FCC CFR47 PART 24 SUBPART E
FCC CFR47 PART 27 SUBPART L

C2PC-2 CERTIFICATION TEST REPORT

for
GSM/WCDMA/LTE Phone + Bluetooth, DTS/UNII a/b/g/n and NFC

MODEL NUMBER: LG-D725, LGD725, D725, LG-D727, LGD727, D727

FCC ID: ZNFD725

REPORT NUMBER: 15I19863-E1

ISSUE DATE: JANUARY 28, 2015

Prepared for
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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
----	1/28/15	Initial Issue	D. Coronia

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME:	LG ELECTRONICS MOBILECOMM U.S.A., INC
EUT DESCRIPTION:	GSM/WCDMA/LTE Phone + Bluetooth, DTS/UNII a/b/g/n and NFC
MODEL:	LG-D725, LGD725, D725, LG-D727, LGD727, D727
SERIAL NUMBER:	411KPTM003289 (Conducted), 411KPUU00281 (Radiated)
DATE TESTED:	JANUARY 22-28, 2015

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
FCC PART 24E and 27F	PASS

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Verification Services Inc. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Approved & Released For
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Tested By:

STEVEN TRAN
CONSUMER TECHNOLOGY DIVISION
WiSE LAB ENGINEER
UL VERIFICATION SERVICES INC

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with TIA-603-C, FCC CFR Part 24, and FCC CFR 47 Part 27.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 and 47266 Benicia Street, Fremont, California, USA. Line conducted emissions are measured only at the 47173 address. The following table identifies which facilities were utilized for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

47173 Benicia Street	47266 Benicia Street
☐ Chamber A(IC: 2324B-1)	☐ Chamber D(IC: 2324B-4)
☐ Chamber B(IC: 2324B-2)	☐ Chamber E(IC: 2324B-5)
☒ Chamber C(IC: 2324B-3)	☐ Chamber F(IC: 2324B-6)
	☐ Chamber G(IC: 2324B-7)
	☐ Chamber H(IC: 2324B-8)

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at http://ts.nist.gov/standards/scopes/2000650.htm.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

EIRP = PSA reading with EUT worst orientation (dBm) + Path loss (dB) – cable loss(between the SG and substitution antenna) + Substitution Antenna Factor (dBi)
ERP = PSA reading with EUT worst orientation (dBm) + Path loss (dB) – cable loss(between the SG and substitution antenna)
(Path loss = Signal generator output – PSA reading with substitution antenna)

4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	3.52 dB
Radiated Disturbance, 30 to 1000 MHz	4.94 dB

Uncertainty figures are valid to a confidence level of 95%.

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a GSM/WCDMA/LTE Phone + Bluetooth, DTS/UNII a/b/g/n and NFC

6. MAXIMUM OUTPUT POWER (LTE)

The transmitter has a maximum peak conducted and radiated ERP/EIRP output powers as follows:

FCC Part 27							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation mW	Conducted		Radiated	
				AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE4	1710~1755	20MHz	QPSK	24.40	275.42	25.40	346.74
	1710~1755	20MHz	16QAM	23.60	229.09	24.28	267.92

FCC Part 27							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation mW	Conducted		Radiated	
				AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE4	1710~1755	15MHz	QPSK	24.50	281.84	25.71	372.39
	1710~1755	15MHz	16QAM	23.20	208.93	24.54	284.45

FCC Part 24							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation mW	Conducted		Radiated	
				AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE2	1850~1910	20MHz	QPSK	24.50	281.84	24.09	256.45
	1850~1910	20MHz	16QAM	23.70	234.42	23.16	207.01

FCC Part 24							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation mW	Conducted		Radiated	
				AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE2	1850~1910	15MHz	QPSK	24.50	281.84	23.82	240.99
	1850~1910	15MHz	16QAM	23.30	213.80	23.36	216.77

6.1. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a PIFA antenna for the [List the bands supported] with a maximum peak gain as follow:

Frequency (MHz)	Peak Gain (dBi)
Band 2, 1850~1910MHz	0.72
Band 4, 1710~1755MHz	0.03

6.2. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
AC Adapter	LG	MCS-02WR	RA4Y1031433	N/A
Earphone	LG	N/A	N/A	N/A

I/O CABLES (CONDUCTED SETUP)

I/O Cable List						
Cable No	**Port**	**# of identical ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	RF Out	1	Spectrum Analyzer	Shielded	None	NA
2	Antenna Port	1	EUT	Shielded	0.1m	NA
3	RF In/Out	1	Communication Test Set	Shielded	1m	NA

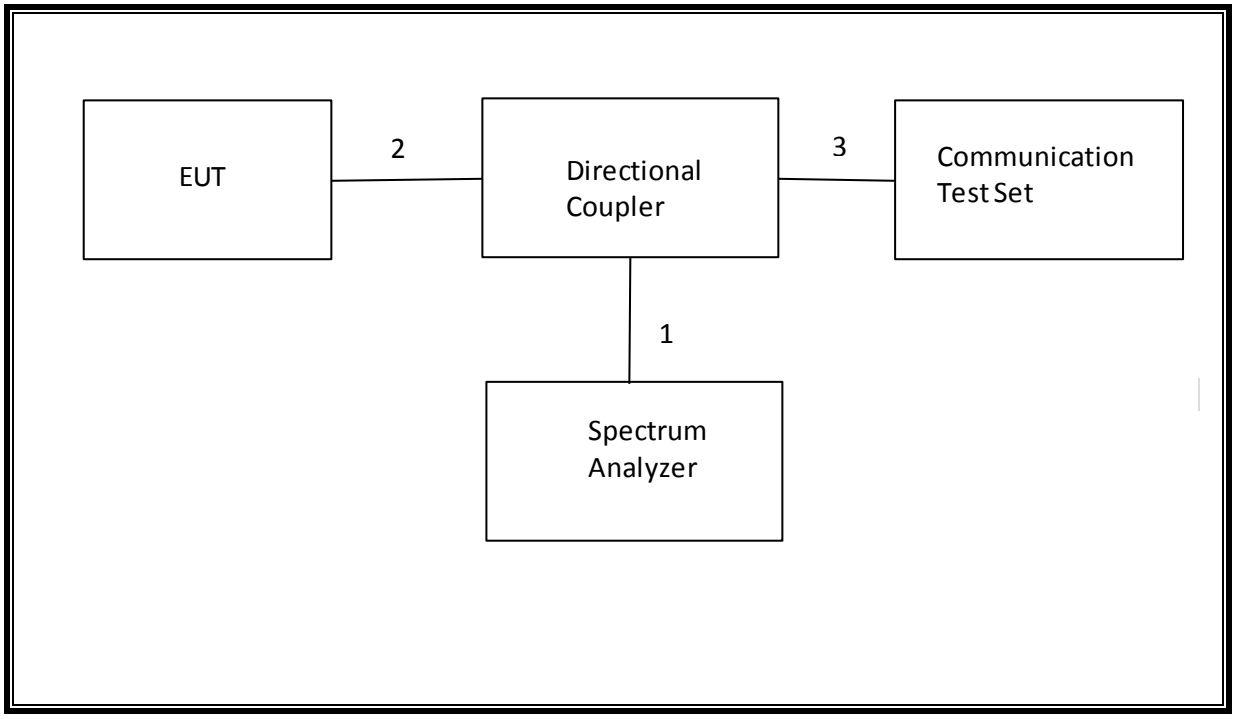
I/O CABLES (RADIATED SETUP)

I/O CABLE LIST						
Cable No.	**Port**	**# of Identical Ports**	**Connector Type**	**Cable Type**	**Cable Length**	**Remarks**
1	USB	1	AC Adapter	Un-shielded	1.2m	N/A
2	Jack	1	Headset	Shielded	1m	N/A
3	RF In/out	1	Communication Test Set	Un-shielded	2m	N/A

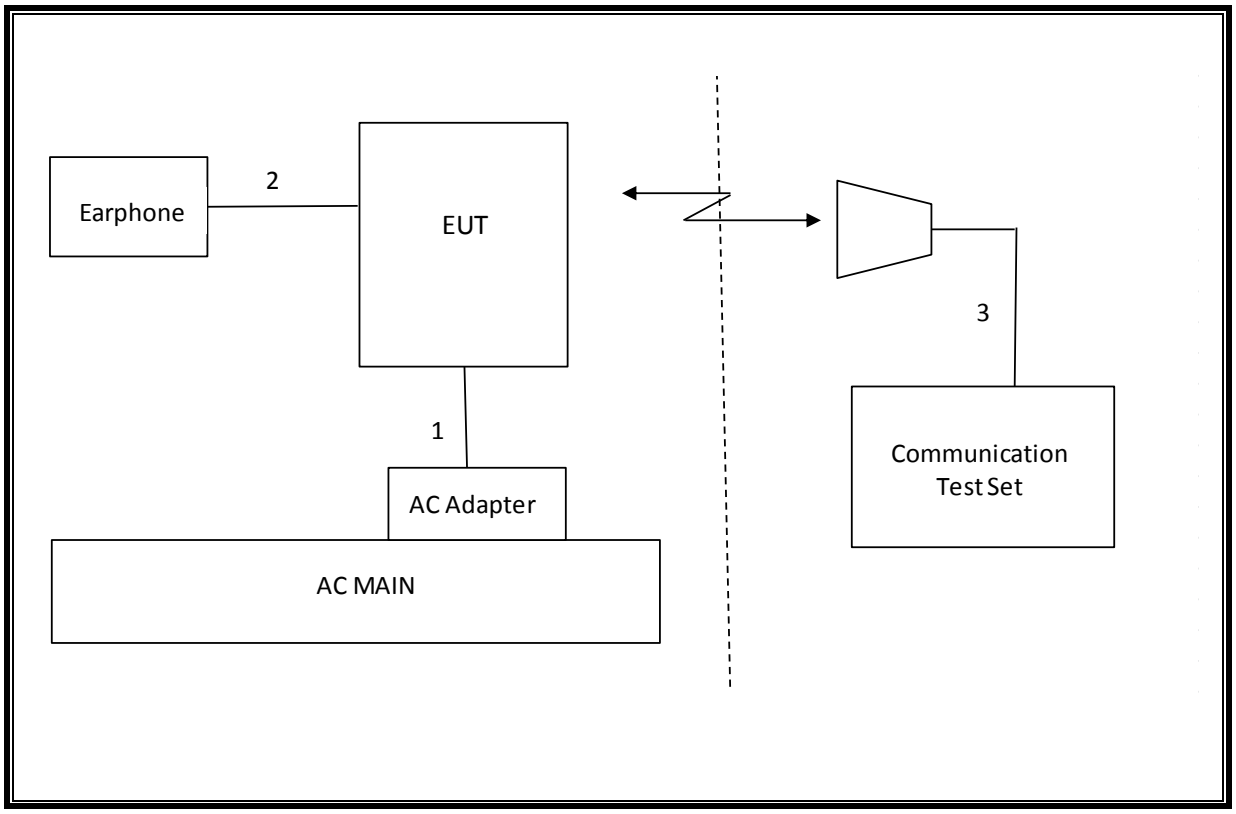
TEST SETUP

The EUT is continuously communicated to the call box during the tests.

SETUP DIAGRAM FOR TESTS (CONDUCTED TEST SETUP)



SETUP DIAGRAM FOR TESTS (RADIATED TEST SETUP)



7. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

TEST EQUIPMENT LIST				
Description	Manufacturer	Model	Asset	Cal Due
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01179	02/26/15
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	C01011	04/22/15
Antenna, Horn, 18 GHz	EMCO	3115	C00783	10/25/15
Antenna, Horn, 18 GHz	EMCO	3115	C00784	10/25/15
Highpass Filter, 2.7 GHz	Micro-Tronics	HPM13194	N02687	CNR
Highpass Filter, 1.5 GHz	Micro-Tronics	HPM13193	N02688	CNR
Temperature / Humidity Chamber	Thermotron	SE 600-10-10	C00930	01/09/15
Communications Test Set	R&S	CMW500	T159	07/02/15
DC power supply, 8 V @ 3 A or 15 V	Agilent / HP	E3610A	None	CNR
Vector signal generator, 6 GHz	Agilent / HP	E4438C	None	06/18/15
Antenna, Tuned Dipole 400~1000	ETS	3121C DB4	C00993	02/14/15
Directional Coupler	RF-Lambda	RFDC5M06G15	None	CNR
Antenna, Horn, 26.5 GHz	ARA	MWH-1826/B	C00589	12/17/15

8. SUMMARY TABLE

C2PC-2 Reason:

1. LTE Band 2 and 4 added 15MHz and 20MHz bandwidth without hardware change.

2. Model number LG-D727, LGD727 and D727 was added; LG Electronics, Inc. confirms that additional models are electrically identical.

FCC Part Section	RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result	Note
2.1049	N/A	Occupied Band width (99%)	N/A	Conducted	Pass	17.9 MHz
22.917(a) 24.238(a) 27.53(g) 90.691	RSS-132(4.5.1) RSS-133(6.5.1) RSS-139(6.5.1)	Band Edge / Conducted Spurious Emission	-13dBm		Pass	-24.4 dBm
2.1046	N/A	Conducted output power	N/A		Pass	24.5 dBm
22.355 24.235 27.54 90.213	RSS-132(4.3) RSS-133(6.3) RSS-139(6.3) RSS-199(4.3)	Frequency Stability	2.5PPM		Pass	0.01 PPM
24.232(c) 27.50(h)(2)	RSS-133(6.4) RSS-199(4.4)	Equivalent Isotropic Radiated Power	33dBm	Radiated	Pass	24.2 dBm
27.50(d)(4)	RSS-139(6.4)		30dBm		Pass	25.7 dBm
22.917(a) 24.238(a) 27.53(g)	RSS-132(4.5.1) RSS-133(6.5.1) RSS-139(6.5.1)	Radiated Spurious Emission	-13dBm		Pass	-46.4 dBm

9. CONDUCTED POWER VERIFICATION RESULTS

9.1. LTE OUTPUT VERIFICATION

9.1.1. LTE OUTPUT RESULT

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						18700	18900	19100
						1860 MHz	1880 MHz	1900 MHz
LTE Band 2	20	QPSK	1	0	0	24.50	24.50	24.30
			1	49	0	24.40	24.50	24.20
			1	99	0	24.50	24.40	24.30
			50	0	1	23.50	23.50	23.50
			50	24	1	23.40	23.40	23.40
			50	50	1	23.40	23.50	23.40
			100	0	1	23.40	23.40	23.50
		16QAM	1	0	1	23.70	23.70	23.50
			1	49	1	23.30	23.60	23.30
			1	99	1	23.30	23.50	23.20
			50	0	2	22.50	22.50	22.40
			50	24	2	22.50	22.44	22.40
			50	50	2	22.50	22.42	22.30
			100	0	2	22.40	22.43	22.30
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						18675	18900	19125
						1857.5 MHz	1880 MHz	1902.5 MHz
LTE Band 2	15	QPSK	1	0	0	24.50	24.50	24.40
			1	37	0	24.40	24.40	24.50
			1	74	0	24.40	24.40	24.40
			36	0	1	23.40	23.40	23.40
			36	20	1	23.40	23.30	23.30
			36	39	1	23.30	23.30	23.40
			75	0	1	23.40	23.40	23.40
		16QAM	1	0	1	23.20	23.30	23.20
			1	37	1	23.20	23.20	23.20
			1	74	1	23.20	23.20	23.30
			36	0	2	22.40	22.40	22.40
			36	20	2	22.30	22.35	22.30
			36	39	2	22.20	22.34	22.40
			75	0	2	22.40	22.50	22.40

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						20050	20175	20300
						1720 MHz	1732.5 MHz	1745 MHz
LTE Band 4	20	QPSK	1	0	0	24.40	24.20	24.30
			1	49	0	24.40	24.20	24.30
			1	99	0	24.40	24.30	24.30
			50	0	1	23.40	23.40	23.50
			50	24	1	23.50	23.40	23.50
			50	50	1	23.50	23.50	23.50
			100	0	1	23.40	23.40	23.50
		16QAM	1	0	1	23.30	23.60	23.40
			1	49	1	23.20	23.60	23.40
			1	99	1	23.30	23.60	23.50
			50	0	2	22.50	22.50	22.50
			50	24	2	22.50	22.50	22.50
			50	50	2	22.50	22.50	22.50
			100	0	2	22.50	22.50	22.50
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						20025	20175	20325
						1717.5 MHz	1732.5 MHz	1747.5 MHz
LTE Band 4	15	QPSK	1	0	0	24.30	24.40	24.50
			1	37	0	24.30	24.40	24.50
			1	74	0	24.30	24.30	24.50
			36	0	1	23.50	23.50	23.50
			36	20	1	23.40	23.50	23.60
			36	39	1	23.50	23.50	23.60
			75	0	1	23.50	23.60	23.60
		16QAM	1	0	1	23.40	23.60	23.40
			1	37	1	23.40	23.60	23.40
			1	74	1	23.40	23.60	23.40
			36	0	2	22.50	22.50	22.60
			36	20	2	22.40	22.50	22.50
			36	39	2	22.40	22.50	22.50
			75	0	2	22.60	22.60	22.60

10. PEAK TO AVERAGE RATIO

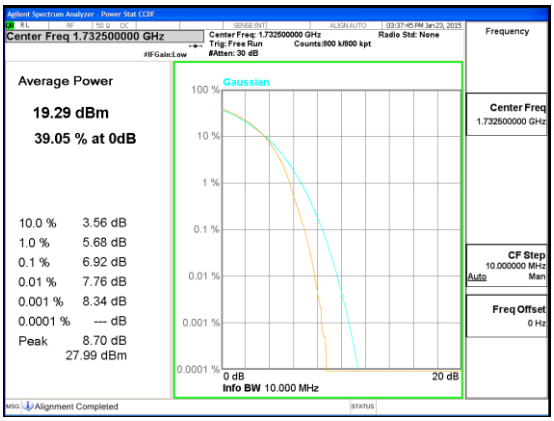
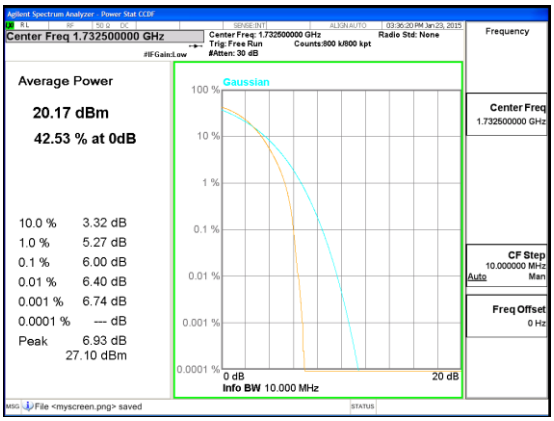
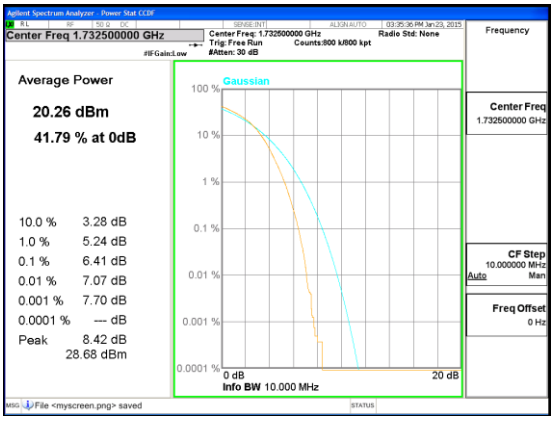
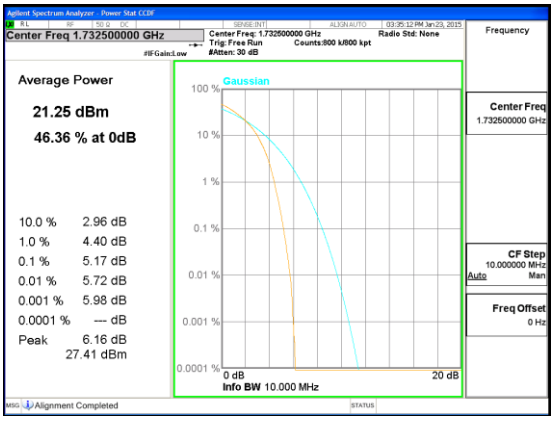
TEST PROCEDURE

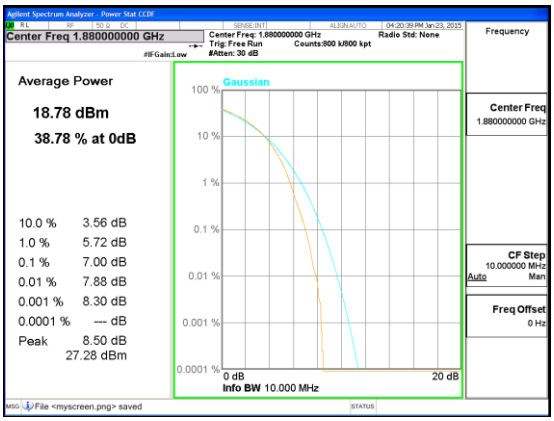
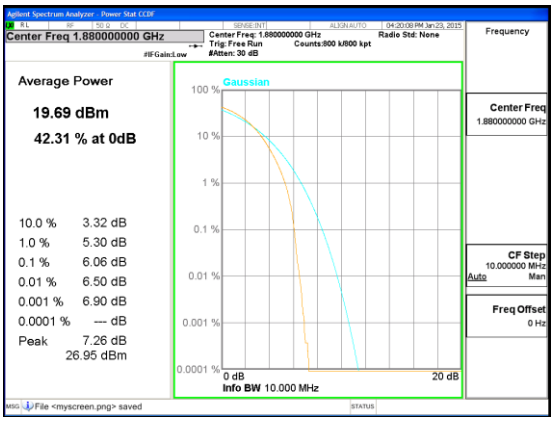
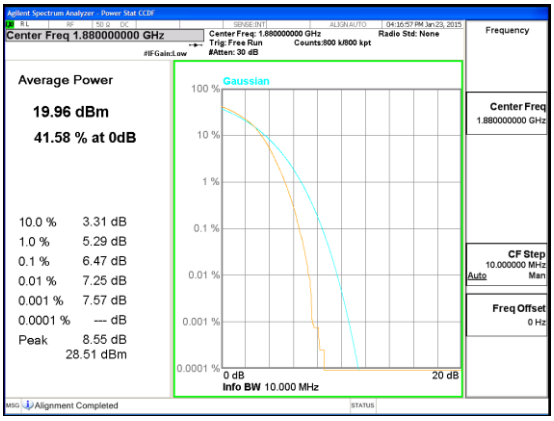
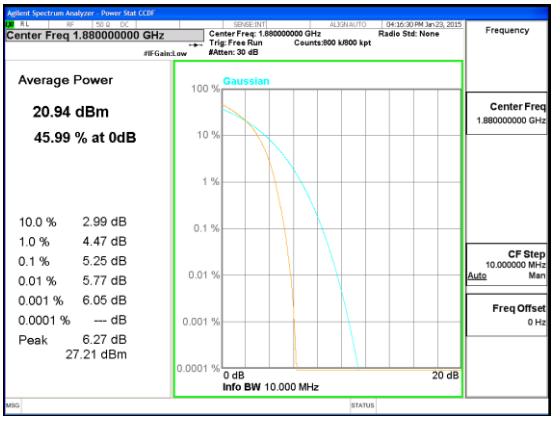
Per KDB 971168 D01 Power Meas License Digital Systems v02r02

TEST SPEC

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

10.1. CONDUCTED PEAK TO AVERAGE RESULT

Band LTE4 20MHz 16QAM	 Band LTE4 20MHz 16QAM Mid channel	 Band LTE4 20MHz QPSK Mid channel
Band LTE4 15MHz 16QAM	 Band LTE4 15MHz 16QAM Mid channel	 Band LTE4 15MHz QPSK Mid channel

Band LTE2 20MHz 16QAM	 Band LTE2 20MHz 16QAM Mid channel	 Band LTE2 20MHz QPSK Mid channel
Band LTE2 15MHz 16QAM	 Band LTE2 15MHz 16QAM Mid channel	 Band LTE2 15MHz QPSK Mid channel

11. LIMITS AND CONDUCTED RESULTS

11.1. OCCUPIED BANDWIDTH

RULE PART(S)

FCC: §2.1049
IC: RSS-132, 4.5; RSS-133, 6.5

LIMITS

For reporting purposes only

TEST PROCEDURE

The transmitter output was connected to a calibrated coaxial cable and coupler, the other end of which was connected to a spectrum analyzer. The occupied bandwidth was measured with the spectrum analyzer at the low, middle and high channel in each band. The -26dB bandwidth was also measured and recorded.

(KDB 971168 D01 Power Meas License Digital Systems v02r02)

MODES TESTED

LTE Band 2 and LTE Band 4

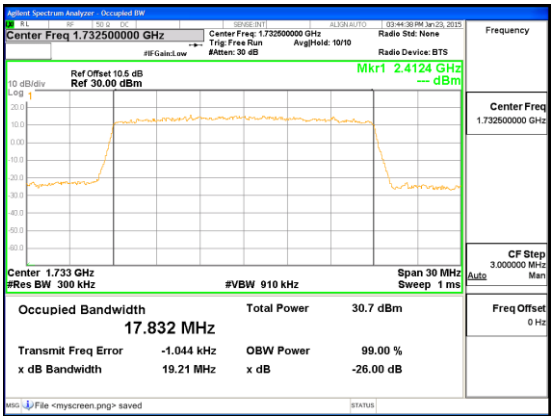
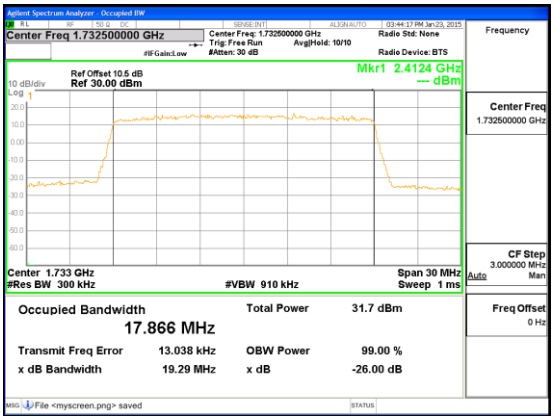
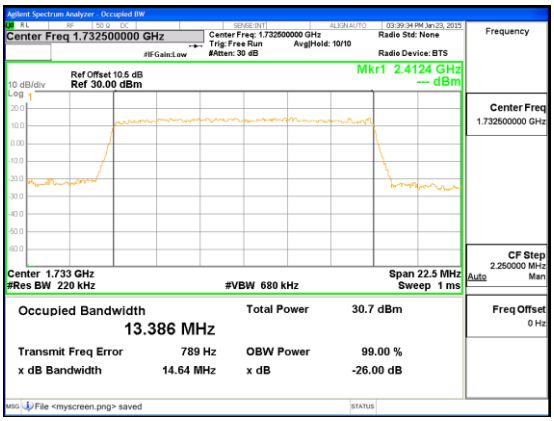
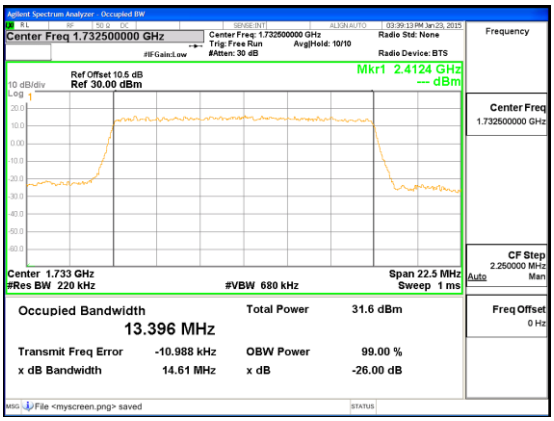
RESULTS

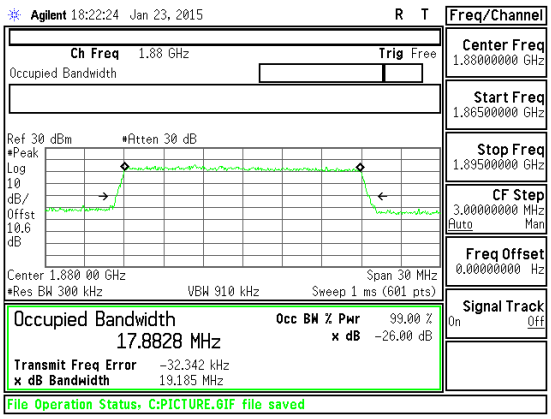
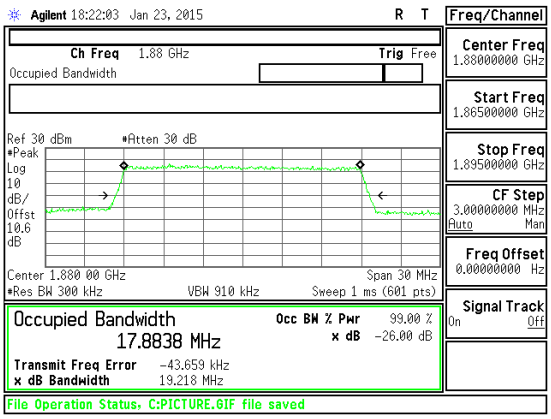
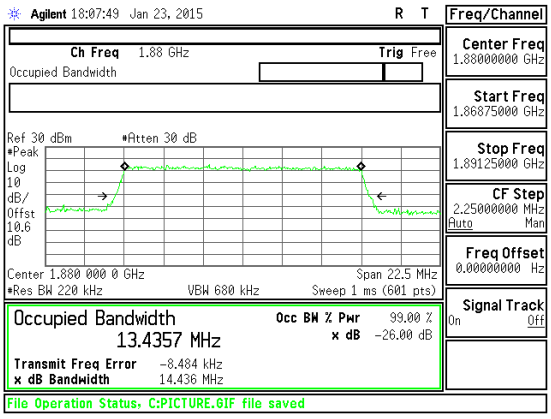
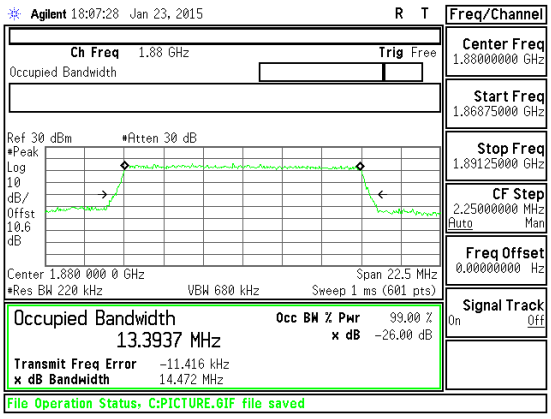
11.1.1. LTE OCCUPIED BANDWIDTH RESULTS

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE4	20	QPSK	100/0	1720	17.876	19.294
			100/0	1732.5	17.866	19.285
			100/0	1745	17.903	19.346
		16QAM	100/0	1720	17.883	19.265
			100/0	1732.5	17.832	19.208
			100/0	1745	17.855	19.336
	15	QPSK	75/0	1717.5	13.454	14.67
			75/0	1732.5	13.396	14.609
			75/0	1747.5	13.45	14.684
		16QAM	75/0	1717.5	13.43	14.605
			75/0	1732.5	13.386	14.639
			75/0	1747.5	13.43	14.554

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE2	20	QPSK	100/0	1860	17.74	19.05
			100/0	1880	17.88	19.22
			100/0	1900	17.82	19
		16QAM	100/0	1860	17.78	19.04
			100/0	1880	17.88	19.19
			100/0	1900	17.78	19.21
	15	QPSK	75/0	1857.5	13.39	14.51
			75/0	1880	13.39	14.47
			75/0	1902.5	13.36	14.45
		16QAM	75/0	1857.5	13.37	14.29
			75/0	1880	13.44	14.44
			75/0	1902.5	13.4	14.36

11.1.1. OCCUPIED BANDWIDTH PLOTS

Band LTE4 20MHz 16QAM	 Band LTE4 20MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE4 20MHz OBW QPSK Mid Channel FRB.gif
Band LTE4 15MHz 16QAM	 Band LTE4 15MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE4 15MHz OBW QPSK Mid Channel FRB.gif

Band LTE2 20MHz 16QAM	 Band LTE2 20MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE2 20MHz OBW QPSK Mid Channel FRB.gif
Band LTE2 15MHz 16QAM	 Band LTE2 15MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE2 15MHz OBW QPSK Mid Channel FRB.gif

11.2. BAND EDGE EMISSIONS

RULE PART(S)

FCC: §24.238, §27. 53

LIMITS

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

TEST PROCEDURE

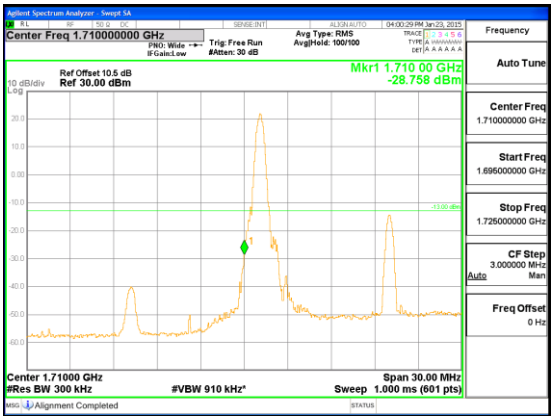
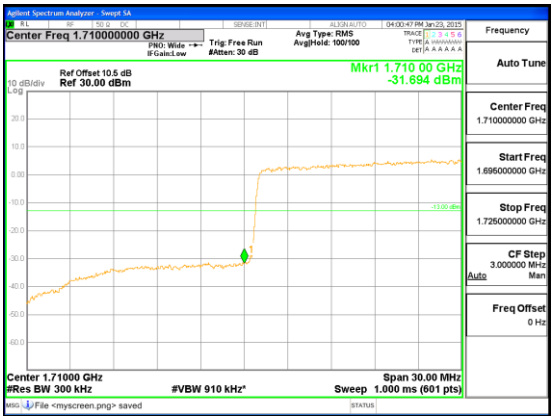
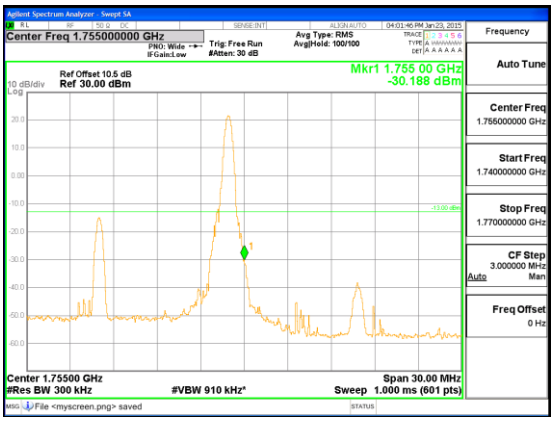
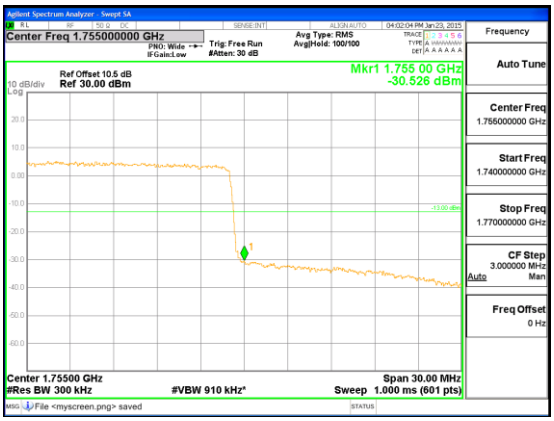
Per KDB 971168 D01 Power Meas License Digital Systems v02r02
The transmitter output was connected to an Agilent 8960 or a CMW500 Test Set and configured to operate at maximum power. The band edge emissions were measured at the required operating frequencies in each band on the Spectrum Analyzer.

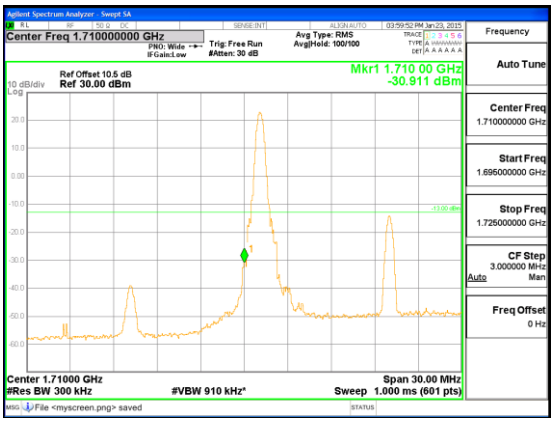
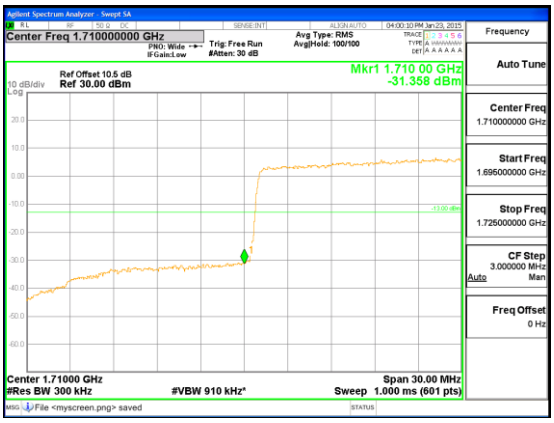
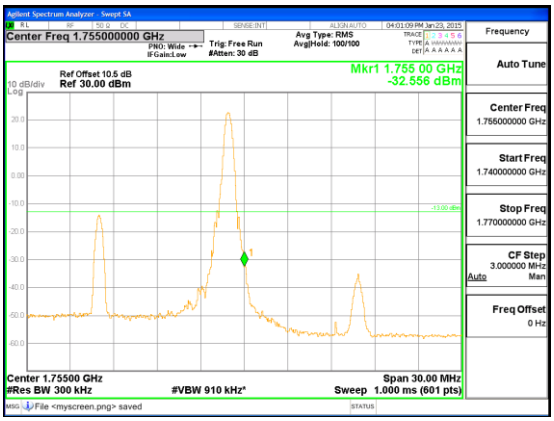
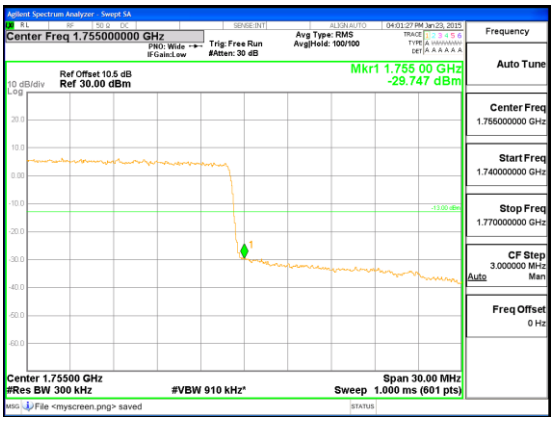
MODES TESTED

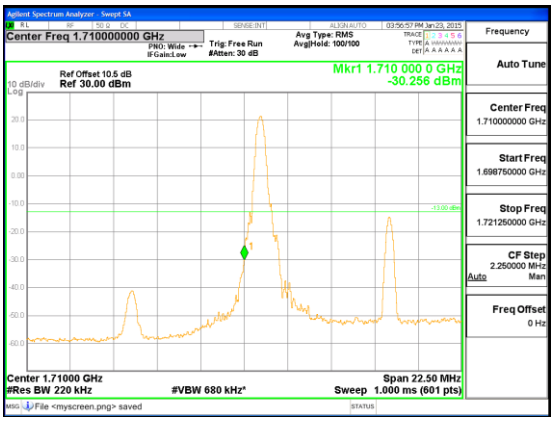
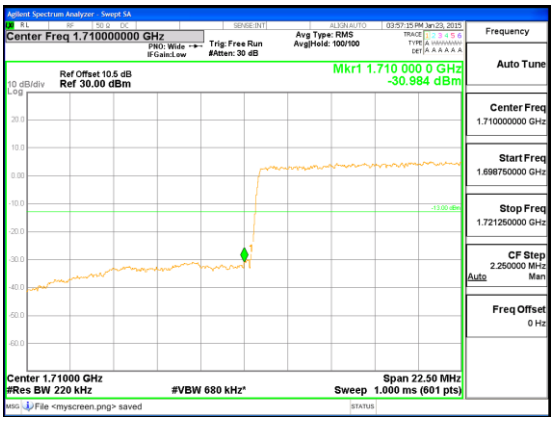
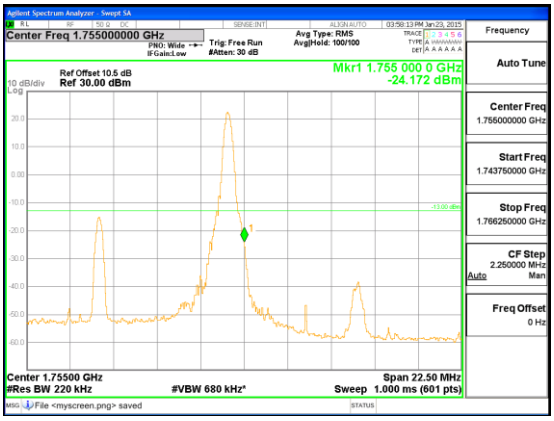
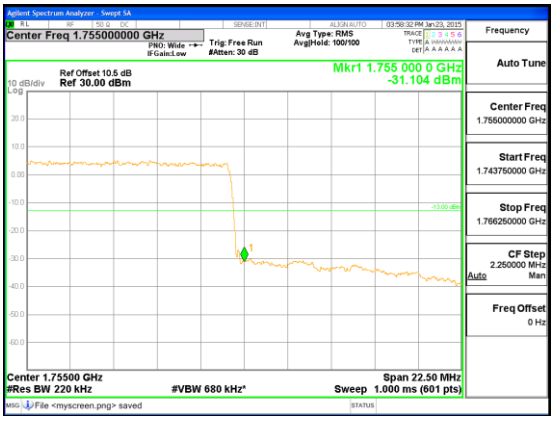
LTE Band 2 and LTE Band 4

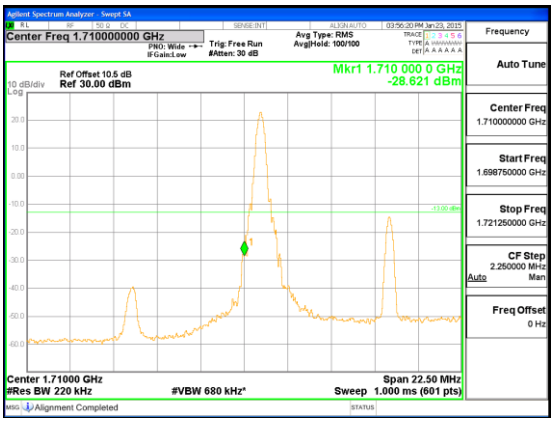
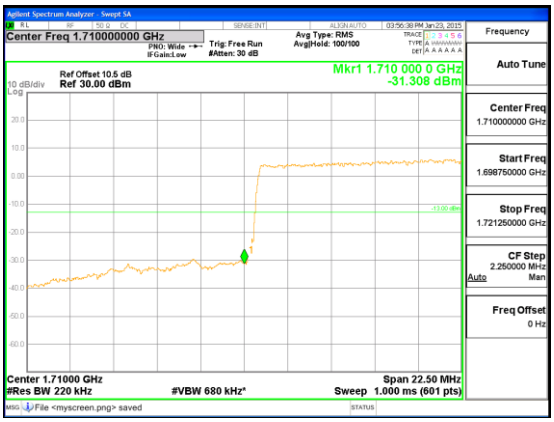
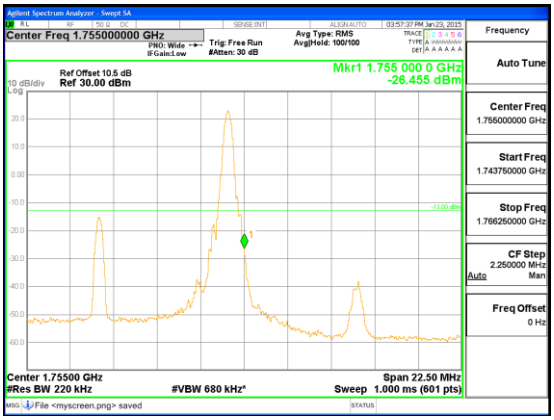
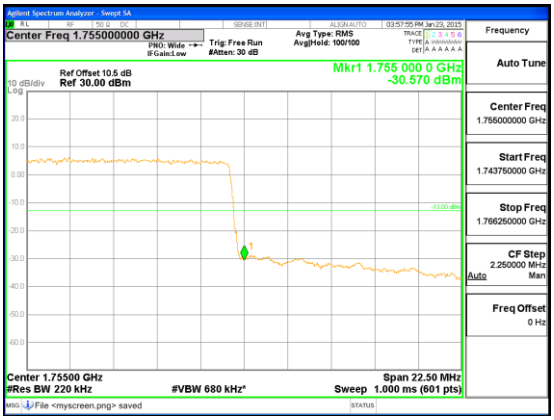
RESULTS

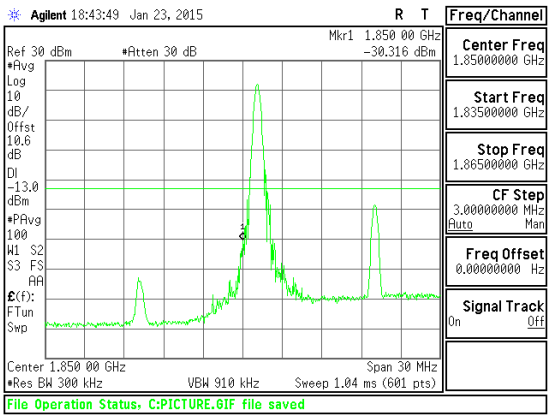
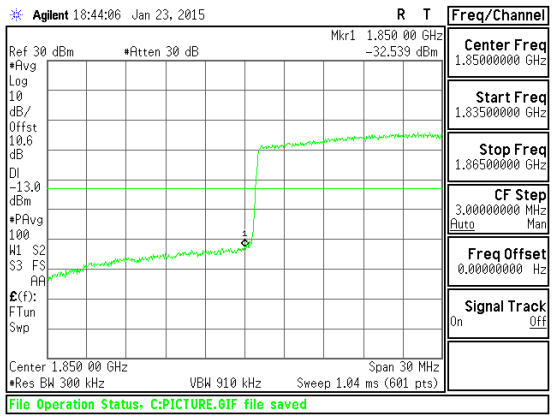
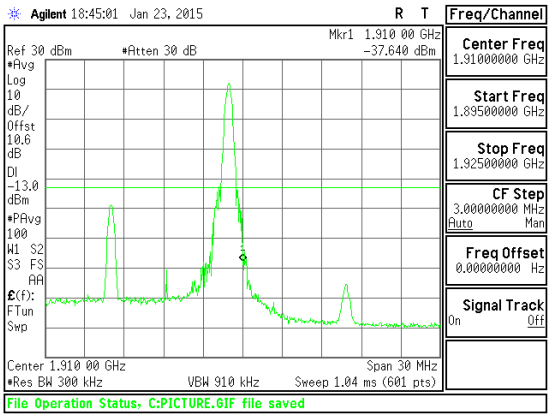
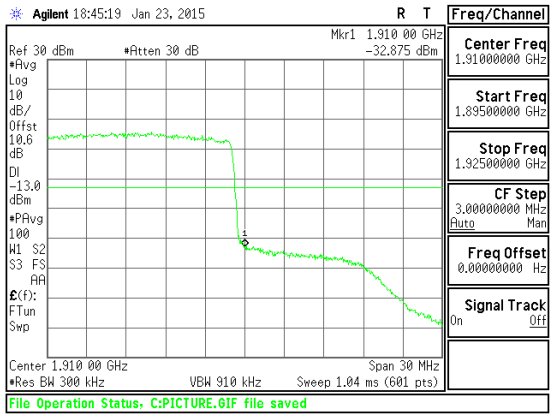
11.2.1. BAND EDGE PLOTS

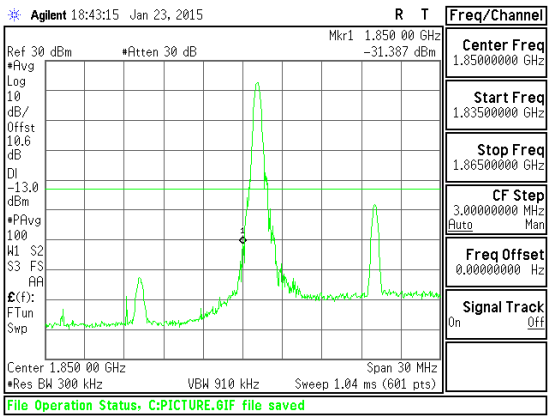
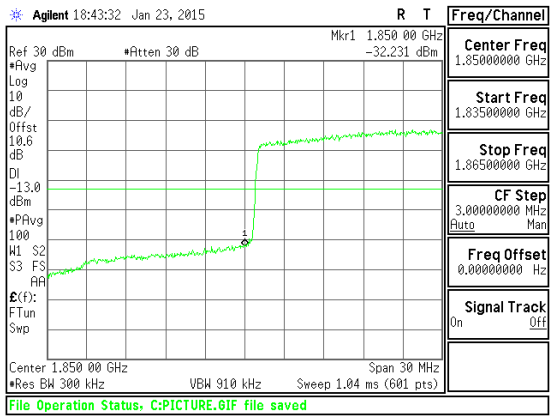
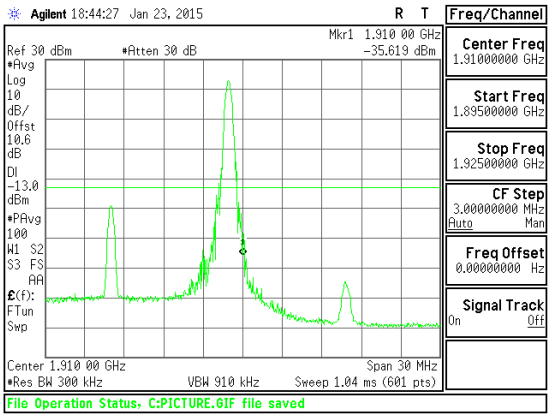
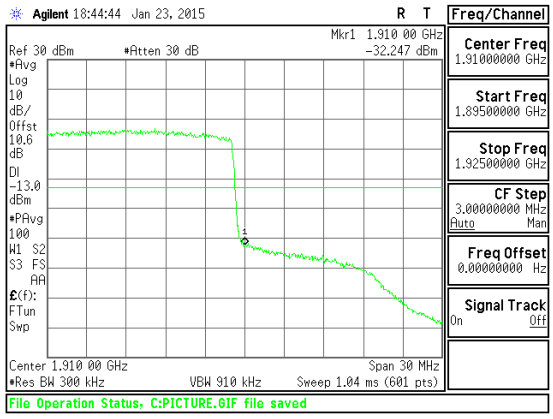
Band LTE4 20MHz 16QAM	 Band LTE4 20MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE4 20MHz CBE 16QAM Low Channel FRB.gif
Band LTE4 20MHz 16QAM	 Band LTE4 20MHz CBE 16QAM High Channel 1RB.gif	 Band LTE4 20MHz CBE 16QAM High Channel FRB.gif

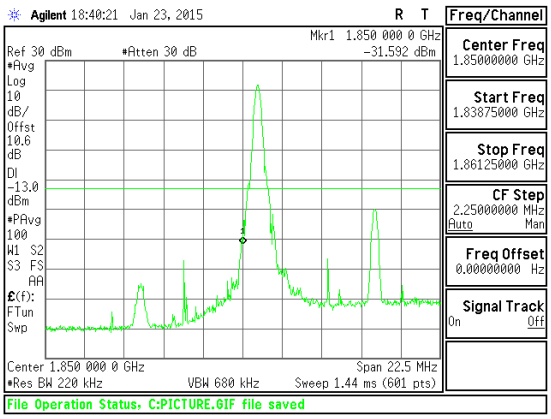
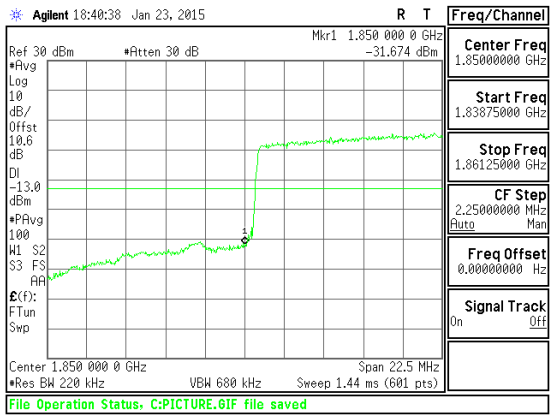
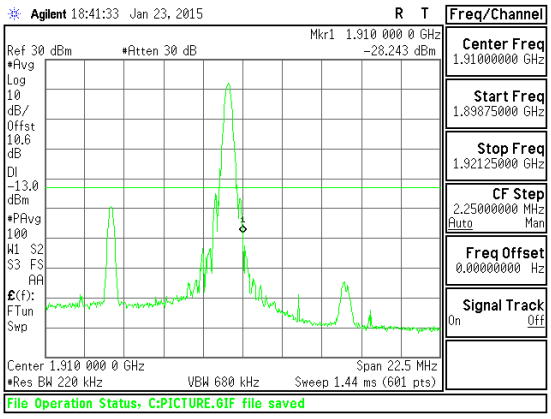
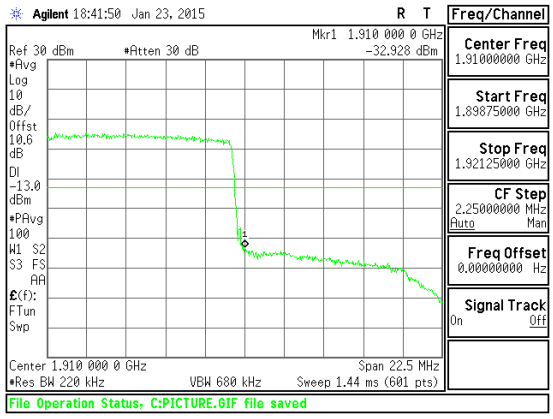
Band LTE4 20MHz QPSK	 Band LTE4 20MHz CBE QPSK Low Channel 1RB.gif	 Band LTE4 20MHz CBE QPSK Low Channel FRB.gif
Band LTE4 20MHz QPSK	 Band LTE4 20MHz CBE QPSK High Channel 1RB.gif	 Band LTE4 20MHz CBE QPSK High Channel FRB.gif

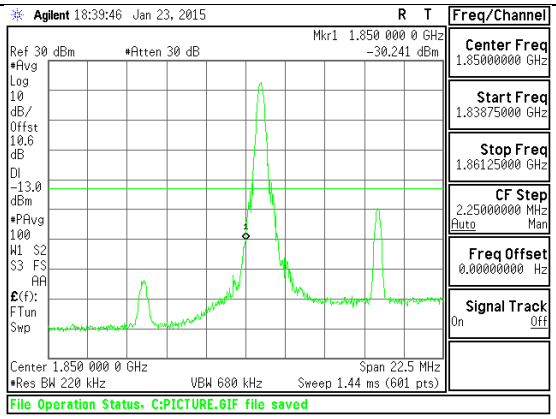
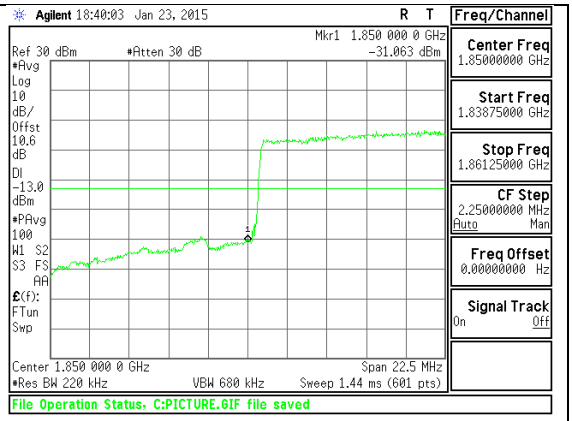
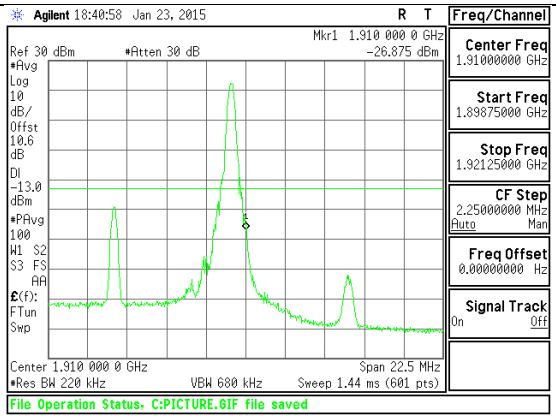
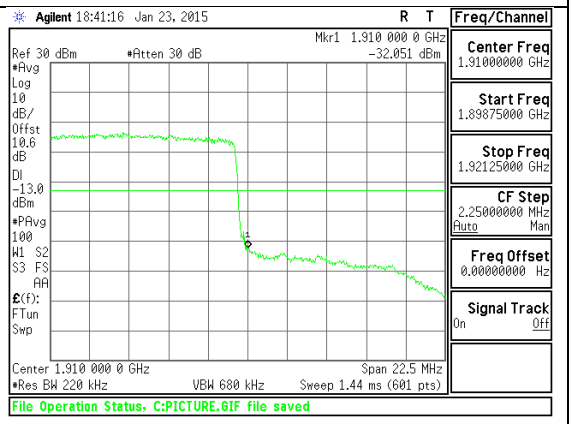
Band LTE4 15MHz 16QAM	 Band LTE4 15MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE4 15MHz CBE 16QAM Low Channel FRB.gif
Band LTE4 15MHz 16QAM	 Band LTE4 15MHz CBE 16QAM High Channel 1RB.gif	 Band LTE4 15MHz CBE 16QAM High Channel FRB.gif

Band LTE4 15MHz QPSK	 Band LTE4 15MHz CBE QPSK Low Channel 1RB.gif	 Band LTE4 15MHz CBE QPSK Low Channel FRB.gif
Band LTE4 15MHz QPSK	 Band LTE4 15MHz CBE QPSK High Channel 1RB.gif	 Band LTE4 15MHz CBE QPSK High Channel FRB.gif

Band LTE2 20MHz 16QAM	 Band LTE2 20MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE2 20MHz CBE 16QAM Low Channel FRB.gif
Band LTE2 20MHz 16QAM	 Band LTE2 20MHz CBE 16QAM High Channel 1RB.gif	 Band LTE2 20MHz CBE 16QAM High Channel FRB.gif

Band LTE2 20MHz QPSK	 Band LTE2 20MHz CBE QPSK Low Channel 1RB.gif	 Band LTE2 20MHz CBE QPSK Low Channel FRB.gif
Band LTE2 20MHz QPSK	 Band LTE2 20MHz CBE QPSK High Channel 1RB.gif	 Band LTE2 20MHz CBE QPSK High Channel FRB.gif

Band LTE2 15MHz 16QAM	 Band LTE2 15MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE2 15MHz CBE 16QAM Low Channel FRB.gif
Band LTE2 15MHz 16QAM	 Band LTE2 15MHz CBE 16QAM High Channel 1RB.gif	 Band LTE2 15MHz CBE 16QAM High Channel FRB.gif

Band LTE2 15MHz QPSK	 Band LTE2 15MHz CBE QPSK Low Channel 1RB.gif	 Band LTE2 15MHz CBE QPSK Low Channel FRB.gif
Band LTE2 15MHz QPSK	 Band LTE2 15MHz CBE QPSK High Channel 1RB.gif	 Band LTE2 15MHz CBE QPSK High Channel FRB.gif

11.3. OUT OF BAND EMISSIONS

RULE PART(S)

FCC: §2.1051, §24.238, and §27.53

LIMITS

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

TEST PROCEDURE

Per KDB 971168 D01 Power Meas License Digital Systems v02r02

The RF output of the transmitter was connected to a spectrum analyzer through a calibrated coaxial cable. Sufficient scans were taken to show the out-of-band Emissions, if any, up to 10th harmonic. Multiple sweeps were recorded in maximum hold mode using a peak detector to ensure that the worst-case emissions were caught.

MODES TESTED

LTE Band 2 and LTE Band 4

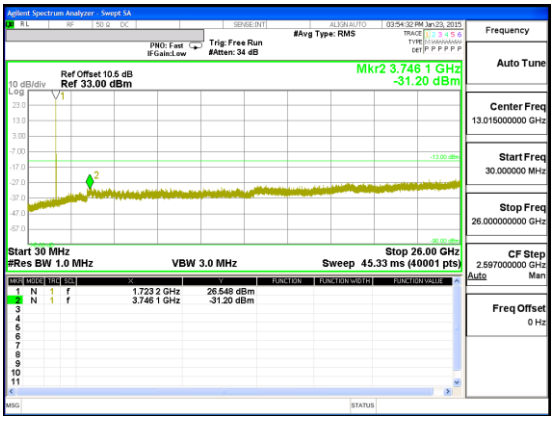
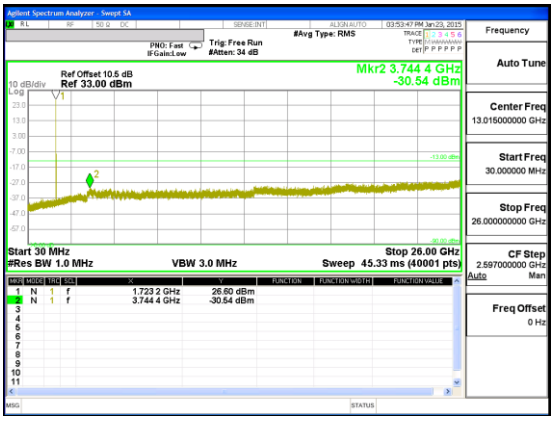
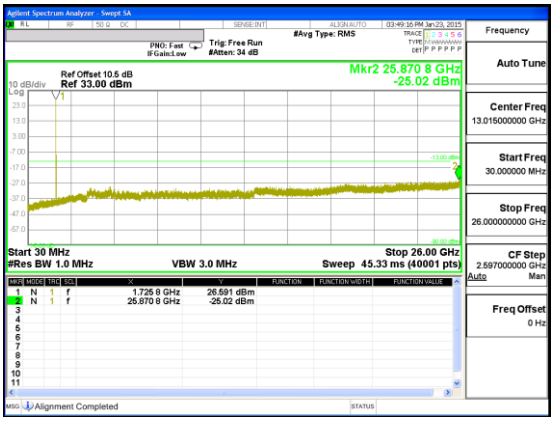
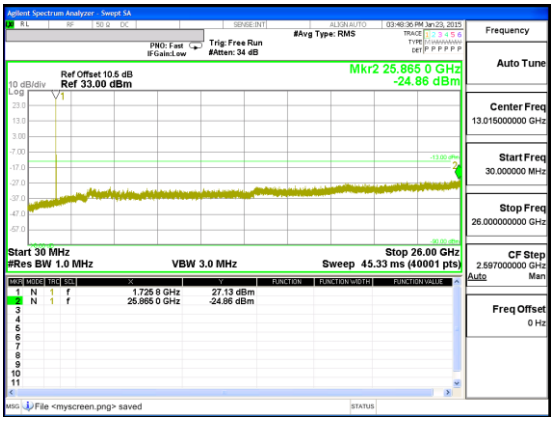
RESULTS

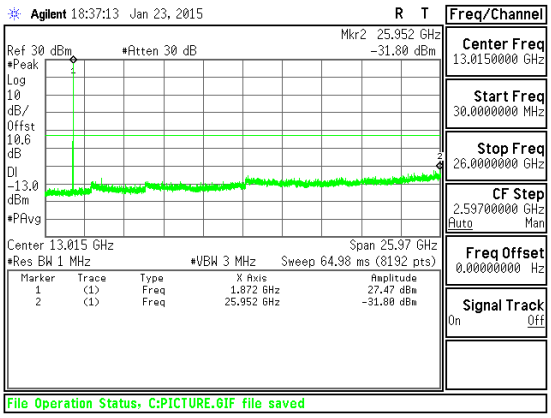
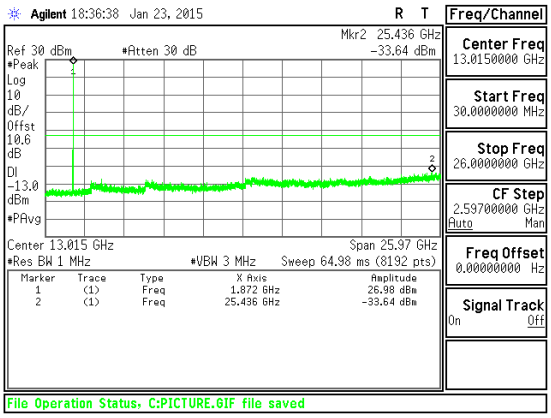
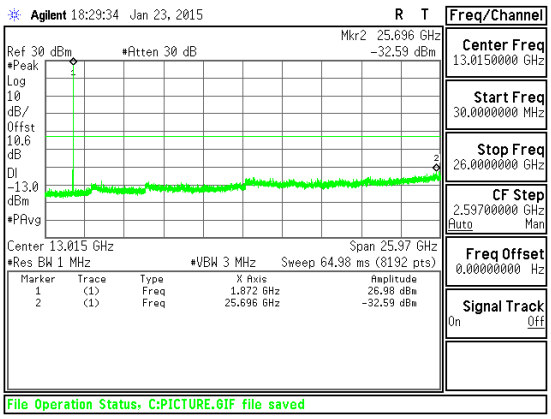
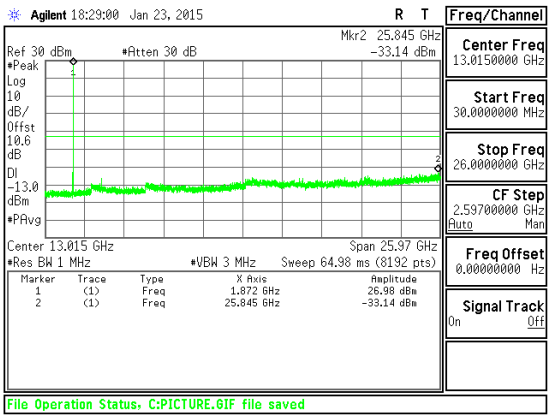
11.3.1. OUT OF BAND EMISSIONS RESULT

Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE4	20	QPSK	1720	-32.27	-13	-19.27
			1732.5	-30.54	-13	-17.54
			1745	-24.83	-13	-11.83
		16QAM	1720	-24.81	-13	-11.81
			1732.5	-31.20	-13	-18.20
			1745	-25.04	-13	-12.04
	15	QPSK	1717.5	-31.67	-13	-18.67
			1732.5	-24.86	-13	-11.86
			1747.5	-24.98	-13	-11.98
		16QAM	1717.5	-32.64	-13	-19.64
			1732.5	-25.02	-13	-12.02
			1747.5	-24.42	-13	-11.42

Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE2	20	QPSK	1860	-34.33	-13	-21.33
			1880	-33.64	-13	-20.64
			1900	-34.19	-13	-21.19
		16QAM	1860	-33.54	-13	-20.54
			1880	-31.80	-13	-18.80
			1900	-33.06	-13	-20.06
	15	QPSK	1857.5	-33.75	-13	-20.75
			1880	-33.14	-13	-20.14
			1902.5	-33.49	-13	-20.49
		16QAM	1857.5	-33.57	-13	-20.57
			1880	-32.59	-13	-19.59
			1902.5	-33.22	-13	-20.22

11.3.2. OUT OF BAND EMISSIONS PLOTS

Band LTE4 20MHz 16QAM	 Band LTE4 20MHz CSE 16QAM Mid channel	 Band LTE4 20MHz CSE QPSK Mid channel
Band LTE4 15MHz 16QAM	 Band LTE4 15MHz CSE 16QAM Mid channel	 Band LTE4 15MHz CSE QPSK Mid channel

Band LTE2 20MHz 16QAM	 Band LTE2 20MHz CSE 16QAM Mid channel	 Band LTE2 20MHz CSE QPSK Mid channel
Band LTE2 15MHz 16QAM	 Band LTE2 15MHz CSE 16QAM Mid channel	 Band LTE2 15MHz CSE QPSK Mid channel

11.4. FREQUENCY STABILITY

RULE PART(S)

FCC: §2.1055,§24.235, §27.54

LIMITS

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

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

TEST PROCEDURE

Per KDB 971168 D01 Power Meas License Digital Systems v02r02

MODES TESTED

LTE Band 2 and LTE Band 4

RESULTS

See the following pages.

11.4.1. FREQUENCY STABILITY RESULTS

LTE BAND 2 – MID CHANNEL (1880.0 MHz)

Reference Frequency: Cellular Mid Channel 1879.999996MHz @ 20°C Limit: to stay +- 2.5 ppm = 4700.000 Hz				
Power Supply	**Environment**	**Frequency Deviation Measureed with Time Elapse**		
(Vdc)	**Temperature (°C)**	**(MHz)**	**Delta (ppm)**	**Limit (ppm)**
3.80	50	1879.999992	0.002	2.5
3.80	40	1879.999994	0.001	2.5
3.80	30	1879.999995	0.001	2.5
3.80	***20***	***1879.999996***	***0***	2.5
3.80	10	1879.999993	0.002	2.5
3.80	0	1879.999996	0.000	2.5
3.80	-10	1879.999997	-0.001	2.5
3.80	-20	1879.999993	0.002	2.5
3.80	-30	1879.999996	0.000	2.5

Reference Frequency: Cellular Mid Channel 1879.999996MHz @ 20°C Limit: to stay +- 2.5 ppm = 4700.000 Hz				
Power Supply	**Environment**	**Frequency Deviation Measureed with Time Elapse**		
(Vdc)	**Temperature (°C)**	**(MHz)**	**Delta (ppm)**	**Limit (ppm)**
3.80	***20***	***1879.999996***	***0***	***2.5***
3.30	20	1879.999995	*0.001*	2.5
4.30	20	1879.999993	*0.002*	2.5

LTE BAND 4 – MID CHANNEL

Reference Frequency: PCS Mid Channel 1732.5MHz @ 20ºC Limit: within the authorized block or +- 2.5 ppm = 4331.250 Hz				
Power Supply	**Environment**	**Frequency Deviation Measureed with Time Elapse**		
(Vdc)	**Temperature (*C)**	**(MHz)**	**Delta (ppm)**	**Limit (ppm)**
3.80	50	1732.500012	-0.010	2.5
3.80	40	1732.500010	-0.009	2.5
3.80	30	1732.500011	-0.010	2.5
3.80	***20***	***1732.499994***	***0***	***2.5***
3.80	10	1732.499993	0.001	2.5
3.80	0	1732.499993	0.001	2.5
3.80	-10	1732.499992	0.001	2.5
3.80	-20	1732.499990	0.002	2.5
3.8	-30	1732.499989	0.003	2.5

Reference Frequency: PCS Mid Channel 1732.500012 MHz @ 20ºC Limit: within the authorized block or +- 2.5 ppm = 4331.250 Hz				
Power Supply	**Environment**	**Frequency Deviation Measureed with Time Elapse**		
(Vdc)	**Temperature (*C)**		**Delta (ppm)**	**Limit (ppm)**
3.80	***20***	***1732.499994***	***0.00000***	***2.5***
4.30	20	1732.499992	*0.00115*	2.5
3.30	20	1732.499991	0.00173	2.5

12. RADIATED TEST RESULTS

12.1. RADIATED POWER (ERP & EIRP)

RULE PART(S)

FCC: §2.1046, §24.232, §27.

LIMITS

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

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

LTE Band 2 and LTE Band 4

TEST RESULTS

12.1.1. LTE ERP/EIRP Results

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE4	20	QPSK	1/0	1720	24.72	296.48
			1/0	1732.5	25.34	341.98
			1/0	1745	25.40	346.74
		16QAM	1/0	1720	23.50	223.87
			1/0	1732.5	24.28	267.92
			1/0	1745	24.21	263.63
Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE4	15	QPSK	1/0	1717.5	24.66	292.42
			1/0	1732.5	25.71	372.39
			1/0	1747.5	25.35	342.77
		16QAM	1/0	1717.5	23.84	242.1
			1/0	1732.5	24.54	284.45
			1/0	1747.5	24.24	265.46

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE2	20	QPSK	1/0	1860	24.03	252.93
			1/0	1880	23.81	240.44
			1/0	1900	24.09	256.45
		16QAM	1/0	1860	23.16	207.01
			1/0	1880	22.96	197.7
			1/0	1900	23.16	207.01
Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE2	15	QPSK	1/0	1857.5	23.76	237.68
			1/0	1880	23.82	240.99
			1/0	1902.5	24.23	264.85
		16QAM	1/0	1857.5	22.96	197.7
			1/0	1880	22.96	197.7
			1/0	1902.5	23.36	216.77

12.1.2. ERP/EIRP PLOTS

LTE Band 4

High Frequency Substitution Measurement
UL Verification Services, Inc. Chamber C

Company: LG
Project #: 15I19863
Date: 01/27/15
Test Engineer: Kiya Kedida
Configuration: X-pos EUT only
Mode: LTE_B4_20MHz_16QAM

Band
LTE4
20MHz
16QAM

Test Equipment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1720.00	13.15	V	0.90	8.01	20.26	30.0	-9.7	
1720.00	16.39	H	0.90	8.01	23.50	30.0	-6.5	
Mid Ch								
1732.50	14.05	V	0.90	8.01	21.16	30.0	-8.8	
1732.50	17.17	H	0.90	8.01	24.28	30.0	-5.7	
High Ch								
1745.00	13.88	V	0.90	8.01	20.99	30.0	-9.0	
1745.00	17.10	H	0.90	8.01	24.21	30.0	-5.8	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

Band

LTE4

20MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc. Chamber C

Company: LG
Project #: 15I19863
Date: 01/27/15
Test Engineer: Kiya Kedida
Configuration: X-pos EUT only
Mode: LTE_B4_20MHz_QPSK

Test Equipment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1720.00	14.04	V	0.90	8.01	21.15	30.0	-8.9	
1720.00	17.61	H	0.90	8.01	24.72	30.0	-5.3	
Mid Ch								
1732.50	14.95	V	0.90	8.01	22.06	30.0	-7.9	
1732.50	18.23	H	0.90	8.01	25.34	30.0	-4.7	
High Ch								
1745.00	15.14	V	0.90	8.01	22.25	30.0	-7.8	
1745.00	18.29	H	0.90	8.01	25.40	30.0	-4.6	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

Band

LTE4

15MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc. Chamber C

Company: LG
Project #: 15I19863
Date: 01/27/15
Test Engineer: Kiya Kedida
Configuration: X-pos EUT only
Mode: LTE_B4_15MHz_16QAM

Test Equipment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1717.50	13.10	V	0.90	8.01	20.21	30.0	-9.8	
1717.50	16.73	H	0.90	8.01	23.84	30.0	-6.2	
Mid Ch								
1732.50	14.24	V	0.90	8.01	21.35	30.0	-8.7	
1732.50	17.43	H	0.90	8.01	24.54	30.0	-5.5	
High Ch								
1747.50	13.88	V	0.90	8.01	20.99	30.0	-9.0	
1747.50	17.13	H	0.90	8.01	24.24	30.0	-5.8	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

Band

LTE4

15MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc. Chamber C

Company: LG
Project #: 15I19863
Date: 01/27/15
Test Engineer: Kiya Kedida
Configuration: X-pos EUT only
Mode: LTE_B4_15MHz_QPSK

Test Equipment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1717.50	14.05	V	0.90	8.01	21.16	30.0	-8.8	
1717.50	17.55	H	0.90	8.01	24.66	30.0	-5.3	
Mid Ch								
1732.50	14.99	V	0.90	8.01	22.10	30.0	-7.9	
1732.50	18.60	H	0.90	8.01	25.71	30.0	-4.3	
High Ch								
1747.50	15.08	V	0.90	8.01	22.19	30.0	-7.8	
1747.50	18.24	H	0.90	8.01	25.35	30.0	-4.7	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

LTE Band 2

Band

LTE2

20MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc. Chamber C

Company: LG
Project #: 15I19863
Date: 01/27/15
Test Engineer: Kiya Kedida
Configuration: Z-pos EUT only
Mode: LTE Band 2_20MHz_16QAM

Test Equipment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable (244639001) Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.860	15.3	V	0.85	8.01	22.46	33.0	-10.5	
1.860	16.0	H	0.85	8.01	23.16	33.0	-9.8	
Mid Ch								
1.880	15.7	V	0.85	8.01	22.86	33.0	-10.1	
1.880	15.8	H	0.85	8.01	22.96	33.0	-10.0	
High Ch								
1.900	16.0	V	0.85	8.01	23.16	33.0	-9.8	
1.900	16.0	H	0.85	8.01	23.16	33.0	-9.8	

Rev. 3.17.11

Band

LTE2

20MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc. Chamber C

Company: LG
Project #: 15I19863
Date: 01/27/15
Test Engineer: Kiya Kedida
Configuration: X-pos EUT only
Mode: LTE Band 2_20MHz_QPSK

Test Equipment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable (244639001) Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.860	16.2	V	0.85	8.01	23.39	33.0	-9.6	
1.860	16.9	H	0.85	8.01	24.03	33.0	-9.0	
Mid Ch								
1.880	16.6	V	0.85	8.01	23.71	33.0	-9.3	
1.880	16.7	H	0.85	8.01	23.81	33.0	-9.2	
High Ch								
1.900	16.9	V	0.85	8.01	24.06	33.0	-8.9	
1.900	16.9	H	0.85	8.01	24.09	33.0	-8.9	

Rev. 3.17.11

Band

LTE2

15MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc. Chamber C

Company: LG
Project #: 15I19863
Date: 01/27/15
Test Engineer: Kiya Kedida
Configuration: X-pos EUT only
Mode: LTE Band 2_15MHz_16QAM

Test Equipment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable (244639001) Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.858	15.2	V	0.85	8.01	22.36	33.0	-10.6	
1.858	15.8	H	0.85	8.01	22.96	33.0	-10.0	
Mid Ch								
1.880	15.6	V	0.85	8.01	22.76	33.0	-10.2	
1.880	15.8	H	0.85	8.01	22.96	33.0	-10.0	
High Ch								
1.903	15.5	V	0.85	8.01	22.66	33.0	-10.3	
1.903	16.2	H	0.85	8.01	23.36	33.0	-9.6	

Rev. 3.17.11

Band

LTE2

15MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc. Chamber C

Company: LG
Project #: 15I19863
Date: 01/27/15
Test Engineer: Kiya Kedida
Configuration: X-pos EUT only
Mode: LTE Band 2_15MHz_QPSK

Test Equipment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable (244639001) Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.858	15.6	V	0.85	8.01	22.75	33.0	-10.3	
1.858	16.6	H	0.85	8.01	23.76	33.0	-9.2	
Mid Ch								
1.880	16.4	V	0.85	8.01	23.56	33.0	-9.4	
1.880	16.7	H	0.85	8.01	23.82	33.0	-9.2	
High Ch								
1.903	16.6	V	0.85	8.01	23.78	33.0	-9.2	
1.903	17.1	H	0.85	8.01	24.23	33.0	-8.8	

Rev. 3.17.11

12.2. FIELD STRENGTH OF SPURIOUS RADIATION

RULE PART(S)

FCC: §2.1053, §24.238, and §27.53

LIMITS

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

TEST PROCEDURE

For Cellular equipment - Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 100 kHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

For PCS equipment - Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 1 MHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

MODES TESTED

LTE Band 2 and LTE Band 4

RESULTS

12.2.1. SPURIOUS RADIATION PLOTS

LTE Band 4

Band
LTE4
20MHz
16QAM

UL Verification Services Chamber C
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19863
Date: 1/27/2015
Test Engineer: Kiya Kedida
Configuration: EUT/AC Charger/HS
Location: Chamber C
Mode: LTE_16QAM Band 4 Harmonics, 20MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1720									
3440.00	-20.7	V	3.0	36.0	1.0	-55.7	-13.0	-42.7	
5160.00	-17.0	V	3.0	35.4	1.0	-51.4	-13.0	-38.4	
6880.00	-13.7	V	3.0	35.7	1.0	-48.4	-13.0	-35.4	
3440.00	-20.8	H	3.0	36.0	1.0	-55.9	-13.0	-42.9	
5160.00	-16.5	H	3.0	35.4	1.0	-50.9	-13.0	-37.9	
6880.00	-14.1	H	3.0	35.7	1.0	-48.7	-13.0	-35.7	
Mid Ch, 1732.5									
3465.00	-21.3	V	3.0	36.0	1.0	-56.3	-13.0	-43.3	
5197.50	-16.8	V	3.0	35.4	1.0	-51.2	-13.0	-38.2	
6930.00	-14.8	V	3.0	35.7	1.0	-49.5	-13.0	-36.5	
3465.00	-20.8	H	3.0	36.0	1.0	-55.9	-13.0	-42.9	
5197.50	-17.3	H	3.0	35.4	1.0	-51.7	-13.0	-38.7	
6930.00	-14.2	H	3.0	35.7	1.0	-48.9	-13.0	-35.9	
High Ch, 1745									
3490.00	-21.0	V	3.0	36.0	1.0	-56.0	-13.0	-43.0	
5235.00	-17.4	V	3.0	35.4	1.0	-51.8	-13.0	-38.8	
6980.00	-13.7	V	3.0	35.7	1.0	-48.3	-13.0	-35.3	
3490.00	-21.4	H	3.0	36.0	1.0	-56.4	-13.0	-43.4	
5235.00	-16.2	H	3.0	35.4	1.0	-50.6	-13.0	-37.6	
6980.00	-13.0	H	3.0	35.7	1.0	-47.7	-13.0	-34.7	

UL Verification Services Chamber C
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19863
Date: 1/27/2015
Test Engineer: Kiya Kedida
Configuration: EUT/AC Charger/HS
Location: Chamber C
Mode: LTE_QPSK Band 4 Harmonics, 20MHz Bandwidth

Band	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch, 1720									
LTE4	3440.00	-20.5	V	3.0	36.0	1.0	-55.5	-13.0	-42.5	
	5160.00	-17.4	V	3.0	35.4	1.0	-51.8	-13.0	-38.8	
	6880.00	-13.0	V	3.0	35.7	1.0	-47.7	-13.0	-34.7	
20MHz	3440.00	-20.4	H	3.0	36.0	1.0	-55.4	-13.0	-42.4	
	5160.00	-17.0	H	3.0	35.4	1.0	-51.4	-13.0	-38.4	
	6880.00	-14.0	H	3.0	35.7	1.0	-48.6	-13.0	-35.6	
QPSK	Mid Ch, 1732.5									
	3465.00	-20.2	V	3.0	36.0	1.0	-55.2	-13.0	-42.2	
	5197.50	-18.0	V	3.0	35.4	1.0	-52.4	-13.0	-39.4	
	6930.00	-13.6	V	3.0	35.7	1.0	-48.3	-13.0	-35.3	
	3465.00	-21.7	H	3.0	36.0	1.0	-56.7	-13.0	-43.7	
	5197.50	-16.3	H	3.0	35.4	1.0	-50.7	-13.0	-37.7	
	6930.00	-12.4	H	3.0	35.7	1.0	-47.0	-13.0	-34.0	
	High Ch, 1745									
	3490.00	-20.5	V	3.0	36.0	1.0	-55.5	-13.0	-42.5	
	5235.00	-17.1	V	3.0	35.4	1.0	-51.5	-13.0	-38.5	
	6980.00	-13.0	V	3.0	35.7	1.0	-47.7	-13.0	-34.7	
	3490.00	-20.3	H	3.0	36.0	1.0	-55.3	-13.0	-42.3	
	5235.00	-16.3	H	3.0	35.4	1.0	-50.7	-13.0	-37.7	
	6980.00	-12.0	H	3.0	35.7	1.0	-46.7	-13.0	-33.7	

UL Verification Services Chamber C
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19863
Date: 1/27/2015
Test Engineer: Kiya Kedida
Configuration: EUT/AC Charger/HS
Location: Chamber C
Mode: LTE_16QAM Band 4 Harmonics, 15MHz Bandwidth

Band
LTE4
15MHz
16QAM

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1717.5									
3435.00	-18.8	V	3.0	36.1	1.0	-53.8	-13.0	-40.8	
5152.50	-17.3	V	3.0	35.4	1.0	-51.7	-13.0	-38.7	
6870.00	-13.3	V	3.0	35.7	1.0	-48.0	-13.0	-35.0	
3435.00	-19.4	H	3.0	36.1	1.0	-54.4	-13.0	-41.4	
5152.50	-16.4	H	3.0	35.4	1.0	-50.8	-13.0	-37.8	
6870.00	-12.5	H	3.0	35.7	1.0	-47.2	-13.0	-34.2	
Mid Ch, 1732.5									
3465.00	-21.0	V	3.0	36.0	1.0	-56.1	-13.0	-43.1	
5197.50	-17.3	V	3.0	35.4	1.0	-51.7	-13.0	-38.7	
6930.00	-14.8	V	3.0	35.7	1.0	-49.5	-13.0	-36.5	
3465.00	-21.8	H	3.0	36.0	1.0	-56.9	-13.0	-43.9	
5197.50	-17.7	H	3.0	35.4	1.0	-52.2	-13.0	-39.2	
6930.00	-13.3	H	3.0	35.7	1.0	-48.0	-13.0	-35.0	
High Ch, 1747.5									
3495.00	-21.4	V	3.0	36.0	1.0	-56.4	-13.0	-43.4	
5242.50	-18.1	V	3.0	35.4	1.0	-52.6	-13.0	-39.6	
6990.00	-13.8	V	3.0	35.7	1.0	-48.5	-13.0	-35.5	
3495.00	-20.2	H	3.0	36.0	1.0	-55.2	-13.0	-42.2	
5242.50	-17.2	H	3.0	35.4	1.0	-51.7	-13.0	-38.7	
6990.00	-12.6	H	3.0	35.7	1.0	-47.3	-13.0	-34.3	

UL Verification Services Chamber C
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19863
Date: 01/27/15
Test Engineer: Kiya Kedida
Configuration: EUT/AC Charger/HS
Location: Chamber C
Mode: LTE_QPSK Band 4 Harmonics, 15MHz Bandwidth

Band LTE4 15MHz QPSK

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1717.5									
3435.00	-18.2	V	3.0	36.1	1.0	-53.3	-13.0	-40.3	
5152.50	-16.8	V	3.0	35.4	1.0	-51.3	-13.0	-38.3	
6870.00	-13.1	V	3.0	35.7	1.0	-47.7	-13.0	-34.7	
3435.00	-21.0	H	3.0	36.1	1.0	-56.1	-13.0	-43.1	
5152.50	-17.5	H	3.0	35.4	1.0	-52.0	-13.0	-39.0	
6870.00	-13.1	H	3.0	35.7	1.0	-47.8	-13.0	-34.8	
Mid Ch, 1732.5									
3465.00	-20.6	V	3.0	36.0	1.0	-55.7	-13.0	-42.7	
5197.50	-18.0	V	3.0	35.4	1.0	-52.4	-13.0	-39.4	
6930.00	-13.3	V	3.0	35.7	1.0	-47.9	-13.0	-34.9	
3465.00	-21.5	H	3.0	36.0	1.0	-56.5	-13.0	-43.5	
5197.50	-17.0	H	3.0	35.4	1.0	-51.5	-13.0	-38.5	
6930.00	-12.4	H	3.0	35.7	1.0	-47.1	-13.0	-34.1	
High Ch, 1747.5									
3495.00	-21.6	V	3.0	36.0	1.0	-56.6	-13.0	-43.6	
5242.50	-18.2	V	3.0	35.4	1.0	-52.6	-13.0	-39.6	
6990.00	-12.9	V	3.0	35.7	1.0	-47.6	-13.0	-34.6	
3495.00	-19.7	H	3.0	36.0	1.0	-54.7	-13.0	-41.7	
5242.50	-16.9	H	3.0	35.4	1.0	-51.3	-13.0	-38.3	
6990.00	-12.2	H	3.0	35.7	1.0	-46.9	-13.0	-33.9	

LTE Band 2

UL Verification Services Chamber C
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19863
Date: 1/27/2015
Test Engineer: Kiya Kedida
Configuration: EUT/AC Charger/HS
Location: Chamber C
Mode: LTE_16QAM Band 2 Harmonics, 20MHz Bandwidth

Band
LTE2
20MHz
16QAM

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1860									
3720.00	-18.5	V	3.0	35.8	1.0	-53.3	-13.0	-40.3	
5580.00	-16.2	V	3.0	35.5	1.0	-50.7	-13.0	-37.7	
7440.00	-14.1	V	3.0	35.7	1.0	-48.9	-13.0	-35.9	
3720.00	-19.4	H	3.0	35.8	1.0	-54.2	-13.0	-41.2	
5580.00	-16.5	H	3.0	35.5	1.0	-50.9	-13.0	-37.9	
7440.00	-13.6	H	3.0	35.7	1.0	-48.4	-13.0	-35.4	
Mid Ch, 1880									
3760.00	-18.8	V	3.0	35.8	1.0	-53.6	-13.0	-40.6	
5640.00	-15.9	V	3.0	35.5	1.0	-50.4	-13.0	-37.4	
7520.00	-13.9	V	3.0	35.7	1.0	-48.7	-13.0	-35.7	
3760.00	-18.4	H	3.0	35.8	1.0	-53.2	-13.0	-40.2	
5640.00	-16.2	H	3.0	35.5	1.0	-50.7	-13.0	-37.7	
7520.00	-12.6	H	3.0	35.7	1.0	-47.4	-13.0	-34.4	
High Ch, 1900									
3800.00	-17.9	V	3.0	35.8	1.0	-52.7	-13.0	-39.7	
5700.00	-15.9	V	3.0	35.5	1.0	-50.4	-13.0	-37.4	
7600.00	-14.0	V	3.0	35.8	1.0	-48.7	-13.0	-35.7	
3800.00	-20.3	H	3.0	35.8	1.0	-55.1	-13.0	-42.1	
5700.00	-15.9	H	3.0	35.5	1.0	-50.4	-13.0	-37.4	
7600.00	-12.1	H	3.0	35.8	1.0	-46.9	-13.0	-33.9	

Band
LTE2
20MHz
QPSK

UL Verification Services Chamber C
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19863
Date: 1/27/2015
Test Engineer: Kiya Kedida
Configuration: EUT/AC Charger/HS
Location: Chamber C
Mode: LTE_QPSK Band 2 Harmonics, 20MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1860									
3720.00	-18.1	V	3.0	35.8	1.0	-53.0	-13.0	-40.0	
5580.00	-16.4	V	3.0	35.5	1.0	-50.9	-13.0	-37.9	
7440.00	-13.7	V	3.0	35.7	1.0	-48.4	-13.0	-35.4	
3720.00	-18.8	H	3.0	35.8	1.0	-53.6	-13.0	-40.6	
5580.00	-16.1	H	3.0	35.5	1.0	-50.6	-13.0	-37.6	
7440.00	-12.3	H	3.0	35.7	1.0	-47.0	-13.0	-34.0	
Mid Ch, 1880									
3760.00	-18.5	V	3.0	35.8	1.0	-53.3	-13.0	-40.3	
5640.00	-16.1	V	3.0	35.5	1.0	-50.6	-13.0	-37.6	
7520.00	-13.3	V	3.0	35.7	1.0	-48.1	-13.0	-35.1	
3760.00	-18.3	H	3.0	35.8	1.0	-53.1	-13.0	-40.1	
5640.00	-15.3	H	3.0	35.5	1.0	-49.8	-13.0	-36.8	
7520.00	-12.6	H	3.0	35.7	1.0	-47.4	-13.0	-34.4	
High Ch, 1900									
3800.00	-18.0	V	3.0	35.8	1.0	-52.8	-13.0	-39.8	
5700.00	-15.8	V	3.0	35.5	1.0	-50.3	-13.0	-37.3	
7600.00	-13.8	V	3.0	35.8	1.0	-48.5	-13.0	-35.5	
3800.00	-19.3	H	3.0	35.8	1.0	-54.1	-13.0	-41.1	
5700.00	-15.3	H	3.0	35.5	1.0	-49.8	-13.0	-36.8	
7600.00	-12.4	H	3.0	35.8	1.0	-47.1	-13.0	-34.1	

Band
LTE2
15MHz
16QAM

UL Verification Services Chamber C
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19863
Date: 1/27/2015
Test Engineer: Kiya Kedida
Configuration: EUT/AC Charger/HS
Location: Chamber C
Mode: LTE_16QAM Band 2 Harmonics, 15MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1857.5									
3715.00	-19.1	V	3.0	35.8	1.0	-54.0	-13.0	-41.0	
5572.50	-15.6	V	3.0	35.5	1.0	-50.1	-13.0	-37.1	
7430.00	-14.2	V	3.0	35.7	1.0	-48.9	-13.0	-35.9	
3715.00	-19.4	H	3.0	35.8	1.0	-54.3	-13.0	-41.3	
5572.50	-16.5	H	3.0	35.5	1.0	-50.9	-13.0	-37.9	
7430.00	-12.7	H	3.0	35.7	1.0	-47.5	-13.0	-34.5	
Mid Ch, 1880									
3760.00	-19.1	V	3.0	35.8	1.0	-53.9	-13.0	-40.9	
5640.00	-14.6	V	3.0	35.5	1.0	-49.1	-13.0	-36.1	
7520.00	-14.0	V	3.0	35.7	1.0	-48.8	-13.0	-35.8	
3760.00	-19.2	H	3.0	35.8	1.0	-54.1	-13.0	-41.1	
5640.00	-15.1	H	3.0	35.5	1.0	-49.6	-13.0	-36.6	
7520.00	-13.1	H	3.0	35.7	1.0	-47.9	-13.0	-34.9	
High Ch, 1902.5									
3805.00	-19.0	V	3.0	35.8	1.0	-53.8	-13.0	-40.8	
5707.50	-16.7	V	3.0	35.5	1.0	-51.1	-13.0	-38.1	
7610.00	-13.5	V	3.0	35.8	1.0	-48.2	-13.0	-35.2	
3805.00	-18.0	H	3.0	35.8	1.0	-52.8	-13.0	-39.8	
5707.50	-14.2	H	3.0	35.5	1.0	-48.7	-13.0	-35.7	
7610.00	-13.5	H	3.0	35.8	1.0	-48.3	-13.0	-35.3	

Band
LTE2
15MHz
QPSK

UL Verification Services Chamber C
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19863
Date: 1/27/2015
Test Engineer: Kiya Kedida
Configuration: EUT/AC Charger/HS
Location: Chamber C
Mode: LTE_QPSK Band 4 Harmonics, 15MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1717.5									
3435.00	-19.2	V	3.0	36.1	1.0	-54.2	-13.0	-41.2	
5152.50	-16.0	V	3.0	35.4	1.0	-50.4	-13.0	-37.4	
6870.00	-13.9	V	3.0	35.7	1.0	-48.5	-13.0	-35.5	
3435.00	-20.7	H	3.0	36.1	1.0	-55.8	-13.0	-42.8	
5152.50	-17.0	H	3.0	35.4	1.0	-51.4	-13.0	-38.4	
6870.00	-14.0	H	3.0	35.7	1.0	-48.7	-13.0	-35.7	
Mid Ch, 1732.5									
3465.00	-19.0	V	3.0	36.0	1.0	-54.1	-13.0	-41.1	
5197.50	-15.7	V	3.0	35.4	1.0	-50.1	-13.0	-37.1	
6930.00	-14.4	V	3.0	35.7	1.0	-49.1	-13.0	-36.1	
3465.00	-20.6	H	3.0	36.0	1.0	-55.6	-13.0	-42.6	
5197.50	-16.4	H	3.0	35.4	1.0	-50.8	-13.0	-37.8	
6930.00	-13.8	H	3.0	35.7	1.0	-48.5	-13.0	-35.5	
High Ch, 1747.5									
3495.00	-19.9	V	3.0	36.0	1.0	-54.9	-13.0	-41.9	
5242.50	-16.6	V	3.0	35.4	1.0	-51.0	-13.0	-38.0	
6990.00	-14.8	V	3.0	35.7	1.0	-49.5	-13.0	-36.5	
3495.00	-18.8	H	3.0	36.0	1.0	-53.8	-13.0	-40.8	
5242.50	-14.5	H	3.0	35.4	1.0	-48.9	-13.0	-35.9	
6990.00	-11.7	H	3.0	35.7	1.0	-46.4	-13.0	-33.4	