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

CERTIFICATION TEST REPORT

FOR

GSM/WCDMA/LTE + BLUETOOTH, DTS/UNII a/b/g/n/ac, ANT+ and NFC

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Rev.	Issue Date	Revisions	Revised By
-	2015-05-10	Initial Release.	Jeff Moser
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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: SONY MOBILE COMMUNICATION, INC.

EUT DESCRIPTION: GSM/WCDMA/LTE + BLUETOOTH, DTS/UNII a/b/g/n/ac, ANT+ and NFC

SERIAL NUMBER: Serial Numbers: CB5A23WPZZ, CB5A23WPYJ, CB5A23WQ0J

DATE TESTED: 2015-04-27 through 2015-05-08

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

UL LLC 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 LLC 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 LLC and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL LLC 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.

Approved & Released
For UL LLC By:

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2. TEST METHODOLOGY

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

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 12 Laboratory Dr., Research Triangle Park, NC 27709, USA.

12 Laboratory Dr., RTP, NC 27709
☐ Chamber A
☒ Chamber C

The onsite chambers (A & C) are covered under Industry Canada company address code 2180C with site numbers 2180C -1 through 2180C-2, respectively.

UL LLC (RTP) is accredited by NVLAP, Laboratory Code 200246-0. The full scope of accreditation can be viewed at http://ts.nist.gov/standards/scopes/2002460.htm.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

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

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)

36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

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4.3. MEASUREMENT UNCERTAINTY

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

Test	Uncertainty
Conducted Emissions (0.150-30MHz)	+/- 2.37 dB
Radiated Emissions (30-1000 MHz)	+/- 6.04 dB (3m)
Radiated Emissions (1-40 GHz)	+/- 6.81 dB

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

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5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a GSM/WCDMA/LTE + BLUETOOTH, DTS/UNII a/b/g/n/ac, ANT+ and NFC capability that is manufactured by Sony.

5.2. MAXIMUM OUTPUT POWER

FCC Part 22/24						
Band	Frequency Range(MHz)	Modulation Peak	Conducted		Radiated	
			AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
GSM850	824~849	GPRS	32.7	1862.09	28.91	778.04
	824~849	EGPRS	26.7	467.74	23.18	207.97
GSM1900	1850~1910	GPRS	29.8	954.99	32.51	1782.38
	1850~1910	EGPRS	25.8	380.19	28.17	656.15
Band 5	824~849	REL99	24.7	295.12	20.16	103.75
	824~849	HSDPA	23.8	239.88	19.41	87.30
	824~849	HSUPA	22.9	194.98		
Band 2	1850~1910	REL99	23.4	218.78	24.55	285.10
	1850~1910	HSDPA	22.4	173.78	23.64	231.21
	1850~1910	HSUPA	22.2	165.96		

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5.3. MAXIMUM OUTPUT POWER (LTE)

FCC Part 27							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation	Conducted		Radiated	
			Peak	AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE17	704~716	10MHz	QPSK	23.21	209.41	17.44	55.46
	704~716	10MHz	16QAM	22.74	187.93	16.80	47.86

FCC Part 27							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation	Conducted		Radiated	
			Peak	AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE17	704~716	5MHz	QPSK	23.60	229.09	17.74	59.43
	704~716	5MHz	16QAM	22.36	172.19	16.87	48.64

FCC Part 22							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation	Conducted		Radiated	
			Peak	AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE5	824~849	10MHz	QPSK	23.66	232.27	19.96	99.08
	824~849	10MHz	16QAM	22.81	190.99	19.24	83.95

FCC Part 22							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation	Conducted		Radiated	
			Peak	AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE5	824~849	5MHz	QPSK	23.69	233.88	20.51	112.46
	824~849	5MHz	16QAM	23.05	201.84	19.64	92.04

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FCC Part 22 (3MHz Bandwidth)							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation	Conducted		Radiated	
			Peak	AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE5	824~849	3MHz	QPSK	23.73	236.05	20.43	110.41
	824~849	3MHz	16QAM	22.92	195.88	19.50	89.13

FCC Part 22							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation	Conducted		Radiated	
			Peak	AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE5	824~849	1.4MHz	QPSK	23.46	221.82	19.16	82.41
	824~849	1.4MHz	16QAM	22.85	192.75	18.01	63.24

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5.4. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a PIFA antenna for the GSM 850, GSM 1900, WCDMA Bands 2 and 5 and LTE Bands 5 and 17 with a maximum peak gain as follow:

Frequency (MHz)	Peak Gain (dBd/dBi)
GSM850, 824~849MHz	-4.2
GSM1900, 1850~1910MHz	0.1
Band 5, 824~849MHz	-4.2
Band 2, 1850~1910MHz	0.1
LTE5, 824~849MHz	-4.2
LTE17, 704~716MHz	-4.5

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5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
AC Adapter	Sony	EP-880	3514W 01 S08499	

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	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.

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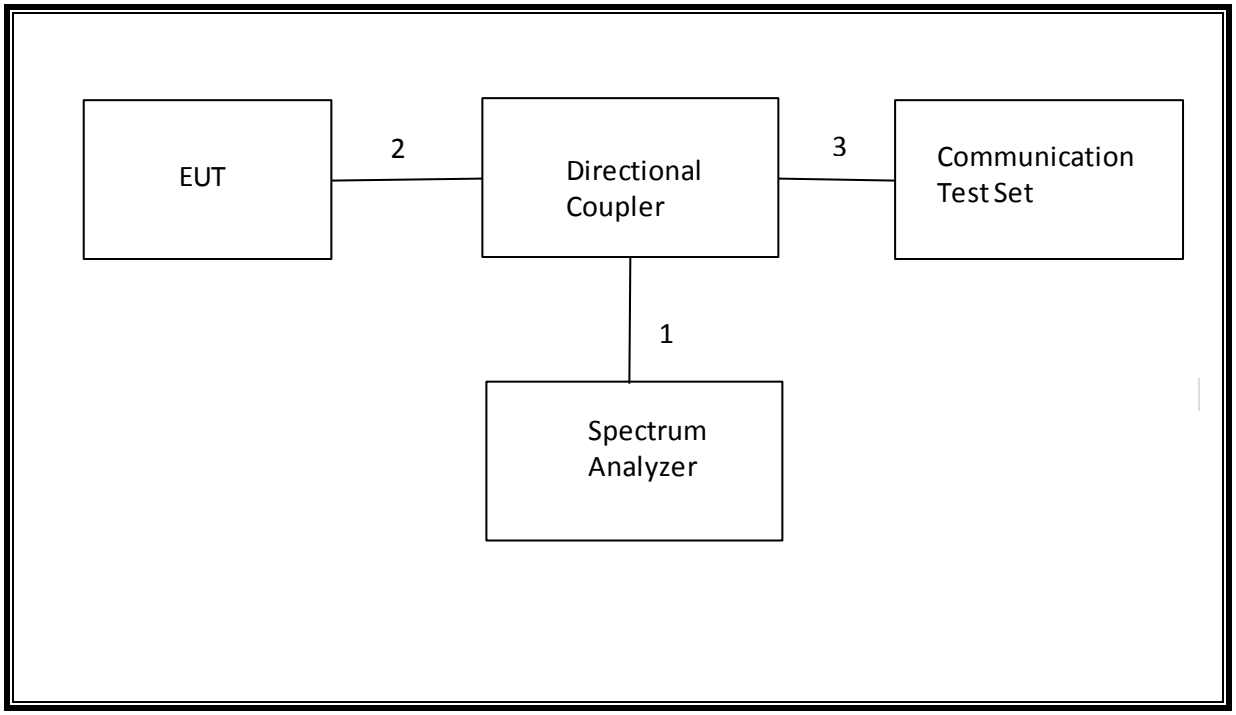
SETUP DIAGRAM FOR TESTS (CONDUCTED TEST SETUP)



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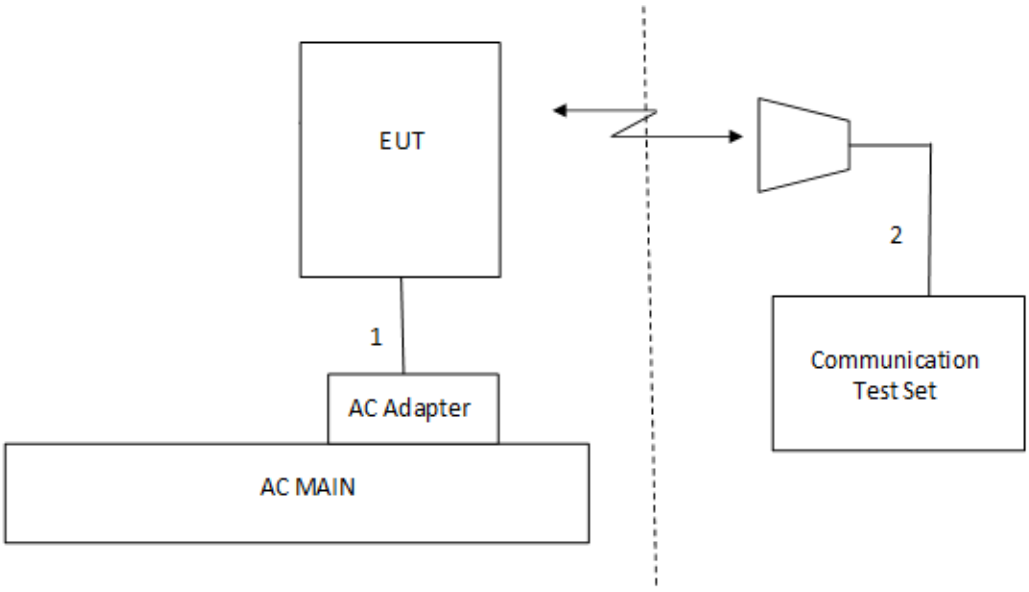
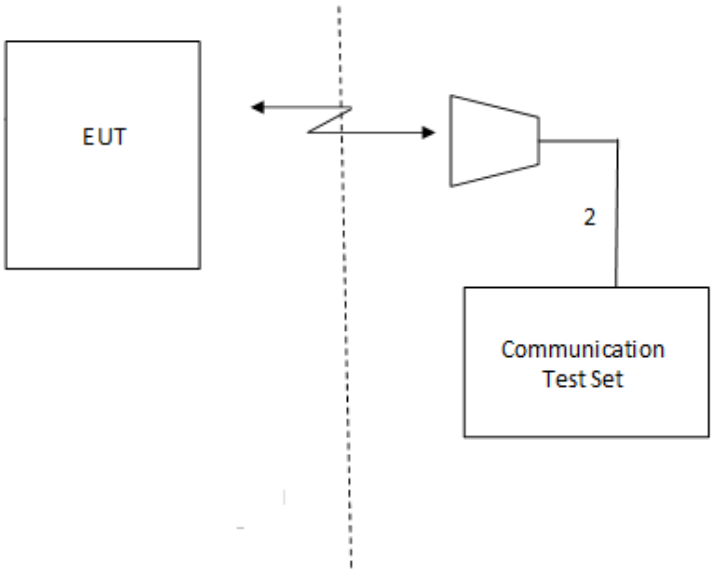
SETUP DIAGRAM FOR TESTS (RADIATED TEST SETUP)

SPURIOUS



FUNDAMENTAL



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6. TEST AND MEASUREMENT EQUIPMENT

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

Wireless Conducted Measurement Equipment

Equipment ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
	Common Equipment				
SA0020	Spectrum Analyzer	Agilent Technologies	E4446	2014-06-12	2015-06-30
SA0022	Network Analyzer	Agilent Technologies	8722ES	2015-03-19	2016-03-31
PAR038	RF Power Meter Sensor	HP	8481A	2015-01-07	2016-01-31
PAR037	Power Meter, 100kHz to 110 GHz	HP	437B	2015-01-07	2016-01-31
T374	Wideband Radio Communications Tester	Rohde and Schwartz	CMW500	2014-10-13	2015-10-31
MM0143	Digital Multimeter,	Fluke	175	2014-09-04	2016-09-30
HI0069	Temp/Humid/Pressure Meter	Cole-Parmer	99760-00	2014-06-27	2015-06-30
-	Directional Coupler	Mini Circuits	ZUDC10-183+	Cal on Demand	Cal on Demand

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Radiated Disturbance Emissions (E-field) – Chamber C

Equip. ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
	30-1000 MHz Range				
AT0066	Hybrid Broadband Antenna	Sunol Sciences Corp.	JB1	2014-07-10	2015-07-31
	1-18 GHz				
AT0062	Double-Ridged Waveguide Horn Antenna, 1 to 18 GHz	ETS Lindgren	3117	2014-07-22	2015-07-31
	Substitution Antenna				
AT0069 (Substitution Antenna)	Double-Ridged Waveguide Horn Antenna, 1 to 18 GHz	ETS Lindgren	3117	2015-02-17	2016-02-29
AT0030 (Substitution Antenna)	Log Periodic	Schaffner	UPA6109	2014-07-01	2015-07-31
	Gain-Loss Chains				
SAC_G (Hybrid) 30-1000MHz	Gain-Loss string for Hyrbid antenna at 3m	Various	Various	2015-01-26	2016-01-31
SAC_G (BOM) 1-18GHz	Gain-Loss string for Hyrbid antenna at 3m	Various	Various	2015-01-26	2016-01-31
	Receiver & Software				
SA0018	Spectrum Analyzer	Agilent	N9030A	2014-06-24	2015-06-30
SOFTEMI	EMI Software	UL	Version 9.5	NA	NA
T918	Wideband Radio Communications Tester	Rohde and Schwartz	CMW500	2014-12-30	2015-12-31
	Additional Equipment used				
HI0069	Temp/Humid/Pressure Meter	Cole-Parmer	99760-00	2014-06-27	2015-06-30
SIG001 (Substitution Signal Generator)	Signal Generator, 100kHz-6GHz	Agilent	N5181A	2015-02-04	2016-02-04
HPF009	1GHz High-pass Filter	Micro-Tronics	HPM17672	2015-01-28	2016-01-31

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7. Summary Table

FCC Part Section	RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result	Note
2.1049	N/A	Occupied Band width (99%)	N/A	Conducted	Pass	8.996 MHz
22.917(a) 24.238(a) 27.53(g)	RSS-132(4.5.1) RSS-133(6.5.1) RSS-139(6.5.1)	Band Edge / Conducted Spurious Emission	-13dBm		Pass	-13.89 dBm/ -16.42 dBm
2.1046	N/A	Conducted output power	N/A		Pass	32.7 dBm
22.355 24.235 27.54	RSS-132(4.3) RSS-133(6.3) RSS-139(6.3)	Frequency Stability	2.5PPM		Pass	-0.005 ppm
22.913(a)(2)	RSS-132(4.4)	Effective Radiated Power	38 dBm	Radiated	Pass	28.91 dBm
27.50(b)(10)	N/A		34.77 dBm		Pass	17.74 dBm
24.232(c) 27.50(h)(2)	RSS-133(6.4) RSS-199(4.4)	Equivalent Isotropic Radiated Power	33dBm		Pass	32.51 dBm
22.917(a) 24.238(a) 27.53(g)	RSS-132(4.5.1) RSS-133(6.5.1) RSS-139(6.5.1)	Radiated Spurious Emission	-13dBm		Pass	-44.3 dBm

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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

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8.1.1. GSM OUTPUT POWER RESULT

Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Burst Pwr (dBm)
GSM (Voice)	CS1	1	128	824.2	N/A
			190	836.6	N/A
			251	848.8	N/A
GPRS (GMSK)	CS1	1	128	824.2	32.7
			190	836.6	32.7
			251	848.8	32.7
		2	128	824.2	31.5
			190	836.6	31.4
			251	848.8	31.5
		3	128	824.2	29.4
			190	836.6	29.5
			251	848.8	29.3
		4	128	824.2	28.4
			190	836.6	28.2
			251	848.8	28.4
EGPRS (8PSK)	MCS5	1	128	824.2	26.5
			190	836.6	26.5
			251	848.8	26.7
		2	128	824.2	24.8
			190	836.6	24.8
			251	848.8	24.9
		3	128	824.2	23.1
			190	836.6	23.1
			251	848.8	23.3
		4	128	824.2	21.0
			190	836.6	21.3
			251	848.8	21.2

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Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Burst Pwr (dBm)
GSM (Voice)	CS1	1	512	1850.2	N/A
			661	1880.0	N/A
			810	1909.8	N/A
GPRS (GMSK)	CS1	1	512	1850.2	29.8
			661	1880.0	28.7
			810	1909.8	28.9
		2	512	1850.2	28.4
			661	1880.0	28.5
			810	1909.8	28.4
		3	512	1850.2	26.4
			661	1880.0	26.4
			810	1909.8	26.6
		4	512	1850.2	25.4
			661	1880.0	25.1
			810	1909.8	25.0
EGPRS (8PSK)	MCS5	1	512	1850.2	25.6
			661	1880.0	25.8
			810	1909.8	25.8
		2	512	1850.2	24.0
			661	1880.0	24.1
			810	1909.8	24.2
		3	512	1850.2	22.1
			661	1880.0	22.2
			810	1909.8	22.2
		4	512	1850.2	19.9
			661	1880.0	21.0
			810	1909.8	21.1

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8.2. UMTS REL 99

TEST PROCEDURE

The following summary of these settings are illustrated below:

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

8.2.1. UMTS REL 99 OUTPUT POWER RESULT

Release 99

Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band V	Rel 99 (RMC, 12.2 kbps)	4132	826.4	0	24.7
		4183	836.6	0	24.6
		4233	846.6	0	24.3

Release 99

Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band II	Rel 99 (RMC, 12.2 kbps)	9262	1852.4	0	23.3
		9400	1880.0	0	23.4
		9538	1907.6	0	23.3

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8.3. UMTS HSDPA

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

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

8.3.1. UMTS HSDPA OUTPUT POWER RESULT

HSDPA

Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band V	Subtest 1	4132	826.4	0	23.8
		4183	836.6	0	23.6
		4233	846.6	0	23.3
	Subtest 2	4132	826.4	0	23.7
		4183	836.6	0	23.6
		4233	846.6	0	23.3
	Subtest 3	4132	826.4	0.5	23.7
		4183	836.6	0.5	23.6
		4233	846.6	0.5	23.3
	Subtest 4	4132	826.4	0.5	23.5
		4183	836.6	0.5	23.6
		4233	846.6	0.5	23.3

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HSDPA

Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band II	Subtest 1	9262	1852.4	0	22.2
		9400	1880.0	0	22.4
		9538	1907.6	0	22.3
	Subtest 2	9262	1852.4	0	22.0
		9400	1880.0	0	22.2
		9538	1907.6	0	22.2
	Subtest 3	9262	1852.4	0.5	22.1
		9400	1880.0	0.5	22.2
		9538	1907.6	0.5	22.2
	Subtest 4	9262	1852.4	0.5	22.1
		9400	1880.0	0.5	22.2
		9538	1907.6	0.5	22.2

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8.3.2. UMTS HSUPA

TEST PROCEDURE

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

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

Note1: βed cannot be set directly, it is set by Absolute Grant Value.

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8.3.3. UMTS HSUPA OUTPUT POWER RESULT

HSUPA

Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band V	Subtest 1	4132	826.4	0	22.9
		4183	836.6	0	22.8
		4233	846.6	0	22.8
	Subtest 2	4132	826.4	2	22.0
		4183	836.6	2	22.0
		4233	846.6	2	21.8
	Subtest 3	4132	826.4	1	22.0
		4183	836.6	1	22.5
		4233	846.6	1	22.3
	Subtest 4	4132	826.4	2	22.8
		4183	836.6	2	22.8
		4233	846.6	2	22.3
	Subtest 5	4132	826.4	0	23.7
		4183	836.6	0	23.6
		4233	846.6	0	23.3

HSUPA

Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band II	Subtest 1	9262	1852.4	0	21.5
		9400	1880.0	0	21.8
		9538	1907.6	0	22.2
	Subtest 2	9262	1852.4	2	20.6
		9400	1880.0	2	20.5
		9538	1907.6	2	20.9
	Subtest 3	9262	1852.4	1	21.2
		9400	1880.0	1	21.0
		9538	1907.6	1	21.0
	Subtest 4	9262	1852.4	2	21.3
		9400	1880.0	2	21.4
		9538	1907.6	2	21.0
	Subtest 5	9262	1852.4	0	22.2
		9400	1880.0	0	22.1
		9538	1907.6	0	22.3

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8.4. LTE OUTPUT VERIFICATION

8.4.1. LTE OUTPUT RESULT

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)
						23790
						710 MHz
LTE Band 17	10	QPSK	1	0	0	23.07
			1	24	0	23.21
			1	49	0	23.21
			25	0	1	22.19
			25	12	1	22.24
			25	24	1	22.19
			50	0	1	22.19
		16QAM	1	0	1	22.26
			1	24	1	22.74
			1	49	1	22.35
			25	0	2	21.25
			25	12	2	21.29
			25	24	2	21.24
			50	0	2	21.16
Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)
						23790
						710 MHz
LTE Band 17	5	QPSK	1	0	0	23.16
			1	12	0	23.60
			1	24	0	23.32
			12	0	1	22.19
			12	6	1	22.22
			12	11	1	22.22
			25	0	1	22.23
		16QAM	1	0	1	22.17
			1	12	1	22.25
			1	24	1	22.36
			12	0	2	21.23
			12	6	2	21.24
			12	11	2	21.21
			25	0	2	21.29

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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	23.32	23.36	23.48
			1	24	0	23.37	23.66	23.43
			1	49	0	23.27	23.20	23.04
			25	0	1	22.25	22.32	22.25
			25	12	1	22.36	22.42	22.33
			25	24	1	22.24	22.24	22.12
			50	0	1	22.27	22.31	22.24
		16QAM	1	0	1	22.37	22.79	22.58
			1	24	1	22.80	22.81	22.68
			1	49	1	22.32	22.60	22.11
			25	0	2	21.30	21.34	21.37
			25	12	2	21.38	21.42	21.41
			25	24	2	21.29	21.26	21.19
			50	0	2	21.24	21.35	21.32
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	23.36	23.47	23.43
			1	12	0	23.69	23.46	23.11
			1	24	0	23.50	23.40	23.18
			12	0	1	22.29	22.31	22.21
			12	6	1	22.32	22.43	22.17
			12	11	1	22.31	22.33	22.14
			25	0	1	22.26	22.35	22.19
		16QAM	1	0	1	22.37	22.75	22.72
			1	12	1	22.62	22.83	23.05
			1	24	1	22.44	22.61	22.90
			12	0	2	21.19	21.40	21.20
			12	6	2	21.29	21.50	21.16
			12	11	2	21.32	21.42	21.13
			25	0	2	21.37	21.32	21.11

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Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)		
						20415	20525	20635
						825.5 MHz	836.5 MHz	847.5 MHz
LTE Band 5	3	QPSK	1	0	0	23.32	23.33	23.30
			1	7	0	23.73	23.44	23.37
			1	14	0	23.38	23.30	23.04
			6	0	1	22.20	22.32	22.10
			6	3	1	22.18	22.35	21.98
			6	5	1	22.27	22.39	22.06
			15	0	1	22.29	22.35	22.08
		16QAM	1	0	1	22.32	22.90	22.38
			1	7	1	22.16	22.91	22.26
			1	14	1	22.42	22.92	22.09
			6	0	2	21.33	21.18	21.31
			6	3	2	21.32	21.30	21.22
			6	5	2	21.38	21.30	21.29
			15	0	2	21.30	21.39	21.09
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	23.46	23.40	23.11
			1	2	0	23.43	23.40	23.10
			1	5	0	23.39	23.36	22.97
			3	0	0	23.22	23.29	23.07
			3	1	0	23.19	23.32	23.07
			3	2	0	23.21	23.35	23.05
			6	0	1	22.11	22.26	21.95
		16QAM	1	0	1	22.50	22.75	22.18
			1	2	1	22.37	22.85	22.15
			1	5	1	22.45	22.71	22.03
			3	0	1	22.22	22.51	22.20
			3	1	1	22.27	22.55	22.26
			3	2	1	22.27	22.56	22.26
			6	0	2	21.28	21.23	21.14

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9. PEAK TO AVERAGE RATIO

Test Procedure

Per KDB 971168 D01 Power Meas License Digital Systems v02r02

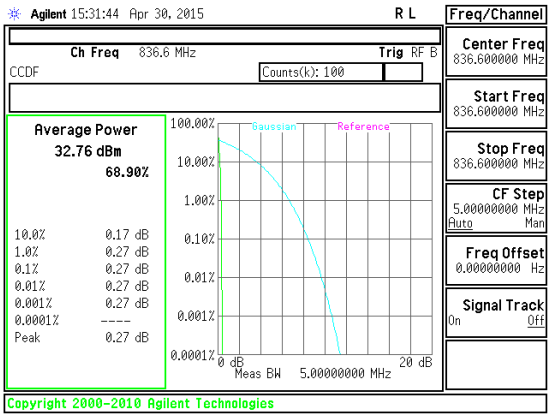
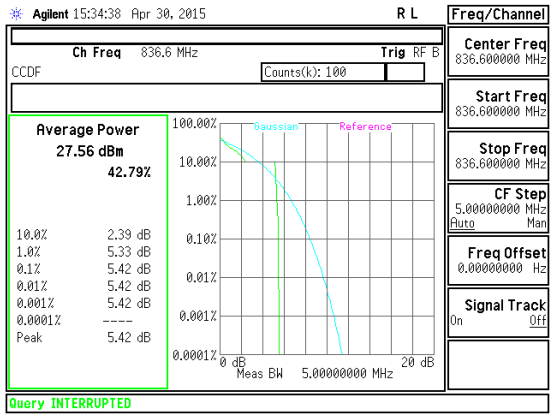
Test Spec

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

9.1. CONDUCTED PEAK TO AVERAGE RESULT

Modes Tested: GSM (850 and 1900), WCDMA (Bands 2 and 5), LTE (Bands 5 and 17).

GSM

Band GSM 850		
	GSM 850, GPRS Mid Channel	GSM 850, EGPRS Mid Channel

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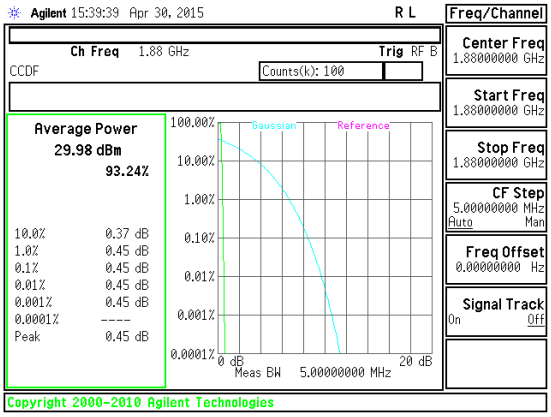
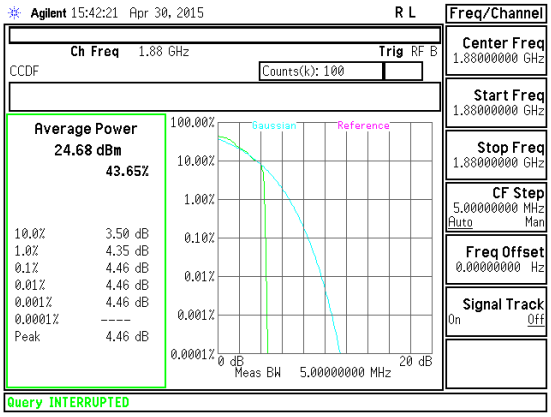
GSM 1900 Band	 GSM 1900, GPRS Mid Channel	 GSM 1900, EGPRS Mid Channel

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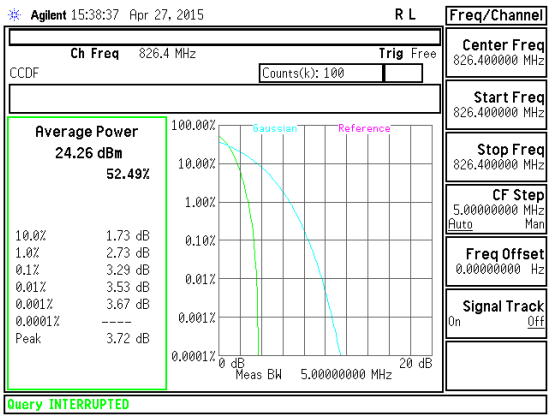
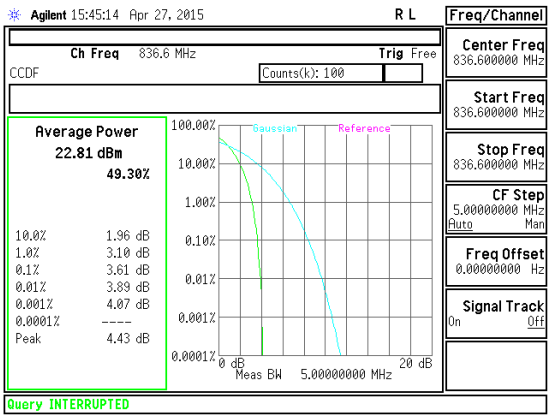
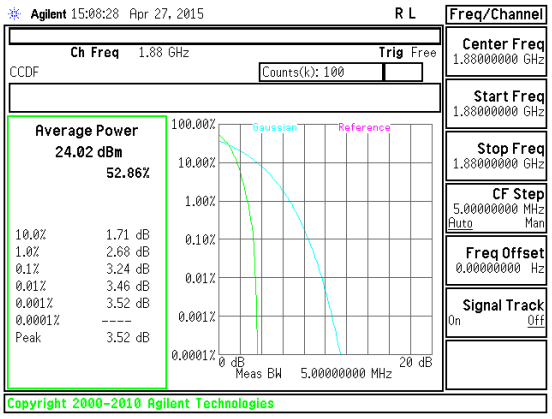
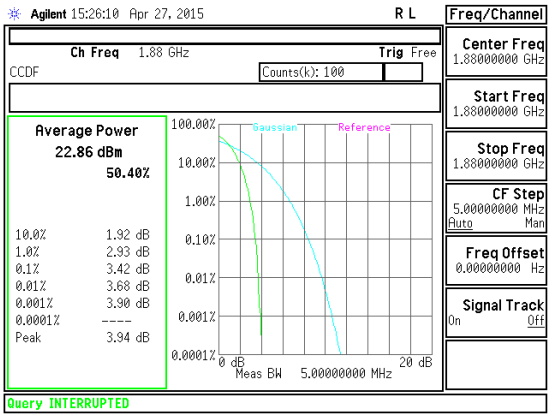
WCDMA

UMTS Band V	 UMTS Band V, REL. 99 Low Channel	 UMTS Band V, HSDPA Mid Channel
UMTS Band II	 UMTS Band II, REL. 99 Mid Channel	 UMTS Band II, HSDPA Mid Channel

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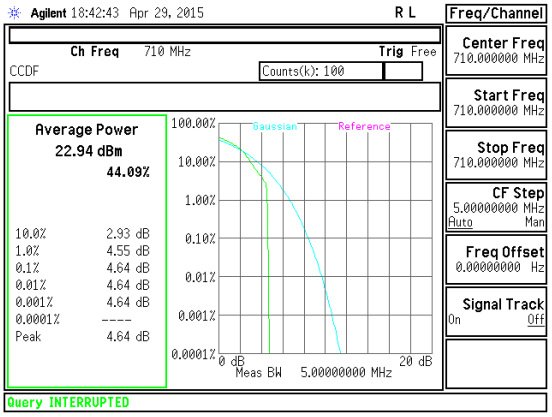
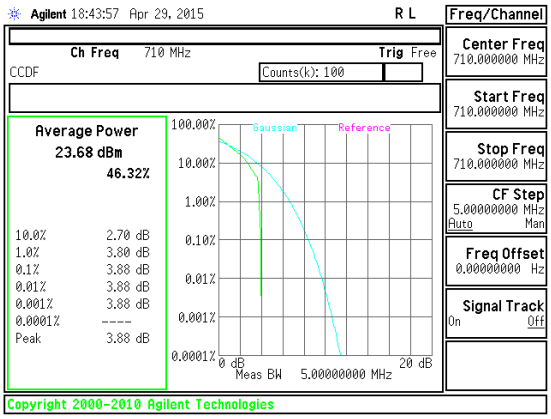
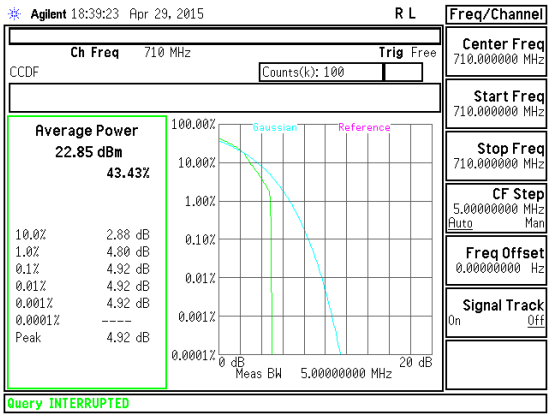
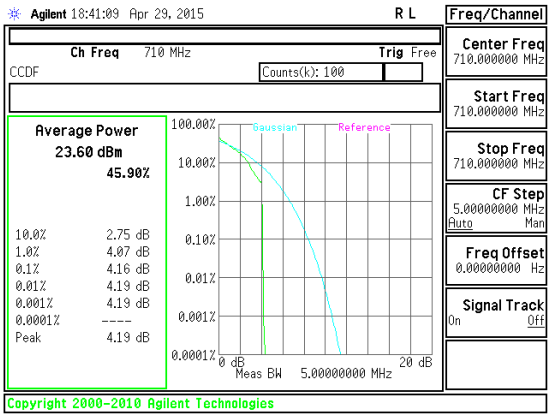
LTE

LTE Band 17	 10 MHz BW, 16QAM MID CHANNEL	 10 MHz BW, QPSK MID CHANNEL
LTE Band 17	 5 MHz BW, 16QAM MID CHANNEL	 5 MHz BW, QPSK MID CHANNEL

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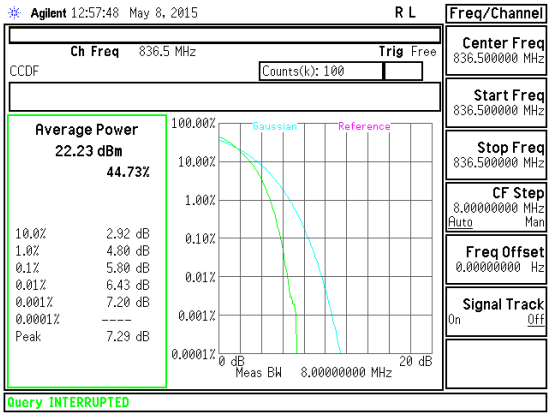
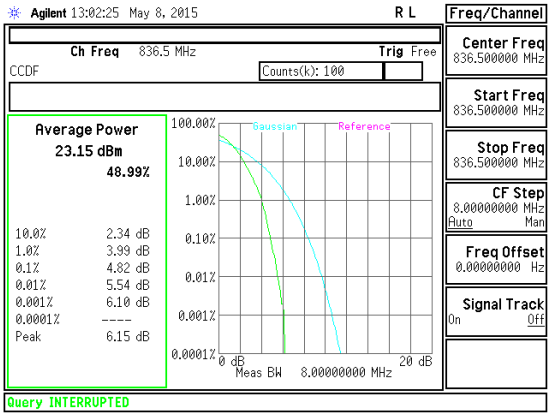
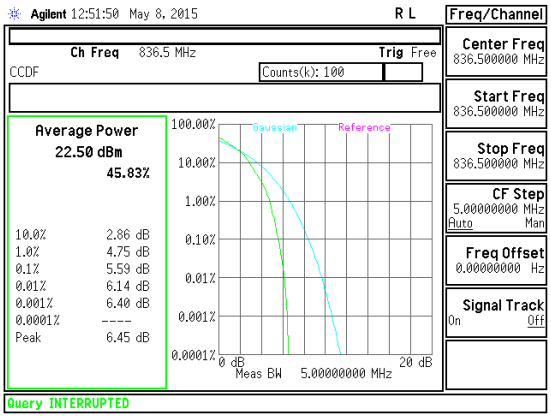
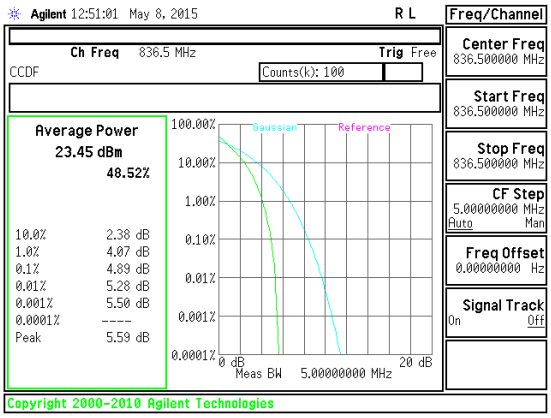
LTE Band 5		
	10 MHz BW, 16QAM MID CHANNEL	10 MHz BW, QPSK MID CHANNEL

LTE Band 5		
	5 MHz BW, 16QAM MID CHANNEL	5 MHz BW, QPSK MID CHANNEL

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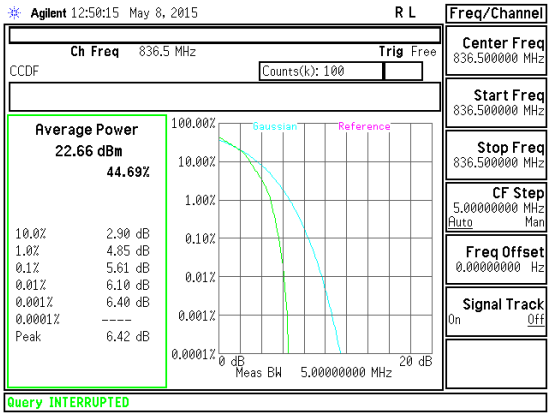
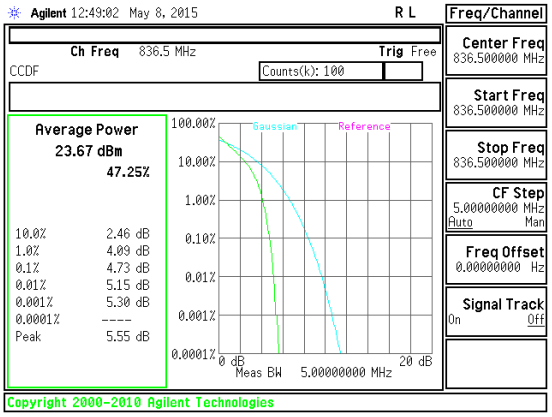
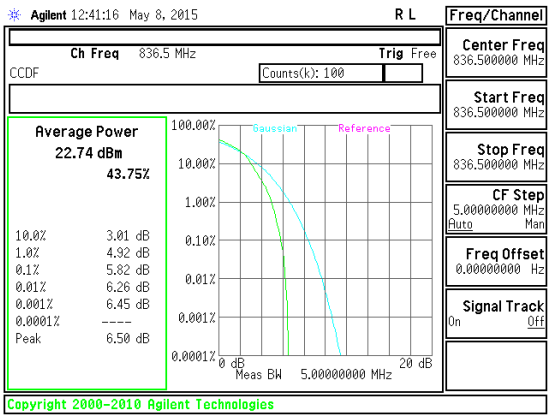
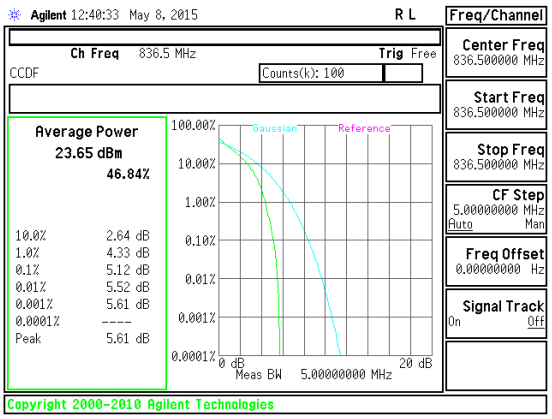
LTE Band 5		
	3 MHz BW, 16QAM MID CHANNEL	3 MHz BW, QPSK MID CHANNEL
LTE Band 5		
	1.4 MHz BW, 16QAM MID CHANNEL	1.4 MHz BW, QPSK MID CHANNEL

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10. LIMITS AND CONDUCTED RESULTS

10.1. OCCUPIED BANDWIDTH

RULE PART(S)

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

LIMITS

For reporting purposes only

TEST PROCEDURE

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

(KDB 971168 D01 Power Meas License Digital Systems v02r02)

MODES TESTED

GSM (850, 1900), WCDMA (Bands V and II), LTE (Bands 5 and 17).

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10.1.1. OCCUPIED BANDWIDTH RESULTS

Band	Mode	Channel	f (MHz)	99% BW (KHz)	-26dB BW (KHz)
GSM850	GPRS	128	824.2	241	316.7
		190	836.6	245.1	318.2
		251	848.8	248.3	318.8
	EGPRS	128	824.2	248.6	315.3
		190	836.6	253.7	317
		251	848.8	248.8	308.1
GSM1900	GPRS	512	1850.2	244.1	309.8
		661	1880	239.6	315.1
		810	1909.8	245.7	317.7
	EGPRS	512	1850.2	238.9	313.5
		661	1880	242.1	309.8
		810	1909.8	244.6	308.1

Band	Mode	Channel	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
Band 5	REL99	4132	826.4	4.132	4.701
		4183	836.6	4.149	4.698
		4233	846.6	4.132	4.708
	HSDPA	4132	826.4	4.140	4.673
		4183	836.6	4.130	4.667
		4233	846.6	4.130	4.679
Band 2	REL99	9262	1852.4	4.156	4.686
		9400	1880	4.131	4.678
		9538	1907.6	4.137	4.715
	HSDPA	9262	1852.4	4.151	4.690
		9400	1880	4.154	4.719
		9538	1907.6	4.149	4.694

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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	8.948	9.651
			50/0	710	8.961	9.742
			50/0	711	8.945	9.772
		16QAM	50/0	709	8.941	9.734
			50/0	710	8.933	9.621
			50/0	711	8.996	9.68

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE17	5	QPSK	25/0	706.5	4.51	4.943
			25/0	710	4.508	4.925
			25/0	713.5	4.503	4.933
		16QAM	25/0	706.5	4.5	4.913
			25/0	710	4.494	4.945
			25/0	713.5	4.485	4.898

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE5	10	QPSK	50/0	829	8.943	9.619
			50/0	836.5	8.963	9.764
			50/0	844	8.954	9.713
		16QAM	50/0	829	8.939	9.742
			50/0	836.5	8.956	9.707
			50/0	844	8.94	9.719

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Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE5	5	QPSK	25/0	826.5	4.511	4.909
			25/0	836.5	4.496	4.957
			25/0	846.5	4.5	4.949
		16QAM	25/0	826.5	4.498	4.902
			25/0	836.5	4.49	4.896
			25/0	846.5	4.49	4.894

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE5	3	QPSK	15/0	825.5	2.686	2.967
			15/0	836.5	2.692	2.966
			15/0	847.5	2.691	2.966
		16QAM	15/0	825.5	2.687	2.966
			15/0	836.5	2.69	2.978
			15/0	847.5	2.679	2.963

Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE5	1.4	QPSK	6/0	824.7	1.085	1.22
			6/0	836.5	1.085	1.226
			6/0	848.3	1.079	1.236
		16QAM	6/0	824.7	1.088	1.233
			6/0	836.5	1.083	1.215
			6/0	848.3	1.085	1.227

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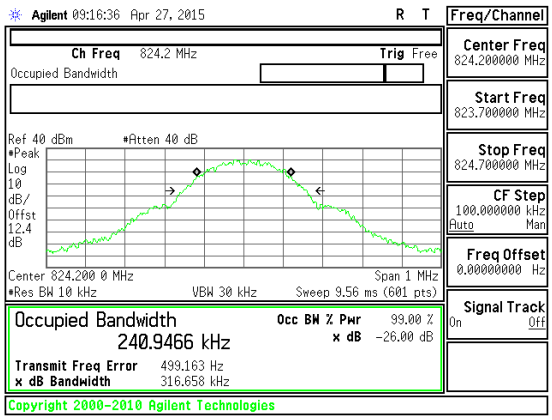
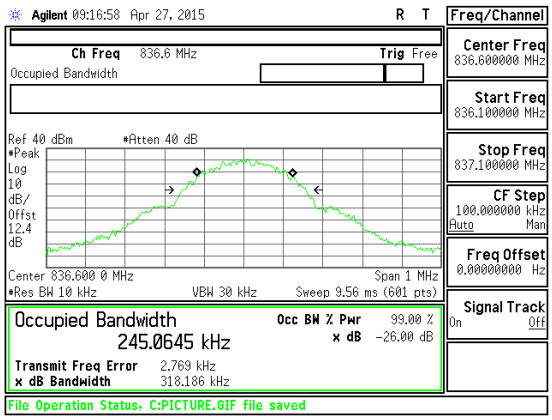
10.1.1. OCCUPIED BANDWIDTH PLOTS

GSM

GSM 850 GPRS	 GSM850 GPRS OBW Low channel	 GSM850 GPRS OBW Mid channel

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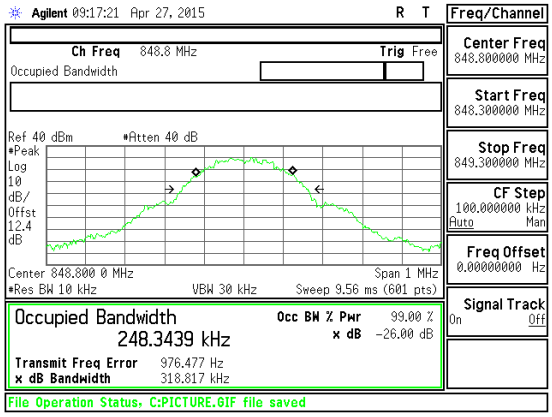
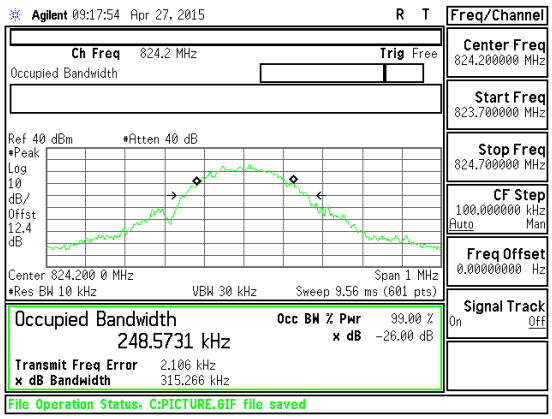
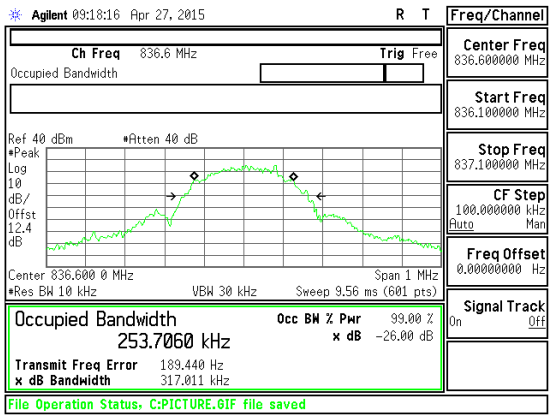
GSM 850 GPRS	 GSM850 GPRS OBW High channel	BLANK
GSM 850 EGPRS	 GSM850 EGPRS OBW Low channel	 GSM850 EGPRS OBW Mid channel

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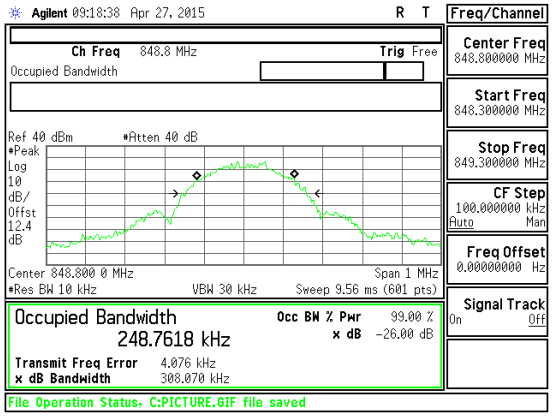
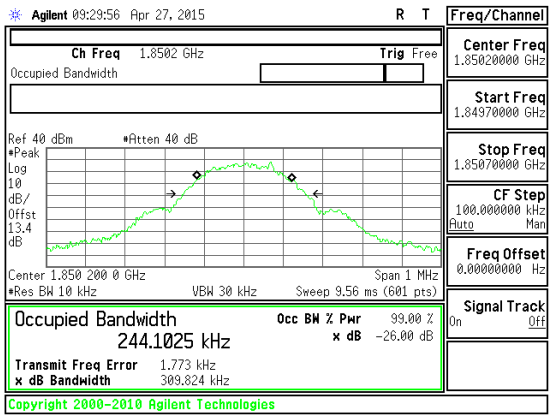
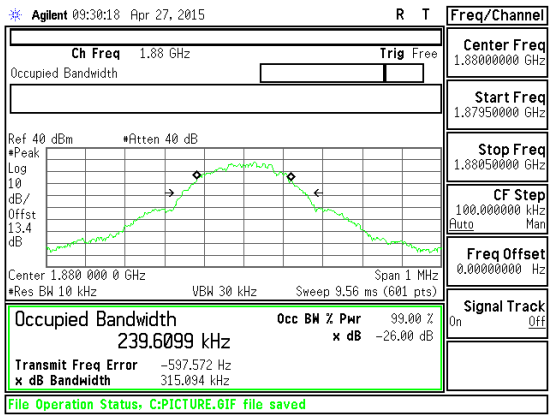
GSM 850 EGPRS	 GSM850 EGPRS OBW High channel	BLANK
GSM 1900 GPRS	 GSM1900 GPRS OBW Low channel	 GSM1900 GPRS OBW Mid channel

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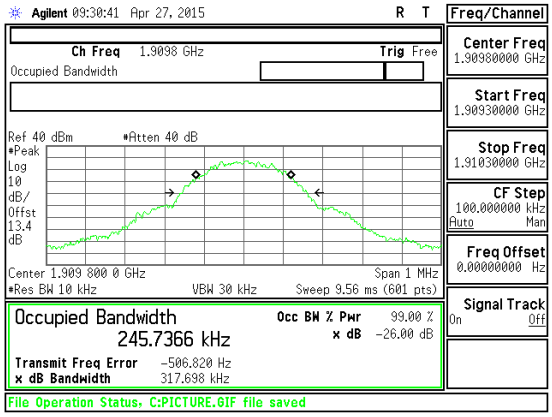
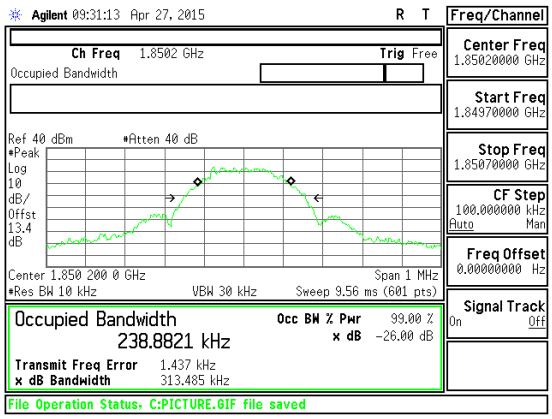
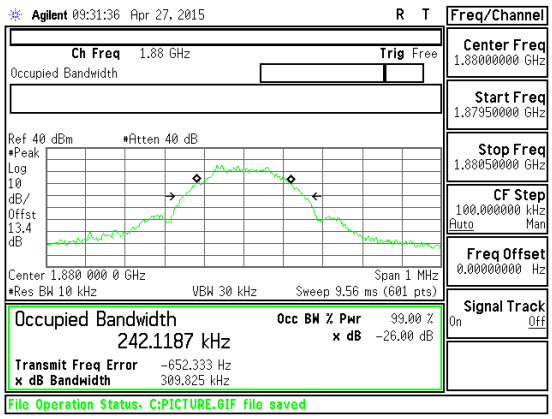
GSM 1900 GPRS	 GSM1900 GPRS OBW High channel	BLANK
GSM 1900 EGPRS	 GSM1900 EGPRS OBW Low channel	 GSM1900 EGPRS OBW Mid channel

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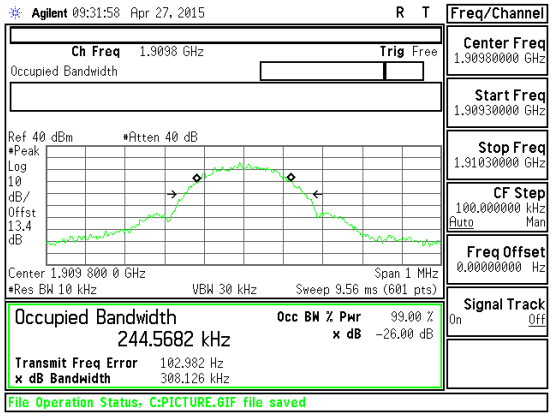
GSM 1900 EGPRS	 GSM1900 EGPRS OBW High channel	BLANK

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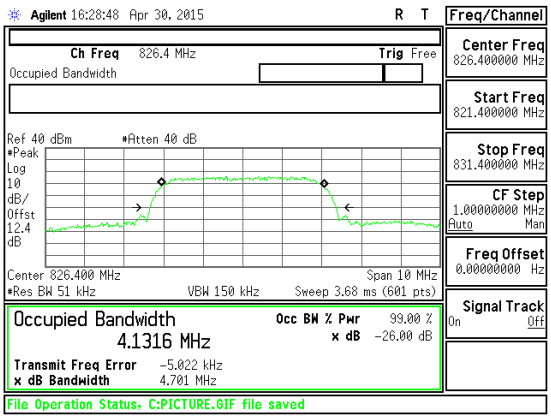
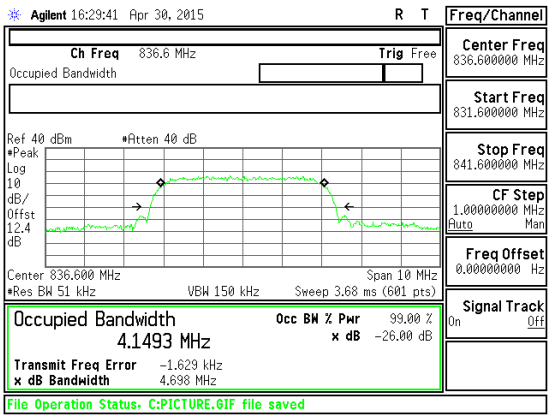
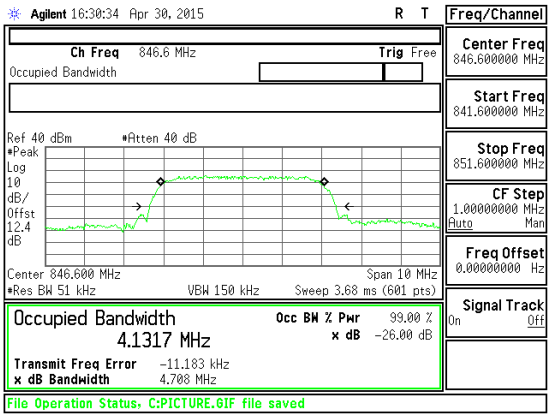
WCDMA

WCDMA Band 5 REL 99	 Band 5 REL 99 OBW Low channel	 Band 5 REL 99 OBW Mid channel
WCDMA Band 5 REL 99	 Band 5 REL 99 OBW High channel	BLANK

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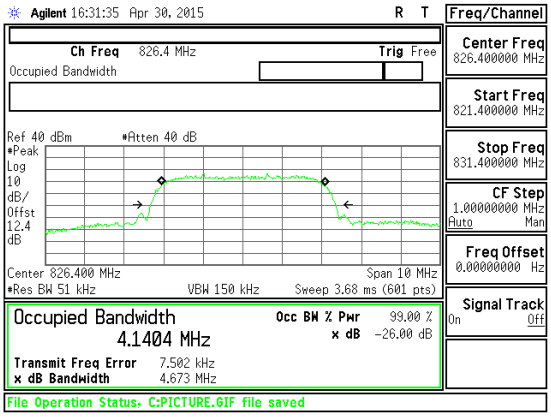
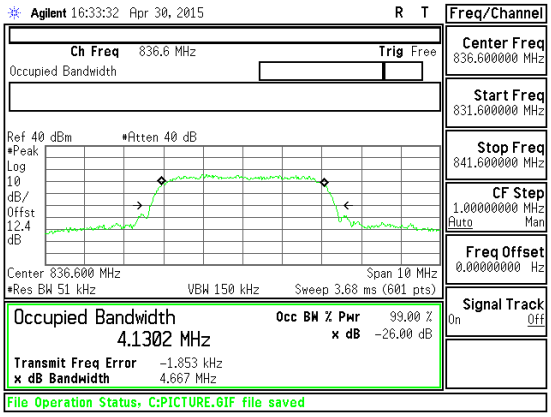
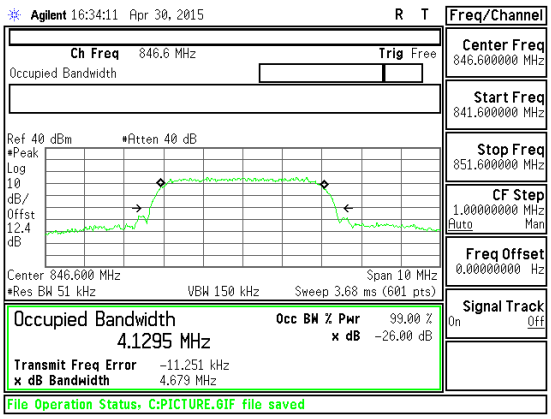
WCDMA Band 5 HSDPA	 Band 5 HSDPA OBW Low channel	 Band 5 HSDPA OBW Mid channel
WCDMA Band 5 HSDPA	 Band 5 HSDPA OBW High channel	BLANK

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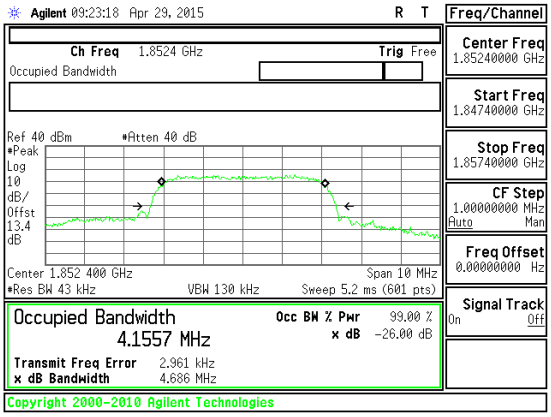
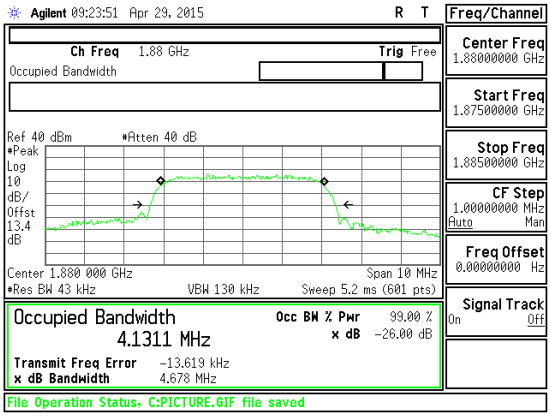
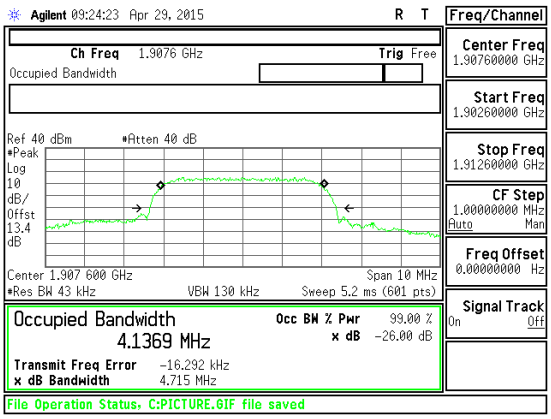
WCDMA Band 2 REL 99	 Band 2 REL 99 OBW Low channel	 Band 2 REL 99 OBW Mid channel
WCDMA Band 2 REL 99	 Band 2 REL 99 OBW High channel	BLANK

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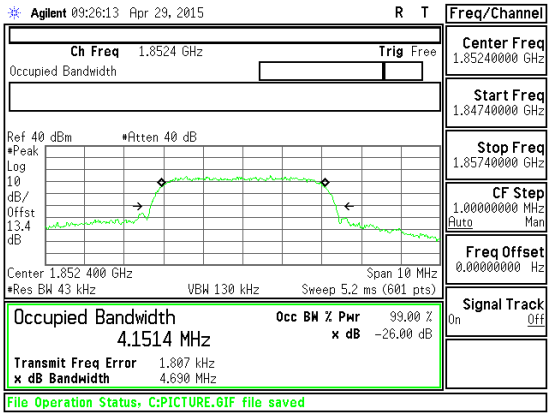
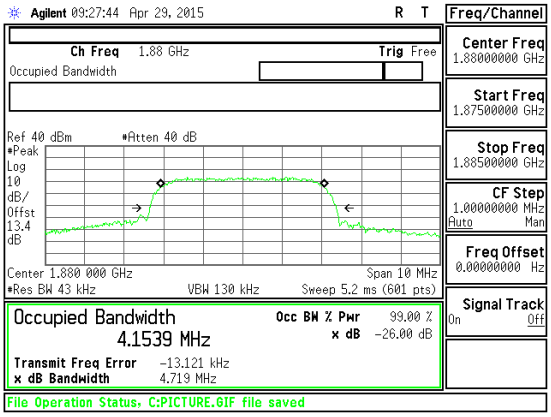
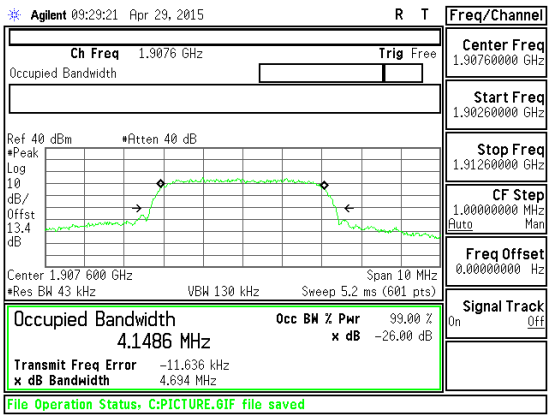
WCDMA Band 2 HSDPA	 Band 2 HSDPA OBW Low channel	 Band 2 HSDPA OBW Mid channel
WCDMA Band 2 HSDPA	 Band 2 HSDPA OBW High channel	BLANK

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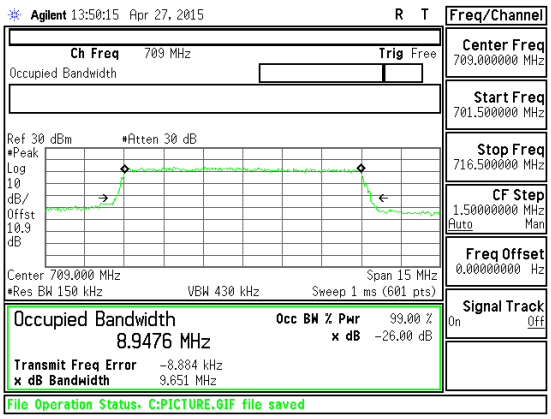
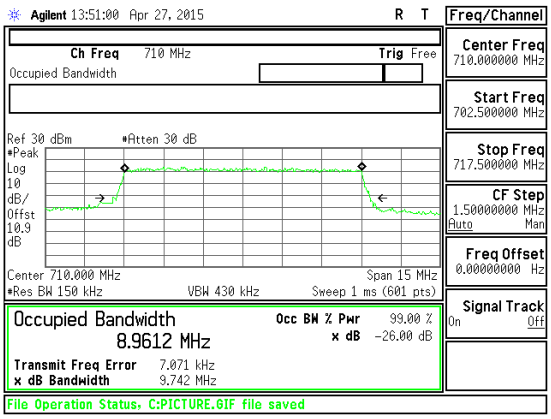
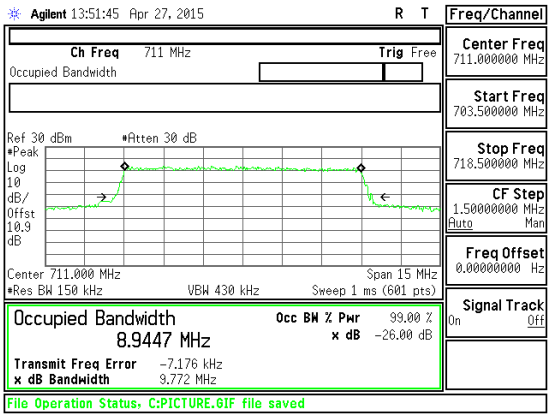
LTE

Band LTE17 10 MHz QPSK	 Band LTE17 - 10 MHz QPSK OBW Low channel	 Band LTE17 - 10 MHz QPSK OBW Mid channel
Band LTE17 10 MHz QPSK	 Band LTE17 - 10 MHz QPSK OBW High channel	BLANK

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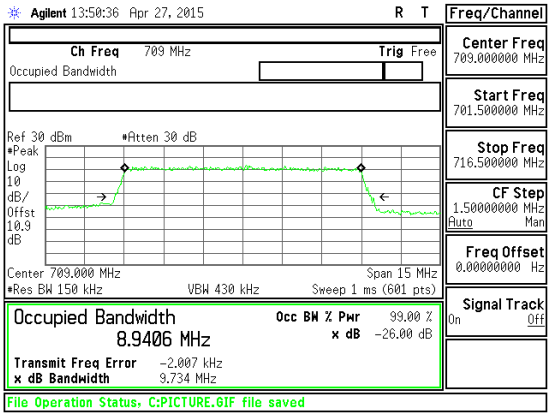
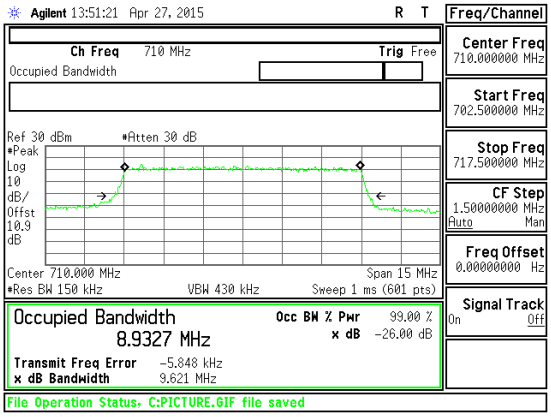
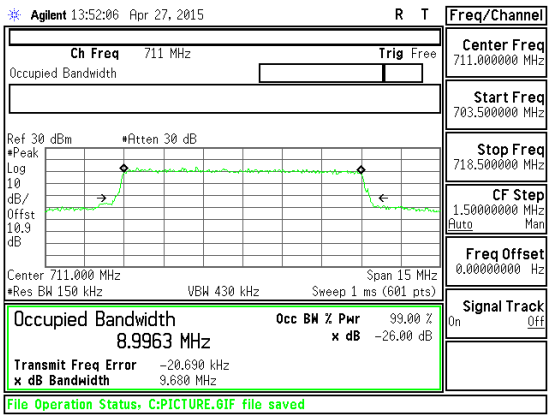
Band LTE17 10 MHz 16QAM	 Band LTE17 - 10 MHz 16QAM OBW Low channel	 Band LTE17 - 10 MHz 16QAM OBW Mid channel
Band LTE17 10 MHz 16QAM	 Band LTE17 - 10 MHz 16QAM OBW High channel	BLANK

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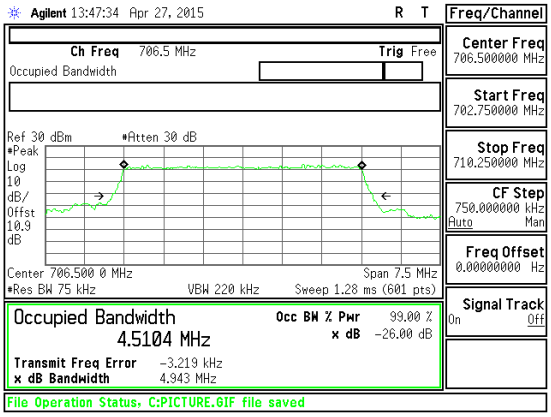
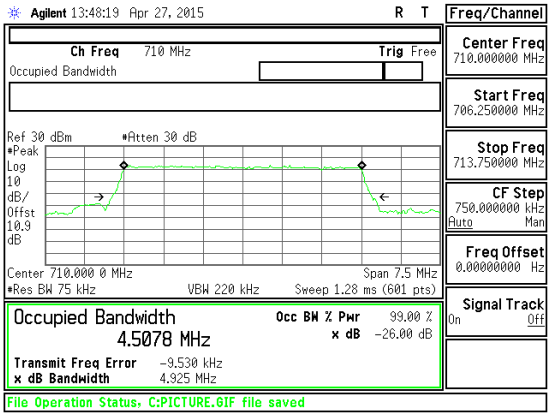
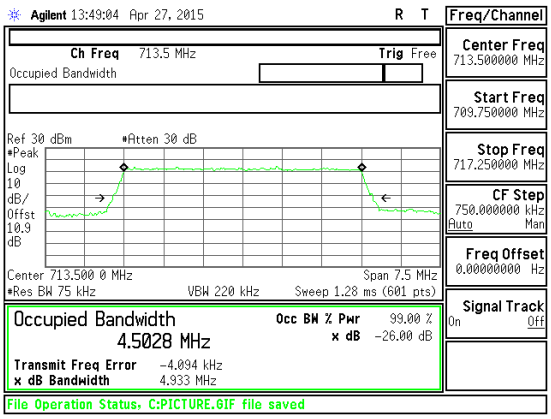
Band LTE17 5 MHz QPSK	 Band LTE17 - 5 MHz QPSK OBW Low channel	 Band LTE17 - 5 MHz QPSK OBW Mid channel
Band LTE17 5 MHz QPSK	 Band LTE17 - 5 MHz QPSK OBW High channel	BLANK

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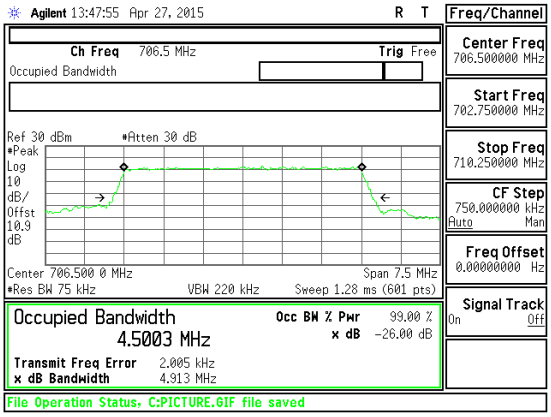
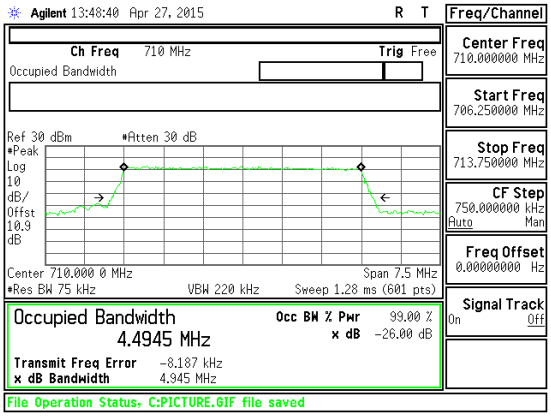
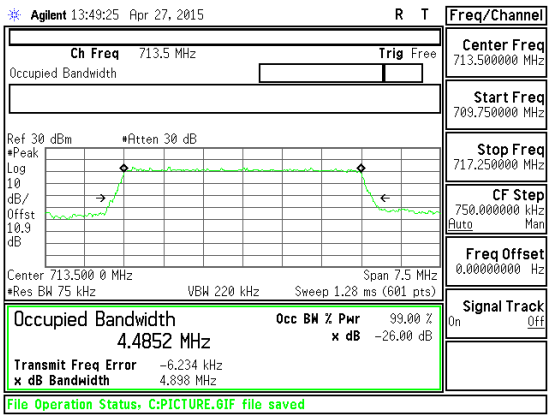
Band LTE17 5 MHz 16 QAM	 Band LTE17 - 5 MHz 16 QAM OBW Low channel	 Band LTE17 - 5 MHz 16 QAM OBW Mid channel
Band LTE17 5 MHz 16 QAM	 Band LTE17 - 5 MHz 16 QAM OBW High channel	BLANK

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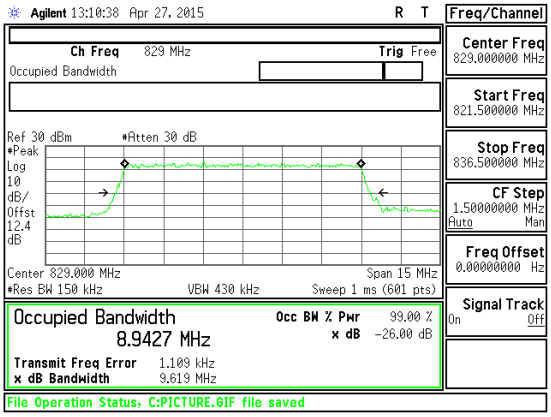
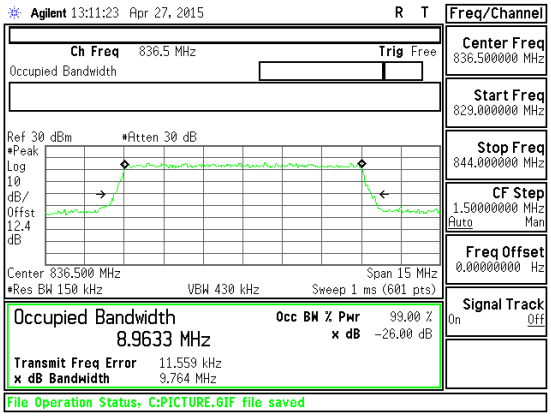
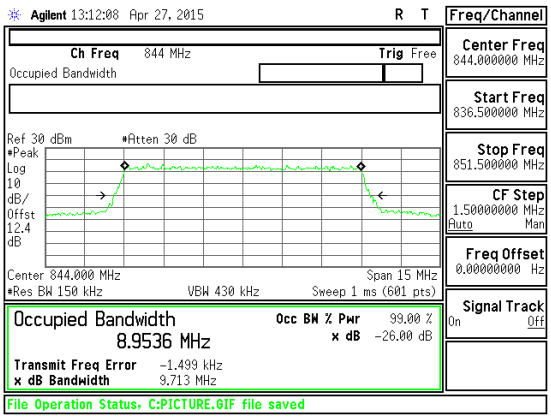
Band LTE5 10 MHz QPSK	 Band LTE5 - 10 MHz QPSK OBW Low channel	 Band LTE5 - 10 MHz QPSK OBW Mid channel
Band LTE5 10 MHz QPSK	 Band LTE5 - 10 MHz QPSK OBW High channel	BLANK

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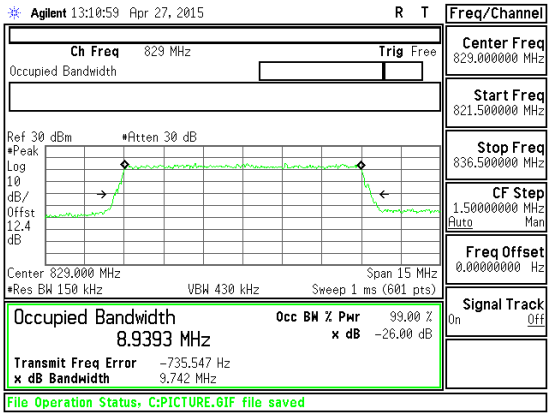
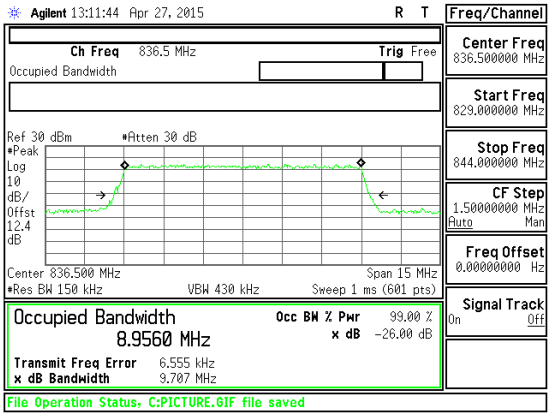
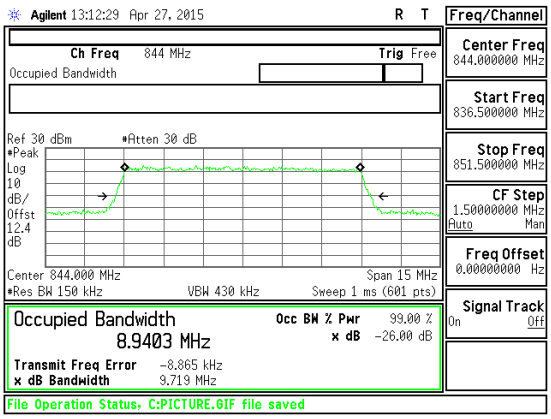
Band LTE5 10 MHz 16QAM	 Band LTE5 - 10 MHz 16QAM OBW Low channel	 Band LTE5 - 10 MHz 16QAM OBW Mid channel
Band LTE5 10 MHz 16QAM	 Band LTE5 - 10 MHz 16QAM OBW High channel	BLANK

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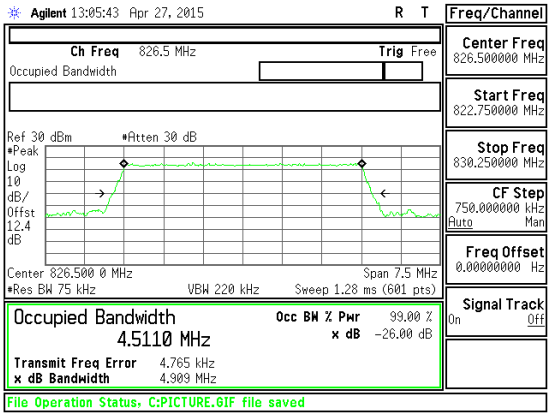
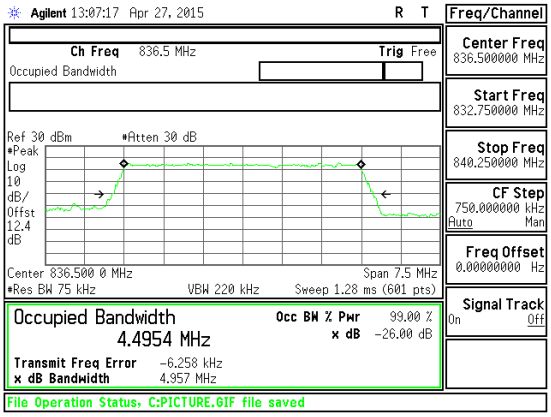
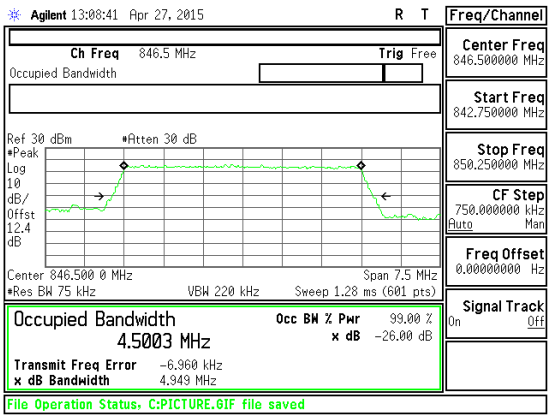
Band LTE5 5 MHz QPSK	 Band LTE5 - 5 MHz QPSK OBW Low channel	 Band LTE5 - 5 MHz QPSK OBW Mid channel
Band LTE5 5 MHz QPSK	 Band LTE5 - 5 MHz QPSK OBW High channel	BLANK

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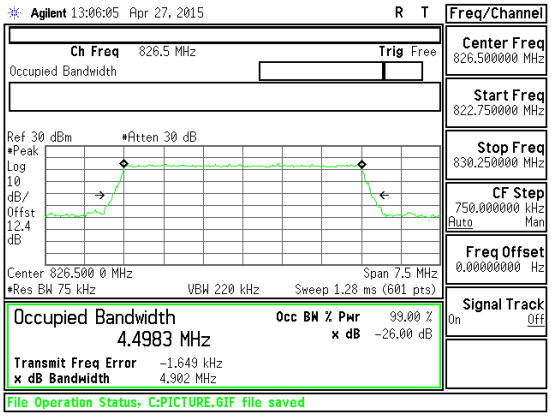
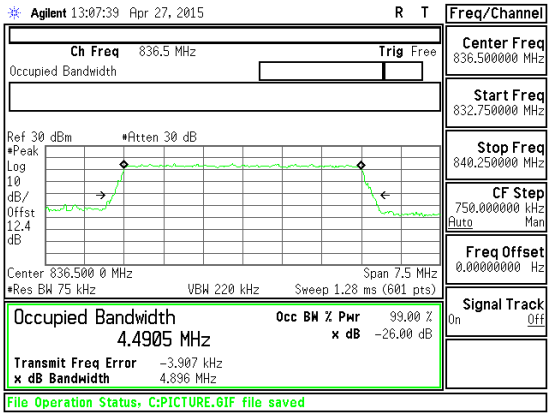
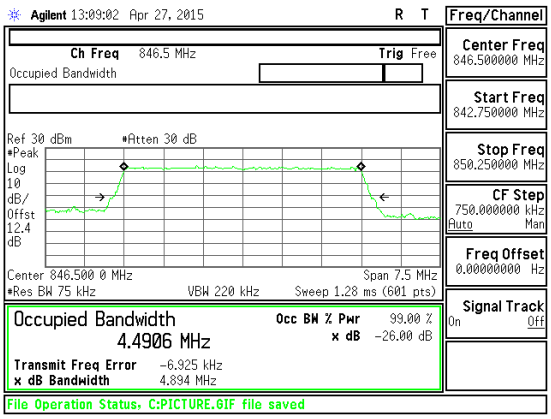
Band LTE5 5 MHz 16 QAM	 Band LTE5 - 5 MHz 16 QAM OBW Low channel	 Band LTE5 - 5 MHz 16 QAM OBW Mid channel
Band LTE5 5 MHz 16 QAM	 Band LTE5 - 5 MHz 16 QAM OBW High channel	BLANK

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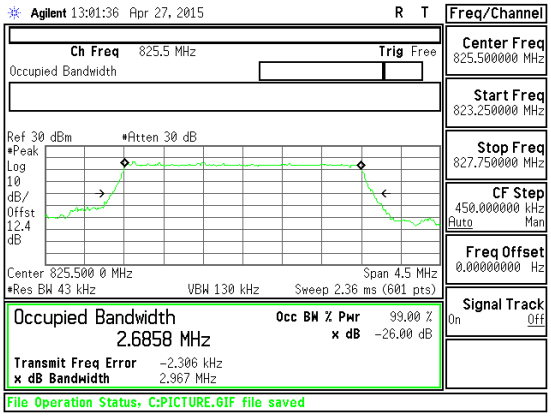
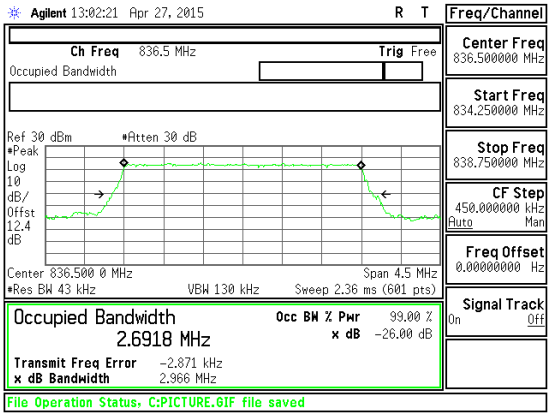
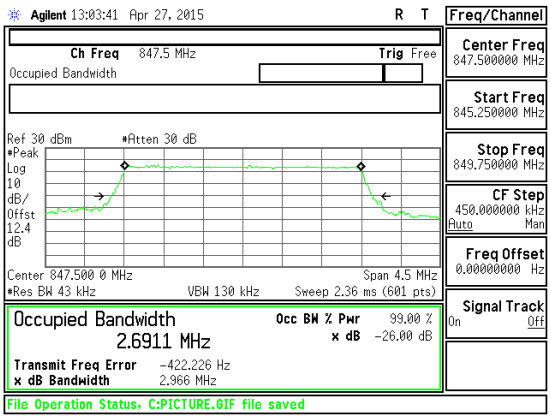
Band LTE5 3 MHz QPSK	 Band LTE5 - 3 MHz QPSK OBW Low channel	 Band LTE5 - 3 MHz QPSK OBW Mid channel
Band LTE5 3 MHz QPSK	 Band LTE5 - 3 MHz QPSK OBW High channel	BLANK

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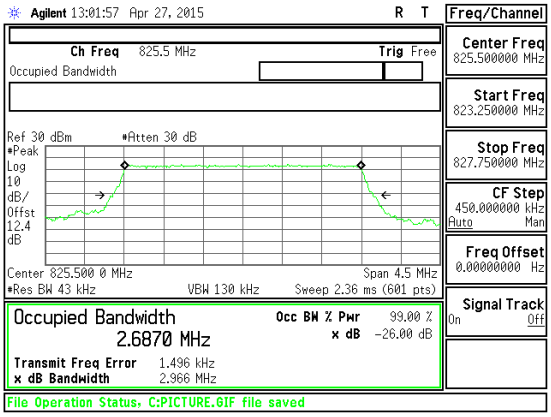
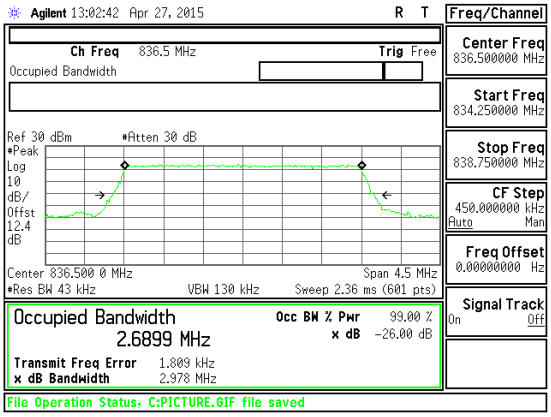
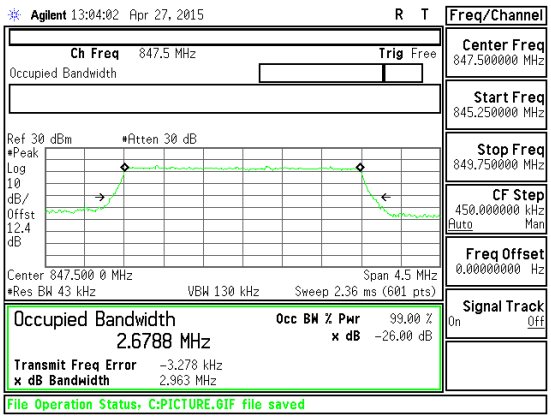
Band LTE5 3 MHz 16QAM	 Band LTE5 - 3 MHz 16QAM OBW Low channel	 Band LTE5 - 3 MHz 16QAM OBW Mid channel
Band LTE5 3 MHz 16QAM	 Band LTE5 - 3 MHz 16QAM OBW High channel	BLANK

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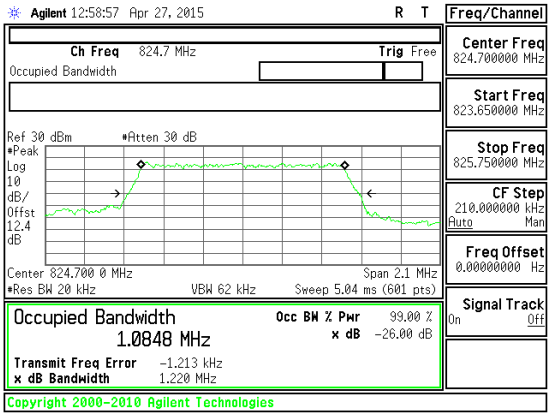
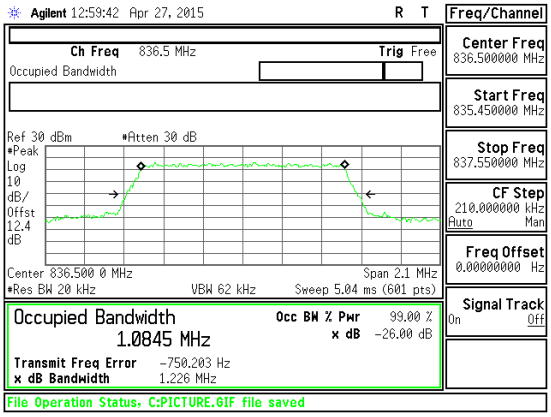
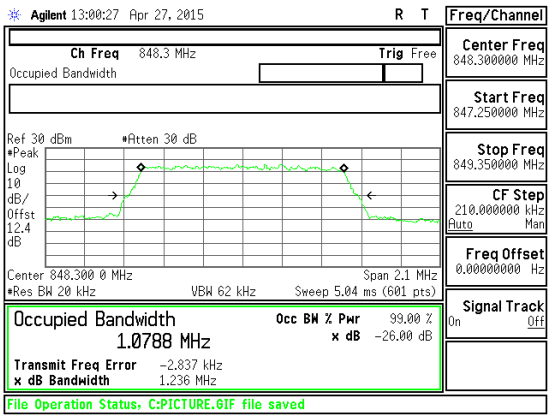
Band LTE5 1.4 MHz QPSK	 Band LTE5 - 1.4 MHz QPSK OBW Low channel	 Band LTE5 - 1.4 MHz QPSK OBW Mid channel
Band LTE5 1.4 MHz QPSK	 Band LTE5 - 1.4 MHz QPSK OBW High channel	BLANK

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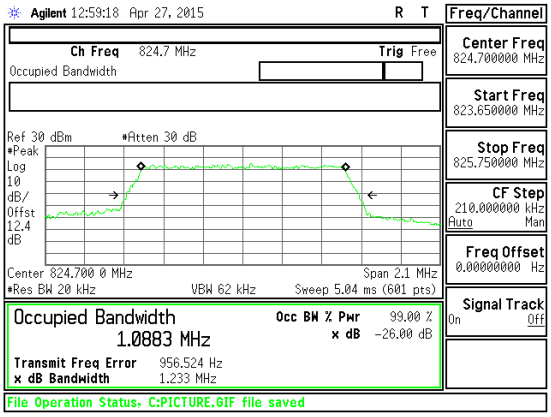
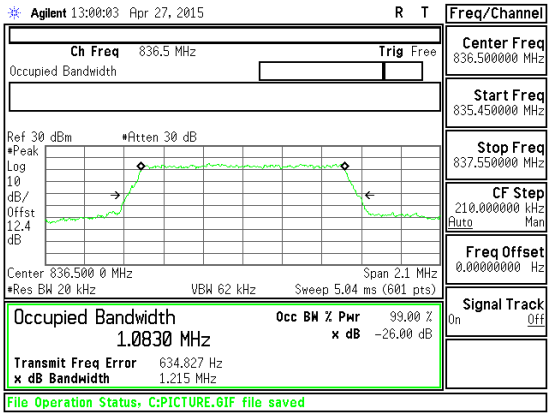
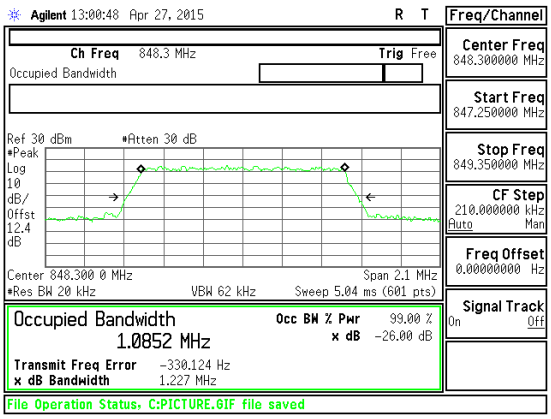
Band LTE5 1.4 MHz 16 QAM	 Band LTE5 - 1.4 MHz 16 QAM OBW Low channel	 Band LTE5 - 1.4 MHz 16 QAM OBW Mid channel
Band LTE5 1.4 MHz 16 QAM	 Band LTE5 - 1.4 MHz 16 QAM OBW High channel	BLANK

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10.2. BAND EDGE EMISSIONS

RULE PART(S)

§22.917(a), §24.238 (a), §27. 53 (g)

LIMITS

Part 22.917(a) & Part 24.238(a) The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (P) dB.

Part 27.53(g) For operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43 + 10 log (P) dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

TEST PROCEDURE

Per KDB 971168 D01 Power Meas License Digital Systems v02r02

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

MODES TESTED

GSM (850, 1900), WCDMA (Bands V and II), LTE (Bands 5 and 17).

RESULTS

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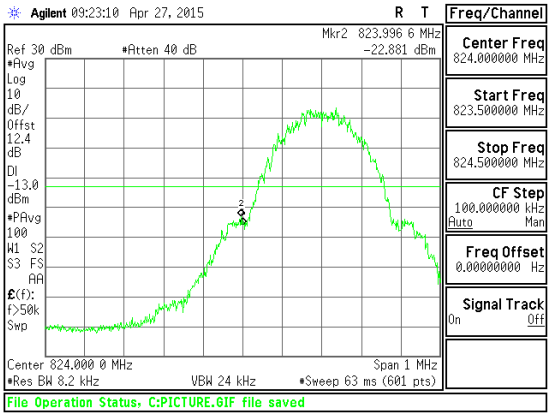
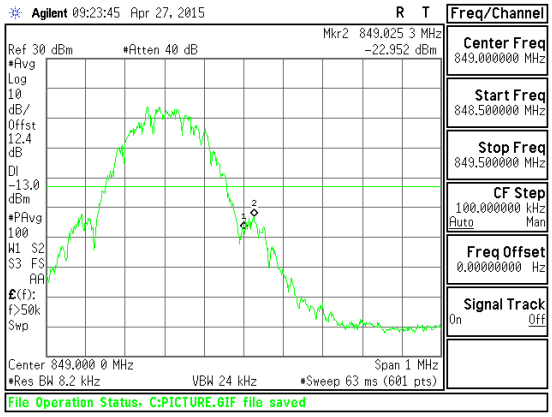
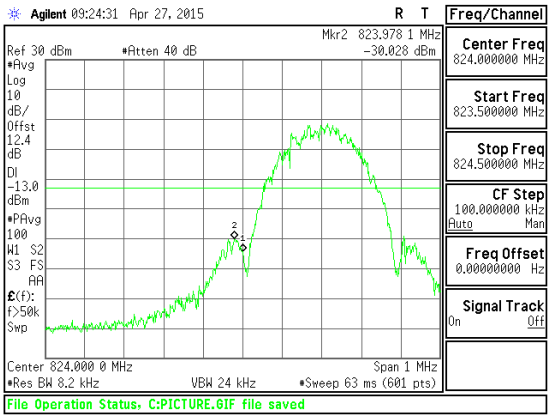
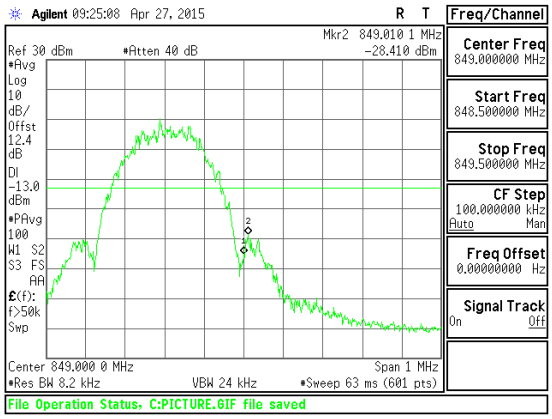
10.2.1. BAND EDGE PLOTS

GSM

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

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

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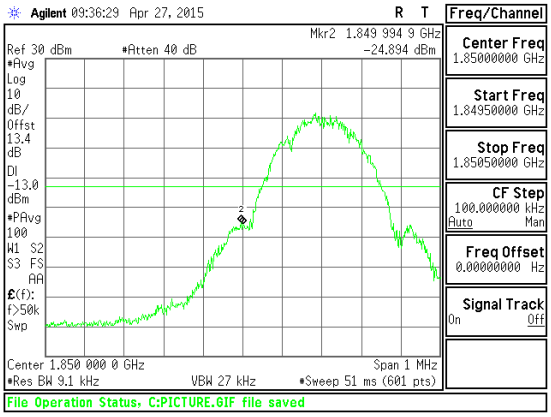
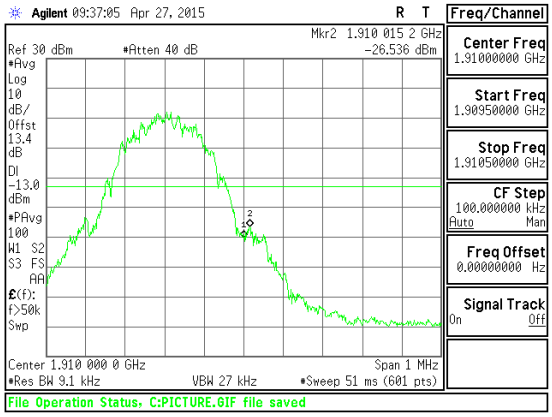
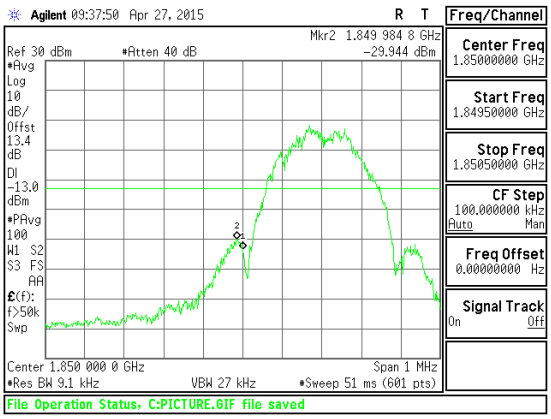
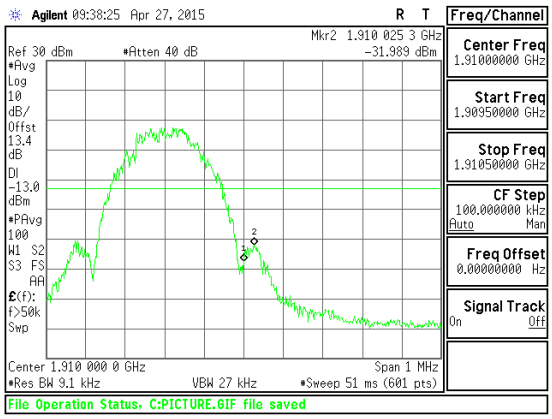
GSM 1900 GPRS		
	GSM1900 GPRS CBE Low channel	GSM1900 GPRS CBE High channel
GSM 1900 EGPRS		
	GSM1900 EGPRS CBE Low channel	GSM1900 EGPRS CBE High channel

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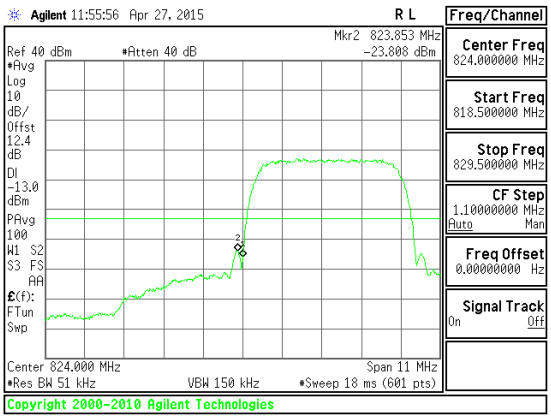
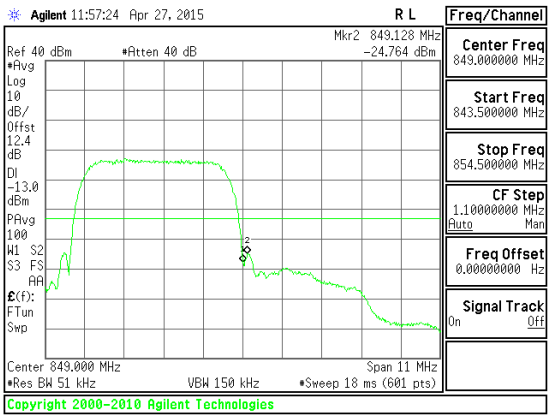
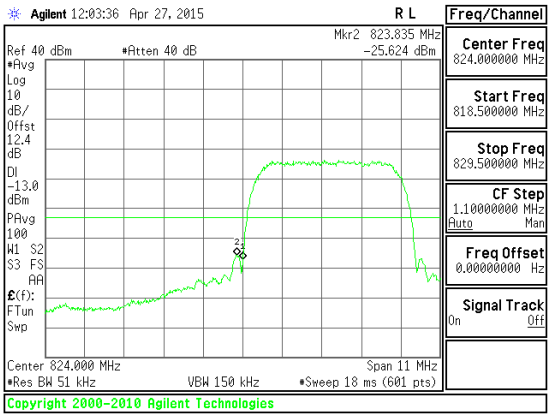
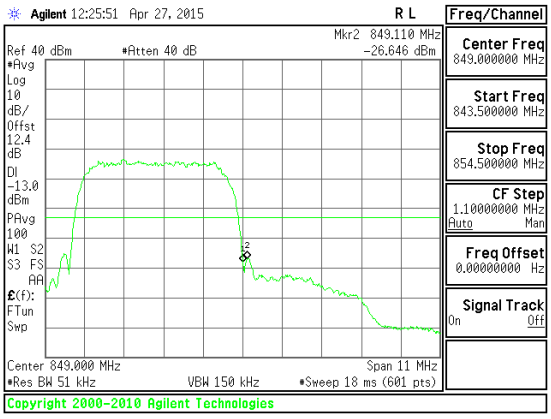
WCDMA

WCDMA Band 5 REL 99	 Band 5 REL 99 CBE Low channel	 Band 5 REL 99 CBE High channel
WCDMA Band 5 HSDPA	 Band 5 HSDPA CBE Low channel	 Band 5 HSDPA CBE High channel

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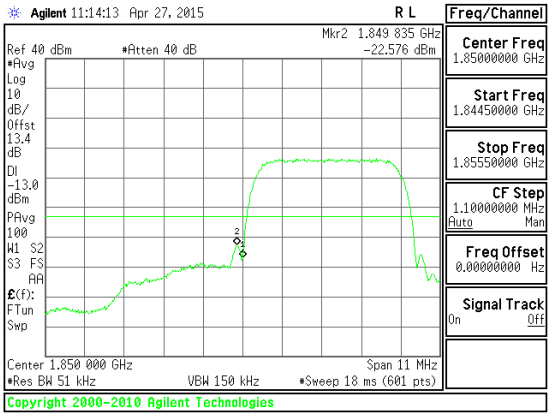
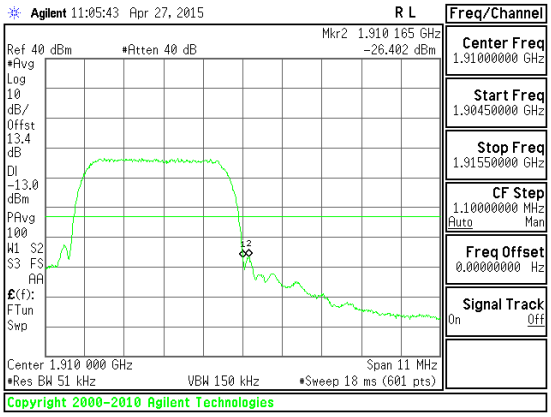
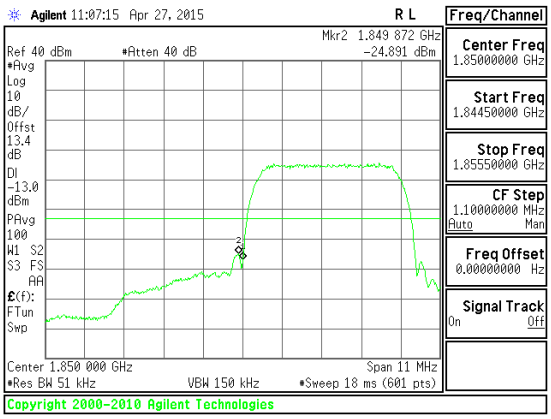
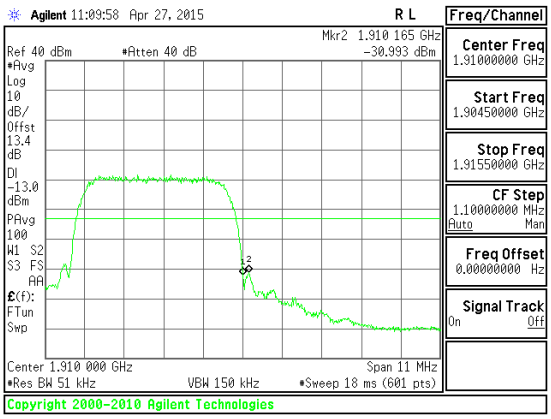
WCDMA Band 2 REL 99	 Band 2 REL 99 CBE Low channel	 Band 2 REL 99 CBE High channel
WCDMA Band 2 HSDPA	 Band 2 HSDPA CBE Low channel	 Band 2 HSDPA CBE High channel

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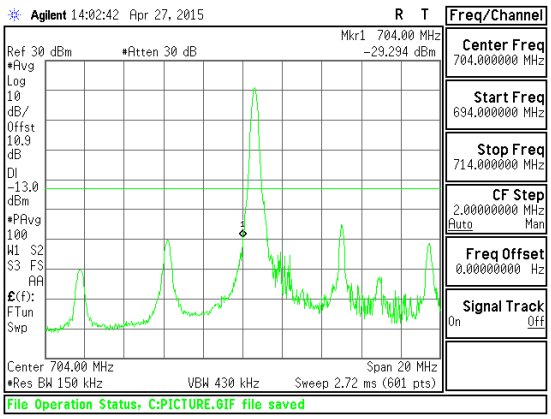
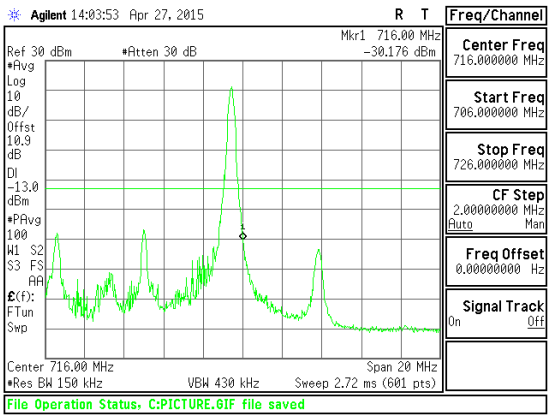
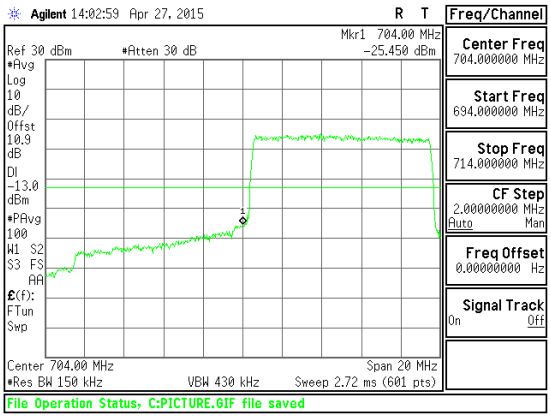
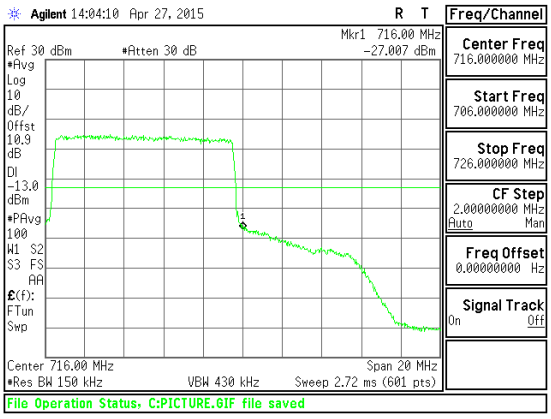
LTE

Band LTE17 10 MHz QPSK	 Band LTE17 - 10 MHz QPSK CBE Low channel 1RB	 Band LTE17 - 10 MHz QPSK CBE High channel 1RB
Band LTE17 10 MHz QPSK	 Band LTE17 - 10 MHz QPSK CBE Low channel FRB	 Band LTE17 - 10 MHz QPSK CBE High channel FRB

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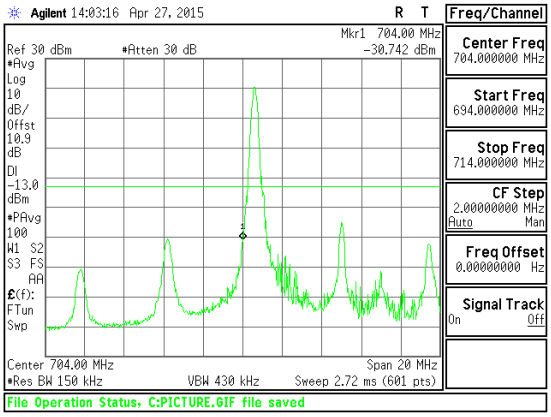
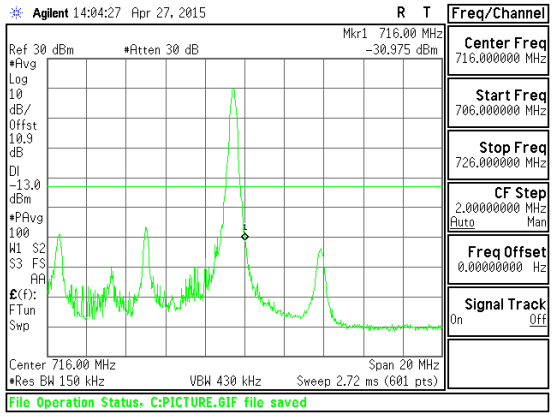
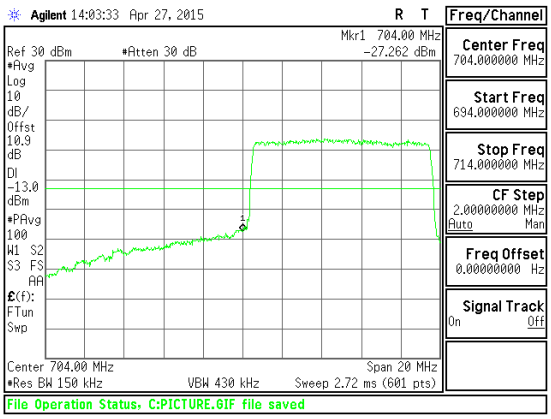
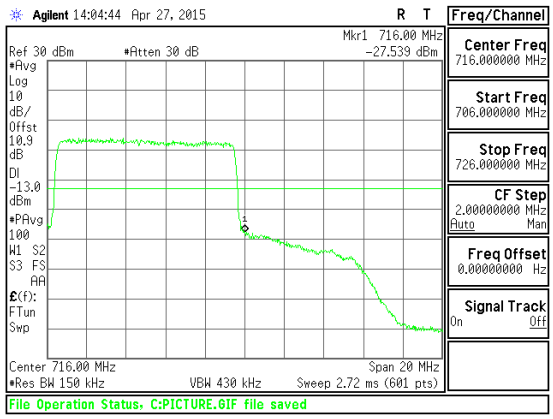
Band LTE17 10 MHz 16QAM	 Band LTE17 - 10 MHz 16QAM CBE Low channel 1RB	 Band LTE17 - 10 MHz 16QAM CBE High channel 1RB
Band LTE17 10 MHz 16QAM	 Band LTE17 - 10 MHz 16QAM CBE Low channel FRB	 Band LTE17 - 10 MHz 16QAM CBE High channel FRB

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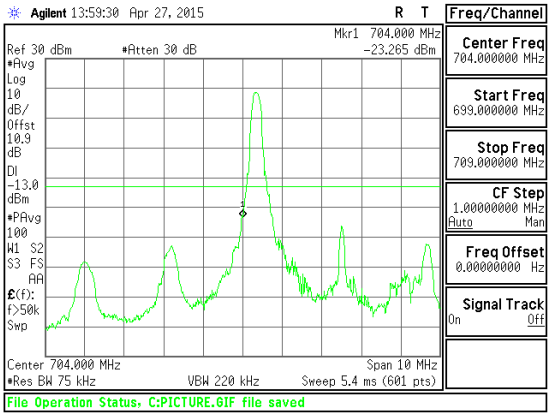
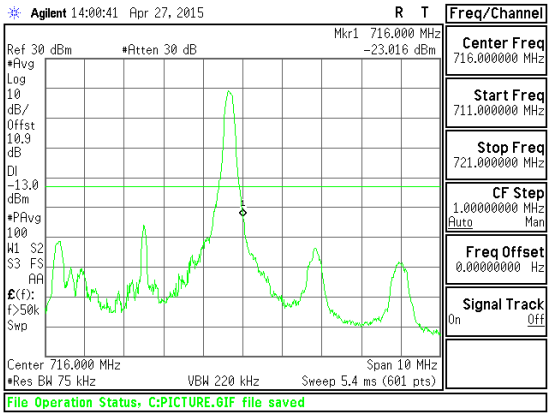
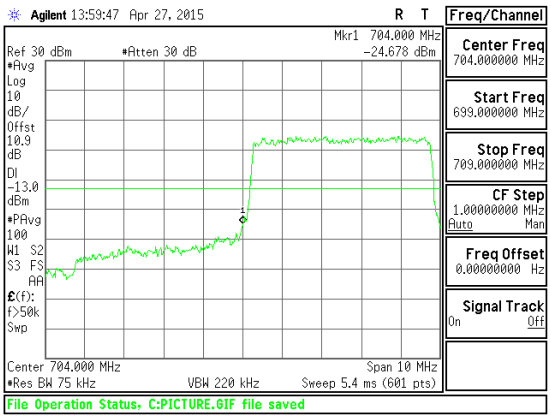
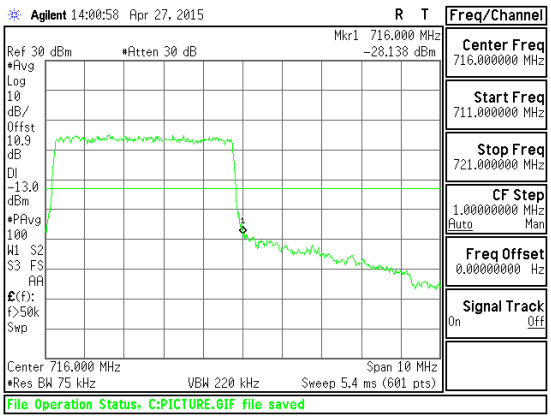
Band LTE17 5 MHz QPSK	 Band LTE17 - 5 MHz QPSK CBE Low channel 1RB	 Band LTE17 - 5 MHz QPSK CBE High channel 1RB
Band LTE17 5 MHz QPSK	 Band LTE17 - 5 MHz QPSK CBE Low channel FRB	 Band LTE17 - 5 MHz QPSK CBE High channel FRB

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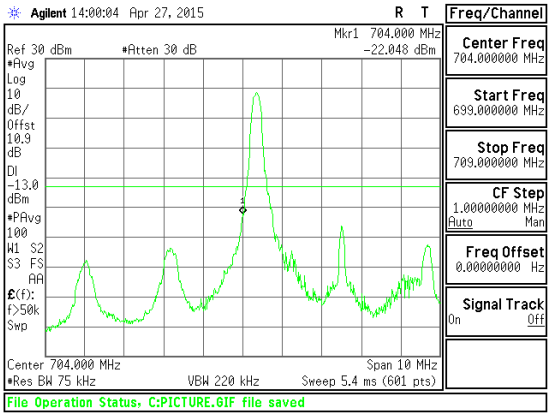
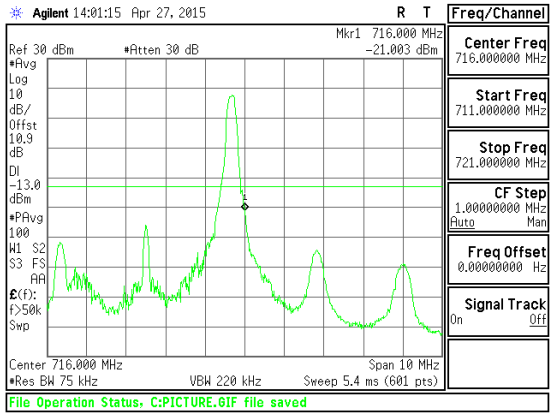
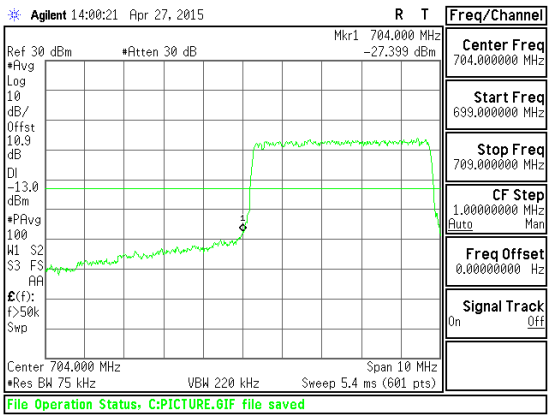
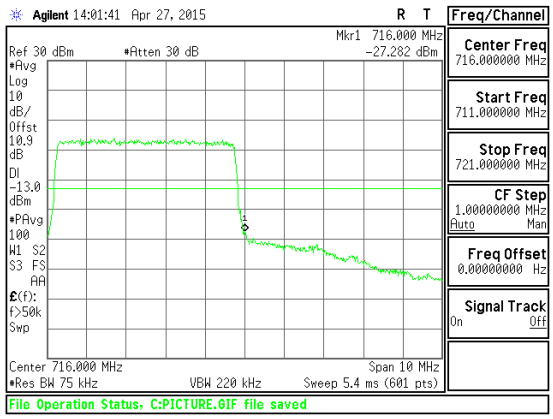
Band LTE17 5 MHz 16 QAM	 Band LTE17 - 5 MHz 16 QAM CBE Low channel 1RB	 Band LTE17 - 5 MHz 16 QAM CBE High channel 1RB
Band LTE17 5 MHz 16 QAM	 Band LTE17 - 5 MHz 16 QAM CBE Low channel FRB	 Band LTE17 - 5 MHz 16 QAM CBE High channel FRB

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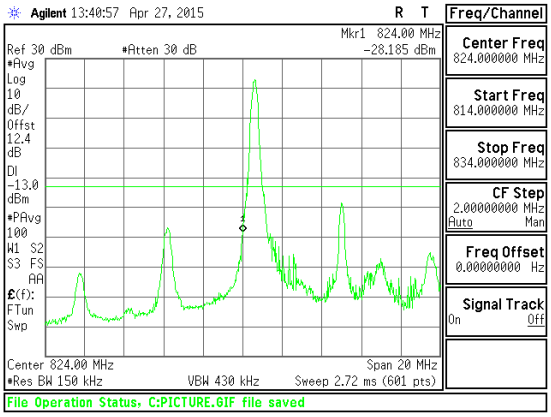
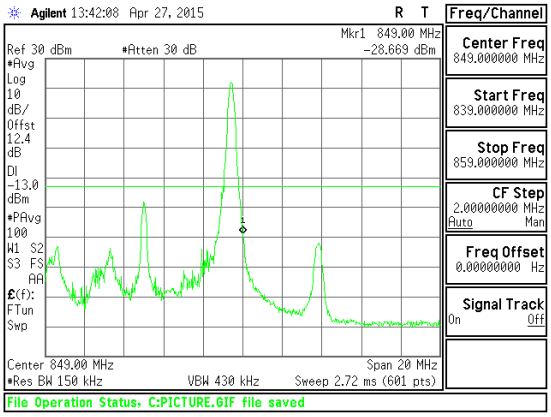
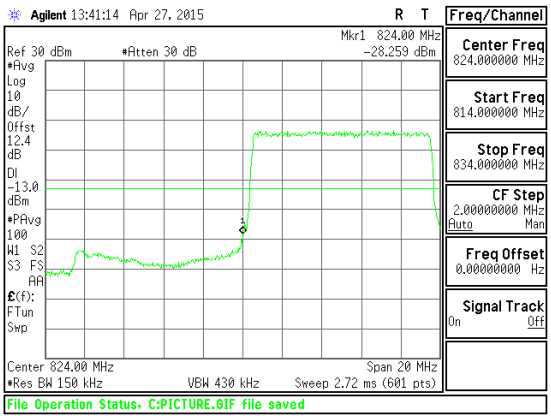
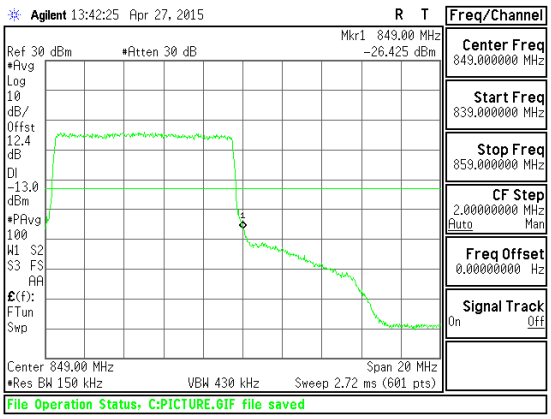
Band LTE5 10 MHz QPSK	 Band LTE5 - 10 MHz QPSK CBE Low channel 1RB	 Band LTE5 - 10 MHz QPSK CBE High channel 1RB
Band LTE5 10 MHz QPSK	 Band LTE5 - 10 MHz QPSK CBE Low channel FRB	 Band LTE5 - 10 MHz QPSK CBE High channel FRB

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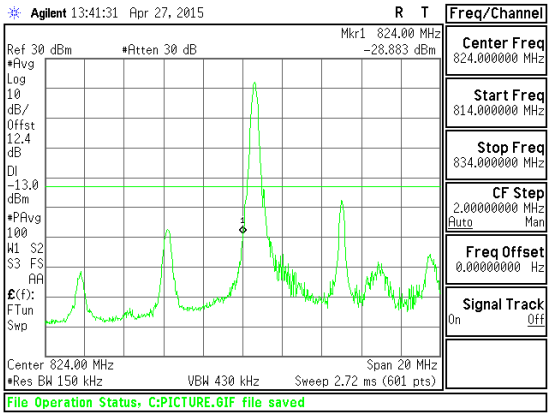
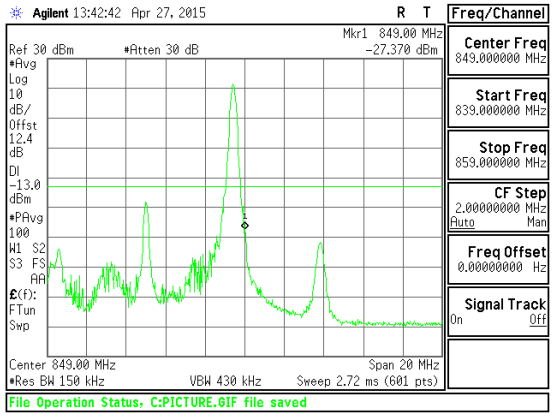
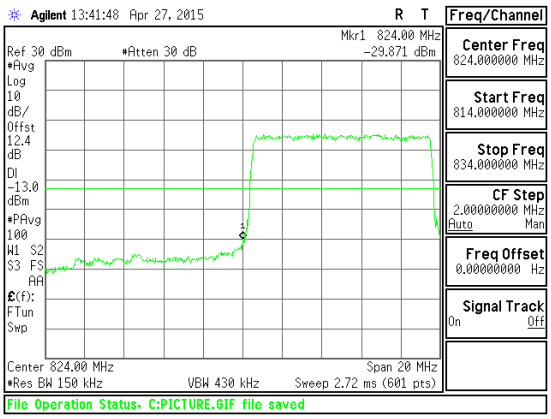
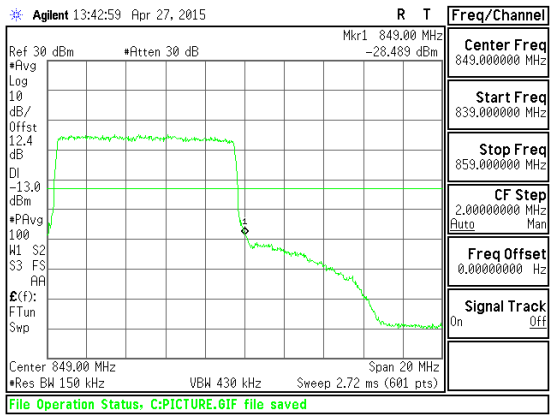
Band LTE5 10 MHz 16QAM	 Band LTE5 - 10 MHz 16QAM CBE Low channel 1RB	 Band LTE5 - 10 MHz 16QAM CBE High channel 1RB
Band LTE5 10 MHz 16QAM	 Band LTE5 - 10 MHz 16QAM CBE Low channel FRB	 Band LTE5 - 10 MHz 16QAM CBE High channel FRB

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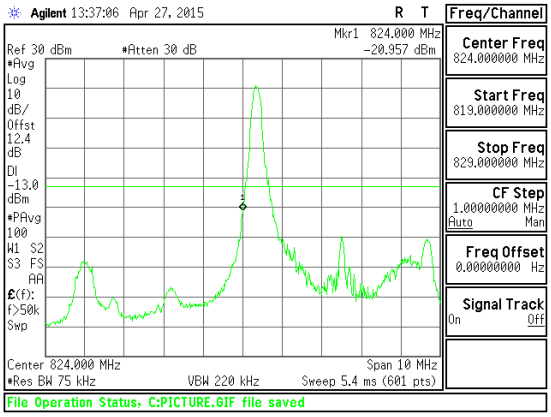
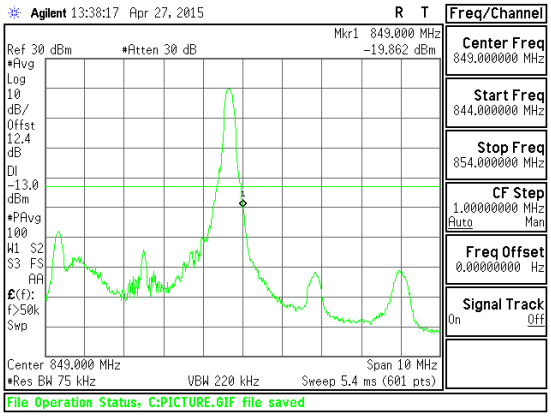
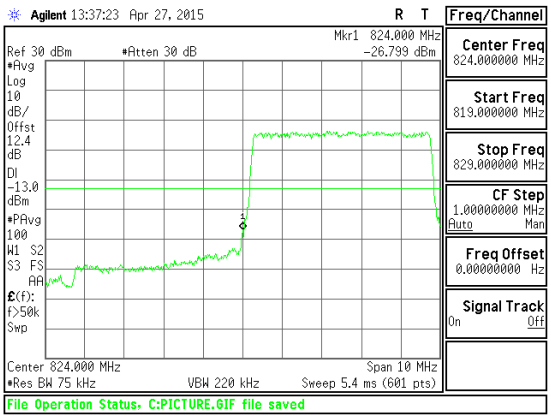
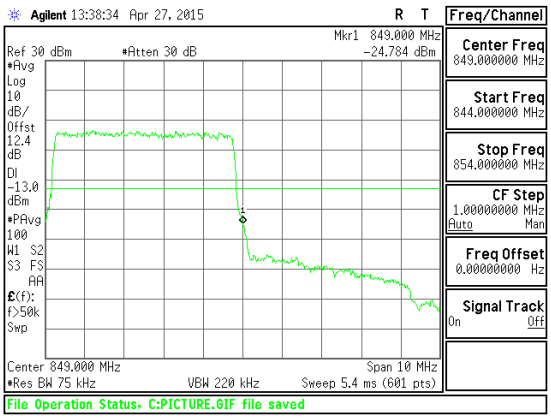
Band LTE5 5 MHz QPSK	 Band LTE5 - 5 MHz QPSK CBE Low channel 1RB	 Band LTE5 - 5 MHz QPSK CBE High channel 1RB
Band LTE5 5 MHz QPSK	 Band LTE5 - 5 MHz QPSK CBE Low channel FRB	 Band LTE5 - 5 MHz QPSK CBE High channel FRB

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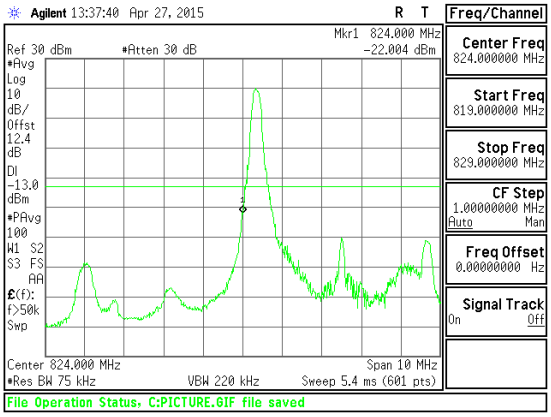
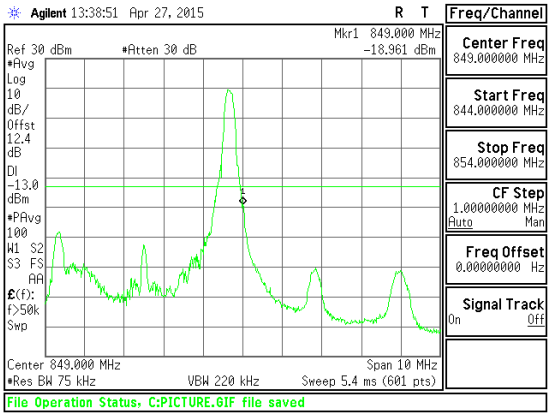
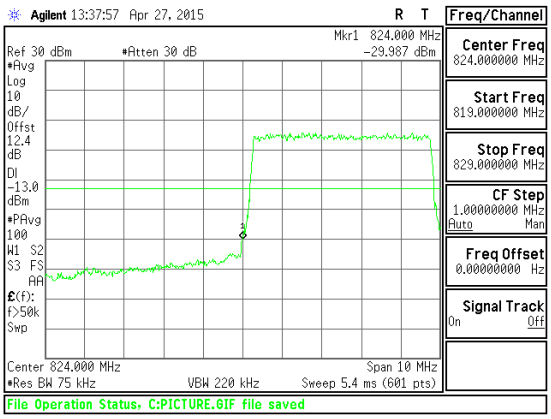
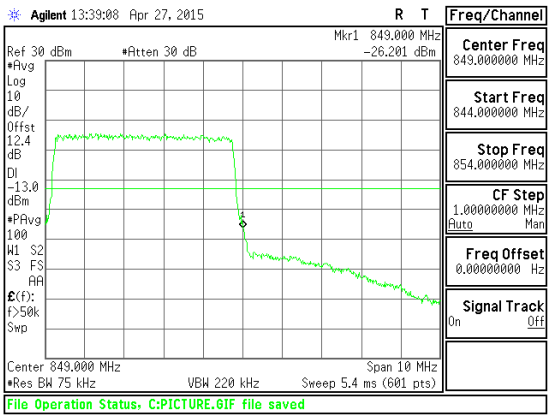
Band LTE5 5 MHz 16 QAM		
	Band LTE5 - 5 MHz 16 QAM CBE Low channel 1RB	Band LTE5 - 5 MHz 16 QAM CBE High channel 1RB
Band LTE5 5 MHz 16 QAM		
	Band LTE5 - 5 MHz 16 QAM CBE Low channel FRB	Band LTE5 - 5 MHz 16 QAM CBE High channel FRB

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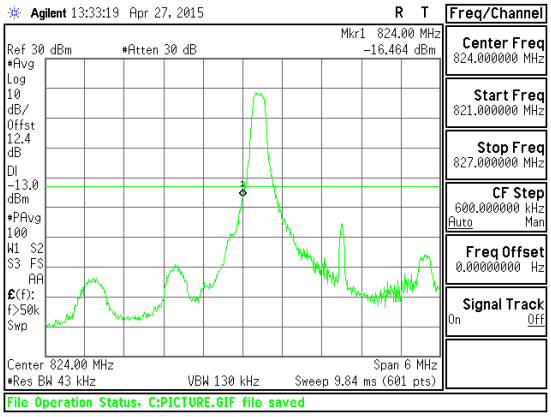
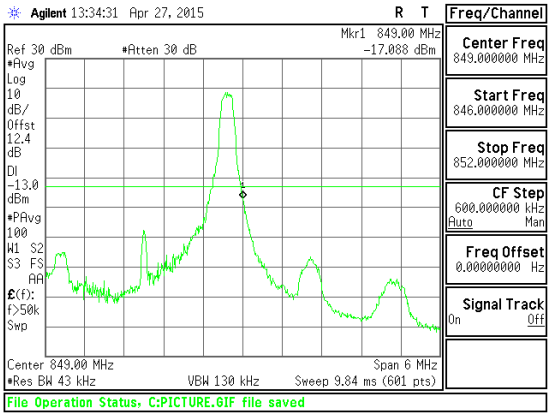
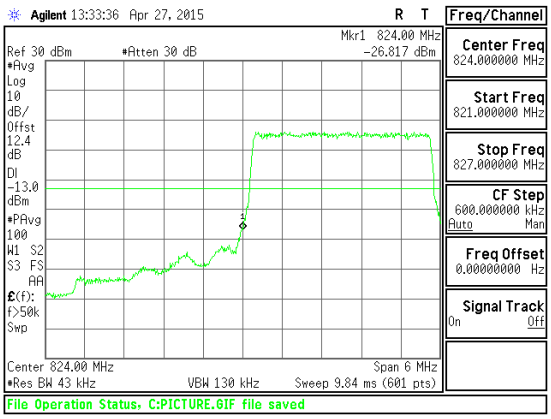
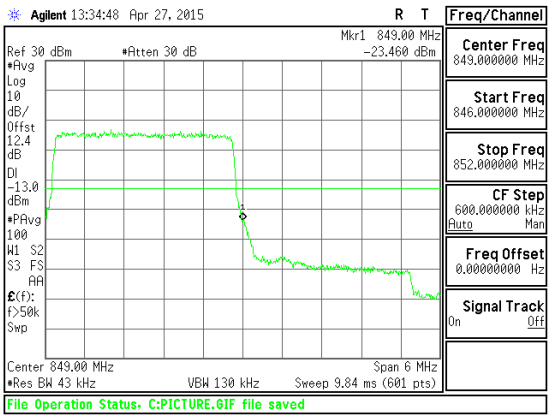
Band LTE5 3 MHz QPSK		
	Band LTE5 - 3 MHz QPSK CBE Low channel 1RB	Band LTE5 - 3 MHz QPSK CBE High channel 1RB
Band LTE5 3 MHz QPSK		
	Band LTE5 - 3 MHz QPSK CBE Low channel FRB	Band LTE5 - 3 MHz QPSK CBE High channel FRB

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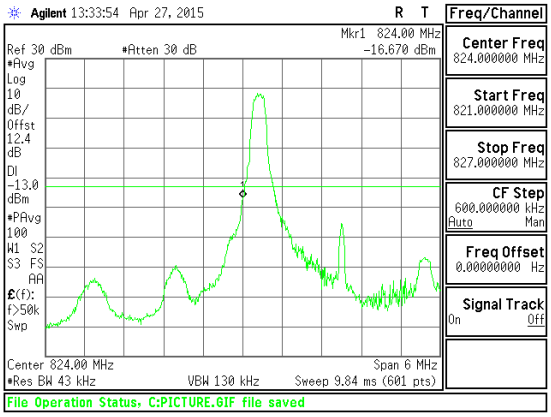
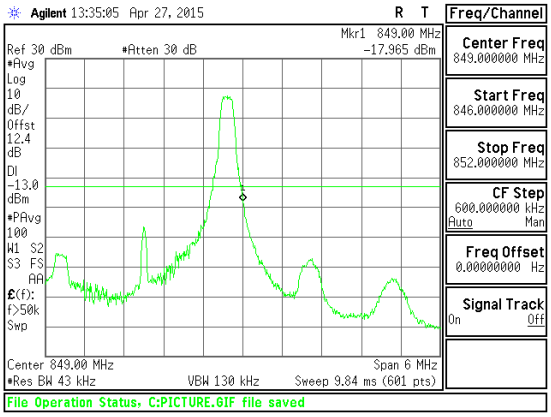
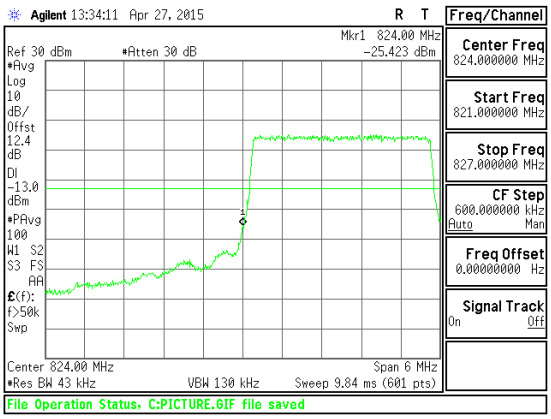
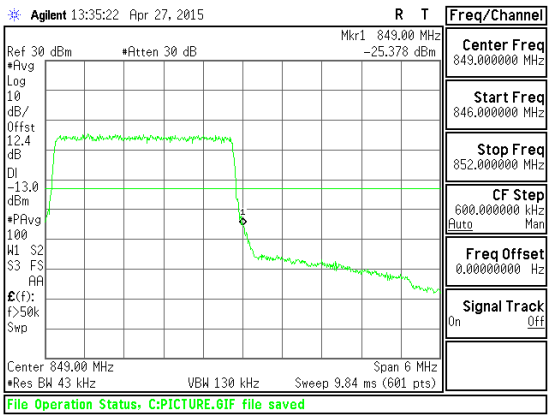
Band LTE5 3 MHz 16QAM	 Band LTE5 - 3 MHz 16QAM CBE Low channel 1RB	 Band LTE5 - 3 MHz 16QAM CBE High channel 1RB
Band LTE5 3 MHz 16QAM	 Band LTE5 - 3 MHz 16QAM CBE Low channel FRB	 Band LTE5 - 3 MHz 16QAM CBE High channel FRB

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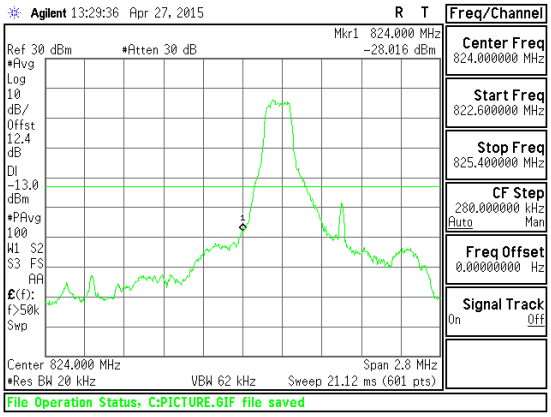
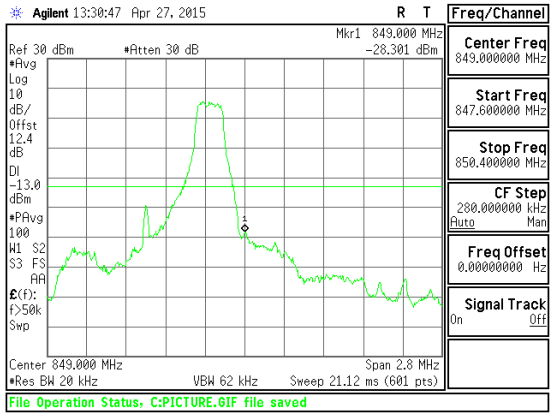
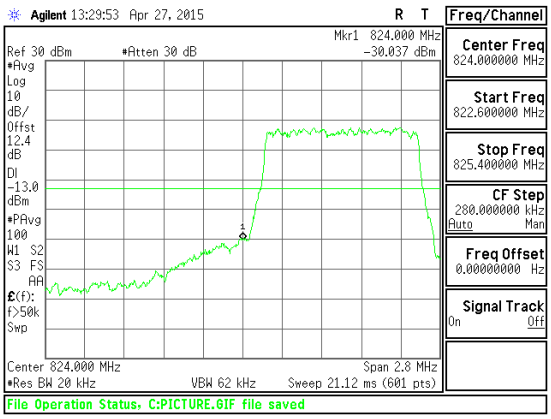
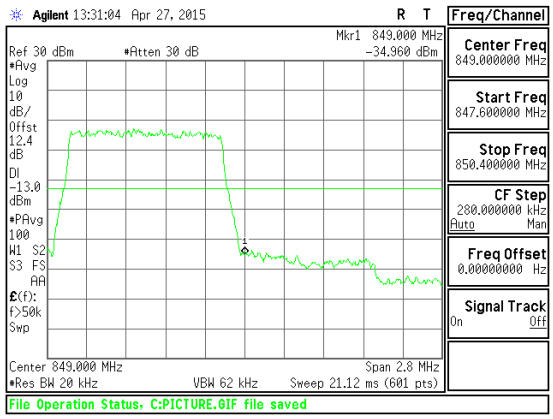
Band LTE5 1.4 MHz QPSK	 Band LTE5 - 1.4 MHz QPSK CBE Low channel 1RB	 Band LTE5 - 1.4 MHz QPSK CBE High channel 1RB
Band LTE5 1.4 MHz QPSK	 Band LTE5 - 1.4 MHz QPSK CBE Low channel FRB	 Band LTE5 - 1.4 MHz QPSK CBE High channel FRB

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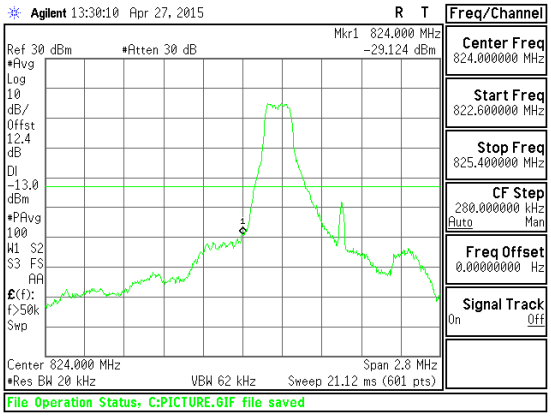
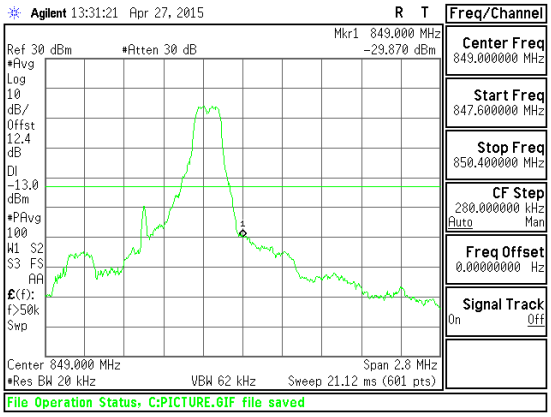
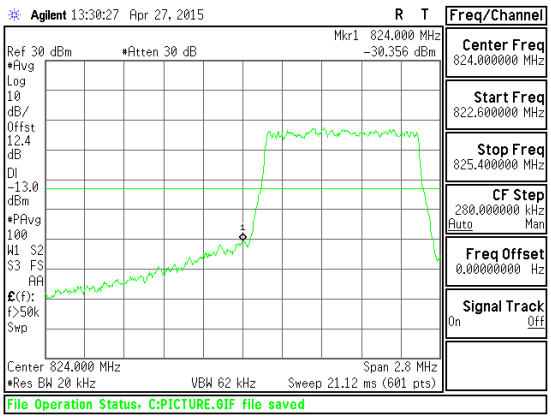
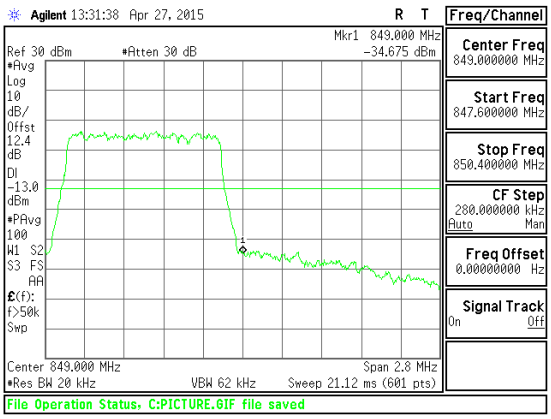
Band LTE5 1.4 MHz 16 QAM	 Band LTE5 - 1.4 MHz 16 QAM CBE Low channel 1RB	 Band LTE5 - 1.4 MHz 16 QAM CBE High channel 1RB
Band LTE5 1.4 MHz 16 QAM	 Band LTE5 - 1.4 MHz 16 QAM CBE Low channel FRB	 Band LTE5 - 1.4 MHz 16 QAM CBE High channel FRB

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10.3. OUT OF BAND EMISSIONS

RULE PART(S)

FCC: §2.1051, §22.917(a), §24.238 (a), §27. 53 (g)

LIMITS

Part 22.917(a) & Part 24.238(a) The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (P) dB.

Part 27.53(g) For operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43 + 10 log (P) dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

TEST PROCEDURE

Per KDB 971168 D01 Power Meas License Digital Systems v02r02

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

MODES TESTED

GSM (850, 1900), WCDMA (Bands V and II), LTE (Bands 5 and 17).

RESULTS

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10.3.1. OUT OF BAND EMISSIONS RESULT

Band	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
GSM850	GPRS	824.2	-19.702	-13	-6.702
		836.6	-18.831	-13	-5.831
		848.8	-18.65	-13	-5.65
	EGPRS	824.2	-19.95	-13	-6.95
		836.6	-20.003	-13	-7.003
		848.8	-18.819	-13	-5.819
GSM1900	GPRS	1850.2	-18.413	-13	-5.413
		1880	-18.338	-13	-5.338
		1909.8	-18.703	-13	-5.703
	EGPRS	1850.2	-18.181	-13	-5.181
		1880	-17.917	-13	-4.917
		1909.8	-17.633	-13	-4.633
Band 5	REL99	826.4	-19.40	-13	-6.40
		836.6	-19.22	-13	-6.22
		846.6	-19.47	-13	-6.47
	HSDPA	826.4	-19.59	-13	-6.59
		836.6	-18.50	-13	-5.50
		846.6	-18.86	-13	-5.86
Band 2	REL99	1852.4	-16.42	-13	-3.42
		1880	-17.49	-13	-4.49
		1907.6	-18.95	-13	-5.95
	HSDPA	1852.4	-18.19	-13	-5.19
		1880	-18.05	-13	-5.05
		1907.6	-17.52	-13	-4.52

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Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE17	10	QPSK	709	-29.154	-13	-16.154
			710	-29.684	-13	-16.684
			711	-30.031	-13	-17.031
		16QAM	709	-29.934	-13	-16.934
			710	-29.009	-13	-16.009
			711	-29.485	-13	-16.485

Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE17	5	QPSK	706.5	-30.046	-13	-17.046
			710	-29.653	-13	-16.653
			713.5	-28.897	-13	-15.897
		16QAM	706.5	-29.064	-13	-16.064
			710	-29.875	-13	-16.875
			713.5	-29.756	-13	-16.756

Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE5	10	QPSK	829	-28.716	-13	-15.716
			836.5	-28.397	-13	-15.397
			844	-27.772	-13	-14.772
		16QAM	829	-28.404	-13	-15.404
			836.5	-28.315	-13	-15.315
			844	-28.065	-13	-15.065

Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE5	5	QPSK	826.5	-27.611	-13	-14.611
			836.5	-28.574	-13	-15.574
			846.5	-27.657	-13	-14.657
		16QAM	826.5	-28.209	-13	-15.209
			836.5	-27.982	-13	-14.982
			846.5	-28.209	-13	-15.209

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Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE5	3	QPSK	825.5	-27.916	-13	-14.916
			836.5	-28.528	-13	-15.528
			847.5	-27.622	-13	-14.622
		16QAM	825.5	-28.336	-13	-15.336
			836.5	-28.512	-13	-15.512
			847.5	-28.256	-13	-15.256

Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE5	1.4	QPSK	824.7	-28.089	-13	-15.089
			836.5	-28.661	-13	-15.661
			848.3	-27.539	-13	-14.539
		16QAM	824.7	-28.471	-13	-15.471
			836.5	-28.165	-13	-15.165
			848.3	-27.102	-13	-14.102

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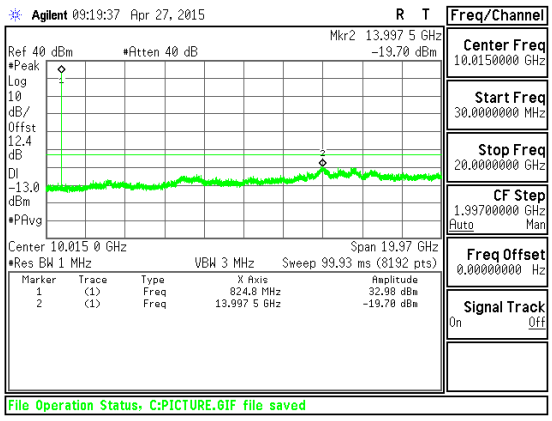
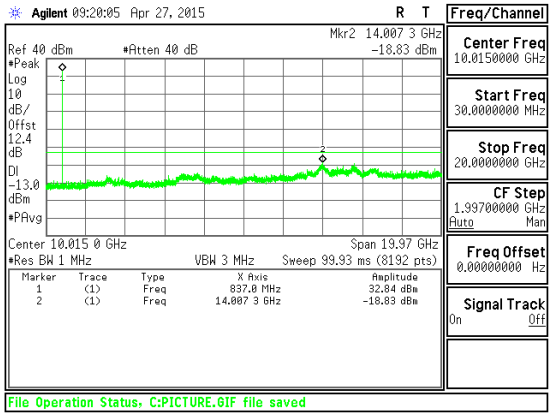
10.3.2. OUT OF BAND EMISSIONS PLOTS

GSM

GSM 850 GPRS	 GSM850 GPRS CSE Low channel	 GSM850 GPRS CSE Mid channel

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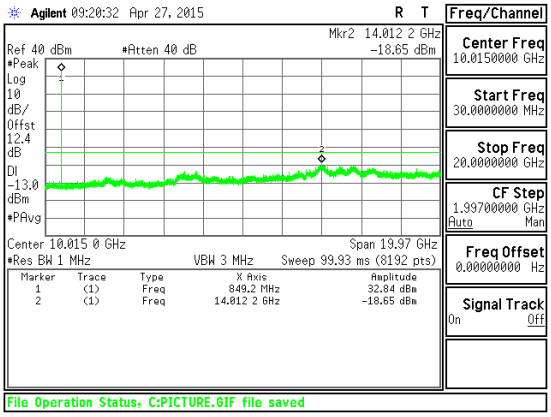
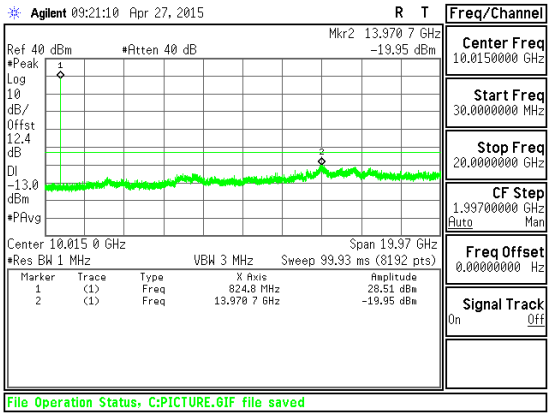
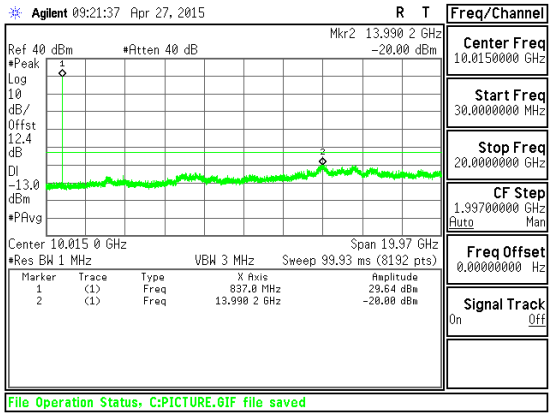
GSM 850 GPRS	 GSM850 GPRS CSE High channel	BLANK
GSM 850 EGPRS	 GSM850 EGPRS CSE Low channel	 GSM850 EGPRS CSE Mid channel

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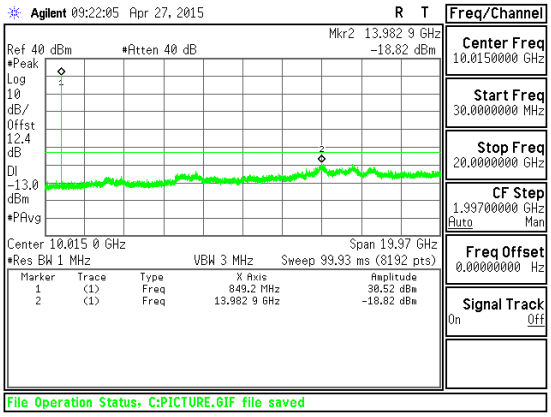
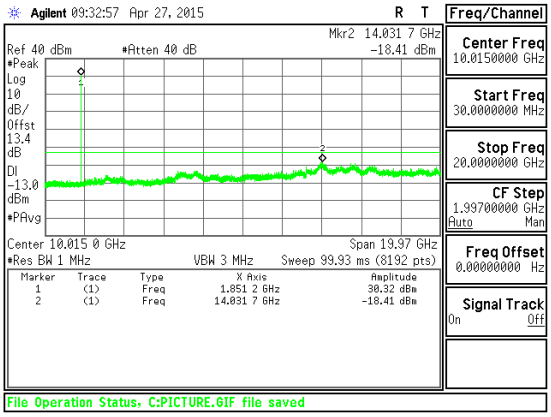
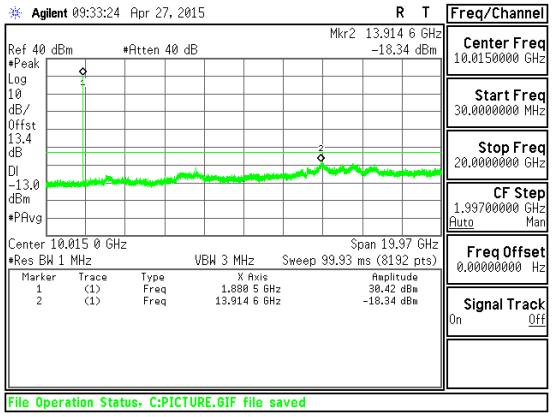
GSM 850 EGPRS	 GSM850 EGPRS CSE High channel	BLANK
GSM 1900 GPRS	 GSM1900 GPRS CSE Low channel	 GSM1900 GPRS CSE Mid channel

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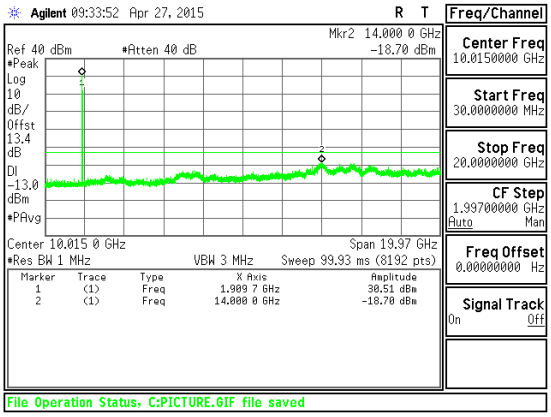
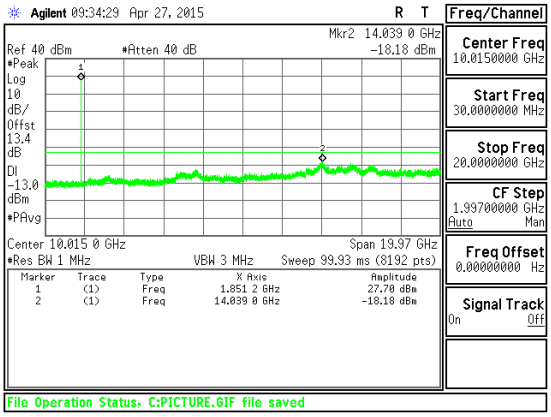
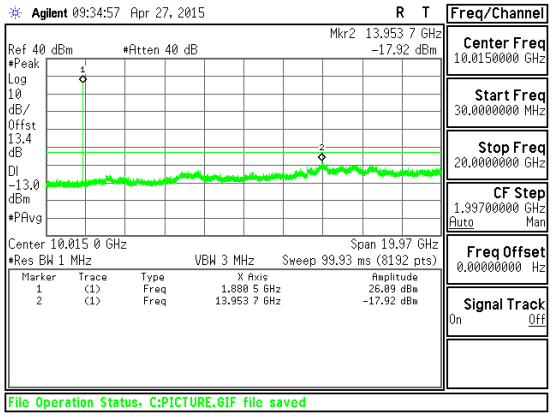
GSM 1900 GPRS	 GSM1900 GPRS CSE High channel	BLANK
GSM 1900 EGPRS	 GSM1900 EGPRS CSE Low channel	 GSM1900 EGPRS CSE Mid channel

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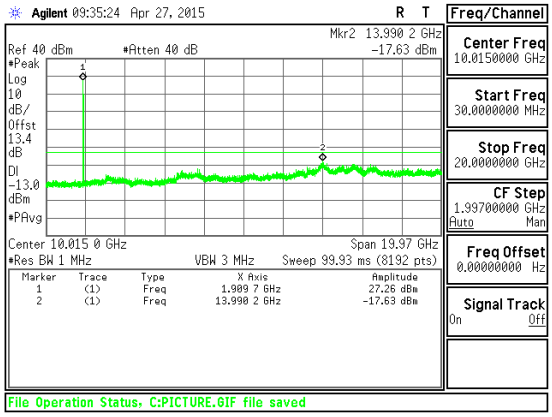
GSM 1900 EGPRS	 GSM1900 EGPRS CSE High channel	BLANK

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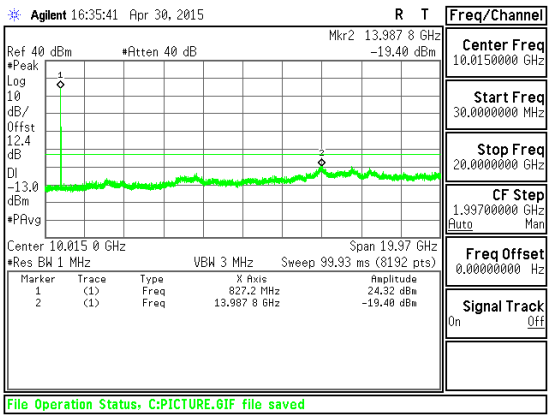
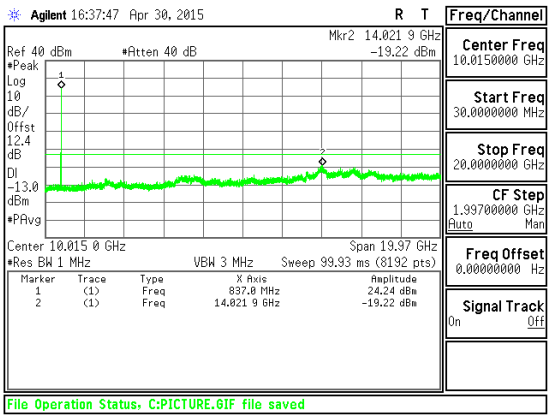
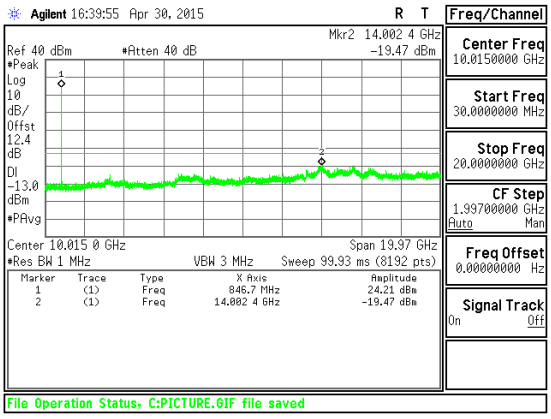
WCDMA

WCDMA Band 5 REL 99	 Band 5 REL 99 CSE Low channel	 Band 5 REL 99 CSE Mid channel
WCDMA Band 5 REL 99	 Band 5 REL 99 CSE High channel	BLANK

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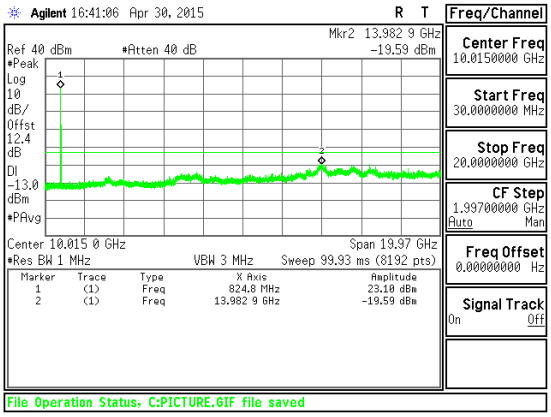
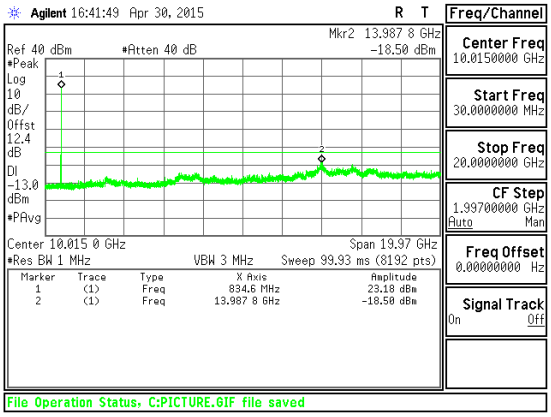
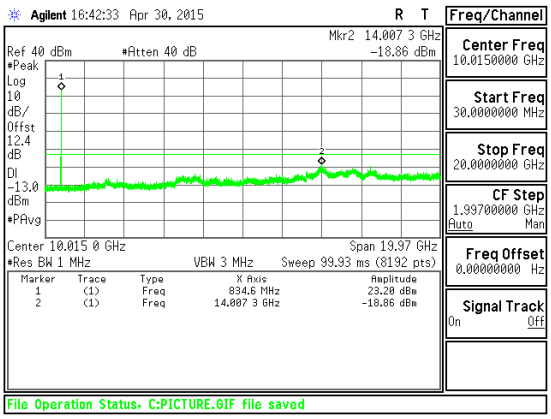
WCDMA Band 5 HSDPA	 Band 5 HSDPA CSE Low channel	 Band 5 HSDPA CSE Mid channel
WCDMA Band 5 HSDPA	 Band 5 HSDPA CSE High channel	BLANK

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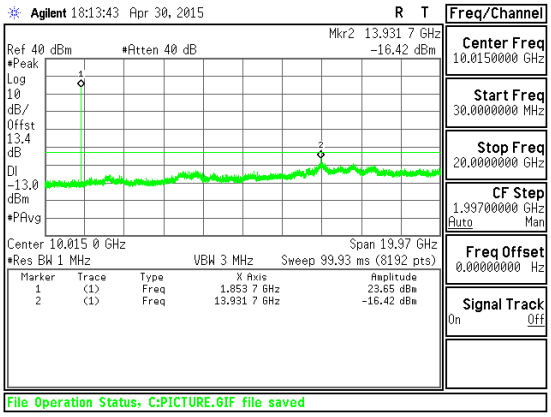
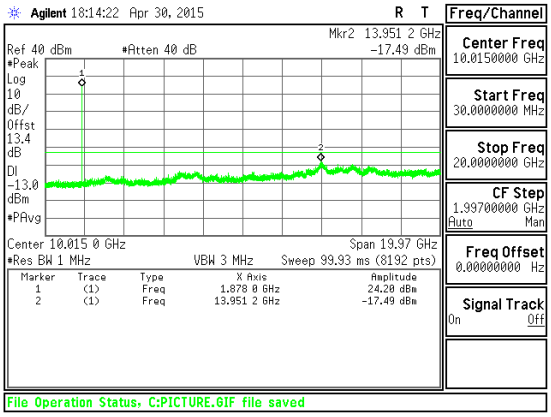
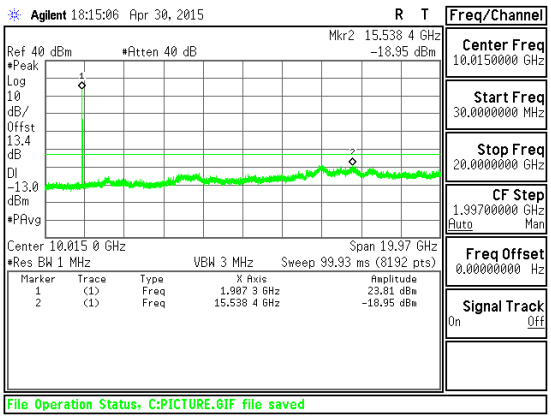
WCDMA Band 2 REL 99	 Band 2 REL 99 CSE Low channel	 Band 2 REL 99 CSE Mid channel
WCDMA Band 2 REL 99	 Band 2 REL 99 CSE High channel	BLANK

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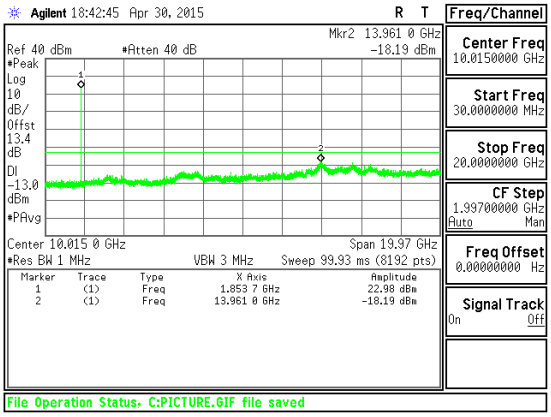
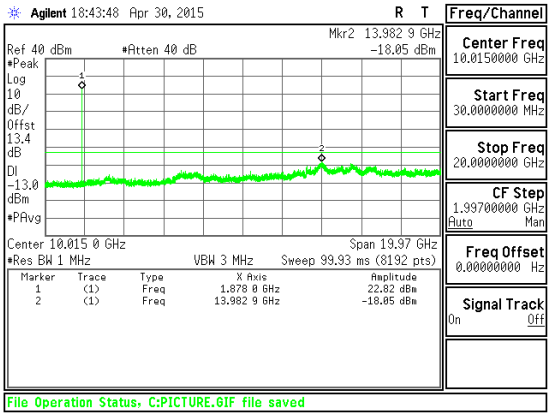
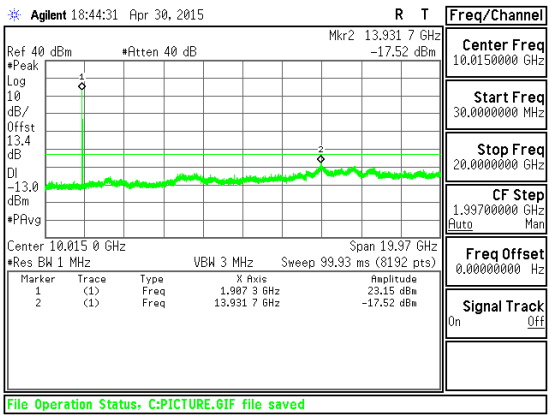
WCDMA Band 2 HSDPA	 Band 2 HSDPA CSE Low channel	 Band 2 HSDPA CSE Mid channel
WCDMA Band 2 HSDPA	 Band 2 HSDPA CSE High channel	BLANK

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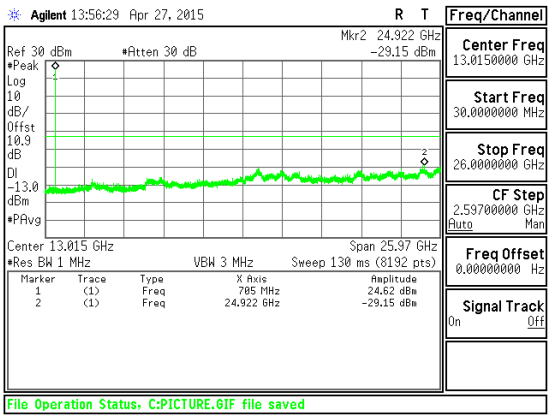
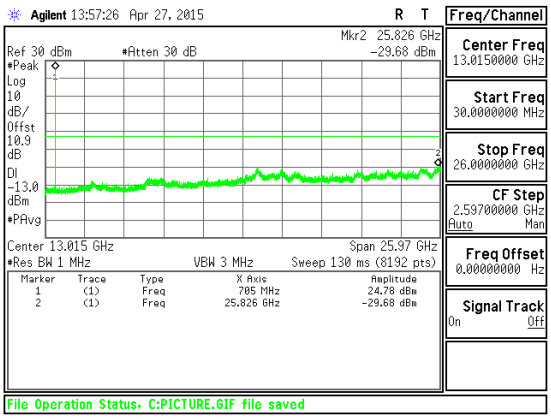
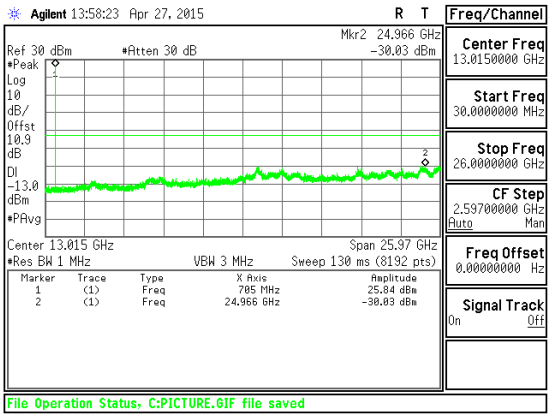
LTE

Band LTE17 10 MHz QPSK	 Band LTE17 - 10 MHz QPSK CSE Low channel	 Band LTE17 - 10 MHz QPSK CSE Mid channel
Band LTE17 10 MHz QPSK	 Band LTE17 - 10 MHz QPSK CSE High channel	BLANK

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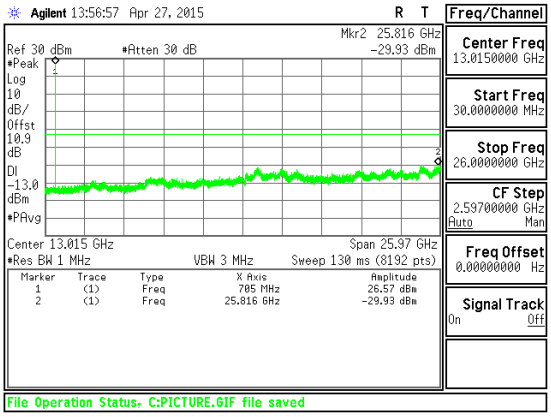
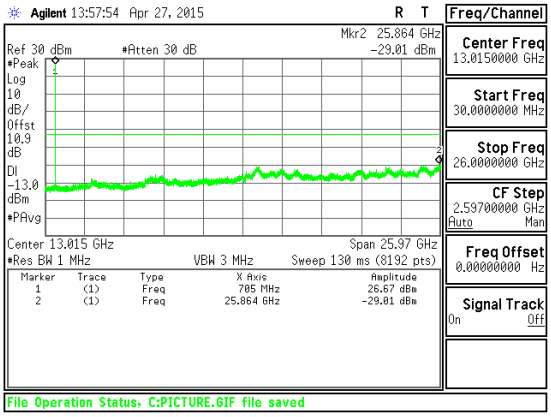
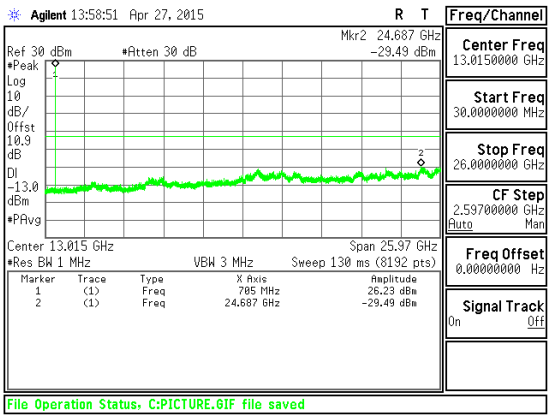
Band LTE17 10 MHz 16QAM	 Band LTE17 - 10 MHz 16QAM CSE Low channel	 Band LTE17 - 10 MHz 16QAM CSE Mid channel
Band LTE17 10 MHz 16QAM	 Band LTE17 - 10 MHz 16QAM CSE High channel	BLANK

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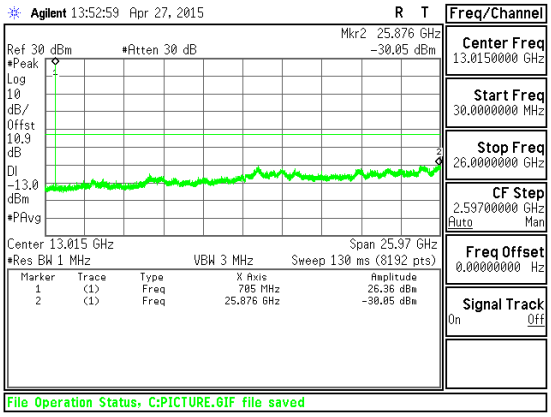
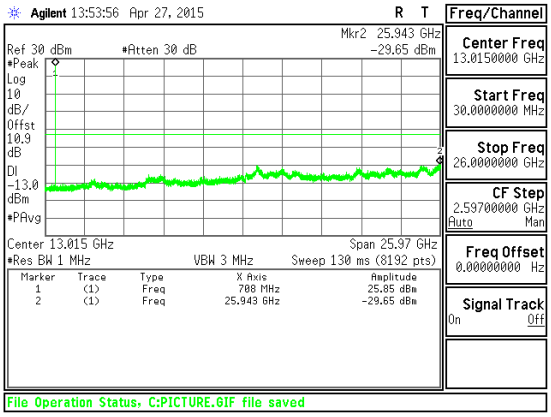
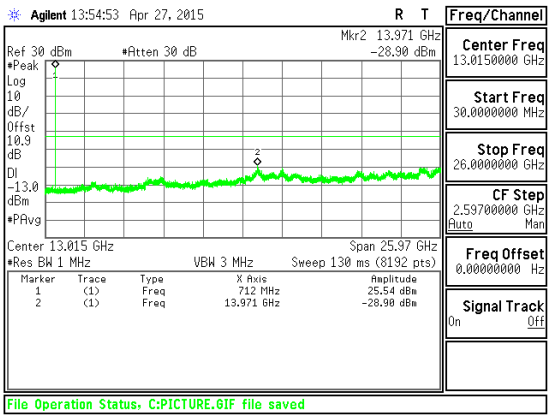
Band LTE17 5 MHz QPSK	 Band LTE17 - 5 MHz QPSK CSE Low channel	 Band LTE17 - 5 MHz QPSK CSE Mid channel
Band LTE17 5 MHz QPSK	 Band LTE17 - 5 MHz QPSK CSE High channel	BLANK

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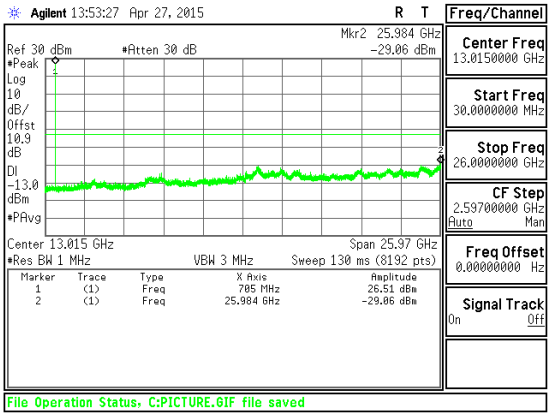
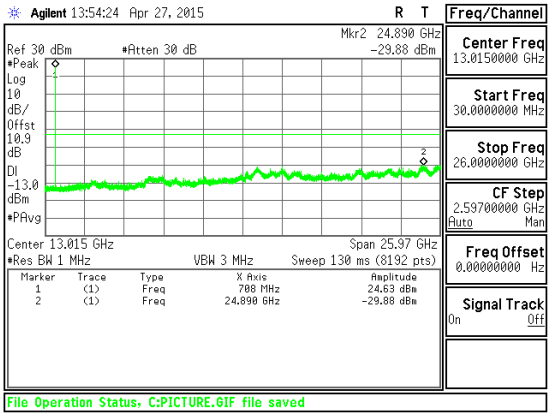
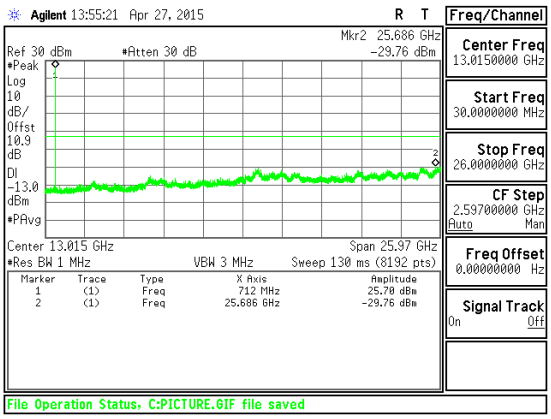
Band LTE17 5 MHz 16 QAM	 Band LTE17 - 5 MHz 16 QAM CSE Low channel	 Band LTE17 - 5 MHz 16 QAM CSE Mid channel
Band LTE17 5 MHz 16 QAM	 Band LTE17 - 5 MHz 16 QAM CSE High channel	BLANK

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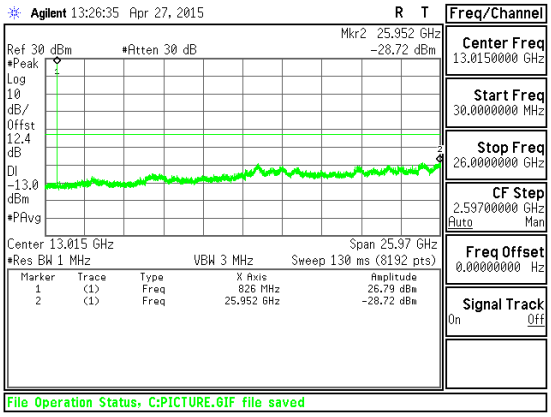
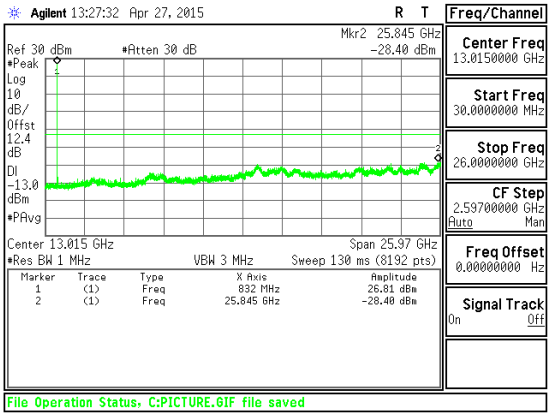
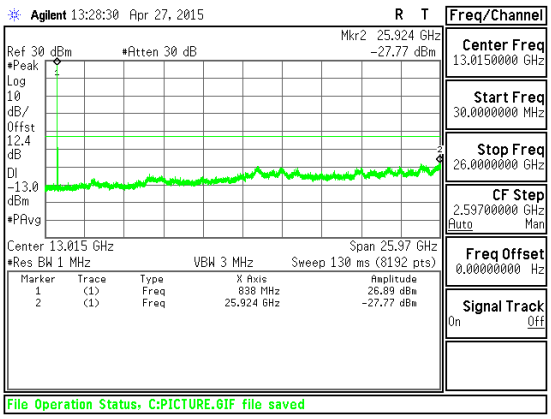
Band LTE5 10 MHz QPSK	 Band LTE5 - 10 MHz QPSK CSE Low channel	 Band LTE5 - 10 MHz QPSK CSE Mid channel
Band LTE5 10 MHz QPSK	 Band LTE5 - 10 MHz QPSK CSE High channel	BLANK

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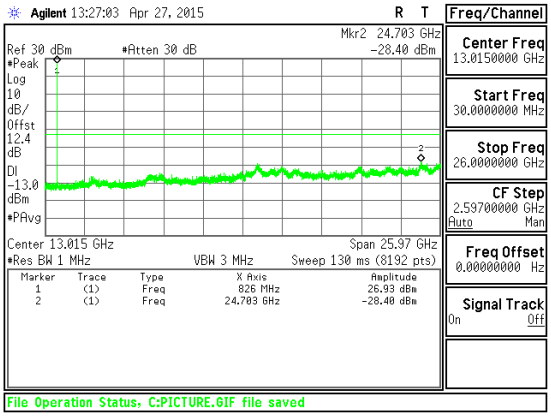
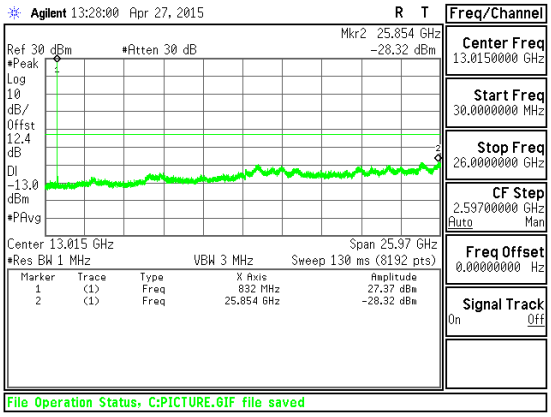
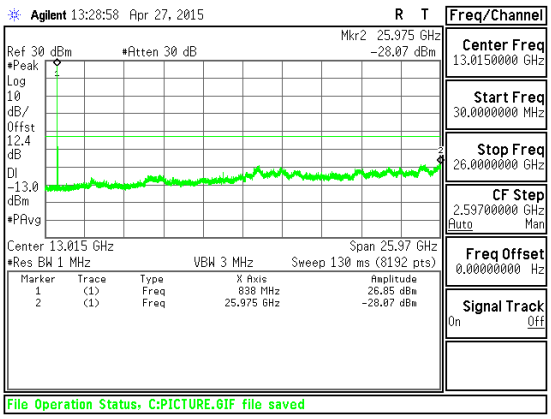
Band LTE5 10 MHz 16QAM	 Band LTE5 - 10 MHz 16QAM CSE Low channel	 Band LTE5 - 10 MHz 16QAM CSE Mid channel
Band LTE5 10 MHz 16QAM	 Band LTE5 - 10 MHz 16QAM CSE High channel	BLANK

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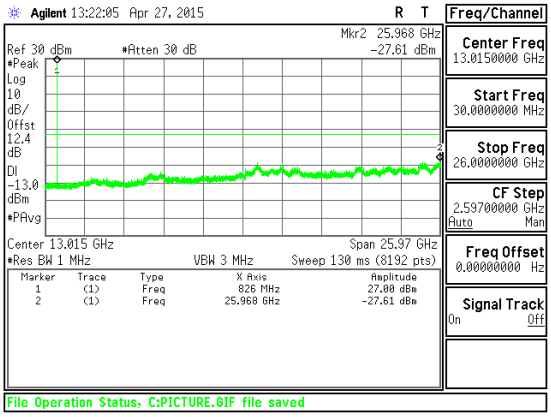
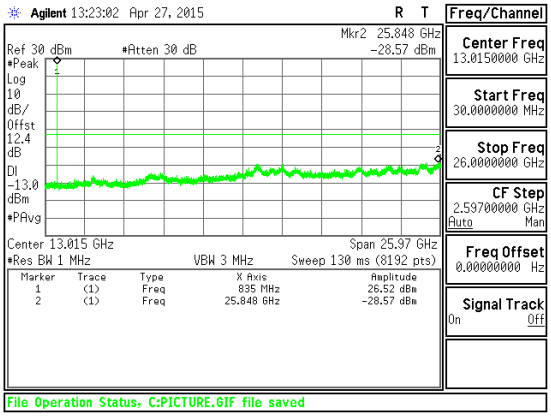
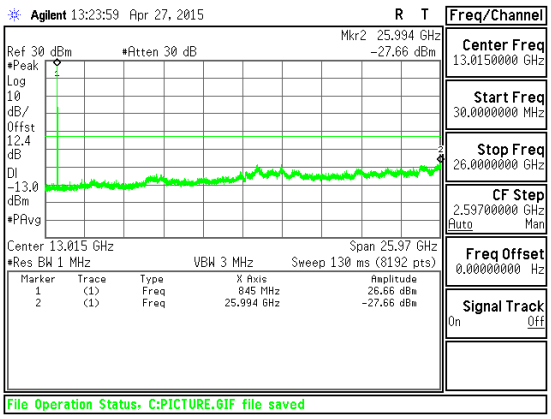
Band LTE5 5 MHz QPSK	 Band LTE5 - 5 MHz QPSK CSE Low channel	 Band LTE5 - 5 MHz QPSK CSE Mid channel
Band LTE5 5 MHz QPSK	 Band LTE5 - 5 MHz QPSK CSE High channel	BLANK

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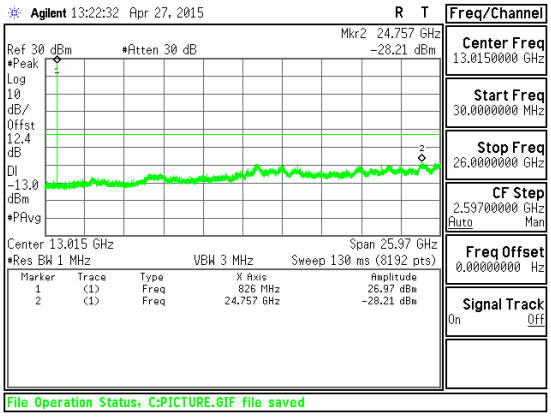
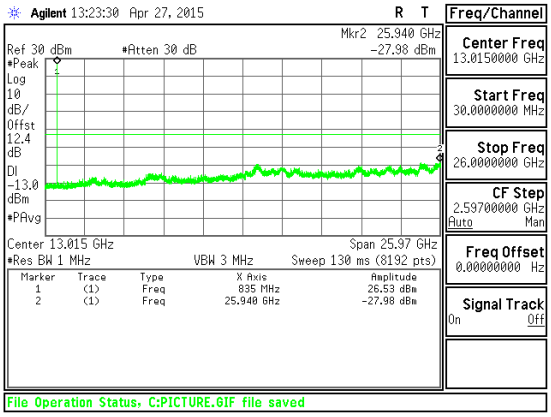
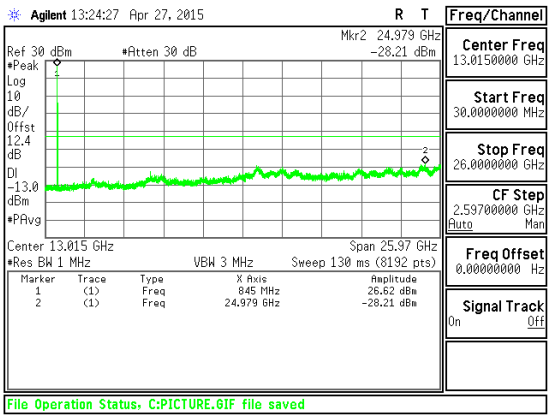
Band LTE5 5 MHz 16 QAM	 Band LTE5 - 5 MHz 16 QAM CSE Low channel	 Band LTE5 - 5 MHz 16 QAM CSE Mid channel
Band LTE5 5 MHz 16 QAM	 Band LTE5 - 5 MHz 16 QAM CSE High channel	BLANK

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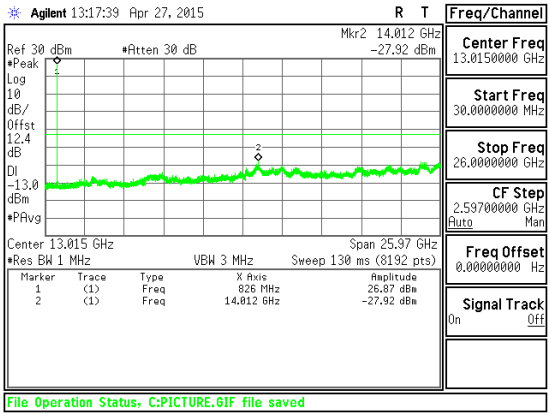
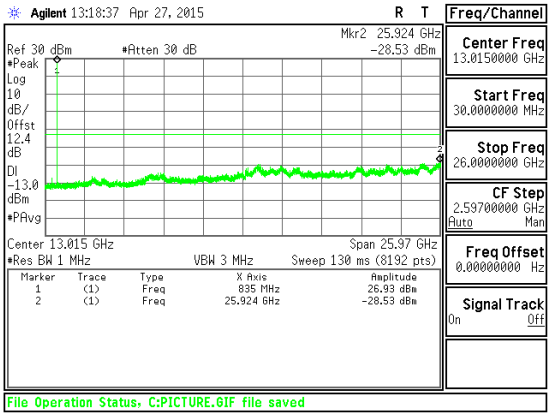
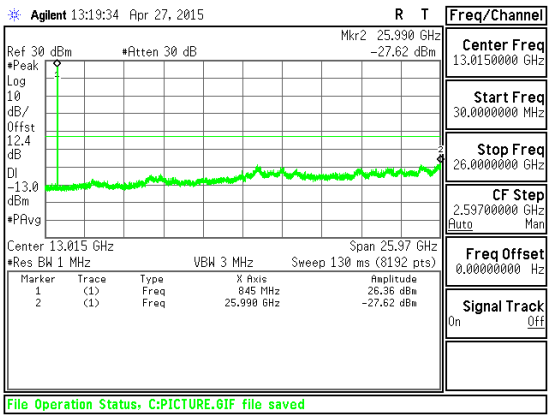
Band LTE5 3 MHz QPSK	 Band LTE5 - 3 MHz QPSK CSE Low channel	 Band LTE5 - 3 MHz QPSK CSE Mid channel
Band LTE5 3 MHz QPSK	 Band LTE5 - 3 MHz QPSK CSE High channel	BLANK

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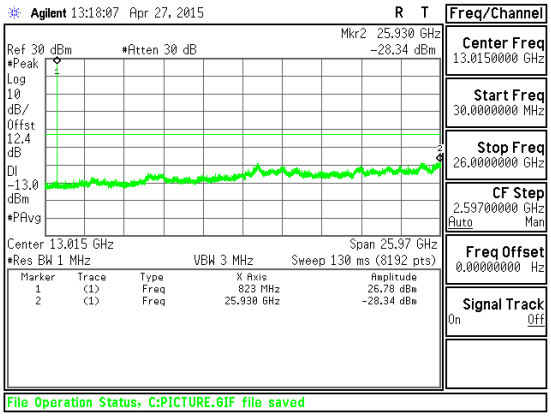
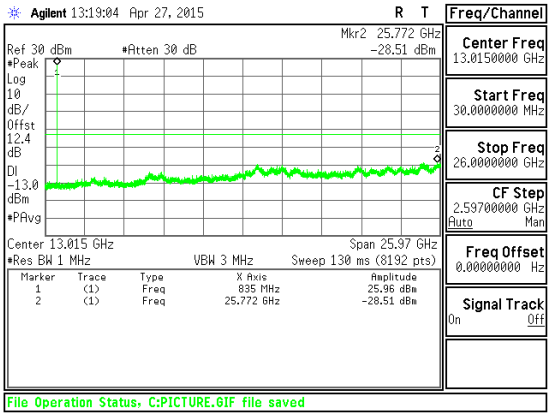
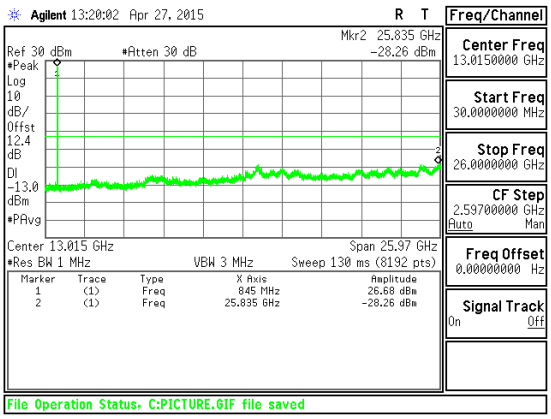
Band LTE5 3 MHz 16QAM	 Band LTE5 - 3 MHz 16QAM CSE Low channel	 Band LTE5 - 3 MHz 16QAM CSE Mid channel
Band LTE5 3 MHz 16QAM	 Band LTE5 - 3 MHz 16QAM CSE High channel	BLANK

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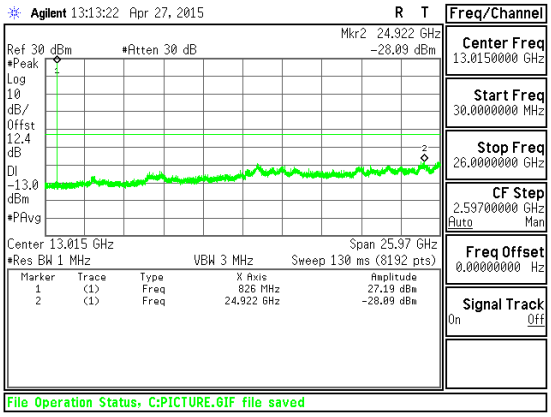
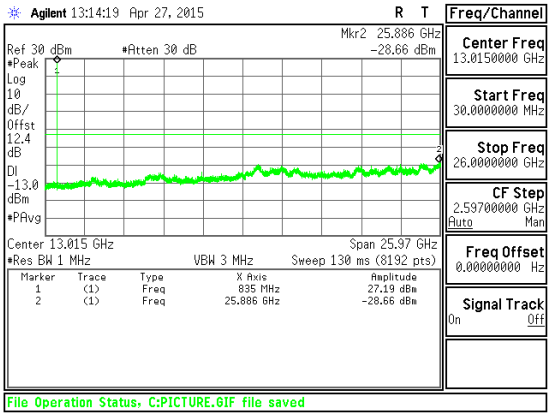
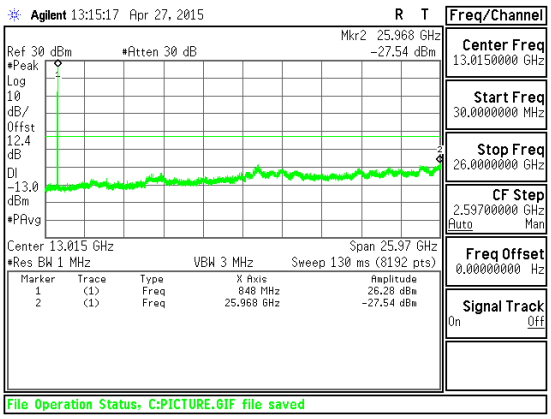
Band LTE5 1.4 MHz QPSK	 Band LTE5 - 1.4 MHz QPSK CSE Low channel	 Band LTE5 - 1.4 MHz QPSK CSE Mid channel
Band LTE5 1.4 MHz QPSK	 Band LTE5 - 1.4 MHz QPSK CSE High channel	BLANK

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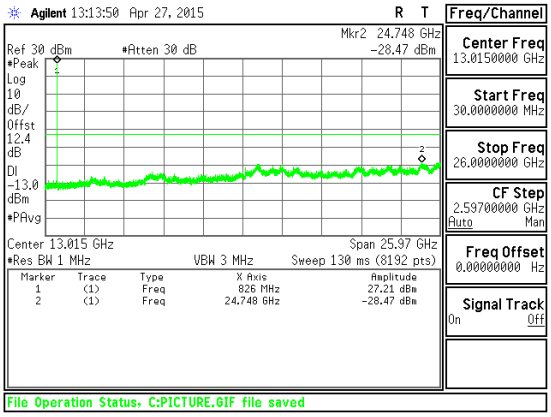
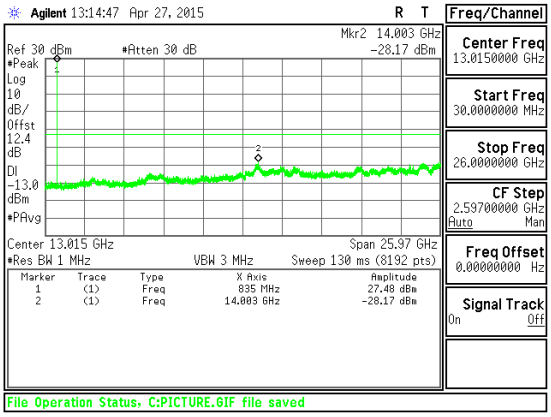
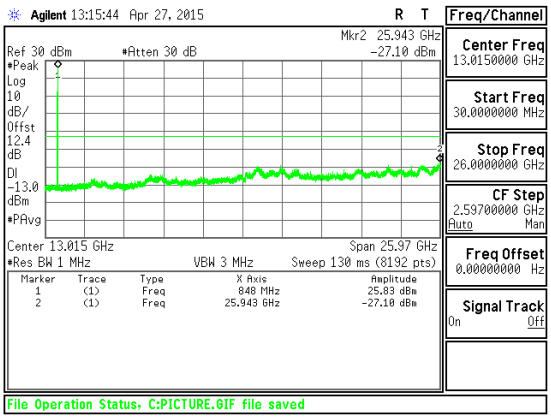
Band LTE5 1.4 MHz 16 QAM	 Band LTE5 - 1.4 MHz 16 QAM CSE Low channel	 Band LTE5 - 1.4 MHz 16 QAM CSE Mid channel
Band LTE5 1.4 MHz 16 QAM	 Band LTE5 - 1.4 MHz 16 QAM CSE High channel	BLANK

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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 v02r02

MODES TESTED

GSM 850 (covers WCDMA Band 5 and LTE Band 5), GSM 1900 (covers WCDMA Band 2) and LTE Band 17.

RESULTS

See the following pages.

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10.4.1. FREQUENCY STABILITY RESULTS

GSM850, Freq: 836.6 MHz– MID CHANNEL

Reference Frequency: PCS Mid Channel		836.6	MHz @ 20°C
Limit: to stay +- 2.5 ppm =		2091.500	Hz
Power Supply	Environment	Frequency Deviation Measured with Time Elapse		
(Vdc)	Temperature (°C)	(MHz)	Delta (ppm)	Limit (ppm)
3.80	50	836.600014	-0.003	2.5
3.80	40	836.600012	-0.001	2.5
3.80	30	836.600012	-0.001	2.5
3.80	***20***	**836.600011**	**0**	***2.5***
3.80	10	836.600013	-0.002	2.5
3.80	0	836.600014	-0.003	2.5
3.80	-10	836.600011	0.001	2.5
3.80	-20	836.600011	0.000	2.5
3.80	-30	836.600011	0.001	2.5

Reference Frequency: PCS Mid Channel		836.6	MHz @ 20°C
Limit: to stay +- 2.5 ppm =		2091.500	Hz
Power Supply	Environment	Frequency Deviation Measured with Time Elapse		
(Vdc)	Temperature (°C)	(MHz)	Delta (ppm)	Limit (ppm)
3.80	***20***	***836.600011***	***0***	***2.5***
4.18	20	836.6000122	*-0.001*	2.5
3.42	20	836.6000122	*-0.001*	2.5

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GSM1900, Freq: 1880 MHz– MID CHANNEL

Reference Frequency: PCS Mid Channel		1880	MHz @ 20°C	
Limit: to stay +- 2.5 ppm =		4700.000	Hz	
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse (MHz)	Delta (ppm)	Limit (ppm)
3.80	50	1880.000024	-0.002	2.5
3.80	40	1880.000024	-0.002	2.5
3.80	30	1880.000016	0.003	2.5
3.80	***20***	**1880.000021**	**0**	***2.5***
3.80	10	1880.000020	0.000	2.5
3.80	0	1880.000021	0.000	2.5
3.80	-10	1880.000017	0.002	2.5
3.80	-20	1880.000016	0.002	2.5
3.80	-30	1880.000015	0.003	2.5

Reference Frequency: PCS Mid Channel		1880	MHz @ 20°C	
Limit: to stay +- 2.5 ppm =		4700.000	Hz	
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse (MHz)	Delta (ppm)	Limit (ppm)
3.80	***20***	***1880.000021***	***0***	***2.5***
4.18	20	1880.00002	*0.000*	2.5
3.42	20	1880.00002	*0.000*	2.5

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LTE17, Freq: 710.0 MHz– MID CHANNEL

Reference Frequency: PCS Mid Channel		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	50	710.000004	-0.003	2.5
3.80	40	710.000005	-0.005	2.5
3.80	30	710.000004	-0.003	2.5
3.80	***20***	**710.000002**	**0**	***2.5***
3.80	10	710.000002	-0.001	2.5
3.80	0	710.000003	-0.002	2.5
3.80	-10	710.000001	0.001	2.5
3.80	-20	710.000002	-0.001	2.5
3.80	-30	710.000001	0.001	2.5

Reference Frequency: PCS Mid Channel		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***	***710.000002***	***0***	***2.5***
4.37	20	710.0000016	*0.000*	2.5
3.23	20	710.0000017	*0.000*	2.5

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11. RADIATED TEST RESULTS

11.1. RADIATED POWER (ERP & EIRP)

RULE PART(S)

FCC: §2.1046, §22.913, §24.232, and 27.50(c)

LIMITS

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

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

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

TEST PROCEDURE

ANSI / TIA / EIA 603C Clause 2.2.17, PXA setting reference to 971168 D01 v02r02

MODES TESTED

GSM (850, 1900), WCDMA (Bands V and II), LTE (Bands 5 and 17).

TEST RESULTS

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11.1.1. ERP/EIRP Results

Band	Mode	Channel	f(MHz)	ERP / EIRP	
				dBm	mW
GSM850	GPRS	128	824.2	28.73	746.45
		190	836.6	28.91	778.04
		251	848.8	27.14	517.61
	EGPRS	128	824.2	22.78	189.67
		190	836.6	23.18	207.97
		251	848.8	21.64	145.88

Band	Mode	Channel	f(MHz)	ERP / EIRP	
				dBm	mW
GSM1900	GPRS	512	1850.2	31.24	1330.45
		661	1880	32.51	1782.38
		810	1909.8	31.78	1506.61
	EGPRS	512	1850.2	26.74	472.06
		661	1880	28.17	656.15
		810	1909.8	26.15	412.10

Band	Mode	Channel	f(MHz)	ERP / EIRP	
				dBm	mW
Band 5	REL99	4132	826.4	20.16	103.75
		4183	836.6	19.81	95.72
		4233	846.6	18.33	68.08
	HSDPA	4132	826.4	19.41	87.30
		4183	836.6	18.50	70.79
		4233	846.6	16.60	45.71

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Band	Mode	Channel	f(MHz)	ERP / EIRP	
				dBm	mW
Band 2	REL99	9262	1852.4	23.42	219.79
		9400	1880	24.55	285.10
		9538	1907.6	23.95	248.31
	HSDPA	9262	1852.4	22.48	177.01
		9400	1880	23.64	231.21
		9538	1907.6	22.82	191.43

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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	17.44	55.46
			1/0	710	16.88	48.75
			1/0	711	16.77	47.53
		16QAM	1/0	709	16.80	47.86
			1/0	710	16.13	41.02
			1/0	711	15.91	38.99

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE17	5	QPSK	1/0	706.5	17.74	59.43
			1/0	710	16.62	45.92
			1/0	713.5	16.97	49.77
		16QAM	1/0	706.5	16.87	48.64
			1/0	710	16.03	40.09
			1/0	713.5	16.42	43.85

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE5	10	QPSK	1/0	829	19.65	92.26
			1/0	836.5	19.96	99.08
			1/0	844	19.07	80.72
		16QAM	1/0	829	18.67	73.62
			1/0	836.5	19.24	83.95
			1/0	844	18.31	67.76

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Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE5	5	QPSK	1/0	826.5	20.51	112.46
			1/0	836.5	19.86	96.83
			1/0	846.5	17.87	61.24
		16QAM	1/0	826.5	19.64	92.04
			1/0	836.5	18.87	77.09
			1/0	846.5	17.13	51.64

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE5	3	QPSK	1/0	825.5	20.43	110.41
			1/0	836.5	19.51	89.33
			1/0	847.5	18.80	75.86
		16QAM	1/0	825.5	19.50	89.13
			1/0	836.5	18.56	71.78
			1/0	847.5	18.01	63.24

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE5	1.4	QPSK	1/0	824.7	19.16	82.41
			1/0	836.5	17.29	53.58
			1/0	848.3	15.96	39.45
		16QAM	1/0	824.7	18.01	63.24
			1/0	836.5	16.27	42.36
			1/0	848.3	15.06	32.06

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11.1.3. ERP/EIRP PLOTS

GSM 850 GPRS

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

Company: Sony
Project #: 10721207
Date: 4/27/2015
Test Engineer: B. Kiewra/M. Nolting
Configuration: FCC ID: PY7-TM0062; Stand-alone (Y (Portrait) orientation); s/n CB5A23WPYJ
Mode: GPRS 850

Test Equipment:
Receiving: Hybrid AT0066 & SMA cables
Substitution: Tx antenna AT0030, sig-gen SIG001, & cable CBL010

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
824.20	25.66	V	0.6	3.6	28.73	38.5	-9.8	
824.20	21.60	H	0.6	3.6	24.67	38.5	-13.8	
Mid Ch								
836.60	25.70	V	0.6	3.8	28.91	38.5	-9.6	
836.60	21.03	H	0.6	3.8	24.24	38.5	-14.3	
High Ch								
848.80	24.22	V	0.6	3.5	27.14	38.5	-11.4	
848.80	21.12	H	0.6	3.5	24.04	38.5	-14.5	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

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GSM 850 EGPRS

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

Company: Sony
Project #: 10721207
Date: 4/27/2015
Test Engineer: B. Kiewra/M. Nolting
Configuration: FCC ID: PY7-TM0062; Stand-alone (Y (Portrait) orientation); s/n CB5A23WPYJ
Mode: EGPRS 850

Test Equipment:
Receiving: Hybrid AT0066 & SMA cables
Substitution: Tx antenna AT0030, sig-gen SIG001, & cable CBL010

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
824.20	19.72	V	0.6	3.6	22.78	38.5	-15.7	
824.20	15.77	H	0.6	3.6	18.83	38.5	-19.7	
Mid Ch								
836.60	19.97	V	0.6	3.8	23.18	38.5	-15.3	
836.60	15.15	H	0.6	3.8	18.36	38.5	-20.1	
High Ch								
848.80	18.72	V	0.6	3.5	21.64	38.5	-16.9	
848.80	15.55	H	0.6	3.5	18.47	38.5	-20.0	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

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GSM 1900 GPRS

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

Company: Sony
Project #: 10721207
Date: 4/29/2015
Test Engineer: B. Kiewra
Configuration: FCC ID: PY7-TM0062; Stand-alone (X (Flat) orientation); s/n CB5A23WPYJ
Mode: GPRS 1900

Test Equipment:
Receiving: Horn AT0067& SMA cables
Substitution: Horn AT0069, sig-gen SIG001, & cable CBL010

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1850.20	20.90	V	0.9	5.4	25.41	33.0	-7.6	
1850.20	26.73	H	0.9	5.4	31.24	33.0	-1.8	
Mid Ch								
1880.00	22.03	V	0.9	5.3	26.43	33.0	-6.6	
1880.00	28.10	H	0.9	5.3	32.51	33.0	-0.5	
High Ch								
1909.80	21.39	V	0.9	5.2	25.68	33.0	-7.3	
1909.80	27.48	H	0.9	5.2	31.78	33.0	-1.2	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

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GSM 1900 EGPRS

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

Company: Sony
Project #: 10721207
Date: 4/29/2015
Test Engineer: B. Kiewra
Configuration: FCC ID: PY7-TM0062; Stand-alone (X (Flat) orientation); s/n CB5A23WPYJ
Mode: EGPRS 1900

Test Equipment:
Receiving: Horn AT0067& SMA cables
Substitution: Horn AT0069, sig-gen SIG001, & cable CBL010

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1850.20	7.46	V	0.9	5.4	11.97	33.0	-21.0	
1850.20	22.23	H	0.9	5.4	26.74	33.0	-6.3	
Mid Ch								
1880.00	17.70	V	0.9	5.3	22.11	33.0	-10.9	
1880.00	23.77	H	0.9	5.3	28.17	33.0	-4.8	
High Ch								
1909.80	15.36	V	0.9	5.2	19.66	33.0	-13.3	
1909.80	21.85	H	0.9	5.2	26.15	33.0	-6.9	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

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WCDMA BAND 5 REL 99

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

Company: Sony
Project #: 10721207
Date: 4/27/2015
Test Engineer: B. Kiewra/M. Nolting
Configuration: FCC ID: PY7-TM0062; Stand-alone (Y (Portrait) orientation); s/n CB5A23WPYJ
Mode: WCDMA5: Rel99

Test Equipment:
Receiving: Hybrid AT0066 & SMA cables
Substitution: Tx antenna AT0030, sig-gen SIG001, & cable CBL010

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	17.10	V	0.6	3.6	20.16	38.5	-18.3	
826.40	12.66	H	0.6	3.6	15.72	38.5	-22.8	
Mid Ch								
836.60	16.60	V	0.6	3.8	19.81	38.5	-18.7	
836.60	11.66	H	0.6	3.8	14.87	38.5	-23.6	
High Ch								
846.60	15.33	V	0.6	3.6	18.33	38.5	-20.2	
846.60	11.22	H	0.6	3.6	14.23	38.5	-24.3	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

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WCDMA BAND 5 HSDPA

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

Company: Sony
Project #: 10721207
Date: 4/27/2015
Test Engineer: B. Kiewra/M. Nolting
Configuration: FCC ID: PY7-TM0062; Stand-alone (Y (Portrait) orientation); s/n CB5A23WPYJ
Mode: WCDMA5: HSDPA

Test Equipment:
Receiving: Hybrid AT0066 & SMA cables
Substitution: Tx antenna AT0030, sig-gen SIG001, & cable CBL010

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	16.34	V	0.6	3.6	19.41	38.5	-19.1	
826.40	10.82	H	0.6	3.6	13.89	38.5	-24.6	
Mid Ch								
836.60	15.29	V	0.6	3.8	18.50	38.5	-20.0	
836.60	10.05	H	0.6	3.8	13.26	38.5	-25.2	
High Ch								
846.60	13.60	V	0.6	3.6	16.60	38.5	-21.9	
846.60	10.19	H	0.6	3.6	13.19	38.5	-25.3	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

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WCDMA BAND 2 REL 99

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

Company: Sony
Project #: 10721207
Date: 4/28/2015
Test Engineer: B. Kiewra
Configuration: FCC ID: PY7-TM0062; Stand-alone (X (Flat) orientation); s/n CB5A23WPYJ
Mode: WCDMA 2 Rel99

Test Equipment:
Receiving: Horn AT0067& SMA cables
Substitution: Horn AT0069, sig-gen SIG001, & cable CBL010

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1852.40	12.68	V	0.9	5.4	17.18	33.0	-15.8	
1852.40	18.92	H	0.9	5.4	23.42	33.0	-9.6	
Mid Ch								
1880.00	13.53	V	0.9	5.3	17.93	33.0	-15.1	
1880.00	20.14	H	0.9	5.3	24.55	33.0	-8.5	
High Ch								
1907.60	14.70	V	0.9	5.2	19.00	33.0	-14.0	
1907.60	19.65	H	0.9	5.2	23.95	33.0	-9.0	

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Note: For Band 4 EIRP limit is 30dBm

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WCDMA BAND 2 HSDPA

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

Company: Sony
Project #: 10721207
Date: 4/28/2015
Test Engineer: B. Kiewra
Configuration: FCC ID: PY7-TM0062; Stand-alone (X (Flat) orientation); s/n CB5A23WPYJ
Mode: WCDMA 2 HSPDA

Test Equipment:
Receiving: Horn AT0067& SMA cables
Substitution: Horn AT0069, sig-gen SIG001, & cable CBL010

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1852.40	11.89	V	0.9	5.4	16.39	33.0	-16.6	
1852.40	17.98	H	0.9	5.4	22.48	33.0	-10.5	
Mid Ch								
1880.00	12.95	V	0.9	5.3	17.35	33.0	-15.7	
1880.00	19.24	H	0.9	5.3	23.64	33.0	-9.4	
High Ch								
1907.60	8.93	V	0.9	5.2	13.23	33.0	-19.8	
1907.60	18.52	H	0.9	5.2	22.82	33.0	-10.2	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

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LTE17, 10 MHz QPSK

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

Company: Sony
Project #: 10721207
Date: 5/1/2015
Test Engineer: B. Kiewra
Configuration: FCC ID: PY7-TM0062; Stand-alone (X (Flat) orientation); s/n CB5A23WPYJ
Mode: LTE 17 10MHz BW QPSK

Test Equipment:
Receiving: Hybrid AT0066 & SMA cables
Substitution: Tx antenna AT0030, sig-gen SIG001, & cable CBL010

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	5.99	V	0.5	3.6	9.08	34.77	-25.7	
709.00	14.35	H	0.5	3.6	17.44	34.77	-17.3	
Mid Ch								
710.00	5.99	V	0.5	3.7	9.12	34.77	-25.7	
710.00	13.75	H	0.5	3.7	16.88	34.77	-17.9	
High Ch								
711.00	5.77	V	0.5	3.7	8.94	34.77	-25.8	
711.00	13.60	H	0.5	3.7	16.77	34.77	-18.0	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

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LTE17, 10 MHz 16QAM

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

Company: Sony
Project #: 10721207
Date: 5/1/2015
Test Engineer: B. Kiewra
Configuration: FCC ID: PY7-TM0062; Stand-alone (X (Flat) orientation); s/n CB5A23WPYJ
Mode: LTE 17 10MHz BW 16-QAM

Test Equipment:
Receiving: Hybrid AT0066 & SMA cables
Substitution: Tx antenna AT0030, sig-gen SIG001, & cable CBL010

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	5.29	V	0.5	3.6	8.38	34.77	-26.4	
709.00	13.71	H	0.5	3.6	16.80	34.77	-18.0	
Mid Ch								
710.00	5.13	V	0.5	3.7	8.26	34.77	-26.5	
710.00	13.00	H	0.5	3.7	16.13	34.77	-18.6	
High Ch								
711.00	4.87	V	0.5	3.7	8.04	34.77	-26.7	
711.00	12.74	H	0.5	3.7	15.91	34.77	-18.9	

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Note: For Band 4 EIRP limit is 30dBm

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LTE17, 5MHz QPSK

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

Company: Sony
Project #: 10721207
Date: 4/27/2015
Test Engineer: B. Kiewra/M. Nolting
Configuration: FCC ID: PY7-TM0062; Stand-alone (X (Flat) orientation); s/n CB5A23WPYJ
Mode: LTE 17 5MHz BW QPSK

Test Equipment:
Receiving: Hybrid AT0066 & SMA cables
Substitution: Tx antenna AT0030, sig-gen SIG001, & cable CBL010

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	7.19	V	0.5	3.5	10.18	34.77	-24.6	
706.50	14.75	H	0.5	3.5	17.74	34.77	-17.0	
Mid Ch								
710.00	6.63	V	0.5	3.7	9.76	34.77	-25.0	
710.00	13.49	H	0.5	3.7	16.62	34.77	-18.1	
High Ch								
713.50	7.50	V	0.5	3.8	10.76	34.77	-24.0	
713.50	13.71	H	0.5	3.8	16.97	34.77	-17.8	

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Note: For Band 4 EIRP limit is 30dBm

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LTE17, 5 MHz 16QAM

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

Company: Sony
Project #: 10721207
Date: 4/27/2015
Test Engineer: B. Kiewra/M. Nolting
Configuration: FCC ID: PY7-TM0062; Stand-alone (X (Flat) orientation); s/n CB5A23WPYJ
Mode: LTE 17 5MHz BW 16-QAM

Test Equipment:
Receiving: Hybrid AT0066 & SMA cables
Substitution: Tx antenna AT0030, sig-gen SIG001, & cable CBL010

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	6.25	V	0.5	3.5	9.24	34.77	-25.5	
706.50	13.88	H	0.5	3.5	16.87	34.77	-17.9	
Mid Ch								
710.00	5.83	V	0.5	3.7	8.96	34.77	-25.8	
710.00	12.90	H	0.5	3.7	16.03	34.77	-18.7	
High Ch								
713.50	6.87	V	0.5	3.8	10.14	34.77	-24.6	
713.50	13.15	H	0.5	3.8	16.42	34.77	-18.4	

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Note: For Band 4 EIRP limit is 30dBm

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LTE5, 10 MHz QPSK

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

Company: Sony
Project #: 10721207
Date: 4/28/2015
Test Engineer: B. Kiewra
Configuration: FCC ID: PY7-TM0062; Stand-alone (Y(Landscape) orientation); s/n CB5A23WPYJ
Mode: LTE 5 10MHz BW QPSK

Test Equipment:
Receiving: Hybrid AT0066 & SMA cables
Substitution: Tx antenna AT0030, sig-gen SIG001, & cable CBL010

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
829.00	16.57	V	0.6	3.7	19.65	38.50	-18.9	
829.00	6.46	H	0.6	3.7	9.54	38.50	-29.0	
Mid Ch								
836.50	16.76	V	0.6	3.8	19.96	38.50	-18.5	
836.50	6.48	H	0.6	3.8	9.69	38.50	-28.8	
High Ch								
844.00	15.96	V	0.6	3.7	19.07	38.50	-19.4	
844.00	6.92	H	0.6	3.7	10.03	38.50	-28.5	

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Note: For Band 4 EIRP limit is 30dBm

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LTE 5, 10 MHz 16QAM

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

Company: Sony
Project #: 10721207
Date: 4/28/2015
Test Engineer: B. Kiewra
Configuration: FCC ID: PY7-TM0062; Stand-alone (Y(Landscape) orientation); s/n CB5A23WPYJ
Mode: LTE 5 10MHz BW 16-QAM

Test Equipment:
Receiving: Hybrid AT0066 & SMA cables
Substitution: Tx antenna AT0030, sig-gen SIG001, & cable CBL010

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
829.00	15.59	V	0.6	3.7	18.67	38.50	-19.8	
829.00	6.08	H	0.6	3.7	9.16	38.50	-29.3	
Mid Ch								
836.50	16.03	V	0.6	3.8	19.24	38.50	-19.3	
836.50	6.25	H	0.6	3.8	9.45	38.50	-29.0	
High Ch								
844.00	15.20	V	0.6	3.7	18.31	38.50	-20.2	
844.00	5.72	H	0.6	3.7	8.83	38.50	-29.7	

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Note: For Band 4 EIRP limit is 30dBm

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LTE5, 5 MHz QPSK

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

Company: Sony
Project #: 10721207
Date: 4/28/2015
Test Engineer: B. Kiewra
Configuration: FCC ID: PY7-TM0062; Stand-alone (Y(Landscape) orientation); s/n CB5A23WPYJ
Mode: LTE 5 5MHz BW QPSK

Test Equipment:
Receiving: Hybrid AT0066 & SMA cables
Substitution: Tx antenna AT0030, sig-gen SIG001, & cable CBL010

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	17.43	V	0.6	3.7	20.51	38.50	-18.0	
826.50	6.52	H	0.6	3.7	9.60	38.50	-28.9	
Mid Ch								
836.50	16.65	V	0.6	3.8	19.86	38.50	-18.6	
836.50	4.36	H	0.6	3.8	7.57	38.50	-30.9	
High Ch								
846.50	14.86	V	0.6	3.6	17.87	38.50	-20.6	
846.50	9.39	H	0.6	3.6	12.40	38.50	-26.1	

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Note: For Band 4 EIRP limit is 30dBm

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LTE5, 5 MHz 16QAM

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

Company: Sony
Project #: 10721207
Date: 4/28/2015
Test Engineer: B. Kiewra
Configuration: FCC ID: PY7-TM0062; Stand-alone (Y(Landscape) orientation); s/n CB5A23WPYJ
Mode: LTE 5 5MHz BW 16-QAM

Test Equipment:
Receiving: Hybrid AT0066 & SMA cables
Substitution: Tx antenna AT0030, sig-gen SIG001, & cable CBL010

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	16.56	V	0.6	3.7	19.64	38.50	-18.9	
826.50	5.58	H	0.6	3.7	8.66	38.50	-29.8	
Mid Ch								
836.50	15.66	V	0.6	3.8	18.87	38.50	-19.6	
836.50	3.64	H	0.6	3.8	6.85	38.50	-31.7	
High Ch								
846.50	14.12	V	0.6	3.6	17.13	38.50	-21.4	
846.50	8.50	H	0.6	3.6	11.51	38.50	-27.0	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

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LTE5, 3 MHz QPSK

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

Company: Sony
Project #: 10721207
Date: 4/28/2015
Test Engineer: B. Kiewra
Configuration: FCC ID: PY7-TM0062; Stand-alone (Y(Landscape) orientation); s/n CB5A23WPYJ
Mode: LTE 5 3MHz BW QPSK

Test Equipment:
Receiving: Hybrid AT0066 & SMA cables
Substitution: Tx antenna AT0030, sig-gen SIG001, & cable CBL010

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
825.50	17.35	V	0.6	3.7	20.43	38.50	-18.1	
825.50	6.07	H	0.6	3.7	9.15	38.50	-29.3	
Mid Ch								
836.50	16.30	V	0.6	3.8	19.51	38.50	-19.0	
836.50	6.90	H	0.6	3.8	10.11	38.50	-28.4	
High Ch								
847.50	15.83	V	0.6	3.6	18.80	38.50	-19.7	
847.50	5.38	H	0.6	3.6	8.35	38.50	-30.2	

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Note: For Band 4 EIRP limit is 30dBm

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LTE5, 3 MHz 16QAM

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

Company: Sony
Project #: 10721207
Date: 4/28/2015
Test Engineer: B. Kiewra
Configuration: FCC ID: PY7-TM0062; Stand-alone (Y(Landscape) orientation); s/n CB5A23WPYJ
Mode: LTE 5 3MHz BW 16-QAM

Test Equipment:
Receiving: Hybrid AT0066 & SMA cables
Substitution: Tx antenna AT0030, sig-gen SIG001, & cable CBL010

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
825.50	16.42	V	0.6	3.7	19.50	38.50	-19.0	
825.50	5.22	H	0.6	3.7	8.30	38.50	-30.2	
Mid Ch								
836.50	15.36	V	0.6	3.8	18.56	38.50	-19.9	
836.50	5.96	H	0.6	3.8	9.16	38.50	-29.3	
High Ch								
847.50	15.04	V	0.6	3.6	18.01	38.50	-20.5	
847.50	4.68	H	0.6	3.6	7.65	38.50	-30.8	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

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LTE5, 1.4 MHz QPSK

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

Company: Sony
Project #: 10721207
Date: 5/1/2015
Test Engineer: B. Kiewra
Configuration: FCC ID: PY7-TM0062; Stand-alone (Y (Landscape) orientation); s/n CB5A23WPYJ
Mode: LTE 5 1.4MHz BW QPSK

Test Equipment:
Receiving: Hybrid AT0066 & SMA cables
Substitution: Tx antenna AT0030, sig-gen SIG001, & cable CBL010

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	16.09	V	0.6	3.6	19.16	38.50	-19.3	
824.70	8.55	H	0.6	3.6	11.62	38.50	-26.9	
Mid Ch								
836.50	14.08	V	0.6	3.8	17.29	38.50	-21.2	
836.50	9.78	H	0.6	3.8	12.98	38.50	-25.5	
High Ch								
848.30	13.02	V	0.6	3.5	15.96	38.50	-22.5	
848.30	11.18	H	0.6	3.5	14.12	38.50	-24.4	

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Note: For Band 4 EIRP limit is 30dBm

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LTE5, 1.4 MHz 16QAM

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

Company: Sony
Project #: 10721207
Date: 5/1/2015
Test Engineer: B. Kiewra
Configuration: FCC ID: PY7-TM0062; Stand-alone (Y(Landscape) orientation); s/n CB5A23WPYJ
Mode: LTE 5 1.4MHz BW 16-QAM

Test Equipment:
Receiving: Hybrid AT0066 & SMA cables
Substitution: Tx antenna AT0030, sig-gen SIG001, & cable CBL010

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	14.93	V	0.6	3.6	18.01	38.50	-20.5	
824.70	7.38	H	0.6	3.6	10.46	38.50	-28.0	
Mid Ch								
836.50	13.07	V	0.6	3.8	16.27	38.50	-22.2	
836.50	8.70	H	0.6	3.8	11.91	38.50	-26.6	
High Ch								
848.30	12.13	V	0.6	3.5	15.06	38.50	-23.4	
848.30	10.35	H	0.6	3.5	13.28	38.50	-25.2	

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Note: For Band 4 EIRP limit is 30dBm

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11.2. FIELD STRENGTH OF SPURIOUS RADIATION

RULE PART(S)

FCC: §2.1053, §22.917(a), §24.238 (a), §27. 53 (g)

LIMITS

Part 22.917(a) & Part 24.238(a) The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (P) dB.

Part 27.53(g) For operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43 + 10 log (P) dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

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TEST PROCEDURE

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

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

MODES TESTED

GSM (850, 1900), WCDMA (Bands V and II), LTE (Bands 5 and 17).

RESULTS

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11.2.1. SPURIOUS RADIATION PLOTS

GSM 850 GPRS

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Sony
Project #: 10721207
Date: 4/28/2015
Test Engineer: M. Nolting
Configuration: EUT with charger (Y (landscape) orientation); FCC ID: PY7-TM0062; s/n CB5A23WPYJ
Mode: GPRS 850

Chamber	Pre-amplifer	Filter	Limit
3m Chamber		Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 824.2MHz								
1.648	-53.0	V	3.0	1.2	-51.7	-13.0	-38.7	
2.473	-54.4	V	3.0	1.2	-53.2	-13.0	-40.2	
3.297	-53.2	V	3.0	1.2	-52.0	-13.0	-39.0	
1.648	-49.0	H	3.0	1.2	-47.8	-13.0	-34.8	
2.473	-55.2	H	3.0	1.2	-54.0	-13.0	-41.0	
3.297	-53.2	H	3.0	1.2	-52.0	-13.0	-39.0	
Mid Ch, 836.6MHz								
1.673	-52.2	V	3.0	1.2	-51.0	-13.0	-38.0	
2.510	-54.1	V	3.0	1.2	-52.9	-13.0	-39.9	
3.346	-52.8	V	3.0	1.2	-51.6	-13.0	-38.6	
1.673	-50.6	H	3.0	1.2	-49.4	-13.0	-36.4	
2.510	-54.0	H	3.0	1.2	-52.8	-13.0	-39.8	
3.346	-53.3	H	3.0	1.2	-52.1	-13.0	-39.1	
High Ch, 848.8MHz								
1.698	-53.3	V	3.0	1.2	-52.1	-13.0	-39.1	
2.546	-52.8	V	3.0	1.2	-51.6	-13.0	-38.6	
3.395	-53.1	V	3.0	1.2	-51.8	-13.0	-38.8	
1.698	-52.1	H	3.0	1.2	-50.9	-13.0	-37.9	
2.546	-53.9	H	3.0	1.2	-52.7	-13.0	-39.7	
3.395	-53.2	H	3.0	1.2	-52.0	-13.0	-39.0	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

Note – Pre-amp is part of substitution measurement.

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GSM 850 EGPRS

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Sony
Project #: 10721207
Date: 4/28/2015
Test Engineer: M. Nolting
Configuration: EUT with charger (Y (landscape) orientation); FCC ID: PY7-TM0062; s/n CB5A23WPYJ
Mode: EGPRS 850

Chamber	Pre-amplifer	Filter	Limit
3m Chamber		Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 824.2MHz								
1.648	-54.1	V	3.0	1.2	-52.9	-13.0	-39.9	
2.473	-55.1	V	3.0	1.2	-53.9	-13.0	-40.9	
3.297	-53.4	V	3.0	1.2	-52.2	-13.0	-39.2	
1.648	-49.5	H	3.0	1.2	-48.3	-13.0	-35.3	
2.473	-54.9	H	3.0	1.2	-53.7	-13.0	-40.7	
3.297	-53.4	H	3.0	1.2	-52.2	-13.0	-39.2	
Mid Ch, 836.6MHz								
1.673	-56.0	V	3.0	1.2	-54.7	-13.0	-41.7	
2.510	-53.8	V	3.0	1.2	-52.6	-13.0	-39.6	
3.346	-52.7	V	3.0	1.2	-51.5	-13.0	-38.5	
1.673	-51.1	H	3.0	1.2	-49.9	-13.0	-36.9	
2.510	-54.8	H	3.0	1.2	-53.6	-13.0	-40.6	
3.346	-53.0	H	3.0	1.2	-51.8	-13.0	-38.8	
High Ch, 848.8MHz								
1.698	-55.4	V	3.0	1.2	-54.2	-13.0	-41.2	
2.546	-54.0	V	3.0	1.2	-52.8	-13.0	-39.8	
3.395	-53.4	V	3.0	1.2	-52.1	-13.0	-39.1	
1.698	-52.8	H	3.0	1.2	-51.6	-13.0	-38.6	
2.546	-54.6	H	3.0	1.2	-53.4	-13.0	-40.4	
3.395	-53.1	H	3.0	1.2	-51.9	-13.0	-38.9	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

Note – Pre-amp is part of substitution measurement.

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GSM 1900 GPRS

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Sony
Project #: 10721207
Date: 4/28/2015
Test Engineer: B. Kiewra
Configuration: EUT with charger (X (lflat) orientation); FCC ID: PY7-TM0062; s/n CB5A23WPYJ
Mode: GPRS 1900

Chamber	Pre-amplifer	Filter	Limit
3m Chamber		Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1850.2MHz								
3.700	-56.6	V	3.0	1.2	-55.4	-13.0	-42.4	
5.551	-51.7	V	3.0	1.2	-50.5	-13.0	-37.5	
7.401	-51.4	V	3.0	1.2	-50.2	-13.0	-37.2	
3.700	-56.4	H	3.0	1.2	-55.2	-13.0	-42.2	
5.551	-50.8	H	3.0	1.2	-49.6	-13.0	-36.6	
7.401	-51.2	H	3.0	1.2	-50.0	-13.0	-37.0	
Mid Ch, 1880MHz								
3.760	-55.5	V	3.0	1.2	-54.3	-13.0	-41.3	
5.640	-51.2	V	3.0	1.2	-50.0	-13.0	-37.0	
7.520	-50.8	V	3.0	1.2	-49.6	-13.0	-36.6	
3.760	-55.7	H	3.0	1.2	-54.5	-13.0	-41.5	
5.640	-50.2	H	3.0	1.2	-49.0	-13.0	-36.0	
7.520	-51.5	H	3.0	1.2	-50.3	-13.0	-37.3	
High Ch, 1909.8MHz								
3.820	-54.9	V	3.0	1.2	-53.7	-13.0	-40.7	
5.729	-52.1	V	3.0	1.2	-50.9	-13.0	-37.9	
7.639	-51.6	V	3.0	1.2	-50.4	-13.0	-37.4	
3.820	-55.0	H	3.0	1.2	-53.8	-13.0	-40.8	
5.729	-50.4	H	3.0	1.2	-49.2	-13.0	-36.2	
7.639	-51.5	H	3.0	1.2	-50.3	-13.0	-37.3	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

Note – Pre-amp is part of substitution measurement.

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GSM 1900 EGPRS

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Sony
Project #: 10721207
Date: 4/28/2015
Test Engineer: B. Kiewra
Configuration: EUT with charger (X (lflat) orientation); FCC ID: PY7-TM0062; s/n CB5A23WPYJ
Mode: EGPRS 1900

Chamber	Pre-amplifer	Filter	Limit
3m Chamber		Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1850.2MHz								
3.700	-57.3	V	3.0	1.2	-56.1	-13.0	-43.1	
5.551	-51.0	V	3.0	1.2	-49.8	-13.0	-36.8	
7.401	-50.5	V	3.0	1.2	-49.3	-13.0	-36.3	
3.700	-61.2	H	3.0	1.2	-60.0	-13.0	-47.0	
5.551	-50.6	H	3.0	1.2	-49.4	-13.0	-36.4	
7.401	-50.4	H	3.0	1.2	-49.2	-13.0	-36.2	
Mid Ch, 1880MHz								
3.760	-54.6	V	3.0	1.2	-53.4	-13.0	-40.4	
5.640	-53.7	V	3.0	1.2	-52.5	-13.0	-39.5	
7.520	-51.2	V	3.0	1.2	-50.0	-13.0	-37.0	
3.760	-56.5	H	3.0	1.2	-55.3	-13.0	-42.3	
5.640	-50.7	H	3.0	1.2	-49.5	-13.0	-36.5	
7.520	-50.0	H	3.0	1.2	-48.8	-13.0	-35.8	
High Ch, 1909.8MHz								
3.820	-56.3	V	3.0	1.2	-55.1	-13.0	-42.1	
5.729	-51.0	V	3.0	1.2	-49.8	-13.0	-36.8	
7.639	-51.9	V	3.0	1.2	-50.7	-13.0	-37.7	
3.820	-56.1	H	3.0	1.2	-54.8	-13.0	-41.8	
5.729	-50.9	H	3.0	1.2	-49.6	-13.0	-36.6	
7.639	-52.2	H	3.0	1.2	-51.0	-13.0	-38.0	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

Note – Pre-amp is part of substitution measurement.

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WCDMA BAND 5 REL 99

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Sony
Project #: 10721207
Date: 4/28/2015
Test Engineer: M. Nolting
Configuration: EUT with charger (Y (landscape) orientation); FCC ID: PY7-TM0062; s/n CB5A23WPYJ
Mode: WCDMA Band 5 Rel99

Chamber	Pre-amplifer	Filter	Limit
3m Chamber		Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 826.4MHz								
1.653	-59.0	V	3.0	1.2	-57.7	-13.0	-44.7	
2.479	-54.9	V	3.0	1.2	-53.7	-13.0	-40.7	
3.306	-53.4	V	3.0	1.2	-52.2	-13.0	-39.2	
1.653	-58.7	H	3.0	1.2	-57.5	-13.0	-44.5	
2.479	-54.7	H	3.0	1.2	-53.5	-13.0	-40.5	
3.306	-53.7	H	3.0	1.2	-52.5	-13.0	-39.5	
Mid Ch, 836.6MHz								
1.673	-58.6	V	3.0	1.2	-57.4	-13.0	-44.4	
2.510	-54.5	V	3.0	1.2	-53.3	-13.0	-40.3	
3.346	-53.3	V	3.0	1.2	-52.1	-13.0	-39.1	
1.673	-57.5	H	3.0	1.2	-56.3	-13.0	-43.3	
2.510	-54.8	H	3.0	1.2	-53.6	-13.0	-40.6	
3.346	-53.1	H	3.0	1.2	-51.9	-13.0	-38.9	
High Ch, 846.6MHz								
1.693	-59.2	V	3.0	1.2	-58.0	-13.0	-45.0	
2.540	-54.2	V	3.0	1.2	-53.0	-13.0	-40.0	
3.386	-53.4	V	3.0	1.2	-52.1	-13.0	-39.1	
1.693	-58.6	H	3.0	1.2	-57.4	-13.0	-44.4	
2.540	-54.6	H	3.0	1.2	-53.4	-13.0	-40.4	
3.386	-53.4	H	3.0	1.2	-52.2	-13.0	-39.2	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

Note – Pre-amp is part of substitution measurement.

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WCDMA BAND 5 HSDPA

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Sony
Project #: 10721207
Date: 4/28/2015
Test Engineer: M. Nolting
Configuration: EUT with charger (Y (landscape) orientation); FCC ID: PY7-TM0062; s/n CB5A23WPYJ
Mode: WCDMA Band 5 HSDPA

Chamber	Pre-amplifer	Filter	Limit
3m Chamber		Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 826.4MHz								
1.653	-58.5	V	3.0	1.2	-57.3	-13.0	-44.3	
2.479	-54.8	V	3.0	1.2	-53.5	-13.0	-40.5	
3.306	-53.5	V	3.0	1.2	-52.3	-13.0	-39.3	
1.653	-58.5	H	3.0	1.2	-57.3	-13.0	-44.3	
2.479	-55.0	H	3.0	1.2	-53.8	-13.0	-40.8	
3.306	-53.6	H	3.0	1.2	-52.4	-13.0	-39.4	
Mid Ch, 836.6MHz								
1.673	-59.1	V	3.0	1.2	-57.9	-13.0	-44.9	
2.510	-53.7	V	3.0	1.2	-52.5	-13.0	-39.5	
3.346	-53.1	V	3.0	1.2	-51.9	-13.0	-38.9	
1.673	-58.4	H	3.0	1.2	-57.2	-13.0	-44.2	
2.510	-54.7	H	3.0	1.2	-53.5	-13.0	-40.5	
3.346	-53.3	H	3.0	1.2	-52.1	-13.0	-39.1	
High Ch, 846.6MHz								
1.693	-58.9	V	3.0	1.2	-57.7	-13.0	-44.7	
2.540	-54.4	V	3.0	1.2	-53.2	-13.0	-40.2	
3.386	-53.5	V	3.0	1.2	-52.3	-13.0	-39.3	
1.693	-59.0	H	3.0	1.2	-57.8	-13.0	-44.8	
2.540	-54.6	H	3.0	1.2	-53.4	-13.0	-40.4	
3.386	-53.8	H	3.0	1.2	-52.6	-13.0	-39.6	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

Note – Pre-amp is part of substitution measurement.

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WCDMA BAND 2 REL 99

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Sony
Project #: 10721207
Date: 4/28/2015
Test Engineer: M. Nolting
Configuration: EUT with charger (X (lflat) orientation); FCC ID: PY7-TM0062; s/n CB5A23WPYJ
Mode: WCDMA Band 2 Rel99

Chamber	Pre-amplifer	Filter	Limit
3m Chamber		Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1852.4MHz								
3.705	-50.1	V	3.0	1.2	-48.9	-13.0	-35.9	
5.557	-49.3	V	3.0	1.2	-48.1	-13.0	-35.1	
7.410	-45.3	V	3.0	1.2	-44.1	-13.0	-31.1	
3.705	-49.4	H	3.0	1.2	-48.2	-13.0	-35.2	
5.557	-49.4	H	3.0	1.2	-48.2	-13.0	-35.2	
7.410	-45.5	H	3.0	1.2	-44.3	-13.0	-31.3	
Mid Ch, 1880MHz								
3.760	-49.7	V	3.0	1.2	-48.4	-13.0	-35.4	
5.640	-48.5	V	3.0	1.2	-47.2	-13.0	-34.2	
7.520	-45.8	V	3.0	1.2	-44.6	-13.0	-31.6	
3.760	-50.0	H	3.0	1.2	-48.8	-13.0	-35.8	
5.640	-49.3	H	3.0	1.2	-48.1	-13.0	-35.1	
7.520	-45.6	H	3.0	1.2	-44.4	-13.0	-31.4	
High Ch, 1907.6MHz								
3.815	-50.0	V	3.0	1.2	-48.8	-13.0	-35.8	
5.723	-48.7	V	3.0	1.2	-47.5	-13.0	-34.5	
7.630	-46.2	V	3.0	1.2	-45.0	-13.0	-32.0	
3.815	-50.1	H	3.0	1.2	-48.9	-13.0	-35.9	
5.723	-48.4	H	3.0	1.2	-47.2	-13.0	-34.2	
7.630	-46.5	H	3.0	1.2	-45.3	-13.0	-32.3	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

Note – Pre-amp is part of substitution measurement.

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WCDMA BAND 2 HSDPA

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Sony
Project #: 10721207
Date: 4/28/2015
Test Engineer: M. Nolting
Configuration: EUT with charger (X (lflat) orientation); FCC ID: PY7-TM0062; s/n CB5A23WPYJ
Mode: WCDMA Band 2 HSDPA

Chamber	Pre-amplifer	Filter	Limit
3m Chamber		Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1852.4MHz								
3.705	-50.4	V	3.0	1.2	-49.2	-13.0	-36.2	
5.557	-49.5	V	3.0	1.2	-48.3	-13.0	-35.3	
7.410	-46.4	V	3.0	1.2	-45.1	-13.0	-32.1	
3.705	-50.4	H	3.0	1.2	-49.2	-13.0	-36.2	
5.557	-49.6	H	3.0	1.2	-48.4	-13.0	-35.4	
7.410	-46.3	H	3.0	1.2	-45.1	-13.0	-32.1	
Mid Ch, 1880MHz								
3.760	-50.5	V	3.0	1.2	-49.3	-13.0	-36.3	
5.640	-49.5	V	3.0	1.2	-48.3	-13.0	-35.3	
7.520	-46.0	V	3.0	1.2	-44.8	-13.0	-31.8	
3.760	-50.5	H	3.0	1.2	-49.3	-13.0	-36.3	
5.640	-49.2	H	3.0	1.2	-48.0	-13.0	-35.0	
7.520	-46.3	H	3.0	1.2	-45.1	-13.0	-32.1	
High Ch, 1907.6MHz								
3.815	-50.8	V	3.0	1.2	-49.6	-13.0	-36.6	
5.723	-48.2	V	3.0	1.2	-47.0	-13.0	-34.0	
7.630	-46.1	V	3.0	1.2	-44.9	-13.0	-31.9	
3.815	-50.9	H	3.0	1.2	-49.7	-13.0	-36.7	
5.723	-49.1	H	3.0	1.2	-47.9	-13.0	-34.9	
7.630	-46.3	H	3.0	1.2	-45.1	-13.0	-32.1	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

Note – Pre-amp is part of substitution measurement.

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LTE17, 10 MHz QPSK

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Sony
Project #: 10721207
Date: 4/29/2015
Test Engineer: B. Kiewra
Configuration: EUT w/ Charger (X (Flat) Orientation) FCC ID: PY7-TM0062; s/n CB5A23WPYJ
Mode: LTE17 10BW QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber		Filter 1	Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 709.0MHz								
1.418	-60.0	V	3.0	1.2	-58.8	-13.0	-45.8	
2.127	-55.1	V	3.0	1.2	-53.9	-13.0	-40.9	
2.836	-52.9	V	3.0	1.2	-51.7	-13.0	-38.7	
1.418	-59.7	H	3.0	1.2	-58.5	-13.0	-45.5	
2.127	-54.8	H	3.0	1.2	-53.6	-13.0	-40.6	
2.836	-53.8	H	3.0	1.2	-52.6	-13.0	-39.6	
Mid Ch, 710 MHz								
1.420	-60.4	V	3.0	1.2	-59.2	-13.0	-46.2	
2.130	-55.5	V	3.0	1.2	-54.3	-13.0	-41.3	
2.840	-53.4	V	3.0	1.2	-52.2	-13.0	-39.2	
1.420	-60.0	H	3.0	1.2	-58.8	-13.0	-45.8	
2.130	-55.4	H	3.0	1.2	-54.2	-13.0	-41.2	
2.840	-53.9	H	3.0	1.2	-52.7	-13.0	-39.7	
High Ch, 711.0MHz								
1.422	-60.3	V	3.0	1.2	-59.1	-13.0	-46.1	
2.133	-55.7	V	3.0	1.2	-54.5	-13.0	-41.5	
2.844	-53.7	V	3.0	1.2	-52.5	-13.0	-39.5	
1.422	-60.2	H	3.0	1.2	-59.0	-13.0	-46.0	
2.133	-55.2	H	3.0	1.2	-54.0	-13.0	-41.0	
2.844	-53.1	H	3.0	1.2	-51.9	-13.0	-38.9	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

Note – Pre-amp is part of substitution measurement.

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LTE17, 10 MHz 16QAM

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Sony
Project #: 10721207
Date: 4/29/2015
Test Engineer: B. Kiewra
Configuration: EUT w/ Charger (X (Flat) Orientation) FCC ID: PY7-TM0062; s/n CB5A23WPYJ
Mode: LTE17 10BW 16-QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber		Filter 1	Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 709.0MHz								
1.418	-60.0	V	3.0	1.2	-58.8	-13.0	-45.8	
2.127	-55.4	V	3.0	1.2	-54.2	-13.0	-41.2	
2.836	-53.5	V	3.0	1.2	-52.3	-13.0	-39.3	
1.418	-60.2	H	3.0	1.2	-59.0	-13.0	-46.0	
2.127	-55.3	H	3.0	1.2	-54.1	-13.0	-41.1	
2.836	-53.7	H	3.0	1.2	-52.5	-13.0	-39.5	
Mid Ch, 710 MHz								
1.420	-59.5	V	3.0	1.2	-58.3	-13.0	-45.3	
2.130	-55.2	V	3.0	1.2	-54.0	-13.0	-41.0	
2.840	-53.8	V	3.0	1.2	-52.6	-13.0	-39.6	
1.420	-60.2	H	3.0	1.2	-59.0	-13.0	-46.0	
2.130	-55.2	H	3.0	1.2	-54.0	-13.0	-41.0	
2.840	-53.7	H	3.0	1.2	-52.5	-13.0	-39.5	
High Ch, 711.0MHz								
1.422	-59.8	V	3.0	1.2	-58.6	-13.0	-45.6	
2.133	-55.5	V	3.0	1.2	-54.3	-13.0	-41.3	
2.844	-53.4	V	3.0	1.2	-52.2	-13.0	-39.2	
1.422	-59.9	H	3.0	1.2	-58.7	-13.0	-45.7	
2.133	-55.6	H	3.0	1.2	-54.4	-13.0	-41.4	
2.844	-53.9	H	3.0	1.2	-52.7	-13.0	-39.7	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

Note – Pre-amp is part of substitution measurement.

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LTE17, 5MHz QPSK

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Sony
Project #: 10721207
Date: 4/29/2015
Test Engineer: B. Kiewra
Configuration: EUT w/ Charger (X (Flat) Orientation) FCC ID: PY7-TM0062; s/n CB5A23WPYJ
Mode: LTE17 5BW QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber		Filter 1	Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 706.5MHz								
1.413	-60.1	V	3.0	1.2	-58.9	-13.0	-45.9	
2.120	-55.5	V	3.0	1.2	-54.3	-13.0	-41.3	
2.826	-53.3	V	3.0	1.2	-52.1	-13.0	-39.1	
1.413	-59.9	H	3.0	1.2	-58.7	-13.0	-45.7	
2.120	-55.4	H	3.0	1.2	-54.2	-13.0	-41.2	
2.826		H	3.0	1.2	1.2	-13.0	14.2	
Mid Ch, 710 MHz								
1.420	-60.2	V	3.0	1.2	-59.0	-13.0	-46.0	
2.130	-55.9	V	3.0	1.2	-54.7	-13.0	-41.7	
2.840	-53.0	V	3.0	1.2	-51.8	-13.0	-38.8	
1.420	-59.6	H	3.0	1.2	-58.4	-13.0	-45.4	
2.130	-55.0	H	3.0	1.2	-53.8	-13.0	-40.8	
2.840	-53.7	H	3.0	1.2	-52.5	-13.0	-39.5	
High Ch, 713.5MHz								
1.427	-59.9	V	3.0	1.2	-58.7	-13.0	-45.7	
2.141	-55.6	V	3.0	1.2	-54.4	-13.0	-41.4	
2.854	-53.9	V	3.0	1.2	-52.7	-13.0	-39.7	
1.427	-59.6	H	3.0	1.2	-58.4	-13.0	-45.4	
2.141	-55.5	H	3.0	1.2	-54.3	-13.0	-41.3	
2.854	-54.3	H	3.0	1.2	-53.1	-13.0	-40.1	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

Note – Pre-amp is part of substitution measurement.

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LTE17, 5 MHz 16QAM

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Sony
Project #: 10721207
Date: 4/29/2015
Test Engineer: B. Kiewra
Configuration: EUT w/ Charger (X (Flat) Orientation) FCC ID: PY7-TM0062; s/n CB5A23WPYJ
Mode: LTE17 5BW 16-QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber		Filter 1	Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 706.5MHz								
1.413	-59.8	V	3.0	1.2	-58.6	-13.0	-45.6	
2.120	-56.3	V	3.0	1.2	-55.1	-13.0	-42.1	
2.826	-52.9	V	3.0	1.2	-51.7	-13.0	-38.7	
1.413	-60.1	H	3.0	1.2	-58.9	-13.0	-45.9	
2.120	-55.7	H	3.0	1.2	-54.5	-13.0	-41.5	
2.826	-53.4	H	3.0	1.2	-52.2	-13.0	-39.2	
Mid Ch, 710 MHz								
1.420	-60.2	V	3.0	1.2	-59.0	-13.0	-46.0	
2.130	-55.6	V	3.0	1.2	-54.4	-13.0	-41.4	
2.840	-53.1	V	3.0	1.2	-51.9	-13.0	-38.9	
1.420	-59.2	H	3.0	1.2	-58.0	-13.0	-45.0	
2.130	-56.0	H	3.0	1.2	-54.8	-13.0	-41.8	
2.840	-53.9	H	3.0	1.2	-52.7	-13.0	-39.7	
High Ch, 713.5MHz								
1.427	-59.5	V	3.0	1.2	-58.3	-13.0	-45.3	
2.141	-55.8	V	3.0	1.2	-54.6	-13.0	-41.6	
2.854	-53.9	V	3.0	1.2	-52.7	-13.0	-39.7	
1.427	-58.9	H	3.0	1.2	-57.7	-13.0	-44.7	
2.141	-55.4	H	3.0	1.2	-54.2	-13.0	-41.2	
2.854	-54.6	H	3.0	1.2	-53.4	-13.0	-40.4	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

Note – Pre-amp is part of substitution measurement.

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LTE5, 10 MHz QPSK

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Sony
Project #: 10721207
Date: 4/29/2015
Test Engineer: B. Kiewra
Configuration: FCC ID: PY7-TM0062; Stand-alone (Y(Landscape) orientation); s/n CB5A23WPYJ
Mode: LTE5 10BW QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber		Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 829.0MHz								
1.658	-58.5	V	3.0	1.2	-57.3	-13.0	-44.3	
2.487	-54.1	V	3.0	1.2	-52.9	-13.0	-39.9	
3.316	-51.9	V	3.0	1.2	-50.7	-13.0	-37.7	
1.658	-58.5	H	3.0	1.2	-57.3	-13.0	-44.3	
2.487	-54.4	H	3.0	1.2	-53.2	-13.0	-40.2	
3.316	-52.8	H	3.0	1.2	-51.6	-13.0	-38.6	
Mid Ch,836.5MHz								
1.673	-60.5	V	3.0	1.2	-59.3	-13.0	-46.3	
2.510	-53.8	V	3.0	1.2	-52.6	-13.0	-39.6	
3.346	-52.6	V	3.0	1.2	-51.4	-13.0	-38.4	
1.673	-60.5	H	3.0	1.2	-59.3	-13.0	-46.3	
2.510	-53.4	H	3.0	1.2	-52.2	-13.0	-39.2	
3.346	-52.2	H	3.0	1.2	-51.0	-13.0	-38.0	
High Ch, 844.0MHz								
1.688	-58.3	V	3.0	1.2	-57.1	-13.0	-44.1	
2.532	-53.3	V	3.0	1.2	-52.1	-13.0	-39.1	
3.376	-52.1	V	3.0	1.2	-50.9	-13.0	-37.9	
1.688	-58.6	H	3.0	1.2	-57.4	-13.0	-44.4	
2.532	-53.6	H	3.0	1.2	-52.4	-13.0	-39.4	
3.376	-52.4	H	3.0	1.2	-51.2	-13.0	-38.2	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

Note – Pre-amp is part of substitution measurement.

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LTE 5, 10 MHz 16QAM

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Sony
Project #: 10721207
Date: 4/29/2015
Test Engineer: B. Kiewra
Configuration: FCC ID: PY7-TM0062; Stand-alone (Y(Landscape) orientation); s/n CB5A23WPYJ
Mode: LTE5 10BW 16-QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber		Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 829.0MHz								
1.658	-58.8	V	3.0	1.2	-57.6	-13.0	-44.6	
2.487	-53.7	V	3.0	1.2	-52.5	-13.0	-39.5	
3.316	-52.0	V	3.0	1.2	-50.8	-13.0	-37.8	
1.658	-58.8	H	3.0	1.2	-57.6	-13.0	-44.6	
2.487	-54.3	H	3.0	1.2	-53.1	-13.0	-40.1	
3.316	-53.1	H	3.0	1.2	-51.9	-13.0	-38.9	
Mid Ch,836.5MHz								
1.673	-59.9	V	3.0	1.2	-58.7	-13.0	-45.7	
2.510	-53.9	V	3.0	1.2	-52.7	-13.0	-39.7	
3.346	-52.0	V	3.0	1.2	-50.8	-13.0	-37.8	
1.673	-60.1	H	3.0	1.2	-58.9	-13.0	-45.9	
2.510	-54.0	H	3.0	1.2	-52.8	-13.0	-39.8	
3.346	-52.3	H	3.0	1.2	-51.1	-13.0	-38.1	
High Ch, 844.0MHz								
1.688	-58.5	V	3.0	1.2	-57.3	-13.0	-44.3	
2.532	-53.3	V	3.0	1.2	-52.1	-13.0	-39.1	
3.376	-52.2	V	3.0	1.2	-51.0	-13.0	-38.0	
1.688	-58.2	H	3.0	1.2	-57.0	-13.0	-44.0	
2.532	-54.0	H	3.0	1.2	-52.8	-13.0	-39.8	
3.376	-52.5	H	3.0	1.2	-51.3	-13.0	-38.3	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

Note – Pre-amp is part of substitution measurement.

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LTE5, 5 MHz QPSK

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Sony
Project #: 10721207
Date: 4/29/2015
Test Engineer: B. Kiewra
Configuration: FCC ID: PY7-TM0062; Stand-alone (Y(Landscape) orientation); s/n CB5A23WPYJ
Mode: LTE5 5BW QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber		Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 826.5MHz								
1.653	-58.2	V	3.0	1.2	-57.0	-13.0	-44.0	
2.480	-53.6	V	3.0	1.2	-52.4	-13.0	-39.4	
3.306	-52.4	V	3.0	1.2	-51.2	-13.0	-38.2	
1.653	-58.8	H	3.0	1.2	-57.6	-13.0	-44.6	
2.480	-54.2	H	3.0	1.2	-53.0	-13.0	-40.0	
3.306	-52.6	H	3.0	1.2	-51.4	-13.0	-38.4	
Mid Ch,836.5MHz								
1.673	-57.8	V	3.0	1.2	-56.6	-13.0	-43.6	
2.510	-53.2	V	3.0	1.2	-52.0	-13.0	-39.0	
3.346	-52.4	V	3.0	1.2	-51.2	-13.0	-38.2	
1.673	-58.0	H	3.0	1.2	-56.8	-13.0	-43.8	
2.510	-54.1	H	3.0	1.2	-52.9	-13.0	-39.9	
3.346	-52.5	H	3.0	1.2	-51.3	-13.0	-38.3	
High Ch, 846.5MHz								
1.693	-58.1	V	3.0	1.2	-56.9	-13.0	-43.9	
2.540	-53.4	V	3.0	1.2	-52.2	-13.0	-39.2	
3.386	-52.3	V	3.0	1.2	-51.1	-13.0	-38.1	
1.693	-58.5	H	3.0	1.2	-57.3	-13.0	-44.3	
2.540	-54.1	H	3.0	1.2	-52.9	-13.0	-39.9	
3.386	-52.1	H	3.0	1.2	-50.9	-13.0	-37.9	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

Note – Pre-amp is part of substitution measurement.

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LTE5, 5 MHz 16QAM

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Sony
Project #: 10721207
Date: 5/1/2015
Test Engineer: B. Kiewra
Configuration: FCC ID: PY7-TM0062; Stand-alone (Y(Landscape) orientation); s/n CB5A23WPYJ
Mode: LTE5 5BW 16-QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber		Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 826.5MHz								
1.653	-58.8	V	3.0	1.2	-57.6	-13.0	-44.6	
2.480	-54.4	V	3.0	1.2	-53.2	-13.0	-40.2	
3.306	-52.5	V	3.0	1.2	-51.3	-13.0	-38.3	
1.653	-58.6	H	3.0	1.2	-57.4	-13.0	-44.4	
2.480	-54.9	H	3.0	1.2	-53.7	-13.0	-40.7	
3.306	-52.6	H	3.0	1.2	-51.4	-13.0	-38.4	
Mid Ch,836.5MHz								
1.673	-58.0	V	3.0	1.2	-56.8	-13.0	-43.8	
2.510	-52.9	V	3.0	1.2	-51.7	-13.0	-38.7	
3.346	-52.1	V	3.0	1.2	-50.9	-13.0	-37.9	
1.673	-58.1	H	3.0	1.2	-56.9	-13.0	-43.9	
2.510	-54.2	H	3.0	1.2	-53.0	-13.0	-40.0	
3.346	-52.1	H	3.0	1.2	-50.9	-13.0	-37.9	
High Ch, 846.5MHz								
1.693	-58.3	V	3.0	1.2	-57.1	-13.0	-44.1	
2.540	-47.0	V	3.0	1.2	-45.8	-13.0	-32.8	
3.386		V	3.0	1.2	1.2	-13.0	14.2	
1.693	-58.6	H	3.0	1.2	-57.4	-13.0	-44.4	
2.540	-53.5	H	3.0	1.2	-52.3	-13.0	-39.3	
3.386	-52.1	H	3.0	1.2	-50.9	-13.0	-37.9	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

Note – Pre-amp is part of substitution measurement.

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LTE5, 3 MHz QPSK

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Sony
Project #: 10721207
Date: 4/29/2015
Test Engineer: B. Kiewra
Configuration: FCC ID: PY7-TM0062; Stand-alone (Y(Landscape) orientation); s/n CB5A23WPYJ
Mode: LTE5 3BW QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber		Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 825.5MHz								
1.651	-58.6	V	3.0	1.2	-57.4	-13.0	-44.4	
2.477	-54.0	V	3.0	1.2	-52.8	-13.0	-39.8	
3.302	-52.1	V	3.0	1.2	-50.9	-13.0	-37.9	
1.651	-58.6	H	3.0	1.2	-57.4	-13.0	-44.4	
2.477	-54.8	H	3.0	1.2	-53.6	-13.0	-40.6	
3.302	-52.7	H	3.0	1.2	-51.5	-13.0	-38.5	
Mid Ch,836.5MHz								
1.673	-58.1	V	3.0	1.2	-56.9	-13.0	-43.9	
2.510	-53.4	V	3.0	1.2	-52.2	-13.0	-39.2	
3.346	-52.1	V	3.0	1.2	-50.9	-13.0	-37.9	
1.673	-57.6	H	3.0	1.2	-56.4	-13.0	-43.4	
2.510	-54.1	H	3.0	1.2	-52.9	-13.0	-39.9	
3.346	-52.1	H	3.0	1.2	-50.9	-13.0	-37.9	
High Ch, 847.5MHz								
1.695	-58.0	V	3.0	1.2	-56.8	-13.0	-43.8	
2.543	-53.5	V	3.0	1.2	-52.3	-13.0	-39.3	
3.390	-52.4	V	3.0	1.2	-51.2	-13.0	-38.2	
1.695	-58.3	H	3.0	1.2	-57.1	-13.0	-44.1	
2.543	-54.0	H	3.0	1.2	-52.8	-13.0	-39.8	
3.390	-52.2	H	3.0	1.2	-51.0	-13.0	-38.0	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

Note – Pre-amp is part of substitution measurement.

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LTE5, 3 MHz 16QAM

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Sony
Project #: 10721207
Date: 4/29/2015
Test Engineer: B. Kiewra
Configuration: FCC ID: PY7-TM0062; Stand-alone (Y(Landscape) orientation); s/n CB5A23WPYJ
Mode: LTE5 3BW 16-QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber		Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 825.5MHz								
1.651	-58.5	V	3.0	1.2	-57.3	-13.0	-44.3	
2.477	-54.2	V	3.0	1.2	-53.0	-13.0	-40.0	
3.302	-53.1	V	3.0	1.2	-51.9	-13.0	-38.9	
1.651	-58.7	H	3.0	1.2	-57.5	-13.0	-44.5	
2.477	-54.3	H	3.0	1.2	-53.1	-13.0	-40.1	
3.302	-53.0	H	3.0	1.2	-51.8	-13.0	-38.8	
Mid Ch,836.5MHz								
1.673	-58.7	V	3.0	1.2	-57.5	-13.0	-44.5	
2.510	-53.7	V	3.0	1.2	-52.5	-13.0	-39.5	
3.346	-52.7	V	3.0	1.2	-51.5	-13.0	-38.5	
1.673	-58.6	H	3.0	1.2	-57.4	-13.0	-44.4	
2.510	-53.9	H	3.0	1.2	-52.7	-13.0	-39.7	
3.346	-52.0	H	3.0	1.2	-50.8	-13.0	-37.8	
High Ch, 847.5MHz								
1.695	-58.4	V	3.0	1.2	-57.2	-13.0	-44.2	
2.543	-53.4	V	3.0	1.2	-52.2	-13.0	-39.2	
3.390	-52.6	V	3.0	1.2	-51.4	-13.0	-38.4	
1.695	-58.6	H	3.0	1.2	-57.4	-13.0	-44.4	
2.543	-54.1	H	3.0	1.2	-52.9	-13.0	-39.9	
3.390	-52.6	H	3.0	1.2	-51.4	-13.0	-38.4	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

Note – Pre-amp is part of substitution measurement.

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LTE5, 1.4 MHz QPSK

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Sony
Project #: 10721207
Date: 4/29/2015
Test Engineer: B. Kiewra
Configuration: FCC ID: PY7-TM0062; Stand-alone (Y(Landscape) orientation); s/n CB5A23WPYJ
Mode: LTE5 1.4BW QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber		Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 824.7MHz								
1.649	-58.5	V	3.0	1.2	-57.3	-13.0	-44.3	
2.474	-54.3	V	3.0	1.2	-53.1	-13.0	-40.1	
3.299	-52.9	V	3.0	1.2	-51.7	-13.0	-38.7	
1.649	-58.8	H	3.0	1.2	-57.6	-13.0	-44.6	
2.474	-54.7	H	3.0	1.2	-53.5	-13.0	-40.5	
3.299	-52.8	H	3.0	1.2	-51.6	-13.0	-38.6	
Mid Ch,836.5MHz								
1.673	-58.0	V	3.0	1.2	-56.8	-13.0	-43.8	
2.510	-53.9	V	3.0	1.2	-52.7	-13.0	-39.7	
3.346	-52.2	V	3.0	1.2	-51.0	-13.0	-38.0	
1.673	-59.0	H	3.0	1.2	-57.8	-13.0	-44.8	
2.510	-53.7	H	3.0	1.2	-52.5	-13.0	-39.5	
3.346	-52.6	H	3.0	1.2	-51.4	-13.0	-38.4	
High Ch, 848.3MHz								
1.697	-58.3	V	3.0	1.2	-57.1	-13.0	-44.1	
2.545	-52.7	V	3.0	1.2	-51.5	-13.0	-38.5	
3.393	-52.8	V	3.0	1.2	-51.6	-13.0	-38.6	
1.697	-58.1	H	3.0	1.2	-56.9	-13.0	-43.9	
2.545	-53.5	H	3.0	1.2	-52.3	-13.0	-39.3	
3.393	-52.9	H	3.0	1.2	-51.7	-13.0	-38.7	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

Note – Pre-amp is part of substitution measurement.

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LTE5, 1.4 MHz 16QAM

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Sony
Project #: 10721207
Date: 4/29/2015
Test Engineer: B. Kiewra
Configuration: FCC ID: PY7-TM0062; Stand-alone (Y(Landscape) orientation); s/n CB5A23WPYJ
Mode: LTE5 1.4BW 16-QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber		Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 824.7MHz								
1.649	-58.4	V	3.0	1.2	-57.2	-13.0	-44.2	
2.474	-54.5	V	3.0	1.2	-53.3	-13.0	-40.3	
3.299	-52.8	V	3.0	1.2	-51.6	-13.0	-38.6	
1.649	-58.8	H	3.0	1.2	-57.6	-13.0	-44.6	
2.474	-54.9	H	3.0	1.2	-53.7	-13.0	-40.7	
3.299	-53.0	H	3.0	1.2	-51.8	-13.0	-38.8	
Mid Ch,836.5MHz								
1.673	-58.6	V	3.0	1.2	-57.4	-13.0	-44.4	
2.510	-54.0	V	3.0	1.2	-52.8	-13.0	-39.8	
3.346	-52.0	V	3.0	1.2	-50.8	-13.0	-37.8	
1.673	-58.5	H	3.0	1.2	-57.3	-13.0	-44.3	
2.510	-54.6	H	3.0	1.2	-53.4	-13.0	-40.4	
3.346	-52.2	H	3.0	1.2	-51.0	-13.0	-38.0	
High Ch, 848.3MHz								
1.697	-58.4	V	3.0	1.2	-57.2	-13.0	-44.2	
2.545	-51.9	V	3.0	1.2	-50.7	-13.0	-37.7	
3.393	-52.1	V	3.0	1.2	-50.9	-13.0	-37.9	
1.697	-58.6	H	3.0	1.2	-57.4	-13.0	-44.4	
2.545	-53.5	H	3.0	1.2	-52.3	-13.0	-39.3	
3.393	-52.6	H	3.0	1.2	-51.4	-13.0	-38.4	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

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