Shenzhen Huatongwei International Inspection Co., Ltd.
Keji Nan No.12 Road, Hi-tech Park, Shenzhen, China
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FCC REPORT

Report Reference No. ..... :	**TRE1509010701**	R/C…….: 74567
FCC ID ..... :	**WA6I134**	
Applicant's name ..... :	**Verykool USA INC**	
Address.....:	3636 Nobel Drive, Suite 325,San Diego,CA 92122,USA	
Manufacturer.....:	MOBIWIRE MOBILES (NINGBO) CO.,LTD	
Address.....:	No.999,Dacheng East Road,Fenghua City,Zhejiang Province,China	
Test item description ..... :	Mobile Phone	
Trade Mark .....:	verykool	
Model/Type reference.....:	i134	
Listed Model(s) .....:	-	
Standard ..... :	**FCC Part 22: PUBLIC MOBILE SERVICES** **FCC Part 24:PERSONAL COMMUNICATIONS SERVICES** **FCC Part 27:MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES**	
Date of receipt of test sample……..:	Sep 28, 2015	
Date of testing……:	Sep 29, 2015- Oct 19, 2015	
Date of issue……...:	Oct 20, 2015	
Result..... ……..:	**Pass**	

Compiled by (position+printed name+signature)..:	File administrators Candy Liu	Candy Liu
Supervised by (position+printed name+signature)..:	Project Engineer Lion Cai	Lion Cai
Approved by (position+printed name+signature)..:	Manager Hans Hu	Hans Hu

Testing Laboratory Name ..... :	**Shenzhen Huatongwei International Inspection Co., Ltd**
Address.....:	Bldg3, Hongfa Hi-tech Industrial Park, Genyu Road, Shenzhen, China

Contents

1. TEST STANDARDS ANDTEST DESCRIPTION

1.1. Test Standards

The tests were performed according to following standards:

FCC Part 22:PRIVATE LAND MOBILE RADIO SERVICES.
FCC Part 24:PUBLIC MOBILE SERVICES
FCC Part 27:MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES
TIA/EIA 603 D June 2010:Land Mobile FM or PM Communications Equipment Measurement and Performance Standards.
47 CFR FCC Part 15 Subpart B: - Unintentional Radiators
FCC Part 2:FREQUENCY ALLOCA-TIONS AND RADIO TREATY MAT-TERS; GENERAL RULES AND REG-ULATIONS
KDB971168 D01:2013-06-07Procedures for Compliance Measurement of the FundamentalEmission Power of Licensed Wideband (> 1 MHz) DigitalTransmission Systems
ANSI C63.4:2009 Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

1.2. Test Description

Test Item	Section in CFR 47	Result
AC Power Conducted Emission	Part 15.207	Pass
RF Output Power	Part 2.1046 Part 22.913 (a)(2) Part 24.232 (c) Part 27.50 (d)	Pass
Modulation Characteristics	Part 2.1047	Pass
99% & -26 dB Occupied Bandwidth	Part 2.1049 Part 22.917 Part 24.238	Pass
Spurious Emissions at Antenna Terminal	Part 2.1051 Part 22.917 (a) Part 24.238 (a) Part 27.53 (h)	Pass
Field Strength of Spurious Radiation	Part 2.1053 Part 22.917 (a) Part 24.238 (a) Part 27.53 (h)	Pass
Out of band emission, Band Edge	Part 22.917 (a) Part 24.238 (a) Part 27.53 (h)	Pass
Frequency stability vs. temperature	Part 2.1055(a)(1)(b)	Pass
Frequency stability vs. voltage	Part 2.1055(d)(1)(2)	Pass

Remark: The measurement uncertainty is not included in the test result.

2. SUMMARY

2.1. Client Information

Applicant:	Verykool USA INC
Address:	3636 Nobel Drive, Suite 325,San Diego,CA 92122,USA
Manufacturer:	MOBIWIRE MOBILES (NINGBO) CO.,LTD
Address:	No.999,Dacheng East Road,Fenghua City,Zhejiang Province,China

2.2. Product Description

Name of EUT	Mobile Phone
Trade Mark:	verykool
Model No.:	i134
Listed Model(s):	-
Power supply:	DC 3.7V From internal battery
Adapter information:	Model:QBAR3G Input:AC 100-300V, 50/60Hz, 0.12A Output: 5.0Vd.c.,0.55A
2G:	
Support Network:	GSM, GPRS, EGPRS
Support Band:	GSM850, DCS1900
Modulation:	GSM/GPRS: GMSK EGPRS: GMSK
Transmit Frequency:	GSM850: 824.20MHz-848.80MHz PCS1900: 1850.20MHz-1909.80MHz
Receive Frequency:	GSM850: 869.20MHz-893.80MHz PCS1900: 1930.20MHz-1989.80MHz
GPRS Class:	12
EGPRS Class:	12
Antenna type:	Intergal Antenna
Antenna gain:	GSM850:-4dBi PCS1900:-1dBi
Hardware version:	V01
Software version:	I134_VK_WOM_SINGLE_SW_V1_0
3G:	
Operation Band:	FDD Band II and FDD Band IV FDD Band V
Power Class:	Power Class 3
Modilation Type:	QPSK for WCDMA/HSUPA/HSDPA
WCDMA Release Version:	Release 7
HSDPA Release Version:	Category 14
HSUPA Release Version:	Category 6
DC-HSUPA Release Version:	Not Supported
Antenna type:	Intergal Antenna
Antenna gain:	Band II:-1.0, Band IV:-2dBi,Band V:-4.0dBi

Test Frequency:

GSM 850		PCS1900	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
128	824.20	512	1850.20
190	836.60	661	1880.00
251	848.80	810	1909.80

FDD Band II		FDD Band V	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
9262	1852.4	4132	826.40
9400	1880.0	4182	836.60
9538	1907.6	4233	846.60

FDD Band IV		-	
Channel	Frequency (MHz)	-	-
1313	1712.6	-	-
1450	1740.0	-	-
1512	1752.4	-	-

2.3. EUT operation mode

The EUT has been tested under typical operating condition. The Applicant providessoftware to control the EUT for staying in continous transmitting and receiving mode for testing.

2.4. EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

● - supplied by the manufacturer

○ - supplied by the lab

○	PowerCable	Length (m) :	/
		Shield :	/
		Detachable :	/
○	Multimeter	Manufacturer :	/
		Model No. :	/

2.5. Modifications

No modifications were implemented to meet testing criteria.

3. TEST ENVIRONMENT

3.1. Address of the test laboratory

Laboratory:Shenzhen Huatongwei International Inspection Co., Ltd. (Gongming)
Address: Bldg3, Hongfa Hi-tech Industrial Park, Genyu Road, Shenzhen, China
Phone: 86-755-26748019 Fax: 86-755-26748089

3.2. Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

CNAS-Lab Code: L1225

Shenzhen Huatongwei International Inspection Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories, Date of Registration: February 28, 2015. Valid time is until February 27, 2018.

A2LA-Lab Cert. No. 2243.01

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing. Valid time is until Sept 30, 2015.

FCC-Registration No.: 662850

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Registration 662850, Renewal date Jul. 01, 2012, valid time is until Jun. 01, 2015.

FCC-Registration No.: 317478

Shenzhen Huatongwei International Inspection Co., Ltd. (Gongming EMC Laboratory) has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Registration 317478, Renewal date July 18, 2014, valid time is until July. 18, 2017.

IC-Registration No.: 5377A

The 3m Alternate Test Site of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 5377A on Dec. 31, 2013, valid time is until Dec. 31, 2016.

IC-Registration No.: 5377B

The 3m Alternate Test Site of Shenzhen Huatongwei International Inspection Co., Ltd. (Gongming EMC Laboratory) has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 5377B on September 3, 2014, valid time is until September 3, 2017.

ACA

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our A2LA accreditation.

VCCI

The 3m Semi-anechoic chamber (12.2m×7.95m×6.7m) of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.:R-2484. Date of Registration: Dec. 20, 2012. Valid time is until Dec. 29, 2015.
Radiated disturbance above 1GHz measurement of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-292. Date of Registration: Dec. 24, 2013. Valid time is until Dec. 23, 2016.
Main Ports Conducted Interference Measurement of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: C-2726. Date of Registration: Dec. 20, 2012. Valid time is until Dec. 19, 2015.
Telecommunication Ports Conducted Interference Measurement of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: T-1837. Date of Registration: May 07, 2013. Valid time is until May 06, 2016.

DNV

Shenzhen Huatongwei International Inspection Co., Ltd. has been found to comply with the requirements of DNV towards subcontractor of EMC and safety testing services in conjunction with the EMC and Low voltage Directives and in the voluntary field. The acceptance is based on a formal quality Audit and follow-ups according to relevant parts of ISO/IEC Guide 17025 (2005), in accordance with the requirements of the DNV Laboratory Quality Manual towards subcontractors. Valid time is until Aug. 24, 2016.

3.3. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Normal Temperature/Tnor:	15~35°C
lative Humidity	30~60 %
Air Pressure	950-1050 hPa

3.4. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to TR-100028-01"Electromagnetic compatibilityand Radio spectrum Matters (ERM);Uncertainties in the measurementof mobile radio equipment characteristics;Part 1"and TR-100028-02 "Electromagnetic compatibilityand Radio spectrum Matters (ERM);Uncertainties in the measurementof mobile radio equipment characteristics;Part 2 " and is documented in the Shenzhen Huatongwei International Inspection Co., Ltd quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Shenzhen Huatongwei laboratory is reported:

Test Items	MeasurementUncertainty	Notes
Frequency stability	25 Hz	(1)
Transmitter power conducted	0.57 dB	(1)
Transmitter power Radiated	2.20 dB	(1)
Conducted spurious emission 9KHz-12.75 GHz	1.60 dB	(1)
Conducted Emission 9KHz-30MHz	3.39 dB	(1)
Radiated Emission 30~1000MHz	4.24 dB	(1)
Radiated Emissio 1~18GHz	5.16 dB	(1)
Radiated Emissio 18-40GHz	5.54 dB	(1)
Occupied Bandwidth	---------	(1)
Emission Mask	---------	(1)
Modulation Characteristic	---------	(1)
Transmitter Frequency Behavior	---------	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

3.5. Equipments Used during the Test

AC Power Conducted Emission					
No.	Equipment	Manufacturer	Model No.	SerialNo.	Last Cal.
1	Artificial Mains	Rohde&Schwarz	ESH2-Z5	100028	2014/11/1
2	EMI Test Receiver	Rohde&Schwarz	ESCS 30	100038	2014/11/1
3	Pulse Limiter	Rohde&Schwarz	ESHSZ2	100044	2014/11/1
4	EMI Test Software	Rohde&Schwarz	ES-K1 V1.71	N/A	N/
5	UNIVERSAL RADIO COMMUNICATION	Rohde&Schwarz	CMU200	112012	2014/11/1

Output Power(Conducted) &Occupied Bandwidth&Emission Bandwidth&Band Edge Compliance&Conducted Spurious Emission					
No.	Equipment	Manufacturer	Model No.	SerialNo.	Last Cal.
1	UNIVERSAL RADIO COMMUNICATION	Rohde&Schwarz	CMU200	112012	2014/11/1
2	Spectrum Analyzer	Rohde&Schwarz	FSU26	201141	2014/11/1
3	Splitter	Mini-Circuit	ZAPD-4	400059	2014/11/1

Frequency Stability					
No.	Equipment	Manufacturer	Model No.	SerialNo.	Last Cal.
1	UNIVERSAL RADIO COMMUNICATION	Rohde&Schwarz	CMU200	112012	2014/11/1
2	Spectrum Analyzer	Rohde&Schwarz	FSU26	201141	2014/11/1
3	Climate Chamber	ESPEC	EL-10KA	05107008	2014/11/1
4	Splitter	Mini-Circuit	ZAPD-4	400059	2014/11/1

Output Power (Radiated) &Radiated Spurious Emission					
No.	Equipment	Manufacturer	Model No.	SerialNo.	Last Cal.
1	UNIVERSAL RADIO COMMUNICATION	Rohde&Schwarz	CMU200	112012	2014/11/1
2	Spectrum Analyzer	Rohde&Schwarz	FSU26	201141	2014/11/1
3	HORNANTENNA	ShwarzBeck	9120D	1012	2014/11/1
4	HORNANTENNA	ShwarzBeck	9120D	1011	2014/11/1
5	Ultra-Broadband Antenna	ShwarzBeck	VULB9163	538	2014/11/1
6	Ultra-Broadband Antenna	ShwarzBeck	VULB9163	539	2014/11/1
7	TURNTABLE	MATURO	TT2.0	----	N/A
8	ANTENNA MAST	MATURO	TAM-4.0-P	----	N/A
9	EMI Test Software	Audix	E3	N/A	N/A
10	EMI Test Receiver	Rohde&Schwarz	ESIB 26	100009	2014/11/1
11	RF Test Panel	Rohde&Schwarz	TS / RSP	335015/ 0017	N/A
12	High pass filter	Compliance Direction systems	BSU-6	34202	2014/11/1
13	Splitter	Mini-Circuit	ZAPD-4	400059	2014/11/1
14	Horn Antenna	SCHWARZBECK	BBHA9170	25841	2014/11/1
15	Horn Antenna	SCHWARZBECK	BBHA9170	25842	2014/11/1
16	Preamplifier	ShwarzBeck	BBV 9718	BBV 9718	2014/11/1
17	Broadband Preamplifier	ShwarzBeck	BBV743	9743-0079	2014/11/1
18	Signal Generator	Rohde&Schwarz	SMF100A	101932	2014/11/1
19	Amplifer	Compliance Direction systems	PAP1-4060	120	2014/11/1
20	TURNTABLE	ETS	2088	2149	N/A
21	ANTENNA MAST	ETS	2075	2346	N/A
22	HORNANTENNA	Rohde&Schwarz	HF906	100068	2014/11/1
23	HORNANTENNA	Rohde&Schwarz	HF906	100039	2014/11/1

The calibration interval was one year.

4. TEST CONDITIONS AND RESULTS

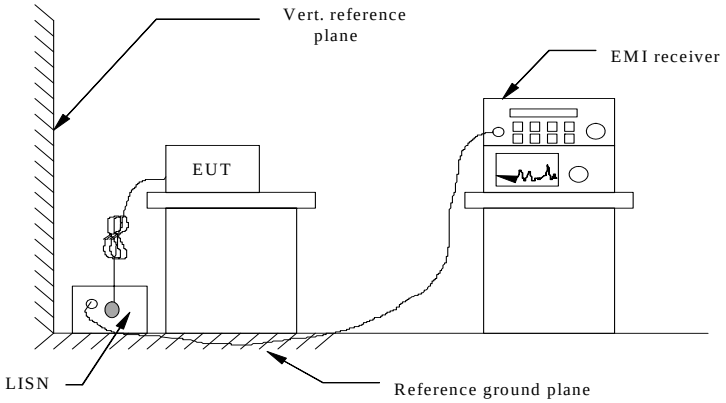
4.1. Conducted Emissions Test

LIMIT:

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

* Decreasing linearly with the logarithmof the frequency

TEST CONFIGURATION



TEST PROCEDURE

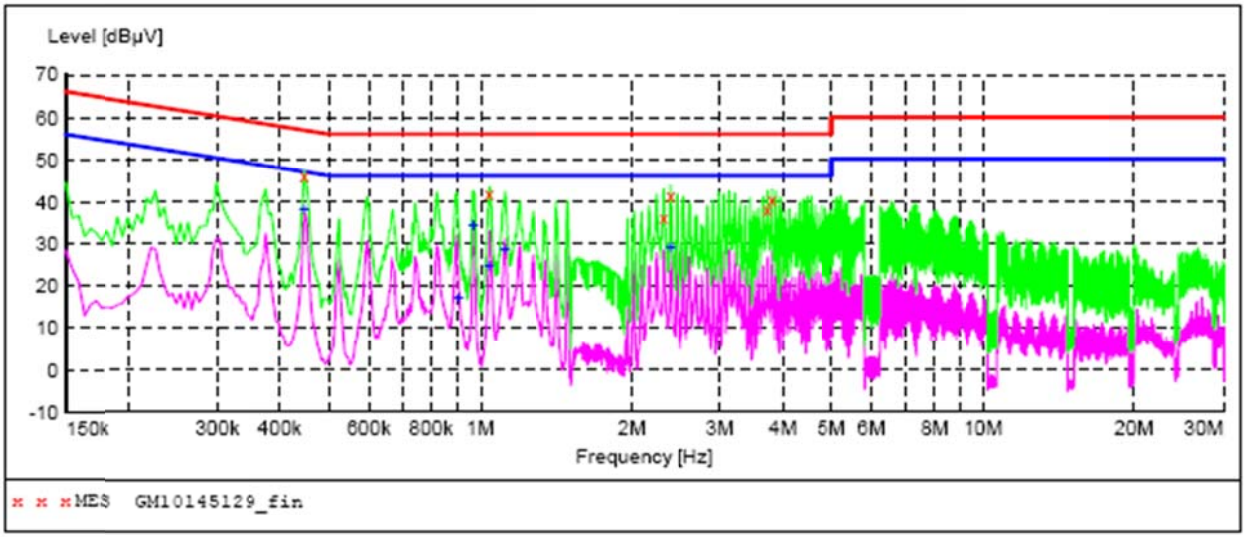
1 The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system; a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.4-2009.
2 Support equipment, if needed, was placed as per ANSI C63.4-2009.
3 All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4-2009.
4 Ifa EUT received DC power from the adapter, the adapter received AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
5 All support equipments received AC power from a second LISN, if any.
6 The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
7 Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.
8 During the above scans, the emissions were maximized by cable manipulation.

TEST RESULTS

Note: We tested all modes and recorded the worst case at GSM850

GSM850

Test mode:	GSM850	Polarization	L



MEASUREMENT RESULT: "GM10145129_fin"

10/14/2015 1:49PM

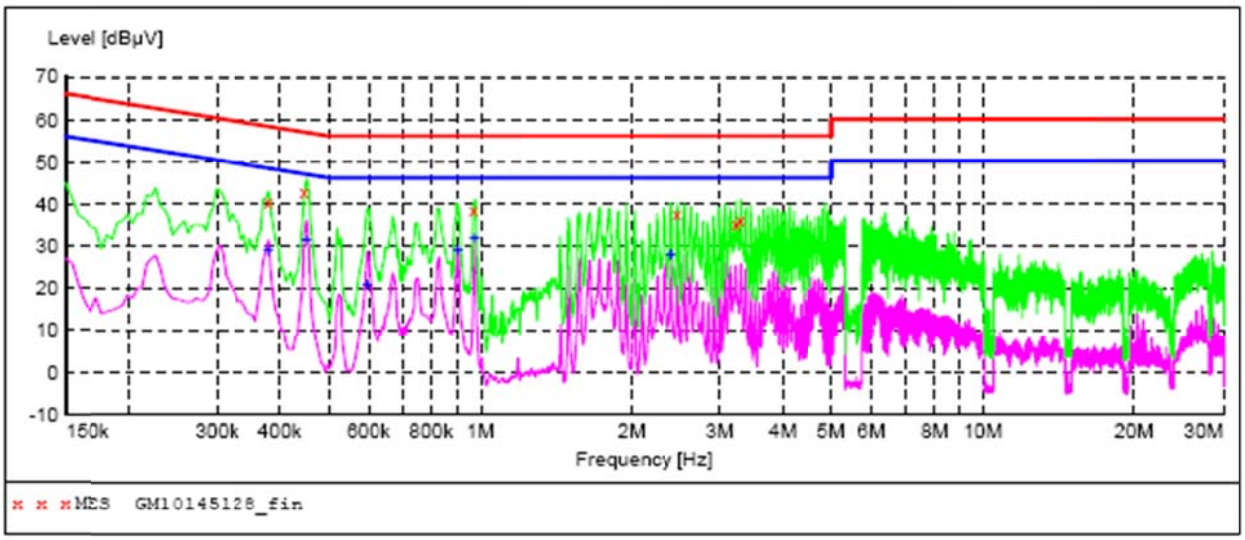
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.447000	46.00	10.2	57	10.9	QP	L1	GND
1.041000	41.50	10.2	56	14.5	QP	L1	GND
2.314500	36.00	10.3	56	20.0	QP	L1	GND
2.386500	41.20	10.3	56	14.8	QP	L1	GND
3.727500	37.90	10.3	56	18.1	QP	L1	GND
3.799500	40.10	10.3	56	15.9	QP	L1	GND

MEASUREMENT RESULT: "GM10145129_fin2"

10/14/2015 1:49PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.447000	37.70	10.2	47	9.2	AV	L1	GND
0.906000	17.20	10.2	46	28.8	AV	L1	GND
0.969000	33.90	10.2	46	12.1	AV	L1	GND
1.041000	24.80	10.2	46	21.2	AV	L1	GND
1.117500	28.20	10.2	46	17.8	AV	L1	GND
2.386500	28.80	10.3	46	17.2	AV	L1	GND

Test mode:	GSM850	Polarization	N



MEASUREMENT RESULT: "GM10145128_fin"

10/14/2015 1:45PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.379500	40.20	10.2	58	18.1	QP	N	GND
0.447000	42.60	10.2	57	14.3	QP	N	GND
0.969000	38.30	10.2	56	17.7	QP	N	GND
2.467500	37.60	10.3	56	18.4	QP	N	GND
3.223500	35.10	10.3	56	20.9	QP	N	GND
3.295500	36.00	10.3	56	20.0	QP	N	GND

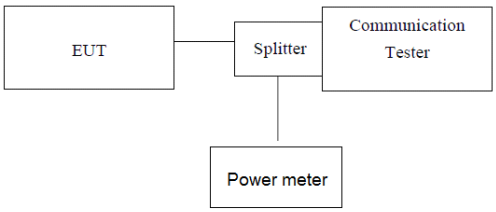
MEASUREMENT RESULT: "GM10145128_fin2"

10/14/2015 1:45PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.379500	29.10	10.2	48	19.2	AV	N	GND
0.451500	31.40	10.2	47	15.4	AV	N	GND
0.595500	20.90	10.2	46	25.1	AV	N	GND
0.901500	29.10	10.2	46	16.9	AV	N	GND
0.973500	31.70	10.2	46	14.3	AV	N	GND
2.395500	28.00	10.3	46	18.0	AV	N	GND

4.2. Conducted Peak Output Power

TEST CONFIGURATION



Note: Measurement setup for testing on Antenna connector

TEST PROCEDURE

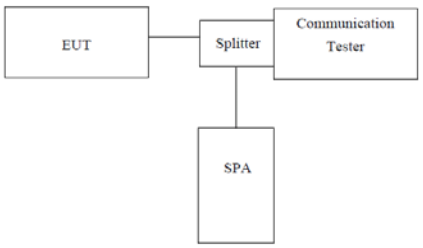
1. The transmitter output port was connected to base station.
2. The RF output of EUT was connected to the power meter by RF cable and attenuator, the path loss was compensated to the results for each measurement.
3. Set EUT at maximum power through base station.
4. Select lowest, middle, and highest channels for each band and different modulation.
5. Measure the maximum burst average power.

TEST RESULTS

EUT Mode	Channel	Frequency (MHz)	Power (dBm)
GSM 850 (GMSK)	128	824.20	32.34
	190	836.60	33.15
	251	848.80	**33.24**
GPRS850 (GMSK,1Slot)	128	824.20	32.38
	190	836.60	**33.14**
	251	848.80	33.06
EGPRS850 (GMSK,1Slot)	128	824.20	32.48
	190	836.60	**33.25**
	251	848.80	33.04
PCS1900 (GMSK)	512	1850.20	30.18
	661	1880.00	30.26
	810	1909.80	**30.47**
GPRS1900 (GMSK,1Slot)	512	1850.20	30.52
	661	1880.00	**30.63**
	810	1909.80	30.47
EGPRS1900 (GMSK,1Slot)	512	1850.20	**30.74**
	661	1880.00	30.58
	810	1909.80	30.16
WCDMA Band II	9262	1852.40	21.98
	9400	1880.00	21.47
	9538	1907.60	**22.08**
WCDMA Band IV	1313	1712.6	21.36
	1450	1740.0	21.49
	1512	1752.4	**21.85**
WCDMA Band V	4132	826.40	**21.96**
	4183	836.60	21.24
	4233	846.60	21.63

4.3. Occupy Bandwidth

TEST CONFIGURATION



Note: Measurement setup for testing on Antenna connector

TEST PROCEDURE

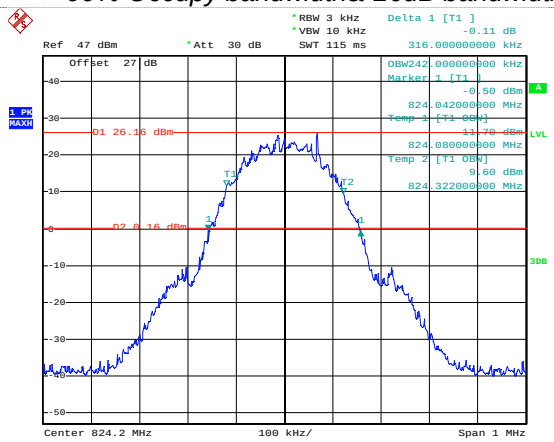
1. The EUT's output RF connector was connected with a short cable to the spectrum analyzer
2. RBWwas set to about 1% of emission BW, VBW= 3 times RBW.
3. -26dBc display line was placed on the screen (or 99% bandwidth), the occupied bandwidth isthe delta frequency between the two points where the display line intersects the signal trace.

TEST RESULTS

EUT Mode	Channel	Frequency (MHz)	99% Occupy bandwidth (KHz)	-26dB bandwidth (KHz)
GSM 850 (GMSK)	128	824.20	242	316
	190	836.60	248	312
	251	848.80	244	312
GPRS850 (GMSK,1Slot)	128	824.20	246	316
	190	836.60	246	316
	251	848.80	244	318
EGPRS850 (GMSK,1Slot)	128	824.20	244	312
	190	836.60	248	320
	251	848.80	246	314
PCS1900 (GMSK)	512	1850.20	244	314
	661	1880.00	246	314
	810	1909.80	248	314
GPRS1900 (GMSK,1Slot)	512	1850.20	248	324
	661	1880.00	246	320
	810	1909.80	250	314
EGPRS1900 (GMSK,1Slot)	512	1850.20	244	316
	661	1880.00	248	324
	810	1909.80	248	324
WCDMA Band II	9262	1852.4	4180	4760
	9400	1880.0	4180	4720
	9538	1907.6	4200	4740
WCDMA Band IV	1313	1712.6	4160	4700
	1450	1740.0	4160	4700
	1512	1752.4	4180	4700
WCDMA Band V	4132	826.40	4180	4720
	4183	836.60	4180	4720
	4233	846.60	4180	4700

GSM850 For GMSK Moudlation

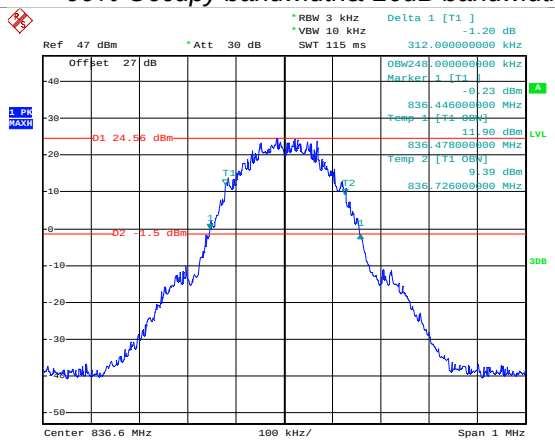
99% Occupy bandwidth&-26dB bandwidth



Date: 15.OCT.2015 14:55:06

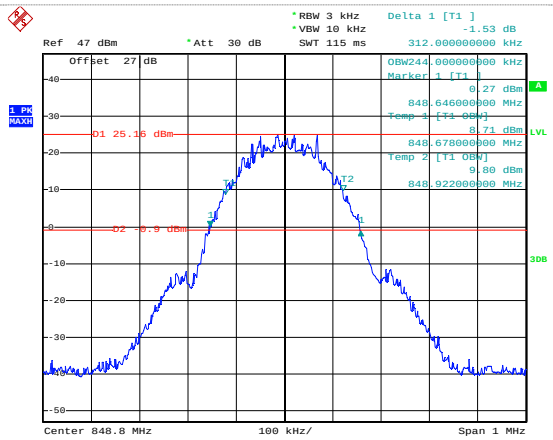
Channel 128

99% Occupy bandwidth&-26dB bandwidth



Date: 15.OCT.2015 14:58:11

Channel 190

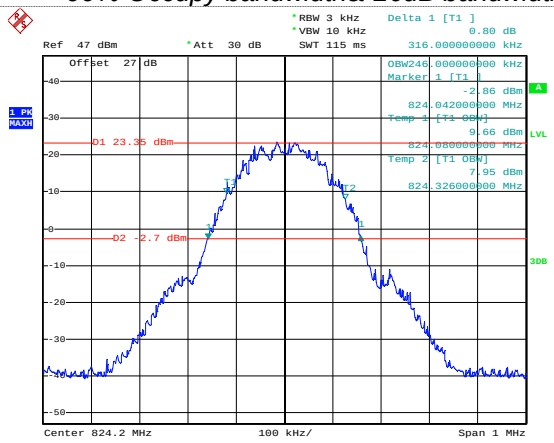


Date: 15.OCT.2015 15:00:56

Channel 251

GPRS850 For GMSK Moudlation

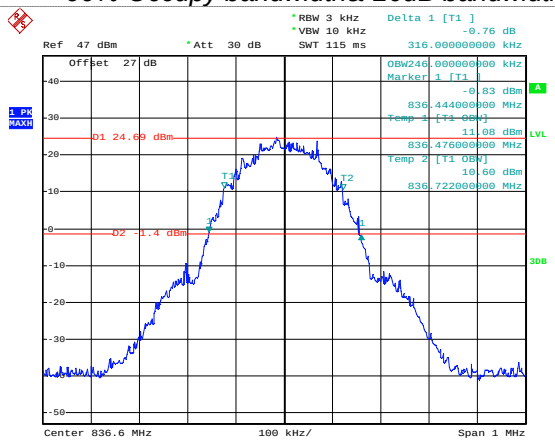
99% Occupy bandwidth&-26dB bandwidth



Date: 15.OCT.2015 14:56:15

Channel 128

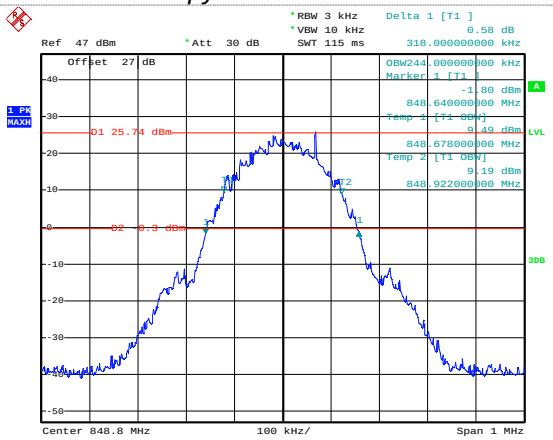
99% Occupy bandwidth&-26dB bandwidth



Date: 15.OCT.2015 14:58:51

Channel 190

99% Occupy bandwidth&-26dB bandwidth



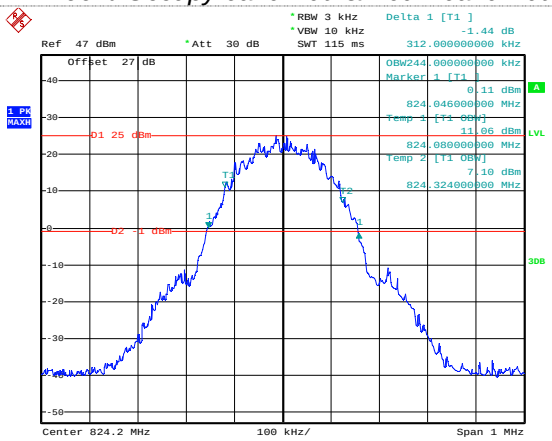
Date: 15.OCT.2015 15:01:31

Channel 251

99% Occupy bandwidth&-26dB bandwidth

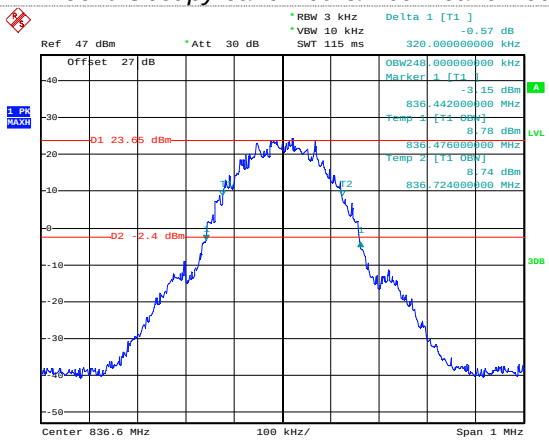
EGPRS850 For GMSK Moudlation

99% Occupy bandwidth&-26dB bandwidth



Date: 15.OCT.2015 14:57:10

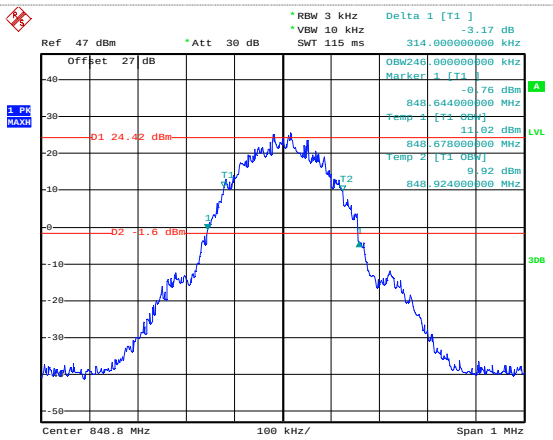
99% Occupy bandwidth&-26dB bandwidth



Date: 15.OCT.2015 14:59:47

Channel 128

Channel 190

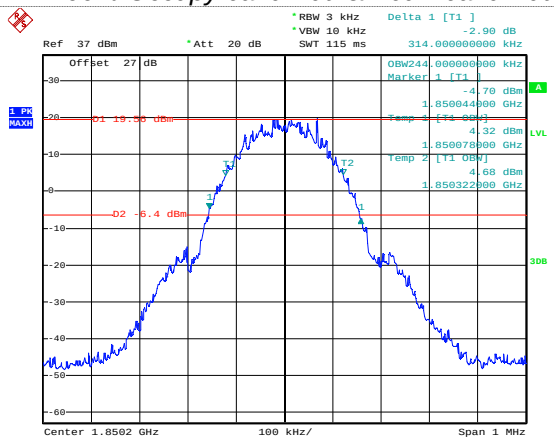


Date: 15.OCT.2015 15:02:14

Channel 251

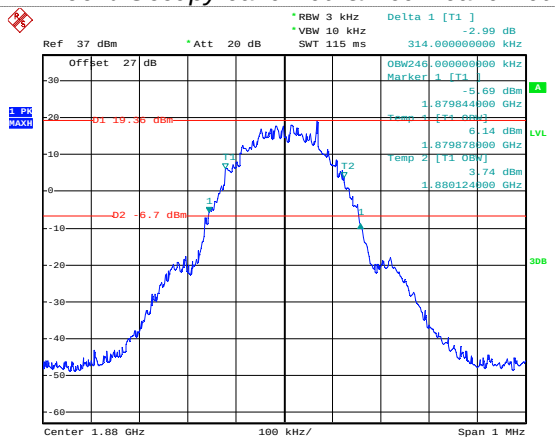
PCS1900 For GMSK Moudlation

99% Occupy bandwidth&-26dB bandwidth



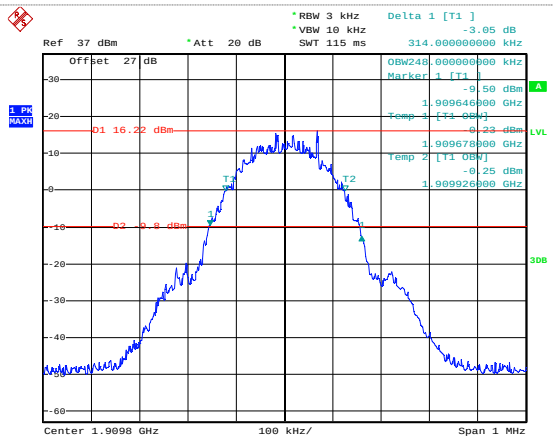
Date: 15.OCT.2015 15:15:07

99% Occupy bandwidth&-26dB bandwidth



Date: 15.OCT.2015 15:17:59

Channel 512

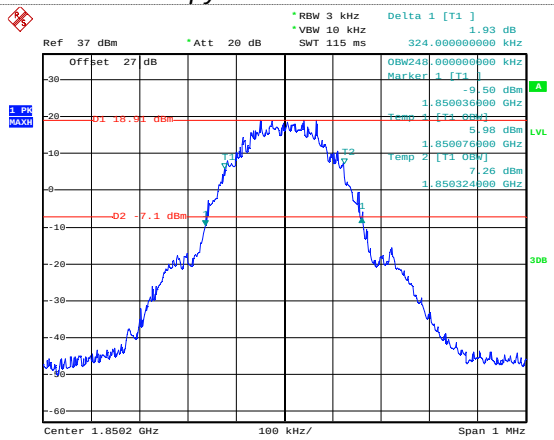


Date: 15.OCT.2015 15:20:18

Channel 810

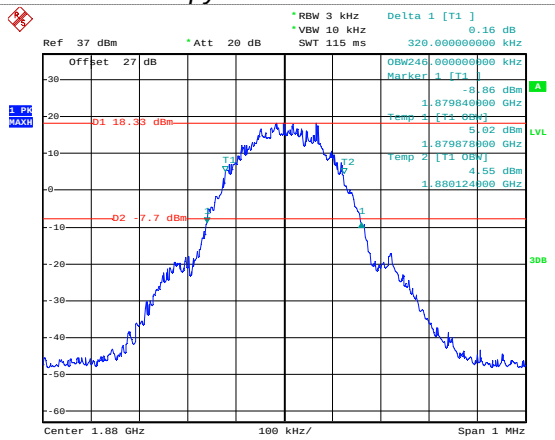
GPRS1900 For GMSK Moudlation

99% Occupy bandwidth&-26dB bandwidth



Date: 15.OCT.2015 15:15:51

99% Occupy bandwidth&-26dB bandwidth

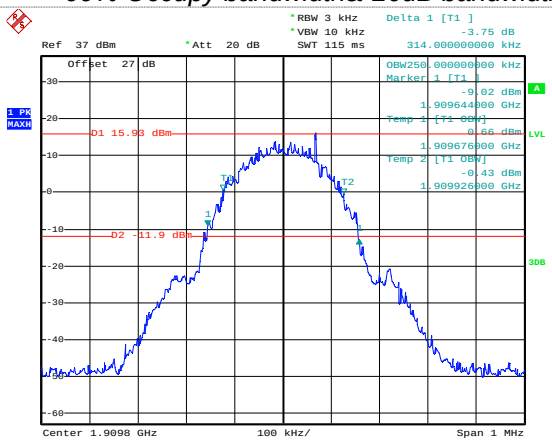


Date: 15.OCT.2015 15:19:00

Channel 512

Channel 661

99% Occupy bandwidth&-26dB bandwidth



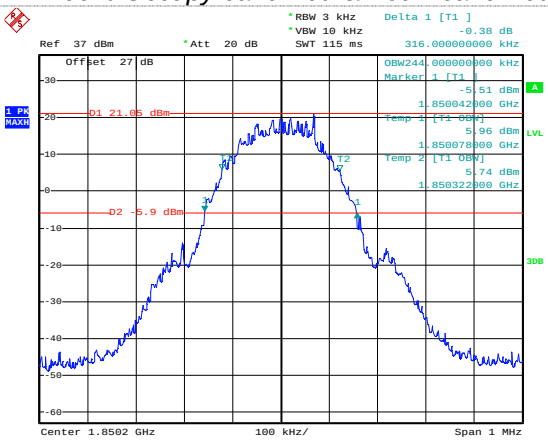
Date: 15.OCT.2015 15:20:59

99% Occupy bandwidth&-26dB bandwidth

Channel 810

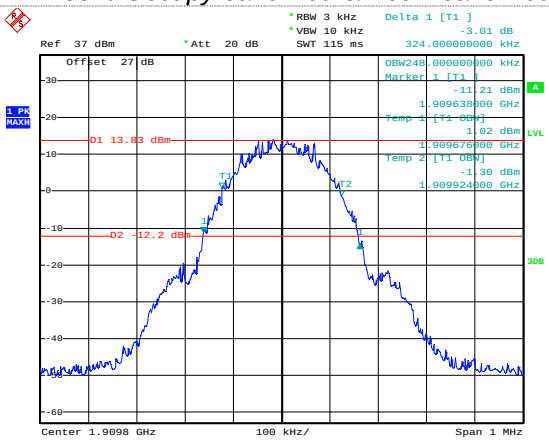
EGPRS1900 For GMSK Moudlation

99% Occupy bandwidth&-26dB bandwidth



Date: 15.OCT.2015 15:16:43

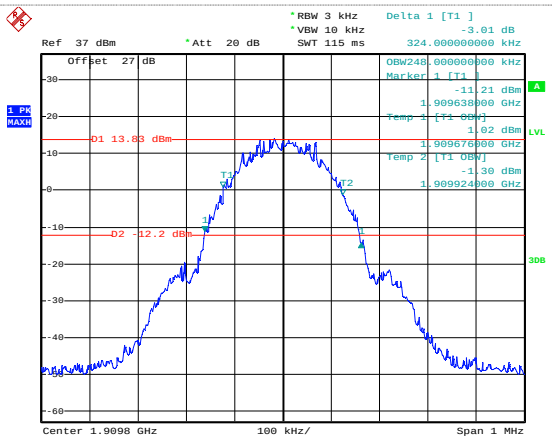
99% Occupy bandwidth&-26dB bandwidth



Date: 15.OCT.2015 15:22:39

Channel 512

Channel 661

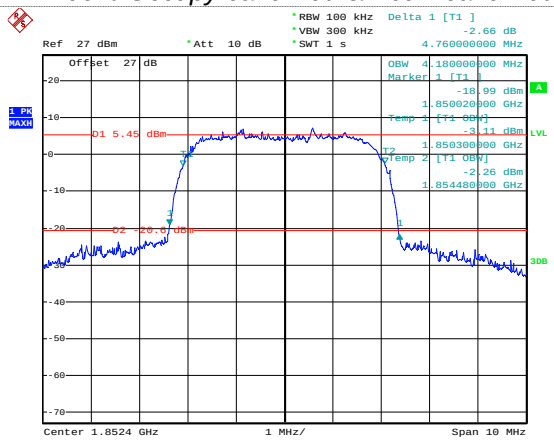


Date: 15.OCT.2015 15:22:39

Channel 810

WCDMA Band II

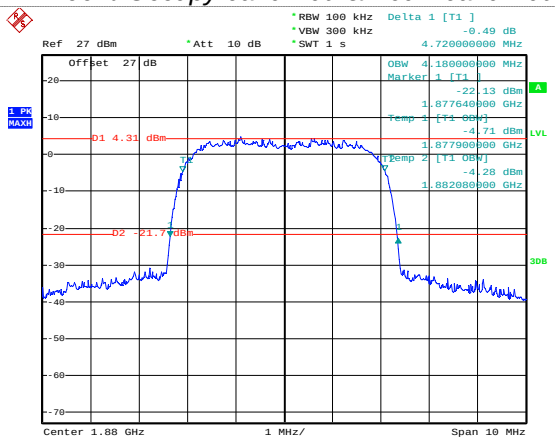
99% Occupy bandwidth&-26dB bandwidth



Date: 14.OCT.2015 21:30:17

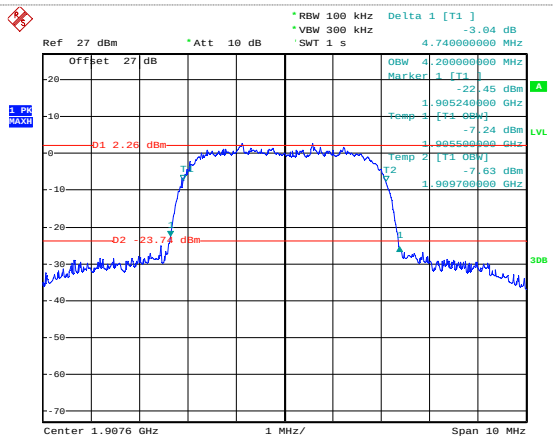
Channel 9262

99% Occupy bandwidth&-26dB bandwidth



Date: 14.OCT.2015 21:29:14

Channel 9400

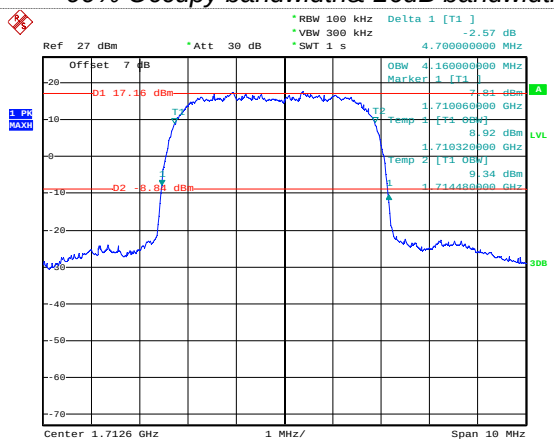


Date: 14.OCT.2015 21:28:05

Channel 9538

WCDMA Band IV

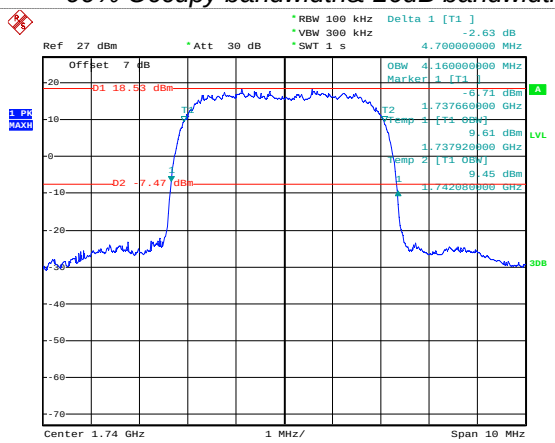
99% Occupy bandwidth&-26dB bandwidth



Date: 14.OCT.2015 20:45:33

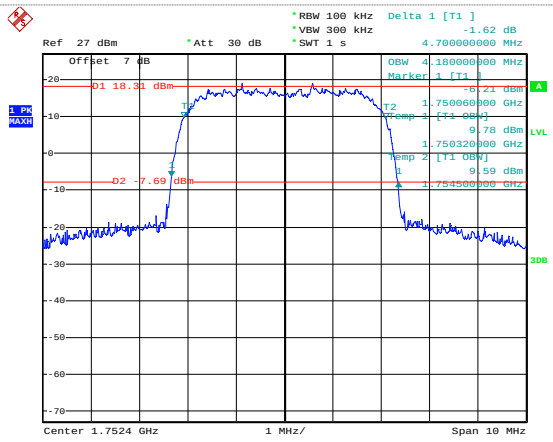
Channel 1313

99% Occupy bandwidth&-26dB bandwidth



Date: 14.OCT.2015 20:46:55

Channel 1450

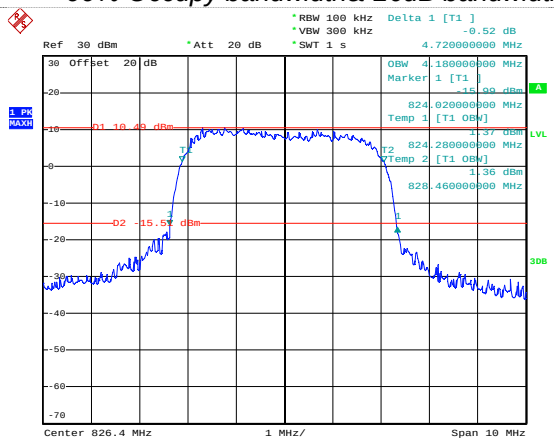


Date: 14.OCT.2015 20:50:33

Channel 1512

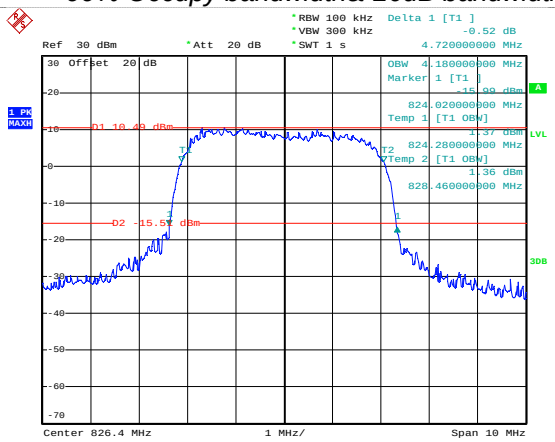
WCDMA Band V

99% Occupy bandwidth&-26dB bandwidth

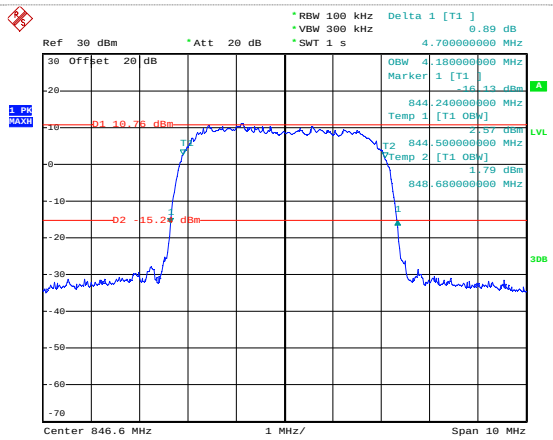


Channel 4132

99% Occupy bandwidth&-26dB bandwidth



Channel 4183



Channel 4233

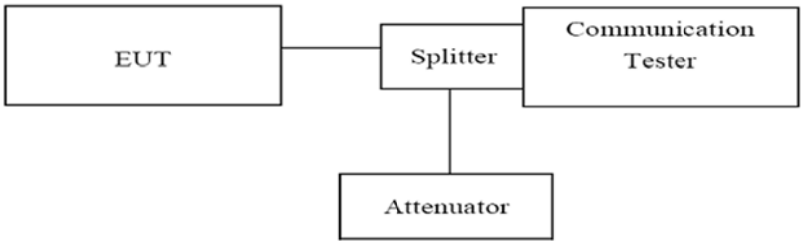
4.4. Out of band emission at antenna terminals

LIMIT

Part 24.238 and Part 22.917 specify that 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.

The specification that emissions shall be attenuated below the transmitter power (P) by at least 43 + 10 log (P) dB, translates in the relevant power range (1 to 0.001 W) to -13 dBm. At 1 W the specified minimum attenuation becomes 43 dB and relative to a 30 dBm (1 W) carrier becomes a limit of -13 dBm. At 0.001 W (0 dBm) the minimum attenuation is 13 dB, which again yields a limit of -13 dBm. In this way a translation of the specification from relative to absolute terms is carried out.

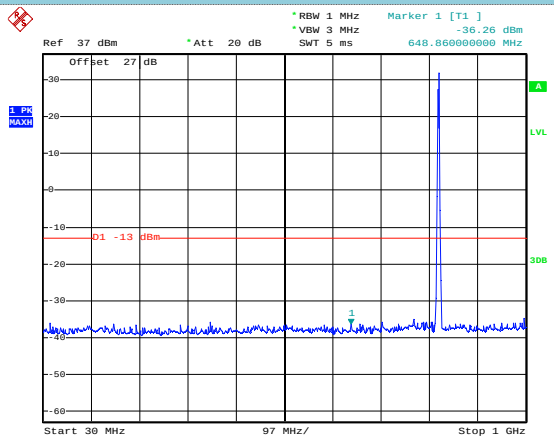
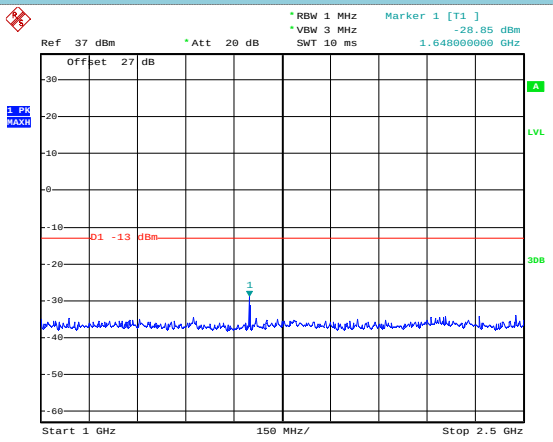
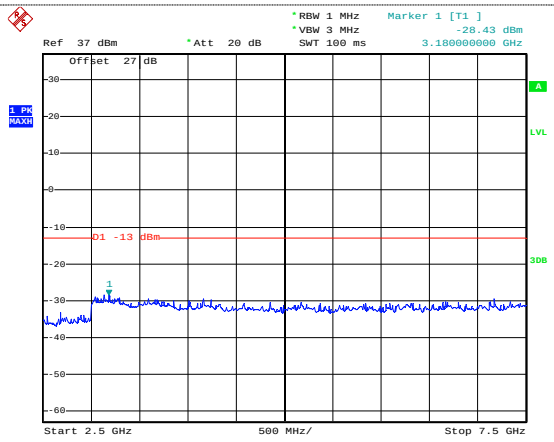
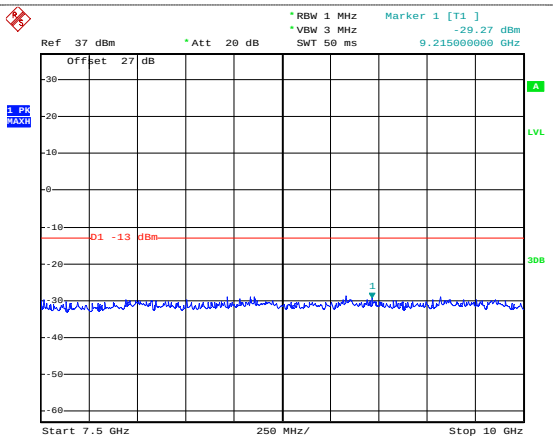
TEST CONFIGURATION

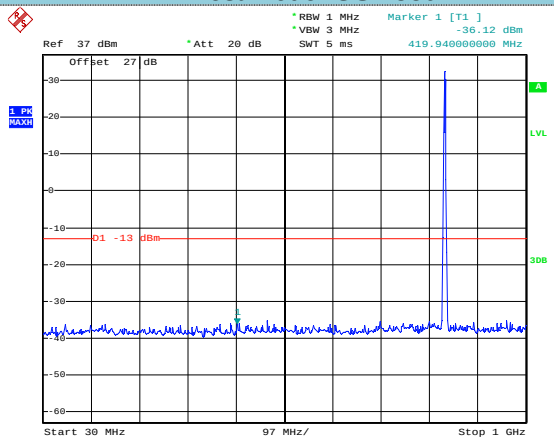
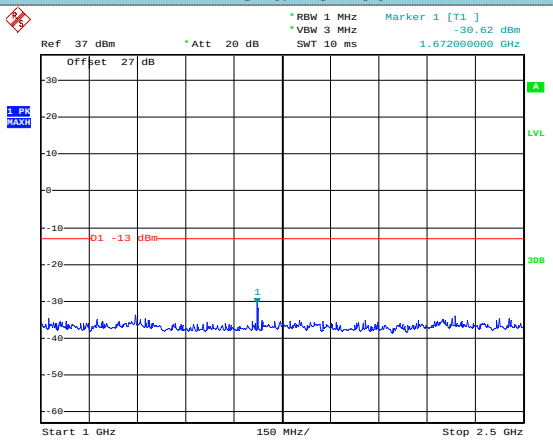


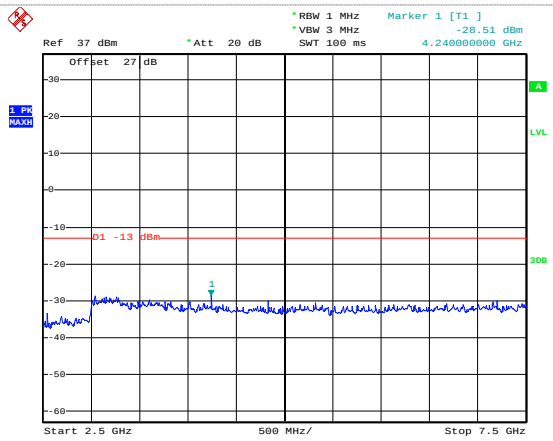
TEST PROCEDURE

1. The RF output of the transceiver was connected to a spectrum analyzer through appropriateattenuation.
2. The resolution bandwidth of the spectrum analyzer was set at 1MHz, sufficientscans were taken to show the out of band Emissions if any up to 10th harmonic.
3. For the out of band: Set the RBW= 1MHz, VBW = 3MHz, Start=30MHz, Stop= 10th harmonic.

TEST RESULTS

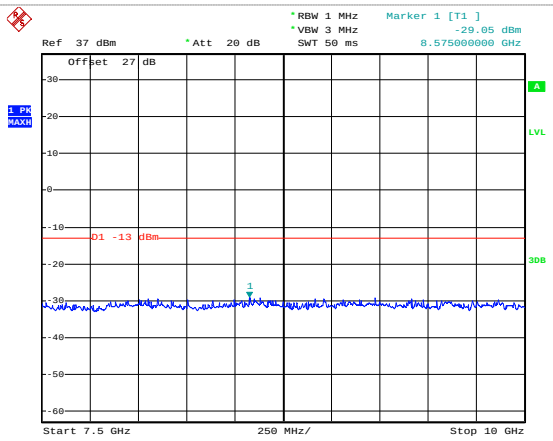
Test mode: GSM850	Channel 128
	
Date: 15.OCT.2015 15:04:45	Date: 15.OCT.2015 15:05:18
30MHz~1GHz	1GHz~2.5GHz
	
Date: 15.OCT.2015 15:06:07	Date: 15.OCT.2015 15:06:58
2.5GHz~7.5GHz	7.5GHz~10GHz

Test mode: GSM850	Channel 190
	
Date: 15.OCT.2015 15:04:22	Date: 15.OCT.2015 15:05:33
30MHz~1GHz	1GHz~2.5GHz



Date: 15.OCT.2015 15:06:17

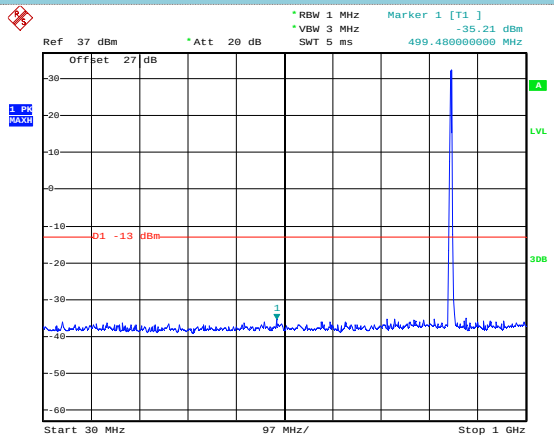
2.5GHz~7.5GHz



Date: 15.OCT.2015 15:07:05

7.5GHz~10GHz

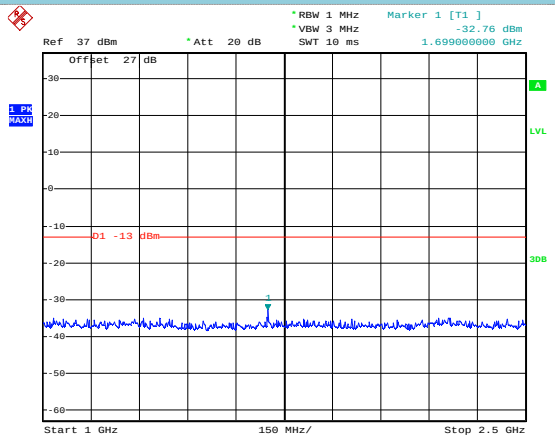
Test mode: GSM850



Date: 15.OCT.2015 15:04:02

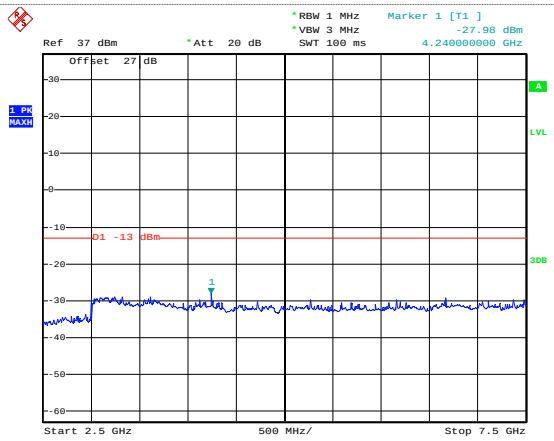
30MHz~1GHz

Channel 251



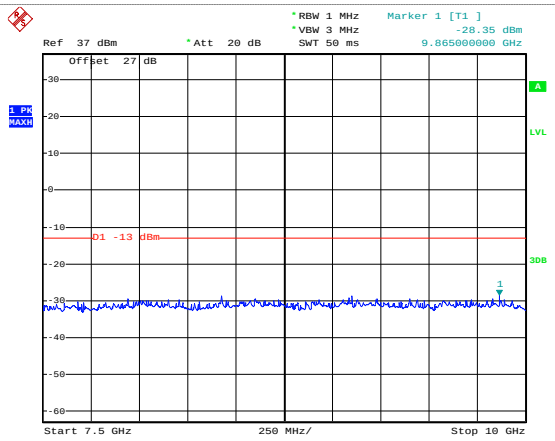
Date: 15.OCT.2015 15:05:44

1GHz~2.5GHz



Date: 15.OCT.2015 15:06:31

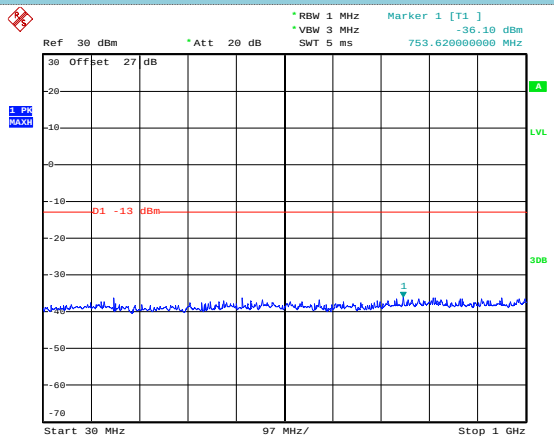
2.5GHz~7.5GHz



Date: 15.OCT.2015 15:07:12

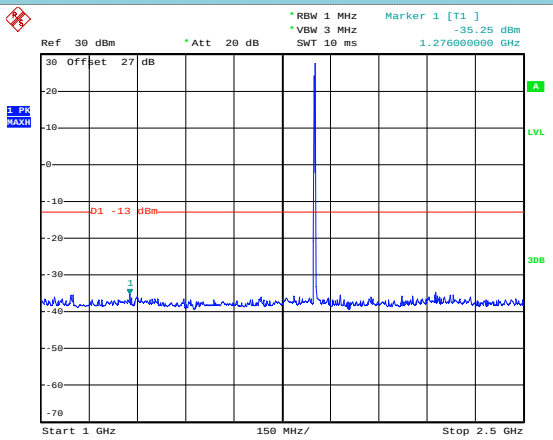
7.5GHz~10GHz

Test mode: PCS1900



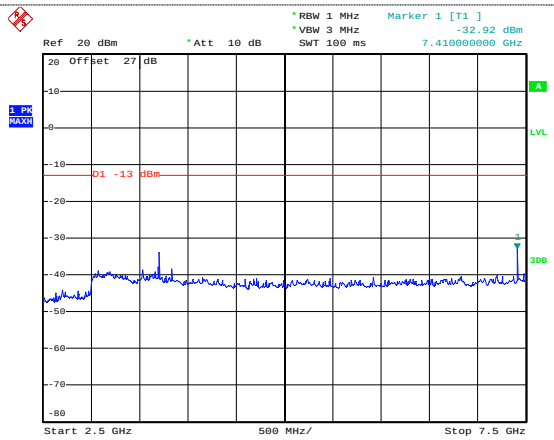
Date: 15.OCT.2015 15:24:06

Channel 512



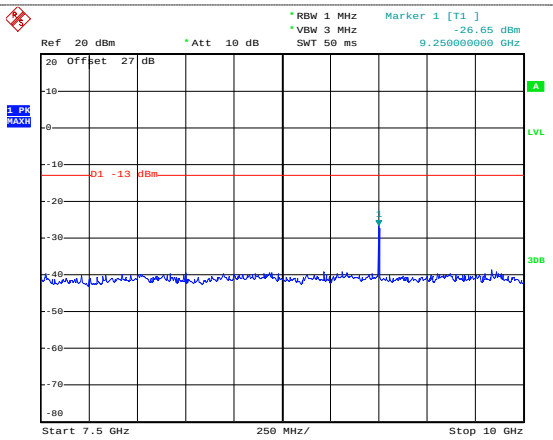
Date: 15.OCT.2015 15:25:22

30MHz~1GHz



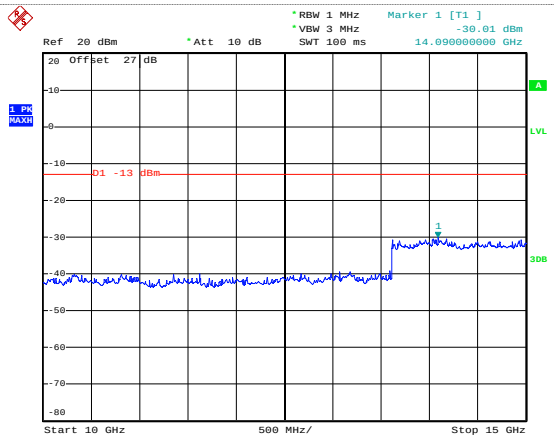
Date: 15.OCT.2015 15:26:00

1GHz~2.5GHz



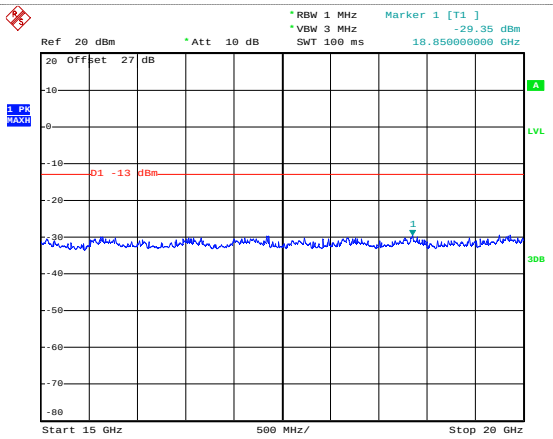
Date: 15.OCT.2015 15:27:41

2.5GHz~7.5GHz



Date: 15.OCT.2015 15:28:01

7.5GHz~10GHz



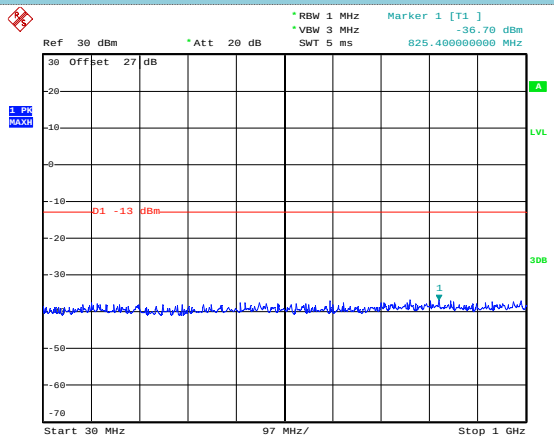
Date: 15.OCT.2015 15:28:33

10GHz~15GHz

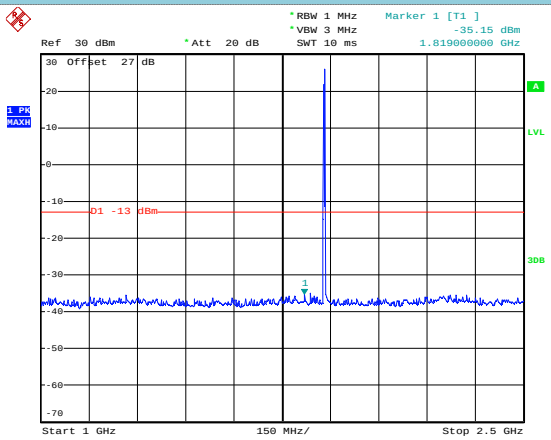
15GHz~20GHz

Test mode: PCS1900

Channel 661

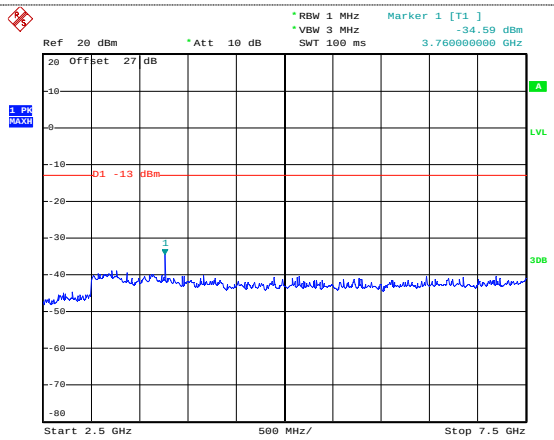


Date: 15.OCT.2015 15:24:13



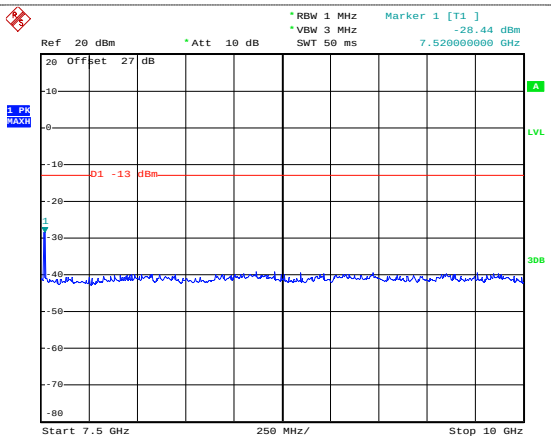
Date: 15.OCT.2015 15:25:04

30MHz~1GHz



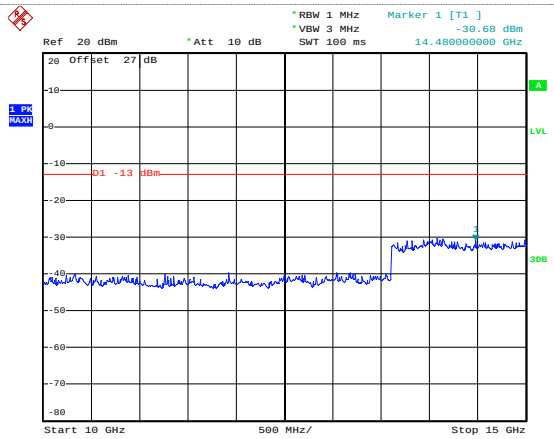
Date: 15.OCT.2015 15:26:13

1GHz~2.5GHz



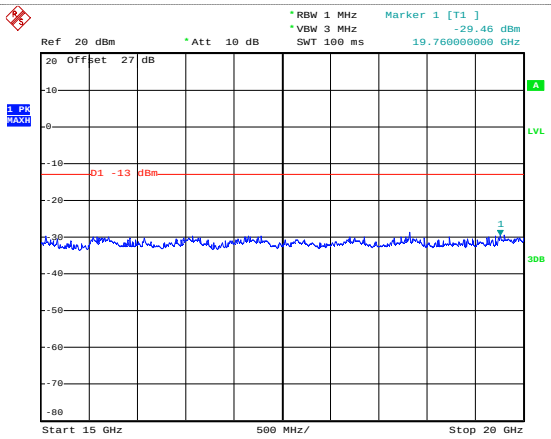
Date: 15.OCT.2015 15:27:25

2.5GHz~7.5GHz



Date: 15.OCT.2015 15:28:07

7.5GHz~10GHz

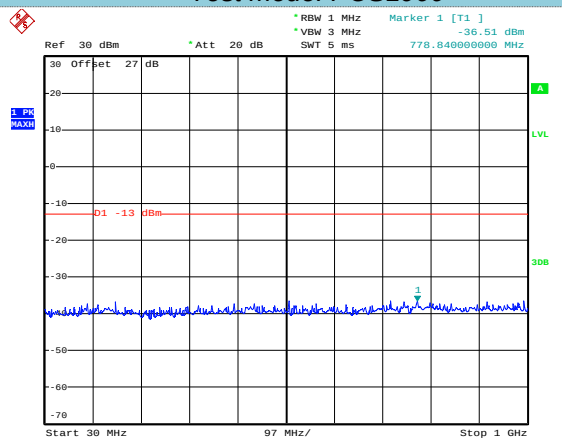


Date: 15.OCT.2015 15:28:39

10GHz~15GHz

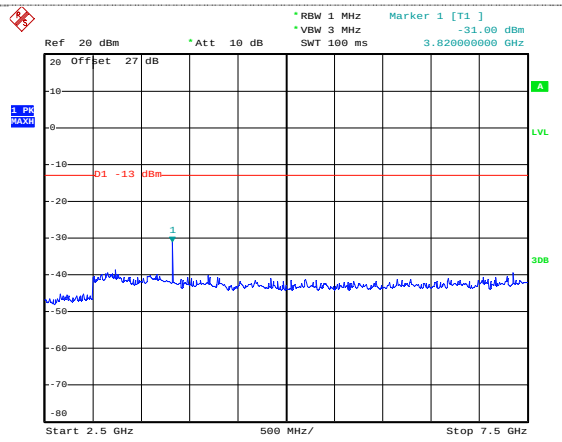
15GHz~20GHz

Test mode: PCS1900



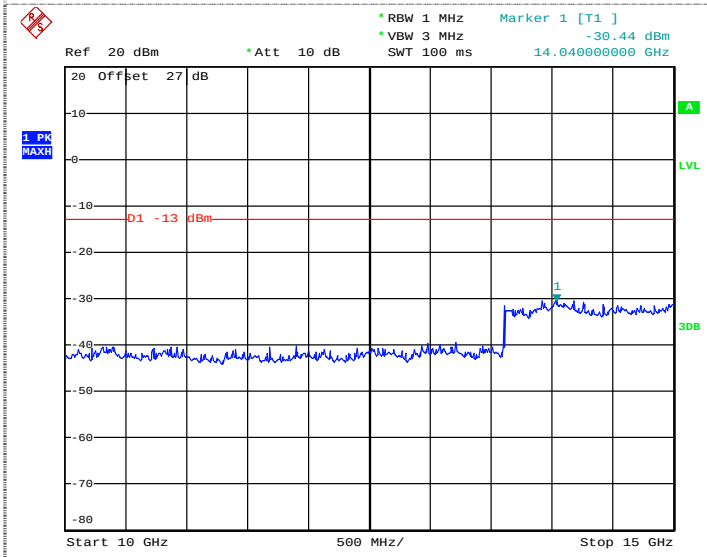
Date: 15.OCT.2015 15:24:20

30MHz~1GHz



Date: 15.OCT.2015 15:26:26

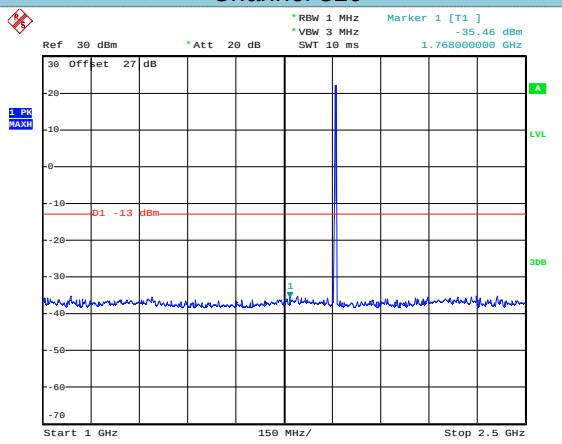
2.5GHz~7.5GHz



Date: 15.OCT.2015 15:28:12

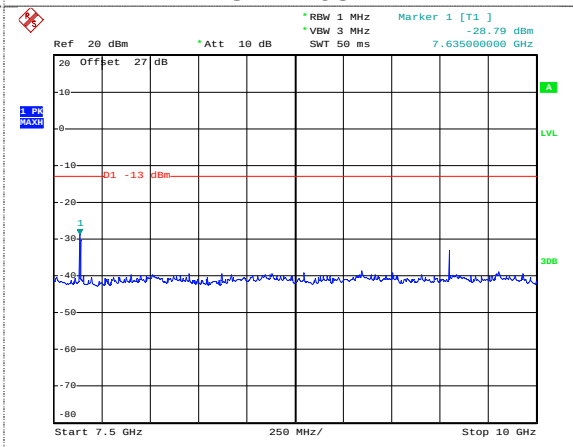
10GHz~15GHz

Channel 810



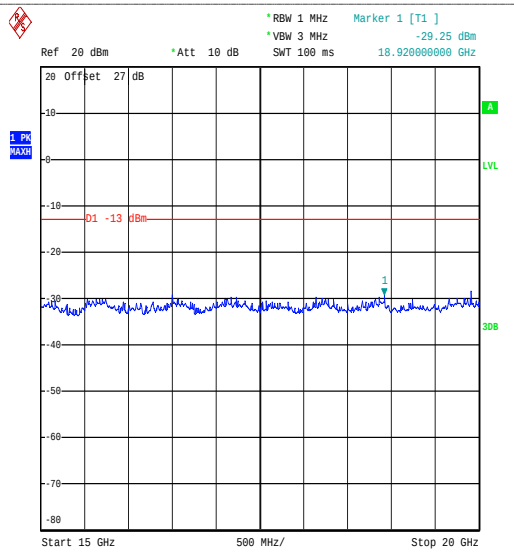
Date: 15.OCT.2015 15:24:46

1GHz~2.5GHz



Date: 15.OCT.2015 15:27:01

7.5GHz~10GHz

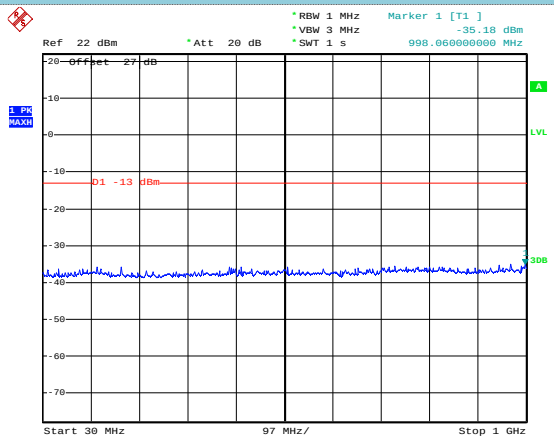


Date: 15.OCT.2015 15:28:45

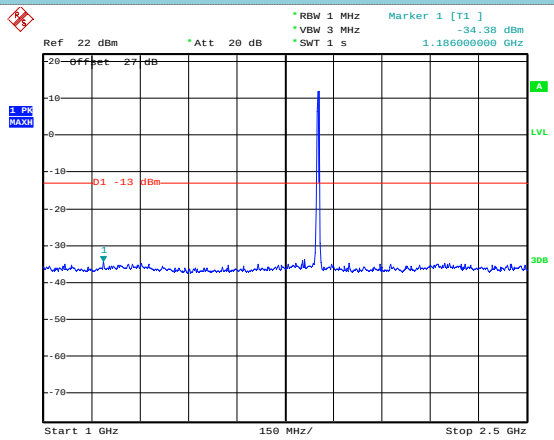
15GHz~20GHz

Test mode: WCDMA Band II

Channel 9262

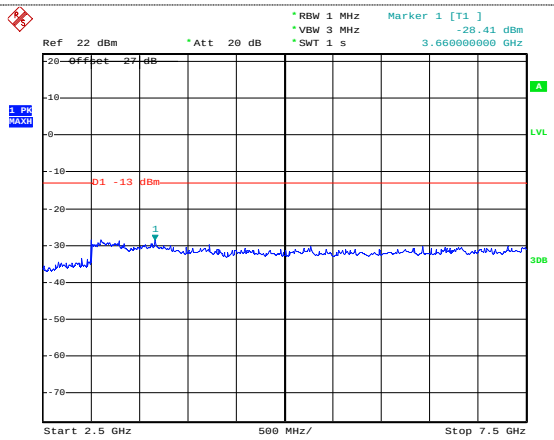


Date: 14.OCT.2015 21:19:19



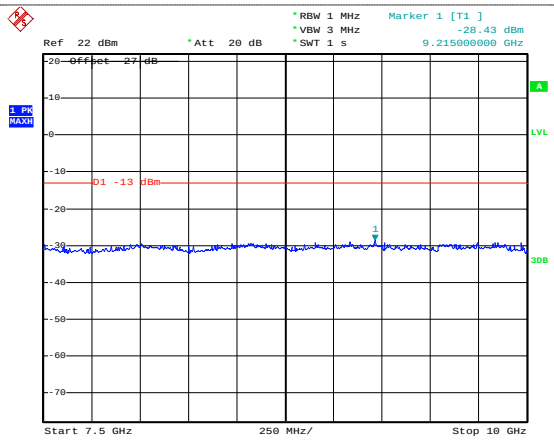
Date: 14.OCT.2015 21:20:11

30MHz~1GHz



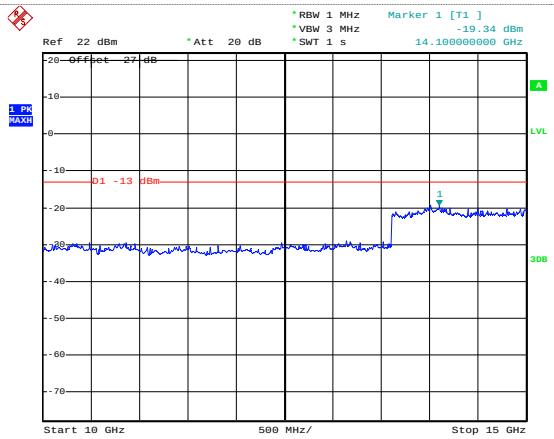
Date: 14.OCT.2015 21:21:37

1GHz~2.5GHz



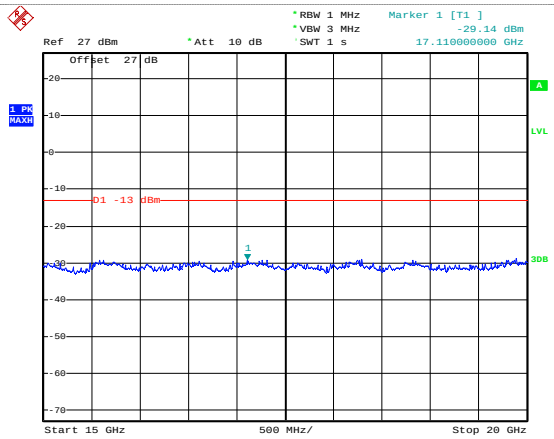
Date: 14.OCT.2015 21:22:15

2.5GHz~7.5GHz



Date: 14.OCT.2015 21:22:55

7.5GHz~10GHz



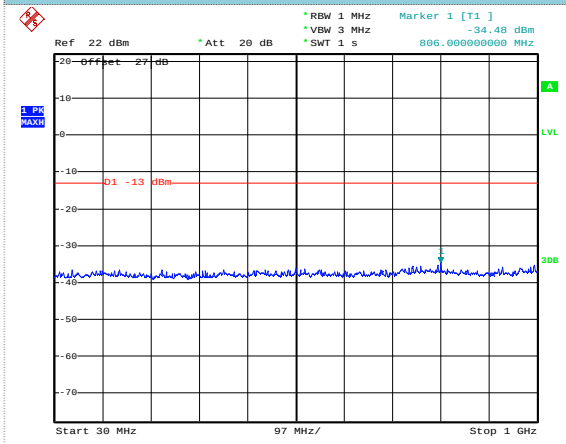
Date: 14.OCT.2015 21:24:35

10GHz~15GHz

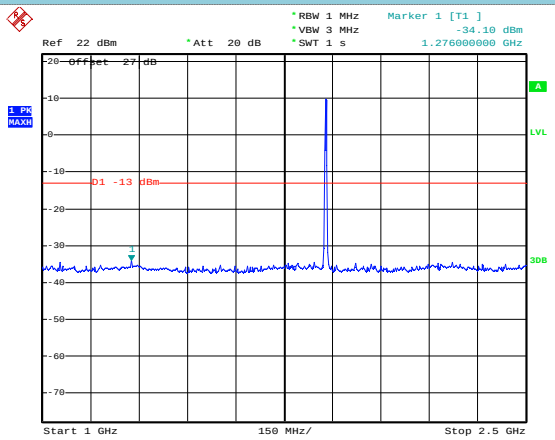
15GHz~20GHz

Test mode: WCDMA Band II

Channel 9400



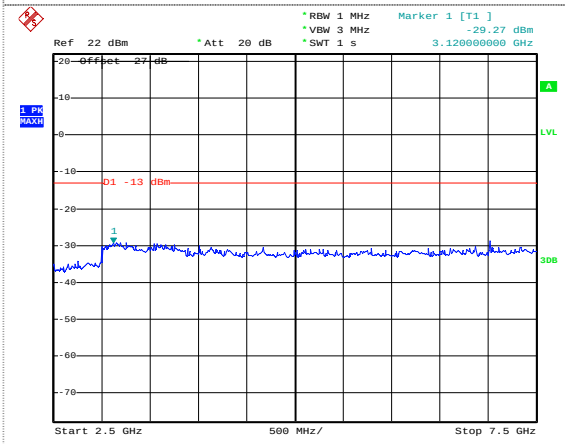
Date: 14.OCT.2015 21:19:26



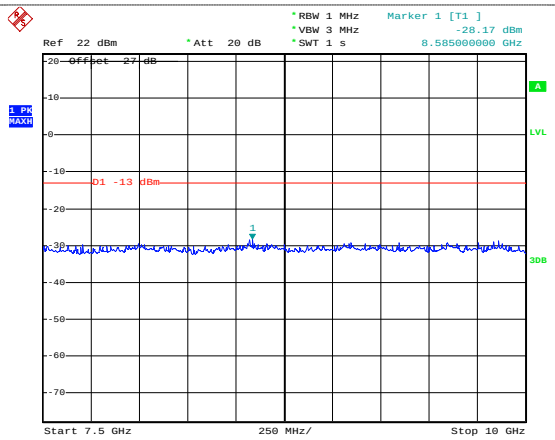
Date: 14.OCT.2015 21:20:43

30MHz~1GHz

1GHz~2.5GHz



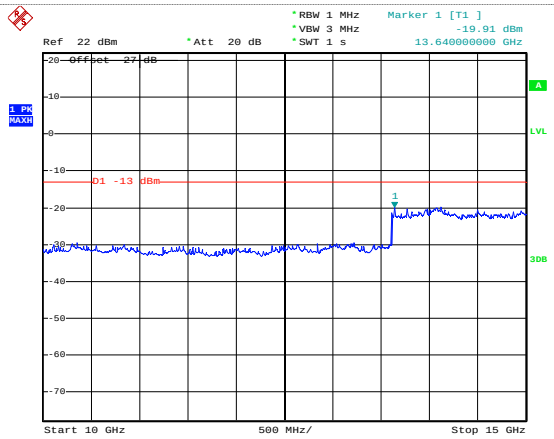
Date: 14.OCT.2015 21:21:46



Date: 14.OCT.2015 21:22:22

2.5GHz~7.5GHz

7.5GHz~10GHz



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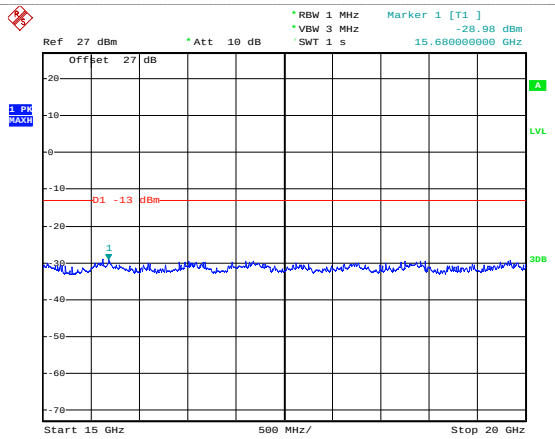


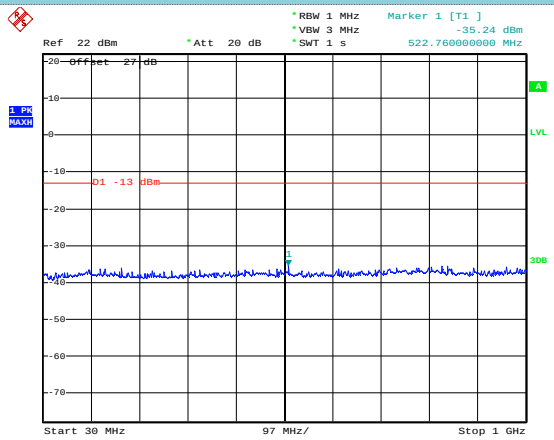
Date: 14.OCT.2015 21:24:43

10GHz~15GHz

15GHz~20GHz

Test mode: WCDMA Band II

Channel 9538



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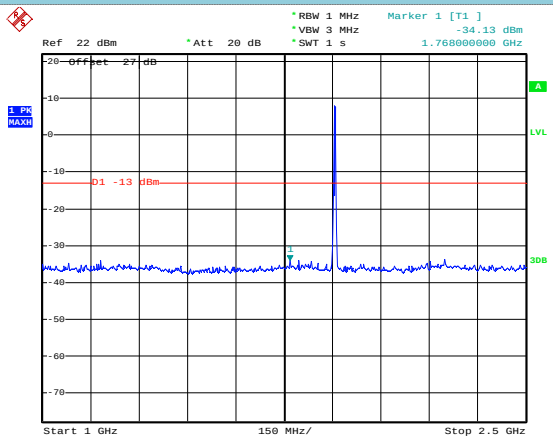
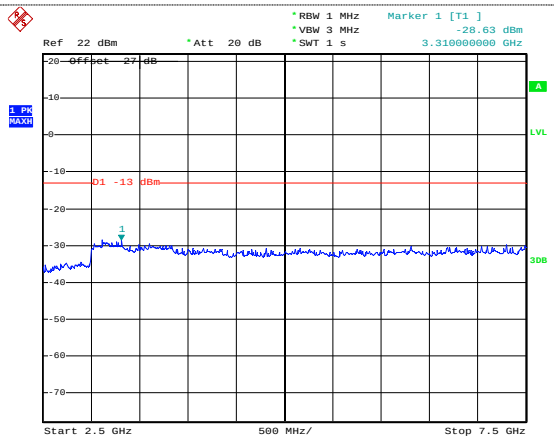


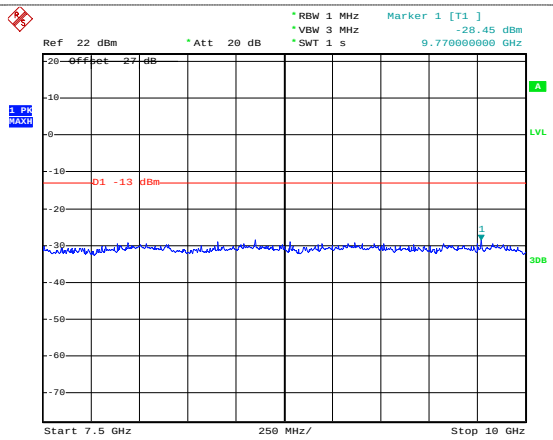
Date: 14.OCT.2015 21:21:14

30MHz~1GHz



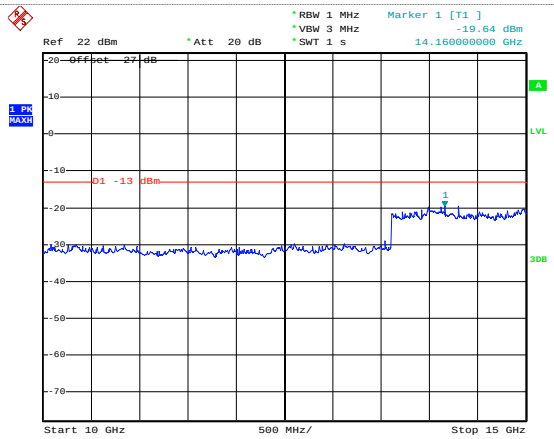
Date: 14.OCT.2015 21:21:56

1GHz~2.5GHz



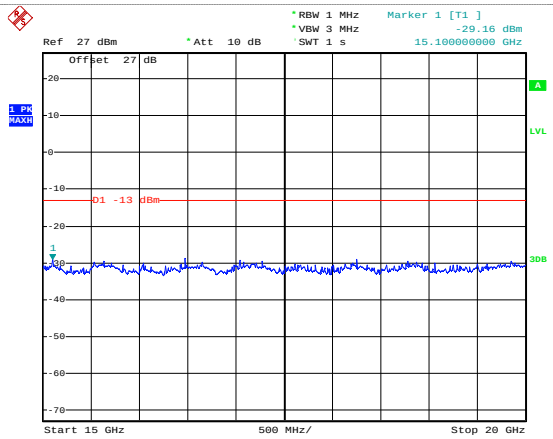
Date: 14.OCT.2015 21:22:28

2.5GHz~7.5GHz



Date: 14.OCT.2015 21:23:17

7.5GHz~10GHz

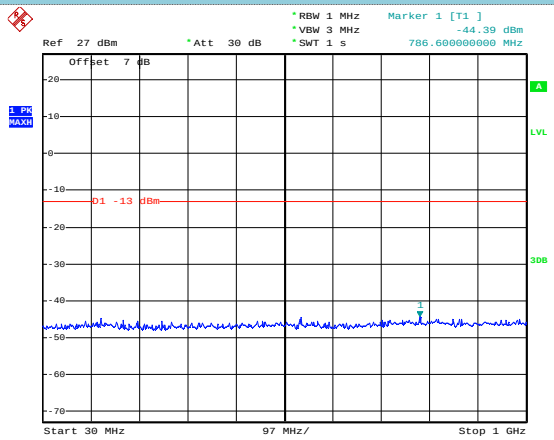


Date: 14.OCT.2015 21:24:48

10GHz~15GHz

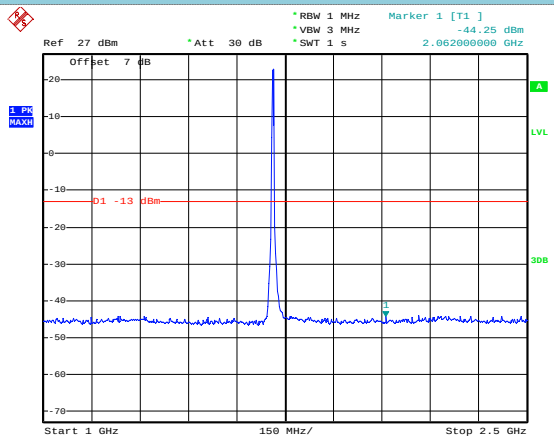
15GHz~20GHz

Test mode: WCDMA Band IV



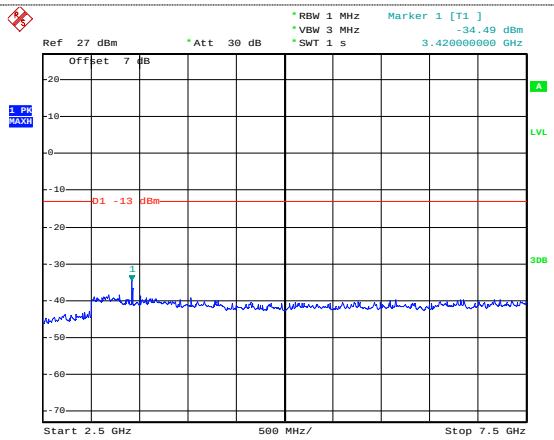
Date: 14.OCT.2015 20:53:09

Channel 1313



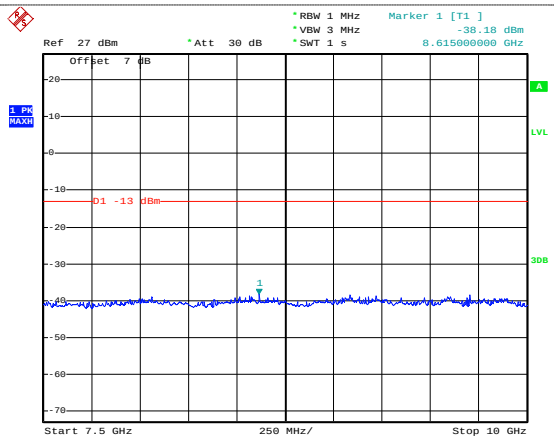
Date: 14.OCT.2015 20:55:21

30MHz~1GHz



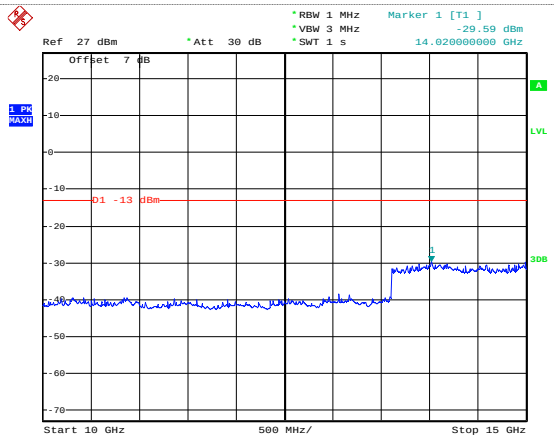
Date: 14.OCT.2015 20:56:00

1GHz~2.5GHz



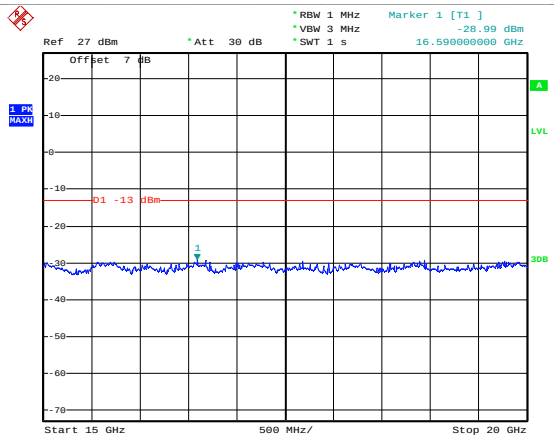
Date: 14.OCT.2015 20:57:19

2.5GHz~7.5GHz



Date: 14.OCT.2015 20:58:20

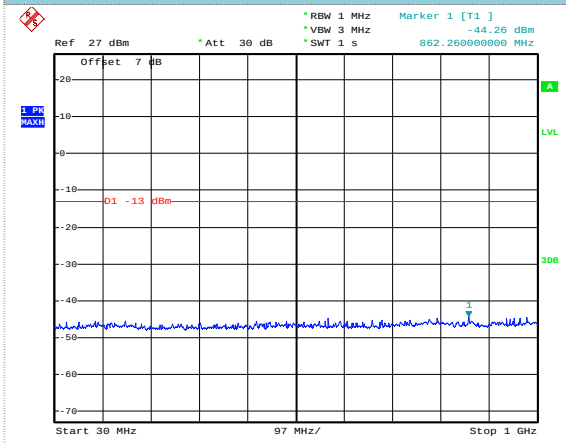
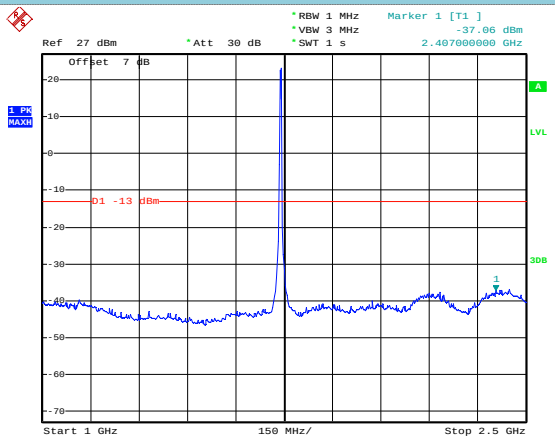
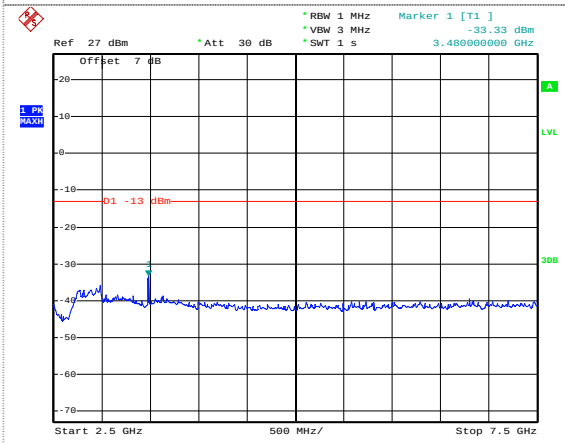
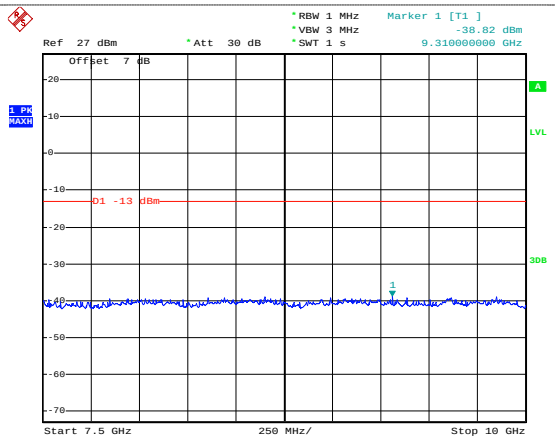
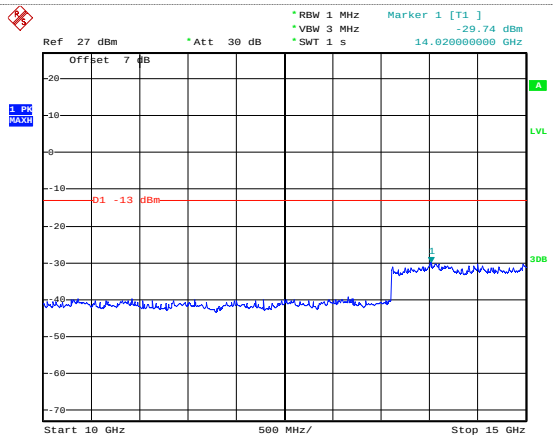
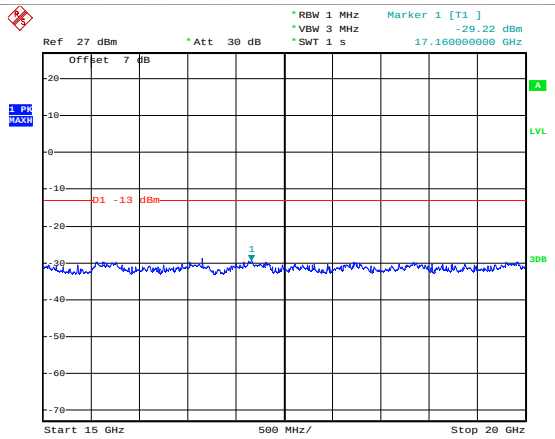
7.5GHz~10GHz

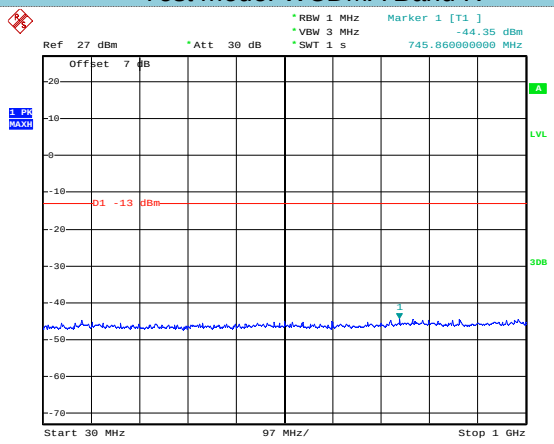
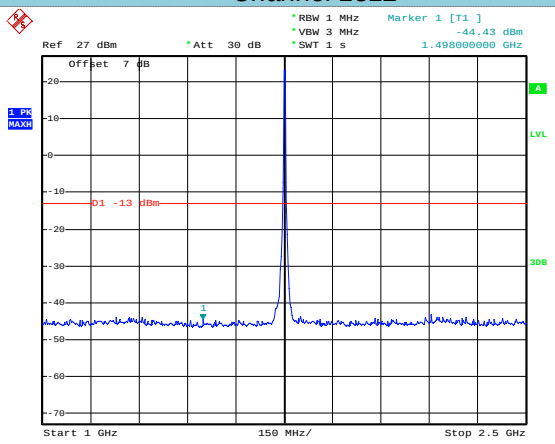
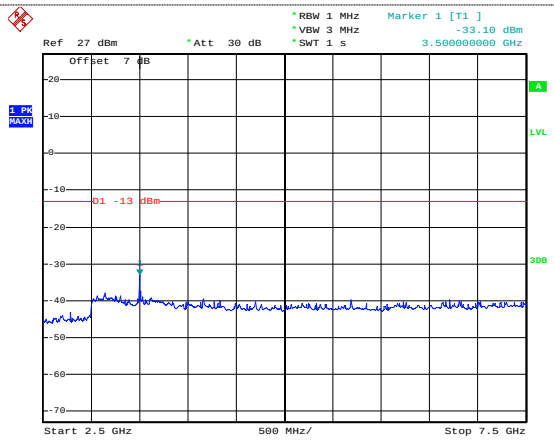
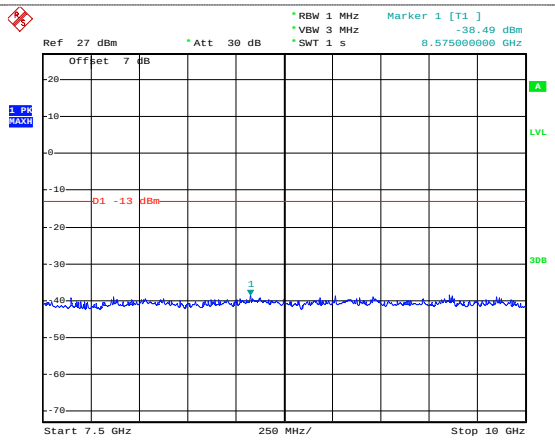
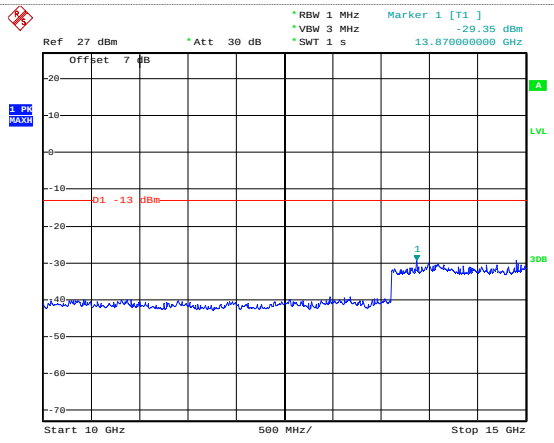
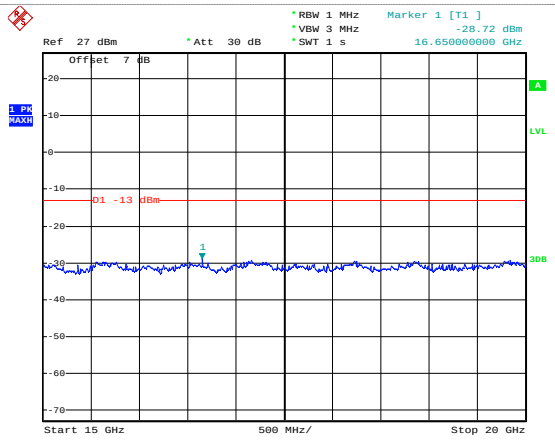


Date: 14.OCT.2015 20:58:50

10GHz~15GHz

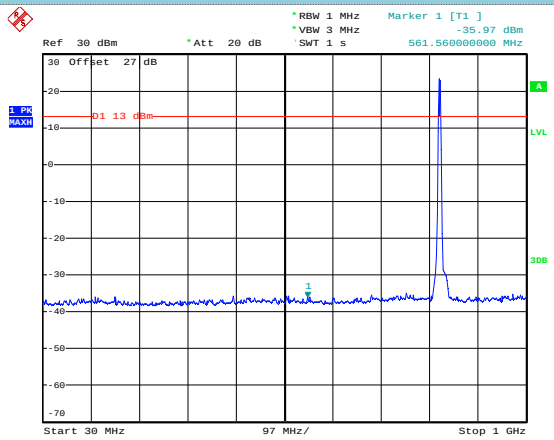
15GHz~20GHz

Test mode: WCDMA Band IV	Channel 1450
	
Date: 14.OCT.2015 20:53:17	Date: 14.OCT.2015 20:54:17
30MHz~1GHz	1GHz~2.5GHz
	
Date: 14.OCT.2015 20:56:22	Date: 14.OCT.2015 20:57:26
2.5GHz~7.5GHz	7.5GHz~10GHz
	
Date: 14.OCT.2015 20:58:26	Date: 14.OCT.2015 20:58:57
10GHz~15GHz	15GHz~20GHz

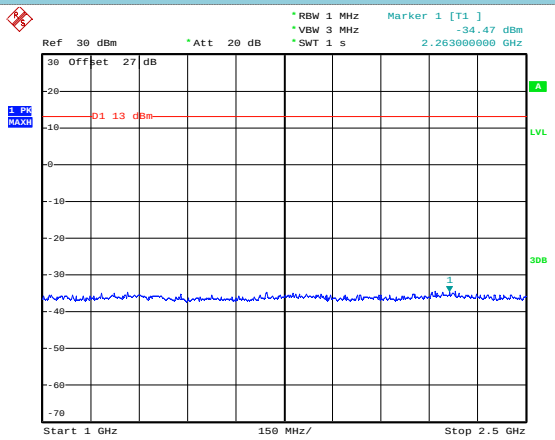
Test mode: WCDMA Band IV	*Channel 1512*
	
Date: 14.OCT.2015 20:52:50	Date: 14.OCT.2015 20:53:49
30MHz~1GHz	*1GHz~2.5GHz*
	
Date: 14.OCT.2015 20:56:42	Date: 14.OCT.2015 20:57:32
2.5GHz~7.5GHz	*7.5GHz~10GHz*
	
Date: 14.OCT.2015 20:58:32	Date: 14.OCT.2015 20:59:01
10GHz~15GHz	*15GHz~20GHz*

Test mode: WCDMA Band V

Channel 4132



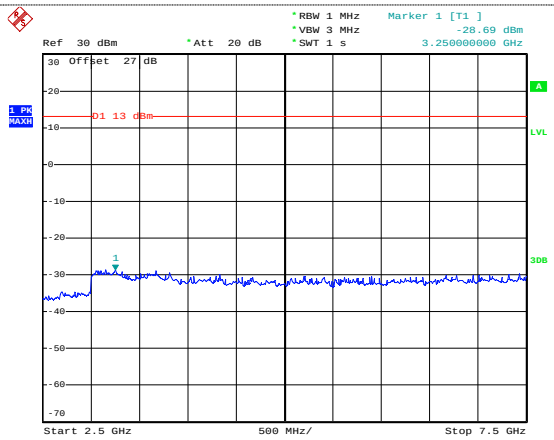
Date: 14.OCT.2015 20:26:00



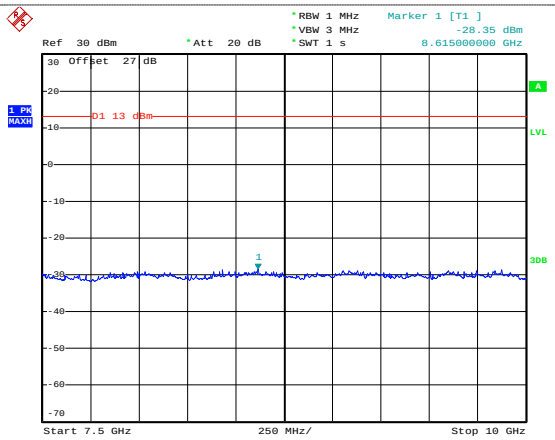
Date: 14.OCT.2015 20:28:21

30MHz~1GHz

1GHz~2.5GHz



Date: 14.OCT.2015 20:29:44



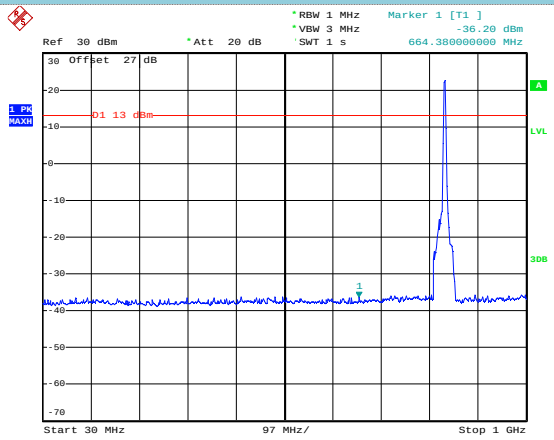
Date: 14.OCT.2015 20:31:13

2.5GHz~7.5GHz

7.5GHz~10GHz

Test mode: WCDMA Band V

Channel 4183



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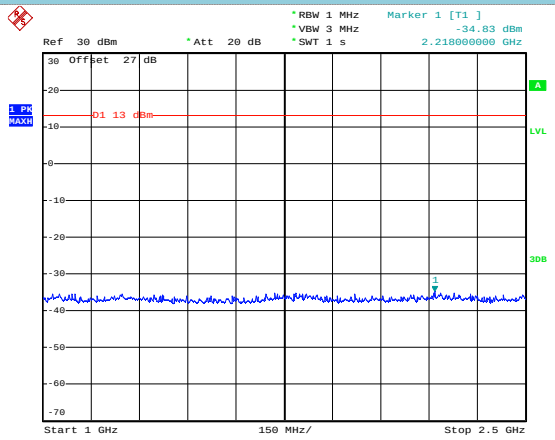
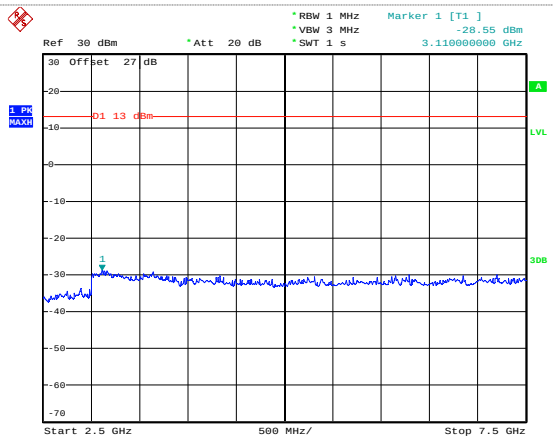


Date: 14.OCT.2015 20:28:27

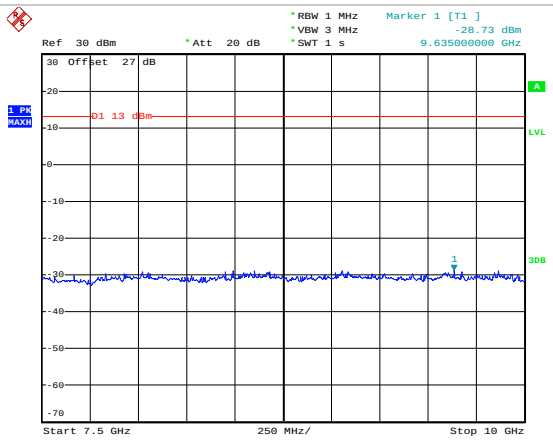
30MHz~1GHz

1GHz~2.5GHz



Date: 14.OCT.2015 20:29:53

2.5GHz~7.5GHz

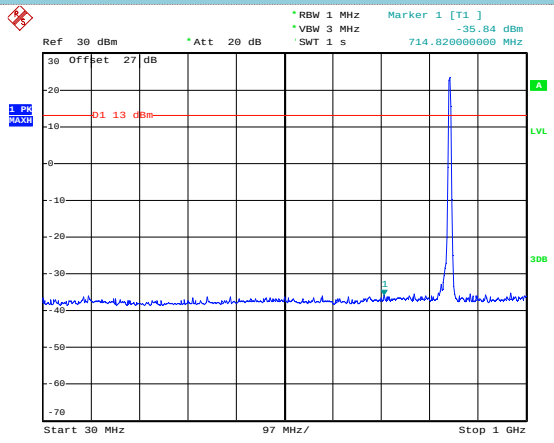


Date: 14.OCT.2015 20:31:21

7.5GHz~10GHz

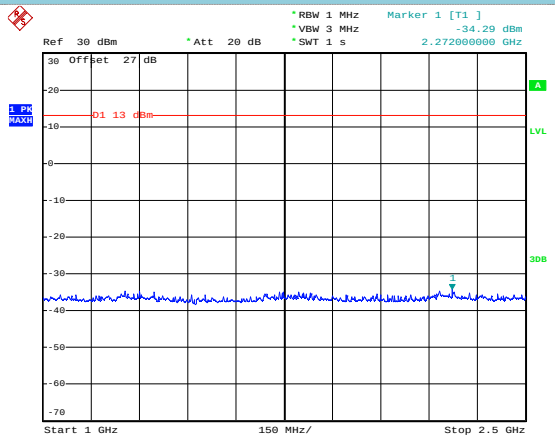
Test mode: WCDMA Band V

Channel 4233



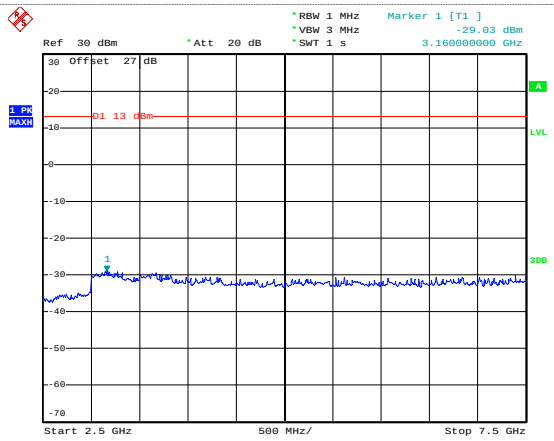
Date: 14.OCT.2015 20:27:27

30MHz~1GHz



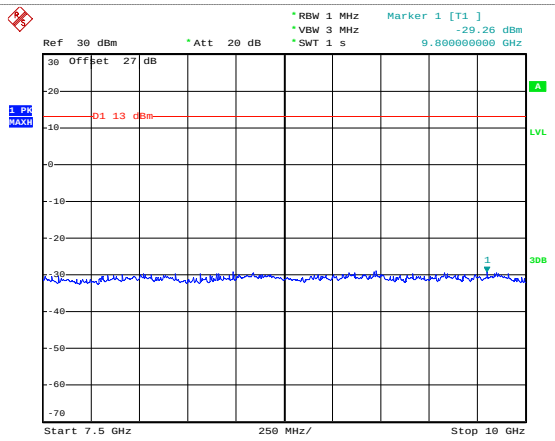
Date: 14.OCT.2015 20:28:36

1GHz~2.5GHz



Date: 14.OCT.2015 20:30:02

2.5GHz~7.5GHz



Date: 14.OCT.2015 20:31:28

7.5GHz~10GHz

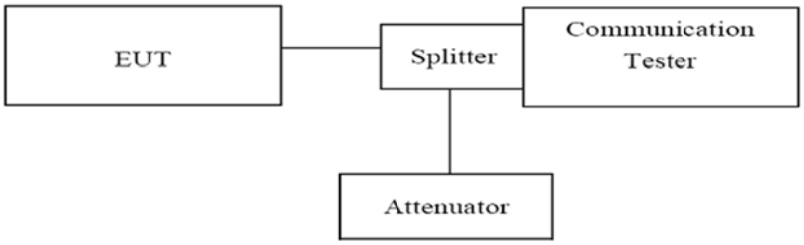
4.5. Band Edge compliance

LIMIT

Part 24.238 and Part 22.917 specify that 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.

The specification that emissions shall be attenuated below the transmitter power (P) by at least 43 + 10 log (P) dB, translates in the relevant power range (1 to 0.001 W) to -13 dBm. At 1 W the specified minimum attenuation becomes 43 dB and relative to a 30 dBm (1 W) carrier becomes a limit of -13 dBm. At 0.001 W (0 dBm) the minimum attenuation is 13 dB, which again yields a limit of -13 dBm. In this way a translation of the specification from relative to absolute terms is carried out.

TEST CONFIGURATION



TEST PROCEDURE

1. The RF output of the transceiver was connected to a spectrum analyzer through appropriateattenuation.
2. For the bandedge: 2G:Set the RBW=10KHz, VBW = 30KHz, Sweep time= Auto

   3G:Set the RBW=100KHz, VBW = 300KHz,Sweep time= Auto

TEST RESULTS

GSM850					
Channel Number	Frequency (MHz)	Measurement Results		Limit (dBm)	Verdict
		Frequency(MHz)	Values(dBm)		
128	824.20	824.00	-14.43	-13.00	Pass
251	848.80	849.00	-14.79	-13.00	Pass

GPRS850					
Channel Number	Frequency (MHz)	Measurement Results		Limit (dBm)	Verdict
		Frequency(MHz)	Values(dBm)		
128	824.20	824.00	-18.24	-13.00	Pass
251	848.80	849.00	-22.16	-13.00	Pass

EGPRS850					
Channel Number	Frequency (MHz)	Measurement Results		Limit (dBm)	Verdict
		Frequency(MHz)	Values(dBm)		
128	824.20	823.99	-21.64	-13.00	Pass
251	848.80	849.01	-23.53	-13.00	Pass

PCS1900					
Channel Number	Frequency (MHz)	Measurement Results		Limit (dBm)	Verdict
		Frequency(MHz)	Values(dBm)		
512	1850.20	1850.00	-15.76	-13.00	Pass
810	1909.80	1910.00	-21.79	-13.00	Pass

GPRS1900					
Channel Number	Frequency (MHz)	Measurement Results		Limit (dBm)	Verdict
		Frequency(MHz)	Values(dBm)		
512	1850.20	1850.00	-14.98	-13.00	Pass
810	1909.80	1910.00	-14.77	-13.00	Pass

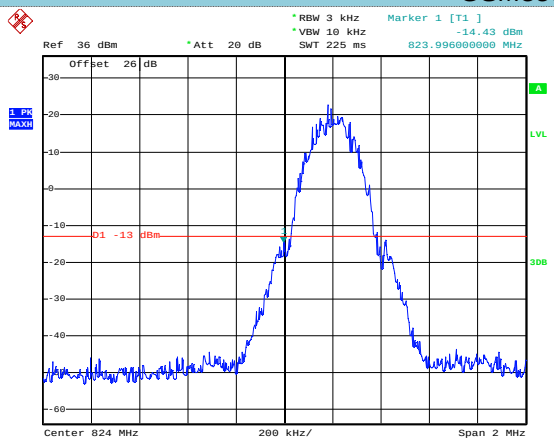
EGPRS1900					
Channel Number	Frequency (MHz)	Measurement Results		Limit (dBm)	Verdict
		Frequency(MHz)	Values(dBm)		
512	1850.20	1850.00	-16.86	-13.00	Pass
810	1909.80	1910.00	-16.53	-13.00	Pass

WCDMA Band II					
Channel Number	Frequency (MHz)	Measurement Results		Limit (dBm)	Verdict
		Frequency (MHz)	Values (dBm)		
9262	1852.4	1850.00	-24.77	-13.00	Pass
9538	1907.6	1910.69	-26.44	-13.00	Pass

WCDMA Band IV					
Channel Number	Frequency (MHz)	Measurement Results		Limit (dBm)	Verdict
		Frequency (MHz)	Values (dBm)		
1313	1712.6	1850.00	-23.81	-13.00	Pass
1512	1752.4	1910.69	-15.93	-13.00	Pass

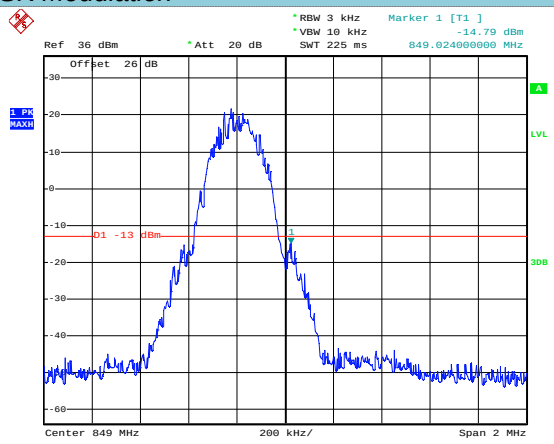
WCDMA Band V					
Channel Number	Frequency (MHz)	Measurement Results		Limit (dBm)	Verdict
		Frequency (MHz)	Values (dBm)		
4132	826.4	824.00	-19.82	-13.00	Pass
4233	846.6	849.09	-23.88	-13.00	Pass

GSM850 For GMSK Moudlation



Date: 15.OCT.2015 15:10:03

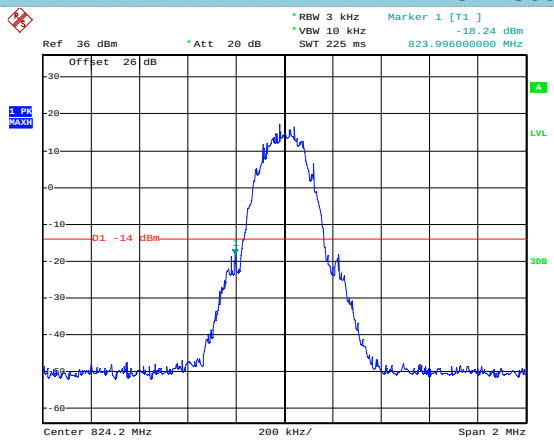
Channel 128



Date: 15.OCT.2015 15:10:57

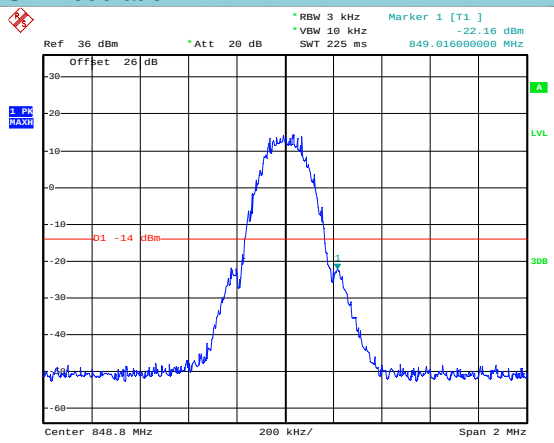
Channel 251

GPRS850 For GMSK Moudlation



Date: 21.OCT.2015 16:05:01

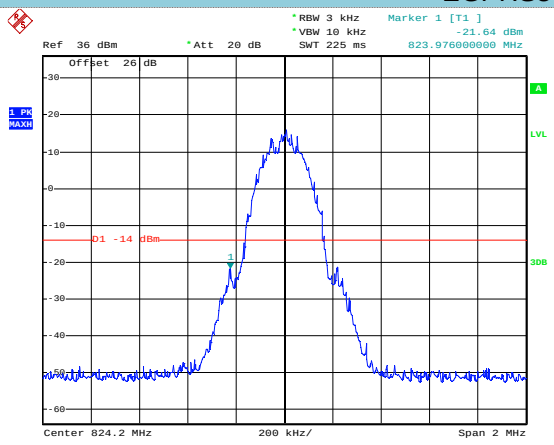
Channel 128



Date: 21.OCT.2015 16:06:09

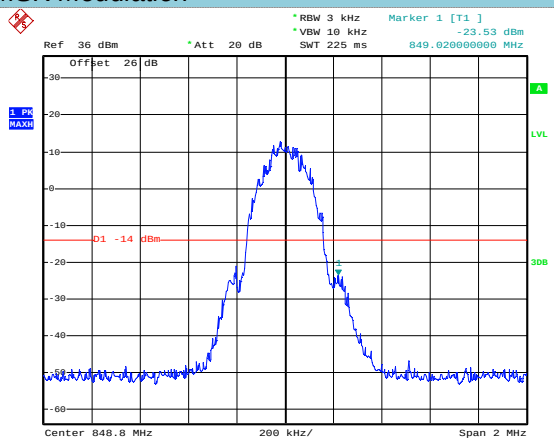
Channel 251

EGPRS850 For GMSK Moudlation



Date: 21.OCT.2015 16:05:24

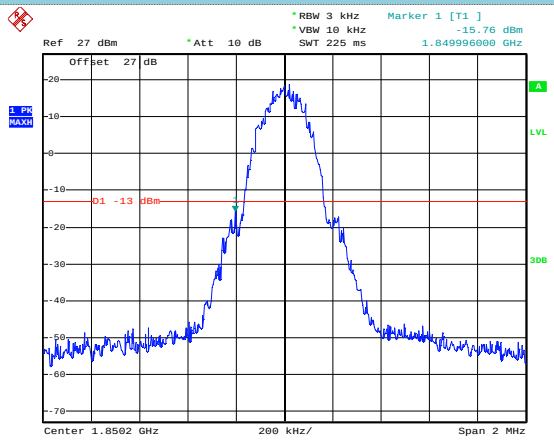
Channel 128



Date: 21.OCT.2015 16:06:29

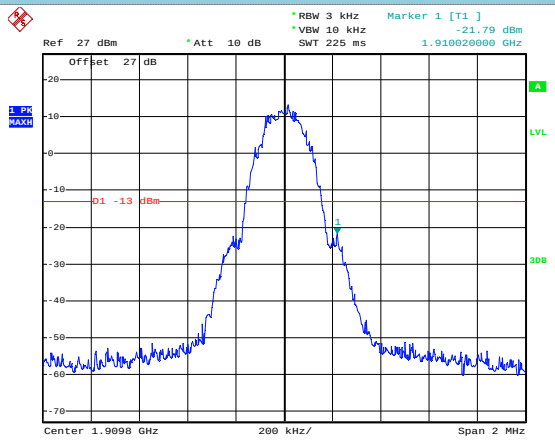
Channel 251

PCS1900 For GMSK Moudlation



Date: 15.OCT.2015 15:29:57

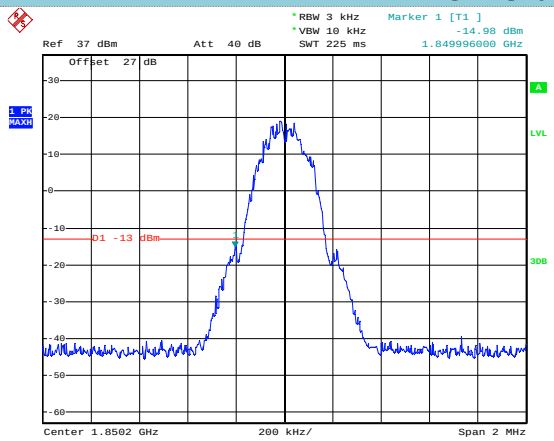
Channel 512



Date: 15.OCT.2015 15:30:38

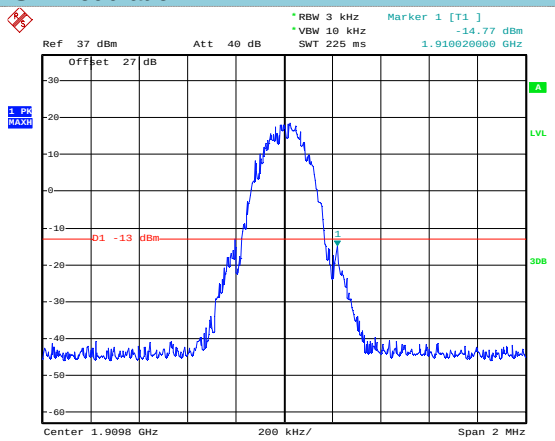
Channel 810

GPRS1900 For GMSK Moudlation



Date: 21.OCT.2015 15:57:01

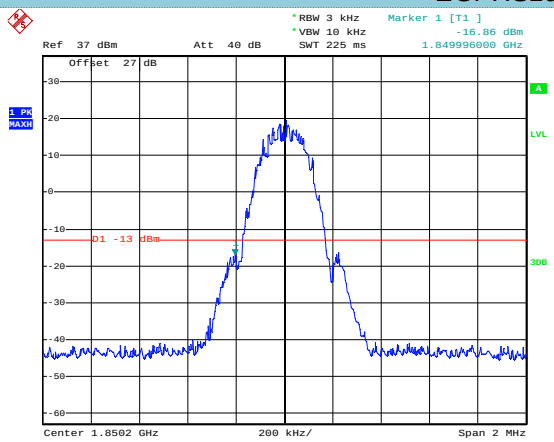
Channel 512



Date: 21.OCT.2015 15:58:52

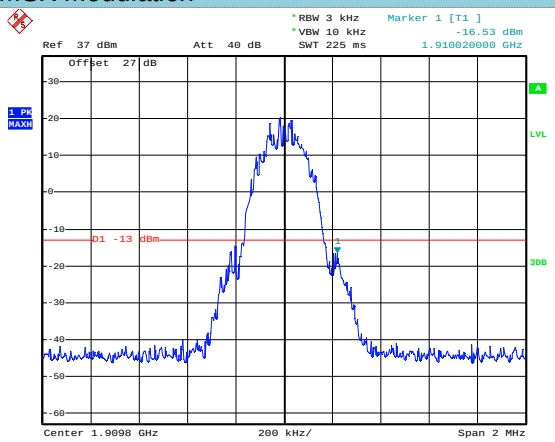
Channel 810

EGPRS1900 For GMSK Moudlation



Date: 21.OCT.2015 15:57:30

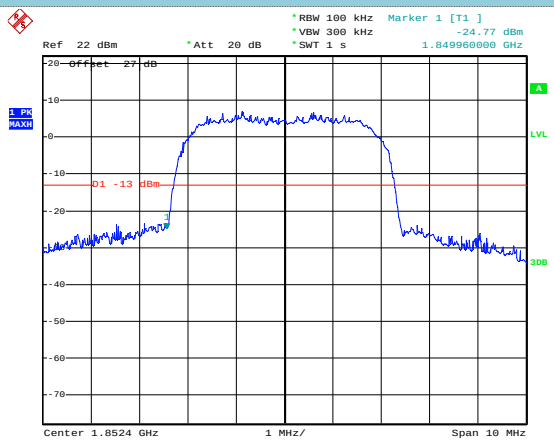
Channel 512



Date: 21.OCT.2015 15:59:04

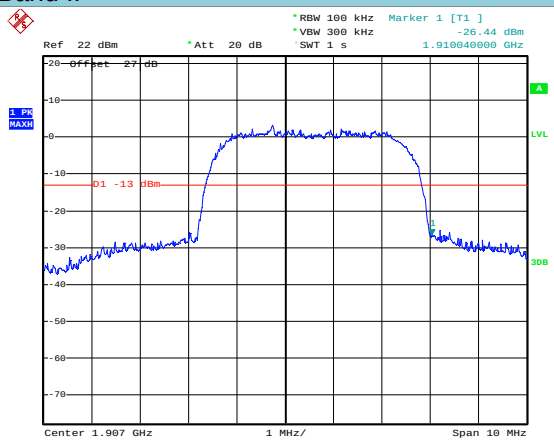
Channel 810

WCDMA Band II



Date: 14.OCT.2015 21:18:34

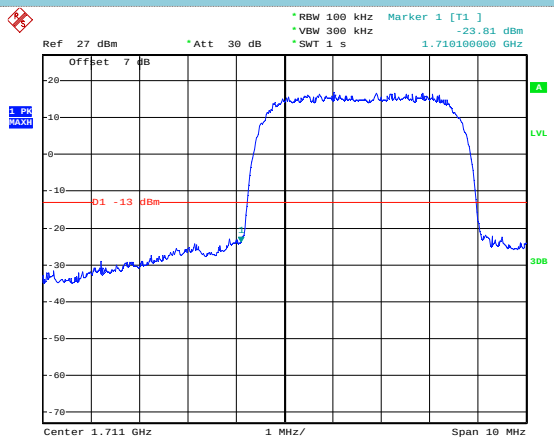
Channel 9262



Date: 14.OCT.2015 21:17:57

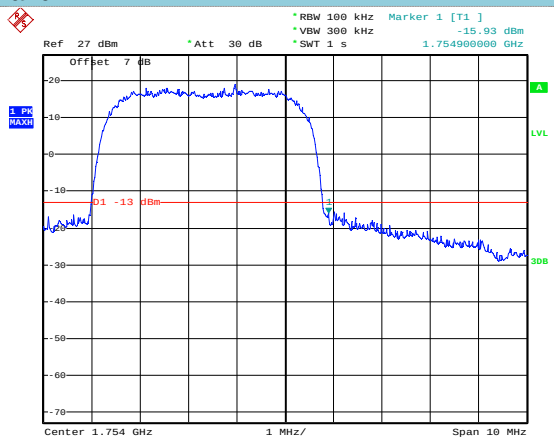
Channel 9538

WCDMA Band IV



Date: 14.OCT.2015 21:01:24

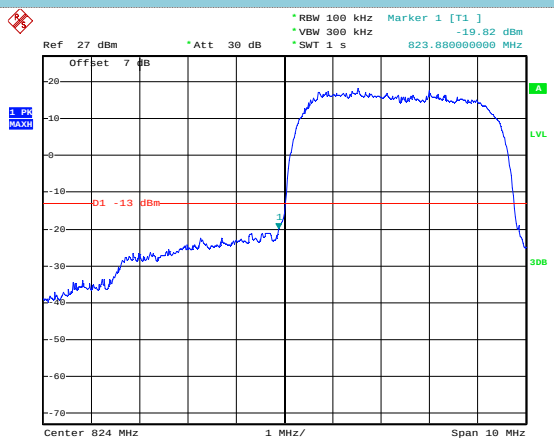
Channel 1313



Date: 14.OCT.2015 21:00:23

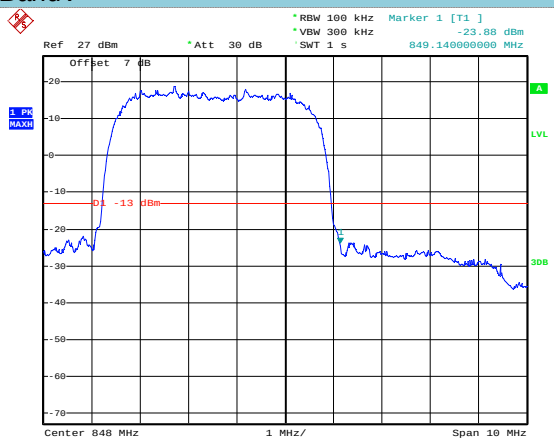
Channel 1750

WCDMA BandV



Date: 14.OCT.2015 20:40:09

Channel 4132



Date: 14.OCT.2015 20:39:08

Channel 4233

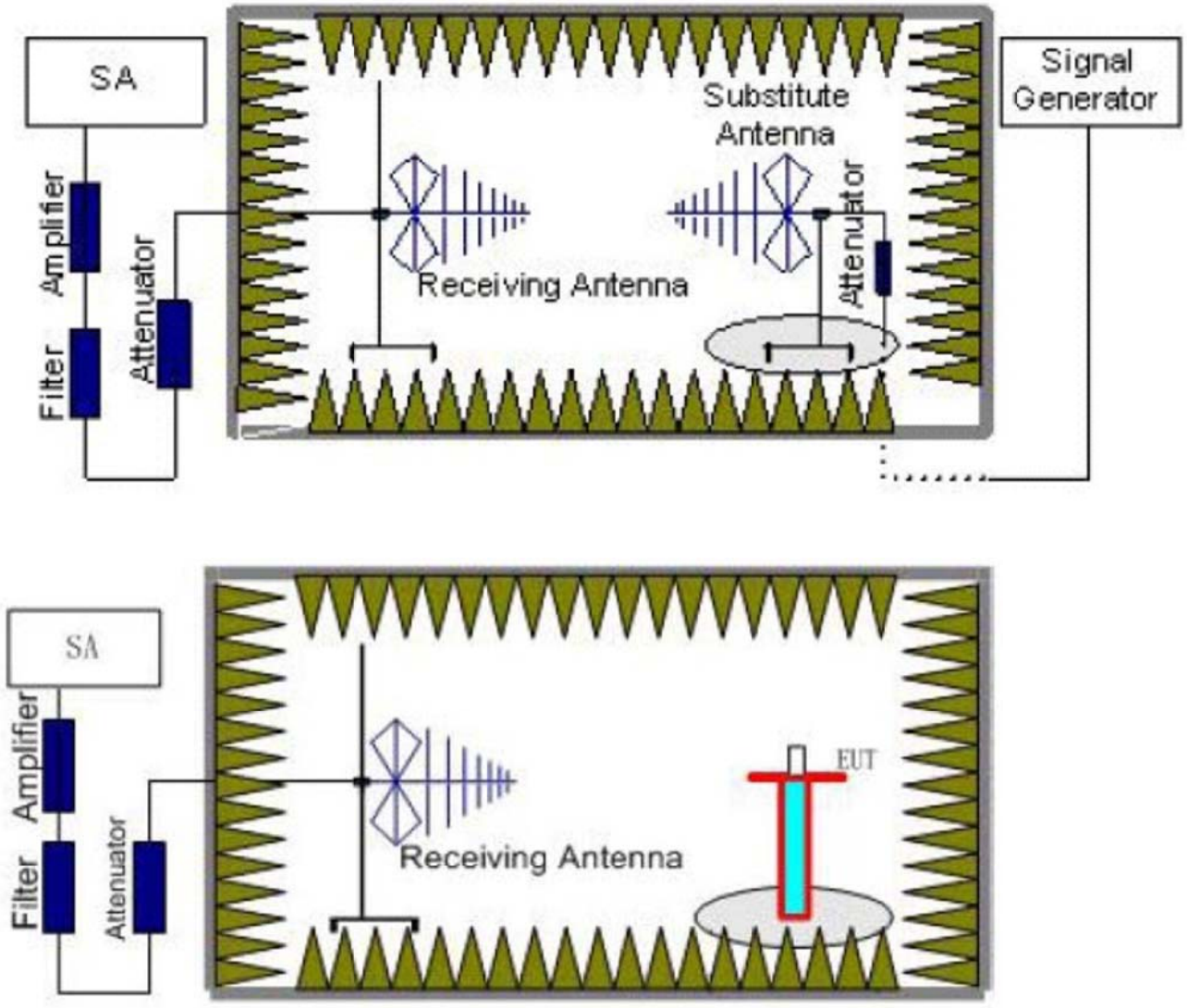
4.6. Radiated Power Measurement

LIMIT

GSM850/WCDMA Band V: 7W ERP

PCS1900/WCDMA Band II: 2W EIRP

TEST CONFIGURATION



TEST PROCEDURE

1. EUT was placed on a 1.50 meter high non-conductive stand at a 3 meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT for emission measurements. The height of receiving antenna is 1.50m. Detected emissions were maximized at each frequency by rotating the EUT through 360° and adjusting the receiving antenna polarization. The radiated emission measurements of all transmit frequencies in three channels (High, Middle, Low) were measured with peak detector.
2. A log-periodic antenna or double-ridged waveguide horn antenna shall be substituted in place of the EUT. The log-periodic antenna will be driven by a signal generator and the level will be adjusted till the same power value on the spectrum analyzer or receiver. The level of the spurious emissions can be calculated through the level of the signal generator, cable loss, the gain of the substitution antenna and the reading of the spectrum analyzer or receiver.
3. The EUT is then put into continuously transmitting mode at its maximum power level during the test.Set Test Receiver or Spectrum RBW=1MHz,VBW=3MHz, And the maximum value of the receiver should be recorded as (Pr).

4. The EUT shall be replaced by a substitution antenna. In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest isconnected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (PMea) is applied to the input of the substitution antenna, and adjust the level of the signal generator output until the value of the receiver reach the previously recorded (Pr). The power of signal source (PMea) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.
5. A amplifier should be connected to the Signal Source output port. And the cable should be connect between the Amplifier and the Substitution Antenna. The cable loss (Pcl) ,the Substitution Antenna Gain (Ga) and the Amplifier Gain (PAg) should be recorded after test.
6. The measurement results are obtained as described below:
   Power(EIRP)=PMea- PAg - Pcl + Ga
   We used SMF100A micowave signal generator which signal level can up to 33dBm,so we not used power Amplifier for substituation test; The measurement results are amend as described below:
   Power(EIRP)=PMea- Pcl + Ga
7. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi) and known input power.
   ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP-2.15dBi.

TEST RESULTS

GSM:

Mode	Channel	Antenna Pol.	ERP	Limit (dBm)	Result
GSM850	128	V	30.47	38.45	Pass
		H	28.74		
	190	V	29.75		
		H	27.63		
	251	V	31.25		
		H	29.45		
GPRS850	128	V	30.85	38.45	Pass
		H	28.63		
	190	V	29.44		
		H	27.25		
	251	V	31.83		
		H	29.52		
EGPRS850	128	V	30.96	38.45	Pass
		H	28.74		
	190	V	29.08		
		H	27.25		
	251	V	31.36		
		H	28.47		

Mode	Channel	Antenna Pol.	EIRP	Limit (dBm)	Result
PCS1900	512	V	27.56	33.01	Pass
		H	24.58		
	661	V	26.75		
		H	24.43		
	810	V	27.25		
		H	23.47		
GPRS1900	512	V	27.64	33.01	Pass
		H	24.36		
	661	V	27.52		
		H	24.96		
	810	V	27.28		
		H	23.45		
EGPRS 1900	512	V	27.59	33.01	Pass
		H	24.36		
	661	V	26.84		
		H	24.52		
	810	V	27.94		
		H	24.38		

WCDMA:

Mode	Channel	Antenna Pol.	EIRP	Limit (dBm)	Result
WCDMA Band II	9262	V	21.41	33.01	Pass
		H	18.76		
	9400	V	21.34		
		H	17.56		
	9538	V	20.83		
		H	17.57		

Mode	Channel	Antenna Pol.	ERP	Limit (dBm)	Result
WCDMA Band IV	1313	V	21.94	38.45	Pass
		H	16.35		
	1450	V	21.54		
		H	16.34		
	1512	V	21.42		
		H	16.35		

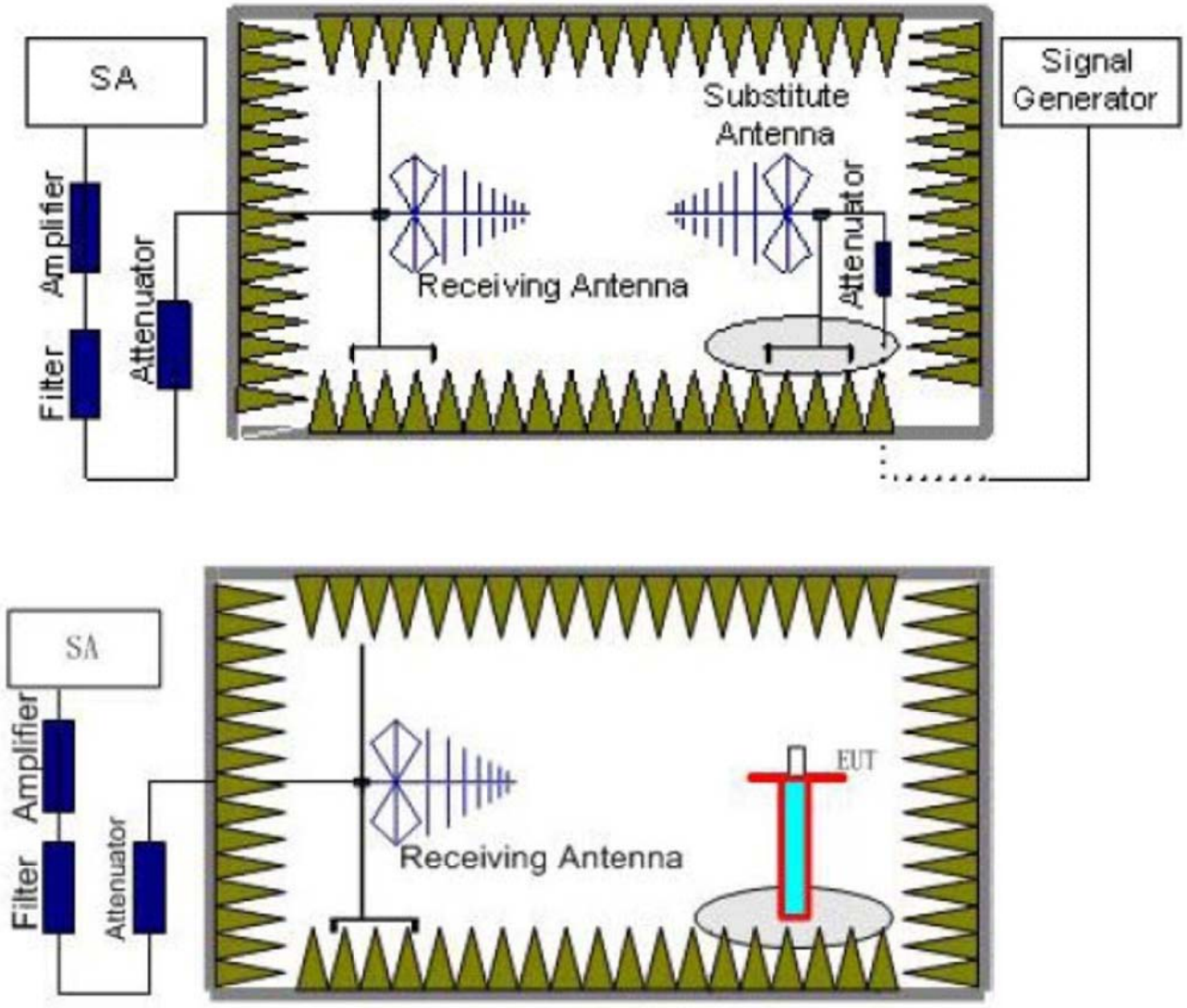
Mode	Channel	Antenna Pol.	ERP	Limit (dBm)	Result
WCDMA Band V	4132	V	21.23	38.45	Pass
		H	16.35		
	4182	V	20.65		
		H	16.41		
	4233	V	21.32		
		H	16.34		

4.7. Radiated Spurious Emssion

LIMIT

-13dBm

TEST CONFIGURATION



TEST RESULTS

1. EUT was placed on a 1.50 meter high non-conductive stand at a 3 meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT for emission measurements. The height of receiving antenna is 1.50m. Detected emissions were maximized at each frequency by rotating the EUT through 360° and adjusting the receiving antenna polarization. The radiated emission measurements of all transmit frequencies in three channels (High, Middle, Low) were measured with peak detector.
2. A log-periodic antenna or double-ridged waveguide horn antenna shall be substituted in place of the EUT. The log-periodic antenna will be driven by a signal generator and the level will be adjusted till the same power value on the spectrum analyzer or receiver. The level of the spurious emissions can be calculated through the level of the signal generator, cable loss, the gain of the substitution antenna and the reading of the spectrum analyzer or receiver.
3. The EUT is then put into continuously transmitting mode at its maximum power level during the test.Set Test Receiver or Spectrum RBW=1MHz,VBW=3MHz, And the maximum value of the receiver should be recorded as (Pr).

4. The EUT shall be replaced by a substitution antenna. In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest isconnected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (PMea) is applied to the input of the substitution antenna, and adjust the level of the signal generator output until the value of the receiver reach the previously recorded (Pr). The power of signal source (PMea) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.
5. A amplifier should be connected to the Signal Source output port. And the cable should be connect between the Amplifier and the Substitution Antenna. The cable loss (Pcl) ,the Substitution Antenna Gain (Ga) and the Amplifier Gain (PAg) should be recorded after test.
6. The measurement results are obtained as described below:
   Power(EIRP)=PMea- PAg - Pcl + Ga
   We used SMF100A micowave signal generator which signal level can up to 33dBm,so we not used power Amplifier for substituation test; The measurement results are amend as described below:
   Power(EIRP)=PMea- Pcl + Ga
7. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi) and known input power.
   ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP-2.15dBi.

TEST RESULTS

GSM850					
Channel	Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
		Polarization	Level (dBm)		
128	1648.40	Vertical	-42.72	-13.00	Pass
	2472.60	V	-47.43		
	3296.80	V	-44.92		
	4121.00	V	-44.96		
	4945.20	V	---		
	1648.40	Horizontal	-40.36	-13.00	Pass
	2472.60	H	-47.25		
	3296.80	H	-46.78		
	4121.00	H	-39.47		
	4945.20	H	---		
190	1673.20	Vertical	-26.78	-13.00	Pass
	2509.80	V	-46.59		
	3346.40	V	-34.68		
	4183.00	V	-38.94		
	5019.60	V	---		
	1673.20	Horizontal	-41.38	-13.00	Pass
	2509.80	H	-48.65		
	3346.40	H	-44.43		
	4183.00	H	-44.94		
	5019.60	H	---		
251	1697.60	Vertical	-41.34	-13.00	Pass
	2546.40	V	-47.06		
	3395.20	V	-46.25		
	4244.00	V	-39.49		
	5092.80	V	---		
	1697.60	Horizontal	-42.86	-13.00	Pass
	2546.40	H	-47.75		
	3395.20	H	-45.96		
	4244.00	H	-44.87		
	5092.80	H	---		

Remark：

1. The emission behaviour belongs to narrowband spurious emission.
2. Remark"---" means that the emission level is too low to be measured
3. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

PCS1900					
Channel	Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
		Polarization	Level (dBm)		
512	3700.40	Vertical	-29.38	-13.00	Pass
	5550.60	V	-40.32		
	7400.80	V	-40.08		
	9251.00	V	-36.66		
	11101.20	V	---		
	3700.40	Horizontal	-23.53	-13.00	Pass
	5550.60	H	-37.65		
	7400.80	H	-36.34		
	9251.00	H	-34.76		
	11101.20	H	---		
661	3760.00	Vertical	-29.75	-13.00	Pass
	5640.00	V	-41.82		
	7520.00	V	-41.65		
	9400.00	V	-36.79		
	11280.00	V	---		
	3760.00	Horizontal	-23.08	-13.00	Pass
	5640.00	H	-36.64		
	7520.00	H	-36.54		
	9400.00	H	-34.98		
	11280.00	H	---		
810	3819.60	Vertical	-30.34	-13.00	Pass
	5729.40	V	-41.25		
	7639.20	V	-40.64		
	9549.00	V	-36.79		
	11458.80	V	---		
	3819.60	Horizontal	-25.38	-13.00	Pass
	5729.40	H	-37.60		
	7639.20	H	-36.46		
	9549.00	H	-34.79		
	11458.80	H	---		

Remark：

1. The emission behaviour belongs to narrowband spurious emission.
2. Remark”---“ means that the emission level is too low to be measured
3. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

WCDMA Band II					
Channel	Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
		Polarization	Level (dBm)		
9262	3704.80	Vertical	-46.33	-13.00	Pass
	5557.20	V	-33.20		
	7409.60	V	-50.69		
	9262.00	V	---		
	3704.80	Horizontal	-39.35	-13.00	Pass
	5557.20	H	-35.43		
	7409.60	H	-50.34		
	9262.00	H	---		
9400	3760.00	Vertical	-45.74	-13.00	Pass
	5640.00	V	-33.16		
	7520.00	V	-50.38		
	9400.00	V	---		
	3760.00	Horizontal	-39.59	-13.00	Pass
	5640.00	H	-35.08		
	7520.00	H	-50.75		
	9400.00	H	---		
9538	3815.20	Vertical	-47.34	-13.00	Pass
	5722.80	V	-33.26		
	7630.40	V	-49.98		
	9538.00	V	---		
	3815.20	Horizontal	-38.33	-13.00	Pass
	5722.80	H	-35.48		
	7630.40	H	-50.65		
	9538.00	H	---		

Remark：

4. The emission behaviour belongs to narrowband spurious emission.
5. Remark”---“ means that the emission level is too low to be measured
6. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

WCDMA Band IV					
Channel	Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
		Polarization	Level (dBm)		
1313	3425.32	Vertical	-42.90	-13.00	Pass
	5137.94	V	-46.74		
	6850.72	V	-50.25		
	8563.71	V	---		
	3425.32	Horizontal	-40.97	-13.00	Pass
	5137.94	H	-45.61		
	6850.72	H	-49.74		
	8563.71	H	---		
1450	3480.52	Vertical	-43.43	-13.00	Pass
	5220.43	V	-45.84		
	6960.45	V	-50.36		
	8700.43	V	---		
	3480.52	Horizontal	-41.49	-13.00	Pass
	5220.43	H	-46.38		
	6960.45	H	-49.04		
	8700.43	H	---		
1512	3504.47	Vertical	-42.53	-13.00	Pass
	5257.34	V	-46.98		
	7009.68	V	-50.46		
	8762.47	V	---		
	3504.47	Horizontal	-40.35	-13.00	Pass
	5257.34	H	-46.23		
	7009.68	H	-48.41		
	8762.47	H	---		

Remark：

4. The emission behaviour belongs to narrowband spurious emission.
5. Remark”---“ means that the emission level is too low to be measured
6. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

WCDMA Band V					
Channel	Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
		Polarization	Level (dBm)		
4132	1652.80	Vertical	-44.21	-13.00	Pass
	2479.20	V	-46.44		
	3305.60	V	-43.25		
	4132.00	V	---		
	1652.80	Horizontal	-46.64	-13.00	Pass
	2479.20	H	-37.14		
	3305.60	H	-48.52		
	4132.00	H	---		
4182	1673.20	Vertical	-43.86	-13.00	Pass
	2509.80	V	-45.74		
	3346.40	V	-43.36		
	4183.00	V	---		
	1673.20	Horizontal	-46.52	-13.00	Pass
	2509.80	H	-37.37		
	3346.40	H	-48.68		
	4183.00	H	---		
4233	1693.20	Vertical	-44.47	-13.00	Pass
	2539.80	V	-45.25		
	3386.40	V	-43.36		
	4233.00	V	---		
	1693.20	Horizontal	-46.63	-13.00	Pass
	2539.80	H	-35.14		
	3386.40	H	-48.63		
	4233.00	H	---		

Remark：

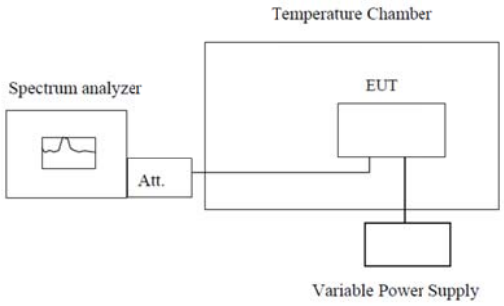
7. The emission behaviour belongs to narrowband spurious emission.
8. Remark”---“ means that the emission level is too low to be measured
9. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

4.8. Frequency stability V.S. Temperature measurement

LIMIT

2.5ppm

TEST CONFIGURATION



Note : Measurement setup for testing on Antenna connector

TEST PROCEDURE

1. The equipment under test was connected to an external DC power supply and input rated voltage.
2. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators.
3. The EUT was placed inside the temperature chamber.
4. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 25℃ operating frequency as reference frequency.
5. Turn EUT off and set the chamber temperature to –30℃. After the temperature stabilized for approximately 30 minutes recorded the frequency.
6. Repeat step measure with 10℃ increased per stage until the highest temperature of +50℃ reached.

TEST RESULTS

Reference Frequency: GSM850 Middle channel=190 channel=836.6MHz					
Power supplied (Vdc)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.70	-30	42	0.0502	2.5	Pass
	-20	37	0.0442		
	-10	25	0.0299		
	0	36	0.0430		
	10	45	0.0538		
	20	46	0.0550		
	30	35	0.0418		
	40	33	0.0394		
	50	34	0.0406		
Reference Frequency: PCS1900 Middle channel=661 channel=1880MHz					
Power supplied (Vdc)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.70	-30	43	0.0229	2.5	Pass
	-20	19	0.0101		
	-10	38	0.0202		
	0	19	0.0101		
	10	52	0.0277		
	20	24	0.0128		
	30	36	0.0191		
	40	29	0.0154		
	50	18	0.0096		

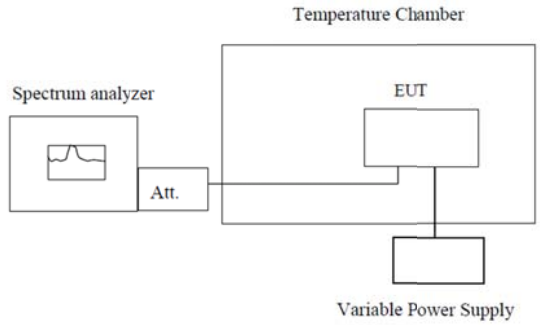
Reference Frequency: WCDMA Band II Middle channel=9400 channel=1880MHz					
Power supplied (Vdc)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.70	-30	42	0.0223	2.5	Pass
	-20	39	0.0207		
	-10	43	0.0229		
	0	24	0.0128		
	10	43	0.0229		
	20	45	0.0239		
	30	43	0.0229		
	40	42	0.0223		
	50	45	0.0239		
Reference Frequency: WCDMA Band IV Middle channel=1450 channel=1740.0MHz					
Power supplied (Vdc)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.70	-30	39	0.0224	2.5	Pass
	-20	40	0.0230		
	-10	37	0.0213		
	0	43	0.0247		
	10	36	0.0207		
	20	35	0.0201		
	30	43	0.0247		
	40	32	0.0184		
	50	45	0.0259		
Reference Frequency: WCDMA Band V Middle channel=4182 channel=836.6MHz					
Power supplied (Vdc)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.70	-30	25	0.0299	2.5	Pass
	-20	19	0.0227		
	-10	43	0.0514		
	0	25	0.0299		
	10	36	0.0430		
	20	42	0.0502		
	30	32	0.0383		
	40	16	0.0191		
	50	45	0.0538		

4.9. Frequency stability V.S. Temperature measurement

LIMIT

2.5ppm

TEST CONFIGURATION



Note : Measurement setup for testing on Antenna connector

TEST PROCEDURE

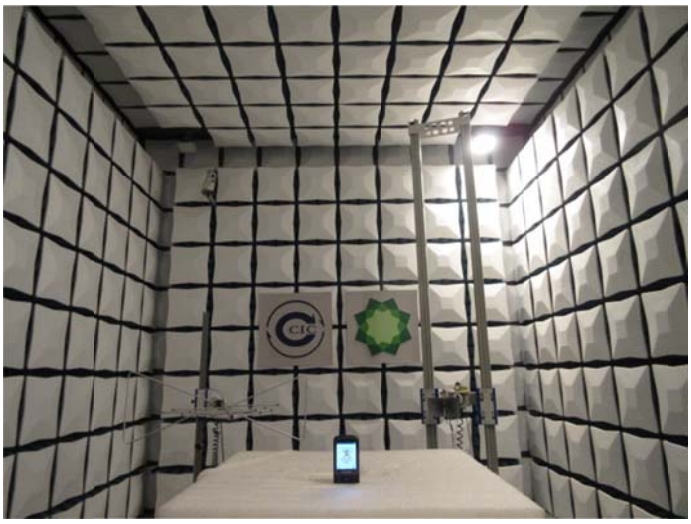
1. Set chamber temperature to 25℃. Use a variable DC power source topower the EUT and set the voltage to rated voltage.
2. Set the spectrum analyzer RBW lowenough to obtain the desired frequency resolution and recorded the frequency.
3. Reduce the input voltage to specified extreme voltage variation (+/- 15%) and endpoint, recordthe maximum frequency change.

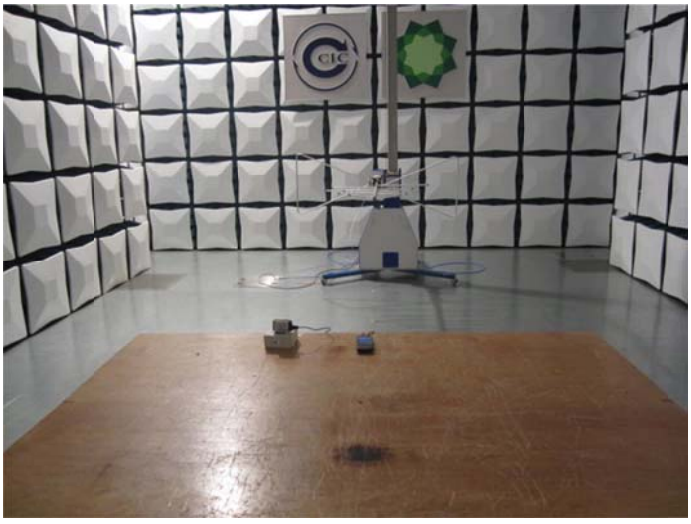
TEST RESULTS

Reference Frequency: GSM850 (GSM link) Middle channel=190 channel=836.6MHz					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.25	37	0.0442	2.5	Pass
	3.70	42	0.0502		
	3.40	34	0.0406		
Reference Frequency: PCS1900 (GSM link) Middle channel=661 channel=1880MHz					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.25	36	0.0191	2.5	Pass
	3.70	28	0.0149		
	3.40	39	0.0207		
Reference Frequency: WCDMA Band II Middle channel=9400 channel=1880MHz					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.25	29	0.0154	2.5	Pass
	3.70	42	0.0223		
	3.40	37	0.0197		
Reference Frequency: WCDMA Band IV Middle channel=1450 channel=1740.0MHz					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.25	38	0.0218	2.5	Pass
	3.70	43	0.0247		
	3.40	39	0.0224		
Reference Frequency: WCDMA Band V Middle channel=4182 channel=836.6MHz					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.25	29	0.0347	2.5	Pass
	3.70	18	0.0215		
	3.40	32	0.0383		

5. Test Setup Photos of the EUT

Radiated emission:





Conducted emission:

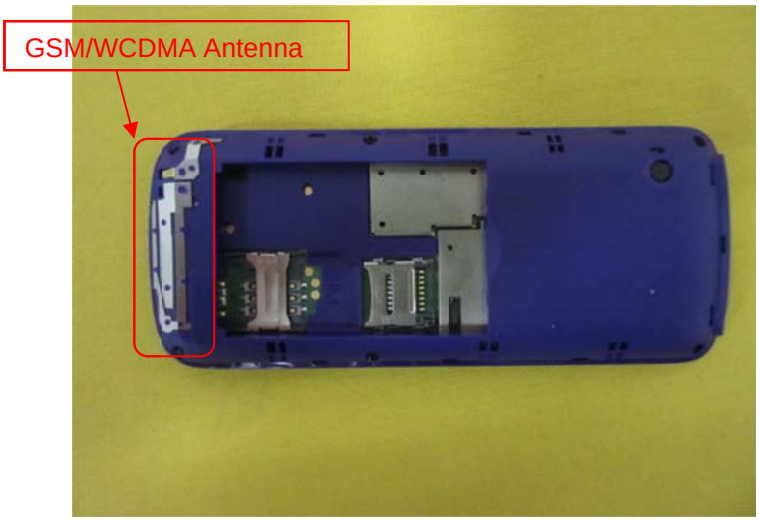
6. External and Internal Photos of the EUT

External photos of the EUT


verykool


verykool

Internal photos of the EUT



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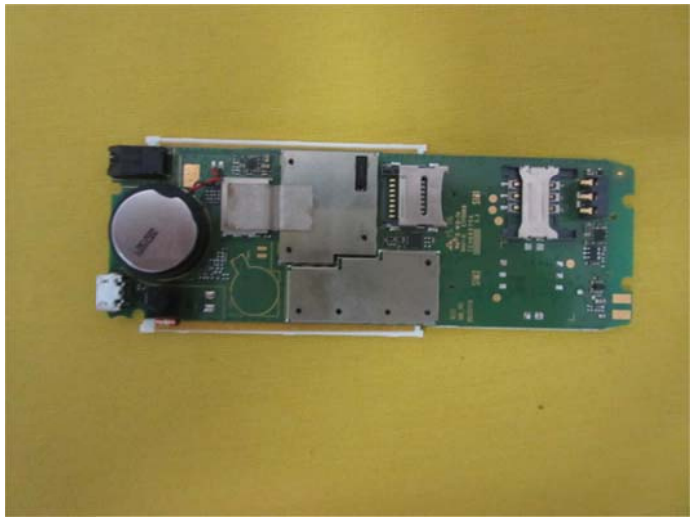
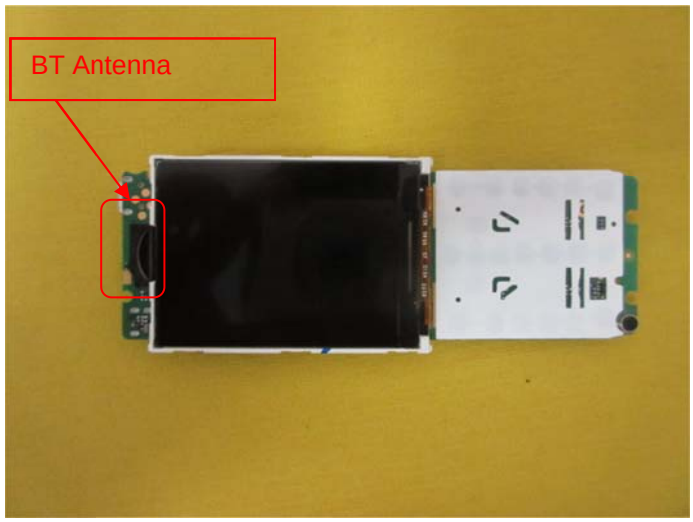
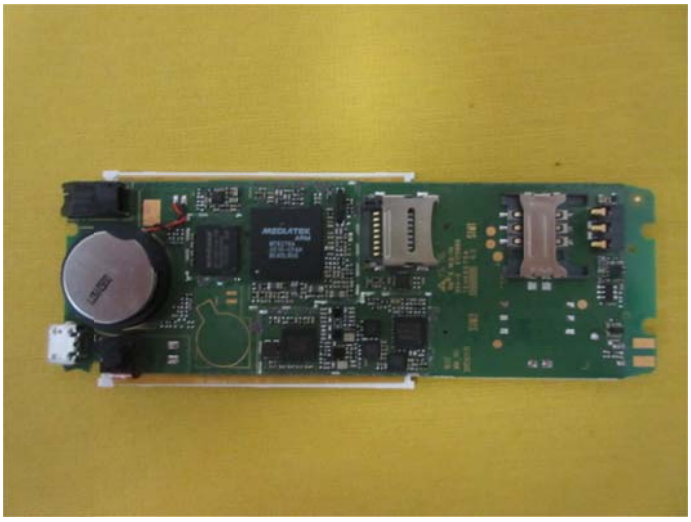
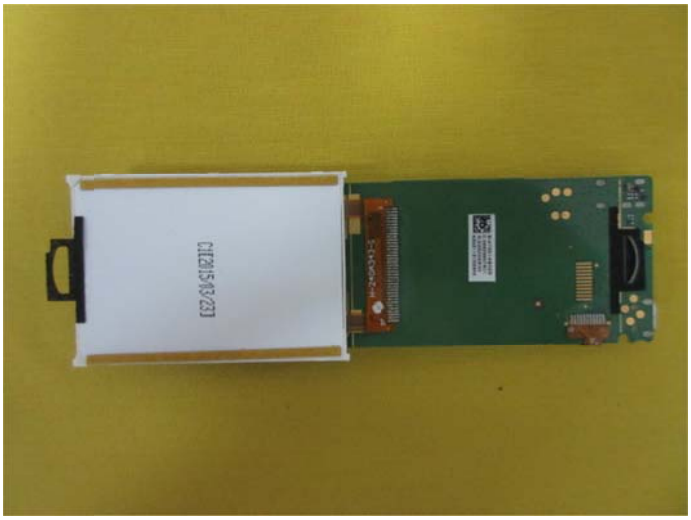



BT Antenna





.....End of Report.....