



FCC CFR47 PART 22 SUBPART H (B2)
FCC CFR47 PART 24 SUBPART E (B2)
FCC CFR47 PART 27 SUBPART F (B13)
FCC CFR47 PART 27 SUBPART H (B12 17)
FCC CFR47 PART 27 SUBPART L (B4)
INDUSTRY CANADA RSS-130 ISSUE 1
INDUSTRY CANADA RSS-132 ISSUE 3
INDUSTRY CANADA RSS-133 ISSUE 6
INDUSTRY CANADA RSS-139 ISSUE 2
INDUSTRY CANADA RSS-199 ISSUE 1

CERTIFICATION TEST REPORT

For

Dolphin CT50

MODEL NUMBER: CT50LFN

FCC ID: HD5-CT50LFN

IC ID: 1693B-CT50LFN

REPORT NUMBER: 15U20259-E1, Revision A

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Prepared for

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: HONEYWELL INTERNATIONAL INC
HONEYWELL SCANNING & MOBILITY
EUT DESCRIPTION: Dolphin CT50
MODEL: CT50LFN
SERIAL NUMBER: 15099404A2
DATE TESTED: MAY 11 – JUNE 05, 2015

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC PART 22H, 24E, 27L, 27F, and 27M	PASS
INDUSTRY CANADA RSS-130, 132, 133, 139, 199	PASS

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

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

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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, FCC CFR 47 Part 27; INDUSTRY CANADA RSS-130 Issue 1, RSS-132 Issue 3, RSS-133 Issue 6, RSS-139 Issue 2, RSS-199 Issue 1.

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:

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

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

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

4.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	3.52 dB
Radiated Disturbance, 30 to 1000 MHz	4.94 dB
Radiated Disturbance, 1GHz to 40GHz	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 Dolphin CT50 Mobile Computer (Terminal).

5.2. MAXIMUM OUTPUT POWER

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

FCC Part 22/24						
Band	Frequency Range(MHz)	Modulation	Conducted		Radiated	
			AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
GSM850	824~849	GMSK	33.40	2187.76		
	824~849	GPRS	33.40	2187.76	33.69	2338.84
	824~849	EGPRS	27.60	575.44	28.77	753.36
GSM1900	1850~1910	GMSK	30.8	234.42		
	1850~1910	GPRS	30.8	165.96	32.86	1931.97
	1850~1910	EGPRS	25.1	177.83	29.60	912.01
Band 5	824~849	REL99	23.70	234.42	24.56	285.76
	824~849	HSDPA	22.50	177.83	24.50	281.84
	824~849	HSUPA	22.70	186.21		
Band 2	1850~1910	REL99	23.7	2187.76	26.18	414.95
	1850~1910	HSDPA	23.7	2187.76	25.63	365.59
	1850~1910	HSUPA	22.7	575.44		

5.3. MAXIMUM OUTPUT POWER (LTE)

LTE Band 2

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

FCC Part 24							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation	Conducted		Radiated	
				AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE2	1850~1910	20MHz	QPSK	23.27	212.32	26.02	399.94
			16QAM	22.32	170.61	24.79	301.30
		15MHz	QPSK	23.16	207.01	25.60	363.08
			16QAM	22.50	177.83	24.66	292.42
		10MHz	QPSK	23.18	207.97	26.83	481.95
			16QAM	22.32	170.61	25.86	385.48
		5MHz	QPSK	23.31	214.29	25.68	369.83
			16QAM	22.49	177.42	24.56	285.76
		3MHz	QPSK	23.21	209.41	25.10	323.59
			16QAM	22.32	170.61	24.26	266.69
		1.4MHz	QPSK	23.20	208.93	25.18	329.61
			16QAM	22.40	173.78	24.16	260.62

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	23.40	218.78	27.08	510.50
			16QAM	22.26	168.27	26.09	406.44
		15MHz	QPSK	23.10	204.17	27.39	548.28
			16QAM	22.50	177.83	26.48	444.63
		10MHz	QPSK	23.11	204.64	27.03	504.66
			16QAM	22.27	168.66	25.90	389.05
		5MHz	QPSK	23.21	209.41	27.52	564.94
			16QAM	22.50	177.83	26.52	448.75
		3MHz	QPSK	23.02	200.45	27.68	586.14
			16QAM	22.19	165.58	26.40	436.52
		1.4MHz	QPSK	23.08	203.24	26.99	500.03
			16QAM	22.22	166.72	26.18	414.95

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	23.13	205.59	24.17	261.22
			16QAM	22.30	169.82	23.13	205.59
		5MHz	QPSK	23.26	211.84	24.25	266.07
			16QAM	22.50	177.83	23.44	220.80
		3MHz	QPSK	23.19	208.45	24.60	288.40
			16QAM	22.37	172.58	23.43	220.29
		1.4MHz	QPSK	23.26	211.84	24.14	259.42
			16QAM	22.42	174.58	23.39	218.27

LTE Band 7

FCC Part 27							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation	Conducted		Radiated	
				AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE7	2500~2570	20MHz	QPSK	23.00	199.53	24.00	251.19
			16QAM	22.00	158.49	23.00	199.53
		15MHz	QPSK	22.96	197.70	25.80	380.19
			16QAM	22.00	158.49	24.64	291.07
		10MHz	QPSK	22.91	195.43	25.84	383.71
			16QAM	22.00	158.49	24.93	311.17
		5MHz	QPSK	22.98	198.61	24.43	277.33
			16QAM	22.00	158.49	23.36	216.77

LTE Band 17

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	22.96	197.70	19.97	99.31
			16QAM	21.88	154.17	18.97	78.89
		5MHz	QPSK	23.02	200.45	19.83	96.16
			16QAM	21.91	155.24	18.66	73.45

5.4. DESCRIPTION OF AVAILABLE ANTENNAS

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

Frequency (MHz)	Peak Gain (dBi)
GSM850, WCDMA Band 5, LTE Band 5 824~849MHz	0.7
GSM1900, WCDMA Band 2, LTE Band 2 1850~1910MHz	1.7
LTE4, 1710~1755MHz	2.7
LTE7, 2500~2570MHz	2.5
LTE17, 704~716MHz	-3.0

5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
AC Adapter	PHIHONG	PSA10F-050Q	N/A	N/A
USB CUP Adapter	Honeywell	N/A	N/A	N/A

I/O CABLES (CONDUCTED SETUP)

N/A

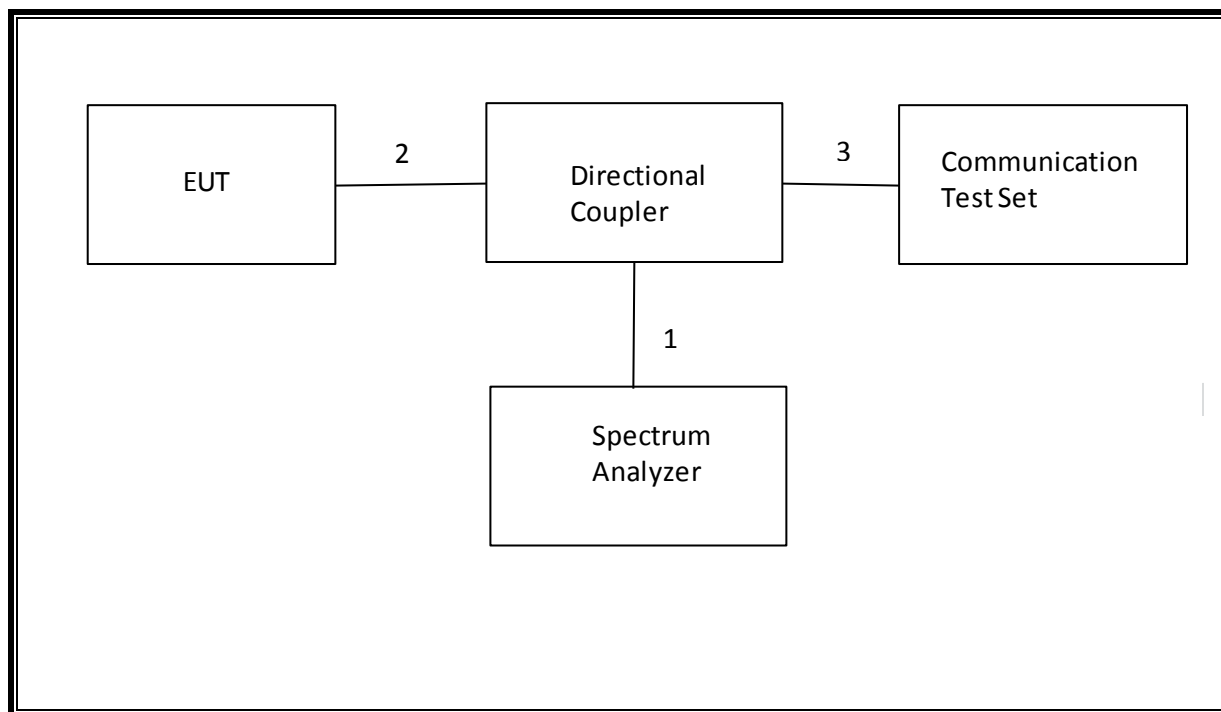
I/O CABLES (RADIATED SETUP)

N/A

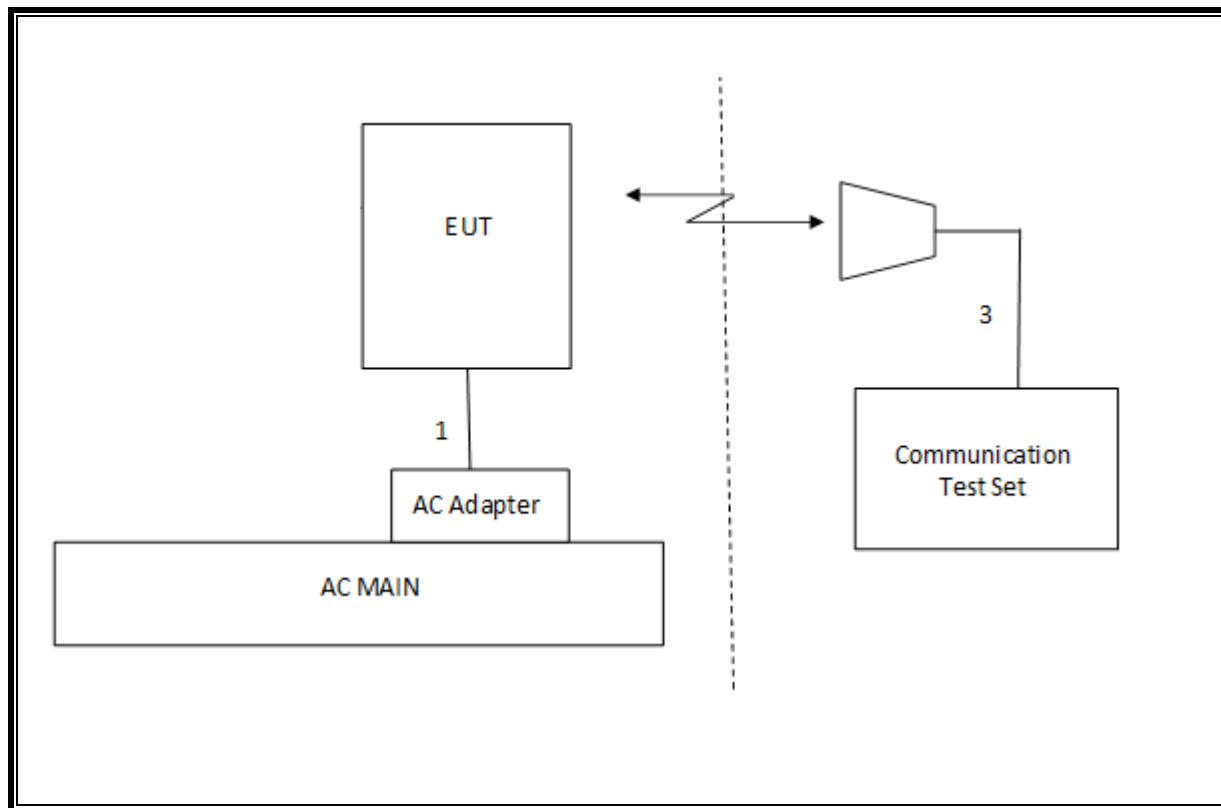
TEST SETUP

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

SETUP DIAGRAM FOR TESTS (CONDUCTED TEST SETUP)



SETUP DIAGRAM FOR TESTS (RADIATED TEST SETUP)



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	T123	10/28/15
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	T185	02/18/16
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	11/01/15
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

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	17.9 MHz
22.917(a) 24.238(a) 27.53(g) 90.691	RSS-132(4.5.1) RSS-133(6.5.1) RSS-139(6.5.1)	Band Edge / Conducted Spurious Emission	-13dBm		Pass	-16.87 dBm
27.53(m)	RSS-199(4.5)		-25dBm		Pass	Band 41
2.1046	N/A	Conducted output power	N/A		Pass	33.69 dBm
27.53(m) 90.691	RSS-199(4.5)	Emission Mask			Pass	Band 41 Band 26
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	0.021 PPM
22.913(a)(2)	RSS-132(4.4)	Effective Radiated Power	38 dBm	Radiated	Pass	33.69 dBm
27.50(c)(10)	N/A		34.77 dBm		Pass	19.97 dBm
24.232(c) 27.50(h)(2)	RSS-133(6.4) RSS-199(4.4)	Equivalent Isotropic Radiated Power	33dBm		Pass	32.86 dBm
27.50(d)(4)	RSS-139(6.4)		30dBm		Pass	27.68 dBm
22.917(a) 24.238(a) 27.53(g)	RSS-132(4.5.1) RSS-133(6.5.1) RSS-139(6.5.1)	Radiated Spurious Emission	-13dBm		Pass	-32.9 dBm
27.53(m)	RSS-199(4.5)		-25dBm		Pass	-46.1 dBm

8. RF POWER OUTPUT VERIFICATION

8.1. GSM/GPRS/EDGE

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

Press Connection control to choose the different menus

Press RESET > choose all to reset all settings

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

Network Support > GSM+GPRS or GSM+EGPRS

Main Service > Packet Data

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

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

> Slot configuration > Uplink/Gamma

> 33 dBm for GPRS 850/900

> 30 dBm for GPRS1800/1900

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

Frequency Offset > + 0 Hz

Mode > BCCH and TCH

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

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

Channel Type > Off

P0> 4 dB

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

TCH > choose desired test channel

Hopping > Off

Main Timeslot > 3 (Default)

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

Bit Stream > 2E9-1PSR Bit Pattern

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

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

8.1.1. GSM OUTPUT POWER RESULT

Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Burst Pwr (dBm)
GSM (Voice)	CS1	1	128	824.2	33.0
			190	836.6	33.3
			251	848.8	33.4
GPRS (GMSK)	CS1	1	128	824.2	33.0
			190	836.6	33.3
			251	848.8	33.4
		2	128	824.2	31.3
			190	836.6	31.2
			251	848.8	31.0
		3	128	824.2	29.2
			190	836.6	29.4
			251	848.8	29.0
		4	128	824.2	27.7
			190	836.6	27.5
			251	848.8	27.2
EGPRS (8PSK)	MCS5	1	128	824.2	27.6
			190	836.6	27.5
			251	848.8	27.1
		2	128	824.2	25.5
			190	836.6	25.4
			251	848.8	25.1
		3	128	824.2	23.3
			190	836.6	23.2
			251	848.8	23.0
		4	128	824.2	20.7
			190	836.6	20.6
			251	848.8	20.4

Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Burst Pwr (dBm)
GSM (Voice)	CS1	1	512	1850.2	30.8
			661	1880.0	30.6
			810	1909.8	30.6
GPRS (GMSK)	CS1	1	512	1850.2	30.8
			661	1880.0	30.6
			810	1909.8	30.6
		2	512	1850.2	28.1
			661	1880.0	28.0
			810	1909.8	28.0
		3	512	1850.2	26.0
			661	1880.0	26.3
			810	1909.8	26.1
		4	512	1850.2	24.2
			661	1880.0	24.4
			810	1909.8	24.3
EGPRS (8PSK)	MCS5	1	512	1850.2	25.0
			661	1880.0	25.1
			810	1909.8	25.0
		2	512	1850.2	22.8
			661	1880.0	23.0
			810	1909.8	22.9
		3	512	1850.2	21.2
			661	1880.0	21.4
			810	1909.8	21.3
		4	512	1850.2	19.0
			661	1880.0	19.3
			810	1909.8	19.1

8.2. UMTS REL 99

TEST PROCEDURE

The following summary of these settings are illustrated below:

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

8.2.1. UMTS REL 99 OUTPUT POWER RESULT

Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band V	Rel 99 (RMC, 12.2 kbps)	4132	826.4	0	23.5
		4183	836.6	0	23.6
		4233	846.6	0	23.7

Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band II	Rel 99 (RMC, 12.2 kbps)	9262	1852.4	0	23.5
		9400	1880.0	0	23.7
		9538	1907.6	0	23.6

8.3. UMTS HSDPA

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

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

8.3.1. UMTS HSDPA OUTPUT POWER RESULT

Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band V	Subtest 1	4132	826.4	0	22.2
		4183	836.6	0	22.1
		4233	846.6	0	22.1
	Subtest 2	4132	826.4	0	22.1
		4183	836.6	0	22.1
		4233	846.6	0	22.2
	Subtest 3	4132	826.4	0.5	21.7
		4183	836.6	0.5	21.6
		4233	846.6	0.5	21.7
	Subtest 4	4132	826.4	0.5	21.6
		4183	836.6	0.5	21.7
		4233	846.6	0.5	21.8

Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band II	Subtest 1	9262	1852.4	0	22.3
		9400	1880.0	0	22.5
		9538	1907.6	0	22.4
	Subtest 2	9262	1852.4	0	22.4
		9400	1880.0	0	22.6
		9538	1907.6	0	22.5
	Subtest 3	9262	1852.4	0.5	21.9
		9400	1880.0	0.5	22.1
		9538	1907.6	0.5	22.0
	Subtest 4	9262	1852.4	0.5	21.9
		9400	1880.0	0.5	22.1
		9538	1907.6	0.5	22.1

8.4. UMTS HSUPA

TEST PROCEDURE

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

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

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

8.4.1. UMTS HSUPA OUTPUT POWER RESULT

Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band V	Subtest 1	4132	826.4	0	22.5
		4183	836.6	0	22.3
		4233	846.6	0	22.2
	Subtest 2	4132	826.4	2	21.5
		4183	836.6	2	21.3
		4233	846.6	2	21.4
	Subtest 3	4132	826.4	1	21.2
		4183	836.6	1	21.3
		4233	846.6	1	21.4
	Subtest 4	4132	826.4	2	22.0
		4183	836.6	2	21.6
		4233	846.6	2	21.8
	Subtest 5	4132	826.4	0	22.5
		4183	836.6	0	22.3
		4233	846.6	0	22.2

Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band II	Subtest 1	9262	1852.4	0	22.4
		9400	1880.0	0	22.7
		9538	1907.6	0	22.5
	Subtest 2	9262	1852.4	2	21.0
		9400	1880.0	2	21.1
		9538	1907.6	2	21.5
	Subtest 3	9262	1852.4	1	21.6
		9400	1880.0	1	21.0
		9538	1907.6	1	21.6
	Subtest 4	9262	1852.4	2	22.0
		9400	1880.0	2	22.0
		9538	1907.6	2	22.0
	Subtest 5	9262	1852.4	0	22.4
		9400	1880.0	0	22.7
		9538	1907.6	0	22.5

8.5. LTE OUTPUT VERIFICATION

8.5.1. LTE OUTPUT RESULT

LTE Band 2

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						18700	18900	19100
						1860 MHz	1880 MHz	1900 MHz
LTE Band 2	20	QPSK	1	0	0	23.19	23.07	23.22
			1	49	0	23.11	23.13	23.16
			1	99	0	23.04	23.15	23.27
			50	0	1	22.17	22.14	22.17
			50	24	1	22.11	22.15	22.18
			50	50	1	22.09	22.21	22.16
			100	0	1	22.09	22.17	22.20
		16QAM	1	0	1	22.21	22.10	22.27
			1	49	1	22.19	22.13	22.21
			1	99	1	22.18	22.18	22.32
			50	0	2	21.14	21.09	21.06
			50	24	2	21.10	21.11	21.03
			50	50	2	20.99	21.10	21.04
			100	0	2	21.05	21.07	21.10
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	23.16	23.11	23.05
			1	37	0	23.13	23.15	23.04
			1	74	0	23.01	23.13	23.13
			36	0	1	22.16	22.15	22.19
			36	20	1	22.17	22.21	22.17
			36	39	1	22.16	22.25	22.19
			75	0	1	22.25	22.19	22.21
		16QAM	1	0	1	22.34	22.46	21.93
			1	37	1	22.29	22.50	21.93
			1	74	1	22.21	22.50	22.01
			36	0	2	21.12	21.06	21.05
			36	20	2	21.13	21.05	21.06
			36	39	2	21.07	21.07	21.08
			75	0	2	21.15	21.14	21.14

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	23.11	23.11	23.05
			1	25	0	23.05	23.13	23.01
			1	49	0	23.01	23.14	23.18
			25	0	1	22.17	22.18	22.19
			25	12	1	22.14	22.15	22.20
			25	25	1	22.17	22.18	22.25
			50	0	1	22.15	22.22	22.25
		16QAM	1	0	1	21.95	22.24	21.94
			1	25	1	21.89	22.29	21.93
			1	49	1	21.92	22.32	22.02
			25	0	2	21.18	21.12	21.18
			25	12	2	21.06	21.12	21.16
			25	25	2	21.12	21.14	21.23
			50	0	2	21.08	21.14	21.13
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	23.09	23.23	23.20
			1	12	0	23.09	23.20	23.23
			1	24	0	23.04	23.24	23.31
			12	0	1	22.13	22.19	22.24
			12	7	1	22.12	22.18	22.20
			12	13	1	22.15	22.18	22.27
			25	0	1	22.22	22.24	22.26
		16QAM	1	0	1	21.93	22.16	22.49
			1	12	1	21.95	22.12	22.48
			1	24	1	21.95	22.17	22.50
			12	0	2	21.19	21.13	21.11
			12	7	2	21.14	21.10	21.12
			12	13	2	21.20	21.14	21.14
			25	0	2	21.26	21.09	21.13

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	23.12	23.18	23.12
			1	8	0	23.09	23.18	23.11
			1	14	0	23.16	23.21	23.20
			8	0	1	22.20	22.24	22.27
			8	4	1	22.17	22.22	22.24
			8	7	1	22.13	22.20	22.22
			15	0	1	22.16	22.25	22.23
		16QAM	1	0	1	21.99	22.32	22.06
			1	8	1	21.92	22.31	22.00
			1	14	1	22.04	22.36	22.00
			8	0	2	21.18	20.97	21.22
			8	4	2	21.15	20.96	21.22
			8	7	2	21.13	20.95	21.21
			15	0	2	21.15	21.19	21.11
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	23.18	23.20	23.20
			1	3	0	23.11	23.13	23.15
			1	5	0	23.17	23.19	23.21
			3	0	0	23.18	23.19	23.22
			3	1	0	23.19	23.14	23.23
			3	3	0	23.20	23.15	23.28
			6	0	1	22.23	22.24	22.31
		16QAM	1	0	1	22.23	22.40	22.09
			1	3	1	22.19	22.37	22.06
			1	5	1	22.27	22.40	22.14
			3	0	1	22.12	22.18	22.39
			3	1	1	22.08	22.15	22.37
			3	3	1	22.08	22.13	22.39
			6	0	2	21.19	20.99	21.27

LTE Band 4

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						20050	20175	20300
						1720 MHz	1732.5 MHz	1745 MHz
LTE Band 4	20	QPSK	1	0	0	22.91	22.89	23.08
			1	49	0	22.85	22.97	23.40
			1	99	0	23.30	23.30	23.07
			50	0	1	21.88	22.00	22.13
			50	24	1	21.95	22.09	22.21
			50	50	1	21.95	22.10	22.18
			100	0	1	21.90	22.05	22.18
		16QAM	1	0	1	22.00	21.97	22.20
			1	49	1	21.96	22.02	22.26
			1	99	1	22.03	22.10	22.20
			50	0	2	20.86	20.94	21.07
			50	24	2	20.87	20.99	21.12
			50	50	2	20.91	21.05	21.12
			100	0	2	20.90	21.02	21.13
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	22.76	22.90	23.07
			1	37	0	22.69	22.93	23.10
			1	74	0	22.75	22.98	22.98
			36	0	1	21.97	22.06	22.18
			36	20	1	21.87	22.06	22.20
			36	39	1	21.87	22.05	22.24
			75	0	1	21.92	22.13	22.30
		16QAM	1	0	1	21.71	22.09	22.50
			1	37	1	21.64	22.16	22.50
			1	74	1	21.67	22.19	22.48
			36	0	2	20.84	21.05	21.11
			36	20	2	20.77	21.05	21.12
			36	39	2	20.80	21.04	21.13
			75	0	2	20.86	21.09	21.17

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	22.85	22.83	23.10
			1	25	0	22.84	22.87	23.11
			1	49	0	22.84	22.92	23.03
			25	0	1	21.94	21.98	22.15
			25	12	1	21.93	21.99	22.17
			25	25	1	21.82	22.00	22.10
			50	0	1	21.97	22.03	22.19
		16QAM	1	0	1	22.01	21.77	22.25
			1	25	1	22.06	21.76	22.27
			1	49	1	22.00	21.83	22.23
			25	0	2	20.89	20.94	21.13
			25	12	2	20.90	20.95	21.14
			25	25	2	20.80	20.98	21.06
			50	0	2	20.89	21.01	21.15
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	22.79	23.06	23.21
			1	12	0	22.74	23.02	23.08
			1	24	0	22.81	23.06	23.12
			12	0	1	21.92	22.04	22.10
			12	7	1	21.91	22.00	22.07
			12	13	1	21.90	22.02	22.09
			25	0	1	21.92	22.03	22.12
		16QAM	1	0	1	21.66	21.98	22.50
			1	12	1	21.66	21.97	22.38
			1	24	1	21.73	22.02	22.44
			12	0	2	20.86	20.98	21.05
			12	7	2	20.88	20.96	21.03
			12	13	2	20.88	20.97	21.09
			25	0	2	20.93	20.97	21.06

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	22.84	22.99	22.98
			1	8	0	22.75	22.99	22.94
			1	14	0	22.79	23.02	23.01
			8	0	1	21.92	22.02	22.13
			8	4	1	21.90	22.01	22.12
			8	7	1	21.91	22.04	22.09
			15	0	1	21.94	22.06	22.13
		16QAM	1	0	1	21.71	22.17	21.93
			1	8	1	21.68	22.16	21.86
			1	14	1	21.75	22.19	21.90
			8	0	2	20.86	20.79	21.15
			8	4	2	20.86	20.76	21.15
			8	7	2	20.85	20.77	21.14
			15	0	2	20.88	21.03	21.05
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	22.86	22.99	23.01
			1	3	0	22.81	22.91	22.96
			1	5	0	22.87	23.00	23.00
			3	0	0	22.93	23.00	23.08
			3	1	0	22.84	22.98	23.01
			3	3	0	22.84	23.00	23.10
			6	0	1	21.95	22.02	22.17
		16QAM	1	0	1	21.98	22.22	21.95
			1	3	1	21.91	22.16	21.91
			1	5	1	22.00	22.18	22.01
			3	0	1	21.83	21.96	22.27
			3	1	1	21.82	21.92	22.21
			3	3	1	21.81	21.93	22.26
			6	0	2	20.96	20.83	21.19

LTE Band 5

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						20450	20525	20600
						829 MHz	836.5 MHz	844 MHz
LTE Band 5	10	QPSK	1	0	0	23.09	23.13	23.03
			1	25	0	22.99	23.11	23.09
			1	49	0	23.04	23.24	23.15
			25	0	1	22.19	22.16	22.19
			25	12	1	22.21	22.16	22.21
			25	25	1	22.25	22.16	22.21
			50	0	1	22.21	22.16	22.28
		16QAM	1	0	1	22.04	22.30	21.95
			1	25	1	21.92	22.29	21.98
			1	49	1	22.01	22.39	21.99
			25	0	2	21.17	21.16	21.20
			25	12	2	21.13	21.15	21.30
			25	25	2	21.14	21.14	21.30
			50	0	2	21.19	21.15	21.20
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	23.11	23.25	23.26
			1	12	0	23.08	23.17	23.21
			1	24	0	23.01	23.19	23.24
			12	0	1	22.24	22.18	22.29
			12	7	1	22.23	22.16	22.22
			12	13	1	22.19	22.15	22.25
			25	0	1	22.19	22.20	22.24
		16QAM	1	0	1	21.99	22.14	22.50
			1	12	1	21.99	22.12	22.50
			1	24	1	21.91	22.14	22.50
			12	0	2	21.21	21.18	21.20
			12	7	2	21.20	21.14	21.20
			12	13	2	21.21	21.15	21.18
			25	0	2	21.26	21.11	21.15

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	23.15	23.19	23.17
			1	8	0	23.00	23.09	23.14
			1	14	0	23.13	23.13	23.15
			8	0	1	22.28	22.18	22.26
			8	4	1	22.14	22.14	22.26
			8	7	1	22.14	22.17	22.22
			15	0	1	22.28	22.17	22.26
		16QAM	1	0	1	22.06	22.34	22.06
			1	8	1	21.90	22.37	22.02
			1	14	1	22.07	22.34	22.03
			8	0	2	21.22	20.99	21.28
			8	4	2	21.08	20.92	21.27
			8	7	2	21.10	20.94	21.26
			15	0	2	21.21	21.17	21.14
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	23.25	23.10	23.26
			1	3	0	23.16	23.05	23.14
			1	5	0	23.09	23.14	23.20
			3	0	0	23.18	23.20	23.21
			3	1	0	23.16	23.13	23.22
			3	3	0	23.19	23.13	23.18
			6	0	1	22.24	22.20	22.32
		16QAM	1	0	1	22.42	22.00	22.34
			1	3	1	22.38	21.91	22.26
			1	5	1	22.29	22.05	22.36
			3	0	1	22.18	22.31	22.23
			3	1	1	22.13	22.32	22.18
			3	3	1	22.15	22.35	22.18
			6	0	2	21.05	21.24	21.33

LTE Band 7

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						20850	21100	21350
						2510 MHz	2535 MHz	2560 MHz
LTE Band 7	20	QPSK	1	0	0	22.96	22.75	23.00
			1	49	0	22.83	22.74	22.96
			1	99	0	22.75	22.84	22.77
			50	0	1	21.95	21.84	21.95
			50	24	1	21.88	21.88	21.90
			50	50	1	21.82	21.84	21.85
			100	0	1	21.89	21.85	21.90
		16QAM	1	0	1	22.00	21.87	22.00
			1	49	1	21.95	21.83	22.00
			1	99	1	21.87	21.89	21.85
			50	0	2	20.95	20.82	20.91
			50	24	2	20.87	20.85	20.89
			50	50	2	20.81	20.82	20.86
			100	0	2	20.87	20.78	20.90
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						20825	21100	21975
						2507.5 MHz	2535 MHz	2562.5 MHz
LTE Band 7	15	QPSK	1	0	0	22.83	22.76	22.96
			1	37	0	22.78	22.77	22.84
			1	74	0	22.62	22.80	22.72
			36	0	1	21.92	21.87	21.88
			36	20	1	21.93	21.89	21.89
			36	39	1	21.86	21.86	21.84
			75	0	1	21.93	21.86	21.89
		16QAM	1	0	1	21.80	22.00	22.00
			1	37	1	21.72	21.96	22.00
			1	74	1	21.57	22.00	22.00
			36	0	2	20.85	20.90	20.84
			36	20	2	20.90	20.91	20.84
			36	39	2	20.83	20.87	20.89
			75	0	2	20.92	20.86	20.88

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						20800	21100	21400
						2505 MHz	2535 MHz	2565 MHz
LTE Band 7	10	QPSK	1	0	0	22.89	22.91	22.87
			1	25	0	22.72	22.78	22.80
			1	49	0	22.76	22.89	22.68
			25	0	1	21.99	21.85	21.95
			25	12	1	21.85	21.86	21.87
			25	25	1	21.89	21.89	21.84
			50	0	1	22.00	21.89	21.86
		16QAM	1	0	1	21.80	22.00	21.72
			1	25	1	21.66	21.97	21.67
			1	49	1	21.68	22.00	21.50
			25	0	2	20.95	20.86	21.00
			25	12	2	20.81	20.87	21.00
			25	25	2	20.87	20.89	20.95
			50	0	2	20.99	20.86	20.97
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						20775	21100	21425
						2502.5	2535 MHz	2567.5
LTE Band 7	5	QPSK	1	0	0	22.90	22.98	22.98
			1	12	0	22.78	22.81	22.87
			1	24	0	22.78	22.89	22.83
			12	0	1	22.00	21.89	21.86
			12	7	1	21.93	21.84	21.82
			12	13	1	21.88	21.86	21.79
			25	0	1	22.00	21.86	21.83
		16QAM	1	0	1	21.76	21.92	22.00
			1	12	1	21.66	21.81	22.00
			1	24	1	21.68	21.81	22.00
			12	0	2	21.00	20.86	20.91
			12	7	2	20.96	20.85	20.82
			12	13	2	20.90	20.87	20.81
			25	0	2	21.00	20.81	20.83

LTE Band 17

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)
						23790
						710 MHz
LTE Band 17	10	QPSK	1	0	0	22.96
			1	25	0	22.95
			1	49	0	22.92
			25	0	1	22.06
			25	12	1	22.05
			25	25	1	22.05
			50	0	1	22.07
		16QAM	1	0	1	21.83
			1	25	1	21.88
			1	49	1	21.78
			25	0	2	21.04
			25	12	2	21.04
			25	25	2	21.07
			50	0	2	21.09
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)
						23790
						710 MHz
LTE Band 17	5	QPSK	1	0	0	23.02
			1	12	0	22.95
			1	24	0	22.90
			12	0	1	22.06
			12	7	1	22.04
			12	13	1	22.12
			25	0	1	22.09
		16QAM	1	0	1	21.91
			1	12	1	21.89
			1	24	1	21.85
			12	0	2	21.01
			12	7	2	21.00
			12	13	2	21.01
			25	0	2	21.04

9. PEAK TO AVERAGE RATIO

Test Procedure

Per KDB 971168 D01 Power Meas License Digital Systems v02r02

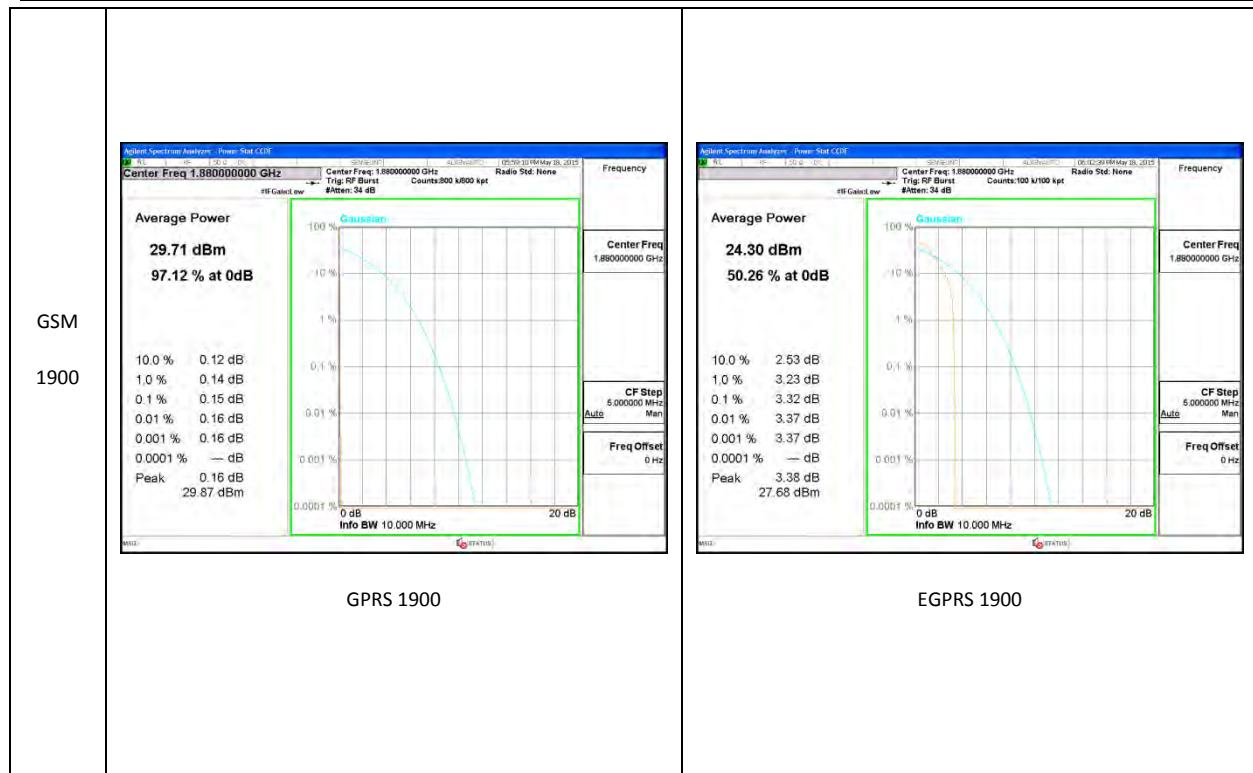
Test Spec

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

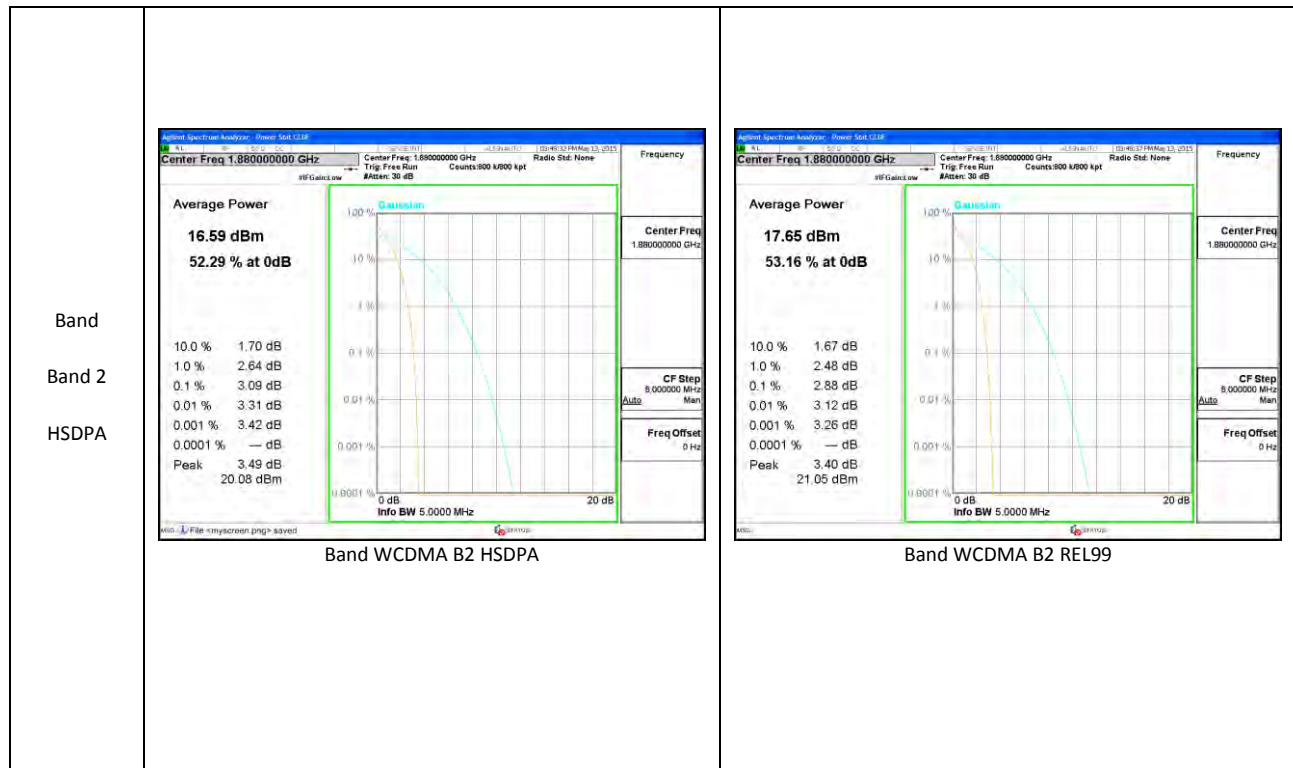
9.1. CONDUCTED PEAK TO AVERAGE RESULT

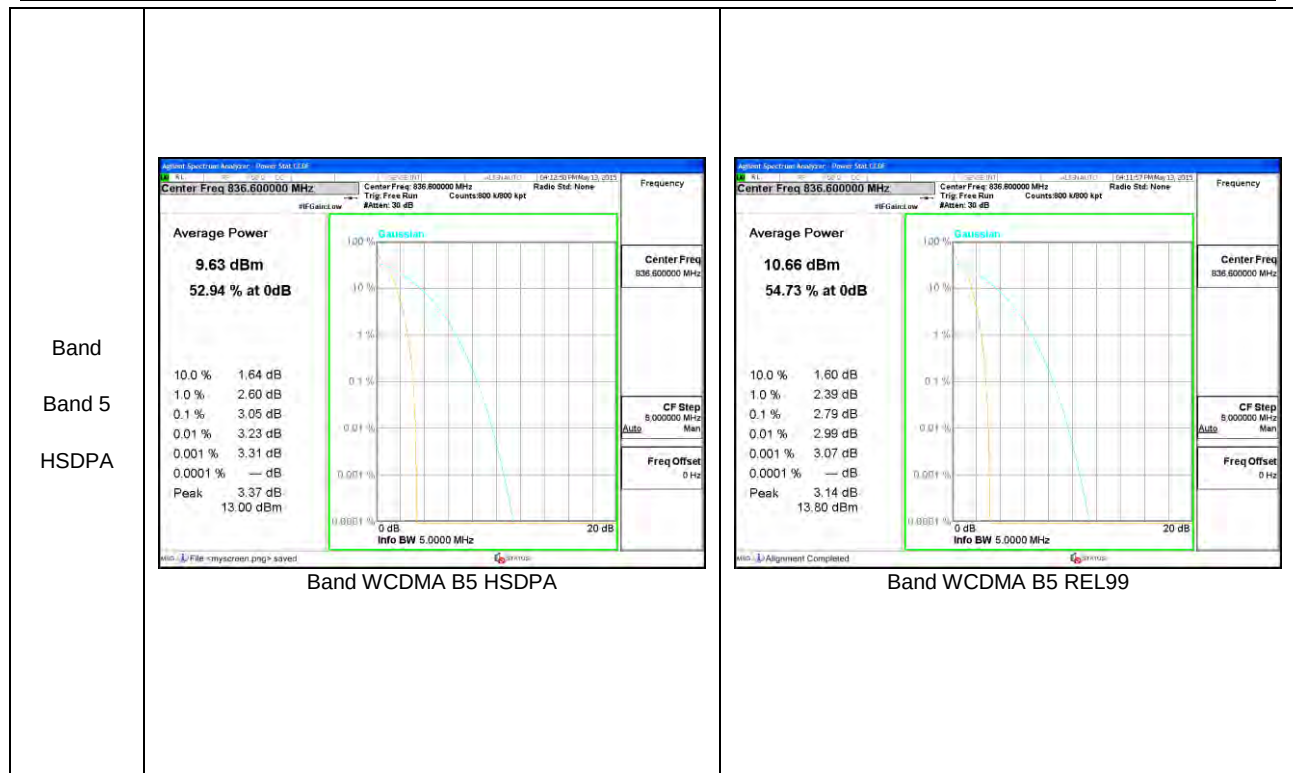
GSM

GSM 850	 Average Power 32.89 dBm 91.42 % at 0dB 10.0 % 0.11 dB 1.0 % 0.25 dB 0.1 % 0.30 dB 0.01 % 0.31 dB 0.001 % 0.31 dB 0.0001 % — dB Peak 0.31 dB 33.20 dBm Center Freq 836.600000 MHz Info BW 10.000 MHz CF Step 10.000000 MHz Freq Offset 0 Hz GPRS 850	 Average Power 26.96 dBm 51.04 % at 0dB 10.0 % 2.52 dB 1.0 % 3.03 dB 0.1 % 3.10 dB 0.01 % 3.13 dB 0.001 % 3.13 dB 0.0001 % — dB Peak 3.19 dB 30.15 dBm Center Freq 836.600000 MHz Info BW 10.000 MHz CF Step 10.000000 MHz Freq Offset 0 Hz EGPRS 850
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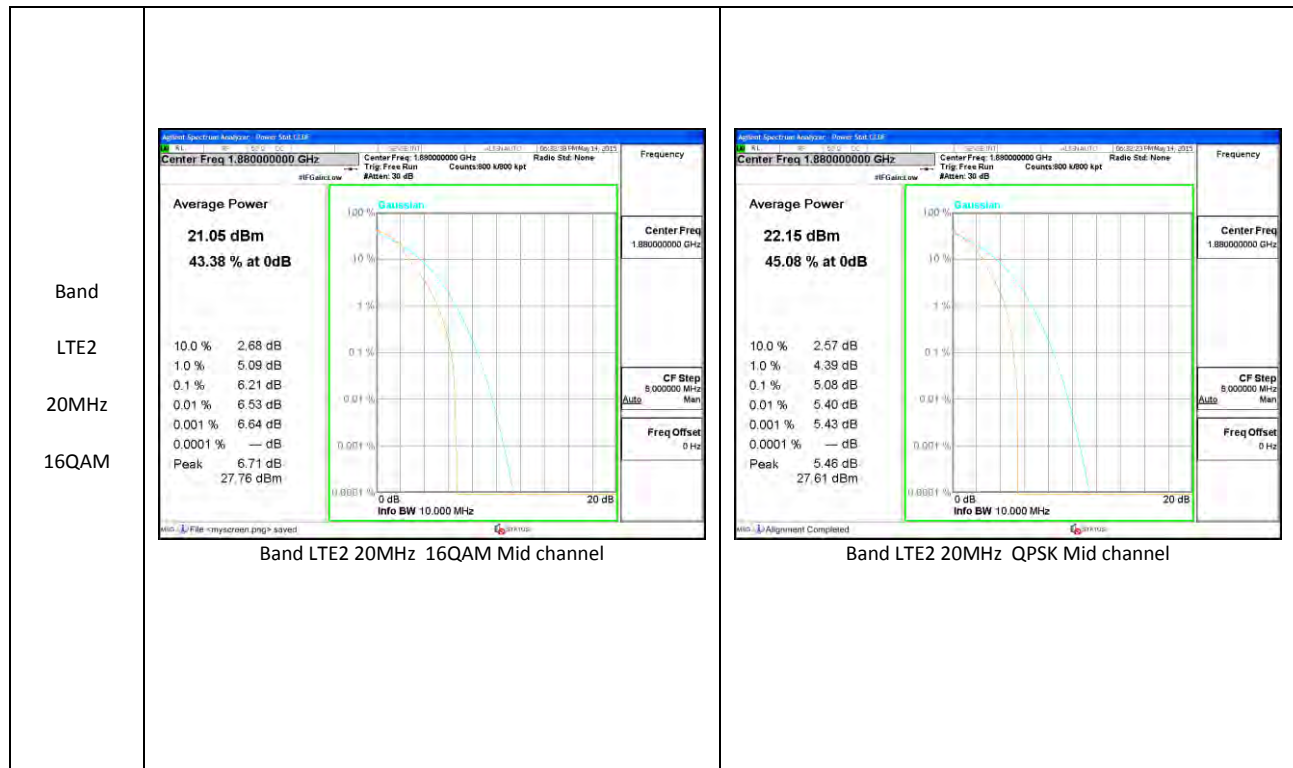


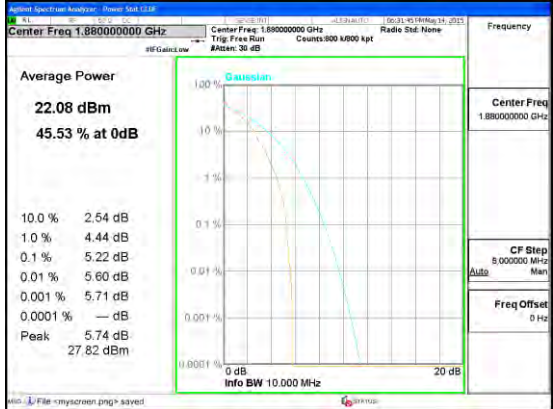
WCDMA

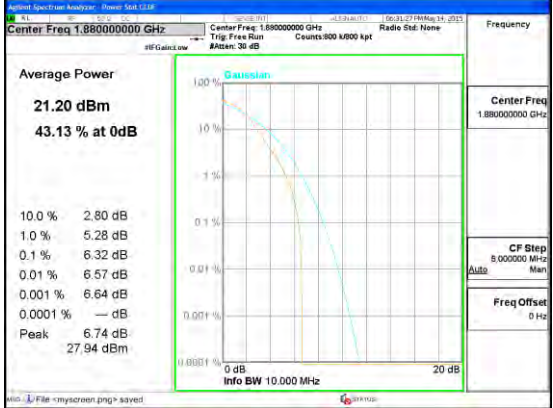
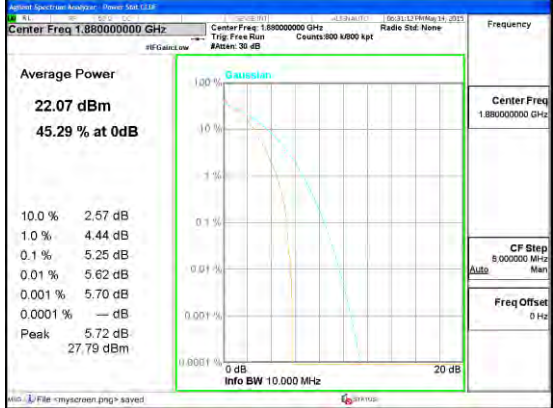




LTE Band 2



Band LTE2 15MHz 16QAM	 Average Power 21.22 dBm 43.15 % at 0dB 10.0 % 2.79 dB 1.0 % 5.28 dB 0.1 % 6.31 dB 0.01 % 6.58 dB 0.001 % 6.63 dB 0.0001 % — dB Peak 6.70 dB 27.92 dBm CF Step 5.000000 MHz Auto Man Freq Offset 0 Hz Center Freq 1.880000000 GHz Trig: Free Run RBW: 30 dB Counts: 800 kpt Radio Std: None Info BW 10.000 MHz Band LTE2 15MHz 16QAM Mid channel	 Average Power 22.08 dBm 45.53 % at 0dB 10.0 % 2.54 dB 1.0 % 4.44 dB 0.1 % 5.22 dB 0.01 % 5.60 dB 0.001 % 5.71 dB 0.0001 % — dB Peak 5.74 dB 27.82 dBm CF Step 5.000000 MHz Auto Man Freq Offset 0 Hz Center Freq 1.880000000 GHz Trig: Free Run RBW: 30 dB Counts: 800 kpt Radio Std: None Info BW 10.000 MHz Band LTE2 15MHz QPSK Mid channel
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Band LTE2 10MHz 16QAM	 Average Power 21.20 dBm 43.13 % at 0dB 10.0 % 2.80 dB 1.0 % 5.28 dB 0.1 % 6.32 dB 0.01 % 6.57 dB 0.001 % 6.64 dB 0.0001 % — dB Peak 6.74 dB 27.94 dBm CF Step 5.000000 MHz Auto Man Freq Offset 0 Hz Center Freq 1.880000000 GHz Trig: Free Run RBW: 30 dB Counts: 800 kpt Radio Std: None Info BW 10.000 MHz Band LTE2 10MHz 16QAM Mid channel	 Average Power 22.07 dBm 45.29 % at 0dB 10.0 % 2.57 dB 1.0 % 4.44 dB 0.1 % 5.25 dB 0.01 % 5.62 dB 0.001 % 5.70 dB 0.0001 % — dB Peak 5.72 dB 27.79 dBm CF Step 5.000000 MHz Auto Man Freq Offset 0 Hz Center Freq 1.880000000 GHz Trig: Free Run RBW: 30 dB Counts: 800 kpt Radio Std: None Info BW 10.000 MHz Band LTE2 10MHz QPSK Mid channel
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Band LTE2 5MHz 16QAM	 Average Power 20.99 dBm 42.50 % at 0dB 10.0 % 2.76 dB 1.0 % 5.44 dB 0.1 % 6.29 dB 0.01 % 6.64 dB 0.001 % 6.75 dB 0.0001 % — dB Peak 6.78 dB 27.77 dBm Center Freq 1.880000000 GHz Trig: Free Run RBW: 30 dB Counts: 800 kpt Radio Std: None CF Step 5.000000 MHz Auto Man Freq Offset 0 Hz Info BW 10.000 MHz Band LTE2 5MHz 16QAM Mid channel	 Average Power 22.06 dBm 44.28 % at 0dB 10.0 % 2.59 dB 1.0 % 4.55 dB 0.1 % 5.47 dB 0.01 % 5.67 dB 0.001 % 5.76 dB 0.0001 % — dB Peak 5.81 dB 27.87 dBm Center Freq 1.880000000 GHz Trig: Free Run RBW: 30 dB Counts: 800 kpt Radio Std: None CF Step 5.000000 MHz Auto Man Freq Offset 0 Hz Info BW 10.000 MHz Band LTE2 5MHz QPSK Mid channel
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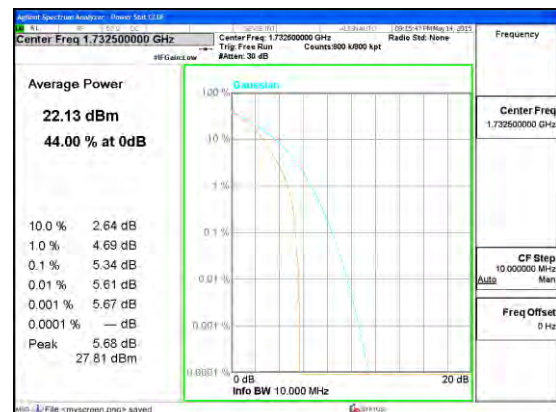
Band LTE2 3MHz 16QAM	 Average Power 21.19 dBm 42.94 % at 0dB 10.0 % 2.82 dB 1.0 % 5.30 dB 0.1 % 6.30 dB 0.01 % 6.59 dB 0.001 % 6.67 dB 0.0001 % — dB Peak 6.70 dB 27.89 dBm Center Freq 1.880000000 GHz Trig: Free Run RBW: 30 dB Counts: 800 kpt Radio Std: None CF Step 5.000000 MHz Auto Man Freq Offset 0 Hz Info BW 10.000 MHz Band LTE2 3MHz 16QAM Mid channel	 Average Power 22.08 dBm 45.78 % at 0dB 10.0 % 2.55 dB 1.0 % 4.47 dB 0.1 % 5.27 dB 0.01 % 5.63 dB 0.001 % 5.75 dB 0.0001 % — dB Peak 5.78 dB 27.86 dBm Center Freq 1.880000000 GHz Trig: Free Run RBW: 30 dB Counts: 800 kpt Radio Std: None CF Step 5.000000 MHz Auto Man Freq Offset 0 Hz Info BW 10.000 MHz Band LTE2 3MHz QPSK Mid channel
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Band LTE2 1.4MHz 16QAM	 Average Power 21.29 dBm 41.94 % at 0dB 10.0 % 2.83 dB 1.0 % 5.32 dB 0.1 % 6.23 dB 0.01 % 6.50 dB 0.001 % 6.57 dB 0.0001 % — dB Peak 6.57 dB 27.86 dBm Center Freq 1.860000000 GHz Trig: Free Run ARef: 30 dB Counts: 800 kpt Radio Std: None CF Step 5.000000 MHz Auto Man Freq Offset 0 Hz Info BW 10.000 MHz Band LTE2 1.4MHz 16QAM Mid channel	 Average Power 22.12 dBm 46.57 % at 0dB 10.0 % 2.51 dB 1.0 % 4.37 dB 0.1 % 5.31 dB 0.01 % 5.60 dB 0.001 % 5.67 dB 0.0001 % — dB Peak 5.68 dB 27.80 dBm Center Freq 1.860000000 GHz Trig: Free Run ARef: 30 dB Counts: 800 kpt Radio Std: None CF Step 5.000000 MHz Auto Man Freq Offset 0 Hz Info BW 10.000 MHz Band LTE2 1.4MHz QPSK Mid channel
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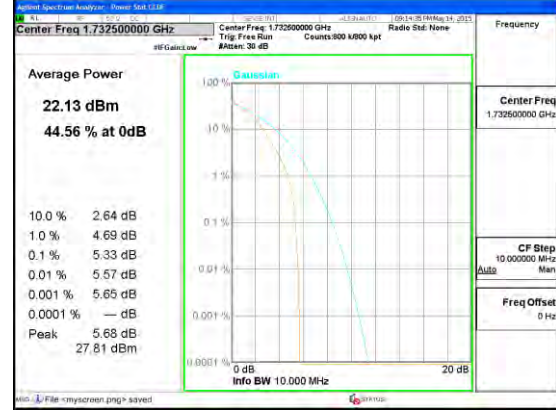
LTE Band 4

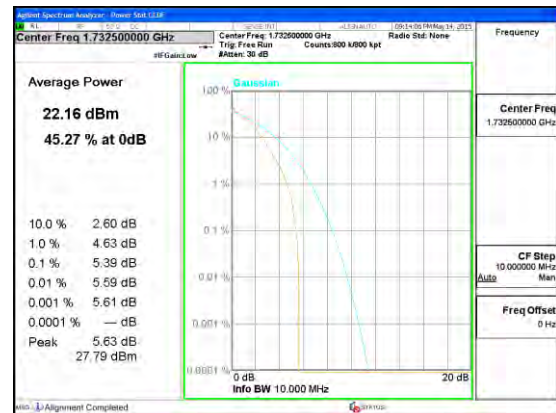
Band LTE4 20MHz 16QAM	 Average Power 21.12 dBm 42.94 % at 0dB 10.0 % 2.72 dB 1.0 % 5.42 dB 0.1 % 6.43 dB 0.01 % 6.67 dB 0.001 % 6.72 dB 0.0001 % — dB Peak 6.81 dB 27.93 dBm Center Freq 1.732500000 GHz Trig: Free Run ARef: 30 dB Counts: 800 kpt Radio Std: None CF Step 10.000000 MHz Auto Man Freq Offset 0 Hz Info BW 10.000 MHz Band LTE4 20MHz 16QAM Mid channel	 Average Power 22.21 dBm 44.19 % at 0dB 10.0 % 2.64 dB 1.0 % 4.62 dB 0.1 % 5.18 dB 0.01 % 5.41 dB 0.001 % 5.43 dB 0.0001 % — dB Peak 5.43 dB 27.64 dBm Center Freq 1.732500000 GHz Trig: Free Run ARef: 30 dB Counts: 800 kpt Radio Std: None CF Step 10.000000 MHz Auto Man Freq Offset 0 Hz Info BW 10.000 MHz Band LTE4 20MHz QPSK Mid channel
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Band LTE4 15MHz 16QAM	 Average Power 21.30 dBm 42.39 % at 0dB 10.0 % 2.82 dB 1.0 % 5.52 dB 0.1 % 6.26 dB 0.01 % 6.45 dB 0.001 % 6.51 dB 0.0001 % -1 dB Peak 6.53 dB 27.83 dBm Center Freq 1.732500000 GHz CF Step 10.000000 MHz Auto Man Freq Offset 0 Hz Info BW 10.000 MHz Band LTE4 15MHz 16QAM Mid channel	 Average Power 22.14 dBm 44.36 % at 0dB 10.0 % 2.58 dB 1.0 % 4.73 dB 0.1 % 5.41 dB 0.01 % 5.62 dB 0.001 % 5.68 dB 0.0001 % -1 dB Peak 5.71 dB 27.85 dBm Center Freq 1.732500000 GHz CF Step 10.000000 MHz Auto Man Freq Offset 0 Hz Info BW 10.000 MHz Band LTE4 15MHz QPSK Mid channel
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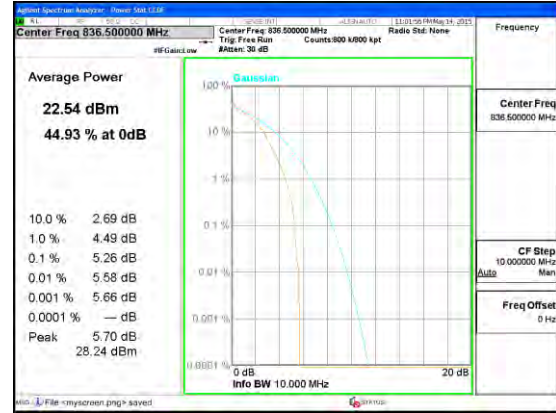
Band LTE4 10MHz 16QAM	 Average Power 21.27 dBm 42.53 % at 0dB 10.0 % 2.82 dB 1.0 % 5.55 dB 0.1 % 6.33 dB 0.01 % 6.51 dB 0.001 % 6.58 dB 0.0001 % -1 dB Peak 6.62 dB 27.89 dBm Center Freq 1.732500000 GHz CF Step 10.000000 MHz Auto Man Freq Offset 0 Hz Info BW 10.000 MHz Band LTE4 10MHz 16QAM Mid channel	 Average Power 22.13 dBm 44.00 % at 0dB 10.0 % 2.64 dB 1.0 % 4.69 dB 0.1 % 5.34 dB 0.01 % 5.61 dB 0.001 % 5.67 dB 0.0001 % -1 dB Peak 5.68 dB 27.81 dBm Center Freq 1.732500000 GHz CF Step 10.000000 MHz Auto Man Freq Offset 0 Hz Info BW 10.000 MHz Band LTE4 10MHz QPSK Mid channel
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Band LTE4 5MHz 16QAM	 Average Power 21.03 dBm 42.04 % at 0dB Center Freq 1.732500000 GHz Trig: Free Run Counts: 800 kpt Radio Std: None Frequency Center Freq 1.732500000 GHz CF Step 10.000000 MHz Auto Freq Offset 0 Hz Peak 27.81 dBm Info BW 10.000 MHz Band LTE4 5MHz 16QAM Mid channel	 Average Power 22.15 dBm 43.57 % at 0dB Center Freq 1.732500000 GHz Trig: Free Run Counts: 800 kpt Radio Std: None Frequency Center Freq 1.732500000 GHz CF Step 10.000000 MHz Auto Freq Offset 0 Hz Peak 27.84 dBm Info BW 10.000 MHz Band LTE4 5MHz QPSK Mid channel
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Band LTE4 3MHz 16QAM	 Average Power 21.25 dBm 42.68 % at 0dB Center Freq 1.732500000 GHz Trig: Free Run Counts: 800 kpt Radio Std: None Frequency Center Freq 1.732500000 GHz CF Step 10.000000 MHz Auto Freq Offset 0 Hz Peak 27.94 dBm Info BW 10.000 MHz Band LTE4 3MHz 16QAM Mid channel	 Average Power 22.13 dBm 44.56 % at 0dB Center Freq 1.732500000 GHz Trig: Free Run Counts: 800 kpt Radio Std: None Frequency Center Freq 1.732500000 GHz CF Step 10.000000 MHz Auto Freq Offset 0 Hz Peak 27.81 dBm Info BW 10.000 MHz Band LTE4 3MHz QPSK Mid channel
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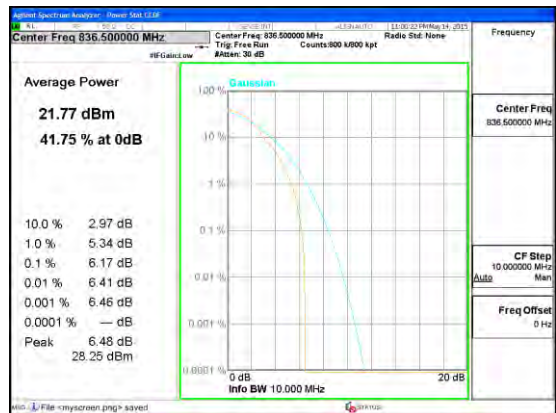
Band LTE4 1.4MHz 16QAM	 Average Power 21.31 dBm 41.70 % at 0dB 10.0 % 2.88 dB 1.0 % 5.59 dB 0.1 % 6.28 dB 0.01 % 6.51 dB 0.001 % 6.57 dB 0.0001 % — dB Peak 6.62 dB 27.93 dBm CF Step 10 000000 MHz Auto Man Freq Offset 0 Hz Center Freq 1.732500000 GHz Info BW 10.000 MHz Band LTE4 1.4MHz 16QAM Mid channel	 Average Power 22.16 dBm 45.27 % at 0dB 10.0 % 2.60 dB 1.0 % 4.63 dB 0.1 % 5.39 dB 0.01 % 5.59 dB 0.001 % 5.61 dB 0.0001 % — dB Peak 5.63 dB 27.79 dBm CF Step 10 000000 MHz Auto Man Freq Offset 0 Hz Center Freq 1.732500000 GHz Info BW 10.000 MHz Band LTE4 1.4MHz QPSK Mid channel
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LTE Band 5

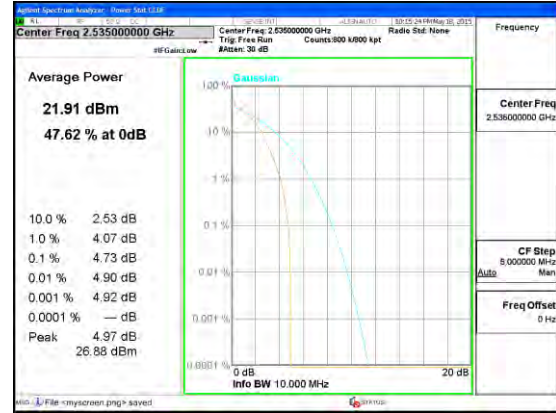
Band LTE5 10MHz 16QAM	 Average Power 21.77 dBm 42.30 % at 0dB 10.0 % 2.93 dB 1.0 % 5.32 dB 0.1 % 6.23 dB 0.01 % 6.44 dB 0.001 % 6.49 dB 0.0001 % — dB Peak 6.51 dB 28.28 dBm CF Step 10 000000 MHz Auto Man Freq Offset 0 Hz Center Freq 836.5000000 MHz Info BW 10.000 MHz Band LTE5 10MHz 16QAM Mid channel	 Average Power 22.54 dBm 44.93 % at 0dB 10.0 % 2.69 dB 1.0 % 4.49 dB 0.1 % 5.26 dB 0.01 % 5.58 dB 0.001 % 5.66 dB 0.0001 % — dB Peak 5.70 dB 28.24 dBm CF Step 10 000000 MHz Auto Man Freq Offset 0 Hz Center Freq 836.5000000 MHz Info BW 10.000 MHz Band LTE5 10MHz QPSK Mid channel
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Band LTE5 5MHz 16QAM	 Average Power 21.45 dBm 41.81 % at 0dB 10.0 % 2.89 dB 1.0 % 5.52 dB 0.1 % 6.32 dB 0.01 % 6.64 dB 0.001 % 6.73 dB 0.0001 % — dB Peak 6.97 dB 28.42 dBm Center Freq 836.500000 MHz Trig: Free Run RBW: 30 dB Counts: 800 k/800 kpt Radio Std: None CF Step 10.000000 MHz Auto Man Freq Offset 0 Hz Info BW 10.000 MHz Band LTE5 5MHz 16QAM Mid channel	 Average Power 22.54 dBm 43.98 % at 0dB 10.0 % 2.72 dB 1.0 % 4.56 dB 0.1 % 5.43 dB 0.01 % 5.61 dB 0.001 % 5.67 dB 0.0001 % — dB Peak 5.67 dB 28.21 dBm Center Freq 836.500000 MHz Trig: Free Run RBW: 30 dB Counts: 800 k/800 kpt Radio Std: None CF Step 10.000000 MHz Auto Man Freq Offset 0 Hz Info BW 10.000 MHz Band LTE5 5MHz QPSK Mid channel
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Band LTE5 3MHz 16QAM	 Average Power 21.74 dBm 42.43 % at 0dB 10.0 % 2.92 dB 1.0 % 5.30 dB 0.1 % 6.24 dB 0.01 % 6.46 dB 0.001 % 6.50 dB 0.0001 % — dB Peak 6.64 dB 28.38 dBm Center Freq 836.500000 MHz Trig: Free Run RBW: 30 dB Counts: 800 k/800 kpt Radio Std: None CF Step 10.000000 MHz Auto Man Freq Offset 0 Hz Info BW 10.000 MHz Band LTE5 3MHz 16QAM Mid channel	 Average Power 22.55 dBm 45.21 % at 0dB 10.0 % 2.69 dB 1.0 % 4.50 dB 0.1 % 5.27 dB 0.01 % 5.59 dB 0.001 % 5.65 dB 0.0001 % — dB Peak 5.66 dB 28.21 dBm Center Freq 836.500000 MHz Trig: Free Run RBW: 30 dB Counts: 800 k/800 kpt Radio Std: None CF Step 10.000000 MHz Auto Man Freq Offset 0 Hz Info BW 10.000 MHz Band LTE5 3MHz QPSK Mid channel
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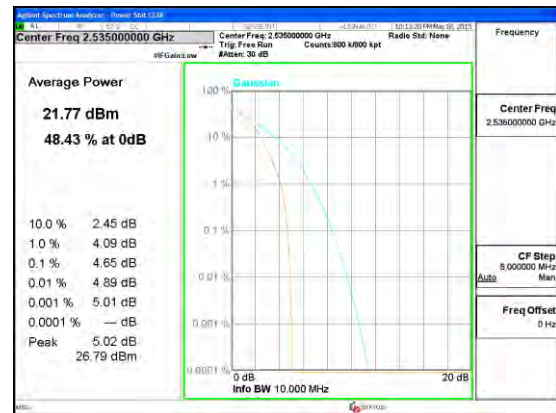
Band LTE5 1.4MHz 16QAM	 Average Power 21.77 dBm 41.75 % at 0dB 10.0 % 2.97 dB 1.0 % 5.34 dB 0.1 % 6.17 dB 0.01 % 6.41 dB 0.001 % 6.46 dB 0.0001 % — dB Peak 6.48 dB 28.25 dBm Center Freq 836.500000 MHz Trig: Free Run Aver: 30 dB Counts: 800 kpt Radio Std: None CF Step 10.000000 MHz Auto Man Freq Offset 0 Hz Band LTE5 1.4MHz 16QAM Mid channel	 Average Power 22.57 dBm 45.85 % at 0dB 10.0 % 2.67 dB 1.0 % 4.41 dB 0.1 % 5.28 dB 0.01 % 5.53 dB 0.001 % 5.58 dB 0.0001 % — dB Peak 5.59 dB 28.16 dBm Center Freq 836.500000 MHz Trig: Free Run Aver: 30 dB Counts: 800 kpt Radio Std: None CF Step 10.000000 MHz Auto Man Freq Offset 0 Hz Band LTE5 1.4MHz QPSK Mid channel
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LTE Band 7

Band LTE7 20MHz 16QAM	 Average Power 20.81 dBm 44.12 % at 0dB 10.0 % 2.77 dB 1.0 % 4.93 dB 0.1 % 5.85 dB 0.01 % 6.04 dB 0.001 % 6.08 dB 0.0001 % — dB Peak 6.18 dB 26.99 dBm Center Freq 2.535000000 GHz Trig: Free Run Aver: 30 dB Counts: 800 kpt Radio Std: None CF Step 8.000000 MHz Auto Man Freq Offset 0 Hz Band LTE7 20MHz 16QAM Mid channel	 Average Power 21.91 dBm 47.62 % at 0dB 10.0 % 2.53 dB 1.0 % 4.07 dB 0.1 % 4.73 dB 0.01 % 4.90 dB 0.001 % 4.92 dB 0.0001 % — dB Peak 4.97 dB 26.88 dBm Center Freq 2.535000000 GHz Trig: Free Run Aver: 30 dB Counts: 800 kpt Radio Std: None CF Step 8.000000 MHz Auto Man Freq Offset 0 Hz Band LTE7 20MHz QPSK Mid channel
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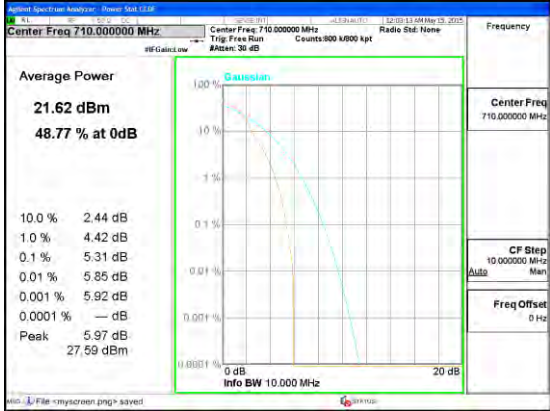
Band LTE7 15MHz 16QAM	 Average Power 20.99 dBm 44.03 % at 0dB 10.0 % 2.89 dB 1.0 % 5.00 dB 0.1 % 5.72 dB 0.01 % 5.92 dB 0.001 % 5.96 dB 0.0001 % — dB Peak 5.99 dB 26.98 dBm Center Freq 2.535000000 GHz Trig: Free Run BAW: 30 dB Counts: 800 kpt Radio Std: None CF Step 5.000000 MHz Auto Man Freq Offset 0 Hz Info BW 10.000 MHz Band LTE7 15MHz 16QAM Mid channel	 Average Power 21.82 dBm 47.13 % at 0dB 10.0 % 2.55 dB 1.0 % 4.14 dB 0.1 % 4.68 dB 0.01 % 4.84 dB 0.001 % 5.00 dB 0.0001 % — dB Peak 5.03 dB 26.95 dBm Center Freq 2.535000000 GHz Trig: Free Run BAW: 30 dB Counts: 800 kpt Radio Std: None CF Step 5.000000 MHz Auto Man Freq Offset 0 Hz Info BW 10.000 MHz Band LTE7 15MHz QPSK Mid channel
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Band LTE7 10MHz 16QAM	 Average Power 21.08 dBm 44.27 % at 0dB 10.0 % 2.89 dB 1.0 % 4.92 dB 0.1 % 5.68 dB 0.01 % 5.82 dB 0.001 % 5.87 dB 0.0001 % — dB Peak 5.98 dB 27.06 dBm Center Freq 2.535000000 GHz Trig: Free Run BAW: 30 dB Counts: 800 kpt Radio Std: None CF Step 5.000000 MHz Auto Man Freq Offset 0 Hz Info BW 10.000 MHz Band LTE7 10MHz 16QAM Mid channel	 Average Power 21.81 dBm 47.34 % at 0dB 10.0 % 2.52 dB 1.0 % 4.14 dB 0.1 % 4.71 dB 0.01 % 5.00 dB 0.001 % 5.09 dB 0.0001 % — dB Peak 5.10 dB 26.91 dBm Center Freq 2.535000000 GHz Trig: Free Run BAW: 30 dB Counts: 800 kpt Radio Std: None CF Step 5.000000 MHz Auto Man Freq Offset 0 Hz Info BW 10.000 MHz Band LTE7 10MHz QPSK Mid channel
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Band LTE7 5MHz 16QAM	 Average Power 20.81 dBm 43.63 % at 0dB 10.0 % 2.98 dB 1.0 % 4.96 dB 0.1 % 5.65 dB 0.01 % 6.05 dB 0.001 % 6.11 dB 0.0001 % — dB Peak 6.14 dB 26.95 dBm Center Freq 2.535000000 GHz Trig: Free Run ARef: 30 dB Counts: 800 kpt Radio Std: None CF Step 5.000000 MHz Auto Man Freq Offset 0 Hz Info BW 10.000 MHz Band LTE7 5MHz 16QAM Mid channel	 Average Power 21.77 dBm 48.43 % at 0dB 10.0 % 2.45 dB 1.0 % 4.09 dB 0.1 % 4.65 dB 0.01 % 4.89 dB 0.001 % 5.01 dB 0.0001 % — dB Peak 5.02 dB 26.79 dBm Center Freq 2.535000000 GHz Trig: Free Run ARef: 30 dB Counts: 800 kpt Radio Std: None CF Step 5.000000 MHz Auto Man Freq Offset 0 Hz Info BW 10.000 MHz Band LTE7 5MHz QPSK Mid channel
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LTE Band 17

Band LTE17 10MHz 16QAM	 Average Power 21.85 dBm 49.50 % at 0dB 10.0 % 2.42 dB 1.0 % 4.27 dB 0.1 % 5.37 dB 0.01 % 5.73 dB 0.001 % 5.96 dB 0.0001 % — dB Peak 6.02 dB 27.87 dBm Center Freq 710.000000 MHz Trig: Free Run ARef: 30 dB Counts: 800 kpt Radio Std: None CF Step 10.000000 MHz Auto Man Freq Offset 0 Hz Info BW 10.000 MHz Band LTE17 10MHz 16QAM Mid channel	 Average Power 22.66 dBm 52.40 % at 0dB 10.0 % 2.13 dB 1.0 % 3.56 dB 0.1 % 4.46 dB 0.01 % 4.95 dB 0.001 % 5.10 dB 0.0001 % — dB Peak 5.13 dB 27.79 dBm Center Freq 710.000000 MHz Trig: Free Run ARef: 30 dB Counts: 800 kpt Radio Std: None CF Step 10.000000 MHz Auto Man Freq Offset 0 Hz Info BW 10.000 MHz Band LTE17 10MHz QPSK Mid channel
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Band		
	Band LTE17 5MHz 16QAM Mid channel	
		
	Band LTE17 5MHz QPSK Mid channel	

10. LIMITS AND CONDUCTED RESULTS

10.1. OCCUPIED BANDWIDTH

RULE PART(S)

FCC: §2.1049

IC: RSS-132, 4.5; RSS-133, 6.5

LIMITS

For reporting purposes only

TEST PROCEDURE

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

(KDB 971168 D01 Power Meas License Digital Systems v02r02)

MODES TESTED

10.1.1. OCCUPIED BANDWIDTH RESULTS

GSM

Band	Mode	Channel	f (MHz)	99% BW (kHz)	-26dB (kHz)
GSM 850	GPRS	128	824.2	246.3	318.4
		190	836.6	243.5	321.7
		251	848.8	246.1	321.8
	EGPRS	128	824.2	230.7	285.9
		190	836.6	241.0	319.5
		251	848.8	237.0	290.4
GSM 1900	GPRS	512	1850.2	242.54	314
		661	1880	240.78	304.4
		810	1909.8	244.98	309.3
	EGPRS	512	1850.2	242.42	309.6
		661	1880	246.56	306.2
		810	1909.8	242.03	312.4

WCDMA

Band	Mode	Channel	f (MHz)	99% BW (MHz)	-26dB (MHz)
Band 5	REL99	4132	826.4	4.169	4.631
		4183	836.6	4.136	4.632
		4233	846.6	4.148	4.625
	HSDPA	4132	826.4	4.161	4.640
		4183	836.6	4.139	4.638
		4233	846.6	4.167	4.626
Band 2	REL99	9262	1852.4	4.152	4.634
		9400	1880	4.162	4.651
		9538	1907.6	4.147	4.619
	HSDPA	9262	1852.4	4.161	4.616
		9400	1880	4.155	4.644
		9538	1907.6	4.133	4.625

10.1.2. LTE OCCUPIED BANDWIDTH RESULTS

LTE Band 2

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE2	20	16QAM	100/0	1860	17.841	19.225
			100/0	1880	17.874	19.318
			100/0	1900	17.918	19.331
		QPSK	100/0	1860	17.907	19.217
			100/0	1880	17.919	19.293
			100/0	1900	17.917	19.258
	15	16QAM	75/0	1857.5	13.414	14.53
			75/0	1880	13.443	14.518
			75/0	1902.5	13.444	14.623
		QPSK	75/0	1857.5	13.405	14.508
			75/0	1880	13.454	14.599
			75/0	1902.5	13.455	14.66
	10	16QAM	50/0	1855	8.970	9.804
			50/0	1880	8.963	9.835
			50/0	1905	8.994	9.881
		QPSK	50/0	1855	8.980	9.961
			50/0	1880	8.973	9.819
			50/0	1905	8.971	9.799
	5	16QAM	25/0	1852.5	4.496	4.998
			25/0	1880	4.489	4.973
			25/0	1907.5	4.481	4.917
		QPSK	25/0	1852.5	4.507	4.966
			25/0	1880	4.494	4.948
			25/0	1907.5	4.478	4.954

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE2	3	16QAM	15/0	1851.5	2.702	2.991
			15/0	1880	2.692	2.967
			15/0	1908.5	2.693	2.993
		QPSK	15/0	1851.5	2.697	2.961
			15/0	1880	2.697	2.974
			15/0	1908.5	2.703	2.987
	1.4	16QAM	6/0	1850.7	1.087	1.286
			6/0	1880	1.090	1.281
			6/0	1909.3	1.093	1.299
		QPSK	6/0	1850.7	1.089	1.272
			6/0	1880	1.083	1.268
			6/0	1909.3	1.089	1.284

LTE Band 4

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE4	20	16QAM	100/0	1720	17.922	19.269
			100/0	1732.5	17.847	19.337
			100/0	1745	17.892	19.263
		QPSK	100/0	1720	17.896	19.217
			100/0	1732.5	17.903	19.158
			100/0	1745	17.904	19.246
	15	16QAM	75/0	1717.5	13.442	14.633
			75/0	1732.5	13.416	14.596
			75/0	1747.5	13.424	14.588
		QPSK	75/0	1717.5	13.433	14.664
			75/0	1732.5	13.414	14.575
			75/0	1747.5	13.417	14.590
	10	16QAM	50/0	1715	8.980	9.922
			50/0	1732.5	8.950	9.762
			50/0	1750	8.991	9.821
		QPSK	50/0	1715	8.981	9.842
			50/0	1732.5	8.982	9.761
			50/0	1750	8.967	9.828
	5	16QAM	25/0	1712.5	4.500	5.004
			25/0	1732.5	4.490	4.955
			25/0	1752.5	4.479	4.949
		QPSK	25/0	1712.5	4.508	4.988
			25/0	1732.5	4.499	4.967
			25/0	1752.5	4.482	4.937

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE4	3	16QAM	15/0	1711.5	2.699	2.982
			15/0	1732.5	2.695	2.981
			15/0	1753.5	2.694	2.992
		QPSK	15/0	1711.5	2.696	2.971
			15/0	1732.5	2.696	2.983
			15/0	1753.5	2.701	2.985
	1.4	16QAM	6/0	1710.7	1.086	1.276
			6/0	1732.5	1.088	1.286
			6/0	1754.3	1.097	1.294
		QPSK	6/0	1710.7	1.089	1.277
			6/0	1732.5	1.083	1.261
			6/0	1754.3	1.088	1.266

LTE Band 5

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE5	10	QPSK	50/0	829	8.989	9.894
			50/0	836.5	8.984	9.82
			50/0	844	8.971	9.819
		16QAM	50/0	829	8.999	9.884
			50/0	836.5	8.957	9.828
			50/0	844	8.997	9.796
	5	QPSK	25/0	826.5	4.507	4.996
			25/0	836.5	4.496	4.938
			25/0	846.5	4.482	4.939
		16QAM	25/0	826.5	4.496	4.991
			25/0	836.5	4.485	4.956
			25/0	846.5	4.477	4.912
	3	QPSK	15/0	825.5	2.695	2.978
			15/0	836.5	2.697	2.969
			15/0	847.5	2.7	2.986
		16QAM	15/0	825.5	2.701	2.989
			15/0	836.5	2.695	2.979
			15/0	847.5	2.693	2.989
	1.4	QPSK	6/0	824.7	1.091	1.279
			6/0	836.5	1.083	1.265
			6/0	848.3	1.09	1.27
		16QAM	6/0	824.7	1.085	1.275
			6/0	836.5	1.089	1.29
			6/0	848.3	1.098	1.3

LTE Band 7

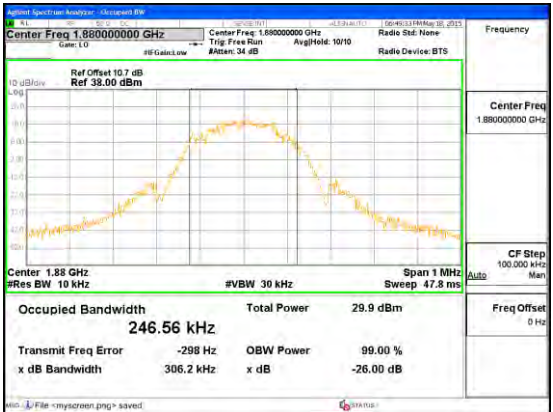
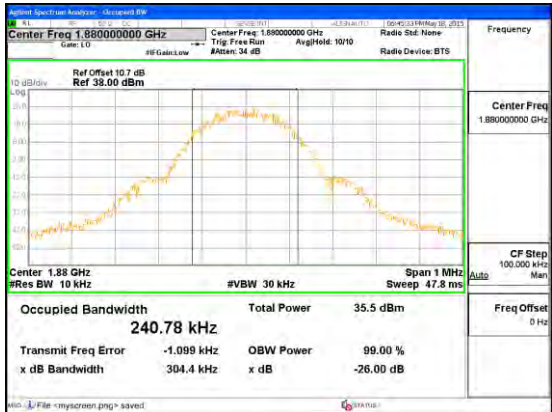
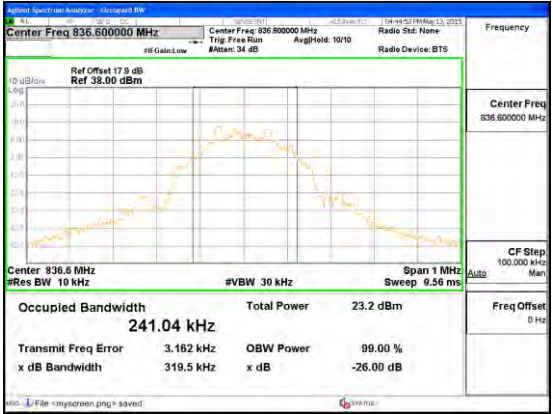
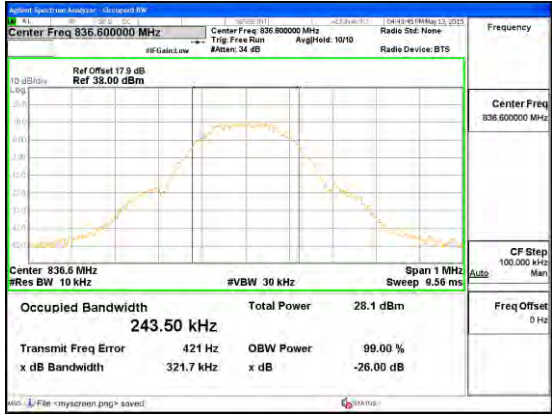
Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE7	20	QPSK	100/0	2510	17.822	19.216
			100/0	2535	17.911	19.33
			100/0	2560	17.875	19.397
		16QAM	100/0	2510	17.868	19.263
			100/0	2535	17.868	19.291
			100/0	2560	17.904	19.341
	15	QPSK	75/0	2507.5	13.41	14.589
			75/0	2535	13.427	14.594
			75/0	2562.5	13.449	14.571
		16QAM	75/0	2507.5	13.431	14.553
			75/0	2535	13.409	14.647
			75/0	2562.5	13.43	14.582
	10	QPSK	50/0	2505	8.983	9.788
			50/0	2535	8.953	9.827
			50/0	2565	8.99	9.902
		16QAM	50/0	2505	8.96	9.844
			50/0	2535	8.992	9.871
			50/0	2565	8.985	9.911
	5	QPSK	25/0	2502.5	4.498	4.992
			25/0	2535	4.486	4.989
			25/0	2567.5	4.49	4.941
		16QAM	25/0	2502.5	4.497	4.966
			25/0	2535	4.502	5.037
			25/0	2567.5	4.493	4.983

LTE Band 17

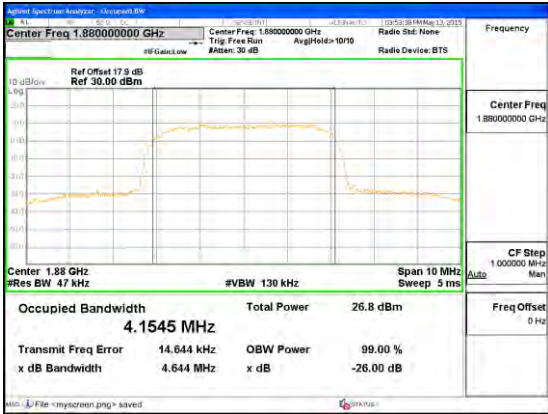
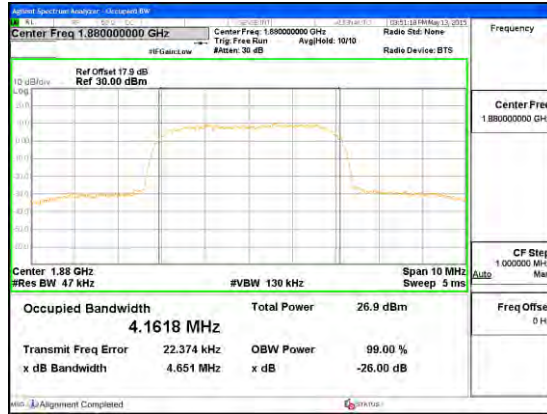
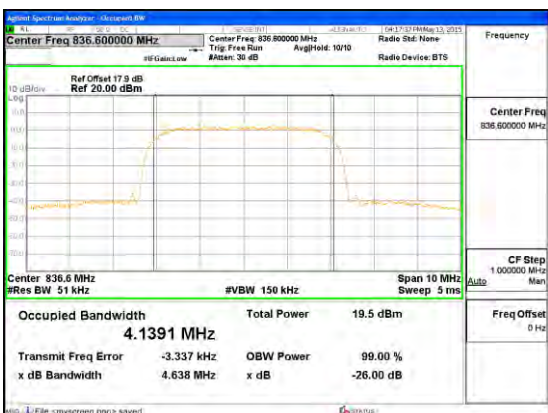
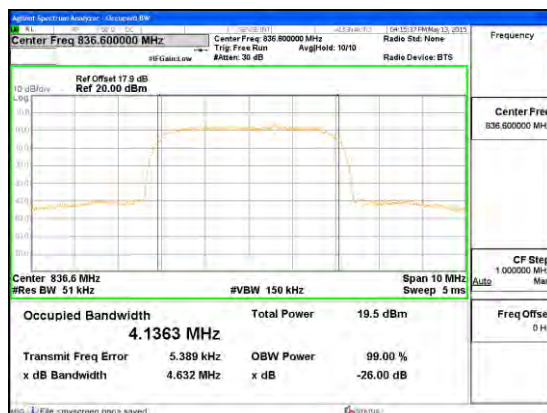
Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE17	10	QPSK	50/0	709	9.000	10.002
			50/0	710	8.988	9.905
			50/0	711	8.967	9.820
		16QAM	50/0	709	9.008	9.891
			50/0	710	8.976	9.882
			50/0	711	8.995	9.843
	5	QPSK	25/0	706.5	4.498	5.017
			25/0	710	4.491	5.009
			25/0	713.5	4.513	4.993
		16QAM	25/0	706.5	4.498	4.983
			25/0	710	4.489	4.963
			25/0	713.5	4.498	5.040

10.1.1. OCCUPIED BANDWIDTH PLOTS

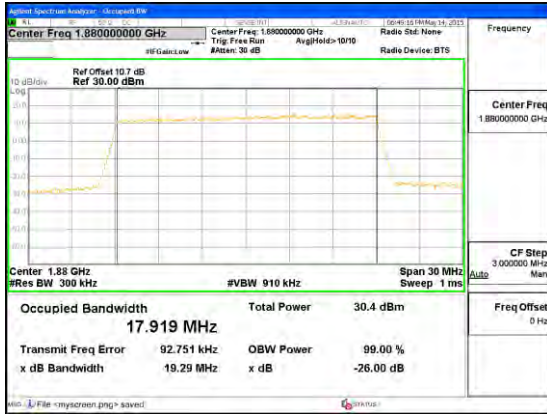
GSM

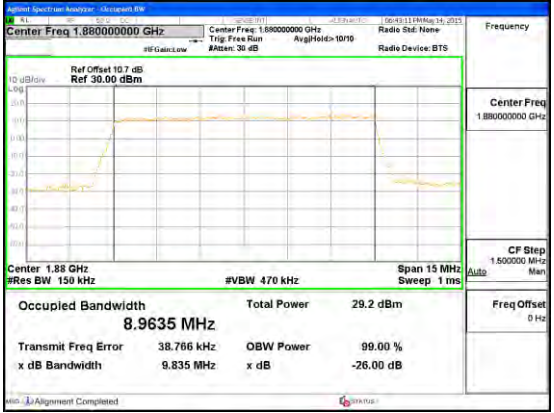
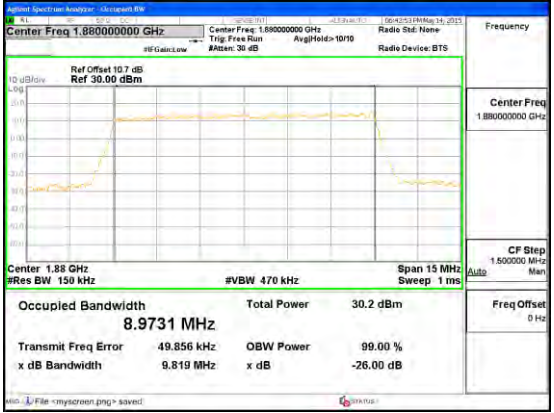
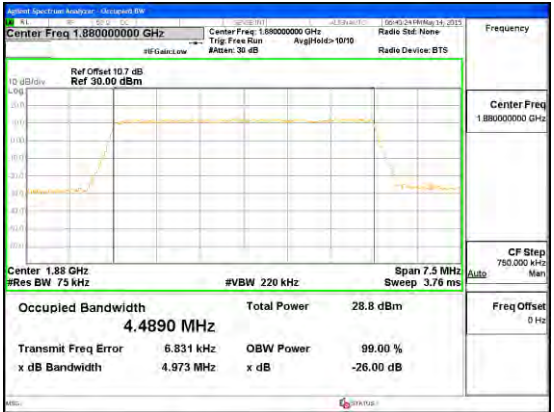
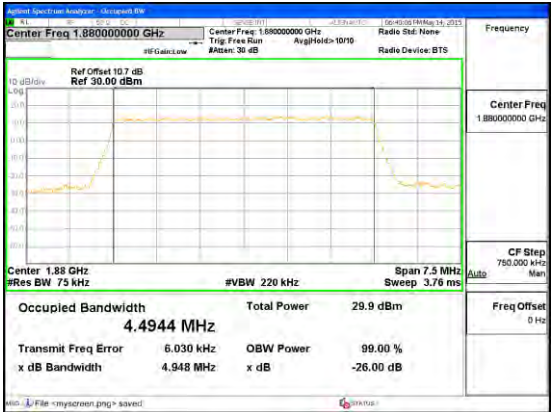
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Band GSM 850	 Band GSM850 EGPRS OBW Mid channel	 Band GSM850 GPRS OBW Mid channel

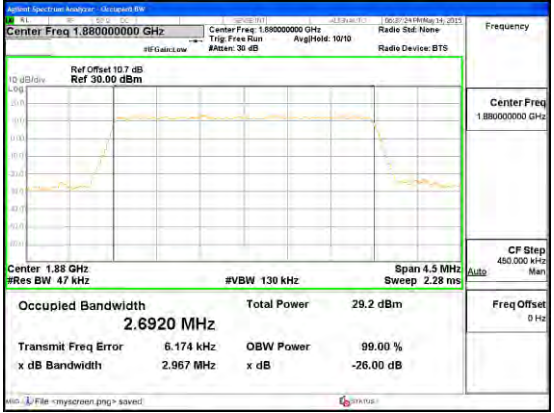
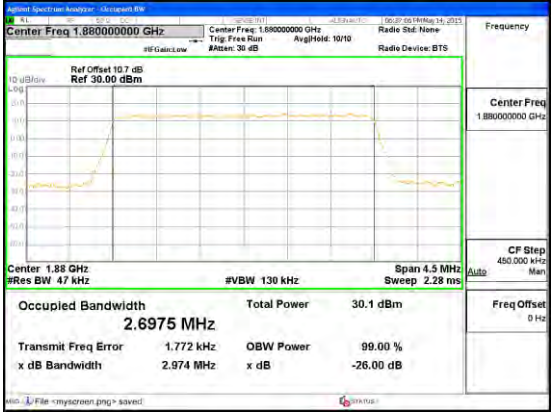
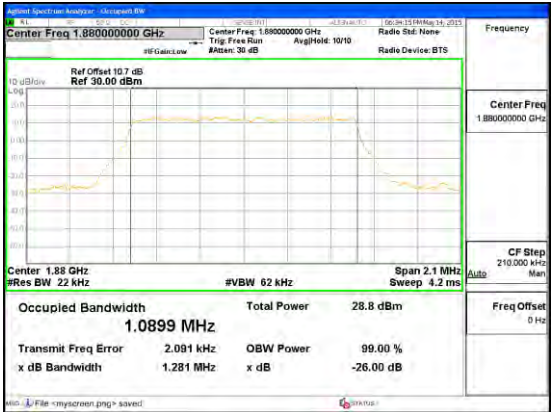
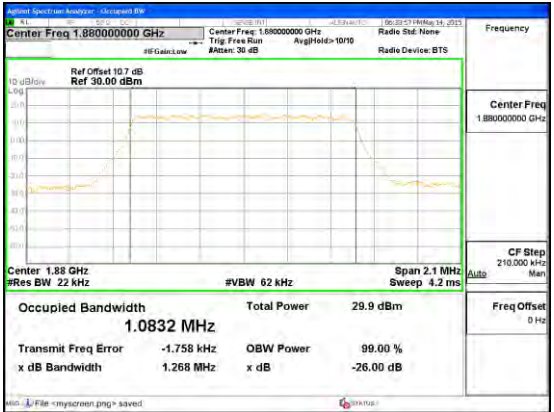
WCDMA

Band Band 2 HSDPA	 Center Freq 1.88000000 GHz Ref Offset 17.9 dB Ref 30.00 dBm Center Freq 1.88 GHz #Res BW 47 kHz #VBW 130 kHz Span 10 MHz Sweep 5 ms Occupied Bandwidth 4.1545 MHz Total Power 26.8 dBm Transmit Freq Error 14.644 kHz OBW Power 99.00 % x dB Bandwidth 4.644 MHz x dB -26.00 dB Band WCDMA B2 HSDPA OBW	 Center Freq 1.88000000 GHz Ref Offset 17.9 dB Ref 30.00 dBm Center Freq 1.88 GHz #Res BW 47 kHz #VBW 130 kHz Span 10 MHz Sweep 5 ms Occupied Bandwidth 4.1618 MHz Total Power 26.9 dBm Transmit Freq Error 22.374 kHz OBW Power 99.00 % x dB Bandwidth 4.651 MHz x dB -26.00 dB Band WCDMA B2 REL99 OBW
Band Band 5 HSDPA	 Center Freq 836.600000 MHz Ref Offset 17.9 dB Ref 20.00 dBm Center Freq 836.6 MHz #Res BW 51 kHz #VBW 150 kHz Span 10 MHz Sweep 5 ms Occupied Bandwidth 4.1391 MHz Total Power 19.5 dBm Transmit Freq Error -3.337 kHz OBW Power 99.00 % x dB Bandwidth 4.638 MHz x dB -26.00 dB Band WCDMA B5 HSDPA OBW	 Center Freq 836.600000 MHz Ref Offset 17.9 dB Ref 20.00 dBm Center Freq 836.6 MHz #Res BW 51 kHz #VBW 150 kHz Span 10 MHz Sweep 5 ms Occupied Bandwidth 4.1363 MHz Total Power 19.5 dBm Transmit Freq Error 5.389 kHz OBW Power 99.00 % x dB Bandwidth 4.632 MHz x dB -26.00 dB Band WCDMA B5 REL99 OBW

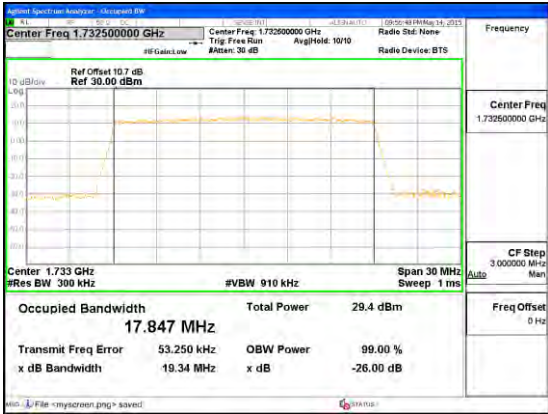
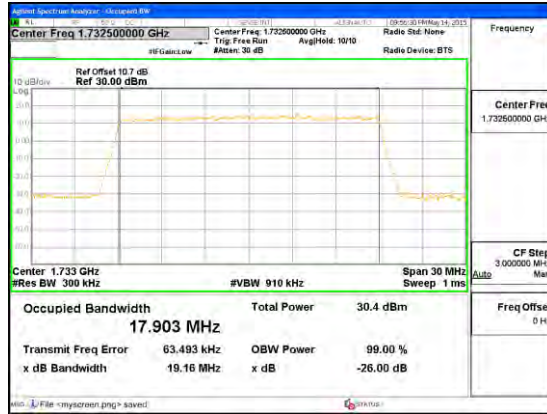
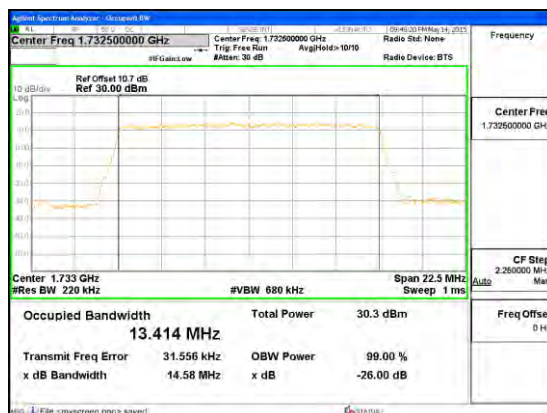
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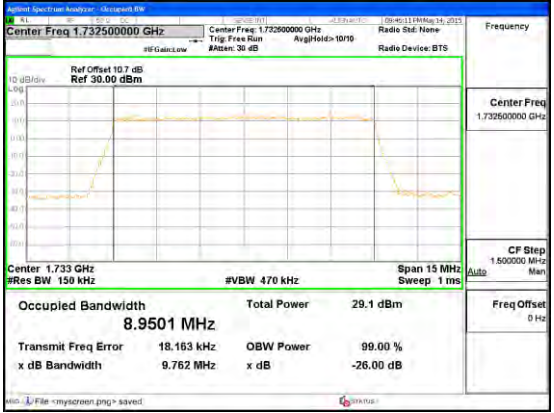
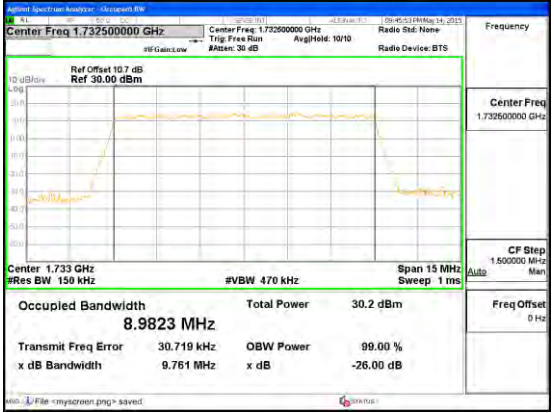
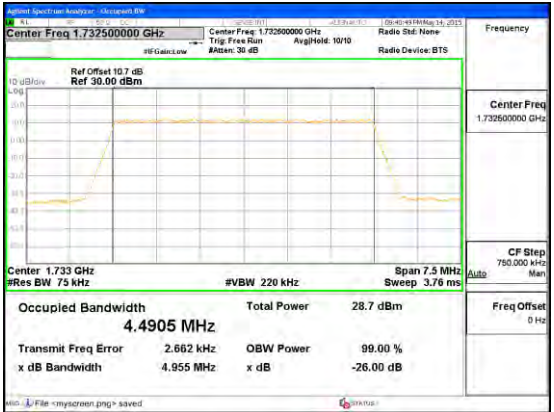
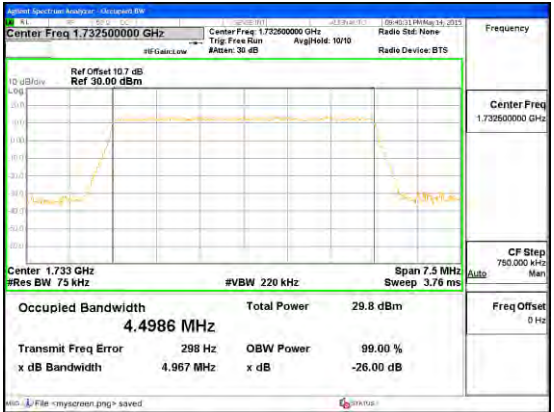
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Band LTE2 15MHz 16QAM	 Band LTE2 15MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE2 15MHz OBW QPSK Mid Channel FRB.gif

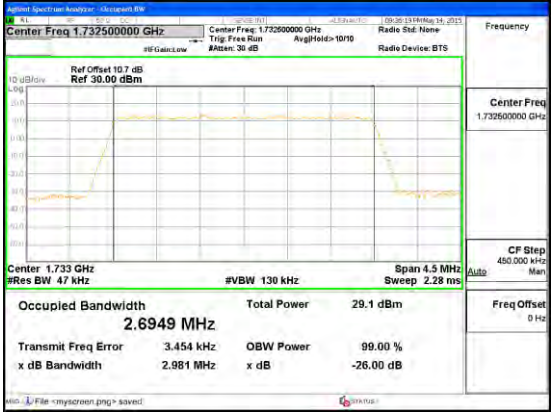
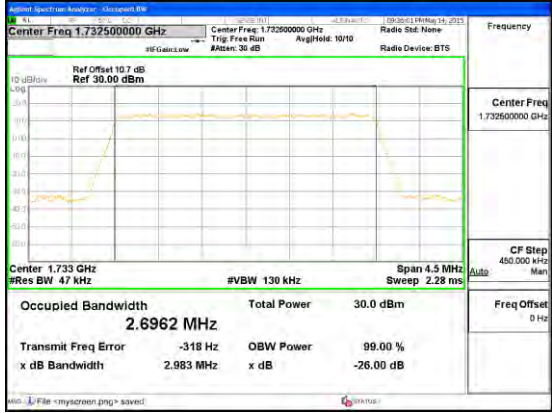
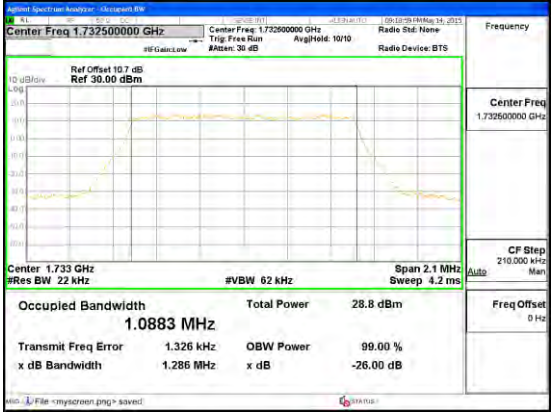
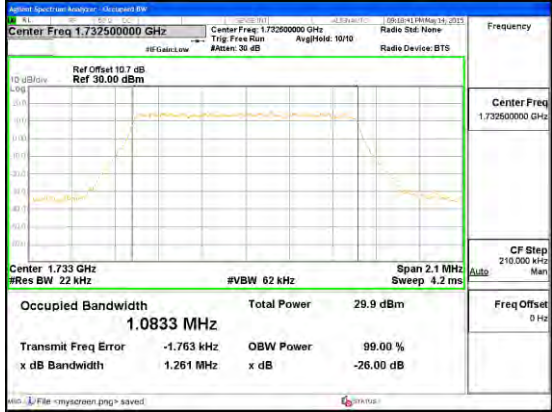
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Band LTE2 5MHz 16QAM	 Band LTE2 5MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE2 5MHz OBW QPSK Mid Channel FRB.gif

Band LTE2 3MHz 16QAM	 Band LTE2 3MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE2 3MHz OBW QPSK Mid Channel FRB.gif
Band LTE2 1.4MHz 16QAM	 Band LTE2 1.4MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE2 1.4MHz OBW QPSK Mid Channel FRB.gif

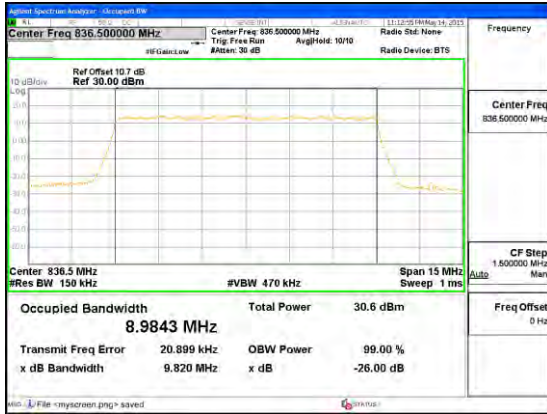
LTE Band 4

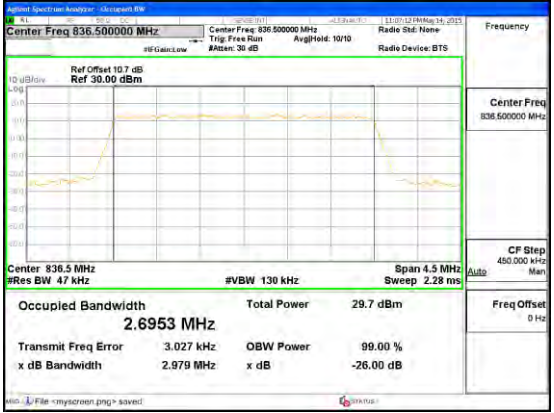
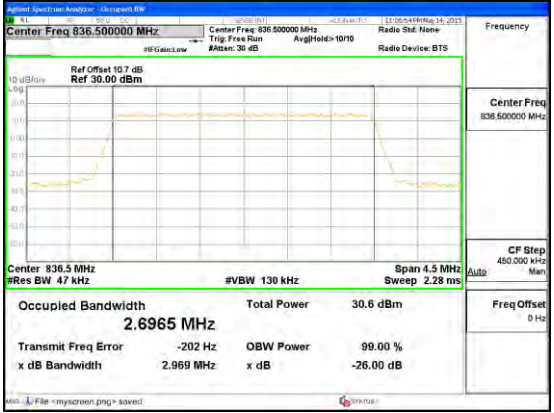
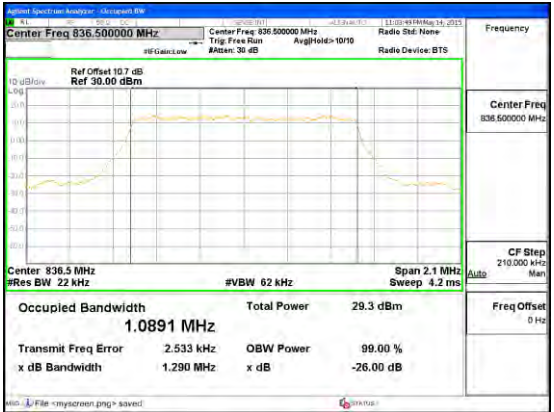
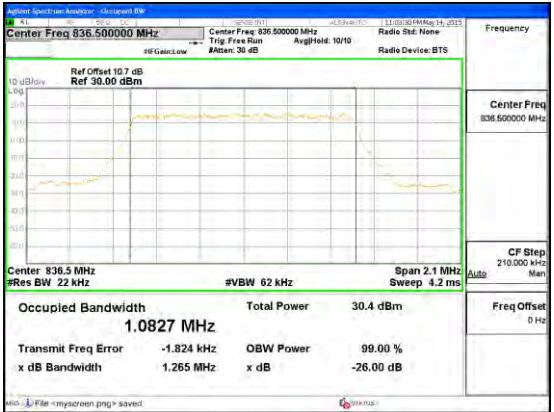
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	 Band LTE4 15MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE4 15MHz OBW QPSK Mid Channel FRB.gif

Band LTE4 10MHz 16QAM	 Band LTE4 10MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE4 10MHz OBW QPSK Mid Channel FRB.gif
Band LTE4 5MHz 16QAM	 Band LTE4 5MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE4 5MHz OBW QPSK Mid Channel FRB.gif

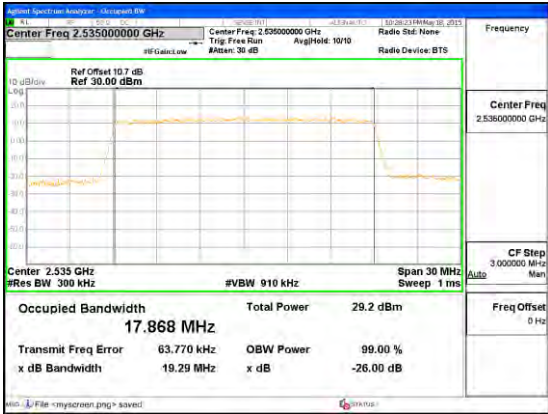
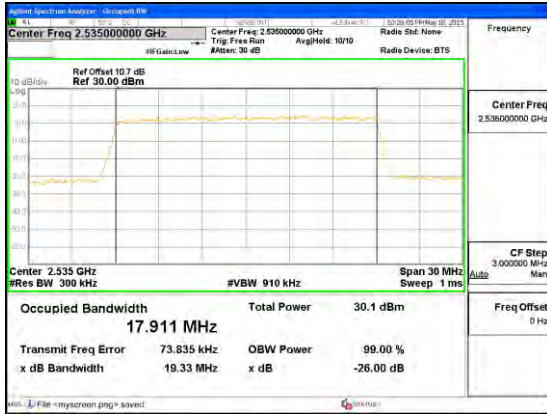
Band LTE4 3MHz 16QAM	 Band LTE4 3MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE4 3MHz OBW QPSK Mid Channel FRB.gif
Band LTE4 1.4MHz 16QAM	 Band LTE4 1.4MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE4 1.4MHz OBW QPSK Mid Channel FRB.gif

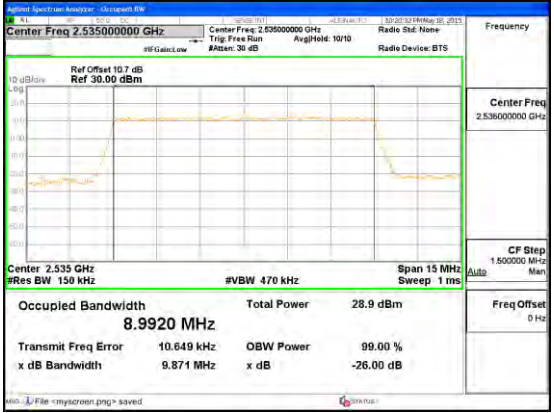
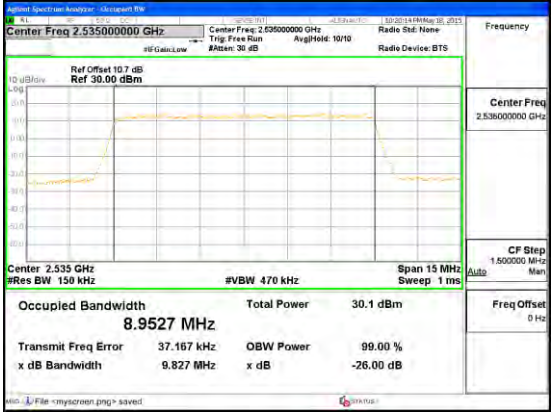
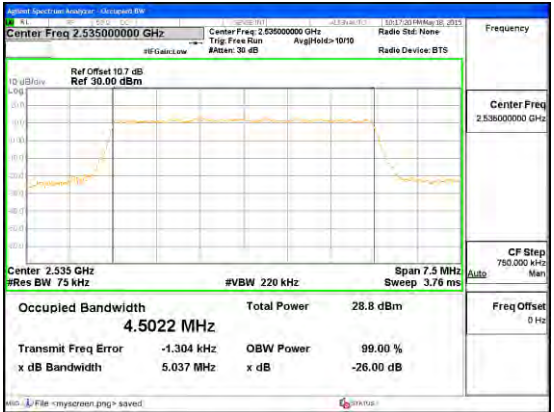
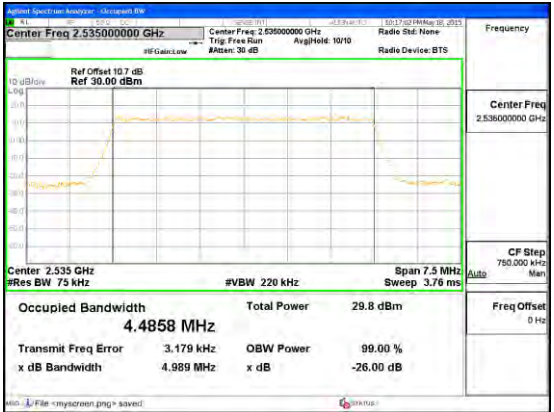
LTE Band 5

Band LTE5 10MHz 16QAM	 Band LTE5 10MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE5 10MHz OBW QPSK Mid Channel FRB.gif
Band LTE5 5MHz 16QAM	 Band LTE5 5MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE5 5MHz OBW QPSK Mid Channel FRB.gif

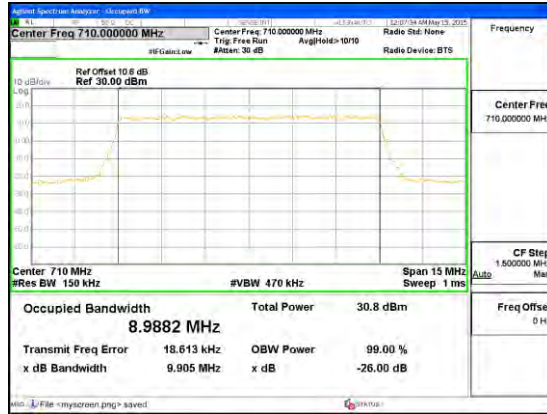
Band LTE5 3MHz 16QAM	 Band LTE5 3MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE5 3MHz OBW QPSK Mid Channel FRB.gif
Band LTE5 1.4MHz 16QAM	 Band LTE5 1.4MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE5 1.4MHz OBW QPSK Mid Channel FRB.gif

LTE Band 7

Band LTE7 20MHz 16QAM	 Band LTE7 20MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE7 20MHz OBW QPSK Mid Channel FRB.gif
Band LTE7 15MHz 16QAM	 Band LTE7 15MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE7 15MHz OBW QPSK Mid Channel FRB.gif

Band LTE7 10MHz 16QAM	 Band LTE7 10MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE7 10MHz OBW QPSK Mid Channel FRB.gif
Band LTE7 5MHz 16QAM	 Band LTE7 5MHz OBW 16QAM Mid Channel FRB.gif	 Band LTE7 5MHz OBW QPSK Mid Channel FRB.gif

LTE Band 17

Band LTE17 10MHz 16QAM		
	Band LTE17 10MHz OBW 16QAM Mid Channel FRB.gif	Band LTE17 10MHz OBW QPSK Mid Channel FRB.gif

10.2. BAND EDGE EMISSIONS

RULE PART(S)

FCC: §22.359, §24.238, §27.53 and § 90.691

LIMITS

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

Part 27: (m)(4) (4) For mobile digital stations, the attenuation factor shall be not less than $40 + 10 \log (P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log (P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and $55 + 10 \log (P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less than $43 + 10 \log (P)$ dB on all frequencies between 2490.5 MHz and 2496 MHz and $55 + 10 \log (P)$ dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

Part 90:

(a)(1) For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $116 \log_{10}(f/6.1)$ decibels or $50 + 10 \log_{10}(P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.

(a)(2) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz. {NOTE: Use 100 kHz reference bandwidth.}

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.

1. Change the center frequency as shown in the table above
2. Set the span to clearly show Lower & Upper frequencies + 1MHz
3. Open screen capture application for PXA/PSA.
4. Load emission mask file
5. Press Run.

If screen capture program is not available or unable to locate the emission mask file, please contact PM or PL right away.

MODES TESTED

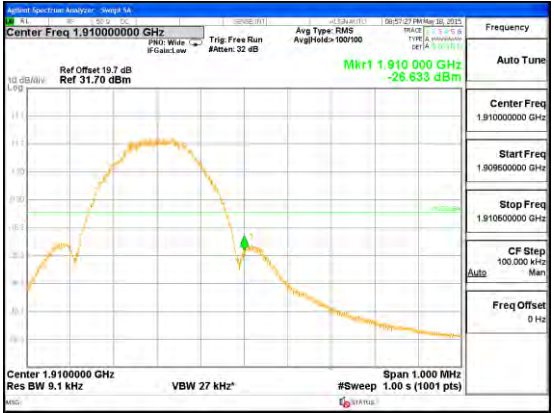
RESULTS

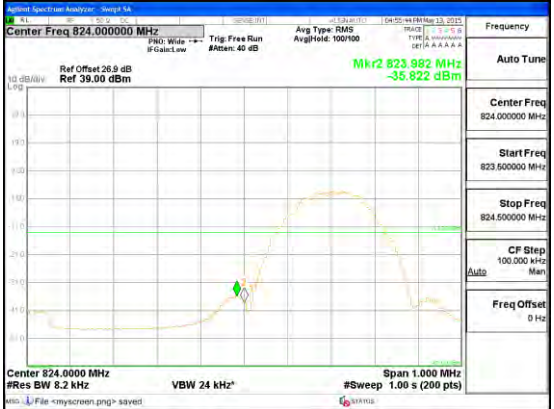
Note: GSM reading need add 9dB DCCF factor due to duty cycle is 12.5% during test.

LTE 41 Reading need apply 4.44dB duty cycle factor ($20\log(6/10)$).

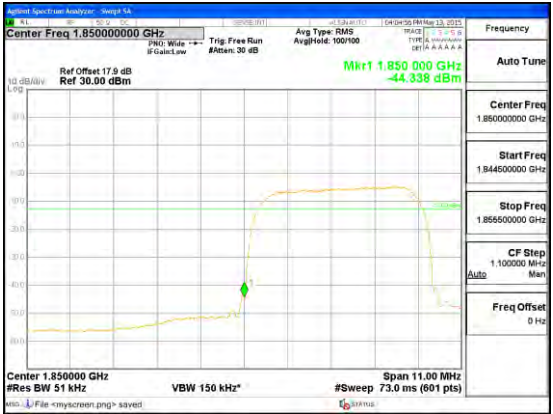
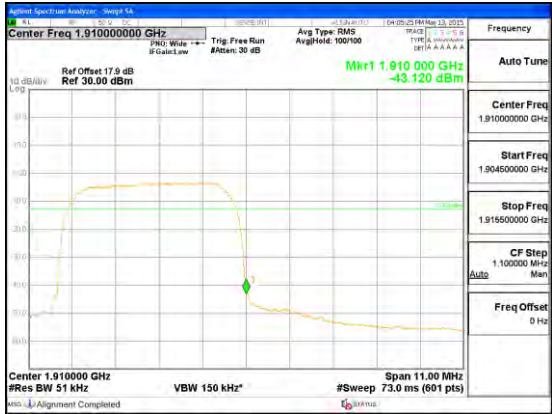
10.2.1. BAND EDGE PLOTS

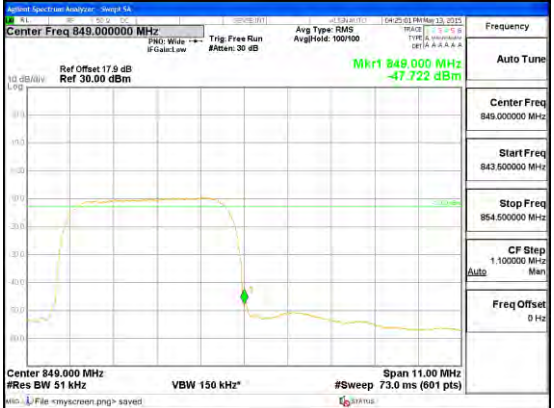
GSM

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

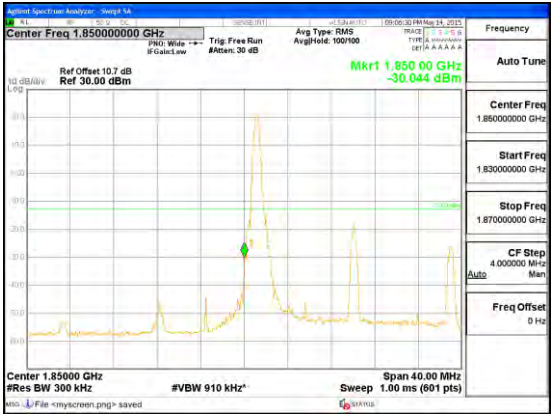
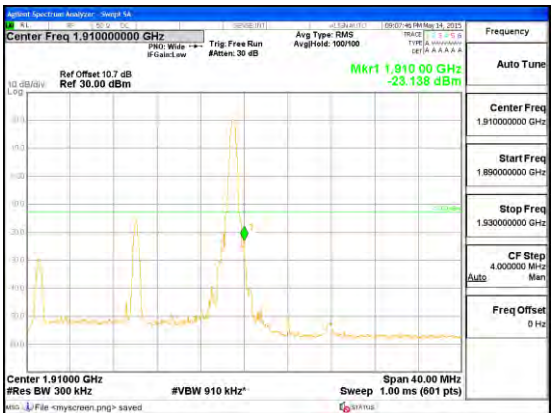
Band GSM 850 EGPRS	 Band GSM850 EGPRS CBE Low channel	 Band GSM850 EGPRS CBE High channel
Band GSM 850 GPRS	 Band GSM850 GPRS CBE Low channel	 Band GSM850 GPRS CBE High channel

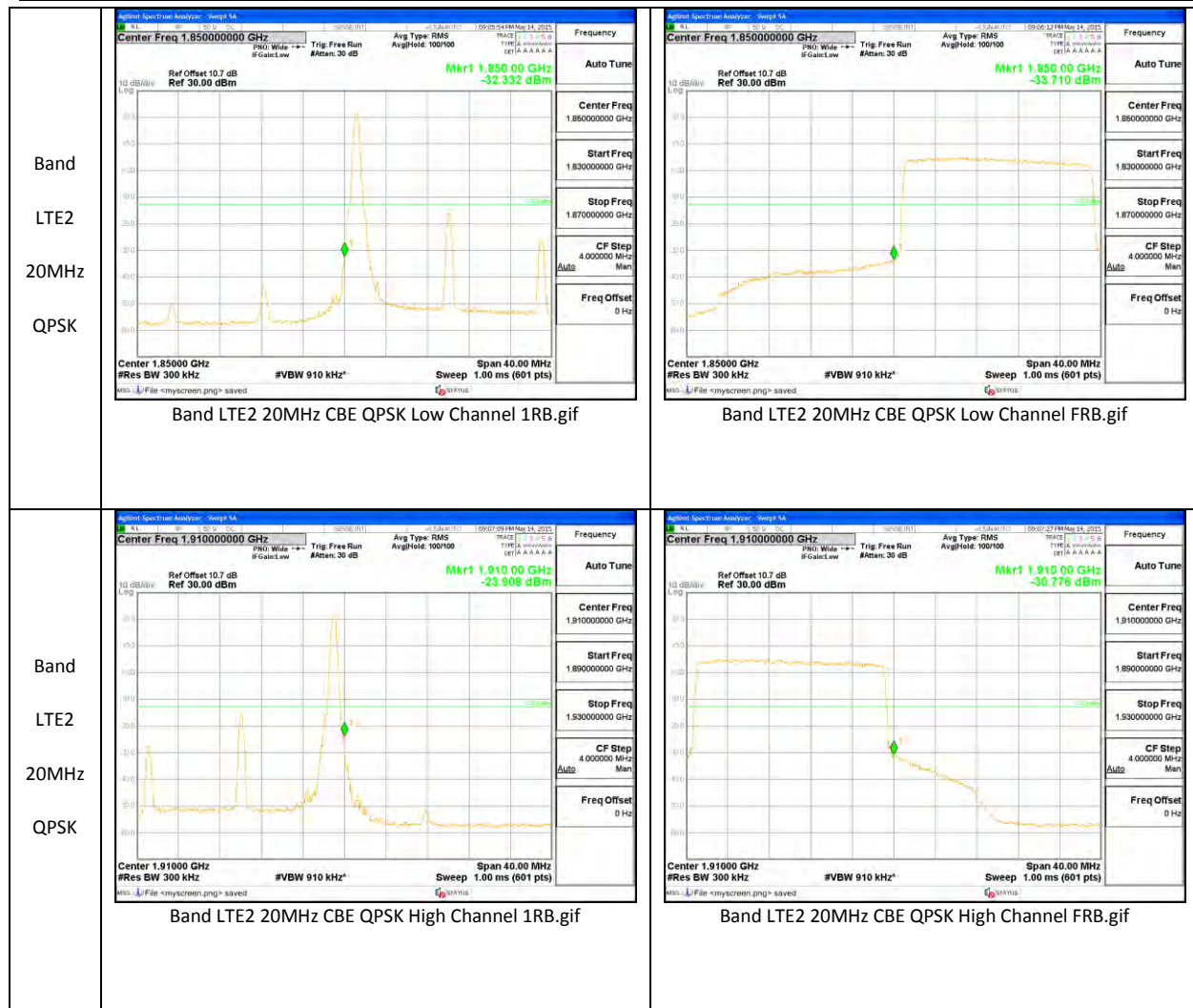
WCDMA

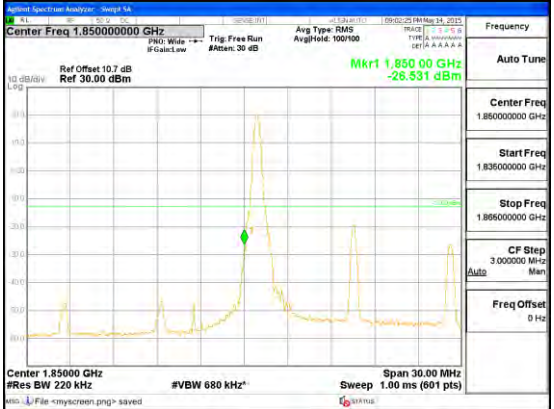
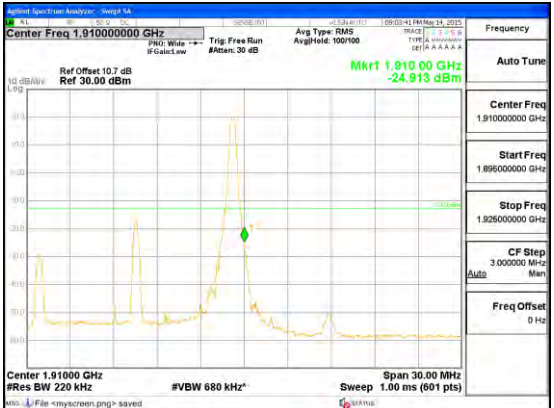
Band Band 2 HSDPA	 Band WCDMA B2 HSDPA CBE	 Band WCDMA B2 HSDPA CBE
Band Band 2 REL99	 Band WCDMA B2 REL99 CBE	 Band WCDMA B2 REL99 CBE

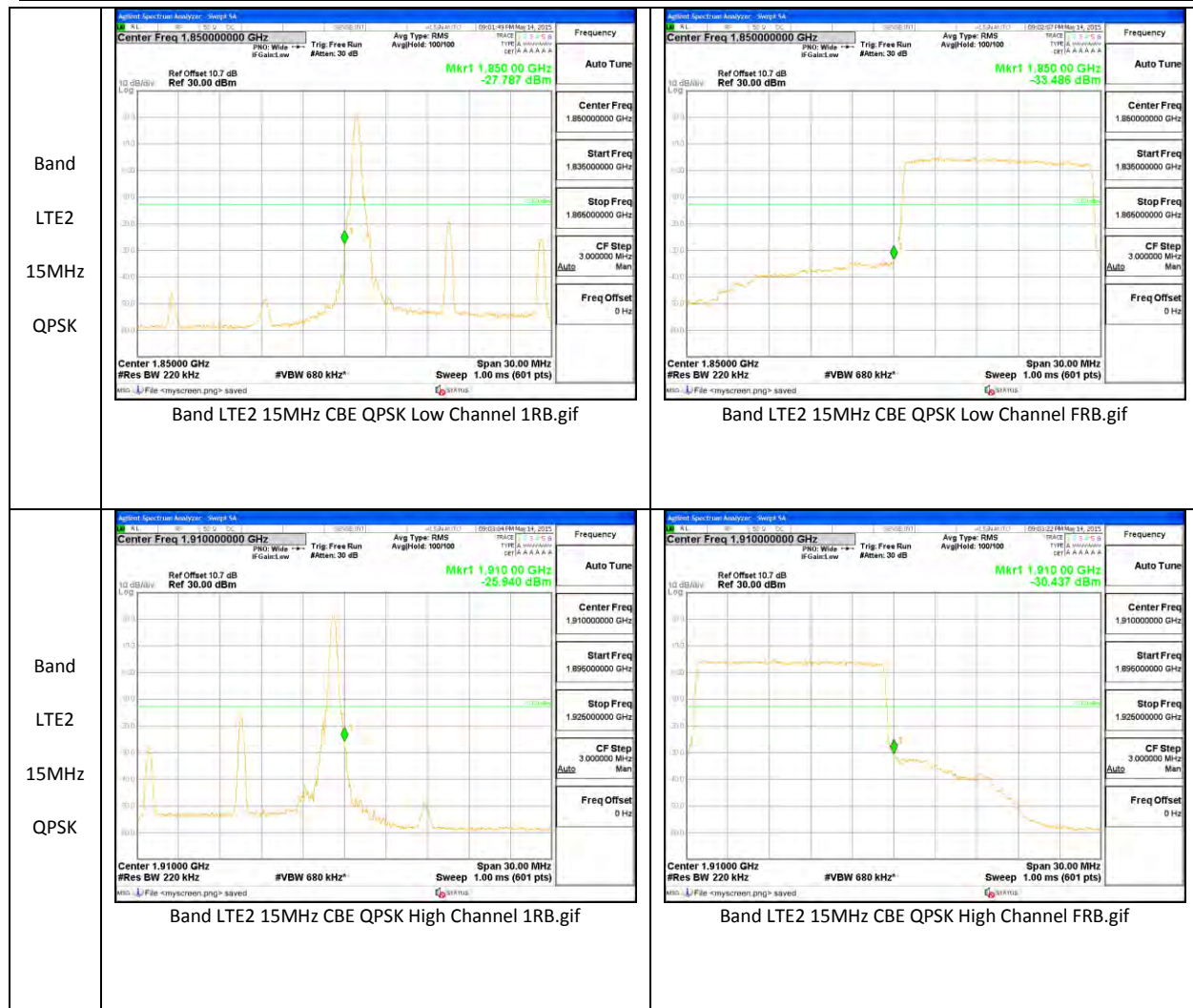
Band Band 5 HSDPA	 Band WCDMA B5 HSDPA CBE	 Band WCDMA B5 HSDPA CBE
Band Band 5 REL99	 Band WCDMA B5 REL99 CBE	 Band WCDMA B5 REL99 CBE

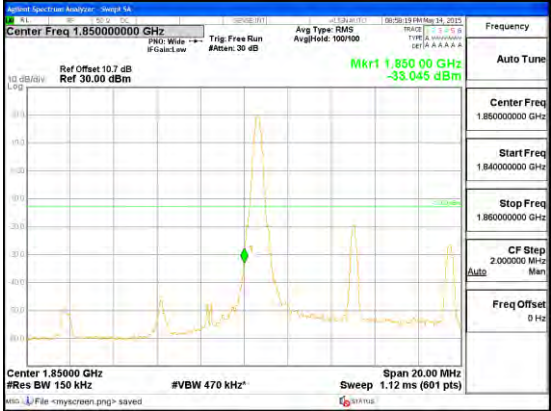
LTE Band 2

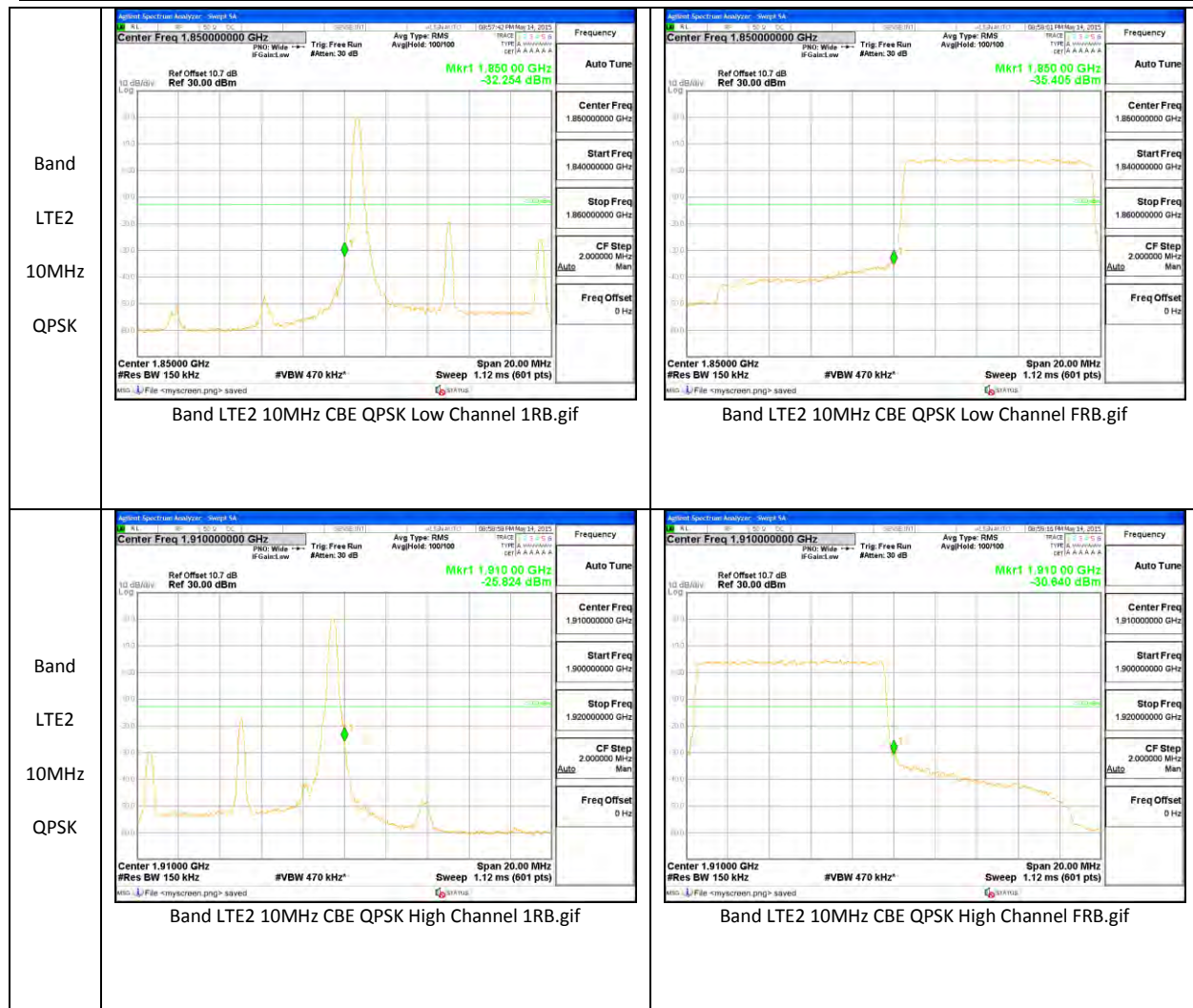
Band LTE2 20MHz 16QAM	 Band LTE2 20MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE2 20MHz CBE 16QAM Low Channel FRB.gif
Band LTE2 20MHz 16QAM	 Band LTE2 20MHz CBE 16QAM High Channel 1RB.gif	 Band LTE2 20MHz CBE 16QAM High Channel FRB.gif

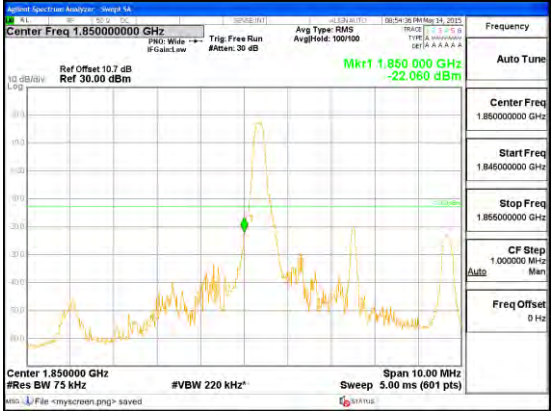
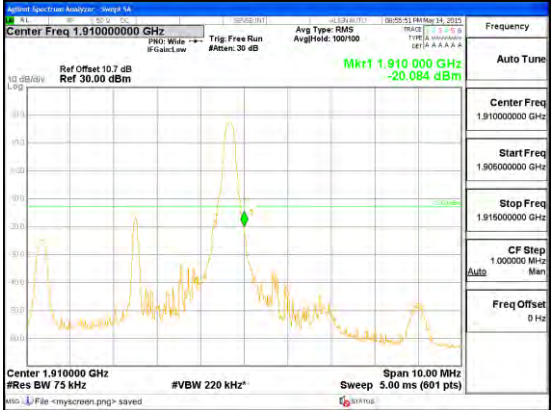


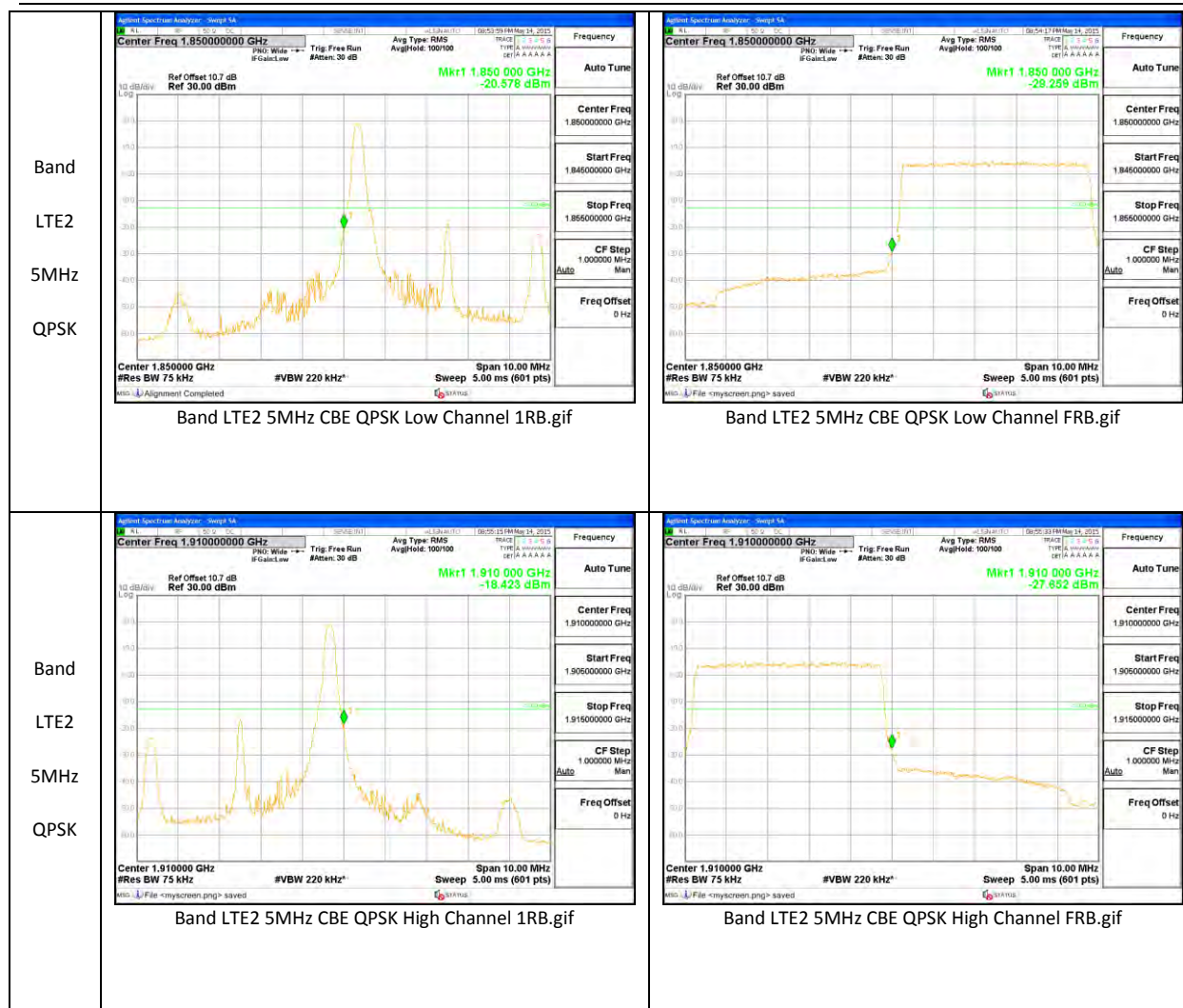
Band LTE2 15MHz 16QAM	 Band LTE2 15MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE2 15MHz CBE 16QAM Low Channel FRB.gif
Band LTE2 15MHz 16QAM	 Band LTE2 15MHz CBE 16QAM High Channel 1RB.gif	 Band LTE2 15MHz CBE 16QAM High Channel FRB.gif

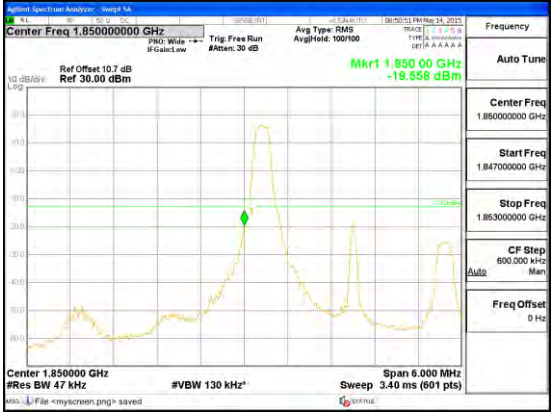
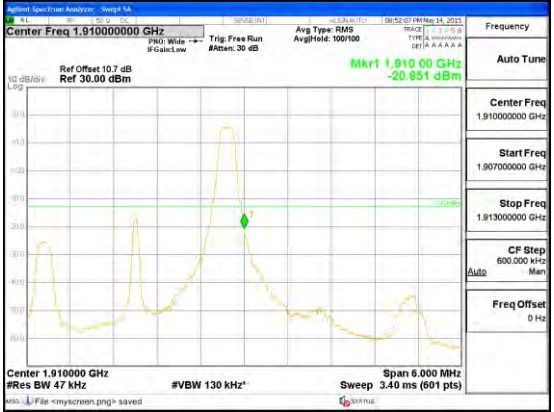


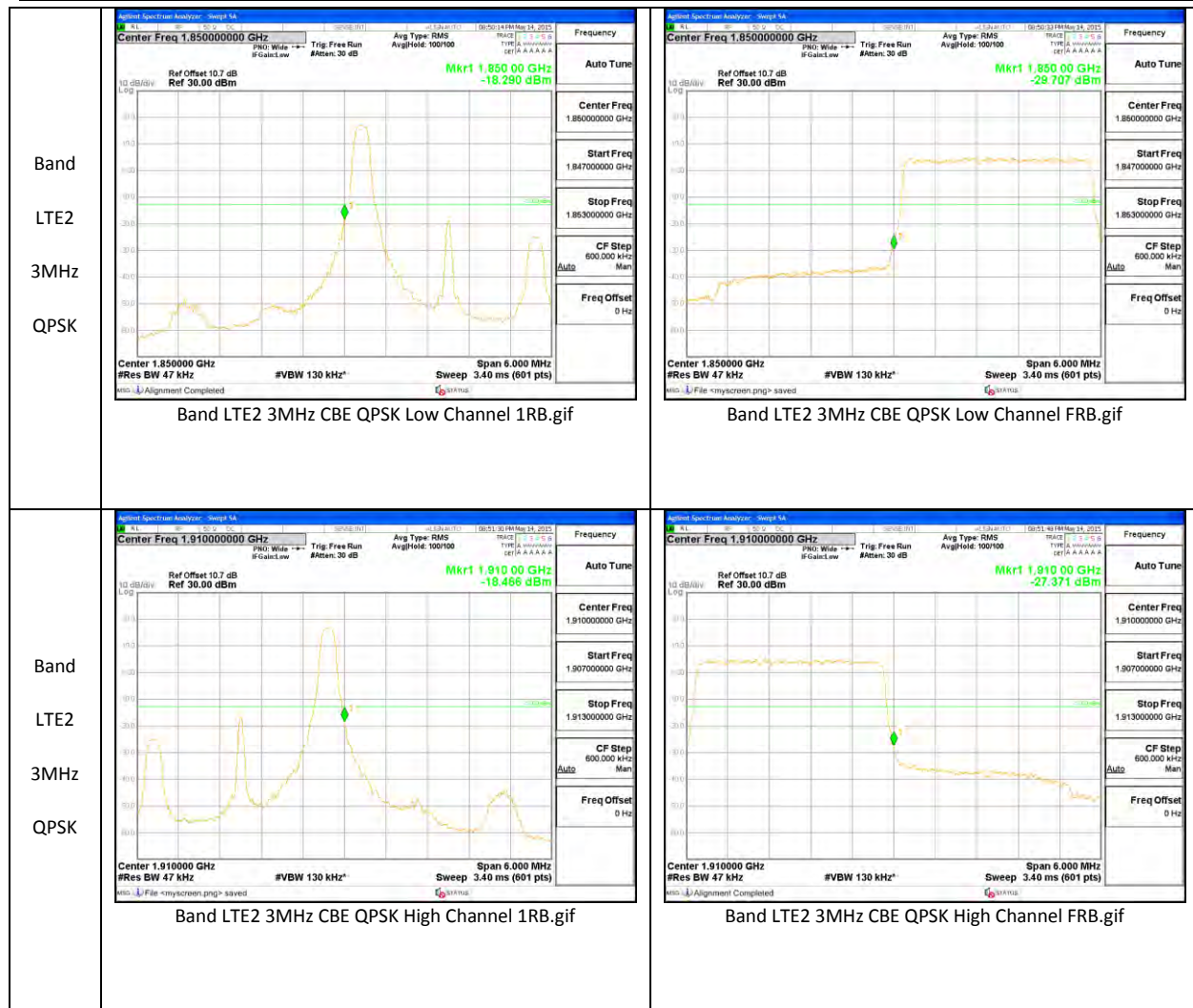
Band LTE2 10MHz 16QAM	 Band LTE2 10MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE2 10MHz CBE 16QAM Low Channel FRB.gif
Band LTE2 10MHz 16QAM	 Band LTE2 10MHz CBE 16QAM High Channel 1RB.gif	 Band LTE2 10MHz CBE 16QAM High Channel FRB.gif

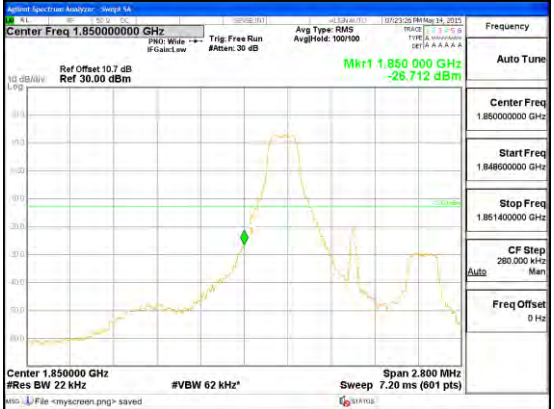
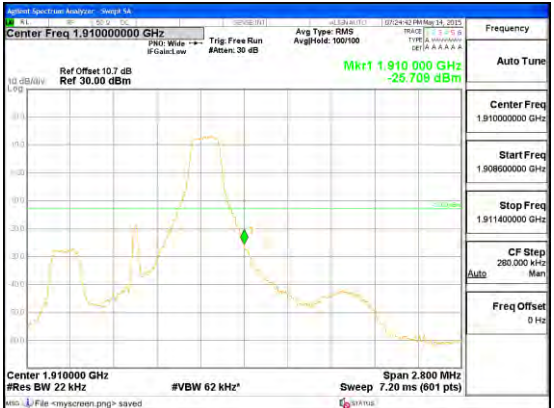


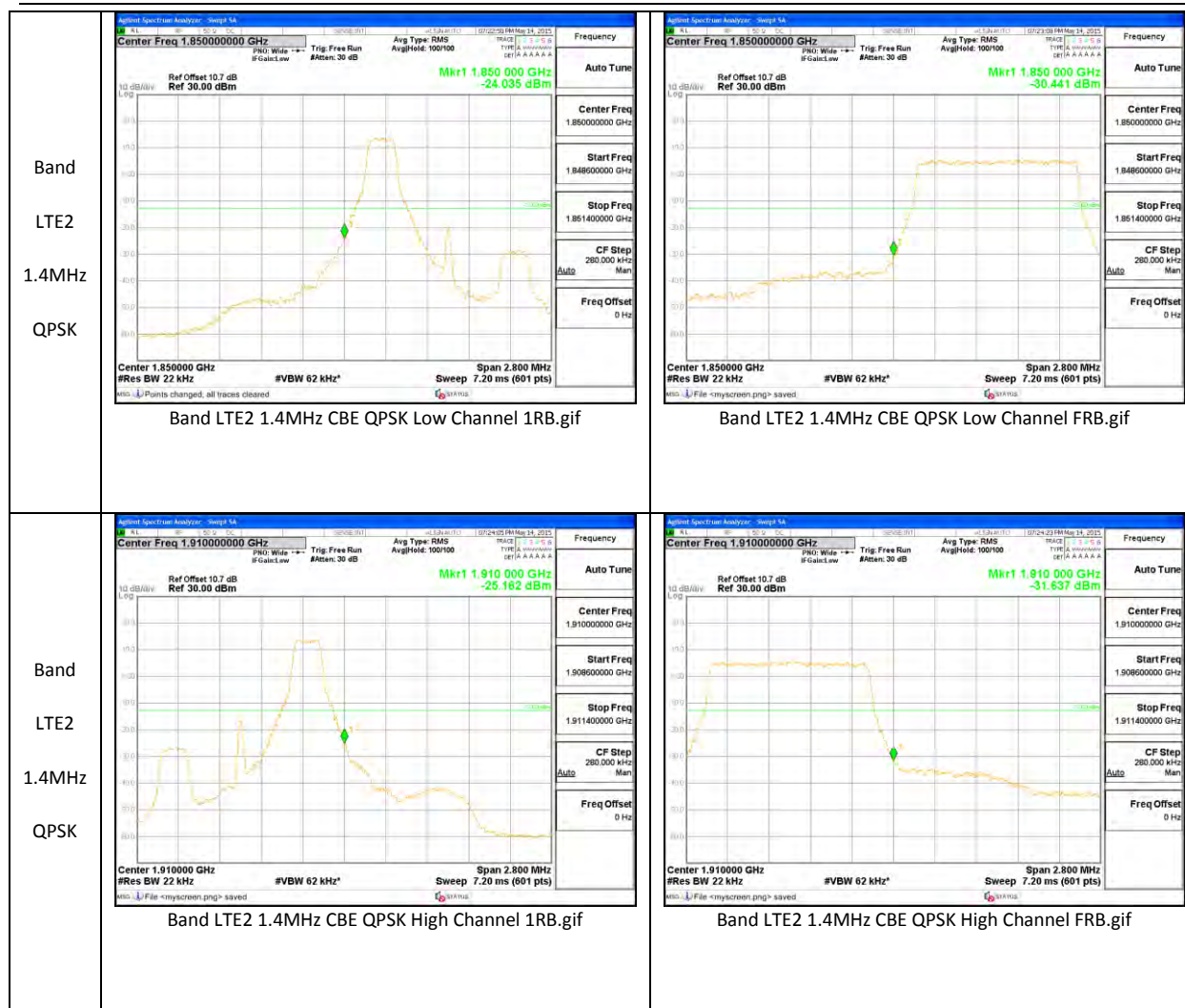
Band LTE2 5MHz 16QAM	 Band LTE2 5MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE2 5MHz CBE 16QAM Low Channel FRB.gif
Band LTE2 5MHz 16QAM	 Band LTE2 5MHz CBE 16QAM High Channel 1RB.gif	 Band LTE2 5MHz CBE 16QAM High Channel FRB.gif



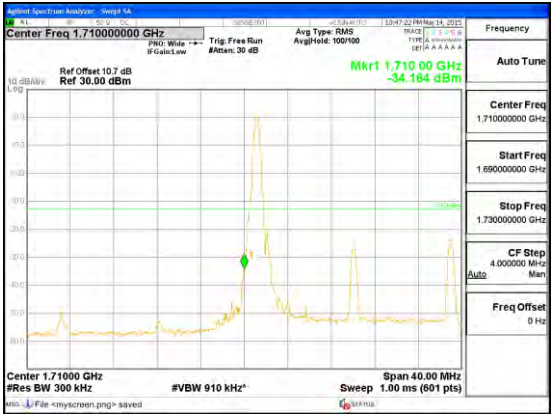
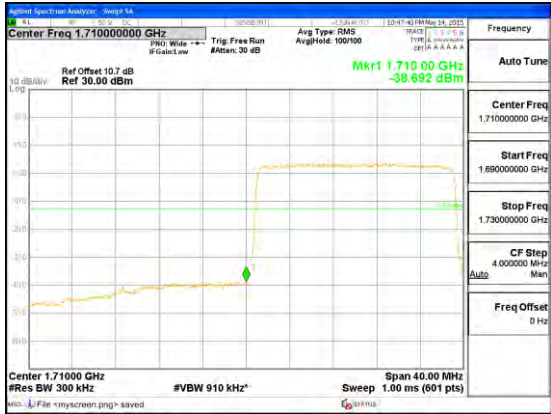
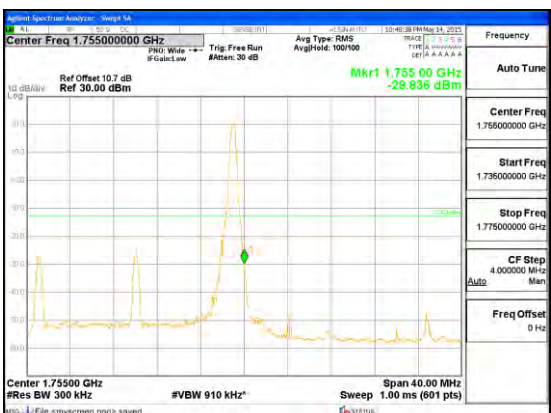
Band LTE2 3MHz 16QAM	 Band LTE2 3MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE2 3MHz CBE 16QAM Low Channel FRB.gif
Band LTE2 3MHz 16QAM	 Band LTE2 3MHz CBE 16QAM High Channel 1RB.gif	 Band LTE2 3MHz CBE 16QAM High Channel FRB.gif

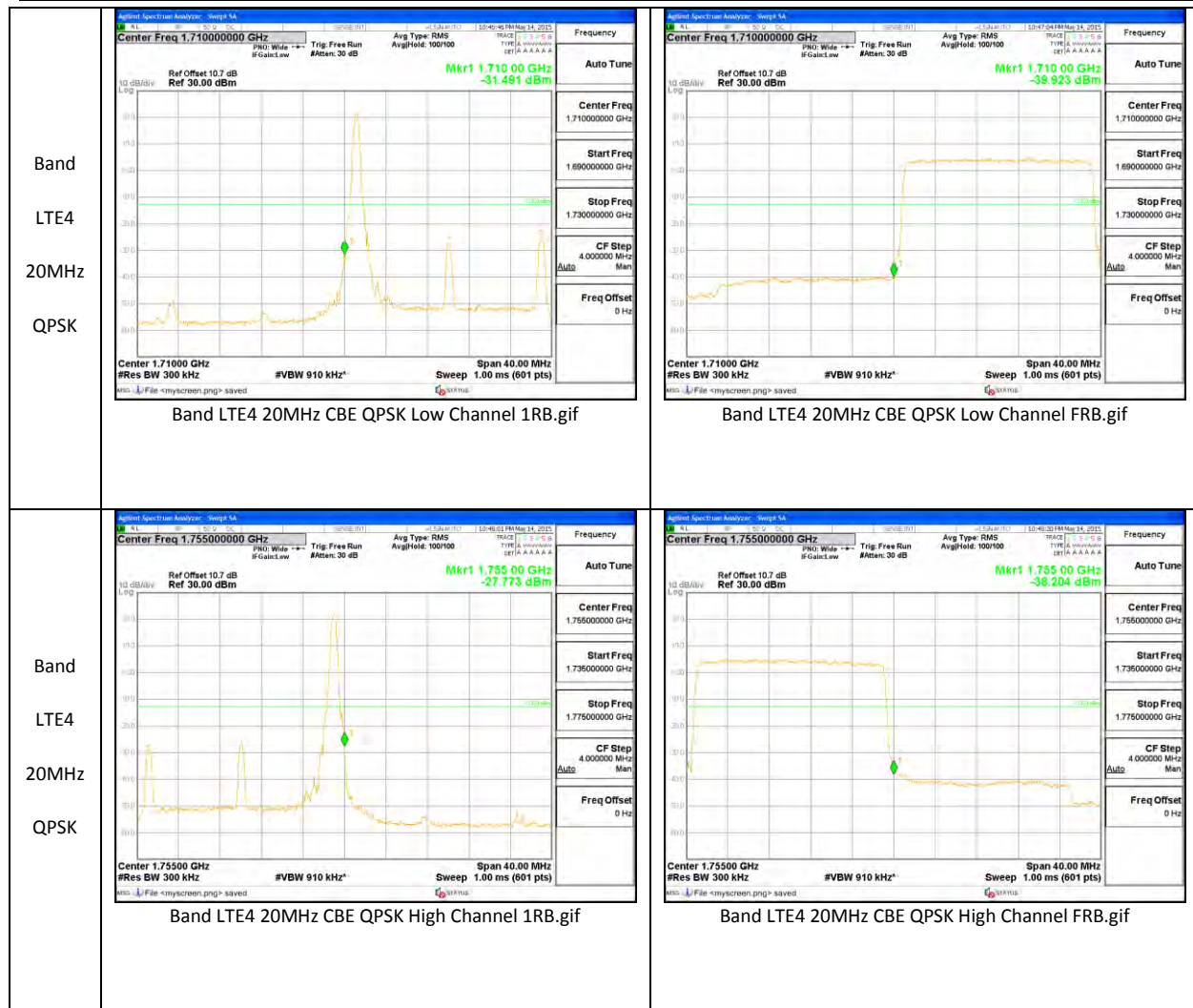


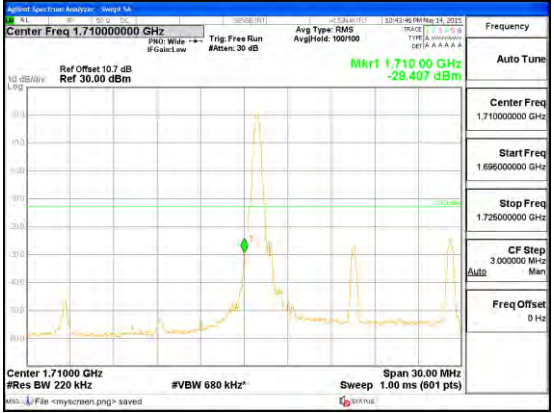
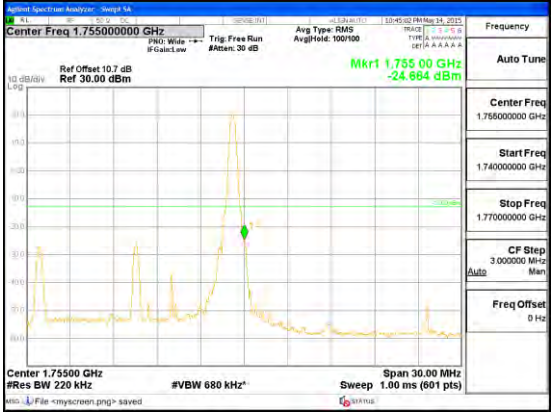
Band LTE2 1.4MHz 16QAM	 Band LTE 1.4MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE2 1.4MHz CBE 16QAM Low Channel FRB.gif
Band LTE2 1.4MHz 16QAM	 Band LTE2 1.4MHz CBE 16QAM High Channel 1RB.gif	 Band LTE2 1.4MHz CBE 16QAM High Channel FRB.gif

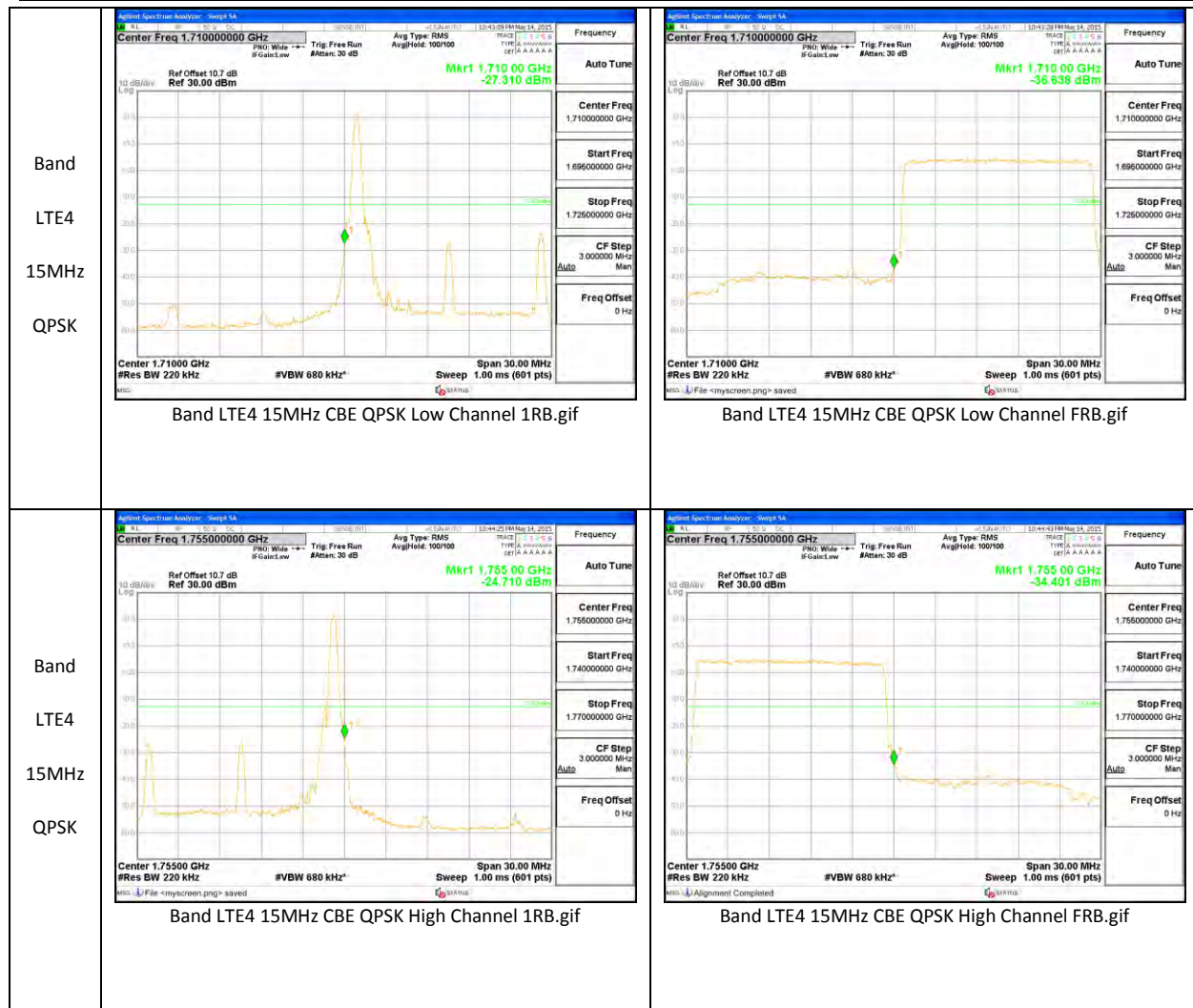


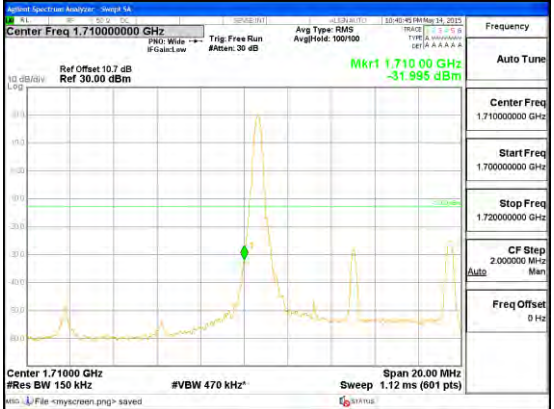
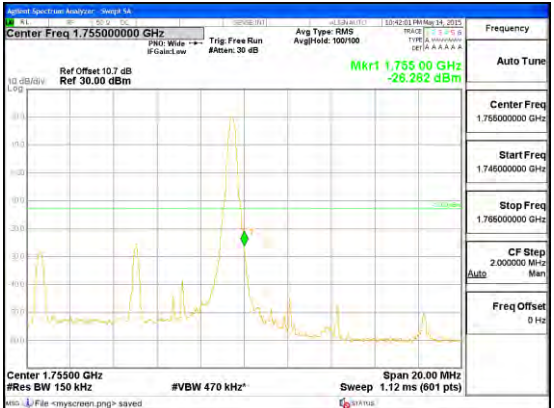
LTE Band 4

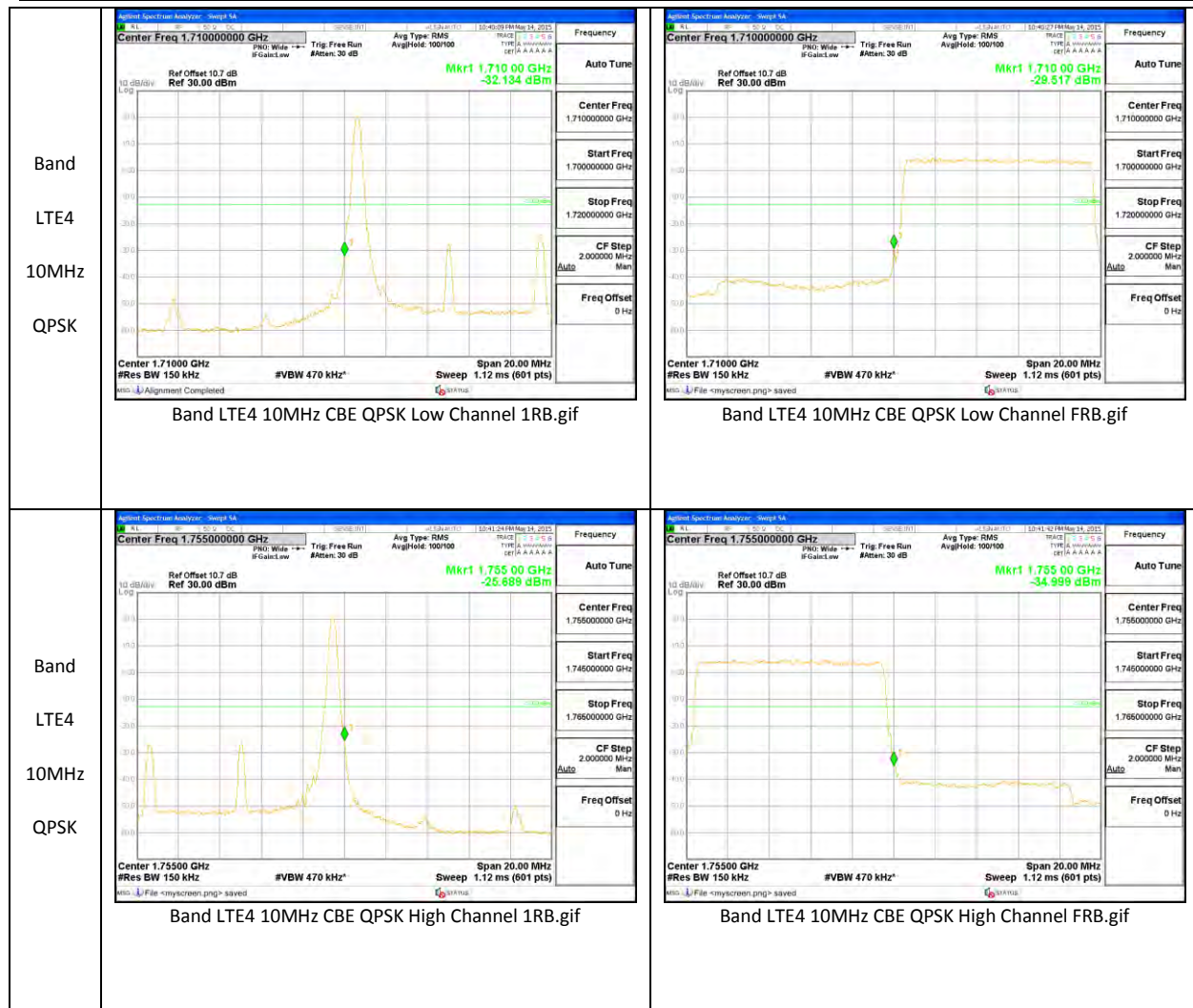
Band LTE4 20MHz 16QAM	 Band LTE4 20MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE4 20MHz CBE 16QAM Low Channel FRB.gif
Band LTE4 20MHz 16QAM	 Band LTE4 20MHz CBE 16QAM High Channel 1RB.gif	 Band LTE4 20MHz CBE 16QAM High Channel FRB.gif

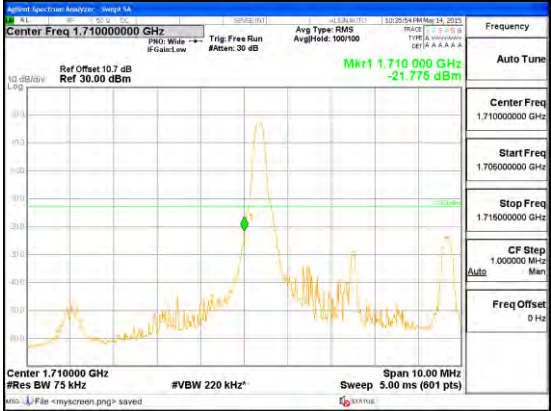
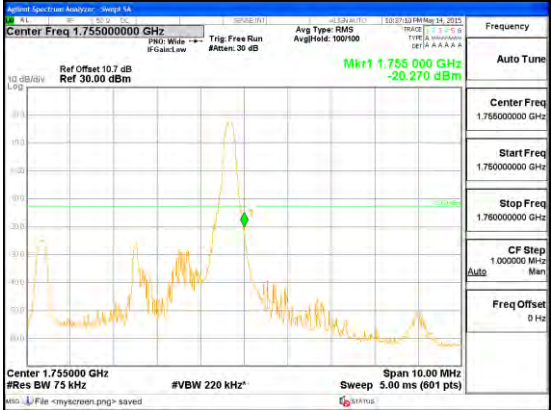
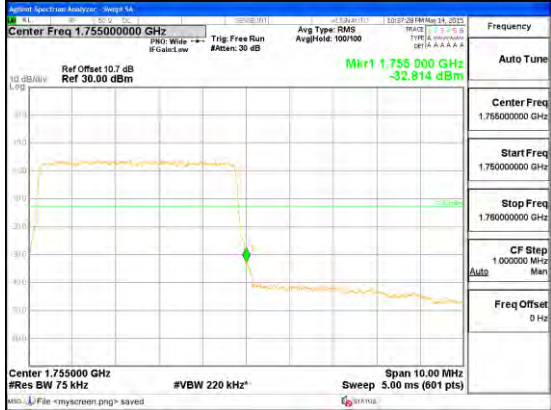


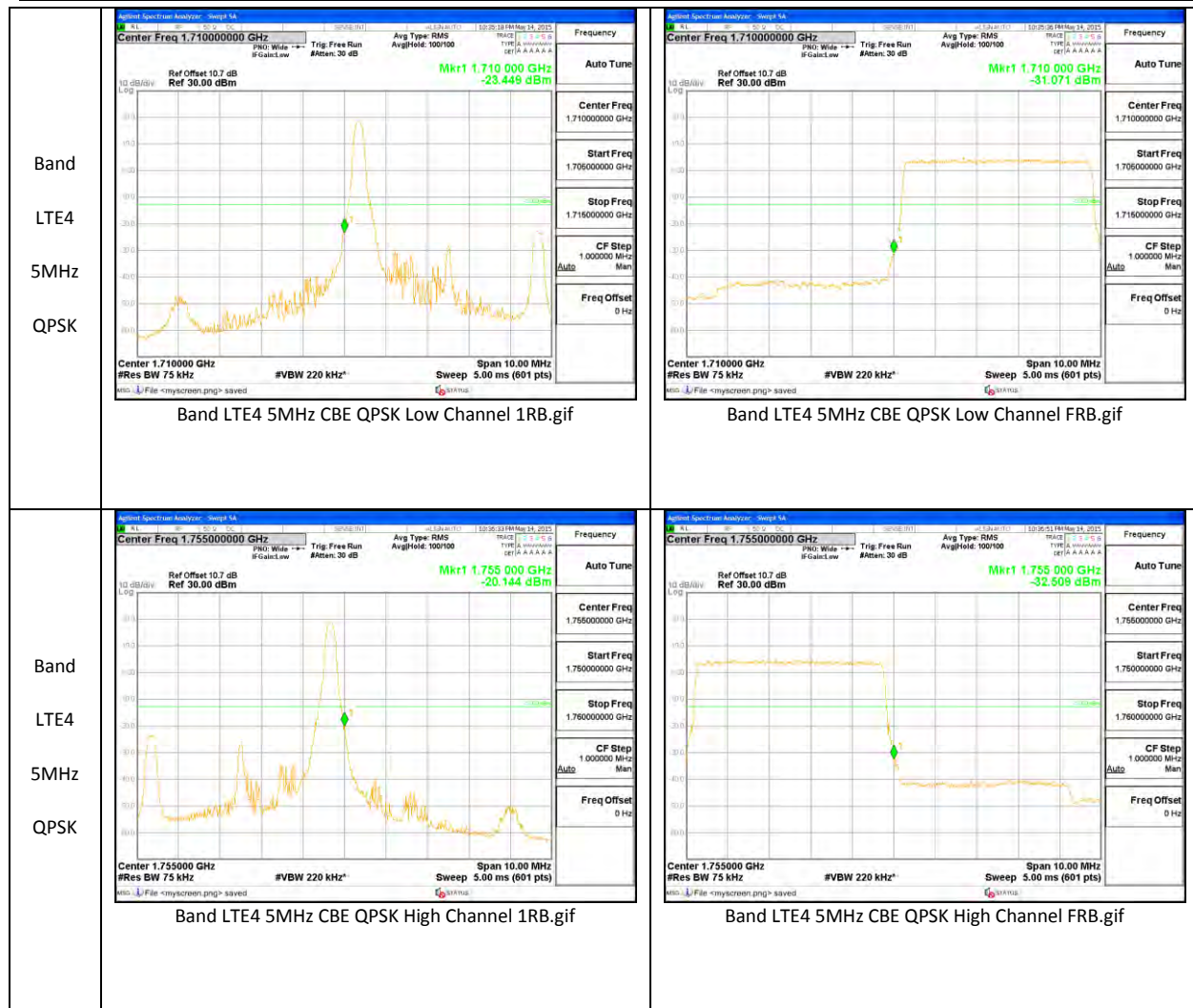
Band LTE4 15MHz 16QAM	 Band LTE4 15MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE4 15MHz CBE 16QAM Low Channel FRB.gif
Band LTE4 15MHz 16QAM	 Band LTE4 15MHz CBE 16QAM High Channel 1RB.gif	 Band LTE4 15MHz CBE 16QAM High Channel FRB.gif

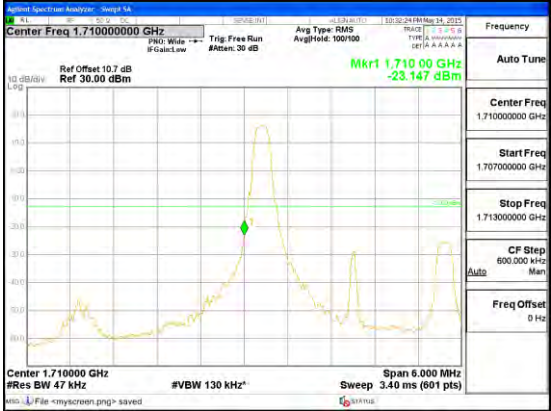
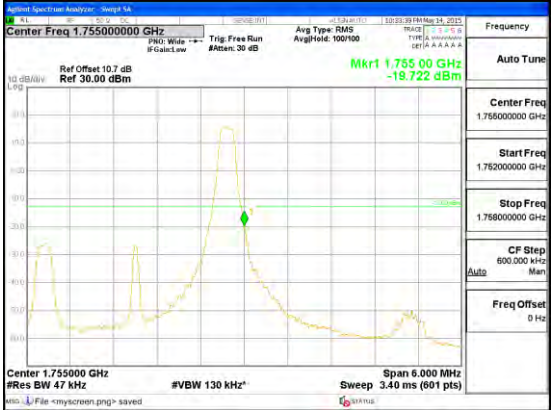


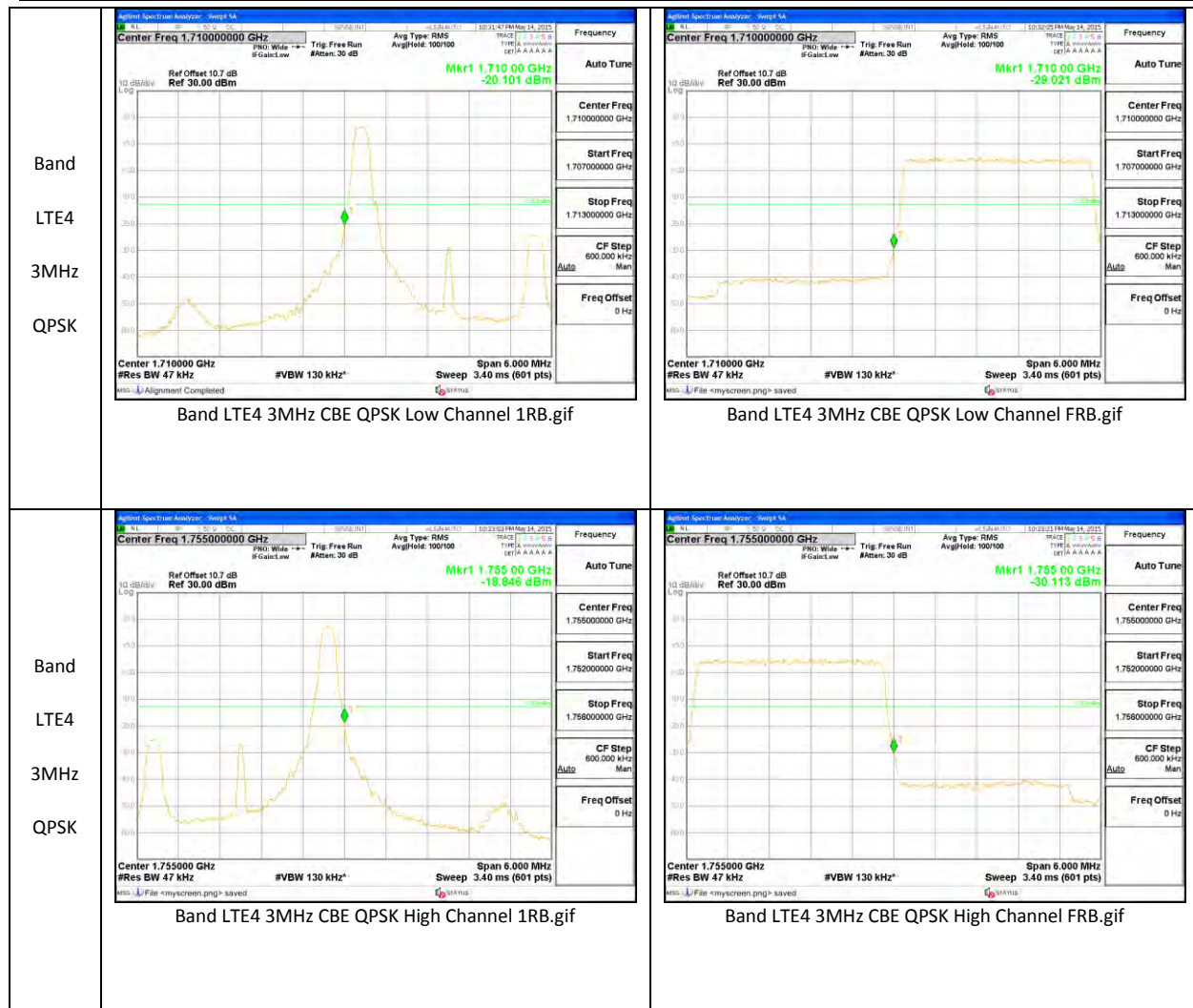
Band LTE4 10MHz 16QAM	 Band LTE4 10MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE4 10MHz CBE 16QAM Low Channel FRB.gif
Band LTE4 10MHz 16QAM	 Band LTE4 10MHz CBE 16QAM High Channel 1RB.gif	 Band LTE4 10MHz CBE 16QAM High Channel FRB.gif

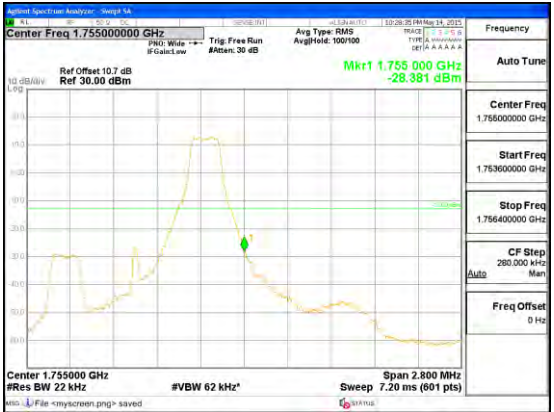
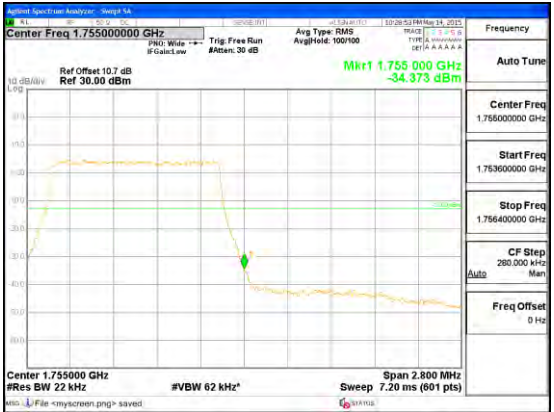


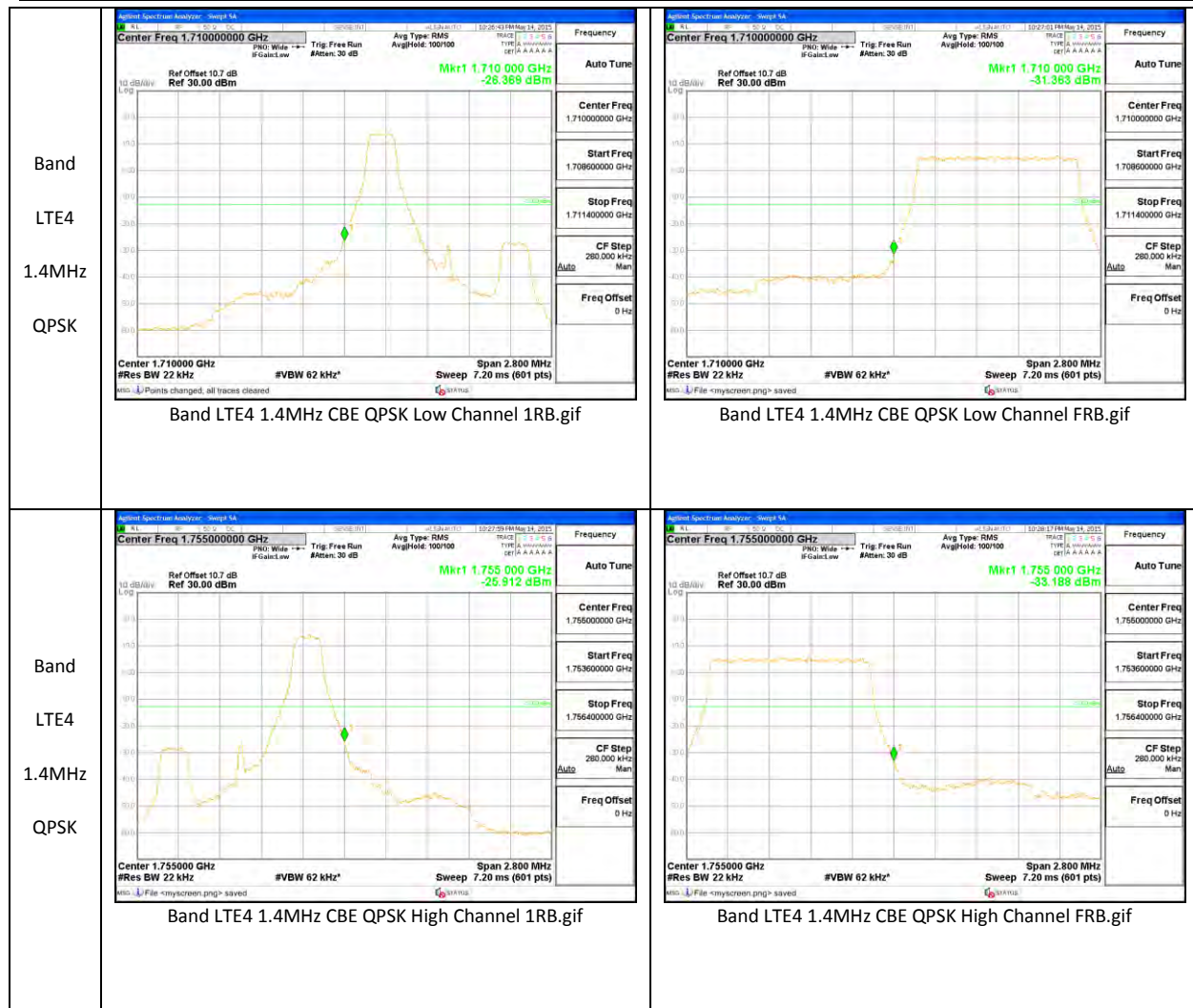
Band LTE4 5MHz 16QAM	 Band LTE4 5MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE4 5MHz CBE 16QAM Low Channel FRB.gif
Band LTE4 5MHz 16QAM	 Band LTE4 5MHz CBE 16QAM High Channel 1RB.gif	 Band LTE4 5MHz CBE 16QAM High Channel FRB.gif



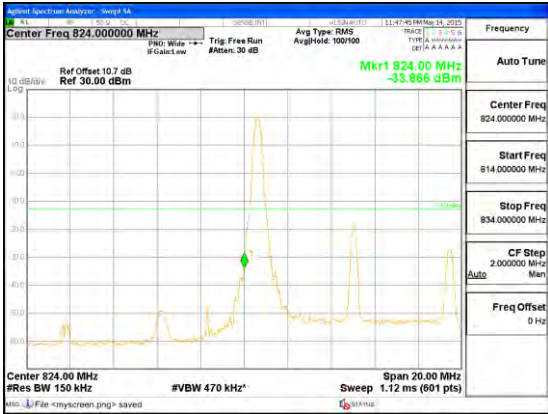
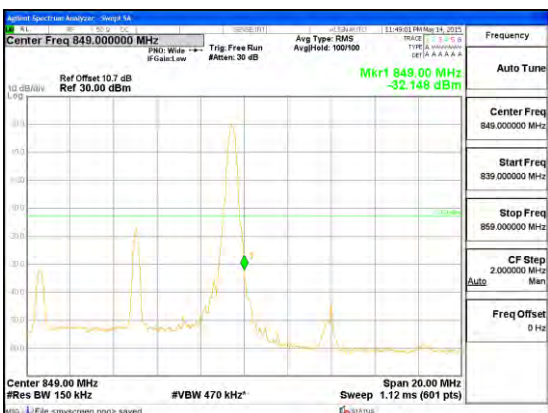
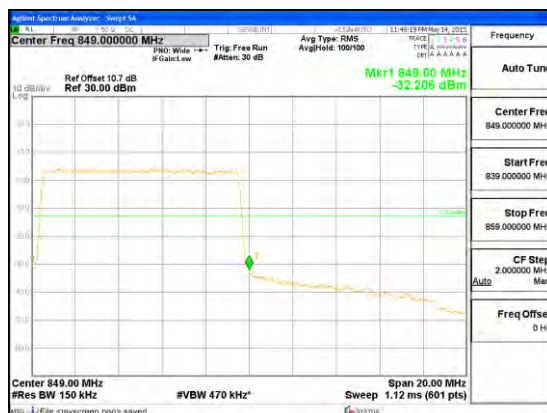
Band LTE4 3MHz 16QAM	 Band LTE4 3MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE4 3MHz CBE 16QAM Low Channel FRB.gif
Band LTE4 3MHz 16QAM	 Band LTE4 3MHz CBE 16QAM High Channel 1RB.gif	 Band LTE4 3MHz CBE 16QAM High Channel FRB.gif

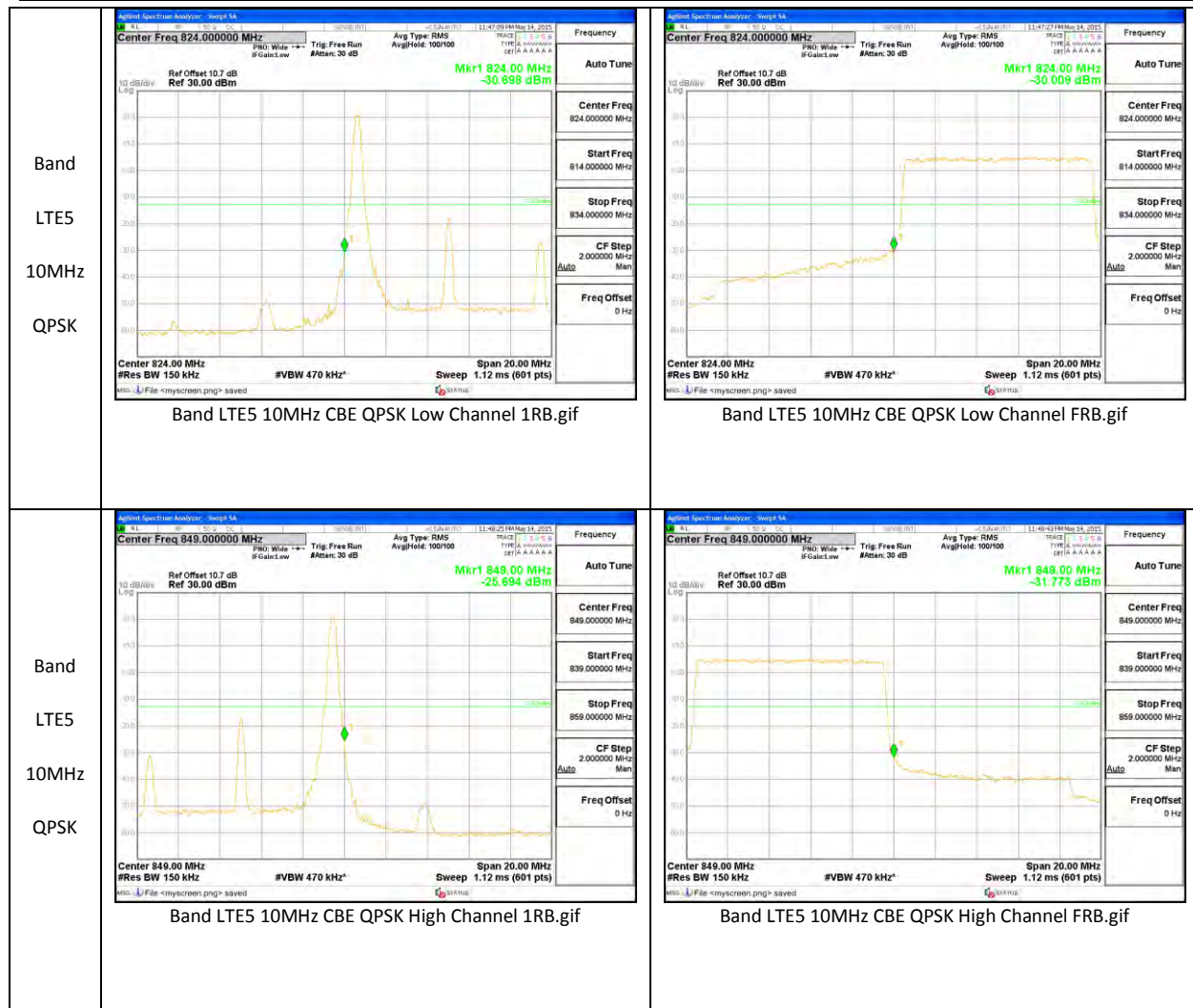


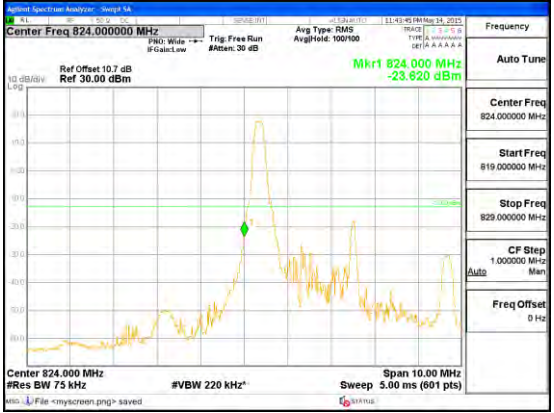
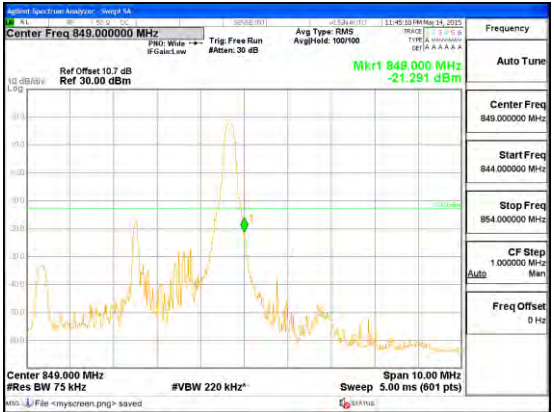
Band LTE4 1.4MHz 16QAM	 Band LTE4 1.4MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE4 1.4MHz CBE 16QAM Low Channel FRB.gif
Band LTE4 1.4MHz 16QAM	 Band LTE4 1.4MHz CBE 16QAM High Channel 1RB.gif	 Band LTE4 1.4MHz CBE 16QAM High Channel FRB.gif

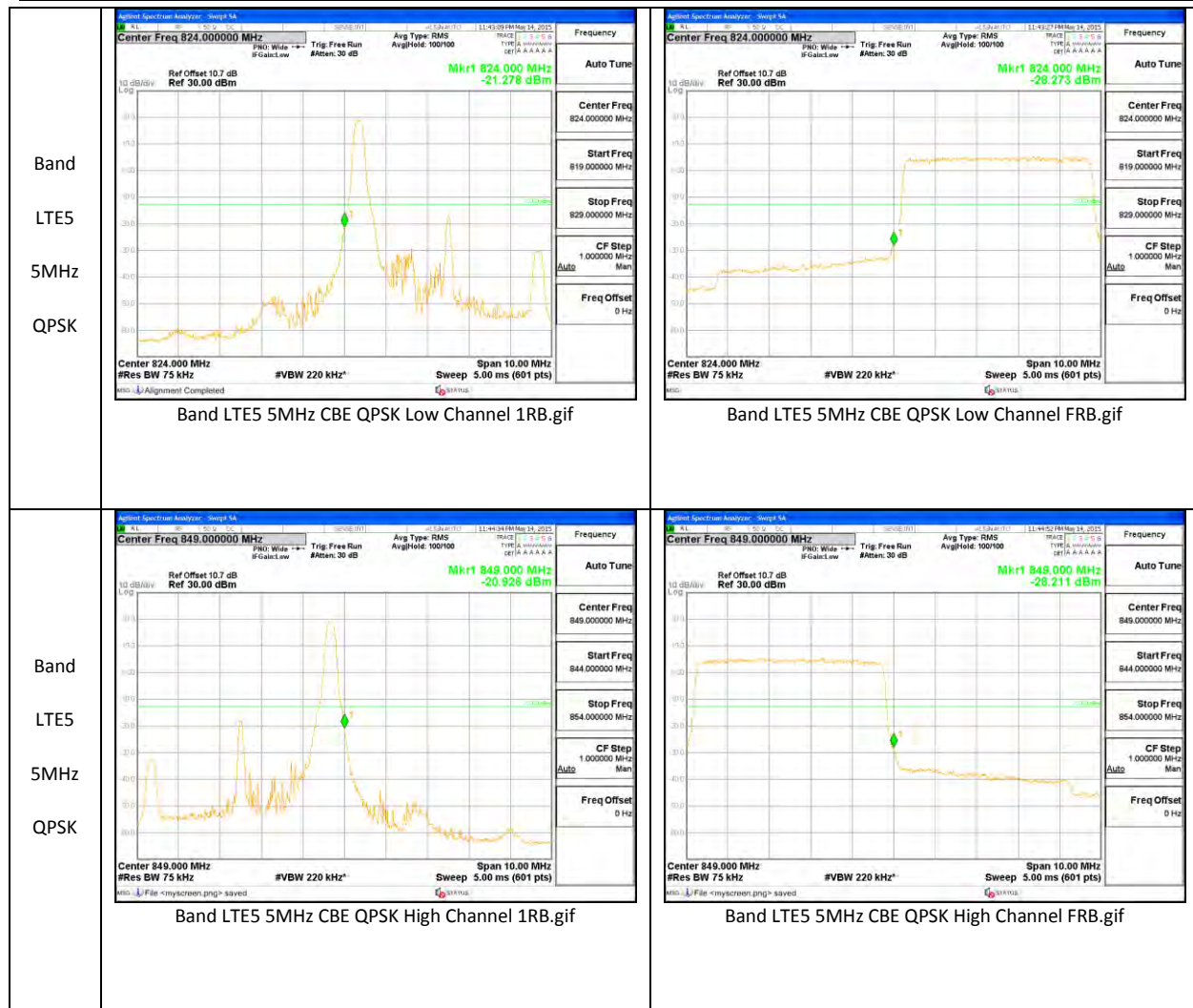


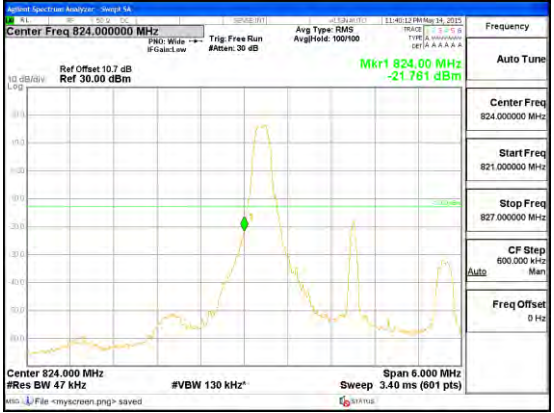
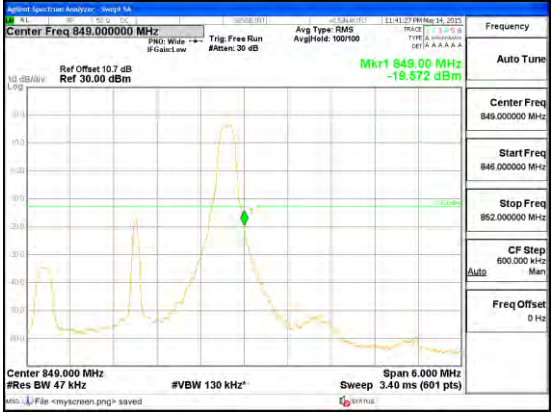
LTE Band 5

Band LTE5 10MHz 16QAM	 Band LTE5 10MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE5 10MHz CBE 16QAM Low Channel FRB.gif
Band LTE5 10MHz 16QAM	 Band LTE5 10MHz CBE 16QAM High Channel 1RB.gif	 Band LTE5 10MHz CBE 16QAM High Channel FRB.gif



Band LTE5 5MHz 16QAM	 Band LTE5 5MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE5 5MHz CBE 16QAM Low Channel FRB.gif
Band LTE5 5MHz 16QAM	 Band LTE5 5MHz CBE 16QAM High Channel 1RB.gif	 Band LTE5 5MHz CBE 16QAM High Channel FRB.gif



Band LTE5 3MHz 16QAM	 Band LTE5 3MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE5 3MHz CBE 16QAM Low Channel FRB.gif
Band LTE5 3MHz 16QAM	 Band LTE5 3MHz CBE 16QAM High Channel 1RB.gif	 Band LTE5 3MHz CBE 16QAM High Channel FRB.gif

