50	19.62	H	0.9	-1.6	17.15	34.8	-17.6	
High Ch								
713.50	14.22	V	0.9	-1.6	11.74	34.8	-23.1	
713.50	20.00	H	0.9	-1.6	17.52	34.8	-17.3	

LTE

Band 12

3MHz

QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788549592
Date: 2018-07-23
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 12 Fundamentals, 3MHz Bandwidth

Test Equpment:
Receiving: VULB9163-750, and Chamber 1 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								
700.50	15.51	V	0.9	-1.6	13.04	34.8	-21.8	
700.50	20.16	H	0.9	-1.6	17.70	34.8	-17.1	
Mid Ch								
707.50	15.44	V	0.9	-1.6	12.97	34.8	-21.8	
707.50	21.16	H	0.9	-1.6	18.69	34.8	-16.1	
High Ch								
714.50	15.90	V	0.9	-1.6	13.43	34.8	-21.4	
714.50	20.98	H	0.9	-1.6	18.50	34.8	-16.3	

LTE

Band 12

3MHz

16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788549592
Date: 2018-07-23
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 12 Fundamentals, 3MHz Bandwidth

Test Equpment:
Receiving: VULB9163-750, and Chamber 1 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								
700.50	14.55	V	0.9	-1.6	12.08	34.8	-22.7	
700.50	19.66	H	0.9	-1.6	17.20	34.8	-17.6	
Mid Ch								
707.50	15.08	V	0.9	-1.6	12.61	34.8	-22.2	
707.50	19.28	H	0.9	-1.6	16.81	34.8	-18.0	
High Ch								
714.50	14.16	V	0.9	-1.6	11.69	34.8	-23.1	
714.50	19.99	H	0.9	-1.6	17.51	34.8	-17.3	

LTE

Band 12

1.4MHz

QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788549592
Date: 2018-07-23
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 12 Fundamentals, 1.4MHz Bandwidth

Test Equpment:
Receiving: VULB9163-750, and Chamber 1 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	15.51	V	0.9	-1.6	13.04	34.8	-21.8	
699.70	20.70	H	0.9	-1.6	18.23	34.8	-16.6	
Mid Ch								
707.50	16.01	V	0.9	-1.6	13.54	34.8	-21.3	
707.50	20.97	H	0.9	-1.6	18.50	34.8	-16.3	
High Ch								
715.30	16.13	V	0.9	-1.6	13.65	34.8	-21.2	
715.30	22.31	H	0.9	-1.6	19.84	34.8	-15.0	

LTE

Band 12

1.4MHz

16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788549592
Date: 2018-07-23
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 12 Fundamentals, 1.4MHz Bandwidth

Test Equpment:
Receiving: VULB9163-750, and Chamber 1 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	14.75	V	0.9	-1.6	12.28	34.8	-22.5	
699.70	20.28	H	0.9	-1.6	17.81	34.8	-17.0	
Mid Ch								
707.50	14.68	V	0.9	-1.6	12.21	34.8	-22.6	
707.50	19.67	H	0.9	-1.6	17.20	34.8	-17.6	
High Ch								
715.30	15.38	V	0.9	-1.6	12.90	34.8	-21.9	
715.30	21.79	H	0.9	-1.6	19.32	34.8	-15.5	

LTE Band 66

LTE Band 66 20MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788549592
Date: 2018-07-24
Test Engineer: 45585
Configuration: EUT / X-Position
Location: Chamber 2
Mode: LTE_QPSK Band 66 Fundamentals, 20MHz Bandwidth

Test Equpment:
Receiving: Horn 3117[00168724], and Chamber 2 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	16.34	V	4.3	9.5	21.51	30.0	-8.5	
1720.00	19.52	H	4.3	9.5	24.69	30.0	-5.3	
Mid Ch								
1745.00	15.25	V	4.4	9.6	20.47	30.0	-9.5	
1745.00	19.69	H	4.4	9.6	24.91	30.0	-5.1	
High Ch								
1770.00	15.60	V	4.4	9.6	20.83	30.0	-9.2	
1770.00	19.47	H	4.4	9.6	24.70	30.0	-5.3	

LTE Band 66 20MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788549592
Date: 2018-07-24
Test Engineer: 45585
Configuration: EUT / X-Position
Location: Chamber 2
Mode: LTE_16QAM Band 66 Fundamentals, 20MHz Bandwidth

Test Equpment:
Receiving: Horn 3117[00168724], and Chamber 2 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	12.72	V	4.3	9.5	17.89	30.0	-12.1	
1720.00	19.14	H	4.3	9.5	24.31	30.0	-5.7	
Mid Ch								
1745.00	11.16	V	4.4	9.6	16.38	30.0	-13.6	
1745.00	19.36	H	4.4	9.6	24.58	30.0	-5.4	
High Ch								
1770.00	14.90	V	4.4	9.6	20.13	30.0	-9.9	
1770.00	20.12	H	4.4	9.6	25.35	30.0	-4.6	

LTE

Band 66

15MHz

QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788549592
Date: 2018-07-24
Test Engineer: 51072
Configuration: EUT / X-position
Location: Chamber 2
Mode: LTE_QPSK Band 66 Fundamentals, 15MHz Bandwidth

Test Equpment:
Receiving: Horn 3117[00168724], and Chamber 2 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	13.69	V	4.3	9.5	18.86	30.0	-11.1	
1717.50	19.60	H	4.3	9.5	24.76	30.0	-5.2	
Mid Ch								
1745.00	15.81	V	4.4	9.6	21.03	30.0	-9.0	
1745.00	20.14	H	4.4	9.6	25.36	30.0	-4.6	
High Ch								
1772.50	16.54	V	4.4	9.6	21.78	30.0	-8.2	
1772.50	19.31	H	4.4	9.6	24.55	30.0	-5.5	

LTE

Band 66

15MHz

16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788549592
Date: 2018-07-24
Test Engineer: 51072
Configuration: EUT / X-position
Location: Chamber 2
Mode: LTE_16QAM Band 66 Fundamentals, 15MHz Bandwidth

Test Equpment:
Receiving: Horn 3117[00168724], and Chamber 2 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	13.03	V	4.3	9.5	18.20	30.0	-11.8	
1717.50	18.79	H	4.3	9.5	23.95	30.0	-6.0	
Mid Ch								
1745.00	14.32	V	4.4	9.6	19.54	30.0	-10.5	
1745.00	18.93	H	4.4	9.6	24.15	30.0	-5.9	
High Ch								
1772.50	16.10	V	4.4	9.6	21.34	30.0	-8.7	
1772.50	19.40	H	4.4	9.6	24.64	30.0	-5.4	

LTE

Band 66

10MHz

QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788549592
Date: 2018-07-24
Test Engineer: 51072
Configuration: EUT / X-position
Location: Chamber 2
Mode: LTE_QPSK Band 66 Fundamentals, 10MHz Bandwidth

Test Equpment:
Receiving: Horn 3117[00168724], and Chamber 2 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								
1715.00	15.53	V	4.3	9.5	20.69	30.0	-9.3	
1715.00	19.65	H	4.3	9.5	24.81	30.0	-5.2	
Mid Ch								
1745.00	13.94	V	4.4	9.6	19.16	30.0	-10.8	
1745.00	20.34	H	4.4	9.6	25.56	30.0	-4.4	
High Ch								
1775.00	14.32	V	4.4	9.6	19.56	30.0	-10.4	
1775.00	18.90	H	4.4	9.6	24.14	30.0	-5.9	

LTE

Band 66

10MHz

16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788549592
Date: 2018-07-24
Test Engineer: 51072
Configuration: EUT / X-position
Location: Chamber 2
Mode: LTE_16QAM Band 66 Fundamentals, 10MHz Bandwidth

Test Equpment:
Receiving: Horn 3117[00168724], and Chamber 2 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								
1715.00	15.13	V	4.3	9.5	20.29	30.0	-9.7	
1715.00	19.03	H	4.3	9.5	24.19	30.0	-5.8	
Mid Ch								
1745.00	13.08	V	4.4	9.6	18.30	30.0	-11.7	
1745.00	19.14	H	4.4	9.6	24.36	30.0	-5.6	
High Ch								
1775.00	13.18	V	4.4	9.6	18.42	30.0	-11.6	
1775.00	17.91	H	4.4	9.6	23.15	30.0	-6.9	

LTE

Band 66

5MHz

QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788549592
Date: 2018-07-24
Test Engineer: 51072
Configuration: EUT / X-position
Location: Chamber 2
Mode: LTE_QPSK Band 66 Fundamentals, 5MHz Bandwidth

Test Equpment:
Receiving: Horn 3117[00168724], and Chamber 2 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								
1712.50	11.18	V	4.3	9.5	16.34	30.0	-13.7	
1712.50	19.90	H	4.3	9.5	25.05	30.0	-5.0	
Mid Ch								
1745.00	14.25	V	4.4	9.6	19.47	30.0	-10.5	
1745.00	19.57	H	4.4	9.6	24.79	30.0	-5.2	
High Ch								
1777.50	14.32	V	4.4	9.6	19.55	30.0	-10.4	
1777.50	19.50	H	4.4	9.6	24.74	30.0	-5.3	

LTE

Band 66

5MHz

16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788549592
Date: 2018-07-24
Test Engineer: 51072
Configuration: EUT / X-position
Location: Chamber 2
Mode: LTE_16QAM Band 66 Fundamentals, 5MHz Bandwidth

Test Equpment:
Receiving: Horn 3117[00168724], and Chamber 2 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								
1712.50	10.17	V	4.3	9.5	15.33	30.0	-14.7	
1712.50	18.65	H	4.3	9.5	23.80	30.0	-6.2	
Mid Ch								
1745.00	12.74	V	4.4	9.6	17.96	30.0	-12.0	
1745.00	17.94	H	4.4	9.6	23.16	30.0	-6.8	
High Ch								
1777.50	12.93	V	4.4	9.6	18.16	30.0	-11.8	
1777.50	18.60	H	4.4	9.6	23.84	30.0	-6.2	

LTE

Band 66

3MHz

QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788549592
Date: 2018-07-24
Test Engineer: 51072
Configuration: EUT / X-position
Location: Chamber 2
Mode: LTE_QPSK Band 66 Fundamentals, 3MHz Bandwidth

Test Equpment:
Receiving: Horn 3117[00168724], and Chamber 2 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								
1711.50	12.78	V	4.3	9.5	17.93	30.0	-12.1	
1711.50	19.96	H	4.3	9.5	25.11	30.0	-4.9	
Mid Ch								
1745.00	14.94	V	4.4	9.6	20.16	30.0	-9.8	
1745.00	20.21	H	4.4	9.6	25.43	30.0	-4.6	
High Ch								
1778.50	18.24	V	4.4	9.6	23.48	30.0	-6.5	
1778.50	19.84	H	4.4	9.6	25.07	30.0	-4.9	

LTE

Band 66

3MHz

16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788549592
Date: 2018-07-24
Test Engineer: 51072
Configuration: EUT / X-position
Location: Chamber 2
Mode: LTE_16QAM Band 66 Fundamentals, 3MHz Bandwidth

Test Equpment:
Receiving: Horn 3117[00168724], and Chamber 2 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								
1711.50	10.80	V	4.3	9.5	15.95	30.0	-14.1	
1711.50	19.28	H	4.3	9.5	24.43	30.0	-5.6	
Mid Ch								
1745.00	13.21	V	4.4	9.6	18.43	30.0	-11.6	
1745.00	18.67	H	4.4	9.6	23.89	30.0	-6.1	
High Ch								
1778.50	16.79	V	4.4	9.6	22.03	30.0	-8.0	
1778.50	18.66	H	4.4	9.6	23.89	30.0	-6.1	

LTE

Band 66

1.4MHz

QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788549592
Date: 2018-07-24
Test Engineer: 51072
Configuration: EUT / X-position
Location: Chamber 2
Mode: LTE_QPSK Band 66 Fundamentals, 1.4MHz Bandwidth

Test Equpment:
Receiving: Horn 3117[00168724], and Chamber 2 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								
1710.70	11.42	V	4.3	9.5	16.56	30.0	-13.4	
1710.70	20.01	H	4.3	9.5	25.15	30.0	-4.8	
Mid Ch								
1745.00	14.72	V	4.4	9.6	19.94	30.0	-10.1	
1745.00	20.20	H	4.4	9.6	25.42	30.0	-4.6	
High Ch								
1779.30	18.04	V	4.4	9.6	23.28	30.0	-6.7	
1779.30	19.65	H	4.4	9.6	24.89	30.0	-5.1	

LTE

Band 66

1.4MHz

16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788549592
Date: 2018-07-24
Test Engineer: 51072
Configuration: EUT / X-position
Location: Chamber 2
Mode: LTE_16QAM Band 66 Fundamentals, 1.4MHz Bandwidth

Test Equpment:
Receiving: Horn 3117[00168724], and Chamber 2 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								
1710.70	10.90	V	4.3	9.5	16.04	30.0	-14.0	
1710.70	19.42	H	4.3	9.5	24.56	30.0	-5.4	
Mid Ch								
1745.00	13.53	V	4.4	9.6	18.75	30.0	-11.3	
1745.00	19.41	H	4.4	9.6	24.63	30.0	-5.4	
High Ch								
1779.30	16.91	V	4.4	9.6	22.15	30.0	-7.9	
1779.30	18.53	H	4.4	9.6	23.77	30.0	-6.2	

LTE Band 71

LTE Band 71 20MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788549592
Date: 2018-07-24
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 71 Fundamentals, 20MHz Bandwidth

Test Equpment:
Receiving: VULB9163-750, and Chamber 1 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								
673.00	12.22	V	0.9	-1.7	9.65	33.0	-23.3	
673.00	20.41	H	0.9	-1.7	17.84	33.0	-15.2	
Mid Ch								
680.50	12.22	V	0.9	-1.7	9.67	33.0	-23.3	
680.50	20.21	H	0.9	-1.7	17.67	33.0	-15.3	
High Ch								
687.90	13.64	V	0.9	-1.6	11.13	33.0	-21.9	
687.90	20.31	H	0.9	-1.6	17.79	33.0	-15.2	

LTE Band 71 20MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788549592
Date: 2018-07-24
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 71 Fundamentals, 20MHz Bandwidth

Test Equpment:
Receiving: VULB9163-750, and Chamber 1 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								
673.00	10.74	V	0.9	-1.7	8.17	33.0	-24.8	
673.00	19.16	H	0.9	-1.7	16.59	33.0	-16.4	
Mid Ch								
680.50	12.49	V	0.9	-1.7	9.94	33.0	-23.1	
680.50	19.31	H	0.9	-1.7	16.77	33.0	-16.2	
High Ch								
687.90	12.59	V	0.9	-1.6	10.08	33.0	-22.9	
687.90	19.17	H	0.9	-1.6	16.65	33.0	-16.3	

LTE

Band 71

15MHz

QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788549592
Date: 2018-07-24
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 71 Fundamentals, 15MHz Bandwidth

Test Equpment:
Receiving: VULB9163-750, and Chamber 1 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								
670.50	11.75	V	0.9	-1.7	9.17	33.0	-23.8	
670.50	20.44	H	0.9	-1.7	17.87	33.0	-15.1	
Mid Ch								
680.50	12.45	V	0.9	-1.7	9.90	33.0	-23.1	
680.50	20.80	H	0.9	-1.7	18.26	33.0	-14.7	
High Ch								
690.40	13.96	V	0.9	-1.6	11.46	33.0	-21.5	
690.40	19.84	H	0.9	-1.6	17.34	33.0	-15.7	

LTE

Band 71

15MHz

16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788549592
Date: 2018-07-24
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 71 Fundamentals, 15MHz Bandwidth

Test Equpment:
Receiving: VULB9163-750, and Chamber 1 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								
670.50	10.69	V	0.9	-1.7	8.11	33.0	-24.9	
670.50	19.56	H	0.9	-1.7	16.99	33.0	-16.0	
Mid Ch								
680.50	11.18	V	0.9	-1.7	8.63	33.0	-24.4	
680.50	19.57	H	0.9	-1.7	17.03	33.0	-16.0	
High Ch								
690.40	12.99	V	0.9	-1.6	10.49	33.0	-22.5	
690.40	18.41	H	0.9	-1.6	15.91	33.0	-17.1	

LTE

Band 71

10MHz

QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788549592
Date: 2018-07-24
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 71 Fundamentals, 10MHz Bandwidth

Test Equpment:
Receiving: VULB9163-750, and Chamber 1 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								
668.00	11.81	V	0.9	-1.7	9.22	33.0	-23.8	
668.00	20.33	H	0.9	-1.7	17.74	33.0	-15.3	
Mid Ch								
680.50	12.76	V	0.9	-1.7	10.21	33.0	-22.8	
680.50	20.12	H	0.9	-1.7	17.58	33.0	-15.4	
High Ch								
692.90	14.15	V	0.9	-1.6	11.66	33.0	-21.3	
692.90	19.93	H	0.9	-1.6	17.44	33.0	-15.6	

LTE

Band 71

10MHz

16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788549592
Date: 2018-07-24
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 71 Fundamentals, 10MHz Bandwidth

Test Equpment:
Receiving: VULB9163-750, and Chamber 1 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								
668.00	10.88	V	0.9	-1.7	8.29	33.0	-24.7	
668.00	19.38	H	0.9	-1.7	16.79	33.0	-16.2	
Mid Ch								
680.50	11.76	V	0.9	-1.7	9.21	33.0	-23.8	
680.50	18.88	H	0.9	-1.7	16.34	33.0	-16.7	
High Ch								
692.90	12.88	V	0.9	-1.6	10.39	33.0	-22.6	
692.90	18.70	H	0.9	-1.6	16.21	33.0	-16.8	

LTE

Band 71

5MHz

QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788549592
Date: 2018-07-24
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 71 Fundamentals, 5MHz Bandwidth

Test Equpment:
Receiving: VULB9163-750, and Chamber 1 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								
665.50	11.39	V	0.9	-1.7	8.80	33.0	-24.2	
665.50	19.59	H	0.9	-1.7	17.00	33.0	-16.0	
Mid Ch								
680.50	12.56	V	0.9	-1.7	10.01	33.0	-23.0	
680.50	19.80	H	0.9	-1.7	17.26	33.0	-15.7	
High Ch								
695.40	14.18	V	0.9	-1.6	11.69	33.0	-21.3	
695.40	19.83	H	0.9	-1.6	17.34	33.0	-15.7	

LTE

Band 71

5MHz

16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788549592
Date: 2018-07-24
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 71 Fundamentals, 5MHz Bandwidth

Test Equpment:
Receiving: VULB9163-750, and Chamber 1 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								
665.50	11.03	V	0.9	-1.7	8.44	33.0	-24.6	
665.50	18.75	H	0.9	-1.7	16.16	33.0	-16.8	
Mid Ch								
680.50	11.65	V	0.9	-1.7	9.10	33.0	-23.9	
680.50	18.57	H	0.9	-1.7	16.03	33.0	-17.0	
High Ch								
695.40	12.58	V	0.9	-1.6	10.09	33.0	-22.9	
695.40	19.22	H	0.9	-1.6	16.73	33.0	-16.3	

10.2. FIELD STRENGTH OF SPURIOUS RADIATION

RULE PART(S)

FCC: §2.1053, §22.917, §24.238 and §27. 53

LIMIT

Part 22.917(a) & Part 24.238(a) & Part 27.53(h) The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (P) dB.

Part 27.53 (g) For operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43 + 10 log (P) dB.

Part 27.53 (h) AWS emission limits—the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least 43 + 10 log10 (P) dB.

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:
a) Set the RBW = 100 KHz for emission below 1GHz and 1MHz for emissions above 1GHz
b) Set VBW ≥ 3 × RBW;
c) Set span ≥ 1.5 times the OBW;
d) Sweep time = auto couple;
e) Detector = rms;
f) Ensure that the number of measurement points ≥ span/RBW;
g) 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

See the following pages.

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

10.2.1. SPURIOUS RADIATION PLOTS

WCDMA Band 5

WCDMA

Band 5
REL99

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

Company: Samsung
Project #: 4788481138
Date: 2018-06-19
Test Engineer: 45585
Configuration: EUT / Adapter / Earphone, X-Position
Location: Chamber 1
Mode: Rel99 Band 5 Harmonics

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 826.4MHz									
1652.80	-21.1	V	3.0	43.6	1.0	-63.6	-13.0	-50.6	
2479.20	-15.9	V	3.0	43.4	1.0	-58.3	-13.0	-45.3	
3305.60	-21.3	V	3.0	43.6	1.0	-63.9	-13.0	-50.9	
1652.80	-19.7	H	3.0	43.6	1.0	-62.2	-13.0	-49.2	
2479.20	-2.9	H	3.0	43.4	1.0	-45.4	-13.0	-32.4	
3305.60	-20.8	H	3.0	43.6	1.0	-63.5	-13.0	-50.5	
Mid Ch, 836.6MHz									
1673.20	-21.1	V	3.0	43.6	1.0	-63.7	-13.0	-50.7	
2509.80	-8.3	V	3.0	43.4	1.0	-50.8	-13.0	-37.8	
3346.40	-21.6	V	3.0	43.6	1.0	-64.2	-13.0	-51.2	
1673.20	-18.2	H	3.0	43.6	1.0	-60.7	-13.0	-47.7	
2509.80	-1.0	H	3.0	43.4	1.0	-43.5	-13.0	-30.5	
3346.40	-20.9	H	3.0	43.6	1.0	-63.6	-13.0	-50.6	
High Ch, 846.6MHz									
1693.20	-22.7	V	3.0	43.6	1.0	-65.2	-13.0	-52.2	
2539.80	-5.7	V	3.0	43.4	1.0	-48.2	-13.0	-35.2	
3386.40	-21.9	V	3.0	43.7	1.0	-64.6	-13.0	-51.6	
1693.20	-19.6	H	3.0	43.6	1.0	-62.1	-13.0	-49.1	
2539.80	-1.6	H	3.0	43.4	1.0	-44.1	-13.0	-31.1	
3386.40	-21.2	H	3.0	43.7	1.0	-63.9	-13.0	-50.9	

WCDMA

Band 5
HSDPA

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

Company: Samsung
Project #: 4788481138
Date: 2018-06-19
Test Engineer: 45585
Configuration: EUT / Adapter / Earphone, X-Position
Location: Chamber 1
Mode: HSDPA Band 5 Harmonics

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 826.4MHz									
1652.80	-21.0	V	3.0	43.6	1.0	-63.6	-13.0	-50.6	
2479.20	-17.9	V	3.0	43.4	1.0	-60.4	-13.0	-47.4	
3305.60	-21.3	V	3.0	43.6	1.0	-63.9	-13.0	-50.9	
1652.80	-19.6	H	3.0	43.6	1.0	-62.2	-13.0	-49.2	
2479.20	-10.1	H	3.0	43.4	1.0	-52.5	-13.0	-39.5	
3305.60	-20.9	H	3.0	43.6	1.0	-63.5	-13.0	-50.5	
Mid Ch, 836.6MHz									
1673.20	-21.7	V	3.0	43.6	1.0	-64.3	-13.0	-51.3	
2509.80	-8.6	V	3.0	43.4	1.0	-51.0	-13.0	-38.0	
3346.40	-21.5	V	3.0	43.6	1.0	-64.1	-13.0	-51.1	
1673.20	-18.4	H	3.0	43.6	1.0	-61.0	-13.0	-48.0	
2509.80	-0.4	H	3.0	43.4	1.0	-42.9	-13.0	-29.9	
3346.40	-20.9	H	3.0	43.6	1.0	-63.5	-13.0	-50.5	
High Ch, 846.6MHz									
1693.20	-22.8	V	3.0	43.6	1.0	-65.3	-13.0	-52.3	
2539.80	-7.7	V	3.0	43.4	1.0	-50.2	-13.0	-37.2	
3386.40	-21.9	V	3.0	43.7	1.0	-64.6	-13.0	-51.6	
1693.20	-19.4	H	3.0	43.6	1.0	-62.0	-13.0	-49.0	
2539.80	-2.3	H	3.0	43.4	1.0	-44.7	-13.0	-31.7	
3386.40	-21.3	H	3.0	43.7	1.0	-63.9	-13.0	-50.9	

WCDMA Band 4

WCDMA

Band 4
REL99

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

Company: Samsung
Project #: 4788549592
Date: 2018-07-23
Test Engineer: 45585
Configuration: EUT / AC Adapter / Earphone, 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	-8.8	V	3.0	43.7	1.0	-51.4	-13.0	-38.4	
5137.20	-19.4	V	3.0	43.8	1.0	-62.1	-13.0	-49.1	
6849.60	-17.1	V	3.0	42.9	1.0	-59.0	-13.0	-46.0	
3424.80	-6.5	H	3.0	43.7	1.0	-49.2	-13.0	-36.2	
5137.20	-19.5	H	3.0	43.8	1.0	-62.3	-13.0	-49.3	
6849.60	-16.7	H	3.0	42.9	1.0	-58.6	-13.0	-45.6	
Mid Ch, 1732.6MHz									
3465.20	-8.6	V	3.0	43.7	1.0	-51.3	-13.0	-38.3	
5197.80	-18.8	V	3.0	43.8	1.0	-61.5	-13.0	-48.5	
6930.40	-17.6	V	3.0	42.8	1.0	-59.4	-13.0	-46.4	
3465.20	-4.7	H	3.0	43.7	1.0	-47.4	-13.0	-34.4	
5197.80	-19.0	H	3.0	43.8	1.0	-61.7	-13.0	-48.7	
6930.40	-17.0	H	3.0	42.8	1.0	-58.8	-13.0	-45.8	
High Ch, 1752.6MHz									
3505.20	-6.5	V	3.0	43.7	1.0	-49.2	-13.0	-36.2	
5257.80	-17.9	V	3.0	43.8	1.0	-60.6	-13.0	-47.6	
7010.40	-18.4	V	3.0	42.7	1.0	-60.1	-13.0	-47.1	
3505.20	-5.2	H	3.0	43.7	1.0	-47.9	-13.0	-34.9	
5257.80	-18.3	H	3.0	43.8	1.0	-61.1	-13.0	-48.1	
7010.40	-17.8	H	3.0	42.7	1.0	-59.6	-13.0	-46.6	

WCDMA

Band 4
HSDPA

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

Company: Samsung
Project #: 4788549592
Date: 2018-07-23
Test Engineer: 45585
Configuration: EUT / AC Adapter / Earphoen, X-Position
Location: Chamber 1
Mode: HSDPA Band 4 Harmonics

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1712.4MHz									
3424.80	-10.3	V	3.0	43.7	1.0	-52.9	-13.0	-39.9	
5137.20	-19.4	V	3.0	43.8	1.0	-62.1	-13.0	-49.1	
6849.60	-17.2	V	3.0	42.9	1.0	-59.0	-13.0	-46.0	
3424.80	-7.8	H	3.0	43.7	1.0	-50.4	-13.0	-37.4	
5137.20	-19.7	H	3.0	43.8	1.0	-62.5	-13.0	-49.5	
6849.60	-16.8	H	3.0	42.9	1.0	-58.6	-13.0	-45.6	
Mid Ch, 1732.6MHz									
3465.20	-9.7	V	3.0	43.7	1.0	-52.4	-13.0	-39.4	
5197.80	-18.8	V	3.0	43.8	1.0	-61.6	-13.0	-48.6	
6930.40	-17.5	V	3.0	42.8	1.0	-59.3	-13.0	-46.3	
3465.20	-5.5	H	3.0	43.7	1.0	-48.2	-13.0	-35.2	
5197.80	-19.2	H	3.0	43.8	1.0	-62.0	-13.0	-49.0	
6930.40	-17.0	H	3.0	42.8	1.0	-58.8	-13.0	-45.8	
High Ch, 1752.6MHz									
3505.20	-7.7	V	3.0	43.7	1.0	-50.4	-13.0	-37.4	
5257.80	-17.9	V	3.0	43.8	1.0	-60.7	-13.0	-47.7	
7010.40	-18.3	V	3.0	42.7	1.0	-60.0	-13.0	-47.0	
3505.20	-5.0	H	3.0	43.7	1.0	-47.7	-13.0	-34.7	
5257.80	-18.3	H	3.0	43.8	1.0	-61.0	-13.0	-48.0	
7010.40	-17.7	H	3.0	42.7	1.0	-59.5	-13.0	-46.5	

WCDMA Band 2

WCDMA

Band 2
REL99

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

Company: Samsung
Project #: 4788481138
Date: 2018-06-18
Test Engineer: 47989
Configuration: EUT / AC Adapter / Earphone, X-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	-13.6	V	3.0	43.8	1.0	-56.4	-13.0	-43.4	
5557.20	-17.8	V	3.0	43.7	1.0	-60.5	-13.0	-47.5	
7409.60	-18.0	V	3.0	42.5	1.0	-59.5	-13.0	-46.5	
3704.80	-12.4	H	3.0	43.8	1.0	-55.1	-13.0	-42.1	
5557.20	-18.4	H	3.0	43.7	1.0	-61.1	-13.0	-48.1	
7409.60	-16.7	H	3.0	42.5	1.0	-58.2	-13.0	-45.2	
Mid Ch, 1880MHz									
3760.00	-15.6	V	3.0	43.8	1.0	-58.4	-13.0	-45.4	
5640.00	-17.4	V	3.0	43.7	1.0	-60.1	-13.0	-47.1	
7520.00	-17.2	V	3.0	42.5	1.0	-58.7	-13.0	-45.7	
3760.00	-6.8	H	3.0	43.8	1.0	-49.5	-13.0	-36.5	
5640.00	-18.0	H	3.0	43.7	1.0	-60.7	-13.0	-47.7	
7520.00	-17.1	H	3.0	42.5	1.0	-58.5	-13.0	-45.5	
High Ch, 1907.6MHz									
3815.20	-10.0	V	3.0	43.8	1.0	-52.8	-13.0	-39.8	
5722.80	-17.0	V	3.0	43.7	1.0	-59.7	-13.0	-46.7	
7630.40	-17.6	V	3.0	42.4	1.0	-59.0	-13.0	-46.0	
3815.20	-3.1	H	3.0	43.8	1.0	-45.9	-13.0	-32.9	
5722.80	-17.7	H	3.0	43.7	1.0	-60.4	-13.0	-47.4	
7630.40	-17.4	H	3.0	42.4	1.0	-58.8	-13.0	-45.8	

WCDMA

Band 2
HSDPA

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

Company: Samsung
Project #: 4788481138
Date: 2018-06-18
Test Engineer: 47989
Configuration: EUT / AC Adapter / Earphone, X-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	-14.4	V	3.0	43.8	1.0	-57.2	-13.0	-44.2	
5557.20	-18.4	V	3.0	43.7	1.0	-61.1	-13.0	-48.1	
7409.60	-18.5	V	3.0	42.5	1.0	-60.0	-13.0	-47.0	
3704.80	-11.7	H	3.0	43.8	1.0	-54.5	-13.0	-41.5	
5557.20	-18.4	H	3.0	43.7	1.0	-61.1	-13.0	-48.1	
7409.60	-17.8	H	3.0	42.5	1.0	-59.3	-13.0	-46.3	
Mid Ch, 1880MHz									
3760.00	-15.0	V	3.0	43.8	1.0	-57.8	-13.0	-44.8	
5640.00	-17.9	V	3.0	43.7	1.0	-60.6	-13.0	-47.6	
7520.00	-17.7	V	3.0	42.5	1.0	-59.1	-13.0	-46.1	
3760.00	-9.4	H	3.0	43.8	1.0	-52.2	-13.0	-39.2	
5640.00	-17.6	H	3.0	43.7	1.0	-60.3	-13.0	-47.3	
7520.00	-17.2	H	3.0	42.5	1.0	-58.7	-13.0	-45.7	
High Ch, 1907.6MHz									
3815.20	-11.5	V	3.0	43.8	1.0	-54.3	-13.0	-41.3	
5722.80	-16.6	V	3.0	43.7	1.0	-59.3	-13.0	-46.3	
7630.40	-17.8	V	3.0	42.4	1.0	-59.2	-13.0	-46.2	
3815.20	-4.1	H	3.0	43.8	1.0	-46.9	-13.0	-33.9	
5722.80	-17.8	H	3.0	43.7	1.0	-60.5	-13.0	-47.5	
7630.40	-17.7	H	3.0	42.4	1.0	-59.1	-13.0	-46.1	

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

LTE Band 2

LTE

Band 2

20MHz

QPSK

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

Company: Samsung
Project #: 4788481138
Date: 2018-06-15
Test Engineer: 47989
Configuration: EUT / Adapter / Earphone, X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 2 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	-14.1	V	3.0	43.8	1.0	-56.9	-13.0	-43.9	
5580.00	-12.3	V	3.0	43.7	1.0	-55.0	-13.0	-42.0	
7440.00	-8.2	V	3.0	42.5	1.0	-49.7	-13.0	-36.7	
9300.00	-15.2	V	3.0	41.2	1.0	-55.4	-13.0	-42.4	
11160.00	-12.3	V	3.0	40.9	1.0	-52.2	-13.0	-39.2	
3720.00	-6.3	H	3.0	43.8	1.0	-49.1	-13.0	-36.1	
5580.00	-15.6	H	3.0	43.7	1.0	-58.4	-13.0	-45.4	
7440.00	-15.0	H	3.0	42.5	1.0	-56.5	-13.0	-43.5	
9300.00	-16.7	H	3.0	41.2	1.0	-56.9	-13.0	-43.9	
11160.00	-10.8	H	3.0	40.9	1.0	-50.7	-13.0	-37.7	
Mid Ch, 1880MHz									
3760.00	-10.8	V	3.0	43.8	1.0	-53.6	-13.0	-40.6	
5640.00	-14.7	V	3.0	43.7	1.0	-57.4	-13.0	-44.4	
7520.00	-11.7	V	3.0	42.5	1.0	-53.2	-13.0	-40.2	
9400.00	-15.6	V	3.0	41.1	1.0	-55.7	-13.0	-42.7	
11280.00	-10.3	V	3.0	41.0	1.0	-50.3	-13.0	-37.3	
3760.00	-1.0	H	3.0	43.8	1.0	-43.8	-13.0	-30.8	
5640.00	-17.4	H	3.0	43.7	1.0	-60.1	-13.0	-47.1	
7520.00	-15.8	H	3.0	42.5	1.0	-57.2	-13.0	-44.2	
9400.00	-13.9	H	3.0	41.1	1.0	-54.0	-13.0	-41.0	
11280.00	-15.7	H	3.0	41.0	1.0	-55.7	-13.0	-42.7	
High Ch, 1900MHz									
3800.00	-11.4	V	3.0	43.8	1.0	-54.2	-13.0	-41.2	
5700.00	-14.1	V	3.0	43.7	1.0	-56.8	-13.0	-43.8	
7600.00	-12.0	V	3.0	42.4	1.0	-53.4	-13.0	-40.4	
9500.00	-15.8	V	3.0	41.0	1.0	-55.8	-13.0	-42.8	
11400.00	-10.6	V	3.0	41.0	1.0	-50.6	-13.0	-37.6	
3800.00	-2.0	H	3.0	43.8	1.0	-44.8	-13.0	-31.8	
5700.00	-16.6	H	3.0	43.7	1.0	-59.3	-13.0	-46.3	
7600.00	-15.8	H	3.0	42.4	1.0	-57.2	-13.0	-44.2	
9500.00	-14.3	H	3.0	41.0	1.0	-54.4	-13.0	-41.4	
11400.00	-15.1	H	3.0	41.0	1.0	-55.1	-13.0	-42.1	

LTE

Band 2

20MHz

16QAM

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

Company:	Samsung
Project #:	4788481138
Date:	2018-06-15
Test Engineer:	47989
Configuration:	EUT / Adapter / Earphone, X-Position
Location:	Chamber 1
Mode:	LTE_QPSK Band 2 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	-14.1	V	3.0	43.8	1.0	-56.9	-13.0	-43.9	
5580.00	-12.3	V	3.0	43.7	1.0	-55.0	-13.0	-42.0	
7440.00	-8.2	V	3.0	42.5	1.0	-49.7	-13.0	-36.7	
9300.00	-15.2	V	3.0	41.2	1.0	-55.4	-13.0	-42.4	
11160.00	-12.3	V	3.0	40.9	1.0	-52.2	-13.0	-39.2	
3720.00	-6.3	H	3.0	43.8	1.0	-49.1	-13.0	-36.1	
5580.00	-15.6	H	3.0	43.7	1.0	-58.4	-13.0	-45.4	
7440.00	-15.0	H	3.0	42.5	1.0	-56.5	-13.0	-43.5	
9300.00	-16.7	H	3.0	41.2	1.0	-56.9	-13.0	-43.9	
11160.00	-10.8	H	3.0	40.9	1.0	-50.7	-13.0	-37.7	
Mid Ch, 1880MHz									
3760.00	-10.8	V	3.0	43.8	1.0	-53.6	-13.0	-40.6	
5640.00	-14.7	V	3.0	43.7	1.0	-57.4	-13.0	-44.4	
7520.00	-11.7	V	3.0	42.5	1.0	-53.2	-13.0	-40.2	
9400.00	-15.6	V	3.0	41.1	1.0	-55.7	-13.0	-42.7	
11280.00	-10.3	V	3.0	41.0	1.0	-50.3	-13.0	-37.3	
3760.00	-1.0	H	3.0	43.8	1.0	-43.8	-13.0	-30.8	
5640.00	-17.4	H	3.0	43.7	1.0	-60.1	-13.0	-47.1	
7520.00	-15.8	H	3.0	42.5	1.0	-57.2	-13.0	-44.2	
9400.00	-13.9	H	3.0	41.1	1.0	-54.0	-13.0	-41.0	
11280.00	-15.7	H	3.0	41.0	1.0	-55.7	-13.0	-42.7	
High Ch, 1900MHz									
3800.00	-11.4	V	3.0	43.8	1.0	-54.2	-13.0	-41.2	
5700.00	-14.1	V	3.0	43.7	1.0	-56.8	-13.0	-43.8	
7600.00	-12.0	V	3.0	42.4	1.0	-53.4	-13.0	-40.4	
9500.00	-15.8	V	3.0	41.0	1.0	-55.8	-13.0	-42.8	
11400.00	-10.6	V	3.0	41.0	1.0	-50.6	-13.0	-37.6	
3800.00	-2.0	H	3.0	43.8	1.0	-44.8	-13.0	-31.8	
5700.00	-16.6	H	3.0	43.7	1.0	-59.3	-13.0	-46.3	
7600.00	-15.8	H	3.0	42.4	1.0	-57.2	-13.0	-44.2	
9500.00	-14.3	H	3.0	41.0	1.0	-54.4	-13.0	-41.4	
11400.00	-15.1	H	3.0	41.0	1.0	-55.1	-13.0	-42.1	

LTE

Band 2

15MHz

QPSK

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

Company: Samsung
Project #: 4788481138
Date: 2018-06-15
Test Engineer: 45585
Configuration: EUT / Adapter / Earphone, X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 2 Harmonics, 15MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1857.5MHz									
3715.00	-16.4	V	3.0	43.8	1.0	-59.2	-13.0	-46.2	
5572.50	-12.5	V	3.0	43.7	1.0	-55.2	-13.0	-42.2	
7430.00	-9.4	V	3.0	42.5	1.0	-50.9	-13.0	-37.9	
9287.50	-15.7	V	3.0	41.2	1.0	-55.9	-13.0	-42.9	
11145.00	-8.6	V	3.0	40.9	1.0	-48.5	-13.0	-35.5	
3715.00	-9.4	H	3.0	43.8	1.0	-52.2	-13.0	-39.2	
5572.50	-15.6	H	3.0	43.7	1.0	-58.3	-13.0	-45.3	
7430.00	-14.0	H	3.0	42.5	1.0	-55.5	-13.0	-42.5	
9287.50	-18.8	H	3.0	41.2	1.0	-59.0	-13.0	-46.0	
11145.00	-17.0	H	3.0	40.9	1.0	-56.9	-13.0	-43.9	
Mid Ch, 1880MHz									
3760.00	-11.0	V	3.0	43.8	1.0	-53.7	-13.0	-40.7	
5640.00	-15.0	V	3.0	43.7	1.0	-57.7	-13.0	-44.7	
7520.00	-11.2	V	3.0	42.5	1.0	-52.7	-13.0	-39.7	
9400.00	-16.0	V	3.0	41.1	1.0	-56.2	-13.0	-43.2	
11280.00	-10.6	V	3.0	41.0	1.0	-50.5	-13.0	-37.5	
3760.00	-2.0	H	3.0	43.8	1.0	-44.8	-13.0	-31.8	
5640.00	-17.5	H	3.0	43.7	1.0	-60.2	-13.0	-47.2	
7520.00	-14.0	H	3.0	42.5	1.0	-55.5	-13.0	-42.5	
9400.00	-17.9	H	3.0	41.1	1.0	-58.0	-13.0	-45.0	
11280.00	-16.0	H	3.0	41.0	1.0	-56.0	-13.0	-43.0	
High Ch, 1902.5MHz									
3805.00	-11.0	V	3.0	43.8	1.0	-53.8	-13.0	-40.8	
5707.50	-13.9	V	3.0	43.7	1.0	-56.6	-13.0	-43.6	
7610.00	-12.4	V	3.0	42.4	1.0	-53.8	-13.0	-40.8	
9512.50	-15.4	V	3.0	41.0	1.0	-55.4	-13.0	-42.4	
11415.00	-12.2	V	3.0	41.0	1.0	-52.2	-13.0	-39.2	
3805.00	-1.0	H	3.0	43.8	1.0	-43.8	-13.0	-30.8	
5707.50	-16.6	H	3.0	43.7	1.0	-59.2	-13.0	-46.2	
7610.00	-14.5	H	3.0	42.4	1.0	-55.9	-13.0	-42.9	
9512.50	-17.9	H	3.0	41.0	1.0	-57.9	-13.0	-44.9	
11415.00	-16.4	H	3.0	41.0	1.0	-56.4	-13.0	-43.4	

LTE

Band 2

15MHz

16QAM

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

Company: Samsung
Project #: 4788481138
Date: 2018-06-15
Test Engineer: 45585
Configuration: EUT / Adapter / Earphone, X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 2 Harmonics, 15MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1857.5MHz									
3715.00	-16.9	V	3.0	43.8	1.0	-59.7	-13.0	-46.7	
5572.50	-13.6	V	3.0	43.7	1.0	-56.3	-13.0	-43.3	
7430.00	-10.1	V	3.0	42.5	1.0	-51.6	-13.0	-38.6	
9287.50	-16.1	V	3.0	41.2	1.0	-56.3	-13.0	-43.3	
11145.00	-9.7	V	3.0	40.9	1.0	-49.6	-13.0	-36.6	
3715.00	-10.1	H	3.0	43.8	1.0	-52.8	-13.0	-39.8	
5572.50	-16.2	H	3.0	43.7	1.0	-58.9	-13.0	-45.9	
7430.00	-14.5	H	3.0	42.5	1.0	-56.0	-13.0	-43.0	
9287.50	-18.8	H	3.0	41.2	1.0	-59.0	-13.0	-46.0	
11145.00	-17.0	H	3.0	40.9	1.0	-56.9	-13.0	-43.9	
Mid Ch, 1880MHz									
3760.00	-11.8	V	3.0	43.8	1.0	-54.5	-13.0	-41.5	
5640.00	-15.7	V	3.0	43.7	1.0	-58.4	-13.0	-45.4	
7520.00	-12.1	V	3.0	42.5	1.0	-53.6	-13.0	-40.6	
9400.00	-16.4	V	3.0	41.1	1.0	-56.5	-13.0	-43.5	
11280.00	-11.4	V	3.0	41.0	1.0	-51.3	-13.0	-38.3	
3760.00	-3.0	H	3.0	43.8	1.0	-45.8	-13.0	-32.8	
5640.00	-17.7	H	3.0	43.7	1.0	-60.4	-13.0	-47.4	
7520.00	-14.6	H	3.0	42.5	1.0	-56.1	-13.0	-43.1	
9400.00	-17.9	H	3.0	41.1	1.0	-58.0	-13.0	-45.0	
11280.00	-16.0	H	3.0	41.0	1.0	-56.0	-13.0	-43.0	
High Ch, 1902.5MHz									
3805.00	-10.0	V	3.0	43.8	1.0	-52.8	-13.0	-39.8	
5707.50	-12.5	V	3.0	43.7	1.0	-55.2	-13.0	-42.2	
7610.00	-13.5	V	3.0	42.4	1.0	-54.9	-13.0	-41.9	
9512.50	-15.1	V	3.0	41.0	1.0	-55.1	-13.0	-42.1	
11415.00	-10.4	V	3.0	41.0	1.0	-50.4	-13.0	-37.4	
3805.00	0.0	H	3.0	43.8	1.0	-42.8	-13.0	-29.8	
5707.50	-16.1	H	3.0	43.7	1.0	-58.8	-13.0	-45.8	
7610.00	-12.5	H	3.0	42.4	1.0	-53.9	-13.0	-40.9	
9512.50	-17.6	H	3.0	41.0	1.0	-57.6	-13.0	-44.6	
11415.00	-15.6	H	3.0	41.0	1.0	-55.6	-13.0	-42.6	

LTE

Band 2

10MHz

QPSK

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

Company: Samsung
Project #: 4788481138
Date: 2018-06-15
Test Engineer: 45585
Configuration: EUT / Adapter / Earphone, X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 2 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, 1855MHz									
3710.00	-12.9	V	3.0	43.8	1.0	-55.7	-13.0	-42.7	
5565.00	-13.1	V	3.0	43.7	1.0	-55.8	-13.0	-42.8	
7420.00	-8.5	V	3.0	42.5	1.0	-50.0	-13.0	-37.0	
9275.00	-16.5	V	3.0	41.2	1.0	-56.7	-13.0	-43.7	
11130.00	-9.4	V	3.0	40.9	1.0	-49.3	-13.0	-36.3	
3710.00	-8.1	H	3.0	43.8	1.0	-50.9	-13.0	-37.9	
5565.00	-15.9	H	3.0	43.7	1.0	-58.6	-13.0	-45.6	
7420.00	-13.2	H	3.0	42.5	1.0	-54.7	-13.0	-41.7	
9275.00	-18.5	H	3.0	41.2	1.0	-58.8	-13.0	-45.8	
11130.00	-17.2	H	3.0	40.9	1.0	-57.1	-13.0	-44.1	
Mid Ch, 1880MHz									
3760.00	-12.4	V	3.0	43.8	1.0	-55.2	-13.0	-42.2	
5640.00	-14.3	V	3.0	43.7	1.0	-57.0	-13.0	-44.0	
7520.00	-10.0	V	3.0	42.5	1.0	-51.5	-13.0	-38.5	
9400.00	-16.5	V	3.0	41.1	1.0	-56.6	-13.0	-43.6	
11280.00	-10.5	V	3.0	41.0	1.0	-50.5	-13.0	-37.5	
3760.00	-4.1	H	3.0	43.8	1.0	-46.9	-13.0	-33.9	
5640.00	-17.9	H	3.0	43.7	1.0	-60.6	-13.0	-47.6	
7520.00	-14.1	H	3.0	42.5	1.0	-55.6	-13.0	-42.6	
9400.00	-18.1	H	3.0	41.1	1.0	-58.2	-13.0	-45.2	
11280.00	-16.0	H	3.0	41.0	1.0	-55.9	-13.0	-42.9	
High Ch, 1905MHz									
3810.00	-9.9	V	3.0	43.8	1.0	-52.7	-13.0	-39.7	
5715.00	-13.7	V	3.0	43.7	1.0	-56.4	-13.0	-43.4	
7620.00	-12.4	V	3.0	42.4	1.0	-53.8	-13.0	-40.8	
9525.00	-15.6	V	3.0	41.0	1.0	-55.6	-13.0	-42.6	
11430.00	-11.5	V	3.0	41.0	1.0	-51.5	-13.0	-38.5	
3810.00	0.0	H	3.0	43.8	1.0	-42.8	-13.0	-29.8	
5715.00	-16.1	H	3.0	43.7	1.0	-58.7	-13.0	-45.7	
7620.00	-14.8	H	3.0	42.4	1.0	-56.2	-13.0	-43.2	
9525.00	-17.5	H	3.0	41.0	1.0	-57.5	-13.0	-44.5	
11430.00	-15.6	H	3.0	41.0	1.0	-55.6	-13.0	-42.6	

LTE

Band 2

10MHz

16QAM

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

Company: Samsung
Project #: 4788481138
Date: 2018-06-15
Test Engineer: 45585
Configuration: EUT / Adapter / Earphone, X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 2 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, 1855MHz									
3710.00	-13.6	V	3.0	43.8	1.0	-56.4	-13.0	-43.4	
5565.00	-14.2	V	3.0	43.7	1.0	-56.9	-13.0	-43.9	
7420.00	-9.6	V	3.0	42.5	1.0	-51.1	-13.0	-38.1	
9275.00	-16.9	V	3.0	41.2	1.0	-57.2	-13.0	-44.2	
11130.00	-10.1	V	3.0	40.9	1.0	-50.0	-13.0	-37.0	
3710.00	-9.0	H	3.0	43.8	1.0	-51.8	-13.0	-38.8	
5565.00	-16.4	H	3.0	43.7	1.0	-59.1	-13.0	-46.1	
7420.00	-13.9	H	3.0	42.5	1.0	-55.4	-13.0	-42.4	
9275.00	-18.5	H	3.0	41.2	1.0	-58.8	-13.0	-45.8	
11130.00	-17.2	H	3.0	40.9	1.0	-57.1	-13.0	-44.1	
Mid Ch, 1880MHz									
3760.00	-13.3	V	3.0	43.8	1.0	-56.1	-13.0	-43.1	
5640.00	-15.3	V	3.0	43.7	1.0	-58.0	-13.0	-45.0	
7520.00	-10.8	V	3.0	42.5	1.0	-52.3	-13.0	-39.3	
9400.00	-16.9	V	3.0	41.1	1.0	-57.0	-13.0	-44.0	
11280.00	-11.7	V	3.0	41.0	1.0	-51.7	-13.0	-38.7	
3760.00	-5.0	H	3.0	43.8	1.0	-47.8	-13.0	-34.8	
5640.00	-18.1	H	3.0	43.7	1.0	-60.8	-13.0	-47.8	
7520.00	-14.8	H	3.0	42.5	1.0	-56.3	-13.0	-43.3	
9400.00	-18.0	H	3.0	41.1	1.0	-58.1	-13.0	-45.1	
11280.00	-16.1	H	3.0	41.0	1.0	-56.1	-13.0	-43.1	
High Ch, 1905MHz									
3810.00	-9.3	V	3.0	43.8	1.0	-52.1	-13.0	-39.1	
5715.00	-13.6	V	3.0	43.7	1.0	-56.3	-13.0	-43.3	
7620.00	-12.3	V	3.0	42.4	1.0	-53.7	-13.0	-40.7	
9525.00	-15.0	V	3.0	41.0	1.0	-55.0	-13.0	-42.0	
11430.00	-9.2	V	3.0	41.0	1.0	-49.2	-13.0	-36.2	
3810.00	0.0	H	3.0	43.8	1.0	-42.9	-13.0	-29.9	
5715.00	-16.4	H	3.0	43.7	1.0	-59.1	-13.0	-46.1	
7620.00	-14.9	H	3.0	42.4	1.0	-56.3	-13.0	-43.3	
9525.00	-17.7	H	3.0	41.0	1.0	-57.7	-13.0	-44.7	
11430.00	-15.6	H	3.0	41.0	1.0	-55.7	-13.0	-42.7	

LTE

Band 2

5MHz

QPSK

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

Company: Samsung
Project #: 4788481138
Date: 2018-06-15
Test Engineer: 45585
Configuration: EUT / Adapter / Earphone, X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 2 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	-13.0	V	3.0	43.8	1.0	-55.8	-13.0	-42.8	
5557.50	-14.3	V	3.0	43.7	1.0	-57.0	-13.0	-44.0	
7410.00	-10.1	V	3.0	42.5	1.0	-51.6	-13.0	-38.6	
9262.50	-16.0	V	3.0	41.3	1.0	-56.2	-13.0	-43.2	
11115.00	-7.9	V	3.0	40.9	1.0	-47.8	-13.0	-34.8	
3705.00	-9.0	H	3.0	43.8	1.0	-51.7	-13.0	-38.7	
5557.50	-16.8	H	3.0	43.7	1.0	-59.5	-13.0	-46.5	
7410.00	-15.5	H	3.0	42.5	1.0	-57.0	-13.0	-44.0	
9262.50	-18.9	H	3.0	41.3	1.0	-59.1	-13.0	-46.1	
11115.00	-15.4	H	3.0	40.9	1.0	-55.3	-13.0	-42.3	
Mid Ch, 1880MHz									
3760.00	-12.3	V	3.0	43.8	1.0	-55.1	-13.0	-42.1	
5640.00	-14.8	V	3.0	43.7	1.0	-57.5	-13.0	-44.5	
7520.00	-11.6	V	3.0	42.5	1.0	-53.0	-13.0	-40.0	
9400.00	-16.9	V	3.0	41.1	1.0	-57.1	-13.0	-44.1	
11280.00	-9.8	V	3.0	41.0	1.0	-49.8	-13.0	-36.8	
3760.00	-4.5	H	3.0	43.8	1.0	-47.3	-13.0	-34.3	
5640.00	-17.7	H	3.0	43.7	1.0	-60.4	-13.0	-47.4	
7520.00	-14.6	H	3.0	42.5	1.0	-56.0	-13.0	-43.0	
9400.00	-18.0	H	3.0	41.1	1.0	-58.1	-13.0	-45.1	
11280.00	-16.2	H	3.0	41.0	1.0	-56.2	-13.0	-43.2	
High Ch, 1907.5MHz									
3815.00	-9.5	V	3.0	43.8	1.0	-52.3	-13.0	-39.3	
5722.50	-13.1	V	3.0	43.7	1.0	-55.8	-13.0	-42.8	
7630.00	-11.7	V	3.0	42.4	1.0	-53.1	-13.0	-40.1	
9537.50	-14.6	V	3.0	41.0	1.0	-54.6	-13.0	-41.6	
11445.00	-8.2	V	3.0	41.0	1.0	-48.2	-13.0	-35.2	
3815.00	0.8	H	3.0	43.8	1.0	-42.0	-13.0	-29.0	
5722.50	-16.5	H	3.0	43.7	1.0	-59.2	-13.0	-46.2	
7630.00	-14.7	H	3.0	42.4	1.0	-56.1	-13.0	-43.1	
9537.50	-17.8	H	3.0	41.0	1.0	-57.8	-13.0	-44.8	
11445.00	-15.8	H	3.0	41.0	1.0	-55.8	-13.0	-42.8	

LTE

Band 2

5MHz

16QAM

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

Company: Samsung
Project #: 4788481138
Date: 2018-06-15
Test Engineer: 45585
Configuration: EUT / Adapter / Earphone, X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 2 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	-13.7	V	3.0	43.8	1.0	-56.5	-13.0	-43.5	
5557.50	-14.9	V	3.0	43.7	1.0	-57.6	-13.0	-44.6	
7410.00	-10.8	V	3.0	42.5	1.0	-52.3	-13.0	-39.3	
9262.50	-16.3	V	3.0	41.3	1.0	-56.5	-13.0	-43.5	
11115.00	-8.7	V	3.0	40.9	1.0	-48.6	-13.0	-35.6	
3705.00	-9.8	H	3.0	43.8	1.0	-52.5	-13.0	-39.5	
5557.50	-17.2	H	3.0	43.7	1.0	-59.9	-13.0	-46.9	
7410.00	-15.8	H	3.0	42.5	1.0	-57.3	-13.0	-44.3	
9262.50	-19.0	H	3.0	41.3	1.0	-59.3	-13.0	-46.3	
11115.00	-15.6	H	3.0	40.9	1.0	-55.5	-13.0	-42.5	
Mid Ch, 1880MHz									
3760.00	-12.9	V	3.0	43.8	1.0	-55.7	-13.0	-42.7	
5640.00	-15.9	V	3.0	43.7	1.0	-58.6	-13.0	-45.6	
7520.00	-13.2	V	3.0	42.5	1.0	-54.6	-13.0	-41.6	
9400.00	-17.1	V	3.0	41.1	1.0	-57.2	-13.0	-44.2	
11280.00	-12.2	V	3.0	41.0	1.0	-52.2	-13.0	-39.2	
3760.00	-5.2	H	3.0	43.8	1.0	-48.0	-13.0	-35.0	
5640.00	-18.0	H	3.0	43.7	1.0	-60.7	-13.0	-47.7	
7520.00	-15.4	H	3.0	42.5	1.0	-56.8	-13.0	-43.8	
9400.00	-18.1	H	3.0	41.1	1.0	-58.2	-13.0	-45.2	
11280.00	-16.3	H	3.0	41.0	1.0	-56.2	-13.0	-43.2	
High Ch, 1907.5MHz									
3815.00	-10.0	V	3.0	43.8	1.0	-52.8	-13.0	-39.8	
5722.50	-13.7	V	3.0	43.7	1.0	-56.4	-13.0	-43.4	
7630.00	-12.3	V	3.0	42.4	1.0	-53.7	-13.0	-40.7	
9537.50	-14.9	V	3.0	41.0	1.0	-54.8	-13.0	-41.8	
11445.00	-8.9	V	3.0	41.0	1.0	-48.9	-13.0	-35.9	
3815.00	0.4	H	3.0	43.8	1.0	-42.4	-13.0	-29.4	
5722.50	-16.8	H	3.0	43.7	1.0	-59.5	-13.0	-46.5	
7630.00	-15.0	H	3.0	42.4	1.0	-56.4	-13.0	-43.4	
9537.50	-17.9	H	3.0	41.0	1.0	-57.9	-13.0	-44.9	
11445.00	-15.8	H	3.0	41.0	1.0	-55.8	-13.0	-42.8	

LTE

Band 2

3MHz

QPSK

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

Company: Samsung
Project #: 4788481138
Date: 2018-06-15
Test Engineer: 45585
Configuration: EUT / Adapter / Earphone, X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 2 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	-16.1	V	3.0	43.8	1.0	-58.8	-13.0	-45.8	
5554.50	-14.4	V	3.0	43.7	1.0	-57.2	-13.0	-44.2	
7406.00	-11.0	V	3.0	42.5	1.0	-52.5	-13.0	-39.5	
9257.50	-16.0	V	3.0	41.3	1.0	-56.2	-13.0	-43.2	
11109.00	-7.0	V	3.0	40.9	1.0	-46.9	-13.0	-33.9	
3703.00	-10.7	H	3.0	43.8	1.0	-53.4	-13.0	-40.4	
5554.50	-17.2	H	3.0	43.7	1.0	-59.9	-13.0	-46.9	
7406.00	-15.3	H	3.0	42.5	1.0	-56.8	-13.0	-43.8	
9257.50	-19.1	H	3.0	41.3	1.0	-59.3	-13.0	-46.3	
11109.00	-10.2	H	3.0	40.9	1.0	-50.1	-13.0	-37.1	
Mid Ch, 1880MHz									
3760.00	-10.3	V	3.0	43.8	1.0	-53.1	-13.0	-40.1	
5640.00	-14.5	V	3.0	43.7	1.0	-57.2	-13.0	-44.2	
7520.00	-10.8	V	3.0	42.5	1.0	-52.3	-13.0	-39.3	
9400.00	-16.6	V	3.0	41.1	1.0	-56.7	-13.0	-43.7	
11280.00	-9.8	V	3.0	41.0	1.0	-49.8	-13.0	-36.8	
3760.00	-3.4	H	3.0	43.8	1.0	-46.2	-13.0	-33.2	
5640.00	-17.9	H	3.0	43.7	1.0	-60.6	-13.0	-47.6	
7520.00	-14.3	H	3.0	42.5	1.0	-55.7	-13.0	-42.7	
9400.00	-17.0	H	3.0	41.1	1.0	-57.1	-13.0	-44.1	
11280.00	-16.1	H	3.0	41.0	1.0	-56.1	-13.0	-43.1	
High Ch, 1908.5MHz									
3817.00	-7.6	V	3.0	43.8	1.0	-50.4	-13.0	-37.4	
5725.50	-12.3	V	3.0	43.7	1.0	-55.0	-13.0	-42.0	
7634.00	-11.9	V	3.0	42.4	1.0	-53.3	-13.0	-40.3	
9542.50	-15.1	V	3.0	41.0	1.0	-55.1	-13.0	-42.1	
11451.00	-7.8	V	3.0	41.0	1.0	-47.8	-13.0	-34.8	
3817.00	4.0	H	3.0	43.8	1.0	-38.8	-13.0	-25.8	
5725.50	-15.6	H	3.0	43.7	1.0	-58.3	-13.0	-45.3	
7634.00	-14.7	H	3.0	42.4	1.0	-56.1	-13.0	-43.1	
9542.50	-18.0	H	3.0	41.0	1.0	-58.0	-13.0	-45.0	
11451.00	-15.9	H	3.0	41.0	1.0	-56.0	-13.0	-43.0	

LTE

Band 2

3MHz

16QAM

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

Company: Samsung
Project #: 4788481138
Date: 2018-06-15
Test Engineer: 45585
Configuration: EUT / Adapter / Earphone, X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 2 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	-15.0	V	3.0	43.8	1.0	-57.8	-13.0	-44.8	
5554.50	-15.3	V	3.0	43.7	1.0	-58.0	-13.0	-45.0	
7406.00	-11.3	V	3.0	42.5	1.0	-52.8	-13.0	-39.8	
9257.50	-16.6	V	3.0	41.3	1.0	-56.8	-13.0	-43.8	
11109.00	-9.3	V	3.0	40.9	1.0	-49.2	-13.0	-36.2	
3703.00	-11.3	H	3.0	43.8	1.0	-54.0	-13.0	-41.0	
5554.50	-17.8	H	3.0	43.7	1.0	-60.6	-13.0	-47.6	
7406.00	-15.3	H	3.0	42.5	1.0	-56.8	-13.0	-43.8	
9257.50	-19.1	H	3.0	41.3	1.0	-59.4	-13.0	-46.4	
11109.00	-16.1	H	3.0	40.9	1.0	-56.0	-13.0	-43.0	
Mid Ch, 1880MHz									
3760.00	-11.2	V	3.0	43.8	1.0	-54.0	-13.0	-41.0	
5640.00	-15.5	V	3.0	43.7	1.0	-58.2	-13.0	-45.2	
7520.00	-12.2	V	3.0	42.5	1.0	-53.7	-13.0	-40.7	
9400.00	-16.9	V	3.0	41.1	1.0	-57.0	-13.0	-44.0	
11280.00	-11.6	V	3.0	41.0	1.0	-51.6	-13.0	-38.6	
3760.00	-4.6	H	3.0	43.8	1.0	-47.4	-13.0	-34.4	
5640.00	-18.1	H	3.0	43.7	1.0	-60.8	-13.0	-47.8	
7520.00	-14.9	H	3.0	42.5	1.0	-56.3	-13.0	-43.3	
9400.00	-18.0	H	3.0	41.1	1.0	-58.1	-13.0	-45.1	
11280.00	-16.1	H	3.0	41.0	1.0	-56.1	-13.0	-43.1	
High Ch, 1908.5MHz									
3817.00	-9.7	V	3.0	43.8	1.0	-52.5	-13.0	-39.5	
5725.50	-12.9	V	3.0	43.7	1.0	-55.6	-13.0	-42.6	
7634.00	-12.0	V	3.0	42.4	1.0	-53.4	-13.0	-40.4	
9542.50	-15.0	V	3.0	41.0	1.0	-55.0	-13.0	-42.0	
11451.00	-9.7	V	3.0	41.0	1.0	-49.7	-13.0	-36.7	
3817.00	1.0	H	3.0	43.8	1.0	-41.8	-13.0	-28.8	
5725.50	-16.0	H	3.0	43.7	1.0	-58.7	-13.0	-45.7	
7634.00	-15.1	H	3.0	42.4	1.0	-56.5	-13.0	-43.5	
9542.50	-18.0	H	3.0	41.0	1.0	-57.9	-13.0	-44.9	
11451.00	-15.9	H	3.0	41.0	1.0	-55.9	-13.0	-42.9	

LTE

Band 2

1.4MHz

QPSK

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

Company: Samsung
Project #: 4788481138
Date: 2018-06-08
Test Engineer: 45585
Configuration: EUT / Adapter / Earphone, X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 2 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	-15.5	V	3.0	43.8	1.0	-58.2	-13.0	-45.2	
5552.10	-15.1	V	3.0	43.7	1.0	-57.9	-13.0	-44.9	
7402.80	-12.0	V	3.0	42.5	1.0	-53.5	-13.0	-40.5	
9253.50	-16.5	V	3.0	41.3	1.0	-56.7	-13.0	-43.7	
11104.20	-8.3	V	3.0	40.9	1.0	-48.2	-13.0	-35.2	
3701.40	-9.5	H	3.0	43.8	1.0	-52.3	-13.0	-39.3	
5552.10	-15.8	H	3.0	43.7	1.0	-58.5	-13.0	-45.5	
7402.80	-14.9	H	3.0	42.5	1.0	-56.4	-13.0	-43.4	
9253.50	-17.9	H	3.0	41.3	1.0	-58.2	-13.0	-45.2	
11104.20	-8.7	H	3.0	40.9	1.0	-48.6	-13.0	-35.6	
Mid Ch, 1880MHz									
3760.00	-13.1	V	3.0	43.8	1.0	-55.9	-13.0	-42.9	
5640.00	-13.6	V	3.0	43.7	1.0	-56.3	-13.0	-43.3	
7520.00	-9.7	V	3.0	42.5	1.0	-51.2	-13.0	-38.2	
9400.00	-16.5	V	3.0	41.1	1.0	-56.6	-13.0	-43.6	
11280.00	-9.6	V	3.0	41.0	1.0	-49.5	-13.0	-36.5	
3760.00	-3.4	H	3.0	43.8	1.0	-46.1	-13.0	-33.1	
5640.00	-16.4	H	3.0	43.7	1.0	-59.1	-13.0	-46.1	
7520.00	-14.1	H	3.0	42.5	1.0	-55.6	-13.0	-42.6	
9400.00	-15.2	H	3.0	41.1	1.0	-55.4	-13.0	-42.4	
11280.00	-13.6	H	3.0	41.0	1.0	-53.6	-13.0	-40.6	
High Ch, 1909.3MHz									
3818.60	-4.7	V	3.0	43.8	1.0	-47.5	-13.0	-34.5	
5727.90	-12.2	V	3.0	43.7	1.0	-54.9	-13.0	-41.9	
7637.20	-11.2	V	3.0	42.4	1.0	-52.6	-13.0	-39.6	
9546.50	-15.9	V	3.0	41.0	1.0	-55.9	-13.0	-42.9	
11455.80	-6.8	V	3.0	41.0	1.0	-46.8	-13.0	-33.8	
3818.60	3.1	H	3.0	43.8	1.0	-39.7	-13.0	-26.7	
5727.90	-15.3	H	3.0	43.7	1.0	-58.0	-13.0	-45.0	
7637.20	-15.0	H	3.0	42.4	1.0	-56.4	-13.0	-43.4	
9546.50	-14.6	H	3.0	41.0	1.0	-54.5	-13.0	-41.5	
11455.80	-13.2	H	3.0	41.0	1.0	-53.2	-13.0	-40.2	

LTE

Band 2

1.4MHz

16QAM

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

Company: Samsung
Project #: 4788481138
Date: 2018-06-08
Test Engineer: 45585
Configuration: EUT / Adapter / Earphone, X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 2 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	-15.0	V	3.0	43.8	1.0	-57.7	-13.0	-44.7	
5552.10	-14.7	V	3.0	43.7	1.0	-57.5	-13.0	-44.5	
7402.80	-11.4	V	3.0	42.5	1.0	-52.9	-13.0	-39.9	
9253.50	-16.3	V	3.0	41.3	1.0	-56.5	-13.0	-43.5	
11104.20	-9.1	V	3.0	40.9	1.0	-49.0	-13.0	-36.0	
3701.40	-9.9	H	3.0	43.8	1.0	-52.6	-13.0	-39.6	
5552.10	-16.7	H	3.0	43.7	1.0	-59.4	-13.0	-46.4	
7402.80	-15.5	H	3.0	42.5	1.0	-57.0	-13.0	-44.0	
9253.50	-18.9	H	3.0	41.3	1.0	-59.1	-13.0	-46.1	
11104.20	-14.8	H	3.0	40.9	1.0	-54.7	-13.0	-41.7	
Mid Ch, 1880MHz									
3760.00	-13.8	V	3.0	43.8	1.0	-56.6	-13.0	-43.6	
5640.00	-14.4	V	3.0	43.7	1.0	-57.1	-13.0	-44.1	
7520.00	-11.2	V	3.0	42.5	1.0	-52.6	-13.0	-39.6	
9400.00	-16.8	V	3.0	41.1	1.0	-56.9	-13.0	-43.9	
11280.00	-10.6	V	3.0	41.0	1.0	-50.5	-13.0	-37.5	
3760.00	-4.3	H	3.0	43.8	1.0	-47.1	-13.0	-34.1	
5640.00	-17.0	H	3.0	43.7	1.0	-59.7	-13.0	-46.7	
7520.00	-14.7	H	3.0	42.5	1.0	-56.2	-13.0	-43.2	
9400.00	-15.7	H	3.0	41.1	1.0	-55.8	-13.0	-42.8	
11280.00	-14.1	H	3.0	41.0	1.0	-54.0	-13.0	-41.0	
High Ch, 1909.3MHz									
3818.60	-5.4	V	3.0	43.8	1.0	-48.3	-13.0	-35.3	
5727.90	-13.0	V	3.0	43.7	1.0	-55.7	-13.0	-42.7	
7637.20	-12.2	V	3.0	42.4	1.0	-53.6	-13.0	-40.6	
9546.50	-16.3	V	3.0	41.0	1.0	-56.3	-13.0	-43.3	
11455.80	-8.0	V	3.0	41.0	1.0	-48.0	-13.0	-35.0	
3818.60	2.4	H	3.0	43.8	1.0	-40.4	-13.0	-27.4	
5727.90	-15.9	H	3.0	43.7	1.0	-58.6	-13.0	-45.6	
7637.20	-15.5	H	3.0	42.4	1.0	-56.8	-13.0	-43.8	
9546.50	-15.0	H	3.0	41.0	1.0	-55.0	-13.0	-42.0	
11455.80	-13.9	H	3.0	41.0	1.0	-53.9	-13.0	-40.9	

LTE Band 4

LTE

Band 4

20MHz

QPSK

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

Company: Samsung
Project #: 4788481138
Date: 2018-06-15
Test Engineer: 47989
Configuration: EUT / AC Adapter / Craddle, X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 4 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	0.4	V	3.0	43.7	1.0	-42.2	-13.0	-29.2	
5160.00	-19.5	V	3.0	43.8	1.0	-62.3	-13.0	-49.3	
6880.00	-14.5	V	3.0	42.8	1.0	-56.4	-13.0	-43.4	
8600.00	-19.0	V	3.0	41.8	1.0	-59.8	-13.0	-46.8	
10320.00	-18.2	V	3.0	40.7	1.0	-57.8	-13.0	-44.8	
3440.00	5.3	H	3.0	43.7	1.0	-37.3	-13.0	-24.3	
5160.00	-20.1	H	3.0	43.8	1.0	-62.9	-13.0	-49.9	
6880.00	-16.1	H	3.0	42.8	1.0	-57.9	-13.0	-44.9	
8600.00	-18.3	H	3.0	41.8	1.0	-59.1	-13.0	-46.1	
10320.00	-18.7	H	3.0	40.7	1.0	-58.4	-13.0	-45.4	
Mid Ch, 1732.5MHz									
3465.00	1.1	V	3.0	43.7	1.0	-41.6	-13.0	-28.6	
5197.50	-18.2	V	3.0	43.8	1.0	-60.9	-13.0	-47.9	
6930.00	-13.9	V	3.0	42.8	1.0	-55.7	-13.0	-42.7	
8662.50	-18.5	V	3.0	41.7	1.0	-59.3	-13.0	-46.3	
10395.00	-18.7	V	3.0	40.7	1.0	-58.3	-13.0	-45.3	
3465.00	6.4	H	3.0	43.7	1.0	-36.2	-13.0	-23.2	
5197.50	-18.9	H	3.0	43.8	1.0	-61.7	-13.0	-48.7	
6930.00	-16.3	H	3.0	42.8	1.0	-58.1	-13.0	-45.1	
8662.50	-18.3	H	3.0	41.7	1.0	-59.1	-13.0	-46.1	
10395.00	-18.6	H	3.0	40.7	1.0	-58.2	-13.0	-45.2	
High Ch, 1745MHz									
3490.00	-3.2	V	3.0	43.7	1.0	-45.9	-13.0	-32.9	
5235.00	-18.6	V	3.0	43.8	1.0	-61.4	-13.0	-48.4	
6980.00	-14.4	V	3.0	42.7	1.0	-56.1	-13.0	-43.1	
8725.00	-19.2	V	3.0	41.7	1.0	-59.8	-13.0	-46.8	
10470.00	-16.9	V	3.0	40.7	1.0	-56.6	-13.0	-43.6	
3490.00	4.6	H	3.0	43.7	1.0	-38.1	-13.0	-25.1	
5235.00	-18.9	H	3.0	43.8	1.0	-61.6	-13.0	-48.6	
6980.00	-16.9	H	3.0	42.7	1.0	-58.6	-13.0	-45.6	
8725.00	-19.0	H	3.0	41.7	1.0	-59.7	-13.0	-46.7	
10470.00	-18.9	H	3.0	40.7	1.0	-58.6	-13.0	-45.6	

LTE

Band 4

20MHz

16QAM

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

Company: Samsung
Project #: 4788481138
Date: 2018-06-15
Test Engineer: 47989
Configuration: EUT / AC Adapter / Craddle, X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 4 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	-3.9	V	3.0	43.7	1.0	-46.6	-13.0	-33.6	
5160.00	-19.8	V	3.0	43.8	1.0	-62.5	-13.0	-49.5	
6880.00	-17.6	V	3.0	42.8	1.0	-59.4	-13.0	-46.4	
8600.00	-19.3	V	3.0	41.8	1.0	-60.1	-13.0	-47.1	
10320.00	-19.1	V	3.0	40.7	1.0	-58.8	-13.0	-45.8	
3440.00	1.0	H	3.0	43.7	1.0	-41.7	-13.0	-28.7	
5160.00	-20.2	H	3.0	43.8	1.0	-62.9	-13.0	-49.9	
6880.00	-17.0	H	3.0	42.8	1.0	-58.9	-13.0	-45.9	
8600.00	-18.7	H	3.0	41.8	1.0	-59.5	-13.0	-46.5	
10320.00	-19.2	H	3.0	40.7	1.0	-58.9	-13.0	-45.9	
Mid Ch, 1732.5MHz									
3465.00	-0.2	V	3.0	43.7	1.0	-42.8	-13.0	-29.8	
5197.50	-18.3	V	3.0	43.8	1.0	-61.1	-13.0	-48.1	
6930.00	-15.3	V	3.0	42.8	1.0	-57.1	-13.0	-44.1	
8662.50	-19.2	V	3.0	41.7	1.0	-59.9	-13.0	-46.9	
10395.00	-17.1	V	3.0	40.7	1.0	-56.7	-13.0	-43.7	
3465.00	5.4	H	3.0	43.7	1.0	-37.3	-13.0	-24.3	
5197.50	-18.6	H	3.0	43.8	1.0	-61.4	-13.0	-48.4	
6930.00	-17.7	H	3.0	42.8	1.0	-59.5	-13.0	-46.5	
8662.50	-17.9	H	3.0	41.7	1.0	-58.7	-13.0	-45.7	
10395.00	-17.2	H	3.0	40.7	1.0	-56.9	-13.0	-43.9	
High Ch, 1745MHz									
3490.00	-4.0	V	3.0	43.7	1.0	-46.7	-13.0	-33.7	
5235.00	-18.6	V	3.0	43.8	1.0	-61.3	-13.0	-48.3	
6980.00	-14.7	V	3.0	42.7	1.0	-56.5	-13.0	-43.5	
8725.00	-19.5	V	3.0	41.7	1.0	-60.2	-13.0	-47.2	
10470.00	-17.3	V	3.0	40.7	1.0	-57.0	-13.0	-44.0	
3490.00	3.1	H	3.0	43.7	1.0	-39.6	-13.0	-26.6	
5235.00	-18.9	H	3.0	43.8	1.0	-61.6	-13.0	-48.6	
6980.00	-17.1	H	3.0	42.7	1.0	-58.8	-13.0	-45.8	
8725.00	-19.1	H	3.0	41.7	1.0	-59.8	-13.0	-46.8	
10470.00	-18.9	H	3.0	40.7	1.0	-58.6	-13.0	-45.6	

LTE

Band 4

15MHz

QPSK

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

Company:	Samsung
Project #:	4788481138
Date:	2018-06-15
Test Engineer:	45585
Configuration:	EUT / Adapter / Earphone, X-Position
Location:	Chamber 1
Mode:	LTE_QPSK Band 4 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	-7.9	V	3.0	43.7	1.0	-50.6	-13.0	-37.6	
5152.50	-20.0	V	3.0	43.8	1.0	-62.8	-13.0	-49.8	
6870.00	-17.3	V	3.0	42.8	1.0	-59.1	-13.0	-46.1	
8587.50	-19.6	V	3.0	41.8	1.0	-60.4	-13.0	-47.4	
10305.00	-19.2	V	3.0	40.6	1.0	-58.9	-13.0	-45.9	
3435.00	1.4	H	3.0	43.7	1.0	-41.3	-13.0	-28.3	
5152.50	-20.4	H	3.0	43.8	1.0	-63.2	-13.0	-50.2	
6870.00	-16.9	H	3.0	42.8	1.0	-58.8	-13.0	-45.8	
8587.50	-19.0	H	3.0	41.8	1.0	-59.8	-13.0	-46.8	
10305.00	-19.2	H	3.0	40.6	1.0	-58.8	-13.0	-45.8	
Mid Ch, 1732.5MHz									
3465.00	-5.9	V	3.0	43.7	1.0	-48.5	-13.0	-35.5	
5197.50	-19.0	V	3.0	43.8	1.0	-61.7	-13.0	-48.7	
6930.00	-17.2	V	3.0	42.8	1.0	-59.0	-13.0	-46.0	
8662.50	-19.2	V	3.0	41.7	1.0	-59.9	-13.0	-46.9	
10395.00	-18.6	V	3.0	40.7	1.0	-58.3	-13.0	-45.3	
3465.00	4.2	H	3.0	43.7	1.0	-38.5	-13.0	-25.5	
5197.50	-19.3	H	3.0	43.8	1.0	-62.1	-13.0	-49.1	
6930.00	-17.2	H	3.0	42.8	1.0	-59.0	-13.0	-46.0	
8662.50	-18.8	H	3.0	41.7	1.0	-59.6	-13.0	-46.6	
10395.00	-19.2	H	3.0	40.7	1.0	-58.8	-13.0	-45.8	
High Ch, 1747.5MHz									
3495.00	-6.7	V	3.0	43.7	1.0	-49.4	-13.0	-36.4	
5242.50	-18.3	V	3.0	43.8	1.0	-61.0	-13.0	-48.0	
6990.00	-13.8	V	3.0	42.7	1.0	-55.5	-13.0	-42.5	
8737.50	-19.8	V	3.0	41.7	1.0	-60.5	-13.0	-47.5	
10485.00	-16.6	V	3.0	40.7	1.0	-56.3	-13.0	-43.3	
3495.00	2.0	H	3.0	43.7	1.0	-40.7	-13.0	-27.7	
5242.50	-18.7	H	3.0	43.8	1.0	-61.5	-13.0	-48.5	
6990.00	-17.8	H	3.0	42.7	1.0	-59.6	-13.0	-46.6	
8737.50	-19.2	H	3.0	41.7	1.0	-59.9	-13.0	-46.9	
10485.00	-18.2	H	3.0	40.7	1.0	-57.9	-13.0	-44.9	

LTE

Band 4

15MHz

16QAM

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

Company: Samsung
Project #: 4788481138
Date: 2018-06-15
Test Engineer: 45585
Configuration: EUT / Adapter / Earphone, X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 4 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	-8.5	V	3.0	43.7	1.0	-51.2	-13.0	-38.2	
5152.50	-20.0	V	3.0	43.8	1.0	-62.8	-13.0	-49.8	
6870.00	-17.3	V	3.0	42.8	1.0	-59.2	-13.0	-46.2	
8587.50	-19.5	V	3.0	41.8	1.0	-60.3	-13.0	-47.3	
10305.00	-19.2	V	3.0	40.6	1.0	-58.9	-13.0	-45.9	
3435.00	0.4	H	3.0	43.7	1.0	-42.3	-13.0	-29.3	
5152.50	-20.3	H	3.0	43.8	1.0	-63.1	-13.0	-50.1	
6870.00	-16.9	H	3.0	42.8	1.0	-58.7	-13.0	-45.7	
8587.50	-19.1	H	3.0	41.8	1.0	-59.8	-13.0	-46.8	
10305.00	-19.3	H	3.0	40.6	1.0	-59.0	-13.0	-46.0	
Mid Ch, 1732.5MHz									
3465.00	-7.3	V	3.0	43.7	1.0	-50.0	-13.0	-37.0	
5197.50	-19.0	V	3.0	43.8	1.0	-61.8	-13.0	-48.8	
6930.00	-17.4	V	3.0	42.8	1.0	-59.2	-13.0	-46.2	
8662.50	-19.3	V	3.0	41.7	1.0	-60.0	-13.0	-47.0	
10395.00	-19.0	V	3.0	40.7	1.0	-58.7	-13.0	-45.7	
3465.00	2.3	H	3.0	43.7	1.0	-40.4	-13.0	-27.4	
5197.50	-19.3	H	3.0	43.8	1.0	-62.1	-13.0	-49.1	
6930.00	-17.2	H	3.0	42.8	1.0	-59.0	-13.0	-46.0	
8662.50	-19.0	H	3.0	41.7	1.0	-59.7	-13.0	-46.7	
10395.00	-19.1	H	3.0	40.7	1.0	-58.8	-13.0	-45.8	
High Ch, 1747.5MHz									
3495.00	-8.0	V	3.0	43.7	1.0	-50.7	-13.0	-37.7	
5242.50	-18.3	V	3.0	43.8	1.0	-61.1	-13.0	-48.1	
6990.00	-15.2	V	3.0	42.7	1.0	-56.9	-13.0	-43.9	
8737.50	-19.8	V	3.0	41.7	1.0	-60.5	-13.0	-47.5	
10485.00	-17.2	V	3.0	40.7	1.0	-56.9	-13.0	-43.9	
3495.00	1.0	H	3.0	43.7	1.0	-41.7	-13.0	-28.7	
5242.50	-18.8	H	3.0	43.8	1.0	-61.5	-13.0	-48.5	
6990.00	-17.8	H	3.0	42.7	1.0	-59.6	-13.0	-46.6	
8737.50	-19.2	H	3.0	41.7	1.0	-59.9	-13.0	-46.9	
10485.00	-18.2	H	3.0	40.7	1.0	-57.9	-13.0	-44.9	

LTE

Band 4

10MHz

QPSK

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

Company: Samsung
Project #: 4788481138
Date: 2018-06-15
Test Engineer: 45585
Configuration: EUT / Adapter / Earphone, X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 4 Harmonics, 10MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1715MHz									
3430.00	-5.6	V	3.0	43.7	1.0	-48.2	-13.0	-35.2	
5145.00	-19.9	V	3.0	43.8	1.0	-62.6	-13.0	-49.6	
6860.00	-17.6	V	3.0	42.9	1.0	-59.4	-13.0	-46.4	
8575.00	-19.5	V	3.0	41.8	1.0	-60.3	-13.0	-47.3	
10290.00	-18.9	V	3.0	40.6	1.0	-58.6	-13.0	-45.6	
3430.00	3.1	H	3.0	43.7	1.0	-39.5	-13.0	-26.5	
5145.00	-20.2	H	3.0	43.8	1.0	-62.9	-13.0	-49.9	
6860.00	-16.9	H	3.0	42.9	1.0	-58.7	-13.0	-45.7	
8575.00	-18.9	H	3.0	41.8	1.0	-59.7	-13.0	-46.7	
10290.00	-19.0	H	3.0	40.6	1.0	-58.7	-13.0	-45.7	
Mid Ch, 1732.5MHz									
3465.00	-4.8	V	3.0	43.7	1.0	-47.5	-13.0	-34.5	
5197.50	-19.0	V	3.0	43.8	1.0	-61.7	-13.0	-48.7	
6930.00	-15.2	V	3.0	42.8	1.0	-57.0	-13.0	-44.0	
8662.50	-19.1	V	3.0	41.7	1.0	-59.8	-13.0	-46.8	
10395.00	-18.4	V	3.0	40.7	1.0	-58.0	-13.0	-45.0	
3465.00	2.9	H	3.0	43.7	1.0	-39.8	-13.0	-26.8	
5197.50	-19.2	H	3.0	43.8	1.0	-62.0	-13.0	-49.0	
6930.00	-17.5	H	3.0	42.8	1.0	-59.3	-13.0	-46.3	
8662.50	-18.9	H	3.0	41.7	1.0	-59.7	-13.0	-46.7	
10395.00	-19.2	H	3.0	40.7	1.0	-58.9	-13.0	-45.9	
High Ch, 1750MHz									
3500.00	-5.8	V	3.0	43.7	1.0	-48.5	-13.0	-35.5	
5250.00	-17.1	V	3.0	43.8	1.0	-59.9	-13.0	-46.9	
7000.00	-14.3	V	3.0	42.7	1.0	-56.1	-13.0	-43.1	
8750.00	-19.9	V	3.0	41.7	1.0	-60.6	-13.0	-47.6	
10500.00	-16.5	V	3.0	40.7	1.0	-56.2	-13.0	-43.2	
3500.00	1.9	H	3.0	43.7	1.0	-40.8	-13.0	-27.8	
5250.00	-18.5	H	3.0	43.8	1.0	-61.3	-13.0	-48.3	
7000.00	-17.7	H	3.0	42.7	1.0	-59.5	-13.0	-46.5	
8750.00	-19.2	H	3.0	41.7	1.0	-59.9	-13.0	-46.9	
10500.00	-18.4	H	3.0	40.7	1.0	-58.1	-13.0	-45.1	

LTE

Band 4

10MHz

16QAM

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

Company: Samsung
Project #: 4788481138
Date: 2018-06-15
Test Engineer: 45585
Configuration: EUT / Adapter / Earphone, X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 4 Harmonics, 10MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1715MHz									
3430.00	-6.8	V	3.0	43.7	1.0	-49.5	-13.0	-36.5	
5145.00	-19.8	V	3.0	43.8	1.0	-62.6	-13.0	-49.6	
6860.00	-17.1	V	3.0	42.9	1.0	-59.0	-13.0	-46.0	
8575.00	-18.8	V	3.0	41.8	1.0	-59.5	-13.0	-46.5	
10290.00	-18.6	V	3.0	40.6	1.0	-58.2	-13.0	-45.2	
3430.00	1.8	H	3.0	43.7	1.0	-40.9	-13.0	-27.9	
5145.00	-20.2	H	3.0	43.8	1.0	-63.0	-13.0	-50.0	
6860.00	-16.8	H	3.0	42.9	1.0	-58.7	-13.0	-45.7	
8575.00	-19.0	H	3.0	41.8	1.0	-59.8	-13.0	-46.8	
10290.00	-19.0	H	3.0	40.6	1.0	-58.6	-13.0	-45.6	
Mid Ch, 1732.5MHz									
3465.00	-6.6	V	3.0	43.7	1.0	-49.3	-13.0	-36.3	
5197.50	-18.9	V	3.0	43.8	1.0	-61.7	-13.0	-48.7	
6930.00	-17.8	V	3.0	42.8	1.0	-59.6	-13.0	-46.6	
8662.50	-19.0	V	3.0	41.7	1.0	-59.7	-13.0	-46.7	
10395.00	-18.8	V	3.0	40.7	1.0	-58.5	-13.0	-45.5	
3465.00	0.8	H	3.0	43.7	1.0	-41.9	-13.0	-28.9	
5197.50	-19.1	H	3.0	43.8	1.0	-61.9	-13.0	-48.9	
6930.00	-17.5	H	3.0	42.8	1.0	-59.3	-13.0	-46.3	
8662.50	-19.0	H	3.0	41.7	1.0	-59.7	-13.0	-46.7	
10395.00	-19.2	H	3.0	40.7	1.0	-58.8	-13.0	-45.8	
High Ch, 1750MHz									
3500.00	-6.5	V	3.0	43.7	1.0	-49.2	-13.0	-36.2	
5250.00	-17.6	V	3.0	43.8	1.0	-60.4	-13.0	-47.4	
7000.00	-15.4	V	3.0	42.7	1.0	-57.1	-13.0	-44.1	
8750.00	-19.9	V	3.0	41.7	1.0	-60.6	-13.0	-47.6	
10500.00	-16.9	V	3.0	40.7	1.0	-56.6	-13.0	-43.6	
3500.00	1.1	H	3.0	43.7	1.0	-41.6	-13.0	-28.6	
5250.00	-18.5	H	3.0	43.8	1.0	-61.3	-13.0	-48.3	
7000.00	-17.8	H	3.0	42.7	1.0	-59.5	-13.0	-46.5	
8750.00	-19.2	H	3.0	41.7	1.0	-59.9	-13.0	-46.9	
10500.00	-18.4	H	3.0	40.7	1.0	-58.1	-13.0	-45.1	

LTE

Band 4

5MHz

QPSK

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

Company: Samsung
Project #: 4788481138
Date: 2018-06-15
Test Engineer: 45585
Configuration: EUT / Adapter / Earphone, X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 4 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	-5.3	V	3.0	43.7	1.0	-47.9	-13.0	-34.9	
5137.50	-19.7	V	3.0	43.8	1.0	-62.4	-13.0	-49.4	
6850.00	-16.6	V	3.0	42.9	1.0	-58.5	-13.0	-45.5	
8562.50	-18.9	V	3.0	41.8	1.0	-59.7	-13.0	-46.7	
10275.00	-18.1	V	3.0	40.6	1.0	-57.7	-13.0	-44.7	
3425.00	3.9	H	3.0	43.7	1.0	-38.7	-13.0	-25.7	
5137.50	-19.8	H	3.0	43.8	1.0	-62.6	-13.0	-49.6	
6850.00	-16.7	H	3.0	42.9	1.0	-58.6	-13.0	-45.6	
8562.50	-18.8	H	3.0	41.8	1.0	-59.6	-13.0	-46.6	
10275.00	-18.8	H	3.0	40.6	1.0	-58.4	-13.0	-45.4	
Mid Ch, 1732.5MHz									
3465.00	1.5	V	3.0	43.7	1.0	-41.2	-13.0	-28.2	
5197.50	-19.1	V	3.0	43.8	1.0	-61.8	-13.0	-48.8	
6930.00	-17.0	V	3.0	42.8	1.0	-58.7	-13.0	-45.7	
8662.50	-19.2	V	3.0	41.7	1.0	-59.9	-13.0	-46.9	
10395.00	-18.8	V	3.0	40.7	1.0	-58.5	-13.0	-45.5	
3465.00	3.6	H	3.0	43.7	1.0	-39.1	-13.0	-26.1	
5197.50	-19.3	H	3.0	43.8	1.0	-62.0	-13.0	-49.0	
6930.00	-17.4	H	3.0	42.8	1.0	-59.2	-13.0	-46.2	
8662.50	-18.9	H	3.0	41.7	1.0	-59.6	-13.0	-46.6	
10395.00	-19.2	H	3.0	40.7	1.0	-58.9	-13.0	-45.9	
High Ch, 1752.5MHz									
3505.00	-5.3	V	3.0	43.7	1.0	-48.0	-13.0	-35.0	
5257.50	-17.6	V	3.0	43.8	1.0	-60.4	-13.0	-47.4	
7010.00	-14.8	V	3.0	42.7	1.0	-56.5	-13.0	-43.5	
8762.50	-19.4	V	3.0	41.7	1.0	-60.1	-13.0	-47.1	
10515.00	-16.4	V	3.0	40.7	1.0	-56.1	-13.0	-43.1	
3505.00	1.6	H	3.0	43.7	1.0	-41.1	-13.0	-28.1	
5257.50	-18.5	H	3.0	43.8	1.0	-61.3	-13.0	-48.3	
7010.00	-17.8	H	3.0	42.7	1.0	-59.6	-13.0	-46.6	
8762.50	-19.4	H	3.0	41.7	1.0	-60.1	-13.0	-47.1	
10515.00	-18.4	H	3.0	40.7	1.0	-58.1	-13.0	-45.1	

LTE

Band 4

5MHz

16QAM

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

Company: Samsung
Project #: 4788481138
Date: 2018-06-15
Test Engineer: 45585
Configuration: EUT / Adapter / Earphone, X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 4 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	-7.9	V	3.0	43.7	1.0	-50.6	-13.0	-37.6	
5137.50	-19.6	V	3.0	43.8	1.0	-62.3	-13.0	-49.3	
6850.00	-17.2	V	3.0	42.9	1.0	-59.0	-13.0	-46.0	
8562.50	-18.8	V	3.0	41.8	1.0	-59.6	-13.0	-46.6	
10275.00	-18.4	V	3.0	40.6	1.0	-58.0	-13.0	-45.0	
3425.00	1.3	H	3.0	43.7	1.0	-41.4	-13.0	-28.4	
5137.50	-19.9	H	3.0	43.8	1.0	-62.7	-13.0	-49.7	
6850.00	-16.8	H	3.0	42.9	1.0	-58.7	-13.0	-45.7	
8562.50	-18.6	H	3.0	41.8	1.0	-59.5	-13.0	-46.5	
10275.00	-18.7	H	3.0	40.6	1.0	-58.4	-13.0	-45.4	
Mid Ch, 1732.5MHz									
3465.00	-0.5	V	3.0	43.7	1.0	-43.2	-13.0	-30.2	
5197.50	-19.0	V	3.0	43.8	1.0	-61.8	-13.0	-48.8	
6930.00	-17.3	V	3.0	42.8	1.0	-59.1	-13.0	-46.1	
8662.50	-19.4	V	3.0	41.7	1.0	-60.1	-13.0	-47.1	
10395.00	-19.1	V	3.0	40.7	1.0	-58.8	-13.0	-45.8	
3465.00	1.4	H	3.0	43.7	1.0	-41.3	-13.0	-28.3	
5197.50	-19.3	H	3.0	43.8	1.0	-62.1	-13.0	-49.1	
6930.00	-17.5	H	3.0	42.8	1.0	-59.3	-13.0	-46.3	
8662.50	-18.9	H	3.0	41.7	1.0	-59.7	-13.0	-46.7	
10395.00	-19.2	H	3.0	40.7	1.0	-58.9	-13.0	-45.9	
High Ch, 1752.5MHz									
3505.00	-6.5	V	3.0	43.7	1.0	-49.2	-13.0	-36.2	
5257.50	-17.7	V	3.0	43.8	1.0	-60.5	-13.0	-47.5	
7010.00	-15.1	V	3.0	42.7	1.0	-56.8	-13.0	-43.8	
8762.50	-19.5	V	3.0	41.7	1.0	-60.2	-13.0	-47.2	
10515.00	-16.9	V	3.0	40.7	1.0	-56.6	-13.0	-43.6	
3505.00	0.6	H	3.0	43.7	1.0	-42.1	-13.0	-29.1	
5257.50	-18.5	H	3.0	43.8	1.0	-61.2	-13.0	-48.2	
7010.00	-17.8	H	3.0	42.7	1.0	-59.5	-13.0	-46.5	
8762.50	-19.4	H	3.0	41.7	1.0	-60.1	-13.0	-47.1	
10515.00	-18.4	H	3.0	40.7	1.0	-58.1	-13.0	-45.1	

LTE

Band 4

3MHz

QPSK

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

Company: Samsung
Project #: 4788481138
Date: 2018-06-15
Test Engineer: 45585
Configuration: EUT / Adapter / Earphone, X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 4 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	-6.0	V	3.0	43.7	1.0	-48.6	-13.0	-35.6	
5134.50	-19.4	V	3.0	43.8	1.0	-62.2	-13.0	-49.2	
6846.00	-16.7	V	3.0	42.9	1.0	-58.6	-13.0	-45.6	
8557.50	-18.6	V	3.0	41.8	1.0	-59.5	-13.0	-46.5	
10269.00	-17.8	V	3.0	40.6	1.0	-57.4	-13.0	-44.4	
3423.00	3.1	H	3.0	43.7	1.0	-39.5	-13.0	-26.5	
5134.50	-19.7	H	3.0	43.8	1.0	-62.5	-13.0	-49.5	
6846.00	-16.7	H	3.0	42.9	1.0	-58.6	-13.0	-45.6	
8557.50	-18.7	H	3.0	41.8	1.0	-59.5	-13.0	-46.5	
10269.00	-18.2	H	3.0	40.6	1.0	-57.9	-13.0	-44.9	
Mid Ch, 1732.5MHz									
3465.00	-0.4	V	3.0	43.7	1.0	-43.1	-13.0	-30.1	
5197.50	-18.9	V	3.0	43.8	1.0	-61.6	-13.0	-48.6	
6930.00	-17.2	V	3.0	42.8	1.0	-59.0	-13.0	-46.0	
8662.50	-19.4	V	3.0	41.7	1.0	-60.1	-13.0	-47.1	
10395.00	-18.4	V	3.0	40.7	1.0	-58.1	-13.0	-45.1	
3465.00	2.5	H	3.0	43.7	1.0	-40.1	-13.0	-27.1	
5197.50	-19.1	H	3.0	43.8	1.0	-61.9	-13.0	-48.9	
6930.00	-17.1	H	3.0	42.8	1.0	-58.9	-13.0	-45.9	
8662.50	-18.5	H	3.0	41.7	1.0	-59.3	-13.0	-46.3	
10395.00	-18.8	H	3.0	40.7	1.0	-58.4	-13.0	-45.4	
High Ch, 1753.5MHz									
3507.00	-6.2	V	3.0	43.7	1.0	-48.9	-13.0	-35.9	
5260.50	-17.8	V	3.0	43.8	1.0	-60.6	-13.0	-47.6	
7014.00	-13.6	V	3.0	42.7	1.0	-55.3	-13.0	-42.3	
8767.50	-18.9	V	3.0	41.7	1.0	-59.5	-13.0	-46.5	
10521.00	-16.8	V	3.0	40.7	1.0	-56.5	-13.0	-43.5	
3507.00	1.4	H	3.0	43.7	1.0	-41.3	-13.0	-28.3	
5260.50	-18.1	H	3.0	43.8	1.0	-60.9	-13.0	-47.9	
7014.00	-13.6	H	3.0	42.7	1.0	-55.3	-13.0	-42.3	
8767.50	-19.3	H	3.0	41.7	1.0	-60.0	-13.0	-47.0	
10521.00	-18.2	H	3.0	40.7	1.0	-57.9	-13.0	-44.9	

LTE

Band 4

3MHz

16QAM

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

Company: Samsung
Project #: 4788481138
Date: 2018-06-15
Test Engineer: 45585
Configuration: EUT / Adapter / Earphone, X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 4 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	-6.6	V	3.0	43.7	1.0	-49.2	-13.0	-36.2	
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	-59.1	-13.0	-46.1	
8557.50	-18.9	V	3.0	41.8	1.0	-59.7	-13.0	-46.7	
10269.00	-17.9	V	3.0	40.6	1.0	-57.5	-13.0	-44.5	
3423.00	2.2	H	3.0	43.7	1.0	-40.5	-13.0	-27.5	
5134.50	-19.7	H	3.0	43.8	1.0	-62.4	-13.0	-49.4	
6846.00	-16.8	H	3.0	42.9	1.0	-58.7	-13.0	-45.7	
8557.50	-18.5	H	3.0	41.8	1.0	-59.3	-13.0	-46.3	
10269.00	-18.3	H	3.0	40.6	1.0	-58.0	-13.0	-45.0	
Mid Ch, 1732.5MHz									
3465.00	-2.1	V	3.0	43.7	1.0	-44.8	-13.0	-31.8	
5197.50	-18.8	V	3.0	43.8	1.0	-61.6	-13.0	-48.6	
6930.00	-17.3	V	3.0	42.8	1.0	-59.1	-13.0	-46.1	
8662.50	-19.3	V	3.0	41.7	1.0	-60.0	-13.0	-47.0	
10395.00	-18.9	V	3.0	40.7	1.0	-58.5	-13.0	-45.5	
3465.00	0.7	H	3.0	43.7	1.0	-42.0	-13.0	-29.0	
5197.50	-19.1	H	3.0	43.8	1.0	-61.9	-13.0	-48.9	
6930.00	-17.2	H	3.0	42.8	1.0	-58.9	-13.0	-45.9	
8662.50	-18.7	H	3.0	41.7	1.0	-59.4	-13.0	-46.4	
10395.00	-18.7	H	3.0	40.7	1.0	-58.4	-13.0	-45.4	
High Ch, 1753.5MHz									
3507.00	-7.0	V	3.0	43.7	1.0	-49.7	-13.0	-36.7	
5260.50	-18.1	V	3.0	43.8	1.0	-60.9	-13.0	-47.9	
7014.00	-14.8	V	3.0	42.7	1.0	-56.6	-13.0	-43.6	
8767.50	-19.2	V	3.0	41.7	1.0	-59.9	-13.0	-46.9	
10521.00	-17.3	V	3.0	40.7	1.0	-57.0	-13.0	-44.0	
3507.00	0.3	H	3.0	43.7	1.0	-42.4	-13.0	-29.4	
5260.50	-18.4	H	3.0	43.8	1.0	-61.2	-13.0	-48.2	
7014.00	-13.5	H	3.0	42.7	1.0	-55.2	-13.0	-42.2	
8767.50	-19.3	H	3.0	41.7	1.0	-60.0	-13.0	-47.0	
10521.00	-18.2	H	3.0	40.7	1.0	-57.9	-13.0	-44.9	

LTE

Band 4

1.4MHz

QPSK

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

Company: Samsung
Project #: 4788481138
Date: 2018-06-15
Test Engineer: 45585
Configuration: EUT / Adapter / Earphone, X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 4 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	-5.9	V	3.0	43.7	1.0	-48.6	-13.0	-35.6	
5132.10	-19.4	V	3.0	43.8	1.0	-62.2	-13.0	-49.2	
6842.80	-17.3	V	3.0	42.9	1.0	-59.2	-13.0	-46.2	
8553.50	-18.5	V	3.0	41.8	1.0	-59.3	-13.0	-46.3	
10264.20	-18.2	V	3.0	40.6	1.0	-57.9	-13.0	-44.9	
3421.40	3.3	H	3.0	43.7	1.0	-39.4	-13.0	-26.4	
5132.10	-19.8	H	3.0	43.8	1.0	-62.6	-13.0	-49.6	
6842.80	-17.0	H	3.0	42.9	1.0	-58.8	-13.0	-45.8	
8553.50	-18.6	H	3.0	41.8	1.0	-59.4	-13.0	-46.4	
10264.20	-18.6	H	3.0	40.6	1.0	-58.3	-13.0	-45.3	
Mid Ch, 1732.5MHz									
3465.00	1.8	V	3.0	43.7	1.0	-40.9	-13.0	-27.9	
5197.50	-18.8	V	3.0	43.8	1.0	-61.6	-13.0	-48.6	
6930.00	-16.0	V	3.0	42.8	1.0	-57.8	-13.0	-44.8	
8662.50	-19.0	V	3.0	41.7	1.0	-59.8	-13.0	-46.8	
10395.00	-18.4	V	3.0	40.7	1.0	-58.1	-13.0	-45.1	
3465.00	3.0	H	3.0	43.7	1.0	-39.6	-13.0	-26.6	
5197.50	-19.3	H	3.0	43.8	1.0	-62.0	-13.0	-49.0	
6930.00	-17.3	H	3.0	42.8	1.0	-59.1	-13.0	-46.1	
8662.50	-18.9	H	3.0	41.7	1.0	-59.7	-13.0	-46.7	
10395.00	-18.7	H	3.0	40.7	1.0	-58.3	-13.0	-45.3	
High Ch, 1754.3MHz									
3508.60	-3.1	V	3.0	43.7	1.0	-45.8	-13.0	-32.8	
5262.90	-17.9	V	3.0	43.8	1.0	-60.6	-13.0	-47.6	
7017.20	-12.6	V	3.0	42.7	1.0	-54.4	-13.0	-41.4	
8771.50	-18.7	V	3.0	41.7	1.0	-59.3	-13.0	-46.3	
10525.80	-15.8	V	3.0	40.7	1.0	-55.5	-13.0	-42.5	
3508.60	1.5	H	3.0	43.7	1.0	-41.2	-13.0	-28.2	
5262.90	-18.4	H	3.0	43.8	1.0	-61.2	-13.0	-48.2	
7017.20	-16.9	H	3.0	42.7	1.0	-58.6	-13.0	-45.6	
8771.50	-18.9	H	3.0	41.7	1.0	-59.6	-13.0	-46.6	
10525.80	-18.1	H	3.0	40.7	1.0	-57.8	-13.0	-44.8	

LTE

Band 4

1.4MHz

16QAM

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

Company: Samsung
Project #: 4788481138
Date: 2018-06-15
Test Engineer: 45585
Configuration: EUT / Adapter / Earphone, X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 4 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	-6.4	V	3.0	43.7	1.0	-49.1	-13.0	-36.1	
5132.10	-18.7	V	3.0	43.8	1.0	-61.4	-13.0	-48.4	
6842.80	-15.3	V	3.0	42.9	1.0	-57.2	-13.0	-44.2	
8553.50	-17.9	V	3.0	41.8	1.0	-58.8	-13.0	-45.8	
10264.20	-17.9	V	3.0	40.6	1.0	-57.5	-13.0	-44.5	
3421.40	3.6	H	3.0	43.7	1.0	-39.1	-13.0	-26.1	
5132.10	-19.5	H	3.0	43.8	1.0	-62.3	-13.0	-49.3	
6842.80	-16.7	H	3.0	42.9	1.0	-58.6	-13.0	-45.6	
8553.50	-18.2	H	3.0	41.8	1.0	-59.1	-13.0	-46.1	
10264.20	-18.3	H	3.0	40.6	1.0	-58.0	-13.0	-45.0	
Mid Ch, 1732.5MHz									
3465.00	-7.0	V	3.0	43.7	1.0	-49.7	-13.0	-36.7	
5197.50	-18.7	V	3.0	43.8	1.0	-61.5	-13.0	-48.5	
6930.00	-15.5	V	3.0	42.8	1.0	-57.2	-13.0	-44.2	
8662.50	-19.1	V	3.0	41.7	1.0	-59.9	-13.0	-46.9	
10395.00	-18.5	V	3.0	40.7	1.0	-58.1	-13.0	-45.1	
3465.00	1.8	H	3.0	43.7	1.0	-40.9	-13.0	-27.9	
5197.50	-19.1	H	3.0	43.8	1.0	-61.9	-13.0	-48.9	
6930.00	-16.8	H	3.0	42.8	1.0	-58.5	-13.0	-45.5	
8662.50	-18.4	H	3.0	41.7	1.0	-59.2	-13.0	-46.2	
10395.00	-17.8	H	3.0	40.7	1.0	-57.4	-13.0	-44.4	
High Ch, 1754.3MHz									
3508.60	-4.8	V	3.0	43.7	1.0	-47.5	-13.0	-34.5	
5262.90	-18.0	V	3.0	43.8	1.0	-60.7	-13.0	-47.7	
7017.20	-13.2	V	3.0	42.7	1.0	-54.9	-13.0	-41.9	
8771.50	-18.8	V	3.0	41.7	1.0	-59.5	-13.0	-46.5	
10525.80	-16.8	V	3.0	40.7	1.0	-56.5	-13.0	-43.5	
3508.60	0.0	H	3.0	43.7	1.0	-42.7	-13.0	-29.7	
5262.90	-18.3	H	3.0	43.8	1.0	-61.1	-13.0	-48.1	
7017.20	-17.4	H	3.0	42.7	1.0	-59.2	-13.0	-46.2	
8771.50	-18.8	H	3.0	41.7	1.0	-59.5	-13.0	-46.5	
10525.80	-18.2	H	3.0	40.7	1.0	-57.9	-13.0	-44.9	

LTE Band 5

LTE

Band 5

10MHz

QPSK

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

Company: Samsung
Project #: 4788481138
Date: 2018-06-18
Test Engineer: 51072
Configuration: EUT / Adapter / Earphone , X-position
Location: Chamber 2
Mode: LTE_QPSK Band 5 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, 829MHz									
1658.00	-17.8	V	3.0	38.2	1.0	-55.0	-13.0	-42.0	
2487.00	-4.1	V	3.0	38.8	1.0	-41.9	-13.0	-28.9	
3316.00	-22.3	V	3.0	39.4	1.0	-60.7	-13.0	-47.7	
4145.00	-18.9	V	3.0	39.8	1.0	-57.7	-13.0	-44.7	
4974.00	-20.0	V	3.0	39.8	1.0	-58.8	-13.0	-45.8	
1658.00	-19.1	H	3.0	38.2	1.0	-56.3	-13.0	-43.3	
2487.00	-1.2	H	3.0	38.8	1.0	-39.0	-13.0	-26.0	
3316.00	-22.0	H	3.0	39.4	1.0	-60.5	-13.0	-47.5	
4145.00	-20.4	H	3.0	39.8	1.0	-59.2	-13.0	-46.2	
4974.00	-20.7	H	3.0	39.8	1.0	-59.5	-13.0	-46.5	
Mid Ch, 836.5MHz									
1673.00	-17.9	V	3.0	38.2	1.0	-55.1	-13.0	-42.1	
2509.50	-2.2	V	3.0	38.8	1.0	-40.0	-13.0	-27.0	
3346.00	-21.3	V	3.0	39.5	1.0	-59.8	-13.0	-46.8	
4182.50	-18.6	V	3.0	39.8	1.0	-57.4	-13.0	-44.4	
5019.00	-19.4	V	3.0	39.8	1.0	-58.2	-13.0	-45.2	
1673.00	-18.0	H	3.0	38.2	1.0	-55.2	-13.0	-42.2	
2509.50	0.9	H	3.0	38.8	1.0	-36.9	-13.0	-23.9	
3346.00	-25.1	H	3.0	39.5	1.0	-63.6	-13.0	-50.6	
4182.50	-20.5	H	3.0	39.8	1.0	-59.3	-13.0	-46.3	
5019.00	-21.1	H	3.0	39.8	1.0	-59.9	-13.0	-46.9	
High Ch, 844MHz									
1688.00	-18.9	V	3.0	38.2	1.0	-56.2	-13.0	-43.2	
2532.00	1.8	V	3.0	38.9	1.0	-36.1	-13.0	-23.1	
3376.00	-19.6	V	3.0	39.5	1.0	-58.1	-13.0	-45.1	
4220.00	-16.7	V	3.0	39.8	1.0	-55.5	-13.0	-42.5	
5064.00	-17.3	V	3.0	39.8	1.0	-56.1	-13.0	-43.1	
1688.00	-17.9	H	3.0	38.2	1.0	-55.2	-13.0	-42.2	
2532.00	-0.7	H	3.0	38.9	1.0	-38.5	-13.0	-25.5	
3376.00	-24.0	H	3.0	39.5	1.0	-62.5	-13.0	-49.5	
4220.00	-17.8	H	3.0	39.8	1.0	-56.6	-13.0	-43.6	
5064.00	-18.4	H	3.0	39.8	1.0	-57.2	-13.0	-44.2	

LTE

Band 5

10MHz

16QAM

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

Company: Samsung
Project #: 4788481138
Date: 2018-06-18
Test Engineer: 51072
Configuration: EUT / Adapter / Earphone , X-position
Location: Chamber 2
Mode: LTE_16QAM Band 5 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, 829MHz									
1658.00	-17.8	V	3.0	38.2	1.0	-55.1	-13.0	-42.1	
2487.00	-28.6	V	3.0	38.8	1.0	-66.4	-13.0	-53.4	
3316.00	-22.9	V	3.0	39.4	1.0	-61.4	-13.0	-48.4	
4145.00	-19.1	V	3.0	39.8	1.0	-57.9	-13.0	-44.9	
4974.00	-16.7	V	3.0	39.8	1.0	-55.4	-13.0	-42.4	
1658.00	-19.2	H	3.0	38.2	1.0	-56.4	-13.0	-43.4	
2487.00	-28.9	H	3.0	38.8	1.0	-66.7	-13.0	-53.7	
3316.00	-25.4	H	3.0	39.4	1.0	-63.9	-13.0	-50.9	
4145.00	-20.8	H	3.0	39.8	1.0	-59.6	-13.0	-46.6	
4974.00	-20.4	H	3.0	39.8	1.0	-59.2	-13.0	-46.2	
Mid Ch, 836.5MHz									
1673.00	-19.2	V	3.0	38.2	1.0	-56.4	-13.0	-43.4	
2509.50	-4.0	V	3.0	38.8	1.0	-41.8	-13.0	-28.8	
3346.00	-23.3	V	3.0	39.5	1.0	-61.7	-13.0	-48.7	
4182.50	-19.6	V	3.0	39.8	1.0	-58.4	-13.0	-45.4	
5019.00	-19.8	V	3.0	39.8	1.0	-58.6	-13.0	-45.6	
1673.00	-19.3	H	3.0	38.2	1.0	-56.5	-13.0	-43.5	
2509.50	-0.8	H	3.0	38.8	1.0	-38.7	-13.0	-25.7	
3346.00	-25.6	H	3.0	39.5	1.0	-64.1	-13.0	-51.1	
4182.50	-21.2	H	3.0	39.8	1.0	-60.0	-13.0	-47.0	
5019.00	-21.6	H	3.0	39.8	1.0	-60.4	-13.0	-47.4	
High Ch, 844MHz									
1688.00	-24.5	V	3.0	38.2	1.0	-61.8	-13.0	-48.8	
2532.00	-6.2	V	3.0	38.9	1.0	-44.0	-13.0	-31.0	
3376.00	-20.3	V	3.0	39.5	1.0	-58.8	-13.0	-45.8	
4220.00	-19.6	V	3.0	39.8	1.0	-58.4	-13.0	-45.4	
5064.00	-18.6	V	3.0	39.8	1.0	-57.4	-13.0	-44.4	
1688.00	-19.7	H	3.0	38.2	1.0	-56.9	-13.0	-43.9	
2532.00	-0.2	H	3.0	38.9	1.0	-38.0	-13.0	-25.0	
3376.00	-23.6	H	3.0	39.5	1.0	-62.1	-13.0	-49.1	
4220.00	-18.4	H	3.0	39.8	1.0	-57.2	-13.0	-44.2	
5064.00	-20.0	H	3.0	39.8	1.0	-58.8	-13.0	-45.8	

LTE

Band 5

5MHz

QPSK

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

Company: Samsung
Project #: 4788481138
Date: 2018-06-18
Test Engineer: 51072
Configuration: EUT / Adapter / Earphone , X-position
Location: Chamber 2
Mode: LTE_QPSK Band 5 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, 826.5MHz									
1653.00	-19.0	V	3.0	38.2	1.0	-56.3	-13.0	-43.3	
2479.50	-9.2	V	3.0	38.8	1.0	-47.0	-13.0	-34.0	
3306.00	-21.1	V	3.0	39.4	1.0	-59.6	-13.0	-46.6	
4132.50	-16.5	V	3.0	39.8	1.0	-55.4	-13.0	-42.4	
4959.00	-16.7	V	3.0	39.8	1.0	-55.5	-13.0	-42.5	
1653.00	-19.5	H	3.0	38.2	1.0	-56.8	-13.0	-43.8	
2479.50	-9.9	H	3.0	38.8	1.0	-47.7	-13.0	-34.7	
3306.00	-21.8	H	3.0	39.4	1.0	-60.2	-13.0	-47.2	
4132.50	-19.5	H	3.0	39.8	1.0	-58.3	-13.0	-45.3	
4959.00	-20.3	H	3.0	39.8	1.0	-59.0	-13.0	-46.0	
Mid Ch, 836.5MHz									
1673.00	-21.8	V	3.0	38.2	1.0	-59.1	-13.0	-46.1	
2509.50	-0.6	V	3.0	38.8	1.0	-38.4	-13.0	-25.4	
3346.00	-22.1	V	3.0	39.5	1.0	-60.6	-13.0	-47.6	
4182.50	-17.6	V	3.0	39.8	1.0	-56.4	-13.0	-43.4	
5019.00	-18.9	V	3.0	39.8	1.0	-57.7	-13.0	-44.7	
1673.00	-17.9	H	3.0	38.2	1.0	-55.1	-13.0	-42.1	
2509.50	0.9	H	3.0	38.8	1.0	-37.0	-13.0	-24.0	
3346.00	-24.7	H	3.0	39.5	1.0	-63.2	-13.0	-50.2	
4182.50	-20.2	H	3.0	39.8	1.0	-59.0	-13.0	-46.0	
5019.00	-21.2	H	3.0	39.8	1.0	-60.0	-13.0	-47.0	
High Ch, 846.5MHz									
1693.00	-24.7	V	3.0	38.2	1.0	-61.9	-13.0	-48.9	
2539.50	1.1	V	3.0	38.9	1.0	-36.7	-13.0	-23.7	
3386.00	-21.4	V	3.0	39.5	1.0	-59.9	-13.0	-46.9	
4232.50	-17.2	V	3.0	39.8	1.0	-56.0	-13.0	-43.0	
5079.00	-17.0	V	3.0	39.8	1.0	-55.7	-13.0	-42.7	
1693.00	-19.5	H	3.0	38.2	1.0	-56.8	-13.0	-43.8	
2539.50	1.0	H	3.0	38.9	1.0	-36.9	-13.0	-23.9	
3386.00	-24.8	H	3.0	39.5	1.0	-63.3	-13.0	-50.3	
4232.50	-17.1	H	3.0	39.8	1.0	-55.9	-13.0	-42.9	
5079.00	-19.8	H	3.0	39.8	1.0	-58.6	-13.0	-45.6	

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

LTE

Band 5

5MHz

16QAM

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

Company: Samsung
Project #: 4788481138
Date: 2018-06-18
Test Engineer: 51072
Configuration: EUT / Adapter / Earphone , X-position
Location: Chamber 2
Mode: LTE_16QAM Band 5 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, 826.5MHz									
1653.00	-20.1	V	3.0	38.2	1.0	-57.3	-13.0	-44.3	
2479.50	-11.4	V	3.0	38.8	1.0	-49.2	-13.0	-36.2	
3306.00	-22.0	V	3.0	39.4	1.0	-60.5	-13.0	-47.5	
4132.50	-18.4	V	3.0	39.8	1.0	-57.2	-13.0	-44.2	
4959.00	-17.8	V	3.0	39.8	1.0	-56.6	-13.0	-43.6	
1653.00	-20.5	H	3.0	38.2	1.0	-57.7	-13.0	-44.7	
2479.50	-12.7	H	3.0	38.8	1.0	-50.6	-13.0	-37.6	
3306.00	-23.0	H	3.0	39.4	1.0	-61.4	-13.0	-48.4	
4132.50	-20.8	H	3.0	39.8	1.0	-59.6	-13.0	-46.6	
4959.00	-21.4	H	3.0	39.8	1.0	-60.2	-13.0	-47.2	
Mid Ch, 836.5MHz									
1673.00	-25.9	V	3.0	38.2	1.0	-63.1	-13.0	-50.1	
2509.50	-4.6	V	3.0	38.8	1.0	-42.4	-13.0	-29.4	
3346.00	-24.8	V	3.0	39.5	1.0	-63.3	-13.0	-50.3	
4182.50	-20.5	V	3.0	39.8	1.0	-59.3	-13.0	-46.3	
5019.00	-17.5	V	3.0	39.8	1.0	-56.3	-13.0	-43.3	
1673.00	-19.8	H	3.0	38.2	1.0	-57.0	-13.0	-44.0	
2509.50	-1.8	H	3.0	38.8	1.0	-39.6	-13.0	-26.6	
3346.00	-24.6	H	3.0	39.5	1.0	-63.1	-13.0	-50.1	
4182.50	-22.5	H	3.0	39.8	1.0	-61.4	-13.0	-48.4	
5019.00	-20.9	H	3.0	39.8	1.0	-59.7	-13.0	-46.7	
High Ch, 846.5MHz									
1693.00	-25.4	V	3.0	38.2	1.0	-62.7	-13.0	-49.7	
2539.50	-1.3	V	3.0	38.9	1.0	-39.2	-13.0	-26.2	
3386.00	-22.3	V	3.0	39.5	1.0	-60.8	-13.0	-47.8	
4232.50	-18.6	V	3.0	39.8	1.0	-57.4	-13.0	-44.4	
5079.00	-18.3	V	3.0	39.8	1.0	-57.1	-13.0	-44.1	
1693.00	-20.7	H	3.0	38.2	1.0	-58.0	-13.0	-45.0	
2539.50	-0.1	H	3.0	38.9	1.0	-37.9	-13.0	-24.9	
3386.00	-25.4	H	3.0	39.5	1.0	-63.8	-13.0	-50.8	
4232.50	-18.4	H	3.0	39.8	1.0	-57.2	-13.0	-44.2	
5079.00	-20.8	H	3.0	39.8	1.0	-59.6	-13.0	-46.6	

LTE

Band 5

3MHz

QPSK

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

Company: Samsung
Project #: 4788481138
Date: 2018-06-18
Test Engineer: 51072
Configuration: EUT / Adapter / Earphone , X-position
Location: Chamber 2
Mode: LTE_QPSK Band 5 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, 825.5MHz									
1651.00	-17.4	V	3.0	38.2	1.0	-54.7	-13.0	-41.7	
2476.50	-28.4	V	3.0	38.8	1.0	-66.2	-13.0	-53.2	
3302.00	-24.3	V	3.0	39.4	1.0	-62.7	-13.0	-49.7	
4127.50	-21.5	V	3.0	39.8	1.0	-60.3	-13.0	-47.3	
4953.00	-19.0	V	3.0	39.8	1.0	-57.8	-13.0	-44.8	
1651.00	-18.9	H	3.0	38.2	1.0	-56.1	-13.0	-43.1	
2476.50	-29.0	H	3.0	38.8	1.0	-66.8	-13.0	-53.8	
3302.00	-26.2	H	3.0	39.4	1.0	-64.6	-13.0	-51.6	
4127.50	-23.0	H	3.0	39.8	1.0	-61.8	-13.0	-48.8	
4953.00	-21.7	H	3.0	39.8	1.0	-60.5	-13.0	-47.5	
Mid Ch, 836.5MHz									
1673.00	-19.3	V	3.0	38.2	1.0	-56.6	-13.0	-43.6	
2509.50	-1.9	V	3.0	38.8	1.0	-39.8	-13.0	-26.8	
3346.00	-22.9	V	3.0	39.5	1.0	-61.3	-13.0	-48.3	
4182.50	-21.3	V	3.0	39.8	1.0	-60.1	-13.0	-47.1	
5019.00	-21.6	V	3.0	39.8	1.0	-60.4	-13.0	-47.4	
1673.00	-17.8	H	3.0	38.2	1.0	-55.0	-13.0	-42.0	
2509.50	0.0	H	3.0	38.8	1.0	-37.8	-13.0	-24.8	
3346.00	-25.2	H	3.0	39.5	1.0	-63.7	-13.0	-50.7	
4182.50	-22.4	H	3.0	39.8	1.0	-61.2	-13.0	-48.2	
5019.00	-22.0	H	3.0	39.8	1.0	-60.8	-13.0	-47.8	
High Ch, 847.5MHz									
1695.00	-22.1	V	3.0	38.2	1.0	-59.3	-13.0	-46.3	
2542.50	-1.4	V	3.0	38.9	1.0	-39.2	-13.0	-26.2	
3390.00	-21.4	V	3.0	39.5	1.0	-59.9	-13.0	-46.9	
4237.50	-19.7	V	3.0	39.8	1.0	-58.5	-13.0	-45.5	
5085.00	-19.0	V	3.0	39.8	1.0	-57.7	-13.0	-44.7	
1695.00	-17.5	H	3.0	38.2	1.0	-54.7	-13.0	-41.7	
2542.50	4.9	H	3.0	38.9	1.0	-32.9	-13.0	-19.9	
3390.00	-24.0	H	3.0	39.5	1.0	-62.5	-13.0	-49.5	
4237.50	-20.8	H	3.0	39.8	1.0	-59.6	-13.0	-46.6	
5085.00	-22.0	H	3.0	39.8	1.0	-60.8	-13.0	-47.8	

LTE

Band 5

3MHz

16QAM

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

Company: Samsung
Project #: 4788481138
Date: 2018-06-18
Test Engineer: 51072
Configuration: EUT / Adapter / Earphone , X-position
Location: Chamber 2
Mode: LTE_16QAM Band 5 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, 825.5MHz									
1651.00	-18.2	V	3.0	38.2	1.0	-55.4	-13.0	-42.4	
2476.50	-28.8	V	3.0	38.8	1.0	-66.6	-13.0	-53.6	
3302.00	-24.6	V	3.0	39.4	1.0	-63.1	-13.0	-50.1	
4127.50	-22.2	V	3.0	39.8	1.0	-61.0	-13.0	-48.0	
4953.00	-19.8	V	3.0	39.8	1.0	-58.6	-13.0	-45.6	
1651.00	-19.4	H	3.0	38.2	1.0	-56.7	-13.0	-43.7	
2476.50	-29.1	H	3.0	38.8	1.0	-66.9	-13.0	-53.9	
3302.00	-26.3	H	3.0	39.4	1.0	-64.8	-13.0	-51.8	
4127.50	-23.5	H	3.0	39.8	1.0	-62.3	-13.0	-49.3	
4953.00	-22.1	H	3.0	39.8	1.0	-60.9	-13.0	-47.9	
Mid Ch, 836.5MHz									
1673.00	-20.8	V	3.0	38.2	1.0	-58.0	-13.0	-45.0	
2509.50	-3.4	V	3.0	38.8	1.0	-41.2	-13.0	-28.2	
3346.00	-23.8	V	3.0	39.5	1.0	-62.3	-13.0	-49.3	
4182.50	-22.1	V	3.0	39.8	1.0	-60.9	-13.0	-47.9	
5019.00	-22.4	V	3.0	39.8	1.0	-61.1	-13.0	-48.1	
1673.00	-18.8	H	3.0	38.2	1.0	-56.0	-13.0	-43.0	
2509.50	-1.0	H	3.0	38.8	1.0	-38.8	-13.0	-25.8	
3346.00	-25.7	H	3.0	39.5	1.0	-64.2	-13.0	-51.2	
4182.50	-23.3	H	3.0	39.8	1.0	-62.1	-13.0	-49.1	
5019.00	-22.7	H	3.0	39.8	1.0	-61.5	-13.0	-48.5	
High Ch, 847.5MHz									
1695.00	-23.0	V	3.0	38.2	1.0	-60.2	-13.0	-47.2	
2542.50	-2.0	V	3.0	38.9	1.0	-39.9	-13.0	-26.9	
3390.00	-22.3	V	3.0	39.5	1.0	-60.8	-13.0	-47.8	
4237.50	-20.3	V	3.0	39.8	1.0	-59.1	-13.0	-46.1	
5085.00	-19.7	V	3.0	39.8	1.0	-58.5	-13.0	-45.5	
1695.00	-18.4	H	3.0	38.2	1.0	-55.7	-13.0	-42.7	
2542.50	2.2	H	3.0	38.9	1.0	-35.7	-13.0	-22.7	
3390.00	-24.8	H	3.0	39.5	1.0	-63.3	-13.0	-50.3	
4237.50	-21.3	H	3.0	39.8	1.0	-60.1	-13.0	-47.1	
5085.00	-22.5	H	3.0	39.8	1.0	-61.3	-13.0	-48.3	

LTE

Band 5

1.4MHz

QPSK

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

Company: Samsung
Project #: 4788481138
Date: 2018-06-18
Test Engineer: 51072
Configuration: EUT / Adapter / Earphone , X-position
Location: Chamber 2
Mode: LTE_QPSK Band 5 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, 824.7MHz									
1649.40	-18.0	V	3.0	38.2	1.0	-55.3	-13.0	-42.3	
2474.10	-27.9	V	3.0	38.8	1.0	-65.7	-13.0	-52.7	
3298.80	-23.1	V	3.0	39.4	1.0	-61.6	-13.0	-48.6	
4123.50	-21.6	V	3.0	39.8	1.0	-60.5	-13.0	-47.5	
4948.20	-19.0	V	3.0	39.8	1.0	-57.8	-13.0	-44.8	
1649.40	-19.2	H	3.0	38.2	1.0	-56.4	-13.0	-43.4	
2474.10	-29.0	H	3.0	38.8	1.0	-66.8	-13.0	-53.8	
3298.80	-24.0	H	3.0	39.4	1.0	-62.4	-13.0	-49.4	
4123.50	-24.0	H	3.0	39.8	1.0	-62.8	-13.0	-49.8	
4948.20	-22.0	H	3.0	39.8	1.0	-60.8	-13.0	-47.8	
Mid Ch, 836.5MHz									
1673.00	-17.5	V	3.0	38.2	1.0	-54.8	-13.0	-41.8	
2509.50	0.3	V	3.0	38.8	1.0	-37.6	-13.0	-24.6	
3346.00	-22.1	V	3.0	39.5	1.0	-60.6	-13.0	-47.6	
4182.50	-20.0	V	3.0	39.8	1.0	-58.8	-13.0	-45.8	
5019.00	-21.0	V	3.0	39.8	1.0	-59.8	-13.0	-46.8	
1673.00	-17.1	H	3.0	38.2	1.0	-54.4	-13.0	-41.4	
2509.50	-0.2	H	3.0	38.8	1.0	-38.1	-13.0	-25.1	
3346.00	-25.5	H	3.0	39.5	1.0	-63.9	-13.0	-50.9	
4182.50	-21.2	H	3.0	39.8	1.0	-60.0	-13.0	-47.0	
5019.00	-21.2	H	3.0	39.8	1.0	-60.0	-13.0	-47.0	
High Ch, 848.3MHz									
1696.60	-21.9	V	3.0	38.2	1.0	-59.1	-13.0	-46.1	
2544.90	-0.7	V	3.0	38.9	1.0	-38.6	-13.0	-25.6	
3393.20	-19.5	V	3.0	39.5	1.0	-58.0	-13.0	-45.0	
4241.50	-19.6	V	3.0	39.8	1.0	-58.4	-13.0	-45.4	
5089.80	-18.7	V	3.0	39.8	1.0	-57.5	-13.0	-44.5	
1696.60	-16.6	H	3.0	38.2	1.0	-53.9	-13.0	-40.9	
2544.90	0.5	H	3.0	38.9	1.0	-37.4	-13.0	-24.4	
3393.20	-22.8	H	3.0	39.5	1.0	-61.2	-13.0	-48.2	
4241.50	-21.5	H	3.0	39.8	1.0	-60.3	-13.0	-47.3	
5089.80	-21.4	H	3.0	39.8	1.0	-60.2	-13.0	-47.2	

LTE

Band 5

1.4MHz

16QAM

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

Company: Samsung
Project #: 4788481138
Date: 2018-06-18
Test Engineer: 51072
Configuration: EUT / Adapter / Earphone , X-position
Location: Chamber 2
Mode: LTE_16QAM Band 5 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, 824.7MHz									
1649.40	-19.0	V	3.0	38.2	1.0	-56.2	-13.0	-43.2	
2474.10	-28.4	V	3.0	38.8	1.0	-66.2	-13.0	-53.2	
3298.80	-23.6	V	3.0	39.4	1.0	-62.1	-13.0	-49.1	
4123.50	-22.7	V	3.0	39.8	1.0	-61.6	-13.0	-48.6	
4948.20	-20.3	V	3.0	39.8	1.0	-59.1	-13.0	-46.1	
1649.40	-20.0	H	3.0	38.2	1.0	-57.2	-13.0	-44.2	
2474.10	-29.3	H	3.0	38.8	1.0	-67.2	-13.0	-54.2	
3298.80	-24.7	H	3.0	39.4	1.0	-63.1	-13.0	-50.1	
4123.50	-24.7	H	3.0	39.8	1.0	-63.5	-13.0	-50.5	
4948.20	-22.6	H	3.0	39.8	1.0	-61.4	-13.0	-48.4	
Mid Ch, 836.5MHz									
1673.00	-18.2	V	3.0	38.2	1.0	-55.5	-13.0	-42.5	
2509.50	-0.1	V	3.0	38.8	1.0	-37.9	-13.0	-24.9	
3346.00	-22.4	V	3.0	39.5	1.0	-60.8	-13.0	-47.8	
4182.50	-20.5	V	3.0	39.8	1.0	-59.3	-13.0	-46.3	
5019.00	-21.1	V	3.0	39.8	1.0	-59.8	-13.0	-46.8	
1673.00	-18.4	H	3.0	38.2	1.0	-55.6	-13.0	-42.6	
2509.50	-1.6	H	3.0	38.8	1.0	-39.4	-13.0	-26.4	
3346.00	-25.7	H	3.0	39.5	1.0	-64.2	-13.0	-51.2	
4182.50	-21.1	H	3.0	39.8	1.0	-59.9	-13.0	-46.9	
5019.00	-21.6	H	3.0	39.8	1.0	-60.4	-13.0	-47.4	
High Ch, 848.3MHz									
1696.60	-22.6	V	3.0	38.2	1.0	-59.9	-13.0	-46.9	
2544.90	-1.2	V	3.0	38.9	1.0	-39.1	-13.0	-26.1	
3393.20	-20.5	V	3.0	39.5	1.0	-59.0	-13.0	-46.0	
4241.50	-20.4	V	3.0	39.8	1.0	-59.2	-13.0	-46.2	
5089.80	-19.3	V	3.0	39.8	1.0	-58.1	-13.0	-45.1	
1696.60	-17.5	H	3.0	38.2	1.0	-54.7	-13.0	-41.7	
2544.90	-0.3	H	3.0	38.9	1.0	-38.2	-13.0	-25.2	
3393.20	-23.5	H	3.0	39.5	1.0	-61.9	-13.0	-48.9	
4241.50	-22.0	H	3.0	39.8	1.0	-60.8	-13.0	-47.8	
5089.80	-21.8	H	3.0	39.8	1.0	-60.6	-13.0	-47.6	

LTE Band 7

LTE

Band 7

20MHz

QPSK

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

Company: Samsung
Project #: 4788481138
Date: 2018-06-18
Test Engineer: 45585
Configuration: EUT / Adapter / Earphone, Z-Position
Location: Chamber 1
Mode: LTE_QPSK Band 7 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, 2510MHz									
5020.00	-14.6	V	3.0	43.8	1.0	-57.4	-25.0	-32.4	
7530.00	-11.8	V	3.0	42.4	1.0	-53.3	-25.0	-28.3	
10040.00	-17.3	V	3.0	40.6	1.0	-56.9	-25.0	-31.9	
12550.00	-7.0	V	3.0	41.7	1.0	-47.7	-25.0	-22.7	
5020.00	-8.3	H	3.0	43.8	1.0	-51.1	-25.0	-26.1	
7530.00	-7.9	H	3.0	42.4	1.0	-49.4	-25.0	-24.4	
10040.00	-14.0	H	3.0	40.6	1.0	-53.6	-25.0	-28.6	
12550.00	-4.0	H	3.0	41.7	1.0	-44.6	-25.0	-19.6	
Mid Ch, 2535MHz									
5070.00	-13.7	V	3.0	43.8	1.0	-56.5	-25.0	-31.5	
7605.00	-1.9	V	3.0	42.4	1.0	-43.3	-25.0	-18.3	
10140.00	-18.0	V	3.0	40.6	1.0	-57.6	-25.0	-32.6	
12675.00	-6.6	V	3.0	41.8	1.0	-47.3	-25.0	-22.3	
5070.00	-5.8	H	3.0	43.8	1.0	-48.6	-25.0	-23.6	
7605.00	-11.8	H	3.0	42.4	1.0	-53.3	-25.0	-28.3	
10140.00	-13.4	H	3.0	40.6	1.0	-53.0	-25.0	-28.0	
12675.00	-4.0	H	3.0	41.8	1.0	-44.8	-25.0	-19.8	
High Ch, 2560MHz									
5120.00	-13.1	V	3.0	43.8	1.0	-55.9	-25.0	-30.9	
7680.00	-10.4	V	3.0	42.4	1.0	-51.7	-25.0	-26.7	
10240.00	-15.4	V	3.0	40.6	1.0	-55.0	-25.0	-30.0	
12800.00	-8.4	V	3.0	41.9	1.0	-49.3	-25.0	-24.3	
5120.00	-7.2	H	3.0	43.8	1.0	-50.0	-25.0	-25.0	
7680.00	-8.6	H	3.0	42.4	1.0	-50.0	-25.0	-25.0	
10240.00	-10.3	H	3.0	40.6	1.0	-49.9	-25.0	-24.9	
12800.00	-6.5	H	3.0	41.9	1.0	-47.4	-25.0	-22.4	

LTE

Band 7

20MHz

16QAM

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

Company: Samsung
Project #: 4788481138
Date: 2018-06-18
Test Engineer: 45585
Configuration: EUT / Adapter / Earphone, Z-Position
Location: Chamber 1
Mode: LTE_16QAM Band 7 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, 2510MHz									
5020.00	-14.7	V	3.0	43.8	1.0	-57.5	-25.0	-32.5	
7530.00	-12.9	V	3.0	42.4	1.0	-54.3	-25.0	-29.3	
10040.00	-18.4	V	3.0	40.6	1.0	-57.9	-25.0	-32.9	
12550.00	-6.9	V	3.0	41.7	1.0	-47.5	-25.0	-22.5	
5020.00	-6.8	H	3.0	43.8	1.0	-49.6	-25.0	-24.6	
7530.00	-9.3	H	3.0	42.4	1.0	-50.7	-25.0	-25.7	
10040.00	-14.7	H	3.0	40.6	1.0	-54.3	-25.0	-29.3	
12550.00	-2.9	H	3.0	41.7	1.0	-43.6	-25.0	-18.6	
Mid Ch, 2535MHz									
5070.00	-14.8	V	3.0	43.8	1.0	-57.6	-25.0	-32.6	
7605.00	-3.8	V	3.0	42.4	1.0	-45.2	-25.0	-20.2	
10140.00	-18.3	V	3.0	40.6	1.0	-57.9	-25.0	-32.9	
12675.00	-7.1	V	3.0	41.8	1.0	-47.8	-25.0	-22.8	
5070.00	-7.1	H	3.0	43.8	1.0	-49.9	-25.0	-24.9	
7605.00	-13.3	H	3.0	42.4	1.0	-54.8	-25.0	-29.8	
10140.00	-14.5	H	3.0	40.6	1.0	-54.1	-25.0	-29.1	
12675.00	-4.9	H	3.0	41.8	1.0	-45.6	-25.0	-20.6	
High Ch, 2560MHz									
5120.00	-13.9	V	3.0	43.8	1.0	-56.6	-25.0	-31.6	
7680.00	-11.1	V	3.0	42.4	1.0	-52.5	-25.0	-27.5	
10240.00	-17.1	V	3.0	40.6	1.0	-56.7	-25.0	-31.7	
12800.00	-9.3	V	3.0	41.9	1.0	-50.2	-25.0	-25.2	
5120.00	-7.9	H	3.0	43.8	1.0	-50.7	-25.0	-25.7	
7680.00	-9.9	H	3.0	42.4	1.0	-51.2	-25.0	-26.2	
10240.00	-12.0	H	3.0	40.6	1.0	-51.6	-25.0	-26.6	
12800.00	-7.7	H	3.0	41.9	1.0	-48.5	-25.0	-23.5	

LTE

Band 7

15MHz

QPSK

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

Company: Samsung
Project #: 4788481138
Date: 2018-06-18
Test Engineer: 47989
Configuration: EUT / AC Adapter / Earphone, Z-Position
Location: Chamber 1
Mode: LTE_QPSK Band 7 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, 2507.5MHz									
5015.00	-13.4	V	3.0	43.8	1.0	-56.2	-25.0	-31.2	
7522.50	-11.1	V	3.0	42.5	1.0	-52.5	-25.0	-27.5	
10030.00	-17.9	V	3.0	40.6	1.0	-57.4	-25.0	-32.4	
12537.50	-5.2	V	3.0	41.6	1.0	-45.8	-25.0	-20.8	
5015.00	-7.8	H	3.0	43.8	1.0	-50.5	-25.0	-25.5	
7522.50	-9.4	H	3.0	42.5	1.0	-50.9	-25.0	-25.9	
10030.00	-14.1	H	3.0	40.6	1.0	-53.7	-25.0	-28.7	
12537.50	-2.3	H	3.0	41.6	1.0	-42.9	-25.0	-17.9	
Mid Ch, 2535MHz									
5070.00	-13.4	V	3.0	43.8	1.0	-56.1	-25.0	-31.1	
7605.00	-12.0	V	3.0	42.4	1.0	-53.4	-25.0	-28.4	
10140.00	-16.5	V	3.0	40.6	1.0	-56.1	-25.0	-31.1	
12675.00	-5.5	V	3.0	41.8	1.0	-46.3	-25.0	-21.3	
5070.00	-6.5	H	3.0	43.8	1.0	-49.2	-25.0	-24.2	
7605.00	-10.5	H	3.0	42.4	1.0	-51.9	-25.0	-26.9	
10140.00	-13.4	H	3.0	40.6	1.0	-53.0	-25.0	-28.0	
12675.00	-2.3	H	3.0	41.8	1.0	-43.1	-25.0	-18.1	
High Ch, 2562.5MHz									
5125.00	-12.4	V	3.0	43.8	1.0	-55.2	-25.0	-30.2	
7687.50	-11.3	V	3.0	42.4	1.0	-52.6	-25.0	-27.6	
10250.00	-15.4	V	3.0	40.6	1.0	-55.1	-25.0	-30.1	
12812.50	-8.9	V	3.0	41.9	1.0	-49.8	-25.0	-24.8	
5125.00	-7.9	H	3.0	43.8	1.0	-50.7	-25.0	-25.7	
7687.50	-9.8	H	3.0	42.4	1.0	-51.1	-25.0	-26.1	
10250.00	-9.4	H	3.0	40.6	1.0	-49.0	-25.0	-24.0	
12812.50	-6.0	H	3.0	41.9	1.0	-46.9	-25.0	-21.9	

LTE

Band 7

15MHz

16QAM

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

Company:	Samsung
Project #:	4788481138
Date:	2018-06-18
Test Engineer:	47989
Configuration:	EUT / AC Adapter / Earphone, Z-Position
Location:	Chamber 1
Mode:	LTE_16QAM Band 7 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, 2507.5MHz									
5015.00	-14.2	V	3.0	43.8	1.0	-56.9	-25.0	-31.9	
7522.50	-11.9	V	3.0	42.5	1.0	-53.4	-25.0	-28.4	
10030.00	-18.0	V	3.0	40.6	1.0	-57.6	-25.0	-32.6	
12537.50	-6.2	V	3.0	41.6	1.0	-46.8	-25.0	-21.8	
5015.00	-8.5	H	3.0	43.8	1.0	-51.3	-25.0	-26.3	
7522.50	-10.9	H	3.0	42.5	1.0	-52.3	-25.0	-27.3	
10030.00	-14.9	H	3.0	40.6	1.0	-54.4	-25.0	-29.4	
12537.50	-2.7	H	3.0	41.6	1.0	-43.4	-25.0	-18.4	
Mid Ch, 2535MHz									
5070.00	-14.5	V	3.0	43.8	1.0	-57.3	-25.0	-32.3	
7605.00	-13.2	V	3.0	42.4	1.0	-54.6	-25.0	-29.6	
10140.00	-17.1	V	3.0	40.6	1.0	-56.7	-25.0	-31.7	
12675.00	-6.0	V	3.0	41.8	1.0	-46.7	-25.0	-21.7	
5070.00	-7.5	H	3.0	43.8	1.0	-50.3	-25.0	-25.3	
7605.00	-12.5	H	3.0	42.4	1.0	-53.9	-25.0	-28.9	
10140.00	-13.9	H	3.0	40.6	1.0	-53.5	-25.0	-28.5	
12675.00	-3.5	H	3.0	41.8	1.0	-44.2	-25.0	-19.2	
High Ch, 2562.5MHz									
5125.00	-12.7	V	3.0	43.8	1.0	-55.5	-25.0	-30.5	
7687.50	-10.4	V	3.0	42.4	1.0	-51.8	-25.0	-26.8	
10250.00	-16.1	V	3.0	40.6	1.0	-55.7	-25.0	-30.7	
12812.50	-9.5	V	3.0	41.9	1.0	-50.4	-25.0	-25.4	
5125.00	-8.0	H	3.0	43.8	1.0	-50.8	-25.0	-25.8	
7687.50	-10.5	H	3.0	42.4	1.0	-51.9	-25.0	-26.9	
10250.00	-10.1	H	3.0	40.6	1.0	-49.8	-25.0	-24.8	
12812.50	-6.4	H	3.0	41.9	1.0	-47.3	-25.0	-22.3	

LTE

Band 7

10MHz

QPSK

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

Company: Samsung
Project #: 4788481138
Date: 2018-06-18
Test Engineer: 47989
Configuration: EUT / AC Adapter / Earphone, Z-Position
Location: Chamber 1
Mode: LTE_QPSK Band 7 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, 2505MHz									
5010.00	-13.7	V	3.0	43.8	1.0	-56.5	-25.0	-31.5	
7515.00	-10.2	V	3.0	42.5	1.0	-51.6	-25.0	-26.6	
10020.00	-17.8	V	3.0	40.6	1.0	-57.4	-25.0	-32.4	
12525.00	-5.5	V	3.0	41.6	1.0	-46.1	-25.0	-21.1	
5010.00	-8.9	H	3.0	43.8	1.0	-51.7	-25.0	-26.7	
7515.00	-9.2	H	3.0	42.5	1.0	-50.7	-25.0	-25.7	
10020.00	-14.2	H	3.0	40.6	1.0	-53.7	-25.0	-28.7	
12525.00	-1.9	H	3.0	41.6	1.0	-42.5	-25.0	-17.5	
Mid Ch, 2535MHz									
5070.00	-13.3	V	3.0	43.8	1.0	-56.0	-25.0	-31.0	
7605.00	-11.5	V	3.0	42.4	1.0	-52.9	-25.0	-27.9	
10140.00	-18.1	V	3.0	40.6	1.0	-57.7	-25.0	-32.7	
12675.00	-3.7	V	3.0	41.8	1.0	-44.5	-25.0	-19.5	
5070.00	-6.7	H	3.0	43.8	1.0	-49.5	-25.0	-24.5	
7605.00	-11.0	H	3.0	42.4	1.0	-52.4	-25.0	-27.4	
10140.00	-13.2	H	3.0	40.6	1.0	-52.8	-25.0	-27.8	
12675.00	-2.5	H	3.0	41.8	1.0	-43.3	-25.0	-18.3	
High Ch, 2565MHz									
5130.00	-12.0	V	3.0	43.8	1.0	-54.8	-25.0	-29.8	
7695.00	-9.0	V	3.0	42.4	1.0	-50.4	-25.0	-25.4	
10260.00	-14.3	V	3.0	40.6	1.0	-53.9	-25.0	-28.9	
12825.00	-8.2	V	3.0	41.9	1.0	-49.0	-25.0	-24.0	
5130.00	-7.4	H	3.0	43.8	1.0	-50.1	-25.0	-25.1	
7695.00	-9.0	H	3.0	42.4	1.0	-50.3	-25.0	-25.3	
10260.00	-9.9	H	3.0	40.6	1.0	-49.6	-25.0	-24.6	
12825.00	-5.1	H	3.0	41.9	1.0	-46.0	-25.0	-21.0	

LTE

Band 7

10MHz

16QAM

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

Company: Samsung
Project #: 4788481138
Date: 2018-06-18
Test Engineer: 47989
Configuration: EUT / AC Adapter / Earphone, Z-Position
Location: Chamber 1
Mode: LTE_16QAM Band 7 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, 2505MHz									
5010.00	-14.2	V	3.0	43.8	1.0	-57.0	-25.0	-32.0	
7515.00	-11.5	V	3.0	42.5	1.0	-52.9	-25.0	-27.9	
10020.00	-17.5	V	3.0	40.6	1.0	-57.1	-25.0	-32.1	
12525.00	-6.0	V	3.0	41.6	1.0	-46.6	-25.0	-21.6	
5010.00	-9.2	H	3.0	43.8	1.0	-52.0	-25.0	-27.0	
7515.00	-10.2	H	3.0	42.5	1.0	-51.6	-25.0	-26.6	
10020.00	-14.9	H	3.0	40.6	1.0	-54.4	-25.0	-29.4	
12525.00	-2.9	H	3.0	41.6	1.0	-43.6	-25.0	-18.6	
Mid Ch, 2535MHz									
5070.00	-13.5	V	3.0	43.8	1.0	-56.3	-25.0	-31.3	
7605.00	-12.1	V	3.0	42.4	1.0	-53.5	-25.0	-28.5	
10140.00	-18.1	V	3.0	40.6	1.0	-57.7	-25.0	-32.7	
12675.00	-4.4	V	3.0	41.8	1.0	-45.1	-25.0	-20.1	
5070.00	-7.5	H	3.0	43.8	1.0	-50.3	-25.0	-25.3	
7605.00	-12.7	H	3.0	42.4	1.0	-54.1	-25.0	-29.1	
10140.00	-14.0	H	3.0	40.6	1.0	-53.6	-25.0	-28.6	
12675.00	-3.4	H	3.0	41.8	1.0	-44.1	-25.0	-19.1	
High Ch, 2565MHz									
5130.00	-13.0	V	3.0	43.8	1.0	-55.7	-25.0	-30.7	
7695.00	-10.2	V	3.0	42.4	1.0	-51.5	-25.0	-26.5	
10260.00	-15.7	V	3.0	40.6	1.0	-55.4	-25.0	-30.4	
12825.00	-9.7	V	3.0	41.9	1.0	-50.6	-25.0	-25.6	
5130.00	-7.8	H	3.0	43.8	1.0	-50.6	-25.0	-25.6	
7695.00	-10.2	H	3.0	42.4	1.0	-51.6	-25.0	-26.6	
10260.00	-12.9	H	3.0	40.6	1.0	-52.5	-25.0	-27.5	
12825.00	-6.6	H	3.0	41.9	1.0	-47.5	-25.0	-22.5	

LTE

Band 7

5MHz

QPSK

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

Company: Samsung
Project #: 4788481138
Date: 2018-06-18
Test Engineer: 47989
Configuration: EUT / AC Adapter / Earphone, Z-Position
Location: Chamber 1
Mode: LTE_QPSK Band 7 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, 2502.5MHz									
5005.00	-14.5	V	3.0	43.8	1.0	-57.3	-25.0	-32.3	
7507.50	-11.1	V	3.0	42.5	1.0	-52.5	-25.0	-27.5	
10010.00	-18.1	V	3.0	40.6	1.0	-57.7	-25.0	-32.7	
12512.50	-5.8	V	3.0	41.6	1.0	-46.4	-25.0	-21.4	
5005.00	-7.1	H	3.0	43.8	1.0	-49.9	-25.0	-24.9	
7507.50	-7.8	H	3.0	42.5	1.0	-49.3	-25.0	-24.3	
10010.00	-14.2	H	3.0	40.6	1.0	-53.7	-25.0	-28.7	
12512.50	-1.9	H	3.0	41.6	1.0	-42.5	-25.0	-17.5	
Mid Ch, 2535MHz									
5070.00	-15.4	V	3.0	43.8	1.0	-58.2	-25.0	-33.2	
7605.00	-12.7	V	3.0	42.4	1.0	-54.1	-25.0	-29.1	
10140.00	-16.7	V	3.0	40.6	1.0	-56.3	-25.0	-31.3	
12675.00	-5.2	V	3.0	41.8	1.0	-45.9	-25.0	-20.9	
5070.00	-5.9	H	3.0	43.8	1.0	-48.7	-25.0	-23.7	
7605.00	-11.5	H	3.0	42.4	1.0	-52.9	-25.0	-27.9	
10140.00	-13.0	H	3.0	40.6	1.0	-52.6	-25.0	-27.6	
12675.00	-2.9	H	3.0	41.8	1.0	-43.6	-25.0	-18.6	
High Ch, 2567.5MHz									
5135.00	-12.4	V	3.0	43.8	1.0	-55.1	-25.0	-30.1	
7702.50	-9.2	V	3.0	42.4	1.0	-50.6	-25.0	-25.6	
10270.00	-14.1	V	3.0	40.6	1.0	-53.7	-25.0	-28.7	
12837.50	-7.3	V	3.0	41.9	1.0	-48.1	-25.0	-23.1	
5135.00	-5.7	H	3.0	43.8	1.0	-48.4	-25.0	-23.4	
7702.50	-10.4	H	3.0	42.4	1.0	-51.8	-25.0	-26.8	
10270.00	-7.1	H	3.0	40.6	1.0	-46.7	-25.0	-21.7	
12837.50	-4.1	H	3.0	41.9	1.0	-45.0	-25.0	-20.0	

LTE

Band 7

5MHz

16QAM

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

Company: Samsung
Project #: 4788481138
Date: 2018-06-18
Test Engineer: 47989
Configuration: EUT / AC Adapter / Earphone, Z-Position
Location: Chamber 1
Mode: LTE_16QAM Band 7 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, 2502.5MHz									
5005.00	-15.0	V	3.0	43.8	1.0	-57.8	-25.0	-32.8	
7507.50	-12.0	V	3.0	42.5	1.0	-53.5	-25.0	-28.5	
10010.00	-18.2	V	3.0	40.6	1.0	-57.8	-25.0	-32.8	
12512.50	-6.3	V	3.0	41.6	1.0	-46.9	-25.0	-21.9	
5005.00	-7.6	H	3.0	43.8	1.0	-50.4	-25.0	-25.4	
7507.50	-9.3	H	3.0	42.5	1.0	-50.8	-25.0	-25.8	
10010.00	-14.7	H	3.0	40.6	1.0	-54.2	-25.0	-29.2	
12512.50	-2.4	H	3.0	41.6	1.0	-43.0	-25.0	-18.0	
Mid Ch, 2535MHz									
5070.00	-16.3	V	3.0	43.8	1.0	-59.1	-25.0	-34.1	
7605.00	-14.4	V	3.0	42.4	1.0	-55.8	-25.0	-30.8	
10140.00	-17.3	V	3.0	40.6	1.0	-56.9	-25.0	-31.9	
12675.00	-6.1	V	3.0	41.8	1.0	-46.8	-25.0	-21.8	
5070.00	-7.1	H	3.0	43.8	1.0	-49.9	-25.0	-24.9	
7605.00	-13.3	H	3.0	42.4	1.0	-54.7	-25.0	-29.7	
10140.00	-14.1	H	3.0	40.6	1.0	-53.7	-25.0	-28.7	
12675.00	-3.3	H	3.0	41.8	1.0	-44.0	-25.0	-19.0	
High Ch, 2567.5MHz									
5135.00	-13.6	V	3.0	43.8	1.0	-56.3	-25.0	-31.3	
7702.50	-11.0	V	3.0	42.4	1.0	-52.3	-25.0	-27.3	
10270.00	-16.1	V	3.0	40.6	1.0	-55.7	-25.0	-30.7	
12837.50	-10.7	V	3.0	41.9	1.0	-51.6	-25.0	-26.6	
5135.00	-6.8	H	3.0	43.8	1.0	-49.5	-25.0	-24.5	
7702.50	-12.5	H	3.0	42.4	1.0	-53.9	-25.0	-28.9	
10270.00	-11.0	H	3.0	40.6	1.0	-50.6	-25.0	-25.6	
12837.50	-8.1	H	3.0	41.9	1.0	-48.9	-25.0	-23.9	

LTE Band 12

LTE

Band 12

10MHz

QPSK

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

Company: Samsung
Project #: 4788549592
Date: 2018-07-23
Test Engineer: 45585
Configuration: EUT / AC Adapter / Earphone, X-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
Low Ch, 704MHz									
1408.00	-23.9	V	3.0	43.8	1.0	-66.7	-13.0	-53.7	
2112.00	-23.0	V	3.0	43.3	1.0	-65.4	-13.0	-52.4	
2816.00	-21.6	V	3.0	43.5	1.0	-64.1	-13.0	-51.1	
3520.00	-20.3	V	3.0	43.7	1.0	-63.0	-13.0	-50.0	
4224.00	-20.2	V	3.0	43.9	1.0	-63.0	-13.0	-50.0	
1408.00	-24.1	H	3.0	43.8	1.0	-66.9	-13.0	-53.9	
2112.00	-23.6	H	3.0	43.3	1.0	-66.0	-13.0	-53.0	
2816.00	-21.5	H	3.0	43.5	1.0	-63.9	-13.0	-50.9	
3520.00	-20.0	H	3.0	43.7	1.0	-62.7	-13.0	-49.7	
4224.00	-19.5	H	3.0	43.9	1.0	-62.4	-13.0	-49.4	
Mid Ch, 707.5MHz									
1415.00	-12.7	V	3.0	43.8	1.0	-55.4	-13.0	-42.4	
2122.50	-23.4	V	3.0	43.3	1.0	-65.8	-13.0	-52.8	
2830.00	-22.3	V	3.0	43.5	1.0	-64.8	-13.0	-51.8	
3537.50	-20.3	V	3.0	43.7	1.0	-63.0	-13.0	-50.0	
4245.00	-20.4	V	3.0	43.9	1.0	-63.2	-13.0	-50.2	
1415.00	-11.3	H	3.0	43.8	1.0	-54.1	-13.0	-41.1	
2122.50	-23.9	H	3.0	43.3	1.0	-66.3	-13.0	-53.3	
2830.00	-22.0	H	3.0	43.5	1.0	-64.5	-13.0	-51.5	
3537.50	-20.0	H	3.0	43.7	1.0	-62.7	-13.0	-49.7	
4245.00	-20.3	H	3.0	43.9	1.0	-63.2	-13.0	-50.2	
High Ch, 711MHz									
1422.00	-12.5	V	3.0	43.8	1.0	-55.3	-13.0	-42.3	
2133.00	-23.4	V	3.0	43.3	1.0	-65.7	-13.0	-52.7	
2844.00	-22.7	V	3.0	43.5	1.0	-65.2	-13.0	-52.2	
3555.00	-19.7	V	3.0	43.7	1.0	-62.4	-13.0	-49.4	
4266.00	-16.7	V	3.0	43.8	1.0	-59.6	-13.0	-46.6	
1422.00	-11.4	H	3.0	43.8	1.0	-54.2	-13.0	-41.2	
2133.00	-24.0	H	3.0	43.3	1.0	-66.4	-13.0	-53.4	
2844.00	-22.2	H	3.0	43.5	1.0	-64.7	-13.0	-51.7	
3555.00	-19.1	H	3.0	43.7	1.0	-61.8	-13.0	-48.8	
4266.00	-17.6	H	3.0	43.8	1.0	-60.4	-13.0	-47.4	

LTE

Band 12

10MHz

16QAM

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

Company: Samsung
Project #: 4788549592
Date: 2018-07-23
Test Engineer: 45585
Configuration: EUT / AC Adapter / Earphone, X-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
Low Ch, 704MHz									
1408.00	-21.3	V	3.0	43.8	1.0	-64.1	-13.0	-51.1	
2112.00	-23.2	V	3.0	43.3	1.0	-65.5	-13.0	-52.5	
2816.00	-21.8	V	3.0	43.5	1.0	-64.3	-13.0	-51.3	
3520.00	-19.3	V	3.0	43.7	1.0	-62.0	-13.0	-49.0	
4224.00	-16.9	V	3.0	43.9	1.0	-59.8	-13.0	-46.8	
1408.00	-20.5	H	3.0	43.8	1.0	-63.3	-13.0	-50.3	
2112.00	-23.6	H	3.0	43.3	1.0	-66.0	-13.0	-53.0	
2816.00	-21.5	H	3.0	43.5	1.0	-64.0	-13.0	-51.0	
3520.00	-19.0	H	3.0	43.7	1.0	-61.7	-13.0	-48.7	
4224.00	-18.2	H	3.0	43.9	1.0	-61.1	-13.0	-48.1	
Mid Ch, 707.5MHz									
1415.00	-22.9	V	3.0	43.8	1.0	-65.7	-13.0	-52.7	
2122.50	-23.4	V	3.0	43.3	1.0	-65.7	-13.0	-52.7	
2830.00	-21.5	V	3.0	43.5	1.0	-64.0	-13.0	-51.0	
3537.50	-20.3	V	3.0	43.7	1.0	-63.0	-13.0	-50.0	
4245.00	-17.6	V	3.0	43.9	1.0	-60.5	-13.0	-47.5	
1415.00	-21.0	H	3.0	43.8	1.0	-63.8	-13.0	-50.8	
2122.50	-23.9	H	3.0	43.3	1.0	-66.2	-13.0	-53.2	
2830.00	-22.0	H	3.0	43.5	1.0	-64.5	-13.0	-51.5	
3537.50	-19.6	H	3.0	43.7	1.0	-62.3	-13.0	-49.3	
4245.00	-18.0	H	3.0	43.9	1.0	-60.9	-13.0	-47.9	
High Ch, 711MHz									
1422.00	-13.7	V	3.0	43.8	1.0	-56.5	-13.0	-43.5	
2133.00	-23.6	V	3.0	43.3	1.0	-65.9	-13.0	-52.9	
2844.00	-22.6	V	3.0	43.5	1.0	-65.1	-13.0	-52.1	
3555.00	-19.8	V	3.0	43.7	1.0	-62.5	-13.0	-49.5	
4266.00	-17.8	V	3.0	43.8	1.0	-60.7	-13.0	-47.7	
1422.00	-12.6	H	3.0	43.8	1.0	-55.4	-13.0	-42.4	
2133.00	-24.0	H	3.0	43.3	1.0	-66.4	-13.0	-53.4	
2844.00	-22.2	H	3.0	43.5	1.0	-64.7	-13.0	-51.7	
3555.00	-19.2	H	3.0	43.7	1.0	-62.0	-13.0	-49.0	
4266.00	-18.3	H	3.0	43.8	1.0	-61.1	-13.0	-48.1	

LTE

Band 12

5MHz

QPSK

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

Company: Samsung
Project #: 4788549592
Date: 2018-07-23
Test Engineer: 45585
Configuration: EUT / AC Adapter / Earphone, X-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	-20.8	V	3.0	43.8	1.0	-63.6	-13.0	-50.6	
2104.50	-23.1	V	3.0	43.3	1.0	-65.4	-13.0	-52.4	
2806.00	-21.9	V	3.0	43.5	1.0	-64.4	-13.0	-51.4	
3507.50	-20.7	V	3.0	43.7	1.0	-63.4	-13.0	-50.4	
4209.00	-19.9	V	3.0	43.9	1.0	-62.7	-13.0	-49.7	
1403.00	-20.4	H	3.0	43.8	1.0	-63.2	-13.0	-50.2	
2104.50	-23.6	H	3.0	43.3	1.0	-65.9	-13.0	-52.9	
2806.00	-21.4	H	3.0	43.5	1.0	-63.9	-13.0	-50.9	
3507.50	-19.7	H	3.0	43.7	1.0	-62.4	-13.0	-49.4	
4209.00	-19.7	H	3.0	43.9	1.0	-62.6	-13.0	-49.6	
Mid Ch, 707.5MHz									
1415.00	-22.0	V	3.0	43.8	1.0	-64.8	-13.0	-51.8	
2122.50	-23.5	V	3.0	43.3	1.0	-65.8	-13.0	-52.8	
2830.00	-20.8	V	3.0	43.5	1.0	-63.3	-13.0	-50.3	
3537.50	-18.5	V	3.0	43.7	1.0	-61.2	-13.0	-48.2	
4245.00	-18.2	V	3.0	43.9	1.0	-61.1	-13.0	-48.1	
1415.00	-21.7	H	3.0	43.8	1.0	-64.5	-13.0	-51.5	
2122.50	-24.0	H	3.0	43.3	1.0	-66.3	-13.0	-53.3	
2830.00	-21.2	H	3.0	43.5	1.0	-63.6	-13.0	-50.6	
3537.50	-19.5	H	3.0	43.7	1.0	-62.2	-13.0	-49.2	
4245.00	-19.6	H	3.0	43.9	1.0	-62.4	-13.0	-49.4	
High Ch, 713.5MHz									
1427.00	-17.4	V	3.0	43.8	1.0	-60.1	-13.0	-47.1	
2140.50	-23.3	V	3.0	43.3	1.0	-65.7	-13.0	-52.7	
2854.00	-22.4	V	3.0	43.5	1.0	-64.9	-13.0	-51.9	
3567.50	-19.7	V	3.0	43.7	1.0	-62.4	-13.0	-49.4	
4281.00	-19.3	V	3.0	43.8	1.0	-62.2	-13.0	-49.2	
1427.00	-16.5	H	3.0	43.8	1.0	-59.2	-13.0	-46.2	
2140.50	-24.0	H	3.0	43.3	1.0	-66.4	-13.0	-53.4	
2854.00	-22.2	H	3.0	43.5	1.0	-64.7	-13.0	-51.7	
3567.50	-20.4	H	3.0	43.7	1.0	-63.1	-13.0	-50.1	
4281.00	-19.4	H	3.0	43.8	1.0	-62.2	-13.0	-49.2	

LTE

Band 12

5MHz

16QAM

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

Company: Samsung
Project #: 4788549592
Date: 2018-07-23
Test Engineer: 45585
Configuration: EUT / AC Adapter / Earphone, X-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	-21.4	V	3.0	43.8	1.0	-64.2	-13.0	-51.2	
2104.50	-23.1	V	3.0	43.3	1.0	-65.4	-13.0	-52.4	
2806.00	-21.8	V	3.0	43.5	1.0	-64.3	-13.0	-51.3	
3507.50	-20.6	V	3.0	43.7	1.0	-63.3	-13.0	-50.3	
4209.00	-19.9	V	3.0	43.9	1.0	-62.7	-13.0	-49.7	
1403.00	-20.9	H	3.0	43.8	1.0	-63.7	-13.0	-50.7	
2104.50	-23.7	H	3.0	43.3	1.0	-66.0	-13.0	-53.0	
2806.00	-21.4	H	3.0	43.5	1.0	-63.9	-13.0	-50.9	
3507.50	-19.7	H	3.0	43.7	1.0	-62.4	-13.0	-49.4	
4209.00	-19.8	H	3.0	43.9	1.0	-62.7	-13.0	-49.7	
Mid Ch, 707.5MHz									
1415.00	-22.8	V	3.0	43.8	1.0	-65.5	-13.0	-52.5	
2122.50	-23.5	V	3.0	43.3	1.0	-65.8	-13.0	-52.8	
2830.00	-21.4	V	3.0	43.5	1.0	-63.9	-13.0	-50.9	
3537.50	-19.4	V	3.0	43.7	1.0	-62.1	-13.0	-49.1	
4245.00	-19.2	V	3.0	43.9	1.0	-62.0	-13.0	-49.0	
1415.00	-22.4	H	3.0	43.8	1.0	-65.2	-13.0	-52.2	
2122.50	-24.0	H	3.0	43.3	1.0	-66.3	-13.0	-53.3	
2830.00	-21.5	H	3.0	43.5	1.0	-64.0	-13.0	-51.0	
3537.50	-19.7	H	3.0	43.7	1.0	-62.4	-13.0	-49.4	
4245.00	-19.9	H	3.0	43.9	1.0	-62.8	-13.0	-49.8	
High Ch, 713.5MHz									
1427.00	-18.0	V	3.0	43.8	1.0	-60.7	-13.0	-47.7	
2140.50	-23.3	V	3.0	43.3	1.0	-65.7	-13.0	-52.7	
2854.00	-22.4	V	3.0	43.5	1.0	-64.9	-13.0	-51.9	
3567.50	-19.7	V	3.0	43.7	1.0	-62.5	-13.0	-49.5	
4281.00	-19.4	V	3.0	43.8	1.0	-62.2	-13.0	-49.2	
1427.00	-17.4	H	3.0	43.8	1.0	-60.2	-13.0	-47.2	
2140.50	-23.9	H	3.0	43.3	1.0	-66.3	-13.0	-53.3	
2854.00	-22.2	H	3.0	43.5	1.0	-64.7	-13.0	-51.7	
3567.50	-20.4	H	3.0	43.7	1.0	-63.1	-13.0	-50.1	
4281.00	-19.3	H	3.0	43.8	1.0	-62.2	-13.0	-49.2	

LTE

Band 12

3MHz

QPSK

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

Company: Samsung
Project #: 4788549592
Date: 2018-07-23
Test Engineer: 47989
Configuration: EUT / AC Adapter / Earphone, X-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	-24.6	V	3.0	43.8	1.0	-67.4	-13.0	-54.4	
2101.50	-22.6	V	3.0	43.3	1.0	-64.9	-13.0	-51.9	
2802.00	-21.8	V	3.0	43.5	1.0	-64.3	-13.0	-51.3	
3502.50	-19.9	V	3.0	43.7	1.0	-62.6	-13.0	-49.6	
4203.00	-19.2	V	3.0	43.9	1.0	-62.0	-13.0	-49.0	
1401.00	-23.3	H	3.0	43.8	1.0	-66.1	-13.0	-53.1	
2101.50	-23.4	H	3.0	43.3	1.0	-65.7	-13.0	-52.7	
2802.00	-21.5	H	3.0	43.5	1.0	-64.0	-13.0	-51.0	
3502.50	-19.1	H	3.0	43.7	1.0	-61.8	-13.0	-48.8	
4203.00	-19.4	H	3.0	43.9	1.0	-62.3	-13.0	-49.3	
Mid Ch, 707.5MHz									
1415.00	-21.5	V	3.0	43.8	1.0	-64.3	-13.0	-51.3	
2122.50	-23.4	V	3.0	43.3	1.0	-65.7	-13.0	-52.7	
2830.00	-21.9	V	3.0	43.5	1.0	-64.4	-13.0	-51.4	
3537.50	-19.4	V	3.0	43.7	1.0	-62.1	-13.0	-49.1	
4245.00	-19.8	V	3.0	43.9	1.0	-62.6	-13.0	-49.6	
1415.00	-22.8	H	3.0	43.8	1.0	-65.6	-13.0	-52.6	
2122.50	-23.9	H	3.0	43.3	1.0	-66.2	-13.0	-53.2	
2830.00	-21.2	H	3.0	43.5	1.0	-63.7	-13.0	-50.7	
3537.50	-19.5	H	3.0	43.7	1.0	-62.2	-13.0	-49.2	
4245.00	-19.8	H	3.0	43.9	1.0	-62.6	-13.0	-49.6	
High Ch, 714.5MHz									
1429.00	-13.1	V	3.0	43.8	1.0	-55.9	-13.0	-42.9	
2143.50	-22.4	V	3.0	43.3	1.0	-64.7	-13.0	-51.7	
2858.00	-22.2	V	3.0	43.5	1.0	-64.7	-13.0	-51.7	
3572.50	-19.7	V	3.0	43.7	1.0	-62.4	-13.0	-49.4	
4287.00	-19.6	V	3.0	43.8	1.0	-62.4	-13.0	-49.4	
1429.00	-13.0	H	3.0	43.8	1.0	-55.8	-13.0	-42.8	
2143.50	-23.8	H	3.0	43.3	1.0	-66.2	-13.0	-53.2	
2858.00	-21.9	H	3.0	43.5	1.0	-64.4	-13.0	-51.4	
3572.50	-19.4	H	3.0	43.7	1.0	-62.1	-13.0	-49.1	
4287.00	-19.2	H	3.0	43.8	1.0	-62.1	-13.0	-49.1	

LTE

Band 12

3MHz

16QAM

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

Company: Samsung
Project #: 4788549592
Date: 2018-07-23
Test Engineer: 47989
Configuration: EUT / AC Adapter / Earphone, X-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	-25.1	V	3.0	43.8	1.0	-67.9	-13.0	-54.9	
2101.50	-22.8	V	3.0	43.3	1.0	-65.1	-13.0	-52.1	
2802.00	-21.8	V	3.0	43.5	1.0	-64.3	-13.0	-51.3	
3502.50	-19.9	V	3.0	43.7	1.0	-62.6	-13.0	-49.6	
4203.00	-19.2	V	3.0	43.9	1.0	-62.1	-13.0	-49.1	
1401.00	-24.3	H	3.0	43.8	1.0	-67.1	-13.0	-54.1	
2101.50	-23.5	H	3.0	43.3	1.0	-65.8	-13.0	-52.8	
2802.00	-21.2	H	3.0	43.5	1.0	-63.7	-13.0	-50.7	
3502.50	-19.4	H	3.0	43.7	1.0	-62.1	-13.0	-49.1	
4203.00	-19.5	H	3.0	43.9	1.0	-62.3	-13.0	-49.3	
Mid Ch, 707.5MHz									
1415.00	-24.5	V	3.0	43.8	1.0	-67.3	-13.0	-54.3	
2122.50	-23.5	V	3.0	43.3	1.0	-65.8	-13.0	-52.8	
2830.00	-22.1	V	3.0	43.5	1.0	-64.6	-13.0	-51.6	
3537.50	-19.6	V	3.0	43.7	1.0	-62.3	-13.0	-49.3	
4245.00	-19.9	V	3.0	43.9	1.0	-62.8	-13.0	-49.8	
1415.00	-23.0	H	3.0	43.8	1.0	-65.8	-13.0	-52.8	
2122.50	-23.5	H	3.0	43.3	1.0	-65.8	-13.0	-52.8	
2830.00	-21.1	H	3.0	43.5	1.0	-63.6	-13.0	-50.6	
3537.50	-19.6	H	3.0	43.7	1.0	-62.3	-13.0	-49.3	
4245.00	-20.0	H	3.0	43.9	1.0	-62.9	-13.0	-49.9	
High Ch, 714.5MHz									
1429.00	-14.4	V	3.0	43.8	1.0	-57.2	-13.0	-44.2	
2143.50	-22.4	V	3.0	43.3	1.0	-64.7	-13.0	-51.7	
2858.00	-22.3	V	3.0	43.5	1.0	-64.8	-13.0	-51.8	
3572.50	-19.7	V	3.0	43.7	1.0	-62.4	-13.0	-49.4	
4287.00	-19.6	V	3.0	43.8	1.0	-62.4	-13.0	-49.4	
1429.00	-13.0	H	3.0	43.8	1.0	-55.8	-13.0	-42.8	
2143.50	-23.7	H	3.0	43.3	1.0	-66.1	-13.0	-53.1	
2858.00	-21.9	H	3.0	43.5	1.0	-64.4	-13.0	-51.4	
3572.50	-19.3	H	3.0	43.7	1.0	-62.1	-13.0	-49.1	
4287.00	-19.3	H	3.0	43.8	1.0	-62.1	-13.0	-49.1	

LTE

Band 12

1.4MHz

QPSK

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

Company: Samsung
Project #: 4788549592
Date: 2018-07-23
Test Engineer: 47989
Configuration: EUT / AC Adapter / Earphone, X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 12 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, 699.7MHz									
1399.40	-23.9	V	3.0	43.8	1.0	-66.7	-13.0	-53.7	
2099.10	-22.3	V	3.0	43.3	1.0	-64.6	-13.0	-51.6	
2798.80	-21.7	V	3.0	43.5	1.0	-64.2	-13.0	-51.2	
3498.50	-19.4	V	3.0	43.7	1.0	-62.1	-13.0	-49.1	
4198.20	-18.9	V	3.0	43.9	1.0	-61.8	-13.0	-48.8	
1399.40	-23.2	H	3.0	43.8	1.0	-66.0	-13.0	-53.0	
2099.10	-23.2	H	3.0	43.3	1.0	-65.5	-13.0	-52.5	
2798.80	-21.8	H	3.0	43.5	1.0	-64.2	-13.0	-51.2	
3498.50	-19.1	H	3.0	43.7	1.0	-61.8	-13.0	-48.8	
4198.20	-19.4	H	3.0	43.9	1.0	-62.2	-13.0	-49.2	
Mid Ch, 707.5MHz									
1415.00	-23.9	V	3.0	43.8	1.0	-66.7	-13.0	-53.7	
2122.50	-23.5	V	3.0	43.3	1.0	-65.8	-13.0	-52.8	
2830.00	-21.1	V	3.0	43.5	1.0	-63.6	-13.0	-50.6	
3537.50	-18.8	V	3.0	43.7	1.0	-61.5	-13.0	-48.5	
4245.00	-19.4	V	3.0	43.9	1.0	-62.2	-13.0	-49.2	
1415.00	-21.3	H	3.0	43.8	1.0	-64.1	-13.0	-51.1	
2122.50	-23.3	H	3.0	43.3	1.0	-65.6	-13.0	-52.6	
2830.00	-21.1	H	3.0	43.5	1.0	-63.6	-13.0	-50.6	
3537.50	-18.6	H	3.0	43.7	1.0	-61.3	-13.0	-48.3	
4245.00	-20.0	H	3.0	43.9	1.0	-62.9	-13.0	-49.9	
High Ch, 715.3MHz									
1430.60	-16.7	V	3.0	43.8	1.0	-59.5	-13.0	-46.5	
2145.90	-21.4	V	3.0	43.3	1.0	-63.7	-13.0	-50.7	
2861.20	-20.9	V	3.0	43.5	1.0	-63.4	-13.0	-50.4	
3576.50	-19.0	V	3.0	43.7	1.0	-61.8	-13.0	-48.8	
4291.80	-19.1	V	3.0	43.8	1.0	-61.9	-13.0	-48.9	
1430.60	-14.0	H	3.0	43.8	1.0	-56.8	-13.0	-43.8	
2145.90	-21.2	H	3.0	43.3	1.0	-63.6	-13.0	-50.6	
2861.20	-20.6	H	3.0	43.5	1.0	-63.1	-13.0	-50.1	
3576.50	-18.8	H	3.0	43.7	1.0	-61.6	-13.0	-48.6	
4291.80	-19.5	H	3.0	43.8	1.0	-62.3	-13.0	-49.3	

LTE

Band 12

1.4MHz

16QAM

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

Company: Samsung
Project #: 4788549592
Date: 2018-07-23
Test Engineer: 47989
Configuration: EUT / AC Adapter / Earphone, X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 12 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, 699.7MHz									
1399.40	-24.5	V	3.0	43.8	1.0	-67.3	-13.0	-54.3	
2099.10	-22.5	V	3.0	43.3	1.0	-64.8	-13.0	-51.8	
2798.80	-21.9	V	3.0	43.5	1.0	-64.4	-13.0	-51.4	
3498.50	-19.4	V	3.0	43.7	1.0	-62.1	-13.0	-49.1	
4198.20	-18.5	V	3.0	43.9	1.0	-61.4	-13.0	-48.4	
1399.40	-23.9	H	3.0	43.8	1.0	-66.7	-13.0	-53.7	
2099.10	-23.5	H	3.0	43.3	1.0	-65.8	-13.0	-52.8	
2798.80	-21.3	H	3.0	43.5	1.0	-63.8	-13.0	-50.8	
3498.50	-19.3	H	3.0	43.7	1.0	-62.0	-13.0	-49.0	
4198.20	-19.7	H	3.0	43.9	1.0	-62.5	-13.0	-49.5	
Mid Ch, 707.5MHz									
1415.00	-24.4	V	3.0	43.8	1.0	-67.1	-13.0	-54.1	
2122.50	-23.1	V	3.0	43.3	1.0	-65.4	-13.0	-52.4	
2830.00	-21.6	V	3.0	43.5	1.0	-64.1	-13.0	-51.1	
3537.50	-18.9	V	3.0	43.7	1.0	-61.6	-13.0	-48.6	
4245.00	-19.6	V	3.0	43.9	1.0	-62.5	-13.0	-49.5	
1415.00	-21.4	H	3.0	43.8	1.0	-64.2	-13.0	-51.2	
2122.50	-23.4	H	3.0	43.3	1.0	-65.7	-13.0	-52.7	
2830.00	-21.6	H	3.0	43.5	1.0	-64.1	-13.0	-51.1	
3537.50	-19.1	H	3.0	43.7	1.0	-61.8	-13.0	-48.8	
4245.00	-20.0	H	3.0	43.9	1.0	-62.9	-13.0	-49.9	
High Ch, 715.3MHz									
1430.60	-17.8	V	3.0	43.8	1.0	-60.6	-13.0	-47.6	
2145.90	-21.8	V	3.0	43.3	1.0	-64.2	-13.0	-51.2	
2861.20	-21.0	V	3.0	43.5	1.0	-63.5	-13.0	-50.5	
3576.50	-19.5	V	3.0	43.7	1.0	-62.2	-13.0	-49.2	
4291.80	-19.2	V	3.0	43.8	1.0	-62.1	-13.0	-49.1	
1430.60	-15.2	H	3.0	43.8	1.0	-58.0	-13.0	-45.0	
2145.90	-23.1	H	3.0	43.3	1.0	-65.4	-13.0	-52.4	
2861.20	-21.1	H	3.0	43.5	1.0	-63.6	-13.0	-50.6	
3576.50	-19.2	H	3.0	43.7	1.0	-61.9	-13.0	-48.9	
4291.80	-19.6	H	3.0	43.8	1.0	-62.5	-13.0	-49.5	

LTE Band 66

LTE Band 66 20MHz QPSK

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

Company: Samsung
Project #: 4788549592
Date: 2018-07-24
Test Engineer: 45585
Configuration: EUT / AC Adapter / Earphone, X-Position
Location: Chamber 2
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	-12.4	V	3.0	39.5	1.0	-50.9	-13.0	-37.9	
5160.00	-22.1	V	3.0	39.8	1.0	-60.9	-13.0	-47.9	
6880.00	-21.1	V	3.0	39.7	1.0	-59.8	-13.0	-46.8	
3440.00	-9.5	H	3.0	39.5	1.0	-48.0	-13.0	-35.0	
5160.00	-20.9	H	3.0	39.8	1.0	-59.7	-13.0	-46.7	
6880.00	-23.0	H	3.0	39.7	1.0	-61.7	-13.0	-48.7	
Mid Ch, 1745MHz									
3490.00	-11.2	V	3.0	39.5	1.0	-49.7	-13.0	-36.7	
5235.00	-20.3	V	3.0	39.8	1.0	-59.2	-13.0	-46.2	
6980.00	-19.5	V	3.0	39.6	1.0	-58.1	-13.0	-45.1	
3490.00	-8.5	H	3.0	39.5	1.0	-47.0	-13.0	-34.0	
5235.00	-22.9	H	3.0	39.8	1.0	-61.8	-13.0	-48.8	
6980.00	-23.9	H	3.0	39.6	1.0	-62.5	-13.0	-49.5	
High Ch, 1770MHz									
3540.00	-8.6	V	3.0	39.6	1.0	-47.1	-13.0	-34.1	
5310.00	-20.8	V	3.0	39.9	1.0	-59.6	-13.0	-46.6	
7080.00	-22.7	V	3.0	39.6	1.0	-61.3	-13.0	-48.3	
3540.00	-26.4	H	3.0	39.6	1.0	-64.9	-13.0	-51.9	
5310.00	-22.8	H	3.0	39.9	1.0	-61.7	-13.0	-48.7	
7080.00	-24.4	H	3.0	39.6	1.0	-63.0	-13.0	-50.0	

LTE Band 66 20MHz 16QAM

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

Company: Samsung
Project #: 4788549592
Date: 2018-07-24
Test Engineer: 45585
Configuration: EUT / AC Adapter / Earphone, X-Position
Location: Chamber 2
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	-15.3	V	3.0	39.5	1.0	-53.8	-13.0	-40.8	
5160.00	-19.9	V	3.0	39.8	1.0	-58.8	-13.0	-45.8	
6880.00	-19.5	V	3.0	39.7	1.0	-58.2	-13.0	-45.2	
3440.00	-14.0	H	3.0	39.5	1.0	-52.6	-13.0	-39.6	
5160.00	-22.2	H	3.0	39.8	1.0	-61.0	-13.0	-48.0	
6880.00	-21.2	H	3.0	39.7	1.0	-59.9	-13.0	-46.9	
Mid Ch, 1745MHz									
3490.00	-9.9	V	3.0	39.5	1.0	-48.4	-13.0	-35.4	
5235.00	-21.6	V	3.0	39.8	1.0	-60.4	-13.0	-47.4	
6980.00	-23.8	V	3.0	39.6	1.0	-62.4	-13.0	-49.4	
3490.00	-9.0	H	3.0	39.5	1.0	-47.6	-13.0	-34.6	
5235.00	-22.2	H	3.0	39.8	1.0	-61.0	-13.0	-48.0	
6980.00	-23.9	H	3.0	39.6	1.0	-62.5	-13.0	-49.5	
High Ch, 1770MHz									
3540.00	-12.5	V	3.0	39.6	1.0	-51.1	-13.0	-38.1	
5310.00	-21.7	V	3.0	39.9	1.0	-60.6	-13.0	-47.6	
7080.00	-19.7	V	3.0	39.6	1.0	-58.3	-13.0	-45.3	
3540.00	-10.6	H	3.0	39.6	1.0	-49.2	-13.0	-36.2	
5310.00	-23.7	H	3.0	39.9	1.0	-62.6	-13.0	-49.6	
7080.00	-23.0	H	3.0	39.6	1.0	-61.6	-13.0	-48.6	

LTE

Band 66

15MHz

QPSK

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

Company: Samsung
Project #: 4788549592
Date: 2018-07-24
Test Engineer: 45585
Configuration: EUT / AC Adapter / Earphone, X-Position
Location: Chamber 2
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	-12.5	V	3.0	39.5	1.0	-51.0	-13.0	-38.0	
5152.50	-20.4	V	3.0	39.8	1.0	-59.2	-13.0	-46.2	
6870.00	-20.7	V	3.0	39.7	1.0	-59.4	-13.0	-46.4	
3435.00	-11.0	H	3.0	39.5	1.0	-49.5	-13.0	-36.5	
5152.50	-22.0	H	3.0	39.8	1.0	-60.9	-13.0	-47.9	
6870.00	-20.7	H	3.0	39.7	1.0	-59.4	-13.0	-46.4	
Mid Ch, 1745MHz									
3490.00	-11.6	V	3.0	39.5	1.0	-50.2	-13.0	-37.2	
5235.00	-20.9	V	3.0	39.8	1.0	-59.8	-13.0	-46.8	
6980.00	-21.6	V	3.0	39.6	1.0	-60.2	-13.0	-47.2	
3490.00	-8.4	H	3.0	39.5	1.0	-47.0	-13.0	-34.0	
5235.00	-23.2	H	3.0	39.8	1.0	-62.1	-13.0	-49.1	
6980.00	-23.9	H	3.0	39.6	1.0	-62.6	-13.0	-49.6	
High Ch, 1772.5MHz									
3545.00	-13.0	V	3.0	39.6	1.0	-51.6	-13.0	-38.6	
5317.50	-24.8	V	3.0	39.9	1.0	-63.6	-13.0	-50.6	
7090.00	-22.0	V	3.0	39.6	1.0	-60.6	-13.0	-47.6	
3545.00	-9.5	H	3.0	39.6	1.0	-48.1	-13.0	-35.1	
5317.50	-21.9	H	3.0	39.9	1.0	-60.7	-13.0	-47.7	
7090.00	-24.3	H	3.0	39.6	1.0	-62.9	-13.0	-49.9	

LTE

Band 66

15MHz

16QAM

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

Company: Samsung
Project #: 4788549592
Date: 2018-07-24
Test Engineer: 45585
Configuration: EUT / AC Adapter / Earphone, X-Position
Location: Chamber 2
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	-16.2	V	3.0	39.5	1.0	-54.7	-13.0	-41.7	
5152.50	-20.6	V	3.0	39.8	1.0	-59.5	-13.0	-46.5	
6870.00	-22.7	V	3.0	39.7	1.0	-61.4	-13.0	-48.4	
3435.00	-13.4	H	3.0	39.5	1.0	-51.9	-13.0	-38.9	
5152.50	-21.5	H	3.0	39.8	1.0	-60.3	-13.0	-47.3	
6870.00	-23.2	H	3.0	39.7	1.0	-61.9	-13.0	-48.9	
Mid Ch, 1745MHz									
3490.00	-12.9	V	3.0	39.5	1.0	-51.5	-13.0	-38.5	
5235.00	-21.8	V	3.0	39.8	1.0	-60.6	-13.0	-47.6	
6980.00	-23.1	V	3.0	39.6	1.0	-61.7	-13.0	-48.7	
3490.00	-9.6	H	3.0	39.5	1.0	-48.1	-13.0	-35.1	
5235.00	-23.9	H	3.0	39.8	1.0	-62.8	-13.0	-49.8	
6980.00	-24.0	H	3.0	39.6	1.0	-62.6	-13.0	-49.6	
High Ch, 1772.5MHz									
3545.00	-9.6	V	3.0	39.6	1.0	-48.2	-13.0	-35.2	
5317.50	-24.8	V	3.0	39.9	1.0	-63.6	-13.0	-50.6	
7090.00	-24.3	V	3.0	39.6	1.0	-62.8	-13.0	-49.8	
3545.00	-7.6	H	3.0	39.6	1.0	-46.1	-13.0	-33.1	
5317.50	-22.9	H	3.0	39.9	1.0	-61.8	-13.0	-48.8	
7090.00	-24.3	H	3.0	39.6	1.0	-62.9	-13.0	-49.9	

LTE Band 66 10MHz QPSK

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

Company: Samsung
Project #: 4788549592
Date: 2018-07-24
Test Engineer: 45585
Configuration: EUT / AC Adapter / Earphone, X-Position
Location: Chamber 2
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	-14.7	V	3.0	39.5	1.0	-53.2	-13.0	-40.2	
5145.00	-18.6	V	3.0	39.8	1.0	-57.4	-13.0	-44.4	
6860.00	-22.6	V	3.0	39.7	1.0	-61.2	-13.0	-48.2	
3430.00	-13.3	H	3.0	39.5	1.0	-51.8	-13.0	-38.8	
5145.00	-21.9	H	3.0	39.8	1.0	-60.7	-13.0	-47.7	
6860.00	-22.8	H	3.0	39.7	1.0	-61.5	-13.0	-48.5	
Mid Ch, 1745MHz									
3490.00	-9.5	V	3.0	39.5	1.0	-48.0	-13.0	-35.0	
5235.00	-20.2	V	3.0	39.8	1.0	-59.0	-13.0	-46.0	
6980.00	-24.0	V	3.0	39.6	1.0	-62.6	-13.0	-49.6	
3490.00	-7.6	H	3.0	39.5	1.0	-46.1	-13.0	-33.1	
5235.00	-21.1	H	3.0	39.8	1.0	-59.9	-13.0	-46.9	
6980.00	-23.9	H	3.0	39.6	1.0	-62.5	-13.0	-49.5	
High Ch, 1775MHz									
3550.00	-9.7	V	3.0	39.6	1.0	-48.2	-13.0	-35.2	
5325.00	-20.9	V	3.0	39.9	1.0	-59.8	-13.0	-46.8	
7100.00	-22.4	V	3.0	39.6	1.0	-61.0	-13.0	-48.0	
3550.00	-8.1	H	3.0	39.6	1.0	-46.7	-13.0	-33.7	
5325.00	-21.9	H	3.0	39.9	1.0	-60.8	-13.0	-47.8	
7100.00	-23.9	H	3.0	39.6	1.0	-62.5	-13.0	-49.5	

LTE Band 66 10MHz 16QAM

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

Company: Samsung
Project #: 4788549592
Date: 2018-07-24
Test Engineer: 45585
Configuration: EUT / AC Adapter / Earphone, X-Position
Location: Chamber 2
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	-15.3	V	3.0	39.5	1.0	-53.8	-13.0	-40.8	
5145.00	-20.0	V	3.0	39.8	1.0	-58.8	-13.0	-45.8	
6860.00	-23.0	V	3.0	39.7	1.0	-61.6	-13.0	-48.6	
3430.00	-13.7	H	3.0	39.5	1.0	-52.2	-13.0	-39.2	
5145.00	-22.7	H	3.0	39.8	1.0	-61.6	-13.0	-48.6	
6860.00	-23.1	H	3.0	39.7	1.0	-61.8	-13.0	-48.8	
Mid Ch, 1745MHz									
3490.00	-10.3	V	3.0	39.5	1.0	-48.8	-13.0	-35.8	
5235.00	-21.1	V	3.0	39.8	1.0	-59.9	-13.0	-46.9	
6980.00	-23.9	V	3.0	39.6	1.0	-62.5	-13.0	-49.5	
3490.00	-7.9	H	3.0	39.5	1.0	-46.5	-13.0	-33.5	
5235.00	-21.8	H	3.0	39.8	1.0	-60.7	-13.0	-47.7	
6980.00	-23.9	H	3.0	39.6	1.0	-62.5	-13.0	-49.5	
High Ch, 1775MHz									
3550.00	-11.0	V	3.0	39.6	1.0	-49.6	-13.0	-36.6	
5325.00	-21.7	V	3.0	39.9	1.0	-60.6	-13.0	-47.6	
7100.00	-23.1	V	3.0	39.6	1.0	-61.7	-13.0	-48.7	
3550.00	-8.7	H	3.0	39.6	1.0	-47.2	-13.0	-34.2	
5325.00	-22.7	H	3.0	39.9	1.0	-61.6	-13.0	-48.6	
7100.00	-24.1	H	3.0	39.6	1.0	-62.7	-13.0	-49.7	

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

LTE Band 66 5MHz QPSK

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

Company: Samsung
Project #: 4788549592
Date: 2018-07-24
Test Engineer: 45585
Configuration: EUT / AC Adapter / Earphone, X-Position
Location: Chamber 2
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	-13.1	V	3.0	39.5	1.0	-51.6	-13.0	-38.6	
5137.50	-21.6	V	3.0	39.8	1.0	-60.4	-13.0	-47.4	
6850.00	-21.5	V	3.0	39.7	1.0	-60.2	-13.0	-47.2	
3425.00	-10.4	H	3.0	39.5	1.0	-48.9	-13.0	-35.9	
5137.50	-19.8	H	3.0	39.8	1.0	-58.6	-13.0	-45.6	
6850.00	-22.5	H	3.0	39.7	1.0	-61.2	-13.0	-48.2	
Mid Ch, 1745MHz									
3490.00	-9.2	V	3.0	39.5	1.0	-47.7	-13.0	-34.7	
5235.00	-20.3	V	3.0	39.8	1.0	-59.2	-13.0	-46.2	
6980.00	-23.6	V	3.0	39.6	1.0	-62.2	-13.0	-49.2	
3490.00	-7.7	H	3.0	39.5	1.0	-46.2	-13.0	-33.2	
5235.00	-21.3	H	3.0	39.8	1.0	-60.1	-13.0	-47.1	
6980.00	-23.6	H	3.0	39.6	1.0	-62.2	-13.0	-49.2	
High Ch, 1777.5MHz									
3555.00	-8.4	V	3.0	39.6	1.0	-47.0	-13.0	-34.0	
5332.50	-20.8	V	3.0	39.9	1.0	-59.7	-13.0	-46.7	
7110.00	-22.8	V	3.0	39.6	1.0	-61.4	-13.0	-48.4	
3555.00	-6.4	H	3.0	39.6	1.0	-45.0	-13.0	-32.0	
5332.50	-22.1	H	3.0	39.9	1.0	-61.0	-13.0	-48.0	
7110.00	-23.7	H	3.0	39.6	1.0	-62.2	-13.0	-49.2	

LTE Band 66 5MHz 16QAM

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

Company: Samsung
Project #: 4788549592
Date: 2018-07-24
Test Engineer: 45585
Configuration: EUT / AC Adapter / Earphone, X-Position
Location: Chamber 2
Mode: LTE_16QAM 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	-13.7	V	3.0	39.5	1.0	-52.2	-13.0	-39.2	
5137.50	-22.7	V	3.0	39.8	1.0	-61.5	-13.0	-48.5	
6850.00	-22.8	V	3.0	39.7	1.0	-61.5	-13.0	-48.5	
3425.00	-12.2	H	3.0	39.5	1.0	-50.7	-13.0	-37.7	
5137.50	-21.2	H	3.0	39.8	1.0	-60.1	-13.0	-47.1	
6850.00	-23.1	H	3.0	39.7	1.0	-61.8	-13.0	-48.8	
Mid Ch, 1745MHz									
3490.00	-10.4	V	3.0	39.5	1.0	-48.9	-13.0	-35.9	
5235.00	-22.3	V	3.0	39.8	1.0	-61.2	-13.0	-48.2	
6980.00	-23.8	V	3.0	39.6	1.0	-62.4	-13.0	-49.4	
3490.00	-8.9	H	3.0	39.5	1.0	-47.5	-13.0	-34.5	
5235.00	-22.7	H	3.0	39.8	1.0	-61.5	-13.0	-48.5	
6980.00	-23.8	H	3.0	39.6	1.0	-62.5	-13.0	-49.5	
High Ch, 1777.5MHz									
3555.00	-9.4	V	3.0	39.6	1.0	-48.0	-13.0	-35.0	
5332.50	-21.6	V	3.0	39.9	1.0	-60.5	-13.0	-47.5	
7110.00	-22.9	V	3.0	39.6	1.0	-61.5	-13.0	-48.5	
3555.00	-7.7	H	3.0	39.6	1.0	-46.2	-13.0	-33.2	
5332.50	-22.5	H	3.0	39.9	1.0	-61.4	-13.0	-48.4	
7110.00	-23.8	H	3.0	39.6	1.0	-62.3	-13.0	-49.3	

LTE Band 66 3MHz QPSK

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

Company: Samsung
Project #: 4788549592
Date: 2018-07-25
Test Engineer: 51072
Configuration: EUT / Adapter / Earphone / X-position
Location: Chamber 2
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	-13.3	V	3.0	39.5	1.0	-51.8	-13.0	-38.8	
5134.50	-18.9	V	3.0	39.8	1.0	-57.7	-13.0	-44.7	
6846.00	-21.6	V	3.0	39.7	1.0	-60.3	-13.0	-47.3	
3423.00	-12.5	H	3.0	39.5	1.0	-51.0	-13.0	-38.0	
5134.50	-19.3	H	3.0	39.8	1.0	-58.1	-13.0	-45.1	
6846.00	-22.0	H	3.0	39.7	1.0	-60.7	-13.0	-47.7	
Mid Ch, 1745MHz									
3490.00	-8.4	V	3.0	39.5	1.0	-47.0	-13.0	-34.0	
5235.00	-20.2	V	3.0	39.8	1.0	-59.1	-13.0	-46.1	
6980.00	-23.2	V	3.0	39.6	1.0	-61.8	-13.0	-48.8	
3490.00	-7.8	H	3.0	39.5	1.0	-46.4	-13.0	-33.4	
5235.00	-21.4	H	3.0	39.8	1.0	-60.3	-13.0	-47.3	
6980.00	-23.1	H	3.0	39.6	1.0	-61.8	-13.0	-48.8	
High Ch, 1778.5MHz									
3557.00	-9.4	V	3.0	39.6	1.0	-48.0	-13.0	-35.0	
5335.50	-20.8	V	3.0	39.9	1.0	-59.6	-13.0	-46.6	
7114.00	-22.2	V	3.0	39.6	1.0	-60.8	-13.0	-47.8	
3557.00	-6.7	H	3.0	39.6	1.0	-45.2	-13.0	-32.2	
5335.50	-21.8	H	3.0	39.9	1.0	-60.7	-13.0	-47.7	
7114.00	-23.6	H	3.0	39.6	1.0	-62.2	-13.0	-49.2	

LTE Band 66 3MHz 16QAM

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

Company: Samsung
Project #: 4788549592
Date: 2018-07-25
Test Engineer: 51072
Configuration: EUT / Adapter / Earphone / X-position
Location: Chamber 2
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	-13.5	V	3.0	39.5	1.0	-52.0	-13.0	-39.0	
5134.50	-20.4	V	3.0	39.8	1.0	-59.2	-13.0	-46.2	
6846.00	-22.7	V	3.0	39.7	1.0	-61.4	-13.0	-48.4	
3423.00	-12.7	H	3.0	39.5	1.0	-51.2	-13.0	-38.2	
5134.50	-21.2	H	3.0	39.8	1.0	-60.0	-13.0	-47.0	
6846.00	-23.1	H	3.0	39.7	1.0	-61.8	-13.0	-48.8	
Mid Ch, 1745MHz									
3490.00	-9.7	V	3.0	39.5	1.0	-48.2	-13.0	-35.2	
5235.00	-21.5	V	3.0	39.8	1.0	-60.3	-13.0	-47.3	
6980.00	-23.4	V	3.0	39.6	1.0	-62.1	-13.0	-49.1	
3490.00	-9.3	H	3.0	39.5	1.0	-47.8	-13.0	-34.8	
5235.00	-22.6	H	3.0	39.8	1.0	-61.4	-13.0	-48.4	
6980.00	-23.6	H	3.0	39.6	1.0	-62.2	-13.0	-49.2	
High Ch, 1778.5MHz									
3557.00	-10.7	V	3.0	39.6	1.0	-49.3	-13.0	-36.3	
5335.50	-21.2	V	3.0	39.9	1.0	-60.1	-13.0	-47.1	
7114.00	-22.5	V	3.0	39.6	1.0	-61.1	-13.0	-48.1	
3557.00	-8.3	H	3.0	39.6	1.0	-46.8	-13.0	-33.8	
5335.50	-22.3	H	3.0	39.9	1.0	-61.1	-13.0	-48.1	
7114.00	-23.7	H	3.0	39.6	1.0	-62.3	-13.0	-49.3	

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
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LTE Band 66 1.4MHz QPSK

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

Company: Samsung
Project #: 4788549592
Date: 2018-07-24
Test Engineer: 51072
Configuration: EUT / Adapter / Earphone / X-position
Location: Chamber 2
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	-12.6	V	3.0	39.5	1.0	-51.1	-13.0	-38.1	
5132.10	-20.5	V	3.0	39.8	1.0	-59.3	-13.0	-46.3	
6842.80	-21.4	V	3.0	39.7	1.0	-60.1	-13.0	-47.1	
3421.40	-9.1	H	3.0	39.5	1.0	-47.6	-13.0	-34.6	
5132.10	-21.0	H	3.0	39.8	1.0	-59.8	-13.0	-46.8	
6842.80	-22.5	H	3.0	39.7	1.0	-61.2	-13.0	-48.2	
Mid Ch, 1745MHz									
3490.00	-7.0	V	3.0	39.5	1.0	-45.5	-13.0	-32.5	
5235.00	-21.1	V	3.0	39.8	1.0	-59.9	-13.0	-46.9	
6980.00	-20.9	V	3.0	39.6	1.0	-59.5	-13.0	-46.5	
3490.00	-7.1	H	3.0	39.5	1.0	-45.7	-13.0	-32.7	
5235.00	-20.6	H	3.0	39.8	1.0	-59.4	-13.0	-46.4	
6980.00	-22.5	H	3.0	39.6	1.0	-61.1	-13.0	-48.1	
High Ch, 1779.3MHz									
3558.60	-6.8	V	3.0	39.6	1.0	-45.3	-13.0	-32.3	
5337.90	-20.7	V	3.0	39.9	1.0	-59.6	-13.0	-46.6	
7117.20	-19.9	V	3.0	39.6	1.0	-58.5	-13.0	-45.5	
3558.60	-5.9	H	3.0	39.6	1.0	-44.5	-13.0	-31.5	
5337.90	-21.2	H	3.0	39.9	1.0	-60.1	-13.0	-47.1	
7117.20	-22.6	H	3.0	39.6	1.0	-61.2	-13.0	-48.2	

LTE Band 66 1.4MHz 16QAM

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

Company: Samsung
Project #: 4788549592
Date: 2018-07-24
Test Engineer: 51072
Configuration: EUT / Adapter / Earphone / X-position
Location: Chamber 2
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	-12.6	V	3.0	39.5	1.0	-51.1	-13.0	-38.1	
5132.10	-21.2	V	3.0	39.8	1.0	-60.0	-13.0	-47.0	
6842.80	-21.7	V	3.0	39.7	1.0	-60.4	-13.0	-47.4	
3421.40	-9.5	H	3.0	39.5	1.0	-48.0	-13.0	-35.0	
5132.10	-21.8	H	3.0	39.8	1.0	-60.6	-13.0	-47.6	
6842.80	-22.7	H	3.0	39.7	1.0	-61.4	-13.0	-48.4	
Mid Ch, 1745MHz									
3490.00	-8.3	V	3.0	39.5	1.0	-46.9	-13.0	-33.9	
5235.00	-21.8	V	3.0	39.8	1.0	-60.6	-13.0	-47.6	
6980.00	-21.2	V	3.0	39.6	1.0	-59.8	-13.0	-46.8	
3490.00	-8.6	H	3.0	39.5	1.0	-47.1	-13.0	-34.1	
5235.00	-21.5	H	3.0	39.8	1.0	-60.3	-13.0	-47.3	
6980.00	-22.9	H	3.0	39.6	1.0	-61.5	-13.0	-48.5	
High Ch, 1779.3MHz									
3558.60	-7.8	V	3.0	39.6	1.0	-46.4	-13.0	-33.4	
5337.90	-21.5	V	3.0	39.9	1.0	-60.3	-13.0	-47.3	
7117.20	-20.5	V	3.0	39.6	1.0	-59.1	-13.0	-46.1	
3558.60	-7.1	H	3.0	39.6	1.0	-45.7	-13.0	-32.7	
5337.90	-21.7	H	3.0	39.9	1.0	-60.5	-13.0	-47.5	
7117.20	-23.2	H	3.0	39.6	1.0	-61.8	-13.0	-48.8	

LTE Band 71

LTE

Band 71

20MHz

QPSK

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

Company: Samsung
Project #: 4788549592
Date: 2018-07-25
Test Engineer: 47989
Configuration: EUT / AC Adapter / Earphone, X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 71 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, 673MHz									
1346.00	-23.9	V	3.0	43.8	1.0	-66.8	-25.0	-41.8	
2019.00	-23.2	V	3.0	43.3	1.0	-65.5	-25.0	-40.5	
2692.00	-21.8	V	3.0	43.5	1.0	-64.3	-25.0	-39.3	
3365.00	-20.1	V	3.0	43.7	1.0	-62.8	-25.0	-37.8	
4038.00	-19.8	V	3.0	43.9	1.0	-62.6	-25.0	-37.6	
1346.00	-22.1	H	3.0	43.8	1.0	-64.9	-25.0	-39.9	
2019.00	-23.2	H	3.0	43.3	1.0	-65.5	-25.0	-40.5	
2692.00	-21.2	H	3.0	43.5	1.0	-63.6	-25.0	-38.6	
3365.00	-19.6	H	3.0	43.7	1.0	-62.3	-25.0	-37.3	
4038.00	-19.0	H	3.0	43.9	1.0	-61.9	-25.0	-36.9	
Mid Ch, 680.5MHz									
1361.00	-23.9	V	3.0	43.8	1.0	-66.7	-25.0	-41.7	
2041.50	-22.4	V	3.0	43.3	1.0	-64.7	-25.0	-39.7	
2722.00	-20.7	V	3.0	43.5	1.0	-63.2	-25.0	-38.2	
3402.50	-20.6	V	3.0	43.7	1.0	-63.3	-25.0	-38.3	
4083.00	-17.3	V	3.0	43.9	1.0	-60.2	-25.0	-35.2	
1361.00	-21.7	H	3.0	43.8	1.0	-64.5	-25.0	-39.5	
2041.50	-22.7	H	3.0	43.3	1.0	-65.0	-25.0	-40.0	
2722.00	-20.1	H	3.0	43.5	1.0	-62.6	-25.0	-37.6	
3402.50	-20.1	H	3.0	43.7	1.0	-62.7	-25.0	-37.7	
4083.00	-17.4	H	3.0	43.9	1.0	-60.2	-25.0	-35.2	
High Ch, 687.9MHz									
1375.80	-22.7	V	3.0	43.8	1.0	-65.5	-25.0	-40.5	
2063.70	-21.7	V	3.0	43.3	1.0	-64.0	-25.0	-39.0	
2751.60	-21.5	V	3.0	43.5	1.0	-64.0	-25.0	-39.0	
3439.50	-20.1	V	3.0	43.7	1.0	-62.8	-25.0	-37.8	
4127.40	-19.2	V	3.0	43.9	1.0	-62.0	-25.0	-37.0	
1375.80	-19.5	H	3.0	43.8	1.0	-62.3	-25.0	-37.3	
2063.70	-22.0	H	3.0	43.3	1.0	-64.3	-25.0	-39.3	
2751.60	-21.5	H	3.0	43.5	1.0	-64.0	-25.0	-39.0	
3439.50	-19.8	H	3.0	43.7	1.0	-62.5	-25.0	-37.5	
4127.40	-19.2	H	3.0	43.9	1.0	-62.1	-25.0	-37.1	

LTE

Band 71

20MHz

16QAM

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

Company: Samsung
Project #: 4788549592
Date: 2018-07-25
Test Engineer: 47989
Configuration: EUT / AC Adapter / Earphone, X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 71 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, 673MHz									
1346.00	-24.6	V	3.0	43.8	1.0	-67.4	-25.0	-42.4	
2019.00	-23.3	V	3.0	43.3	1.0	-65.6	-25.0	-40.6	
2692.00	-21.5	V	3.0	43.5	1.0	-63.9	-25.0	-38.9	
3365.00	-20.4	V	3.0	43.7	1.0	-63.0	-25.0	-38.0	
4038.00	-20.0	V	3.0	43.9	1.0	-62.8	-25.0	-37.8	
1346.00	-22.8	H	3.0	43.8	1.0	-65.6	-25.0	-40.6	
2019.00	-23.8	H	3.0	43.3	1.0	-66.1	-25.0	-41.1	
2692.00	-21.4	H	3.0	43.5	1.0	-63.9	-25.0	-38.9	
3365.00	-20.2	H	3.0	43.7	1.0	-62.8	-25.0	-37.8	
4038.00	-19.6	H	3.0	43.9	1.0	-62.5	-25.0	-37.5	
Mid Ch, 680.5MHz									
1361.00	-24.1	V	3.0	43.8	1.0	-67.0	-25.0	-42.0	
2041.50	-22.6	V	3.0	43.3	1.0	-64.9	-25.0	-39.9	
2722.00	-21.1	V	3.0	43.5	1.0	-63.6	-25.0	-38.6	
3402.50	-20.9	V	3.0	43.7	1.0	-63.6	-25.0	-38.6	
4083.00	-17.7	V	3.0	43.9	1.0	-60.6	-25.0	-35.6	
1361.00	-23.0	H	3.0	43.8	1.0	-65.8	-25.0	-40.8	
2041.50	-23.0	H	3.0	43.3	1.0	-65.3	-25.0	-40.3	
2722.00	-20.9	H	3.0	43.5	1.0	-63.4	-25.0	-38.4	
3402.50	-19.8	H	3.0	43.7	1.0	-62.5	-25.0	-37.5	
4083.00	-17.7	H	3.0	43.9	1.0	-60.6	-25.0	-35.6	
High Ch, 687.9MHz									
1375.80	-23.4	V	3.0	43.8	1.0	-66.2	-25.0	-41.2	
2063.70	-23.1	V	3.0	43.3	1.0	-65.4	-25.0	-40.4	
2751.60	-22.0	V	3.0	43.5	1.0	-64.5	-25.0	-39.5	
3439.50	-20.3	V	3.0	43.7	1.0	-63.0	-25.0	-38.0	
4127.40	-19.5	V	3.0	43.9	1.0	-62.4	-25.0	-37.4	
1375.80	-21.8	H	3.0	43.8	1.0	-64.6	-25.0	-39.6	
2063.70	-23.4	H	3.0	43.3	1.0	-65.7	-25.0	-40.7	
2751.60	-21.6	H	3.0	43.5	1.0	-64.1	-25.0	-39.1	
3439.50	-20.0	H	3.0	43.7	1.0	-62.7	-25.0	-37.7	
4127.40	-19.5	H	3.0	43.9	1.0	-62.4	-25.0	-37.4	

LTE

Band 71

15MHz

QPSK

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

Company: Samsung
Project #: 4788549592
Date: 2018-07-25
Test Engineer: 47989
Configuration: EUT / AC Adapter / Earphone, X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 71 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, 670.5MHz									
1341.00	-25.1	V	3.0	43.8	1.0	-67.9	-25.0	-42.9	
2011.50	-23.6	V	3.0	43.3	1.0	-65.9	-25.0	-40.9	
2682.00	-21.9	V	3.0	43.5	1.0	-64.3	-25.0	-39.3	
3352.50	-21.3	V	3.0	43.6	1.0	-64.0	-25.0	-39.0	
4023.00	-21.0	V	3.0	43.9	1.0	-63.8	-25.0	-38.8	
1341.00	-21.0	H	3.0	43.8	1.0	-63.9	-25.0	-38.9	
2011.50	-23.8	H	3.0	43.3	1.0	-66.1	-25.0	-41.1	
2682.00	-21.6	H	3.0	43.5	1.0	-64.0	-25.0	-39.0	
3352.50	-20.7	H	3.0	43.6	1.0	-63.4	-25.0	-38.4	
4023.00	-20.9	H	3.0	43.9	1.0	-63.7	-25.0	-38.7	
Mid Ch, 680.5MHz									
1361.00	-24.3	V	3.0	43.8	1.0	-67.1	-25.0	-42.1	
2041.50	-22.8	V	3.0	43.3	1.0	-65.1	-25.0	-40.1	
2722.00	-21.1	V	3.0	43.5	1.0	-63.6	-25.0	-38.6	
3402.50	-19.9	V	3.0	43.7	1.0	-62.6	-25.0	-37.6	
4083.00	-18.7	V	3.0	43.9	1.0	-61.5	-25.0	-36.5	
1361.00	-22.6	H	3.0	43.8	1.0	-65.4	-25.0	-40.4	
2041.50	-22.6	H	3.0	43.3	1.0	-64.9	-25.0	-39.9	
2722.00	-20.1	H	3.0	43.5	1.0	-62.6	-25.0	-37.6	
3402.50	-20.0	H	3.0	43.7	1.0	-62.7	-25.0	-37.7	
4083.00	-19.1	H	3.0	43.9	1.0	-62.0	-25.0	-37.0	
High Ch, 690.4MHz									
1380.80	-24.7	V	3.0	43.8	1.0	-67.5	-25.0	-42.5	
2071.20	-22.5	V	3.0	43.3	1.0	-64.9	-25.0	-39.9	
2761.60	-22.0	V	3.0	43.5	1.0	-64.5	-25.0	-39.5	
3452.00	-20.7	V	3.0	43.7	1.0	-63.4	-25.0	-38.4	
4142.40	-18.5	V	3.0	43.9	1.0	-61.4	-25.0	-36.4	
1380.80	-20.7	H	3.0	43.8	1.0	-63.5	-25.0	-38.5	
2071.20	-21.7	H	3.0	43.3	1.0	-64.1	-25.0	-39.1	
2761.60	-21.0	H	3.0	43.5	1.0	-63.5	-25.0	-38.5	
3452.00	-19.3	H	3.0	43.7	1.0	-62.0	-25.0	-37.0	
4142.40	-17.5	H	3.0	43.9	1.0	-60.4	-25.0	-35.4	

LTE

Band 71

15MHz

16QAM

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

Company: Samsung
Project #: 4788549592
Date: 2018-07-25
Test Engineer: 47989
Configuration: EUT / AC Adapter / Earphone, X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 71 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, 670.5MHz									
1341.00	-25.2	V	3.0	43.8	1.0	-68.0	-25.0	-43.0	
2011.50	-23.5	V	3.0	43.3	1.0	-65.8	-25.0	-40.8	
2682.00	-21.6	V	3.0	43.5	1.0	-64.1	-25.0	-39.1	
3352.50	-21.2	V	3.0	43.6	1.0	-63.9	-25.0	-38.9	
4023.00	-21.1	V	3.0	43.9	1.0	-64.0	-25.0	-39.0	
1341.00	-21.6	H	3.0	43.8	1.0	-64.5	-25.0	-39.5	
2011.50	-23.9	H	3.0	43.3	1.0	-66.3	-25.0	-41.3	
2682.00	-21.4	H	3.0	43.5	1.0	-63.9	-25.0	-38.9	
3352.50	-20.9	H	3.0	43.6	1.0	-63.5	-25.0	-38.5	
4023.00	-20.7	H	3.0	43.9	1.0	-63.6	-25.0	-38.6	
Mid Ch, 680.5MHz									
1361.00	-24.7	V	3.0	43.8	1.0	-67.5	-25.0	-42.5	
2041.50	-22.9	V	3.0	43.3	1.0	-65.2	-25.0	-40.2	
2722.00	-21.6	V	3.0	43.5	1.0	-64.1	-25.0	-39.1	
3402.50	-20.6	V	3.0	43.7	1.0	-63.2	-25.0	-38.2	
4083.00	-17.8	V	3.0	43.9	1.0	-60.6	-25.0	-35.6	
1361.00	-23.0	H	3.0	43.8	1.0	-65.8	-25.0	-40.8	
2041.50	-23.1	H	3.0	43.3	1.0	-65.4	-25.0	-40.4	
2722.00	-20.7	H	3.0	43.5	1.0	-63.1	-25.0	-38.1	
3402.50	-20.6	H	3.0	43.7	1.0	-63.2	-25.0	-38.2	
4083.00	-19.3	H	3.0	43.9	1.0	-62.1	-25.0	-37.1	
High Ch, 690.4MHz									
1380.80	-24.8	V	3.0	43.8	1.0	-67.6	-25.0	-42.6	
2071.20	-23.0	V	3.0	43.3	1.0	-65.3	-25.0	-40.3	
2761.60	-22.0	V	3.0	43.5	1.0	-64.5	-25.0	-39.5	
3452.00	-20.9	V	3.0	43.7	1.0	-63.6	-25.0	-38.6	
4142.40	-17.9	V	3.0	43.9	1.0	-60.8	-25.0	-35.8	
1380.80	-21.9	H	3.0	43.8	1.0	-64.7	-25.0	-39.7	
2071.20	-23.1	H	3.0	43.3	1.0	-65.4	-25.0	-40.4	
2761.60	-21.2	H	3.0	43.5	1.0	-63.7	-25.0	-38.7	
3452.00	-19.6	H	3.0	43.7	1.0	-62.3	-25.0	-37.3	
4142.40	-18.2	H	3.0	43.9	1.0	-61.1	-25.0	-36.1	

LTE

Band 71

10MHz

QPSK

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

Company: Samsung
Project #: 4788549592
Date: 2018-07-25
Test Engineer: 47989
Configuration: EUT / AC Adapter / Earphone, X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 71 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, 668MHz									
1336.00	-23.7	V	3.0	43.8	1.0	-66.6	-25.0	-41.6	
2004.00	-23.2	V	3.0	43.3	1.0	-65.6	-25.0	-40.6	
2672.00	-21.3	V	3.0	43.5	1.0	-63.8	-25.0	-38.8	
3340.00	-21.0	V	3.0	43.6	1.0	-63.7	-25.0	-38.7	
4008.00	-19.7	V	3.0	43.9	1.0	-62.5	-25.0	-37.5	
1336.00	-20.3	H	3.0	43.8	1.0	-63.1	-25.0	-38.1	
2004.00	-24.4	H	3.0	43.3	1.0	-66.7	-25.0	-41.7	
2672.00	-21.4	H	3.0	43.5	1.0	-63.9	-25.0	-38.9	
3340.00	-20.7	H	3.0	43.6	1.0	-63.3	-25.0	-38.3	
4008.00	-19.9	H	3.0	43.9	1.0	-62.7	-25.0	-37.7	
Mid Ch, 680.5MHz									
1361.00	-24.2	V	3.0	43.8	1.0	-67.0	-25.0	-42.0	
2041.50	-22.5	V	3.0	43.3	1.0	-64.8	-25.0	-39.8	
2722.00	-21.9	V	3.0	43.5	1.0	-64.4	-25.0	-39.4	
3402.50	-20.2	V	3.0	43.7	1.0	-62.8	-25.0	-37.8	
4083.00	-18.0	V	3.0	43.9	1.0	-60.9	-25.0	-35.9	
1361.00	-21.5	H	3.0	43.8	1.0	-64.3	-25.0	-39.3	
2041.50	-23.1	H	3.0	43.3	1.0	-65.4	-25.0	-40.4	
2722.00	-20.8	H	3.0	43.5	1.0	-63.3	-25.0	-38.3	
3402.50	-20.2	H	3.0	43.7	1.0	-62.9	-25.0	-37.9	
4083.00	-18.9	H	3.0	43.9	1.0	-61.8	-25.0	-36.8	
High Ch, 692.9MHz									
1385.80	-22.5	V	3.0	43.8	1.0	-65.3	-25.0	-40.3	
2078.70	-22.7	V	3.0	43.3	1.0	-65.1	-25.0	-40.1	
2771.60	-21.5	V	3.0	43.5	1.0	-63.9	-25.0	-38.9	
3464.50	-19.9	V	3.0	43.7	1.0	-62.6	-25.0	-37.6	
4157.40	-16.1	V	3.0	43.9	1.0	-58.9	-25.0	-33.9	
1385.80	-20.9	H	3.0	43.8	1.0	-63.7	-25.0	-38.7	
2078.70	-23.0	H	3.0	43.3	1.0	-65.3	-25.0	-40.3	
2771.60	-21.1	H	3.0	43.5	1.0	-63.5	-25.0	-38.5	
3464.50	-18.9	H	3.0	43.7	1.0	-61.6	-25.0	-36.6	
4157.40	-18.6	H	3.0	43.9	1.0	-61.5	-25.0	-36.5	

LTE

Band 71

10MHz

16QAM

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

Company: Samsung
Project #: 4788549592
Date: 2018-07-25
Test Engineer: 47989
Configuration: EUT / AC Adapter / Earphone, X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 71 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, 668MHz									
1336.00	-24.3	V	3.0	43.8	1.0	-67.2	-25.0	-42.2	
2004.00	-23.6	V	3.0	43.3	1.0	-65.9	-25.0	-40.9	
2672.00	-21.6	V	3.0	43.5	1.0	-64.1	-25.0	-39.1	
3340.00	-21.2	V	3.0	43.6	1.0	-63.9	-25.0	-38.9	
4008.00	-20.1	V	3.0	43.9	1.0	-62.9	-25.0	-37.9	
1336.00	-21.8	H	3.0	43.8	1.0	-64.6	-25.0	-39.6	
2004.00	-24.4	H	3.0	43.3	1.0	-66.7	-25.0	-41.7	
2672.00	-20.9	H	3.0	43.5	1.0	-63.4	-25.0	-38.4	
3340.00	-20.8	H	3.0	43.6	1.0	-63.4	-25.0	-38.4	
4008.00	-20.0	H	3.0	43.9	1.0	-62.9	-25.0	-37.9	
Mid Ch, 680.5MHz									
1361.00	-24.6	V	3.0	43.8	1.0	-67.4	-25.0	-42.4	
2041.50	-22.7	V	3.0	43.3	1.0	-65.0	-25.0	-40.0	
2722.00	-22.0	V	3.0	43.5	1.0	-64.4	-25.0	-39.4	
3402.50	-20.6	V	3.0	43.7	1.0	-63.2	-25.0	-38.2	
4083.00	-18.7	V	3.0	43.9	1.0	-61.6	-25.0	-36.6	
1361.00	-22.8	H	3.0	43.8	1.0	-65.6	-25.0	-40.6	
2041.50	-23.4	H	3.0	43.3	1.0	-65.7	-25.0	-40.7	
2722.00	-21.0	H	3.0	43.5	1.0	-63.4	-25.0	-38.4	
3402.50	-20.1	H	3.0	43.7	1.0	-62.8	-25.0	-37.8	
4083.00	-19.1	H	3.0	43.9	1.0	-62.0	-25.0	-37.0	
High Ch, 692.9MHz									
1385.80	-23.3	V	3.0	43.8	1.0	-66.1	-25.0	-41.1	
2078.70	-23.1	V	3.0	43.3	1.0	-65.4	-25.0	-40.4	
2771.60	-21.8	V	3.0	43.5	1.0	-64.2	-25.0	-39.2	
3464.50	-20.2	V	3.0	43.7	1.0	-62.9	-25.0	-37.9	
4157.40	-16.8	V	3.0	43.9	1.0	-59.7	-25.0	-34.7	
1385.80	-22.1	H	3.0	43.8	1.0	-64.9	-25.0	-39.9	
2078.70	-22.6	H	3.0	43.3	1.0	-65.0	-25.0	-40.0	
2771.60	-20.7	H	3.0	43.5	1.0	-63.2	-25.0	-38.2	
3464.50	-19.2	H	3.0	43.7	1.0	-61.9	-25.0	-36.9	
4157.40	-18.9	H	3.0	43.9	1.0	-61.8	-25.0	-36.8	

LTE

Band 71

5MHz

QPSK

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

Company: Samsung
Project #: 4788549592
Date: 2018-07-25
Test Engineer: 45585
Configuration: EUT / AC Adapter / Earphone, X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 71 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, 665.5MHz									
1331.00	-21.5	V	3.0	43.8	1.0	-64.3	-25.0	-39.3	
1996.50	-23.6	V	3.0	43.3	1.0	-65.9	-25.0	-40.9	
2662.00	-21.3	V	3.0	43.5	1.0	-63.7	-25.0	-38.7	
3327.50	-21.2	V	3.0	43.6	1.0	-63.8	-25.0	-38.8	
3993.00	-19.6	V	3.0	43.9	1.0	-62.5	-25.0	-37.5	
1331.00	-23.0	H	3.0	43.8	1.0	-65.8	-25.0	-40.8	
1996.50	-24.2	H	3.0	43.3	1.0	-66.5	-25.0	-41.5	
2662.00	-21.9	H	3.0	43.5	1.0	-64.4	-25.0	-39.4	
3327.50	-21.4	H	3.0	43.6	1.0	-64.1	-25.0	-39.1	
3993.00	-19.3	H	3.0	43.9	1.0	-62.1	-25.0	-37.1	
Mid Ch, 680.5MHz									
1361.00	-23.7	V	3.0	43.8	1.0	-66.5	-25.0	-41.5	
2041.50	-23.0	V	3.0	43.3	1.0	-65.3	-25.0	-40.3	
2722.00	-22.4	V	3.0	43.5	1.0	-64.9	-25.0	-39.9	
3402.50	-21.3	V	3.0	43.7	1.0	-64.0	-25.0	-39.0	
4083.00	-16.9	V	3.0	43.9	1.0	-59.8	-25.0	-34.8	
1361.00	-21.3	H	3.0	43.8	1.0	-64.2	-25.0	-39.2	
2041.50	-23.6	H	3.0	43.3	1.0	-65.9	-25.0	-40.9	
2722.00	-20.6	H	3.0	43.5	1.0	-63.1	-25.0	-38.1	
3402.50	-19.8	H	3.0	43.7	1.0	-62.5	-25.0	-37.5	
4083.00	-16.8	H	3.0	43.9	1.0	-59.6	-25.0	-34.6	
High Ch, 695.4MHz									
1390.80	-22.3	V	3.0	43.8	1.0	-65.1	-25.0	-40.1	
2086.20	-23.3	V	3.0	43.3	1.0	-65.6	-25.0	-40.6	
2781.60	-22.4	V	3.0	43.5	1.0	-64.9	-25.0	-39.9	
3477.00	-20.6	V	3.0	43.7	1.0	-63.3	-25.0	-38.3	
4172.40	-17.4	V	3.0	43.9	1.0	-60.2	-25.0	-35.2	
1390.80	-22.6	H	3.0	43.8	1.0	-65.4	-25.0	-40.4	
2086.20	-24.0	H	3.0	43.3	1.0	-66.4	-25.0	-41.4	
2781.60	-20.5	H	3.0	43.5	1.0	-63.0	-25.0	-38.0	
3477.00	-20.2	H	3.0	43.7	1.0	-62.9	-25.0	-37.9	
4172.40	-18.1	H	3.0	43.9	1.0	-61.0	-25.0	-36.0	

LTE

Band 71

5MHz

16QAM

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

Company: Samsung
Project #: 4788549592
Date: 2018-07-25
Test Engineer: 45585
Configuration: EUT / AC Adapter / Earphone, X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 71 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, 665.5MHz									
1331.00	-23.8	V	3.0	43.8	1.0	-66.7	-25.0	-41.7	
1996.50	-23.8	V	3.0	43.3	1.0	-66.1	-25.0	-41.1	
2662.00	-21.6	V	3.0	43.5	1.0	-64.1	-25.0	-39.1	
3327.50	-21.4	V	3.0	43.6	1.0	-64.1	-25.0	-39.1	
3993.00	-20.1	V	3.0	43.9	1.0	-63.0	-25.0	-38.0	
1331.00	-23.3	H	3.0	43.8	1.0	-66.1	-25.0	-41.1	
1996.50	-24.1	H	3.0	43.3	1.0	-66.4	-25.0	-41.4	
2662.00	-21.9	H	3.0	43.5	1.0	-64.3	-25.0	-39.3	
3327.50	-21.5	H	3.0	43.6	1.0	-64.1	-25.0	-39.1	
3993.00	-19.7	H	3.0	43.9	1.0	-62.6	-25.0	-37.6	
Mid Ch, 680.5MHz									
1361.00	-24.6	V	3.0	43.8	1.0	-67.4	-25.0	-42.4	
2041.50	-22.9	V	3.0	43.3	1.0	-65.2	-25.0	-40.2	
2722.00	-22.3	V	3.0	43.5	1.0	-64.8	-25.0	-39.8	
3402.50	-21.4	V	3.0	43.7	1.0	-64.1	-25.0	-39.1	
4083.00	-18.1	V	3.0	43.9	1.0	-60.9	-25.0	-35.9	
1361.00	-22.1	H	3.0	43.8	1.0	-64.9	-25.0	-39.9	
2041.50	-23.6	H	3.0	43.3	1.0	-65.9	-25.0	-40.9	
2722.00	-20.9	H	3.0	43.5	1.0	-63.4	-25.0	-38.4	
3402.50	-20.3	H	3.0	43.7	1.0	-62.9	-25.0	-37.9	
4083.00	-17.7	H	3.0	43.9	1.0	-60.5	-25.0	-35.5	
High Ch, 695.4MHz									
1390.80	-23.5	V	3.0	43.8	1.0	-66.3	-25.0	-41.3	
2086.20	-23.1	V	3.0	43.3	1.0	-65.4	-25.0	-40.4	
2781.60	-21.2	V	3.0	43.5	1.0	-63.6	-25.0	-38.6	
3477.00	-19.7	V	3.0	43.7	1.0	-62.4	-25.0	-37.4	
4172.40	-18.6	V	3.0	43.9	1.0	-61.5	-25.0	-36.5	
1390.80	-20.7	H	3.0	43.8	1.0	-63.5	-25.0	-38.5	
2086.20	-23.0	H	3.0	43.3	1.0	-65.3	-25.0	-40.3	
2781.60	-20.8	H	3.0	43.5	1.0	-63.3	-25.0	-38.3	
3477.00	-18.7	H	3.0	43.7	1.0	-61.4	-25.0	-36.4	
4172.40	-18.2	H	3.0	43.9	1.0	-61.1	-25.0	-36.1	