



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

CERTIFICATION TEST REPORT
FOR
GSM/WCDMA/LTE PHONE + BLUETOOTH, DTS/UNII a/b/g/n & NFC

MODEL NUMBER: LG-H443, H443, LGH443

FCC ID: ZNFH443

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----	1/12/15	Initial Issue	D. Coronia
A	2/10/15	Update standard	D. Coronia
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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: LG ELECTRONICS MOBILECOMM U.S.A., INC
EUT DESCRIPTION: GSM/WCDMA/LTE PHONE + BLUETOOTH, DTS/UNII a/b/g/n & NFC
MODEL: LG-H443, H443, LGH443
SERIAL NUMBER: 43-03557
DATE TESTED: DECEMBER 9 2014 – FEBRUARY 12 2015

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

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

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

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2. TEST METHODOLOGY

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

3. FACILITIES AND ACCREDITATION

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

47173 Benicia Street	47266 Benicia Street
<input checked="" type="checkbox"/> Chamber A(IC: 2324B-1)	<input type="checkbox"/> Chamber D(IC: 2324B-4)
<input checked="" type="checkbox"/> Chamber B(IC: 2324B-2)	<input type="checkbox"/> Chamber E(IC: 2324B-5)
<input checked="" type="checkbox"/> Chamber C(IC: 2324B-3)	<input type="checkbox"/> Chamber F(IC: 2324B-6)
	<input type="checkbox"/> Chamber G(IC: 2324B-7)
	<input type="checkbox"/> Chamber H(IC: 2324B-8)

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

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

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

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

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 40000 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/LTE PHONE + BLUETOOTH, DTS/UNII a/b/g/n & NFC

5.2. MAXIMUM OUTPUT POWER

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

FCC Part 22/24/27						
Band	Frequency Range(MHz)	Modulation Mw	Conducted		Radiated	
			AVG(dBm)	AVG(Mw)	AVG(dBm)	AVG(Mw)
GSM850	824~849	GMSK	32.7	1862.09		
	824~849	GPRS	32.7	1862.09	27.66	583.45
	824~849	EGPRS	27.7	588.84	23.49	223.36
GSM1900	1850~1910	GMSK	30.1	1023.29		
	1850~1910	GPRS	30.1	1023.29	32.51	1782.38
	1850~1910	EGPRS	26.5	446.68	28.52	711.21
Band 5	824~849	REL99	23.1	204.17	18.561	71.8
	824~849	HSDPA	23.1	204.17	17.581	57.29
	824~849	HSUPA	23.1	204.17		
Band 2	1850~1910	REL99	23.2	208.93	24.33	271.02
	1850~1910	HSDPA	23.1	204.17	23.06	202.30
	1850~1910	HSUPA	23.2	208.93		

5.3. MAXIMUM OUTPUT POWER (LTE)

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

FCC Part 22/24/27							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation Mw	Conducted		Radiated	
				AVG(dBm)	AVG(Mw)	AVG(dBm)	AVG(Mw)
LTE17	704~716	10MHz	QPSK	23.4	218.78	19.171	82.62
	704~716	10MHz	16QAM	22.6	181.97	18.141	65.18

FCC Part 22/2 4/27							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation Mw	Conducted		Radiated	
				AVG(dBm)	AVG(Mw)	AVG(dBm)	AVG(Mw)
LTE17	704~716	5MHz	QPSK	23.3	213.80	18.701	74.15
	704~716	5MHz	16QAM	22.2	165.96	17.431	55.35

FCC Part 22/2 4/27							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation Mw	Conducted		Radiated	
				AVG(dBm)	AVG(Mw)	AVG(dBm)	AVG(Mw)
LTE5	824~849	10MHz	QPSK	23.6	229.09	19.481	88.74
	824~849	10MHz	16QAM	22.7	186.21	18.521	71.14

FCC Part 22/2 4/27							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation Mw	Conducted		Radiated	
				AVG(dBm)	AVG(Mw)	AVG(dBm)	AVG(Mw)
LTE5	824~849	5MHz	QPSK	23.5	223.87	19.421	87.52
	824~849	5MHz	16QAM	22.6	181.97	18.531	71.3

FCC Part 22/2 4/27							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation Mw	Conducted		Radiated	
				AVG(dBm)	AVG(Mw)	AVG(dBm)	AVG(Mw)
LTE4	1710~1755	10MHz	QPSK	23.5	223.87	24.84	304.79
	1710~1755	10MHz	16QAM	22.7	186.21	23.09	203.70

FCC Part 22/2 4/27							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation Mw	Conducted		Radiated	
				AVG(dBm)	AVG(Mw)	AVG(dBm)	AVG(Mw)
LTE4	1710~1755	5MHz	QPSK	23.3	213.80	24.27	267.30
	1710~1755	5MHz	16QAM	22.7	186.21	23.47	222.33

FCC Part 22/2 4/27							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation Mw	Conducted		Radiated	
				AVG(dBm)	AVG(Mw)	AVG(dBm)	AVG(Mw)
LTE2	1850~1910	10MHz	QPSK	23.7	234.42	25.98	396.28
	1850~1910	10MHz	16QAM	22.7	186.21	25.08	322.11

FCC Part 22/2 4/27							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation Mw	Conducted		Radiated	
				AVG(dBm)	AVG(Mw)	AVG(dBm)	AVG(Mw)
LTE2	1850~1910	5MHz	QPSK	23.6	229.09	26.16	413.05
	1850~1910	5MHz	16QAM	22.6	181.97	25.89	388.15

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)
BAND 2, 1850~1910MHz	1.42
BAND 4, 1710~1755MHz	0.87
BAND 5, 824~849MHz	-5.25
BAND 17, 704~716MHz	-6.64

5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
AC Adapter	LG	MCS-01WR	RD4X0891946	N/A
Earphone	LG	LG-L33L	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

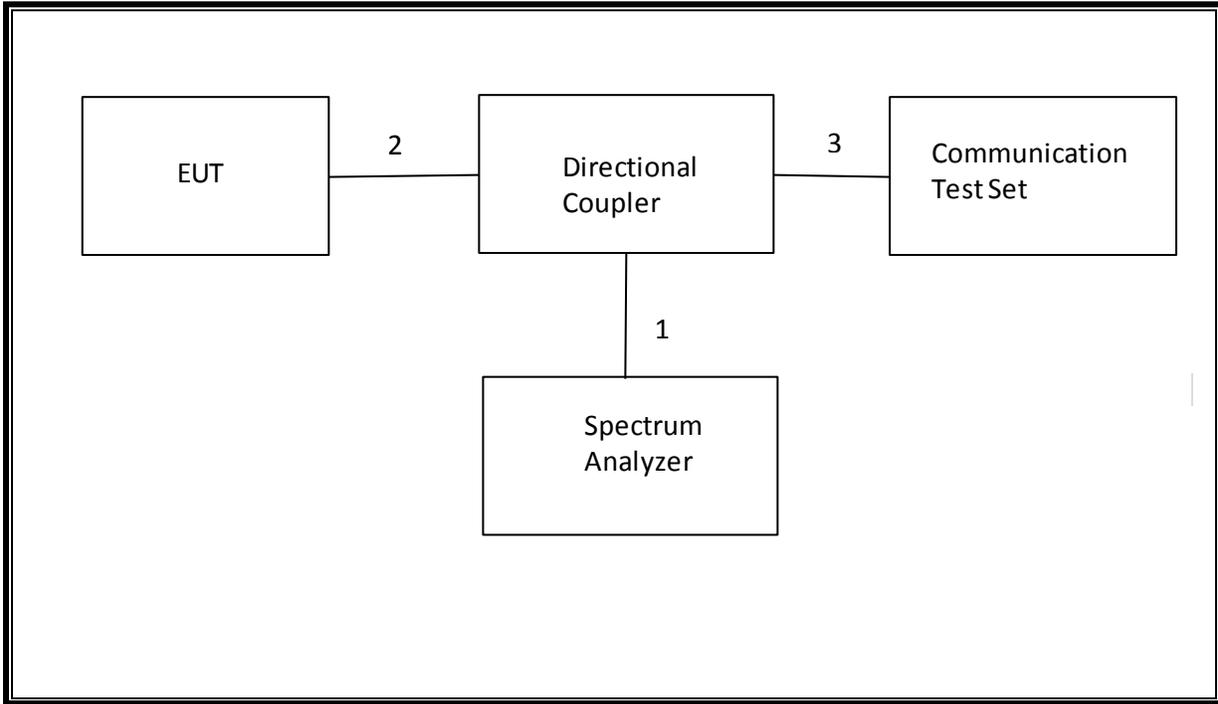
I/O CABLES (RADIATED SETUP)

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	NA
2	Jack	1	Headset	Shielded	1m	NA
3	RF In/out	1	Communication Test Set	Un-shielded	2m	NA

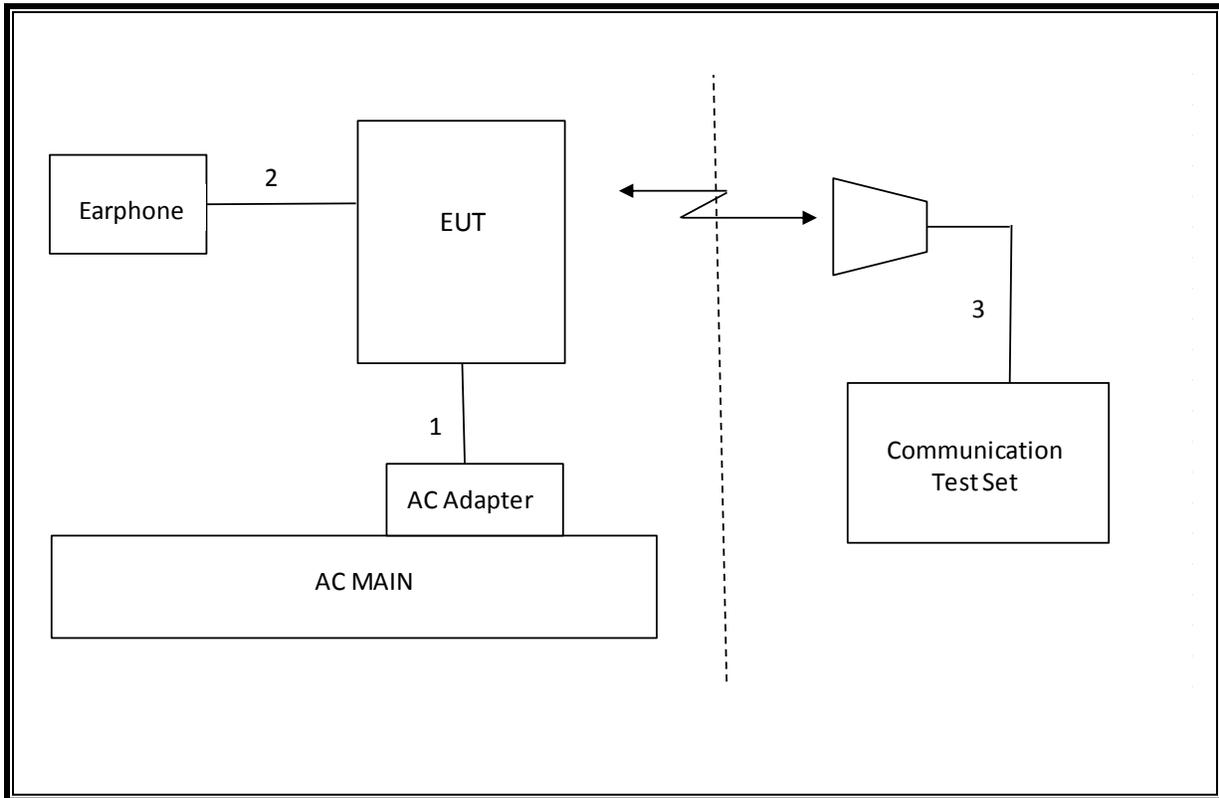
TEST SETUP

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

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	02/26/15
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	C01011	04/22/15
Antenna, Horn, 18 GHz	EMCO	3115	C00783	10/25/15
Antenna, Horn, 18 GHz	EMCO	3115	C00784	10/25/15
Highpass Filter, 2.7 GHz	Micro-Tronics	HPM13194	N02687	CNR
Highpass Filter, 1.5 GHz	Micro-Tronics	HPM13193	N02688	CNR
Temperature / Humidity Chamber	Thermotron	SE 600-10-10	C00930	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	02/14/15
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	9.0 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	-17.8 dBm
2.1046	N/A	Conducted output power	N/A		Pass	32.7 dBm
22.355 24.235 27.54 90.213	RSS-132(4.3) RSS-133(6.3) RSS-139(6.3) RSS-199(4.3)	Frequency Stability	2.5PPM		Pass	.011 PPM
22.913(a)(2)	RSS-132(4.4)	Effective Radiated Power	38 dBm	Radiated	Pass	27.7 dBm
27.50(b)(10)	N/A		34.77 dBm		Pass	19.2 dBm
24.232(c) 27.50(h)(2)	RSS-133(6.4) RSS-199(4.4)	Equivalent Isotropic Radiated Power	33dBm		Pass	32.5 dBm
27.50(d)(4)	RSS-139(6.4)		30dBm		Pass	24.8 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	-32.1 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	32.6
			190	836.6	32.7
			251	848.8	32.4
GPRS (GMSK)	CS1	1	128	824.2	32.6
			190	836.6	32.7
			251	848.8	32.4
		2	128	824.2	31.3
			190	836.6	31.4
			251	848.8	31.4
EGPRS (8PSK)	MCS5	1	128	824.2	27.7
			190	836.6	27.7
			251	848.8	27.6
		2	128	824.2	27.7
			190	836.6	27.7
			251	848.8	27.5

Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Burst Pwr (dBm)
GSM (Voice)	CS1	1	512	1850.2	30.1
			661	1880.0	30.0
			810	1909.8	29.9
GPRS (GMSK)	CS1	1	512	1850.2	30.1
			661	1880.0	30.0
			810	1909.8	29.9
		2	512	1850.2	29.2
			661	1880.0	29.1
			810	1909.8	29.0
EGPRS (8PSK)	MCS5	1	512	1850.2	26.5
			661	1880.0	26.3
			810	1909.8	26.5
		2	512	1850.2	26.4
			661	1880.0	26.5
			810	1909.8	26.5

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	23.1
		4183	836.6	0	23.1
		4233	846.6	0	23.1

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	23.2
		9400	1880.0	0	23.2
		9538	1907.6	0	23.2

8.3. UMTS HSDPA

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

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

8.3.1. UMTS HSDPA OUTPUT POWER RESULT

Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band V	Subtest 1	4132	826.4	0	23.1
		4183	836.6	0	23.1
		4233	846.6	0	23.1
	Subtest 2	4132	826.4	0	23.1
		4183	836.6	0	23.1
		4233	846.6	0	23.1
	Subtest 3	4132	826.4	0.5	22.7
		4183	836.6	0.5	22.6
		4233	846.6	0.5	22.6
	Subtest 4	4132	826.4	0.5	22.7
		4183	836.6	0.5	22.6
		4233	846.6	0.5	22.6

Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band II	Subtest 1	9262	1852.4	0	23.1
		9400	1880.0	0	23.1
		9538	1907.6	0	23.1
	Subtest 2	9262	1852.4	0	23.1
		9400	1880.0	0	23.1
		9538	1907.6	0	23.1
	Subtest 3	9262	1852.4	0.5	22.6
		9400	1880.0	0.5	22.8
		9538	1907.6	0.5	22.7
	Subtest 4	9262	1852.4	0.5	22.6
		9400	1880.0	0.5	22.8
		9538	1907.6	0.5	22.7

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
β_{ed} (note1)	1309/225	94/75	47/15	56/75	134/15	
MPR	0	2	1	2	0	
HSDPA Specific Settings	DACK	8				
	DNAK	8				
	DCQI	8				
	Ack-Nack repetition factor	3				
	CQI Feedback (Table 5.2B.4)	4ms				
	CQI Repetition Factor (Table 5.2B.4)	2				
	Ahs = β_{hs}/β_c	30/15				
HSUPA Specific Settings	D E-DPCCH	6	8	8	5	7
	DHARQ	0	0	0	0	0
	AG Index	20	12	15	17	21
	Reference E-TFCIs	5	5	2	5	5
	ETFCI (from 34.121 Table C.11.1.3)	75	67	92	71	81
	Associated Max UL Data Rate kbps	242.1	174.9	482.8	205.8	308.9
	Reference E_TFCIs	E-TFCI 11 E-TFCI PO 4 E-TFCI 67 E-TFCI PO 18 E-TFCI 71 E-TFCI PO 23 E-TFCI 75 E-TFCI PO 26 E-TFCI 81 E-TFCI PO 27		E-TFCI 11 E-TFCI PO 4 E-TFCI 92 E-TFCI PO 18		E-TFCI 11 E-TFCI PO 4 E-TFCI 67 E-TFCI PO 18 E-TFCI 71 E-TFCI PO 23 E-TFCI 75 E-TFCI PO 26 E-TFCI 81 E-TFCI PO 27

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

8.4.1. 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	23.1
		4183	836.6	0	23.0
		4233	846.6	0	23.0
	Subtest 2	4132	826.4	2	21.7
		4183	836.6	2	21.4
		4233	846.6	2	21.5
	Subtest 3	4132	826.4	1	21.6
		4183	836.6	1	21.5
		4233	846.6	1	21.9
	Subtest 4	4132	826.4	2	21.7
		4183	836.6	2	21.4
		4233	846.6	2	21.5
	Subtest 5	4132	826.4	0	23.1
		4183	836.6	0	23.0
		4233	846.6	0	23.0

Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band II	Subtest 1	9262	1852.4	0	23.2
		9400	1880.0	0	23.2
		9538	1907.6	0	23.2
	Subtest 2	9262	1852.4	2	21.3
		9400	1880.0	2	21.6
		9538	1907.6	2	21.0
	Subtest 3	9262	1852.4	1	21.8
		9400	1880.0	1	21.7
		9538	1907.6	1	22.1
	Subtest 4	9262	1852.4	2	21.3
		9400	1880.0	2	21.6
		9538	1907.6	2	21.0
	Subtest 5	9262	1852.4	0	23.2
		9400	1880.0	0	23.2
		9538	1907.6	0	23.2

8.5. DC-HSDPA

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

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

Table E.5.0: Levels for HSDPA connection setup

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

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

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

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

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

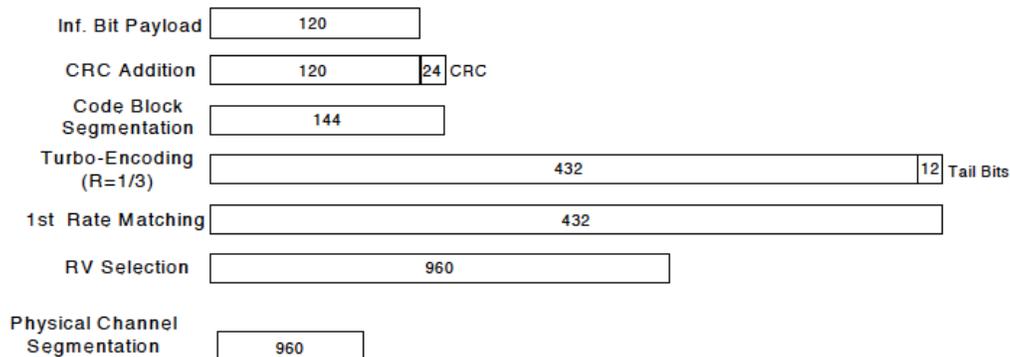


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

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

	Mode	Rel6 HSDPA	Rel6 HSDPA	Rel6 HSDPA	Rel6 HSDPA
	Subtest	1	2	3	4
WCDMA General Settings	Loopback Mode	Test Mode 1			
	Rel99 RMC	12.2kbps RMC			
	HSDPA FRC	H-Set1			
	Power Control Algorithm	Algorithm2			
	β_c	2/15	12/15	15/15	15/15
	β_d	15/15	15/15	8/15	4/15
	β_d (SF)	64			
	β_c/β_d	2/15	12/15	15/8	15/4
	β_{hs}	4/15	24/15	30/15	30/15
	MPR	0	0	0.5	0.5
HSDPA Specific Settings	DACK	8			
	DNAK	8			
	DCQI	8			
	Ack-Nack Repetition factor	3			
	CQI Feedback	4ms			
	CQI Repetition Factor	2			
	$A_{hs} = \beta_{hs} / \beta_c$	30/15			

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

8.5.1. UMTS DC-HSDPA OUTPUT POWER RESULT

Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band V	Subtest 1	4132	826.4	0	23.1
		4183	836.6	0	23.1
		4233	846.6	0	23.1
	Subtest 2	4132	826.4	0	23.1
		4183	836.6	0	23.1
		4233	846.6	0	23.1
	Subtest 3	4132	826.4	0.5	22.7
		4183	836.6	0.5	22.6
		4233	846.6	0.5	22.6
	Subtest 4	4132	826.4	0.5	22.7
		4183	836.6	0.5	22.6
		4233	846.6	0.5	22.6

Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band II	Subtest 1	9262	1852.4	0	23.1
		9400	1880.0	0	23.1
		9538	1907.6	0	23.1
	Subtest 2	9262	1852.4	0	23.1
		9400	1880.0	0	23.1
		9538	1907.6	0	23.1
	Subtest 3	9262	1852.4	0.5	22.6
		9400	1880.0	0.5	22.8
		9538	1907.6	0.5	22.7
	Subtest 4	9262	1852.4	0.5	22.6
		9400	1880.0	0.5	22.8
		9538	1907.6	0.5	22.7

8.7. LTE OUTPUT VERIFICATION

8.7.1. LTE OUTPUT RESULT

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)	
						23790	710 MHz
						LTE Band 17	10
			1	25	0	23.2	
			1	49	0	23.3	
			25	0	1	22.2	
			25	12	1	22.1	
			25	25	1	22.0	
			50	0	1	22.1	
		16QAM	1	0	1	22.5	
			1	25	1	22.6	
			1	49	1	22.7	
			25	0	2	21.2	
			25	12	2	21.1	
			25	25	2	21.1	
			50	0	2	21.1	
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)	
						23790	710 MHz
						LTE Band 17	5
			1	12	0	23.1	
			1	24	0	23.0	
			12	0	1	22.1	
			12	7	1	22.1	
			12	13	1	22.0	
			25	0	1	22.1	
		16QAM	1	0	1	22.2	
			1	12	1	22.1	
			1	24	1	22.1	
			12	0	2	21.3	
			12	7	2	21.2	
			12	13	2	21.2	
			25	0	2	21.1	

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	23.3	23.5	23.4
			1	25	0	23.4	23.6	23.3
			1	49	0	23.2	23.4	23.2
			25	0	1	22.4	22.4	22.3
			25	12	1	22.3	22.3	22.3
			25	25	1	22.2	22.3	22.3
		16QAM	50	0	1	22.3	22.3	22.3
			1	0	1	22.7	22.7	22.4
			1	25	1	22.1	22.7	22.2
			1	49	1	22.1	22.7	22.2
			25	0	2	21.3	21.2	21.2
			25	12	2	21.2	21.2	21.3
			25	25	2	21.2	21.2	21.3
			50	0	2	21.2	21.2	21.3
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	23.3	23.3	23.3
			1	12	0	23.3	23.5	23.3
			1	24	0	23.2	23.5	23.3
			12	0	1	22.3	22.3	22.2
			12	7	1	22.3	22.3	22.2
			12	13	1	22.3	22.2	22.2
		16QAM	25	0	1	22.2	22.3	22.2
			1	0	1	22.6	22.2	22.5
			1	12	1	22.2	22.3	22.6
			1	24	1	21.8	22.3	22.5
			12	0	2	21.1	21.4	21.4
			12	7	2	21.0	21.3	21.4
			12	13	2	21.2	21.3	21.4
			25	0	2	21.2	21.3	21.2

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						20000	20175	20350
						1715 MHz	1732.5 MHz	1750 MHz
LTE Band 4	10	QPSK	1	0	0	23.4	23.4	23.3
			1	25	0	23.5	23.5	23.1
			1	49	0	23.4	23.4	23.1
			25	0	1	22.3	22.3	22.1
			25	12	1	22.1	22.1	22.1
			25	25	1	22.2	22.2	22.2
			50	0	1	22.2	22.2	22.1
		16QAM	1	0	1	22.5	22.7	22.6
			1	25	1	22.6	22.7	22.2
			1	49	1	22.6	22.3	22.2
			25	0	2	21.3	21.2	21.3
			25	12	2	21.3	21.1	21.2
			25	25	2	21.3	21.1	21.2
			50	0	2	21.1	21.1	21.0
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						19975	20175	20375
						1712.5 MHz	1732.5 MHz	1752.5 MHz
LTE Band 4	5	QPSK	1	0	0	23.2	23.1	23.3
			1	12	0	23.3	23.3	23.2
			1	24	0	23.1	23.4	23.1
			12	0	1	22.3	22.3	22.2
			12	7	1	22.1	22.2	22.1
			12	13	1	22.1	22.2	22.1
			25	0	1	22.2	22.2	22.2
		16QAM	1	0	1	22.7	22.2	22.5
			1	12	1	22.2	22.2	22.3
			1	24	1	22.2	21.8	22.2
			12	0	2	21.5	21.3	21.2
			12	7	2	21.3	21.1	21.2
			12	13	2	21.3	21.2	21.3
			25	0	2	21.3	21.5	21.1

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	23.4	23.7	23.4
			1	25	0	23.3	23.5	23.3
			1	49	0	23.3	23.4	23.3
			25	0	1	22.2	22.4	22.3
			25	12	1	22.2	22.3	22.2
			25	25	1	22.2	22.3	22.2
			50	0	1	22.2	22.4	22.2
		16QAM	1	0	1	22.7	22.6	22.3
			1	25	1	22.4	22.7	22.2
			1	49	1	22.7	22.7	22.3
			25	0	2	21.2	21.3	21.2
			25	12	2	21.2	21.3	21.3
			25	25	2	21.4	21.3	21.3
			50	0	2	21.3	21.3	21.2
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	23.1	23.3	23.2
			1	12	0	23.2	23.6	23.3
			1	24	0	23.2	23.3	23.3
			12	0	1	22.1	22.2	22.2
			12	7	1	22.2	22.3	22.2
			12	13	1	22.2	22.3	22.2
			25	0	1	22.2	22.3	22.2
		16QAM	1	0	1	22.2	22.3	22.6
			1	12	1	22.2	22.3	22.2
			1	24	1	22.1	22.2	22.1
			12	0	2	21.1	21.1	21.2
			12	7	2	21.0	21.1	21.4
			12	13	2	21.2	21.2	21.3
			25	0	2	21.3	21.5	21.2

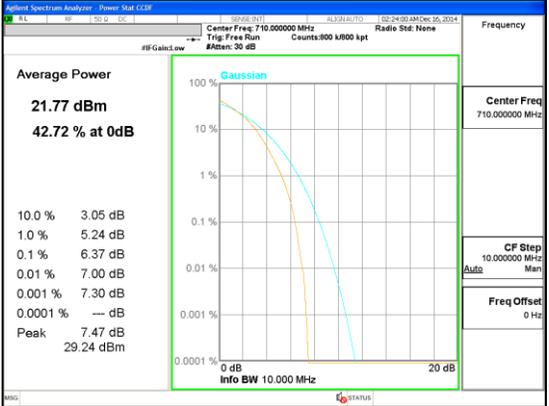
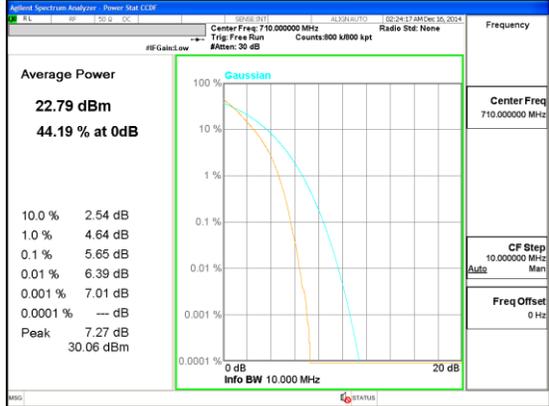
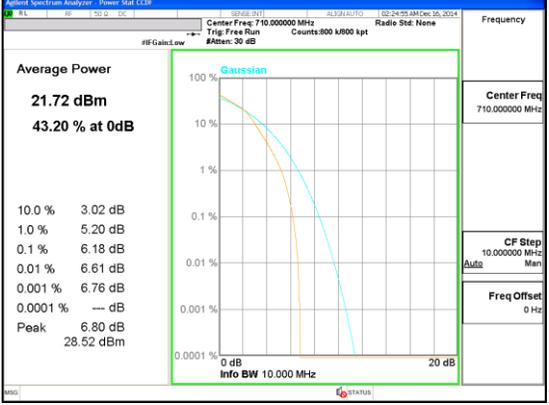
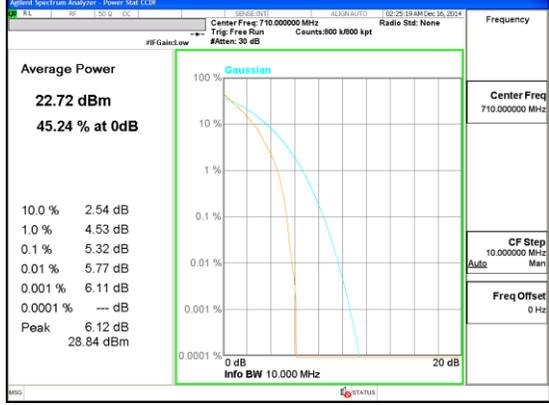
9. PEAK TO AVERAGE RATIO

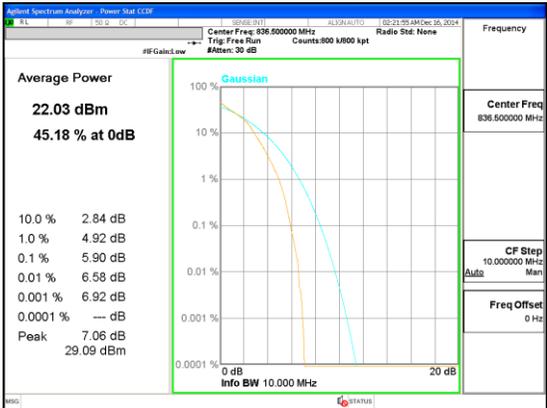
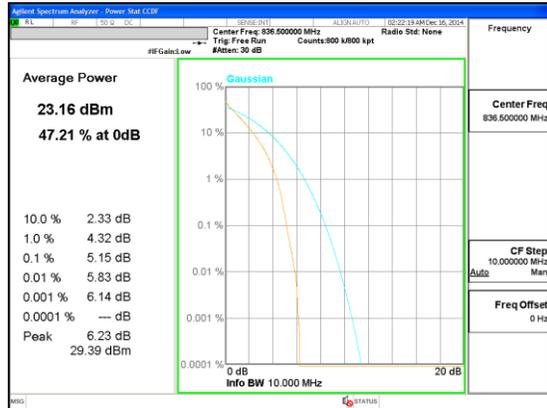
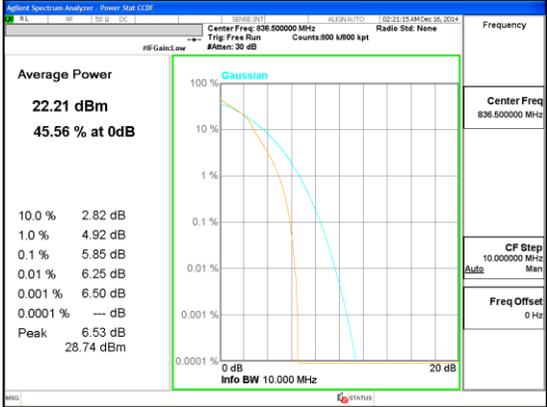
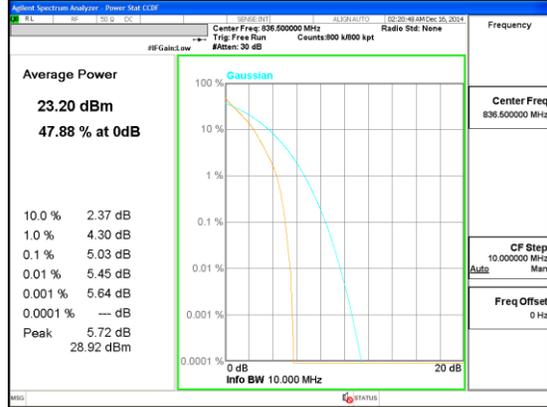
TEST PROCEDURE

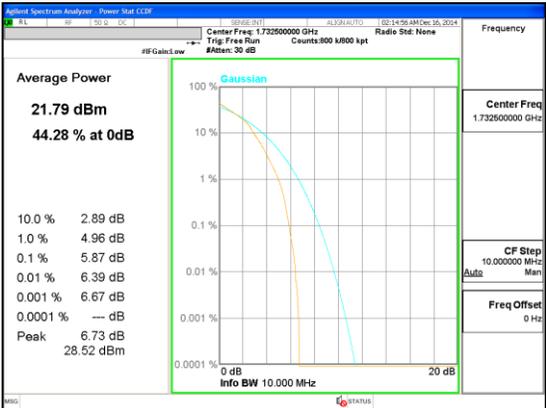
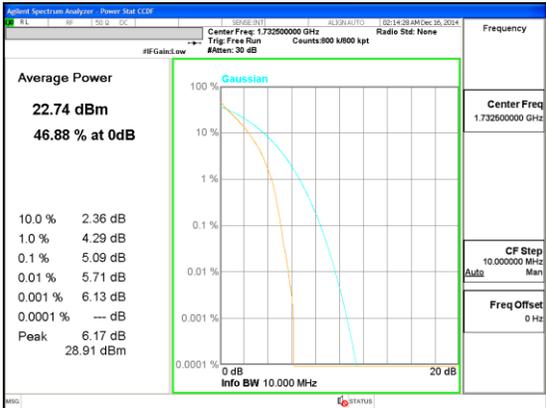
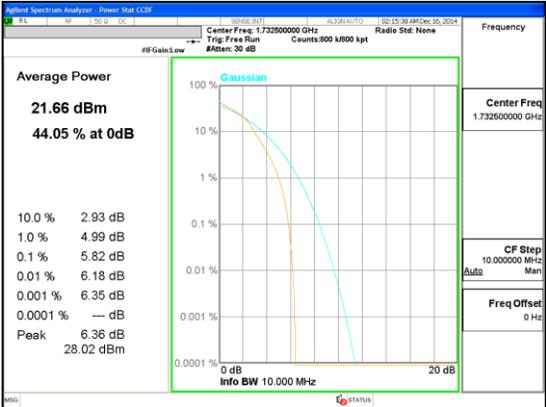
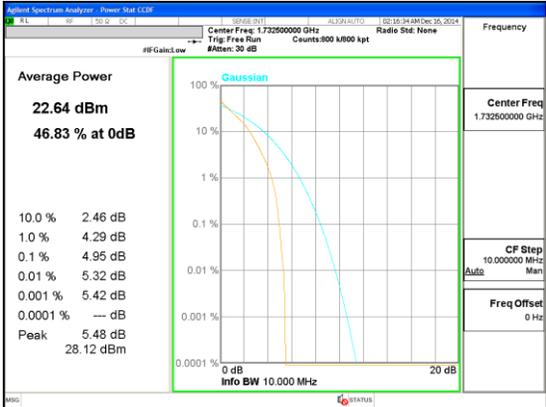
Per KDB 971168 D01 Power Meas License Digital Systems v02r01

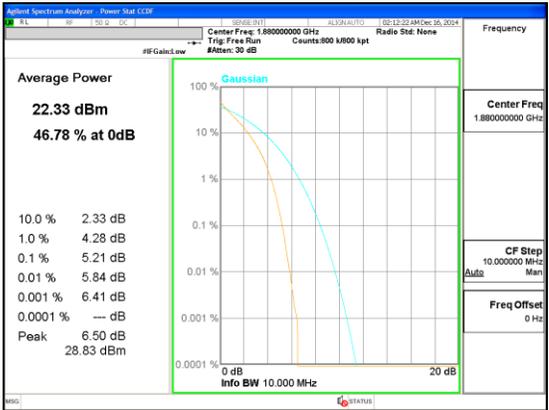
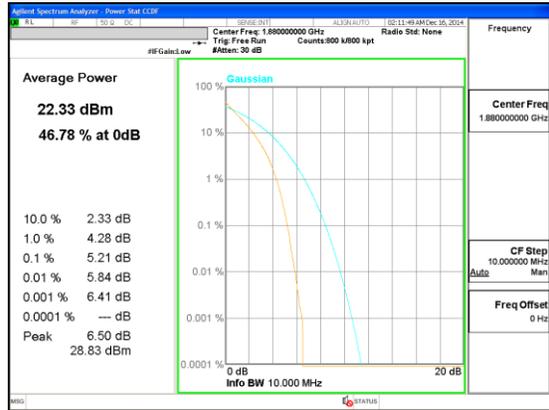
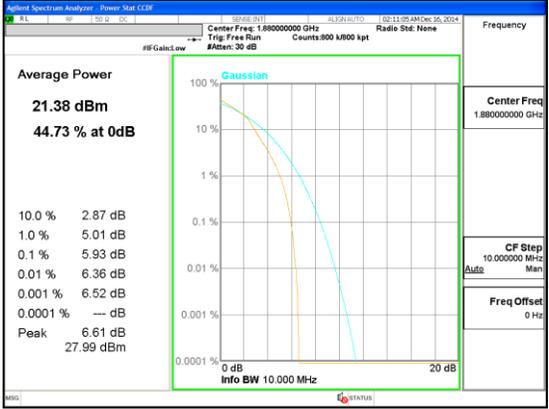
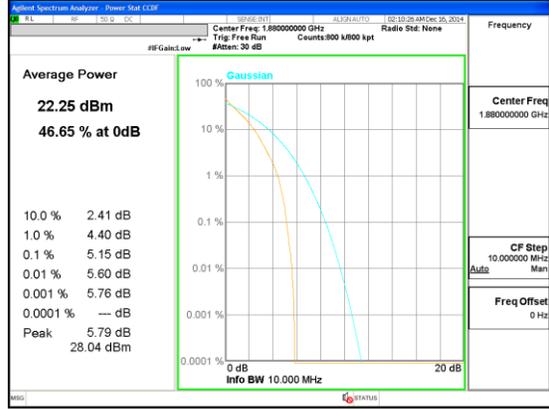
In addition, when the transmitter power is measured in terms of average value, the peak-to-average ratio of the power shall not exceed 13dB.

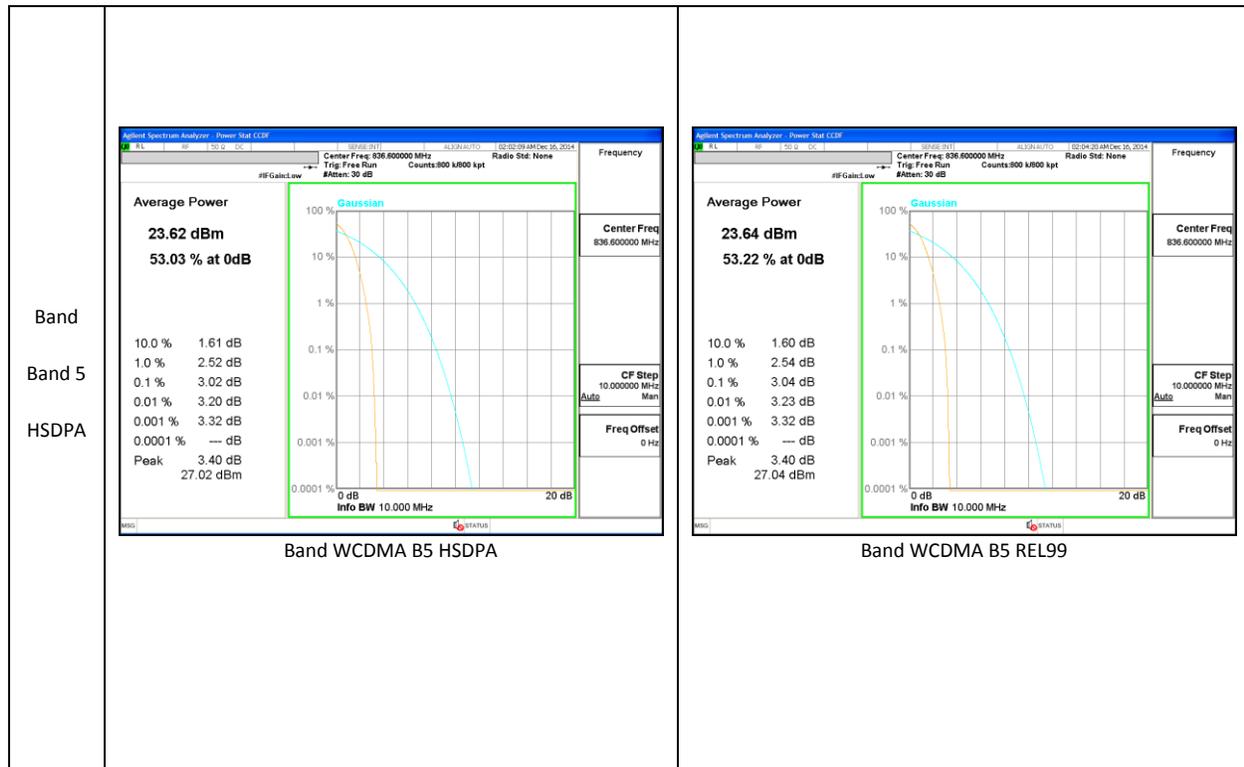
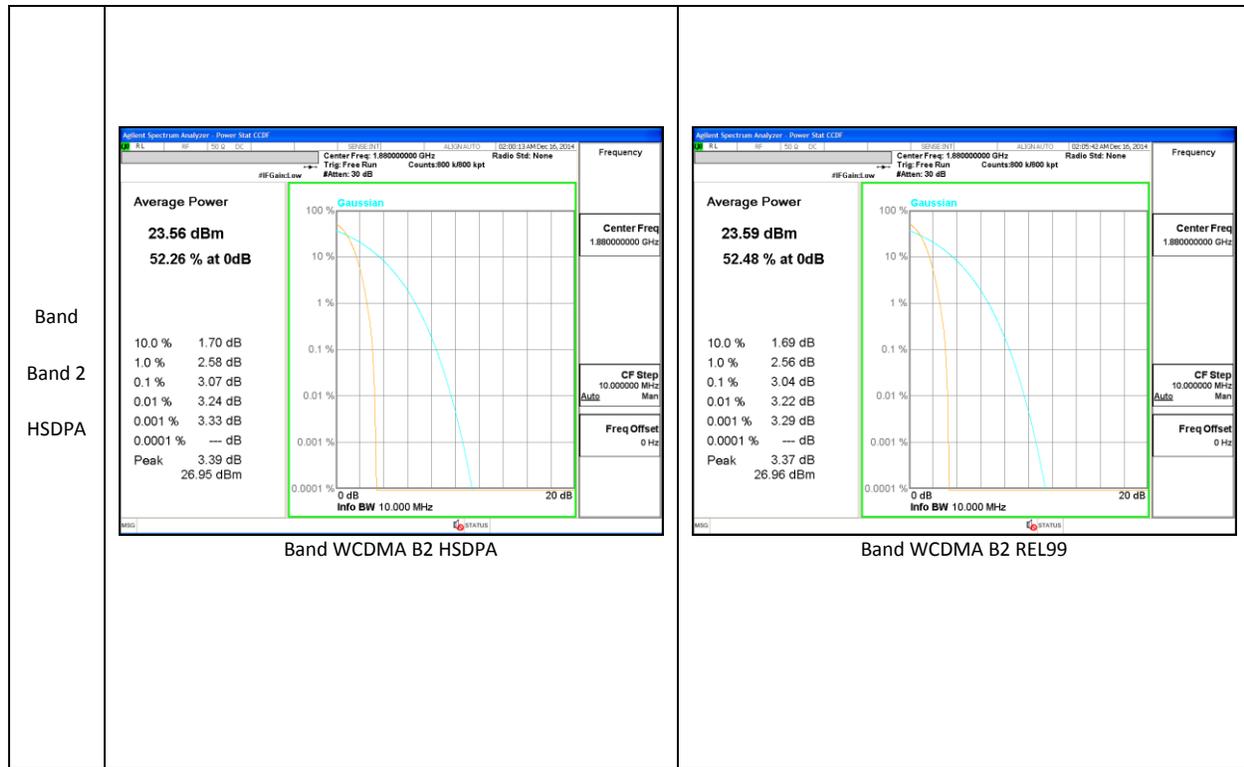
9.1. CONDUCTED PEAK TO AVERAGE RESULT

<p>Band</p> <p>LTE17</p> <p>10MHz</p> <p>16QAM</p>	 <p>Average Power 21.77 dBm 42.72 % at 0dB</p> <p>10.0 % 3.05 dB 1.0 % 5.24 dB 0.1 % 6.37 dB 0.01 % 7.00 dB 0.001 % 7.30 dB 0.0001 % — dB Peak 7.47 dB 29.24 dBm</p> <p>Center Freq: 710.000000 MHz Info BW: 10.000 MHz</p> <p>CF Step: 10.000000 MHz Freq Offset: 0 Hz</p> <p>Band LTE17 10MHz 16QAM Mid channel</p>	 <p>Average Power 22.79 dBm 44.19 % at 0dB</p> <p>10.0 % 2.54 dB 1.0 % 4.64 dB 0.1 % 5.65 dB 0.01 % 6.39 dB 0.001 % 7.01 dB 0.0001 % — dB Peak 7.27 dB 30.06 dBm</p> <p>Center Freq: 710.000000 MHz Info BW: 10.000 MHz</p> <p>CF Step: 10.000000 MHz Freq Offset: 0 Hz</p> <p>Band LTE17 10MHz QPSK Mid channel</p>
<p>Band</p> <p>LTE17</p> <p>5MHz</p> <p>16QAM</p>	 <p>Average Power 21.72 dBm 43.20 % at 0dB</p> <p>10.0 % 3.02 dB 1.0 % 5.20 dB 0.1 % 6.18 dB 0.01 % 6.61 dB 0.001 % 6.76 dB 0.0001 % — dB Peak 6.80 dB 28.52 dBm</p> <p>Center Freq: 710.000000 MHz Info BW: 10.000 MHz</p> <p>CF Step: 10.000000 MHz Freq Offset: 0 Hz</p> <p>Band LTE17 5MHz 16QAM Mid channel</p>	 <p>Average Power 22.72 dBm 45.24 % at 0dB</p> <p>10.0 % 2.54 dB 1.0 % 4.53 dB 0.1 % 5.32 dB 0.01 % 5.77 dB 0.001 % 6.11 dB 0.0001 % — dB Peak 6.12 dB 28.84 dBm</p> <p>Center Freq: 710.000000 MHz Info BW: 10.000 MHz</p> <p>CF Step: 10.000000 MHz Freq Offset: 0 Hz</p> <p>Band LTE17 5MHz QPSK Mid channel</p>

<p>Band LTE5 10MHz 16QAM</p>	 <p>Average Power 22.03 dBm 45.18 % at 0dB</p> <table border="1"> <tr><td>10.0 %</td><td>2.84 dB</td></tr> <tr><td>1.0 %</td><td>4.92 dB</td></tr> <tr><td>0.1 %</td><td>5.90 dB</td></tr> <tr><td>0.01 %</td><td>6.58 dB</td></tr> <tr><td>0.001 %</td><td>6.92 dB</td></tr> <tr><td>0.0001 %</td><td>— dB</td></tr> <tr><td>Peak</td><td>7.06 dB 29.09 dBm</td></tr> </table> <p>Center Freq: 836.500000 MHz CF Step: 10.000000 MHz Freq Offset: 0 Hz</p> <p>Band LTE5 10MHz 16QAM Mid channel</p>	10.0 %	2.84 dB	1.0 %	4.92 dB	0.1 %	5.90 dB	0.01 %	6.58 dB	0.001 %	6.92 dB	0.0001 %	— dB	Peak	7.06 dB 29.09 dBm	 <p>Average Power 23.16 dBm 47.21 % at 0dB</p> <table border="1"> <tr><td>10.0 %</td><td>2.33 dB</td></tr> <tr><td>1.0 %</td><td>4.32 dB</td></tr> <tr><td>0.1 %</td><td>5.15 dB</td></tr> <tr><td>0.01 %</td><td>5.83 dB</td></tr> <tr><td>0.001 %</td><td>6.14 dB</td></tr> <tr><td>0.0001 %</td><td>— dB</td></tr> <tr><td>Peak</td><td>6.23 dB 29.39 dBm</td></tr> </table> <p>Center Freq: 836.500000 MHz CF Step: 10.000000 MHz Freq Offset: 0 Hz</p> <p>Band LTE5 10MHz QPSK Mid channel</p>	10.0 %	2.33 dB	1.0 %	4.32 dB	0.1 %	5.15 dB	0.01 %	5.83 dB	0.001 %	6.14 dB	0.0001 %	— dB	Peak	6.23 dB 29.39 dBm
10.0 %	2.84 dB																													
1.0 %	4.92 dB																													
0.1 %	5.90 dB																													
0.01 %	6.58 dB																													
0.001 %	6.92 dB																													
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Peak	7.06 dB 29.09 dBm																													
10.0 %	2.33 dB																													
1.0 %	4.32 dB																													
0.1 %	5.15 dB																													
0.01 %	5.83 dB																													
0.001 %	6.14 dB																													
0.0001 %	— dB																													
Peak	6.23 dB 29.39 dBm																													
<p>Band LTE5 5MHz 16QAM</p>	 <p>Average Power 22.21 dBm 45.56 % at 0dB</p> <table border="1"> <tr><td>10.0 %</td><td>2.82 dB</td></tr> <tr><td>1.0 %</td><td>4.92 dB</td></tr> <tr><td>0.1 %</td><td>5.85 dB</td></tr> <tr><td>0.01 %</td><td>6.25 dB</td></tr> <tr><td>0.001 %</td><td>6.50 dB</td></tr> <tr><td>0.0001 %</td><td>— dB</td></tr> <tr><td>Peak</td><td>6.53 dB 28.74 dBm</td></tr> </table> <p>Center Freq: 836.500000 MHz CF Step: 10.000000 MHz Freq Offset: 0 Hz</p> <p>Band LTE5 5MHz 16QAM Mid channel</p>	10.0 %	2.82 dB	1.0 %	4.92 dB	0.1 %	5.85 dB	0.01 %	6.25 dB	0.001 %	6.50 dB	0.0001 %	— dB	Peak	6.53 dB 28.74 dBm	 <p>Average Power 23.20 dBm 47.88 % at 0dB</p> <table border="1"> <tr><td>10.0 %</td><td>2.37 dB</td></tr> <tr><td>1.0 %</td><td>4.30 dB</td></tr> <tr><td>0.1 %</td><td>5.03 dB</td></tr> <tr><td>0.01 %</td><td>5.45 dB</td></tr> <tr><td>0.001 %</td><td>5.64 dB</td></tr> <tr><td>0.0001 %</td><td>— dB</td></tr> <tr><td>Peak</td><td>5.72 dB 28.92 dBm</td></tr> </table> <p>Center Freq: 836.500000 MHz CF Step: 10.000000 MHz Freq Offset: 0 Hz</p> <p>Band LTE5 5MHz QPSK Mid channel</p>	10.0 %	2.37 dB	1.0 %	4.30 dB	0.1 %	5.03 dB	0.01 %	5.45 dB	0.001 %	5.64 dB	0.0001 %	— dB	Peak	5.72 dB 28.92 dBm
10.0 %	2.82 dB																													
1.0 %	4.92 dB																													
0.1 %	5.85 dB																													
0.01 %	6.25 dB																													
0.001 %	6.50 dB																													
0.0001 %	— dB																													
Peak	6.53 dB 28.74 dBm																													
10.0 %	2.37 dB																													
1.0 %	4.30 dB																													
0.1 %	5.03 dB																													
0.01 %	5.45 dB																													
0.001 %	5.64 dB																													
0.0001 %	— dB																													
Peak	5.72 dB 28.92 dBm																													

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

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



10. LIMITS AND CONDUCTED RESULTS

10.1. OCCUPIED BANDWIDTH

RULE PART(S)

FCC: §2.1049

LIMITS

For reporting purposes only

TEST PROCEDURE

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

(KDB 971168 D01 Power Meas License Digital Systems v02r01 - 06/07/2013)

MODES TESTED

GSM, WCDMA, and LTE

RESULTS

10.1.1. OCCUPIED BANDWIDTH RESULTS

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	309.3
		190	836.6	243.6	325.8
		251	848.8	238.4	311.2
	EGPRS	128	824.2	240.3	292.6
		190	836.6	241	307.2
		251	848.8	243.9	304.7
GSM1900	GMSK	512	1850.2		
		661	1880		
		810	1909.8		
	GPRS	512	1850.2	248.6	312.1
		661	1880	239.4	322.7
		810	1909.8	241.6	320.5
	EGPRS	512	1850.2	246.2	316.3
		661	1880	245.7	310.7
		810	1909.8	247	315.7

Band	Mode	Channel	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
Band 5	REL99	4132	826.4	4.148	4.644
		4183	836.6	4.149	4.639
		4233	846.6	4.166	4.657
	HSDPA	4132	826.4	4.164	4.658
		4183	836.6	4.157	4.646
		4233	846.6	4.16	4.643
	HSUPA	4132	826.4		
		4183	836.6		
		4233	846.6		
Band 2	REL99	9262	1852.4	4.161	4.637
		9400	1880	4.162	4.634
		9538	1907.6	4.164	4.641
	HSDPA	9262	1852.4	4.179	4.627
		9400	1880	4.18	4.653
		9538	1907.6	4.162	4.632
	HSUPA	9262	1852.4		
		9400	1880		
		9538	1907.6		

10.1.2. LTE OCCUPIED BANDWIDTH RESULTS

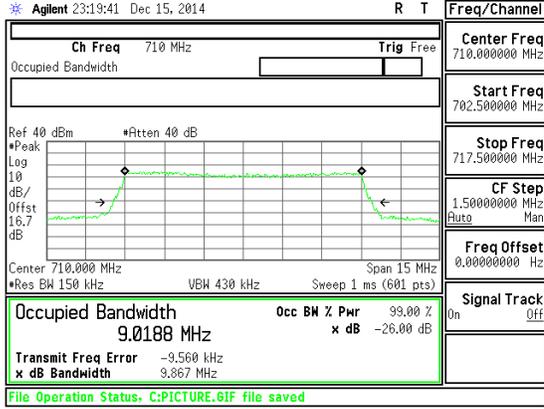
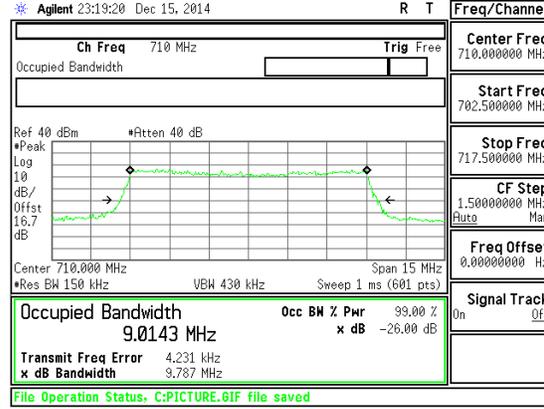
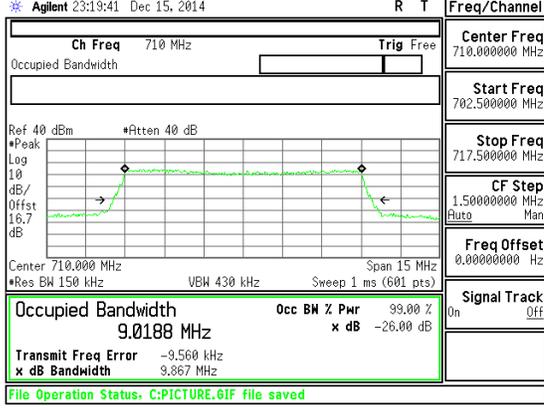
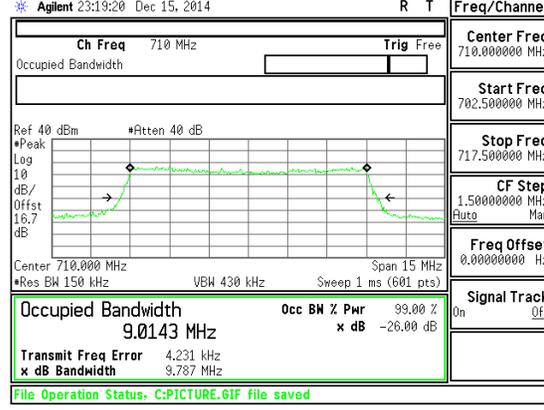
Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE17	10	QPSK	50/0	709	8.983	9.783
			50/0	710	9.014	9.787
			50/0	711	9.027	9.869
		16QAM	50/0	709	9.006	9.773
			50/0	710	9.019	9.867
			50/0	711	9.036	9.892
Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE17	5	QPSK	25/0	706.5	4.502	4.937
			25/0	710	4.529	5.016
			25/0	713.5	4.5	4.936
		16QAM	25/0	706.5	4.505	4.959
			25/0	710	4.516	4.999
			25/0	713.5	4.513	4.924

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE5	10	QPSK	50/0	829	8.97	9.826
			50/0	836.5	8.982	9.722
			50/0	844	8.964	9.778
		16QAM	50/0	829	8.973	9.738
			50/0	836.5	8.965	9.717
			50/0	844	8.97	9.71
Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE5	5	QPSK	25/0	826.5	4.506	4.937
			25/0	836.5	4.503	4.973
			25/0	846.5	4.511	4.973
		16QAM	25/0	826.5	4.505	4.982
			25/0	836.5	4.505	4.966
			25/0	846.5	4.52	4.98

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE4	10	QPSK	50/0	1715	8.964	9.788
			50/0	1732.5	8.967	9.828
			50/0	1750	8.961	9.78
		16QAM	50/0	1715	8.957	9.776
			50/0	1732.5	8.961	9.883
			50/0	1750	8.98	9.903
Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE4	5	QPSK	25/0	1712.5	4.509	4.878
			25/0	1732.5	4.509	4.994
			25/0	1752.5	4.508	4.951
		16QAM	25/0	1712.5	4.508	4.986
			25/0	1732.5	4.497	4.968
			25/0	1752.5	4.525	4.975

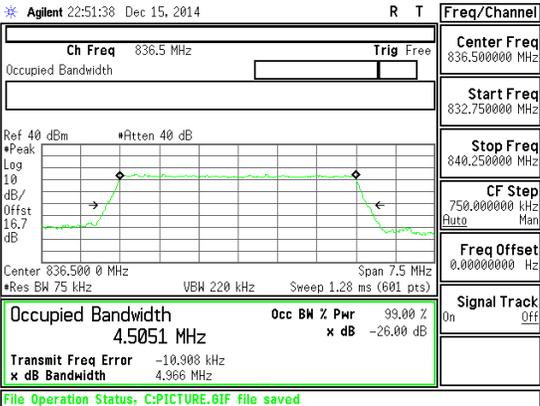
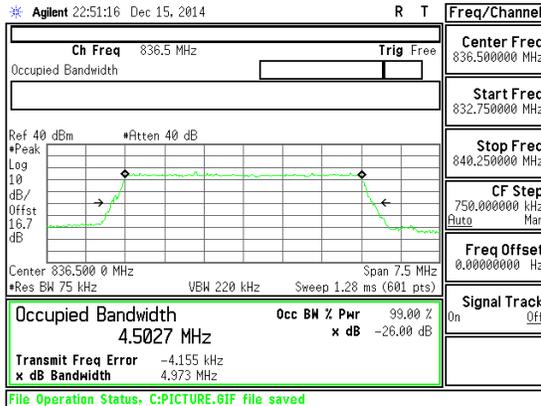
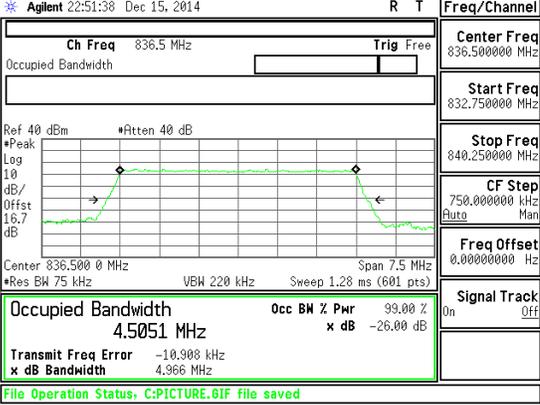
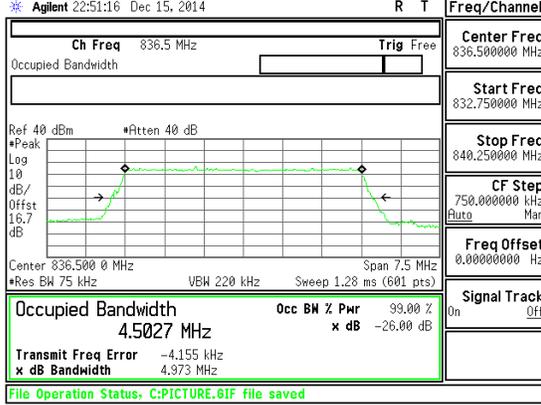
Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE2	10	QPSK	50/0	1855	8.953	9.846
			50/0	1880	8.965	9.841
			50/0	1905	8.955	9.837
		16QAM	50/0	1855	8.975	9.847
			50/0	1880	8.956	9.687
			50/0	1905	8.939	9.728
Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE2	5	QPSK	25/0	1852.5	4.508	4.978
			25/0	1880	4.518	4.924
			25/0	1907.5	4.51	4.928
		16QAM	25/0	1852.5	4.505	5.011
			25/0	1880	4.514	4.95
			25/0	1907.5	4.504	5.01

10.1.3. OCCUPIED BANDWIDTH PLOTS

<p>Band LTE17 10MHz 16QAM</p>	 <p>Agilent 23:19:41 Dec 15, 2014 R T Freq/Channel</p> <p>Ch Freq 710 MHz Trig Free</p> <p>Center Freq 710.000000 MHz</p> <p>Start Freq 702.500000 MHz</p> <p>Stop Freq 717.500000 MHz</p> <p>CF Step 1.50000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Occupied Bandwidth 9.0188 MHz Occ BW % Pwr x dB 99.00 % -26.00 dB</p> <p>Transmit Freq Error -9.560 kHz x dB Bandwidth 9.867 MHz</p> <p>File Operation Status, C:PICTURE.GIF file saved</p> <p>Band LTE17 10MHz OBW 16QAM Mid Channel FRB.gif</p>	 <p>Agilent 23:19:20 Dec 15, 2014 R T Freq/Channel</p> <p>Ch Freq 710 MHz Trig Free</p> <p>Center Freq 710.000000 MHz</p> <p>Start Freq 702.500000 MHz</p> <p>Stop Freq 717.500000 MHz</p> <p>CF Step 1.50000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Occupied Bandwidth 9.0143 MHz Occ BW % Pwr x dB 99.00 % -26.00 dB</p> <p>Transmit Freq Error 4.231 kHz x dB Bandwidth 9.787 MHz</p> <p>File Operation Status, C:PICTURE.GIF file saved</p> <p>Band LTE17 10MHz OBW QPSK Mid Channel FRB.gif</p>
<p>Band LTE17 10MHz 16QAM</p>	 <p>Agilent 23:19:41 Dec 15, 2014 R T Freq/Channel</p> <p>Ch Freq 710 MHz Trig Free</p> <p>Center Freq 710.000000 MHz</p> <p>Start Freq 702.500000 MHz</p> <p>Stop Freq 717.500000 MHz</p> <p>CF Step 1.50000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Occupied Bandwidth 9.0188 MHz Occ BW % Pwr x dB 99.00 % -26.00 dB</p> <p>Transmit Freq Error -9.560 kHz x dB Bandwidth 9.867 MHz</p> <p>File Operation Status, C:PICTURE.GIF file saved</p> <p>Band LTE17 10MHz OBW 16QAM Mid Channel FRB.gif</p>	 <p>Agilent 23:19:20 Dec 15, 2014 R T Freq/Channel</p> <p>Ch Freq 710 MHz Trig Free</p> <p>Center Freq 710.000000 MHz</p> <p>Start Freq 702.500000 MHz</p> <p>Stop Freq 717.500000 MHz</p> <p>CF Step 1.50000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Occupied Bandwidth 9.0143 MHz Occ BW % Pwr x dB 99.00 % -26.00 dB</p> <p>Transmit Freq Error 4.231 kHz x dB Bandwidth 9.787 MHz</p> <p>File Operation Status, C:PICTURE.GIF file saved</p> <p>Band LTE17 10MHz OBW QPSK Mid Channel FRB.gif</p>

<p>Band LTE17 5MHz 16QAM</p>	<p>Agilent 23:13:52 Dec 15, 2014</p> <p>Ch Freq 710 MHz Trig Free</p> <p>Center Freq 710.000000 MHz</p> <p>Start Freq 706.250000 MHz</p> <p>Stop Freq 713.750000 MHz</p> <p>CF Step 750.000000 kHz</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track Off</p> <p>Occupied Bandwidth 4.5162 MHz</p> <p>Transmit Freq Error -12.479 kHz</p> <p>x dB Bandwidth 4.399 MHz</p> <p>Occ BN % Pwr 99.00 %</p> <p>x dB -26.00 dB</p> <p>File Operation Status, C:PICTURE.GIF file saved</p> <p>Band LTE17 5MHz OBW 16QAM Mid Channel FRB.gif</p>	<p>Agilent 23:13:31 Dec 15, 2014</p> <p>Ch Freq 710 MHz Trig Free</p> <p>Center Freq 710.000000 MHz</p> <p>Start Freq 706.250000 MHz</p> <p>Stop Freq 713.750000 MHz</p> <p>CF Step 750.000000 kHz</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track Off</p> <p>Occupied Bandwidth 4.5287 MHz</p> <p>Transmit Freq Error -6.535 kHz</p> <p>x dB Bandwidth 5.016 MHz</p> <p>Occ BN % Pwr 99.00 %</p> <p>x dB -26.00 dB</p> <p>File Operation Status, C:PICTURE.GIF file saved</p> <p>Band LTE17 5MHz OBW QPSK Mid Channel FRB.gif</p>
<p>Band LTE17 5MHz 16QAM</p>	<p>Agilent 23:13:52 Dec 15, 2014</p> <p>Ch Freq 710 MHz Trig Free</p> <p>Center Freq 710.000000 MHz</p> <p>Start Freq 706.250000 MHz</p> <p>Stop Freq 713.750000 MHz</p> <p>CF Step 750.000000 kHz</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track Off</p> <p>Occupied Bandwidth 4.5162 MHz</p> <p>Transmit Freq Error -12.479 kHz</p> <p>x dB Bandwidth 4.399 MHz</p> <p>Occ BN % Pwr 99.00 %</p> <p>x dB -26.00 dB</p> <p>File Operation Status, C:PICTURE.GIF file saved</p> <p>Band LTE17 5MHz OBW 16QAM Mid Channel FRB.gif</p>	<p>Agilent 23:13:31 Dec 15, 2014</p> <p>Ch Freq 710 MHz Trig Free</p> <p>Center Freq 710.000000 MHz</p> <p>Start Freq 706.250000 MHz</p> <p>Stop Freq 713.750000 MHz</p> <p>CF Step 750.000000 kHz</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track Off</p> <p>Occupied Bandwidth 4.5287 MHz</p> <p>Transmit Freq Error -6.535 kHz</p> <p>x dB Bandwidth 5.016 MHz</p> <p>Occ BN % Pwr 99.00 %</p> <p>x dB -26.00 dB</p> <p>File Operation Status, C:PICTURE.GIF file saved</p> <p>Band LTE17 5MHz OBW QPSK Mid Channel FRB.gif</p>

<p>Band LTE5 10MHz 16QAM</p>	<p>Agilent 22:56:01 Dec 15, 2014 R T Freq/Channel</p> <p>Ch Freq 836.5 MHz Trig Free Center Freq 836.500000 MHz</p> <p>Occupied Bandwidth Start Freq 829.000000 MHz</p> <p>Stop Freq 844.000000 MHz</p> <p>CF Step 1.50000000 MHz</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track Off</p> <p>Ref 40 dBm •Atten 40 dB</p> <p>#Peak Log 10 dB/Offset 16.7 dB</p> <p>Center 836.500 MHz Span 15 MHz</p> <p>#Res BW 150 kHz VBN 430 kHz Sweep 1 ms (601 pts)</p> <p>Occupied Bandwidth 8.9654 MHz Occ BN % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 4.606 kHz x dB Bandwidth 3.717 MHz</p> <p>File Operation Status, C:PICTURE.GIF file saved</p> <p>Band LTE5 10MHz OBW 16QAM Mid Channel FRB.gif</p>	<p>Agilent 22:55:40 Dec 15, 2014 R T Freq/Channel</p> <p>Ch Freq 836.5 MHz Trig Free Center Freq 836.500000 MHz</p> <p>Occupied Bandwidth Start Freq 829.000000 MHz</p> <p>Stop Freq 844.000000 MHz</p> <p>CF Step 1.50000000 MHz</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track Off</p> <p>Ref 40 dBm •Atten 40 dB</p> <p>#Peak Log 10 dB/Offset 16.7 dB</p> <p>Center 836.500 MHz Span 15 MHz</p> <p>#Res BW 150 kHz VBN 430 kHz Sweep 1 ms (601 pts)</p> <p>Occupied Bandwidth 8.9825 MHz Occ BN % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -10.218 kHz x dB Bandwidth 3.722 MHz</p> <p>File Operation Status, C:PICTURE.GIF file saved</p> <p>Band LTE5 10MHz OBW QPSK Mid Channel FRB.gif</p>
<p>Band LTE5 10MHz 16QAM</p>	<p>Agilent 22:56:01 Dec 15, 2014 R T Freq/Channel</p> <p>Ch Freq 836.5 MHz Trig Free Center Freq 836.500000 MHz</p> <p>Occupied Bandwidth Start Freq 829.000000 MHz</p> <p>Stop Freq 844.000000 MHz</p> <p>CF Step 1.50000000 MHz</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track Off</p> <p>Ref 40 dBm •Atten 40 dB</p> <p>#Peak Log 10 dB/Offset 16.7 dB</p> <p>Center 836.500 MHz Span 15 MHz</p> <p>#Res BW 150 kHz VBN 430 kHz Sweep 1 ms (601 pts)</p> <p>Occupied Bandwidth 8.9654 MHz Occ BN % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 4.606 kHz x dB Bandwidth 3.717 MHz</p> <p>File Operation Status, C:PICTURE.GIF file saved</p> <p>Band LTE5 10MHz OBW 16QAM Mid Channel FRB.gif</p>	<p>Agilent 22:55:40 Dec 15, 2014 R T Freq/Channel</p> <p>Ch Freq 836.5 MHz Trig Free Center Freq 836.500000 MHz</p> <p>Occupied Bandwidth Start Freq 829.000000 MHz</p> <p>Stop Freq 844.000000 MHz</p> <p>CF Step 1.50000000 MHz</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track Off</p> <p>Ref 40 dBm •Atten 40 dB</p> <p>#Peak Log 10 dB/Offset 16.7 dB</p> <p>Center 836.500 MHz Span 15 MHz</p> <p>#Res BW 150 kHz VBN 430 kHz Sweep 1 ms (601 pts)</p> <p>Occupied Bandwidth 8.9825 MHz Occ BN % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -10.218 kHz x dB Bandwidth 3.722 MHz</p> <p>File Operation Status, C:PICTURE.GIF file saved</p> <p>Band LTE5 10MHz OBW QPSK Mid Channel FRB.gif</p>

<p>Band LTE5 5MHz 16QAM</p>	 <p>Agilent 22:51:38 Dec 15, 2014</p> <p>Ch Freq 836.5 MHz Trig Free</p> <p>Center Freq 836.500000 MHz</p> <p>Start Freq 832.750000 MHz</p> <p>Stop Freq 840.250000 MHz</p> <p>CF Step 750.000000 kHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track Off</p> <p>Occupied Bandwidth 4.5051 MHz</p> <p>Transmit Freq Error -10.908 kHz</p> <p>x dB Bandwidth 4.366 MHz</p> <p>File Operation Status, C:PICTURE.GIF file saved</p> <p>Band LTE5 5MHz OBW 16QAM Mid Channel FRB.gif</p>	 <p>Agilent 22:51:16 Dec 15, 2014</p> <p>Ch Freq 836.5 MHz Trig Free</p> <p>Center Freq 836.500000 MHz</p> <p>Start Freq 832.750000 MHz</p> <p>Stop Freq 840.250000 MHz</p> <p>CF Step 750.000000 kHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track Off</p> <p>Occupied Bandwidth 4.5027 MHz</p> <p>Transmit Freq Error -4.155 kHz</p> <p>x dB Bandwidth 4.373 MHz</p> <p>File Operation Status, C:PICTURE.GIF file saved</p> <p>Band LTE5 5MHz OBW QPSK Mid Channel FRB.gif</p>
<p>Band LTE5 5MHz 16QAM</p>	 <p>Agilent 22:51:38 Dec 15, 2014</p> <p>Ch Freq 836.5 MHz Trig Free</p> <p>Center Freq 836.500000 MHz</p> <p>Start Freq 832.750000 MHz</p> <p>Stop Freq 840.250000 MHz</p> <p>CF Step 750.000000 kHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track Off</p> <p>Occupied Bandwidth 4.5051 MHz</p> <p>Transmit Freq Error -10.908 kHz</p> <p>x dB Bandwidth 4.366 MHz</p> <p>File Operation Status, C:PICTURE.GIF file saved</p> <p>Band LTE5 5MHz OBW 16QAM Mid Channel FRB.gif</p>	 <p>Agilent 22:51:16 Dec 15, 2014</p> <p>Ch Freq 836.5 MHz Trig Free</p> <p>Center Freq 836.500000 MHz</p> <p>Start Freq 832.750000 MHz</p> <p>Stop Freq 840.250000 MHz</p> <p>CF Step 750.000000 kHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track Off</p> <p>Occupied Bandwidth 4.5027 MHz</p> <p>Transmit Freq Error -4.155 kHz</p> <p>x dB Bandwidth 4.373 MHz</p> <p>File Operation Status, C:PICTURE.GIF file saved</p> <p>Band LTE5 5MHz OBW QPSK Mid Channel FRB.gif</p>

<p>Band LTE4 10MHz 16QAM</p>	<p>Agilent 00:22:45 Dec 16, 2014</p> <p>Ch Freq 1.7325 GHz Trig Free</p> <p>Center Freq 1.73250000 GHz</p> <p>Start Freq 1.72500000 GHz</p> <p>Stop Freq 1.74000000 GHz</p> <p>CF Step 1.50000000 MHz</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On</p> <p>Occupied Bandwidth 8.9609 MHz</p> <p>Transmit Freq Error -3.586 kHz</p> <p>x dB Bandwidth 3.883 MHz</p> <p>Occ BN % Pwr 99.00 %</p> <p>x dB -26.00 dB</p> <p>File Operation Status, C:PICTURE.GIF file saved</p> <p>Band LTE4 10MHz OBW 16QAM Mid Channel FRB.gif</p>	<p>Agilent 00:22:24 Dec 16, 2014</p> <p>Ch Freq 1.7325 GHz Trig Free</p> <p>Center Freq 1.73250000 GHz</p> <p>Start Freq 1.72500000 GHz</p> <p>Stop Freq 1.74000000 GHz</p> <p>CF Step 1.50000000 MHz</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track Off</p> <p>Occupied Bandwidth 8.9673 MHz</p> <p>Transmit Freq Error 1.191 kHz</p> <p>x dB Bandwidth 3.828 MHz</p> <p>Occ BN % Pwr 99.00 %</p> <p>x dB -26.00 dB</p> <p>File Operation Status, C:PICTURE.GIF file saved</p> <p>Band LTE4 10MHz OBW QPSK Mid Channel FRB.gif</p>
<p>Band LTE4 10MHz 16QAM</p>	<p>Agilent 00:22:45 Dec 16, 2014</p> <p>Ch Freq 1.7325 GHz Trig Free</p> <p>Center Freq 1.73250000 GHz</p> <p>Start Freq 1.72500000 GHz</p> <p>Stop Freq 1.74000000 GHz</p> <p>CF Step 1.50000000 MHz</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On</p> <p>Occupied Bandwidth 8.9609 MHz</p> <p>Transmit Freq Error -3.586 kHz</p> <p>x dB Bandwidth 3.883 MHz</p> <p>Occ BN % Pwr 99.00 %</p> <p>x dB -26.00 dB</p> <p>File Operation Status, C:PICTURE.GIF file saved</p> <p>Band LTE4 10MHz OBW 16QAM Mid Channel FRB.gif</p>	<p>Agilent 00:22:24 Dec 16, 2014</p> <p>Ch Freq 1.7325 GHz Trig Free</p> <p>Center Freq 1.73250000 GHz</p> <p>Start Freq 1.72500000 GHz</p> <p>Stop Freq 1.74000000 GHz</p> <p>CF Step 1.50000000 MHz</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track Off</p> <p>Occupied Bandwidth 8.9673 MHz</p> <p>Transmit Freq Error 1.191 kHz</p> <p>x dB Bandwidth 3.828 MHz</p> <p>Occ BN % Pwr 99.00 %</p> <p>x dB -26.00 dB</p> <p>File Operation Status, C:PICTURE.GIF file saved</p> <p>Band LTE4 10MHz OBW QPSK Mid Channel FRB.gif</p>

<p>Band LTE4 5MHz 16QAM</p>	<p>Agilent 00:19:07 Dec 16, 2014</p> <p>Ch Freq 1.7325 GHz Trig Free</p> <p>Center Freq 1.73250000 GHz</p> <p>Start Freq 1.72875000 GHz</p> <p>Stop Freq 1.73625000 GHz</p> <p>CF Step 750.000000 kHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track Off</p> <p>Occupied Bandwidth 4.4966 MHz Occ BN % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -8.626 kHz</p> <p>x dB Bandwidth 4.368 MHz</p> <p>File Operation Status, C:PICTURE.GIF file saved</p> <p>Band LTE4 5MHz OBW 16QAM Mid Channel FRB.gif</p>	<p>Agilent 00:18:45 Dec 16, 2014</p> <p>Ch Freq 1.7325 GHz Trig Free</p> <p>Center Freq 1.73250000 GHz</p> <p>Start Freq 1.72875000 GHz</p> <p>Stop Freq 1.73625000 GHz</p> <p>CF Step 750.000000 kHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track Off</p> <p>Occupied Bandwidth 4.5092 MHz Occ BN % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -14.181 kHz</p> <p>x dB Bandwidth 4.394 MHz</p> <p>File Operation Status, C:PICTURE.GIF file saved</p> <p>Band LTE4 5MHz OBW QPSK Mid Channel FRB.gif</p>
<p>Band LTE4 5MHz 16QAM</p>	<p>Agilent 00:19:07 Dec 16, 2014</p> <p>Ch Freq 1.7325 GHz Trig Free</p> <p>Center Freq 1.73250000 GHz</p> <p>Start Freq 1.72875000 GHz</p> <p>Stop Freq 1.73625000 GHz</p> <p>CF Step 750.000000 kHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track Off</p> <p>Occupied Bandwidth 4.4966 MHz Occ BN % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -8.626 kHz</p> <p>x dB Bandwidth 4.368 MHz</p> <p>File Operation Status, C:PICTURE.GIF file saved</p> <p>Band LTE4 5MHz OBW 16QAM Mid Channel FRB.gif</p>	<p>Agilent 00:18:45 Dec 16, 2014</p> <p>Ch Freq 1.7325 GHz Trig Free</p> <p>Center Freq 1.73250000 GHz</p> <p>Start Freq 1.72875000 GHz</p> <p>Stop Freq 1.73625000 GHz</p> <p>CF Step 750.000000 kHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track Off</p> <p>Occupied Bandwidth 4.5092 MHz Occ BN % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -14.181 kHz</p> <p>x dB Bandwidth 4.394 MHz</p> <p>File Operation Status, C:PICTURE.GIF file saved</p> <p>Band LTE4 5MHz OBW QPSK Mid Channel FRB.gif</p>

<p>Band LTE2 10MHz 16QAM</p>	<p>Agilent 23:50:30 Dec 15, 2014</p> <p>Ch Freq 1.88 GHz Trig Free</p> <p>Center Freq 1.88000000 GHz</p> <p>Start Freq 1.87250000 GHz</p> <p>Stop Freq 1.88750000 GHz</p> <p>CF Step 1.50000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Occupied Bandwidth 8.9558 MHz</p> <p>Transmit Freq Error 3.154 kHz</p> <p>x dB Bandwidth 3.687 MHz</p> <p>File Operation Status, C:PICTURE.GIF file saved</p> <p>Band LTE2 10MHz OBW 16QAM Mid Channel FRB.gif</p>	<p>Agilent 23:50:08 Dec 15, 2014</p> <p>Ch Freq 1.88 GHz Trig Free</p> <p>Center Freq 1.88000000 GHz</p> <p>Start Freq 1.87250000 GHz</p> <p>Stop Freq 1.88750000 GHz</p> <p>CF Step 1.50000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Occupied Bandwidth 8.9656 MHz</p> <p>Transmit Freq Error -6.908 kHz</p> <p>x dB Bandwidth 3.841 MHz</p> <p>File Operation Status, C:PICTURE.GIF file saved</p> <p>Band LTE2 10MHz OBW QPSK Mid Channel FRB.gif</p>
<p>Band LTE2 10MHz 16QAM</p>	<p>Agilent 23:50:30 Dec 15, 2014</p> <p>Ch Freq 1.88 GHz Trig Free</p> <p>Center Freq 1.88000000 GHz</p> <p>Start Freq 1.87250000 GHz</p> <p>Stop Freq 1.88750000 GHz</p> <p>CF Step 1.50000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Occupied Bandwidth 8.9558 MHz</p> <p>Transmit Freq Error 3.154 kHz</p> <p>x dB Bandwidth 3.687 MHz</p> <p>File Operation Status, C:PICTURE.GIF file saved</p> <p>Band LTE2 10MHz OBW 16QAM Mid Channel FRB.gif</p>	<p>Agilent 23:50:08 Dec 15, 2014</p> <p>Ch Freq 1.88 GHz Trig Free</p> <p>Center Freq 1.88000000 GHz</p> <p>Start Freq 1.87250000 GHz</p> <p>Stop Freq 1.88750000 GHz</p> <p>CF Step 1.50000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Occupied Bandwidth 8.9656 MHz</p> <p>Transmit Freq Error -6.908 kHz</p> <p>x dB Bandwidth 3.841 MHz</p> <p>File Operation Status, C:PICTURE.GIF file saved</p> <p>Band LTE2 10MHz OBW QPSK Mid Channel FRB.gif</p>

<p>Band LTE2 5MHz 16QAM</p>	<p>Agilent 23:42:23 Dec 15, 2014</p> <p>Ch Freq 1.88 GHz Trig Free</p> <p>Center Freq 1.88000000 GHz</p> <p>Start Freq 1.87625000 GHz</p> <p>Stop Freq 1.88375000 GHz</p> <p>CF Step 750.000000 kHz</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track Off</p> <p>Occupied Bandwidth 4.5139 MHz</p> <p>Transmit Freq Error 2.227 kHz</p> <p>x dB Bandwidth 4.950 MHz</p> <p>File Operation Status, C:PICTURE.GIF file saved</p> <p>Band LTE2 5MHz OBW 16QAM Mid Channel FRB.gif</p>	<p>Agilent 23:42:02 Dec 15, 2014</p> <p>Ch Freq 1.88 GHz Trig Free</p> <p>Center Freq 1.88000000 GHz</p> <p>Start Freq 1.87625000 GHz</p> <p>Stop Freq 1.88375000 GHz</p> <p>CF Step 750.000000 kHz</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track Off</p> <p>Occupied Bandwidth 4.5182 MHz</p> <p>Transmit Freq Error -74.197 Hz</p> <p>x dB Bandwidth 4.924 MHz</p> <p>File Operation Status, C:PICTURE.GIF file saved</p> <p>Band LTE2 5MHz OBW QPSK Mid Channel FRB.gif</p>
<p>Band LTE2 5MHz 16QAM</p>	<p>Agilent 23:42:23 Dec 15, 2014</p> <p>Ch Freq 1.88 GHz Trig Free</p> <p>Center Freq 1.88000000 GHz</p> <p>Start Freq 1.87625000 GHz</p> <p>Stop Freq 1.88375000 GHz</p> <p>CF Step 750.000000 kHz</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track Off</p> <p>Occupied Bandwidth 4.5139 MHz</p> <p>Transmit Freq Error 2.227 kHz</p> <p>x dB Bandwidth 4.950 MHz</p> <p>File Operation Status, C:PICTURE.GIF file saved</p> <p>Band LTE2 5MHz OBW 16QAM Mid Channel FRB.gif</p>	<p>Agilent 23:42:02 Dec 15, 2014</p> <p>Ch Freq 1.88 GHz Trig Free</p> <p>Center Freq 1.88000000 GHz</p> <p>Start Freq 1.87625000 GHz</p> <p>Stop Freq 1.88375000 GHz</p> <p>CF Step 750.000000 kHz</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track Off</p> <p>Occupied Bandwidth 4.5182 MHz</p> <p>Transmit Freq Error -74.197 Hz</p> <p>x dB Bandwidth 4.924 MHz</p> <p>File Operation Status, C:PICTURE.GIF file saved</p> <p>Band LTE2 5MHz OBW QPSK Mid Channel FRB.gif</p>

<p>Band Band 2 HSDPA</p>	<p>Agilent 22:21:09 Dec 15, 2014 R T Freq/Channel</p> <p>Ch Freq 1.88 GHz Trig Free</p> <p>Center Freq 1.88000000 GHz</p> <p>Start Freq 1.87500000 GHz</p> <p>Stop Freq 1.88500000 GHz</p> <p>CF Step 1.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Occupied Bandwidth 4.1793 MHz Occ BN % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -6.165 kHz x dB Bandwidth 4.653 MHz</p> <p>File Operation Status, C:PICTURE.GIF file saved</p> <p>Band WCDMA B2 HSDPA OBW</p>	<p>Agilent 22:18:16 Dec 15, 2014 R T Freq/Channel</p> <p>Ch Freq 1.88 GHz Trig Free</p> <p>Center Freq 1.88000000 GHz</p> <p>Start Freq 1.87500000 GHz</p> <p>Stop Freq 1.88500000 GHz</p> <p>CF Step 1.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Occupied Bandwidth 4.1622 MHz Occ BN % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -10.043 kHz x dB Bandwidth 4.634 MHz</p> <p>File Operation Status, C:PICTURE.GIF file saved</p> <p>Band WCDMA B2 REL99 OBW</p>
<p>Band Band 2 HSDPA</p>	<p>Agilent 22:21:09 Dec 15, 2014 R T Freq/Channel</p> <p>Ch Freq 1.88 GHz Trig Free</p> <p>Center Freq 1.88000000 GHz</p> <p>Start Freq 1.87500000 GHz</p> <p>Stop Freq 1.88500000 GHz</p> <p>CF Step 1.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Occupied Bandwidth 4.1793 MHz Occ BN % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -6.165 kHz x dB Bandwidth 4.653 MHz</p> <p>File Operation Status, C:PICTURE.GIF file saved</p> <p>Band WCDMA B2 HSDPA OBW</p>	<p>Agilent 22:18:16 Dec 15, 2014 R T Freq/Channel</p> <p>Ch Freq 1.88 GHz Trig Free</p> <p>Center Freq 1.88000000 GHz</p> <p>Start Freq 1.87500000 GHz</p> <p>Stop Freq 1.88500000 GHz</p> <p>CF Step 1.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Occupied Bandwidth 4.1622 MHz Occ BN % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -10.043 kHz x dB Bandwidth 4.634 MHz</p> <p>File Operation Status, C:PICTURE.GIF file saved</p> <p>Band WCDMA B2 REL99 OBW</p>

<p>Band Band 5 HSDPA</p>	<p>Agilent 22:35:49 Dec 15, 2014 R T Freq/Channel</p> <p>Ch Freq 836.6 MHz Trig Free Center Freq 836.600000 MHz</p> <p>Occupied Bandwidth Start Freq 831.600000 MHz</p> <p>Stop Freq 841.600000 MHz</p> <p>CF Step 1.00000000 MHz</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 40 dBm *Atten 40 dB</p> <p>#Peak Log 10 dB/Offst 16.7 dB</p> <p>Center 836.600 MHz Span 10 MHz</p> <p>*Res BW 51 kHz VBN 150 kHz Sweep 3.68 ms (601 pts)</p> <p>Occupied Bandwidth 4.1565 MHz Occ BN % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -6.864 kHz x dB Bandwidth 4.646 MHz</p> <p>File Operation Status, C:PICTURE.GIF file saved</p> <p>Band WCDMA B5 HSDPA OBW</p>	<p>Agilent 22:33:53 Dec 15, 2014 R T Freq/Channel</p> <p>Ch Freq 836.6 MHz Trig Free Center Freq 836.600000 MHz</p> <p>Occupied Bandwidth Start Freq 831.600000 MHz</p> <p>Stop Freq 841.600000 MHz</p> <p>CF Step 1.00000000 MHz</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 40 dBm *Atten 40 dB</p> <p>#Peak Log 10 dB/Offst 16.7 dB</p> <p>Center 836.600 MHz Span 10 MHz</p> <p>*Res BW 51 kHz VBN 150 kHz Sweep 3.68 ms (601 pts)</p> <p>Occupied Bandwidth 4.1491 MHz Occ BN % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 3.234 kHz x dB Bandwidth 4.639 MHz</p> <p>File Operation Status, C:PICTURE.GIF file saved</p> <p>Band WCDMA B5 REL99 OBW</p>
<p>Band Band 5 HSDPA</p>	<p>Agilent 22:35:49 Dec 15, 2014 R T Freq/Channel</p> <p>Ch Freq 836.6 MHz Trig Free Center Freq 836.600000 MHz</p> <p>Occupied Bandwidth Start Freq 831.600000 MHz</p> <p>Stop Freq 841.600000 MHz</p> <p>CF Step 1.00000000 MHz</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 40 dBm *Atten 40 dB</p> <p>#Peak Log 10 dB/Offst 16.7 dB</p> <p>Center 836.600 MHz Span 10 MHz</p> <p>*Res BW 51 kHz VBN 150 kHz Sweep 3.68 ms (601 pts)</p> <p>Occupied Bandwidth 4.1565 MHz Occ BN % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -6.864 kHz x dB Bandwidth 4.646 MHz</p> <p>File Operation Status, C:PICTURE.GIF file saved</p> <p>Band WCDMA B5 HSDPA OBW</p>	<p>Agilent 22:33:53 Dec 15, 2014 R T Freq/Channel</p> <p>Ch Freq 836.6 MHz Trig Free Center Freq 836.600000 MHz</p> <p>Occupied Bandwidth Start Freq 831.600000 MHz</p> <p>Stop Freq 841.600000 MHz</p> <p>CF Step 1.00000000 MHz</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 40 dBm *Atten 40 dB</p> <p>#Peak Log 10 dB/Offst 16.7 dB</p> <p>Center 836.600 MHz Span 10 MHz</p> <p>*Res BW 51 kHz VBN 150 kHz Sweep 3.68 ms (601 pts)</p> <p>Occupied Bandwidth 4.1491 MHz Occ BN % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 3.234 kHz x dB Bandwidth 4.639 MHz</p> <p>File Operation Status, C:PICTURE.GIF file saved</p> <p>Band WCDMA B5 REL99 OBW</p>

<p>Band GSM1900 EGPRS</p>	<p>Agilent 22:04:36 Dec 15, 2014</p> <p>Ch Freq 1.88 GHz Trig Free</p> <p>Center Freq 1.88000000 GHz</p> <p>Start Freq 1.87950000 GHz</p> <p>Stop Freq 1.88050000 GHz</p> <p>CF Step 100.000000 kHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Occupied Bandwidth 245.6973 kHz</p> <p>Occ BN % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 1.481 kHz</p> <p>x dB Bandwidth 310.749 kHz</p> <p>File Operation Status, C:PICTURE.GIF file saved</p> <p>Band GSM1900 EGPRS OBW Mid channel</p>	<p>Agilent 22:03:19 Dec 15, 2014</p> <p>Ch Freq 1.88 GHz Trig Free</p> <p>Center Freq 1.88000000 GHz</p> <p>Start Freq 1.87950000 GHz</p> <p>Stop Freq 1.88050000 GHz</p> <p>CF Step 100.000000 kHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Occupied Bandwidth 239.3907 kHz</p> <p>Occ BN % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -473.637 Hz</p> <p>x dB Bandwidth 322.650 kHz</p> <p>File Operation Status, C:PICTURE.GIF file saved</p> <p>Band GSM1900 GPRS OBW Mid channel</p>
<p>Band GSM1900 EGPRS</p>	<p>Agilent 22:04:36 Dec 15, 2014</p> <p>Ch Freq 1.88 GHz Trig Free</p> <p>Center Freq 1.88000000 GHz</p> <p>Start Freq 1.87950000 GHz</p> <p>Stop Freq 1.88050000 GHz</p> <p>CF Step 100.000000 kHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Occupied Bandwidth 245.6973 kHz</p> <p>Occ BN % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 1.481 kHz</p> <p>x dB Bandwidth 310.749 kHz</p> <p>File Operation Status, C:PICTURE.GIF file saved</p> <p>Band GSM1900 EGPRS OBW Mid channel</p>	<p>Agilent 22:03:19 Dec 15, 2014</p> <p>Ch Freq 1.88 GHz Trig Free</p> <p>Center Freq 1.88000000 GHz</p> <p>Start Freq 1.87950000 GHz</p> <p>Stop Freq 1.88050000 GHz</p> <p>CF Step 100.000000 kHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Occupied Bandwidth 239.3907 kHz</p> <p>Occ BN % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -473.637 Hz</p> <p>x dB Bandwidth 322.650 kHz</p> <p>File Operation Status, C:PICTURE.GIF file saved</p> <p>Band GSM1900 GPRS OBW Mid channel</p>

<p>Band GSM850 0 EGPRS</p>	<p>Agilent 21:53:10 Dec 15, 2014 R T Freq/Channel</p> <p>Ch Freq 836.6 MHz Trig Free</p> <p>Center Freq 836.600000 MHz</p> <p>Start Freq 836.100000 MHz</p> <p>Stop Freq 837.100000 MHz</p> <p>CF Step 100.000000 kHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 40 dBm *Atten 40 dB</p> <p>#Peak</p> <p>Log 10</p> <p>dB/Offst 16.7</p> <p>dB</p> <p>Center 836.600 0 MHz Span 1 MHz</p> <p>*Res BW 10 kHz VBW 30 kHz Sweep 9.56 ms (601 pts)</p> <p>Occupied Bandwidth 240.5779 kHz</p> <p>Occ BW % Pwr 99.00 %</p> <p>x dB -26.00 dB</p> <p>Transmit Freq Error 2.382 kHz</p> <p>x dB Bandwidth 307.175 kHz</p> <p>File Operation Status, C:PICTURE.GIF file saved</p> <p>Band GSM850 EGPRS OBW Mid channel!</p>	<p>Agilent 21:51:53 Dec 15, 2014 R T Freq/Channel</p> <p>Ch Freq 836.6 MHz Trig Free</p> <p>Center Freq 836.600000 MHz</p> <p>Start Freq 836.100000 MHz</p> <p>Stop Freq 837.100000 MHz</p> <p>CF Step 100.000000 kHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 40 dBm *Atten 40 dB</p> <p>#Peak</p> <p>Log 10</p> <p>dB/Offst 16.7</p> <p>dB</p> <p>Center 836.600 0 MHz Span 1 MHz</p> <p>*Res BW 10 kHz VBW 30 kHz Sweep 9.56 ms (601 pts)</p> <p>Occupied Bandwidth 243.6076 kHz</p> <p>Occ BW % Pwr 99.00 %</p> <p>x dB -26.00 dB</p> <p>Transmit Freq Error 670.082 Hz</p> <p>x dB Bandwidth 325.838 kHz</p> <p>File Operation Status, C:PICTURE.GIF file saved</p> <p>Band GSM850 GPRS OBW Mid channel!</p>
<p>Band GSM850 0 EGPRS</p>	<p>Agilent 21:53:10 Dec 15, 2014 R T Freq/Channel</p> <p>Ch Freq 836.6 MHz Trig Free</p> <p>Center Freq 836.600000 MHz</p> <p>Start Freq 836.100000 MHz</p> <p>Stop Freq 837.100000 MHz</p> <p>CF Step 100.000000 kHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 40 dBm *Atten 40 dB</p> <p>#Peak</p> <p>Log 10</p> <p>dB/Offst 16.7</p> <p>dB</p> <p>Center 836.600 0 MHz Span 1 MHz</p> <p>*Res BW 10 kHz VBW 30 kHz Sweep 9.56 ms (601 pts)</p> <p>Occupied Bandwidth 240.5779 kHz</p> <p>Occ BW % Pwr 99.00 %</p> <p>x dB -26.00 dB</p> <p>Transmit Freq Error 2.382 kHz</p> <p>x dB Bandwidth 307.175 kHz</p> <p>File Operation Status, C:PICTURE.GIF file saved</p> <p>Band GSM850 EGPRS OBW Mid channel!</p>	<p>Agilent 21:51:53 Dec 15, 2014 R T Freq/Channel</p> <p>Ch Freq 836.6 MHz Trig Free</p> <p>Center Freq 836.600000 MHz</p> <p>Start Freq 836.100000 MHz</p> <p>Stop Freq 837.100000 MHz</p> <p>CF Step 100.000000 kHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 40 dBm *Atten 40 dB</p> <p>#Peak</p> <p>Log 10</p> <p>dB/Offst 16.7</p> <p>dB</p> <p>Center 836.600 0 MHz Span 1 MHz</p> <p>*Res BW 10 kHz VBW 30 kHz Sweep 9.56 ms (601 pts)</p> <p>Occupied Bandwidth 243.6076 kHz</p> <p>Occ BW % Pwr 99.00 %</p> <p>x dB -26.00 dB</p> <p>Transmit Freq Error 670.082 Hz</p> <p>x dB Bandwidth 325.838 kHz</p> <p>File Operation Status, C:PICTURE.GIF file saved</p> <p>Band GSM850 GPRS OBW Mid channel!</p>

10.2. BAND EDGE EMISSIONS

RULE PART(S)

FCC: §22.359, §24.238, and §27.53

LIMITS

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

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

TEST PROCEDURE

Per KDB 971168 D01 Power Meas License Digital Systems v02r01

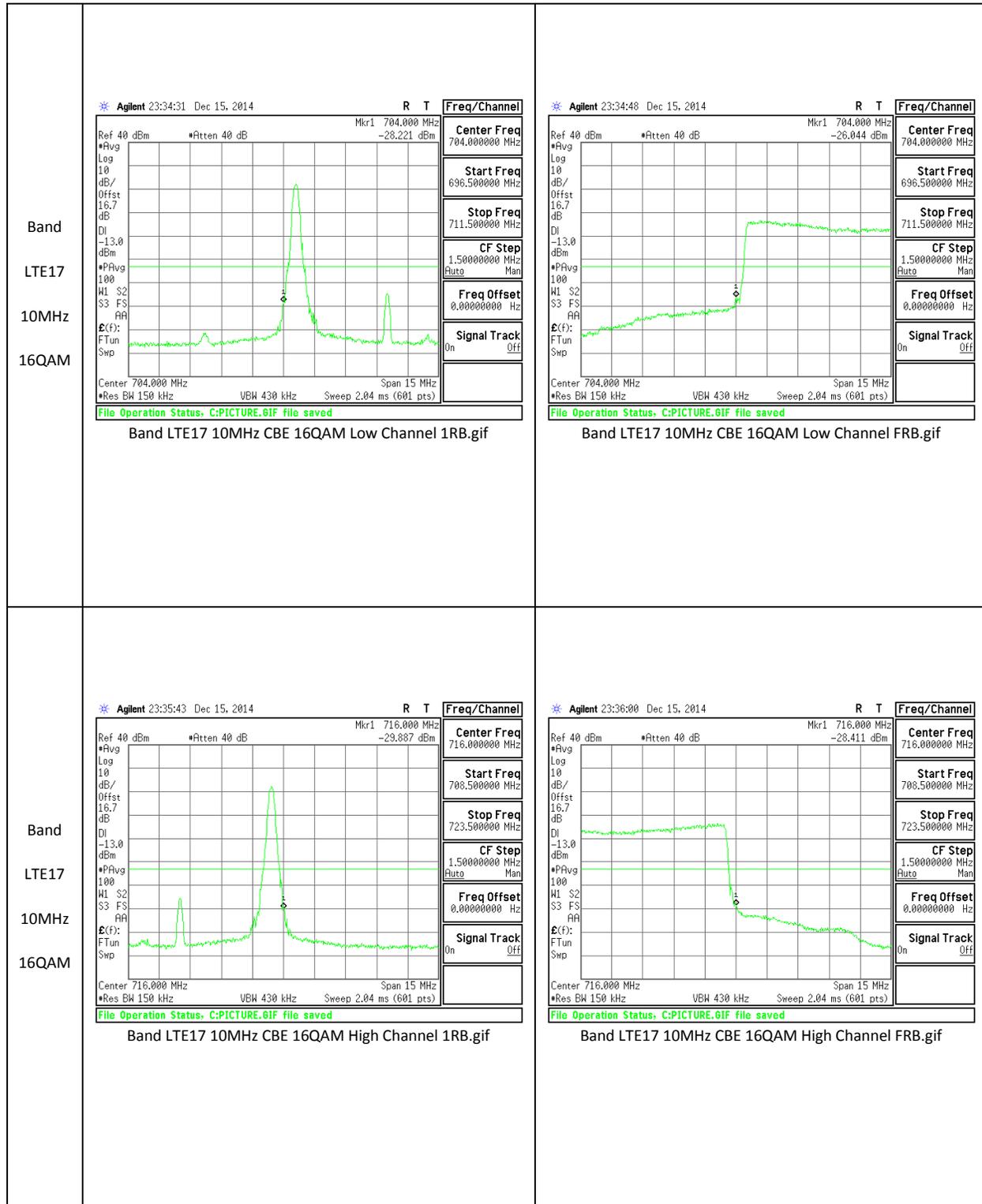
The transmitter output was connected to an Agilent 8960 or a CMW500 Test Set and configured to operate at maximum power. The band edge emissions were measured at the required operating frequencies in each band on the Spectrum Analyzer.

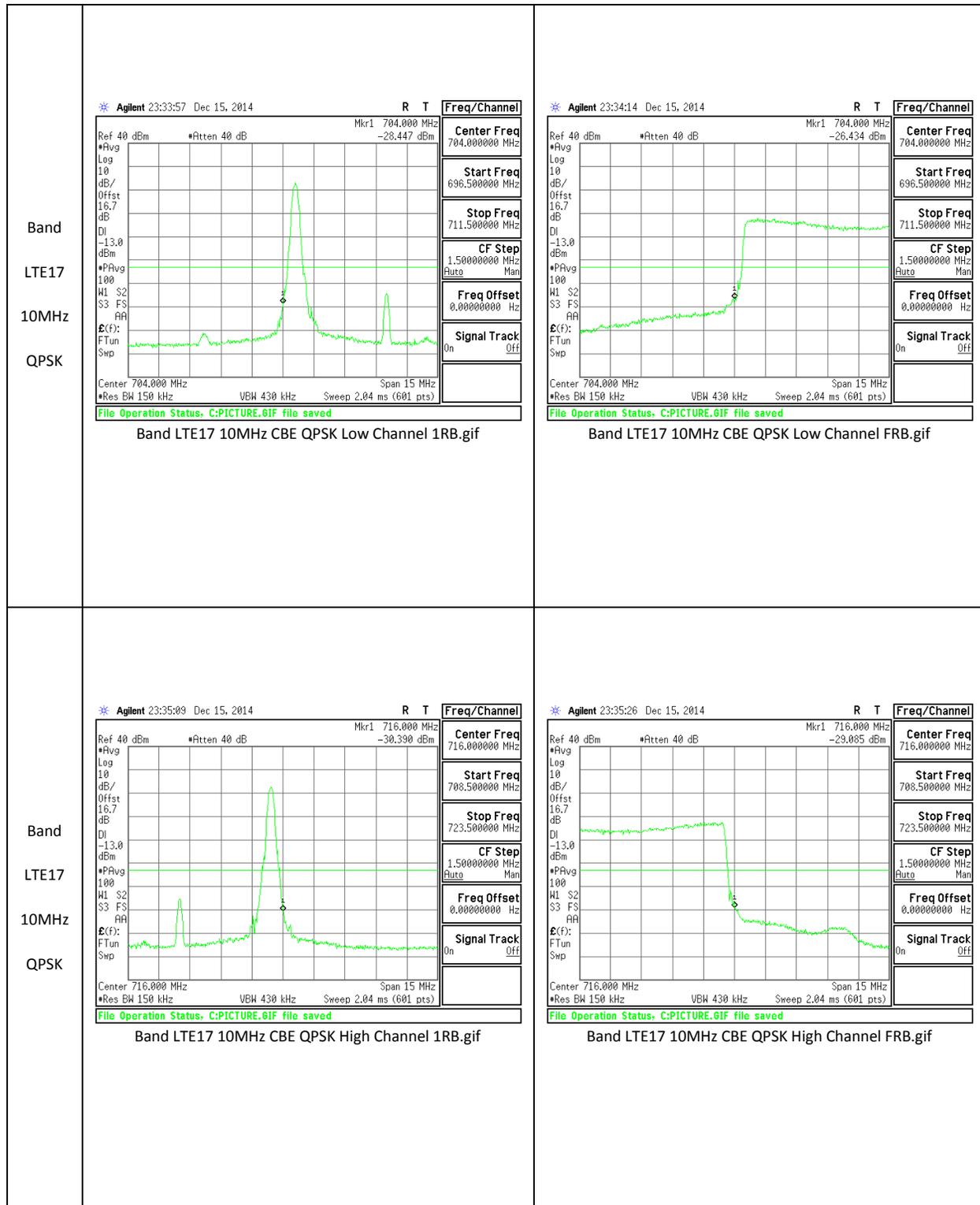
MODES TESTED

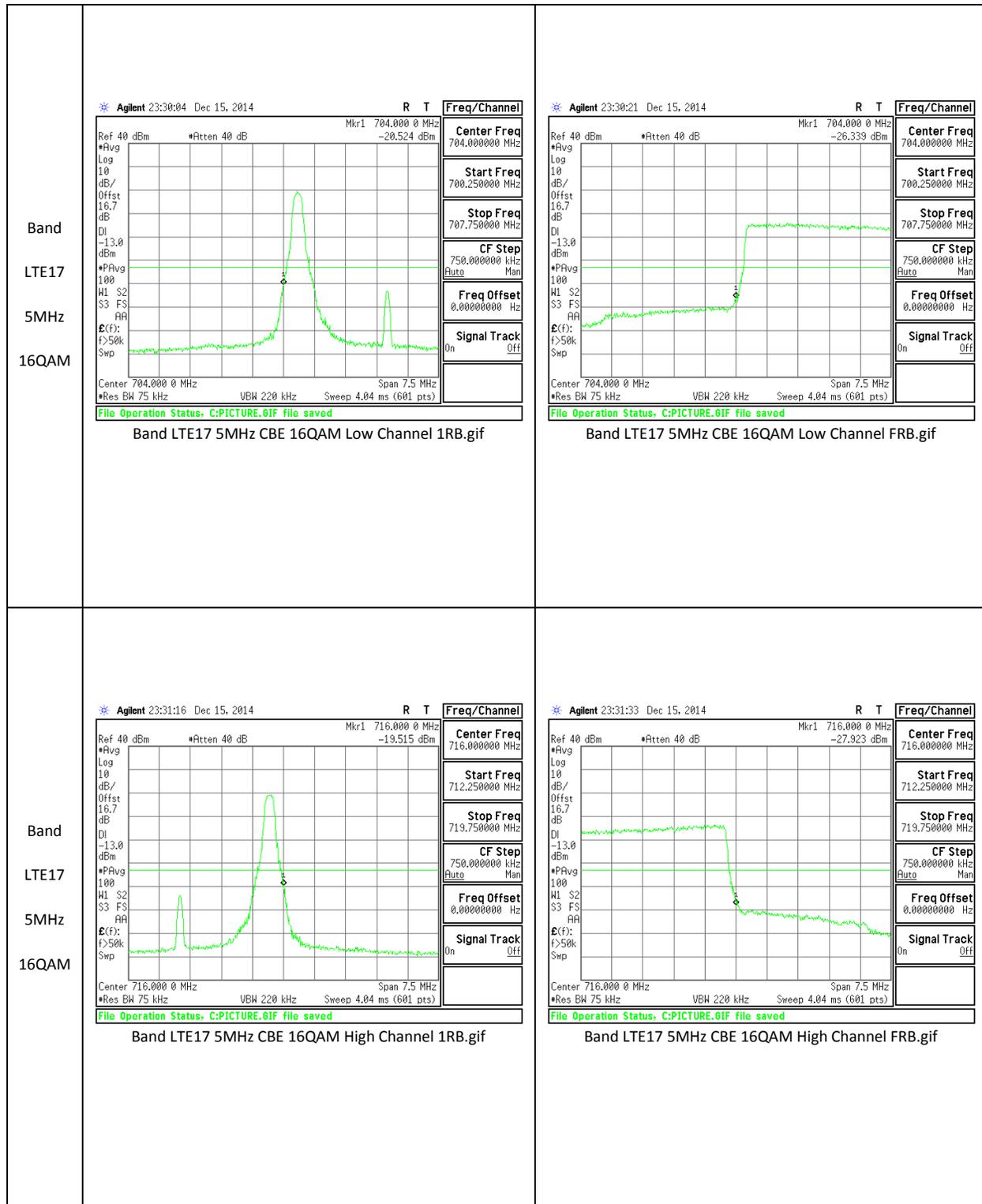
GSM, WCDMA, and LTE

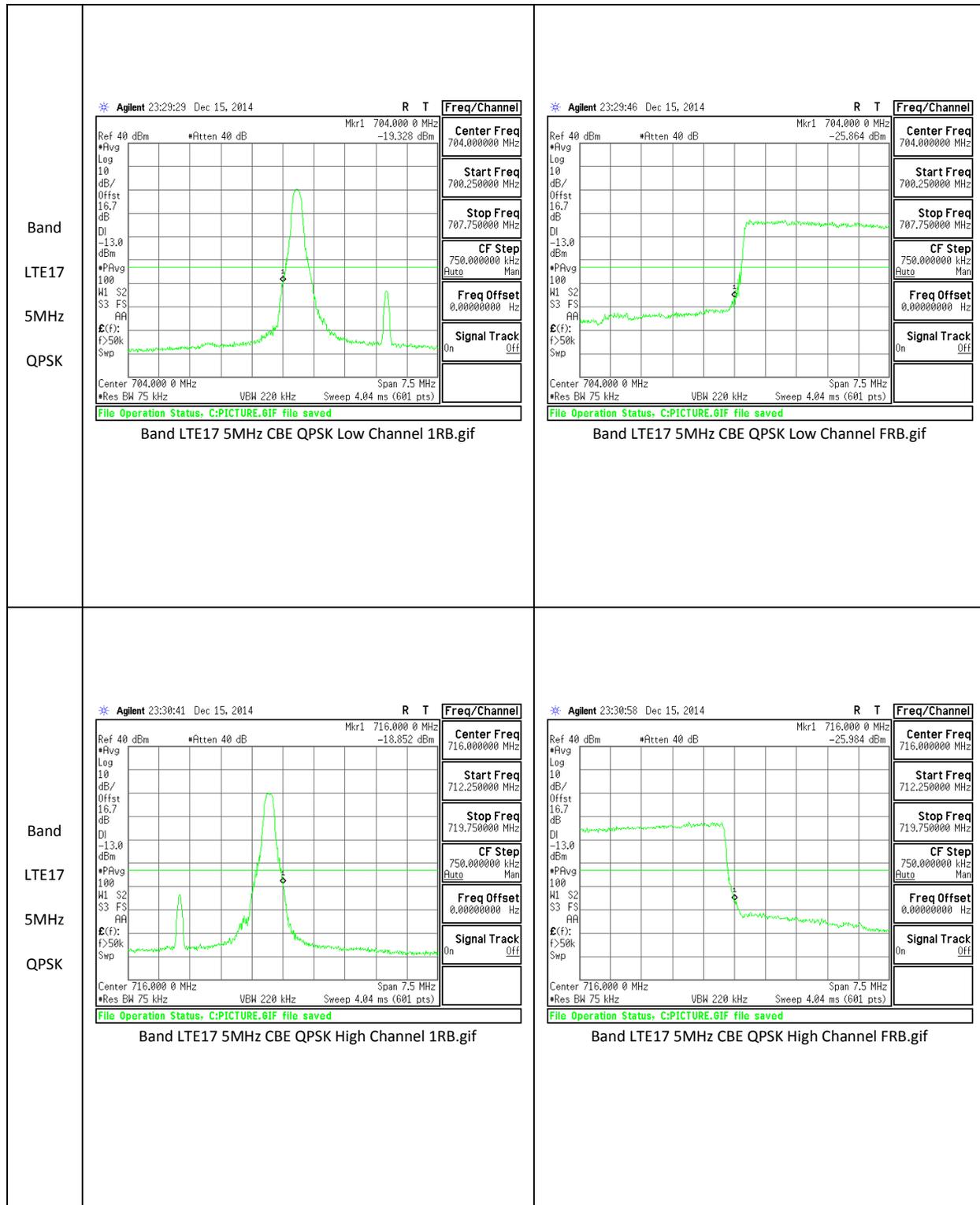
RESULTS

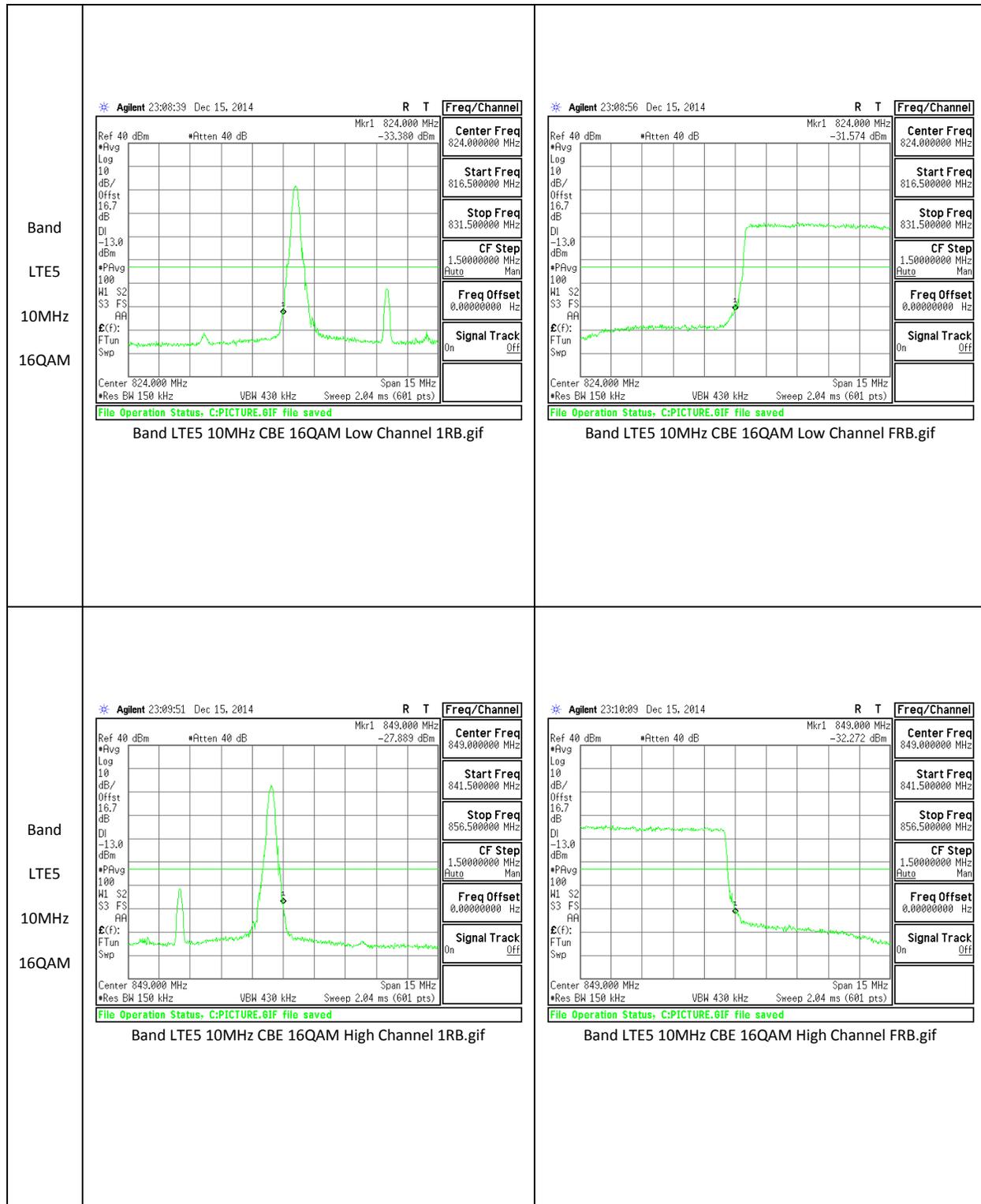
10.2.1. BAND EDGE PLOTS

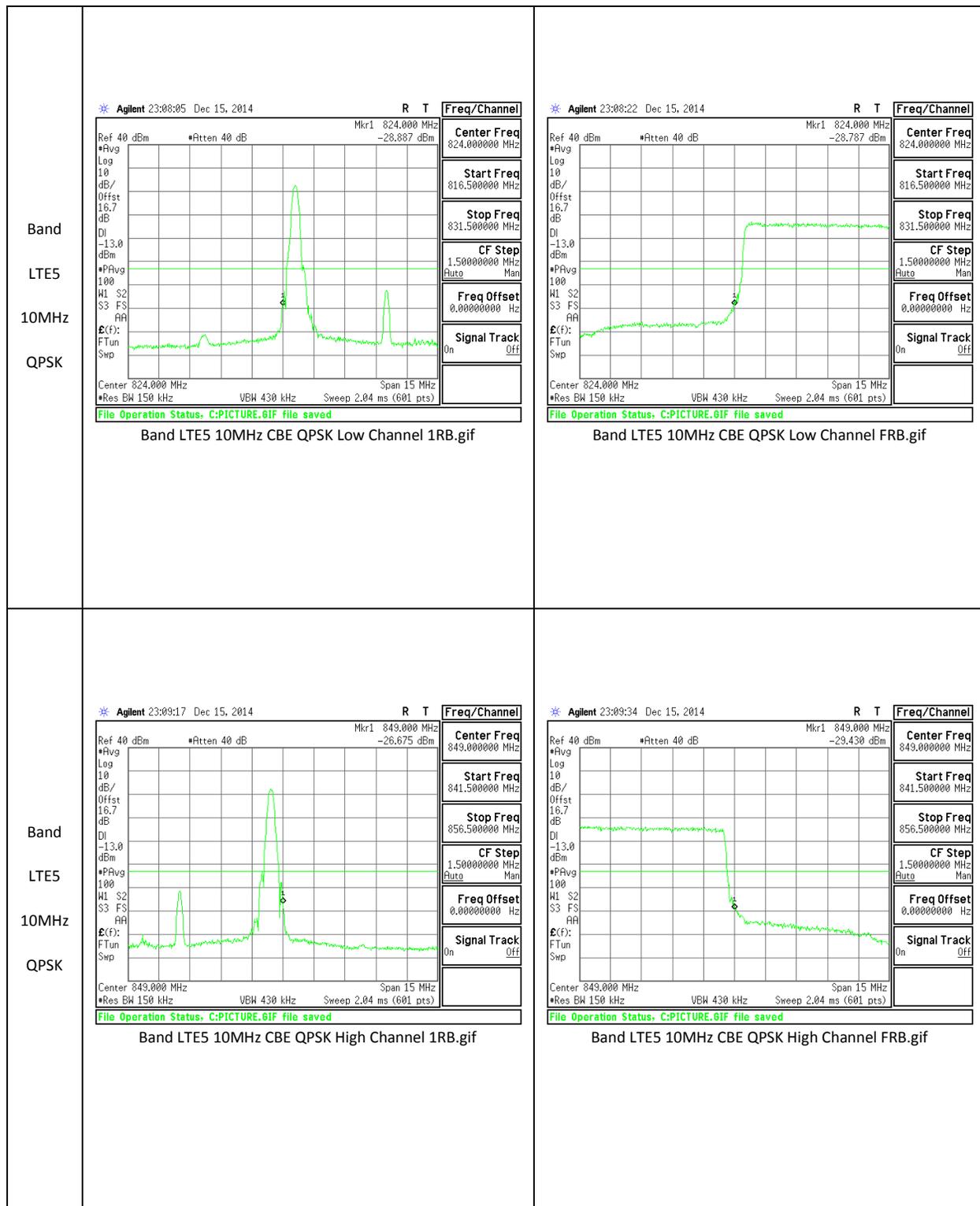


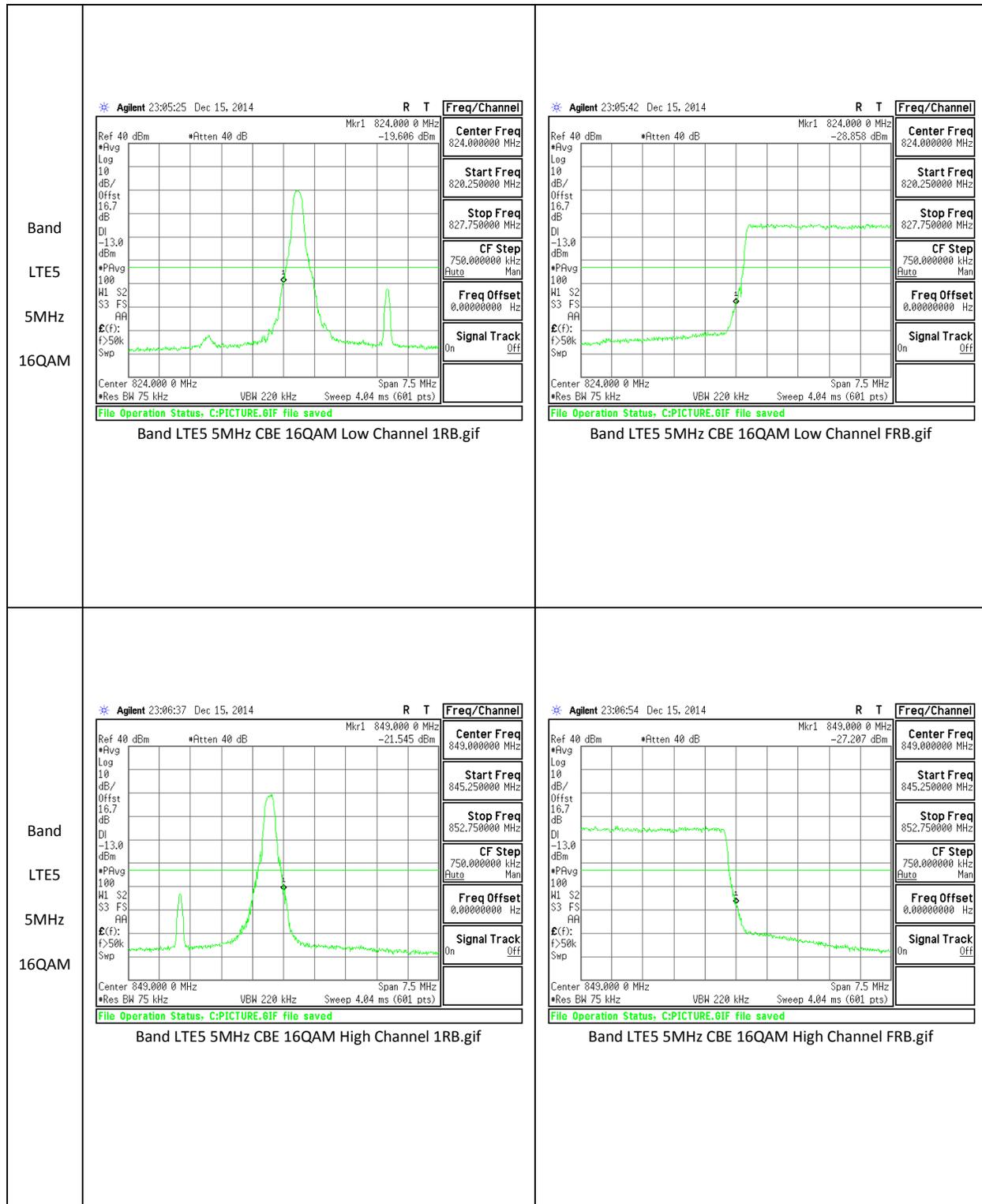


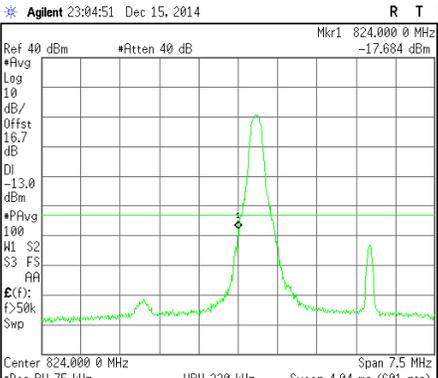
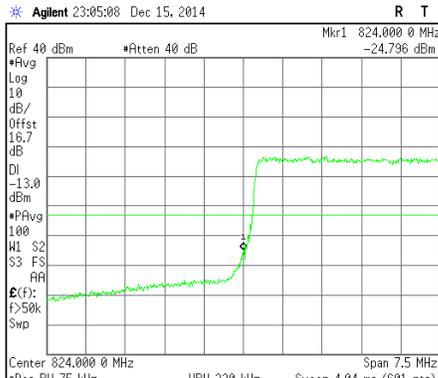
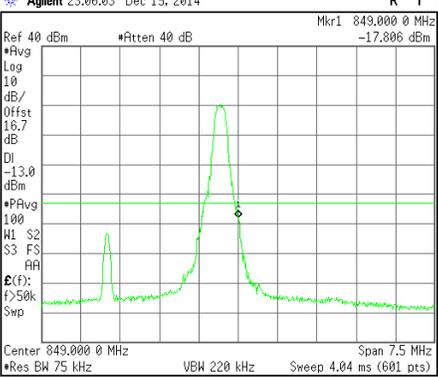
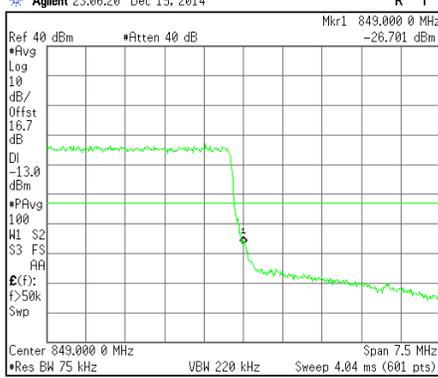


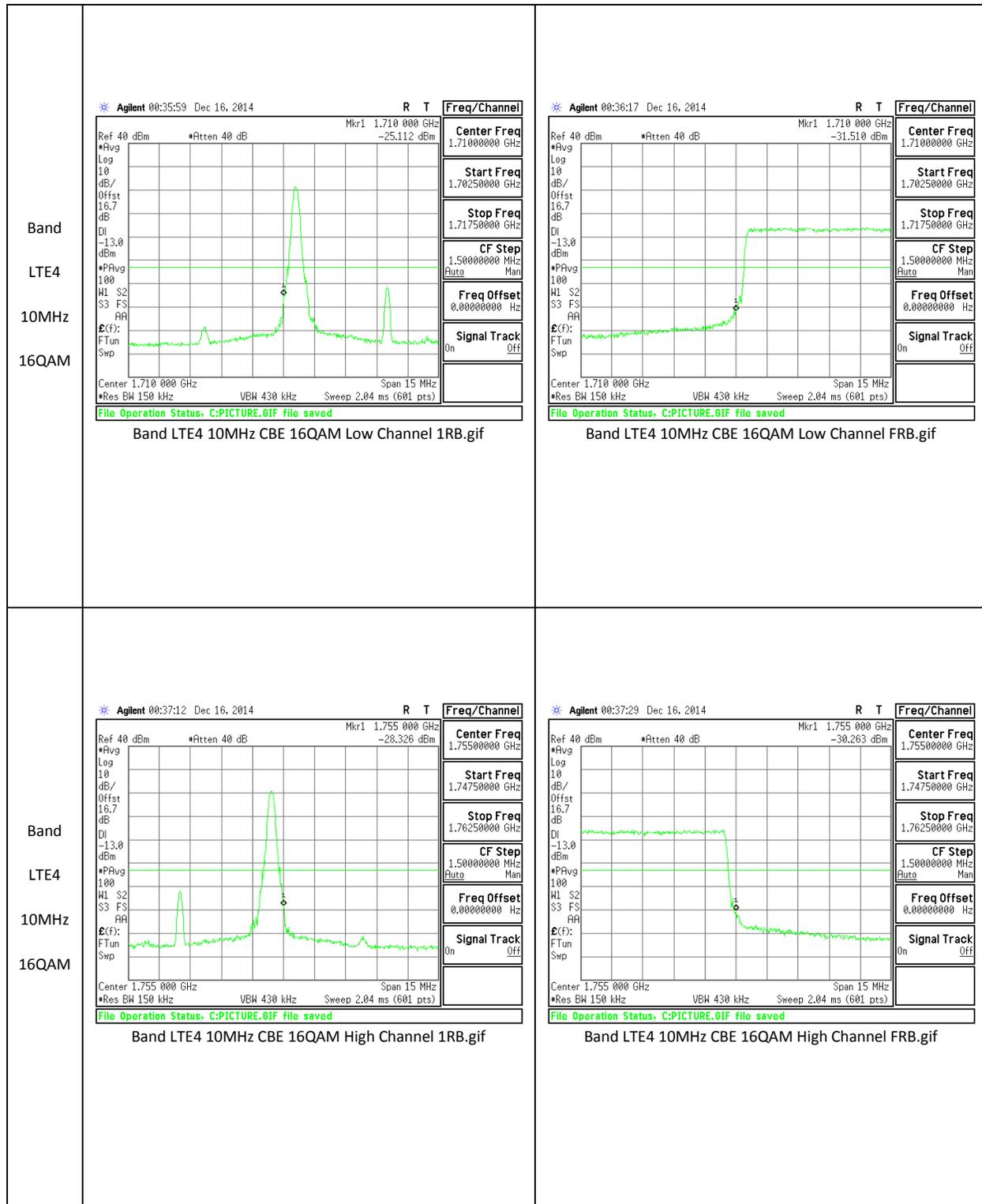


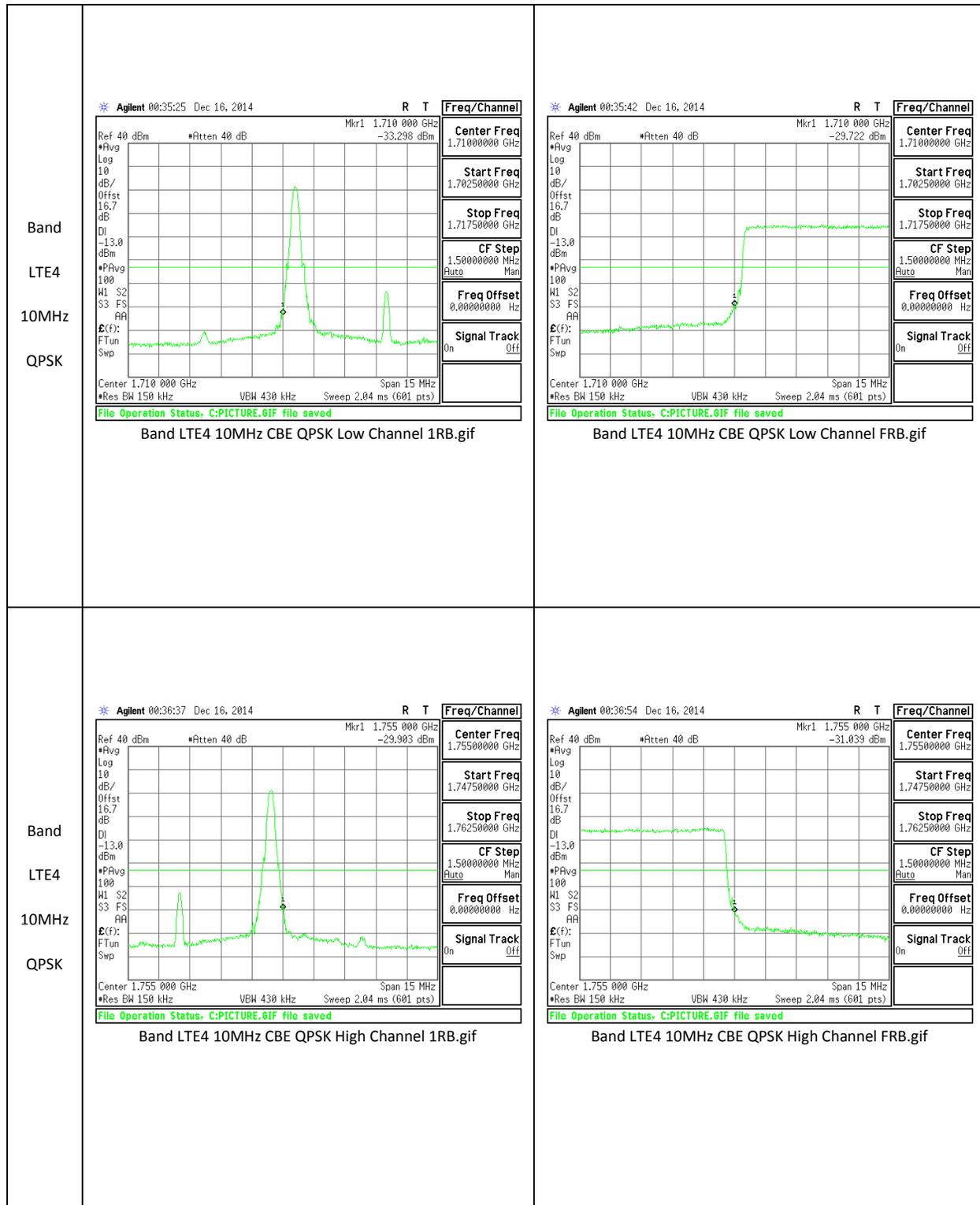


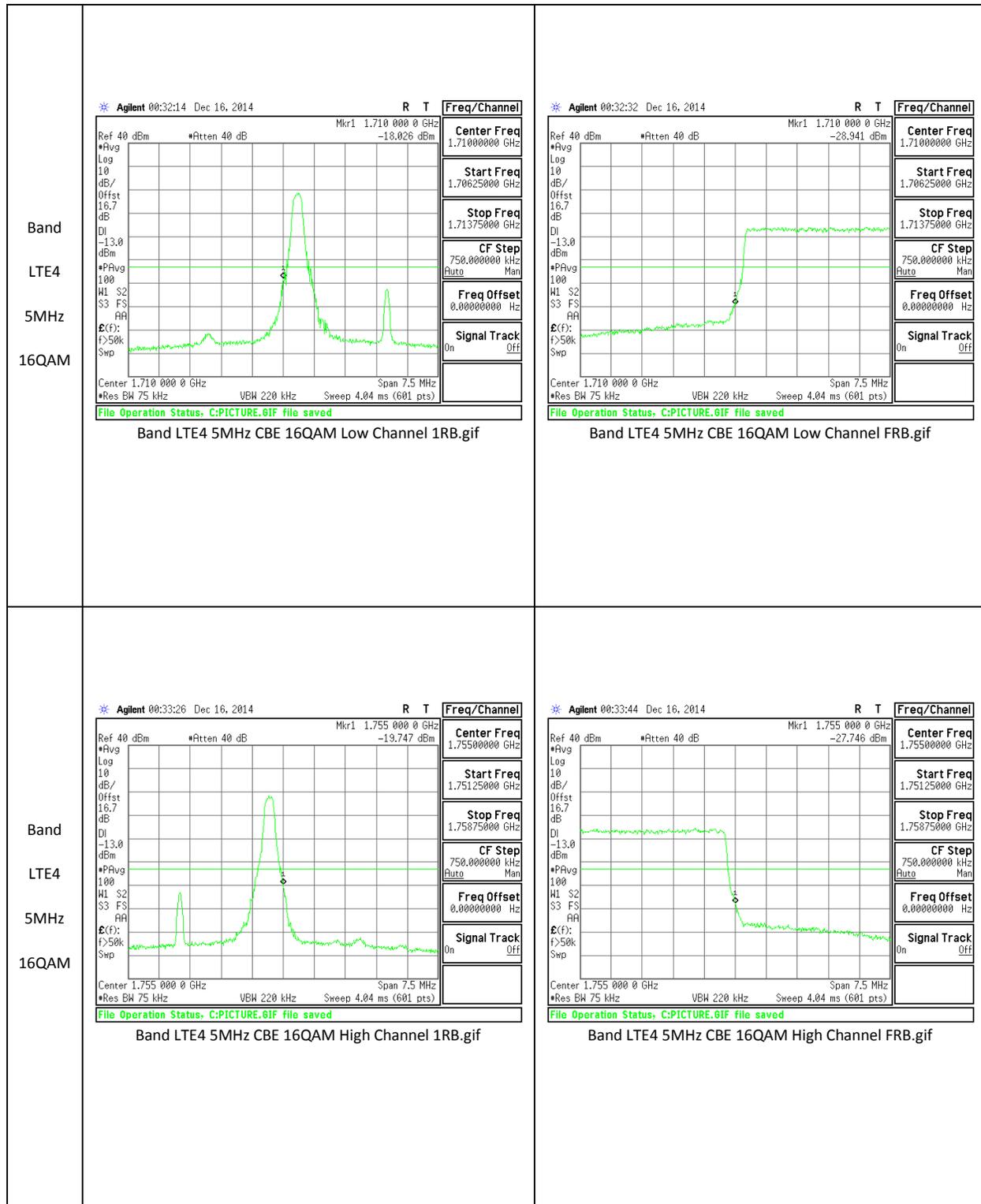


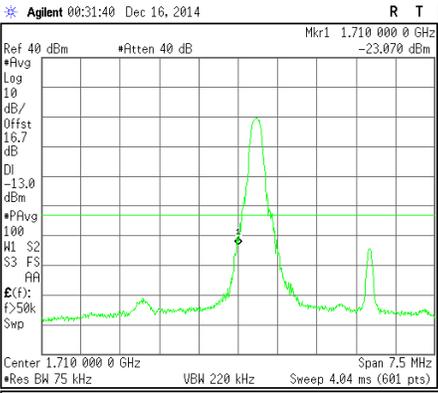
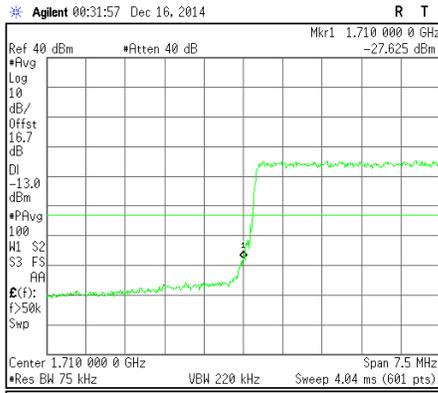
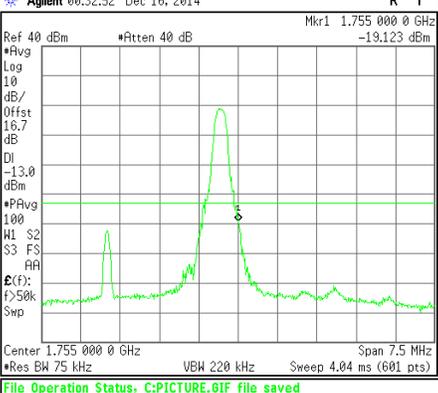
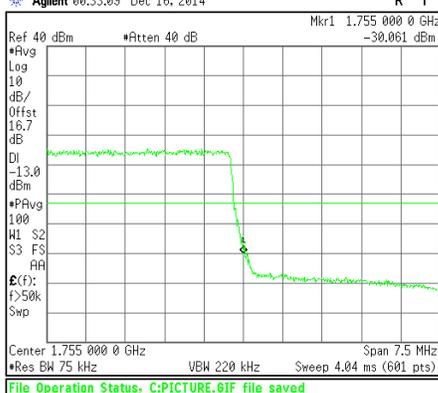


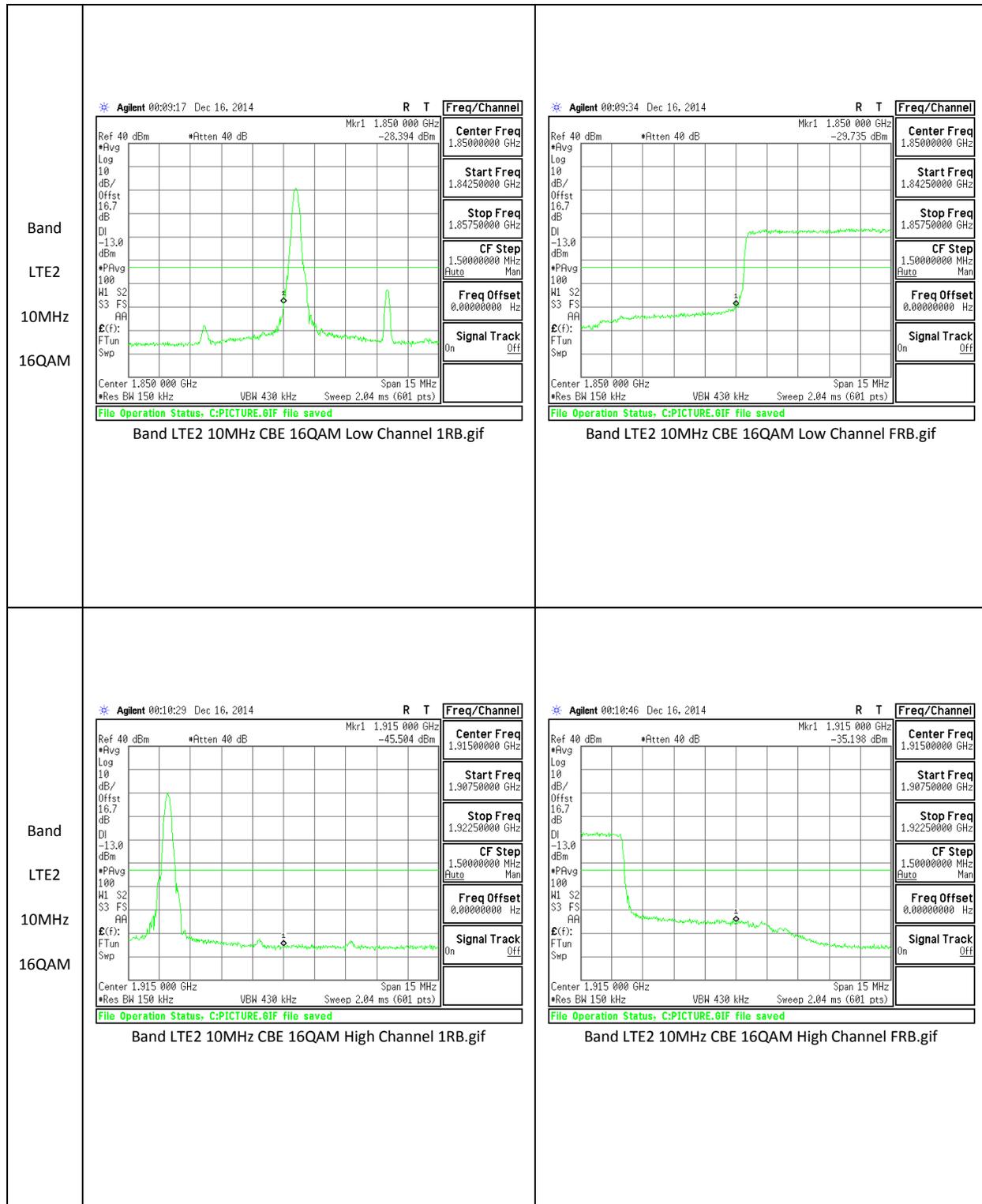
<p>Band LTE5 5MHz QPSK</p>	 <p>Agilent 23:04:51 Dec 15, 2014</p> <p>Center Freq: 824.000000 MHz Start Freq: 820.250000 MHz Stop Freq: 827.750000 MHz CF Step: 750.000000 kHz Freq Offset: 0.00000000 Hz Signal Track: On</p> <p>File Operation Status: C:PICTURE.GIF file saved</p> <p>Band LTE5 5MHz CBE QPSK Low Channel 1RB.gif</p>	 <p>Agilent 23:05:08 Dec 15, 2014</p> <p>Center Freq: 824.000000 MHz Start Freq: 820.250000 MHz Stop Freq: 827.750000 MHz CF Step: 750.000000 kHz Freq Offset: 0.00000000 Hz Signal Track: On</p> <p>File Operation Status: C:PICTURE.GIF file saved</p> <p>Band LTE5 5MHz CBE QPSK Low Channel FRB.gif</p>
<p>Band LTE5 5MHz QPSK</p>	 <p>Agilent 23:06:03 Dec 15, 2014</p> <p>Center Freq: 849.000000 MHz Start Freq: 845.250000 MHz Stop Freq: 852.750000 MHz CF Step: 750.000000 kHz Freq Offset: 0.00000000 Hz Signal Track: On</p> <p>File Operation Status: C:PICTURE.GIF file saved</p> <p>Band LTE5 5MHz CBE QPSK High Channel 1RB.gif</p>	 <p>Agilent 23:06:20 Dec 15, 2014</p> <p>Center Freq: 849.000000 MHz Start Freq: 845.250000 MHz Stop Freq: 852.750000 MHz CF Step: 750.000000 kHz Freq Offset: 0.00000000 Hz Signal Track: On</p> <p>File Operation Status: C:PICTURE.GIF file saved</p> <p>Band LTE5 5MHz CBE QPSK High Channel FRB.gif</p>

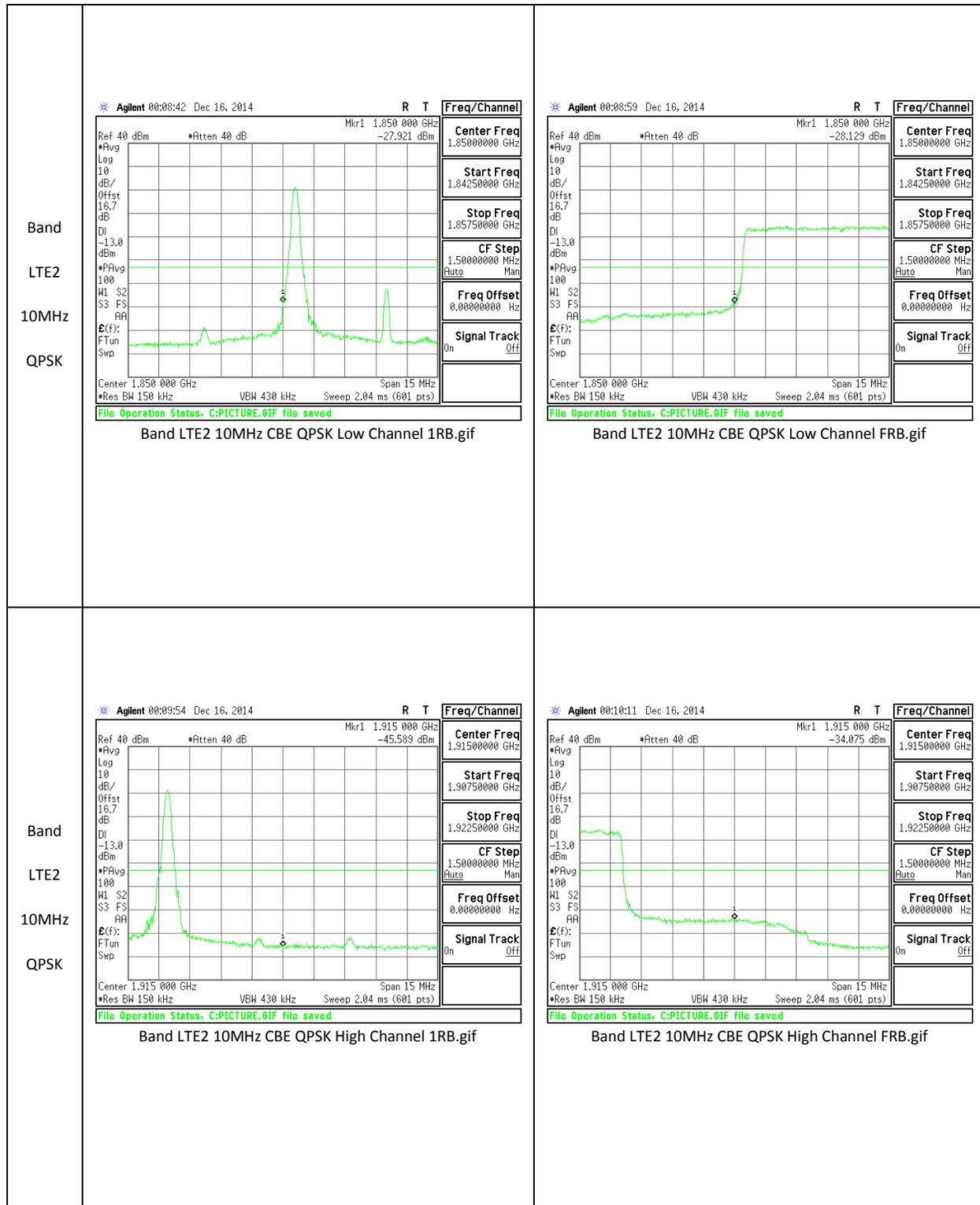


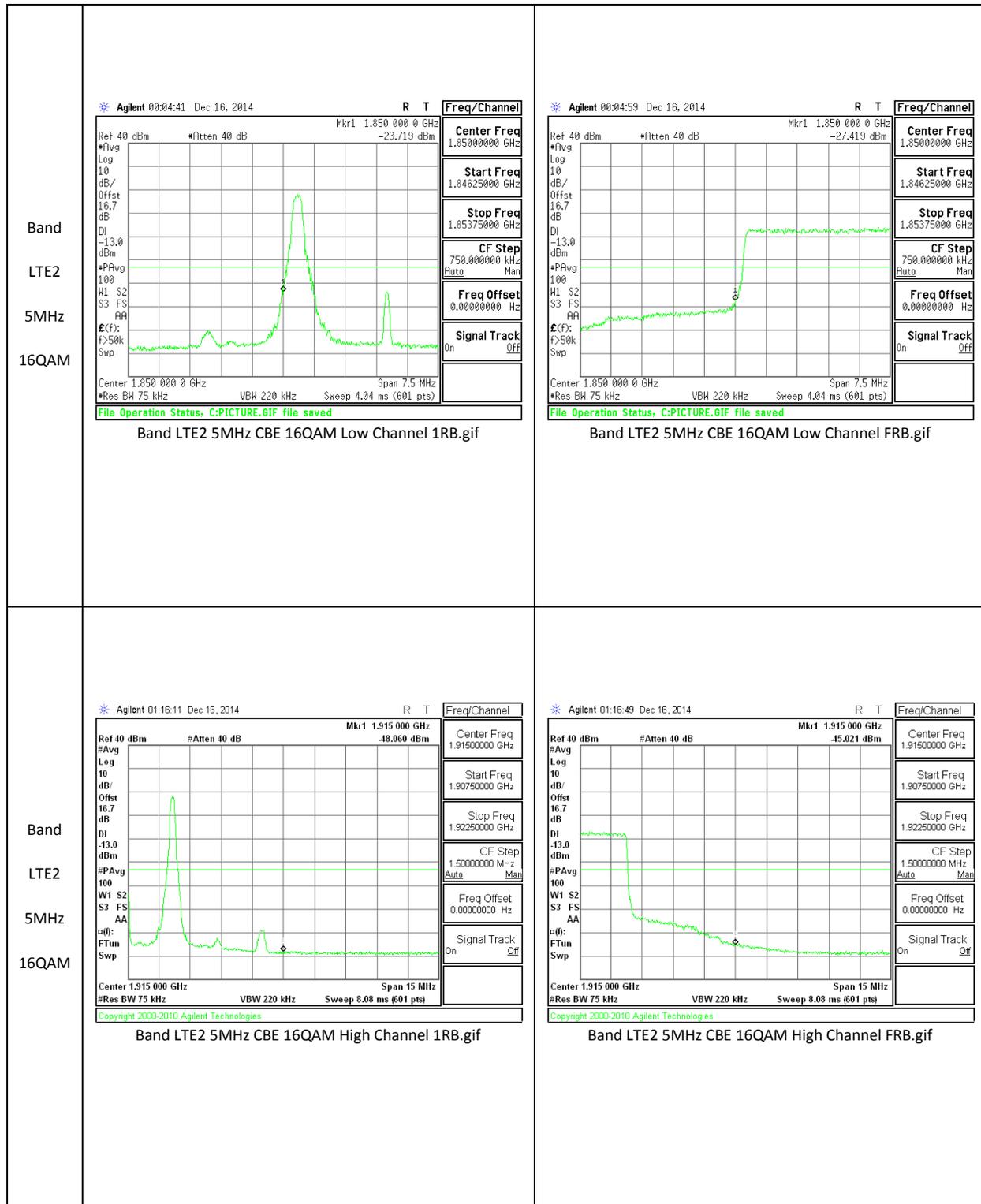


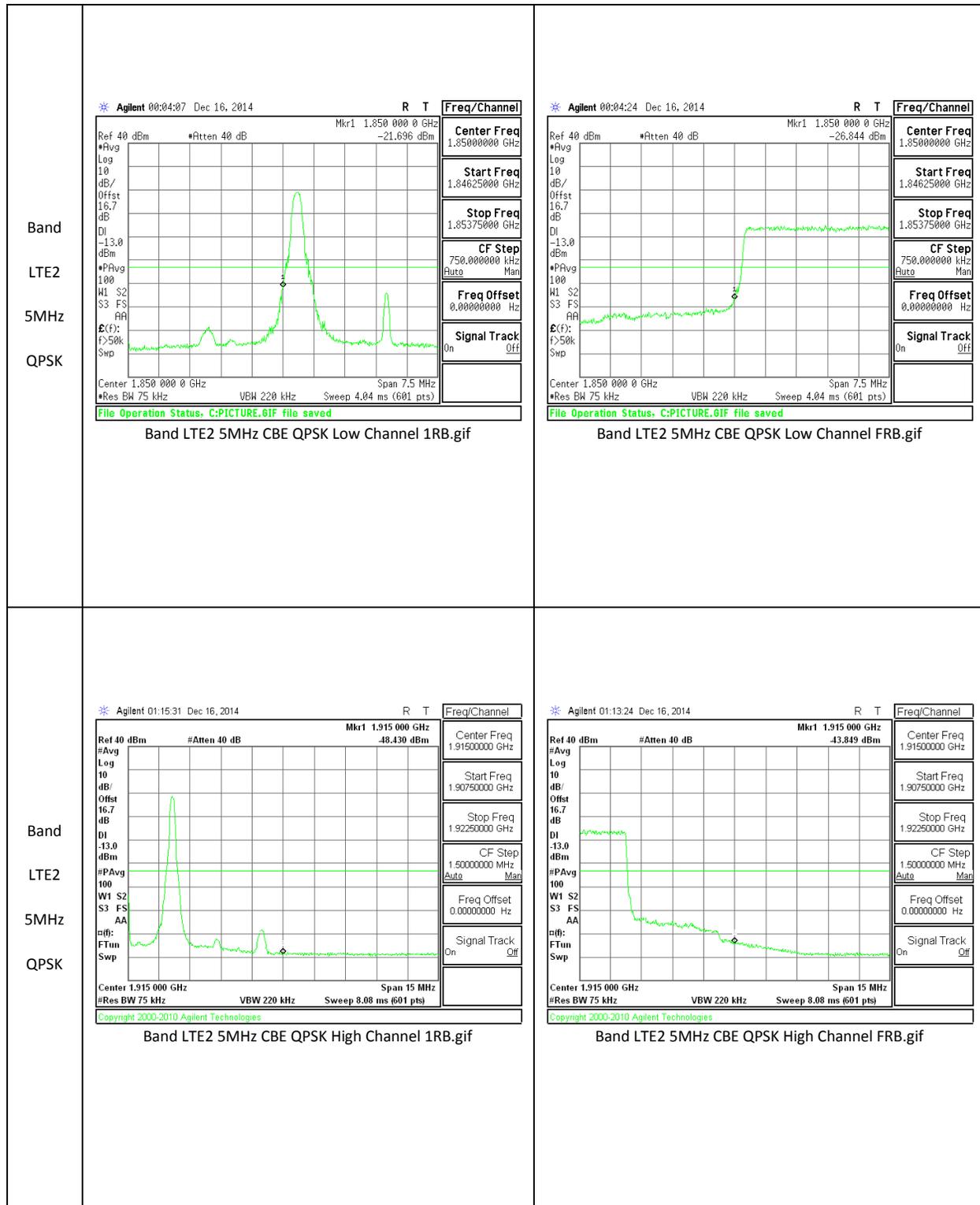


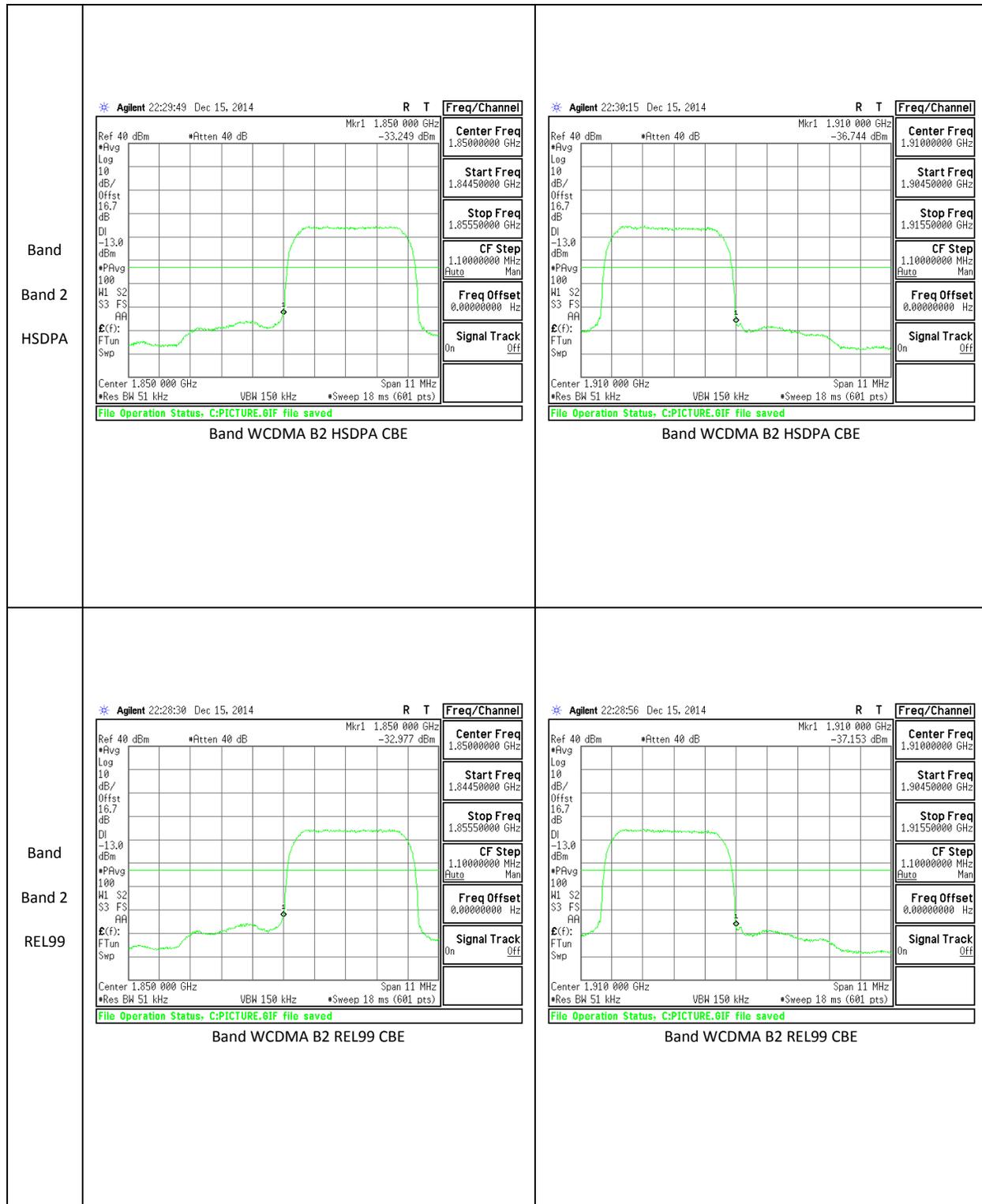
<p>Band LTE4 5MHz QPSK</p>	 <p>Agilent 00:31:40 Dec 16, 2014</p> <p>Center Freq: 1.71000000 GHz Start Freq: 1.70625000 GHz Stop Freq: 1.71375000 GHz CF Step: 750.000000 kHz Freq Offset: 0.00000000 Hz Signal Track: On</p> <p>File Operation Status: C:PICTURE.GIF file saved</p> <p>Band LTE4 5MHz CBE QPSK Low Channel 1RB.gif</p>	 <p>Agilent 00:31:57 Dec 16, 2014</p> <p>Center Freq: 1.71000000 GHz Start Freq: 1.70625000 GHz Stop Freq: 1.71375000 GHz CF Step: 750.000000 kHz Freq Offset: 0.00000000 Hz Signal Track: On</p> <p>File Operation Status: C:PICTURE.GIF file saved</p> <p>Band LTE4 5MHz CBE QPSK Low Channel FRB.gif</p>
<p>Band LTE4 5MHz QPSK</p>	 <p>Agilent 00:32:52 Dec 16, 2014</p> <p>Center Freq: 1.75500000 GHz Start Freq: 1.75125000 GHz Stop Freq: 1.75875000 GHz CF Step: 750.000000 kHz Freq Offset: 0.00000000 Hz Signal Track: On</p> <p>File Operation Status: C:PICTURE.GIF file saved</p> <p>Band LTE4 5MHz CBE QPSK High Channel 1RB.gif</p>	 <p>Agilent 00:33:09 Dec 16, 2014</p> <p>Center Freq: 1.75500000 GHz Start Freq: 1.75125000 GHz Stop Freq: 1.75875000 GHz CF Step: 750.000000 kHz Freq Offset: 0.00000000 Hz Signal Track: On</p> <p>File Operation Status: C:PICTURE.GIF file saved</p> <p>Band LTE4 5MHz CBE QPSK High Channel FRB.gif</p>

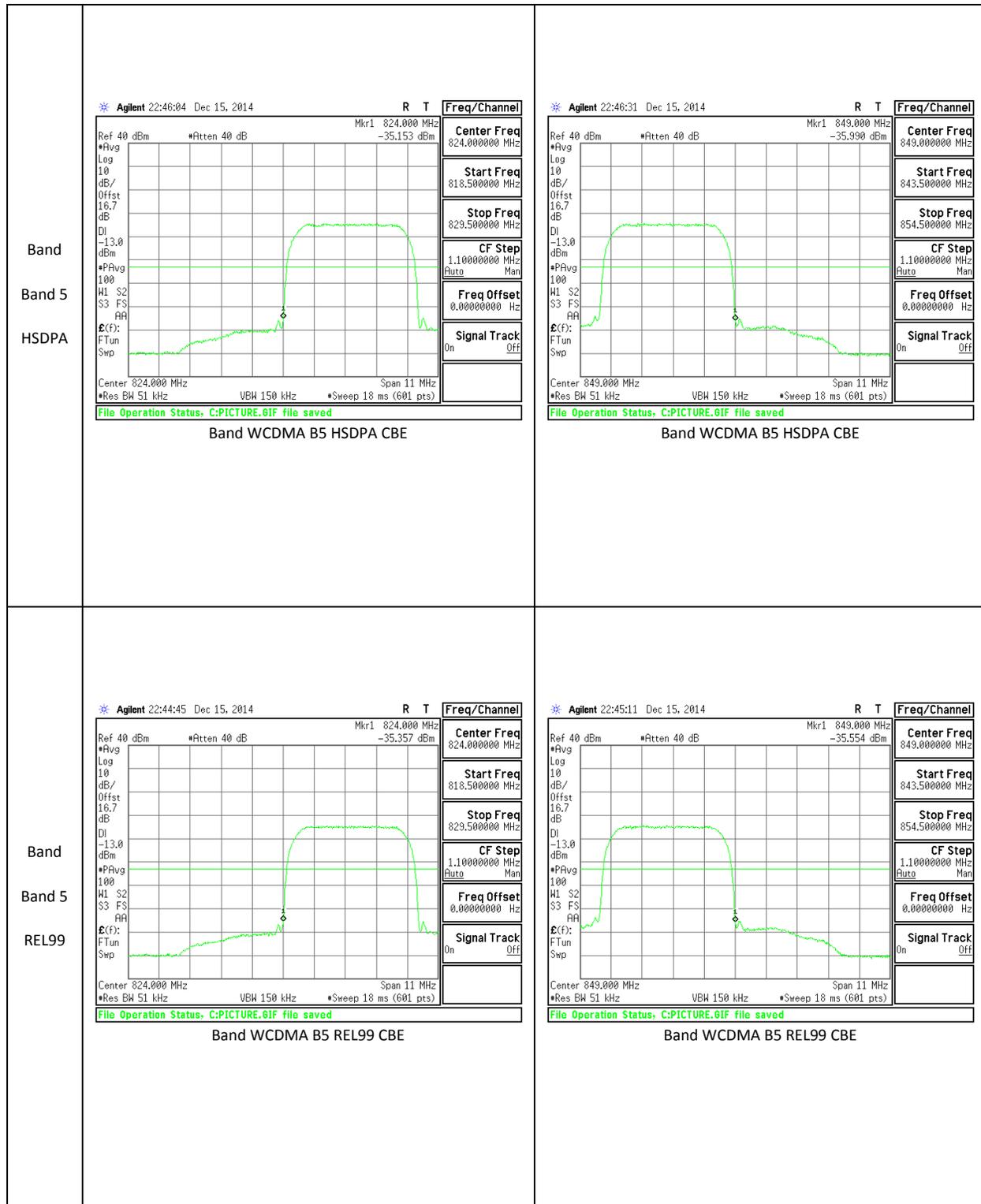


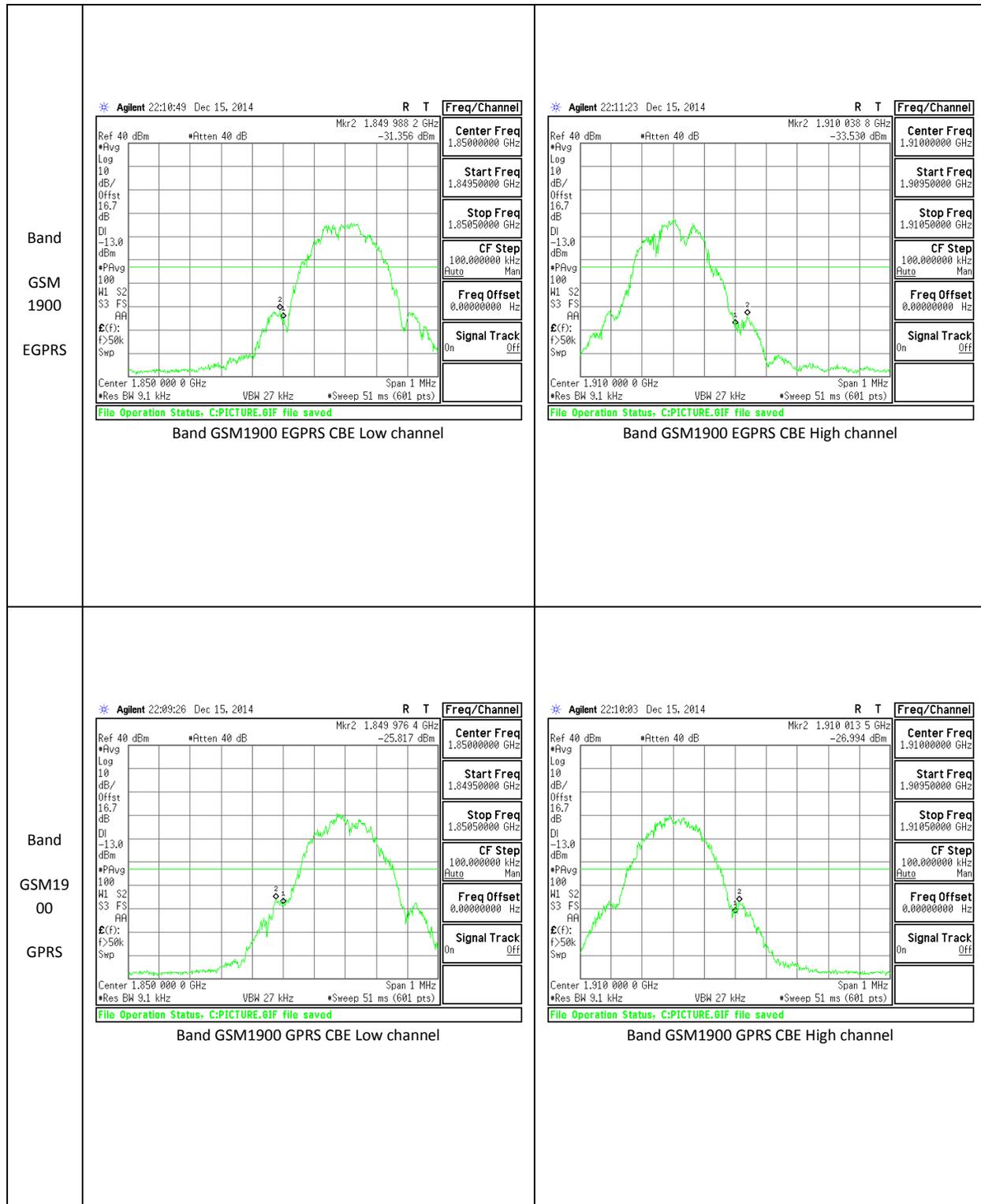


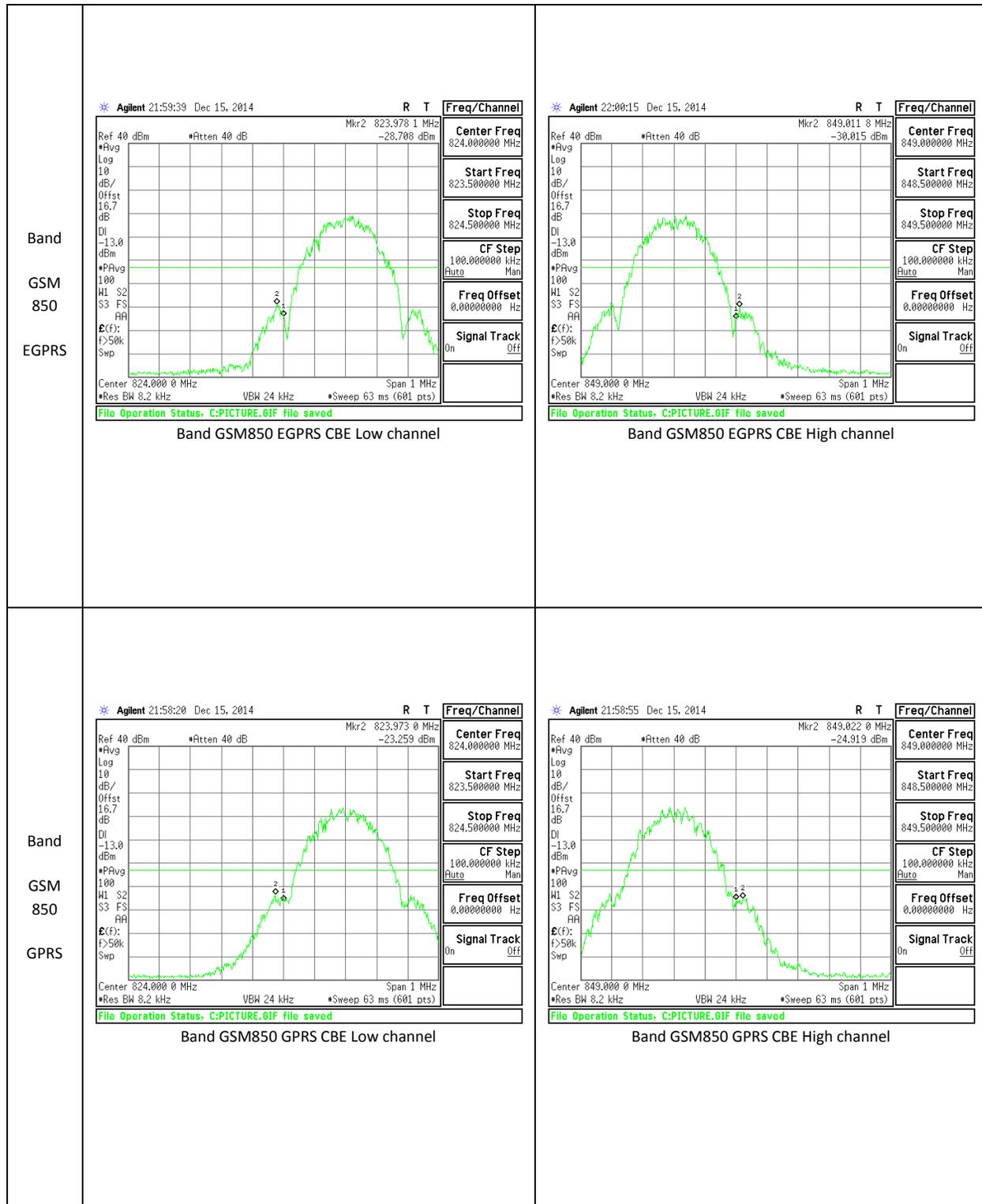












10.3. OUT OF BAND EMISSIONS

RULE PART(S)

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

LIMITS

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

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

TEST PROCEDURE

Per KDB 971168 D01 Power Meas License Digital Systems v02r01

The RF output of the transmitter was connected to a spectrum analyzer through a calibrated coaxial cable. Sufficient scans were taken to show the out-of-band Emissions, if any, up to 10th harmonic. Multiple sweeps were recorded in maximum hold mode using a peak detector to ensure that the worst-case emissions were caught.

MODES TESTED

GSM, WCDMA, and LTE

RESULTS

10.3.1. OUT OF BAND EMISSIONS RESULT

Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE17	10	QPSK	709	-27.289	-13	-14.289
			710	-26.347	-13	-13.347
			711	-27.02	-13	-14.02
		16QAM	709	-26.769	-13	-13.769
			710	-26.992	-13	-13.992
			711	-27.271	-13	-14.271
Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE17	5	QPSK	706.5	-27.078	-13	-14.078
			710	-26.909	-13	-13.909
			713.5	-26.971	-13	-13.971
		16QAM	706.5	-26.803	-13	-13.803
			710	-26.461	-13	-13.461
			713.5	-26.662	-13	-13.662

Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE5	10	QPSK	829	-26.233	-13	-13.233
			836.5	-26.437	-13	-13.437
			844	-22.714	-13	-9.714
		16QAM	829	-27.054	-13	-14.054
			836.5	-25.406	-13	-12.406
			844	-27.687	-13	-14.687
Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE5	5	QPSK	826.5	-26.213	-13	-13.213
			836.5	-27.162	-13	-14.162
			846.5	-26.888	-13	-13.888
		16QAM	826.5	-27.079	-13	-14.079
			836.5	-26.467	-13	-13.467
			846.5	-27.258	-13	-14.258

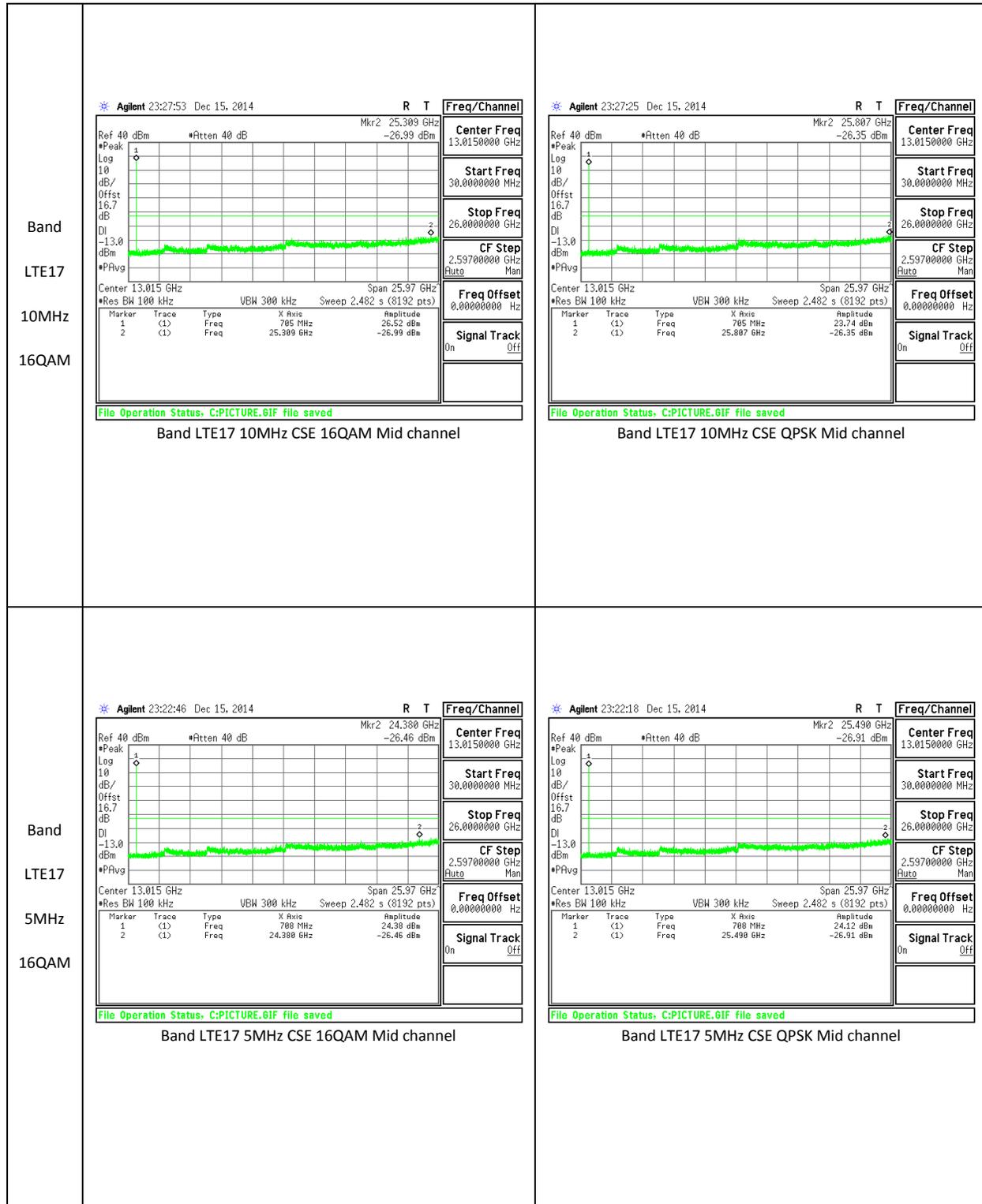
Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE4	10	QPSK	1715	-30.167	-13	-17.167
			1732.5	-30.1	-13	-17.1
			1750	-30.554	-13	-17.554
		16QAM	1715	-30.943	-13	-17.943
			1732.5	-30.22	-13	-17.22
			1750	-30.229	-13	-17.229
Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE4	5	QPSK	1712.5	-30.128	-13	-17.128
			1732.5	-30.082	-13	-17.082
			1752.5	-30.006	-13	-17.006
		16QAM	1712.5	-30.299	-13	-17.299
			1732.5	-30.639	-13	-17.639
			1752.5	-29.909	-13	-16.909

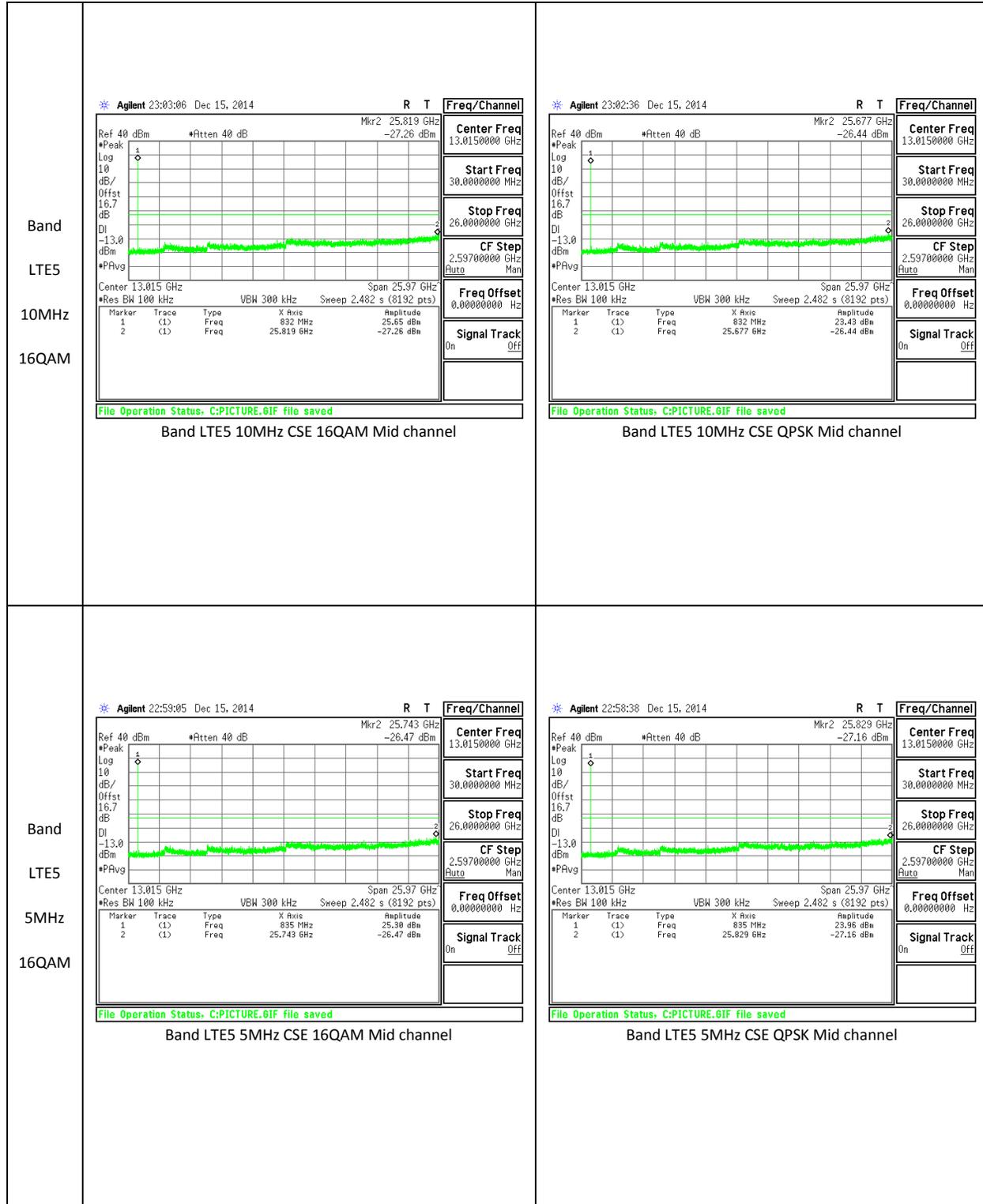
Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE2	10	QPSK	1855	-30.725	-13	-17.725
			1880	-27.58	-13	-14.58
			1905	-22.778	-13	-9.778
		16QAM	1855	-30.284	-13	-17.284
			1880	-25.997	-13	-12.997
			1905	-27.456	-13	-14.456
Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE2	5	QPSK	1852.5	-30.169	-13	-17.169
			1880	-30.191	-13	-17.191
			1907.5	-30.613	-13	-17.613
		16QAM	1852.5	-30.234	-13	-17.234
			1880	-29.976	-13	-16.976
			1907.5	-30.407	-13	-17.407

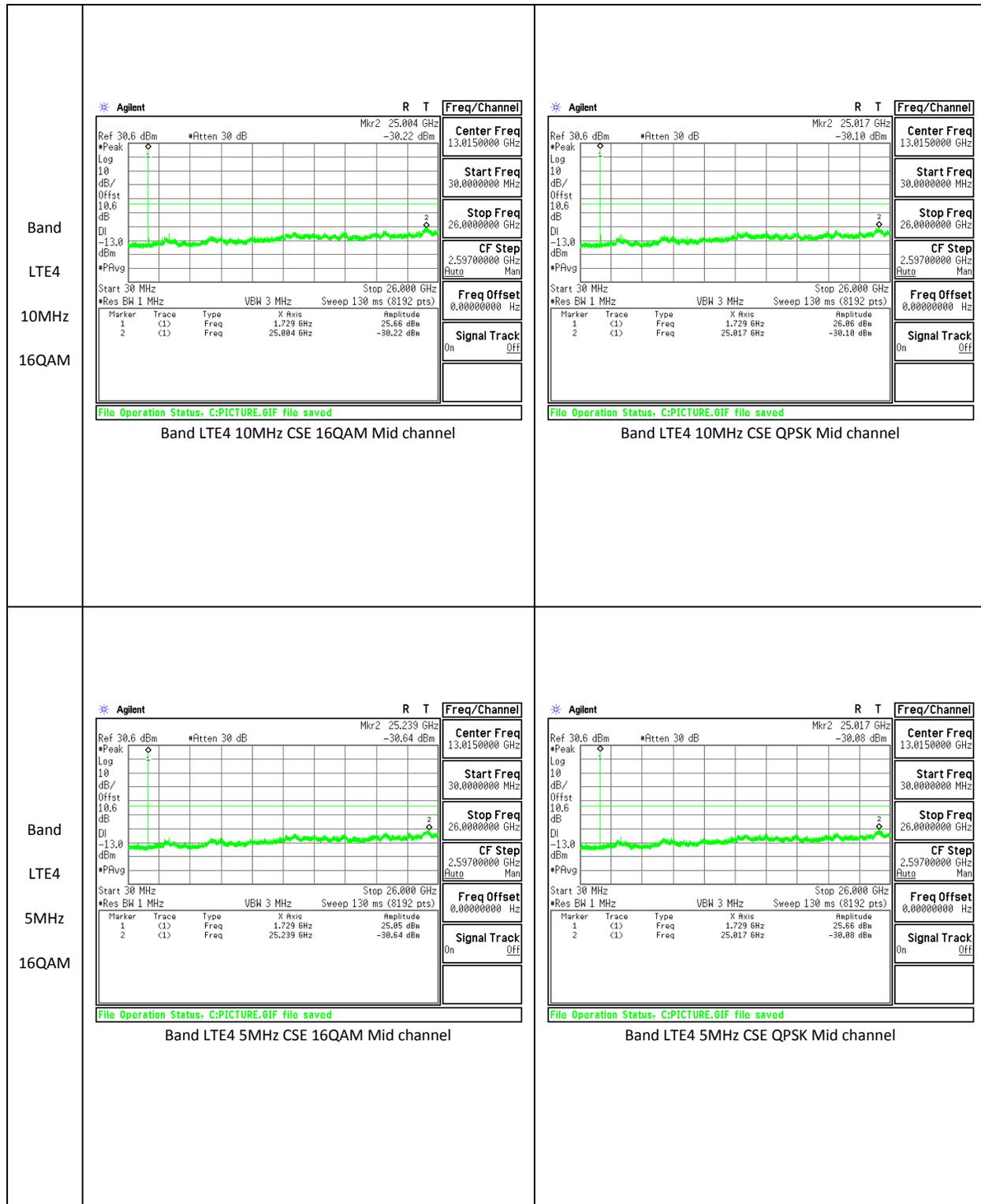
Band	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
GSM850	GMSK	824.2			
		836.6			
		848.8			
	GPRS	824.2	-19.338	-13	-6.338
		836.6	-19.955	-13	-6.955
		848.8	-19.304	-13	-6.304
	EGPRS	824.2	-18.944	-13	-5.944
		836.6	-19.339	-13	-6.339
		848.8	-19.456	-13	-6.456
GSM1900	GMSK	1850.2			
		1880			
		1909.8			
	GPRS	1850.2	-19.936	-13	-6.936
		1880	-19.878	-13	-6.878
		1909.8	-19.789	-13	-6.789
	EGPRS	1850.2	-19.63	-13	-6.63
		1880	-19.651	-13	-6.651
		1909.8	-18.921	-13	-5.921

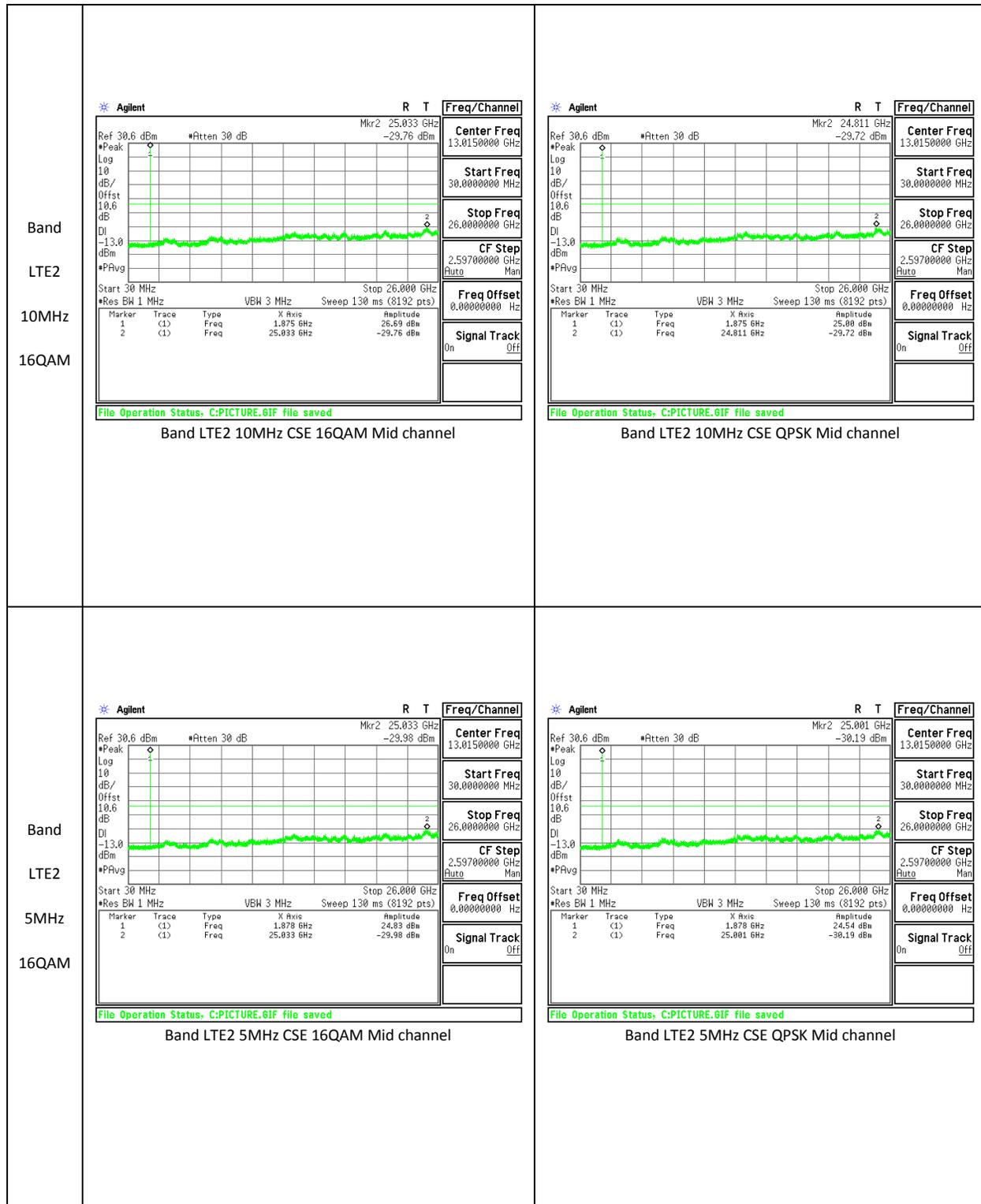
Band	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
WCDMA Band 5	REL99	824.2	-18.67	-13	-5.67
		836.6	-19.958	-13	-6.958
		848.8	-19.664	-13	-6.664
	HSDPA	824.2	-19.573	-13	-6.573
		836.6	-19.63	-13	-6.63
		848.8	-19.285	-13	-6.285
	HSUPA	824.2			
		836.6			
		848.8			
WCDMA Band 2	REL99	1850.2	-19.18	-13	-6.18
		1880	-19.652	-13	-6.652
		1909.8	-19.427	-13	-6.427
	HSDPA	1850.2	-18.749	-13	-5.749
		1880	-18.637	-13	-5.637
		1909.8	-19.664	-13	-6.664
	HSUPA	1850.2			
		1880			
		1909.8			

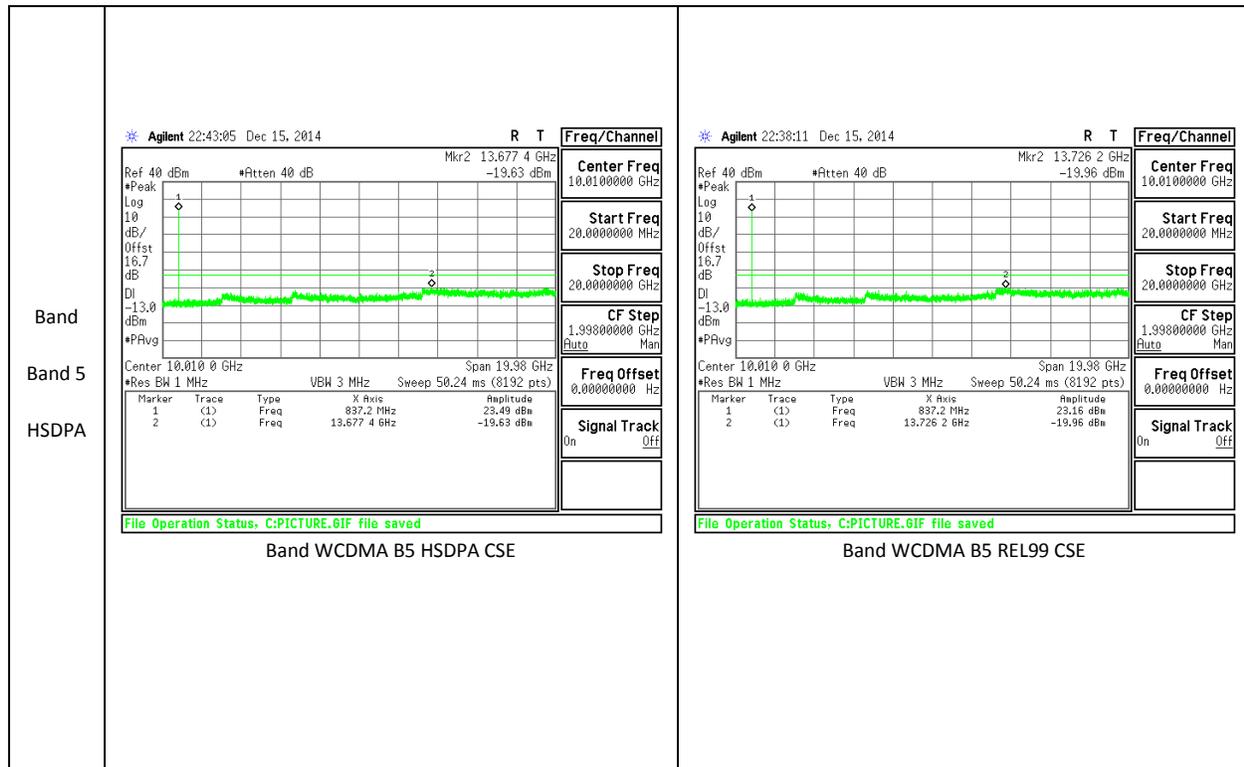
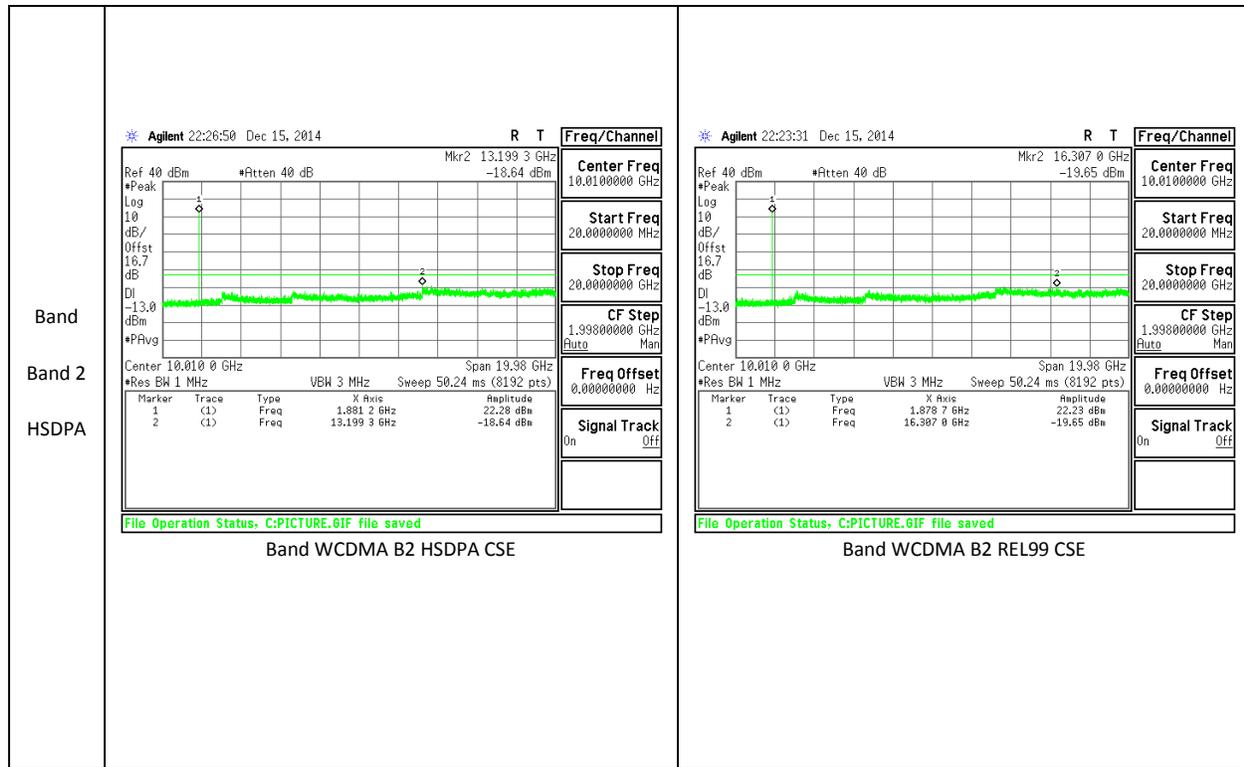
10.3.2. OUT OF BAND EMISSIONS PLOTS

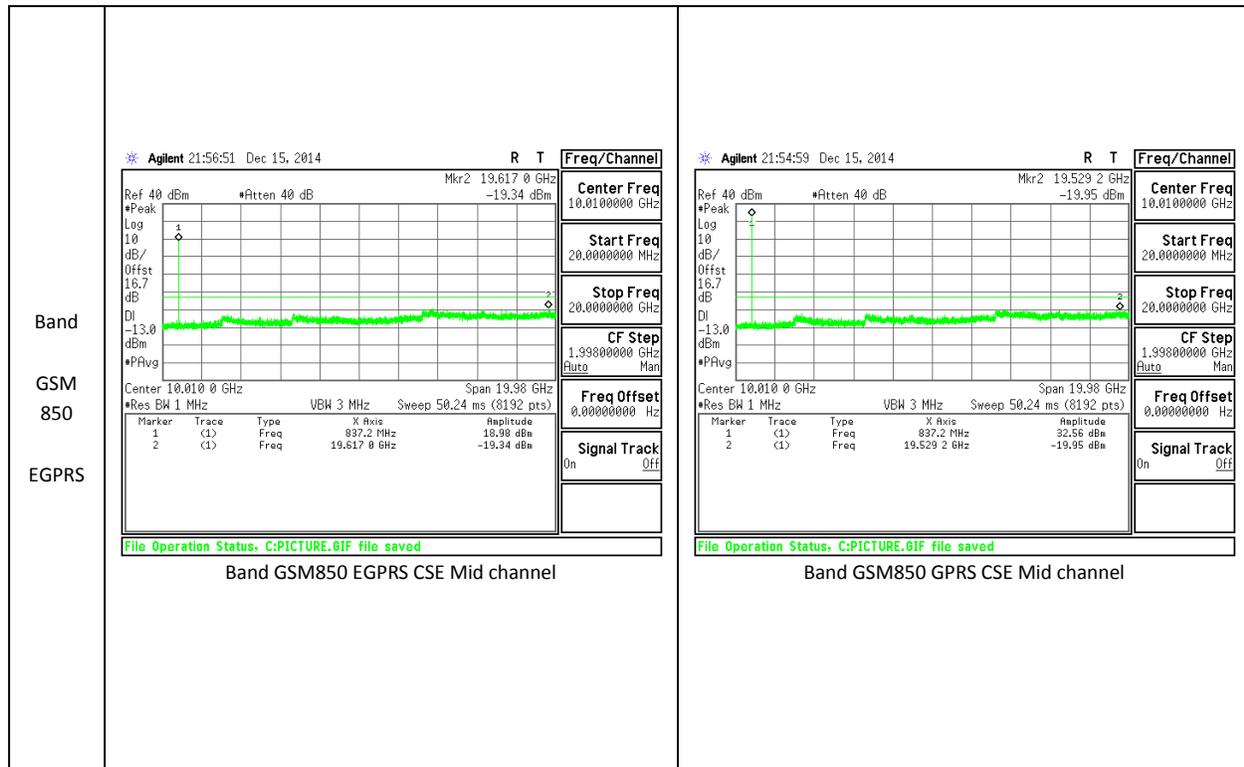
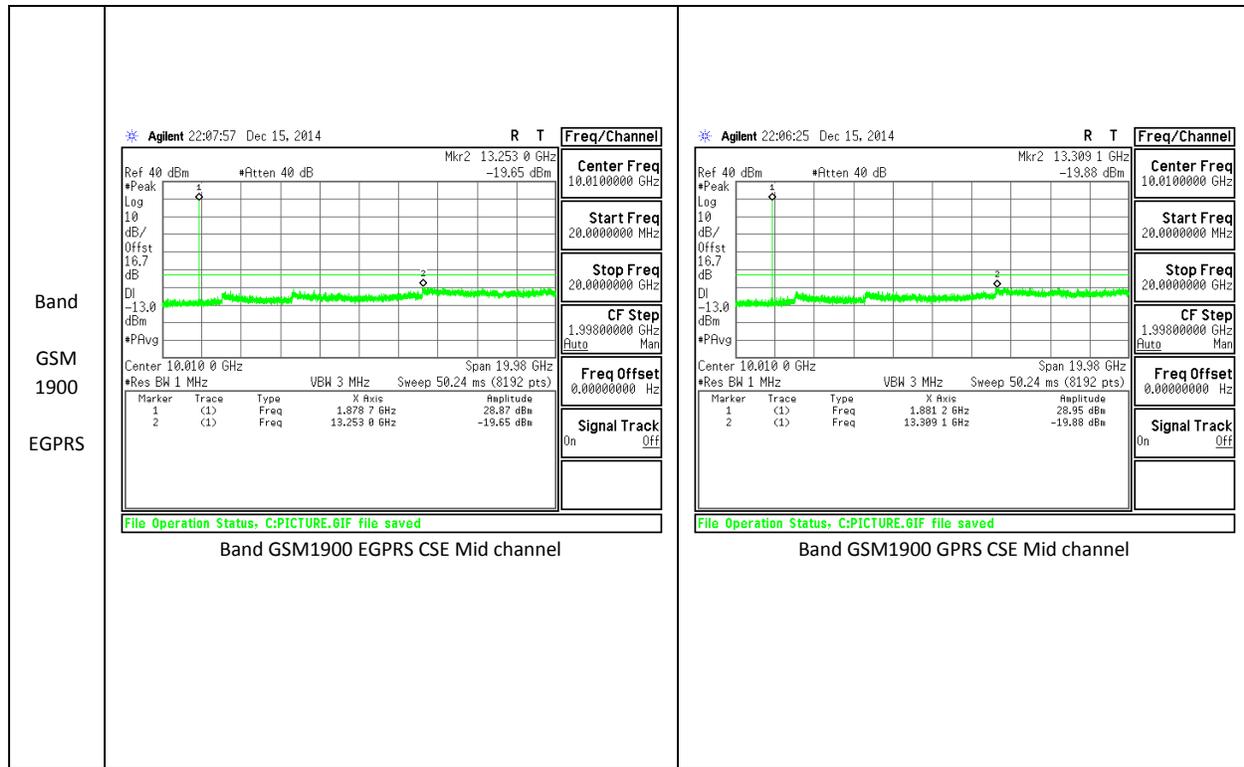












10.4. FREQUENCY STABILITY

RULE PART(S)

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

LIMITS

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

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

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

TEST PROCEDURE

Per KDB 971168 D01 Power Meas License Digital Systems v02r01

MODES TESTED

GSM, WCDMA, and LTE

RESULTS

See the following pages.

10.4.1. FREQUENCY STABILITY RESULTS

GPRS 850 -Freq: 836.6MHz– MID CHANNEL

Reference Frequency: PCS Mid Channel 836.6 MHz @ 20°C				
Limit: to stay +- 2.5 ppm = 2091.500 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	50	836.600015	0.006	2.5
3.80	40	836.600021	-0.001	2.5
3.80	30	836.600019	0.002	2.5
3.80	20	836.600020	0	2.5
3.80	10	836.600021	-0.001	2.5
3.80	0	836.600025	-0.006	2.5
3.80	-10	836.600016	0.006	2.5
3.80	-20	836.600021	-0.001	2.5
3.80	-30	836.600024	-0.004	2.5

Reference Frequency: PCS Mid Channel 836.6 MHz @ 20°C				
Limit: to stay +- 2.5 ppm = 2091.500 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	20	836.600020	0	2.5
4.37	20	836.6000212	-0.001	2.5
3.23(End of volt)	20	836.6000224	-0.003	2.5

GPRS 1900 -Freq: 1880MHz– MID CHANNEL

Reference Frequency: PCS Mid Channel		1880	MHz @ 20°C	
Limit: to stay +/- 2.5 ppm =		4700.000	Hz	
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	50	1880.000028	-0.006	2.5
3.80	40	1880.000018	0.000	2.5
3.80	30	1880.000033	-0.008	2.5
3.80	20	1880.000017	0	2.5
3.80	10	1880.000034	-0.009	2.5
3.80	0	1880.000035	-0.010	2.5
3.80	-10	1880.000023	-0.003	2.5
3.80	-20	1880.000024	-0.004	2.5
3.80	-30	1880.000017	0.000	2.5

Reference Frequency: PCS Mid Channel		1880	MHz @ 20°C	
Limit: to stay +/- 2.5 ppm =		4700.000	Hz	
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	20	1880.000017	0	2.5
4.37	20	1880.000023	-0.004	2.5
3.23(End of volt)	20	1880.00002	-0.002	2.5

LTE BAND 4 – MID CHANNEL

Reference Frequency: PCS Mid Channel 1732.500004MHz @ 20°C Limit: within the authorized block or +/- 2.5 ppm = 4331.250 Hz				
Power Supply (Vdc)	Environment Temperature (*C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	50	1732.500003	0.001	2.5
3.80	40	1732.500005	-0.001	2.5
3.80	30	1732.500003	0.001	2.5
3.80	20	1732.500004	0	2.5
3.80	10	1732.500004	0.000	2.5
3.80	0	1732.500005	-0.001	2.5
3.80	-10	1732.500003	0.001	2.5
3.80	-20	1732.500006	-0.001	2.5
3.80	-30	1732.500002	0.001	2.5

Reference Frequency: PCS Mid Channel 1732.500004 MHz @ 20°C Limit: within the authorized block or +/- 2.5 ppm = 4331.250 Hz				
Power Supply (Vdc)	Environment Temperature (*C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	20	1732.500004	0.00000	2.5
4.37	20	1732.500002	0.00115	2.5
3.23	20	1732.500005	-0.00058	2.5

LTE Band 17 MID CHANNEL

Reference Frequency: PCS Mid Channel 709.999995 MHz @ 20°C Limit: within the authorized block or +/- 2.5 ppm = 1775.000 Hz				
Power Supply (Vdc)	Environment Temperature (*C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	50	709.999994	0.001	2.5
3.80	40	709.999997	-0.003	2.5
3.80	30	709.999996	-0.001	2.5
3.80	20	709.999995	0	2.5
3.80	10	709.999994	0.001	2.5
3.80	0	709.999996	-0.001	2.5
3.80	-10	709.999994	0.001	2.5
3.80	-20	710.000002	-0.010	2.5
3.80	-30	710.000003	-0.011	2.5

Reference Frequency: PCS Mid Channel 709.999995 MHz @ 20°C Limit: within the authorized block or +/- 2.5 ppm = 1775.000 Hz				
Power Supply (Vdc)	Environment Temperature (*C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	20	709.999995	0.00000	2.5
4.37	20	709.999994	0.00141	2.5
3.23	20	709.999993	0.00282	2.5

11. RADIATED TEST RESULTS

11.1. RADIATED POWER (ERP & EIRP)

RULE PART(S)

FCC: §2.1046, §22.913, §24.232, §27 and § 90.635.

LIMITS

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

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

27.50(b) - (10) Portable stations (hand-held devices) transmitting in the 746-757 MHz, 776-788 MHz, and 805-806 MHz bands are limited to 3 watts ERP. (LTE B13)

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

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

27.50(h) - (2) Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.(LTE B41 & 7)

90.635(b) - The maximum output power of the transmitter for mobile stations is 100 watts (20 dBw). (LTE B26)
In addition, when the transmitter power is measured in terms of average value, the peak-to-average ratio of the power shall not exceed 13dB.

TEST PROCEDURE

ANSI / TIA / EIA 603C Clause 2.2.17; PSA setting reference to 971168 D01 v02r01

For peak power measurement with a PSA:

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

For average power measurement with a PSA:

a) Set span to at least 1.5 times the OBW; b) Set RBW = 1-5% of the OBW, not to exceed 1 MHz; c) Set VBW $\geq 3 \times$ RBW; d) Set number of points in sweep $\geq 2 \times$ span / RBW; e) Sweep time = auto-couple; f) Detector = RMS (power averaging); g) Use free run trigger If burst duty cycle ≥ 98 ; h) Use trigger to capture bursts If burst duty cycle < 98 ; i)

Trace average at least 100 traces in power averaging (*i.e.*, RMS) mode. j) Compute the power by integrating the spectrum across the OBW of the signal using the instrument's band power measurement function.

MODES TESTED

GSM, WCDMA, and LTE

TEST RESULTS

11.1.1. ERP/EIRP Results

Band	Mode	Channel	f(MHz)	ERP / EIRP	
				dBm	mW
Band 2	REL99	9262	1852.4	23.30	213.80
		9400	1880	24.33	271.02
		9538	1907.6	23.50	223.87
	HSDPA	9262	1852.4	22.82	191.43
		9400	1880	23.06	202.30
		9538	1907.6	22.80	190.55
	HSUPA	9262	1852.4		
		9400	1880		
		9538	1907.6		

Band	Mode	Channel	f(MHz)	ERP / EIRP	
				dBm	mW
Band 5	REL99	4132	826.4	18.561	71.8
		4183	836.6	18.311	67.78
		4233	846.6	17.961	62.53
	HSDPA	4132	826.4	17.581	57.29
		4183	836.6	17.431	55.35
		4233	846.6	17.121	51.53
	HSUPA	4132	826.4		
		4183	836.6		
		4233	846.6		

Band	Mode	Channel	f(MHz)	ERP / EIRP	
				dBm	mW
GSM1900	GMSK	512	1850.2		
		661	1880		
		810	1909.8		
	GPRS	512	1850.2	31.56	1432.19
		661	1880	32.41	1741.81
		810	1909.8	32.51	1782.38
	EGPRS	512	1850.2	27.95	623.73
		661	1880	27.91	618.02
		810	1909.8	28.52	711.21

Band	Mode	Channel	f(MHz)	ERP / EIRP	
				dBm	mW
GSM850	GMSK	128	824.2		
		190	836.6		
		251	848.8		
	GPRS	128	824.2	27.27	533.33
		190	836.6	27.431	553.48
		251	848.8	27.66	583.45
	EGPRS	128	824.2	23.36	216.77
		190	836.6	22.491	177.46
		251	848.8	23.49	223.36

11.1.2. LTE ERP/EIRP Results

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE17	10	QPSK	1/0	709	18.271	67.16
			1/0	710	18.531	71.3
			1/0	711	19.171	82.62
		16QAM	1/0	709	17.051	50.71
			1/0	710	17.321	53.96
			1/0	711	18.141	65.18

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE17	5	QPSK	1/0	706.5	18.061	63.99
			1/0	710	18.281	67.31
			1/0	713.5	18.701	74.15
		16QAM	1/0	706.5	16.891	48.88
			1/0	710	17.331	54.09
			1/0	713.5	17.431	55.35

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE5	10	QPSK	1/0	829	18.851	76.75
			1/0	836.5	19.481	88.74
			1/0	844	19.161	82.43
		16QAM	1/0	829	18.231	66.54
			1/0	836.5	18.521	71.14
			1/0	844	18.291	67.47

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE5	5	QPSK	1/0	826.5	18.091	64.43
			1/0	836.5	19.421	87.52
			1/0	846.5	19.141	82.05
		16QAM	1/0	826.5	17.351	54.34
			1/0	836.5	18.531	71.3
			1/0	846.5	18.151	65.33

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE4	10	QPSK	1/0	1715	23.95	248.31
			1/0	1732.5	24.84	304.79
			1/0	1750	24.11	257.63
		16QAM	1/0	1715	23.05	201.84
			1/0	1732.5	22.97	198.15
			1/0	1750	23.09	203.70

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE4	5	QPSK	1/0	1712.5	23.44	220.80
			1/0	1732.5	24.27	267.30
			1/0	1752.5	23.70	234.42
		16QAM	1/0	1712.5	22.54	179.47
			1/0	1732.5	23.47	222.33
			1/0	1752.5	22.80	190.55

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE2	10	QPSK	1/0	1855	25.81	381.07
			1/0	1880	25.69	370.68
			1/0	1905	25.98	396.28
		16QAM	1/0	1855	24.95	312.61
			1/0	1880	24.79	301.30
			1/0	1905	25.08	322.11

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE2	5	QPSK	1/0	1852.5	25.38	345.14
			1/0	1880	26.16	413.05
			1/0	1907.5	26.09	406.44
		16QAM	1/0	1852.5	24.49	281.19
			1/0	1880	25.40	346.74
			1/0	1907.5	25.89	388.15

11.1.3. ERP/EIRP PLOTS

Band LTE17 10MHz 16QAM	High Frequency Substitution Measurement UL Verification Services, Inc. Chamber C																																																																																																
	Company:		Lions																																																																																														
	Project #:		14119589																																																																																														
	Date:		12/22/14																																																																																														
	Test Engineer:		D. Soper																																																																																														
	Configuration:		EUT x-position																																																																																														
	Mode:		LTE B17 10MHz 16QAM																																																																																														
	Test Equipment:																																																																																																
	Receiving: Sunol T185, and 3m Chamber N-type Cable (Setup this one for testing EUT)																																																																																																
	Substitution: Dipole S/N: 00022117, 4ft SMA Cable (SN # 245200 001) Warehouse.																																																																																																
<table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBd)</th> <th>ERP (dBm)</th> <th>Limit (dBm)</th> <th>Margin (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td colspan="9">Low Ch</td> </tr> <tr> <td>709.00</td> <td>7.78</td> <td>V</td> <td>0.6</td> <td>0.0</td> <td>7.18</td> <td>34.8</td> <td>-27.6</td> <td></td> </tr> <tr> <td>709.00</td> <td>17.65</td> <td>H</td> <td>0.6</td> <td>0.0</td> <td>17.05</td> <td>34.8</td> <td>-17.7</td> <td></td> </tr> <tr> <td colspan="9">Mid Ch</td> </tr> <tr> <td>710.00</td> <td>7.95</td> <td>V</td> <td>0.6</td> <td>0.0</td> <td>7.35</td> <td>34.8</td> <td>-27.4</td> <td></td> </tr> <tr> <td>710.00</td> <td>17.92</td> <td>H</td> <td>0.6</td> <td>0.0</td> <td>17.32</td> <td>34.8</td> <td>-17.4</td> <td></td> </tr> <tr> <td colspan="9">High Ch</td> </tr> <tr> <td>711.00</td> <td>8.10</td> <td>V</td> <td>0.6</td> <td>0.0</td> <td>7.50</td> <td>34.8</td> <td>-27.3</td> <td></td> </tr> <tr> <td>711.00</td> <td>18.74</td> <td>H</td> <td>0.6</td> <td>0.0</td> <td>18.14</td> <td>34.8</td> <td>-16.6</td> <td></td> </tr> </tbody> </table>								f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes	Low Ch									709.00	7.78	V	0.6	0.0	7.18	34.8	-27.6		709.00	17.65	H	0.6	0.0	17.05	34.8	-17.7		Mid Ch									710.00	7.95	V	0.6	0.0	7.35	34.8	-27.4		710.00	17.92	H	0.6	0.0	17.32	34.8	-17.4		High Ch									711.00	8.10	V	0.6	0.0	7.50	34.8	-27.3		711.00	18.74	H	0.6	0.0	18.14	34.8	-16.6	
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes																																																																																									
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710.00	17.92	H	0.6	0.0	17.32	34.8	-17.4																																																																																										
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711.00	8.10	V	0.6	0.0	7.50	34.8	-27.3																																																																																										
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1752.50	14.20	V	0.9	8.1	21.40	30.0	-8.6																																																																																											
1752.50	15.60	H	0.9	8.1	22.80	30.0	-7.2																																																																																											

Band LTE4 5MHz QPSK	High Frequency Substitution Measurement UL Verification Services, Inc.																																																																																																	
	Company:		LG																																																																																															
	Project #:		14119589																																																																																															
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	Location:		Chamber C																																																																																															
	Mode:		LTE_QPSK Band 4 Fundamentals, 5MHz Bandwidth																																																																																															
	Test Equipment:		Receiving: Horn T119, and Chamber C SMA Cables Substitution: Horn T59, 4ft SMA Cable Warehouse																																																																																															
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Band LTE2 10MHz 16QAM	High Frequency Substitution Measurement UL Verification Services, Inc.																																																																																																	
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Band LTE2 5MHz 16QAM	High Frequency Substitution Measurement UL Verification Services, Inc.								
	Company: LG Project #: 14119589 Date: 2/12/2015 Test Engineer: K.Kedida Configuration: EUT Only Location: Chamber C Mode: LTE_16QAM Band 2 Fundamentals, 5MHz Bandwidth								
	Test Equipment: Receiving: Horn T119, and Chamber C SMA Cables Substitution: Horn T59, 4ft SMA Cable Warehouse								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	1852.50	17.50	V	0.9	7.9	24.49	33.0	-8.5	
	1852.50	17.46	H	0.9	7.9	24.45	33.0	-8.6	
	Mid Ch								
	1880.00	18.43	V	0.9	7.9	25.40	33.0	-7.6	
	1880.00	17.72	H	0.9	7.9	24.69	33.0	-8.3	
High Ch									
1907.50	18.00	V	0.9	7.9	24.98	33.0	-8.0		
1907.50	18.91	H	0.9	7.9	25.89	33.0	-7.1		

Band Band 2 REL99	High Frequency Substitution Measurement UL Verification Services, Inc. Chamber C								
	Company:		Lions						
	Project #:		14119589						
	Date:		12\22\14						
	Test Engineer:		D. Soper						
	Configuration:		EUT x-position						
	Mode:		WCDMA REL99 B2						
	Test Equipment:		Receiving: Horn T119, and Chamber C SMA Cables Substitution: Horn T217 Substitution, 4ft SMA Cable Warehouse						
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
	Low Ch								
1852.50	15.31	V	0.8	7.9	22.41	33.0	-10.6		
1852.50	16.20	H	0.8	7.9	23.30	33.0	-9.7		
Mid Ch									
1880.00	15.51	V	0.9	7.9	22.56	33.0	-10.4		
1880.00	17.28	H	0.9	7.9	24.33	33.0	-8.7		
High Ch									
1907.50	13.65	V	0.9	7.9	20.65	33.0	-12.4		
1907.50	16.50	H	0.9	7.9	23.50	33.0	-9.5		
Rev. 3.17.11 Note: For Band 4 EIRP limit is 30dBm									

Band Band 5 HSDPA	High Frequency Substitution Measurement UL Verification Services, Inc. Chamber B																																																																																																	
	Company:		Lions																																																																																															
	Project #:		14119589																																																																																															
	Date:		12/23/14																																																																																															
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	Mode:		WCDMA B5 HSDPA																																																																																															
	Test Equipment:																																																																																																	
	Receiving: Sunol T243, and 5m Chamber B N-type Cable																																																																																																	
	Substitution: Dipole T273, 4ft SMA Cable Warehouse.																																																																																																	
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Rev. 3.17.11																																																																																																		
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm																																																																																																		

High Frequency Substitution Measurement UL Verification Services, Inc. Chamber B									
Company:		Lions							
Project #:		14119589							
Date:		12/23/14							
Test Engineer:		D. Soper							
Configuration:		EUT x-position							
Mode:		REL99 B5 HSDPA							
Test Equipment:									
Receiving: Sunol T243, and 5m Chamber B N-type Cable									
Substitution: Dipole T273, 4ft SMA Cable Warehouse.									
Band	f	SG reading	Ant. Pol.	Cable Loss	Antenna Gain	ERP	Limit	Margin	Notes
Band 5	MHz	(dBm)	(H/V)	(dB)	(dBd)	(dBm)	(dBm)	(dB)	
REL99	Low Ch								
	826.40	12.30	V	0.9	0.0	11.40	38.5	-27.0	
	826.40	19.46	H	0.9	0.0	18.56	38.5	-19.9	
	Mid Ch								
	836.60	13.40	V	0.9	0.0	12.50	38.5	-25.9	
	836.60	19.21	H	0.9	0.0	18.31	38.5	-20.1	
	High Ch								
	846.60	13.42	V	0.9	0.0	12.52	38.5	-25.9	
	846.60	18.86	H	0.9	0.0	17.96	38.5	-20.5	
Rev. 3.17.11									
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm									

Band GSM 1900 EGPRS	High Frequency Substitution Measurement UL Verification Services, Inc. Chamber C								
	Company: LG Project #: 14I19589 Date: 2/12/215 Test Engineer: K.Kedida Configuration: EUT Only Location: Chamber C Mode: EGPRS 1900								
	Test Equipment: Receiving: Horn T119 and Chamber C SMA Cables Substitution: Horn T59 Substitution, 4ft SMA Cable Warehouse								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
	Low Ch								
	1850.20	18.65	V	0.9	8.0	25.76	33.0	-7.2	
	1850.20	20.84	H	0.9	8.0	27.95	33.0	-5.1	
	Mid Ch								
	1880.00	19.20	V	0.9	8.0	26.31	33.0	-6.7	
	1880.00	20.80	H	0.9	8.0	27.91	33.0	-5.1	
High Ch									
1909.80	18.92	V	0.9	8.0	26.03	33.0	-7.0		
1909.80	21.41	H	0.9	8.0	28.52	33.0	-4.5		
Rev. 3.17.11 Note: For Band 4 EIRP limit is 30dBm									

Band GSM 1900 GPRS	High Frequency Substitution Measurement UL Verification Services, Inc. Chamber C								
	Company:		LG						
	Project #:		14119589						
	Date:		2/12/215						
	Test Engineer:		K.Kedida						
	Configuration:		EUT Only						
	Location:		Chamber C						
	Mode:		GPRS 1900						
	Test Equipment:								
	Receiving: Horn T119 and Chamber C SMA Cables								
Substitution: Horn T59 Substitution, 4ft SMA Cable Warehouse									
	f	SG reading	Ant. Pol.	Cable Loss	Antenna Gain	EIRP	Limit	Margin	Notes
	MHz	(dBm)	(H/V)	(dB)	(dBi)	(dBm)	(dBm)	(dB)	
	Low Ch								
	1850.20	23.46	V	0.9	8.0	30.57	33.0	-2.4	
	1850.20	24.45	H	0.9	8.0	31.56	33.0	-1.4	
	Mid Ch								
	1880.00	23.70	V	0.9	8.0	30.81	33.0	-2.2	
	1880.00	25.30	H	0.9	8.0	32.41	33.0	-0.6	
	High Ch								
	1909.80	23.61	V	0.9	8.0	30.72	33.0	-2.3	
	1909.80	25.40	H	0.9	8.0	32.51	33.0	-0.5	
	Rev. 3.17.11								
	Note: For Band 4 EIRP limit is 30dBm								

Band GSM 850 EGPRS	High Frequency Substitution Measurement UL Verification Services, Inc. Chamber B																																																																																																	
	Company:		Lions																																																																																															
	Project #:		14119589																																																																																															
	Date:		12/23/14																																																																																															
	Test Engineer:		D. Soper																																																																																															
	Configuration:		EUT x-position																																																																																															
	Mode:		EGPRS850																																																																																															
	Test Equipment:																																																																																																	
	Receiving: Sunol T243, and 5m Chamber B N-type Cable																																																																																																	
	Substitution: Dipole T273, 4ft SMA Cable Warehouse.																																																																																																	
<table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBd)</th> <th>ERP (dBm)</th> <th>Limit (dBm)</th> <th>Margin (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td colspan="9">Low Ch</td> </tr> <tr> <td>826.40</td> <td>15.23</td> <td>V</td> <td>0.9</td> <td>0.0</td> <td>14.33</td> <td>38.5</td> <td>-24.1</td> <td></td> </tr> <tr> <td>826.40</td> <td>24.26</td> <td>H</td> <td>0.9</td> <td>0.0</td> <td>23.36</td> <td>38.5</td> <td>-15.1</td> <td></td> </tr> <tr> <td colspan="9">Mid Ch</td> </tr> <tr> <td>836.60</td> <td>15.20</td> <td>V</td> <td>0.9</td> <td>0.0</td> <td>14.30</td> <td>38.5</td> <td>-24.1</td> <td></td> </tr> <tr> <td>836.60</td> <td>23.39</td> <td>H</td> <td>0.9</td> <td>0.0</td> <td>22.49</td> <td>38.5</td> <td>-16.0</td> <td></td> </tr> <tr> <td colspan="9">High Ch</td> </tr> <tr> <td>846.60</td> <td>16.42</td> <td>V</td> <td>0.9</td> <td>0.0</td> <td>15.52</td> <td>38.5</td> <td>-22.9</td> <td></td> </tr> <tr> <td>846.60</td> <td>24.39</td> <td>H</td> <td>0.9</td> <td>0.0</td> <td>23.49</td> <td>38.5</td> <td>-15.0</td> <td></td> </tr> </tbody> </table>									f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes	Low Ch									826.40	15.23	V	0.9	0.0	14.33	38.5	-24.1		826.40	24.26	H	0.9	0.0	23.36	38.5	-15.1		Mid Ch									836.60	15.20	V	0.9	0.0	14.30	38.5	-24.1		836.60	23.39	H	0.9	0.0	22.49	38.5	-16.0		High Ch									846.60	16.42	V	0.9	0.0	15.52	38.5	-22.9		846.60	24.39	H	0.9	0.0	23.49	38.5	-15.0	
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Band GSM 850 GPRS	High Frequency Substitution Measurement UL Verification Services, Inc. Chamber B																																																																																																	
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11.2. FIELD STRENGTH OF SPURIOUS RADIATION

RULE PART(S)

FCC: §2.1053, §22.917, §24.238, and §27.53

LIMIT

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

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

TEST PROCEDURE

For Cellular equipment - Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 100 kHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

For PCS equipment - Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 1 MHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

MODES TESTED

GSM, WCDMA, and LTE

RESULTS

11.2.1. SPURIOUS RADIATION PLOTS

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company:		LG Electronics							
Project #:		14119589							
Date:		12/29/2014							
Test Engineer:		L. Lara							
Configuration:		EUT Y-position with AC charger and HS							
Location:		Chamber C							
Mode:		LTE_16QAM Band 17 Harmonics, 10MHz Bandwidth							
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Band									
LTE17									
10MHz									
16QAM									
Low Ch, 709									
1418.00	-31.4	V	3.0	37.4	1.0	-67.8	-13.0	-54.8	
2127.00	-26.1	V	3.0	36.6	1.0	-61.7	-13.0	-48.7	
2836.00	-22.6	V	3.0	36.4	1.0	-58.0	-13.0	-45.0	
Mid Ch, 710									
1418.00	-31.9	H	3.0	37.4	1.0	-68.2	-13.0	-55.2	
2127.00	-26.8	H	3.0	36.6	1.0	-62.4	-13.0	-49.4	
2836.00	-23.0	H	3.0	36.4	1.0	-58.4	-13.0	-45.4	
High Ch, 711									
1420.00	-31.7	V	3.0	37.3	1.0	-68.1	-13.0	-55.1	
2130.00	-25.7	V	3.0	36.6	1.0	-61.2	-13.0	-48.2	
2840.00	-22.2	V	3.0	36.4	1.0	-57.6	-13.0	-44.6	
1420.00	-31.7	H	3.0	37.3	1.0	-68.1	-13.0	-55.1	
2130.00	-26.4	H	3.0	36.6	1.0	-62.0	-13.0	-49.0	
2840.00	-23.3	H	3.0	36.4	1.0	-58.7	-13.0	-45.7	
High Ch, 711									
1422.00	-31.9	V	3.0	37.3	1.0	-68.3	-13.0	-55.3	
2133.00	-25.4	V	3.0	36.6	1.0	-60.9	-13.0	-47.9	
2844.00	-22.1	V	3.0	36.4	1.0	-57.5	-13.0	-44.5	
1422.00	-31.5	H	3.0	37.3	1.0	-67.9	-13.0	-54.9	
2133.00	-26.8	H	3.0	36.6	1.0	-62.4	-13.0	-49.4	
2844.00	-23.3	H	3.0	36.4	1.0	-58.7	-13.0	-45.7	

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company:		LG Electronics							
Project #:		14119589							
Date:		12/29/2014							
Test Engineer:		L. Lara							
Configuration:		EUT Y-position with AC charger and HS							
Location:		Chamber C							
Mode:		LTE_QPSK Band 17 Harmonics, 10MHz Bandwidth							
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Band									
LTE17									
10MHz									
QPSK									
Low Ch, 709									
1418.00	-31.5	V	3.0	37.4	1.0	-67.9	-13.0	-54.9	
2127.00	-25.7	V	3.0	36.6	1.0	-61.3	-13.0	-48.3	
2836.00	-22.7	V	3.0	36.4	1.0	-58.1	-13.0	-45.1	
1418.00	-30.9	H	3.0	37.4	1.0	-67.2	-13.0	-54.2	
2127.00	-26.8	H	3.0	36.6	1.0	-62.3	-13.0	-49.3	
2836.00	-23.3	H	3.0	36.4	1.0	-58.7	-13.0	-45.7	
Mid Ch, 710									
1420.00	-31.7	V	3.0	37.3	1.0	-68.1	-13.0	-55.1	
2130.00	-25.7	V	3.0	36.6	1.0	-61.3	-13.0	-48.3	
2840.00	-22.3	V	3.0	36.4	1.0	-57.6	-13.0	-44.6	
1420.00	-31.5	H	3.0	37.3	1.0	-67.9	-13.0	-54.9	
2130.00	-26.0	H	3.0	36.6	1.0	-61.5	-13.0	-48.5	
2840.00	-22.9	H	3.0	36.4	1.0	-58.3	-13.0	-45.3	
High Ch, 711									
1422.00	-32.1	V	3.0	37.3	1.0	-68.4	-13.0	-55.4	
2133.00	-25.4	V	3.0	36.6	1.0	-61.0	-13.0	-48.0	
2844.00	-22.7	V	3.0	36.4	1.0	-58.0	-13.0	-45.0	
1422.00	-30.4	H	3.0	37.3	1.0	-66.8	-13.0	-53.8	
2133.00	-26.5	H	3.0	36.6	1.0	-62.1	-13.0	-49.1	
2844.00	-22.9	H	3.0	36.4	1.0	-58.3	-13.0	-45.3	

UL Verification Services, Inc Above 1GHz High Frequency Substitution Measurement									
Company:		LG Electronics							
Project #:		14119589							
Date:		12/29/2014							
Test Engineer:		L. Lara							
Configuration:		EUT Y-position with AC charger and HS							
Location:		Chamber C							
Mode:		LTE_16QAM Band 17 Harmonics, 5MHz Bandwidth							
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Band									
Low Ch, 706.5									
1413.00	-31.8	V	3.0	37.4	1.0	-68.1	-13.0	-55.1	
2119.50	-25.7	V	3.0	36.6	1.0	-61.3	-13.0	-48.3	
LTE17									
2826.00	-22.6	V	3.0	36.4	1.0	-58.0	-13.0	-45.0	
1413.00	-31.8	H	3.0	37.4	1.0	-68.1	-13.0	-55.1	
2119.50	-26.5	H	3.0	36.6	1.0	-62.0	-13.0	-49.0	
5MHz									
2826.00	-23.6	H	3.0	36.4	1.0	-59.0	-13.0	-46.0	
16QAM									
Mid Ch, 710									
1420.00	-31.6	V	3.0	37.3	1.0	-68.0	-13.0	-55.0	
2130.00	-25.9	V	3.0	36.6	1.0	-61.5	-13.0	-48.5	
2840.00	-22.7	V	3.0	36.4	1.0	-58.1	-13.0	-45.1	
1420.00	-31.4	H	3.0	37.3	1.0	-67.8	-13.0	-54.8	
2130.00	-26.8	H	3.0	36.6	1.0	-62.4	-13.0	-49.4	
2840.00	-23.0	H	3.0	36.4	1.0	-58.4	-13.0	-45.4	
High Ch, 713.5									
1427.00	-32.0	V	3.0	37.3	1.0	-68.3	-13.0	-55.3	
2140.50	-25.1	V	3.0	36.6	1.0	-60.6	-13.0	-47.6	
2854.00	-22.5	V	3.0	36.4	1.0	-57.8	-13.0	-44.8	
1427.00	-32.0	H	3.0	37.3	1.0	-68.3	-13.0	-55.3	
2140.50	-26.0	H	3.0	36.6	1.0	-61.6	-13.0	-48.6	
2854.00	-22.6	H	3.0	36.4	1.0	-58.0	-13.0	-45.0	

UL Verification Services, Inc Above 1GHz High Frequency Substitution Measurement									
Company:		LG Electronics							
Project #:		14119589							
Date:		12/29/2014							
Test Engineer:		L. Lara							
Configuration:		EUT Y-position with AC charger and HS							
Location:		Chamber C							
Mode:		LTE_QPSK Band 17 Harmonics, 5MHz Bandwidth							
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Band									
Low Ch, 706.5									
1413.00	-31.8	V	3.0	37.4	1.0	-68.1	-13.0	-55.1	
2119.50	-25.5	V	3.0	36.6	1.0	-61.1	-13.0	-48.1	
LTE17									
2826.00	-22.1	V	3.0	36.4	1.0	-57.5	-13.0	-44.5	
1413.00	-31.7	H	3.0	37.4	1.0	-68.0	-13.0	-55.0	
2119.50	-26.5	H	3.0	36.6	1.0	-62.1	-13.0	-49.1	
5MHz									
2826.00	-23.3	H	3.0	36.4	1.0	-58.7	-13.0	-45.7	
Mid Ch, 710									
1420.00	-31.7	V	3.0	37.3	1.0	-68.1	-13.0	-55.1	
2130.00	-25.4	V	3.0	36.6	1.0	-60.9	-13.0	-47.9	
2840.00	-22.3	V	3.0	36.4	1.0	-57.7	-13.0	-44.7	
1420.00	-31.6	H	3.0	37.3	1.0	-68.0	-13.0	-55.0	
2130.00	-26.1	H	3.0	36.6	1.0	-61.7	-13.0	-48.7	
2840.00	-23.3	H	3.0	36.4	1.0	-58.7	-13.0	-45.7	
High Ch, 713.5									
1427.00	-31.6	V	3.0	37.3	1.0	-67.9	-13.0	-54.9	
2140.50	-25.5	V	3.0	36.6	1.0	-61.0	-13.0	-48.0	
2854.00	-21.6	V	3.0	36.4	1.0	-57.0	-13.0	-44.0	
1427.00	-31.0	H	3.0	37.3	1.0	-67.4	-13.0	-54.4	
2140.50	-26.2	H	3.0	36.6	1.0	-61.8	-13.0	-48.8	
2854.00	-22.7	H	3.0	36.4	1.0	-58.1	-13.0	-45.1	

UL Verification Services, Inc Above 1GHz High Frequency Substitution Measurement											
Company:		LG Electronics									
Project #:		14119589									
Date:		12/29/2014									
Test Engineer:		L. Lara									
Configuration:		EUT Y-position with AC charger and HS									
Location:		Chamber C									
Mode:		LTE_16QAM Band 5 Harmonics, 10MHz Bandwidth									
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes	
Band LTE5 10MHz 16QAM	Low Ch, 829										
		1658.00	-28.0	V	3.0	37.0	1.0	-64.1	-13.0	-51.1	
		2487.00	-24.0	V	3.0	36.4	1.0	-59.4	-13.0	-46.4	
		3316.00	-20.9	V	3.0	36.1	1.0	-56.1	-13.0	-43.1	
		1658.00	-28.4	H	3.0	37.0	1.0	-64.4	-13.0	-51.4	
		2487.00	-25.2	H	3.0	36.4	1.0	-60.7	-13.0	-47.7	
		3316.00	-20.9	H	3.0	36.1	1.0	-56.0	-13.0	-43.0	
		Mid Ch, 836.5									
		1673.00	-28.0	V	3.0	37.0	1.0	-64.0	-13.0	-51.0	
		2509.50	-23.0	V	3.0	36.4	1.0	-58.4	-13.0	-45.4	
		3346.00	-20.4	V	3.0	36.1	1.0	-55.5	-13.0	-42.5	
		1673.00	-27.8	H	3.0	37.0	1.0	-63.8	-13.0	-50.8	
		2509.50	-24.5	H	3.0	36.4	1.0	-59.9	-13.0	-46.9	
		3346.00	-20.8	H	3.0	36.1	1.0	-56.0	-13.0	-43.0	
		High Ch, 844									
		1688.00	-27.8	V	3.0	37.0	1.0	-63.8	-13.0	-50.8	
		2532.00	-22.9	V	3.0	36.4	1.0	-58.3	-13.0	-45.3	
		3376.00	-22.0	V	3.0	36.1	1.0	-57.1	-13.0	-44.1	
	1688.00	-27.8	H	3.0	37.0	1.0	-63.8	-13.0	-50.8		
	2532.00	-24.6	H	3.0	36.4	1.0	-60.0	-13.0	-47.0		
	3376.00	-21.9	H	3.0	36.1	1.0	-57.0	-13.0	-44.0		

UL Verification Services, Inc Above 1GHz High Frequency Substitution Measurement											
Company:		LG Electronics									
Project #:		14119589									
Date:		12/29/2014									
Test Engineer:		L. Lara									
Configuration:		EUT Y-position with AC charger and HS									
Location:		Chamber C									
Mode:		LTE_QPSK Band 5 Harmonics, 10MHz Bandwidth									
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes	
Band	Low Ch, 829										
	1658.00	-28.1	V	3.0	37.0	1.0	-64.1	-13.0	-51.1		
	2487.00	-23.5	V	3.0	36.4	1.0	-58.9	-13.0	-45.9		
	LTE5	3316.00	-20.3	V	3.0	36.1	1.0	-55.4	-13.0	-42.4	
		1658.00	-28.2	H	3.0	37.0	1.0	-64.2	-13.0	-51.2	
	10MHz	2487.00	-25.4	H	3.0	36.4	1.0	-60.8	-13.0	-47.8	
3316.00		-20.7	H	3.0	36.1	1.0	-55.8	-13.0	-42.8		
QPSK	Mid Ch, 836.5										
	1673.00	-28.1	V	3.0	37.0	1.0	-64.1	-13.0	-51.1		
	2509.50	-22.9	V	3.0	36.4	1.0	-58.3	-13.0	-45.3		
	3346.00	-21.2	V	3.0	36.1	1.0	-56.3	-13.0	-43.3		
	1673.00	-28.3	H	3.0	37.0	1.0	-64.3	-13.0	-51.3		
	2509.50	-24.3	H	3.0	36.4	1.0	-59.7	-13.0	-46.7		
	High Ch, 844										
	1688.00	-27.4	V	3.0	37.0	1.0	-63.4	-13.0	-50.4		
	2532.00	-22.9	V	3.0	36.4	1.0	-58.3	-13.0	-45.3		
	3376.00	-22.4	V	3.0	36.1	1.0	-57.5	-13.0	-44.5		
	1688.00	-27.3	H	3.0	37.0	1.0	-63.3	-13.0	-50.3		
	2532.00	-24.1	H	3.0	36.4	1.0	-59.5	-13.0	-46.5		
	3376.00	-22.2	H	3.0	36.1	1.0	-57.3	-13.0	-44.3		

UL Verification Services, Inc Above 1GHz High Frequency Substitution Measurement									
Company:		LG Electronics							
Project #:		14119589							
Date:		12/29/2014							
Test Engineer:		L. Lara							
Configuration:		EUT Y-position with AC charger and HS							
Location:		Chamber C							
Mode:		LTE_16QAM Band 5 Harmonics, 5MHz Bandwidth							
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Band									
Low Ch, 826.5									
1653.00	-28.8	V	3.0	37.0	1.0	-64.8	-13.0	-51.8	
2479.50	-23.7	V	3.0	36.4	1.0	-59.2	-13.0	-46.2	
LTE5									
3306.00	-21.7	V	3.0	36.1	1.0	-56.8	-13.0	-43.8	
1653.00	-28.8	H	3.0	37.0	1.0	-64.8	-13.0	-51.8	
2479.50	-25.6	H	3.0	36.4	1.0	-61.0	-13.0	-48.0	
5MHz									
3306.00	-21.5	H	3.0	36.1	1.0	-56.6	-13.0	-43.6	
16QAM									
Mid Ch, 836.5									
1673.00	-27.6	V	3.0	37.0	1.0	-63.6	-13.0	-50.6	
2509.50	-22.1	V	3.0	36.4	1.0	-57.5	-13.0	-44.5	
3346.00	-21.1	V	3.0	36.1	1.0	-56.2	-13.0	-43.2	
1673.00	-27.5	H	3.0	37.0	1.0	-63.5	-13.0	-50.5	
2509.50	-24.0	H	3.0	36.4	1.0	-59.4	-13.0	-46.4	
3346.00	-21.4	H	3.0	36.1	1.0	-56.5	-13.0	-43.5	
High Ch, 846.5									
1693.00	-28.0	V	3.0	37.0	1.0	-64.0	-13.0	-51.0	
2539.50	-23.2	V	3.0	36.4	1.0	-58.6	-13.0	-45.6	
3386.00	-21.7	V	3.0	36.1	1.0	-56.8	-13.0	-43.8	
1693.00	-27.6	H	3.0	37.0	1.0	-63.6	-13.0	-50.6	
2539.50	-24.8	H	3.0	36.4	1.0	-60.2	-13.0	-47.2	
3386.00	-21.9	H	3.0	36.1	1.0	-57.0	-13.0	-44.0	

UL Verification Services, Inc Above 1GHz High Frequency Substitution Measurement										
Company:		LG Electronics								
Project #:		14119589								
Date:		12/29/2014								
Test Engineer:		L. Lara								
Configuration:		EUT Y-position with AC charger and HS								
Location:		Chamber C								
Mode:		LTE_QPSK Band 5 Harmonics, 5MHz Bandwidth								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Band	Low Ch, 826.5									
	1653.00	-28.0	V	3.0	37.0	1.0	-64.0	-13.0	-51.0	
	2479.50	-24.0	V	3.0	36.4	1.0	-59.4	-13.0	-46.4	
	3306.00	-21.5	V	3.0	36.1	1.0	-56.7	-13.0	-43.7	
	1653.00	-28.6	H	3.0	37.0	1.0	-64.6	-13.0	-51.6	
	2479.50	-25.4	H	3.0	36.4	1.0	-60.9	-13.0	-47.9	
5MHz	3306.00	-21.4	H	3.0	36.1	1.0	-56.6	-13.0	-43.6	
	Mid Ch, 836.5									
QPSK	1673.00	-27.2	V	3.0	37.0	1.0	-63.2	-13.0	-50.2	
	2509.50	-23.7	V	3.0	36.4	1.0	-59.1	-13.0	-46.1	
	3346.00	-20.6	V	3.0	36.1	1.0	-55.7	-13.0	-42.7	
	1673.00	-27.4	H	3.0	37.0	1.0	-63.4	-13.0	-50.4	
	2509.50	-25.1	H	3.0	36.4	1.0	-60.5	-13.0	-47.5	
	3346.00	-21.0	H	3.0	36.1	1.0	-56.1	-13.0	-43.1	
High Ch, 846.5										
	1693.00	-27.4	V	3.0	37.0	1.0	-63.3	-13.0	-50.3	
	2539.50	-23.1	V	3.0	36.4	1.0	-58.5	-13.0	-45.5	
	3386.00	-21.4	V	3.0	36.1	1.0	-56.5	-13.0	-43.5	
	1693.00	-28.1	H	3.0	37.0	1.0	-64.1	-13.0	-51.1	
	2539.50	-24.9	H	3.0	36.4	1.0	-60.3	-13.0	-47.3	
	3386.00	-22.5	H	3.0	36.1	1.0	-57.6	-13.0	-44.6	

UL Verification Services									
Above 1GHz High Frequency Substitution Measurement									
Company:		LG Electronics							
Project #:		14119589							
Date:		12/30/2014							
Test Engineer:		L. Lara							
Configuration:		EUT X-position with AC charger and HS							
Location:		Chamber C							
Mode:		LTE_16QAM Band 4 Harmonics, 10MHz Bandwidth							
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Band									
LTE4									
10MHz									
16QAM									
Low Ch, 1715									
3430.00	-8.0	V	3.0	36.1	1.0	-43.0	-13.0	-30.0	
5145.00	-15.1	V	3.0	35.4	1.0	-49.6	-13.0	-36.6	
6860.00	-12.7	V	3.0	35.7	1.0	-47.3	-13.0	-34.3	
3430.00	-8.5	H	3.0	36.1	1.0	-43.6	-13.0	-30.6	
5145.00	-16.4	H	3.0	35.4	1.0	-50.8	-13.0	-37.8	
6860.00	-11.8	H	3.0	35.7	1.0	-46.5	-13.0	-33.5	
Mid Ch, 1732.5									
3465.00	-3.7	V	3.0	36.0	1.0	-38.7	-13.0	-25.7	
5197.50	-15.7	V	3.0	35.4	1.0	-50.1	-13.0	-37.1	
6930.00	-12.5	V	3.0	35.7	1.0	-47.2	-13.0	-34.2	
3465.00	-1.4	H	3.0	36.0	1.0	-36.4	-13.0	-23.4	
5197.50	-16.4	H	3.0	35.4	1.0	-50.8	-13.0	-37.8	
6930.00	-10.9	H	3.0	35.7	1.0	-45.6	-13.0	-32.6	
High Ch, 1750									
3500.00	-6.6	V	3.0	36.0	1.0	-41.6	-13.0	-28.6	
5250.00	-16.5	V	3.0	35.4	1.0	-51.0	-13.0	-38.0	
7000.00	-12.2	V	3.0	35.7	1.0	-46.9	-13.0	-33.9	
3500.00	-1.8	H	3.0	36.0	1.0	-36.8	-13.0	-23.8	
5250.00	-16.1	H	3.0	35.4	1.0	-50.5	-13.0	-37.5	
7000.00	-10.8	H	3.0	35.7	1.0	-45.5	-13.0	-32.5	

UL Verification Services									
Above 1GHz High Frequency Substitution Measurement									
Company:		LG Electronics							
Project #:		14119589							
Date:		12/30/2014							
Test Engineer:		L. Lara							
Configuration:		EUT X-position with AC charger and HS							
Location:		Chamber C							
Mode:		LTE_QPSK Band 4 Harmonics, 10MHz Bandwidth							
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1715									
Band	3430.00	-6.1	V	3.0	36.1	1.0	-41.1	-13.0	-28.1
	5145.00	-16.5	V	3.0	35.4	1.0	-50.9	-13.0	-37.9
LTE4	6860.00	-13.3	V	3.0	35.7	1.0	-47.9	-13.0	-34.9
	3430.00	-8.0	H	3.0	36.1	1.0	-43.1	-13.0	-30.1
	5145.00	-16.7	H	3.0	35.4	1.0	-51.1	-13.0	-38.1
10MHz	6860.00	-12.2	H	3.0	35.7	1.0	-46.9	-13.0	-33.9
Mid Ch, 1732.5									
QPSK	3465.00	-4.8	V	3.0	36.0	1.0	-39.8	-13.0	-26.8
	5197.50	-15.6	V	3.0	35.4	1.0	-50.0	-13.0	-37.0
	6930.00	-12.0	V	3.0	35.7	1.0	-46.7	-13.0	-33.7
	3465.00	-1.5	H	3.0	36.0	1.0	-36.5	-13.0	-23.5
	5197.50	-16.2	H	3.0	35.4	1.0	-50.6	-13.0	-37.6
	6930.00	-11.4	H	3.0	35.7	1.0	-46.1	-13.0	-33.1
High Ch, 1750									
	3500.00	-3.6	V	3.0	36.0	1.0	-38.6	-13.0	-25.6
	5250.00	-15.0	V	3.0	35.4	1.0	-49.4	-13.0	-36.4
	7000.00	-11.4	V	3.0	35.7	1.0	-46.1	-13.0	-33.1
	3500.00	-1.1	H	3.0	36.0	1.0	-36.1	-13.0	-23.1
	5250.00	-15.9	H	3.0	35.4	1.0	-50.4	-13.0	-37.4
	7000.00	-11.2	H	3.0	35.7	1.0	-45.8	-13.0	-32.8

UL Verification Services									
Above 1GHz High Frequency Substitution Measurement									
Company:		LG Electronics							
Project #:		14119589							
Date:		12/30/2014							
Test Engineer:		L. Lara							
Configuration:		EUT X-position with AC charger and HS							
Location:		Chamber C							
Mode:		LTE_16QAM Band 4 Harmonics, 5MHz Bandwidth							
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Band									
Low Ch, 1712.5									
3425.00	-6.5	V	3.0	36.1	1.0	-41.6	-13.0	-28.6	
5137.50	-15.2	V	3.0	35.4	1.0	-49.6	-13.0	-36.6	
LTE4									
6850.00	-12.9	V	3.0	35.7	1.0	-47.5	-13.0	-34.5	
3425.00	-4.1	H	3.0	36.1	1.0	-39.2	-13.0	-26.2	
5137.50	-15.8	H	3.0	35.4	1.0	-50.3	-13.0	-37.3	
5MHz									
6850.00	-11.5	H	3.0	35.7	1.0	-46.2	-13.0	-33.2	
16QAM									
Mid Ch, 1732.5									
3465.00	-4.2	V	3.0	36.0	1.0	-39.3	-13.0	-26.3	
5197.50	-15.2	V	3.0	35.4	1.0	-49.7	-13.0	-36.7	
6930.00	-12.9	V	3.0	35.7	1.0	-47.6	-13.0	-34.6	
3465.00	-1.2	H	3.0	36.0	1.0	-36.3	-13.0	-23.3	
5197.50	-16.0	H	3.0	35.4	1.0	-50.5	-13.0	-37.5	
6930.00	-11.0	H	3.0	35.7	1.0	-45.7	-13.0	-32.7	
High Ch, 1752.5									
3505.00	-2.1	V	3.0	36.0	1.0	-37.1	-13.0	-24.1	
5257.50	-16.4	V	3.0	35.4	1.0	-50.8	-13.0	-37.8	
7010.00	-11.3	V	3.0	35.7	1.0	-45.9	-13.0	-32.9	
3505.00	0.9	H	3.0	36.0	1.0	-34.1	-13.0	-21.1	
5257.50	-15.6	H	3.0	35.4	1.0	-50.1	-13.0	-37.1	
7010.00	-10.9	H	3.0	35.7	1.0	-45.6	-13.0	-32.6	

UL Verification Services										
Above 1GHz High Frequency Substitution Measurement										
Company:		LG Electronics								
Project #:		14119589								
Date:		12/30/2014								
Test Engineer:		L. Lara								
Configuration:		EUT X-position with AC charger and HS								
Location:		Chamber C								
Mode:		LTE_QPSK Band 4 Harmonics, 5MHz Bandwidth								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch, 1712.5									
Band	3425.00	-6.5	V	3.0	36.1	1.0	-41.6	-13.0	-28.6	
	5137.50	-16.3	V	3.0	35.4	1.0	-50.8	-13.0	-37.8	
LTE4	6850.00	-13.5	V	3.0	35.7	1.0	-48.1	-13.0	-35.1	
	3425.00	-3.9	H	3.0	36.1	1.0	-39.0	-13.0	-26.0	
	5137.50	-16.0	H	3.0	35.4	1.0	-50.4	-13.0	-37.4	
5MHz	6850.00	-11.5	H	3.0	35.7	1.0	-46.2	-13.0	-33.2	
	Mid Ch, 1732.5									
	3465.00	-5.5	V	3.0	36.0	1.0	-40.5	-13.0	-27.5	
QPSK	5197.50	-14.9	V	3.0	35.4	1.0	-49.4	-13.0	-36.4	
	6930.00	-12.4	V	3.0	35.7	1.0	-47.1	-13.0	-34.1	
	3465.00	-1.1	H	3.0	36.0	1.0	-36.1	-13.0	-23.1	
	5197.50	-16.2	H	3.0	35.4	1.0	-50.6	-13.0	-37.6	
	6930.00	-11.9	H	3.0	35.7	1.0	-46.6	-13.0	-33.6	
	High Ch, 1752.5									
	3505.00	-1.3	V	3.0	36.0	1.0	-36.3	-13.0	-23.3	
	5257.50	-16.0	V	3.0	35.4	1.0	-50.4	-13.0	-37.4	
	7010.00	-11.4	V	3.0	35.7	1.0	-46.1	-13.0	-33.1	
	3505.00	2.6	H	3.0	36.0	1.0	-32.4	-13.0	-19.4	
	5257.50	-16.0	H	3.0	35.4	1.0	-50.5	-13.0	-37.5	
	7010.00	-10.4	H	3.0	35.7	1.0	-45.1	-13.0	-32.1	

UL Verification Services									
Above 1GHz High Frequency Substitution Measurement									
Company:		LG Electronics							
Project #:		14119589							
Date:		12/30/2014							
Test Engineer:		L. Lara							
Configuration:		EUT X-position with AC charger and HS							
Location:		Chamber C							
Mode:		LTE_16QAM Band 2 Harmonics, 10MHz Bandwidth							
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Band									
Low Ch, 1855									
3710.00	-11.6	V	3.0	35.9	1.0	-46.5	-13.0	-33.5	
5565.00	-16.5	V	3.0	35.5	1.0	-50.9	-13.0	-37.9	
LTE2									
7420.00	-11.9	V	3.0	35.7	1.0	-46.7	-13.0	-33.7	
3710.00	-6.2	H	3.0	35.9	1.0	-41.1	-13.0	-28.1	
5565.00	-16.0	H	3.0	35.5	1.0	-50.4	-13.0	-37.4	
10MHz									
7420.00	-11.5	H	3.0	35.7	1.0	-46.2	-13.0	-33.2	
16QAM									
Mid Ch, 1880									
3760.00	-17.0	V	3.0	35.8	1.0	-51.8	-13.0	-38.8	
5640.00	-12.1	V	3.0	35.5	1.0	-46.6	-13.0	-33.6	
7520.00	-11.2	V	3.0	35.7	1.0	-46.0	-13.0	-33.0	
3760.00	-13.1	H	3.0	35.8	1.0	-47.9	-13.0	-34.9	
5640.00	-14.6	H	3.0	35.5	1.0	-49.1	-13.0	-36.1	
7520.00	-11.6	H	3.0	35.7	1.0	-46.3	-13.0	-33.3	
High Ch, 1905									
3810.00	-13.9	V	3.0	35.8	1.0	-48.7	-13.0	-35.7	
5715.00	-12.8	V	3.0	35.5	1.0	-47.3	-13.0	-34.3	
7620.00	-12.7	V	3.0	35.8	1.0	-47.4	-13.0	-34.4	
3810.00	-12.2	H	3.0	35.8	1.0	-47.0	-13.0	-34.0	
5715.00	-14.8	H	3.0	35.5	1.0	-49.3	-13.0	-36.3	
7620.00	-10.8	H	3.0	35.8	1.0	-45.6	-13.0	-32.6	

UL Verification Services									
Above 1GHz High Frequency Substitution Measurement									
Company:		LG Electronics							
Project #:		14119589							
Date:		12/30/2014							
Test Engineer:		L. Lara							
Configuration:		EUT X-position with AC charger and HS							
Location:		Chamber C							
Mode:		LTE_QPSK Band 2 Harmonics, 10MHz Bandwidth							
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Band									
Low Ch, 1855									
3710.00	-12.4	V	3.0	35.9	1.0	-47.2	-13.0	-34.2	
5565.00	-13.1	V	3.0	35.5	1.0	-47.5	-13.0	-34.5	
LTE2									
7420.00	-12.4	V	3.0	35.7	1.0	-47.1	-13.0	-34.1	
3710.00	-7.1	H	3.0	35.9	1.0	-41.9	-13.0	-28.9	
5565.00	-15.3	H	3.0	35.5	1.0	-49.7	-13.0	-36.7	
10MHz									
7420.00	-11.5	H	3.0	35.7	1.0	-46.3	-13.0	-33.3	
QPSK									
Mid Ch, 1880									
3760.00	-17.8	V	3.0	35.8	1.0	-52.6	-13.0	-39.6	
5640.00	-15.1	V	3.0	35.5	1.0	-49.6	-13.0	-36.6	
7520.00	-12.4	V	3.0	35.7	1.0	-47.1	-13.0	-34.1	
3760.00	-13.4	H	3.0	35.8	1.0	-48.2	-13.0	-35.2	
5640.00	-14.1	H	3.0	35.5	1.0	-48.6	-13.0	-35.6	
7520.00	-11.8	H	3.0	35.7	1.0	-46.6	-13.0	-33.6	
High Ch, 1905									
3810.00	-16.9	V	3.0	35.8	1.0	-51.7	-13.0	-38.7	
5715.00	-15.9	V	3.0	35.5	1.0	-50.4	-13.0	-37.4	
7620.00	-11.0	V	3.0	35.8	1.0	-45.8	-13.0	-32.8	
3810.00	-12.4	H	3.0	35.8	1.0	-47.2	-13.0	-34.2	
5715.00	-14.9	H	3.0	35.5	1.0	-49.4	-13.0	-36.4	
7620.00	-11.4	H	3.0	35.8	1.0	-46.2	-13.0	-33.2	

UL Verification Services Above 1GHz High Frequency Substitution Measurement									
Company:		LG Electronics							
Project #:		14119589							
Date:		12/30/2014							
Test Engineer:		L. Lara							
Configuration:		EUT X-position with AC charger and HS							
Location:		Chamber C							
Mode:		LTE_16QAM Band 2 Harmonics, 5MHz Bandwidth							
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Band									
Low Ch, 1852.5									
3705.00	-11.5	V	3.0	35.9	1.0	-46.3	-13.0	-33.3	
5557.50	-15.4	V	3.0	35.5	1.0	-49.9	-13.0	-36.9	
LTE2									
7410.00	-12.2	V	3.0	35.7	1.0	-46.9	-13.0	-33.9	
3705.00	-8.3	H	3.0	35.9	1.0	-43.2	-13.0	-30.2	
5557.50	-16.3	H	3.0	35.5	1.0	-50.8	-13.0	-37.8	
5MHz									
7410.00	-12.1	H	3.0	35.7	1.0	-46.8	-13.0	-33.8	
16QAM									
Mid Ch, 1880									
3760.00	-11.2	V	3.0	35.8	1.0	-46.0	-13.0	-33.0	
5640.00	-14.4	V	3.0	35.5	1.0	-48.9	-13.0	-35.9	
7520.00	-11.6	V	3.0	35.7	1.0	-46.3	-13.0	-33.3	
3760.00	-9.6	H	3.0	35.8	1.0	-44.4	-13.0	-31.4	
5640.00	-14.9	H	3.0	35.5	1.0	-49.4	-13.0	-36.4	
7520.00	-11.5	H	3.0	35.7	1.0	-46.3	-13.0	-33.3	
High Ch, 1907.5									
3815.00	-17.7	V	3.0	35.8	1.0	-52.4	-13.0	-39.4	
5722.50	-14.4	V	3.0	35.5	1.0	-48.9	-13.0	-35.9	
7630.00	-11.7	V	3.0	35.8	1.0	-46.4	-13.0	-33.4	
3815.00	-14.5	H	3.0	35.8	1.0	-49.3	-13.0	-36.3	
5722.50	-12.8	H	3.0	35.5	1.0	-47.3	-13.0	-34.3	
7630.00	-10.0	H	3.0	35.8	1.0	-44.8	-13.0	-31.8	

UL Verification Services										
Above 1GHz High Frequency Substitution Measurement										
Company:		LG Electronics								
Project #:		14119589								
Date:		12/30/2014								
Test Engineer:		L. Lara								
Configuration:		EUT X-position with AC charger and HS								
Location:		Chamber C								
Mode:		LTE_QPSK Band 2 Harmonics, 5MHz Bandwidth								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Band	Low Ch, 1852.5									
	3705.00	-12.1	V	3.0	35.9	1.0	-47.0	-13.0	-34.0	
LTE2	5557.50	-15.3	V	3.0	35.5	1.0	-49.8	-13.0	-36.8	
	7410.00	-12.0	V	3.0	35.7	1.0	-46.7	-13.0	-33.7	
5MHz	3705.00	-7.9	H	3.0	35.9	1.0	-42.8	-13.0	-29.8	
	5557.50	-14.7	H	3.0	35.5	1.0	-49.1	-13.0	-36.1	
QPSK	7410.00	-11.3	H	3.0	35.7	1.0	-46.0	-13.0	-33.0	
	Mid Ch, 1880									
	3760.00	-13.6	V	3.0	35.8	1.0	-48.4	-13.0	-35.4	
	5640.00	-15.6	V	3.0	35.5	1.0	-50.1	-13.0	-37.1	
	7520.00	-11.4	V	3.0	35.7	1.0	-46.1	-13.0	-33.1	
	3760.00	-9.9	H	3.0	35.8	1.0	-44.7	-13.0	-31.7	
	5640.00	-15.3	H	3.0	35.5	1.0	-49.7	-13.0	-36.7	
	7520.00	-11.1	H	3.0	35.7	1.0	-45.8	-13.0	-32.8	
	High Ch, 1907.5									
	3815.00	-15.7	V	3.0	35.8	1.0	-50.5	-13.0	-37.5	
	5722.50	-12.3	V	3.0	35.5	1.0	-46.8	-13.0	-33.8	
	7630.00	-11.9	V	3.0	35.8	1.0	-46.7	-13.0	-33.7	
	3815.00	-14.3	H	3.0	35.8	1.0	-49.0	-13.0	-36.0	
	5722.50	-12.5	H	3.0	35.5	1.0	-47.0	-13.0	-34.0	
	7630.00	-11.2	H	3.0	35.8	1.0	-46.0	-13.0	-33.0	

UL Verification Services									
Above 1GHz High Frequency Substitution Measurement									
Company:		LG Electronics							
Project #:		14119589							
Date:		12/30/2014							
Test Engineer:		L. Lara							
Configuration:		EUT X-position with AC charger and HS							
Location:		Chamber C							
Mode:		HSDPA Band 2 Harmonics							
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1852.4									
Band	3704.80	-16.6	V	3.0	35.9	1.0	-51.4	-13.0	-38.4
	5557.20	-16.4	V	3.0	35.5	1.0	-50.9	-13.0	-37.9
	7409.60	-11.8	V	3.0	35.7	1.0	-46.5	-13.0	-33.5
Band 2	3704.80	-16.8	H	3.0	35.9	1.0	-51.6	-13.0	-38.6
	5557.20	-15.3	H	3.0	35.5	1.0	-49.7	-13.0	-36.7
	7409.60	-11.4	H	3.0	35.7	1.0	-46.1	-13.0	-33.1
HSDPA	Mid Ch, 1880								
	3760.00	-18.2	V	3.0	35.8	1.0	-53.0	-13.0	-40.0
	5640.00	-15.1	V	3.0	35.5	1.0	-49.6	-13.0	-36.6
	7520.00	-11.7	V	3.0	35.7	1.0	-46.4	-13.0	-33.4
	3760.00	-17.2	H	3.0	35.8	1.0	-52.1	-13.0	-39.1
	5640.00	-15.6	H	3.0	35.5	1.0	-50.1	-13.0	-37.1
	7520.00	-11.4	H	3.0	35.7	1.0	-46.1	-13.0	-33.1
	High Ch, 1907.6								
	3815.20	-17.5	V	3.0	35.8	1.0	-52.3	-13.0	-39.3
	5722.80	-15.2	V	3.0	35.5	1.0	-49.7	-13.0	-36.7
	7630.40	-12.6	V	3.0	35.8	1.0	-47.4	-13.0	-34.4
	3815.20	-14.5	H	3.0	35.8	1.0	-49.2	-13.0	-36.2
	5722.80	-14.2	H	3.0	35.5	1.0	-48.7	-13.0	-35.7
	7630.40	-11.7	H	3.0	35.8	1.0	-46.4	-13.0	-33.4

UL Verification Services									
Above 1GHz High Frequency Substitution Measurement									
Company:		LG Electronics							
Project #:		14119589							
Date:		12/30/2014							
Test Engineer:		L. Lara							
Configuration:		EUT X-position with AC charger and HS							
Location:		Chamber C							
Mode:		Rel99 Band 2 Harmonics							
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1852.4									
3704.80	-17.2	V	3.0	35.9	1.0	-52.1	-13.0	-39.1	
5557.20	-15.8	V	3.0	35.5	1.0	-50.3	-13.0	-37.3	
7409.60	-10.8	V	3.0	35.7	1.0	-45.5	-13.0	-32.5	
Band 2									
3704.80	-15.8	H	3.0	35.9	1.0	-50.7	-13.0	-37.7	
5557.20	-15.2	H	3.0	35.5	1.0	-49.7	-13.0	-36.7	
7409.60	-11.3	H	3.0	35.7	1.0	-46.1	-13.0	-33.1	
REL99									
Mid Ch, 1880									
3760.00	-19.5	V	3.0	35.8	1.0	-54.3	-13.0	-41.3	
5640.00	-15.9	V	3.0	35.5	1.0	-50.4	-13.0	-37.4	
7520.00	-12.6	V	3.0	35.7	1.0	-47.4	-13.0	-34.4	
3760.00	-16.8	H	3.0	35.8	1.0	-51.6	-13.0	-38.6	
5640.00	-14.9	H	3.0	35.5	1.0	-49.3	-13.0	-36.3	
7520.00	-11.7	H	3.0	35.7	1.0	-46.4	-13.0	-33.4	
High Ch, 1907.6									
3815.20	-16.6	V	3.0	35.8	1.0	-51.4	-13.0	-38.4	
5722.80	-13.4	V	3.0	35.5	1.0	-47.9	-13.0	-34.9	
7630.40	-12.5	V	3.0	35.8	1.0	-47.3	-13.0	-34.3	
3815.20	-14.3	H	3.0	35.8	1.0	-49.1	-13.0	-36.1	
5722.80	-13.6	H	3.0	35.5	1.0	-48.1	-13.0	-35.1	
7630.40	-11.5	H	3.0	35.8	1.0	-46.2	-13.0	-33.2	

UL Verification Services Above 1GHz High Frequency Substitution Measurement									
Company:		LG Electronics							
Project #:		14119589							
Date:		12/29/14							
Test Engineer:		L. Lara							
Configuration:		EUT Y-position with AC charger and HS							
Mode:		WCDMA_HSDPA_850							
Chamber		Pre-amplifier			Filter		Limit		
3m Chamber		T34 8449B			Filter 1		Part 22		
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Band									
Low Ch, 826.40MHz									
1.652	-28.8	V	3.0	37.4	1.0	-65.2	-13.0	-52.2	
2.479	-23.8	V	3.0	36.4	1.0	-59.1	-13.0	-46.1	
Band 5									
3.306	-20.7	V	3.0	35.8	1.0	-55.5	-13.0	-42.5	
1.652	-29.1	H	3.0	37.4	1.0	-65.5	-13.0	-52.5	
2.479	-25.5	H	3.0	36.4	1.0	-60.9	-13.0	-47.9	
HSDPA									
3.306	-21.0	H	3.0	35.8	1.0	-55.8	-13.0	-42.8	
Mid Ch, 836.6MHz									
1.673	-28.1	V	3.0	37.3	1.0	-64.4	-13.0	-51.4	
2.510	-23.0	V	3.0	36.4	1.0	-58.4	-13.0	-45.4	
3.346	-20.5	V	3.0	35.8	1.0	-55.2	-13.0	-42.2	
1.673	-27.8	H	3.0	37.3	1.0	-64.2	-13.0	-51.2	
2.510	-24.3	H	3.0	36.4	1.0	-59.7	-13.0	-46.7	
3.346	-20.9	H	3.0	35.8	1.0	-55.7	-13.0	-42.7	
High Ch, 846.6MHz									
1.693	-27.5	V	3.0	37.3	1.0	-63.8	-13.0	-50.8	
2.539	-23.3	V	3.0	36.3	1.0	-58.6	-13.0	-45.6	
3.386	-22.0	V	3.0	35.7	1.0	-56.7	-13.0	-43.7	
1.693	-27.6	H	3.0	37.3	1.0	-63.9	-13.0	-50.9	
2.539	-24.6	H	3.0	36.3	1.0	-59.9	-13.0	-46.9	
3.386	-21.8	H	3.0	35.7	1.0	-56.5	-13.0	-43.5	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

UL Verification Services Above 1GHz High Frequency Substitution Measurement									
Company:		LG Electronics							
Project #:		14119589							
Date:		12/29/14							
Test Engineer:		L. Lara							
Configuration:		EUT Y-position with AC charger and HS							
Mode:		WCDMA_Rel 99_ 850							
Chamber		Pre-amplifier			Filter		Limit		
3m Chamber		T34 8449B			Filter 1		Part 22		
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Band									
Low Ch, 826.40MHz									
1.652	-28.9	V	3.0	37.4	1.0	-65.3	-13.0	-52.3	
2.479	-23.5	V	3.0	36.4	1.0	-58.9	-13.0	-45.9	
Band 5									
3.306	-21.4	V	3.0	35.8	1.0	-56.2	-13.0	-43.2	
1.652	-28.9	H	3.0	37.4	1.0	-65.2	-13.0	-52.2	
2.479	-25.5	H	3.0	36.4	1.0	-60.8	-13.0	-47.8	
REL99									
3.306	-21.4	H	3.0	35.8	1.0	-56.2	-13.0	-43.2	
Mid Ch, 836.6MHz									
1.673	-27.8	V	3.0	37.3	1.0	-64.2	-13.0	-51.2	
2.510	-23.1	V	3.0	36.4	1.0	-58.5	-13.0	-45.5	
3.346	-20.6	V	3.0	35.8	1.0	-55.4	-13.0	-42.4	
1.673	-28.0	H	3.0	37.3	1.0	-64.3	-13.0	-51.3	
2.510	-24.4	H	3.0	36.4	1.0	-59.7	-13.0	-46.7	
3.346	-20.8	H	3.0	35.8	1.0	-55.6	-13.0	-42.6	
High Ch, 846.6MHz									
1.693	-27.4	V	3.0	37.3	1.0	-63.7	-13.0	-50.7	
2.539	-23.4	V	3.0	36.3	1.0	-58.8	-13.0	-45.8	
3.386	-22.4	V	3.0	35.7	1.0	-57.1	-13.0	-44.1	
1.693	-27.8	H	3.0	37.3	1.0	-64.1	-13.0	-51.1	
2.539	-24.9	H	3.0	36.3	1.0	-60.2	-13.0	-47.2	
3.386	-21.9	H	3.0	35.7	1.0	-56.6	-13.0	-43.6	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement										
		Company:	LG							
		Project #:	14I19589							
		Date:	12/29/14							
		Test Engineer:	Jude Semana							
		Configuration:	X-pos EUT w/ AC Adaptor and HS							
		Mode:	EGPRS1900 Harm							
		Chamber	Pre-amplifer	Filter	Limit					
		3m Chamber	T34 8449B	Filter 1	Part 24					
Band	f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch, 1850.2MHz									
GSM 1900	3.700	-11.0	V	3.0	35.4	1.0	-45.4	-13.0	-32.4	
	5.551	-8.0	V	3.0	34.7	1.0	-41.7	-13.0	-28.7	
	7.401	-5.3	V	3.0	34.9	1.0	-39.2	-13.0	-26.2	
EGPRS	3.700	-7.3	H	3.0	35.4	1.0	-41.7	-13.0	-28.7	
	5.551	-5.4	H	3.0	34.7	1.0	-39.1	-13.0	-26.1	
	7.401	-3.0	H	3.0	34.9	1.0	-36.9	-13.0	-23.9	
	Mid Ch, 1880.0MHz									
	3.760	-12.7	V	3.0	35.3	1.0	-47.0	-13.0	-34.0	
5.640	-10.3	V	3.0	34.7	1.0	-44.0	-13.0	-31.0		
7.520	-10.5	V	3.0	34.9	1.0	-44.4	-13.0	-31.4		
3.760	-15.3	H	3.0	35.3	1.0	-49.6	-13.0	-36.6		
5.640	-9.0	H	3.0	34.7	1.0	-42.8	-13.0	-29.8		
7.520	-5.2	H	3.0	34.9	1.0	-39.2	-13.0	-26.2		
High Ch, 1909.8MHz										
3.820	-8.0	V	3.0	35.3	1.0	-42.3	-13.0	-29.3		
5.729	-6.0	V	3.0	34.7	1.0	-39.7	-13.0	-26.7		
7.639	-4.6	V	3.0	35.0	1.0	-38.5	-13.0	-25.5		
3.820	-8.8	H	3.0	35.3	1.0	-43.1	-13.0	-30.1		
5.729	-5.3	H	3.0	34.7	1.0	-39.0	-13.0	-26.0		
7.639	-3.6	H	3.0	35.0	1.0	-37.5	-13.0	-24.5		
Rev. 03.03.09										
Note: No other emissions were detected above the system noise floor.										

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement										
Company: LG Project #: 14119589 Date: 12/29/14 Test Engineer: Jude Semana Configuration: X-pos EUT w/ AC Adaptor and HS Mode: GPRS1900 Harm										
		Chamber	Pre-amplifier		Filter		Limit			
		3m Chamber	T34 8449B		Filter 1		Part 24			
Band	f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch, 1850.2MHz									
GSM 1900	3.700	-13.6	V	3.0	35.4	1.0	-48.0	-13.0	-35.0	
	5.551	-8.1	V	3.0	34.7	1.0	-41.9	-13.0	-28.9	
	7.401	-5.5	V	3.0	34.9	1.0	-39.4	-13.0	-26.4	
GPRS	3.700	-8.7	H	3.0	35.4	1.0	-43.1	-13.0	-30.1	
	5.551	-5.8	H	3.0	34.7	1.0	-39.6	-13.0	-26.6	
	7.401	-3.1	H	3.0	34.9	1.0	-37.0	-13.0	-24.0	
	Mid Ch, 1880.0MHz									
	3.760	-12.7	V	3.0	35.3	1.0	-47.1	-13.0	-34.1	
	5.640	-11.5	V	3.0	34.7	1.0	-45.2	-13.0	-32.2	
	7.520	-9.7	V	3.0	34.9	1.0	-43.6	-13.0	-30.6	
	3.760	-9.9	H	3.0	35.3	1.0	-44.2	-13.0	-31.2	
	5.640	-6.8	H	3.0	34.7	1.0	-40.5	-13.0	-27.5	
	7.520	-3.2	H	3.0	34.9	1.0	-37.2	-13.0	-24.2	
	High Ch, 1909.8MHz									
	3.820	-8.7	V	3.0	35.3	1.0	-43.0	-13.0	-30.0	
	5.729	-6.4	V	3.0	34.7	1.0	-40.1	-13.0	-27.1	
	7.639	-6.0	V	3.0	35.0	1.0	-39.9	-13.0	-26.9	
	3.820	-10.9	H	3.0	35.3	1.0	-45.2	-13.0	-32.2	
	5.729	-5.4	H	3.0	34.7	1.0	-39.1	-13.0	-26.1	
	7.639	-5.1	H	3.0	35.0	1.0	-39.1	-13.0	-26.1	
Rev. 03.03.09										
Note: No other emissions were detected above the system noise floor.										

UL Verification Services Above 1GHz High Frequency Substitution Measurement										
Company: LG Electronics Project #: 14119589 Date: 12/29/14 Test Engineer: L. Lara Configuration: EUT Y-position with AC charger and HS Mode: EGPRS 850										
<div style="border: 1px solid black; padding: 2px; display: inline-block; background-color: #e0f7fa;">Chamber</div> 3m Chamber		<div style="border: 1px solid black; padding: 2px; display: inline-block; background-color: #e0f7fa;">Pre-amplifier</div> T34 8449B		<div style="border: 1px solid black; padding: 2px; display: inline-block; background-color: #e0f7fa;">Filter</div> Filter 1		<div style="border: 1px solid black; padding: 2px; display: inline-block; background-color: #e0f7fa;">Limit</div> Part 22				
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes	
Low Ch, 824.2MHz										
Band GSM 850 EGPRS	1.648	-28.3	V	3.0	37.4	1.0	-64.7	-13.0	-51.7	
	2.473	-23.9	V	3.0	36.4	1.0	-59.3	-13.0	-46.3	
	3.297	-21.5	V	3.0	35.8	1.0	-56.3	-13.0	-43.3	
	1.648	-29.2	H	3.0	37.4	1.0	-65.5	-13.0	-52.5	
	2.473	-25.9	H	3.0	36.4	1.0	-61.3	-13.0	-48.3	
	3.297	-21.6	H	3.0	35.8	1.0	-56.4	-13.0	-43.4	
Mid Ch, 836.6MHz										
	1.673	-27.7	V	3.0	37.3	1.0	-64.0	-13.0	-51.0	
	2.510	-22.6	V	3.0	36.4	1.0	-57.9	-13.0	-44.9	
	3.346	-21.1	V	3.0	35.8	1.0	-55.9	-13.0	-42.9	
	1.673	-28.3	H	3.0	37.3	1.0	-64.6	-13.0	-51.6	
	2.510	-24.6	H	3.0	36.4	1.0	-59.9	-13.0	-46.9	
	3.346	-20.7	H	3.0	35.8	1.0	-55.4	-13.0	-42.4	
High Ch, 848.8MHz										
	1.698	-27.3	V	3.0	37.3	1.0	-63.6	-13.0	-50.6	
	2.547	-24.0	V	3.0	36.3	1.0	-59.3	-13.0	-46.3	
	3.395	-22.2	V	3.0	35.7	1.0	-56.9	-13.0	-43.9	
	1.698	-28.0	H	3.0	37.3	1.0	-64.3	-13.0	-51.3	
	2.547	-25.4	H	3.0	36.3	1.0	-60.7	-13.0	-47.7	
	3.395	-22.3	H	3.0	35.7	1.0	-57.0	-13.0	-44.0	
Rev. 03.03.09 Note: No other emissions were detected above the system noise floor.										

UL Verification Services Above 1GHz High Frequency Substitution Measurement										
Company:		LG Electronics								
Project #:		14119589								
Date:		12/29/14								
Test Engineer:		L. Lara								
Configuration:		EUT Y-position with AC charger and HS								
Mode:		GPRS 850								
Chamber		Pre-amplifier		Filter		Limit				
3m Chamber		T34 8449B		Filter 1		Part 22				
Band	f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch, 824.2MHz									
	1.648	-28.6	V	3.0	37.4	1.0	-65.0	-13.0	-52.0	
GSM	2.473	-23.6	V	3.0	36.4	1.0	-59.0	-13.0	-46.0	
850	3.297	-21.0	V	3.0	35.8	1.0	-55.8	-13.0	-42.8	
	1.648	-28.0	H	3.0	37.4	1.0	-64.4	-13.0	-51.4	
GPRS	2.473	-24.3	H	3.0	36.4	1.0	-59.7	-13.0	-46.7	
	3.297	-21.6	H	3.0	35.8	1.0	-56.4	-13.0	-43.4	
	Mid Ch, 836.6MHz									
	1.673	-28.1	V	3.0	37.3	1.0	-64.4	-13.0	-51.4	
	2.510	-22.9	V	3.0	36.4	1.0	-58.3	-13.0	-45.3	
	3.346	-20.9	V	3.0	35.8	1.0	-55.6	-13.0	-42.6	
	1.673	-28.2	H	3.0	37.3	1.0	-64.5	-13.0	-51.5	
	2.510	-24.6	H	3.0	36.4	1.0	-60.0	-13.0	-47.0	
	3.346	-21.0	H	3.0	35.8	1.0	-55.7	-13.0	-42.7	
	High Ch, 848.8MHz									
	1.698	-27.9	V	3.0	37.3	1.0	-64.2	-13.0	-51.2	
	2.547	-22.7	V	3.0	36.3	1.0	-58.1	-13.0	-45.1	
	3.395	-21.5	V	3.0	35.7	1.0	-56.2	-13.0	-43.2	
	1.698	-27.8	H	3.0	37.3	1.0	-64.1	-13.0	-51.1	
	2.547	-25.3	H	3.0	36.3	1.0	-60.7	-13.0	-47.7	
	3.395	-22.3	H	3.0	35.7	1.0	-57.0	-13.0	-44.0	
Rev. 03.03.09										
Note: No other emissions were detected above the system noise floor.										