



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

CERTIFICATION TEST REPORT

FOR

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

MODEL NUMBER: SM-C115L

FCC ID: A3LSMC115L

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: SAMSUNG ELECTRONICS CO., LTD.
EUT DESCRIPTION: GSM/WCDMA/LTE Phone + Bluetooth & DTS/UNII a/b/g/n + NFC
MODEL: SM-C115L
SERIAL NUMBER: FL-131-A (Radiated& Conducted)
DATE TESTED: APRIL 8 – 22, 2014

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC PART 22H, 24E and 27H	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 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 24						
Band	Frequency Range(MHz)	Modulation Peak	Conducted		Radiated	
			Peak (dBm)	Peak(mW)	Peak (dBm)	Peak(mW)
GSM1900	1850~1910	GMSK	29.6	912		
	1850~1910	GPRS	29.6	912	27.1	512.86

FCC Part 22/24						
Band	Frequency Range(MHz)	Modulation Peak	Conducted		Radiated	
			Avg (dBm)	Avg (mW)	Avg (dBm)	Avg (mW)
Band 5	824~849	REL99	23.0	199.53	19.601	91.22
	824~849	HSDPA	22.5	177.83	19.881	97.3
	824~849	HSUPA	22.5	177.83		
Band 2	1850~1910	REL99	23.0	199.53	23.38	217.77
	1850~1910	HSDPA	22.5	177.83	22.89	194.54
	1850~1910	HSUPA	22.5	177.83		

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)
LTE17	704~716	10MHz	QPSK	22.50	177.83	9.101	8.13
	704~716	10MHz	16QAM	21.50	141.25	8.131	6.5

FCC Part 27							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation Peak	Conducted		Radiated	
				Avg (dBm)	Avg(mW)	Avg (dBm)	Avg(mW)
LTE17	704~716	5MHz	QPSK	22.50	177.83	9.561	9.04
	704~716	5MHz	16QAM	21.50	141.25	8.711	7.43

FCC Part 22							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation Peak	Conducted		Radiated	
				Avg (dBm)	Avg(mW)	Avg (dBm)	Avg(mW)
LTE5	824~849	10MHz	QPSK	23.50	223.87	20.701	117.52
	824~849	10MHz	16QAM	22.50	177.83	19.701	93.35

FCC Part 22							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation Peak	Conducted		Radiated	
				Avg (dBm)	Avg(mW)	Avg (dBm)	Avg(mW)
LTE5	824~849	5MHz	QPSK	23.50	223.87	21.001	125.92
	824~849	5MHz	16QAM	22.50	177.83	20.101	102.35

FCC Part 22							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation Peak	Conducted		Radiated	
				Avg (dBm)	Avg(mW)	Avg (dBm)	Avg(mW)
LTE5	824~849	3MHz	QPSK	23.50	223.87	20.501	112.23
	824~849	3MHz	16QAM	22.50	177.83	19.701	93.35

FCC Part 22							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation Peak	Conducted		Radiated	
				Avg (dBm)	Avg(mW)	Avg (dBm)	Avg(mW)
LTE5	824~849	1.4MHz	QPSK	23.50	223.87	20.601	114.84
	824~849	1.4MHz	16QAM	22.50	177.83	19.90	97.72

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 5, 824~849MHz	-2.29
Band 2, 1850~1910MHz	0.77
LTE17, 704~716MHz	-8.54

5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
AC Adapter	SAMSUNG	EP-TA10EWE	N/A	N/A
Earphone	SAMSUNG	N/A	N/A	N/A

I/O CABLES (CONDUCTED SETUP)

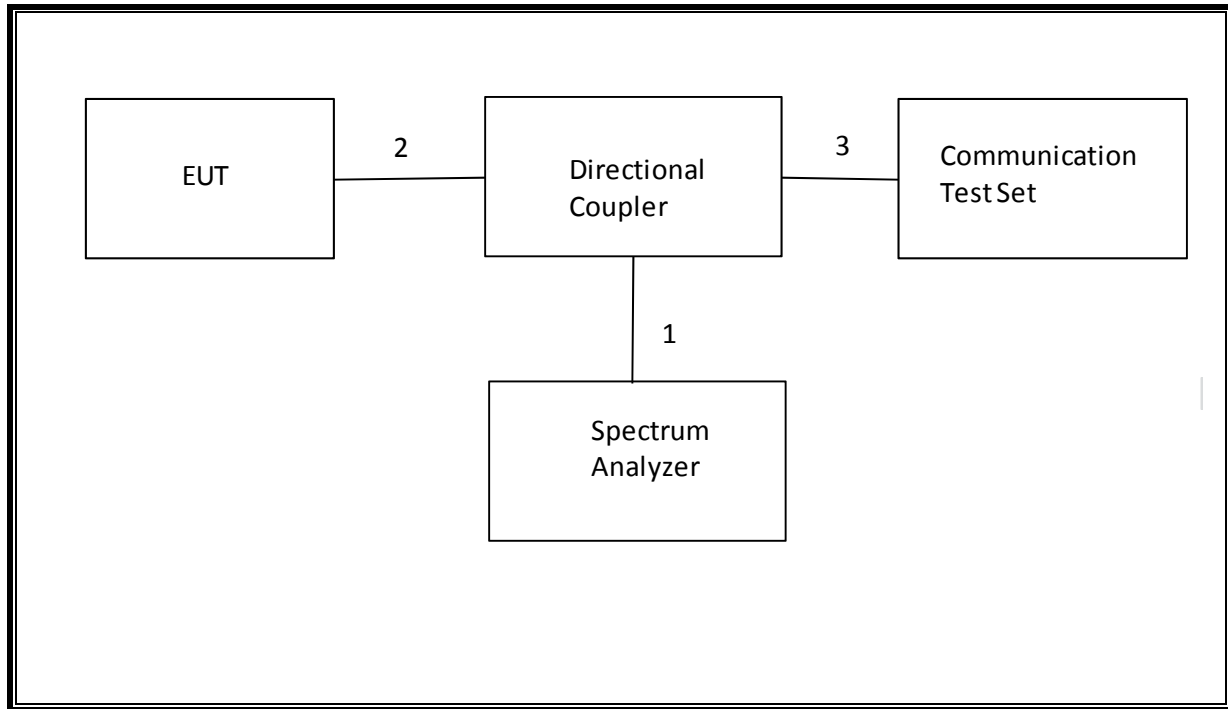
I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	RF Out	1	Spectrum Analyzer	Shielded	None	NA
2	Antenna Port	1	EUT	Shielded	0.1m	NA
3	RF In/Out	1	Communication Test Set	Shielded	1m	NA

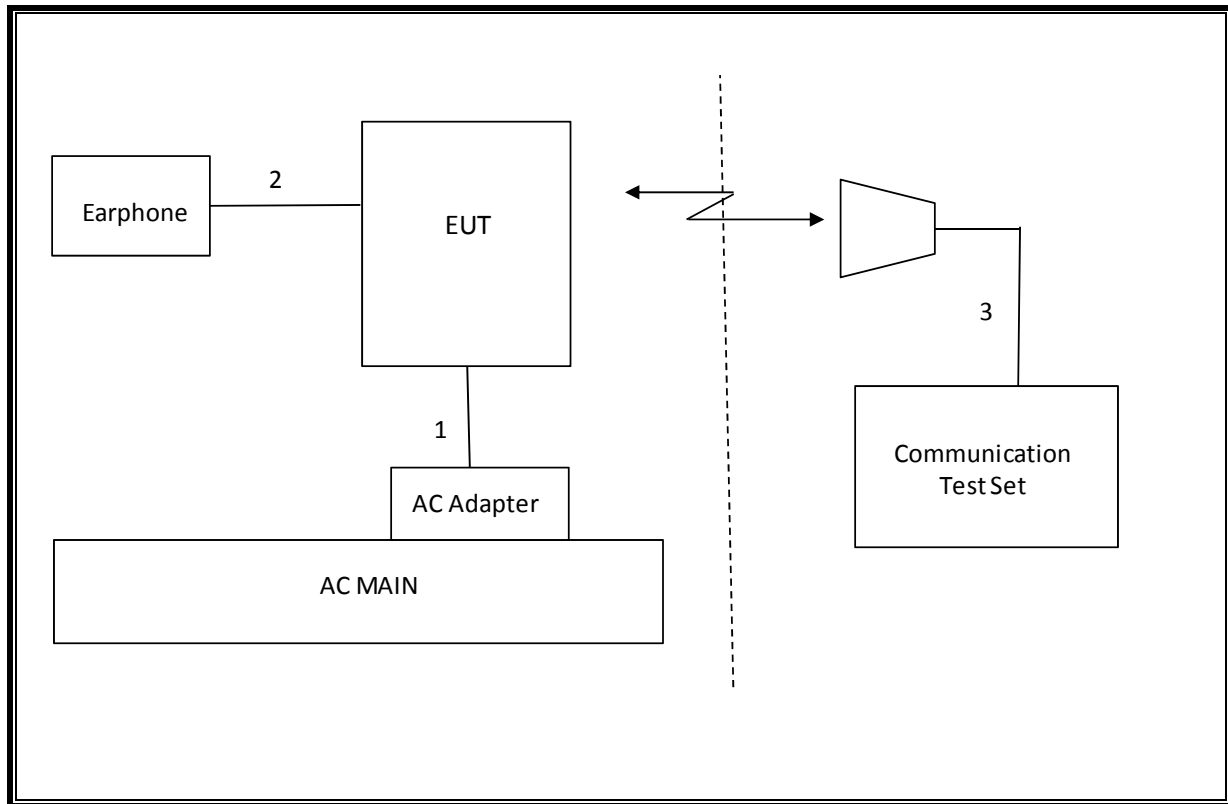
I/O CABLES (RADIATED SETUP)

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

TEST SETUP

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

SETUP DIAGRAM FOR TESTS (CONDUCTED TEST SETUP)

SETUP DIAGRAM FOR TESTS (RADIATED TEST SETUP)

6. TEST AND MEASUREMENT EQUIPMENT

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

TEST EQUIPMENT LIST				
Description	Manufacturer	Model	Asset	Cal Due
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01179	02/26/15
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	C01011	08/14/14
Antenna, Horn, 18 GHz	EMCO	3115	C00783	10/25/14
Antenna, Horn, 18 GHz	EMCO	3115	C00784	09/25/14
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	01/09/15
Communications Test Set	R&S	CMW500	T159	07/02/14
DC power supply, 8 V @ 3 A or 15 V	Agilent / HP	E3610A	None	CNR
Vector signal generator, 6 GHz	Agilent / HP	E4438C	None	07/06/14
Antenna, Tuned Dipole 400~1000	ETS	3121C DB4	C00993	02/14/15
Antenna, Horn, 25.5 GHz	ARA	MWH-1826/B	C00980	11/14/14
Directional Coupler	RF-Lambda	RFDC5M06G15	None	CNR

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	8.943MHz
22.917(a) 24.238(a) 27.53(g)	RSS-132(4.5.1) RSS-133(6.5.1) RSS-130(4.6)	Band Edge / Conducted Spurious Emission	-13dBm		Pass	-14.287dBm
2.1046	N/A	Conducted output power	N/A		Pass	29.6dBm
22.355 24.235 27.54	RSS-132(4.3) RSS-133(6.3) RSS-130(4.2)	Frequency Stability	2.5PPM		Pass	-0.09PPM
22.913(a)(2)	RSS-132(4.4)	Effective Radiated Power	38 dBm	Radiated	Pass	21dBm
27.50(b)(10)	RSS-130(4.4)		34.77 dBm		Pass	
24.232(c)	RSS-133(6.4)	Equivalent Isotropic Radiated Power	33dBm		Pass	27.1dBm
22.917(a) 24.238(a) 27.53(g)	RSS-132(4.5.1) RSS-133(6.5.1) RSS-130(4.6)	Radiated Spurious Emission	-13dBm		Pass	-40.7dBm

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

Band	Mode	Ch.	f(MHz)	1 time slot	2 time slot
				Peak (dBm)	Peak (dBm)
GSM1900	GMSK	512	1850.2	29.5	
		661	1880	29.5	
		810	1909.8	29.6	
	GPRS	512	1850.2	29.5	26.3
		661	1880	29.5	26.1
		810	1909.8	29.6	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	Ch.	f(MHz)	Conducted Power (dBm)
				Avg (dBm)
Band 5	REL99	4132	826.4	22.9
		4183	836.6	23.0
		4233	846.6	23.0
Band 2	REL99	9262	1852.4	23.0
		9400	1880	22.9
		9538	1907.6	23.0

8.3. UMTS HSDPA

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

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

8.3.1. UMTS HSDPA OUTPUT POWER RESULT

Band	Mode	Subset	Ch.	f(MHz)	Conducted Power (dBm)
					Avg (dBm)
Band 5	HSDPA	1	4132	826.4	22.5
			4183	836.6	22.5
			4233	846.6	22.5
		2	4132	826.4	22.5
			4183	836.6	22.5
			4233	846.6	22.5
		3	4132	826.4	22.5
			4183	836.6	22.5
			4233	846.6	22.5
		4	4132	826.4	21.9
			4183	836.6	22.2
			4233	846.6	21.8
Band 2	HSDPA	1	9262	1852.4	22.5

			9400	1880	22.5
			9538	1907.6	22.5
		2	9262	1852.4	22.5
			9400	1880	22.5
			9538	1907.6	22.5
		3	9262	1852.4	22.0
			9400	1880	22.2
			9538	1907.6	22.2
		4	9262	1852.4	21.2
			9400	1880	20.8
			9538	1907.6	20.7

8.3.2. UMTS HSUPA

TEST PROCEDURE

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

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

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

8.3.3. UMTS HSUPA OUTPUT POWER RESULT

Band	Mode	Subset	Ch.	f(MHz)	Conducted Power (dBm)
					Avg (dBm)
Band 5	HSUPA	1	4132	826.4	22.1
			4183	836.6	22.3
			4233	846.6	22.3
		2	4132	826.4	20.5
			4183	836.6	20.5
			4233	846.6	20.5
		3	4132	826.4	21.2
			4183	836.6	21.3
			4233	846.6	21.3
		4	4132	826.4	20.1
			4183	836.6	20.1
			4233	846.6	20.2
		5	4132	826.4	22.5
			4183	836.6	22.5
			4233	846.6	22.5
Band 2	HSUPA	1	9262	1852.4	21.6
			9400	1880	21.5
			9538	1907.6	21.7
		2	9262	1852.4	19.5
			9400	1880	19.6
			9538	1907.6	19.8
		3	9262	1852.4	20.7
			9400	1880	20.6
			9538	1907.6	20.8
		4	9262	1852.4	19.7
			9400	1880	19.5
			9538	1907.6	19.7
		5	9262	1852.4	22.5
			9400	1880	22.4
			9538	1907.6	22.5

8.4. LTE OUTPUT VERIFICATION

8.4.1. LTE OUTPUT RESULT

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	23.50	23.50	23.50
			1	25	0	23.40	23.50	23.50
			1	49	0	23.30	23.50	23.00
			25	0	1	21.90	22.10	22.10
			25	12	1	21.90	22.10	22.10
			25	25	1	21.90	22.10	22.00
			50	0	1	22.00	22.20	22.00
		16QAM	1	0	1	22.40	22.50	22.40
			1	25	1	22.50	22.50	22.50
			1	49	1	22.20	22.50	21.90
			25	0	2	21.10	21.10	21.10
			25	12	2	20.90	21.10	21.10
			25	25	2	21.00	21.10	20.90
			50	0	2	21.00	21.10	21.00
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	23.40	23.50	23.50
			1	12	0	23.40	23.30	23.50
			1	24	0	23.50	23.30	23.20
			12	0	1	22.20	22.30	22.40
			12	7	1	22.10	22.10	22.20
			12	13	1	22.00	22.20	22.10
			25	0	1	22.00	22.20	22.30
		16QAM	1	0	1	22.50	22.50	22.50
			1	12	1	22.50	22.50	22.50
			1	24	1	22.50	22.50	22.50
			12	0	2	21.00	21.20	21.40
			12	7	2	21.10	21.10	21.20
			12	13	2	21.00	21.00	21.10
			25	0	2	20.90	21.20	21.30
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						20415	20525	20635
						825.5 MHz	836.5 MHz	847.5 MHz
LTE	3	QPSK	1	0	0	23.50	23.40	23.50

Band 5			1	8	0	23.50	23.40	23.50
			1	14	0	23.50	23.30	23.50
			8	0	1	22.40	22.50	22.50
			8	4	1	22.20	22.40	22.50
			8	7	1	22.30	22.30	22.40
			15	0	1	22.30	22.30	22.40
		16QAM	1	0	1	22.50	22.50	22.50
			1	8	1	22.50	22.50	22.50
			1	14	1	22.50	22.50	22.50
			8	0	2	21.20	21.50	21.40
			8	4	2	21.20	21.40	21.40
			8	7	2	21.20	21.40	21.30
			15	0	2	21.10	21.40	21.50
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						20407	20525	20643
						824.7 MHz	836.5 MHz	848.3 MHz
LTE Band 5	1.4	QPSK	1	0	0	23.50	23.50	23.50
			1	3	0	23.50	23.50	23.50
			1	5	0	23.50	23.40	23.50
			3	0	0	23.40	23.50	23.50
			3	1	0	23.40	23.50	23.50
			3	3	0	23.40	23.50	23.50
			6	0	1	22.30	22.50	22.50
		16QAM	1	0	1	22.30	22.50	22.50
			1	3	1	22.50	22.50	22.50
			1	5	1	22.50	22.50	22.50
			3	0	1	22.50	22.50	22.50
			3	1	1	22.50	22.40	22.50
			3	3	1	22.40	22.40	22.50
			6	0	2	21.10	21.20	21.40

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)
						23790
						710 MHz
LTE Band 17	10	QPSK	1	0	0	22.50
			1	25	0	22.50
			1	49	0	22.50
			25	0	1	21.50
			25	12	1	21.50
			25	25	1	21.50
			50	0	1	21.50
		16QAM	1	0	1	21.50
			1	25	1	21.50
			1	49	1	21.50
			25	0	2	20.50
			25	12	2	20.50
			25	25	2	20.50
			50	0	2	20.50
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)
						23790
						710 MHz
LTE Band 17	5	QPSK	1	0	0	22.50
			1	12	0	22.50
			1	24	0	22.50
			12	0	1	21.50
			12	7	1	21.50
			12	13	1	21.50
			25	0	1	21.50
		16QAM	1	0	1	21.50
			1	12	1	21.50
			1	24	1	21.50
			12	0	2	20.50
			12	7	2	20.50
			12	13	2	20.50
			25	0	2	20.50

9. PEAK TO AVERAGE RATIO

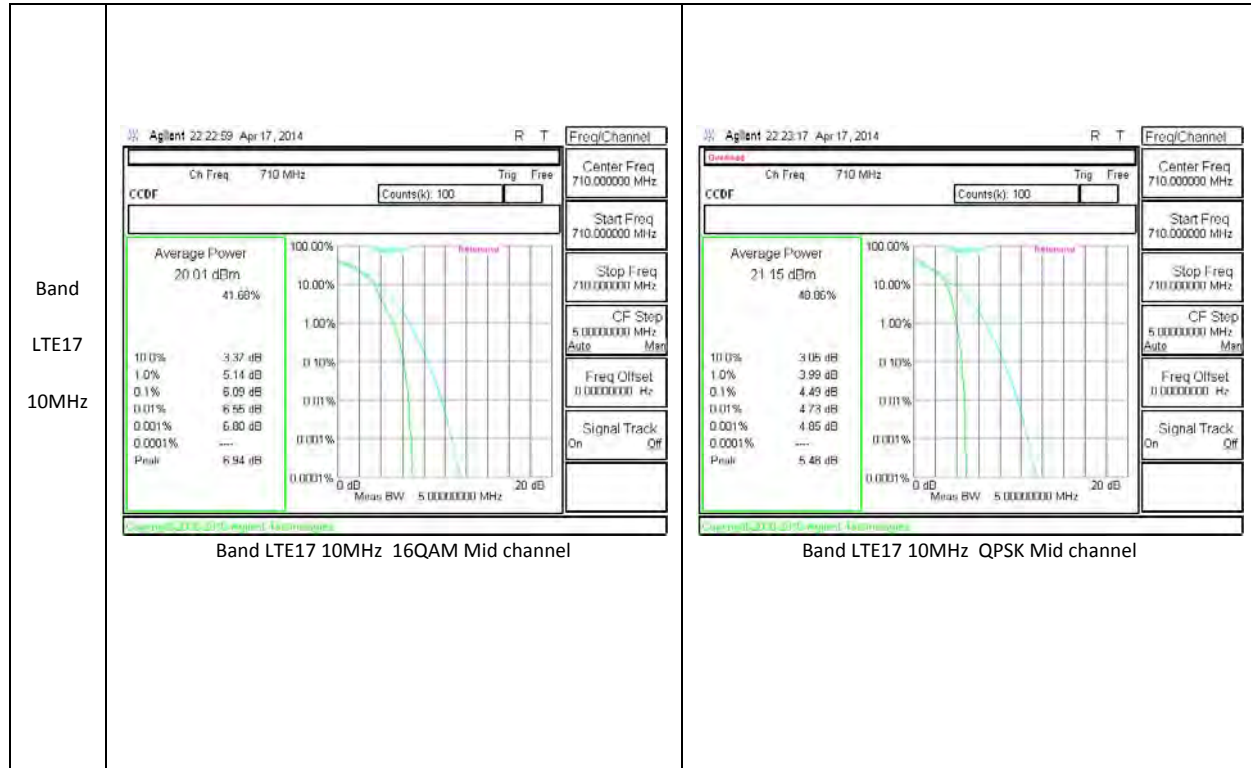
Test Procedure

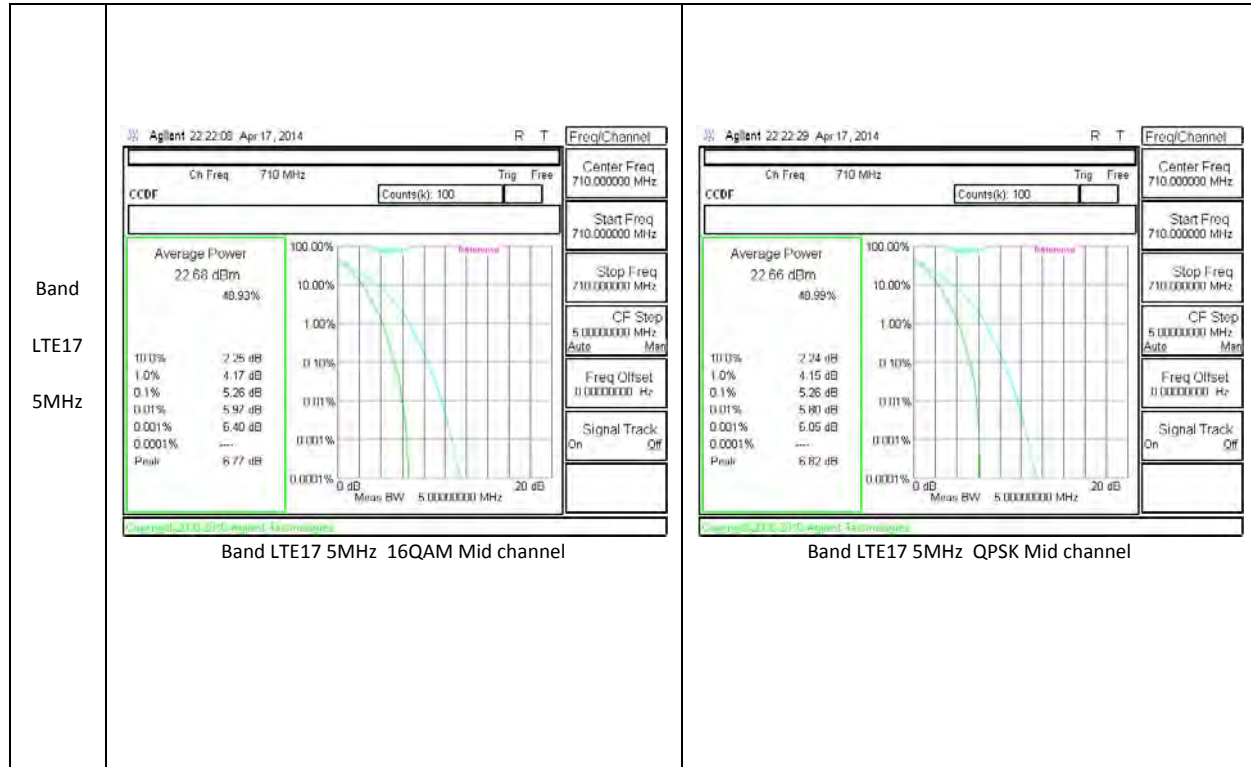
Per KDB 971168 D01 Power Meas License Digital Systems v02r01

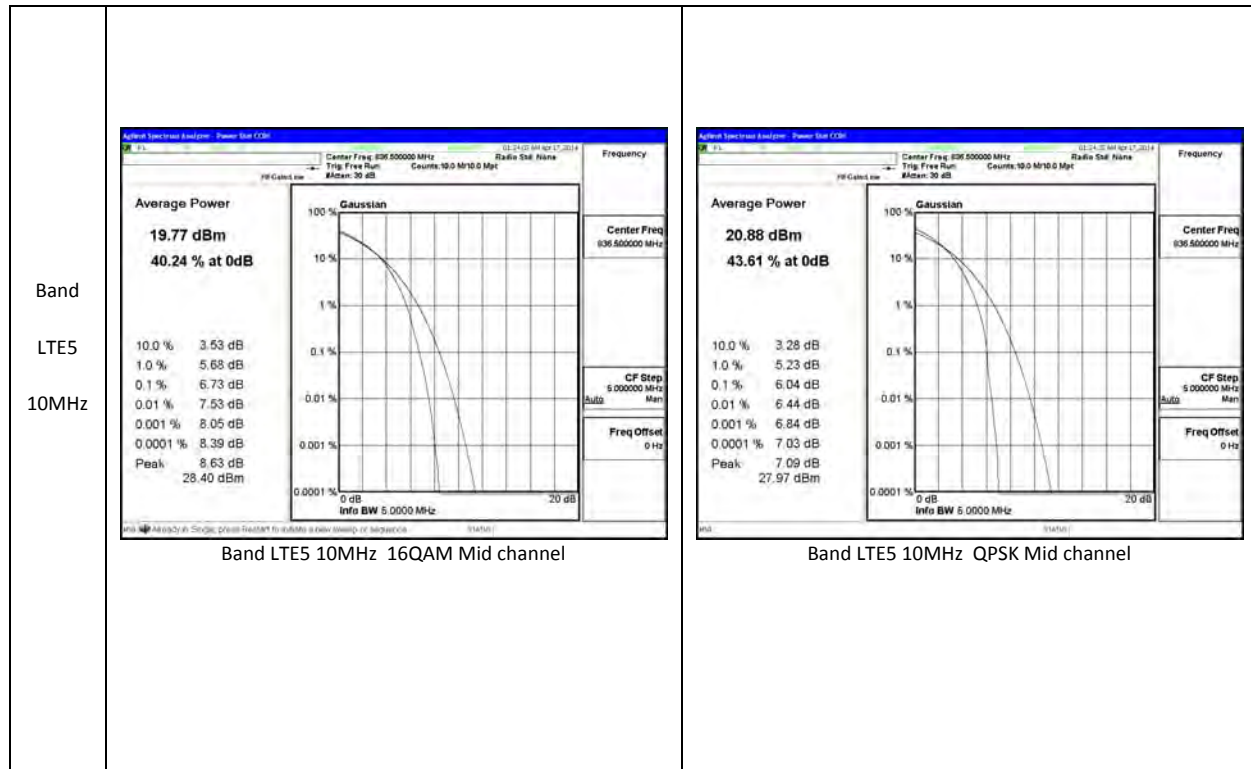
Test Spec

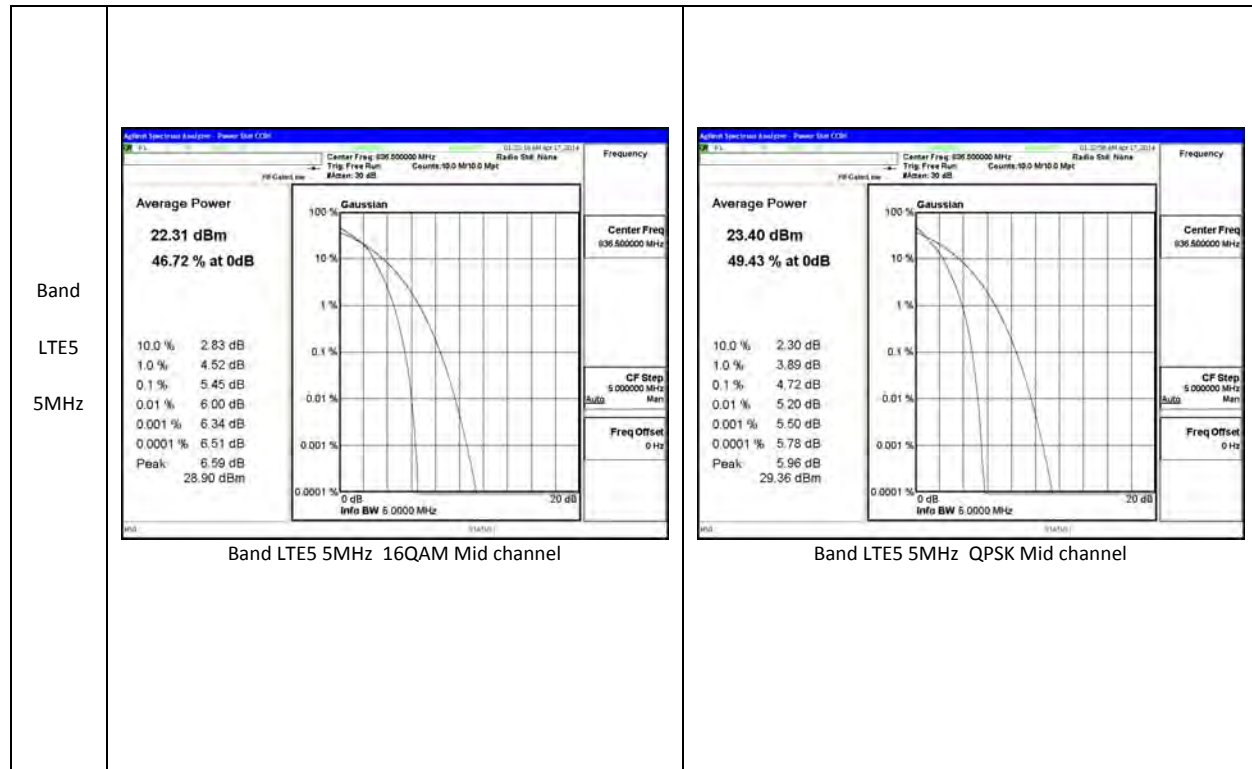
In addition, when the transmitter power is measured in terms of average value, the peak-to-average ratio of the power shall not exceed 13 dB.

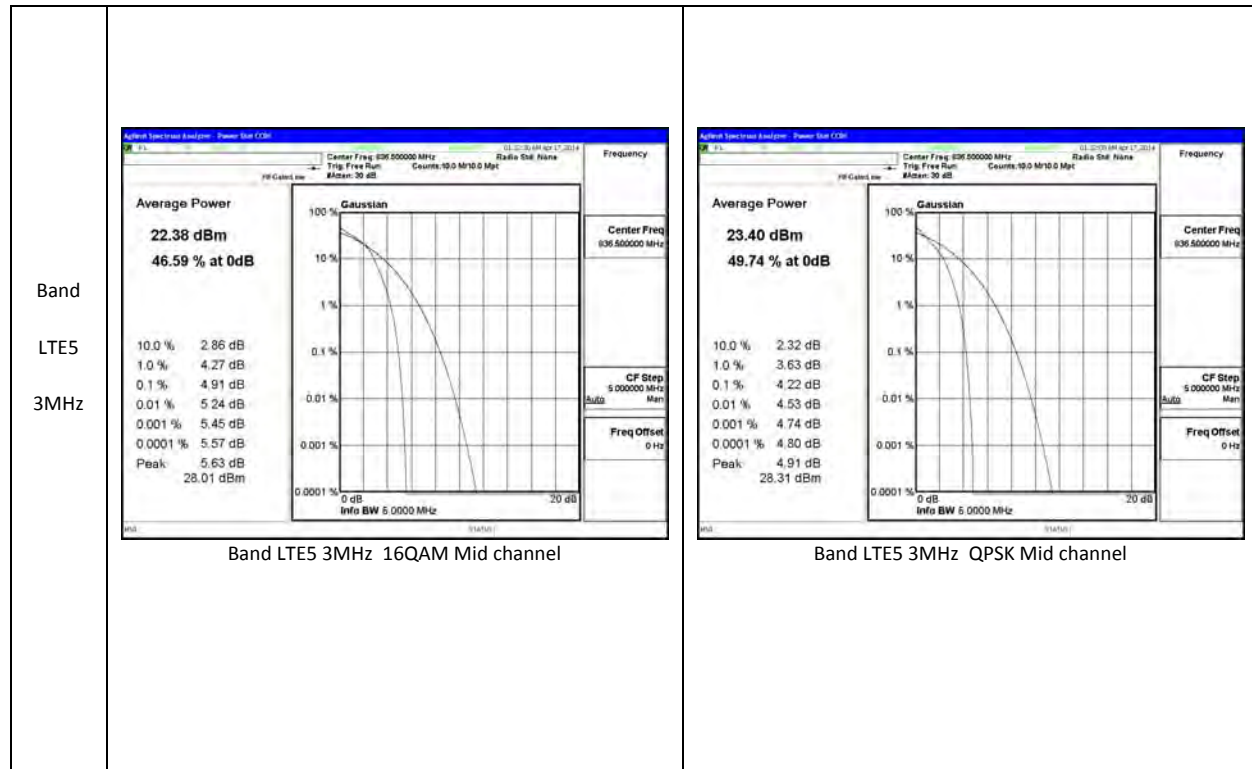
9.1. CONDUCTED PEAK TO AVERAGE RESULT

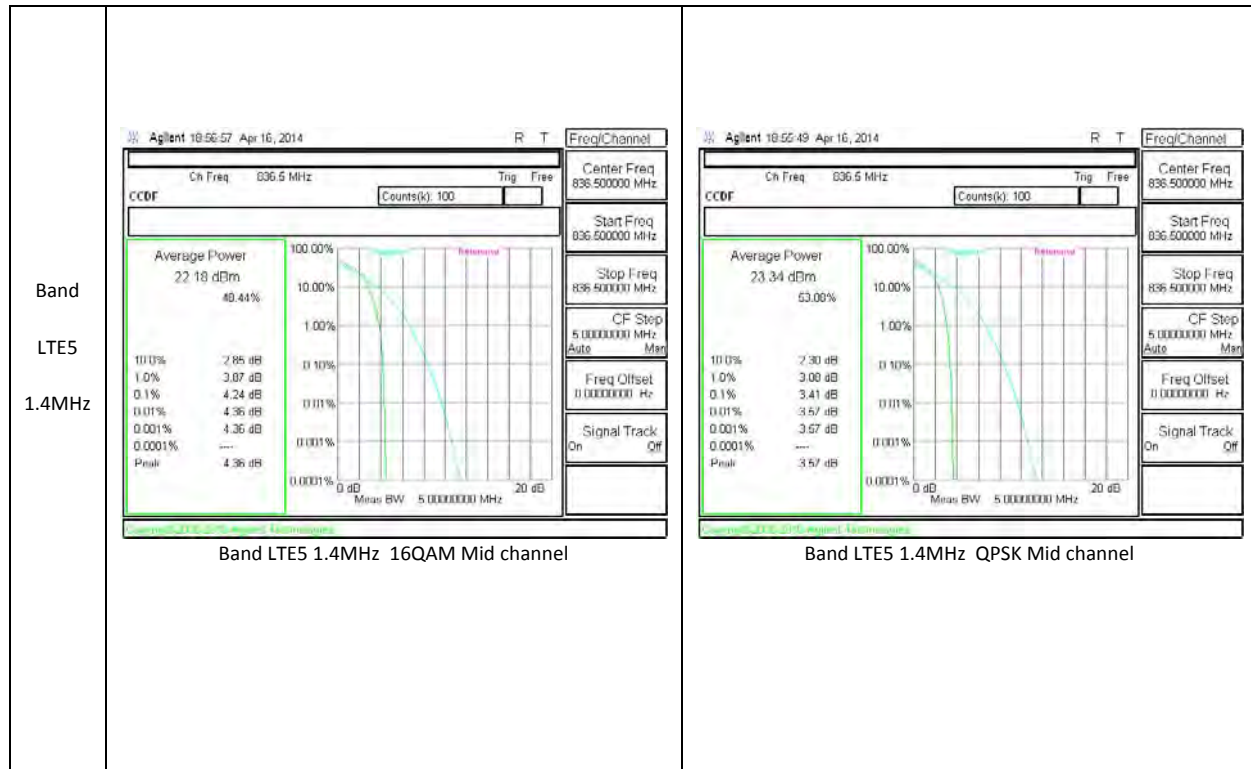


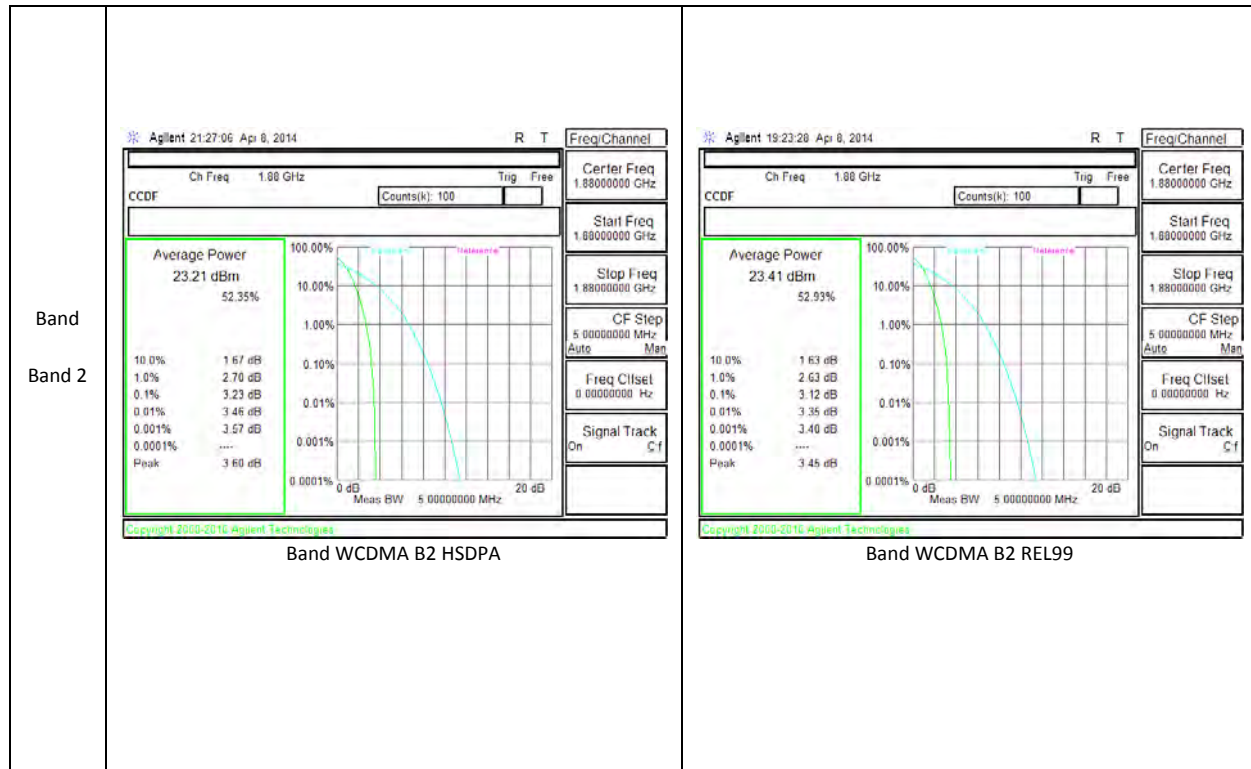


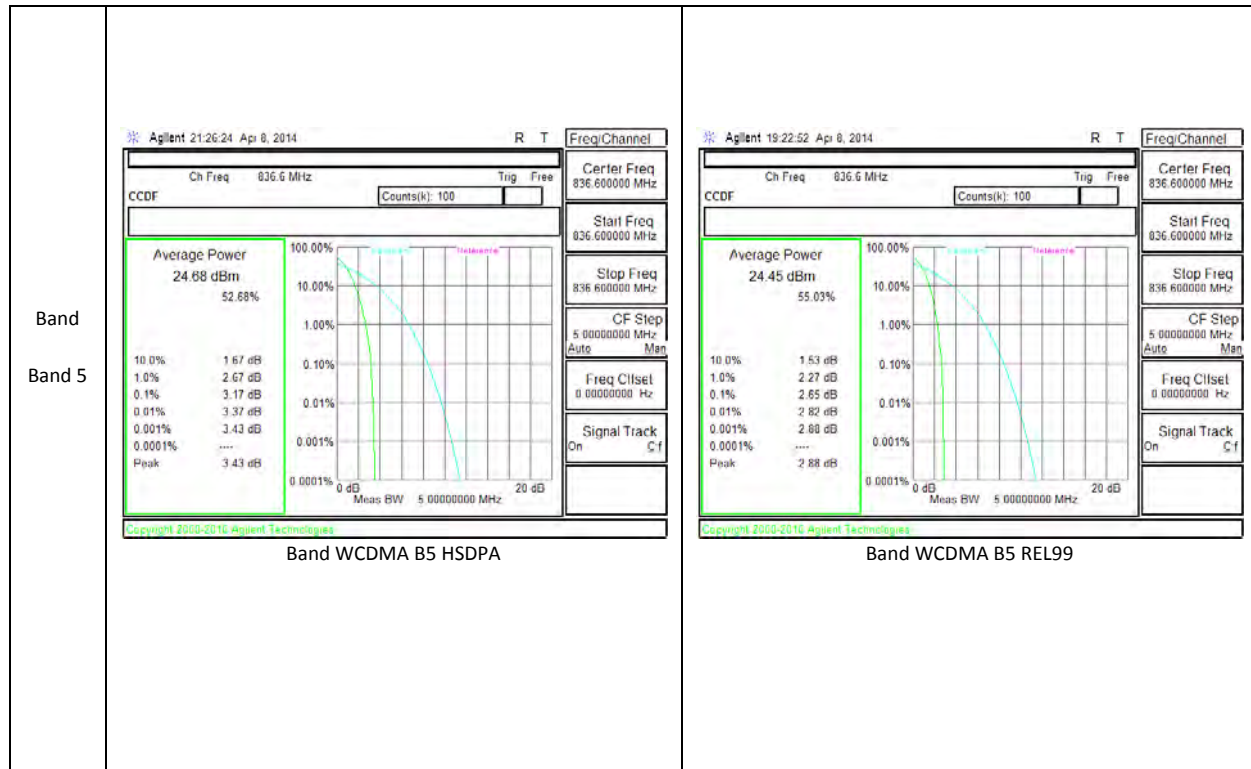












10. LIMITS AND CONDUCTED RESULTS

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)

10.1.1. OCCUPIED BANDWIDTH RESULTS

Band	Mode	Channel	f (MHz)	99% BW (KHz)	-26dB BW (KHz)
GSM1900	GPRS	512	1850.2	256	334
		661	1880	247	328
		810	1909.8	252	326
Band 5	REL99	4132	826.4	4180	4719
		4183	836.6	4140	4746
		4233	846.6	4173	4721
	HSDPA	4132	826.4	4175	4676
		4183	836.6	4182	4706
		4233	846.6	4117	4681
Band 2	REL99	9262	1852.4	4169	4730
		9400	1880	4122	4711
		9538	1907.6	4185	4708
	HSDPA	9262	1852.4	4146	4690
		9400	1880	4155	4698
		9538	1907.6	4158	4700

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	8.918	9.566
			50/0	710	8.877	9.606
			50/0	711	8.895	9.562
		16QAM	50/0	709	8.907	9.564
			50/0	710	8.887	9.556
			50/0	711	8.896	9.550

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE17	5	QPSK	25/0	706.5	4.471	4.810
			25/0	710	4.460	4.836
			25/0	713.5	4.455	4.798
		16QAM	25/0	706.5	4.466	4.835
			25/0	710	4.470	4.837
			25/0	713.5	4.466	4.838

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE5	10	QPSK	50/0	829	8.941	9.514
			50/0	836.5	8.926	9.511
			50/0	844	8.943	9.573
		16QAM	50/0	829	8.932	9.553
			50/0	836.5	8.933	9.550
			50/0	844	8.935	9.481

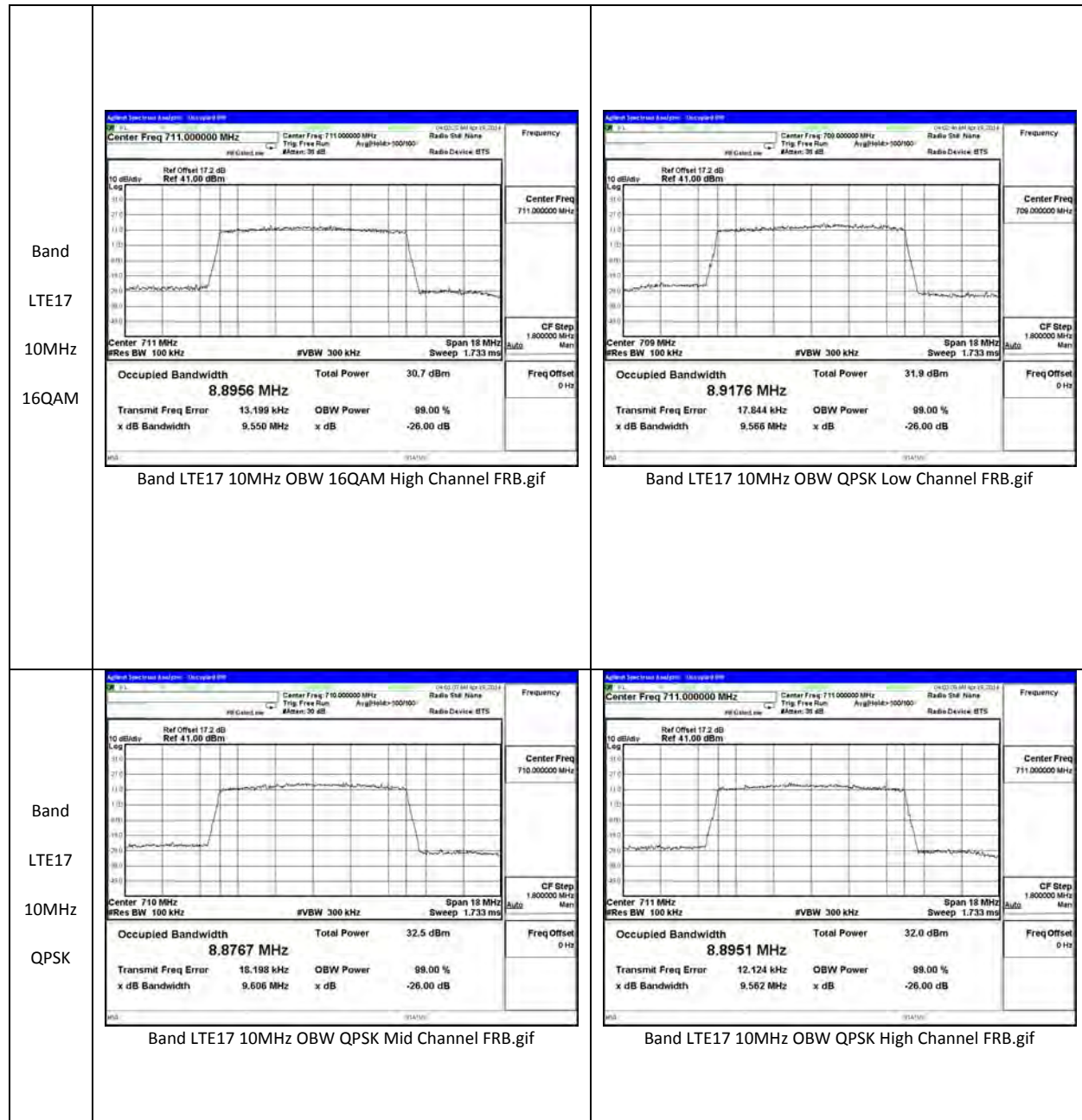
Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE5	5	QPSK	25/0	826.5	4.460	4.807
			25/0	836.5	4.459	4.802
			25/0	846.5	4.460	4.817
		16QAM	25/0	826.5	4.471	4.814
			25/0	836.5	4.462	4.843

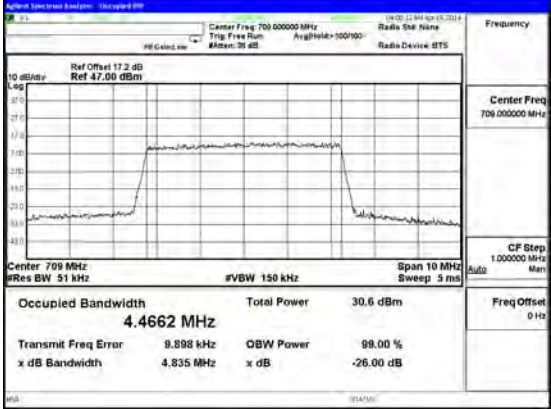
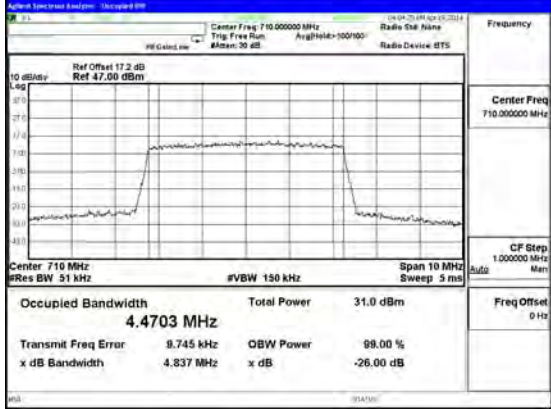
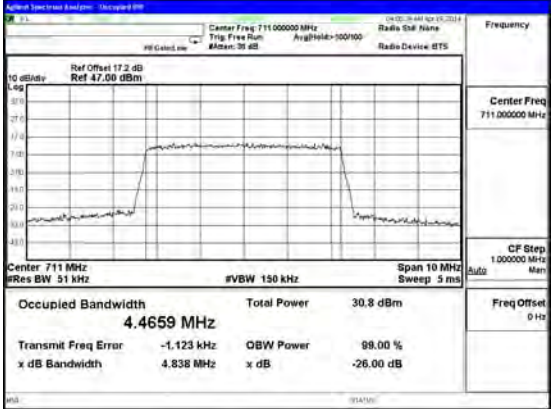
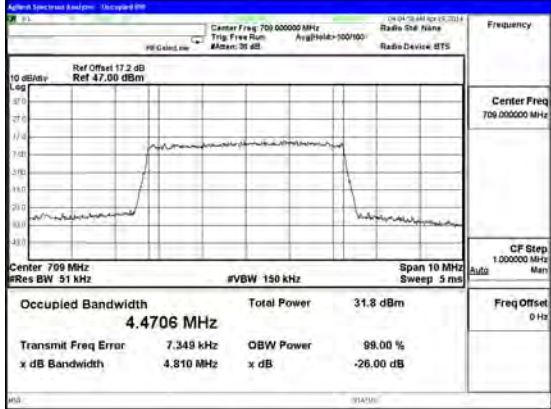
			25/0	846.5	4.472	4.849
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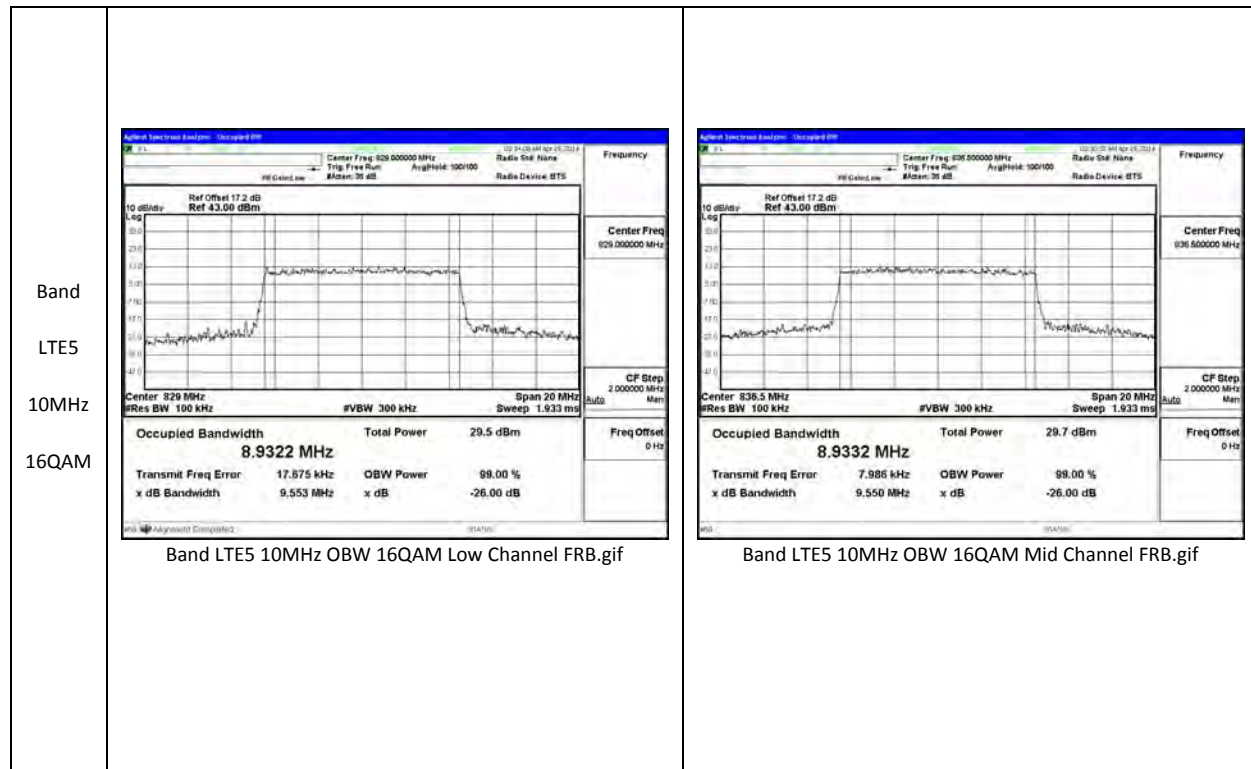
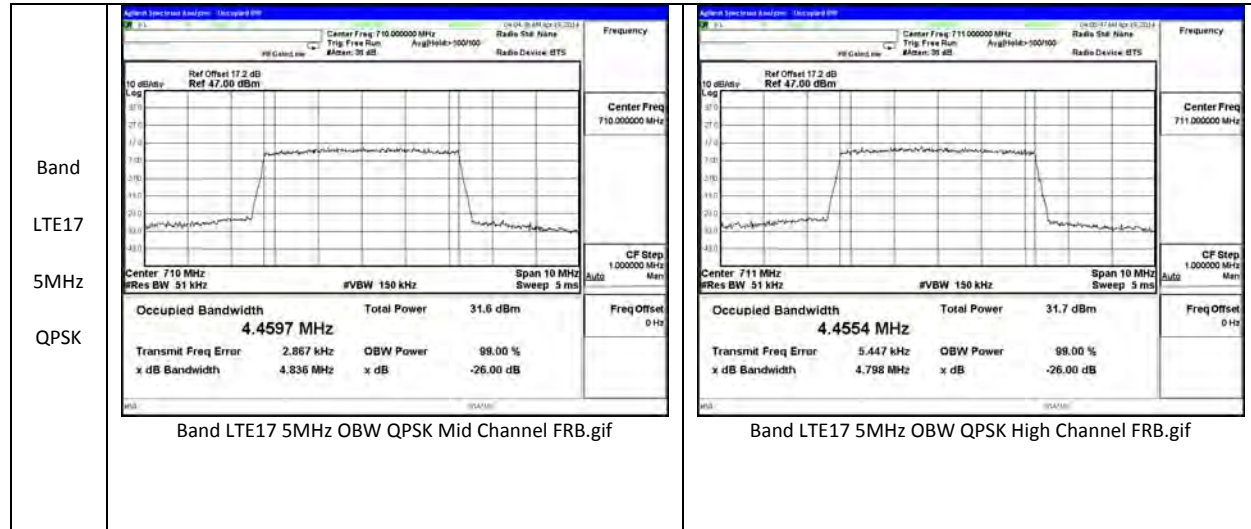
Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE5	3	QPSK	15/0	825.5	2.624	2.857
			15/0	836.5	2.654	2.872
			15/0	847.5	2.650	2.831
		16QAM	15/0	825.5	2.677	2.952
			15/0	836.5	2.684	3.021
			15/0	847.5	2.683	2.954

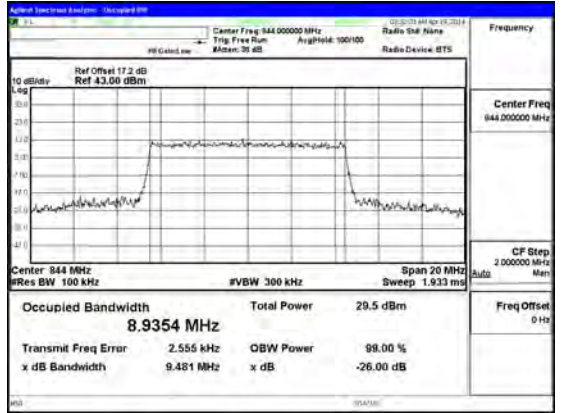
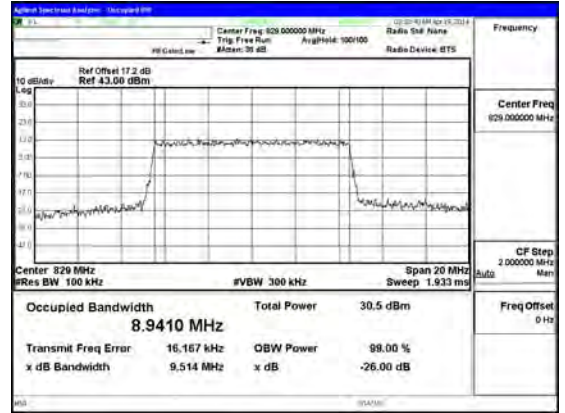
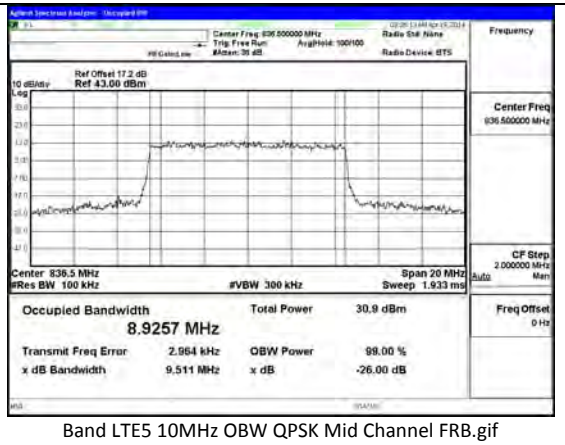
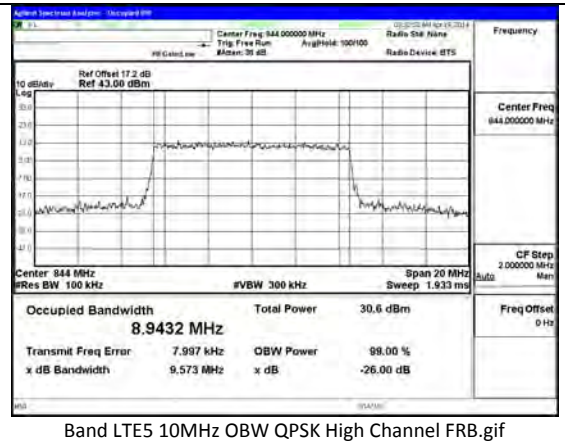
Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE5	1.4	QPSK	6/0	824.7	1.084	1.289
			6/0	836.5	1.079	1.284
			6/0	848.3	1.082	1.304
		16QAM	6/0	824.7	1.077	1.294
			6/0	836.5	1.085	1.313
			6/0	848.3	1.086	1.328

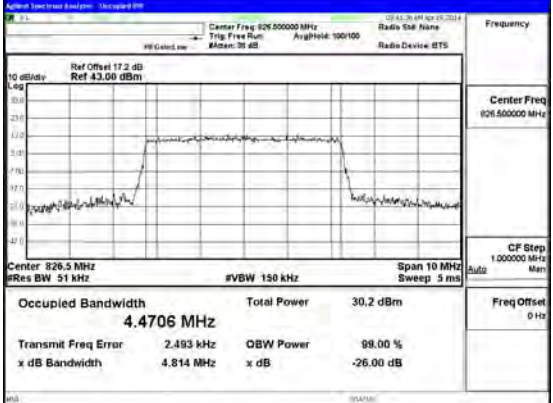
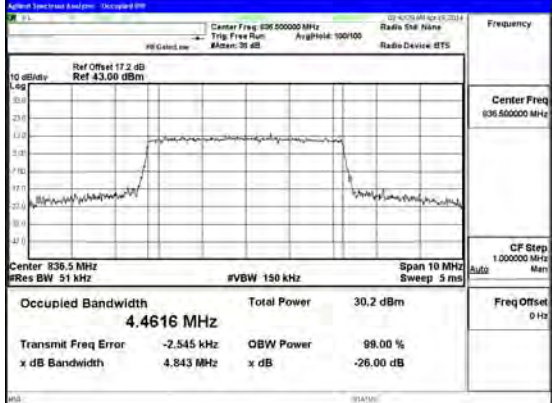
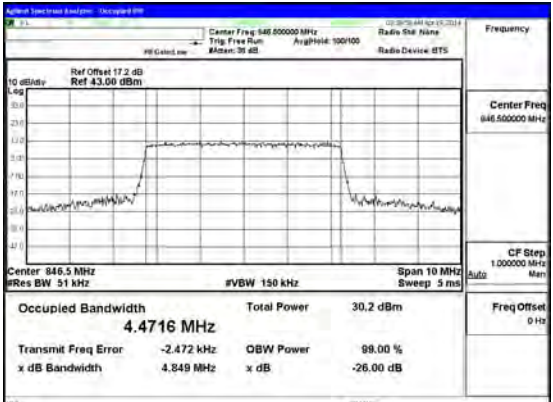
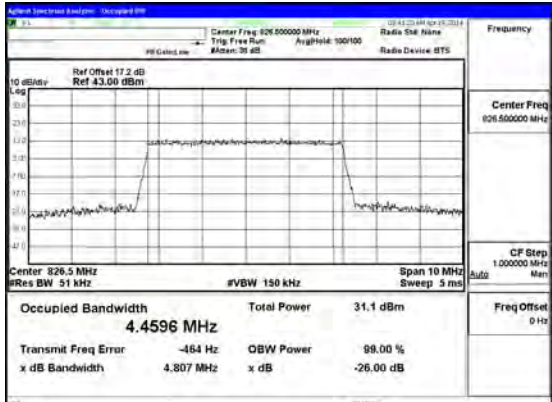
10.1.3. OCCUPIED BANDWIDTH PLOTS

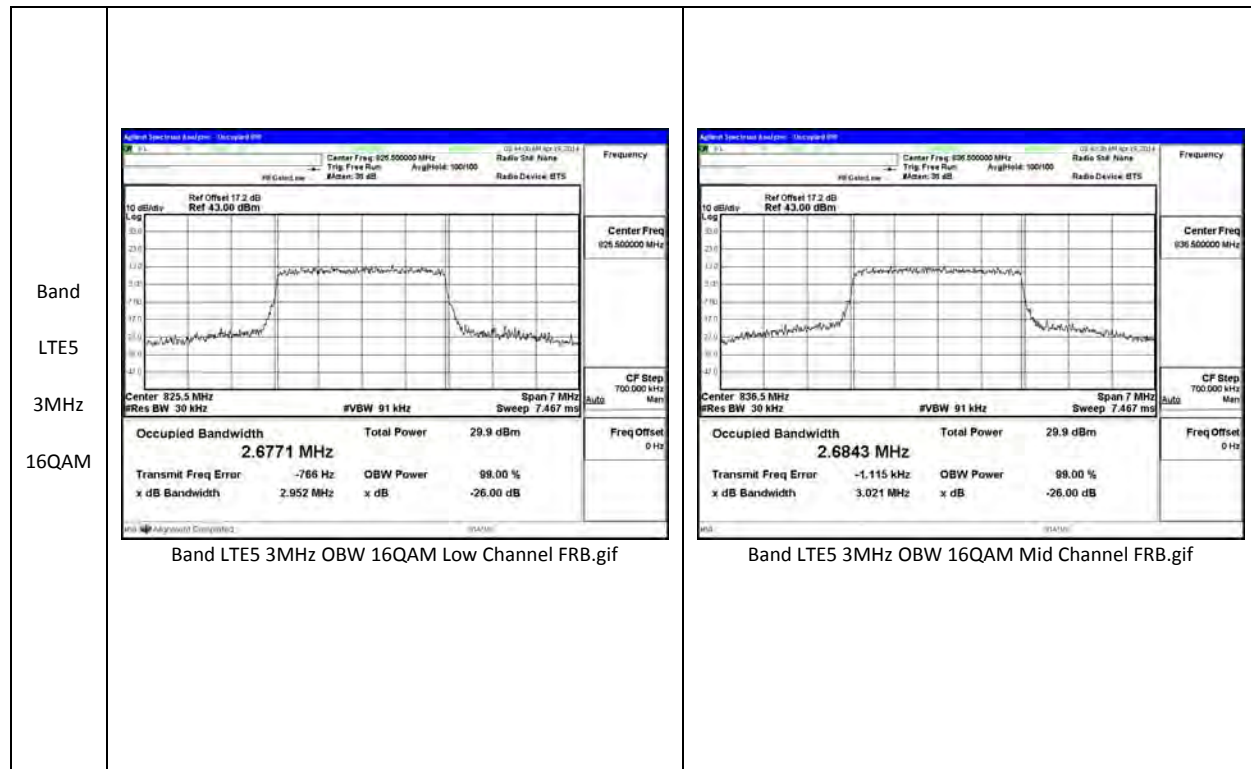
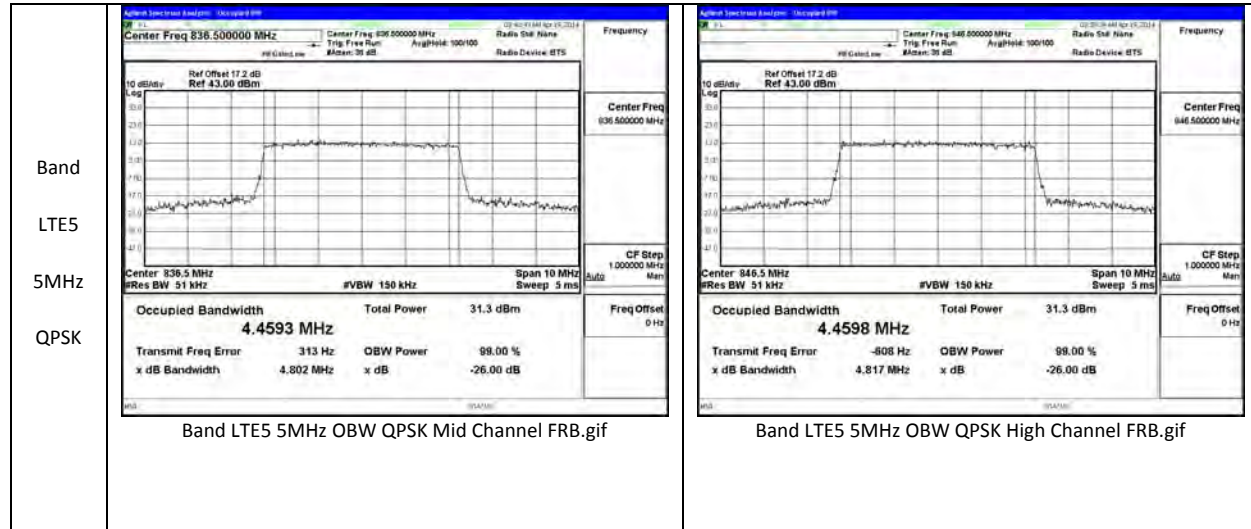


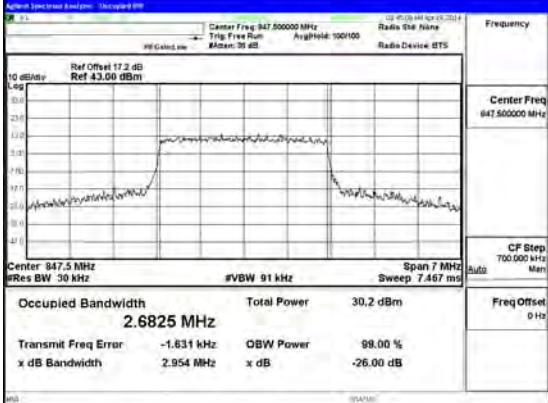
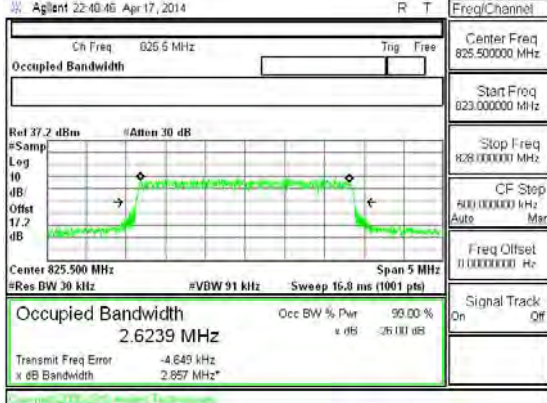
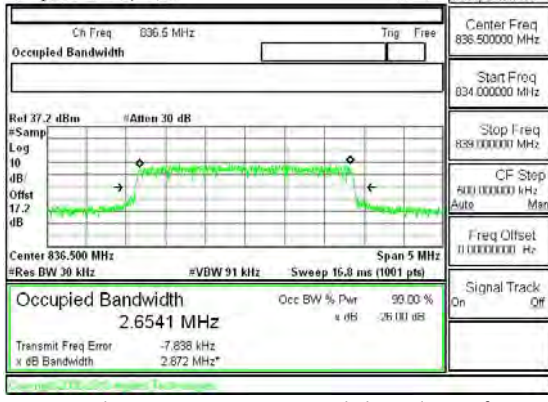
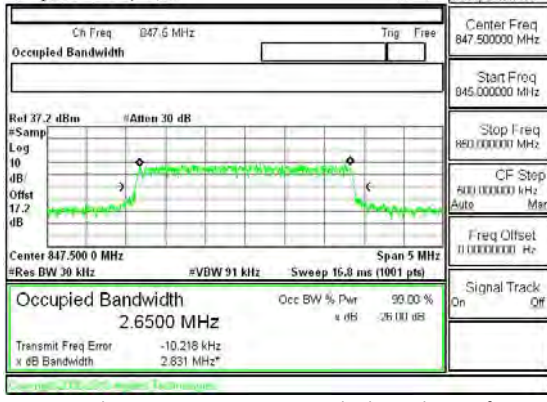
Band LTE17 5MHz 16QAM	 Band LTE17 5MHz OBW 16QAM Low Channel FRB.gif	 Band LTE17 5MHz OBW 16QAM Mid Channel FRB.gif
Band LTE17 5MHz 16QAM	 Band LTE17 5MHz OBW 16QAM High Channel FRB.gif	 Band LTE17 5MHz OBW QPSK Low Channel FRB.gif

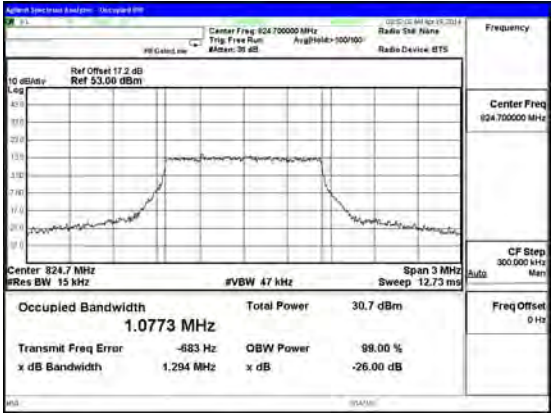
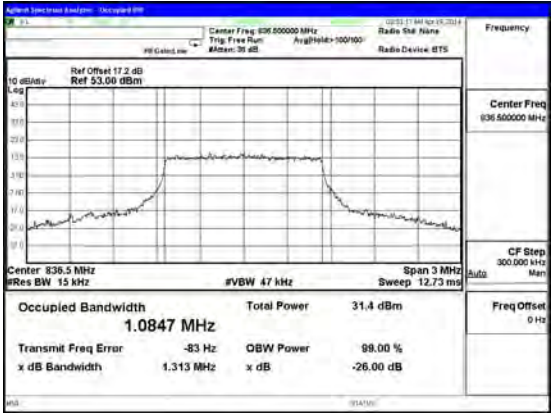
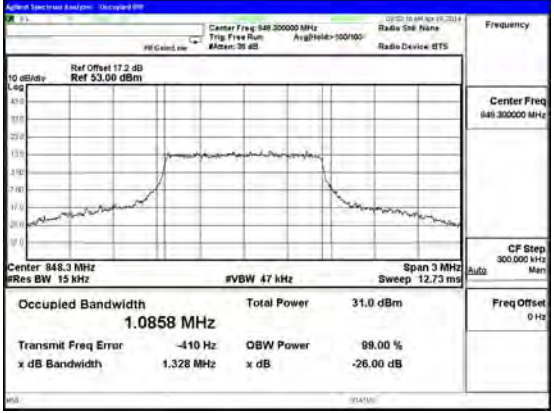
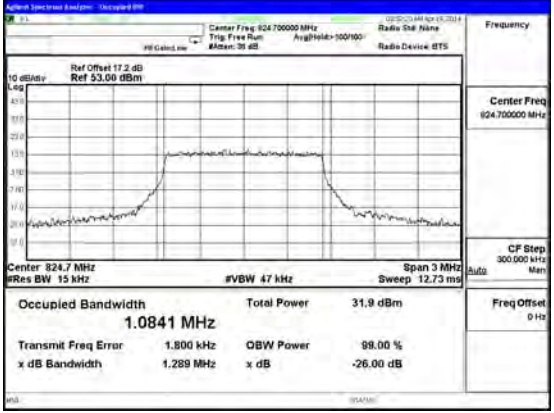


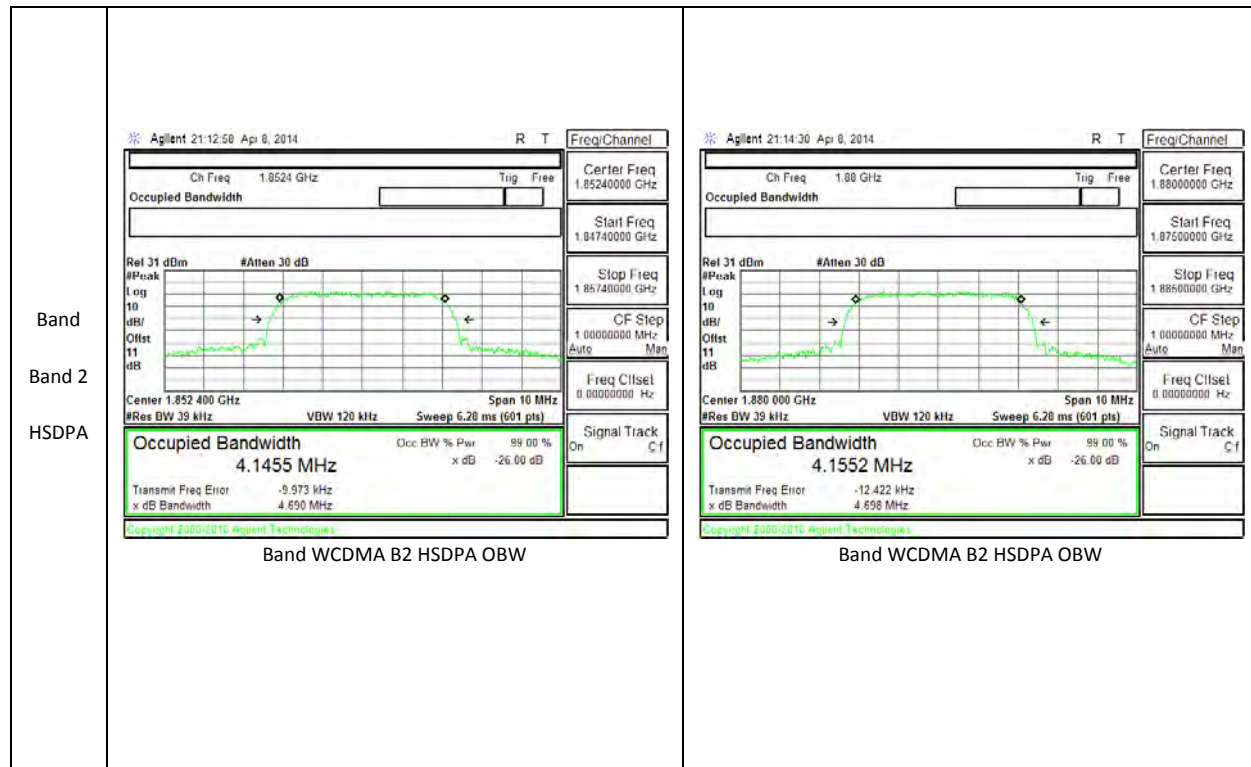
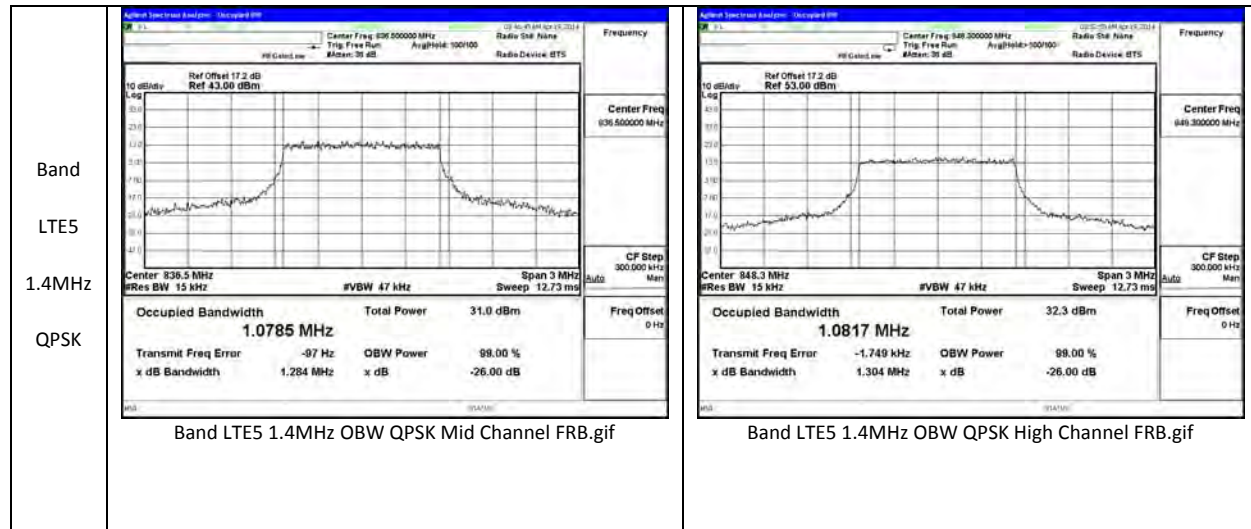
Band LTE5 10MHz 16QAM	 Band LTE5 10MHz OBW 16QAM High Channel FRB.gif	 Band LTE5 10MHz OBW QPSK Low Channel FRB.gif
Band LTE5 10MHz QPSK	 Band LTE5 10MHz OBW QPSK Mid Channel FRB.gif	 Band LTE5 10MHz OBW QPSK High Channel FRB.gif

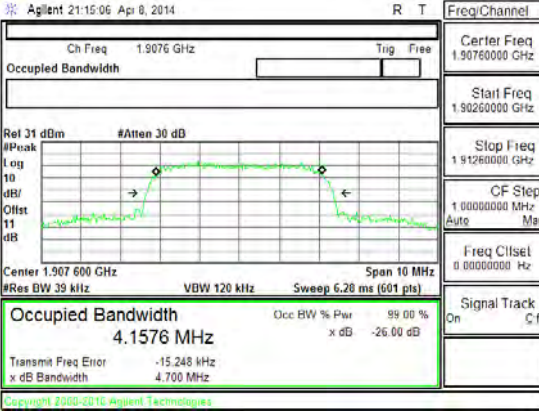
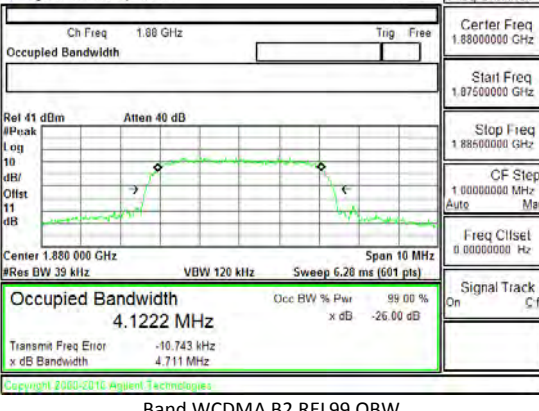
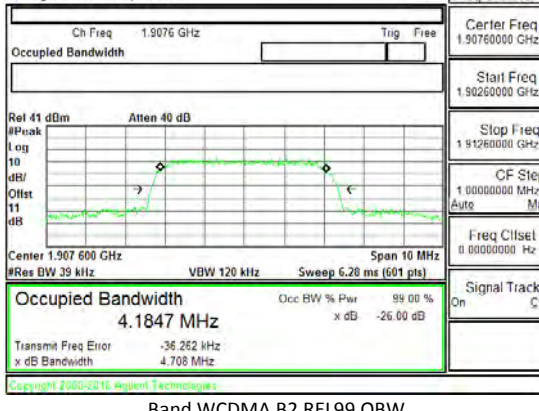
Band LTE5 5MHz 16QAM	 Band LTE5 5MHz OBW 16QAM Low Channel FRB.gif	 Band LTE5 5MHz OBW 16QAM Mid Channel FRB.gif
Band LTE5 5MHz 16QAM	 Band LTE5 5MHz OBW 16QAM High Channel FRB.gif	 Band LTE5 5MHz OBW QPSK Low Channel FRB.gif

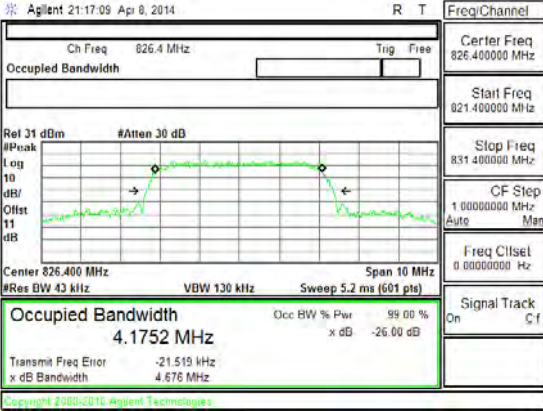
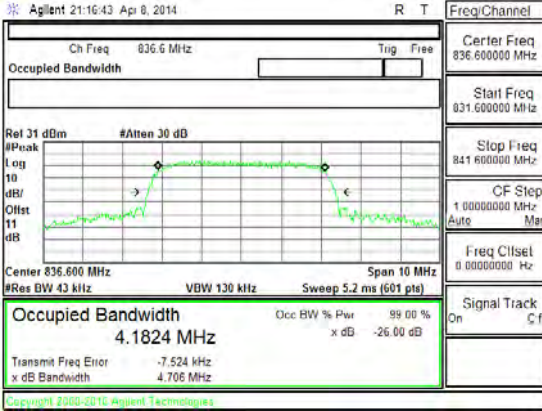
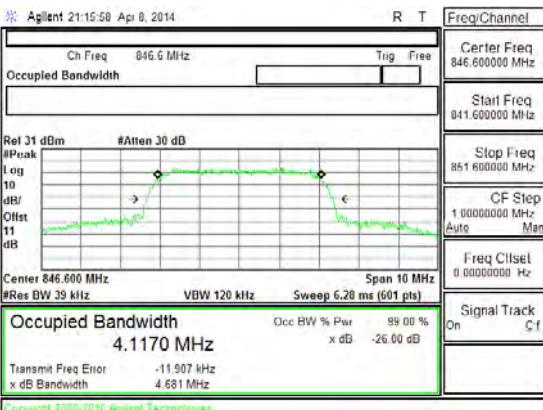
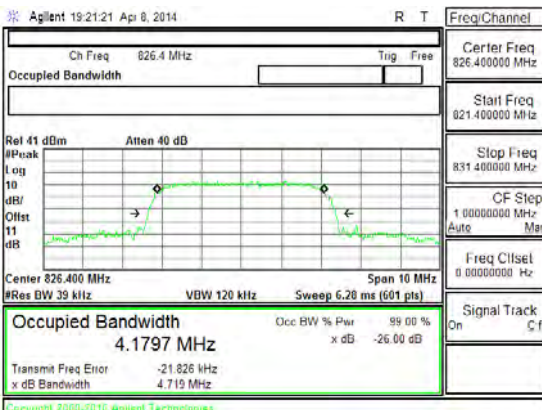


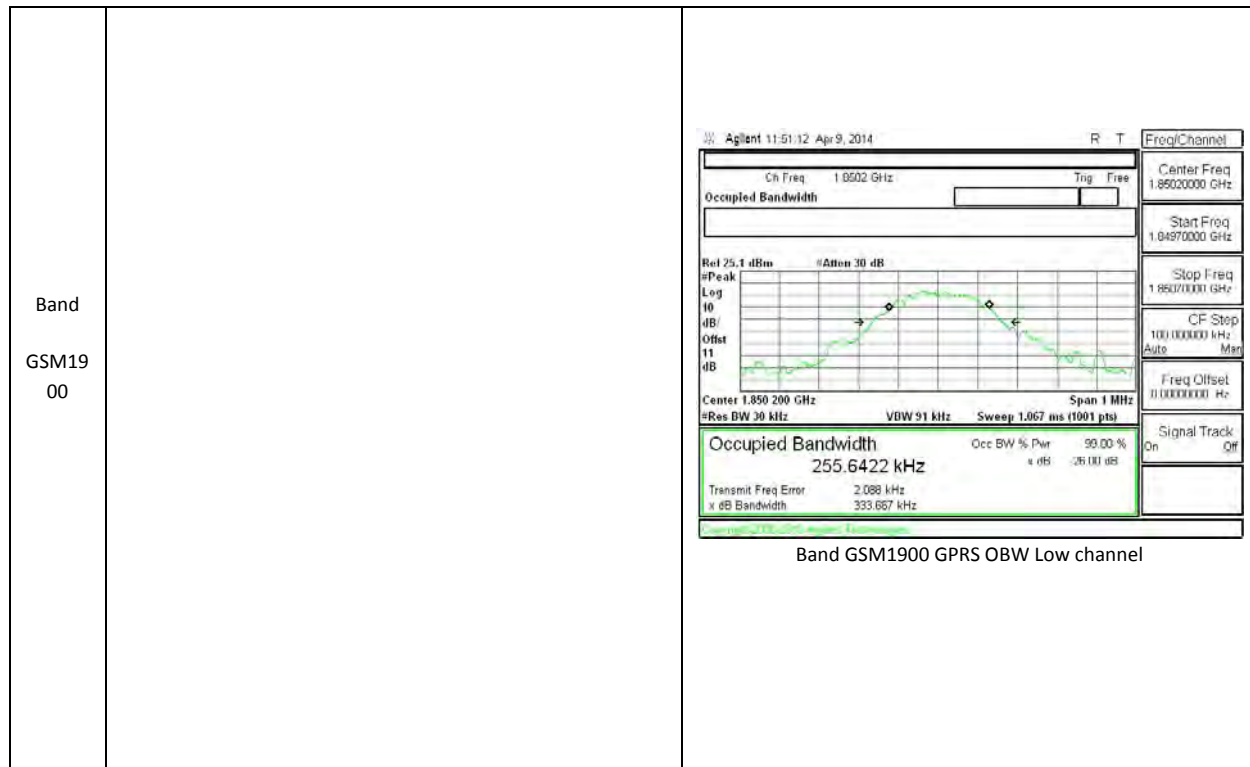
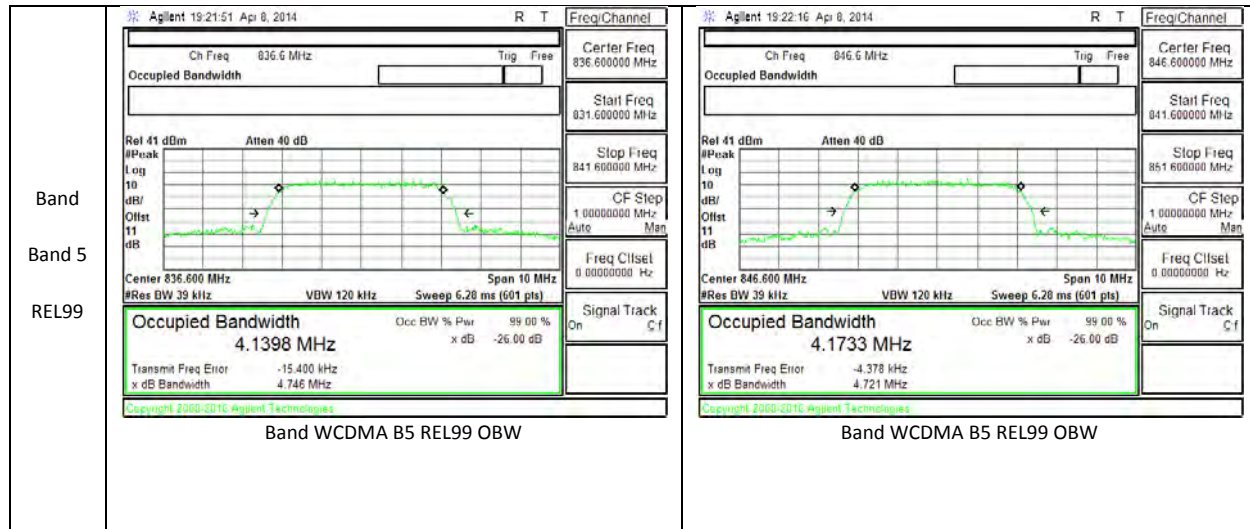
Band LTE5 3MHz 16QAM	 Agilent Spectrum Analyzer - Occupied BW Center Freq 847.50000 MHz Ref Offset 17.2 dB Ref 43.00 dBm Occupied Bandwidth: 2.6825 MHz Total Power: 30.2 dBm Transmit Freq Error: -1.631 kHz OBW Power: 99.00 % x dB Bandwidth: 2.954 MHz x dB: -26.00 dB Band LTE5 3MHz OBW 16QAM High Channel FRB.gif	 Agilent 22-40-46 Apr 17, 2014 Ch Freq 825.5 MHz Occupied Bandwidth Rel 37.2 dBm #Atten 30 dB Occupied Bandwidth: 2.6239 MHz Transmit Freq Error: -4.649 kHz x dB Bandwidth: 2.657 MHz* Band LTE5 3MHz OBW QPSK Low Channel FRB.gif
Band LTE5 3MHz QPSK	 Agilent 22-47-19 Apr 17, 2014 Ch Freq 836.5 MHz Occupied Bandwidth Rel 37.2 dBm #Atten 30 dB Occupied Bandwidth: 2.6541 MHz Transmit Freq Error: -7.838 kHz x dB Bandwidth: 2.672 MHz* Band LTE5 3MHz OBW QPSK Mid Channel FRB.gif	 Agilent 22-46-43 Apr 17, 2014 Ch Freq 847.5 MHz Occupied Bandwidth Rel 37.2 dBm #Atten 30 dB Occupied Bandwidth: 2.6500 MHz Transmit Freq Error: -10.218 kHz x dB Bandwidth: 2.631 MHz* Band LTE5 3MHz OBW QPSK High Channel FRB.gif

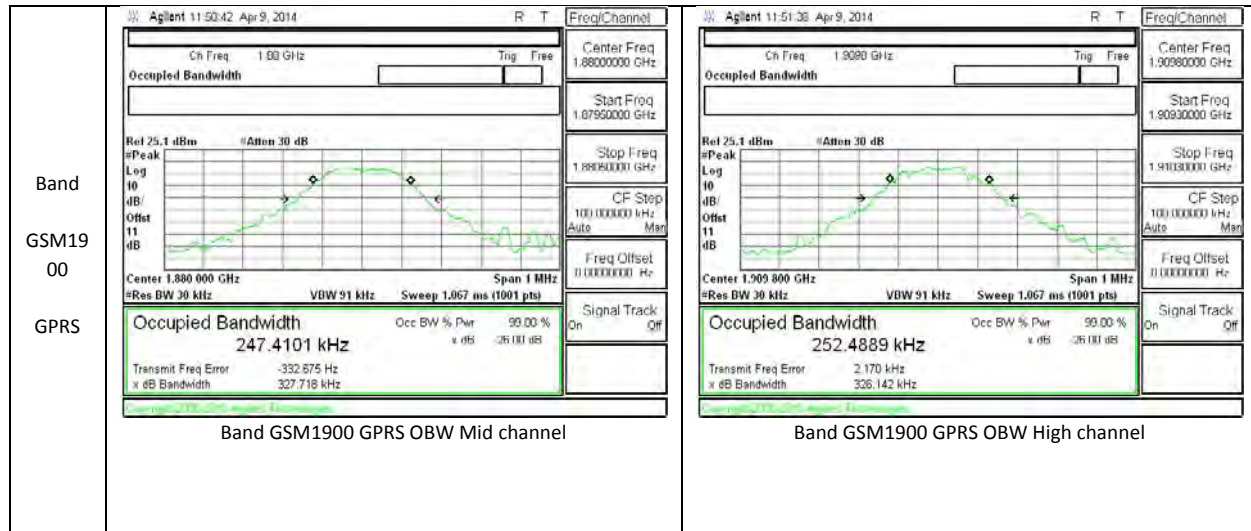
Band LTE5 1.4MHz 16QAM	 Band LTE5 1.4MHz OBW 16QAM Low Channel FRB.gif	 Band LTE5 1.4MHz OBW 16QAM Mid Channel FRB.gif
Band LTE5 1.4MHz 16QAM	 Band LTE5 1.4MHz OBW 16QAM High Channel FRB.gif	 Band LTE5 1.4MHz OBW QPSK Low Channel FRB.gif



Band Band 2 HSDPA	 Agilent 21:15:06 Apr 8, 2014 Ch Freq 1.9076 GHz Center Freq 1.90760000 GHz Start Freq 1.90260000 GHz Stop Freq 1.91260000 GHz CF Step 1.00000000 MHz Freq Clist 0.00000000 Hz Signal Track On Occupied Bandwidth 4.1576 MHz Transmit Freq Error -15.248 kHz x dB Bandwidth 4.700 MHz Occ BW % Per 99.00 % x dB -26.00 dB Band WCDMA B2 HSDPA OBW
Band Band 2 REL99	 Agilent 19:19:46 Apr 8, 2014 Ch Freq 1.88 GHz Center Freq 1.88000000 GHz Start Freq 1.87500000 GHz Stop Freq 1.88500000 GHz CF Step 1.00000000 MHz Freq Clist 0.00000000 Hz Signal Track On Occupied Bandwidth 4.1222 MHz Transmit Freq Error -10.743 kHz x dB Bandwidth 4.711 MHz Occ BW % Per 99.00 % x dB -26.00 dB Band WCDMA B2 REL99 OBW
Agilent 19:19:14 Apr 8, 2014 Ch Freq 1.8524 GHz Center Freq 1.85240000 GHz Start Freq 1.84740000 GHz Stop Freq 1.85740000 GHz CF Step 1.00000000 MHz Freq Clist 0.00000000 Hz Signal Track On Occupied Bandwidth 4.1691 MHz Transmit Freq Error -2.726 kHz x dB Bandwidth 4.730 MHz Occ BW % Per 99.00 % x dB -26.00 dB Band WCDMA B2 REL99 OBW	 Agilent 19:20:10 Apr 8, 2014 Ch Freq 1.9076 GHz Center Freq 1.90760000 GHz Start Freq 1.90260000 GHz Stop Freq 1.91260000 GHz CF Step 1.00000000 MHz Freq Clist 0.00000000 Hz Signal Track On Occupied Bandwidth 4.1847 MHz Transmit Freq Error -36.262 kHz x dB Bandwidth 4.708 MHz Occ BW % Per 99.00 % x dB -26.00 dB Band WCDMA B2 REL99 OBW

Band Band 5 HSDPA	 Agilent 21:17:09 Apr 8, 2014 Ch Freq 826.4 MHz Center Freq 826.400000 MHz Start Freq 821.400000 MHz Stop Freq 831.400000 MHz CF Step 1.000000 MHz Freq Cllsel 0.000000 Hz Occupied Bandwidth 4.1752 MHz Transmit Freq Error -21.515 kHz Band WCDMA B5 HSDPA OBW	 Agilent 21:16:43 Apr 8, 2014 Ch Freq 836.6 MHz Center Freq 836.600000 MHz Start Freq 831.600000 MHz Stop Freq 841.600000 MHz CF Step 1.000000 MHz Freq Cllsel 0.000000 Hz Occupied Bandwidth 4.1824 MHz Transmit Freq Error -7.524 kHz Band WCDMA B5 HSDPA OBW
Band Band 5 HSDPA	 Agilent 21:15:58 Apr 8, 2014 Ch Freq 846.6 MHz Center Freq 846.600000 MHz Start Freq 841.600000 MHz Stop Freq 851.600000 MHz CF Step 1.000000 MHz Freq Cllsel 0.000000 Hz Occupied Bandwidth 4.1170 MHz Transmit Freq Error -11.907 kHz Band WCDMA B5 HSDPA OBW	 Agilent 19:21:21 Apr 8, 2014 Ch Freq 826.4 MHz Center Freq 826.400000 MHz Start Freq 821.400000 MHz Stop Freq 831.400000 MHz CF Step 1.000000 MHz Freq Cllsel 0.000000 Hz Occupied Bandwidth 4.1797 MHz Transmit Freq Error -21.826 kHz Band WCDMA B5 REL99 OBW





10.2. BAND EDGE EMISSIONS

RULE PART(S)

FCC: §22.359, §24.238

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.

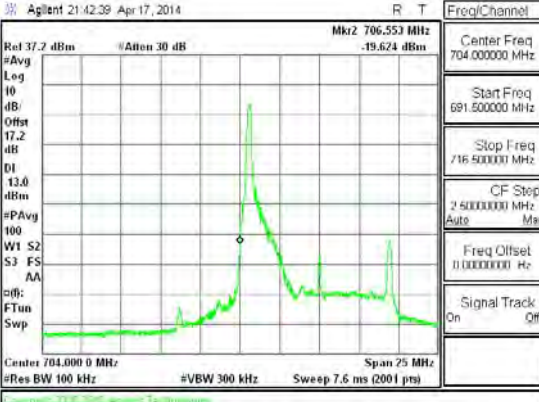
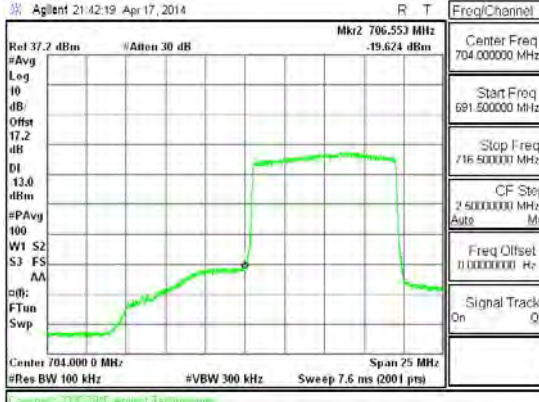
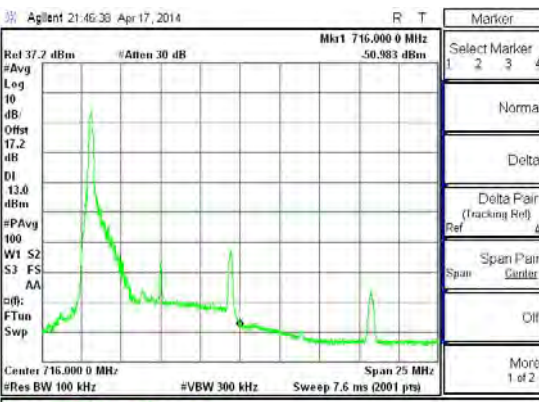
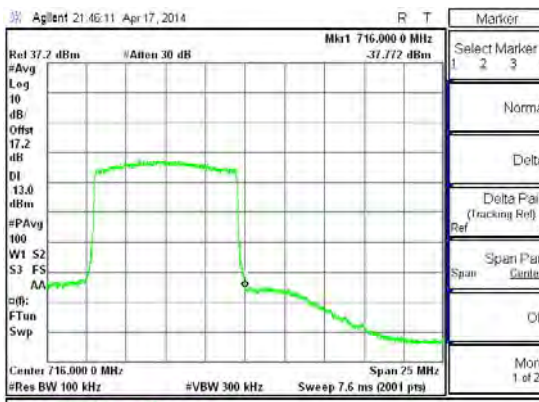
TEST PROCEDURE

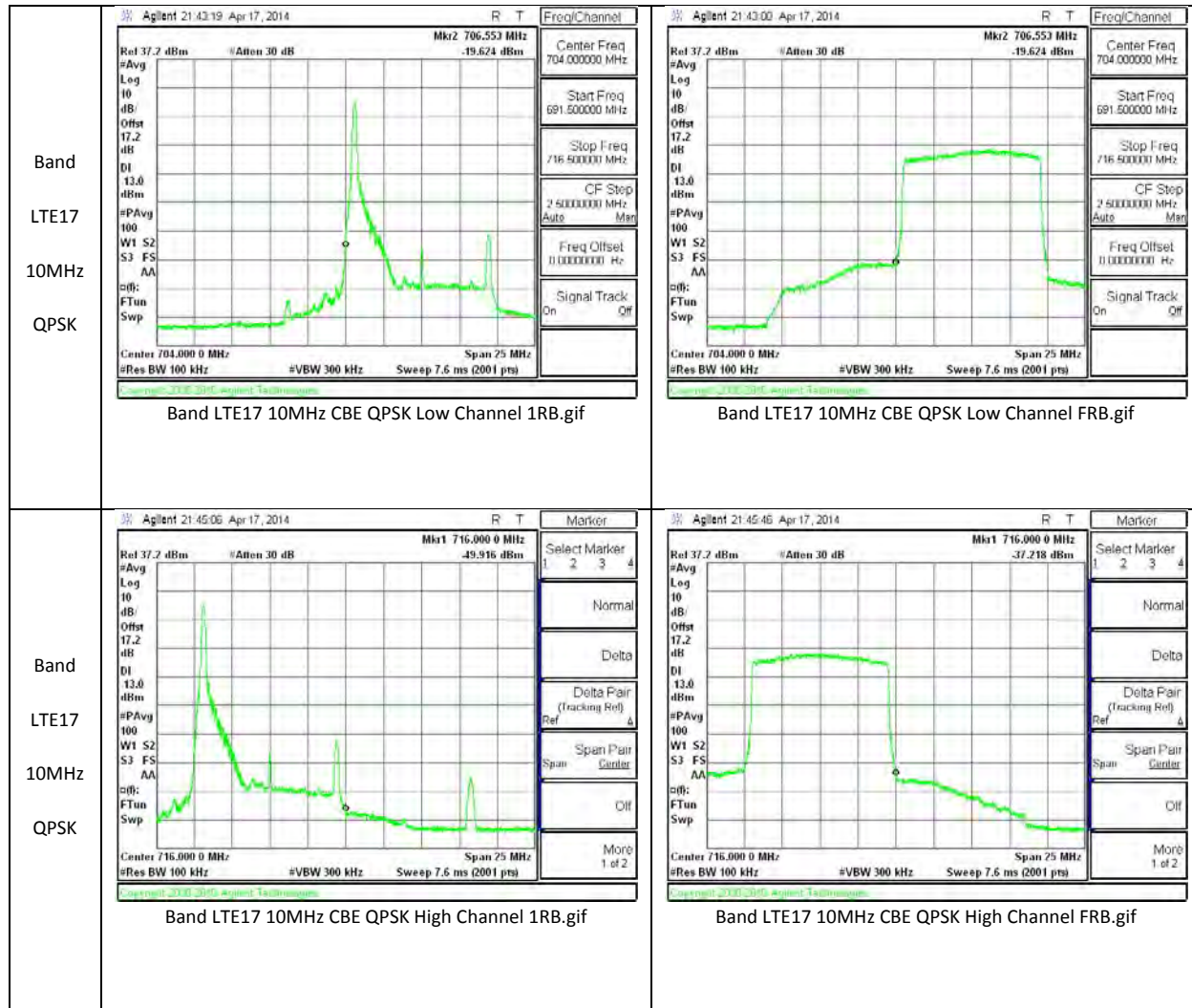
Per KDB 971168 D01 Power Meas License Digital Systems v02r01

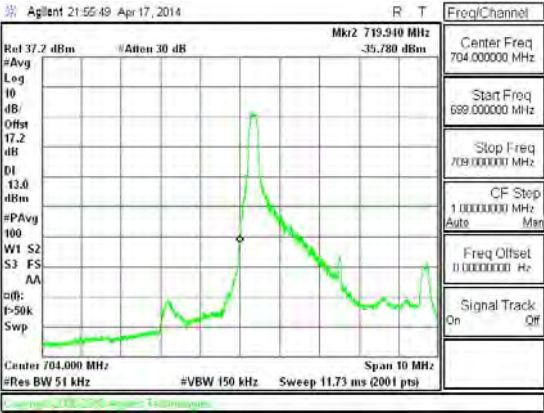
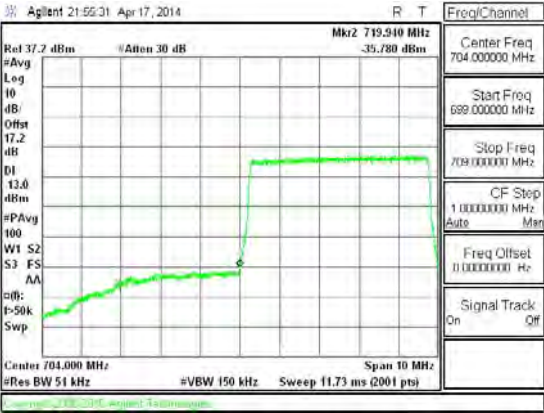
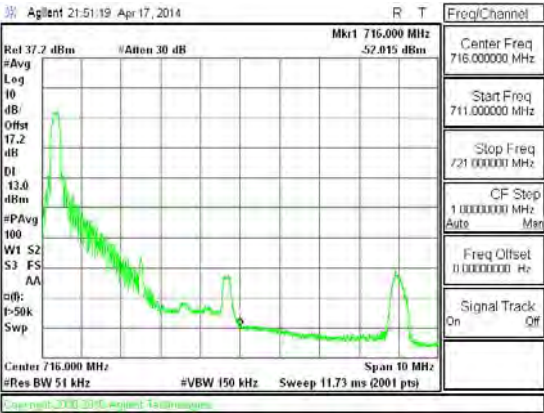
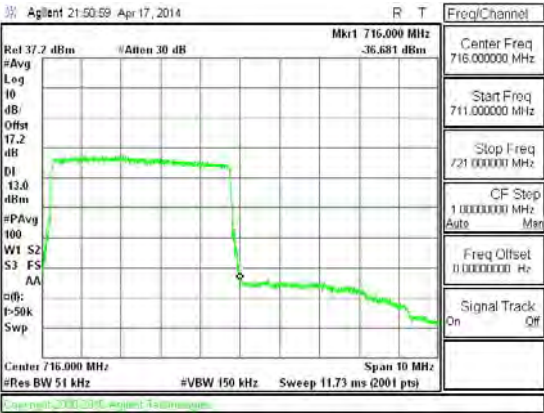
The transmitter output was connected to an Agilent 8960 or a CMW500 Test Set and configured to operate at maximum power. The band edge emissions were measured at the required operating frequencies in each band on the Spectrum Analyzer.

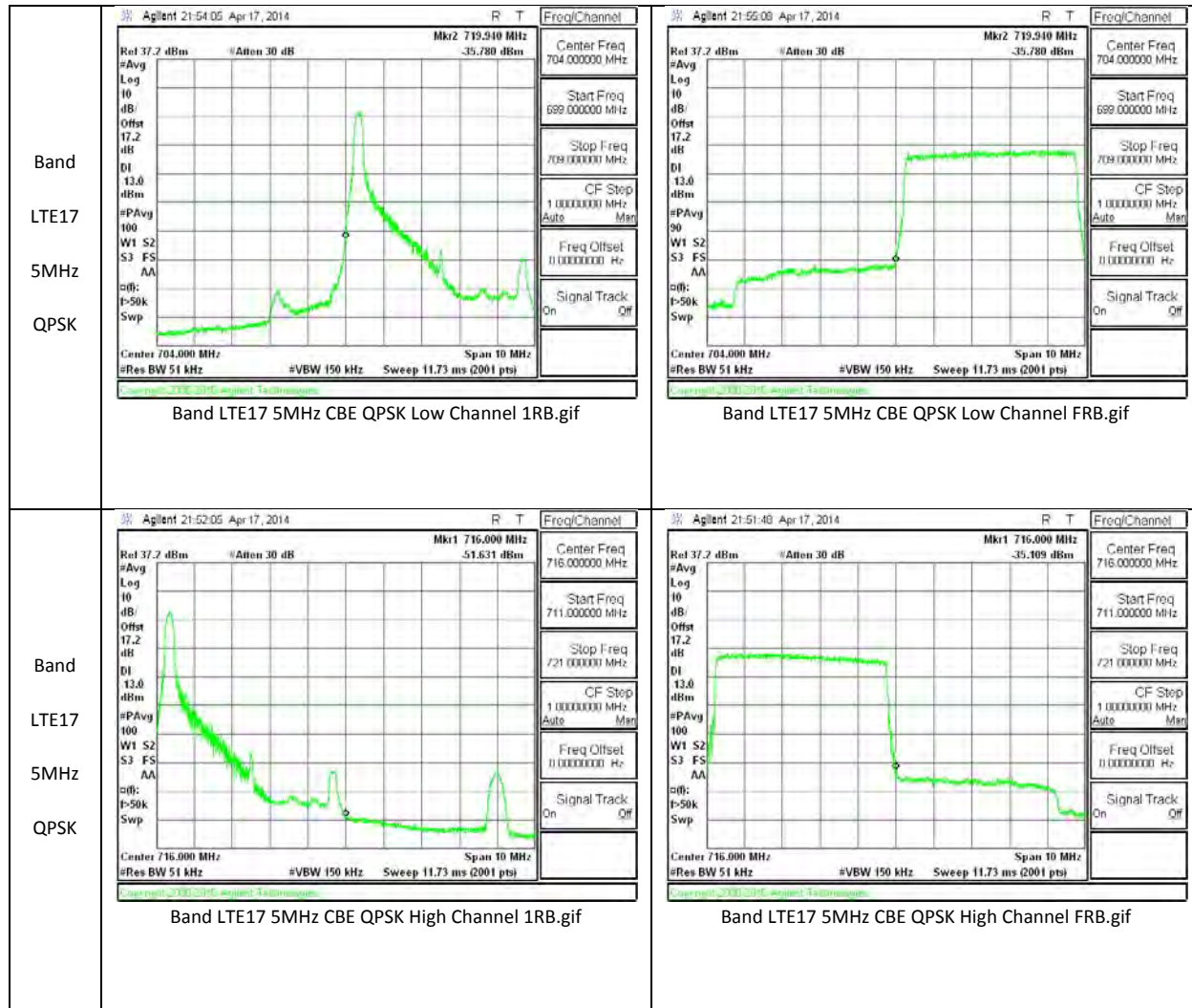
RESULTS

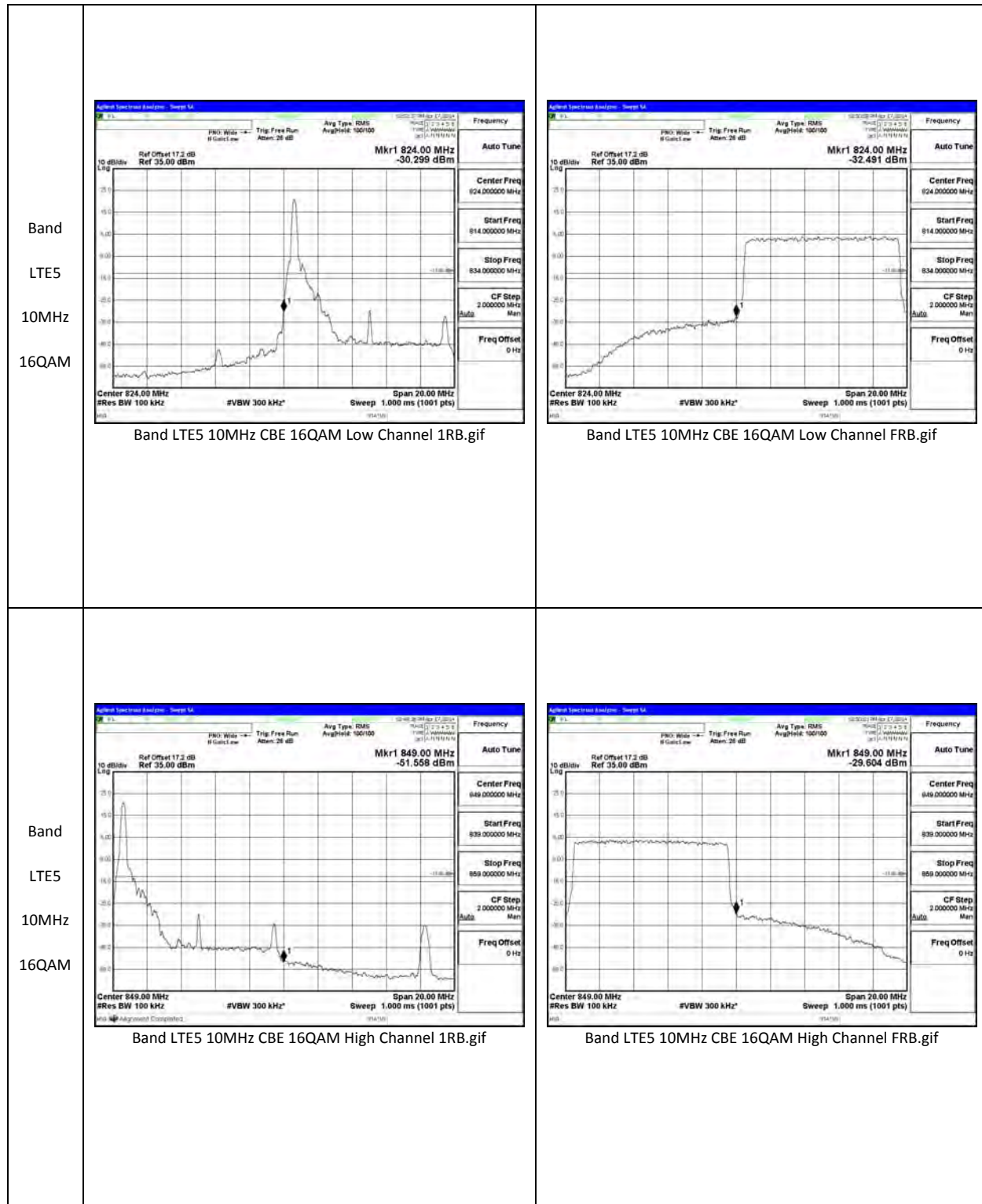
10.2.1. BAND EDGE PLOTS

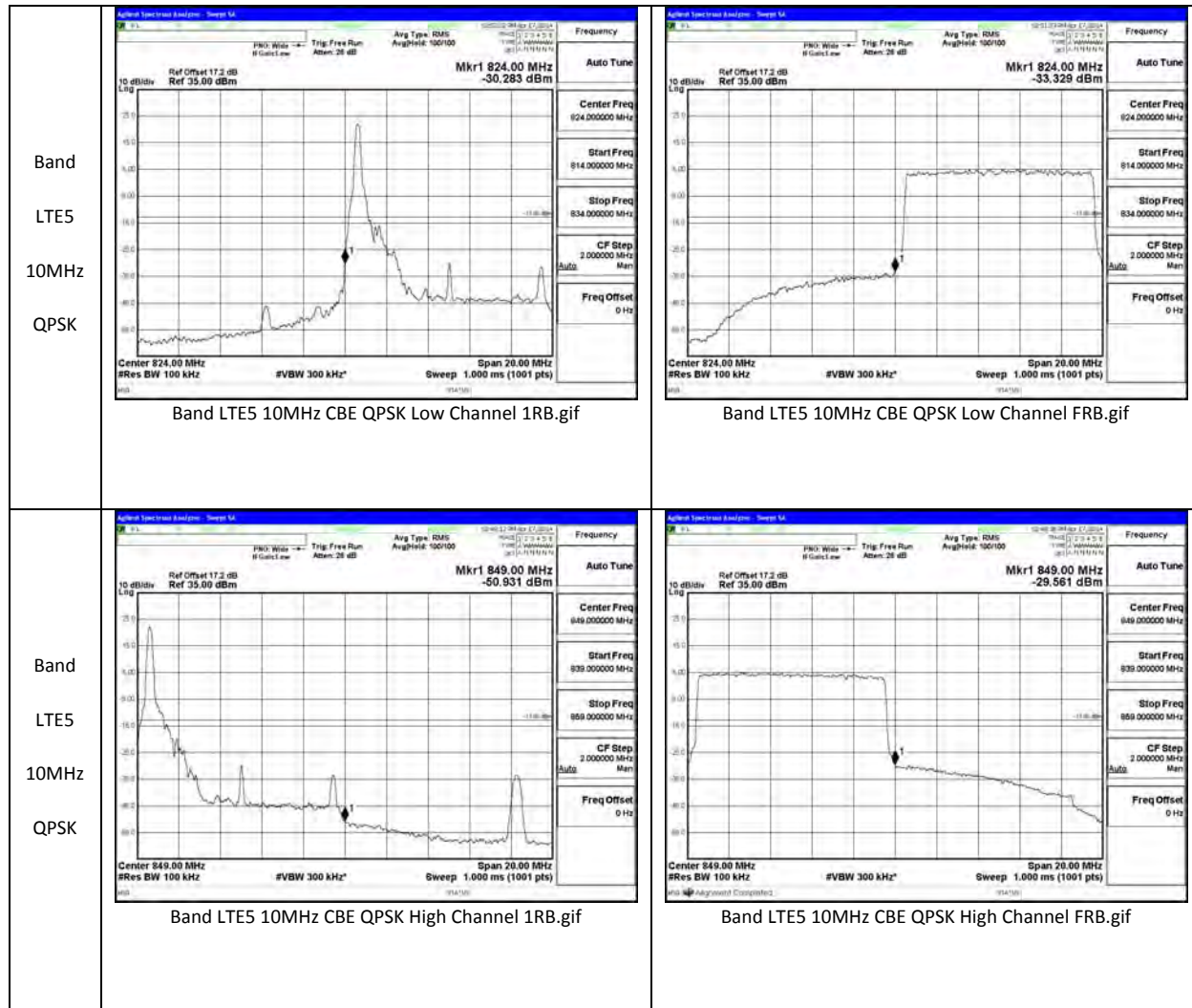
Band LTE17 10MHz 16QAM	 Agilent 21:42:39 Apr 17, 2014 Rel 37.2 dBm #Atten 30 dB Mkr2 706.553 MHz -19.624 dBm Center Freq 704.000000 MHz Start Freq 691.500000 MHz Stop Freq 716.500000 MHz CF Step 2.5000000 MHz Auto Man Freq Offset 0.0000000 Hz Signal Track On Off Center 704.000 0 MHz Span 25 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 7.6 ms (2001 pts) Band LTE17 10MHz CBE 16QAM Low Channel 1RB.gif	 Agilent 21:42:19 Apr 17, 2014 Rel 37.2 dBm #Atten 30 dB Mkr2 706.553 MHz -19.624 dBm Center Freq 704.000000 MHz Start Freq 691.500000 MHz Stop Freq 716.500000 MHz CF Step 2.5000000 MHz Auto Man Freq Offset 0.0000000 Hz Signal Track On Off Center 704.000 0 MHz Span 25 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 7.6 ms (2001 pts) Band LTE17 10MHz CBE 16QAM Low Channel FRB.gif
Band LTE17 10MHz 16QAM	 Agilent 21:46:30 Apr 17, 2014 Rel 37.2 dBm #Atten 30 dB Mkr1 716.000 0 MHz -50.383 dBm Center Freq 716.000000 MHz Start Freq 703.500000 MHz Stop Freq 728.500000 MHz CF Step 2.5000000 MHz Auto Man Freq Offset 0.0000000 Hz Signal Track On Off Center 716.000 0 MHz Span 25 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 7.6 ms (2001 pts) Band LTE17 10MHz CBE 16QAM High Channel 1RB.gif	 Agilent 21:46:11 Apr 17, 2014 Rel 37.2 dBm #Atten 30 dB Mkr1 716.000 0 MHz -31.112 dBm Center Freq 716.000000 MHz Start Freq 703.500000 MHz Stop Freq 728.500000 MHz CF Step 2.5000000 MHz Auto Man Freq Offset 0.0000000 Hz Signal Track On Off Center 716.000 0 MHz Span 25 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 7.6 ms (2001 pts) Band LTE17 10MHz CBE 16QAM High Channel FRB.gif

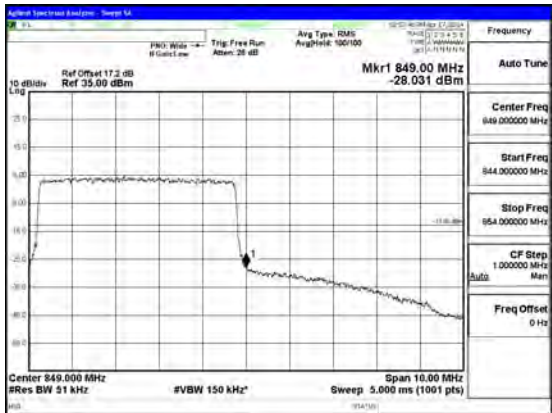


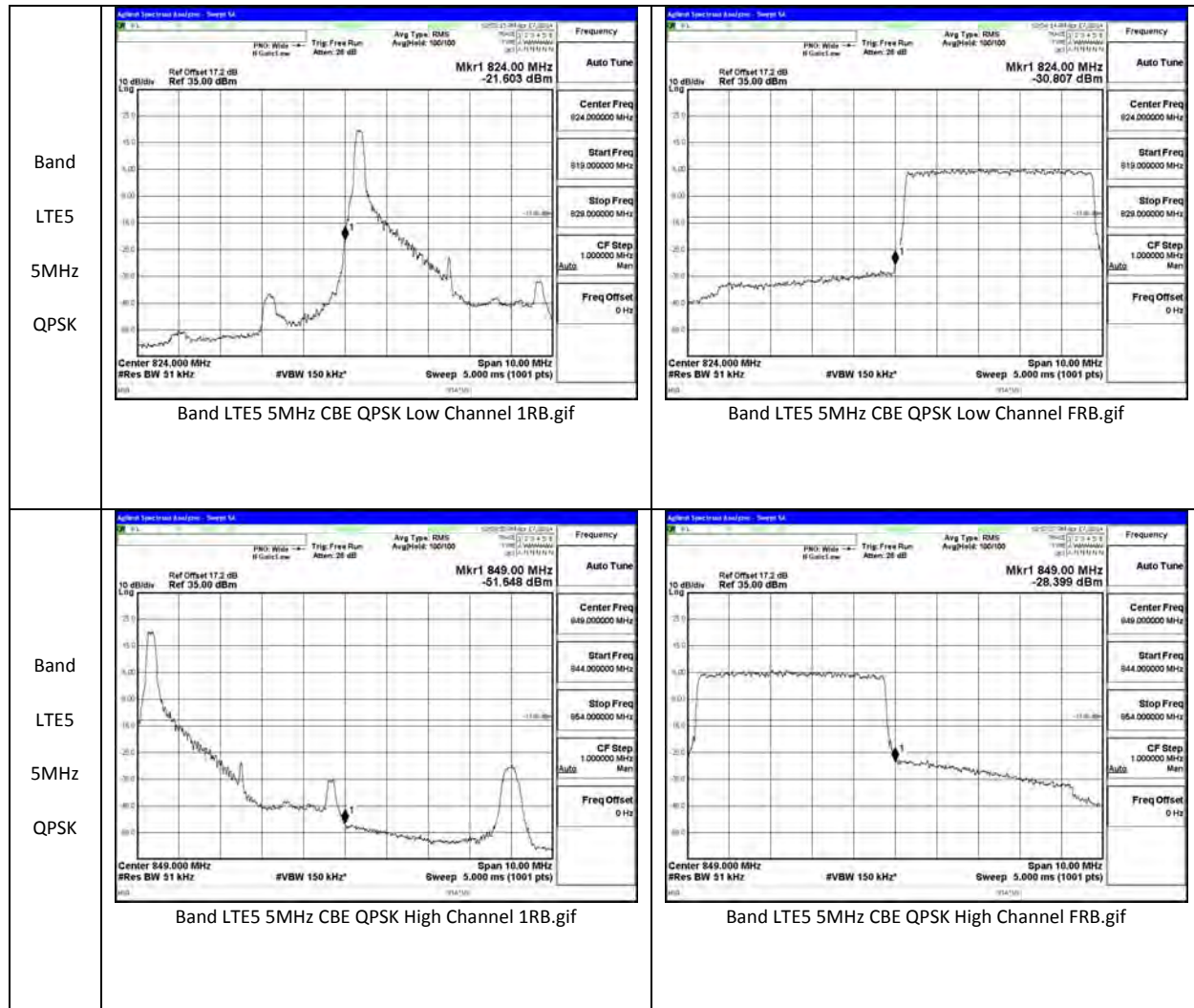
Band LTE17 5MHz 16QAM	 Agilent 21:55:49 Apr 17, 2014 R T Freq/Channel Mkr2 719.940 MHz -35.780 dBm Center Freq 704.000000 MHz Start Freq 689.000000 MHz Stop Freq 709.000000 MHz CF Stop 1.00000000 MHz Auto Man Freq Offset 0.0000000 Hz Signal Track On Off Center 704.000 MHz #VBW 150 kHz Span 10 MHz #Res BW 51 kHz Sweep 11.73 ms (2001 pts) Comment 21:55:49 Agilent Technologies Band LTE17 5MHz CBE 16QAM Low Channel 1RB.gif	 Agilent 21:55:31 Apr 17, 2014 R T Freq/Channel Mkr2 719.940 MHz -35.780 dBm Center Freq 704.000000 MHz Start Freq 689.000000 MHz Stop Freq 709.000000 MHz CF Stop 1.00000000 MHz Auto Man Freq Offset 0.0000000 Hz Signal Track On Off Center 704.000 MHz #VBW 150 kHz Span 10 MHz #Res BW 51 kHz Sweep 11.73 ms (2001 pts) Comment 21:55:31 Agilent Technologies Band LTE17 5MHz CBE 16QAM Low Channel FRB.gif
Band LTE17 5MHz 16QAM	 Agilent 21:51:19 Apr 17, 2014 R T Freq/Channel Mkr1 716.000 MHz -52.015 dBm Center Freq 716.000000 MHz Start Freq 711.000000 MHz Stop Freq 721.000000 MHz CF Stop 1.00000000 MHz Auto Man Freq Offset 0.0000000 Hz Signal Track On Off Center 716.000 MHz #VBW 150 kHz Span 10 MHz #Res BW 51 kHz Sweep 11.73 ms (2001 pts) Comment 21:51:19 Agilent Technologies Band LTE17 5MHz CBE 16QAM High Channel 1RB.gif	 Agilent 21:50:59 Apr 17, 2014 R T Freq/Channel Mkr1 716.000 MHz -36.681 dBm Center Freq 716.000000 MHz Start Freq 711.000000 MHz Stop Freq 721.000000 MHz CF Stop 1.00000000 MHz Auto Man Freq Offset 0.0000000 Hz Signal Track On Off Center 716.000 MHz #VBW 150 kHz Span 10 MHz #Res BW 51 kHz Sweep 11.73 ms (2001 pts) Comment 21:50:59 Agilent Technologies Band LTE17 5MHz CBE 16QAM High Channel FRB.gif

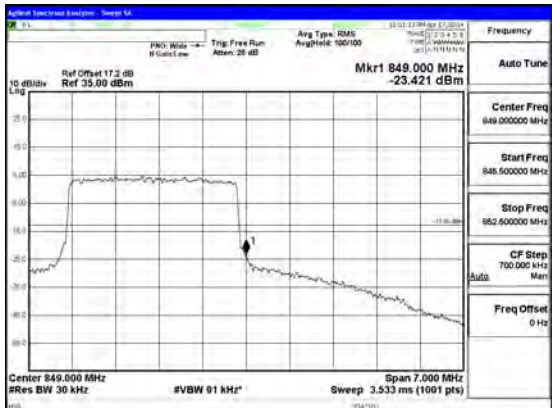


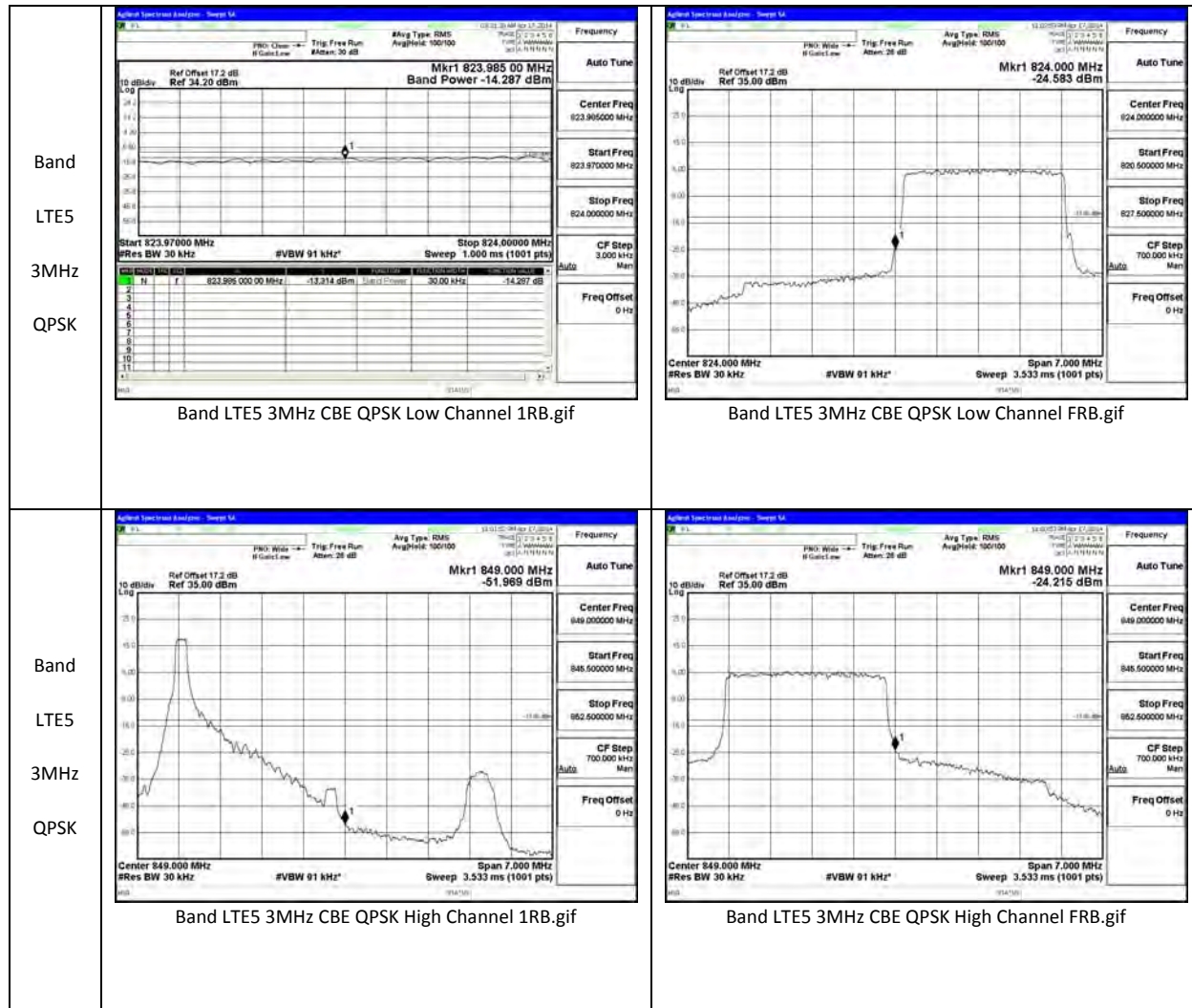


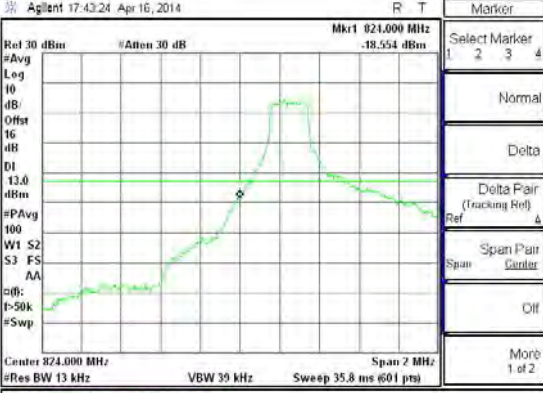
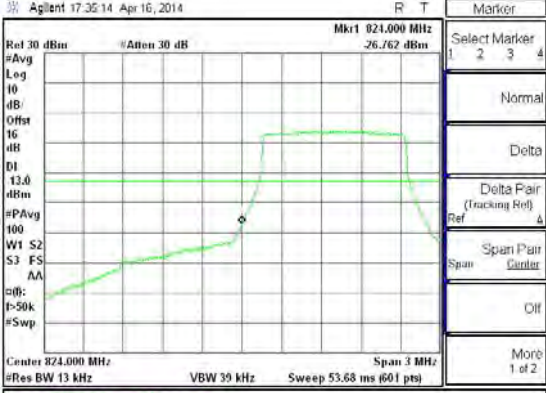
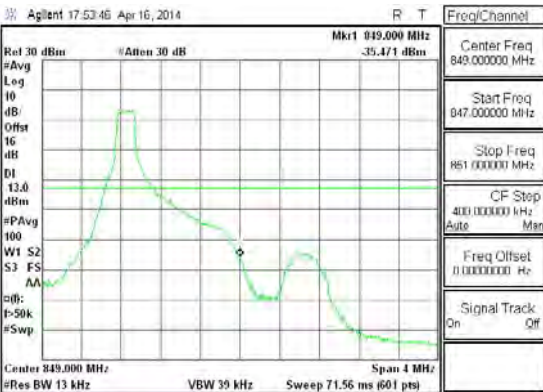
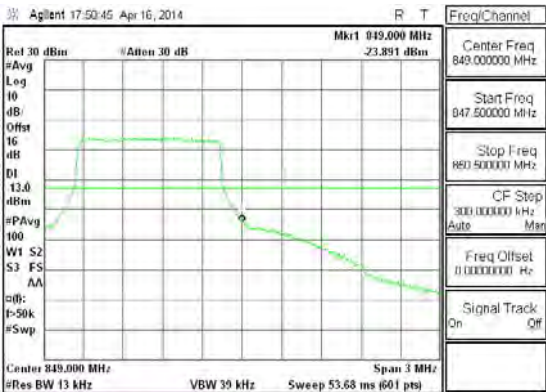


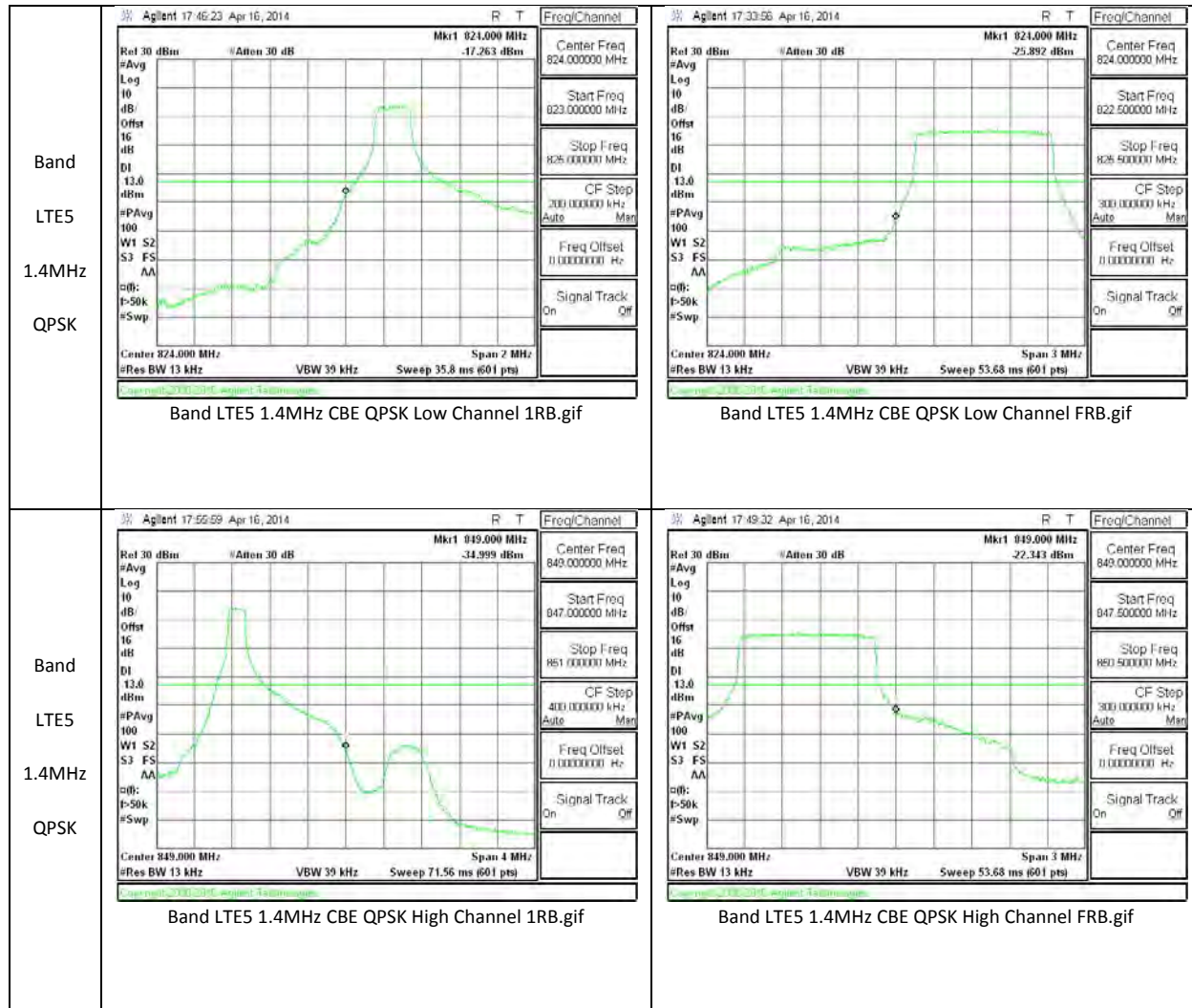
Band LTE5 5MHz 16QAM	 Band LTE5 5MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE5 5MHz CBE 16QAM Low Channel FRB.gif
Band LTE5 5MHz 16QAM	 Band LTE5 5MHz CBE 16QAM High Channel 1RB.gif	 Band LTE5 5MHz CBE 16QAM High Channel FRB.gif

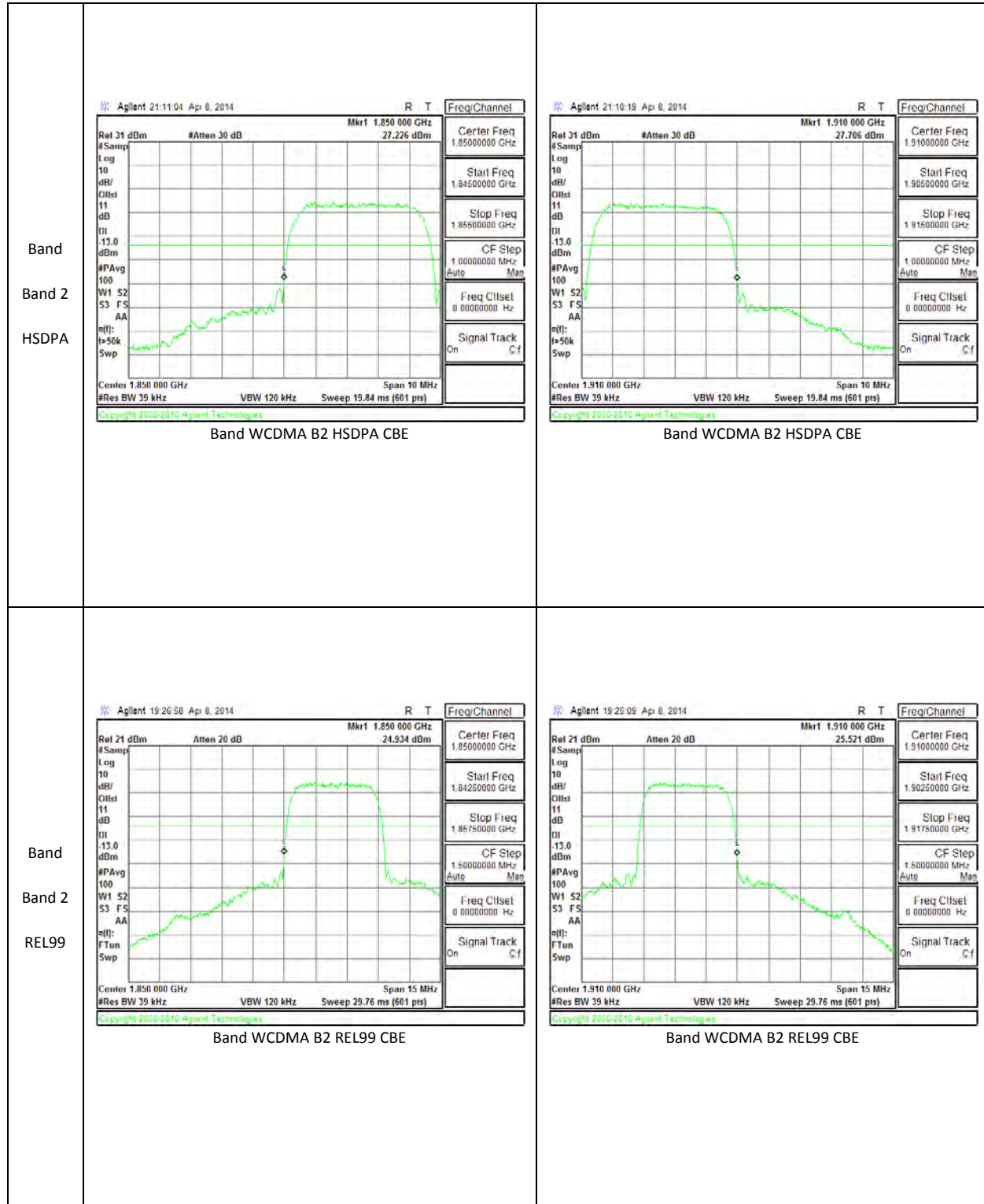


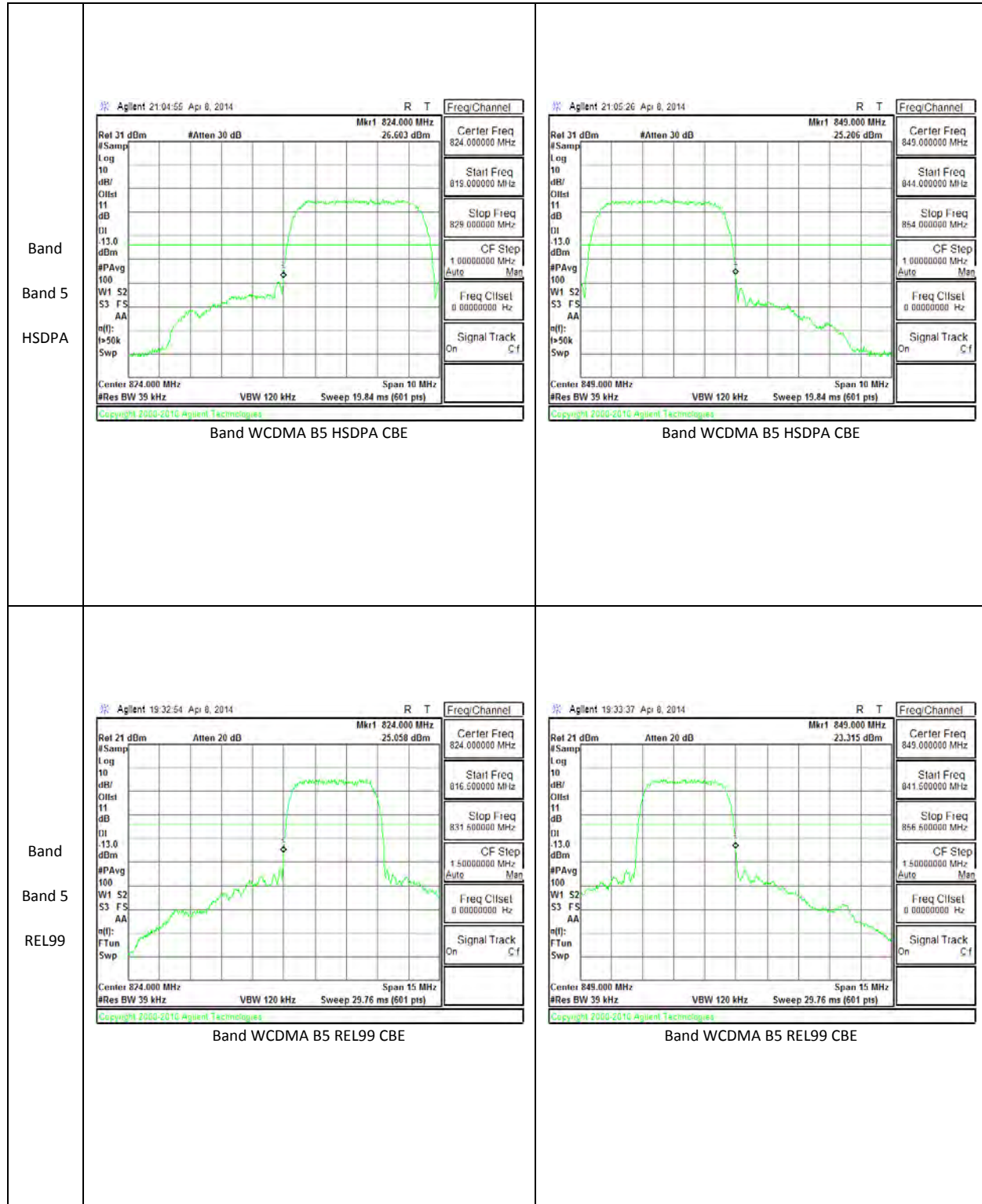
Band LTE5 3MHz 16QAM	 Band LTE5 3MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE5 3MHz CBE 16QAM Low Channel FRB.gif
Band LTE5 3MHz 16QAM	 Band LTE5 3MHz CBE 16QAM High Channel 1RB.gif	 Band LTE5 3MHz CBE 16QAM High Channel FRB.gif

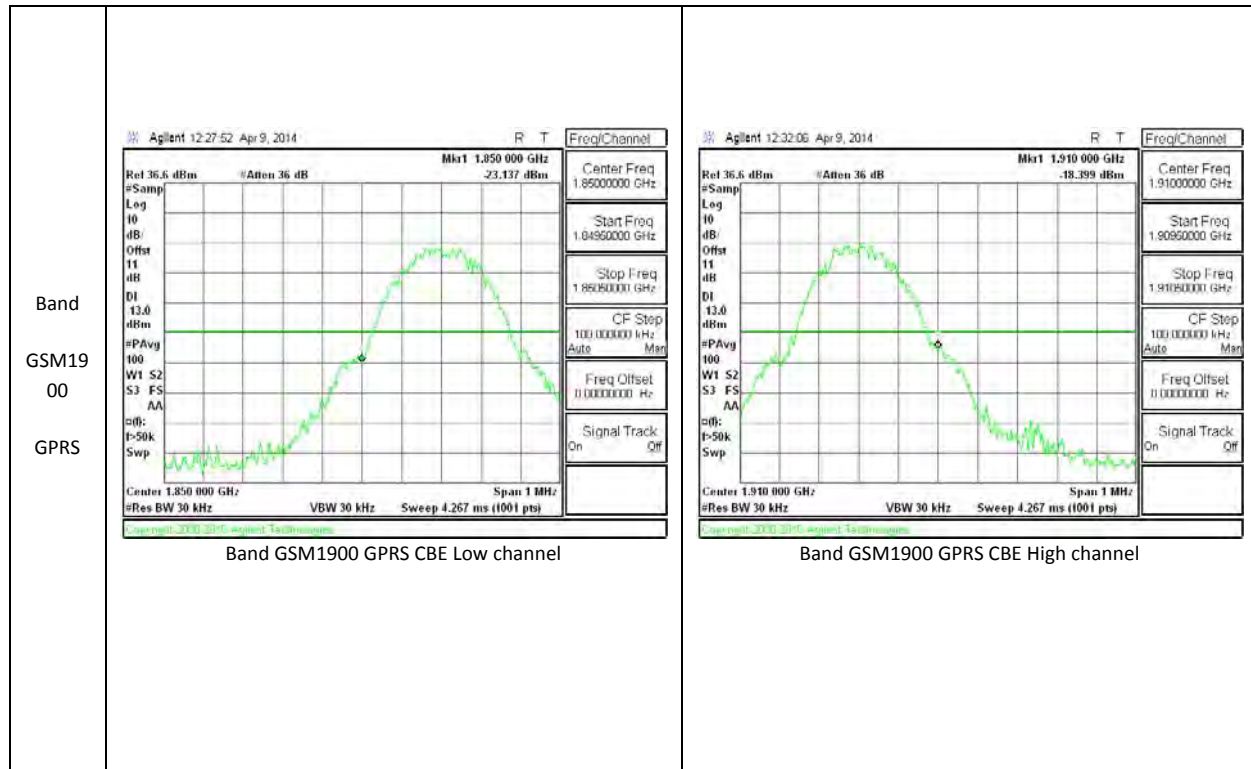


Band LTE5 1.4MHz 16QAM	 Band LTE5 1.4MHz CBE 16QAM Low Channel 1RB.gif	 Band LTE5 1.4MHz CBE 16QAM Low Channel FRB.gif
Band LTE5 1.4MHz 16QAM	 Band LTE5 1.4MHz CBE 16QAM High Channel 1RB.gif	 Band LTE5 1.4MHz CBE 16QAM High Channel FRB.gif









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.

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	-25.52	-13	-12.52
			710	-26.49	-13	-13.49
			711	-26.19	-13	-13.19
		16QAM	709	-27.19	-13	-14.19
			710	-24.78	-13	-11.78
			711	-25.16	-13	-12.16

Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE17	5	QPSK	706.5	-25.26	-13	-12.26
			710	-24.95	-13	-11.95
			713.5	-23.77	-13	-10.77
		16QAM	706.5	-24.71	-13	-11.71
			710	-25.71	-13	-12.71
			713.5	-27.39	-13	-14.39

Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE5	10	QPSK	829	-25.22	-13	-12.22
			836.5	-23.57	-13	-10.57
			844	-25.59	-13	-12.59
		16QAM	829	-25.75	-13	-12.75
			836.5	-26.02	-13	-13.02
			844	-24.88	-13	-11.88

Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE5	5	QPSK	826.5	-26.96	-13	-13.96
			836.5	-25.79	-13	-12.79
			846.5	-25.46	-13	-12.46
		16QAM	826.5	-25.53	-13	-12.53
			836.5	-25.5	-13	-12.5

			846.5	-26.31	-13	-13.31
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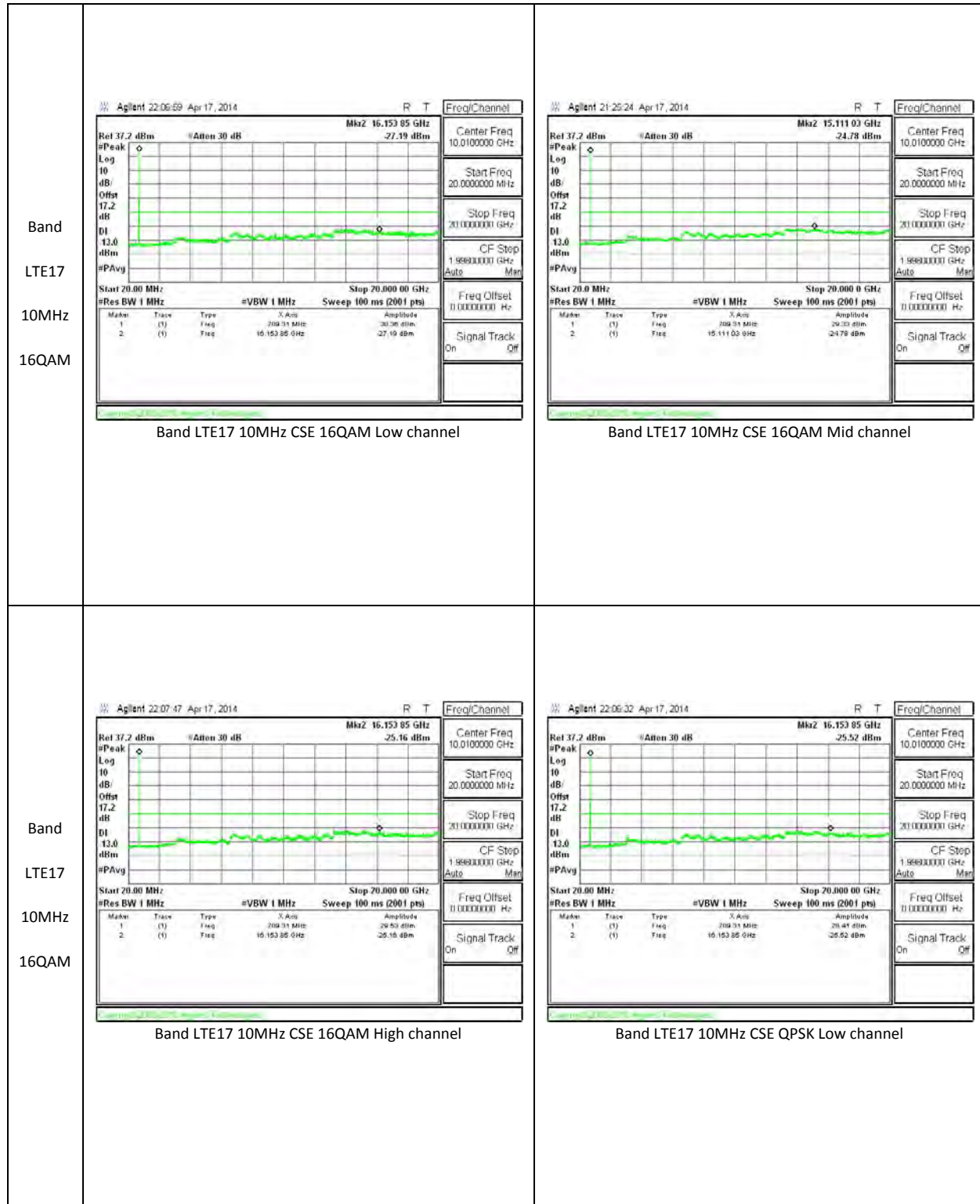
Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE5	3	QPSK	825.5	-26.33	-13	-13.33
			836.5	-23.8	-13	-10.8
			847.5	-24.98	-13	-11.98
		16QAM	825.5	-24.49	-13	-11.49
			836.5	-25.67	-13	-12.67
			847.5	-25.82	-13	-12.82

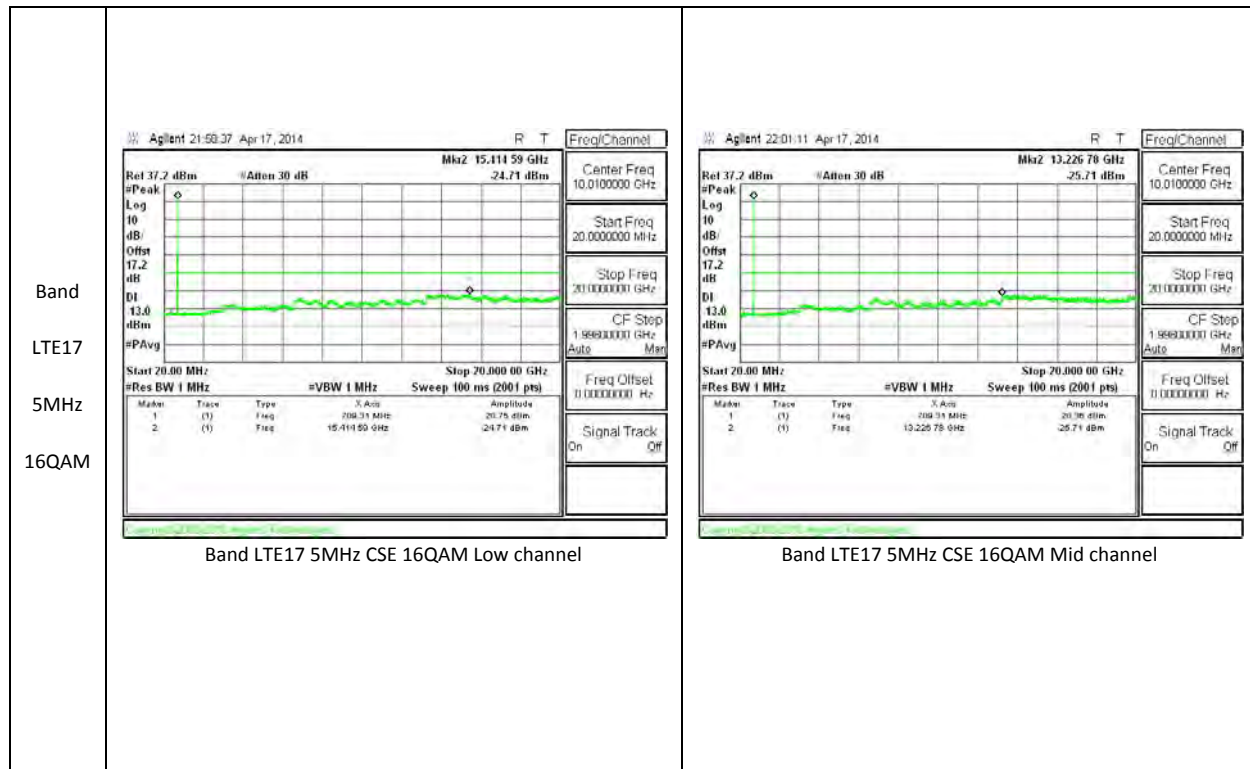
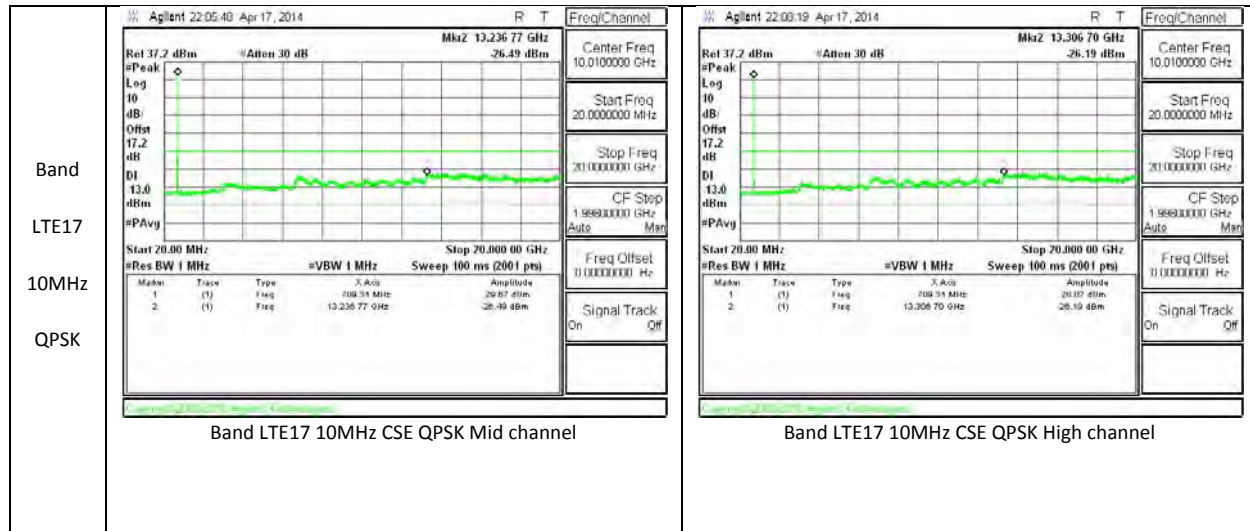
Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE5	1.4	QPSK	824.7	-38.55	-13	-25.55
			836.5	-38.64	-13	-25.64
			848.3	-38.51	-13	-25.51
		16QAM	824.7	-38.28	-13	-25.28
			836.5	-38.49	-13	-25.49
			848.3	-41.01	-13	-28.01

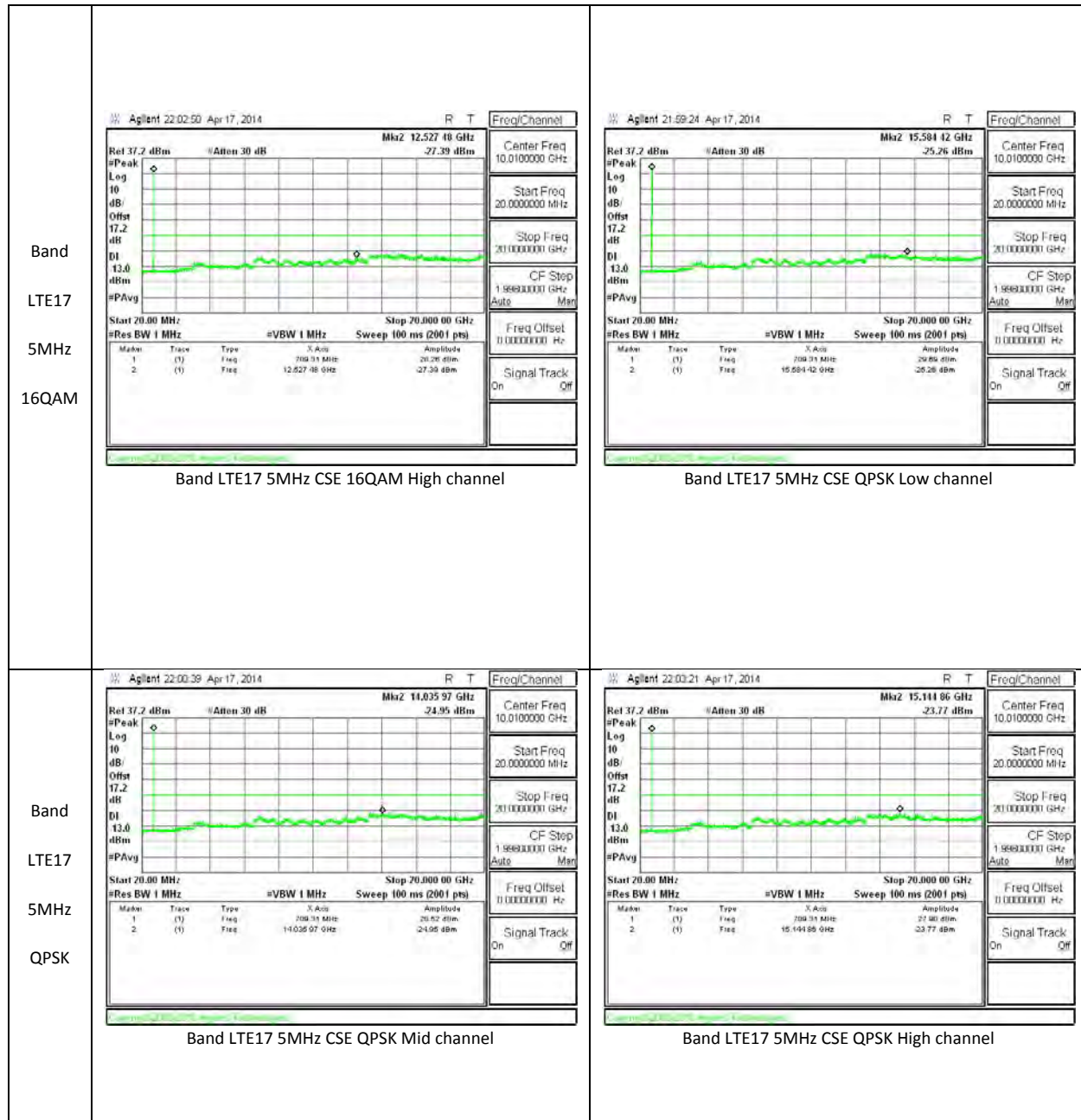
Band	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
GSM1900	GPRS	1850.2	-24.23	-13	-11.23
		1880	-24.92	-13	-11.92
		1909.8	-25.42	-13	-12.42
Band 2	REL99	1852.4	-40.08	-13	-27.08
		1880	-36.64	-13	-23.64
		1907.6	-34.26	-13	-21.26
	HSDPA	1852.4	-41.68	-13	-28.68
		1880	-42.23	-13	-29.23
		1907.6	-33.91	-13	-20.91
Band 5	REL99	826.6	-44.74	-13	-31.74
		836.6	-42.71	-13	-29.71
		846.4	-38.97	-13	-25.97
	HSDPA	826.6	-40.74	-13	-27.74

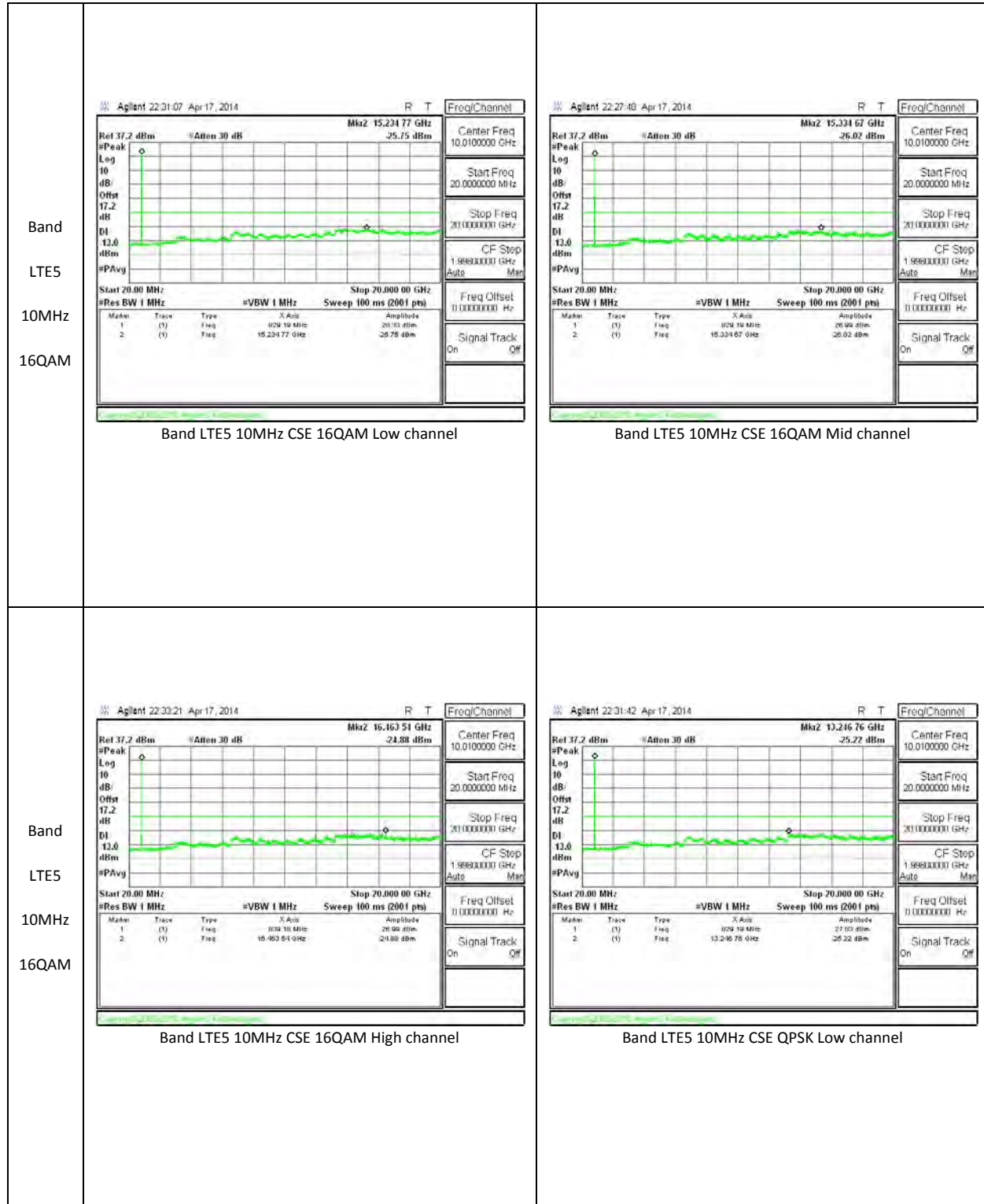
		836.6	-42.57	-13	-29.57
		846.4	-42.21	-13	-29.21

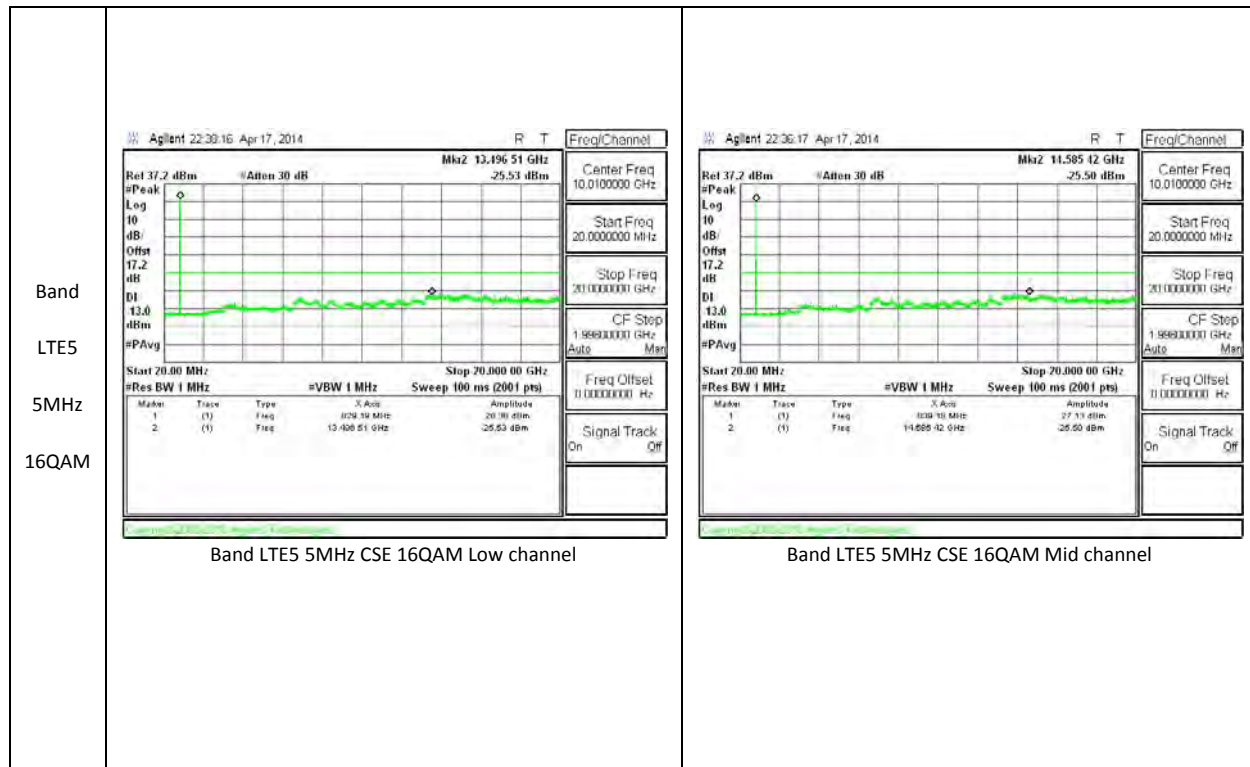
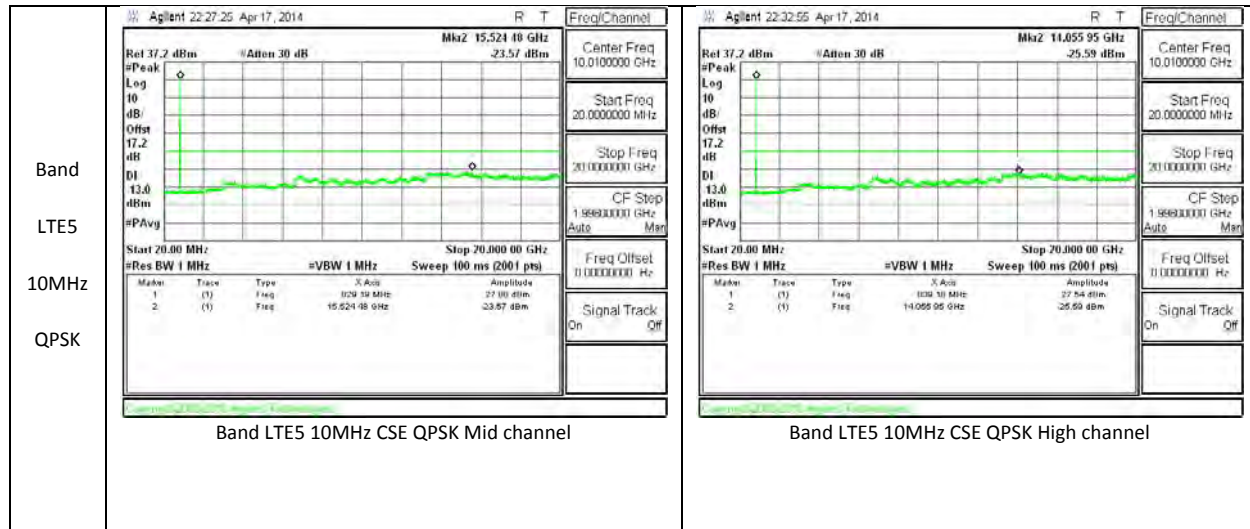
10.3.2. OUT OF BAND EMISSIONS PLOTS

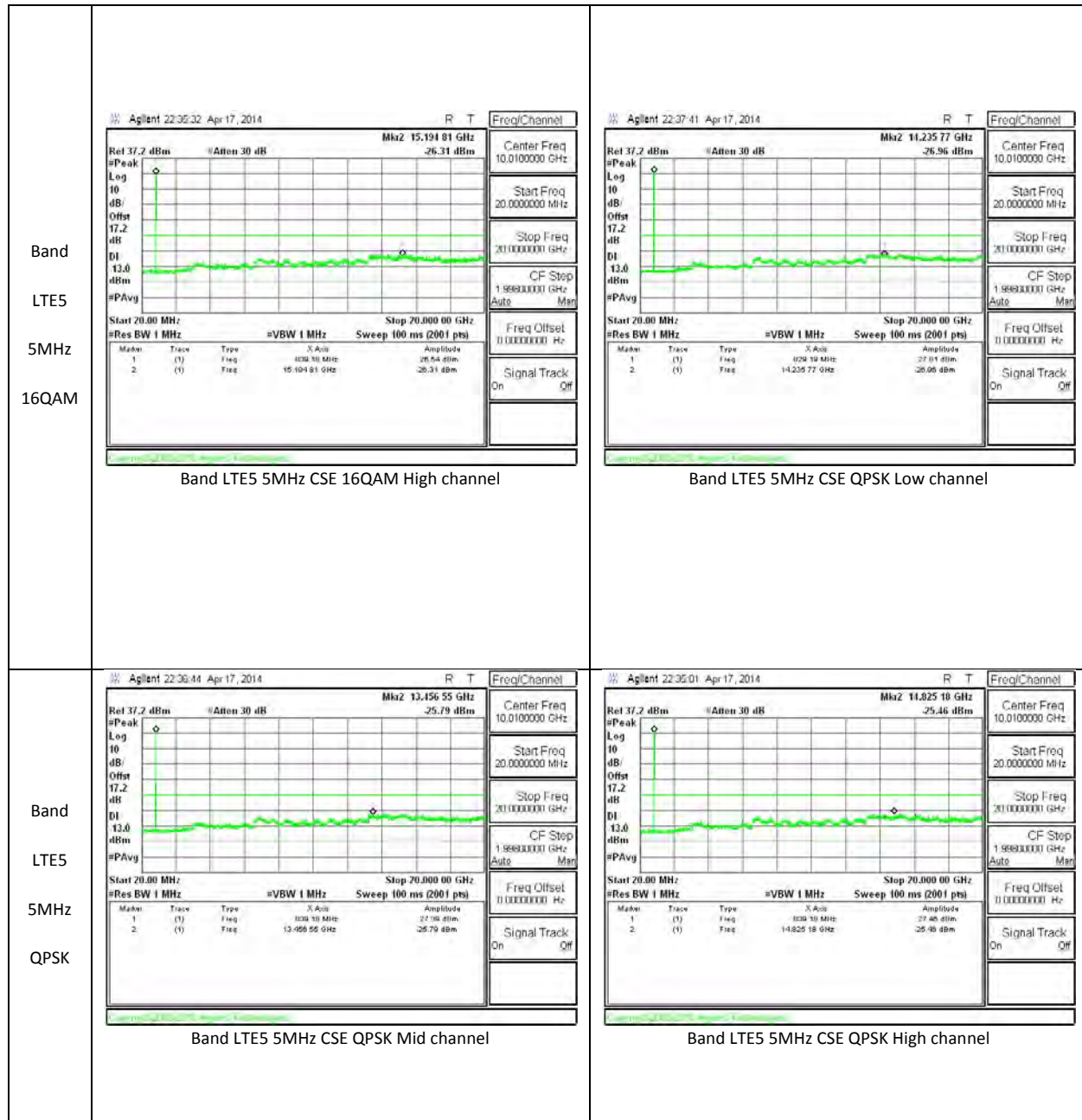


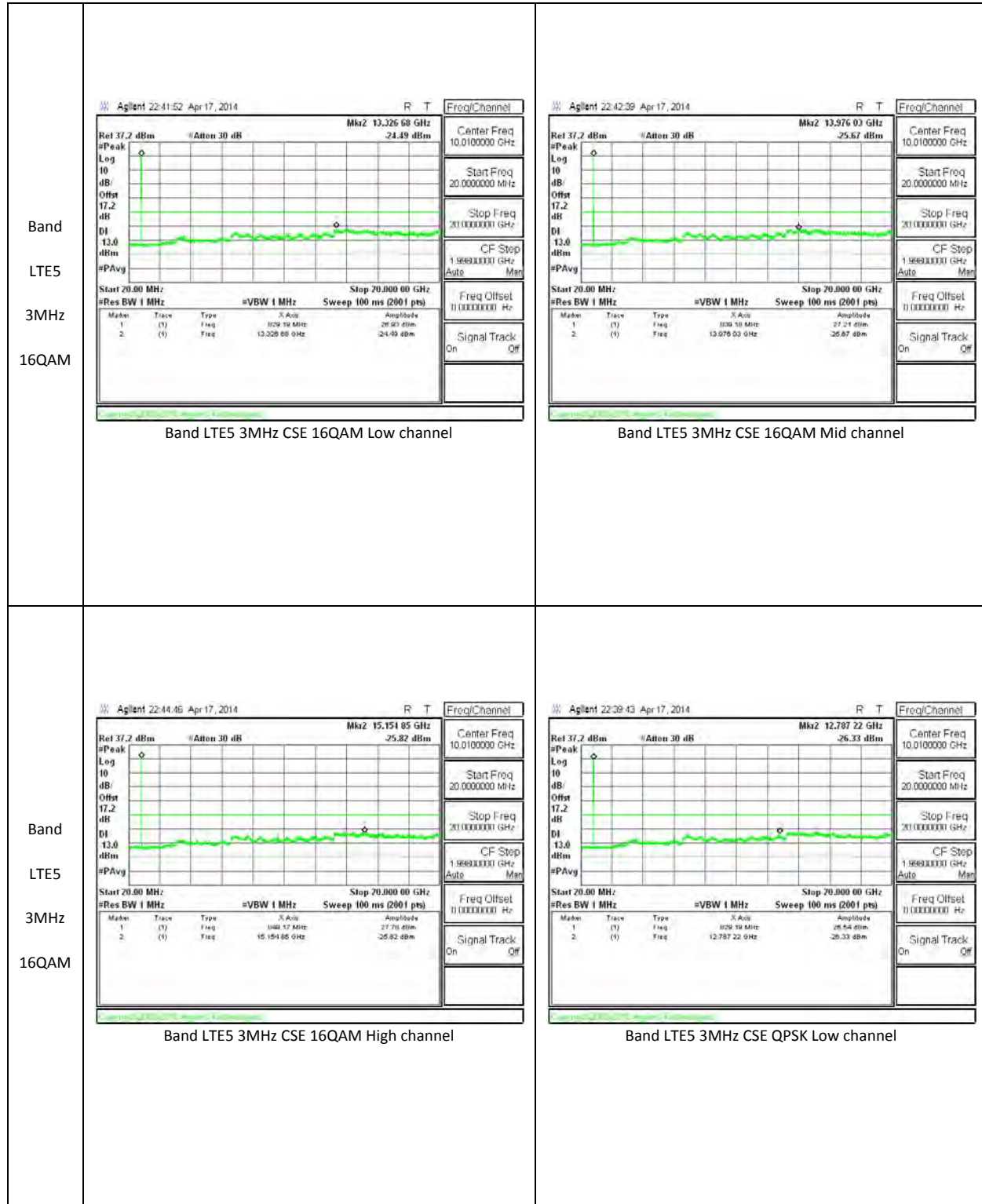


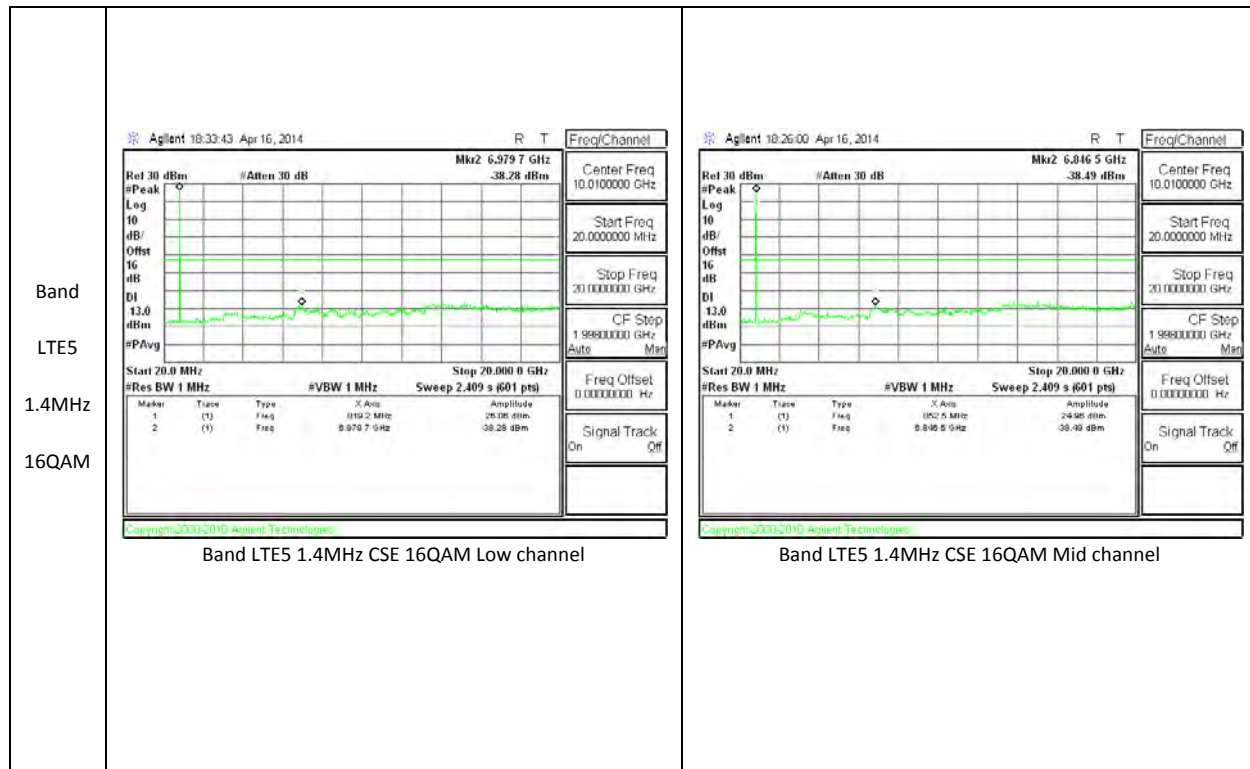
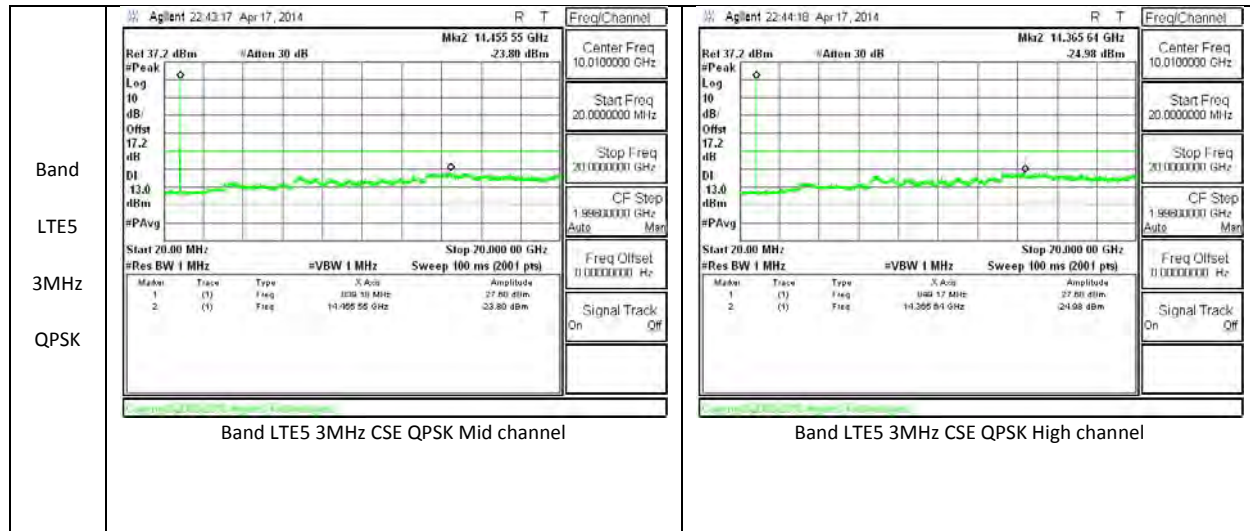


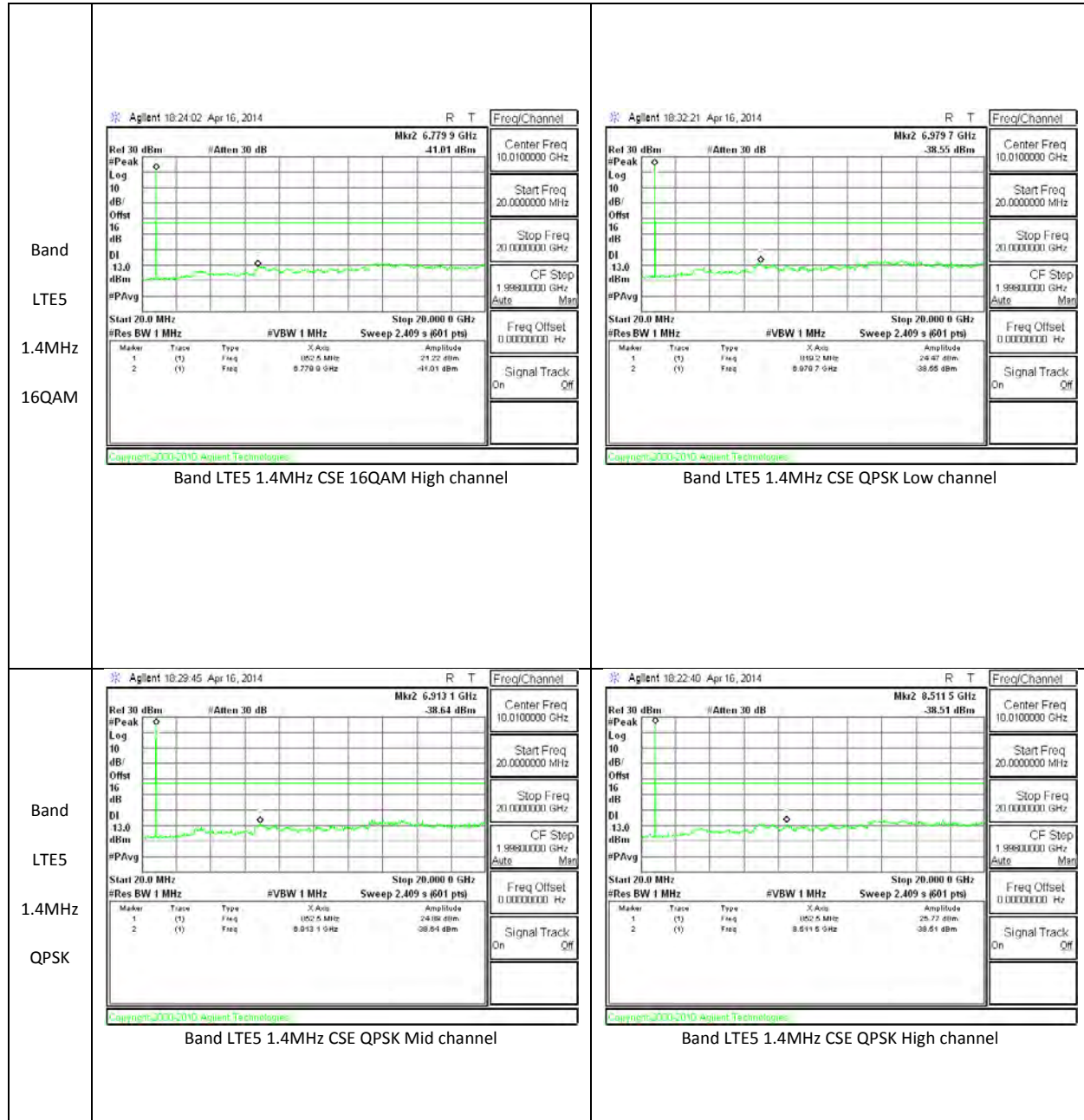


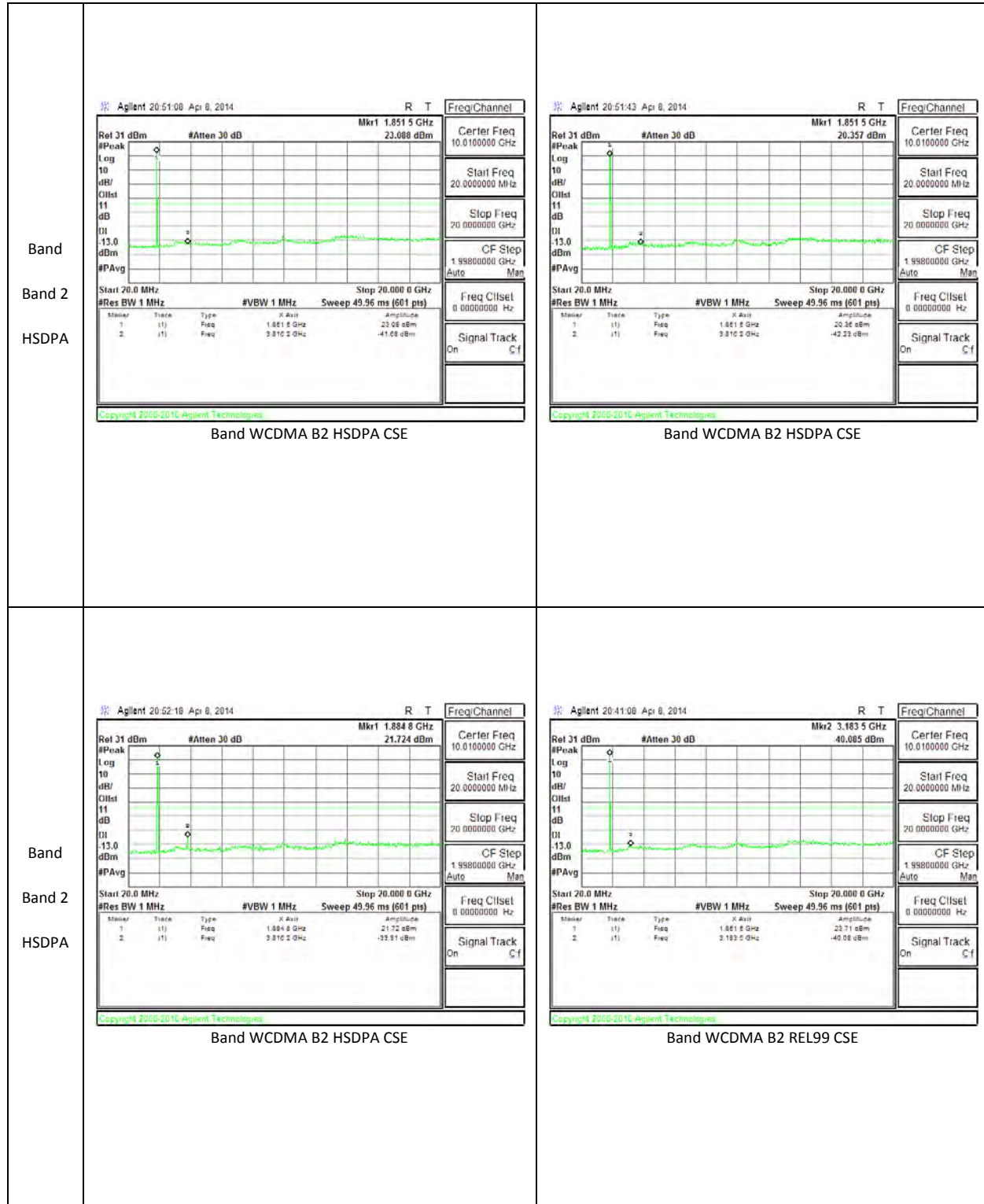


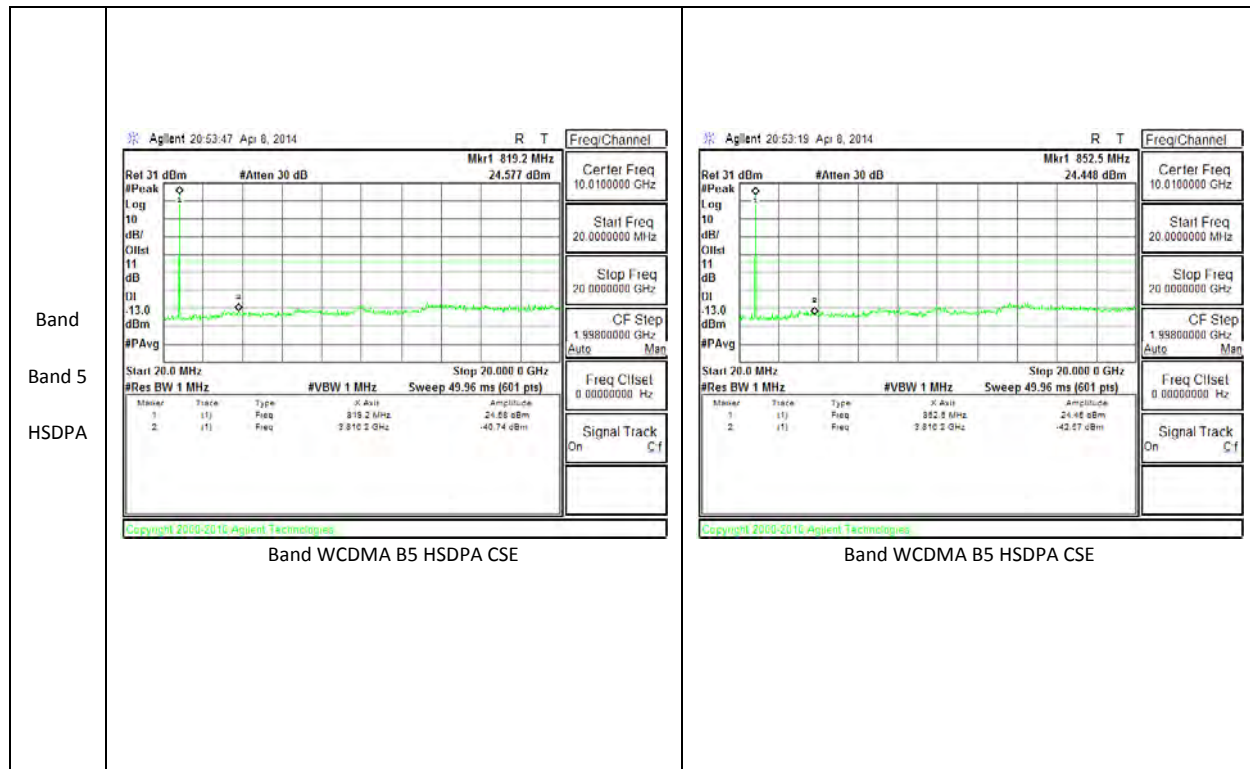
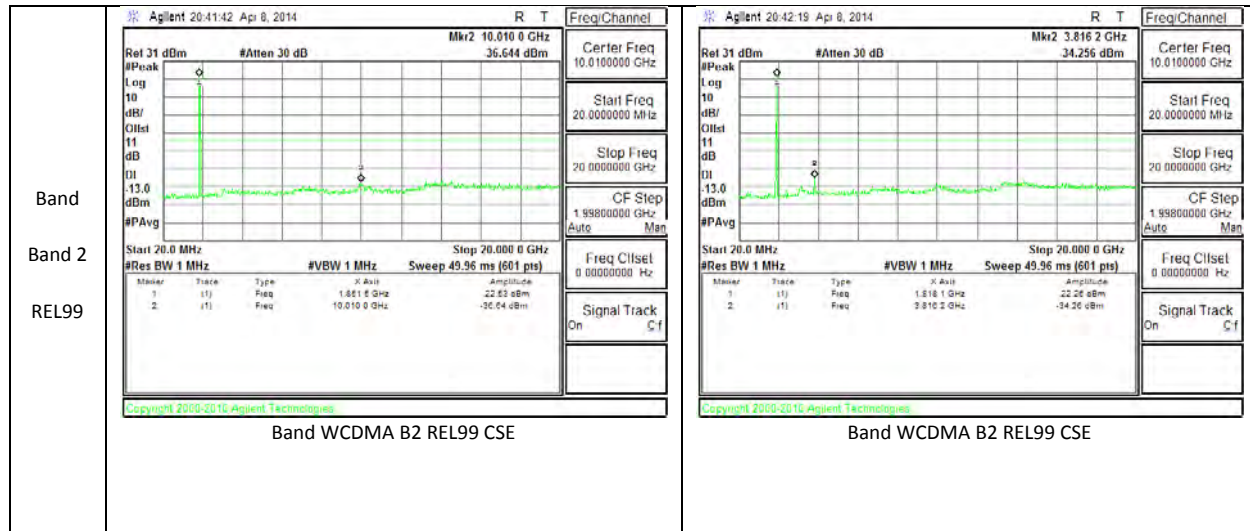


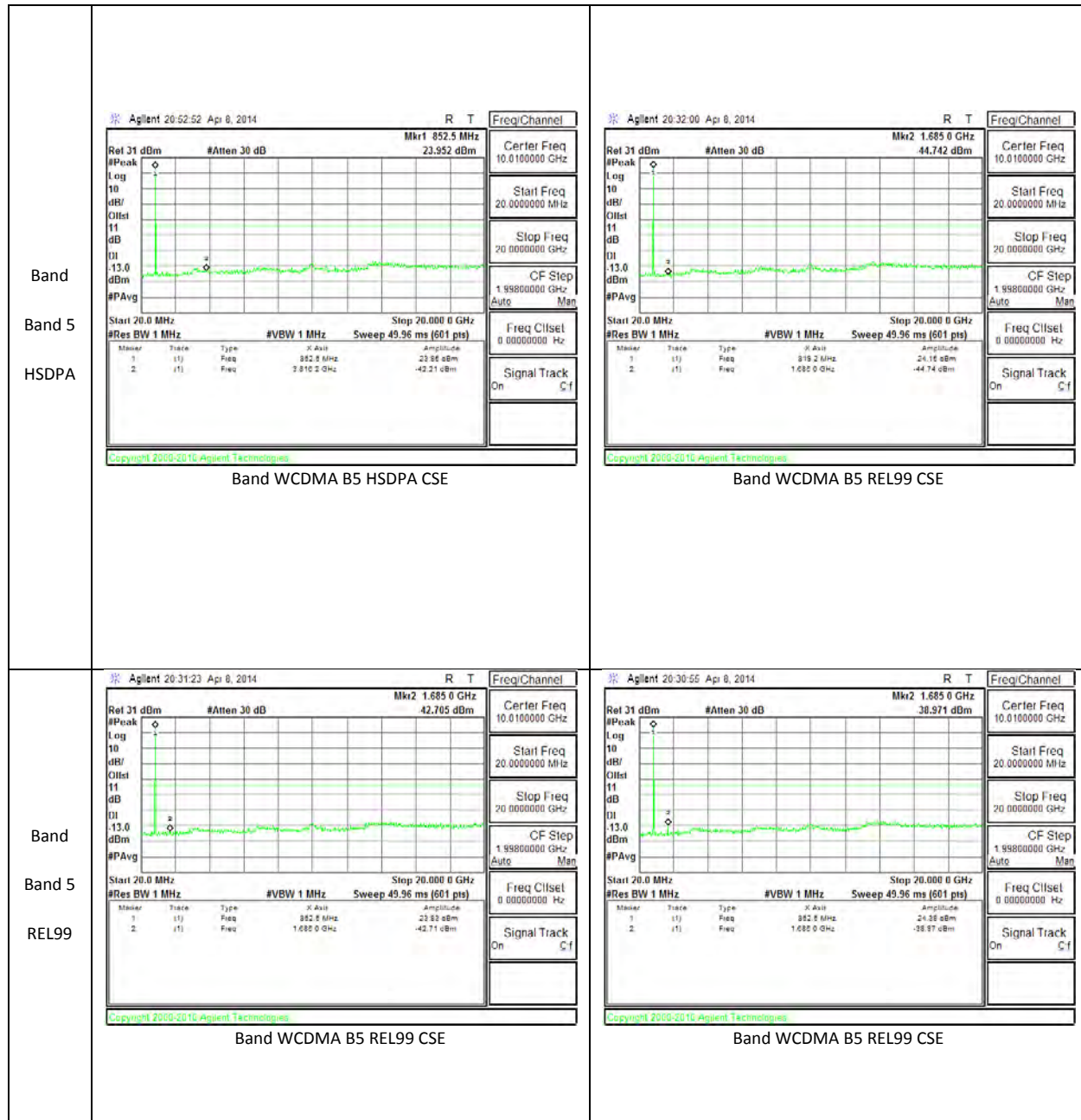


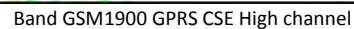
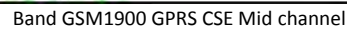
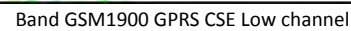












10.4. FREQUENCY STABILITY

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

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 3.8Vdc.

Frequency Stability vs Voltage:

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

RESULTS

See the following pages.

10.4.1. FREQUENCY STABILITY RESULTS

B5, – MID CHANNEL 4183, Frequency 836.6MHz

Reference Frequency: Band 5 Channel 4183 Freq : 836.6 MHz @ 20°C Limit: +- 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	85	836.600006	-0.002	2.5
3.80	60	836.600005	-0.001	2.5
3.80	35	836.600003	0.001	2.5
3.80	20	836.600004	0	2.5
3.80	10	836.600002	0.002	2.5
3.80	0	836.600004	0.000	2.5
3.80	-10	836.600005	-0.001	2.5
3.80	-20	836.600005	-0.001	2.5
3.80	-30	836.600006	-0.002	2.5

Reference Frequency: Band 5 Channel 4183 Freq : 836.6 MHz @ 20°C Limit: +- 2.5 ppm = 2091.500 Hz				
Power Supply (Vdc)	Environment Temperature (*C)	Frequency Deviation Measured with Time Elapse		
			Delta (ppm)	Limit (ppm)
3.80	20	836.600004	0.000	2.5
3.3 end volt	20	836.600004	0.000	2.5
4.20	20	836.600004	0.000	2.5

B2, Channel 9400 Freq: 1880MHz– MID CHANNEL

Reference Frequency: Band 2 Channel 9400 Freq: 1880MHz @ 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	85	1880.000008	0.001	2.5
3.80	60	1880.000007	0.002	2.5
3.80	35	1880.000006	0.002	2.5
3.80	20	1880.000010	0	2.5
3.80	10	1880.000009	0.001	2.5
3.80	0	1880.000001	0.000	2.5
3.80	-10	1880.000008	0.001	2.5
3.80	-20	1880.000009	0.001	2.5
3.80	-30	1880.000009	0.001	2.5

Reference Frequency: Band 2 Channel 9400 Freq: 1880MHz @ 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	1880.000010	0	2.5
3.3 end volt	20	1880.000008	0.001	2.5
4.20	20	1880.000009	0.001	2.5

LTE17 Channel 23790 Freq: 710 MHz– MID CHANNEL

Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	85	710.000022	-0.004	2.5
3.80	60	710.000024	-0.007	2.5
3.80	35	710.000016	0.004	2.5
3.80	20	710.000019	0	2.5
3.80	10	710.000014	0.007	2.5
3.80	0	710.000008	0.015	2.5
3.80	-10	710.000018	0.001	2.5
3.80	-20	710.000083	-0.090	2.5
3.80	-25	710.000022	-0.004	2.5

Reference Frequency: LTE17 Channel 23790 Freq : 710 MHz @ 20°C				
Limit: to stay +/- 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	710.000019	0	2.5
3.3 end volt	20	710.000013	0.008	2.5
4.20	20	710.000016	0.004	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

TEST RESULTS

11.1.1. ERP/EIRP Results

Band	Mode	Channel	f(MHz)	ERP / EIRP	
				dBm	mW
Band 2	REL99	9262	1852.4	23.25	211.35
		9400	1880	23.38	217.77
		9538	1907.6	21.77	150.31
	HSDPA	9262	1852.4	22.23	167.11
		9400	1880	22.89	194.54
		9538	1907.6	21.86	153.46

Band	Mode	Channel	f(MHz)	ERP / EIRP	
				dBm	mW
Band 5	REL99	4132	826.4	18.301	67.62
		4183	836.6	19.151	82.24
		4233	846.6	19.601	91.22
	HSDPA	4132	826.4	18.601	72.46

		4183	836.6	19.401	87.12
		4233	846.6	19.881	97.3

Band	Mode	Channel	f(MHz)	ERP / EIRP	
				dBm	mW
GSM1900	GPRS	512	1850.2	25.17	328.85
		661	1880	27.1	512.86
		810	1909.8	27	501.19

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	8.971	7.89
			1/0	710	9.101	8.13
			1/0	711	9.011	7.96
		16QAM	1/0	709	8.001	6.31
			1/0	710	8.131	6.5
			1/0	711	8.071	6.41

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE17	5	QPSK	1/0	706.5	9.141	8.21
			1/0	710	8.921	7.8
			1/0	713.5	9.561	9.04
		16QAM	1/0	706.5	8.091	6.44
			1/0	710	8.091	6.44
			1/0	713.5	8.711	7.43

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE5	10	QPSK	1/0	829	19.001	79.45
			1/0	836.5	20.701	117.52
			1/0	844	20.101	102.35
		16QAM	1/0	829	18.101	64.58
			1/0	836.5	19.701	93.35
			1/0	844	18.801	75.88

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE5	5	QPSK	1/0	826.5	19.101	81.3

			1/0	836.5	21.001	125.92
			1/0	846.5	19.701	93.35
		16QAM	1/0	826.5	17.901	61.67
			1/0	836.5	20.101	102.35
			1/0	846.5	18.601	72.46

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE5	3	QPSK	1/0	825.5	19.001	79.45
			1/0	836.5	20.501	112.23
			1/0	847.5	20.201	104.74
		16QAM	1/0	825.5	17.901	61.67
			1/0	836.5	19.701	93.35
			1/0	847.5	19.401	87.12

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE5	1.4	QPSK	1/0	824.7	18.50	70.79
			1/0	836.5	20.601	114.84
			1/0	848.3	20.60	114.82
		16QAM	1/0	824.7	17.60	57.54
			1/0	836.5	19.401	87.12
			1/0	848.3	19.90	97.72

11.1.3. ERP/EIRP PLOTS

Band

LTE17

10MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc. Chamber C

Company: Samsung

Project #: 14U17495

Date: 04/21/14

Test Engineer: R. Alegre

Configuration: EUT, X position

Mode: LTE Band 17_10MHz_16QAM

Test Equipment:

Receiving: Sunol T407, and 3m Chamber N-type Cable (Setup this one for testing EUT)

Substitution: Dipole S/N: 00022117, 4ft SMA Cable (SN # 245200 001) Warehouse.

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	5.32	V	0.9	0.0	4.42	34.8	-30.4	
709.00	8.90	H	0.9	0.0	8.00	34.8	-26.8	
Mid Ch								
710.00	5.33	V	0.9	0.0	4.43	34.8	-30.4	
710.00	9.03	H	0.9	0.0	8.13	34.8	-26.7	
High Ch								
711.00	4.98	V	0.9	0.0	4.08	34.8	-30.7	
711.00	8.97	H	0.9	0.0	8.07	34.8	-26.7	

Rev. 3.17.11

Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm

Band

LTE17

5MHz

16QAM

High Frequency Substitution Measurement

UL Verification Services, Inc. Chamber C

Company:

Project #:

Date:

Test Engineer:

Configuration:

Mode:

Test Equipment:

Receiving: Sunol T407, and 3m Chamber N-type Cable (Setup this one for testing EUT)

Substitution: Dipole S/N: 00022117, 4ft SMA Cable (SN # 245200 001) Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
706.50	6.15	V	0.9	0.0	5.25	34.8	-29.5	
706.50	8.99	H	0.9	0.0	8.09	34.8	-26.7	
Mid Ch								
710.00	5.41	V	0.9	0.0	4.51	34.8	-30.3	
710.00	8.99	H	0.9	0.0	8.09	34.8	-26.7	
High Ch								
713.50	4.99	V	0.9	0.0	4.09	34.8	-30.7	
713.50	9.61	H	0.9	0.0	8.71	34.8	-26.1	

Rev. 3.17.11

Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm

Band

LTE5

5MHz

QPSK

High Frequency Substitution Measurement

Compliance Certification Services Chamber C

Company:

Project #:

Date:

Test Engineer:

Configuration:

Mode:

Samsung

14U17495

04/17/14

K.Kedida

EUT only

LTE band 5, 5MHz BW

QPSK, Average, RB1-0

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.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
826.50	12.10	V	0.9	0.0	11.20	38.5	-27.2	
826.50	20.00	H	0.9	0.0	19.10	38.5	-19.3	
Mid Ch								
836.50	13.30	V	0.9	0.0	12.40	38.5	-26.0	
836.50	21.90	H	0.9	0.0	21.00	38.5	-17.4	
High Ch								
846.50	11.70	V	0.9	0.0	10.80	38.5	-27.6	
846.50	20.60	H	0.9	0.0	19.70	38.5	-18.7	
Rev. 3.17.11								

Band Band 2 HSDPA	High Frequency Fundamental Measurement Compliance Certification Services Chamber C								
	Company:		Samsung						
	Project #:		14U17495						
	Date:		04/14/14						
	Test Engineer:		D. Soper						
	Configuration:		X-position						
	Mode:		HSDPA B2 1900Mhz						
	Test Equipment:								
	Receiving: T119, 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								
	1.852	2.1	V	0.85	7.85	9.11	33.0	-23.9	
	1.852	15.2	H	0.85	7.85	22.23	33.0	-10.8	
	Mid Ch								
	1.880	7.7	V	0.85	7.85	14.65	33.0	-18.4	
	1.880	15.9	H	0.85	7.85	22.89	33.0	-10.1	
	High Ch								
	1.908	3.8	V	0.85	7.90	10.88	33.0	-22.1	
	1.908	14.8	H	0.85	7.90	21.86	33.0	-11.1	
	Rev. 3.17.11								

Band Band 2 REL99	High Frequency Fundamental Measurement Compliance Certification Services Chamber C								
	Company:		Samsung						
	Project #:		14U17495						
	Date:		04/14/14						
	Test Engineer:		D. Soper						
	Configuration:		X-position						
	Mode:		REL99 B2 1900Mhz						
	Test Equipment:								
	Receiving: T119, 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								
	1.852	7.1	V	0.85	7.85	14.14	33.0	-18.9	
	1.852	16.3	H	0.85	7.85	23.25	33.0	-9.8	
	Mid Ch								
	1.880	2.8	V	0.85	7.85	9.80	33.0	-23.2	
	1.880	16.4	H	0.85	7.85	23.38	33.0	-9.6	
	High Ch								
	1.908	2.5	V	0.85	7.90	9.50	33.0	-23.5	
	1.908	14.7	H	0.85	7.90	21.77	33.0	-11.2	
	Rev. 3.17.11								

Band

Band 5

HSDPA

High Frequency Substitution Measurement

Compliance Certification Services Chamber C

Company:

Project #:

Date:

Test Engineer:

Configuration:

Mode:

Samsung

14U17495

04/17/14

K.Kedida

EUT ONLY, X position

HSDPA 850MHz

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.

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	11.10	V	0.9	0.0	10.20	38.5	-28.2	
826.40	19.50	H	0.9	0.0	18.60	38.5	-19.8	
Mid Ch								
836.60	11.55	V	0.9	0.0	10.65	38.5	-27.8	
836.60	20.30	H	0.9	0.0	19.40	38.5	-19.0	
High Ch								
846.60	11.46	V	0.9	0.0	10.56	38.5	-27.9	
846.60	20.78	H	0.9	0.0	19.88	38.5	-18.6	

Rev. 3.17.11

Band GSM19 00 GPRS	High Frequency Fundamental Measurement Compliance Certification Services Chamber C Company: Samsung Project #: 14U17495 Date: 04/21/14 Test Engineer: R. Alegre Configuration: X-position Mode: GPRS 1900Mhz Test Equipment: Receiving: T119, and Chamber C 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 colspan="9">Low Ch</td> </tr> <tr> <td>1.850</td> <td>6.7</td> <td>V</td> <td>0.85</td> <td>7.85</td> <td>13.69</td> <td>33.0</td> <td>-19.3</td> <td></td> </tr> <tr> <td>1.850</td> <td>18.2</td> <td>H</td> <td>0.85</td> <td>7.85</td> <td>25.17</td> <td>33.0</td> <td>-7.8</td> <td></td> </tr> <tr> <td colspan="9">Mid Ch</td> </tr> <tr> <td>1.880</td> <td>7.3</td> <td>V</td> <td>0.85</td> <td>7.85</td> <td>14.30</td> <td>33.0</td> <td>-18.7</td> <td></td> </tr> <tr> <td>1.880</td> <td>20.1</td> <td>H</td> <td>0.85</td> <td>7.85</td> <td>27.10</td> <td>33.0</td> <td>-5.9</td> <td></td> </tr> <tr> <td colspan="9">High Ch</td> </tr> <tr> <td>1.910</td> <td>10.6</td> <td>V</td> <td>0.85</td> <td>7.90</td> <td>17.61</td> <td>33.0</td> <td>-15.4</td> <td></td> </tr> <tr> <td>1.910</td> <td>20.0</td> <td>H</td> <td>0.85</td> <td>7.90</td> <td>27.00</td> <td>33.0</td> <td>-6.0</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									1.850	6.7	V	0.85	7.85	13.69	33.0	-19.3		1.850	18.2	H	0.85	7.85	25.17	33.0	-7.8		Mid Ch									1.880	7.3	V	0.85	7.85	14.30	33.0	-18.7		1.880	20.1	H	0.85	7.85	27.10	33.0	-5.9		High Ch									1.910	10.6	V	0.85	7.90	17.61	33.0	-15.4		1.910	20.0	H	0.85	7.90	27.00	33.0	-6.0	
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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1.850	6.7	V	0.85	7.85	13.69	33.0	-19.3																																																																																				
1.850	18.2	H	0.85	7.85	25.17	33.0	-7.8																																																																																				
Mid Ch																																																																																											
1.880	7.3	V	0.85	7.85	14.30	33.0	-18.7																																																																																				
1.880	20.1	H	0.85	7.85	27.10	33.0	-5.9																																																																																				
High Ch																																																																																											
1.910	10.6	V	0.85	7.90	17.61	33.0	-15.4																																																																																				
1.910	20.0	H	0.85	7.90	27.00	33.0	-6.0																																																																																				

11.2. FIELD STRENGTH OF SPURIOUS RADIATION

RULE PART(S)

FCC: §2.1053, §22.917, §24.238, and §27

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 DATA

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement										
Company:	Samsung									
Project #:	14U17495									
Date:	04/21/14									
Test Engineer:	K.KEDIDA									
Configuration:	X Position, EUT and AC Adapter									
Mode:	TX, LTE B17 10MHz 16QAM									
Chamber Pre-amplifier Filter Limit 3m Chamber C T145 8449B Filter 1 Part 27										
Band	f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
LTE17 10MHz 16QAM	Low Ch, (709MHz)									
	1.418	-17.5	V	3.0	33.1	1.0	-49.6	-13.0	-36.6	
	2.127	-18.2	V	3.0	31.6	1.0	-48.7	-13.0	-35.7	
	2.836	-19.5	V	3.0	31.0	1.0	-49.5	-13.0	-36.5	
	1.418	-12.4	H	3.0	33.1	1.0	-44.5	-13.0	-31.5	
	2.127	-19.7	H	3.0	31.6	1.0	-50.3	-13.0	-37.3	
	2.836	-19.5	H	3.0	31.0	1.0	-49.5	-13.0	-36.5	
	Mid Ch, (710MHz)									
	1.420	-17.1	V	3.0	33.1	1.0	-49.2	-13.0	-36.2	
	2.130	-20.1	V	3.0	31.6	1.0	-50.6	-13.0	-37.6	
	2.840	-20.0	V	3.0	31.0	1.0	-50.0	-13.0	-37.0	
	1.420	-13.8	H	3.0	33.1	1.0	-45.9	-13.0	-32.9	
	2.130	-19.1	H	3.0	31.6	1.0	-49.7	-13.0	-36.7	
	2.840	-20.6	H	3.0	31.0	1.0	-50.6	-13.0	-37.6	
	High Ch, (711MHz)									
	1.422	-14.1	V	3.0	33.1	1.0	-46.2	-13.0	-33.2	
	2.133	-19.5	V	3.0	31.6	1.0	-50.1	-13.0	-37.1	
	2.844	-19.4	V	3.0	31.0	1.0	-49.4	-13.0	-36.4	
1.422	-18.0	H	3.0	33.1	1.0	-50.1	-13.0	-37.1		
2.133	-20.5	H	3.0	31.6	1.0	-51.1	-13.0	-38.1		
2.844	-19.9	H	3.0	31.0	1.0	-49.9	-13.0	-36.9		
Rev. 03.03.09										

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement										
Company:	Samsung									
Project #:	14U17495									
Date:	04/21/14									
Test Engineer:	K.KEDIDA									
Configuration:	X Position, EUT and AC Adapter									
Mode:	TX, LTE B17 10MHz QPSK									
Chamber 3m Chamber C Pre-amplifier T145 8449B Filter Filter 1 Limit Part 27										
Band	f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
LTE17 10MHz QPSK	Low Ch, (709MHz)									
	1.418	-15.7	V	3.0	33.1	1.0	-47.8	-13.0	-34.8	
	2.127	-17.5	V	3.0	31.6	1.0	-48.1	-13.0	-35.1	
	2.836	-18.6	V	3.0	31.0	1.0	-48.6	-13.0	-35.6	
	1.418	-12.1	H	3.0	33.1	1.0	-44.2	-13.0	-31.2	
	2.127	-18.5	H	3.0	31.6	1.0	-49.1	-13.0	-36.1	
	2.836	-18.9	H	3.0	31.0	1.0	-48.9	-13.0	-35.9	
	Mid Ch, (710MHz)									
	1.420	-15.8	V	3.0	33.1	1.0	-47.9	-13.0	-34.9	
	2.130	-19.8	V	3.0	31.6	1.0	-50.4	-13.0	-37.4	
	2.840	-19.4	V	3.0	31.0	1.0	-49.4	-13.0	-36.4	
	1.420	-12.8	H	3.0	33.1	1.0	-44.9	-13.0	-31.9	
	2.130	-17.9	H	3.0	31.6	1.0	-48.5	-13.0	-35.5	
	2.840	-19.8	H	3.0	31.0	1.0	-49.8	-13.0	-36.8	
	High Ch, (711MHz)									
	1.422	-12.8	V	3.0	33.1	1.0	-44.9	-13.0	-31.9	
	2.133	-18.3	V	3.0	31.6	1.0	-48.9	-13.0	-35.9	
	2.844	-17.9	V	3.0	31.0	1.0	-47.9	-13.0	-34.9	
1.422	-16.5	H	3.0	33.1	1.0	-48.6	-13.0	-35.6		
2.133	-19.3	H	3.0	31.6	1.0	-49.9	-13.0	-36.9		
2.844	-18.7	H	3.0	31.0	1.0	-48.7	-13.0	-35.7		
Rev. 03.03.09										

Company: Samsung
Project #: 14U17495
Date: 04/21/14
Test Engineer: K.KEDIDA
Configuration: X Position, EUT and AC Adapter
Mode: TX, LTE B17 5MHz har 16QAM

Chamber	Pre-amplifier	Filter	Limit
3m Chamber C	T145 8449B	Filter 1	Part 27

Band	f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
LTE17	Low Ch. (706.5MHz)									
	1.413	-14.8	V	3.0	33.1	1.0	-46.9	-13.0	-33.9	
	2.120	-18.8	V	3.0	31.6	1.0	-49.4	-13.0	-36.4	
5MHz	2.826	-19.6	V	3.0	31.0	1.0	-49.6	-13.0	-36.6	
	1.413	-8.6	H	3.0	33.1	1.0	-40.7	-13.0	-27.7	
	2.120	-17.4	H	3.0	31.6	1.0	-48.0	-13.0	-35.0	
16QAM	2.826	-19.2	H	3.0	31.0	1.0	-49.3	-13.0	-36.3	
	Mid Ch. (710MHz)									
	1.420	-17.9	V	3.0	33.1	1.0	-50.0	-13.0	-37.0	
	2.130	-20.6	V	3.0	31.6	1.0	-51.2	-13.0	-38.2	
	2.840	-18.9	V	3.0	31.0	1.0	-48.9	-13.0	-35.9	
	1.420	-13.1	H	3.0	33.1	1.0	-45.1	-13.0	-32.1	
	2.130	-19.2	H	3.0	31.6	1.0	-49.8	-13.0	-36.8	
	2.840	-18.8	H	3.0	31.0	1.0	-48.8	-13.0	-35.8	
	High Ch. (713.5MHz)									
	1.427	-12.3	V	3.0	33.1	1.0	-44.4	-13.0	-31.4	
	2.141	-18.8	V	3.0	31.6	1.0	-49.4	-13.0	-36.4	
	2.854	-18.8	V	3.0	31.0	1.0	-48.8	-13.0	-35.8	
	1.427	-10.5	H	3.0	33.1	1.0	-42.6	-13.0	-29.6	
2.141	-17.9	H	3.0	31.6	1.0	-48.5	-13.0	-35.5		
2.854	-19.6	H	3.0	31.0	1.0	-49.6	-13.0	-36.6		

Rev. 03.03.09

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement										
Company:	Samsung									
Project #:	14U17495									
Date:	04/21/14									
Test Engineer:	K.KEDIDA									
Configuration:	X Position, EUT and AC Adapter									
Mode:	TX, LTE B17 5MHz har QPSK									
Chamber 3m Chamber C Pre-amplifier T145 8449B Filter Filter 1 Limit Part 27										
Band	f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
LTE17 5MHz QPSK	Low Ch, (706.5MHz)									
	1.413	-14.1	V	3.0	33.1	1.0	-46.1	-13.0	-33.1	
	2.120	-18.0	V	3.0	31.6	1.0	-48.6	-13.0	-35.6	
	2.826	-18.0	V	3.0	31.0	1.0	-48.1	-13.0	-35.1	
	1.413	-8.8	H	3.0	33.1	1.0	-40.9	-13.0	-27.9	
	2.120	-16.2	H	3.0	31.6	1.0	-46.8	-13.0	-33.8	
	2.826	-19.6	H	3.0	31.0	1.0	-49.6	-13.0	-36.6	
	Mid Ch, (710MHz)									
	1.420	-16.8	V	3.0	33.1	1.0	-48.9	-13.0	-35.9	
	2.130	-19.4	V	3.0	31.6	1.0	-49.9	-13.0	-36.9	
	2.840	-18.2	V	3.0	31.0	1.0	-48.2	-13.0	-35.2	
	1.420	-12.7	H	3.0	33.1	1.0	-44.8	-13.0	-31.8	
	2.130	-18.8	H	3.0	31.6	1.0	-49.4	-13.0	-36.4	
	2.840	-19.0	H	3.0	31.0	1.0	-49.1	-13.0	-36.1	
	High Ch, (713.5MHz)									
	1.427	-11.3	V	3.0	33.1	1.0	-43.4	-13.0	-30.4	
	2.141	-17.5	V	3.0	31.6	1.0	-48.1	-13.0	-35.1	
	2.854	-18.1	V	3.0	31.0	1.0	-48.1	-13.0	-35.1	
1.427	-9.6	H	3.0	33.1	1.0	-41.7	-13.0	-28.7		
2.141	-17.8	H	3.0	31.6	1.0	-48.3	-13.0	-35.3		
2.854	-17.8	H	3.0	31.0	1.0	-47.8	-13.0	-34.8		
Rev. 03.03.09										

Company: Samsung
Project #: 14U17495
Date: 04/18/14
Test Engineer: Charles Vergonio
Configuration: X Position, EUT and AC Adapter
Mode: TX, LTE B5 10MHZ 16QAM

Chamber	Pre-amplifier	Filter	Limit
3m Chamber	T145 8449B	Filter 1	Part 22

Band	f	SG reading	Ant. Pol.	Distance	Preamp	Filter	ERP	Limit	Delta	Notes
	GHz	(dBm)	(H/V)	(m)	(dB)	(dB)	(dBm)	(dBm)	(dB)	
LTE5	Low Ch. (829MHz)									
	1.658	-27.5	V	3.0	32.6	1.0	-59.1	-13.0	-46.1	
	2.487	-26.7	V	3.0	31.4	1.0	-57.1	-13.0	-44.1	
10MHz	3.316	-24.3	V	3.0	30.5	1.0	-53.9	-13.0	-40.9	
	1.658	-28.5	H	3.0	32.6	1.0	-60.2	-13.0	-47.2	
	2.487	-28.6	H	3.0	31.4	1.0	-59.0	-13.0	-46.0	
16QAM	3.316	-24.2	H	3.0	30.5	1.0	-53.7	-13.0	-40.7	
	Mid Ch. (836.5MHz)									
	1.673	-29.1	V	3.0	32.6	1.0	-60.7	-13.0	-47.7	
	2.509	-25.9	V	3.0	31.5	1.0	-56.4	-13.0	-43.4	
	3.346	-23.6	V	3.0	30.5	1.0	-53.1	-13.0	-40.1	
	1.673	-28.3	H	3.0	32.6	1.0	-59.9	-13.0	-46.9	
	2.509	-28.1	H	3.0	31.5	1.0	-58.6	-13.0	-45.6	
	3.346	-24.0	H	3.0	30.5	1.0	-53.5	-13.0	-40.5	
	High Ch. (844MHz)									
	1.688	-28.7	V	3.0	32.6	1.0	-60.3	-13.0	-47.3	
	2.532	-27.1	V	3.0	31.5	1.0	-57.5	-13.0	-44.5	
	3.376	-23.9	V	3.0	30.5	1.0	-53.4	-13.0	-40.4	
	1.688	-30.1	H	3.0	32.6	1.0	-61.7	-13.0	-48.7	
	2.532	-27.7	H	3.0	31.5	1.0	-58.2	-13.0	-45.2	
	3.376	-24.0	H	3.0	30.5	1.0	-53.4	-13.0	-40.4	

Note: No other emissions were detected above the system noise floor.

Company: Samsung
Project #: 14U17495
Date: 04/18/14
Test Engineer: Charles Vergonio
Configuration: X Position, EUT and AC Adapter
Mode: TX, LTE B5 10MHZ QPSK

Chamber	Pre-amplifier	Filter	Limit
3m Chamber	T145 8449B	Filter 1	Part 22

Band	f	SG reading	Ant. Pol.	Distance	Preamp	Filter	ERP	Limit	Delta	Notes
	GHz	(dBm)	(H/V)	(m)	(dB)	(dB)	(dBm)	(dBm)	(dB)	
LTE5	Low Ch, (829MHz)									
	1.658	-27.4	V	3.0	32.6	1.0	-59.1	-13.0	-46.1	
	2.487	-26.5	V	3.0	31.4	1.0	-56.9	-13.0	-43.9	
10MHz	3.316	-24.2	V	3.0	30.5	1.0	-53.7	-13.0	-40.7	
	1.658	-28.4	H	3.0	32.6	1.0	-60.1	-13.0	-47.1	
	2.487	-28.4	H	3.0	31.4	1.0	-58.8	-13.0	-45.8	
QPSK	3.316	-24.3	H	3.0	30.5	1.0	-53.8	-13.0	-40.8	
	Mid Ch, (836.5MHz)									
	1.673	-28.9	V	3.0	32.6	1.0	-60.5	-13.0	-47.5	
	2.509	-26.0	V	3.0	31.5	1.0	-56.5	-13.0	-43.5	
	3.346	-23.9	V	3.0	30.5	1.0	-53.4	-13.0	-40.4	
	1.673	-28.3	H	3.0	32.6	1.0	-59.9	-13.0	-46.9	
	2.509	-28.0	H	3.0	31.5	1.0	-58.5	-13.0	-45.5	
	3.346	-24.1	H	3.0	30.5	1.0	-53.6	-13.0	-40.6	
	High Ch, (844MHz)									
	1.688	-28.5	V	3.0	32.6	1.0	-60.1	-13.0	-47.1	
	2.532	-26.5	V	3.0	31.5	1.0	-57.0	-13.0	-44.0	
	3.376	-23.3	V	3.0	30.5	1.0	-52.8	-13.0	-39.8	
	1.688	-29.5	H	3.0	32.6	1.0	-61.1	-13.0	-48.1	
	2.532	-28.1	H	3.0	31.5	1.0	-58.6	-13.0	-45.6	
	3.376	-23.5	H	3.0	30.5	1.0	-53.0	-13.0	-40.0	

Rev. 03.03.09

Note: No other emissions were detected above the system noise floor.

Company: Samsung
Project #: 14U17495
Date: 04/18/14
Test Engineer: Charles Vergonio
Configuration: X Position, EUT and AC Adapter
Mode: TX, LTE B5 5MHZ 16QAM

Chamber	Pre-amplifier	Filter	Limit
3m Chamber	T145 8449B	Filter 1	Part 22

Band	f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
LTE5	Low Ch, (826.5MHz)									
	1.653	-27.7	V	3.0	32.7	1.0	-59.4	-13.0	-46.4	
	2.479	-26.5	V	3.0	31.4	1.0	-56.9	-13.0	-43.9	
5MHz	3.306	-24.3	V	3.0	30.5	1.0	-53.9	-13.0	-40.9	
	1.653	-29.9	H	3.0	32.7	1.0	-61.6	-13.0	-48.6	
	2.479	-27.8	H	3.0	31.4	1.0	-58.2	-13.0	-45.2	
16QAM	3.306	-24.7	H	3.0	30.5	1.0	-54.3	-13.0	-41.3	
	Mid Ch, (836.5MHz)									
	1.673	-27.8	V	3.0	32.6	1.0	-59.4	-13.0	-46.4	
	2.509	-27.0	V	3.0	31.5	1.0	-57.5	-13.0	-44.5	
	3.346	-24.4	V	3.0	30.5	1.0	-53.9	-13.0	-40.9	
	1.673	-29.1	H	3.0	32.6	1.0	-60.7	-13.0	-47.7	
	2.509	-27.8	H	3.0	31.5	1.0	-58.3	-13.0	-45.3	
	3.346	-24.7	H	3.0	30.5	1.0	-54.2	-13.0	-41.2	
	High Ch, (846.5MHz)									
	1.693	-29.3	V	3.0	32.6	1.0	-60.8	-13.0	-47.8	
	2.539	-27.0	V	3.0	31.4	1.0	-57.5	-13.0	-44.5	
	3.386	-22.9	V	3.0	30.5	1.0	-52.4	-13.0	-39.4	
	1.693	-29.9	H	3.0	32.6	1.0	-61.5	-13.0	-48.5	
	2.539	-28.1	H	3.0	31.4	1.0	-58.5	-13.0	-45.5	
	3.386	-24.5	H	3.0	30.5	1.0	-54.0	-13.0	-41.0	

Rev. 03.03.09

Note: No other emissions were detected above the system noise floor.

Company: Samsung
Project #: 14U17495
Date: 04/18/14
Test Engineer: Charles Vergonio
Configuration: X Position, EUT and AC Adapter
Mode: TX, LTE B5 5MHz QPSK

Chamber	Pre-amplifier	Filter	Limit
3m Chamber	T145 8449B	Filter 1	Part 22

Band	f	SG reading	Ant. Pol.	Distance	Preamp	Filter	ERP	Limit	Delta	Notes
	GHz	(dBm)	(H/V)	(m)	(dB)	(dB)	(dBm)	(dBm)	(dB)	
LTE5	Low Ch, (826.5MHz)									
	1.653	-26.9	V	3.0	32.7	1.0	-58.5	-13.0	-45.5	
	2.479	-26.7	V	3.0	31.4	1.0	-57.1	-13.0	-44.1	
5MHz	3.306	-24.3	V	3.0	30.5	1.0	-53.8	-13.0	-40.8	
	1.653	-29.3	H	3.0	32.7	1.0	-60.9	-13.0	-47.9	
	2.479	-27.8	H	3.0	31.4	1.0	-58.2	-13.0	-45.2	
QPSK	3.306	-24.5	H	3.0	30.5	1.0	-54.0	-13.0	-41.0	
	Mid Ch, (836.5MHz)									
	1.673	-28.1	V	3.0	32.6	1.0	-59.7	-13.0	-46.7	
	2.509	-26.9	V	3.0	31.5	1.0	-57.4	-13.0	-44.4	
	3.346	-24.0	V	3.0	30.5	1.0	-53.5	-13.0	-40.5	
	1.673	-29.6	H	3.0	32.6	1.0	-61.2	-13.0	-48.2	
	2.509	-27.8	H	3.0	31.5	1.0	-58.3	-13.0	-45.3	
	3.346	-24.7	H	3.0	30.5	1.0	-54.2	-13.0	-41.2	
	High Ch, (846.5MHz)									
	1.693	-29.1	V	3.0	32.6	1.0	-60.6	-13.0	-47.6	
	2.539	-26.6	V	3.0	31.4	1.0	-57.1	-13.0	-44.1	
	3.386	-23.8	V	3.0	30.5	1.0	-53.2	-13.0	-40.2	
	1.693	-29.6	H	3.0	32.6	1.0	-61.1	-13.0	-48.1	
	2.539	-27.3	H	3.0	31.4	1.0	-57.7	-13.0	-44.7	
	3.386	-23.7	H	3.0	30.5	1.0	-53.2	-13.0	-40.2	

Note: No other emissions were detected above the system noise floor.

Company: Samsung
Project #: 14U17495
Date: 04/18/14
Test Engineer: Charles Vergonio
Configuration: X Position, EUT and AC Adapter
Mode: TX, LTE B5 3MHz 16QAM

Chamber	Pre-amplifier	Filter	Limit
5m Chamber	T145 8449B	Filter 1	Part 22

Band	f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
LTE5	Low Ch. (825.5MHz)									
	1.651	-29.6	V	3.0	32.7	1.0	-61.3	-13.0	-48.3	
	2.477	-26.6	V	3.0	31.4	1.0	-57.0	-13.0	-44.0	
3MHz	3.302	-23.2	V	3.0	30.5	1.0	-52.8	-13.0	-39.8	
	1.651	-30.1	H	3.0	32.7	1.0	-61.8	-13.0	-48.8	
	2.477	-29.5	H	3.0	31.4	1.0	-59.9	-13.0	-46.9	
16QAM	3.302	-24.0	H	3.0	30.5	1.0	-53.6	-13.0	-40.6	
	Mid Ch. (836.5MHz)									
	1.673	-30.3	V	3.0	32.6	1.0	-61.9	-13.0	-48.9	
	2.509	-26.3	V	3.0	31.5	1.0	-56.8	-13.0	-43.8	
	3.346	-22.9	V	3.0	30.5	1.0	-52.4	-13.0	-39.4	
	1.673	-29.4	H	3.0	32.6	1.0	-61.0	-13.0	-48.0	
	2.509	-28.0	H	3.0	31.5	1.0	-58.5	-13.0	-45.5	
	3.346	-24.4	H	3.0	30.5	1.0	-53.9	-13.0	-40.9	
	High Ch. (847.5MHz)									
	1.695	-29.4	V	3.0	32.6	1.0	-61.0	-13.0	-48.0	
	2.542	-26.0	V	3.0	31.4	1.0	-56.4	-13.0	-43.4	
	3.390	-23.8	V	3.0	30.5	1.0	-53.3	-13.0	-40.3	
	1.695	-29.4	H	3.0	32.6	1.0	-61.0	-13.0	-48.0	
	2.542	-28.4	H	3.0	31.4	1.0	-58.8	-13.0	-45.8	
	3.390	-23.4	H	3.0	30.5	1.0	-52.9	-13.0	-39.9	

Note: No other emissions were detected above the system noise floor.

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement										
Company:	Samsung									
Project #:	14U17495									
Date:	04/18/14									
Test Engineer:	Charles Vergonio									
Configuration:	X Position, EUT and AC Adapter									
Mode:	TX, LTE B5 3MHZ QPSK									
Chamber Pre-amplifier Filter Limit 3m Chamber T145 8449B Filter 1 Part 22										
Band	f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
LTE5 3MHz QPSK	Low Ch, (825.5MHz)									
	1.651	-29.4	V	3.0	32.7	1.0	-61.1	-13.0	-48.1	
	2.477	-26.8	V	3.0	31.4	1.0	-57.1	-13.0	-44.1	
	3.302	-24.4	V	3.0	30.5	1.0	-53.9	-13.0	-40.9	
	1.651	-30.3	H	3.0	32.7	1.0	-61.9	-13.0	-48.9	
	2.477	-28.1	H	3.0	31.4	1.0	-58.5	-13.0	-45.5	
	3.302	-24.2	H	3.0	30.5	1.0	-53.8	-13.0	-40.8	
	Mid Ch, (836.5MHz)									
	1.673	-30.1	V	3.0	32.6	1.0	-61.7	-13.0	-48.7	
	2.509	-25.7	V	3.0	31.5	1.0	-56.2	-13.0	-43.2	
	3.346	-24.0	V	3.0	30.5	1.0	-53.5	-13.0	-40.5	
	1.673	-29.8	H	3.0	32.6	1.0	-61.4	-13.0	-48.4	
	2.509	-28.0	H	3.0	31.5	1.0	-58.5	-13.0	-45.5	
	3.346	-23.6	H	3.0	30.5	1.0	-53.1	-13.0	-40.1	
	High Ch, (847.5MHz)									
	1.695	-29.3	V	3.0	32.6	1.0	-60.8	-13.0	-47.8	
	2.542	-26.2	V	3.0	31.4	1.0	-56.6	-13.0	-43.6	
	3.390	-24.2	V	3.0	30.5	1.0	-53.6	-13.0	-40.6	
	1.695	-29.8	H	3.0	32.6	1.0	-61.3	-13.0	-48.3	
	2.542	-27.8	H	3.0	31.4	1.0	-58.2	-13.0	-45.2	
3.390	-24.3	H	3.0	30.5	1.0	-53.7	-13.0	-40.7		
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										
Company:	Samsung									
Project #:	14U17495									
Date:	04/18/14									
Test Engineer:	Charles Vergonio									
Configuration:	X Position, EUT and AC Adapter									
Mode:	WCDMA_HSDPA 1900									
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
Band 2 HSDPA	Low Ch, 1852.4MHz									
	3.705	-20.6	V	3.0	35.4	1.0	-55.0	-13.0	-42.0	
	5.557	-18.0	V	3.0	34.7	1.0	-51.7	-13.0	-38.7	
	7.409	-15.3	V	3.0	34.9	1.0	-49.2	-13.0	-36.2	
	3.705	-19.2	H	3.0	35.4	1.0	-53.6	-13.0	-40.6	
	5.557	-18.0	H	3.0	34.7	1.0	-51.7	-13.0	-38.7	
	7.409	-13.6	H	3.0	34.9	1.0	-47.5	-13.0	-34.5	
	Mid Ch, 1880.0MHz									
	3.760	-21.6	V	3.0	35.3	1.0	-56.0	-13.0	-43.0	
	5.640	-17.5	V	3.0	34.7	1.0	-51.3	-13.0	-38.3	
	7.520	-13.1	V	3.0	34.9	1.0	-47.1	-13.0	-34.1	
	3.760	-21.4	H	3.0	35.3	1.0	-55.7	-13.0	-42.7	
	5.640	-17.4	H	3.0	34.7	1.0	-51.1	-13.0	-38.1	
	7.520	-13.8	H	3.0	34.9	1.0	-47.8	-13.0	-34.8	
	High Ch, 1907.6 MHz									
	3.820	-20.3	V	3.0	35.3	1.0	-54.5	-13.0	-41.5	
	5.723	-17.3	V	3.0	34.7	1.0	-51.1	-13.0	-38.1	
	7.630	-14.1	V	3.0	34.9	1.0	-48.1	-13.0	-35.1	
	3.820	-20.8	H	3.0	35.3	1.0	-55.1	-13.0	-42.1	
	5.723	-18.1	H	3.0	34.7	1.0	-51.8	-13.0	-38.8	
7.630	-12.7	H	3.0	34.9	1.0	-46.7	-13.0	-33.7		
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:	Samsung									
Project #:	14U17495									
Date:	04/18/14									
Test Engineer:	Charles Vergonio									
Configuration:	X Position, EUT and AC Adapter									
Mode:	WCDMA_Rel 1900									
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
REL99	Low Ch, 1852.4MHz									
	3.705	-20.3	V	3.0	35.4	1.0	-54.7	-13.0	-41.7	
	5.557	-17.7	V	3.0	34.7	1.0	-51.4	-13.0	-38.4	
	7.409	-14.2	V	3.0	34.9	1.0	-48.1	-13.0	-35.1	
	3.705	-20.6	H	3.0	35.4	1.0	-55.0	-13.0	-42.0	
	5.557	-18.9	H	3.0	34.7	1.0	-52.6	-13.0	-39.6	
	7.409	-13.7	H	3.0	34.9	1.0	-47.6	-13.0	-34.6	
	Mid Ch, 1880.0MHz									
	3.760	-19.4	V	3.0	35.3	1.0	-53.8	-13.0	-40.8	
	5.640	-19.2	V	3.0	34.7	1.0	-53.0	-13.0	-40.0	
	7.520	-14.9	V	3.0	34.9	1.0	-48.9	-13.0	-35.9	
	3.760	-22.0	H	3.0	35.3	1.0	-56.4	-13.0	-43.4	
	5.640	-18.9	H	3.0	34.7	1.0	-52.7	-13.0	-39.7	
	7.520	-13.0	H	3.0	34.9	1.0	-46.9	-13.0	-33.9	
	High Ch, 1907.6 MHz									
	3.820	-17.8	V	3.0	35.3	1.0	-52.1	-13.0	-39.1	
	5.723	-18.4	V	3.0	34.7	1.0	-52.1	-13.0	-39.1	
	7.630	-14.5	V	3.0	34.9	1.0	-48.4	-13.0	-35.4	
3.820	-20.7	H	3.0	35.3	1.0	-55.0	-13.0	-42.0		
5.723	-17.2	H	3.0	34.7	1.0	-50.9	-13.0	-37.9		
7.630	-13.1	H	3.0	34.9	1.0	-47.1	-13.0	-34.1		
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: Samsung Project #: 14U17495 Date: 04/18/14 Test Engineer: Charles Vergonio Configuration: X Position, EUT and AC Adapter 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)	Preamplifier (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 826.6MHz									
1.653	-28.1	V	3.0	37.4	1.0	-64.5	-13.0	-51.5	
2.480	-24.8	V	3.0	36.4	1.0	-60.2	-13.0	-47.2	
3.306	-22.7	V	3.0	35.8	1.0	-57.5	-13.0	-44.5	
1.653	-28.5	H	3.0	37.4	1.0	-64.8	-13.0	-51.8	
2.480	-24.9	H	3.0	36.4	1.0	-60.3	-13.0	-47.3	
3.306	-23.0	H	3.0	35.8	1.0	-57.8	-13.0	-44.8	
Mid Ch, 836.6MHz									
1.673	-26.7	V	3.0	37.3	1.0	-63.1	-13.0	-50.1	
2.510	-24.8	V	3.0	36.4	1.0	-60.1	-13.0	-47.1	
3.346	-22.1	V	3.0	35.8	1.0	-56.8	-13.0	-43.8	
1.673	-28.4	H	3.0	37.3	1.0	-64.7	-13.0	-51.7	
2.510	-26.0	H	3.0	36.4	1.0	-61.3	-13.0	-48.3	
3.346	-22.2	H	3.0	35.8	1.0	-57.0	-13.0	-44.0	
High Ch, 846.4MHz									
1.693	-27.8	V	3.0	37.3	1.0	-64.2	-13.0	-51.2	
2.539	-24.4	V	3.0	36.3	1.0	-59.7	-13.0	-46.7	
3.386	-22.6	V	3.0	35.7	1.0	-57.3	-13.0	-44.3	
1.693	-27.7	H	3.0	37.3	1.0	-64.0	-13.0	-51.0	
2.539	-26.0	H	3.0	36.3	1.0	-61.3	-13.0	-48.3	
3.386	-22.7	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.									

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company:		Samsung							
Project #:		14U17495							
Date:		04/18/14							
Test Engineer:		Charles Vergonio							
Configuration:		X Position, EUT and AC Adapter							
Mode:		WCDMA_REL 99_ 850							
Chamber		Pre-amplifer		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
Low Ch, 826.6MHz									
1.653	-27.5	V	3.0	37.4	1.0	-63.9	-13.0	-50.9	
2.480	-24.5	V	3.0	36.4	1.0	-59.9	-13.0	-46.9	
3.306	-22.7	V	3.0	35.8	1.0	-57.4	-13.0	-44.4	
1.653	-28.0	H	3.0	37.4	1.0	-64.4	-13.0	-51.4	
2.480	-25.6	H	3.0	36.4	1.0	-61.0	-13.0	-48.0	
3.306	-22.9	H	3.0	35.8	1.0	-57.7	-13.0	-44.7	
Mid Ch, 836.6MHz									
1.673	-27.5	V	3.0	37.3	1.0	-63.8	-13.0	-50.8	
2.510	-24.1	V	3.0	36.4	1.0	-59.4	-13.0	-46.4	
3.346	-21.9	V	3.0	35.8	1.0	-56.7	-13.0	-43.7	
1.673	-27.9	H	3.0	37.3	1.0	-64.3	-13.0	-51.3	
2.510	-26.6	H	3.0	36.4	1.0	-61.9	-13.0	-48.9	
3.346	-22.8	H	3.0	35.8	1.0	-57.5	-13.0	-44.5	
High Ch, 846.4MHz									
1.693	-27.2	V	3.0	37.3	1.0	-63.5	-13.0	-50.5	
2.539	-23.5	V	3.0	36.3	1.0	-58.9	-13.0	-45.9	
3.386	-22.2	V	3.0	35.7	1.0	-57.0	-13.0	-44.0	
1.693	-27.9	H	3.0	37.3	1.0	-64.2	-13.0	-51.2	
2.539	-25.4	H	3.0	36.3	1.0	-60.7	-13.0	-47.7	
3.386	-23.1	H	3.0	35.7	1.0	-57.8	-13.0	-44.8	
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:	Samsung									
Project #:	14U17495									
Date:	04/18/14									
Test Engineer:	Charles Vergonio									
Configuration:	X Position, EUT and AC Adapter									
Mode:	GPRS 1900									
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
GSM19 00 GPRS	Low Ch, 1850.2MHz									
	3.700	-21.6	V	3.0	35.4	1.0	-56.0	-13.0	-43.0	
	5.551	-18.3	V	3.0	34.7	1.0	-52.0	-13.0	-39.0	
	7.401	-11.3	V	3.0	34.9	1.0	-45.2	-13.0	-32.2	
	3.700	-21.5	H	3.0	35.4	1.0	-55.9	-13.0	-42.9	
	5.551	-17.8	H	3.0	34.7	1.0	-51.5	-13.0	-38.5	
	7.401	-10.7	H	3.0	34.9	1.0	-44.6	-13.0	-31.6	
	Mid Ch, 1880.0MHz									
	3.760	-20.7	V	3.0	35.3	1.0	-55.0	-13.0	-42.0	
	5.640	-18.2	V	3.0	34.7	1.0	-51.9	-13.0	-38.9	
	7.520	-10.9	V	3.0	34.9	1.0	-44.9	-13.0	-31.9	
	3.760	-21.5	H	3.0	35.3	1.0	-55.9	-13.0	-42.9	
	5.640	-17.5	H	3.0	34.7	1.0	-51.2	-13.0	-38.2	
	7.520	-10.5	H	3.0	34.9	1.0	-44.4	-13.0	-31.4	
	High Ch, 1909.8 MHz									
	3.820	-20.8	V	3.0	35.3	1.0	-55.1	-13.0	-42.1	
	5.729	-18.4	V	3.0	34.7	1.0	-52.1	-13.0	-39.1	
	7.639	-11.3	V	3.0	35.0	1.0	-45.3	-13.0	-32.3	
3.820	-21.7	H	3.0	35.3	1.0	-56.0	-13.0	-43.0		
5.729	-16.9	H	3.0	34.7	1.0	-50.7	-13.0	-37.7		
7.639	-10.8	H	3.0	35.0	1.0	-44.7	-13.0	-31.7		
Rev. 03.03.09										
Note: No other emissions were detected above the system noise floor.										