



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

CERTIFICATION TEST REPORT

FOR

CDMA/LTE Phone + Bluetooth & DTS/UNII a/b/g/n + NFC

**MODEL NUMBER: LG-VS880, VS880, LGVS880
FCC ID: ZNFVS880**

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Prepared for

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: LG ELECTRONICS MOBILECOMM U.S.A., INC
EUT DESCRIPTION: CDMA/LTE Phone + Bluetooth & DTS/UNII a/b/g/n + NFC
MODEL: LG-VS880, VS880, LGVS880
SERIAL NUMBER: 1838501 (Conducted), 1838500 (Radiated)
DATE TESTED: MARCH 21- APRIL 11, 2014

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC PART 22H, 24E, 27E 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, FCC CFR 47 Part 27

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 Benicia Street, Fremont, California, USA.

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at <http://www.ul.com>

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

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

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

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

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

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

4.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	3.52 dB
Radiated Disturbance, 30 to 18000 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 CDMA/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						
Band	Frequency Range(MHz)	Modulation Peak	Conducted		Radiated	
			Avg (dBm)	Avg (mW)	Avg (dBm)	Avg (mW)
BC0	824~849	1xRTT	25.3	338.84	22.131	163.34
	824~849	EVDO REL. 0	25.3	338.84	22.10	162.18
	824~849	EVDO REV. A	25.3	338.84		
BC1	1850~1910	1xRTT	24.5	281.84	25.11	324.34
	1850~1910	EVDO REL. 0	24.5	281.84	24.65	291.74
	1850~1910	EVDO REV. A	24.5	281.84		

5.3. MAXIMUM OUTPUT POWER (LTE)

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

FCC Part 27							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation Peak	Conducted		Radiated	
				Avg (dBm)	Avg (mW)	Avg (dBm)	Avg (mW)
LTE13	777~787	10MHz	QPSK	24.7	295.12	21.58	143.88
	777~787	10MHz	16QAM	23.5	223.87	20.76	119.12

FCC Part 27							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation Peak	Conducted		Radiated	
				Avg (dBm)	Avg (mW)	Avg (dBm)	Avg (mW)
LTE4	1710~1755	20MHz	QPSK	24.6	288.40	24.53	283.79
	1710~1755	20MHz	16QAM	23.7	234.42	23.57	227.51

FCC Part 27							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation Peak	Conducted		Radiated	
				Avg (dBm)	Avg (mW)	Avg (dBm)	Avg (mW)
LTE4	1710~1755	15MHz	QPSK	24.7	295.12	24.32	270.40
	1710~1755	15MHz	16QAM	23.6	229.09	24.24	265.46

FCC Part 27							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation Peak	Conducted		Radiated	
				Avg (dBm)	Avg (mW)	Avg (dBm)	Avg (mW)
LTE4	1710~1755	10MHz	QPSK	24.6	288.40	24.12	258.23
	1710~1755	10MHz	16QAM	23.5	223.87	23.11	204.64

FCC Part 27							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation Peak	Conducted		Radiated	
				Avg (dBm)	Avg (mW)	Avg (dBm)	Avg (mW)
LTE4	1710~1755	5MHz	QPSK	24.6	288.40	24.86	306.2
	1710~1755	5MHz	16QAM	23.4	218.78	24.01	251.77

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)
BC0, 824~849MHz	-5.78
BC1, 1850~1910MHz	-0.08
LTE4, 1710~1755MHz	-1.03
LTE13, 777~787MHz	-3.94

5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
AC Adapter	LG	MCS-01WD	DB390078751	N/A
Headset	LG	N/A	N/A	N/A

I/O CABLES (CONDUCTED SETUP)

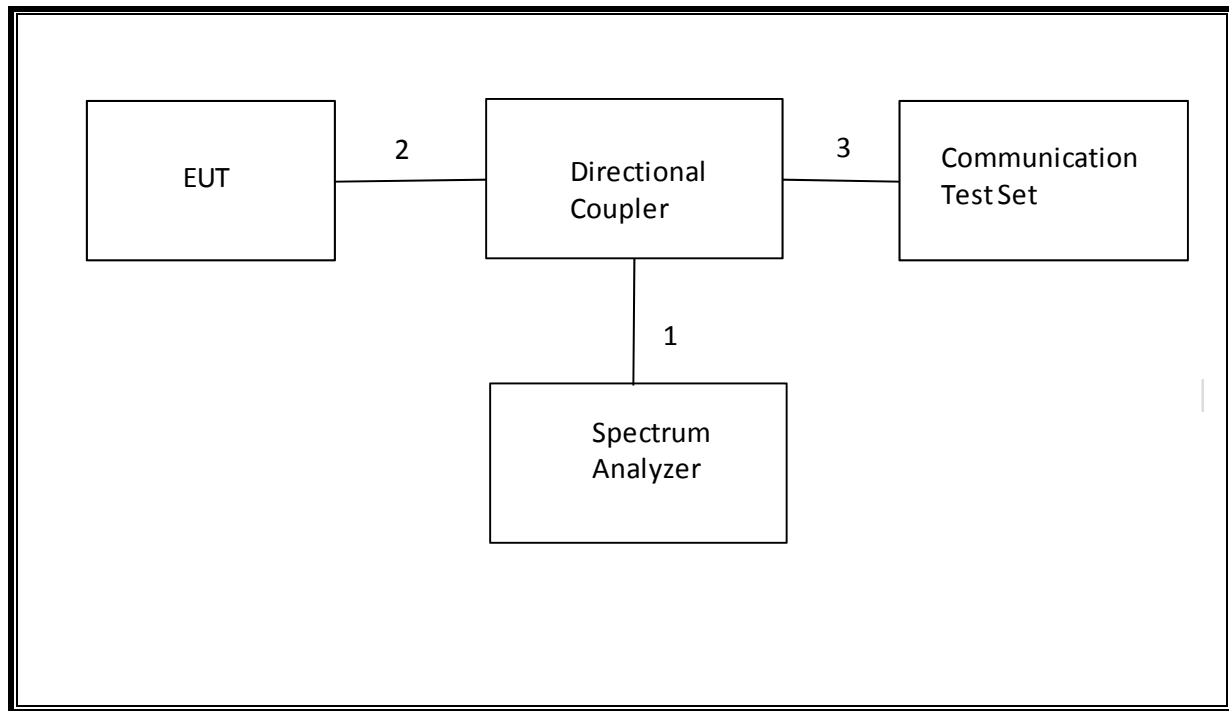
I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	RF Out	1	Spectrum Analyzer	Shielded	None	NA
2	Antenna Port	1	EUT	Shielded	0.1m	NA
3	RF In/Out	1	Communication Test Set	Shielded	1m	NA

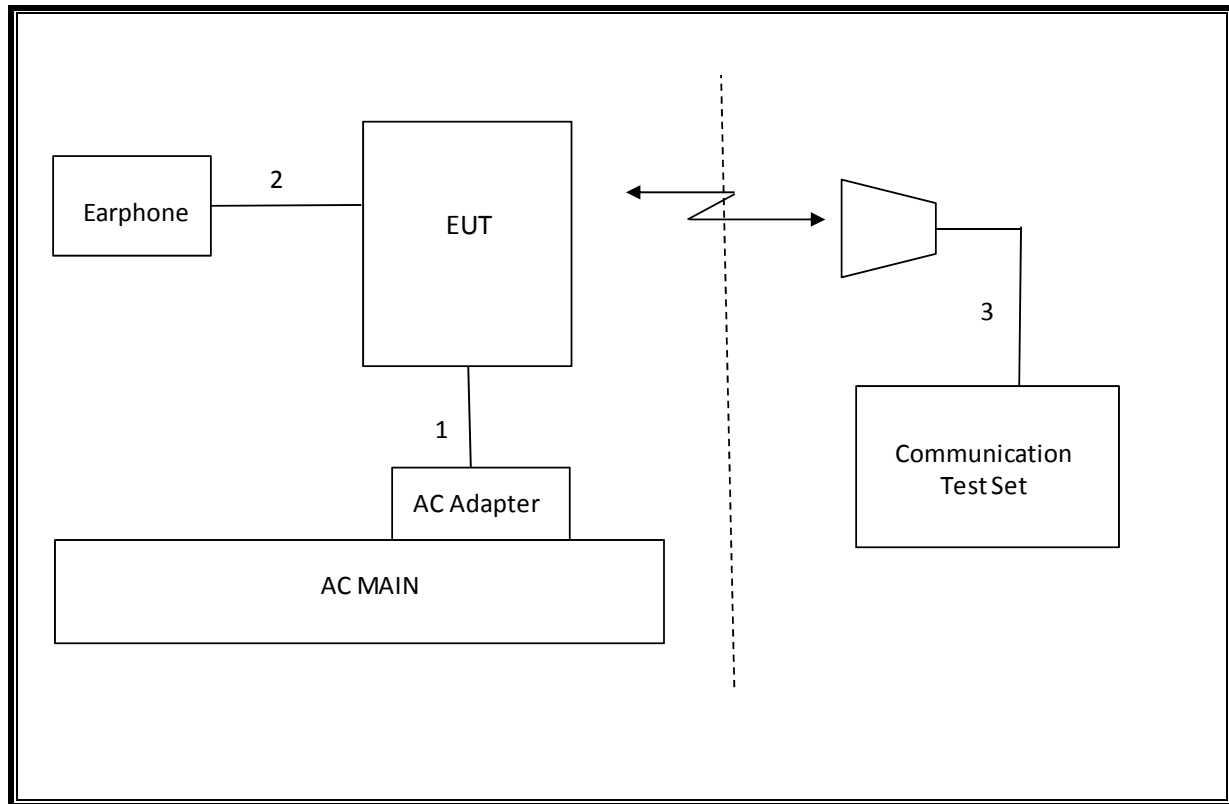
I/O CABLES (RADIATED SETUP)

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

TEST SETUP

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

SETUP DIAGRAM FOR TESTS (CONDUCTED TEST SETUP)

SETUP DIAGRAM FOR TESTS (RADIATED TEST SETUP)

6. TEST AND MEASUREMENT EQUIPMENT

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

TEST EQUIPMENT LIST				
Description	Manufacturer	Model	Asset	Cal Due
Antenna, Horn, 18 GHz	EMCO	3115	C00872	10/25/14
Antenna, Horn, 18 GHz	EMCO	3115	C00783	10/25/14
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00885	12/11/14
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01179	02/26/15
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01063	10/22/14
Communication Test Set	Agilent / HP	E5515C	C01086	06/20/14
Temperature / Humidity Chamber	Thermotron	SE 600-10-10	C00930	01/09/15
Highpass Filter, 1.5 GHz	Micro-Tronics	HPM13193	N02689	CNR
Highpass Filter, 2.7 GHz	Micro-Tronics	HPM13194	N02687	CNR
Antenna, Biconolog, 30MHz-1 GHz	Sunol Sciences	JB1	C01016	08/14/14
Vector signal generator, 6 GHz	Agilent / HP	E4438C	None	07/06/14

7. Summary Table

FCC Part Section	RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result	Worst Case
2.1049	N/A	Occupied Band width (99%)	N/A	Conducted	Pass	17.86MHz
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	-13.33dBm
2.1046	N/A	Conducted output power	N/A		Pass	25.3dBm
22.355 24.235 27.54 90.213	RSS-132(4.3) RSS-133(6.3) RSS-139(6.3) RSS-199(4.3)	Frequency Stability	2.5PPM		Pass	0.056PPM
22.913(a)(2)	RSS-132(4.4)	Effective Radiated Power	38 dBm	Radiated	Pass	22.131dBm
27.50(b)(10)	N/A		34.77 dBm		Pass	
24.232(c)	RSS-133(6.4)	Equivalent Isotropic Radiated Power	33dBm		Pass	25.11dBm
27.50(d)(4)	RSS-139(6.4)		30dBm		Pass	
22.917(a) 24.238(a) 27.53(g)	RSS-132(4.5.1) RSS-133(6.5.1) RSS-139(6.5.1)	Radiated Spurious Emission	-13dBm		Pass	-30.4dBm

8.1.1. 1xRTT

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

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

8.1.2. CDMA2000 OUTPUT POWER RESULT

1xRTT

Full Power

Band	Mode	Ch	Freq. (MHz)	Avg Pwr (dBm)
BC 0	RC1, SO55 (Loopback)	1013	824.70	25.3
		384	836.52	25.3
		777	848.31	25.2
	RC3, SO55 (Loopback)	1013	824.70	25.3
		384	836.52	25.2
		777	848.31	25.2
	RC3, SO32 (+F-SCH)	1013	824.70	25.2
		384	836.52	25.2
		777	848.31	25.2

1xRTT

Full Power

Band	Mode	Ch	Freq. (MHz)	Avg Pwr (dBm)
BC 1	RC1 SO55 (Loopback)	25	1851.25	24.4
		600	1880.00	24.4
		1175	1908.75	24.4
	RC3 SO55 (Loopback)	25	1851.25	24.4
		600	1880.00	24.4
		1175	1908.75	24.4
	RC3 SO32 (+F-SCH)	25	1851.25	24.5
		600	1880.00	24.4
		1175	1908.75	24.4

8.1.3. 1xEV-DO Release 0

TEST PROCEDURE

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

<u>Application</u>	<u>Rev, License</u>
1xEV-DO Terminal Test	A.09.13

EVDO Release 0 - RTAP

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

EVDO Release 0 - FTAP

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

8.1.4. 1xEVDO REL 0 OUTPUT POWER RESULT

1xEV-Do Rel. 0

Band	FTAP Rate	Channel	f (MHz)	Avg Pwr (dBm)
BC0	307.2 kbps (2 slot, QPSK)	1013	824.70	25.3
		384	836.52	25.3
		777	848.31	25.2

1xEV-Do Rel. 0

Band	FTAP Rate	Channel	f (MHz)	Avg Pwr (dBm)
BC 1	307.2 kbps (2 slot, QPSK)	25	1851.25	24.4
		600	1880.00	24.5
		1175	1908.75	24.5

8.1.5. 1xEV-DO Rev. A

TEST PROCEDURE

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

<u>Application</u>	<u>Rev, License</u>
1xEV-DO Terminal Test	A.09.13

EVDO Release A – RETAP

- Call Setup > Shift & Preset
 - Cell Power > -60 dBm/1.23 MHz
 - Protocol Rev > A (1xEV-DO-A)
 - Application Config > Enhanced Test Application Protocol > RETAP
 - R-Data Pkt Size > 4096
 - Protocol Subtype Config > Release A Physical Layer Subtype > Subtype 2
- > PL Subtype 2 Access Channel MAC Subtype > Default (Subtype 0)
- Access Network Info > Cell Parameters > Sector ID > 00000000 > Subnet Mask > 0
 - Generator Info > Termination Parameters > Max Forward Packet Duration > 16 Slots > ACK R-Data After > Subpacket 0 (All ACK)
 - Rvs Power Ctrl > All Up bits (to get the maximum power)

EVDO Release A - FETAP

- Call Setup > Shift & Preset
 - Cell Power > -60 dBm/1.23 MHz
 - Protocol Rev > A (1xEV-DO-A)
 - Application Config > Enhanced Test Application Protocol > FETAP
 - F-Traffic Format > 4 (1024, 2,128) Canonical (307.2k, QPSK)
 - Protocol Subtype Config > Release A Physical Layer Subtype > Subtype 2
- > PL Subtype 2 Access Channel MAC Subtype > Default (Subtype 0)
- Access Network Info > Cell Parameters > Sector ID > 00000000 > Subnet Mask > 0
 - Generator Info > Termination Parameters > Max Forward Packet Duration > 16 Slots > ACK R-Data After > Subpacket 0 (All ACK)
 - Rvs Power Ctrl > All Up bits (to get the maximum power)

8.1.6. 1xEVDO REV A OUTPUT RESULT

1xEv-Do Rev. A

Band	FETAP Traffic Format	Channel	f (MHz)	Avg Pwr (dBm)
BC0	307.2k, QPSK/ ACK channel is transmitted at all the slots	1013	824.70	25.3
		384	836.52	25.3
		777	848.31	25.3

1xEv-Do Rev. A

Band	FETAP Traffic Format	Channel	f (MHz)	Avg Pwr (dBm)
BC 1	307.2k, QPSK/ ACK channel is transmitted at all the slots	25	1851.25	24.4
		600	1880	24.5
		1175	1908.75	24.5

8.2. LTE OUTPUT VERIFICATION

8.2.1. LTE OUTPUT RESULT

Band	BW (MHz)	Mode	RB Allocation	RB Size	Target MPR	Avg Pwr (dBm)		
						20050	20175	20300
						1720 MHz	1732.5 MHz	1745 MHz
LTE Band 4	20	QPSK	1	0	0	24.4	24.4	24.5
			1	49	0	24.4	24.5	24.5
			1	99	0	24.4	24.6	24.3
			50	0	1	23.5	23.6	23.7
			50	25	1	23.6	23.5	23.6
			50	50	1	23.5	23.6	23.6
			100	0	1	23.5	23.5	23.6
		16QAM	1	0	1	23.7	23.7	23.6
			1	49	1	23.6	23.7	23.7
			1	99	1	23.6	23.7	23.6
			50	0	2	22.6	22.6	22.6
			50	25	2	22.5	22.6	22.6
			50	50	2	22.5	22.5	22.6
			100	0	2	22.6	22.6	22.6
Band	BW (MHz)	Mode	RB Allocation	RB Size	Target MPR	Avg Pwr (dBm)		
						20025	20175	20325
						1717.5 MHz	1732.5 MHz	1747.5 MHz
LTE Band 4	15	QPSK	1	0	0	24.5	24.6	24.7
			1	36	0	24.5	24.6	24.6
			1	74	0	24.5	24.6	24.4
			36	0	1	23.5	23.6	23.7
			36	18	1	23.4	23.5	23.6
			36	37	1	23.5	23.6	23.6
			75	0	1	23.5	23.6	23.6
		16QAM	1	0	1	23.4	23.4	23.6
			1	36	1	23.3	23.4	23.4
			1	74	1	23.3	23.5	23.3
			36	0	2	22.4	22.6	22.6
			36	18	2	22.4	22.5	22.6
			36	37	2	22.5	22.6	22.6
			75	0	2	22.5	22.5	22.6
Band	BW (MHz)	Mode	RB Allocation	RB Size	Target MPR	Avg Pwr (dBm)		
						20000	20175	20350
						1715 MHz	1732.5 MHz	1750 MHz
LTE Band 4	10	QPSK	1	0	0	24.5	24.5	24.6
			1	25	0	24.5	24.6	24.5

			1	49	0	24.5	24.6	24.5
			25	0	1	23.5	23.6	23.5
			25	12	1	23.4	23.5	23.5
			25	25	1	23.4	23.5	23.5
			50	0	1	23.4	23.5	23.5
		16QAM	1	0	1	23.3	23.4	23.5
			1	25	1	23.2	23.4	23.4
			1	49	1	23.3	23.4	23.3
			25	0	2	22.5	22.5	22.5
			25	12	2	22.5	22.5	22.5
			25	25	2	22.4	22.5	22.5
			50	0	2	22.5	22.5	22.5
Band	BW (MHz)	Mode	RB Allocation	RB Size	Target MPR	Avg Pwr (dBm)		
						19975	20175	20375
						1712.5 MHz	1732.5 MHz	1752.5 MHz
LTE Band 4	5	QPSK	1	0	0	24.6	24.5	24.4
			1	12	0	24.5	24.5	24.4
			1	24	0	24.6	24.5	24.4
			12	0	1	23.5	23.5	23.6
			12	6	1	23.5	23.5	23.5
			12	13	1	23.5	23.5	23.5
			25	0	1	23.4	23.6	23.5
		16QAM	1	0	1	23.3	23.3	23.3
			1	12	1	23.3	23.4	23.3
			1	24	1	23.3	23.4	23.3
			12	0	2	22.5	22.6	22.6
			12	6	2	22.5	22.6	22.5
			12	13	2	22.4	22.6	22.6
			25	0	2	22.5	22.6	22.5

Band	BW (MHz)	Mode	RB Allocation	RB Size	Target MPR	Avg Pwr (dBm)
						23230
						782 MHz
LTE Band 13	10	QPSK	1	0	0	24.7
			1	25	0	24.6
			1	49	0	24.6
			25	0	1	23.5
			25	12	1	23.6
			25	25	1	23.5
			50	0	1	23.5
		16QAM	1	0	1	23.4
			1	25	1	23.5
			1	49	1	23.4
			25	0	2	22.6
			25	12	2	22.5
			25	25	2	22.4
			50	0	2	22.5

9. PEAK TO AVERAGE RATIO

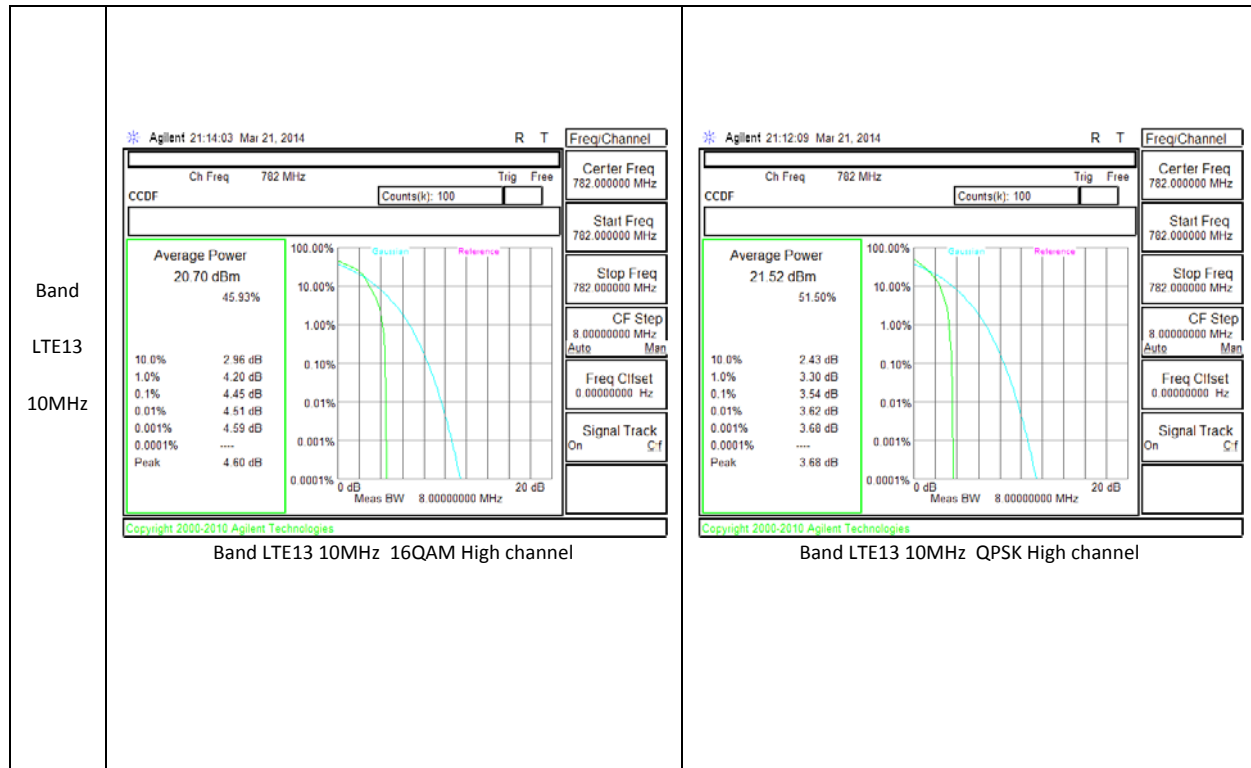
Test Procedure

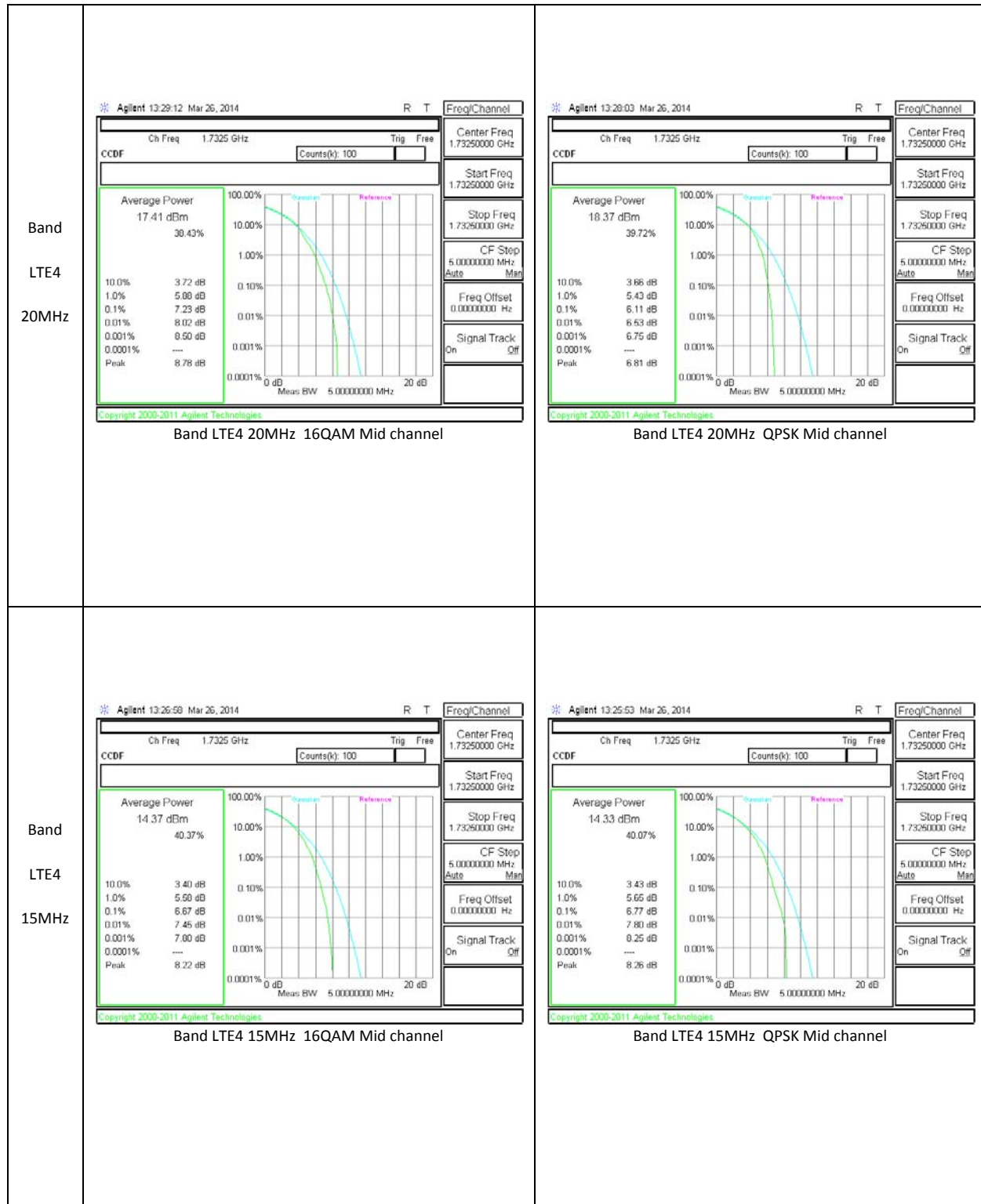
Per KDB 971168 D01 Power Meas License Digital Systems v02r01

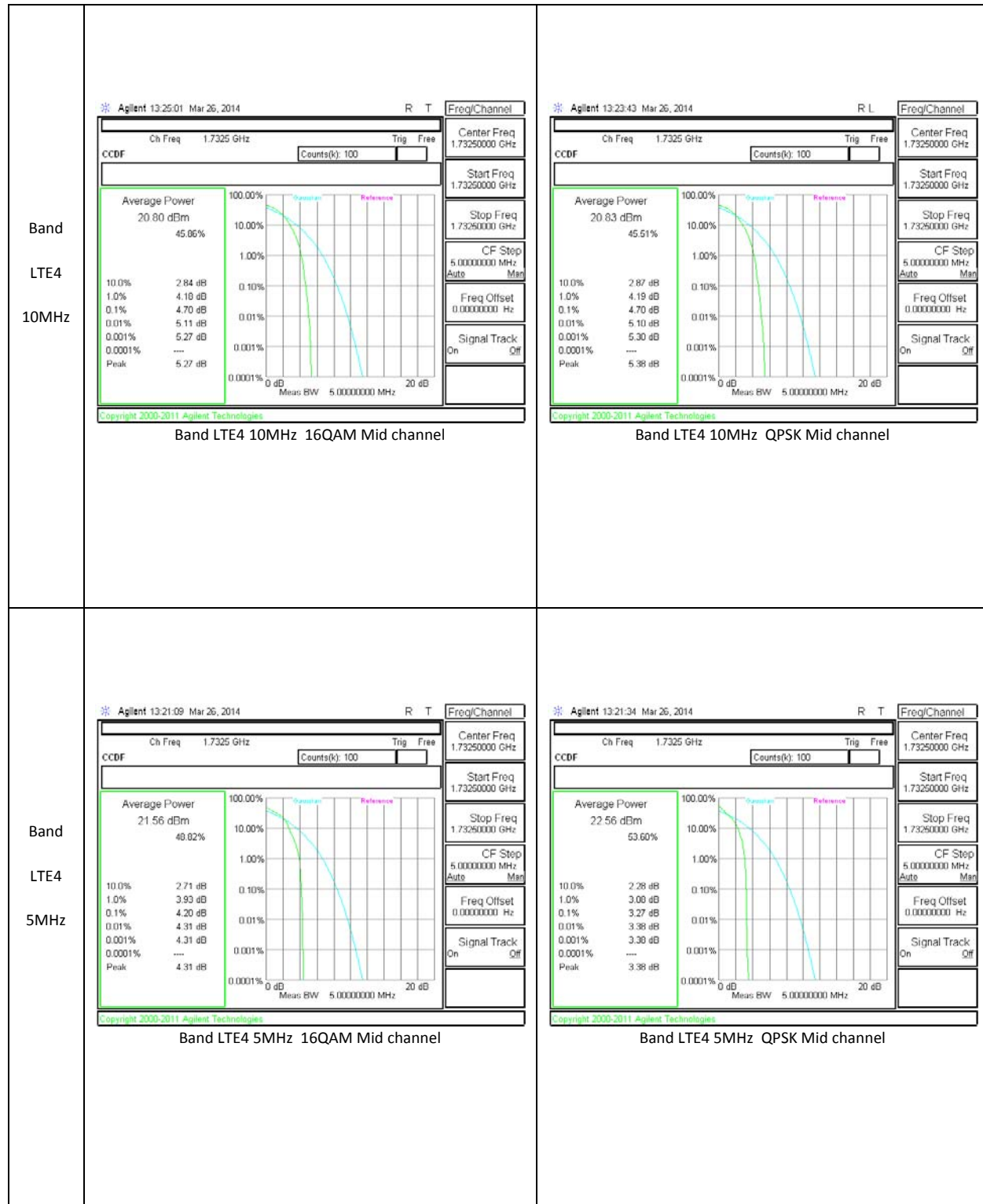
Test Spec

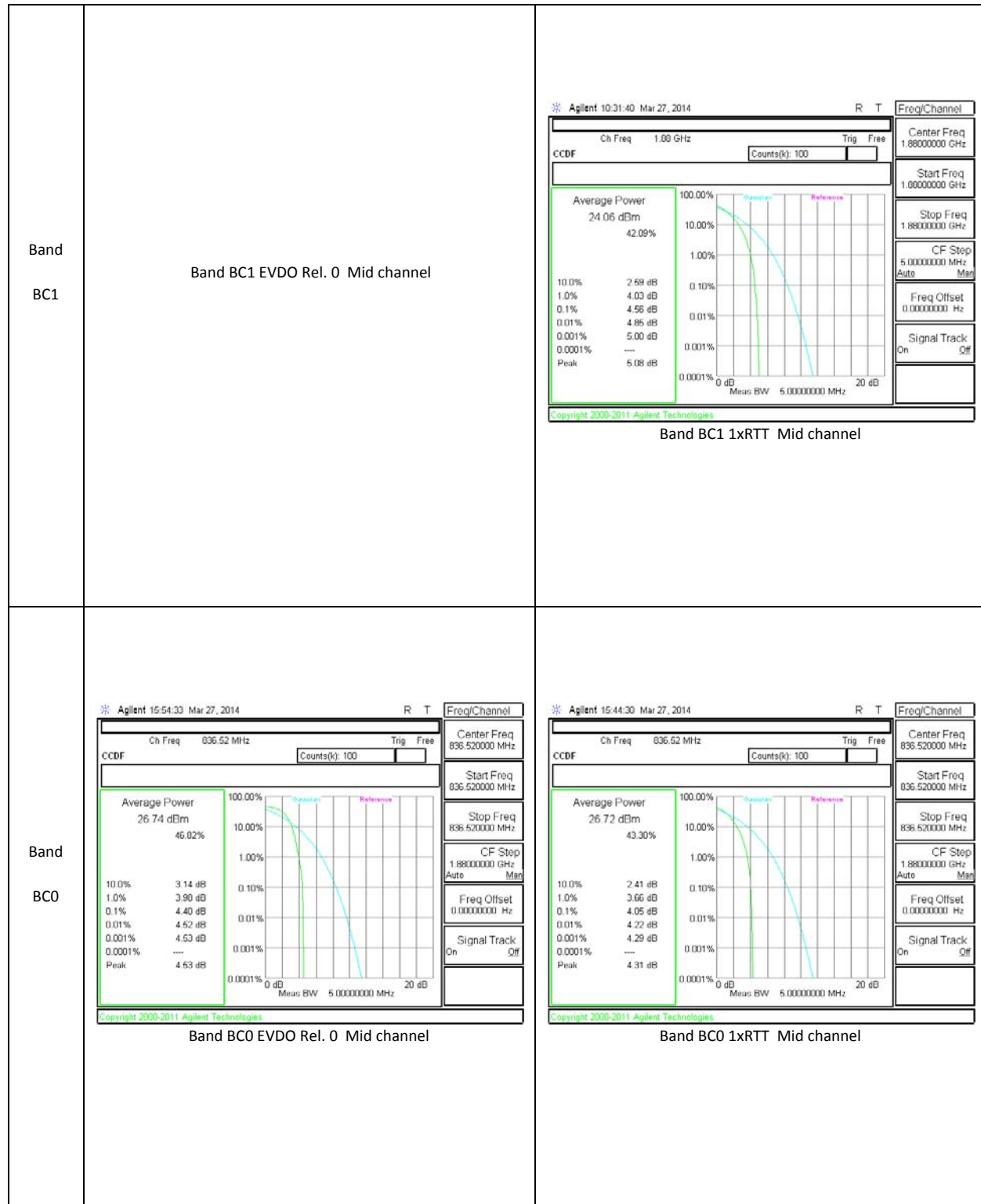
In addition, when the transmitter power is measured in terms of average value, the peak-to-average ratio of the power shall not exceed 13 dB.

9.1. CONDUCTED PEAK TO AVERAGE RESULT









10. LIMITS AND CONDUCTED RESULTS

10.1. OCCUPIED BANDWIDTH

RULE PART(S)

FCC: §2.1049

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

LIMITS

For reporting purposes only

TEST PROCEDURE

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

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

MODES TESTED

CDMA2000 BC0/BC1; LTE B4/B13

10.1.1. OCCUPIED BANDWIDTH RESULTS

Band	Mode	Channel	f (MHz)	99% BW (KHz)	-26dB BW (KHz)
BC0	1xRTT	1013	824.7	1269	1411
		384	836.52	1279	1390
		777	848.31	1276	1421
	EVDO REL. 0	1013	824.7	1281	1435
		384	836.52	1274	1433
		777	848.31	1278	1446
BC1	1xRTT	25	1851.25	1350	2114
		600	1880	1265	1427
		1175	1908.75	1245	1401
	EVDO REL. 0	25	1851.2	1311	1953
		600	1880	1278	1453
		1175	1908.75	1279	1456

10.1.2. LTE OCCUPIED BANDWIDTH RESULTS

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (KHz)	-26dB BW
LTE13	10	QPSK	50/0	782	8937	9763
		16QAM	50/0	782	8908	9590

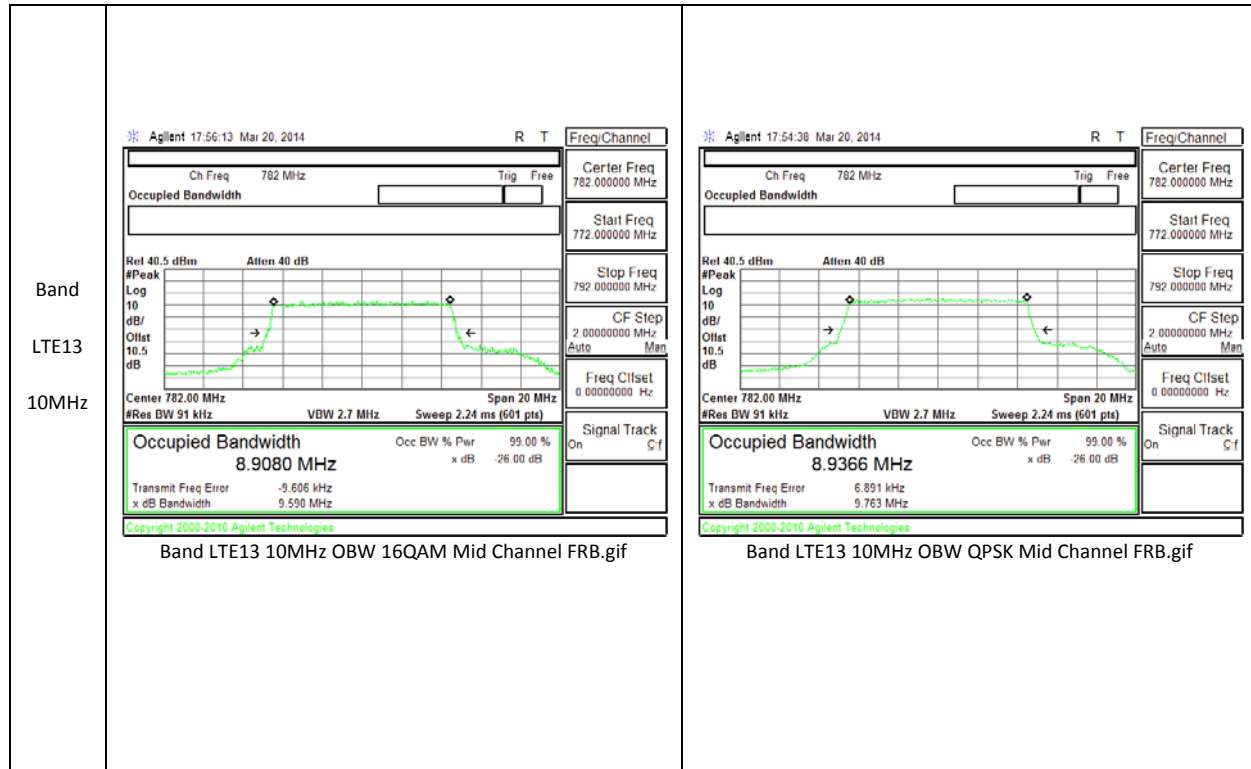
Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (KHz)	-26dB BW
LTE4	20	QPSK	100/0	1720	17860	18901
			100/0	1732.5	17797	18767
			100/0	1745	17825	18919
		16QAM	100/0	1720	17858	18904
			100/0	1732.5	17831	18903
			100/0	1745	17835	19110

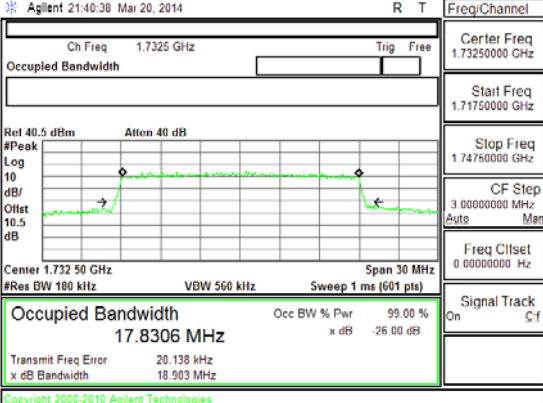
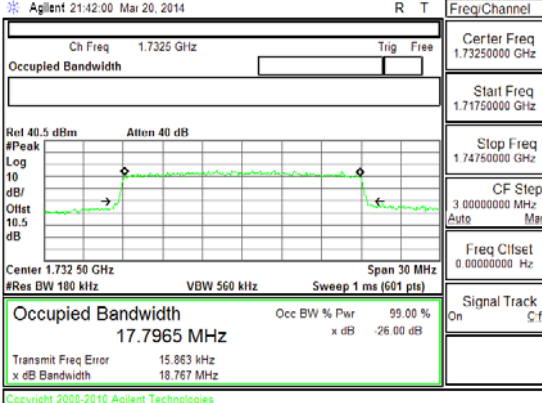
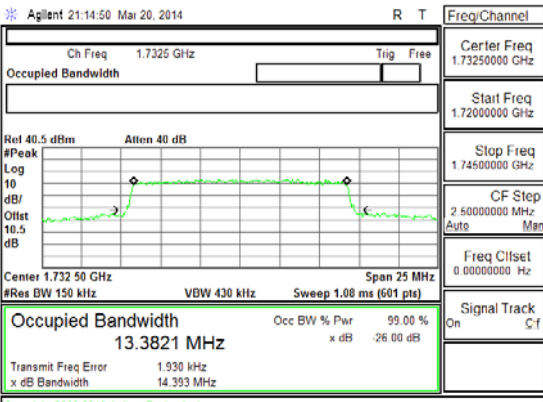
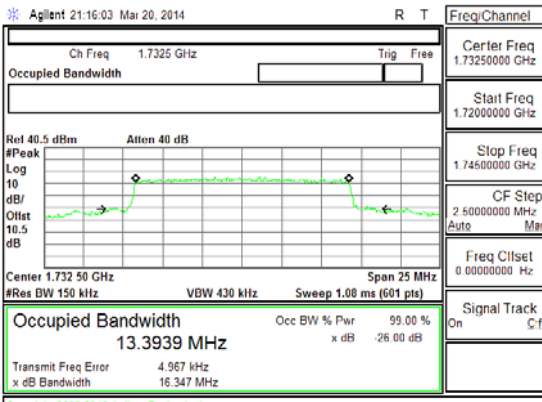
Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (KHz)	-26dB BW
LTE4	15	QPSK	75/0	1717.5	13399	14516
			75/0	1732.5	13394	16347
			75/0	1747.5	13390	14394
		16QAM	75/0	1717.5	13377	14304
			75/0	1732.5	13382	14393
			75/0	1747.5	13425	14359

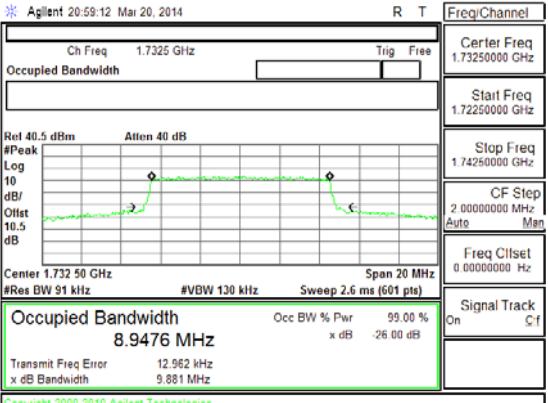
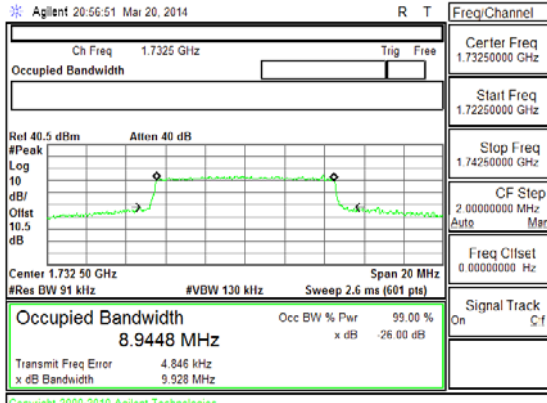
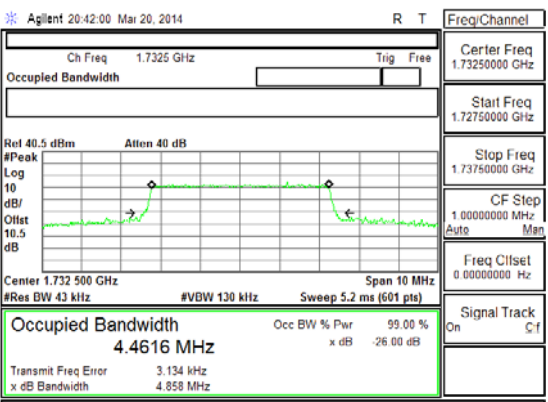
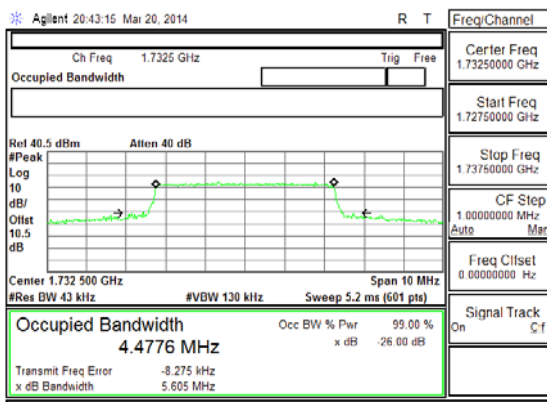
Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (KHz)	-26dB BW
LTE4	10	QPSK	50/0	1715	8935	9686
			50/0	1732.5	8945	9928
			50/0	1750	8953	9686
		16QAM	50/0	1715	8952	9578
			50/0	1732.5	8948	9881
			50/0	1750	8934	9587

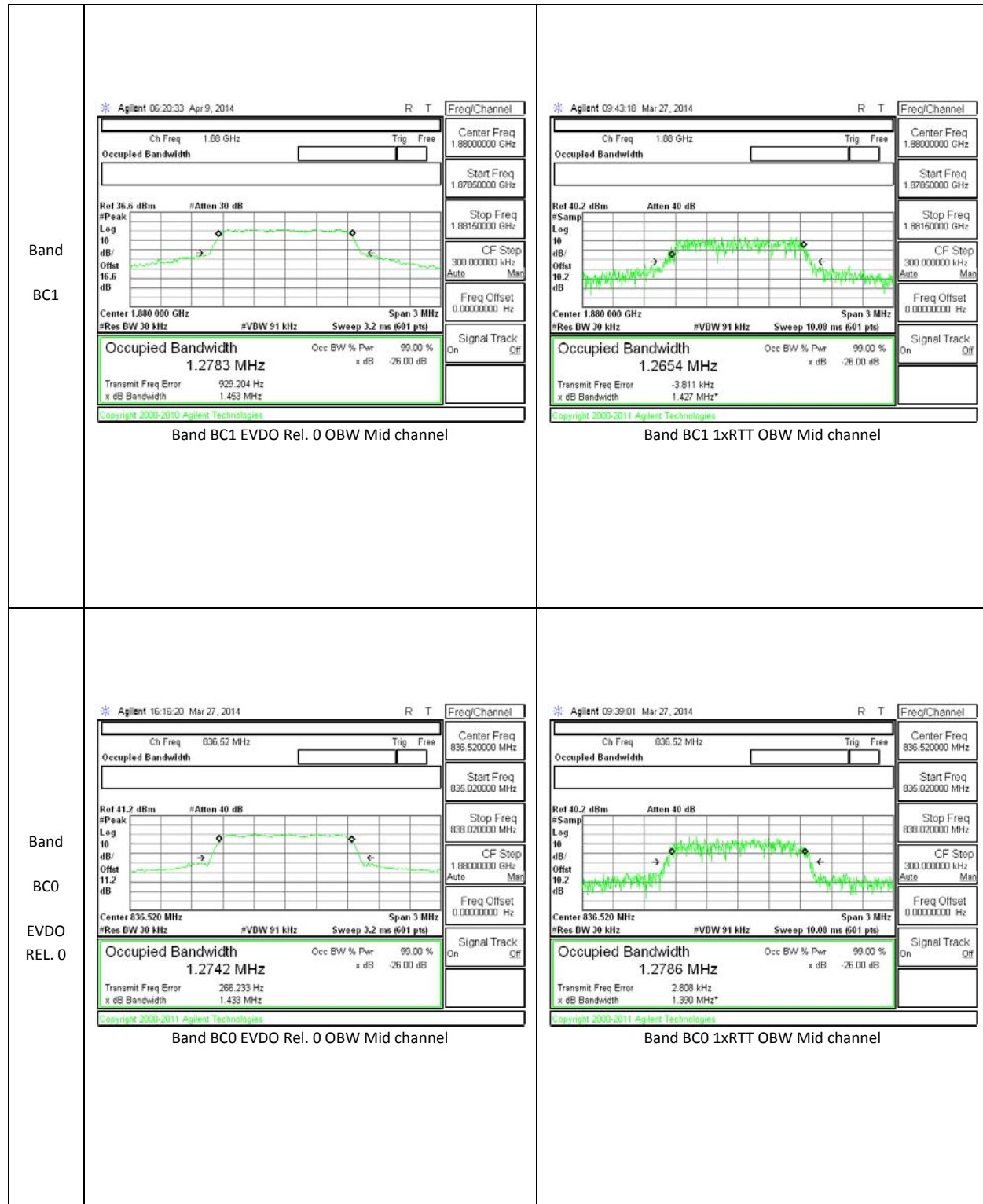
Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (KHz)	-26dB BW
LTE4	5	QPSK	25/0	1712.5	4457	4852
			25/0	1732.5	4478	5605
			25/0	1752.5	4454	4891
		16QAM	25/0	1712.5	4462	4865
			25/0	1732.5	4462	4858
			25/0	1752.5	4479	4897

10.1.1. OCCUPIED BANDWIDTH PLOTS



Band LTE4 20MHz	 Agilent 21:40:38 Mar 20, 2014 Ch Freq 1.7325 GHz Center Freq 1.73250000 GHz Start Freq 1.71750000 GHz Stop Freq 1.74750000 GHz CF Step 3.00000000 MHz Freq Cllset 0.00000000 Hz Signal Track On Occupied Bandwidth 17.8306 MHz Transmit Freq Error 20.138 kHz x dB Bandwidth 18.903 MHz Band LTE4 20MHz OBW 16QAM Mid Channel FRB.gif	 Agilent 21:42:00 Mar 20, 2014 Ch Freq 1.7325 GHz Center Freq 1.73250000 GHz Start Freq 1.71750000 GHz Stop Freq 1.74750000 GHz CF Step 3.00000000 MHz Freq Cllset 0.00000000 Hz Signal Track On Occupied Bandwidth 17.7965 MHz Transmit Freq Error 15.863 kHz x dB Bandwidth 18.767 MHz Band LTE4 20MHz OBW QPSK Mid Channel FRB.gif
Band LTE4 15MHz	 Agilent 21:14:50 Mar 20, 2014 Ch Freq 1.7325 GHz Center Freq 1.73250000 GHz Start Freq 1.72000000 GHz Stop Freq 1.74500000 GHz CF Step 2.50000000 MHz Freq Cllset 0.00000000 Hz Signal Track On Occupied Bandwidth 13.3821 MHz Transmit Freq Error 1.930 kHz x dB Bandwidth 14.393 MHz Band LTE4 15MHz OBW 16QAM Mid Channel FRB.gif	 Agilent 21:16:03 Mar 20, 2014 Ch Freq 1.7325 GHz Center Freq 1.73250000 GHz Start Freq 1.72000000 GHz Stop Freq 1.74500000 GHz CF Step 2.50000000 MHz Freq Cllset 0.00000000 Hz Signal Track On Occupied Bandwidth 13.3939 MHz Transmit Freq Error 4.967 kHz x dB Bandwidth 16.347 MHz Band LTE4 15MHz OBW QPSK Mid Channel FRB.gif

Band LTE4 10MHz	 Agilent 20:59:12 Mar 20, 2014 Ch Freq 1.7325 GHz Center Freq 1.73250000 GHz Start Freq 1.72250000 GHz Stop Freq 1.74250000 GHz CF Step 2.00000000 MHz Freq Cllset 0.00000000 Hz Signal Track On Occupied Bandwidth 8.9476 MHz Transmit Freq Error 12.962 kHz x dB Bandwidth 9.881 MHz Occ BW % Per 99.00 % x dB -26.00 dB Band LTE4 10MHz OBW 16QAM Mid Channel FRB.gif	 Agilent 20:56:51 Mar 20, 2014 Ch Freq 1.7325 GHz Center Freq 1.73250000 GHz Start Freq 1.72250000 GHz Stop Freq 1.74250000 GHz CF Step 2.00000000 MHz Freq Cllset 0.00000000 Hz Signal Track On Occupied Bandwidth 8.9448 MHz Transmit Freq Error 4.846 kHz x dB Bandwidth 9.928 MHz Occ BW % Per 99.00 % x dB -26.00 dB Band LTE4 10MHz OBW QPSK Mid Channel FRB.gif
Band LTE4 5MHz	 Agilent 20:42:00 Mar 20, 2014 Ch Freq 1.7325 GHz Center Freq 1.73250000 GHz Start Freq 1.72750000 GHz Stop Freq 1.73750000 GHz CF Step 1.00000000 MHz Freq Cllset 0.00000000 Hz Signal Track On Occupied Bandwidth 4.4616 MHz Transmit Freq Error 3.134 kHz x dB Bandwidth 4.858 MHz Occ BW % Per 99.00 % x dB -26.00 dB Band LTE4 5MHz OBW 16QAM Mid Channel FRB.gif	 Agilent 20:43:15 Mar 20, 2014 Ch Freq 1.7325 GHz Center Freq 1.73250000 GHz Start Freq 1.72750000 GHz Stop Freq 1.73750000 GHz CF Step 1.00000000 MHz Freq Cllset 0.00000000 Hz Signal Track On Occupied Bandwidth 4.4776 MHz Transmit Freq Error -8.275 kHz x dB Bandwidth 5.605 MHz Occ BW % Per 99.00 % x dB -26.00 dB Band LTE4 5MHz OBW QPSK Mid Channel FRB.gif



10.2. BAND EDGE EMISSIONS

RULE PART(S)

FCC: §22.359, §24.238 and § 27

LIMITS

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

TEST PROCEDURE

Per KDB 971168 D01 Power Meas License Digital Systems v02r01

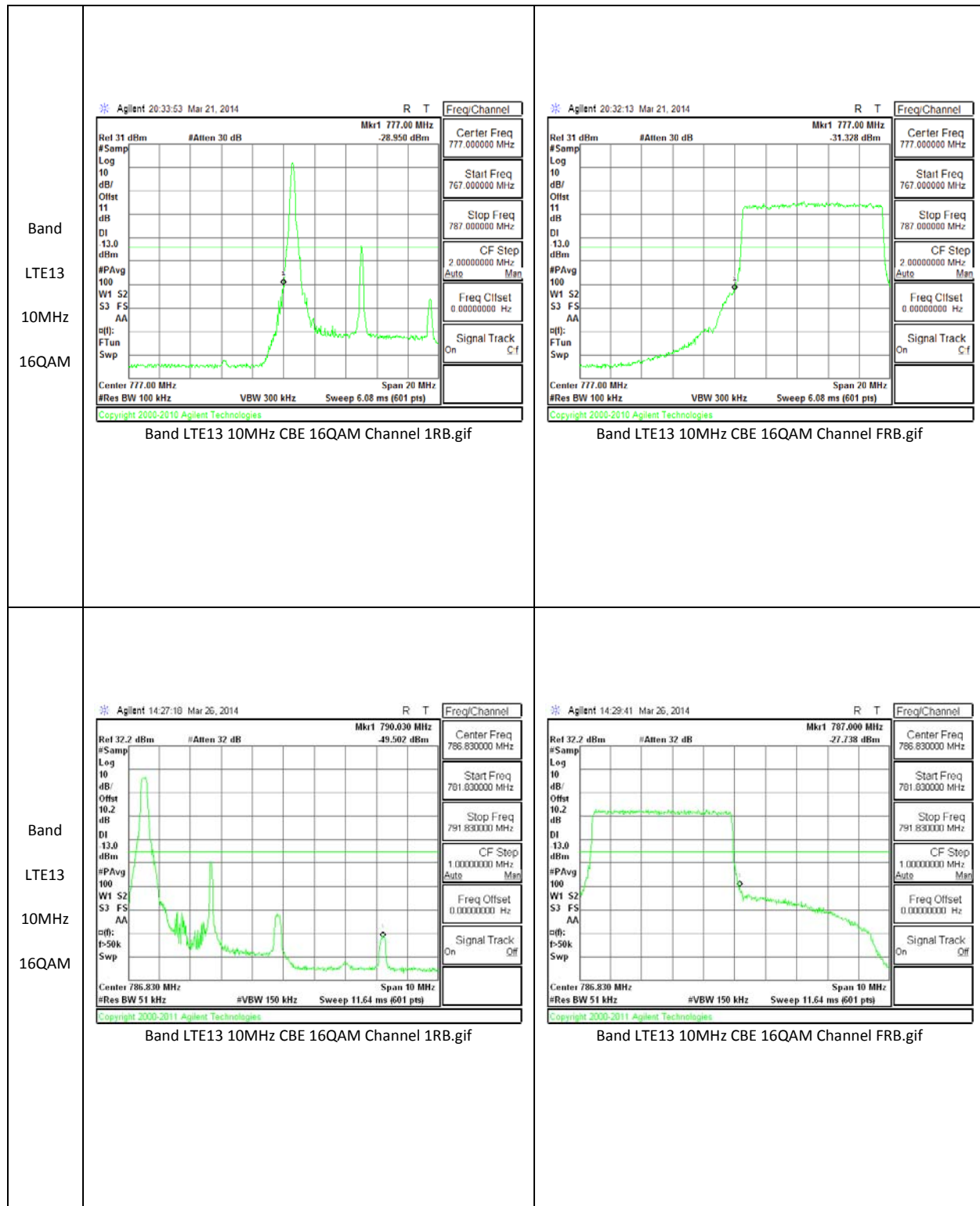
The transmitter output was connected to an Agilent 8960 or a CMW500 Test Set and configured to operate at maximum power. The band edge emissions were measured at the required operating frequencies in each band on the Spectrum Analyzer.

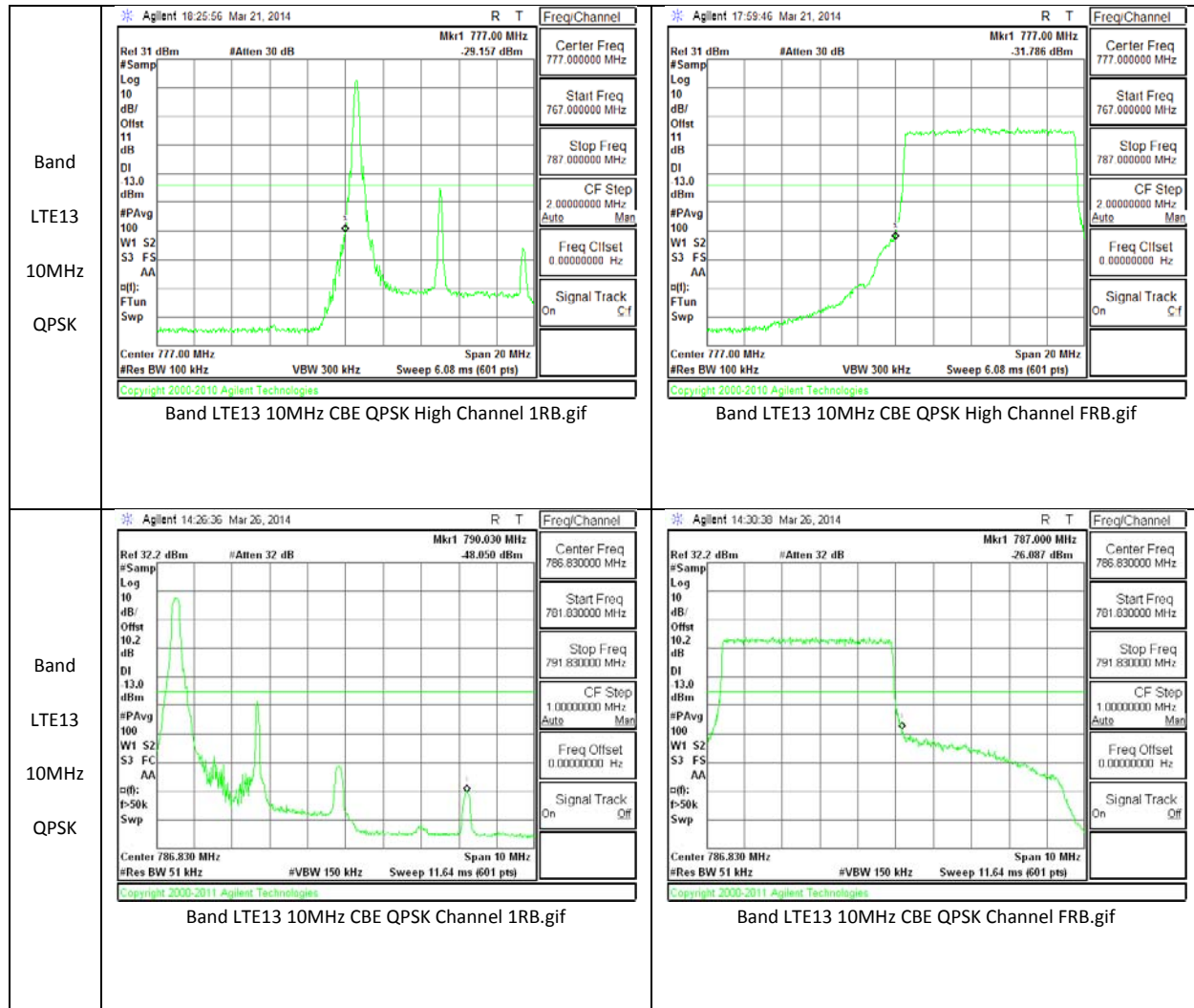
MODES TESTED

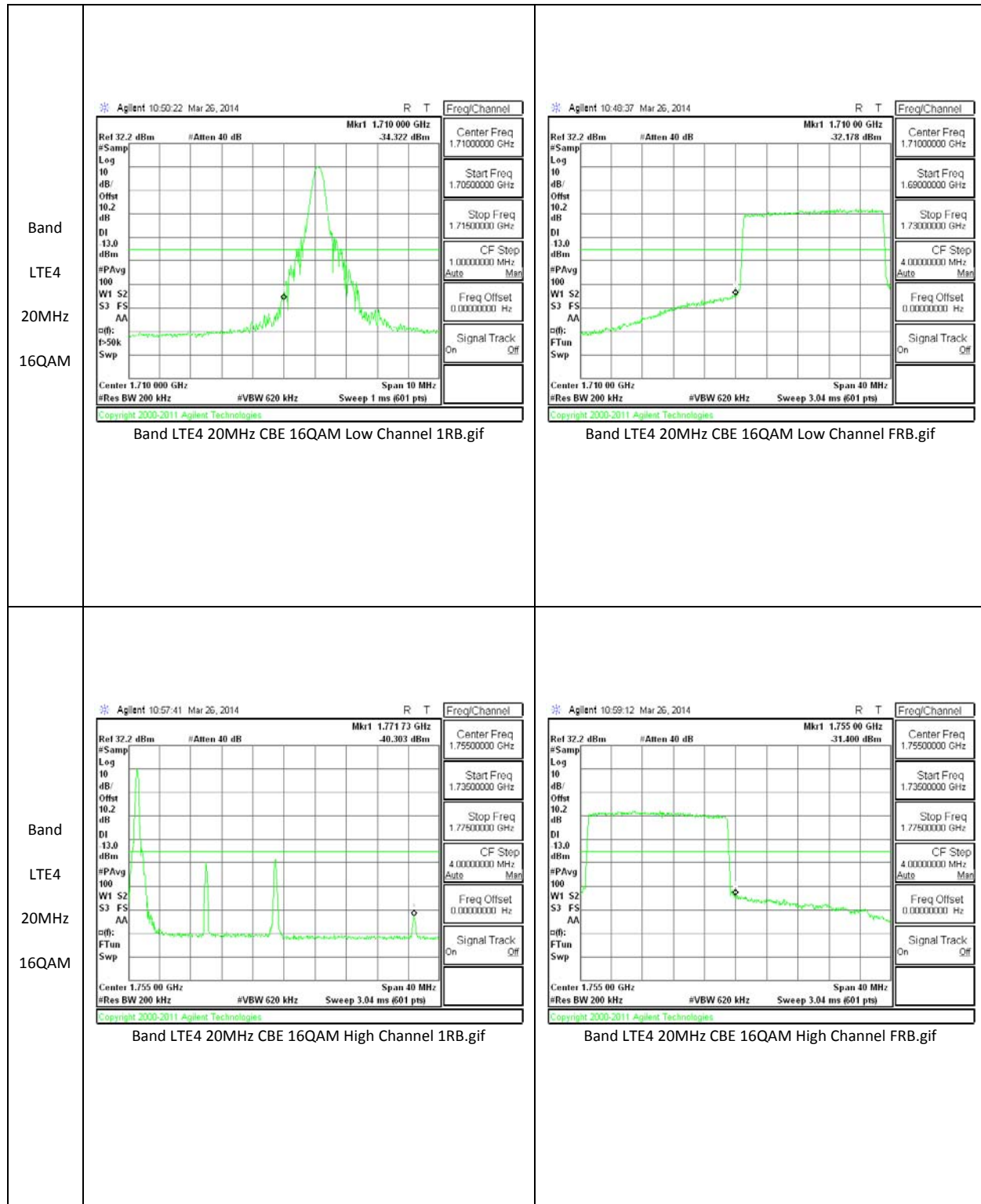
CDMA2000 BC0/BC1; LTE B4/B13

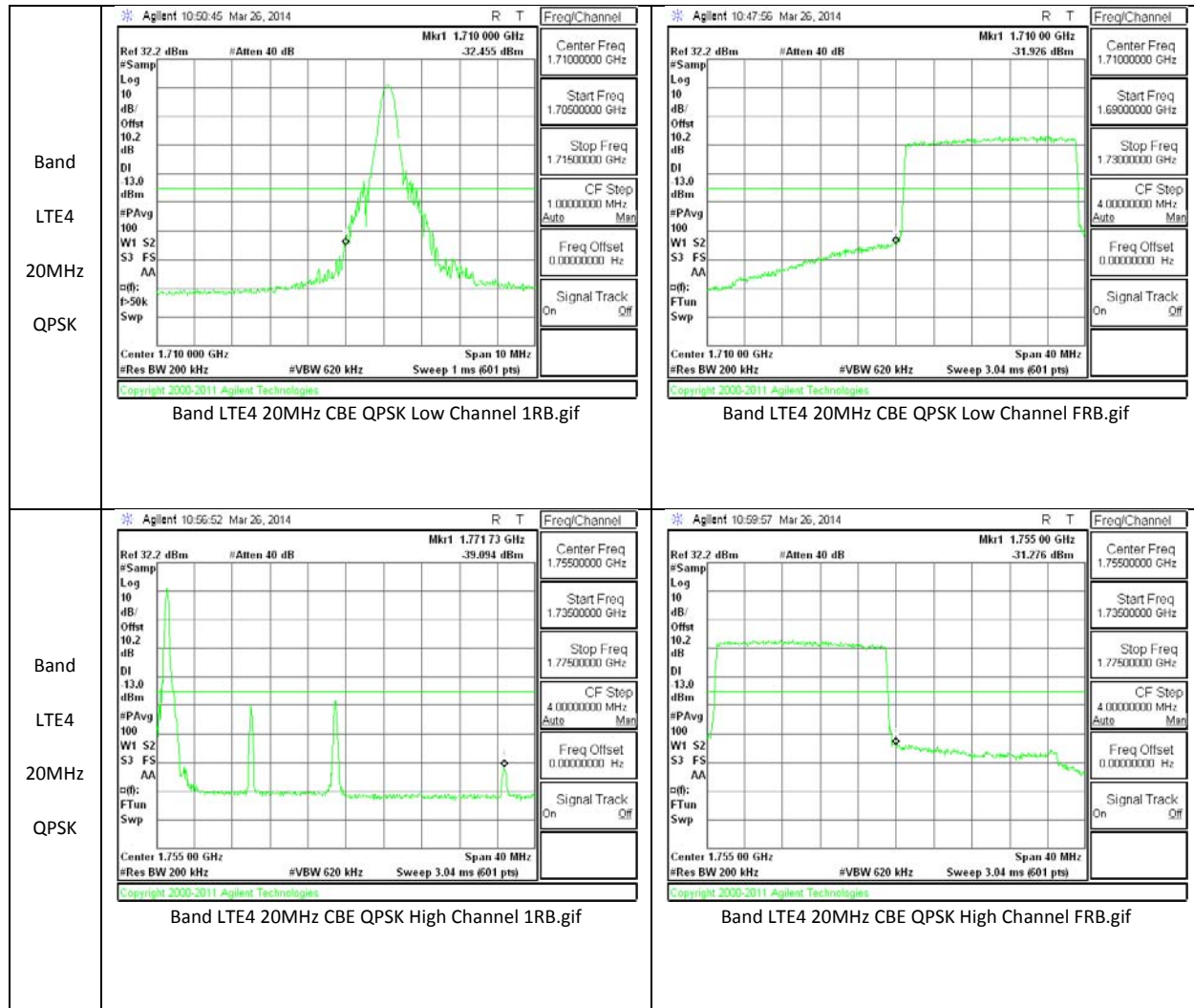
RESULTS

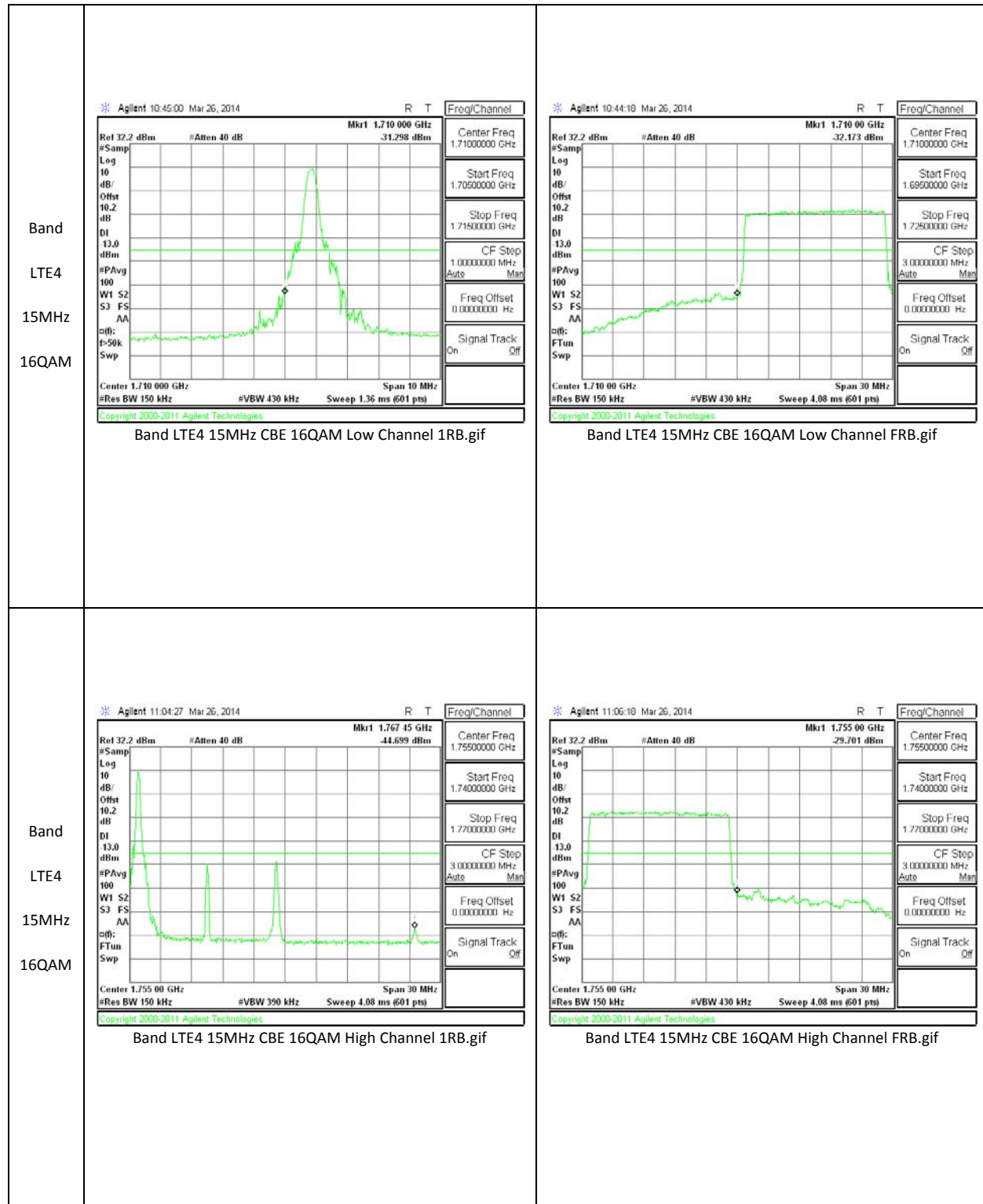
10.2.1. BAND EDGE PLOTS

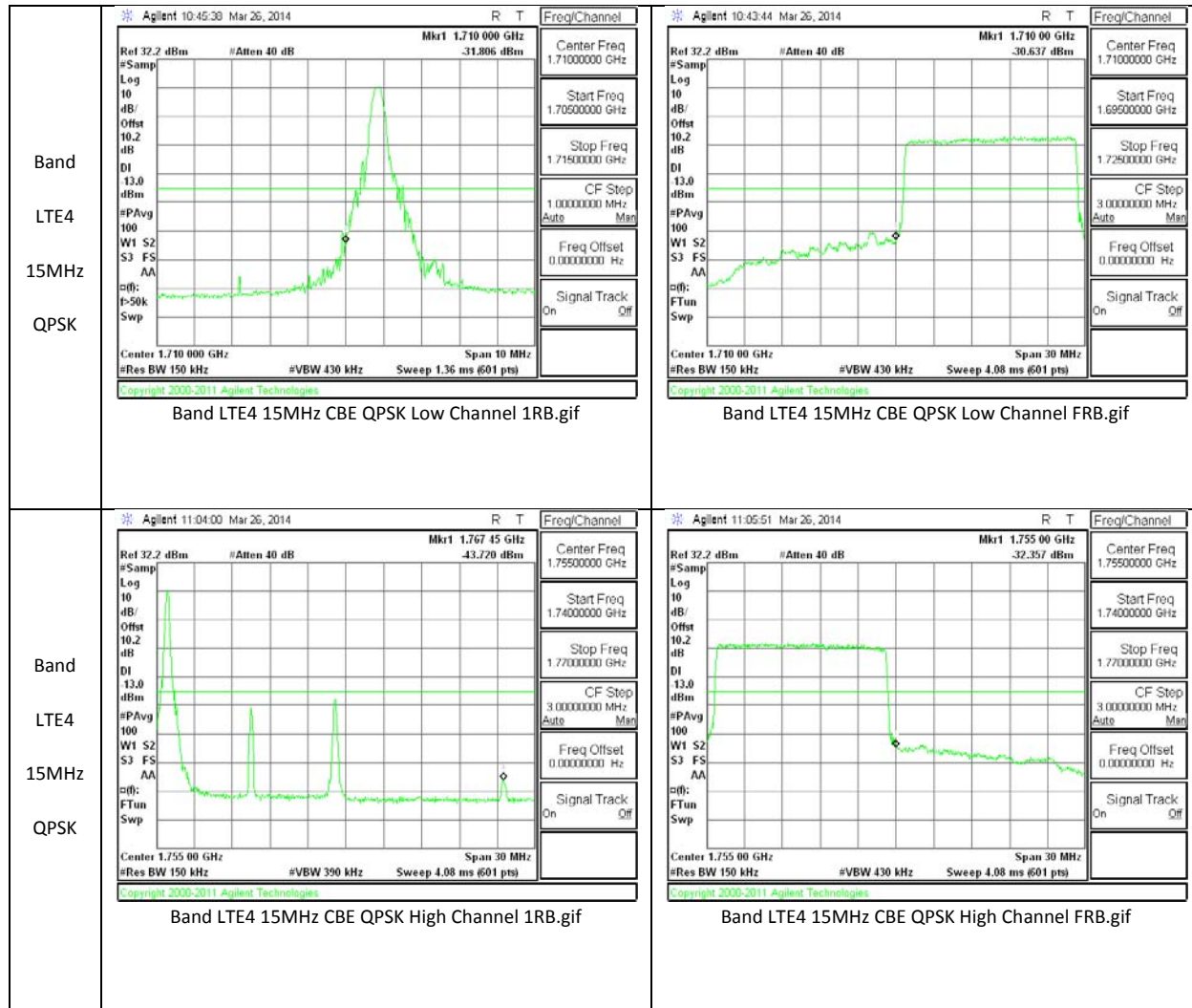


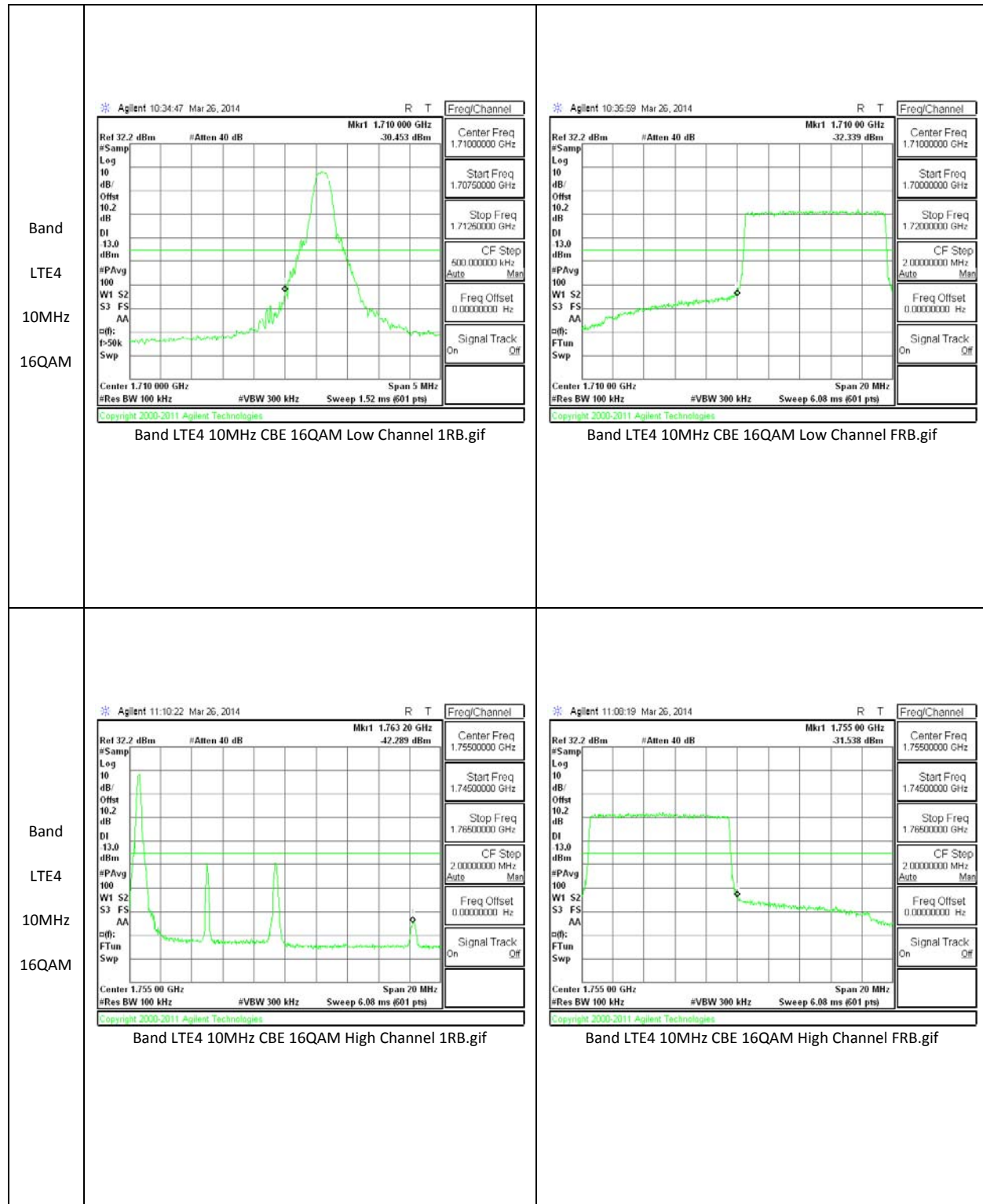


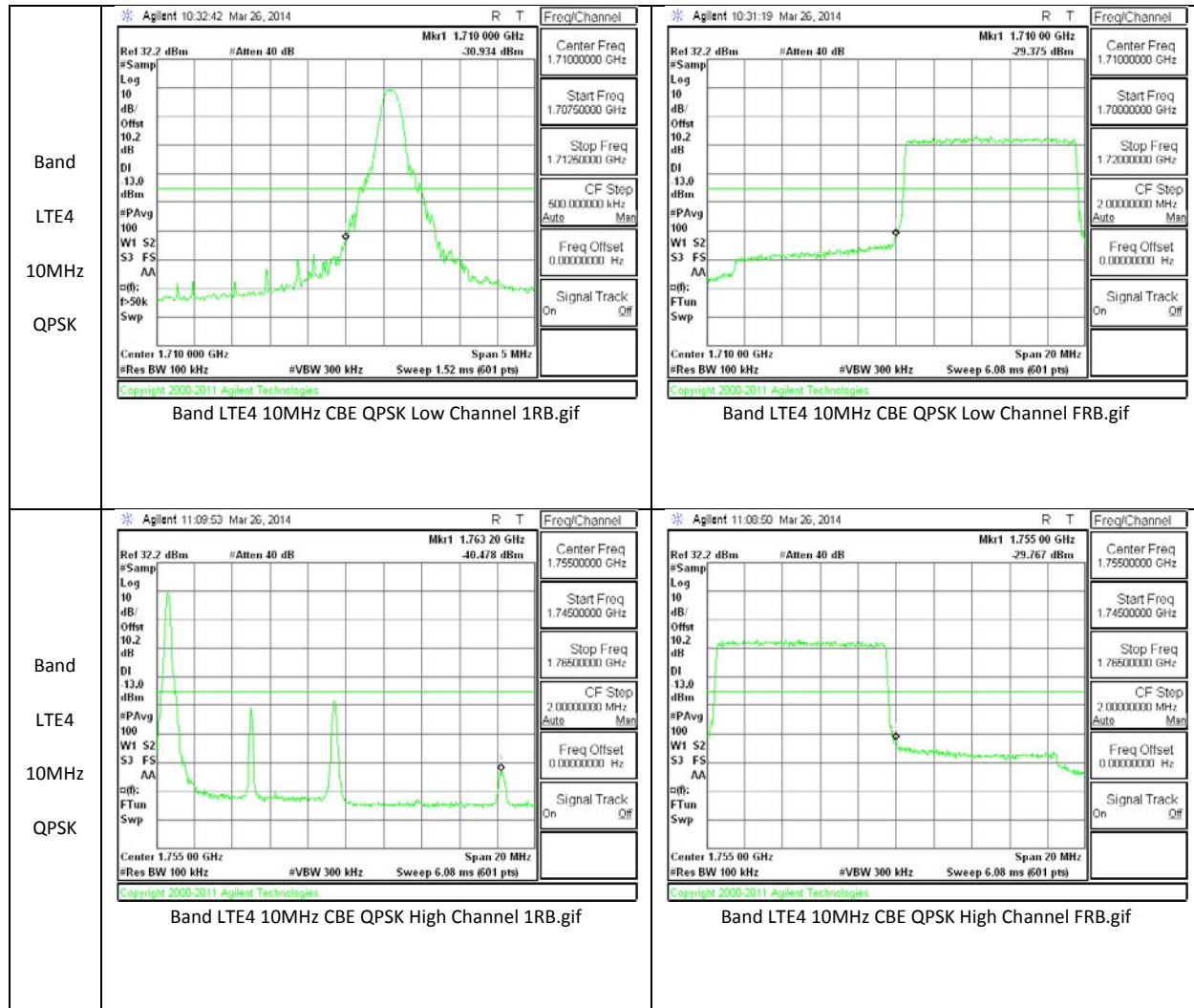


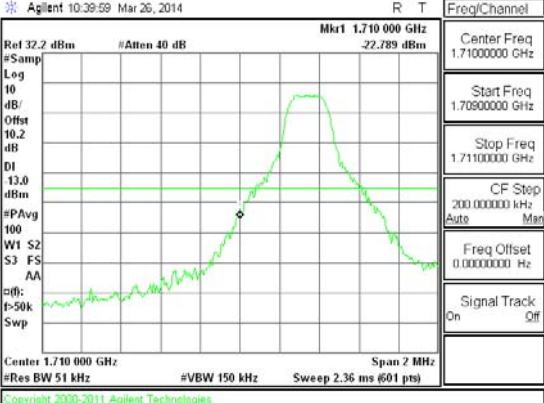
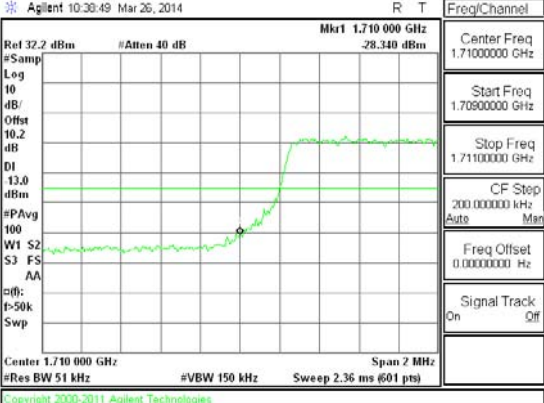
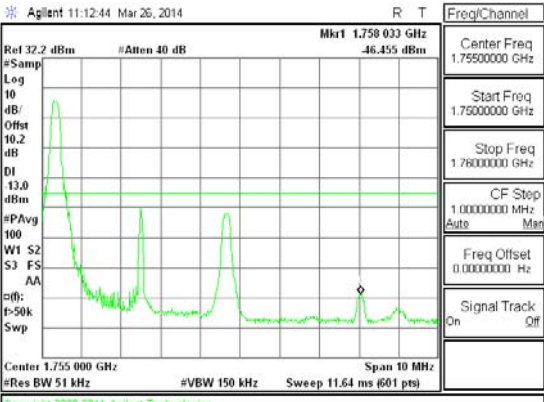
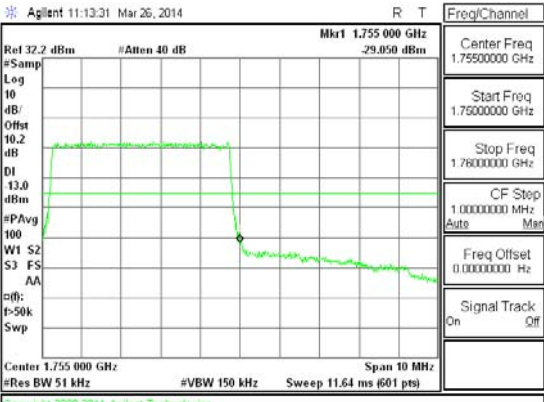


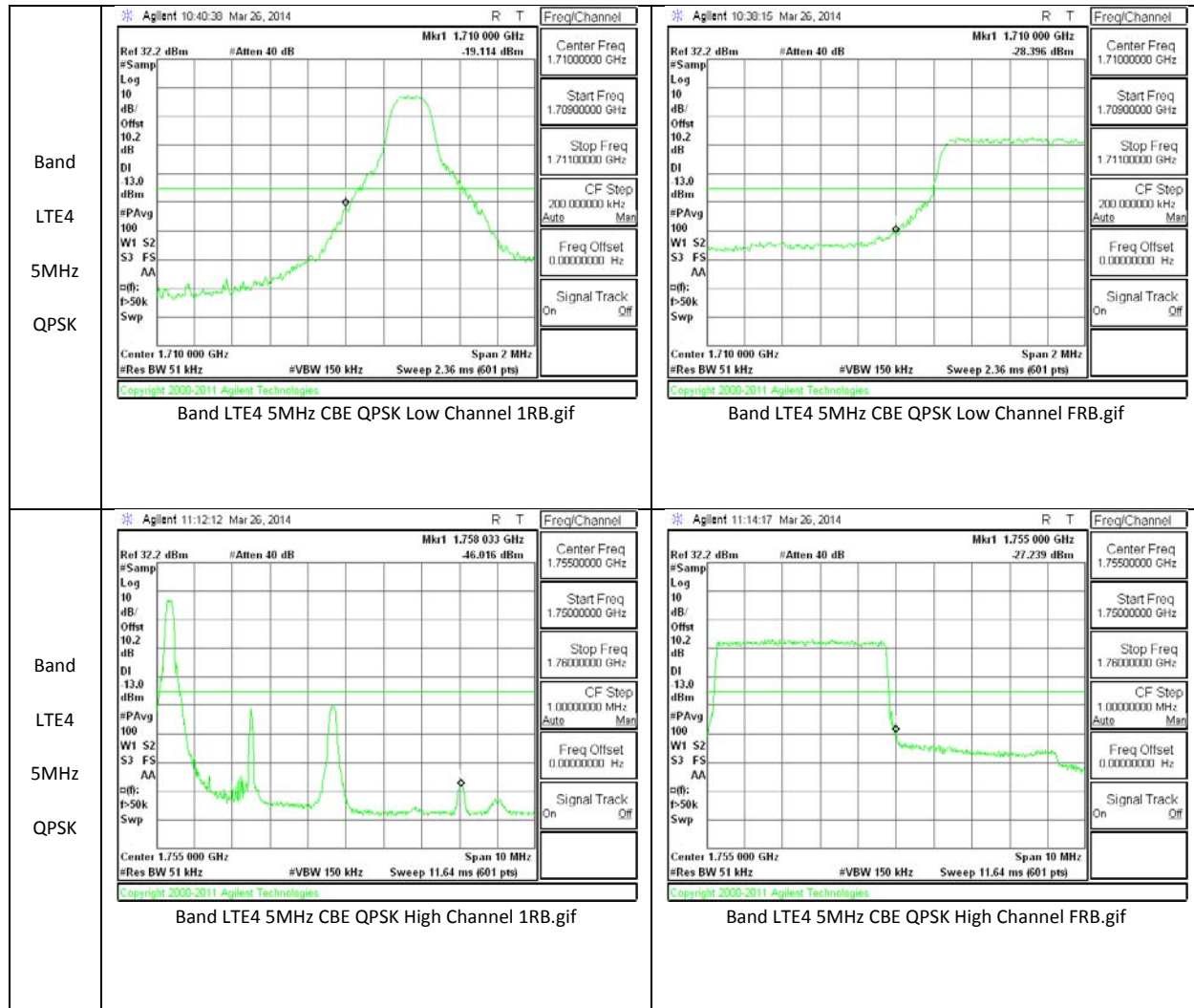


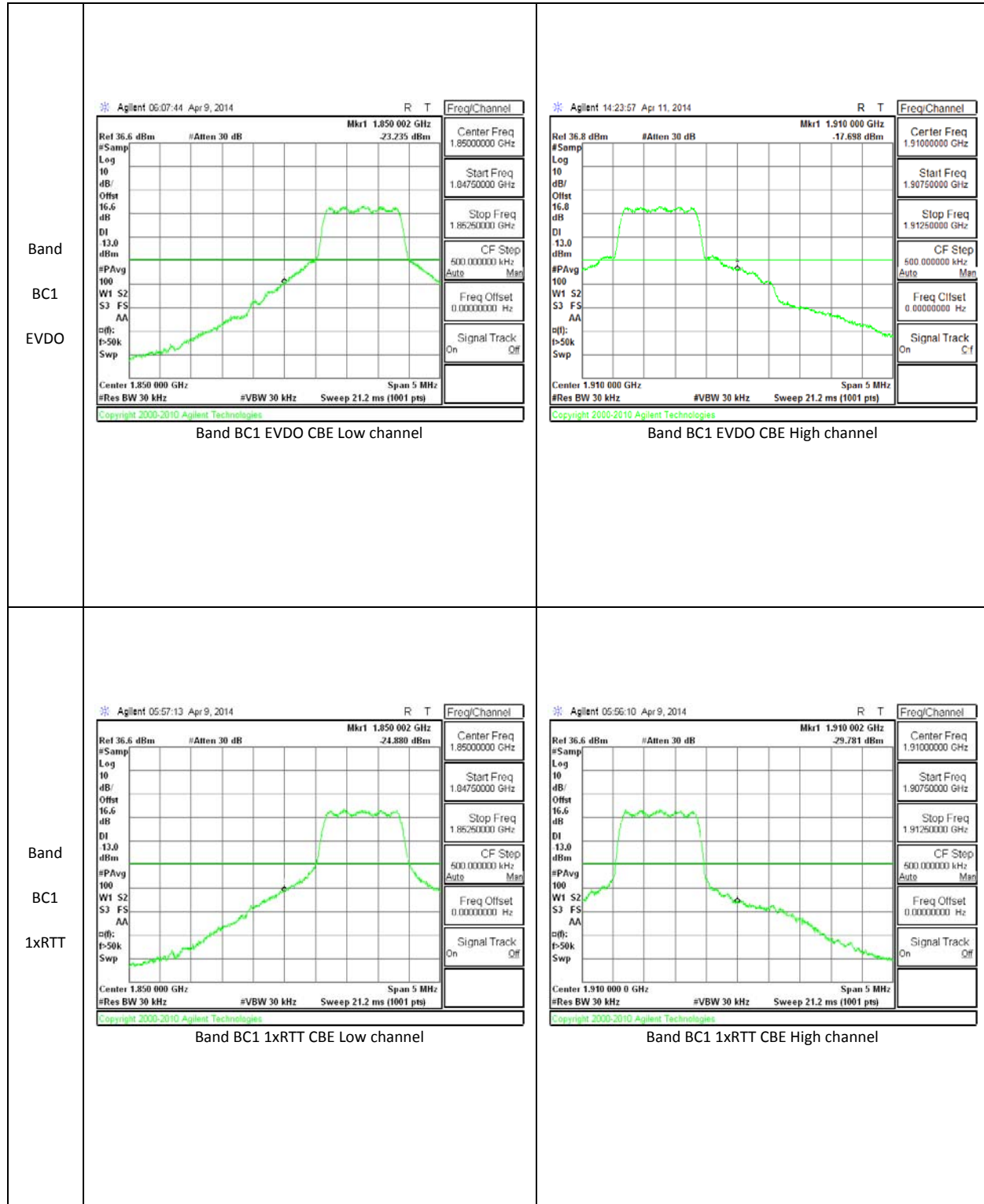


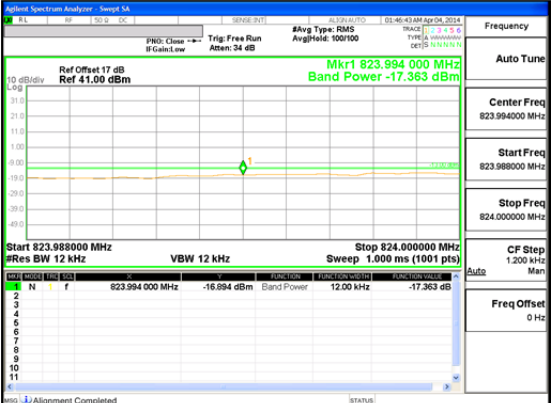
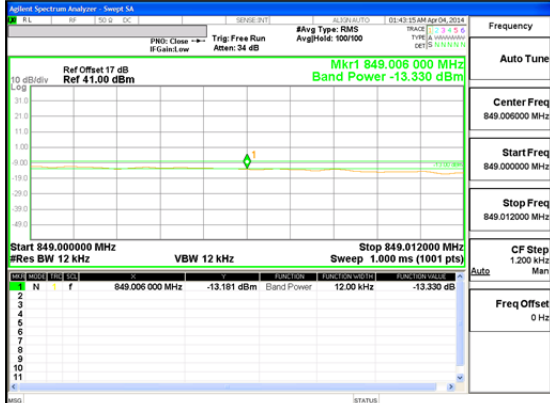
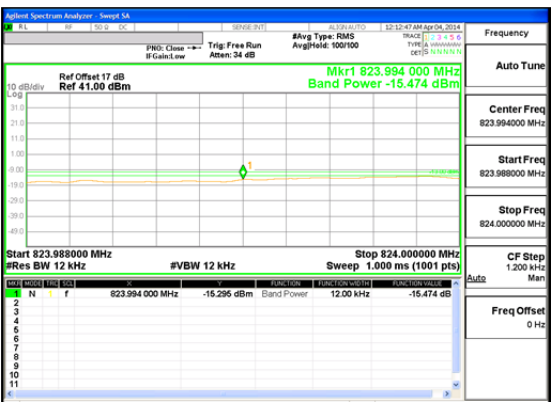
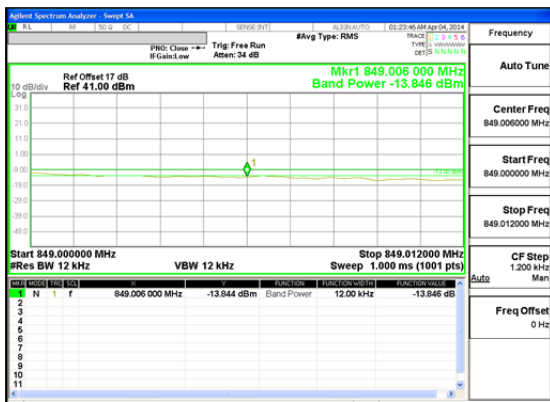




Band LTE4 5MHz 16QAM	 Band LTE4 5MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE4 5MHz CBE 16QAM Low Channel FRB.gif
Band LTE4 5MHz 16QAM	 Band LTE4 5MHz CBE 16QAM High Channel 1RB.gif	 Band LTE4 5MHz CBE 16QAM High Channel FRB.gif





Band BC0 EVDO REL. 0	 Band BC0 EVDO Rel. 0 CBE Low channel	 Band BC0 EVDO Rel. 0 CBE High channel
Band BC0	 Band BC0 RTT CBE Low channel	 Band BC0 1xRTT CBE High channel

10.3. OUT OF BAND EMISSIONS

RULE PART(S)

FCC: §2.1051, §22.901, §22.917, §24.238 and §27

LIMITS

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

TEST PROCEDURE

Per KDB 971168 D01 Power Meas License Digital Systems 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.

SOP

For each out of band emissions measurement:

- Set display line at -13 dBm
- Set RBW & VBW to 100 kHz for the measurement below 1 GHz, and 1 MHz for the measurement above 1 GHz.

MODES TESTED

CDMA2000 BC0/BC1; LTE B4/B13

RESULTS

10.3.1. OUT OF BAND EMISSIONS RESULT

Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE13	10	QPSK	782	-36.67	-13	-23.67
		16QAM	782	-38.51	-13	-25.51

Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE4	20	QPSK	1720	-23.27	-13	-10.27
			1732.5	-24.47	-13	-11.47
			1745	-24.30	-13	-11.3
		16QAM	1720	-23.43	-13	-10.43
			1732.5	-24.74	-13	-11.74
			1745	-24.43	-13	-11.43

Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE4	15	QPSK	1717.5	-24.36	-13	-11.36
			1732.5	-23.05	-13	-10.05
			1747.5	-23.25	-13	-10.25
		16QAM	1717.5	-23.45	-13	-10.45
			1732.5	-24.67	-13	-11.67
			1747.5	-24.44	-13	-11.44

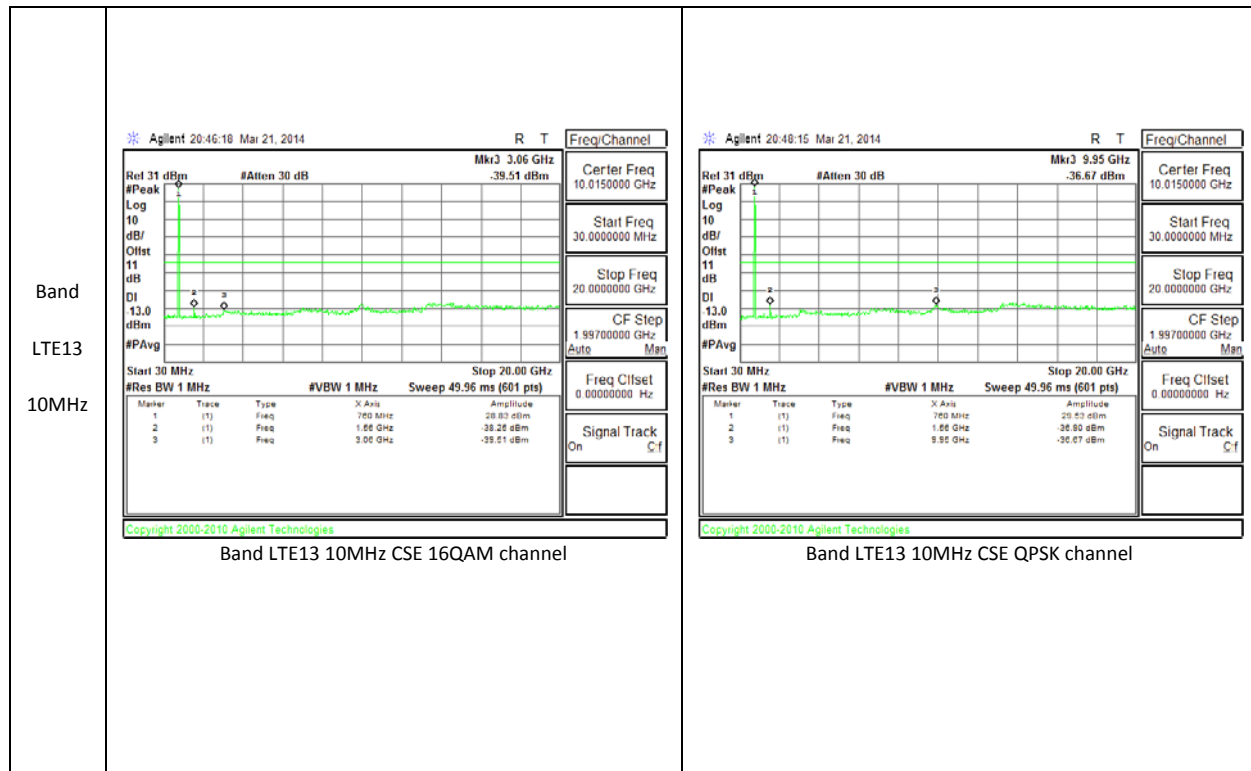
Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE4	10	QPSK	1715	-24.20	-13	-11.2
			1732.5	-22.10	-13	-9.1
			1750	-24.23	-13	-11.23
		16QAM	1715	-24.25	-13	-11.25
			1732.5	-24.70	-13	-11.7
			1750	-24.70	-13	-11.7

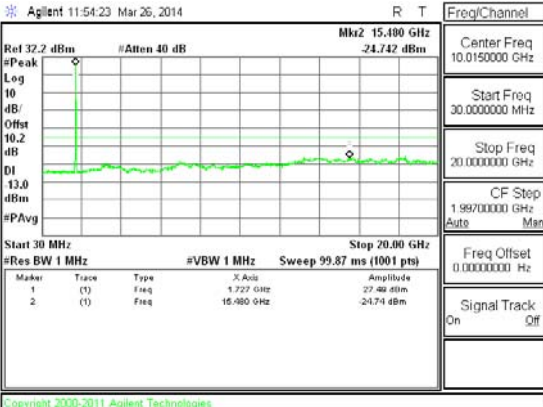
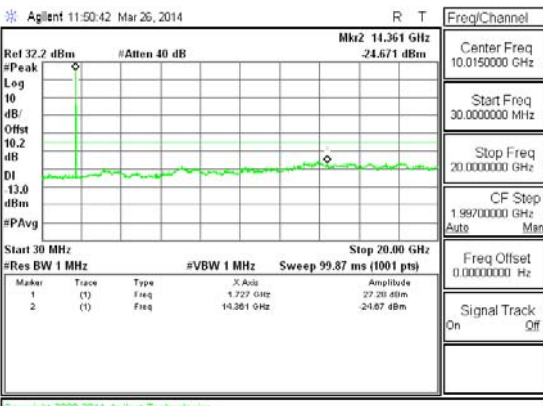
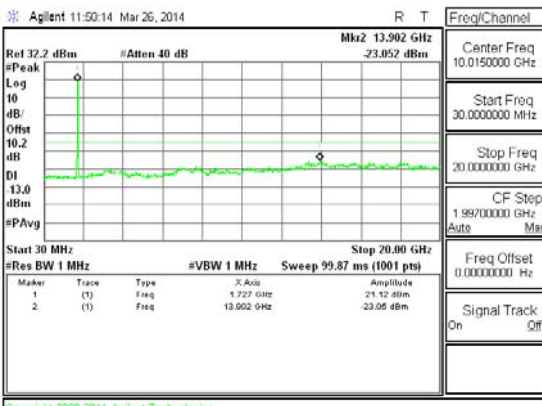
Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE4	5	QPSK	1712.5	-23.31	-13	-10.31

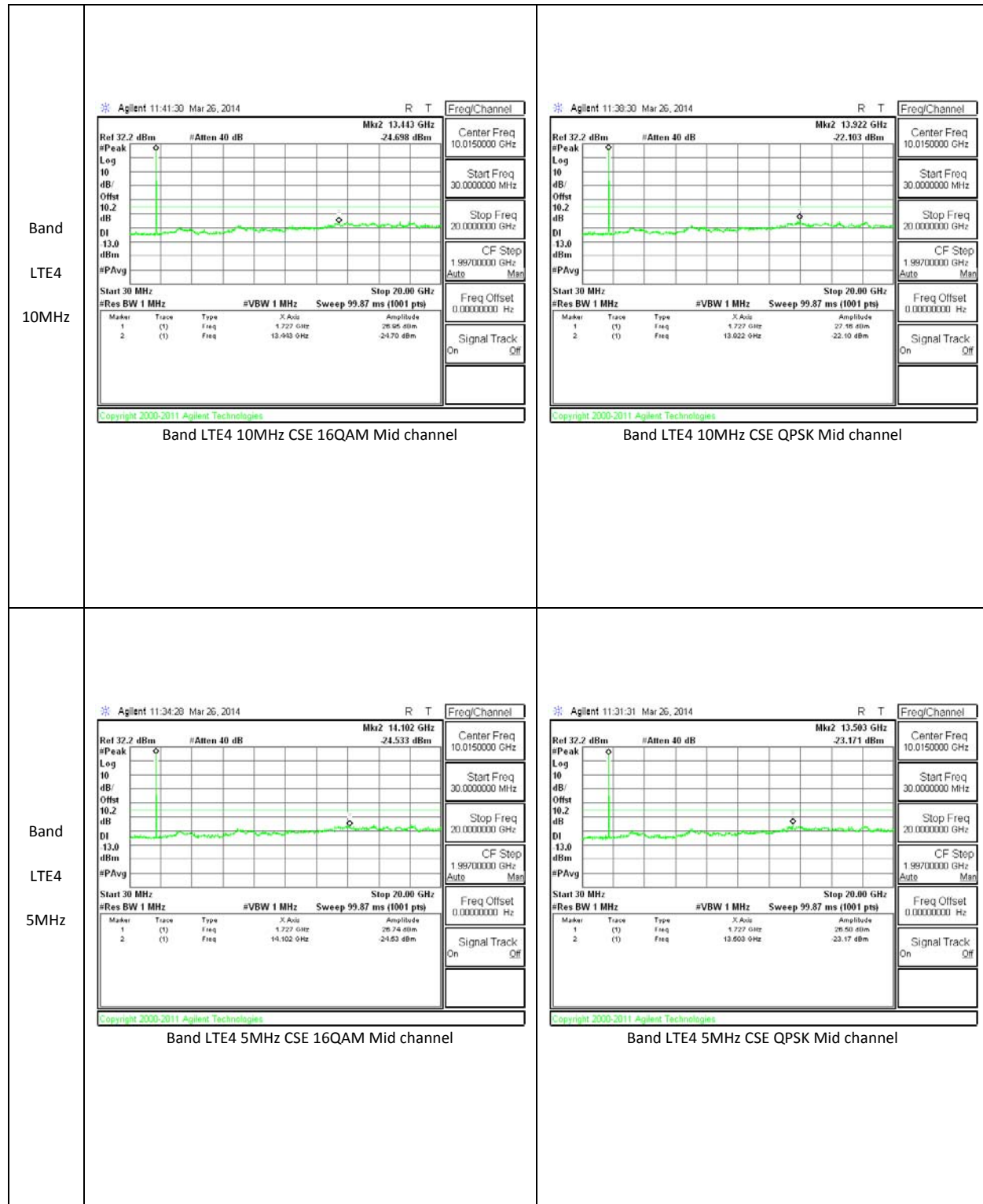
			1732.5	-23.17	-13	-10.17
			1752.5	-23.38	-13	-10.38
		16QAM	1712.5	-23.68	-13	-10.68
			1732.5	-24.53	-13	-11.53
			1752.5	-22.88	-13	-9.88

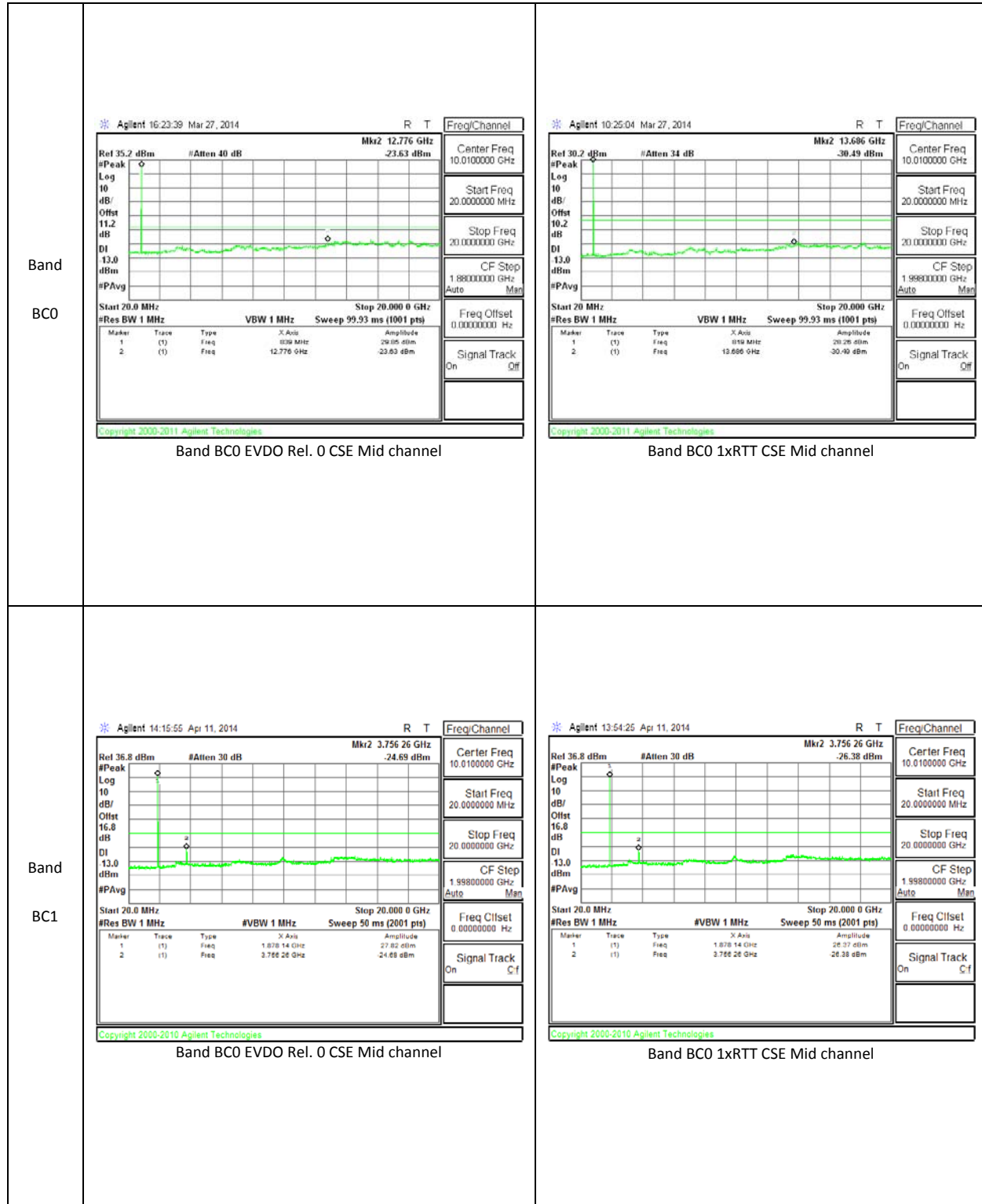
Band	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
BC0	1xRTT	824.7	-28.81	-13	-15.81
		836.52	-30.49	-13	-17.49
		848.31	-29.46	-13	-16.46
BC0	EVDO	824.7	-23.62	-13	-10.62
		836.52	-23.63	-13	-10.63
		848.31	-25.25	-13	-12.25

Band	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
BC1	1xRTT	824.7	-27.14	-13	-14.14
		836.52	-26.83	-13	-13.83
		848.31	-26.49	-13	-13.49
BC1	EVDO	1851.25	-26.69	-13	-13.69
		1880	-24.69	-13	-11.69
		1908.75	-24.56	-13	-11.56

10.3.2. OUT OF BAND EMISSIONS PLOTS

Band LTE4 20MHz	 Agilent 11:54:23 Mar 26, 2014 Rel 32.2 dBm #Atten 40 dB Mk2 15.480 GHz Center Freq 10.0150000 GHz Start Freq 30.0000000 MHz Stop Freq 20.0000000 GHz CF Step 1.99700000 GHz Start 30 MHz #Res BW 1 MHz #VBW 1 MHz Sweep 99.87 ms (1001 pts) Marker 1 (T) Freq 15.480 GHz Amplitude 24.742 dBm Signal Track On Copyright 2000-2011 Agilent Technologies Band LTE4 20MHz CSE 16QAM Mid channel
Band LTE4 15MHz	 Agilent 11:50:42 Mar 26, 2014 Rel 32.2 dBm #Atten 40 dB Mk2 14.361 GHz Center Freq 10.0150000 GHz Start Freq 30.0000000 MHz Stop Freq 20.0000000 GHz CF Step 1.99700000 GHz Start 30 MHz #Res BW 1 MHz #VBW 1 MHz Sweep 99.87 ms (1001 pts) Marker 1 (T) Freq 14.361 GHz Amplitude 24.671 dBm Signal Track On Copyright 2000-2011 Agilent Technologies Band LTE4 15MHz CSE 16QAM Mid channel
	 Agilent 11:50:14 Mar 26, 2014 Rel 32.2 dBm #Atten 40 dB Mk2 13.902 GHz Center Freq 10.0150000 GHz Start Freq 30.0000000 MHz Stop Freq 20.0000000 GHz CF Step 1.99700000 GHz Start 30 MHz #Res BW 1 MHz #VBW 1 MHz Sweep 99.87 ms (1001 pts) Marker 1 (T) Freq 13.902 GHz Amplitude 23.052 dBm Signal Track On Copyright 2000-2011 Agilent Technologies Band LTE4 15MHz CSE QPSK Mid channel





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

SOP

Frequency Stability vs Temperature:

The EUT is placed inside a temperature chamber. The temperature is set to 20°C and allowed to stabilize. After sufficient soak time, the transmitting frequency error is measured. The temperature is increased by 10 degrees, allowed to stabilize and soak, and then the measurement is repeated. This is repeated until +50°C is reached. Reference power supply voltage for these tests is 3.7Vdc.

Frequency Stability vs Voltage:

The peak frequency error is recorded (worst-case). The test voltage ranges from 3.50 to 4.26 VDC.

MODES TESTED

CDMA2000 BC0/BC1; LTE B4/B13

RESULTS

See the following pages.

10.4.1. FREQUENCY STABILITY RESULTS

BC 0 Cell BAND – 836.52MHz

Reference Frequency: CDMA2000_Mid Channe 836.520002 MHz @ 20°C				
Limit: to stay +- 2.5 ppm = 2091.300 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	50	836.520004	-0.002	2.5
3.80	40	836.520003	-0.001	2.5
3.80	30	836.520001	0.001	2.5
3.80	20	836.520002	0	2.5
3.80	10	836.520005	-0.004	2.5
3.80	0	836.520006	-0.005	2.5
3.80	-10	836.520003	-0.001	2.5
3.80	-20	836.520002	0.000	2.5
3.80	-30	836.520001	0.001	2.5

Reference Frequency: CDMA2000_Mid channel 836.520001 MHz @ 20°C				
Limit: to stay +- 2.5 ppm = 2091.300 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	20	836.520002	0	2.5
4.30	20	836.520004	-0.002	2.5
3.5(end volt)	20	836.520001	0.001	2.5

BC 1 PCS BAND 1880.00 MHz

Reference Frequency: CDMA2000_Mid Channel 1880.000002 MHz @ 20°C Limit: to stay +/- 2.5 ppm = 4700.000 Hz				
Power Supply (Vac)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	50	1880.000008	-0.003	2.5
3.80	40	1880.000003	-0.001	2.5
3.80	30	1880.000006	-0.002	2.5
3.80	20	1880.000002	0	2.5
3.80	10	1880.000003	-0.001	2.5
3.80	0	1880.000002	0.000	2.5
3.80	-10	1880.000001	0.001	2.5
3.80	-20	1880.000005	-0.002	2.5
3.80	-30	1880.000007	-0.003	2.5

Reference Frequency: CDMA2000_Mid Channel 1880.000002 MHz @ 20°C Limit: to stay +/- 2.5 ppm = 4700.000 Hz				
Power Supply (Vac)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	20	1880.000002	0	2.5
4.30	20	1880.000007	-0.003	2.5
3.5(end volt)	20	1880.000003	-0.001	2.5

LTE BAND 13 – MID CHANNEL

Reference Frequency: Mid Channel 782.000031 MHz @ 20°C				
Limit: within the authorized block or +/- 2.5 ppm = 1955.000 Hz				
Power Supply (Vdc)	Environment Temperature (*C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	50	782.000011	0.026	2.5
3.80	40	782.000014	0.022	2.5
3.80	30	782.000021	0.013	2.5
3.80	20	782.000031	0	2.5
3.80	10	782.000024	0.009	2.5
3.80	0	781.999988	0.055	2.5
3.80	-10	781.999987	0.056	2.5
3.80	-20	781.999991	0.051	2.5
3.80	-30	781.999992	0.050	2.5

Reference Frequency: Mid Channel 782.000031 MHz @ 20°C				
Limit: within the authorized block or +/- 2.5 ppm = 1955.000 Hz				
Power Supply (Vdc)	Environment Temperature (*C)	Frequency Deviation Measured with Time Elapse		
			Delta (ppm)	Limit (ppm)
3.80	20	782.000031	0.00000	2.5
4.30	20	782.000028	0.00384	2.5
End Volt(3.5)	20	782.000013	0.02302	2.5

LTE BAND 4 – MID CHANNEL

Reference Frequency: PCS Mid Channel 1732.500012MHz @ 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	1732.500018	-0.003	2.5
3.80	40	1732.500015	-0.002	2.5
3.80	30	1732.500019	-0.004	2.5
3.80	20	1732.500012	0	2.5
3.80	10	1732.500015	-0.002	2.5
3.80	0	1732.500014	-0.001	2.5
3.80	-10	1732.500012	0.000	2.5
3.80	-20	1732.500010	0.001	2.5
3.80	-30	1732.500011	0.001	2.5

Reference Frequency: PCS Mid Channel 1732.500012 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		
			Delta (ppm)	Limit (ppm)
3.80	20	1732.500012	0.00000	2.5
4.30	20	1732.500017	-0.00289	2.5
End Volt(3.5)	20	1732.500010	0.00115	2.5

11. RADIATED TEST RESULTS

11.1. RADIATED POWER (ERP & EIRP)

RULE PART(S)

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

LIMITS

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

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

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

MODES TESTED

CDMA2000 BC0/BC1; LTE B4/B13

TEST RESULTS**11.1.1. ERP/EIRP Results**

Band	Mode	Channel	f(MHz)	ERP / EIRP	
				dBm	mW
BC1	1xRTT	25	1851.25	23.95	248.31
		600	1880	25.11	324.34
		1175	1908.75	24.55	285.1
	EVDO REL. 0	25	1851.25	23.78	238.78
		600	1880	24.65	291.74
		1175	1908.75	24.54	284.45

Band	Mode	Channel	f(MHz)	ERP / EIRP	
				dBm	mW
BC0	1xRTT	1013	824.7	21.341	136.18
		384	836.52	22.131	163.34
		777	848.31	21.951	156.71
	EVDO REL. 0	1013	824.7	21.98	157.76
		384	836.52	22.10	162.18
		777	848.31	21.46	139.96

11.1.2. LTE ERP/EIRP Results

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE13	10	QPSK	1/0	782	21.58	143.88
		16QAM	1/0	782	20.76	119.12

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE4	20	QPSK	1/0	1720	23.16	207.01
			1/0	1732.5	23.95	248.31
			1/0	1745	24.53	283.79
		16QAM	1/0	1720	22.24	167.49
			1/0	1732.5	23.02	200.45
			1/0	1745	23.57	227.51

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE4	15	QPSK	1/0	1717.5	23.50	223.87
			1/0	1732.5	24.26	266.69
			1/0	1747.5	24.32	270.40
		16QAM	1/0	1717.5	23.20	208.93
			1/0	1732.5	24.22	264.24
			1/0	1747.5	24.24	265.46

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE4	10	QPSK	1/0	1715	23.72	235.5
			1/0	1732.5	23.84	242.1
			1/0	1750	24.12	258.23
		16QAM	1/0	1715	22.72	187.07
			1/0	1732.5	22.91	195.43

			1/0	1750	23.11	204.64
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Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE4	5	QPSK	1/0	1712.5	24.02	252.35
			1/0	1732.5	24.86	306.2
			1/0	1752.5	24.45	278.61
		16QAM	1/0	1712.5	23.97	249.46
			1/0	1732.5	24.01	251.77
			1/0	1752.5	23.56	226.99

11.1.3. ERP/EIRP DATA

Band BC1	High Frequency Fundamental Measurement Compliance Certification Services Chamber B Company: LG Project #: 14U17222 Date: 03/26/14 Test Engineer: Charles Vergonio Configuration: EUT, X Position Mode: CDMA EVDO 1900MHz Test Equipment: Receiving: T345, and Chamber B SMA Cables Substitution: Horn T59 Substitution, 4ft SMA Cable (244639001) Warehouse <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>f GHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBi)</th> <th>EIRP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td>Low Ch</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>1.851</td> <td>16.0</td> <td>V</td> <td>0.85</td> <td>7.90</td> <td>23.05</td> <td>33.0</td> <td>-10.0</td> <td></td> </tr> <tr> <td>1.851</td> <td>16.7</td> <td>H</td> <td>0.85</td> <td>7.90</td> <td>23.78</td> <td>33.0</td> <td>-9.2</td> <td></td> </tr> <tr> <td>Mid Ch</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>1.880</td> <td>15.9</td> <td>V</td> <td>0.85</td> <td>7.90</td> <td>22.92</td> <td>33.0</td> <td>-10.1</td> <td></td> </tr> <tr> <td>1.880</td> <td>17.6</td> <td>H</td> <td>0.85</td> <td>7.90</td> <td>24.65</td> <td>33.0</td> <td>-8.4</td> <td></td> </tr> <tr> <td>High Ch</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>1.909</td> <td>16.2</td> <td>V</td> <td>0.85</td> <td>7.80</td> <td>23.14</td> <td>33.0</td> <td>-9.9</td> <td></td> </tr> <tr> <td>1.909</td> <td>17.6</td> <td>H</td> <td>0.85</td> <td>7.80</td> <td>24.54</td> <td>33.0</td> <td>-8.5</td> <td></td> </tr> </tbody> </table> Rev. 3.17.11	f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes	Low Ch									1.851	16.0	V	0.85	7.90	23.05	33.0	-10.0		1.851	16.7	H	0.85	7.90	23.78	33.0	-9.2		Mid Ch									1.880	15.9	V	0.85	7.90	22.92	33.0	-10.1		1.880	17.6	H	0.85	7.90	24.65	33.0	-8.4		High Ch									1.909	16.2	V	0.85	7.80	23.14	33.0	-9.9		1.909	17.6	H	0.85	7.80	24.54	33.0	-8.5	
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes																																																																																			
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Band

BC1

1xRTT

High Frequency Fundamental Measurement

Compliance Certification Services Chamber B

Company: LG

Project #: 14U17222

Date: 03/20/14

Test Engineer: K.Kedida

Configuration: EUT, X Position

Mode: CDMA 1900MHz

Test Equipment:

Receiving: T345, and Chamber B SMA Cables

Substitution: Horn T59 Substitution, 4ft SMA Cable (244639001) Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.851	16.2	V	0.85	7.90	23.25	33.0	-9.8	
1.851	16.9	H	0.85	7.90	23.95	33.0	-9.1	
Mid Ch								
1.880	16.0	V	0.85	7.90	23.05	33.0	-10.0	
1.880	18.1	H	0.85	7.90	25.11	33.0	-7.9	
High Ch								
1.909	16.0	V	0.85	7.80	22.95	33.0	-10.1	
1.909	17.6	H	0.85	7.80	24.55	33.0	-8.5	

Rev. 3.17.11

Band BC0	High Frequency Substitution Measurement Compliance Certification Services Chamber B Company: LG Project #: 14U17222 Date: 03/26/14 Test Engineer: Charles Vergonio Configuration: EUT, X Position Mode: CDMA EVDO BC0 Test Equipment: Receiving: Sunol T243, and Chamber B Cable (Setup this one for testing EUT) Substitution: Dipole S/N: 00022117, 8ft SMA Cable (SN # 208955002) Warehouse. <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <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>Low Ch</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>824.70</td> <td>15.42</td> <td>V</td> <td>0.9</td> <td>0.0</td> <td>14.52</td> <td>38.5</td> <td>-23.9</td> <td></td> </tr> <tr> <td>824.70</td> <td>22.88</td> <td>H</td> <td>0.9</td> <td>0.0</td> <td>21.98</td> <td>38.5</td> <td>-16.5</td> <td></td> </tr> <tr> <td>Mid Ch</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>836.52</td> <td>16.61</td> <td>V</td> <td>0.9</td> <td>0.0</td> <td>15.71</td> <td>38.5</td> <td>-22.7</td> <td></td> </tr> <tr> <td>836.52</td> <td>23.00</td> <td>H</td> <td>0.9</td> <td>0.0</td> <td>22.10</td> <td>38.5</td> <td>-16.3</td> <td></td> </tr> <tr> <td>High Ch</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>848.31</td> <td>16.29</td> <td>V</td> <td>0.9</td> <td>0.0</td> <td>15.39</td> <td>38.5</td> <td>-23.1</td> <td></td> </tr> <tr> <td>848.31</td> <td>22.36</td> <td>H</td> <td>0.9</td> <td>0.0</td> <td>21.46</td> <td>38.5</td> <td>-17.0</td> <td></td> </tr> </tbody> </table> Rev. 3.17.11	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes	Low Ch									824.70	15.42	V	0.9	0.0	14.52	38.5	-23.9		824.70	22.88	H	0.9	0.0	21.98	38.5	-16.5		Mid Ch									836.52	16.61	V	0.9	0.0	15.71	38.5	-22.7		836.52	23.00	H	0.9	0.0	22.10	38.5	-16.3		High Ch									848.31	16.29	V	0.9	0.0	15.39	38.5	-23.1		848.31	22.36	H	0.9	0.0	21.46	38.5	-17.0	
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Band BC0 1xRTT	High Frequency Substitution Measurement Compliance Certification Services Chamber B Company: LG Project #: 14U17222 Date: 03/20/14 Test Engineer: K.Kedida Configuration: EUT, X Position Mode: CDMA RTT BC0 Test Equipment: Receiving: Sunol T243, and Chamber B Cable (Setup this one for testing EUT) Substitution: Dipole S/N: 00022117, 8ft SMA Cable (SN # 208955002) Warehouse. <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <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>Low Ch</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>824.70</td> <td>15.11</td> <td>V</td> <td>0.9</td> <td>0.0</td> <td>14.21</td> <td>38.5</td> <td>-24.2</td> <td></td> </tr> <tr> <td>824.70</td> <td>22.24</td> <td>H</td> <td>0.9</td> <td>0.0</td> <td>21.34</td> <td>38.5</td> <td>-17.1</td> <td></td> </tr> <tr> <td>Mid Ch</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>836.52</td> <td>16.61</td> <td>V</td> <td>0.9</td> <td>0.0</td> <td>15.71</td> <td>38.5</td> <td>-22.7</td> <td></td> </tr> <tr> <td>836.52</td> <td>23.03</td> <td>H</td> <td>0.9</td> <td>0.0</td> <td>22.13</td> <td>38.5</td> <td>-16.3</td> <td></td> </tr> <tr> <td>High Ch</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>848.31</td> <td>16.18</td> <td>V</td> <td>0.9</td> <td>0.0</td> <td>15.28</td> <td>38.5</td> <td>-23.2</td> <td></td> </tr> <tr> <td>848.31</td> <td>22.85</td> <td>H</td> <td>0.9</td> <td>0.0</td> <td>21.95</td> <td>38.5</td> <td>-16.5</td> <td></td> </tr> </tbody> </table> Rev. 3.17.11	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes	Low Ch									824.70	15.11	V	0.9	0.0	14.21	38.5	-24.2		824.70	22.24	H	0.9	0.0	21.34	38.5	-17.1		Mid Ch									836.52	16.61	V	0.9	0.0	15.71	38.5	-22.7		836.52	23.03	H	0.9	0.0	22.13	38.5	-16.3		High Ch									848.31	16.18	V	0.9	0.0	15.28	38.5	-23.2		848.31	22.85	H	0.9	0.0	21.95	38.5	-16.5	
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848.31	16.18	V	0.9	0.0	15.28	38.5	-23.2																																																																																				
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Band LTE13 10MHz 16QAM	High Frequency Substitution Measurement Compliance Certification Services Chamber B Company: LG Project #: 14U17222 Date: 03/26/14 Test Engineer: Charles Vergonio Configuration: Z position Mode: LTE_B13_10MHz_16QAM Test Equipment: Receiving: Sunol T243, and Chamber B Cable (Setup this one for testing EUT) Substitution: Dipole S/N: 00022117, 8ft SMA Cable (SN # 208955002) Warehouse. <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <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>Low Ch</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Mid Ch</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>782.000</td> <td>21.61</td> <td>V</td> <td>0.9</td> <td>0.0</td> <td>20.76</td> <td>34.8</td> <td>-14.0</td> <td></td> </tr> <tr> <td>782.000</td> <td>13.94</td> <td>H</td> <td>0.9</td> <td>0.0</td> <td>13.04</td> <td>34.8</td> <td>-21.8</td> <td></td> </tr> <tr> <td>Mid Ch</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>NEW</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> Rev. 3.17.11	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes	Low Ch																		Mid Ch									782.000	21.61	V	0.9	0.0	20.76	34.8	-14.0		782.000	13.94	H	0.9	0.0	13.04	34.8	-21.8		Mid Ch																		NEW								
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Band LTE13 10MHz QPSK	High Frequency Substitution Measurement Compliance Certification Services Chamber B Company: LG Project #: 14U17222 Date: 03/26/14 Test Engineer: Charles Vergonio Configuration: Z position Mode: LTE_B13_10MHz_QPSK Test Equipment: Receiving: Sunol T243, and Chamber B Cable (Setup this one for testing EUT) Substitution: Dipole S/N: 00022117, 8ft SMA Cable (SN # 208955002) Warehouse. <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <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>Low Ch</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Mid Ch</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>782.000</td> <td>22.48</td> <td>V</td> <td>0.9</td> <td>0.0</td> <td>21.58</td> <td>34.8</td> <td>-13.2</td> <td></td> </tr> <tr> <td>782.000</td> <td>14.94</td> <td>H</td> <td>0.9</td> <td>0.0</td> <td>14.04</td> <td>34.8</td> <td>-20.8</td> <td></td> </tr> <tr> <td>Mid Ch</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>NEW</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> Rev. 3.17.11	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes	Low Ch																		Mid Ch									782.000	22.48	V	0.9	0.0	21.58	34.8	-13.2		782.000	14.94	H	0.9	0.0	14.04	34.8	-20.8		Mid Ch																		NEW								
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Mid Ch																																																																																		
NEW																																																																																		

Band

LTE4

20MHz

16QAM

High Frequency Fundamental Measurement

Compliance Certification Services Chamber B

Company:

Project #:

Date:

Test Engineer:

Configuration:

Mode:

Test Equipment:

Receiving: Horn T345, and Chamber B SMA Cables

Substitution: Horn T59 Substitution, 4ft SMA Cable (244639001) Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.720	12.7	V	0.85	8.29	20.15	30.0	-9.9	
1.720	14.8	H	0.85	8.29	22.24	30.0	-7.8	
Mid Ch								
1.732	13.2	V	0.85	8.29	20.60	30.0	-9.4	
1.732	15.6	H	0.85	8.29	23.02	30.0	-7.0	
High Ch								
1.745	13.4	V	0.85	8.29	20.87	30.0	-9.1	
1.745	16.1	H	0.85	8.29	23.57	30.0	-6.4	

Rev. 3.17.11

Band

LTE4

20MHz

QPSK

High Frequency Fundamental Measurement

Compliance Certification Services Chamber B

Company:

Project #:

Date:

Test Engineer:

Configuration:

Mode:

Test Equipment:

Receiving: Horn T345, and Chamber B SMA Cables

Substitution: Horn T59 Substitution, 4ft SMA Cable (244639001) Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.720	13.2	V	0.85	8.29	20.59	30.0	-9.4	
1.720	15.7	H	0.85	8.29	23.16	30.0	-6.8	
Mid Ch								
1.732	14.5	V	0.85	8.29	21.97	30.0	-8.0	
1.732	16.5	H	0.85	8.29	23.95	30.0	-6.1	
High Ch								
1.745	13.7	V	0.85	8.29	21.18	30.0	-8.8	
1.745	17.1	H	0.85	8.29	24.53	30.0	-5.5	

Rev. 3.17.11

Band

LTE4

15MHz

16QAM

High Frequency Fundamental Measurement

Compliance Certification Services Chamber B

Company:

Project #:

Date:

Test Engineer:

Configuration:

Mode:

Test Equipment:

Receiving: Horn T345, and Chamber B SMA Cables

Substitution: Horn T59 Substitution, 4ft SMA Cable (244639001) Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.718	13.1	V	0.85	8.29	20.56	30.0	-9.4	
1.718	15.8	H	0.85	8.29	23.20	30.0	-6.8	
Mid Ch								
1.732	12.3	V	0.85	8.29	19.74	30.0	-10.3	
1.732	16.8	H	0.85	8.29	24.22	30.0	-5.8	
High Ch								
1.748	13.3	V	0.85	8.29	20.78	30.0	-9.2	
1.748	16.8	H	0.85	8.29	24.24	30.0	-5.8	

Rev. 3.17.11

Band LTE4 15MHz QPSK	High Frequency Fundamental Measurement Compliance Certification Services Chamber B																																																																																																	
	Company: LG																																																																																																	
	Project #: 14U17222																																																																																																	
	Date: 03/28/14																																																																																																	
	Test Engineer: R. Alegre																																																																																																	
	Configuration: Z position																																																																																																	
	Mode: LTE_B4_15MHz_QPSK																																																																																																	
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Rev. 3.17.11																																																																																																		

Band

LTE4

10MHz

16QAM

High Frequency Fundamental Measurement

Compliance Certification Services Chamber B

Company: LG

Project #: 14U17222

Date: 03/26/14

Test Engineer: Charles Vergonio

Configuration: Z position

Mode: LTE_B4_10MHz_16QAM

Test Equipment:

Receiving: Horn T345, and Chamber B SMA Cables

Substitution: Horn T59 Substitution, 4ft SMA Cable (244639001) Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.715	10.7	V	0.85	8.29	18.18	30.0	-11.8	
1.715	15.3	H	0.85	8.29	22.72	30.0	-7.3	
Mid Ch								
1.733	12.0	V	0.85	8.29	19.48	30.0	-10.5	
1.733	15.5	H	0.85	8.29	22.91	30.0	-7.1	
High Ch								
1.750	12.1	V	0.85	7.92	19.13	30.0	-10.9	
1.750	16.0	H	0.85	7.92	23.11	30.0	-6.9	

Rev. 3.17.11

Band LTE4 10MHz QPSK	High Frequency Fundamental Measurement Compliance Certification Services Chamber B																																																																																																	
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	Project #: 14U17222																																																																																																	
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Rev. 3.17.11																																																																																																		

Band

LTE4

5MHz

16QAM

High Frequency Fundamental Measurement

Compliance Certification Services Chamber B

Company:

Project #:

Date:

Test Engineer:

Configuration:

Mode:

LG

14U17222

03/26/14

Charles Vergonio

Z position

LTE_B4_5MHz_16QAM

Test Equipment:

Receiving: Horn T345, and Chamber B SMA Cables

Substitution: Horn T59 Substitution, 4ft SMA Cable (244639001) Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.713	11.8	V	0.85	8.29	19.24	30.0	-10.8	
1.713	16.5	H	0.85	8.29	23.97	30.0	-6.0	
Mid Ch								
1.733	12.0	V	0.85	8.29	19.48	30.0	-10.5	
1.733	16.6	H	0.85	8.29	24.01	30.0	-6.0	
High Ch								
1.753	12.5	V	0.85	7.92	19.61	30.0	-10.4	
1.753	16.5	H	0.85	7.92	23.56	30.0	-6.4	

Rev. 3.17.11

Band

LTE4

5MHz

QPSK

High Frequency Fundamental Measurement

Compliance Certification Services Chamber B

Company: LG

Project #: 14U17222

Date: 03/26/14

Test Engineer: Charles Vergonio

Configuration: Z position

Mode: LTE_B4_5MHz_QPSK

Test Equipment:

Receiving: Horn T345, and Chamber C SMA Cables

Substitution: Horn T59 Substitution, 4ft SMA Cable (244639001) Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.713	13.0	V	0.85	8.29	20.40	30.0	-9.6	
1.713	16.6	H	0.85	8.29	24.02	30.0	-6.0	
Mid Ch								
1.733	13.3	V	0.85	8.29	20.69	30.0	-9.3	
1.733	17.4	H	0.85	8.29	24.86	30.0	-5.1	
High Ch								
1.753	13.2	V	0.85	7.92	20.24	30.0	-9.8	
1.753	17.4	H	0.85	7.92	24.45	30.0	-5.6	

Rev. 3.17.11

11.2. FIELD STRENGTH OF SPURIOUS RADIATION

RULE PART(S)

FCC: §2.1053, §22.917, §24.238

LIMIT

§22.917 (e) and §24.238 (a): Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log (P)$ dB

TEST PROCEDURE

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

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

RESULTS

11.2.1. SPURIOUS RADIATION PLOTS

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement										
Band LTE13 10MHz 16QAM	Company:		LG							
	Project #:		14U17222							
	Date:		03/29/14							
	Test Engineer:		R. Alegre							
	Configuration:		EUT with AC adapter							
	Mode:		TX, LTE band 13, 10MHz BW, 16QAM							
	Chamber		Pre-amplifier		Filter		Limit			
	3m Chamber		T145 8449B		Filter 1		Part 24			
	f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch, (779.5 MHz)									
Mid Ch, (782 MHz)										
1.564	-29.0	V	3.0	30.7	1.0	-58.7	-13.0	-45.7		
2.346	-24.8	V	3.0	28.9	1.0	-52.7	-13.0	-39.7		
3.128	-23.1	V	3.0	26.8	1.0	-49.0	-13.0	-36.0		
1.564	-30.1	H	3.0	30.7	1.0	-59.8	-13.0	-46.8		
2.346	-27.1	H	3.0	28.9	1.0	-55.0	-13.0	-42.0		
3.128	-23.5	H	3.0	26.8	1.0	-49.3	-13.0	-36.3		
High Ch, (784.5 MHz)										
Rev. 03.03.09										
Note: No other emissions were detected above the system noise floor.										

Band LTE13 10MHz QPSK	Compliance Certification Services Above 1GHz High Frequency Substitution Measurement																																																																																																												
	Company: LG																																																																																																												
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	Test Engineer: R. Alegre																																																																																																												
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	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <td style="width: 25%; background-color: #e0f7fa;">Chamber</td> <td style="width: 25%; background-color: #e0f7fa;">Pre-amplifier</td> <td style="width: 25%; background-color: #e0f7fa;">Filter</td> <td style="width: 25%; background-color: #e0f7fa;">Limit</td> </tr> <tr> <td>3m Chamber</td> <td>T145 8449B</td> <td>Filter 1</td> <td>Part 24</td> </tr> </table>										Chamber	Pre-amplifier	Filter	Limit	3m Chamber	T145 8449B	Filter 1	Part 24																																																																																											
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Rev. 03.03.09																																																																																																													

Company: LG
Project #: 14U17222
Date: 03/29/14
Test Engineer: R. Alegre
Configuration: EUT with AC adapter
Mode: TX, LTE band 4, 20MHz BW, 16QAM

Chamber	Pre-amplifier	Filter	Limit
3m Chamber	T145 8449B	Filter 1	Part 24

Rev. 03.03.09

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 14U17222
Date: 03/29/14
Test Engineer: R. Alegre
Configuration: EUT with AC adapter
Mode: TX, LTE band 4, 20MHz BW, QPSK

Chamber
 3m Chamber

Pre-amplifier
 T145 8449B

Filter
 Filter 1

Limit
 Part 24

Band	f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes	
20MHz QPSK	Low Ch, (1720 MHz)										
	LTE4	3.440	-22.6	V	3.0	30.4	1.0	-52.0	-13.0	-39.0	
		5.160	-20.6	V	3.0	28.7	1.0	-48.3	-13.0	-35.3	
		6.880	-17.1	V	3.0	27.1	1.0	-43.2	-13.0	-30.2	
		3.440	-23.0	H	3.0	30.4	1.0	-52.4	-13.0	-39.4	
		5.160	-20.3	H	3.0	28.7	1.0	-48.1	-13.0	-35.1	
		6.880	-16.4	H	3.0	27.1	1.0	-42.5	-13.0	-29.5	
	Mid Ch, (1732.5 MHz)										
		3.465	-22.7	V	3.0	30.4	1.0	-52.1	-13.0	-39.1	
		5.198	-20.1	V	3.0	28.7	1.0	-47.8	-13.0	-34.8	
		6.930	-16.7	V	3.0	27.1	1.0	-42.7	-13.0	-29.7	
		3.465	-22.5	H	3.0	30.4	1.0	-51.9	-13.0	-38.9	
		5.198	-19.4	H	3.0	28.7	1.0	-47.1	-13.0	-34.1	
		6.930	-14.9	H	3.0	27.1	1.0	-41.0	-13.0	-28.0	
	High Ch, (1745 MHz)										
		3.490	-22.2	V	3.0	30.4	1.0	-51.6	-13.0	-38.6	
	5.235	-19.7	V	3.0	28.7	1.0	-47.4	-13.0	-34.4		
	6.980	-16.2	V	3.0	27.0	1.0	-42.2	-13.0	-29.2		
	3.490	-22.6	H	3.0	30.4	1.0	-52.0	-13.0	-39.0		
	5.235	-20.1	H	3.0	28.7	1.0	-47.8	-13.0	-34.8		
	6.980	-15.5	H	3.0	27.0	1.0	-41.5	-13.0	-28.5		

Rev. 03.03.09

UL VERIFICATION SERVICES INC. FORM NO: CCSUP47011
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
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Compliance Certification Services Above 1GHz High Frequency Substitution Measurement										
Company: LG Project #: 14U17222 Date: 03/29/14 Test Engineer: R. Alegre Configuration: EUT with AC adapter Mode: TX, LTE band 4, 15MHz BW, QPSK										
Chamber 3m Chamber		Pre-amplifier T145 8449B		Filter Filter 1		Limit Part 24				
Band	f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
15MHz LTE4 QPSK	Low Ch, (1717.5 MHz)									
	3.435	-24.1	V	3.0	30.4	1.0	-53.6	-13.0	-40.6	
	5.153	-20.1	V	3.0	28.7	1.0	-47.8	-13.0	-34.8	
	6.870	-16.3	V	3.0	27.1	1.0	-42.4	-13.0	-29.4	
	3.435	-22.5	H	3.0	30.4	1.0	-51.9	-13.0	-38.9	
	5.153	-18.2	H	3.0	28.7	1.0	-46.0	-13.0	-33.0	
	6.870	-15.7	H	3.0	27.1	1.0	-41.9	-13.0	-28.9	
	Mid Ch, (1732.5 MHz)									
	3.465	-22.2	V	3.0	30.4	1.0	-51.6	-13.0	-38.6	
	5.198	-19.5	V	3.0	28.7	1.0	-47.3	-13.0	-34.3	
	6.930	-15.9	V	3.0	27.1	1.0	-42.0	-13.0	-29.0	
	3.465	-22.7	H	3.0	30.4	1.0	-52.1	-13.0	-39.1	
	5.198	-20.0	H	3.0	28.7	1.0	-47.7	-13.0	-34.7	
	6.930	-15.3	H	3.0	27.1	1.0	-41.4	-13.0	-28.4	
	High Ch, (1747.5 MHz)									
	3.495	-22.6	V	3.0	30.4	1.0	-52.0	-13.0	-39.0	
	5.243	-19.8	V	3.0	28.7	1.0	-47.4	-13.0	-34.4	
	6.990	-16.5	V	3.0	27.0	1.0	-42.5	-13.0	-29.5	
3.495	-22.2	H	3.0	30.4	1.0	-51.6	-13.0	-38.6		
5.243	-19.0	H	3.0	28.7	1.0	-46.6	-13.0	-33.6		
6.990	-14.8	H	3.0	27.0	1.0	-40.9	-13.0	-27.9		
Rev. 03.03.09										

Company: LG
Project #: 14U17222
Date: 03/29/14
Test Engineer: R. Alegre
Configuration: EUT with AC adapter
Mode: TX, LTE band 4, 10MHz BW, 16QAM

Chamber	Pre-amplifier	Filter	Limit
3m Chamber	T145 8449B	Filter 1	Part 24

Rev. 03.03.09

Company: LG
Project #: 14U17222
Date: 03/29/14
Test Engineer: R. Alegre
Configuration: EUT with AC adapter
Mode: TX. LTE band 4. 10MHz BW. QPSK

Chamber	Pre-amplifier	Filter	Limit
3m Chamber	T145 8449B	Filter 1	Part 24

Band	f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
LTE4	Low Ch, (1715 MHz)									
	3.430	-22.2	V	3.0	30.4	1.0	-51.7	-13.0	-38.7	
	5.145	-19.3	V	3.0	28.8	1.0	-47.1	-13.0	-34.1	
10MHz	6.860	-16.8	V	3.0	27.1	1.0	-42.9	-13.0	-29.9	
	3.430	-23.3	H	3.0	30.4	1.0	-52.7	-13.0	-39.7	
	5.145	-20.3	H	3.0	28.8	1.0	-48.0	-13.0	-35.0	
QPSK	6.860	-16.1	H	3.0	27.1	1.0	-42.2	-13.0	-29.2	
	Mid Ch, (1732.5 MHz)									
	3.465	-22.4	V	3.0	30.4	1.0	-51.8	-13.0	-38.8	
	5.198	-19.8	V	3.0	28.7	1.0	-47.5	-13.0	-34.5	
	6.930	-16.5	V	3.0	27.1	1.0	-42.6	-13.0	-29.6	
	3.465	-23.0	H	3.0	30.4	1.0	-52.4	-13.0	-39.4	
	5.198	-19.9	H	3.0	28.7	1.0	-47.6	-13.0	-34.6	
	6.930	-15.6	H	3.0	27.1	1.0	-41.6	-13.0	-28.6	
	High Ch, (1750 MHz)									
	3.500	-22.2	V	3.0	30.4	1.0	-51.6	-13.0	-38.6	
	5.250	-20.6	V	3.0	28.7	1.0	-48.2	-13.0	-35.2	
	7.000	-15.7	V	3.0	27.0	1.0	-41.7	-13.0	-28.7	
	3.500	-24.1	H	3.0	30.4	1.0	-53.5	-13.0	-40.5	
	5.250	-19.8	H	3.0	28.7	1.0	-47.4	-13.0	-34.4	
	7.000	-14.9	H	3.0	27.0	1.0	-40.9	-13.0	-27.9	

Rev. 03.03.09

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement										
Company:	LG									
Project #:	14U17222									
Date:	03/29/14									
Test Engineer:	R. Alegre									
Configuration:	EUT with AC adapter									
Mode:	TX, LTE band 4, 5MHz BW, 16 QAM									
Chamber		Pre-amplifier		Filter		Limit				
3m Chamber		T145 8449B		Filter 1		Part 24				
Band	f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
LTE4 5MHz 16QAM	Low Ch, (1712.5 MHz)									
	3.425	-21.6	V	3.0	30.4	1.0	-51.0	-13.0	-38.0	
	5.138	-20.0	V	3.0	28.8	1.0	-47.8	-13.0	-34.8	
	6.850	-16.9	V	3.0	27.1	1.0	-43.0	-13.0	-30.0	
	3.425	-22.2	H	3.0	30.4	1.0	-51.7	-13.0	-38.7	
	5.138	-19.5	H	3.0	28.8	1.0	-47.2	-13.0	-34.2	
	6.850	-14.9	H	3.0	27.1	1.0	-41.0	-13.0	-28.0	
	Mid Ch, (1732.5 MHz)									
	3.465	-21.0	V	3.0	30.4	1.0	-50.4	-13.0	-37.4	
	5.198	-20.1	V	3.0	28.7	1.0	-47.8	-13.0	-34.8	
	6.930	-16.0	V	3.0	27.1	1.0	-42.1	-13.0	-29.1	
	3.465	-22.9	H	3.0	30.4	1.0	-52.3	-13.0	-39.3	
	5.198	-18.3	H	3.0	28.7	1.0	-46.0	-13.0	-33.0	
	6.930	-15.3	H	3.0	27.1	1.0	-41.4	-13.0	-28.4	
	High Ch, (1752.5 MHz)									
	3.505	-22.1	V	3.0	30.4	1.0	-51.4	-13.0	-38.4	
	5.258	-19.6	V	3.0	28.6	1.0	-47.2	-13.0	-34.2	
	7.010	-15.3	V	3.0	27.0	1.0	-41.3	-13.0	-28.3	
3.505	-20.6	H	3.0	30.4	1.0	-50.0	-13.0	-37.0		
5.258	-19.5	H	3.0	28.6	1.0	-47.2	-13.0	-34.2		
7.010	-14.7	H	3.0	27.0	1.0	-40.7	-13.0	-27.7		
Rev. 03.03.09										

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement										
Company:	LG									
Project #:	14U17222									
Date:	03/29/14									
Test Engineer:	R. Alegre									
Configuration:	EUT with AC adapter									
Mode:	TX, LTE band 4, 5MHz BW, QPSK									
Chamber		Pre-amplifier		Filter		Limit				
3m Chamber		T145 8449B		Filter 1		Part 24				
Band	f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
LTE4 5MHz QPSK	Low Ch, (1712.5 MHz)									
	3.425	-21.7	V	3.0	30.4	1.0	-51.2	-13.0	-38.2	
	5.138	-19.5	V	3.0	28.8	1.0	-47.3	-13.0	-34.3	
	6.850	-16.3	V	3.0	27.1	1.0	-42.5	-13.0	-29.5	
	3.425	-20.4	H	3.0	30.4	1.0	-49.8	-13.0	-36.8	
	5.138	-17.6	H	3.0	28.8	1.0	-45.3	-13.0	-32.3	
	6.850	-14.9	H	3.0	27.1	1.0	-41.0	-13.0	-28.0	
	Mid Ch, (1732.5 MHz)									
	3.465	-20.2	V	3.0	30.4	1.0	-49.6	-13.0	-36.6	
	5.198	-19.7	V	3.0	28.7	1.0	-47.4	-13.0	-34.4	
	6.930	-15.6	V	3.0	27.1	1.0	-41.6	-13.0	-28.6	
	3.465	-22.4	H	3.0	30.4	1.0	-51.8	-13.0	-38.8	
5.198	-17.5	H	3.0	28.7	1.0	-45.2	-13.0	-32.2		
6.930	-15.2	H	3.0	27.1	1.0	-41.2	-13.0	-28.2		
High Ch, (1752.5 MHz)										
3.505	-22.0	V	3.0	30.4	1.0	-51.4	-13.0	-38.4		
5.258	-19.3	V	3.0	28.6	1.0	-47.0	-13.0	-34.0		
7.010	-15.5	V	3.0	27.0	1.0	-41.5	-13.0	-28.5		
3.505	-20.9	H	3.0	30.4	1.0	-50.3	-13.0	-37.3		
5.258	-19.7	H	3.0	28.6	1.0	-47.3	-13.0	-34.3		
7.010	-14.4	H	3.0	27.0	1.0	-40.4	-13.0	-27.4		
Rev. 03.03.09										

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement										
Band BC1	Company: LG									
	Project #: 14U17222									
	Date: 03/29/14									
	Test Engineer: R. Alegre									
	Configuration: EUT with AC adapter									
	Mode: EVDO									
	Chamber 3m Chamber		Pre-amplifier T343 8449B		Filter Filter 1		Limit Part 24			
	f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch, 1851.25MHz									
	3.703	3.4	V	3.0	35.4	1.0	-31.0	-13.0	-18.0	
5.554	-14.0	V	3.0	34.7	1.0	-47.7	-13.0	-34.7		
7.405	-16.0	V	3.0	34.9	1.0	-49.9	-13.0	-36.9		
3.703	4.0	H	3.0	35.4	1.0	-30.4	-13.0	-17.4		
5.554	-18.9	H	3.0	34.7	1.0	-52.7	-13.0	-39.7		
7.405	-15.7	H	3.0	34.9	1.0	-49.6	-13.0	-36.6		
Mid Ch, 1880.0MHz										
3.760	-0.1	V	3.0	35.3	1.0	-34.4	-13.0	-21.4		
5.640	-20.2	V	3.0	34.7	1.0	-53.9	-13.0	-40.9		
7.520	-15.7	V	3.0	34.9	1.0	-49.6	-13.0	-36.6		
3.760	0.3	H	3.0	35.3	1.0	-34.0	-13.0	-21.0		
5.640	-18.3	H	3.0	34.7	1.0	-52.0	-13.0	-39.0		
7.520	-15.5	H	3.0	34.9	1.0	-49.4	-13.0	-36.4		
High Ch, 1908.75 MHz										
3.818	-2.8	V	3.0	35.3	1.0	-37.1	-13.0	-24.1		
5.726	-14.7	V	3.0	34.7	1.0	-48.5	-13.0	-35.5		
7.635	-15.8	V	3.0	34.9	1.0	-49.7	-13.0	-36.7		
3.818	-1.9	H	3.0	35.3	1.0	-36.2	-13.0	-23.2		
5.726	-17.3	H	3.0	34.7	1.0	-51.1	-13.0	-38.1		
7.635	-15.2	H	3.0	34.9	1.0	-49.2	-13.0	-36.2		
Rev. 03.03.09										
Note: No other emissions were detected above the system noise floor.										

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement										
Company:	LG									
Project #:	14U17222									
Date:	03/29/14									
Test Engineer:	R. Alegre									
Configuration:	EUT with AC adapter									
Mode:	CDMA									
Chamber Pre-amplifier Filter Limit 3m Chamber T343 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
1xRTT	Low Ch, 1851.25MHz									
	3.703	3.7	V	3.0	35.4	1.0	-30.7	-13.0	-17.7	
	5.554	-17.2	V	3.0	34.7	1.0	-50.9	-13.0	-37.9	
	7.405	-15.2	V	3.0	34.9	1.0	-49.1	-13.0	-36.1	
	3.703	4.1	H	3.0	35.4	1.0	-30.3	-13.0	-17.3	
	5.554	-16.7	H	3.0	34.7	1.0	-50.4	-13.0	-37.4	
	7.405	-15.0	H	3.0	34.9	1.0	-48.9	-13.0	-35.9	
	Mid Ch, 1880.0MHz									
	3.760	2.1	V	3.0	35.3	1.0	-32.3	-13.0	-19.3	
	5.640	-15.5	V	3.0	34.7	1.0	-49.2	-13.0	-36.2	
	7.520	-15.9	V	3.0	34.9	1.0	-49.8	-13.0	-36.8	
	3.760	1.9	H	3.0	35.3	1.0	-32.5	-13.0	-19.5	
	5.640	-14.9	H	3.0	34.7	1.0	-48.7	-13.0	-35.7	
	7.520	-14.7	H	3.0	34.9	1.0	-48.6	-13.0	-35.6	
	High Ch, 1908.75 MHz									
	3.818	-2.5	V	3.0	35.3	1.0	-36.8	-13.0	-23.8	
	5.726	-13.9	V	3.0	34.7	1.0	-47.6	-13.0	-34.6	
	7.635	-14.9	V	3.0	34.9	1.0	-48.9	-13.0	-35.9	
	3.818	-1.7	H	3.0	35.3	1.0	-35.9	-13.0	-22.9	
	5.726	-17.3	H	3.0	34.7	1.0	-51.0	-13.0	-38.0	
7.635	-14.7	H	3.0	34.9	1.0	-48.7	-13.0	-35.7		
Rev. 03.03.09										
Note: No other emissions were detected above the system noise floor.										

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Compliance Certification Services Above 1GHz High Frequency Substitution Measurement										
Band BC0 1xRTT	Company: LG									
	Project #: 14U17222									
	Date: 03/29/14									
	Test Engineer: R. Alegre									
	Configuration: EUT with AC adapter									
	Mode: RTT BC0 HARM									
	Chamber 3m Chamber C		Pre-amplifier T343 8449B		Filter Filter 1		Limit 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, 824.7MHz									
	1.649	-26.4	V	3.0	37.4	1.0	-62.8	-13.0	-49.8	
2.474	-24.5	V	3.0	36.4	1.0	-59.9	-13.0	-46.9		
3.298	-22.7	V	3.0	35.8	1.0	-57.5	-13.0	-44.5		
1.649	-25.7	H	3.0	37.4	1.0	-62.1	-13.0	-49.1		
2.474	-25.2	H	3.0	36.4	1.0	-60.6	-13.0	-47.6		
3.298	-23.4	H	3.0	35.8	1.0	-58.2	-13.0	-45.2		
Mid Ch, 836.52MHz										
1.673	-24.9	V	3.0	37.3	1.0	-61.3	-13.0	-48.3		
2.509	-24.3	V	3.0	36.4	1.0	-59.7	-13.0	-46.7		
3.346	-23.3	V	3.0	35.8	1.0	-58.0	-13.0	-45.0		
1.673	-27.3	H	3.0	37.3	1.0	-63.6	-13.0	-50.6		
2.509	-26.2	H	3.0	36.4	1.0	-61.5	-13.0	-48.5		
3.346	-23.5	H	3.0	35.8	1.0	-58.2	-13.0	-45.2		
High Ch, 848.31 MHz										
1.696	-26.2	V	3.0	37.3	1.0	-62.5	-13.0	-49.5		
2.544	-23.3	V	3.0	36.3	1.0	-58.6	-13.0	-45.6		
3.393	-22.7	V	3.0	35.7	1.0	-57.4	-13.0	-44.4		
1.696	-26.8	H	3.0	37.3	1.0	-63.1	-13.0	-50.1		
2.544	-25.0	H	3.0	36.3	1.0	-60.3	-13.0	-47.3		
3.393	-22.8	H	3.0	35.7	1.0	-57.5	-13.0	-44.5		
Rev. 03.03.09										
Note: No other emissions were detected above the system noise floor.										