



FCC CFR47 PART 22 SUBPART H
FCC CFR47 PART 24 SUBPART E
FCC CFR47 PART 27 SUBPART F
FCC CFR47 PART 27 SUBPART L
FCC CFR47 PART 27 SUBPART M
INDUSTRY CANADA RSS-130 ISSUE 1
INDUSTRY CANADA RSS-132 ISSUE 3
INDUSTRY CANADA RSS-133 ISSUE 6
INDUSTRY CANADA RSS-139 ISSUE 2
INDUSTRY CANADA RSS-199 ISSUE 1

CERTIFICATION TEST REPORT

FOR

GSM/CDMA/WCDMA/LTE Phone + BLUETOOTH, with DTS/UNII a/b/g/n/ac & NFC

MODEL NUMBER: LG-VS986, VS986, LGVS986, LG-AS986, AS986, LGAS986

FCC ID: ZNFVS986

IC ID: 2703C-VS986

REPORT NUMBER: 15I20402-E1

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Prepared for

**LG ELECTRONICS MOBILECOMM U.S.A., INC
1000 SYLVAN AVENUE
ENGLEWOOD CLIFFS,
NEW JERSEY, 07632, U.S.A**

Prepared by

**UL VERIFICATION SERVICES
47173 BENICIA STREET
FREMONT, CA 94538, U.S.A.
TEL: (510) 771-1000
FAX: (510) 661-0888**



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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: LG ELECTRONICS MOBILECOMM U.S.A., INC
EUT DESCRIPTION: GSM/CDMA/WCDMA/LTE Phone + BLUETOOTH, DTS/UNII a/b/g/n/ac & NFC
MODEL: LG-VS986, VS986, LGVS986, LG-AS986, AS986, LGAS986
SERIAL NUMBER: 1V4UH (Conducted), 1V4UK (Radiated)
DATE TESTED: MARCH 28 – APRIL 16, 2015

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC PART 22H, 24E, 27L AND 27M	PASS
RSS 130, 132, 133, 139, 199	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

UL Verification Services Inc. By:



PENG ZHANG
 CONSUMER TECHNOLOGY DIVISION
 PROJECT LEAD
 UL Verification Services Inc.

Tested By:



CHARLES VERGONIO
 CONSUMER TECHNOLOGY DIVISION
 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 47 Part 22, FCC CFR Part 24, FCC CFR 47 Part 27, RSS-130, RSS-132, RSS-133, RSS-139, RSS-199.

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
<input type="checkbox"/> Chamber A(IC: 2324B-1)	<input type="checkbox"/> Chamber D(IC: 2324B-4)
<input type="checkbox"/> Chamber B(IC: 2324B-2)	<input type="checkbox"/> Chamber E(IC: 2324B-5)
<input checked="" type="checkbox"/> Chamber C(IC: 2324B-3)	<input type="checkbox"/> Chamber F(IC: 2324B-6)
	<input checked="" type="checkbox"/> Chamber G(IC: 2324B-7)
	<input type="checkbox"/> 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:

$$\text{EIRP} = \text{PSA reading with EUT worst orientation (dBm)} + \text{Path loss (dB)} - \text{cable loss (between the SG and substitution antenna)} + \text{Substitution Antenna Factor (dBi)}$$

$$\text{ERP} = \text{PSA reading with EUT worst orientation (dBm)} + \text{Path loss (dB)} - \text{cable loss (between the SG and substitution antenna)}$$

$$(\text{Path loss} = \text{Signal generator output} - \text{PSA reading with substitution antenna})$$

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 20000 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/CDMA/WCDMA/LTE Phone + BLUETOOTH, DTS/UNII a/b/g/n/ac & NFC.

5.2. MAXIMUM OUTPUT POWER

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

FCC Part 22/24						
Band	Frequency Range(MHz)	Modulation	Conducted		Radiated	
			AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
GSM850	824~849	GPRS	33.2	2089.30	30.70	1174.90
	824~849	EGPRS	27.7	588.84	25.99	397.19
GSM1900	1850~1910	GPRS	29.4	870.96	31.41	1383.57
	1850~1910	EGPRS	26.7	467.74	28.58	721.11
Band 5	824~849	REL99	23.7	234.42	21.66	146.55
	824~849	HSDPA	23.4	218.78	21.63	145.55
	824~849	HSUPA	22.4	173.78		
Band 2	1850~1910	REL99	23.5	223.87	26.14	411.15
	1850~1910	HSDPA	23.4	218.78	26.11	408.32
	1850~1910	HSUPA	23.2	208.93		
BC0	824~849	1xRTT	24.6	288.40	21.86	153.46
	824~849	EVDO REL. 0	24.6	288.40	21.84	152.76
	824~849	EVDO REV. A	24.6	288.40		
BC1	1850~1910	1xRTT	24.4	275.42	26.74	472.06
	1850~1910	EVDO REL. 0	24.5	281.84	26.72	469.89
	1850~1910	EVDO REV. A	24.4	275.42		

5.3. MAXIMUM OUTPUT POWER (LTE)

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

FCC Part 27; RSS-130							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation	Conducted		Radiated	
				AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE13	777~787	10MHz	QPSK	23.70	234.42	20.11	102.57
	777~787	10MHz	16QAM	22.80	190.55	19.50	89.13

FCC Part 27; RSS-130							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation	Conducted		Radiated	
				AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE13	777~787	5MHz	QPSK	24.40	275.42	20.09	102.09
	777~787	5MHz	16QAM	23.40	218.78	19.48	88.72

FCC Part 27, RSS 199							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation	Conducted		Radiated	
				AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE7	2500~2570	20MHz	QPSK	23.40	218.78	22.79	190.11
	2500~2570	20MHz	16QAM	22.20	165.96	22.16	164.44

FCC Part 27, RSS 199							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation	Conducted		Radiated	
				AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE7	2500~2570	15MHz	QPSK	23.40	218.78	23.01	199.99
	2500~2570	15MHz	16QAM	22.40	173.78	22.36	172.19

FCC Part 27, RSS 199							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation	Conducted		Radiated	
				AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE7	2500~2570	10MHz	QPSK	23.00	199.53	22.61	182.39
	2500~2570	10MHz	16QAM	22.00	158.49	21.92	155.60

FCC Part 27, RSS 199							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation	Conducted		Radiated	
				AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE7	2500~2570	5MHz	QPSK	23.10	204.17	23.18	207.97
	2500~2570	5MHz	16QAM	21.60	144.54	22.50	177.83

FCC Part 22, RSS 132							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation	Conducted		Radiated	
				AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE5	824~849	10MHz	QPSK	24.20	263.03	21.76	149.97
	824~849	10MHz	16QAM	22.80	190.55	20.90	123.03

FCC Part 22, RSS 132							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation	Conducted		Radiated	
				AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE5	824~849	5MHz	QPSK	24.40	275.42	21.39	137.72
	824~849	5MHz	16QAM	23.40	218.78	20.54	113.24

FCC Part 22, RSS 132							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation	Conducted		Radiated	
				AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE5	824~849	3MHz	QPSK	24.40	275.42	21.43	139.00
	824~849	3MHz	16QAM	23.40	218.78	20.57	114.02

FCC Part 22, RSS 132							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation	Conducted		Radiated	
				AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE5	824~849	1.4MHz	QPSK	24.40	275.42	21.28	134.28
	824~849	1.4MHz	16QAM	23.40	218.78	20.33	107.89

FCC Part 27, RSS 139							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation	Conducted		Radiated	
				AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE4	1710~1755	20MHz	QPSK	24.70	295.12	27.62	578.10
	1710~1755	20MHz	16QAM	23.70	234.42	26.98	498.88

FCC Part 27, RSS 139							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation	Conducted		Radiated	
				AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE4	1710~1755	15MHz	QPSK	24.00	251.19	27.73	592.93
	1710~1755	15MHz	16QAM	22.50	177.83	27.21	526.02

FCC Part 27, RSS 139							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation	Conducted		Radiated	
				AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE4	1710~1755	10MHz	QPSK	24.20	263.03	27.76	597.04
	1710~1755	10MHz	16QAM	22.90	194.98	26.86	485.29

FCC Part 27, RSS 139							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation	Conducted		Radiated	
				AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE4	1710~1755	5MHz	QPSK	24.50	281.84	27.83	606.74
	1710~1755	5MHz	16QAM	23.60	229.09	27.03	504.66

FCC Part 27, RSS 139							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation	Conducted		Radiated	
				AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE4	1710~1755	3MHz	QPSK	23.80	239.88	27.85	609.54
	1710~1755	3MHz	16QAM	23.00	199.53	27.25	530.88

FCC Part 27, RSS 139							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation	Conducted		Radiated	
				AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE4	1710~1755	1.4MHz	QPSK	23.80	239.88	27.87	612.35
	1710~1755	1.4MHz	16QAM	22.50	177.83	26.98	498.88

FCC Part 27, RSS 133							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation	Conducted		Radiated	
				AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE2	1850~1910	20MHz	QPSK	24.50	281.84	26.35	431.52
	1850~1910	20MHz	16QAM	23.50	223.87	26.03	400.87

FCC Part 27, RSS 133							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation	Conducted		Radiated	
				AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE2	1850~1910	15MHz	QPSK	24.50	281.84	26.37	433.51
	1850~1910	15MHz	16QAM	23.50	223.87	26.06	403.65

FCC Part 27, RSS 133							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation	Conducted		Radiated	
				AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE2	1850~1910	10MHz	QPSK	23.90	245.47	26.35	431.52
	1850~1910	10MHz	16QAM	22.60	181.97	26.03	400.87

FCC Part 27, RSS 133							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation	Conducted		Radiated	
				AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE2	1850~1910	5MHz	QPSK	24.30	269.15	26.37	433.51
	1850~1910	5MHz	16QAM	23.40	218.78	26.06	403.65

FCC Part 27, RSS 133							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation	Conducted		Radiated	
				AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE2	1850~1910	3MHz	QPSK	24.30	269.15	26.41	437.52
	1850~1910	3MHz	16QAM	23.20	208.93	26.04	401.79

FCC Part 27, RSS 133							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation	Conducted		Radiated	
				AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE2	1850~1910	1.4MHz	QPSK	24.00	251.19	26.39	435.51
	1850~1910	1.4MHz	16QAM	22.80	190.55	26.02	399.94

5.4. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a PIFA antenna for the unit with a maximum peak gain as follow:

Frequency (MHz)	Peak Gain (dBi)
BC0, Band 5, 824~849MHz	-2.5
BC1, Band 2, 1850~1910MHz	1.29
LTE4, 1710~1755MHz	0.51
LTE7, 2500~2690MHz	-1.43
LTE13, 777~787MHz	-3.54

5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
AC Adapter	LG	MCS-04WD2	EAY62991904	N/A
Smart Case Cover	LG	LG-P1	DK0227	N/A
Wireless Charger	LG	WCD-110	LF1212625283010049	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

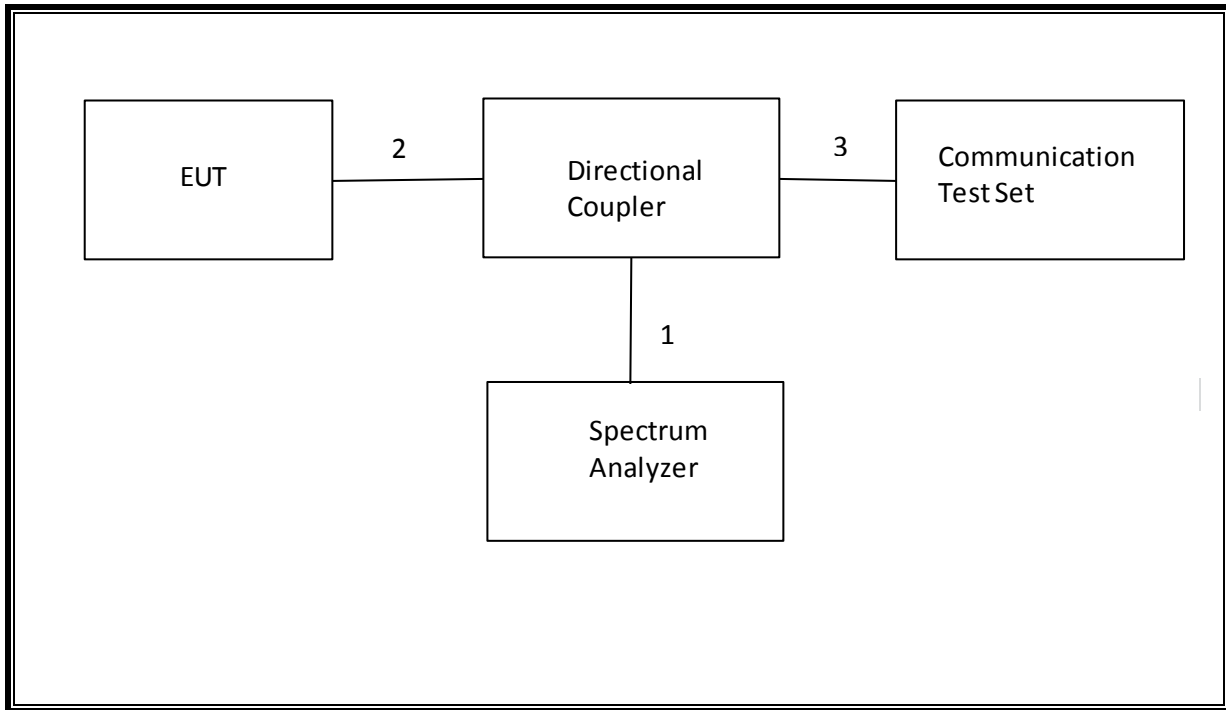
I/O CABLES (RADIATED SETUP)

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	No
2	Jack	1	Headset	Shielded	1m	No
3	RF In/out	1	Communication Test Set	Un-shielded	2m	Yes

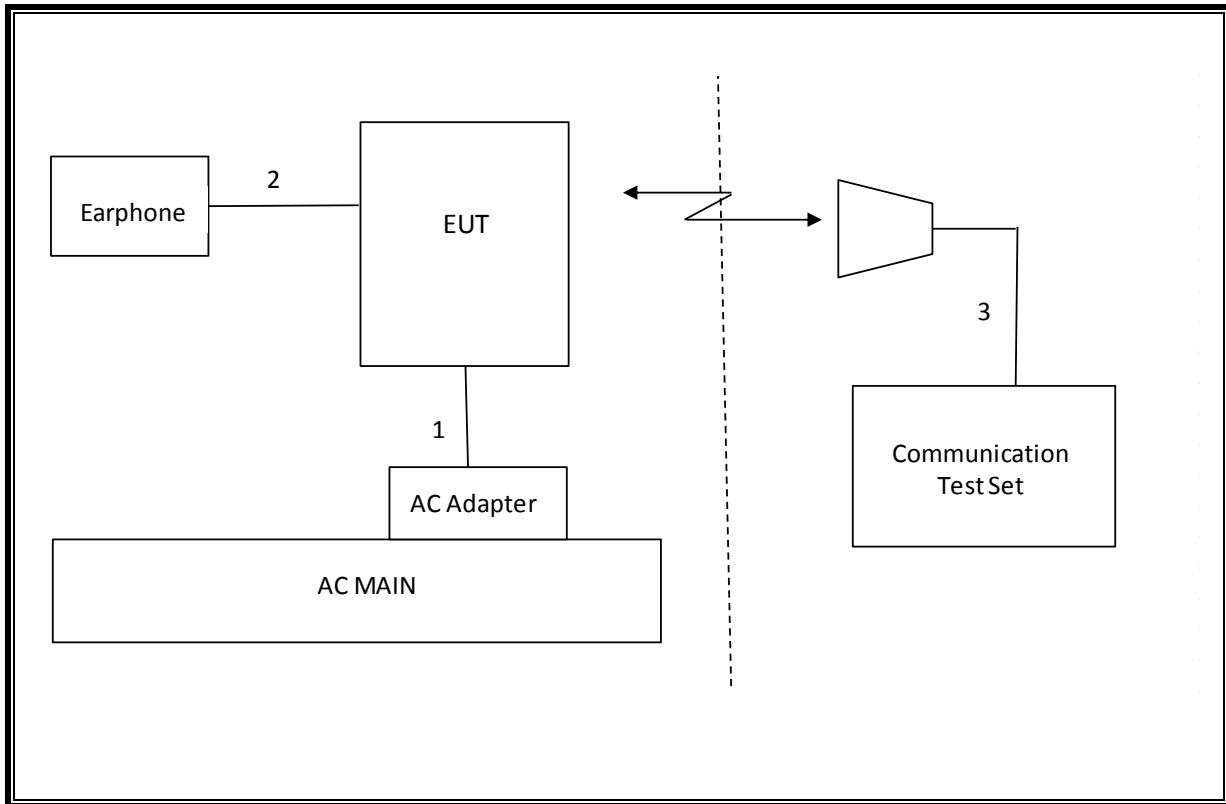
TEST SETUP

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)



6. 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	05/01/15
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	05/11/15
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	02/11/16
Directional Coupler	RF-Lambda	RFDC5M06G15	None	CNR
Antenna, Horn, 26.5 GHz	ARA	MWH-1826/B	C00589	12/17/15

Test Software List			
Description	Manufacturer	Model	Version
Radiated Software	UL	UL EMC	Version 9.5, 07/22/14
Conducted Software	UL	UL EMC	Version 9.5, 05/17/14
CLT Software	UL	UL RF	Version 1.0, 02/02/15
Antenna Port Software	UL	UL RF	Version 2.1.1.1, 1/20/15

7. Summary Table

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	17.96MHz
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	-15.219dBm
27.53(m)	RSS-199(4.5)		-25dBm		Pass	-32.73dBm
2.1046	N/A	Conducted output power	N/A		Pass	33.2dBm
27.53(m) 90.691	RSS-199(4.5)	Emission Mask	N/A		Pass	N/A
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	0.011PPM
22.913(a)(2)	RSS-132(4.4)	Effective Radiated Power	38 dBm	Radiated	Pass	30.70dBm
27.50(c)(10)	N/A		34.77 dBm		Pass	20.11dBm
24.232(c) 27.50(h)(2)	RSS-133(6.4) RSS-199(4.4)	Equivalent Isotropic Radiated Power	33dBm		Pass	31.41dBm
27.50(d)(4)	RSS-139(6.4)		30dBm		Pass	27.87dBm
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	-29.2dBm
27.53(m)	RSS-199(4.5)		-25dBm		Pass	-41.6dBm

8. RF POWER OUTPUT VERIFICATION

8.1. GSM/GPRS/EDGE

Function: Menu select > GSM Mobile Station > GSM 850/900/1800/1900

Press Connection control to choose the different menus

Press RESET > choose all to reset all settings

Connection Press Signal Off to turn off the signal and change settings

Network Support > GSM+GPRS or GSM+EGPRS

Main Service > Packet Data

Service selection > Test Mode A – Auto Slot Config. off

MS Signal Press Slot Config bottom on the right twice to select and change the number of time slots and power setting

- > Slot configuration > Uplink/Gamma
- > 33 dBm for GPRS 850/900
- > 30 dBm for GPRS1800/1900

BS Signal Enter the same channel number for TCH channel (test channel) and BCCH channel

Frequency Offset > + 0 Hz

Mode > BCCH and TCH

BCCH Level > -85 dBm (May need to adjust if link is not stable)

BCCH Channel > choose desire test channel [Enter the same channel number for TCH channel (test channel) and BCCH channel]

Channel Type > Off

P0> 4 dB

Slot Config > Unchanged (if already set under MS Signal)

TCH > choose desired test channel

Hopping > Off

Main Timeslot > 3 (Default)

Network Coding Scheme > CS4 (GPRS) and MCS5 ~ MCS9 (EGPRS)

- Bit Stream > 2E9-1PSR Bit Pattern

AF/RF Enter appropriate offsets for Ext. Att. Output and Ext. Att. Input

Connection Press Signal On to turn on the signal and change settings

8.1.1. GSM OUTPUT POWER RESULT

Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Burst Pwr (dBm)
GSM (Voice)	CS1	1	128	824.2	33.2
			190	836.6	33.2
			251	848.8	33.2
GPRS (GMSK)	CS1	1	128	824.2	33.2
			190	836.6	33.2
			251	848.8	33.2
		2	128	824.2	31.7
			190	836.6	31.7
			251	848.8	31.7
EGPRS (8PSK)	MCS5	1	128	824.2	27.7
			190	836.6	27.7
			251	848.8	27.7
		2	128	824.2	27.7
			190	836.6	27.7
			251	848.8	27.7

Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Burst Pwr (dBm)
GSM (Voice)	CS1	1	512	1850.2	29.4
			661	1880.0	29.4
			810	1909.8	29.4
GPRS (GMSK)	CS1	1	512	1850.2	29.4
			661	1880.0	29.4
			810	1909.8	29.4
		2	512	1850.2	28.4
			661	1880.0	28.4
			810	1909.8	28.3
EGPRS (8PSK)	MCS5	1	512	1850.2	26.7
			661	1880.0	26.7
			810	1909.8	26.7
		2	512	1850.2	26.7
			661	1880.0	26.7
			810	1909.8	26.7

8.2. UMTS REL 99

TEST PROCEDURE

The following summary of these settings are illustrated below:

	Mode	Rel99
	Subtest	-
WCDMA General Settings	Loopback Mode	Test Mode 1
	Rel99 RMC	12.2kbps RMC
	HSDPA FRC	Not Applicable
	HSUPA Test	Not Applicable
	Power Control Algorithm	Algorithm2
	β_c	Not Applicable
	β_d	Not Applicable
	β_{ec}	Not Applicable
	β_c/β_d	8/15
	β_{hs}	Not Applicable
β_{ed}	Not Applicable	

8.2.1. UMTS REL 99 OUTPUT POWER RESULT

Band	Mode	Ch.	f(MHz)	Conducted Power
				(dBm) Avg (dBm)
Band 5	REL99	4132	826.4	23.7
		4183	836.6	23.7
		4233	846.6	23.4
Band 2	REL99	9262	1852.4	23.5
		9400	1880	23.5
		9538	1907.6	23.5

8.3. UMTS HSDPA

The following 4 Sub-tests were completed according to Release 5 procedures in section 5.2 of 3GPP TS34.121. A summary of these settings are illustrated below:

	Mode	Rel5 HSDPA			
	Subtest	1	2	3	4
WCDMA General Settings	Loopback Mode	Test Mode 1			
	Rel99 RMC	12.2kbps RMC			
	HSDPA FRC	H-Set1			
	Power Control Algorithm	Algorithm 2			
	β_c	2/15	12/15	15/15	15/15
	β_d	15/15	15/15	8/15	4/15
	Bd (SF)	64			
	β_c/β_d	2/15	12/15	15/8	15/4
	β_{hs}	4/15	24/15	30/15	30/15
MPR (dB)	0	0	0.5	0.5	
HSDPA Specific Settings	D_{ACK}	8			
	D_{NAK}	8			
	DCQI	8			
	Ack-Nack repetition factor	3			
	CQI Feedback (Table 5.2B.4)	4ms			
	CQI Repetition Factor (Table 5.2B.4)	2			
	$A_{hs} = \beta_{hs}/\beta_c$	30/15			

8.3.1. UMTS HSDPA OUTPUT POWER RESULT

Band	Mode	Subset	Ch.	f(MHz)	Conducted Power (dBm)
					Avg (dBm)
Band 5	HSDPA	1	4132	826.4	23.4
			4183	836.6	23.3
			4233	846.6	23.3
		2	4132	826.4	23.1
			4183	836.6	23.2
			4233	846.6	23.0
		3	4132	826.4	22.7
			4183	836.6	22.5
			4233	846.6	22.6
		4	4132	826.4	22.2
			4183	836.6	22.2
			4233	846.6	22.2

Band 2	HSDPA	1	9262	1852.4	23.3
			9400	1880	23.4
			9538	1907.6	23.2
		2	9262	1852.4	23.2
			9400	1880	23.3
			9538	1907.6	23.1
		3	9262	1852.4	22.6
			9400	1880	22.6
			9538	1907.6	22.7
		4	9262	1852.4	22.2
			9400	1880	22.2
			9538	1907.6	22.2

8.3.2. UMTS HSUPA

TEST PROCEDURE

The following summary of these settings are illustrated below: (ETSI TS 134.121-1 Table C.11.1)

	Mode	Rel6 HSUPA	Rel6 HSUPA	Rel6 HSUPA	Rel6 HSUPA	Rel6 HSUPA
	Subtest	1	2	3	4	5
WCDMA General Settings	Loopback Mode	Test Mode 1				
	P-CPICH (dB)	-10				
	P-CCPCH (dB)	-12				
	SCH (dB)	-12				
	PICH(dB)	-15				
	DPCH (dB)	-9				
	HS-SCCH_1 (dB)	-8				
	HS-PDSCH (dB)	-3				
	Rel99 RMC	12.2kbps RMC				
	HSDPA FRC	H-Set1				
	HSUPA Test	HSUPA Loopback				
	Power Control Algorithm	Algorithm2				
	Bc	11/15	6/15	15/15	2/15	15/15
	Bd	15/15	15/15	9/15	15/15	15/15
	Bec	209/225	12/15	30/15	2/15	5/15
	β_c/β_d	11/15	6/15	15/9	2/15	15/15
Bhs	22/15	12/15	30/15	4/15	30/15	
β_{ed} (note1)	1309/225	94/75	47/15	56/75	134/15	
MPR	0	2	1	2	0	
HSDPA Specific Settings	DACK	8				
	DNAK	8				
	DCQI	8				
	Ack-Nack repetition factor	3				
	CQI Feedback (Table 5.2B.4)	4ms				
	CQI Repetition Factor (Table 5.2B.4)	2				
Ahs = β_{hs}/β_c	30/15					
HSUPA Specific Settings	D E-DPCCH	6	8	8	5	7
	DHARQ	0	0	0	0	0
	AG Index	20	12	15	17	21
	Reference E-TFCIs	5	5	2	5	5
	ETFCI (from 34.121 Table C.11.1.3)	75	67	92	71	81
	Associated Max UL Data Rate kbps	242.1	174.9	482.8	205.8	308.9
	Reference E_TFCIs	E-TFCI 11 E-TFCI PO 4 E-TFCI 67 E-TFCI PO 18 E-TFCI 71 E-TFCI PO 23 E-TFCI 75 E-TFCI PO 26 E-TFCI 81 E-TFCI PO 27		E-TFCI 11 E-TFCI PO 4 E-TFCI 92 E-TFCI PO 18		E-TFCI 11 E-TFCI PO 4 E-TFCI 67 E-TFCI PO 18 E-TFCI 71 E-TFCI PO 23 E-TFCI 75 E-TFCI PO 26 E-TFCI 81 E-TFCI PO 27

Note1: β_{ed} cannot be set directly, it is set by Absolute Grant Value.

8.3.3. UMTS HSUPA OUTPUT POWER RESULT

Band	Mode	Subset	Ch.	f(MHz)	Conducted Power
					(dBm) Avg (dBm)
Band 5	HSUPA	1	4132	826.4	22.3
			4183	836.6	22.4
			4233	846.6	22.3
		2	4132	826.4	21.3
			4183	836.6	21.0
			4233	846.6	21.1
		3	4132	826.4	22.3
			4183	836.6	22.2
			4233	846.6	22.1
		4	4132	826.4	21.6
			4183	836.6	21.7
			4233	846.6	21.7
		5	4132	826.4	22.4
			4183	836.6	22.4
			4233	846.6	22.3
Band 2	HSUPA	1	9262	1852.4	23.1
			9400	1880	23.2
			9538	1907.6	23.0
		2	9262	1852.4	21.2
			9400	1880	21.1
			9538	1907.6	21.2
		3	9262	1852.4	22.2
			9400	1880	22.1
			9538	1907.6	22.0
		4	9262	1852.4	21.6
			9400	1880	21.5
			9538	1907.6	21.6
		5	9262	1852.4	23.4
			9400	1880	23.5

			9538	1907.6	23.2
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8.4. CDMA2000

8.4.1. 1xRTT

TEST PROCEDURE

This procedure assumes the Agilest 8960 Test Set has the following applications installed and with valid license.

<u>Application</u>	<u>Rev, License</u>
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CDMA2000 Mobile Test	B.13.08, L
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- Call Setup > Shift & Preset
- Cell Info > Cell Parameters > System ID (SID) > 7
 > Network ID (NID) > 1
- Protocol Rev > 6 (IS-2000-0)
- Radio Config (RC) > Please see following table or details
- FCH Service Option (SO) Setup > Please see following table or details
- Traffic Data Rate > Full
- TDSO SCH Info > F-SCH Parameters > F-SCH Data Rate > 153.6 kbps
 > R-SCH Parameters > R-SCH Data Rate > 153.6 kbps
- Rvs Power Ctrl > Active bits
 - Rvs Power Ctrl > All Up bits (Maximum TxPout)

8.4.2. CDMA2000 OUTPUT POWER RESULT

Band	Mode	Ch	Freq. (MHz)	Avg Pwr (dBm)
BC1	RC1, SO55 (Loopback)	25	1851.25	24.3
		600	1880.00	24.4
		1175	1908.75	24.4
	RC3, SO55 (Loopback)	25	1851.25	24.3
		600	1880.00	24.3
		1175	1908.75	24.3
	RC3, SO32 (+F-SCH)	25	1851.25	24.3
		600	1880.00	24.4
		1175	1908.75	24.3

Band	Mode	Ch	Freq. (MHz)	Avg Pwr (dBm)
BC0	RC1, SO55 (Loopback)	1013	824.70	24.6
		384	836.52	24.5
		777	848.31	24.4
	RC3, SO55 (Loopback)	1013	824.70	24.5
		384	836.52	24.5
		777	848.31	24.3
	RC3, SO32 (+F-SCH)	1013	824.70	24.6
		384	836.52	24.5
		777	848.31	24.4

8.4.3. 1xEV-DO Release 0

TEST PROCEDURE

This procedure assumes the Agilent 8960 Test Set has the following applications installed and with valid license.

<u>Application</u>	<u>Rev, License</u>
1xEV-DO Terminal Test	A.09.13

EVDO Release 0 - RTAP

- Call Setup > Shift & Preset
- Call Control:
 - Access Network Info > Cell Parameters > Sector ID > 00000000 > Subnet Mask > 0
 - Generator Info > Termination Parameters > Max Forward Packet Duration > 16 Slots
- Call Params:
 - Cell Power > -105.5 dBm/1.23 MHz
 - Cell Band > (Select US Cellular or US PCS)
 - Channel > (Enter channel number)
 - Application Config > Enhanced Test Application Protocol > RTAP
 - RTAP Rate > 153.6 kbps
 - Rvs Power Ctrl > Active bits
 - Protocol Rel > 0 (1xEV-DO)
- Press “Start Data Connection” when “Session Open” appear in “Active Cell”
- Rvs Power Ctrl > All Up bits (Maximum TxPout)

EVDO Release 0 - FTAP

- Call Setup > Shift & Preset
- Call Control:
 - Access Network Info > Cell Parameters > Sector ID > 00000000 > Subnet Mask > 0
 - Generator Info > Termination Parameters > Max Forward Packet Duration > 16 Slots
- Call Params:
 - Cell Power > -105.5 dBm/1.23 MHz
 - Cell Band > (Select US Cellular or US PCS)
 - Channel > (Enter channel number)
 - Application Config > Enhanced Test Application Protocol > FTAP (default)
 - FTAP Rate > 307.2 kbps (2 Slot, QPSK)
 - Rvs Power Ctrl > Active bits
 - Protocol Rel > 0 (1xEV-DO)
- Press “Start Data Connection” when “Session Open” appear in “Active Cell”
- Rvs Power Ctrl > All Up bits (Maximum TxPout)

8.4.4. 1XEVD0 REL 0 OUTPUT POWER RESULT

Band	FTAP Rate	Channel	f (MHz)	Avg Pwr (dBm)
BC0	307.2 kbps (2 slot, QPSK)	1013	824.70	24.6
		384	836.52	24.5
		777	848.31	24.4

Band	FTAP Rate	Channel	f (MHz)	Avg Pwr (dBm)
BC1	307.2 kbps (2 slot, QPSK)	25	1851.25	24.3
		600	1880.00	24.5
		1175	1908.75	24.3

8.4.5. 1xEV-DO Rev. A

TEST PROCEDURE

This procedure assumes the Agilent 8960 Test Set has the following applications installed and with valid license.

<u>Application</u>	<u>Rev, License</u>
1xEV-DO Terminal Test	A.09.13

EVDO Release A – RETAP

- Call Setup > Shift & Preset
- Cell Power > -60 dBm/1.23 MHz
- Protocol Rev > A (1xEV-DO-A)
- Application Config > Enhanced Test Application Protocol > RETAP
- R-Data Pkt Size > 4096
- Protocol Subtype Config > Release A Physical Layer Subtype > Subtype 2
- > PL Subtype 2 Access Channel MAC Subtype > Default (Subtype 0)
- Access Network Info > Cell Parameters > Sector ID > 00000000 > Subnet Mask > 0
- Generator Info > Termination Parameters > Max Forward Packet Duration > 16 Slots > ACK R-Data After > Subpacket 0 (All ACK)
- Rvs Power Ctrl > All Up bits (to get the maximum power)

EVDO Release A - FETAP

- Call Setup > Shift & Preset
- Cell Power > -60 dBm/1.23 MHz
- Protocol Rev > A (1xEV-DO-A)
- Application Config > Enhanced Test Application Protocol > FETAP
- F-Traffic Format > 4 (1024, 2,128) Canonical (307.2k, QPSK)
- Protocol Subtype Config > Release A Physical Layer Subtype > Subtype 2
- > PL Subtype 2 Access Channel MAC Subtype > Default (Subtype 0)
- Access Network Info > Cell Parameters > Sector ID > 00000000 > Subnet Mask > 0
- Generator Info > Termination Parameters > Max Forward Packet Duration > 16 Slots > ACK R-Data After > Subpacket 0 (All ACK)
- Rvs Power Ctrl > All Up bits (to get the maximum power)

8.4.6. 1xEVDO REV A OUTPUT RESULT

Band	FETAP Traffic Format	Channel	f (MHz)	Avg Pwr (dBm)
BC0	307.2k, QPSK/ ACK channel is transmitted at all the slots	1013	824.70	24.6
		384	836.52	24.5
		777	848.31	24.4

Band	FETAP Traffic Format	Channel	f (MHz)	Avg Pwr (dBm)
BC1	307.2k, QPSK/ ACK channel is transmitted at all the slots	25	1851.25	24.3
		600	1880.00	24.4
		1175	1908.75	24.3

8.5. LTE OUTPUT VERIFICATION

8.5.1. LTE OUTPUT RESULT

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)
						23230
						782 MHz
LTE Band 13	10	QPSK	1	0	0	23.20
			1	25	0	23.70
			1	49	0	23.40
			25	0	1	22.60
			25	12	1	22.70
			25	25	1	22.80
			50	0	1	22.60
		16QAM	1	0	1	22.40
			1	25	1	22.80
			1	49	1	22.50
			25	0	2	21.60
			25	12	2	21.70
			25	25	2	21.50
			50	0	2	21.50
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)
						23230
						782 MHz
LTE Band 13	5	QPSK	1	0	0	24.30
			1	12	0	24.40
			1	24	0	24.40
			12	0	1	23.40
			12	7	1	23.40
			12	13	1	23.40
			25	0	1	23.40
		16QAM	1	0	1	23.20
			1	12	1	23.40
			1	24	1	23.40
			12	0	2	22.40
			12	7	2	22.40
			12	13	2	22.40
			25	0	2	22.40

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						20850	21100	21350
						2510 MHz	2535 MHz	2560 MHz
LTE Band 7	20	QPSK	1	0	0	23.35	23.40	23.38
			1	49	0	23.32	23.37	23.30
			1	99	0	23.20	23.30	22.10
			50	0	1	22.15	22.21	21.90
			50	24	1	22.10	22.15	21.80
			50	50	1	22.00	22.00	21.80
			100	0	1	22.10	22.00	21.80
		16QAM	1	0	1	22.00	21.90	22.10
			1	49	1	22.20	21.90	21.70
			1	99	1	22.10	21.70	21.70
			50	0	2	21.00	20.70	20.60
			50	24	2	21.00	20.70	20.60
			50	50	2	20.90	20.70	20.60
			100	0	2	20.90	20.80	20.60
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						20825	21100	21375
						2507.5 MHz	2535 MHz	2562.5 MHz
LTE Band 7	15	QPSK	1	0	0	23.40	23.30	23.40
			1	37	0	23.30	23.30	23.40
			1	74	0	23.30	23.40	23.40
			36	0	1	22.40	22.40	22.00
			36	20	1	22.40	22.40	22.10
			36	39	1	22.40	22.30	22.30
			75	0	1	22.40	22.20	22.10
		16QAM	1	0	1	22.30	21.70	22.30
			1	37	1	22.40	21.70	22.30
			1	74	1	22.30	21.90	22.20
			36	0	2	21.30	21.00	20.80
			36	20	2	21.30	21.00	20.80
			36	39	2	21.30	21.20	20.80
			75	0	2	21.20	21.10	20.90

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						20800	21100	21400
						2505 MHz	2535 MHz	2565 MHz
LTE Band 7	10	QPSK	1	0	0	23.00	22.80	22.90
			1	25	0	22.90	22.70	22.90
			1	49	0	22.90	23.00	22.80
			25	0	1	22.30	22.00	22.30
			25	12	1	22.50	22.20	22.30
			25	25	1	22.30	22.10	22.20
			50	0	1	22.30	22.00	22.00
		16QAM	1	0	1	21.30	21.10	21.70
			1	25	1	21.30	21.00	22.00
			1	49	1	21.20	21.00	22.10
			25	0	2	21.20	20.80	20.80
			25	12	2	21.10	21.00	20.90
			25	25	2	21.10	21.00	21.00
			50	0	2	21.10	20.80	20.90
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						20775	21100	21425
						2502.5 MHz	2535 MHz	2567.5 MHz
LTE Band 7	5	QPSK	1	0	0	23.10	23.10	23.10
			1	12	0	23.20	23.10	23.10
			1	24	0	23.20	23.20	23.20
			12	0	1	22.10	22.10	22.10
			12	7	1	22.10	22.10	22.20
			12	13	1	22.20	22.20	22.20
			25	0	1	22.20	22.20	22.10
		16QAM	1	0	1	21.50	21.60	21.50
			1	12	1	21.40	21.50	21.50
			1	24	1	21.40	21.40	21.50
			12	0	2	21.00	20.90	20.90
			12	7	2	21.00	20.90	21.00
			12	13	2	20.90	21.00	21.00
			25	0	2	21.10	21.00	21.00

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						20450	20525	20600
						829 MHz	836.5 MHz	844 MHz
LTE Band 5	10	QPSK	1	0	0	23.90	23.90	24.20
			1	25	0	23.80	24.00	23.80
			1	49	0	23.90	24.00	23.70
			25	0	1	23.00	23.00	23.00
			25	12	1	23.00	23.00	22.80
			25	25	1	23.00	23.00	22.80
			50	0	1	23.00	23.00	22.80
		16QAM	1	0	1	22.80	22.60	22.60
			1	25	1	22.70	22.80	22.50
			1	49	1	22.50	22.50	22.40
			25	0	2	21.60	21.90	21.20
			25	12	2	21.70	22.00	21.20
			25	25	2	21.60	22.00	21.20
			50	0	2	21.60	21.90	21.30
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						20425	20525	20625
						826.5 MHz	836.5 MHz	846.5 MHz
LTE Band 5	5	QPSK	1	0	0	24.40	24.40	24.30
			1	12	0	24.40	24.40	24.30
			1	24	0	24.40	24.40	24.40
			12	0	1	23.40	23.40	23.20
			12	7	1	23.40	23.40	23.10
			12	13	1	23.40	23.40	23.20
			25	0	1	23.40	23.40	23.40
		16QAM	1	0	1	23.40	23.40	23.40
			1	12	1	23.40	23.30	23.40
			1	24	1	23.40	23.40	23.40
			12	0	2	22.40	22.40	22.10
			12	7	2	22.40	22.40	22.30
			12	13	2	22.40	22.30	22.20
			25	0	2	22.40	22.40	22.00

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						20415	20525	20635
						825.5 MHz	836.5 MHz	847.5 MHz
LTE Band 5	3	QPSK	1	0	0	24.40	24.40	24.30
			1	8	0	24.40	24.40	24.30
			1	14	0	24.40	24.40	24.30
			8	0	1	23.40	23.40	23.20
			8	4	1	23.40	23.40	23.30
			8	7	1	23.40	23.40	23.30
		16QAM	15	0	1	23.40	23.40	23.40
			1	0	1	23.40	23.40	23.10
			1	8	1	23.40	23.40	23.20
			1	14	1	23.40	23.40	23.10
			8	0	2	22.40	22.40	22.20
			8	4	2	22.40	22.40	22.20
			8	7	2	22.40	22.40	22.30
			15	0	2	22.40	22.40	22.20
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						20407	20525	20643
						824.7 MHz	836.5 MHz	848.3 MHz
LTE Band 5	1.4	QPSK	1	0	0	24.40	24.40	24.40
			1	3	0	24.40	24.40	24.40
			1	5	0	24.40	24.40	24.40
			3	0	0	24.40	24.40	24.40
			3	1	0	24.40	24.40	24.40
			3	3	0	24.40	24.30	23.30
		16QAM	6	0	1	23.40	23.40	23.20
			1	0	1	23.40	23.30	23.30
			1	3	1	23.40	23.30	23.30
			1	5	1	23.40	23.20	23.20
			3	0	1	23.40	23.20	23.20
			3	1	1	23.40	23.30	23.20
			3	3	1	23.40	23.30	23.20
			6	0	2	22.40	22.40	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	24.40	24.70
			1	49	0	24.40	24.60	24.60
			1	99	0	24.70	24.70	24.70
			50	0	1	23.50	23.70	23.70
			50	24	1	23.30	23.70	23.70
			50	50	1	23.50	23.70	23.70
			100	0	1	23.50	23.70	23.70
		16QAM	1	0	1	23.50	23.40	23.70
			1	49	1	23.50	23.70	23.70
			1	99	1	23.70	23.70	23.70
			50	0	2	22.60	22.70	22.70
			50	24	2	22.60	22.70	22.70
			50	50	2	22.70	22.70	22.70
			100	0	2	22.60	22.70	22.70
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	23.70	23.50	24.00
			1	37	0	23.80	23.80	24.20
			1	74	0	23.80	24.00	24.20
			36	0	1	23.00	22.80	23.30
			36	20	1	23.10	22.80	23.50
			36	39	1	23.10	23.00	23.50
			75	0	1	23.00	22.80	23.40
		16QAM	1	0	1	22.50	22.10	22.30
			1	37	1	22.50	22.30	23.30
			1	74	1	22.50	22.50	23.30
			36	0	2	22.30	22.00	22.70
			36	20	2	22.20	22.00	22.60
			36	39	2	22.30	22.30	22.60
			75	0	2	22.20	22.20	22.60

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						20000	20175	20350
						1715 MHz	1732.5 MHz	1750 MHz
LTE Band 4	10	QPSK	1	0	0	23.70	24.20	23.80
			1	25	0	24.00	24.10	24.00
			1	49	0	23.80	24.10	23.70
			25	0	1	23.10	23.10	23.00
			25	12	1	23.10	23.30	23.00
			25	25	1	23.00	23.20	23.00
			50	0	1	23.00	23.30	23.00
		16QAM	1	0	1	22.50	22.60	22.30
			1	25	1	22.90	22.90	22.60
			1	49	1	22.60	22.90	22.30
			25	0	2	22.30	22.50	22.20
			25	12	2	22.30	22.60	22.20
			25	25	2	22.30	22.50	22.30
			50	0	2	22.20	22.60	22.20
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						19975	20175	20375
						1712.5 MHz	1732.5 MHz	1752.5 MHz
LTE Band 4	5	QPSK	1	0	0	23.80	23.90	24.30
			1	12	0	24.00	24.00	24.50
			1	24	0	24.00	24.00	24.00
			12	0	1	22.80	22.90	23.20
			12	7	1	22.90	22.70	23.30
			12	13	1	22.90	23.00	23.20
			25	0	1	22.80	23.00	23.20
		16QAM	1	0	1	23.30	22.60	23.10
			1	12	1	23.60	22.80	23.30
			1	24	1	23.50	22.90	23.20
			12	0	2	22.00	22.00	22.50
			12	7	2	22.20	22.10	22.50
			12	13	2	22.00	22.10	22.50
			25	0	2	22.00	22.30	22.40

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						19965	20175	20385
						1711.5 MHz	1732.5 MHz	1753.5 MHz
LTE Band 4	3	QPSK	1	0	0	23.60	23.80	23.60
			1	8	0	23.70	23.70	23.70
			1	14	0	23.80	23.80	23.60
			8	0	1	22.30	22.50	22.30
			8	4	1	22.20	22.60	22.50
			8	7	1	22.30	22.60	22.40
			15	0	1	22.40	22.60	22.50
		16QAM	1	0	1	22.50	22.30	22.30
			1	8	1	22.80	22.50	23.00
			1	14	1	23.00	22.60	23.00
			8	0	2	21.60	22.00	21.60
			8	4	2	21.80	22.00	21.50
			8	7	2	21.80	21.90	21.50
			15	0	2	21.70	21.90	21.70
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						19957	20175	20393
						1710.7 MHz	1732.5 MHz	1754.3 MHz
LTE Band 4	1.4	QPSK	1	0	0	23.60	23.80	23.60
			1	3	0	23.60	23.70	23.70
			1	5	0	23.60	23.70	23.70
			3	0	0	23.40	23.60	23.50
			3	1	0	23.50	23.50	23.60
			3	3	0	23.50	23.50	23.70
			6	0	1	22.40	22.30	22.30
		16QAM	1	0	1	22.40	22.30	22.40
			1	3	1	22.50	22.50	22.40
			1	5	1	22.30	22.50	22.40
			3	0	1	22.40	22.50	22.30
			3	1	1	22.40	22.40	22.50
			3	3	1	22.50	22.50	22.40
			6	0	2	21.80	21.80	21.70

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	24.50
			1	49	0	24.50	24.50	24.50
			1	99	0	24.50	24.50	24.50
			50	0	1	23.50	23.50	23.50
			50	24	1	23.50	23.50	23.50
			50	50	1	23.50	23.50	23.50
			100	0	1	23.50	23.50	23.40
		16QAM	1	0	1	23.50	23.50	23.50
			1	49	1	23.50	23.50	23.50
			1	99	1	23.50	23.50	23.50
			50	0	2	22.50	22.40	22.30
			50	24	2	22.50	22.50	22.30
			50	50	2	22.50	22.50	22.40
			100	0	2	22.50	22.50	22.25
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	24.50
			1	37	0	24.50	24.50	24.50
			1	74	0	24.20	24.50	24.40
			36	0	1	23.50	23.50	23.50
			36	20	1	23.50	23.50	23.50
			36	39	1	23.50	23.50	23.50
			75	0	1	23.50	23.50	23.50
		16QAM	1	0	1	23.50	23.20	23.50

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						18650	18900	19150
						1855 MHz	1880 MHz	1905 MHz
			1	37	1	23.50	23.00	23.40
			1	74	1	23.50	23.00	23.40
			36	0	2	22.50	22.50	22.50
			36	20	2	22.50	22.50	22.50
			36	39	2	22.40	22.50	22.50
			75	0	2	22.40	22.50	22.40
LTE Band 2	10	QPSK	1	0	0	23.70	23.90	23.40
			1	25	0	23.70	23.90	23.60
			1	49	0	23.70	23.80	23.70
			25	0	1	22.80	22.90	22.40
			25	12	1	23.00	22.90	22.50
			25	25	1	22.90	22.80	22.50
		16QAM	50	0	1	22.90	22.80	22.40
			1	0	1	22.20	22.20	22.30
			1	25	1	22.50	22.20	22.60
			1	49	1	22.00	22.20	22.60
			25	0	2	21.80	21.70	21.30
			25	12	2	22.00	21.70	21.40
			25	25	2	21.80	21.70	21.40
			50	0	2	21.80	21.70	21.30

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						18625	18900	19175
						1852.5 MHz	1880 MHz	1907.5 MHz
LTE Band 2	5	QPSK	1	0	0	24.30	24.10	24.00
			1	12	0	24.30	24.10	24.30
			1	24	0	24.30	24.30	24.00
			12	0	1	23.10	23.20	23.10
			12	7	1	23.20	23.10	23.20
			12	13	1	23.30	23.30	23.00
			25	0	1	23.20	23.30	23.10
		16QAM	1	0	1	23.00	22.70	23.40
			1	12	1	23.10	22.70	23.40
			1	24	1	23.10	22.90	23.20
			12	0	2	22.30	22.00	21.90
			12	7	2	22.30	21.90	21.90
			12	13	2	22.30	22.00	21.90
			25	0	2	22.20	22.10	21.90

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						18615	18900	19185
						1851.5 MHz	1880 MHz	1908.5 MHz
LTE Band 2	3	QPSK	1	0	0	24.30	24.30	24.30
			1	8	0	24.20	24.20	24.30
			1	14	0	24.30	24.30	24.20
			8	0	1	23.10	23.30	23.30
			8	4	1	23.10	23.20	23.30
			8	7	1	23.00	23.30	23.20
			15	0	1	23.10	23.20	23.00
		16QAM	1	0	1	22.70	22.70	23.20
			1	8	1	22.60	22.60	23.00
			1	14	1	22.70	22.60	22.80
			8	0	2	22.20	22.10	22.00
			8	4	2	22.20	22.10	21.90
			8	7	2	22.10	22.00	21.80
			15	0	2	22.10	22.00	21.90

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						18607	18900	19193
						1850.7 MHz	1880 MHz	1909.3 MHz
LTE Band 2	1.4	QPSK	1	0	0	24.00	23.80	23.60
			1	3	0	24.00	23.80	23.50
			1	5	0	23.90	23.80	23.50
			3	0	0	23.90	23.70	23.60
			3	1	0	24.00	23.80	23.50
			3	3	0	23.90	23.70	23.50
		16QAM	6	0	1	22.80	22.80	22.50
			1	0	1	22.80	22.50	22.30
			1	3	1	22.80	22.50	22.10
			1	5	1	22.80	22.50	22.10
			3	0	1	22.70	22.40	22.30
			3	1	1	22.70	22.40	22.20
			3	3	1	22.70	22.40	22.30
			6	0	2	21.70	21.70	21.50

9. PEAK TO AVERAGE RATIO



Test Procedure

Per KDB 971168 D01 Power Meas License Digital Systems v02r02

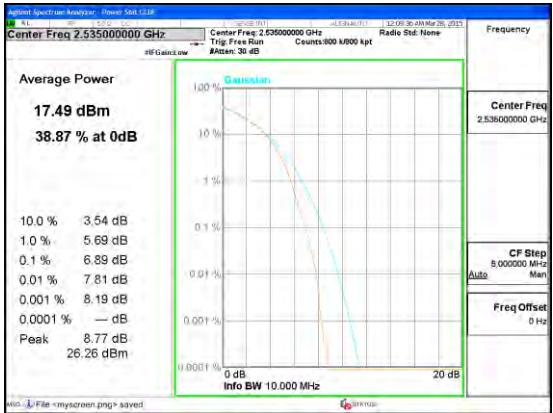
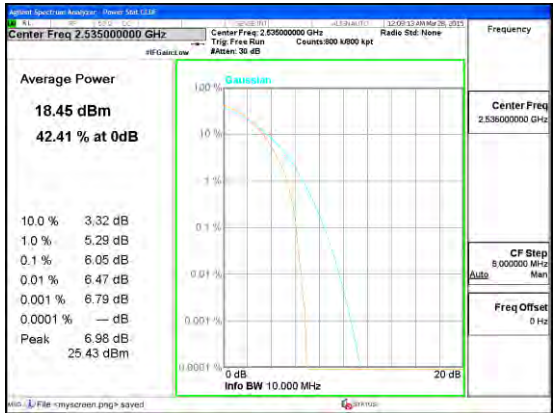
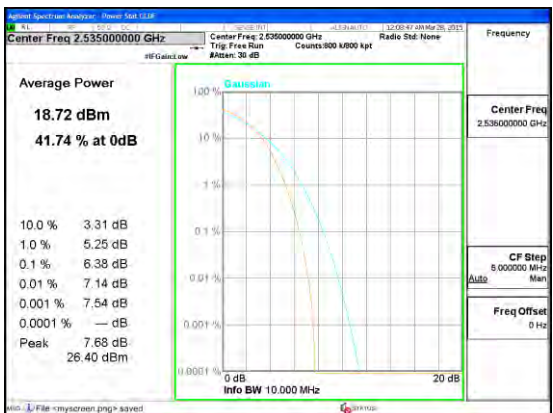

Test Spec

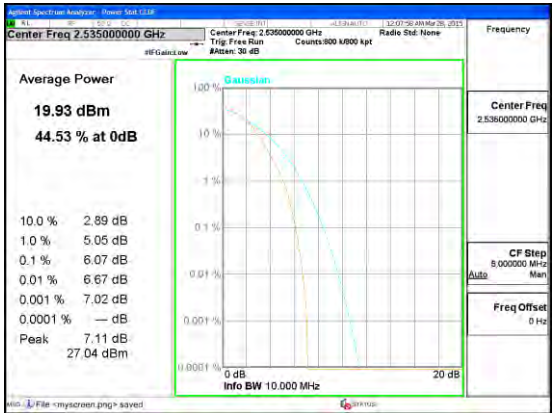

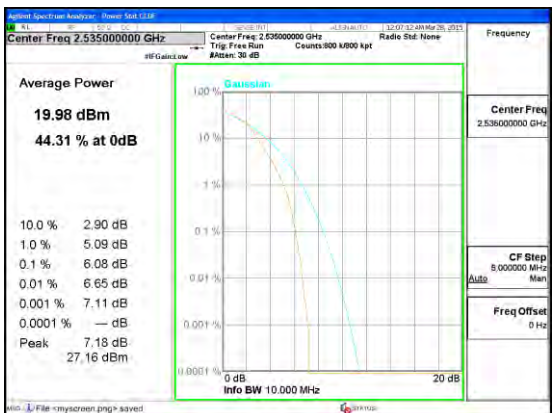

In addition, when the transmitter power is measured in terms of average value, the peak-to-average ratio of the power shall not exceed 13 dB.




9.1. CONDUCTED PEAK TO AVERAGE RESULT


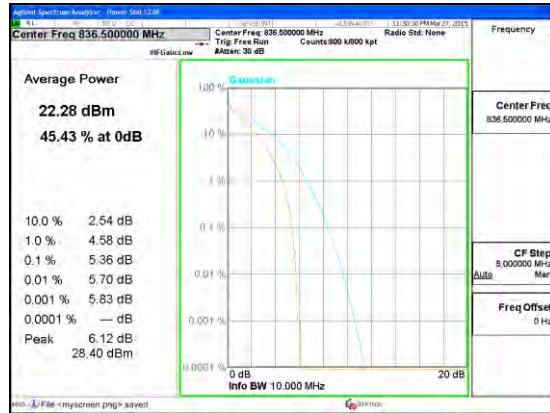
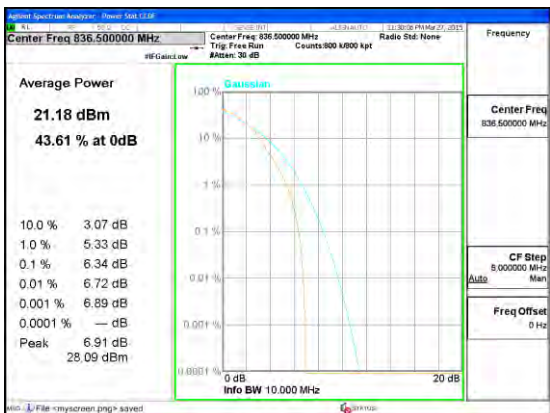

<p>Band</p> <p>LTE13</p> <p>10MHz</p>	 <p>Average Power 21.41 dBm 45.10 % at 0dB</p> <p>10.0 % 2.91 dB 1.0 % 4.85 dB 0.1 % 5.77 dB 0.01 % 6.26 dB 0.001 % 6.51 dB 0.0001 % — dB Peak 6.85 dB 28.26 dBm</p> <p>Band LTE13 10MHz 16QAM High channel</p>	 <p>Average Power 22.33 dBm 47.71 % at 0dB</p> <p>10.0 % 2.34 dB 1.0 % 4.13 dB 0.1 % 4.92 dB 0.01 % 5.40 dB 0.001 % 5.75 dB 0.0001 % — dB Peak 5.91 dB 28.24 dBm</p> <p>Band LTE13 10MHz QPSK High channel</p>
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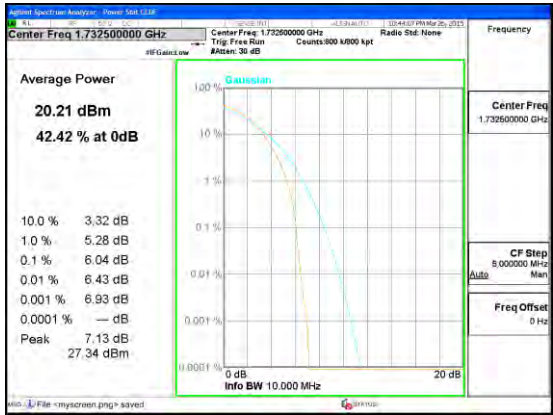
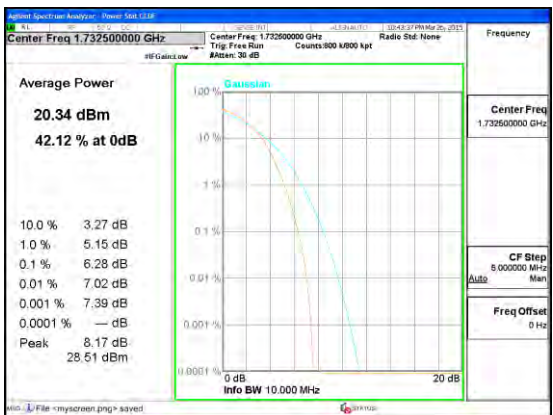

<p>Band</p> <p>LTE13</p> <p>5MHz</p>	<p>Average Power 21.39 dBm 44.69 % at 0dB</p> <table border="1"> <tr><td>10.0 %</td><td>2.89 dB</td></tr> <tr><td>1.0 %</td><td>4.86 dB</td></tr> <tr><td>0.1 %</td><td>5.69 dB</td></tr> <tr><td>0.01 %</td><td>6.11 dB</td></tr> <tr><td>0.001 %</td><td>6.53 dB</td></tr> <tr><td>0.0001 %</td><td>— dB</td></tr> <tr><td>Peak</td><td>6.59 dB 27.98 dBm</td></tr> </table> <p>Center Freq: 782.000000 MHz</p> <p>CF Step: 5.000000 MHz</p> <p>Freq Offset: 0 Hz</p> <p>Band LTE13 5MHz 16QAM Mid channel</p>	10.0 %	2.89 dB	1.0 %	4.86 dB	0.1 %	5.69 dB	0.01 %	6.11 dB	0.001 %	6.53 dB	0.0001 %	— dB	Peak	6.59 dB 27.98 dBm	<p>Average Power 22.47 dBm 47.48 % at 0dB</p> <table border="1"> <tr><td>10.0 %</td><td>2.68 dB</td></tr> <tr><td>1.0 %</td><td>4.14 dB</td></tr> <tr><td>0.1 %</td><td>4.23 dB</td></tr> <tr><td>0.01 %</td><td>4.27 dB</td></tr> <tr><td>0.001 %</td><td>4.29 dB</td></tr> <tr><td>0.0001 %</td><td>— dB</td></tr> <tr><td>Peak</td><td>4.32 dB 26.79 dBm</td></tr> </table> <p>Center Freq: 782.000000 MHz</p> <p>CF Step: 5.000000 MHz</p> <p>Freq Offset: 0 Hz</p> <p>Band LTE13 5MHz QPSK Mid channel</p>	10.0 %	2.68 dB	1.0 %	4.14 dB	0.1 %	4.23 dB	0.01 %	4.27 dB	0.001 %	4.29 dB	0.0001 %	— dB	Peak	4.32 dB 26.79 dBm
10.0 %	2.89 dB																													
1.0 %	4.86 dB																													
0.1 %	5.69 dB																													
0.01 %	6.11 dB																													
0.001 %	6.53 dB																													
0.0001 %	— dB																													
Peak	6.59 dB 27.98 dBm																													
10.0 %	2.68 dB																													
1.0 %	4.14 dB																													
0.1 %	4.23 dB																													
0.01 %	4.27 dB																													
0.001 %	4.29 dB																													
0.0001 %	— dB																													
Peak	4.32 dB 26.79 dBm																													



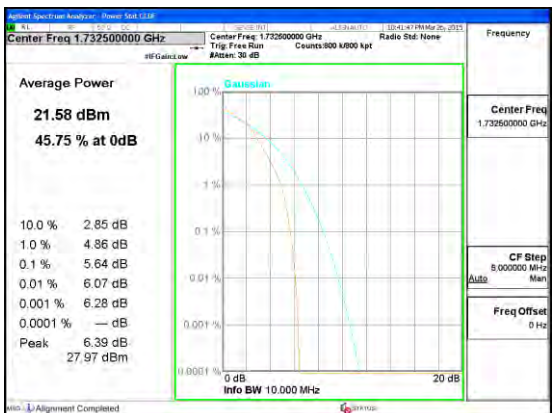

<p>Band LTE7 20MHz</p>	 <p style="text-align: center;">Band LTE7 20MHz 16QAM Mid channel</p>	 <p style="text-align: center;">Band LTE7 20MHz QPSK Mid channel</p>
<p>Band LTE7 15MHz</p>	 <p style="text-align: center;">Band LTE7 15MHz 16QAM Mid channel</p>	 <p style="text-align: center;">Band LTE7 15MHz QPSK Mid channel</p>



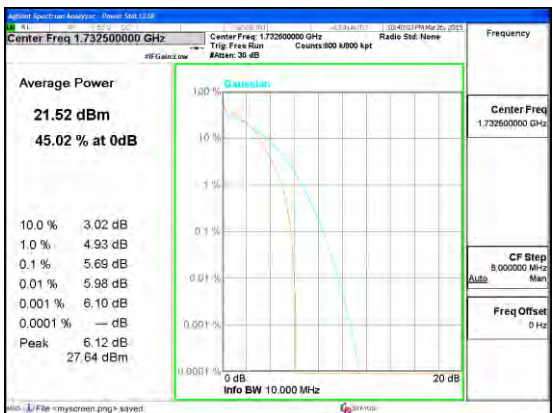

<p>Band LTE7 10MHz</p>	 <p style="text-align: center;">Band LTE7 10MHz 16QAM Mid channel</p>	 <p style="text-align: center;">Band LTE7 10MHz QPSK Mid channel</p>
<p>Band LTE7 5MHz</p>	 <p style="text-align: center;">Band LTE7 5MHz 16QAM Mid channel</p>	 <p style="text-align: center;">Band LTE7 5MHz QPSK Mid channel</p>


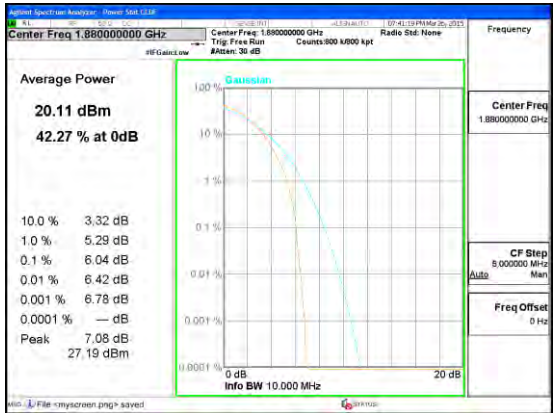
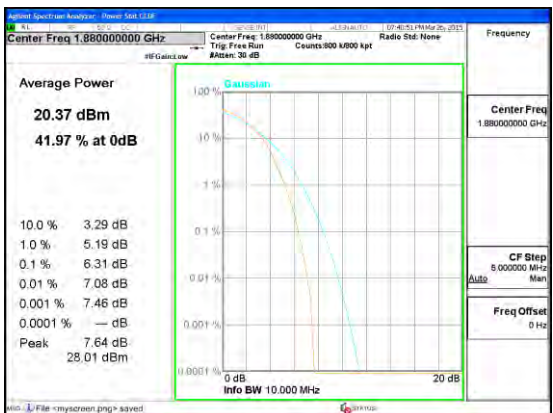

<p>Band</p> <p>LTE5</p> <p>10MHz</p>	 <p style="text-align: center;">Band LTE5 10MHz 16QAM Mid channel</p>	 <p style="text-align: center;">Band LTE5 10MHz QPSK Mid channel</p>
<p>Band</p> <p>LTE5</p> <p>5MHz</p>	 <p style="text-align: center;">Band LTE5 5MHz 16QAM Mid channel</p>	 <p style="text-align: center;">Band LTE5 5MHz QPSK Mid channel</p>

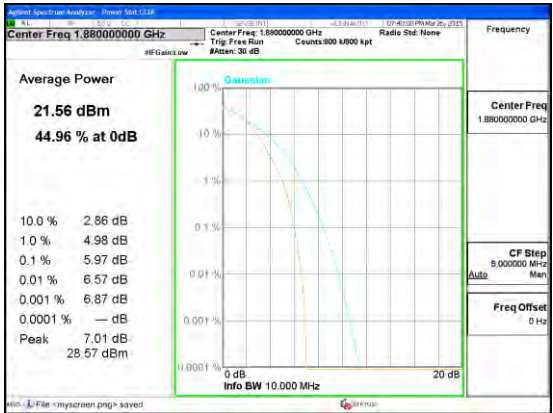
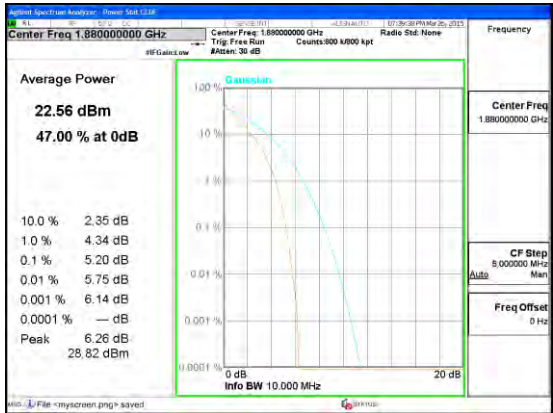
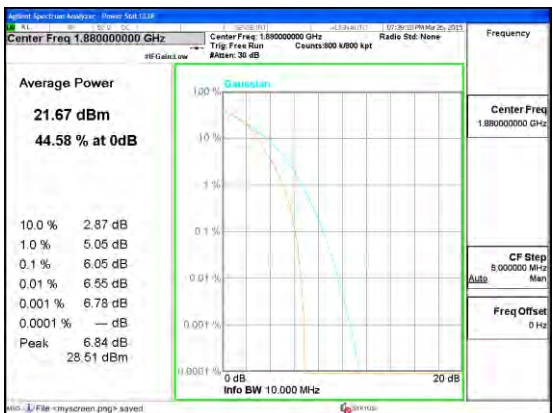

<p>Band</p> <p>LTE5</p> <p>3MHz</p>	 <p style="text-align: center;">Band LTE5 3MHz 16QAM Mid channel</p>	 <p style="text-align: center;">Band LTE5 3MHz QPSK Mid channel</p>
<p>Band</p> <p>LTE5</p> <p>1.4MHz</p>	 <p style="text-align: center;">Band LTE5 1.4MHz 16QAM Mid channel</p>	 <p style="text-align: center;">Band LTE5 1.4MHz QPSK Mid channel</p>

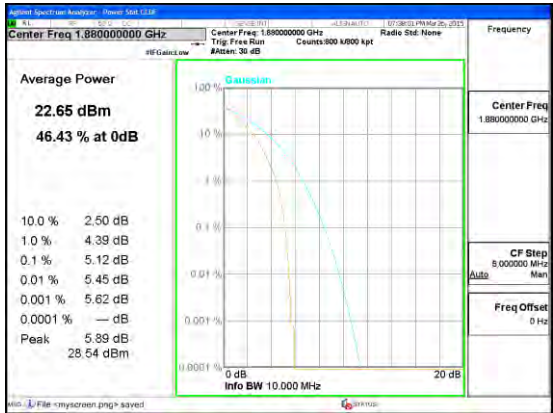
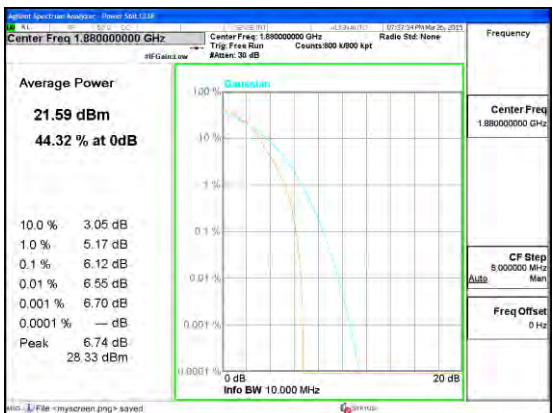

<p>Band</p> <p>LTE4</p> <p>20MHz</p>	 <p style="text-align: center;">Band LTE4 20MHz 16QAM Mid channel</p>	 <p style="text-align: center;">Band LTE4 20MHz QPSK Mid channel</p>
<p>Band</p> <p>LTE4</p> <p>15MHz</p>	 <p style="text-align: center;">Band LTE4 15MHz 16QAM Mid channel</p>	 <p style="text-align: center;">Band LTE4 15MHz QPSK Mid channel</p>

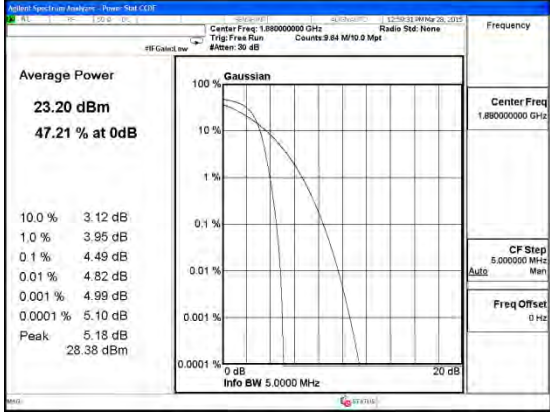
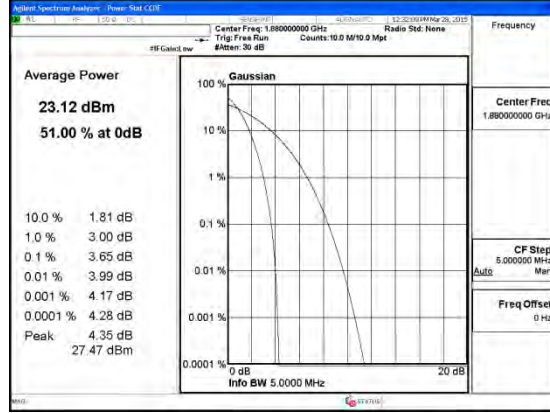
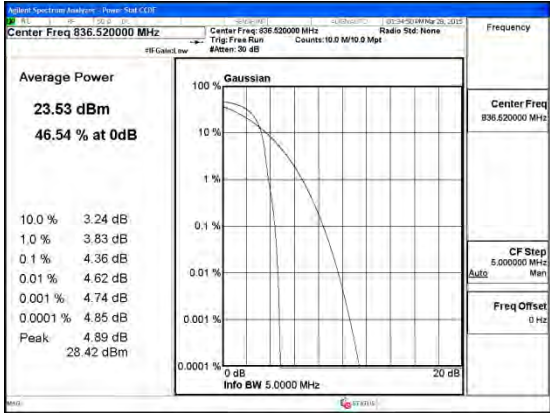
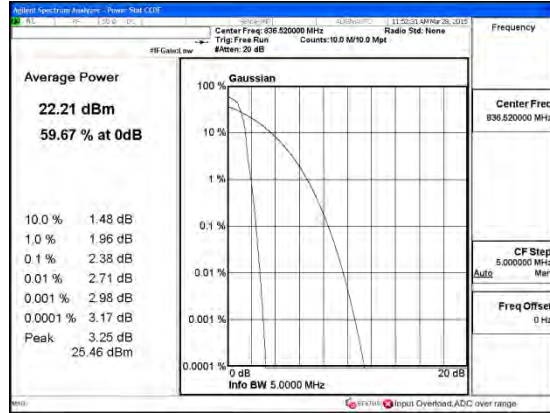
<p>Band</p> <p>LTE4</p> <p>10MHz</p>	 <p style="text-align: center;">Band LTE4 10MHz 16QAM Mid channel</p>	 <p style="text-align: center;">Band LTE4 10MHz QPSK Mid channel</p>
<p>Band</p> <p>LTE4</p> <p>5MHz</p>	 <p style="text-align: center;">Band LTE4 5MHz 16QAM Mid channel</p>	 <p style="text-align: center;">Band LTE4 5MHz QPSK Mid channel</p>

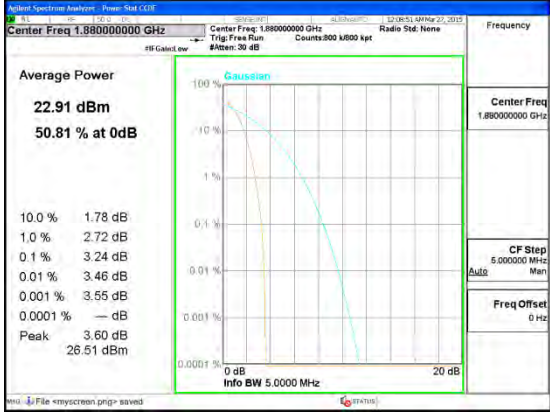
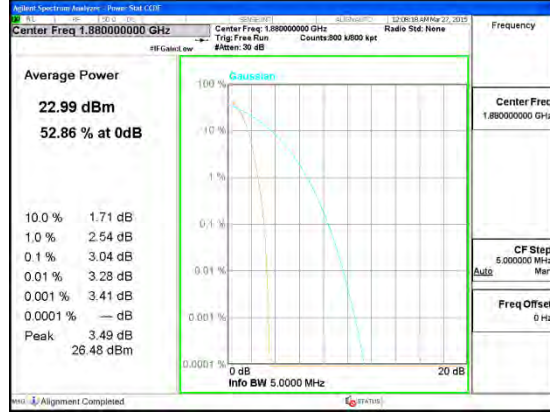

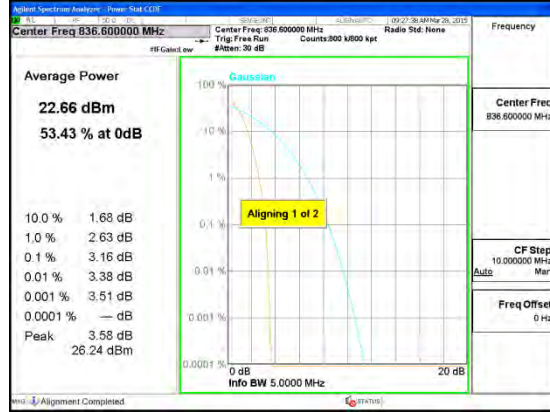
<p>Band LTE4 3MHz</p>	 <p style="text-align: center;">Band LTE4 3MHz 16QAM Mid channel</p>	 <p style="text-align: center;">Band LTE4 3MHz QPSK Mid channel</p>
<p>Band LTE4 1.4MHz</p>	 <p style="text-align: center;">Band LTE4 1.4MHz 16QAM Mid channel</p>	 <p style="text-align: center;">Band LTE4 1.4MHz QPSK Mid channel</p>


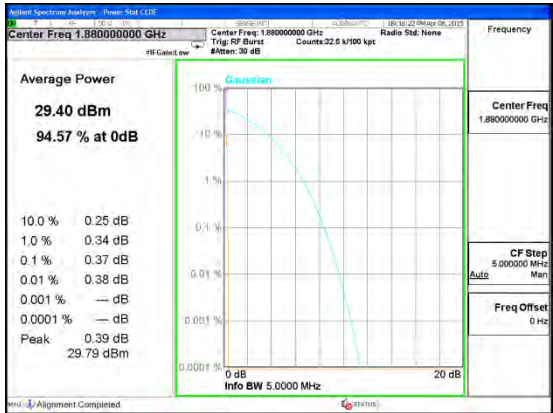


<p>Band LTE2 20MHz</p>	 <p style="text-align: center;">Band LTE2 20MHz 16QAM Mid channel</p>	 <p style="text-align: center;">Band LTE2 20MHz QPSK Mid channel</p>
<p>Band LTE2 15MHz</p>	 <p style="text-align: center;">Band LTE2 15MHz 16QAM Mid channel</p>	 <p style="text-align: center;">Band LTE2 15MHz QPSK Mid channel</p>

<p>Band LTE2 10MHz</p>	 <p style="text-align: center;">Band LTE2 10MHz 16QAM Mid channel</p>	 <p style="text-align: center;">Band LTE2 10MHz QPSK Mid channel</p>
<p>Band LTE2 5MHz</p>	 <p style="text-align: center;">Band LTE2 5MHz 16QAM Mid channel</p>	 <p style="text-align: center;">Band LTE2 5MHz QPSK Mid channel</p>

<p>Band</p> <p>LTE2</p> <p>3MHz</p>	 <p style="text-align: center;">Band LTE2 3MHz 16QAM Mid channel</p>	 <p style="text-align: center;">Band LTE2 3MHz QPSK Mid channel</p>
<p>Band</p> <p>LTE2</p> <p>1.4MHz</p>	 <p style="text-align: center;">Band LTE2 1.4MHz 16QAM Mid channel</p>	 <p style="text-align: center;">Band LTE2 1.4MHz QPSK Mid channel</p>

<p>Band BC1 EVDO REL. 0</p>	 <p>Average Power 23.20 dBm 47.21 % at 0dB</p> <p>10.0 % 3.12 dB 1.0 % 3.95 dB 0.1 % 4.49 dB 0.01 % 4.82 dB 0.001 % 4.99 dB 0.0001 % 5.10 dB Peak 5.18 dB 28.38 dBm</p> <p>Center Freq 1.88000000 GHz</p> <p>CF Step 5.000000 MHz</p> <p>Freq Offset 0 Hz</p> <p>Band BC1 EVDO Rel. 0 Mid channel</p>	 <p>Average Power 23.12 dBm 51.00 % at 0dB</p> <p>10.0 % 1.81 dB 1.0 % 3.00 dB 0.1 % 3.65 dB 0.01 % 3.99 dB 0.001 % 4.17 dB 0.0001 % 4.28 dB Peak 4.35 dB 27.47 dBm</p> <p>Center Freq 1.88000000 GHz</p> <p>CF Step 5.000000 MHz</p> <p>Freq Offset 0 Hz</p> <p>Band BC1 1xRTT Mid channel</p>
<p>Band BC0 EVDO REL. 0</p>	 <p>Average Power 23.53 dBm 46.54 % at 0dB</p> <p>10.0 % 3.24 dB 1.0 % 3.83 dB 0.1 % 4.36 dB 0.01 % 4.62 dB 0.001 % 4.74 dB 0.0001 % 4.85 dB Peak 4.89 dB 28.42 dBm</p> <p>Center Freq 836.520000 MHz</p> <p>CF Step 5.000000 MHz</p> <p>Freq Offset 0 Hz</p> <p>Band BC0 EVDO Rel. 0 Mid channel</p>	 <p>Average Power 22.21 dBm 59.67 % at 0dB</p> <p>10.0 % 1.48 dB 1.0 % 1.96 dB 0.1 % 2.38 dB 0.01 % 2.71 dB 0.001 % 2.98 dB 0.0001 % 3.17 dB Peak 3.25 dB 25.46 dBm</p> <p>Center Freq 836.520000 MHz</p> <p>CF Step 5.000000 MHz</p> <p>Freq Offset 0 Hz</p> <p>Band BC0 1xRTT Mid channel</p>

<p>Band Band 2 HSDPA</p>	 <p style="text-align: center;">Band WCDMA B2 HSDPA</p>	 <p style="text-align: center;">Band WCDMA B2 REL99</p>
<p>Band Band 5 HSDPA</p>	 <p style="text-align: center;">Band WCDMA B5 HSDPA</p>	 <p style="text-align: center;">Band WCDMA B5 REL99</p>

<p>Band GSM1900 EGPRS</p>	 <p style="text-align: center;">Band GSM1900 EGPRS Mid channel</p>	 <p style="text-align: center;">Band GSM1900 GPRS Mid channel</p>
<p>Band GSM850 EGPRS</p>	 <p style="text-align: center;">Band GSM850 EGPRS Mid channel</p>	 <p style="text-align: center;">Band GSM850 GPRS Mid channel</p>

10. LIMITS AND CONDUCTED RESULTS

10.1. 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

CDMA, WCDMA, GSM, and LTE

10.1.1. OCCUPIED BANDWIDTH RESULTS

Band	Mode	Channel	f (MHz)	99% BW (KHz)	-26dB BW (KHz)
GSM850	GPRS	128	824.2	245.5	323.4
		190	836.6	244.5	317.9
		251	848.8	246.2	318
	EGPRS	128	824.2	250.1	313.1
		190	836.6	240.7	307.6
		251	848.8	244.2	311.6
GSM1900	GPRS	512	1850.2	244	323
		661	1880	244.5	312.9
		810	1909.8	247.6	322.2
	EGPRS	512	1850.2	245.1	313.7
		661	1880	247.3	316.5
		810	1909.8	250	323.1
Band 5	REL99	4132	826.4	4122	4686
		4183	836.6	4128	4681
		4233	846.6	4127	4674
	HSDPA	4132	826.4	4122	4689
		4183	836.6	4133	4701
		4233	846.6	4124	4679
	HSUPA	4132	826.4		
		4183	836.6		
		4233	846.6		
Band 2	REL99	9262	1852.4	4156	4732
		9400	1880	4138	4717
		9538	1907.6	4152	4707
	HSDPA	9262	1852.4	4150	4725
		9400	1880	4153	4715
		9538	1907.6	4154	4737
	HSUPA	9262	1852.4		
		9400	1880		
		9538	1907.6		

BC0	1xRTT	1013	824.7	1271	1425
		384	836.52	1273	1419
		777	848.31	1271	1425
	EVDO REL. 0	1013	824.7	1272	1420
		384	836.52	1268	1420
		777	848.31	1268	1420
	EVDO REV. A	1013	824.7		
		384	836.52		
		777	848.31		
BC1	1xRTT	25	1851.25	1274	1428
		600	1880	1275	1434
		1175	1908.75	1274	1426
	EVDO REL. 0	25	1851.25	1279	1428
		600	1880	1276	1431
		1175	1908.75	1276	1425
	EVDO REV. A	25	1851.25		
		600	1880		
		1175	1908.75		

10.1.2. LTE OCCUPIED BANDWIDTH RESULTS

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE13	10	QPSK	50/0	782	8.967	9.723
			50/0	782	8.973	9.737
			50/0	782	8.961	9.718
		16QAM	50/0	782	8.975	9.753
			50/0	782	8.958	9.79
			50/0	782	8.971	9.787

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE13	5	QPSK	25/0	779.5	4.491	4.952
			25/0	782	4.483	4.92
			25/0	784.5	4.502	4.942
		16QAM	25/0	779.5	4.487	4.926
			25/0	782	4.48	4.895
			25/0	784.5	4.499	4.954

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE7	20	QPSK	100/0	2510	17.932	19.235
			100/0	2535	17.944	19.319
			100/0	2560	17.935	19.438
		16QAM	100/0	2510	17.933	19.377
			100/0	2535	17.908	19.405
			100/0	2560	17.924	19.497

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE7	15	QPSK	75/0	2507.5	13.442	14.641
			75/0	2535	13.453	14.647
			75/0	2562.5	13.452	14.567
		16QAM	75/0	2507.5	13.443	14.62
			75/0	2535	13.446	14.675
			75/0	2562.5	13.435	14.59

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE7	10	QPSK	50/0	2505	8.98	9.835
			50/0	2535	8.98	9.741
			50/0	2565	8.956	9.688
		16QAM	50/0	2505	8.984	9.815
			50/0	2535	8.949	9.779
			50/0	2565	8.979	9.755

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE7	5	QPSK	25/0	2502.5	4.498	4.946
			25/0	2535	4.484	4.927
			25/0	2567.5	4.506	4.943
		16QAM	25/0	2502.5	4.491	4.926
			25/0	2535	4.483	4.902
			25/0	2567.5	4.5	4.942

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE5	10	QPSK	50/0	829	8.956	9.746
			50/0	836.5	8.98	9.745
			50/0	844	8.939	9.718
		16QAM	50/0	829	8.972	9.762
			50/0	836.5	8.97	9.814
			50/0	844	8.961	9.748

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE5	5	QPSK	25/0	826.5	4.491	4.933
			25/0	836.5	4.484	4.917
			25/0	846.5	4.508	4.951
		16QAM	25/0	826.5	4.487	4.917
			25/0	836.5	4.483	4.919
			25/0	846.5	4.499	4.941

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE5	3	QPSK	15/0	825.5	2.695	2.984
			15/0	836.5	2.698	2.988
			15/0	847.5	2.701	2.999
		16QAM	15/0	825.5	2.7	3.01
			15/0	836.5	2.697	3.003
			15/0	847.5	2.696	3.005

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE5	1.4	QPSK	6/0	824.7	1.087	1.23
			6/0	836.5	1.081	1.23
			6/0	848.3	1.086	1.225
		16QAM	6/0	824.7	1.086	1.236
			6/0	836.5	1.088	1.238
			6/0	848.3	1.093	1.243

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE4	20	QPSK	100/0	1720	17.958	19.429
			100/0	1732.5	17.94	19.367
			100/0	1745	17.963	19.458
		16QAM	100/0	1720	17.927	19.437
			100/0	1732.5	17.887	19.348
			100/0	1745	17.94	19.493

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE4	15	QPSK	75/0	1717.5	13.454	14.589
			75/0	1732.5	13.454	14.533
			75/0	1747.5	13.468	14.59
		16QAM	75/0	1717.5	13.464	14.637
			75/0	1732.5	13.428	14.585
			75/0	1747.5	13.433	14.533

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE4	10	QPSK	50/0	1715	8.984	9.738
			50/0	1732.5	8.949	9.766
			50/0	1750	8.966	9.748
		16QAM	50/0	1715	8.942	9.791
			50/0	1732.5	8.986	9.769
			50/0	1750	8.971	9.817

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE4	5	QPSK	25/0	1712.5	4.488	4.925
			25/0	1732.5	4.491	4.967
			25/0	1752.5	4.486	4.92
		16QAM	25/0	1712.5	4.502	4.958
			25/0	1732.5	4.497	4.95
			25/0	1752.5	4.505	4.954

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE4	3	QPSK	15/0	1711.5	2.699	2.983
			15/0	1732.5	2.694	2.996
			15/0	1753.5	2.7	3.003
		16QAM	15/0	1711.5	2.701	3.006
			15/0	1732.5	2.693	2.995
			15/0	1753.5	2.696	3.016

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE4	1.4	QPSK	6/0	1710.7	1.087	1.233
			6/0	1732.5	1.081	1.227
			6/0	1754.3	1.085	1.232
		16QAM	6/0	1710.7	1.086	1.236
			6/0	1732.5	1.088	1.234
			6/0	1754.3	1.093	1.242

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE2	20	QPSK	100/0	1860	17.922	19.452
			100/0	1880	17.953	19.294
			100/0	1900	17.94	19.367
		16QAM	100/0	1860	17.91	19.42
			100/0	1880	17.912	19.408
			100/0	1900	17.873	19.43

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE2	15	QPSK	75/0	1857.5	13.439	14.586
			75/0	1880	13.465	14.602
			75/0	1902.5	13.448	14.525
		16QAM	75/0	1857.5	13.456	14.606
			75/0	1880	13.434	14.607
			75/0	1902.5	13.424	14.54

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE2	10	QPSK	50/0	1855	8.976	9.785
			50/0	1880	8.964	9.772
			50/0	1905	8.968	9.76
		16QAM	50/0	1855	8.958	9.8
			50/0	1880	8.986	9.765
			50/0	1905	8.985	9.81

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE2	5	QPSK	25/0	1852.5	4.494	4.921
			25/0	1880	4.498	4.964
			25/0	1907.5	4.491	4.925
		16QAM	25/0	1852.5	4.491	4.936
			25/0	1880	4.495	4.926
			25/0	1907.5	4.503	4.944

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE2	3	QPSK	15/0	1851.5	2.699	2.993
			15/0	1880	2.701	2.996
			15/0	1908.5	2.702	2.981
		16QAM	15/0	1851.5	2.704	3.003
			15/0	1880	2.693	3.001
			15/0	1908.5	2.693	3.017

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE2	1.4	QPSK	6/0	1850.7	1.085	1.231
			6/0	1880	1.081	1.23
			6/0	1909.3	1.088	1.225
		16QAM	6/0	1850.7	1.096	1.246
			6/0	1880	1.089	1.236
			6/0	1909.3	1.096	1.251

10.1.1. OCCUPIED BANDWIDTH PLOTS



<p>Band LTE13 5MHz</p>	 <p>Band LTE13 5MHz OBW 16QAM Mid Channel FRB.gif</p>	 <p>Band LTE13 5MHz OBW QPSK Mid Channel FRB.gif</p>
<p>Band LTE7 20MHz</p>	 <p>Band LTE7 20MHz OBW 16QAM Mid Channel FRB.gif</p>	 <p>Band LTE7 20MHz OBW QPSK Mid Channel FRB.gif</p>

<p>Band LTE7 15MHz</p>	<p>Band LTE7 15MHz OBW 16QAM Mid Channel FRB.gif</p>	<p>Band LTE7 15MHz OBW QPSK Mid Channel FRB.gif</p>
<p>Band LTE7 10MHz</p>	<p>Band LTE7 10MHz OBW 16QAM Mid Channel FRB.gif</p>	<p>Band LTE7 10MHz OBW QPSK Mid Channel FRB.gif</p>

<p>Band LTE7 5MHz</p>	 <p>Band LTE7 5MHz OBW 16QAM Mid Channel FRB.gif</p>	 <p>Band LTE7 5MHz OBW QPSK Mid Channel FRB.gif</p>
<p>Band LTE5 10MHz</p>	 <p>Band LTE5 10MHz OBW 16QAM Mid Channel FRB.gif</p>	 <p>Band LTE5 10MHz OBW QPSK Mid Channel FRB.gif</p>

<p>Band LTE5 5MHz</p>	<p>Band LTE5 5MHz OBW 16QAM Mid Channel FRB.gif</p>	<p>Band LTE5 5MHz OBW QPSK Mid Channel FRB.gif</p>
<p>Band LTE5 3MHz</p>	<p>Band LTE5 3MHz OBW 16QAM Mid Channel FRB.gif</p>	<p>Band LTE5 3MHz OBW QPSK Mid Channel FRB.gif</p>



<p>Band LTE4 20MHz</p>	<p>Band LTE4 20MHz OBW 16QAM Mid Channel FRB.gif</p>	<p>Band LTE4 20MHz OBW QPSK Mid Channel FRB.gif</p>
<p>Band LTE4 15MHz</p>	<p>Band LTE4 15MHz OBW 16QAM Mid Channel FRB.gif</p>	<p>Band LTE4 15MHz OBW QPSK Mid Channel FRB.gif</p>

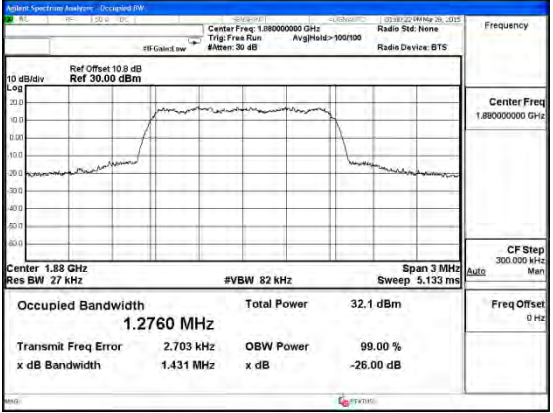
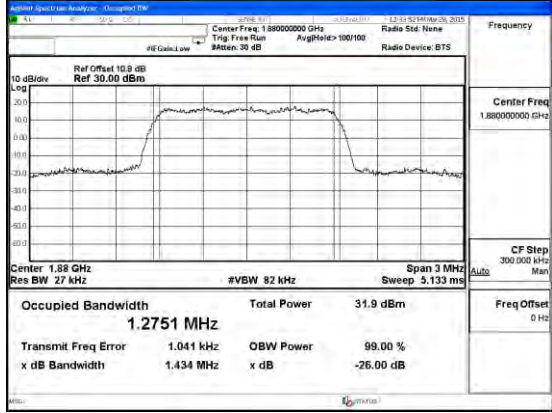
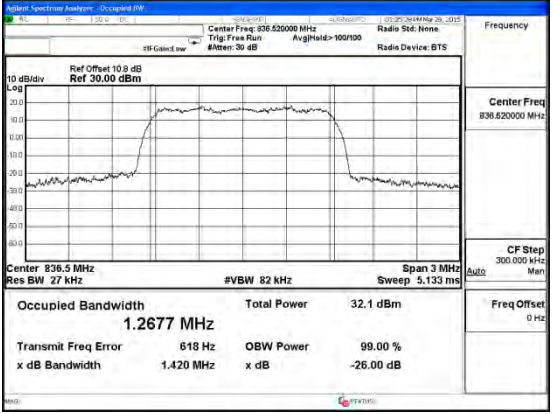
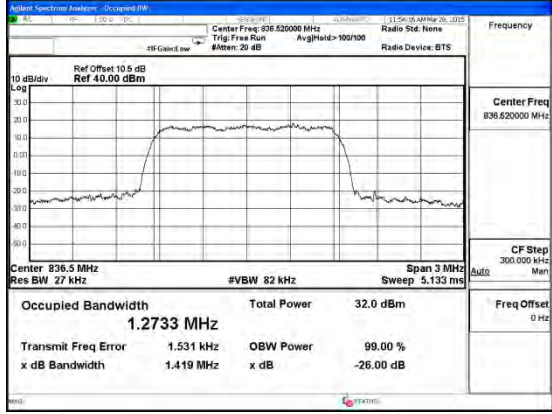
<p>Band LTE4 10MHz</p>	 <p>Band LTE4 10MHz OBW 16QAM Mid Channel FRB.gif</p>	 <p>Band LTE4 10MHz OBW QPSK Mid Channel FRB.gif</p>
<p>Band LTE4 5MHz</p>	 <p>Band LTE4 5MHz OBW 16QAM Mid Channel FRB.gif</p>	 <p>Band LTE4 5MHz OBW QPSK Mid Channel FRB.gif</p>

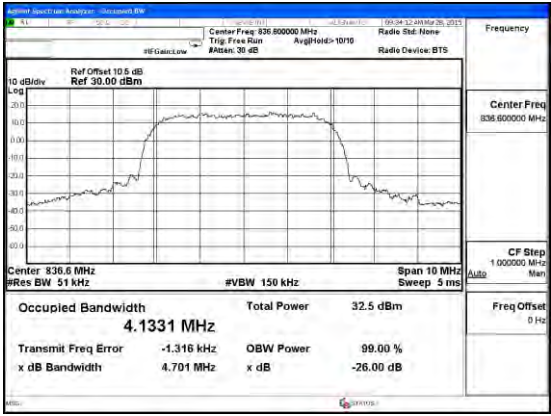
<p>Band LTE4 3MHz</p>	 <p>Band LTE4 3MHz OBW 16QAM Mid Channel FRB.gif</p>	 <p>Band LTE4 3MHz OBW QPSK Mid Channel FRB.gif</p>
<p>Band LTE4 1.4MHz</p>	 <p>Band LTE4 1.4MHz OBW 16QAM Mid Channel FRB.gif</p>	 <p>Band LTE4 1.4MHz OBW QPSK Mid Channel FRB.gif</p>

<p>Band LTE2 20MHz</p>	<p>Band LTE2 20MHz OBW 16QAM Mid Channel FRB.gif</p>	<p>Band LTE2 20MHz OBW QPSK Mid Channel FRB.gif</p>
<p>Band LTE2 15MHz</p>	<p>Band LTE2 15MHz OBW 16QAM Mid Channel FRB.gif</p>	<p>Band LTE2 15MHz OBW QPSK Mid Channel FRB.gif</p>

<p>Band LTE2 10MHz</p>	 <p>Band LTE2 10MHz OBW 16QAM Mid Channel FRB.gif</p>	 <p>Band LTE2 10MHz OBW QPSK Mid Channel FRB.gif</p>
<p>Band LTE2 5MHz</p>	 <p>Band LTE2 5MHz OBW 16QAM Mid Channel FRB.gif</p>	 <p>Band LTE2 5MHz OBW QPSK Mid Channel FRB.gif</p>

<p>Band LTE2 3MHz</p>	 <p>Band LTE2 3MHz OBW 16QAM Mid Channel FRB.gif</p>	 <p>Band LTE2 3MHz OBW QPSK Mid Channel FRB.gif</p>
<p>Band LTE2 1.4MHz</p>	 <p>Band LTE2 1.4MHz OBW 16QAM Mid Channel FRB.gif</p>	 <p>Band LTE2 1.4MHz OBW QPSK Mid Channel FRB.gif</p>

<p>Band BC1</p>	 <p>Band BC1 EVDO Rel. 0 OBW Mid channel</p>	 <p>Band BC1 1xRTT OBW Mid channel</p>
<p>Band BC0</p>	 <p>Band BC0 EVDO Rel. 0 OBW Mid channel</p>	 <p>Band BC0 1xRTT OBW Mid channel</p>

<p>Band Band 2</p>	 <p style="text-align: center;">Band WCDMA B2 HSDPA OBW</p>	 <p style="text-align: center;">Band WCDMA B2 REL99 OBW</p>
<p>Band Band 5</p>	 <p style="text-align: center;">Band WCDMA B5 HSDPA OBW</p>	 <p style="text-align: center;">Band WCDMA B5 REL99 OBW</p>

<p>Band GSM1900</p>	 <p>Band GSM1900 EGPRS OBW Mid channel</p>	 <p>Band GSM1900 GPRS OBW Mid channel</p>
<p>Band GSM850</p>	 <p>Band GSM850 EGPRS OBW Mid channel</p>	 <p>Band GSM850 GPRS OBW Mid channel</p>

10.2. BAND EDGE EMISSIONS

RULE PART(S)

FCC: §22.359, §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.

Part 27: (m)(4) (4) For mobile digital stations, the attenuation factor shall be not less than $40 + 10 \log (P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log (P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and $55 + 10 \log (P)$ 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. In addition, the attenuation factor shall not be less than $43 + 10 \log (P)$ dB on all frequencies between 2490.5 MHz and 2496 MHz and $55 + 10 \log (P)$ dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

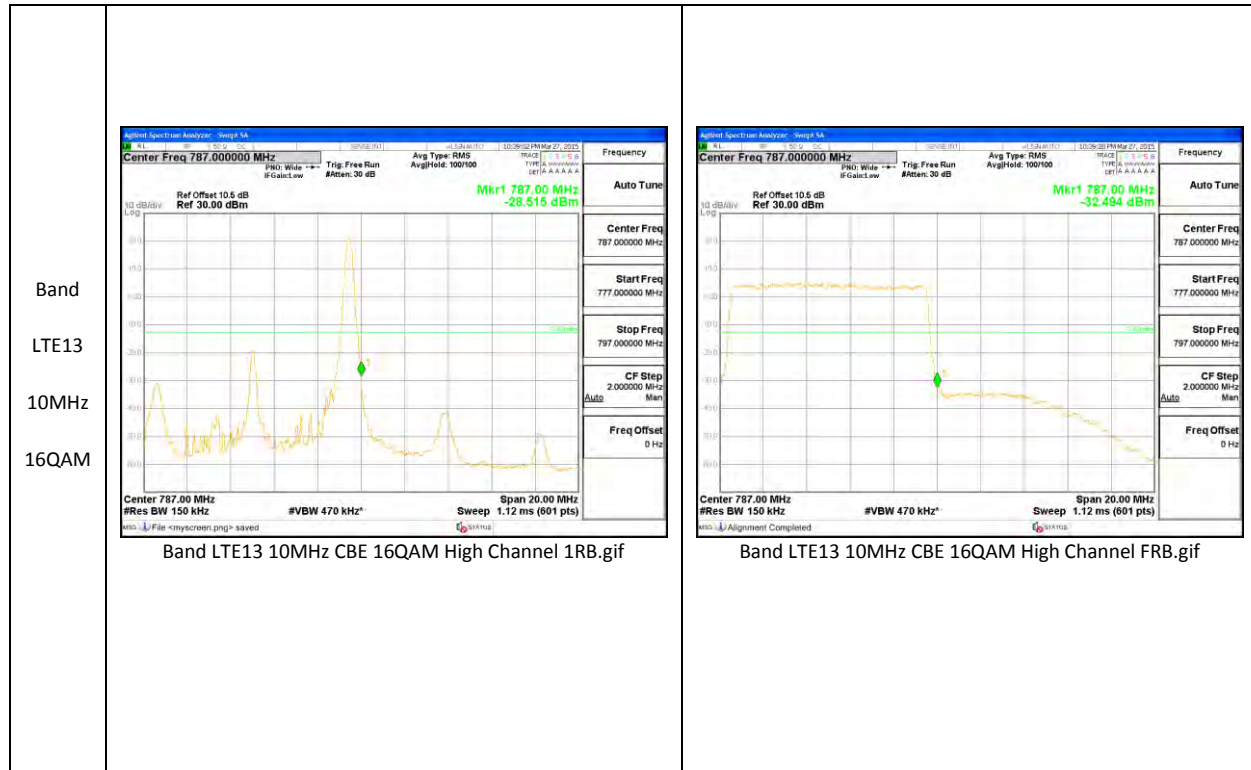
TEST PROCEDURE

Per KDB 971168 D01 Power Meas License Digital Systems v02r02

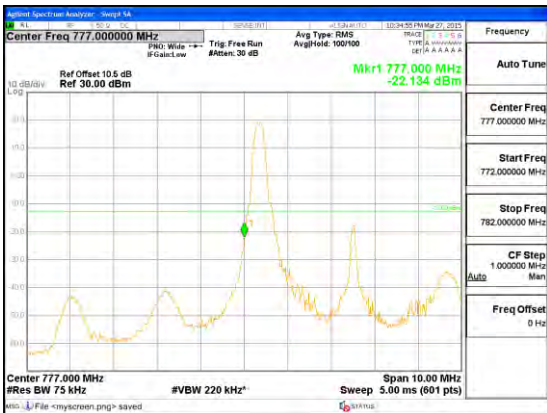

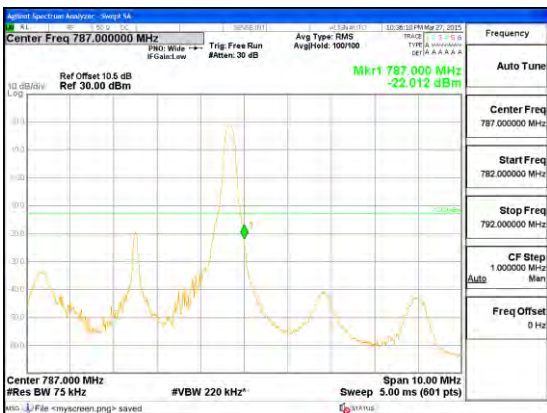
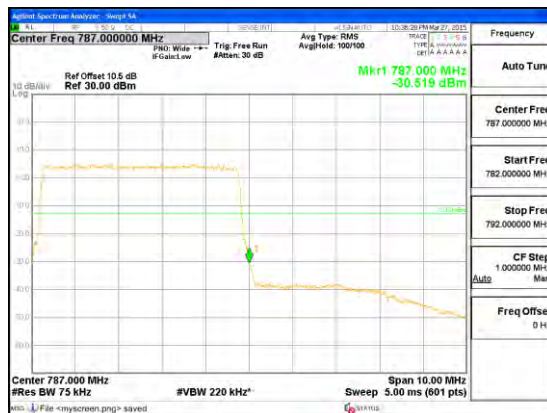
The transmitter output was connected to an Agilent 8960 or a CMW500 Test Set and configured to operate at maximum power. The band edge emissions were measured at the required operating frequencies in each band on the Spectrum Analyzer.

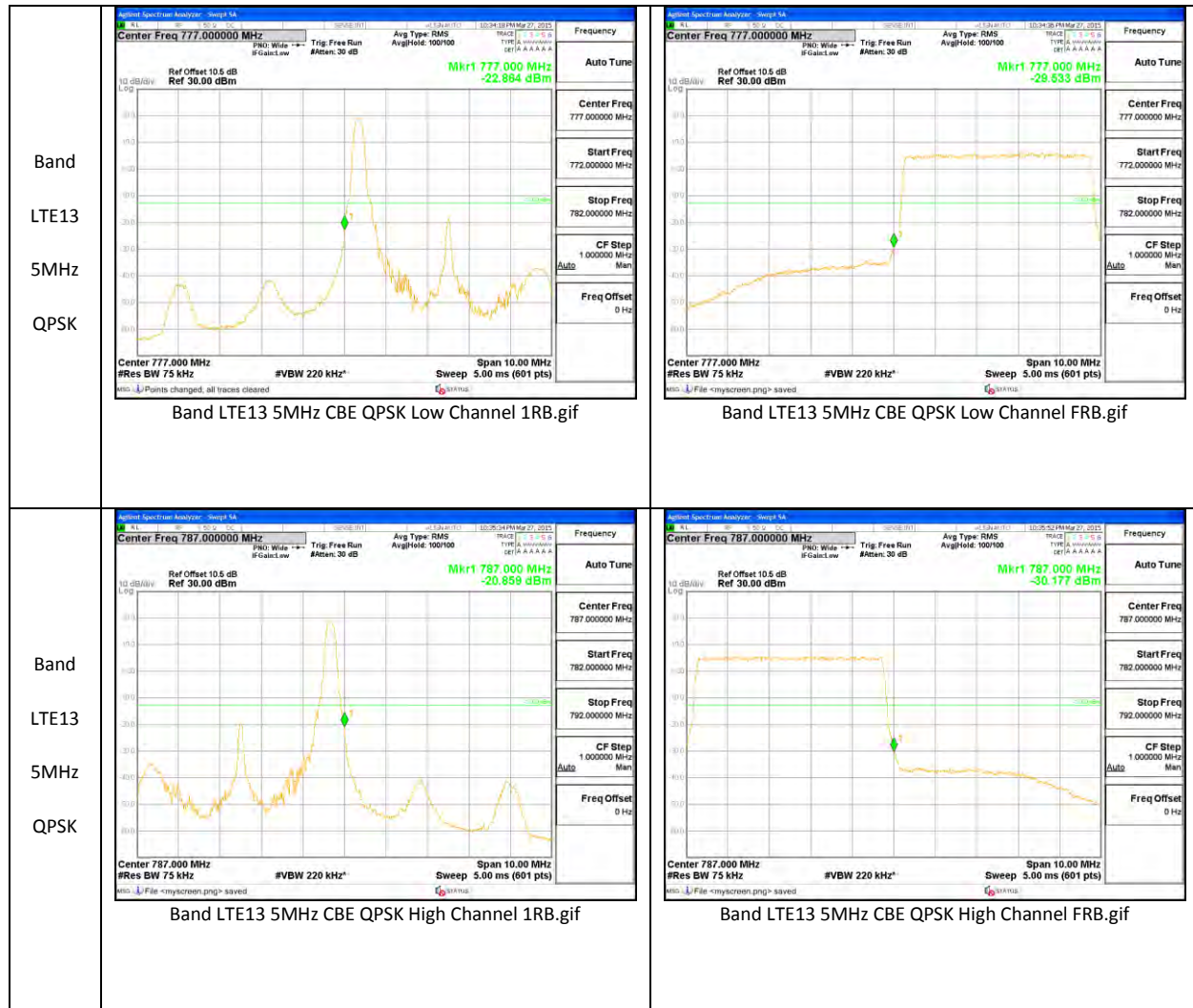
RESULTS

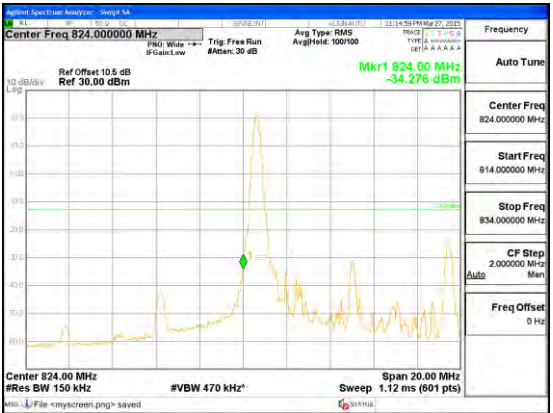

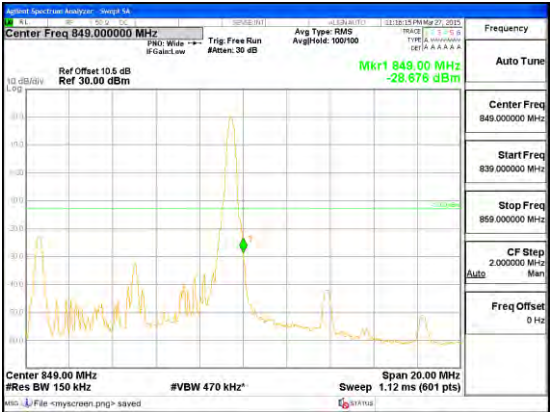

10.2.1. BAND EDGE PLOTS

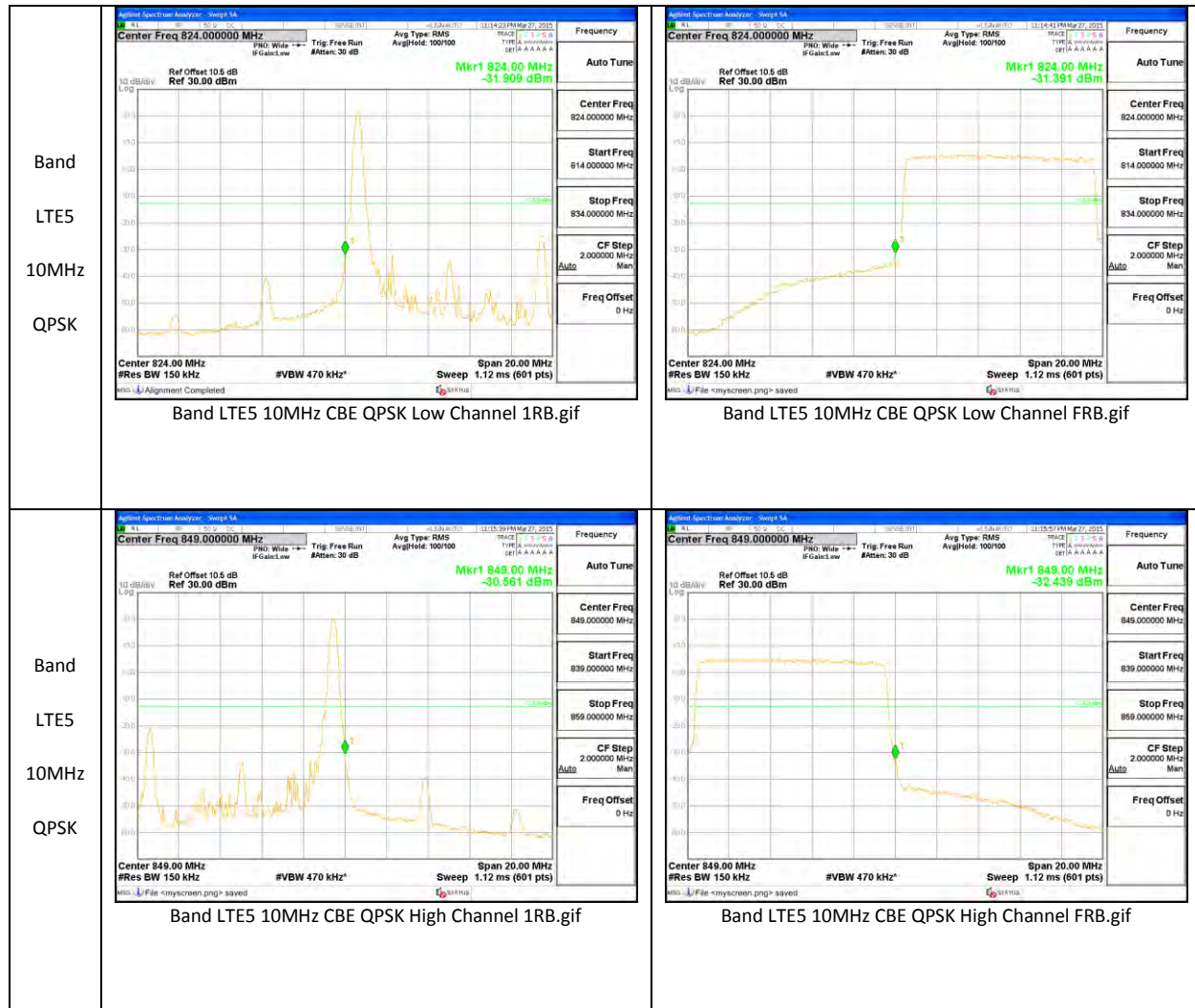


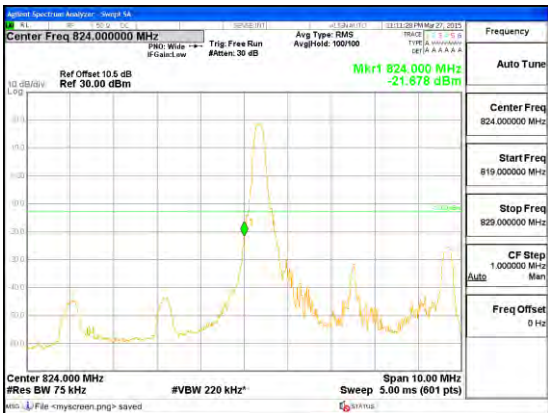
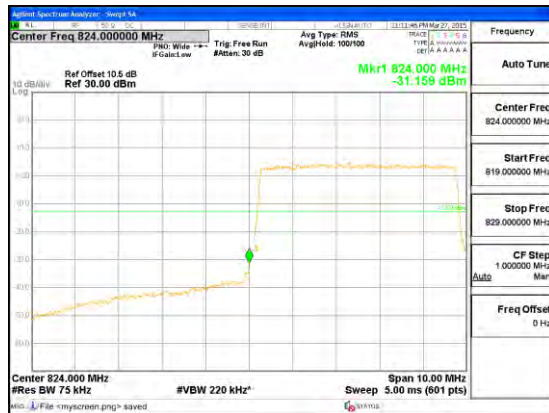
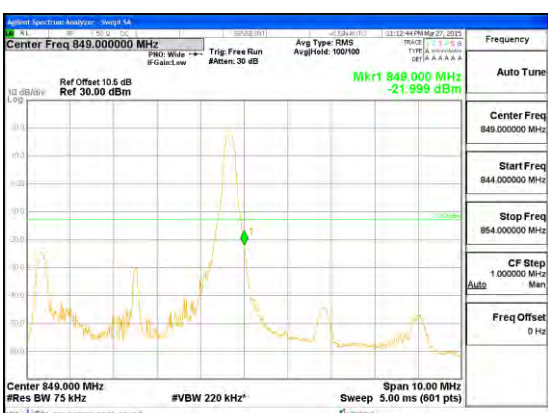
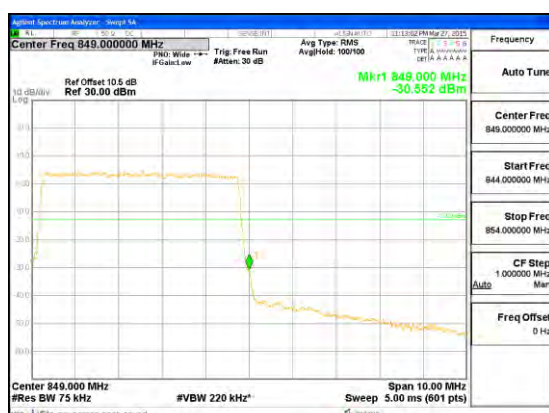


Band LTE13 5MHz 16QAM	 <p>Band LTE13 5MHz CBE 16QAM Low Channel 1RB.gif</p>	 <p>Band LTE13 5MHz CBE 16QAM Low Channel FRB.gif</p>
Band LTE13 5MHz 16QAM	 <p>Band LTE13 5MHz CBE 16QAM High Channel 1RB.gif</p>	 <p>Band LTE13 5MHz CBE 16QAM High Channel FRB.gif</p>



Band LTE5 10MHz 16QAM	 <p>Band LTE5 10MHz CBE 16QAM Low Channel 1RB.gif</p>	 <p>Band LTE5 10MHz CBE 16QAM Low Channel FRB.gif</p>
Band LTE5 10MHz 16QAM	 <p>Band LTE5 10MHz CBE 16QAM High Channel 1RB.gif</p>	 <p>Band LTE5 10MHz CBE 16QAM High Channel FRB.gif</p>



<p>Band LTE5 5MHz 16QAM</p>	 <p>Band LTE5 5MHz CBE 16QAM Low Channel 1RB.gif</p>	 <p>Band LTE5 5MHz CBE 16QAM Low Channel FRB.gif</p>
<p>Band LTE5 5MHz 16QAM</p>	 <p>Band LTE5 5MHz CBE 16QAM High Channel 1RB.gif</p>	 <p>Band LTE5 5MHz CBE 16QAM High Channel FRB.gif</p>

