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 WITH BT + DTS WLAN b/g/n & NFC

MODEL NUMBER: LGK371, K371, LG-K371

FCC ID: ZNFK371

REPORT NUMBER: 16I22670-E1V2

ISSUE DATE: 2/22/2016

Prepared for
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NVLAP LAB CODE 200065-0

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME:	LG ELECTRONICS MOBILECOMM U.S.A., INC.
EUT DESCRIPTION:	GSM/WCDMA/LTE PHONE WITH BT + DTS WLAN b/g/n & NFC
MODEL:	LGK371, K371, LG-K371
SERIAL NUMBER:	510CYBD001165 (Conducted); 512CYDG000378 (Radiated)
DATE TESTED:	NOVEMBER 25, 2015 - JANUARY 27, 2016

APPLICABLE STANDARDS

STANDARD	TEST RESULTS
FCC PART 22H, 24E, 27H & 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 revision section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Approved & Released For
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2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with TIA-603-D, 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	☐ Chamber D
☐ Chamber B	☐ Chamber E
☒ Chamber C	☐ Chamber F
	☐ Chamber G
	☐ Chamber H

The above test sites and facilities are covered under FCC Test Firm Registration # 208313.

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0.

Chambers A through H are covered under Industry Canada company address code 2324B with site numbers 2324B -1 through 2324B-8, respectively.

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, 9KHz to 30 MHz	2.14 dB
Radiated Disturbance, 30 to 1000 MHz	4.98 dB
Radiated Disturbance,1000 to 6000 MHz	3.86 dB
Radiated Disturbance,6000 to 18000 MHz	4.23 dB
Radiated Disturbance,18000 to 26000 MHz	5.30 dB
Radiated Disturbance,26000 to 40000 MHz	5.23 dB

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

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5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

This EUT is a GSM/WCDMA/LTE PHONE WITH BT + DTS WLAN b/g/n & NFC.

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5.2. MAXIMUM OUTPUT POWER (GSM/EGPRS)

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

FCC Part 22/24						
Band	Frequency Range(MHz)	Modulation	Conducted		Radiated	
			AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
GSM850	824~849	GMSK	33.2	2089.30		
	824~849	GPRS	33.2	2089.30	30.36	1086.43
	824~849	EGPRS	27.1	512.86	26.00	398.11
GSM1900	1850~1910	GMSK	29.6	912.01		
	1850~1910	GPRS	29.6	912.01	31.60	1445.44
	1850~1910	EGPRS	25.2	331.13	28.30	676.08

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5.3. MAXIMUM OUTPUT POWER (WCDMA)

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

FCC Part 22/24/27						
Band	Frequency Range(MHz)	Modulation	Conducted		Radiated	
			AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
Band 2	1850~1910	REL99	22.1	162.18	24.92	310.46
	1850~1910	HSDPA	22.1	162.18	24.62	289.73
	1850~1910	HSUPA	22.2	165.96		
Band 4	1710~1755	REL99	22.2	165.96	23.21	209.41
	1710~1755	HSDPA	22.1	162.18	23.77	238.23
	1710~1755	HSUPA	22.2	165.96		
Band 5	824~849	REL99	23.4	218.78	22.29	169.43
	824~849	HSDPA	23.4	218.78	22.40	173.78
	824~849	HSUPA	23.4	218.78		

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5.4. MAXIMUM OUTPUT POWER (LTE)

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

FCC Part 24							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation	Conducted		Radiated	
				AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE2	1850~1910	1.4MHz	QPSK	22.1	162.18	25.69	370.68
			16QAM	21.6	144.54	25.13	325.84
		3MHz	QPSK	22.1	162.18	25.72	373.25
			16QAM	21.6	144.54	25.10	323.59
		5MHz	QPSK	22.1	162.18	25.64	366.44
			16QAM	21.1	128.82	25.07	321.37
		10MHz	QPSK	22.2	165.96	25.75	375.84
			16QAM	21.6	144.54	25.09	322.85
		15MHz	QPSK	22.2	165.96	25.78	378.44
			16QAM	21.4	138.04	24.88	307.61
		20MHz	QPSK	22.3	169.82	25.77	377.57
			16QAM	21.5	141.25	24.85	305.49

FCC Part 27							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation	Conducted		Radiated	
				AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE4	1710~1755	1.4MHz	QPSK	22.5	177.83	24.90	309.03
			16QAM	22.0	158.49	24.40	275.42
		3MHz	QPSK	22.6	181.97	24.30	269.15
			16QAM	21.6	144.54	24.30	269.15
		5MHz	QPSK	22.4	173.78	23.77	238.23
			16QAM	21.8	151.36	23.80	239.88
		10MHz	QPSK	22.4	173.78	25.28	337.29
			16QAM	21.6	144.54	24.70	295.12
		15MHz	QPSK	22.6	181.97	25.20	331.13
			16QAM	21.9	154.88	24.70	295.12
		20MHz	QPSK	22.4	173.78	25.13	325.84
			16QAM	21.8	151.36	24.60	288.40

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FCC Part 22							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation	Conducted		Radiated	
				AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE5	824~849	1.4MHz	QPSK	23.9	245.47	22.62	182.81
			16QAM	23.3	213.80	21.90	154.88
		3MHz	QPSK	24.1	257.04	22.68	185.35
			16QAM	23.3	213.80	21.90	154.88
		5MHz	QPSK	24.0	251.19	22.55	179.89
			16QAM	23.2	208.93	21.80	151.36
		10MHz	QPSK	23.9	245.47	23.00	199.53
			16QAM	23.0	199.53	22.60	181.97

FCC Part 27							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation	Conducted		Radiated	
				AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE12	699~716	1.4MHz	QPSK	24.3	269.15	19.77	94.84
			16QAM	23.4	218.78	19.41	87.30
		3MHz	QPSK	24.3	269.15	19.92	98.17
			16QAM	23.4	218.78	19.26	84.33
		5MHz	QPSK	24.3	269.15	19.39	86.90
			16QAM	23.3	213.80	18.32	67.92
		10MHz	QPSK	23.9	245.47	19.26	84.33
			16QAM	23.4	218.78	18.56	71.78

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5.5. 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	0.61
GSM1900, 1850~1910MHz	0.38
Band 2, 1850~1910MHz	0.38
Band 4, 1710~1755MHz	0.38
Band 5, 824~849MHz	0.61
Band 12, 699~716MHz	-3.92

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5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

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

I/O CABLES (CONDUCTED SETUP)

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

I/O CABLES (RADIATED SETUP)

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

TEST SETUP

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

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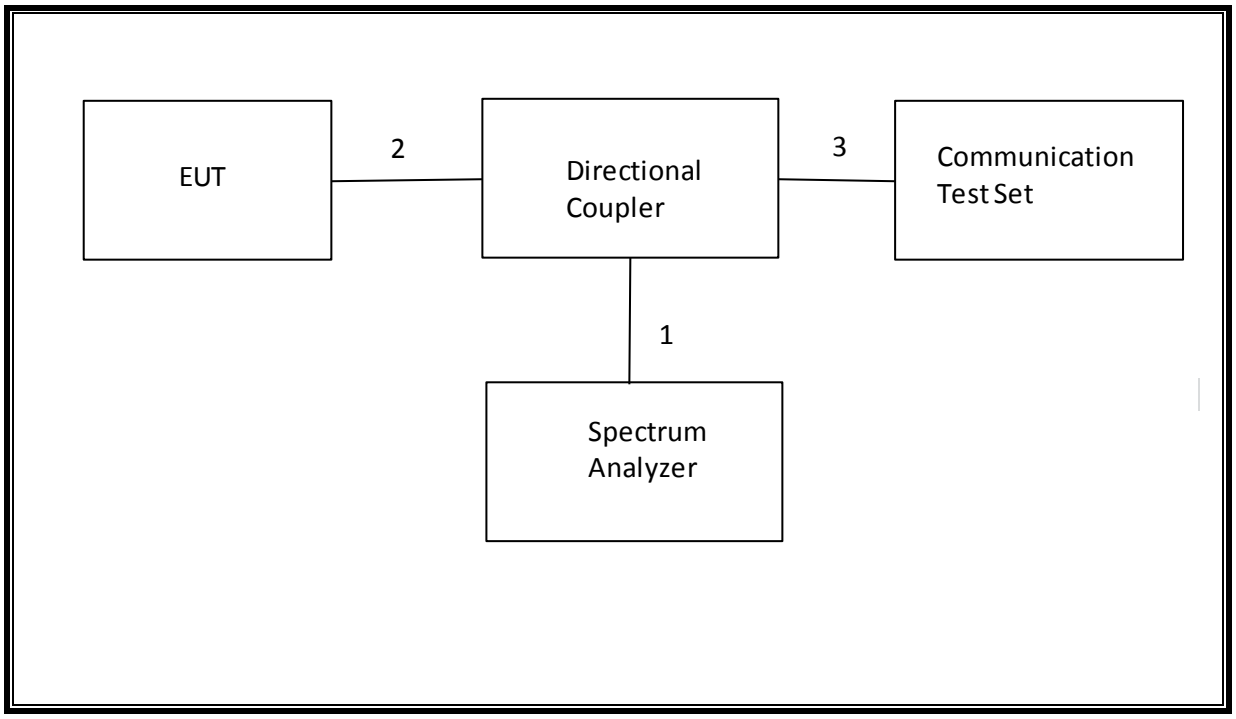
SETUP DIAGRAM FOR TESTS (CONDUCTED TEST SETUP)



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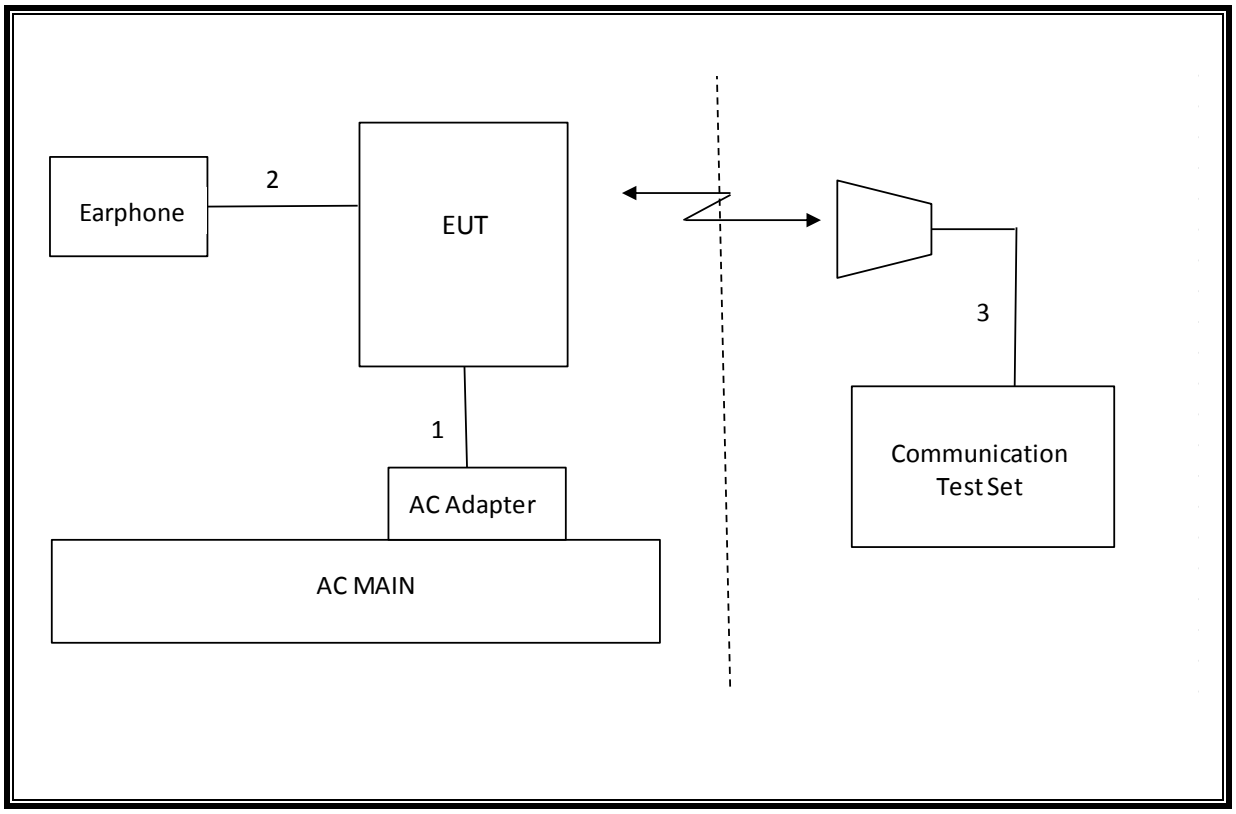
SETUP DIAGRAM FOR TESTS (RADIATED TEST SETUP)



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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	T Number	Cal Due
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	123	10/22/16
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	130	06/10/16
Antenna, Horn, 18 GHz	EMCO	3115	59	11/18/16
Highpass Filter, 2.7 GHz	Micro-Tronics	HPM13194	151	CNR
Highpass Filter, 1.5 GHz	Micro-Tronics	HPM13193	153	CNR
Temperature / Humidity Chamber	Thermotron	SE 600-10-10	80	05/15/16
Communications Test Set	R&S	CMW500	159	07/10/16
DC power supply, 8 V @ 3 A or 15 V	Agilent / HP	E3610A	None	CNR
Vector signal generator, 6 GHz	Agilent / HP	E4438C	None	06/16/16
Antenna, Tuned Dipole 400~1000	ETS	3121C DB4	273	05/05/16
Directional Coupler	RF-Lambda	RFDC5M06G15	None	CNR
Antenna, Horn, 26.5 GHz	ARA	MWH-1826/B	447	05/18/16

Test Software List			
Description	Manufacturer	Model	Version
Radiated Software	UL	UL EMC	Ver 9.5, June 24, 2015
Conducted Software	UL	UL EMC	Ver 9.5, May 26, 2015
CLT Software	UL	UL RF	Ver 1.0, Feb 2, 2015
Antenna Port Software	UL	UL RF	Ver 3.7, Nov 12, 2015

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7. SUMMARY TABLE

FCC Part Section	RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result
2.1049	N/A	Occupied Bandwidth (99%)	N/A	Conducted	Pass
22.917(a) 24.238(a) 27.53(g)	RSS-132(4.5.1) RSS-133(6.5.1) RSS-139(6.5.1)	Band Edge / Conducted Spurious Emission	-13dBm		Pass
2.1046	N/A	Conducted output power	N/A		Pass
22.355 24.235 27.54	RSS-132(4.3) RSS-133(6.3) RSS-139(6.3)	Frequency Stability	2.5PPM		Pass
22.913(a)(2)	RSS-132(4.4)	Effective Radiated Power	38dBm	Radiated	Pass
27.50(c)(10)	N/A		34.77dBm		Pass
24.232(c) 27.50(h)(2)	RSS-133(6.4)	Equivalent Isotropic Radiated Power	33dBm		Pass
27.50(d)(4)	RSS-139(6.4)		30dBm		Pass
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

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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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8.2. GSM OUTPUT POWER RESULT

Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Burst Pwr (dBm)
GSM (Voice)	CS1	1	128	824.4	33.2
			190	836.6	33.2
			251	848.8	33.2
GPRS (GMSK)	CS1	1	128	824.4	33.2
			190	836.6	33.2
			251	848.8	33.2
		2	128	824.4	31.7
			190	836.6	31.7
			251	848.8	31.7
EGPRS (8PSK)	MCS5	1	128	824.4	26.8
			190	836.6	27.0
			251	848.8	27.1
		2	128	824.4	26.1
			190	836.6	26.2
			251	848.8	26.2

Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Burst Pwr (dBm)
GSM (Voice)	CS1	1	512	1850.2	29.6
			661	1880.0	29.4
			810	1909.8	29.5
GPRS (GMSK)	CS1	1	512	1850.2	29.6
			661	1880.0	29.4
			810	1909.8	29.5
		2	512	1850.2	27.8
			661	1880.0	27.7
			810	1909.8	27.8
EGPRS (8PSK)	MCS5	1	512	1850.2	25.2
			661	1880.0	25.2
			810	1909.8	25.2
		2	512	1850.2	24.1
			661	1880.0	24.1
			810	1909.8	24.1

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8.3. 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

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8.4. UMTS REL 99 OUTPUT POWER RESULT

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	22.1
		9400	1880.0	0	22.1
		9538	1907.6	0	22.1

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	22.1
		1413	1732.6	0	22.1
		1513	1752.6	0	22.2

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	23.4
		4183	836.6	0	23.4
		4233	846.6	0	23.4

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8.5. 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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8.6. UMTS HSDPA OUTPUT POWER RESULT

Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band II	Subtest 1	9262	1852.4	0	22.1
		9400	1880.0	0	22.0
		9538	1907.6	0	22.1
	Subtest 2	9262	1852.4	0	22.1
		9400	1880.0	0	22.1
		9538	1907.6	0	22.0
	Subtest 3	9262	1852.4	0.5	21.6
		9400	1880.0	0.5	21.5
		9538	1907.6	0.5	21.6
	Subtest 4	9262	1852.4	0.5	21.6
		9400	1880.0	0.5	21.5
		9538	1907.6	0.5	21.5

Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band IV	Subtest 1	1312	1712.4	0	22.0
		1413	1732.6	0	22.0
		1513	1752.6	0	22.1
	Subtest 2	1312	1712.4	0	22.1
		1413	1732.6	0	22.0
		1513	1752.6	0	22.1
	Subtest 3	1312	1712.4	0.5	21.6
		1413	1732.6	0.5	21.4
		1513	1752.6	0.5	21.5
	Subtest 4	1312	1712.4	0.5	21.4
		1413	1732.6	0.5	21.5
		1513	1752.6	0.5	21.5

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Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band V	Subtest 1	4132	826.4	0	23.3
		4183	836.6	0	23.4
		4233	846.6	0	23.3
	Subtest 2	4132	826.4	0	23.2
		4183	836.6	0	23.2
		4233	846.6	0	23.2
	Subtest 3	4132	826.4	0.5	22.2
		4183	836.6	0.5	22.2
		4233	846.6	0.5	22.2
	Subtest 4	4132	826.4	0.5	22.1
		4183	836.6	0.5	22.3
		4233	846.6	0.5	22.1

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8.7. 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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8.8. UMTS HSUPA OUTPUT POWER RESULT

Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band II	Subtest 1	9262	1852.4	0	21.8
		9400	1880.0	0	21.5
		9538	1907.6	0	21.4
	Subtest 2	9262	1852.4	2	20.6
		9400	1880.0	2	20.2
		9538	1907.6	2	20.0
	Subtest 3	9262	1852.4	1	21.2
		9400	1880.0	1	20.8
		9538	1907.6	1	20.7
	Subtest 4	9262	1852.4	2	20.6
		9400	1880.0	2	20.4
		9538	1907.6	2	20.3
	Subtest 5	9262	1852.4	0	22.2
		9400	1880.0	0	22.1
		9538	1907.6	0	22.1

Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band IV	Subtest 1	1312	1712.4	0	21.8
		1413	1732.6	0	21.6
		1513	1752.6	0	21.2
	Subtest 2	1312	1712.4	2	19.9
		1413	1732.6	2	20.3
		1513	1752.6	2	20.6
	Subtest 3	1312	1712.4	1	20.9
		1413	1732.6	1	20.9
		1513	1752.6	1	20.7
	Subtest 4	1312	1712.4	2	20.4
		1413	1732.6	2	20.3
		1513	1752.6	2	20.7
	Subtest 5	1312	1712.4	0	22.0
		1413	1732.6	0	22.1
		1513	1752.6	0	22.2

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Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band V	Subtest 1	4132	826.4	0	22.8
		4183	836.6	0	23.0
		4233	846.6	0	22.8
	Subtest 2	4132	826.4	2	21.6
		4183	836.6	2	21.6
		4233	846.6	2	21.2
	Subtest 3	4132	826.4	1	22.2
		4183	836.6	1	22.1
		4233	846.6	1	21.8
	Subtest 4	4132	826.4	2	21.7
		4183	836.6	2	21.7
		4233	846.6	2	21.6
	Subtest 5	4132	826.4	0	23.3
		4183	836.6	0	23.4
		4233	846.6	0	23.2

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8.9. LTE OUTPUT POWER RESULT

LTE Band 2

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Avg Pwr (dBm)		
						18607	18900	19193
						1850.7 MHz	1880 MHz	1909.3 MHz
LTE Band 2	1.4	QPSK	1	0	0	22.1	21.7	21.9
			1	2	0	22.1	21.7	21.9
			1	5	0	22.1	22.0	21.9
			3	0	0	22.0	21.9	22.1
			3	1	0	22.1	22.0	22.0
			3	2	0	22.1	22.0	22.0
			6	0	1	20.9	20.9	21.1
		16QAM	1	0	1	21.6	21.2	21.3
			1	2	1	21.6	21.2	21.4
			1	5	1	21.6	21.4	21.2
			3	0	1	21.1	20.8	21.0
			3	1	1	21.1	20.8	21.1
			3	2	1	21.2	20.8	20.9
			6	0	2	20.0	19.6	20.0

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Avg Pwr (dBm)		
						18615	18900	19185
						1851.5 MHz	1880 MHz	1908.5 MHz
LTE Band 2	3	QPSK	1	0	0	21.9	21.9	22.1
			1	7	0	22.0	21.9	22.0
			1	14	0	22.0	21.8	22.1
			6	0	1	20.9	20.9	21.0
			6	3	1	21.0	20.9	21.0
			6	5	1	21.0	20.9	21.0
			15	0	1	21.0	20.9	21.2
		16QAM	1	0	1	21.4	21.2	21.0
			1	7	1	21.6	21.3	20.9
			1	14	1	21.6	21.2	21.0
			6	0	2	20.1	20.2	20.1
			6	3	2	20.1	20.2	20.0
			6	5	2	20.1	20.3	20.0
			15	0	2	20.2	19.9	20.0

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Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Avg Pwr (dBm)		
						18625	18900	19175
						1852.5 MHz	1880 MHz	1907.5 MHz
LTE Band 2	5	QPSK	1	0	0	21.7	21.7	21.7
			1	12	0	22.1	21.6	22.1
			1	24	0	21.5	21.6	22.0
			12	0	1	21.0	20.9	21.1
			12	6	1	20.9	20.9	21.0
			12	11	1	20.9	20.9	20.9
			25	0	1	20.9	20.9	21.0
		16QAM	1	0	1	20.9	21.0	21.0
			1	12	1	20.8	20.8	21.1
			1	24	1	20.7	20.9	20.9
			12	0	2	19.7	19.7	20.0
			12	6	2	19.8	19.7	19.9
			12	11	2	19.7	19.7	19.9
			25	0	2	20.2	20.0	20.0

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Avg Pwr (dBm)		
						18650	18900	19150
						1855 MHz	1880 MHz	1905 MHz
LTE Band 2	10	QPSK	1	0	0	22.2	22.1	22.2
			1	24	0	22.1	21.9	22.2
			1	49	0	22.1	21.7	22.0
			25	0	1	21.0	21.0	21.0
			25	12	1	20.9	21.0	21.1
			25	24	1	21.0	20.9	21.0
			50	0	1	21.0	20.9	21.0
		16QAM	1	0	1	21.6	21.3	21.3
			1	24	1	21.6	21.2	21.4
			1	49	1	21.5	21.2	21.5
			25	0	2	20.3	20.2	19.9
			25	12	2	20.2	20.3	20.0
			25	24	2	20.1	20.1	19.9
			50	0	2	20.1	19.9	20.0

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Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Avg Pwr (dBm)		
						18675	18900	19125
						1857.5 MHz	1880 MHz	1902.5 MHz
LTE Band 2	15	QPSK	1	0	0	22.2	22.2	22.2
			1	37	0	22.0	22.0	22.2
			1	74	0	21.9	21.9	22.1
			36	0	1	21.0	21.0	21.1
			36	18	1	21.1	20.9	21.0
			36	35	1	20.9	21.0	20.9
			75	0	1	21.0	20.9	21.0
		16QAM	1	0	1	21.3	21.2	21.4
			1	37	1	21.2	21.4	21.3
			1	74	1	21.3	21.4	21.3
			36	0	2	20.0	20.1	20.1
			36	18	2	19.9	20.0	20.0
			36	35	2	19.9	19.9	20.1
			75	0	2	20.0	19.9	20.0

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Avg Pwr (dBm)		
						18700	18900	19100
						1860 MHz	1880 MHz	1900 MHz
LTE Band 2	20	QPSK	1	0	0	22.2	22.1	22.3
			1	49	0	22.0	22.2	22.3
			1	99	0	22.0	22.0	22.1
			50	0	1	21.0	21.1	21.1
			50	25	1	20.9	21.0	21.1
			50	49	1	20.9	21.0	21.0
			100	0	1	21.0	21.0	21.0
		16QAM	1	0	1	21.5	21.2	21.3
			1	49	1	21.3	20.7	21.3
			1	99	1	21.2	21.0	20.8
			50	0	2	20.0	20.0	20.1
			50	25	2	19.7	20.0	20.0
			50	49	2	19.7	20.0	20.1
			100	0	2	20.1	19.9	20.1

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LTE Band 4

Band	BW (MHz)	Mode	RB Allocation	RB offset	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	22.4	22.1	22.2
			1	2	0	22.4	22.2	22.4
			1	5	0	22.4	22.0	22.2
			3	0	0	22.4	22.3	22.3
			3	1	0	22.4	22.2	22.5
			3	2	0	22.3	22.2	22.3
			6	0	1	21.2	21.2	21.2
		16QAM	1	0	1	21.9	21.5	21.5
			1	2	1	22.0	21.7	21.5
			1	5	1	22.0	21.6	21.4
			3	0	1	21.3	21.3	21.2
			3	1	1	21.1	21.3	21.0
			3	2	1	21.0	21.4	21.1
			6	0	2	20.0	20.4	20.4

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Avg Pwr (dBm)		
						19965	20175	20385
						1711.5 MHz	1732.5 MHz	1753.5 MHz
LTE Band 4	3	QPSK	1	0	0	22.3	22.2	22.3
			1	7	0	22.2	22.4	22.6
			1	14	0	22.2	22.3	22.6
			6	0	1	21.2	21.2	21.3
			6	3	1	21.2	21.2	21.2
			6	5	1	21.3	21.2	21.2
			15	0	1	21.2	21.3	21.2
		16QAM	1	0	1	21.4	21.2	21.6
			1	7	1	21.3	21.1	21.5
			1	14	1	21.4	21.1	21.4
			6	0	2	20.4	20.5	20.2
			6	3	2	20.4	20.5	20.2
			6	5	2	20.4	20.5	19.9
			15	0	2	20.2	20.4	20.2

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Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Avg Pwr (dBm)		
						19975	20175	20375
						1712.5 MHz	1732.5 MHz	1752.5 MHz
LTE Band 4	5	QPSK	1	0	0	22.2	22.1	22.4
			1	12	0	22.4	22.4	22.3
			1	24	0	22.1	22.1	22.2
			12	0	1	21.3	21.2	21.2
			12	7	1	21.2	21.2	21.2
			12	13	1	21.3	21.2	21.2
			25	0	1	21.3	21.2	21.2
		16QAM	1	0	1	21.5	21.1	21.8
			1	12	1	21.2	21.0	21.5
			1	24	1	21.5	21.1	21.5
			12	0	2	20.4	20.1	20.3
			12	7	2	20.3	20.3	20.2
			12	13	2	20.2	20.1	20.3
			25	0	2	20.3	20.3	20.2

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Avg Pwr (dBm)		
						20000	20175	20350
						1715 MHz	1732.5 MHz	1750 MHz
LTE Band 4	10	QPSK	1	0	0	22.3	22.3	22.3
			1	25	0	22.2	22.4	22.3
			1	49	0	22.1	22.0	22.0
			25	0	1	21.3	21.3	21.3
			25	12	1	21.3	21.3	21.2
			25	25	1	21.1	21.1	21.1
			50	0	1	21.2	21.3	21.2
		16QAM	1	0	1	21.6	21.4	21.3
			1	25	1	21.6	21.5	21.5
			1	49	1	21.3	21.3	21.5
			25	0	2	20.2	20.4	20.1
			25	12	2	20.1	20.4	20.2
			25	25	2	20.3	20.2	20.2
			50	0	2	20.4	20.2	20.3

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Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Avg Pwr (dBm)		
						20025	20175	20325
						1717.5 MHz	1732.5 MHz	1747.5 MHz
LTE Band 4	15	QPSK	1	0	0	22.6	22.4	22.4
			1	37	0	22.3	22.3	22.3
			1	74	0	22.2	22.1	22.3
			36	0	1	21.4	21.3	21.3
			36	20	1	21.3	21.3	21.2
			36	39	1	21.2	21.2	21.2
			75	0	1	21.1	21.2	21.2
		16QAM	1	0	1	21.8	21.9	21.5
			1	37	1	21.6	21.8	21.3
			1	74	1	21.6	21.7	21.4
			36	0	2	20.5	20.5	20.4
			36	20	2	20.4	20.4	20.2
			36	39	2	20.4	20.1	20.2
			75	0	2	20.0	20.2	20.2

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Avg Pwr (dBm)		
						20050	20175	20300
						1720 MHz	1732.5 MHz	1745 MHz
LTE Band 4	20	QPSK	1	0	0		22.4	
			1	49	0		22.3	
			1	99	0		22.1	
			50	0	1		21.3	
			50	24	1		21.3	
			50	50	1		21.1	
			100	0	1		21.2	
		16QAM	1	0	1		21.5	
			1	49	1		21.8	
			1	99	1		21.5	
			50	0	2		20.3	
			50	24	2		20.1	
			50	50	2		20.2	
			100	0	2		20.2	

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LTE Band 5

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Avg Pwr (dBm)		
						20407	20525	20643
						824.7 MHz	836.5 MHz	848.3 MHz
LTE Band 5	1.4	QPSK	1	0	0	23.7	23.5	23.7
			1	3	0	23.9	23.5	23.7
			1	5	0	23.9	23.7	23.6
			3	0	0	23.8	23.7	23.8
			3	1	0	23.9	23.7	23.9
			3	3	0	23.9	23.8	23.9
			6	0	1	22.8	22.8	22.6
		16QAM	1	0	1	23.2	23.2	22.9
			1	3	1	23.3	23.2	23.0
			1	5	1	23.3	23.1	22.9
			3	0	1	22.8	22.6	22.8
			3	1	1	22.8	22.6	22.7
			3	3	1	23.0	22.7	22.9
			6	0	2	22.1	21.4	21.9

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Avg Pwr (dBm)		
						20415	20525	20635
						825.5 MHz	836.5 MHz	847.5 MHz
LTE Band 5	3	QPSK	1	0	0	23.8	23.8	24.0
			1	8	0	23.7	23.8	23.9
			1	14	0	23.8	23.9	24.1
			8	0	1	22.7	22.7	22.8
			8	4	1	22.7	22.7	22.7
			8	7	1	22.7	22.7	22.7
			15	0	1	22.8	22.7	22.8
		16QAM	1	0	1	23.0	22.6	23.3
			1	8	1	23.1	23.2	23.3
			1	14	1	23.0	23.2	23.3
			8	0	2	21.9	21.9	21.8
			8	4	2	21.8	21.9	21.4
			8	7	2	21.8	21.8	21.6
			15	0	2	21.6	21.5	21.7

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Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Avg Pwr (dBm)		
						20425	20525	20625
						826.5 MHz	836.5 MHz	846.5 MHz
LTE Band 5	5	QPSK	1	0	0	24.0	23.7	23.5
			1	12	0	23.8	23.9	23.8
			1	24	0	23.7	23.7	23.6
			12	0	1	22.8	22.6	22.7
			12	7	1	22.7	22.6	22.7
			12	13	1	22.7	22.7	22.7
			25	0	1	22.8	22.7	22.7
		16QAM	1	0	1	23.2	22.5	22.6
			1	12	1	23.1	22.7	22.2
			1	24	1	22.6	22.9	22.5
			12	0	2	21.7	21.5	21.6
			12	7	2	21.7	21.5	21.6
			12	13	2	21.7	21.6	21.7
			25	0	2	21.8	21.8	21.9

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Avg Pwr (dBm)		
						20450	20525	20600
						829 MHz	836.5 MHz	844 MHz
LTE Band 5	10	QPSK	1	0	0		23.7	
			1	25	0		23.9	
			1	49	0		23.8	
			25	0	1		22.7	
			25	12	1		22.7	
			25	25	1		22.7	
			50	0	1		22.7	
		16QAM	1	0	1		23.0	
			1	25	1		23.0	
			1	49	1		23.0	
			25	0	2		21.8	
			25	12	2		21.9	
			25	25	2		21.9	
			50	0	2		21.7	

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LTE Band 12

Band	BW (MHz)	Mode	RB Allocation	RB offset	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	23.9	24.2	24.0
			1	3	0	23.9	24.2	24.0
			1	5	0	24.2	24.3	23.8
			3	0	0	24.1	24.0	23.9
			3	1	0	24.0	24.1	24.0
			3	3	0	24.1	24.3	24.0
			6	0	1	23.0	23.1	23.0
		16QAM	1	0	1	23.4	23.4	23.1
			1	3	1	23.3	23.4	23.3
			1	5	1	23.2	23.3	23.1
			3	0	1	23.2	22.9	22.9
			3	1	1	23.1	23.0	22.7
			3	3	1	23.1	23.1	22.8
			6	0	2	21.8	21.9	21.9

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Avg Pwr (dBm)		
						23025	23095	23165
						700.5 MHz	707.5 MHz	714.5 MHz
LTE Band 12	3	QPSK	1	0	0	23.9	24.1	24.0
			1	8	0	23.9	24.3	24.0
			1	14	0	24.0	24.2	23.9
			8	0	1	23.0	23.1	22.8
			8	4	1	23.0	23.0	22.9
			8	7	1	23.1	23.0	22.9
			15	0	1	23.0	23.0	22.9
		16QAM	1	0	1	23.2	23.0	23.3
			1	8	1	23.1	23.0	23.2
			1	14	1	23.2	23.4	23.3
			8	0	2	22.1	22.3	22.0
			8	4	2	22.2	22.0	21.8
			8	7	2	22.1	22.0	21.8
			15	0	2	22.1	22.1	21.9

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Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Avg Pwr (dBm)		
						23035	23095	23155
						701.5 MHz	707.5 MHz	713.5 MHz
LTE Band 12	5	QPSK	1	0	0	24.1	24.1	23.8
			1	12	0	24.0	24.3	23.9
			1	24	0	24.1	23.8	23.9
			12	0	1	23.0	23.1	22.9
			12	7	1	22.9	23.0	23.0
			12	13	1	22.9	22.9	22.9
			25	0	1	22.9	22.9	22.9
		16QAM	1	0	1	23.0	23.1	22.8
			1	12	1	23.3	23.1	22.8
			1	24	1	23.3	23.2	22.9
			12	0	2	22.0	21.9	21.8
			12	7	2	22.1	22.0	21.9
			12	13	2	22.1	21.9	21.8
			25	0	2	22.1	22.1	21.9

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Avg Pwr (dBm)		
						23060	23095	23130
						704 MHz	707.5 MHz	711 MHz
LTE Band 12	10	QPSK	1	0	0		23.9	
			1	25	0		23.9	
			1	49	0		23.9	
			25	0	1		22.9	
			25	12	1		23.1	
			25	25	1		23.0	
			50	0	1		22.9	
		16QAM	1	0	1		23.4	
			1	25	1		23.0	
			1	49	1		23.3	
			25	0	2		22.2	
			25	12	2		22.0	
			25	25	2		22.0	
			50	0	2		22.0	

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9. PEAK TO AVERAGE RATIO

TEST PROCEDURE

Per KDB 971168 D01 Power Meas License Digital Systems v02r02

TEST SPEC

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

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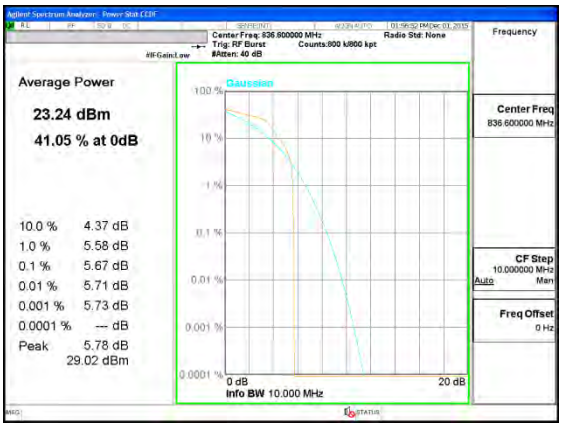
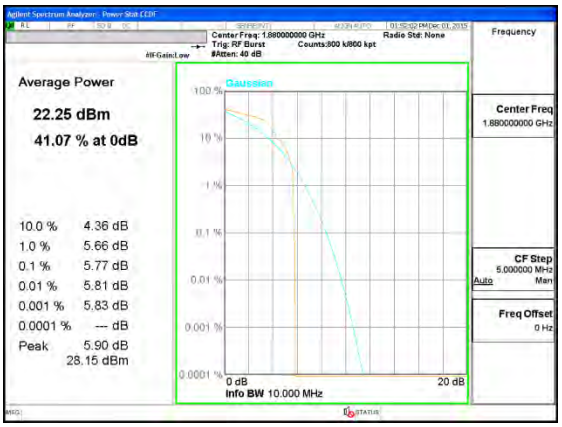
9.1. CONDUCTED PEAK TO AVERAGE RESULT

GSM



Band GSM850 EGPRS Mid channel

Band GSM850 GPRS Mid channel



Band GSM1900 EGPRS Mid channel

Band GSM1900 GPRS Mid channel

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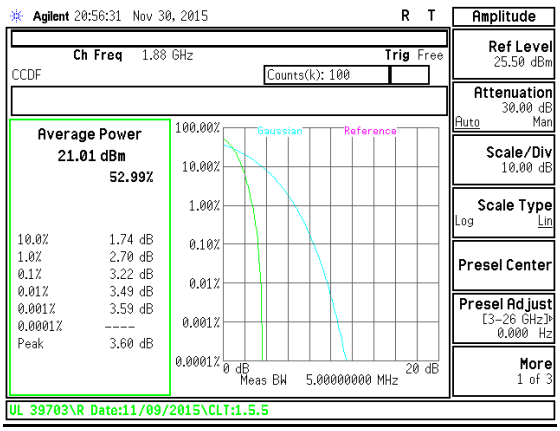
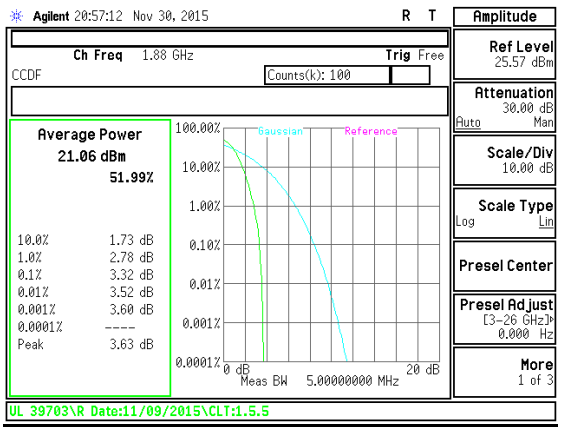
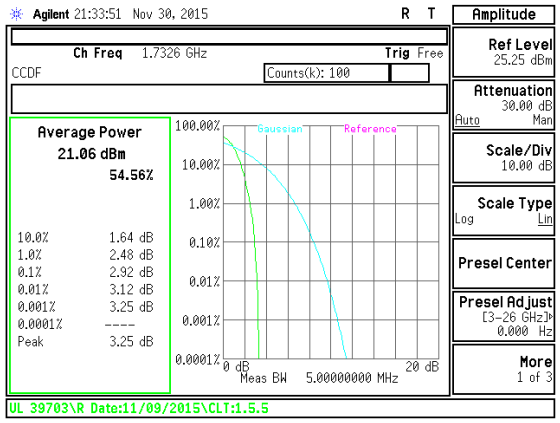
WCDMA



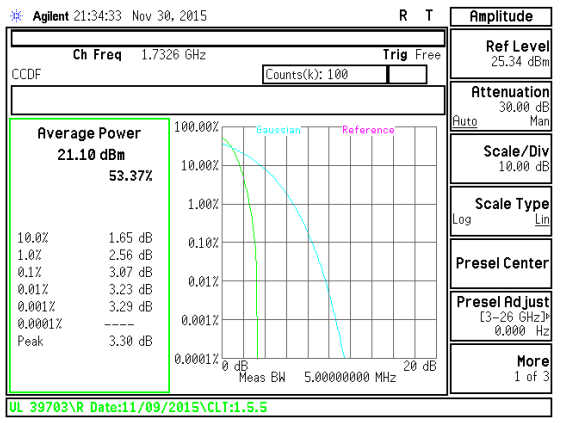
Band B2 REL99



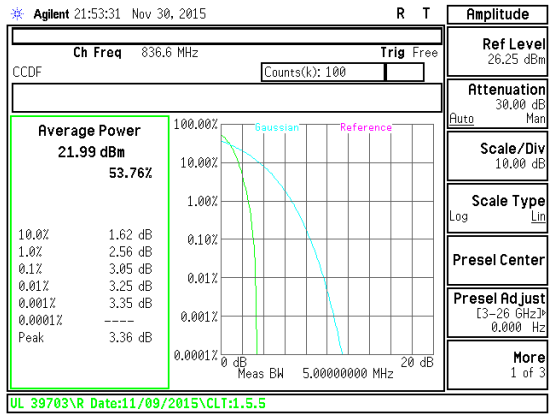
Band B2 HSDPA



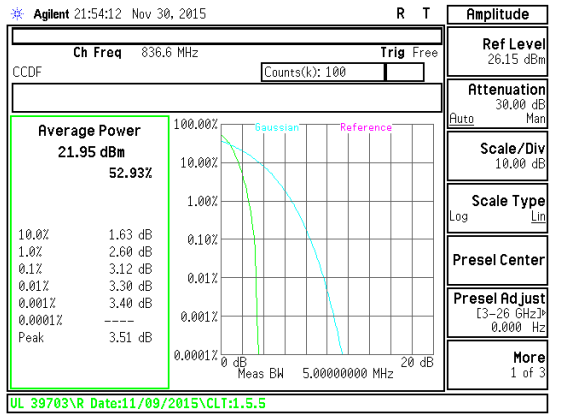
Band B4 REL99



Band B4 HSDPA



Band B5 REL99



Band B5 HSDPA

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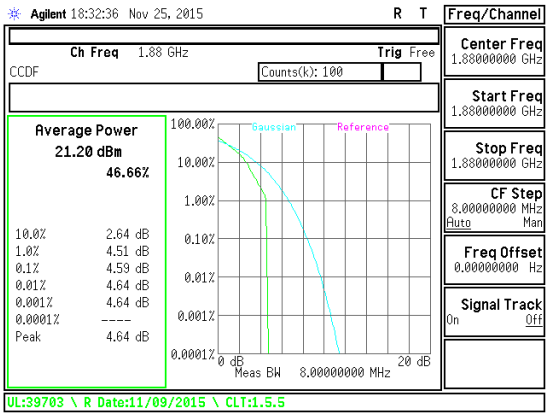
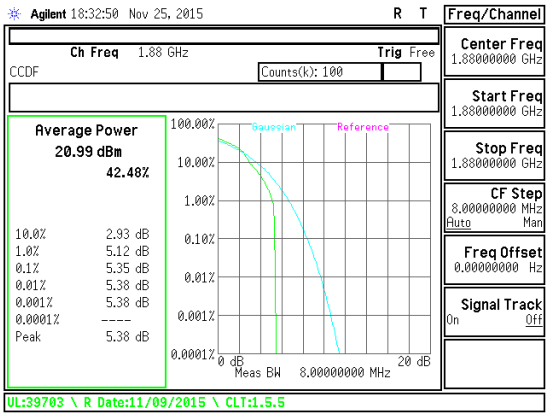
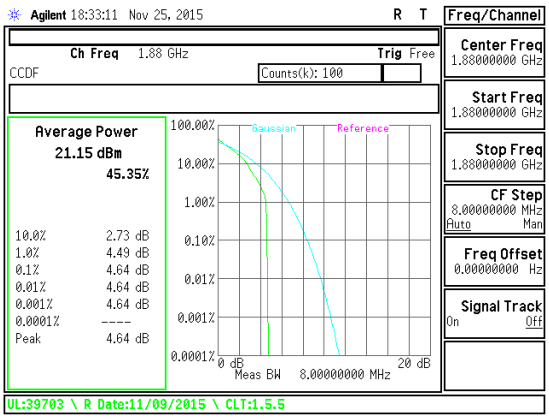
LTE Band 2



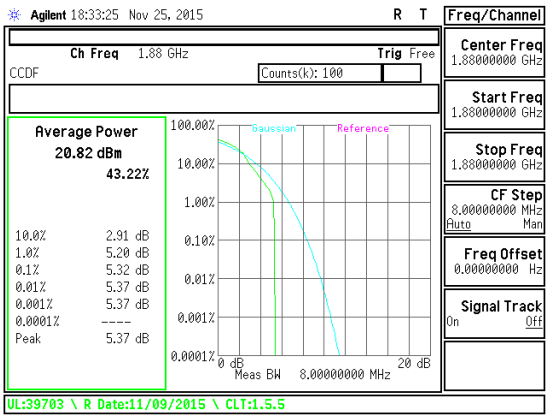
Band LTE2 1.4MHz QPSK Mid Channel



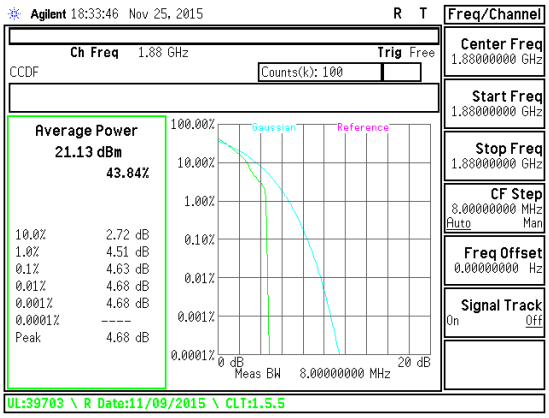
Band LTE2 1.4MHz 16QAM Mid Channel



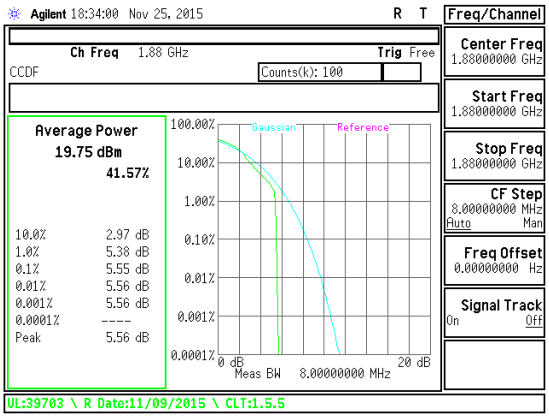
Band LTE2 3MHz QPSK Mid Channel



Band LTE2 3MHz 16QAM Mid Channel



Band LTE2 5MHz QPSK Mid Channel



Band LTE2 5MHz 16QAM Mid Channel

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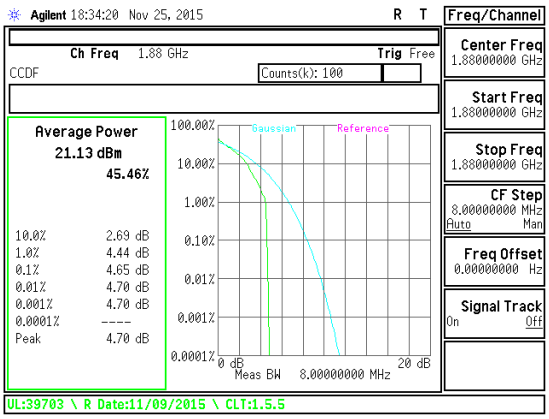
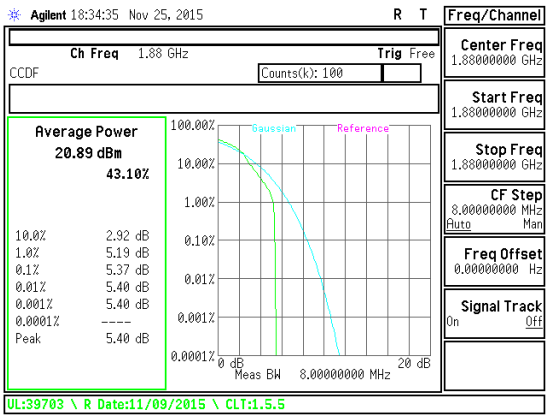
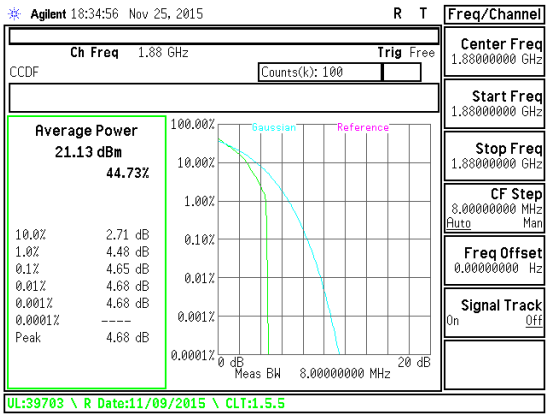


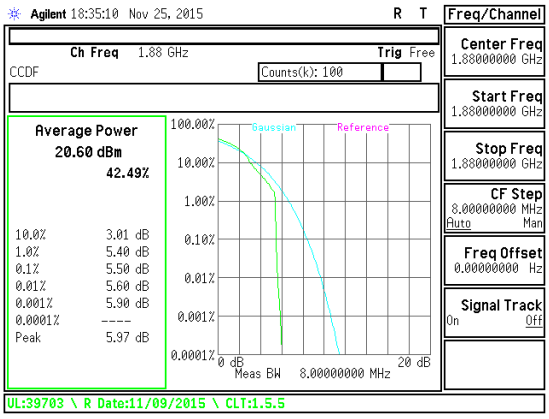
Band LTE2 10MHz QPSK Mid Channel



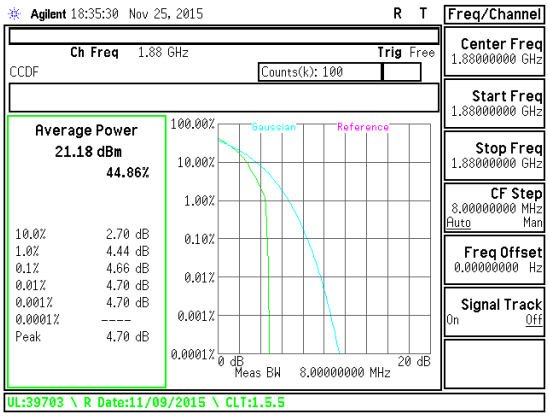
Band LTE2 10MHz 16QAM Mid Channel



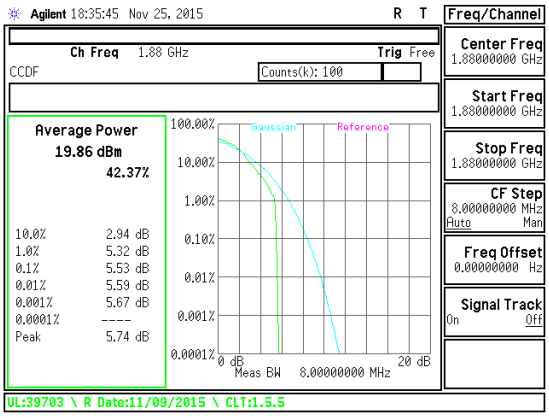
Band LTE2 15MHz QPSK Mid Channel



Band LTE2 15MHz 16QAM Mid Channel



Band LTE2 20MHz QPSK Mid Channel



Band LTE2 20MHz 16QAM Mid Channel

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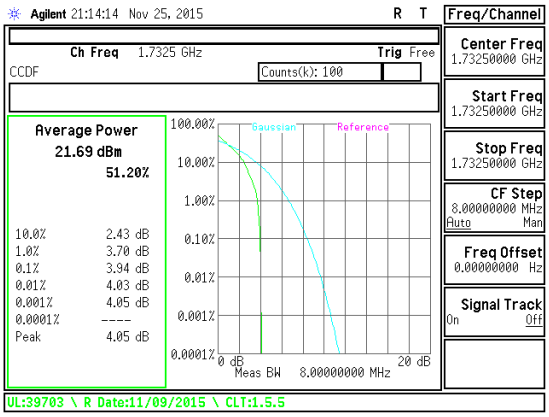
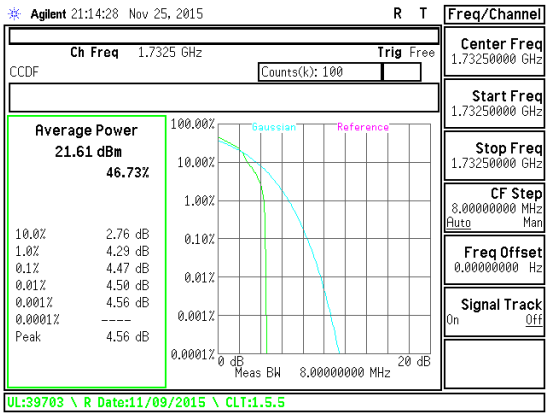
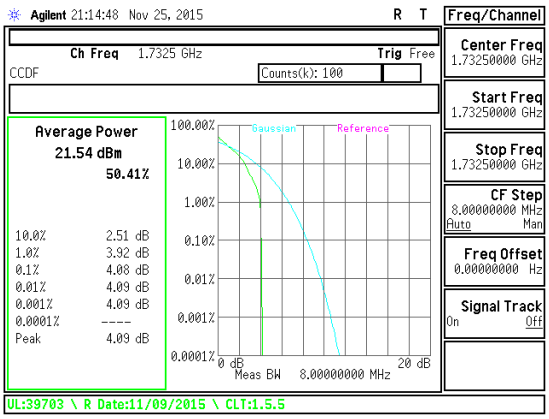
LTE Band 4



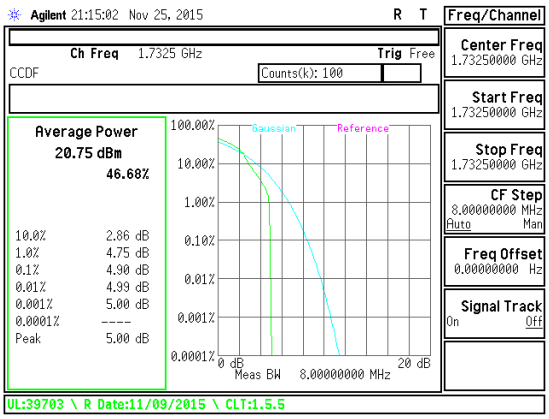
Band LTE4 1.4MHz QPSK Mid Channel



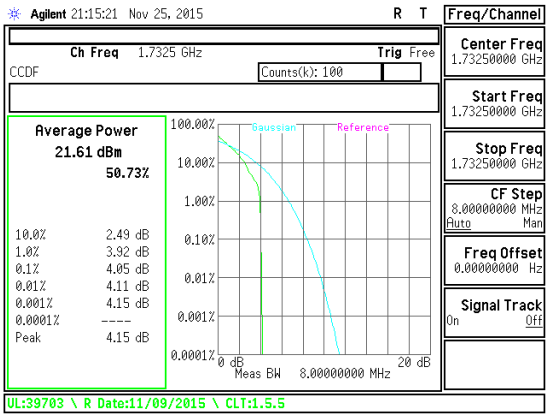
Band LTE4 1.4MHz 16QAM Mid Channel



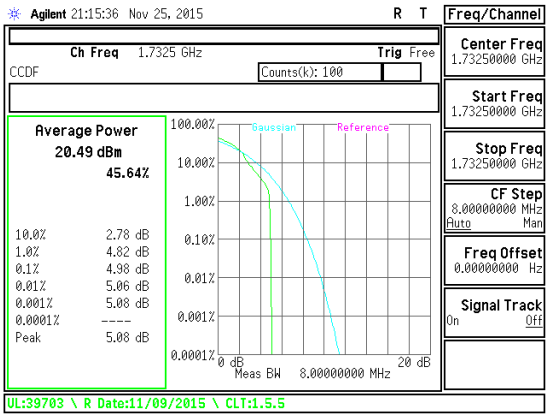
Band LTE4 3MHz QPSK Mid Channel



Band LTE4 3MHz 16QAM Mid Channel



Band LTE4 5MHz QPSK Mid Channel



Band LTE4 5MHz 16QAM Mid Channel

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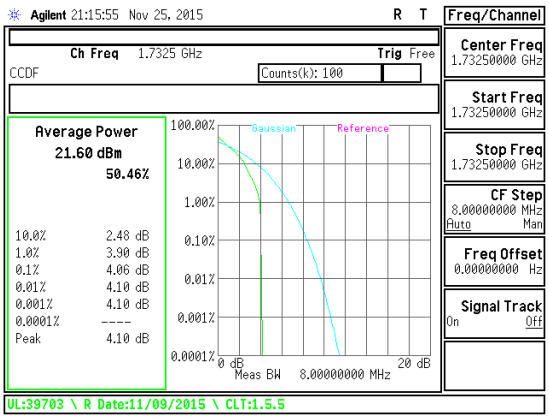
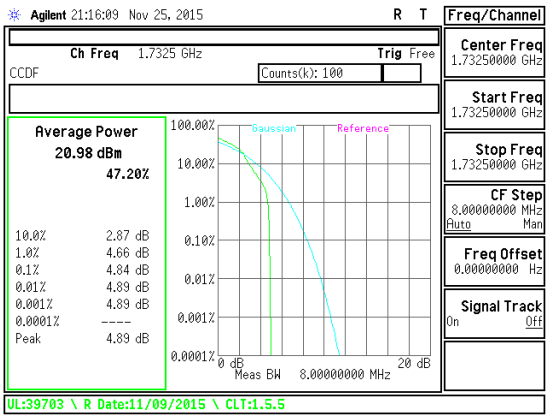
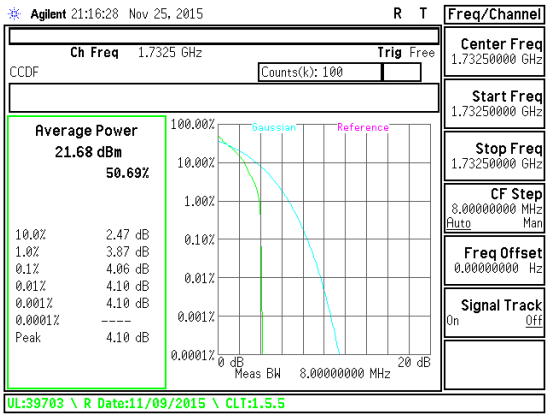


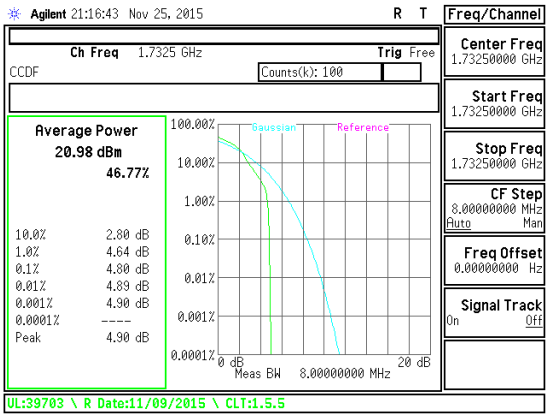
Band LTE4 10MHz QPSK Mid Channel



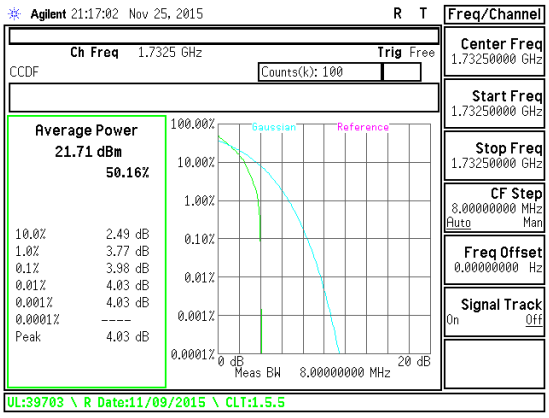
Band LTE4 10MHz 16QAM Mid Channel



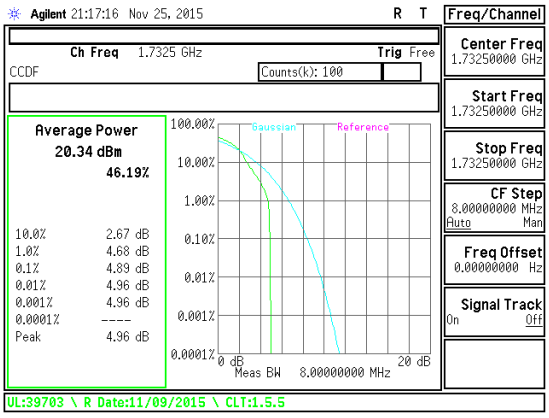
Band LTE4 15MHz QPSK Mid Channel



Band LTE4 15MHz 16QAM Mid Channel



Band LTE4 20MHz QPSK Mid Channel



Band LTE4 20MHz 16QAM Mid Channel

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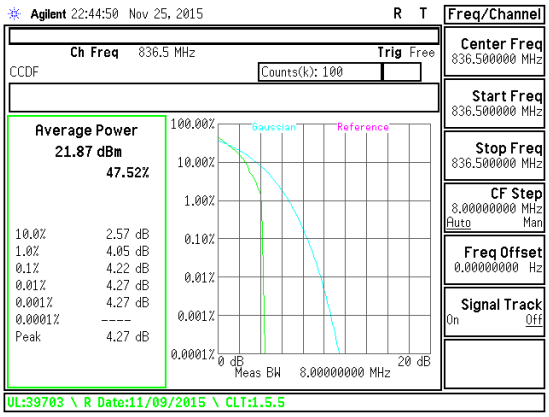
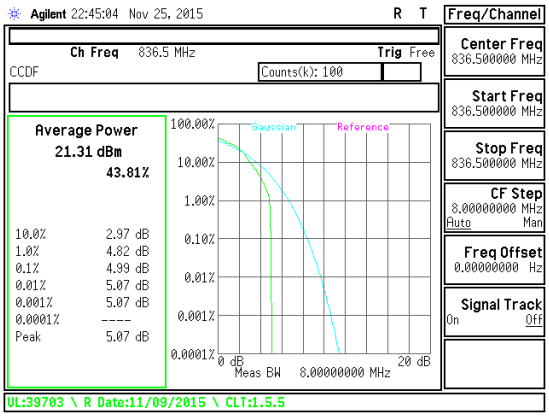
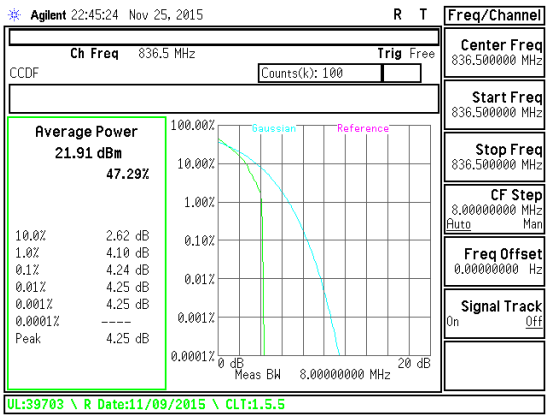
LTE Band 5



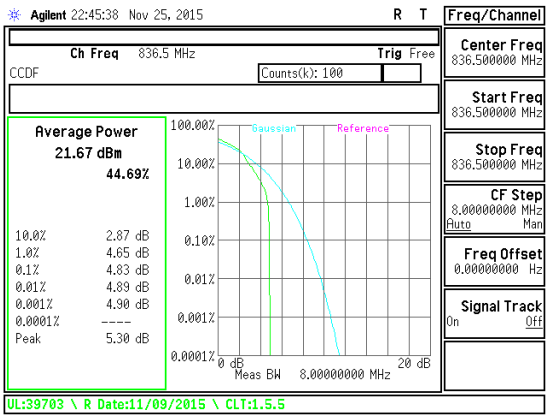
Band LTE5 1.4MHz QPSK Mid Channel



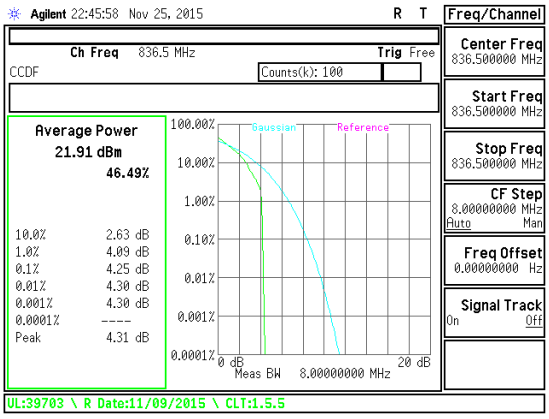
Band LTE5 1.4MHz 16QAM Mid Channel



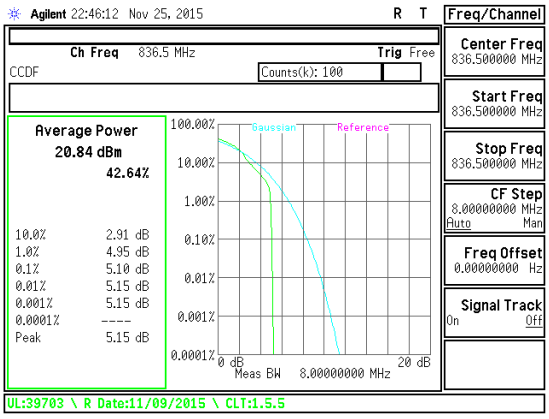
Band LTE5 3MHz QPSK Mid Channel



Band LTE5 3MHz 16QAM Mid Channel



Band LTE5 5MHz QPSK Mid Channel



Band LTE5 5MHz 16QAM Mid Channel

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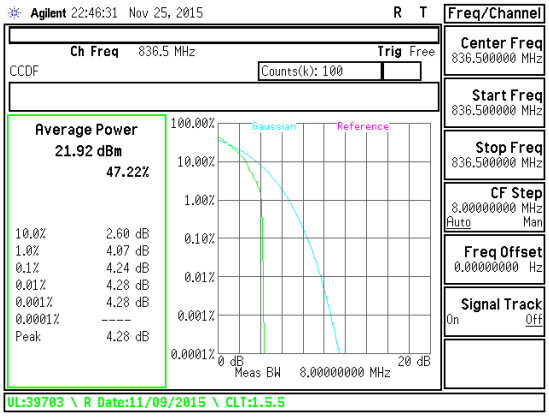
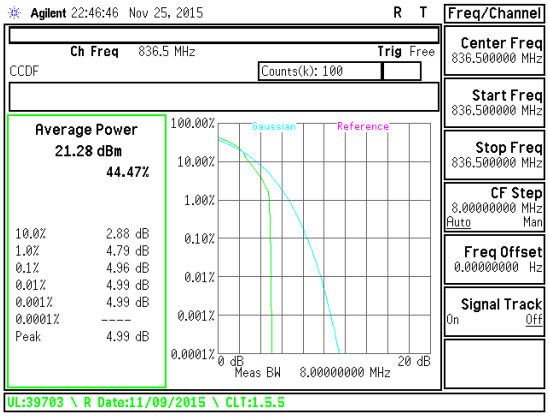


Band LTE5 10MHz QPSK Mid Channel



Band LTE5 10MHz 16QAM Mid Channel

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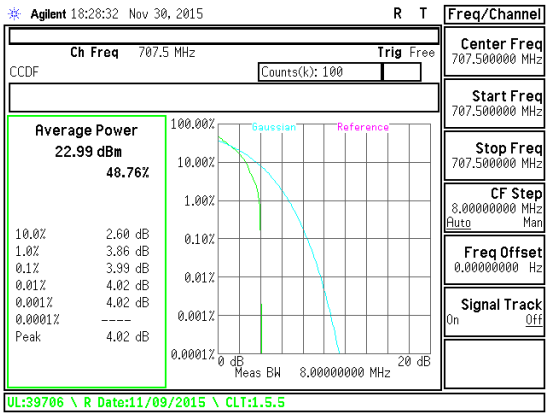
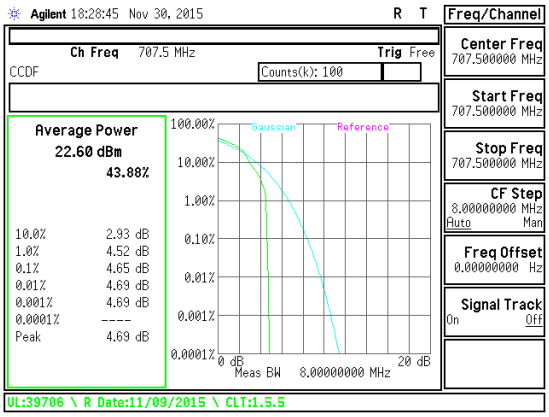
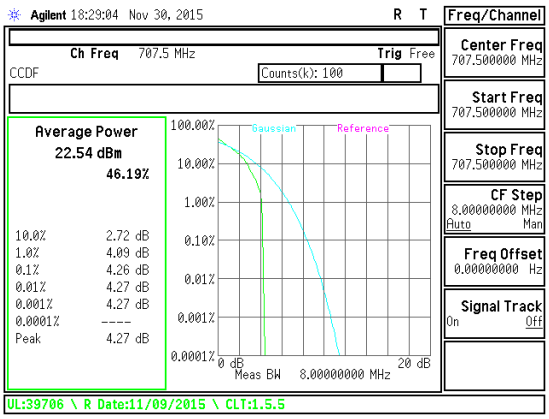
LTE Band 12



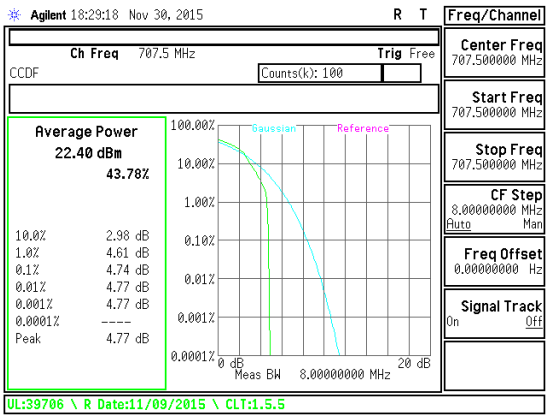
Band LTE12 1.4MHz QPSK Mid Channel



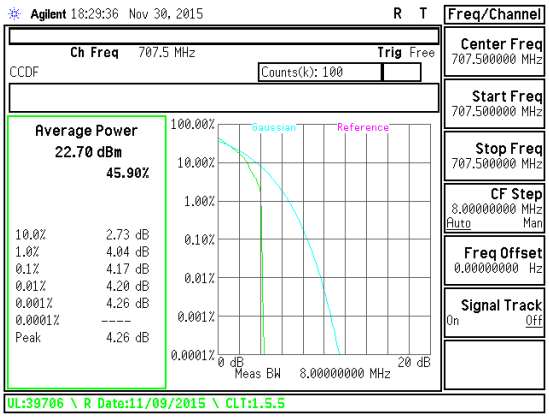
Band LTE12 1.4MHz 16QAM Mid Channel



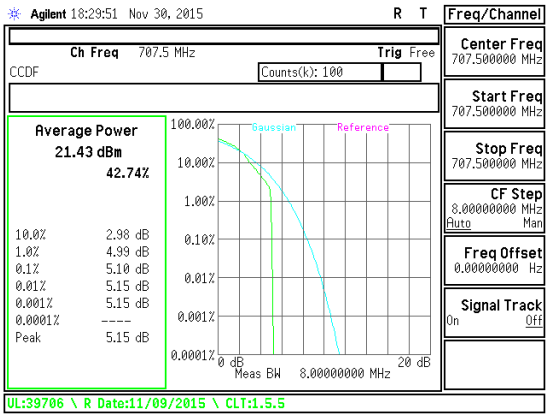
Band LTE12 3MHz QPSK Mid Channel



Band LTE12 3MHz 16QAM Mid Channel



Band LTE12 5MHz QPSK Mid Channel



Band LTE12 5MHz 16QAM Mid Channel

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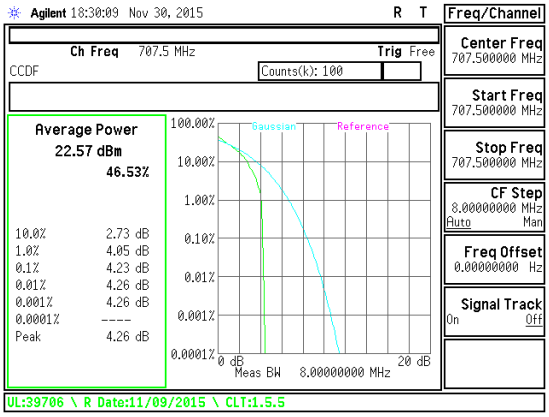
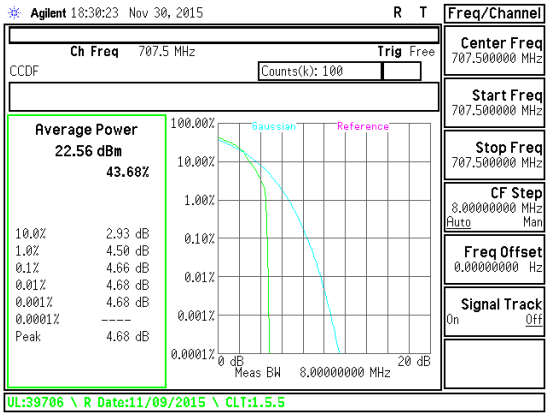


Band LTE12 10MHz QPSK Mid Channel



Band LTE12 10MHz 16QAM Mid Channel

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10. OCCUPIED BANDWIDTH

RULE PART(S)

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

LIMITS

For reporting purposes only

TEST PROCEDURE

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

(KDB 971168 D01 Power Meas License Digital Systems v02r02)

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10.1. OCCUPIED BANDWIDTH RESULTS AND PLOTS

GSM

Band	Mode	Channel	f (MHz)	99% BW (kHz)	-26dB (kHz)
GSM 850	GPRS	128	824.2	244.3	317.6
		190	836.6	245.62	320.0
		251	848.8	242.69	318.7
	EGPRS	128	824.2	238.44	319.1
		190	836.6	243.04	308.6
		251	848.8	248.92	319.1
GSM 1900	GPRS	512	1850.2	246.86	312.9
		661	1880	250.22	313.4
		810	1909.8	246.96	326.6
	EGPRS	512	1850.2	244.80	315.2
		661	1880	243.05	303.8
		810	1909.8	242.00	309.4

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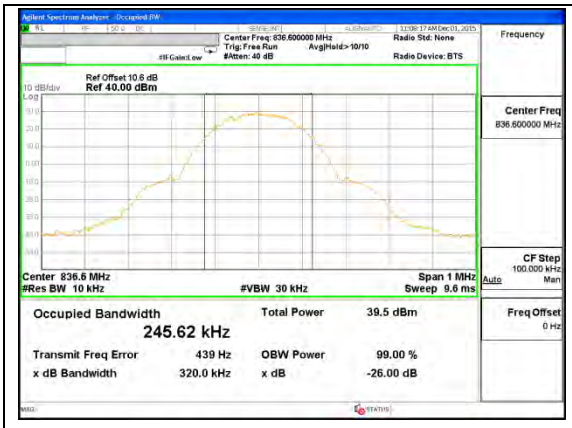
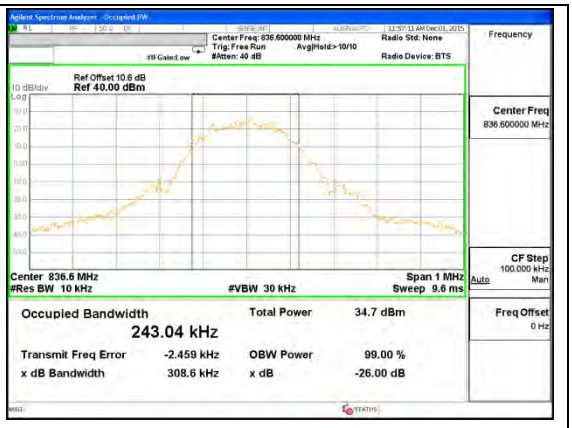
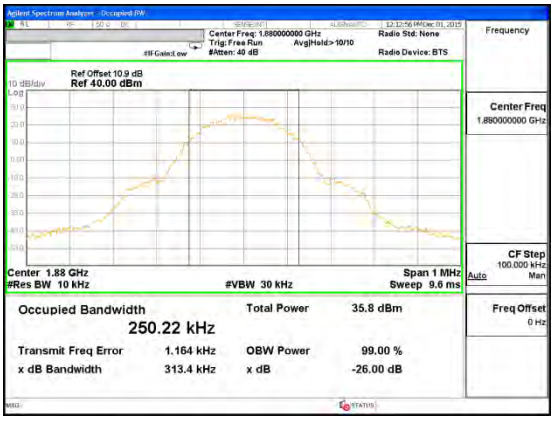


Band GSM850 GPRS Mid channel



Band GSM850 EGPRS Mid channel



Band GSM1900 GPRS Mid channel

Band GSM1900 EGPRS Mid channel

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WCDMA

Band	Mode	Channel	f (MHz)	99% BW (MHz)	-26dB (MHz)
Band 2	REL99	9262	1852.4	4.1582	4.717
		9400	1880	4.1539	4.696
		9538	1907.6	4.1373	4.725
	HSDPA	9262	1852.4	4.1425	4.684
		9400	1880	4.1488	4.707
		9538	1907.6	4.1432	4.715
Band 4	REL99	9262	1712.4	4.1764	4.727
		9400	1732.6	4.1504	4.730
		9538	1752.6	4.1599	4.690
	HSDPA	9262	1712.4	4.1587	4.721
		9400	1732.6	4.1668	4.715
		9538	1752.6	4.1561	4.703
Band 5	REL99	4132	826.4	4.1422	4.729
		4183	836.6	4.1652	4.704
		4233	846.6	4.1518	4.737
	HSDPA	4132	826.4	4.1370	4.699
		4183	836.6	4.1620	4.720
		4233	846.6	4.1467	4.720

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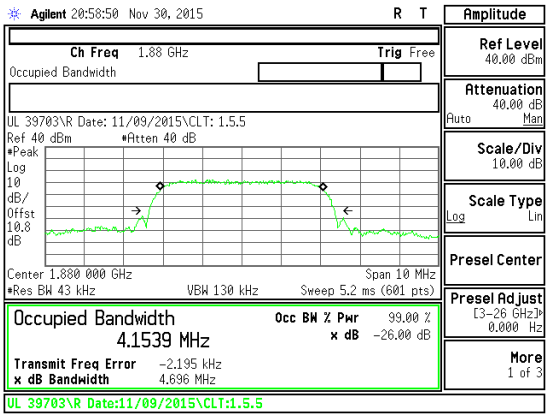
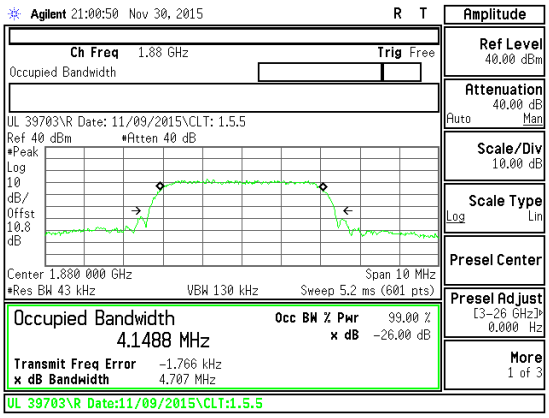
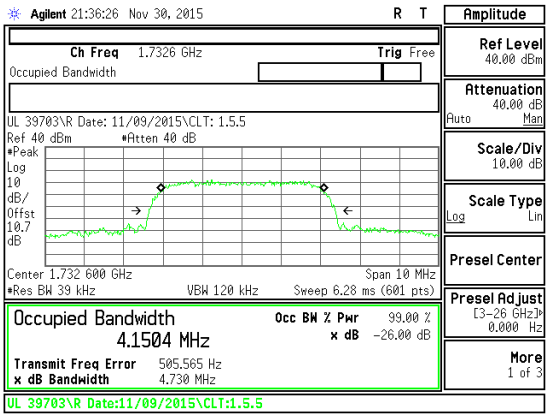


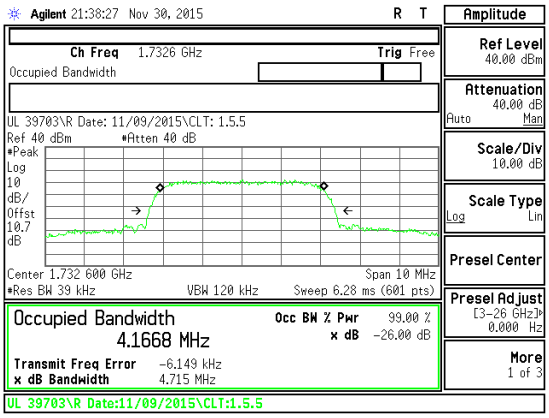
Band B2 REL99 Mid Channel



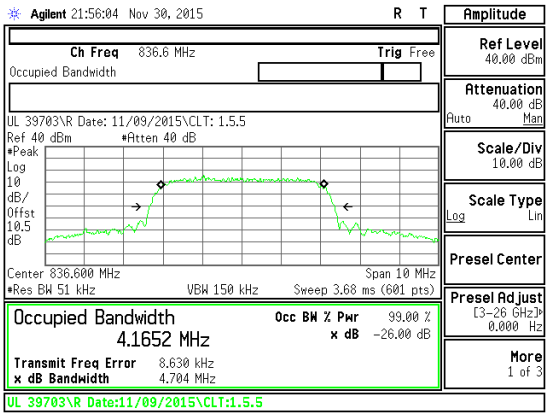
Band B2 HSDPA Mid Channel



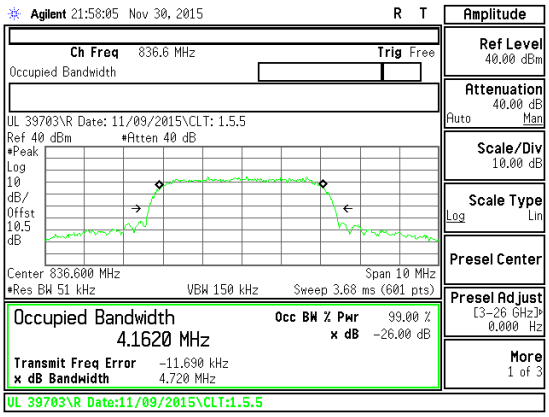
Band B4 REL99 Mid Channel



Band B4 HSDPA Mid Channel



Band B5 REL99 Mid Channel



Band B5 HSDPA Mid Channel

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LTE Band 2

BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
1.4	QPSK	6/0	1850.7	1.0863	1.303
		6/0	1880	1.0807	1.270
		6/0	1909.3	1.0871	1.293
	16QAM	6/0	1850.7	1.0835	1.299
		6/0	1880	1.0854	1.305
		6/0	1909.3	1.0948	1.299
3	QPSK	15/0	1851.5	2.6907	2.952
		15/0	1880	2.6913	2.954
		15/0	1908.5	2.6835	2.959
	16QAM	15/0	1851.5	2.6835	2.989
		15/0	1880	2.6907	2.978
		15/0	1908.5	2.6897	2.958
5	QPSK	25/0	1852.5	4.5030	5.011
		25/0	1880	4.5131	4.999
		25/0	1907.5	4.4982	4.961
	16QAM	25/0	1852.5	4.5025	4.946
		25/0	1880	4.5141	4.989
		25/0	1907.5	4.5048	4.958
10	QPSK	50/0	1855	8.9506	9.646
		50/0	1880	8.9408	9.769
		50/0	1905	8.9486	9.701
	16QAM	50/0	1855	8.9419	9.770
		50/0	1880	8.9442	9.748
		50/0	1905	8.9488	9.730
15	QPSK	75/0	1857.5	13.4044	14.560
		75/0	1880	13.3986	14.551
		75/0	1902.5	13.4533	14.680
	16QAM	75/0	1857.5	13.386	14.389
		75/0	1880	13.4007	14.474
		75/0	1902.5	13.4452	14.568
20	QPSK	100/0	1860	17.8222	19.374
		100/0	1880	17.8599	19.192
		100/0	1900	17.9038	19.251
	16QAM	100/0	1860	17.8526	19.051
		100/0	1880	17.8851	19.215
		100/0	1900	17.8194	19.012

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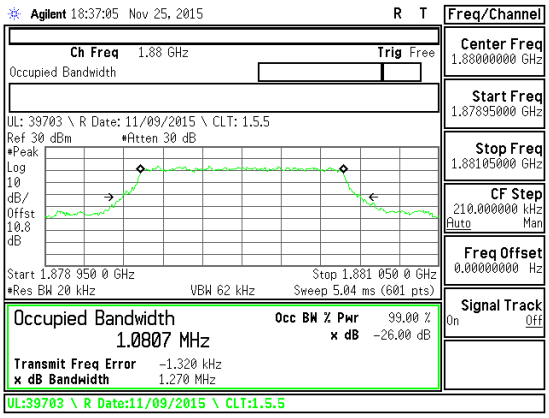
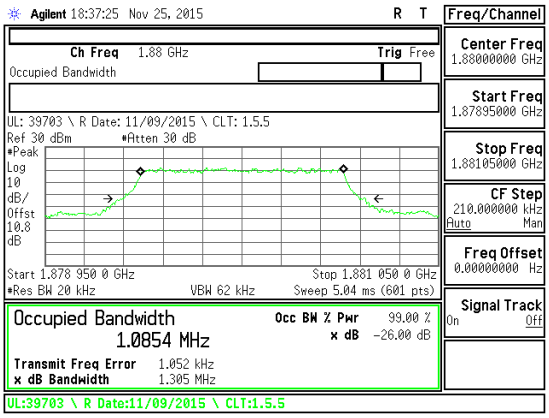
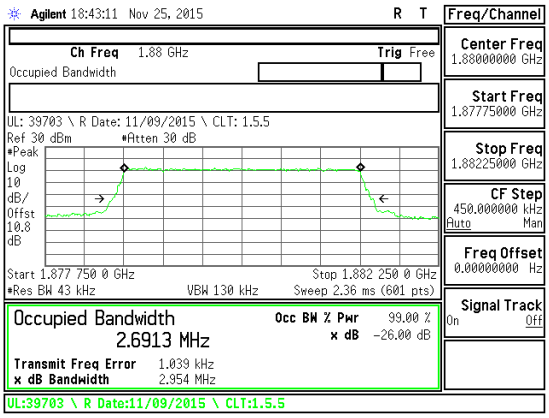


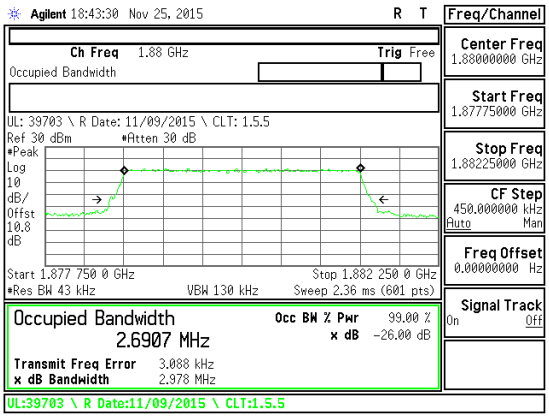
Band LTE2 1.4MHz QPSK Mid Channel



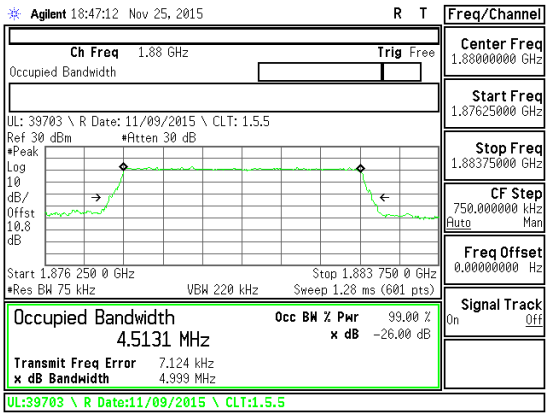
Band LTE2 1.4MHz 16QAM Mid Channel



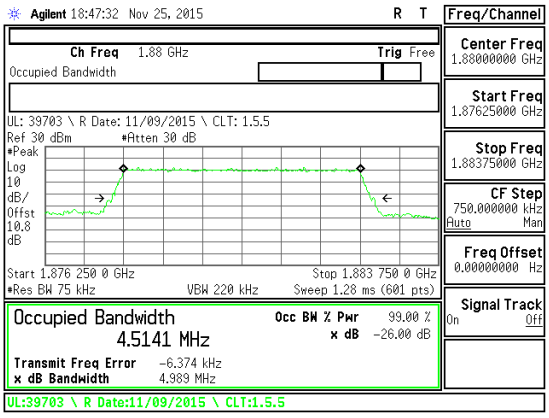
Band LTE2 3MHz QPSK Mid Channel



Band LTE2 3MHz 16QAM Mid Channel



Band LTE2 5MHz QPSK Mid Channel



Band LTE2 5MHz 16QAM Mid Channel

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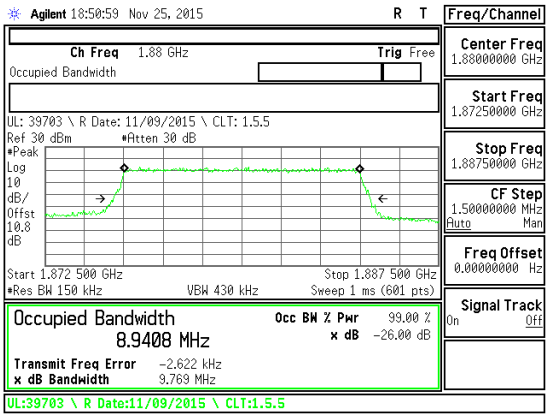
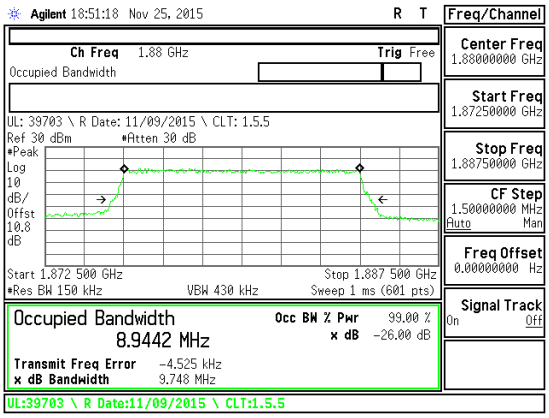
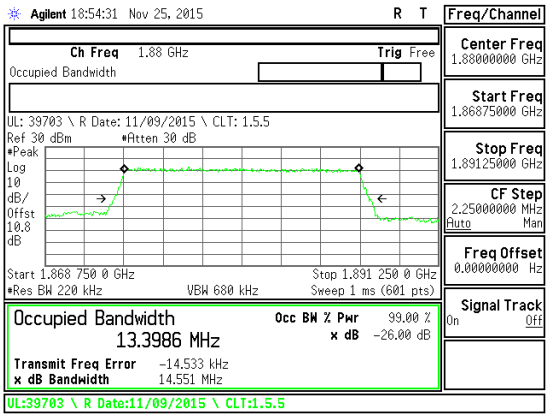


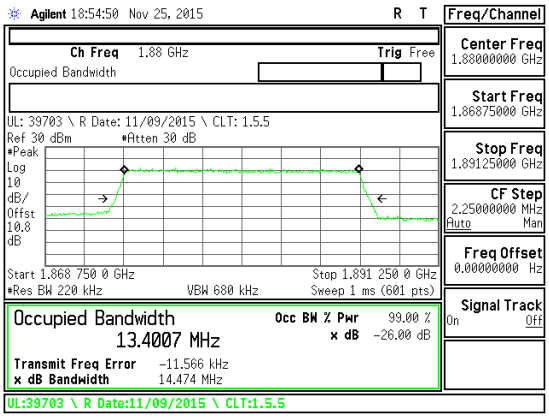
Band LTE2 10MHz QPSK Mid Channel



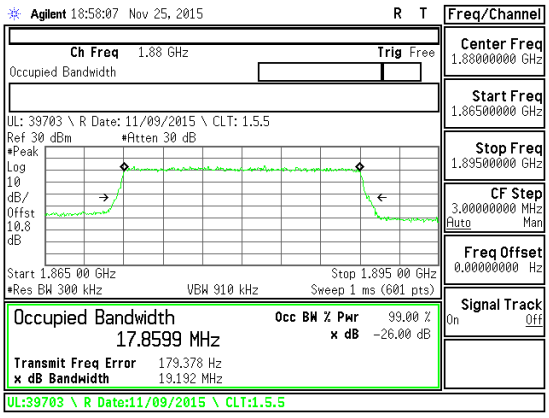
Band LTE2 10MHz 16QAM Mid Channel



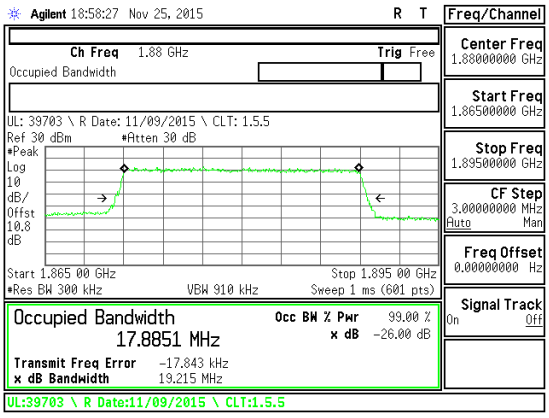
Band LTE2 15MHz QPSK Mid Channel



Band LTE2 15MHz 16QAM Mid Channel



Band LTE2 20MHz QPSK Mid Channel



Band LTE2 20MHz 16QAM Mid Channel

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LTE Band 4

BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
1.4	QPSK	6/0	1710.7	1.0850	1.259
		6/0	1732.5	1.0784	1.271
		6/0	1754.3	1.0852	1.283
	16QAM	6/0	1710.7	1.0831	1.274
		6/0	1732.5	1.0847	1.297
		6/0	1754.3	1.0888	1.256
3	QPSK	15/0	1711.5	2.6846	2.984
		15/0	1732.5	2.6928	2.931
		15/0	1753.5	2.6937	2.974
	16QAM	15/0	1711.5	2.6891	2.982
		15/0	1732.5	2.6871	2.972
		15/0	1753.5	2.6891	2.957
5	QPSK	25/0	1712.5	4.4951	4.981
		25/0	1732.5	4.5152	4.966
		25/0	1752.5	4.5031	5.016
	16QAM	25/0	1712.5	4.5083	4.920
		25/0	1732.5	4.5140	5.007
		25/0	1752.5	4.5015	4.966
10	QPSK	50/0	1715	8.9554	9.740
		50/0	1732.5	8.9554	9.762
		50/0	1750	8.9225	9.618
	16QAM	50/0	1715	8.9471	9.781
		50/0	1732.5	8.9475	9.657
		50/0	1750	8.9595	9.754
15	QPSK	75/0	1717.5	13.4487	14.495
		75/0	1732.5	13.4061	14.551
		75/0	1747.5	13.3913	14.512
	16QAM	75/0	1717.5	13.4239	14.521
		75/0	1732.5	13.4481	14.563
		75/0	1747.5	13.4121	14.453
20	QPSK	100/0	1720	17.8640	19.202
		100/0	1732.5	17.8677	19.330
		100/0	1745	17.8871	19.167
	16QAM	100/0	1720	17.9336	19.241
		100/0	1732.5	17.8241	19.044
		100/0	1745	17.8971	19.057

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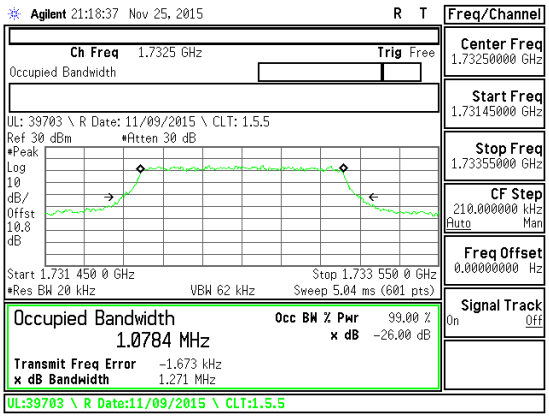
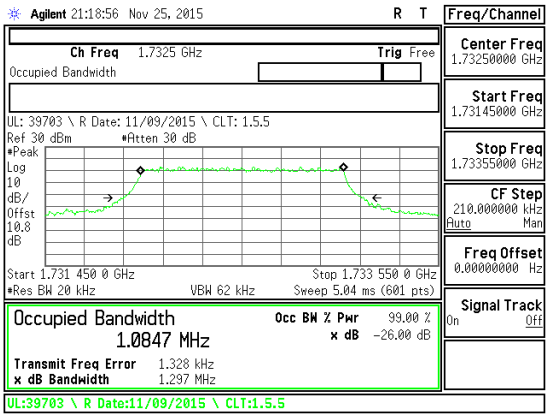
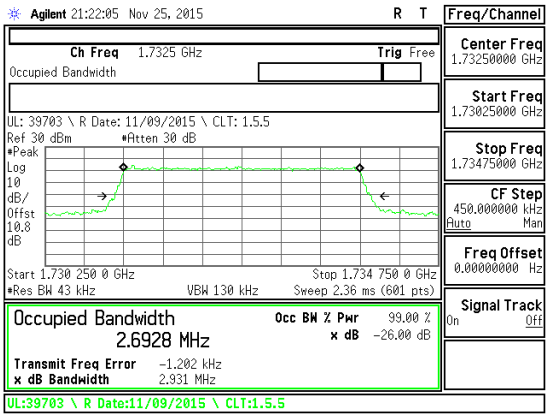


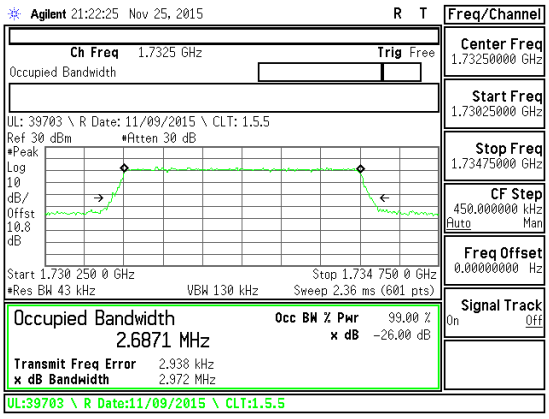
Band LTE4 1.4MHz QPSK Mid Channel



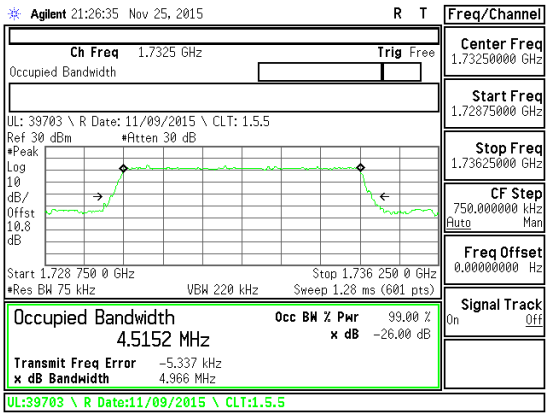
Band LTE4 1.4MHz 16QAM Mid Channel



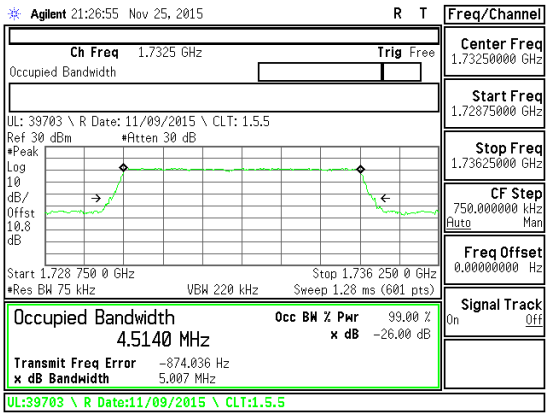
Band LTE4 3MHz QPSK Mid Channel



Band LTE4 3MHz 16QAM Mid Channel



Band LTE4 5MHz QPSK Mid Channel



Band LTE4 5MHz 16QAM Mid Channel

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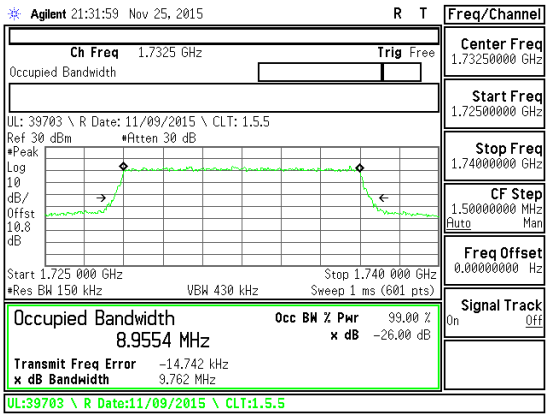
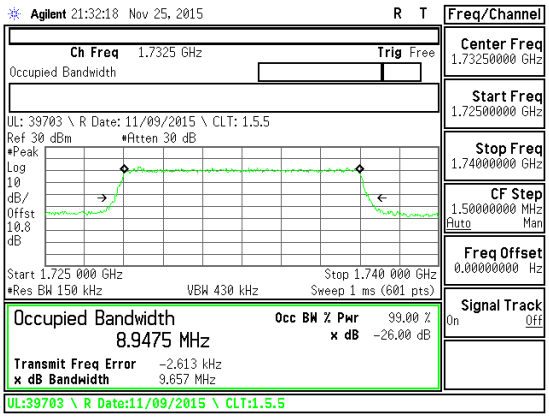
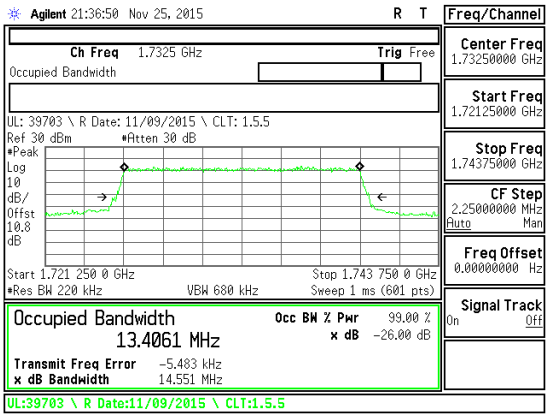


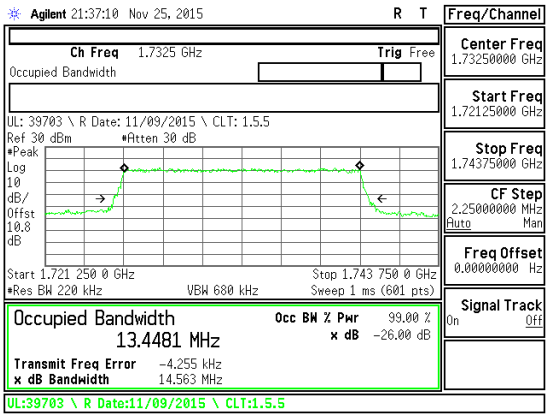
Band LTE4 10MHz QPSK Mid Channel



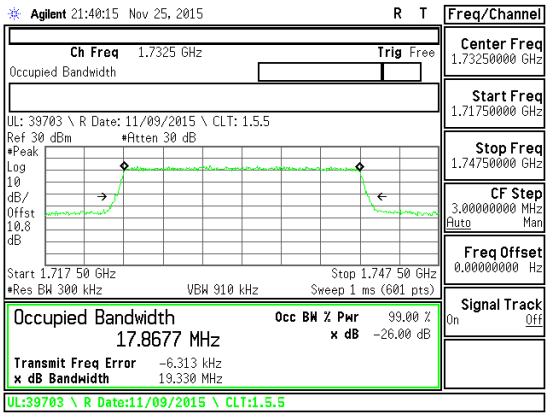
Band LTE4 10MHz 16QAM Mid Channel



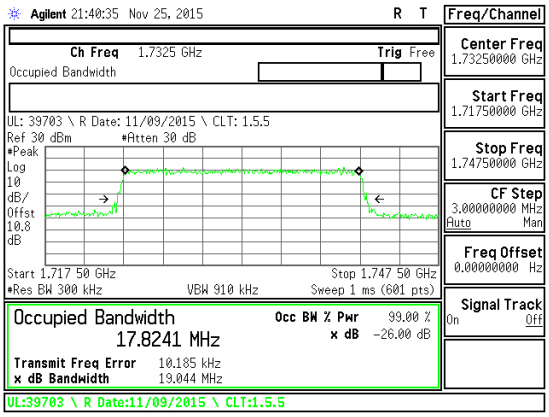
Band LTE4 15MHz QPSK Mid Channel



Band LTE4 15MHz 16QAM Mid Channel



Band LTE4 20MHz QPSK Mid Channel



Band LTE4 20MHz 16QAM Mid Channel

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LTE Band 5

BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
1.4	QPSK	6/0	824.7	1.0844	1.275
		6/0	836.5	1.0800	1.263
		6/0	848.3	1.0840	1.282
	16QAM	6/0	824.7	1.0844	1.286
		6/0	836.5	1.0833	1.276
		6/0	848.3	1.0899	1.293
3	QPSK	15/0	825.5	2.6813	2.942
		15/0	836.5	2.6870	2.967
		15/0	847.5	2.6800	2.954
	16QAM	15/0	825.5	2.6876	2.992
		15/0	836.5	2.6902	2.975
		15/0	847.5	2.6882	2.971
5	QPSK	25/0	826.5	4.5059	4.956
		25/0	836.5	4.5120	4.985
		25/0	846.5	4.5032	5.037
	16QAM	25/0	826.5	4.5057	4.930
		25/0	836.5	4.5113	4.991
		25/0	846.5	4.5004	4.967
10	QPSK	50/0	829	8.9517	9.858
		50/0	836.5	8.9479	9.678
		50/0	844	8.9837	9.719
	16QAM	50/0	829	8.9825	9.770
		50/0	836.5	8.9661	9.680
		50/0	844	8.9590	9.706

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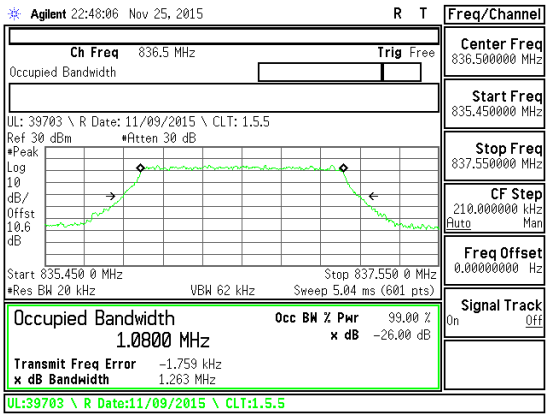
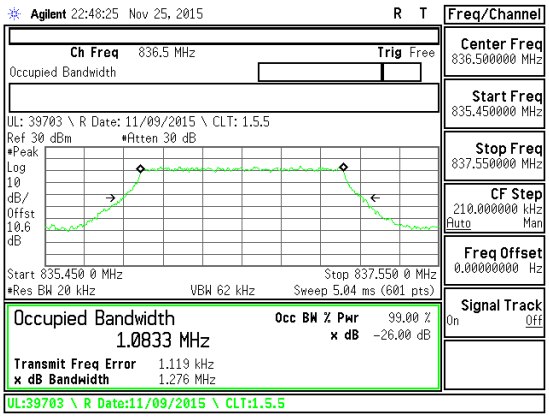
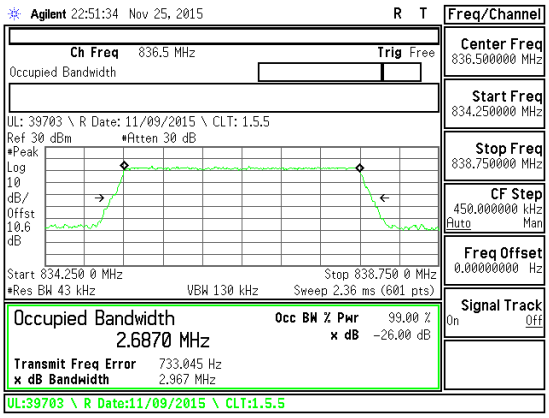


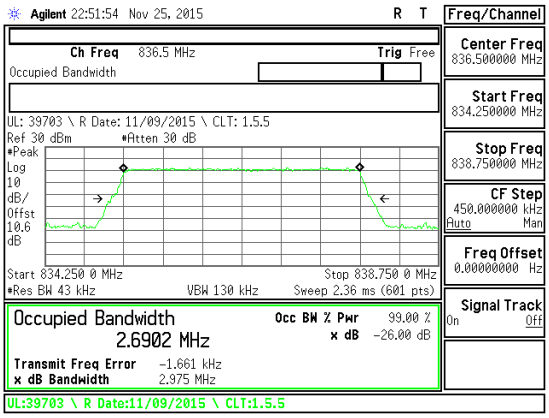
Band LTE5 1.4MHz QPSK Mid Channel



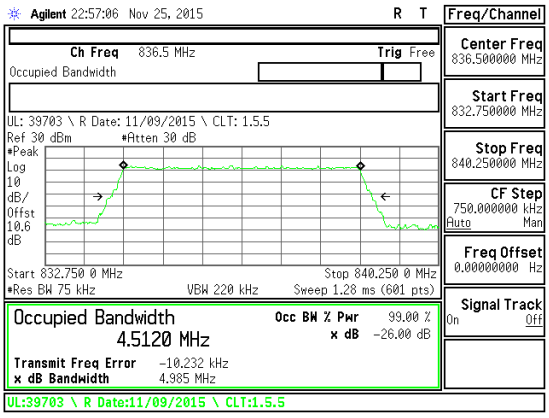
Band LTE5 1.4MHz 16QAM Mid Channel



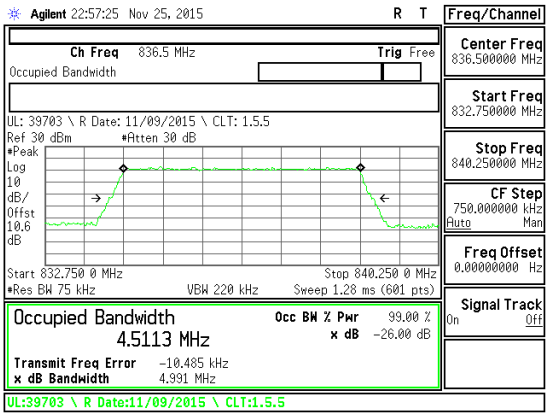
Band LTE5 3MHz QPSK Mid Channel



Band LTE5 3MHz 16QAM Mid Channel



Band LTE5 5MHz QPSK Mid Channel



Band LTE5 5MHz 16QAM Mid Channel

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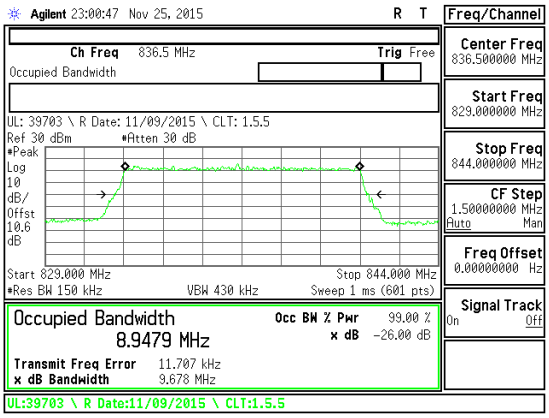
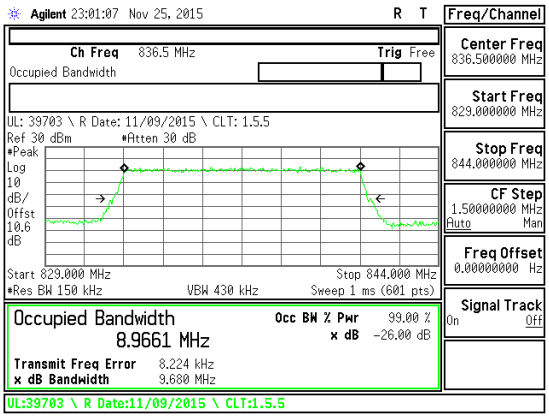


Band LTE5 10MHz QPSK Mid Channel



Band LTE5 10MHz 16QAM Mid Channel

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LTE Band 12

BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
1.4	QPSK	6/0	699.7	1.0864	1.288
		6/0	707.5	1.0821	1.276
		6/0	715.3	1.0849	1.306
	16QAM	6/0	699.7	1.0842	1.305
		6/0	707.5	1.0896	1.293
		6/0	715.3	1.0951	1.365
3	QPSK	15/0	700.5	2.6952	2.982
		15/0	707.5	2.6885	2.936
		15/0	714.5	2.6762	2.957
	16QAM	15/0	700.5	2.6916	3.028
		15/0	707.5	2.6875	2.947
		15/0	714.5	2.6736	2.883
5	QPSK	25/0	701.5	4.5223	4.993
		25/0	707.5	4.5152	4.919
		25/0	713.5	4.4892	4.944
	16QAM	25/0	701.5	4.5128	4.919
		25/0	707.5	4.5052	4.987
		25/0	713.5	4.4840	4.922
10	QPSK	50/0	704	8.9090	9.736
		50/0	707.5	8.9582	9.738
		50/0	711	8.9942	9.806
	16QAM	50/0	704	8.9256	9.641
		50/0	707.5	8.9607	9.663
		50/0	711	8.9773	9.727

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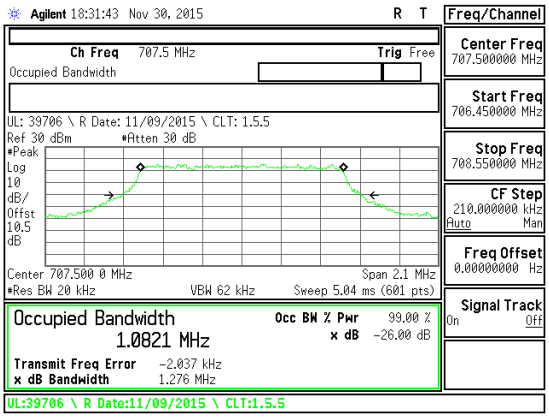
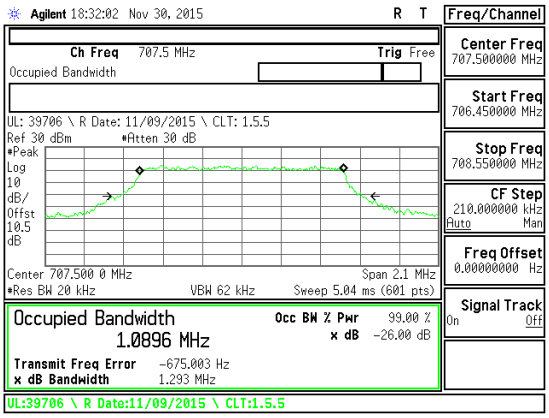
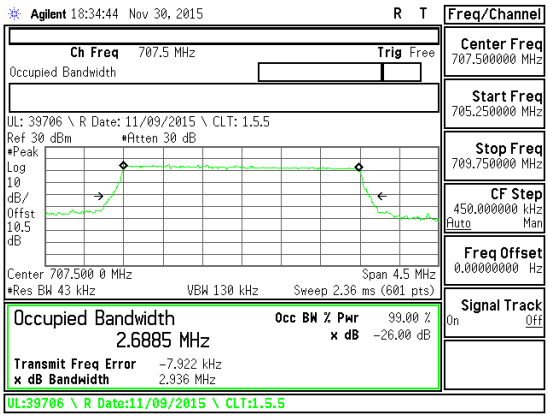


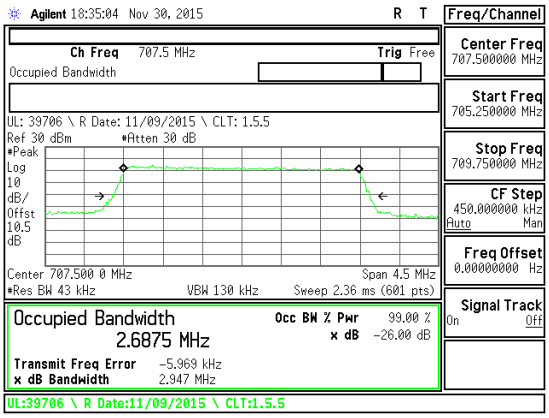
Band LTE12 1.4MHz QPSK Mid Channel



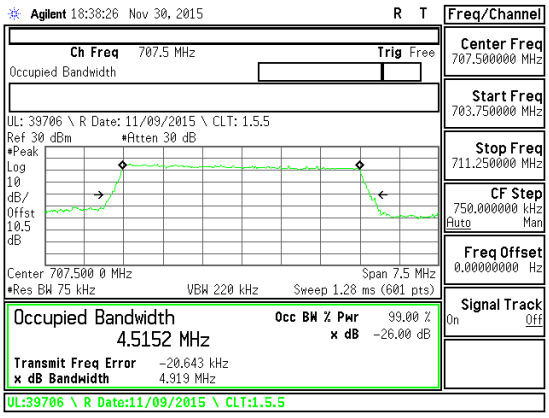
Band LTE12 1.4MHz 16QAM Mid Channel



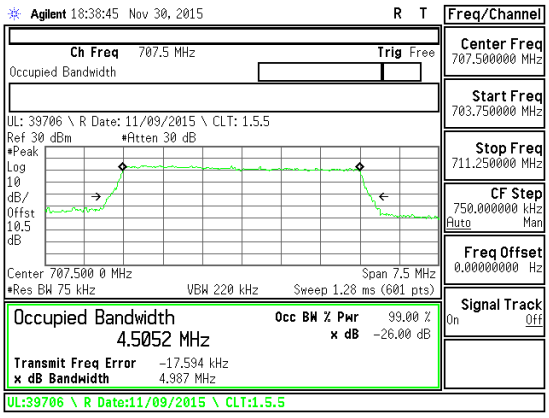
Band LTE12 3MHz QPSK Mid Channel



Band LTE12 3MHz 16QAM Mid Channel



Band LTE12 5MHz QPSK Mid Channel



Band LTE12 5MHz 16QAM Mid Channel

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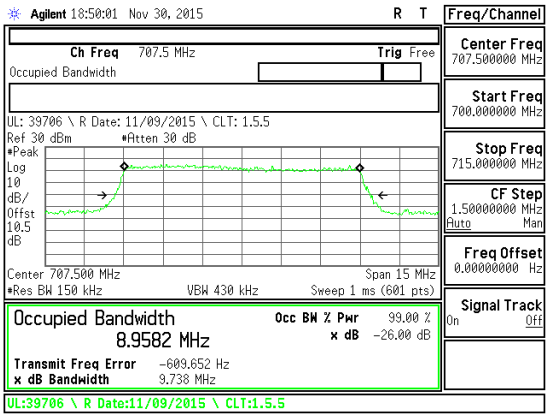
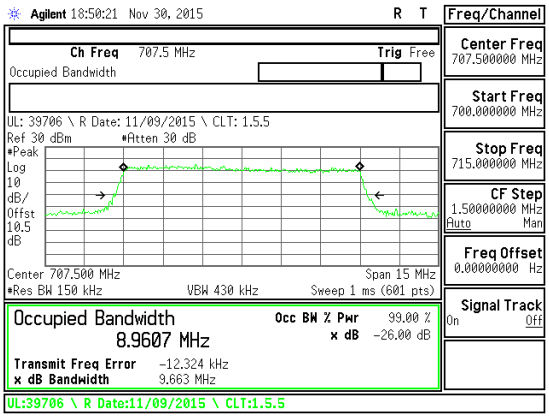


Band LTE12 10MHz QPSK Mid Channel



Band LTE12 10MHz 16QAM Mid Channel

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11. BAND EDGE EMISSIONS

RULE PART(S)

FCC: §22.359, §24.238, §27. 53

LIMITS

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

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.

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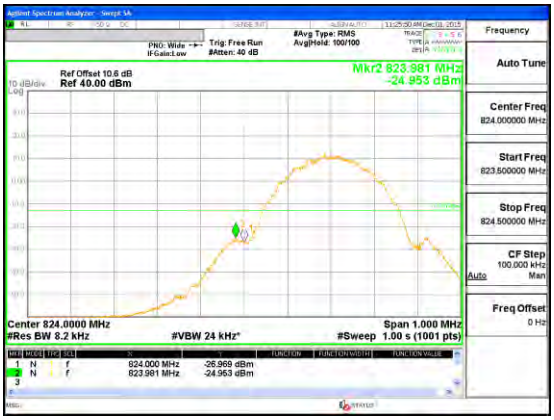
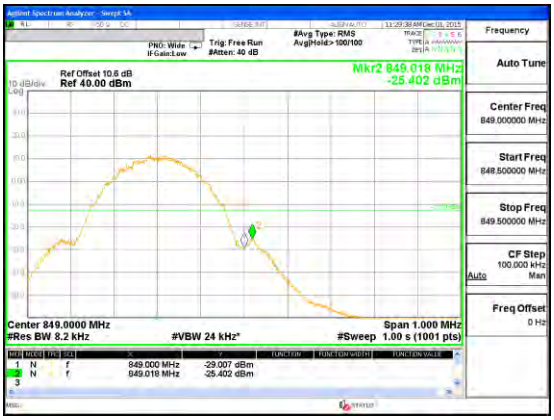
11.1. BAND EDGE PLOTS

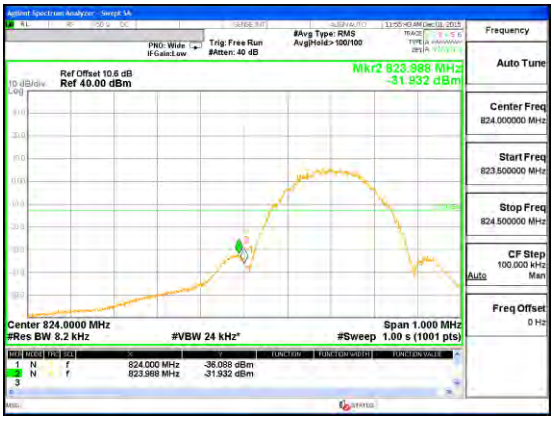
GSM



Band GSM850 GPRS Low channel



Band GSM850 GPRS High channel



Band GSM850 EGPRS Low channel

Band GSM850 EGPRS High channel

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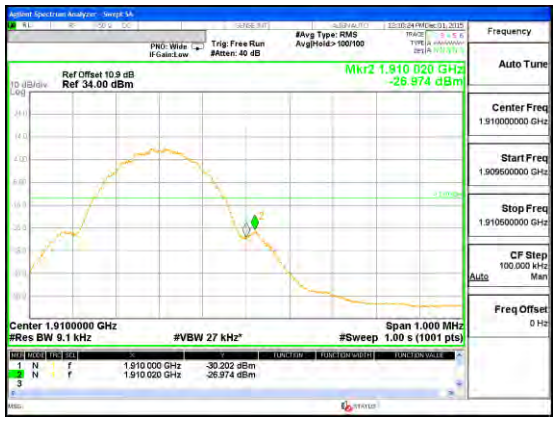
Band GSM1900 GPRS Low channel



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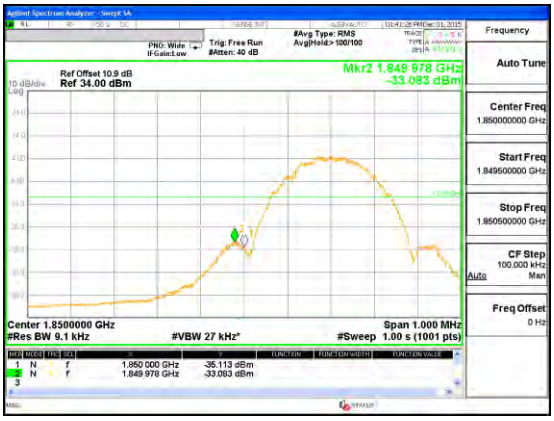

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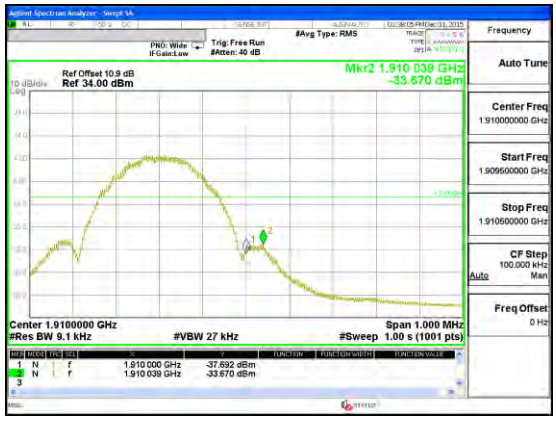

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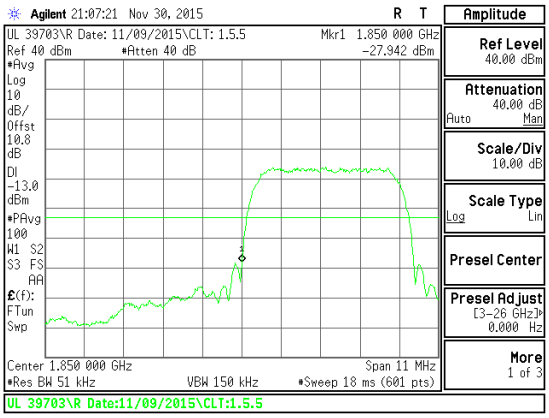
WCDMA



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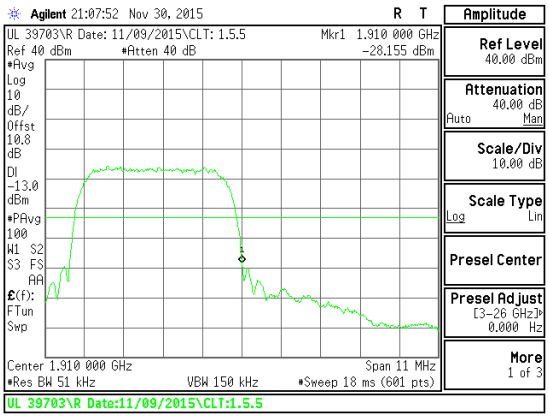
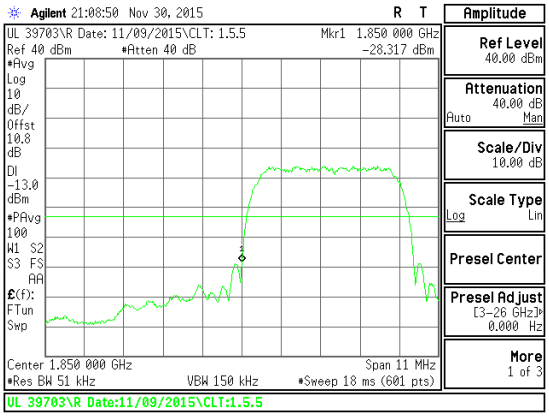
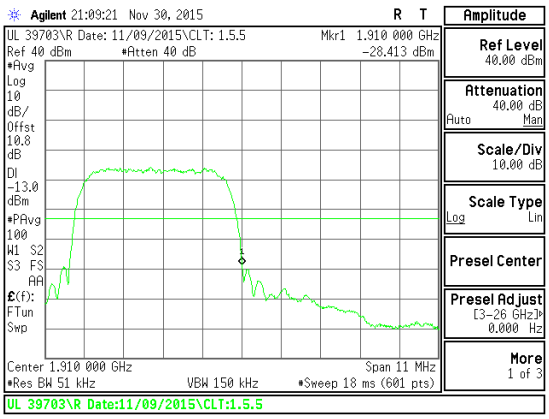


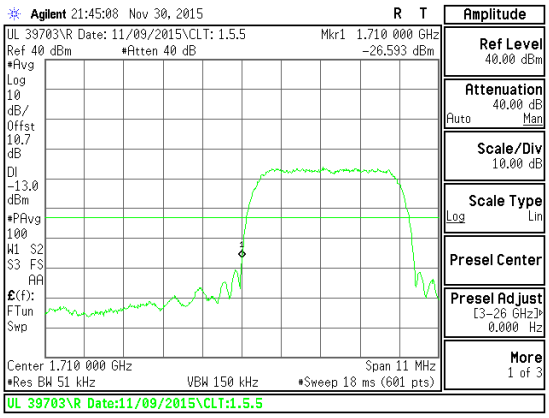
Band B2 REL99 High channel



Band B2 HSDPA Low channel



Band B2 HSDPA High channel



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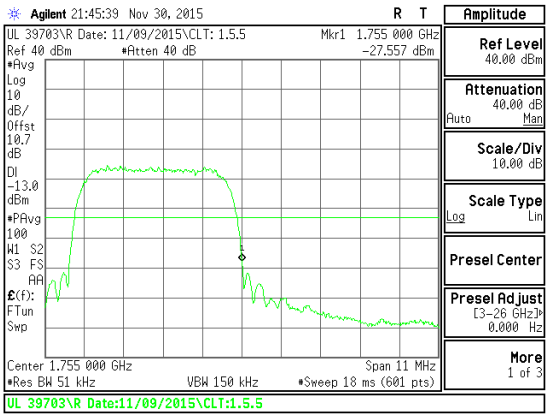

Band B4 REL99 High channel

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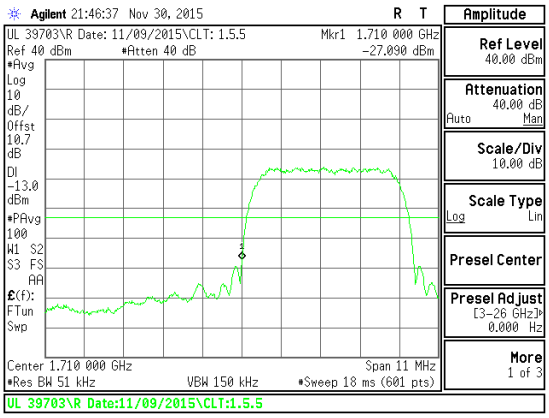

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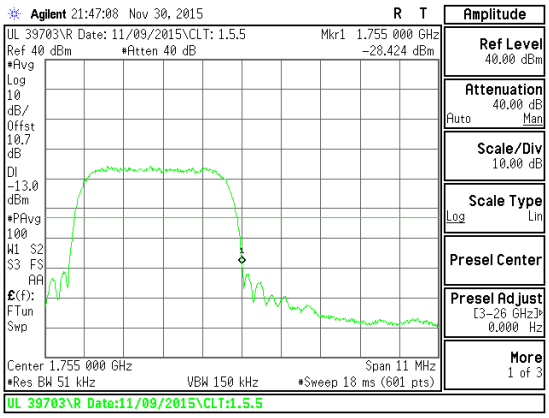

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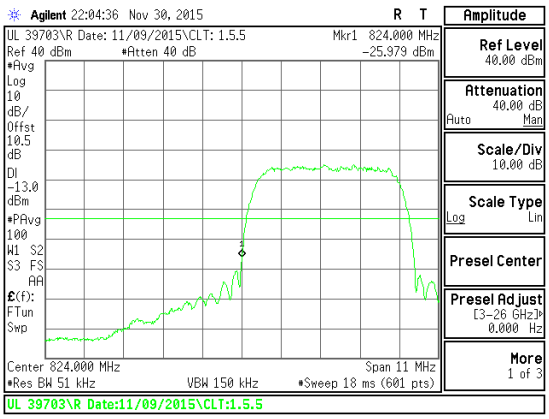
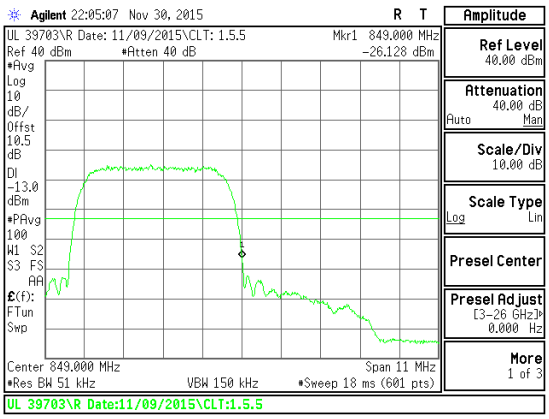


Band B5 REL99 Low channel



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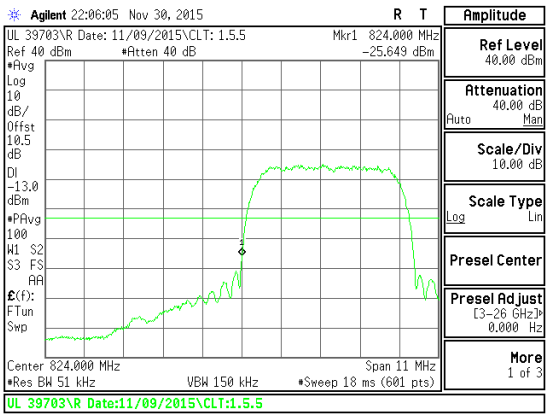

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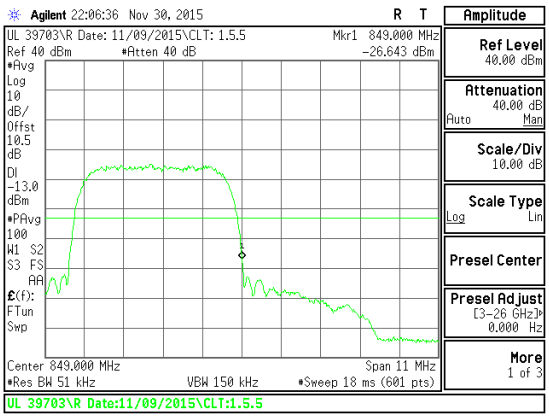

Band B5 HSDPA High channel

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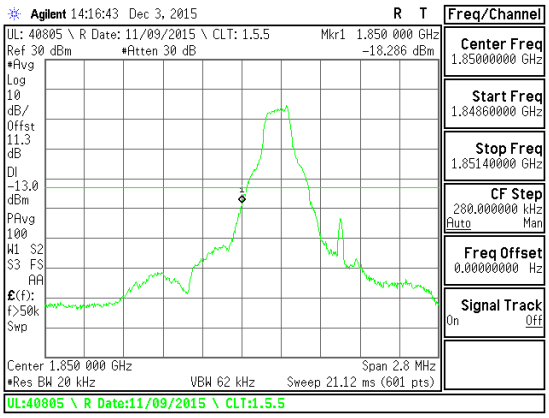
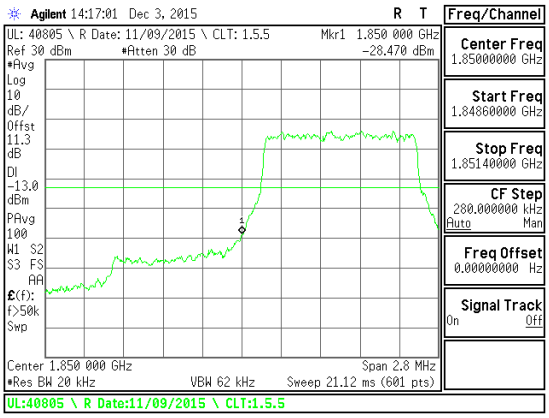
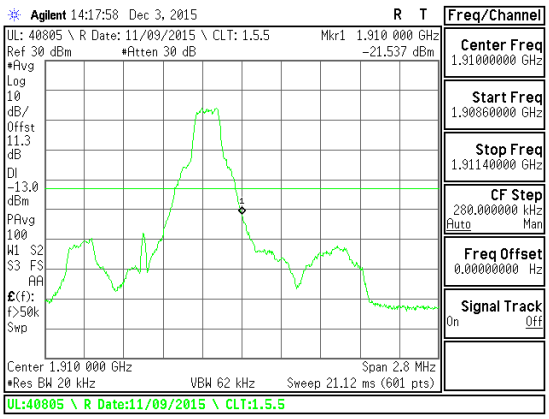
LTE Band 2



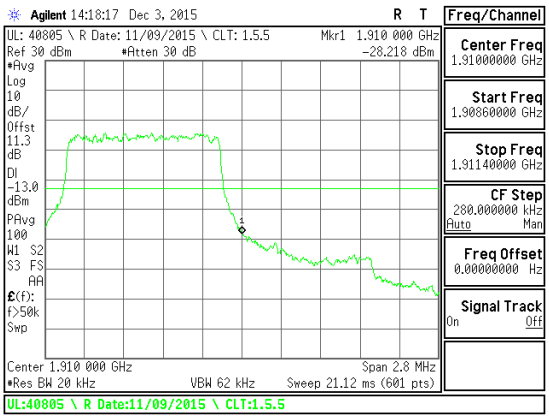
Band LTE2 1.4MHz QPSK Low Channel 1RB.gif



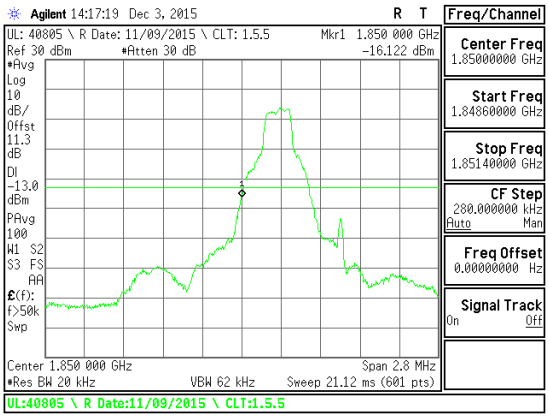
Band LTE2 1.4MHz QPSK Low Channel FRB.gif



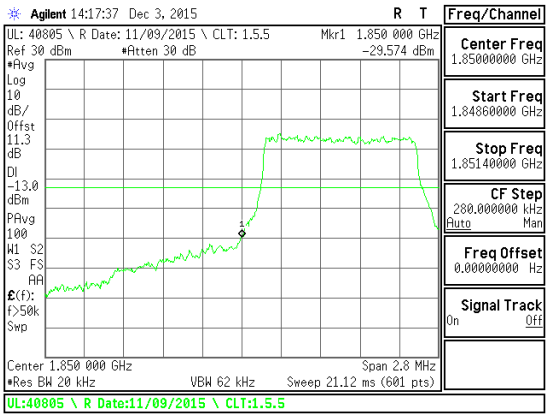
Band LTE2 1.4MHz QPSK High Channel 1RB.gif



Band LTE2 1.4MHz QPSK High Channel FRB.gif



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



Band LTE2 1.4MHz 16QAM Low Channel FRB.gif

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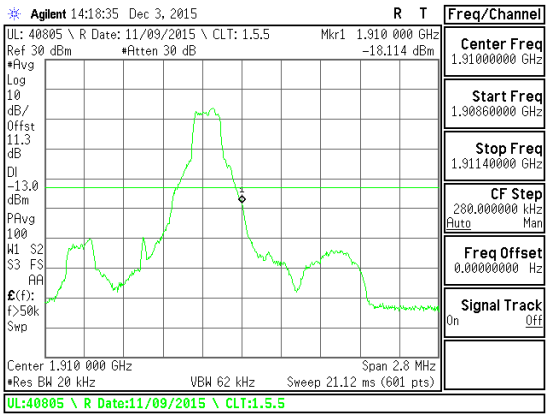
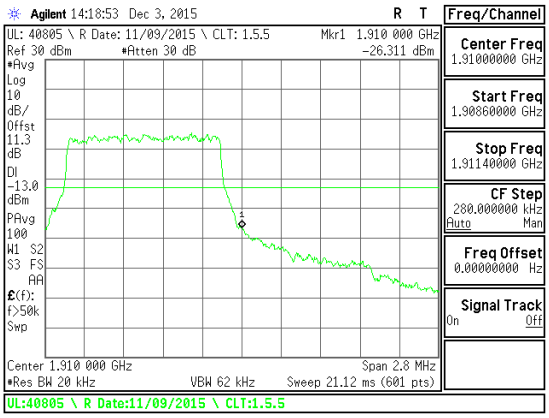
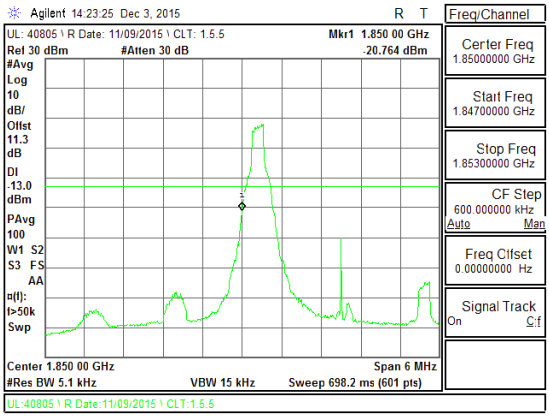


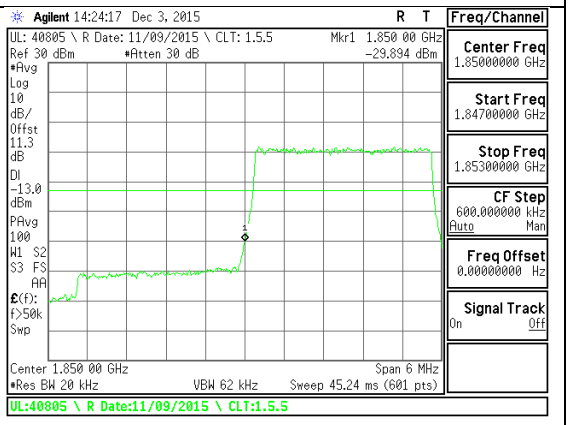
Band LTE2 1.4MHz 16QAM High Channel 1RB.gif



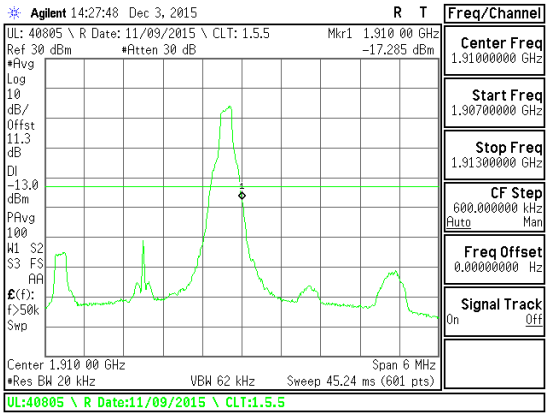
Band LTE2 1.4MHz 16QAM High Channel 1RB.gif



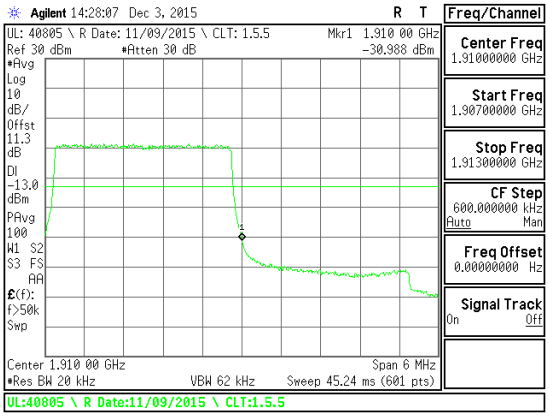
Band LTE2 3MHz QPSK Low Channel 1RB.gif
Note: RBW used is 1% of 1RB OBW.



Band LTE2 3MHz QPSK Low Channel FRB.gif



Band LTE2 3MHz QPSK High Channel 1RB.gif



Band LTE2 3MHz QPSK High Channel FRB.gif

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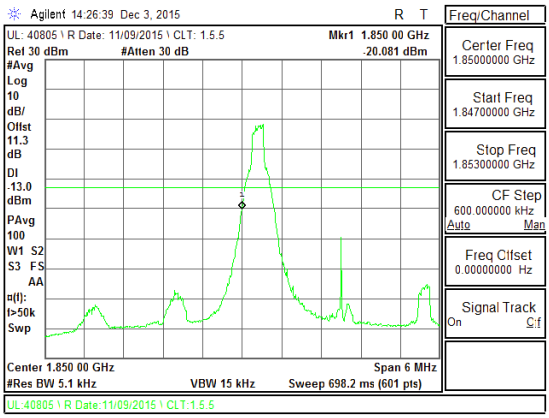
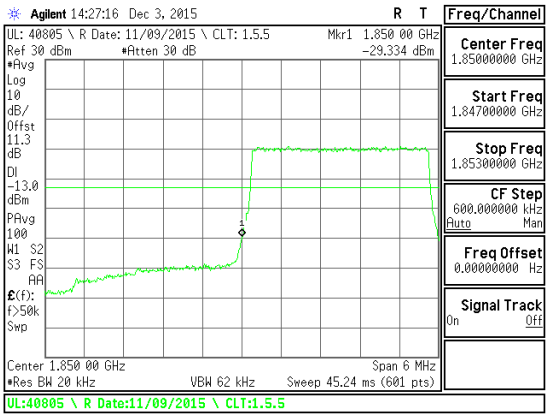
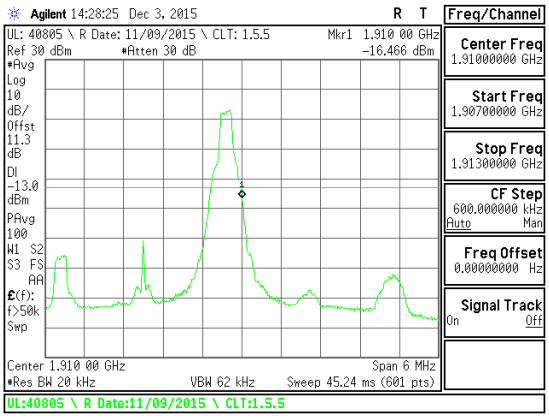


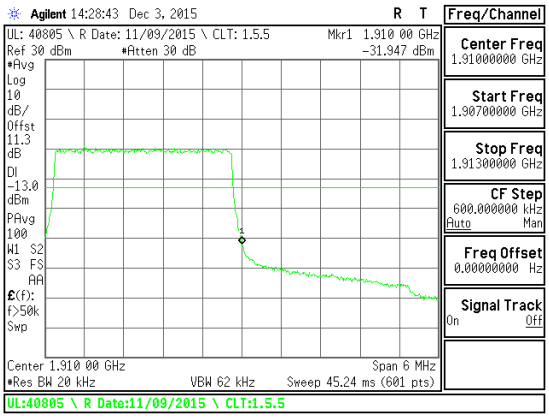
Band LTE2 3MHz 16QAM Low Channel 1RB.gif
Note: RBW used is 1% of 1RB OBW.



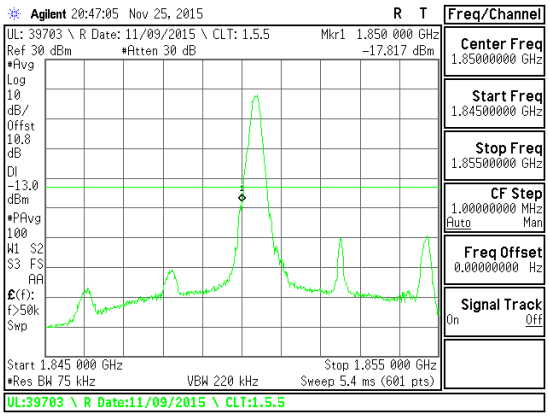
Band LTE2 3MHz 16QAM Low Channel FRB.gif



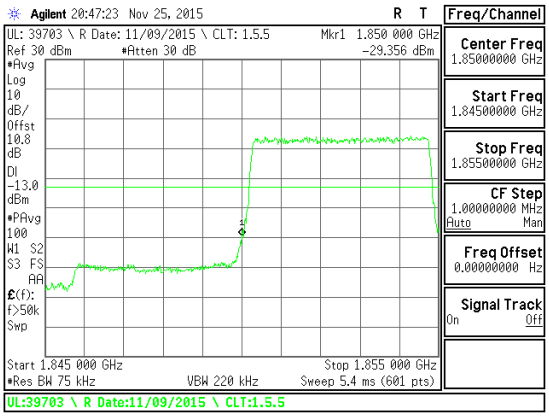
Band LTE2 3MHz 16QAM High Channel 1RB.gif



Band LTE2 3MHz 16QAM High Channel FRB.gif



Band LTE2 5MHz QPSK Low Channel 1RB.gif



Band LTE2 5MHz QPSK Low Channel FRB.gif

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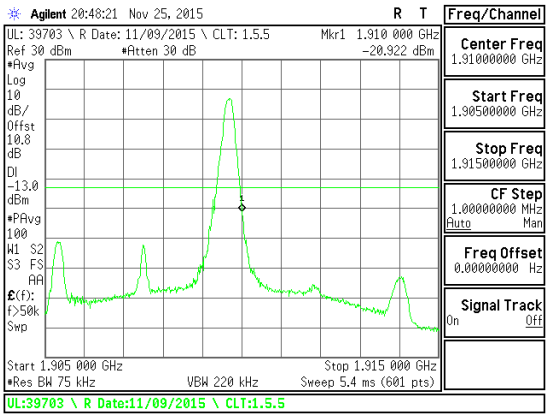

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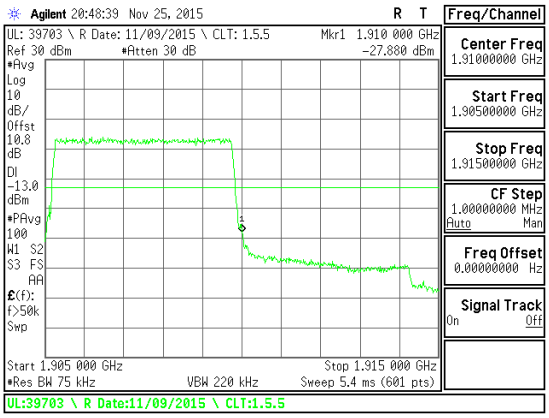

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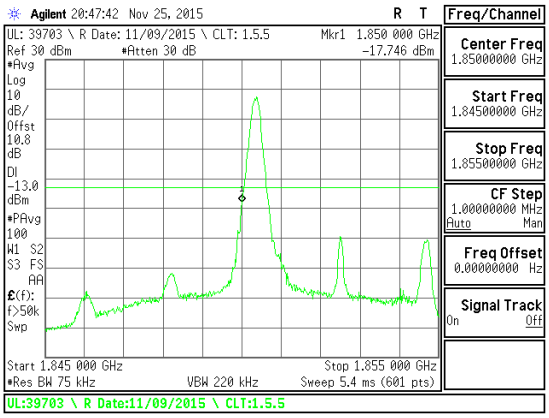
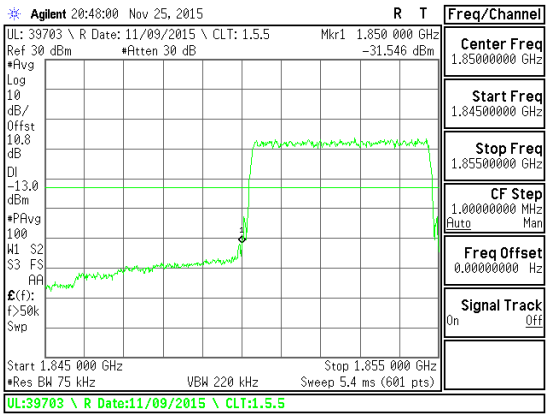


Band LTE2 5MHz 16QAM Low Channel 1RB.gif



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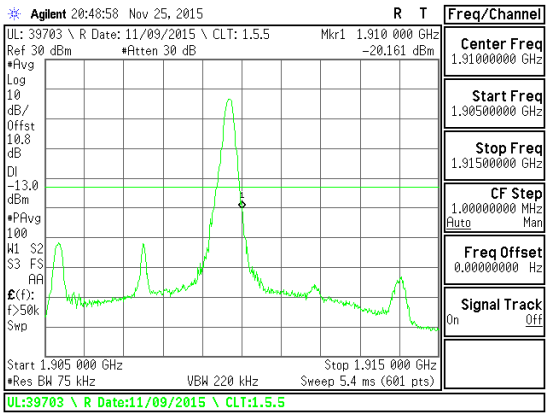
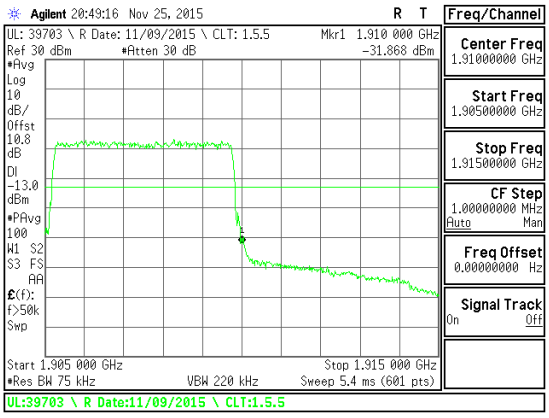


Band LTE2 5MHz 16QAM High Channel 1RB.gif



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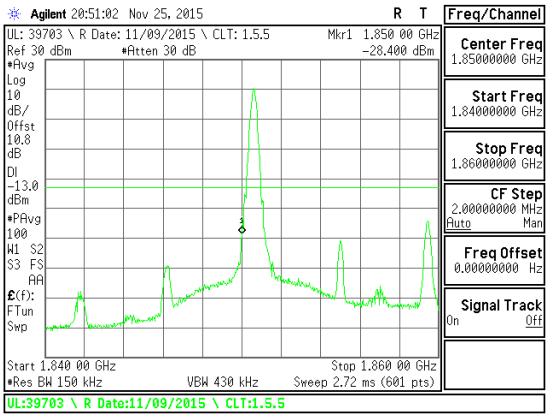
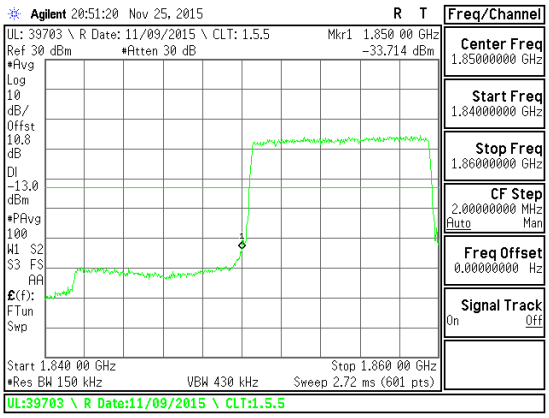
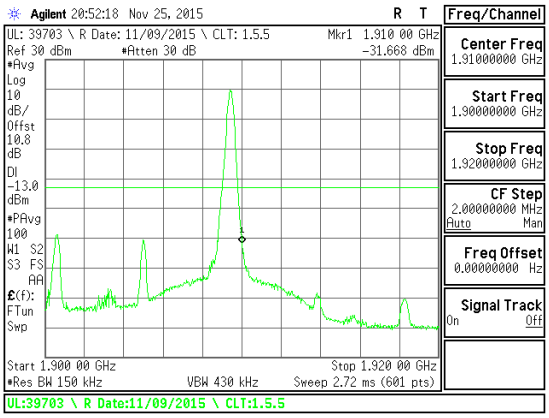


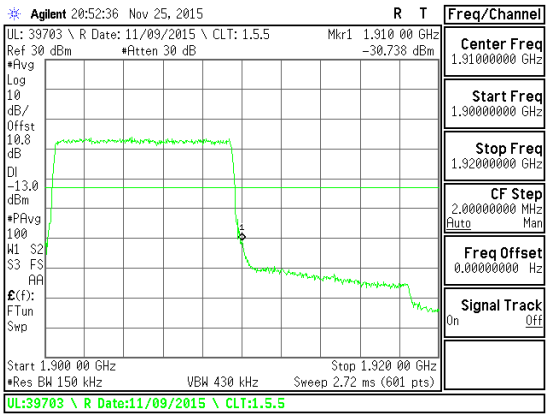
Band LTE2 10MHz QPSK Low Channel 1RB.gif



Band LTE2 10MHz QPSK Low Channel FRB.gif



Band LTE2 10MHz QPSK High Channel 1RB.gif



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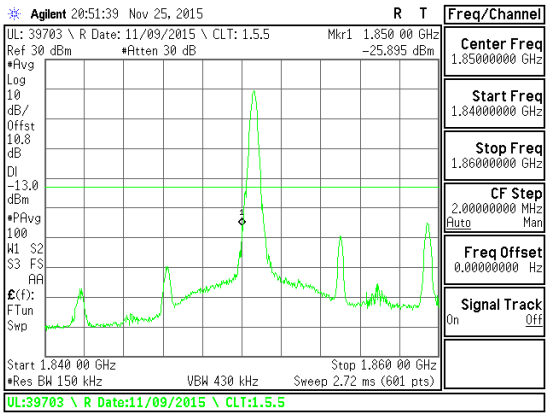
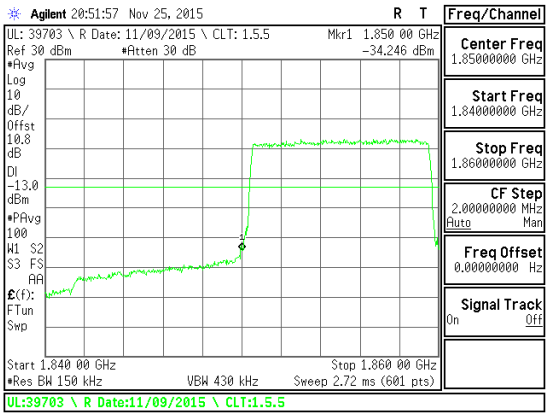


Band LTE2 10MHz 16QAM Low Channel 1RB.gif



Band LTE2 10MHz 16QAM Low Channel FRB.gif

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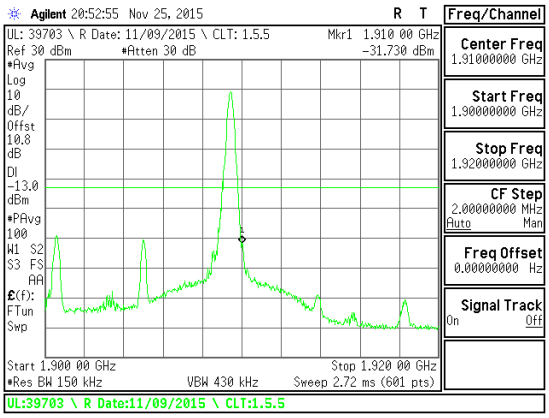
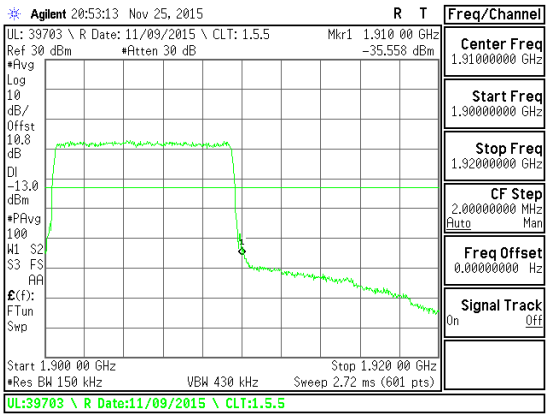
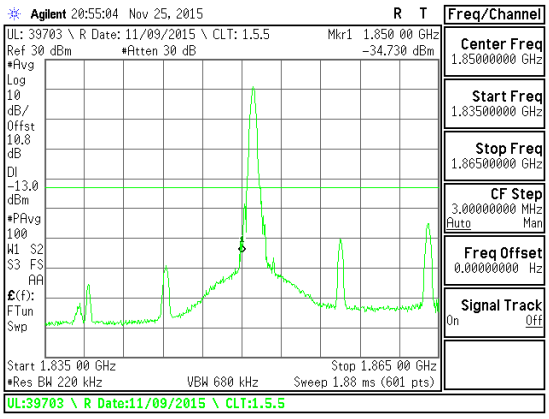


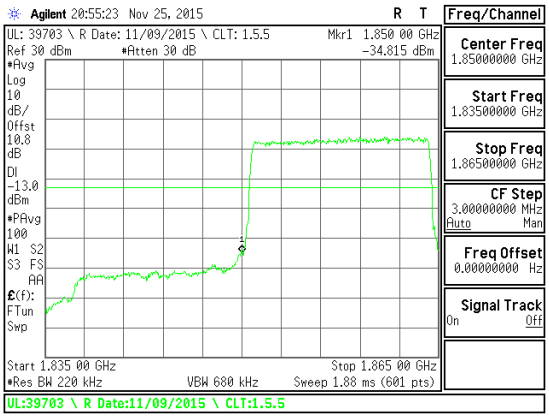
Band LTE2 10MHz 16QAM High Channel 1RB.gif



Band LTE2 10MHz 16QAM High Channel FRB.gif



Band LTE2 15MHz QPSK Low Channel 1RB.gif



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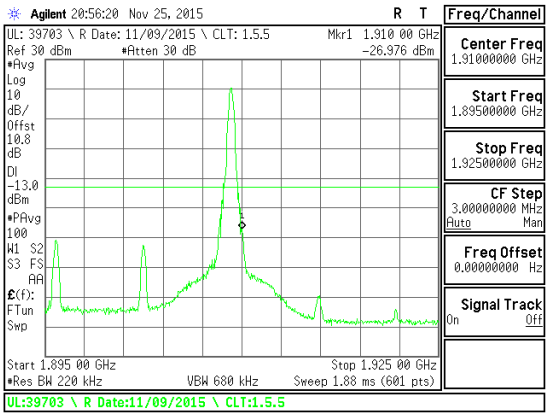

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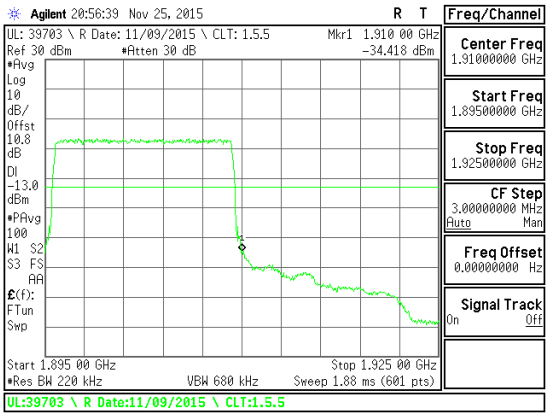

Band LTE2 15MHz QPSK High Channel FRB.gif

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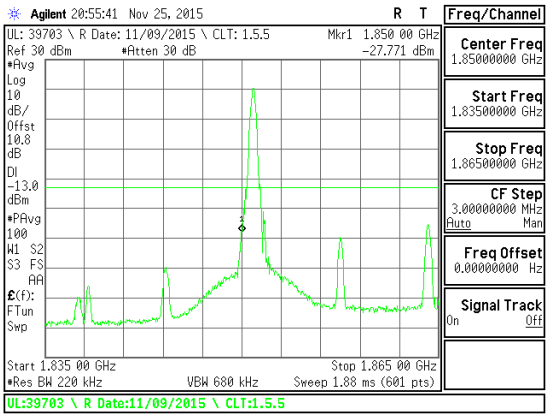

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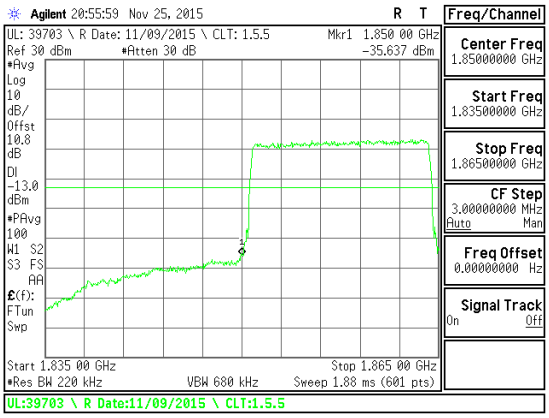

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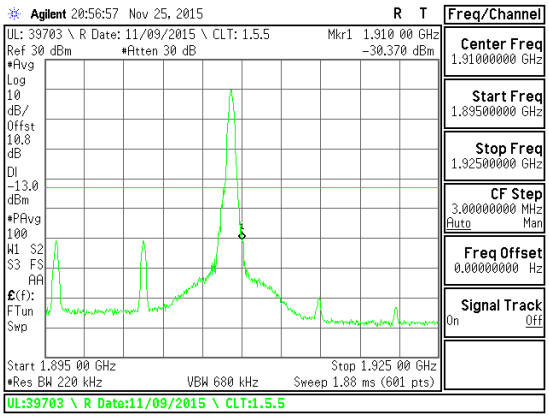

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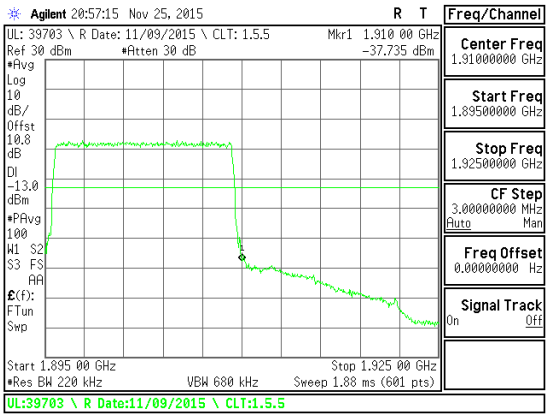

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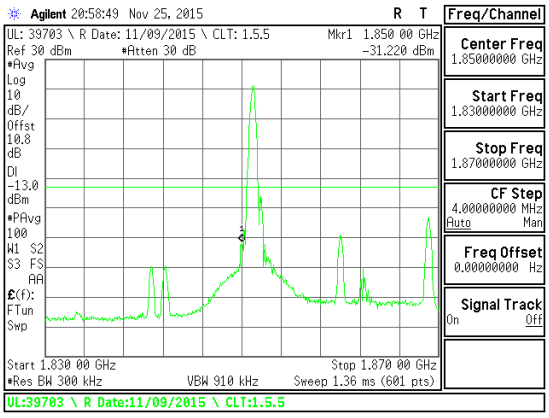

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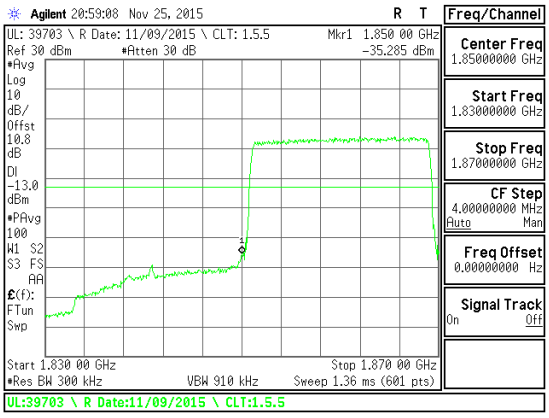

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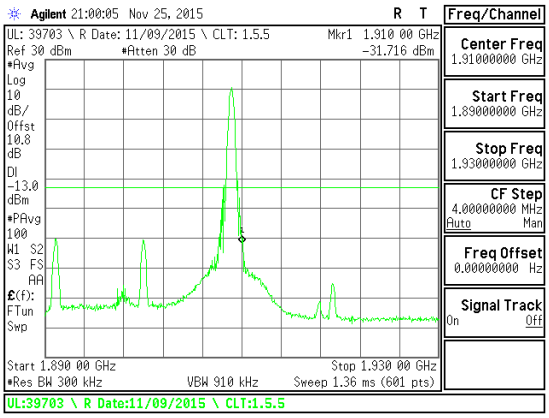

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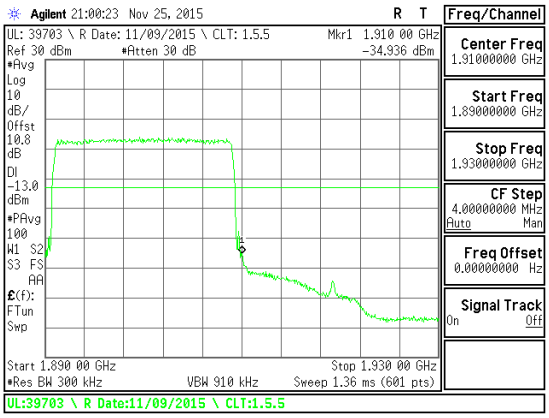

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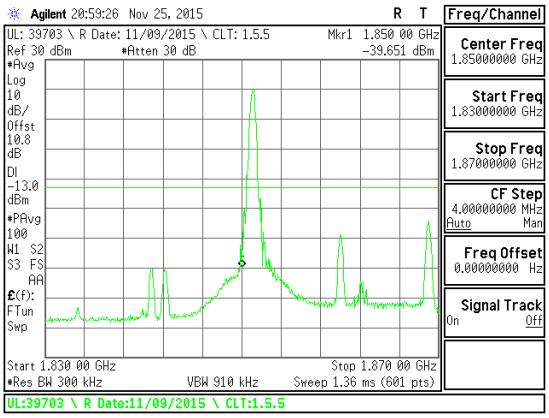

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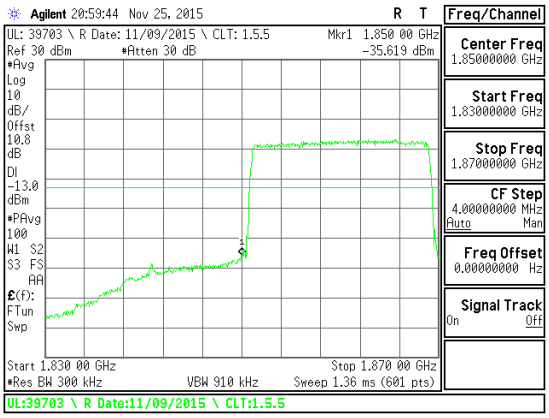

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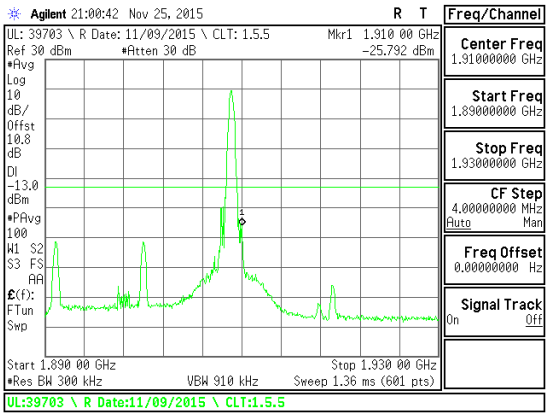

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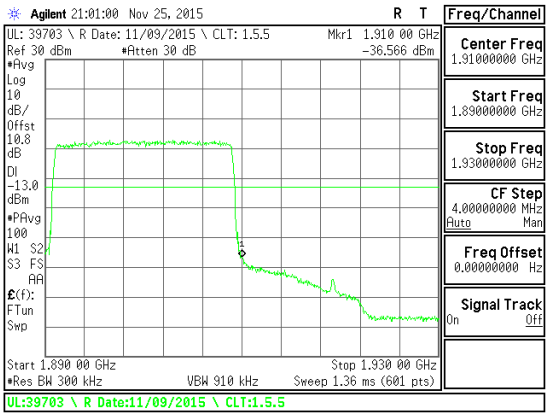

Band LTE2 20MHz 16QAM High Channel FRB.gif

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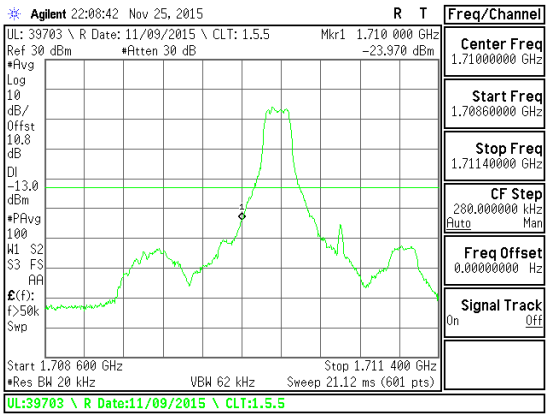
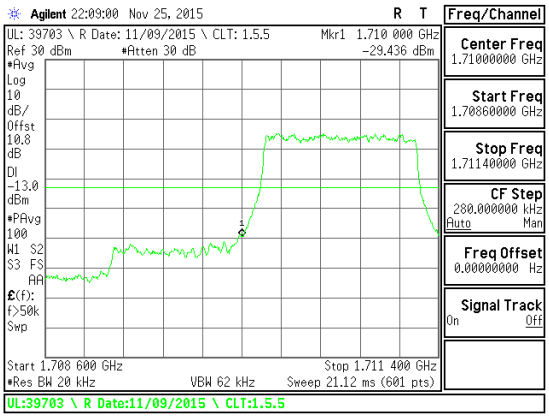
LTE Band 4



Band LTE4 1.4MHz QPSK Low Channel 1RB.gif



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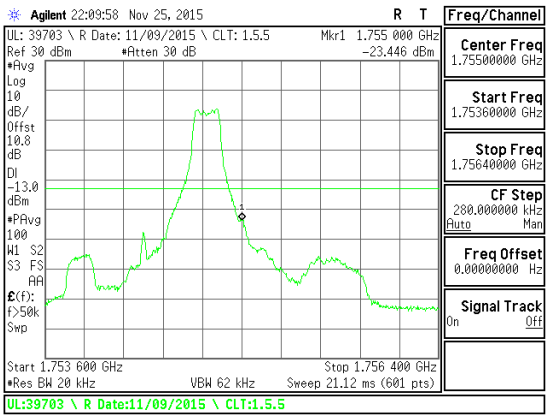

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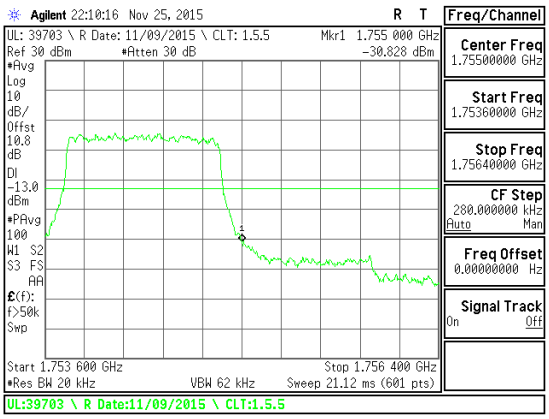

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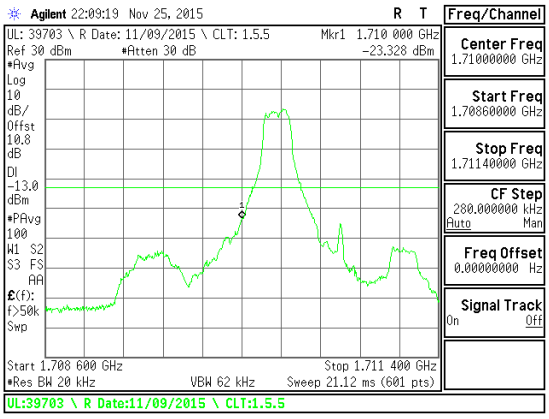

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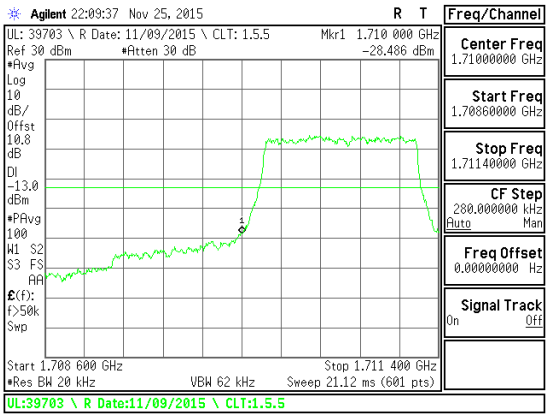

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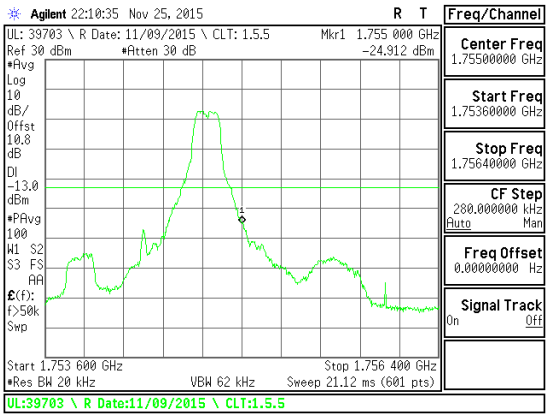

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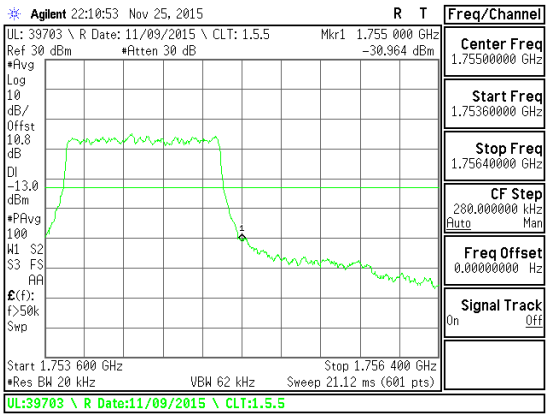

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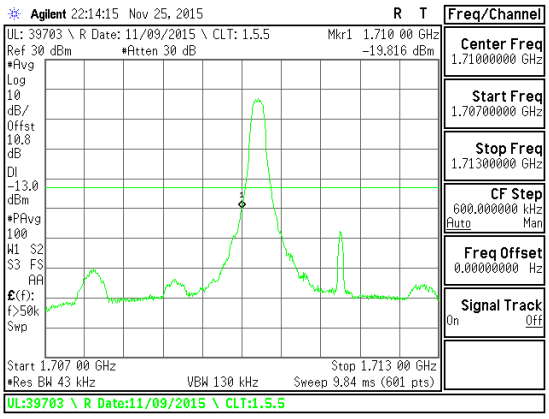
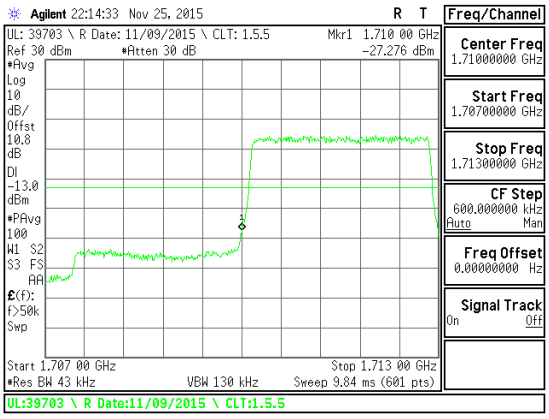


Band LTE4 3MHz QPSK Low Channel 1RB.gif



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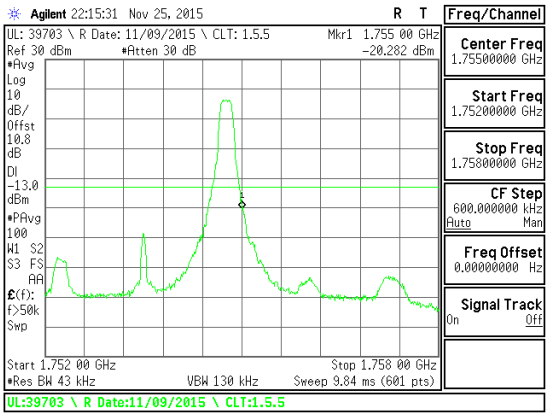

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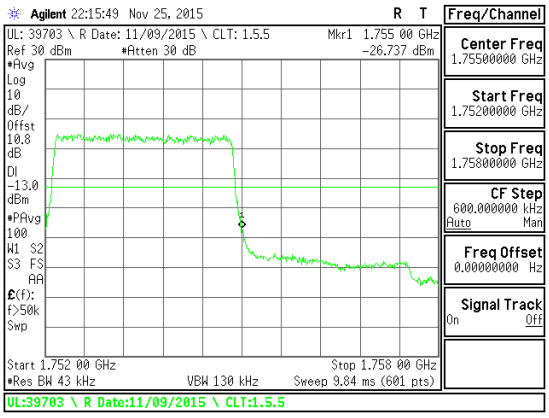

Band LTE4 3MHz QPSK High Channel FRB.gif

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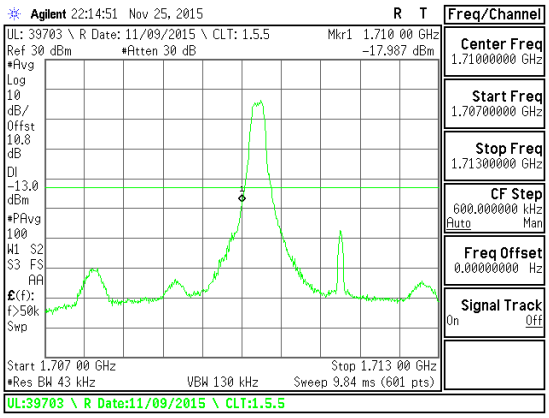

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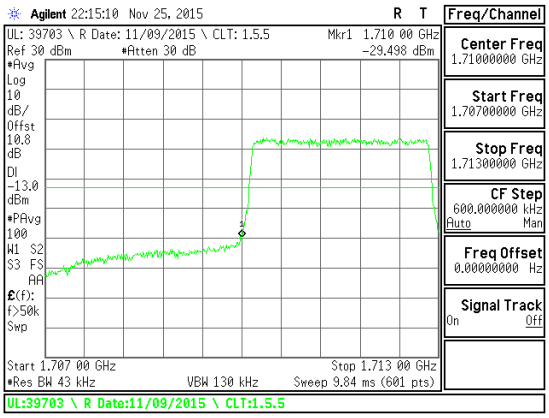

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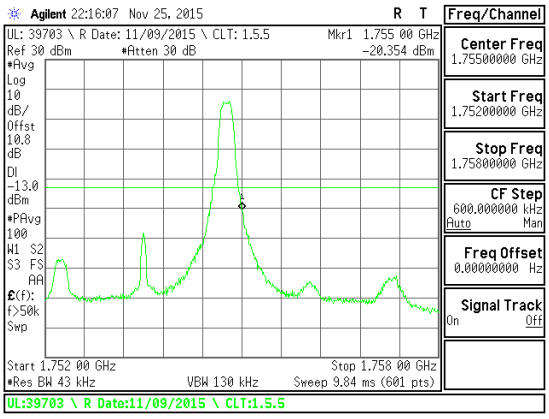

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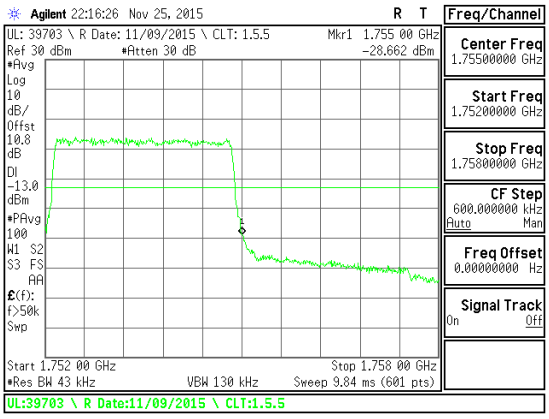

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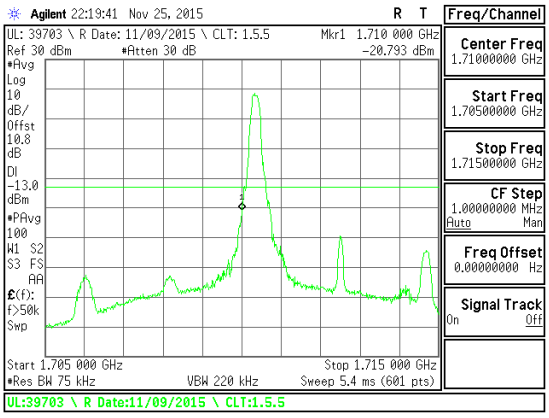

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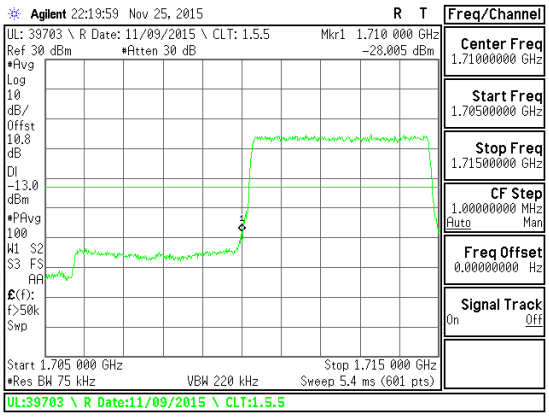

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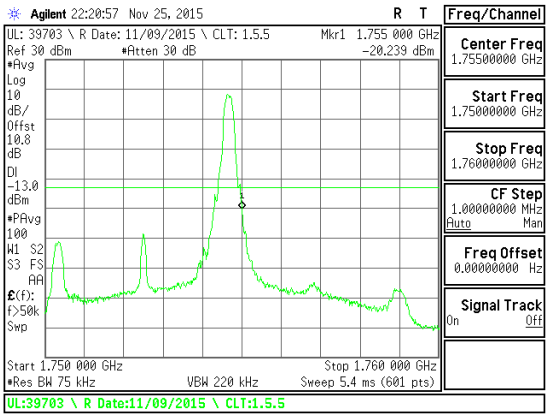

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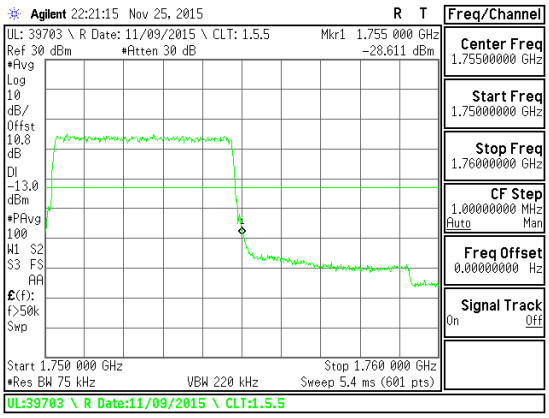

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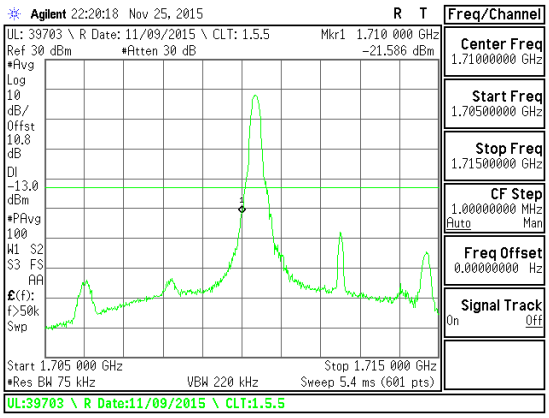

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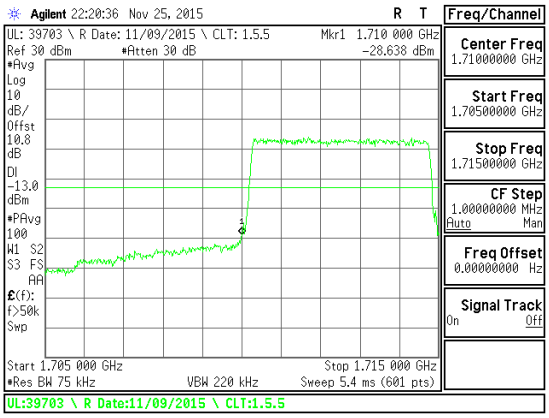

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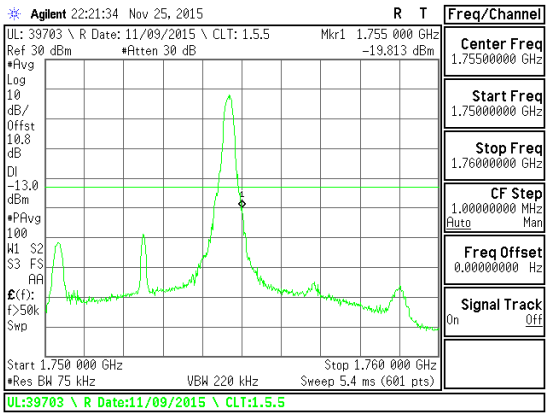

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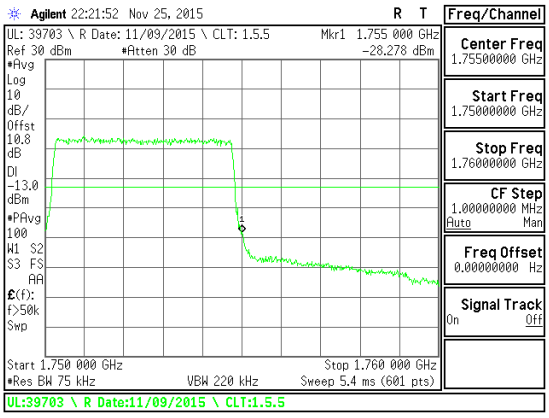

Band LTE4 5MHz 16QAM High Channel FRB.gif

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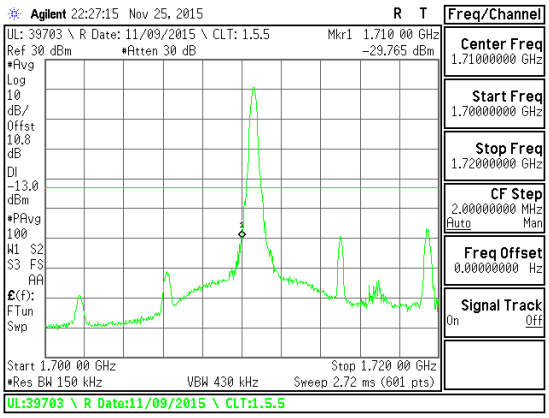

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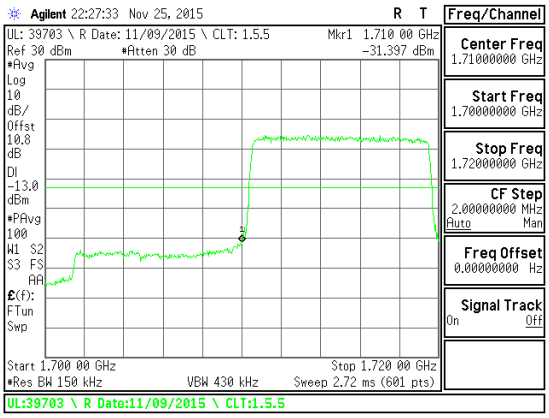

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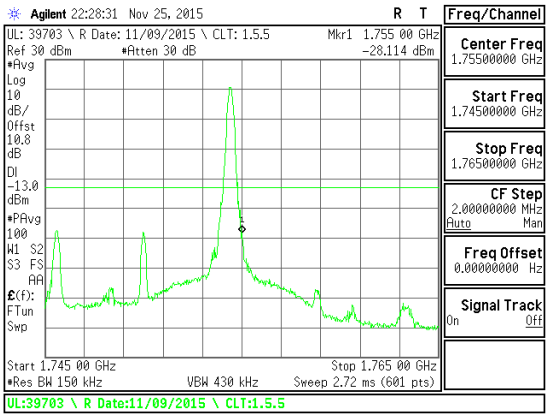

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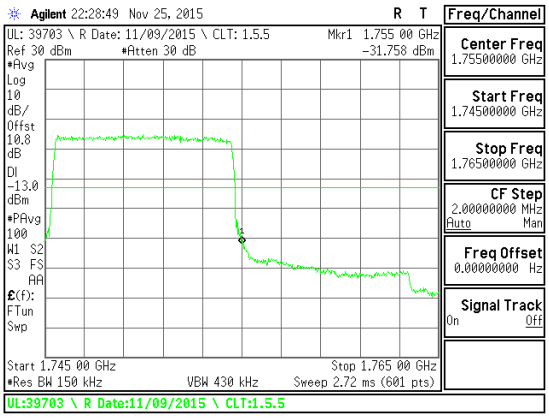

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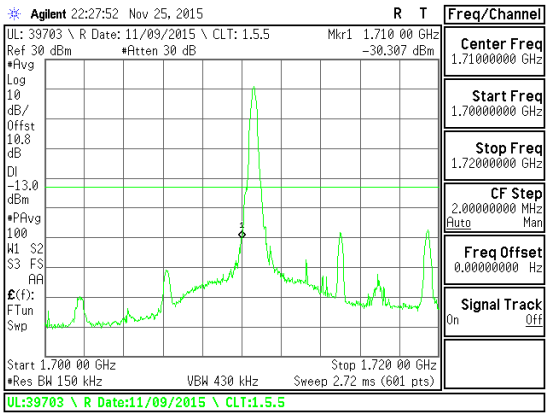

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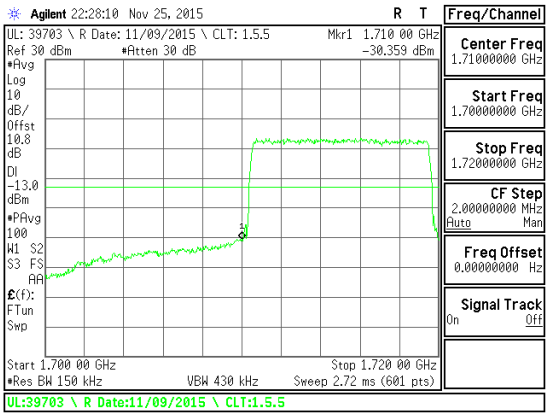

Band LTE4 10MHz 16QAM Low Channel FRB.gif

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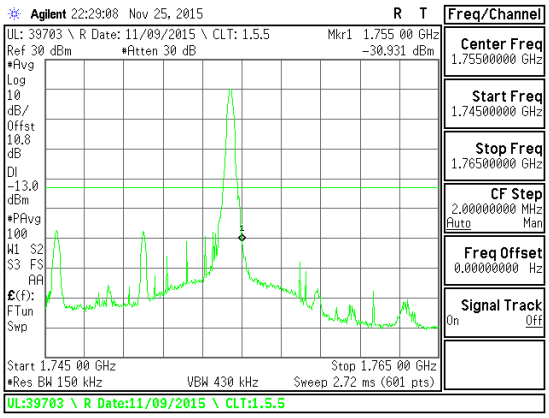

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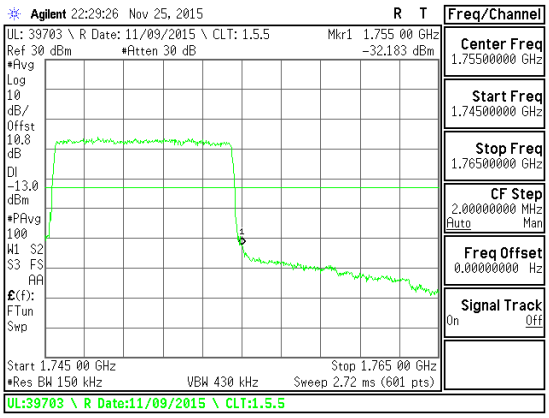
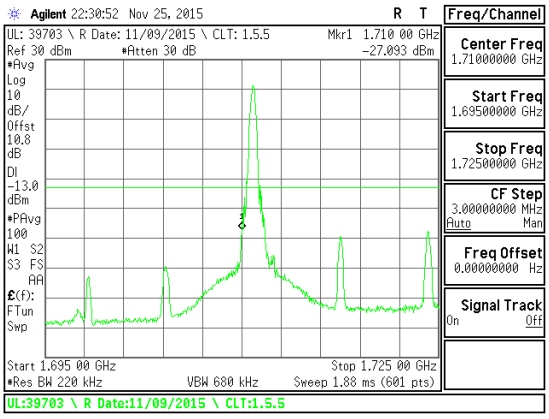
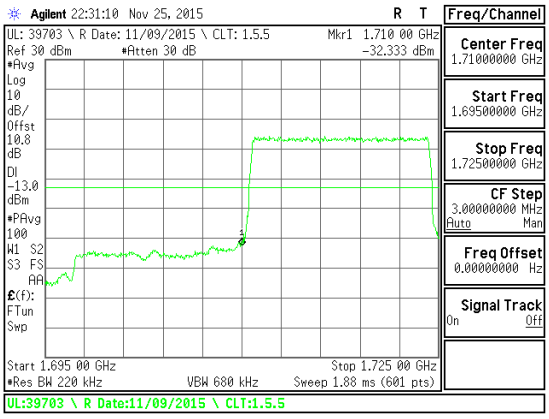


Band LTE4 10MHz 16QAM High Channel FRB.gif



Band LTE4 15MHz QPSK Low Channel 1RB.gif



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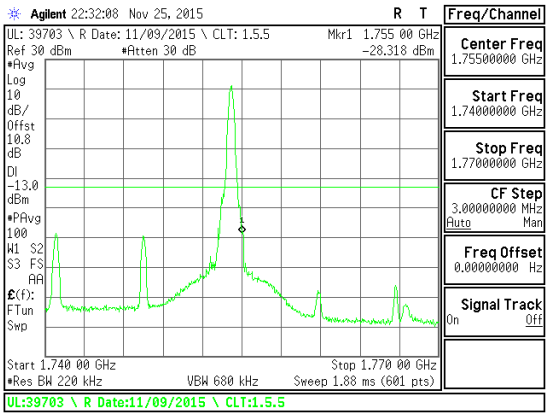

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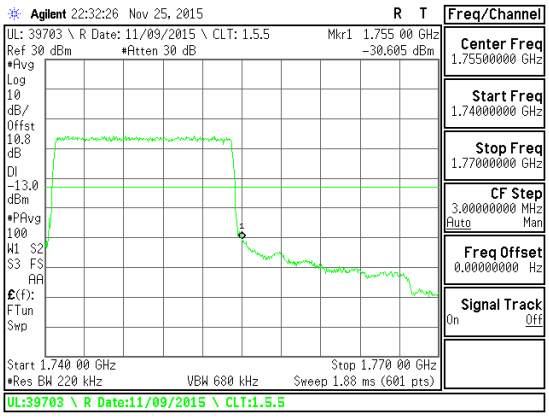

Band LTE4 15MHz QPSK High Channel FRB.gif

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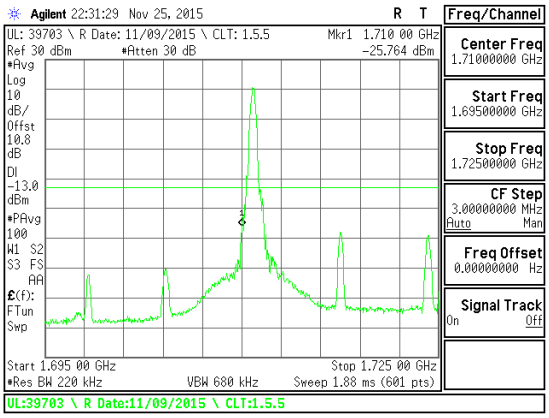

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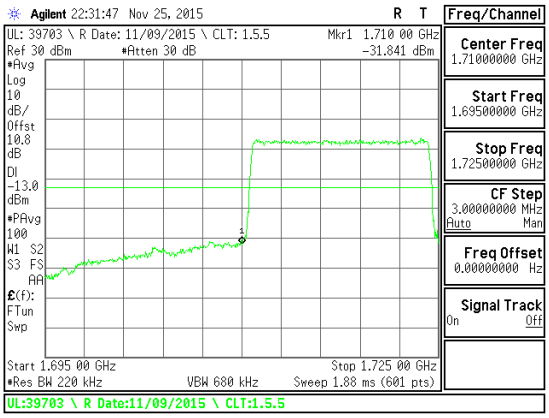

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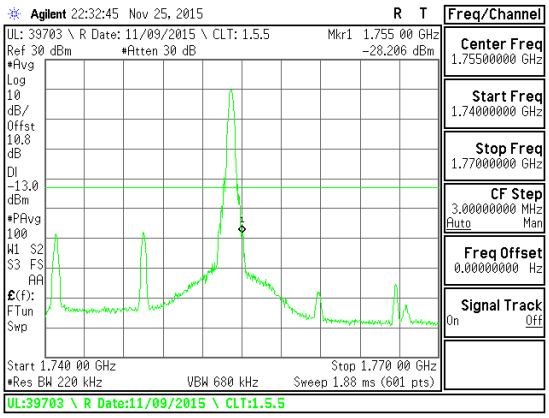

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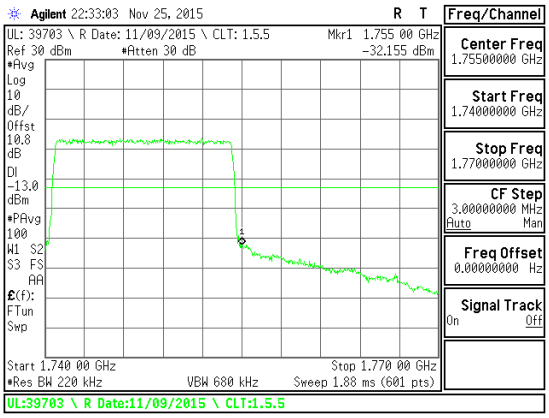

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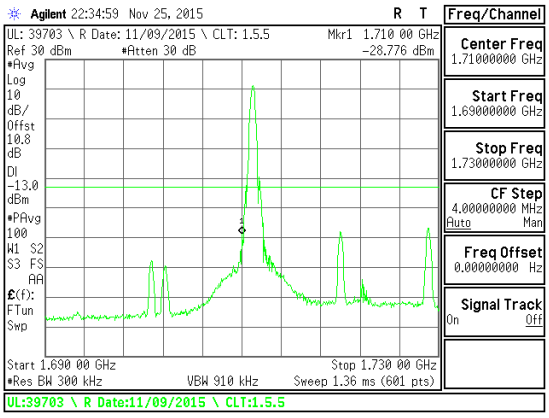
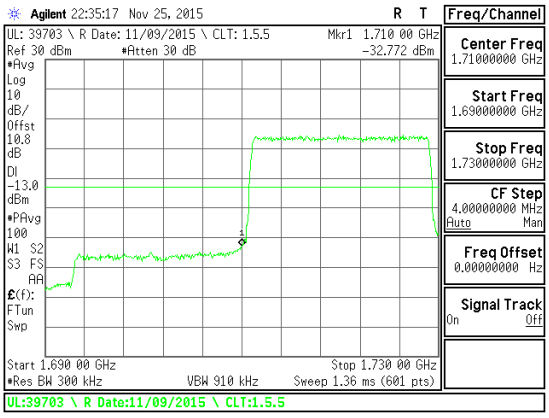


Band LTE4 20MHz QPSK Low Channel 1RB.gif



Band LTE4 20MHz QPSK Low Channel FRB.gif

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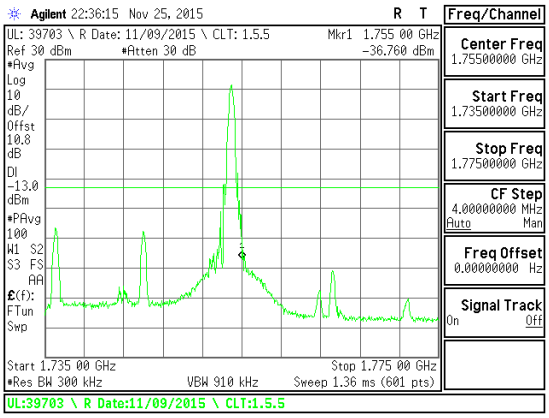

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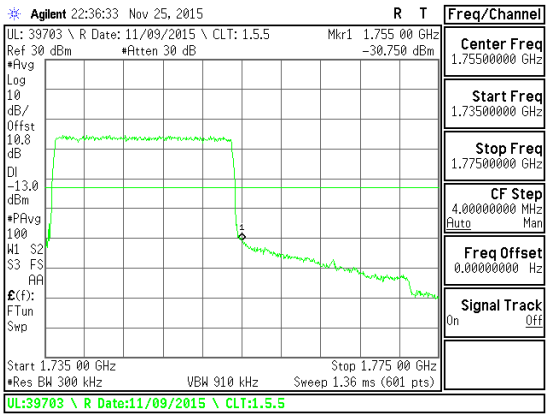

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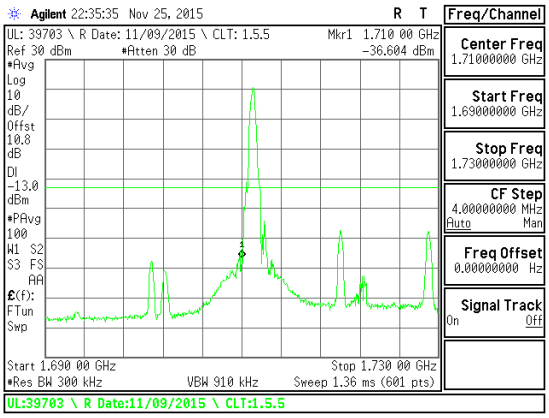

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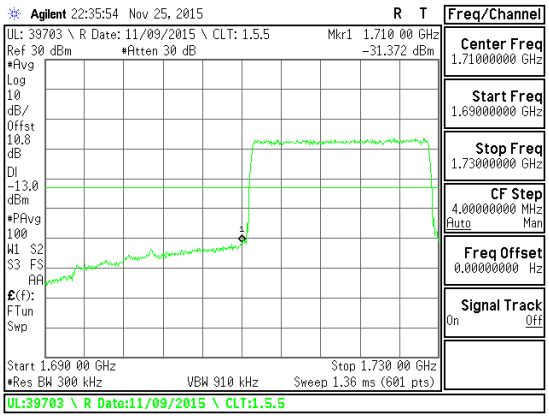

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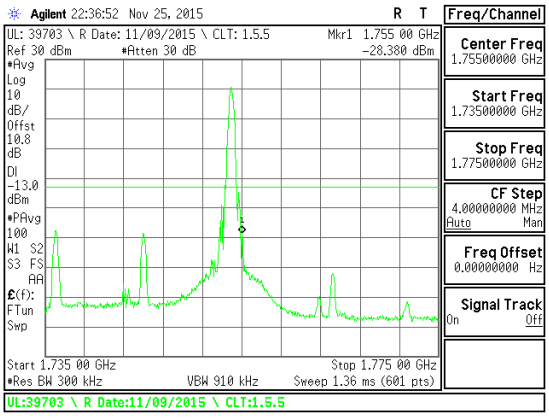

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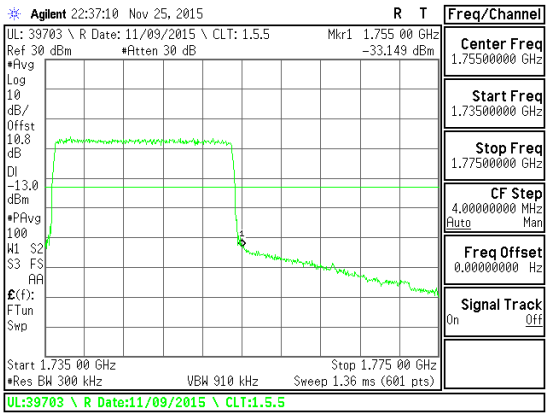

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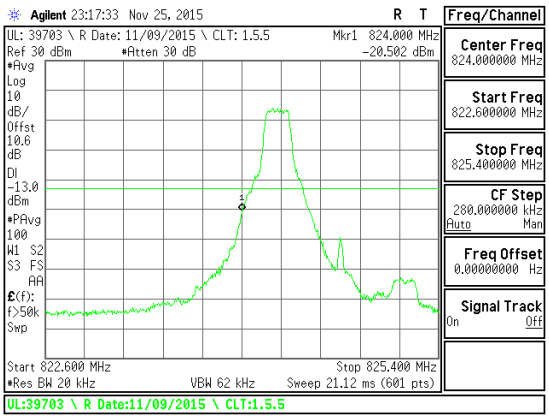
LTE Band 5



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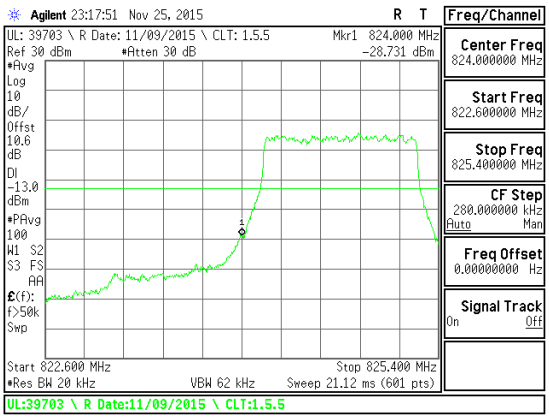

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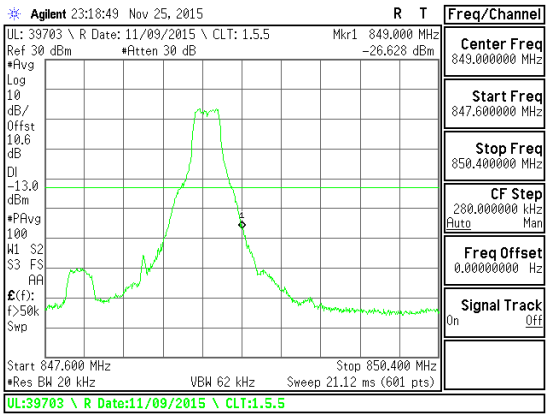

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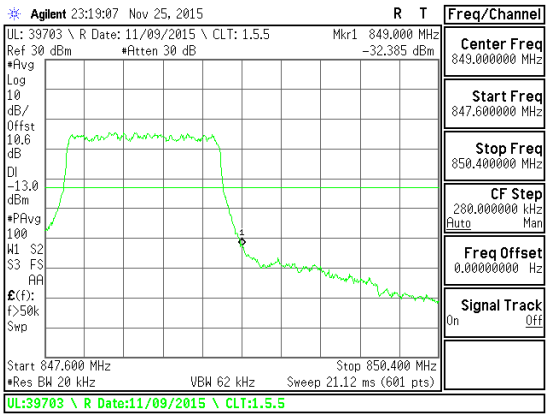

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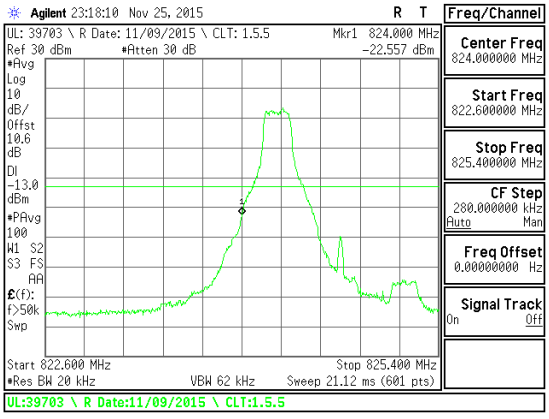

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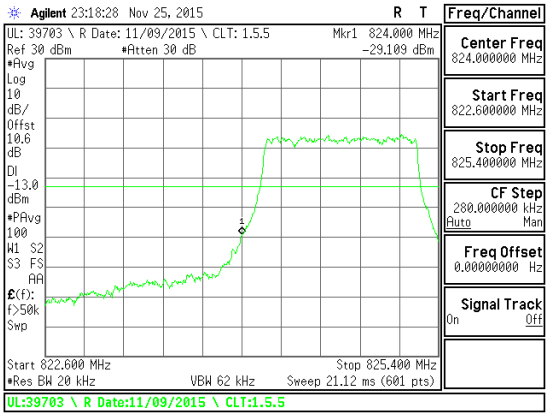

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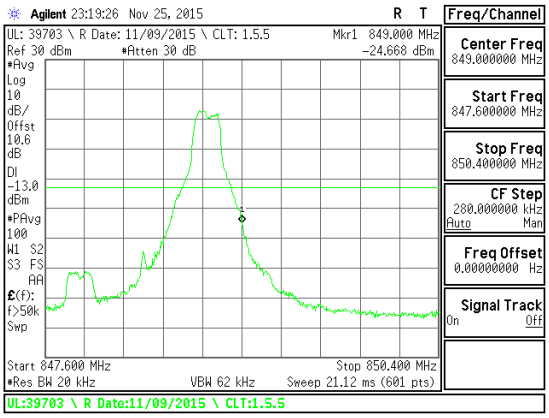

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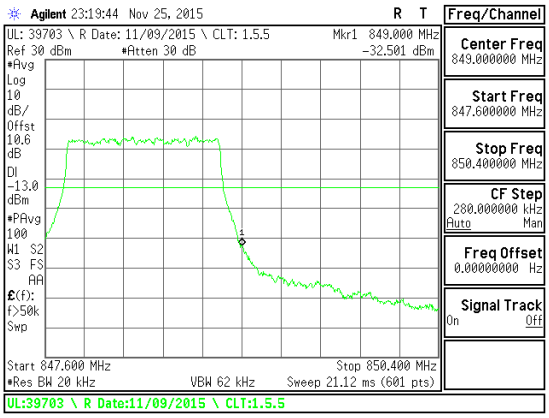

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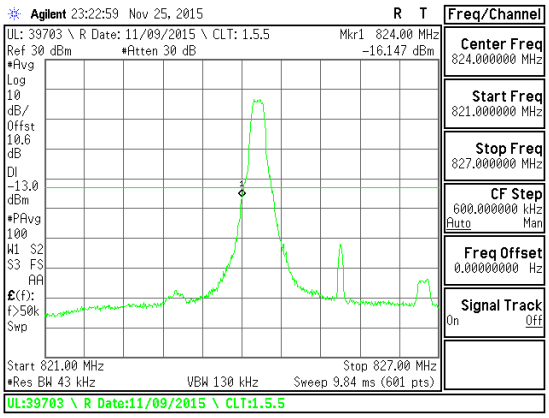
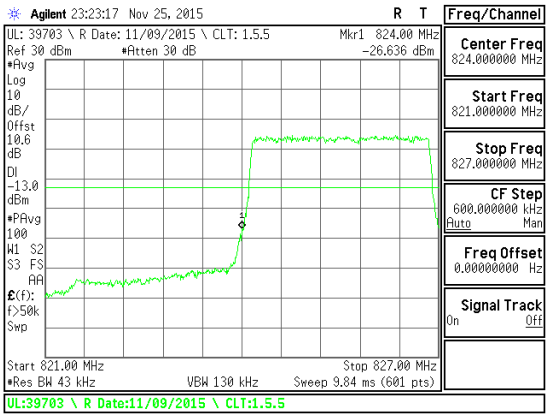


Band LTE5 3MHz QPSK Low Channel 1RB.gif



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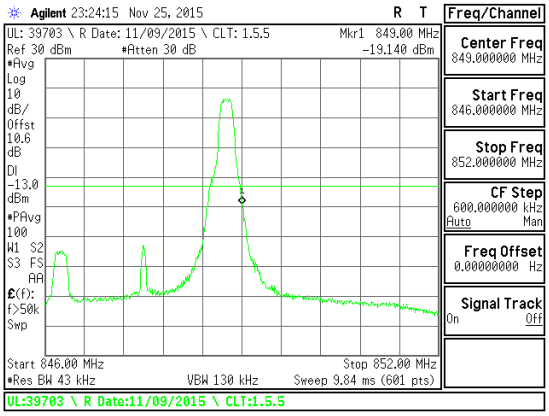

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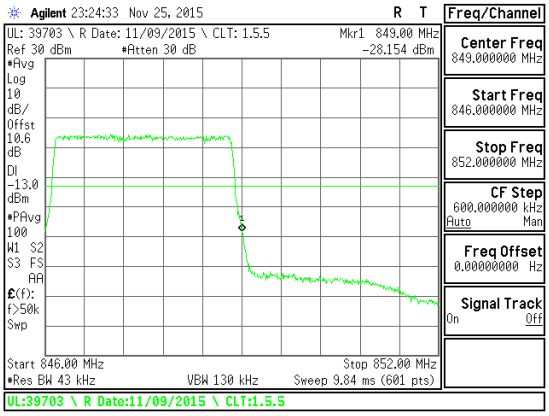

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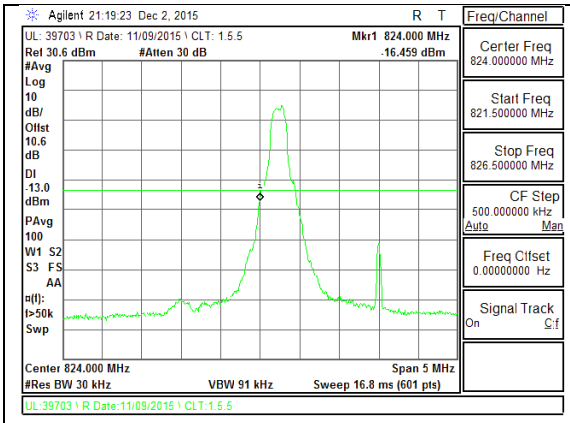

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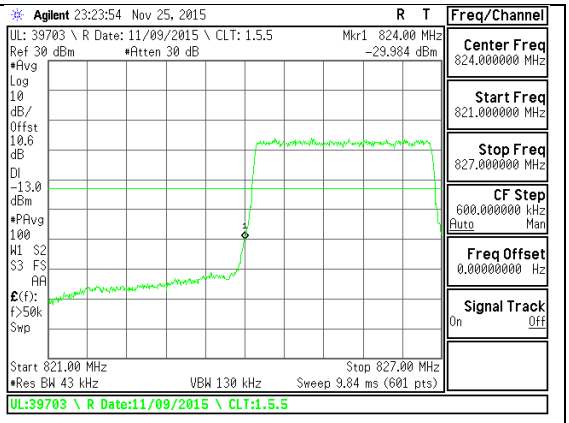

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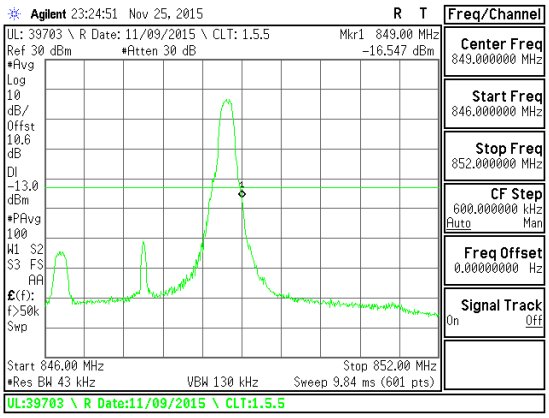

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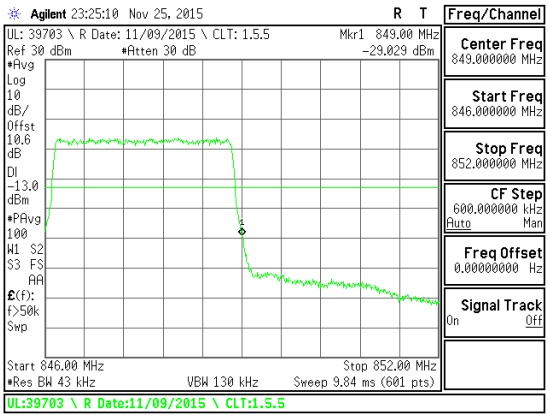

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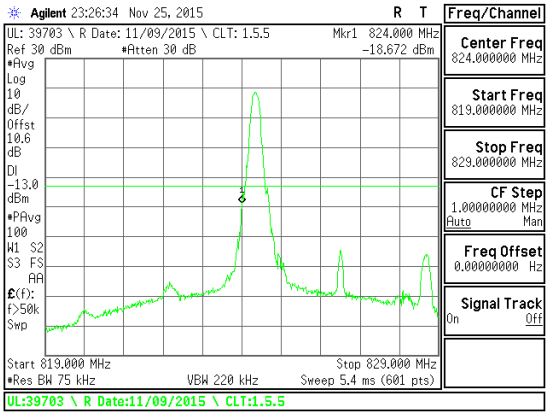

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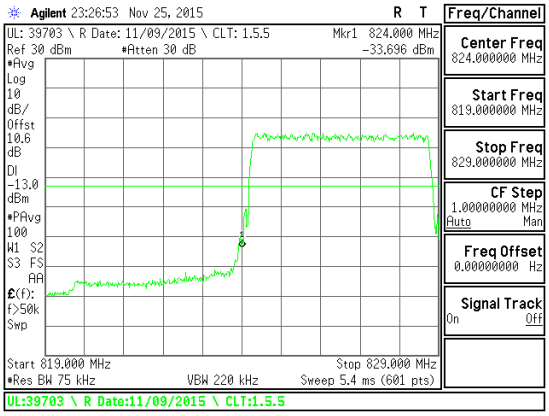

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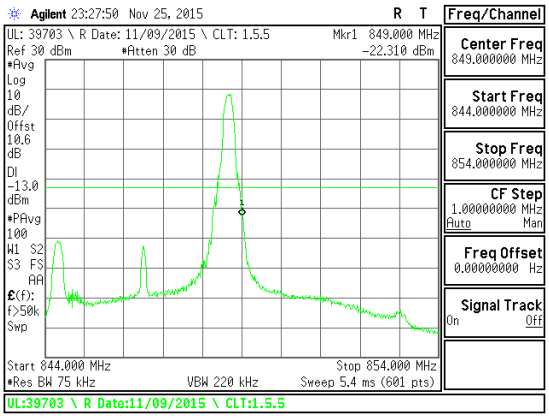

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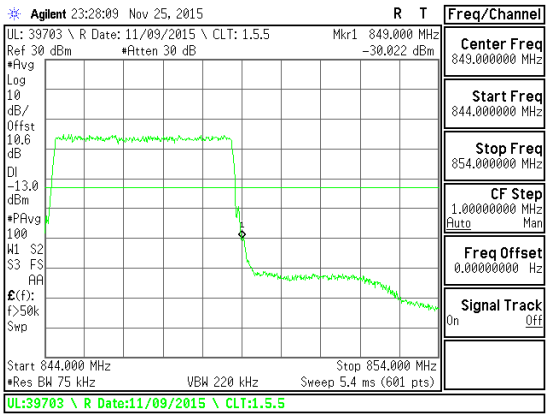

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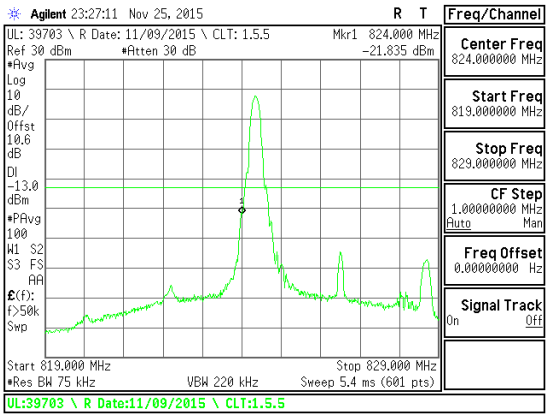

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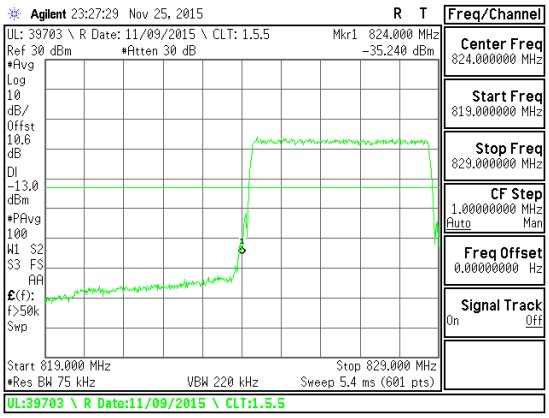

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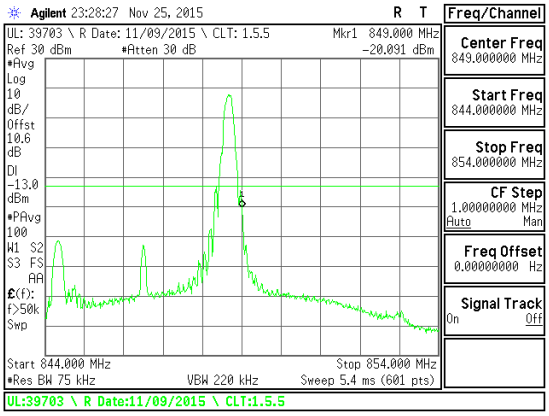

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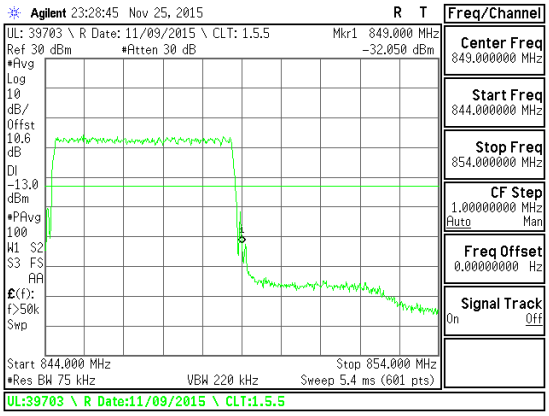

Band LTE5 5MHz 16QAM High Channel FRB.gif

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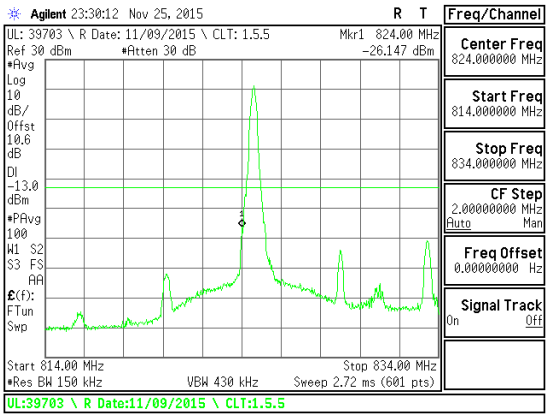

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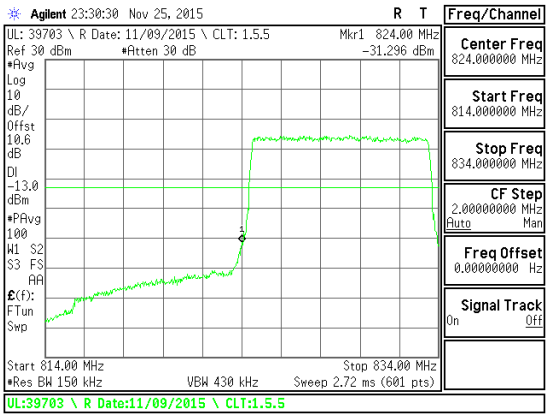

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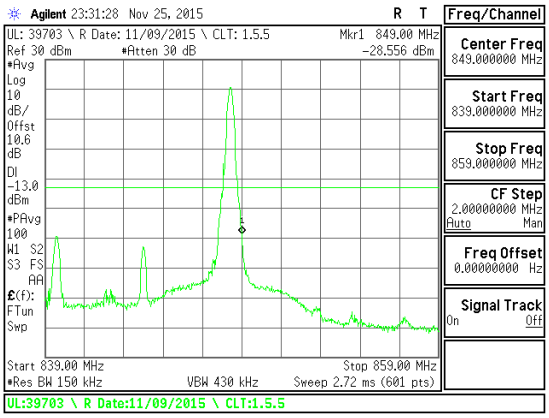

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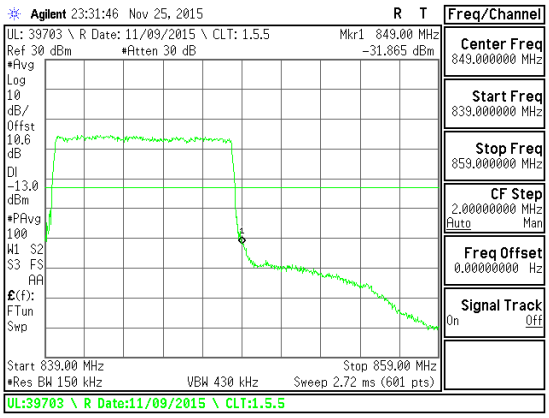

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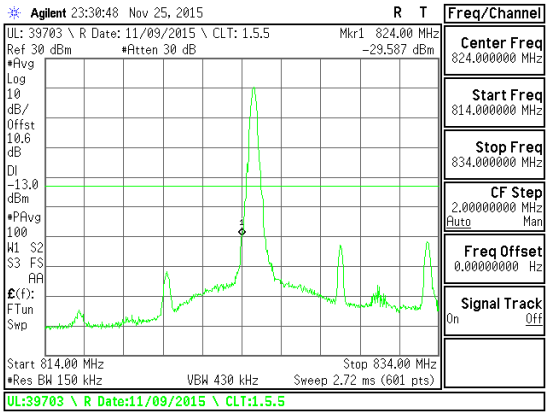

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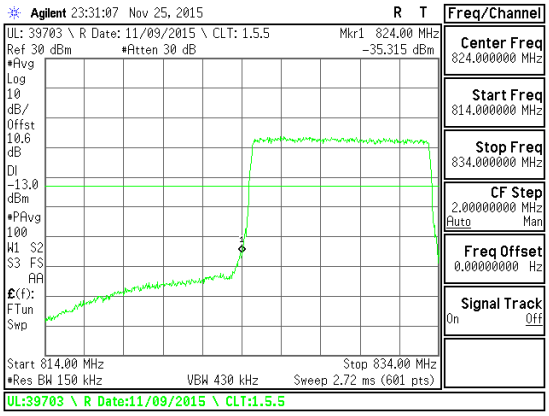

Band LTE5 10MHz 16QAM Low Channel FRB.gif

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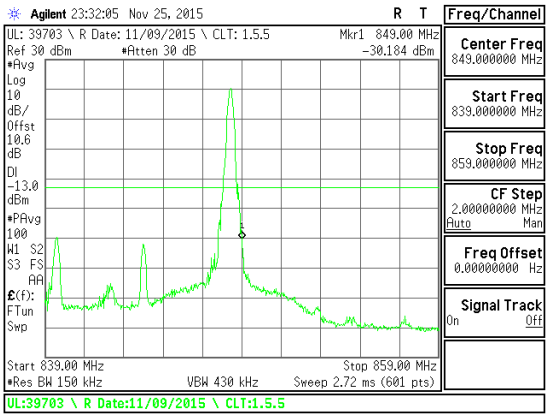

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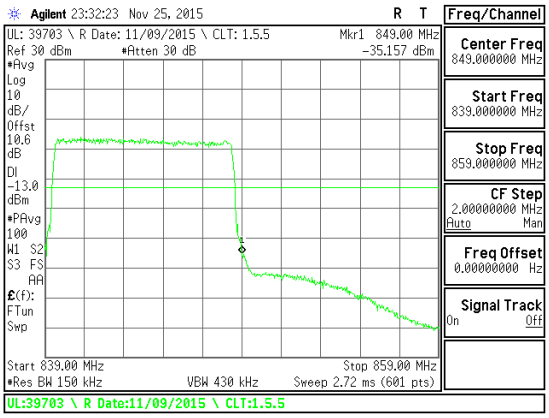

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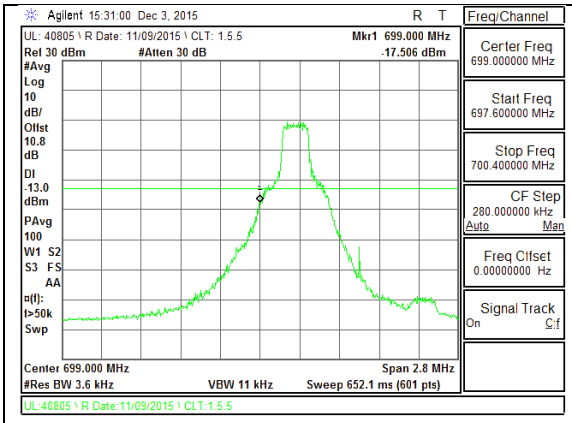
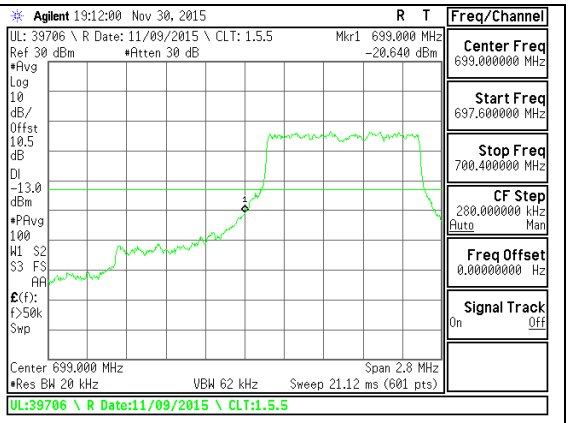
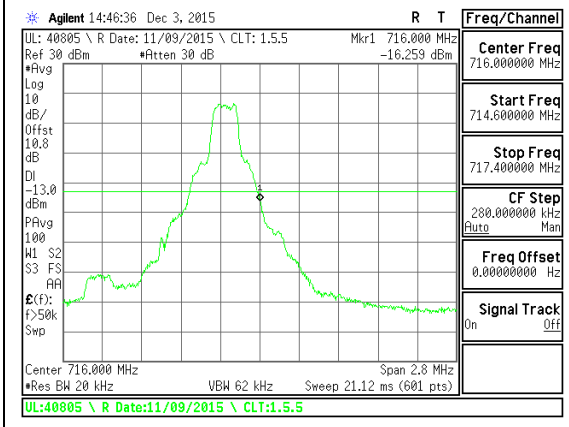
LTE Band 12



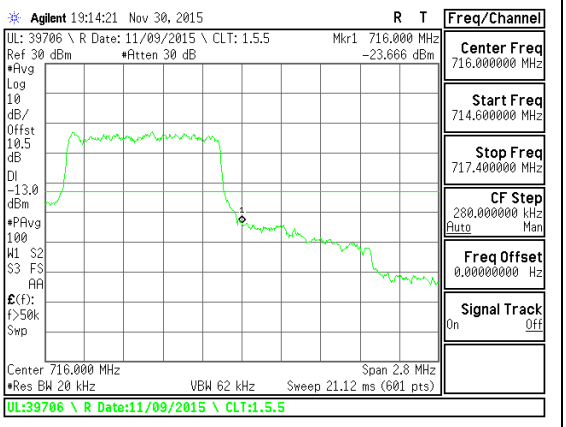
Band LTE12 1.4MHz QPSK Low Channel 1RB.gif
Note: RBW used is 1% of 1RB OBW.



Band LTE12 1.4MHz QPSK Low Channel FRB.gif



Band LTE12 1.4MHz QPSK High Channel 1RB.gif



Band LTE12 1.4MHz QPSK High Channel FRB.gif

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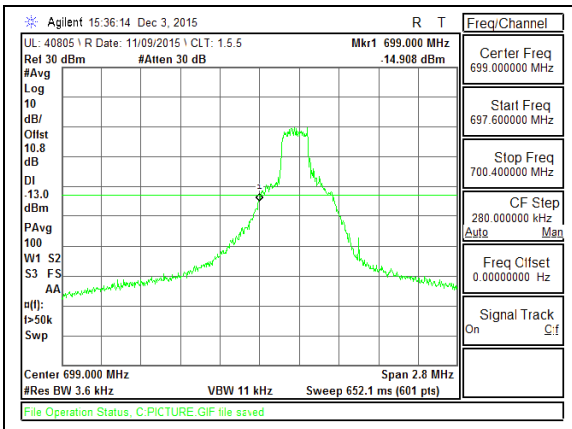
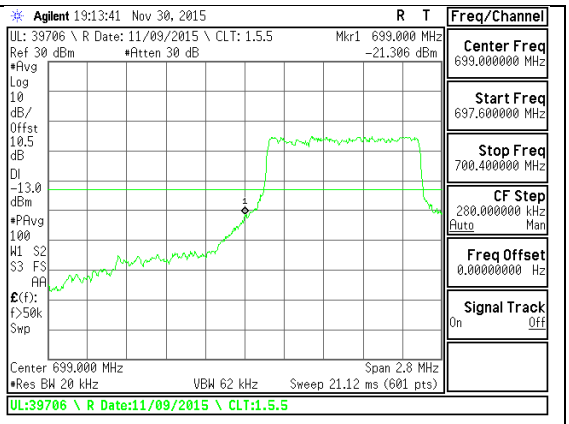
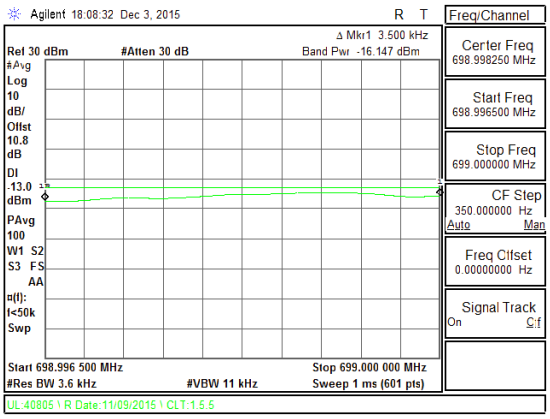


Band LTE12 1.4MHz 16QAM Low Channel 1RB.gif
Note: RBW used is 1% of 1RB OBW



Band LTE12 1.4MHz 16QAM Low Channel FRB.gif



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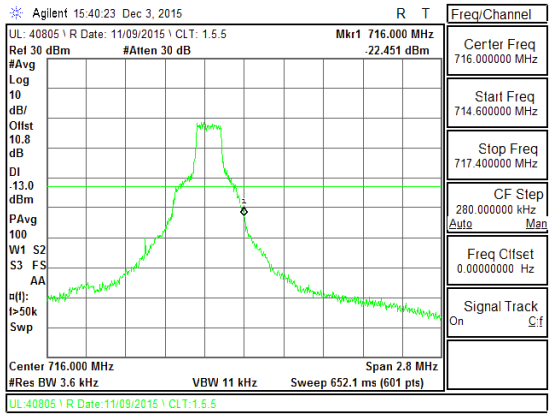
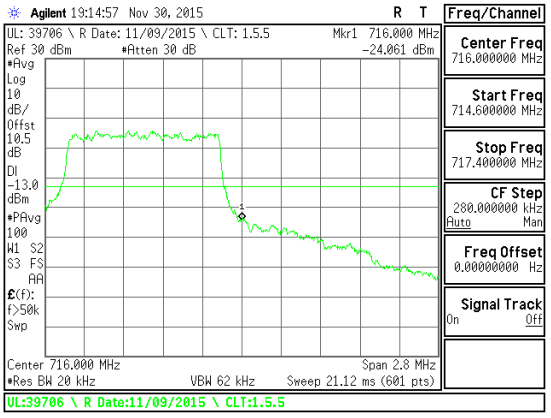


Band LTE12 1.4MHz 16QAM High Channel 1RB.gif



Band LTE12 1.4MHz 16QAM High Channel FRB.gif

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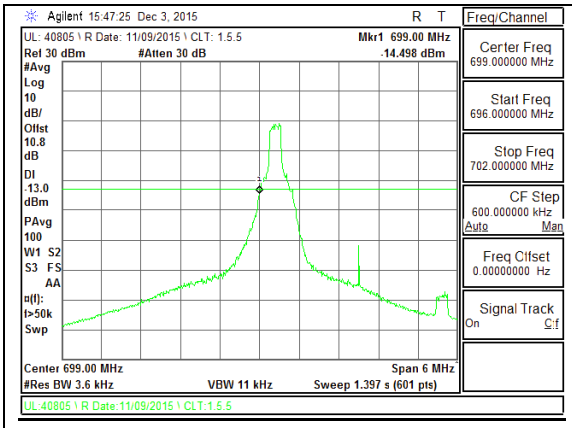
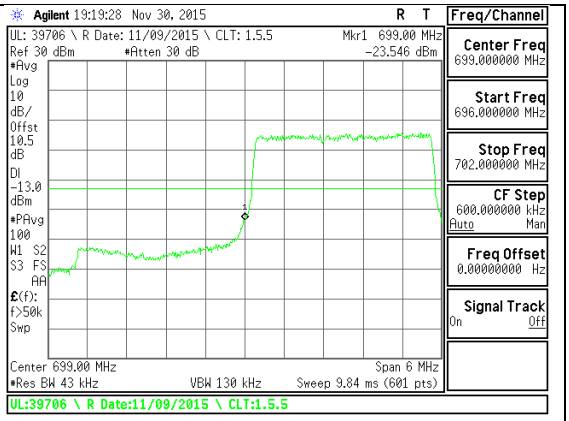
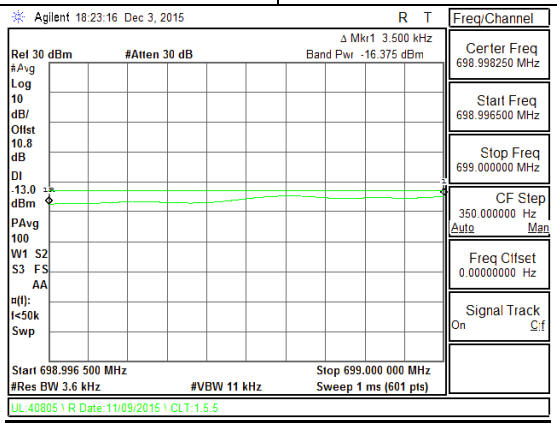


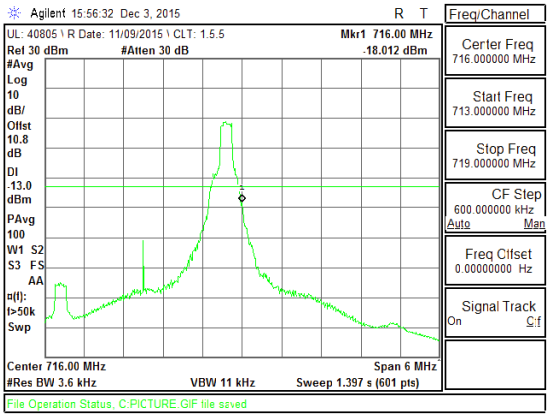
Band LTE12 3MHz QPSK Low Channel 1RB.gif
Note: RBW used is 1% of 1RB OBW



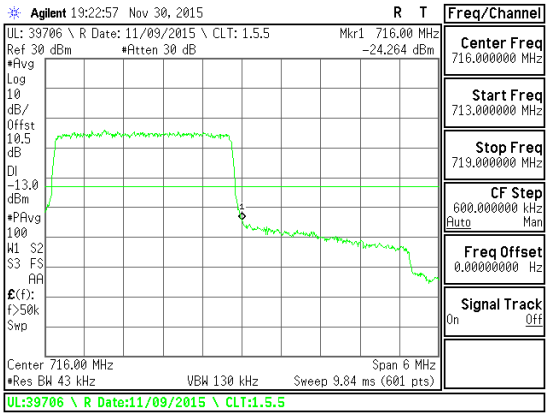
Band LTE12 3MHz QPSK Low Channel FRB.gif



Band LTE12 3MHz QPSK Low Channel 1RB.gif
Note: RBW used is 1% of 1RB OBW



Band LTE12 3MHz QPSK High Channel 1RB.gif



Band LTE12 3MHz QPSK High Channel FRB.gif

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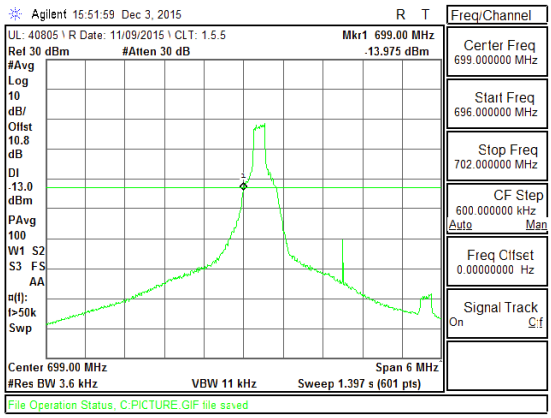
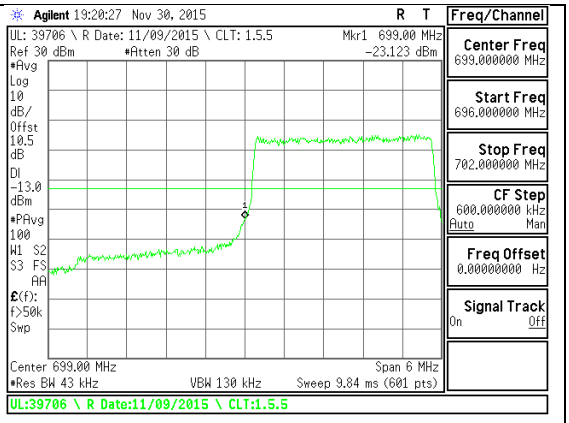
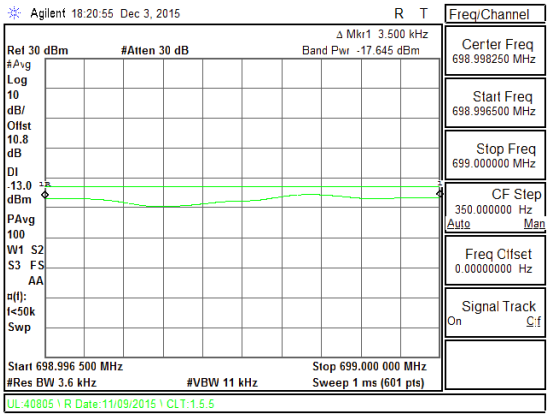


Band LTE12 3MHz 16QAM Low Channel 1RB.gif
Note: RBW used is 1% of 1RB OBW



Band LTE12 3MHz 16QAM Low Channel FRB.gif



Band LTE12 3MHz 16QAM Low Channel 1RB.gif
Note: RBW used is 1% of 1RB OBW

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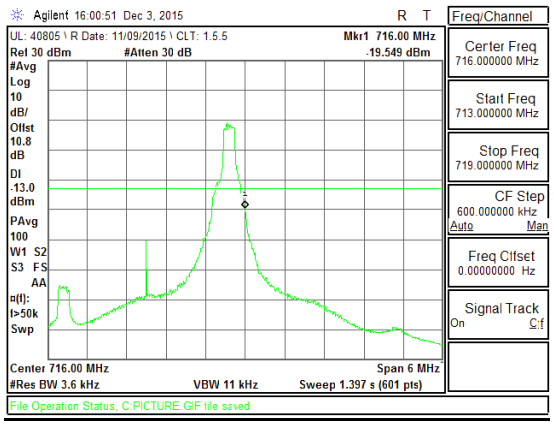
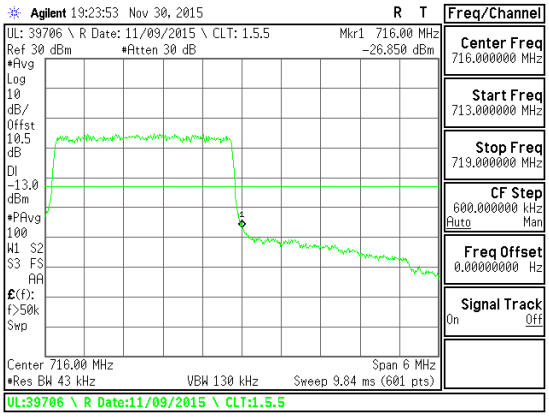
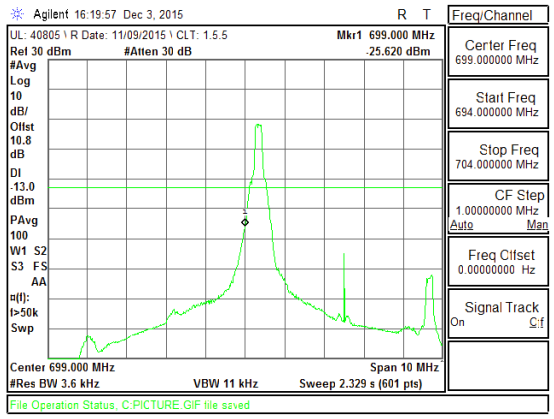


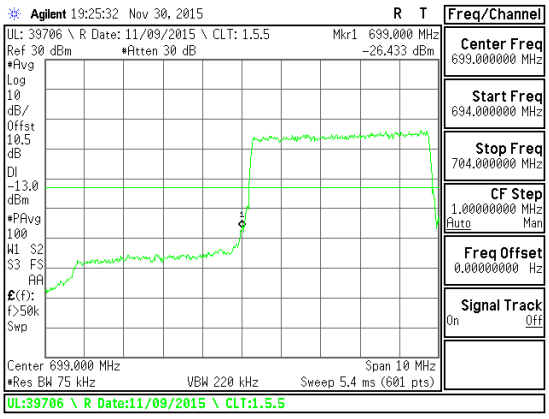
Band LTE12 3MHz 16QAM High Channel 1RB.gif



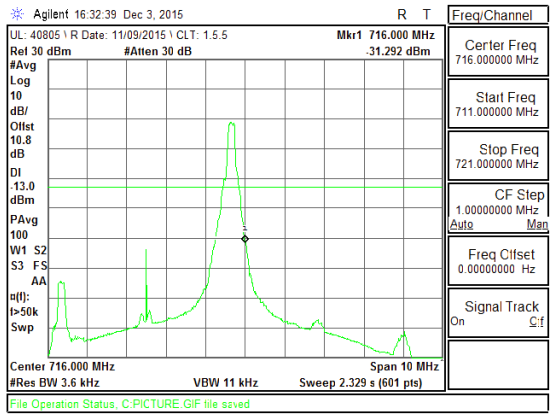
Band LTE12 3MHz 16QAM High Channel FRB.gif



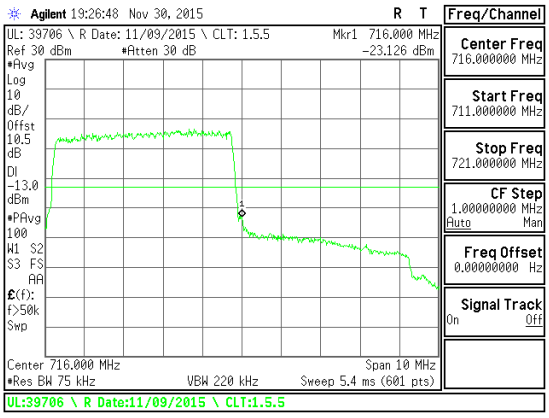
Band LTE12 5MHz QPSK Low Channel 1RB.gif



Band LTE12 5MHz QPSK Low Channel FRB.gif



Band LTE12 5MHz QPSK High Channel 1RB.gif



Band LTE12 5MHz QPSK High Channel FRB.gif

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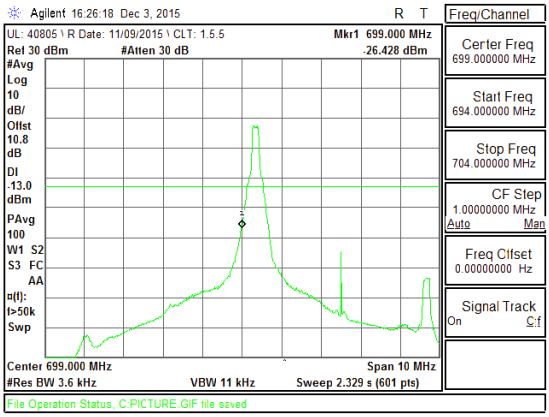
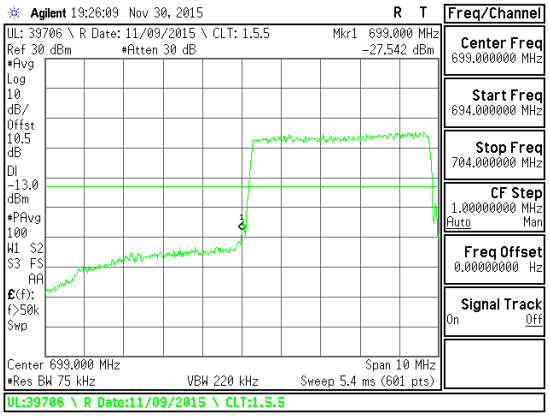
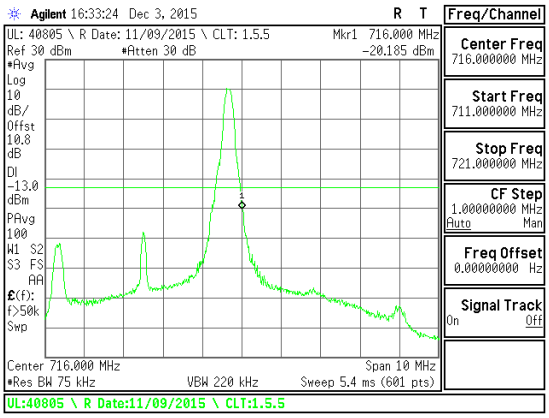


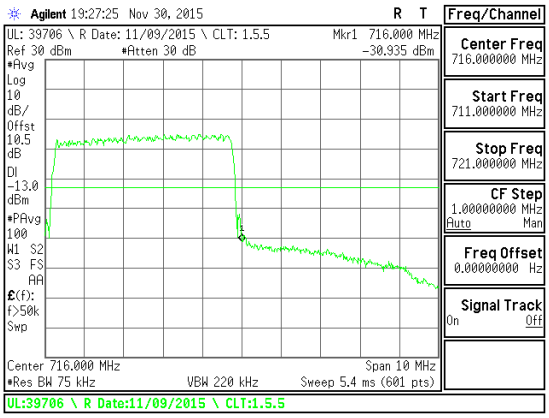
Band LTE12 5MHz 16QAM Low Channel 1RB.gif



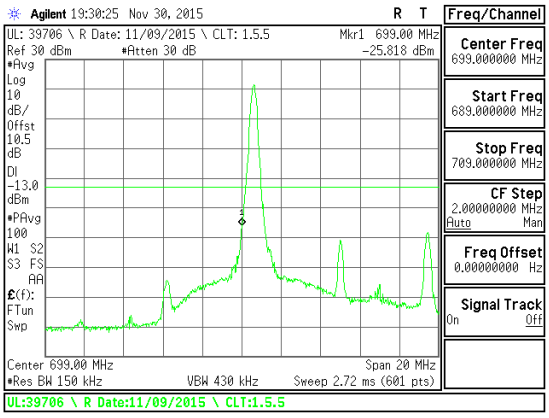
Band LTE12 5MHz 16QAM Low Channel FRB.gif



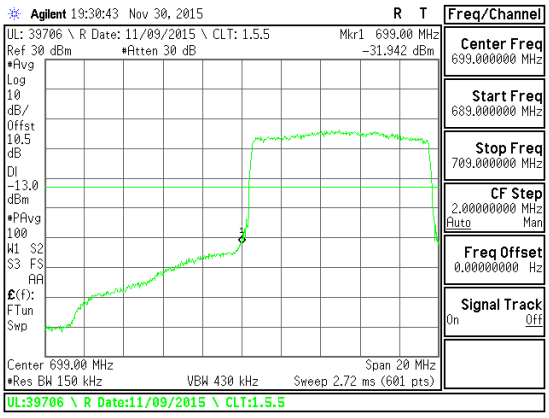
Band LTE12 5MHz 16QAM High Channel 1RB.gif



Band LTE12 5MHz 16QAM High Channel FRB.gif



Band LTE12 10MHz QPSK Low Channel 1RB.gif



Band LTE12 10MHz QPSK Low Channel FRB.gif

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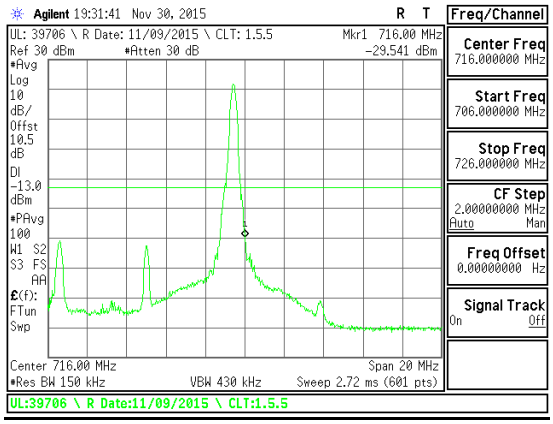
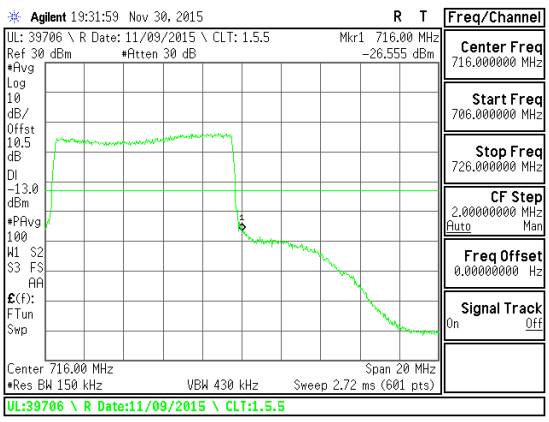
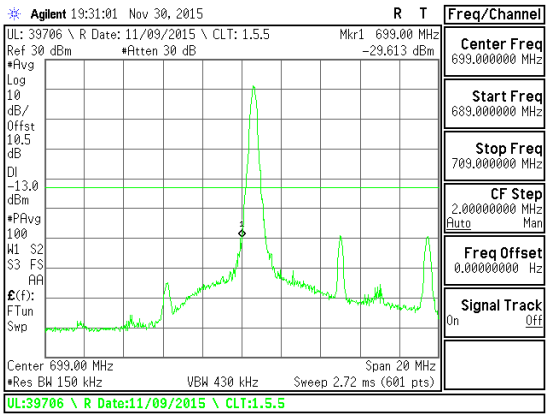


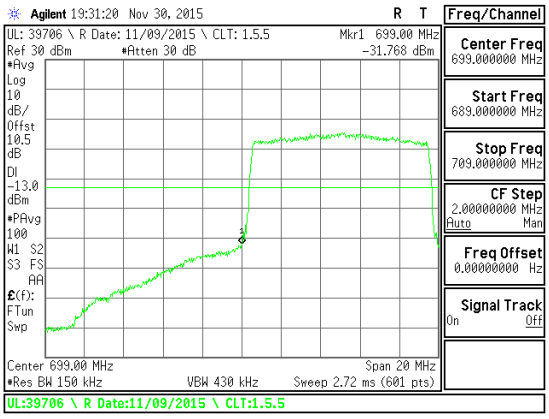
Band LTE12 10MHz QPSK High Channel 1RB.gif



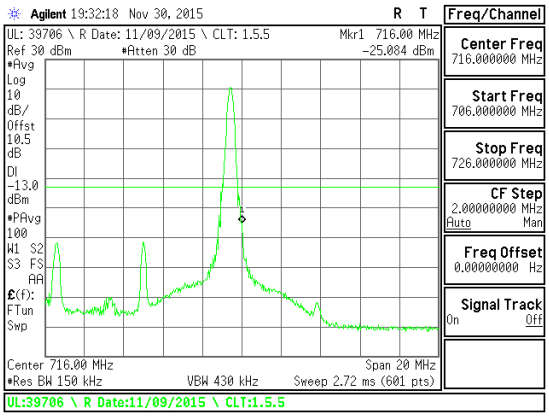
Band LTE12 10MHz QPSK High Channel FRB.gif



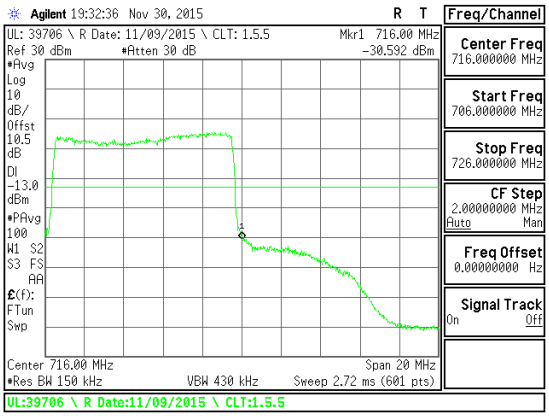
Band LTE12 10MHz 16QAM Low Channel 1RB.gif



Band LTE12 10MHz 16QAM Low Channel FRB.gif



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



Band LTE12 10MHz 16QAM High Channel FRB.gif

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12. OUT OF BAND EMISSIONS

RULE PART(S)

FCC: §2.1051, §22.901, §22.917, §24.238, §27.53

LIMITS

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

TEST PROCEDURE

Per KDB 971168 D01 Power Meas License Digital Systems v02r02

The 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.

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12.1. OUT OF BAND EMISSIONS RESULTS AND PLOTS

GSM

Band	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
GSM 850	GPRS	824.2	-24.50	-13	-11.5
		836.6	-24.48	-13	-11.48
		848.8	-23.98	-13	-10.98
	EGPRS	824.2	-24.08	-13	-11.08
		836.6	-25.009	-13	-12.009
		848.8	-24.248	-13	-11.248
GSM 1900	GPRS	1850.2	-23.553	-13	-10.553
		1880	-23.539	-13	-10.539
		1909.8	-25.059	-13	-12.059
	EGPRS	1850.2	-24.694	-13	-11.694
		1880	-24.886	-13	-11.886
		1909.8	-24.859	-13	-11.859

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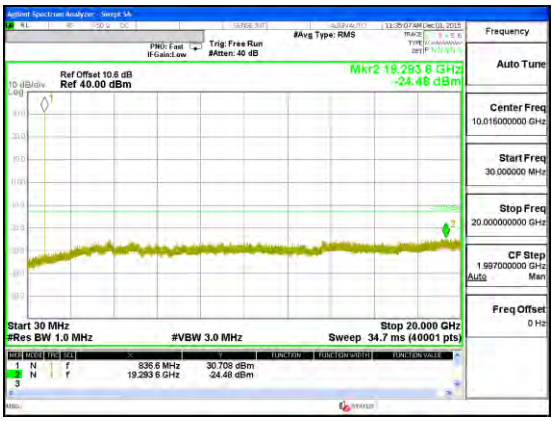
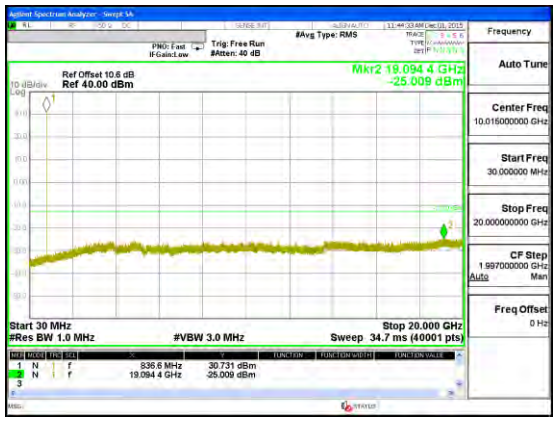


Band GSM850 GPRS CSE Mid channel



Band GSM850 EGPRS CSE Mid channel

Band GSM1900 GPRS CSE Mid channel

Band GSM1900 EGPRS CSE Mid channel

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WCDMA

Band	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
Band 2	REL99	1852.4	-23.314	-13	-10.314
		1880	-23.025	-13	-10.025
		1907.6	-23.069	-13	-10.069
	HSDPA	1852.4	-22.504	-13	-9.504
		1880	-23.217	-13	-10.217
		1907.6	-22.92	-13	-9.92
Band 4	REL99	1712.4	-23.195	-13	-10.195
		1732.6	-22.266	-13	-9.266
		1752.6	-22.928	-13	-9.928
	HSDPA	1712.4	-23.351	-13	-10.351
		1732.6	-23.188	-13	-10.188
		1752.6	-22.649	-13	-9.649
Band 5	REL99	826.4	-22.489	-13	-9.489
		836.6	-23.463	-13	-10.463
		846.6	-23.798	-13	-10.798
	HSDPA	826.4	-22.818	-13	-9.818
		836.6	-22.825	-13	-9.825
		846.6	-23.268	-13	-10.268

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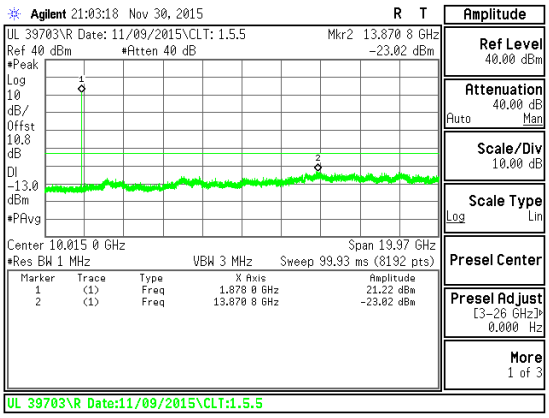
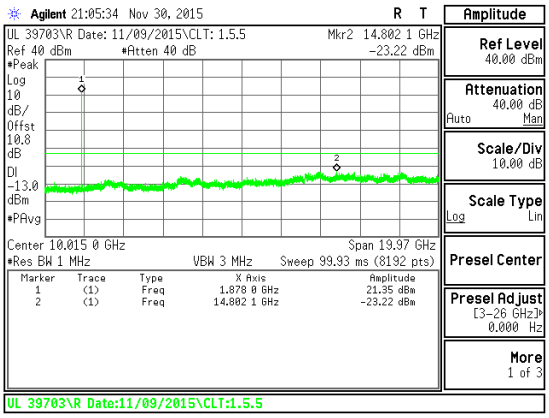
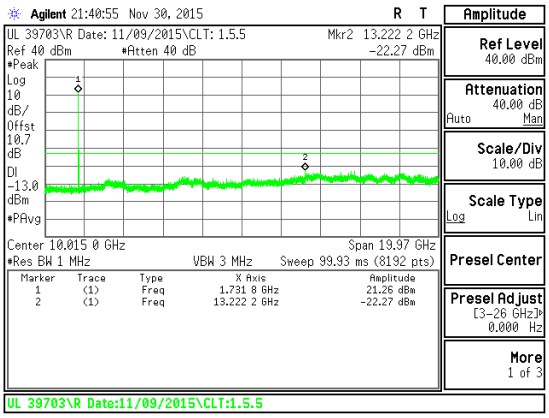


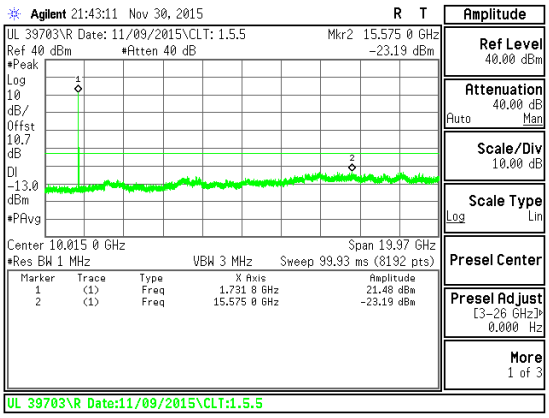
Band WCDMA B2 REL99 CSE Mid Channel



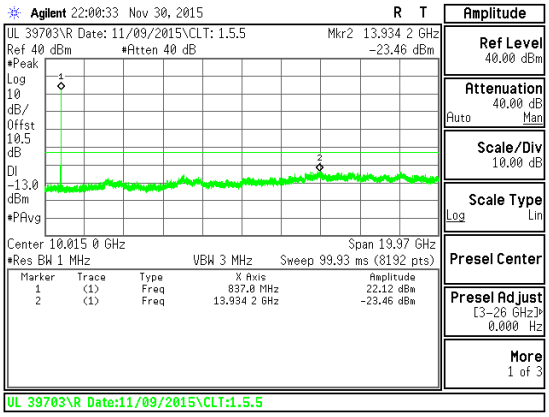
Band WCDMA B2 HSDPA CSE Mid Channel



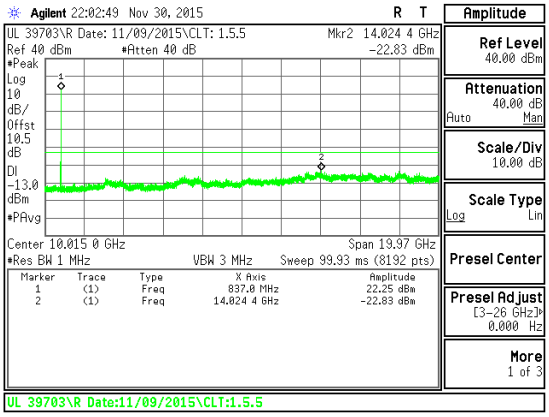
Band WCDMA B4 REL99 CSE Mid Channel



Band WCDMA B4 HSDPA CSE Mid Channel



Band WCDMA B5 REL99 CSE Mid Channel



Band WCDMA B5 HSDPA CSE Mid Channel

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LTE Band 2

BW(MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
1.4	QPSK	1850.7	-30.333	-13	-17.333
		1880	-30.151	-13	-17.151
		1909.3	-29.954	-13	-16.954
	16QAM	1850.7	-29.576	-13	-16.576
		1880	-30.31	-13	-17.31
		1909.3	-28.312	-13	-15.312
3	QPSK	1851.5	-29.973	-13	-16.973
		1880	-29.242	-13	-16.242
		1908.5	-29.386	-13	-16.386
	16QAM	1851.5	-30.371	-13	-17.371
		1880	-30.398	-13	-17.398
		1908.5	-29.113	-13	-16.113
5	QPSK	1852.5	-29.749	-13	-16.749
		1880	-30.949	-13	-17.949
		1907.5	-30.384	-13	-17.384
	16QAM	1852.5	-29.625	-13	-16.625
		1880	-30.894	-13	-17.894
		1907.5	-30.395	-13	-17.395
10	QPSK	1855	-30.125	-13	-17.125
		1880	-29.31	-13	-16.31
		1905	-30.08	-13	-17.08
	16QAM	1855	-28.32	-13	-15.32
		1880	-29.45	-13	-16.45
		1905	-30.46	-13	-17.46
15	QPSK	1857.5	-29.85	-13	-16.85
		1880	-30.6	-13	-17.6
		1902.5	-29.92	-13	-16.92
	16QAM	1857.5	-30.34	-13	-17.34
		1880	-30.67	-13	-17.67
		1902.5	-30.07	-13	-17.07
20	QPSK	1860	-29.88	-13	-16.88
		1880	-28.75	-13	-15.75
		1900	-29.55	-13	-16.55
	16QAM	1860	-30.17	-13	-17.17
		1880	-30.62	-13	-17.62
		1900	-29.27	-13	-16.27

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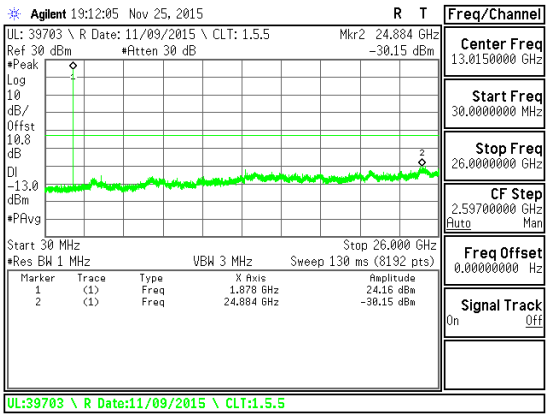
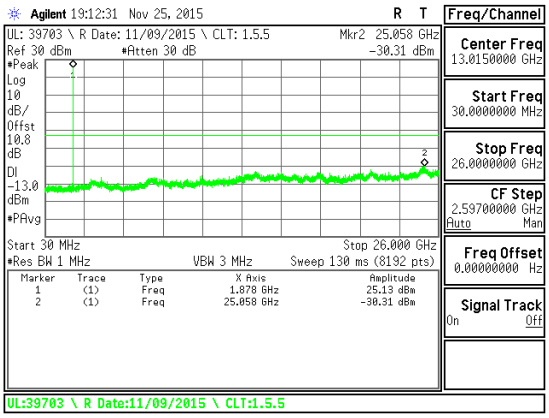
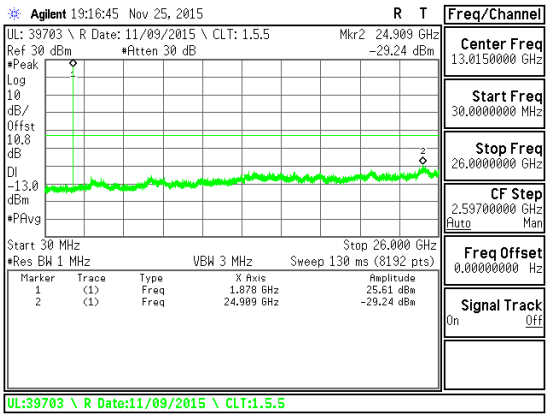


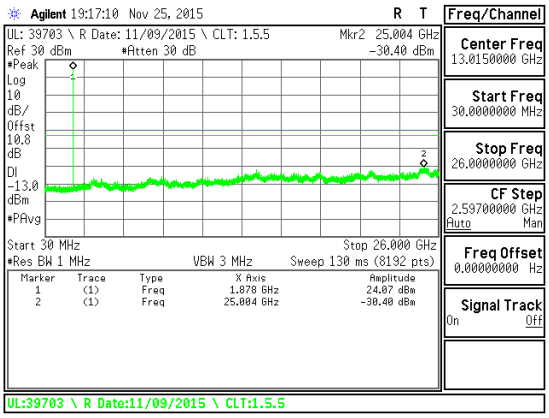
Band LTE2 1.4MHz CSE QPSK Mid channel



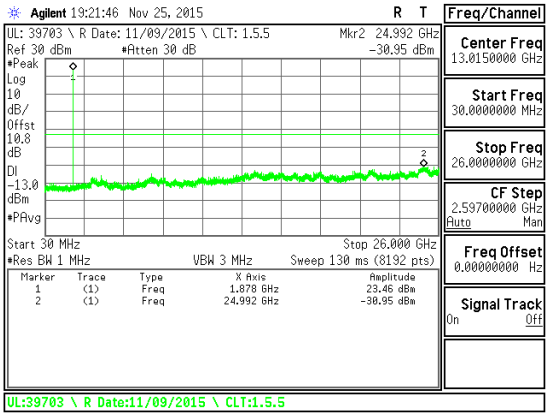
Band LTE2 1.4MHz CSE 16QAM Mid channel



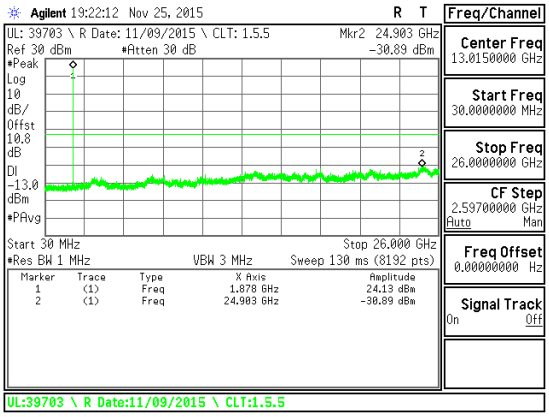
Band LTE2 3MHz CSE QPSK Mid channel



Band LTE2 3MHz CSE 16QAM Mid channel



Band LTE2 5MHz CSE QPSK Mid channel



Band LTE2 5MHz CSE 16QAM Mid channel

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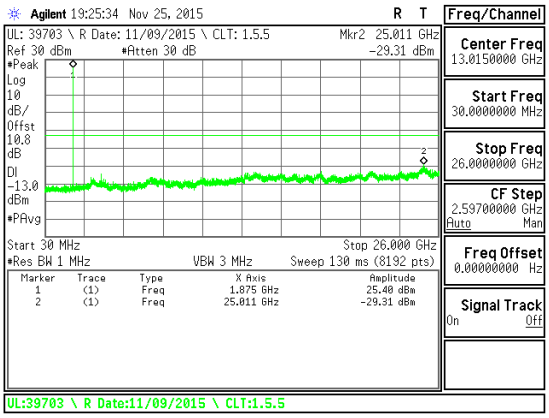
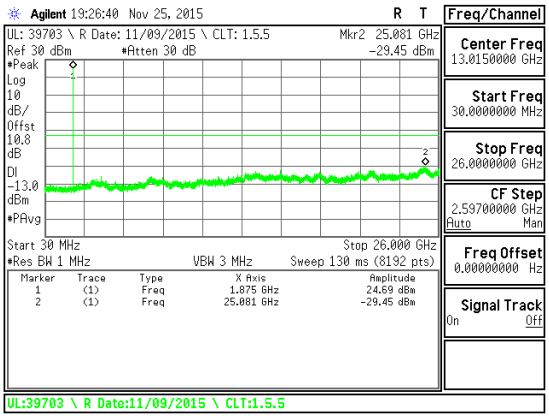
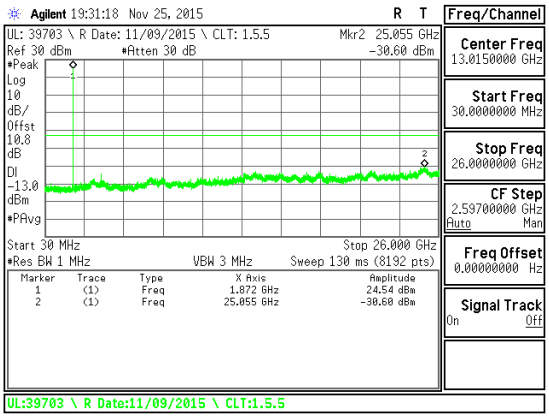


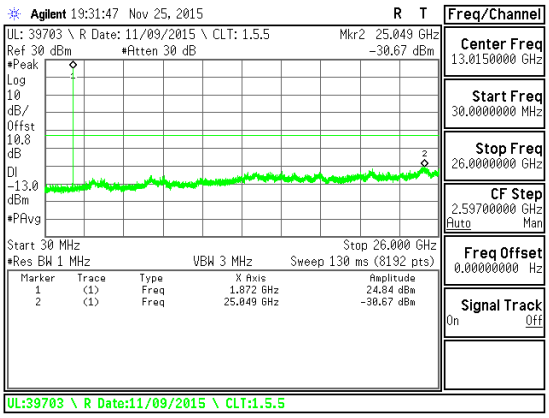
Band LTE2 10MHz CSE QPSK Mid channel



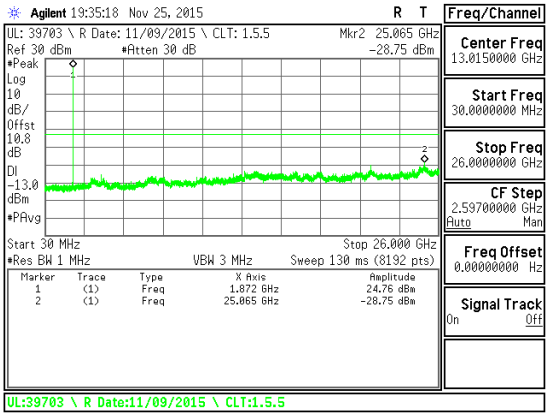
Band LTE2 10MHz CSE 16QAM Mid channel



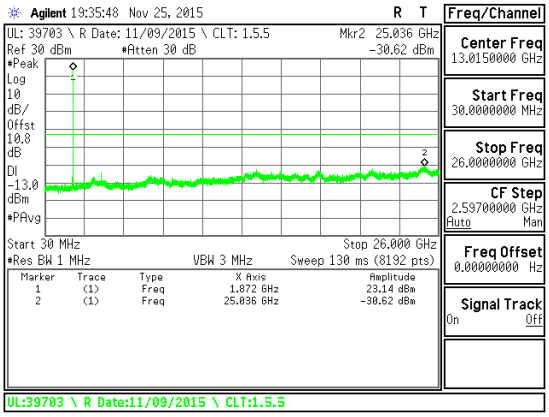
Band LTE2 15MHz CSE QPSK Mid channel



Band LTE2 15MHz CSE 16QAM Mid channel



Band LTE2 20MHz CSE QPSK Mid channel



Band LTE2 20MHz CSE 16QAM Mid channel

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LTE Band 4

BW(MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
1.4	QPSK	1710.7	-30.125	-13	-17.125
		1732.5	-31.149	-13	-18.149
		1754.3	-29.011	-13	-16.011
	16QAM	1710.7	-30.201	-13	-17.201
		1732.5	-30.426	-13	-17.426
		1754.3	-29.717	-13	-16.717
3	QPSK	1711.5	-30.492	-13	-17.492
		1732.5	-29.579	-13	-16.579
		1753.5	-29.996	-13	-16.996
	16QAM	1711.5	-29.8	-13	-16.8
		1732.5	-30.232	-13	-17.232
		1753.5	-30.046	-13	-17.046
5	QPSK	1712.5	-30.567	-13	-17.567
		1732.5	-30.409	-13	-17.409
		1752.5	-30.734	-13	-17.734
	16QAM	1712.5	-29.992	-13	-16.992
		1732.5	-30.028	-13	-17.028
		1752.5	-30.372	-13	-17.372
10	QPSK	1715	-30.19	-13	-17.19
		1732.5	-29.89	-13	-16.89
		1750	-30.21	-13	-17.21
	16QAM	1715	-30.263	-13	-17.263
		1732.5	-30.32	-13	-17.32
		1750	-30.15	-13	-17.15
15	QPSK	1717.5	-30.12	-13	-17.12
		1732.5	-30.27	-13	-17.27
		1747.5	-29.99	-13	-16.99
	16QAM	1717.5	-29.91	-13	-16.91
		1732.5	-29.18	-13	-16.18
		1747.5	-30.22	-13	-17.22
20	QPSK	1720	-30.18	-13	-17.18
		1732.5	-30.72	-13	-17.72
		1745	-30.42	-13	-17.42
	16QAM	1720	-29.83	-13	-16.83
		1732.5	-30.33	-13	-17.33
		1745	-29.98	-13	-16.98

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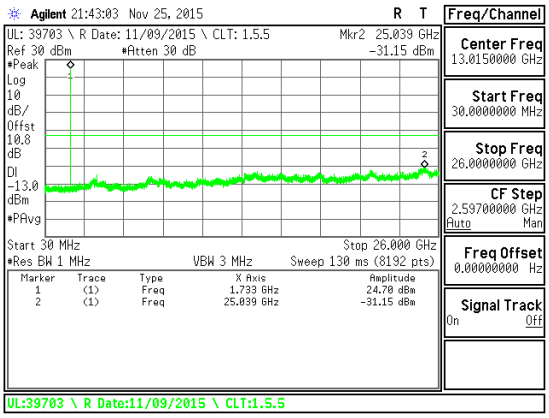
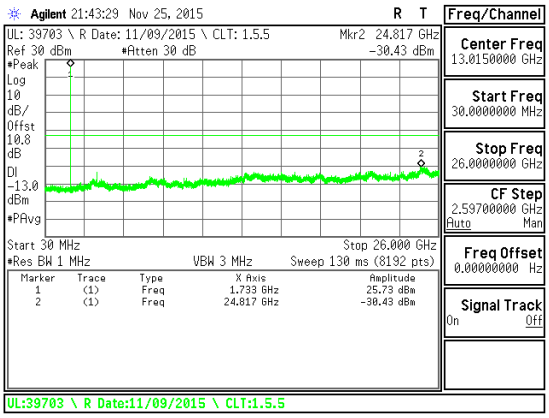
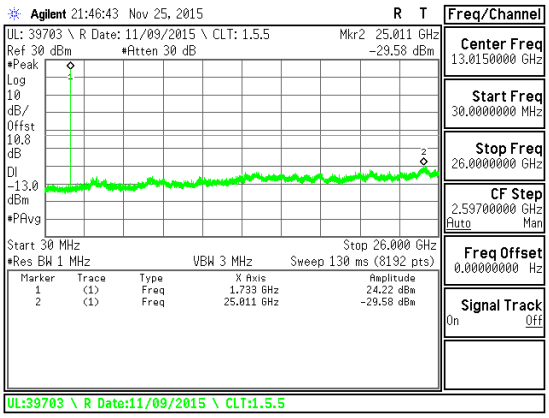


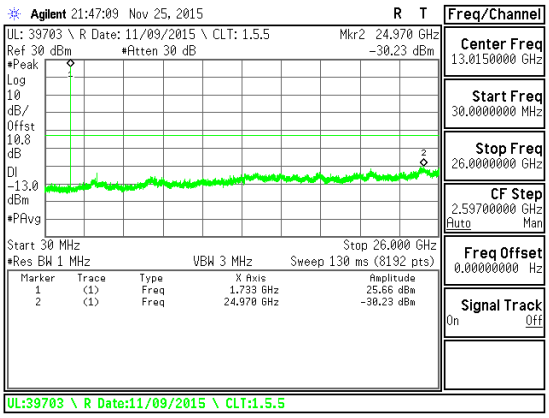
Band LTE4 1.4MHz CSE QPSK Mid channel



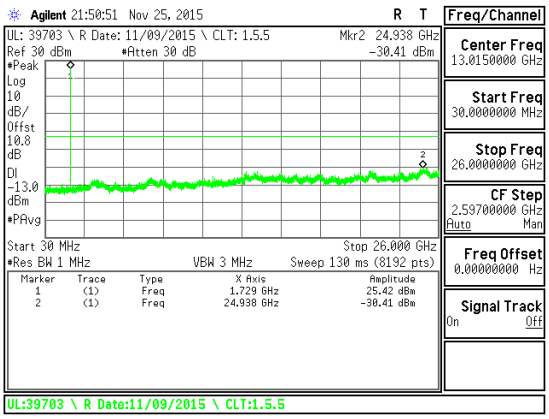
Band LTE4 1.4MHz CSE 16QAM Mid channel



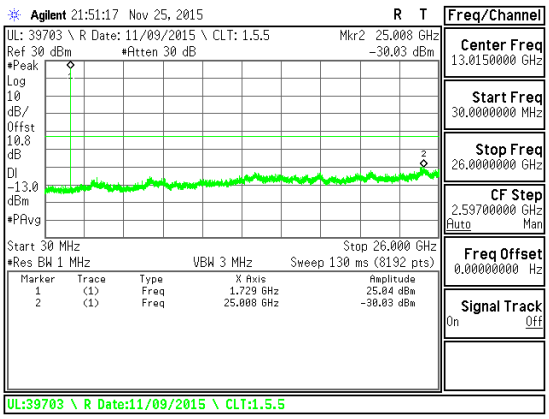
Band LTE4 3MHz CSE QPSK Mid channel



Band LTE4 3MHz CSE 16QAM Mid channel



Band LTE4 5MHz CSE QPSK Mid channel



Band LTE4 5MHz CSE 16QAM Mid channel

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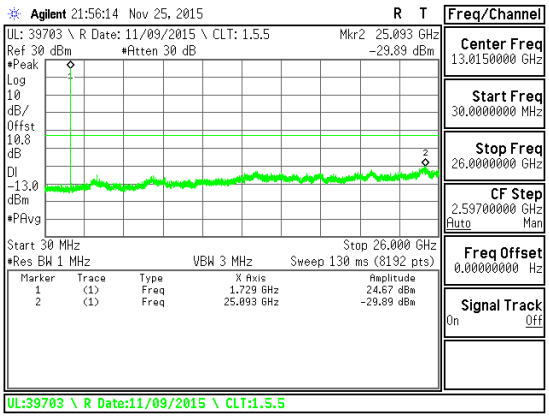
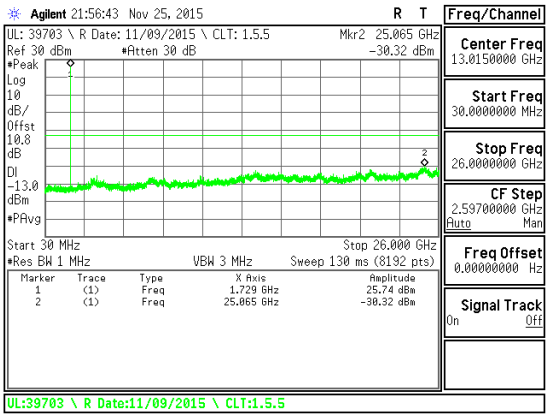
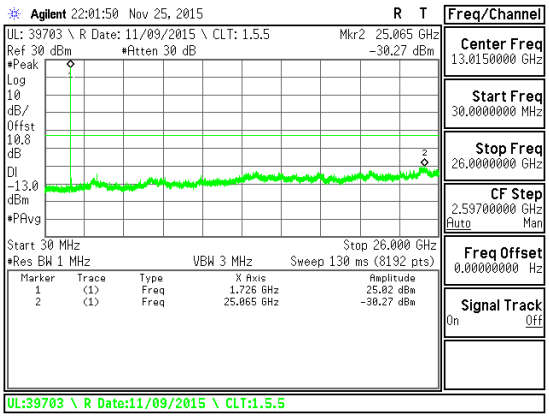


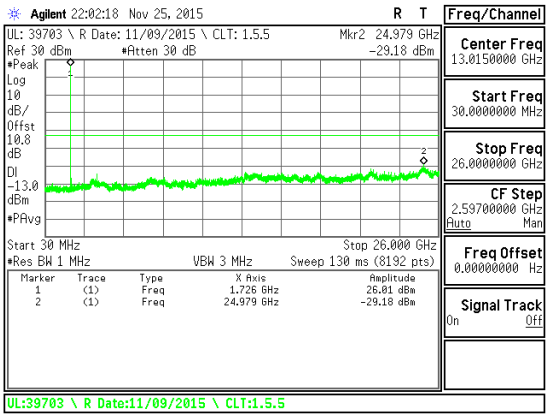
Band LTE4 10MHz CSE QPSK Mid channel



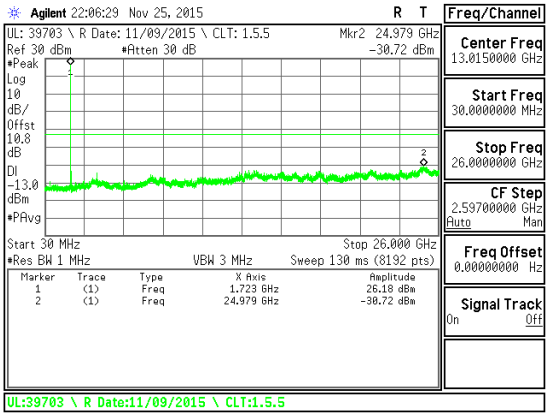
Band LTE4 10MHz CSE 16QAM Mid channel



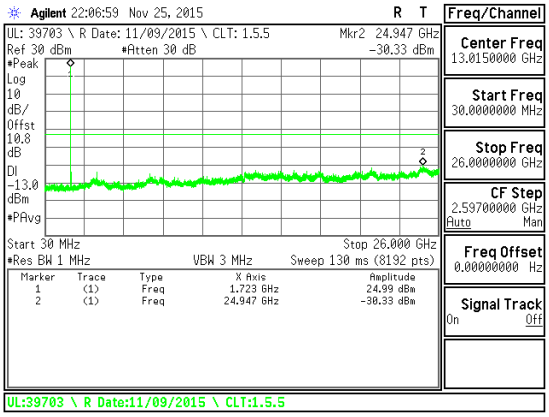
Band LTE4 15MHz CSE QPSK Mid channel



Band LTE4 15MHz CSE 16QAM Mid channel



Band LTE4 20MHz CSE QPSK Mid channel



Band LTE4 20MHz CSE 16QAM Mid channel

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LTE Band 5

BW(MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
1.4	QPSK	824.7	-31.133	-13	-18.133
		836.5	-30.021	-13	-17.021
		848.3	-30.828	-13	-17.828
	16QAM	824.7	-29.616	-13	-16.616
		836.5	-30.605	-13	-17.605
		848.3	-30.641	-13	-17.641
3	QPSK	825.5	-30.213	-13	-17.213
		836.5	-29.924	-13	-16.924
		847.5	-29.769	-13	-16.769
	16QAM	825.5	-30.473	-13	-17.473
		836.5	-29.652	-13	-16.652
		847.5	-30.796	-13	-17.796
5	QPSK	826.5	-30.968	-13	-17.968
		836.5	-30.703	-13	-17.703
		846.5	-30.224	-13	-17.224
	16QAM	826.5	-30.63	-13	-17.63
		836.5	-29.822	-13	-16.822
		846.5	-30.593	-13	-17.593
10	QPSK	829	-30.61	-13	-17.61
		836.5	-30.88	-13	-17.88
		844	-29.89	-13	-16.89
	16QAM	829	-30.25	-13	-17.25
		836.5	-31.018	-13	-18.018
		844	-31.11	-13	-18.11

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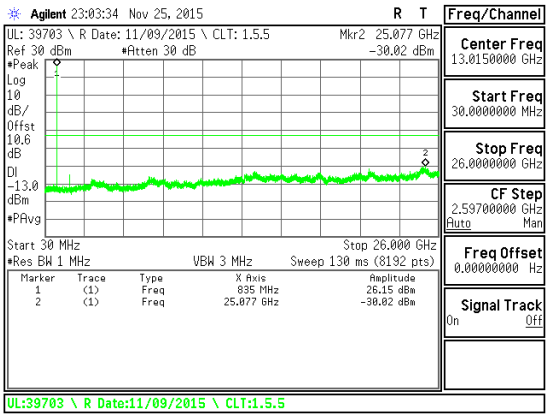
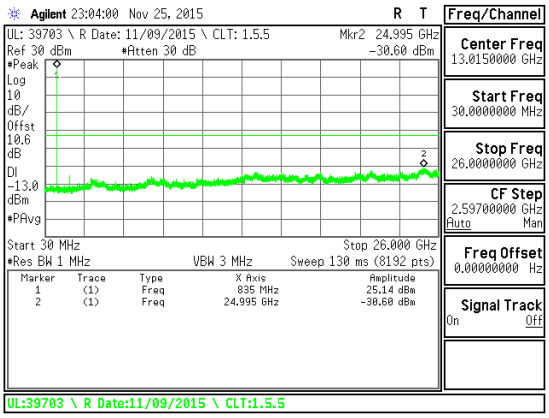
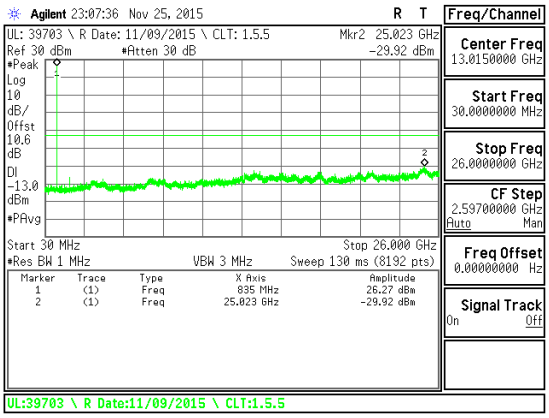


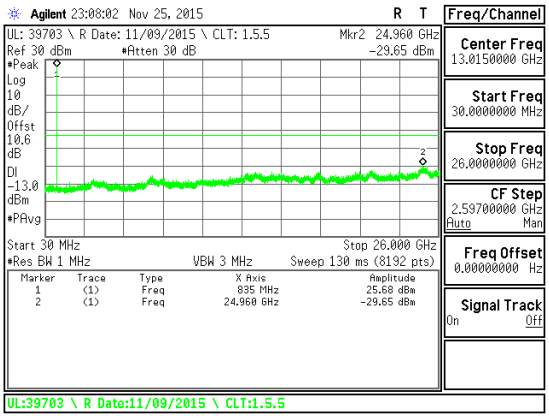
Band LTE5 1.4MHz CSE QPSK Mid channel



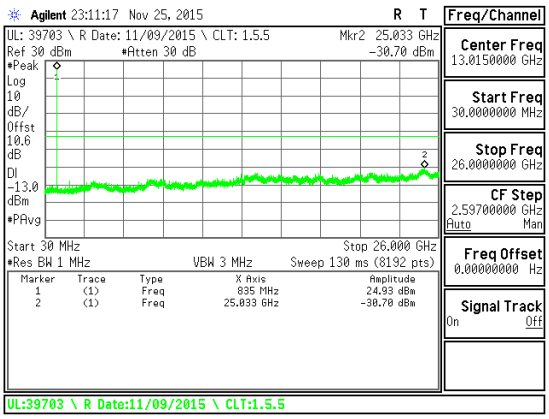
Band LTE5 1.4MHz CSE 16QAM Mid channel



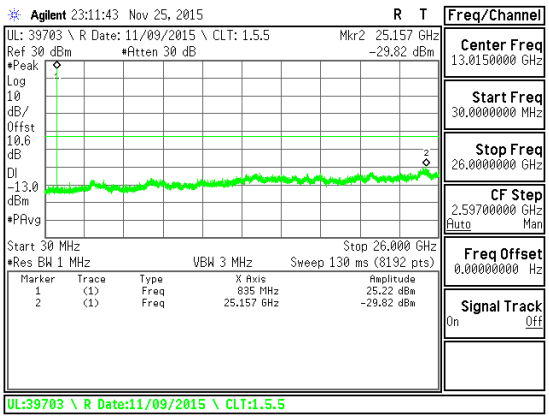
Band LTE5 3MHz CSE QPSK Mid channel



Band LTE5 3MHz CSE 16QAM Mid channel



Band LTE5 5MHz CSE QPSK Mid channel



Band LTE5 5MHz CSE 16QAM Mid channel

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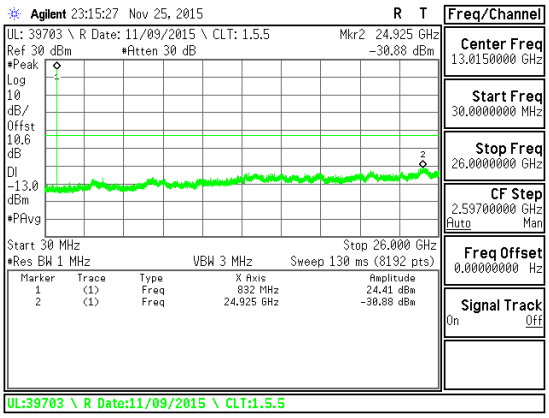
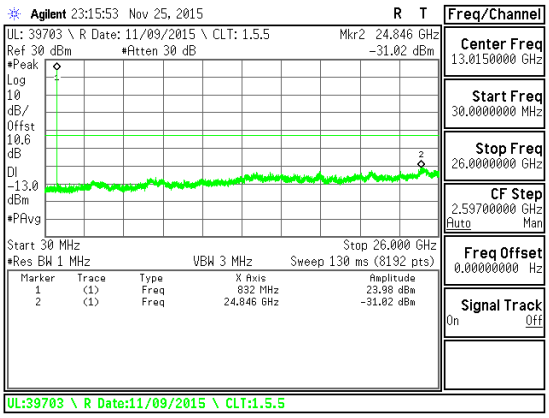


Band LTE5 10MHz CSE QPSK Mid channel



Band LTE5 10MHz CSE 16QAM Mid channel

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LTE Band 12

BW(MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
1.4	QPSK	699.7	-29.966	-13	-16.966
		707.5	-30.637	-13	-17.637
		715.3	-30.423	-13	-17.423
	16QAM	699.7	-30.708	-13	-17.708
		707.5	-30.357	-13	-17.357
		715.3	-30.626	-13	-17.626
3	QPSK	700.5	-29.634	-13	-16.634
		707.5	-29.42	-13	-16.42
		714.5	-30.944	-13	-17.944
	16QAM	700.5	-30.501	-13	-17.501
		707.5	-30.675	-13	-17.675
		714.5	-29.177	-13	-16.177
5	QPSK	701.5	-30.371	-13	-17.371
		707.5	-30.47	-13	-17.47
		713.5	-30.668	-13	-17.668
	16QAM	701.5	-30.858	-13	-17.858
		707.5	-30.839	-13	-17.839
		713.5	-30.114	-13	-17.114
10	QPSK	704	-29.62	-13	-16.62
		707.5	-30.46	-13	-17.46
		711	-30.52	-13	-17.52
	16QAM	704	-29.88	-13	-16.88
		707.5	-30.78	-13	-17.78
		711	-30.06	-13	-17.06

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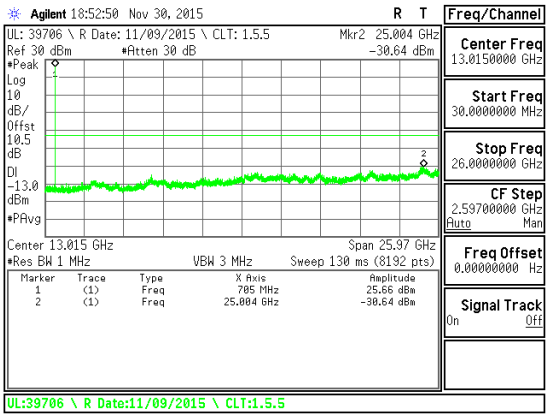
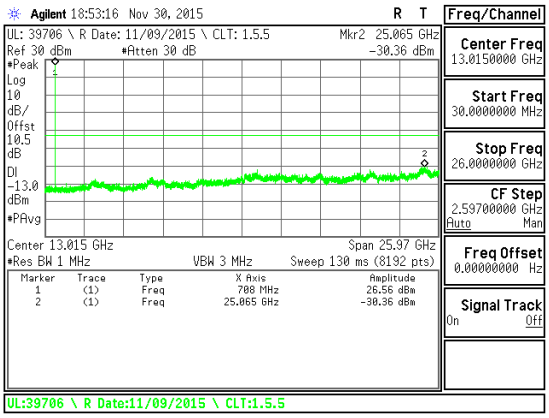
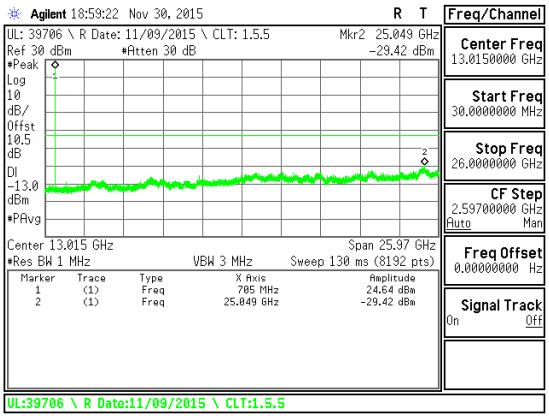


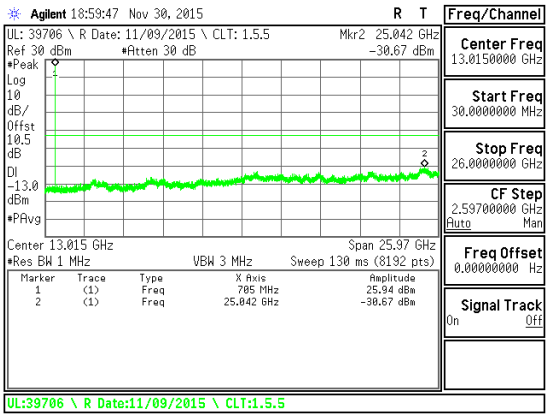
Band LTE12 1.4MHz CSE QPSK Mid channel



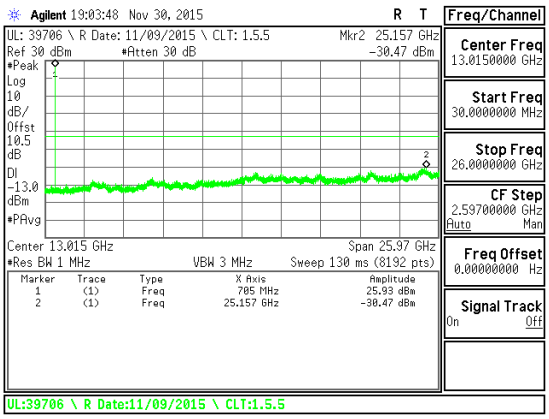
Band LTE12 1.4MHz CSE 16QAM Mid channel



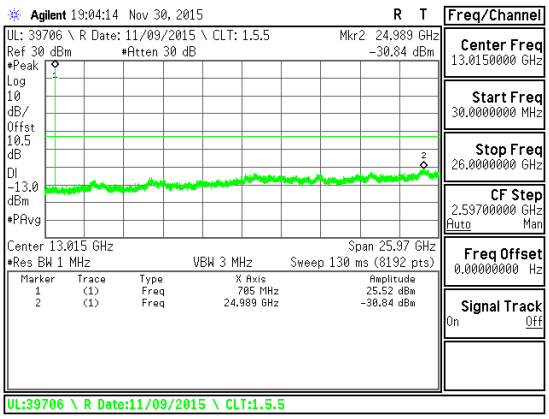
Band LTE12 3MHz CSE QPSK Mid channel



Band LTE12 3MHz CSE 16QAM Mid channel



Band LTE12 5MHz CSE QPSK Mid channel



Band LTE12 5MHz CSE 16QAM Mid channel

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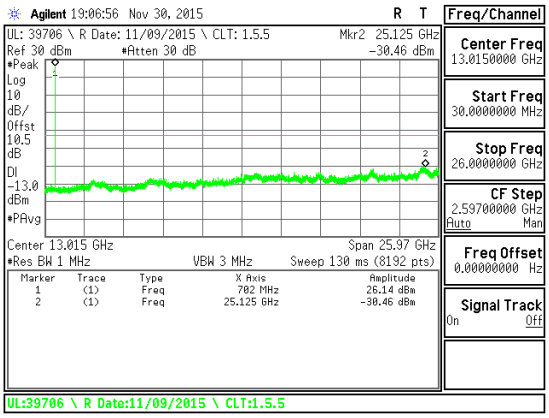
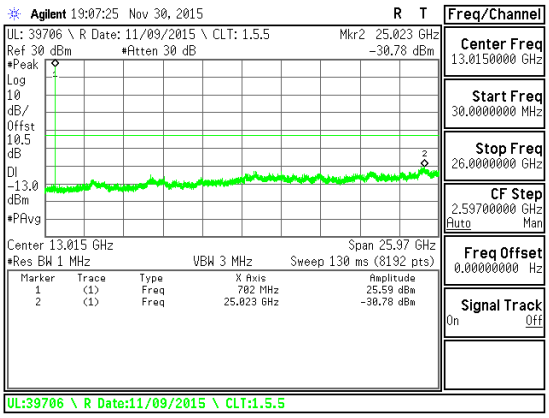


Band LTE12 10MHz CSE QPSK Mid channel



Band LTE12 10MHz CSE 16QAM Mid channel

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13. FREQUENCY STABILITY

RULE PART(S)

FCC: §2.1055, §22.355, §24.235, §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

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13.1. FREQUENCY STABILITY RESULTS

GSM 850

Reference Frequency: Cell Mid Channel		836.6	MHz @ 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	836.600016	0.001	2.5
3.80	40	836.600016	0.001	2.5
3.80	30	836.600017	-0.001	2.5
3.80	***20***	**836.600017**	**0**	***2.5***
3.80	10	836.600020	-0.005	2.5
3.80	0	836.600022	-0.007	2.5
3.80	-10	836.600020	-0.004	2.5
3.80	-20	836.600021	-0.005	2.5
3.80	-30	836.600023	-0.008	2.5

Reference Frequency: PCS Mid Channel		836.6	MHz @ 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***	***836.600017***	***0***	***2.5***
4.37	20	836.6000243	*-0.009*	2.5
3.23(End of volt)	20	836.60003	*-0.016*	2.5

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GSM 1900

Reference Frequency: PCS Mid Channel 1880 MHz @ 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	1880.000000	0.011	2.5
3.80	40	1880.000048	-0.014	2.5
3.80	30	1880.000036	-0.008	2.5
3.80	***20***	**1880.000021**	**0**	***2.5***
3.80	10	1880.000031	-0.005	2.5
3.80	0	1880.000033	-0.006	2.5
3.80	-10	1880.000032	-0.006	2.5
3.80	-20	1880.000027	-0.003	2.5
3.80	-30	1880.000034	-0.007	2.5

Reference Frequency: PCS Mid Channel 1880 MHz @ 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***	***1880.000021***	***0***	***2.5***
4.37	20	1880.00004	*-0.010*	2.5
3.23(End of volt)	20	1880.000036	*-0.008*	2.5

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LTE Band 4

Reference Frequency: PCS Mid Channel 1732.5 MHz @ 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	1732.500004	0.000	2.5
3.80	40	1732.500004	0.000	2.5
3.80	30	1732.500004	0.000	2.5
3.80	***20***	**1732.500004**	**0**	***2.5***
3.80	10	1732.500004	0.000	2.5
3.80	0	1732.499997	0.004	2.5
3.80	-10	1732.499996	0.005	2.5
3.80	-20	1732.499996	0.004	2.5
3.80	-30	1732.499997	0.004	2.5

Reference Frequency: PCS Mid Channel 1732.5 MHz @ 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***
4.37	20	1732.500004	*0.000*	2.5
3.23(End of volt)	20	1732.500005	*0.000*	2.5

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LTE Band 12

Reference Frequency: PCS 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	50	707.500004	0.001	2.5
3.80	40	707.500004	0.000	2.5
3.80	30	707.500004	0.000	2.5
3.80	***20***	**707.500004**	**0**	***2.5***
3.80	10	707.500004	0.000	2.5
3.80	0	707.499997	0.011	2.5
3.80	-10	707.499996	0.011	2.5
3.80	-20	707.499996	0.011	2.5
3.80	-30	707.499997	0.010	2.5

Reference Frequency: PCS 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***	***707.500004***	***0***	***2.5***
4.37	20	707.5000043	*0.000*	2.5
3.23(End of volt)	20	707.5000049	*-0.001*	2.5

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14. RADIATED TEST RESULTS

14.1. RADIATED POWER (ERP & EIRP)

RULE PART(S)

FCC: §2.1046, §22.913, §24.232, §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 (b) - (10) Portable stations (handheld devices) transmitting in the 746-757 MHz, 776-788 MHz, and 805-806 MHz bands are limited to 3 watts ERP. (LTE B13)

27.50 (c) - (10) Portable stations (handheld devices) are limited to 3 watts ERP; (LTE B17)

27.50 (d) - (4) Fixed, mobile, and portable (handheld) 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.

TEST PROCEDURE

ANSI / TIA / EIA 603D Clause 2.2.17; PSA setting reference to 971168 D01 v02r02

For peak power measurement with a PSA:

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

For average power measurement with a PSA:

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

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14.1.1. ERP/EIRP RESULTS AND TABLE

GSM

Band	Mode	Channel	f(MHz)	ERP/EIRP	
				dBm	mW
GSM850	GPRS	128	824.2	30.36	1086.43
		190	836.6	29.30	851.14
		251	848.8	29.10	812.83
	EGPRS	128	824.2	26.00	398.11
		190	836.6	25.00	316.23
		251	848.8	24.70	295.12
GSM1900	GPRS	512	1850.2	31.60	1445.44
		661	1880	29.60	912.01
		810	1909.8	31.13	1297.18
	EGPRS	512	1850.2	28.30	676.08
		661	1880.0	26.30	426.58
		810	1909.8	27.80	602.56

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GSM850 GPRS

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG Electronics
Project #: 16I22670
Date: 1/25/2016
Test Engineer: Jude Semana
Configuration: X-pos EUT Only
Location: Chamber C
Mode: GPRS 850 MHz Fundamentals

Test Equipment:
Receiving: Hybrid T185, and Chamber C SMA Cables
Substitution: Dipole T416, 6ft N Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
824.20	22.60	V	0.9	0.0	21.70	38.5	-16.8	
824.20	31.26	H	0.9	0.0	30.36	38.5	-8.1	
Mid Ch								
836.60	21.40	V	0.9	0.0	20.50	38.5	-18.0	
836.60	30.20	H	0.9	0.0	29.30	38.5	-9.2	
High Ch								
848.80	21.90	V	0.9	0.0	21.00	38.5	-17.5	
848.80	30.00	H	0.9	0.0	29.10	38.5	-9.4	

GSM850 EGPRS

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG Electronics
Project #: 16I22670
Date: 1/25/2016
Test Engineer: Jude Semana
Configuration: X-pos EUT Only
Location: Chamber C
Mode: EGPRS 850 MHz Fundamentals

Test Equipment:
Receiving: Hybrid T185, and Chamber C SMA Cables
Substitution: Dipole T416, 6ft N Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
824.20	17.10	V	0.9	0.0	16.20	38.5	-22.3	
824.20	26.90	H	0.9	0.0	26.00	38.5	-12.5	
Mid Ch								
836.60	16.20	V	0.9	0.0	15.30	38.5	-23.2	
836.60	25.90	H	0.9	0.0	25.00	38.5	-13.5	
High Ch								
848.80	17.00	V	0.9	0.0	16.10	38.5	-22.4	
848.80	25.60	H	0.9	0.0	24.70	38.5	-13.8	

GSM1900 GPRS

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG Electronics
Project #: 16I22670
Date: 1/25/2016
Test Engineer: Jude Semana
Configuration: EUT Only (X-Position)
Location: Chamber C
Mode: GPRS 1900 MHz Fundamentals

Test Equipment:
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								
1850.20	21.40	V	0.9	8.6	29.10	33.0	-3.9	
1850.20	23.90	H	0.9	8.6	31.60	33.0	-1.4	
Mid Ch								
1880.00	19.60	V	0.9	8.6	27.30	33.0	-5.7	
1880.00	21.90	H	0.9	8.6	29.60	33.0	-3.4	
High Ch								
1909.80	21.30	V	0.9	8.6	29.00	33.0	-4.0	
1909.80	23.43	H	0.9	8.6	31.13	33.0	-1.9	

GSM1900 EGPRS

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG Electronics
Project #: 16I22670
Date: 1/25/2016
Test Engineer: Jude Semana
Configuration: EUT Only (X-Position)
Location: Chamber C
Mode: EGPRS 1900 MHz Fundamentals

Test Equipment:
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								
1850.20	18.20	V	0.9	8.6	25.90	33.0	-7.1	
1850.20	20.60	H	0.9	8.6	28.30	33.0	-4.7	
Mid Ch								
1880.00	16.20	V	0.9	8.6	23.90	33.0	-9.1	
1880.00	18.60	H	0.9	8.6	26.30	33.0	-6.7	
High Ch								
1909.80	17.80	V	0.9	8.6	25.50	33.0	-7.5	
1909.80	20.10	H	0.9	8.6	27.80	33.0	-5.2	

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WCDMA

Band	Mode	Channel	f(MHz)	ERP/EIRP	
				dBm	mW
Band 2	REL99	9262	1852.4	24.20	263.03
		9400	1880	24.92	310.46
		9538	1907.6	23.93	247.17
	HSDPA	9262	1852.4	24.17	261.22
		9400	1880.0	24.62	289.73
		9538	1907.6	23.83	241.55
Band 4	REL99	1312	1712.4	23.16	207.01
		1413	1732.6	23.21	209.41
		1513	1752.6	23.16	207.01
	HSDPA	1312	1712.4	23.15	206.54
		1413	1732.6	23.77	238.23
		1513	1752.6	23.25	211.35
Band 5	REL99	4132	826.4	22.29	169.43
		4183	836.6	21.91	155.24
		4233	846.6	22.07	161.06
	HSDPA	4132	826.4	22.40	173.78
		4183	836.6	22.10	162.18
		4233	846.6	22.20	165.96

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B2 REL99

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG Electronics
Project #: 16I22670
Date: 1/23/2016
Test Engineer: R.Alegre
Configuration: EUT only X postion
Location: Chamber C
Mode: Rel99 Band 2 Fundamentals

Test Equipment:
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								
1852.40	10.51	V	0.9	8.6	18.21	33.0	-14.8	
1852.40	16.50	H	0.9	8.6	24.20	33.0	-8.8	
Mid Ch								
1880.00	10.66	V	0.9	8.6	18.37	33.0	-14.6	
1880.00	17.21	H	0.9	8.6	24.92	33.0	-8.1	
High Ch								
1907.60	10.84	V	0.9	8.6	18.56	33.0	-14.4	
1907.60	16.21	H	0.9	8.6	23.93	33.0	-9.1	

B2 HSDPA

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG Electronics
Project #: 16I22670
Date: 1/23/2016
Test Engineer: R.Alegre
Configuration: EUT only X postion
Location: Chamber C
Mode: HSDPA Band 2 Fundamentals

Test Equipment:
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								
1852.40	10.53	V	0.9	8.6	18.23	33.0	-14.8	
1852.40	16.47	H	0.9	8.6	24.17	33.0	-8.8	
Mid Ch								
1880.00	10.60	V	0.9	8.6	18.31	33.0	-14.7	
1880.00	16.91	H	0.9	8.6	24.62	33.0	-8.4	
High Ch								
1907.60	10.80	V	0.9	8.6	18.52	33.0	-14.5	
1907.60	16.11	H	0.9	8.6	23.83	33.0	-9.2	

B4 REL99

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG Electronics
Project #: 16I22670
Date: 1/23/2016
Test Engineer: R.Alegre
Configuration: EUT only
Location: Chamber C
Mode: Rel99 Band 4 Fundamentals

Test Equipment:
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								
1712.40	9.52	V	0.9	8.7	17.37	30.0	-12.6	
1712.40	15.32	H	0.9	8.7	23.16	30.0	-6.8	
Mid Ch								
1732.60	9.66	V	0.9	8.7	17.47	30.0	-12.5	
1732.60	15.40	H	0.9	8.7	23.21	30.0	-6.8	
High Ch								
1752.60	10.34	V	0.9	8.7	18.11	30.0	-11.9	
1752.60	15.39	H	0.9	8.7	23.16	30.0	-6.8	

B4 HSDPA

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG Electronics
Project #: 16I22670
Date: 1/23/2016
Test Engineer: R.Alegre
Configuration: EUT only
Location: Chamber C
Mode: HSDPA Band 4 Fundamentals

Test Equipment:
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								
1712.40	9.57	V	0.9	8.7	17.42	30.0	-12.6	
1712.40	15.31	H	0.9	8.7	23.15	30.0	-6.8	
Mid Ch								
1732.60	10.15	V	0.9	8.7	17.96	30.0	-12.0	
1732.60	15.96	H	0.9	8.7	23.77	30.0	-6.2	
High Ch								
1752.60	10.36	V	0.9	8.7	18.13	30.0	-11.9	
1752.60	15.48	H	0.9	8.7	23.25	30.0	-6.7	

B5 REL99

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG Electronics
Project #: 16I22670
Date: 1/27/2016
Test Engineer: Jude Semana
Configuration: X-pos EUT Only
Location: Chamber C
Mode: Rel99 Band 5 Fundamentals

Test Equipment:
Receiving: Hybrid T185, and Chamber C SMA Cables
Substitution: Dipole T416, 6ft N Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
826.40	14.40	V	0.9	0.0	13.50	38.5	-25.0	
826.40	23.19	H	0.9	0.0	22.29	38.5	-16.2	
Mid Ch								
836.60	13.50	V	0.9	0.0	12.60	38.5	-25.9	
836.60	22.81	H	0.9	0.0	21.91	38.5	-16.6	
High Ch								
846.60	13.80	V	0.9	0.0	12.90	38.5	-25.6	
846.60	22.97	H	0.9	0.0	22.07	38.5	-16.4	

B5 HSDPA

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG Electronics
Project #: 16I22670
Date: 1/27/2016
Test Engineer: Jude Semana
Configuration: X-pos EUT Only
Location: Chamber C
Mode: HSDPA Band 5 Fundamentals

Test Equipment:
Receiving: Hybrid T185, and Chamber C SMA Cables
Substitution: Dipole T416, 6ft N Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
826.40	14.50	V	0.9	0.0	13.60	38.5	-24.9	
826.40	23.30	H	0.9	0.0	22.40	38.5	-16.1	
Mid Ch								
836.60	13.80	V	0.9	0.0	12.90	38.5	-25.6	
836.60	23.00	H	0.9	0.0	22.10	38.5	-16.4	
High Ch								
846.60	13.80	V	0.9	0.0	12.90	38.5	-25.6	
846.60	23.10	H	0.9	0.0	22.20	38.5	-16.3	

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LTE Band 2

BW (MHz)	Mode	RB/RB Size	f(MHz)	EIRP	
				dBm	mW
1.4	QPSK	1/0	1850.7	25.63	365.59
		1/0	1880	25.32	340.41
		1/0	1909.3	25.69	370.68
	16QAM	1/0	1850.7	24.87	306.90
		1/0	1880	24.37	273.53
		1/0	1909.3	25.13	325.84
3	QPSK	1/0	1851.5	25.62	364.75
		1/0	1880	25.35	342.77
		1/0	1908.5	25.72	373.25
	16QAM	1/0	1851.5	24.84	304.79
		1/0	1880	24.38	274.16
		1/0	1908.5	25.10	323.59
5	QPSK	1/0	1852.5	25.60	363.08
		1/0	1880	25.18	329.61
		1/0	1907.5	25.64	366.44
	16QAM	1/0	1852.5	24.84	304.79
		1/0	1880	24.37	273.53
		1/0	1907.5	25.07	321.37
10	QPSK	1/0	1855	25.48	353.18
		1/0	1880	25.28	337.29
		1/0	1905	25.75	375.84
	16QAM	1/0	1855	24.92	310.46
		1/0	1880	24.31	269.77
		1/0	1905	25.09	322.85
15	QPSK	1/0	1857.5	25.45	350.75
		1/0	1880	25.28	337.29
		1/0	1902.5	25.78	378.44
	16QAM	1/0	1857.5	24.80	302.00
		1/0	1880	24.41	276.06
		1/0	1902.5	24.88	307.61
20	QPSK	1/0	1860	25.35	342.77
		1/0	1880	25.24	334.20
		1/0	1900	25.77	377.57
	16QAM	1/0	1860	24.70	295.12
		1/0	1880	24.28	267.92
		1/0	1900	24.85	305.49

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1.4MHz QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG Electronics
Project #: 16I22670
Date: 1/23/2016
Test Engineer: R.Alegre
Configuration: EUT only X postion
Location: Chamber C
Mode: LTE_QPSK Band 2 Fundamentals, 1.4MHz Bandwidth

Test Equipment:
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								
1850.70	12.20	V	0.9	8.6	19.90	33.0	-13.1	
1850.70	17.93	H	0.9	8.6	25.63	33.0	-7.4	
Mid Ch								
1880.00	12.25	V	0.9	8.6	19.96	33.0	-13.0	
1880.00	17.61	H	0.9	8.6	25.32	33.0	-7.7	
High Ch								
1909.30	12.20	V	0.9	8.6	19.92	33.0	-13.1	
1909.30	17.97	H	0.9	8.6	25.69	33.0	-7.3	

1.4MHz 16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG Electronics
Project #: 16I22670
Date: 1/23/2016
Test Engineer: R.Alegre
Configuration: EUT only X postion
Location: Chamber C
Mode: LTE_16QAM Band 2 Fundamentals, 1.4MHz Bandwidth

Test Equipment:
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								
1850.70	11.51	V	0.9	8.6	19.21	33.0	-13.8	
1850.70	17.17	H	0.9	8.6	24.87	33.0	-8.1	
Mid Ch								
1880.00	11.33	V	0.9	8.6	19.04	33.0	-14.0	
1880.00	16.66	H	0.9	8.6	24.37	33.0	-8.6	
High Ch								
1909.30	11.51	V	0.9	8.6	19.23	33.0	-13.8	
1909.30	17.41	H	0.9	8.6	25.13	33.0	-7.9	

3MHz QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG Electronics
Project #: 16I22670
Date: 1/23/2016
Test Engineer: R.Alegre
Configuration: EUT only X postion
Location: Chamber C
Mode: LTE_QPSK Band 2 Fundamentals, 3MHz Bandwidth

Test Equipment:
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								
1851.50	12.20	V	0.9	8.6	19.90	33.0	-13.1	
1851.50	17.92	H	0.9	8.6	25.62	33.0	-7.4	
Mid Ch								
1880.00	12.09	V	0.9	8.6	19.80	33.0	-13.2	
1880.00	17.64	H	0.9	8.6	25.35	33.0	-7.7	
High Ch								
1908.50	12.25	V	0.9	8.6	19.97	33.0	-13.0	
1908.50	18.00	H	0.9	8.6	25.72	33.0	-7.3	

3MHz 16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG Electronics
Project #: 16I22670
Date: 1/23/2016
Test Engineer: R.Alegre
Configuration: EUT only X postion
Location: Chamber C
Mode: LTE_16QAM Band 2 Fundamentals, 3MHz Bandwidth

Test Equipment:
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								
1851.50	11.55	V	0.9	8.6	19.25	33.0	-13.8	
1851.50	17.14	H	0.9	8.6	24.84	33.0	-8.2	
Mid Ch								
1880.00	11.18	V	0.9	8.6	18.89	33.0	-14.1	
1880.00	16.67	H	0.9	8.6	24.38	33.0	-8.6	
High Ch								
1908.50	11.58	V	0.9	8.6	19.30	33.0	-13.7	
1908.50	17.38	H	0.9	8.6	25.10	33.0	-7.9	

5MHz QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG Electronics
Project #: 16I22670
Date: 1/23/2016
Test Engineer: R.Alegre
Configuration: EUT only X postion
Location: Chamber C
Mode: LTE_QPSK Band 2 Fundamentals, 5MHz Bandwidth

Test Equipment:
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								
1852.50	12.17	V	0.9	8.6	19.87	33.0	-13.1	
1852.50	17.90	H	0.9	8.6	25.60	33.0	-7.4	
Mid Ch								
1880.00	12.03	V	0.9	8.6	19.74	33.0	-13.3	
1880.00	17.47	H	0.9	8.6	25.18	33.0	-7.8	
High Ch								
1907.50	12.16	V	0.9	8.6	19.88	33.0	-13.1	
1907.50	17.92	H	0.9	8.6	25.64	33.0	-7.4	

5MHz 16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG Electronics
Project #: 16I22670
Date: 1/23/2016
Test Engineer: R.Alegre
Configuration: EUT only X postion
Location: Chamber C
Mode: LTE_16QAM Band 2 Fundamentals, 5MHz Bandwidth

Test Equipment:
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								
1852.50	11.54	V	0.9	8.6	19.24	33.0	-13.8	
1852.50	17.14	H	0.9	8.6	24.84	33.0	-8.2	
Mid Ch								
1880.00	11.09	V	0.9	8.6	18.80	33.0	-14.2	
1880.00	16.66	H	0.9	8.6	24.37	33.0	-8.6	
High Ch								
1907.50	11.44	V	0.9	8.6	19.16	33.0	-13.8	
1907.50	17.35	H	0.9	8.6	25.07	33.0	-7.9	

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10MHz QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG Electronics
Project #: 16I22670
Date: 1/23/2016
Test Engineer: R.Alegre
Configuration: EUT only X postion
Location: Chamber C
Mode: LTE_QPSK Band 2 Fundamentals, 10MHz Bandwidth

Test Equipment:
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	12.27	V	0.9	8.6	19.97	33.0	-13.0	
1855.00	17.78	H	0.9	8.6	25.48	33.0	-7.5	
Mid Ch								
1880.00	12.15	V	0.9	8.6	19.86	33.0	-13.1	
1880.00	17.57	H	0.9	8.6	25.28	33.0	-7.7	
High Ch								
1905.00	12.25	V	0.9	8.6	19.96	33.0	-13.0	
1905.00	18.04	H	0.9	8.6	25.75	33.0	-7.2	

10MHz 16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG Electronics
Project #: 16I22670
Date: 1/23/2016
Test Engineer: R.Alegre
Configuration: EUT only X postion
Location: Chamber C
Mode: LTE_16QAM Band 2 Fundamentals, 10MHz Bandwidth

Test Equipment:
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	11.29	V	0.9	8.6	18.99	33.0	-14.0	
1855.00	17.22	H	0.9	8.6	24.92	33.0	-8.1	
Mid Ch								
1880.00	11.28	V	0.9	8.6	18.99	33.0	-14.0	
1880.00	16.60	H	0.9	8.6	24.31	33.0	-8.7	
High Ch								
1905.00	11.51	V	0.9	8.6	19.22	33.0	-13.8	
1905.00	17.38	H	0.9	8.6	25.09	33.0	-7.9	

15MHz QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG Electronics
Project #: 16I22670
Date: 1/23/2016
Test Engineer: R.Alegre
Configuration: EUT only X postion
Location: Chamber C
Mode: LTE_QPSK Band 2 Fundamentals, 15MHz Bandwidth

Test Equipment:
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	12.23	V	0.9	8.6	19.93	33.0	-13.1	
1857.50	17.75	H	0.9	8.6	25.45	33.0	-7.5	
Mid Ch								
1880.00	12.05	V	0.9	8.6	19.76	33.0	-13.2	
1880.00	17.57	H	0.9	8.6	25.28	33.0	-7.7	
High Ch								
1902.50	12.25	V	0.9	8.6	19.96	33.0	-13.0	
1902.50	18.07	H	0.9	8.6	25.78	33.0	-7.2	

15MHz 16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG Electronics
Project #: 16I22670
Date: 1/23/2016
Test Engineer: R.Alegre
Configuration: EUT only X postion
Location: Chamber C
Mode: LTE_16QAM Band 2 Fundamentals, 15MHz Bandwidth

Test Equipment:
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	11.67	V	0.9	8.6	19.37	33.0	-13.6	
1857.50	17.10	H	0.9	8.6	24.80	33.0	-8.2	
Mid Ch								
1880.00	11.16	V	0.9	8.6	18.87	33.0	-14.1	
1880.00	16.70	H	0.9	8.6	24.41	33.0	-8.6	
High Ch								
1902.50	11.51	V	0.9	8.6	19.22	33.0	-13.8	
1902.50	17.17	H	0.9	8.6	24.88	33.0	-8.1	

20MHz QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG Electronics
Project #: 16I22670
Date: 1/23/2016
Test Engineer: R.Alegre
Configuration: EUT only X postion
Location: Chamber C
Mode: LTE_QPSK Band 2 Fundamentals, 20MHz Bandwidth

Test Equipment:
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	12.33	V	0.9	8.6	20.03	33.0	-13.0	
1860.00	17.65	H	0.9	8.6	25.35	33.0	-7.6	
Mid Ch								
1880.00	12.03	V	0.9	8.6	19.74	33.0	-13.3	
1880.00	17.53	H	0.9	8.6	25.24	33.0	-7.8	
High Ch								
1900.00	12.24	V	0.9	8.6	19.95	33.0	-13.1	
1900.00	18.06	H	0.9	8.6	25.77	33.0	-7.2	

20MHz 16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG Electronics
Project #: 16I22670
Date: 1/23/2016
Test Engineer: R.Alegre
Configuration: EUT only X postion
Location: Chamber C
Mode: LTE_16QAM Band 2 Fundamentals, 20MHz Bandwidth

Test Equipment:
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	11.66	V	0.9	8.6	19.36	33.0	-13.6	
1860.00	17.00	H	0.9	8.6	24.70	33.0	-8.3	
Mid Ch								
1880.00	11.19	V	0.9	8.6	18.90	33.0	-14.1	
1880.00	16.57	H	0.9	8.6	24.28	33.0	-8.7	
High Ch								
1900.00	11.52	V	0.9	8.6	19.23	33.0	-13.8	
1900.00	17.14	H	0.9	8.6	24.85	33.0	-8.2	

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LTE Band 4

BW (MHz)	Mode	RB/RB Size	f(MHz)	EIRP	
				dBm	mW
1.4	QPSK	1/0	1710.7	24.80	302.00
		1/0	1732.5	24.90	309.03
		1/0	1754.3	24.90	309.03
	16QAM	1/0	1710.7	24.30	269.15
		1/0	1732.5	24.40	275.42
		1/0	1754.3	24.40	275.42
3	QPSK	1/0	1711.5	24.00	251.19
		1/0	1732.5	24.30	269.15
		1/0	1753.5	24.20	263.03
	16QAM	1/0	1711.5	23.90	245.47
		1/0	1732.5	24.30	269.15
		1/0	1753.5	24.10	257.04
5	QPSK	1/0	1712.5	23.44	220.80
		1/0	1732.5	23.77	238.23
		1/0	1752.5	23.50	223.87
	16QAM	1/0	1712.5	23.50	223.87
		1/0	1732.5	23.80	239.88
		1/0	1752.5	23.70	234.42
10	QPSK	1/0	1715	25.28	337.29
		1/0	1732.5	24.90	309.03
		1/0	1750	24.60	288.40
	16QAM	1/0	1715	24.70	295.12
		1/0	1732.5	24.60	288.40
		1/0	1750	24.10	257.04
15	QPSK	1/0	1717.5	25.20	331.13
		1/0	1732.5	25.00	316.23
		1/0	1747.5	24.50	281.84
	16QAM	1/0	1717.5	24.70	295.12
		1/0	1732.5	24.40	275.42
		1/0	1747.5	24.00	251.19
20	QPSK	1/0	1720	25.13	325.84
		1/0	1732.5	24.59	287.74
		1/0	1745	23.87	243.78
	16QAM	1/0	1720	24.60	288.40
		1/0	1732.5	24.20	263.03
		1/0	1745	23.40	218.78

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1.4MHz QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG Electronics
Project #: 16I22670
Date: 1/25/2016
Test Engineer: Jude Semana
Configuration: EUT Only (X-Position)
Location: Chamber C
Mode: LTE_QPSK Band 4 Fundamentals, 1.4MHz Bandwidth

Test Equipment:
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	10.90	V	0.9	8.8	18.80	30.0	-11.2	
1710.70	16.50	H	0.9	8.8	24.80	30.0	-5.2	
Mid Ch								
1732.50	11.50	V	0.9	8.8	19.40	30.0	-10.6	
1732.50	17.00	H	0.9	8.8	24.90	30.0	-5.1	
High Ch								
1754.30	11.80	V	0.9	8.8	19.70	30.0	-10.3	
1754.30	17.00	H	0.9	8.8	24.90	30.0	-5.1	

1.4MHz 16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG Electronics
Project #: 16I22670
Date: 1/25/2016
Test Engineer: Jude Semana
Configuration: EUT Only (X-Position)
Location: Chamber C
Mode: LTE_16QAM Band 4 Fundamentals, 1.4MHz Bandwidth

Test Equipment:
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	10.50	V	0.9	8.8	18.40	30.0	-11.6	
1710.70	16.40	H	0.9	8.8	24.30	30.0	-5.7	
Mid Ch								
1732.50	10.90	V	0.9	8.8	18.80	30.0	-11.2	
1732.50	16.50	H	0.9	8.8	24.40	30.0	-5.6	
High Ch								
1754.30	11.20	V	0.9	8.8	19.10	30.0	-10.9	
1754.30	16.50	H	0.9	8.8	24.40	30.0	-5.6	

3MHz QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG Electronics
Project #: 16I22670
Date: 1/25/2016
Test Engineer: Jude Semana
Configuration: EUT Only (X-Position)
Location: Chamber C
Mode: LTE_QPSK Band 4 Fundamentals, 3MHz Bandwidth

Test Equipment:
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	10.60	V	0.9	8.8	18.50	30.0	-11.5	
1711.50	16.10	H	0.9	8.8	24.00	30.0	-6.0	
Mid Ch								
1732.50	11.00	V	0.9	8.8	18.90	30.0	-11.1	
1732.50	16.40	H	0.9	8.8	24.30	30.0	-5.7	
High Ch								
1753.50	10.80	V	0.9	8.8	18.70	30.0	-11.3	
1753.50	16.30	H	0.9	8.8	24.20	30.0	-5.8	

3MHz 16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG Electronics
Project #: 16I22670
Date: 1/25/2016
Test Engineer: Jude Semana
Configuration: EUT Only (X-Position)
Location: Chamber C
Mode: LTE_16QAM Band 4 Fundamentals, 3MHz Bandwidth

Test Equipment:
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	10.60	V	0.9	8.8	18.50	30.0	-11.5	
1711.50	16.00	H	0.9	8.8	23.90	30.0	-6.1	
Mid Ch								
1732.50	11.00	V	0.9	8.8	18.90	30.0	-11.1	
1732.50	16.40	H	0.9	8.8	24.30	30.0	-5.7	
High Ch								
1753.50	10.90	V	0.9	8.8	18.80	30.0	-11.2	
1753.50	16.20	H	0.9	8.8	24.10	30.0	-5.9	

5MHz QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG Electronics
Project #: 16I22670
Date: 1/25/2016
Test Engineer: Jude Semana
Configuration: EUT Only (X-Position)
Location: Chamber C
Mode: LTE_QPSK Band 4 Fundamentals, 5MHz Bandwidth

Test Equipment:
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	10.40	V	0.9	8.2	17.74	30.0	-12.3	
1712.50	16.10	H	0.9	8.2	23.44	30.0	-6.6	
Mid Ch								
1732.50	11.00	V	0.9	8.2	18.27	30.0	-11.7	
1732.50	16.50	H	0.9	8.2	23.77	30.0	-6.2	
High Ch								
1752.50	10.60	V	0.9	8.1	17.80	30.0	-12.2	
1752.50	16.30	H	0.9	8.1	23.50	30.0	-6.5	

5MHz 16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG Electronics
Project #: 16I22670
Date: 1/25/2016
Test Engineer: Jude Semana
Configuration: EUT Only (X-Position)
Location: Chamber C
Mode: LTE_16QAM Band 4 Fundamentals, 5MHz Bandwidth

Test Equipment:
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	9.60	V	0.9	8.8	17.50	30.0	-12.5	
1712.50	15.60	H	0.9	8.8	23.50	30.0	-6.5	
Mid Ch								
1732.50	10.30	V	0.9	8.8	18.20	30.0	-11.8	
1732.50	15.90	H	0.9	8.8	23.80	30.0	-6.2	
High Ch								
1752.50	10.50	V	0.9	8.8	18.40	30.0	-11.6	
1752.50	15.80	H	0.9	8.8	23.70	30.0	-6.3	

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10MHz QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG Electronics
Project #: 16I22670
Date: 1/25/2016
Test Engineer: Jude Semana
Configuration: EUT Only (X-Position)
Location: Chamber C
Mode: LTE_QPSK Band 4 Fundamentals. 10MHz Bandwidth

Test Equipment:
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	11.60	V	0.9	8.8	19.50	30.0	-10.5	
1715.00	17.38	H	0.9	8.8	25.28	30.0	-4.7	
Mid Ch								
1732.50	11.60	V	0.9	8.8	19.50	30.0	-10.5	
1732.50	17.00	H	0.9	8.8	24.90	30.0	-5.1	
High Ch								
1750.00	11.30	V	0.9	8.8	19.20	30.0	-10.8	
1750.00	16.70	H	0.9	8.8	24.60	30.0	-5.4	

10MHz 16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG Electronics
Project #: 16I22670
Date: 1/25/2016
Test Engineer: Jude Semana
Configuration: EUT Only (X-Position)
Location: Chamber C
Mode: LTE_16QAM Band 4 Fundamentals. 10MHz Bandwidth

Test Equipment:
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	9.80	V	0.9	8.8	17.70	30.0	-12.3	
1715.00	16.80	H	0.9	8.8	24.70	30.0	-5.3	
Mid Ch								
1732.50	10.90	V	0.9	8.8	18.80	30.0	-11.2	
1732.50	16.70	H	0.9	8.8	24.60	30.0	-5.4	
High Ch								
1750.00	10.60	V	0.9	8.8	18.50	30.0	-11.5	
1750.00	16.20	H	0.9	8.8	24.10	30.0	-5.9	

15MHz QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG Electronics
Project #: 16I22670
Date: 1/25/2016
Test Engineer: Jude Semana
Configuration: EUT Only (X-Position)
Location: Chamber C
Mode: LTE_QPSK Band 4 Fundamentals. 15MHz Bandwidth

Test Equipment:
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	11.50	V	0.9	8.8	19.40	30.0	-10.6	
1717.50	17.30	H	0.9	8.8	25.20	30.0	-4.8	
Mid Ch								
1732.50	11.30	V	0.9	8.8	19.20	30.0	-10.8	
1732.50	17.10	H	0.9	8.8	25.00	30.0	-5.0	
High Ch								
1747.50	11.10	V	0.9	8.8	19.00	30.0	-11.0	
1747.50	16.60	H	0.9	8.8	24.50	30.0	-5.5	

15MHz 16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG Electronics
Project #: 16I22670
Date: 1/25/2016
Test Engineer: Jude Semana
Configuration: EUT Only (X-Position)
Location: Chamber C
Mode: LTE_16QAM Band 4 Fundamentals. 15MHz Bandwidth

Test Equipment:
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	10.90	V	0.9	8.8	18.80	30.0	-11.2	
1717.50	16.80	H	0.9	8.8	24.70	30.0	-5.3	
Mid Ch								
1732.50	10.90	V	0.9	8.8	18.80	30.0	-11.2	
1732.50	16.50	H	0.9	8.8	24.40	30.0	-5.6	
High Ch								
1747.50	10.30	V	0.9	8.8	18.20	30.0	-11.8	
1747.50	16.10	H	0.9	8.8	24.00	30.0	-6.0	

20MHz QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG Electronics
Project #: 16I22670
Date: 1/25/2016
Test Engineer: Jude Semana
Configuration: EUT Only (X-Position)
Location: Chamber C
Mode: LTE_QPSK Band 4 Fundamentals. 20MHz Bandwidth

Test Equipment:
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	11.20	V	0.9	8.8	19.10	30.0	-10.9	
1720.00	17.23	H	0.9	8.8	25.13	30.0	-4.9	
Mid Ch								
1732.50	11.00	V	0.9	8.8	18.90	30.0	-11.1	
1732.50	16.69	H	0.9	8.8	24.59	30.0	-5.4	
High Ch								
1745.00	10.30	V	0.9	8.8	18.20	30.0	-11.8	
1745.00	15.97	H	0.9	8.8	23.87	30.0	-6.1	

20MHz 16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG Electronics
Project #: 16I22670
Date: 1/25/2016
Test Engineer: Jude Semana
Configuration: EUT Only (X-Position)
Location: Chamber C
Mode: LTE_16QAM Band 4 Fundamentals. 20MHz Bandwidth

Test Equipment:
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	10.90	V	0.9	8.8	18.80	30.0	-11.2	
1720.00	16.70	H	0.9	8.8	24.60	30.0	-5.4	
Mid Ch								
1732.50	10.50	V	0.9	8.8	18.40	30.0	-11.6	
1732.50	16.30	H	0.9	8.8	24.20	30.0	-5.8	
High Ch								
1745.00	10.00	V	0.9	8.8	17.90	30.0	-12.1	
1745.00	15.50	H	0.9	8.8	23.40	30.0	-6.6	

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LTE Band 5

BW (MHz)	Mode	RB/RB Size	f(MHz)	ERP	
				dBm	mW
1.4	QPSK	1/0	824.7	22.62	182.81
		1/0	836.5	21.12	129.42
		1/0	848.3	21.40	138.04
	16QAM	1/0	824.7	21.90	154.88
		1/0	836.5	20.40	109.65
		1/0	848.3	20.80	120.23
3	QPSK	1/0	825.5	22.68	185.35
		1/0	836.5	21.33	135.83
		1/0	847.5	21.56	143.22
	16QAM	1/0	825.5	21.90	154.88
		1/0	836.5	20.40	109.65
		1/0	847.5	20.90	123.03
5	QPSK	1/0	826.5	22.55	179.89
		1/0	836.5	21.46	139.96
		1/0	846.5	21.77	150.31
	16QAM	1/0	826.5	21.80	151.36
		1/0	836.5	20.60	114.82
		1/0	846.5	21.00	125.89
10	QPSK	1/0	829	23.00	199.53
		1/0	836.5	22.05	160.32
		1/0	844	22.17	164.82
	16QAM	1/0	829	22.60	181.97
		1/0	836.5	22.00	158.49
		1/0	844	21.50	141.25

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1.4MHz QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG Electronics
Project #: 16I22670
Date: 1/25/2016
Test Engineer: Jude Semana
Configuration: EUT Only (X-Position)
Location: Chamber C
Mode: LTE_QPSK Band 5 Fundamentals, 1.4MHz Bandwidth

Test Equipment:
Receiving: Hybrid T185, and Chamber C SMA Cables
Substitution: Dipole T416, 6ft SMA Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
824.70	16.30	V	0.9	0.0	15.40	38.5	-23.1	
824.70	23.52	H	0.9	0.0	22.62	38.5	-15.9	
Mid Ch								
836.50	14.63	V	0.9	0.0	13.73	38.5	-24.8	
836.50	22.02	H	0.9	0.0	21.12	38.5	-17.4	
High Ch								
848.30	15.00	V	0.9	0.0	14.10	38.5	-24.4	
848.30	22.30	H	0.9	0.0	21.40	38.5	-17.1	

1.4MHz 16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG Electronics
Project #: 16I22670
Date: 1/25/2016
Test Engineer: Jude Semana
Configuration: EUT Only (X-Position)
Location: Chamber C
Mode: LTE_16QAM Band 5 Fundamentals, 1.4MHz Bandwidth

Test Equipment:
Receiving: Hybrid T185, and Chamber C SMA Cables
Substitution: Dipole T416, 6ft SMA Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
824.70	15.60	V	0.9	0.0	14.70	38.5	-23.8	
824.70	22.80	H	0.9	0.0	21.90	38.5	-16.6	
Mid Ch								
836.50	13.70	V	0.9	0.0	12.80	38.5	-25.7	
836.50	21.30	H	0.9	0.0	20.40	38.5	-18.1	
High Ch								
848.30	14.30	V	0.9	0.0	13.40	38.5	-25.1	
848.30	21.70	H	0.9	0.0	20.80	38.5	-17.7	

3MHz QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG Electronics
Project #: 16I22670
Date: 1/25/2016
Test Engineer: Jude Semana
Configuration: EUT Only (X-Position)
Location: Chamber C
Mode: LTE_QPSK Band 5 Fundamentals, 3MHz Bandwidth

Test Equipment:
Receiving: Hybrid T185, and Chamber C SMA Cables
Substitution: Dipole T416, 6ft SMA Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
825.50	16.00	V	0.9	0.0	15.10	38.5	-23.4	
825.50	23.58	H	0.9	0.0	22.68	38.5	-15.8	
Mid Ch								
836.50	14.90	V	0.9	0.0	14.00	38.5	-24.5	
836.50	22.23	H	0.9	0.0	21.33	38.5	-17.2	
High Ch								
847.50	15.10	V	0.9	0.0	14.20	38.5	-24.3	
847.50	22.46	H	0.9	0.0	21.56	38.5	-16.9	

3MHz 16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG Electronics
Project #: 16I22670
Date: 1/25/2016
Test Engineer: Jude Semana
Configuration: EUT Only (X-Position)
Location: Chamber C
Mode: LTE_16QAM Band 5 Fundamentals, 3MHz Bandwidth

Test Equipment:
Receiving: Hybrid T185, and Chamber C SMA Cables
Substitution: Dipole T416, 6ft SMA Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
825.50	15.30	V	0.9	0.0	14.40	38.5	-24.1	
825.50	22.80	H	0.9	0.0	21.90	38.5	-16.6	
Mid Ch								
836.50	13.40	V	0.9	0.0	12.50	38.5	-26.0	
836.50	21.30	H	0.9	0.0	20.40	38.5	-18.1	
High Ch								
847.50	14.40	V	0.9	0.0	13.50	38.5	-25.0	
847.50	21.80	H	0.9	0.0	20.90	38.5	-17.6	

5MHz QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG Electronics
Project #: 16I22670
Date: 1/25/2016
Test Engineer: Jude Semana
Configuration: EUT Only (X-Position)
Location: Chamber C
Mode: LTE_QPSK Band 5 Fundamentals, 5MHz Bandwidth

Test Equipment:
Receiving: Hybrid T185, and Chamber C SMA Cables
Substitution: Dipole T416, 6ft SMA Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
826.50	15.80	V	0.9	0.0	14.90	38.5	-23.6	
826.50	23.45	H	0.9	0.0	22.55	38.5	-16.0	
Mid Ch								
836.50	14.70	V	0.9	0.0	13.80	38.5	-24.7	
836.50	22.36	H	0.9	0.0	21.46	38.5	-17.0	
High Ch								
846.50	15.20	V	0.9	0.0	14.30	38.5	-24.2	
846.50	22.67	H	0.9	0.0	21.77	38.5	-16.7	

5MHz 16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG Electronics
Project #: 16I22670
Date: 1/25/2016
Test Engineer: Jude Semana
Configuration: EUT Only (X-Position)
Location: Chamber C
Mode: LTE_16QAM Band 5 Fundamentals, 5MHz Bandwidth

Test Equipment:
Receiving: Hybrid T185, and Chamber C SMA Cables
Substitution: Dipole T416, 6ft SMA Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
826.50	15.19	V	0.9	0.0	14.29	38.5	-24.2	
826.50	22.70	H	0.9	0.0	21.80	38.5	-16.7	
Mid Ch								
836.50	14.20	V	0.9	0.0	13.30	38.5	-25.2	
836.50	21.50	H	0.9	0.0	20.60	38.5	-17.9	
High Ch								
846.50	15.20	V	0.9	0.0	14.30	38.5	-24.2	
846.50	21.90	H	0.9	0.0	21.00	38.5	-17.5	

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10MHz QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG Electronics
Project #: 16I22670
Date: 1/25/2016
Test Engineer: Jude Semana
Configuration: EUT Only (X-Position)
Location: Chamber C
Mode: LTE_QPSK Band 5 Fundamentals, 10MHz Bandwidth

Test Equipment:
Receiving: Hybrid T185, and Chamber C SMA Cables
Substitution: Dipole T416, 6ft SMA Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
829.00	16.20	V	0.9	0.0	15.30	38.5	-23.2	
829.00	23.90	H	0.9	0.0	23.00	38.5	-15.5	
Mid Ch								
836.50	15.49	V	0.9	0.0	14.59	38.5	-23.9	
836.50	22.95	H	0.9	0.0	22.05	38.5	-16.5	
High Ch								
844.00	15.90	V	0.9	0.0	15.00	38.5	-23.5	
844.00	23.07	H	0.9	0.0	22.17	38.5	-16.3	

10MHz 16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG Electronics
Project #: 16I22670
Date: 1/25/2016
Test Engineer: Jude Semana
Configuration: EUT Only (X-Position)
Location: Chamber C
Mode: LTE_16QAM Band 5 Fundamentals, 10MHz Bandwidth

Test Equipment:
Receiving: Hybrid T185, and Chamber C SMA Cables
Substitution: Dipole T416, 6ft SMA Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
829.00	15.70	V	0.9	0.0	14.80	38.5	-23.7	
829.00	23.50	H	0.9	0.0	22.60	38.5	-15.9	
Mid Ch								
836.50	15.10	V	0.9	0.0	14.20	38.5	-24.3	
836.50	22.90	H	0.9	0.0	22.00	38.5	-16.5	
High Ch								
844.00	15.10	V	0.9	0.0	14.20	38.5	-24.3	
844.00	22.40	H	0.9	0.0	21.50	38.5	-17.0	

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LTE Band 12

BW (MHz)	Mode	RB/RB Size	f(MHz)	ERP	
				dBm	mW
1.4	QPSK	1/0	699.7	18.58	72.11
		1/0	707.5	19.29	84.92
		1/0	715.3	19.77	94.84
	16QAM	1/0	699.7	17.94	62.23
		1/0	707.5	18.71	74.30
		1/0	715.3	19.41	87.30
3	QPSK	1/0	700.5	18.77	75.34
		1/0	707.5	19.35	86.10
		1/0	714.5	19.92	98.17
	16QAM	1/0	700.5	18.31	67.76
		1/0	707.5	18.50	70.79
		1/0	714.5	19.26	84.33
5	QPSK	1/0	701.5	18.54	71.45
		1/0	707.5	19.39	86.90
		1/0	713.5	19.28	84.72
	16QAM	1/0	701.5	17.34	54.20
		1/0	707.5	18.11	64.71
		1/0	713.5	18.32	67.92
10	QPSK	1/0	704	18.78	75.51
		1/0	707.5	18.96	78.70
		1/0	711	19.26	84.33
	16QAM	1/0	704	17.89	61.52
		1/0	707.5	18.48	70.47
		1/0	711	18.56	71.78

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1.4MHz QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG Electronics
Project #: 16I22670
Date: 1/25/2016
Test Engineer: O. Stoelting
Configuration: X-pos EUT Only
Location: Chamber C
Mode: LTE_QPSK Band 12 Fundamentals, 1.4MHz Bandwidth

Test Equipment:
Receiving: Hybrid T185, and Chamber C SMA Cables
Substitution: Dipole T416, 6ft N-type cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
699.70	12.09	V	0.9	0.0	11.19	34.8	-23.6	
699.70	19.48	H	0.9	0.0	18.58	34.8	-16.2	
Mid Ch								
707.50	11.08	V	0.9	0.0	10.18	34.8	-24.6	
707.50	20.19	H	0.9	0.0	19.29	34.8	-15.5	
High Ch								
715.30	12.67	V	0.9	0.0	11.77	34.8	-23.0	
715.30	20.67	H	0.9	0.0	19.77	34.8	-15.0	

1.4MHz 16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG Electronics
Project #: 16I22670
Date: 1/25/2016
Test Engineer: O. Stoelting
Configuration: X-pos EUT Only
Location: Chamber C
Mode: LTE_16QAM Band 12 Fundamentals, 1.4MHz Bandwidth

Test Equipment:
Receiving: Hybrid T185, and Chamber C SMA Cables
Substitution: Dipole T416, 6ft N-type cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
699.70	11.24	V	0.9	0.0	10.34	34.8	-24.5	
699.70	18.84	H	0.9	0.0	17.94	34.8	-16.9	
Mid Ch								
707.50	10.29	V	0.9	0.0	9.39	34.8	-25.4	
707.50	19.61	H	0.9	0.0	18.71	34.8	-16.1	
High Ch								
715.30	12.35	V	0.9	0.0	11.45	34.8	-23.3	
715.30	20.31	H	0.9	0.0	19.41	34.8	-15.4	

3MHz QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG Electronics
Project #: 16I22670
Date: 1/25/2016
Test Engineer: O. Stoelting
Configuration: X-pos EUT Only
Location: Chamber C
Mode: LTE_QPSK Band 12 Fundamentals, 3MHz Bandwidth

Test Equipment:
Receiving: Hybrid T185, and Chamber C SMA Cables
Substitution: Dipole T416, 6ft N-type cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
700.50	11.59	V	0.9	0.0	10.69	34.8	-24.1	
700.50	19.67	H	0.9	0.0	18.77	34.8	-16.0	
Mid Ch								
707.50	12.24	V	0.9	0.0	11.34	34.8	-23.5	
707.50	20.25	H	0.9	0.0	19.35	34.8	-15.5	
High Ch								
714.50	13.69	V	0.9	0.0	12.79	34.8	-22.0	
714.50	20.82	H	0.9	0.0	19.92	34.8	-14.9	

3MHz 16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG Electronics
Project #: 16I22670
Date: 1/25/2016
Test Engineer: O. Stoelting
Configuration: X-pos EUT Only
Location: Chamber C
Mode: LTE_16QAM Band 12 Fundamentals, 3MHz Bandwidth

Test Equipment:
Receiving: Hybrid T185, and Chamber C SMA Cables
Substitution: Dipole T416, 6ft N-type cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
700.50	11.11	V	0.9	0.0	10.21	34.8	-24.6	
700.50	19.21	H	0.9	0.0	18.31	34.8	-16.5	
Mid Ch								
707.50	11.44	V	0.9	0.0	10.54	34.8	-24.3	
707.50	19.40	H	0.9	0.0	18.50	34.8	-16.3	
High Ch								
714.50	12.92	V	0.9	0.0	12.02	34.8	-22.8	
714.50	20.16	H	0.9	0.0	19.26	34.8	-15.5	

5MHz QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG Electronics
Project #: 16I22670
Date: 1/25/2016
Test Engineer: O. Stoelting
Configuration: X-pos EUT Only
Location: Chamber C
Mode: LTE_QPSK Band 12 Fundamentals, 5MHz Bandwidth

Test Equipment:
Receiving: Hybrid T185, and Chamber C SMA Cables
Substitution: Dipole T416, 6ft N-type cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
701.50	11.67	V	0.9	0.0	10.77	34.8	-24.0	
701.50	19.44	H	0.9	0.0	18.54	34.8	-16.3	
Mid Ch								
707.50	10.39	V	0.9	0.0	9.49	34.8	-25.3	
707.50	20.29	H	0.9	0.0	19.39	34.8	-15.4	
High Ch								
713.50	11.21	V	0.9	0.0	10.31	34.8	-24.5	
713.50	20.18	H	0.9	0.0	19.28	34.8	-15.5	

5MHz 16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG Electronics
Project #: 16I22670
Date: 1/25/2016
Test Engineer: O. Stoelting
Configuration: X-pos EUT Only
Location: Chamber C
Mode: LTE_16QAM Band 12 Fundamentals, 5MHz Bandwidth

Test Equipment:
Receiving: Hybrid T185, and Chamber C SMA Cables
Substitution: Dipole T416, 6ft N-type cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
701.50	10.48	V	0.9	0.0	9.58	34.8	-25.2	
701.50	18.24	H	0.9	0.0	17.34	34.8	-17.5	
Mid Ch								
707.50	9.46	V	0.9	0.0	8.56	34.8	-26.2	
707.50	19.01	H	0.9	0.0	18.11	34.8	-16.7	
High Ch								
713.50	10.28	V	0.9	0.0	9.38	34.8	-25.4	
713.50	19.22	H	0.9	0.0	18.32	34.8	-16.5	

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10MHz QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG Electronics
Project #: 16I22670
Date: 1/25/2016
Test Engineer: O. Stoelting
Configuration: X-pos EUT Only
Location: Chamber C
Mode: LTE_QPSK Band 12 Fundamentals, 10MHz Bandwidth

Test Equipment:
Receiving: Hybrid T185, and Chamber C SMA Cables
Substitution: Dipole T416, 6ft N-type cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
704.00	11.97	V	0.9	0.0	11.07	34.8	-23.7	
704.00	19.68	H	0.9	0.0	18.78	34.8	-16.0	
Mid Ch								
707.50	11.74	V	0.9	0.0	10.84	34.8	-24.0	
707.50	19.86	H	0.9	0.0	18.96	34.8	-15.8	
High Ch								
711.00	12.25	V	0.9	0.0	11.35	34.8	-23.4	
711.00	20.16	H	0.9	0.0	19.26	34.8	-15.5	

10MHz 16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: LG Electronics
Project #: 16I22670
Date: 1/25/2016
Test Engineer: O. Stoelting
Configuration: X-pos 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, 6ft N-type cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
704.00	11.02	V	0.9	0.0	10.12	34.8	-24.7	
704.00	18.79	H	0.9	0.0	17.89	34.8	-16.9	
Mid Ch								
707.50	11.30	V	0.9	0.0	10.40	34.8	-24.4	
707.50	19.38	H	0.9	0.0	18.48	34.8	-16.3	
High Ch								
711.00	11.50	V	0.9	0.0	10.60	34.8	-24.2	
711.00	19.46	H	0.9	0.0	18.56	34.8	-16.2	

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14.2. FIELD STRENGTH OF SPURIOUS RADIATION

RULE PART(S)

FCC: §2.1053, §22.917, §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.

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14.2.1. SPURIOUS EMISSION TEST DATA

GSM

GSM850 GPRS

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

Company: LG Electronics
Project #: 16I22670
Date: 1/26/2016
Test Engineer: O. Stoelting
Configuration: X-pos EUT, HS, AC Charger
Location: Chamber C
Mode: GPRS 850 MHz Harmonics

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 824.2									
1648.40	-14.7	V	3.0	36.4	1.0	-50.1	-13.0	-37.1	
2472.60	-9.4	V	3.0	35.0	1.0	-43.4	-13.0	-30.4	
3296.80	-21.8	V	3.0	34.3	1.0	-55.0	-13.0	-42.0	
1648.40	-21.6	H	3.0	36.4	1.0	-56.9	-13.0	-43.9	
2472.60	-16.3	H	3.0	35.0	1.0	-50.3	-13.0	-37.3	
3296.80	-22.4	H	3.0	34.3	1.0	-55.7	-13.0	-42.7	
Mid Ch, 836.6									
1673.20	-16.7	V	3.0	36.3	1.0	-52.1	-13.0	-39.1	
2509.80	-19.1	V	3.0	34.9	1.0	-53.0	-13.0	-40.0	
3346.40	-22.0	V	3.0	34.2	1.0	-55.2	-13.0	-42.2	
1673.20	-20.8	H	3.0	36.3	1.0	-56.1	-13.0	-43.1	
2509.80	-19.4	H	3.0	34.9	1.0	-53.4	-13.0	-40.4	
3346.40	-23.1	H	3.0	34.2	1.0	-56.3	-13.0	-43.3	
High Ch, 848.8									
1697.60	-21.1	V	3.0	36.3	1.0	-56.4	-13.0	-43.4	
2546.40	-18.6	V	3.0	34.9	1.0	-52.5	-13.0	-39.5	
3395.20	-21.2	V	3.0	34.2	1.0	-54.4	-13.0	-41.4	
1697.60	-27.3	H	3.0	36.3	1.0	-62.6	-13.0	-49.6	
2546.40	-17.7	H	3.0	34.9	1.0	-51.6	-13.0	-38.6	
3395.20	-22.7	H	3.0	34.2	1.0	-55.8	-13.0	-42.8	

GSM850 EGPRS

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

Company: LG Electronics
Project #: 16I22670
Date: 1/26/2016
Test Engineer: O. Stoelting
Configuration: X-pos EUT, HS, AC Charger
Location: Chamber C
Mode: EGPRS 850 MHz Harmonics

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 824.2									
1648.40	-23.9	V	3.0	36.4	1.0	-59.3	-13.0	-46.3	
2472.60	-15.4	V	3.0	35.0	1.0	-49.4	-13.0	-36.4	
3296.80	-22.0	V	3.0	34.3	1.0	-55.3	-13.0	-42.3	
1648.40	-22.4	H	3.0	36.4	1.0	-57.7	-13.0	-44.7	
2472.60	-23.2	H	3.0	35.0	1.0	-57.2	-13.0	-44.2	
3296.80	-21.9	H	3.0	34.3	1.0	-55.2	-13.0	-42.2	
Mid Ch, 836.6									
1673.20	-20.0	V	3.0	36.3	1.0	-55.3	-13.0	-42.3	
2509.80	-24.6	V	3.0	34.9	1.0	-58.5	-13.0	-45.5	
3346.40	-21.9	V	3.0	34.2	1.0	-55.1	-13.0	-42.1	
1673.20	-20.9	H	3.0	36.3	1.0	-56.2	-13.0	-43.2	
2509.80	-23.6	H	3.0	34.9	1.0	-57.5	-13.0	-44.5	
3346.40	-22.9	H	3.0	34.2	1.0	-56.1	-13.0	-43.1	
High Ch, 848.8									
1697.60	-22.7	V	3.0	36.3	1.0	-58.0	-13.0	-45.0	
2546.40	-23.6	V	3.0	34.9	1.0	-57.5	-13.0	-44.5	
3395.20	-21.9	V	3.0	34.2	1.0	-55.1	-13.0	-42.1	
1697.60	-27.2	H	3.0	36.3	1.0	-62.5	-13.0	-49.5	
2546.40	-22.9	H	3.0	34.9	1.0	-56.8	-13.0	-43.8	
3395.20	-22.8	H	3.0	34.2	1.0	-55.9	-13.0	-42.9	

GSM1900 GPRS

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

Company: LG Electronics
Project #: 16I22670
Date: 1/26/2016
Test Engineer: O. Stoelting
Configuration: X-pos EUT, HS, AC Charger
Location: Chamber C
Mode: GPRS 1900 MHz 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, 1850.2									
3700.40	-17.2	V	3.0	33.9	1.0	-50.0	-13.0	-37.0	
5550.60	-18.0	V	3.0	33.1	1.0	-50.1	-13.0	-37.1	
7400.80	-18.7	V	3.0	32.9	1.0	-50.6	-13.0	-37.6	
3700.40	-20.9	H	3.0	33.9	1.0	-53.8	-13.0	-40.8	
5550.60	-20.4	H	3.0	33.1	1.0	-52.5	-13.0	-39.5	
7400.80	-19.1	H	3.0	32.9	1.0	-51.0	-13.0	-38.0	
Mid Ch, 1880									
3760.00	-18.2	V	3.0	33.8	1.0	-51.0	-13.0	-38.0	
5640.00	-19.9	V	3.0	33.1	1.0	-52.0	-13.0	-39.0	
7520.00	-18.8	V	3.0	32.8	1.0	-50.6	-13.0	-37.6	
3760.00	-19.2	H	3.0	33.8	1.0	-52.0	-13.0	-39.0	
5640.00	-19.6	H	3.0	33.1	1.0	-51.7	-13.0	-38.7	
7520.00	-18.3	H	3.0	32.8	1.0	-50.1	-13.0	-37.1	
High Ch, 1909.8									
3819.60	-18.5	V	3.0	33.7	1.0	-51.2	-13.0	-38.2	
5729.40	-19.3	V	3.0	33.1	1.0	-51.4	-13.0	-38.4	
7639.20	-18.6	V	3.0	32.8	1.0	-50.5	-13.0	-37.5	
3819.60	-20.0	H	3.0	33.7	1.0	-52.7	-13.0	-39.7	
5729.40	-18.5	H	3.0	33.1	1.0	-50.6	-13.0	-37.6	
7639.20	-18.8	H	3.0	32.8	1.0	-50.7	-13.0	-37.7	

GSM1900 EGPRS

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

Company: LG Electronics
Project #: 16I22670
Date: 1/26/2016
Test Engineer: O. Stoelting
Configuration: X-pos EUT, HS, AC Charger
Location: Chamber C
Mode: EGPRS 1900 MHz 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, 1850.2									
3700.40	-19.1	V	3.0	33.9	1.0	-51.9	-13.0	-38.9	
5550.60	-20.0	V	3.0	33.1	1.0	-52.2	-13.0	-39.2	
7400.80	-19.2	V	3.0	32.9	1.0	-51.1	-13.0	-38.1	
3700.40	-21.1	H	3.0	33.9	1.0	-54.0	-13.0	-41.0	
5550.60	-20.0	H	3.0	33.1	1.0	-52.1	-13.0	-39.1	
7400.80	-18.6	H	3.0	32.9	1.0	-50.4	-13.0	-37.4	
Mid Ch, 1880									
3760.00	-20.1	V	3.0	33.8	1.0	-52.9	-13.0	-39.9	
5640.00	-20.5	V	3.0	33.1	1.0	-52.6	-13.0	-39.6	
7520.00	-18.7	V	3.0	32.8	1.0	-50.5	-13.0	-37.5	
3760.00	-20.0	H	3.0	33.8	1.0	-52.8	-13.0	-39.8	
5640.00	-19.2	H	3.0	33.1	1.0	-51.3	-13.0	-38.3	
7520.00	-18.4	H	3.0	32.8	1.0	-50.3	-13.0	-37.3	
High Ch, 1909.8									
3819.60	-19.5	V	3.0	33.7	1.0	-52.2	-13.0	-39.2	
5729.40	-20.1	V	3.0	33.1	1.0	-52.2	-13.0	-39.2	
7639.20	-18.9	V	3.0	32.8	1.0	-50.8	-13.0	-37.8	
3819.60	-20.6	H	3.0	33.7	1.0	-53.4	-13.0	-40.4	
5729.40	-18.7	H	3.0	33.1	1.0	-50.8	-13.0	-37.8	
7639.20	-18.6	H	3.0	32.8	1.0	-50.5	-13.0	-37.5	

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