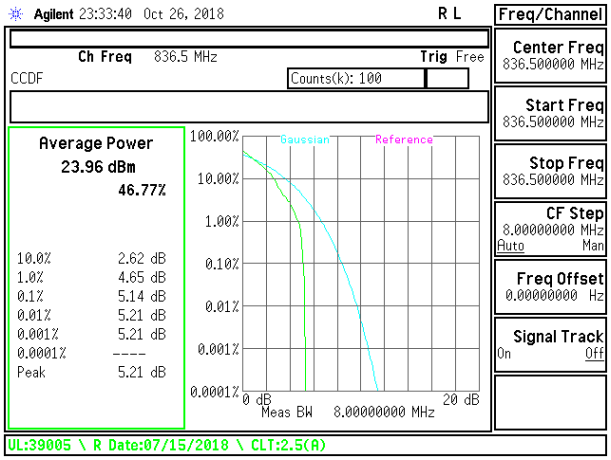
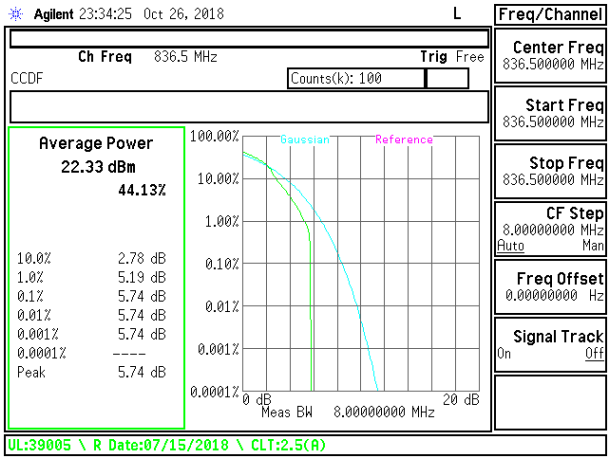
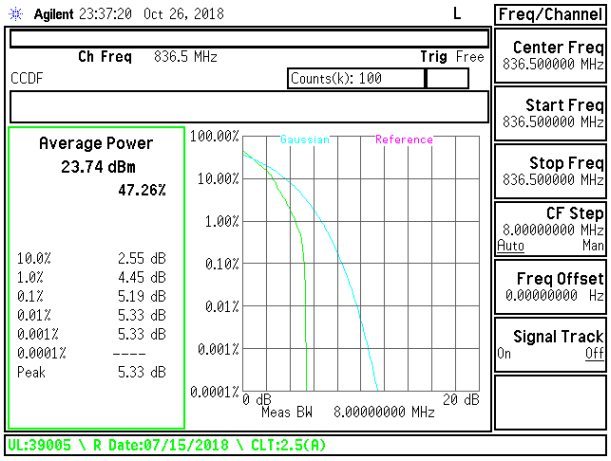
8.5.12. LTE BAND 26 (FCC PART 22)



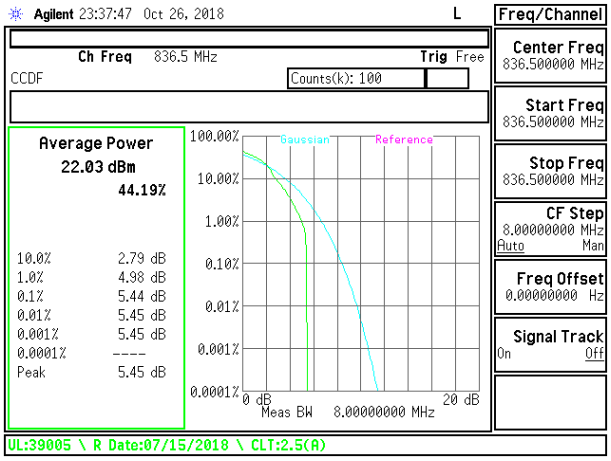
LTE B26 1.4MHz QPSK Mid Channel



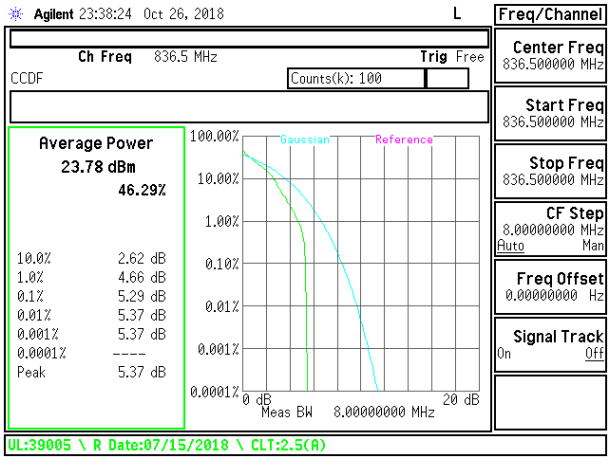
LTE B26 1.4MHz 16QAM Mid Channel



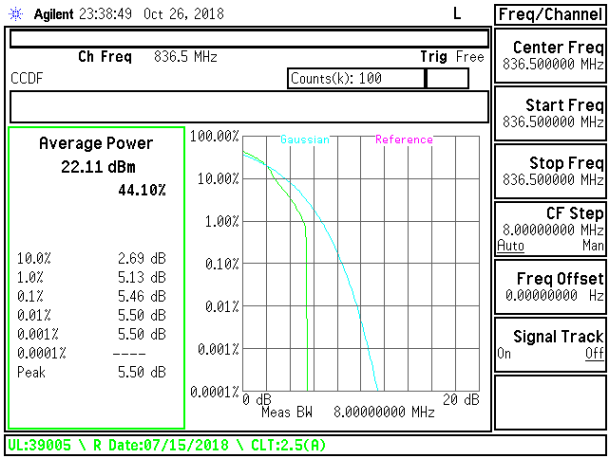
LTE B26 3MHz QPSK Mid Channel



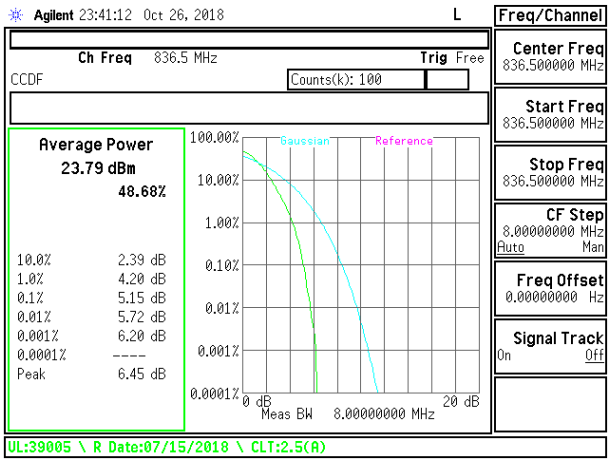
LTE B26 3MHz 16QAM Mid Channel



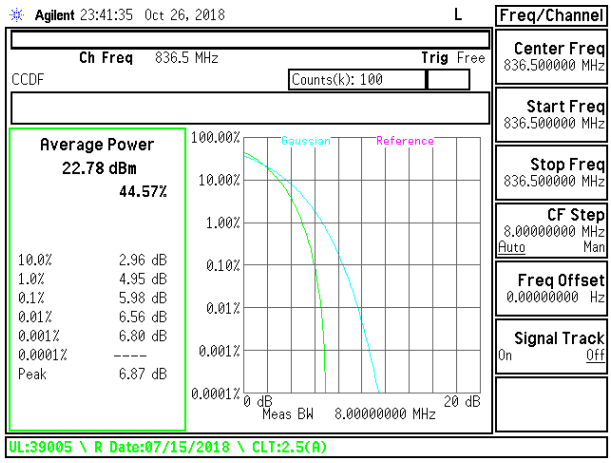
LTE B26 5MHz QPSK Mid Channel



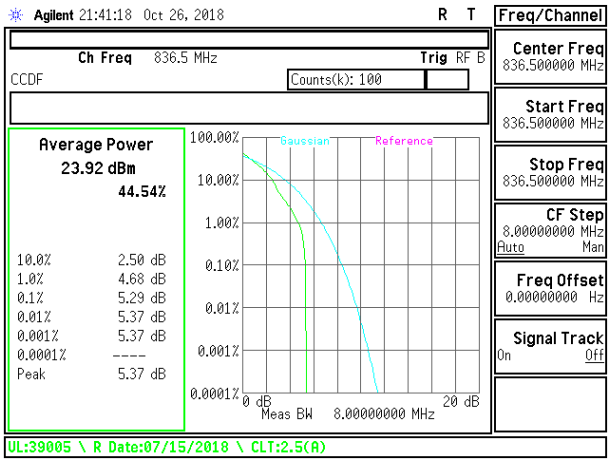
LTE B26 5MHz 16QAM Mid Channel



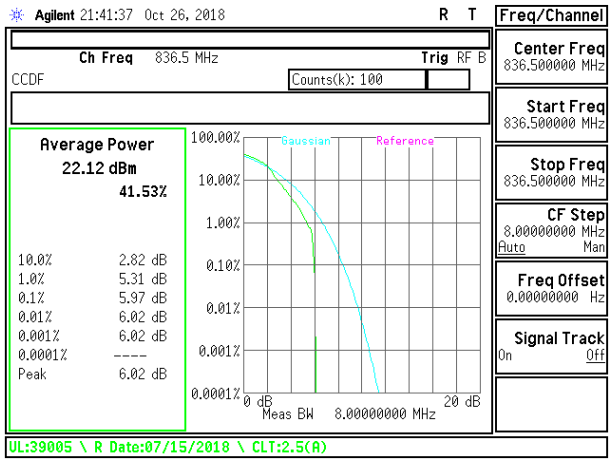
LTE B26 10MHz QPSK Mid Channel



LTE B26 10MHz 16QAM Mid Channel

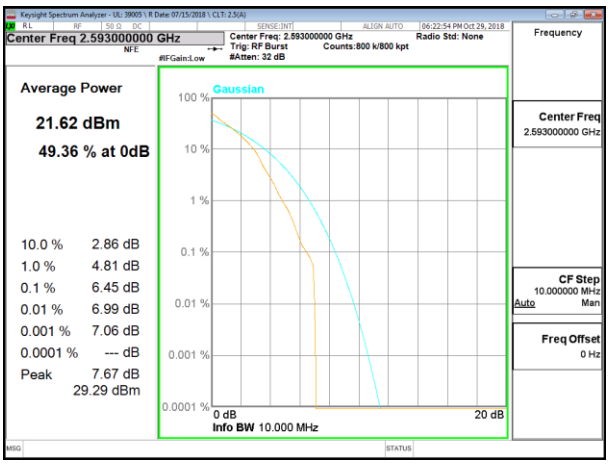


LTE B26 15MHz QPSK Mid Channel

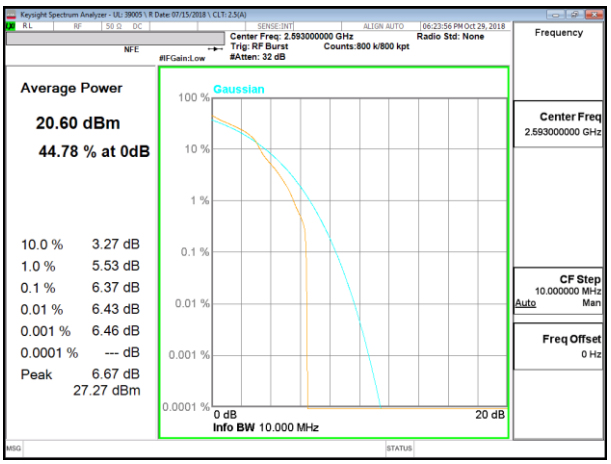


LTE B26 15MHz 16QAM Mid Channel

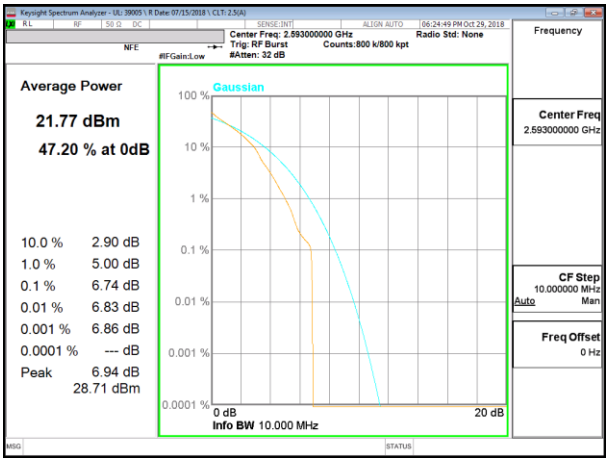
8.5.13. LTE BAND 41



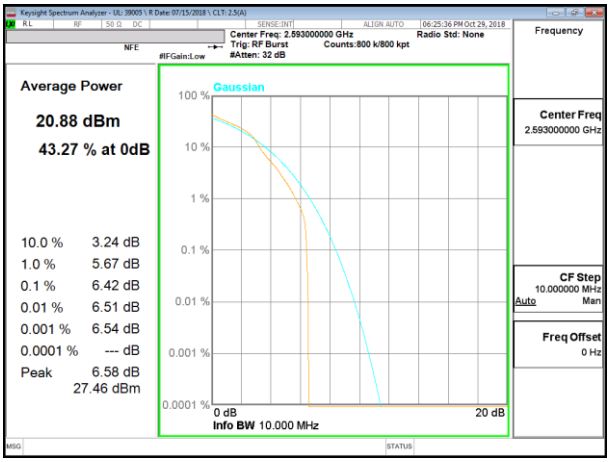
LTE B41 5MHz QPSK Middle Channel



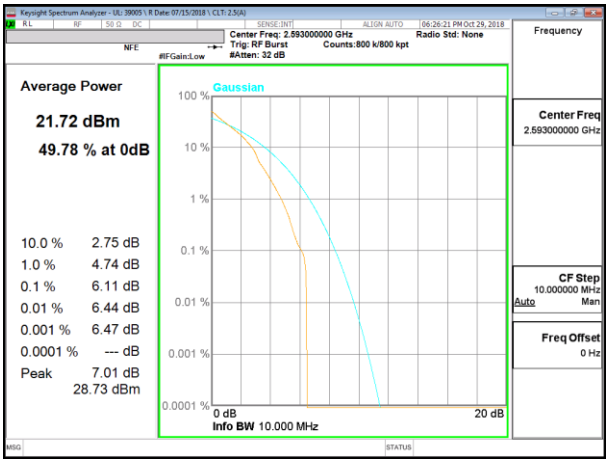
LTE B41 5MHz 16QAM Middle Channel



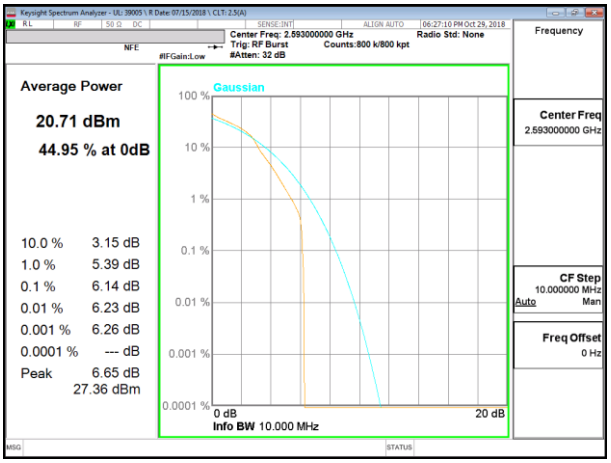
LTE B41 10MHz QPSK Middle Channel



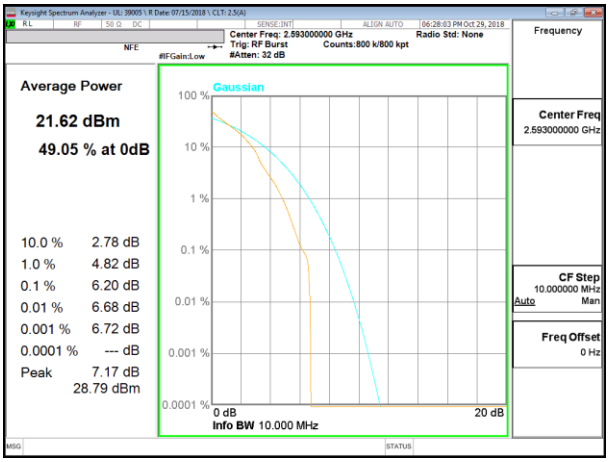
LTE B41 10MHz 16QAM Middle Channel



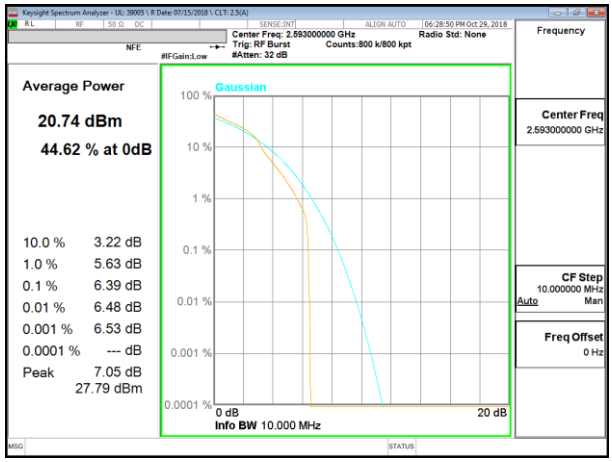
LTE B41 15MHz QPSK Middle Channel



LTE B41 15MHz 16QAM Middle Channel

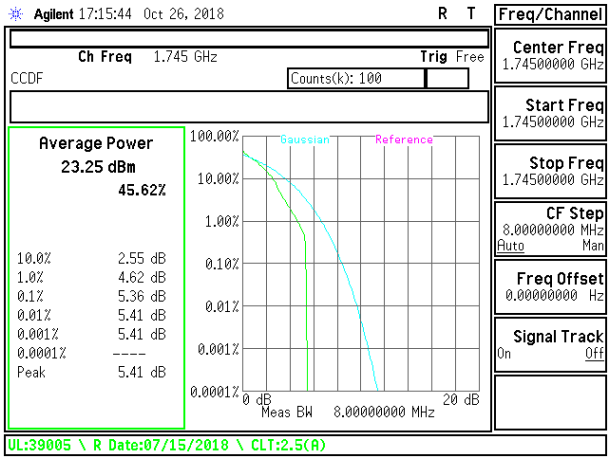


LTE B41 20MHz QPSK Middle Channel

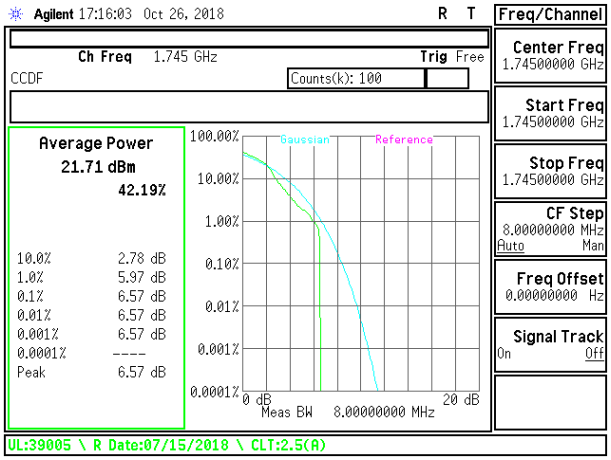


LTE B41 20MHz 16QAM Middle Channel

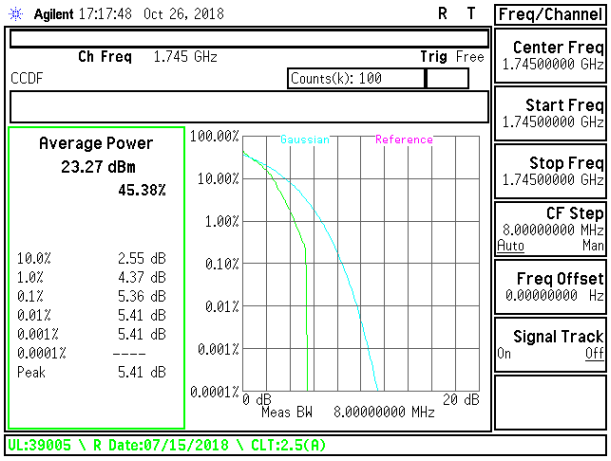
8.5.14. LTE BAND 66



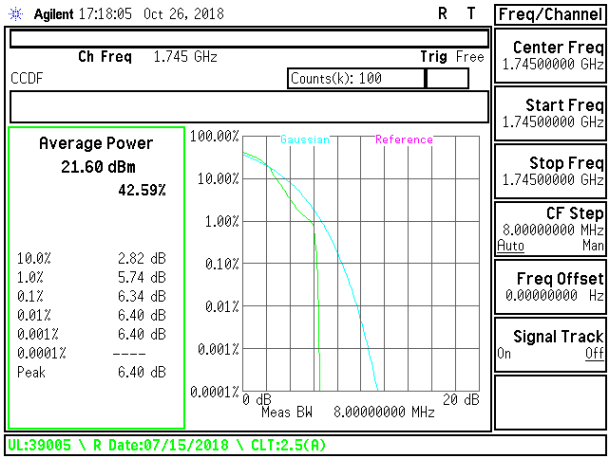
LTE B66 1.4MHz QPSK Mid Channel



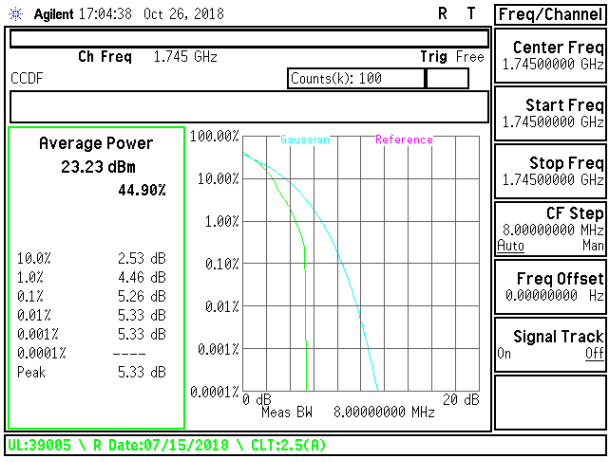
LTE B66 1.4MHz 16QAM Mid Channel



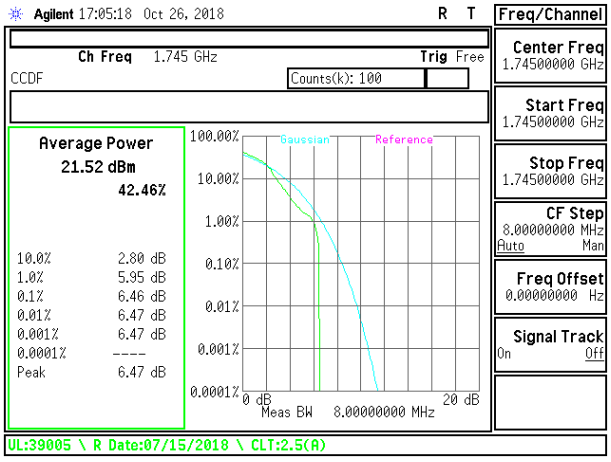
LTE B66 3MHz QPSK Mid Channel



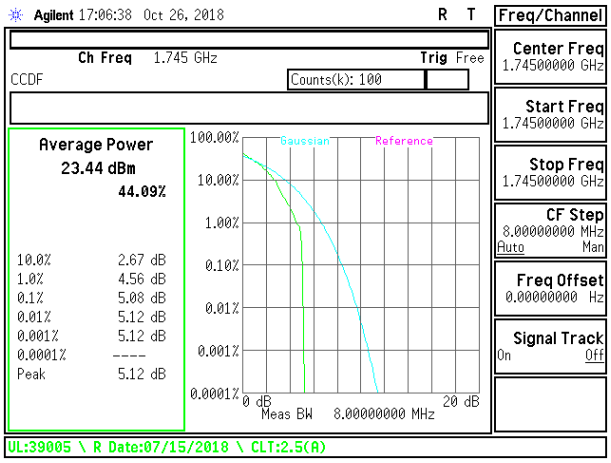
LTE B66 3MHz 16QAM Mid Channel



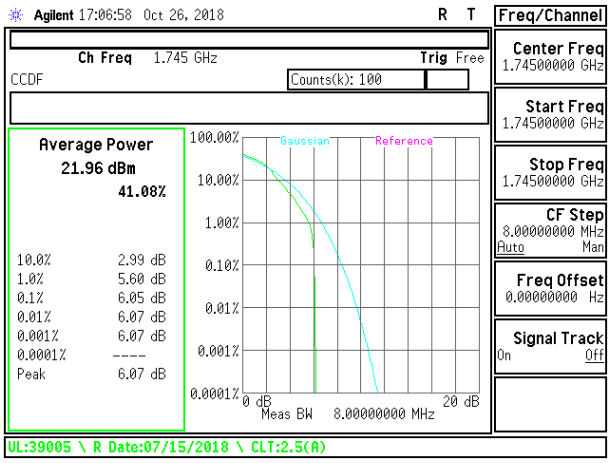
LTE B66 5MHz QPSK Mid Channel



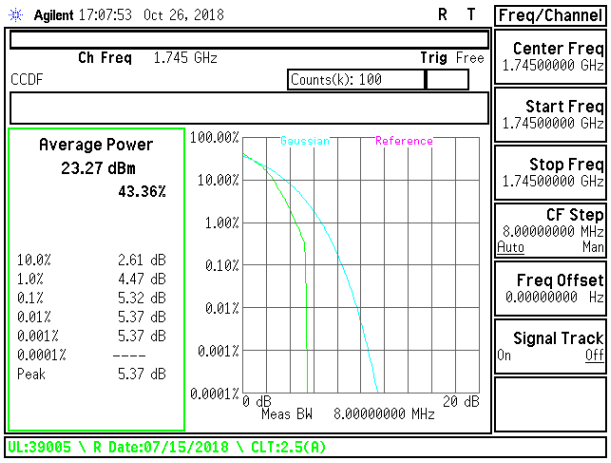
LTE B66 5MHz 16QAM Mid Channel



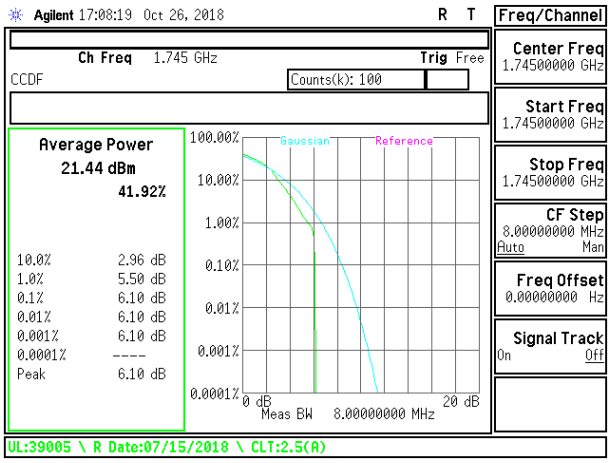
LTE B66 10MHz QPSK Mid Channel



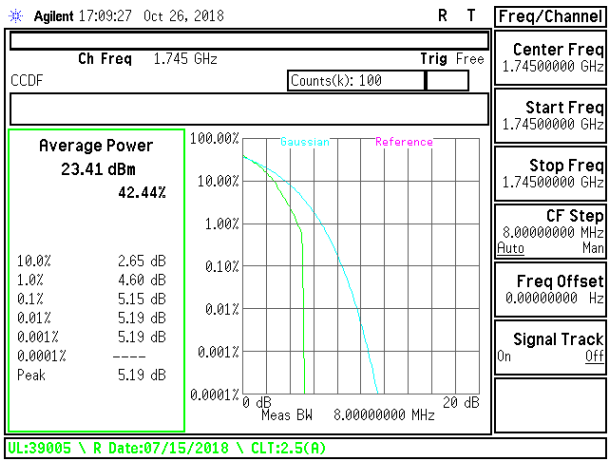
LTE B66 10MHz 16QAM Mid Channel



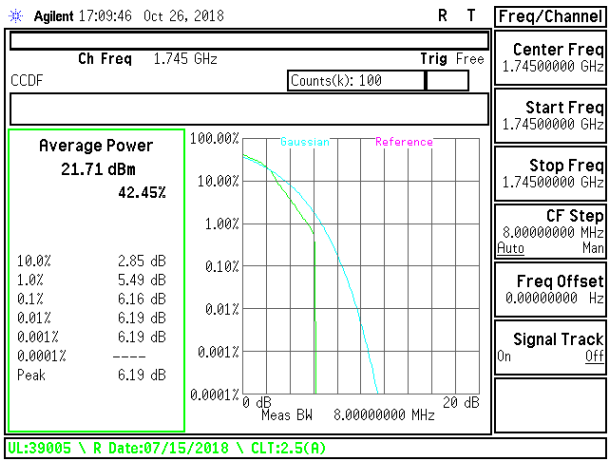
LTE B66 15MHz QPSK Mid Channel



LTE B66 15MHz 16QAM Mid Channel



LTE B66 20MHz QPSK Mid Channel



LTE B66 20MHz 16QAM Mid Channel

9. RADIATED TEST RESULTS

9.1. EFFECTIVE RADIATED POWER ERP/EIRP

RULE PART(S)

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

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) are limited to 3 watts ERP; (LTE B12)

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 66)

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 603C Clause 2.2.17; PSA setting reference to 971168 D01 v02r02

For peak power measurement with a PSA:

a) Set the RBW ≥ OBW; b) Set VBW ≥ 3 × RBW; c) Set span ≥ 2 x RBW; d) Sweep time = auto couple; e) Detector = peak; f) Ensure that the number of measurement points ≥ span/RBW; g) Trace mode = max hold;

For average power measurement with a PSA:

a) Set span to at least 1.5 times the OBW; b) Set RBW = 1-5% of the OBW, not to exceed 1 MHz; c) Set VBW ≥ 3 x RBW; d) Set number of points in sweep ≥ 2 × span / RBW; e) Sweep time = auto-couple; f) Detector = RMS (power averaging); g) Use free run trigger If burst duty cycle ≥ 98; h) Use trigger to capture bursts If burst duty cycle < 98; i) Trace average at least 100 traces in power averaging (*i.e.*, RMS) mode. j) Compute the power by integrating the spectrum across the OBW of the signal using the instrument's band power measurement function.

MODES TESTED

GSM, WCMDA, and LTE

Note: This testing was performed to confirm that the measured radiated powers were consistent with the calculated ERP/EIRP test data given device-to-device variations in output power and the measurement uncertainties associated with the radiated tests. Measured ERP/EIRP test results are for reference only. Please refer to Section 5.2 for the final ERP/EIRP results.

TEST RESULTS

GSM

Band	Mode	Channel	f(MHz)	ERP/EIRP	
				dBm	mW
GSM 850	GPRS	128	824.2	29.83	961.61
		190	836.6	30.61	1150.80
		251	848.8	30.58	1142.88
	EGPRS	128	824.2	27.32	539.51
		190	836.6	26.63	460.26
		251	848.8	26.89	488.65
GSM 1900	GPRS	512	1850.2	30.52	1127.20
		661	1880.0	29.65	922.57
		810	1909.8	29.49	889.20
	EGPRS	512	1850.2	27.19	523.60
		661	1880.0	26.88	487.53
		810	1909.8	27.01	502.34

WCDMA

Band	Mode	Channel	f(MHz)	ERP/EIRP	
				dBm	mW
Band 2	REL99	9262	1852.4	22.87	193.64
		9400	1880	24.52	283.14
		9538	1907.6	22.76	188.80
	HSDPA	9262	1852.4	24.51	282.49
		9400	1880.0	25.12	325.09
		9538	1907.6	24.10	257.04
Band 5	REL99	4132	826.4	17.92	61.94
		4183	836.6	19.88	97.27
		4233	846.6	18.40	69.18
	HSDPA	4132	826.4	17.00	50.12
		4183	836.6	17.06	50.82
		4233	846.6	18.16	65.46
Band 4	REL99	1312	1712.4	24.95	312.61
		1413	1732.6	25.43	349.14
		1513	1752.6	25.95	393.55
	HSDPA	1312	1712.4	25.49	354.00
		1413	1732.6	25.69	370.68
		1513	1752.6	26.36	432.51

LTE Band 2

BW (MHz)	Mode	RB/RB Size	f(MHz)	EIRP	
				dBm	mW
20	QPSK	1/0	1860	25.61	363.92
		1/0	1880	25.91	389.94
		1/0	1900	24.59	287.74
	16QAM	1/0	1860	24.21	263.63
		1/0	1880	24.38	274.16
		1/0	1900	23.05	201.84
15	QPSK	1/0	1857.5	24.70	295.12
		1/0	1880	25.90	389.05
		1/0	1902.5	24.81	302.69
5	16QAM	1/0	1852.5	24.32	270.40
		1/0	1880	24.10	257.04
		1/0	1907.5	22.23	167.11

LTE Band 4

BW (MHz)	Mode	RB/RB Size	f(MHz)	EIRP	
				dBm	mW
20	QPSK	1/0	1720	24.21	263.63
		1/0	1732.5	24.99	315.50
		1/0	1745	25.29	338.06
	16QAM	1/0	1720	23.60	229.09
		1/0	1732.5	23.25	211.35
		1/0	1745	23.59	228.56
3	QPSK	1/0	1711.5	24.89	308.32
		1/0	1732.5	25.03	318.42
		1/0	1753.5	25.93	391.74
3	16QAM	1/0	1711.5	23.27	212.32
		1/0	1732.5	23.41	219.28
		1/0	1753.5	24.19	262.42

LTE Band 5

BW (MHz)	Mode	RB/RB Size	f(MHz)	ERP	
				dBm	mW
10	QPSK	1/0	829	20.47	111.43
		1/0	836.5	21.12	129.42
		1/0	844	22.16	164.44
	16QAM	1/0	829	18.22	66.37
		1/0	836.5	18.96	78.70
		1/0	844	19.84	96.38
3	QPSK	1/0	825.5	20.73	118.30
		1/0	836.5	21.40	138.04
		1/0	847.5	21.82	152.05
	16QAM	1/0	825.5	18.37	68.71
		1/0	836.5	19.20	83.18
		1/0	847.5	19.74	94.19

LTE Band 7

BW (MHz)	Mode	RB/RB Size	f(MHz)	EIRP	
				dBm	mW
20	QPSK	1/0	2510	26.04	401.79
		1/0	2535	26.75	473.15
		1/0	2560	26.98	498.88
	16QAM	1/0	2510	24.42	276.69
		1/0	2535	25.01	316.96
		1/0	2560	25.44	349.95
15	QPSK	1/0	2507.5	25.96	394.46
		1/0	2535	26.81	479.73
		1/0	2562.5	24.98	314.77
	16QAM	1/0	2507.5	24.53	283.79
		1/0	2535	25.16	328.10
		1/0	2562.5	23.28	212.81

LTE Band 12

BW (MHz)	Mode	RB/RB Size	f(MHz)	ERP	
				dBm	mW
10	QPSK	1/0	704	18.07	64.12
		1/0	707.5	18.42	69.50
		1/0	711	18.53	71.29
	16QAM	1/0	704	16.34	43.05
		1/0	707.5	16.77	47.53
		1/0	711	16.85	48.42
5	QPSK	1/0	701.5	17.95	62.37
		1/0	707.5	18.62	72.78
		1/0	713.5	18.29	67.45
	16QAM	1/0	701.5	16.14	41.11
		1/0	707.5	16.89	48.87
		1/0	713.5	16.51	44.77

LTE Band 13

BW (MHz)	Mode	RB/RB Size	f(MHz)	ERP	
				dBm	mW
10	QPSK				
		1/0	782	18.17	65.61
	16QAM				
		1/0	782	16.06	40.36
5	QPSK	1/0	779.5	18.32	67.92
		1/0	782	18.40	69.18
		1/0	784.5	18.46	70.15
	16QAM	1/0	779.5	16.10	40.74
		1/0	782	16.24	42.07
		1/0	784.5	16.26	42.27

LTE Band 17

BW (MHz)	Mode	RB/RB Size	f(MHz)	ERP	
				dBm	mW
10	QPSK	1/0	709	17.97	62.66
		1/0	710	18.45	69.98
		1/0	711	18.69	73.96
	16QAM	1/0	709	16.44	44.06
		1/0	710	16.55	45.19
		1/0	711	16.47	44.36
5	QPSK	1/0	706.5	18.27	67.14
		1/0	710	18.32	67.92
		1/0	713.5	18.56	71.78
	16QAM	1/0	706.5	16.62	45.92
		1/0	710	16.60	45.71
		1/0	713.5	17.00	50.12

LTE Band 25

BW (MHz)	Mode	RB/RB Size	f(MHz)	EIRP	
				dBm	mW
20	QPSK	1/0	1860	22.27	168.66
		1/0	1882.5	23.56	226.99
		1/0	1905	23.85	242.66
	16QAM	1/0	1860	20.54	113.24
		1/0	1882.5	21.76	149.97
		1/0	1905	22.25	167.88
3	QPSK	1/0	1851.5	22.79	190.11
		1/0	1882.5	24.18	261.82
		1/0	1913.5	22.70	186.21
5	16QAM	1/0	1852.5	21.89	154.53
		1/0	1882.5	21.08	128.23
		1/0	1912.5	22.01	158.85

LTE Band 26 (FCC PART 90S)

BW (MHz)	Mode	RB/RB Size	f(MHz)	ERP	
				dBm	mW
15	QPSK				
		1/0	821.5	19.71	93.54
	16QAM				
		1/0	821.5	18.58	72.11
10	QPSK				
		1/0	819	20.16	103.75
	16QAM				
		1/0	819	18.46	70.15

LTE Band 26 (FCC PART 22)

BW (MHz)	Mode	RB/RB Size	f(MHz)	ERP	
				dBm	mW
15	QPSK	1/0	831.5	19.23	83.75
		1/0	836.5	19.22	83.56
		1/0	841.5	18.83	76.38
	16QAM	1/0	831.5	17.54	56.75
		1/0	836.5	17.14	51.76
		1/0	841.5	17.50	56.23
1.4	QPSK	1/0	814.7	20.17	103.99
		1/0	831.5	19.60	91.20
		1/0	848.3	19.33	85.70
3	16QAM	1/0	815.5	18.15	65.31
		1/0	831.5	17.47	55.85
		1/0	847.5	17.40	54.95

LTE Band 41

BW (MHz)	Mode	RB/RB Size	f(MHz)	EIRP	
				dBm	mW
20	QPSK	1/0	2506	23.42	219.79
		1/0	2593	20.39	109.40
		1/0	2680	22.44	175.39
	16QAM	1/0	2506	21.36	136.77
		1/0	2593	19.33	85.70
		1/0	2680	21.35	136.46
15	QPSK	1/0	2503.5	24.02	252.35
		1/0	2593	21.56	143.22
		1/0	2682.5	23.11	204.64
15	16QAM	1/0	2503.5	21.90	154.88
		1/0	2593	19.82	95.94
		1/0	2682.5	21.76	149.97

LTE Band 66

BW (MHz)	Mode	RB/RB Size	f(MHz)	EIRP	
				dBm	mW
20	QPSK	1/0	1720	22.78	189.67
		1/0	1745	22.35	171.79
		1/0	1770	23.63	230.67
	16QAM	1/0	1720	21.10	128.82
		1/0	1745	20.74	118.58
		1/0	1770	21.94	156.31
3	QPSK	1/0	1711.5	20.30	107.15
		1/0	1745	22.61	182.39
		1/0	1778.5	22.30	169.82
15	16QAM	1/0	1717.5	20.76	119.12
		1/0	1745	21.83	152.41
		1/0	1772.5	21.61	144.88

9.1.1. GSM

GPRS 850

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 11/23/2018
Test Engineer: 43575 OS
Configuration: EUT Only
Location: Chamber B
Mode: GPRS 850 MHz Fundamentals

Test Equipment:
Receiving: Hybrid T407, and Chamber B SMA Cables
Substitution: Dipole T416, Chamber B Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
824.20	27.82	V	2.9	0.1	25.07	38.5	-13.4	
824.20	32.49	H	2.9	0.2	29.83	38.5	-8.7	
Mid Ch								
836.60	26.86	V	2.9	0.1	24.02	38.5	-14.5	
836.60	33.35	H	2.9	0.2	30.61	38.5	-7.9	
High Ch								
848.80	27.84	V	2.9	0.0	24.94	38.5	-13.6	
848.80	33.38	H	2.9	0.1	30.58	38.5	-7.9	

EGPRS 850

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 11/23/2018
Test Engineer: 43575 OS
Configuration: EUT Only
Location: Chamber B
Mode: EGPRS 850 MHz Fundamentals

Test Equipment:
Receiving: Hybrid T407, and Chamber B SMA Cables
Substitution: Dipole T416, Chamber B Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
824.20	23.58	V	2.9	0.1	20.82	38.5	-17.7	
824.20	29.98	H	2.9	0.2	27.32	38.5	-11.2	
Mid Ch								
836.60	23.87	V	2.9	0.1	21.03	38.5	-17.5	
836.60	29.37	H	2.9	0.2	26.63	38.5	-11.9	
High Ch								
848.80	23.63	V	2.9	0.0	20.73	38.5	-17.8	
848.80	29.69	H	2.9	0.1	26.89	38.5	-11.6	

GPRS 1900

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 11/21/2018
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber B
Mode: GPRS 1900 MHz Fundamentals

Test Equipment:
Receiving: Horn T863, and Chamber B SMA Cables
Substitution: Horn T60, Chamber B Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1850.20	25.62	V	4.4	9.3	30.52	33.0	-2.5	
1850.20	16.14	H	4.4	9.3	21.04	33.0	-12.0	
Mid Ch								
1880.00	25.02	V	4.4	9.1	29.65	33.0	-3.4	
1880.00	19.32	H	4.4	9.1	23.95	33.0	-9.0	
High Ch								
1909.80	25.12	V	4.5	8.8	29.49	33.0	-3.5	
1909.80	14.47	H	4.5	8.8	18.84	33.0	-14.2	

EGPRS 1900

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 11/21/2018
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber B
Mode: EGPRS 1900 MHz Fundamentals

Test Equipment:
Receiving: Horn T863, and Chamber B SMA Cables
Substitution: Horn T60, Chamber B Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1850.20	22.29	V	4.4	9.3	27.19	33.0	-5.8	
1850.20	18.64	H	4.4	9.3	23.54	33.0	-9.5	
Mid Ch								
1880.00	22.26	V	4.4	9.1	26.88	33.0	-6.1	
1880.00	13.62	H	4.4	9.1	18.25	33.0	-14.8	
High Ch								
1909.80	22.64	V	4.5	8.8	27.01	33.0	-6.0	
1909.80	17.58	H	4.5	8.8	21.95	33.0	-11.0	

9.1.2. WCDMA

B2 REL99

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 10/30/2018
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber B
Mode: Rel99 Band 2 Fundamentals

Test Equipment:
Receiving: Horn T863, and Chamber B SMA Cables
Substitution: Horn T60, Chamber B Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1852.40	18.69	V	5.1	9.3	22.87	33.0	-10.1	
1852.40	13.49	H	5.1	9.3	17.67	33.0	-15.3	
Mid Ch								
1880.00	20.59	V	5.1	9.1	24.52	33.0	-8.5	
1880.00	8.40	H	5.1	9.1	12.33	33.0	-20.7	
High Ch								
1907.60	19.06	V	5.2	8.9	22.76	33.0	-10.2	
1907.60	12.61	H	5.2	8.9	16.31	33.0	-16.7	

B2 HSDPA

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 10/30/2018
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber B
Mode: HSDPA Band 2 Fundamentals

Test Equipment:
Receiving: Horn T863, and Chamber B SMA Cables
Substitution: Horn T60, Chamber B Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1852.40	20.33	V	5.1	9.3	24.51	33.0	-8.5	
1852.40	14.77	H	5.1	9.3	18.95	33.0	-14.0	
Mid Ch								
1880.00	21.19	V	5.1	9.1	25.12	33.0	-7.9	
1880.00	15.10	H	5.1	9.1	19.03	33.0	-14.0	
High Ch								
1907.60	20.40	V	5.2	8.9	24.10	33.0	-8.9	
1907.60	10.46	H	5.2	8.9	14.16	33.0	-18.8	

B5 REL99

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 11/23/2018
Test Engineer: 43575 OS
Configuration: EUT Only
Location: Chamber B
Mode: Rel99 Band 5 Fundamentals

Test Equipment:
Receiving: Hybrid T407, and Chamber B SMA Cables
Substitution: Dipole T416, Chamber B Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
826.40	16.56	V	2.9	0.1	13.79	38.5	-24.7	
826.40	20.60	H	2.9	0.2	17.92	38.5	-20.6	
Mid Ch								
836.60	16.20	V	2.9	0.1	13.36	38.5	-25.1	
836.60	22.62	H	2.9	0.2	19.88	38.5	-18.6	
High Ch								
846.60	13.74	V	2.9	0.0	10.85	38.5	-27.7	
846.60	21.19	H	2.9	0.1	18.40	38.5	-20.1	

B5 HSDPA

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 11/23/2018
Test Engineer: 43575 OS
Configuration: EUT Only
Location: Chamber B
Mode: HSDPA Band 5 Fundamentals

Test Equipment:
Receiving: Hybrid T407, and Chamber B SMA Cables
Substitution: Dipole T416, Chamber B Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
826.40	13.12	V	2.9	0.1	10.34	38.5	-28.2	
826.40	19.68	H	2.9	0.2	17.00	38.5	-21.5	
Mid Ch								
836.60	14.83	V	2.9	0.1	11.99	38.5	-26.5	
836.60	19.81	H	2.9	0.2	17.06	38.5	-21.4	
High Ch								
846.60	12.14	V	2.9	0.0	9.25	38.5	-29.2	
846.60	20.94	H	2.9	0.1	18.16	38.5	-20.3	

B4 REL99

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 10/30/2018
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber B
Mode: Rel99 Band 4 Fundamentals

Test Equipment:
Receiving: Horn T863, and Chamber B SMA Cables
Substitution: Horn T60, Chamber B Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1712.40	21.44	V	4.9	8.4	24.95	30.0	-5.1	
1712.40	16.22	H	4.9	8.4	19.72	30.0	-10.3	
Mid Ch								
1732.60	21.64	V	4.9	8.7	25.43	30.0	-4.6	
1732.60	16.12	H	4.9	8.7	19.90	30.0	-10.1	
High Ch								
1752.60	21.87	V	4.9	9.0	25.95	30.0	-4.1	
1752.60	15.38	H	4.9	9.0	19.45	30.0	-10.5	

B4 HSDPA

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 10/30/2018
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber B
Mode: HSDPA Band 4 Fundamentals

Test Equipment:
Receiving: Horn T863, and Chamber B SMA Cables
Substitution: Horn T60, Chamber B Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1712.40	21.98	V	4.9	8.4	25.49	30.0	-4.5	
1712.40	15.63	H	4.9	8.4	19.14	30.0	-10.9	
Mid Ch								
1732.60	21.90	V	4.9	8.7	25.69	30.0	-4.3	
1732.60	17.10	H	4.9	8.7	20.89	30.0	-9.1	
High Ch								
1752.60	22.29	V	4.9	9.0	26.36	30.0	-3.6	
1752.60	16.41	H	4.9	9.0	20.48	30.0	-9.5	

9.1.3. LTE Band 2

20MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 11/19/2018
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 2 Fundamentals, 20MHz Bandwidth

Test Equipment:
Receiving: Horn T863, and Chamber B SMA Cables
Substitution: Horn T60, Chamber B Passthrough Cables

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	20.80	V	4.4	9.2	25.61	33.0	-7.4	
1860.00	12.22	H	4.4	9.2	17.03	33.0	-16.0	
Mid Ch								
1880.00	21.28	V	4.4	9.1	25.91	33.0	-7.1	
1880.00	11.84	H	4.4	9.1	16.47	33.0	-16.5	
High Ch								
1900.00	20.15	V	4.5	8.9	24.59	33.0	-8.4	
1900.00	11.61	H	4.5	8.9	16.05	33.0	-17.0	

20MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 11/19/2018
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 2 Fundamentals, 20MHz Bandwidth

Test Equipment:
Receiving: Horn T863, and Chamber B SMA Cables
Substitution: Horn T60, Chamber B Passthrough Cables

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	19.40	V	4.4	9.2	24.21	33.0	-8.8	
1860.00	10.82	H	4.4	9.2	15.63	33.0	-17.4	
Mid Ch								
1880.00	19.75	V	4.4	9.1	24.38	33.0	-8.6	
1880.00	10.19	H	4.4	9.1	14.82	33.0	-18.2	
High Ch								
1900.00	18.61	V	4.5	8.9	23.05	33.0	-9.9	
1900.00	9.98	H	4.5	8.9	14.42	33.0	-18.6	

15MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 11/19/2018
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 2 Fundamentals, 15MHz Bandwidth

Test Equipment:
Receiving: Horn T863, and Chamber B SMA Cables
Substitution: Horn T60, Chamber B Passthrough Cables

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	19.86	V	4.4	9.2	24.70	33.0	-8.3	
1857.50	12.00	H	4.4	9.2	16.83	33.0	-16.2	
Mid Ch								
1880.00	21.27	V	4.4	9.1	25.90	33.0	-7.1	
1880.00	10.97	H	4.4	9.1	15.60	33.0	-17.4	
High Ch								
1902.50	20.39	V	4.5	8.9	24.81	33.0	-8.2	
1902.50	11.56	H	4.5	8.9	15.98	33.0	-17.0	

5MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 11/19/2018
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 2 Fundamentals, 5MHz Bandwidth

Test Equipment:
Receiving: Horn T863, and Chamber B SMA Cables
Substitution: Horn T60, Chamber B Passthrough Cables

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	19.44	V	4.4	9.3	24.32	33.0	-8.7	
1852.50	10.32	H	4.4	9.3	15.20	33.0	-17.8	
Mid Ch								
1880.00	19.47	V	4.4	9.1	24.10	33.0	-8.9	
1880.00	9.20	H	4.4	9.1	13.83	33.0	-19.2	
High Ch								
1907.50	17.83	V	4.5	8.9	22.23	33.0	-10.8	
1907.50	8.27	H	4.5	8.9	12.67	33.0	-20.3	

9.1.4. LTE Band 4

20MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 11/19/2018
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 4 Fundamentals, 20MHz Bandwidth

Test Equipment:
Receiving: Horn T863, and Chamber B SMA Cables
Substitution: Horn T60, Chamber B Passthrough Cables

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	19.88	V	4.2	8.5	24.21	30.0	-5.8	
1720.00	15.54	H	4.2	8.5	19.87	30.0	-10.1	
Mid Ch								
1732.50	20.51	V	4.2	8.7	24.99	30.0	-5.0	
1732.50	13.93	H	4.2	8.7	18.41	30.0	-11.6	
High Ch								
1745.00	20.63	V	4.2	8.9	25.29	30.0	-4.7	
1745.00	14.73	H	4.2	8.9	19.38	30.0	-10.6	

20MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 11/19/2018
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 4 Fundamentals, 20MHz Bandwidth

Test Equipment:
Receiving: Horn T863, and Chamber B SMA Cables
Substitution: Horn T60, Chamber B Passthrough Cables

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	19.27	V	4.2	8.5	23.60	30.0	-6.4	
1720.00	13.71	H	4.2	8.5	18.04	30.0	-12.0	
Mid Ch								
1732.50	18.77	V	4.2	8.7	23.25	30.0	-6.7	
1732.50	12.15	H	4.2	8.7	16.63	30.0	-13.4	
High Ch								
1745.00	18.93	V	4.2	8.9	23.59	30.0	-6.4	
1745.00	13.10	H	4.2	8.9	17.75	30.0	-12.2	

3MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 11/19/2018
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 4 Fundamentals, 3MHz Bandwidth

Test Equipment:
Receiving: Horn T863, and Chamber B SMA Cables
Substitution: Horn T60, Chamber B Passthrough Cables

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	20.69	V	4.2	8.4	24.89	30.0	-5.1	
1711.50	14.74	H	4.2	8.4	18.94	30.0	-11.1	
Mid Ch								
1732.50	20.55	V	4.2	8.7	25.03	30.0	-5.0	
1732.50	12.90	H	4.2	8.7	17.38	30.0	-12.6	
High Ch								
1753.50	21.14	V	4.2	9.0	25.93	30.0	-4.1	
1753.50	13.82	H	4.2	9.0	18.60	30.0	-11.4	

3MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 11/19/2018
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 4 Fundamentals, 3MHz Bandwidth

Test Equipment:
Receiving: Horn T863, and Chamber B SMA Cables
Substitution: Horn T60, Chamber B Passthrough Cables

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	19.07	V	4.2	8.4	23.27	30.0	-6.7	
1711.50	13.13	H	4.2	8.4	17.33	30.0	-12.7	
Mid Ch								
1732.50	18.93	V	4.2	8.7	23.41	30.0	-6.6	
1732.50	11.21	H	4.2	8.7	15.69	30.0	-14.3	
High Ch								
1753.50	19.40	V	4.2	9.0	24.19	30.0	-5.8	
1753.50	12.09	H	4.2	9.0	16.87	30.0	-13.1	

9.1.5. LTE Band 5

10MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 11/23/2018
Test Engineer: 43575 OS
Configuration: EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 5 Fundamentals, 10MHz Bandwidth

Test Equipment:
Receiving: Hybrid T407, and Chamber B SMA Cables
Substitution: Dipole T416, Chamber B Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
829.00	18.60	V	2.9	0.1	15.81	38.5	-22.7	
829.00	23.16	H	2.9	0.2	20.47	38.5	-18.0	
Mid Ch								
836.50	17.44	V	2.9	0.1	14.59	38.5	-23.9	
836.50	23.87	H	2.9	0.2	21.12	38.5	-17.4	
High Ch								
844.00	17.85	V	2.9	0.0	14.98	38.5	-23.5	
844.00	24.92	H	2.9	0.1	22.16	38.5	-16.3	

10MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 11/23/2018
Test Engineer: 43575 OS
Configuration: EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 5 Fundamentals, 10MHz Bandwidth

Test Equipment:
Receiving: Hybrid T407, and Chamber B SMA Cables
Substitution: Dipole T416, Chamber B Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
829.00	16.39	V	2.9	0.1	13.60	38.5	-24.9	
829.00	20.91	H	2.9	0.2	18.22	38.5	-20.3	
Mid Ch								
836.50	15.23	V	2.9	0.1	12.38	38.5	-26.1	
836.50	21.71	H	2.9	0.2	18.96	38.5	-19.5	
High Ch								
844.00	15.74	V	2.9	0.0	12.87	38.5	-25.6	
844.00	22.60	H	2.9	0.1	19.84	38.5	-18.7	

3MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 11/23/2018
Test Engineer: 43575 OS
Configuration: EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 5 Fundamentals, 3MHz Bandwidth

Test Equipment:
Receiving: Hybrid T407, and Chamber B SMA Cables
Substitution: Dipole T416, Chamber B Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
825.50	15.47	V	2.9	0.1	12.70	38.5	-25.8	
825.50	23.40	H	2.9	0.2	20.73	38.5	-17.8	
Mid Ch								
836.50	18.01	V	2.9	0.1	15.16	38.5	-23.3	
836.50	24.15	H	2.9	0.2	21.40	38.5	-17.1	
High Ch								
847.50	17.48	V	2.9	0.0	14.58	38.5	-23.9	
847.50	24.61	H	2.9	0.1	21.82	38.5	-16.7	

3MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 11/23/2018
Test Engineer: 43575 OS
Configuration: EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 5 Fundamentals, 3MHz Bandwidth

Test Equipment:
Receiving: Hybrid T407, and Chamber B SMA Cables
Substitution: Dipole T416, Chamber B Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
825.50	14.65	V	2.9	0.1	11.88	38.5	-26.6	
825.50	21.04	H	2.9	0.2	18.37	38.5	-20.1	
Mid Ch								
836.50	15.84	V	2.9	0.1	12.99	38.5	-25.5	
836.50	21.95	H	2.9	0.2	19.20	38.5	-19.3	
High Ch								
847.50	15.15	V	2.9	0.0	12.25	38.5	-26.2	
847.50	22.53	H	2.9	0.1	19.74	38.5	-18.8	

9.1.6. LTE Band 7

20MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 11/21/2018
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 7 Fundamentals, 20MHz Bandwidth

Test Equipment:
Receiving: Horn T863, and Chamber B SMA Cables
Substitution: Horn T60, Chamber B Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2510.00	21.64	V	5.2	9.6	26.04	33.0	-7.0	
2510.00	18.26	H	5.2	9.6	22.66	33.0	-10.3	
Mid Ch								
2535.00	22.41	V	5.2	9.5	26.75	33.0	-6.2	
2535.00	19.36	H	5.2	9.5	23.70	33.0	-9.3	
High Ch								
2560.00	22.82	V	5.3	9.5	26.98	33.0	-6.0	
2560.00	16.54	H	5.3	9.5	20.71	33.0	-12.3	

20MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 11/21/2018
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 7 Fundamentals, 20MHz Bandwidth

Test Equipment:
Receiving: Horn T863, and Chamber B SMA Cables
Substitution: Horn T60, Chamber B Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2510.00	20.02	V	5.2	9.6	24.42	33.0	-8.6	
2510.00	16.89	H	5.2	9.6	21.29	33.0	-11.7	
Mid Ch								
2535.00	20.67	V	5.2	9.5	25.01	33.0	-8.0	
2535.00	17.59	H	5.2	9.5	21.93	33.0	-11.1	
High Ch								
2560.00	21.28	V	5.3	9.5	25.44	33.0	-7.6	
2560.00	14.89	H	5.3	9.5	19.06	33.0	-13.9	

15MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 11/21/2018
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 7 Fundamentals, 15MHz Bandwidth

Test Equipment:
Receiving: Horn T863, and Chamber B SMA Cables
Substitution: Horn T60, Chamber B Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2507.50	21.59	V	5.2	9.6	25.96	33.0	-7.0	
2507.50	18.25	H	5.2	9.6	22.62	33.0	-10.4	
Mid Ch								
2535.00	22.47	V	5.2	9.5	26.81	33.0	-6.2	
2535.00	19.63	H	5.2	9.5	23.97	33.0	-9.0	
High Ch								
2562.50	20.84	V	5.4	9.5	24.98	33.0	-8.0	
2562.50	19.66	H	5.4	9.5	23.80	33.0	-9.2	

15MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 11/21/2018
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 7 Fundamentals, 15MHz Bandwidth

Test Equipment:
Receiving: Horn T863, and Chamber B SMA Cables
Substitution: Horn T60, Chamber B Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2507.50	20.16	V	5.2	9.6	24.53	33.0	-8.5	
2507.50	16.98	H	5.2	9.6	21.35	33.0	-11.6	
Mid Ch								
2535.00	20.82	V	5.2	9.5	25.16	33.0	-7.8	
2535.00	18.00	H	5.2	9.5	22.34	33.0	-10.7	
High Ch								
2562.50	19.14	V	5.4	9.5	23.28	33.0	-9.7	
2562.50	18.06	H	5.4	9.5	22.20	33.0	-10.8	

9.1.7. LTE Band 12

10MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 11/23/2018
Test Engineer: 43575 OS
Configuration: EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 12 Fundamentals, 10MHz Bandwidth

Test Equipment:
Receiving: Hybrid T407, and Chamber B SMA Cables
Substitution: Dipole T416, Chamber B Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
704.00	10.11	V	2.6	1.2	8.65	34.8	-26.2	
704.00	19.14	H	2.6	1.6	18.07	34.8	-16.7	
Mid Ch								
707.50	10.63	V	2.7	1.1	9.12	34.8	-25.7	
707.50	19.57	H	2.7	1.5	18.42	34.8	-16.4	
High Ch								
711.00	10.99	V	2.6	1.1	9.45	34.8	-25.3	
711.00	19.71	H	2.6	1.5	18.53	34.8	-16.3	

10MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 11/23/2018
Test Engineer: 43575 OS
Configuration: EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 12 Fundamentals, 10MHz Bandwidth

Test Equipment:
Receiving: Hybrid T407, and Chamber B SMA Cables
Substitution: Dipole T416, Chamber B Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
704.00	8.49	V	2.6	1.2	7.03	34.8	-27.8	
704.00	17.41	H	2.6	1.6	16.34	34.8	-18.5	
Mid Ch								
707.50	8.96	V	2.7	1.1	7.45	34.8	-27.4	
707.50	17.92	H	2.7	1.5	16.77	34.8	-18.0	
High Ch								
711.00	9.28	V	2.6	1.1	7.74	34.8	-27.1	
711.00	18.03	H	2.6	1.5	16.85	34.8	-17.9	

5MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 11/23/2018
Test Engineer: 43575 OS
Configuration: EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 12 Fundamentals, 5MHz Bandwidth

Test Equipment:
Receiving: Hybrid T407, and Chamber B SMA Cables
Substitution: Dipole T416, Chamber B Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
701.50	6.78	V	2.6	1.2	5.34	34.8	-29.5	
701.50	18.99	H	2.6	1.6	17.95	34.8	-16.9	
Mid Ch								
707.50	8.12	V	2.7	1.1	6.61	34.8	-28.2	
707.50	19.77	H	2.7	1.5	18.62	34.8	-16.2	
High Ch								
713.50	12.17	V	2.6	1.1	10.61	34.8	-24.2	
713.50	19.50	H	2.6	1.4	18.29	34.8	-16.5	

5MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 11/23/2018
Test Engineer: 43575 OS
Configuration: EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 12 Fundamentals, 5MHz Bandwidth

Test Equipment:
Receiving: Hybrid T407, and Chamber B SMA Cables
Substitution: Dipole T416, Chamber B Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
701.50	4.84	V	2.6	1.2	3.40	34.8	-31.4	
701.50	17.18	H	2.6	1.6	16.14	34.8	-18.7	
Mid Ch								
707.50	6.83	V	2.7	1.1	5.32	34.8	-29.5	
707.50	18.04	H	2.7	1.5	16.89	34.8	-17.9	
High Ch								
713.50	8.94	V	2.6	1.1	7.38	34.8	-27.4	
713.50	17.72	H	2.6	1.4	16.51	34.8	-18.3	

9.1.8. LTE Band 13

10MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 11/23/2018
Test Engineer: 43575 OS
Configuration: EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 13 Fundamentals, 10MHz Bandwidth

Test Equipment:
Receiving: Hybrid T407, and Chamber B SMA Cables
Substitution: Dipole T416, Chamber B Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
782.00	0.00	V	2.8	0.3	0.00	34.8	0.0	
782.00	0.00	H	2.8	0.5	0.00	34.8	0.0	
Mid Ch								
782.00	13.65	V	2.8	0.3	11.21	34.8	-23.6	
782.00	20.47	H	2.8	0.5	18.17	34.8	-16.6	
High Ch								
782.00	0.00	V	2.8	0.3	0.00	34.8	0.0	
782.00	0.00	H	2.8	0.5	0.00	34.8	0.0	

10MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 11/23/2018
Test Engineer: 43575 OS
Configuration: EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 13 Fundamentals, 10MHz Bandwidth

Test Equipment:
Receiving: Hybrid T407, and Chamber B SMA Cables
Substitution: Dipole T416, Chamber B Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
782.00	0.00	V	2.8	0.3	0.00	34.8	0.0	
782.00	0.00	H	2.8	0.5	0.00	34.8	0.0	
Mid Ch								
782.00	11.56	V	2.8	0.3	9.12	34.8	-25.6	
782.00	18.36	H	2.8	0.5	16.06	34.8	-18.7	
High Ch								
782.00	0.00	V	2.8	0.3	0.00	34.8	0.0	
782.00	0.00	H	2.8	0.5	0.00	34.8	0.0	

5MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 11/24/2018
Test Engineer: 43575 OS
Configuration: EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 13 Fundamentals, 5MHz Bandwidth

Test Equipment:
Receiving: Hybrid T407, and Chamber B SMA Cables
Substitution: Dipole T416, Chamber B Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
779.50	13.76	V	2.8	0.4	11.35	34.8	-23.4	
779.50	20.56	H	2.8	0.5	18.32	34.8	-16.5	
Mid Ch								
782.00	13.80	V	2.8	0.3	11.36	34.8	-23.4	
782.00	20.70	H	2.8	0.5	18.40	34.8	-16.4	
High Ch								
784.50	13.42	V	2.8	0.3	10.95	34.8	-23.8	
784.50	20.80	H	2.8	0.4	18.46	34.8	-16.3	

5MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 11/23/2018
Test Engineer: 43575 OS
Configuration: EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 13 Fundamentals, 5MHz Bandwidth

Test Equipment:
Receiving: Hybrid T407, and Chamber B SMA Cables
Substitution: Dipole T416, Chamber B Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
779.50	11.80	V	2.8	0.4	9.39	34.8	-25.4	
779.50	18.34	H	2.8	0.5	16.10	34.8	-18.7	
Mid Ch								
782.00	11.71	V	2.8	0.3	9.27	34.8	-25.5	
782.00	18.54	H	2.8	0.5	16.24	34.8	-18.5	
High Ch								
784.50	11.32	V	2.8	0.3	8.85	34.8	-25.9	
784.50	18.60	H	2.8	0.4	16.26	34.8	-18.5	

9.1.9. LTE Band 17

10MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 11/24/2018
Test Engineer: 43575 OS
Configuration: EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 17 Fundamentals, 10MHz Bandwidth

Test Equipment:
Receiving: Hybrid T407, and Chamber B SMA Cables
Substitution: Dipole T416, Chamber B Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
709.00	8.90	V	2.7	1.1	7.36	34.8	-27.4	
709.00	19.14	H	2.7	1.5	17.97	34.8	-16.8	
Mid Ch								
710.00	9.57	V	2.7	1.1	8.03	34.8	-26.7	
710.00	19.63	H	2.7	1.5	18.45	34.8	-16.3	
High Ch								
711.00	9.68	V	2.6	1.1	8.15	34.8	-26.6	
711.00	19.87	H	2.6	1.5	18.69	34.8	-16.1	

10MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 11/24/2018
Test Engineer: 43575 OS
Configuration: EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 17 Fundamentals, 10MHz Bandwidth

Test Equipment:
Receiving: Hybrid T407, and Chamber B SMA Cables
Substitution: Dipole T416, Chamber B Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
709.00	6.09	V	2.7	1.1	4.55	34.8	-30.2	
709.00	17.61	H	2.7	1.5	16.44	34.8	-18.3	
Mid Ch								
710.00	7.90	V	2.7	1.1	6.36	34.8	-28.4	
710.00	17.73	H	2.7	1.5	16.55	34.8	-18.2	
High Ch								
711.00	8.18	V	2.6	1.1	6.65	34.8	-28.1	
711.00	17.65	H	2.6	1.5	16.47	34.8	-18.3	

5MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 11/24/2018
Test Engineer: 43575 OS
Configuration: EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 17 Fundamentals, 5MHz Bandwidth

Test Equipment:
Receiving: Hybrid T407, and Chamber B SMA Cables
Substitution: Dipole T416, Chamber B Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
706.50	8.87	V	2.6	1.1	7.38	34.8	-27.4	
706.50	19.38	H	2.6	1.5	18.27	34.8	-16.5	
Mid Ch								
710.00	9.50	V	2.7	1.1	7.96	34.8	-26.8	
710.00	19.50	H	2.7	1.5	18.32	34.8	-16.5	
High Ch								
713.50	10.63	V	2.6	1.1	9.08	34.8	-25.7	
713.50	19.77	H	2.6	1.4	18.56	34.8	-16.2	

5MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 11/24/2018
Test Engineer: 43575 OS
Configuration: EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 17 Fundamentals, 5MHz Bandwidth

Test Equipment:
Receiving: Hybrid T407, and Chamber B SMA Cables
Substitution: Dipole T416, Chamber B Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
706.50	6.73	V	2.6	1.1	5.24	34.8	-29.5	
706.50	17.73	H	2.6	1.5	16.62	34.8	-18.2	
Mid Ch								
710.00	8.13	V	2.7	1.1	6.59	34.8	-28.2	
710.00	17.78	H	2.7	1.5	16.60	34.8	-18.2	
High Ch								
713.50	8.89	V	2.6	1.1	7.34	34.8	-27.4	
713.50	18.21	H	2.6	1.4	17.00	34.8	-17.8	

9.1.10. LTE Band 25

20MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 11/19/2018
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 25 Fundamentals, 20MHz Bandwidth

Test Equipment:
Receiving: Horn T863, and Chamber B SMA Cables
Substitution: Horn T60, Chamber B Passthrough Cables

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	17.46	V	4.4	9.2	22.27	33.0	-10.7	
1860.00	11.72	H	4.4	9.2	16.53	33.0	-16.5	
Mid Ch								
1882.50	18.95	V	4.4	9.0	23.56	33.0	-9.4	
1882.50	12.67	H	4.4	9.0	17.27	33.0	-15.7	
High Ch								
1905.00	19.43	V	4.5	8.9	23.85	33.0	-9.2	
1905.00	12.08	H	4.5	8.9	16.50	33.0	-16.5	

20MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 11/19/2018
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 25 Fundamentals, 20MHz Bandwidth

Test Equipment:
Receiving: Horn T863, and Chamber B SMA Cables
Substitution: Horn T60, Chamber B Passthrough Cables

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	15.73	V	4.4	9.2	20.54	33.0	-12.5	
1860.00	9.91	H	4.4	9.2	14.72	33.0	-18.3	
Mid Ch								
1882.50	17.15	V	4.4	9.0	21.76	33.0	-11.2	
1882.50	10.93	H	4.4	9.0	15.53	33.0	-17.5	
High Ch								
1905.00	17.83	V	4.5	8.9	22.25	33.0	-10.8	
1905.00	10.44	H	4.5	8.9	14.86	33.0	-18.1	

3MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 11/19/2018
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 25 Fundamentals, 3MHz Bandwidth

Test Equipment:
Receiving: Horn T863, and Chamber B SMA Cables
Substitution: Horn T60, Chamber B Passthrough Cables

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	17.90	V	4.4	9.3	22.79	33.0	-10.2	
1851.50	10.51	H	4.4	9.3	15.39	33.0	-17.6	
Mid Ch								
1882.50	19.57	V	4.4	9.0	24.18	33.0	-8.8	
1882.50	9.52	H	4.4	9.0	14.12	33.0	-18.9	
High Ch								
1913.50	18.34	V	4.5	8.8	22.70	33.0	-10.3	
1913.50	11.53	H	4.5	8.8	15.89	33.0	-17.1	

5MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 11/20/2018
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 25 Fundamentals, 5MHz Bandwidth

Test Equipment:
Receiving: Horn T863, and Chamber B SMA Cables
Substitution: Horn T60, Chamber B Passthrough Cables

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	17.02	V	4.4	9.3	21.89	33.0	-11.1	
1852.50	11.03	H	4.4	9.3	15.90	33.0	-17.1	
Mid Ch								
1882.50	16.47	V	4.4	9.0	21.08	33.0	-11.9	
1882.50	9.22	H	4.4	9.0	13.82	33.0	-19.2	
High Ch								
1912.50	17.65	V	4.5	8.8	22.01	33.0	-11.0	
1912.50	8.53	H	4.5	8.8	12.89	33.0	-20.1	

9.1.11. LTE Band 26 (FCC PART 90S)

15MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 1/16/2019
Test Engineer: 43575 OS
Configuration: EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 26 Fundamentals, 15MHz Bandwidth

Test Equipment:
Receiving: Hybrid T407, and Chamber B SMA Cables
Substitution: Dipole T416, Chamber B Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
821.50	15.31	V	2.9	0.1	12.57	38.5	-25.9	
821.50	22.37	H	2.9	0.2	19.71	38.5	-18.8	

15MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 1/16/2019
Test Engineer: 43575 OS
Configuration: EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 26 Fundamentals, 15MHz Bandwidth

Test Equipment:
Receiving: Hybrid T407, and Chamber B SMA Cables
Substitution: Dipole T416, Chamber B Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
821.50	14.34	V	2.9	0.1	11.60	38.5	-26.9	
821.50	21.24	H	2.9	0.2	18.58	38.5	-19.9	

10MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 11/27/2018
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 26 Fundamentals, 10MHz Bandwidth

Test Equipment:
Receiving: Hybrid T407, and Chamber B SMA Cables
Substitution: Dipole T416, Chamber B Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
819.00	15.62	V	2.8	0.1	12.89	50.0	-37.1	Part 90
819.00	22.81	H	2.8	0.2	20.16	50.0	-29.8	Part 90
Mid Ch								
831.50	0.00	V	2.9	0.1	0.00	38.5	0.0	
831.50	0.00	H	2.9	0.2	0.00	38.5	0.0	
High Ch								
844.00	0.00	V	2.9	0.0	0.00	38.5	0.0	
844.00	0.00	H	2.9	0.1	0.00	38.5	0.0	

10MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 11/27/2018
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 26 Fundamentals, 10MHz Bandwidth

Test Equipment:
Receiving: Hybrid T407, and Chamber B SMA Cables
Substitution: Dipole T416, Chamber B Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
819.00	13.91	V	2.8	0.1	11.18	50.0	-38.8	Part 90
819.00	21.11	H	2.8	0.2	18.46	50.0	-31.5	Part 90
Mid Ch								
831.50	0.00	V	2.9	0.1	0.00	38.5	0.0	
831.50	0.00	H	2.9	0.2	0.00	38.5	0.0	
High Ch								
844.00	0.00	V	2.9	0.0	0.00	38.5	0.0	
844.00	0.00	H	2.9	0.1	0.00	38.5	0.0	

9.1.12. LTE Band 26 (FCC PART 22)

15MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 11/24/2018
Test Engineer: 43575 OS
Configuration: EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 26 Fundamentals, 15MHz Bandwidth

Test Equipment:
Receiving: Hybrid T407, and Chamber B SMA Cables
Substitution: Dipole T416, Chamber B Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
831.50	16.41	V	2.9	0.1	13.58	38.5	-24.9	
831.50	21.96	H	2.9	0.2	19.23	38.5	-19.3	
Mid Ch								
836.50	16.33	V	2.9	0.1	13.48	38.5	-25.0	
836.50	21.96	H	2.9	0.2	19.22	38.5	-19.3	
High Ch								
841.50	15.88	V	2.9	0.0	13.03	38.5	-25.5	
841.50	21.58	H	2.9	0.1	18.83	38.5	-19.7	

15MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 11/24/2018
Test Engineer: 43575 OS
Configuration: EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 26 Fundamentals, 15MHz Bandwidth

Test Equipment:
Receiving: Hybrid T407, and Chamber B SMA Cables
Substitution: Dipole T416, Chamber B Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
831.50	14.60	V	2.9	0.1	11.77	38.5	-26.7	
831.50	20.27	H	2.9	0.2	17.54	38.5	-21.0	
Mid Ch								
836.50	14.60	V	2.9	0.1	11.75	38.5	-26.7	
836.50	19.88	H	2.9	0.2	17.14	38.5	-21.4	
High Ch								
841.50	14.12	V	2.9	0.0	11.27	38.5	-27.2	
841.50	20.25	H	2.9	0.1	17.50	38.5	-21.0	

1.4MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 11/24/2018
Test Engineer: 43575 OS
Configuration: EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 26 Fundamentals, 1.4MHz Bandwidth

Test Equipment:
Receiving: Hybrid T407, and Chamber B SMA Cables
Substitution: Dipole T416, Chamber B Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
814.70	15.86	V	2.8	0.1	13.16	50.0	-36.8	Part 90
814.70	22.81	H	2.8	0.2	20.17	50.0	-29.8	Part 90
Mid Ch								
831.50	16.14	V	2.9	0.1	13.31	38.5	-25.2	
831.50	22.33	H	2.9	0.2	19.60	38.5	-18.9	
High Ch								
848.30	16.16	V	2.9	0.0	13.26	38.5	-25.2	
848.30	22.12	H	2.9	0.1	19.33	38.5	-19.2	

3MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 11/24/2018
Test Engineer: 43575 OS
Configuration: EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 26 Fundamentals, 3MHz Bandwidth

Test Equipment:
Receiving: Hybrid T407, and Chamber B SMA Cables
Substitution: Dipole T416, Chamber B Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
815.50	14.02	V	2.8	0.1	11.31	50.0	-38.7	Part 90
815.50	20.79	H	2.8	0.2	18.15	50.0	-31.8	Part 90
Mid Ch								
831.50	14.32	V	2.9	0.1	11.49	38.5	-27.0	
831.50	20.20	H	2.9	0.2	17.47	38.5	-21.0	
High Ch								
847.50	14.12	V	2.9	0.0	11.23	38.5	-27.3	
847.50	20.19	H	2.9	0.1	17.40	38.5	-21.1	

9.1.13. LTE Band 41

20MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 11/21/2018
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 41(FCC) Fundamentals, 20MHz Bandwidth

Test Equpment:
Receiving: Horn T863, and Chamber B SMA Cables
Substitution: Horn T60, Chamber B Passthrough Cables

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	19.04	V	5.2	9.6	23.42	33.0	-9.6	
2506.00	13.80	H	5.2	9.6	18.18	33.0	-14.8	
Mid Ch								
2593.00	16.21	V	5.3	9.5	20.39	33.0	-12.6	
2593.00	13.38	H	5.3	9.5	17.56	33.0	-15.4	
High Ch								
2680.00	18.06	V	5.4	9.8	22.44	33.0	-10.6	
2680.00	15.44	H	5.4	9.8	19.82	33.0	-13.2	

20MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 11/21/2018
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 41(FCC) Fundamentals, 20MHz Bandwidth

Test Equpment:
Receiving: Horn T863, and Chamber B SMA Cables
Substitution: Horn T60, Chamber B Passthrough Cables

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	16.98	V	5.2	9.6	21.36	33.0	-11.6	
2506.00	11.86	H	5.2	9.6	16.24	33.0	-16.8	
Mid Ch								
2593.00	15.15	V	5.3	9.5	19.33	33.0	-13.7	
2593.00	11.89	H	5.3	9.5	16.07	33.0	-16.9	
High Ch								
2680.00	16.97	V	5.4	9.8	21.35	33.0	-11.7	
2680.00	14.19	H	5.4	9.8	18.57	33.0	-14.4	

15MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 11/21/2018
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 41(FCC) Fundamentals, 15MHz Bandwidth

Test Equpment:
Receiving: Horn T863, and Chamber B SMA Cables
Substitution: Horn T60, Chamber B Passthrough Cables

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	19.63	V	5.2	9.6	24.02	33.0	-9.0	
2503.50	15.25	H	5.2	9.6	19.63	33.0	-13.4	
Mid Ch								
2593.00	17.38	V	5.3	9.5	21.56	33.0	-11.4	
2593.00	13.98	H	5.3	9.5	18.16	33.0	-14.8	
High Ch								
2682.50	18.73	V	5.4	9.8	23.11	33.0	-9.9	
2682.50	14.77	H	5.4	9.8	19.15	33.0	-13.8	

15MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 11/21/2018
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 41(FCC) Fundamentals, 15MHz Bandwidth

Test Equpment:
Receiving: Horn T863, and Chamber B SMA Cables
Substitution: Horn T60, Chamber B Passthrough Cables

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	17.51	V	5.2	9.6	21.90	33.0	-11.1	
2503.50	13.13	H	5.2	9.6	17.51	33.0	-15.5	
Mid Ch								
2593.00	15.64	V	5.3	9.5	19.82	33.0	-13.2	
2593.00	12.51	H	5.3	9.5	16.69	33.0	-16.3	
High Ch								
2682.50	17.38	V	5.4	9.8	21.76	33.0	-11.2	
2682.50	12.86	H	5.4	9.8	17.24	33.0	-15.8	

9.1.14. LTE Band 66

20MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 11/19/2018
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 66 Fundamentals, 20MHz Bandwidth

Test Equpment:
Receiving: Horn T863, and Chamber B SMA Cables
Substitution: Horn T60, Chamber B Passthrough Cables

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	18.45	V	4.2	8.5	22.78	30.0	-7.2	
1720.00	10.89	H	4.2	8.5	15.22	30.0	-14.8	
Mid Ch								
1745.00	17.70	V	4.2	8.9	22.35	30.0	-7.6	
1745.00	8.63	H	4.2	8.9	13.28	30.0	-16.7	
High Ch								
1770.00	18.66	V	4.3	9.3	23.63	30.0	-6.4	
1770.00	9.68	H	4.3	9.3	14.66	30.0	-15.3	

20MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 11/19/2018
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 66 Fundamentals, 20MHz Bandwidth

Test Equpment:
Receiving: Horn T863, and Chamber B SMA Cables
Substitution: Horn T60, Chamber B Passthrough Cables

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	16.77	V	4.2	8.5	21.10	30.0	-8.9	
1720.00	9.73	H	4.2	8.5	14.06	30.0	-15.9	
Mid Ch								
1745.00	16.09	V	4.2	8.9	20.74	30.0	-9.3	
1745.00	6.94	H	4.2	8.9	11.59	30.0	-18.4	
High Ch								
1770.00	16.97	V	4.3	9.3	21.94	30.0	-8.1	
1770.00	8.03	H	4.3	9.3	13.01	30.0	-17.0	

3MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 11/19/2018
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 66 Fundamentals, 3MHz Bandwidth

Test Equpment:
Receiving: Horn T863, and Chamber B SMA Cables
Substitution: Horn T60, Chamber B Passthrough Cables

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	16.10	V	4.2	8.4	20.30	30.0	-9.7	
1711.50	9.12	H	4.2	8.4	13.31	30.0	-16.7	
Mid Ch								
1745.00	17.96	V	4.2	8.9	22.61	30.0	-7.4	
1745.00	9.44	H	4.2	8.9	14.09	30.0	-15.9	
High Ch								
1778.50	17.19	V	4.3	9.4	22.30	30.0	-7.7	
1778.50	9.86	H	4.3	9.4	14.98	30.0	-15.0	

15MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Lions
Project #: 12563734
Date: 11/19/2018
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 66 Fundamentals, 15MHz Bandwidth

Test Equpment:
Receiving: Horn T863, and Chamber B SMA Cables
Substitution: Horn T60, Chamber B Passthrough Cables

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	16.45	V	4.2	8.5	20.76	30.0	-9.2	
1717.50	9.64	H	4.2	8.5	13.95	30.0	-16.1	
Mid Ch								
1745.00	17.18	V	4.2	8.9	21.83	30.0	-8.2	
1745.00	9.63	H	4.2	8.9	14.28	30.0	-15.7	
High Ch								
1772.50	16.60	V	4.3	9.3	21.61	30.0	-8.4	
1772.50	8.77	H	4.3	9.3	13.78	30.0	-16.2	

9.2. FIELD STRENGTH OF SPURIOUS RADIATION

RULE PART(S)

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

LIMITS

FCC: §22.917(a), §24.238(a), §27.53 (g), (h), §90.691
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.

FCC: §27.53 (Band 13)
(c) 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.
(f) Emissions in the band 1559-1610 MHz shall be limited to −70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals. (-70 dBW/MHz = -40dBm/MHz).

FCC: §27.53 (m) (Band 7, 41)
At least 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section.

TEST PROCEDURE

KDB 971168 D01 v02r02/D02 v01
TIA-603-E, Section 2.2.12.

MODES TESTED

- GSM 850
- GSM 1900
- WCDMA Band 5
- WCDMA Band 2
- WCDMA Band 4
- LTE Band 2
- LTE Band 4
- LTE Band 5
- LTE Band 7
- LTE Band 12
- LTE Band 13
- LTE Band 17
- LTE Band 25
- LTE Band 26
- LTE Band 41
- LTE Band 66

RESULTS

No spurious emissions were detected above system noise floor from 18-26GHz.

9.2.1. GSM

Company:	Samsung
Project #:	12563734
Date:	10/30/18
Test Engineer:	16069
Configuration:	EUT+ Support Equipment
Mode:	GPRS 850
Chamber #:	Chamber A

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	AF T477 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	824.2MHz											
4	1.644	-70.44	Pk	28.5	-31.6	11.5	-62.04	-13	-49.04	0-360	149	V
1	1.649	-69.87	Pk	28.5	-31.5	12.1	-60.77	-13	-47.77	0-360	149	H
5	2.461	-72.25	Pk	32.2	-30.6	11.5	-59.15	-13	-46.15	0-360	149	V
2	2.472	-71.65	Pk	32.3	-30.6	11.8	-58.15	-13	-45.15	0-360	149	H
6	3.284	-70.44	Pk	32.9	-29.3	10.9	-55.94	-13	-42.94	0-360	149	V
3	3.29	-71.54	Pk	32.8	-29.1	11.1	-56.74	-13	-43.74	0-360	149	H
	836.6MHz											
4	1.662	-69.43	Pk	28.6	-31.7	11.6	-60.93	-13	-47.93	0-360	149	V
1	1.669	-70.59	Pk	28.7	-31.6	12.7	-60.79	-13	-47.79	0-360	149	H
5	2.499	-72.01	Pk	32.4	-30.5	11.8	-58.31	-13	-45.31	0-360	149	V
2	2.504	-72.03	Pk	32.4	-30.4	11.2	-58.83	-13	-45.83	0-360	149	H
6	3.333	-71.74	Pk	32.7	-28.9	10.9	-57.04	-13	-44.04	0-360	149	V
3	3.343	-71.47	Pk	32.7	-29	10.4	-57.37	-13	-44.37	0-360	149	H
	848.8MHz											
4	1.69	-70.56	Pk	28.9	-31.3	11.7	-61.26	-13	-48.26	0-360	149	V
1	1.693	-70.75	Pk	28.9	-31.3	12.6	-60.55	-13	-47.55	0-360	149	H
5	2.541	-71.88	Pk	32.4	-30.4	11.9	-57.98	-13	-44.98	0-360	149	V
2	2.542	-71.4	Pk	32.3	-30.4	11.8	-57.7	-13	-44.7	0-360	149	H
6	3.383	-70.99	Pk	32.6	-29.1	11.4	-56.09	-13	-43.09	0-360	149	V
3	3.398	-72.26	Pk	32.6	-29.1	11.2	-57.56	-13	-44.56	0-360	149	H

Company:	Samsung
Project #:	12563734
Date:	10/30/18
Test Engineer:	16069
Configuration:	EUT+ Support Equipment
Mode:	EGPRS 850
Chamber #:	Chamber A

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	AF T477 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	824.2MHz											
4	1.642	-71.4	Pk	28.4	-31.6	11.5	-63.1	-13	-50.1	0-360	150	V
1	1.647	-69.85	Pk	28.5	-31.6	12.2	-60.75	-13	-47.75	0-360	149	H
5	2.459	-71.3	Pk	32.2	-30.6	11.6	-58.1	-13	-45.1	0-360	150	V
2	2.468	-71.04	Pk	32.2	-30.6	11.8	-57.64	-13	-44.64	0-360	149	H
3	3.294	-70.94	Pk	32.8	-29.3	11.2	-56.24	-13	-43.24	0-360	149	H
6	3.297	-71.45	Pk	32.8	-29.3	11.3	-56.65	-13	-43.65	0-360	150	V
	836.6MHz											
4	1.664	-71.18	Pk	28.6	-31.7	11.6	-62.68	-13	-49.68	0-360	149	V
1	1.671	-70.71	Pk	28.7	-31.6	12.7	-60.91	-13	-47.91	0-360	149	H
5	2.499	-71.68	Pk	32.4	-30.5	11.8	-57.98	-13	-44.98	0-360	149	V
2	2.505	-72.75	Pk	32.4	-30.4	11.3	-59.45	-13	-46.45	0-360	149	H
6	3.339	-71.14	Pk	32.7	-29	11	-56.44	-13	-43.44	0-360	149	V
3	3.342	-70.62	Pk	32.7	-29	10.5	-56.42	-13	-43.42	0-360	149	H
	848.8MHz											
1	1.696	-69.06	Pk	28.9	-31.4	12.6	-58.96	-13	-45.96	0-360	149	H
4	1.698	-71.13	Pk	28.9	-31.3	12.9	-60.63	-13	-47.63	0-360	149	V
2	2.546	-67.25	Pk	32.3	-30.4	12.1	-53.25	-13	-40.25	0-360	149	H
5	2.546	-69.44	Pk	32.3	-30.4	11.9	-55.64	-13	-42.64	0-360	149	V
6	3.37	-72.26	Pk	32.6	-29.3	11.7	-57.26	-13	-44.26	0-360	149	V
3	3.391	-73.14	Pk	32.6	-29.2	11.2	-58.54	-13	-45.54	0-360	149	H

Company:	Samsung
Project #:	12563734
Date:	10/30/18
Test Engineer:	16069
Configuration:	EUT+ Support Equipment
Mode:	GPRS 1900
Chamber #:	Chamber A

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	AF T477 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	1852.2MHz											
4	3.689	-71.72	Pk	33	-28.8	11.7	-55.82	-13	-42.82	0-360	149	V
1	3.696	-71.58	Pk	33	-28.9	11.3	-56.18	-13	-43.18	0-360	149	H
5	5.525	-73.45	Pk	35	-26.9	11.3	-54.05	-13	-41.05	0-360	149	V
2	5.551	-70.14	Pk	35	-26.7	10.8	-51.04	-13	-38.04	0-360	149	H
3	7.398	-74.31	Pk	35.6	-23.1	10.6	-51.21	-13	-38.21	0-360	149	H
6	7.411	-74.58	Pk	35.6	-22.9	10.9	-50.98	-13	-37.98	0-360	149	V
	1880MHz											
4	3.756	-71.93	Pk	33.2	-28.8	11.3	-56.23	-13	-43.23	0-360	149	V
1	3.76	-70.73	Pk	33.2	-28.8	11.6	-54.73	-13	-41.73	0-360	149	H
2	5.629	-73.45	Pk	35.1	-26.9	10.5	-54.75	-13	-41.75	0-360	149	H
5	5.63	-71.7	Pk	35.1	-26.9	10.7	-52.8	-13	-39.8	0-360	149	V
3	7.514	-75.83	Pk	35.7	-23.1	10.5	-52.73	-13	-39.73	0-360	149	H
6	7.529	-75.3	Pk	35.7	-22.9	10.6	-51.9	-13	-38.9	0-360	149	V
	1909.8MHz											
4	3.804	-71.38	Pk	33.2	-28.3	11.4	-55.08	-13	-42.08	0-360	149	V
1	3.814	-71.81	Pk	33.1	-28.5	11.4	-55.81	-13	-42.81	0-360	149	H
5	5.67	-73.85	Pk	35	-26.6	10.7	-54.75	-13	-41.75	0-360	149	V
2	5.708	-73.07	Pk	35	-26.3	10.6	-53.77	-13	-40.77	0-360	149	H
6	7.591	-74.35	Pk	35.7	-22.6	10.7	-50.55	-13	-37.55	0-360	149	V
3	7.63	-75.34	Pk	35.7	-23	10.7	-51.94	-13	-38.94	0-360	149	H

Company:	Samsung
Project #:	12563734
Date:	10/30/18
Test Engineer:	16069
Configuration:	EUT+ Support Equipment
Mode:	EGPRS 1900
Chamber #:	Chamber A

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	AF T477 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	1852.2MHz											
4	3.689	-72.06	Pk	33	-28.8	11.7	-56.16	-13	-43.16	0-360	149	V
1	3.702	-71.61	Pk	33.1	-29	11.2	-56.31	-13	-43.31	0-360	149	H
5	5.525	-72.39	Pk	35	-26.9	11.3	-52.99	-13	-39.99	0-360	149	V
2	5.542	-71.86	Pk	35	-26.8	11.1	-52.56	-13	-39.56	0-360	149	H
6	7.385	-74.77	Pk	35.6	-23.2	11.2	-51.17	-13	-38.17	0-360	149	V
3	7.398	-74.53	Pk	35.6	-23.1	10.6	-51.43	-13	-38.43	0-360	149	H
	1880MHz											
4	3.744	-71.25	Pk	33.1	-28.8	11.4	-55.55	-13	-42.55	0-360	149	V
1	3.759	-70.63	Pk	33.2	-28.8	11.5	-54.73	-13	-41.73	0-360	149	H
2	5.735	-72.67	Pk	35	-26.5	10.4	-53.77	-13	-40.77	0-360	149	H
5	5.755	-73.28	Pk	35	-26.3	10.7	-53.88	-13	-40.88	0-360	149	V
6	7.503	-75.54	Pk	35.7	-23.2	11.1	-51.94	-13	-38.94	0-360	149	V
3	7.513	-75.14	Pk	35.7	-23.1	10.5	-52.04	-13	-39.04	0-360	149	H
	1909.8MHz											
4	3.797	-71.47	Pk	33.2	-28.5	11.3	-55.47	-13	-42.47	0-360	149	V
1	3.817	-71.73	Pk	33.1	-28.6	11.6	-55.63	-13	-42.63	0-360	149	H
5	5.705	-72.54	Pk	35	-26.3	10.7	-53.14	-13	-40.14	0-360	149	V
2	5.716	-72.43	Pk	35	-26.2	10.5	-53.13	-13	-40.13	0-360	149	H
6	7.59	-73.62	Pk	35.7	-22.7	10.7	-49.92	-13	-36.92	0-360	149	V
3	7.63	-72.93	Pk	35.7	-23	10.7	-49.53	-13	-36.53	0-360	149	H

9.2.2. WCDMA

Company:	Samsung
Project #:	12563734
Date:	10/30/18
Test Engineer:	19480
Configuration:	EUT+ Support Equipment
Mode:	REL99 B5
Chamber #:	Chamber B

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	AF T477 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	826.4MHz											
1	1.655	-68.36	Pk	28.7	-33.2	10.7	-62.16	-13	-49.16	0-360	149	H
2	1.655	-69.85	Pk	28.7	-33.2	9.6	-64.75	-13	-51.75	0-360	149	V
3	2.478	-69.56	Pk	32.6	-32.3	8.7	-60.56	-13	-47.56	0-360	149	H
4	2.481	-71.27	Pk	32.6	-32.3	8.7	-62.27	-13	-49.27	0-360	149	V
6	3.306	-71.28	Pk	32.9	-31	9.9	-59.48	-13	-46.48	0-360	149	V
5	3.307	-71.02	Pk	32.9	-30.9	9.6	-59.42	-13	-46.42	0-360	149	H
	836.6MHz											
1	1.674	-70.21	Pk	29.1	-33.2	10.5	-63.81	-13	-50.81	0-360	149	H
2	1.674	-70.75	Pk	29.1	-33.2	9	-65.85	-13	-52.85	0-360	149	V
3	2.51	-70.89	Pk	32.7	-32.2	9.1	-61.29	-13	-48.29	0-360	149	H
4	2.51	-71.13	Pk	32.7	-32.2	9.3	-61.33	-13	-48.33	0-360	149	V
5	3.346	-71.17	Pk	32.9	-31	9.1	-60.17	-13	-47.17	0-360	149	H
6	3.347	-72.12	Pk	32.9	-31	9.3	-60.92	-13	-47.92	0-360	149	V
	846.6MHz											
1	1.694	-69.37	Pk	29.5	-33.3	10.4	-62.77	-13	-49.77	0-360	149	H
2	1.694	-67.72	Pk	29.5	-33.3	9.7	-61.82	-13	-48.82	0-360	149	V
4	2.541	-70.21	Pk	32.7	-32	8.9	-60.61	-13	-47.61	0-360	149	V
3	2.544	-70.11	Pk	32.7	-32	9	-60.41	-13	-47.41	0-360	149	H
5	3.386	-71.26	Pk	32.8	-31.3	8.6	-61.16	-13	-48.16	0-360	149	H
6	3.387	-69.98	Pk	32.8	-31.3	8.7	-59.78	-13	-46.78	0-360	149	V

Company:	Samsung
Project #:	12563734
Date:	10/30/18
Test Engineer:	19480
Configuration:	EUT+ Support Equipment
Mode:	HSDPA B5
Chamber #:	Chamber B

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	AF T477 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	826.4MHz											
2	1.653	-69.73	Pk	28.7	-33.3	9.7	-64.63	-13	-51.63	0-360	149	V
1	1.655	-69.62	Pk	28.7	-33.2	10.8	-63.32	-13	-50.32	0-360	149	H
4	2.479	-70.59	Pk	32.6	-32.3	8.8	-61.49	-13	-48.49	0-360	149	V
3	2.48	-71.68	Pk	32.6	-32.3	8.7	-62.68	-13	-49.68	0-360	149	H
5	3.307	-71.61	Pk	32.9	-30.9	9.6	-60.01	-13	-47.01	0-360	149	H
6	3.308	-71.23	Pk	32.9	-30.9	9.9	-59.33	-13	-46.33	0-360	149	V
	836.6MHz											
2	1.675	-69.64	Pk	29.1	-33.1	9	-64.64	-13	-51.64	0-360	149	V
1	1.676	-69.36	Pk	29.1	-33.1	10.5	-62.86	-13	-49.86	0-360	149	H
3	2.509	-70.63	Pk	32.7	-32.2	9.1	-61.03	-13	-48.03	0-360	149	H
4	2.51	-71.6	Pk	32.7	-32.2	9.3	-61.8	-13	-48.8	0-360	149	V
5	3.347	-70.92	Pk	32.9	-31	9.1	-59.92	-13	-46.92	0-360	149	H
6	3.347	-72.33	Pk	32.9	-31	9.3	-61.13	-13	-48.13	0-360	149	V
	846.6MHz											
2	1.692	-68.19	Pk	29.4	-33.2	9.7	-62.29	-13	-49.29	0-360	149	V
1	1.694	-70.1	Pk	29.5	-33.3	10.4	-63.5	-13	-50.5	0-360	149	H
3	2.539	-69.28	Pk	32.7	-32	8.8	-59.78	-13	-46.78	0-360	149	H
4	2.543	-70.06	Pk	32.7	-32	8.9	-60.46	-13	-47.46	0-360	149	V
6	3.387	-70.58	Pk	32.8	-31.3	8.7	-60.38	-13	-47.38	0-360	149	V
5	3.389	-70.62	Pk	32.8	-31.3	8.6	-60.52	-13	-47.52	0-360	149	H

Company:	Samsung
Project #:	12563734
Date:	10/30/18
Test Engineer:	19480
Configuration:	EUT+ Support Equipment
Mode:	REL99 B2
Chamber #:	Chamber B

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	AF T477 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	1852.4MHz											
4	3.706	-69.95	Pk	33.2	-30.9	10	-57.65	-13	-44.65	0-360	149	V
3	3.707	-69.73	Pk	33.2	-30.9	10.2	-57.23	-13	-44.23	0-360	149	H
5	5.555	-70.96	Pk	35.4	-29.6	8.9	-56.26	-13	-43.26	0-360	149	H
6	5.558	-71.41	Pk	35.4	-29.7	8.8	-56.91	-13	-43.91	0-360	149	V
7	7.408	-70.85	Pk	36.2	-27.5	6.9	-55.25	-13	-42.25	0-360	149	H
8	7.411	-70.64	Pk	36.2	-27.5	7.1	-54.84	-13	-41.84	0-360	149	V
	1880MHz											
3	3.758	-69.14	Pk	33.3	-31.1	9.3	-57.64	-13	-44.64	0-360	149	H
4	3.761	-70.12	Pk	33.3	-31	9.7	-58.12	-13	-45.12	0-360	149	V
5	5.636	-70.85	Pk	35.5	-29.4	8.5	-56.25	-13	-43.25	0-360	149	H
6	5.641	-71.96	Pk	35.5	-29.4	8.1	-57.76	-13	-44.76	0-360	149	V
8	7.52	-68.87	Pk	36.2	-27.3	7.4	-52.57	-13	-39.57	0-360	149	V
7	7.525	-69.1	Pk	36.2	-27.4	7.4	-52.9	-13	-39.9	0-360	149	H
	1907.6MHz											
3	3.811	-68.99	Pk	33.4	-30.5	9.3	-56.79	-13	-43.79	0-360	149	H
4	3.815	-70.43	Pk	33.4	-30.5	9.7	-57.83	-13	-44.83	0-360	149	V
5	5.721	-71.79	Pk	35.5	-29.7	7.7	-58.29	-13	-45.29	0-360	149	H
6	5.723	-70.56	Pk	35.5	-29.7	7.8	-56.96	-13	-43.96	0-360	149	V
8	7.626	-68.06	Pk	36.4	-27	7.4	-51.26	-13	-38.26	0-360	149	V
7	7.627	-69.1	Pk	36.4	-27	7.4	-52.3	-13	-39.3	0-360	149	H

Company:	Samsung
Project #:	12563734
Date:	10/30/18
Test Engineer:	19480
Configuration:	EUT+ Support Equipment
Mode:	HSDPA B2
Chamber #:	Chamber B

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	AF T477 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	1852.4MHz											
3	3.704	-70	Pk	33.2	-30.9	10.2	-57.5	-13	-44.5	0-360	149	H
4	3.706	-69.09	Pk	33.2	-30.9	10	-56.79	-13	-43.79	0-360	149	V
5	5.554	-70.48	Pk	35.4	-29.6	8.9	-55.78	-13	-42.78	0-360	149	H
6	5.557	-71.31	Pk	35.4	-29.7	8.8	-56.81	-13	-43.81	0-360	149	V
7	7.413	-72.72	Pk	36.2	-27.4	6.9	-57.02	-13	-44.02	0-360	149	H
8	7.413	-73.18	Pk	36.2	-27.4	7.2	-57.18	-13	-44.18	0-360	149	V
	1880MHz											
4	3.76	-70.29	Pk	33.3	-31.1	9.6	-58.49	-13	-45.49	0-360	149	V
3	3.764	-69.58	Pk	33.3	-31	9.3	-57.98	-13	-44.98	0-360	149	H
5	5.642	-70.78	Pk	35.5	-29.4	8.1	-56.58	-13	-43.58	0-360	149	H
6	5.643	-71.72	Pk	35.5	-29.4	7.9	-57.72	-13	-44.72	0-360	149	V
7	7.52	-74.51	Pk	36.2	-27.3	7.5	-58.11	-13	-45.11	0-360	149	H
8	7.52	-72.8	Pk	36.2	-27.3	7.4	-56.5	-13	-43.5	0-360	149	V
	1907.6MHz											
4	3.813	-70.7	Pk	33.4	-30.5	9.6	-58.2	-13	-45.2	0-360	149	V
3	3.816	-70.32	Pk	33.4	-30.5	9.4	-58.02	-13	-45.02	0-360	149	H
6	5.722	-70.58	Pk	35.5	-29.7	7.7	-57.08	-13	-44.08	0-360	149	V
5	5.727	-71.59	Pk	35.5	-29.6	8	-57.69	-13	-44.69	0-360	149	H
7	7.631	-72.35	Pk	36.4	-27	7.4	-55.55	-13	-42.55	0-360	149	H
8	7.631	-72.66	Pk	36.4	-27	7.4	-55.86	-13	-42.86	0-360	149	V

Company:	Samsung
Project #:	12563734
Date:	10/30/18
Test Engineer:	19480
Configuration:	EUT+ Support Equipment
Mode:	REL99 B4
Chamber #:	Chamber B

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	AF T477 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	1712.4MHz											
3	3.426	-69.77	Pk	32.8	-31.5	9	-59.47	-13	-46.47	0-360	149	H
4	3.426	-70.85	Pk	32.8	-31.5	9.2	-60.35	-13	-47.35	0-360	149	V
5	5.139	-70.31	Pk	34.6	-30.1	8.5	-57.31	-13	-44.31	0-360	149	H
6	5.14	-71.08	Pk	34.6	-30.1	8.4	-58.18	-13	-45.18	0-360	149	V
8	6.851	-72.59	Pk	35.8	-28.1	6.7	-58.19	-13	-45.19	0-360	149	V
7	6.853	-72.59	Pk	35.8	-28	6.8	-57.99	-13	-44.99	0-360	149	H
	1732.6MHz											
4	3.467	-71.73	Pk	32.9	-31.3	9.3	-60.83	-13	-47.83	0-360	149	V
3	3.468	-70.82	Pk	32.9	-31.2	9.7	-59.42	-13	-46.42	0-360	149	H
5	5.195	-71.14	Pk	34.7	-29.8	9.1	-57.14	-13	-44.14	0-360	149	H
6	5.198	-71.22	Pk	34.7	-29.8	9.3	-57.02	-13	-44.02	0-360	149	V
7	6.929	-72.37	Pk	35.8	-27.9	6.8	-57.67	-13	-44.67	0-360	149	H
8	6.933	-71.81	Pk	35.8	-28	6.7	-57.31	-13	-44.31	0-360	149	V
	1752.6MHz											
3	3.504	-70.86	Pk	32.9	-31	9.7	-59.26	-13	-46.26	0-360	149	H
4	3.505	-71.31	Pk	32.9	-31	9.8	-59.61	-13	-46.61	0-360	149	V
6	5.258	-70.97	Pk	34.8	-29.8	8.6	-57.37	-13	-44.37	0-360	149	V
5	5.261	-70.41	Pk	34.8	-29.7	8.7	-56.61	-13	-43.61	0-360	149	H
8	7.007	-72.71	Pk	35.9	-27.9	7.1	-57.61	-13	-44.61	0-360	149	V
7	7.01	-72.32	Pk	35.9	-27.8	7.1	-57.12	-13	-44.12	0-360	149	H

Company:	Samsung
Project #:	12563734
Date:	10/30/18
Test Engineer:	19480
Configuration:	EUT+ Support Equipment
Mode:	HSDPA B4
Chamber #:	Chamber B

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	AF T477 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	1712.4MHz											
3	3.422	-70.37	Pk	32.8	-31.4	8.9	-60.07	-13	-47.07	0-360	149	H
4	3.427	-69.69	Pk	32.8	-31.5	9.1	-59.29	-13	-46.29	0-360	149	V
6	5.135	-69.6	Pk	34.6	-30	8.1	-56.9	-13	-43.9	0-360	149	V
5	5.14	-70.81	Pk	34.6	-30.1	8.5	-57.81	-13	-44.81	0-360	149	H
8	6.849	-72.29	Pk	35.8	-28.2	6.7	-57.99	-13	-44.99	0-360	149	V
7	6.851	-71.42	Pk	35.8	-28.1	6.7	-57.02	-13	-44.02	0-360	149	H
	1732.6MHz											
4	3.467	-70.11	Pk	32.9	-31.3	9.3	-59.21	-13	-46.21	0-360	149	V
3	3.469	-70.58	Pk	32.9	-31.2	9.7	-59.18	-13	-46.18	0-360	149	H
6	5.197	-71.71	Pk	34.7	-29.8	9.1	-57.71	-13	-44.71	0-360	149	V
5	5.202	-72.58	Pk	34.7	-29.8	9.3	-58.38	-13	-45.38	0-360	149	H
7	6.928	-71.23	Pk	35.8	-27.9	6.8	-56.53	-13	-43.53	0-360	149	H
8	6.93	-72.7	Pk	35.8	-28	6.8	-58.1	-13	-45.1	0-360	149	V
	1752.6MHz											
4	3.505	-71.52	Pk	32.9	-31	9.8	-59.82	-13	-46.82	0-360	149	V
3	3.506	-70.22	Pk	32.9	-31	9.7	-58.62	-13	-45.62	0-360	149	H
6	5.259	-71.19	Pk	34.8	-29.8	8.6	-57.59	-13	-44.59	0-360	149	V
5	5.261	-70.9	Pk	34.8	-29.7	8.7	-57.1	-13	-44.1	0-360	149	H
7	7.009	-72.64	Pk	35.9	-27.8	7.1	-57.44	-13	-44.44	0-360	149	H
8	7.01	-72.79	Pk	35.9	-27.8	7.1	-57.59	-13	-44.59	0-360	149	V

9.2.3. LTE BAND 2

Company:	Samsung
Project #:	12563734
Date:	10/29/18
Test Engineer:	19498
Configuration:	EUT+ Support Equipment
Mode:	LTE 2 QPSK 20MHz
Chamber #:	Chamber B

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	AF T477 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	1860MHz											
4	3.718	-71.17	Pk	33.3	-31.1	9.7	-59.27	-13	-46.27	0-360	149	V
1	3.723	-70.79	Pk	33.3	-31.1	10.1	-58.49	-13	-45.49	0-360	149	H
5	5.678	-71.04	Pk	35.5	-29.3	8.5	-56.34	-13	-43.34	0-360	149	V
2	5.68	-69.68	Pk	35.5	-29.5	8.1	-55.58	-13	-42.58	0-360	149	H
3	7.404	-68.91	Pk	36.2	-27.4	7	-53.11	-13	-40.11	0-360	149	H
6	7.404	-66.71	Pk	36.2	-27.4	7	-50.91	-13	-37.91	0-360	149	V
	1880MHz											
1	3.776	-69.11	Pk	33.4	-30.9	10	-56.61	-13	-43.61	0-360	149	H
4	3.777	-69.98	Pk	33.4	-30.9	9.9	-57.58	-13	-44.58	0-360	149	V
5	5.651	-71.79	Pk	35.5	-29.3	8.1	-57.49	-13	-44.49	0-360	149	V
2	5.654	-70.34	Pk	35.5	-29.1	8.4	-55.54	-13	-42.54	0-360	149	H
6	7.516	-72.49	Pk	36.2	-27.3	7.5	-56.09	-13	-43.09	0-360	149	V
3	7.527	-72.28	Pk	36.2	-27.3	7.5	-55.88	-13	-42.88	0-360	149	H
	1900MHz											
4	3.795	-70.09	Pk	33.4	-30.6	9.5	-57.79	-13	-44.79	0-360	149	V
1	3.801	-69.9	Pk	33.4	-30.6	9.9	-57.2	-13	-44.2	0-360	149	H
5	5.685	-71.22	Pk	35.5	-29.5	8	-57.22	-13	-44.22	0-360	149	V
2	5.69	-69.32	Pk	35.5	-29.4	8	-55.22	-13	-42.22	0-360	149	H
3	7.564	-66.64	Pk	36.3	-27.4	7.4	-50.34	-13	-37.34	0-360	149	H
6	7.565	-64.16	Pk	36.3	-27.4	7.4	-47.86	-13	-34.86	0-360	149	V

Company:	Samsung
Project #:	12563734
Date:	10/29/18
Test Engineer:	19498
Configuration:	EUT+ Support Equipment
Mode:	LTE 2 16QAM 20MHz
Chamber #:	Chamber B

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	AF T477 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	1860MHz											
4	3.725	-71.14	Pk	33.3	-31.1	10	-58.94	-13	-45.94	0-360	149	V
1	3.732	-69.93	Pk	33.3	-31.1	9.9	-57.83	-13	-44.83	0-360	149	H
5	5.566	-72	Pk	35.5	-29.7	8.8	-57.4	-13	-44.4	0-360	149	V
2	5.574	-70.78	Pk	35.5	-30	8.3	-56.98	-13	-43.98	0-360	149	H
3	7.443	-72.85	Pk	36.1	-27.2	7	-56.95	-13	-43.95	0-360	149	H
6	7.444	-72.48	Pk	36.1	-27.2	6.9	-56.68	-13	-43.68	0-360	149	V
	1880MHz											
4	3.761	-68.7	Pk	33.3	-31	9.7	-56.7	-13	-43.7	0-360	149	V
1	3.762	-69.97	Pk	33.3	-31	9.3	-58.37	-13	-45.37	0-360	149	H
5	5.651	-70.11	Pk	35.5	-29.3	8.1	-55.81	-13	-42.81	0-360	149	V
2	5.659	-70.77	Pk	35.5	-29	8.5	-55.77	-13	-42.77	0-360	149	H
3	7.523	-72.12	Pk	36.2	-27.4	7.4	-55.92	-13	-42.92	0-360	149	H
6	7.523	-72.41	Pk	36.2	-27.4	7.4	-56.21	-13	-43.21	0-360	149	V
	1900MHz											
4	3.792	-69.79	Pk	33.4	-30.7	9.7	-57.39	-13	-44.39	0-360	149	V
1	3.799	-69.26	Pk	33.4	-30.7	9.9	-56.66	-13	-43.66	0-360	149	H
5	5.716	-69.21	Pk	35.5	-29.5	7.8	-55.41	-13	-42.41	0-360	149	V
2	5.72	-69.65	Pk	35.5	-29.7	7.6	-56.25	-13	-43.25	0-360	149	H
3	7.564	-67.72	Pk	36.3	-27.4	7.4	-51.42	-13	-38.42	0-360	149	H
6	7.565	-64.45	Pk	36.3	-27.4	7.4	-48.15	-13	-35.15	0-360	149	V

9.2.4. LTE BAND 4

Company:	Samsung
Project #:	12563734
Date:	10/29/18
Test Engineer:	19480
Configuration:	EUT+ Support Equipment
Mode:	LTE 4 QPSK 20MHz
Chamber #:	Chamber B

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	AF T477 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	1720MHz											
4	3.44	-67.49	Pk	32.9	-31.6	8.9	-57.29	-13	-44.29	0-360	149	V
3	3.441	-70.13	Pk	32.9	-31.6	8.8	-60.03	-13	-47.03	0-360	149	H
5	5.155	-70.69	Pk	34.6	-29.8	9.1	-56.79	-13	-43.79	0-360	149	H
6	5.16	-55.85	Pk	34.6	-29.8	9.4	-41.65	-13	-28.65	0-360	149	V
8	6.879	-72.54	Pk	35.8	-28.5	6.8	-58.44	-13	-45.44	0-360	149	V
7	6.882	-71.58	Pk	35.8	-28.4	6.7	-57.48	-13	-44.48	0-360	149	H
	1732.5MHz											
3	3.464	-69.19	Pk	32.9	-31.3	9.6	-57.99	-13	-44.99	0-360	149	H
4	3.469	-70.52	Pk	32.9	-31.2	9.2	-59.62	-13	-46.62	0-360	149	V
5	5.197	-57.47	Pk	34.7	-29.8	9.2	-43.37	-13	-30.37	0-360	149	H
6	5.197	-54.21	Pk	34.7	-29.8	9.2	-40.11	-13	-27.11	0-360	149	V
8	6.93	-73.19	Pk	35.8	-28	6.8	-58.59	-13	-45.59	0-360	149	V
7	6.934	-72.05	Pk	35.8	-28	6.6	-57.65	-13	-44.65	0-360	149	H
	1745MHz											
4	3.489	-67.75	Pk	32.9	-31.2	9.5	-56.55	-13	-43.55	0-360	149	V
3	3.49	-67.48	Pk	32.9	-31.2	9.5	-56.28	-13	-43.28	0-360	149	H
5	5.235	-57.86	Pk	34.8	-29.6	9.1	-43.56	-13	-30.56	0-360	149	H
6	5.235	-57.69	Pk	34.8	-29.6	8.7	-43.79	-13	-30.79	0-360	149	V
7	6.979	-72.28	Pk	35.9	-27.9	6.9	-57.38	-13	-44.38	0-360	149	H
8	6.982	-72.64	Pk	35.9	-27.9	6.9	-57.74	-13	-44.74	0-360	149	V

Company:	Samsung
Project #:	12563734
Date:	10/29/18
Test Engineer:	19480
Configuration:	EUT+ Support Equipment
Mode:	LTE 4 16QAM 20MHz
Chamber #:	Chamber B

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	AF T477 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	1720MHz											
3	3.437	-70.2	Pk	32.8	-31.6	8.8	-60.2	-13	-47.2	0-360	149	H
4	3.438	-70.08	Pk	32.9	-31.7	8.9	-59.98	-13	-46.98	0-360	149	V
6	5.162	-70.26	Pk	34.6	-29.7	9.4	-55.96	-13	-42.96	0-360	149	V
5	5.165	-71.61	Pk	34.6	-29.6	9.4	-57.21	-13	-44.21	0-360	149	H
8	6.881	-72.22	Pk	35.8	-28.4	6.8	-58.02	-13	-45.02	0-360	149	V
7	6.883	-71.13	Pk	35.8	-28.4	6.7	-57.03	-13	-44.03	0-360	149	H
	1732.5MHz											
3	3.464	-70.59	Pk	32.9	-31.3	9.6	-59.39	-13	-46.39	0-360	149	H
4	3.466	-71.09	Pk	32.9	-31.3	9.3	-60.19	-13	-47.19	0-360	149	V
5	5.199	-71.17	Pk	34.7	-29.8	9.3	-56.97	-13	-43.97	0-360	149	H
6	5.201	-70.57	Pk	34.7	-29.8	9.4	-56.27	-13	-43.27	0-360	149	V
8	6.929	-72.12	Pk	35.8	-27.9	6.9	-57.32	-13	-44.32	0-360	149	V
7	6.935	-72.22	Pk	35.8	-28	6.7	-57.72	-13	-44.72	0-360	149	H
	1745MHz											
3	3.49	-68.89	Pk	32.9	-31.2	9.5	-57.69	-13	-44.69	0-360	149	H
4	3.49	-69.29	Pk	32.9	-31.2	9.6	-57.99	-13	-44.99	0-360	149	V
5	5.235	-59.69	Pk	34.8	-29.6	9.1	-45.39	-13	-32.39	0-360	149	H
6	5.235	-60.45	Pk	34.8	-29.6	8.7	-46.55	-13	-33.55	0-360	149	V
8	6.976	-71.19	Pk	35.9	-27.9	7	-56.19	-13	-43.19	0-360	149	V
7	6.979	-72.11	Pk	35.9	-27.9	6.9	-57.21	-13	-44.21	0-360	149	H

9.2.5. LTE BAND 5

Company:	Samsung
Project #:	12563734
Date:	10/26/18
Test Engineer:	16069
Configuration:	EUT+ Support Equipment
Mode:	LTE 5 QPSK 10MHz
Chamber #:	Chamber A

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	AF T477 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	829MHz											
4	1.649	-70.48	Pk	28.5	-31.5	11.2	-62.28	-13	-49.28	0-360	149	V
1	1.657	-70.08	Pk	28.6	-31.7	12.4	-60.78	-13	-47.78	0-360	149	H
5	2.476	-71.58	Pk	32.3	-30.5	11.5	-58.28	-13	-45.28	0-360	149	V
2	2.484	-71.21	Pk	32.3	-30.5	11.1	-58.31	-13	-45.31	0-360	149	H
6	3.292	-70.27	Pk	32.8	-29.2	11.2	-55.47	-13	-42.47	0-360	149	V
3	3.308	-71.79	Pk	32.8	-29.2	11.3	-56.89	-13	-43.89	0-360	149	H
	836.5MHz											
4	1.67	-70.25	Pk	28.7	-31.6	11.6	-61.55	-13	-48.55	0-360	149	V
1	1.674	-70.86	Pk	28.7	-31.6	12.5	-61.26	-13	-48.26	0-360	149	H
5	2.496	-70.42	Pk	32.4	-30.5	12	-56.52	-13	-43.52	0-360	149	V
2	2.506	-70.68	Pk	32.4	-30.4	11.3	-57.38	-13	-44.38	0-360	149	H
6	3.337	-71.22	Pk	32.7	-29	11	-56.52	-13	-43.52	0-360	149	V
3	3.344	-71.76	Pk	32.7	-29	10.4	-57.66	-13	-44.66	0-360	149	H
	844MHz											
4	1.679	-71.17	Pk	28.8	-31.5	10.9	-62.97	-13	-49.97	0-360	149	V
1	1.682	-71.66	Pk	28.8	-31.5	12.2	-62.16	-13	-49.16	0-360	149	H
5	2.525	-70.66	Pk	32.4	-30.4	12.1	-56.56	-13	-43.56	0-360	149	V
2	2.527	-69.89	Pk	32.4	-30.4	12.1	-55.79	-13	-42.79	0-360	149	H
6	3.364	-71.48	Pk	32.7	-29.2	11.7	-56.28	-13	-43.28	0-360	149	V
3	3.374	-71.81	Pk	32.6	-29.1	11.4	-56.91	-13	-43.91	0-360	149	H

Company:	Samsung
Project #:	12563734
Date:	10/26/18
Test Engineer:	16069
Configuration:	EUT+ Support Equipment
Mode:	LTE 5 16QAM 10MHz
Chamber #:	Chamber A

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	AF T477 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	829MHz											
1	1.658	-70.74	Pk	28.6	-31.6	12.3	-61.44	-13	-48.44	0-360	149	H
4	1.664	-69.76	Pk	28.6	-31.7	11.6	-61.26	-13	-48.26	0-360	149	V
5	2.474	-71.77	Pk	32.3	-30.6	11.6	-58.47	-13	-45.47	0-360	149	V
2	2.48	-70.65	Pk	32.3	-30.5	11.3	-57.55	-13	-44.55	0-360	149	H
3	3.316	-70.89	Pk	32.7	-29.1	11.3	-55.99	-13	-42.99	0-360	149	H
6	3.323	-70.89	Pk	32.7	-29	10.9	-56.29	-13	-43.29	0-360	149	V
	836.5MHz											
4	1.67	-70.99	Pk	28.7	-31.6	11.6	-62.29	-13	-49.29	0-360	149	V
1	1.676	-70.94	Pk	28.7	-31.6	12.3	-61.54	-13	-48.54	0-360	149	H
5	2.493	-71.32	Pk	32.4	-30.5	11.7	-57.72	-13	-44.72	0-360	149	V
2	2.502	-70.92	Pk	32.4	-30.5	11.2	-57.82	-13	-44.82	0-360	149	H
6	3.332	-71.4	Pk	32.7	-28.9	10.9	-56.7	-13	-43.7	0-360	149	V
3	3.34	-72.26	Pk	32.7	-29	10.6	-57.96	-13	-44.96	0-360	149	H
	844MHz											
4	1.674	-70.87	Pk	28.7	-31.6	11.3	-62.47	-13	-49.47	0-360	149	V
1	1.686	-71.48	Pk	28.8	-31.5	12.3	-61.88	-13	-48.88	0-360	149	H
5	2.514	-70.8	Pk	32.4	-30.5	11.7	-57.2	-13	-44.2	0-360	149	V
2	2.53	-71.64	Pk	32.4	-30.5	12.2	-57.54	-13	-44.54	0-360	149	H
6	3.355	-70.66	Pk	32.7	-29.2	11.6	-55.56	-13	-42.56	0-360	149	V
3	3.373	-71.96	Pk	32.6	-29.2	11.4	-57.16	-13	-44.16	0-360	149	H

9.2.6. LTE BAND 7

Company:	Samsung
Project #:	12563734
Date:	10/29/18
Test Engineer:	10649
Configuration:	EUT+ Support Equipment
Mode:	LTE 7 QPSK 20MHz
Chamber #:	Chamber A

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	AF T477 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	2510MHz											
4	3.984	-70.57	Pk	33.3	-28.6	11.5	-54.37	-25	-29.37	0-360	149	V
1	4.05	-69.98	Pk	33.4	-28.6	11.6	-53.58	-25	-28.58	0-360	149	H
5	4.877	-71.78	Pk	34.1	-27.3	11.4	-53.58	-25	-28.58	0-360	149	V
2	4.975	-70.1	Pk	34.3	-27.6	11.1	-52.3	-25	-27.3	0-360	149	H
3	5.834	-71.03	Pk	35.1	-25.8	10.7	-51.03	-25	-26.03	0-360	149	H
6	7.975	-72.32	Pk	35.8	-22.5	11.4	-47.62	-25	-22.62	0-360	149	V
	2535MHz											
4	3.285	-68.82	Pk	32.8	-29.3	11	-54.32	-25	-29.32	0-360	149	V
5	4.127	-70.42	Pk	33.4	-28	11.3	-53.72	-25	-28.72	0-360	149	V
1	4.299	-71.98	Pk	33.6	-27.8	11.1	-55.08	-25	-30.08	0-360	149	H
2	5.101	-71.02	Pk	34.4	-27.2	11.3	-52.52	-25	-27.52	0-360	149	H
6	6.703	-73.82	Pk	35.6	-24.8	10.6	-52.42	-25	-27.42	0-360	149	V
3	8.116	-72.87	Pk	35.8	-22.7	11.5	-48.27	-25	-23.27	0-360	149	H
	2560MHz											
1	3.124	-69.84	Pk	32.9	-29.4	11.8	-54.54	-25	-29.54	0-360	149	H
4	3.237	-70.04	Pk	33.1	-29.5	11.3	-55.14	-25	-30.14	0-360	149	V
5	3.878	-70.37	Pk	33	-28.7	12	-54.07	-25	-29.07	0-360	149	V
6	4.309	-70.77	Pk	33.6	-27.7	11.6	-53.27	-25	-28.27	0-360	149	V
2	4.358	-70.79	Pk	33.6	-27.8	11.2	-53.79	-25	-28.79	0-360	149	H
3	5.707	-70.95	Pk	35	-26.3	10.6	-51.65	-25	-26.65	0-360	149	H

Company:	Samsung
Project #:	12563734
Date:	10/29/18
Test Engineer:	10649
Configuration:	EUT+ Support Equipment
Mode:	LTE 7 16QAM 20MHz
Chamber #:	Chamber A

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	AF T477 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	2510MHz											
4	3.756	-69.54	Pk	33.2	-28.8	11.2	-53.94	-25	-28.94	0-360	149	V
1	3.8	-69.15	Pk	33.2	-28.5	11.2	-53.25	-25	-28.25	0-360	149	H
2	5.426	-71.58	Pk	34.7	-26.8	11.2	-52.48	-25	-27.48	0-360	149	H
5	6.829	-72.56	Pk	35.5	-24.2	10.7	-50.56	-25	-25.56	0-360	149	V
6	7.24	-72.46	Pk	35.7	-23.7	11	-49.46	-25	-24.46	0-360	149	V
3	7.903	-73.63	Pk	35.8	-22.7	11.2	-49.33	-25	-24.33	0-360	149	H
	2535MHz											
1	3.112	-71.28	Pk	32.9	-29.2	11.7	-55.88	-25	-30.88	0-360	149	H
4	3.445	-70.43	Pk	32.7	-29	11.6	-55.13	-25	-30.13	0-360	149	V
2	3.712	-68.35	Pk	33.1	-29	11.1	-53.15	-25	-28.15	0-360	149	H
5	5.153	-71.01	Pk	34.4	-27.3	11.3	-52.61	-25	-27.61	0-360	149	V
3	5.51	-70.44	Pk	34.9	-26.8	10.7	-51.64	-25	-26.64	0-360	149	H
6	7.169	-72.24	Pk	35.7	-23.9	10.7	-49.74	-25	-24.74	0-360	149	V
	2560MHz											
1	3.747	-69.19	Pk	33.1	-28.8	11.4	-53.49	-25	-28.49	0-360	149	H
4	4.771	-69.83	Pk	34.1	-27.1	10.6	-52.23	-25	-27.23	0-360	149	V
2	4.877	-71.23	Pk	34.1	-27.3	11.2	-53.23	-25	-28.23	0-360	149	H
5	5.587	-70.91	Pk	35.1	-26.9	10.9	-51.81	-25	-26.81	0-360	149	V
3	10.658	-72.65	Pk	37.7	-19.6	10.4	-44.15	-25	-19.15	0-360	149	H
6	11.427	-73.63	Pk	38.2	-19.1	10.9	-43.63	-25	-18.63	0-360	149	V

9.2.7. LTE BAND 12

Company:	Samsung
Project #:	12563734
Date:	10/27/18
Test Engineer:	38602
Configuration:	EUT+ Support Equipment
Mode:	LTE 12 QPSK 10MHz
Chamber #:	Chamber A

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	AF T477 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	704MHz											
4	1.396	-69.97	Pk	28.7	-31.7	12.6	-60.37	-13	-47.37	0-360	149	V
1	1.402	-69.93	Pk	28.6	-31.9	13.1	-60.13	-13	-47.13	0-360	149	H
2	2.082	-69.57	Pk	31.2	-31	12.2	-57.17	-13	-44.17	0-360	149	H
5	2.09	-70.03	Pk	31.2	-30.9	12	-57.73	-13	-44.73	0-360	149	V
3	2.836	-70.58	Pk	32.2	-29.5	11.9	-55.98	-13	-42.98	0-360	149	H
6	2.836	-71.21	Pk	32.2	-29.5	11.7	-56.81	-13	-43.81	0-360	149	V
	707.5MHz											
1	1.406	-68.38	Pk	28.6	-31.7	12.9	-58.58	-13	-45.58	0-360	149	H
2	2.869	-69.87	Pk	32.2	-29.7	11.7	-55.67	-13	-42.67	0-360	149	H
3	1.399	-69.75	Pk	28.6	-31.8	12.7	-60.25	-13	-47.25	0-360	149	V
4	2.877	-71.34	Pk	32.2	-29.7	12.6	-56.24	-13	-43.24	0-360	149	V
6	2.134	-70.4	Pk	31.1	-30.8	13.3	-56.8	-13	-43.8	0-360	149	V
5	2.142	-71.06	Pk	31.1	-30.7	12	-58.66	-13	-45.66	0-360	149	H
	711MHz											
1	1.408	-70.89	Pk	28.6	-31.7	12.7	-61.29	-13	-48.29	0-360	149	H
5	1.454	-69.53	Pk	28.7	-31.9	12.3	-60.43	-13	-47.43	0-360	149	V
2	2.148	-71.59	Pk	31.1	-30.8	12.1	-59.19	-13	-46.19	0-360	149	H
6	2.17	-69.84	Pk	31.1	-30.6	12.1	-57.24	-13	-44.24	0-360	149	V
3	2.869	-70.77	Pk	32.2	-29.7	11.7	-56.57	-13	-43.57	0-360	149	H
4	2.883	-69.99	Pk	32.2	-29.6	12.4	-54.99	-13	-41.99	0-360	149	V

Company:	Samsung
Project #:	12563734
Date:	10/27/18
Test Engineer:	38602
Configuration:	EUT+ Support Equipment
Mode:	LTE 12 16QAM 10MHz
Chamber #:	Chamber A

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	AF T477 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	704MHz											
5	1.395	-69.67	Pk	28.7	-31.8	12.5	-60.27	-13	-47.27	0-360	149	V
1	1.409	-69.62	Pk	28.6	-31.7	12.7	-60.02	-13	-47.02	0-360	149	H
2	2.111	-69.62	Pk	31.1	-31.1	12.4	-57.22	-13	-44.22	0-360	149	H
6	2.12	-70.95	Pk	31.1	-31	12.5	-58.35	-13	-45.35	0-360	149	V
3	2.745	-70.02	Pk	32.4	-30.3	12.8	-55.12	-13	-42.12	0-360	149	H
4	2.829	-71.66	Pk	32.2	-29.5	11.8	-57.16	-13	-44.16	0-360	149	H
	707.5MHz											
1	* 1.406	-68.2	Pk	28.6	-31.7	12.9	-58.4	-13	-45.4	0-360	149	H
4	* 2.882	-69.54	Pk	32.2	-29.5	11.6	-55.24	-13	-42.24	0-360	149	H
5	* 1.406	-70.29	Pk	28.6	-31.7	12.4	-60.99	-13	-47.99	0-360	149	V
3	* 2.876	-70.5	Pk	32.2	-29.7	12.6	-55.4	-13	-42.4	0-360	149	V
2	2.138	-70.17	Pk	31.1	-30.8	12.2	-57.67	-13	-44.67	0-360	149	H
6	2.148	-70.2	Pk	31.1	-30.8	12.4	-57.5	-13	-44.5	0-360	149	V
	711MHz											
1	1.398	-70.12	Pk	28.6	-31.8	12.7	-60.62	-13	-47.62	0-360	149	V
2	1.406	-71.95	Pk	28.6	-31.7	12.9	-62.15	-13	-49.15	0-360	149	H
3	2.144	-69.57	Pk	31.1	-30.7	12	-57.17	-13	-44.17	0-360	149	H
6	2.148	-69.71	Pk	31.1	-30.8	12.4	-57.01	-13	-44.01	0-360	149	V
4	2.845	-71.95	Pk	32.1	-29.7	11.8	-57.75	-13	-44.75	0-360	149	H
5	2.85	-71.08	Pk	32.1	-29.7	12	-56.68	-13	-43.68	0-360	149	V

9.2.8. LTE BAND 13

Company:	Samsung
Project #:	12563734
Date:	10/27/18
Test Engineer:	38602
Configuration:	EUT+ Support Equipment
Mode:	LTE 13 QPSK 10MHz
Chamber #:	Chamber A

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	AF T477 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	782MHz											
4	1.559	-70.16	Pk	27.9	-31.7	11.9	-62.06	-40	-22.06	0-360	149	V
1	1.566	-70.98	Pk	27.9	-31.6	11.8	-62.88	-40	-22.88	0-360	149	H
2	2.356	-69.89	Pk	31.6	-30.5	12.9	-55.89	-13	-42.89	0-360	149	H
6	2.367	-70.85	Pk	31.7	-30.4	12.4	-57.15	-13	-44.15	0-360	149	V
8	3.145	-71.39	Pk	32.8	-29.3	11.3	-56.59	-13	-43.59	0-360	149	V
3	3.165	-71.43	Pk	32.9	-29.2	11	-56.73	-13	-43.73	0-360	149	H

Company:	Samsung
Project #:	12563734
Date:	10/27/18
Test Engineer:	38602
Configuration:	EUT+ Support Equipment
Mode:	LTE 13 16QAM 10MHz
Chamber #:	Chamber A

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	AF T477 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	782MHz											
1	1.563	-70.78	Pk	27.9	-31.6	11.6	-62.88	-40	-22.88	0-360	149	H
5	1.567	-70.45	Pk	27.9	-31.6	12.1	-62.05	-40	-22.05	0-360	149	V
2	2.332	-69.99	Pk	31.6	-30.7	12.5	-56.59	-13	-43.59	0-360	149	H
6	2.342	-71.17	Pk	31.6	-30.6	12.9	-57.27	-13	-44.27	0-360	149	V
7	3.137	-70.58	Pk	32.8	-29.4	11.3	-55.88	-13	-42.88	0-360	149	V
4	3.138	-71.02	Pk	32.8	-29.5	11.6	-56.12	-13	-43.12	0-360	149	H

9.2.9. LTE BAND 17

Company:	Samsung
Project #:	12563734
Date:	10/29/18
Test Engineer:	16069
Configuration:	EUT+ Support Equipment
Mode:	LTE 17 QPSK 10MHz
Chamber #:	Chamber A

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	AF T477 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	709MHz											
4	1.412	-71.42	Pk	28.6	-31.7	11.6	-62.92	-13	-49.92	0-360	149	V
1	1.415	-68.96	Pk	28.7	-31.7	11.3	-60.66	-13	-47.66	0-360	149	H
5	2.128	-71.7	Pk	31.1	-30.8	13.3	-58.1	-13	-45.1	0-360	149	V
2	2.129	-71.4	Pk	31.1	-30.8	12.6	-58.5	-13	-45.5	0-360	149	H
6	2.833	-71.57	Pk	32.2	-29.6	11.8	-57.17	-13	-44.17	0-360	149	V
3	2.837	-71.84	Pk	32.2	-29.5	11.8	-57.34	-13	-44.34	0-360	149	H
	710MHz											
4	1.411	-62.81	Pk	28.6	-31.7	11.7	-54.21	-13	-41.21	0-360	149	V
1	1.414	-70.99	Pk	28.7	-31.7	11.5	-62.49	-13	-49.49	0-360	149	H
2	2.126	-71.42	Pk	31.1	-30.9	12.7	-58.52	-13	-45.52	0-360	149	H
5	2.126	-71.64	Pk	31.1	-30.9	13.1	-58.34	-13	-45.34	0-360	149	V
3	2.845	-69.95	Pk	32.1	-29.7	11.8	-55.75	-13	-42.75	0-360	149	H
6	2.846	-71.76	Pk	32.1	-29.7	11.7	-57.66	-13	-44.66	0-360	149	V
	711MHz											
4	1.421	-70.86	Pk	28.7	-31.7	10.6	-63.26	-13	-50.26	0-360	149	V
1	1.424	-70.75	Pk	28.7	-31.8	10.4	-63.45	-13	-50.45	0-360	149	H
5	2.12	-70.33	Pk	31.1	-31	12.5	-57.73	-13	-44.73	0-360	149	V
2	2.128	-70.62	Pk	31.1	-30.8	12.6	-57.72	-13	-44.72	0-360	149	H
6	2.831	-71.4	Pk	32.2	-29.5	11.9	-56.8	-13	-43.8	0-360	149	V
3	2.842	-71.64	Pk	32.2	-29.6	11.7	-57.34	-13	-44.34	0-360	149	H

Company:	Samsung
Project #:	12563734
Date:	10/29/18
Test Engineer:	16069
Configuration:	EUT+ Support Equipment
Mode:	LTE 17 16QAM 10MHz
Chamber #:	Chamber A

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	AF T477 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	709MHz											
4	1.412	-70.65	Pk	28.6	-31.7	11.6	-62.15	-13	-49.15	0-360	149	V
1	1.414	-71.43	Pk	28.7	-31.7	11.5	-62.93	-13	-49.93	0-360	149	H
5	2.117	-71.33	Pk	31.1	-31	12.2	-59.03	-13	-46.03	0-360	149	V
2	2.119	-71.12	Pk	31.1	-31	13.1	-57.92	-13	-44.92	0-360	149	H
3	2.832	-71.98	Pk	32.2	-29.5	11.9	-57.38	-13	-44.38	0-360	149	H
6	2.834	-69.39	Pk	32.2	-29.6	11.8	-54.99	-13	-41.99	0-360	149	V
	710MHz											
4	1.411	-64.43	Pk	28.6	-31.7	11.7	-55.83	-13	-42.83	0-360	149	V
1	1.417	-70.74	Pk	28.7	-31.6	10.9	-62.74	-13	-49.74	0-360	149	H
2	2.125	-71.42	Pk	31.1	-30.9	12.9	-58.32	-13	-45.32	0-360	149	H
5	2.128	-71.1	Pk	31.1	-30.8	13.3	-57.5	-13	-44.5	0-360	149	V
3	2.834	-72.42	Pk	32.2	-29.6	11.9	-57.92	-13	-44.92	0-360	149	H
6	2.834	-71.93	Pk	32.2	-29.6	11.8	-57.53	-13	-44.53	0-360	149	V
	711MHz											
4	1.417	-70.63	Pk	28.7	-31.6	10.7	-62.83	-13	-49.83	0-360	149	V
1	1.42	-70.11	Pk	28.7	-31.6	10.7	-62.31	-13	-49.31	0-360	149	H
5	2.119	-70.12	Pk	31.1	-31	12.4	-57.62	-13	-44.62	0-360	149	V
2	2.127	-71.57	Pk	31.1	-30.9	12.7	-58.67	-13	-45.67	0-360	149	H
6	2.828	-71.84	Pk	32.2	-29.6	12.2	-57.04	-13	-44.04	0-360	149	V
3	2.841	-71.86	Pk	32.2	-29.5	11.7	-57.46	-13	-44.46	0-360	149	H

9.2.10. LTE BAND 25

Company:	Samsung
Project #:	12563734
Date:	10/27/18
Test Engineer:	19498
Configuration:	EUT+ Support Equipment
Mode:	LTE 25 QPSK 20MHz
Chamber #:	Chamber B

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	AF T477 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	1860MHz											
4	3.718	-70.43	Pk	33.3	-31.1	9.7	-58.53	-13	-45.53	0-360	149	V
1	3.721	-68.95	Pk	33.3	-31.1	9.9	-56.85	-13	-43.85	0-360	149	H
5	5.596	-69.29	Pk	35.5	-29.4	8.1	-55.09	-13	-42.09	0-360	149	V
2	5.597	-71.12	Pk	35.5	-29.4	8.1	-56.92	-13	-43.92	0-360	149	H
3	7.404	-68.38	Pk	36.2	-27.4	7	-52.58	-13	-39.58	0-360	149	H
6	7.404	-69.37	Pk	36.2	-27.4	7	-53.57	-13	-40.57	0-360	149	V
	1882.5MHz											
1	3.747	-63.61	Pk	33.3	-31	9.9	-51.41	-13	-38.41	0-360	149	H
4	3.747	-65.83	Pk	33.3	-31	9.8	-53.73	-13	-40.73	0-360	149	V
2	5.56	-70.87	Pk	35.4	-29.6	9	-56.07	-13	-43.07	0-360	149	H
5	5.561	-68.7	Pk	35.4	-29.6	9	-53.9	-13	-40.9	0-360	149	V
3	7.494	-71.06	Pk	36.1	-26.8	7.7	-54.06	-13	-41.06	0-360	149	H
6	7.495	-66.68	Pk	36.1	-26.8	7.6	-49.78	-13	-36.78	0-360	149	V
	1905MHz											
4	3.791	-68.89	Pk	33.4	-30.8	9.7	-56.59	-13	-43.59	0-360	149	V
1	3.792	-67.74	Pk	33.4	-30.7	10.3	-54.74	-13	-41.74	0-360	149	H
2	5.688	-67.96	Pk	35.5	-29.4	8.1	-53.76	-13	-40.76	0-360	149	H
5	5.688	-64.46	Pk	35.5	-29.4	7.9	-50.46	-13	-37.46	0-360	149	V
3	7.584	-67.14	Pk	36.3	-27.3	7	-51.14	-13	-38.14	0-360	149	H
6	7.584	-65.42	Pk	36.3	-27.3	7	-49.42	-13	-36.42	0-360	149	V

Company:	Samsung
Project #:	12563734
Date:	10/27/18
Test Engineer:	19498
Configuration:	EUT+ Support Equipment
Mode:	LTE 25 16QAM 20MHz
Chamber #:	Chamber B

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	AF T477 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	1860MHz											
4	3.721	-70.41	Pk	33.3	-31.1	9.8	-58.41	-13	-45.41	0-360	149	V
1	3.726	-69.38	Pk	33.3	-31.1	10.1	-57.08	-13	-44.08	0-360	149	H
2	5.554	-69.61	Pk	35.4	-29.6	8.9	-54.91	-13	-41.91	0-360	149	H
5	5.562	-70.14	Pk	35.4	-29.5	9	-55.24	-13	-42.24	0-360	149	V
3	7.402	-70.19	Pk	36.2	-27.4	7.1	-54.29	-13	-41.29	0-360	149	H
6	7.404	-68.17	Pk	36.2	-27.4	7	-52.37	-13	-39.37	0-360	149	V
	1882.5MHz											
1	3.747	-63.75	Pk	33.3	-31	9.9	-51.55	-13	-38.55	0-360	149	H
4	3.747	-70.13	Pk	33.3	-30.9	9.8	-57.93	-13	-44.93	0-360	149	V
2	5.607	-69.75	Pk	35.5	-29.5	8.6	-55.15	-13	-42.15	0-360	149	H
5	5.611	-68.39	Pk	35.5	-29.7	8.5	-54.09	-13	-41.09	0-360	149	V
3	7.495	-71.84	Pk	36.1	-26.8	7.7	-54.84	-13	-41.84	0-360	149	H
6	7.495	-68.71	Pk	36.1	-26.8	7.6	-51.81	-13	-38.81	0-360	149	V
	1905MHz											
1	3.821	-67.52	Pk	33.4	-30.5	9.5	-55.12	-13	-42.12	0-360	149	H
4	3.823	-69.62	Pk	33.4	-30.5	9.8	-56.92	-13	-43.92	0-360	149	V
2	5.688	-69.59	Pk	35.5	-29.4	8.1	-55.39	-13	-42.39	0-360	149	H
5	5.688	-65.24	Pk	35.5	-29.4	7.9	-51.24	-13	-38.24	0-360	149	V
3	7.584	-68.72	Pk	36.3	-27.3	7	-52.72	-13	-39.72	0-360	149	H
6	7.584	-65.21	Pk	36.3	-27.3	7	-49.21	-13	-36.21	0-360	149	V

9.2.11. LTE BAND 26 Part 90S

Company:	Samsung
Project #:	12563734
Date:	1/16/19
Test Engineer:	19480
Configuration:	EUT+ Support Equipment
Mode:	LTE 26 QPSK 15MHz
Chamber #:	Chamber B

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	AF T477 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	821.5MHz											
1	1.627	-68.08	Pk	28.2	-33.4	10.3	-62.98	-13	-49.98	0-360	149	H
2	1.632	-67.78	Pk	28.3	-33.4	10.5	-62.38	-13	-49.38	0-360	149	V
3	2.44	-68.79	Pk	32.5	-32	8.4	-59.89	-13	-46.89	0-360	149	H
4	2.444	-68	Pk	32.5	-32	9.4	-58.1	-13	-45.1	0-360	149	V
6	3.258	-70.19	Pk	33	-31.1	9.8	-58.49	-13	-45.49	0-360	149	V
5	3.261	-69.47	Pk	33	-30.9	10.4	-56.97	-13	-43.97	0-360	149	H

Company:	Samsung
Project #:	12563734
Date:	1/16/19
Test Engineer:	19480
Configuration:	EUT+ Support Equipment
Mode:	LTE 26 16QAM 15MHz
Chamber #:	Chamber B

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	AF T477 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	821.5MHz											
1	1.631	-68.3	Pk	28.2	-33.4	10.6	-62.9	-13	-49.9	0-360	149	H
2	1.633	-69.66	Pk	28.3	-33.4	10.6	-64.16	-13	-51.16	0-360	149	V
4	2.447	-68.83	Pk	32.5	-32.1	9.3	-59.13	-13	-46.13	0-360	149	V
3	2.449	-69.11	Pk	32.5	-32.2	8.7	-60.11	-13	-47.11	0-360	149	H
5	3.257	-68.22	Pk	33	-31	10.3	-55.92	-13	-42.92	0-360	149	H
6	3.263	-69.57	Pk	33	-30.9	9.8	-57.67	-13	-44.67	0-360	149	V

9.2.12. LTE BAND 26 Part 22

Company:	Samsung
Project #:	12563734
Date:	10/26/18
Test Engineer:	16069
Configuration:	EUT+ Support Equipment
Mode:	LTE 26 QPSK 15MHz
Chamber #:	Chamber A

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	AF T477 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	831.5MHz											
4	1.645	-70.77	Pk	28.5	-31.6	11.4	-62.47	-13	-49.47	0-360	149	V
1	1.647	-70.08	Pk	28.5	-31.6	12.2	-60.98	-13	-47.98	0-360	149	H
5	2.458	-71.25	Pk	32.2	-30.6	11.6	-58.05	-13	-45.05	0-360	149	V
2	2.463	-71.45	Pk	32.2	-30.5	12.2	-57.55	-13	-44.55	0-360	149	H
6	3.275	-70.13	Pk	32.9	-29.3	10.8	-55.73	-13	-42.73	0-360	149	V
3	3.281	-70.67	Pk	32.9	-29.2	10.7	-56.27	-13	-43.27	0-360	149	H
	836.5MHz											
4	1.662	-69.43	Pk	28.6	-31.7	11.6	-60.93	-13	-47.93	0-360	149	V
1	1.664	-70.96	Pk	28.6	-31.7	12.3	-61.76	-13	-48.76	0-360	149	H
5	2.482	-71.55	Pk	32.3	-30.5	11.5	-58.25	-13	-45.25	0-360	149	V
2	2.493	-71.03	Pk	32.4	-30.5	11.3	-57.83	-13	-44.83	0-360	149	H
6	3.308	-71.55	Pk	32.8	-29.2	10.9	-57.05	-13	-44.05	0-360	149	V
3	3.328	-71.6	Pk	32.7	-29	10.8	-57.1	-13	-44.1	0-360	149	H
	841.5MHz											
4	1.684	-70.85	Pk	28.8	-31.5	11.1	-62.45	-13	-49.45	0-360	149	V
1	1.686	-71.51	Pk	28.8	-31.5	12.4	-61.81	-13	-48.81	0-360	149	H
5	2.518	-70.99	Pk	32.4	-30.5	11.6	-57.49	-13	-44.49	0-360	149	V
2	2.525	-71.02	Pk	32.4	-30.4	12	-57.02	-13	-44.02	0-360	149	H
6	3.349	-72.3	Pk	32.7	-29.1	11.2	-57.5	-13	-44.5	0-360	149	V
3	3.362	-72.32	Pk	32.7	-29.2	11.1	-57.72	-13	-44.72	0-360	149	H

Company:	Samsung
Project #:	12563734
Date:	10/26/18
Test Engineer:	16069
Configuration:	EUT+ Support Equipment
Mode:	LTE 26 16QAM 15MHz
Chamber #:	Chamber A

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	AF T477 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	831.5MHz											
4	1.63	-68.97	Pk	28.4	-31.6	10.8	-61.37	-13	-48.37	0-360	149	V
1	1.64	-70.67	Pk	28.4	-31.6	12.2	-61.67	-13	-48.67	0-360	149	H
5	2.45	-72.24	Pk	32.1	-30.5	11.9	-58.74	-13	-45.74	0-360	149	V
2	2.463	-71.97	Pk	32.2	-30.6	12.3	-58.07	-13	-45.07	0-360	149	H
6	3.263	-72.28	Pk	33	-29.4	10.3	-58.38	-13	-45.38	0-360	149	V
3	3.273	-70.79	Pk	32.9	-29.3	10.3	-56.89	-13	-43.89	0-360	149	H
	836.5MHz											
4	1.652	-70.63	Pk	28.5	-31.6	11.2	-62.53	-13	-49.53	0-360	149	V
1	1.659	-71.18	Pk	28.6	-31.6	12.3	-61.88	-13	-48.88	0-360	149	H
5	2.481	-71.24	Pk	32.3	-30.5	11.4	-58.04	-13	-45.04	0-360	149	V
2	2.489	-71.03	Pk	32.4	-30.4	10.9	-58.13	-13	-45.13	0-360	149	H
6	3.304	-72.29	Pk	32.8	-29.2	11.1	-57.59	-13	-44.59	0-360	149	V
3	3.327	-72.75	Pk	32.7	-29	10.9	-58.15	-13	-45.15	0-360	149	H
	841.5MHz											
4	1.674	-70.75	Pk	28.7	-31.6	11.3	-62.35	-13	-49.35	0-360	149	V
1	1.678	-70.65	Pk	28.8	-31.5	12	-61.35	-13	-48.35	0-360	149	H
5	2.523	-71.73	Pk	32.4	-30.5	12	-57.83	-13	-44.83	0-360	149	V
2	2.524	-68.61	Pk	32.4	-30.4	11.9	-54.71	-13	-41.71	0-360	149	H
3	3.367	-71.2	Pk	32.6	-29.2	11.2	-56.6	-13	-43.6	0-360	149	H
6	3.371	-70.86	Pk	32.6	-29.2	11.8	-55.66	-13	-42.66	0-360	149	V

9.2.13. LTE BAND 41

Company:	Samsung
Project #:	12563734
Date:	10/29/18
Test Engineer:	10649
Configuration:	EUT+ Support Equipment
Mode:	LTE 41 QPSK 20MHz
Chamber #:	Chamber A

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	AF T477 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	2506MHz											
4	3.614	-69.92	Pk	33	-28.5	11.1	-54.32	-25	-29.32	0-360	149	V
1	3.758	-68.9	Pk	33.2	-28.8	11.5	-53	-25	-28	0-360	149	H
5	4.301	-71.32	Pk	33.6	-27.8	11.6	-53.92	-25	-28.92	0-360	149	V
6	5.319	-70.47	Pk	34.6	-26.7	10.7	-51.87	-25	-26.87	0-360	149	V
2	5.542	-71.69	Pk	35	-26.8	11.1	-52.39	-25	-27.39	0-360	149	H
3	9.81	-73.29	Pk	37	-20.7	11	-45.99	-25	-20.99	0-360	149	H
	2593MHz											
4	3.392	-69.68	Pk	32.6	-29.2	11.2	-55.08	-25	-30.08	0-360	149	V
1	3.703	-71.48	Pk	33.1	-29	11.2	-56.18	-25	-31.18	0-360	149	H
5	4.869	-72.17	Pk	34.1	-27.4	10.9	-54.57	-25	-29.57	0-360	149	V
2	5.704	-73.5	Pk	35	-26.3	10.6	-54.2	-25	-29.2	0-360	149	H
3	8.511	-74.35	Pk	35.8	-22.3	11.2	-49.65	-25	-24.65	0-360	149	H
6	10.298	-75.71	Pk	37.5	-19.9	10.3	-47.81	-25	-22.81	0-360	149	V
	2680MHz											
1	3.608	-69.07	Pk	33	-28.7	11.1	-53.67	-25	-28.67	0-360	149	H
4	4.252	-71.12	Pk	33.5	-28.1	11.6	-54.12	-25	-29.12	0-360	149	V
2	4.754	-69.41	Pk	34.1	-27.2	10.6	-51.91	-25	-26.91	0-360	149	H
5	6.507	-72.71	Pk	35.7	-24.7	11.4	-50.31	-25	-25.31	0-360	149	V
3	7.372	-72.75	Pk	35.7	-23.2	11.1	-49.15	-25	-24.15	0-360	149	H
6	9.871	-74.77	Pk	37.1	-20.6	11	-47.27	-25	-22.27	0-360	149	V

Company:	Samsung
Project #:	12563734
Date:	10/29/18
Test Engineer:	10649
Configuration:	EUT+ Support Equipment
Mode:	LTE 41 16QAM 20MHz
Chamber #:	Chamber A

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	AF T477 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	2506MHz											
4	3.5	-69.58	Pk	32.9	-29.1	11.4	-54.38	-25	-29.38	0-360	149	V
5	4.305	-71.15	Pk	33.6	-27.7	11.8	-53.45	-25	-28.45	0-360	149	V
1	5.035	-69.79	Pk	34.3	-27.5	11.2	-51.79	-25	-26.79	0-360	149	H
6	5.217	-71.61	Pk	34.5	-26.9	11.3	-52.71	-25	-27.71	0-360	149	V
2	6.755	-70.85	Pk	35.5	-24.6	10.6	-49.35	-25	-24.35	0-360	149	H
3	7.896	-72.35	Pk	35.8	-22.9	10.9	-48.55	-25	-23.55	0-360	149	H
	2593MHz											
1	3.231	-69.31	Pk	33.1	-29.5	11.5	-54.21	-25	-29.21	0-360	149	H
4	3.462	-72.54	Pk	32.7	-29	11.4	-57.44	-25	-32.44	0-360	149	V
5	5.316	-71.76	Pk	34.6	-26.7	10.7	-53.16	-25	-28.16	0-360	149	V
2	5.363	-73.22	Pk	34.6	-26.8	11	-54.42	-25	-29.42	0-360	149	H
3	7.931	-73.87	Pk	35.8	-22.6	11.3	-49.37	-25	-24.37	0-360	149	H
6	10.85	-74.06	Pk	37.9	-19.1	11	-44.26	-25	-19.26	0-360	149	V
	2680MHz											
4	4.541	-72.92	Pk	34	-27.8	11	-55.72	-25	-30.72	0-360	149	V
1	4.542	-70.94	Pk	34	-27.7	11	-53.64	-25	-28.64	0-360	149	H
5	6.496	-73.62	Pk	35.7	-24.8	11.3	-51.42	-25	-26.42	0-360	149	V
2	6.63	-74.11	Pk	35.6	-24.9	10.6	-52.81	-25	-27.81	0-360	149	H
6	8.099	-72.49	Pk	35.8	-22.5	11.4	-47.79	-25	-22.79	0-360	149	V
3	9.752	-74.46	Pk	36.9	-20.8	10.8	-47.56	-25	-22.56	0-360	149	H

9.2.14. LTE BAND 66

Company:	Samsung
Project #:	12563734
Date:	10/27/18
Test Engineer:	19498
Configuration:	EUT+ Support Equipment
Mode:	LTE 66 QPSK 20MHz
Chamber #:	Chamber B

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	AF T477 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	1720MHz											
4	3.48	-71.37	Pk	32.9	-31.2	9.5	-60.17	-13	-47.17	0-360	149	V
1	3.485	-71.48	Pk	32.9	-30.9	9.5	-59.98	-13	-46.98	0-360	149	H
5	5.148	-70.5	Pk	34.6	-30	9	-56.9	-13	-43.9	0-360	149	V
2	5.163	-69.91	Pk	34.6	-29.6	9.3	-55.61	-13	-42.61	0-360	149	H
6	6.835	-71.81	Pk	35.8	-28.3	7.2	-57.11	-13	-44.11	0-360	149	V
3	6.856	-72.17	Pk	35.8	-28	6.7	-57.67	-13	-44.67	0-360	149	H
	1745MHz											
1	3.488	-70.15	Pk	32.9	-31	9.5	-58.75	-13	-45.75	0-360	149	H
6	3.491	-71.29	Pk	32.9	-31.2	9.6	-59.99	-13	-46.99	0-360	149	V
5	5.234	-69.82	Pk	34.8	-29.7	8.7	-56.02	-13	-43.02	0-360	149	V
2	5.236	-71.16	Pk	34.8	-29.6	9.1	-56.86	-13	-43.86	0-360	149	H
4	6.946	-70.19	Pk	35.8	-27.9	6.9	-55.39	-13	-42.39	0-360	149	V
3	6.947	-71.2	Pk	35.8	-27.9	6.8	-56.5	-13	-43.5	0-360	149	H
	1770MHz											
4	3.542	-70.82	Pk	33.1	-31.1	9.2	-59.62	-13	-46.62	0-360	149	V
1	3.554	-70.14	Pk	33.1	-31.3	9.2	-59.14	-13	-46.14	0-360	149	H
5	5.309	-70.7	Pk	34.9	-29.7	8.4	-57.1	-13	-44.1	0-360	149	V
2	5.328	-69.77	Pk	35	-29.9	7.9	-56.77	-13	-43.77	0-360	149	H
6	7.06	-71.74	Pk	35.9	-27.7	7.2	-56.34	-13	-43.34	0-360	149	V
3	7.062	-71.89	Pk	36	-27.7	6.9	-56.69	-13	-43.69	0-360	149	H

Company:	Samsung
Project #:	12563734
Date:	10/27/18
Test Engineer:	19498
Configuration:	EUT+ Support Equipment
Mode:	LTE 66 16QAM 20MHz
Chamber #:	Chamber B

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	AF T477 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	1720MHz											
1	3.44	-70.85	Pk	32.9	-31.6	8.8	-60.75	-13	-47.75	0-360	149	H
4	3.444	-69.65	Pk	32.9	-31.6	8.7	-59.65	-13	-46.65	0-360	149	V
5	5.141	-71.13	Pk	34.6	-30	8.5	-58.03	-13	-45.03	0-360	149	V
2	5.145	-69.25	Pk	34.6	-30	9	-55.65	-13	-42.65	0-360	149	H
6	6.847	-71.56	Pk	35.8	-28.3	6.6	-57.46	-13	-44.46	0-360	149	V
3	6.857	-71.69	Pk	35.8	-28.1	6.6	-57.39	-13	-44.39	0-360	149	H
	1745MHz											
4	3.474	-71.26	Pk	32.9	-31.2	9.3	-60.26	-13	-47.26	0-360	149	V
1	3.48	-70.07	Pk	32.9	-31.2	9.4	-58.97	-13	-45.97	0-360	149	H
5	5.226	-70.31	Pk	34.7	-29.4	8.9	-56.11	-13	-43.11	0-360	149	V
2	5.227	-69.74	Pk	34.8	-29.5	9	-55.44	-13	-42.44	0-360	149	H
6	6.94	-71.19	Pk	35.8	-27.8	6.9	-56.29	-13	-43.29	0-360	149	V
3	6.955	-70.69	Pk	35.9	-27.7	6.9	-55.59	-13	-42.59	0-360	149	H
	1770MHz											
5	3.53	-70.24	Pk	33	-31	9.9	-58.34	-13	-45.34	0-360	149	V
1	3.546	-69.71	Pk	33.1	-31.2	9.2	-58.61	-13	-45.61	0-360	149	H
6	5.298	-69.92	Pk	34.9	-30.2	7.7	-57.52	-13	-44.52	0-360	149	V
2	5.302	-71.4	Pk	34.9	-30.1	8.1	-58.5	-13	-45.5	0-360	149	H
4	7.05	-71.77	Pk	35.9	-27.9	6.8	-56.97	-13	-43.97	0-360	149	V
3	7.075	-72.24	Pk	36	-27.8	7.1	-56.94	-13	-43.94	0-360	149	H