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

FCC ID: PY7-TM0063

REPORT NUMBER: R10721247-RF

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Prepared for
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Revision History

Rev.	Issue Date	Revisions	Revised By
-	2015-05-04	Initial Release.	Jeff Moser
1	2015-05-13	Revised limit designation in Section 11.2	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: CB5A23SQ3R, CB5A23SHJC

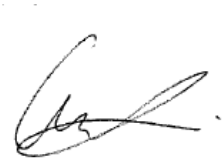
DATE TESTED: 2015-04-06 through 2015-04-24

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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Prepared 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:

EIRP = PSA reading with EUT worst orientation (dBm) + Path loss (dB) – cable loss(between the SG and substitution antenna) + Substitution Antenna Factor (dBi)

ERP = PSA reading with EUT worst orientation (dBm) + Path loss (dB) – cable loss(between the SG and substitution antenna)

(Path loss = Signal generator output – PSA reading with substitution antenna)

4.3. MEASUREMENT UNCERTAINTY

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

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%.

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

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

FCC Part 22/2 4/27						
Band	Frequency Range(MHz)	Modulation mW	Conducted		Radiated	
			AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
GSM850	824~849	GMSK	33.2	2089.30		
	824~849	GPRS	33.3	2137.96	30.01	1002.31
	824~849	EGPRS	26.6	457.09	24.10	257.04
GSM1900	1850~1910	GMSK	30.0	1000.00		
	1850~1910	GPRS	30.0	1000.00	32.86	1931.97
	1850~1910	EGPRS	25.9	389.05	28.30	676.08
Band 5	824~849	REL99	24.2	263.03	22.14	163.68
	824~849	HSDPA	22.7	186.21	21.16	130.62
	824~849	HSUPA	22.6	181.97		

5.3. MAXIMUM OUTPUT POWER (LTE)

FCC Part 22/2 4/27							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation mW	Conducted		Radiated	
				AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE17	704~716	10MHz	QPSK	23.4	218.78	17.55	56.89
	704~716	10MHz	16QAM	22.8	190.55	16.76	47.42

FCC Part 22/2 4/27							
Band	Frequency Range(MHz)	BandWidth (MHz)	Modulation mW	Conducted		Radiated	
				AVG(dBm)	AVG(mW)	AVG(dBm)	AVG(mW)
LTE17	704~716	5MHz	QPSK	23.3	213.80	17.53	56.62
	704~716	5MHz	16QAM	22.9	194.98	17.28	53.46

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

5.4. DESCRIPTION OF AVAILABLE ANTENNAS

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

Frequency (MHz)	Peak Gain (dBi)
GSM850, 824~849MHz	-2.8
GSM1900, 1850~1910MHz	0.2
Band 5, 824~849MHz	-2.8
LTE17, 704~716MHz	-4.7

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	N/A

I/O CABLES (CONDUCTED SETUP)

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

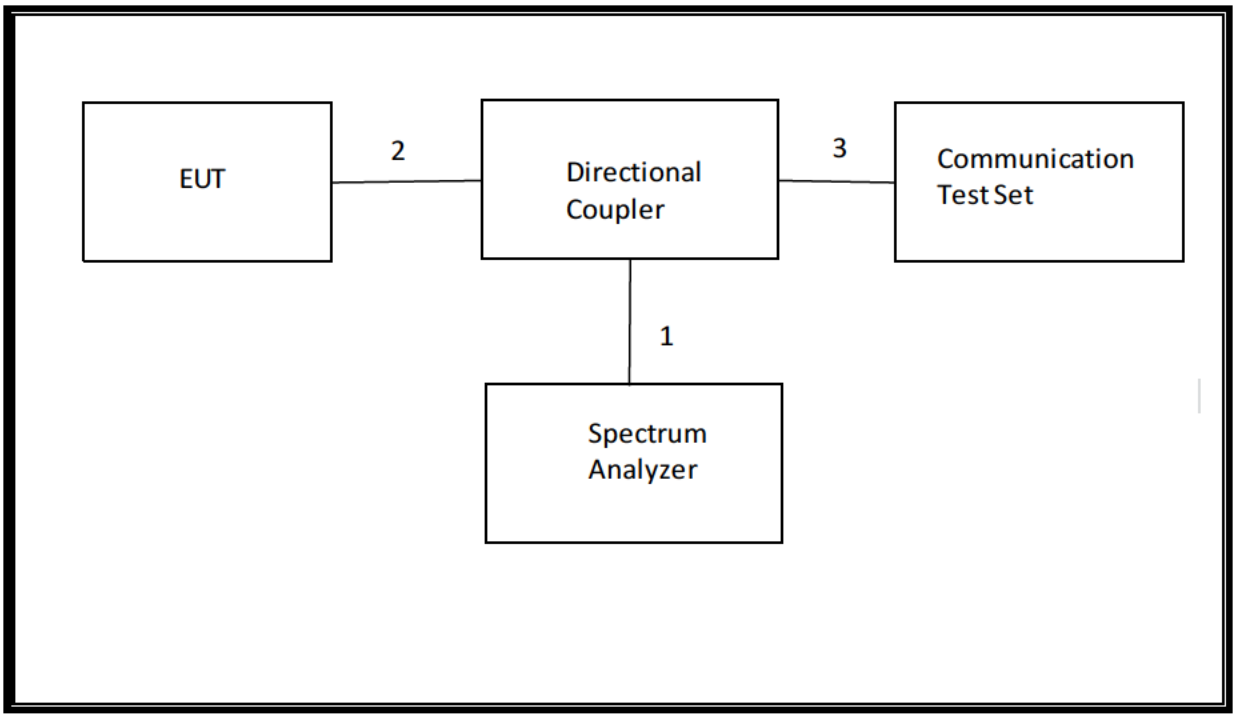
I/O CABLES (RADIATED SETUP)

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

TEST SETUP

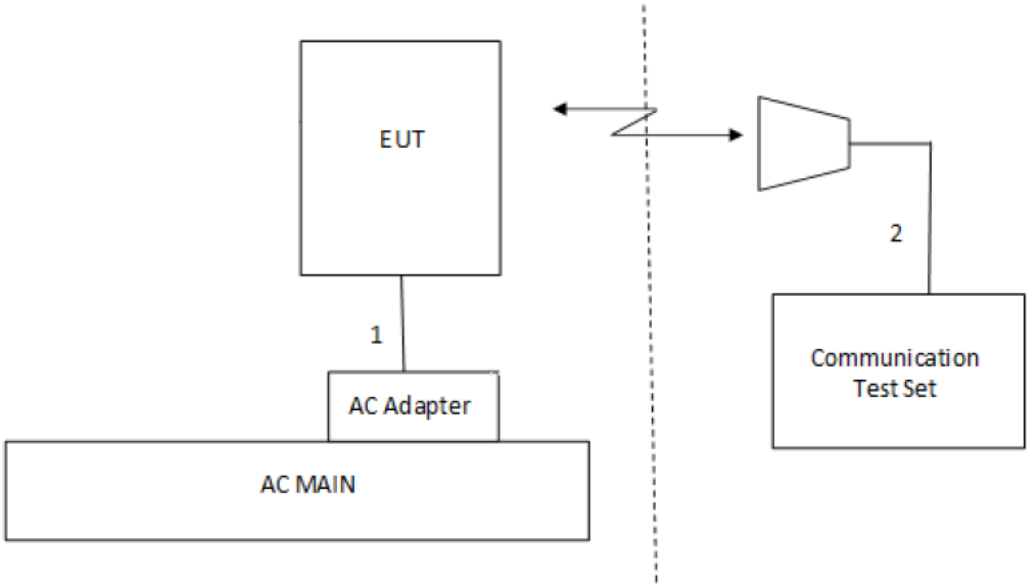
The EUT is continuously communicated to the call box during the tests.

SETUP DIAGRAM FOR TESTS (CONDUCTED TEST SETUP)

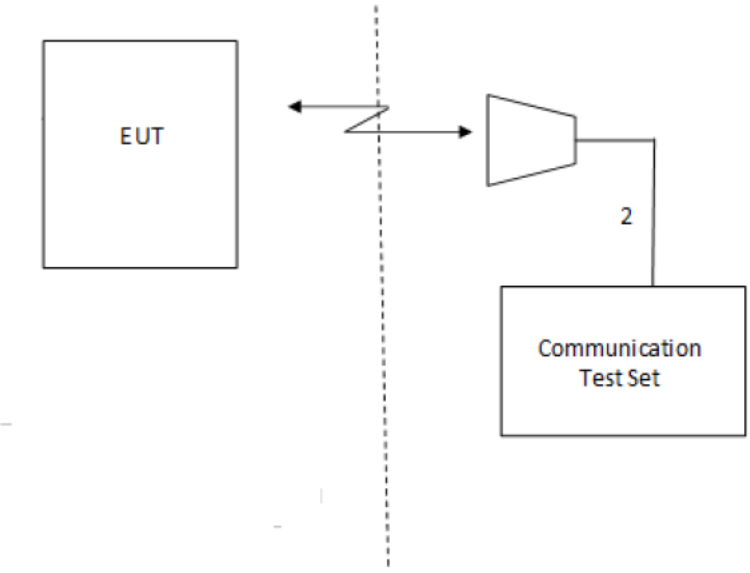


SETUP DIAGRAM FOR TESTS (RADIATED TEST SETUP)

SPURIOUS



FUNDAMENTAL



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

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
AT0016 (Substitution Antenna)	Dipole Antenna, 400-1000MHz	EMCO	3121C-DB4	2014-04-17	2015-04-30
	Tuned Dipole Set				
AT0013-AT0016	Four Dipole Antenna Set, 30 to 1000 MHz	EMCO	3121C-DB-1, -2, -3, -4	2014-04-17	2015-04-30
	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

Equip. ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
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

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	8.97 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	-13.9 dB (See Note), -16.92 dBm
2.1046	N/A	Conducted output power	N/A		Pass	33.2 dBm
22.355 24.235 27.54	RSS-132(4.3) RSS-133(6.3) RSS-139(6.3)	Frequency Stability	2.5PPM		Pass	-0.083 ppm
22.913(a)(2)	RSS-132(4.4)	Effective Radiated Power	38 dBm	Radiated	Pass	30.01 dBm
27.50(b)(10)	N/A		34.77 dBm		Pass	17.55 dBm
24.232(c) 27.50(h)(2)	RSS-133(6.4) RSS-199(4.4)	Equivalent Isotropic Radiated Power	33dBm		Pass	32.86 dBm
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	-41.9 dBm
Note: The -13.9 dBm value is for GSM and includes a 9 dB DCCF						

8. RF POWER OUTPUT VERIFICATION

8.1. GSM/GPRS/EDGE

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

Press Connection control to choose the different menus

Press RESET > choose all to reset all settings

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

Network Support > GSM+GPRS or GSM+EGPRS

Main Service > Packet Data

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

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

> Slot configuration > Uplink/Gamma

> 33 dBm for GPRS 850/900

> 30 dBm for GPRS1800/1900

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

Frequency Offset > + 0 Hz

Mode > BCCH and TCH

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

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

Channel Type > Off

P0> 4 dB

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

TCH > choose desired test channel

Hopping > Off

Main Timeslot > 3 (Default)

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

Bit Stream > 2E9-1PSR Bit Pattern

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

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

8.1.1. GSM OUTPUT POWER RESULT

Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Burst Pwr (dBm)
GSM (Voice)	CS1	1	128	824.2	33.2
			190	836.6	33.1
			251	848.8	32.9
GPRS (GMSK)	CS1	1	128	824.2	33.3
			190	836.6	33.2
			251	848.8	33.1
		2	128	824.2	32.1
			190	836.6	32.1
			251	848.8	32.0
		3	128	824.2	29.6
			190	836.6	29.6
			251	848.8	29.5
		4	128	824.2	29.1
			190	836.6	29.1
			251	848.8	29.0
EGPRS (8PSK)	MCS5	1	128	824.2	26.6
			190	836.6	26.6
			251	848.8	26.4
		2	128	824.2	24.7
			190	836.6	24.8
			251	848.8	24.7
		3	128	824.2	22.7
			190	836.6	22.8
			251	848.8	22.6
		4	128	824.2	21.6
			190	836.6	21.6
			251	848.8	21.4

Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Burst Pwr (dBm)
GSM (Voice)	CS1	1	512	1850.2	30.0
			661	1880.0	29.9
			810	1909.8	30.0
GPRS (GMSK)	CS1	1	512	1850.2	30.0
			661	1880.0	29.9
			810	1909.8	30.0
		2	512	1850.2	28.6
			661	1880.0	28.6
			810	1909.8	28.7
		3	512	1850.2	26.7
			661	1880.0	26.8
			810	1909.8	26.9
		4	512	1850.2	26.1
			661	1880.0	25.5
			810	1909.8	25.7
EGPRS (8PSK)	MCS5	1	512	1850.2	25.9
			661	1880.0	25.8
			810	1909.8	25.9
		2	512	1850.2	23.7
			661	1880.0	23.7
			810	1909.8	23.7
		3	512	1850.2	21.7
			661	1880.0	21.7
			810	1909.8	21.8
		4	512	1850.2	21.0
			661	1880.0	21.0
			810	1909.8	21.0

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

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	24.2
		4183	836.6	0	24.2
		4233	846.6	0	24.1

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

Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band V	Subtest 1	4132	826.4	0	22.6
		4183	836.6	0	22.7
		4233	846.6	0	22.5
	Subtest 2	4132	826.4	0	22.7
		4183	836.6	0	22.7
		4233	846.6	0	22.6
	Subtest 3	4132	826.4	0.5	22.2
		4183	836.6	0.5	22.2
		4233	846.6	0.5	22.1
	Subtest 4	4132	826.4	0.5	22.2
		4183	836.6	0.5	22.1
		4233	846.6	0.5	22.0

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.

8.3.3. UMTS HSUPA OUTPUT POWER RESULT

Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band V	Subtest 1	4132	826.4	0	22.2
		4183	836.6	0	22.1
		4233	846.6	0	21.9
	Subtest 2	4132	826.4	2	21.6
		4183	836.6	2	21.0
		4233	846.6	2	21.6
	Subtest 3	4132	826.4	1	21.3
		4183	836.6	1	21.0
		4233	846.6	1	21.0
	Subtest 4	4132	826.4	2	21.5
		4183	836.6	2	21.9
		4233	846.6	2	21.9
	Subtest 5	4132	826.4	0	22.7
		4183	836.6	0	22.7
		4233	846.6	0	22.6

8.4. LTE OUTPUT VERIFICATION

8.4.1. LTE OUTPUT RESULT

Band	BW (MHz)	Mode	RB Alloca ion	RB offset	Target MPR	Avg Pwr (dBm)		
						23780	23790	23800
						709 MHz	710 MHz	711 MHz
LTE Band 17	10	QPSK	1	0	0	23.1	23.2	23.3
			1	25	0	23.1	23.4	23.2
			1	49	0	23.1	23.2	23.3
			25	0	1	22.1	22.1	22.1
			25	12	1	22.1	22.1	22.0
			25	24	1	22.1	22.0	22.0
			50	0	1	22.1	22.1	22.1
		16QAM	1	0	1	22.2	22.5	22.4
			1	25	1	22.6	22.5	22.8
			1	49	1	22.2	22.5	22.5
			25	0	2	21.1	21.2	21.2
			25	12	2	21.1	21.1	21.1
			25	24	2	21.1	21.1	21.1
			50	0	2	21.1	21.1	21.1
Band	BW (MHz)	Mode	RB Alloca ion	RB offset	Target MPR	Avg Pwr (dBm)		
						23755	23790	23825
						706.5 MHz	710 MHz	713.5 MHz
LTE Band 17	5	QPSK	1	0	0	23.1	23.3	23.2
			1	12	0	23.2	23.2	23.2
			1	24	0	23.2	23.2	23.2
			12	0	1	22.0	22.1	22.1
			12	6	1	22.1	22.1	22.1
			12	11	1	22.0	22.1	22.1
			25	0	1	22.0	22.0	22.0
		16QAM	1	0	1	22.2	22.4	22.9
			1	12	1	22.2	22.3	22.8
			1	24	1	22.3	22.3	22.9
			12	0	2	20.9	21.1	21.1
			12	6	2	21.0	21.1	21.1
			12	11	2	21.0	21.1	21.1
			25	0	2	21.1	21.0	21.0

9. PEAK TO AVERAGE RATIO

Test Procedure

Per KDB 971168 D01 Power Meas License Digital Systems v02r02

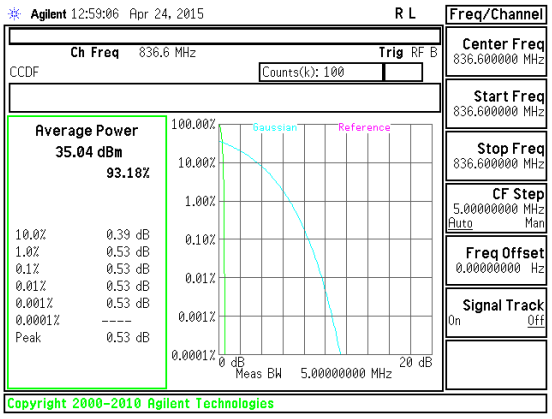
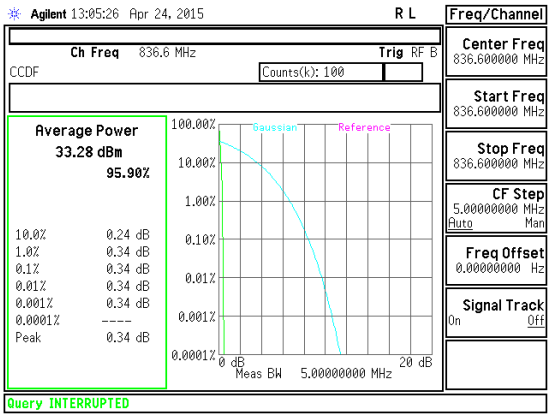
Test Spec

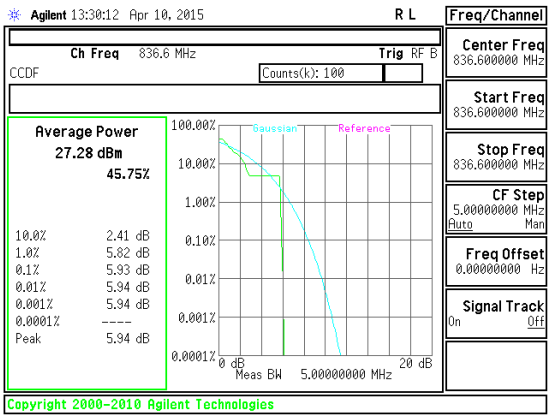
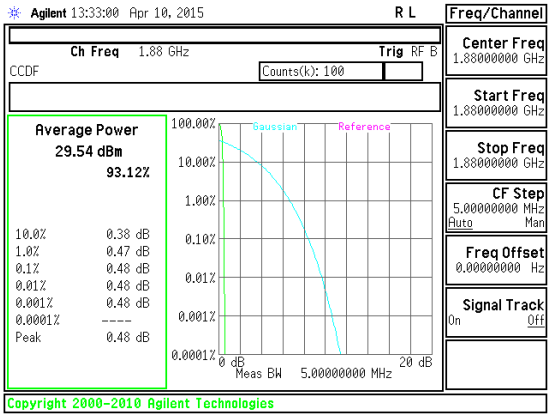
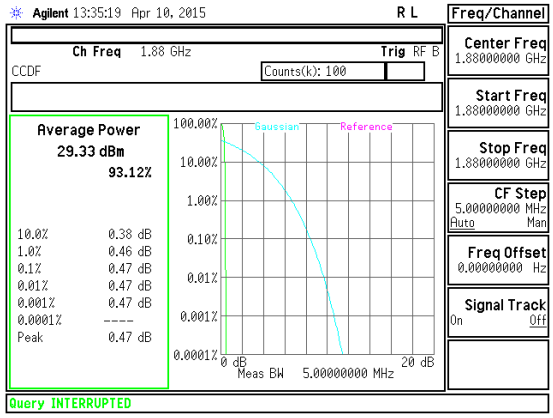
In addition, when the transmitter power is measured in terms of average value, the peak-to-average ratio of the power shall not exceed 13 dB.

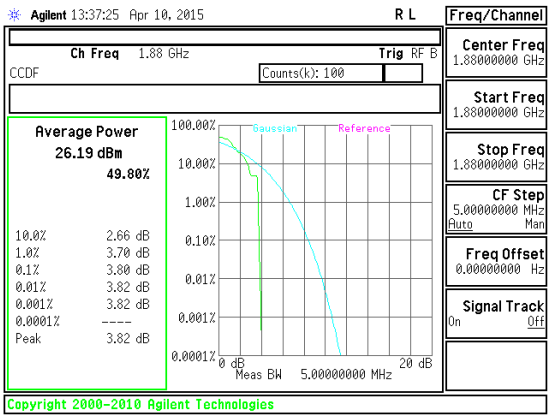
9.1. CONDUCTED PEAK TO AVERAGE RESULT

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

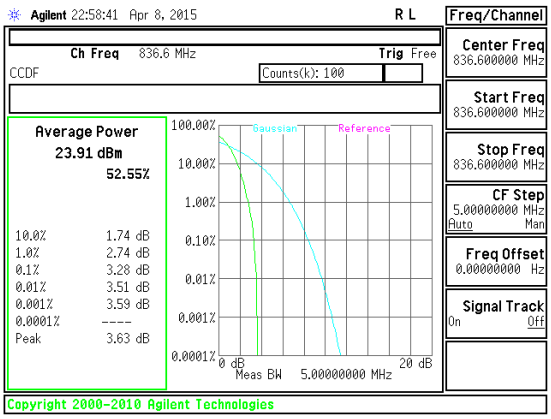
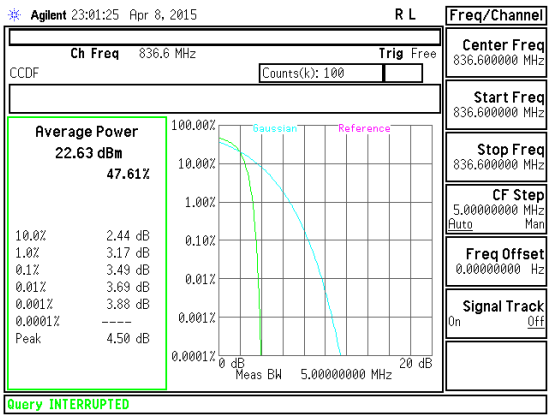
GSM

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

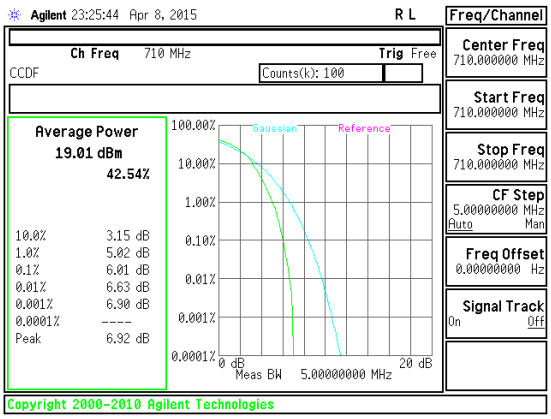
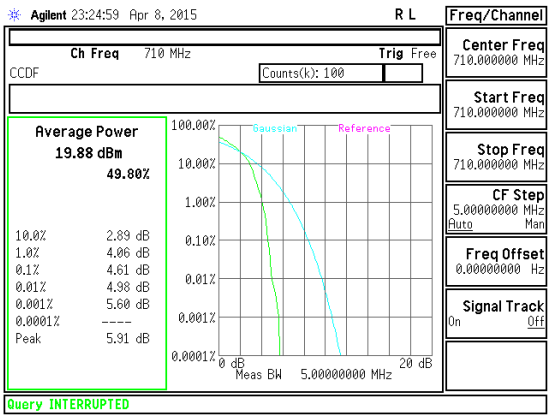
Band GSM 850	 GSM 850, EGPRS Mid Channel	BLANK
GSM 1900 Band	 GSM 1900, GSM Mid Channel	 GSM 1900, GPRS Mid Channel

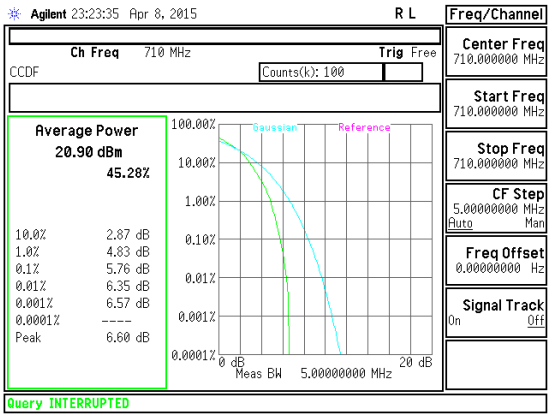
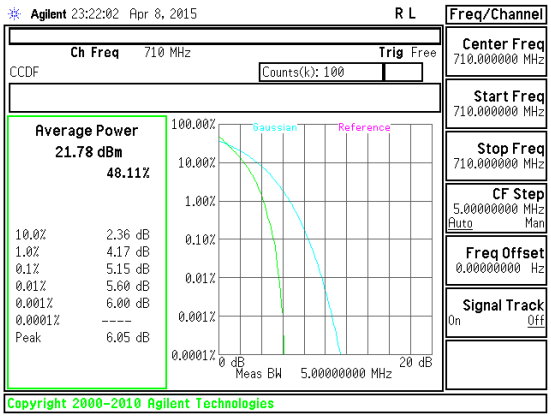
GSM 1900 Band	 GSM 1900, EGPRS Mid Channel	BLANK

WCDMA

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

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

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 Band V, LTE Band 17.

10.1.1. OCCUPIED BANDWIDTH RESULTS

Band	Mode	Channel	f (MHz)	99% BW (KHz)	-26dB BW (KHz)
GSM850	GPRS	128	824.2	244.0	310.2
		190	836.6	245.7	316.0
		251	848.8	238.6	322.0
	EGPRS	128	824.2	236.2	294.9
		190	836.6	245.9	315.3
		251	848.8	241.5	296.6
GSM1900	GPRS	512	1850.2	239.8	309.8
		661	1880	237.6	314.2
		810	1909.8	237.7	321.1
	EGPRS	512	1850.2	234.0	294.8
		661	1880	243.3	309.2
		810	1909.8	239.9	299.9

Band	Mode	Channel	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
Band 5	REL99	4132	826.4	4.143	4.709
		4183	836.6	4.112	4.691
		4233	846.6	4.135	4.661
	HSDPA	4132	826.4	4.153	4.688
		4183	836.6	4.140	4.688
		4233	846.6	4.123	4.682

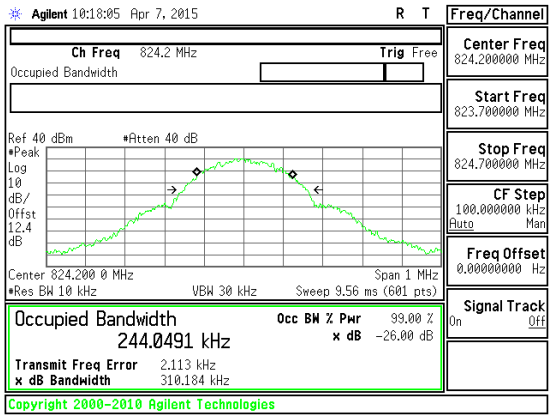
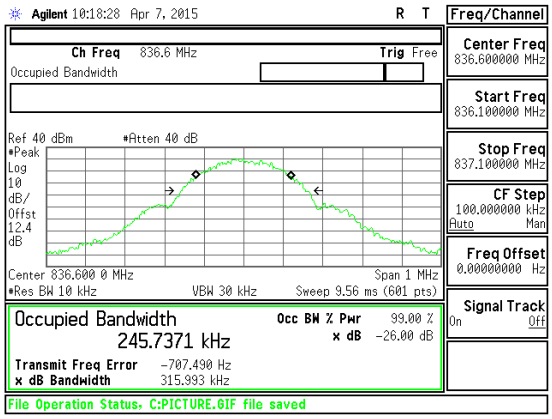
10.1.2. LTE OCCUPIED BANDWIDTH RESULTS

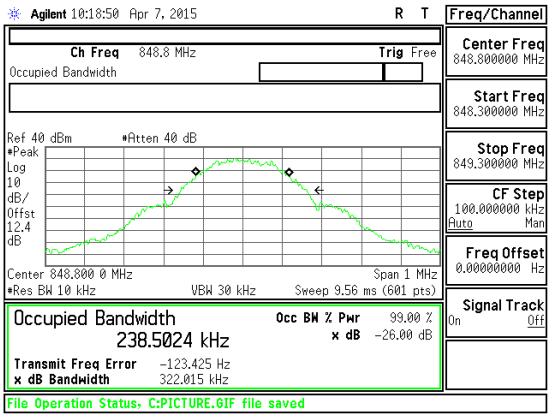
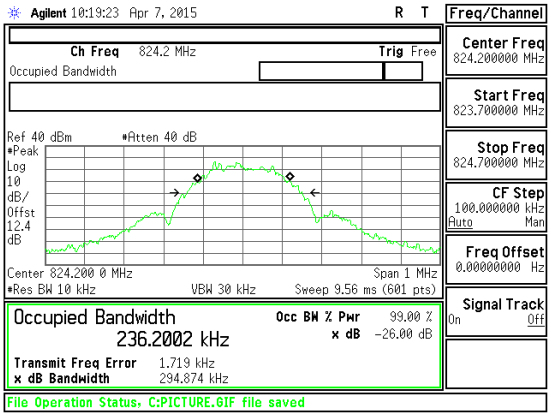
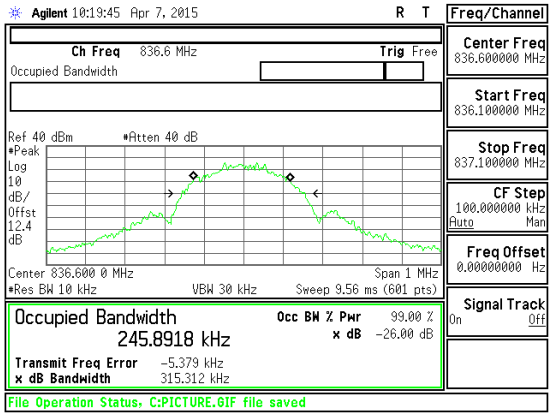
Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE17	10	QPSK	50/0	709	8.948	9.656
			50/0	710	8.956	9.774
			50/0	711	8.966	9.696
		16QAM	50/0	709	8.933	9.701
			50/0	710	8.951	9.547
			50/0	711	8.963	9.673

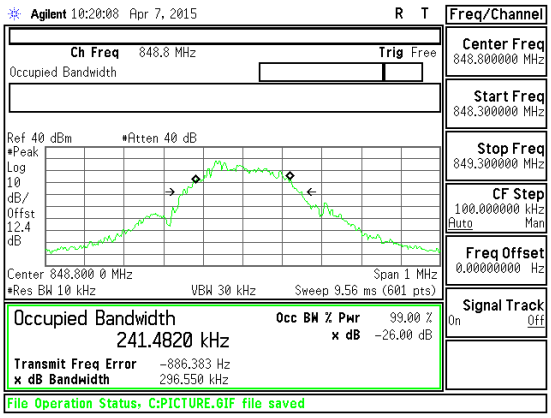
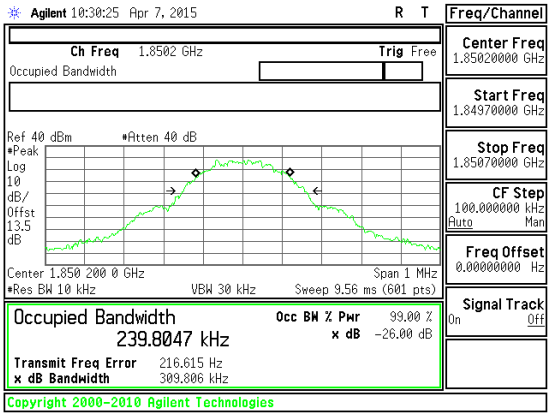
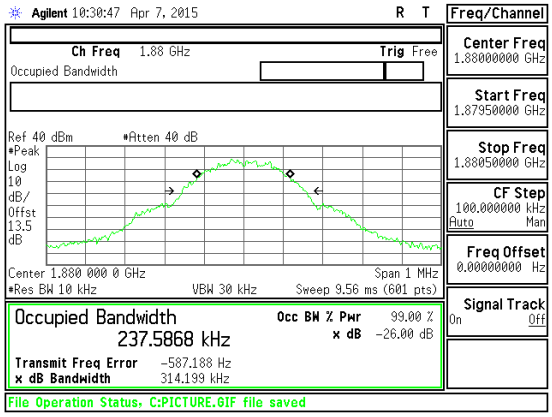
Band	BW(MHz)	Mode	RB/RB Size	f (MHz)	99% BW (KHz)	-26dB BW (KHz)
LTE17	5	QPSK	25/0	706.5	4.502	4.905
			25/0	710	4.501	4.959
			25/0	713.5	4.492	4.956
		16QAM	25/0	706.5	4.500	4.895
			25/0	710	4.507	4.961
			25/0	713.5	4.508	4.933

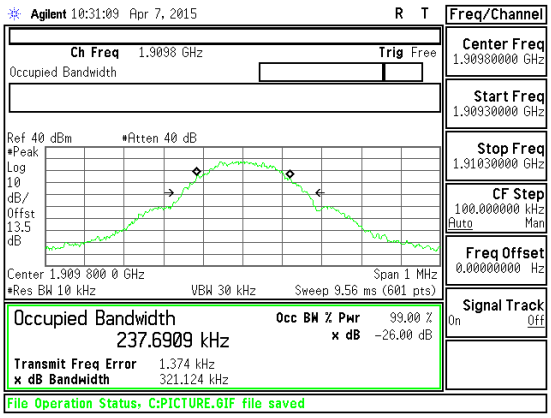
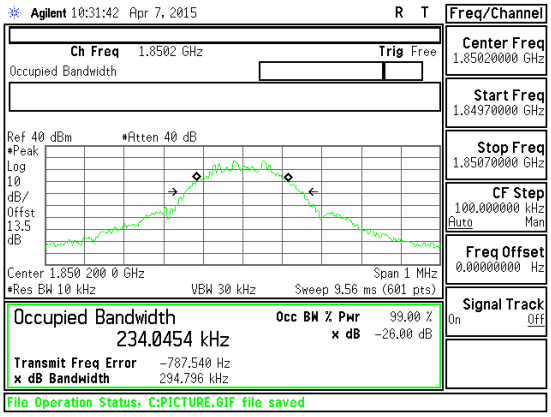
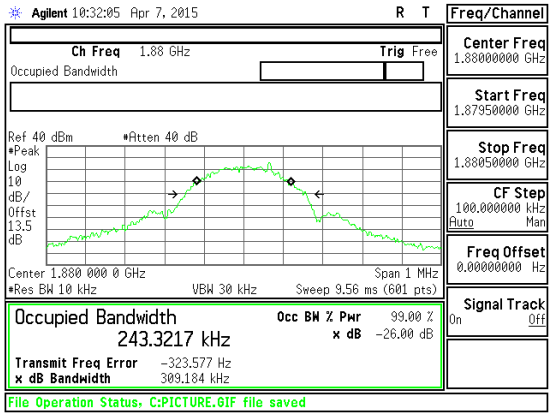
10.1.1. OCCUPIED BANDWIDTH PLOTS

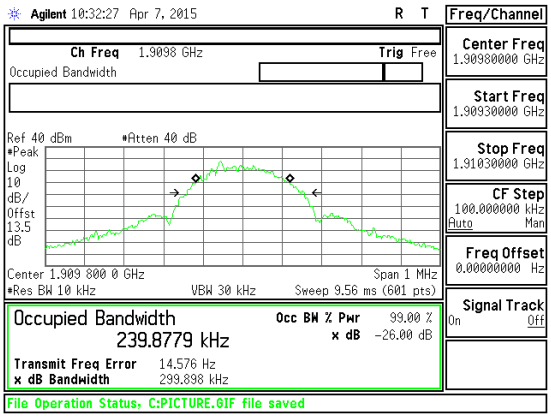
GSM

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

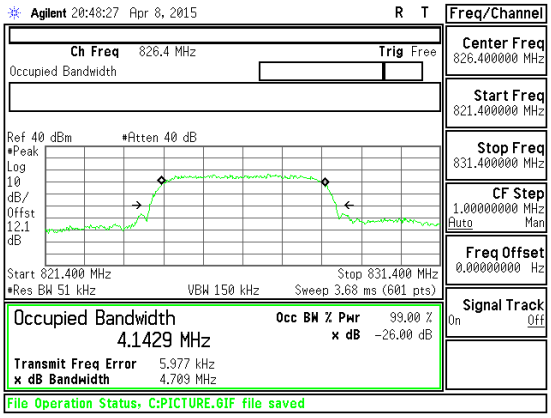
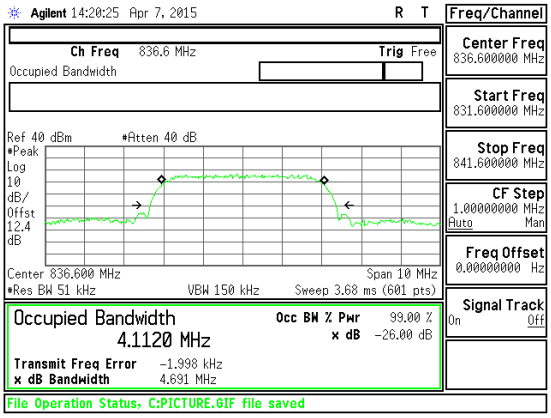
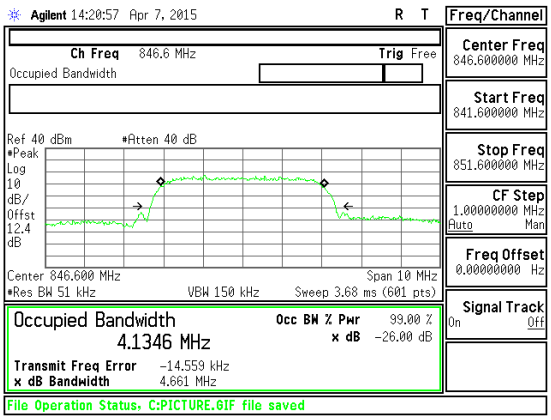
GSM 850 GPRS	 GSM850 GPRS OBW High channel	BLANK
GSM 850 EGPRS	 GSM850 EGPRS OBW Low channel	 GSM850 EGPRS OBW Mid channel

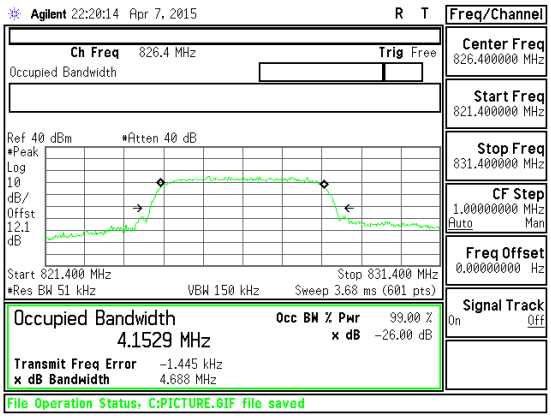
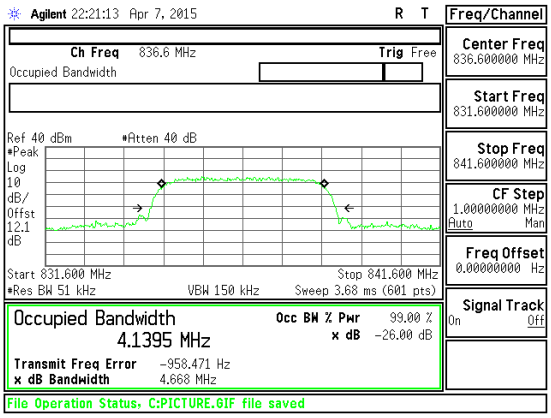
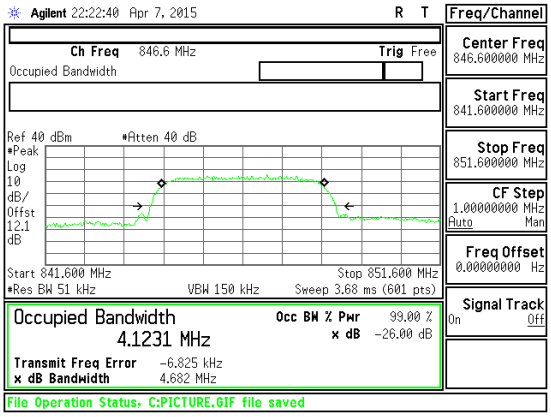
GSM 850 EGPRS	 GSM850 EGPRS OBW High channel	BLANK
GSM 1900 GPRS	 GSM1900 GPRS OBW Low channel	 GSM1900 GPRS OBW Mid channel

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

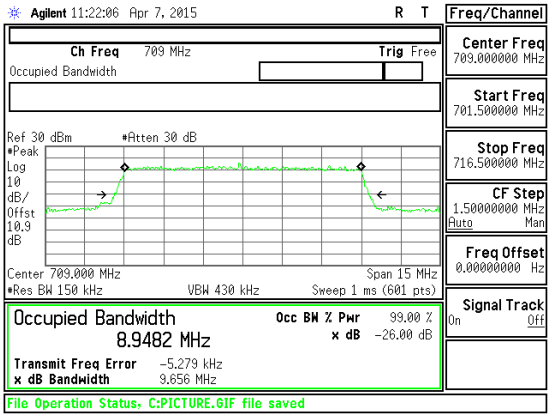
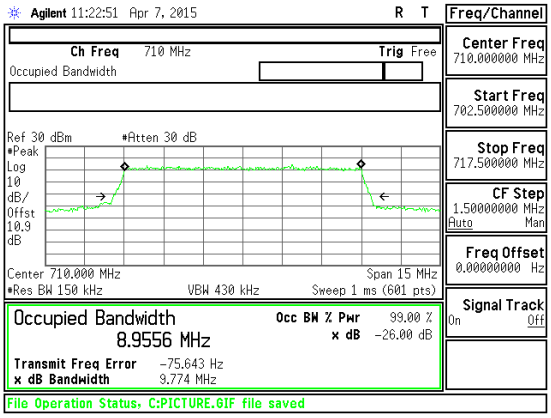
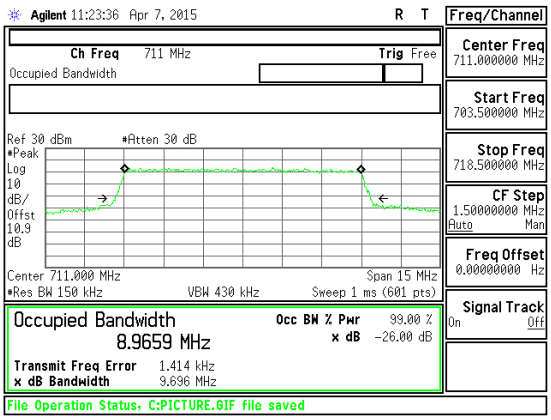
GSM 1900 EGPRS	 GSM1900 EGPRS OBW High channel	BLANK

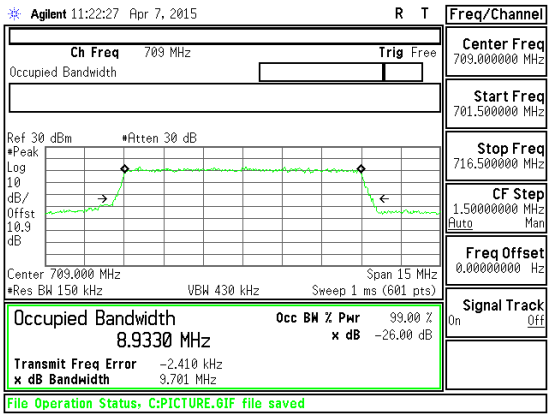
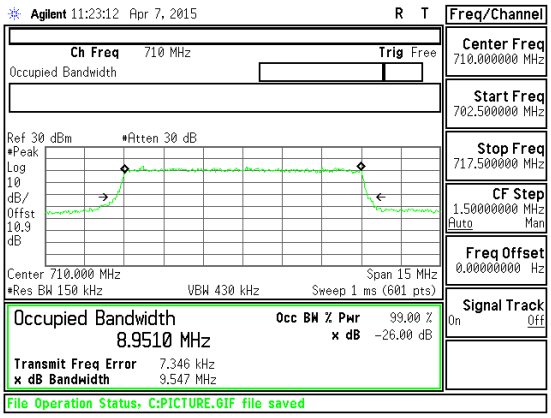
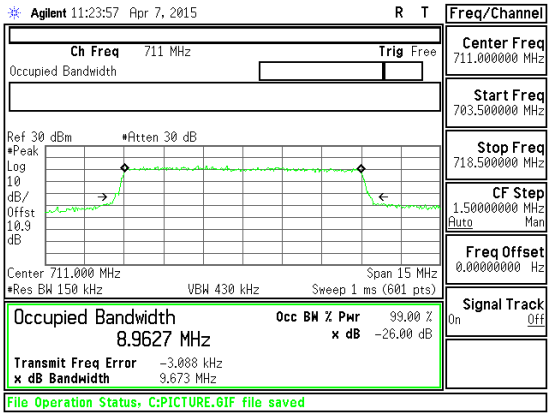
WCDMA

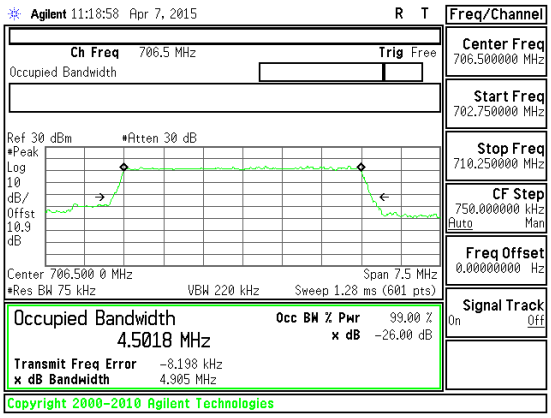
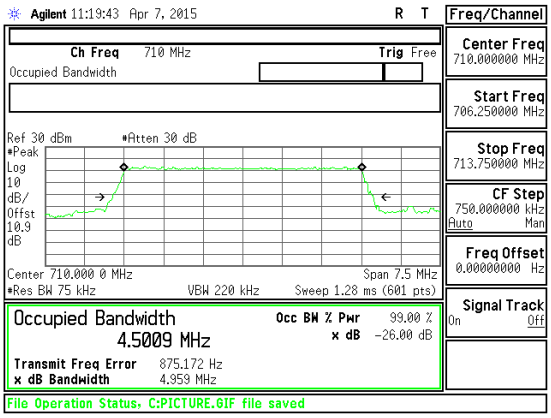
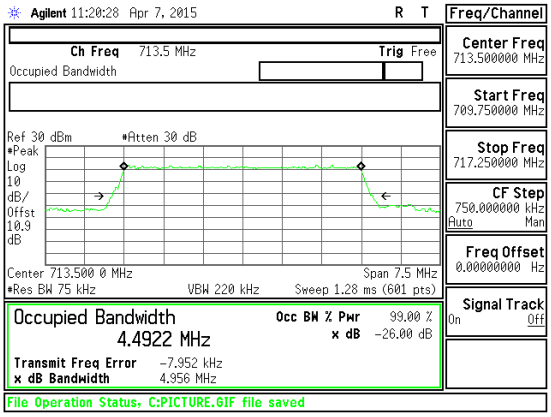
WCDMA Band 5 REL 99	 Band 5 REL 99 OBW Low channel	 Band 5 REL 99 OBW Mid channel
WCDMA Band 5 REL 99	 Band 5 REL 99 OBW High channel	BLANK

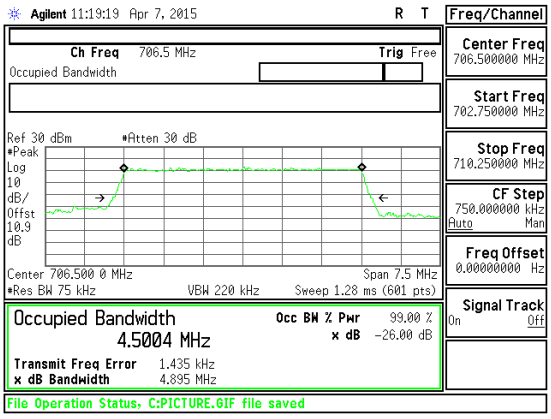
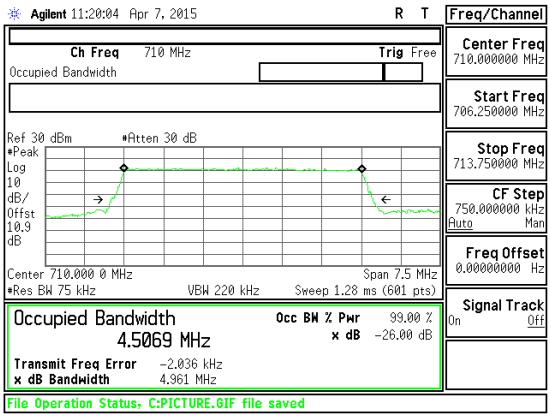
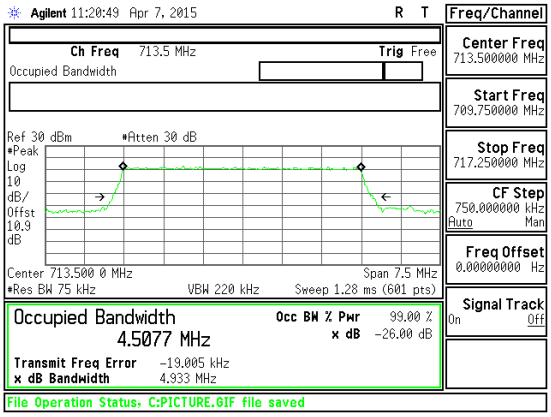
WCDMA Band 5 HSDPA	 Band 5 HSDPA OBW Low channel	 Band 5 HSDPA OBW Mid channel
WCDMA Band 5 HSDPA	 Band 5 HSDPA OBW High channel	BLANK

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

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

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

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

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

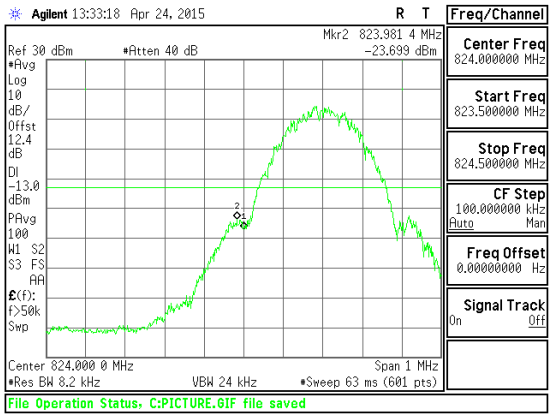
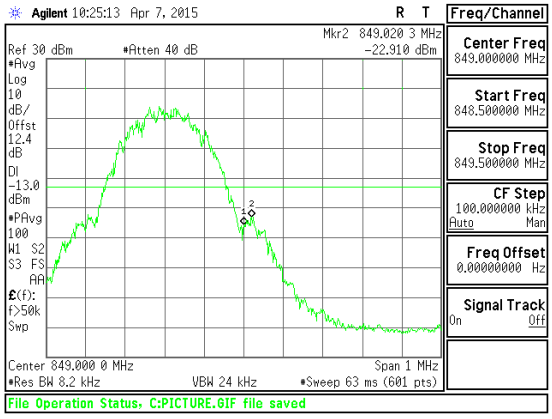
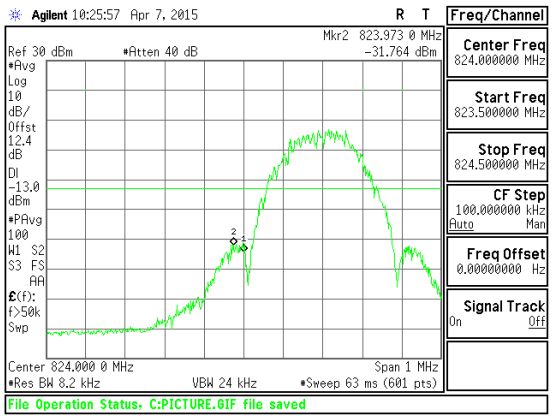
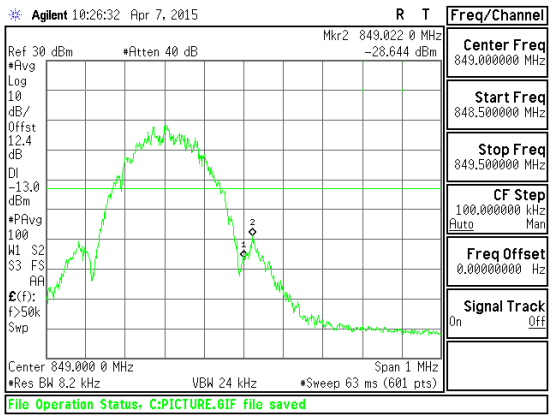
GSM (850, 1900), WCDMA (Band V), LTE (Band 17).

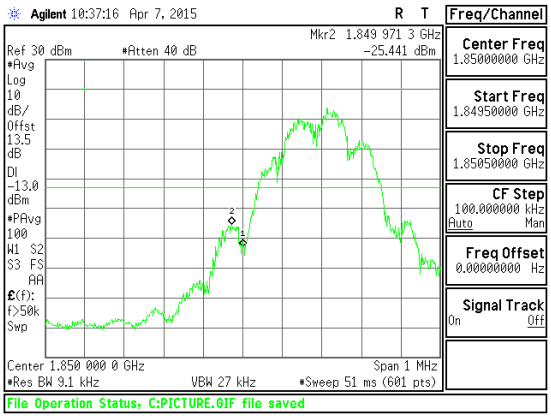
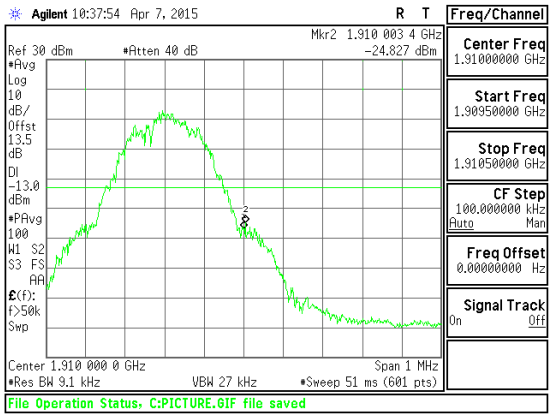
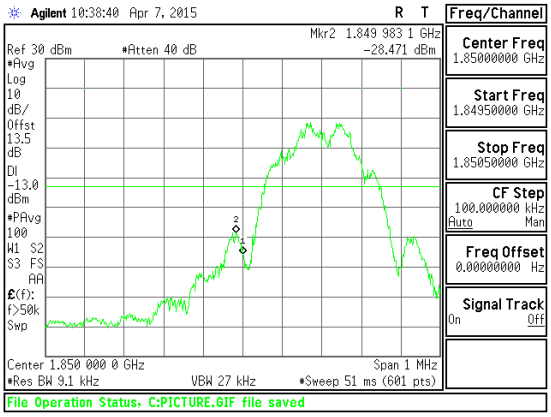
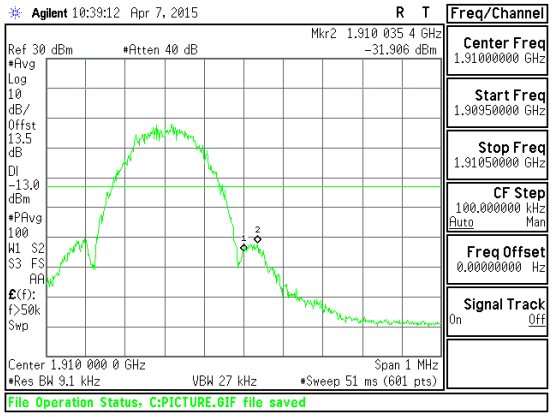
RESULTS

Note: The GSM reading needs the addition of a 9dB DCCF factor due to the duty cycle is 12.5% during test.

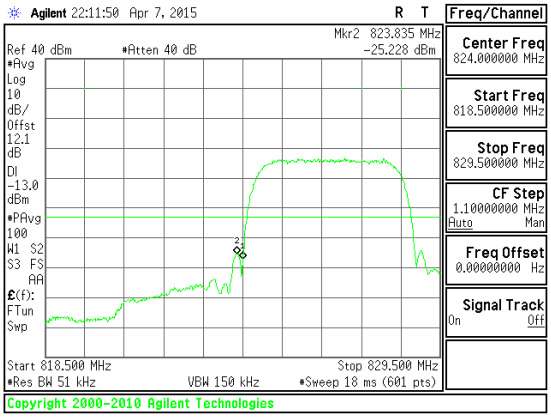
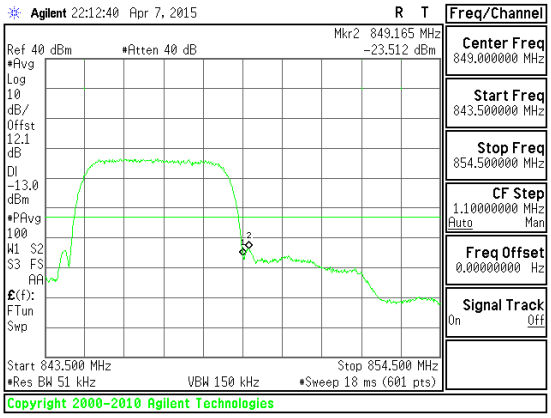
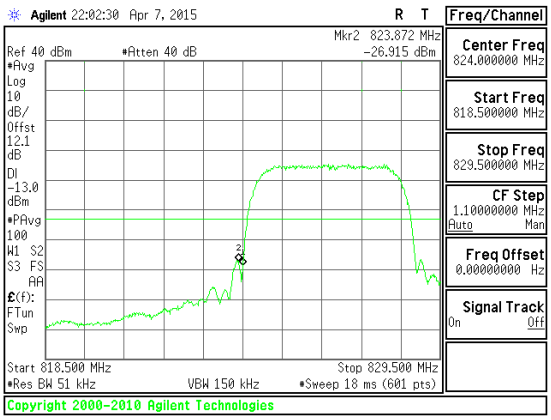
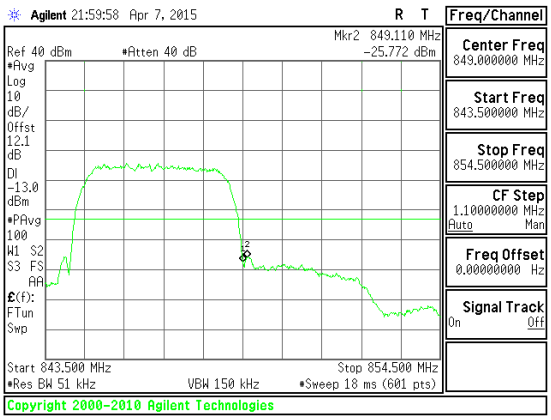
10.2.1. BAND EDGE PLOTS

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

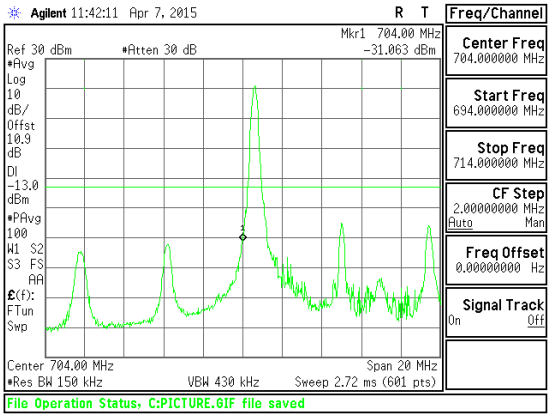
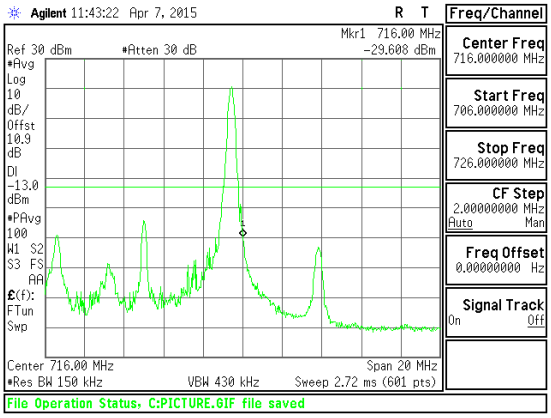
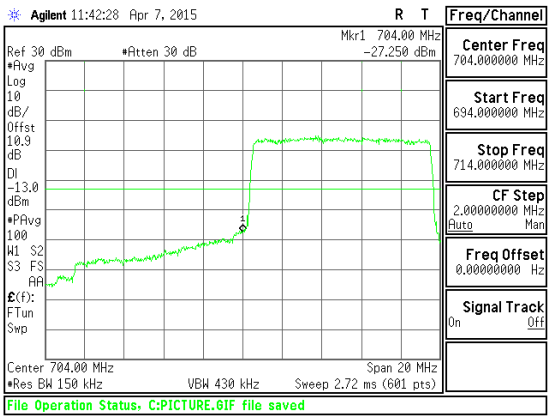
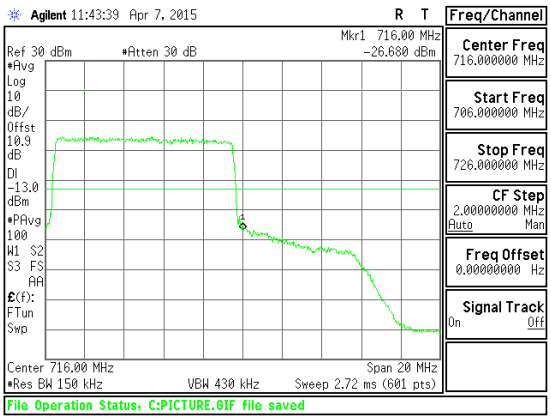
GSM 850 GPRS	 GSM850 GPRS CBE Low channel	 GSM850 GPRS CBE High channel
GSM 850 EGPRS	 GSM850 EGPRS CBE Low channel	 GSM850 EGPRS CBE High channel

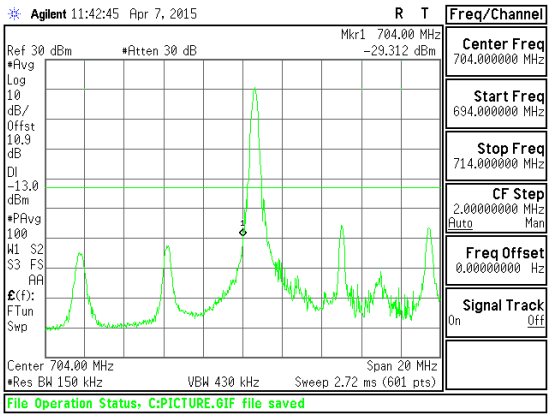
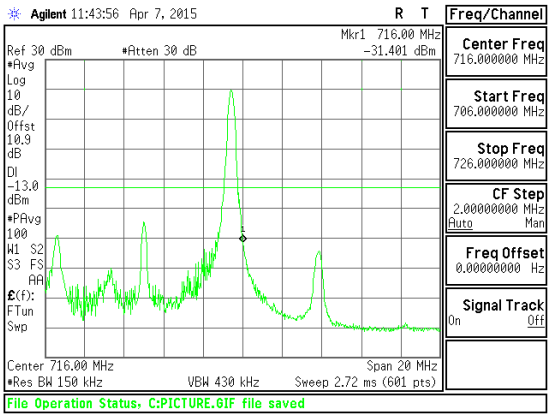
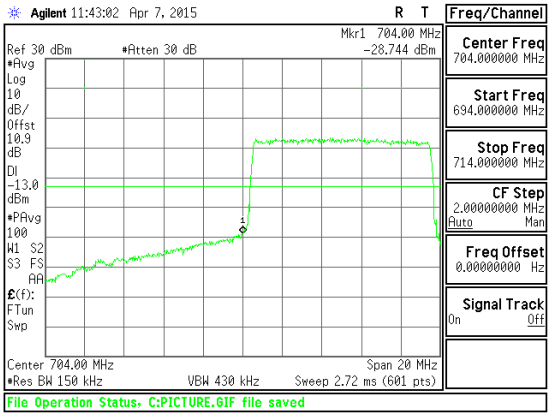
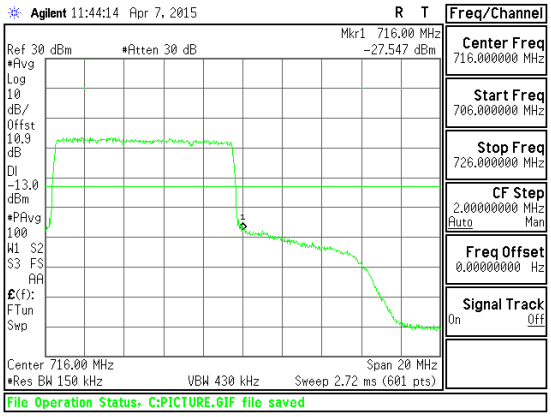
GSM 1900 GPRS	 GSM1900 GPRS CBE Low channel	 GSM1900 GPRS CBE High channel
GSM 1900 EGPRS	 GSM1900 EGPRS CBE Low channel	 GSM1900 EGPRS CBE High channel

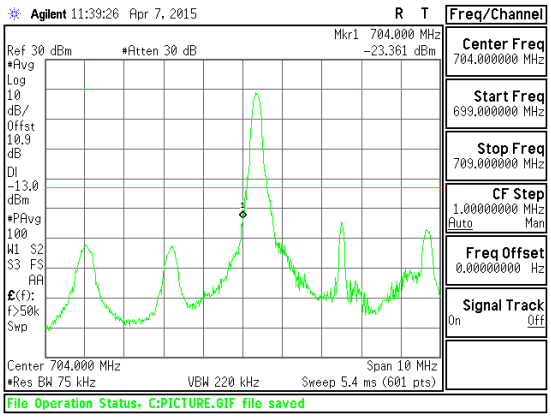
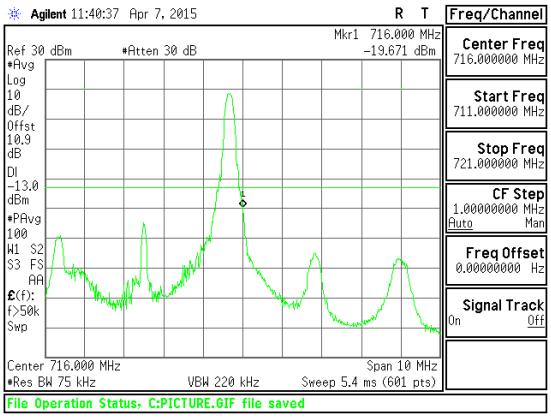
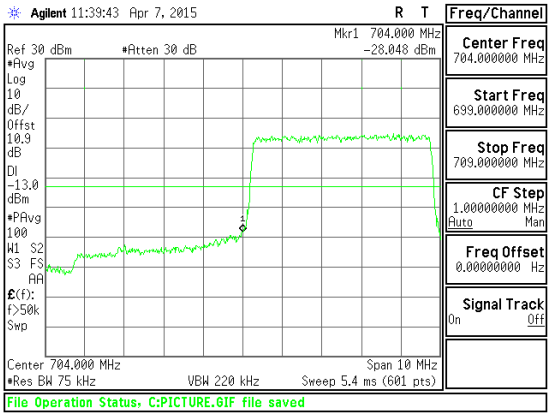
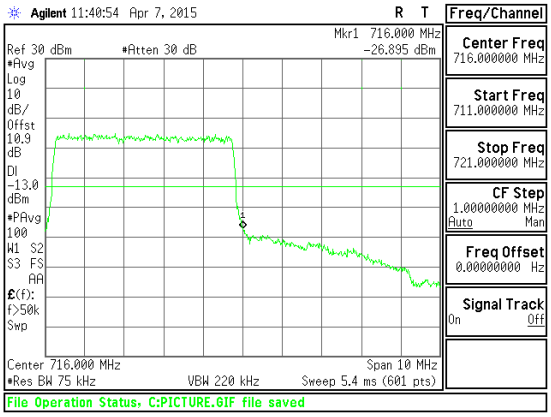
WCDMA

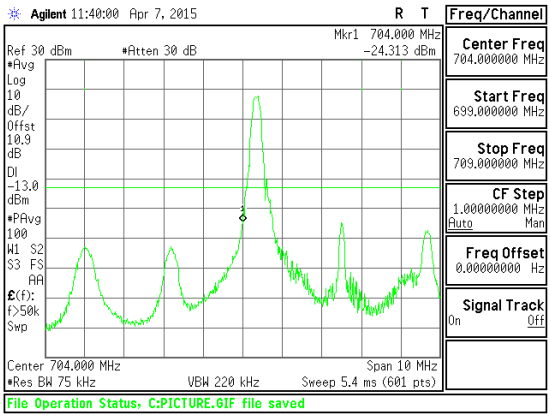
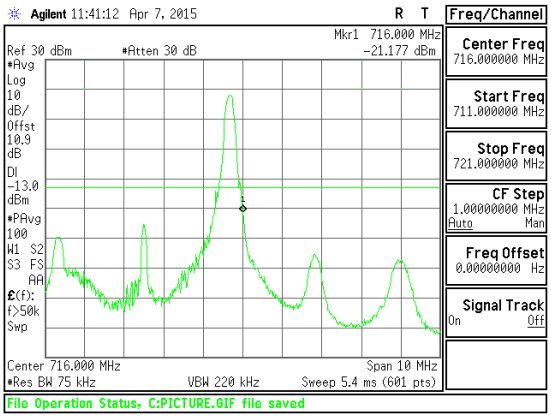
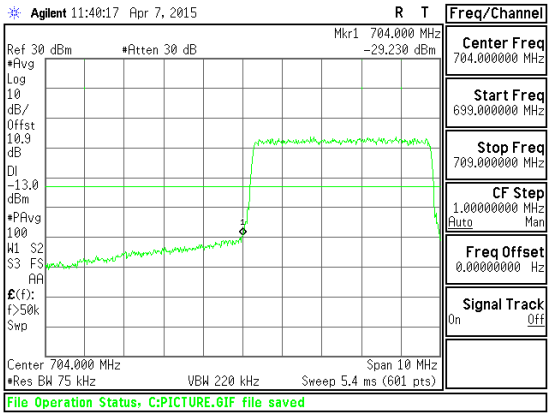
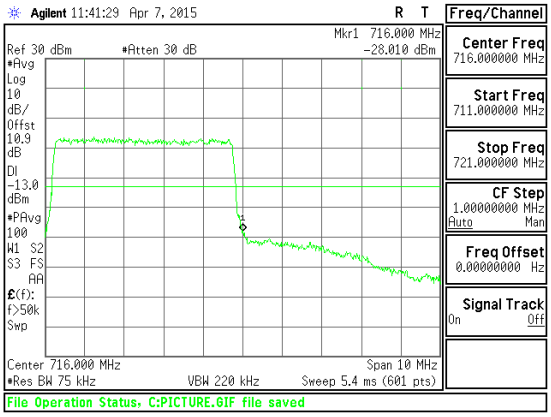
WCDMA Band 5 REL 99	 Band 5 REL 99 CBE Low channel	 Band 5 REL 99 CBE High channel
WCDMA Band 5 HSDPA	 Band 5 HSDPA CBE Low channel	 Band 5 HSDPA CBE High channel

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

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

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

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

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 (Band V), LTE (Band 17).

RESULTS

10.3.1. OUT OF BAND EMISSIONS RESULT

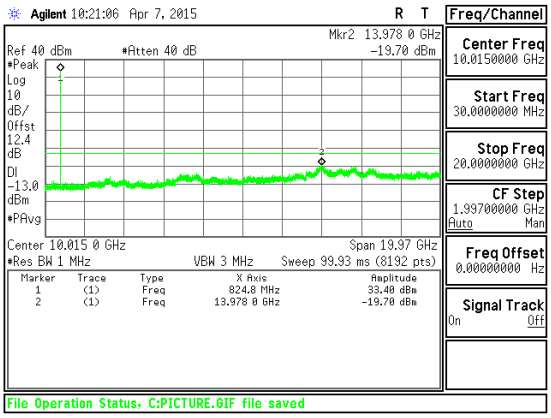
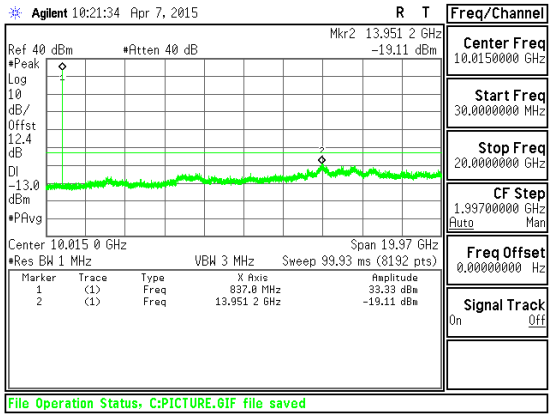
Band	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
GSM 850	GPRS	824.2	-19.699	-13	-6.699
		836.6	-19.115	-13	-6.115
		848.8	-19.259	-13	-6.259
	EGPRS	824.2	-19.473	-13	-6.473
		836.6	-18.558	-13	-5.558
		848.8	-18.818	-13	-5.818
GSM 1900	GPRS	1850.2	-18.726	-13	-5.726
		1880	-18.687	-13	-5.687
		1909.8	-18.578	-13	-5.578
	EGPRS	1850.2	-18.410	-13	-5.410
		1880	-17.563	-13	-4.563
		1909.8	-18.431	-13	-5.431
Band 5	REL99	826.4	-19.489	-13	-6.489
		836.6	-19.089	-13	-6.089
		846.6	-18.363	-13	-5.363
	HSDPA	826.4	-19.430	-13	-6.430
		836.6	-19.990	-13	-6.990
		846.6	-19.290	-13	-6.290

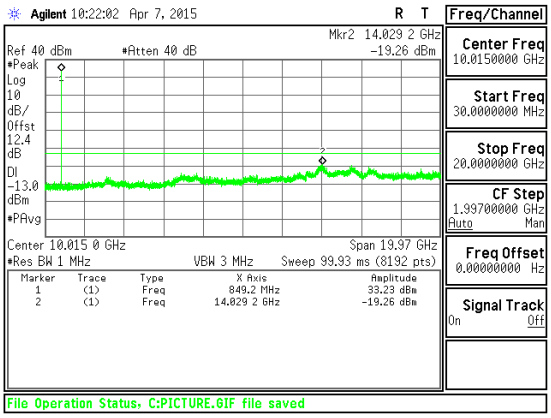
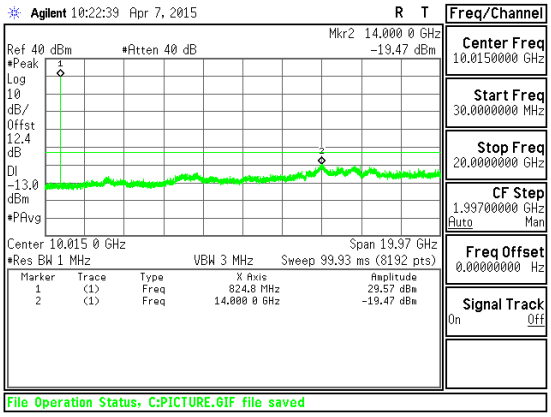
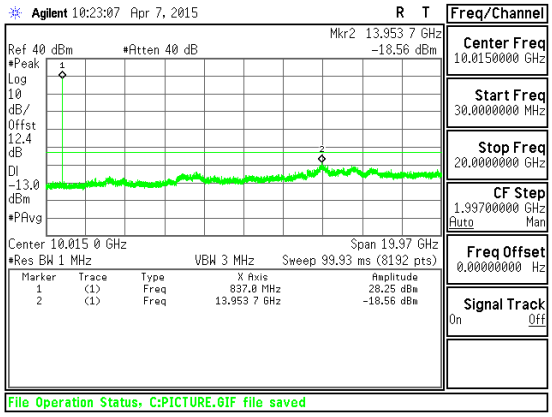
Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE17	10	QPSK	709	-29.50	-13	-16.50
			710	-29.77	-13	-16.77
			711	-28.29	-13	-15.29
		16QAM	709	-29.65	-13	-16.65
			710	-29.29	-13	-16.29
			711	-29.78	-13	-16.78

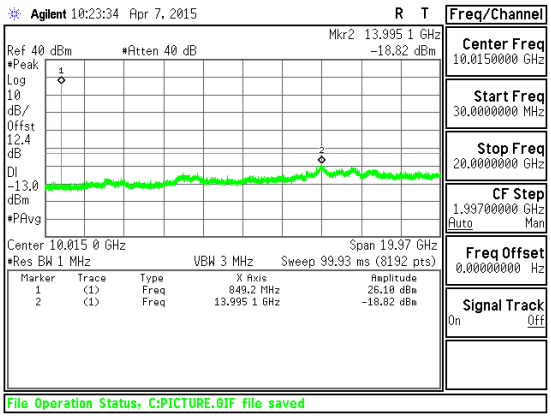
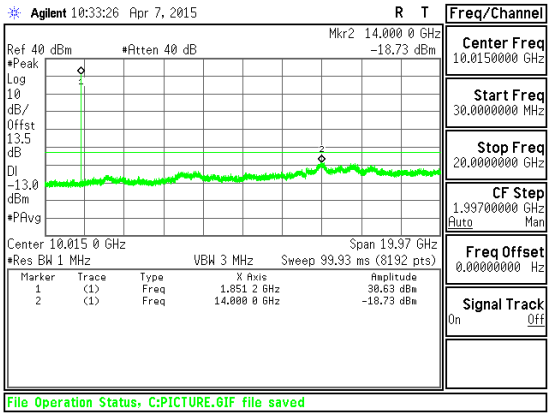
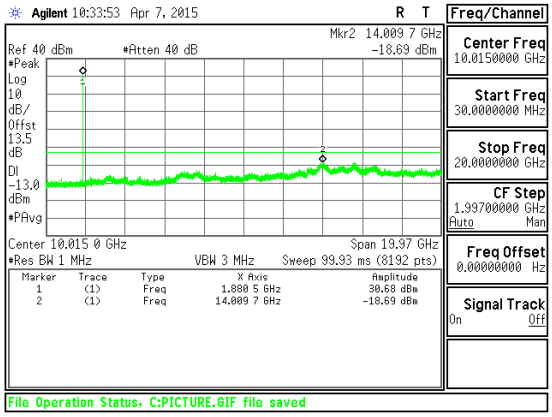
Band	BW (MHz)	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
LTE17	5	QPSK	706.5	-30.295	-13	-17.295
			710	-29.940	-13	-16.940
			713.5	-28.842	-13	-15.842
		16QAM	706.5	-30.404	-13	-17.404
			710	-29.761	-13	-16.761
			713.5	-29.889	-13	-16.889

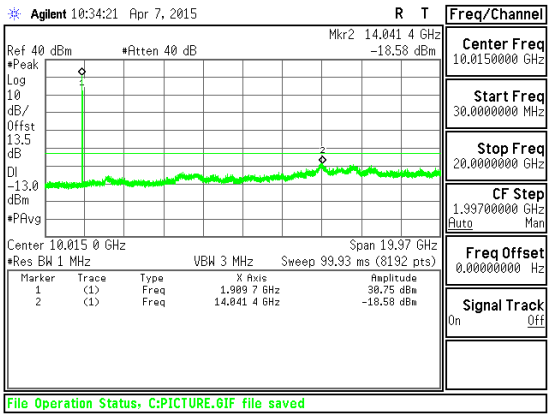
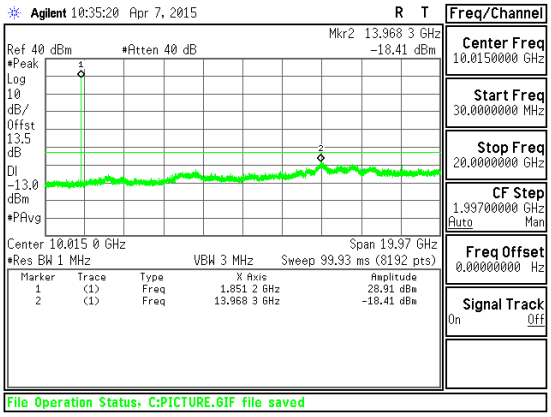
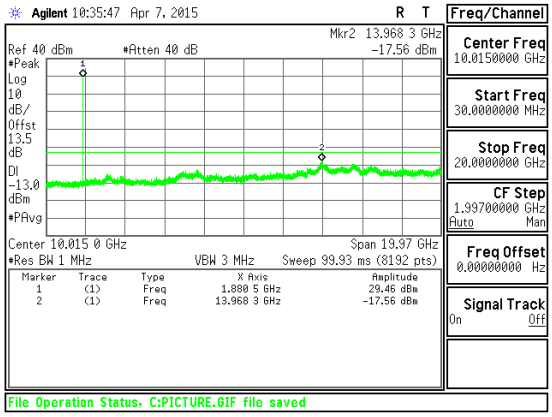
10.3.2. OUT OF BAND EMISSIONS PLOTS

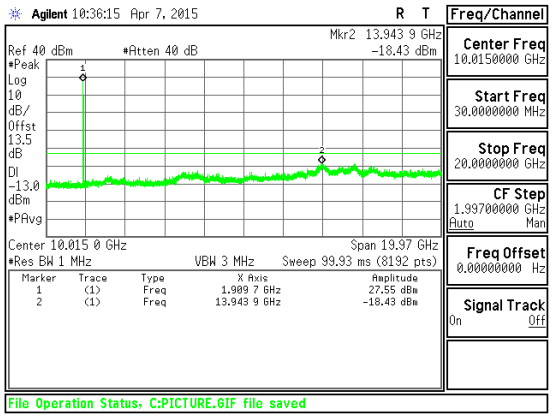
GSM

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

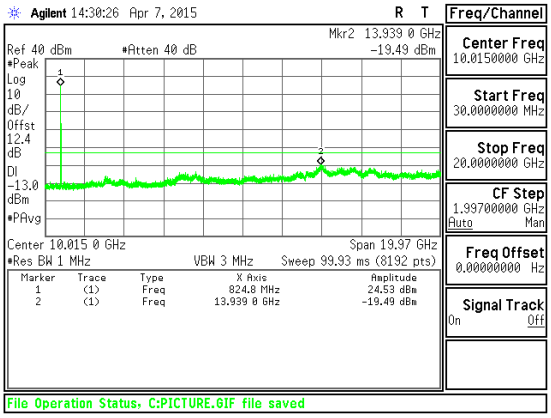
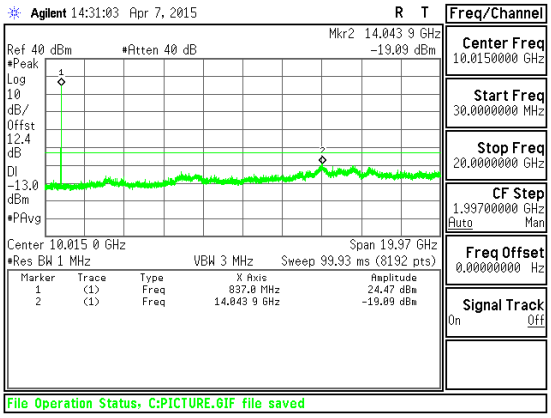
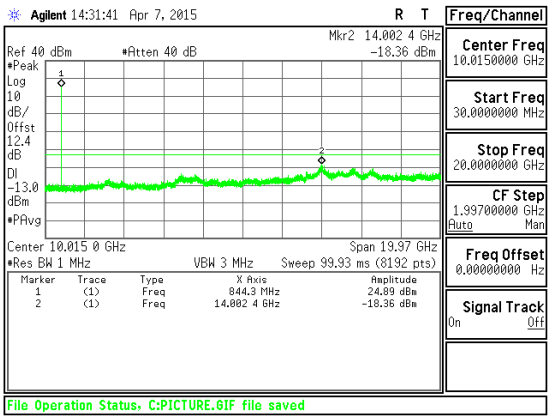
GSM 850 GPRS	 GSM850 GPRS CSE High channel	BLANK
GSM 850 EGPRS	 GSM850 EGPRS CSE Low channel	 GSM850 EGPRS CSE Mid channel

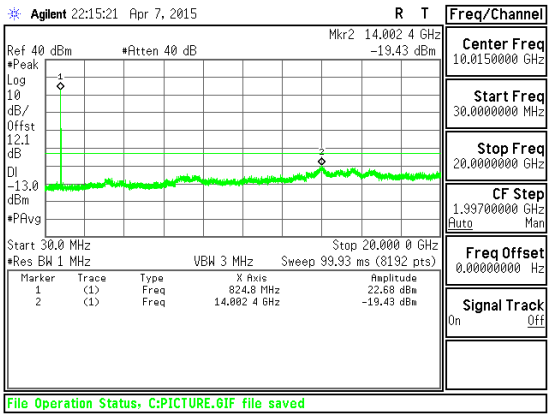
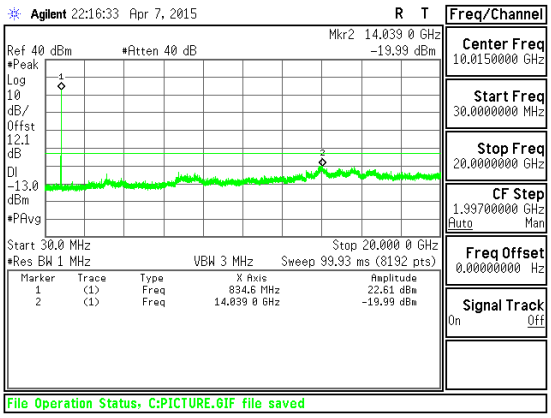
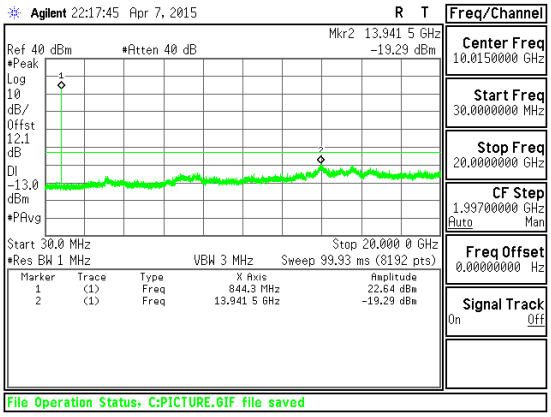
GSM 850 EGPRS	 GSM850 EGPRS CSE High channel	BLANK
GSM 1900 GPRS	 GSM1900 GPRS CSE Low channel	 GSM1900 GPRS CSE Mid channel

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

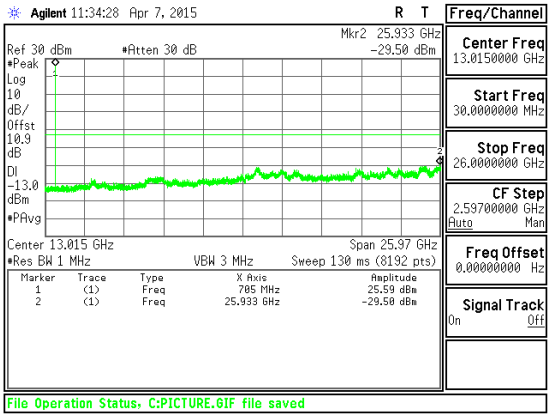
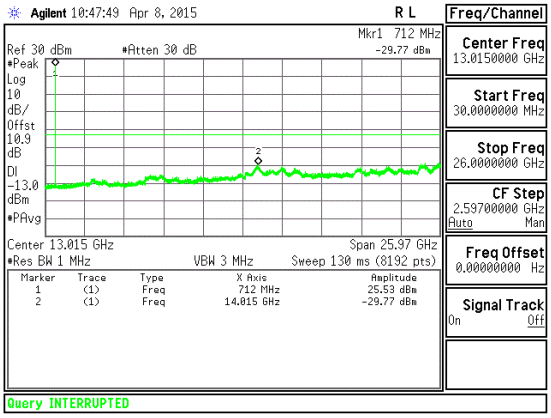
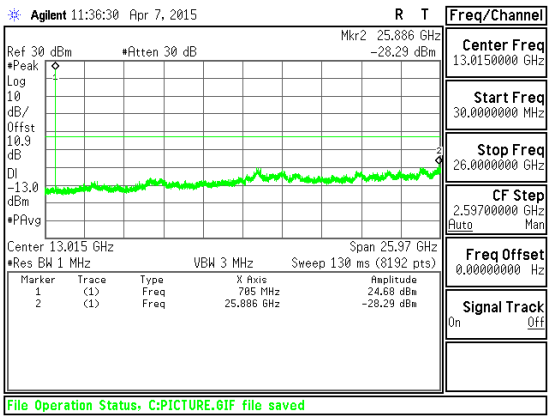
GSM 1900 EGPRS	 GSM1900 EGPRS CSE High channel	BLANK

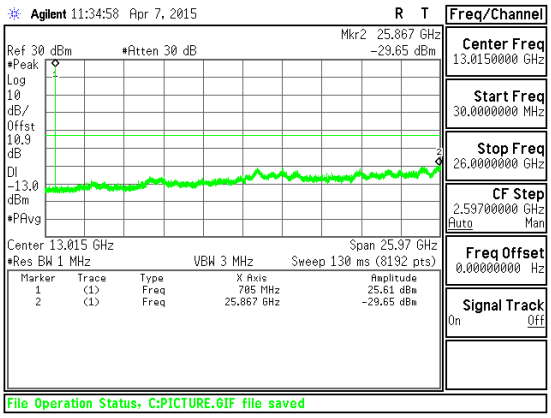
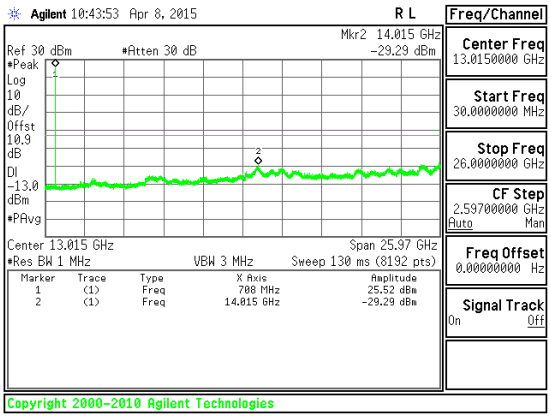
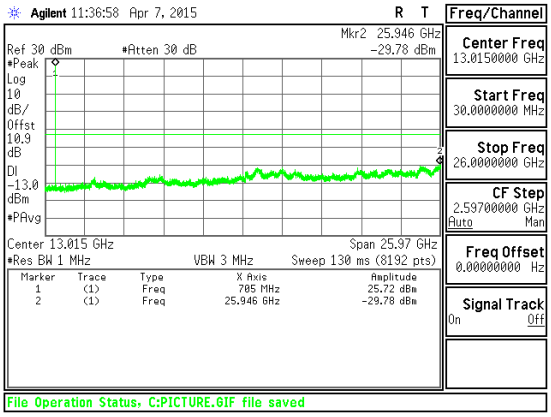
WCDMA

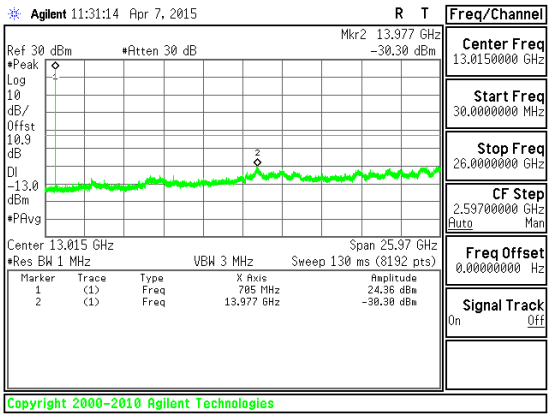
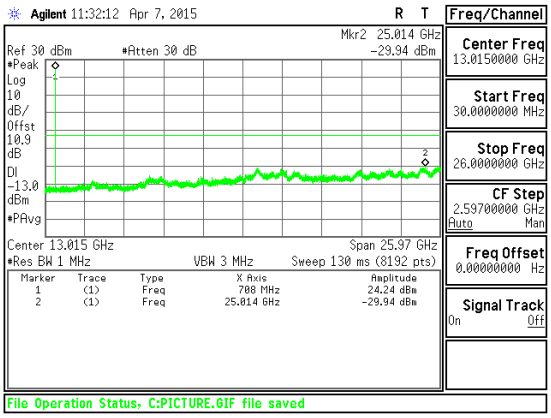
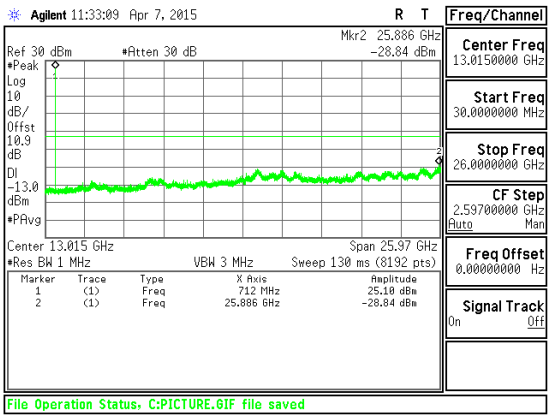
WCDMA Band 5 REL 99	 Band 5 REL 99 CSE Low channel	 Band 5 REL 99 CSE Mid channel
WCDMA Band 5 REL 99	 Band 5 REL 99 CSE High channel	BLANK

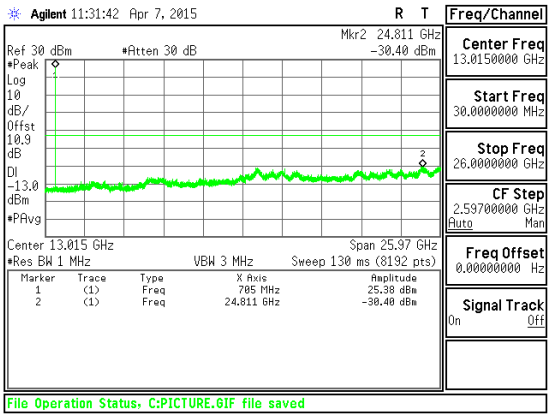
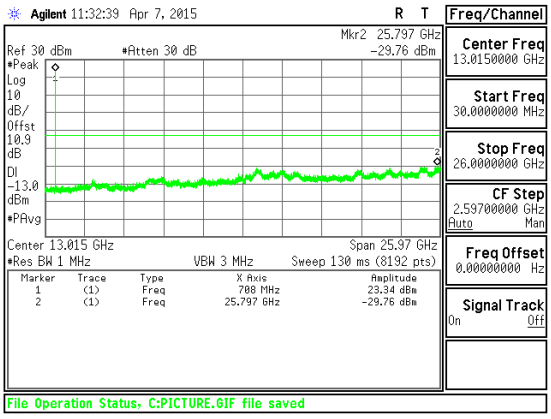
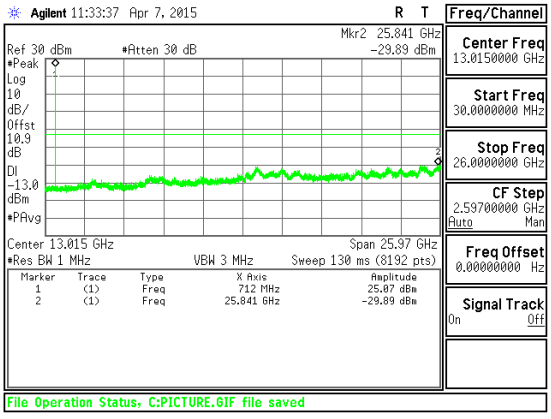
WCDMA Band 5 HSDPA	 Band 5 HSDPA CSE Low channel	 Band 5 HSDPA CSE Mid channel
WCDMA Band 5 HSDPA	 Band 5 HSDPA CSE High channel	BLANK

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

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

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

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

10.4. FREQUENCY STABILITY

RULE PART(S)

FCC: §2.1055, §22.355, §24.235, §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), GSM 1900 and LTE Band 17.

RESULTS

See the following pages.

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 (Vdc)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse (MHz)	Delta (ppm)	Limit (ppm)
3.80	50	836.599950	0.022	2.5
3.80	40	836.600022	-0.065	2.5
3.80	30	836.600038	-0.083	2.5
3.80	***20***	**836.599968**	**0**	***2.5***
3.80	10	836.599964	0.005	2.5
3.80	0	836.599965	0.003	2.5
3.80	-10	836.599957	0.013	2.5
3.80	-20	836.599963	0.005	2.5
3.80	-30	836.599949	0.022	2.5

Reference Frequency: PCS Mid Channel		836.6	MHz @ 20°C
Limit: to stay +- 2.5 ppm =		2091.500	Hz
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse (MHz)	Delta (ppm)	Limit (ppm)
3.80	***20***	***836.599968***	***0***	***2.5***
4.37	20	836.5999626	*0.006*	2.5
3.23	20	836.5999768	*-0.011*	2.5

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	1879.999922	0.064	2.5
3.80	40	1879.999953	0.048	2.5
3.80	30	1880.000098	-0.029	2.5
3.80	***20***	**1880.000043**	**0**	***2.5***
3.80	10	1880.000083	-0.021	2.5
3.80	0	1880.000113	-0.037	2.5
3.80	-10	1880.000120	-0.041	2.5
3.80	-20	1880.000156	-0.060	2.5
3.80	-30	1880.000094	-0.027	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***	***1880.000043***	***0***	***2.5***
4.37	20	1879.999922	*0.065*	2.5
3.23	20	1880.000113	*-0.037*	2.5

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	Environment	Frequency Deviation Measured with Time Elapse		
(Vdc)	Temperature (°C)	(MHz)	Delta (ppm)	Limit (ppm)
3.80	50	709.999997	0.011	2.5
3.80	40	709.999997	0.012	2.5
3.80	30	710.000005	0.000	2.5
3.80	***20***	**710.000005**	**0**	***2.5***
3.80	10	710.000005	0.000	2.5
3.80	0	709.999997	0.011	2.5
3.80	-10	710.000004	0.001	2.5
3.80	-20	710.000004	0.001	2.5
3.80	-30	710.000004	0.001	2.5

Reference Frequency: PCS Mid Channel		710	MHz @ 20°C
Limit: to stay +- 2.5 ppm =		1775.000	Hz
Power Supply	Environment	Frequency Deviation Measured with Time Elapse		
(Vdc)	Temperature (°C)	(MHz)	Delta (ppm)	Limit (ppm)
3.80	***20***	***710.000005***	***0***	***2.5***
4.37	20	710.0000038	*0.002*	2.5
3.23	20	710.0000037	*0.002*	2.5

11. RADIATED TEST RESULTS

11.1. RADIATED POWER (ERP & EIRP)

RULE PART(S)

FCC: §2.1046, §22.913, §24.232, §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(b) - (10) Portable stations (hand-held devices) transmitting in the 746-757 MHz, 776-788 MHz, and 805-806 MHz bands are limited to 3 watts ERP. (LTE B13)

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

TEST PROCEDURE

ANSI / TIA / EIA 603C Clause 2.2.17; PSA setting reference to 971168 D01 v02r02

MODES TESTED

GSM (850, 1900), WCDMA (Band V), LTE (Band 17).

TEST RESULTS

11.1.1. ERP/EIRP Results

Band	Mode	Channel	f(MHz)	ERP / EIRP	
				dBm	mW
GSM850	GPRS	128	824.2	29.98	995.41
		190	836.6	30.01	1002.31
		251	848.8	28.65	732.82
	EGPRS	128	824.2	23.83	241.55
		190	836.6	24.10	257.04
		251	848.8	23.12	205.12

Band	Mode	Channel	f(MHz)	ERP / EIRP	
				dBm	mW
GSM1900	GPRS	512	1850.2	31.27	1339.68
		661	1880	31.74	1492.79
		810	1909.8	32.86	1931.97
	EGPRS	512	1850.2	27.29	535.80
		661	1880	27.31	538.27
		810	1909.8	28.30	676.08

Band	Mode	Channel	f(MHz)	ERP / EIRP	
				dBm	mW
Band 5	REL99	4132	826.4	22.14	163.68
		4183	836.6	21.35	136.46
		4233	846.6	20.17	103.99
	HSDPA	4132	826.4	21.16	130.62
		4183	836.6	19.87	97.05
		4233	846.6	17.73	59.29

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	17.55	56.89
			1/0	710	17.35	54.33
			1/0	711	16.98	49.89
		16QAM	1/0	709	16.76	47.42
			1/0	710	15.97	39.54
			1/0	711	16.07	40.46

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE17	5	QPSK	1/0	706.5	17.53	56.62
			1/0	710	17.26	53.21
			1/0	713.5	16.50	44.67
		16QAM	1/0	706.5	17.28	53.46
			1/0	710	16.20	41.69
			1/0	713.5	15.70	37.15

11.1.3. ERP/EIRP PLOTS

GSM 850 GPRS

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

Company: Sony
Project #: 10721247
Date: 4/6/2015
Test Engineer: M. Nolting
Configuration: FCC ID: PY7-TM0063 Stand-alone (Y (Landscape) orientation); s/n CB5A23SQ3R
Mode: GPRS 850

Test Equipment:
Receiving: Hybrid AT0066 & SMA cables
Substitution: Dipole AT0016, sig-gen SIG001, & cable CBL010

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
824.20	31.50	V	0.6	-1.0	29.98	38.5	-8.5	
824.20	26.72	H	0.6	-1.0	25.20	38.5	-13.3	
Mid Ch								
836.60	31.48	V	0.6	-0.9	30.01	38.5	-8.5	
836.60	27.13	H	0.6	-0.9	25.65	38.5	-12.8	
High Ch								
848.80	30.08	V	0.6	-0.9	28.65	38.5	-9.9	
848.80	25.60	H	0.6	-0.9	24.17	38.5	-14.3	

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

GSM 850 EGPRS

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

Company: Sony
Project #: 10721247
Date: 4/6/2015
Test Engineer: M. Nolting
Configuration: FCC ID PY7-TM0063 Stand-alone (Y (Landscape) orientation); s/n CB5A23SQ3R
Mode: EGPRS 850

Test Equipment:
Receiving: Hybrid AT0066 & SMA cables
Substitution: Dipole AT0016, sig-gen SIG001, & cable CBL010

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
824.20	25.35	V	0.6	-1.0	23.83	38.5	-14.7	
824.20	20.66	H	0.6	-1.0	19.14	38.5	-19.4	
Mid Ch								
836.60	25.58	V	0.6	-0.9	24.10	38.5	-14.4	
836.60	21.16	H	0.6	-0.9	19.68	38.5	-18.8	
High Ch								
848.80	24.55	V	0.6	-0.9	23.12	38.5	-15.4	
848.80	20.11	H	0.6	-0.9	18.67	38.5	-19.8	

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

GSM 1900 GPRS

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

Company: Sony
Project #: 10721247
Date: 4/7/2015
Test Engineer: B. Kiewra
Configuration: FCC ID: PY7-TM0063; Stand-alone (X (Flat) orientation); s/n CB5A23SQ3R
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)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1850.20	20.51	V	0.9	5.4	25.02	33.0	-8.0	
1850.20	26.76	H	0.9	5.4	31.27	33.0	-1.7	
Mid Ch								
1880.00	22.16	V	0.9	5.3	26.56	33.0	-6.4	
1880.00	27.34	H	0.9	5.3	31.74	33.0	-1.3	
High Ch								
1909.80	22.50	V	0.9	5.2	26.80	33.0	-6.2	
1909.80	28.56	H	0.9	5.2	32.86	33.0	-0.1	

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

GSM 1900 EGPRS

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

Company: Sony
Project #: 10721247
Date: 4/7/2015
Test Engineer: B. Kiewra
Configuration: FCC ID: PY7-TM0063; Stand-alone (X (Flat) orientation); s/n CB5A23SQ3R
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 (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1850.20	14.63	V	0.9	5.4	19.14	33.0	-13.9	
1850.20	22.78	H	0.9	5.4	27.29	33.0	-5.7	
Mid Ch								
1880.00	17.58	V	0.9	5.3	21.98	33.0	-11.0	
1880.00	22.91	H	0.9	5.3	27.31	33.0	-5.7	
High Ch								
1909.80	16.57	V	0.9	5.2	20.87	33.0	-12.1	
1909.80	24.00	H	0.9	5.2	28.30	33.0	-4.7	

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

WCDMA BAND 5 REL 99

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

Company: Sony
Project #: 10721247
Date: 4/6/2015
Test Engineer: M. Nolting
Configuration: FCC ID: PY7-TM0063 Stand-alone (Y (Landscape) orientation); s/n CB5A23SQ3R
Mode: REL99

Test Equipment:
Receiving: Hybrid AT0066 & SMA cables
Substitution: Dipole AT0016, sig-gen SIG001, & cable CBL010

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
826.40	23.65	V	0.6	-0.9	22.14	38.5	-16.4	
826.40	18.55	H	0.6	-0.9	17.04	38.5	-21.5	
Mid Ch								
836.60	22.83	V	0.6	-0.9	21.35	38.5	-17.1	
836.60	17.88	H	0.6	-0.9	16.40	38.5	-22.1	
High Ch								
846.60	21.62	V	0.6	-0.9	20.17	38.5	-18.3	
846.60	16.56	H	0.6	-0.9	15.12	38.5	-23.4	

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

WCDMA BAND 5 HSDPA

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

Company: Sony
Project #: 10721247
Date: 4/6/2015
Test Engineer: M. Nolting
Configuration: FCC ID: PY7-TM0063 Stand-alone (Y (Landscape) orientation); s/n CB5A23SQ3R
Mode: HSDPA

Test Equipment:
Receiving: Hybrid AT0066 & SMA cables
Substitution: Dipole AT0016, sig-gen SIG001, & cable CBL010

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
826.40	22.68	V	0.6	-0.9	21.16	38.5	-17.3	
826.40	16.46	H	0.6	-0.9	14.95	38.5	-23.6	
Mid Ch								
836.60	21.35	V	0.6	-0.9	19.87	38.5	-18.6	
836.60	15.81	H	0.6	-0.9	14.33	38.5	-24.2	
High Ch								
846.60	19.18	V	0.6	-0.9	17.73	38.5	-20.8	
846.60	14.61	H	0.6	-0.9	13.17	38.5	-25.3	

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

LTE17, 10 MHz QPSK

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

Company: Sony
Project #: 10721247
Date: 4/7/2015
Test Engineer: B.Kiewra
Configuration: FCC ID: PY7-TM0063 Stand-alone (X (Landscape) flat); s/n CB5A23SQ3R
Mode: LTE17 10MHzBW QPSK

Test Equipment:
Receiving: Horn AT0067 & SMA cables
Substitution: Dipole AT0016, sig-gen SIG001, & cable CBL010

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
709.00	5.82	V	0.5	-0.4	4.88	34.8	-29.9	
709.00	18.50	H	0.5	-0.4	17.55	34.8	-17.2	
Mid Ch								
710.00	3.93	V	0.5	-0.4	2.98	34.8	-31.8	
710.00	18.30	H	0.5	-0.4	17.35	34.8	-17.5	
High Ch								
711.00	3.38	V	0.5	-0.4	2.42	34.8	-32.4	
711.00	17.94	H	0.5	-0.4	16.98	34.8	-17.8	

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

LTE17, 10 MHz 16QAM

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

Company: Sony
Project #: 10721247
Date: 4/7/2015
Test Engineer: B.Kiewra
Configuration: FCC ID: PY7-TM0063 Stand-alone (X (Landscape) flat); s/n CB5A23SQ3R
Mode: LTE17 10MHzBW 16-QAM

Test Equipment:
Receiving: Hybrid AT0066 & SMA cables
Substitution: Dipole AT0016, sig-gen SIG001, & cable CBL010

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
709.00	5.43	V	0.5	-0.4	4.48	34.8	-30.3	
709.00	17.70	H	0.5	-0.4	16.76	34.8	-18.0	
Mid Ch								
710.00	3.01	V	0.5	-0.4	2.06	34.8	-32.7	
710.00	16.92	H	0.5	-0.4	15.97	34.8	-18.8	
High Ch								
711.00	2.02	V	0.5	-0.4	1.06	34.8	-33.7	
711.00	17.03	H	0.5	-0.4	16.07	34.8	-18.7	

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

LTE17, 5MHz QPSK

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

Company: Sony
Project #: 10721247
Date: 4/6/2015
Test Engineer: M. Nolting
Configuration: FCC ID: PY7-TM0063 Stand-alone (X (Landscape) flat); s/n CB5A23SQ3R
Mode: LTE17 5MHzBW QPSK

Test Equipment:
Receiving: Hybrid AT0066 & SMA cables
Substitution: Dipole AT0016, sig-gen SIG001, & cable CBL010

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
706.50	11.38	V	0.5	-0.4	10.46	34.8	-24.3	
706.50	18.45	H	0.5	-0.4	17.53	34.8	-17.3	
Mid Ch								
710.00	11.37	V	0.5	-0.4	10.42	34.8	-24.4	
710.00	18.21	H	0.5	-0.4	17.26	34.8	-17.5	
High Ch								
713.50	11.65	V	0.5	-0.5	10.67	34.8	-24.1	
713.50	17.49	H	0.5	-0.5	16.50	34.8	-18.3	

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

LTE17, 5 MHz 16QAM

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

Company: Sony
Project #: 10721247
Date: 4/6/2015
Test Engineer: M. Nolting
Configuration: FCC ID: PY7-TM0063 Stand-alone (X (Landscape) flat); s/n CB5A23SQ3R
Mode: LTE17 5MHzBW 16-QAM

Test Equipment:
Receiving: Hybrid AT0066 & SMA cables
Substitution: Dipole AT0016, sig-gen SIG001, & cable CBL010

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
706.50	10.58	V	0.5	-0.4	9.66	34.8	-25.1	
706.50	18.20	H	0.5	-0.4	17.28	34.8	-17.5	
Mid Ch								
710.00	10.70	V	0.5	-0.4	9.75	34.8	-25.0	
710.00	17.15	H	0.5	-0.4	16.20	34.8	-18.6	
High Ch								
713.50	11.22	V	0.5	-0.5	10.24	34.8	-24.6	
713.50	16.68	H	0.5	-0.5	15.70	34.8	-19.1	

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

11.2. FIELD STRENGTH OF SPURIOUS RADIATION

RULE PART(S)

FCC: §2.1053, §22.917(a), §24.238(a), §27.53(g).

LIMIT

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

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 (Band V), LTE (Band 17).

RESULTS

11.2.1. SPURIOUS RADIATION PLOTS

GSM 850 GPRS

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

Company: Sony
Project #: 10721247
Date: 4/8/2015
Test Engineer: B. Kiewra
Configuration: FCC ID: PY7-TM0063 with charger (Y (Landscape) Orientation); s/n CB5A23SQ3R
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	-54.7	V	3.0	1.2	-53.5	-13.0	-40.5	
2.473	-51.3	V	3.0	1.2	-50.1	-13.0	-37.1	
3.297	-53.8	V	3.0	1.2	-52.6	-13.0	-39.6	
1.648	-55.3	H	3.0	1.2	-54.1	-13.0	-41.1	
2.473	-56.7	H	3.0	1.2	-55.5	-13.0	-42.5	
3.297	-54.8	H	3.0	1.2	-53.6	-13.0	-40.6	
Mid Ch,836.6MHz								
1.673	-56.1	V	3.0	1.2	-54.9	-13.0	-41.9	
2.510	-50.2	V	3.0	1.2	-49.0	-13.0	-36.0	
3.346	-55.2	V	3.0	1.2	-54.0	-13.0	-41.0	
1.673	-57.7	H	3.0	1.2	-56.5	-13.0	-43.5	
2.510	-55.1	H	3.0	1.2	-53.9	-13.0	-40.9	
3.346	-57.2	H	3.0	1.2	-56.0	-13.0	-43.0	
High Ch, 848.8MHz								
1.698	-56.9	V	3.0	1.2	-55.7	-13.0	-42.7	
2.546	-50.8	V	3.0	1.2	-49.6	-13.0	-36.6	
3.395	-53.4	V	3.0	1.2	-52.2	-13.0	-39.2	
1.698	-57.1	H	3.0	1.2	-55.9	-13.0	-42.9	
2.546	-53.2	H	3.0	1.2	-52.0	-13.0	-39.0	
3.395	-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.

GSM 850 EGPRS

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

Company: Sony
Project #: 10721247
Date: 4/8/2015
Test Engineer: B. Kiewra
Configuration: FCC ID: PY7-TM0063 with charger (Y (Landscape) Orientation); s/n CB5A23SQ3R
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	-57.7	V	3.0	1.2	-56.5	-13.0	-43.5	
2.473	-54.5	V	3.0	1.2	-53.3	-13.0	-40.3	
3.297	-53.8	V	3.0	1.2	-52.6	-13.0	-39.6	
1.648	-54.7	H	3.0	1.2	-53.5	-13.0	-40.5	
2.473	-56.9	H	3.0	1.2	-55.7	-13.0	-42.7	
3.297	-54.6	H	3.0	1.2	-53.4	-13.0	-40.4	
Mid Ch,836.6MHz								
1.673	-55.9	V	3.0	1.2	-54.7	-13.0	-41.7	
2.510	-51.3	V	3.0	1.2	-50.1	-13.0	-37.1	
3.346	-55.8	V	3.0	1.2	-54.6	-13.0	-41.6	
1.673	-61.2	H	3.0	1.2	-60.0	-13.0	-47.0	
2.510	-57.0	H	3.0	1.2	-55.8	-13.0	-42.8	
3.346	-57.0	H	3.0	1.2	-55.8	-13.0	-42.8	
High Ch, 848.8MHz								
1.698	-58.7	V	3.0	1.2	-57.5	-13.0	-44.5	
2.546	-53.1	V	3.0	1.2	-51.9	-13.0	-38.9	
3.395	-52.9	V	3.0	1.2	-51.7	-13.0	-38.7	
1.698	-58.8	H	3.0	1.2	-57.6	-13.0	-44.6	
2.546	-54.8	H	3.0	1.2	-53.6	-13.0	-40.6	
3.395	-53.7	H	3.0	1.2	-52.5	-13.0	-39.5	

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

Note – Pre-amp is part of substitution measurement.

GSM 1900 GPRS

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

Company: Sony
Project #: 10721247
Date: 4/10/2015
Test Engineer: B. Kiewra
Configuration: FCC ID: PY7-TM0063 with charger (X (Flat) Orientation); s/n CB5A23SQ3R
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	-50.5	V	3.0	1.2	-49.3	-13.0	-36.3	
5.551	-48.5	V	3.0	1.2	-47.3	-13.0	-34.3	
7.401	-45.0	V	3.0	1.2	-43.8	-13.0	-30.8	
3.700	-51.3	H	3.0	1.2	-50.1	-13.0	-37.1	
5.551	-49.3	H	3.0	1.2	-48.1	-13.0	-35.1	
7.401	-45.3	H	3.0	1.2	-44.1	-13.0	-31.1	
Mid Ch, 1880.0MHz								
3.760	-50.1	V	3.0	1.2	-48.9	-13.0	-35.9	
5.640	-47.8	V	3.0	1.2	-46.6	-13.0	-33.6	
7.520	-44.7	V	3.0	1.2	-43.5	-13.0	-30.5	
3.760	-50.0	H	3.0	1.2	-48.8	-13.0	-35.8	
5.640	-45.8	H	3.0	1.2	-44.5	-13.0	-31.5	
7.520	-45.4	H	3.0	1.2	-44.2	-13.0	-31.2	
High Ch, 1909.8MHz								
3.820	-52.0	V	3.0	1.2	-50.8	-13.0	-37.8	
5.729	-45.0	V	3.0	1.2	-43.8	-13.0	-30.8	
7.639	-44.9	V	3.0	1.2	-43.7	-13.0	-30.7	
3.820	-49.9	H	3.0	1.2	-48.6	-13.0	-35.6	
5.729	-43.1	H	3.0	1.2	-41.9	-13.0	-28.9	
7.639	-44.6	H	3.0	1.2	-43.4	-13.0	-30.4	

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

Note – Pre-amp is part of substitution measurement.

GSM 1900 EGPRS

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

Company: Sony
Project #: 10721247
Date: 4/10/2015
Test Engineer: B. Kiewra
Configuration: FCC ID: PY7-TM0063 with charger (X (Flat) Orientation); s/n CB5A23SQ3R
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	-50.6	V	3.0	1.2	-49.4	-13.0	-36.4	
5.551	-48.3	V	3.0	1.2	-47.1	-13.0	-34.1	
7.401	-44.3	V	3.0	1.2	-43.1	-13.0	-30.1	
3.700	-51.4	H	3.0	1.2	-50.2	-13.0	-37.2	
5.551	-48.9	H	3.0	1.2	-47.7	-13.0	-34.7	
7.401	-45.7	H	3.0	1.2	-44.5	-13.0	-31.5	
Mid Ch, 1880.0MHz								
3.760	-49.9	V	3.0	1.2	-48.7	-13.0	-35.7	
5.640	-48.2	V	3.0	1.2	-47.0	-13.0	-34.0	
7.520	-44.6	V	3.0	1.2	-43.4	-13.0	-30.4	
3.760	-49.4	H	3.0	1.2	-48.2	-13.0	-35.2	
5.640	-47.9	H	3.0	1.2	-46.7	-13.0	-33.7	
7.520	-45.2	H	3.0	1.2	-44.0	-13.0	-31.0	
High Ch, 1909.8MHz								
3.820	-50.1	V	3.0	1.2	-48.9	-13.0	-35.9	
5.729	-47.6	V	3.0	1.2	-46.4	-13.0	-33.4	
7.639	-45.1	V	3.0	1.2	-43.9	-13.0	-30.9	
3.820	-50.1	H	3.0	1.2	-48.9	-13.0	-35.9	
5.729	-44.9	H	3.0	1.2	-43.7	-13.0	-30.7	
7.639	-45.2	H	3.0	1.2	-44.0	-13.0	-31.0	

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

Note – Pre-amp is part of substitution measurement.

WCDMA BAND 5 REL 99

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

Company: Sony
Project #: 10721247
Date: 4/9/2015
Test Engineer: B. Kiewra
Configuration: FCC ID: PY7-TM0063 with charger (Y (Landscape) Orientation); s/n CB5A23SQ3R
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	-55.5	V	3.0	1.2	-54.3	-13.0	-41.3	
2.480	-48.5	V	3.0	1.2	-47.3	-13.0	-34.3	
3.306	-52.8	V	3.0	1.2	-51.6	-13.0	-38.6	
1.653	-54.2	H	3.0	1.2	-53.0	-13.0	-40.0	
2.480	-54.6	H	3.0	1.2	-53.4	-13.0	-40.4	
3.306	-53.2	H	3.0	1.2	-52.0	-13.0	-39.0	
Mid Ch, 836.6MHz								
1.673	-56.3	V	3.0	1.2	-55.1	-13.0	-42.1	
2.510	-52.4	V	3.0	1.2	-51.2	-13.0	-38.2	
3.346	-52.6	V	3.0	1.2	-51.4	-13.0	-38.4	
1.673	-55.2	H	3.0	1.2	-54.0	-13.0	-41.0	
2.510	-49.3	H	3.0	1.2	-48.1	-13.0	-35.1	
3.346	-52.8	H	3.0	1.2	-51.6	-13.0	-38.6	
High Ch, 846.6MHz								
1.693	-55.2	V	3.0	1.2	-54.0	-13.0	-41.0	
2.540	-52.7	V	3.0	1.2	-51.5	-13.0	-38.5	
3.386	-52.6	V	3.0	1.2	-51.4	-13.0	-38.4	
1.693	-54.4	H	3.0	1.2	-53.2	-13.0	-40.2	
2.540	-52.2	H	3.0	1.2	-51.0	-13.0	-38.0	
3.386	-52.8	H	3.0	1.2	-51.6	-13.0	-38.6	

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

Note – Pre-amp is part of substitution measurement.

WCDMA BAND 5 HSDPA

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

Company: Sony
Project #: 10721247
Date: 4/9/2015
Test Engineer: B. Kiewra
Configuration: FCC ID: PY7-TM0063 with charger (Y (Landscape) Orientation); s/n CB5A23SQ3R
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	-56.5	V	3.0	1.2	-55.3	-13.0	-42.3	
2.480	-51.2	V	3.0	1.2	-50.0	-13.0	-37.0	
3.306	-53.1	V	3.0	1.2	-51.9	-13.0	-38.9	
1.653	-56.2	H	3.0	1.2	-55.0	-13.0	-42.0	
2.480	-50.9	H	3.0	1.2	-49.7	-13.0	-36.7	
3.306	-52.8	H	3.0	1.2	-51.6	-13.0	-38.6	
Mid Ch, 836.6MHz								
1.673	-56.6	V	3.0	1.2	-55.4	-13.0	-42.4	
2.510	-52.9	V	3.0	1.2	-51.7	-13.0	-38.7	
3.346	-52.5	V	3.0	1.2	-51.3	-13.0	-38.3	
1.673	-55.3	H	3.0	1.2	-54.1	-13.0	-41.1	
2.510	-54.3	H	3.0	1.2	-53.1	-13.0	-40.1	
3.346	-52.8	H	3.0	1.2	-51.6	-13.0	-38.6	
High Ch, 846.6MHz								
1.693	-55.9	V	3.0	1.2	-54.7	-13.0	-41.7	
2.540	-53.3	V	3.0	1.2	-52.1	-13.0	-39.1	
3.386	-52.8	V	3.0	1.2	-51.6	-13.0	-38.6	
1.693	-54.2	H	3.0	1.2	-53.0	-13.0	-40.0	
2.540	-54.1	H	3.0	1.2	-52.9	-13.0	-39.9	
3.386	-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.

LTE17, 10 MHz QPSK

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

Company: Sony
Project #: 10721247
Date: 4/9/2015
Test Engineer: B. Kiewra
Configuration: FCC ID: PY7-TM0063 with charger (X (Flat) Orientation); s/n CB5A23SQ3R
Mode: LTE 17 10MHz BW 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	-60.2	V	3.0	1.2	-59.0	-13.0	-46.0	
2.127	-55.5	V	3.0	1.2	-54.3	-13.0	-41.3	
2.836	-53.7	V	3.0	1.2	-52.5	-13.0	-39.5	
1.418	-60.3	H	3.0	1.2	-59.1	-13.0	-46.1	
2.127	-56.0	H	3.0	1.2	-54.8	-13.0	-41.8	
2.836	-53.8	H	3.0	1.2	-52.6	-13.0	-39.6	
Mid Ch, 710.0MHz								
1.420	-60.6	V	3.0	1.2	-59.4	-13.0	-46.4	
2.130	-55.7	V	3.0	1.2	-54.5	-13.0	-41.5	
2.840	-53.6	V	3.0	1.2	-52.4	-13.0	-39.4	
1.420	-60.8	H	3.0	1.2	-59.6	-13.0	-46.6	
2.130	-56.4	H	3.0	1.2	-55.2	-13.0	-42.2	
2.840	-53.9	H	3.0	1.2	-52.7	-13.0	-39.7	
High Ch, 711.0MHz								
1.422	-60.5	V	3.0	1.2	-59.3	-13.0	-46.3	
2.133	-56.0	V	3.0	1.2	-54.8	-13.0	-41.8	
2.844	-53.4	V	3.0	1.2	-52.2	-13.0	-39.2	
1.422	-62.4	H	3.0	1.2	-61.2	-13.0	-48.2	
2.133	-58.5	H	3.0	1.2	-57.3	-13.0	-44.3	
2.844	-54.5	H	3.0	1.2	-53.3	-13.0	-40.3	

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

Note – Pre-amp is part of substitution measurement.

LTE17, 10 MHz 16QAM

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

Company: Sony
Project #: 10721247
Date: 4/9/2015
Test Engineer: B. Kiewra
Configuration: FCC ID: PY7-TM0063 with charger (X (Flat) Orientation); s/n CB5A23SQ3R
Mode: LTE 17 10MHz BW 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	-60.4	V	3.0	1.2	-59.2	-13.0	-46.2	
2.127	-56.1	V	3.0	1.2	-54.9	-13.0	-41.9	
2.836	-54.0	V	3.0	1.2	-52.8	-13.0	-39.8	
1.418	-61.2	H	3.0	1.2	-60.0	-13.0	-47.0	
2.127	-55.7	H	3.0	1.2	-54.5	-13.0	-41.5	
2.836	-53.5	H	3.0	1.2	-52.3	-13.0	-39.3	
Mid Ch, 710.0MHz								
1.420	-60.4	V	3.0	1.2	-59.2	-13.0	-46.2	
2.130	-56.2	V	3.0	1.2	-55.0	-13.0	-42.0	
2.840	-54.2	V	3.0	1.2	-53.0	-13.0	-40.0	
1.420	-60.8	H	3.0	1.2	-59.6	-13.0	-46.6	
2.130	-56.1	H	3.0	1.2	-54.9	-13.0	-41.9	
2.840	-54.5	H	3.0	1.2	-53.3	-13.0	-40.3	
High Ch, 711.0MHz								
1.422	-59.5	V	3.0	1.2	-58.3	-13.0	-45.3	
2.133	-55.2	V	3.0	1.2	-54.0	-13.0	-41.0	
2.844	-53.1	V	3.0	1.2	-51.9	-13.0	-38.9	
1.422	-62.5	H	3.0	1.2	-61.3	-13.0	-48.3	
2.133	-57.8	H	3.0	1.2	-56.6	-13.0	-43.6	
2.844	-54.0	H	3.0	1.2	-52.8	-13.0	-39.8	

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

Note – Pre-amp is part of substitution measurement.

LTE17, 5MHz QPSK

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

Company: Sony
Project #: 10721247
Date: 4/9/2015
Test Engineer: B. Kiewra
Configuration: FCC ID: PY7-TM0063 with charger (X (Flat) Orientation); s/n CB5A23SQ3R
Mode: LTE 17 5MHz BW 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	-59.1	V	3.0	1.2	-57.9	-13.0	-44.9	
2.120	-56.2	V	3.0	1.2	-55.0	-13.0	-42.0	
2.826	-53.8	V	3.0	1.2	-52.6	-13.0	-39.6	
1.413	-60.4	H	3.0	1.2	-59.2	-13.0	-46.2	
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, 710.0MHz								
1.420	-60.6	V	3.0	1.2	-59.4	-13.0	-46.4	
2.130	-55.5	V	3.0	1.2	-54.3	-13.0	-41.3	
2.840	-53.3	V	3.0	1.2	-52.1	-13.0	-39.1	
1.420	-60.2	H	3.0	1.2	-59.0	-13.0	-46.0	
2.130	-56.3	H	3.0	1.2	-55.1	-13.0	-42.1	
2.840	-54.1	H	3.0	1.2	-52.9	-13.0	-39.9	
High Ch, 713.5MHz								
1.427	-59.8	V	3.0	1.2	-58.6	-13.0	-45.6	
2.141	-56.3	V	3.0	1.2	-55.1	-13.0	-42.1	
2.854	-54.0	V	3.0	1.2	-52.8	-13.0	-39.8	
1.427	-60.3	H	3.0	1.2	-59.1	-13.0	-46.1	
2.141	-56.3	H	3.0	1.2	-55.1	-13.0	-42.1	
2.854	-54.0	H	3.0	1.2	-52.8	-13.0	-39.8	

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

Note – Pre-amp is part of substitution measurement.

LTE17, 5 MHz 16QAM

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

Company: Sony
Project #: 10721247
Date: 4/9/2015
Test Engineer: B. Kiewra
Configuration: FCC ID: PY7-TM0063 with charger (X (Flat) Orientation); s/n CB5A23SQ3R
Mode: LTE 17 5MHz BW 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	-60.6	V	3.0	1.2	-59.4	-13.0	-46.4	
2.120	-56.2	V	3.0	1.2	-55.0	-13.0	-42.0	
2.826	-53.9	V	3.0	1.2	-52.7	-13.0	-39.7	
1.413	-59.9	H	3.0	1.2	-58.7	-13.0	-45.7	
2.120	-56.4	H	3.0	1.2	-55.2	-13.0	-42.2	
2.826	-53.4	H	3.0	1.2	-52.2	-13.0	-39.2	
Mid Ch, 710.0MHz								
1.420	-60.3	V	3.0	1.2	-59.1	-13.0	-46.1	
2.130	-55.9	V	3.0	1.2	-54.7	-13.0	-41.7	
2.840	-54.0	V	3.0	1.2	-52.8	-13.0	-39.8	
1.420	-60.3	H	3.0	1.2	-59.1	-13.0	-46.1	
2.130	-55.5	H	3.0	1.2	-54.3	-13.0	-41.3	
2.840	-54.0	H	3.0	1.2	-52.8	-13.0	-39.8	
High Ch, 713.5MHz								
1.427	-60.3	V	3.0	1.2	-59.1	-13.0	-46.1	
2.141	-55.9	V	3.0	1.2	-54.7	-13.0	-41.7	
2.854	-54.3	V	3.0	1.2	-53.1	-13.0	-40.1	
1.427	-60.9	H	3.0	1.2	-59.7	-13.0	-46.7	
2.141	-56.1	H	3.0	1.2	-54.9	-13.0	-41.9	
2.854	-54.7	H	3.0	1.2	-53.5	-13.0	-40.5	

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

Note – Pre-amp is part of substitution measurement.