FCC CFR47 PART 22 SUBPART H
FCC CFR47 PART 24 SUBPART E
FCC CFR47 PART 27 SUBPART H
FCC CFR47 PART 27 SUBPART L

CERTIFICATION TEST REPORT

FOR

GSM/WCDMA/LTE PHONE + BLUETOOTH, DTS b/g/n

MODEL NUMBER: LG-H345, LGH345, H345

FCC ID: ZNFH345

REPORT NUMBER: 15I19960-E1

ISSUE DATE: FEBRUARY 20, 2015

Prepared for
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TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS 5
2. TEST METHODOLOGY 6
3. FACILITIES AND ACCREDITATION 6
4. CALIBRATION AND UNCERTAINTY 6
4.1. MEASURING INSTRUMENT CALIBRATION 6
4.2. SAMPLE CALCULATION 6
4.3. MEASUREMENT UNCERTAINTY 7
5. EQUIPMENT UNDER TEST 8
5.1. DESCRIPTION OF EUT 8
5.2. MAXIMUM OUTPUT POWER 9
5.3. MAXIMUM OUTPUT POWER (LTE) 10
5.4. DESCRIPTION OF AVAILABLE ANTENNAS 12
5.5. DESCRIPTION OF TEST SETUP 13
6. TEST AND MEASUREMENT EQUIPMENT 16
7. SUMMARY TABLE 17
8. RF POWER OUTPUT VERIFICATION 18
8.1. GSM/GPRS/EDGE 18
8.1.1. GSM OUTPUT POWER RESULT 19
8.2. UMTS REL 99 21
8.2.1. UMTS REL 99 OUTPUT POWER RESULT 21
8.3. UMTS HSDPA 22
8.3.1. UMTS HSDPA OUTPUT POWER RESULT 23
8.4. UMTS HSUPA 25
8.4.1. UMTS HSUPA OUTPUT POWER RESULT 26
8.5. DC-HSDPA 28
8.5.1. UMTS DC-HSDPA OUTPUT POWER RESULT 31
8.7. LTE OUTPUT VERIFICATION 33
8.7.1. LTE OUTPUT RESULT 33
9. PEAK TO AVERAGE RATIO 41
9.1. CONDUCTED PEAK TO AVERAGE RESULT 41
10. LIMITS AND CONDUCTED RESULTS 51
10.1. OCCUPIED BANDWIDTH 51

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10.1.1. OCCUPIED BANDWIDTH RESULTS 52
10.1.2. LTE OCCUPIED BANDWIDTH RESULTS 54
10.1.3. OCCUPIED BANDWIDTH PLOTS 59
10.2. BAND EDGE EMISSIONS 78
10.2.1. BAND EDGE PLOTS 79
10.3. OUT OF BAND EMISSIONS 116
10.3.1. OUT OF BAND EMISSIONS RESULT 117
10.3.2. OUT OF BAND EMISSIONS PLOTS 123
10.4. FREQUENCY STABILITY 134
10.4.1. FREQUENCY STABILITY RESULTS 135
11. RADIATED TEST RESULTS 137
11.1. RADIATED POWER (ERP & EIRP) 137
11.1.1. ERP/EIRP RESULTS 138
11.1.2. LTE ERP/EIRP RESULTS 140
11.1.3. ERP/EIRP PLOTS 145
11.2. FIELD STRENGTH OF SPURIOUS RADIATION 187
11.2.1. SPURIOUS RADIATION PLOTS 188
12. SETUP PHOTOS 218

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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 b/g/n
MODEL:	LG-H345, LGH345, H345
Serial Number:	501KPMZ818115 (2G/3G), 501KPE818116 (LTE)
DATE TESTED:	FEBRUARY 2-16, 2015

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
FCC PART 22H, 24E, 27H and 27L	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.

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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, 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)

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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%.

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5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a GSM/WCDMA/LTE PHONE + BLUETOOTH, DTS b/g/n

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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 mW	Conducted		Radiated	
			AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
GSM850	824~849	GMSK	33.00	1995.26		
	824~849	GPRS	33.00	1995.26	31.52	1419.38
	824~849	EGPRS	33.00	1995.26	27.40	549.67
GSM1900	1850~1910	GMSK	30.50	1122.02		
	1850~1910	GPRS	30.50	1122.02	30.05	1011.58
	1850~1910	EGPRS	26.70	467.74	26.46	442.59
Band 5	824~849	REL99	24.20	263.03	22.66	184.5
	824~849	HSDPA	24.10	257.04	22.82	191.43
	824~849	HSUPA	24.00	251.19		
Band 4	1710~1755	REL99	23.70	234.42	26.09	406.33
	1710~1755	HSDPA	23.50	223.87	26.12	409.15
	1710~1755	HSUPA	23.60	229.09		
Band 2	1850~1910	REL99	23.60	229.09	23.85	242.66
	1850~1910	HSDPA	23.40	218.78	23.82	240.99
	1850~1910	HSUPA	23.40	218.78		

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5.3. MAXIMUM OUTPUT POWER (LTE)

LTE Band 12

FCC Part 27							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation	Conducted		Radiated	
			mW	AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE12	699~716	10MHz	QPSK	23.90	245.47	24.41	276.06
			16QAM	23.20	208.93	23.7	234.42
		5MHz	QPSK	24.20	263.03	24.6	288.4
			16QAM	23.20	208.93	23.8	239.88
		3MHz	QPSK	24.00	251.19	24.75	298.54
			16QAM	23.20	208.93	23.9	245.47
		1.4MHz	QPSK	23.90	245.47	24.3	269.15
			16QAM	23.20	208.93	23.5	223.87

LTE Band 4

FCC Part 27							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation	Conducted		Radiated	
			mW	AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE4	1710~1755	20MHz	QPSK	24.20	263.03	26.59	456.15
			16QAM	23.20	208.93	25.92	390.94
		15MHz	QPSK	24.20	263.03	26.72	470.01
			16QAM	23.20	208.93	25.82	382.04
		10MHz	QPSK	24.10	257.04	26.54	450.9
			16QAM	23.20	208.93	25.68	369.94
		5MHz	QPSK	24.20	263.03	26.70	468.19
			16QAM	23.20	208.93	25.94	393.03
		3MHz	QPSK	24.10	257.04	26.72	470.01
			16QAM	23.20	208.93	25.82	382.04
		1.4MHz	QPSK	24.10	257.04	26.26	422.75
			16QAM	23.20	208.93	25.52	356.54

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LTE Band 2

FCC Part 24							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation	Conducted		Radiated	
			mW	AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE2	1850~1910	20MHz	QPSK	24.20	263.03	26.39	435.77
			16QAM	23.20	208.93	25.24	334.4
		15MHz	QPSK	24.10	257.04	25.91	390.33
			16QAM	23.20	208.93	25.14	326.91
		10MHz	QPSK	24.00	251.19	25.98	395.92
			16QAM	23.20	208.93	25.15	327.04
		5MHz	QPSK	24.20	263.03	25.68	369.64
			16QAM	23.20	208.93	24.75	298.39
		3MHz	QPSK	23.90	245.47	25.29	338.03
			16QAM	23.20	208.93	24.49	281.16
		1.4MHz	QPSK	23.80	239.88	25.19	330.51
			16QAM	23.20	208.93	24.09	256.56

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5.4. 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)
GSM850, 824~849MHz	-1.0
GSM1900, 1850~1910MHz	2.2
WCDMA B2, 1850~1910MHz	2.2
WCDMA B4, 1710~1755MHz	2.4
WCDMA B5, 824~849MHz	-1.0
LTE B2, 1850~1910MHz	2.2
LTE B4, 1710~1755MHz	2.4
LTE B12, 699~716MHz	-1.0

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5.5. 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)

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

TEST SETUP

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

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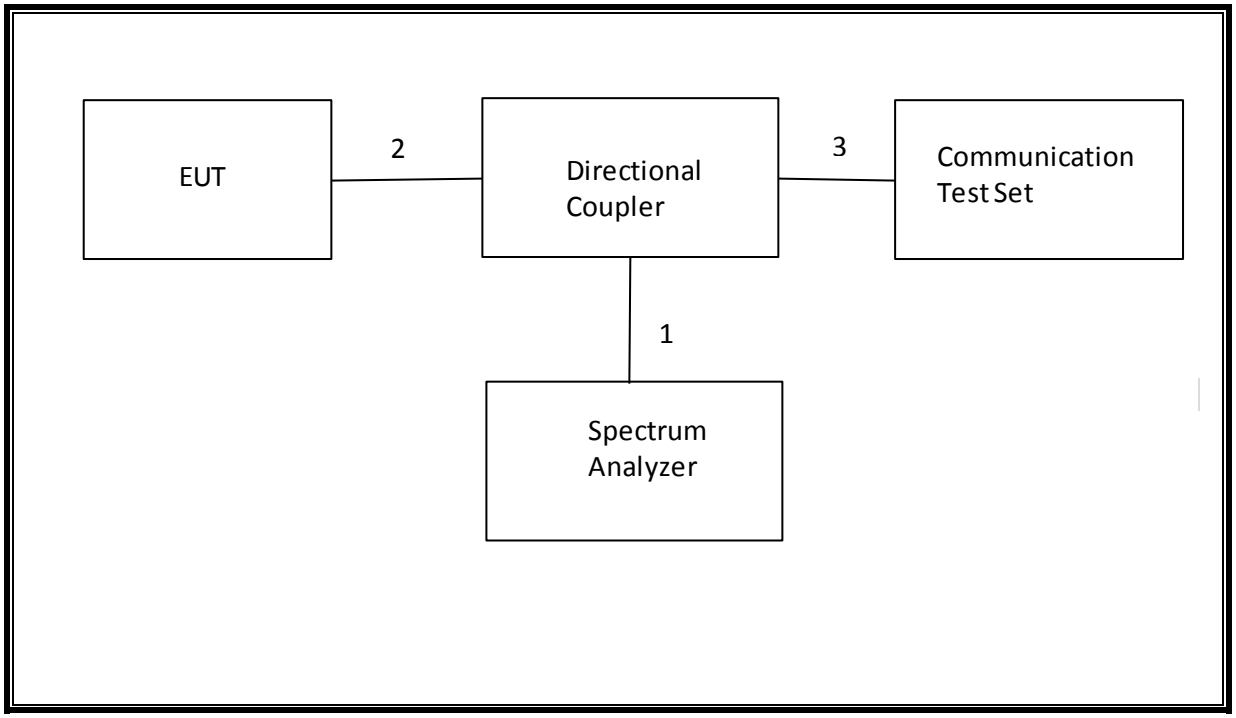
SETUP DIAGRAM FOR TESTS (CONDUCTED TEST SETUP)



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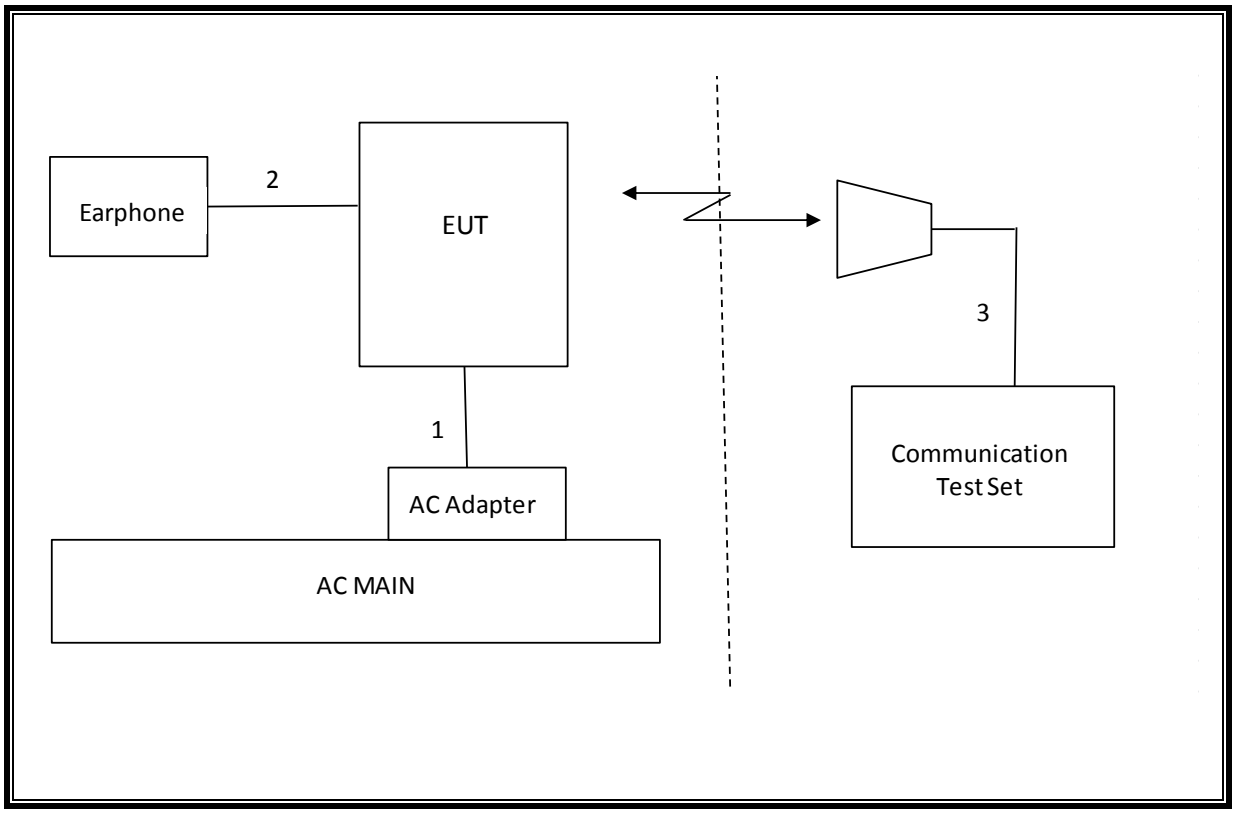
SETUP DIAGRAM FOR TESTS (RADIATED TEST SETUP)



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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	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	6502	158071	10/14/15
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

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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	17.90 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	-18.183 dBm
2.1046	N/A	Conducted output power	N/A		Pass	33 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	0.012 PPM
22.913(a)(2)	RSS-132(4.4)	Effective Radiated Power	38 dBm	Radiated	Pass	31.5 dBm
27.50(c)(10)	N/A		34.77 dBm		Pass	26.7 dBm
24.232(c) 27.50(h)(2)	RSS-133(6.4) RSS-199(4.4)	Equivalent Isotropic Radiated Power	33dBm		Pass	30.1 dBm
27.50(d)(4)	RSS-139(6.4)		30dBm		Pass	26.72 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	-41.1 dBm

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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

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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	33.0
			190	836.6	33.0
			251	848.8	32.7
GPRS (GMSK)	CS1	1	128	824.2	33.0
			190	836.6	33.0
			251	848.8	32.7
		2	128	824.2	31.0
			190	836.6	31.7
			251	848.8	31.5
		3	128	824.2	30.2
			190	836.6	30.2
			251	848.8	30.2
		4	128	824.2	28.7
			190	836.6	28.7
			251	848.8	28.6
EGPRS (8PSK)	MCS5	1	128	824.2	27.7
			190	836.6	27.7
			251	848.8	27.4
		2	128	824.2	26.7
			190	836.6	26.7
			251	848.8	26.7
		3	128	824.2	24.7
			190	836.6	24.7
			251	848.8	24.5
		4	128	824.2	23.7
			190	836.6	23.6
			251	848.8	23.3

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Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Burst Pwr (dBm)
GSM (Voice)	CS1	1	512	1850.2	30.5
			661	1880.0	30.5
			810	1909.8	30.3
GPRS (GMSK)	CS1	1	512	1850.2	30.5
			661	1880.0	30.5
			810	1909.8	30.3
		2	512	1850.2	28.5
			661	1880.0	28.7
			810	1909.8	28.6
		3	512	1850.2	27.1
			661	1880.0	27.0
			810	1909.8	26.8
		4	512	1850.2	25.4
			661	1880.0	25.5
			810	1909.8	25.4
EGPRS (8PSK)	MCS5	1	512	1850.2	26.7
			661	1880.0	26.7
			810	1909.8	26.6
		2	512	1850.2	25.5
			661	1880.0	25.7
			810	1909.8	25.5
		3	512	1850.2	23.4
			661	1880.0	23.5
			810	1909.8	23.3
		4	512	1850.2	22.2
			661	1880.0	22.2
			810	1909.8	22.2

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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
	βc	Not Applicable
	βd	Not Applicable
	βec	Not Applicable
	βc/βd	8/15
	βhs	Not Applicable
	βed	Not Applicable

8.2.1. UMTS REL 99 OUTPUT POWER RESULT

Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band V	Rel 99 (RMC, 12.2 kbps)	4132	826.4	0	24.1
		4183	836.6	0	24.1
		4233	846.6	0	24.2

Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band IV	Rel 99 (RMC, 12.2 kbps)	1312	1712.4	0	23.6
		1413	1732.6	0	23.5
		1513	1752.6	0	23.7

Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band II	Rel 99 (RMC, 12.2 kbps)	9262	1852.4	0	23.5
		9400	1880.0	0	23.3
		9538	1907.6	0	23.4

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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			
	βc	2/15	12/15	15/15	15/15
	βd	15/15	15/15	8/15	4/15
	Bd (SF)	64			
	βc/βd	2/15	12/15	15/8	15/4
	βhs	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			
	Ahs =βhs/βc	30/15			

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8.3.1. UMTS HSDPA OUTPUT POWER RESULT

Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band V	Subtest 1	4132	826.4	0	24.0
		4183	836.6	0	24.1
		4233	846.6	0	24.1
	Subtest 2	4132	826.4	0	24.0
		4183	836.6	0	24.1
		4233	846.6	0	24.1
	Subtest 3	4132	826.4	0.5	23.7
		4183	836.6	0.5	23.6
		4233	846.6	0.5	23.6
	Subtest 4	4132	826.4	0.5	23.7
		4183	836.6	0.5	23.6
		4233	846.6	0.5	23.6

Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band IV	Subtest 1	1312	1712.4	0	23.5
		1413	1732.6	0	23.4
		1513	1752.6	0	23.5
	Subtest 2	1312	1712.4	0	23.5
		1413	1732.6	0	23.4
		1513	1752.6	0	23.5
	Subtest 3	1312	1712.4	0.5	23.2
		1413	1732.6	0.5	23.1
		1513	1752.6	0.5	23.2
	Subtest 4	1312	1712.4	0.5	23.2
		1413	1732.6	0.5	23.1
		1513	1752.6	0.5	23.2

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Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band II	Subtest 1	9262	1852.4	0	23.4
		9400	1880.0	0	23.3
		9538	1907.6	0	23.3
	Subtest 2	9262	1852.4	0	23.4
		9400	1880.0	0	23.3
		9538	1907.6	0	23.3
	Subtest 3	9262	1852.4	0.5	23.2
		9400	1880.0	0.5	23.2
		9538	1907.6	0.5	23.2
	Subtest 4	9262	1852.4	0.5	22.8
		9400	1880.0	0.5	23.2
		9538	1907.6	0.5	23.3

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8.4. 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
	βc/βd	11/15	6/15	15/9	2/15	15/15
	Bhs	22/15	12/15	30/15	4/15	30/15
	βed (note1)	1309/225	94/75	47/15 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 = βhs/βc	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: βed cannot be set directly, it is set by Absolute Grant Value.

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8.4.1. UMTS HSUPA OUTPUT POWER RESULT

Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band V	Subtest 1	4132	826.4	0	24.0
		4183	836.6	0	24.0
		4233	846.6	0	23.3
	Subtest 2	4132	826.4	2	22.1
		4183	836.6	2	22.2
		4233	846.6	2	22.2
	Subtest 3	4132	826.4	1	23.1
		4183	836.6	1	23.0
		4233	846.6	1	23.1
	Subtest 4	4132	826.4	2	22.1
		4183	836.6	2	22.2
		4233	846.6	2	22.2
	Subtest 5	4132	826.4	0	24.0
		4183	836.6	0	24.0
		4233	846.6	0	23.3

Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band IV	Subtest 1	1312	1712.4	0	22.7
		1413	1732.6	0	23.2
		1513	1752.6	0	22.8
	Subtest 2	1312	1712.4	2	21.5
		1413	1732.6	2	21.7
		1513	1752.6	2	21.6
	Subtest 3	1312	1712.4	1	22.1
		1413	1732.6	1	22.2
		1513	1752.6	1	22.6
	Subtest 4	1312	1712.4	2	21.7
		1413	1732.6	2	21.7
		1513	1752.6	2	21.7
	Subtest 5	1312	1712.4	0	23.5
		1413	1732.6	0	23.5
		1513	1752.6	0	23.6

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Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band II	Subtest 1	9262	1852.4	0	22.6
		9400	1880.0	0	23.1
		9538	1907.6	0	22.7
	Subtest 2	9262	1852.4	2	21.5
		9400	1880.0	2	21.7
		9538	1907.6	2	21.5
	Subtest 3	9262	1852.4	1	21.9
		9400	1880.0	1	22.0
		9538	1907.6	1	22.1
	Subtest 4	9262	1852.4	2	21.7
		9400	1880.0	2	21.7
		9538	1907.6	2	21.7
	Subtest 5	9262	1852.4	0	23.4
		9400	1880.0	0	23.2
		9538	1907.6	0	23.3

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8.5. DC-HSDPA

The following tests were completed according to procedures in section 7.3.13 of 3GPP TS34.108 v9.5.0. A summary of these settings are illustrated below:

Downlink Physical Channels are set as per 3GPP TS34.121-1 v9.0.0 E.5.0

Table E.5.0: Levels for HSDPA connection setup

Parameter During Connection setup	Unit	Value
P-CPICH_Ec/Ior	dB	-10
P-CCPCH and SCH_Ec/Ior	dB	-12
PICH _Ec/Ior	dB	-15
HS-PDSCH	dB	off
HS-SCCH_1	dB	off
DPCH_Ec/Ior	dB	-5
OCNS_Ec/Ior	dB	-3.1

Call is set up as per 3GPP TS34.108 v9.5.0 sub clause 7.3.13

The configurations of the fixed reference channels for HSDPA RF tests are described in 3GPP TS 34.121, annex C for FDD and 3GPP TS 34.122.

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Table C.8.1.12: Fixed Reference Channel H-Set 12

Parameter	Unit	Value
Nominal Avg. Inf. Bit Rate	kbps	60
Inter-TTI Distance	TTI's	1
Number of HARQ Processes	Processes	6
Information Bit Payload (N_{INF})	Bits	120
Number Code Blocks	Blocks	1
Binary Channel Bits Per TTI	Bits	960
Total Available SML's in UE	SML's	19200
Number of SML's per HARQ Proc.	SML's	3200
Coding Rate		0.15
Number of Physical Channel Codes	Codes	1
Modulation		QPSK
Note 1: The RMC is intended to be used for DC-HSDPA mode and both cells shall transmit with identical parameters as listed in the table. Note 2: Maximum number of transmission is limited to 1, i.e., retransmission is not allowed. The redundancy and constellation version 0 shall be used.		

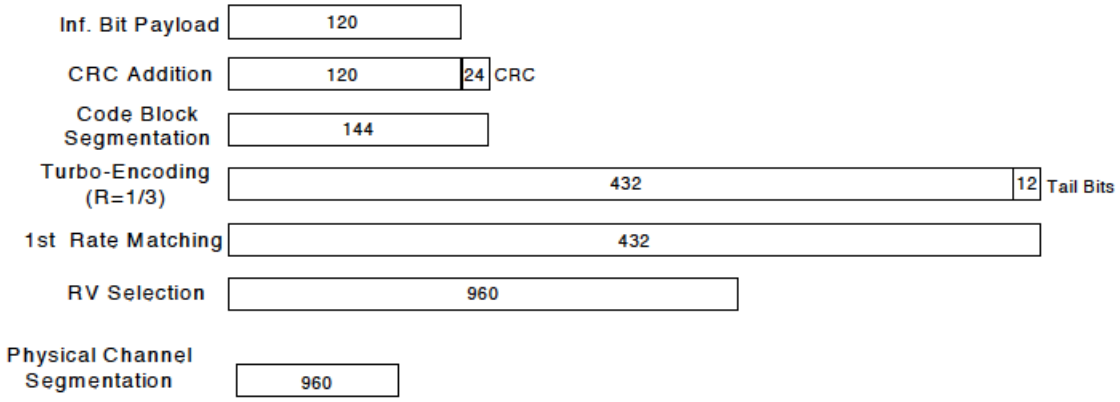

Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

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The following 4 Sub-tests for HSDPA were completed according to Release 6 procedures in section 5.2 of 3GPP TS34.121. A summary of subtest settings are illustrated below:

	Mode	Rel6 HSDPA	Rel6 HSDPA	Rel6 HSDPA	Rel6 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	Algorithm2			
	βc	2/15	12/15	15/15	15/15
	βd	15/15	15/15	8/15	4/15
	βd (SF)	64			
	βc/βd	2/15	12/15	15/8	15/4
	βhs	4/15	24/15	30/15	30/15
	MPR	0	0	0.5	0.5
HSDPA Specific Settings	DACK	8			
	DNAK	8			
	DCQI	8			
	Ack-Nack Repetition factor	3			
	CQI Feedback	4ms			
	CQI Repetition Factor	2			
	Ahs = βhs/ βc	30/15			

Up commands are set continuously to set the UE to Max power.

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8.5.1. UMTS DC-HSDPA OUTPUT POWER RESULT

Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band V	Subtest 1	4132	826.4	0	24.0
		4183	836.6	0	24.1
		4233	846.6	0	24.1
	Subtest 2	4132	826.4	0	24.0
		4183	836.6	0	24.1
		4233	846.6	0	24.1
	Subtest 3	4132	826.4	0.5	23.7
		4183	836.6	0.5	23.6
		4233	846.6	0.5	23.6
	Subtest 4	4132	826.4	0.5	23.7
		4183	836.6	0.5	23.6
		4233	846.6	0.5	23.6

Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band IV	Subtest 1	1312	1712.4	0	23.6
		1413	1732.6	0	23.4
		1513	1752.6	0	23.7
	Subtest 2	1312	1712.4	0	23.4
		1413	1732.6	0	23.4
		1513	1752.6	0	23.7
	Subtest 3	1312	1712.4	0.5	22.9
		1413	1732.6	0.5	23.2
		1513	1752.6	0.5	23.2
	Subtest 4	1312	1712.4	0.5	23.2
		1413	1732.6	0.5	23.2
		1513	1752.6	0.5	23.2

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Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band II	Subtest 1	9262	1852.4	0	23.4
		9400	1880.0	0	23.3
		9538	1907.6	0	23.3
	Subtest 2	9262	1852.4	0	23.4
		9400	1880.0	0	23.3
		9538	1907.6	0	23.3
	Subtest 3	9262	1852.4	0.5	23.2
		9400	1880.0	0.5	23.2
		9538	1907.6	0.5	23.2
	Subtest 4	9262	1852.4	0.5	22.8
		9400	1880.0	0.5	23.2
		9538	1907.6	0.5	23.3

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8.7. LTE OUTPUT VERIFICATION

8.7.1. LTE OUTPUT RESULT

LTE Band 2

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	24.2	24.2	24.2
			1	49	0	24.2	23.9	24.0
			1	99	0	24.2	24.1	23.9
			50	0	1	23.1	23.0	23.0
			50	25	1	23.0	22.9	23.0
			50	49	1	23.0	22.9	22.9
			100	0	1	22.9	22.9	22.9
		16QAM	1	0	1	23.2	23.1	23.2
			1	49	1	22.9	22.8	23.2
			1	99	1	22.7	23.2	22.9
			50	0	2	22.2	22.1	22.0
			50	25	2	22.1	22.0	21.7
			50	49	2	21.8	21.9	21.7
			100	0	2	22.0	21.8	21.9

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	23.95	23.94	23.80
			1	37	0	23.9	23.9	24.1
			1	74	0	23.9	23.8	23.6
			36	0	1	23.0	23.0	22.9
			36	18	1	22.9	22.9	22.8
			36	35	1	22.9	22.8	22.9
			75	0	1	22.9	22.9	22.8
		16QAM	1	0	1	23.0	23.2	23.2
			1	37	1	23.2	23.2	23.2
			1	74	1	22.9	23.2	23.2
			36	0	2	22.1	22.1	21.8
			36	18	2	21.9	22.0	21.6
			36	35	2	21.9	22.0	21.7
			75	0	2	21.9	22.0	21.8

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Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						18650	18900	19150
						1855 MHz	1880 MHz	1905 MHz
LTE Band 2	10	QPSK	1	0	0	23.9	23.9	24.0
			1	24	0	23.8	23.9	23.7
			1	49	0	24.0	23.8	23.9
			25	0	1	22.9	22.9	22.8
			25	12	1	22.9	22.9	22.9
			25	24	1	22.8	22.7	22.9
			50	0	1	22.9	22.9	22.8
		16QAM	1	0	1	23.2	23.2	23.1
			1	24	1	23.2	23.2	23.2
			1	49	1	23.2	23.1	23.1
			25	0	2	21.9	22.2	21.8
			25	12	2	21.8	21.9	22.2
			25	24	2	21.9	21.8	22.1
			50	0	2	21.9	21.9	21.9

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	23.7	24.1	23.9
			1	12	0	23.9	24.2	24.2
			1	24	0	23.7	23.8	23.8
			12	0	1	22.7	22.8	22.9
			12	6	1	22.9	22.8	22.9
			12	11	1	22.8	22.8	22.9
			25	0	1	22.8	22.8	23.0
		16QAM	1	0	1	23.2	22.8	23.2
			1	12	1	23.2	23.0	23.2
			1	24	1	22.6	22.8	23.2
			12	0	2	21.9	21.9	22.0
			12	6	2	21.8	21.8	21.9
			12	11	2	21.9	21.9	22.0
			25	0	2	22.1	21.7	21.9

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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	23.8	23.8	23.9
			1	7	0	23.9	23.9	23.8
			1	14	0	23.8	23.5	23.8
			6	0	1	22.8	22.7	23.0
			6	3	1	22.8	22.8	23.0
			6	5	1	22.8	22.8	22.9
			15	0	1	22.8	22.8	22.9
		16QAM	1	0	1	23.2	23.2	23.0
			1	7	1	23.1	23.2	22.9
			1	14	1	23.2	23.2	23.2
			6	0	2	21.7	21.9	22.2
			6	3	2	21.7	21.9	22.2
			6	5	2	22.0	21.8	22.2
			15	0	2	21.9	21.7	22.2

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	23.7	23.6	23.7
			1	2	0	23.8	23.8	23.7
			1	5	0	23.8	23.6	23.8
			3	0	0	23.8	23.7	24.1
			3	1	0	23.9	23.8	23.9
			3	2	0	23.9	23.8	23.8
			6	0	1	22.8	22.9	22.9
		16QAM	1	0	1	23.2	23.2	23.2
			1	2	1	23.2	23.2	22.5
			1	5	1	23.2	23.0	22.7
			3	0	1	23.0	23.2	22.6
			3	1	1	22.8	22.7	22.7
			3	2	1	22.7	22.8	22.7
			6	0	2	22.1	22.0	21.7

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LTE Band 4

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	24.0	24.2	24.1
			1	49	0	24.1	24.2	24.1
			1	99	0	23.8	24.1	24.1
			50	0	1	23.1	23.1	23.0
			50	25	1	23.0	23.0	23.1
			50	49	1	23.0	22.9	23.1
			100	0	1	23.1	23.0	23.0
		16QAM	1	0	1	23.2	23.2	23.2
			1	49	1	23.2	23.1	23.2
			1	99	1	22.9	23.0	23.2
			50	0	2	22.1	22.1	22.0
			50	25	2	22.0	22.0	22.1
			50	49	2	21.9	21.9	22.0
			100	0	2	22.0	22.0	21.9

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	23.9	23.9	24.1
			1	37	0	24.0	23.9	24.2
			1	74	0	23.6	23.7	23.8
			36	0	1	22.9	23.0	23.2
			36	18	1	22.9	22.9	23.1
			36	35	1	22.9	22.9	23.1
			75	0	1	22.9	22.9	22.9
		16QAM	1	0	1	23.2	23.2	23.2
			1	37	1	23.2	23.2	23.2
			1	74	1	23.2	23.2	23.2
			36	0	2	21.9	21.9	22.0
			36	18	2	21.8	21.8	22.0
			36	35	2	21.8	21.9	21.9
			75	0	2	21.9	21.8	21.8

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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	23.9	23.9	24.0
			1	24	0	23.7	23.8	24.1
			1	49	0	23.8	23.8	24.0
			25	0	1	23.0	22.8	23.0
			25	12	1	22.8	22.8	23.0
			25	24	1	22.9	22.8	23.0
			50	0	1	22.9	22.8	23.0
		16QAM	1	0	1	23.2	23.2	22.5
			1	24	1	23.2	23.2	23.2
			1	49	1	22.9	23.2	22.7
			25	0	2	21.8	21.9	22.0
			25	12	2	21.8	21.8	22.0
			25	24	2	21.9	21.9	21.8
			50	0	2	21.8	21.9	21.9

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	23.6	23.9	23.9
			1	12	0	23.9	24.2	23.9
			1	24	0	23.5	23.9	23.9
			12	0	1	22.7	22.7	23.0
			12	6	1	22.7	22.8	22.9
			12	11	1	22.8	22.7	22.9
			25	0	1	22.8	22.8	22.9
		16QAM	1	0	1	23.2	23.2	23.2
			1	12	1	23.2	23.2	23.2
			1	24	1	23.2	23.0	23.2
			12	0	2	22.1	21.9	22.0
			12	6	2	22.0	21.9	21.9
			12	11	2	21.9	21.8	21.9
			25	0	2	22.0	21.7	21.8

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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	23.7	23.7	23.9
			1	7	0	23.7	23.8	24.1
			1	14	0	23.8	23.7	23.9
			6	0	1	22.8	22.8	22.8
			6	3	1	22.8	22.8	22.7
			6	5	1	22.8	22.8	22.8
			15	0	1	22.8	22.8	22.8
		16QAM	1	0	1	23.2	23.0	22.9
			1	7	1	23.2	23.1	22.8
			1	14	1	23.2	23.0	23.1
			6	0	2	22.0	21.7	21.9
			6	3	2	22.2	21.7	22.1
			6	5	2	22.1	21.5	22.0
			15	0	2	21.9	21.8	22.1

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	23.7	23.6	23.9
			1	2	0	23.7	23.6	24.1
			1	5	0	23.8	23.6	24.0
			3	0	0	23.8	23.7	23.9
			3	1	0	23.9	23.7	24.0
			3	2	0	23.8	23.7	24.0
			6	0	1	22.8	22.7	22.9
		16QAM	1	0	1	23.1	23.2	22.9
			1	2	1	23.2	23.2	22.6
			1	5	1	23.2	23.2	22.9
			3	0	1	22.8	22.8	23.0
			3	1	1	22.6	22.9	23.2
			3	2	1	23.1	22.6	22.8
			6	0	2	22.2	22.0	22.1

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LTE Band 12

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						23060	23095	23130
						704 MHz	707.5 MHz	711 MHz
LTE Band 12	10	QPSK	1	0	0	23.7	23.8	23.9
			1	24	0	23.7	23.9	23.9
			1	49	0	23.8	23.7	23.9
			25	0	1	22.8	22.8	23.0
			25	12	1	22.9	22.9	23.0
			25	24	1	22.9	22.9	22.9
			50	0	1	22.8	22.8	23.0
		16QAM	1	0	1	23.2	23.2	23.2
			1	24	1	23.0	23.2	23.0
			1	49	1	22.7	23.2	23.1
			25	0	2	21.7	21.9	22.0
			25	12	2	21.8	21.9	21.9
			25	24	2	21.8	21.9	22.0
			50	0	2	21.7	22.0	22.0

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						23035	23095	23155
						701.5 MHz	707.5 MHz	713.5 MHz
LTE Band 12	5	QPSK	1	0	0	23.8	24.2	23.9
			1	12	0	23.9	24.2	24.2
			1	24	0	23.6	23.9	23.8
			12	0	1	22.8	22.9	22.9
			12	6	1	22.7	22.9	23.0
			12	11	1	22.8	22.8	22.9
			25	0	1	22.8	22.9	22.9
		16QAM	1	0	1	22.4	23.2	23.2
			1	12	1	22.6	23.2	23.2
			1	24	1	22.4	23.2	23.2
			12	0	2	21.6	22.0	22.0
			12	6	2	21.8	22.0	22.0
			12	11	2	21.8	21.9	22.0
			25	0	2	21.9	21.8	22.0

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Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						23025	23095	23165
						700.5 MHz	707.5 MHz	714.5 MHz
LTE Band 12	3	QPSK	1	0	0	23.8	23.9	23.8
			1	7	0	24.0	23.8	24.2
			1	14	0	23.8	23.6	23.9
			6	0	1	22.8	22.8	22.8
			6	3	1	22.8	22.9	22.9
			6	5	1	22.9	22.8	22.9
			15	0	1	22.8	22.9	22.9
		16QAM	1	0	1	23.2	23.2	23.2
			1	7	1	23.2	23.2	23.2
			1	14	1	23.1	23.2	22.9
			6	0	2	21.9	21.7	21.5
			6	3	2	21.9	21.8	21.6
			6	5	2	21.9	21.7	21.8
			15	0	2	21.8	21.7	21.8

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						23017	23095	23173
						699.7 MHz	707.5 MHz	715.3 MHz
LTE Band 12	1.4	QPSK	1	0	0	23.6	23.8	23.7
			1	2	0	23.9	23.9	23.9
			1	5	0	23.8	23.8	23.8
			3	0	0	23.8	23.7	23.9
			3	1	0	23.7	23.8	23.9
			3	2	0	23.8	23.9	23.9
			6	0	1	22.7	22.7	22.8
		16QAM	1	0	1	23.2	22.8	23.2
			1	2	1	22.4	23.2	23.2
			1	5	1	23.2	23.0	23.2
			3	0	1	23.0	22.4	23.2
			3	1	1	22.6	22.7	22.4
			3	2	1	22.5	23.2	22.6
			6	0	2	21.5	21.5	21.9

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9. PEAK TO AVERAGE RATIO

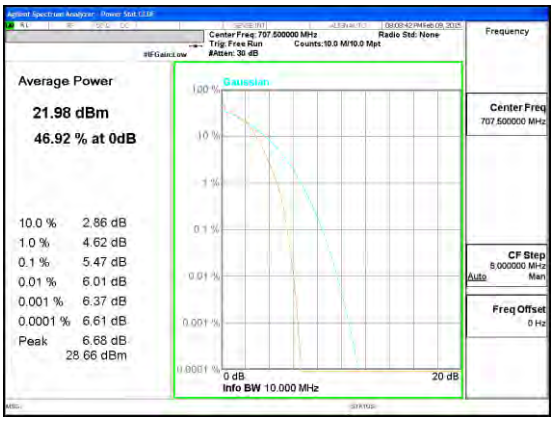
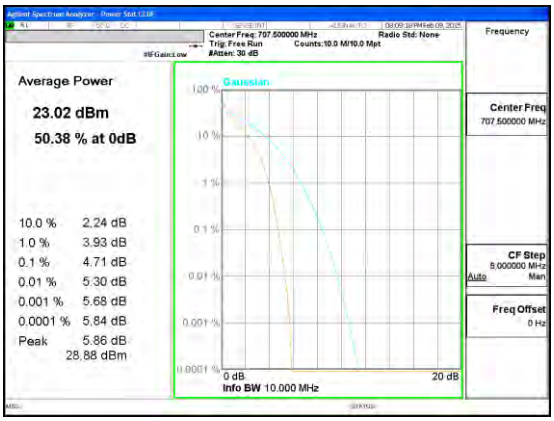
TEST PROCEDURE

Per KDB 971168 D01 Power Meas License Digital Systems v02r02

LIMIT

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

Band LTE12 10MHz 16QAM	 Band LTE12 10MHz 16QAM Mid channel	 Band LTE12 10MHz QPSK Mid channel

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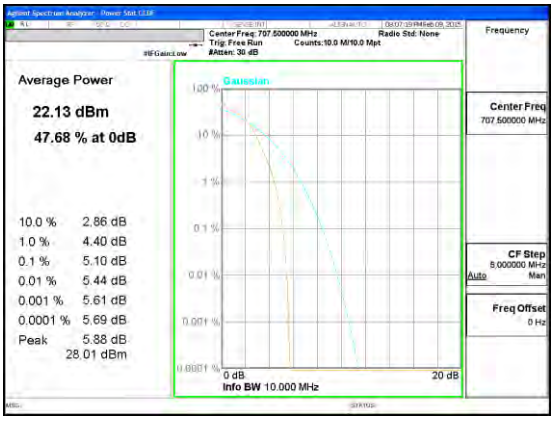
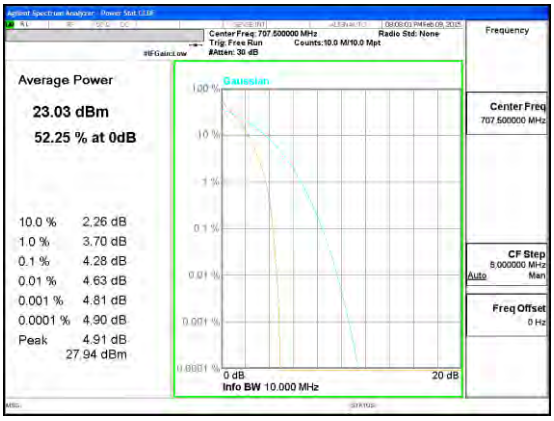
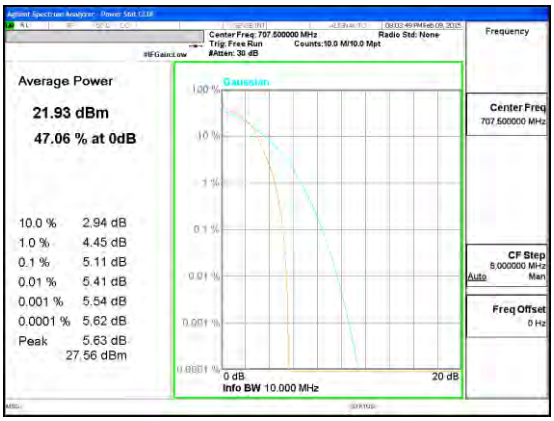
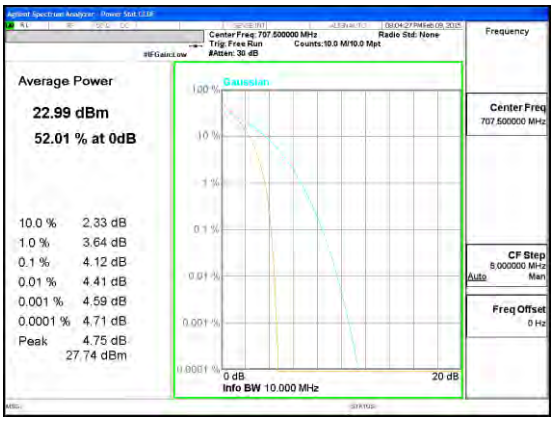
Band LTE12 5MHz 16QAM	 Band LTE12 5MHz 16QAM Mid channel	 Band LTE12 5MHz QPSK Mid channel

Band LTE12 3MHz 16QAM	 Band LTE12 3MHz 16QAM Mid channel	 Band LTE12 3MHz QPSK Mid channel

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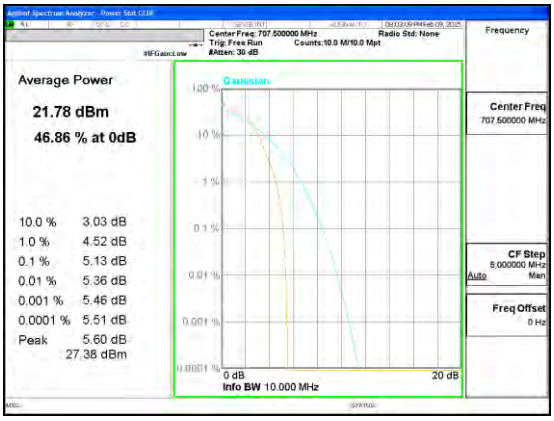
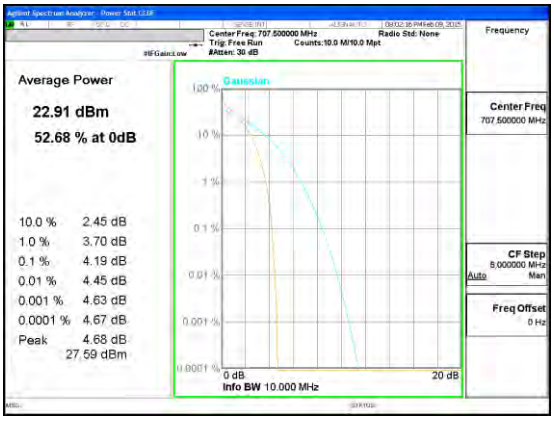
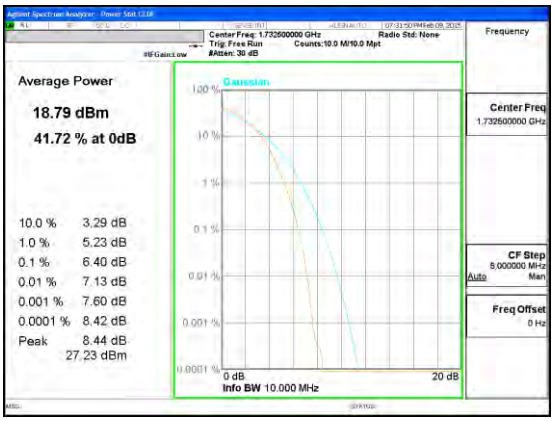
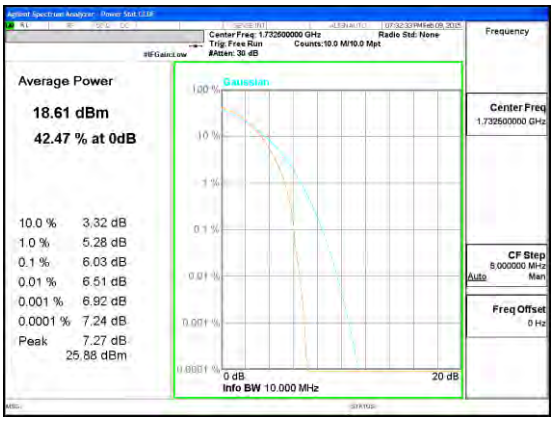
Band LTE12 1.4MHz 16QAM	 Band LTE12 1.4MHz 16QAM Mid channel	 Band LTE12 1.4MHz QPSK Mid channel

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

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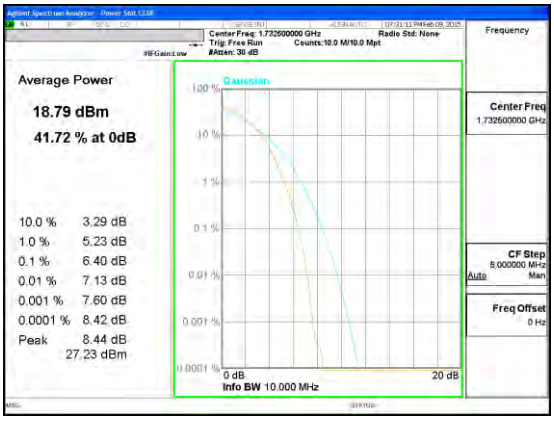
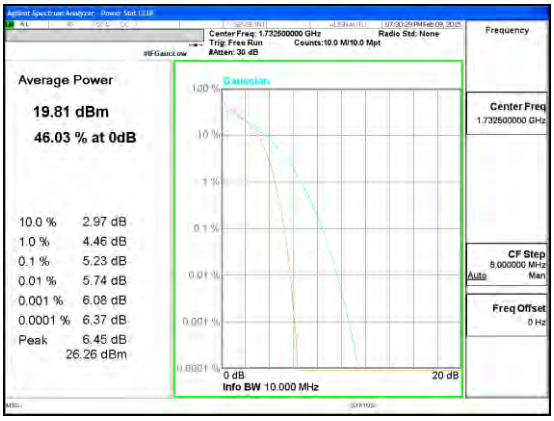
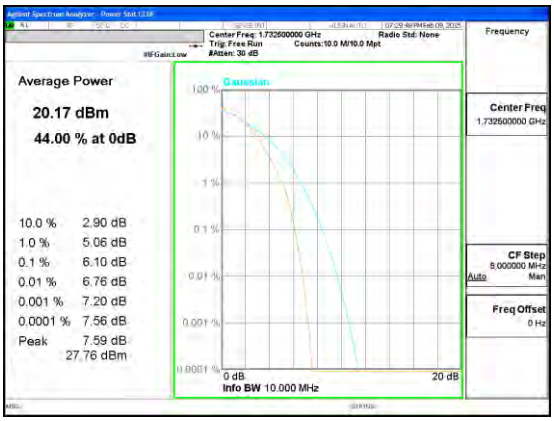
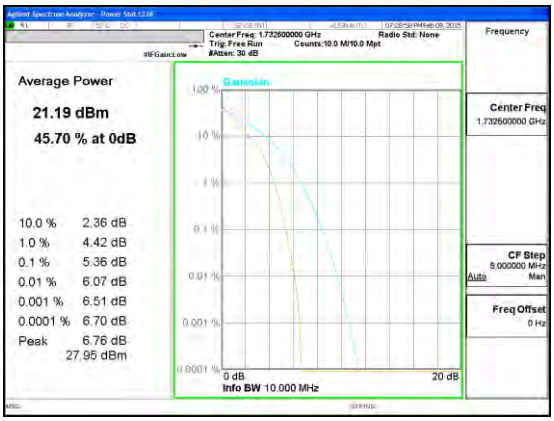
Band LTE4 15MHz 16QAM	 Band LTE4 15MHz 16QAM Mid channel	 Band LTE4 15MHz QPSK Mid channel

Band LTE4 10MHz 16QAM	 Band LTE4 10MHz 16QAM Mid channel	 Band LTE4 10MHz QPSK Mid channel

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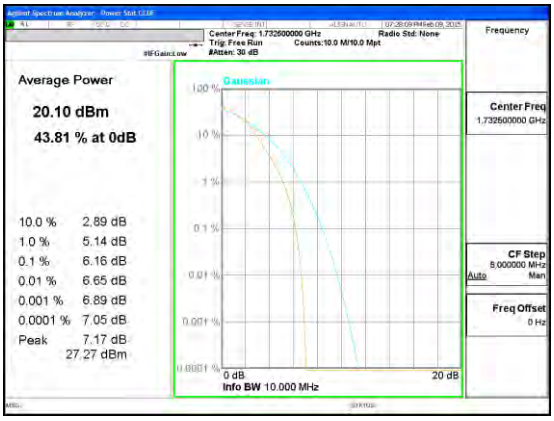
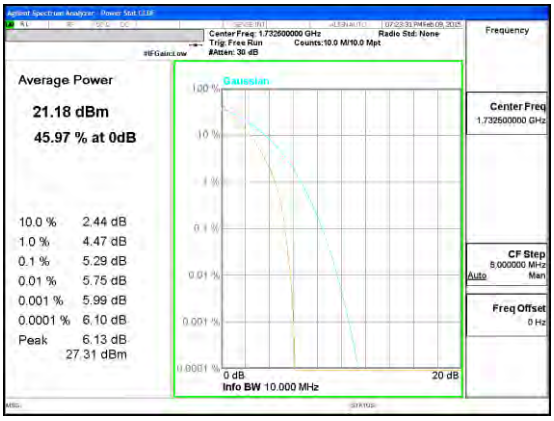
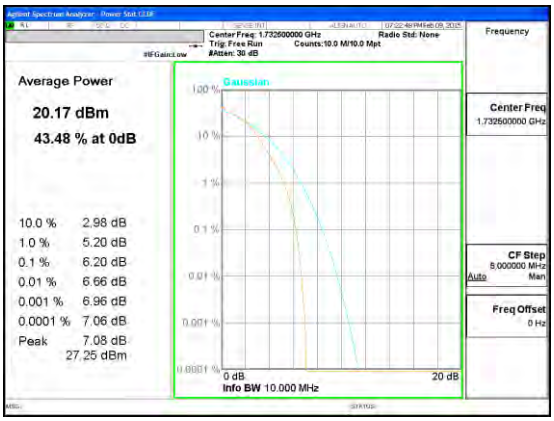
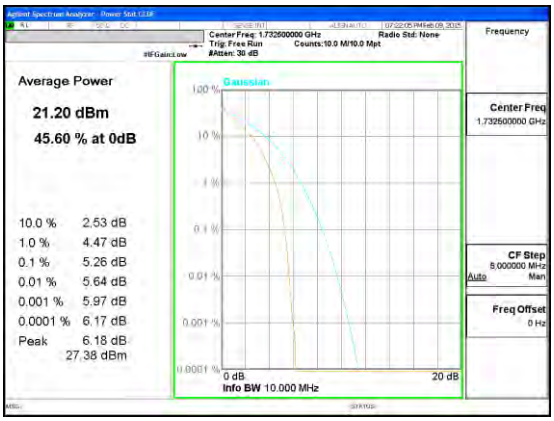
Band LTE4 5MHz 16QAM	 Band LTE4 5MHz 16QAM Mid channel	 Band LTE4 5MHz QPSK Mid channel

Band LTE4 3MHz 16QAM	 Band LTE4 3MHz 16QAM Mid channel	 Band LTE4 3MHz QPSK Mid channel

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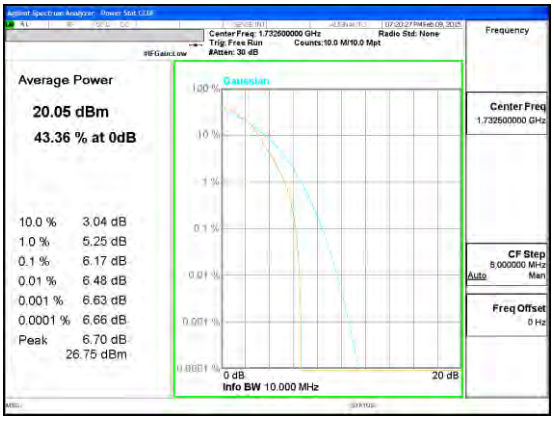
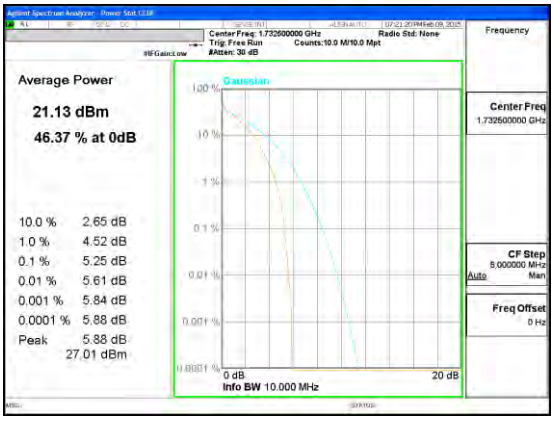
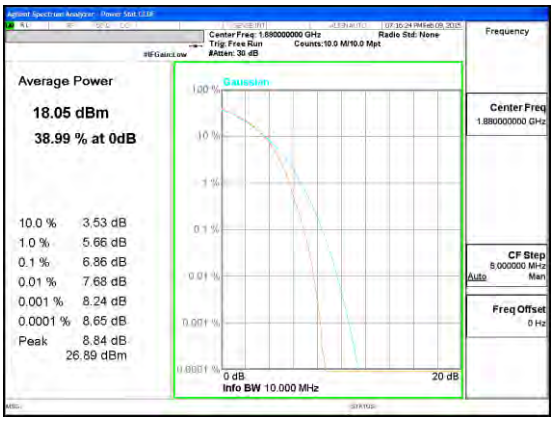
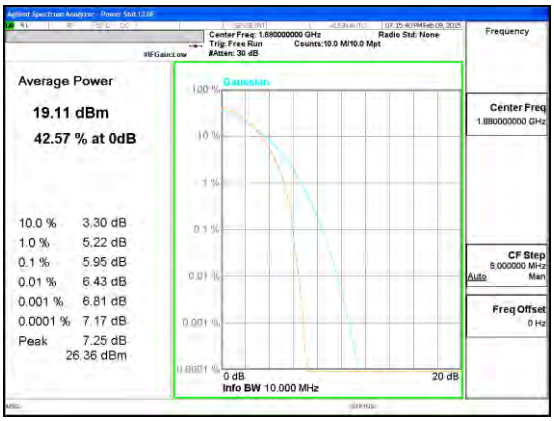
Band LTE4 1.4MHz 16QAM	 Band LTE4 1.4MHz 16QAM Mid channel	 Band LTE4 1.4MHz QPSK Mid channel

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

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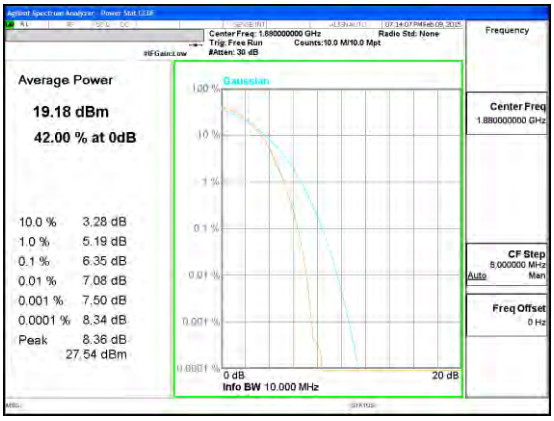
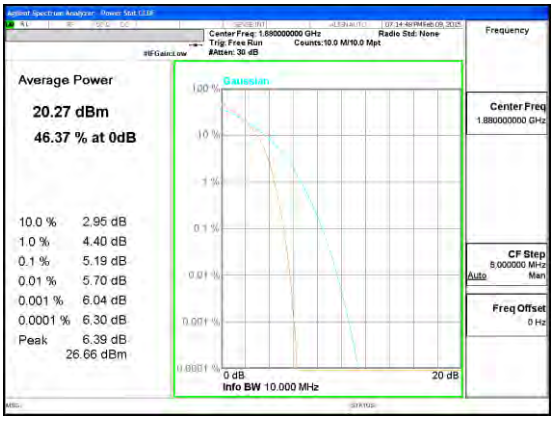
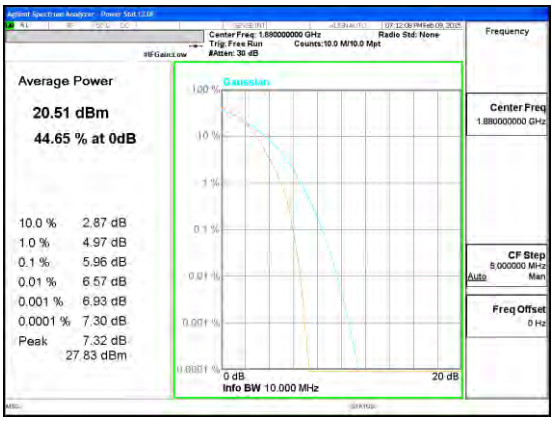
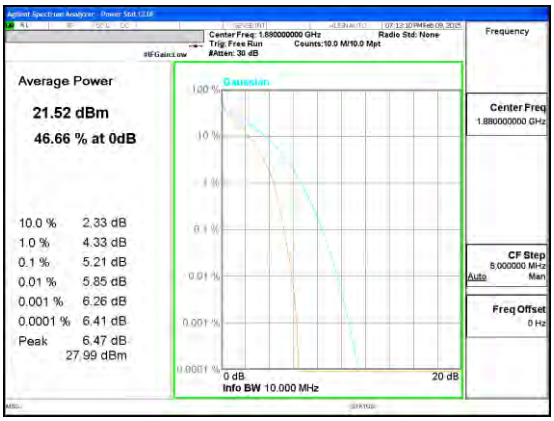
Band LTE2 15MHz 16QAM	 Band LTE2 15MHz 16QAM Mid channel	 Band LTE2 15MHz QPSK Mid channel

Band LTE2 10MHz 16QAM	 Band LTE2 10MHz 16QAM Mid channel	 Band LTE2 10MHz QPSK Mid channel

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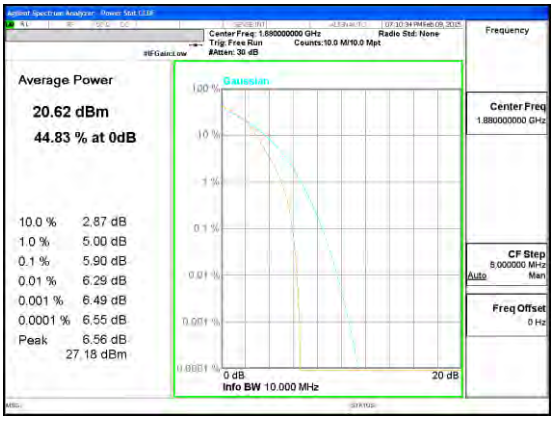
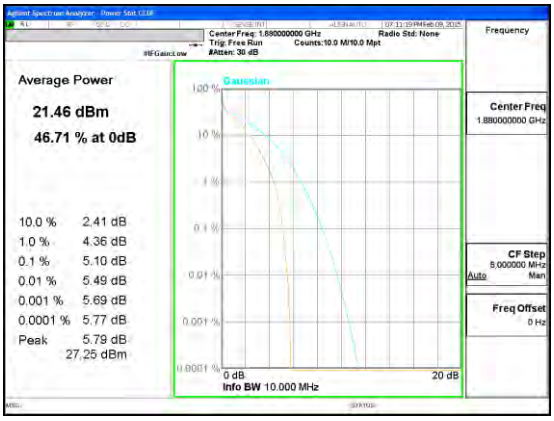
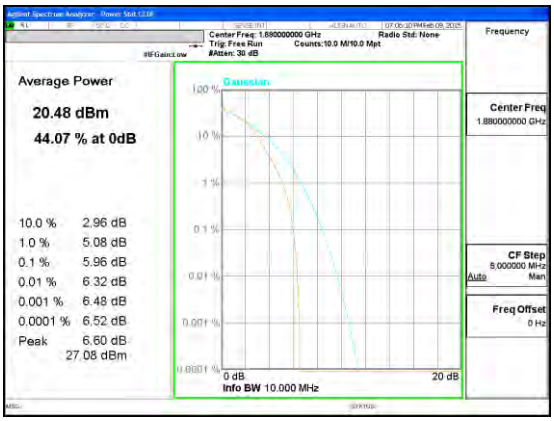
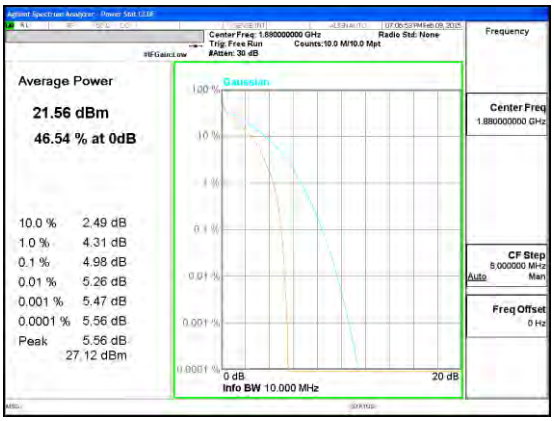
Band LTE2 5MHz 16QAM	 Band LTE2 5MHz 16QAM Mid channel	 Band LTE2 5MHz QPSK Mid channel

Band LTE2 3MHz 16QAM	 Band LTE2 3MHz 16QAM Mid channel	 Band LTE2 3MHz QPSK Mid channel

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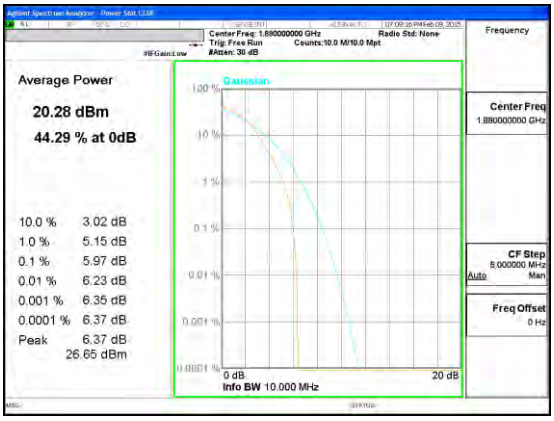
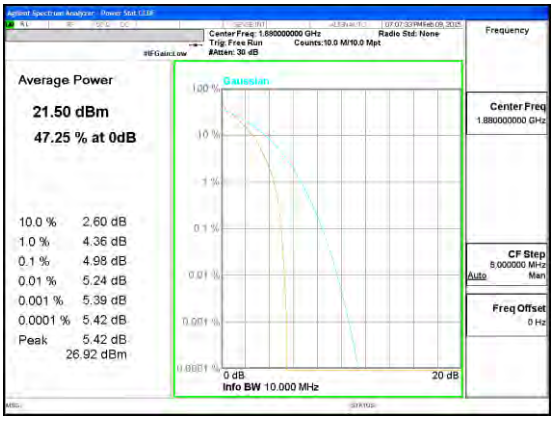
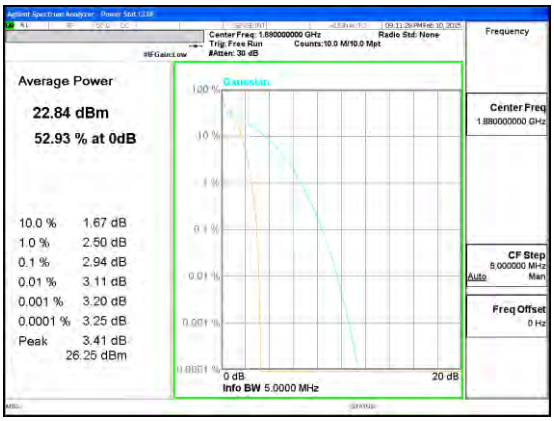
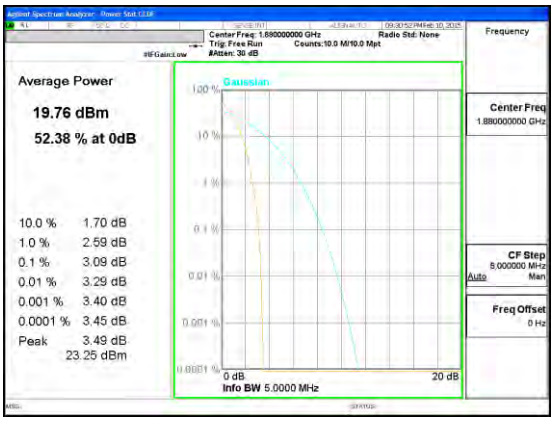
Band LTE2 1.4MHz 16QAM	 Band LTE2 1.4MHz 16QAM Mid channel	 Band LTE2 1.4MHz QPSK Mid channel

Band Band 2 HSDPA	 Band WCDMA B2 HSDPA	 Band WCDMA B2 REL99

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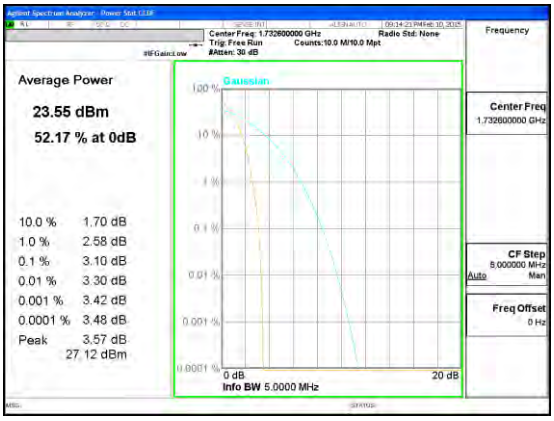
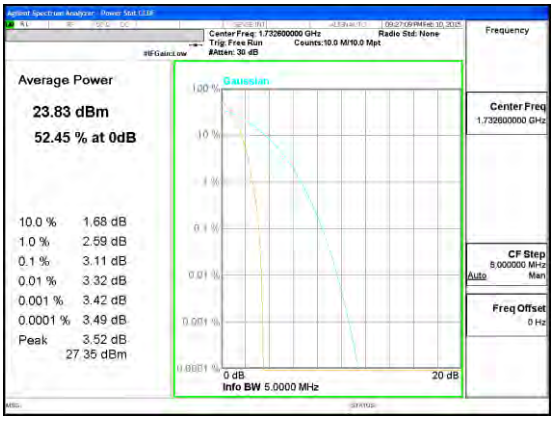
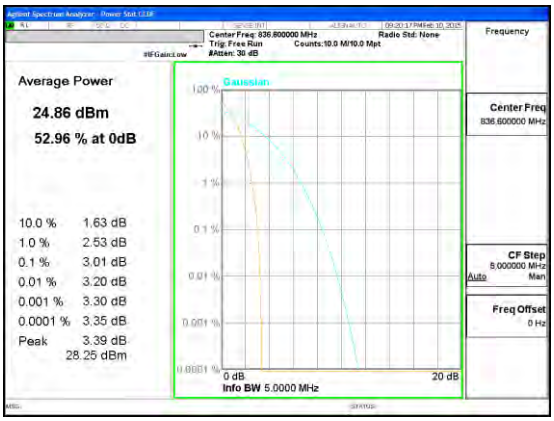
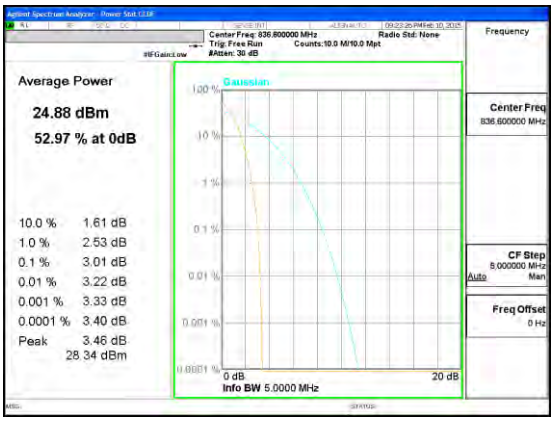
Band Band 4 HSDPA	 Band WCDMA B4 HSDPA	 Band WCDMA B4 REL99

Band Band 5 HSDPA	 Band WCDMA B5 HSDPA	 Band WCDMA B5 REL99

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10. LIMITS AND CONDUCTED RESULTS

10.1. OCCUPIED BANDWIDTH

RULE PART(S)

FCC: §2.1049

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

GSM, WCDMA, and LTE

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10.1.1. OCCUPIED BANDWIDTH RESULTS

Band	Mode	Channel	f (MHz)	99% BW (kHz)	-26dB BW (kHz)
GSM850	GPRS	128	824.2	243.1	317.3
		190	836.6	244.9	317.4
		251	848.8	245.3	313.4
	EGPRS	128	824.2	249	316.5
		190	836.6	244.6	304.5
		251	848.8	242.8	304.2
GSM1900	GPRS	512	1850.2	242.4	318.6
		661	1880	244.4	323.6
		810	1909.8	245.9	307.2
	EGPRS	512	1850.2	250.9	319.1
		661	1880	251.9	325.4
		810	1909.8	250.8	324

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Band	Mode	Channel	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
Band 5	REL99	4132	826.4	4.154	4.680
		4183	836.6	4.154	4.650
		4233	846.6	4.153	4.655
	HSDPA	4132	826.4	4.165	4.650
		4183	836.6	4.153	4.649
		4233	846.6	4.179	4.660
Band 4	REL99	1312	1712.4	4.194	4.64
		1413	1732.6	4.184	4.64
		1513	1752.6	4.175	4.638
	HSDPA	1312	1712.4	4.185	4.629
		1413	1732.6	4.189	4.629
		1513	1752.6	4.178	4.629
Band 2	REL99	9262	1852.4	4.167	4.652
		9400	1880	4.176	4.647
		9538	1907.6	4.154	4.639
	HSDPA	9262	1852.4	4.186	4.637
		9400	1880	4.181	4.637
		9538	1907.6	4.171	4.630

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10.1.2. LTE OCCUPIED BANDWIDTH RESULTS

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE12	10	QPSK	50/0	704	8.974	9.723
			50/0	707.5	8.992	9.841
			50/0	711	8.979	9.968
		16QAM	50/0	704	8.963	9.869
			50/0	707.5	8.968	9.807
			50/0	711	8.936	9.820
	5	QPSK	25/0	701.5	4.504	4.982
			25/0	707.5	4.507	4.974
			25/0	713.5	4.502	4.990
		16QAM	25/0	701.5	4.517	4.981
			25/0	707.5	4.508	5.014
			25/0	713.5	4.516	5.063
	3	QPSK	15/0	700.5	2.691	2.989
			15/0	707.5	2.682	2.984
			15/0	714.5	2.699	2.979
		16QAM	15/0	700.5	2.693	2.977
			15/0	707.5	2.692	2.969
			15/0	714.5	2.691	2.979
	1.4	QPSK	6/0	699.7	1.086	1.308
			6/0	707.5	1.086	1.269
			6/0	715.3	1.086	1.285
		16QAM	6/0	699.7	1.088	1.270
			6/0	707.5	1.086	1.296
			6/0	715.3	1.087	1.296

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Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE4	20	QPSK	100/0	1720	17.92	19.12
			100/0	1732.5	17.88	19.35
			100/0	1745	17.81	19.14
		16QAM	100/0	1720	17.88	19.29
			100/0	1732.5	17.9	19.26
			100/0	1745	17.87	19.02
	15	QPSK	75/0	1717.5	13.44	14.52
			75/0	1732.5	13.45	14.5
			75/0	1747.5	13.41	14.6
		16QAM	75/0	1717.5	13.42	14.6
			75/0	1732.5	13.44	14.55
			75/0	1747.5	13.41	14.57
	10	QPSK	50/0	1715	8.957	9.632
			50/0	1732.5	8.982	9.779
			50/0	1750	8.977	9.717
		16QAM	50/0	1715	8.98	9.754
			50/0	1732.5	8.957	9.874
			50/0	1750	8.963	9.718
	5	QPSK	25/0	1712.5	4.515	4.938
			25/0	1732.5	4.512	4.986
			25/0	1752.5	4.503	4.97
		16QAM	25/0	1712.5	4.515	5.004
			25/0	1732.5	4.513	4.998
			25/0	1752.5	4.514	4.99

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Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE4	3	QPSK	15/0	1711.5	2.691	2.969
			15/0	1732.5	2.696	2.97
			15/0	1753.5	2.685	2.967
		16QAM	15/0	1711.5	2.689	2.955
			15/0	1732.5	2.689	2.983
			15/0	1753.5	2.693	2.966
	1.4	QPSK	6/0	1710.7	1.086	1.287
			6/0	1732.5	1.081	1.269
			6/0	1754.3	1.084	1.293
		16QAM	6/0	1710.7	1.091	1.293
			6/0	1732.5	1.084	1.271
			6/0	1754.3	1.093	1.300

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Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE2	20	QPSK	100/0	1860	17.800	19.050
			100/0	1880	17.840	19.280
			100/0	1900	17.900	19.300
		16QAM	100/0	1860	17.800	19.240
			100/0	1880	17.880	19.130
			100/0	1900	17.880	19.320
	15	QPSK	75/0	1857.5	13.390	14.510
			75/0	1880	13.410	14.520
			75/0	1902.5	13.400	14.510
		16QAM	75/0	1857.5	13.390	14.450
			75/0	1880	13.410	14.690
			75/0	1902.5	13.370	14.520
	10	QPSK	50/0	1855	8.945	9.826
			50/0	1880	8.958	9.811
			50/0	1905	8.927	9.748
		16QAM	50/0	1855	8.966	9.740
			50/0	1880	8.951	9.764
			50/0	1905	8.951	9.734
	5	QPSK	25/0	1852.5	4.500	4.960
			25/0	1880	4.500	4.982
			25/0	1907.5	4.498	4.930
		16QAM	25/0	1852.5	4.509	4.916
			25/0	1880	4.506	4.960
			25/0	1907.5	4.500	4.899

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Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE2	3	QPSK	15/0	1851.5	2.694	2.976
			15/0	1880	2.687	2.942
			15/0	1908.5	2.689	2.978
		16QAM	15/0	1851.5	2.699	2.967
			15/0	1880	2.680	2.963
			15/0	1908.5	2.696	2.960
	1.4	QPSK	6/0	1850.7	1.087	1.264
			6/0	1880	1.081	1.275
			6/0	1909.3	1.084	1.275
		16QAM	6/0	1850.7	1.084	1.261
			6/0	1880	1.087	1.285
			6/0	1909.3	1.092	1.292

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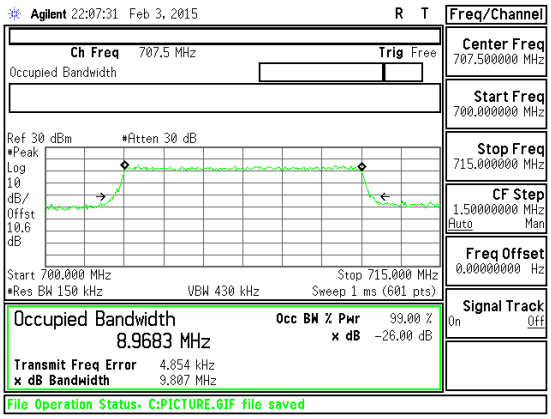
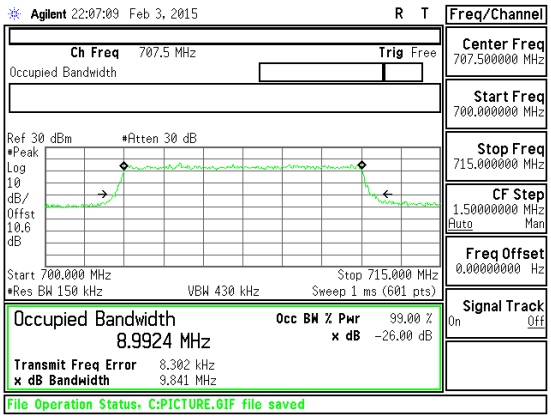
10.1.3. OCCUPIED BANDWIDTH PLOTS

Band LTE12 10MHz 16QAM

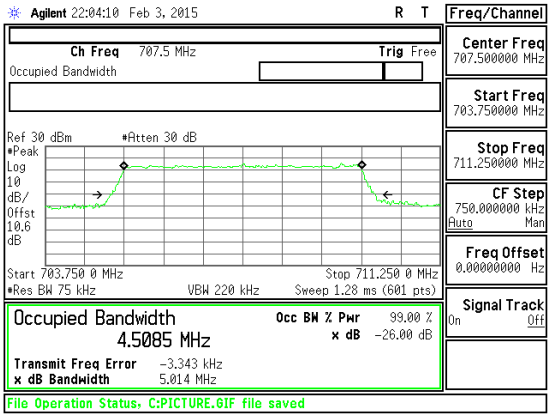


Band LTE12 10MHz OBW 16QAM Mid Channel FRB.gif

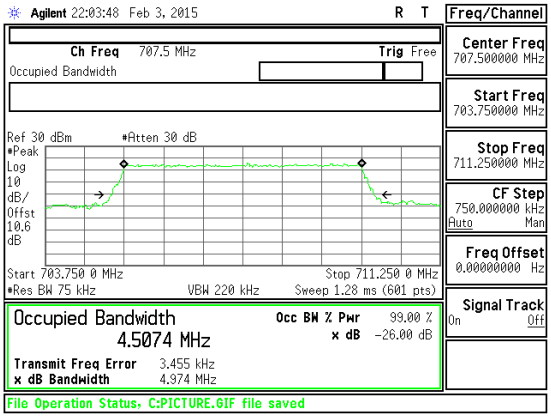


Band LTE12 10MHz OBW QPSK Mid Channel FRB.gif

Band LTE12 5MHz 16QAM



Band LTE12 5MHz OBW 16QAM Mid Channel FRB.gif



Band LTE12 5MHz OBW QPSK Mid Channel FRB.gif

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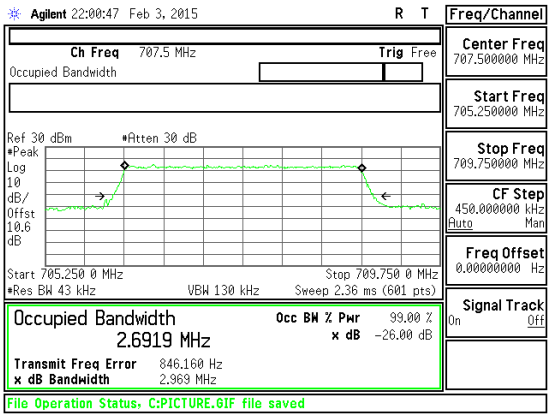
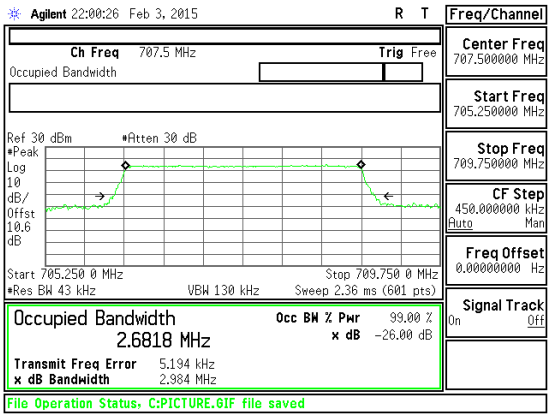
Band LTE12 3MHz 16QAM

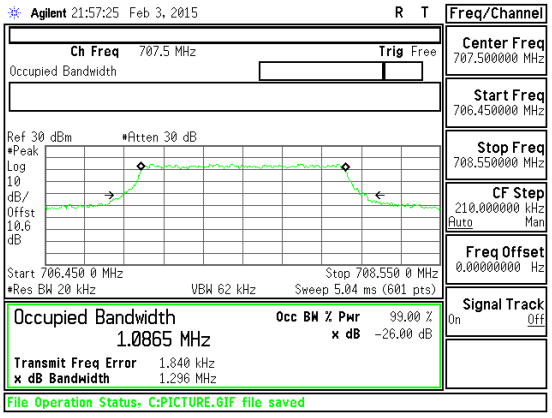


Band LTE12 3MHz OBW 16QAM Mid Channel FRB.gif

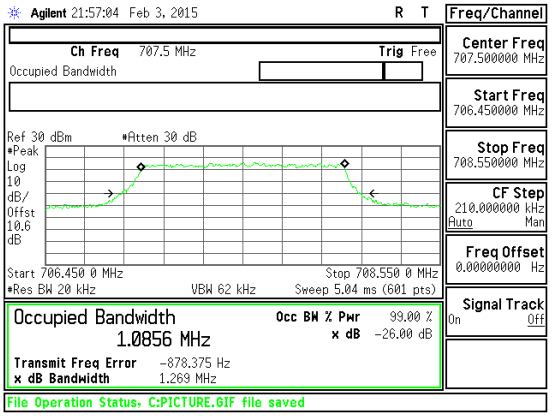


Band LTE12 3MHz OBW QPSK Mid Channel FRB.gif

Band LTE12 1.4MHz 16QAM



Band LTE12 1.4MHz OBW 16QAM Mid Channel FRB.gif



Band LTE12 1.4MHz OBW QPSK Mid Channel FRB.gif

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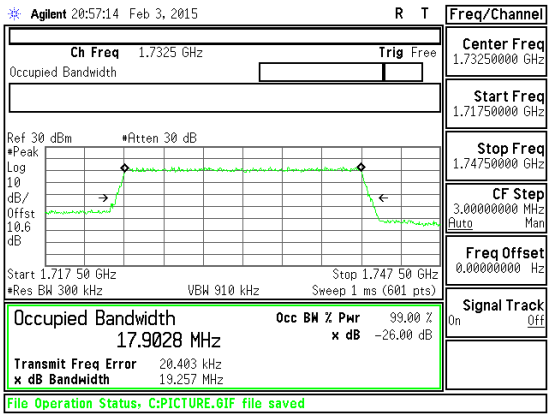
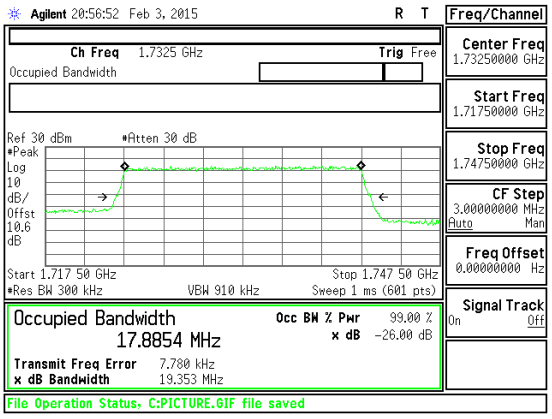
Band LTE4 20MHz 16QAM

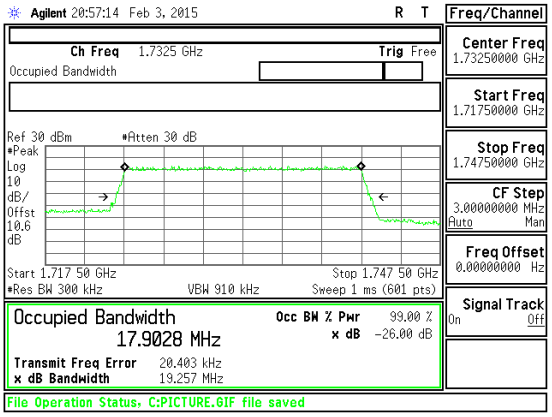


Band LTE4 20MHz OBW 16QAM Mid Channel FRB.gif

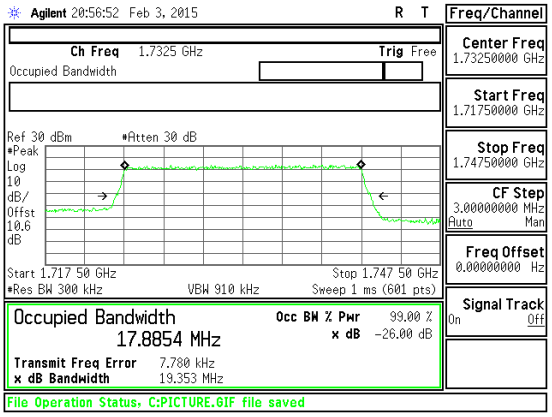


Band LTE4 20MHz OBW QPSK Mid Channel FRB.gif

Band LTE4 20MHz 16QAM



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



Band LTE4 20MHz OBW QPSK Mid Channel FRB.gif

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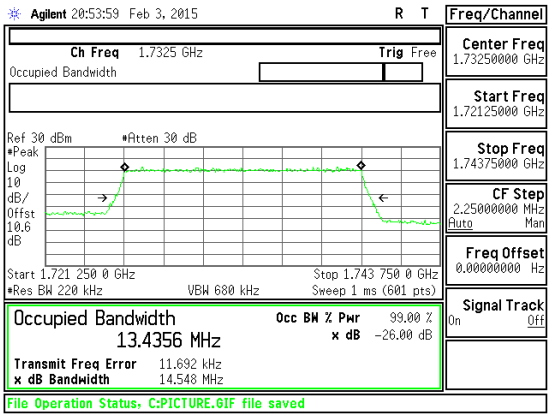
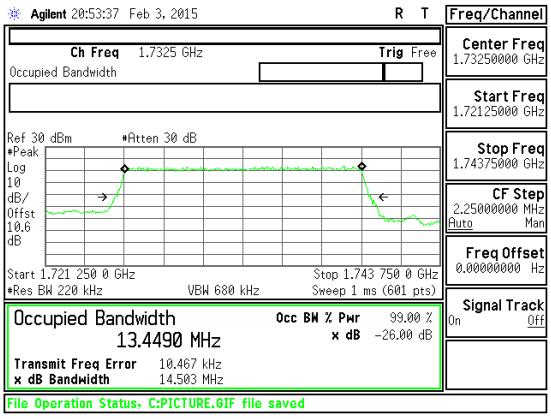
Band LTE4 15MHz 16QAM

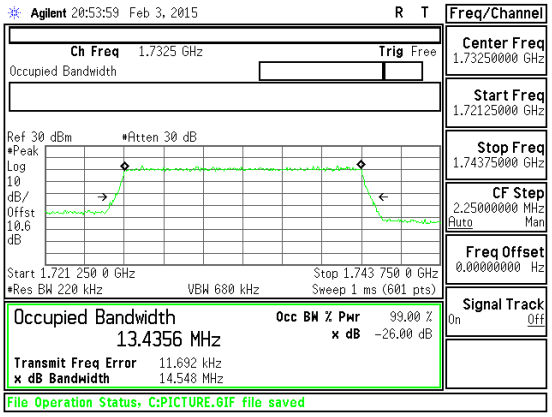


Band LTE4 15MHz OBW 16QAM Mid Channel FRB.gif

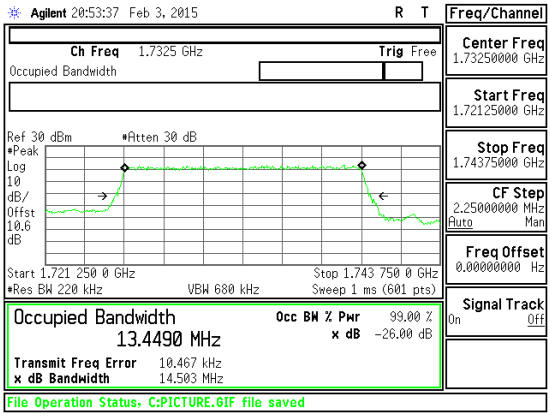


Band LTE4 15MHz OBW QPSK Mid Channel FRB.gif

Band LTE4 15MHz 16QAM



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



Band LTE4 15MHz OBW QPSK Mid Channel FRB.gif

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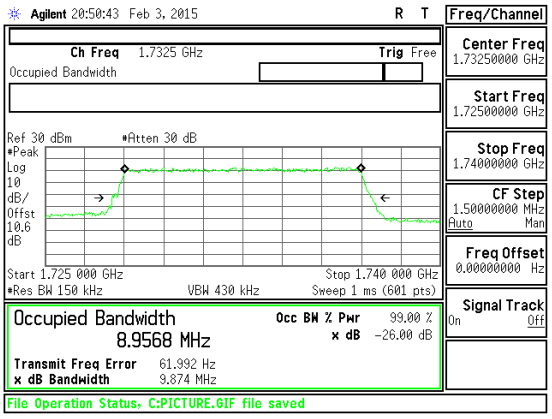
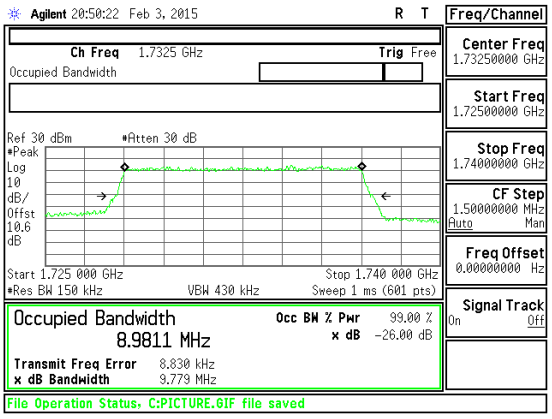
Band LTE4 10MHz 16QAM

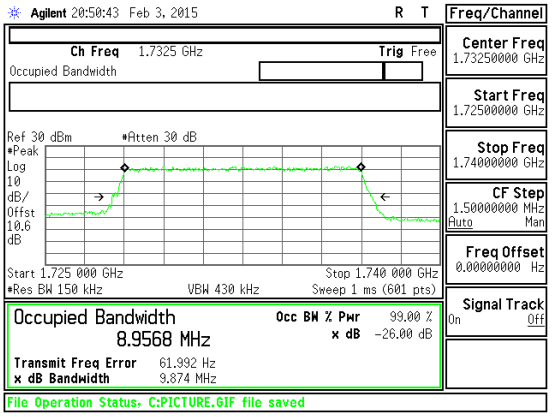


Band LTE4 10MHz OBW 16QAM Mid Channel FRB.gif

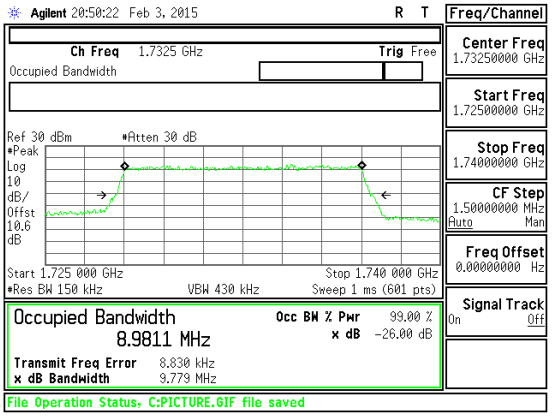


Band LTE4 10MHz OBW QPSK Mid Channel FRB.gif

Band LTE4 10MHz 16QAM



Band LTE4 10MHz OBW 16QAM Mid Channel FRB.gif



Band LTE4 10MHz OBW QPSK Mid Channel FRB.gif

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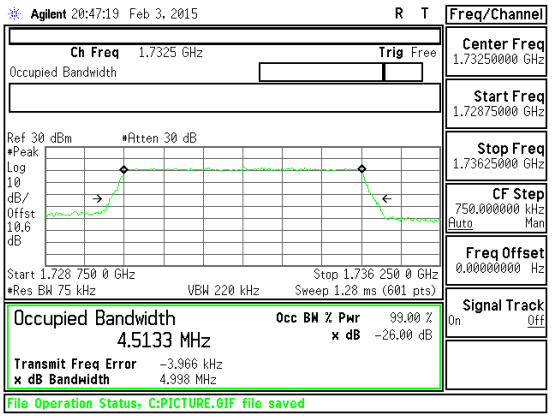
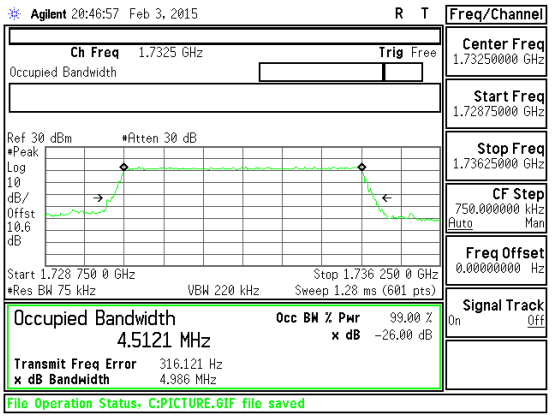
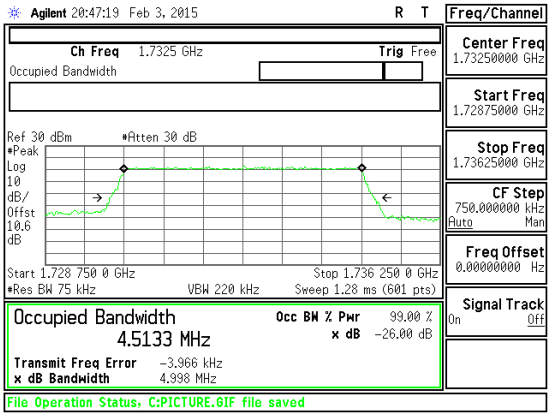
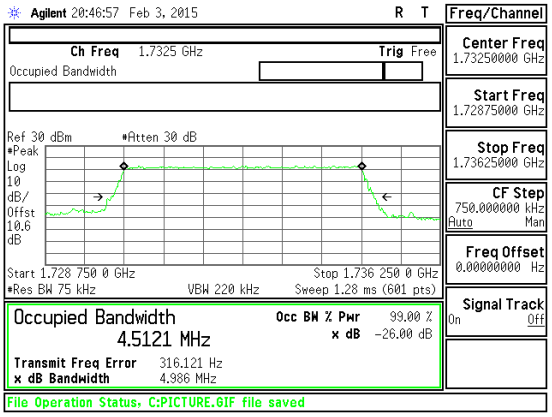
Band LTE4 5MHz 16QAM	 Band LTE4 5MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE4 5MHz OBW QPSK Mid Channel FRB.gif
Band LTE4 5MHz 16QAM	 Band LTE4 5MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE4 5MHz OBW QPSK Mid Channel FRB.gif

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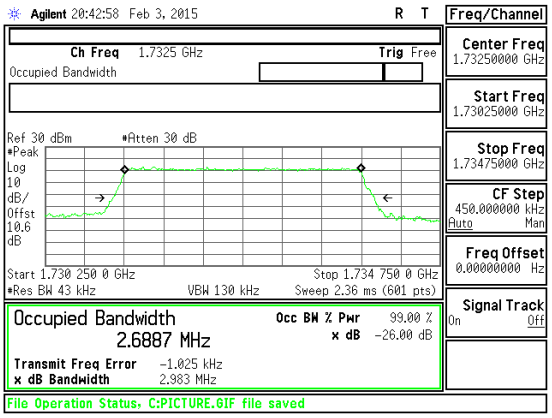
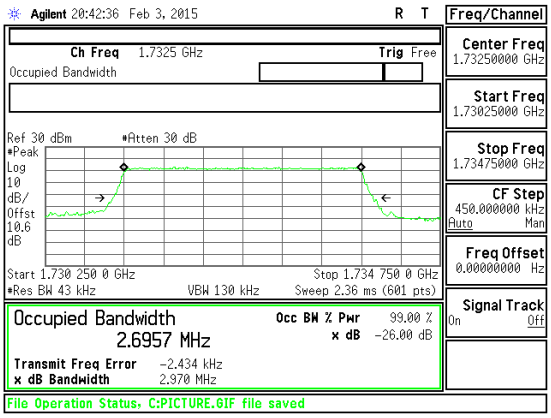
Band LTE4 3MHz 16QAM

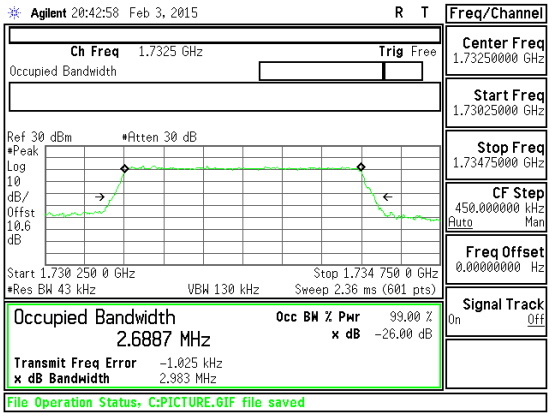


Band LTE4 3MHz OBW 16QAM Mid Channel FRB.gif

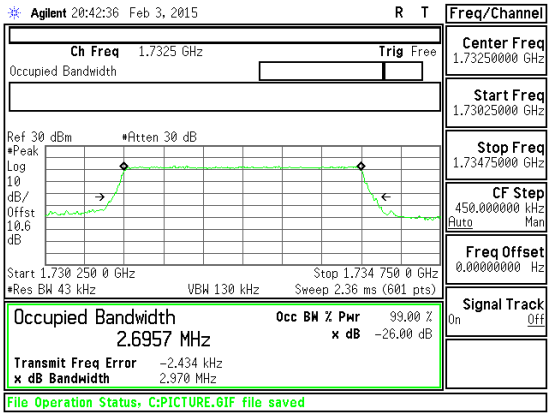


Band LTE4 3MHz OBW QPSK Mid Channel FRB.gif

Band LTE4 3MHz 16QAM



Band LTE4 3MHz OBW 16QAM Mid Channel FRB.gif



Band LTE4 3MHz OBW QPSK Mid Channel FRB.gif

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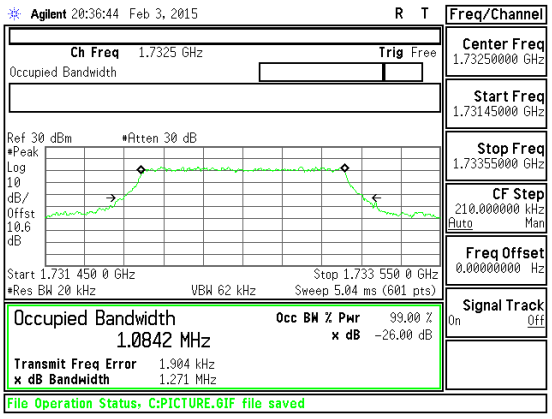
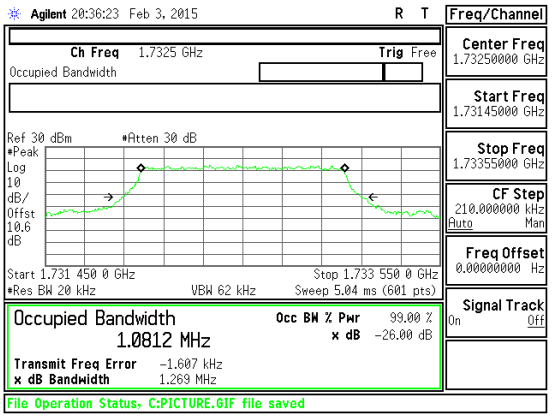
Band LTE4 1.4MHz 16QAM

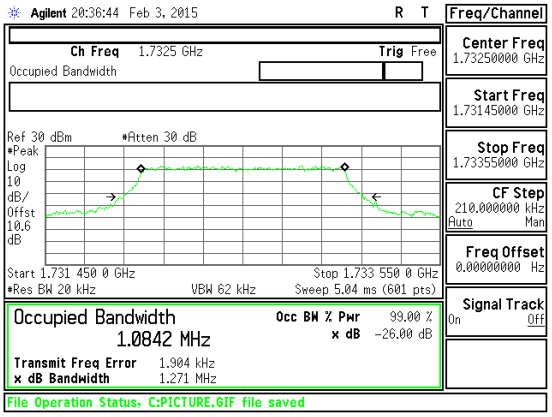


Band LTE4 1.4MHz OBW 16QAM Mid Channel FRB.gif

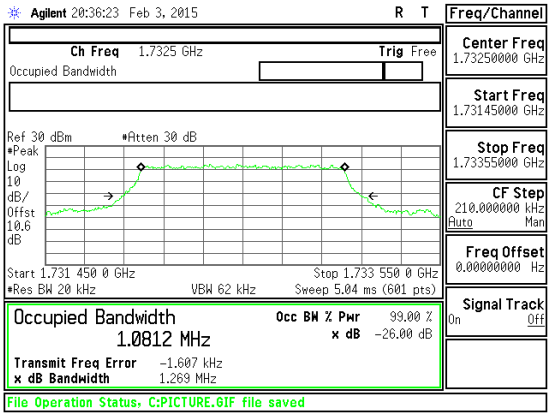


Band LTE4 1.4MHz OBW QPSK Mid Channel FRB.gif

Band LTE4 1.4MHz 16QAM



Band LTE4 1.4MHz OBW 16QAM Mid Channel FRB.gif



Band LTE4 1.4MHz OBW QPSK Mid Channel FRB.gif

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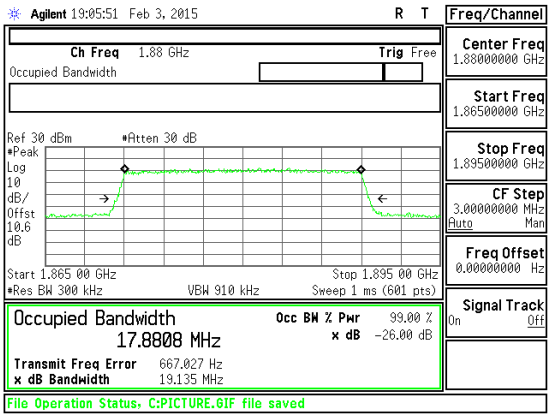
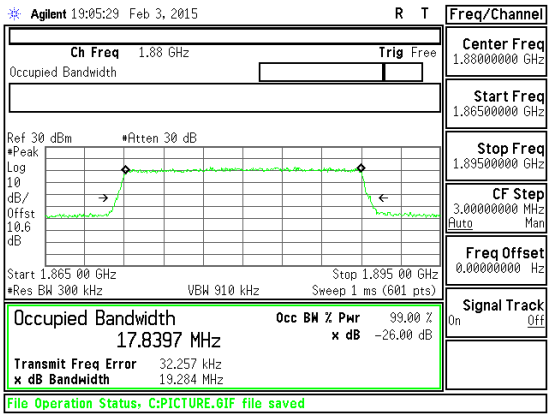
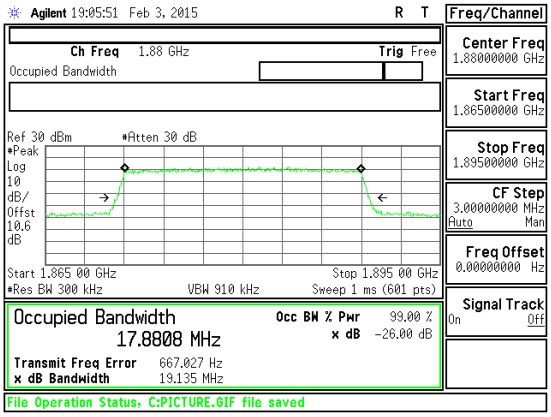
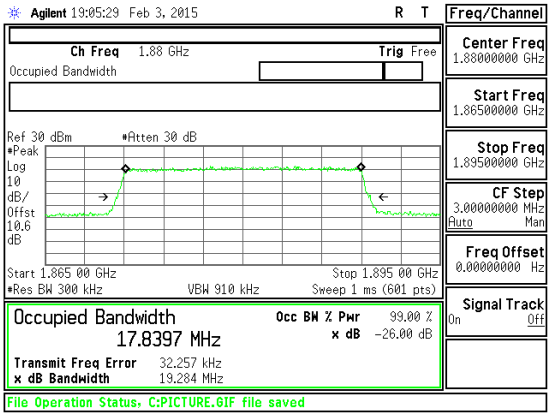
Band LTE2 20MHz 16QAM	 Band LTE2 20MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE2 20MHz OBW QPSK Mid Channel FRB.gif
Band LTE2 20MHz 16QAM	 Band LTE2 20MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE2 20MHz OBW QPSK Mid Channel FRB.gif

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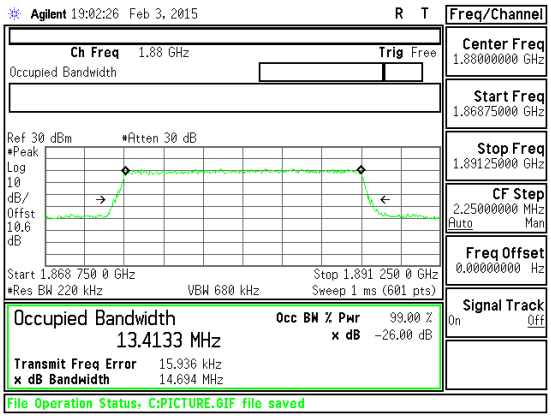
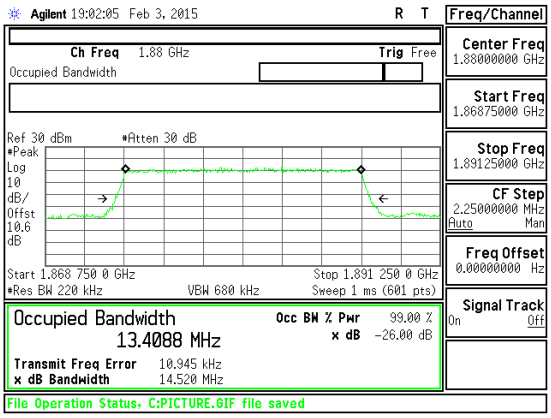
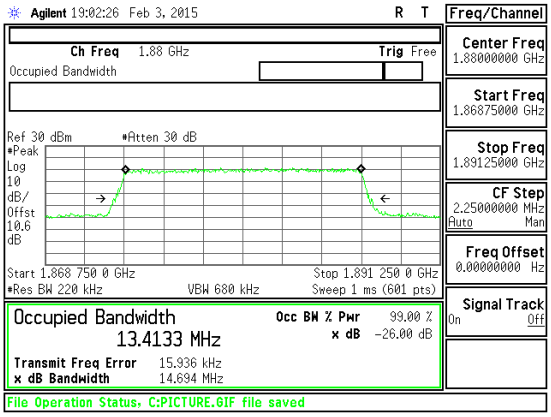
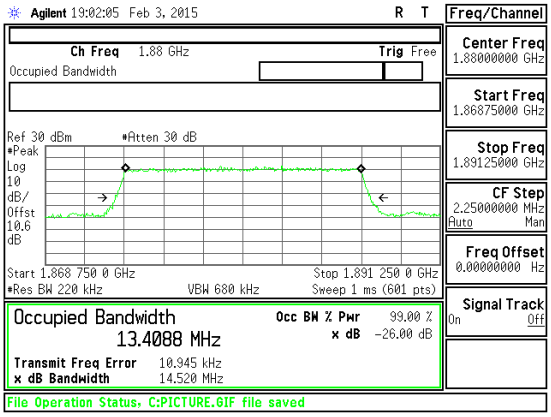
Band LTE2 15MHz 16QAM	 Band LTE2 15MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE2 15MHz OBW QPSK Mid Channel FRB.gif
Band LTE2 15MHz 16QAM	 Band LTE2 15MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE2 15MHz OBW QPSK Mid Channel FRB.gif

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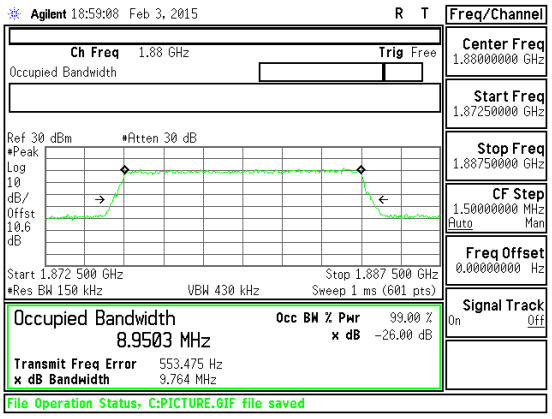
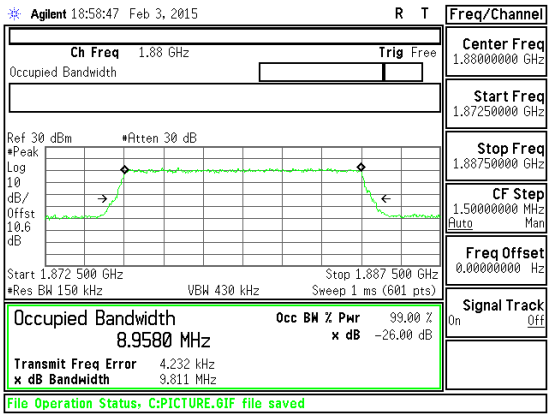
Band LTE2 10MHz 16QAM

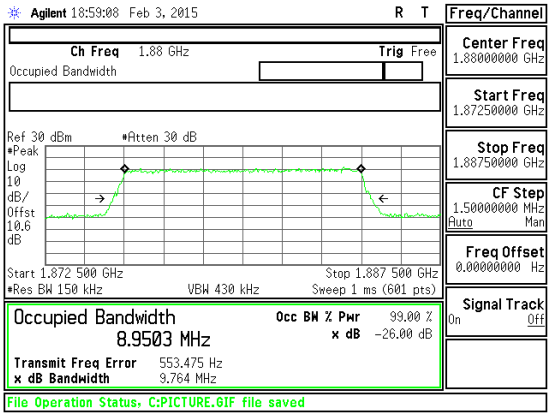


Band LTE2 10MHz OBW 16QAM Mid Channel FRB.gif

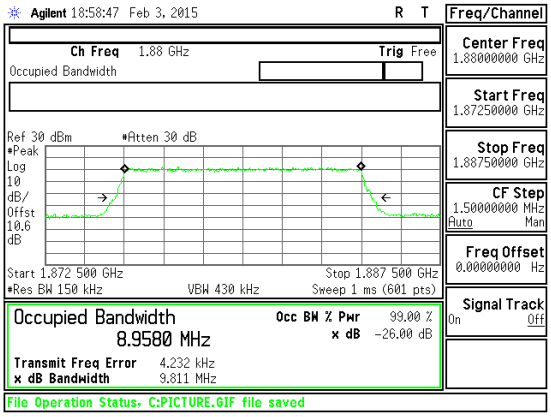


Band LTE2 10MHz OBW QPSK Mid Channel FRB.gif

Band LTE2 10MHz 16QAM



Band LTE2 10MHz OBW 16QAM Mid Channel FRB.gif



Band LTE2 10MHz OBW QPSK Mid Channel FRB.gif

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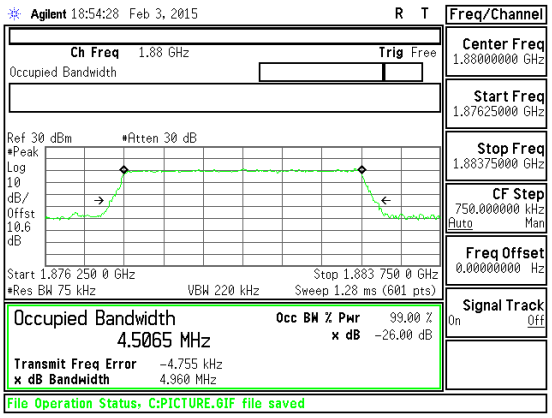
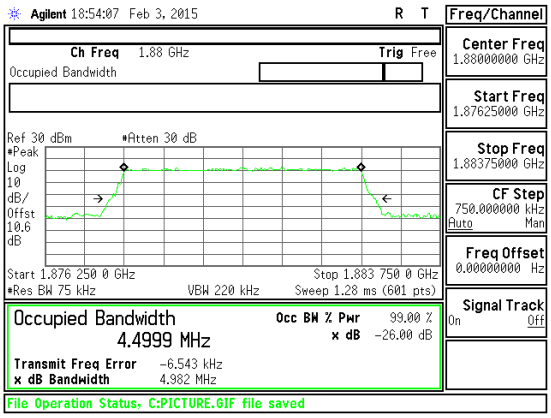
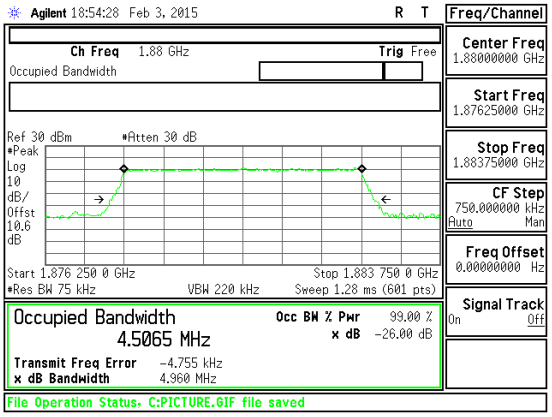
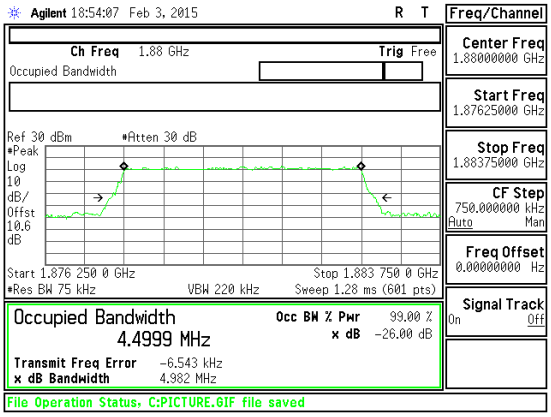
Band LTE2 5MHz 16QAM	 Band LTE2 5MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE2 5MHz OBW QPSK Mid Channel FRB.gif
Band LTE2 5MHz 16QAM	 Band LTE2 5MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE2 5MHz OBW QPSK Mid Channel FRB.gif

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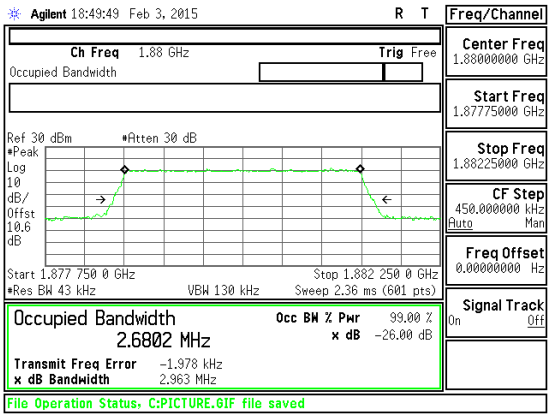
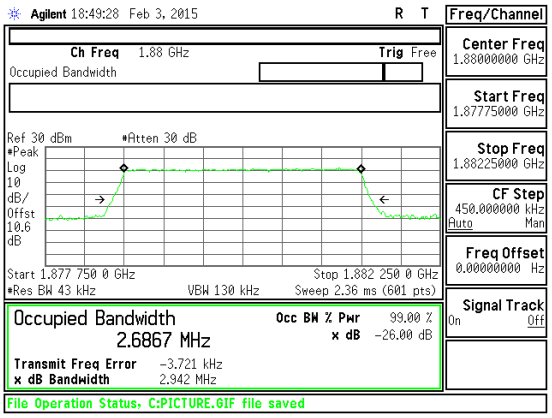
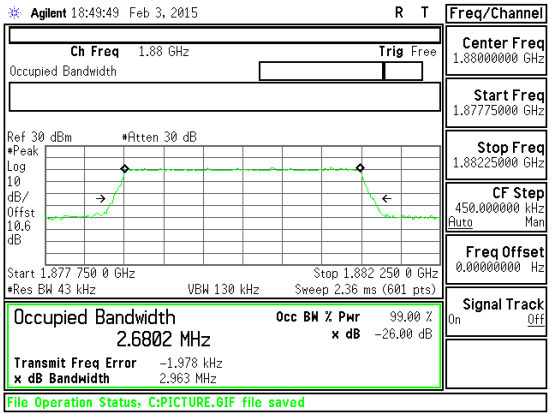
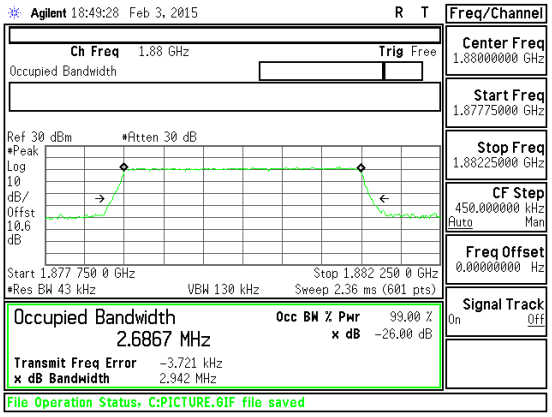
Band LTE2 3MHz 16QAM	 Band LTE2 3MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE2 3MHz OBW QPSK Mid Channel FRB.gif
Band LTE2 3MHz 16QAM	 Band LTE2 3MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE2 3MHz OBW QPSK Mid Channel FRB.gif

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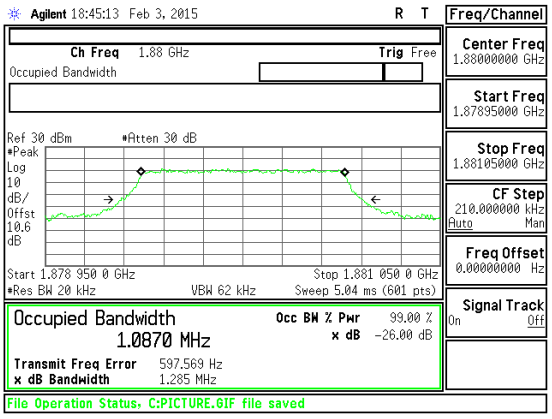
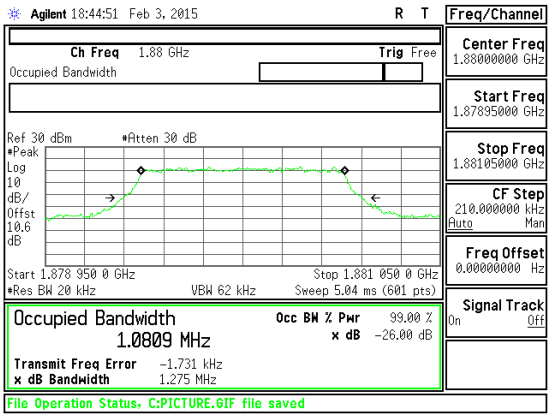
Band LTE2 1.4MHz 16QAM

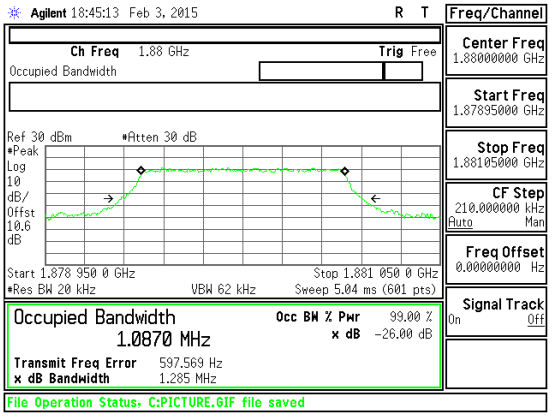


Band LTE2 1.4MHz OBW 16QAM Mid Channel FRB.gif

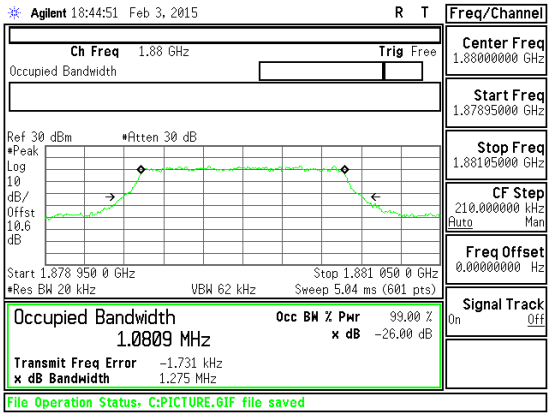


Band LTE2 1.4MHz OBW QPSK Mid Channel FRB.gif

Band LTE2 1.4MHz 16QAM



Band LTE2 1.4MHz OBW 16QAM Mid Channel FRB.gif



Band LTE2 1.4MHz OBW QPSK Mid Channel FRB.gif

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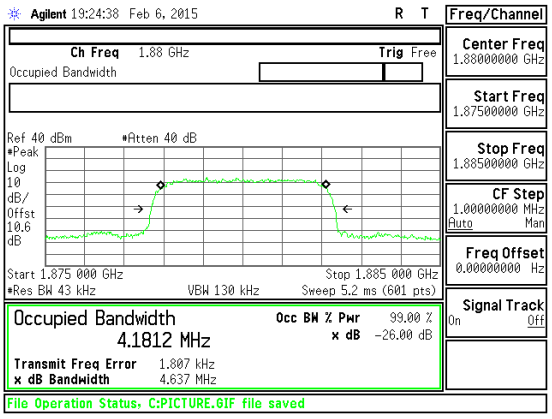
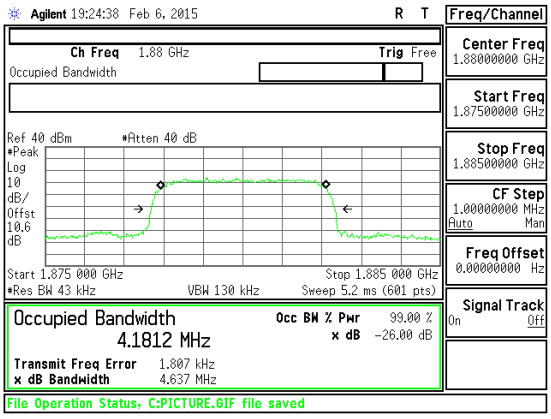
Band

Band 2

HSDPA



Band WCDMA B2 HSDPA OBW

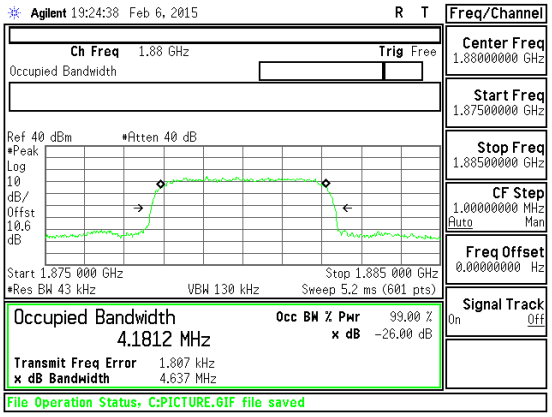


Band WCDMA B2 REL99 OBW

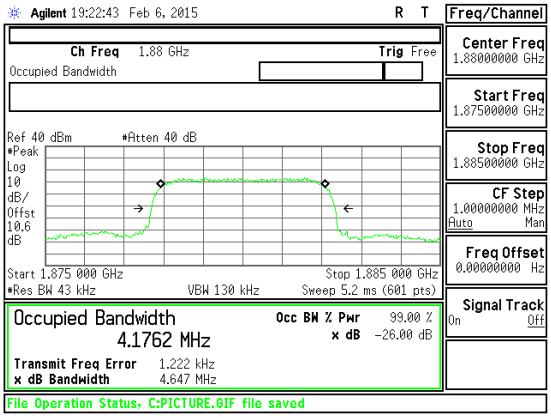
Band

Band 2

REL99



Band WCDMA B2 REL99 OBW



Band WCDMA B2 REL99 OBW

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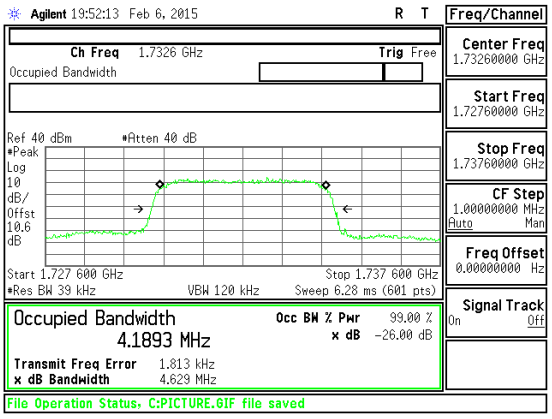
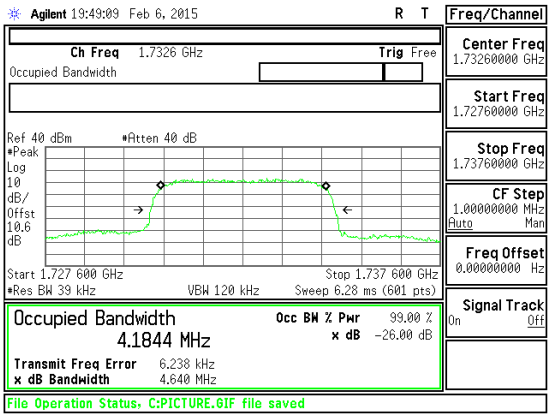
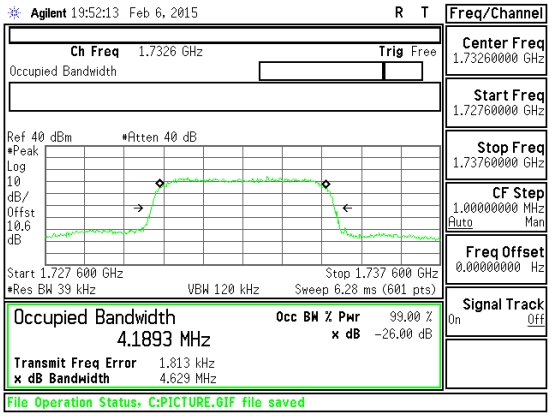
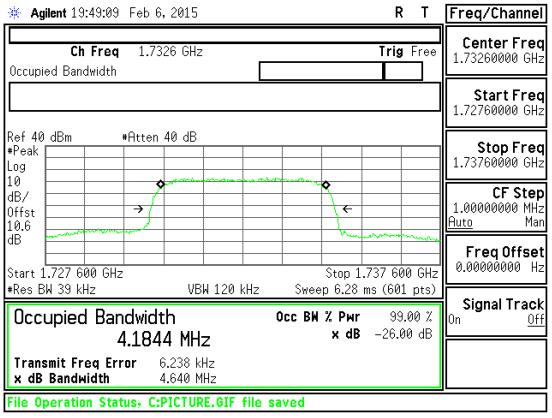
Band		
Band 4 HSDPA	 Band WCDMA B4 HSDPA OBW	 Band WCDMA B4 REL99 OBW
Band 4 HSDPA	 Band WCDMA B4 HSDPA OBW	 Band WCDMA B4 REL99 OBW

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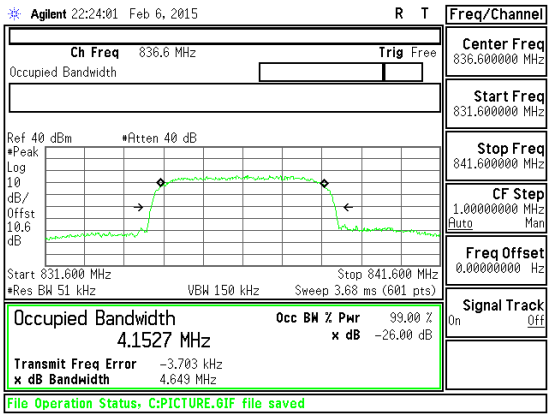
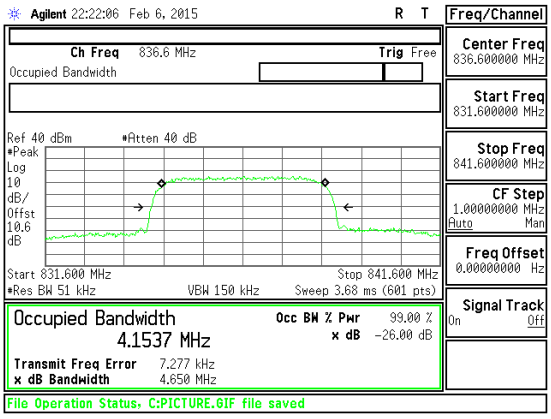
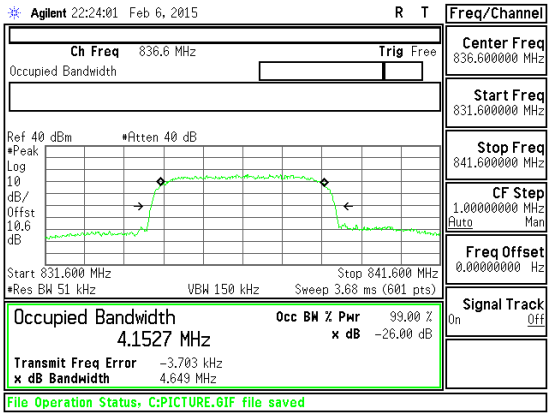
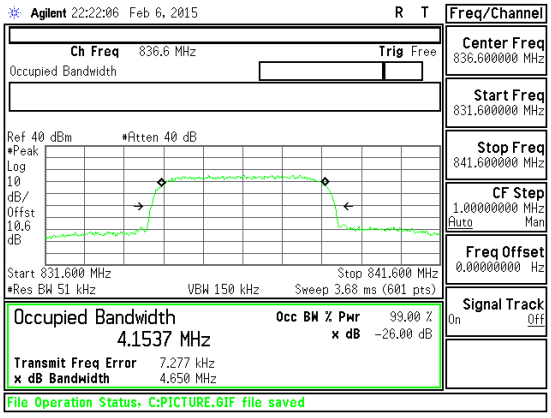
Band Band 5 HSDPA	 Band WCDMA B5 HSDPA OBW	 Band WCDMA B5 REL99 OBW
Band Band 5 HSDPA	 Band WCDMA B5 HSDPA OBW	 Band WCDMA B5 REL99 OBW

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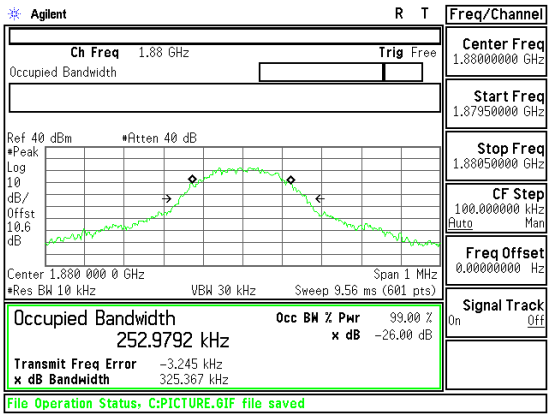
Band GSM1900 EGPRS



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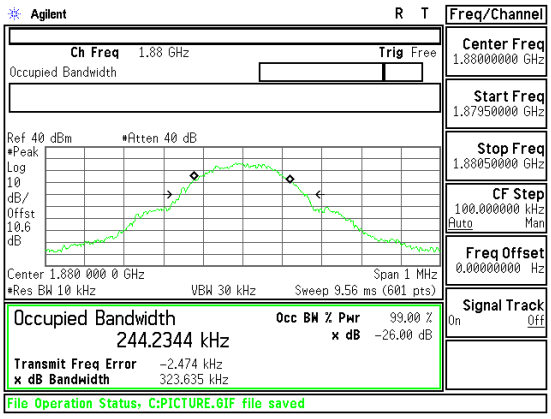
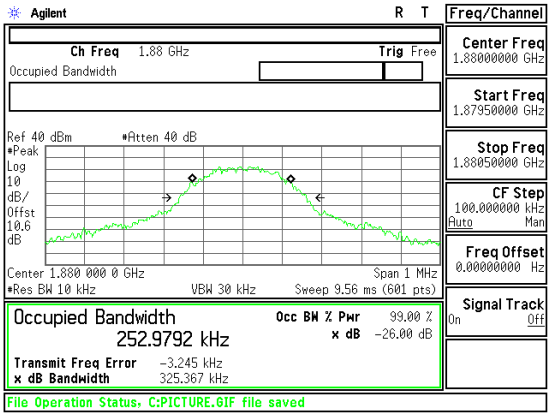


Band GSM1900 GPRS OBW Mid channel

Band GSM1900 EGPRS



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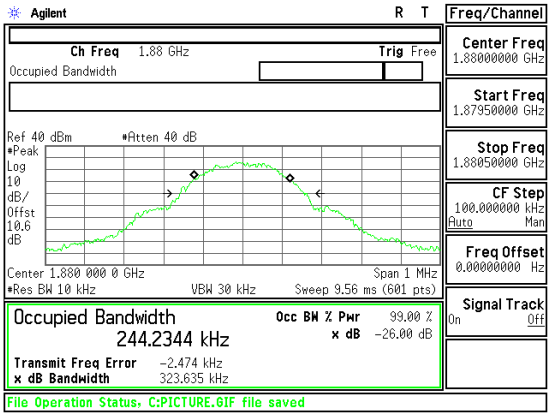

Band GSM1900 GPRS OBW Mid channel

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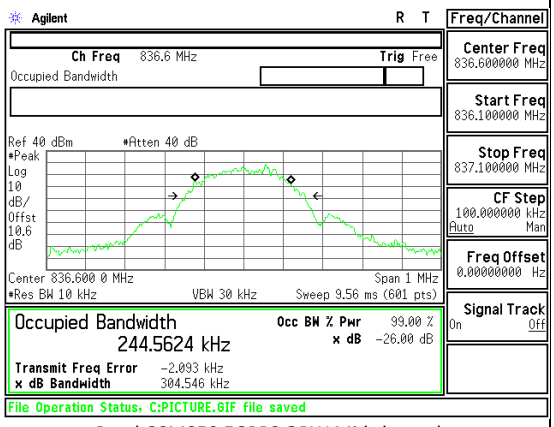
Band

GSM850

EGPRS



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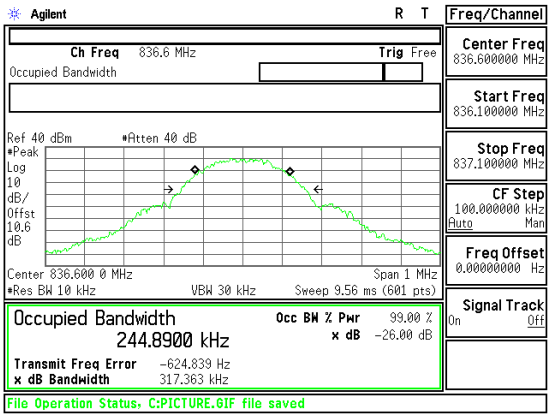
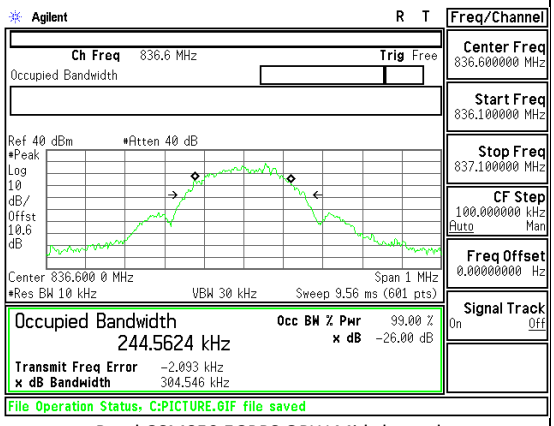


Band GSM850 GPRS OBW Mid channel

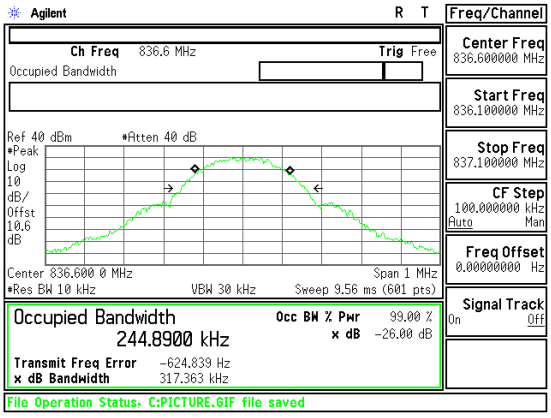
Band

GSM850

EGPRS



Band GSM850 EGPRS OBW Mid channel



Band GSM850 GPRS OBW Mid channel

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10.2. BAND EDGE EMISSIONS

RULE PART(S)

FCC: §22.359, §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.

Part 27: (m)(4) For mobile station, the attenuation factor shall be not less than 43+10Log(P)dB at the channel edge and (55+10Log(P)dB) at 5.5MHz from the channel edges.

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

GSM, WCDMA, and LTE

RESULTS

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701I
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888

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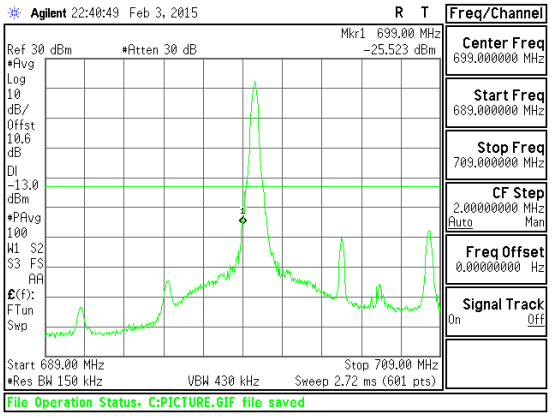
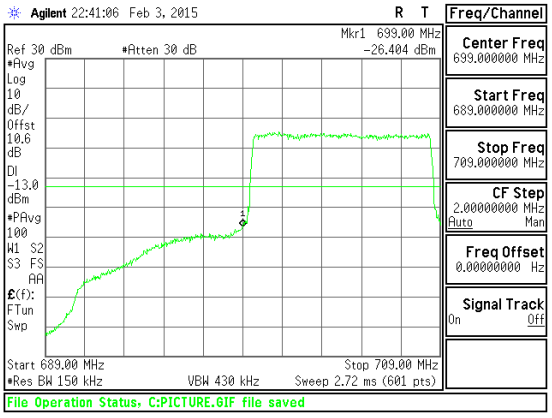
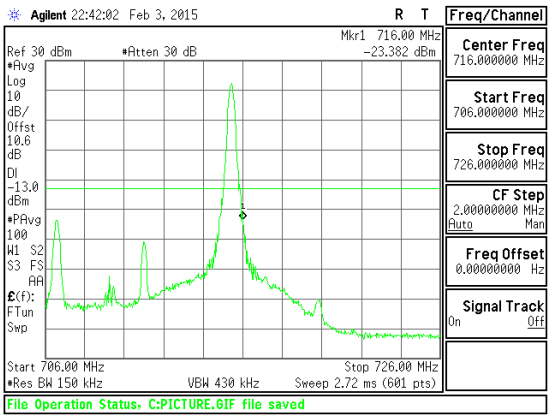
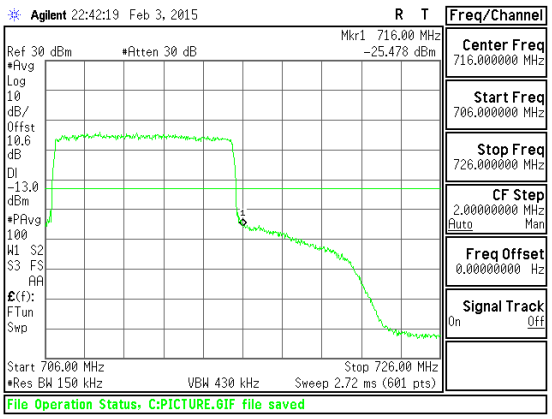
10.2.1. BAND EDGE PLOTS

Band LTE12 10MHz 16QAM	 Band LTE12 10MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE12 10MHz CBE 16QAM Low Channel FRB.gif
Band LTE12 10MHz 16QAM	 Band LTE12 10MHz CBE 16QAM High Channel 1RB.gif	 Band LTE12 10MHz CBE 16QAM High Channel FRB.gif

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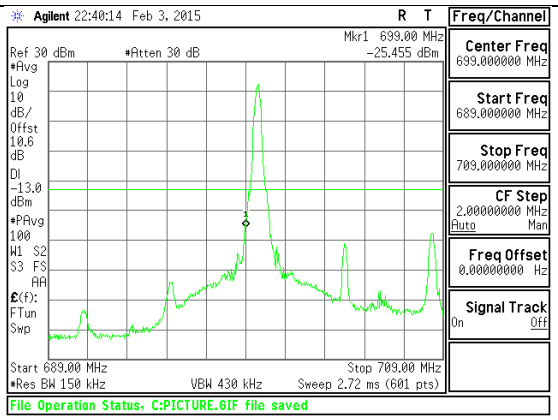
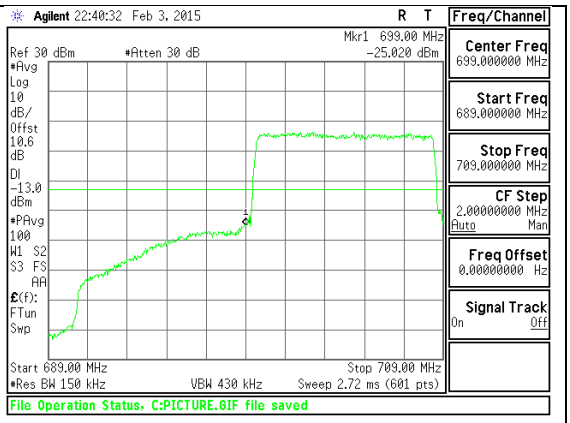
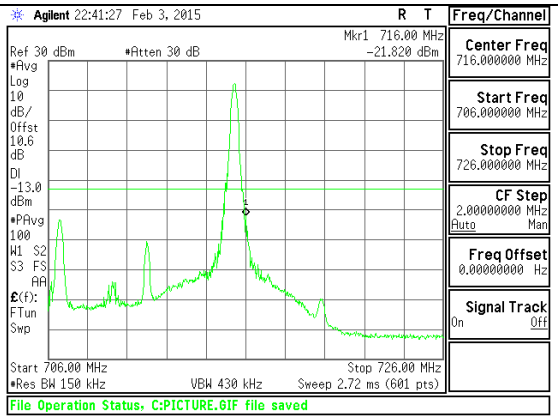
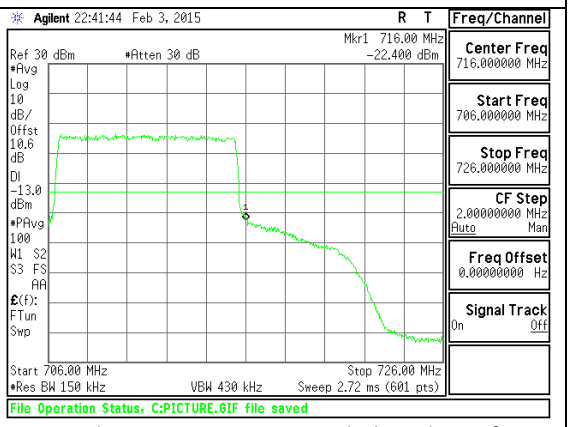
Band LTE12 10MHz QPSK	 Band LTE12 10MHz CBE QPSK Low Channel 1RB.gif	 Band LTE12 10MHz CBE QPSK Low Channel FRB.gif
Band LTE12 10MHz QPSK	 Band LTE12 10MHz CBE QPSK High Channel 1RB.gif	 Band LTE12 10MHz CBE QPSK High Channel FRB.gif

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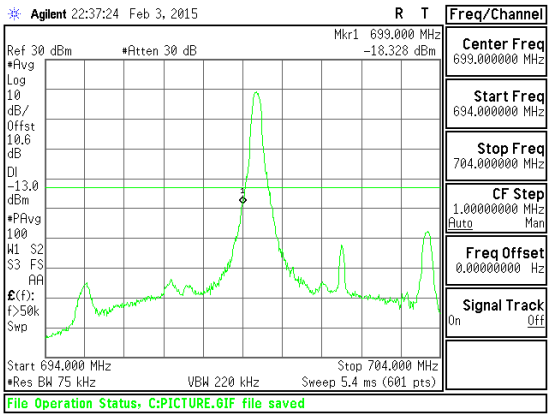
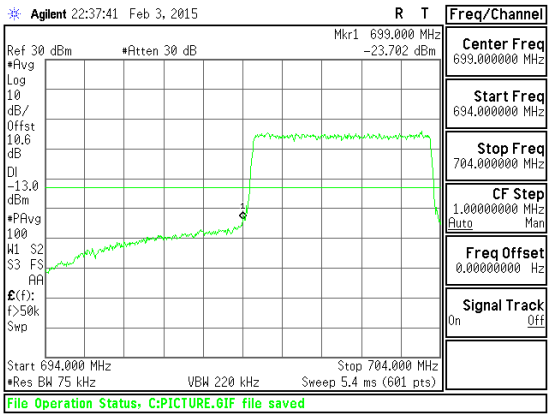
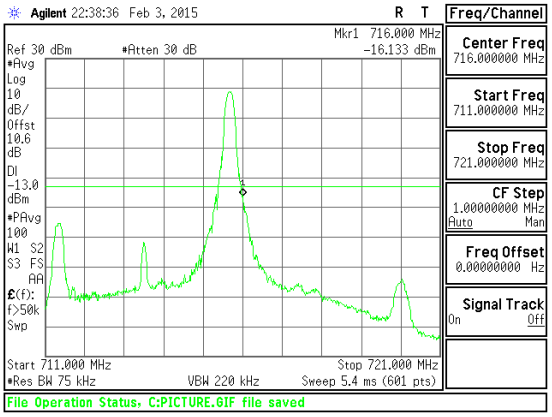
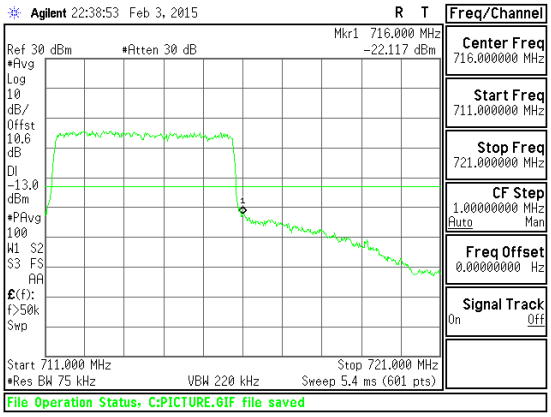
Band LTE12 5MHz 16QAM	 Band LTE12 5MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE12 5MHz CBE 16QAM Low Channel FRB.gif
Band LTE12 5MHz 16QAM	 Band LTE12 5MHz CBE 16QAM High Channel 1RB.gif	 Band LTE12 5MHz CBE 16QAM High Channel FRB.gif

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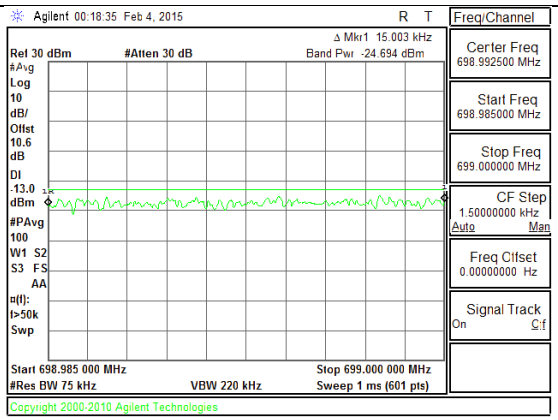
Band LTE12 5MHz QPSK



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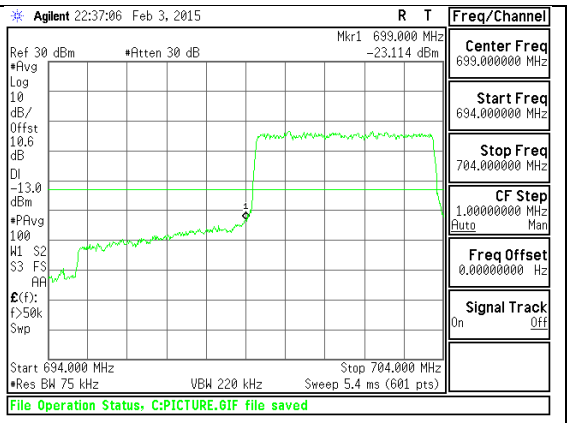

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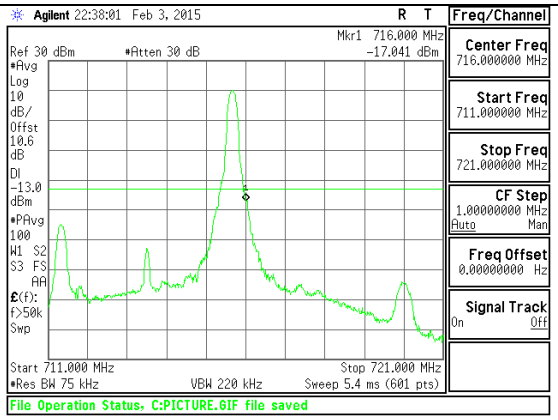
Band LTE12 5MHz QPSK



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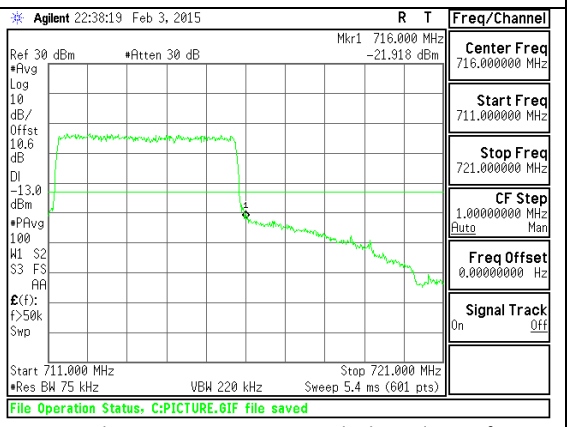

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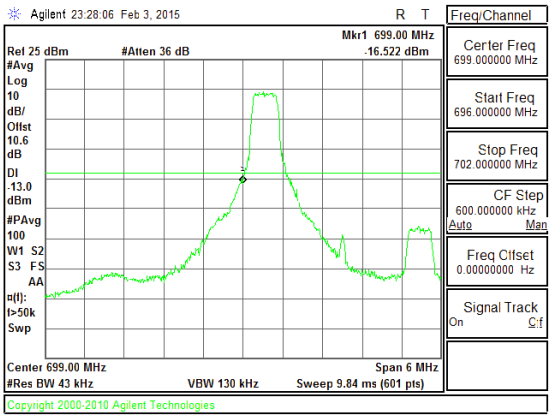
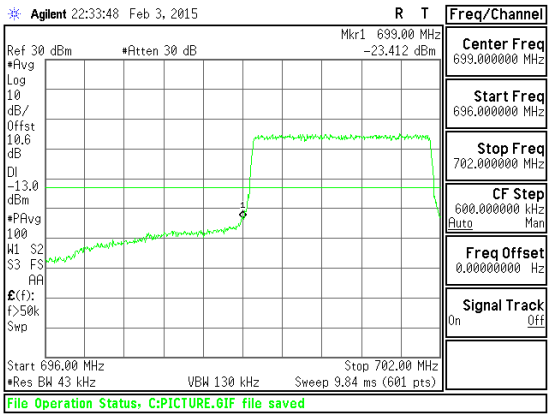
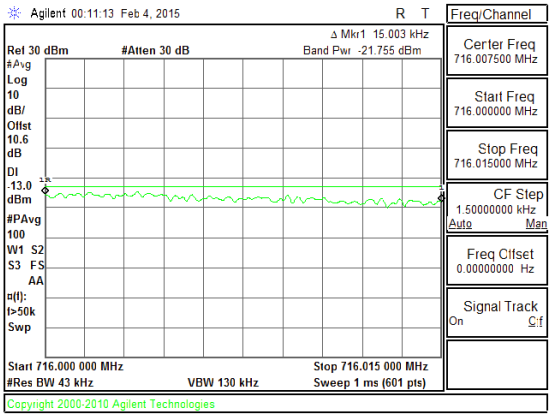
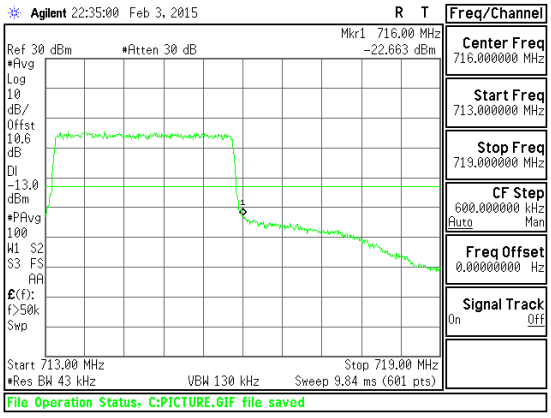
Band LTE12 3MHz 16QAM	 Band LTE12 3MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE12 3MHz CBE 16QAM Low Channel FRB.gif
Band LTE12 3MHz 16QAM	 Band LTE12 3MHz CBE 16QAM High Channel 1RB.gif	 Band LTE12 3MHz CBE 16QAM High Channel FRB.gif

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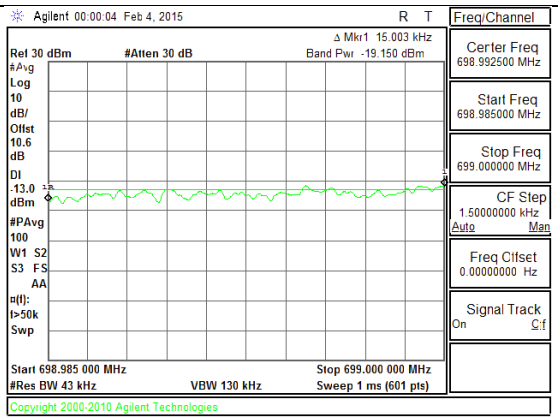
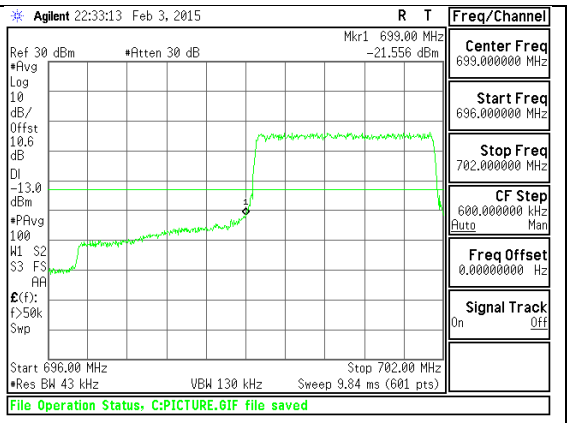
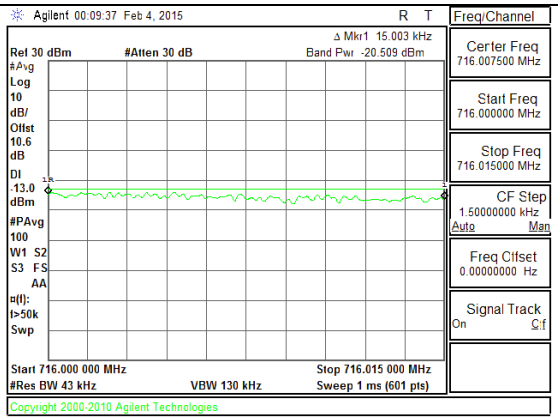
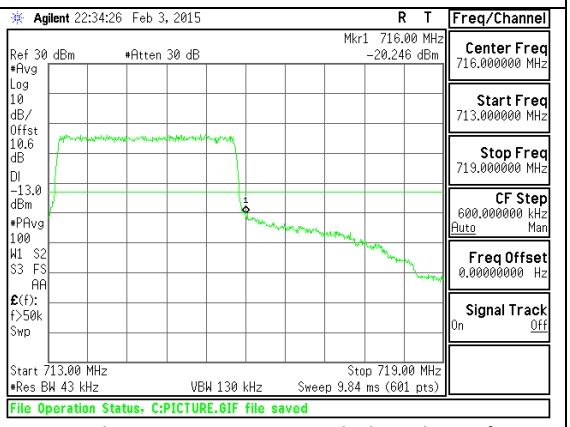
Band LTE12 3MHz QPSK	 Band LTE12 3MHz CBE QPSK Low Channel 1RB.gif	 Band LTE12 3MHz CBE QPSK Low Channel FRB.gif
Band LTE12 3MHz QPSK	 Band LTE12 3MHz CBE QPSK High Channel 1RB.gif	 Band LTE12 3MHz CBE QPSK High Channel FRB.gif

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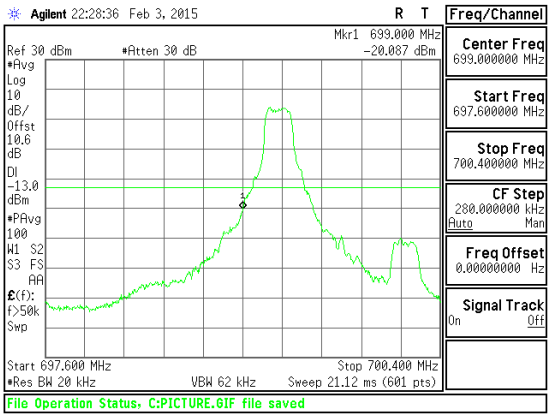
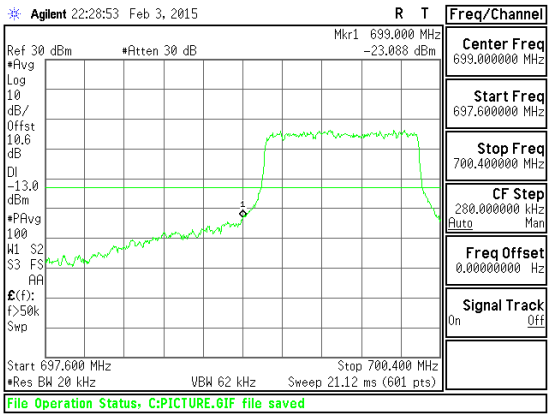
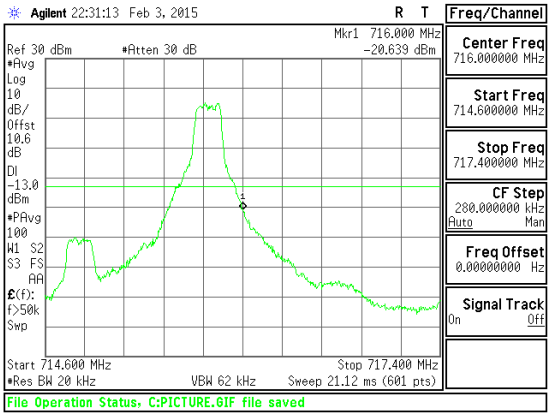
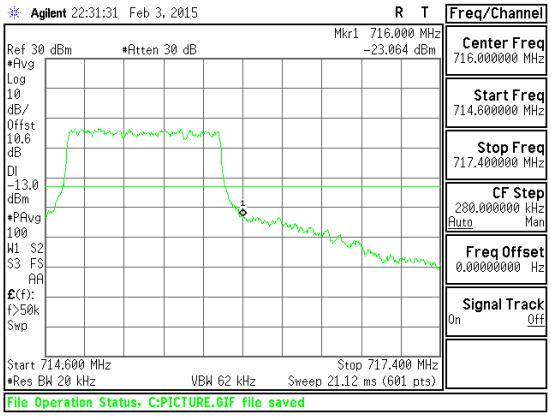
Band LTE12 1.4MHz 16QAM	 Band LTE12 1.4MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE12 1.4MHz CBE 16QAM Low Channel FRB.gif
Band LTE12 1.4MHz 16QAM	 Band LTE12 1.4MHz CBE 16QAM High Channel 1RB.gif	 Band LTE12 1.4MHz CBE 16QAM High Channel FRB.gif

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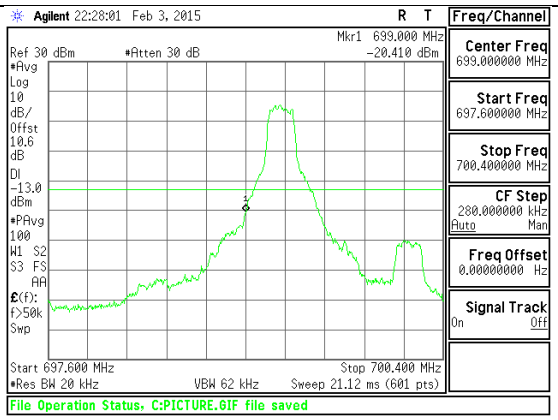
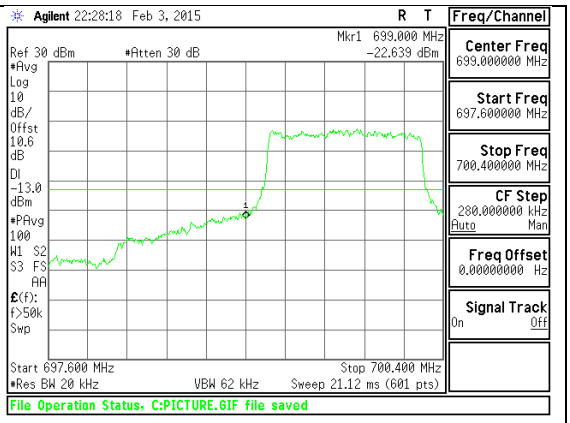
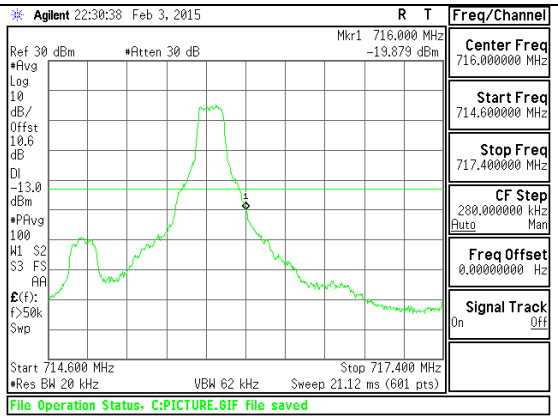
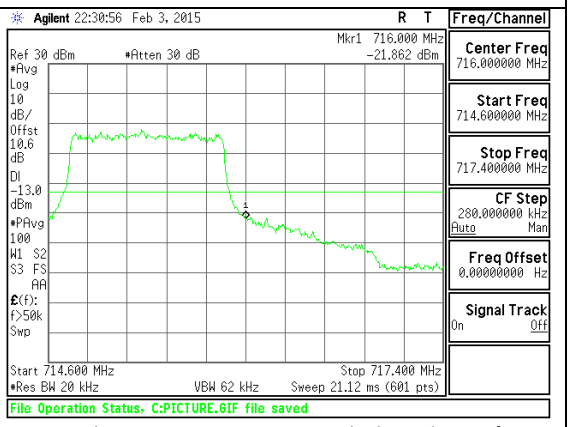
Band LTE12 1.4MHz QPSK	 Band LTE12 1.4MHz CBE QPSK Low Channel 1RB.gif	 Band LTE12 1.4MHz CBE QPSK Low Channel FRB.gif
Band LTE12 1.4MHz QPSK	 Band LTE12 1.4MHz CBE QPSK High Channel 1RB.gif	 Band LTE12 1.4MHz CBE QPSK High Channel FRB.gif

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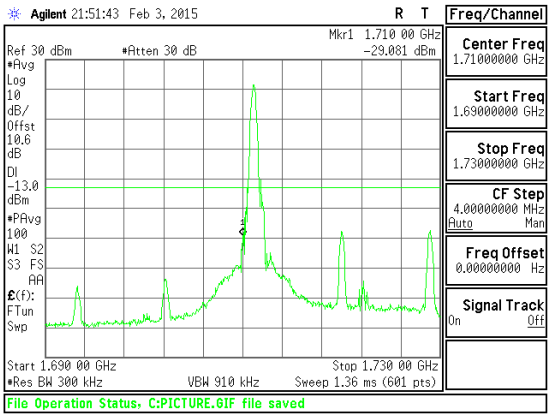
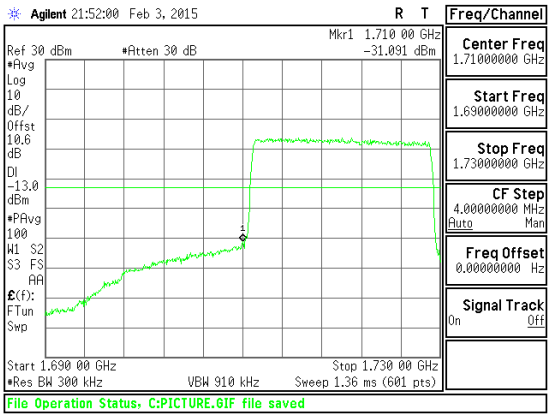
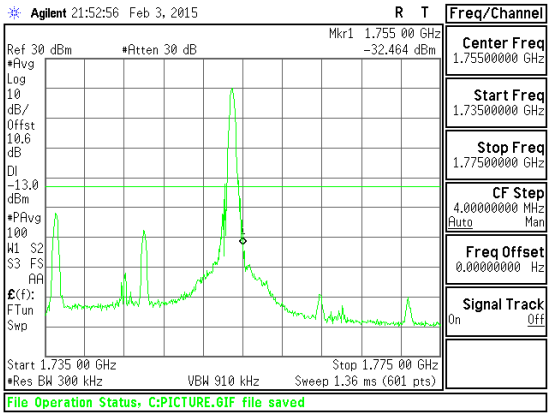
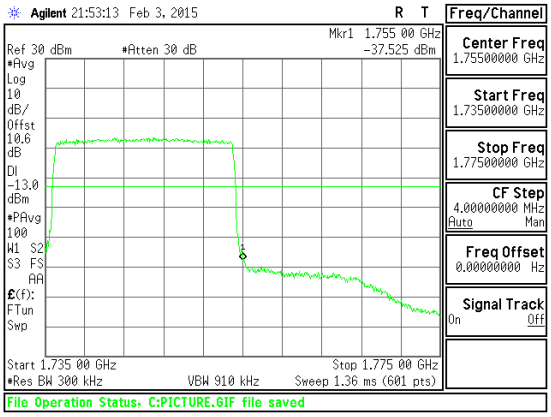
Band LTE4 20MHz 16QAM	 Band LTE4 20MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE4 20MHz CBE 16QAM Low Channel FRB.gif
Band LTE4 20MHz 16QAM	 Band LTE4 20MHz CBE 16QAM High Channel 1RB.gif	 Band LTE4 20MHz CBE 16QAM High Channel FRB.gif

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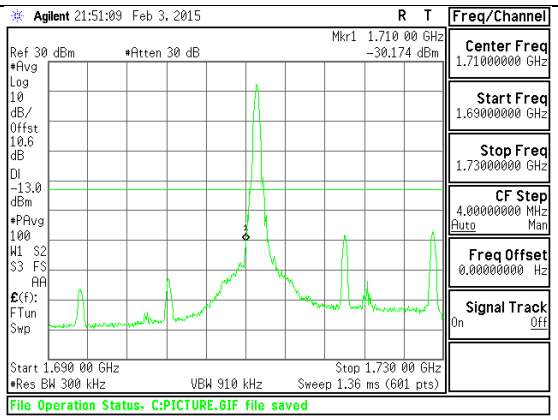
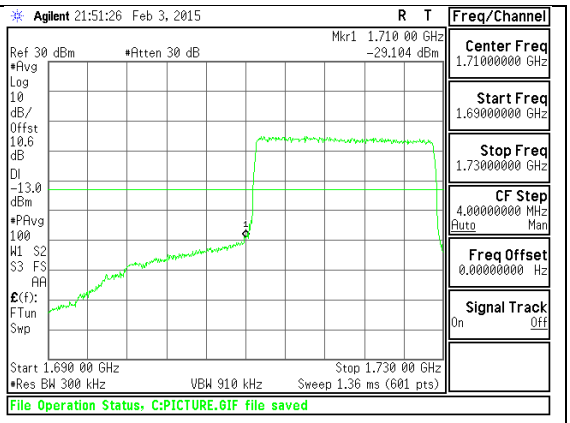
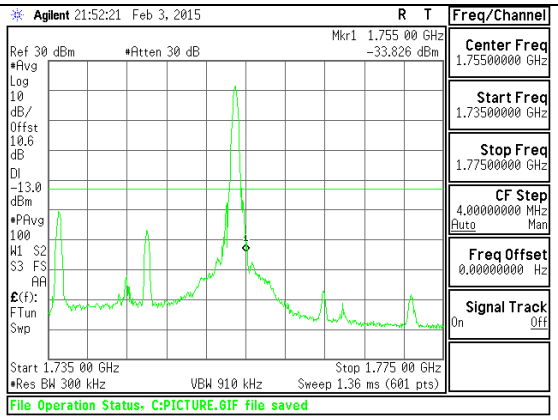
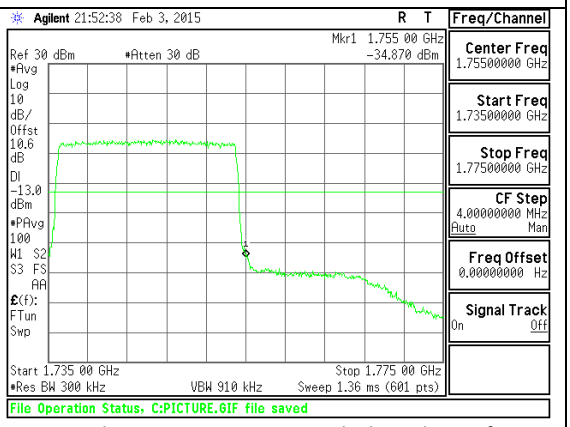
Band LTE4 20MHz QPSK	 Band LTE4 20MHz CBE QPSK Low Channel 1RB.gif	 Band LTE4 20MHz CBE QPSK Low Channel FRB.gif
Band LTE4 20MHz QPSK	 Band LTE4 20MHz CBE QPSK High Channel 1RB.gif	 Band LTE4 20MHz CBE QPSK High Channel FRB.gif

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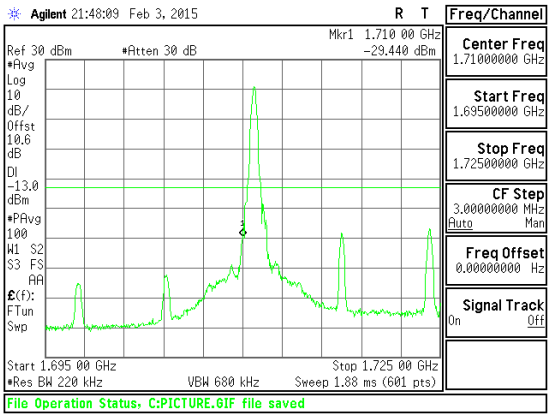
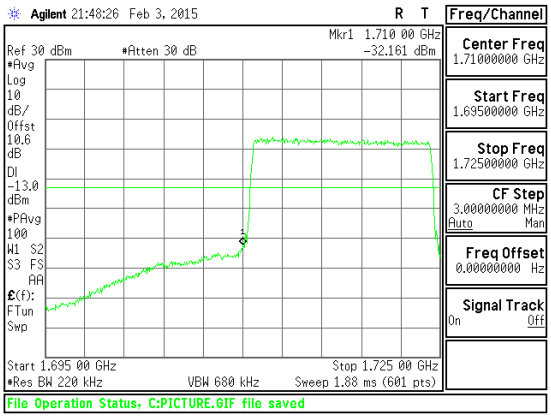
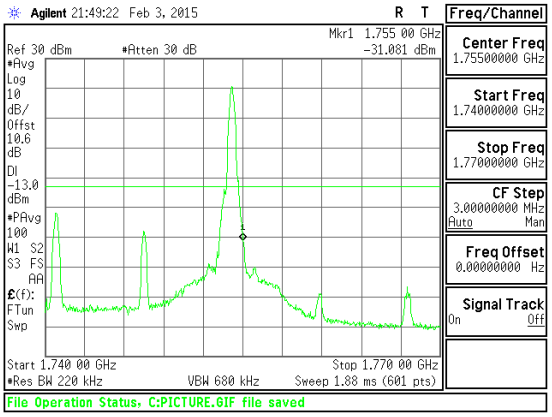
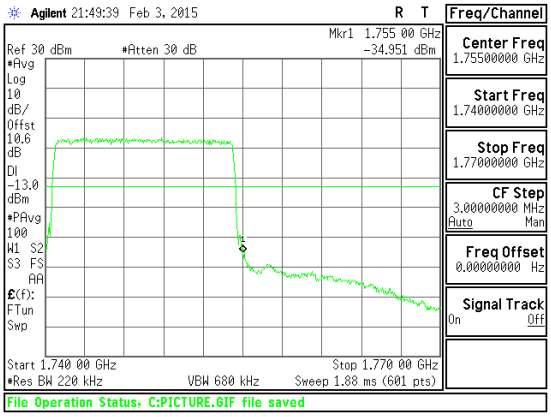
Band LTE4 15MHz 16QAM	 Band LTE4 15MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE4 15MHz CBE 16QAM Low Channel FRB.gif
Band LTE4 15MHz 16QAM	 Band LTE4 15MHz CBE 16QAM High Channel 1RB.gif	 Band LTE4 15MHz CBE 16QAM High Channel FRB.gif

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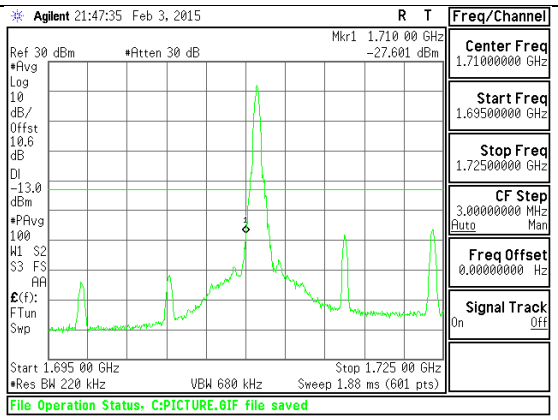
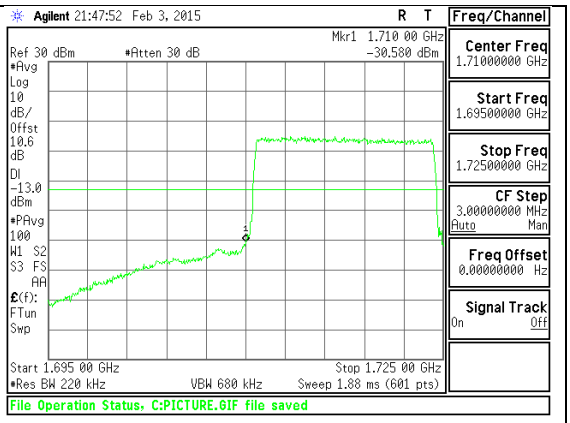
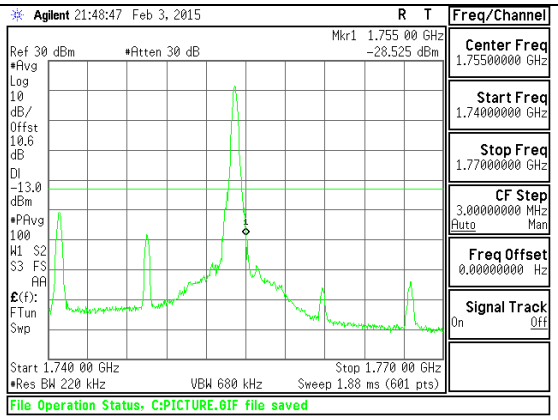
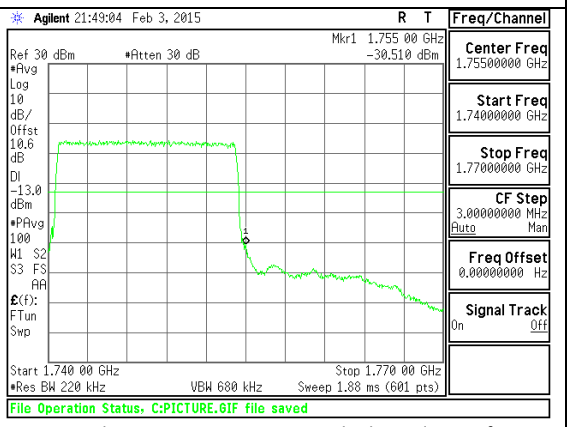
Band LTE4 15MHz QPSK	 Band LTE4 15MHz CBE QPSK Low Channel 1RB.gif	 Band LTE4 15MHz CBE QPSK Low Channel FRB.gif
Band LTE4 15MHz QPSK	 Band LTE4 15MHz CBE QPSK High Channel 1RB.gif	 Band LTE4 15MHz CBE QPSK High Channel FRB.gif

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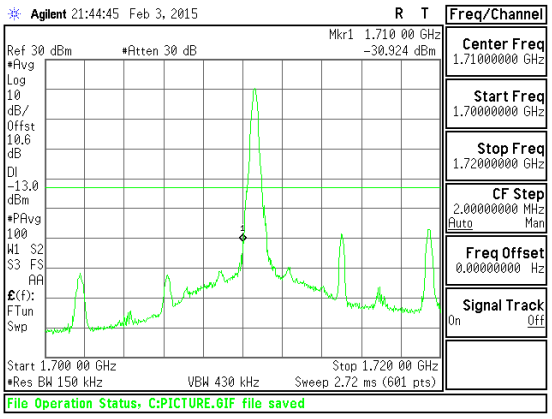
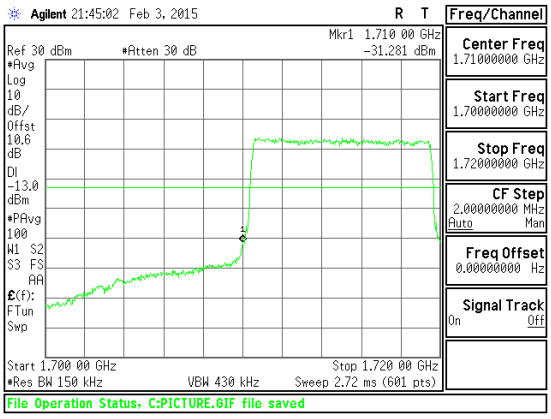
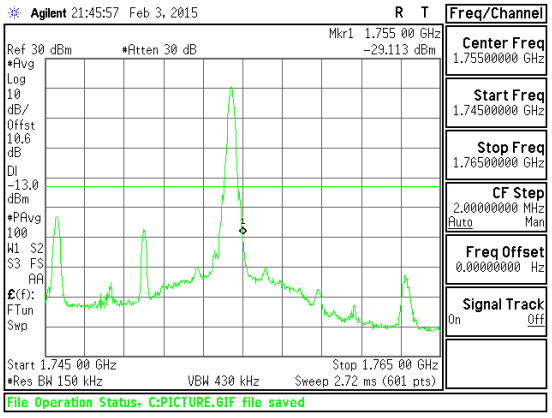
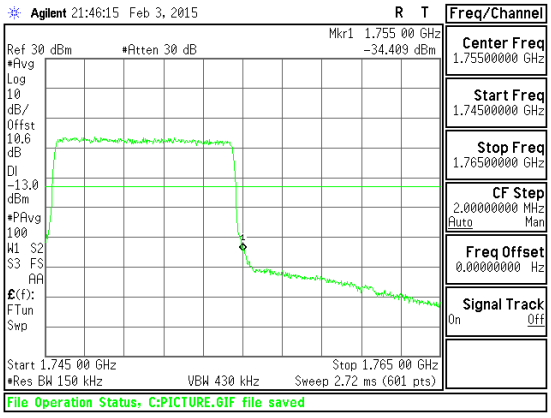
Band LTE4 10MHz 16QAM	 Band LTE4 10MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE4 10MHz CBE 16QAM Low Channel FRB.gif
Band LTE4 10MHz 16QAM	 Band LTE4 10MHz CBE 16QAM High Channel 1RB.gif	 Band LTE4 10MHz CBE 16QAM High Channel FRB.gif

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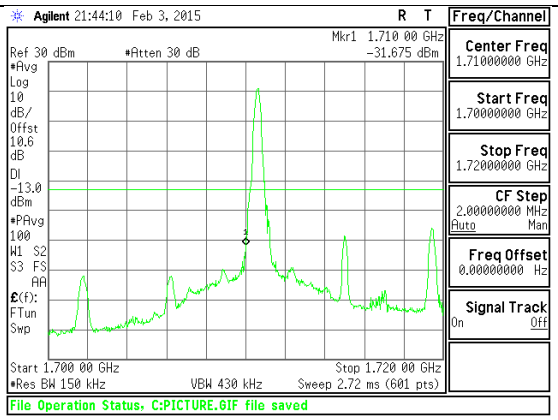
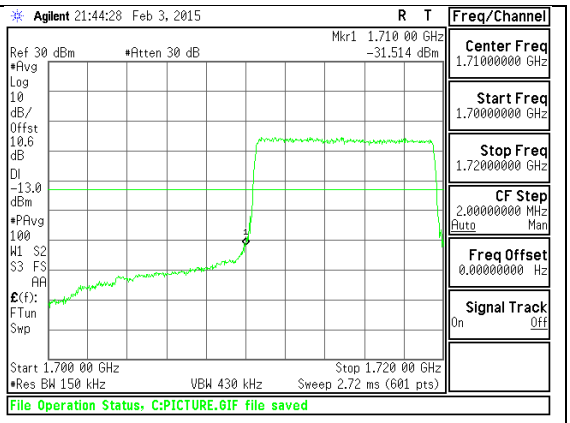
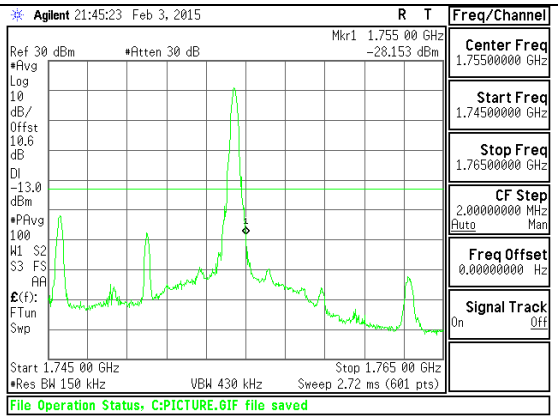
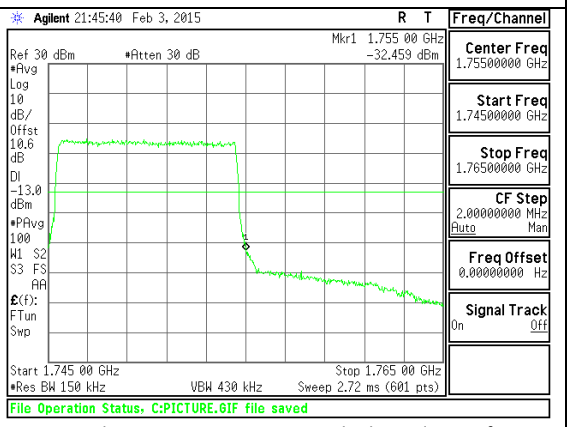
Band LTE4 10MHz QPSK	 Band LTE4 10MHz CBE QPSK Low Channel 1RB.gif	 Band LTE4 10MHz CBE QPSK Low Channel FRB.gif
Band LTE4 10MHz QPSK	 Band LTE4 10MHz CBE QPSK High Channel 1RB.gif	 Band LTE4 10MHz CBE QPSK High Channel FRB.gif

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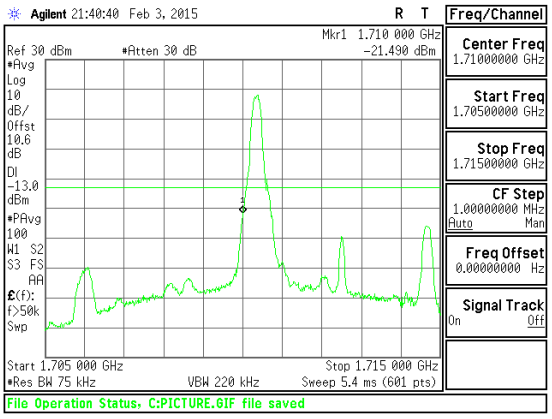
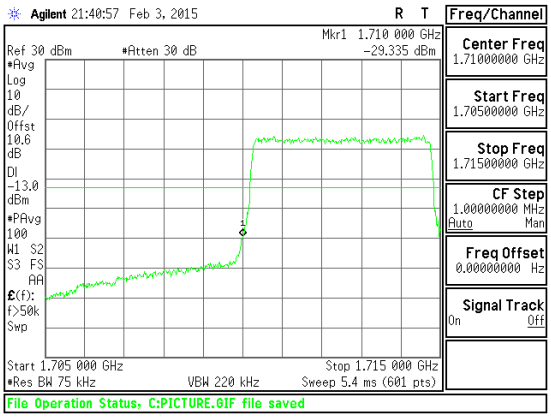
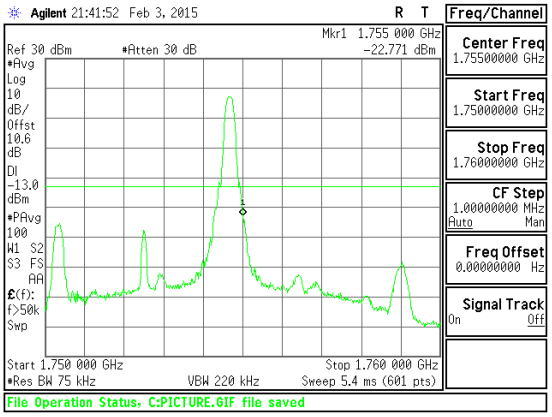
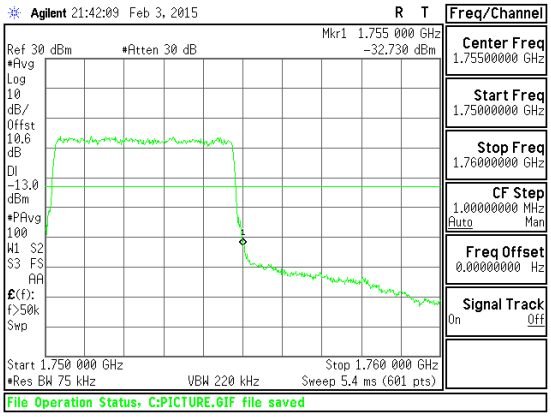
Band LTE4 5MHz 16QAM	 Band LTE4 5MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE4 5MHz CBE 16QAM Low Channel FRB.gif
Band LTE4 5MHz 16QAM	 Band LTE4 5MHz CBE 16QAM High Channel 1RB.gif	 Band LTE4 5MHz CBE 16QAM High Channel FRB.gif

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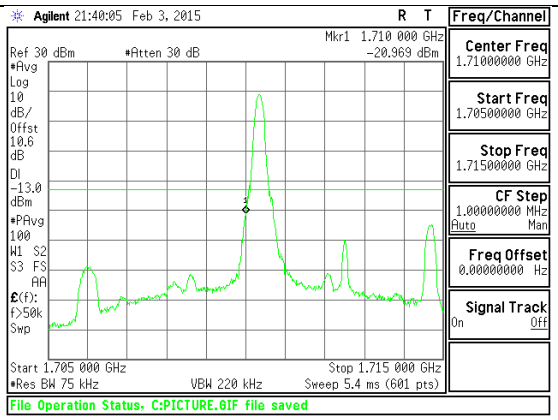
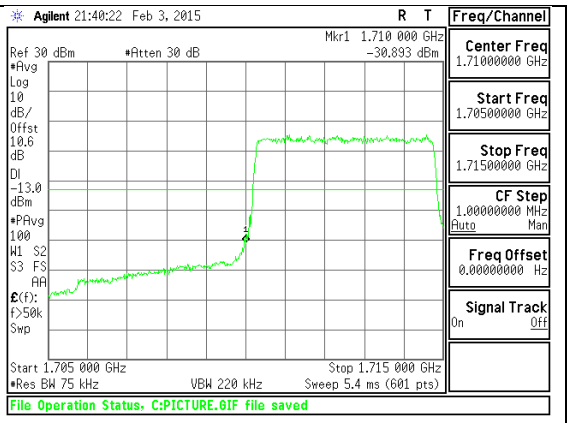
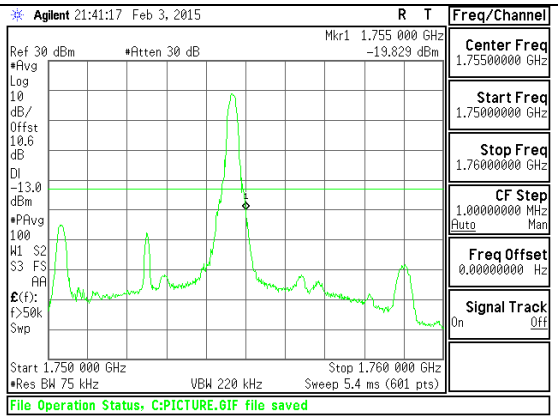
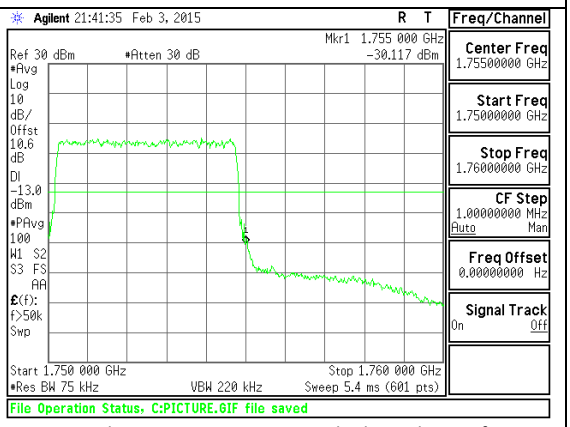
Band LTE4 5MHz QPSK	 Band LTE4 5MHz CBE QPSK Low Channel 1RB.gif	 Band LTE4 5MHz CBE QPSK Low Channel FRB.gif
Band LTE4 5MHz QPSK	 Band LTE4 5MHz CBE QPSK High Channel 1RB.gif	 Band LTE4 5MHz CBE QPSK High Channel FRB.gif

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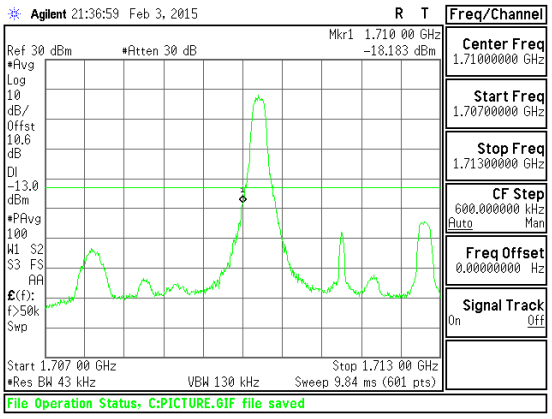
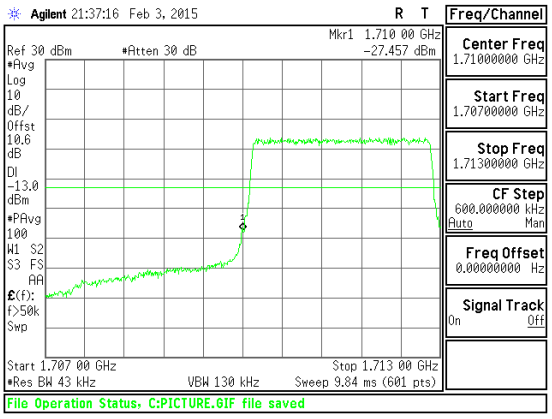
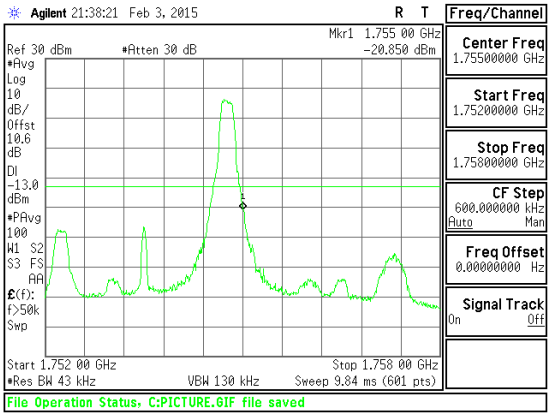
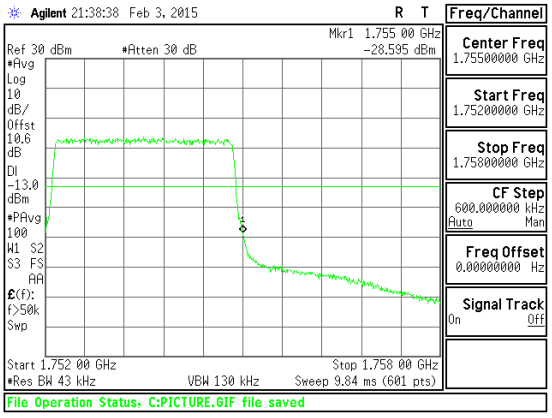
Band LTE4 3MHz 16QAM	 Band LTE4 3MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE4 3MHz CBE 16QAM Low Channel FRB.gif
Band LTE4 3MHz 16QAM	 Band LTE4 3MHz CBE 16QAM High Channel 1RB.gif	 Band LTE4 3MHz CBE 16QAM High Channel FRB.gif

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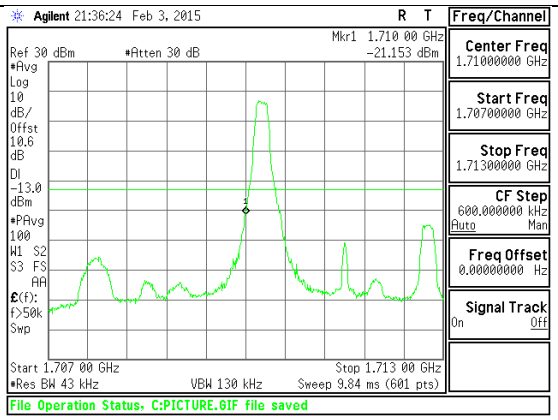
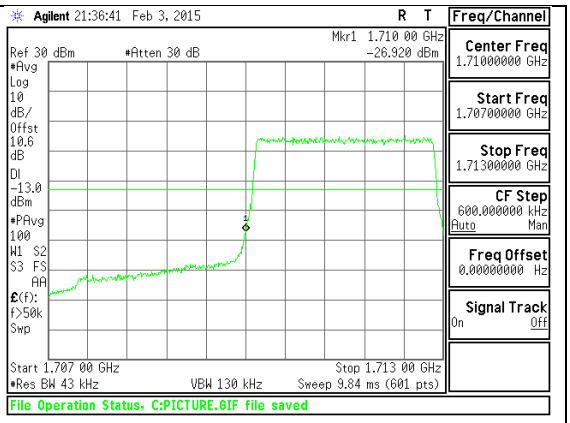
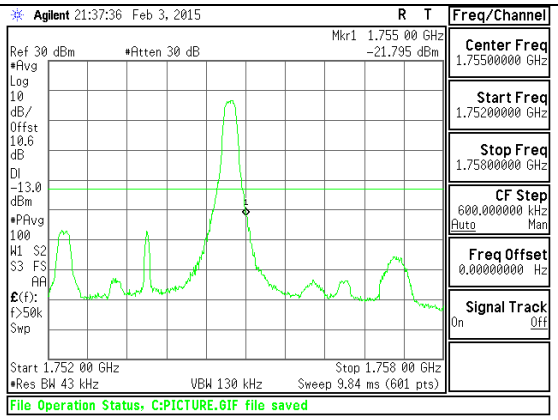
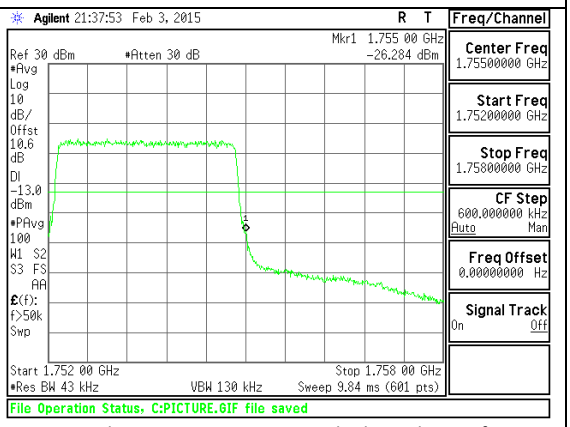
Band LTE4 3MHz QPSK	 Band LTE4 3MHz CBE QPSK Low Channel 1RB.gif	 Band LTE4 3MHz CBE QPSK Low Channel FRB.gif
Band LTE4 3MHz QPSK	 Band LTE4 3MHz CBE QPSK High Channel 1RB.gif	 Band LTE4 3MHz CBE QPSK High Channel FRB.gif

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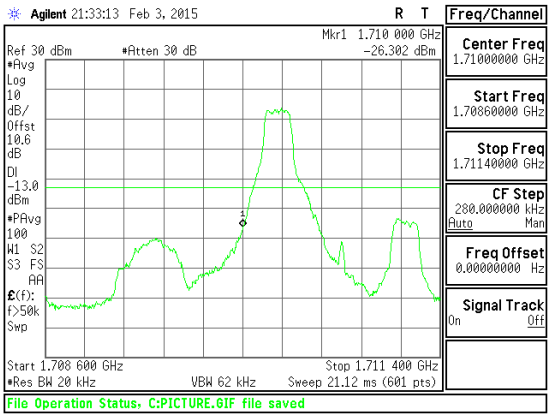
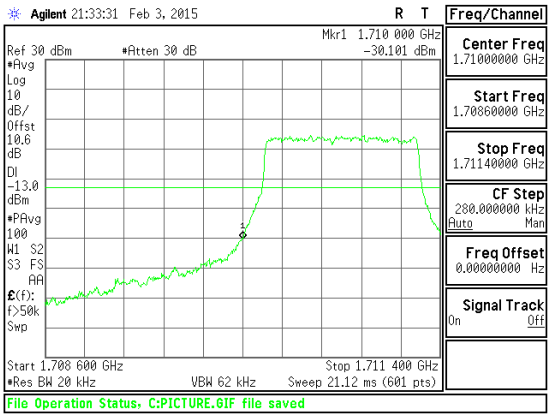
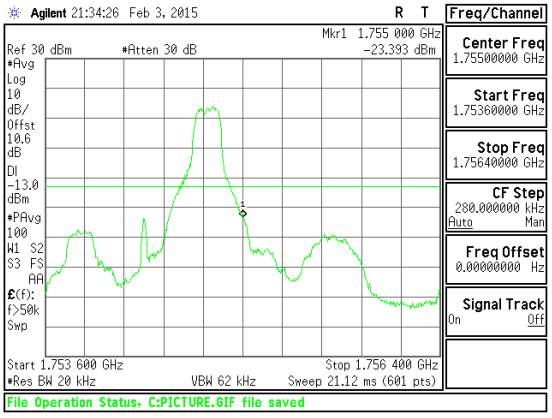
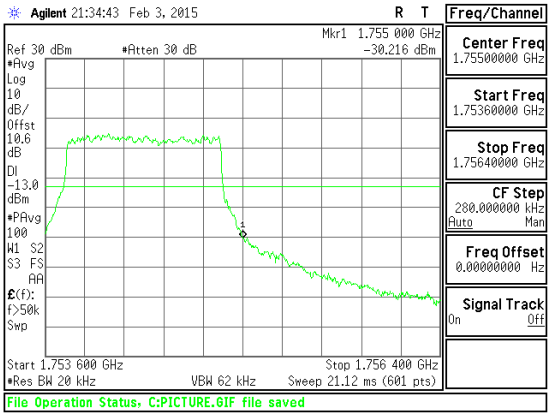
Band LTE4 1.4MHz 16QAM	 Band LTE4 1.4MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE4 1.4MHz CBE 16QAM Low Channel FRB.gif
Band LTE4 1.4MHz 16QAM	 Band LTE4 1.4MHz CBE 16QAM High Channel 1RB.gif	 Band LTE4 1.4MHz CBE 16QAM High Channel FRB.gif

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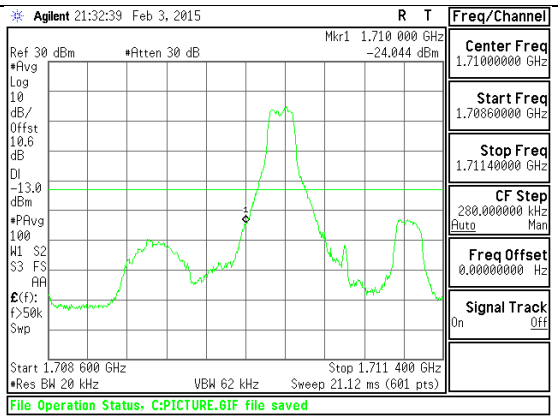
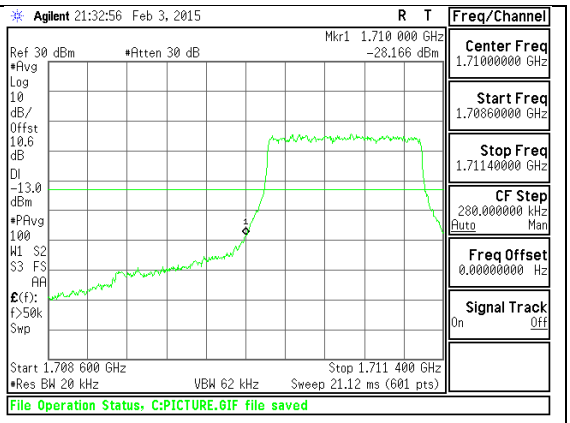
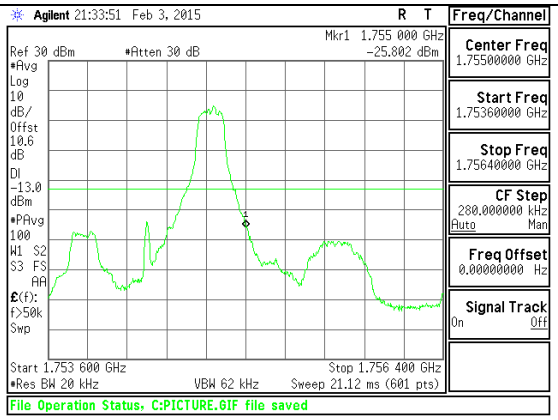
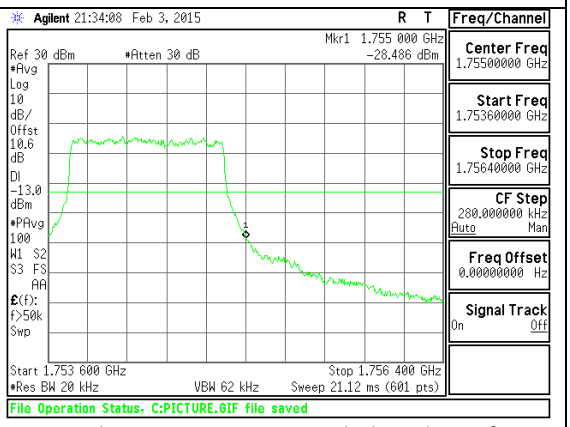
Band LTE4 1.4MHz QPSK	 Band LTE4 1.4MHz CBE QPSK Low Channel 1RB.gif	 Band LTE4 1.4MHz CBE QPSK Low Channel FRB.gif
Band LTE4 1.4MHz QPSK	 Band LTE4 1.4MHz CBE QPSK High Channel 1RB.gif	 Band LTE4 1.4MHz CBE QPSK High Channel FRB.gif

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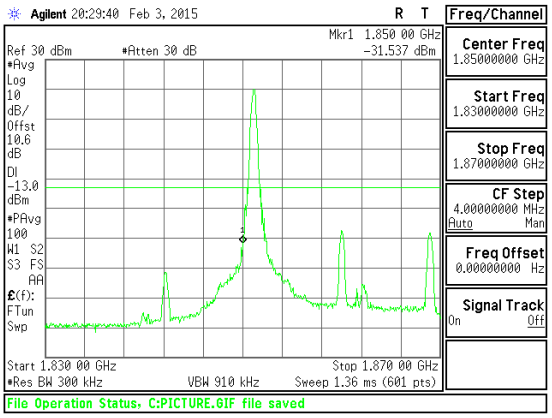
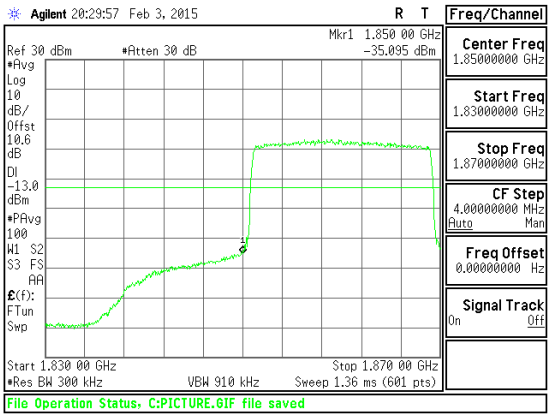
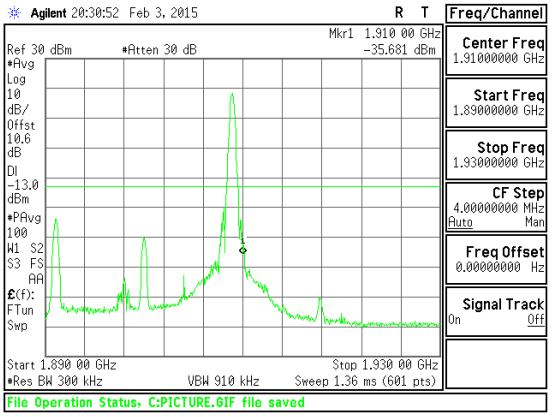
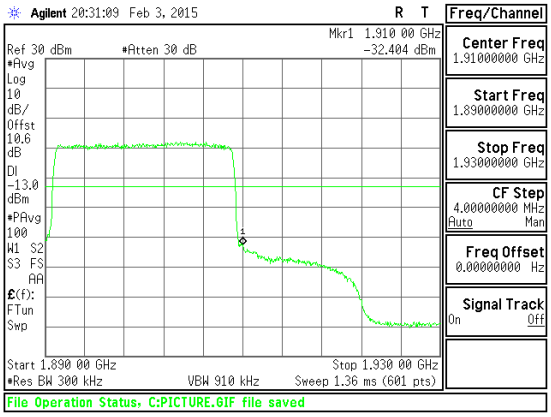
Band LTE2 20MHz 16QAM	 Band LTE2 20MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE2 20MHz CBE 16QAM Low Channel FRB.gif
Band LTE2 20MHz 16QAM	 Band LTE2 20MHz CBE 16QAM High Channel 1RB.gif	 Band LTE2 20MHz CBE 16QAM High Channel FRB.gif

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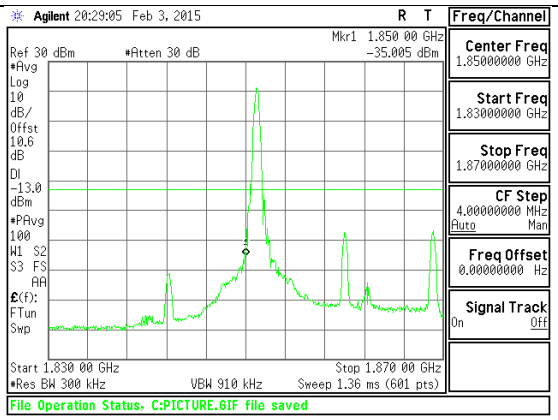
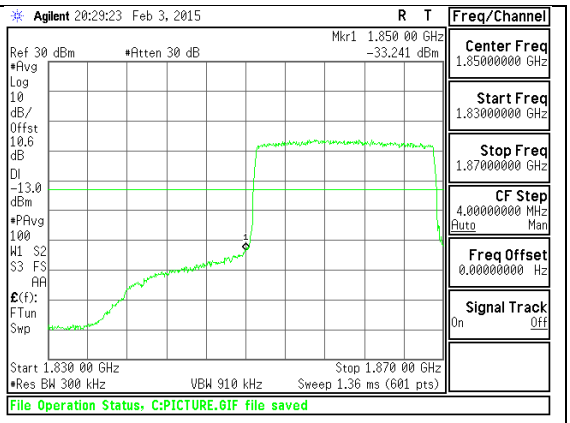
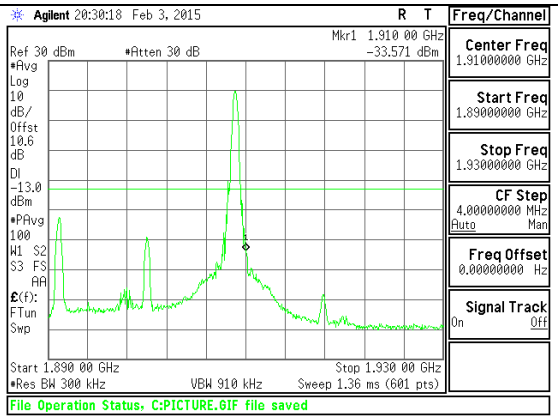
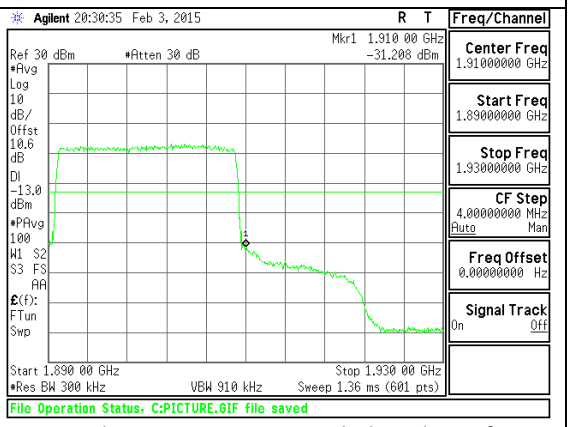
Band LTE2 20MHz QPSK	 Band LTE2 20MHz CBE QPSK Low Channel 1RB.gif	 Band LTE2 20MHz CBE QPSK Low Channel FRB.gif
Band LTE2 20MHz QPSK	 Band LTE2 20MHz CBE QPSK High Channel 1RB.gif	 Band LTE2 20MHz CBE QPSK High Channel FRB.gif

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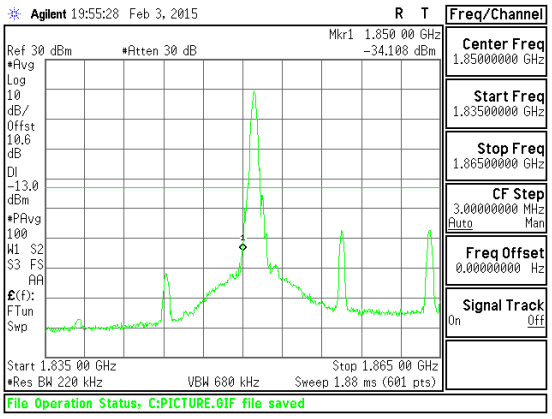
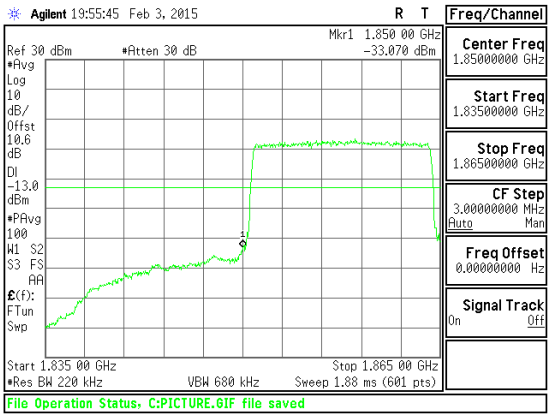
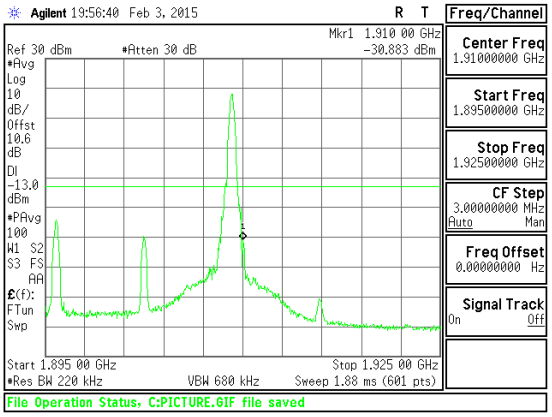
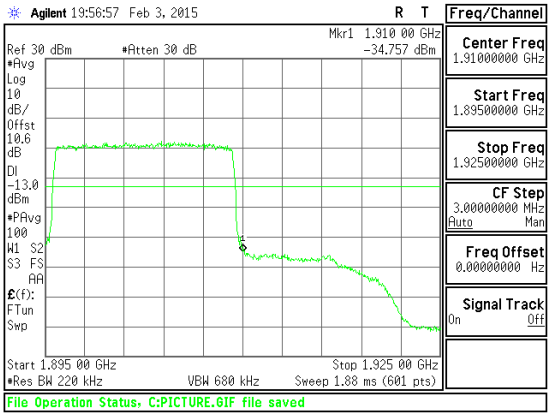
Band LTE2 15MHz 16QAM	 Band LTE2 15MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE2 15MHz CBE 16QAM Low Channel FRB.gif
Band LTE2 15MHz 16QAM	 Band LTE2 15MHz CBE 16QAM High Channel 1RB.gif	 Band LTE2 15MHz CBE 16QAM High Channel FRB.gif

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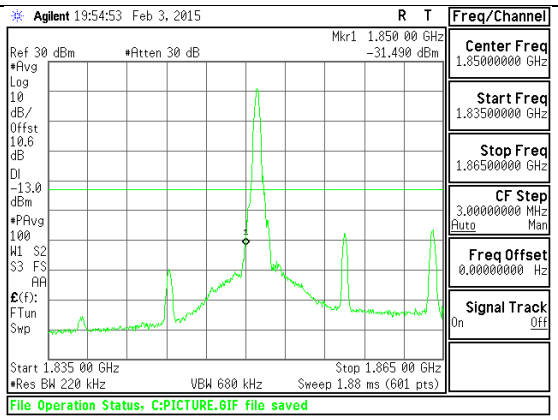
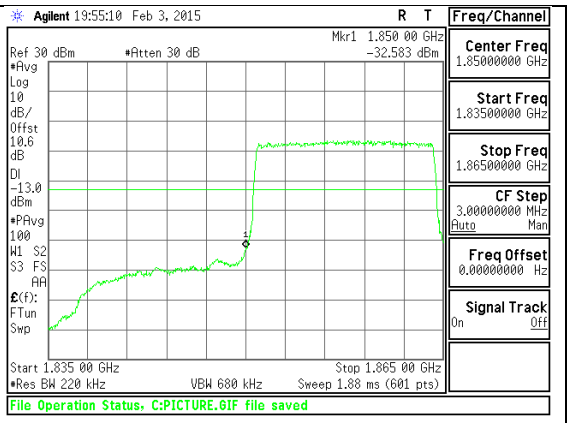
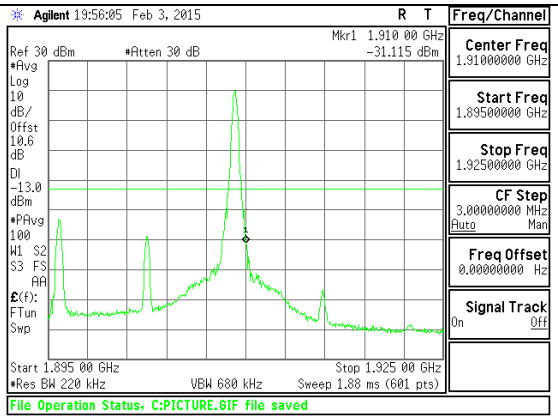
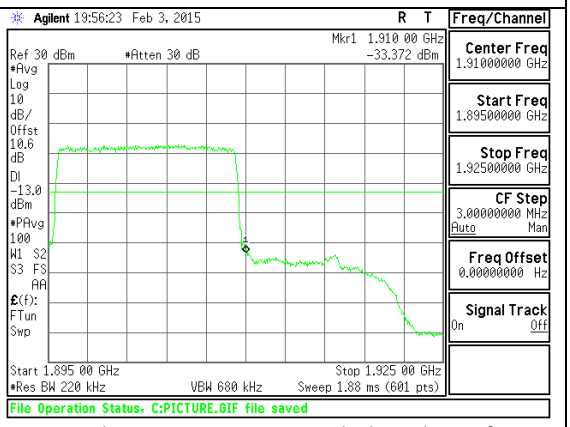
Band LTE2 15MHz QPSK	 Band LTE2 15MHz CBE QPSK Low Channel 1RB.gif	 Band LTE2 15MHz CBE QPSK Low Channel FRB.gif
Band LTE2 15MHz QPSK	 Band LTE2 15MHz CBE QPSK High Channel 1RB.gif	 Band LTE2 15MHz CBE QPSK High Channel FRB.gif

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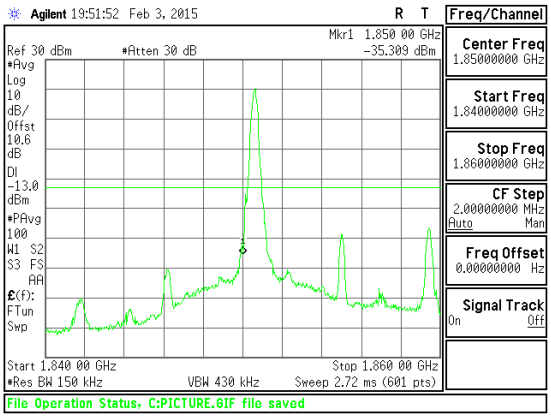
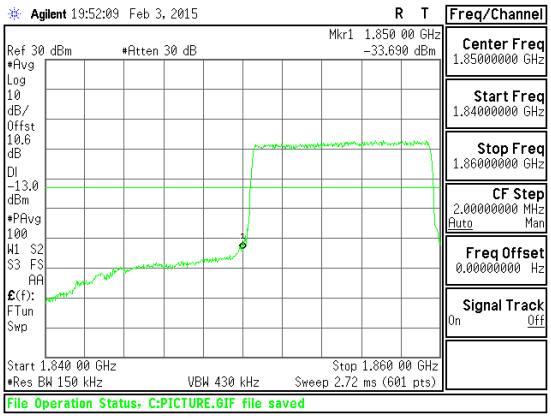
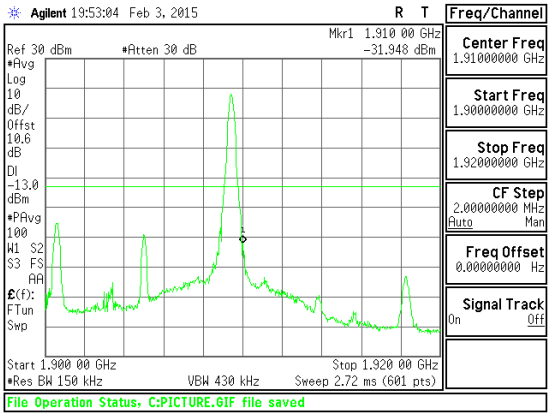
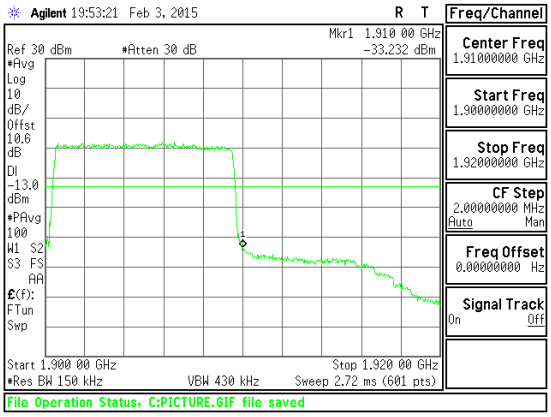
Band LTE2 10MHz 16QAM	 Band LTE2 10MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE2 10MHz CBE 16QAM Low Channel FRB.gif
Band LTE2 10MHz 16QAM	 Band LTE2 10MHz CBE 16QAM High Channel 1RB.gif	 Band LTE2 10MHz CBE 16QAM High Channel FRB.gif

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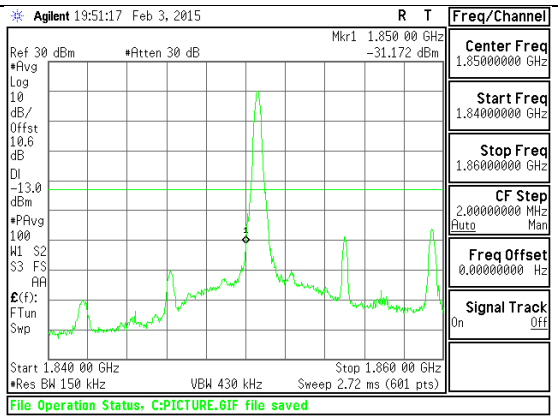
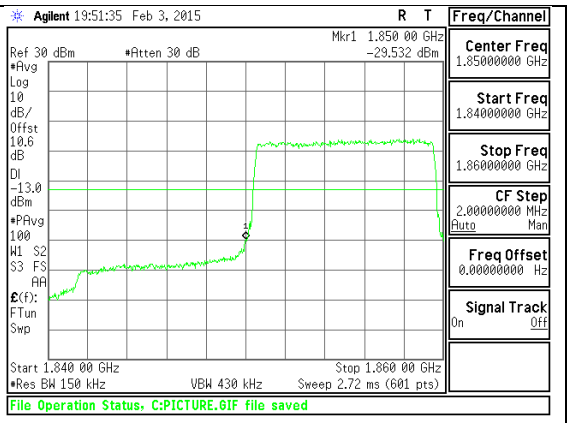
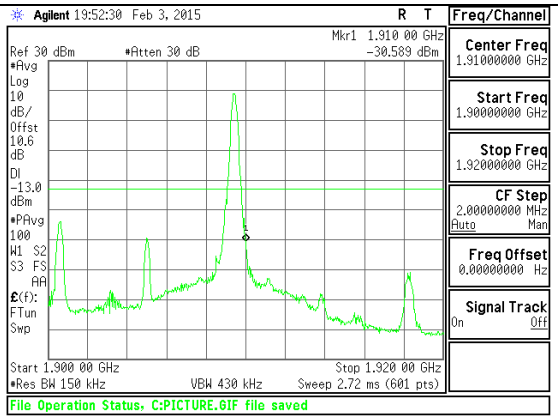
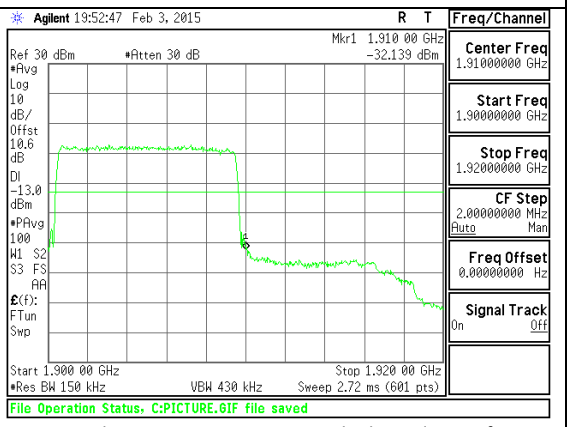
Band LTE2 10MHz QPSK	 Band LTE2 10MHz CBE QPSK Low Channel 1RB.gif	 Band LTE2 10MHz CBE QPSK Low Channel FRB.gif
Band LTE2 10MHz QPSK	 Band LTE2 10MHz CBE QPSK High Channel 1RB.gif	 Band LTE2 10MHz CBE QPSK High Channel FRB.gif

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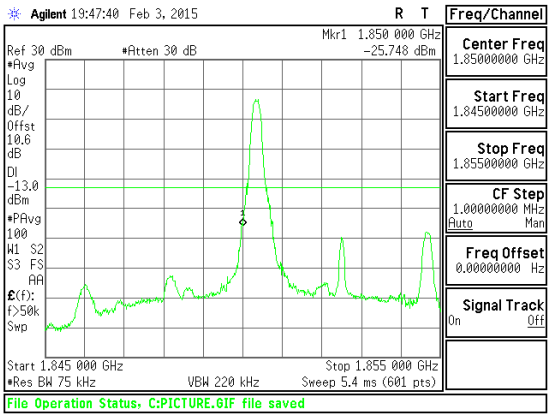
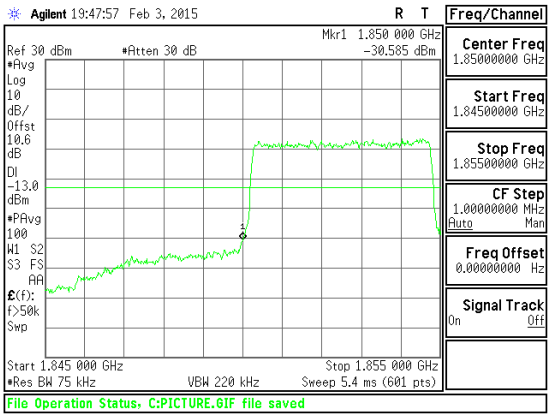
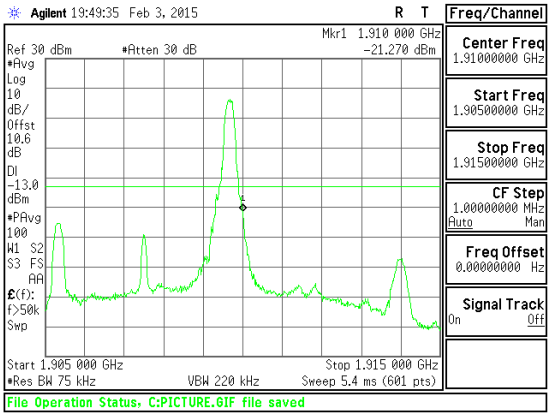
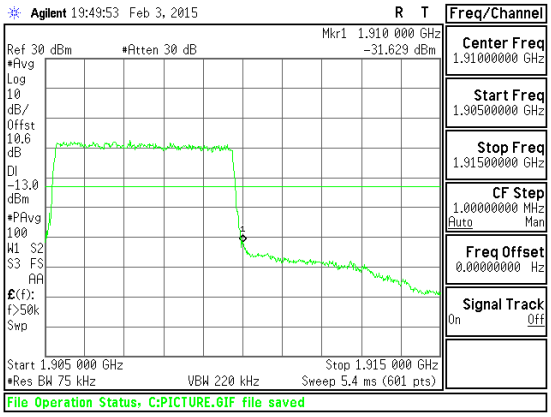
Band LTE2 5MHz 16QAM	 Band LTE2 5MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE2 5MHz CBE 16QAM Low Channel FRB.gif
Band LTE2 5MHz 16QAM	 Band LTE2 5MHz CBE 16QAM High Channel 1RB.gif	 Band LTE2 5MHz CBE 16QAM High Channel FRB.gif

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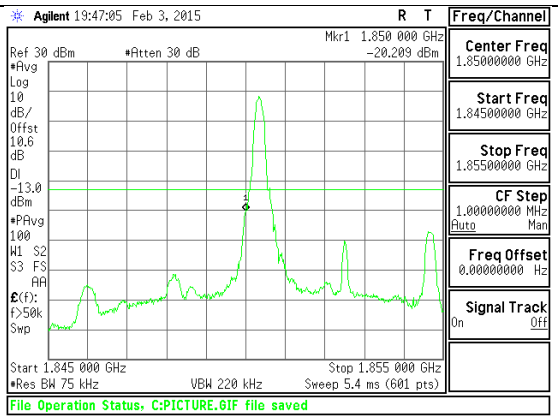
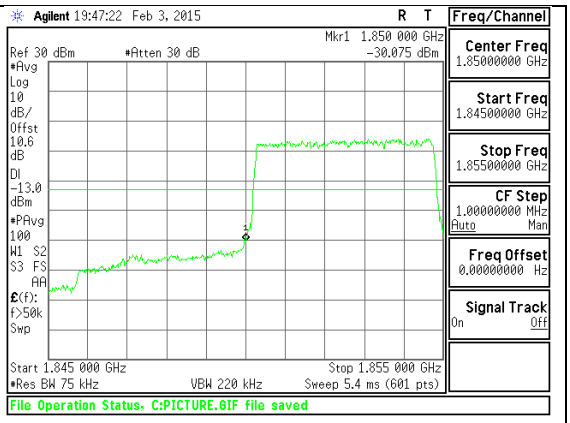
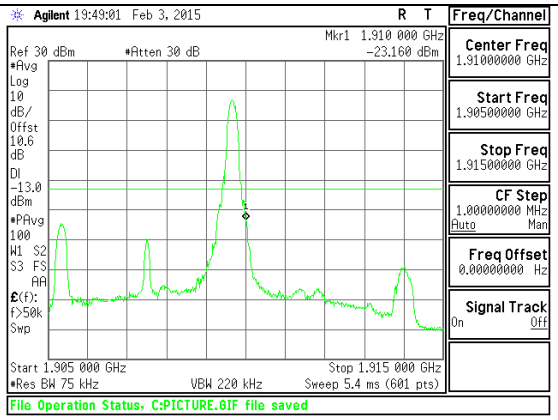
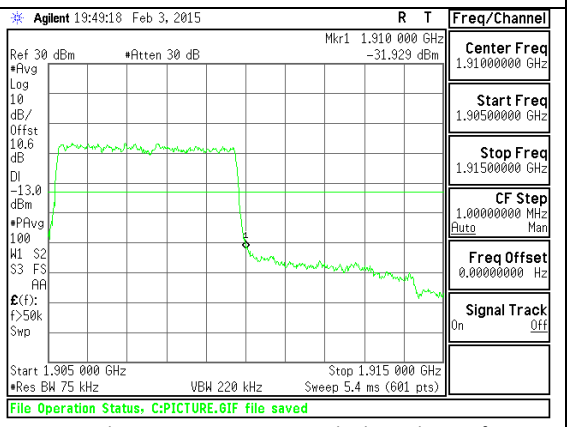
Band LTE2 5MHz QPSK	 Band LTE2 5MHz CBE QPSK Low Channel 1RB.gif	 Band LTE2 5MHz CBE QPSK Low Channel FRB.gif
Band LTE2 5MHz QPSK	 Band LTE2 5MHz CBE QPSK High Channel 1RB.gif	 Band LTE2 5MHz CBE QPSK High Channel FRB.gif

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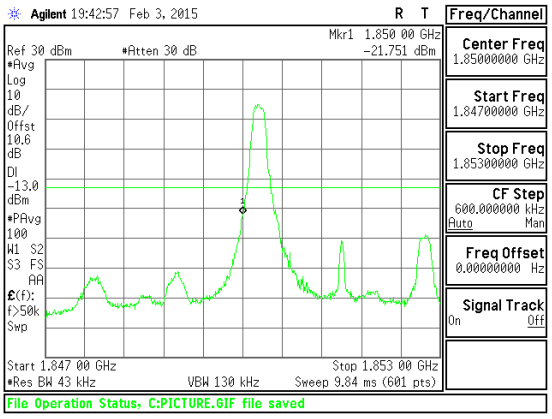
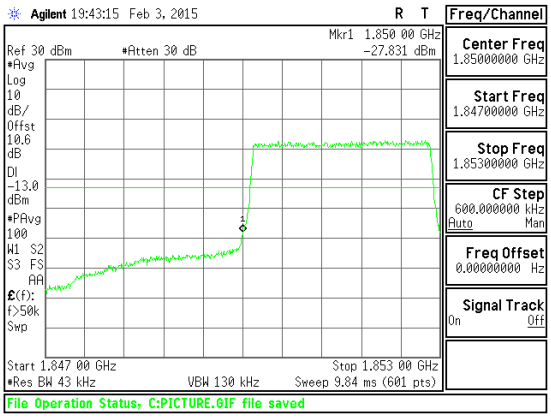
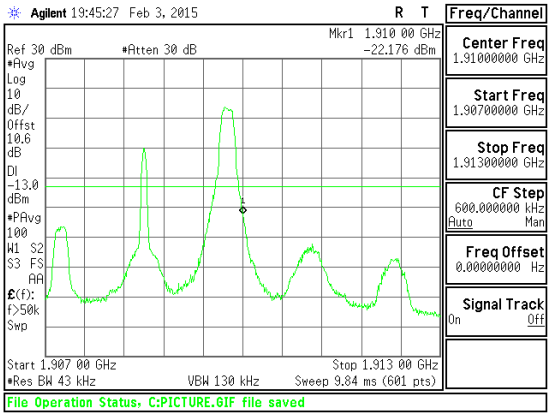
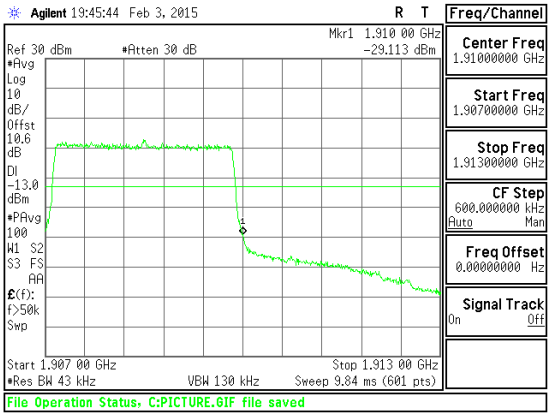
Band LTE2 3MHz 16QAM	 Band LTE2 3MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE2 3MHz CBE 16QAM Low Channel FRB.gif
Band LTE2 3MHz 16QAM	 Band LTE2 3MHz CBE 16QAM High Channel 1RB.gif	 Band LTE2 3MHz CBE 16QAM High Channel FRB.gif

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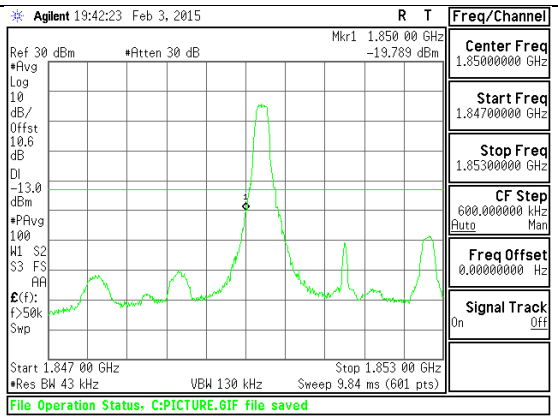
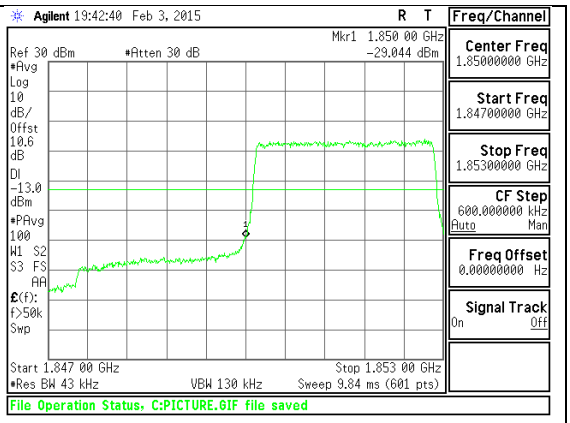
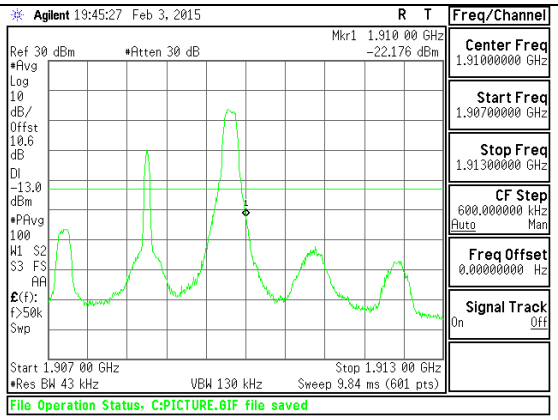
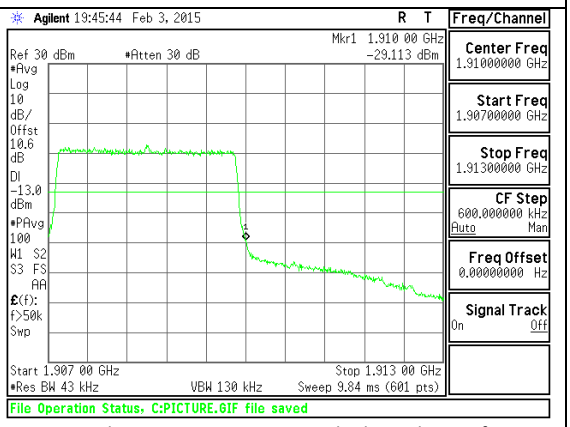
Band LTE2 3MHz QPSK	 Band LTE2 3MHz CBE QPSK Low Channel 1RB.gif	 Band LTE2 3MHz CBE QPSK Low Channel FRB.gif
Band LTE2 3MHz QPSK	 Band LTE2 3MHz CBE QPSK High Channel 1RB.gif	 Band LTE2 3MHz CBE QPSK High Channel FRB.gif

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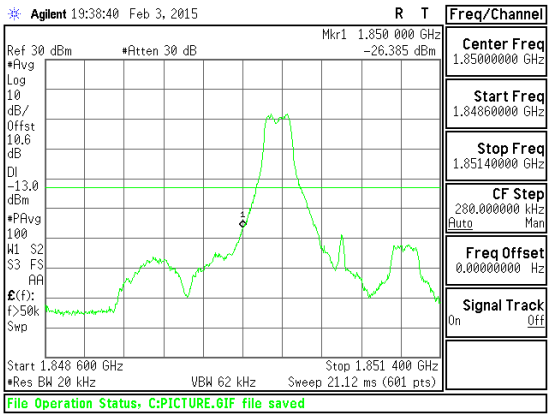
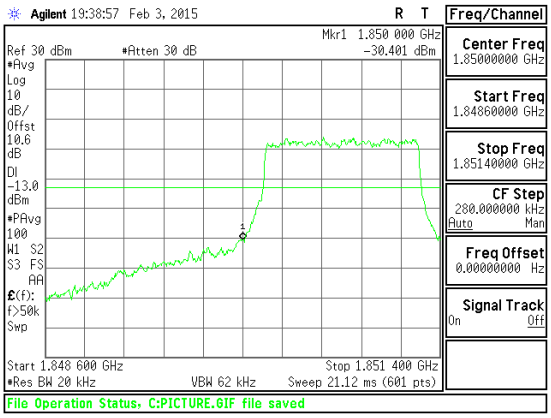
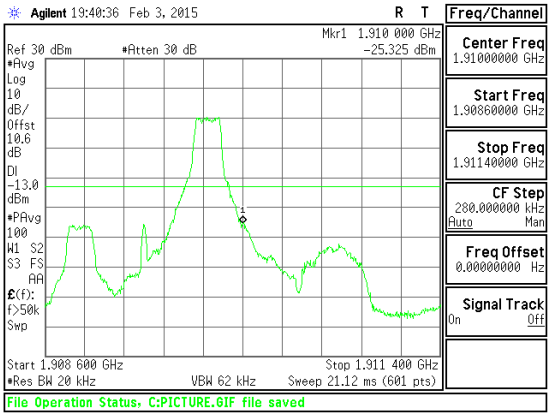
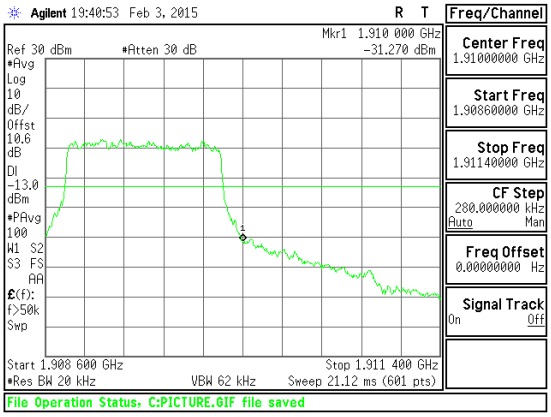
Band LTE2 1.4MHz 16QAM	 Band LTE2 1.4MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE2 1.4MHz CBE 16QAM Low Channel FRB.gif
Band LTE2 1.4MHz 16QAM	 Band LTE2 1.4MHz CBE 16QAM High Channel 1RB.gif	 Band LTE2 1.4MHz CBE 16QAM High Channel FRB.gif

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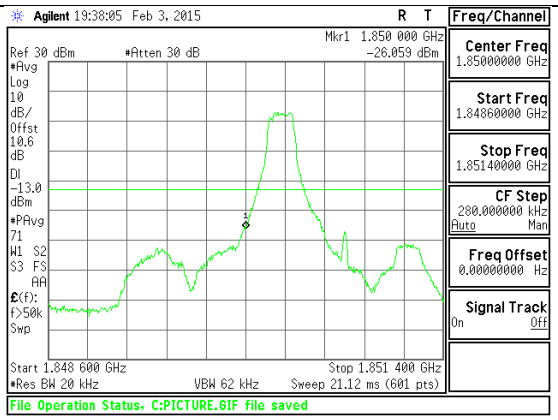
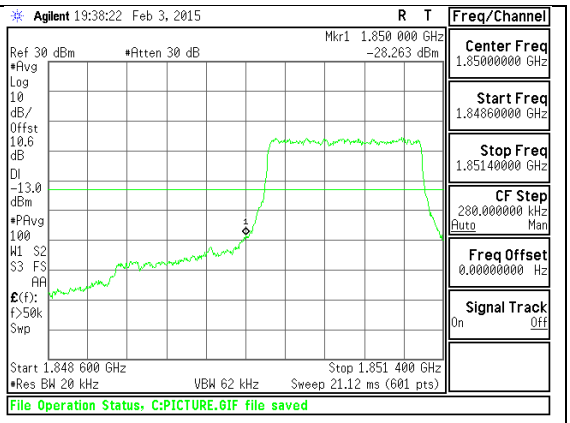
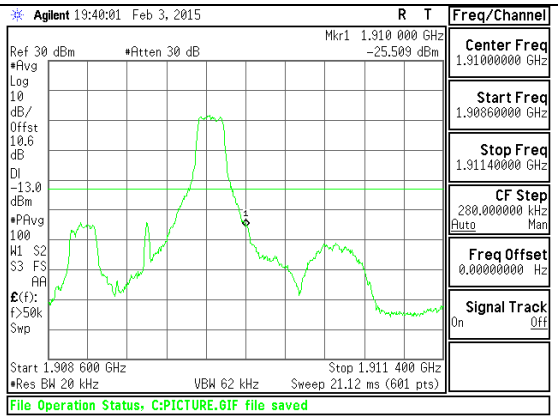
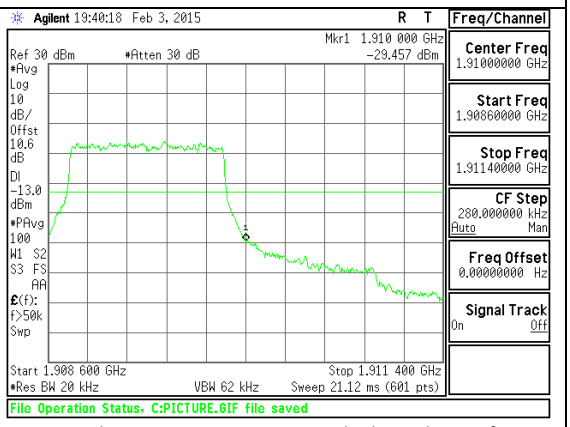
Band LTE2 1.4MHz QPSK	 Band LTE2 1.4MHz CBE QPSK Low Channel 1RB.gif	 Band LTE2 1.4MHz CBE QPSK Low Channel FRB.gif
Band LTE2 1.4MHz QPSK	 Band LTE2 1.4MHz CBE QPSK High Channel 1RB.gif	 Band LTE2 1.4MHz CBE QPSK High Channel FRB.gif

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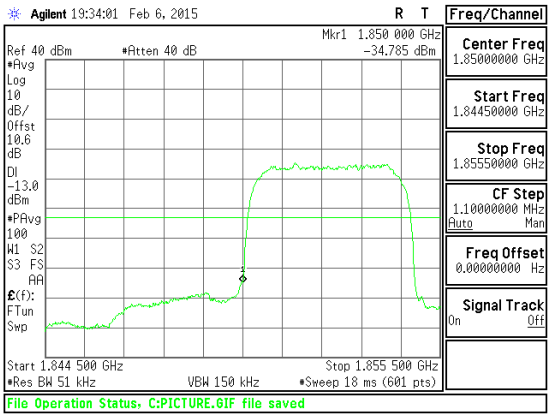
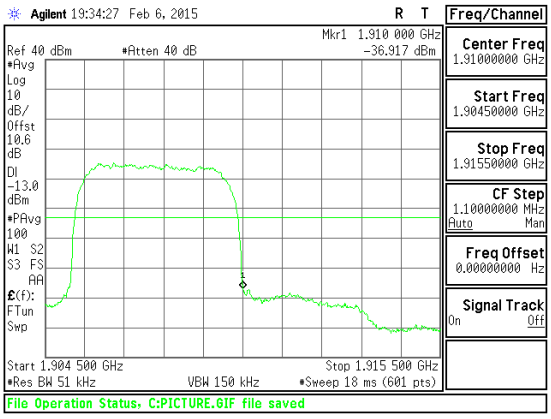
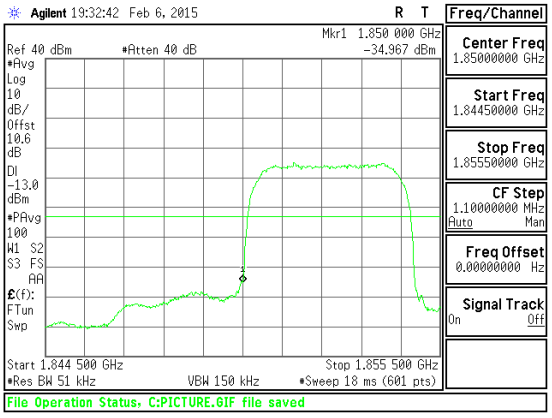
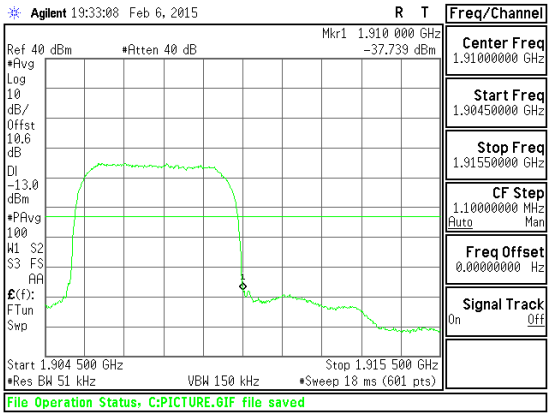
Band Band 2 HSDPA	 Band WCDMA B2 HSDPA CBE	 Band WCDMA B2 HSDPA CBE
Band Band 2 REL99	 Band WCDMA B2 REL99 CBE	 Band WCDMA B2 REL99 CBE

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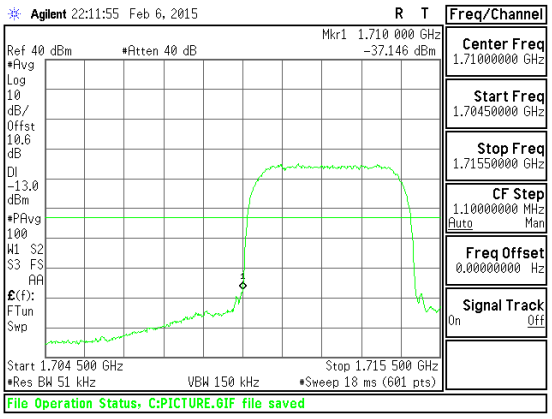
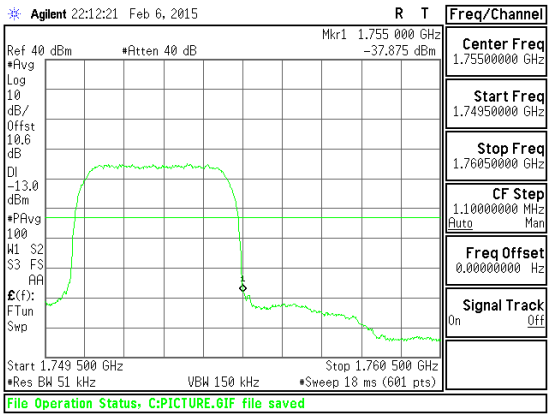
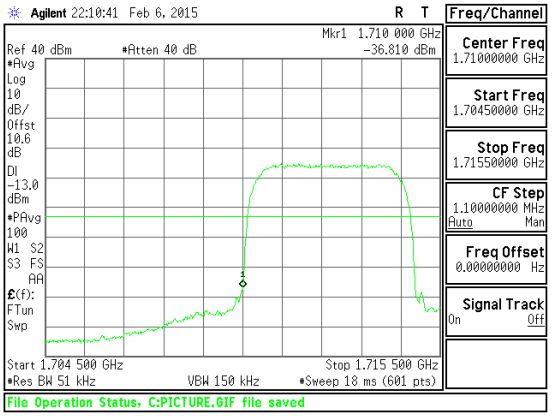
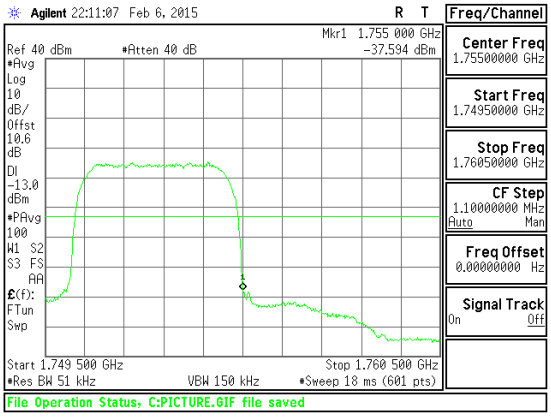
Band Band 4 HSDPA	 Band WCDMA B4 HSDPA CBE	 Band WCDMA B4 HSDPA CBE
Band Band 4 REL99	 Band WCDMA B4 REL99 CBE	 Band WCDMA B4 REL99 CBE

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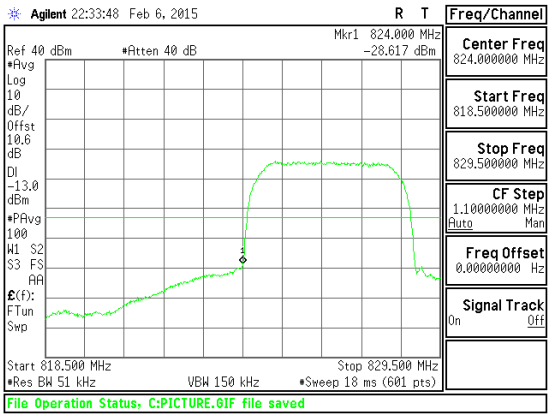
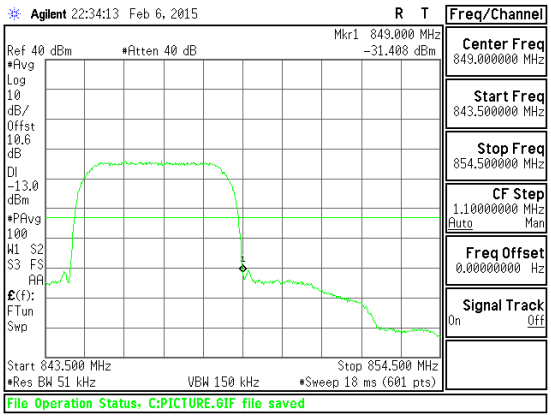
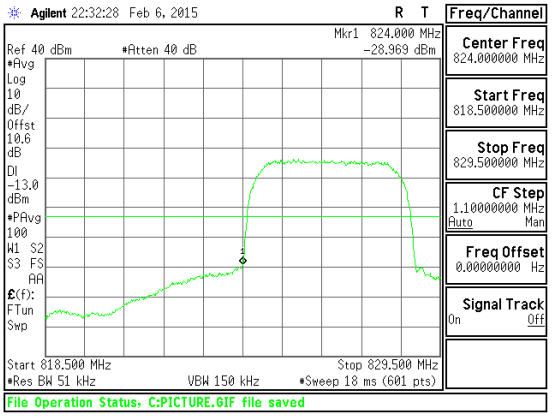
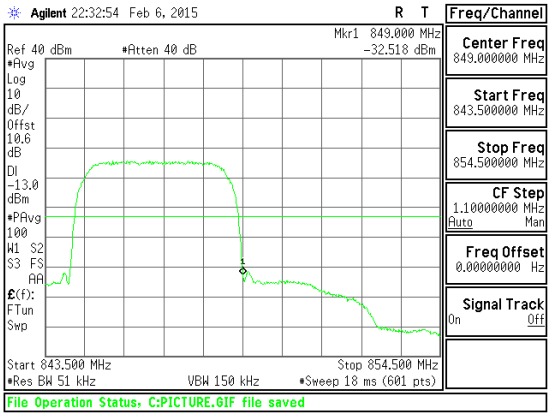
Band Band 5 HSDPA		
	Band WCDMA B5 HSDPA CBE	Band WCDMA B5 HSDPA CBE
Band Band 5 REL99		
	Band WCDMA B5 REL99 CBE	Band WCDMA B5 REL99 CBE

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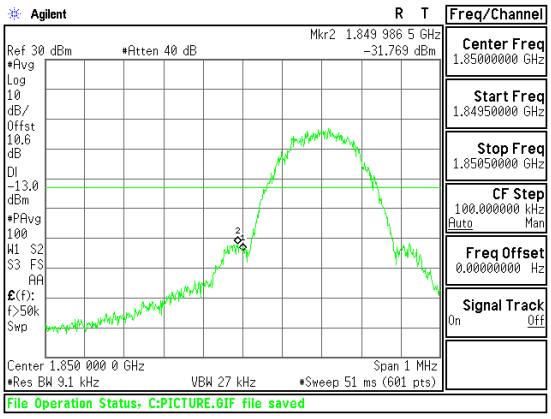
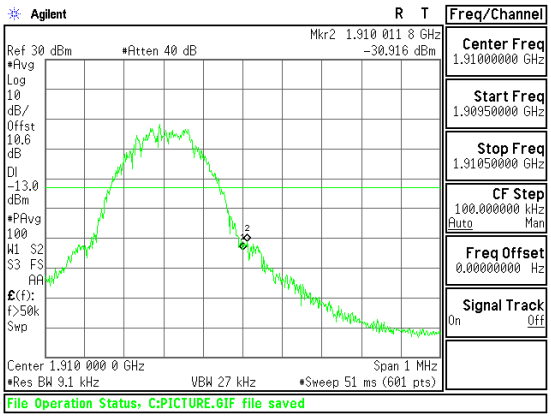
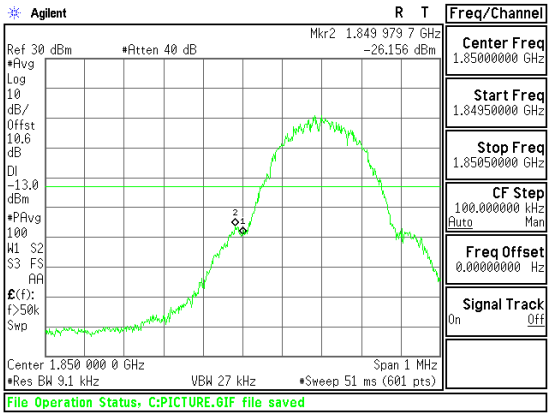
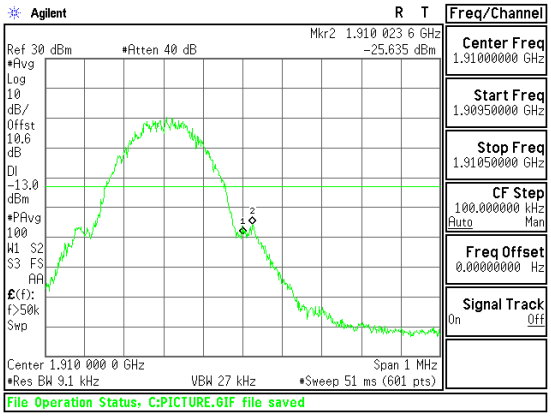
Band GSM 1900 EGPRS	 Band GSM1900 EGPRS CBE Low channel	 Band GSM1900 EGPRS CBE High channel
Band GSM 1900 GPRS	 Band GSM1900 GPRS CBE Low channel	 Band GSM1900 GPRS CBE High channel

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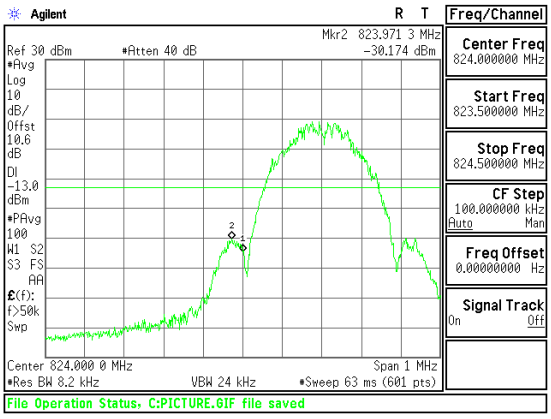
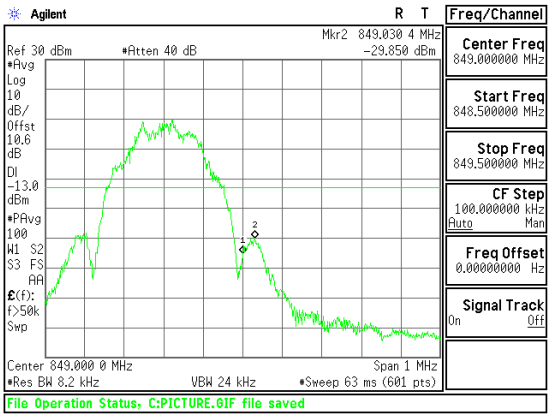
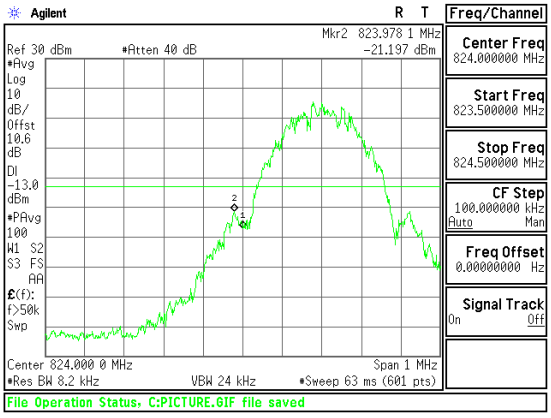
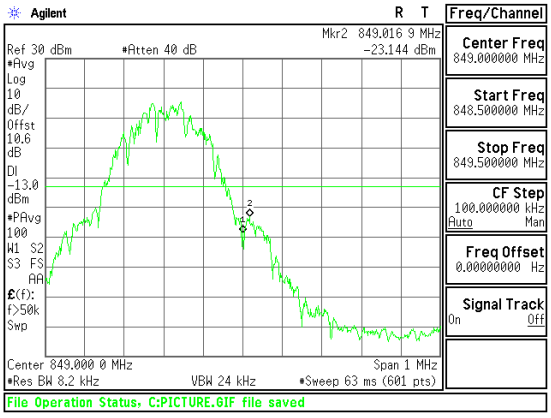
Band GSM 850 EGPRS	 Band GSM850 EGPRS CBE Low channel	 Band GSM850 EGPRS CBE High channel
Band GSM 850 GPRS	 Band GSM850 GPRS CBE Low channel	 Band GSM850 GPRS CBE High channel

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10.3. OUT OF BAND EMISSIONS

RULE PART(S)

FCC: §2.1051, §22.901, §22.917, §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.

Part 27: (m)(4) For mobile station, the attenuation factor shall be not less than 43+10Log(P)dB at the channel edge and (55+10Log(P)dB) at 5.5MHz from the channel edges.

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

GSM, WCDMA, and LTE

RESULTS

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10.3.1. OUT OF BAND EMISSIONS RESULT

Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE12	10	QPSK	704	-33.44	-13	-19.88
			707.5	-33.16	-13	-20.16
			711	-34.22	-13	-21.22
		16QAM	704	-33.31	-13	-20.31
			707.5	-36.39	-13	-23.39
			711	-31.98	-13	-18.98
	5	QPSK	701.5	-33.36	-13	-20.36
			707.5	-33.61	-13	-20.61
			713.5	-32.88	-13	-19.88
		16QAM	701.5	-33.97	-13	-20.97
			707.5	-32.86	-13	-19.86
			713.5	-32.78	-13	-19.78
	3	QPSK	700.5	-33.72	-13	-20.72
			707.5	-33.86	-13	-20.86
			714.5	-32.84	-13	-19.84
		16QAM	700.5	-33.89	-13	-20.89
			707.5	-33.88	-13	-20.88
			714.5	-33.81	-13	-20.81
	1.4	QPSK	699.7	-32.93	-13	-19.93
			707.5	-32.68	-13	-19.68
			715.3	-33.18	-13	-20.18
		16QAM	699.7	-33.46	-13	-20.46
			707.5	-33.63	-13	-20.63
			715.3	-33.52	-13	-20.52

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Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE4	20	QPSK	1720	-26.39	-13	-13.39
			1732.5	-30.92	-13	-17.92
			1745	-27.20	-13	-14.20
		16QAM	1720	-31.40	-13	-18.40
			1732.5	-32.66	-13	-19.66
			1745	-30.66	-13	-17.66
	15	QPSK	1717.5	-26.43	-13	-13.43
			1732.5	-30.25	-13	-17.25
			1747.5	-34.39	-13	-21.39
		16QAM	1717.5	-24.65	-13	-11.65
			1732.5	-32.82	-13	-19.82
			1747.5	-29.31	-13	-16.31
	10	QPSK	1715	-25.67	-13	-12.67
			1732.5	-32.73	-13	-19.73
			1750	-28.02	-13	-15.02
		16QAM	1715	-25.91	-13	-12.91
			1732.5	-33.24	-13	-20.24
			1750	-28.02	-13	-15.02
	5	QPSK	1712.5	-26.74	-13	-13.74
			1732.5	-33.14	-13	-20.14
			1752.5	-32.52	-13	-19.52
		16QAM	1712.5	-30.51	-13	-17.51
			1732.5	-32.69	-13	-19.69
			1752.5	-33.08	-13	-20.08

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Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE4	3	QPSK	1711.5	-28.61	-13	-15.61
			1732.5	-29.64	-13	-16.64
			1753.5	-32.43	-13	-19.43
		16QAM	1711.5	-25.82	-13	-12.82
			1732.5	-30.11	-13	-17.11
			1753.5	-32.70	-13	-19.70
	1.4	QPSK	1710.7	-25.82	-13	-12.82
			1732.5	-31.25	-13	-18.25
			1754.3	-33.17	-13	-20.17
		16QAM	1710.7	-26.82	-13	-13.82
			1732.5	-32.77	-13	-19.77
			1754.3	-32.85	-13	-19.85

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Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE2	20	QPSK	1860	-33.44	-13	-20.44
			1880	-33.42	-13	-20.42
			1900	-35.57	-13	-22.57
		16QAM	1860	-33.10	-13	-20.10
			1880	-33.26	-13	-20.26
			1900	-37.54	-13	-24.54
	15	QPSK	1857.5	-32.23	-13	-19.23
			1880	-33.15	-13	-20.15
			1902.5	-36.42	-13	-23.42
		16QAM	1857.5	-33.71	-13	-20.71
			1880	-33.59	-13	-20.59
			1902.5	-35.60	-13	-22.60
	10	QPSK	1855	-33.33	-13	-20.33
			1880	-33.29	-13	-20.29
			1905	-32.48	-13	-19.48
		16QAM	1855	-33.46	-13	-20.46
			1880	-33.03	-13	-20.03
			1905	-32.48	-13	-19.48
	5	QPSK	1852.5	-32.77	-13	-19.77
			1880	-33.67	-13	-20.67
			1907.5	-33.93	-13	-20.93
		16QAM	1852.5	-33.79	-13	-20.79
			1880	-33.89	-13	-20.89
			1907.5	-33.25	-13	-20.25

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Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE2	3	QPSK	1851.5	-33.58	-13	-20.58
			1880	-33.63	-13	-20.63
			1908.5	-33.09	-13	-20.09
		16QAM	1851.5	-32.83	-13	-19.83
			1880	-33.85	-13	-20.85
			1908.5	-33.44	-13	-20.44
	1.4	QPSK	1850.7	-34.14	-13	-21.14
			1880	-33.75	-13	-20.75
			1909.3	-33.41	-13	-20.41
		16QAM	1850.7	-33.79	-13	-20.79
			1880	-33.48	-13	-20.48
			1909.3	-33.09	-13	-20.09

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Band	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
GSM850	GPRS	824.2	-25.753	-13	-12.753
		836.6	-26.018	-13	-13.018
		848.8	-25.924	-13	-12.924
	EGPRS	824.2	-24.749	-13	-11.749
		836.6	-25.668	-13	-12.668
		848.8	-25.876	-13	-12.876
GSM1900	GPRS	1850.2	-26.047	-13	-13.047
		1880	-25.387	-13	-12.387
		1909.8	-25.388	-13	-12.388
	EGPRS	1850.2	-25.582	-13	-12.582
		1880	-25.661	-13	-12.661
		1909.8	-25.736	-13	-12.736

Band	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
BAND 5	REL99	826.4	-25.72	-13	-12.72
		836.6	-25.49	-13	-12.49
		846.6	-25.29	-13	-12.29
	HSDPA	826.4	-24.88	-13	-11.88
		836.6	-25.81	-13	-12.81
		846.6	-25.74	-13	-12.74
BAND 4	REL99	1712.4	-25.87	-13	-12.87
		1732.6	-25.86	-13	-12.86
		1752.6	-26.04	-13	-13.04
	HSDPA	1712.4	-25.62	-13	-12.62
		1732.6	-24.81	-13	-11.81
		1752.6	-25.67	-13	-12.67
BAND 2	REL99	1852.4	-25.63	-13	-12.63
		1880	-25.81	-13	-12.81
		1907.6	-25.86	-13	-12.86
	HSDPA	1852.4	-25.19	-13	-12.19
		1880	-25.43	-13	-12.43
		1907.6	-25.71	-13	-12.71

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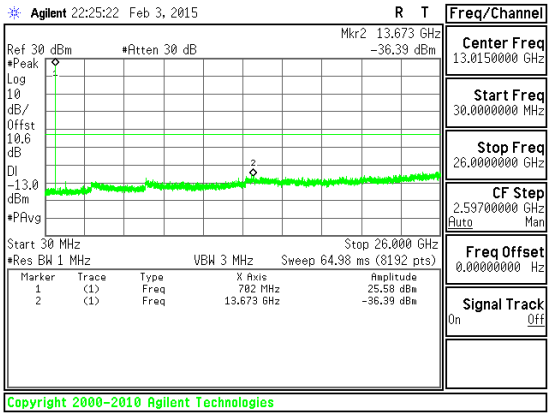
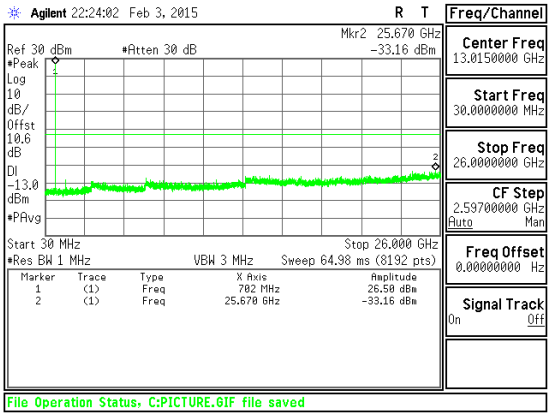
10.3.2. OUT OF BAND EMISSIONS PLOTS

Band LTE12 10MHz 16QAM

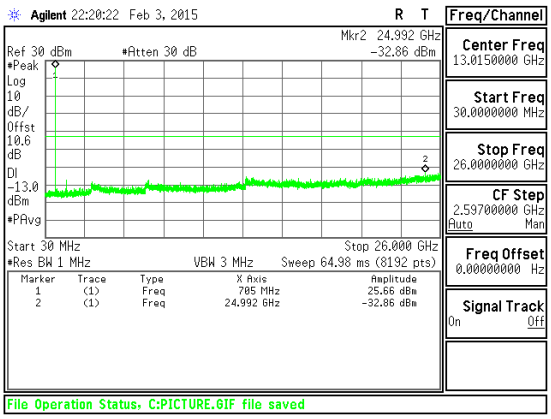


Band LTE12 10MHz CSE 16QAM Mid channel

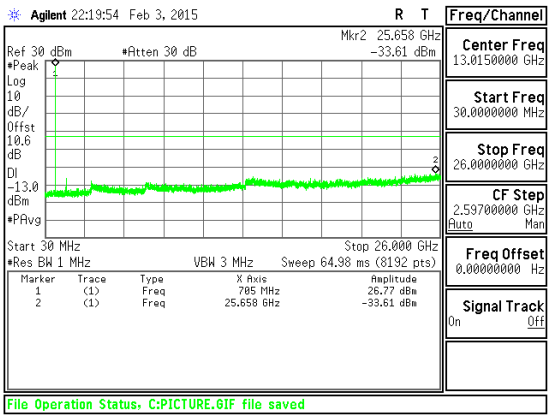


Band LTE12 10MHz CSE QPSK Mid channel

Band LTE12 5MHz 16QAM



Band LTE12 5MHz CSE 16QAM Mid channel



Band LTE12 5MHz CSE QPSK Mid channel

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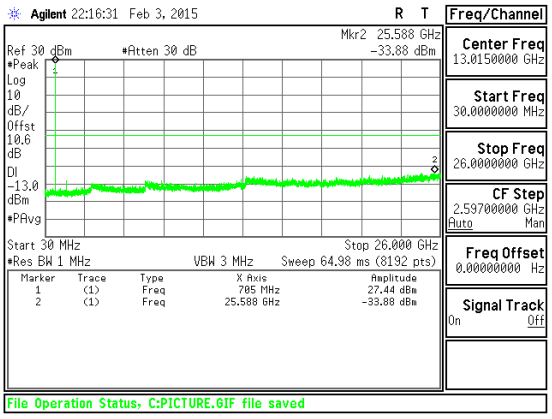
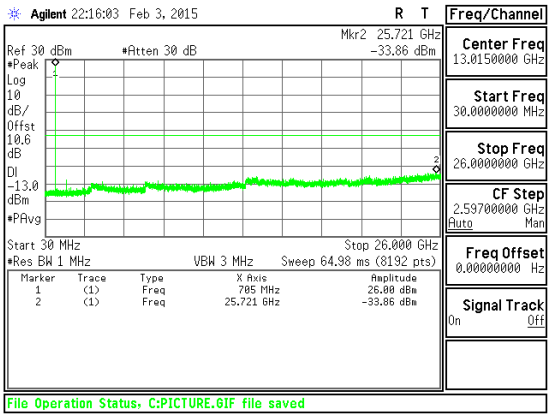
Band LTE12 3MHz 16QAM

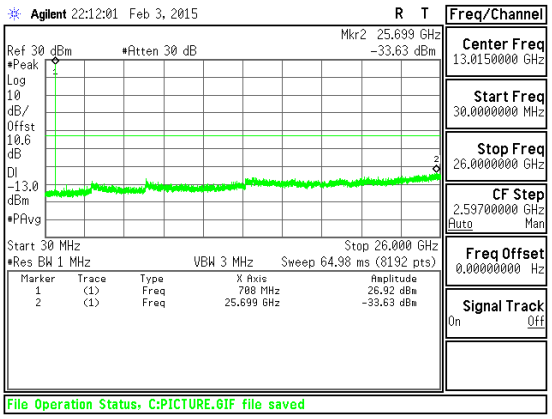


Band LTE12 3MHz CSE 16QAM Mid channel

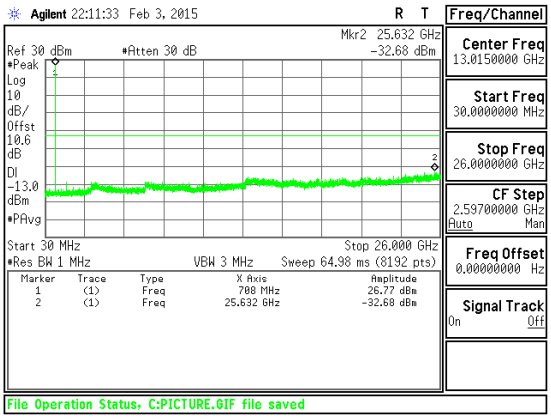


Band LTE12 3MHz CSE QPSK Mid channel

Band LTE12 1.4MHz 16QAM



Band LTE12 1.4MHz CSE 16QAM Mid channel



Band LTE12 1.4MHz CSE QPSK Mid channel

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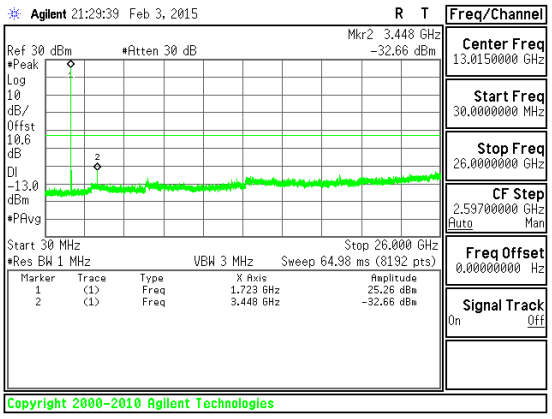
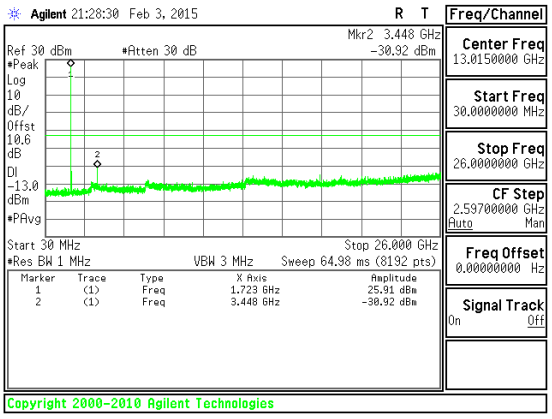
Band LTE4 20MHz 16QAM

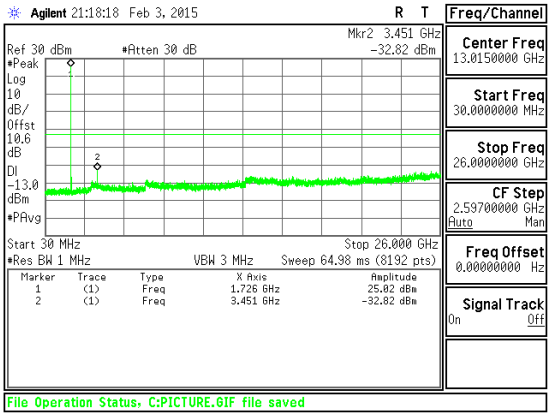


Band LTE4 20MHz CSE 16QAM Mid channel

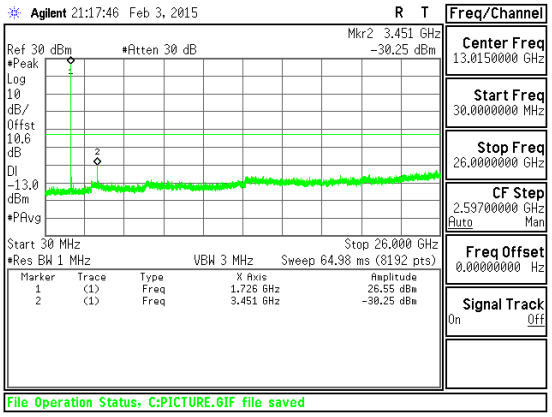


Band LTE4 20MHz CSE QPSK Mid channel

Band LTE4 15MHz 16QAM



Band LTE4 15MHz CSE 16QAM Mid channel



Band LTE4 15MHz CSE QPSK Mid channel

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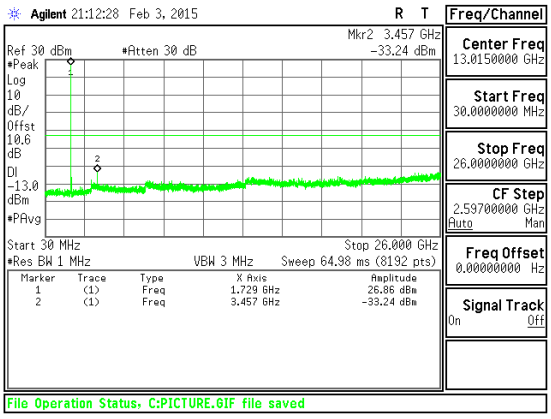
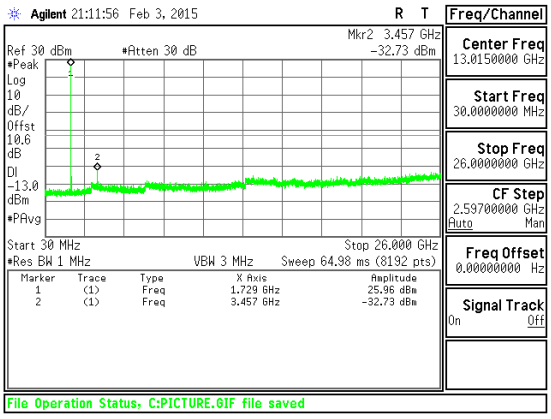
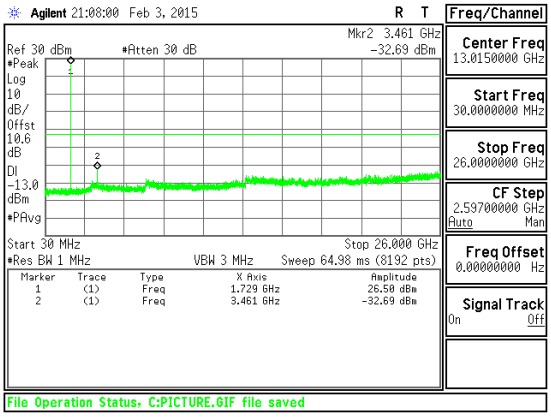
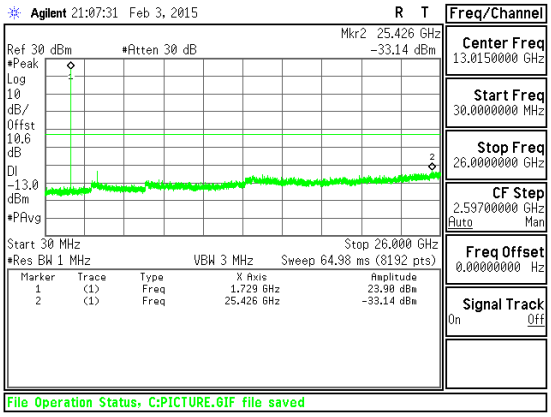
Band LTE4 10MHz 16QAM	 Band LTE4 10MHz CSE 16QAM Mid channel	 Band LTE4 10MHz CSE QPSK Mid channel
Band LTE4 5MHz 16QAM	 Band LTE4 5MHz CSE 16QAM Mid channel	 Band LTE4 5MHz CSE QPSK Mid channel

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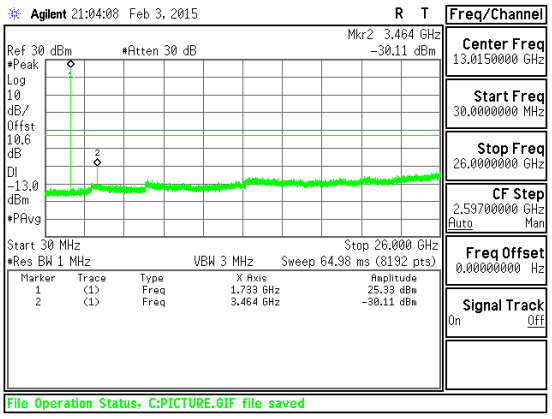
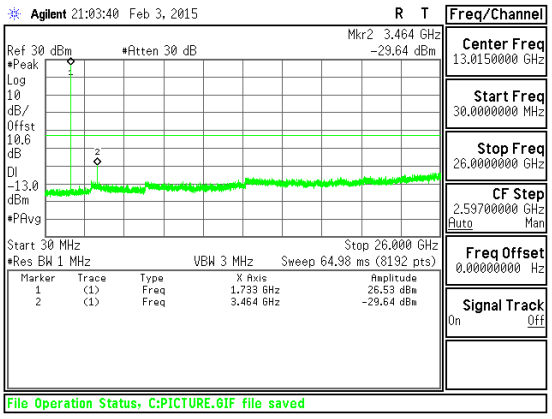
Band LTE4 3MHz 16QAM

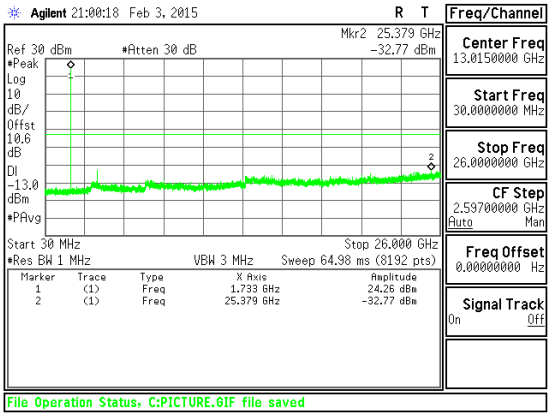


Band LTE4 3MHz CSE 16QAM Mid channel

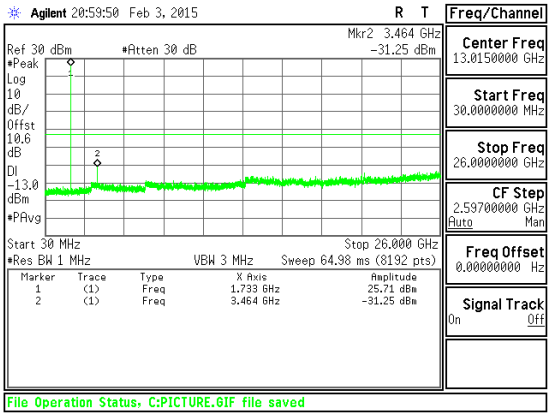


Band LTE4 3MHz CSE QPSK Mid channel

Band LTE4 1.4MHz 16QAM



Band LTE4 1.4MHz CSE 16QAM Mid channel



Band LTE4 1.4MHz CSE QPSK Mid channel

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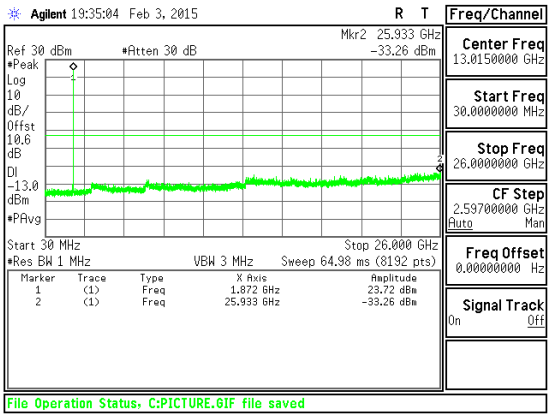
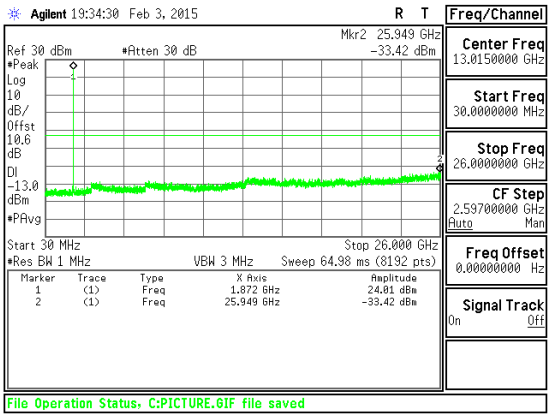
Band LTE2 20MHz 16QAM

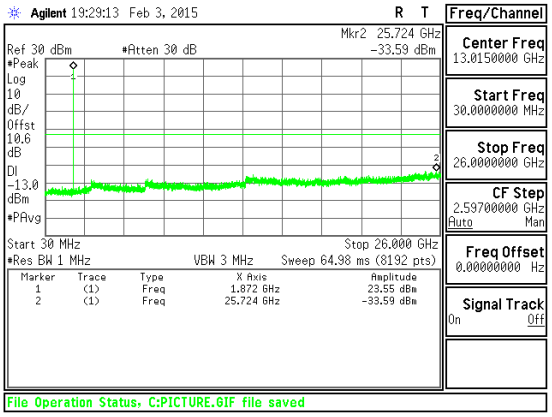


Band LTE2 20MHz CSE 16QAM Mid channel

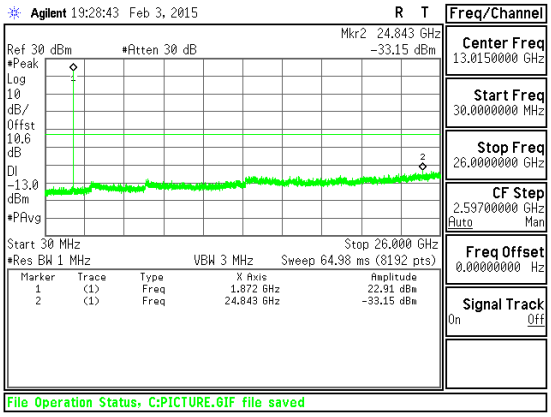


Band LTE2 20MHz CSE QPSK Mid channel

Band LTE2 15MHz 16QAM



Band LTE2 15MHz CSE 16QAM Mid channel



Band LTE2 15MHz CSE QPSK Mid channel

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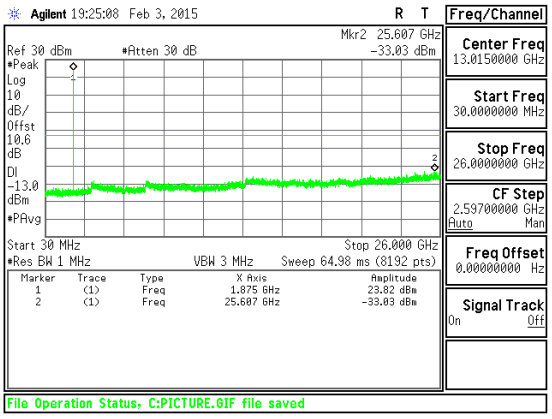
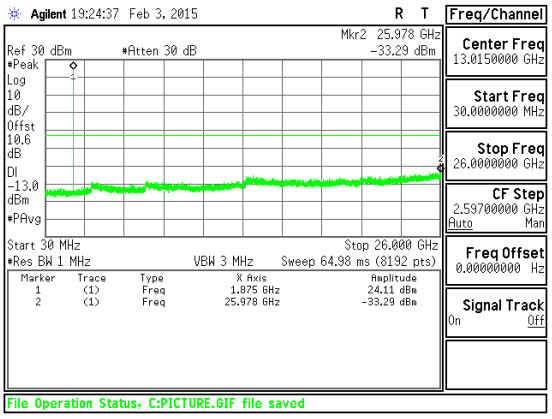
Band LTE2 10MHz 16QAM

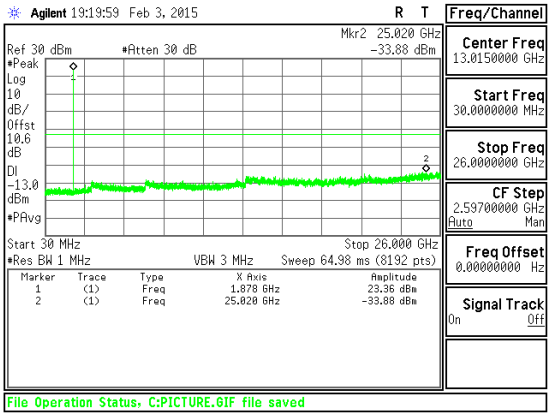


Band LTE2 10MHz CSE 16QAM Mid channel

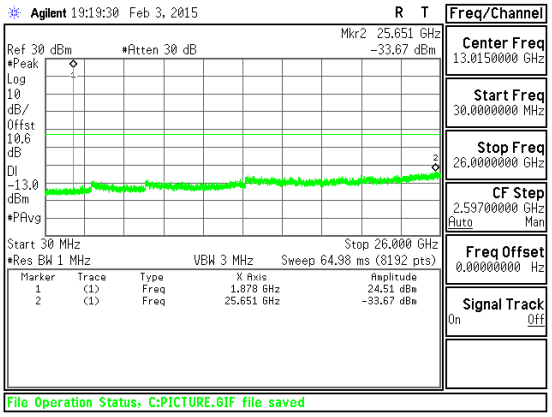


Band LTE2 10MHz CSE QPSK Mid channel

Band LTE2 5MHz 16QAM



Band LTE2 5MHz CSE 16QAM Mid channel



Band LTE2 5MHz CSE QPSK Mid channel

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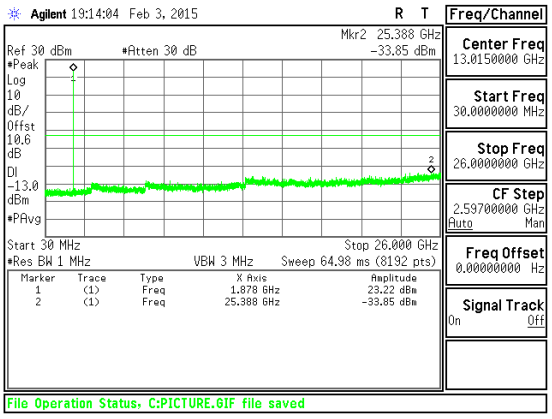
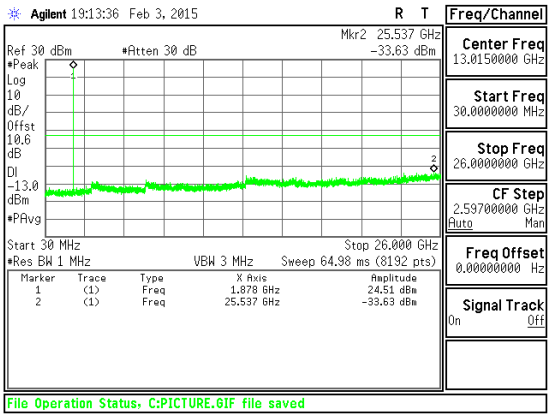
Band LTE2 3MHz 16QAM

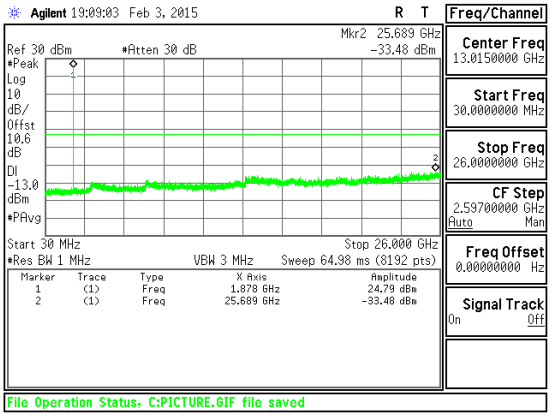


Band LTE2 3MHz CSE 16QAM Mid channel

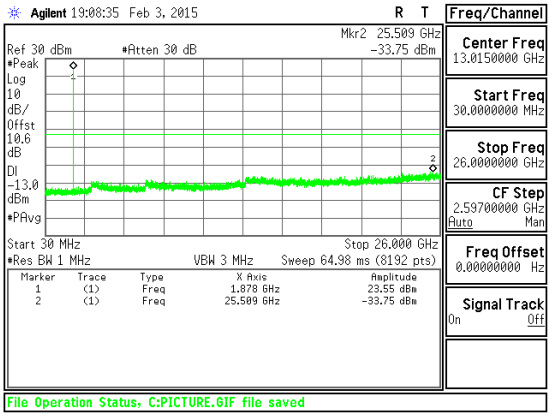


Band LTE2 3MHz CSE QPSK Mid channel

Band LTE2 1.4MHz 16QAM



Band LTE2 1.4MHz CSE 16QAM Mid channel



Band LTE2 1.4MHz CSE QPSK Mid channel

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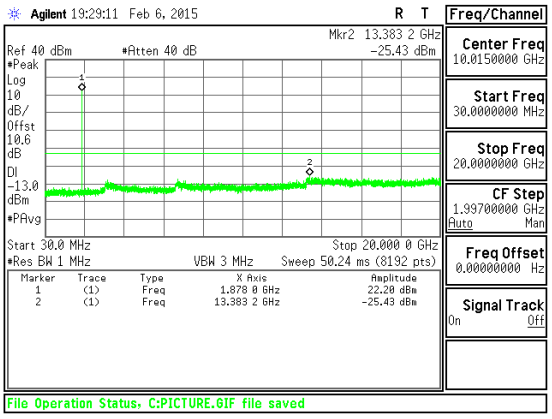
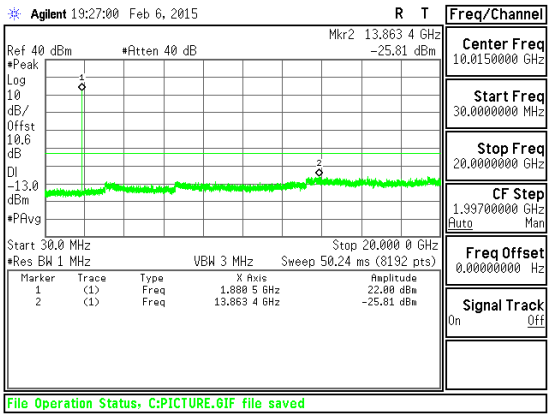
Band

Band 2



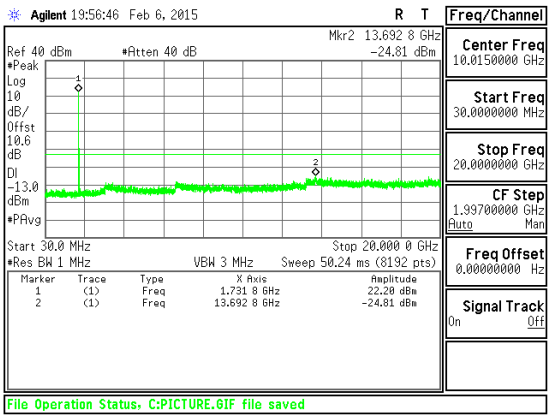
Band WCDMA B2 HSDPA CSE



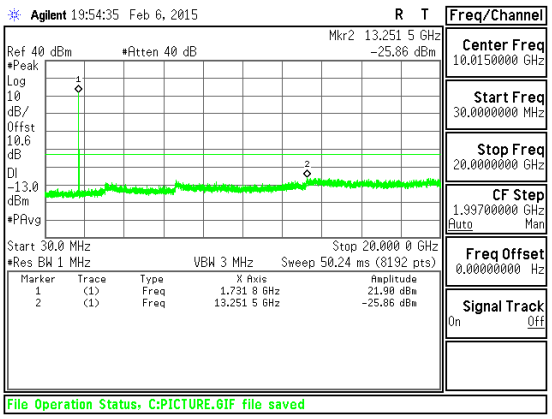
Band WCDMA B2 REL99 CSE

Band

Band 4



Band WCDMA B4 HSDPA CSE



Band WCDMA B4 REL99 CSE

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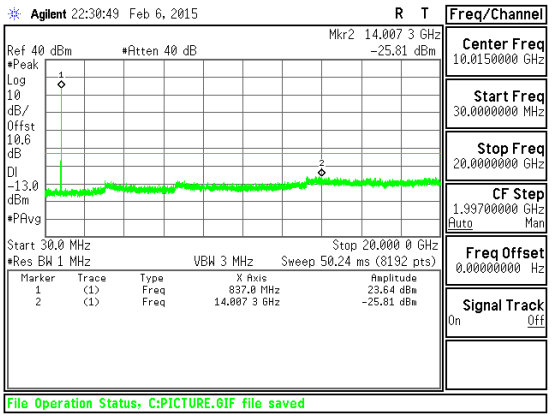
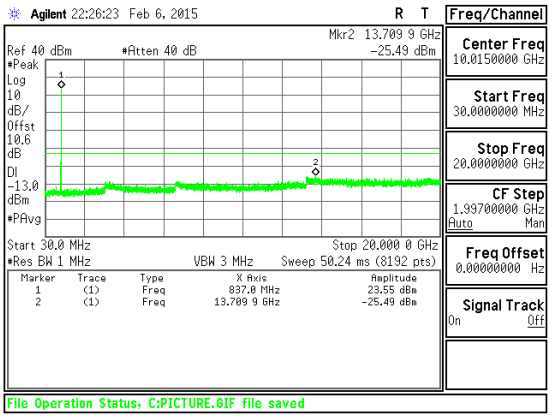
Band

Band 5



Band WCDMA B5 HSDPA CSE

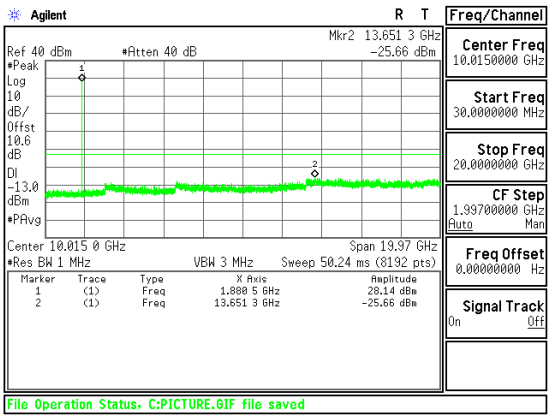


Band WCDMA B5 REL99 CSE

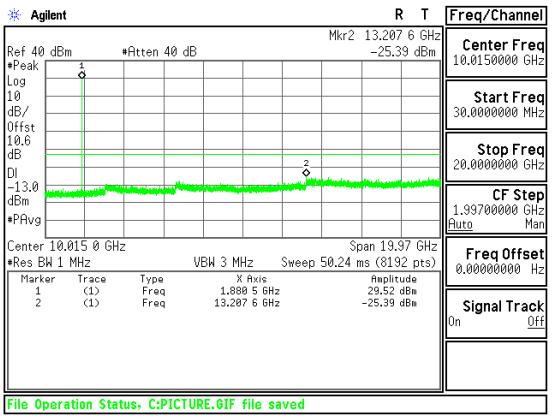
Band

GSM1900

EGPRS



Band GSM1900 EGPRS CSE Mid channel



Band GSM1900 GPRS CSE Mid channel

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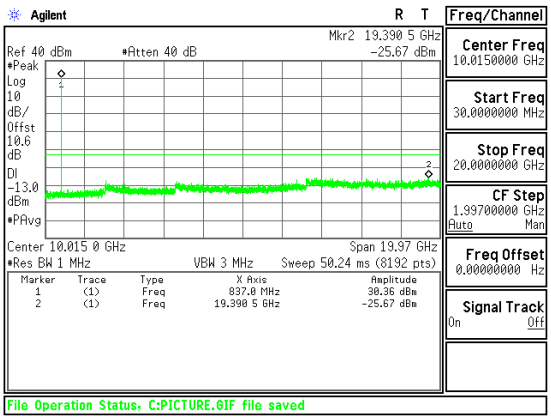
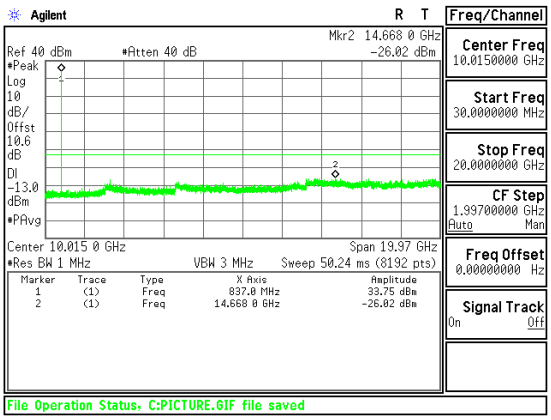
Band GSM850 EGPRS	 Band GSM850 EGPRS CSE Mid channel	 Band GSM850 GPRS CSE Mid channel

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10.4. FREQUENCY STABILITY

RULE PART(S)

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

LIMITS

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

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

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

TEST PROCEDURE

Per KDB 971168 D01 Power Meas License Digital Systems v02r02

MODES TESTED

WCDMA, and LTE

RESULTS

See the following pages.

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10.4.1. FREQUENCY STABILITY RESULTS

WCDMA BAND 2 – MID CHANNEL (1880.0 MHz)

Reference Frequency: Cellular Mid Channel 1879.999997MHz @ 20°C Limit: to stay +- 2.5 ppm = 4700.000 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse (MHz)	Delta (ppm)	Limit (ppm)
3.80	50	1879.999995	0.001	2.5
3.80	40	1879.999984	0.007	2.5
3.80	30	1879.999997	0.000	2.5
3.80	***20***	***1879.999997***	***0***	2.5
3.80	10	1880.000007	-0.006	2.5
3.80	0	1879.999996	0.001	2.5
3.80	-10	1879.999996	0.000	2.5
3.80	-20	1879.999988	0.005	2.5
3.80	-30	1879.999997	0.000	2.5

Reference Frequency: Cellular Mid Channel 1879.999975MHz @ 20°C Limit: to stay +- 2.5 ppm = 4700.000 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse (MHz)	Delta (ppm)	Limit (ppm)
3.80	***20***	***1879.999997***	***0***	***2.5***
3.23	20	1880.000001	*-0.002*	2.5
4.37	20	1879.999996	*0.000*	2.5

WCDMA BAND 4 – MID CHANNEL (1732.5 MHz)

Reference Frequency: Cellular Mid Channel 1732.500004MHz @ 20°C Limit: to stay +- 2.5 ppm = 4331.250 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse (MHz)	Delta (ppm)	Limit (ppm)
3.80	50	1732.499996	0.005	2.5
3.80	40	1732.499989	0.009	2.5
3.80	30	1732.499984	0.011	2.5
3.80	***20***	***1732.500004***	***0***	2.5
3.80	10	1732.500003	0.000	2.5
3.80	0	1732.500013	-0.005	2.5
3.80	-10	1732.500003	0.001	2.5
3.80	-20	1732.499988	0.010	2.5
3.80	-30	1732.500003	0.000	2.5

Reference Frequency: Cellular Mid Channel 1732.500004MHz @ 20°C Limit: to stay +- 2.5 ppm = 4331.250 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse (MHz)	Delta (ppm)	Limit (ppm)
3.80	***20***	***1732.500004***	***0***	***2.5***
3.23	20	1732.500018	*-0.008*	2.5
4.37	20	1732.500005	*0.000*	2.5

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WCDMA BAND 5 – MID CHANNEL (836.5 MHz)

Reference Frequency: Cellular Mid Channel 836.600007MHz @ 20°C Limit: to stay +- 2.5 ppm = 2091.500 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse (MHz)	Delta (ppm)	Limit (ppm)
3.80	50	836.599995	0.011	2.5
3.80	40	836.599998	0.007	2.5
3.80	30	836.600003	0.002	2.5
3.80	***20***	***836.600004***	***0***	2.5
3.80	10	836.599998	0.008	2.5
3.80	0	836.599998	0.007	2.5
3.80	-10	836.599998	0.007	2.5
3.80	-20	836.600002	0.003	2.5
3.80	-30	836.600003	0.002	2.5

Reference Frequency: Cellular Mid Channel 836.500007MHz @ 20°C Limit: to stay +- 2.5 ppm = 2091.500 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse (MHz)	Delta (ppm)	Limit (ppm)
3.80	***20***	***836.600004***	***0***	***2.5***
3.23	20	836.599994	*0.012*	2.5
4.37	20	836.600002	*0.003*	2.5

LTE BAND 12 – MID CHANNEL (707.5 MHz)

Reference Frequency: Cellular Mid Channel 707.50000678 MHz @ 20°C Limit: to stay +- 2.5 ppm = 1768.750 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse (MHz)	Delta (ppm)	Limit (ppm)
3.80	50	707.500052	-0.079	2.5
3.80	40	707.499990	0.008	2.5
3.80	30	707.499991	0.007	2.5
3.80	***20***	***707.499996***	***0***	2.5
3.80	10	707.500003	-0.010	2.5
3.80	0	707.500003	-0.009	2.5
3.80	-10	707.499996	0.001	2.5
3.80	-20	707.500028	-0.045	2.5
3.80	-30	707.499997	-0.001	2.5

Reference Frequency: Cellular Mid Channel 707.5 MHz @ 20°C Limit: to stay +- 2.5 ppm = 1768.750 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse (MHz)	Delta (ppm)	Limit (ppm)
3.80	***20***	***707.499996***	***0***	***2.5***
3.23	20	707.499995	*0.002*	2.5
4.37	20	707.499996	*0.000*	2.5

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11. RADIATED TEST RESULTS

11.1. RADIATED POWER (ERP & EIRP)

RULE PART(S)

FCC: §2.1046, §22.913, §24.232, and §27

LIMITS

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

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

27.50(c) - (10) Portable stations (hand-held devices) are limited to 3 watts ERP; (LTE B17 & LTE B12)

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

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

MODES TESTED

GSM, WCDMA, and LTE

TEST RESULTS

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701I
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888

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11.1.1. ERP/EIRP RESULTS

WCDMA

Band	Mode	Channel	f(MHz)	ERP / EIRP	
				dBm	mW
Band 2	REL99	9262	1852.4	23.85	242.66
		9400	1880	23.73	236.05
		9538	1907.6	23.4	218.78
	HSDPA	9262	1852.4	23.82	240.99
		9400	1880	23.61	229.61
		9538	1907.6	23.8	239.88

Band	Mode	Channel	f(MHz)	ERP / EIRP	
				dBm	mW
Band 4	REL99	1312	1712.4	24.09	256.32
		1413	1732.6	26.09	406.33
		1513	1752.6	24.48	280.35
	HSDPA	1312	1712.4	24.00	251.06
		1413	1732.6	26.12	409.15
		1513	1752.6	24.17	261.03

Band	Mode	Channel	f(MHz)	ERP / EIRP	
				dBm	mW
Band 5	REL99	4132	826.4	21.03	126.77
		4183	836.6	22.4	173.78
		4233	846.6	22.66	184.5
	HSDPA	4132	826.4	21.43	139
		4183	836.6	21.7	147.91
		4233	846.6	22.82	191.43

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GSM

Band	Mode	Channel	f(MHz)	ERP / EIRP	
				dBm	mW
GSM1900	GPRS	512	1850.2	30.05	1011.58
		661	1880	29.49	889.2
		810	1909.8	29.45	881.05
	EGPRS	512	1850.2	26.46	442.59
		661	1880	26.18	414.95
		810	1909.8	26.18	414.95

Band	Mode	Channel	f(MHz)	ERP / EIRP	
				dBm	mW
GSM850	GPRS	128	824.2	30.21	1049.78
		190	836.6	31.52	1419.38
		251	848.8	30.36	1086.68
	EGPRS	128	824.2	26.33	429.64
		190	836.6	27.40	549.67
		251	848.8	26.76	474.35

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11.1.2. LTE ERP/EIRP RESULTS

LTE Band 12

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE12	10	QPSK	1/0	704	24.31	269.77
			1/0	707.5	23.92	246.6
			1/0	711	24.41	276.06
		16QAM	1/0	704	23.6	229.09
			1/0	707.5	23.2	208.93
			1/0	711	23.7	234.42
Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE12	5	QPSK	1/0	701.5	23.9	245.47
			1/0	707.5	24.12	258.23
			1/0	713.5	24.6	288.4
		16QAM	1/0	701.5	23.1	204.17
			1/0	707.5	23.3	213.8
			1/0	713.5	23.8	239.88
Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE12	3	QPSK	1/0	700.5	24.28	267.92
			1/0	707.5	24.14	259.42
			1/0	714.5	24.75	298.54
		16QAM	1/0	700.5	23.5	223.87
			1/0	707.5	23.3	213.8
			1/0	714.5	23.9	245.47
Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE12	1.4	QPSK	1/0	699.7	24.1	257.04
			1/0	707.5	24.2	263.03
			1/0	715.3	24.3	269.15
		16QAM	1/0	699.7	23.4	218.78
			1/0	707.5	23.5	223.87
			1/0	715.3	23.3	213.8

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LTE Band 4

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE4	20	QPSK	1/0	1720	26.51	448.15
			1/0	1732.5	26.59	456.15
			1/0	1745	26.44	440.34
		16QAM	1/0	1720	25.74	375.34
			1/0	1732.5	25.92	390.94
			1/0	1745	25.69	370.5
Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE4	15	QPSK	1/0	1717.5	26.71	468.59
			1/0	1732.5	26.72	470.01
			1/0	1747.5	26.07	404.97
		16QAM	1/0	1717.5	25.75	375.66
			1/0	1732.5	25.82	382.04
			1/0	1747.5	25.28	337.61
Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE4	10	QPSK	1/0	1715	26.54	450.9
			1/0	1732.5	26.30	426.68
			1/0	1750	26.22	418.92
		16QAM	1/0	1715	25.65	367.35
			1/0	1732.5	25.52	356.54
			1/0	1750	25.68	369.94
Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE4	5	QPSK	1/0	1712.5	26.70	468.19
			1/0	1732.5	26.42	438.64
			1/0	1752.5	26.04	401.59
		16QAM	1/0	1712.5	25.94	393.03
			1/0	1732.5	25.82	382.04
			1/0	1752.5	25.89	387.96

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Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE4	3	QPSK	1/0	1711.5	26.45	441.36
			1/0	1732.5	26.72	470.01
			1/0	1753.5	25.83	383.19
		16QAM	1/0	1711.5	25.75	375.66
			1/0	1732.5	25.82	382.04
			1/0	1753.5	24.78	300.9
Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE4	1.4	QPSK	1/0	1710.7	26.26	422.75
			1/0	1732.5	26.25	421.8
			1/0	1754.3	25.48	353.29
		16QAM	1/0	1710.7	24.95	312.67
			1/0	1732.5	25.52	356.54
			1/0	1754.3	24.68	293.85

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LTE Band 2

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE2	20	QPSK	1/0	1860	26.39	435.77
			1/0	1880	25.49	353.9
			1/0	1900	26.11	407.85
		16QAM	1/0	1860	25.24	334.4
			1/0	1880	24.39	274.71
			1/0	1900	24.97	313.69
Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE2	15	QPSK	1/0	1857.5	25.91	390.33
			1/0	1880	25.27	336.19
			1/0	1902.5	25.48	353.36
		16QAM	1/0	1857.5	25.14	326.91
			1/0	1880	24.49	281.11
			1/0	1902.5	23.87	243.91
Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE2	10	QPSK	1/0	1855	25.98	395.92
			1/0	1880	25.41	347.44
			1/0	1905	25.20	331.09
		16QAM	1/0	1855	25.15	327.04
			1/0	1880	24.39	274.71
			1/0	1905	24.38	274.12
Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE2	5	QPSK	1/0	1852.5	25.68	369.64
			1/0	1880	24.57	286.42
			1/0	1907.5	25.42	348.07
		16QAM	1/0	1852.5	24.75	298.39
			1/0	1880	23.79	239.27
			1/0	1907.5	24.49	280.97

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Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE2	3	QPSK	1/0	1851.5	25.15	327.23
			1/0	1880	24.38	274.08
			1/0	1908.5	25.29	338.03
		16QAM	1/0	1851.5	24.25	265.98
			1/0	1880	23.59	228.5
			1/0	1908.5	24.49	281.16
Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE2	1.4	QPSK	1/0	1850.7	25.17	328.78
			1/0	1880	24.37	273.45
			1/0	1909.3	25.19	330.51
		16QAM	1/0	1850.7	24.05	254.04
			1/0	1880	23.54	225.88
			1/0	1909.3	24.09	256.56

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11.1.3. ERP/EIRP PLOTS

Band

LTE12

10MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19960
Date: 2/4/2015
Test Engineer: Kiya Kedida
Configuration: EUT Only
Location: Chamber C
Mode: LTE_16QAM Band 12 Fundamentals, 10MHz Bandwidth

Test Equipment:
Receiving: Hybrid T185, and Chamber C SMA Cables
Substitution: Dipole T416, Xft SMA Cable (SN # SERIALNUMBER) Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
704.00	17.50	V	0.9	0.0	16.60	34.8	-18.2	
704.00	24.50	H	0.9	0.0	23.60	34.8	-11.2	
Mid Ch								
707.50	16.60	V	0.9	0.0	15.70	34.8	-19.1	
707.50	24.10	H	0.9	0.0	23.20	34.8	-11.6	
High Ch								
711.00	17.39	V	0.9	0.0	16.49	34.8	-18.3	
711.00	24.60	H	0.9	0.0	23.70	34.8	-11.1	

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Band

LTE12

10MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19960
Date: 2/4/2015
Test Engineer: Kiya Kedida
Configuration: EUT Only
Location: Chamber C
Mode: LTE_QPSK Band 12 Fundamentals, 10MHz Bandwidth

Test Equpment:
Receiving: Hybrid T185, and Chamber C SMA Cables
Substitution: Dipole T416, Xft SMA Cable (SN # SERIALNUMBER) Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
704.00	18.36	V	0.9	0.0	17.46	34.8	-17.3	
704.00	25.21	H	0.9	0.0	24.31	34.8	-10.5	
Mid Ch								
707.50	17.72	V	0.9	0.0	16.82	34.8	-18.0	
707.50	24.82	H	0.9	0.0	23.92	34.8	-10.9	
High Ch								
711.00	17.90	V	0.9	0.0	17.00	34.8	-17.8	
711.00	25.31	H	0.9	0.0	24.41	34.8	-10.4	

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Band

LTE12

5MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19960
Date: 2/4/2015
Test Engineer: Kiya Kedida
Configuration: EUT Only
Location: Chamber C
Mode: LTE_16QAM Band 12 Fundamentals, 5MHz Bandwidth

Test Equpment:
Receiving: Hybrid T185, and Chamber C SMA Cables
Substitution: Dipole T416, Xft SMA Cable (SN # SERIALNUMBER) Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
701.50	16.80	V	0.9	0.0	15.90	34.8	-18.9	
701.50	24.00	H	0.9	0.0	23.10	34.8	-11.7	
Mid Ch								
707.50	16.90	V	0.9	0.0	16.00	34.8	-18.8	
707.50	24.20	H	0.9	0.0	23.30	34.8	-11.5	
High Ch								
713.50	17.50	V	0.9	0.0	16.60	34.8	-18.2	
713.50	24.70	H	0.9	0.0	23.80	34.8	-11.0	

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Band

LTE12

5MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19960
Date: 2/4/2015
Test Engineer: Kiya Kedida
Configuration: EUT Only
Location: Chamber C
Mode: LTE_QPSK Band 12 Fundamentals, 5MHz Bandwidth

Test Equpment:
Receiving: Hybrid T185, and Chamber C SMA Cables
Substitution: Dipole T416, Xft SMA Cable (SN # SERIALNUMBER) Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
701.50	17.50	V	0.9	0.0	16.60	34.8	-18.2	
701.50	24.80	H	0.9	0.0	23.90	34.8	-10.9	
Mid Ch								
707.50	17.51	V	0.9	0.0	16.61	34.8	-18.2	
707.50	25.02	H	0.9	0.0	24.12	34.8	-10.7	
High Ch								
713.50	18.15	V	0.9	0.0	17.25	34.8	-17.6	
713.50	25.50	H	0.9	0.0	24.60	34.8	-10.2	

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Band

LTE12

3MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19960
Date: 2/4/2015
Test Engineer: Kiya Kedida
Configuration: EUT Only
Location: Chamber C
Mode: LTE_16QAM Band 12 Fundamentals, 3MHz Bandwidth

Test Equpment:
Receiving: Hybrid T185, and Chamber C SMA Cables
Substitution: Dipole T416, Xft SMA Cable (SN # SERIALNUMBER) Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
700.50	17.10	V	0.9	0.0	16.20	34.8	-18.6	
700.50	24.40	H	0.9	0.0	23.50	34.8	-11.3	
Mid Ch								
707.50	17.00	V	0.9	0.0	16.10	34.8	-18.7	
707.50	24.20	H	0.9	0.0	23.30	34.8	-11.5	
High Ch								
714.50	17.90	V	0.9	0.0	17.00	34.8	-17.8	
714.50	24.80	H	0.9	0.0	23.90	34.8	-10.9	

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Band

LTE12

3MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19960
Date: 2/4/2015
Test Engineer: Kiya Kedida
Configuration: EUT Only
Location: Chamber C
Mode: LTE_QPSK Band 12 Fundamentals, 3MHz Bandwidth

Test Equpment:
Receiving: Hybrid T185, and Chamber C SMA Cables
Substitution: Dipole T416, Xft SMA Cable (SN # SERIALNUMBER) Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
700.50	17.82	V	0.9	0.0	16.92	34.8	-17.9	
700.50	25.18	H	0.9	0.0	24.28	34.8	-10.5	
Mid Ch								
707.50	17.65	V	0.9	0.0	16.75	34.8	-18.1	
707.50	25.04	H	0.9	0.0	24.14	34.8	-10.7	
High Ch								
714.50	18.48	V	0.9	0.0	17.58	34.8	-17.2	
714.50	25.65	H	0.9	0.0	24.75	34.8	-10.1	

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Band

LTE12

1.4MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19960
Date: 2/4/2015
Test Engineer: Kiya Kedida
Configuration: EUT Only
Location: Chamber C
Mode: LTE_16QAM Band 12 Fundamentals, 1.4MHz Bandwidth

Test Equpment:
Receiving: Hybrid T185, and Chamber C SMA Cables
Substitution: Dipole T416, Xft SMA Cable (SN # SERIALNUMBER) Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
699.70	16.90	V	0.9	0.0	16.00	34.8	-18.8	
699.70	24.30	H	0.9	0.0	23.40	34.8	-11.4	
Mid Ch								
707.50	16.80	V	0.9	0.0	15.90	34.8	-18.9	
707.50	24.40	H	0.9	0.0	23.50	34.8	-11.3	
High Ch								
715.30	17.10	V	0.9	0.0	16.20	34.8	-18.6	
715.30	24.20	H	0.9	0.0	23.30	34.8	-11.5	

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Band

LTE12

1.4MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19960
Date: 2/4/2015
Test Engineer: Kiya Kedida
Configuration: EUT Only
Location: Chamber C
Mode: LTE_QPSK Band 12 Fundamentals, 1.4MHz Bandwidth

Test Equpment:
Receiving: Hybrid T185, and Chamber C SMA Cables
Substitution: Dipole T416, Xft SMA Cable (SN # SERIALNUMBER) Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
699.70	17.60	V	0.9	0.0	16.70	34.8	-18.1	
699.70	25.00	H	0.9	0.0	24.10	34.8	-10.7	
Mid Ch								
707.50	17.44	V	0.9	0.0	16.54	34.8	-18.3	
707.50	25.10	H	0.9	0.0	24.20	34.8	-10.6	
High Ch								
715.30	17.80	V	0.9	0.0	16.90	34.8	-17.9	
715.30	25.20	H	0.9	0.0	24.30	34.8	-10.5	

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Band

LTE4

20MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19960
Date: 2/5/2015
Test Engineer: Kiya Kedida
Configuration: EUT Only
Location: Chamber C
Mode: LTE_16QAM Band 4 Fundamentals, 5MHz Bandwidth

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

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1720.00	17.10	V	0.9	8.2	24.44	30.0	-5.6	
1720.00	18.40	H	0.9	8.2	25.74	30.0	-4.3	
Mid Ch								
1732.50	16.70	V	0.9	8.2	23.97	30.0	-6.0	
1732.50	18.65	H	0.9	8.2	25.92	30.0	-4.1	
High Ch								
1745.00	16.77	V	0.9	8.1	23.97	30.0	-6.0	
1745.00	18.49	H	0.9	8.1	25.69	30.0	-4.3	

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Band

LTE4

20MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19960
Date: 2/5/2015
Test Engineer: Kiya Kedida
Configuration: EUT Only
Location: Chamber C
Mode: LTE_QPSK Band 4 Fundamentals, 5MHz Bandwidth

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

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1720.00	17.96	V	0.9	8.2	25.30	30.0	-4.7	
1720.00	19.17	H	0.9	8.2	26.51	30.0	-3.5	
Mid Ch								
1732.50	17.53	V	0.9	8.2	24.80	30.0	-5.2	
1732.50	19.32	H	0.9	8.2	26.59	30.0	-3.4	
High Ch								
1745.00	17.43	V	0.9	8.1	24.63	30.0	-5.4	
1745.00	19.24	H	0.9	8.1	26.44	30.0	-3.6	

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Band

LTE4

15MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19960
Date: 2/5/2015
Test Engineer: Kiya Kedida
Configuration: EUT Only
Location: Chamber C
Mode: LTE_16QAM Band 4 Fundamentals, 3MHz Bandwidth

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

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1717.50	16.90	V	0.9	8.2	24.25	30.0	-5.8	
1717.50	18.40	H	0.9	8.2	25.75	30.0	-4.3	
Mid Ch								
1732.50	16.90	V	0.9	8.2	24.17	30.0	-5.8	
1732.50	18.55	H	0.9	8.2	25.82	30.0	-4.2	
High Ch								
1747.50	16.57	V	0.9	8.1	23.76	30.0	-6.2	
1747.50	18.09	H	0.9	8.1	25.28	30.0	-4.7	

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Band

LTE4

15MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19960
Date: 2/5/2015
Test Engineer: Kiya Kedida
Configuration: EUT Only
Location: Chamber C
Mode: LTE_QPSK Band 4 Fundamentals, 3MHz Bandwidth

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

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1717.50	17.62	V	0.9	8.2	24.97	30.0	-5.0	
1717.50	19.36	H	0.9	8.2	26.71	30.0	-3.3	
Mid Ch								
1732.50	17.56	V	0.9	8.2	24.83	30.0	-5.2	
1732.50	19.45	H	0.9	8.2	26.72	30.0	-3.3	
High Ch								
1747.50	17.22	V	0.9	8.1	24.41	30.0	-5.6	
1747.50	18.88	H	0.9	8.1	26.07	30.0	-3.9	

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Band

LTE4

10MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19960
Date: 2/5/2015
Test Engineer: Kiya Kedida
Configuration: EUT Only
Location: Chamber C
Mode: LTE_16QAM Band 4 Fundamentals, 1.4MHz Bandwidth

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

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1715.00	16.80	V	0.9	8.3	24.15	30.0	-5.8	
1715.00	18.30	H	0.9	8.3	25.65	30.0	-4.3	
Mid Ch								
1732.50	16.50	V	0.9	8.2	23.77	30.0	-6.2	
1732.50	18.25	H	0.9	8.2	25.52	30.0	-4.5	
High Ch								
1750.00	16.57	V	0.9	8.1	23.76	30.0	-6.2	
1750.00	18.49	H	0.9	8.1	25.68	30.0	-4.3	

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Band

LTE4

10MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19960
Date: 2/5/2015
Test Engineer: Kiya Kedida
Configuration: EUT Only
Location: Chamber C
Mode: LTE_QPSK Band 4 Fundamentals, 1.4MHz Bandwidth

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

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1715.00	17.38	V	0.9	8.3	24.73	30.0	-5.3	
1715.00	19.19	H	0.9	8.3	26.54	30.0	-3.5	
Mid Ch								
1732.50	17.26	V	0.9	8.2	24.53	30.0	-5.5	
1732.50	19.03	H	0.9	8.2	26.30	30.0	-3.7	
High Ch								
1750.00	17.05	V	0.9	8.1	24.24	30.0	-5.8	
1750.00	19.03	H	0.9	8.1	26.22	30.0	-3.8	

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Band

LTE4

5MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19960
Date: 2/3/2015
Test Engineer: Kiya Kedida
Configuration: EUT Only
Location: Chamber C
Mode: LTE_16QAM Band 4 Fundamentals, 5MHz Bandwidth

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

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1712.50	16.60	V	0.9	8.2	23.94	30.0	-6.1	
1712.50	18.60	H	0.9	8.2	25.94	30.0	-4.1	
Mid Ch								
1732.50	17.20	V	0.9	8.2	24.47	30.0	-5.5	
1732.50	18.55	H	0.9	8.2	25.82	30.0	-4.2	
High Ch								
1752.50	16.47	V	0.9	8.1	23.67	30.0	-6.3	
1752.50	18.69	H	0.9	8.1	25.89	30.0	-4.1	

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Band

LTE4

5MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19960
Date: 2/3/2015
Test Engineer: Kiya Kedida
Configuration: EUT Only
Location: Chamber C
Mode: LTE_QPSK Band 4 Fundamentals, 5MHz Bandwidth

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

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1712.50	17.66	V	0.9	8.2	25.00	30.0	-5.0	
1712.50	19.36	H	0.9	8.2	26.70	30.0	-3.3	
Mid Ch								
1732.50	17.93	V	0.9	8.2	25.20	30.0	-4.8	
1732.50	19.15	H	0.9	8.2	26.42	30.0	-3.6	
High Ch								
1752.50	17.41	V	0.9	8.1	24.61	30.0	-5.4	
1752.50	18.84	H	0.9	8.1	26.04	30.0	-4.0	

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Band

LTE4

3MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19960
Date: 2/3/2015
Test Engineer: Kiya Kedida
Configuration: EUT Only
Location: Chamber C
Mode: LTE_16QAM Band 4 Fundamentals, 3MHz Bandwidth

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

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1711.50	16.30	V	0.9	8.2	23.65	30.0	-6.4	
1711.50	18.40	H	0.9	8.2	25.75	30.0	-4.3	
Mid Ch								
1732.50	16.90	V	0.9	8.2	24.17	30.0	-5.8	
1732.50	18.55	H	0.9	8.2	25.82	30.0	-4.2	
High Ch								
1753.50	16.27	V	0.9	8.1	23.46	30.0	-6.5	
1753.50	17.59	H	0.9	8.1	24.78	30.0	-5.2	

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Band

LTE4

3MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19960
Date: 2/3/2015
Test Engineer: Kiya Kedida
Configuration: EUT Only
Location: Chamber C
Mode: LTE_QPSK Band 4 Fundamentals, 3MHz Bandwidth

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

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1711.50	16.96	V	0.9	8.2	24.31	30.0	-5.7	
1711.50	19.10	H	0.9	8.2	26.45	30.0	-3.6	
Mid Ch								
1732.50	17.86	V	0.9	8.2	25.13	30.0	-4.9	
1732.50	19.45	H	0.9	8.2	26.72	30.0	-3.3	
High Ch								
1753.50	17.22	V	0.9	8.1	24.41	30.0	-5.6	
1753.50	18.64	H	0.9	8.1	25.83	30.0	-4.2	

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Band

LTE4

1.4MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19960
Date: 2/3/2015
Test Engineer: Kiya Kedida
Configuration: EUT Only
Location: Chamber C
Mode: LTE_16QAM Band 4 Fundamentals, 1.4MHz Bandwidth

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

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1710.70	16.10	V	0.9	8.3	23.45	30.0	-6.5	
1710.70	17.60	H	0.9	8.3	24.95	30.0	-5.0	
Mid Ch								
1732.50	16.40	V	0.9	8.2	23.67	30.0	-6.3	
1732.50	18.25	H	0.9	8.2	25.52	30.0	-4.5	
High Ch								
1754.30	15.87	V	0.9	8.1	23.06	30.0	-6.9	
1754.30	17.49	H	0.9	8.1	24.68	30.0	-5.3	

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Band

LTE4

1.4MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19960
Date: 2/3/2015
Test Engineer: Kiya Kedida
Configuration: EUT Only
Location: Chamber C
Mode: LTE_QPSK Band 4 Fundamentals, 1.4MHz Bandwidth

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

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1710.70	16.61	V	0.9	8.3	23.96	30.0	-6.0	
1710.70	18.91	H	0.9	8.3	26.26	30.0	-3.7	
Mid Ch								
1732.50	17.29	V	0.9	8.2	24.56	30.0	-5.4	
1732.50	18.98	H	0.9	8.2	26.25	30.0	-3.7	
High Ch								
1754.30	16.77	V	0.9	8.1	23.96	30.0	-6.0	
1754.30	18.29	H	0.9	8.1	25.48	30.0	-4.5	

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Band

LTE2

20MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19960
Date: 2/3/2015
Test Engineer: Kiya Kedida
Configuration: EUT Only
Location: Chamber C
Mode: LTE_16QAM Band 2 Fundamentals, 20MHz Bandwidth

Test Equpment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T59, Xft SMA Cable (SN # SERIALNUMBER) Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1860.00	16.90	V	0.9	7.9	23.88	33.0	-9.1	
1860.00	18.26	H	0.9	7.9	25.24	33.0	-7.8	
Mid Ch								
1880.00	15.73	V	0.9	7.9	22.70	33.0	-10.3	
1880.00	17.42	H	0.9	7.9	24.39	33.0	-8.6	
High Ch								
1900.00	15.65	V	0.9	7.9	22.61	33.0	-10.4	
1900.00	18.01	H	0.9	7.9	24.97	33.0	-8.0	

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Band

LTE2

20MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19960
Date: 2/3/2015
Test Engineer: Kiya Kedida
Configuration: EUT Only
Location: Chamber C
Mode: LTE_QPSK Band 2 Fundamentals, 20MHz Bandwidth

Test Equpment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T59, Xft SMA Cable (SN # SERIALNUMBER) Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1860.00	17.95	V	0.9	7.9	24.93	33.0	-8.1	
1860.00	19.41	H	0.9	7.9	26.39	33.0	-6.6	
Mid Ch								
1880.00	16.53	V	0.9	7.9	23.50	33.0	-9.5	
1880.00	18.52	H	0.9	7.9	25.49	33.0	-7.5	
High Ch								
1900.00	16.59	V	0.9	7.9	23.55	33.0	-9.5	
1900.00	19.15	H	0.9	7.9	26.11	33.0	-6.9	

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Band

LTE2

15MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19960
Date: 2/3/2015
Test Engineer: Kiya Kedida
Configuration: EUT Only
Location: Chamber C
Mode: LTE_16QAM Band 2 Fundamentals, 15MHz Bandwidth

Test Equpment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T59, Xft SMA Cable (SN # SERIALNUMBER) Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1857.50	17.90	V	0.9	7.9	24.88	33.0	-8.1	
1857.50	18.16	H	0.9	7.9	25.14	33.0	-7.9	
Mid Ch								
1880.00	15.87	V	0.9	7.9	22.84	33.0	-10.2	
1880.00	17.52	H	0.9	7.9	24.49	33.0	-8.5	
High Ch								
1902.50	15.40	V	0.9	7.9	22.36	33.0	-10.6	
1902.50	16.91	H	0.9	7.9	23.87	33.0	-9.1	

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Band

LTE2

15MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19960
Date: 2/3/2015
Test Engineer: Kiya Kedida
Configuration: EUT Only
Location: Chamber C
Mode: LTE_QPSK Band 2 Fundamentals, 15MHz Bandwidth

Test Equpment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T59, Xft SMA Cable (SN # SERIALNUMBER) Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1857.50	17.99	V	0.9	7.9	24.97	33.0	-8.0	
1857.50	18.93	H	0.9	7.9	25.91	33.0	-7.1	
Mid Ch								
1880.00	16.81	V	0.9	7.9	23.78	33.0	-9.2	
1880.00	18.30	H	0.9	7.9	25.27	33.0	-7.7	
High Ch								
1902.50	16.20	V	0.9	7.9	23.16	33.0	-9.8	
1902.50	18.52	H	0.9	7.9	25.48	33.0	-7.5	

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Band

LTE2

10MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19960
Date: 2/3/2015
Test Engineer: Kiya Kedida
Configuration: EUT Only
Location: Chamber C
Mode: LTE_16QAM Band 2 Fundamentals, 10MHz Bandwidth

Test Equpment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T59, Xft SMA Cable (SN # SERIALNUMBER) Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1855.00	16.90	V	0.9	7.9	23.89	33.0	-9.1	
1855.00	18.16	H	0.9	7.9	25.15	33.0	-7.9	
Mid Ch								
1880.00	15.73	V	0.9	7.9	22.70	33.0	-10.3	
1880.00	17.42	H	0.9	7.9	24.39	33.0	-8.6	
High Ch								
1905.00	15.80	V	0.9	7.9	22.77	33.0	-10.2	
1905.00	17.41	H	0.9	7.9	24.38	33.0	-8.6	

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Band

LTE2

10MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19960
Date: 2/3/2015
Test Engineer: Kiya Kedida
Configuration: EUT Only
Location: Chamber C
Mode: LTE_QPSK Band 2 Fundamentals, 10MHz Bandwidth

Test Equpment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T59, Xft SMA Cable (SN # SERIALNUMBER) Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1855.00	17.71	V	0.9	7.9	24.70	33.0	-8.3	
1855.00	18.99	H	0.9	7.9	25.98	33.0	-7.0	
Mid Ch								
1880.00	16.70	V	0.9	7.9	23.67	33.0	-9.3	
1880.00	18.44	H	0.9	7.9	25.41	33.0	-7.6	
High Ch								
1905.00	16.56	V	0.9	7.9	23.53	33.0	-9.5	
1905.00	18.23	H	0.9	7.9	25.20	33.0	-7.8	

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Band

LTE2

5MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19960
Date: 2/3/2015
Test Engineer: Kiya Kedida
Configuration: EUT Only
Location: Chamber C
Mode: LTE_16QAM Band 2 Fundamentals, 5MHz Bandwidth

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

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1852.50	17.20	V	0.9	7.9	24.19	33.0	-8.8	
1852.50	17.76	H	0.9	7.9	24.75	33.0	-8.3	
Mid Ch								
1880.00	16.78	V	0.9	7.9	23.75	33.0	-9.3	
1880.00	16.82	H	0.9	7.9	23.79	33.0	-9.2	
High Ch								
1907.50	15.20	V	0.9	7.9	22.18	33.0	-10.8	
1907.50	17.51	H	0.9	7.9	24.49	33.0	-8.5	

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Band

LTE2

5MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19960
Date: 2/3/2015
Test Engineer: Kiya Kedida
Configuration: EUT Only
Location: Chamber C
Mode: LTE_QPSK Band 2 Fundamentals, 5MHz Bandwidth

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

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1852.50	18.10	V	0.9	7.9	25.09	33.0	-7.9	
1852.50	18.69	H	0.9	7.9	25.68	33.0	-7.3	
Mid Ch								
1880.00	17.58	V	0.9	7.9	24.55	33.0	-8.5	
1880.00	17.57	H	0.9	7.9	24.57	33.0	-8.4	
High Ch								
1907.50	16.09	V	0.9	7.9	23.07	33.0	-9.9	
1907.50	18.44	H	0.9	7.9	25.42	33.0	-7.6	

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Band

LTE2

3MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19960
Date: 2/3/2015
Test Engineer: Kiya Kedida
Configuration: EUT Only
Location: Chamber C
Mode: LTE_16QAM Band 2 Fundamentals, 3MHz Bandwidth

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

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1851.50	17.20	V	0.9	7.9	24.19	33.0	-8.8	
1851.50	17.26	H	0.9	7.9	24.25	33.0	-8.8	
Mid Ch								
1880.00	16.43	V	0.9	7.9	23.40	33.0	-9.6	
1880.00	16.62	H	0.9	7.9	23.59	33.0	-9.4	
High Ch								
1908.50	15.10	V	0.9	7.9	22.08	33.0	-10.9	
1908.50	17.51	H	0.9	7.9	24.49	33.0	-8.5	

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Band

LTE2

3MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19960
Date: 2/3/2015
Test Engineer: Kiya Kedida
Configuration: EUT Only
Location: Chamber C
Mode: LTE_QPSK Band 2 Fundamentals, 3MHz Bandwidth

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

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1851.50	18.00	V	0.9	7.9	24.99	33.0	-8.0	
1851.50	18.16	H	0.9	7.9	25.15	33.0	-7.9	
Mid Ch								
1880.00	17.23	V	0.9	7.9	24.20	33.0	-8.8	
1880.00	17.41	H	0.9	7.9	24.38	33.0	-8.6	
High Ch								
1908.50	15.91	V	0.9	7.9	22.89	33.0	-10.1	
1908.50	18.31	H	0.9	7.9	25.29	33.0	-7.7	

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Band

LTE2

1.4MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19960
Date: 2/3/2015
Test Engineer: Kiya Kedida
Configuration: EUT Only
Location: Chamber C
Mode: LTE_16QAM Band 2 Fundamentals, 1.4MHz Bandwidth

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

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1850.70	17.00	V	0.9	7.9	23.99	33.0	-9.0	
1850.70	17.06	H	0.9	7.9	24.05	33.0	-9.0	
Mid Ch								
1880.00	16.03	V	0.9	7.9	23.00	33.0	-10.0	
1880.00	16.57	H	0.9	7.9	23.54	33.0	-9.5	
High Ch								
1909.30	14.90	V	0.9	7.9	21.88	33.0	-11.1	
1909.30	17.11	H	0.9	7.9	24.09	33.0	-8.9	

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Band

LTE2

1.4MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19960
Date: 2/3/2015
Test Engineer: Kiya Kedida
Configuration: EUT Only
Location: Chamber C
Mode: LTE_QPSK Band 2 Fundamentals, 1.4MHz Bandwidth

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

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1850.70	17.80	V	0.9	7.9	24.79	33.0	-8.2	
1850.70	18.18	H	0.9	7.9	25.17	33.0	-7.8	
Mid Ch								
1880.00	16.73	V	0.9	7.9	23.70	33.0	-9.3	
1880.00	17.40	H	0.9	7.9	24.37	33.0	-8.6	
High Ch								
1909.30	15.66	V	0.9	7.9	22.64	33.0	-10.4	
1909.30	18.21	H	0.9	7.9	25.19	33.0	-7.8	

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Band

Band 2

HSDPA

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

Company: LG
Project #: 15I19960
Date: 2/3/2015
Test Engineer: R. Alegre
Configuration: EUT Only
Mode: HSDPA B2

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								
1852.40	8.53	V	0.9	8.0	15.64	33.0	-17.4	
1852.40	16.71	H	0.9	8.0	23.82	33.0	-9.2	
Mid Ch								
1880.00	8.46	V	0.9	8.0	15.57	33.0	-17.4	
1880.00	16.50	H	0.9	8.0	23.61	33.0	-9.4	
High Ch								
1907.60	8.50	V	0.9	8.0	15.61	33.0	-17.4	
1907.60	16.69	H	0.9	8.0	23.80	33.0	-9.2	

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

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Band

Band 2

REL99

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

Company: LG
Project #: 15I19960
Date: 2/3/2015
Test Engineer: R. Alegre
Configuration: EUT Only
Mode: Rel99 B2

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								
1852.40	8.56	V	0.9	8.0	15.67	33.0	-17.3	
1852.40	16.74	H	0.9	8.0	23.85	33.0	-9.2	
Mid Ch								
1880.00	8.63	V	0.9	8.0	15.74	33.0	-17.3	
1880.00	16.62	H	0.9	8.0	23.73	33.0	-9.3	
High Ch								
1907.60	8.54	V	0.9	8.0	15.65	33.0	-17.4	
1907.60	16.29	H	0.9	8.0	23.40	33.0	-9.6	

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

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Band

Band 4

HSDPA

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19960
Date: 2/3/2015
Test Engineer: Kiya Kedida
Configuration: EUT Only
Location: Chamber C
Mode: HSDPA Band 4 Fundamentals

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

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1712.40	12.48	V	0.9	7.9	19.47	33.0	-13.5	
1712.40	17.01	H	0.9	7.9	24.00	33.0	-9.0	
Mid Ch								
1732.60	13.21	V	0.9	7.9	20.18	33.0	-12.8	
1732.60	19.15	H	0.9	7.9	26.12	33.0	-6.9	
High Ch								
1752.60	11.30	V	0.9	7.9	18.28	33.0	-14.7	
1752.60	17.19	H	0.9	7.9	24.17	33.0	-8.8	

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Band

Band 4

REL99

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19960
Date: 2/3/2015
Test Engineer: Kiya Kedida
Configuration: EUT Only
Location: Chamber C
Mode: Rel99 Band 4 Fundamentals

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

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1712.40	12.30	V	0.9	7.9	19.29	33.0	-13.7	
1712.40	17.10	H	0.9	7.9	24.09	33.0	-8.9	
Mid Ch								
1732.60	12.83	V	0.9	7.9	19.80	33.0	-13.2	
1732.60	19.12	H	0.9	7.9	26.09	33.0	-6.9	
High Ch								
1752.60	11.17	V	0.9	7.9	18.15	33.0	-14.9	
1752.60	17.50	H	0.9	7.9	24.48	33.0	-8.5	

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Band

Band 5

HSDPA

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19960
Date: 2/3/2015
Test Engineer: K.Kedida
Configuration: EUT Only
Location: Chamber C
Mode: HSDPA Band 5 Fundamentals

Test Equpment:
Receiving: Hybrid T185, and Chamber C SMA Cables
Substitution: Dipole T416, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
826.40	17.44	V	0.9	0.0	16.54	38.5	-22.0	
826.40	22.33	H	0.9	0.0	21.43	38.5	-17.1	
Mid Ch								
836.60	17.58	V	0.9	0.0	16.68	38.5	-21.8	
836.60	22.60	H	0.9	0.0	21.70	38.5	-16.8	
High Ch								
846.60	19.24	V	0.9	0.0	18.34	38.5	-20.2	
846.60	23.72	H	0.9	0.0	22.82	38.5	-15.7	

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Band

Band 5

REL99

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG
Project #: 15I19960
Date: 2/3/2015
Test Engineer: K.Kedida
Configuration: EUT Only
Location: Chamber C
Mode: Rel99 Band 5 Fundamentals

Test Equpment:
Receiving: Hybrid T185, and Chamber C SMA Cables
Substitution: Dipole T416, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
826.40	17.19	V	0.9	0.0	16.29	38.5	-22.2	
826.40	21.93	H	0.9	0.0	21.03	38.5	-17.5	
Mid Ch								
836.60	16.88	V	0.9	0.0	15.98	38.5	-22.5	
836.60	23.30	H	0.9	0.0	22.40	38.5	-16.1	
High Ch								
846.60	18.64	V	0.9	0.0	17.74	38.5	-20.8	
846.60	23.56	H	0.9	0.0	22.66	38.5	-15.8	

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Band

GSM 1900

EGPRS

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

Company: LG
Project #: 15I19960
Date: 2/3/2015
Test Engineer: R. Alegre
Configuration: EUT Only
Mode: EGPRS 1880

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								
1850.20	11.97	V	0.9	8.0	19.08	33.0	-13.9	
1850.20	19.35	H	0.9	8.0	26.46	33.0	-6.5	
Mid Ch								
1880.00	11.65	V	0.9	8.0	18.76	33.0	-14.2	
1880.00	19.07	H	0.9	8.0	26.18	33.0	-6.8	
High Ch								
1909.80	11.92	V	0.9	8.0	19.03	33.0	-14.0	
1909.80	19.07	H	0.9	8.0	26.18	33.0	-6.8	

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

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Band

GSM 1900

GPRS

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

Company: LG
Project #: 15I19960
Date: 2/3/2015
Test Engineer: R. Alegre
Configuration: EUT Only
Mode: GPRS 1880

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								
1850.20	14.92	V	0.9	8.0	22.03	33.0	-11.0	
1850.20	22.94	H	0.9	8.0	30.05	33.0	-3.0	
Mid Ch								
1880.00	14.59	V	0.9	8.0	21.70	33.0	-11.3	
1880.00	22.38	H	0.9	8.0	29.49	33.0	-3.5	
High Ch								
1909.80	14.91	V	0.9	8.0	22.02	33.0	-11.0	
1909.80	22.34	H	0.9	8.0	29.45	33.0	-3.6	

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

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Band

GSM 850

EGPRS

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

Company: LG
Project #: 15I19960
Date: 02/04/15
Test Engineer: Kiya Kedida
Configuration: EUT Only
Mode: EGPRS850

Test Equipment:
Receiving: Hybrid T185, and Chamber C SMA Cables
Substitution: Dipole T416, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
824.20	18.34	V	0.9	0.0	17.44	38.5	-21.0	
824.20	27.23	H	0.9	0.0	26.33	38.5	-12.1	
Mid Ch								
836.60	17.28	V	0.9	0.0	16.38	38.5	-22.1	
836.60	28.30	H	0.9	0.0	27.40	38.5	-11.0	
High Ch								
848.80	20.29	V	0.9	0.0	19.39	38.5	-19.1	
848.80	27.66	H	0.9	0.0	26.76	38.5	-11.7	

Rev. 3.17.11
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm

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Band

GSM 850

GPRS

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

Company: LG
Project #: 15I19960
Date: 02/04/15
Test Engineer: Kiya Kedida
Configuration: EUT Only
Mode: GPRS850

Test Equipment:
Receiving: Hybrid T185, and Chamber C SMA Cables
Substitution: Dipole T416, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
824.20	22.42	V	0.9	0.0	21.52	38.5	-16.9	
824.20	31.11	H	0.9	0.0	30.21	38.5	-8.2	
Mid Ch								
836.60	23.96	V	0.9	0.0	23.06	38.5	-15.4	
836.60	32.42	H	0.9	0.0	31.52	38.5	-6.9	
High Ch								
848.80	23.60	V	0.9	0.0	22.70	38.5	-15.7	
848.80	31.26	H	0.9	0.0	30.36	38.5	-8.1	

Rev. 3.17.11
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm

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11.2. FIELD STRENGTH OF SPURIOUS RADIATION

RULE PART(S)

FCC: §2.1053, §22.917, and §24.238

LIMIT

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

GSM, WCDMA, and LTE

RESULTS

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701I
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888

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11.2.1. SPURIOUS RADIATION PLOTS

UL Verification Services Chamber
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19960
Date: 2/6/2015
Test Engineer: K.Kedida
Configuration: EUT , AC Adapter and HP
Location: Chamber C
Mode: LTE_16QAM Band 12 Harmonics, 10MHz Bandwidth

Band
LTE12
10MHz
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,704									
1408.00	-28.6	V	3.0	37.4	1.0	-64.9	-13.0	-51.9	
2112.00	-24.3	V	3.0	36.6	1.0	-59.9	-13.0	-46.9	
2816.00	-22.5	V	3.0	36.4	1.0	-57.8	-13.0	-44.8	
1408.00	-26.3	H	3.0	37.4	1.0	-62.7	-13.0	-49.7	
2112.00	-24.9	H	3.0	36.6	1.0	-60.4	-13.0	-47.4	
2816.00	-24.2	H	3.0	36.4	1.0	-59.6	-13.0	-46.6	
Mid Ch,707.5									
1415.00	-28.8	V	3.0	37.3	1.0	-65.1	-13.0	-52.1	
2122.50	-23.8	V	3.0	36.6	1.0	-59.3	-13.0	-46.3	
2830.00	-23.2	V	3.0	36.4	1.0	-58.6	-13.0	-45.6	
1415.00	-27.2	H	3.0	37.3	1.0	-63.5	-13.0	-50.5	
2122.50	-23.8	H	3.0	36.6	1.0	-59.4	-13.0	-46.4	
2830.00	-23.8	H	3.0	36.4	1.0	-59.2	-13.0	-46.2	
High Ch,711									
1422.00	-29.1	V	3.0	37.3	1.0	-65.4	-13.0	-52.4	
2133.00	-23.7	V	3.0	36.6	1.0	-59.3	-13.0	-46.3	
2844.00	-23.7	V	3.0	36.4	1.0	-59.1	-13.0	-46.1	
1422.00	-27.3	H	3.0	37.3	1.0	-63.6	-13.0	-50.6	
2133.00	-23.8	H	3.0	36.6	1.0	-59.4	-13.0	-46.4	
2844.00	-24.3	H	3.0	36.4	1.0	-59.7	-13.0	-46.7	

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UL Verification Services Chamber
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19960
Date: 2/6/2015
Test Engineer: K.Kedida
Configuration: EUT , AC Adapter and HP
Location: Chamber C
Mode: LTE_QPSK Band 12 Harmonics, 10MHz Bandwidth

Band
LTE12
10MHz
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,704									
1408.00	-28.3	V	3.0	37.4	1.0	-64.7	-13.0	-51.7	
2112.00	-23.4	V	3.0	36.6	1.0	-59.0	-13.0	-46.0	
2816.00	-22.2	V	3.0	36.4	1.0	-57.6	-13.0	-44.6	
1408.00	-24.6	H	3.0	37.4	1.0	-60.9	-13.0	-47.9	
2112.00	-24.4	H	3.0	36.6	1.0	-59.9	-13.0	-46.9	
2816.00	-23.6	H	3.0	36.4	1.0	-59.0	-13.0	-46.0	
Mid Ch,707.5									
1415.00	-28.2	V	3.0	37.3	1.0	-64.6	-13.0	-51.6	
2122.50	-23.2	V	3.0	36.6	1.0	-58.8	-13.0	-45.8	
2830.00	-22.3	V	3.0	36.4	1.0	-57.7	-13.0	-44.7	
1415.00	-25.9	H	3.0	37.3	1.0	-62.3	-13.0	-49.3	
2122.50	-23.2	H	3.0	36.6	1.0	-58.8	-13.0	-45.8	
2830.00	-22.7	H	3.0	36.4	1.0	-58.1	-13.0	-45.1	
High Ch,711									
1422.00	-28.4	V	3.0	37.3	1.0	-64.8	-13.0	-51.8	
2133.00	-23.1	V	3.0	36.6	1.0	-58.7	-13.0	-45.7	
2844.00	-22.6	V	3.0	36.4	1.0	-57.9	-13.0	-44.9	
1422.00	-25.9	H	3.0	37.3	1.0	-62.2	-13.0	-49.2	
2133.00	-23.2	H	3.0	36.6	1.0	-58.8	-13.0	-45.8	
2844.00	-23.2	H	3.0	36.4	1.0	-58.6	-13.0	-45.6	

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UL Verification Services Chamber
Above 1GHz High Frequency Substitution Measurement

Company: LG Electronics
Project #: 15I19834
Date: 01/30/15
Test Engineer: J. Jackson
Configuration: EUT , AC Adapter
Location: Chamber C
Mode: LTE_16QAM Band 12 Harmonics, 5MHz Bandwidth

Band
LTE12
5MHz
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, 701.50									
1403.00	-28.0	V	3.0	37.4	1.0	-64.4	-13.0	-51.4	
2104.50	-23.4	V	3.0	36.6	1.0	-59.0	-13.0	-46.0	
2806.00	-22.7	V	3.0	36.4	1.0	-58.1	-13.0	-45.1	
1403.00	-26.1	H	3.0	37.4	1.0	-62.5	-13.0	-49.5	
2104.50	-24.2	H	3.0	36.6	1.0	-59.8	-13.0	-46.8	
2806.00	-23.8	H	3.0	36.4	1.0	-59.2	-13.0	-46.2	
Mid Ch, 707.50									
1415.00	-28.4	V	3.0	37.3	1.0	-64.8	-13.0	-51.8	
2122.50	-23.3	V	3.0	36.6	1.0	-58.9	-13.0	-45.9	
2830.00	-23.3	V	3.0	36.4	1.0	-58.7	-13.0	-45.7	
1415.00	-26.3	H	3.0	37.3	1.0	-62.6	-13.0	-49.6	
2122.50	-22.7	H	3.0	36.6	1.0	-58.2	-13.0	-45.2	
2830.00	-23.3	H	3.0	36.4	1.0	-58.7	-13.0	-45.7	
High Ch, 713.50									
1427.00	-27.1	V	3.0	37.3	1.0	-63.4	-13.0	-50.4	
2140.50	-23.9	V	3.0	36.6	1.0	-59.5	-13.0	-46.5	
2854.00	-23.1	V	3.0	36.4	1.0	-58.5	-13.0	-45.5	
1427.00	-26.0	H	3.0	37.3	1.0	-62.4	-13.0	-49.4	
2140.50	-25.1	H	3.0	36.6	1.0	-60.7	-13.0	-47.7	
2854.00	-23.8	H	3.0	36.4	1.0	-59.2	-13.0	-46.2	

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UL Verification Services Chamber
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19960
Date: 2/6/2015
Test Engineer: K.Kedida
Configuration: EUT , AC Adapter and HP
Location: Chamber C
Mode: LTE_QPSK Band 12 Harmonics, 5MHz Bandwidth

Band
LTE12
5MHz
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, 701.50									
1403.00	-27.3	V	3.0	37.4	1.0	-63.7	-13.0	-50.7	
2104.50	-24.0	V	3.0	36.6	1.0	-59.5	-13.0	-46.5	
2806.00	-22.3	V	3.0	36.4	1.0	-57.6	-13.0	-44.6	
1403.00	-25.1	H	3.0	37.4	1.0	-61.5	-13.0	-48.5	
2104.50	-23.1	H	3.0	36.6	1.0	-58.7	-13.0	-45.7	
2806.00	-23.2	H	3.0	36.4	1.0	-58.5	-13.0	-45.5	
Mid Ch, 707.50									
1415.00	-28.4	V	3.0	37.3	1.0	-64.8	-13.0	-51.8	
2122.50	-22.7	V	3.0	36.6	1.0	-58.2	-13.0	-45.2	
2830.00	-22.6	V	3.0	36.4	1.0	-58.0	-13.0	-45.0	
1415.00	-25.0	H	3.0	37.3	1.0	-61.4	-13.0	-48.4	
2122.50	-22.5	H	3.0	36.6	1.0	-58.1	-13.0	-45.1	
2830.00	-22.2	H	3.0	36.4	1.0	-57.6	-13.0	-44.6	
High Ch, 713.50									
1427.00	-27.3	V	3.0	37.3	1.0	-63.6	-13.0	-50.6	
2140.50	-23.1	V	3.0	36.6	1.0	-58.7	-13.0	-45.7	
2854.00	-22.6	V	3.0	36.4	1.0	-58.0	-13.0	-45.0	
1427.00	-25.3	H	3.0	37.3	1.0	-61.7	-13.0	-48.7	
2140.50	-23.8	H	3.0	36.6	1.0	-59.4	-13.0	-46.4	
2854.00	-23.7	H	3.0	36.4	1.0	-59.1	-13.0	-46.1	

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UL Verification Services Chamber
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19960
Date: 2/6/2015
Test Engineer: K.Kedida
Configuration: EUT , AC Adapter and HP
Location: Chamber C
Mode: LTE_16QAM Band 12 Harmonics, 3MHz Bandwidth

Band
LTE12
3MHz
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, 700.5									
1401.00	-27.5	V	3.0	37.4	1.0	-63.8	-13.0	-50.8	
2101.50	-23.7	V	3.0	36.6	1.0	-59.2	-13.0	-46.2	
2802.00	-23.0	V	3.0	36.4	1.0	-58.4	-13.0	-45.4	
1401.00	-25.1	H	3.0	37.4	1.0	-61.5	-13.0	-48.5	
2101.50	-22.9	H	3.0	36.6	1.0	-58.5	-13.0	-45.5	
2802.00	-23.4	H	3.0	36.4	1.0	-58.7	-13.0	-45.7	
Mid Ch, 707.50									
1415.00	-27.6	V	3.0	37.3	1.0	-64.0	-13.0	-51.0	
2122.00	-23.8	V	3.0	36.6	1.0	-59.3	-13.0	-46.3	
2830.00	-23.2	V	3.0	36.4	1.0	-58.6	-13.0	-45.6	
1415.00	-26.0	H	3.0	37.3	1.0	-62.4	-13.0	-49.4	
2122.00	-25.6	H	3.0	36.6	1.0	-61.2	-13.0	-48.2	
2830.00	-24.4	H	3.0	36.4	1.0	-59.8	-13.0	-46.8	
High Ch, 714.5									
1429.00	-28.1	V	3.0	37.3	1.0	-64.5	-13.0	-51.5	
2143.50	-24.3	V	3.0	36.6	1.0	-59.9	-13.0	-46.9	
2858.00	-22.2	V	3.0	36.4	1.0	-57.6	-13.0	-44.6	
1429.00	-26.2	H	3.0	37.3	1.0	-62.5	-13.0	-49.5	
2143.50	-24.2	H	3.0	36.6	1.0	-59.8	-13.0	-46.8	
2858.00	-23.9	H	3.0	36.4	1.0	-59.3	-13.0	-46.3	

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UL Verification Services Chamber
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19960
Date: 2/6/2015
Test Engineer: K.Kedida
Configuration: EUT , AC Adapter and HP
Location: Chamber C
Mode: LTE_QPSK Band 12 Harmonics, 3MHz Bandwidth

Band
LTE12
3MHz
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, 700.5									
1401.00	-27.2	V	3.0	37.4	1.0	-63.5	-13.0	-50.5	
2101.50	-23.1	V	3.0	36.6	1.0	-58.7	-13.0	-45.7	
2802.00	-22.3	V	3.0	36.4	1.0	-57.7	-13.0	-44.7	
1401.00	-24.5	H	3.0	37.4	1.0	-60.8	-13.0	-47.8	
2101.50	-22.2	H	3.0	36.6	1.0	-57.8	-13.0	-44.8	
2802.00	-22.3	H	3.0	36.4	1.0	-57.6	-13.0	-44.6	
Mid Ch, 707.50									
1415.00	-27.8	V	3.0	37.3	1.0	-64.1	-13.0	-51.1	
2122.00	-22.6	V	3.0	36.6	1.0	-58.1	-13.0	-45.1	
2830.00	-22.5	V	3.0	36.4	1.0	-57.9	-13.0	-44.9	
1415.00	-25.3	H	3.0	37.3	1.0	-61.6	-13.0	-48.6	
2122.00	-24.2	H	3.0	36.6	1.0	-59.8	-13.0	-46.8	
2830.00	-23.4	H	3.0	36.4	1.0	-58.8	-13.0	-45.8	
High Ch, 714.5									
1429.00	-26.9	V	3.0	37.3	1.0	-63.2	-13.0	-50.2	
2143.50	-22.8	V	3.0	36.6	1.0	-58.3	-13.0	-45.3	
2858.00	-22.0	V	3.0	36.4	1.0	-57.4	-13.0	-44.4	
1429.00	-24.8	H	3.0	37.3	1.0	-61.2	-13.0	-48.2	
2143.50	-22.8	H	3.0	36.6	1.0	-58.4	-13.0	-45.4	
2858.00	-22.7	H	3.0	36.4	1.0	-58.1	-13.0	-45.1	

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UL Verification Services Chamber
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19960
Date: 2/6/2015
Test Engineer: K.Kedida
Configuration: EUT , AC Adapter and HP
Location: Chamber C
Mode: LTE_16QAM Band 12 Harmonics, 1.4MHz Bandwidth

Band
LTE12
1.4MHz
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, 699.7									
1399.40	-27.8	V	3.0	37.4	1.0	-64.2	-13.0	-51.2	
2099.10	-22.8	V	3.0	36.6	1.0	-58.4	-13.0	-45.4	
2798.80	-22.8	V	3.0	36.4	1.0	-58.2	-13.0	-45.2	
1399.40	-24.9	H	3.0	37.4	1.0	-61.3	-13.0	-48.3	
2099.10	-23.8	H	3.0	36.6	1.0	-59.3	-13.0	-46.3	
2798.80	-23.9	H	3.0	36.4	1.0	-59.3	-13.0	-46.3	
Mid Ch, 707.50									
1415.00	-27.3	V	3.0	37.3	1.0	-63.7	-13.0	-50.7	
2122.00	-23.2	V	3.0	36.6	1.0	-58.8	-13.0	-45.8	
2830.00	-22.4	V	3.0	36.4	1.0	-57.8	-13.0	-44.8	
1415.00	-25.1	H	3.0	37.3	1.0	-61.4	-13.0	-48.4	
2122.00	-22.9	H	3.0	36.6	1.0	-58.5	-13.0	-45.5	
2830.00	-24.1	H	3.0	36.4	1.0	-59.4	-13.0	-46.4	
High Ch, 715.3									
1430.60	-27.1	V	3.0	37.3	1.0	-63.4	-13.0	-50.4	
2145.90	-23.8	V	3.0	36.6	1.0	-59.3	-13.0	-46.3	
2861.20	-22.8	V	3.0	36.4	1.0	-58.2	-13.0	-45.2	
1430.60	-25.1	H	3.0	37.3	1.0	-61.4	-13.0	-48.4	
2145.90	-22.0	H	3.0	36.6	1.0	-57.6	-13.0	-44.6	
2861.20	-23.1	H	3.0	36.4	1.0	-58.5	-13.0	-45.5	

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UL Verification Services Chamber
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19960
Date: 2/6/2015
Test Engineer: K.Kedida
Configuration: EUT , AC Adapter and HP
Location: Chamber C
Mode: LTE_QPSK Band 12 Harmonics, 1.4MHz Bandwidth

Band
LTE12
1.4MHz
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, 699.7									
1399.40	-27.5	V	3.0	37.4	1.0	-63.8	-13.0	-50.8	
2099.10	-24.1	V	3.0	36.6	1.0	-59.7	-13.0	-46.7	
2798.80	-22.6	V	3.0	36.4	1.0	-58.0	-13.0	-45.0	
1399.40	-24.8	H	3.0	37.4	1.0	-61.2	-13.0	-48.2	
2099.10	-23.0	H	3.0	36.6	1.0	-58.5	-13.0	-45.5	
2798.80	-23.6	H	3.0	36.4	1.0	-59.0	-13.0	-46.0	
Mid Ch, 707.50									
1415.00	-27.6	V	3.0	37.3	1.0	-64.0	-13.0	-51.0	
2122.00	-22.7	V	3.0	36.6	1.0	-58.3	-13.0	-45.3	
2830.00	-22.6	V	3.0	36.4	1.0	-58.0	-13.0	-45.0	
1415.00	-24.1	H	3.0	37.3	1.0	-60.4	-13.0	-47.4	
2122.00	-22.0	H	3.0	36.6	1.0	-57.6	-13.0	-44.6	
2830.00	-23.4	H	3.0	36.4	1.0	-58.8	-13.0	-45.8	
High Ch, 715.3									
1430.60	-26.8	V	3.0	37.3	1.0	-63.1	-13.0	-50.1	
2145.90	-23.3	V	3.0	36.6	1.0	-58.9	-13.0	-45.9	
2861.20	-22.2	V	3.0	36.4	1.0	-57.6	-13.0	-44.6	
1430.60	-24.0	H	3.0	37.3	1.0	-60.4	-13.0	-47.4	
2145.90	-21.6	H	3.0	36.6	1.0	-57.2	-13.0	-44.2	
2861.20	-23.6	H	3.0	36.4	1.0	-59.0	-13.0	-46.0	

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

Company: LG
Project #: 15I19960
Date: 2/5/2015
Test Engineer: K.Kedida
Configuration: EUT , AC Adapter and HP
Location: Chamber C
Mode: LTE_16QAM Band 4 Harmonics, 20MHz Bandwidth

Band

LTE4

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, 1720									
3440.00	-8.7	V	3.0	36.0	1.0	-43.7	-13.0	-30.7	
5160.00	-15.9	V	3.0	35.4	1.0	-50.3	-13.0	-37.3	
6880.00	-14.7	V	3.0	35.7	1.0	-49.4	-13.0	-36.4	
3440.00	-10.8	H	3.0	36.0	1.0	-45.8	-13.0	-32.8	
5160.00	-15.6	H	3.0	35.4	1.0	-50.0	-13.0	-37.0	
6880.00	-13.0	H	3.0	35.7	1.0	-47.6	-13.0	-34.6	
Mid Ch, 1732.5									
3465.00	-9.4	V	3.0	36.0	1.0	-44.5	-13.0	-31.5	
5197.50	-14.5	V	3.0	35.4	1.0	-48.9	-13.0	-35.9	
6930.00	-14.8	V	3.0	35.7	1.0	-49.5	-13.0	-36.5	
3465.00	-12.1	H	3.0	36.0	1.0	-47.1	-13.0	-34.1	
5197.50	-15.4	H	3.0	35.4	1.0	-49.8	-13.0	-36.8	
6930.00	-13.0	H	3.0	35.7	1.0	-47.7	-13.0	-34.7	
High Ch, 1745									
3490.00	-11.8	V	3.0	36.0	1.0	-46.8	-13.0	-33.8	
5235.00	-15.8	V	3.0	35.4	1.0	-50.3	-13.0	-37.3	
6980.00	-14.6	V	3.0	35.7	1.0	-49.3	-13.0	-36.3	
3490.00	-12.9	H	3.0	36.0	1.0	-47.9	-13.0	-34.9	
5235.00	-14.8	H	3.0	35.4	1.0	-49.2	-13.0	-36.2	
6980.00	-12.3	H	3.0	35.7	1.0	-47.0	-13.0	-34.0	

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

Company: LG
Project #: 15I19960
Date: 2/5/2015
Test Engineer: K.Kedida
Configuration: EUT , AC Adapter and HP
Location: Chamber C
Mode: LTE_QPSK Band 4 Harmonics, 20MHz Bandwidth

Band LTE4 20MHz 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, 1720									
3440.00	-8.0	V	3.0	36.0	1.0	-43.1	-13.0	-30.1	
5160.00	-16.1	V	3.0	35.4	1.0	-50.5	-13.0	-37.5	
6880.00	-14.4	V	3.0	35.7	1.0	-49.1	-13.0	-36.1	
3440.00	-8.9	H	3.0	36.0	1.0	-44.0	-13.0	-31.0	
5160.00	-15.9	H	3.0	35.4	1.0	-50.3	-13.0	-37.3	
6880.00	-12.3	H	3.0	35.7	1.0	-47.0	-13.0	-34.0	
Mid Ch, 1732.5									
3465.00	-8.7	V	3.0	36.0	1.0	-43.7	-13.0	-30.7	
5197.50	-13.4	V	3.0	35.4	1.0	-47.8	-13.0	-34.8	
6930.00	-14.1	V	3.0	35.7	1.0	-48.8	-13.0	-35.8	
3465.00	-10.9	H	3.0	36.0	1.0	-46.0	-13.0	-33.0	
5197.50	-15.7	H	3.0	35.4	1.0	-50.1	-13.0	-37.1	
6930.00	-12.4	H	3.0	35.7	1.0	-47.1	-13.0	-34.1	
High Ch, 1745									
3490.00	-10.1	V	3.0	36.0	1.0	-45.1	-13.0	-32.1	
5235.00	-15.0	V	3.0	35.4	1.0	-49.4	-13.0	-36.4	
6980.00	-13.7	V	3.0	35.7	1.0	-48.4	-13.0	-35.4	
3490.00	-13.1	H	3.0	36.0	1.0	-48.1	-13.0	-35.1	
5235.00	-13.2	H	3.0	35.4	1.0	-47.7	-13.0	-34.7	
6980.00	-12.3	H	3.0	35.7	1.0	-47.0	-13.0	-34.0	

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Band

LTE4

15MHz

16QAM

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

Company: LG
Project #: 15I19960
Date: 2/5/2015
Test Engineer: K.Kedida
Configuration: EUT , AC Adapter and HP
Location: Chamber C
Mode: LTE_16QAM Band 4 Harmonics, 15MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1717.5									
3435.00	-9.8	V	3.0	36.1	1.0	-44.8	-13.0	-31.8	
5152.50	-16.0	V	3.0	35.4	1.0	-50.5	-13.0	-37.5	
6870.00	-13.9	V	3.0	35.7	1.0	-48.6	-13.0	-35.6	
3435.00	-10.9	H	3.0	36.1	1.0	-46.0	-13.0	-33.0	
5152.50	-13.3	H	3.0	35.4	1.0	-47.7	-13.0	-34.7	
6870.00	-12.6	H	3.0	35.7	1.0	-47.3	-13.0	-34.3	
Mid Ch, 1732.5									
3465.00	-9.1	V	3.0	36.0	1.0	-44.1	-13.0	-31.1	
5197.50	-13.8	V	3.0	35.4	1.0	-48.2	-13.0	-35.2	
6930.00	-14.1	V	3.0	35.7	1.0	-48.7	-13.0	-35.7	
3465.00	-11.8	H	3.0	36.0	1.0	-46.8	-13.0	-33.8	
5197.50	-15.4	H	3.0	35.4	1.0	-49.8	-13.0	-36.8	
6930.00	-12.8	H	3.0	35.7	1.0	-47.5	-13.0	-34.5	
High Ch, 1747.5									
3495.00	-11.8	V	3.0	36.0	1.0	-46.8	-13.0	-33.8	
5242.50	-14.8	V	3.0	35.4	1.0	-49.2	-13.0	-36.2	
6990.00	-14.4	V	3.0	35.7	1.0	-49.1	-13.0	-36.1	
3495.00	-11.8	H	3.0	36.0	1.0	-46.8	-13.0	-33.8	
5242.50	-15.8	H	3.0	35.4	1.0	-50.2	-13.0	-37.2	
6990.00	-11.7	H	3.0	35.7	1.0	-46.4	-13.0	-33.4	

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Band

LTE4

15MHz

QPSK

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

Company: LG
Project #: 15I19960
Date: 2/5/2015
Test Engineer: K.Kedida
Configuration: EUT , AC Adapter and HP
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	-9.2	V	3.0	36.1	1.0	-44.3	-13.0	-31.3	
5152.50	-16.0	V	3.0	35.4	1.0	-50.5	-13.0	-37.5	
6870.00	-14.5	V	3.0	35.7	1.0	-49.2	-13.0	-36.2	
3435.00	-10.5	H	3.0	36.1	1.0	-45.5	-13.0	-32.5	
5152.50	-14.0	H	3.0	35.4	1.0	-48.4	-13.0	-35.4	
6870.00	-12.4	H	3.0	35.7	1.0	-47.1	-13.0	-34.1	
Mid Ch, 1732.5									
3465.00	-7.2	V	3.0	36.0	1.0	-42.3	-13.0	-29.3	
5197.50	-11.5	V	3.0	35.4	1.0	-45.9	-13.0	-32.9	
6930.00	-13.2	V	3.0	35.7	1.0	-47.8	-13.0	-34.8	
3465.00	-10.0	H	3.0	36.0	1.0	-45.1	-13.0	-32.1	
5197.50	-15.1	H	3.0	35.4	1.0	-49.5	-13.0	-36.5	
6930.00	-12.5	H	3.0	35.7	1.0	-47.2	-13.0	-34.2	
High Ch, 1747.5									
3495.00	-11.0	V	3.0	36.0	1.0	-46.0	-13.0	-33.0	
5242.50	-13.6	V	3.0	35.4	1.0	-48.0	-13.0	-35.0	
6990.00	-13.4	V	3.0	35.7	1.0	-48.1	-13.0	-35.1	
3495.00	-11.6	H	3.0	36.0	1.0	-46.6	-13.0	-33.6	
5242.50	-14.7	H	3.0	35.4	1.0	-49.1	-13.0	-36.1	
6990.00	-13.4	H	3.0	35.7	1.0	-48.1	-13.0	-35.1	

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Band

LTE4

10MHz

16QAM

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

Company: LG
Project #: 15I19960
Date: 2/5/2015
Test Engineer: K.Kedida
Configuration: EUT , AC Adapter and HP
Location: Chamber C
Mode: LTE_16QAM Band 4 Harmonics, 10MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1715									
3430.00	-10.3	V	3.0	36.1	1.0	-45.4	-13.0	-32.4	
5145.00	-14.6	V	3.0	35.4	1.0	-49.0	-13.0	-36.0	
6860.00	-13.9	V	3.0	35.7	1.0	-48.6	-13.0	-35.6	
3430.00	-11.3	H	3.0	36.1	1.0	-46.3	-13.0	-33.3	
5145.00	-15.3	H	3.0	35.4	1.0	-49.7	-13.0	-36.7	
6860.00	-12.8	H	3.0	35.7	1.0	-47.5	-13.0	-34.5	
Mid Ch, 1732.5									
3465.00	-9.0	V	3.0	36.0	1.0	-44.0	-13.0	-31.0	
5197.50	-13.6	V	3.0	35.4	1.0	-48.0	-13.0	-35.0	
6930.00	-15.1	V	3.0	35.7	1.0	-49.8	-13.0	-36.8	
3465.00	-10.2	H	3.0	36.0	1.0	-45.2	-13.0	-32.2	
5197.50	-15.0	H	3.0	35.4	1.0	-49.4	-13.0	-36.4	
6930.00	-12.8	H	3.0	35.7	1.0	-47.4	-13.0	-34.4	
High Ch, 1750									
3500.00	-12.3	V	3.0	36.0	1.0	-47.3	-13.0	-34.3	
5250.00	-14.4	V	3.0	35.4	1.0	-48.8	-13.0	-35.8	
7000.00	-13.4	V	3.0	35.7	1.0	-48.1	-13.0	-35.1	
3500.00	-12.7	H	3.0	36.0	1.0	-47.7	-13.0	-34.7	
5250.00	-14.7	H	3.0	35.4	1.0	-49.1	-13.0	-36.1	
7000.00	-12.5	H	3.0	35.7	1.0	-47.1	-13.0	-34.1	

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Band

LTE4

10MHz

QPSK

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

Company: LG
Project #: 15I19960
Date: 2/5/2015
Test Engineer: K.Kedida
Configuration: EUT , AC Adapter and HP
Location: Chamber C
Mode: LTE_QPSK Band 4 Harmonics, 10MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1715									
3430.00	-9.7	V	3.0	36.1	1.0	-44.7	-13.0	-31.7	
5145.00	-13.7	V	3.0	35.4	1.0	-48.2	-13.0	-35.2	
6860.00	-13.2	V	3.0	35.7	1.0	-47.9	-13.0	-34.9	
3430.00	-9.5	H	3.0	36.1	1.0	-44.5	-13.0	-31.5	
5145.00	-14.9	H	3.0	35.4	1.0	-49.3	-13.0	-36.3	
6860.00	-11.8	H	3.0	35.7	1.0	-46.5	-13.0	-33.5	
Mid Ch, 1732.5									
3465.00	-8.0	V	3.0	36.0	1.0	-43.0	-13.0	-30.0	
5197.50	-12.5	V	3.0	35.4	1.0	-46.9	-13.0	-33.9	
6930.00	-14.1	V	3.0	35.7	1.0	-48.8	-13.0	-35.8	
3465.00	-9.3	H	3.0	36.0	1.0	-44.3	-13.0	-31.3	
5197.50	-14.9	H	3.0	35.4	1.0	-49.3	-13.0	-36.3	
6930.00	-12.4	H	3.0	35.7	1.0	-47.1	-13.0	-34.1	
High Ch, 1750									
3500.00	-11.8	V	3.0	36.0	1.0	-46.8	-13.0	-33.8	
5250.00	-13.2	V	3.0	35.4	1.0	-47.6	-13.0	-34.6	
7000.00	-13.2	V	3.0	35.7	1.0	-47.8	-13.0	-34.8	
3500.00	-12.8	H	3.0	36.0	1.0	-47.8	-13.0	-34.8	
5250.00	-14.2	H	3.0	35.4	1.0	-48.6	-13.0	-35.6	
7000.00	-12.7	H	3.0	35.7	1.0	-47.3	-13.0	-34.3	

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Band

LTE4

5MHz

16QAM

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

Company: LG
Project #: 15I19960
Date: 2/5/2015
Test Engineer: K.Kedida
Configuration: EUT , AC Adapter and HP
Location: Chamber B
Mode: LTE_16QAM Band 4 Harmonics, 5MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1712.5									
3425.00	-11.8	V	3.0	36.1	1.0	-46.8	-13.0	-33.8	
5137.50	-14.6	V	3.0	35.4	1.0	-49.1	-13.0	-36.1	
6850.00	-14.1	V	3.0	35.7	1.0	-48.7	-13.0	-35.7	
3425.00	-8.3	H	3.0	36.1	1.0	-43.4	-13.0	-30.4	
5137.50	-15.5	H	3.0	35.4	1.0	-49.9	-13.0	-36.9	
6850.00	-13.6	H	3.0	35.7	1.0	-48.3	-13.0	-35.3	
Mid Ch, 1732.5									
3465.00	-9.1	V	3.0	36.0	1.0	-44.1	-13.0	-31.1	
5197.50	-13.7	V	3.0	35.4	1.0	-48.1	-13.0	-35.1	
6930.00	-13.4	V	3.0	35.7	1.0	-48.1	-13.0	-35.1	
3465.00	-9.6	H	3.0	36.0	1.0	-44.6	-13.0	-31.6	
5197.50	-14.8	H	3.0	35.4	1.0	-49.2	-13.0	-36.2	
6930.00	-12.4	H	3.0	35.7	1.0	-47.0	-13.0	-34.0	
High Ch, 1752.5									
3505.00	-12.8	V	3.0	36.0	1.0	-47.8	-13.0	-34.8	
5257.50	-14.4	V	3.0	35.4	1.0	-48.8	-13.0	-35.8	
7010.00	-13.9	V	3.0	35.7	1.0	-48.6	-13.0	-35.6	
3505.00	-11.6	H	3.0	36.0	1.0	-46.6	-13.0	-33.6	
5257.50	-14.5	H	3.0	35.4	1.0	-48.9	-13.0	-35.9	
7010.00	-12.3	H	3.0	35.7	1.0	-46.9	-13.0	-33.9	

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Band

LTE4

5MHz

QPSK

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

Company: LG
Project #: 15I19960
Date: 2/5/2015
Test Engineer: K.Kedida
Configuration: EUT , AC Adapter and HP
Location: Chamber B
Mode: LTE_QPSK Band 4 Harmonics, 5MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1712.5									
3425.00	-11.2	V	3.0	36.1	1.0	-46.3	-13.0	-33.3	
5137.50	-15.9	V	3.0	35.4	1.0	-50.3	-13.0	-37.3	
6850.00	-14.3	V	3.0	35.7	1.0	-49.0	-13.0	-36.0	
3425.00	-7.0	H	3.0	36.1	1.0	-42.1	-13.0	-29.1	
5137.50	-14.9	H	3.0	35.4	1.0	-49.4	-13.0	-36.4	
6850.00	-12.3	H	3.0	35.7	1.0	-47.0	-13.0	-34.0	
Mid Ch, 1732.5									
3465.00	-7.6	V	3.0	36.0	1.0	-42.7	-13.0	-29.7	
5197.50	-13.0	V	3.0	35.4	1.0	-47.4	-13.0	-34.4	
6930.00	-14.0	V	3.0	35.7	1.0	-48.7	-13.0	-35.7	
3465.00	-9.1	H	3.0	36.0	1.0	-44.2	-13.0	-31.2	
5197.50	-14.1	H	3.0	35.4	1.0	-48.5	-13.0	-35.5	
6930.00	-11.9	H	3.0	35.7	1.0	-46.6	-13.0	-33.6	
High Ch, 1752.5									
3505.00	-12.4	V	3.0	36.0	1.0	-47.4	-13.0	-34.4	
5257.50	-14.3	V	3.0	35.4	1.0	-48.7	-13.0	-35.7	
7010.00	-13.8	V	3.0	35.7	1.0	-48.4	-13.0	-35.4	
3505.00	-11.3	H	3.0	36.0	1.0	-46.3	-13.0	-33.3	
5257.50	-13.9	H	3.0	35.4	1.0	-48.4	-13.0	-35.4	
7010.00	-12.0	H	3.0	35.7	1.0	-46.7	-13.0	-33.7	

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

Company: LG
Project #: 15I19960
Date: 2/5/2015
Test Engineer: K.Kedida
Configuration: EUT , AC Adapter and HP
Location: Chamber C
Mode: LTE_16QAM Band 4 Harmonics, 3MHz Bandwidth

Band LTE4 3MHz 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, 1711.5									
3423.00	-8.4	V	3.0	36.1	1.0	-43.5	-13.0	-30.5	
5134.50	-14.8	V	3.0	35.4	1.0	-49.3	-13.0	-36.3	
6846.00	-13.4	V	3.0	35.7	1.0	-48.1	-13.0	-35.1	
3423.00	-8.1	H	3.0	36.1	1.0	-43.1	-13.0	-30.1	
5134.50	-15.3	H	3.0	35.4	1.0	-49.8	-13.0	-36.8	
6846.00	-13.5	H	3.0	35.7	1.0	-48.2	-13.0	-35.2	
Mid Ch, 1732.5									
3465.00	-8.3	V	3.0	36.0	1.0	-43.3	-13.0	-30.3	
5197.50	-15.6	V	3.0	35.4	1.0	-50.0	-13.0	-37.0	
6930.00	-13.4	V	3.0	35.7	1.0	-48.0	-13.0	-35.0	
3465.00	-9.7	H	3.0	36.0	1.0	-44.8	-13.0	-31.8	
5197.50	-14.2	H	3.0	35.4	1.0	-48.6	-13.0	-35.6	
6930.00	-12.3	H	3.0	35.7	1.0	-46.9	-13.0	-33.9	
High Ch, 1753.5									
3507.00	-13.1	V	3.0	36.0	1.0	-48.1	-13.0	-35.1	
5260.50	-14.5	V	3.0	35.4	1.0	-49.0	-13.0	-36.0	
7014.00	-14.0	V	3.0	35.7	1.0	-48.7	-13.0	-35.7	
3507.00	-12.9	H	3.0	36.0	1.0	-47.9	-13.0	-34.9	
5260.50	-14.6	H	3.0	35.4	1.0	-49.0	-13.0	-36.0	
7014.00	-11.5	H	3.0	35.7	1.0	-46.2	-13.0	-33.2	

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Band

LTE4

3MHz

QPSK

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

Company: LG
Project #: 15I19960
Date: 2/5/2015
Test Engineer: K.Kedida
Configuration: EUT , AC Adapter and HP
Location: Chamber C
Mode: LTE_QPSK Band 4 Harmonics, 3MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1711.5									
3423.00	-7.2	V	3.0	36.1	1.0	-42.3	-13.0	-29.3	
5134.50	-13.7	V	3.0	35.4	1.0	-48.2	-13.0	-35.2	
6846.00	-13.4	V	3.0	35.7	1.0	-48.1	-13.0	-35.1	
3423.00	-8.0	H	3.0	36.1	1.0	-43.0	-13.0	-30.0	
5134.50	-15.1	H	3.0	35.4	1.0	-49.5	-13.0	-36.5	
6846.00	-11.8	H	3.0	35.7	1.0	-46.5	-13.0	-33.5	
Mid Ch, 1732.5									
3465.00	-8.1	V	3.0	36.0	1.0	-43.1	-13.0	-30.1	
5197.50	-14.6	V	3.0	35.4	1.0	-49.1	-13.0	-36.1	
6930.00	-13.7	V	3.0	35.7	1.0	-48.3	-13.0	-35.3	
3465.00	-8.3	H	3.0	36.0	1.0	-43.4	-13.0	-30.4	
5197.50	-15.7	H	3.0	35.4	1.0	-50.2	-13.0	-37.2	
6930.00	-12.4	H	3.0	35.7	1.0	-47.0	-13.0	-34.0	
High Ch, 1753.5									
3507.00	-13.1	V	3.0	36.0	1.0	-48.1	-13.0	-35.1	
5260.50	-14.2	V	3.0	35.4	1.0	-48.7	-13.0	-35.7	
7014.00	-12.5	V	3.0	35.7	1.0	-47.2	-13.0	-34.2	
3507.00	-11.5	H	3.0	36.0	1.0	-46.5	-13.0	-33.5	
5260.50	-13.9	H	3.0	35.4	1.0	-48.3	-13.0	-35.3	
7014.00	-11.3	H	3.0	35.7	1.0	-46.0	-13.0	-33.0	

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

Company: LG
Project #: 15I19960
Date: 2/5/2015
Test Engineer: K.Kedida
Configuration: EUT , AC Adapter and HP
Location: Chamber C
Mode: LTE_16QAM Band 4 Harmonics, 1.4MHz Bandwidth

Band

LTE4

1.4MHz

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, 1710.7									
3421.40	-7.2	V	3.0	36.1	1.0	-42.2	-13.0	-29.2	
5132.10	-14.1	V	3.0	35.4	1.0	-48.6	-13.0	-35.6	
6842.80	-12.8	V	3.0	35.7	1.0	-47.5	-13.0	-34.5	
3421.40	-6.5	H	3.0	36.1	1.0	-41.5	-13.0	-28.5	
5132.10	-12.1	H	3.0	35.4	1.0	-46.5	-13.0	-33.5	
6842.80	-10.9	H	3.0	35.7	1.0	-45.6	-13.0	-32.6	
Mid Ch, 1732.5									
3465.00	-7.1	V	3.0	36.0	1.0	-42.1	-13.0	-29.1	
5197.50	-13.8	V	3.0	35.4	1.0	-48.2	-13.0	-35.2	
6930.00	-13.3	V	3.0	35.7	1.0	-47.9	-13.0	-34.9	
3465.00	-7.8	H	3.0	36.0	1.0	-42.8	-13.0	-29.8	
5197.50	-15.3	H	3.0	35.4	1.0	-49.7	-13.0	-36.7	
6930.00	-13.4	H	3.0	35.7	1.0	-48.0	-13.0	-35.0	
High Ch, 1754.3									
3508.60	-11.9	V	3.0	36.0	1.0	-46.9	-13.0	-33.9	
5262.90	-14.6	V	3.0	35.4	1.0	-49.0	-13.0	-36.0	
7017.20	-14.2	V	3.0	35.7	1.0	-48.9	-13.0	-35.9	
3508.60	-12.7	H	3.0	36.0	1.0	-47.7	-13.0	-34.7	
5262.90	-14.1	H	3.0	35.4	1.0	-48.6	-13.0	-35.6	
7017.20	-11.5	H	3.0	35.7	1.0	-46.2	-13.0	-33.2	

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

Company: LG
Project #: 15I19960
Date: 2/5/2015
Test Engineer: K.Kedida
Configuration: EUT , AC Adapter and HP
Location: Chamber C
Mode: LTE_QPSK Band 4 Harmonics, 1.4MHz Bandwidth

Band LTE4 1.4MHz 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, 1710.7									
3421.40	-6.1	V	3.0	36.1	1.0	-41.2	-13.0	-28.2	
5132.10	-14.9	V	3.0	35.4	1.0	-49.3	-13.0	-36.3	
6842.80	-12.9	V	3.0	35.7	1.0	-47.5	-13.0	-34.5	
3421.40	-6.1	H	3.0	36.1	1.0	-41.1	-13.0	-28.1	
5132.10	-12.9	H	3.0	35.4	1.0	-47.4	-13.0	-34.4	
6842.80	-12.1	H	3.0	35.7	1.0	-46.7	-13.0	-33.7	
Mid Ch, 1732.5									
3465.00	-6.2	V	3.0	36.0	1.0	-41.3	-13.0	-28.3	
5197.50	-11.7	V	3.0	35.4	1.0	-46.1	-13.0	-33.1	
6930.00	-13.2	V	3.0	35.7	1.0	-47.8	-13.0	-34.8	
3465.00	-7.9	H	3.0	36.0	1.0	-43.0	-13.0	-30.0	
5197.50	-14.9	H	3.0	35.4	1.0	-49.3	-13.0	-36.3	
6930.00	-12.5	H	3.0	35.7	1.0	-47.1	-13.0	-34.1	
High Ch, 1754.3									
3508.60	-12.1	V	3.0	36.0	1.0	-47.1	-13.0	-34.1	
5262.90	-15.3	V	3.0	35.4	1.0	-49.7	-13.0	-36.7	
7017.20	-12.9	V	3.0	35.7	1.0	-47.6	-13.0	-34.6	
3508.60	-10.7	H	3.0	36.0	1.0	-45.7	-13.0	-32.7	
5262.90	-13.4	H	3.0	35.4	1.0	-47.9	-13.0	-34.9	
7017.20	-11.5	H	3.0	35.7	1.0	-46.1	-13.0	-33.1	

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

Company: LG Electronics
Project #: 15I19960
Date: 2/4/2015
Test Engineer: Jude Semana
Configuration: X Position, AC Charger + Headset
Mode: HSDPA B2

Chamber	Pre-amplifer	Filter	Limit
5m Chamber A	T343 8449B	Filter 1	Part 24

Band

Band 2

HSDPA

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1852.4MHz									
3.704	-18.8	V	3.0	35.4	1.0	-53.2	-13.0	-40.2	
5.557	-16.7	V	3.0	34.7	1.0	-50.4	-13.0	-37.4	
7.409	-16.3	V	3.0	34.9	1.0	-50.2	-13.0	-37.2	
3.704	-19.8	H	3.0	35.4	1.0	-54.2	-13.0	-41.2	
5.557	-15.0	H	3.0	34.7	1.0	-48.7	-13.0	-35.7	
7.409	-15.4	H	3.0	34.9	1.0	-49.3	-13.0	-36.3	
Mid Ch, 1880.0MHz									
3.760	-16.2	V	3.0	35.3	1.0	-50.5	-13.0	-37.5	
5.640	-14.2	V	3.0	34.7	1.0	-47.9	-13.0	-34.9	
7.520	-15.7	V	3.0	34.9	1.0	-49.7	-13.0	-36.7	
3.760	-14.6	H	3.0	35.3	1.0	-49.0	-13.0	-36.0	
5.640	-16.5	H	3.0	34.7	1.0	-50.2	-13.0	-37.2	
7.520	-15.5	H	3.0	34.9	1.0	-49.4	-13.0	-36.4	
High Ch, 1907.6 MHz									
3.815	-17.8	V	3.0	35.3	1.0	-52.1	-13.0	-39.1	
5.723	-13.3	V	3.0	34.7	1.0	-47.0	-13.0	-34.0	
7.630	-16.2	V	3.0	34.9	1.0	-50.2	-13.0	-37.2	
3.815	-14.5	H	3.0	35.3	1.0	-48.7	-13.0	-35.7	
5.723	-12.5	H	3.0	34.7	1.0	-46.3	-13.0	-33.3	
7.630	-13.9	H	3.0	34.9	1.0	-47.9	-13.0	-34.9	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

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

Company: LG Electronics
Project #: 15I19960
Date: 2/4/2015
Test Engineer: Jude Semana
Configuration: X Position, AC Charger + Headset
Mode: REL99 B2

Chamber	Pre-amplifer	Filter	Limit
5m Chamber A	T343 8449B	Filter 1	Part 24

Band

Band 2

REL99

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1852.4MHz									
3.704	-18.7	V	3.0	35.4	1.0	-53.1	-13.0	-40.1	
5.557	-16.4	V	3.0	34.7	1.0	-50.1	-13.0	-37.1	
7.409	-16.1	V	3.0	34.9	1.0	-50.0	-13.0	-37.0	
3.704	-19.0	H	3.0	35.4	1.0	-53.4	-13.0	-40.4	
5.557	-15.1	H	3.0	34.7	1.0	-48.8	-13.0	-35.8	
7.409	-14.6	H	3.0	34.9	1.0	-48.5	-13.0	-35.5	
Mid Ch, 1880.0MHz									
3.760	-15.4	V	3.0	35.3	1.0	-49.8	-13.0	-36.8	
5.640	-13.8	V	3.0	34.7	1.0	-47.6	-13.0	-34.6	
7.520	-15.5	V	3.0	34.9	1.0	-49.5	-13.0	-36.5	
3.760	-13.4	H	3.0	35.3	1.0	-47.7	-13.0	-34.7	
5.640	-16.0	H	3.0	34.7	1.0	-49.7	-13.0	-36.7	
7.520	-14.1	H	3.0	34.9	1.0	-48.0	-13.0	-35.0	
High Ch, 1907.6 MHz									
3.815	-17.9	V	3.0	35.3	1.0	-52.2	-13.0	-39.2	
5.723	-12.8	V	3.0	34.7	1.0	-46.5	-13.0	-33.5	
7.630	-15.8	V	3.0	34.9	1.0	-49.7	-13.0	-36.7	
3.815	-15.1	H	3.0	35.3	1.0	-49.4	-13.0	-36.4	
5.723	-11.9	H	3.0	34.7	1.0	-45.6	-13.0	-32.6	
7.630	-14.3	H	3.0	34.9	1.0	-48.3	-13.0	-35.3	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

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Band

Band 4

HSDPA

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

Company: LG
Project #: 15I19960
Date: 2/7/2015
Test Engineer: K.Kedida
Configuration: EUT Only
Location: Chamber C
Mode: HSDPA Band 2 Harmonics

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1712.4									
3424.80	-9.5	V	3.0	35.9	1.0	-44.4	-13.0	-31.4	
5137.20	-13.6	V	3.0	35.5	1.0	-48.1	-13.0	-35.1	
6849.60	-13.1	V	3.0	35.7	1.0	-47.8	-13.0	-34.8	
3424.80	-11.8	H	3.0	35.9	1.0	-46.7	-13.0	-33.7	
5137.20	-13.2	H	3.0	35.5	1.0	-47.6	-13.0	-34.6	
6849.60	-12.6	H	3.0	35.7	1.0	-47.3	-13.0	-34.3	
Mid Ch, 1732.6									
3465.20	-7.0	V	3.0	35.8	1.0	-41.8	-13.0	-28.8	
5197.80	-13.1	V	3.0	35.5	1.0	-47.5	-13.0	-34.5	
6930.04	-12.7	V	3.0	35.7	1.0	-47.4	-13.0	-34.4	
3465.20	-11.3	H	3.0	35.8	1.0	-46.2	-13.0	-33.2	
5197.80	-12.0	H	3.0	35.5	1.0	-46.5	-13.0	-33.5	
6930.04	-11.9	H	3.0	35.7	1.0	-46.6	-13.0	-33.6	
High Ch, 1752.6									
3505.20	-10.4	V	3.0	35.8	1.0	-45.2	-13.0	-32.2	
5257.80	-12.8	V	3.0	35.5	1.0	-47.3	-13.0	-34.3	
7010.40	-12.1	V	3.0	35.8	1.0	-46.9	-13.0	-33.9	
3505.20	-12.6	H	3.0	35.8	1.0	-47.4	-13.0	-34.4	
5257.80	-13.3	H	3.0	35.5	1.0	-47.8	-13.0	-34.8	
7010.40	-11.0	H	3.0	35.8	1.0	-45.8	-13.0	-32.8	

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Band

Band 4

REL99

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

Company: LG
Project #: 15I19960
Date: 2/7/2015
Test Engineer: K.Kedida
Configuration: EUT Only
Location: Chamber C
Mode: Rel 99 Band 2 Harmonics

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1712.4									
3424.80	-8.8	V	3.0	35.9	1.0	-43.7	-13.0	-30.7	
5137.20	-14.1	V	3.0	35.5	1.0	-48.6	-13.0	-35.6	
6849.60	-12.7	V	3.0	35.7	1.0	-47.5	-13.0	-34.5	
3424.80	-11.2	H	3.0	35.9	1.0	-46.1	-13.0	-33.1	
5137.20	-13.6	H	3.0	35.5	1.0	-48.0	-13.0	-35.0	
6849.60	-11.8	H	3.0	35.7	1.0	-46.5	-13.0	-33.5	
Mid Ch, 1732.6									
3465.20	-8.6	V	3.0	35.8	1.0	-43.4	-13.0	-30.4	
5197.80	-13.8	V	3.0	35.5	1.0	-48.3	-13.0	-35.3	
6930.04	-12.7	V	3.0	35.7	1.0	-47.5	-13.0	-34.5	
3465.20	-11.9	H	3.0	35.8	1.0	-46.7	-13.0	-33.7	
5197.80	-13.2	H	3.0	35.5	1.0	-47.7	-13.0	-34.7	
6930.04	-11.5	H	3.0	35.7	1.0	-46.3	-13.0	-33.3	
High Ch, 1752.6									
3505.20	-10.1	V	3.0	35.8	1.0	-44.9	-13.0	-31.9	
5257.80	-13.1	V	3.0	35.5	1.0	-47.6	-13.0	-34.6	
7010.40	-12.2	V	3.0	35.8	1.0	-47.0	-13.0	-34.0	
3505.20	-11.0	H	3.0	35.8	1.0	-45.8	-13.0	-32.8	
5257.80	-14.2	H	3.0	35.5	1.0	-48.7	-13.0	-35.7	
7010.40	-12.3	H	3.0	35.8	1.0	-47.1	-13.0	-34.1	

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Band

Band 5

HSDPA

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

Company: LG
Project #: 15I19960
Date: 2/6/2015
Test Engineer: K.Kedida
Configuration: EUT Only
Location: Chamber C
Mode: HSDPA Band 5 Harmonics

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 826.4									
1652.80	-18.0	V	3.0	37.0	1.0	-54.0	-13.0	-41.0	
2479.20	-23.4	V	3.0	36.4	1.0	-58.8	-13.0	-45.8	
3305.60	-21.3	V	3.0	36.1	1.0	-56.5	-13.0	-43.5	
1652.80	-17.1	H	3.0	37.0	1.0	-53.2	-13.0	-40.2	
2479.20	-23.5	H	3.0	36.4	1.0	-59.0	-13.0	-46.0	
3305.60	-22.1	H	3.0	36.1	1.0	-57.3	-13.0	-44.3	
Mid Ch, 836.6									
1673.20	-21.3	V	3.0	37.0	1.0	-57.3	-13.0	-44.3	
2509.80	-22.4	V	3.0	36.4	1.0	-57.8	-13.0	-44.8	
3346.40	-21.2	V	3.0	36.1	1.0	-56.4	-13.0	-43.4	
1673.20	-17.3	H	3.0	37.0	1.0	-53.3	-13.0	-40.3	
2509.80	-24.0	H	3.0	36.4	1.0	-59.4	-13.0	-46.4	
3346.40	-21.5	H	3.0	36.1	1.0	-56.6	-13.0	-43.6	
High Ch, 846.6									
1693.20	-22.2	V	3.0	37.0	1.0	-58.1	-13.0	-45.1	
2539.80	-23.3	V	3.0	36.4	1.0	-58.7	-13.0	-45.7	
3386.40	-21.7	V	3.0	36.1	1.0	-56.8	-13.0	-43.8	
1693.20	-21.3	H	3.0	37.0	1.0	-57.3	-13.0	-44.3	
2539.80	-23.8	H	3.0	36.4	1.0	-59.2	-13.0	-46.2	
3386.40	-21.6	H	3.0	36.1	1.0	-56.7	-13.0	-43.7	

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Band

Band 5

REL99

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

Company: LG
Project #: 15I19960
Date: 2/6/2015
Test Engineer: K.Kedida
Configuration: EUT Only
Location: Chamber C
Mode: Rel99 Band 5 Harmonics

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 826.4									
1652.80	-16.3	V	3.0	37.0	1.0	-52.4	-13.0	-39.4	
2479.20	-22.9	V	3.0	36.4	1.0	-58.4	-13.0	-45.4	
3305.60	-21.0	V	3.0	36.1	1.0	-56.2	-13.0	-43.2	
1652.80	-17.1	H	3.0	37.0	1.0	-53.1	-13.0	-40.1	
2479.20	-23.7	H	3.0	36.4	1.0	-59.1	-13.0	-46.1	
3305.60	-21.8	H	3.0	36.1	1.0	-57.0	-13.0	-44.0	
Mid Ch, 836.6									
1673.20	-20.1	V	3.0	37.0	1.0	-56.1	-13.0	-43.1	
2509.80	-23.3	V	3.0	36.4	1.0	-58.7	-13.0	-45.7	
3346.40	-21.6	V	3.0	36.1	1.0	-56.7	-13.0	-43.7	
1673.20	-19.4	H	3.0	37.0	1.0	-55.4	-13.0	-42.4	
2509.80	-24.7	H	3.0	36.4	1.0	-60.1	-13.0	-47.1	
3346.40	-22.0	H	3.0	36.1	1.0	-57.1	-13.0	-44.1	
High Ch, 846.6									
1693.20	-20.8	V	3.0	37.0	1.0	-56.7	-13.0	-43.7	
2539.80	-23.6	V	3.0	36.4	1.0	-59.1	-13.0	-46.1	
3386.40	-21.6	V	3.0	36.1	1.0	-56.7	-13.0	-43.7	
1693.20	-19.0	H	3.0	37.0	1.0	-55.0	-13.0	-42.0	
2539.80	-24.4	H	3.0	36.4	1.0	-59.8	-13.0	-46.8	
3386.40	-21.6	H	3.0	36.1	1.0	-56.7	-13.0	-43.7	

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

Company: LG Electronics
Project #: 15I19960
Date: 2/4/2015
Test Engineer: Jude Semana
Configuration: EUT w/ AC Charger + HS
Mode: EGPRS 1900

Chamber	Pre-amplifer	Filter	Limit
5m Chamber A	T34 8449B	Filter 1	Part 24

Band	f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch, 1850.2MHz									
GSM 1900	3.700	-17.5	V	3.0	35.4	1.0	-51.9	-13.0	-38.9	
	5.551	-15.3	V	3.0	34.7	1.0	-49.0	-13.0	-36.0	
	7.401	-15.5	V	3.0	34.9	1.0	-49.4	-13.0	-36.4	
EGPRS	3.700	-17.6	H	3.0	35.4	1.0	-52.0	-13.0	-39.0	
	5.551	-14.2	H	3.0	34.7	1.0	-48.0	-13.0	-35.0	
	7.401	-14.2	H	3.0	34.9	1.0	-48.1	-13.0	-35.1	
	Mid Ch, 1880.0MHz									
	3.760	-17.4	V	3.0	35.3	1.0	-51.8	-13.0	-38.8	
	5.640	-16.0	V	3.0	34.7	1.0	-49.8	-13.0	-36.8	
	7.520	-15.1	V	3.0	34.9	1.0	-49.0	-13.0	-36.0	
	3.760	-17.4	H	3.0	35.3	1.0	-51.7	-13.0	-38.7	
	5.640	-14.2	H	3.0	34.7	1.0	-47.9	-13.0	-34.9	
	7.520	-13.1	H	3.0	34.9	1.0	-47.0	-13.0	-34.0	
	High Ch, 1909.8MHz									
	3.820	-17.9	V	3.0	35.3	1.0	-52.1	-13.0	-39.1	
	5.729	-13.9	V	3.0	34.7	1.0	-47.6	-13.0	-34.6	
	7.639	-13.2	V	3.0	35.0	1.0	-47.1	-13.0	-34.1	
	3.820	-16.4	H	3.0	35.3	1.0	-50.7	-13.0	-37.7	
	5.729	-13.6	H	3.0	34.7	1.0	-47.4	-13.0	-34.4	
	7.639	-13.3	H	3.0	35.0	1.0	-47.2	-13.0	-34.2	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

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

Company: LG Electronics
Project #: 15I19960
Date: 2/4/2015
Test Engineer: Jude Semana
Configuration: EUT w/ AC Charger + HS
Mode: GPRS1900

Chamber	Pre-amplifer	Filter	Limit
5m Chamber A	T34 8449B	Filter 1	Part 24

Band	f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch, 1850.2MHz									
GSM 1900	3.700	-17.1	V	3.0	35.4	1.0	-51.5	-13.0	-38.5	
	5.551	-15.2	V	3.0	34.7	1.0	-48.9	-13.0	-35.9	
	7.401	-14.5	V	3.0	34.9	1.0	-48.5	-13.0	-35.5	
GPRS	3.700	-17.4	H	3.0	35.4	1.0	-51.8	-13.0	-38.8	
	5.551	-13.7	H	3.0	34.7	1.0	-47.5	-13.0	-34.5	
	7.401	-14.0	H	3.0	34.9	1.0	-47.9	-13.0	-34.9	
	Mid Ch, 1880.0MHz									
	3.760	-16.4	V	3.0	35.3	1.0	-50.7	-13.0	-37.7	
	5.640	-15.9	V	3.0	34.7	1.0	-49.6	-13.0	-36.6	
	7.520	-13.8	V	3.0	34.9	1.0	-47.7	-13.0	-34.7	
	3.760	-18.1	H	3.0	35.3	1.0	-52.4	-13.0	-39.4	
	5.640	-13.2	H	3.0	34.7	1.0	-46.9	-13.0	-33.9	
	7.520	-12.8	H	3.0	34.9	1.0	-46.8	-13.0	-33.8	
	High Ch, 1909.8MHz									
	3.820	-17.7	V	3.0	35.3	1.0	-52.0	-13.0	-39.0	
	5.729	-12.9	V	3.0	34.7	1.0	-46.6	-13.0	-33.6	
	7.639	-13.2	V	3.0	35.0	1.0	-47.1	-13.0	-34.1	
	3.820	-16.0	H	3.0	35.3	1.0	-50.3	-13.0	-37.3	
	5.729	-12.5	H	3.0	34.7	1.0	-46.2	-13.0	-33.2	
	7.639	-12.8	H	3.0	35.0	1.0	-46.8	-13.0	-33.8	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

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UL Verification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19960
Date: 02/16/15
Test Engineer: K.Kedida
Configuration: EUT,AC charger and HS
Mode: EGPRS 850

Chamber	Pre-amplifer	Filter	Limit
3m Chamber	T34 8449B	Filter 1	Part 22

Band	f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch, 824.2MHz									
GSM 850	1.648	-9.4	V	3.0	37.4	1.0	-45.8	-13.0	-32.8	
	2.473	-18.4	V	3.0	36.4	1.0	-53.8	-13.0	-40.8	
	3.297	-21.5	V	3.0	35.8	1.0	-56.3	-13.0	-43.3	
	1.648	-9.9	H	3.0	37.4	1.0	-46.3	-13.0	-33.3	
EGPRS	2.473	-21.2	H	3.0	36.4	1.0	-56.6	-13.0	-43.6	
	3.297	-22.5	H	3.0	35.8	1.0	-57.3	-13.0	-44.3	
	Mid Ch, 836.6MHz									
	1.673	-9.8	V	3.0	37.3	1.0	-46.1	-13.0	-33.1	
	2.510	-19.8	V	3.0	36.4	1.0	-55.2	-13.0	-42.2	
	3.346	-21.4	V	3.0	35.8	1.0	-56.1	-13.0	-43.1	
	1.673	-10.2	H	3.0	37.3	1.0	-46.6	-13.0	-33.6	
	2.510	-20.6	H	3.0	36.4	1.0	-55.9	-13.0	-42.9	
	3.346	-22.3	H	3.0	35.8	1.0	-57.0	-13.0	-44.0	
	High Ch, 848.8MHz									
	1.698	-11.0	V	3.0	37.3	1.0	-47.3	-13.0	-34.3	
	2.547	-18.7	V	3.0	36.3	1.0	-54.0	-13.0	-41.0	
	3.395	-20.5	V	3.0	35.7	1.0	-55.2	-13.0	-42.2	
	1.698	-9.1	H	3.0	37.3	1.0	-45.4	-13.0	-32.4	
	2.547	-21.3	H	3.0	36.3	1.0	-56.6	-13.0	-43.6	
	3.395	-21.6	H	3.0	35.7	1.0	-56.3	-13.0	-43.3	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

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UL Verification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 15I19960
Date: 02/16/15
Test Engineer: K.Kedida
Configuration: EUT,AC charger and HS
Mode: GPRS 850

Chamber	Pre-amplifer	Filter	Limit
3m Chamber	T34 8449B	Filter 1	Part 22

Band	f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch, 824.2MHz									
GSM 850	1.648	-8.5	V	3.0	37.4	1.0	-44.9	-13.0	-31.9	
	2.473	-18.0	V	3.0	36.4	1.0	-53.4	-13.0	-40.4	
	3.297	-21.4	V	3.0	35.8	1.0	-56.2	-13.0	-43.2	
	1.648	-9.3	H	3.0	37.4	1.0	-45.6	-13.0	-32.6	
GPRS	2.473	-20.4	H	3.0	36.4	1.0	-55.8	-13.0	-42.8	
	3.297	-22.0	H	3.0	35.8	1.0	-56.8	-13.0	-43.8	
	Mid Ch, 836.6MHz									
	1.673	-8.5	V	3.0	37.3	1.0	-44.8	-13.0	-31.8	
	2.510	-19.4	V	3.0	36.4	1.0	-54.7	-13.0	-41.7	
	3.346	-21.6	V	3.0	35.8	1.0	-56.4	-13.0	-43.4	
	1.673	-9.3	H	3.0	37.3	1.0	-45.6	-13.0	-32.6	
	2.510	-21.9	H	3.0	36.4	1.0	-57.3	-13.0	-44.3	
	3.346	-21.3	H	3.0	35.8	1.0	-56.0	-13.0	-43.0	
	High Ch, 848.8MHz									
	1.698	-10.5	V	3.0	37.3	1.0	-46.8	-13.0	-33.8	
	2.547	-17.5	V	3.0	36.3	1.0	-52.8	-13.0	-39.8	
	3.395	-19.8	V	3.0	35.7	1.0	-54.5	-13.0	-41.5	
	1.698	-7.9	H	3.0	37.3	1.0	-44.2	-13.0	-31.2	
	2.547	-20.7	H	3.0	36.3	1.0	-56.0	-13.0	-43.0	
	3.395	-21.4	H	3.0	35.7	1.0	-56.1	-13.0	-43.1	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

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