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

CERTIFICATION TEST REPORT

FOR

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

MODEL NUMBER: LG-US991, US991, LGUS991

FCC ID: ZNFUS991

REPORT NUMBER: 15I20405-E1

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Prepared for
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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
-	4/22/15	Initial	P. ZHANG

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME:	LG ELECTRONICS MOBILECOMM U.S.A., INC.
EUT DESCRIPTION:	GSM/WCDMA/CDMA/LTE Phone + Bluetooth, DTS/UNII a/b/g/n/ac & NFC.
MODEL:	LG-US991, US991, LGUS991
SERIAL NUMBER:	1V4UZ and 1V4V0 (Radiated); 1V4UX and 1V4UY (Conducted)
DATE TESTED:	MAR 27 – APR 20, 2015

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

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

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

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2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with TIA-603-C, FCC CFR 47 Part 22, FCC CFR Part 24, and FCC CFR 47 Part 27.

3. FACILITIES AND ACCREDITATION

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

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

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

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

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

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

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

ERP = PSA reading with EUT worst orientation (dBm) + Path loss (dB) – cable loss(between the SG and substitution antenna)

(Path loss = Signal generator output – PSA reading with substitution antenna)

4.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	3.52 dB
Radiated Disturbance, 30 to 20000 MHz	4.94 dB

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a GSM/WCDMA/CDMA/LTE Phone + Bluetooth, DTS/UNII a/b/g/n/ac & NFC.

5.2. MAXIMUM OUTPUT POWER

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

FCC Part 22/24						
Band	Frequency Range(MHz)	Modulation	Conducted		Radiated	
			AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
GSM850	824~849	GPRS	33.2	2089.30	31.88	1541.70
	824~849	EGPRS	27.7	588.84	26.86	485.29
GSM1900	1850~1910	GPRS	29.4	870.96	31.36	1367.73
	1850~1910	EGPRS	26.7	467.74	28.59	722.77
Band 5	824~849	REL99	23.6	229.09	21.72	148.59
	824~849	HSDPA	23.6	229.09	21.63	145.55
	824~849	HSUPA	22.3	169.82		
Band 2	1850~1910	REL99	23.5	223.87	26.26	422.67
	1850~1910	HSDPA	23.4	218.78	26.07	404.58
	1850~1910	HSUPA	22.4	173.78		
BC0	824~849	1xRTT	24.6	288.40	22.87	193.64
	824~849	EVDO REL. 0	24.5	281.84	22.78	189.67
	824~849	EVDO REV. A	24.2	263.03		
BC1	1850~1910	1xRTT	24.4	275.42	26.60	457.09
	1850~1910	EVDO REL. 0	24.4	275.42	26.50	446.68
	1850~1910	EVDO REV. A	24.1	257.04		

5.3. MAXIMUM OUTPUT POWER (LTE)

LTE Band 25

FCC Part 24							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation	Conducted		Radiated	
				AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE25	1850~1915	20MHz	QPSK	24.20	263.03	26.38	434.51
			16QAM	23.20	208.93	25.67	368.98
		15MHz	QPSK	24.20	263.03	26.25	421.70
			16QAM	23.10	204.17	25.48	353.18
		10MHz	QPSK	24.20	263.03	26.34	430.53
			16QAM	23.10	204.17	25.35	342.77
		5MHz	QPSK	24.10	257.04	26.32	428.55
			16QAM	23.10	204.17	25.42	348.34
		3MHz	QPSK	24.10	257.04	26.41	437.52
			16QAM	23.20	208.93	25.27	336.51
		1.4MHz	QPSK	24.20	263.03	26.39	435.51
			16QAM	23.10	204.17	26.02	399.94

LTE17

FCC Part 27							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation	Conducted		Radiated	
				AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE17	704~716	10MHz	QPSK	24.50	281.84		
			16QAM	23.70	234.42		
		5MHz	QPSK	24.40	275.42		
			16QAM	23.50	223.87		

Note: Cover by LTE band 12

LTE Band 13

FCC Part 27							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation mW	Conducted		Radiated	
				AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE13	777~787	10MHz	QPSK	24.20	263.03	20.28	106.66
			16QAM	23.40	218.78	19.47	88.51
		5MHz	QPSK	24.20	263.03	20.10	102.33
		5MHz	16QAM	23.10	204.17	19.38	86.70

LTE Band 12

FCC Part 27							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation	Conducted		Radiated	
				AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE12	699~716	10MHz	QPSK	24.70	295.12	21.15	130.32
			16QAM	23.70	234.42	20.72	118.03
		5MHz	QPSK	24.60	288.40	21.24	133.05
			16QAM	23.70	234.42	20.60	114.82
		3MHz	QPSK	24.60	288.40	21.29	134.59
			16QAM	23.70	234.42	20.71	117.76
		1.4MHz	QPSK	24.60	288.40	20.49	111.94
			16QAM	23.50	223.87	19.86	96.83

LTE Band 5

FCC Part 22							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation	Conducted		Radiated	
				AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE5	824~849	10MHz	QPSK	24.40	275.42	22.50	177.83
			16QAM	23.40	218.78	21.18	131.22
		5MHz	QPSK	24.40	275.42	22.31	170.22
			16QAM	23.40	218.78	20.53	112.98
		3MHz	QPSK	24.30	269.15	22.43	174.98
			16QAM	23.30	213.80	20.83	121.06
		1.4MHz	QPSK	24.30	269.15	22.48	177.01
			16QAM	23.30	213.80	20.88	122.46

LTE Band 4

FCC Part 27							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation	Conducted		Radiated	
				AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE4	1710~1755	20MHz	QPSK	24.40	275.42	29.51	893.31
			16QAM	23.50	223.87	28.84	765.60
		15MHz	QPSK	24.30	269.15	29.25	841.40
			16QAM	23.50	223.87	28.48	704.69
		10MHz	QPSK	24.30	269.15	29.09	810.96
			16QAM	23.50	223.87	28.42	695.02
		5MHz	QPSK	24.20	263.03	29.23	837.53
			16QAM	23.30	213.80	28.47	703.07
		3MHz	QPSK	24.10	257.04	29.24	839.46
			16QAM	23.10	204.17	28.72	744.73
		1.4MHz	QPSK	24.20	263.03	29.05	803.53
		1.4MHz	16QAM	23.30	213.80	28.30	676.08

LTE Band 2

FCC Part 24							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation	Conducted		Radiated	
				AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE2	1850~1910	20MHz	QPSK	24.20	263.03		
			16QAM	23.00	199.53		
		15MHz	QPSK	24.01	251.77		
			16QAM	23.00	199.53		
		10MHz	QPSK	24.20	263.03		
			16QAM	23.20	208.93		
		5MHz	QPSK	24.10	257.04		
			16QAM	23.00	199.53		
		3MHz	QPSK	24.20	263.03		
			16QAM	23.10	204.17		
		1.4MHz	QPSK	23.90	245.47		
			16QAM	23.10	204.17		

Note: Cover by LTE25

5.4. DESCRIPTION OF AVAILABLE ANTENNAS

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

Frequency (MHz)	Peak Gain (dBi)
LTE2, 1850~1910MHz; LTE25, 1850~1915MHz	1.29
LTE4, 1710~1755MHz	0.51
LTE5, 824~849MHz	-2.5
LTE12, LTE17, 699~716MHz	-5.75
LTE13, 777~787MHz	-3.54

5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

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

I/O CABLES (CONDUCTED SETUP)

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

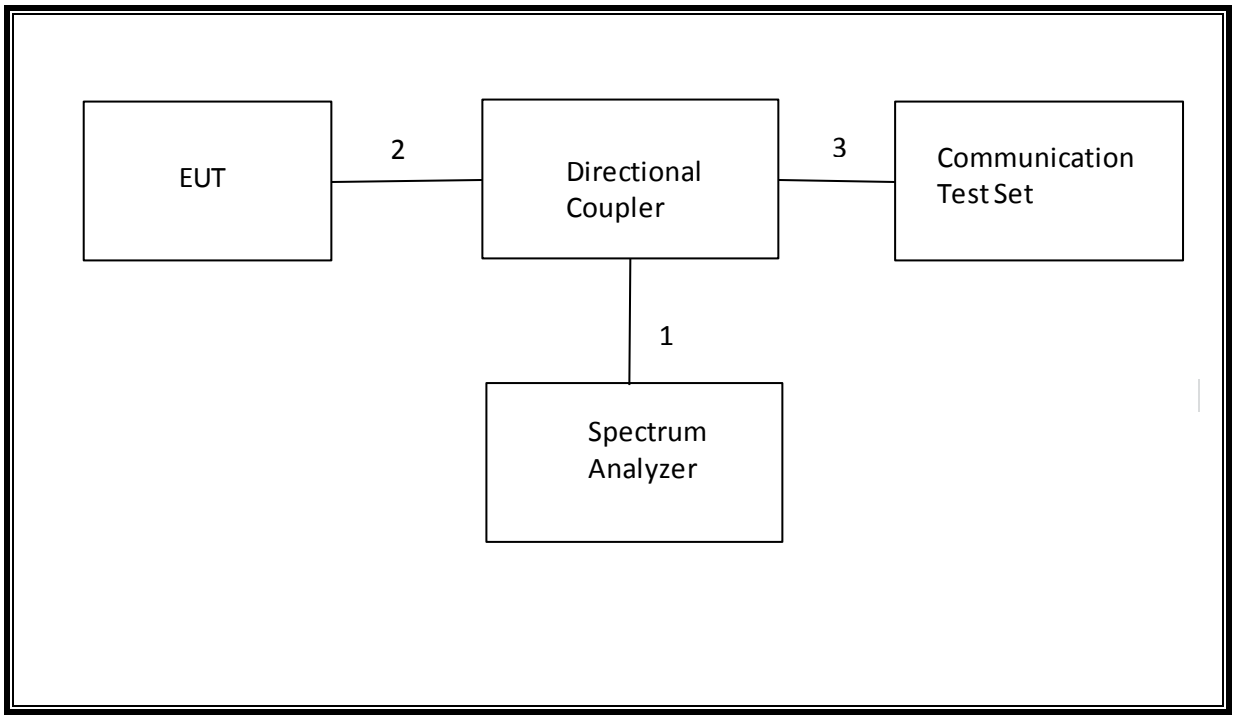
I/O CABLES (RADIATED SETUP)

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

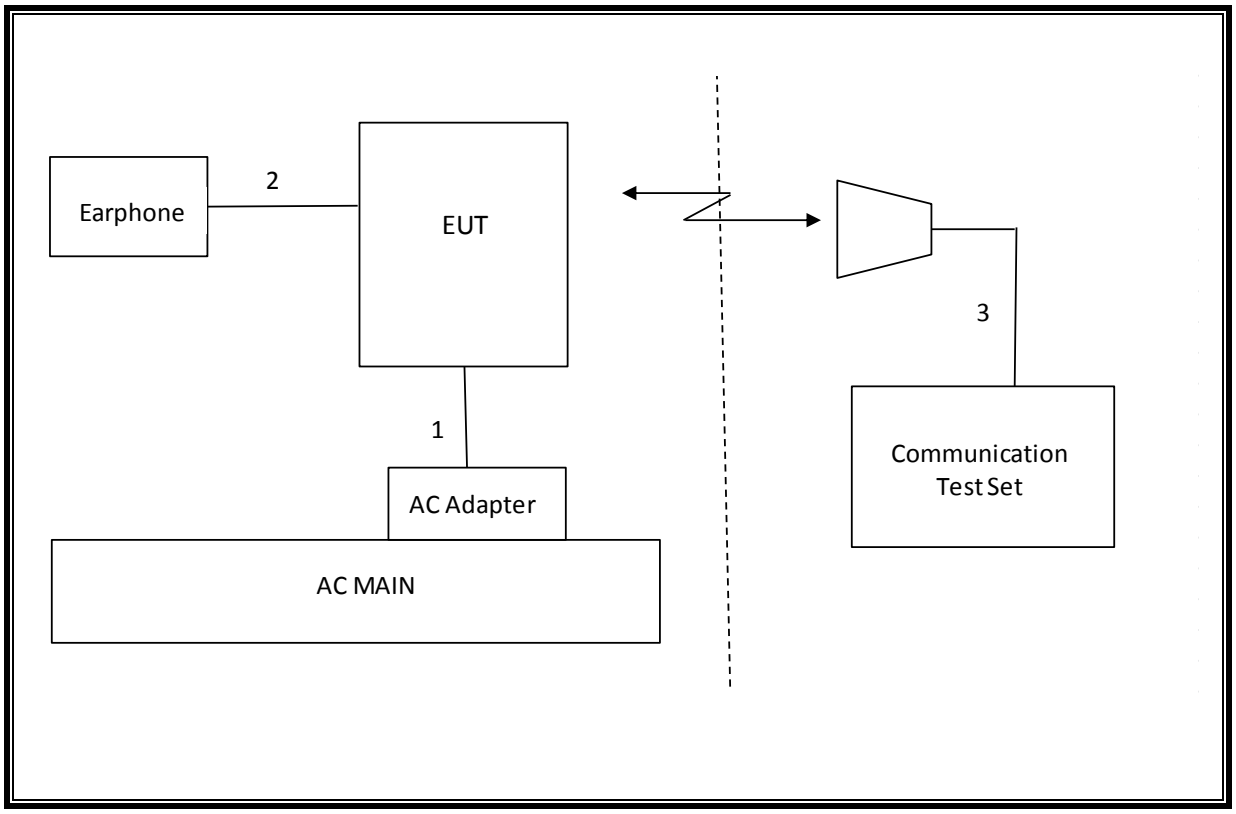
TEST SETUP

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

SETUP DIAGRAM FOR TESTS (CONDUCTED TEST SETUP)



SETUP DIAGRAM FOR TESTS (RADIATED TEST SETUP)



6. TEST AND MEASUREMENT EQUIPMENT

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

TEST EQUIPMENT LIST				
Description	Manufacturer	Model	Asset	Cal Due
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01179	05/01/15
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	C01011	04/22/15
Antenna, Horn, 18 GHz	EMCO	3115	C00783	10/25/15
Antenna, Horn, 18 GHz	EMCO	3115	C00784	10/25/15
Highpass Filter, 2.7 GHz	Micro-Tronics	HPM13194	N02687	CNR
Highpass Filter, 1.5 GHz	Micro-Tronics	HPM13193	N02688	CNR
Temperature / Humidity Chamber	Thermotron	SE 600-10-10	C00930	05/11/15
Communications Test Set	R&S	CMW500	T159	07/02/15
DC power supply, 8 V @ 3 A or 15 V	Agilent / HP	E3610A	None	CNR
Vector signal generator, 6 GHz	Agilent / HP	E4438C	None	06/18/15
Antenna, Tuned Dipole 400~1000	ETS	3121C DB4	C00993	02/11/16
Directional Coupler	RF-Lambda	RFDC5M06G15	None	CNR
Antenna, Horn, 26.5 GHz	ARA	MWH-1826/B	C00589	12/17/15

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

7. Summary Table

FCC Part Section	RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result	Note
2.1049	N/A	Occupied Band width (99%)	N/A	Conducted	Pass	17.98MHz
22.917(a) 24.238(a) 27.53(g) 90.691	RSS-132(4.5.1) RSS-133(6.5.1) RSS-139(6.5.1)	Band Edge / Conducted Spurious Emission	-13dBm		Pass	-14.128dBm
2.1046	N/A	Conducted output power	N/A		Pass	33.2dBm
22.355 24.235 27.54 90.213	RSS-132(4.3) RSS-133(6.3) RSS-139(6.3) RSS-199(4.3)	Frequency Stability	2.5PPM		Pass	0.009PPM
22.913(a)(2)	RSS-132(4.4)	Effective Radiated Power	38 dBm	Radiated	Pass	31.88dBm
27.50(c)(10)	N/A		34.77 dBm		Pass	21.29dBm
24.232(c) 27.50(h)(2)	RSS-133(6.4) RSS-199(4.4)	Equivalent Isotropic Radiated Power	33dBm		Pass	31.36dBm
27.50(d)(4)	RSS-139(6.4)		30dBm		Pass	29.51dBm
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	-35.3dBm

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

GSM

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

Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Burst Pwr (dBm)
GSM (Voice)	CS1	1	128	824.2	33.2
			190	836.6	33.2
			251	848.8	33.2
GPRS (GMSK)	CS1	1	128	824.2	33.2
			190	836.6	33.2
			251	848.8	33.2
		2	128	824.2	31.7
			190	836.6	31.7
			251	848.8	31.5
EGPRS (8PSK)	MCS5	1	128	824.2	27.7
			190	836.6	27.7
			251	848.8	27.7
		2	128	824.2	27.7
			190	836.6	27.7
			251	848.8	27.7

8.2. UMTS REL 99

TEST PROCEDURE

The following summary of these settings are illustrated below:

	Mode	Rel99
	Subtest	-
WCDMA General Settings	Loopback Mode	Test Mode 1
	Rel99 RMC	12.2kbps RMC
	HSDPA FRC	Not Applicable
	HSUPA Test	Not Applicable
	Power Control Algorithm	Algorithm2
	βc	Not Applicable
	βd	Not Applicable
	βec	Not Applicable
	βc/βd	8/15
	βhs	Not Applicable
	βed	Not Applicable

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

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	23.6
		4183	836.6	0	23.6
		4233	846.6	0	23.4

8.3. UMTS HSDPA

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

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

Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band II HSDPA	Subtest 1	9262	1852.4	0	23.4
		9400	1880.0	0	23.4
		9538	1907.6	0	23.4
	Subtest 2	9262	1852.4	0	23.3
		9400	1880.0	0	23.3
		9538	1907.6	0	23.2
	Subtest 3	9262	1852.4	0.5	21.7
		9400	1880.0	0.5	21.8
		9538	1907.6	0.5	21.7
	Subtest 4	9262	1852.4	0.5	21.5
		9400	1880.0	0.5	21.6
		9538	1907.6	0.5	21.5

Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band V HSDPA	Subtest 1	4132	826.4	0	23.6
		4183	836.6	0	23.5
		4233	846.6	0	23.3
	Subtest 2	4132	826.4	0	22.0
		4183	836.6	0	22.1
		4233	846.6	0	22.1
	Subtest 3	4132	826.4	0.5	21.9
		4183	836.6	0.5	22.0
		4233	846.6	0.5	22.0
	Subtest 4	4132	826.4	0.5	22.2
		4183	836.6	0.5	22.1
		4233	846.6	0.5	21.9

8.3.2. UMTS HSUPA

TEST PROCEDURE

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

	Mode	Rel6 HSUPA	Rel6 HSUPA	Rel6 HSUPA	Rel6 HSUPA	Rel6 HSUPA
	Subtest	1	2	3	4	5
WCDMA General Settings	Loopback Mode	Test Mode 1				
	P-CPICH (dB)	-10				
	P-CCPCH (dB)	-12				
	SCH (dB)	-12				
	PICH(dB)	-15				
	DPCH (dB)	-9				
	HS-SCCH_1 (dB)	-8				
	HS-PDSCH (dB)	-3				
	Rel99 RMC	12.2kbps RMC				
	HSDPA FRC	H-Set1				
	HSUPA Test	HSUPA Loopback				
	Power Control Algorithm	Algorithm2				
	Bc	11/15	6/15	15/15	2/15	15/15
	Bd	15/15	15/15	9/15	15/15	15/15
	Bec	209/225	12/15	30/15	2/15	5/15
	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.

Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band II HSUPA	Subtest 1	9262	1852.4	0	22.4
		9400	1880.0	0	22.4
		9538	1907.6	0	21.8
	Subtest 2	9262	1852.4	2	20.8
		9400	1880.0	2	21.1
		9538	1907.6	2	20.8
	Subtest 3	9262	1852.4	1	22.1
		9400	1880.0	1	22.2
		9538	1907.6	1	22.1
	Subtest 4	9262	1852.4	2	22.2
		9400	1880.0	2	21.3
		9538	1907.6	2	22.2
	Subtest 5	9262	1852.4	0	23.4
		9400	1880.0	0	23.4
		9538	1907.6	0	23.3

Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band V HSUPA	Subtest 1	4132	826.4	0	22.2
		4183	836.6	0	22.1
		4233	846.6	0	22.3
	Subtest 2	4132	826.4	2	21.7
		4183	836.6	2	21.5
		4233	846.6	2	21.1
	Subtest 3	4132	826.4	1	22.0
		4183	836.6	1	22.4
		4233	846.6	1	21.4
	Subtest 4	4132	826.4	2	21.4
		4183	836.6	2	22.2
		4233	846.6	2	22.2
	Subtest 5	4132	826.4	0	23.5
		4183	836.6	0	23.5
		4233	846.6	0	23.4

9.1. CDMA2000

9.1.1. 1xRTT

TEST PROCEDURE

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

Application	Rev, License
CDMA2000 Mobile Test	B.13.08, L

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

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

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

8.4.3. 1xEV-DO Release 0

TEST PROCEDURE

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

Application	Rev, License
1xEV-DO Terminal Test	A.09.13

EVDO Release 0 - RTAP

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

EVDO Release 0 - FTAP

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

Band	FTAP Rate	Channel	f (MHz)	Avg Pwr (dBm)
BC1	307.2 kbps (2 slot, QPSK)	25	1851.25	24.2
		600	1880.00	24.3
		1175	1908.75	24.4

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

8.4.5. 1xEV-DO Rev. A

TEST PROCEDURE

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

Application	Rev, License
1xEV-DO Terminal Test	A.09.13

EVDO Release A – RETAP

- Call Setup > Shift & Preset
- Cell Power > -60 dBm/1.23 MHz
- Protocol Rev > A (1xEV-DO-A)
- Application Config > Enhanced Test Application Protocol > RETAP
- R-Data Pkt Size > 4096
- Protocol Subtype Config > Release A Physical Layer Subtype > Subtype 2

> PL Subtype 2 Access Channel MAC Subtype > Default (Subtype 0)

- Access Network Info > Cell Parameters > Sector ID > 00000000 > Subnet Mask > 0
- Generator Info > Termination Parameters > Max Forward Packet Duration >16 Slots > ACK R-Data After > Subpacket 0 (All ACK)
- Rvs Power Ctrl > All Up bits (to get the maximum power)

EVDO Release A - FETAP

- Call Setup > Shift & Preset
- Cell Power > -60 dBm/1.23 MHz
- Protocol Rev > A (1xEV-DO-A)
- Application Config > Enhanced Test Application Protocol > FETAP
- F-Traffic Format > 4 (1024, 2,128) Canonical (307.2k, QPSK)
- Protocol Subtype Config > Release A Physical Layer Subtype > Subtype 2

> PL Subtype 2 Access Channel MAC Subtype > Default (Subtype 0)

- Access Network Info > Cell Parameters > Sector ID > 00000000 > Subnet Mask > 0
- Generator Info > Termination Parameters > Max Forward Packet Duration >16 Slots > ACK R-Data After > Subpacket 0 (All ACK)
- Rvs Power Ctrl > All Up bits (to get the maximum power)

Band	FETAP Traffic Format	Channel	f (MHz)	Avg Pwr (dBm)
BC1	307.2k, QPSK/ ACK channel is transmitted at all the slots	25	1851.25	24.0
		600	1880.00	24.0
		1175	1908.75	24.1

Band	FETAP Traffic Format	Channel	f (MHz)	Avg Pwr (dBm)
BC0	307.2k, QPSK/ ACK channel is transmitted at all the slots	1013	824.70	24.1
		384	836.52	24.2
		777	848.31	24.1

9.2. LTE OUTPUT VERIFICATION

9.2.1. LTE OUTPUT RESULT

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						26140	26365	26590
						1860 MHz	1882.5 MHz	1905 MHz
LTE Band 25	20	QPSK	1	0	0	24.20	24.20	24.20
			1	49	0	24.20	24.10	24.20
			1	99	0	24.10	24.00	24.20
			50	0	1	22.90	22.90	22.50
			50	24	1	22.90	22.80	22.40
			50	50	1	22.90	22.80	22.50
			100	0	1	22.90	22.80	22.60
		16QAM	1	0	1	23.20	23.20	22.70
			1	49	1	23.10	23.10	22.50
			1	99	1	23.00	23.00	22.40
			50	0	2	22.00	22.00	21.60
			50	24	2	22.00	22.00	21.60
			50	50	2	22.00	21.90	21.60
			100	0	2	21.90	21.90	21.70
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						26115	26365	26615
						1857.5 MHz	1882.5 MHz	1907.5 MHz
LTE Band 25	15	QPSK	1	0	0	24.20	24.20	24.10
			1	37	0	24.20	24.10	24.10
			1	74	0	24.20	24.00	24.00
			36	0	1	22.90	22.90	22.60
			36	20	1	22.90	22.90	22.60
			36	39	1	22.90	22.90	22.60
			75	0	1	22.90	22.90	22.60
		16QAM	1	0	1	23.10	23.00	23.10
			1	37	1	23.00	23.00	23.00
			1	74	1	22.90	23.00	23.00
			36	0	2	22.00	21.90	21.70
			36	20	2	22.00	21.90	21.70
			36	39	2	22.00	22.00	21.70
			75	0	2	21.90	22.00	21.70

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						26090	26365	26640
						1855 MHz	1882.5 MHz	1910 MHz
LTE Band 25	10	QPSK	1	0	0	24.20	24.10	24.10
			1	25	0	24.10	24.10	24.00
			1	49	0	24.10	24.00	24.00
			25	0	1	22.90	22.90	22.70
			25	12	1	22.90	22.90	22.70
			25	25	1	22.90	22.90	22.70
			50	0	1	22.90	22.90	22.70
		16QAM	1	0	1	23.10	23.00	23.10
			1	25	1	23.00	23.00	23.00
			1	49	1	23.00	23.00	23.00
			25	0	2	22.00	22.00	21.80
			25	12	2	22.00	22.00	21.80
			25	25	2	22.00	22.00	21.80
			50	0	2	22.00	22.00	21.80

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						26065	26365	26665
						1852.5 MHz	1882.5 MHz	1912.5 MHz
LTE Band 25	5	QPSK	1	0	0	24.10	24.10	24.10
			1	12	0	24.10	24.10	24.00
			1	24	0	24.10	24.10	24.00
			12	0	1	22.90	22.80	22.70
			12	7	1	23.00	22.90	22.60
			12	13	1	22.90	23.00	22.60
			25	0	1	22.90	22.90	22.70
		16QAM	1	0	1	23.10	23.00	23.10
			1	12	1	23.10	23.00	23.00
			1	24	1	23.00	22.90	23.00
			12	0	2	22.00	21.90	21.80
			12	7	2	22.00	22.00	21.80
			12	13	2	22.00	22.00	21.80
			25	0	2	22.00	22.00	21.80

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						26055	26365	26675
						1851.5 MHz	1882.5 MHz	1913.5 MHz
LTE Band 25	3	QPSK	1	0	0	24.10	24.10	24.00
			1	8	0	24.10	24.10	24.00
			1	14	0	24.00	24.00	24.00
			8	0	1	22.90	22.80	22.60
			8	4	1	23.00	22.90	22.60
			8	7	1	22.90	22.90	22.60
			15	0	1	22.90	22.90	22.70
		16QAM	1	0	1	23.10	23.00	23.00
			1	8	1	23.20	23.00	23.00
			1	14	1	23.00	23.00	23.00
			8	0	2	22.00	22.00	21.80
			8	4	2	22.00	22.00	21.70
			8	7	2	22.00	22.00	21.70
			15	0	2	22.00	22.00	21.70

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						26047	26365	26683
						1850.7 MHz	1882.5 MHz	1914.3 MHz
LTE Band 25	1.4	QPSK	1	0	0	24.20	24.10	24.10
			1	3	0	24.10	24.10	24.10
			1	5	0	24.00	24.00	24.10
			3	0	0	24.00	24.00	23.80
			3	1	0	24.00	24.00	23.70
			3	3	0	23.90	23.90	23.70
			6	0	1	22.90	22.90	22.70
		16QAM	1	0	1	23.10	23.00	23.00
			1	3	1	23.20	23.00	23.00
			1	5	1	23.00	23.00	23.00
			3	0	1	23.00	23.00	22.80
			3	1	1	23.00	23.00	22.80
			3	3	1	23.00	23.00	22.80
			6	0	2	22.00	22.00	21.80

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm) 23790 710 MHz
LTE Band 17	10	QPSK	1	0	0	24.50
			1	25	0	24.40
			1	49	0	24.30
			25	0	1	23.40
			25	12	1	23.40
			25	25	1	23.30
			50	0	1	23.40
		16QAM	1	0	1	23.70
			1	25	1	23.70
			1	49	1	23.70
			25	0	2	22.30
			25	12	2	22.30
			25	25	2	22.20
			50	0	2	22.20

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm) 23790 710 MHz
LTE Band 17	5	QPSK	1	0	0	24.40
			1	12	0	24.40
			1	24	0	24.30
			12	0	1	23.30
			12	7	1	23.30
			12	13	1	23.30
			25	0	1	23.40
		16QAM	1	0	1	23.50
			1	12	1	23.50
			1	24	1	23.40
			12	0	2	22.30
			12	7	2	22.30
			12	13	2	22.30
			25	0	2	22.50

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm) 23230 782 MHz
LTE Band 13	10	QPSK	1	0	0	24.20
			1	25	0	24.20
			1	49	0	24.10
			25	0	1	23.20
			25	12	1	23.20
			25	25	1	23.10
			50	0	1	23.10
		16QAM	1	0	1	23.40
			1	25	1	23.30
			1	49	1	23.30
			25	0	2	22.10
			25	12	2	22.00
			25	25	2	22.00
			50	0	2	22.10

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm) 23230 782 MHz
LTE Band 13	5	QPSK	1	0	0	24.20
			1	12	0	24.20
			1	24	0	24.10
			12	0	1	23.10
			12	7	1	23.10
			12	13	1	23.10
			25	0	1	23.10
		16QAM	1	0	1	23.10
			1	12	1	23.10
			1	24	1	23.10
			12	0	2	22.10
			12	7	2	22.10
			12	13	2	22.10
			25	0	2	22.30

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						23060	23095	23130
						704 MHz	707.5 MHz	711 MHz
LTE Band 12	10	QPSK	1	0	0	24.70	24.60	24.60
			1	25	0	24.60	24.50	24.60
			1	49	0	24.60	24.50	24.50
			25	0	1	23.40	23.50	23.50
			25	12	1	23.30	23.40	23.40
			25	25	1	23.30	23.40	23.40
			50	0	1	23.30	23.40	23.50
		16QAM	1	0	1	23.40	23.70	23.70
			1	25	1	23.30	23.70	23.70
			1	49	1	23.30	23.70	23.70
			25	0	2	22.40	22.40	22.40
			25	12	2	22.30	22.40	22.30
			25	25	2	22.30	22.30	22.30
			50	0	2	22.30	22.30	22.30

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						23035	23095	23155
						701.5 MHz	707.5 MHz	713.5 MHz
LTE Band 12	5	QPSK	1	0	0	24.60	24.60	24.60
			1	12	0	24.60	24.50	24.50
			1	24	0	24.60	24.50	24.50
			12	0	1	23.40	23.40	23.40
			12	7	1	23.30	23.40	23.40
			12	13	1	23.30	23.40	23.40
			25	0	1	23.30	23.40	23.40
		16QAM	1	0	1	23.40	23.70	23.70
			1	12	1	23.30	23.70	23.70
			1	24	1	23.30	23.70	23.60
			12	0	2	22.30	22.30	22.30
			12	7	2	22.30	22.40	22.30
			12	13	2	22.30	22.30	22.30
			25	0	2	22.30	22.30	22.30

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						23025	23095	23165
						700.5 MHz	707.5 MHz	714.5 MHz
LTE Band 12	3	QPSK	1	0	0	24.60	24.60	24.60
			1	8	0	24.60	24.50	24.60
			1	14	0	24.50	24.50	24.60
			8	0	1	23.40	23.50	23.50
			8	4	1	23.40	23.50	23.50
			8	7	1	23.40	23.40	23.50
			15	0	1	23.40	23.40	23.50
		16QAM	1	0	1	23.40	23.40	23.70
			1	8	1	23.40	23.40	23.70
			1	14	1	23.40	23.40	23.60
			8	0	2	22.40	22.50	22.50
			8	4	2	22.40	22.50	22.50
			8	7	2	22.40	22.50	22.40
			15	0	2	22.40	22.40	22.50

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						23017	23095	23173
						699.7 MHz	707.5 MHz	715.3 MHz
LTE Band 12	1.4	QPSK	1	0	0	24.60	24.50	24.50
			1	3	0	24.50	24.60	24.50
			1	5	0	24.50	24.50	24.50
			3	0	0	24.50	24.50	24.50
			3	1	0	24.50	24.50	24.40
			3	3	0	24.50	24.40	24.40
			6	0	1	23.50	23.40	23.50
		16QAM	1	0	1	23.50	23.40	23.50
			1	3	1	23.40	23.40	23.40
			1	5	1	23.50	23.40	23.40
			3	0	1	23.30	23.20	23.40
			3	1	1	23.30	23.20	23.30
			3	3	1	23.20	23.20	23.30
			6	0	2	22.30	22.30	22.40

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						20450	20525	20600
						829 MHz	836.5 MHz	844 MHz
LTE Band 5	10	QPSK	1	0	0	24.30	24.40	24.40
			1	25	0	24.30	24.40	24.40
			1	49	0	24.20	24.40	24.40
			25	0	1	23.20	23.20	23.20
			25	12	1	23.20	23.20	23.20
			25	25	1	23.20	23.20	23.20
			50	0	1	23.20	23.20	23.10
		16QAM	1	0	1	23.40	23.40	23.40
			1	25	1	23.30	23.40	23.30
			1	49	1	23.30	23.30	23.30
			25	0	2	22.30	22.20	22.30
			25	12	2	22.30	22.20	22.20
			25	25	2	22.20	22.10	22.20
			50	0	2	22.20	22.20	22.20

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						20425	20525	20625
						826.5 MHz	836.5 MHz	846.5 MHz
LTE Band 5	5	QPSK	1	0	0	24.30	24.40	24.20
			1	12	0	24.00	24.40	24.30
			1	24	0	24.20	24.30	24.20
			12	0	1	23.10	23.20	23.20
			12	7	1	23.20	23.20	23.10
			12	13	1	23.10	23.20	23.10
			25	0	1	23.20	23.10	23.20
		16QAM	1	0	1	23.20	23.10	23.40
			1	12	1	23.30	23.10	23.40
			1	24	1	23.10	23.10	23.40
			12	0	2	22.10	22.10	22.10
			12	7	2	22.10	22.10	22.10
			12	13	2	22.10	22.10	22.10
			25	0	2	22.30	22.20	22.10

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						20415	20525	20635
						825.5 MHz	836.5 MHz	847.5 MHz
LTE Band 5	3	QPSK	1	0	0	24.30	24.30	24.20
			1	8	0	24.20	24.40	24.30
			1	14	0	24.20	24.30	24.20
			8	0	1	23.10	23.20	23.20
			8	4	1	23.20	23.20	23.10
			8	7	1	23.10	23.20	23.10
			15	0	1	23.20	23.10	23.20
		16QAM	1	0	1	23.20	23.10	23.40
			1	8	1	23.30	23.20	23.40
			1	14	1	23.10	23.10	23.30
			8	0	2	22.10	22.10	22.20
			8	4	2	22.10	22.10	22.10
			8	7	2	22.10	22.10	22.10
			15	0	2	22.20	22.20	22.10

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						20407	20525	20643
						824.7 MHz	836.5 MHz	848.3 MHz
LTE Band 5	1.4	QPSK	1	0	0	24.30	24.30	24.30
			1	3	0	24.20	24.30	24.20
			1	5	0	24.20	24.30	24.20
			3	0	0	24.10	24.20	24.20
			3	1	0	24.20	24.20	24.10
			3	3	0	24.10	24.10	24.10
			6	0	1	23.20	23.10	23.20
		16QAM	1	0	1	23.20	23.10	23.40
			1	3	1	23.30	23.10	23.40
			1	5	1	23.10	23.10	23.30
			3	0	1	23.10	23.20	23.20
			3	1	1	23.20	23.20	23.10
			3	3	1	23.10	23.10	23.20
			6	0	2	22.20	22.20	22.20

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						20050	20175	20300
						1720 MHz	1732.5 MHz	1745 MHz
LTE Band 4	20	QPSK	1	0	0	24.40	24.40	24.40
			1	49	0	24.20	24.30	24.00
			1	99	0	24.10	24.10	23.90
			50	0	1	23.10	23.10	23.10
			50	24	1	23.10	23.10	23.00
			50	50	1	23.10	23.10	23.00
			100	0	1	23.10	23.10	23.10
		16QAM	1	0	1	23.50	23.50	23.30
			1	49	1	23.50	23.50	23.20
			1	99	1	23.50	23.50	22.90
			50	0	2	22.20	22.20	22.00
			50	24	2	22.20	22.10	22.00
			50	50	2	22.10	22.10	22.00
			100	0	2	22.10	22.10	22.10

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						20025	20175	20325
						1717.5 MHz	1732.5 MHz	1747.5 MHz
LTE Band 4	15	QPSK	1	0	0	24.20	24.30	24.30
			1	37	0	24.20	24.20	24.30
			1	74	0	24.10	24.10	24.20
			36	0	1	23.30	23.30	23.30
			36	20	1	23.30	23.30	23.30
			36	39	1	23.30	23.30	23.30
			75	0	1	23.40	23.30	23.20
		16QAM	1	0	1	23.30	23.30	23.50
			1	37	1	23.50	23.20	23.50
			1	74	1	23.40	23.00	23.50
			36	0	2	22.30	22.30	22.20
			36	20	2	22.30	22.30	22.20
			36	39	2	22.30	22.30	22.30
			75	0	2	22.40	22.30	22.30

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						20000	20175	20350
						1715 MHz	1732.5 MHz	1750 MHz
LTE Band 4	10	QPSK	1	0	0	24.10	24.20	24.30
			1	25	0	24.10	24.10	24.20
			1	49	0	24.00	24.00	24.20
			25	0	1	23.30	23.20	23.20
			25	12	1	23.30	23.20	23.20
			25	25	1	23.20	23.30	23.30
			50	0	1	23.30	23.30	23.30
		16QAM	1	0	1	23.30	23.30	23.50
			1	25	1	23.40	23.20	23.50
			1	49	1	23.30	23.10	23.40
			25	0	2	22.30	22.30	22.30
			25	12	2	22.30	22.30	22.30
			25	25	2	22.30	22.30	22.30
			50	0	2	22.30	22.30	22.30

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						19975	20175	20375
						1712.5 MHz	1732.5 MHz	1752.5 MHz
LTE Band 4	5	QPSK	1	0	0	24.00	24.00	24.20
			1	12	0	24.10	24.00	24.20
			1	24	0	24.00	24.00	24.20
			12	0	1	23.30	23.20	23.20
			12	7	1	23.20	23.20	23.20
			12	13	1	23.20	23.20	23.20
			25	0	1	23.30	23.30	23.30
		16QAM	1	0	1	23.30	23.30	23.30
			1	12	1	23.30	23.20	23.30
			1	24	1	22.20	23.10	23.30
			12	0	2	22.30	22.30	22.30
			12	7	2	22.20	22.20	22.20
			12	13	2	22.20	22.20	22.20
			25	0	2	22.20	22.20	22.20

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						19965	20175	20385
						1711.5 MHz	1732.5 MHz	1753.5 MHz
LTE Band 4	3	QPSK	1	0	0	23.90	24.00	24.10
			1	8	0	24.00	23.90	24.00
			1	14	0	23.90	23.80	24.00
			8	0	1	23.00	23.10	22.90
			8	4	1	23.00	23.00	23.00
			8	7	1	23.00	23.00	23.00
			15	0	1	23.10	23.00	23.00
		16QAM	1	0	1	23.10	23.10	23.10
			1	8	1	23.10	23.10	23.20
			1	14	1	23.10	23.00	23.00
			8	0	2	22.10	22.10	22.20
			8	4	2	22.20	22.10	22.10
			8	7	2	22.10	22.10	22.10
			15	0	2	22.10	22.10	22.20

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						19957	20175	20393
						1710.7 MHz	1732.5 MHz	1754.3 MHz
LTE Band 4	1.4	QPSK	1	0	0	24.00	24.00	24.20
			1	3	0	24.00	24.10	24.20
			1	5	0	24.00	24.00	24.20
			3	0	0	24.10	24.10	24.10
			3	1	0	24.10	24.10	24.20
			3	3	0	24.10	24.10	24.10
			6	0	1	23.10	23.10	23.10
		16QAM	1	0	1	23.30	23.30	23.30
			1	3	1	23.30	23.20	23.30
			1	5	1	23.20	23.10	23.30
			3	0	1	23.20	23.20	23.20
			3	1	1	23.20	23.20	23.20
			3	3	1	23.20	23.20	23.20
			6	0	2	22.20	22.20	22.20

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						18700	18900	19100
						1860 MHz	1880 MHz	1900 MHz
LTE Band 2	20	QPSK	1	0	0	24.10	24.00	24.20
			1	49	0	24.00	23.80	24.00
			1	99	0	23.80	23.90	23.80
			50	0	1	22.40	22.40	22.60
			50	24	1	22.40	22.40	22.60
			50	50	1	22.40	22.40	22.60
			100	0	1	22.40	22.50	22.60
		16QAM	1	0	1	23.00	23.00	22.90
			1	49	1	22.90	22.80	22.70
			1	99	1	22.70	22.70	22.80
			50	0	2	21.60	21.60	21.60
			50	24	2	21.50	21.50	21.60
			50	50	2	21.50	21.50	21.60
			100	0	2	21.50	21.60	21.70

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						18675	18900	19125
						1857.5 MHz	1880 MHz	1902.5 MHz
LTE Band 2	15	QPSK	1	0	0	23.70	23.80	24.01
			1	37	0	23.40	23.50	23.65
			1	74	0	23.60	23.60	23.86
			36	0	1	22.40	22.40	22.52
			36	20	1	22.50	22.40	22.51
			36	39	1	22.30	22.40	22.53
			75	0	1	22.50	22.50	22.61
		16QAM	1	0	1	22.70	22.60	23.00
			1	37	1	22.60	22.20	22.40
			1	74	1	22.60	22.40	23.10
			36	0	2	21.50	21.50	21.60
			36	20	2	21.60	21.50	21.60
			36	39	2	21.50	21.40	21.60
			75	0	2	21.60	21.50	21.70

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						18650	18900	19150
						1855 MHz	1880 MHz	1905 MHz
LTE Band 2	10	QPSK	1	0	0	23.90	23.80	24.00
			1	25	0	23.70	23.80	24.20
			1	49	0	23.80	23.80	23.90
			25	0	1	22.80	22.80	23.00
			25	12	1	22.70	22.70	22.90
			25	25	1	22.80	22.70	22.90
			50	0	1	22.80	22.70	22.90
		16QAM	1	0	1	22.87	22.90	23.10
			1	25	1	23.20	23.20	23.10
			1	49	1	22.75	22.76	22.90
			25	0	2	21.95	21.99	22.10
			25	12	2	21.82	21.91	22.10
			25	25	2	21.93	21.87	22.00
			50	0	2	21.90	21.79	22.00

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						18625	18900	19175
						1852.5 MHz	1880 MHz	1907.5 MHz
LTE Band 2	5	QPSK	1	0	0	23.90	23.90	24.00
			1	12	0	23.90	24.10	23.80
			1	24	0	24.00	23.90	24.00
			12	0	1	22.70	22.60	22.70
			12	7	1	22.70	22.60	22.70
			12	13	1	22.70	22.60	22.80
			25	0	1	22.70	22.60	22.70
		16QAM	1	0	1	22.80	22.70	22.90
			1	12	1	22.90	22.50	23.00
			1	24	1	22.90	21.60	22.90
			12	0	2	21.80	21.70	21.90
			12	7	2	21.90	21.70	21.80
			12	13	2	21.80	21.70	21.80
			25	0	2	21.80	21.70	21.80

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						18615	18900	19185
						1851.5 MHz	1880 MHz	1908.5 MHz
LTE Band 2	3	QPSK	1	0	0	23.70	23.70	23.90
			1	8	0	24.20	24.20	24.10
			1	14	0	23.80	23.70	23.90
			8	0	1	22.70	22.60	22.80
			8	4	1	22.70	22.60	22.80
			8	7	1	22.80	22.60	22.80
			15	0	1	22.80	22.60	22.80
		16QAM	1	0	1	22.50	22.50	23.10
			1	8	1	22.50	22.50	22.90
			1	14	1	22.60	22.40	22.90
			8	0	2	21.90	21.80	21.70
			8	4	2	21.90	21.70	21.80
			8	7	2	22.00	21.80	21.80
			15	0	2	21.90	21.70	21.90

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						18607	18900	19193
						1850.7 MHz	1880 MHz	1909.3 MHz
LTE Band 2	1.4	QPSK	1	0	0	23.80	23.70	23.90
			1	3	0	23.90	23.90	23.90
			1	5	0	23.70	23.50	23.80
			3	0	0	23.60	23.60	23.70
			3	1	0	23.70	23.60	23.70
			3	3	0	23.70	23.60	23.80
			6	0	1	22.70	22.50	22.70
		16QAM	1	0	1	22.50	22.50	23.10
			1	3	1	22.40	22.40	23.00
			1	5	1	22.60	22.40	22.90
			3	0	1	22.90	22.90	22.70
			3	1	1	23.00	22.80	22.80
			3	3	1	22.90	22.70	22.80
			6	0	2	21.80	21.60	21.80

10. PEAK TO AVERAGE RATIO

Test Procedure

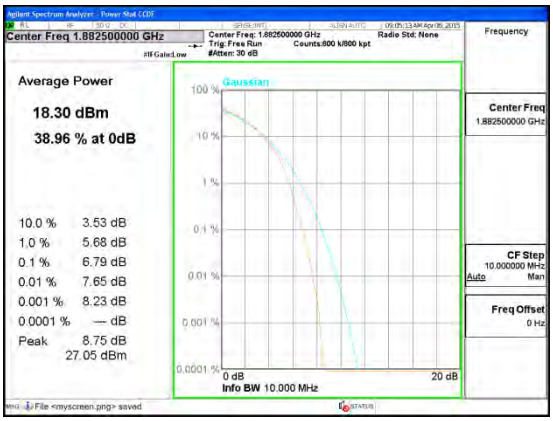
Per KDB 971168 D01 Power Meas License Digital Systems v02r02

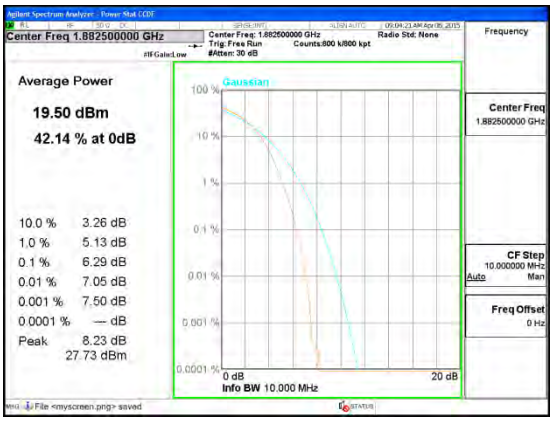
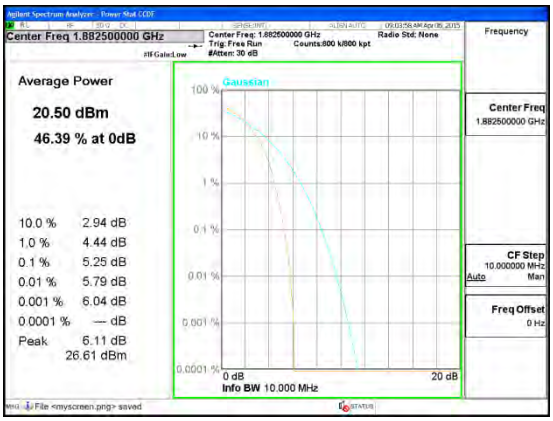
Test Spec

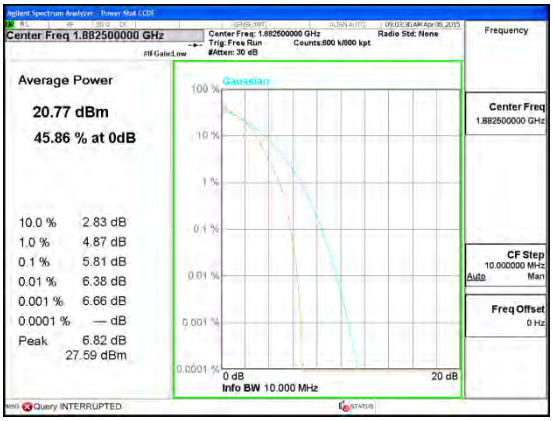
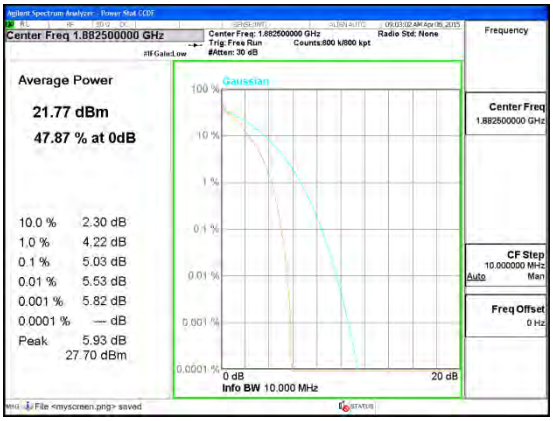
In addition, when the transmitter power is measured in terms of average value, the peak-to-average ratio of the power shall not exceed 13 dB.

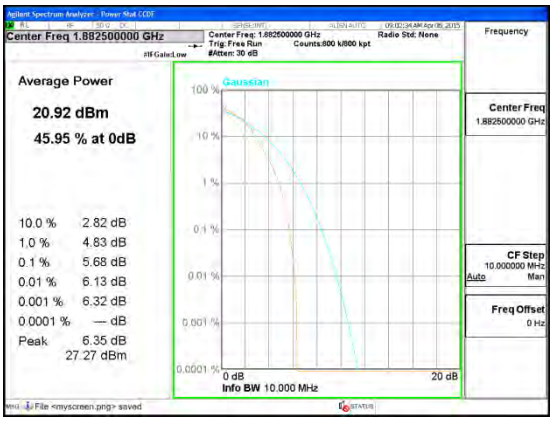
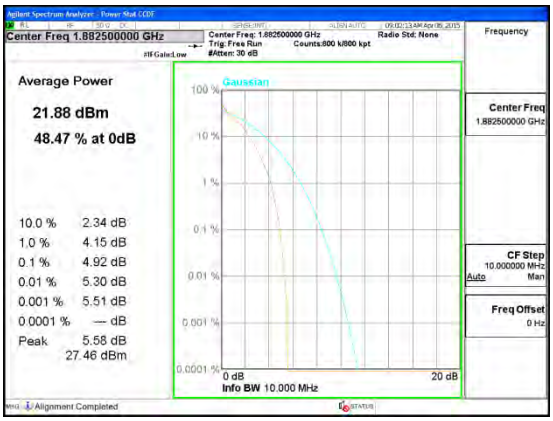
10.1. CONDUCTED PEAK TO AVERAGE RESULT

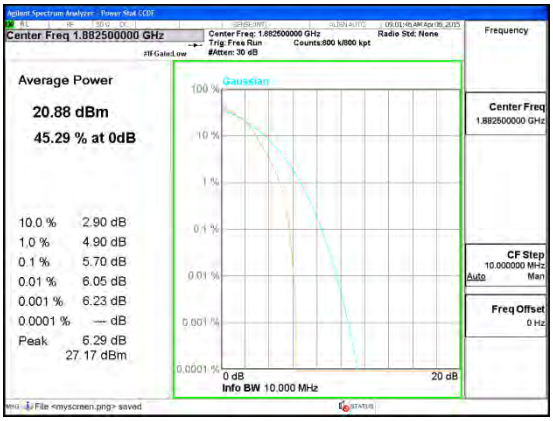
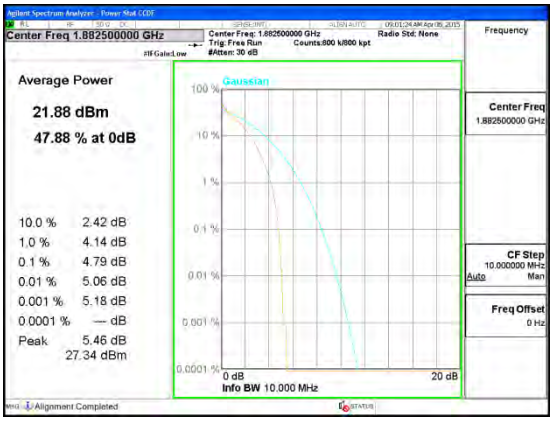
LTE Band 25 & 2

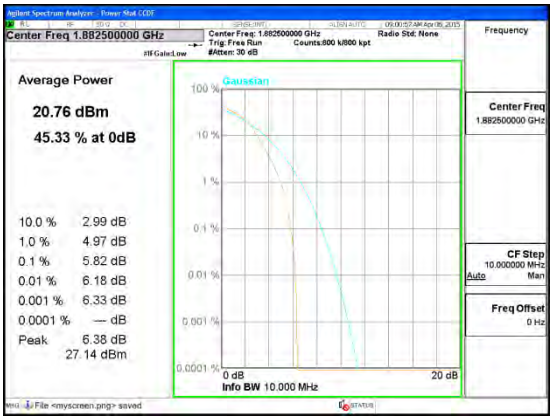
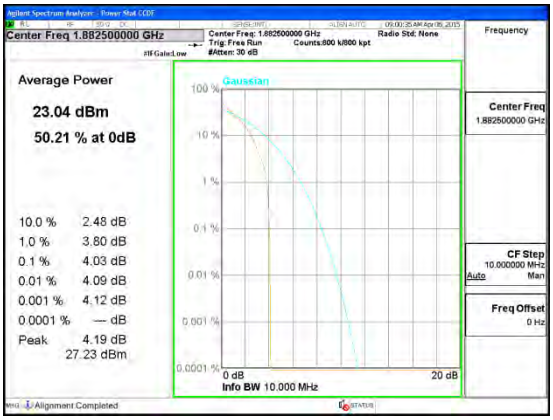
Band LTE25 20MHz	 Band LTE25 20MHz 16QAM Mid channel	 Band LTE2 20MHz QPSK Mid channel

Band LTE25 15MHz	 Band LTE25 15MHz 16QAM Mid channel	 Band LTE25 15MHz QPSK Mid channel

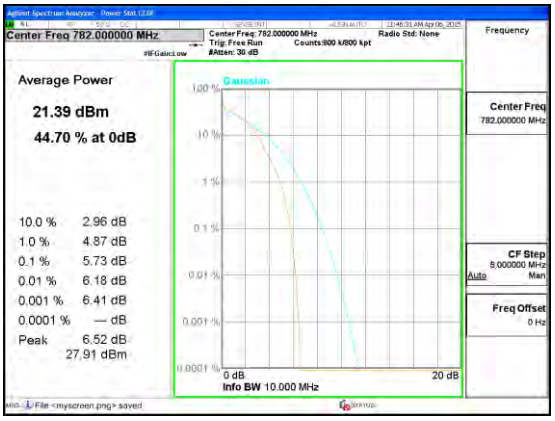
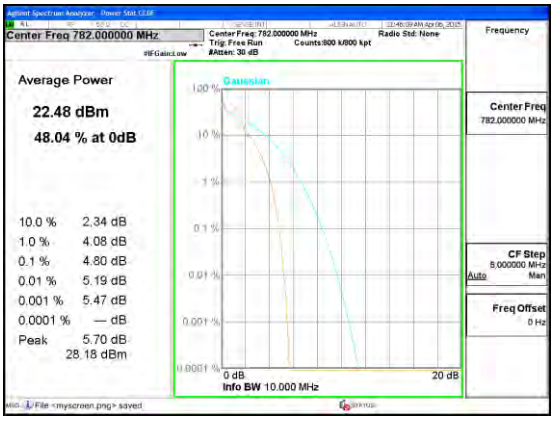
Band LTE25 10MHz	 Band LTE25 10MHz 16QAM Mid channel	 Band LTE25 10MHz QPSK Mid channel

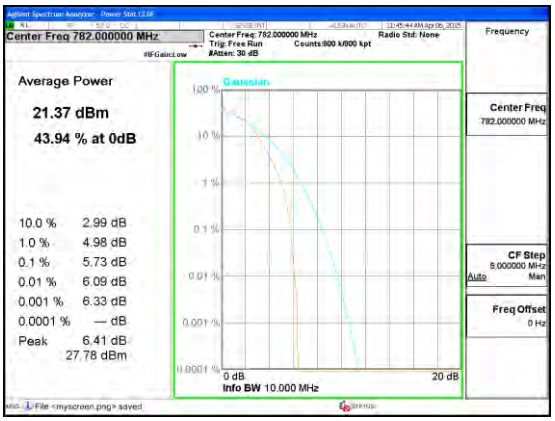
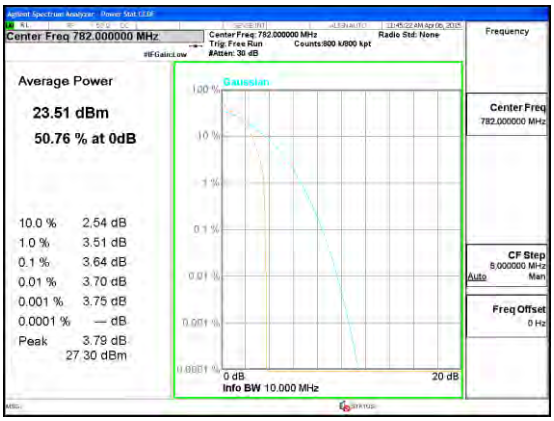
Band LTE25 5MHz		
	Band LTE25 5MHz 16QAM Mid channel	Band LTE25 5MHz QPSK Mid channel

Band LTE25 3MHz		
	Band LTE25 3MHz 16QAM Mid channel	Band LTE25 3MHz QPSK Mid channel

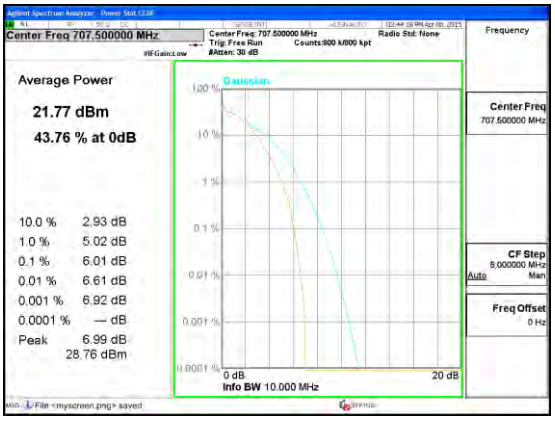
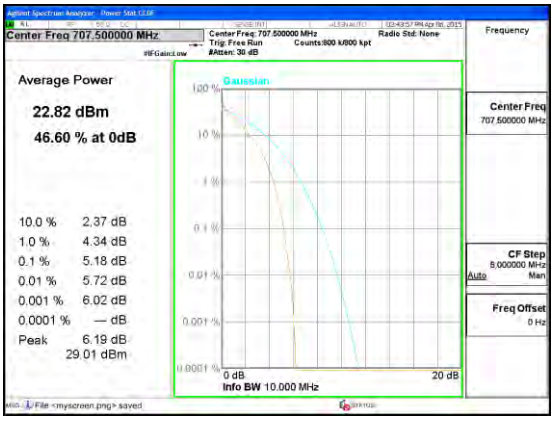
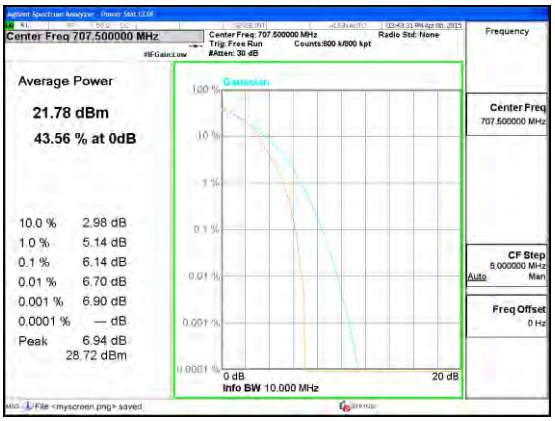
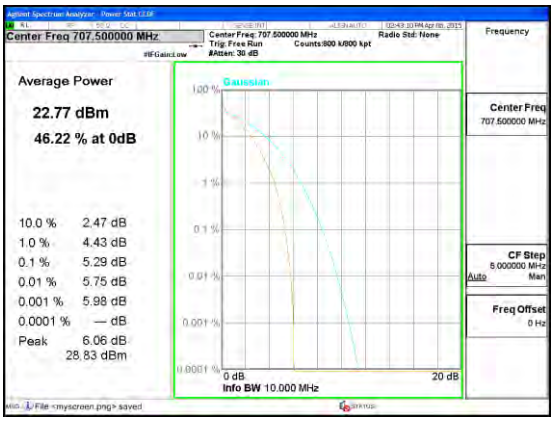
Band LTE25 1.4MHz	 Band LTE25 1.4MHz 16QAM Mid channel	 Band LTE25 1.4MHz QPSK Mid channel

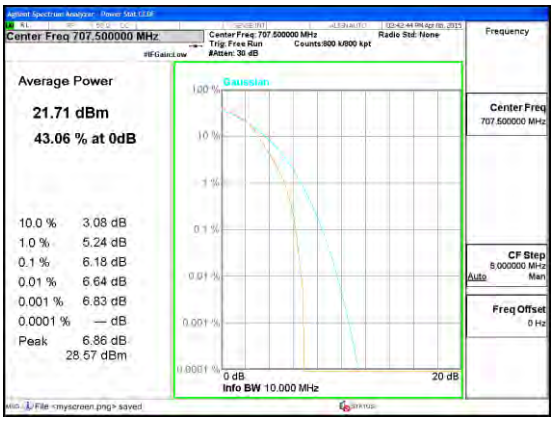
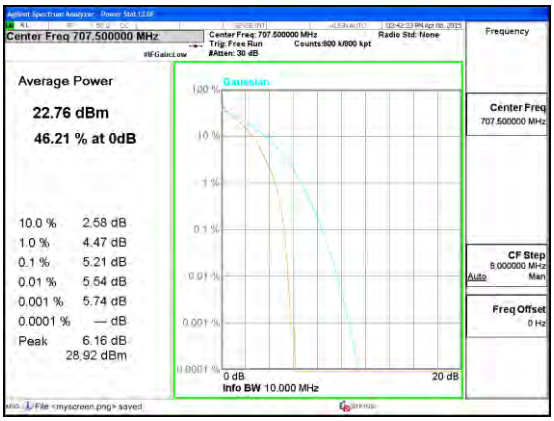
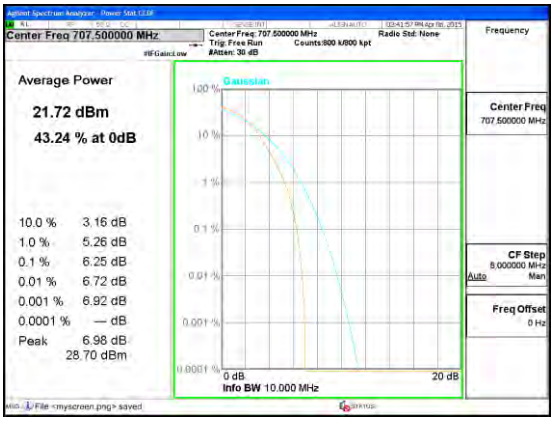
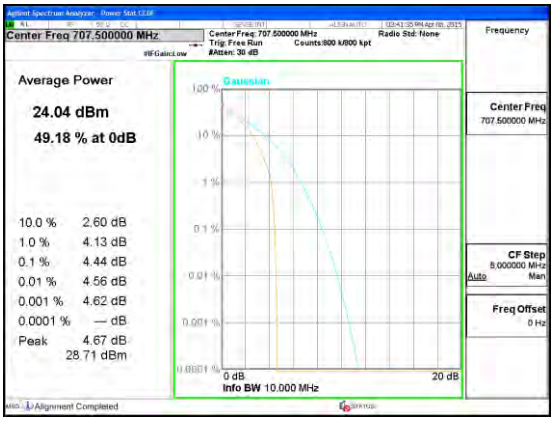
LTE Band 13

Band LTE13 10MHz	 Band LTE13 10MHz 16QAM High channel	 Band LTE13 10MHz QPSK High channel

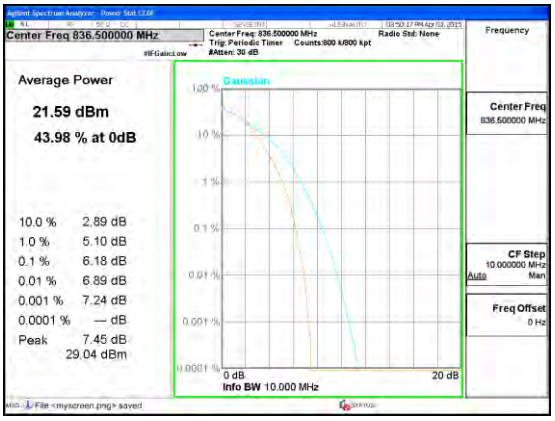
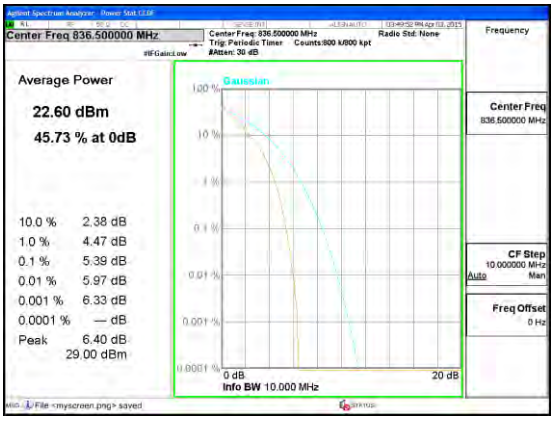
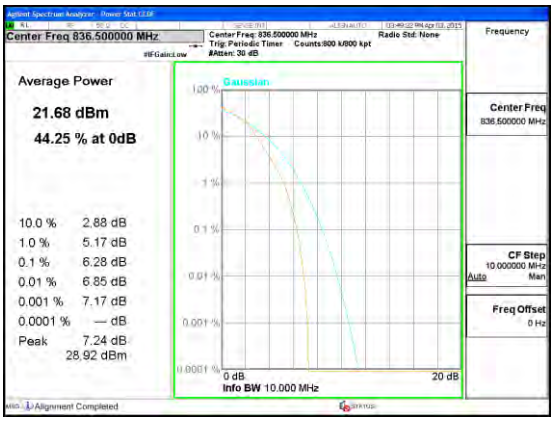
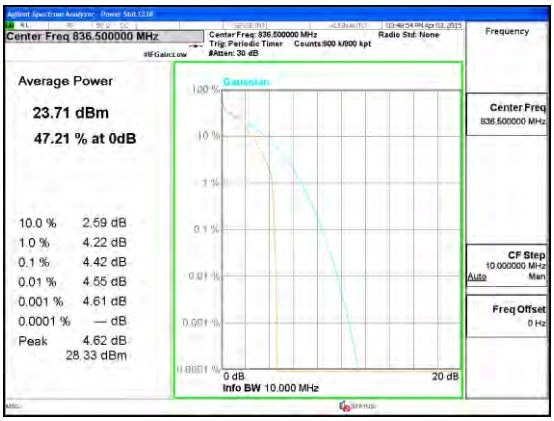
Band LTE13 5MHz	 Band LTE13 5MHz 16QAM Mid channel	 Band LTE13 5MHz QPSK Mid channel

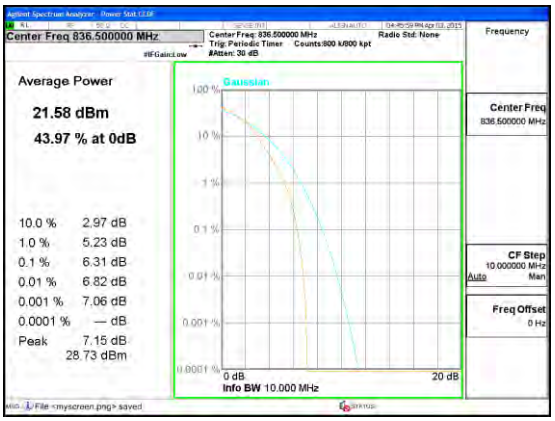
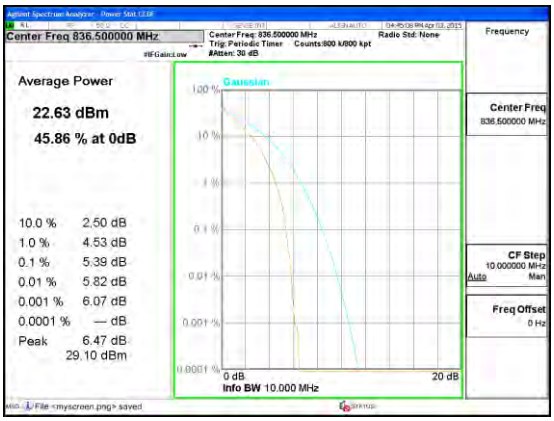
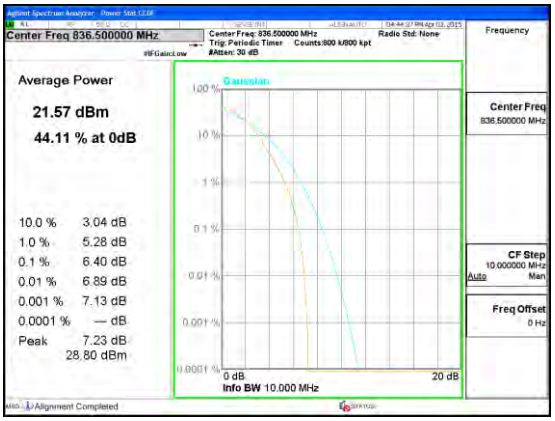
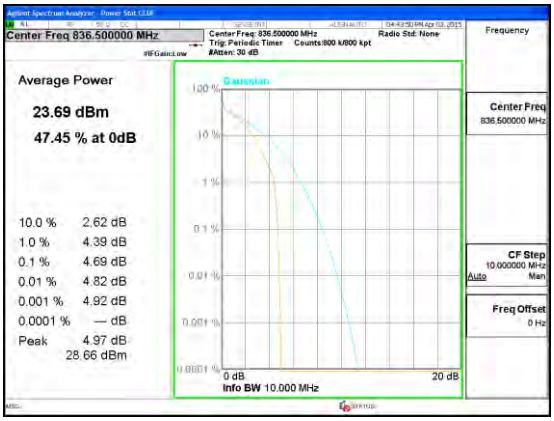
LTE Band 12 & 17

Band LTE12 10MHz	 Band LTE12 10MHz 16QAM Mid channel	 Band LTE12 10MHz QPSK Mid channel
Band LTE12 5MHz	 Band LTE12 5MHz 16QAM Mid channel	 Band LTE12 5MHz QPSK Mid channel

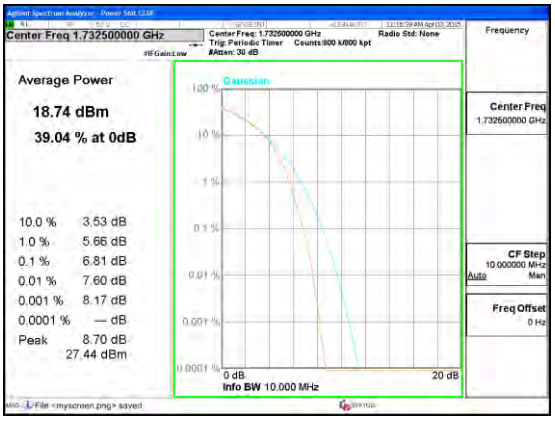
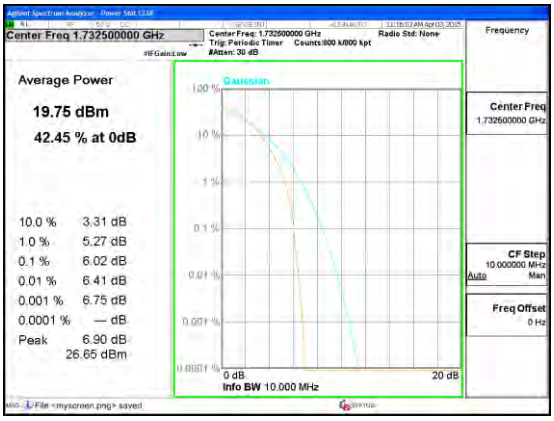
Band LTE12 3MHz	 Band LTE12 3MHz 16QAM Mid channel	 Band LTE12 3MHz QPSK Mid channel
Band LTE12 1.4MHz	 Band LTE12 1.4MHz 16QAM Mid channel	 Band LTE12 1.4MHz QPSK Mid channel

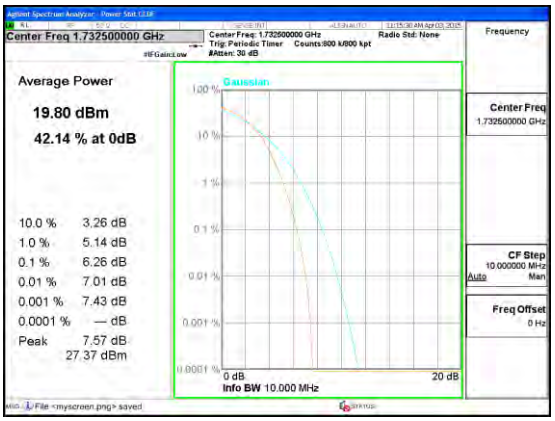
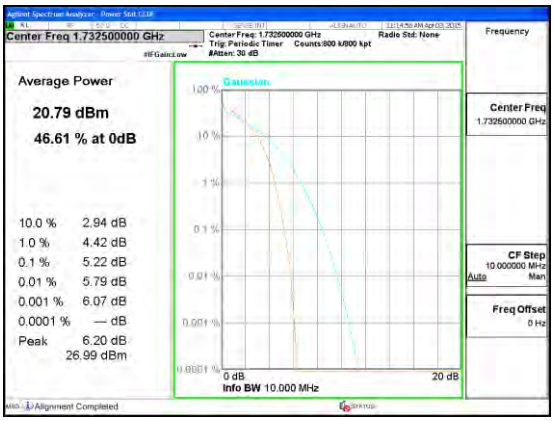
LTE Band 5

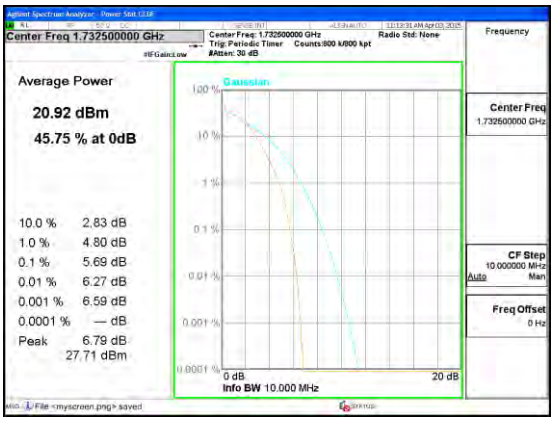
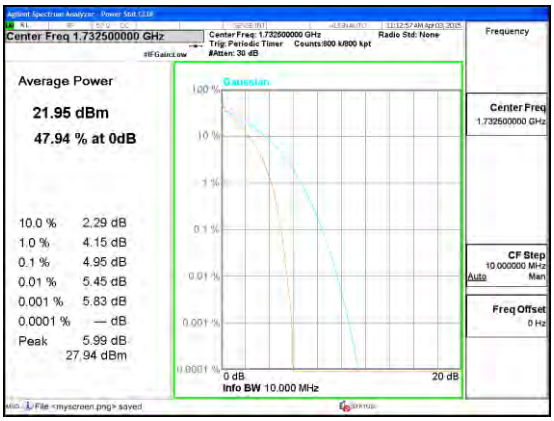
Band LTE5 10MHz	 Band LTE5 10MHz 16QAM Mid channel	 Band LTE5 10MHz QPSK Mid channel
Band LTE5 5MHz	 Band LTE5 5MHz 16QAM Mid channel	 Band LTE5 5MHz QPSK Mid channel

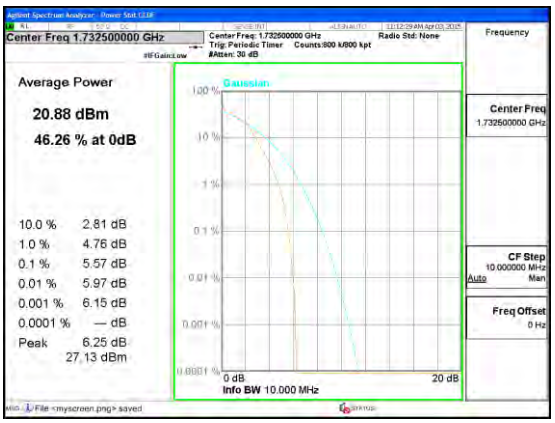
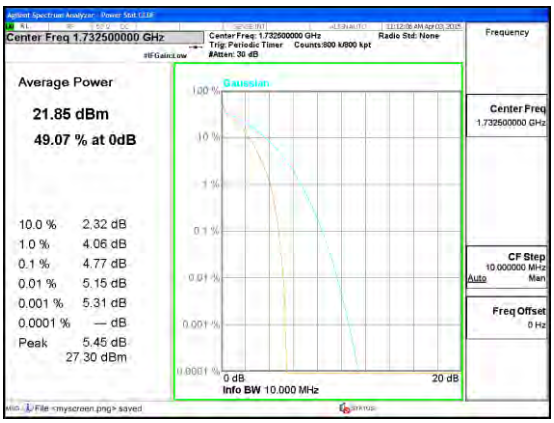
Band LTE5 3MHz	 Band LTE5 3MHz 16QAM Mid channel	 Band LTE5 3MHz QPSK Mid channel
Band LTE5 1.4MHz	 Band LTE5 1.4MHz 16QAM Mid channel	 Band LTE5 1.4MHz QPSK Mid channel

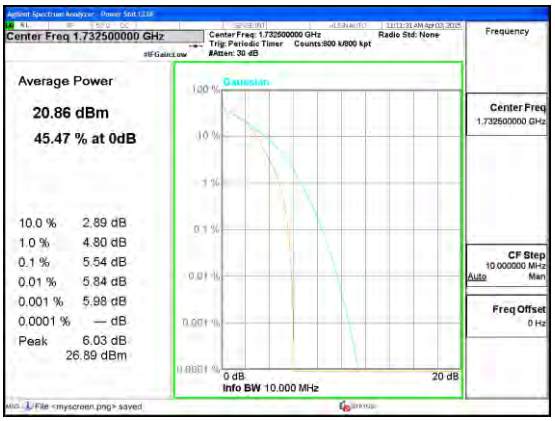
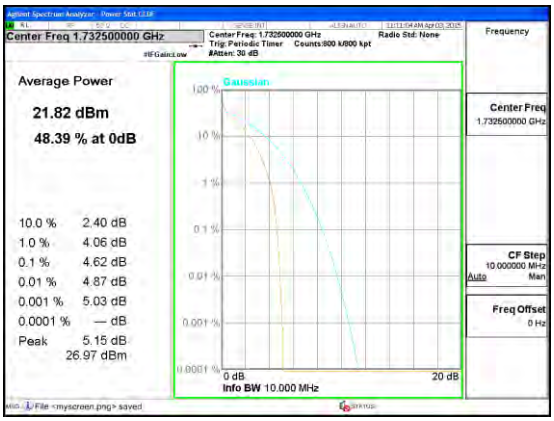
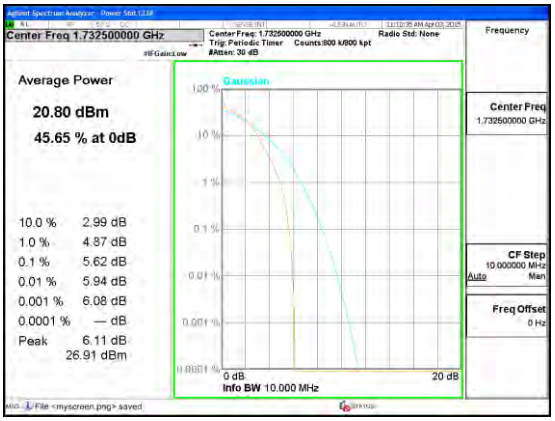
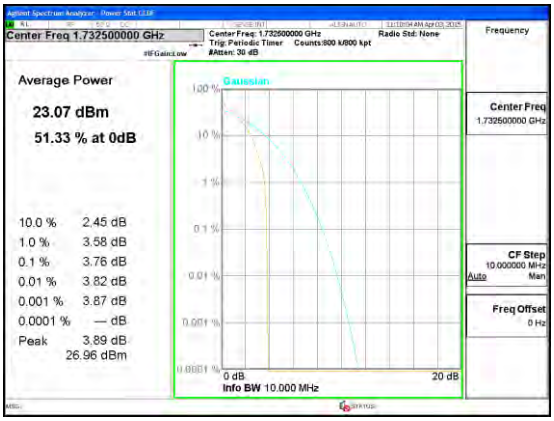
LTE Band 4

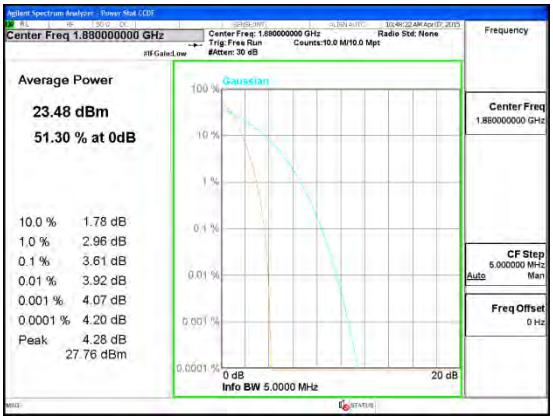
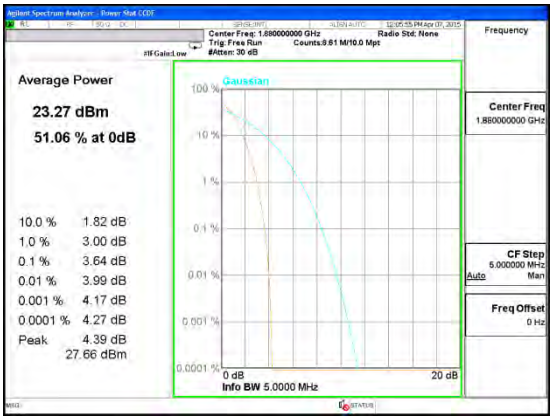
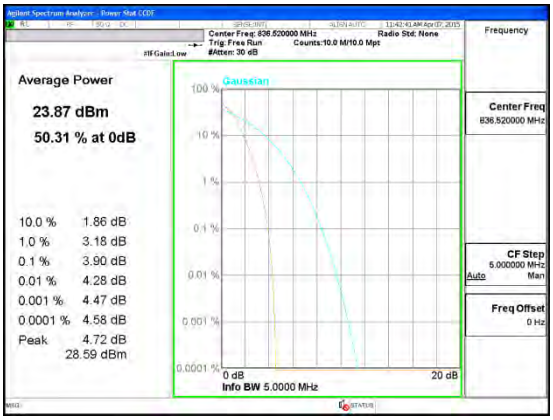
Band LTE4 20MHz	 Band LTE4 20MHz 16QAM Mid channel	 Band LTE4 20MHz QPSK Mid channel

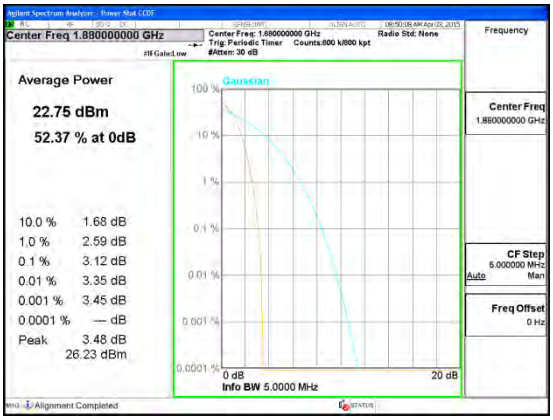
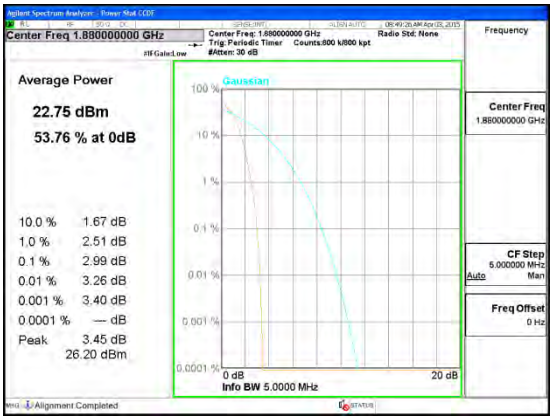
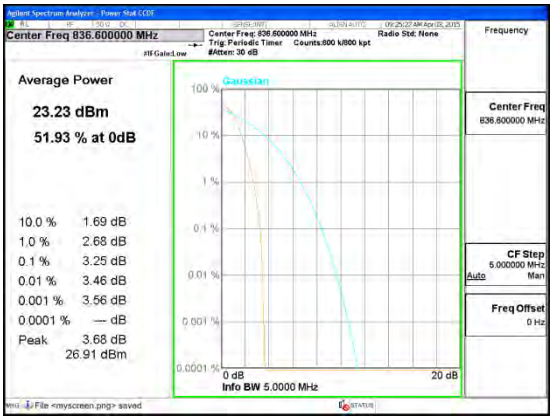
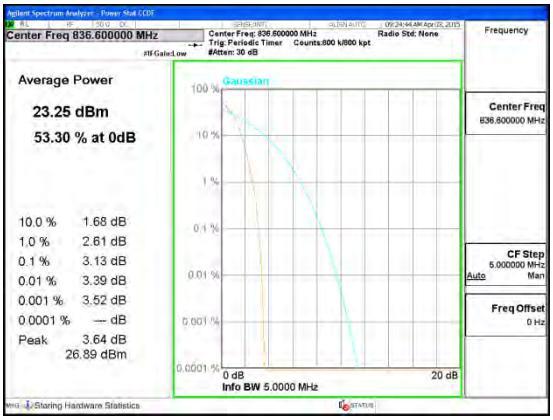
Band LTE4 15MHz	 Band LTE4 15MHz 16QAM Mid channel	 Band LTE4 15MHz QPSK Mid channel

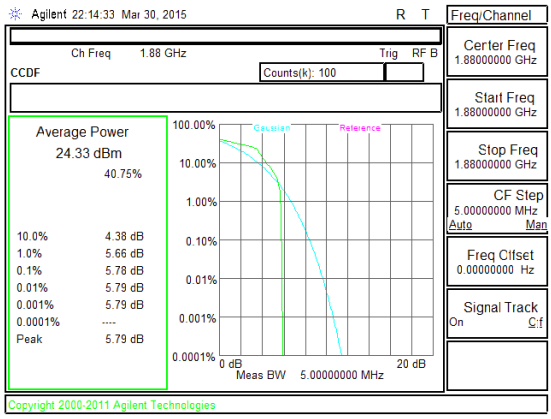
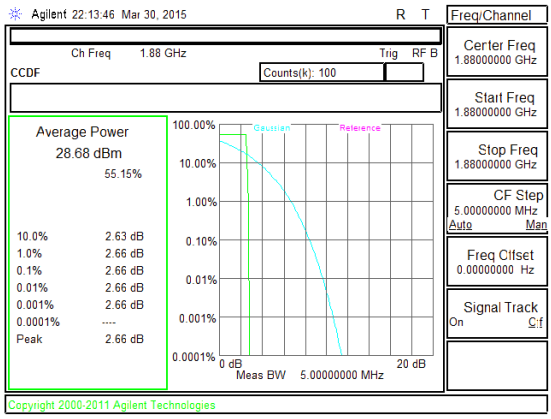
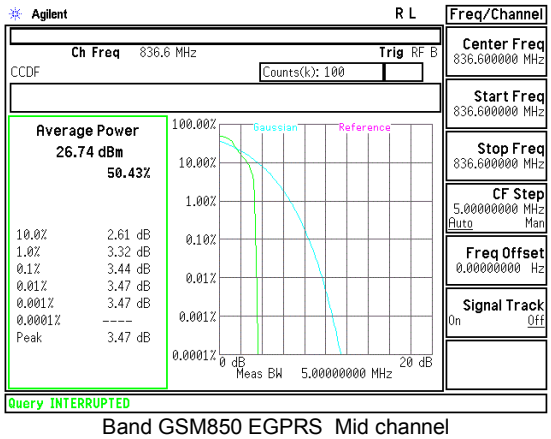
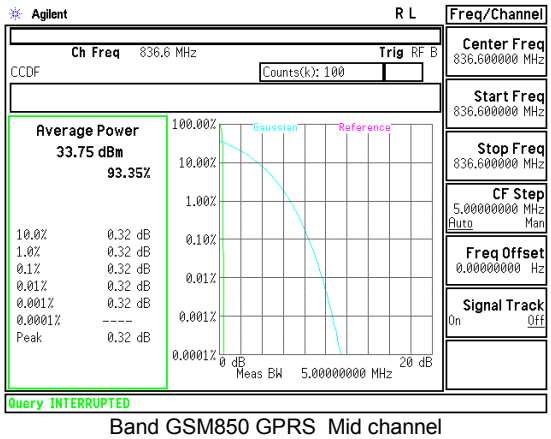
Band LTE4 10MHz	 Band LTE4 10MHz 16QAM Mid channel	 Band LTE4 10MHz QPSK Mid channel

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

Band LTE4 3MHz	 Band LTE4 3MHz 16QAM Mid channel	 Band LTE4 3MHz QPSK Mid channel
Band LTE4 1.4MHz	 Band LTE4 1.4MHz 16QAM Mid channel	 Band LTE4 1.4MHz QPSK Mid channel

Band BC1	 Band BC1 EVDO Rel. 0 Mid channel	 Band BC1 1xRTT Mid channel
Band BC0	 Band BC0 EVDO Rel. 0 Mid channel	 Band BC0 1xRTT Mid channel

Band		
Band 2	 Band WCDMA B2 HSDPA	 Band WCDMA B2 REL99
Band 5	 Band WCDMA B5 HSDPA	 Band WCDMA B5 REL99

Band GSM1900	 Band GSM1900 EGPRS Mid channel	 Band GSM1900 GPRS Mid channel
Band GSM850	 Band GSM850 EGPRS Mid channel	 Band GSM850 GPRS Mid channel

11. LIMITS AND CONDUCTED RESULTS

11.1. OCCUPIED BANDWIDTH

RULE PART(S)

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

LIMITS

For reporting purposes only

TEST PROCEDURE

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

(KDB 971168 D01 Power Meas License Digital Systems v02r02)

MODES TESTED

Band	Mode	Channel	f (MHz)	99% BW (KHz)	-26dB BW (KHz)
GSM850	GMSK	128	824.2		
		190	836.6		
		251	848.8		
	GPRS	128	824.2	244.1	313.8
		190	836.6	242.8	322.3
		251	848.8	243.9	317.5
	EGPRS	128	824.2	241.8	302.6
		190	836.6	231.9	312.8
		251	848.8	242.9	317.3
GSM1900	GMSK	512	1850.2		
		661	1880		
		810	1909.8		
	GPRS	512	1850.2	244.7	313
		661	1880	245.9	317.3
		810	1909.8	242.8	318.6
	EGPRS	512	1850.2	237.5	311.7
		661	1880	248.2	317
		810	1909.8	242.4	314.5

Band	Mode	Channel	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
Band 5	REL99	4132	826.4	4.125	4.708
		4183	836.6	4.132	4.7
		4233	846.6	4.124	4.688
	HSDPA	4132	826.4	4.135	4.696
		4183	836.6	4.133	4.695
		4233	846.6	4.138	4.699
	HSUPA	4132	826.4		
		4183	836.6		
		4233	846.6		
Band 2	REL99	9262	1852.4	4.163	4.743
		9400	1880	4.157	4.721
		9538	1907.6	4.144	4.72
	HSDPA	9262	1852.4	4.174	4.725
		9400	1880	4.16	4.716
		9538	1907.6	4.146	4.71
	HSUPA	9262	1852.4		
		9400	1880		
		9538	1907.6		

BC0	1xRTT	1013	824.7	1.279	1.411
		384	836.52	1.267	1.409
		777	848.31	1.270	1.412
	EVDO REL. 0	1013	824.7	1.270	1.410
		384	836.52	1.267	1.413
		777	848.31	1.270	1.417
	EVDO REV. A	1013	824.7		
		384	836.52		
		777	848.31		
BC1	1xRTT	25	1851.25	1.277	1.433
		600	1880	1.276	1.433
		1175	1908.75	1.276	1.429
	EVDO REL. 0	25	1851.25	1.282	1.439
		600	1880	1.278	1.438
		1175	1908.75	1.276	1.432
	EVDO REV. A	25	1851.25		
		600	1880		
		1175	1908.75		

11.1.1. LTE OCCUPIED BANDWIDTH RESULTS

LTE Band 25 & 2

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE25	20	QPSK	100/0	1860	17.95	19.37
			100/0	1882.5	17.96	19.44
			100/0	1905	17.96	19.48
		16QAM	100/0	1860	17.97	19.40
			100/0	1882.5	17.94	19.45
			100/0	1905	17.90	19.39
	15	QPSK	75/0	1857.5	13.47	14.78
			75/0	1882.5	13.47	14.66
			75/0	1907.5	13.48	14.70
		16QAM	75/0	1857.5	13.47	14.62
			75/0	1882.5	13.45	14.71
			75/0	1907.5	13.45	14.60
	10	QPSK	50/0	1855	8.98	9.82
			50/0	1882.5	8.99	9.80
			50/0	1910	8.96	9.82
		16QAM	50/0	1855	8.99	9.83
			50/0	1882.5	8.97	9.83
			50/0	1910	8.99	9.78
	5	QPSK	25/0	1852.5	4.49	4.91
			25/0	1882.5	4.50	4.97
			25/0	1912.5	4.49	4.92
		16QAM	25/0	1852.5	4.49	4.93
			25/0	1882.5	4.50	4.95
			25/0	1912.5	4.51	4.98

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE25	3	QPSK	15/0	1851.5	2.70	2.99
			15/0	1882.5	2.70	2.98
			15/0	1913.5	2.70	3.01
		16QAM	15/0	1851.5	2.70	3.01
			15/0	1882.5	2.70	3.01
			15/0	1913.5	2.70	3.0
LTE25	1.4	QPSK	6/0	1850.7	1.09	1.24
			6/0	1882.5	1.09	1.23
			6/0	1914.3	1.09	1.24
		16QAM	6/0	1850.7	1.10	1.25
			6/0	1880	1.10	1.26
			6/0	1909.3	1.10	1.25

LTE Band 13

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE13	10	QPSK	50/0	782	8.972	9.709
			50/0	782	8.959	9.716
			50/0	782	8.963	9.714
		16QAM	50/0	782	8.966	9.79
			50/0	782	8.979	9.751
			50/0	782	8.977	9.782
	5	QPSK	25/0	779.5	4.495	4.911
			25/0	782	4.496	4.968
			25/0	784.5	4.488	4.937
		16QAM	25/0	779.5	4.493	4.927
			25/0	782	4.497	4.939
			25/0	784.5	4.497	4.959

LTE Band 12 & 17

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE12	10	QPSK	50/0	704	8.971	9.719
			50/0	707.5	8.996	9.772
			50/0	711	8.959	9.745
		16QAM	50/0	704	8.975	9.776
			50/0	707.5	8.968	9.814
			50/0	711	8.989	9.798
	5	QPSK	25/0	701.5	4.492	4.905
			25/0	707.5	4.501	4.977
			25/0	713.5	4.492	4.91
		16QAM	25/0	701.5	4.492	4.945
			25/0	707.5	4.503	4.926
			25/0	713.5	4.501	4.936
	3	QPSK	15/0	700.5	2.696	2.981
			15/0	707.5	2.697	2.998
			15/0	714.5	2.704	2.978
		16QAM	15/0	700.5	2.698	2.975
			15/0	707.5	2.698	2.989
			15/0	714.5	2.698	3.008
	1.4	QPSK	6/0	699.7	1.08	1.227
			6/0	707.5	1.088	1.233
			6/0	715.3	1.087	1.234
		16QAM	6/0	699.7	1.088	1.233
			6/0	707.5	1.095	1.242
			6/0	715.3	1.086	1.235

LTE Band 5

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE5	10	QPSK	50/0	829	8.967	9.724
			50/0	836.5	9.001	9.756
			50/0	844	8.975	9.759
		16QAM	50/0	829	8.962	9.728
			50/0	836.5	8.971	9.783
			50/0	844	8.965	9.765
	5	QPSK	25/0	826.5	4.489	4.91
			25/0	836.5	4.499	4.953
			25/0	846.5	4.493	4.886
		16QAM	25/0	826.5	4.496	4.934
			25/0	836.5	4.499	4.946
			25/0	846.5	4.497	4.962
	3	QPSK	15/0	825.5	2.698	2.987
			15/0	836.5	2.698	2.984
			15/0	847.5	2.697	2.973
		16QAM	15/0	825.5	2.7	3.012
			15/0	836.5	2.698	3.003
			15/0	847.5	2.701	2.981
	1.4	QPSK	6/0	824.7	1.087	1.232
			6/0	836.5	1.08	1.229
			6/0	848.3	1.087	1.225
		16QAM	6/0	824.7	1.085	1.23
			6/0	836.5	1.087	1.238
			6/0	848.3	1.096	1.241

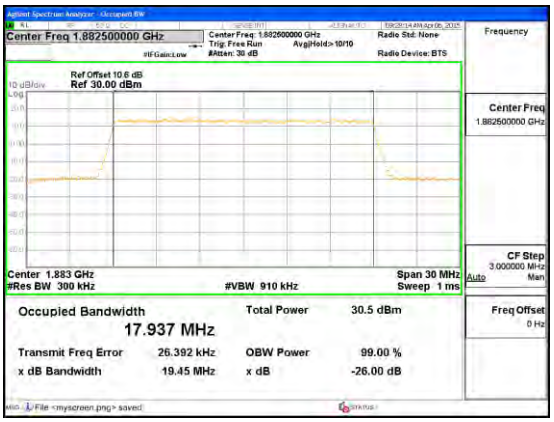
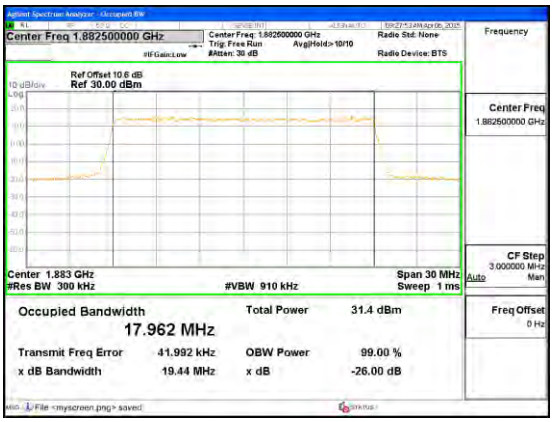
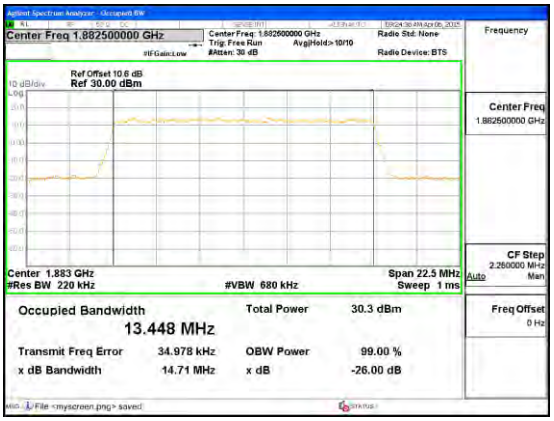
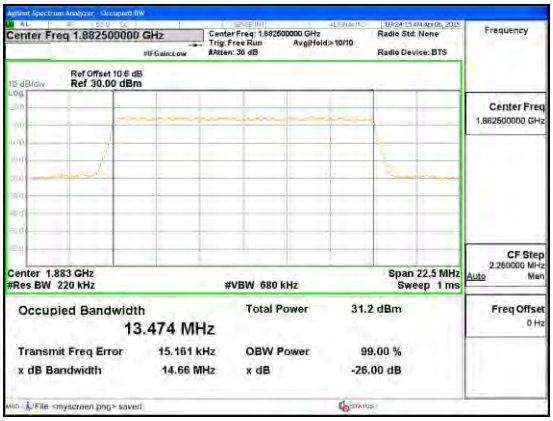
LTE Band 4

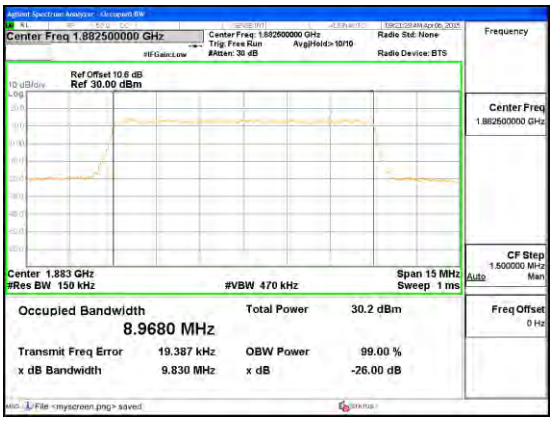
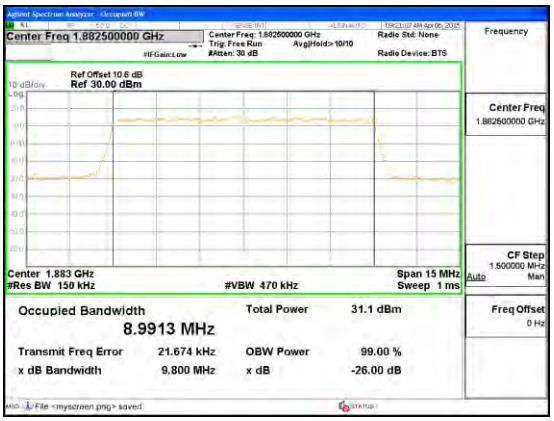
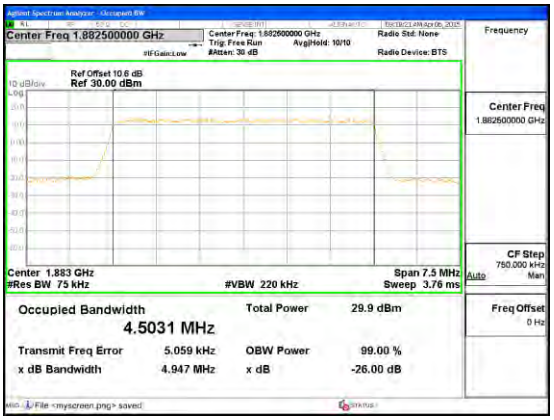
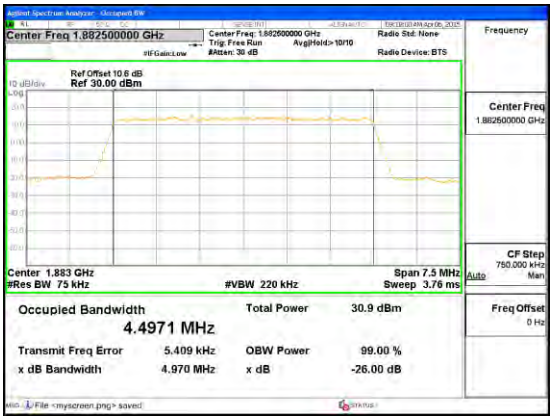
Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE4	20	QPSK	100/0	1720	17.951	19.432
			100/0	1732.5	17.915	19.278
			100/0	1745	17.978	19.465
		16QAM	100/0	1720	17.946	19.44
			100/0	1732.5	17.891	19.377
			100/0	1745	17.915	19.422
	15	QPSK	75/0	1717.5	13.448	14.674
			75/0	1732.5	13.428	14.552
			75/0	1747.5	13.471	14.626
		16QAM	75/0	1717.5	13.471	14.658
			75/0	1732.5	13.431	14.601
			75/0	1747.5	13.463	14.544
	10	QPSK	50/0	1715	8.975	9.747
			50/0	1732.5	8.967	9.73
			50/0	1750	8.963	9.797
		16QAM	50/0	1715	8.981	9.819
			50/0	1732.5	8.956	9.802
			50/0	1750	8.999	9.806
	5	QPSK	25/0	1712.5	4.486	4.922
			25/0	1732.5	4.492	4.905
			25/0	1752.5	4.493	4.968
		16QAM	25/0	1712.5	4.501	4.952
			25/0	1732.5	4.49	4.948
			25/0	1752.5	4.495	4.952

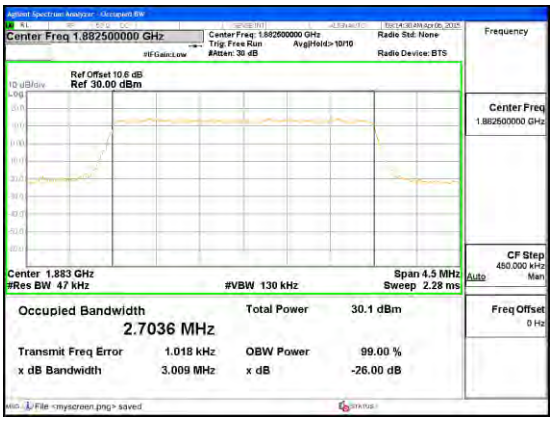
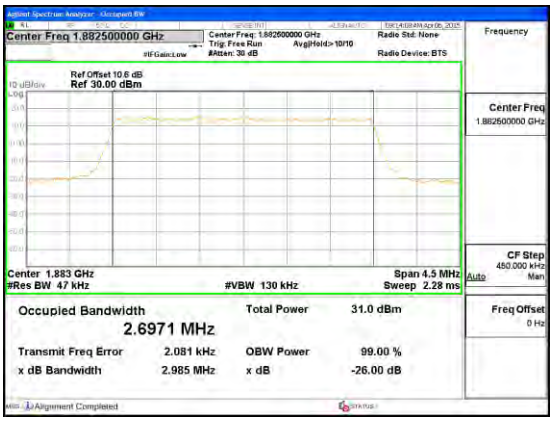
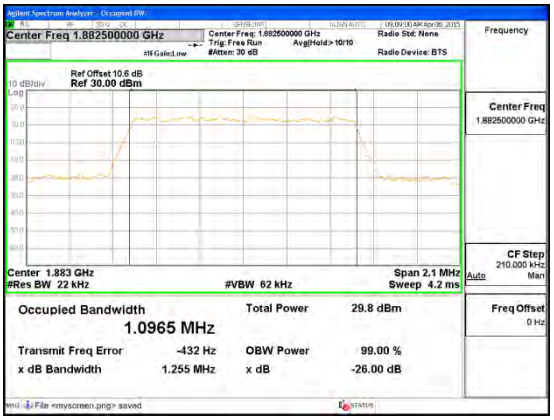
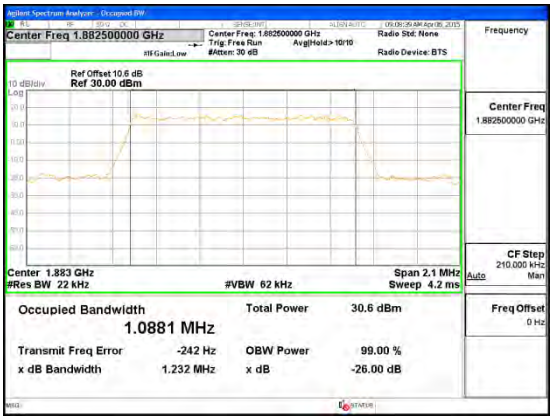
Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE4	3	QPSK	15/0	1711.5	2.699	2.98
			15/0	1732.5	2.699	3.013
			15/0	1753.5	2.699	2.991
		16QAM	15/0	1711.5	2.698	3.006
			15/0	1732.5	2.697	2.996
			15/0	1753.5	2.697	2.98
	1.4	QPSK	6/0	1710.7	1.085	1.233
			6/0	1732.5	1.08	1.229
			6/0	1754.3	1.088	1.233
		16QAM	6/0	1710.7	1.096	1.242
			6/0	1732.5	1.088	1.236
			6/0	1754.3	1.094	1.245

11.1.1. OCCUPIED BANDWIDTH PLOTS

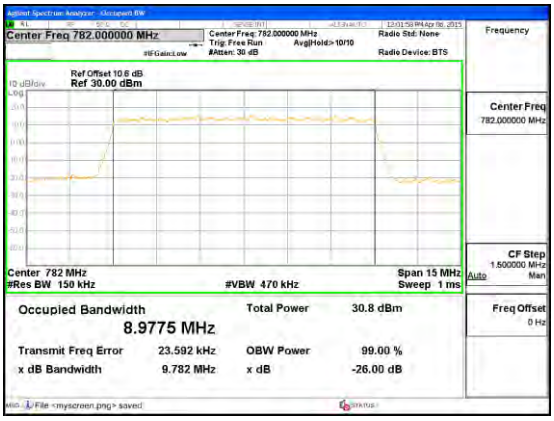
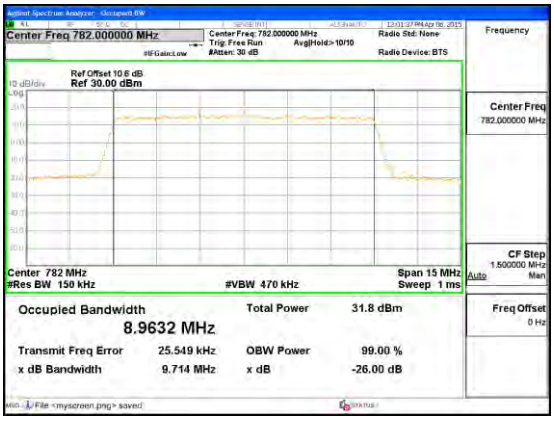
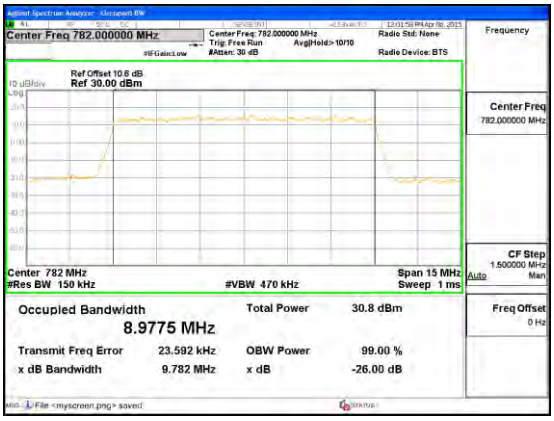
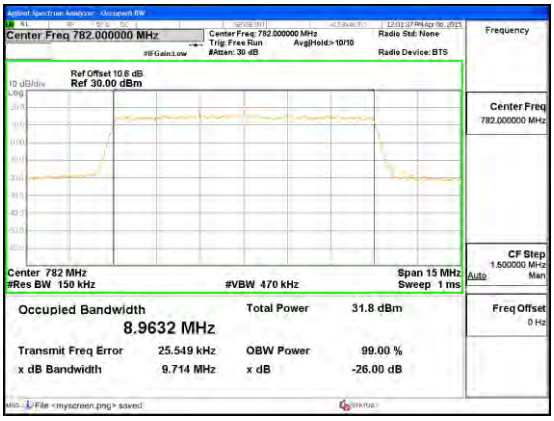
LTE Band 25

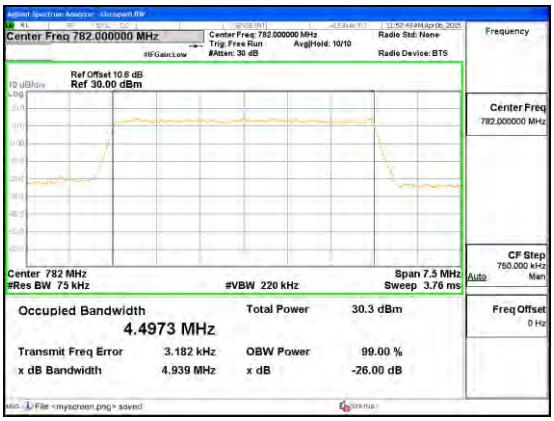
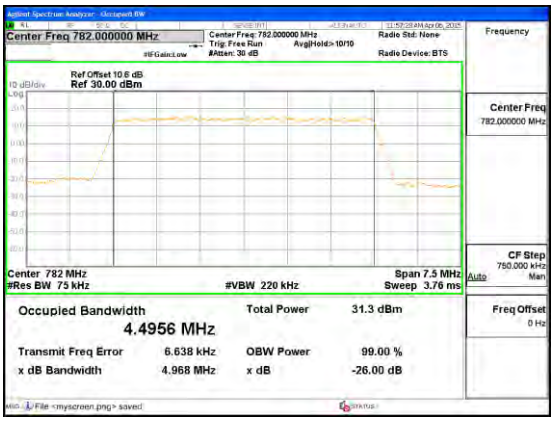
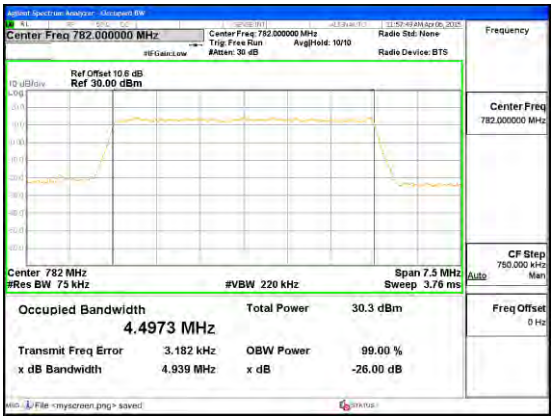
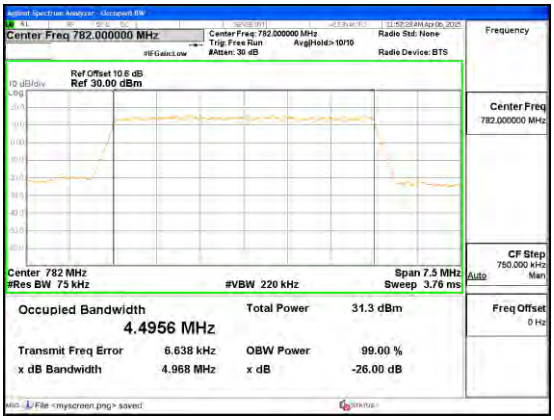
Band LTE25 20MHz	 Band LTE25 20MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE25 20MHz OBW QPSK Mid Channel FRB.gif
Band LTE25 15MHz	 Band LTE25 15MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE25 15MHz OBW QPSK Mid Channel FRB.gif

Band LTE25 10MHz	 Band LTE25 10MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE25 10MHz OBW QPSK Mid Channel FRB.gif
Band LTE25 5MHz	 Band LTE25 5MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE25 5MHz OBW QPSK Mid Channel FRB.gif

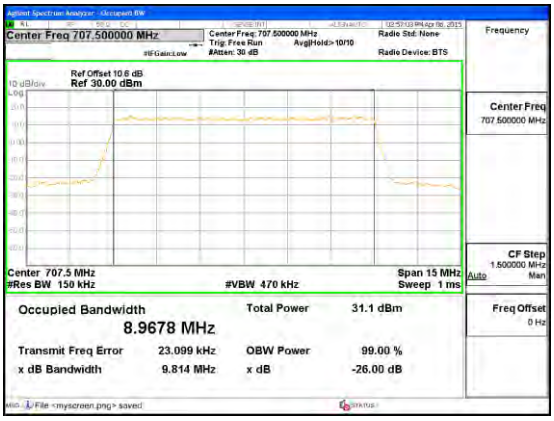
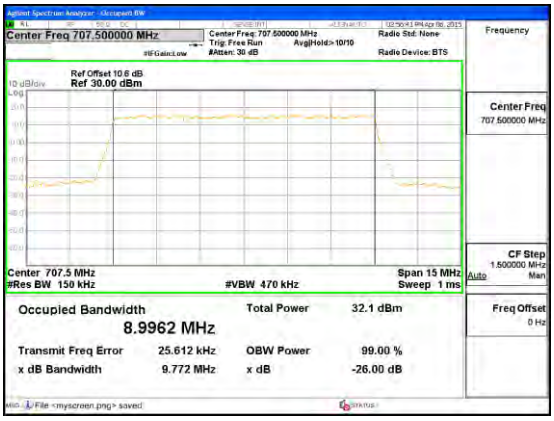
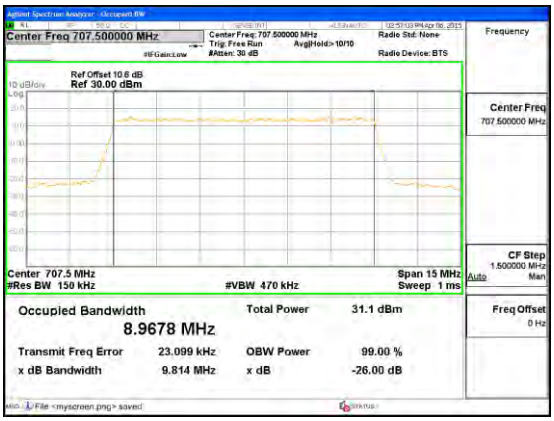
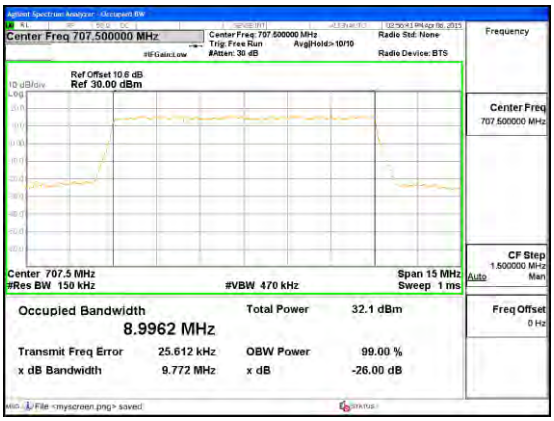
Band LTE25 3MHz	 Band LTE25 3MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE25 3MHz OBW QPSK Mid Channel FRB.gif
Band LTE25 1.4MHz	 Band LTE25 1.4MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE25 1.4MHz OBW QPSK Mid Channel FRB.gif

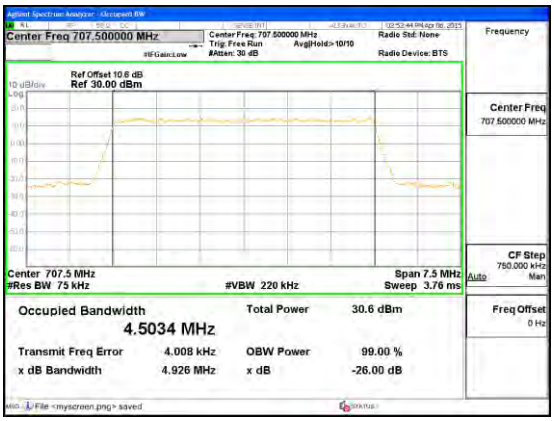
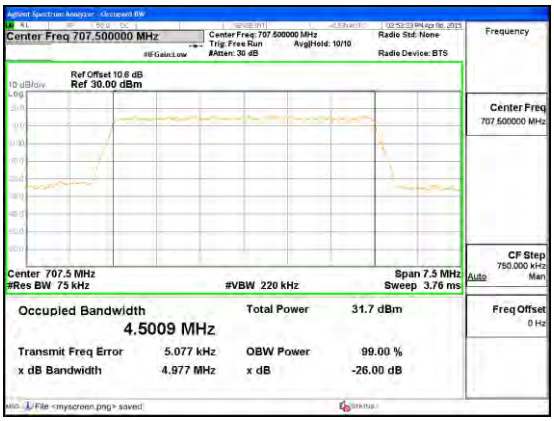
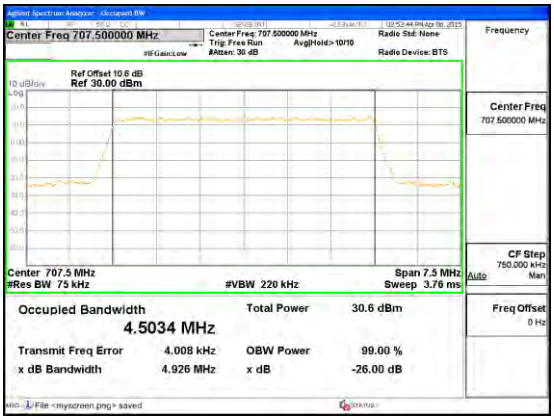
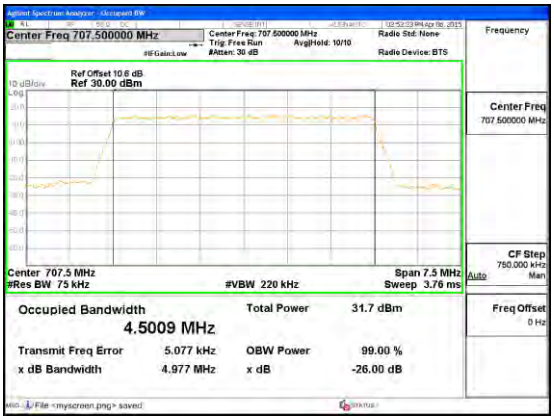
LTE Band 13

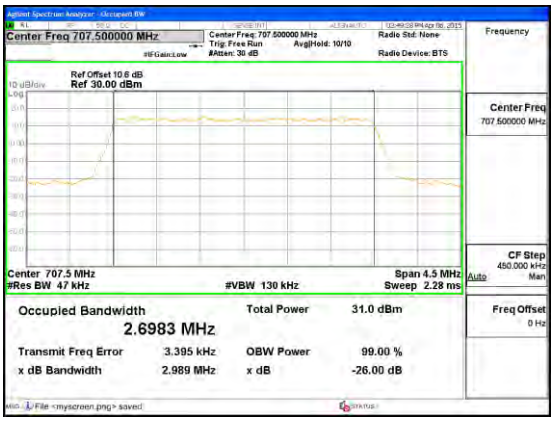
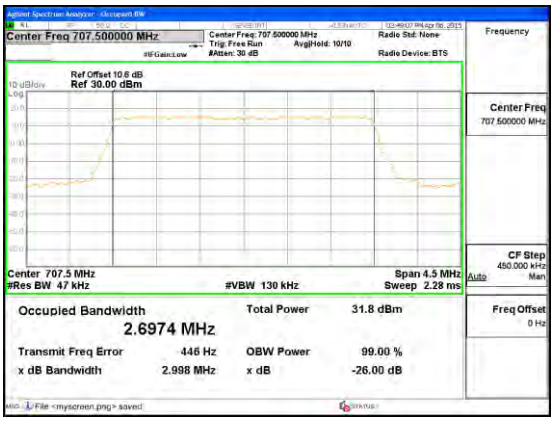
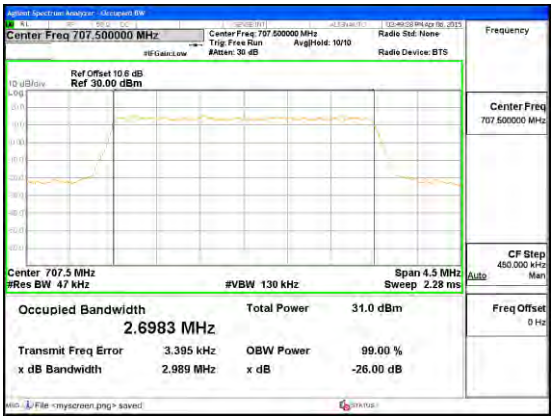
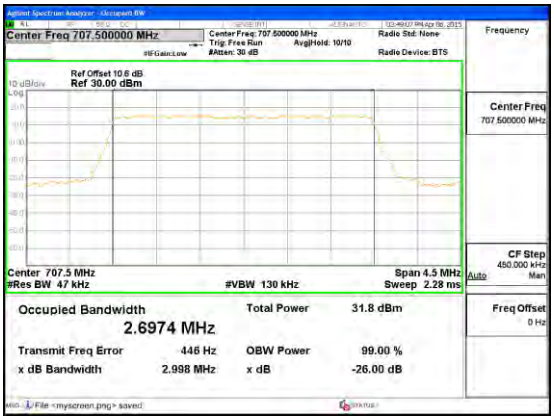
Band LTE13 10MHz	 Band LTE13 10MHz OBW 16QAM High Channel FRB.gif	 Band LTE13 10MHz OBW QPSK High Channel FRB.gif
Band LTE13 10MHz	 Band LTE13 10MHz OBW 16QAM High Channel FRB.gif	 Band LTE13 10MHz OBW QPSK High Channel FRB.gif

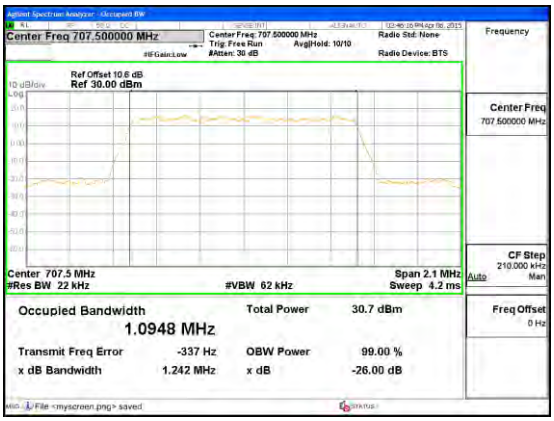
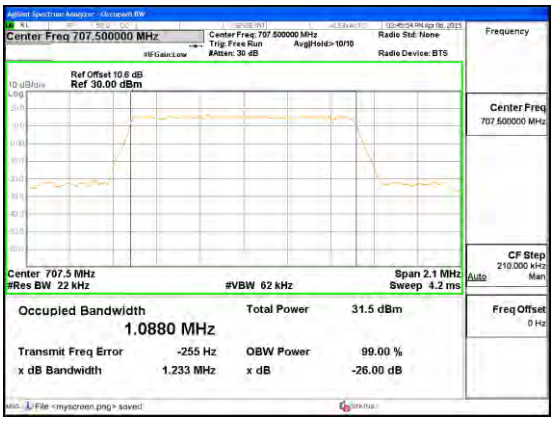
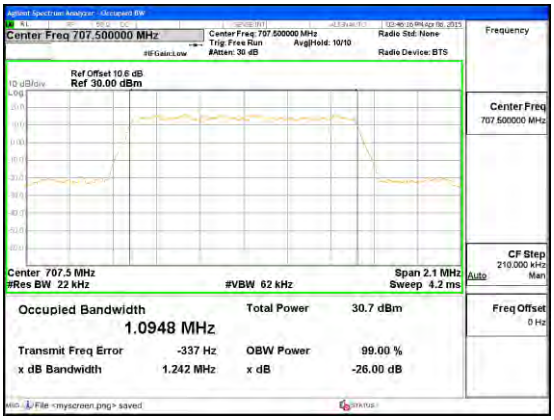
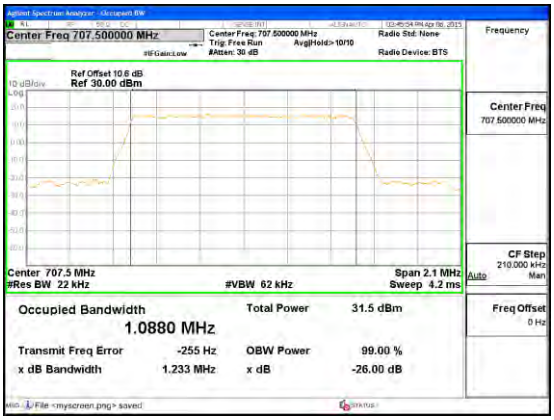
Band LTE13 5MHz	 Band LTE13 5MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE13 5MHz OBW QPSK Mid Channel FRB.gif
Band LTE13 5MHz	 Band LTE13 5MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE13 5MHz OBW QPSK Mid Channel FRB.gif

LTE Band 12

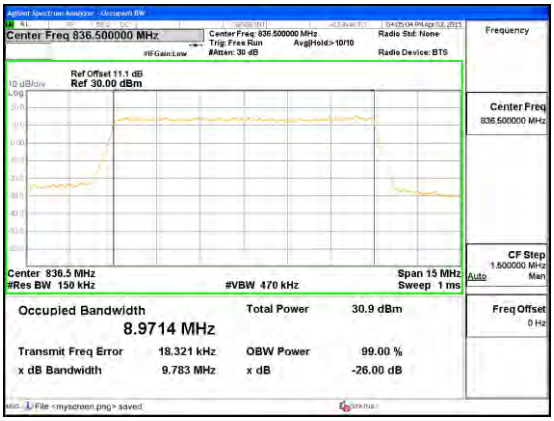
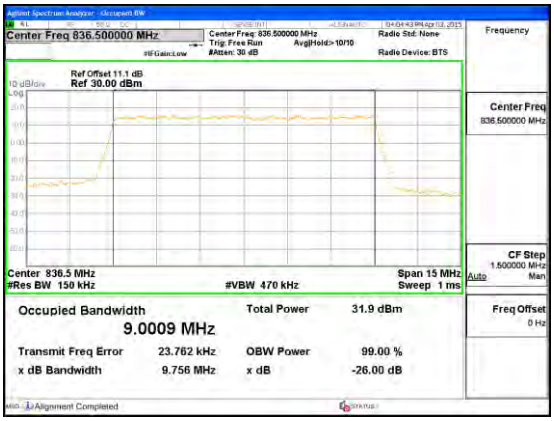
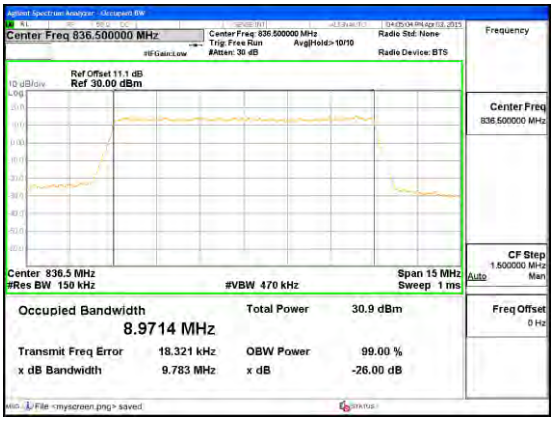
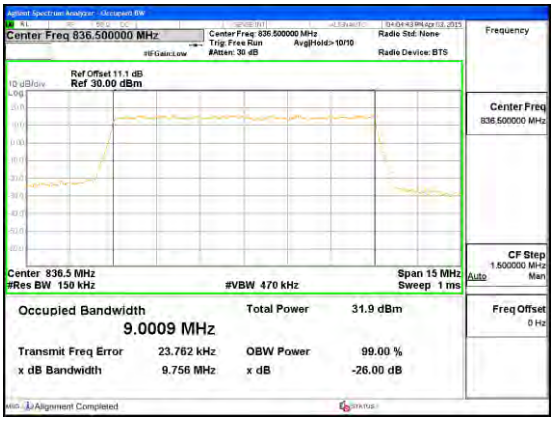
Band LTE12 10MHz	 Band LTE12 10MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE12 10MHz OBW QPSK Mid Channel FRB.gif
Band LTE12 10MHz	 Band LTE12 10MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE12 10MHz OBW QPSK Mid Channel FRB.gif

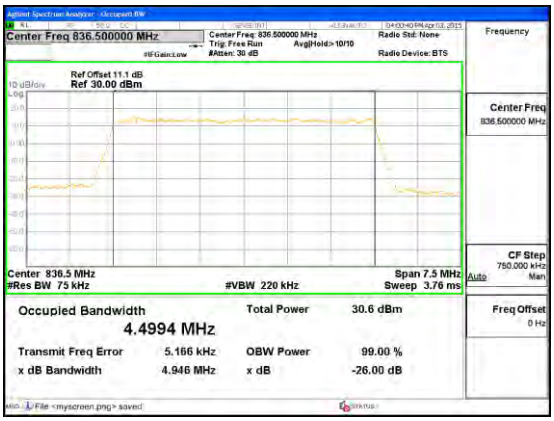
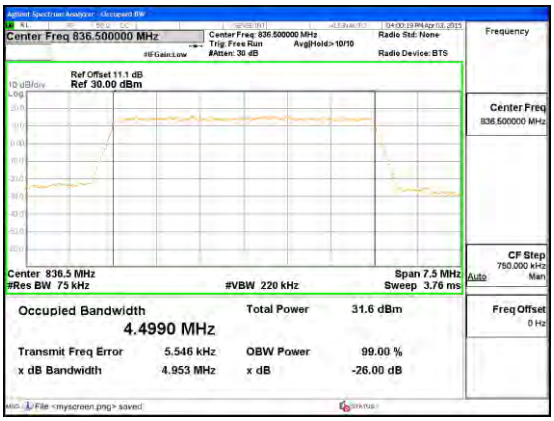
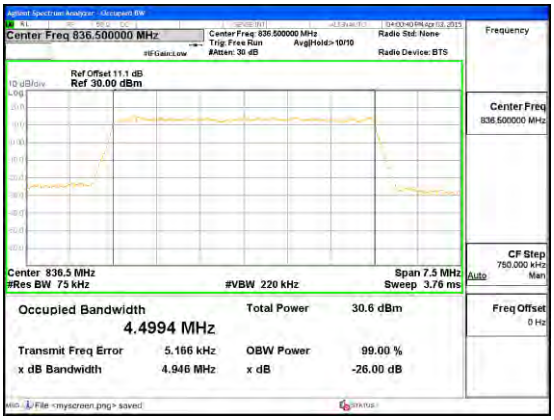
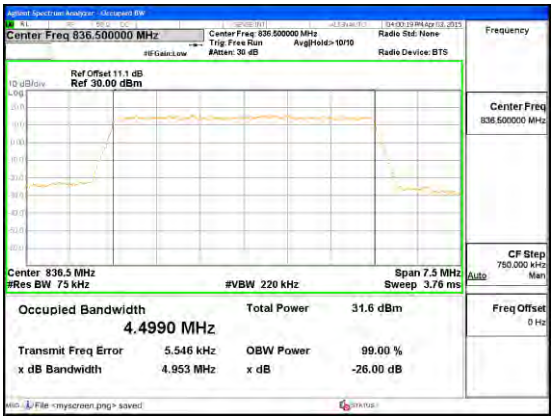
Band LTE12 5MHz	 Band LTE12 5MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE12 5MHz OBW QPSK Mid Channel FRB.gif
Band LTE12 5MHz	 Band LTE12 5MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE12 5MHz OBW QPSK Mid Channel FRB.gif

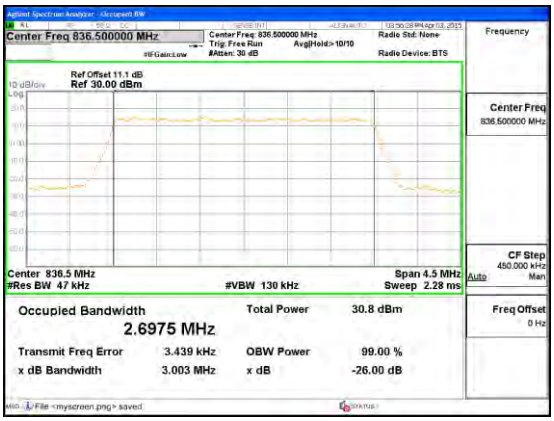
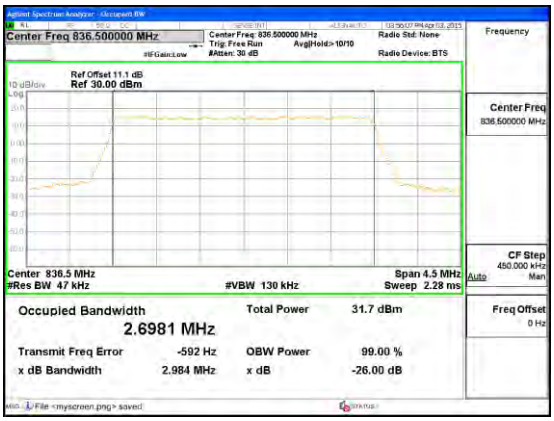
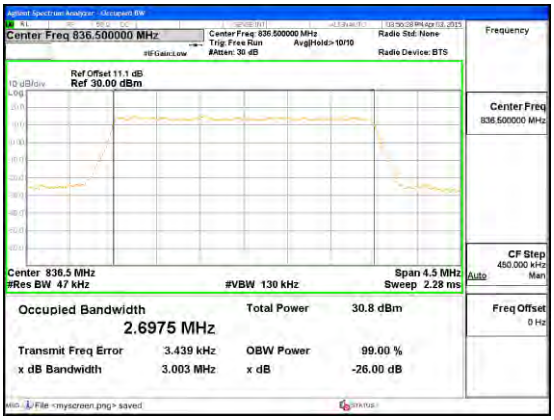
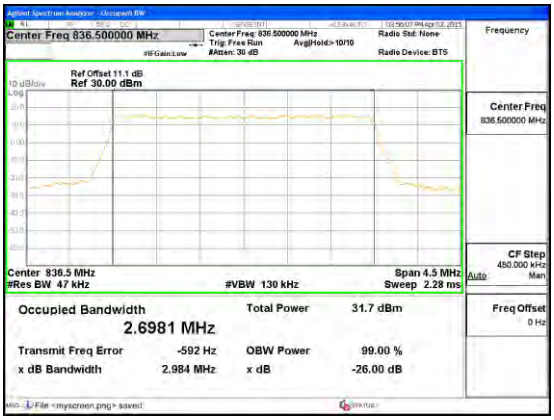
Band LTE12 3MHz	 Band LTE12 3MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE12 3MHz OBW QPSK Mid Channel FRB.gif
Band LTE12 3MHz	 Band LTE12 3MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE12 3MHz OBW QPSK Mid Channel FRB.gif

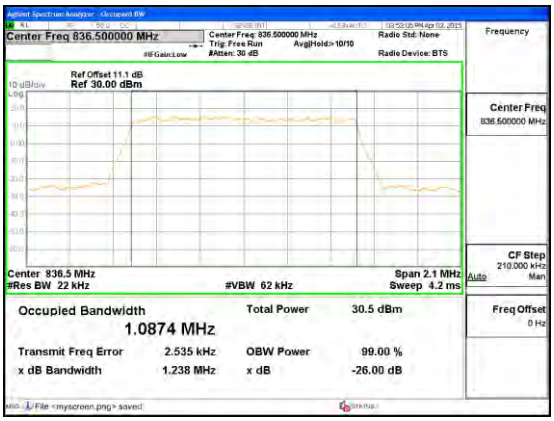
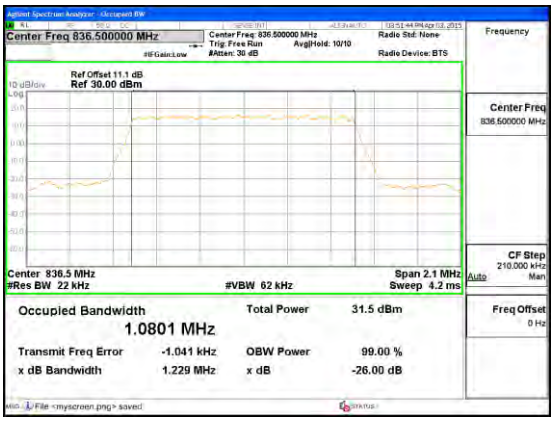
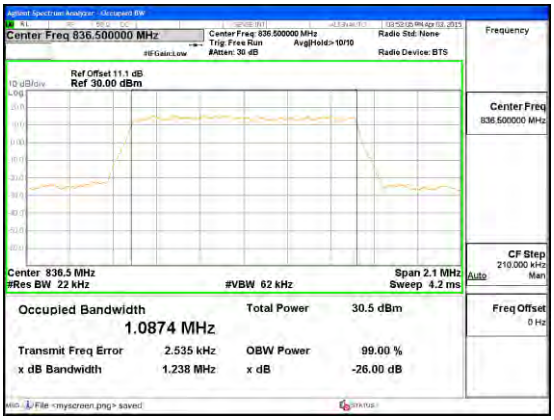
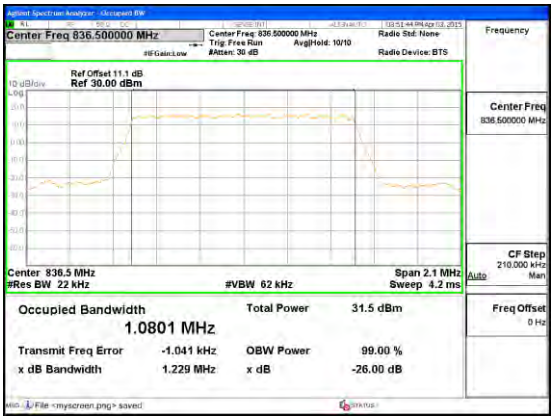
Band LTE12 1.4MHz	 Band LTE12 1.4MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE12 1.4MHz OBW QPSK Mid Channel FRB.gif
Band LTE12 1.4MHz	 Band LTE12 1.4MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE12 1.4MHz OBW QPSK Mid Channel FRB.gif

LTE Band 5

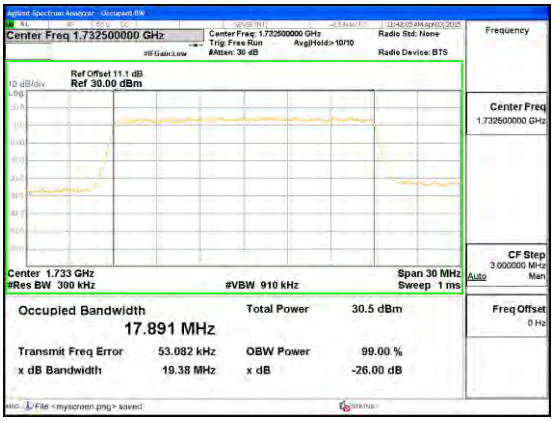
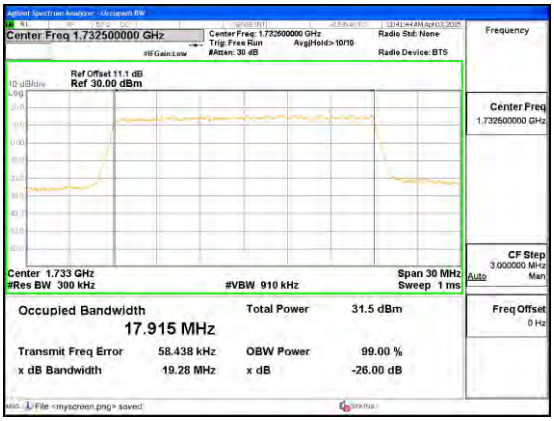
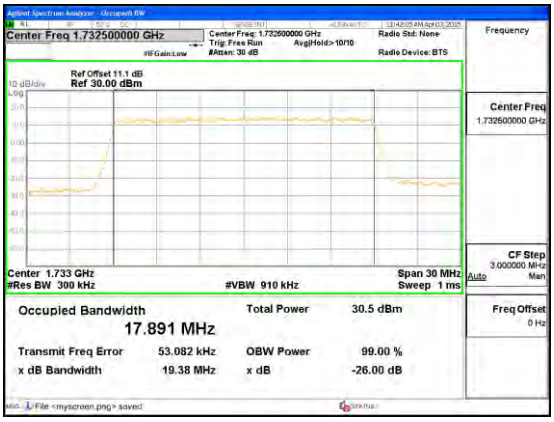
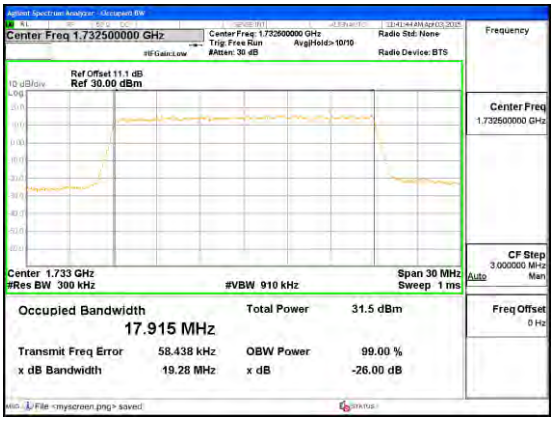
Band LTE5 10MHz	 Band LTE5 10MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE5 10MHz OBW QPSK Mid Channel FRB.gif
Band LTE5 10MHz	 Band LTE5 10MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE5 10MHz OBW QPSK Mid Channel FRB.gif

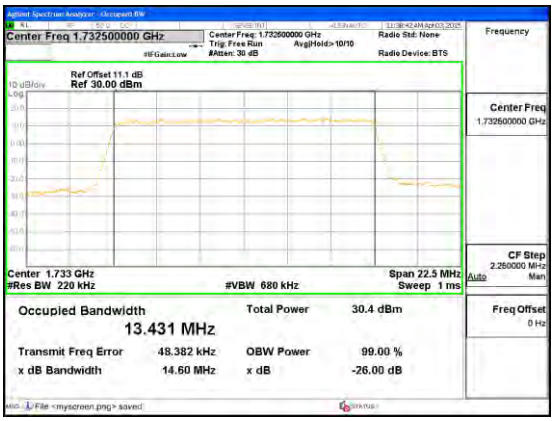
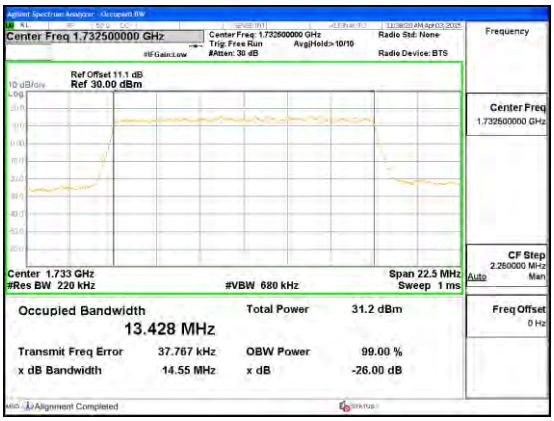
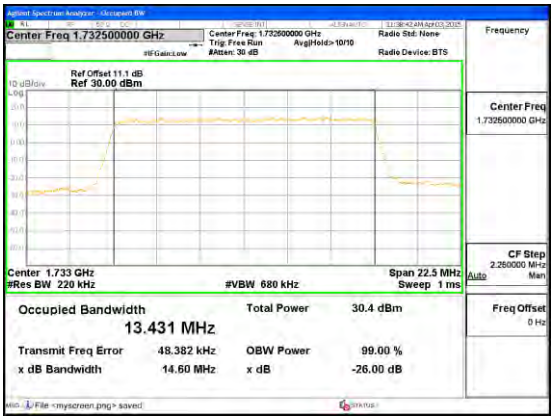
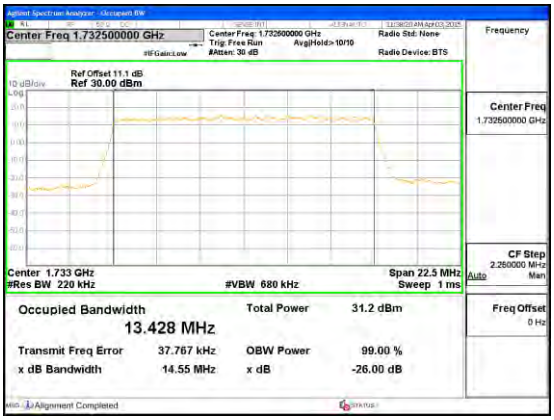
Band LTE5 5MHz	 Band LTE5 5MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE5 5MHz OBW QPSK Mid Channel FRB.gif
Band LTE5 5MHz	 Band LTE5 5MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE5 5MHz OBW QPSK Mid Channel FRB.gif

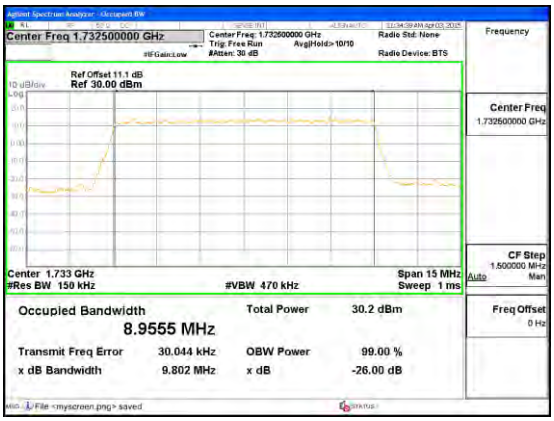
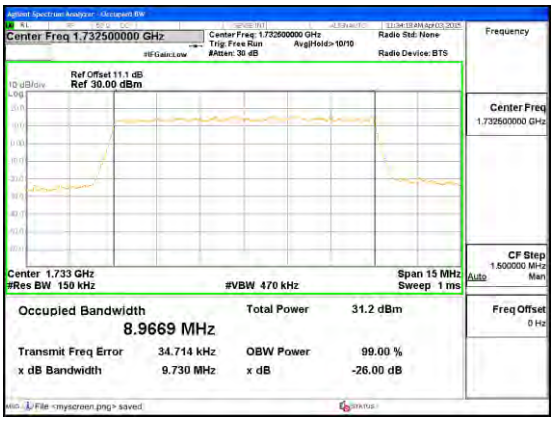
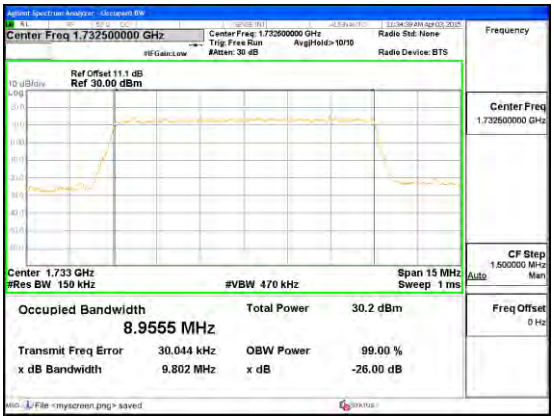
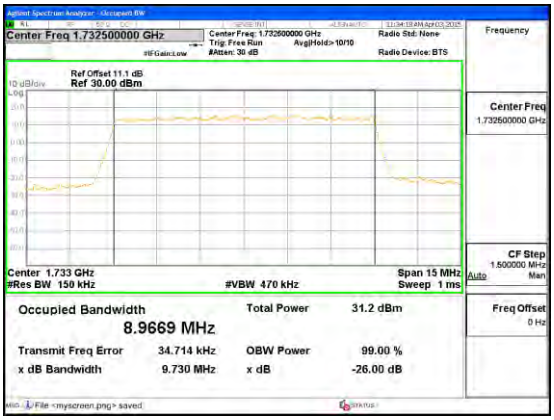
Band LTE5 3MHz	 Band LTE5 3MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE5 3MHz OBW QPSK Mid Channel FRB.gif
Band LTE5 3MHz	 Band LTE5 3MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE5 3MHz OBW QPSK Mid Channel FRB.gif

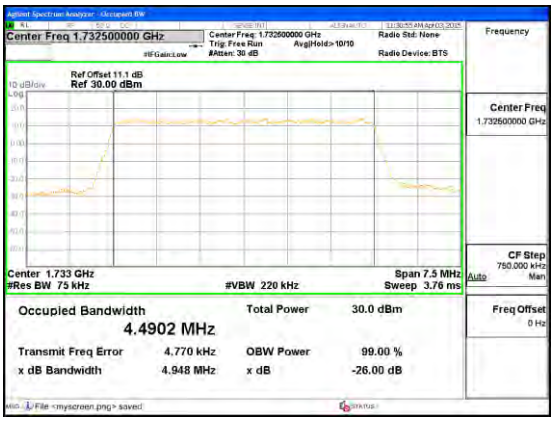
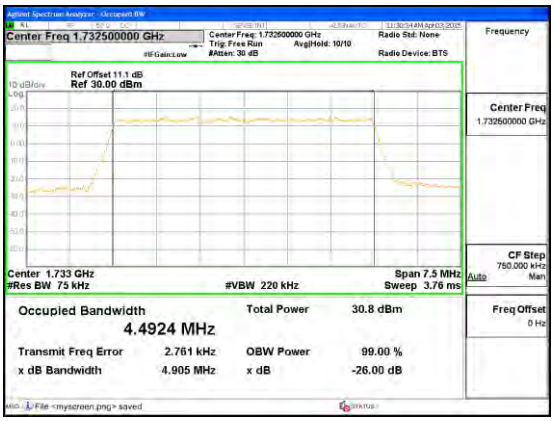
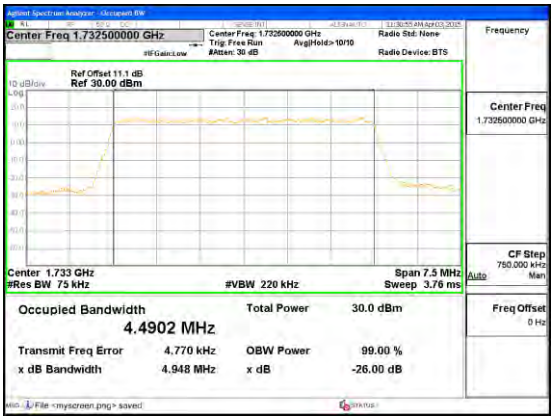
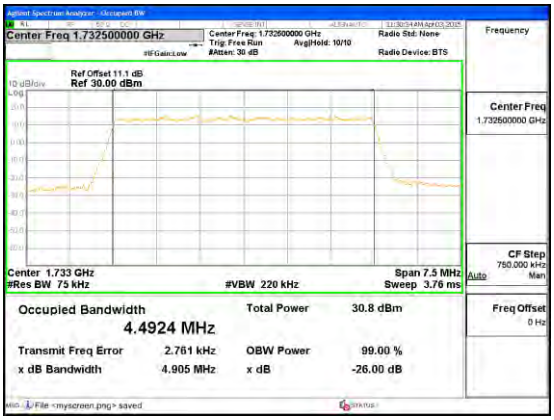
Band LTE5 1.4MHz	 Band LTE5 1.4MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE5 1.4MHz OBW QPSK Mid Channel FRB.gif
Band LTE5 1.4MHz	 Band LTE5 1.4MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE5 1.4MHz OBW QPSK Mid Channel FRB.gif

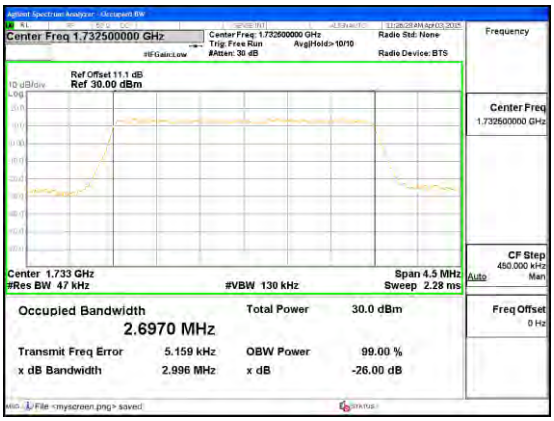
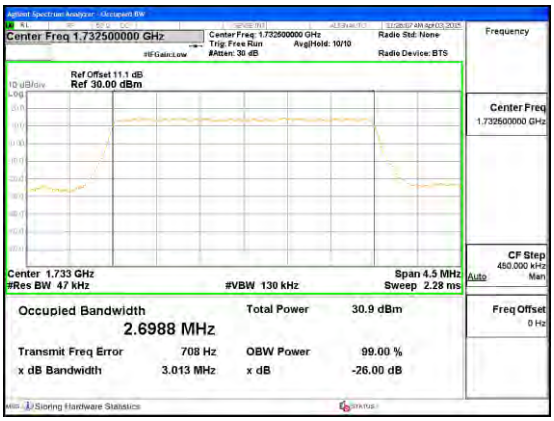
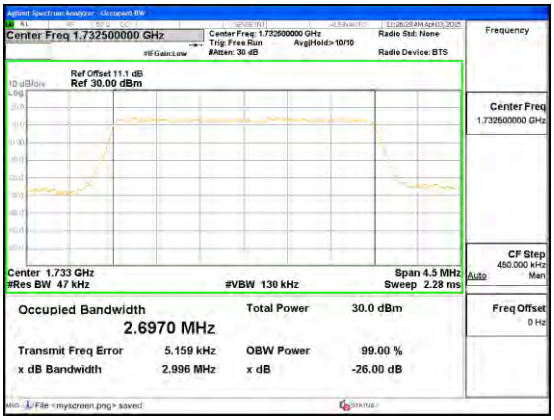
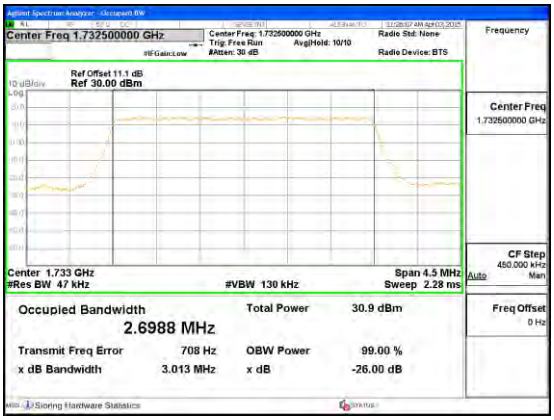
LTE Band 4

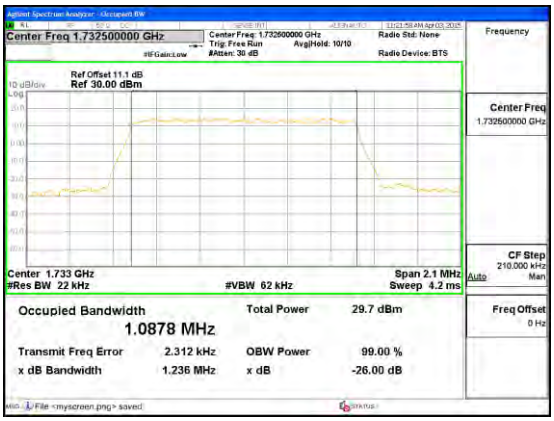
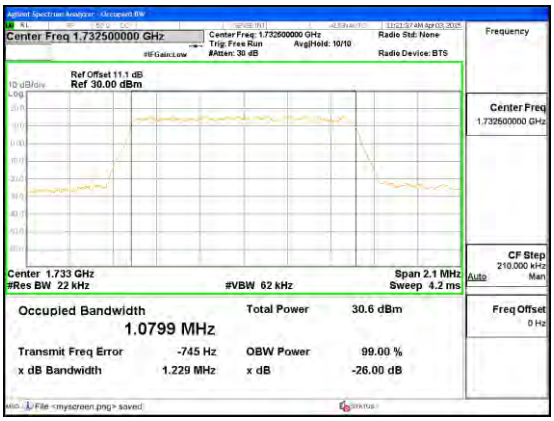
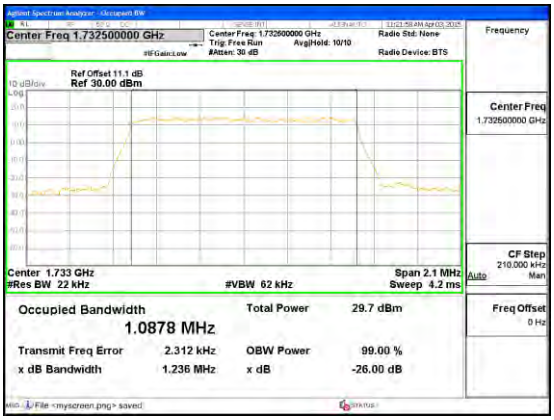
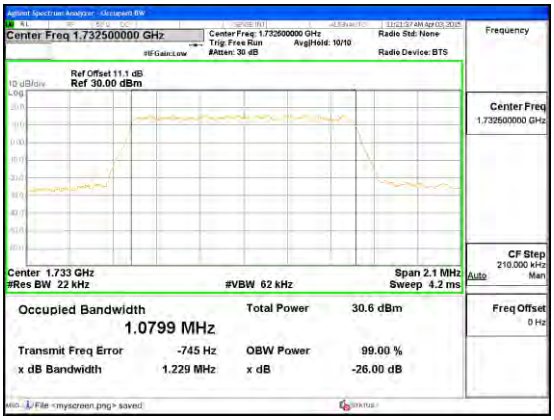
Band LTE4 20MHz	 Band LTE4 20MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE4 20MHz OBW QPSK Mid Channel FRB.gif
Band LTE4 20MHz	 Band LTE4 20MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE4 20MHz OBW QPSK Mid Channel FRB.gif

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

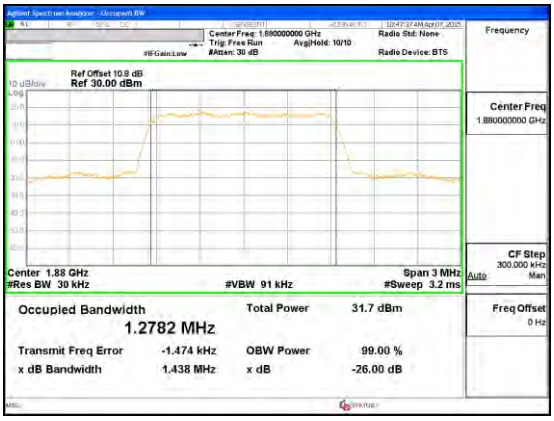
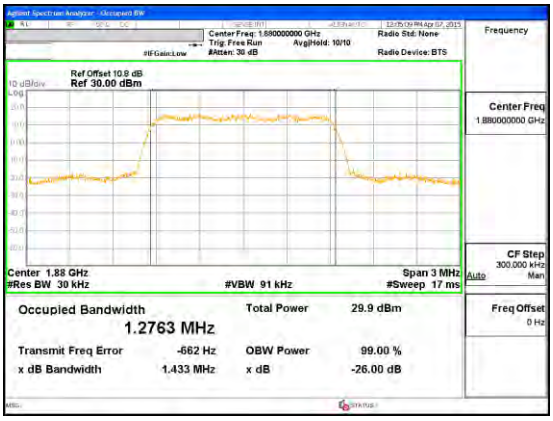
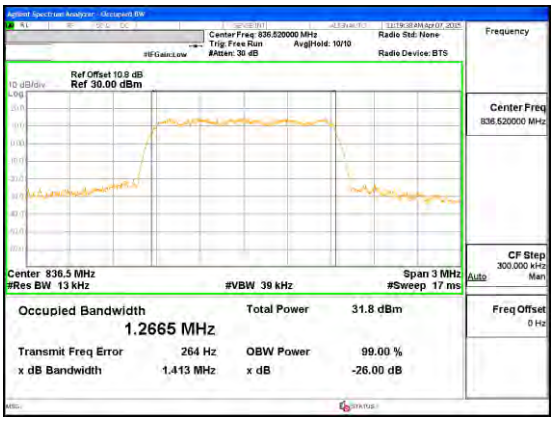
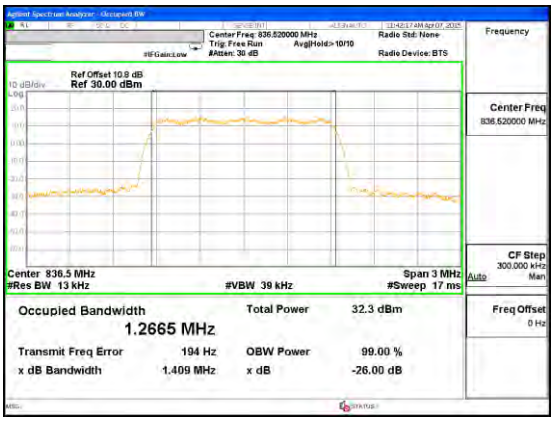
Band LTE4 10MHz	 Band LTE4 10MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE4 10MHz OBW QPSK Mid Channel FRB.gif
Band LTE4 10MHz	 Band LTE4 10MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE4 10MHz OBW QPSK Mid Channel FRB.gif

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

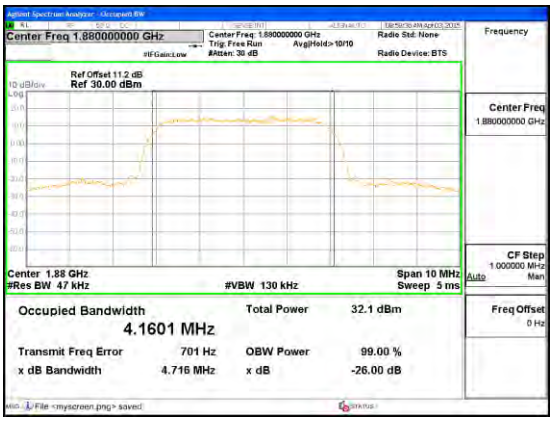
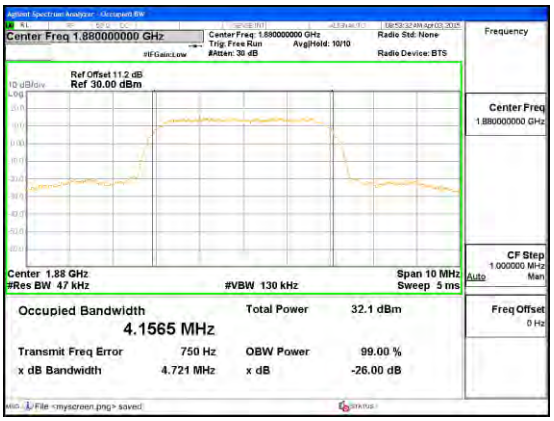
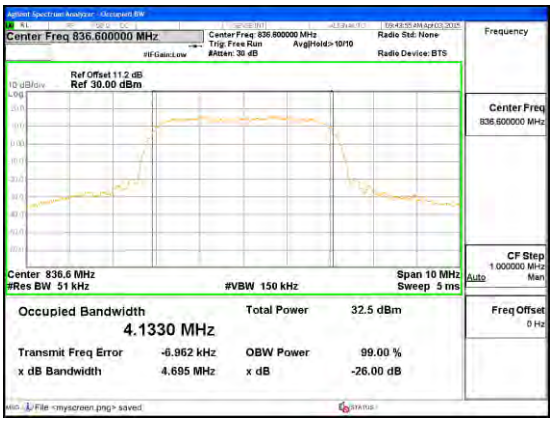
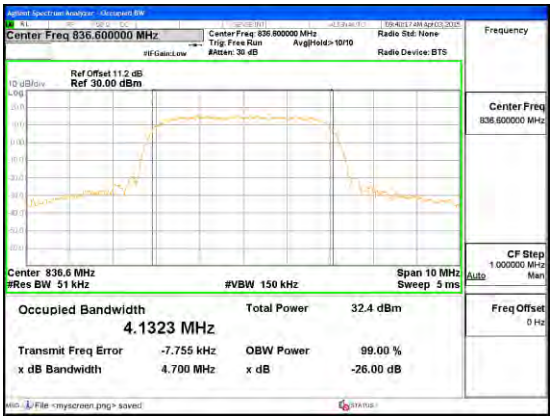
Band LTE4 3MHz	 Band LTE4 3MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE4 3MHz OBW QPSK Mid Channel FRB.gif
Band LTE4 3MHz	 Band LTE4 3MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE4 3MHz OBW QPSK Mid Channel FRB.gif

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

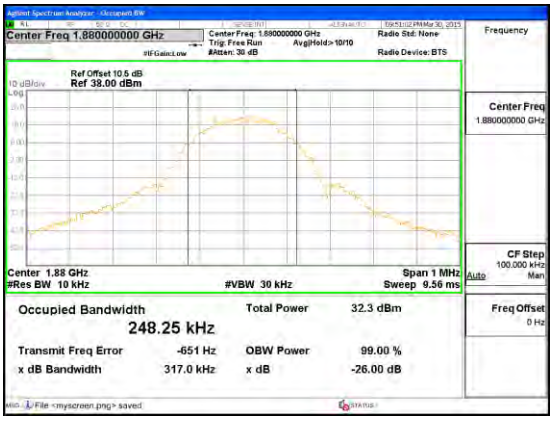
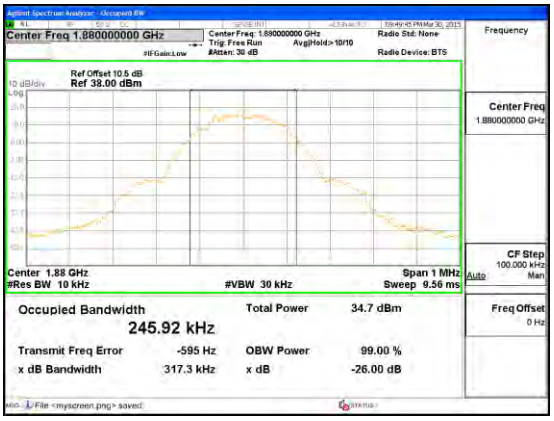
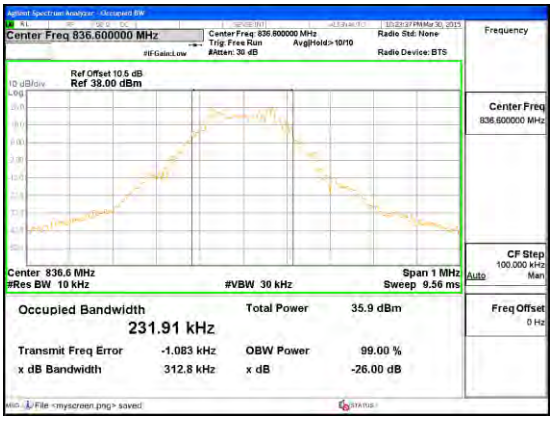
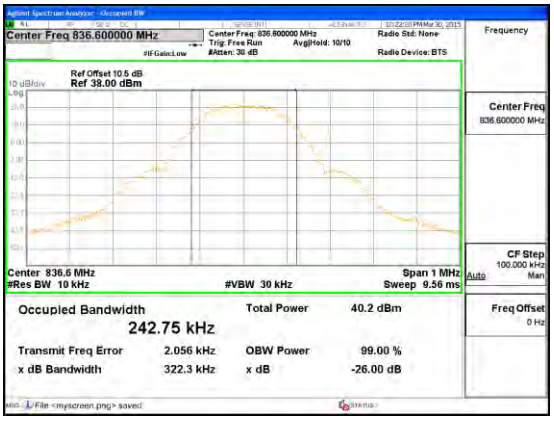
CDMA

Band BC1	 Band BC1 EVDO Rel. 0 OBW Mid channel	 Band BC1 1xRTT OBW Mid channel
Band BC0	 Band BC0 EVDO Rel. 0 OBW Mid channel	 Band BC0 1xRTT OBW Mid channel

WCDMA

Band Band 2	 Band WCDMA B2 HSDPA OBW	 Band WCDMA B2 REL99 OBW
Band Band 5	 Band WCDMA B5 HSDPA OBW	 Band WCDMA B5 REL99 OBW

GSM

Band GSM1900	 Band GSM1900 EGPRS OBW Mid channel	 Band GSM1900 GPRS OBW Mid channel
Band GSM850	 Band GSM850 EGPRS OBW Mid channel	 Band GSM850 GPRS OBW Mid channel

11.2. BAND EDGE EMISSIONS

RULE PART(S)

FCC: §22.359, §24.238, §27. 53

LIMITS

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

TEST PROCEDURE

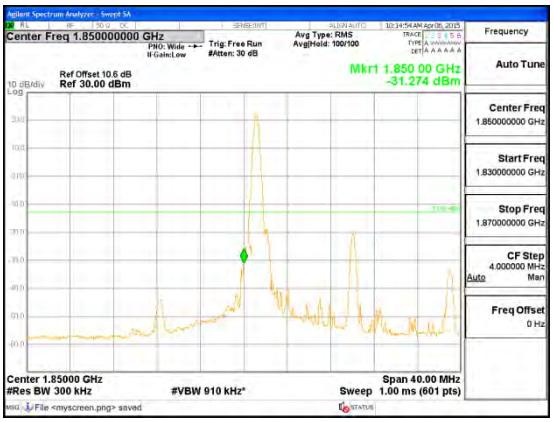
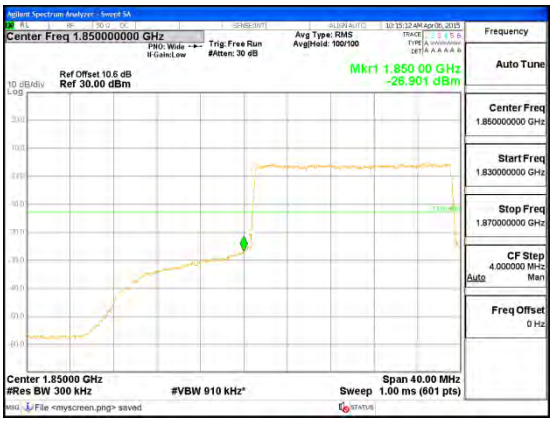
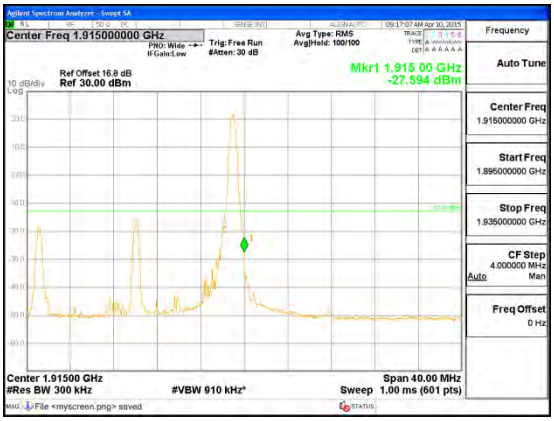
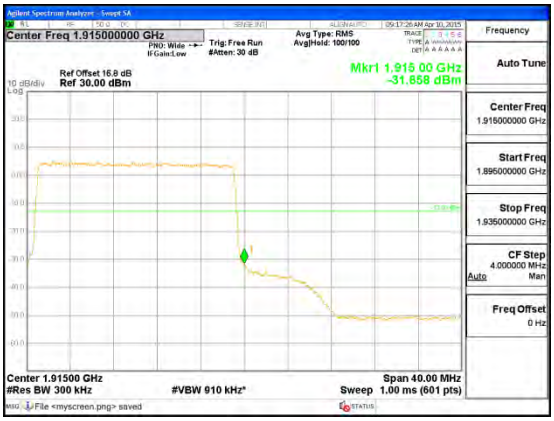
Per KDB 971168 D01 Power Meas License Digital Systems v02r02
The transmitter output was connected to an Agilent 8960 or a CMW500 Test Set and configured to operate at maximum power. The band edge emissions were measured at the required operating frequencies in each band on the Spectrum Analyzer.

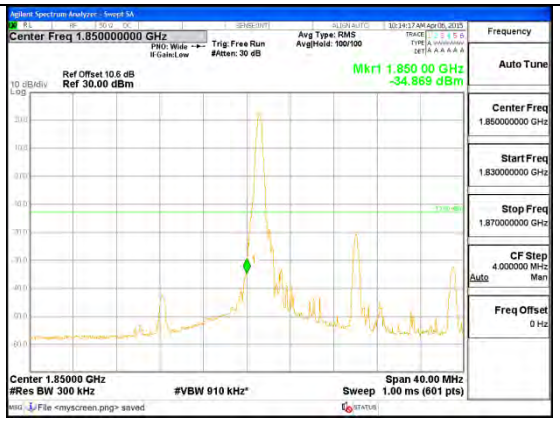
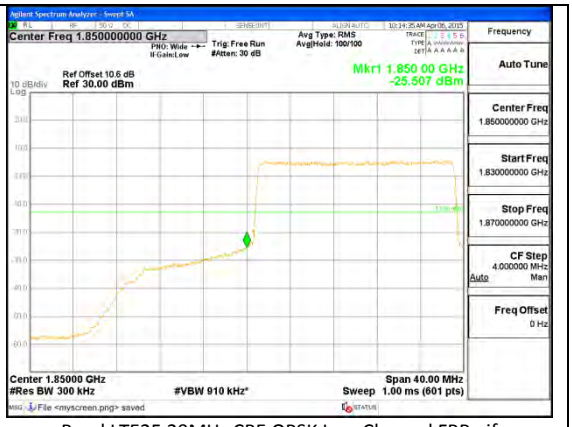
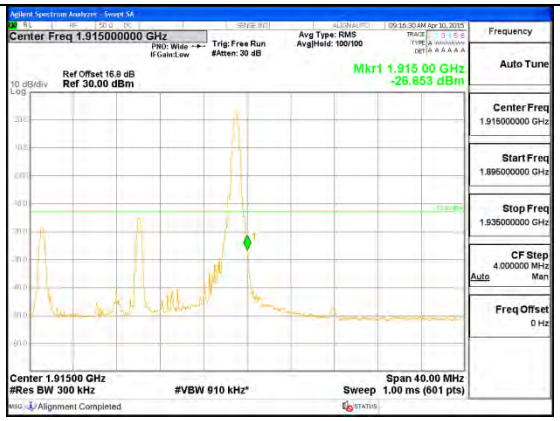
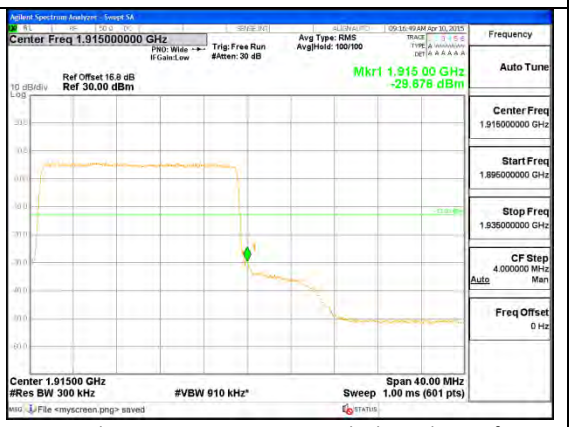
RESULTS

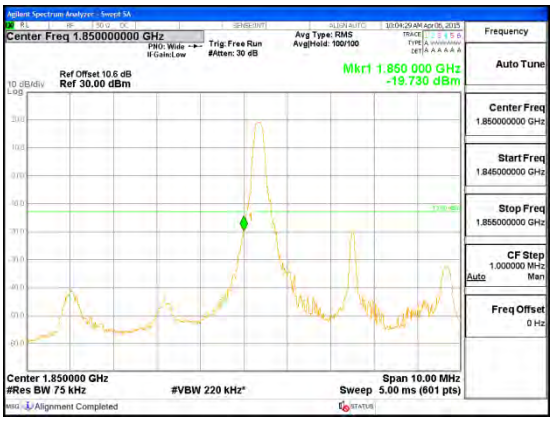
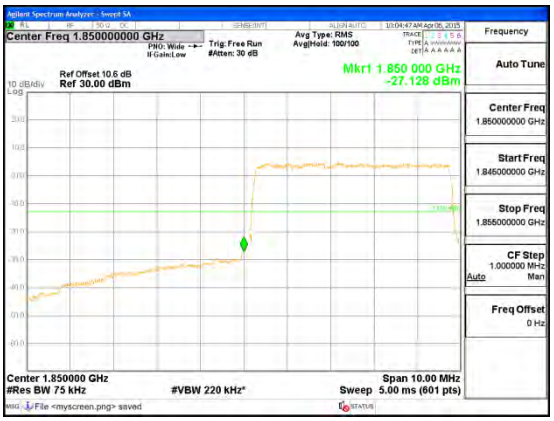
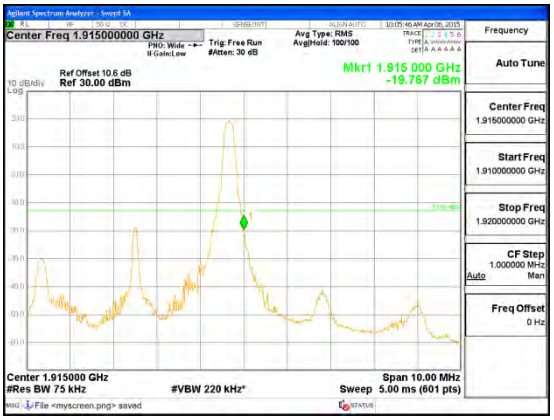
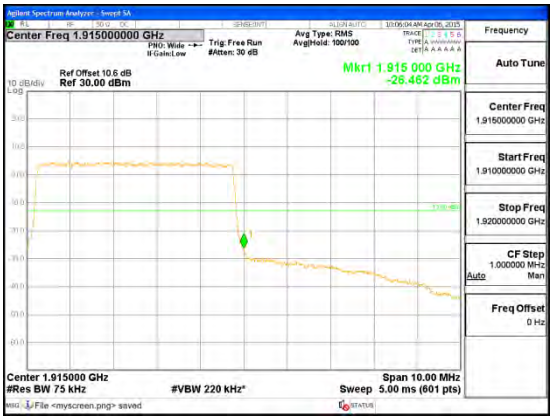
Note: GSM reading need add 9dB DCCF factor due to duty cycle is 12.5% during test.

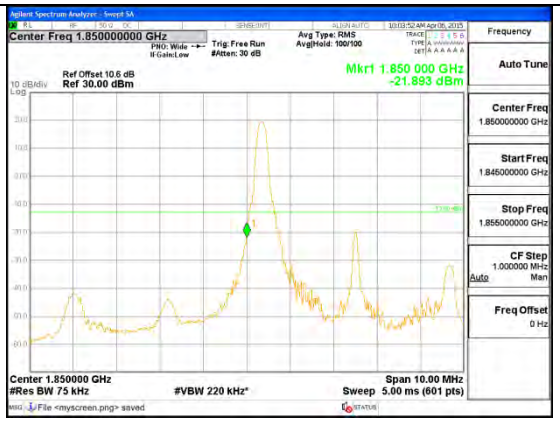
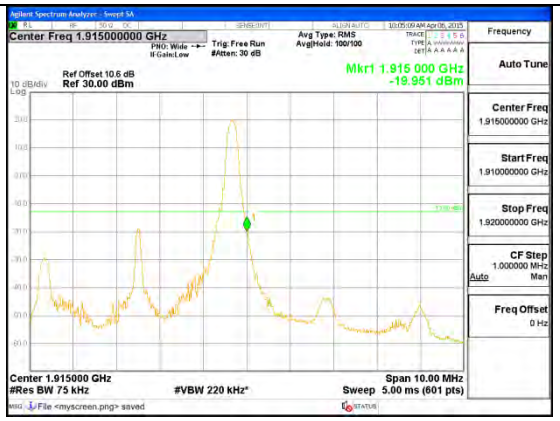
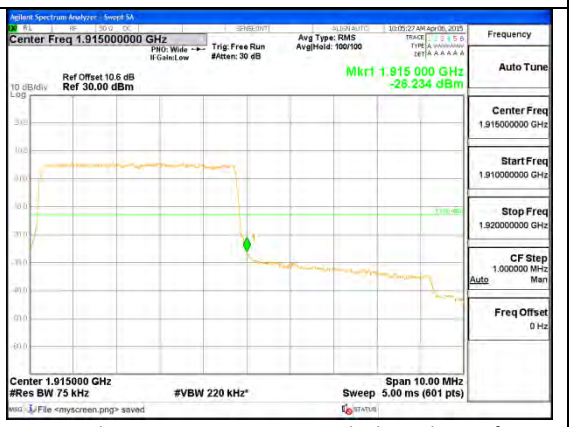
11.2.1. BAND EDGE PLOTS

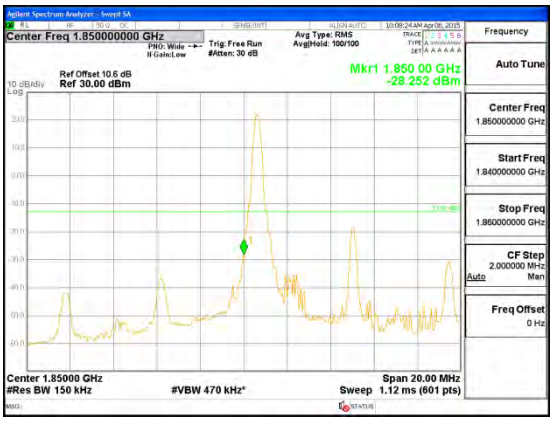
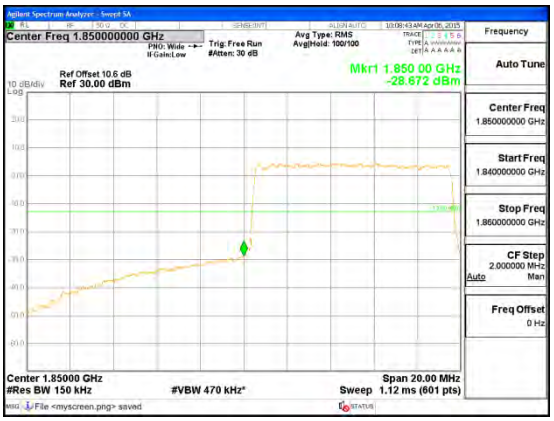
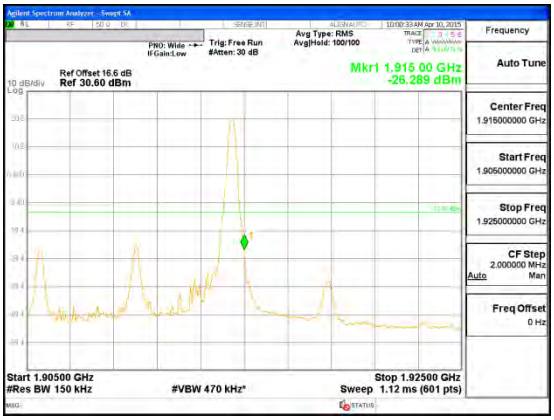
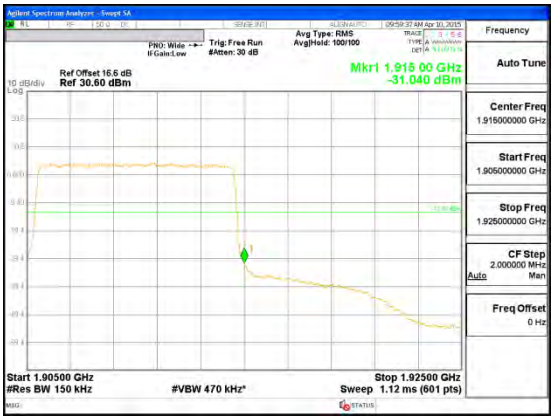
LTE Band 25

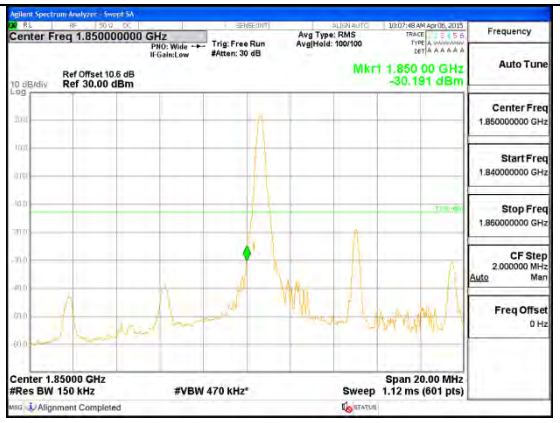
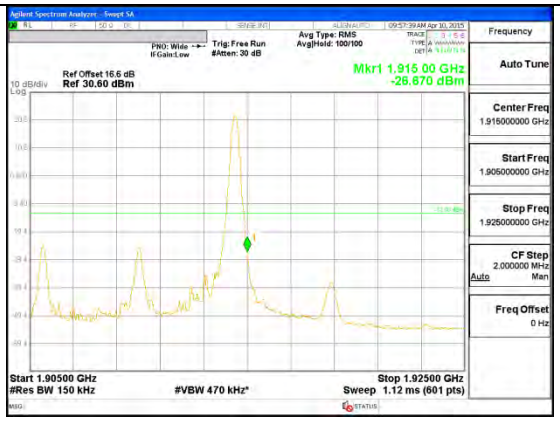
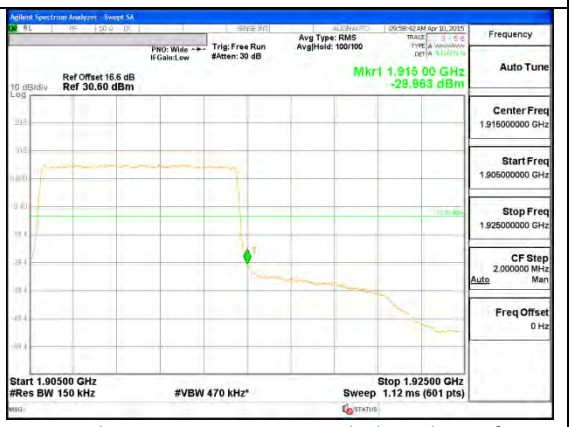
Band LTE25 20MHz 16QAM	 Band LTE25 20MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE25 20MHz CBE 16QAM Low Channel FRB.gif
Band LTE25 20MHz 16QAM	 Band LTE25 20MHz CBE 16QAM High Channel 1RB.gif	 Band LTE25 20MHz CBE 16QAM High Channel FRB.gif

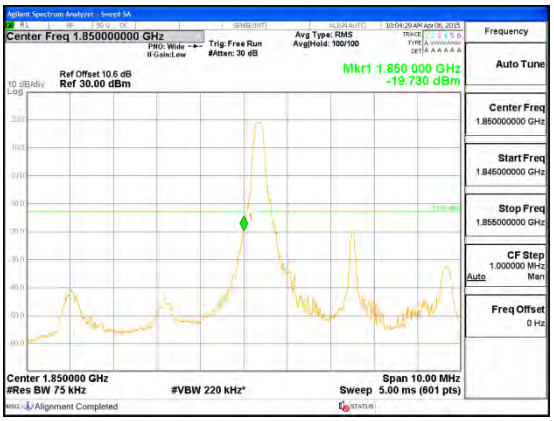
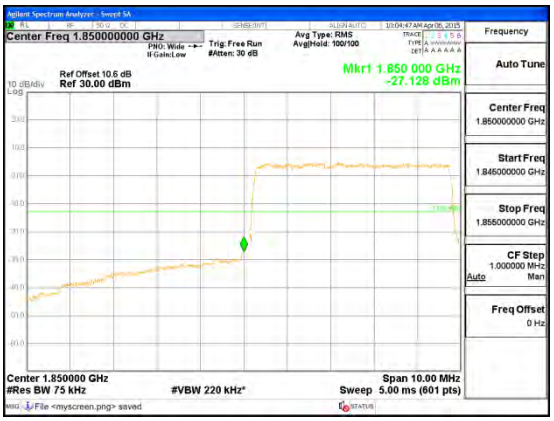
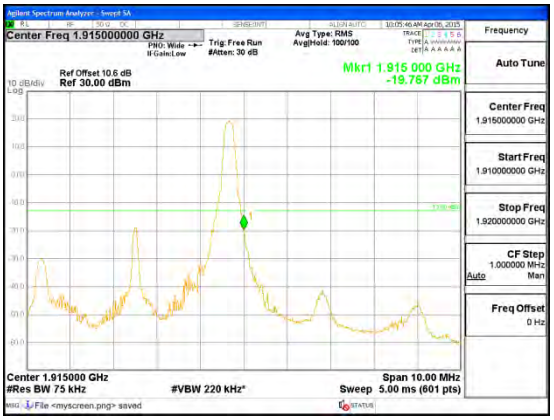
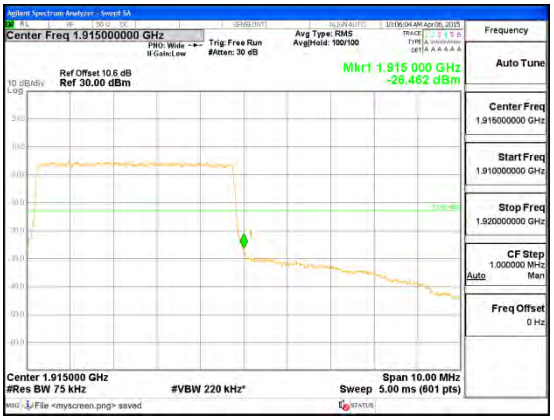
Band LTE25 20MHz QPSK	 Band LTE25 20MHz CBE QPSK Low Channel 1RB.gif	 Band LTE25 20MHz CBE QPSK Low Channel FRB.gif
Band LTE25 20MHz QPSK	 Band LTE25 20MHz CBE QPSK High Channel 1RB.gif	 Band LTE25 20MHz CBE QPSK High Channel FRB.gif

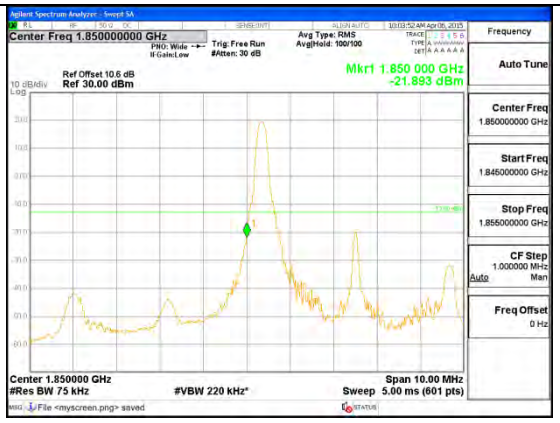
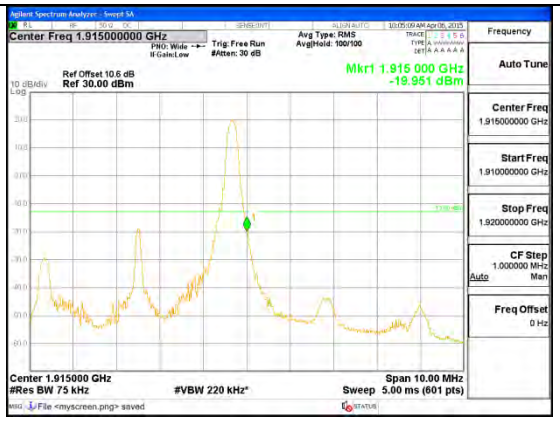
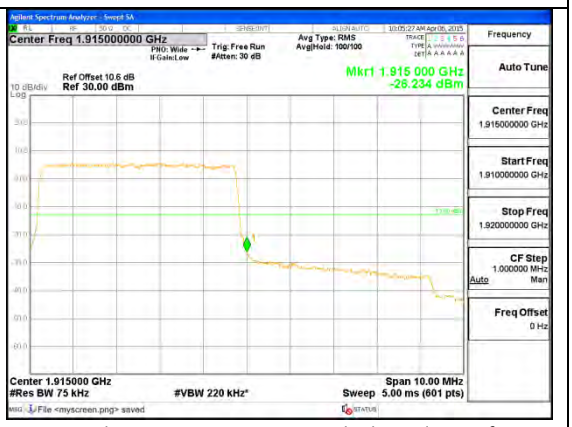
Band LTE25 15MHz 16QAM	 Band LTE25 15MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE25 15MHz CBE 16QAM Low Channel FRB.gif
Band LTE25 15MHz 16QAM	 Band LTE25 15MHz CBE 16QAM High Channel 1RB.gif	 Band LTE25 15MHz CBE 16QAM High Channel FRB.gif

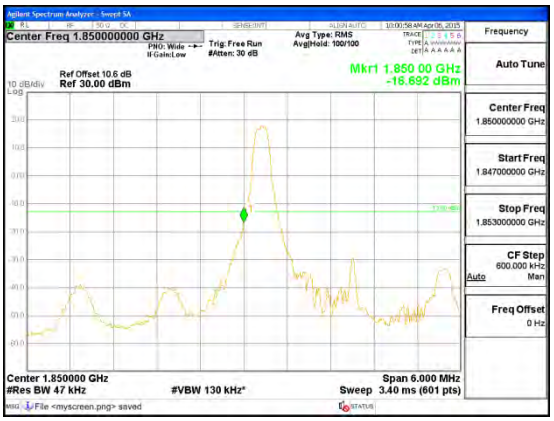
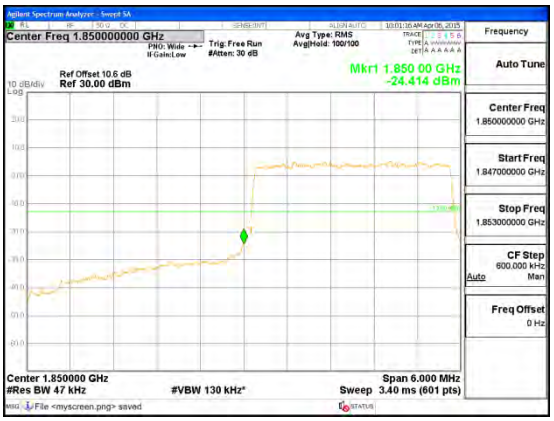
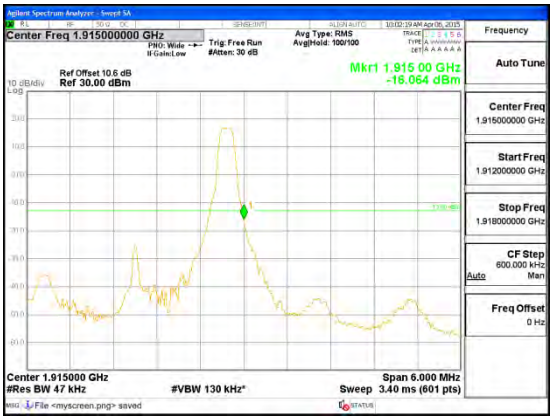
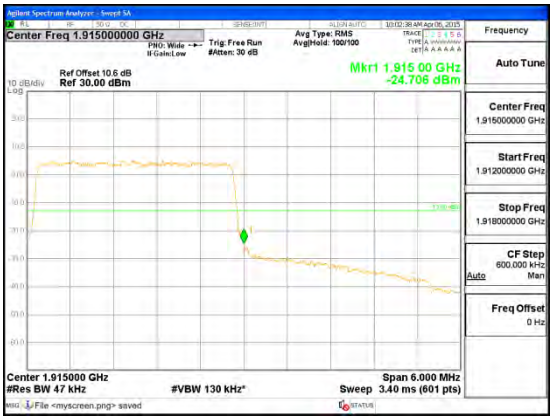
Band LTE25 15MHz QPSK	 Band LTE25 15MHz CBE QPSK Low Channel 1RB.gif	 Band LTE25 15MHz CBE QPSK Low Channel FRB.gif
Band LTE25 15MHz QPSK	 Band LTE25 15MHz CBE QPSK High Channel 1RB.gif	 Band LTE25 15MHz CBE QPSK High Channel FRB.gif

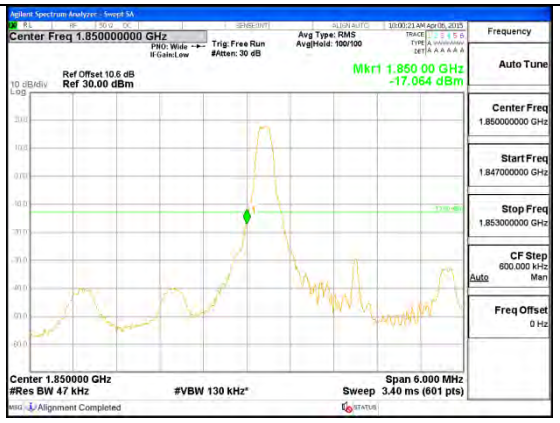
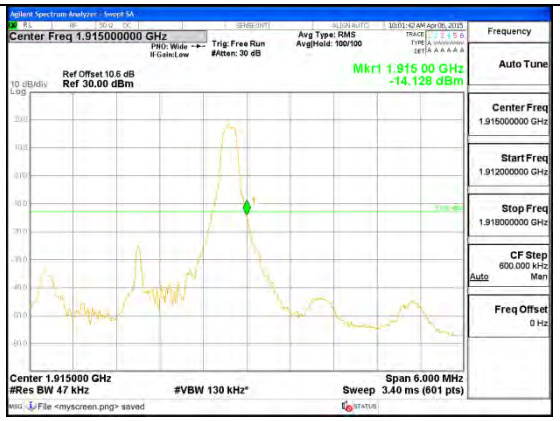
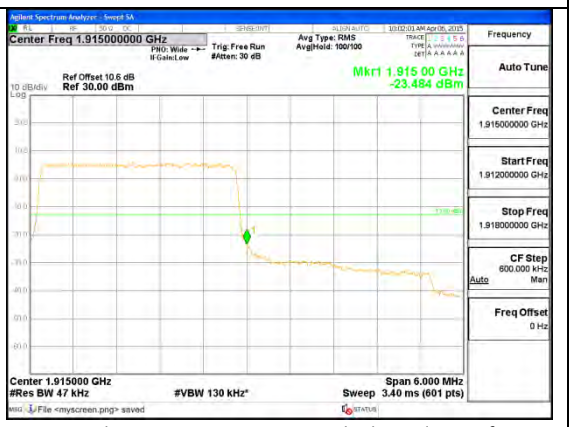
Band LTE25 10MHz 16QAM	 Band LTE25 10MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE25 10MHz CBE 16QAM Low Channel FRB.gif
Band LTE25 10MHz 16QAM	 Band LTE25 10MHz CBE 16QAM High Channel 1RB.gif	 Band LTE25 10MHz CBE 16QAM High Channel FRB.gif

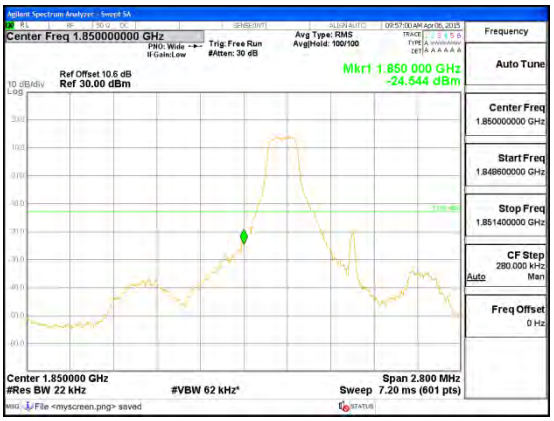
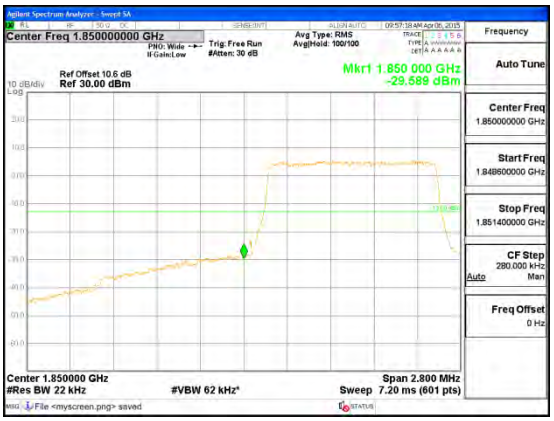
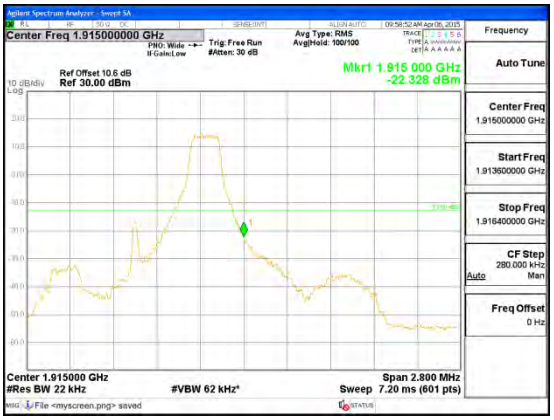
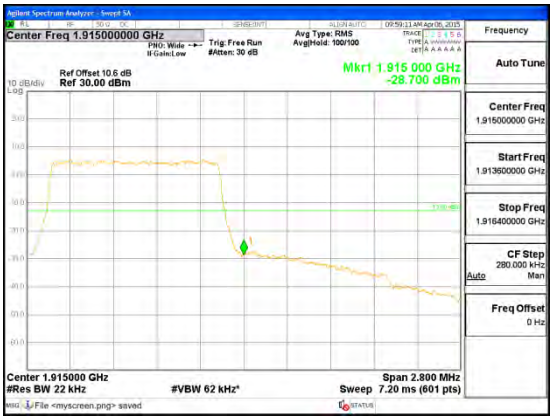
Band LTE25 10MHz QPSK	 Band LTE25 10MHz CBE QPSK Low Channel 1RB.gif	 Band LTE25 10MHz CBE QPSK Low Channel FRB.gif
Band LTE25 10MHz QPSK	 Band LTE25 10MHz CBE QPSK High Channel 1RB.gif	 Band LTE25 10MHz CBE QPSK High Channel FRB.gif

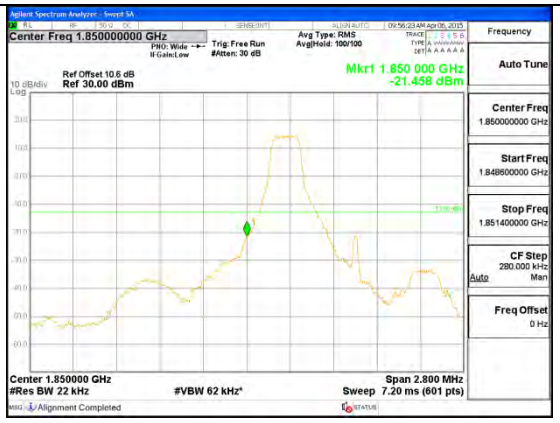
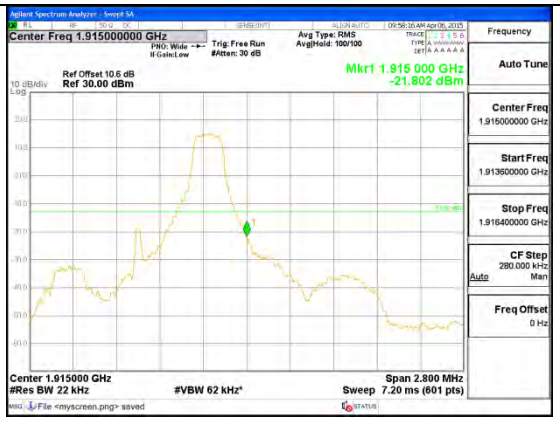
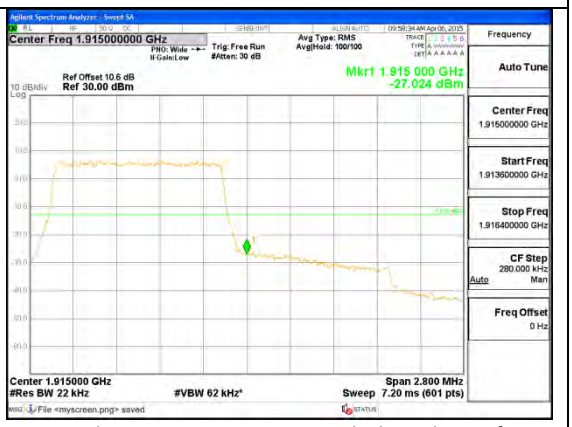
Band LTE25 5MHz 16QAM	 Band LTE25 5MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE25 5MHz CBE 16QAM Low Channel FRB.gif
Band LTE25 5MHz 16QAM	 Band LTE25 5MHz CBE 16QAM High Channel 1RB.gif	 Band LTE25 5MHz CBE 16QAM High Channel FRB.gif

Band LTE25 5MHz QPSK	 Band LTE25 5MHz CBE QPSK Low Channel 1RB.gif	 Band LTE25 5MHz CBE QPSK Low Channel FRB.gif
Band LTE25 5MHz QPSK	 Band LTE25 5MHz CBE QPSK High Channel 1RB.gif	 Band LTE25 5MHz CBE QPSK High Channel FRB.gif

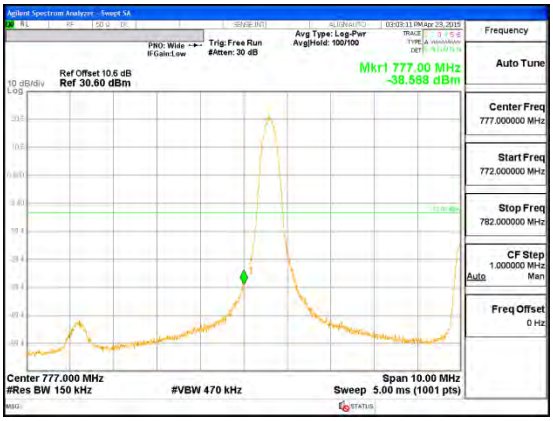
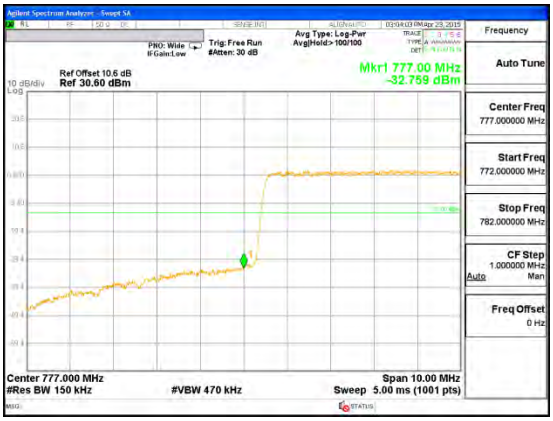
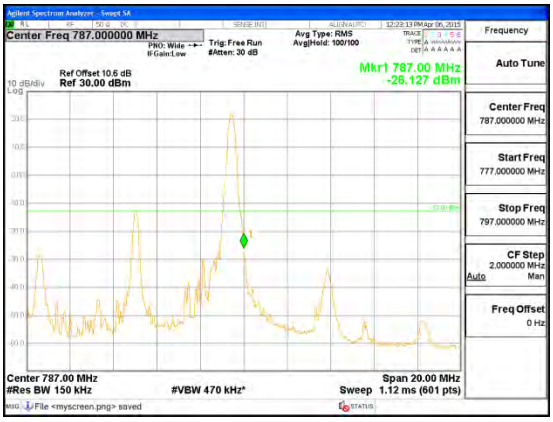
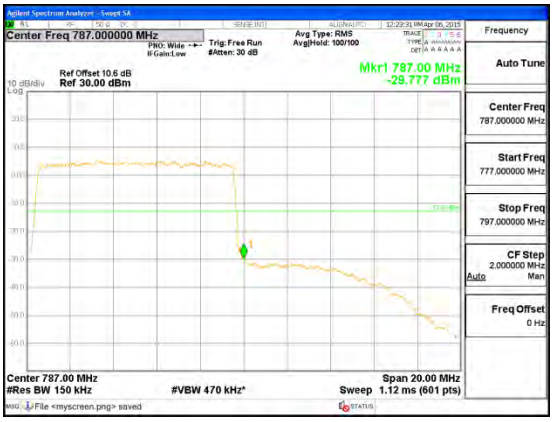
Band LTE25 3MHz 16QAM	 Band LTE25 3MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE25 3MHz CBE 16QAM Low Channel FRB.gif
Band LTE25 3MHz 16QAM	 Band LTE25 3MHz CBE 16QAM High Channel 1RB.gif	 Band LTE25 3MHz CBE 16QAM High Channel FRB.gif

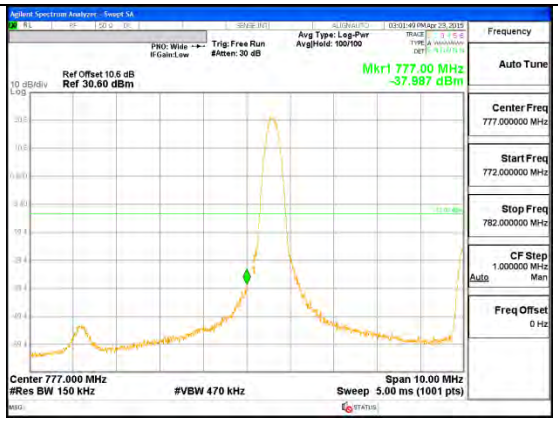
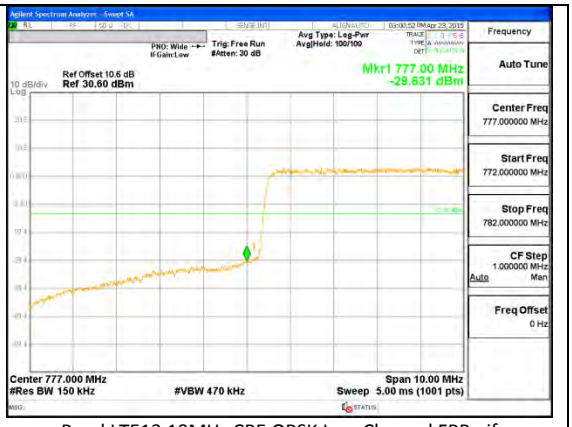
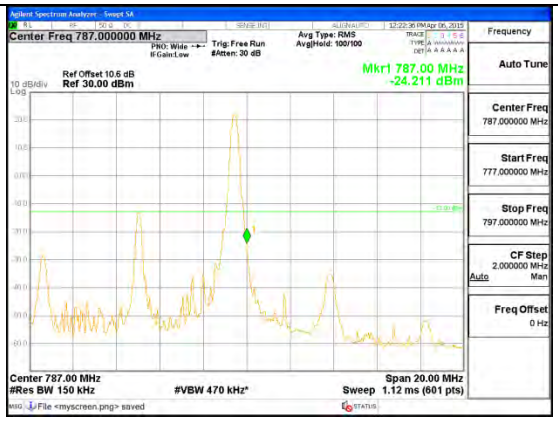
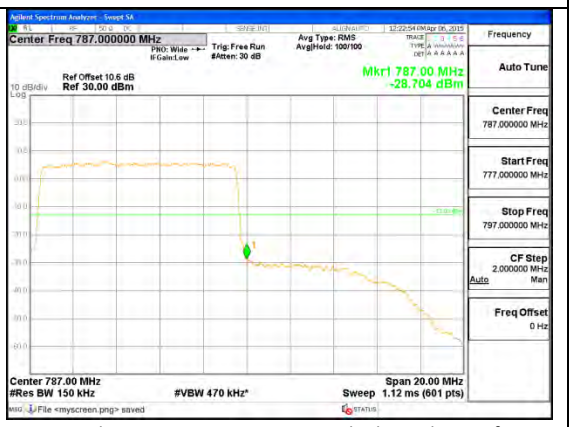
Band LTE25 3MHz QPSK	 Band LTE25 3MHz CBE QPSK Low Channel 1RB.gif	 Band LTE25 3MHz CBE QPSK Low Channel FRB.gif
Band LTE25 3MHz QPSK	 Band LTE25 3MHz CBE QPSK High Channel 1RB.gif	 Band LTE25 3MHz CBE QPSK High Channel FRB.gif

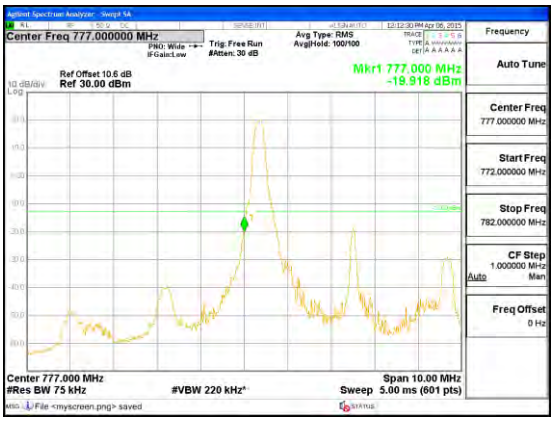
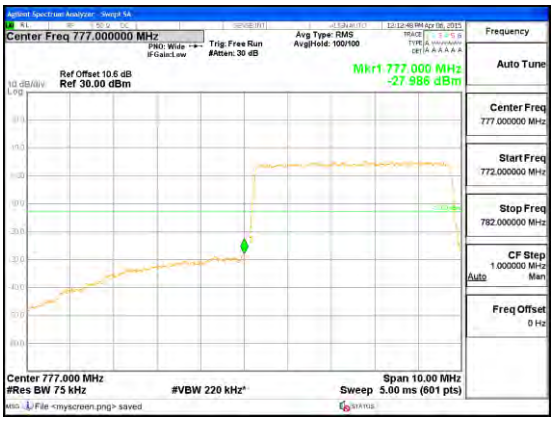
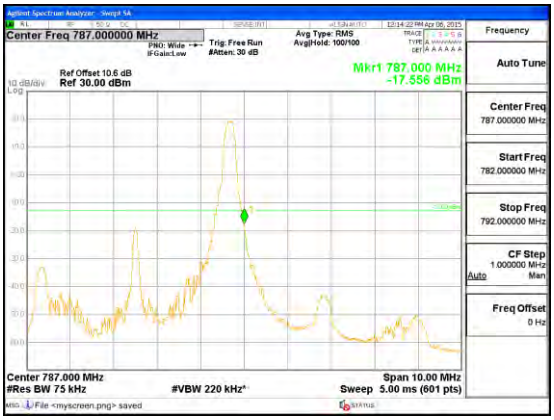
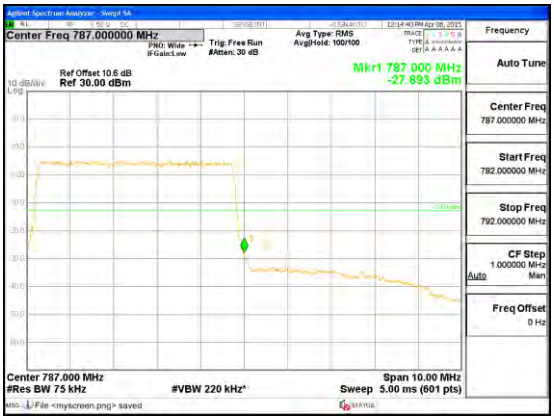
Band LTE25 1.4MHz 16QAM	 Band LTE25 1.4MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE25 1.4MHz CBE 16QAM Low Channel FRB.gif
Band LTE25 1.4MHz 16QAM	 Band LTE25 1.4MHz CBE 16QAM High Channel 1RB.gif	 Band LTE25 1.4MHz CBE 16QAM High Channel FRB.gif

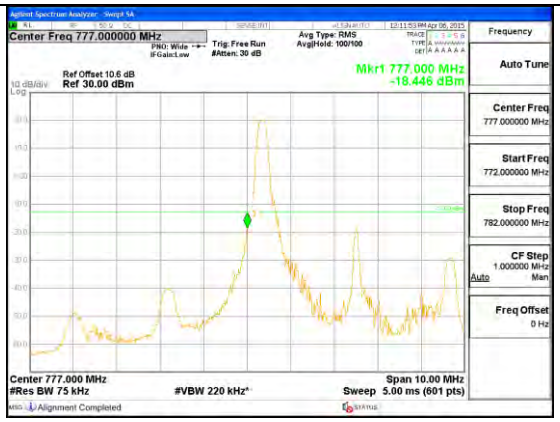
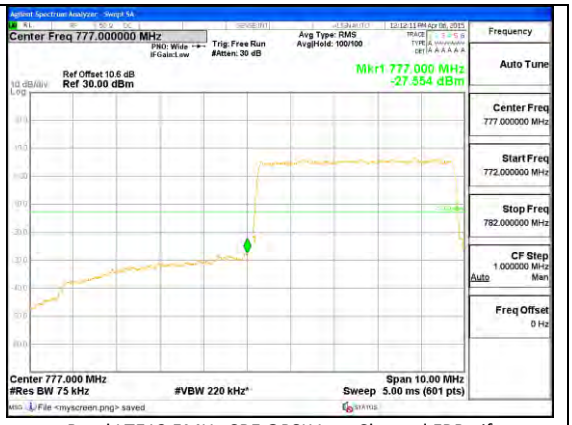
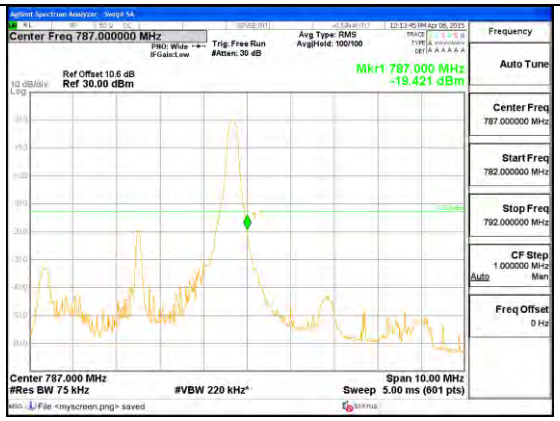
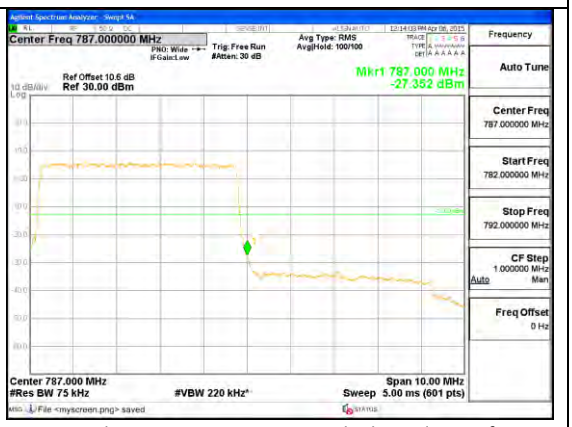
Band LTE25 1.4MHz QPSK	 Band LTE25 1.4MHz CBE QPSK Low Channel 1RB.gif	 Band LTE25 1.4MHz CBE QPSK Low Channel FRB.gif
Band LTE25 1.4MHz QPSK	 Band LTE25 1.4MHz CBE QPSK High Channel 1RB.gif	 Band LTE25 1.4MHz CBE QPSK High Channel FRB.gif

LTE Band 13

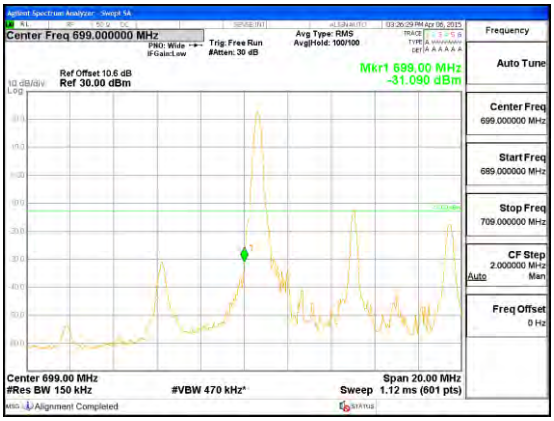
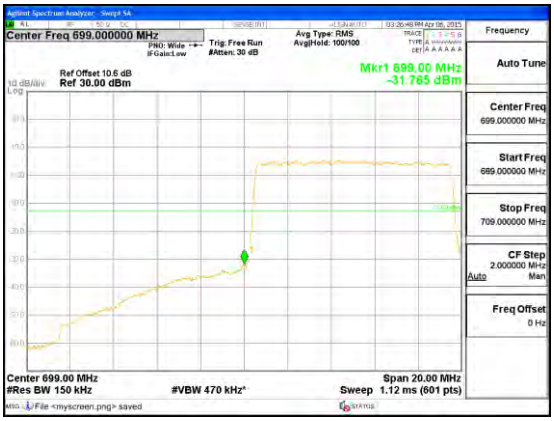
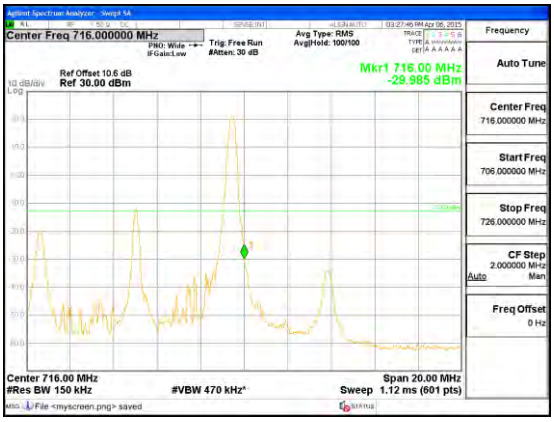
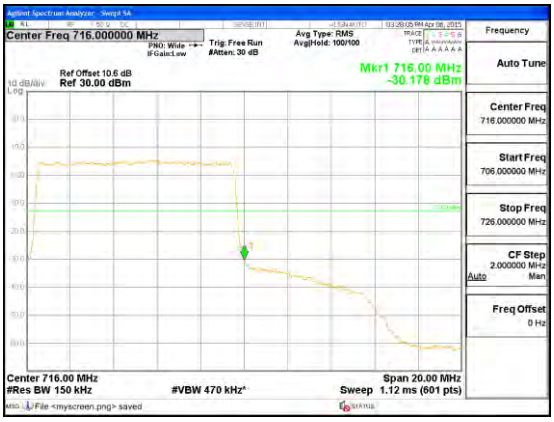
Band LTE13 10MHz 16QAM	 Band LTE13 10MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE13 10MHz CBE 16QAM Low Channel FRB.gif
Band LTE13 10MHz 16QAM	 Band LTE13 10MHz CBE QPSK High Channel 1RB.gif	 Band LTE13 10MHz CBE QPSK High Channel FRB.gif

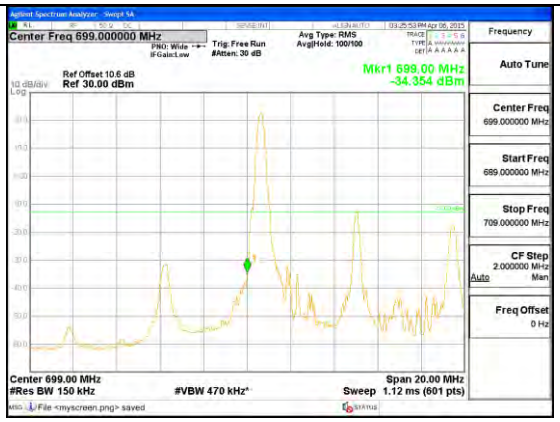
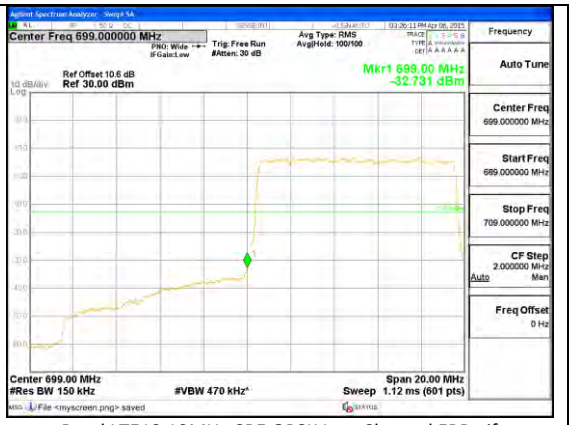
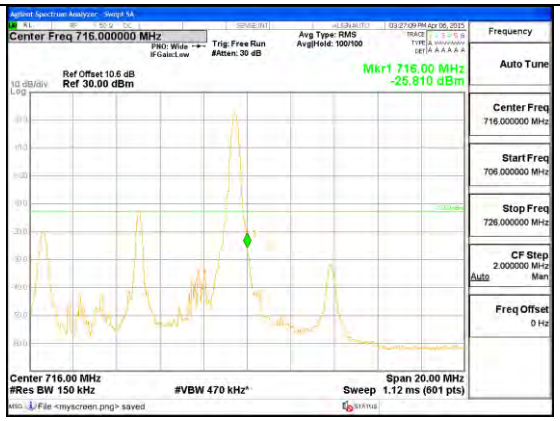
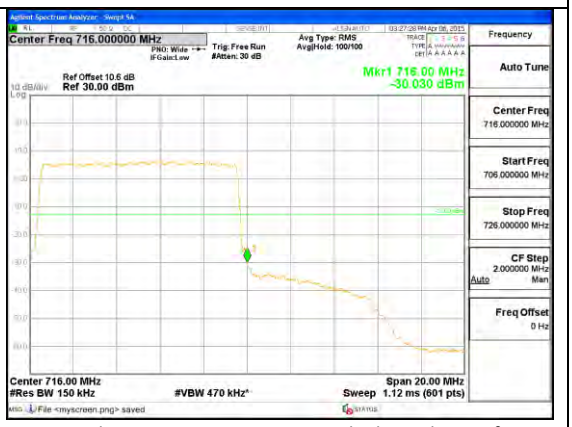
Band LTE13 10MHz QPSK	 Band LTE13 10MHz CBE QPSK Low Channel 1RB.gif	 Band LTE13 10MHz CBE QPSK Low Channel FRB.gif
Band LTE13 10MHz QPSK	 Band LTE13 10MHz CBE QPSK High Channel 1RB.gif	 Band LTE13 10MHz CBE QPSK High Channel FRB.gif

Band LTE13 5MHz 16QAM	 Band LTE13 5MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE13 5MHz CBE 16QAM Low Channel FRB.gif
Band LTE13 5MHz 16QAM	 Band LTE13 5MHz CBE 16QAM High Channel 1RB.gif	 Band LTE13 5MHz CBE 16QAM High Channel FRB.gif

Band LTE13 5MHz QPSK	 Band LTE13 5MHz CBE QPSK Low Channel 1RB.gif	 Band LTE13 5MHz CBE QPSK Low Channel FRB.gif
Band LTE13 5MHz QPSK	 Band LTE13 5MHz CBE QPSK High Channel 1RB.gif	 Band LTE13 5MHz CBE QPSK High Channel FRB.gif

LTE Band 12

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

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