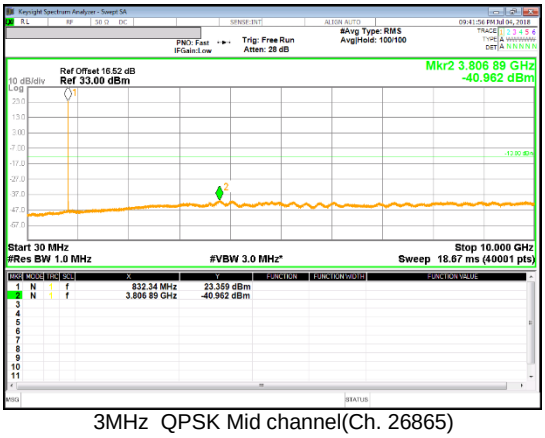
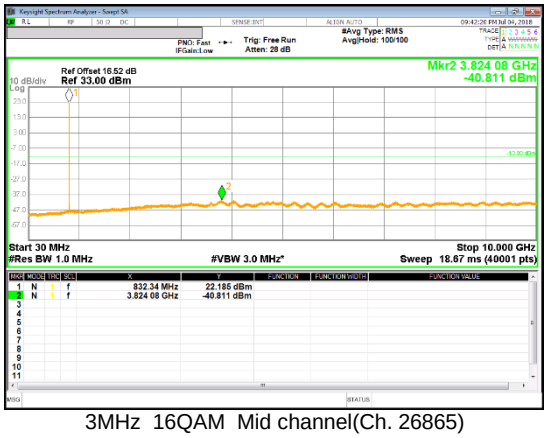
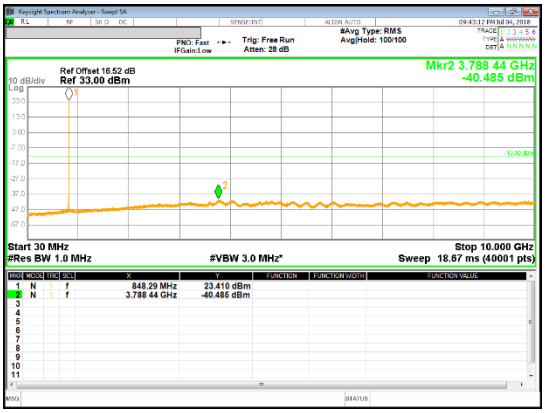


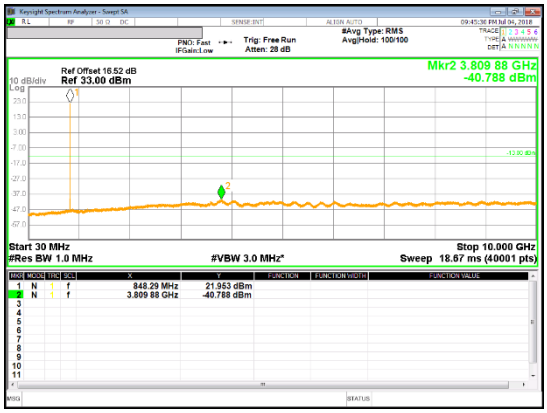
3MHz QPSK Mid channel(Ch. 26865)



3MHz 16QAM Mid channel(Ch. 26865)



3MHz QPSK High channel



3MHz 16QAM High channel

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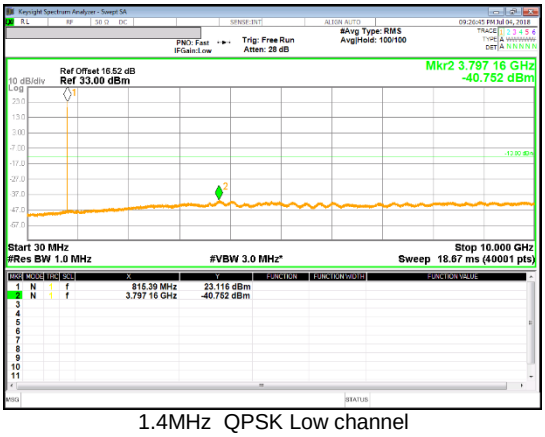
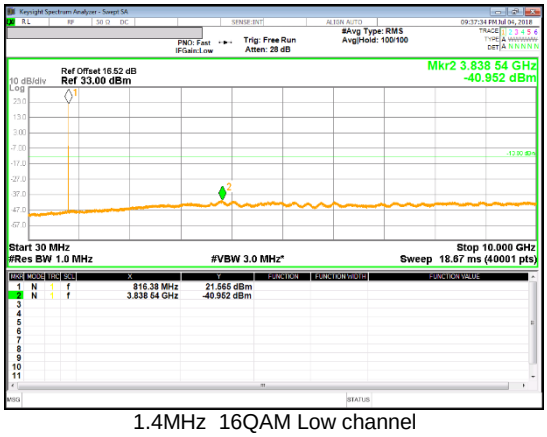
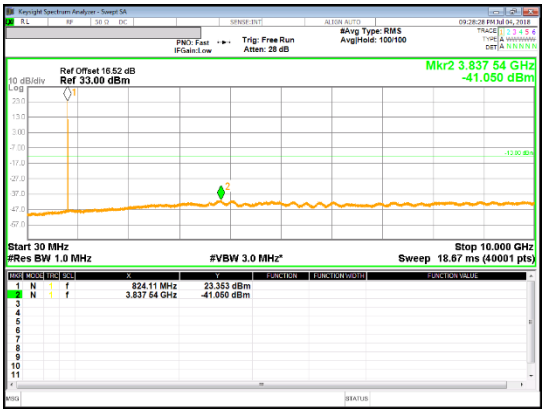
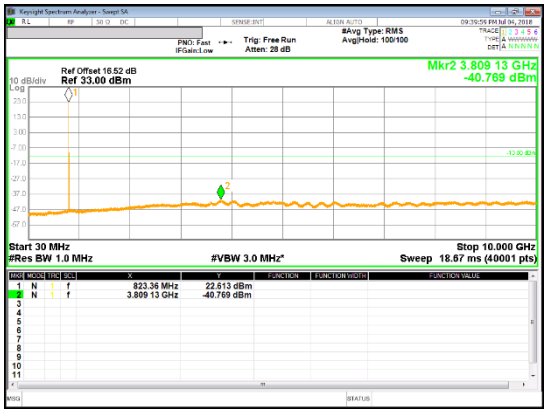
Band 26 1.4MHz	 1.4MHz QPSK Low channel	 1.4MHz 16QAM Low channel
	 1.4MHz QPSK Mid channel(Ch. 26783)	 1.4MHz 16QAM Mid channel(Ch. 26783)
	  1.4MHz QPSK Mid channel (Ch. 26797)	 1.4MHz 16QAM Mid channel (Ch. 26797)

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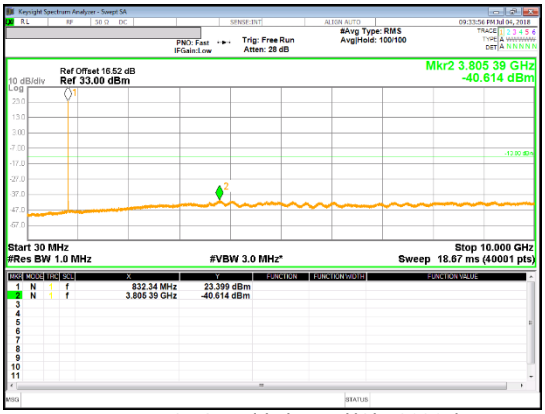
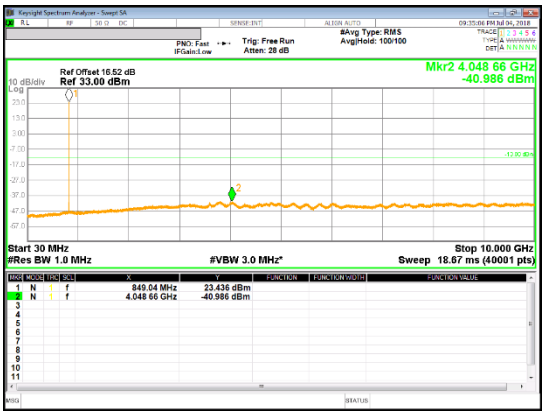
Band 26 1.4MHz	 1.4MHz QPSK Mid channel(Ch. 26865)	 1.4MHz 16QAM Mid channel(Ch. 26865)
	 1.4MHz QPSK High channel	 1.4MHz 16QAM High channel

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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

CDMA BC0 1xRTT

Reference Frequency : CDMA BC0 Low Channel 824.7 MHz / High Channel 848.31 MHz @ 20ºC						
Limit: +- 2.5 ppm =	Low Channel	2061.750	Hz	High Channel	2120.775	Hz
Power Supply [Vdc]	Environment Temperature [*C]	Frequency Deviation Measureed with Time Elapse				
		Low Channel		High Channel		Limit [ppm]
		[MHz]	Delta [ppm]	[MHz]	Delta [ppm]	
3.80	50	824.69998257	0.002	848.30998610	0.001	2.5
3.80	40	824.69998501	-0.001	848.30998915	-0.003	2.5
3.80	30	824.69999049	-0.008	848.30998857	-0.002	2.5
3.80	***20***	***824.69998420***	***0.000***	***848.30998691***	***0.000***	***2.5***
3.80	10	824.69998543	-0.001	848.30999082	-0.005	2.5
3.80	0	824.69998513	-0.001	848.30998621	0.001	2.5
3.80	-10	824.69998725	-0.004	848.30998389	0.004	2.5
3.80	-20	824.69998242	0.002	848.30999014	-0.004	2.5
3.80	-30	824.69999025	-0.007	848.30998476	0.003	2.5

Reference Frequency : CDMA BC0 Low Channel 824.7 MHz / High Channel 848.31 MHz @ 20ºC						
Limit: +- 2.5 ppm =	Low Channel	2061.750	Hz	High Channel	2120.775	Hz
Power Supply [Vdc]	Environment Temperature [*C]	Frequency Deviation Measureed with Time Elapse				
		Low Channel		High Channel		Limit [ppm]
		[MHz]	Delta [ppm]	[MHz]	Delta [ppm]	
3.80	***20***	***824.69998420***	***0***	***848.30998691***	***0***	***2.5***
4.30	20	824.69998036	0.005	848.30998892	-0.002	2.5
3.40	20	824.69998833	-0.005	848.30998645	0.001	2.5

CDMA BC1 EVDO

Limit		1850	1915	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	1850.6994	1914.3006		
Extreme (50C)		1850.6993	1914.3006	-22.8	-0.012
Extreme (40C)		1850.6993	1914.3006	-26.4	-0.014
Extreme (30C)		1850.6993	1914.3006	-23.6	-0.013
Extreme (10C)		1850.6993	1914.3006	-26.4	-0.014
Extreme (0C)		1850.6993	1914.3006	-27.4	-0.015
Extreme (-10C)		1850.6993	1914.3006	-21.9	-0.012
Extreme (-20C)		1850.6993	1914.3006	-25.3	-0.013
Extreme (-30C)		1850.6993	1914.3006	-25.5	-0.014
20C	15%	1850.6993	1914.3006	-29.6	-0.016
	-15%	1850.6993	1914.3006	-23.4	-0.012
	End Point	1850.6993	1914.3006	-25.1	-0.013

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CDMA BC10 1xRTT

Reference Frequency : CDMA BC10 Low Channel 817.9 MHz / High Channel 823.1 MHz @ 20ºC						
Limit: +- 2.5 ppm =	Low Channel	2044.750	Hz	High Channel	2057.750	Hz
Power Supply [Vdc]	Environment Temperature [*C]	Frequency Deviation Measureed with Time Elapse				
		Low Channel		High Channel		Limit [ppm]
		[MHz]	Delta [ppm]	[MHz]	Delta [ppm]	
3.80	50	817.89998063	-0.001	823.09998172	-0.002	2.5
3.80	40	817.89999045	-0.013	823.09998112	-0.001	2.5
3.80	30	817.89999086	-0.013	823.09998835	-0.010	2.5
3.80	***20***	***817.89998022***	***0.000***	***823.09998027***	***0.000***	***2.5***
3.80	10	817.89998947	-0.011	823.09998953	-0.011	2.5
3.80	0	817.89998552	-0.006	823.09998843	-0.010	2.5
3.80	-10	817.89999057	-0.013	823.09998632	-0.007	2.5
3.80	-20	817.89998118	-0.001	823.09998227	-0.002	2.5
3.80	-30	817.89999094	-0.013	823.09998148	-0.001	2.5

Reference Frequency : CDMA BC10 Low Channel 817.9 MHz / High Channel 823.1 MHz @ 20ºC						
Limit: +- 2.5 ppm =	Low Channel	2044.750	Hz	High Channel	2057.750	Hz
Power Supply [Vdc]	Environment Temperature [*C]	Frequency Deviation Measureed with Time Elapse				
		Low Channel		High Channel		Limit [ppm]
		[MHz]	Delta [ppm]	[MHz]	Delta [ppm]	
3.80	***20***	**817.89998022**	***0***	**823.09998027**	***0***	***2.5***
4.30	20	817.89998861	-0.010	823.09999052	-0.012	2.5
3.40	20	817.89998042	0.000	823.09998843	-0.010	2.5

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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

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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				
		Low Channel		High Channel		Limit [ppm]
		[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				
		Low Channel		High Channel		Limit [ppm]
		[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 12 (QPSK)

Limit		699	716	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	699.6995	715.3005		
Extreme (50C)		699.6994	715.3005	-9.4	-0.013
Extreme (40C)		699.6994	715.3005	-11.7	-0.017
Extreme (30C)		699.6994	715.3005	-7.2	-0.010
Extreme (10C)		699.6994	715.3005	-17.1	-0.024
Extreme (0C)		699.6994	715.3005	-9.4	-0.013
Extreme (-10C)		699.6994	715.3005	-13.6	-0.019
Extreme (-20C)		699.6994	715.3005	-14.9	-0.021
Extreme (-30C)		699.6994	715.3005	-10.1	-0.014
20C	15%	699.6994	715.3005	-12.8	-0.018
	-15%	699.6994	715.3005	-17.7	-0.025
	End Point	699.6994	715.3005	-10.3	-0.015

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LTE Band 25 (Low Frequency: QPSK / High Frequency: 16QAM)

Limit		1850	1915	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	1850.6995	1914.3005		
Extreme (50C)		1850.6994	1914.3005	-20.1	-0.011
Extreme (40C)		1850.6994	1914.3005	-28.6	-0.015
Extreme (30C)		1850.6994	1914.3005	-27.3	-0.014
Extreme (10C)		1850.6994	1914.3005	-23.8	-0.013
Extreme (0C)		1850.6994	1914.3005	-25.8	-0.014
Extreme (-10C)		1850.6994	1914.3005	-28.4	-0.015
Extreme (-20C)		1850.6994	1914.3005	-28.0	-0.015
Extreme (-30C)		1850.6994	1914.3005	-28.7	-0.015
20C	15%	1850.6994	1914.3005	-22.8	-0.012
	-15%	1850.6994	1914.3005	-25.7	-0.014
	End Point	1850.6994	1914.3005	-22.6	-0.012

LTE Band 26 (QPSK)

Reference Frequency : LTE Band 26 Low Channel 814.7 MHz / High Channel 848.3 MHz @ 20ºC						
Limit: +- 2.5 ppm =	Low Channel	2036.750	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	814.69998346	0.005	848.29998060	-0.001	2.5
3.80	40	814.69998081	0.008	848.29998278	-0.003	2.5
3.80	30	814.69999042	-0.004	848.29998224	-0.003	2.5
3.80	***20***	***814.69998737***	***0.000***	***848.29998006***	***0.000***	***2.5***
3.80	10	814.69998428	0.004	848.29998630	-0.007	2.5
3.80	0	814.69998805	-0.001	848.29998191	-0.002	2.5
3.80	-10	814.69998407	0.004	848.29998790	-0.009	2.5
3.80	-20	814.69998665	0.001	848.29998665	-0.008	2.5
3.80	-30	814.69998427	0.004	848.29998612	-0.007	2.5

Reference Frequency : LTE Band 26 Low Channel 814.7 MHz / High Channel 848.3 MHz @ 20ºC						
Limit: +- 2.5 ppm =	Low Channel	2036.750	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***	**814.69998737**	***0***	**848.29998006**	***0***	***2.5***
4.30	20	814.69998525	0.003	848.29998313	-0.004	2.5
3.40	20	814.69998473	0.003	848.29998799	-0.009	2.5

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LTE Band 41 (QPSK)

Limit		2496	2690	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	2498.4978	2687.5022		
Extreme (50C)		2498.4978	2687.5023	23.1	0.009
Extreme (40C)		2498.4978	2687.5023	27.3	0.011
Extreme (30C)		2498.4978	2687.5023	30.6	0.012
Extreme (10C)		2498.4978	2687.5023	28.1	0.011
Extreme (0C)		2498.4978	2687.5023	29.2	0.011
Extreme (-10C)		2498.4978	2687.5023	22.9	0.009
Extreme (-20C)		2498.4978	2687.5023	27.4	0.011
Extreme (-30C)		2498.4978	2687.5023	27.1	0.010
20C	15%	2498.4978	2687.5023	22.7	0.009
	-15%	2498.4978	2687.5023	30.4	0.012
	End Point	2498.4978	2687.5023	30.8	0.012

LTE Band 41 HPUE (QPSK)

Limit		2496	2690	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ End of OBW	F high @ End of OBW		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	2498.4978	2687.5022		
Extreme (50C)		2498.4978	2687.5023	22.8	0.009
Extreme (40C)		2498.4978	2687.5023	25.1	0.010
Extreme (30C)		2498.4978	2687.5023	28.1	0.011
Extreme (10C)		2498.4978	2687.5023	29.8	0.011
Extreme (0C)		2498.4978	2687.5023	26.9	0.010
Extreme (-10C)		2498.4978	2687.5023	22.5	0.009
Extreme (-20C)		2498.4978	2687.5023	22.6	0.009
Extreme (-30C)		2498.4978	2687.5023	23.7	0.009
20C	15%	2498.4978	2687.5023	23.4	0.009
	-15%	2498.4978	2687.5023	24.9	0.010
	End Point	2498.4978	2687.5023	23.2	0.009

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10. RADIATED TEST RESULTS

10.1. RADIATED POWER (ERP & EIRP)

RULE PART(S)

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

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)

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

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

TEST PROCEDURE

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

For radiated output power measurement with a ESU40:

a) Set the RBW ≥ 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(CDMA), average(LTE);

TEST RESULTS

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10.1.1. ERP/EIRP Results

CDMA

Band	Mode	Channel	f [MHz]	ERP / EIRP	
				[dBm]	[mW]
BC0	1xRTT	1013	824.7	**23.63**	**230.67**
		384	836.52	22.85	192.75
		777	848.31	22.01	158.85
	EVDO Rel.0	1013	824.7	**24.23**	**264.85**
		384	836.52	24.02	252.35
		777	848.31	23.24	210.86
	EVDO Rev.A	1013	824.7	24.87	306.90
		384	836.5	**25.08**	**322.11**
		777	848.3	23.79	239.33
BC1	1xRTT	25	1851.3	23.60	229.09
		600	1880.0	**23.61**	**229.61**
		1175	1908.8	23.01	199.99
	EVDO Rel.0	25	1851.3	**25.04**	**319.15**
		600	1880.0	23.76	237.68
		1175	1908.8	22.91	195.43
	EVDO Rev.A	25	1851.3	25.95	393.55
		600	1880.0	**26.53**	**449.78**
		1175	1908.8	25.34	341.98
BC10	1xRTT	450	817.3	23.49	223.36
		560	820.0	**23.72**	**235.50**
		670	822.8	23.39	218.27

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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 [MHz]	Mode	RB Size/ RB Offset	f [MHz]	ERP / EIRP [dBm]	ERP / EIRP [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 12

Band	BW [MHz]	Mode	RB Size/ RB Offset	f [MHz]	ERP / EIRP [dBm]	ERP / EIRP [mW]
Band 12	10	QPSK	1/49	704.0	18.42	69.50
			1/0	707.5	17.65	58.21
			1/25	711.0	**19.18**	**82.79**
		16QAM	1/25	704.0	16.70	46.77
			1/0	707.5	**16.96**	**49.66**
			1/0	711.0	16.78	47.64
	5	QPSK	1/12	701.5	17.90	61.66
			1/12	707.5	18.60	72.44
			1/12	713.5	**18.76**	**75.16**
		16QAM	1/0	701.5	15.58	36.14
			1/12	707.5	16.64	46.13
			1/24	713.5	**17.66**	**58.34**
	3	QPSK	1/0	700.5	17.60	57.54
			1/8	707.5	18.43	69.66
			1/0	714.5	**19.31**	**85.31**
		16QAM	1/8	700.5	17.02	50.35
			1/8	707.5	16.67	46.45
			1/0	714.5	**17.97**	**62.66**
	1.4	QPSK	1/12	699.7	17.91	61.80
			1/12	707.5	**18.86**	**76.91**
			1/12	715.3	18.77	75.34
		16QAM	1/0	699.7	16.73	47.10
			1/12	707.5	17.08	51.05
			1/12	715.3	**17.78**	**59.98**

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LTE Band 25

Band	BW [MHz]	Mode	RB Size/ RB Offset	f [MHz]	ERP / EIRP [dBm]	ERP / EIRP [mW]
Band 25	20	QPSK	1/0	1860.0	**23.63**	**230.67**
			1/49	1882.5	23.59	228.56
			1/0	1905.0	22.29	169.43
		16QAM	1/0	1860.0	22.62	182.81
			1/49	1882.5	**22.72**	**187.07**
			1/49	1905.0	21.72	148.59
	15	QPSK	1/37	1857.5	**23.60**	**229.09**
			1/0	1882.5	23.51	224.39
			1/37	1907.5	22.46	176.20
		16QAM	1/37	1857.5	**22.69**	**185.78**
			1/37	1882.5	22.11	162.55
			1/37	1907.5	21.74	149.28
	10	QPSK	1/0	1855.0	**24.02**	**252.35**
			1/25	1882.5	23.80	239.88
			1/0	1910.0	23.07	202.77
		16QAM	1/0	1855.0	**23.32**	**214.78**
			1/25	1882.5	22.65	184.08
			1/0	1910.0	22.02	159.22
	5	QPSK	1/12	1852.5	**23.90**	**245.47**
			1/12	1882.5	22.97	198.15
			1/12	1912.5	22.49	177.42
		16QAM	1/0	1852.5	**22.84**	**192.31**
			1/0	1882.5	22.44	175.39
			1/24	1912.5	21.55	142.89
	3	QPSK	1/8	1851.5	**24.17**	**261.22**
			1/8	1882.5	23.37	217.27
			1/14	1913.5	21.09	128.53
		16QAM	1/14	1851.5	**23.23**	**210.38**
			1/8	1882.5	21.60	144.54
			1/8	1913.5	22.62	182.81
	1.4	QPSK	1/3	1850.7	**24.07**	**255.27**
			1/3	1882.5	23.33	215.28
			1/3	1914.3	21.56	143.22
		16QAM	1/3	1850.7	23.22	209.89
			1/0	1882.5	**23.26**	**211.84**
			1/0	1914.3	21.18	131.22

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LTE Band 26

Band	BW [MHz]	Mode	RB Size/ RB Offset	f [MHz]	ERP / EIRP [dBm]	ERP / EIRP [mW]
Band 26	15	QPSK	1/37	821.5	**24.17**	**261.22**
			1/0	831.5	**23.56**	**226.99**
			1/74	841.5	22.33	171.00
		16QAM	1/37	821.5	**23.87**	**243.78**
			1/37	831.5	**22.42**	**174.58**
			1/74	841.5	21.28	134.28
	10	QPSK	1/49	819.0	**24.48**	**280.54**
			1/25	829.0	23.79	239.33
			1/0	831.5	**24.87**	**306.90**
			1/49	844.0	21.85	153.11
		16QAM	1/0	819.0	**23.13**	**205.59**
			1/0	829.0	21.91	155.24
			1/25	831.5	22.57	180.72
			1/25	844.0	**22.66**	**184.50**
	5	QPSK	1/24	816.5	**24.16**	**260.62**
			1/12	821.5	23.34	215.77
			1/24	826.5	23.32	214.78
			1/12	831.5	**23.87**	**243.78**
			1/12	846.5	23.09	203.70
		16QAM	1/12	816.5	**23.15**	**206.54**
			1/12	821.5	22.04	159.96
			1/24	826.5	22.23	167.11
			1/12	831.5	**22.57**	**180.72**
			1/12	846.5	21.95	156.68
	3	QPSK	1/8	815.5	**24.38**	**274.16**
			1/14	822.5	23.46	221.82
			1/12	825.5	23.92	246.60
			1/8	831.5	**24.08**	**255.86**
			1/8	847.5	23.04	201.37
		16QAM	1/0	815.5	**23.58**	**228.03**
			1/14	822.5	22.29	169.43
			1/0	825.5	22.37	172.58
			1/8	831.5	**22.85**	**192.75**
			1/8	847.5	22.40	173.78
	1.4	QPSK	1/3	814.7	**25.12**	**325.09**
			1/5	823.3	23.74	236.59
			1/5	824.7	23.40	218.78
			1/3	831.5	**24.19**	**262.42**
			1/0	848.3	23.65	231.74
		16QAM	1/3	814.7	**23.71**	**234.96**
			1/5	823.3	22.54	179.47
			1/3	824.7	22.57	180.72
			1/3	831.5	**22.88**	**194.09**
			1/0	848.3	21.76	149.97

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LTE Band 41

Band	BW [MHz]	Mode	RB Size/ RB Offset	f [MHz]	ERP / EIRP [dBm]	ERP / EIRP [mW]
Band 41	20	QPSK	1/49	2506.0	23.31	214.29
			1/49	2593.0	24.40	275.42
			1/49	2680.0	**25.52**	**356.45**
		16QAM	1/49	2506.0	22.60	181.97
			1/49	2593.0	24.70	295.12
			1/49	2680.0	**26.06**	**403.65**
	15	QPSK	1/74	2503.5	25.49	354.00
			1/37	2593.0	24.76	299.23
			1/37	2682.5	**26.39**	**435.51**
		16QAM	1/37	2503.5	24.85	305.49
			1/74	2593.0	24.63	290.40
			1/74	2682.5	**25.13**	**325.84**
	10	QPSK	1/25	2501.0	23.96	248.89
			1/25	2593.0	24.70	295.12
			1/25	2685.0	**24.96**	**313.33**
		16QAM	1/25	2501.0	25.24	334.20
			1/25	2593.0	**25.30**	**338.84**
			1/49	2685.0	25.10	323.59
	5	QPSK	1/12	2498.5	23.20	208.93
			1/12	2593.0	25.13	325.84
			1/12	2687.5	**25.86**	**385.48**
		16QAM	1/12	2498.5	24.47	279.90
			1/12	2593.0	24.07	255.27
			1/12	2687.5	**25.92**	**390.84**

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LTE Band 41 (HPUE)

Band	BW [MHz]	Mode	RB Size/ RB Offset	f [MHz]	ERP / EIRP [dBm]	ERP / EIRP [mW]
Band 41	20	QPSK	1/49	2506.0	26.21	417.83
			1/49	2593.0	26.23	419.76
			1/49	2680.0	**28.50**	**707.95**
		16QAM	1/49	2506.0	26.11	408.32
			1/0	2593.0	26.22	418.79
			1/49	2680.0	**28.68**	**737.90**
	15	QPSK	1/37	2503.5	26.02	399.94
			1/37	2593.0	26.49	445.66
			1/37	2682.5	**29.06**	**805.38**
		16QAM	1/37	2503.5	25.68	369.83
			1/37	2593.0	26.38	434.51
			1/0	2682.5	**28.36**	**685.49**
	10	QPSK	1/25	2501.0	26.25	421.70
			1/49	2593.0	27.03	504.66
			1/0	2685.0	**28.51**	**709.58**
		16QAM	1/49	2501.0	25.22	332.66
			1/49	2593.0	26.51	447.71
			1/25	2685.0	**28.94**	**783.43**
	5	QPSK	1/12	2498.5	26.15	412.10
			1/12	2593.0	26.08	405.51
			1/12	2687.5	**28.42**	**695.02**
		16QAM	1/12	2498.5	25.12	325.09
			1/12	2593.0	25.63	365.59
			1/12	2687.5	**28.72**	**744.73**

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10.1.2. ERP/EIRP DATA

CDMA BC0

BC0
1xRTT

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788534503
Date: 2018-07-17
Test Engineer: 51072
Configuration: EUT
Location: Chamber 1
Mode: RTT BC0 Fundamentals

Test Equipment:
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								
824.70	20.71	V	1.0	-1.5	18.29	38.5	-20.2	
824.70	26.05	H	1.0	-1.5	23.63	38.5	-14.9	
Mid Ch								
836.52	19.79	V	1.0	-1.4	17.41	38.5	-21.1	
836.52	25.23	H	1.0	-1.4	22.85	38.5	-15.7	
High Ch								
848.31	15.20	V	1.0	-1.4	12.86	38.5	-25.6	
848.31	24.35	H	1.0	-1.4	22.01	38.5	-16.5	

BC0
EVDO Rel.0

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788534503
Date: 2018-07-17
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: EVDO BC0 Fundamentals

Test Equipment:
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								
824.70	21.97	V	1.0	-1.5	19.55	38.5	-19.0	
824.70	26.65	H	1.0	-1.5	24.23	38.5	-14.3	
Mid Ch								
836.52	18.39	V	1.0	-1.4	16.01	38.5	-22.5	
836.52	26.40	H	1.0	-1.4	24.02	38.5	-14.5	
High Ch								
848.31	17.81	V	1.0	-1.4	15.47	38.5	-23.0	
848.31	25.58	H	1.0	-1.4	23.24	38.5	-15.3	

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BC0
EVDO
Rev.A

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788534503
Date: 2018-07-17
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: EVDO BC0 Fundamentals

Test Equipment:
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								
824.70	21.62	V	1.0	-1.5	19.20	38.5	-19.3	
824.70	27.29	H	1.0	-1.5	24.87	38.5	-13.6	
Mid Ch								
836.52	19.60	V	1.0	-1.4	17.22	38.5	-21.3	
836.52	27.46	H	1.0	-1.4	25.08	38.5	-13.4	
High Ch								
848.31	18.52	V	1.0	-1.4	16.18	38.5	-22.3	
848.31	26.13	H	1.0	-1.4	23.79	38.5	-14.7	

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CDMA BC1

BC1
1xRTT

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788534503
Date: 2018-07-17
Test Engineer: 47989
Configuration: EUT
Location: Chamber 1
Mode: RTT BC1 Fundamentals

Test Equipment:
Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables
Substitution: Horn 3115[00161451], 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1851.25	18.28	V	4.5	9.5	23.28	33.0	-9.7	
1851.25	18.61	H	4.5	9.5	23.60	33.0	-9.4	
Mid Ch								
1880.00	17.51	V	4.5	9.2	22.19	33.0	-10.8	
1880.00	18.93	H	4.5	9.2	23.61	33.0	-9.4	
High Ch								
1908.75	16.54	V	4.6	8.9	20.86	33.0	-12.1	
1908.75	18.69	H	4.6	8.9	23.01	33.0	-10.0	

BC1
EVDO Rel.0

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788534503
Date: 2018-07-17
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: EVDO BC1 Fundamentals

Test Equipment:
Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables
Substitution: Horn 3115[00161451], 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1851.25	17.59	V	4.5	9.5	22.59	33.0	-10.4	
1851.25	20.05	H	4.5	9.5	25.04	33.0	-8.0	
Mid Ch								
1880.00	17.37	V	4.5	9.2	22.05	33.0	-11.0	
1880.00	19.08	H	4.5	9.2	23.76	33.0	-9.2	
High Ch								
1908.75	15.65	V	4.6	8.9	19.97	33.0	-13.0	
1908.75	18.59	H	4.6	8.9	22.91	33.0	-10.1	

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BC1
EVDO
Rev.A

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788534503
Date: 2018-07-17
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: EVDO BC1 Fundamentals

Test Equipment:
Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables
Substitution: Horn 3115[00161451], 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1851.25	20.14	V	4.5	9.5	25.14	33.0	-7.9	
1851.25	20.96	H	4.5	9.5	25.95	33.0	-7.0	
Mid Ch								
1880.00	20.21	V	4.5	9.2	24.89	33.0	-8.1	
1880.00	21.85	H	4.5	9.2	26.53	33.0	-6.5	
High Ch								
1908.75	18.21	V	4.6	8.9	22.53	33.0	-10.5	
1908.75	21.02	H	4.6	8.9	25.34	33.0	-7.7	

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CDMA BC10

BC10
1xRTT

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788534503
Date: 2018-07-17
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: RTT BC10 Fundamentals

Test Equipment:
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								
817.90	20.43	V	0.9	-1.5	17.99	38.5	-20.5	
817.90	25.93	H	0.9	-1.5	23.49	38.5	-15.0	
Mid Ch								
820.50	20.52	V	0.9	-1.5	18.08	38.5	-20.4	
820.50	26.15	H	0.9	-1.5	23.72	38.5	-14.8	
High Ch								
823.10	20.29	V	1.0	-1.5	17.86	38.5	-20.6	
823.10	25.82	H	1.0	-1.5	23.39	38.5	-15.1	

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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 Equipment:
Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables
Substitution: Horn 3115[00161451], 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1860.00	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 Equipment:
Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables
Substitution: Horn 3115[00161451], 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1860.00	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	

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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	

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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 Equipment:
Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables
Substitution: Horn 3115[00161451], 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1855.00	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 Equipment:
Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables
Substitution: Horn 3115[00161451], 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1855.00	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	

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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 Equipment:
Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables
Substitution: Horn 3115[00161451], 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1852.50	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 Equipment:
Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables
Substitution: Horn 3115[00161451], 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1852.50	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	

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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	

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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	

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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 Equipment:
Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables
Substitution: Horn 3115[00161451], 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1720.00	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 Equipment:
Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables
Substitution: Horn 3115[00161451], 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1720.00	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	

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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 Equipment:
Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables
Substitution: Horn 3115[00161451], 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1717.50	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	

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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 Equipment:
Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables
Substitution: Horn 3115[00161451], 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1717.50	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	

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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 Equipment:
Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables
Substitution: Horn 3115[00161451], 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
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	

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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 Equipment:
Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables
Substitution: Horn 3115[00161451], 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
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	

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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 Equipment:
Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables
Substitution: Horn 3115[00161451], 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
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	

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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 Equipment:
Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables
Substitution: Horn 3115[00161451], 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
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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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 Equipment:
Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables
Substitution: Horn 3115[00161451], 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
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	

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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 Equipment:
Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables
Substitution: Horn 3115[00161451], 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
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	

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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 Equipment:
Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables
Substitution: Horn 3115[00161451], 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
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	

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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 Equipment:
Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables
Substitution: Horn 3115[00161451], 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
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	

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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 Equipment:
Receiving: VULB9163-749, and Chamber 2 SMA Cables
Substitution: Dipole 3121_DB4, 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
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 Equipment:
Receiving: VULB9163-749, and Chamber 2 SMA Cables
Substitution: Dipole 3121_DB4, 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
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	

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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 Equipment:
Receiving: VULB9163-749, and Chamber 2 SMA Cables
Substitution: Dipole 3121_DB4, 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
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 Equipment:
Receiving: VULB9163-749, and Chamber 2 SMA Cables
Substitution: Dipole 3121_DB4, 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
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	

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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 Equipment:
Receiving: VULB9163-749, and Chamber 2 SMA Cables
Substitution: Dipole 3121_DB4, 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
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 Equipment:
Receiving: VULB9163-749, and Chamber 2 SMA Cables
Substitution: Dipole 3121_DB4, 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
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	

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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 Equipment:
Receiving: VULB9163-749, and Chamber 2 SMA Cables
Substitution: Dipole 3121_DB4, 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
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 Equipment:
Receiving: VULB9163-749, and Chamber 2 SMA Cables
Substitution: Dipole 3121_DB4, 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
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	

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LTE Band 12

LTE

Band 12

10MHz

QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788534503
Date: 2018-07-11
Test Engineer: 51072
Configuration: EUT / Y-position
Location: Chamber 2
Mode: LTE_QPSK Band 12 Fundamentals, 10MHz Bandwidth

Test Equipment:
Receiving: VULB9163-749, and Chamber 2 SMA Cables
Substitution: Dipole 3121_DB4, 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
704.00	20.89	V	0.9	-1.6	18.42	34.8	-16.4	
704.00	19.23	H	0.9	-1.6	16.77	34.8	-18.0	
Mid Ch								
707.50	20.12	V	0.9	-1.6	17.65	34.8	-17.2	
707.50	19.05	H	0.9	-1.6	16.58	34.8	-18.2	
High Ch								
711.00	21.65	V	0.9	-1.6	19.18	34.8	-15.6	
711.00	19.69	H	0.9	-1.6	17.22	34.8	-17.6	

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Band 12

10MHz

16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788534503
Date: 2018-07-11
Test Engineer: 51072
Configuration: EUT / Y-position
Location: Chamber 2
Mode: LTE_16QAM Band 12 Fundamentals, 10MHz Bandwidth

Test Equipment:
Receiving: VULB9163-749, and Chamber 2 SMA Cables
Substitution: Dipole 3121_DB4, 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
704.00	19.17	V	0.9	-1.6	16.70	34.8	-18.1	
704.00	17.81	H	0.9	-1.6	15.35	34.8	-19.5	
Mid Ch								
707.50	19.43	V	0.9	-1.6	16.96	34.8	-17.8	
707.50	18.17	H	0.9	-1.6	15.70	34.8	-19.1	
High Ch								
711.00	19.25	V	0.9	-1.6	16.78	34.8	-18.0	
711.00	18.05	H	0.9	-1.6	15.58	34.8	-19.2	

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Band 12

5MHz

QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788534503
Date: 2018-07-11
Test Engineer: 51072
Configuration: EUT / Y-position
Location: Chamber 2
Mode: LTE_QPSK Band 12 Fundamentals, 5MHz Bandwidth

Test Equipment:
Receiving: VULB9163-749, and Chamber 2 SMA Cables
Substitution: Dipole 3121_DB4, 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
701.50	20.37	V	0.9	-1.6	17.90	34.8	-16.9	
701.50	19.10	H	0.9	-1.6	16.63	34.8	-18.2	
Mid Ch								
707.50	21.07	V	0.9	-1.6	18.60	34.8	-16.2	
707.50	19.16	H	0.9	-1.6	16.69	34.8	-18.1	
High Ch								
713.50	21.23	V	0.9	-1.6	18.76	34.8	-16.0	
713.50	19.30	H	0.9	-1.6	16.82	34.8	-18.0	

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Band 12

5MHz

16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788534503
Date: 2018-07-11
Test Engineer: 51072
Configuration: EUT / Y-position
Location: Chamber 2
Mode: LTE_16QAM Band 12 Fundamentals, 5MHz Bandwidth

Test Equipment:
Receiving: VULB9163-749, and Chamber 2 SMA Cables
Substitution: Dipole 3121_DB4, 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
701.50	18.05	V	0.9	-1.6	15.58	34.8	-19.2	
701.50	17.15	H	0.9	-1.6	14.68	34.8	-20.1	
Mid Ch								
707.50	19.11	V	0.9	-1.6	16.64	34.8	-18.2	
707.50	17.47	H	0.9	-1.6	15.00	34.8	-19.8	
High Ch								
713.50	20.13	V	0.9	-1.6	17.66	34.8	-17.1	
713.50	18.04	H	0.9	-1.6	15.56	34.8	-19.2	

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Band 12

3MHz

QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788534503
Date: 2018-07-11
Test Engineer: 51072
Configuration: EUT / Y-position
Location: Chamber 2
Mode: LTE_QPSK Band 12 Fundamentals, 3MHz Bandwidth

Test Equipment:
Receiving: VULB9163-749, and Chamber 2 SMA Cables
Substitution: Dipole 3121_DB4, 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
700.50	20.06	V	0.9	-1.6	17.60	34.8	-17.2	
700.50	18.88	H	0.9	-1.6	16.42	34.8	-18.4	
Mid Ch								
707.50	20.90	V	0.9	-1.6	18.43	34.8	-16.4	
707.50	19.45	H	0.9	-1.6	16.98	34.8	-17.8	
High Ch								
714.50	21.79	V	0.9	-1.6	19.31	34.8	-15.5	
714.50	19.56	H	0.9	-1.6	17.08	34.8	-17.7	

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Band 12

3MHz

16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788534503
Date: 2018-07-11
Test Engineer: 51072
Configuration: EUT / Y-position
Location: Chamber 2
Mode: LTE_16QAM Band 12 Fundamentals, 3MHz Bandwidth

Test Equipment:
Receiving: VULB9163-749, and Chamber 2 SMA Cables
Substitution: Dipole 3121_DB4, 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
700.50	19.48	V	0.9	-1.6	17.02	34.8	-17.8	
700.50	17.66	H	0.9	-1.6	15.20	34.8	-19.6	
Mid Ch								
707.50	19.14	V	0.9	-1.6	16.67	34.8	-18.1	
707.50	17.74	H	0.9	-1.6	15.27	34.8	-19.5	
High Ch								
714.50	20.45	V	0.9	-1.6	17.97	34.8	-16.8	
714.50	18.48	H	0.9	-1.6	16.00	34.8	-18.8	

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Band 12

1.4MHz

QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788534503
Date: 2018-07-11
Test Engineer: 51072
Configuration: EUT / Y-position
Location: Chamber 2
Mode: LTE_QPSK Band 12 Fundamentals, 1.4MHz Bandwidth

Test Equipment:
Receiving: VULB9163-749, and Chamber 2 SMA Cables
Substitution: Dipole 3121_DB4, 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
699.70	20.37	V	0.9	-1.6	17.91	34.8	-16.9	
699.70	19.04	H	0.9	-1.6	16.57	34.8	-18.2	
Mid Ch								
707.50	21.33	V	0.9	-1.6	18.86	34.8	-15.9	
707.50	19.74	H	0.9	-1.6	17.27	34.8	-17.5	
High Ch								
715.30	21.25	V	0.9	-1.6	18.77	34.8	-16.0	
715.30	19.09	H	0.9	-1.6	16.61	34.8	-18.2	

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Band 12

1.4MHz

16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788534503
Date: 2018-07-11
Test Engineer: 51072
Configuration: EUT / Y-position
Location: Chamber 2
Mode: LTE_16QAM Band 12 Fundamentals, 1.4MHz Bandwidth

Test Equipment:
Receiving: VULB9163-749, and Chamber 2 SMA Cables
Substitution: Dipole 3121_DB4, 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
699.70	19.19	V	0.9	-1.6	16.73	34.8	-18.1	
699.70	18.03	H	0.9	-1.6	15.56	34.8	-19.2	
Mid Ch								
707.50	19.55	V	0.9	-1.6	17.08	34.8	-17.7	
707.50	18.01	H	0.9	-1.6	15.54	34.8	-19.3	
High Ch								
715.30	20.26	V	0.9	-1.6	17.78	34.8	-17.0	
715.30	18.70	H	0.9	-1.6	16.22	34.8	-18.6	

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LTE Band 25

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Band 25

20MHz

QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788534503
Date: 2018-07-12
Test Engineer: 45585
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 25 Fundamentals, 20MHz Bandwidth

Test Equipment:
Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables
Substitution: Horn 3115[00161451], 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1860.00	16.35	V	4.5	9.4	21.25	33.0	-11.8	
1860.00	18.73	H	4.5	9.4	23.63	33.0	-9.4	
Mid Ch								
1882.50	17.51	V	4.5	9.2	22.16	33.0	-10.8	
1882.50	18.93	H	4.5	9.2	23.59	33.0	-9.4	
High Ch								
1905.00	16.89	V	4.6	8.9	21.26	33.0	-11.7	
1905.00	17.91	H	4.6	8.9	22.29	33.0	-10.7	

LTE

Band 25

20MHz

16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788534503
Date: 2018-07-12
Test Engineer: 45585
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 25 Fundamentals, 20MHz Bandwidth

Test Equipment:
Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables
Substitution: Horn 3115[00161451], 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1860.00	15.44	V	4.5	9.4	20.34	33.0	-12.7	
1860.00	17.72	H	4.5	9.4	22.62	33.0	-10.4	
Mid Ch								
1882.50	16.88	V	4.5	9.2	21.53	33.0	-11.5	
1882.50	18.06	H	4.5	9.2	22.72	33.0	-10.3	
High Ch								
1905.00	15.04	V	4.6	8.9	19.41	33.0	-13.6	
1905.00	17.34	H	4.6	8.9	21.72	33.0	-11.3	

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Band 25

15MHz

QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788534503
Date: 2018-07-11
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 25 Fundamentals, 15MHz Bandwidth

Test Equipment:
Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables
Substitution: Horn 3115[00161451], 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1857.50	17.05	V	4.5	9.4	21.98	33.0	-11.0	
1857.50	18.67	H	4.5	9.4	23.60	33.0	-9.4	
Mid Ch								
1882.50	17.05	V	4.5	9.2	21.70	33.0	-11.3	
1882.50	18.85	H	4.5	9.2	23.51	33.0	-9.5	
High Ch								
1907.50	12.72	V	4.6	8.9	17.06	33.0	-15.9	
1907.50	18.12	H	4.6	8.9	22.46	33.0	-10.5	

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Band 25

15MHz

16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788534503
Date: 2018-07-11
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 25 Fundamentals, 15MHz Bandwidth

Test Equipment:
Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables
Substitution: Horn 3115[00161451], 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1857.50	16.63	V	4.5	9.4	21.56	33.0	-11.4	
1857.50	17.76	H	4.5	9.4	22.69	33.0	-10.3	
Mid Ch								
1882.50	15.88	V	4.5	9.2	20.53	33.0	-12.5	
1882.50	17.45	H	4.5	9.2	22.11	33.0	-10.9	
High Ch								
1907.50	12.37	V	4.6	8.9	16.71	33.0	-16.3	
1907.50	17.40	H	4.6	8.9	21.74	33.0	-11.3	

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Band 25

10MHz

QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788534503
Date: 2018-07-11
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 25 Fundamentals, 10MHz Bandwidth

Test Equipment:
Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables
Substitution: Horn 3115[00161451], 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1855.00	17.36	V	4.5	9.5	22.31	33.0	-10.7	
1855.00	19.06	H	4.5	9.5	24.02	33.0	-9.0	
Mid Ch								
1882.50	16.63	V	4.5	9.2	21.28	33.0	-11.7	
1882.50	19.14	H	4.5	9.2	23.80	33.0	-9.2	
High Ch								
1910.00	15.09	V	4.6	8.9	19.39	33.0	-13.6	
1910.00	18.77	H	4.6	8.9	23.07	33.0	-9.9	

LTE

Band 25

10MHz

16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788534503
Date: 2018-07-11
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 25 Fundamentals, 10MHz Bandwidth

Test Equipment:
Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables
Substitution: Horn 3115[00161451], 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1855.00	16.40	V	4.5	9.5	21.35	33.0	-11.6	
1855.00	18.36	H	4.5	9.5	23.32	33.0	-9.7	
Mid Ch								
1882.50	15.63	V	4.5	9.2	20.28	33.0	-12.7	
1882.50	17.99	H	4.5	9.2	22.65	33.0	-10.4	
High Ch								
1910.00	13.70	V	4.6	8.9	18.00	33.0	-15.0	
1910.00	17.72	H	4.6	8.9	22.02	33.0	-11.0	

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Band 25

5MHz

QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788534503
Date: 2018-07-11
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 25 Fundamentals, 5MHz Bandwidth

Test Equipment:
Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables
Substitution: Horn 3115[00161451], 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1852.50	17.73	V	4.5	9.5	22.72	33.0	-10.3	
1852.50	18.91	H	4.5	9.5	23.90	33.0	-9.1	
Mid Ch								
1882.50	17.18	V	4.5	9.2	21.83	33.0	-11.2	
1882.50	18.31	H	4.5	9.2	22.97	33.0	-10.0	
High Ch								
1912.50	14.88	V	4.6	8.8	19.14	33.0	-13.9	
1912.50	18.24	H	4.6	8.8	22.49	33.0	-10.5	

LTE

Band 25

5MHz

16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788534503
Date: 2018-07-11
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 25 Fundamentals, 5MHz Bandwidth

Test Equipment:
Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables
Substitution: Horn 3115[00161451], 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1852.50	15.93	V	4.5	9.5	20.92	33.0	-12.1	
1852.50	17.85	H	4.5	9.5	22.84	33.0	-10.2	
Mid Ch								
1882.50	16.07	V	4.5	9.2	20.72	33.0	-12.3	
1882.50	17.78	H	4.5	9.2	22.44	33.0	-10.6	
High Ch								
1912.50	12.79	V	4.6	8.8	17.05	33.0	-16.0	
1912.50	17.30	H	4.6	8.8	21.55	33.0	-11.4	

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LTE

Band 25

3MHz

QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788534503
Date: 2018-07-11
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 25 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	17.22	V	4.5	9.5	22.22	33.0	-10.8	
1851.50	19.17	H	4.5	9.5	24.17	33.0	-8.8	
Mid Ch								
1882.50	15.38	V	4.5	9.2	20.03	33.0	-13.0	
1882.50	18.71	H	4.5	9.2	23.37	33.0	-9.6	
High Ch								
1913.50	13.97	V	4.6	8.8	18.21	33.0	-14.8	
1913.50	16.85	H	4.6	8.8	21.09	33.0	-11.9	

LTE

Band 25

3MHz

16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788534503
Date: 2018-07-11
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 25 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	17.12	V	4.5	9.5	22.12	33.0	-10.9	
1851.50	18.23	H	4.5	9.5	23.23	33.0	-9.8	
Mid Ch								
1882.50	16.81	V	4.5	9.2	21.46	33.0	-11.5	
1882.50	16.94	H	4.5	9.2	21.60	33.0	-11.4	
High Ch								
1913.50	13.22	V	4.6	8.8	17.46	33.0	-15.5	
1913.50	18.38	H	4.6	8.8	22.62	33.0	-10.4	

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Band 25

1.4MHz

QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788534503
Date: 2018-07-11
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 25 Fundamentals, 1.4MHz Bandwidth

Test Equipment:
Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables
Substitution: Horn 3115[00161451], 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1850.70	16.65	V	4.5	9.5	21.65	33.0	-11.3	
1850.70	19.06	H	4.5	9.5	24.07	33.0	-8.9	
Mid Ch								
1882.50	16.82	V	4.5	9.2	21.47	33.0	-11.5	
1882.50	18.67	H	4.5	9.2	23.33	33.0	-9.7	
High Ch								
1914.30	13.10	V	4.6	8.8	17.33	33.0	-15.7	
1914.30	17.33	H	4.6	8.8	21.56	33.0	-11.4	

LTE

Band 25

1.4MHz

16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788534503
Date: 2018-07-11
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 25 Fundamentals, 1.4MHz Bandwidth

Test Equipment:
Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables
Substitution: Horn 3115[00161451], 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1850.70	16.87	V	4.5	9.5	21.87	33.0	-11.1	
1850.70	18.21	H	4.5	9.5	23.22	33.0	-9.8	
Mid Ch								
1882.50	17.28	V	4.5	9.2	21.93	33.0	-11.1	
1882.50	18.60	H	4.5	9.2	23.26	33.0	-9.7	
High Ch								
1914.30	13.96	V	4.6	8.8	18.19	33.0	-14.8	
1914.30	16.95	H	4.6	8.8	21.18	33.0	-11.8	

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LTE Band 26

LTE

Band 26

15MHz

QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788534503
Date: 2018-07-11
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 26 Fundamentals, 15MHz Bandwidth

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								
821.50	20.59	V	0.9	-1.5	18.16	38.5	-20.3	
821.50	26.60	H	0.9	-1.5	24.17	38.5	-14.3	
Mid Ch								
831.50	19.17	V	1.0	-1.4	16.77	38.5	-21.7	
831.50	25.96	H	1.0	-1.4	23.56	38.5	-14.9	
High Ch								
841.50	17.12	V	1.0	-1.4	14.75	38.5	-23.7	
841.50	24.70	H	1.0	-1.4	22.33	38.5	-16.2	

LTE

Band 26

15MHz

16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788534503
Date: 2018-07-11
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 26 Fundamentals, 15MHz Bandwidth

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								
821.50	20.03	V	0.9	-1.5	17.60	38.5	-20.9	
821.50	26.30	H	0.9	-1.5	23.87	38.5	-14.6	
Mid Ch								
831.50	17.94	V	1.0	-1.4	15.54	38.5	-23.0	
831.50	24.82	H	1.0	-1.4	22.42	38.5	-16.1	
High Ch								
841.50	16.26	V	1.0	-1.4	13.89	38.5	-24.6	
841.50	23.65	H	1.0	-1.4	21.28	38.5	-17.2	

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Band 26

10MHz

QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788534503
Date: 2018-07-11
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 26 Fundamentals, 10MHz Bandwidth

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

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
819.00	20.56	V	0.9	-1.5	18.12	50.0	-31.9	Part 90
819.00	26.92	H	0.9	-1.5	24.48	50.0	-25.5	Part 90
Mid Ch								
831.50	20.80	V	1.0	-1.4	18.40	38.5	-20.1	
831.50	27.27	H	1.0	-1.4	24.87	38.5	-13.6	
High Ch								
844.00	17.29	V	1.0	-1.4	14.93	38.5	-23.6	
844.00	24.20	H	1.0	-1.4	21.85	38.5	-16.7	

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samusung
Project #: 4788534503
Date: 2018-07-18
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 26 Fundamentals, 10MHz Bandwidth

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

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
829.00	20.45	V	1.0	-1.5	18.04	50.0	-32.0	Part 90
829.00	26.20	H	1.0	-1.5	23.79	50.0	-26.2	Part 90

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LTE

Band 26

10MHz

16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788534503
Date: 2018-07-11
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 26 Fundamentals, 10MHz Bandwidth

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								
819.00	19.56	V	0.9	-1.5	17.12	50.0	-32.9	Part 90
819.00	25.57	H	0.9	-1.5	23.13	50.0	-26.9	Part 90
Mid Ch								
831.50	17.99	V	1.0	-1.4	15.59	38.5	-22.9	
831.50	24.97	H	1.0	-1.4	22.57	38.5	-15.9	
High Ch								
844.00	17.39	V	1.0	-1.4	15.03	38.5	-23.5	
844.00	25.01	H	1.0	-1.4	22.66	38.5	-15.8	

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samusung
Project #: 4788534503
Date: 2018-07-18
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 26 Fundamentals, 10MHz Bandwidth

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
829.00	18.61	V	1.0	-1.5	16.20	50.0	-33.8	Part 90
829.00	24.32	H	1.0	-1.5	21.91	50.0	-28.1	Part 90

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Band 26

5MHz

QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788534503
Date: 2018-07-11
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 26 Fundamentals, 5MHz Bandwidth

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

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
816.50	20.21	V	0.9	-1.5	17.77	50.0	-32.2	Part 90
816.50	26.61	H	0.9	-1.5	24.16	50.0	-25.8	Part 90
Mid Ch								
831.50	20.58	V	1.0	-1.4	18.18	38.5	-20.3	
831.50	26.27	H	1.0	-1.4	23.87	38.5	-14.6	
High Ch								
846.50	18.29	V	1.0	-1.4	15.94	38.5	-22.6	
846.50	25.44	H	1.0	-1.4	23.09	38.5	-15.4	

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samusung
Project #: 4788534503
Date: 2018-07-18
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 26 Fundamentals, 5MHz Bandwidth

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

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
821.50	19.18	V	0.9	-1.5	16.75	50.0	-33.2	Part 90
821.50	25.77	H	0.9	-1.5	23.34	50.0	-26.7	Part 90
826.50	20.34	V	1.0	-1.5	17.92	38.5	-20.6	
826.50	25.74	H	1.0	-1.5	23.32	38.5	-15.2	

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Band 26

5MHz

16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788534503
Date: 2018-07-11
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 26 Fundamentals, 5MHz Bandwidth

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

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
816.50	19.39	V	0.9	-1.5	16.95	50.0	-33.1	Part 90
816.50	25.60	H	0.9	-1.5	23.15	50.0	-26.8	Part 90
Mid Ch								
831.50	19.75	V	1.0	-1.4	17.35	38.5	-21.2	
831.50	24.97	H	1.0	-1.4	22.57	38.5	-15.9	
High Ch								
846.50	17.80	V	1.0	-1.4	15.45	38.5	-23.0	
846.50	24.30	H	1.0	-1.4	21.95	38.5	-16.5	

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samusung
Project #: 4788534503
Date: 2018-07-18
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 26 Fundamentals, 5MHz Bandwidth

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

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
821.50	21.01	V	0.9	-1.5	18.58	50.0	-31.4	Part 90
821.50	24.47	H	0.9	-1.5	22.04	50.0	-28.0	Part 90
826.50	19.14	V	1.0	-1.5	16.72	38.5	-21.8	
826.50	24.65	H	1.0	-1.5	22.23	38.5	-16.3	

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Band 26

3MHz

QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788534503
Date: 2018-07-11
Test Engineer: 45585
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 26 Fundamentals, 3MHz Bandwidth

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

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
815.50	20.93	V	0.9	-1.5	18.48	50.0	-31.5	Part 90
815.50	26.82	H	0.9	-1.5	24.38	50.0	-25.6	Part 90
Mid Ch								
831.50	19.37	V	1.0	-1.4	16.97	38.5	-21.5	
831.50	26.48	H	1.0	-1.4	24.08	38.5	-14.4	
High Ch								
847.50	19.04	V	1.0	-1.4	16.69	38.5	-21.8	
847.50	25.38	H	1.0	-1.4	23.04	38.5	-15.5	

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samusung
Project #: 4788534503
Date: 2018-07-18
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 26 Fundamentals, 3MHz Bandwidth

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

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
822.50	19.62	V	1.0	-1.5	17.19	50.0	-32.8	
822.50	25.89	H	1.0	-1.5	23.46	50.0	-26.5	
825.50	20.56	V	1.0	-1.5	18.14	38.5	-20.4	
825.50	26.34	H	1.0	-1.5	23.92	38.5	-14.6	

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Band 26

3MHz

16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788534503
Date: 2018-07-11
Test Engineer: 45585
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 26 Fundamentals, 3MHz Bandwidth

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

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
815.50	19.29	V	0.9	-1.5	16.84	50.0	-33.2	Part 90
815.50	26.02	H	0.9	-1.5	23.58	50.0	-26.4	Part 90
Mid Ch								
831.50	18.51	V	1.0	-1.4	16.11	38.5	-22.4	
831.50	25.25	H	1.0	-1.4	22.85	38.5	-15.7	
High Ch								
847.50	18.14	V	1.0	-1.4	15.79	38.5	-22.7	
847.50	24.74	H	1.0	-1.4	22.40	38.5	-16.1	

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samusung
Project #: 4788534503
Date: 2018-07-18
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 26 Fundamentals, 3MHz Bandwidth

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

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
822.50	18.80	V	1.0	-1.5	16.37	50.0	-33.6	
822.50	24.72	H	1.0	-1.5	22.29	50.0	-27.7	
825.50	19.14	V	1.0	-1.5	16.72	38.5	-21.7	
825.50	24.79	H	1.0	-1.5	22.37	38.5	-16.1	

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Band 26

1.4MHz

QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788534503
Date: 2018-07-11
Test Engineer: 45585
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 26 Fundamentals, 1.4MHz Bandwidth

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

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
814.70	20.70	V	0.9	-1.5	18.25	50.0	-31.7	Part 90
814.70	27.56	H	0.9	-1.5	25.12	50.0	-24.9	Part 90
Mid Ch								
831.50	21.01	V	1.0	-1.4	18.61	38.5	-19.9	
831.50	26.59	H	1.0	-1.4	24.19	38.5	-14.3	
High Ch								
848.30	18.75	V	1.0	-1.4	16.41	38.5	-22.1	
848.30	25.99	H	1.0	-1.4	23.65	38.5	-14.9	

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samusung
Project #: 4788534503
Date: 2018-07-18
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 26 Fundamentals, 1.4MHz Bandwidth

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

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
823.30	20.95	V	1.0	-1.5	18.52	50.0	-31.5	
823.30	26.16	H	1.0	-1.5	23.74	50.0	-26.3	
824.70	20.67	V	1.0	-1.5	18.25	38.5	-20.2	
824.70	25.83	H	1.0	-1.5	23.40	38.5	-15.0	

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LTE

Band 26

1.4MHz

16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788534503
Date: 2018-07-11
Test Engineer: 45585
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 26 Fundamentals, 1.4MHz Bandwidth

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

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
814.70	18.99	V	0.9	-1.5	16.54	50.0	-33.5	Part 90
814.70	26.15	H	0.9	-1.5	23.71	50.0	-26.3	Part 90
Mid Ch								
831.50	19.71	V	1.0	-1.4	17.31	38.5	-21.2	
831.50	25.28	H	1.0	-1.4	22.88	38.5	-15.6	
High Ch								
848.30	17.13	V	1.0	-1.4	14.79	38.5	-23.7	
848.30	24.10	H	1.0	-1.4	21.76	38.5	-16.7	

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samusung
Project #: 4788534503
Date: 2018-07-18
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 26 Fundamentals, 1.4MHz Bandwidth

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

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
823.30	19.62	V	1.0	-1.5	17.19	50.0	-32.8	
823.30	24.96	H	1.0	-1.5	22.54	50.0	-27.5	
824.70	19.55	V	1.0	-1.5	17.13	38.5	-21.3	
824.70	25.00	H	1.0	-1.5	22.57	38.5	-15.9	

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LTE Band 41

LTE

Band 41

20MHz

QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788534503
Date: 2018-07-14
Test Engineer: 45585
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 41 Fundamentals, 20MHz Bandwidth

Test Equipment:
Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables
Substitution: Horn 3115[00161451], 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2506.00	17.93	V	5.3	10.3	22.87	33.0	-10.1	
2506.00	18.37	H	5.3	10.3	23.31	33.0	-9.7	
Mid Ch								
2593.00	16.28	V	5.4	10.1	20.95	33.0	-12.1	
2593.00	19.73	H	5.4	10.1	24.40	33.0	-8.6	
High Ch								
2680.00	17.93	V	5.5	10.2	22.57	33.0	-10.4	
2680.00	20.89	H	5.5	10.2	25.52	33.0	-7.5	

LTE

Band 41

20MHz

16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788534503
Date: 2018-07-14
Test Engineer: 45585
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 41 Fundamentals, 20MHz Bandwidth

Test Equipment:
Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables
Substitution: Horn 3115[00161451], 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2506.00	17.30	V	5.3	10.3	22.24	33.0	-10.8	
2506.00	17.66	H	5.3	10.3	22.60	33.0	-10.4	
Mid Ch								
2593.00	16.95	V	5.4	10.1	21.62	33.0	-11.4	
2593.00	20.03	H	5.4	10.1	24.70	33.0	-8.3	
High Ch								
2680.00	18.25	V	5.5	10.2	22.89	33.0	-10.1	
2680.00	21.43	H	5.5	10.2	26.06	33.0	-6.9	

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Band 41

15MHz

QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788534503
Date: 2018-07-14
Test Engineer: 45585
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 41 Fundamentals, 15MHz Bandwidth

Test Equipment:
Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables
Substitution: Horn 3115[00161451], 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2503.50	17.38	V	5.3	10.3	22.33	33.0	-10.7	
2503.50	20.54	H	5.3	10.3	25.49	33.0	-7.5	
Mid Ch								
2593.00	16.92	V	5.4	10.1	21.59	33.0	-11.4	
2593.00	20.09	H	5.4	10.1	24.76	33.0	-8.2	
High Ch								
2682.50	17.82	V	5.5	10.2	22.45	33.0	-10.5	
2682.50	21.75	H	5.5	10.2	26.39	33.0	-6.6	

LTE

Band 41

15MHz

16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788534503
Date: 2018-07-14
Test Engineer: 45585
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 41 Fundamentals, 15MHz Bandwidth

Test Equipment:
Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables
Substitution: Horn 3115[00161451], 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2503.50	16.29	V	5.3	10.3	21.24	33.0	-11.8	
2503.50	19.90	H	5.3	10.3	24.85	33.0	-8.1	
Mid Ch								
2593.00	16.26	V	5.4	10.1	20.93	33.0	-12.1	
2593.00	19.96	H	5.4	10.1	24.63	33.0	-8.4	
High Ch								
2682.50	16.89	V	5.5	10.2	21.52	33.0	-11.5	
2682.50	20.49	H	5.5	10.2	25.13	33.0	-7.9	

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Band 41

10MHz

QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788534503
Date: 2018-07-15
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 41 Fundamentals, 10MHz Bandwidth

Test Equipment:
Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables
Substitution: Horn 3115[00161451], 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2501.00	18.03	V	5.3	10.3	22.99	33.0	-10.0	
2501.00	18.99	H	5.3	10.3	23.96	33.0	-9.0	
Mid Ch								
2593.00	16.83	V	5.4	10.1	21.50	33.0	-11.5	
2593.00	20.03	H	5.4	10.1	24.70	33.0	-8.3	
High Ch								
2685.00	16.69	V	5.5	10.2	21.32	33.0	-11.7	
2685.00	20.33	H	5.5	10.2	24.96	33.0	-8.0	

LTE

Band 41

10MHz

16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788534503
Date: 2018-07-15
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 41 Fundamentals, 10MHz Bandwidth

Test Equipment:
Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables
Substitution: Horn 3115[00161451], 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2501.00	19.42	V	5.3	10.3	24.38	33.0	-8.6	
2501.00	20.27	H	5.3	10.3	25.24	33.0	-7.8	
Mid Ch								
2593.00	17.53	V	5.4	10.1	22.20	33.0	-10.8	
2593.00	20.63	H	5.4	10.1	25.30	33.0	-7.7	
High Ch								
2685.00	17.27	V	5.5	10.2	21.90	33.0	-11.1	
2685.00	20.47	H	5.5	10.2	25.10	33.0	-7.9	

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Band 41

5MHz

QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788534503
Date: 2018-07-15
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 41 Fundamentals, 5MHz Bandwidth

Test Equipment:
Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables
Substitution: Horn 3115[00161451], 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2498.50	17.12	V	5.3	10.3	22.12	33.0	-10.9	
2498.50	18.20	H	5.3	10.3	23.20	33.0	-9.8	
Mid Ch								
2593.00	16.43	V	5.4	10.1	21.10	33.0	-11.9	
2593.00	20.46	H	5.4	10.1	25.13	33.0	-7.9	
High Ch								
2687.50	17.70	V	5.5	10.2	22.33	33.0	-10.7	
2687.50	21.23	H	5.5	10.2	25.86	33.0	-7.1	

LTE

Band 41

5MHz

16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788534503
Date: 2018-07-15
Test Engineer: 47989
Configuration: EUT / X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 41 Fundamentals, 5MHz Bandwidth

Test Equipment:
Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables
Substitution: Horn 3115[00161451], 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2498.50	17.05	V	5.3	10.3	22.05	33.0	-11.0	
2498.50	19.47	H	5.3	10.3	24.47	33.0	-8.5	
Mid Ch								
2593.00	16.23	V	5.4	10.1	20.90	33.0	-12.1	
2593.00	19.40	H	5.4	10.1	24.07	33.0	-8.9	
High Ch								
2687.50	18.27	V	5.5	10.2	22.90	33.0	-10.1	
2687.50	21.29	H	5.5	10.2	25.92	33.0	-7.1	

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LTE Band 41 (HPUE)

LTE

Band 41
HPUE

20MHz

QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788534503
Date: 2018-07-16
Test Engineer: 51072
Configuration: EUT / X-position
Location: Chamber 1
Mode: LTE_QPSK Band 41 Fundamentals, 20MHz Bandwidth

Test Equipment:
Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables
Substitution: Horn 3115[00161451], 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2506.00	19.79	V	5.3	10.3	24.73	33.0	-8.3	
2506.00	21.27	H	5.3	10.3	26.21	33.0	-6.8	
Mid Ch								
2593.00	18.67	V	5.4	10.1	23.34	33.0	-9.7	
2593.00	21.56	H	5.4	10.1	26.23	33.0	-6.8	
High Ch								
2680.00	20.54	V	5.5	10.2	25.18	33.0	-7.8	
2680.00	23.87	H	5.5	10.2	28.50	33.0	-4.5	

LTE

Band 41
HPUE

20MHz

16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788534503
Date: 2018-07-16
Test Engineer: 51072
Configuration: EUT / X-position
Location: Chamber 1
Mode: LTE_16QAM Band 41 Fundamentals, 20MHz Bandwidth

Test Equipment:
Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables
Substitution: Horn 3115[00161451], 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2506.00	19.47	V	5.3	10.3	24.41	33.0	-8.6	
2506.00	21.17	H	5.3	10.3	26.11	33.0	-6.9	
Mid Ch								
2593.00	17.78	V	5.4	10.1	22.45	33.0	-10.6	
2593.00	21.55	H	5.4	10.1	26.22	33.0	-6.8	
High Ch								
2680.00	20.78	V	5.5	10.2	25.42	33.0	-7.6	
2680.00	24.05	H	5.5	10.2	28.68	33.0	-4.3	

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LTE

Band 41
HPUE

15MHz

QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788534503
Date: 2018-07-16
Test Engineer: 51072
Configuration: EUT / X-position
Location: Chamber 1
Mode: LTE_QPSK Band 41 Fundamentals, 15MHz Bandwidth

Test Equipment:
Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables
Substitution: Horn 3115[00161451], 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2503.50	19.97	V	5.3	10.3	24.92	33.0	-8.1	
2503.50	21.07	H	5.3	10.3	26.02	33.0	-7.0	
Mid Ch								
2593.00	18.22	V	5.4	10.1	22.89	33.0	-10.1	
2593.00	21.82	H	5.4	10.1	26.49	33.0	-6.5	
High Ch								
2682.50	21.24	V	5.5	10.2	25.87	33.0	-7.1	
2682.50	24.42	H	5.5	10.2	29.06	33.0	-3.9	

LTE

Band 41
HPUE

15MHz

16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788534503
Date: 2018-07-16
Test Engineer: 51072
Configuration: EUT / X-position
Location: Chamber 1
Mode: LTE_16QAM Band 41 Fundamentals, 15MHz Bandwidth

Test Equipment:
Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables
Substitution: Horn 3115[00161451], 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2503.50	19.87	V	5.3	10.3	24.82	33.0	-8.2	
2503.50	20.73	H	5.3	10.3	25.68	33.0	-7.3	
Mid Ch								
2593.00	18.14	V	5.4	10.1	22.81	33.0	-10.2	
2593.00	21.71	H	5.4	10.1	26.38	33.0	-6.6	
High Ch								
2682.50	20.28	V	5.5	10.2	24.91	33.0	-8.1	
2682.50	23.72	H	5.5	10.2	28.36	33.0	-4.6	

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LTE

Band 41
HPUE

10MHz

QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788534503
Date: 2018-07-16
Test Engineer: 51072
Configuration: EUT / X-position
Location: Chamber 1
Mode: LTE_QPSK Band 41 Fundamentals, 10MHz Bandwidth

Test Equipment:
Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables
Substitution: Horn 3115[00161451], 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2501.00	21.22	V	5.3	10.3	26.18	33.0	-6.8	
2501.00	21.28	H	5.3	10.3	26.25	33.0	-6.8	
Mid Ch								
2593.00	19.57	V	5.4	10.1	24.24	33.0	-8.8	
2593.00	22.36	H	5.4	10.1	27.03	33.0	-6.0	
High Ch								
2685.00	20.99	V	5.5	10.2	25.62	33.0	-7.4	
2685.00	23.88	H	5.5	10.2	28.51	33.0	-4.5	

LTE

Band 41
HPUE

10MHz

16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788534503
Date: 2018-07-16
Test Engineer: 51072
Configuration: EUT / X-position
Location: Chamber 1
Mode: LTE_16QAM Band 41 Fundamentals, 10MHz Bandwidth

Test Equipment:
Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables
Substitution: Horn 3115[00161451], 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2501.00	20.16	V	5.3	10.3	25.12	33.0	-7.9	
2501.00	20.25	H	5.3	10.3	25.22	33.0	-7.8	
Mid Ch								
2593.00	19.07	V	5.4	10.1	23.74	33.0	-9.3	
2593.00	21.84	H	5.4	10.1	26.51	33.0	-6.5	
High Ch								
2685.00	20.67	V	5.5	10.2	25.30	33.0	-7.7	
2685.00	24.31	H	5.5	10.2	28.94	33.0	-4.1	

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LTE

Band 41
HPUE

5MHz

QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788534503
Date: 2018-07-16
Test Engineer: 51072
Configuration: EUT / X-position
Location: Chamber 1
Mode: LTE_QPSK Band 41 Fundamentals, 5MHz Bandwidth

Test Equipment:
Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables
Substitution: Horn 3115[00161451], 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2498.50	20.68	V	5.3	10.3	25.68	33.0	-7.3	
2498.50	21.15	H	5.3	10.3	26.15	33.0	-6.8	
Mid Ch								
2593.00	18.92	V	5.4	10.1	23.59	33.0	-9.4	
2593.00	21.41	H	5.4	10.1	26.08	33.0	-6.9	
High Ch								
2687.50	21.27	V	5.5	10.2	25.90	33.0	-7.1	
2687.50	23.79	H	5.5	10.2	28.42	33.0	-4.6	

LTE

Band 41
HPUE

5MHz

16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 4788534503
Date: 2018-07-16
Test Engineer: 51072
Configuration: EUT / X-position
Location: Chamber 1
Mode: LTE_16QAM Band 41 Fundamentals, 5MHz Bandwidth

Test Equipment:
Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables
Substitution: Horn 3115[00161451], 3m N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2498.50	19.72	V	5.3	10.3	24.72	33.0	-8.3	
2498.50	20.12	H	5.3	10.3	25.12	33.0	-7.9	
Mid Ch								
2593.00	18.34	V	5.4	10.1	23.01	33.0	-10.0	
2593.00	20.96	H	5.4	10.1	25.63	33.0	-7.4	
High Ch								
2687.50	21.57	V	5.5	10.2	26.20	33.0	-6.8	
2687.50	24.09	H	5.5	10.2	28.72	33.0	-4.3	

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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(CDMA, 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.

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10.2.1. SPURIOUS RADIATION PLOTS

CDMA BC0

BC0
1xRTT

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

Company: Samsung
Project #: 4788534503
Date: 2018-07-17
Test Engineer: 51072
Configuration: EUT / Adapter / Earphone / X-positino
Location: Chamber 1
Mode: RTT BC0 Harmonics

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 824.7MHz									
1649.40	-18.9	V	3.0	43.6	1.0	-61.5	-13.0	-48.5	
2474.10	-20.5	V	3.0	43.4	1.0	-62.9	-13.0	-49.9	
3298.80	-18.9	V	3.0	43.6	1.0	-61.5	-13.0	-48.5	
4123.50	-18.8	V	3.0	43.9	1.0	-61.7	-13.0	-48.7	
4948.20	-18.7	V	3.0	43.8	1.0	-61.5	-13.0	-48.5	
1649.40	-18.2	H	3.0	43.6	1.0	-60.8	-13.0	-47.8	
2474.10	-20.7	H	3.0	43.4	1.0	-63.1	-13.0	-50.1	
3298.80	-18.8	H	3.0	43.6	1.0	-61.4	-13.0	-48.4	
4123.50	-19.5	H	3.0	43.9	1.0	-62.3	-13.0	-49.3	
4948.20	-19.0	H	3.0	43.8	1.0	-61.8	-13.0	-48.8	
Mid Ch, 836.52MHz									
1673.04	-18.7	V	3.0	43.6	1.0	-61.3	-13.0	-48.3	
2509.56	-13.9	V	3.0	43.4	1.0	-56.3	-13.0	-43.3	
3346.08	-19.5	V	3.0	43.6	1.0	-62.1	-13.0	-49.1	
4182.60	-19.3	V	3.0	43.9	1.0	-62.2	-13.0	-49.2	
5019.12	-19.0	V	3.0	43.8	1.0	-61.8	-13.0	-48.8	
1673.04	-15.3	H	3.0	43.6	1.0	-57.9	-13.0	-44.9	
2509.56	-13.8	H	3.0	43.4	1.0	-56.2	-13.0	-43.2	
3346.08	-18.7	H	3.0	43.6	1.0	-61.4	-13.0	-48.4	
4182.60	-19.8	H	3.0	43.9	1.0	-62.6	-13.0	-49.6	
5019.12	-19.3	H	3.0	43.8	1.0	-62.1	-13.0	-49.1	
High Ch, 848.31MHz									
1696.62	-19.2	V	3.0	43.6	1.0	-61.7	-13.0	-48.7	
2544.93	-18.3	V	3.0	43.4	1.0	-60.8	-13.0	-47.8	
3393.24	-18.9	V	3.0	43.7	1.0	-61.5	-13.0	-48.5	
4241.55	-19.2	V	3.0	43.9	1.0	-62.0	-13.0	-49.0	
5089.86	-18.7	V	3.0	43.8	1.0	-61.5	-13.0	-48.5	
1696.62	-15.1	H	3.0	43.6	1.0	-57.6	-13.0	-44.6	
2544.93	-17.4	H	3.0	43.4	1.0	-59.9	-13.0	-46.9	
3393.24	-16.7	H	3.0	43.7	1.0	-59.4	-13.0	-46.4	
4241.55	-19.8	H	3.0	43.9	1.0	-62.7	-13.0	-49.7	
5089.86	-19.1	H	3.0	43.8	1.0	-61.9	-13.0	-48.9	

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BC0
EVDO Rel.0

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

Company: Samsung
Project #: 4788534503
Date: 2018-07-17
Test Engineer: 51072
Configuration: EUT / Adapter / Earphone / X-positino
Location: Chamber 1
Mode: EVDO BC0 Harmonics

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 824.7MHz									
1649.40	-20.4	V	3.0	43.6	1.0	-63.0	-13.0	-50.0	
2474.10	-20.2	V	3.0	43.4	1.0	-62.6	-13.0	-49.6	
3298.80	-19.4	V	3.0	43.6	1.0	-62.1	-13.0	-49.1	
4123.50	-19.1	V	3.0	43.9	1.0	-62.0	-13.0	-49.0	
4948.20	-18.8	V	3.0	43.8	1.0	-61.6	-13.0	-48.6	
1649.40	-20.1	H	3.0	43.6	1.0	-62.7	-13.0	-49.7	
2474.10	-19.0	H	3.0	43.4	1.0	-61.4	-13.0	-48.4	
3298.80	-19.3	H	3.0	43.6	1.0	-61.9	-13.0	-48.9	
4123.50	-19.5	H	3.0	43.9	1.0	-62.4	-13.0	-49.4	
4948.20	-19.1	H	3.0	43.8	1.0	-61.9	-13.0	-48.9	
Mid Ch, 836.52MHz									
1673.04	-21.3	V	3.0	43.6	1.0	-63.8	-13.0	-50.8	
2509.56	-13.0	V	3.0	43.4	1.0	-55.4	-13.0	-42.4	
3346.08	-20.0	V	3.0	43.6	1.0	-62.6	-13.0	-49.6	
4182.60	-19.4	V	3.0	43.9	1.0	-62.3	-13.0	-49.3	
5019.12	-19.1	V	3.0	43.8	1.0	-61.9	-13.0	-48.9	
1673.04	-16.4	H	3.0	43.6	1.0	-59.0	-13.0	-46.0	
2509.56	-10.2	H	3.0	43.4	1.0	-52.6	-13.0	-39.6	
3346.08	-18.8	H	3.0	43.6	1.0	-61.5	-13.0	-48.5	
4182.60	-20.0	H	3.0	43.9	1.0	-62.8	-13.0	-49.8	
5019.12	-19.5	H	3.0	43.8	1.0	-62.3	-13.0	-49.3	
High Ch, 848.31MHz									
1696.62	-19.9	V	3.0	43.6	1.0	-62.4	-13.0	-49.4	
2544.93	-19.5	V	3.0	43.4	1.0	-61.9	-13.0	-48.9	
3393.24	-19.4	V	3.0	43.7	1.0	-62.0	-13.0	-49.0	
4241.55	-19.0	V	3.0	43.9	1.0	-61.8	-13.0	-48.8	
5089.86	-18.9	V	3.0	43.8	1.0	-61.6	-13.0	-48.6	
1696.62	-15.2	H	3.0	43.6	1.0	-57.7	-13.0	-44.7	
2544.93	-15.6	H	3.0	43.4	1.0	-58.1	-13.0	-45.1	
3393.24	-16.9	H	3.0	43.7	1.0	-59.6	-13.0	-46.6	
4241.55	-19.8	H	3.0	43.9	1.0	-62.6	-13.0	-49.6	
5089.86	-19.1	H	3.0	43.8	1.0	-61.9	-13.0	-48.9	

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BC0
EVDO Rev.A

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

Company: Samsung
Project #: 4788534503
Date: 2018-07-17
Test Engineer: 51072
Configuration: EUT / Adapter / Earphone / X-positino
Location: Chamber 1
Mode: EVDO BC0 Harmonics

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 824.7MHz									
1649.40	-20.4	V	3.0	43.6	1.0	-63.0	-13.0	-50.0	
2474.10	-19.9	V	3.0	43.4	1.0	-62.3	-13.0	-49.3	
3298.80	-19.3	V	3.0	43.6	1.0	-61.9	-13.0	-48.9	
4123.50	-19.0	V	3.0	43.9	1.0	-61.9	-13.0	-48.9	
4948.20	-18.8	V	3.0	43.8	1.0	-61.6	-13.0	-48.6	
1649.40	-18.3	H	3.0	43.6	1.0	-60.9	-13.0	-47.9	
2474.10	-19.0	H	3.0	43.4	1.0	-61.4	-13.0	-48.4	
3298.80	-19.1	H	3.0	43.6	1.0	-61.7	-13.0	-48.7	
4123.50	-19.5	H	3.0	43.9	1.0	-62.3	-13.0	-49.3	
4948.20	-19.1	H	3.0	43.8	1.0	-61.9	-13.0	-48.9	
Mid Ch, 836.52MHz									
1673.04	-18.7	V	3.0	43.6	1.0	-61.3	-13.0	-48.3	
2509.56	-14.9	V	3.0	43.4	1.0	-57.4	-13.0	-44.4	
3346.08	-19.6	V	3.0	43.6	1.0	-62.3	-13.0	-49.3	
4182.60	-19.2	V	3.0	43.9	1.0	-62.1	-13.0	-49.1	
5019.12	-19.1	V	3.0	43.8	1.0	-61.9	-13.0	-48.9	
1673.04	-15.6	H	3.0	43.6	1.0	-58.2	-13.0	-45.2	
2509.56	-10.5	H	3.0	43.4	1.0	-52.9	-13.0	-39.9	
3346.08	-19.0	H	3.0	43.6	1.0	-61.6	-13.0	-48.6	
4182.60	-19.9	H	3.0	43.9	1.0	-62.8	-13.0	-49.8	
5019.12	-19.4	H	3.0	43.8	1.0	-62.2	-13.0	-49.2	
High Ch, 848.31MHz									
1696.62	-20.2	V	3.0	43.6	1.0	-62.7	-13.0	-49.7	
2544.93	-19.5	V	3.0	43.4	1.0	-61.9	-13.0	-48.9	
3393.24	7.3	V	3.0	43.7	1.0	-35.3	-13.0	-22.3	
4241.55	-18.3	V	3.0	43.9	1.0	-61.1	-13.0	-48.1	
5089.86	-18.8	V	3.0	43.8	1.0	-61.6	-13.0	-48.6	
1696.62	-16.3	H	3.0	43.6	1.0	-58.9	-13.0	-45.9	
2544.93	-15.4	H	3.0	43.4	1.0	-57.8	-13.0	-44.8	
3393.24	-17.2	H	3.0	43.7	1.0	-59.9	-13.0	-46.9	
4241.55	-19.9	H	3.0	43.9	1.0	-62.8	-13.0	-49.8	
5089.86	-19.1	H	3.0	43.8	1.0	-61.9	-13.0	-48.9	

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CDMA BC1

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

Company: Samsung
Project #: 4788534503
Date: 2018-07-20
Test Engineer: 45585
Configuration: EUT / AC Adapter / Earphone, X-Position
Location: Chamber 1
Mode: RTT BC1 Harmonics

BC1
1xRTT

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1851.25MHz									
3702.50	-8.8	V	3.0	43.8	1.0	-51.6	-13.0	-38.6	
5553.75	19.9	V	3.0	43.7	1.0	-22.8	-13.0	-9.8	
7405.00	-16.5	V	3.0	42.5	1.0	-58.0	-13.0	-45.0	
9256.25	-14.2	V	3.0	41.3	1.0	-54.4	-13.0	-41.4	
11107.50	-14.9	V	3.0	40.9	1.0	-54.8	-13.0	-41.8	
3702.50	-5.3	H	3.0	43.8	1.0	-48.0	-13.0	-35.0	
5553.75	17.7	H	3.0	43.7	1.0	-25.1	-13.0	-12.1	
7405.00	-16.5	H	3.0	42.5	1.0	-58.0	-13.0	-45.0	
9256.25	-14.7	H	3.0	41.3	1.0	-55.0	-13.0	-42.0	
11107.50	-15.3	H	3.0	40.9	1.0	-55.2	-13.0	-42.2	
Mid Ch, 1880MHz									
3760.00	-6.5	V	3.0	43.8	1.0	-49.3	-13.0	-36.3	
5640.00	23.7	V	3.0	43.7	1.0	-19.0	-13.0	-6.0	
7520.00	-16.2	V	3.0	42.5	1.0	-57.7	-13.0	-44.7	
9400.00	-10.1	V	3.0	41.1	1.0	-50.2	-13.0	-37.2	
11280.00	-14.2	V	3.0	41.0	1.0	-54.1	-13.0	-41.1	
3760.00	-7.1	H	3.0	43.8	1.0	-49.9	-13.0	-36.9	
5640.00	22.6	H	3.0	43.7	1.0	-20.1	-13.0	-7.1	
7520.00	-16.1	H	3.0	42.5	1.0	-57.5	-13.0	-44.5	
9400.00	-11.6	H	3.0	41.1	1.0	-51.7	-13.0	-38.7	
11280.00	-14.0	H	3.0	41.0	1.0	-53.9	-13.0	-40.9	
High Ch, 1908.75MHz									
3817.50	-6.6	V	3.0	43.8	1.0	-49.4	-13.0	-36.4	
5726.25	25.9	V	3.0	43.7	1.0	-16.8	-13.0	-3.8	
7635.00	-16.8	V	3.0	42.4	1.0	-58.2	-13.0	-45.2	
9543.75	-7.8	V	3.0	41.0	1.0	-47.8	-13.0	-34.8	
11452.50	-13.5	V	3.0	41.0	1.0	-53.5	-13.0	-40.5	
3817.50	-2.3	H	3.0	43.8	1.0	-45.1	-13.0	-32.1	
5726.25	23.9	H	3.0	43.7	1.0	-18.8	-13.0	-5.8	
7635.00	-16.5	H	3.0	42.4	1.0	-57.9	-13.0	-44.9	
9543.75	-12.0	H	3.0	41.0	1.0	-52.0	-13.0	-39.0	
11452.50	-13.2	H	3.0	41.0	1.0	-53.2	-13.0	-40.2	

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BC1
EVDO Rel.0

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

Company: Samsung
Project #: 4788534503
Date: 2018-07-20
Test Engineer: 45585
Configuration: EUT / AC Adapter / Earphone, X-Position
Location: Chamber 1
Mode: EVDO BC1 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, 1851.25MHz									
3702.50	-6.5	V	3.0	43.8	1.0	-49.3	-13.0	-36.3	
5553.75	20.8	V	3.0	43.7	1.0	-22.0	-13.0	-9.0	
7405.00	-16.2	V	3.0	42.5	1.0	-57.7	-13.0	-44.7	
9256.25	-14.8	V	3.0	41.3	1.0	-55.1	-13.0	-42.1	
11107.50	-15.5	V	3.0	40.9	1.0	-55.4	-13.0	-42.4	
3702.50	-6.5	H	3.0	43.8	1.0	-49.3	-13.0	-36.3	
5553.75	19.4	H	3.0	43.7	1.0	-23.3	-13.0	-10.3	
7405.00	-16.8	H	3.0	42.5	1.0	-58.3	-13.0	-45.3	
9256.25	-13.4	H	3.0	41.3	1.0	-53.6	-13.0	-40.6	
11107.50	-15.1	H	3.0	40.9	1.0	-55.0	-13.0	-42.0	
Mid Ch, 1880MHz									
3760.00	-7.5	V	3.0	43.8	1.0	-50.3	-13.0	-37.3	
5640.00	22.3	V	3.0	43.7	1.0	-20.4	-13.0	-7.4	
7520.00	-16.1	V	3.0	42.5	1.0	-57.5	-13.0	-44.5	
9400.00	-10.4	V	3.0	41.1	1.0	-50.5	-13.0	-37.5	
11280.00	-14.2	V	3.0	41.0	1.0	-54.1	-13.0	-41.1	
3760.00	-9.3	H	3.0	43.8	1.0	-52.1	-13.0	-39.1	
5640.00	21.2	H	3.0	43.7	1.0	-21.5	-13.0	-8.5	
7520.00	-15.9	H	3.0	42.5	1.0	-57.4	-13.0	-44.4	
9400.00	-13.7	H	3.0	41.1	1.0	-53.9	-13.0	-40.9	
11280.00	-14.1	H	3.0	41.0	1.0	-54.1	-13.0	-41.1	
High Ch, 1908.75MHz									
3817.50	-5.9	V	3.0	43.8	1.0	-48.7	-13.0	-35.7	
5726.25	23.3	V	3.0	43.7	1.0	-19.4	-13.0	-6.4	
7635.00	-17.3	V	3.0	42.4	1.0	-58.7	-13.0	-45.7	
9543.75	-7.6	V	3.0	41.0	1.0	-47.6	-13.0	-34.6	
11452.50	-13.8	V	3.0	41.0	1.0	-53.8	-13.0	-40.8	
3817.50	-1.8	H	3.0	43.8	1.0	-44.6	-13.0	-31.6	
5726.25	24.7	H	3.0	43.7	1.0	-18.0	-13.0	-5.0	
7635.00	-17.0	H	3.0	42.4	1.0	-58.4	-13.0	-45.4	
9543.75	-10.9	H	3.0	41.0	1.0	-50.9	-13.0	-37.9	
11452.50	-13.3	H	3.0	41.0	1.0	-53.3	-13.0	-40.3	

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BC1
EVDO Rev.A

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

Company: Samsung
Project #: 4788534503
Date: 2018-07-20
Test Engineer: 45585
Configuration: EUT / AC Adapter / Earphone, X-Position
Location: Chamber 1
Mode: EVDO BC1 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, 1851.25MHz									
3702.50	-9.4	V	3.0	43.8	1.0	-52.1	-13.0	-39.1	
5553.75	21.7	V	3.0	43.7	1.0	-21.0	-13.0	-8.0	
7405.00	-16.0	V	3.0	42.5	1.0	-57.5	-13.0	-44.5	
9256.25	-14.3	V	3.0	41.3	1.0	-54.5	-13.0	-41.5	
11107.50	-15.0	V	3.0	40.9	1.0	-54.9	-13.0	-41.9	
3702.50	-6.9	H	3.0	43.8	1.0	-49.7	-13.0	-36.7	
5553.75	18.1	H	3.0	43.7	1.0	-24.6	-13.0	-11.6	
7405.00	-16.3	H	3.0	42.5	1.0	-57.8	-13.0	-44.8	
9256.25	-15.6	H	3.0	41.3	1.0	-55.9	-13.0	-42.9	
11107.50	-15.1	H	3.0	40.9	1.0	-55.0	-13.0	-42.0	
Mid Ch, 1880MHz									
3760.00	-8.3	V	3.0	43.8	1.0	-51.1	-13.0	-38.1	
5640.00	22.5	V	3.0	43.7	1.0	-20.2	-13.0	-7.2	
7520.00	-15.8	V	3.0	42.5	1.0	-57.2	-13.0	-44.2	
9400.00	-10.2	V	3.0	41.1	1.0	-50.3	-13.0	-37.3	
11280.00	-13.9	V	3.0	41.0	1.0	-53.9	-13.0	-40.9	
3760.00	-7.7	H	3.0	43.8	1.0	-50.5	-13.0	-37.5	
5640.00	22.1	H	3.0	43.7	1.0	-20.6	-13.0	-7.6	
7520.00	-16.1	H	3.0	42.5	1.0	-57.5	-13.0	-44.5	
9400.00	-11.4	H	3.0	41.1	1.0	-51.6	-13.0	-38.6	
11280.00	-13.9	H	3.0	41.0	1.0	-53.9	-13.0	-40.9	
High Ch, 1908.75MHz									
3817.50	-7.0	V	3.0	43.8	1.0	-49.8	-13.0	-36.8	
5726.25	22.9	V	3.0	43.7	1.0	-19.8	-13.0	-6.8	
7635.00	-16.7	V	3.0	42.4	1.0	-58.1	-13.0	-45.1	
9543.75	-7.2	V	3.0	41.0	1.0	-47.2	-13.0	-34.2	
11452.50	-14.0	V	3.0	41.0	1.0	-54.0	-13.0	-41.0	
3817.50	-2.5	H	3.0	43.8	1.0	-45.3	-13.0	-32.3	
5726.25	25.4	H	3.0	43.7	1.0	-17.3	-13.0	-4.3	
7635.00	-16.4	H	3.0	42.4	1.0	-57.8	-13.0	-44.8	
9543.75	-11.6	H	3.0	41.0	1.0	-51.6	-13.0	-38.6	
11452.50	-13.4	H	3.0	41.0	1.0	-53.4	-13.0	-40.4	

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CDMA BC10

BC10
1xRTT

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

Company: Samsung
Project #: 4788534503
Date: 2018-07-18
Test Engineer: 47989
Configuration: EUT / Adapter / Earphone / X-position
Location: Chamber 1
Mode: RTT BC10 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, 817.9MHz									
1635.80	-17.9	V	3.0	43.6	1.0	-60.5	-13.0	-47.5	
2453.70	-22.1	V	3.0	43.4	1.0	-64.5	-13.0	-51.5	
3271.60	-20.6	V	3.0	43.6	1.0	-63.2	-13.0	-50.2	
4089.50	-19.6	V	3.0	43.9	1.0	-62.4	-13.0	-49.4	
4907.40	-19.2	V	3.0	43.8	1.0	-62.0	-13.0	-49.0	
1635.80	-17.4	H	3.0	43.6	1.0	-60.0	-13.0	-47.0	
2453.70	-22.4	H	3.0	43.4	1.0	-64.8	-13.0	-51.8	
3271.60	-20.3	H	3.0	43.6	1.0	-62.9	-13.0	-49.9	
4089.50	-19.5	H	3.0	43.9	1.0	-62.4	-13.0	-49.4	
4907.40	-19.0	H	3.0	43.8	1.0	-61.8	-13.0	-48.8	
Mid Ch, 820.5MHz									
1641.00	-18.1	V	3.0	43.6	1.0	-60.7	-13.0	-47.7	
2461.50	-21.9	V	3.0	43.4	1.0	-64.3	-13.0	-51.3	
3282.00	-20.3	V	3.0	43.6	1.0	-62.9	-13.0	-49.9	
4102.50	-19.6	V	3.0	43.9	1.0	-62.5	-13.0	-49.5	
4923.00	-18.7	V	3.0	43.8	1.0	-61.5	-13.0	-48.5	
1641.00	-18.2	H	3.0	43.6	1.0	-60.8	-13.0	-47.8	
2461.50	-22.4	H	3.0	43.4	1.0	-64.9	-13.0	-51.9	
3282.00	-19.8	H	3.0	43.6	1.0	-62.4	-13.0	-49.4	
4102.50	-20.1	H	3.0	43.9	1.0	-62.9	-13.0	-49.9	
4923.00	-19.1	H	3.0	43.8	1.0	-61.9	-13.0	-48.9	
High Ch, 823.1MHz									
1646.20	-17.9	V	3.0	43.6	1.0	-60.4	-13.0	-47.4	
2469.30	-22.6	V	3.0	43.4	1.0	-65.0	-13.0	-52.0	
3292.40	-20.1	V	3.0	43.6	1.0	-62.8	-13.0	-49.8	
4115.50	-19.5	V	3.0	43.9	1.0	-62.4	-13.0	-49.4	
4938.60	-18.5	V	3.0	43.8	1.0	-61.3	-13.0	-48.3	
1646.20	-18.0	H	3.0	43.6	1.0	-60.6	-13.0	-47.6	
2469.30	-22.0	H	3.0	43.4	1.0	-64.4	-13.0	-51.4	
3292.40	-19.3	H	3.0	43.6	1.0	-61.9	-13.0	-48.9	
4115.50	-19.4	H	3.0	43.9	1.0	-62.3	-13.0	-49.3	
4938.60	-19.4	H	3.0	43.8	1.0	-62.2	-13.0	-49.2	

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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	

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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	

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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	

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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	

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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	

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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	

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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	

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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	

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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	

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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	

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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	

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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	

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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	

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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	

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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	

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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	

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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	

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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	

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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	

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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	

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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	

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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	

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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	

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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	

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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	

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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	

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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	

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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	

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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	

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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	

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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	

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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	

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LTE Band 12

LTE

Band 12

10MHz

QPSK

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

Company: Samsung
Project #: 4788534503
Date: 2018-07-16
Test Engineer: 45585
Configuration: EUT / Adapter / Earphone / Y-position
Location: Chamber 2
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	-17.6	V	3.0	38.1	1.0	-54.7	-13.0	-41.7	
2112.00	-18.1	V	3.0	38.5	1.0	-55.6	-13.0	-42.6	
2816.00	-26.4	V	3.0	39.1	1.0	-64.5	-13.0	-51.5	
3520.00	-26.6	V	3.0	39.6	1.0	-65.2	-13.0	-52.2	
4224.00	-24.3	V	3.0	39.8	1.0	-63.2	-13.0	-50.2	
1408.00	-23.7	H	3.0	38.1	1.0	-60.8	-13.0	-47.8	
2112.00	-19.1	H	3.0	38.5	1.0	-56.6	-13.0	-43.6	
2816.00	-28.4	H	3.0	39.1	1.0	-66.5	-13.0	-53.5	
3520.00	-26.5	H	3.0	39.6	1.0	-65.0	-13.0	-52.0	
4224.00	-25.2	H	3.0	39.8	1.0	-64.0	-13.0	-51.0	
Mid Ch, 707.5MHz									
1415.00	-22.1	V	3.0	38.1	1.0	-59.2	-13.0	-46.2	
2122.50	-14.1	V	3.0	38.5	1.0	-51.6	-13.0	-38.6	
2830.00	-27.3	V	3.0	39.1	1.0	-65.4	-13.0	-52.4	
3537.50	-25.9	V	3.0	39.6	1.0	-64.4	-13.0	-51.4	
4245.00	-25.3	V	3.0	39.8	1.0	-64.2	-13.0	-51.2	
1415.00	-25.5	H	3.0	38.1	1.0	-62.7	-13.0	-49.7	
2122.50	-16.4	H	3.0	38.5	1.0	-53.8	-13.0	-40.8	
2830.00	-27.7	H	3.0	39.1	1.0	-65.8	-13.0	-52.8	
3537.50	-26.0	H	3.0	39.6	1.0	-64.5	-13.0	-51.5	
4245.00	-25.3	H	3.0	39.8	1.0	-64.2	-13.0	-51.2	
High Ch, 711MHz									
1422.00	-21.9	V	3.0	38.1	1.0	-59.0	-13.0	-46.0	
2133.00	-17.4	V	3.0	38.5	1.0	-54.9	-13.0	-41.9	
2844.00	-27.1	V	3.0	39.1	1.0	-65.2	-13.0	-52.2	
3555.00	-26.2	V	3.0	39.6	1.0	-64.7	-13.0	-51.7	
4266.00	-24.9	V	3.0	39.8	1.0	-63.7	-13.0	-50.7	
1422.00	-23.4	H	3.0	38.1	1.0	-60.6	-13.0	-47.6	
2133.00	-18.5	H	3.0	38.5	1.0	-56.0	-13.0	-43.0	
2844.00	-27.1	H	3.0	39.1	1.0	-65.2	-13.0	-52.2	
3555.00	-26.7	H	3.0	39.6	1.0	-65.3	-13.0	-52.3	
4266.00	-24.4	H	3.0	39.8	1.0	-63.3	-13.0	-50.3	

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LTE

Band 12

10MHz

16QAM

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

Company: Samsung
Project #: 4788534503
Date: 2018-07-16
Test Engineer: 45585
Configuration: EUT / Adapter / Earphone / Y-position
Location: Chamber 2
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	-20.6	V	3.0	38.1	1.0	-57.8	-13.0	-44.8	
2112.00	-17.4	V	3.0	38.5	1.0	-54.9	-13.0	-41.9	
2816.00	-27.6	V	3.0	39.1	1.0	-65.7	-13.0	-52.7	
3520.00	-26.3	V	3.0	39.6	1.0	-64.9	-13.0	-51.9	
4224.00	-25.4	V	3.0	39.8	1.0	-64.2	-13.0	-51.2	
1408.00	-27.7	H	3.0	38.1	1.0	-64.8	-13.0	-51.8	
2112.00	-17.7	H	3.0	38.5	1.0	-55.2	-13.0	-42.2	
2816.00	-27.5	H	3.0	39.1	1.0	-65.6	-13.0	-52.6	
3520.00	-26.6	H	3.0	39.6	1.0	-65.2	-13.0	-52.2	
4224.00	-25.1	H	3.0	39.8	1.0	-63.9	-13.0	-50.9	
Mid Ch, 707.5MHz									
1415.00	-23.4	V	3.0	38.1	1.0	-60.5	-13.0	-47.5	
2122.50	-16.3	V	3.0	38.5	1.0	-53.8	-13.0	-40.8	
2830.00	-27.3	V	3.0	39.1	1.0	-65.4	-13.0	-52.4	
3537.50	-25.9	V	3.0	39.6	1.0	-64.4	-13.0	-51.4	
4245.00	-25.4	V	3.0	39.8	1.0	-64.2	-13.0	-51.2	
1415.00	-25.5	H	3.0	38.1	1.0	-62.7	-13.0	-49.7	
2122.50	-18.3	H	3.0	38.5	1.0	-55.8	-13.0	-42.8	
2830.00	-27.7	H	3.0	39.1	1.0	-65.8	-13.0	-52.8	
3537.50	-25.9	H	3.0	39.6	1.0	-64.5	-13.0	-51.5	
4245.00	-25.3	H	3.0	39.8	1.0	-64.2	-13.0	-51.2	
High Ch, 711MHz									
1422.00	-20.2	V	3.0	38.1	1.0	-57.3	-13.0	-44.3	
2133.00	-20.4	V	3.0	38.5	1.0	-57.9	-13.0	-44.9	
2844.00	-27.7	V	3.0	39.1	1.0	-65.8	-13.0	-52.8	
3555.00	-26.9	V	3.0	39.6	1.0	-65.5	-13.0	-52.5	
4266.00	-25.3	V	3.0	39.8	1.0	-64.1	-13.0	-51.1	
1422.00	-25.4	H	3.0	38.1	1.0	-62.5	-13.0	-49.5	
2133.00	-20.3	H	3.0	38.5	1.0	-57.8	-13.0	-44.8	
2844.00	-26.5	H	3.0	39.1	1.0	-64.7	-13.0	-51.7	
3555.00	-26.8	H	3.0	39.6	1.0	-65.4	-13.0	-52.4	
4266.00	-25.1	H	3.0	39.8	1.0	-64.0	-13.0	-51.0	

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LTE

Band 12

5MHz

QPSK

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

Company: Samsung
Project #: 4788534503
Date: 2018-07-14
Test Engineer: 51072
Configuration: EUT / Adapter / Earphone / Y-position
Location: Chamber 2
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	-24.4	V	3.0	38.1	1.0	-61.5	-13.0	-48.5	
2104.50	-20.4	V	3.0	38.5	1.0	-57.9	-13.0	-44.9	
2806.00	-26.7	V	3.0	39.1	1.0	-64.8	-13.0	-51.8	
3507.50	-26.1	V	3.0	39.5	1.0	-64.6	-13.0	-51.6	
4209.00	-24.1	V	3.0	39.8	1.0	-62.9	-13.0	-49.9	
1403.00	-29.2	H	3.0	38.1	1.0	-66.3	-13.0	-53.3	
2104.50	-19.5	H	3.0	38.5	1.0	-57.0	-13.0	-44.0	
2806.00	-27.7	H	3.0	39.1	1.0	-65.8	-13.0	-52.8	
3507.50	-26.2	H	3.0	39.5	1.0	-64.8	-13.0	-51.8	
4209.00	-25.7	H	3.0	39.8	1.0	-64.5	-13.0	-51.5	
Mid Ch, 707.5MHz									
1415.00	-23.8	V	3.0	38.1	1.0	-61.0	-13.0	-48.0	
2122.50	-21.4	V	3.0	38.5	1.0	-58.9	-13.0	-45.9	
2830.00	-25.3	V	3.0	39.1	1.0	-63.4	-13.0	-50.4	
3537.50	-25.0	V	3.0	39.6	1.0	-63.5	-13.0	-50.5	
4245.00	-23.5	V	3.0	39.8	1.0	-62.3	-13.0	-49.3	
1415.00	-25.5	H	3.0	38.1	1.0	-62.6	-13.0	-49.6	
2122.50	-20.7	H	3.0	38.5	1.0	-58.2	-13.0	-45.2	
2830.00	-24.7	H	3.0	39.1	1.0	-62.8	-13.0	-49.8	
3537.50	-25.3	H	3.0	39.6	1.0	-63.9	-13.0	-50.9	
4245.00	-25.0	H	3.0	39.8	1.0	-63.9	-13.0	-50.9	
High Ch, 713.5MHz									
1427.00	-21.5	V	3.0	38.1	1.0	-58.7	-13.0	-45.7	
2140.50	-16.8	V	3.0	38.5	1.0	-54.4	-13.0	-41.4	
2854.00	-27.4	V	3.0	39.1	1.0	-65.5	-13.0	-52.5	
3567.50	-24.9	V	3.0	39.6	1.0	-63.5	-13.0	-50.5	
4281.00	-22.2	V	3.0	39.8	1.0	-61.0	-13.0	-48.0	
1427.00	-26.2	H	3.0	38.1	1.0	-63.3	-13.0	-50.3	
2140.50	-16.1	H	3.0	38.5	1.0	-53.6	-13.0	-40.6	
2854.00	-27.7	H	3.0	39.1	1.0	-65.8	-13.0	-52.8	
3567.50	-25.4	H	3.0	39.6	1.0	-63.9	-13.0	-50.9	
4281.00	-24.5	H	3.0	39.8	1.0	-63.3	-13.0	-50.3	

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LTE

Band 12

5MHz

16QAM

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

Company: Samsung
Project #: 4788534503
Date: 2018-07-14
Test Engineer: 51072
Configuration: EUT / Adapter / Earphone / Y-position
Location: Chamber 2
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	-26.1	V	3.0	38.1	1.0	-63.2	-13.0	-50.2	
2104.50	-22.8	V	3.0	38.5	1.0	-60.3	-13.0	-47.3	
2806.00	-25.0	V	3.0	39.1	1.0	-63.1	-13.0	-50.1	
3507.50	-24.3	V	3.0	39.5	1.0	-62.8	-13.0	-49.8	
4209.00	-21.7	V	3.0	39.8	1.0	-60.5	-13.0	-47.5	
1403.00	-29.0	H	3.0	38.1	1.0	-66.1	-13.0	-53.1	
2104.50	-21.8	H	3.0	38.5	1.0	-59.3	-13.0	-46.3	
2806.00	-25.6	H	3.0	39.1	1.0	-63.6	-13.0	-50.6	
3507.50	-25.1	H	3.0	39.5	1.0	-63.7	-13.0	-50.7	
4209.00	-24.6	H	3.0	39.8	1.0	-63.4	-13.0	-50.4	
Mid Ch, 707.5MHz									
1415.00	-25.3	V	3.0	38.1	1.0	-62.4	-13.0	-49.4	
2122.50	-22.3	V	3.0	38.5	1.0	-59.8	-13.0	-46.8	
2830.00	-26.2	V	3.0	39.1	1.0	-64.3	-13.0	-51.3	
3537.50	-25.6	V	3.0	39.6	1.0	-64.1	-13.0	-51.1	
4245.00	-23.7	V	3.0	39.8	1.0	-62.5	-13.0	-49.5	
1415.00	-25.8	H	3.0	38.1	1.0	-62.9	-13.0	-49.9	
2122.50	-21.3	H	3.0	38.5	1.0	-58.8	-13.0	-45.8	
2830.00	-26.0	H	3.0	39.1	1.0	-64.1	-13.0	-51.1	
3537.50	-24.9	H	3.0	39.6	1.0	-63.5	-13.0	-50.5	
4245.00	-24.3	H	3.0	39.8	1.0	-63.1	-13.0	-50.1	
High Ch, 713.5MHz									
1427.00	-25.2	V	3.0	38.1	1.0	-62.3	-13.0	-49.3	
2140.50	-19.2	V	3.0	38.5	1.0	-56.7	-13.0	-43.7	
2854.00	-28.3	V	3.0	39.1	1.0	-66.4	-13.0	-53.4	
3567.50	-25.5	V	3.0	39.6	1.0	-64.0	-13.0	-51.0	
4281.00	-22.4	V	3.0	39.8	1.0	-61.2	-13.0	-48.2	
1427.00	-28.3	H	3.0	38.1	1.0	-65.4	-13.0	-52.4	
2140.50	-18.2	H	3.0	38.5	1.0	-55.7	-13.0	-42.7	
2854.00	-29.1	H	3.0	39.1	1.0	-67.2	-13.0	-54.2	
3567.50	-25.0	H	3.0	39.6	1.0	-63.5	-13.0	-50.5	
4281.00	-23.7	H	3.0	39.8	1.0	-62.5	-13.0	-49.5	

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LTE

Band 12

3MHz

QPSK

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

Company: Samsung
Project #: 4788534503
Date: 2018-07-15
Test Engineer: 51072
Configuration: EUT / Adapter / Earphone / Y-position
Location: Chamber 2
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	-26.2	V	3.0	38.1	1.0	-63.3	-13.0	-50.3	
2101.50	-23.6	V	3.0	38.5	1.0	-61.1	-13.0	-48.1	
2802.00	-24.4	V	3.0	39.1	1.0	-62.5	-13.0	-49.5	
3502.50	-23.5	V	3.0	39.5	1.0	-62.1	-13.0	-49.1	
4203.00	-21.8	V	3.0	39.8	1.0	-60.6	-13.0	-47.6	
1401.00	-28.3	H	3.0	38.1	1.0	-65.4	-13.0	-52.4	
2101.50	-19.2	H	3.0	38.5	1.0	-56.6	-13.0	-43.6	
2802.00	-25.4	H	3.0	39.1	1.0	-63.4	-13.0	-50.4	
3502.50	-25.8	H	3.0	39.5	1.0	-64.3	-13.0	-51.3	
4203.00	-24.7	H	3.0	39.8	1.0	-63.5	-13.0	-50.5	
Mid Ch, 707.5MHz									
1415.00	-21.9	V	3.0	38.1	1.0	-59.0	-13.0	-46.0	
2122.50	-21.5	V	3.0	38.5	1.0	-59.0	-13.0	-46.0	
2830.00	-25.5	V	3.0	39.1	1.0	-63.6	-13.0	-50.6	
3537.50	-24.8	V	3.0	39.6	1.0	-63.4	-13.0	-50.4	
4245.00	-22.4	V	3.0	39.8	1.0	-61.2	-13.0	-48.2	
1415.00	-22.2	H	3.0	38.1	1.0	-59.4	-13.0	-46.4	
2122.50	-26.4	H	3.0	38.5	1.0	-63.9	-13.0	-50.9	
2830.00	-25.0	H	3.0	39.1	1.0	-63.1	-13.0	-50.1	
3537.50	-25.3	H	3.0	39.6	1.0	-63.9	-13.0	-50.9	
4245.00	-25.2	H	3.0	39.8	1.0	-64.0	-13.0	-51.0	
High Ch, 714.5MHz									
1429.00	-20.8	V	3.0	38.1	1.0	-57.9	-13.0	-44.9	
2143.50	-14.9	V	3.0	38.5	1.0	-52.4	-13.0	-39.4	
2858.00	-27.2	V	3.0	39.1	1.0	-65.3	-13.0	-52.3	
3572.50	-25.6	V	3.0	39.6	1.0	-64.1	-13.0	-51.1	
4287.00	-22.1	V	3.0	39.8	1.0	-61.0	-13.0	-48.0	
1429.00	-25.9	H	3.0	38.1	1.0	-63.0	-13.0	-50.0	
2143.50	-16.2	H	3.0	38.5	1.0	-53.7	-13.0	-40.7	
2858.00	-24.8	H	3.0	39.1	1.0	-62.9	-13.0	-49.9	
3572.50	-25.1	H	3.0	39.6	1.0	-63.7	-13.0	-50.7	
4287.00	-25.0	H	3.0	39.8	1.0	-63.8	-13.0	-50.8	

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LTE

Band 12

3MHz

16QAM

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

Company: Samsung
Project #: 4788534503
Date: 2018-07-15
Test Engineer: 51072
Configuration: EUT / Adapter / Earphone / Y-position
Location: Chamber 2
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	-28.1	V	3.0	38.1	1.0	-65.2	-13.0	-52.2	
2101.50	-23.5	V	3.0	38.5	1.0	-61.0	-13.0	-48.0	
2802.00	-26.8	V	3.0	39.1	1.0	-64.8	-13.0	-51.8	
3502.50	-25.2	V	3.0	39.5	1.0	-63.7	-13.0	-50.7	
4203.00	-23.8	V	3.0	39.8	1.0	-62.6	-13.0	-49.6	
1401.00	-28.7	H	3.0	38.1	1.0	-65.8	-13.0	-52.8	
2101.50	-20.0	H	3.0	38.5	1.0	-57.4	-13.0	-44.4	
2802.00	-27.0	H	3.0	39.1	1.0	-65.0	-13.0	-52.0	
3502.50	-26.1	H	3.0	39.5	1.0	-64.6	-13.0	-51.6	
4203.00	-25.5	H	3.0	39.8	1.0	-64.3	-13.0	-51.3	
Mid Ch, 707.5MHz									
1415.00	-23.0	V	3.0	38.1	1.0	-60.1	-13.0	-47.1	
2122.50	-22.3	V	3.0	38.5	1.0	-59.8	-13.0	-46.8	
2830.00	-26.2	V	3.0	39.1	1.0	-64.3	-13.0	-51.3	
3537.50	-25.1	V	3.0	39.6	1.0	-63.6	-13.0	-50.6	
4245.00	-23.3	V	3.0	39.8	1.0	-62.1	-13.0	-49.1	
1415.00	-23.3	H	3.0	38.1	1.0	-60.4	-13.0	-47.4	
2122.50	-27.7	H	3.0	38.5	1.0	-65.2	-13.0	-52.2	
2830.00	-26.4	H	3.0	39.1	1.0	-64.5	-13.0	-51.5	
3537.50	-25.9	H	3.0	39.6	1.0	-64.4	-13.0	-51.4	
4245.00	-25.1	H	3.0	39.8	1.0	-64.0	-13.0	-51.0	
High Ch, 714.5MHz									
1429.00	-21.9	V	3.0	38.1	1.0	-59.0	-13.0	-46.0	
2143.50	-18.5	V	3.0	38.5	1.0	-56.0	-13.0	-43.0	
2858.00	-27.1	V	3.0	39.1	1.0	-65.3	-13.0	-52.3	
3572.50	-26.2	V	3.0	39.6	1.0	-64.8	-13.0	-51.8	
4287.00	-23.3	V	3.0	39.8	1.0	-62.1	-13.0	-49.1	
1429.00	-26.5	H	3.0	38.1	1.0	-63.6	-13.0	-50.6	
2143.50	-19.2	H	3.0	38.5	1.0	-56.7	-13.0	-43.7	
2858.00	-25.8	H	3.0	39.1	1.0	-63.9	-13.0	-50.9	
3572.50	-25.8	H	3.0	39.6	1.0	-64.4	-13.0	-51.4	
4287.00	-24.9	H	3.0	39.8	1.0	-63.7	-13.0	-50.7	

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LTE

Band 12

1.4MHz

QPSK

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

Company: Samsung
Project #: 4788534503
Date: 2018-07-14
Test Engineer: 51072
Configuration: EUT / Adapter / Earphone / Y-position
Location: Chamber 2
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	-27.9	V	3.0	38.1	1.0	-65.0	-13.0	-52.0	
2099.10	-19.5	V	3.0	38.5	1.0	-57.0	-13.0	-44.0	
2798.80	-25.4	V	3.0	39.1	1.0	-63.5	-13.0	-50.5	
3498.50	-24.4	V	3.0	39.5	1.0	-62.9	-13.0	-49.9	
4198.20	-22.4	V	3.0	39.8	1.0	-61.2	-13.0	-48.2	
1399.40	-29.5	H	3.0	38.1	1.0	-66.6	-13.0	-53.6	
2099.10	-17.5	H	3.0	38.5	1.0	-55.0	-13.0	-42.0	
2798.80	-26.1	H	3.0	39.1	1.0	-64.2	-13.0	-51.2	
3498.50	-26.3	H	3.0	39.5	1.0	-64.8	-13.0	-51.8	
4198.20	-24.9	H	3.0	39.8	1.0	-63.7	-13.0	-50.7	
Mid Ch, 707.5MHz									
1415.00	-22.6	V	3.0	38.1	1.0	-59.7	-13.0	-46.7	
2122.50	-20.9	V	3.0	38.5	1.0	-58.4	-13.0	-45.4	
2830.00	-25.3	V	3.0	39.1	1.0	-63.4	-13.0	-50.4	
3537.50	-25.1	V	3.0	39.6	1.0	-63.7	-13.0	-50.7	
4245.00	-21.9	V	3.0	39.8	1.0	-60.7	-13.0	-47.7	
1415.00	-26.7	H	3.0	38.1	1.0	-63.8	-13.0	-50.8	
2122.50	-20.2	H	3.0	38.5	1.0	-57.7	-13.0	-44.7	
2830.00	-24.6	H	3.0	39.1	1.0	-62.7	-13.0	-49.7	
3537.50	-25.9	H	3.0	39.6	1.0	-64.4	-13.0	-51.4	
4245.00	-25.0	H	3.0	39.8	1.0	-63.8	-13.0	-50.8	
High Ch, 715.3MHz									
1430.60	-24.4	V	3.0	38.1	1.0	-61.5	-13.0	-48.5	
2145.90	-17.0	V	3.0	38.5	1.0	-54.5	-13.0	-41.5	
2861.20	-27.4	V	3.0	39.1	1.0	-65.6	-13.0	-52.6	
3576.50	-25.5	V	3.0	39.6	1.0	-64.0	-13.0	-51.0	
4291.80	-21.5	V	3.0	39.8	1.0	-60.3	-13.0	-47.3	
1430.60	-27.4	H	3.0	38.1	1.0	-64.5	-13.0	-51.5	
2145.90	-16.5	H	3.0	38.5	1.0	-54.0	-13.0	-41.0	
2861.20	-27.9	H	3.0	39.1	1.0	-66.1	-13.0	-53.1	
3576.50	-25.6	H	3.0	39.6	1.0	-64.1	-13.0	-51.1	
4291.80	-24.2	H	3.0	39.8	1.0	-63.0	-13.0	-50.0	

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LTE

Band 12

1.4MHz

16QAM

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

Company: Samsung
Project #: 4788534503
Date: 2018-07-14
Test Engineer: 51072
Configuration: EUT / Adapter / Earphone / Y-position
Location: Chamber 2
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	-26.9	V	3.0	38.1	1.0	-64.0	-13.0	-51.0	
2099.10	-22.0	V	3.0	38.5	1.0	-59.4	-13.0	-46.4	
2798.80	-26.1	V	3.0	39.1	1.0	-64.1	-13.0	-51.1	
3498.50	-24.6	V	3.0	39.5	1.0	-63.2	-13.0	-50.2	
4198.20	-23.2	V	3.0	39.8	1.0	-62.0	-13.0	-49.0	
1399.40	-29.4	H	3.0	38.1	1.0	-66.6	-13.0	-53.6	
2099.10	-20.3	H	3.0	38.5	1.0	-57.8	-13.0	-44.8	
2798.80	-26.3	H	3.0	39.1	1.0	-64.4	-13.0	-51.4	
3498.50	-26.3	H	3.0	39.5	1.0	-64.8	-13.0	-51.8	
4198.20	-25.3	H	3.0	39.8	1.0	-64.1	-13.0	-51.1	
Mid Ch, 707.5MHz									
1415.00	-20.7	V	3.0	38.1	1.0	-57.8	-13.0	-44.8	
2122.50	-21.1	V	3.0	38.5	1.0	-58.6	-13.0	-45.6	
2830.00	-26.4	V	3.0	39.1	1.0	-64.5	-13.0	-51.5	
3537.50	-25.0	V	3.0	39.6	1.0	-63.5	-13.0	-50.5	
4245.00	-22.7	V	3.0	39.8	1.0	-61.5	-13.0	-48.5	
1415.00	-26.7	H	3.0	38.1	1.0	-63.9	-13.0	-50.9	
2122.50	-23.1	H	3.0	38.5	1.0	-60.6	-13.0	-47.6	
2830.00	-26.8	H	3.0	39.1	1.0	-64.9	-13.0	-51.9	
3537.50	-26.0	H	3.0	39.6	1.0	-64.6	-13.0	-51.6	
4245.00	-25.4	H	3.0	39.8	1.0	-64.2	-13.0	-51.2	
High Ch, 715.3MHz									
1430.60	-25.2	V	3.0	38.1	1.0	-62.3	-13.0	-49.3	
2145.90	-19.4	V	3.0	38.5	1.0	-56.9	-13.0	-43.9	
2861.20	-28.0	V	3.0	39.1	1.0	-66.2	-13.0	-53.2	
3576.50	-26.0	V	3.0	39.6	1.0	-64.6	-13.0	-51.6	
4291.80	-22.6	V	3.0	39.8	1.0	-61.5	-13.0	-48.5	
1430.60	-27.3	H	3.0	38.1	1.0	-64.4	-13.0	-51.4	
2145.90	-18.7	H	3.0	38.5	1.0	-56.2	-13.0	-43.2	
2861.20	-28.1	H	3.0	39.1	1.0	-66.3	-13.0	-53.3	
3576.50	-26.0	H	3.0	39.6	1.0	-64.6	-13.0	-51.6	
4291.80	-22.7	H	3.0	39.8	1.0	-61.5	-13.0	-48.5	

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LTE Band 25

LTE Band 25 20MHz QPSK

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

Company: Samsung
Project #: 4788534503.
Date: 2018-07-18
Test Engineer: 51072
Configuration: EUT / Adapter / Earphone / X-position
Location: Chamber 2
Mode: LTE_QPSK Band 25 Harmonics, 20MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1860MHz									
3720.00	-12.4	V	3.0	39.7	1.0	-51.1	-13.0	-38.1	
5580.00	-22.5	V	3.0	39.9	1.0	-61.4	-13.0	-48.4	
7440.00	-20.7	V	3.0	39.4	1.0	-59.1	-13.0	-46.1	
3720.00	-9.0	H	3.0	39.7	1.0	-47.7	-13.0	-34.7	
5580.00	-22.4	H	3.0	39.9	1.0	-61.4	-13.0	-48.4	
7440.00	-22.2	H	3.0	39.4	1.0	-60.7	-13.0	-47.7	
Mid Ch, 1882.5MHz									
3765.00	-13.6	V	3.0	39.7	1.0	-52.3	-13.0	-39.3	
5647.50	-23.4	V	3.0	40.0	1.0	-62.3	-13.0	-49.3	
7530.00	-20.0	V	3.0	39.4	1.0	-58.4	-13.0	-45.4	
3765.00	-11.7	H	3.0	39.7	1.0	-50.3	-13.0	-37.3	
5647.50	-22.7	H	3.0	40.0	1.0	-61.7	-13.0	-48.7	
7530.00	-21.6	H	3.0	39.4	1.0	-60.0	-13.0	-47.0	
High Ch, 1905MHz									
3810.00	-20.9	V	3.0	39.7	1.0	-59.6	-13.0	-46.6	
5715.00	-23.5	V	3.0	40.0	1.0	-62.5	-13.0	-49.5	
7620.00	-19.5	V	3.0	39.3	1.0	-57.8	-13.0	-44.8	
3810.00	-15.4	H	3.0	39.7	1.0	-54.1	-13.0	-41.1	
5715.00	-23.2	H	3.0	40.0	1.0	-62.2	-13.0	-49.2	
7620.00	-20.2	H	3.0	39.3	1.0	-58.6	-13.0	-45.6	

LTE Band 25 20MHz 16QAM

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

Company: Samsung
Project #: 4788534503.
Date: 2018-07-18
Test Engineer: 51072
Configuration: EUT / Adapter / Earphone / X-position
Location: Chamber 2
Mode: LTE_16QAM Band 25 Harmonics, 20MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1860MHz									
3720.00	-13.4	V	3.0	39.7	1.0	-52.0	-13.0	-39.0	
5580.00	-23.0	V	3.0	39.9	1.0	-62.0	-13.0	-49.0	
7440.00	-21.4	V	3.0	39.4	1.0	-59.8	-13.0	-46.8	
3720.00	-10.1	H	3.0	39.7	1.0	-48.8	-13.0	-35.8	
5580.00	-23.1	H	3.0	39.9	1.0	-62.0	-13.0	-49.0	
7440.00	-22.6	H	3.0	39.4	1.0	-61.0	-13.0	-48.0	
Mid Ch, 1882.5MHz									
3765.00	-14.3	V	3.0	39.7	1.0	-53.0	-13.0	-40.0	
5647.50	-23.6	V	3.0	40.0	1.0	-62.6	-13.0	-49.6	
7530.00	-20.5	V	3.0	39.4	1.0	-58.9	-13.0	-45.9	
3765.00	-12.3	H	3.0	39.7	1.0	-51.0	-13.0	-38.0	
5647.50	-23.0	H	3.0	40.0	1.0	-62.0	-13.0	-49.0	
7530.00	-21.8	H	3.0	39.4	1.0	-60.2	-13.0	-47.2	
High Ch, 1905MHz									
3810.00	-21.5	V	3.0	39.7	1.0	-60.2	-13.0	-47.2	
5715.00	-23.6	V	3.0	40.0	1.0	-62.6	-13.0	-49.6	
7620.00	-19.7	V	3.0	39.3	1.0	-58.1	-13.0	-45.1	
3810.00	-15.9	H	3.0	39.7	1.0	-54.6	-13.0	-41.6	
5715.00	-23.4	H	3.0	40.0	1.0	-62.4	-13.0	-49.4	
7620.00	-20.5	H	3.0	39.3	1.0	-58.8	-13.0	-45.8	

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LTE
Band 25
15MHz
QPSK

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

Company: Samsung
Project #: 4788534503.
Date: 2018-07-18
Test Engineer: 51072
Configuration: EUT / Adapter / Earphone / X-position
Location: Chamber 2
Mode: LTE_QPSK Band 25 Harmonics, 15MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1857.5MHz									
3715.00	-14.8	V	3.0	39.7	1.0	-53.5	-13.0	-40.5	
5572.50	-22.7	V	3.0	39.9	1.0	-61.6	-13.0	-48.6	
7430.00	-20.2	V	3.0	39.4	1.0	-58.6	-13.0	-45.6	
3715.00	-10.7	H	3.0	39.7	1.0	-49.3	-13.0	-36.3	
5572.50	-23.8	H	3.0	39.9	1.0	-62.7	-13.0	-49.7	
7430.00	-21.7	H	3.0	39.4	1.0	-60.1	-13.0	-47.1	
Mid Ch, 1882.5MHz									
3765.00	-14.0	V	3.0	39.7	1.0	-52.7	-13.0	-39.7	
5647.50	-22.7	V	3.0	40.0	1.0	-61.7	-13.0	-48.7	
7530.00	-20.9	V	3.0	39.4	1.0	-59.3	-13.0	-46.3	
3765.00	-11.9	H	3.0	39.7	1.0	-50.6	-13.0	-37.6	
5647.50	-22.3	H	3.0	40.0	1.0	-61.3	-13.0	-48.3	
7530.00	-21.0	H	3.0	39.4	1.0	-59.4	-13.0	-46.4	
High Ch, 1907.5MHz									
3815.00	-21.0	V	3.0	39.7	1.0	-59.7	-13.0	-46.7	
5722.50	-22.6	V	3.0	40.0	1.0	-61.6	-13.0	-48.6	
7630.00	-20.4	V	3.0	39.3	1.0	-58.8	-13.0	-45.8	
3815.00	-14.7	H	3.0	39.7	1.0	-53.5	-13.0	-40.5	
5722.50	-23.5	H	3.0	40.0	1.0	-62.4	-13.0	-49.4	
7630.00	-20.6	H	3.0	39.3	1.0	-58.9	-13.0	-45.9	

LTE
Band 25
15MHz
16QAM

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

Company: Samsung
Project #: 4788534503.
Date: 2018-07-18
Test Engineer: 51072
Configuration: EUT / Adapter / Earphone / X-position
Location: Chamber 2
Mode: LTE_16QAM Band 25 Harmonics, 15MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1857.5MHz									
3715.00	-15.9	V	3.0	39.7	1.0	-54.6	-13.0	-41.6	
5572.50	-23.4	V	3.0	39.9	1.0	-62.4	-13.0	-49.4	
7430.00	-20.7	V	3.0	39.4	1.0	-59.2	-13.0	-46.2	
3715.00	-11.7	H	3.0	39.7	1.0	-50.4	-13.0	-37.4	
5572.50	-24.1	H	3.0	39.9	1.0	-63.0	-13.0	-50.0	
7430.00	-22.3	H	3.0	39.4	1.0	-60.7	-13.0	-47.7	
Mid Ch, 1882.5MHz									
3765.00	-15.1	V	3.0	39.7	1.0	-53.8	-13.0	-40.8	
5647.50	-23.2	V	3.0	40.0	1.0	-62.2	-13.0	-49.2	
7530.00	-21.2	V	3.0	39.4	1.0	-59.6	-13.0	-46.6	
3765.00	-12.8	H	3.0	39.7	1.0	-51.5	-13.0	-38.5	
5647.50	-23.1	H	3.0	40.0	1.0	-62.1	-13.0	-49.1	
7530.00	-21.6	H	3.0	39.4	1.0	-59.9	-13.0	-46.9	
High Ch, 1907.5MHz									
3815.00	-21.1	V	3.0	39.7	1.0	-59.8	-13.0	-46.8	
5722.50	-23.0	V	3.0	40.0	1.0	-62.0	-13.0	-49.0	
7630.00	-20.5	V	3.0	39.3	1.0	-58.8	-13.0	-45.8	
3815.00	-15.2	H	3.0	39.7	1.0	-53.9	-13.0	-40.9	
5722.50	-23.3	H	3.0	40.0	1.0	-62.3	-13.0	-49.3	
7630.00	-20.9	H	3.0	39.3	1.0	-59.2	-13.0	-46.2	

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LTE

Band 25

10MHz

QPSK

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

Company: Samsung
Project #: 4788534503
Date: 2018-07-19
Test Engineer: 45585
Configuration: EUT / AC Adapter / Earphone, X-Position
Location: Chamber 2
Mode: LTE_QPSK Band 25 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	-11.6	V	3.0	39.7	1.0	-50.2	-13.0	-37.2	
5565.00	-22.3	V	3.0	39.9	1.0	-61.3	-13.0	-48.3	
7420.00	-21.3	V	3.0	39.4	1.0	-59.8	-13.0	-46.8	
3710.00	-9.3	H	3.0	39.7	1.0	-48.0	-13.0	-35.0	
5565.00	-22.6	H	3.0	39.9	1.0	-61.6	-13.0	-48.6	
7420.00	-22.1	H	3.0	39.4	1.0	-60.6	-13.0	-47.6	
Mid Ch, 1882.5MHz									
3765.00	-17.2	V	3.0	39.7	1.0	-55.9	-13.0	-42.9	
5647.50	-23.0	V	3.0	40.0	1.0	-62.0	-13.0	-49.0	
7530.00	-20.3	V	3.0	39.4	1.0	-58.7	-13.0	-45.7	
3765.00	-12.6	H	3.0	39.7	1.0	-51.3	-13.0	-38.3	
5647.50	-23.4	H	3.0	40.0	1.0	-62.4	-13.0	-49.4	
7530.00	-21.6	H	3.0	39.4	1.0	-60.0	-13.0	-47.0	
High Ch, 1910MHz									
3820.00	-17.6	V	3.0	39.7	1.0	-56.4	-13.0	-43.4	
5730.00	-23.5	V	3.0	40.0	1.0	-62.5	-13.0	-49.5	
7640.00	-18.2	V	3.0	39.3	1.0	-56.5	-13.0	-43.5	
3820.00	-12.6	H	3.0	39.7	1.0	-51.3	-13.0	-38.3	
5730.00	-23.9	H	3.0	40.0	1.0	-62.9	-13.0	-49.9	
7640.00	-18.5	H	3.0	39.3	1.0	-56.8	-13.0	-43.8	

LTE

Band 25

10MHz

16QAM

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

Company: Samsung
Project #: 4788534503
Date: 2018-07-19
Test Engineer: 45585
Configuration: EUT / AC Adapter / Earphone, X-Position
Location: Chamber 2
Mode: LTE_16QAM Band 25 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	-12.3	V	3.0	39.7	1.0	-51.0	-13.0	-38.0	
5565.00	-22.9	V	3.0	39.9	1.0	-61.9	-13.0	-48.9	
7420.00	-20.4	V	3.0	39.4	1.0	-58.8	-13.0	-45.8	
3710.00	-10.3	H	3.0	39.7	1.0	-48.9	-13.0	-35.9	
5565.00	-23.2	H	3.0	39.9	1.0	-62.1	-13.0	-49.1	
7420.00	-22.6	H	3.0	39.4	1.0	-61.0	-13.0	-48.0	
Mid Ch, 1882.5MHz									
3765.00	-17.8	V	3.0	39.7	1.0	-56.5	-13.0	-43.5	
5647.50	-23.5	V	3.0	40.0	1.0	-62.4	-13.0	-49.4	
7530.00	-20.9	V	3.0	39.4	1.0	-59.3	-13.0	-46.3	
3765.00	-13.5	H	3.0	39.7	1.0	-52.2	-13.0	-39.2	
5647.50	-23.8	H	3.0	40.0	1.0	-62.8	-13.0	-49.8	
7530.00	-22.0	H	3.0	39.4	1.0	-60.4	-13.0	-47.4	
High Ch, 1910MHz									
3820.00	-18.4	V	3.0	39.7	1.0	-57.1	-13.0	-44.1	
5730.00	-23.7	V	3.0	40.0	1.0	-62.7	-13.0	-49.7	
7640.00	-18.6	V	3.0	39.3	1.0	-57.0	-13.0	-44.0	
3820.00	-13.5	H	3.0	39.7	1.0	-52.2	-13.0	-39.2	
5730.00	-24.1	H	3.0	40.0	1.0	-63.1	-13.0	-50.1	
7640.00	-18.9	H	3.0	39.3	1.0	-57.2	-13.0	-44.2	

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LTE Band 25 5MHz QPSK

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

Company: Samsung
Project #: 4788534503
Date: 2018-07-18
Test Engineer: 45585
Configuration: EUT / AC Adapter / Earphone, X-Position
Location: Chamber 2
Mode: LTE_QPSK Band 25 Harmonics, 5MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1852.5MHz									
3705.00	-12.6	V	3.0	39.7	1.0	-51.2	-13.0	-38.2	
5557.50	-23.0	V	3.0	39.9	1.0	-61.9	-13.0	-48.9	
7410.00	-22.2	V	3.0	39.4	1.0	-60.6	-13.0	-47.6	
3705.00	-10.0	H	3.0	39.7	1.0	-48.6	-13.0	-35.6	
5557.50	-22.5	H	3.0	39.9	1.0	-61.4	-13.0	-48.4	
7410.00	-22.7	H	3.0	39.4	1.0	-61.1	-13.0	-48.1	
Mid Ch, 1882.5MHz									
3765.00	-17.4	V	3.0	39.7	1.0	-56.1	-13.0	-43.1	
5647.50	-22.6	V	3.0	40.0	1.0	-61.6	-13.0	-48.6	
7530.00	-21.0	V	3.0	39.4	1.0	-59.4	-13.0	-46.4	
3765.00	-13.2	H	3.0	39.7	1.0	-51.9	-13.0	-38.9	
5647.50	-24.1	H	3.0	40.0	1.0	-63.1	-13.0	-50.1	
7530.00	-21.6	H	3.0	39.4	1.0	-60.0	-13.0	-47.0	
High Ch, 1912.5MHz									
3825.00	-16.5	V	3.0	39.7	1.0	-55.2	-13.0	-42.2	
5737.50	-22.3	V	3.0	40.0	1.0	-61.3	-13.0	-48.3	
7650.00	-20.8	V	3.0	39.3	1.0	-59.2	-13.0	-46.2	
3825.00	-13.3	H	3.0	39.7	1.0	-52.0	-13.0	-39.0	
5737.50	-23.5	H	3.0	40.0	1.0	-62.5	-13.0	-49.5	
7650.00	-21.2	H	3.0	39.3	1.0	-59.6	-13.0	-46.6	

LTE Band 25 5MHz 16QAM

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

Company: Samsung
Project #: 4788534503
Date: 2018-07-18
Test Engineer: 45585
Configuration: EUT / AC Adapter / Earphone, X-Position
Location: Chamber 2
Mode: LTE_16QAM Band 25 Harmonics, 5MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1852.5MHz									
3705.00	-14.0	V	3.0	39.7	1.0	-52.6	-13.0	-39.6	
5557.50	-23.2	V	3.0	39.9	1.0	-62.2	-13.0	-49.2	
7410.00	-23.7	V	3.0	39.4	1.0	-62.2	-13.0	-49.2	
3705.00	-9.7	H	3.0	39.7	1.0	-48.3	-13.0	-35.3	
5557.50	-22.9	H	3.0	39.9	1.0	-61.9	-13.0	-48.9	
7410.00	-23.8	H	3.0	39.4	1.0	-62.2	-13.0	-49.2	
Mid Ch, 1882.5MHz									
3765.00	-18.4	V	3.0	39.7	1.0	-57.1	-13.0	-44.1	
5647.50	-23.2	V	3.0	40.0	1.0	-62.2	-13.0	-49.2	
7530.00	-21.4	V	3.0	39.4	1.0	-59.8	-13.0	-46.8	
3765.00	-14.4	H	3.0	39.7	1.0	-53.1	-13.0	-40.1	
5647.50	-24.2	H	3.0	40.0	1.0	-63.2	-13.0	-50.2	
7530.00	-21.7	H	3.0	39.4	1.0	-60.1	-13.0	-47.1	
High Ch, 1912.5MHz									
3825.00	-17.1	V	3.0	39.7	1.0	-55.8	-13.0	-42.8	
5737.50	-22.6	V	3.0	40.0	1.0	-61.6	-13.0	-48.6	
7650.00	-21.1	V	3.0	39.3	1.0	-59.4	-13.0	-46.4	
3825.00	-14.0	H	3.0	39.7	1.0	-52.7	-13.0	-39.7	
5737.50	-23.7	H	3.0	40.0	1.0	-62.7	-13.0	-49.7	
7650.00	-21.5	H	3.0	39.3	1.0	-59.8	-13.0	-46.8	

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LTE
Band 25
3MHz
QPSK

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

Company: Samsung
Project #: 4788534503
Date: 2018-07-18
Test Engineer: 45585
Configuration: EUT / AC Adapter / Earphone, X-Position
Location: Chamber 2
Mode: LTE_QPSK Band 25 Harmonics, 3MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1851.5MHz									
3703.00	-15.8	V	3.0	39.7	1.0	-54.4	-13.0	-41.4	
5554.50	-23.2	V	3.0	39.9	1.0	-62.1	-13.0	-49.1	
7406.00	-20.5	V	3.0	39.4	1.0	-59.0	-13.0	-46.0	
3703.00	-8.9	H	3.0	39.7	1.0	-47.5	-13.0	-34.5	
5554.50	-24.2	H	3.0	39.9	1.0	-63.2	-13.0	-50.2	
7406.00	-22.2	H	3.0	39.4	1.0	-60.7	-13.0	-47.7	
Mid Ch, 1882.5MHz									
3765.00	-18.0	V	3.0	39.7	1.0	-56.7	-13.0	-43.7	
5647.50	-22.1	V	3.0	40.0	1.0	-61.1	-13.0	-48.1	
7530.00	-20.5	V	3.0	39.4	1.0	-58.9	-13.0	-45.9	
3765.00	-8.8	H	3.0	39.7	1.0	-47.5	-13.0	-34.5	
5647.50	-11.4	H	3.0	40.0	1.0	-50.4	-13.0	-37.4	
7530.00	-4.1	H	3.0	39.4	1.0	-42.5	-13.0	-29.5	
High Ch, 1913.5MHz									
3827.00	-17.6	V	3.0	39.7	1.0	-56.3	-13.0	-43.3	
5740.50	-23.4	V	3.0	40.0	1.0	-62.3	-13.0	-49.3	
7654.00	-19.8	V	3.0	39.3	1.0	-58.1	-13.0	-45.1	
3827.00	-13.8	H	3.0	39.7	1.0	-52.5	-13.0	-39.5	
5740.50	-23.8	H	3.0	40.0	1.0	-62.8	-13.0	-49.8	
7654.00	-20.0	H	3.0	39.3	1.0	-58.4	-13.0	-45.4	

LTE
Band 25
3MHz
16QAM

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

Company: Samsung
Project #: 4788534503
Date: 2018-07-18
Test Engineer: 45585
Configuration: EUT / AC Adapter / Earphone, X-Position
Location: Chamber 2
Mode: LTE_16QAM Band 25 Harmonics, 3MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1851.5MHz									
3703.00	-16.6	V	3.0	39.7	1.0	-55.3	-13.0	-42.3	
5554.50	-23.6	V	3.0	39.9	1.0	-62.5	-13.0	-49.5	
7406.00	-21.1	V	3.0	39.4	1.0	-59.6	-13.0	-46.6	
3703.00	-10.0	H	3.0	39.7	1.0	-48.6	-13.0	-35.6	
5554.50	-24.3	H	3.0	39.9	1.0	-63.2	-13.0	-50.2	
7406.00	-22.6	H	3.0	39.4	1.0	-61.1	-13.0	-48.1	
Mid Ch, 1882.5MHz									
3765.00	-18.4	V	3.0	39.7	1.0	-57.1	-13.0	-44.1	
5647.50	-23.8	V	3.0	40.0	1.0	-62.7	-13.0	-49.7	
7530.00	-20.8	V	3.0	39.4	1.0	-59.2	-13.0	-46.2	
3765.00	-14.5	H	3.0	39.7	1.0	-53.2	-13.0	-40.2	
5647.50	-24.2	H	3.0	40.0	1.0	-63.2	-13.0	-50.2	
7530.00	-22.0	H	3.0	39.4	1.0	-60.4	-13.0	-47.4	
High Ch, 1913.5MHz									
3827.00	-21.1	V	3.0	39.7	1.0	-59.8	-13.0	-46.8	
5740.50	-24.0	V	3.0	40.0	1.0	-62.9	-13.0	-49.9	
7654.00	-21.3	V	3.0	39.3	1.0	-59.6	-13.0	-46.6	
3827.00	-15.7	H	3.0	39.7	1.0	-54.4	-13.0	-41.4	
5740.50	-24.3	H	3.0	40.0	1.0	-63.3	-13.0	-50.3	
7654.00	-20.2	H	3.0	39.3	1.0	-58.5	-13.0	-45.5	

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LTE Band 25 1.4MHz QPSK

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

Company: Samsung
Project #: 4788534503
Date: 2018-07-18
Test Engineer: 45585
Configuration: EUT / AC Adpater / Earphone, X-Position
Location: Chamber 2
Mode: LTE_QPSK Band 25 Harmonics, 1.4MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1850.7MHz									
3701.40	-15.8	V	3.0	39.7	1.0	-54.4	-13.0	-41.4	
5552.10	-23.3	V	3.0	39.9	1.0	-62.2	-13.0	-49.2	
7402.80	-20.0	V	3.0	39.4	1.0	-58.4	-13.0	-45.4	
3701.40	-9.1	H	3.0	39.7	1.0	-47.8	-13.0	-34.8	
5552.10	-23.3	H	3.0	39.9	1.0	-62.3	-13.0	-49.3	
7402.80	-22.1	H	3.0	39.4	1.0	-60.5	-13.0	-47.5	
Mid Ch, 1882.5MHz									
3765.00	-15.5	V	3.0	39.7	1.0	-54.2	-13.0	-41.2	
5647.50	-23.1	V	3.0	40.0	1.0	-62.1	-13.0	-49.1	
7530.00	-20.3	V	3.0	39.4	1.0	-58.6	-13.0	-45.6	
3765.00	-13.3	H	3.0	39.7	1.0	-51.9	-13.0	-38.9	
5647.50	-24.1	H	3.0	40.0	1.0	-63.1	-13.0	-50.1	
7530.00	-21.8	H	3.0	39.4	1.0	-60.2	-13.0	-47.2	
High Ch, 1914.3MHz									
3828.60	-18.0	V	3.0	39.7	1.0	-56.8	-13.0	-43.8	
5742.90	-23.1	V	3.0	40.0	1.0	-62.0	-13.0	-49.0	
7657.20	-20.5	V	3.0	39.3	1.0	-58.8	-13.0	-45.8	
3828.60	-14.6	H	3.0	39.7	1.0	-53.3	-13.0	-40.3	
5742.90	-23.0	H	3.0	40.0	1.0	-62.0	-13.0	-49.0	
7657.20	-19.5	H	3.0	39.3	1.0	-57.8	-13.0	-44.8	

LTE Band 25 1.4MHz 16QAM

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

Company: Samsung
Project #: 4788534503
Date: 2018-07-18
Test Engineer: 45585
Configuration: EUT / AC Adpater / Earphone, X-Position
Location: Chamber 2
Mode: LTE_16QAM Band 25 Harmonics, 1.4MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1850.7MHz									
3701.40	-16.1	V	3.0	39.7	1.0	-54.8	-13.0	-41.8	
5552.10	-23.5	V	3.0	39.9	1.0	-62.4	-13.0	-49.4	
7402.80	-20.2	V	3.0	39.4	1.0	-58.7	-13.0	-45.7	
3701.40	-9.5	H	3.0	39.7	1.0	-48.2	-13.0	-35.2	
5552.10	-23.3	H	3.0	39.9	1.0	-62.3	-13.0	-49.3	
7402.80	-22.3	H	3.0	39.4	1.0	-60.8	-13.0	-47.8	
Mid Ch, 1882.5MHz									
3765.00	-18.1	V	3.0	39.7	1.0	-56.7	-13.0	-43.7	
5647.50	-23.7	V	3.0	40.0	1.0	-62.6	-13.0	-49.6	
7530.00	-21.1	V	3.0	39.4	1.0	-59.5	-13.0	-46.5	
3765.00	-14.4	H	3.0	39.7	1.0	-53.0	-13.0	-40.0	
5647.50	-24.2	H	3.0	40.0	1.0	-63.2	-13.0	-50.2	
7530.00	-22.4	H	3.0	39.4	1.0	-60.8	-13.0	-47.8	
High Ch, 1914.3MHz									
3828.60	-18.6	V	3.0	39.7	1.0	-57.3	-13.0	-44.3	
5742.90	-23.3	V	3.0	40.0	1.0	-62.3	-13.0	-49.3	
7657.20	-20.8	V	3.0	39.3	1.0	-59.1	-13.0	-46.1	
3828.60	-15.3	H	3.0	39.7	1.0	-54.0	-13.0	-41.0	
5742.90	-23.3	H	3.0	40.0	1.0	-62.3	-13.0	-49.3	
7657.20	-20.7	H	3.0	39.3	1.0	-59.0	-13.0	-46.0	

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LTE Band 26

LTE Band 26 15MHz QPSK

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

Company: Samsung
Project #: 4788534503
Date: 2018-07-18
Test Engineer: 45585
Configuration: EUT / AC Adapter / Earphone, X-Position
Location: Chamber 2
Mode: LTE_QPSK Band 26 Harmonics, 15MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 821.5MHz									
1643.00	-24.9	V	3.0	38.2	1.0	-62.2	-13.0	-49.2	
2464.50	-28.3	V	3.0	38.8	1.0	-66.1	-13.0	-53.1	
3286.00	-25.0	V	3.0	39.4	1.0	-63.4	-13.0	-50.4	
1643.00	-19.1	H	3.0	38.2	1.0	-56.4	-13.0	-43.4	
2464.50	-29.1	H	3.0	38.8	1.0	-66.9	-13.0	-53.9	
3286.00	-24.9	H	3.0	39.4	1.0	-63.3	-13.0	-50.3	
Mid Ch, 831.5MHz									
1663.00	-20.9	V	3.0	38.2	1.0	-58.2	-13.0	-45.2	
2494.50	-28.5	V	3.0	38.8	1.0	-66.3	-13.0	-53.3	
3326.00	-25.8	V	3.0	39.4	1.0	-64.3	-13.0	-51.3	
1663.00	-19.0	H	3.0	38.2	1.0	-56.2	-13.0	-43.2	
2494.50	-28.9	H	3.0	38.8	1.0	-66.7	-13.0	-53.7	
3326.00	-24.7	H	3.0	39.4	1.0	-63.1	-13.0	-50.1	
High Ch, 841.5MHz									
1683.00	-21.3	V	3.0	38.2	1.0	-58.6	-13.0	-45.6	
2524.50	-26.3	V	3.0	38.8	1.0	-64.1	-13.0	-51.1	
3366.00	-17.4	V	3.0	39.5	1.0	-55.8	-13.0	-42.8	
1683.00	-16.5	H	3.0	38.2	1.0	-53.7	-13.0	-40.7	
2524.50	-25.1	H	3.0	38.8	1.0	-62.9	-13.0	-49.9	
3366.00	-18.5	H	3.0	39.5	1.0	-57.0	-13.0	-44.0	

LTE Band 26 15MHz 16QAM

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

Company: Samsung
Project #: 4788534503
Date: 2018-07-18
Test Engineer: 45585
Configuration: EUT / AC Adapter / Earphone, X-Position
Location: Chamber 2
Mode: LTE_16QAM Band 26 Harmonics, 15MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 821.5MHz									
1643.00	-25.2	V	3.0	38.2	1.0	-62.4	-13.0	-49.4	
2464.50	-28.2	V	3.0	38.8	1.0	-66.0	-13.0	-53.0	
3286.00	-24.9	V	3.0	39.4	1.0	-63.3	-13.0	-50.3	
1643.00	-20.1	H	3.0	38.2	1.0	-57.3	-13.0	-44.3	
2464.50	-29.0	H	3.0	38.8	1.0	-66.8	-13.0	-53.8	
3286.00	-24.9	H	3.0	39.4	1.0	-63.3	-13.0	-50.3	
Mid Ch, 831.5MHz									
1663.00	-18.6	V	3.0	38.2	1.0	-55.8	-13.0	-42.8	
2494.50	-28.2	V	3.0	38.8	1.0	-66.1	-13.0	-53.1	
3326.00	-26.4	V	3.0	39.4	1.0	-64.9	-13.0	-51.9	
1663.00	-22.1	H	3.0	38.2	1.0	-59.3	-13.0	-46.3	
2494.50	-28.5	H	3.0	38.8	1.0	-66.3	-13.0	-53.3	
3326.00	-24.3	H	3.0	39.4	1.0	-62.8	-13.0	-49.8	
High Ch, 841.5MHz									
1683.00	-22.3	V	3.0	38.2	1.0	-59.6	-13.0	-46.6	
2524.50	-26.5	V	3.0	38.8	1.0	-64.4	-13.0	-51.4	
3366.00	-18.5	V	3.0	39.5	1.0	-57.0	-13.0	-44.0	
1683.00	-17.8	H	3.0	38.2	1.0	-55.0	-13.0	-42.0	
2524.50	-25.6	H	3.0	38.8	1.0	-63.4	-13.0	-50.4	
3366.00	-19.5	H	3.0	39.5	1.0	-57.9	-13.0	-44.9	

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LTE Band 26 10MHz QPSK

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

Company: Samsung
Project #: 4788534503
Date: 2018-07-17
Test Engineer: 51078
Configuration: EUT / AC Adapter / Earphone, X-Position
Location: Chamber 2
Mode: LTE_QPSK Band 26 Harmonics, 10MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 819MHz									
1638.00	-21.1	V	3.0	38.2	1.0	-58.4	-13.0	-45.4	
2457.00	-28.5	V	3.0	38.8	1.0	-66.3	-13.0	-53.3	
3276.00	-24.8	V	3.0	39.4	1.0	-63.2	-13.0	-50.2	
1638.00	-19.2	H	3.0	38.2	1.0	-56.5	-13.0	-43.5	
2457.00	-28.8	H	3.0	38.8	1.0	-66.6	-13.0	-53.6	
3276.00	-24.5	H	3.0	39.4	1.0	-62.9	-13.0	-49.9	
Mid Ch, 831.5MHz									
1663.00	-17.6	V	3.0	38.2	1.0	-54.9	-13.0	-41.9	
2494.50	-28.0	V	3.0	38.8	1.0	-65.8	-13.0	-52.8	
3326.00	-22.4	V	3.0	39.4	1.0	-60.8	-13.0	-47.8	
1663.00	-17.5	H	3.0	38.2	1.0	-54.7	-13.0	-41.7	
2494.50	-27.7	H	3.0	38.8	1.0	-65.5	-13.0	-52.5	
3326.00	-23.5	H	3.0	39.4	1.0	-61.9	-13.0	-48.9	
High Ch, 844MHz									
1688.00	-21.1	V	3.0	38.2	1.0	-58.4	-13.0	-45.4	
2532.00	-26.5	V	3.0	38.9	1.0	-64.4	-13.0	-51.4	
3376.00	-19.6	V	3.0	39.5	1.0	-58.1	-13.0	-45.1	
1688.00	-16.2	H	3.0	38.2	1.0	-53.4	-13.0	-40.4	
2532.00	-25.5	H	3.0	38.9	1.0	-63.3	-13.0	-50.3	
3376.00	-18.2	H	3.0	39.5	1.0	-56.7	-13.0	-43.7	

LTE Band 26 10MHz 16QAM

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

Company: Samsung
Project #: 4788534503
Date: 2018-07-17
Test Engineer: 51078
Configuration: EUT / AC Adapter / Earphone, X-Position
Location: Chamber 2
Mode: LTE_16QAM Band 26 Harmonics, 10MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 819MHz									
1638.00	-21.2	V	3.0	38.2	1.0	-58.5	-13.0	-45.5	
2457.00	-28.4	V	3.0	38.8	1.0	-66.2	-13.0	-53.2	
3276.00	-24.1	V	3.0	39.4	1.0	-62.5	-13.0	-49.5	
1638.00	-21.3	H	3.0	38.2	1.0	-58.5	-13.0	-45.5	
2457.00	-28.9	H	3.0	38.8	1.0	-66.7	-13.0	-53.7	
3276.00	-23.3	H	3.0	39.4	1.0	-61.7	-13.0	-48.7	
Mid Ch, 831.5MHz									
1663.00	-19.0	V	3.0	38.2	1.0	-56.3	-13.0	-43.3	
2494.50	-28.1	V	3.0	38.8	1.0	-66.0	-13.0	-53.0	
3326.00	-23.3	V	3.0	39.4	1.0	-61.8	-13.0	-48.8	
1663.00	-18.7	H	3.0	38.2	1.0	-55.9	-13.0	-42.9	
2494.50	-28.1	H	3.0	38.8	1.0	-65.9	-13.0	-52.9	
3326.00	-24.1	H	3.0	39.4	1.0	-62.5	-13.0	-49.5	
High Ch, 844MHz									
1688.00	-17.4	V	3.0	38.2	1.0	-54.6	-13.0	-41.6	
2532.00	-26.6	V	3.0	38.9	1.0	-64.4	-13.0	-51.4	
3376.00	-19.8	V	3.0	39.5	1.0	-58.3	-13.0	-45.3	
1688.00	-18.2	H	3.0	38.2	1.0	-55.4	-13.0	-42.4	
2532.00	-26.4	H	3.0	38.9	1.0	-64.2	-13.0	-51.2	
3376.00	-20.6	H	3.0	39.5	1.0	-59.1	-13.0	-46.1	

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LTE

Band 26

5MHz

QPSK

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

Company: Samsung
Project #: 4788534503
Date: 2018-07-17
Test Engineer: 51072
Configuration: EUT / AC Adapter / Earphone, X-Position
Location: Chamber 2
Mode: LTE_QPSK Band 26 Harmonics, 5MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 816.5MHz									
1633.00	-21.5	V	3.0	38.2	1.0	-58.7	-13.0	-45.7	
2449.50	-27.4	V	3.0	38.8	1.0	-65.2	-13.0	-52.2	
3266.00	-23.3	V	3.0	39.4	1.0	-61.7	-13.0	-48.7	
1633.00	-20.2	H	3.0	38.2	1.0	-57.4	-13.0	-44.4	
2449.50	-27.6	H	3.0	38.8	1.0	-65.4	-13.0	-52.4	
3266.00	-24.2	H	3.0	39.4	1.0	-62.6	-13.0	-49.6	
Mid Ch, 831.5MHz									
1663.00	-18.8	V	3.0	38.2	1.0	-56.1	-13.0	-43.1	
2494.50	-27.8	V	3.0	38.8	1.0	-65.7	-13.0	-52.7	
3326.00	-26.3	V	3.0	39.4	1.0	-64.8	-13.0	-51.8	
1663.00	-20.4	H	3.0	38.2	1.0	-57.6	-13.0	-44.6	
2494.50	-27.8	H	3.0	38.8	1.0	-65.7	-13.0	-52.7	
3326.00	-22.4	H	3.0	39.4	1.0	-60.8	-13.0	-47.8	
High Ch, 846.5MHz									
1693.00	-20.2	V	3.0	38.2	1.0	-57.4	-13.0	-44.4	
2539.50	-24.1	V	3.0	38.9	1.0	-62.0	-13.0	-49.0	
3386.00	-20.5	V	3.0	39.5	1.0	-58.9	-13.0	-45.9	
1693.00	-16.7	H	3.0	38.2	1.0	-53.9	-13.0	-40.9	
2539.50	-23.6	H	3.0	38.9	1.0	-61.4	-13.0	-48.4	
3386.00	-19.0	H	3.0	39.5	1.0	-57.5	-13.0	-44.5	

LTE

Band 26

5MHz

16QAM

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

Company: Samsung
Project #: 4788534503
Date: 2018-07-17
Test Engineer: 51072
Configuration: EUT / AC Adapter / Earphone, X-Position
Location: Chamber 2
Mode: LTE_16QAM Band 26 Harmonics, 5MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 816.5MHz									
1633.00	-23.3	V	3.0	38.2	1.0	-60.5	-13.0	-47.5	
2449.50	-28.4	V	3.0	38.8	1.0	-66.2	-13.0	-53.2	
3266.00	-24.0	V	3.0	39.4	1.0	-62.4	-13.0	-49.4	
1633.00	-22.1	H	3.0	38.2	1.0	-59.4	-13.0	-46.4	
2449.50	-28.0	H	3.0	38.8	1.0	-65.8	-13.0	-52.8	
3266.00	-24.6	H	3.0	39.4	1.0	-63.0	-13.0	-50.0	
Mid Ch, 831.5MHz									
1663.00	-20.2	V	3.0	38.2	1.0	-57.4	-13.0	-44.4	
2494.50	-28.3	V	3.0	38.8	1.0	-66.1	-13.0	-53.1	
3326.00	-26.7	V	3.0	39.4	1.0	-65.2	-13.0	-52.2	
1663.00	-22.1	H	3.0	38.2	1.0	-59.3	-13.0	-46.3	
2494.50	-28.3	H	3.0	38.8	1.0	-66.2	-13.0	-53.2	
3326.00	-23.7	H	3.0	39.4	1.0	-62.1	-13.0	-49.1	
High Ch, 846.5MHz									
1693.00	-21.4	V	3.0	38.2	1.0	-58.7	-13.0	-45.7	
2539.50	-25.0	V	3.0	38.9	1.0	-62.9	-13.0	-49.9	
3386.00	-21.4	V	3.0	39.5	1.0	-59.9	-13.0	-46.9	
1693.00	-17.8	H	3.0	38.2	1.0	-55.0	-13.0	-42.0	
2539.50	-24.3	H	3.0	38.9	1.0	-62.2	-13.0	-49.2	
3386.00	-19.6	H	3.0	39.5	1.0	-58.1	-13.0	-45.1	

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LTE
Band 26
3MHz
QPSK

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

Company: Samsung
Project #: 4788534503
Date: 2018-07-17
Test Engineer: 45585
Configuration: EUT / AC Adapter / Earphone, X-Position
Location: Chamber 2
Mode: LTE_QPSK Band 26 Harmonics, 3MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 815.5MHz									
1631.00	-21.9	V	3.0	38.2	1.0	-59.1	-13.0	-46.1	
2446.50	-28.4	V	3.0	38.8	1.0	-66.2	-13.0	-53.2	
3262.00	-24.2	V	3.0	39.4	1.0	-62.6	-13.0	-49.6	
1631.00	-22.2	H	3.0	38.2	1.0	-59.4	-13.0	-46.4	
2446.50	-28.8	H	3.0	38.8	1.0	-66.6	-13.0	-53.6	
3262.00	-22.3	H	3.0	39.4	1.0	-60.7	-13.0	-47.7	
Mid Ch, 831.5MHz									
1663.00	-18.5	V	3.0	38.2	1.0	-55.8	-13.0	-42.8	
2494.50	-27.9	V	3.0	38.8	1.0	-65.7	-13.0	-52.7	
3326.00	-26.3	V	3.0	39.4	1.0	-64.7	-13.0	-51.7	
1663.00	-19.5	H	3.0	38.2	1.0	-56.7	-13.0	-43.7	
2494.50	-27.9	H	3.0	38.8	1.0	-65.8	-13.0	-52.8	
3326.00	-22.3	H	3.0	39.4	1.0	-60.7	-13.0	-47.7	
High Ch, 847.5MHz									
1695.00	-17.8	V	3.0	38.2	1.0	-55.1	-13.0	-42.1	
2542.50	-24.3	V	3.0	38.9	1.0	-62.1	-13.0	-49.1	
3390.00	-23.1	V	3.0	39.5	1.0	-61.6	-13.0	-48.6	
1695.00	-16.3	H	3.0	38.2	1.0	-53.5	-13.0	-40.5	
2542.50	-24.6	H	3.0	38.9	1.0	-62.5	-13.0	-49.5	
3390.00	-18.4	H	3.0	39.5	1.0	-56.9	-13.0	-43.9	

LTE
Band 26
3MHz
16QAM

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

Company: Samsung
Project #: 4788534503
Date: 2018-07-17
Test Engineer: 45585
Configuration: EUT / AC Adapter / Earphone, X-Position
Location: Chamber 2
Mode: LTE_16QAM Band 26 Harmonics, 3MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 815.5MHz									
1631.00	-22.5	V	3.0	38.2	1.0	-59.7	-13.0	-46.7	
2446.50	-28.6	V	3.0	38.8	1.0	-66.3	-13.0	-53.3	
3262.00	-24.9	V	3.0	39.4	1.0	-63.3	-13.0	-50.3	
1631.00	-23.2	H	3.0	38.2	1.0	-60.4	-13.0	-47.4	
2446.50	-29.0	H	3.0	38.8	1.0	-66.8	-13.0	-53.8	
3262.00	-23.2	H	3.0	39.4	1.0	-61.6	-13.0	-48.6	
Mid Ch, 831.5MHz									
1663.00	-20.0	V	3.0	38.2	1.0	-57.2	-13.0	-44.2	
2494.50	-28.2	V	3.0	38.8	1.0	-66.0	-13.0	-53.0	
3326.00	-26.8	V	3.0	39.4	1.0	-65.2	-13.0	-52.2	
1663.00	-20.7	H	3.0	38.2	1.0	-57.9	-13.0	-44.9	
2494.50	-28.1	H	3.0	38.8	1.0	-65.9	-13.0	-52.9	
3326.00	-23.2	H	3.0	39.4	1.0	-61.6	-13.0	-48.6	
High Ch, 847.5MHz									
1695.00	-19.1	V	3.0	38.2	1.0	-56.3	-13.0	-43.3	
2542.50	-25.1	V	3.0	38.9	1.0	-62.9	-13.0	-49.9	
3390.00	-23.7	V	3.0	39.5	1.0	-62.2	-13.0	-49.2	
1695.00	-17.6	H	3.0	38.2	1.0	-54.8	-13.0	-41.8	
2542.50	-25.6	H	3.0	38.9	1.0	-63.4	-13.0	-50.4	
3390.00	-19.2	H	3.0	39.5	1.0	-57.7	-13.0	-44.7	

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LTE Band 26 1.4MHz QPSK

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

Company: Samsung
Project #: 4788534503
Date: 2018-07-17
Test Engineer: 47989
Configuration: EUT / AC Adapter / Earphone, X-Position
Location: Chamber 2
Mode: LTE_QPSK Band 26 Harmonics, 1.4MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 814.7MHz									
1629.40	-22.8	V	3.0	38.2	1.0	-60.0	-13.0	-47.0	
2444.10	-28.1	V	3.0	38.8	1.0	-65.9	-13.0	-52.9	
3258.80	-23.1	V	3.0	39.4	1.0	-61.5	-13.0	-48.5	
1629.40	-21.7	H	3.0	38.2	1.0	-58.9	-13.0	-45.9	
2444.10	-28.1	H	3.0	38.8	1.0	-65.8	-13.0	-52.8	
3258.80	-23.1	H	3.0	39.4	1.0	-61.5	-13.0	-48.5	
Mid Ch, 831.5MHz									
1663.00	-19.3	V	3.0	38.2	1.0	-56.5	-13.0	-43.5	
2494.50	-27.9	V	3.0	38.8	1.0	-65.7	-13.0	-52.7	
3326.00	-24.6	V	3.0	39.4	1.0	-63.0	-13.0	-50.0	
1663.00	-19.8	H	3.0	38.2	1.0	-57.0	-13.0	-44.0	
2494.50	-28.6	H	3.0	38.8	1.0	-66.4	-13.0	-53.4	
3326.00	-24.1	H	3.0	39.4	1.0	-62.5	-13.0	-49.5	
High Ch, 848.3MHz									
1696.60	-21.2	V	3.0	38.2	1.0	-58.4	-13.0	-45.4	
2544.90	-26.7	V	3.0	38.9	1.0	-64.5	-13.0	-51.5	
3393.20	-19.0	V	3.0	39.5	1.0	-57.5	-13.0	-44.5	
1696.60	-16.0	H	3.0	38.2	1.0	-53.2	-13.0	-40.2	
2544.90	-24.8	H	3.0	38.9	1.0	-62.7	-13.0	-49.7	
3393.20	-18.1	H	3.0	39.5	1.0	-56.6	-13.0	-43.6	

LTE Band 26 1.4MHz 16QAM

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

Company: Samsung
Project #: 4788534503
Date: 2018-07-17
Test Engineer: 47989
Configuration: EUT / AC Adapter / Earphone, X-Position
Location: Chamber 2
Mode: LTE_16QAM Band 26 Harmonics, 1.4MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 814.7MHz									
1629.40	-23.9	V	3.0	38.2	1.0	-61.1	-13.0	-48.1	
2444.10	-28.2	V	3.0	38.8	1.0	-66.0	-13.0	-53.0	
3258.80	-23.5	V	3.0	39.4	1.0	-62.0	-13.0	-49.0	
1629.40	-23.2	H	3.0	38.2	1.0	-60.4	-13.0	-47.4	
2444.10	-28.4	H	3.0	38.8	1.0	-66.2	-13.0	-53.2	
3258.80	-23.7	H	3.0	39.4	1.0	-62.1	-13.0	-49.1	
Mid Ch, 831.5MHz									
1663.00	-20.4	V	3.0	38.2	1.0	-57.6	-13.0	-44.6	
2494.50	-28.0	V	3.0	38.8	1.0	-65.8	-13.0	-52.8	
3326.00	-25.0	V	3.0	39.4	1.0	-63.5	-13.0	-50.5	
1663.00	-20.7	H	3.0	38.2	1.0	-57.9	-13.0	-44.9	
2494.50	-28.6	H	3.0	38.8	1.0	-66.4	-13.0	-53.4	
3326.00	-24.9	H	3.0	39.4	1.0	-63.4	-13.0	-50.4	
High Ch, 848.3MHz									
1696.60	-22.2	V	3.0	38.2	1.0	-59.5	-13.0	-46.5	
2544.90	-27.0	V	3.0	38.9	1.0	-64.8	-13.0	-51.8	
3393.20	-17.8	V	3.0	39.5	1.0	-56.3	-13.0	-43.3	
1696.60	-17.3	H	3.0	38.2	1.0	-54.5	-13.0	-41.5	
2544.90	-25.2	H	3.0	38.9	1.0	-63.1	-13.0	-50.1	
3393.20	-19.1	H	3.0	39.5	1.0	-57.6	-13.0	-44.6	

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LTE Band 41

LTE

Band 41

20MHz

QPSK

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

Company:	Samsung
Project #:	4788534503
Date:	2018-07-15
Test Engineer:	47989
Configuration:	EUT / AC Adapter / Earphone, X-Position
Location:	Chamber 1
Mode:	LTE_QPSK Band 41 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, 2506MHz									
5012.00	2.5	V	3.0	43.8	1.0	-40.3	-25.0	-15.3	
7518.00	-3.5	V	3.0	42.5	1.0	-45.0	-25.0	-20.0	
10024.00	-14.0	V	3.0	40.6	1.0	-53.6	-25.0	-28.6	
12530.00	-7.9	V	3.0	41.6	1.0	-48.5	-25.0	-23.5	
5012.00	1.1	H	3.0	43.8	1.0	-41.7	-25.0	-16.7	
7518.00	-4.6	H	3.0	42.5	1.0	-46.1	-25.0	-21.1	
10024.00	-4.4	H	3.0	40.6	1.0	-44.0	-25.0	-19.0	
12530.00	-8.7	H	3.0	41.6	1.0	-49.3	-25.0	-24.3	
Mid Ch, 2593MHz									
5186.00	0.8	V	3.0	43.8	1.0	-41.9	-25.0	-16.9	
7779.00	2.3	V	3.0	42.3	1.0	-39.0	-25.0	-14.0	
10372.00	-13.1	V	3.0	40.7	1.0	-52.8	-25.0	-27.8	
12965.00	-8.6	V	3.0	42.0	1.0	-49.6	-25.0	-24.6	
5186.00	-0.6	H	3.0	43.8	1.0	-43.3	-25.0	-18.3	
7779.00	-0.4	H	3.0	42.3	1.0	-41.7	-25.0	-16.7	
10372.00	-13.5	H	3.0	40.7	1.0	-53.2	-25.0	-28.2	
12965.00	-9.9	H	3.0	42.0	1.0	-50.9	-25.0	-25.9	
High Ch, 2680MHz									
5360.00	2.0	V	3.0	43.7	1.0	-40.8	-25.0	-15.8	
8040.00	10.9	V	3.0	42.2	1.0	-30.3	-25.0	-5.3	
10720.00	-7.9	V	3.0	40.8	1.0	-47.6	-25.0	-22.6	
13400.00	-1.9	V	3.0	42.4	1.0	-43.3	-25.0	-18.3	
5360.00	0.1	H	3.0	43.7	1.0	-42.6	-25.0	-17.6	
8040.00	8.8	H	3.0	42.2	1.0	-32.4	-25.0	-7.4	
10720.00	-10.9	H	3.0	40.8	1.0	-50.7	-25.0	-25.7	
13400.00	-4.0	H	3.0	42.4	1.0	-45.4	-25.0	-20.4	

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
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LTE

Band 41

20MHz

16QAM

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

Company: Samsung
Project #: 4788534503
Date: 2018-07-15
Test Engineer: 47989
Configuration: EUT / AC Adapter / Earphone, X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 41 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, 2506MHz									
5012.00	1.8	V	3.0	43.8	1.0	-41.0	-25.0	-16.0	
7518.00	-6.5	V	3.0	42.5	1.0	-47.9	-25.0	-22.9	
10024.00	-14.1	V	3.0	40.6	1.0	-53.6	-25.0	-28.6	
12530.00	-7.7	V	3.0	41.6	1.0	-48.3	-25.0	-23.3	
5012.00	1.1	H	3.0	43.8	1.0	-41.7	-25.0	-16.7	
7518.00	-4.6	H	3.0	42.5	1.0	-46.1	-25.0	-21.1	
10024.00	-5.2	H	3.0	40.6	1.0	-44.8	-25.0	-19.8	
12530.00	-8.3	H	3.0	41.6	1.0	-48.9	-25.0	-23.9	
Mid Ch, 2593MHz									
5186.00	-0.1	V	3.0	43.8	1.0	-42.8	-25.0	-17.8	
7779.00	4.8	V	3.0	42.3	1.0	-36.6	-25.0	-11.6	
10372.00	-13.2	V	3.0	40.7	1.0	-52.8	-25.0	-27.8	
12965.00	-8.1	V	3.0	42.0	1.0	-49.1	-25.0	-24.1	
5186.00	-1.3	H	3.0	43.8	1.0	-44.1	-25.0	-19.1	
7779.00	0.7	H	3.0	42.3	1.0	-40.7	-25.0	-15.7	
10372.00	-13.7	H	3.0	40.7	1.0	-53.4	-25.0	-28.4	
12965.00	-9.9	H	3.0	42.0	1.0	-50.9	-25.0	-25.9	
High Ch, 2680MHz									
5360.00	2.4	V	3.0	43.7	1.0	-40.4	-25.0	-15.4	
8040.00	9.5	V	3.0	42.2	1.0	-31.6	-25.0	-6.6	
10720.00	-8.1	V	3.0	40.8	1.0	-47.9	-25.0	-22.9	
13400.00	-3.2	V	3.0	42.4	1.0	-44.6	-25.0	-19.6	
5360.00	0.4	H	3.0	43.7	1.0	-42.3	-25.0	-17.3	
8040.00	8.7	H	3.0	42.2	1.0	-32.4	-25.0	-7.4	
10720.00	-9.6	H	3.0	40.8	1.0	-49.4	-25.0	-24.4	
13400.00	-3.9	H	3.0	42.4	1.0	-45.3	-25.0	-20.3	

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LTE

Band 41

15MHz

QPSK

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

Company: Samsung
Project #: 4788534503
Date: 2018-07-15
Test Engineer: 47989
Configuration: EUT / AC Adapter / Earphone, X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 41 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, 2503.5MHz									
5007.00	0.2	V	3.0	43.8	1.0	-42.6	-25.0	-17.6	
7510.50	-5.3	V	3.0	42.5	1.0	-46.7	-25.0	-21.7	
10014.00	-14.0	V	3.0	40.6	1.0	-53.6	-25.0	-28.6	
12517.50	-8.0	V	3.0	41.6	1.0	-48.6	-25.0	-23.6	
5007.00	-0.5	H	3.0	43.8	1.0	-43.3	-25.0	-18.3	
7510.50	-8.5	H	3.0	42.5	1.0	-50.0	-25.0	-25.0	
10014.00	-2.7	H	3.0	40.6	1.0	-42.2	-25.0	-17.2	
12517.50	-10.0	H	3.0	41.6	1.0	-50.6	-25.0	-25.6	
Mid Ch, 2593MHz									
5186.00	2.8	V	3.0	43.8	1.0	-40.0	-25.0	-15.0	
7779.00	1.2	V	3.0	42.3	1.0	-40.1	-25.0	-15.1	
10372.00	-12.5	V	3.0	40.7	1.0	-52.2	-25.0	-27.2	
12965.00	-8.6	V	3.0	42.0	1.0	-49.5	-25.0	-24.5	
5186.00	2.5	H	3.0	43.8	1.0	-40.2	-25.0	-15.2	
7779.00	-0.4	H	3.0	42.3	1.0	-41.7	-25.0	-16.7	
10372.00	-12.7	H	3.0	40.7	1.0	-52.3	-25.0	-27.3	
12965.00	-9.4	H	3.0	42.0	1.0	-50.4	-25.0	-25.4	
High Ch, 2682.5MHz									
5365.00	2.2	V	3.0	43.7	1.0	-40.6	-25.0	-15.6	
8047.50	5.3	V	3.0	42.2	1.0	-35.9	-25.0	-10.9	
10730.00	-11.2	V	3.0	40.8	1.0	-51.0	-25.0	-26.0	
13412.50	-1.0	V	3.0	42.4	1.0	-42.4	-25.0	-17.4	
5365.00	1.6	H	3.0	43.7	1.0	-41.1	-25.0	-16.1	
8047.50	5.1	H	3.0	42.2	1.0	-36.0	-25.0	-11.0	
10730.00	-12.7	H	3.0	40.8	1.0	-52.5	-25.0	-27.5	
13412.50	-6.6	H	3.0	42.4	1.0	-47.9	-25.0	-22.9	

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LTE

Band 41

15MHz

16QAM

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

Company: Samsung
Project #: 4788534503
Date: 2018-07-15
Test Engineer: 47989
Configuration: EUT / AC Adapter / Earphone, X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 41 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, 2503.5MHz									
5007.00	0.4	V	3.0	43.8	1.0	-42.3	-25.0	-17.3	
7510.50	-4.8	V	3.0	42.5	1.0	-46.3	-25.0	-21.3	
10014.00	-14.1	V	3.0	40.6	1.0	-53.7	-25.0	-28.7	
12517.50	-9.0	V	3.0	41.6	1.0	-49.6	-25.0	-24.6	
5007.00	0.4	H	3.0	43.8	1.0	-42.4	-25.0	-17.4	
7510.50	-9.1	H	3.0	42.5	1.0	-50.6	-25.0	-25.6	
10014.00	-3.5	H	3.0	40.6	1.0	-43.0	-25.0	-18.0	
12517.50	-10.8	H	3.0	41.6	1.0	-51.5	-25.0	-26.5	
Mid Ch, 2593MHz									
5186.00	2.9	V	3.0	43.8	1.0	-39.8	-25.0	-14.8	
7779.00	1.8	V	3.0	42.3	1.0	-39.5	-25.0	-14.5	
10372.00	-12.0	V	3.0	40.7	1.0	-51.7	-25.0	-26.7	
12965.00	-7.4	V	3.0	42.0	1.0	-48.4	-25.0	-23.4	
5186.00	2.6	H	3.0	43.8	1.0	-40.2	-25.0	-15.2	
7779.00	-0.4	H	3.0	42.3	1.0	-41.7	-25.0	-16.7	
10372.00	-13.2	H	3.0	40.7	1.0	-52.8	-25.0	-27.8	
12965.00	-9.3	H	3.0	42.0	1.0	-50.3	-25.0	-25.3	
High Ch, 2682.5MHz									
5365.00	1.8	V	3.0	43.7	1.0	-41.0	-25.0	-16.0	
8047.50	7.8	V	3.0	42.2	1.0	-33.4	-25.0	-8.4	
10730.00	-10.9	V	3.0	40.8	1.0	-50.6	-25.0	-25.6	
13412.50	-0.9	V	3.0	42.4	1.0	-42.3	-25.0	-17.3	
5365.00	2.9	H	3.0	43.7	1.0	-39.8	-25.0	-14.8	
8047.50	5.7	H	3.0	42.2	1.0	-35.5	-25.0	-10.5	
10730.00	-13.0	H	3.0	40.8	1.0	-52.7	-25.0	-27.7	
13412.50	-6.3	H	3.0	42.4	1.0	-47.7	-25.0	-22.7	

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LTE

Band 41

10MHz

QPSK

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

Company: Samsung
Project #: 4788534503
Date: 2018-07-15
Test Engineer: 47989
Configuration: EUT / AC Adapter / Earphone, X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 41 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, 2501MHz									
5002.00	-2.2	V	3.0	43.8	1.0	-45.0	-25.0	-20.0	
7503.00	-9.5	V	3.0	42.5	1.0	-50.9	-25.0	-25.9	
10004.00	-13.4	V	3.0	40.6	1.0	-53.0	-25.0	-28.0	
12505.00	-10.0	V	3.0	41.6	1.0	-50.6	-25.0	-25.6	
5002.00	-0.7	H	3.0	43.8	1.0	-43.5	-25.0	-18.5	
7503.00	-5.4	H	3.0	42.5	1.0	-46.9	-25.0	-21.9	
10004.00	-12.9	H	3.0	40.6	1.0	-52.4	-25.0	-27.4	
12505.00	-5.6	H	3.0	41.6	1.0	-46.2	-25.0	-21.2	
Mid Ch, 2593MHz									
5186.00	3.1	V	3.0	43.8	1.0	-39.7	-25.0	-14.7	
7779.00	-4.9	V	3.0	42.3	1.0	-46.2	-25.0	-21.2	
10372.00	-13.4	V	3.0	40.7	1.0	-53.0	-25.0	-28.0	
12965.00	-7.8	V	3.0	42.0	1.0	-48.8	-25.0	-23.8	
5186.00	0.6	H	3.0	43.8	1.0	-42.1	-25.0	-17.1	
7779.00	-5.2	H	3.0	42.3	1.0	-46.5	-25.0	-21.5	
10372.00	-13.3	H	3.0	40.7	1.0	-53.0	-25.0	-28.0	
12965.00	-9.7	H	3.0	42.0	1.0	-50.7	-25.0	-25.7	
High Ch, 2685MHz									
5370.00	4.3	V	3.0	43.7	1.0	-38.5	-25.0	-13.5	
8055.00	-7.8	V	3.0	42.2	1.0	-49.0	-25.0	-24.0	
10740.00	-10.3	V	3.0	40.8	1.0	-50.1	-25.0	-25.1	
13425.00	-1.8	V	3.0	42.4	1.0	-43.2	-25.0	-18.2	
5370.00	2.9	H	3.0	43.7	1.0	-39.8	-25.0	-14.8	
8055.00	-10.7	H	3.0	42.2	1.0	-51.9	-25.0	-26.9	
10740.00	-12.9	H	3.0	40.8	1.0	-52.7	-25.0	-27.7	
13425.00	-6.1	H	3.0	42.4	1.0	-47.5	-25.0	-22.5	

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LTE

Band 41

10MHz

16QAM

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

Company: Samsung
Project #: 4788534503
Date: 2018-07-15
Test Engineer: 47989
Configuration: EUT / AC Adapter / Earphone, X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 41 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, 2501MHz									
5002.00	-2.1	V	3.0	43.8	1.0	-44.9	-25.0	-19.9	
7503.00	-10.5	V	3.0	42.5	1.0	-52.0	-25.0	-27.0	
10004.00	-13.6	V	3.0	40.6	1.0	-53.2	-25.0	-28.2	
12505.00	-9.2	V	3.0	41.6	1.0	-49.9	-25.0	-24.9	
5002.00	0.4	H	3.0	43.8	1.0	-42.4	-25.0	-17.4	
7503.00	-4.7	H	3.0	42.5	1.0	-46.1	-25.0	-21.1	
10004.00	-13.1	H	3.0	40.6	1.0	-52.6	-25.0	-27.6	
12505.00	-6.3	H	3.0	41.6	1.0	-46.9	-25.0	-21.9	
Mid Ch, 2593MHz									
5186.00	2.6	V	3.0	43.8	1.0	-40.1	-25.0	-15.1	
7779.00	-4.5	V	3.0	42.3	1.0	-45.8	-25.0	-20.8	
10372.00	-12.7	V	3.0	40.7	1.0	-52.4	-25.0	-27.4	
12965.00	-7.9	V	3.0	42.0	1.0	-48.9	-25.0	-23.9	
5186.00	-1.0	H	3.0	43.8	1.0	-43.8	-25.0	-18.8	
7779.00	-5.4	H	3.0	42.3	1.0	-46.7	-25.0	-21.7	
10372.00	-13.2	H	3.0	40.7	1.0	-52.9	-25.0	-27.9	
12965.00	-9.7	H	3.0	42.0	1.0	-50.7	-25.0	-25.7	
High Ch, 2685MHz									
5370.00	4.7	V	3.0	43.7	1.0	-38.0	-25.0	-13.0	
8055.00	-6.9	V	3.0	42.2	1.0	-48.1	-25.0	-23.1	
10740.00	-9.7	V	3.0	40.8	1.0	-49.5	-25.0	-24.5	
13425.00	-1.8	V	3.0	42.4	1.0	-43.2	-25.0	-18.2	
5370.00	3.3	H	3.0	43.7	1.0	-39.4	-25.0	-14.4	
8055.00	-10.7	H	3.0	42.2	1.0	-51.9	-25.0	-26.9	
10740.00	-13.0	H	3.0	40.8	1.0	-52.8	-25.0	-27.8	
13425.00	-6.8	H	3.0	42.4	1.0	-48.1	-25.0	-23.1	

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LTE

Band 41

5MHz

QPSK

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

Company: Samsung
Project #: 4788534503
Date: 2018-07-15
Test Engineer: 47989
Configuration: EUT / AC Adapter / Earphone, X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 41 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, 2498.5MHz									
4997.00	-1.4	V	3.0	43.8	1.0	-44.1	-25.0	-19.1	
7495.50	-7.8	V	3.0	42.5	1.0	-49.2	-25.0	-24.2	
9994.00	-14.5	V	3.0	40.6	1.0	-54.0	-25.0	-29.0	
12492.50	-6.9	V	3.0	41.6	1.0	-47.5	-25.0	-22.5	
4997.00	-2.2	H	3.0	43.8	1.0	-45.0	-25.0	-20.0	
7495.50	-10.4	H	3.0	42.5	1.0	-51.9	-25.0	-26.9	
9994.00	-14.1	H	3.0	40.6	1.0	-53.7	-25.0	-28.7	
12492.50	-10.3	H	3.0	41.6	1.0	-50.9	-25.0	-25.9	
Mid Ch, 2593MHz									
5186.00	2.5	V	3.0	43.8	1.0	-40.3	-25.0	-15.3	
7779.00	-4.6	V	3.0	42.3	1.0	-45.9	-25.0	-20.9	
10372.00	-14.0	V	3.0	40.7	1.0	-53.7	-25.0	-28.7	
12965.00	-9.3	V	3.0	42.0	1.0	-50.3	-25.0	-25.3	
5186.00	-2.6	H	3.0	43.8	1.0	-45.4	-25.0	-20.4	
7779.00	-4.7	H	3.0	42.3	1.0	-46.0	-25.0	-21.0	
10372.00	-12.9	H	3.0	40.7	1.0	-52.5	-25.0	-27.5	
12965.00	-8.5	H	3.0	42.0	1.0	-49.5	-25.0	-24.5	
High Ch, 2687.5MHz									
5375.00	1.7	V	3.0	43.7	1.0	-41.1	-25.0	-16.1	
8062.50	-9.4	V	3.0	42.2	1.0	-50.6	-25.0	-25.6	
10750.00	-11.6	V	3.0	40.8	1.0	-51.4	-25.0	-26.4	
13437.50	-1.1	V	3.0	42.4	1.0	-42.5	-25.0	-17.5	
5375.00	3.3	H	3.0	43.7	1.0	-39.4	-25.0	-14.4	
8062.50	-10.0	H	3.0	42.2	1.0	-51.1	-25.0	-26.1	
10750.00	-13.1	H	3.0	40.8	1.0	-52.8	-25.0	-27.8	
13437.50	-5.6	H	3.0	42.4	1.0	-47.0	-25.0	-22.0	

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LTE

Band 41

5MHz

16QAM

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

Company: Samsung
Project #: 4788534503
Date: 2018-07-15
Test Engineer: 47989
Configuration: EUT / AC Adapter / Earphone, X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 41 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, 2498.5MHz									
4997.00	-0.8	V	3.0	43.8	1.0	-43.6	-25.0	-18.6	
7495.50	-8.2	V	3.0	42.5	1.0	-49.7	-25.0	-24.7	
9994.00	-14.5	V	3.0	40.6	1.0	-54.1	-25.0	-29.1	
12492.50	-5.8	V	3.0	41.6	1.0	-46.4	-25.0	-21.4	
4997.00	-1.4	H	3.0	43.8	1.0	-44.2	-25.0	-19.2	
7495.50	-11.4	H	3.0	42.5	1.0	-52.9	-25.0	-27.9	
9994.00	-14.8	H	3.0	40.6	1.0	-54.4	-25.0	-29.4	
12492.50	-8.6	H	3.0	41.6	1.0	-49.2	-25.0	-24.2	
Mid Ch, 2593MHz									
5186.00	2.5	V	3.0	43.8	1.0	-40.2	-25.0	-15.2	
7779.00	-4.6	V	3.0	42.3	1.0	-45.9	-25.0	-20.9	
10372.00	-13.2	V	3.0	40.7	1.0	-52.9	-25.0	-27.9	
12965.00	-8.5	V	3.0	42.0	1.0	-49.5	-25.0	-24.5	
5186.00	0.0	H	3.0	43.8	1.0	-42.8	-25.0	-17.8	
7779.00	-5.0	H	3.0	42.3	1.0	-46.3	-25.0	-21.3	
10372.00	-13.5	H	3.0	40.7	1.0	-53.1	-25.0	-28.1	
12965.00	-9.1	H	3.0	42.0	1.0	-50.1	-25.0	-25.1	
High Ch, 2687.5MHz									
5375.00	1.0	V	3.0	43.7	1.0	-41.7	-25.0	-16.7	
8062.50	-9.7	V	3.0	42.2	1.0	-50.8	-25.0	-25.8	
10750.00	-11.3	V	3.0	40.8	1.0	-51.1	-25.0	-26.1	
13437.50	-3.0	V	3.0	42.4	1.0	-44.4	-25.0	-19.4	
5375.00	3.3	H	3.0	43.7	1.0	-39.5	-25.0	-14.5	
8062.50	-10.0	H	3.0	42.2	1.0	-51.2	-25.0	-26.2	
10750.00	-12.8	H	3.0	40.8	1.0	-52.6	-25.0	-27.6	
13437.50	-5.8	H	3.0	42.4	1.0	-47.2	-25.0	-22.2	

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LTE Band 41 (HPUE)

LTE

Band 41
HPUE

20MHz

QPSK

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

Company: Samsung
Project #: 4788534503
Date: 2018-07-15
Test Engineer: 47989
Configuration: EUT / AC Adapter / Earphone, X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 41 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, 2506MHz									
5012.00	5.1	V	3.0	43.8	1.0	-37.7	-25.0	-12.7	
7518.00	2.2	V	3.0	42.5	1.0	-39.2	-25.0	-14.2	
10024.00	-13.0	V	3.0	40.6	1.0	-52.5	-25.0	-27.5	
12530.00	-6.3	V	3.0	41.6	1.0	-46.9	-25.0	-21.9	
5012.00	3.6	H	3.0	43.8	1.0	-39.2	-25.0	-14.2	
7518.00	-10.4	H	3.0	42.5	1.0	-51.9	-25.0	-26.9	
10024.00	-15.0	H	3.0	40.6	1.0	-54.5	-25.0	-29.5	
12530.00	-11.6	H	3.0	41.6	1.0	-52.2	-25.0	-27.2	
Mid Ch, 2593MHz									
5186.00	1.3	V	3.0	43.8	1.0	-41.5	-25.0	-16.5	
7779.00	5.9	V	3.0	42.3	1.0	-35.4	-25.0	-10.4	
10372.00	-13.0	V	3.0	40.7	1.0	-52.7	-25.0	-27.7	
12965.00	-9.0	V	3.0	42.0	1.0	-50.0	-25.0	-25.0	
5186.00	-3.5	H	3.0	43.8	1.0	-46.3	-25.0	-21.3	
7779.00	-0.6	H	3.0	42.3	1.0	-41.9	-25.0	-16.9	
10372.00	-14.7	H	3.0	40.7	1.0	-54.3	-25.0	-29.3	
12965.00	-10.4	H	3.0	42.0	1.0	-51.4	-25.0	-26.4	
High Ch, 2680MHz									
5360.00	4.5	V	3.0	43.7	1.0	-38.3	-25.0	-13.3	
8040.00	-6.9	V	3.0	42.2	1.0	-48.1	-25.0	-23.1	
10720.00	-3.0	V	3.0	40.8	1.0	-42.8	-25.0	-17.8	
13400.00	-1.8	V	3.0	42.4	1.0	-43.1	-25.0	-18.1	
5360.00	1.0	H	3.0	43.7	1.0	-41.7	-25.0	-16.7	
8040.00	-5.3	H	3.0	42.2	1.0	-46.5	-25.0	-21.5	
10720.00	-9.9	H	3.0	40.8	1.0	-49.7	-25.0	-24.7	
13400.00	-5.5	H	3.0	42.4	1.0	-46.9	-25.0	-21.9	

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LTE

Band 41
HPUE

20MHz

16QAM

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

Company: Samsung
Project #: 4788534503
Date: 2018-07-15
Test Engineer: 47989
Configuration: EUT / AC Adapter / Earphone, X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 41 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, 2506MHz									
5012.00	5.2	V	3.0	43.8	1.0	-37.6	-25.0	-12.6	
7518.00	1.2	V	3.0	42.5	1.0	-40.2	-25.0	-15.2	
10024.00	-11.7	V	3.0	40.6	1.0	-51.2	-25.0	-26.2	
12530.00	-3.2	V	3.0	41.6	1.0	-43.9	-25.0	-18.9	
5012.00	4.0	H	3.0	43.8	1.0	-38.8	-25.0	-13.8	
7518.00	-10.3	H	3.0	42.5	1.0	-51.8	-25.0	-26.8	
10024.00	-14.3	H	3.0	40.6	1.0	-53.8	-25.0	-28.8	
12530.00	-11.6	H	3.0	41.6	1.0	-52.2	-25.0	-27.2	
Mid Ch, 2593MHz									
5186.00	2.3	V	3.0	43.8	1.0	-40.5	-25.0	-15.5	
7779.00	8.7	V	3.0	42.3	1.0	-32.6	-25.0	-7.6	
10372.00	-12.4	V	3.0	40.7	1.0	-52.0	-25.0	-27.0	
12965.00	-8.0	V	3.0	42.0	1.0	-49.0	-25.0	-24.0	
5186.00	-1.8	H	3.0	43.8	1.0	-44.5	-25.0	-19.5	
7779.00	2.5	H	3.0	42.3	1.0	-38.8	-25.0	-13.8	
10372.00	-14.9	H	3.0	40.7	1.0	-54.6	-25.0	-29.6	
12965.00	-10.5	H	3.0	42.0	1.0	-51.5	-25.0	-26.5	
High Ch, 2680MHz									
5360.00	5.0	V	3.0	43.7	1.0	-37.8	-25.0	-12.8	
8040.00	-7.3	V	3.0	42.2	1.0	-48.5	-25.0	-23.5	
10720.00	-3.2	V	3.0	40.8	1.0	-42.9	-25.0	-17.9	
13400.00	-3.7	V	3.0	42.4	1.0	-45.0	-25.0	-20.0	
5360.00	1.8	H	3.0	43.7	1.0	-41.0	-25.0	-16.0	
8040.00	-8.1	H	3.0	42.2	1.0	-49.2	-25.0	-24.2	
10720.00	-9.8	H	3.0	40.8	1.0	-49.6	-25.0	-24.6	
13400.00	-6.5	H	3.0	42.4	1.0	-47.8	-25.0	-22.8	

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LTE

Band 41
HPUE

15MHz

QPSK

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

Company: Samsung
Project #: 4788534503
Date: 2018-07-17
Test Engineer: 47989
Configuration: EUT / AC Adapter / Earphone, X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 41 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, 2503.5MHz									
5007.00	4.0	V	3.0	43.8	1.0	-38.8	-25.0	-13.8	
7510.50	-4.5	V	3.0	42.5	1.0	-45.9	-25.0	-20.9	
10014.00	-13.4	V	3.0	40.6	1.0	-53.0	-25.0	-28.0	
12517.50	-8.1	V	3.0	41.6	1.0	-48.8	-25.0	-23.8	
5007.00	4.5	H	3.0	43.8	1.0	-38.2	-25.0	-13.2	
7510.50	-8.5	H	3.0	42.5	1.0	-50.0	-25.0	-25.0	
10014.00	-14.3	H	3.0	40.6	1.0	-53.8	-25.0	-28.8	
12517.50	-10.3	H	3.0	41.6	1.0	-50.9	-25.0	-25.9	
Mid Ch, 2593MHz									
5186.00	2.6	V	3.0	43.8	1.0	-40.1	-25.0	-15.1	
7779.00	-5.0	V	3.0	42.3	1.0	-46.3	-25.0	-21.3	
10372.00	-9.8	V	3.0	40.7	1.0	-49.5	-25.0	-24.5	
12965.00	-8.1	V	3.0	42.0	1.0	-49.1	-25.0	-24.1	
5186.00	2.5	H	3.0	43.8	1.0	-40.3	-25.0	-15.3	
7779.00	-7.8	H	3.0	42.3	1.0	-49.2	-25.0	-24.2	
10372.00	-13.7	H	3.0	40.7	1.0	-53.4	-25.0	-28.4	
12965.00	-9.9	H	3.0	42.0	1.0	-50.9	-25.0	-25.9	
High Ch, 2682.5MHz									
5365.00	5.9	V	3.0	43.7	1.0	-36.9	-25.0	-11.9	
8047.50	-5.7	V	3.0	42.2	1.0	-46.9	-25.0	-21.9	
10730.00	-5.7	V	3.0	40.8	1.0	-45.5	-25.0	-20.5	
13412.50	-1.2	V	3.0	42.4	1.0	-42.6	-25.0	-17.6	
5365.00	2.1	H	3.0	43.7	1.0	-40.6	-25.0	-15.6	
8047.50	-8.1	H	3.0	42.2	1.0	-49.3	-25.0	-24.3	
10730.00	-11.2	H	3.0	40.8	1.0	-51.0	-25.0	-26.0	
13412.50	-6.6	H	3.0	42.4	1.0	-47.9	-25.0	-22.9	

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LTE

Band 41
HPUE

15MHz

16QAM

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

Company: Samsung
Project #: 4788534503
Date: 2018-07-17
Test Engineer: 47989
Configuration: EUT / AC Adapter / Earphone, X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 41 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, 2503.5MHz									
5007.00	4.0	V	3.0	43.8	1.0	-38.8	-25.0	-13.8	
7510.50	-4.8	V	3.0	42.5	1.0	-46.2	-25.0	-21.2	
10014.00	-13.0	V	3.0	40.6	1.0	-52.6	-25.0	-27.6	
12517.50	-8.0	V	3.0	41.6	1.0	-48.7	-25.0	-23.7	
5007.00	5.1	H	3.0	43.8	1.0	-37.7	-25.0	-12.7	
7510.50	-10.7	H	3.0	42.5	1.0	-52.1	-25.0	-27.1	
10014.00	-14.6	H	3.0	40.6	1.0	-54.1	-25.0	-29.1	
12517.50	-11.0	H	3.0	41.6	1.0	-51.6	-25.0	-26.6	
Mid Ch, 2593MHz									
5186.00	2.4	V	3.0	43.8	1.0	-40.4	-25.0	-15.4	
7779.00	-4.9	V	3.0	42.3	1.0	-46.2	-25.0	-21.2	
10372.00	-9.1	V	3.0	40.7	1.0	-48.8	-25.0	-23.8	
12965.00	-7.6	V	3.0	42.0	1.0	-48.6	-25.0	-23.6	
5186.00	2.5	H	3.0	43.8	1.0	-40.3	-25.0	-15.3	
7779.00	-6.9	H	3.0	42.3	1.0	-48.2	-25.0	-23.2	
10372.00	-14.6	H	3.0	40.7	1.0	-54.3	-25.0	-29.3	
12965.00	-9.3	H	3.0	42.0	1.0	-50.3	-25.0	-25.3	
High Ch, 2682.5MHz									
5365.00	6.4	V	3.0	43.7	1.0	-36.4	-25.0	-11.4	
8047.50	-6.0	V	3.0	42.2	1.0	-47.2	-25.0	-22.2	
10730.00	-5.1	V	3.0	40.8	1.0	-44.9	-25.0	-19.9	
13412.50	-1.1	V	3.0	42.4	1.0	-42.5	-25.0	-17.5	
5365.00	2.3	H	3.0	43.7	1.0	-40.4	-25.0	-15.4	
8047.50	-8.7	H	3.0	42.2	1.0	-49.8	-25.0	-24.8	
10730.00	-11.3	H	3.0	40.8	1.0	-51.1	-25.0	-26.1	
13412.50	-7.1	H	3.0	42.4	1.0	-48.4	-25.0	-23.4	

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LTE

Band 41
HPUE

10MHz

QPSK

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

Company: Samsung
Project #: 4788534503
Date: 2018-07-18
Test Engineer: 47989
Configuration: EUT / AC Adapter / Earphone, X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 41 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, 2501MHz									
5002.00	1.2	V	3.0	43.8	1.0	-41.6	-25.0	-16.6	
7503.00	-6.4	V	3.0	42.5	1.0	-47.9	-25.0	-22.9	
10004.00	-10.7	V	3.0	40.6	1.0	-50.3	-25.0	-25.3	
12505.00	-7.4	V	3.0	41.6	1.0	-48.1	-25.0	-23.1	
5002.00	1.2	H	3.0	43.8	1.0	-41.5	-25.0	-16.5	
7503.00	-12.0	H	3.0	42.5	1.0	-53.5	-25.0	-28.5	
10004.00	-14.4	H	3.0	40.6	1.0	-54.0	-25.0	-29.0	
12505.00	-9.4	H	3.0	41.6	1.0	-50.0	-25.0	-25.0	
Mid Ch, 2593MHz									
5186.00	4.2	V	3.0	43.8	1.0	-38.6	-25.0	-13.6	
7779.00	-4.4	V	3.0	42.3	1.0	-45.7	-25.0	-20.7	
10372.00	-7.4	V	3.0	40.7	1.0	-47.1	-25.0	-22.1	
12965.00	-8.1	V	3.0	42.0	1.0	-49.1	-25.0	-24.1	
5186.00	4.0	H	3.0	43.8	1.0	-38.8	-25.0	-13.8	
7779.00	-6.9	H	3.0	42.3	1.0	-48.3	-25.0	-23.3	
10372.00	-13.5	H	3.0	40.7	1.0	-53.2	-25.0	-28.2	
12965.00	-8.7	H	3.0	42.0	1.0	-49.7	-25.0	-24.7	
High Ch, 2685MHz									
5370.00	6.1	V	3.0	43.7	1.0	-36.6	-25.0	-11.6	
8055.00	-4.4	V	3.0	42.2	1.0	-45.6	-25.0	-20.6	
10740.00	-1.6	V	3.0	40.8	1.0	-41.4	-25.0	-16.4	
13425.00	1.0	V	3.0	42.4	1.0	-40.3	-25.0	-15.3	
5370.00	3.5	H	3.0	43.7	1.0	-39.2	-25.0	-14.2	
8055.00	-6.7	H	3.0	42.2	1.0	-47.9	-25.0	-22.9	
10740.00	-5.7	H	3.0	40.8	1.0	-45.4	-25.0	-20.4	
13425.00	-4.1	H	3.0	42.4	1.0	-45.5	-25.0	-20.5	

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LTE

Band 41
HPUE

10MHz

16QAM

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

Company: Samsung
Project #: 4788534503
Date: 2018-07-18
Test Engineer: 47989
Configuration: EUT / AC Adapter / Earphone, X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 41 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, 2501MHz									
5002.00	0.4	V	3.0	43.8	1.0	-42.4	-25.0	-17.4	
7503.00	-5.0	V	3.0	42.5	1.0	-46.4	-25.0	-21.4	
10004.00	-10.0	V	3.0	40.6	1.0	-49.6	-25.0	-24.6	
12505.00	-7.0	V	3.0	41.6	1.0	-47.6	-25.0	-22.6	
5002.00	1.6	H	3.0	43.8	1.0	-41.2	-25.0	-16.2	
7503.00	-12.9	H	3.0	42.5	1.0	-54.4	-25.0	-29.4	
10004.00	-13.8	H	3.0	40.6	1.0	-53.4	-25.0	-28.4	
12505.00	-9.4	H	3.0	41.6	1.0	-50.0	-25.0	-25.0	
Mid Ch, 2593MHz									
5186.00	4.5	V	3.0	43.8	1.0	-38.3	-25.0	-13.3	
7779.00	-4.4	V	3.0	42.3	1.0	-45.7	-25.0	-20.7	
10372.00	-10.1	V	3.0	40.7	1.0	-49.7	-25.0	-24.7	
12965.00	-6.5	V	3.0	42.0	1.0	-47.5	-25.0	-22.5	
5186.00	4.6	H	3.0	43.8	1.0	-38.2	-25.0	-13.2	
7779.00	-7.0	H	3.0	42.3	1.0	-48.3	-25.0	-23.3	
10372.00	-12.2	H	3.0	40.7	1.0	-51.9	-25.0	-26.9	
12965.00	-7.8	H	3.0	42.0	1.0	-48.8	-25.0	-23.8	
High Ch, 2685MHz									
5370.00	6.3	V	3.0	43.7	1.0	-36.5	-25.0	-11.5	
8055.00	-4.7	V	3.0	42.2	1.0	-45.9	-25.0	-20.9	
10740.00	-1.8	V	3.0	40.8	1.0	-41.6	-25.0	-16.6	
13425.00	0.2	V	3.0	42.4	1.0	-41.2	-25.0	-16.2	
5370.00	3.6	H	3.0	43.7	1.0	-39.1	-25.0	-14.1	
8055.00	-4.8	H	3.0	42.2	1.0	-45.9	-25.0	-20.9	
10740.00	-7.9	H	3.0	40.8	1.0	-47.7	-25.0	-22.7	
13425.00	-5.6	H	3.0	42.4	1.0	-47.0	-25.0	-22.0	

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LTE

Band 41
HPUE

5MHz

QPSK

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

Company: Samsung
Project #: 4788534503
Date: 2018-07-18
Test Engineer: 47989
Configuration: EUT / AC Adapter / Earphone, X-Position
Location: Chamber 1
Mode: LTE_QPSK Band 41 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, 2498.5MHz									
4997.00	-3.5	V	3.0	43.8	1.0	-46.3	-25.0	-21.3	
7495.50	-6.8	V	3.0	42.5	1.0	-48.2	-25.0	-23.2	
9994.00	-9.6	V	3.0	40.6	1.0	-49.2	-25.0	-24.2	
12492.50	-7.7	V	3.0	41.6	1.0	-48.3	-25.0	-23.3	
4997.00	-0.7	H	3.0	43.8	1.0	-43.5	-25.0	-18.5	
7495.50	-9.8	H	3.0	42.5	1.0	-51.2	-25.0	-26.2	
9994.00	-12.8	H	3.0	40.6	1.0	-52.3	-25.0	-27.3	
12492.50	-9.9	H	3.0	41.6	1.0	-50.5	-25.0	-25.5	
Mid Ch, 2593MHz									
5186.00	4.1	V	3.0	43.8	1.0	-38.7	-25.0	-13.7	
7779.00	-5.2	V	3.0	42.3	1.0	-46.5	-25.0	-21.5	
10372.00	-9.2	V	3.0	40.7	1.0	-48.9	-25.0	-23.9	
12965.00	-7.3	V	3.0	42.0	1.0	-48.3	-25.0	-23.3	
5186.00	1.3	H	3.0	43.8	1.0	-41.4	-25.0	-16.4	
7779.00	-6.2	H	3.0	42.3	1.0	-47.5	-25.0	-22.5	
10372.00	-11.4	H	3.0	40.7	1.0	-51.1	-25.0	-26.1	
12965.00	-8.1	H	3.0	42.0	1.0	-49.1	-25.0	-24.1	
High Ch, 2687.5MHz									
5375.00	5.4	V	3.0	43.7	1.0	-37.3	-25.0	-12.3	
8062.50	-7.0	V	3.0	42.2	1.0	-48.2	-25.0	-23.2	
10750.00	-1.8	V	3.0	40.8	1.0	-41.5	-25.0	-16.5	
13437.50	-1.3	V	3.0	42.4	1.0	-42.7	-25.0	-17.7	
5375.00	1.4	H	3.0	43.7	1.0	-41.3	-25.0	-16.3	
8062.50	-9.9	H	3.0	42.2	1.0	-51.0	-25.0	-26.0	
10750.00	-6.5	H	3.0	40.8	1.0	-46.2	-25.0	-21.2	
13437.50	-6.2	H	3.0	42.4	1.0	-47.6	-25.0	-22.6	

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LTE

Band 41
HPUE

5MHz

16QAM

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

Company: Samsung
Project #: 4788534503
Date: 2018-07-18
Test Engineer: 47989
Configuration: EUT / AC Adapter / Earphone, X-Position
Location: Chamber 1
Mode: LTE_16QAM Band 41 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, 2498.5MHz									
4997.00	-3.2	V	3.0	43.8	1.0	-46.0	-25.0	-21.0	
7495.50	-5.6	V	3.0	42.5	1.0	-47.1	-25.0	-22.1	
9994.00	-10.7	V	3.0	40.6	1.0	-50.3	-25.0	-25.3	
12492.50	-7.1	V	3.0	41.6	1.0	-47.7	-25.0	-22.7	
4997.00	-0.2	H	3.0	43.8	1.0	-43.0	-25.0	-18.0	
7495.50	-8.8	H	3.0	42.5	1.0	-50.2	-25.0	-25.2	
9994.00	-14.3	H	3.0	40.6	1.0	-53.9	-25.0	-28.9	
12492.50	-10.1	H	3.0	41.6	1.0	-50.7	-25.0	-25.7	
Mid Ch, 2593MHz									
5186.00	3.4	V	3.0	43.8	1.0	-39.4	-25.0	-14.4	
7779.00	-6.0	V	3.0	42.3	1.0	-47.3	-25.0	-22.3	
10372.00	-9.5	V	3.0	40.7	1.0	-49.1	-25.0	-24.1	
12965.00	-8.2	V	3.0	42.0	1.0	-49.2	-25.0	-24.2	
5186.00	0.5	H	3.0	43.8	1.0	-42.3	-25.0	-17.3	
7779.00	-6.6	H	3.0	42.3	1.0	-48.0	-25.0	-23.0	
10372.00	-11.9	H	3.0	40.7	1.0	-51.6	-25.0	-26.6	
12965.00	-8.2	H	3.0	42.0	1.0	-49.2	-25.0	-24.2	
High Ch, 2687.5MHz									
5375.00	5.1	V	3.0	43.7	1.0	-37.6	-25.0	-12.6	
8062.50	-7.9	V	3.0	42.2	1.0	-49.1	-25.0	-24.1	
10750.00	-2.0	V	3.0	40.8	1.0	-41.8	-25.0	-16.8	
13437.50	-1.6	V	3.0	42.4	1.0	-42.9	-25.0	-17.9	
5375.00	1.5	H	3.0	43.7	1.0	-41.2	-25.0	-16.2	
8062.50	-10.9	H	3.0	42.2	1.0	-52.0	-25.0	-27.0	
10750.00	-6.5	H	3.0	40.8	1.0	-46.3	-25.0	-21.3	
13437.50	-5.4	H	3.0	42.4	1.0	-46.8	-25.0	-21.8	

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