FCC REPORT

Applicant:	Shenzhen Fortuneship Technology CO., LTD
Address of Applicant:	7th floor, Kingson Building, New Energy Innovation Industrial Park, No.1 ChuangSheng Road, Xili, Nanshan District, Shenzhen, P.R.China
Equipment Under Test (EUT)	
Product Name:	SMART PHONE
Model No.:	FSM3500G, LS001(A-Z)
FCC ID:	2ABXI-LS001
Applicable standards:	FCC CFR Title 47 Part 2 FCC CFR Title 47 Part22 Subpart H FCC CFR Title 47 Part24 Subpart E
Date of sample receipt:	24 Oct., 2014
Date of Test:	24 Oct., to 13 Nov., 2014
Date of report issued:	13 Nov., 2014
Test Result:	PASS *

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:

Bruce Zhang
Laboratory Manager

2. Version

Version No.	Date	Description
00	*13 Nov., 2014*	*Original*

Prepared by: Luna Gao ***Date:*** *13 Nov., 2014*

Report Clerk

Reviewed by: Winner Zhang ***Date:*** *13 Nov., 2014*

Project Engineer

3. Contents

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4. Test Summary

Test Item	Section in CFR 47	Result
RF Exposure (SAR)	Part 1.1307 Part 2.1093	Passed* (Please refer to SAR Report)
RF Output Power	Part 2.1046 Part 22.913 (a)(2) Part 24.232 (c)	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)	Pass
Field Strength of Spurious Radiation	Part 2.1053 Part 22.917 (a) Part 24.238 (a)	Pass
Out of band emission, Band Edge	Part 22.917 (a) Part 24.238 (a)	Pass
Frequency stability vs. temperature	Part 2.1055(a)(1)(b)	Pass
Frequency stability vs. voltage	Part 2.1055(d)(1)(2)	Pass

Pass: The EUT complies with the essential requirements in the standard.

5. General Information

5.1 Client Information

Applicant:	Shenzhen Fortuneship Technology CO., LTD
Address of Applicant:	7th floor, Kingson Building, New Energy Innovation Industrial Park, No.1 ChuangSheng Road, Xili, Nanshan District, Shenzhen, P.R.China
Manufacturer:	Shenzhen Fortuneship Technology CO., LTD
Address of Manufacturer:	7th floor, Kingson Building, New Energy Innovation Industrial Park, No.1 ChuangSheng Road, Xili, Nanshan District, Shenzhen, P.R.China
Factory:	Huizhou Fortuneship Technology CO., LTD
Address of Factory:	He Chang East 4 Road No.1, ZhongKai ZIP, Hui Zhou City, Guang Dong Province, China

5.2 General Description of E.U.T.

Product Name:	SMART PHONE
Model No.:	FSM3500G, LS001(A-Z)
Operation Frequency range:	GSM 850: 824.20MHz-848.80MHz PCS1900: 1850.20MHz-1909.80MHz WCDMA Band V:826.4MHz-846.6MHz WCDMA Band II:1852.4 MHz -1907.6 MHz
Modulation type:	GSM/GPRS:GMSK, UMTS:QPSK, EGPRS: 8PSK
Antenna type:	Internal Antenna
Antenna gain:	GSM 850: 0.41 dBi PCS 1900: 1.26 dBi WCDMA 850 : 0.43 dBi WCDMA1900 : 1.32 dBi
AC adapter:	Model: A31-501000 Input:100-240V AC, 50/60Hz 0.2A Output:5.0V DC, 1A
Power supply:	Rechargeable Li-ion Battery DC3.8V-2300mAh
Remark:	Model No.: FSM3500G, LS001(A-Z) were identical inside, the electrical circuit design, layout, components used and internal wiring, with only difference being model name. The model LS001(A-Z), “A-Z” means Different Customer Icon. The models are same except models name. It not affect the test result. The EUT has two versions, double SIM and single SIM. Both of them can meet different customer’s demand in various markets. The electrical circuit design, layout, components used and internal wiring was identical .We selected double SIM Version for full test.

Operation Frequency List:

GSM 850		PCS1900	
Channel:	Frequency (MHz)	Channel:	Frequency (MHz)
128	824.20	512	1850.20
129	824.40	513	1850.40
….	….	….	….
189	836.40	660	1879.80
190	836.60	661	1880.00
191	836.80	662	1880.20
…	…	…	…
250	848.60	809	1909.60
251	848.80	810	1909.80
WCDMA Band V		WCDMA Band II	
Channel:	Frequency (MHz)	Channel:	Frequency (MHz)
4132	826.40	9262	1852.40
4133	826.60	9263	1852.60
….	….	….	….
4182	836.40	9399	1879.80
4183	836.60	9400	1880.00
4184	836.80	9401	1880.20
…	…	…	…
4232	846.40	9537	1907.40
4233	846.60	9538	1907.60

Regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

GSM850			PCS1900		
	Channel	Frequency(MHz)		Channel	Frequency(MHz)
Lowest channel	128	824.20	Lowest channel	512	1850.20
Middle channel	190	836.60	Middle channel	661	1880.00
Highest channel	251	848.80	Highest channel	810	1909.80
WCDMA Band V			WCDMA Band II		
	Channel	Frequency(MHz)		Channel	Frequency(MHz)
Lowest channel	4132	826.40	Lowest channel	9262	1852.40
Middle channel	4183	836.60	Middle channel	9400	1880.00
Highest channel	4233	846.60	Highest channel	9538	1907.60

5.3 Test modes

Communicate mode (GSM850)	Keep the EUT in communicating mode on GSM 850 band.
Data mode (GPRS850)	Keep the EUT in data communicating mode on GPRS 850 band.
Data mode (EGPRS850)	Keep the EUT in data communicating mode on EGPRS 850 band.
Communicate mode (PCS1900)	Keep the EUT in communicating mode on PCS1900 band.
Data mode (GPRS1900)	Keep the EUT in data communicating mode on GPRS1900 band.
Data mode (EGPRS1900)	Keep the EUT in data communicating mode on EGPRS1900 band.
Communicate mode (UMTS 850)	Keep the EUT in communicating mode on UMTS 850 band.
Communicate mode (UMTS 1900)	Keep the EUT in communicating mode on UMTS 1900 band.
Data mode (RMC UMTS 850)	Keep the EUT in data communicating mode on RMC in UMTS 850 (12.2 kbps, 64 kbps, 144 kbps & 384 kbps).
Data mode (HSDPA UMTS 850)	Keep the EUT in data communicating mode on HSDPA in UMTS 850(Sub-test 1~Sub-test 4).
Data mode (HSUPA UMTS 850)	Keep the EUT in data communicating mode on HSUPA in UMTS 850(Sub-test 1~Sub-test 5).
Data mode (RMC UMTS 1900)	Keep the EUT in data communicating mode on RMC in UMTS 850 (12.2 kbps, 64 kbps, 144 kbps & 384 kbps).
Data mode (HSDPA UMTS 1900)	Keep the EUT in data communicating mode on HSDPA in UMTS 1900. (Sub-test 1~Sub-test 4).
Data mode (HSUPA UMTS 1900)	Keep the EUT in data communicating mode on HSUPA in UMTS 1900. (Sub-test 1~Sub-test 5).
Remark :	Pre-test output power of all modes, and found GSM 850, PCS 1900, UMTS 850 12.2 kbps RMC & UMTS 1900 12.2 kbps RMC were the worst case. The details please refer to section 6.5.

5.4 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is filing to comply with Section Part 22 subpart H and Part 24 subpart E of the FCC CFR 47 Rules.

5.5 Test Methodology

Both conducted and radiated testing were performed according to the procedures document on TIA/EIA 603 and FCC CFR 47.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055 and 2.1057

5.6 Laboratory Facility

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

- **FCC - Registration No.: 817957**

Shenzhen Zhongjian Nanfang Testing 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 out files. Registration 817957, February 27, 2012.

- **IC - Registration No.: 10106A-1**

The 3m Semi-anechoic chamber of Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.

- **CNAS - Registration No.: CNAS L6048**

Shenzhen Zhongjian Nanfang Testing Co., Ltd. is accredited to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L6048.

5.7 Laboratory Location

Shenzhen Zhongjian Nanfang Testing Co., Ltd.
Address: No.B-C, 1/F., Building 2, Laodong No.2 Industrial Park, Xixiang Road,
Bao'an District, Shenzhen, Guangdong, China
Tel: +86-755-23118282
Fax: +86-755-23116366

5.8 Test Instruments list

Radiated Emission:

Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
1	3m Semi- Anechoic Chamber	SAEMC	9(L)*6(W)* 6(H)	CCIS0001	Aug. 23 2014	Aug. 22 2017
2	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	CCIS0005	Apr. 19 2014	Apr. 19 2015
3	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA9120D	CCIS0006	Apr. 19 2014	Apr. 19 2015
4	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
5	Coaxial Cable	CCIS	N/A	CCIS0016	Apr. 01 2014	Mar. 31 2015
6	Coaxial Cable	CCIS	N/A	CCIS0017	Apr. 01 2014	Mar. 31 2015
7	Coaxial cable	CCIS	N/A	CCIS0018	Apr. 01 2014	Mar. 31 2015
8	Coaxial Cable	CCIS	N/A	CCIS0019	Apr. 01 2014	Mar. 31 2015
9	Coaxial Cable	CCIS	N/A	CCIS0087	Apr. 01 2014	Mar. 31 2015
10	Amplifier(10kHz-1.3GHz)	HP	8447D	CCIS0003	Apr. 01 2014	Mar. 31 2015
11	Amplifier(1GHz-18GHz)	Compliance Direction Systems Inc.	PAP-1G18	CCIS0011	June 09 2014	June 08 2015
12	Pre-amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	Apr. 01 2014	Mar. 31 2015
13	Horn Antenna	ETS-LINDGREN	3160	GTS217	Mar. 30 2014	Mar. 29 2015
14	Printer	HP	HP LaserJet P1007	N/A	N/A	N/A
15	Positioning Controller	UC	UC3000	CCIS0015	N/A	N/A
16	Spectrum analyzer 9k-30GHz	Rohde & Schwarz	FSP	CCIS0023	Apr. 19 2014	Apr. 19 2015
17	EMI Test Receiver	Rohde & Schwarz	ESPI	CCIS0022	Apr. 01 2014	Mar. 31 2015
18	Loop antenna	Laplace instrument	RF300	EMC0701	Apr. 01 2014	Mar. 31 2015
19	Universal radio communication tester	Rhode & Schwarz	CMU200	CCIS0069	May. 29 2014	May. 28 2015
20	Signal Analyzer	Rohde & Schwarz	FSIQ3	CCIS0088	Apr. 19 2014	Apr. 19 2015

6. System test configuration

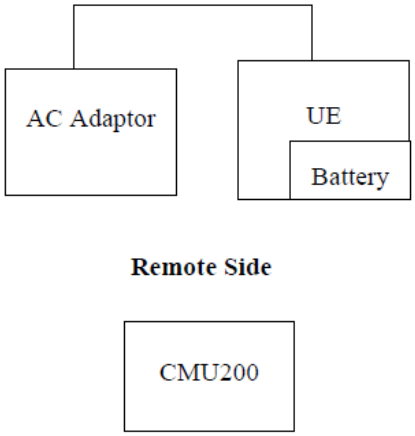
6.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the commission's requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

6.2 EUT Exercise

The EUT (Transmitter) was operated in the engineering mode to fix the Tx frequency which was for the purpose of the measurements.

6.3 Configuration of Tested System

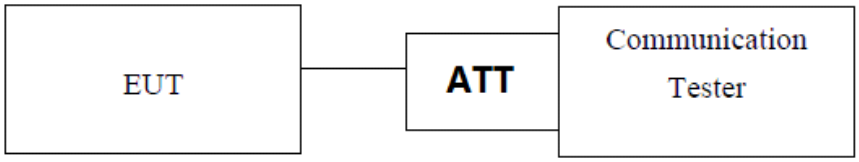


Remote Side

6.4 Description of Test Modes

The EUT has been tested under operating condition.
EUT staying in continuous transmitting mode. Channel Low, Mid and High for each type band with rated data rate were chosen for full testing.
The field strength of spurious radiation emission was measured as EUT stand-up position (H mode) and lie down position (E1, E2 mode) for three modes (GSM850, PCS1900, WCDMA Band V and WCDMA Band II) with power adaptor, earphone and Data cable. The worst-case H mode for GSM850, PCS1900, UMTS 850 and UMTS 1900.

6.5 Conducted Output Power

Test Requirement:	FCC part 22.913(a) and FCC part 24.232(b)
Test Method:	FCC part 2.1046
Limit:	GSM 850 7W PCS 1900 2W WCDMA Band V: 7W WCDMA Band II: 2W
Test setup:	 *Note: Measurement setup for testing on Antenna connector*
Test Procedure:	The transmitter output was connected to a calibrated attenuator, the other end of which was connected to the CMU200. Transmitter output power was read off in dBm.
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Measurement Data

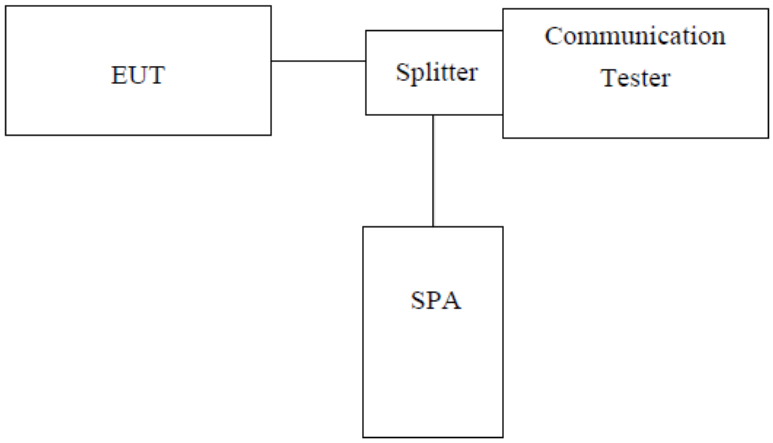
EUT Mode	Channel	Frequency (MHz)	Burst Average power (dBm)	Limit(dBm)	Result
GSM 850	128	824.20	33.20	38.45	Pass
	190	836.60	33.25		
	251	848.80	33.23		
GPRS 850 (1 Uplink slot)	128	824.20	33.23		
	190	836.60	33.27		
	251	848.80	33.26		
GPRS 850 (2 Uplink slots)	128	824.20	32.36		
	190	836.60	32.41		
	251	848.80	32.42		
GPRS 850 (3 Uplink slots)	128	824.20	30.47		
	190	836.60	30.53		
	251	848.80	30.55		
GPRS 850 (4 Uplink slots)	128	824.20	29.18		
	190	836.60	29.24		
	251	848.80	29.29		
EGPRS 850 (1 Uplink slot)	128	824.20	27.59		
	190	836.60	27.39		
	251	848.80	27.05		
EGPRS 850 (2 Uplink slots)	128	824.20	26.04		
	190	836.60	25.83		
	251	848.80	25.48		
EGPRS 850 (3 Uplink slot)	128	824.20	23.65		
	190	836.60	23.39		
	251	848.80	23.00		
EGPRS 850 (4 Uplink slot)	128	824.20	21.97		
	190	836.60	21.81		
	251	848.80	21.45		

EUT Mode	Channel	Frequency (MHz)	Burst Average power (dBm)	Limit(dBm)	Result
PCS 1900	512	1850.20	30.04	33.00	Pass
	661	1880.00	30.00		
	810	1909.80	30.03		
GPRS 1900 (1 Uplink slot)	512	1850.20	30.05		
	661	1880.00	29.97		
	810	1909.80	29.95		
GPRS 1900 (2 Uplink slots)	512	1850.20	29.22		
	661	1880.00	29.23		
	810	1909.80	29.32		
GPRS 1900 (3 Uplink slots)	512	1850.20	27.38		
	661	1880.00	27.44		
	810	1909.80	27.58		
GPRS 1900 (4 Uplink slots)	512	1850.20	26.13		
	661	1880.00	26.24		
	810	1909.80	26.48		
EGPRS 1900 (1 Uplink slot)	512	1850.20	25.00		
	661	1880.00	25.12		
	810	1909.80	25.11		
EGPRS 1900 (2 Uplink slots)	512	1850.20	23.47		
	661	1880.00	23.62		
	810	1909.80	23.58		
EGPRS 1900 (3 Uplink slot)	512	1850.20	20.95		
	661	1880.00	20.90		
	810	1909.80	20.76		
EGPRS 1900 (4 Uplink slots)	512	1850.20	19.22		
	661	1880.00	19.29		
	810	1909.80	19.29		

EUT Mode		Channel	Frequency (MHz)	Burst Average power (dBm)	Limit(dBm)	Result
UMTS 850 HSDPA	Subtest 1	4132	826.40	22.52	38.45	Pass
		4183	836.00	22.40		
		4233	846.60	22.26		
	Subtest 2	4132	826.40	22.05		
		4183	836.00	21.78		
		4233	846.60	21.67		
	Subtest 3	4132	826.40	20.55		
		4183	836.00	19.98		
		4233	846.60	20.19		
	Subtest 4	4132	826.40	20.43		
		4183	836.00	19.91		
		4233	846.60	20.07		
UMTS 850 HSUPA	Subtest 1	4132	826.40	22.37		
		4183	836.00	22.24		
		4233	846.60	22.14		
	Subtest 2	4132	826.40	22.48		
		4183	836.00	22.28		
		4233	846.60	22.21		
	Subtest 3	4132	826.40	20.43		
		4183	836.00	19.93		
		4233	846.60	20.28		
	Subtest 4	4132	826.40	22.53		
		4183	836.00	22.40		
		4233	846.60	22.27		
	Subtest 5	4132	826.40	21.53		
		4183	836.00	21.15		
		4233	846.60	21.03		
UMTS 850 RMC	12.2kbps	4132	826.40	23.47		
		4183	836.00	23.33		
		4233	846.60	23.23		
UMTS 850 AMR	12.2kbps	4132	826.40	23.36		
		4183	836.00	23.19		
		4233	846.60	23.16		

EUT Mode		Channel	Frequency (MHz)	Burst Average power (dBm)	Limit(dBm)	Result
UMTS1900 HSDPA	Subtest 1	9262	1852.40	22.53	33.00	Pass
		9400	1880.00	22.59		
		9538	1907.60	22.37		
	Subtest 2	9262	1852.40	22.08		
		9400	1880.00	22.06		
		9538	1907.60	21.96		
	Subtest 3	9262	1852.40	20.43		
		9400	1880.00	20.41		
		9538	1907.60	19.89		
	Subtest 4	9262	1852.40	20.48		
		9400	1880.00	20.33		
		9538	1907.60	20.02		
UMTS1900 HSUPA	Subtest 1	9262	1852.40	22.37		
		9400	1880.00	22.52		
		9538	1907.60	22.28		
	Subtest 2	9262	1852.40	22.40		
		9400	1880.00	22.54		
		9538	1907.60	22.28		
	Subtest 3	9262	1852.40	20.36		
		9400	1880.00	20.26		
		9538	1907.60	19.93		
	Subtest 4	9262	1852.40	22.47		
		9400	1880.00	22.59		
		9538	1907.60	22.34		
	Subtest 5	9262	1852.40	21.39		
		9400	1880.00	21.41		
		9538	1907.60	21.32		
UMTS1900 RMC	12.2kbps	9262	1852.40	23.47		
		9400	1880.00	23.54		
		9538	1907.60	23.25		
UMTS1900 AMR	12.2kbps	9262	1852.40	23.40		
		9400	1880.00	23.52		
		9538	1907.60	23.13		

6.6 Occupy Bandwidth

Test Requirement:	FCC part 22.913(a) and FCC part 24.232(b)
Test Method:	FCC part 2.1049
Test setup:	 *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. RBW was 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 is the delta frequency between the two points where the display line intersects the signal trace.
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

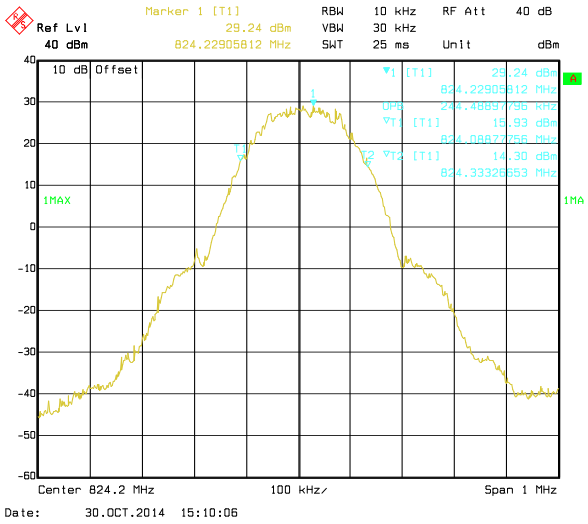
Measurement Data

EUT Mode	Channel	Frequency (MHz)	99% Occupy bandwidth (kHz)	-26dB bandwidth (kHz)
GSM 850	128	824.2	244	319
	190	836.6	246	319
	251	848.8	244	321
PCS 1900	512	1850.2	242	317
	661	1880.0	246	323
	810	1909.8	244	315
EGPRS850	128	824.2	251	321
	190	836.6	253	321
	251	848.8	246	323
EGPRS1900	512	1850.2	248	325
	661	1880.0	253	327
	810	1909.8	253	331
UMTS850 12.2k RMC	4132	824.40	4148	4709
	4183	836.00	4168	4709
	4233	846.60	4148	4689
UMTS1900 12.2k RMC	9262	1852.40	4188	4770
	9400	1880.00	4188	4749
	9538	1907.60	4208	4810

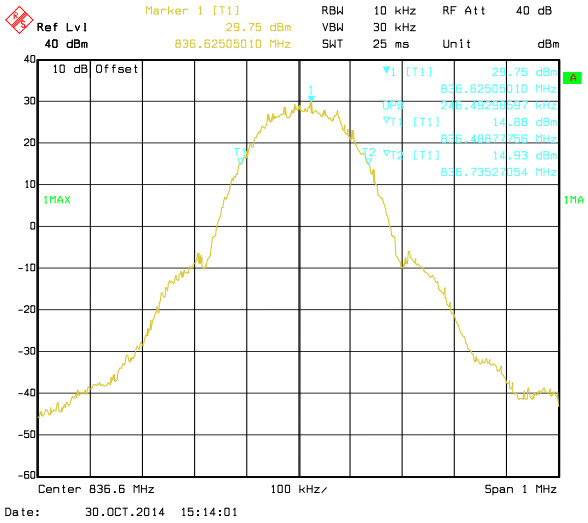
Note: GSM & GPRS use the same modulation technical (GMSK), and with the same channels, so the 99% OBW and the -26dB of GPRS not performed.

Test plot as follows:

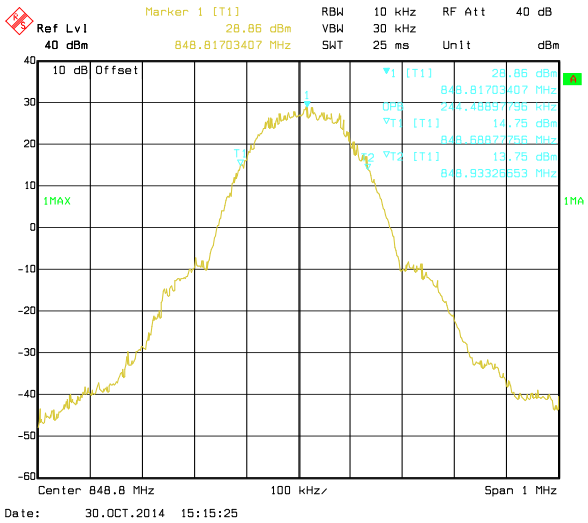
Test Item: 99% Occupy bandwidth Test Mode: GSM850



Lowest channel

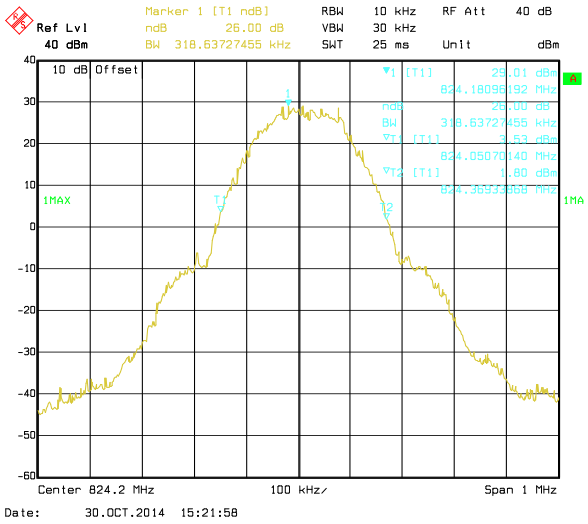


Middle channel

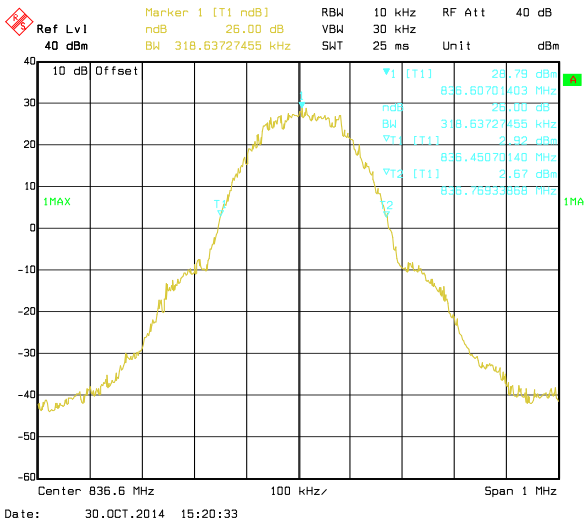


Highest channel

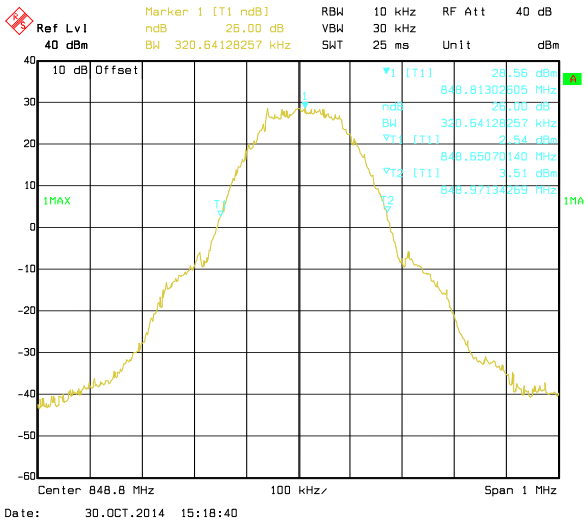
Test Item: -26dB bandwidth Test Mode: GSM850



Lowest channel

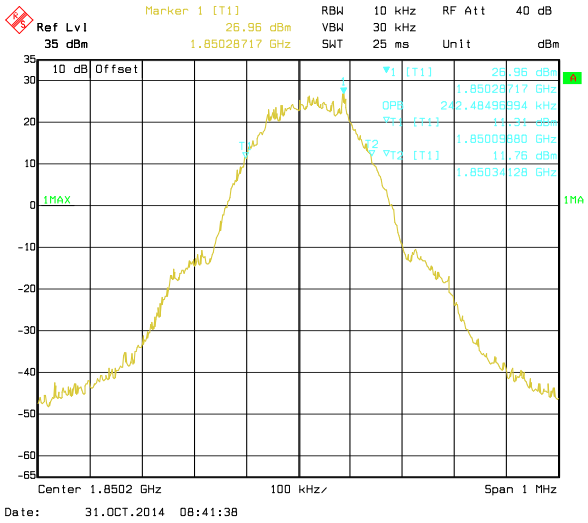


Middle channel

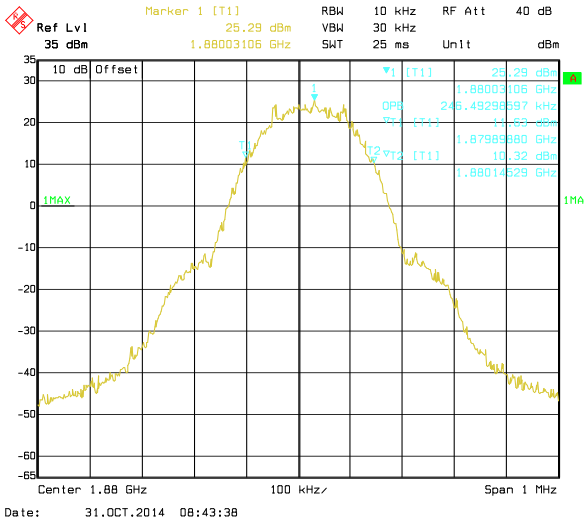


Highest channel

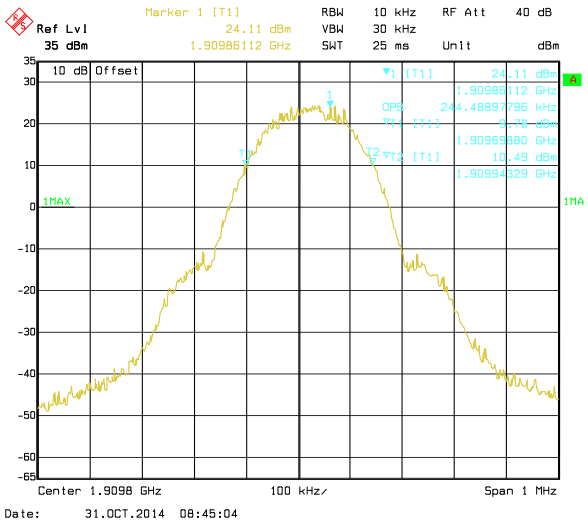
Test Item: 99% Occupy bandwidth Test Mode: PCS 1900



Lowest channel

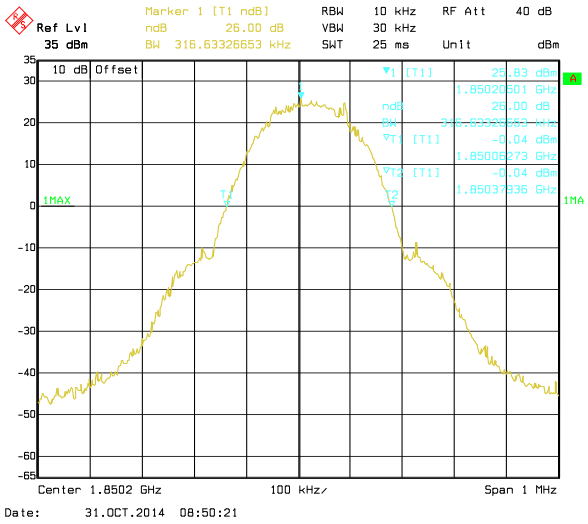


Middle channel

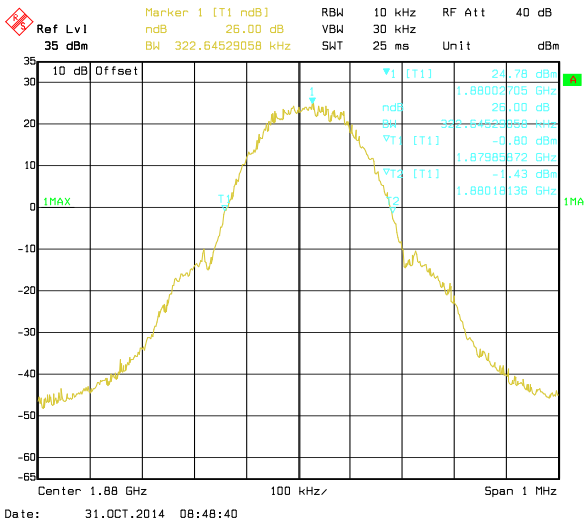


Highest channel

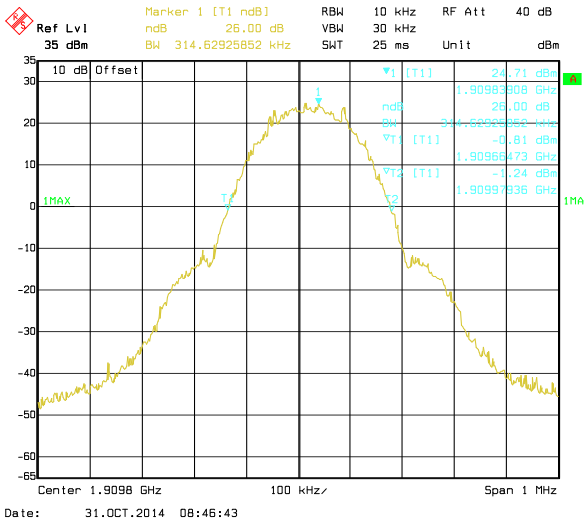
Test Item: -26dB bandwidth Test Mode: PCS 1900



Lowest channel

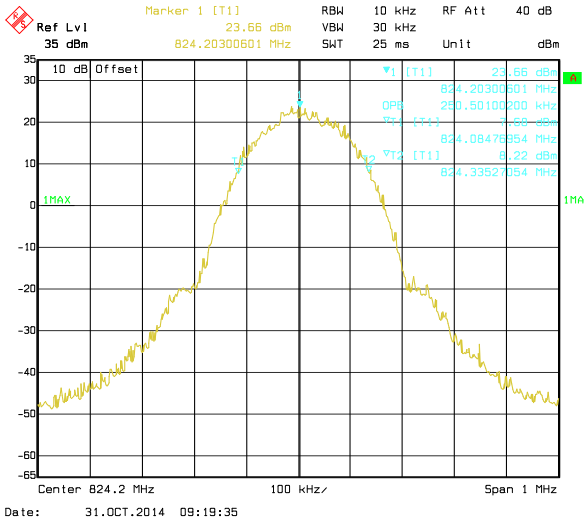


Middle channel

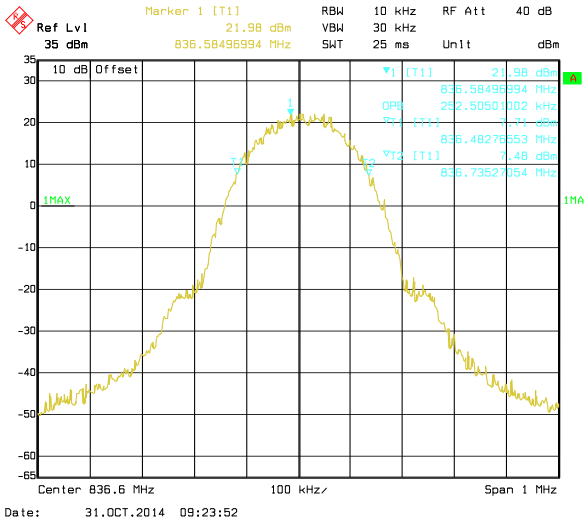


Highest channel

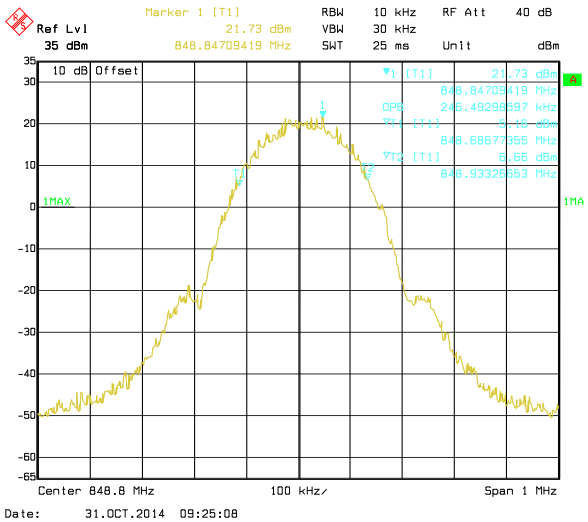
Test Item: 99% Occupy bandwidth Test Mode: EGPRS 850



Lowest channel

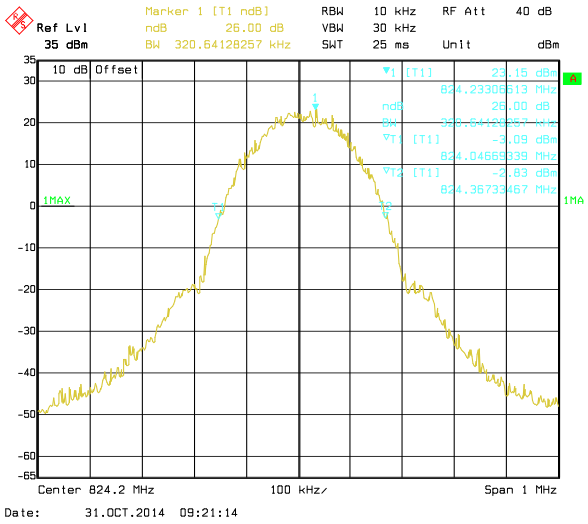


Middle channel

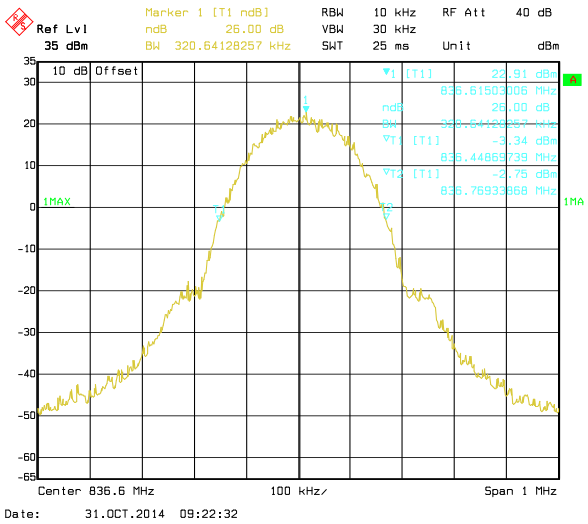


Highest channel

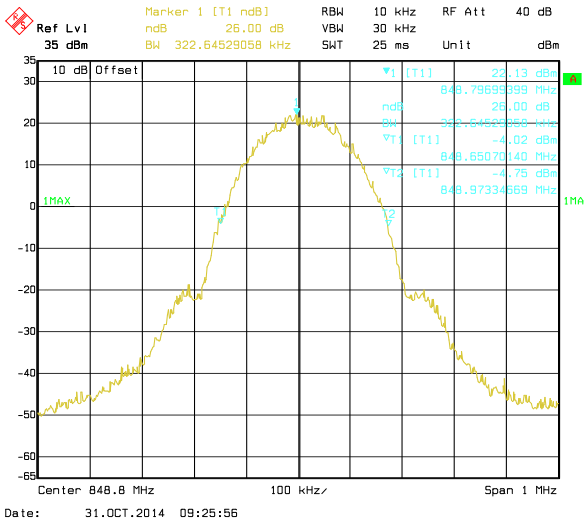
Test Item: -26dB bandwidth Test Mode: EGPRS 850



Lowest channel

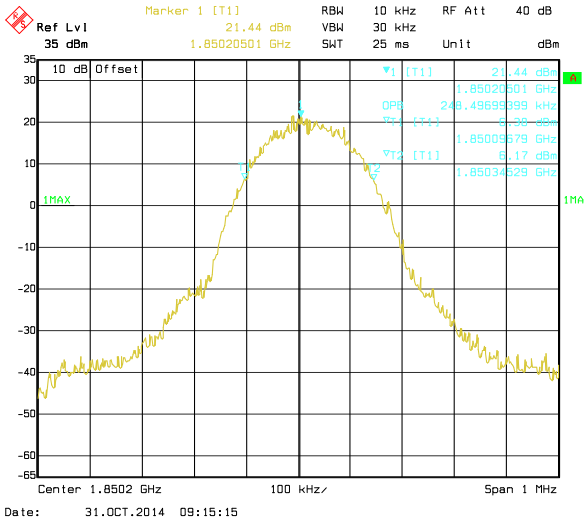


Middle channel

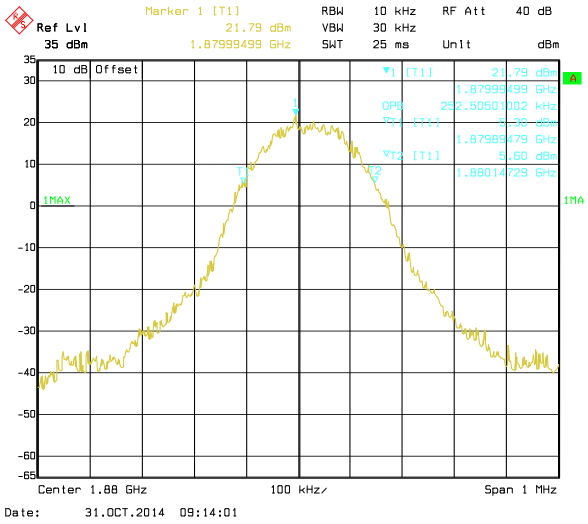


Highest channel

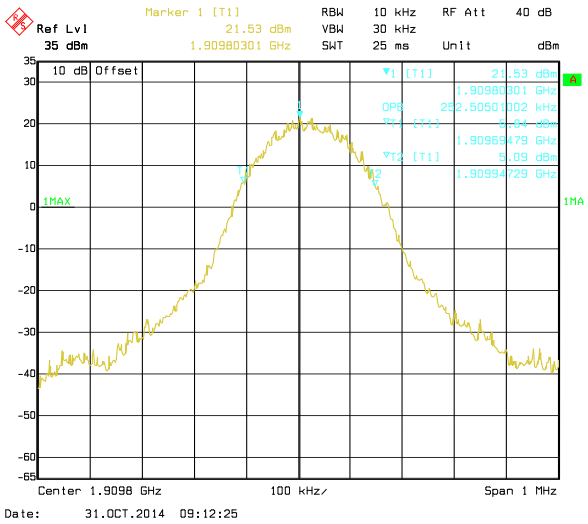
Test Item: 99% Occupy bandwidth Test Mode: EGPRS 1900



Lowest channel

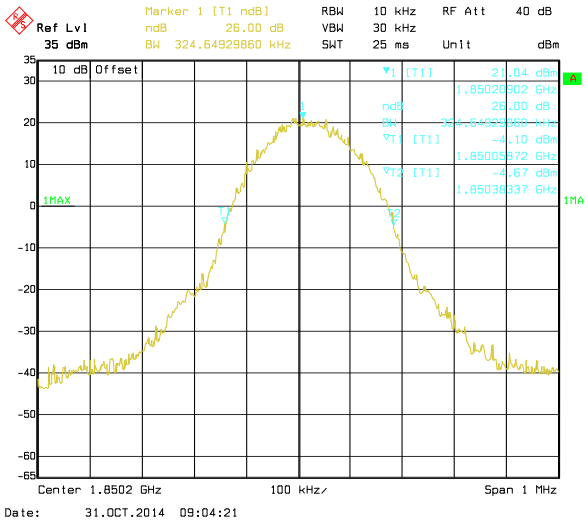


Middle channel

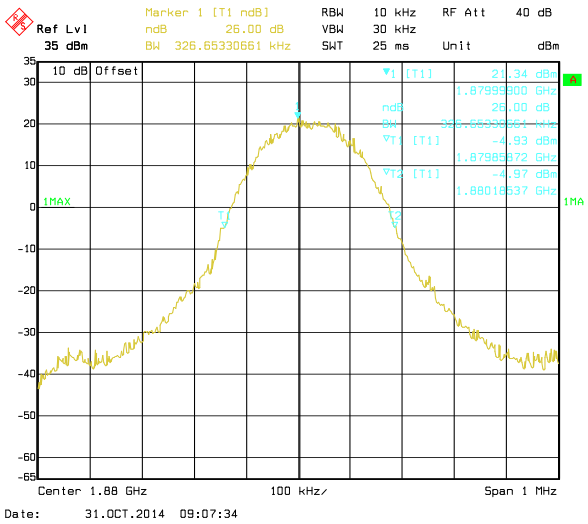


Highest channel

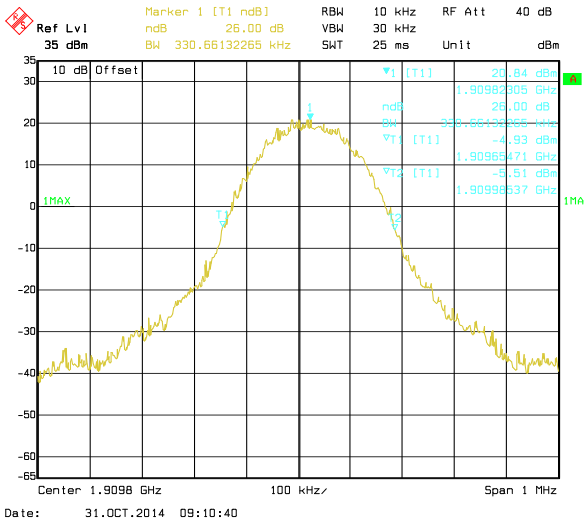
Test Item: -26dB bandwidth Test Mode: EGPRS 1900



Lowest channel

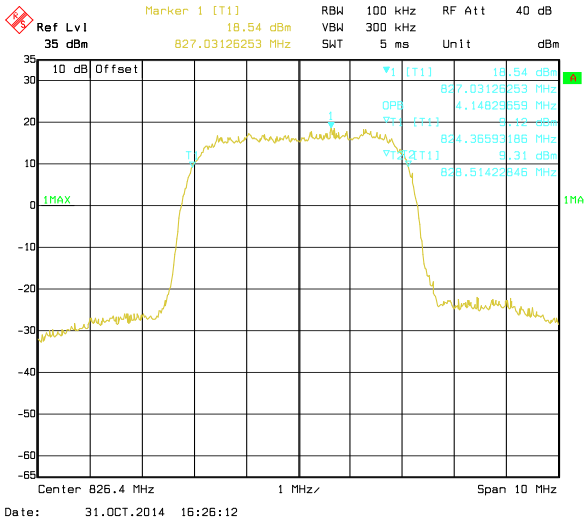


Middle channel

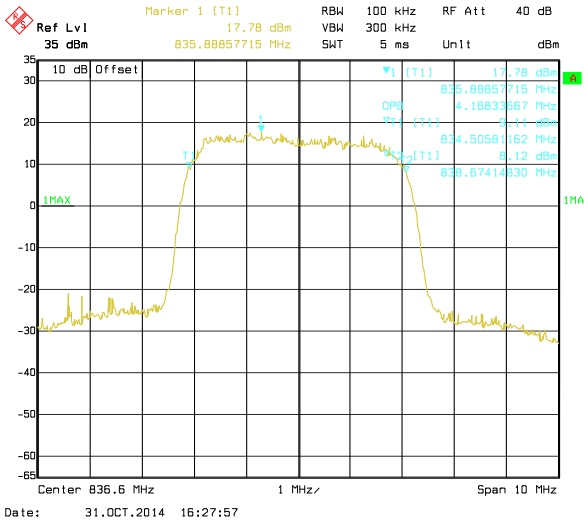


Highest channel

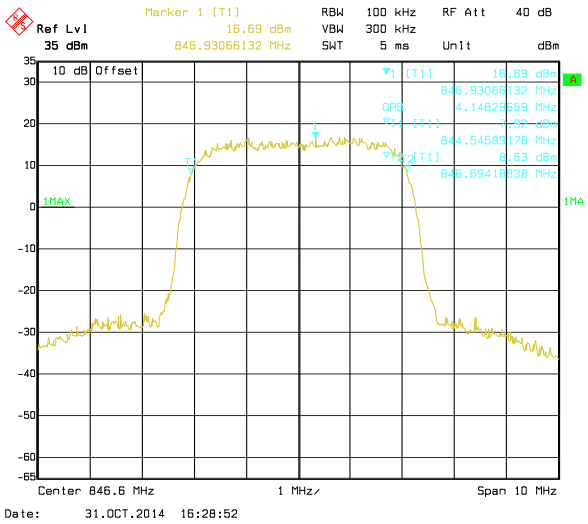
Test Item: 99% Occupy bandwidth Test Mode: UMTS 850 12.2k RMC



Lowest channel

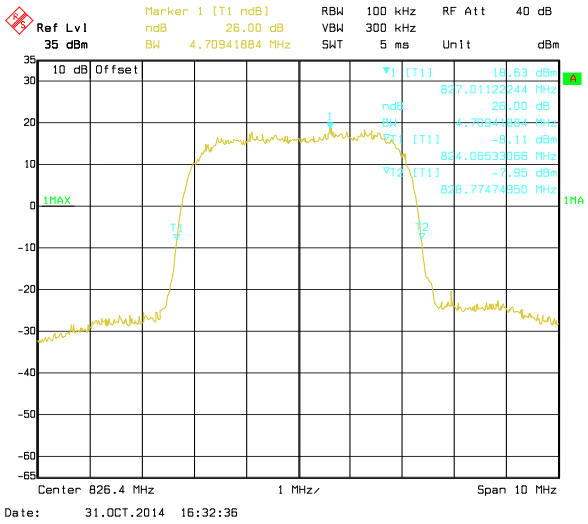


Middle channel

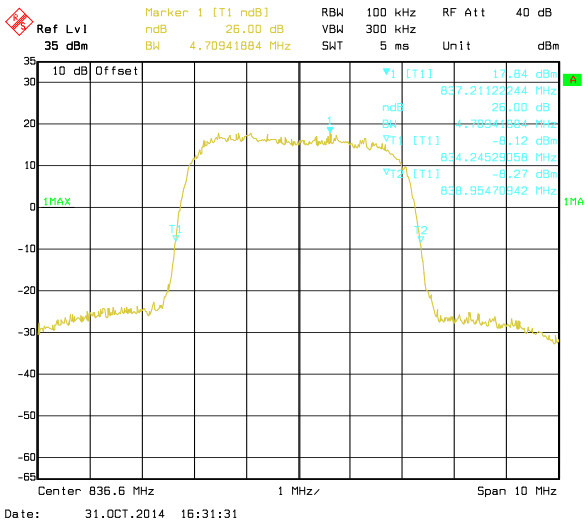


Highest channel

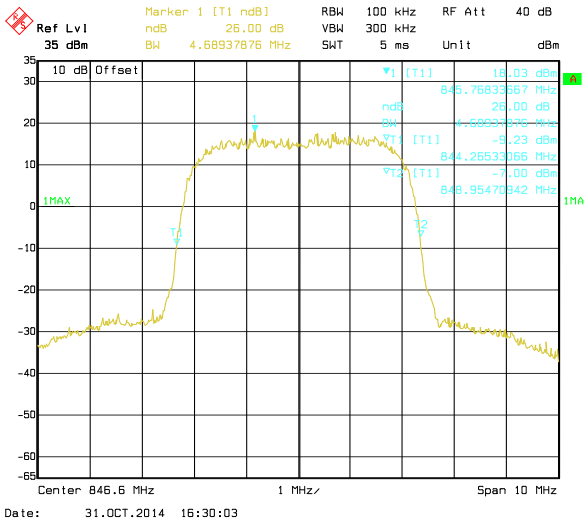
Test Item: -26dB bandwidth Test Mode: UMTS 850 12.2k RMC



Lowest channel

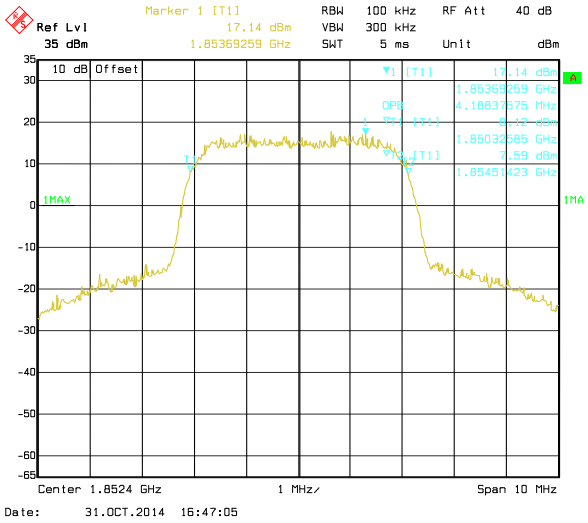


Middle channel

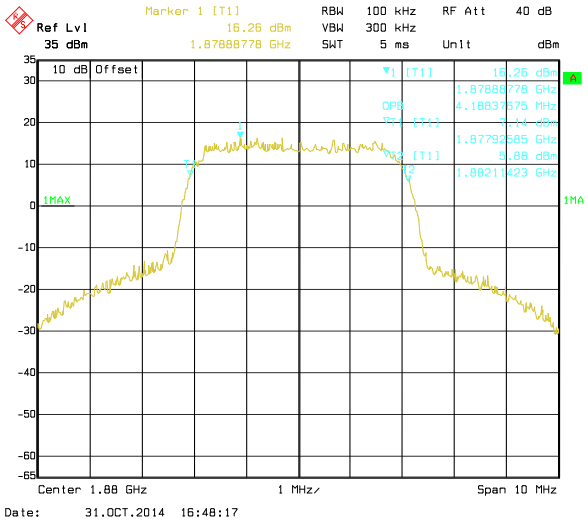


Highest channel

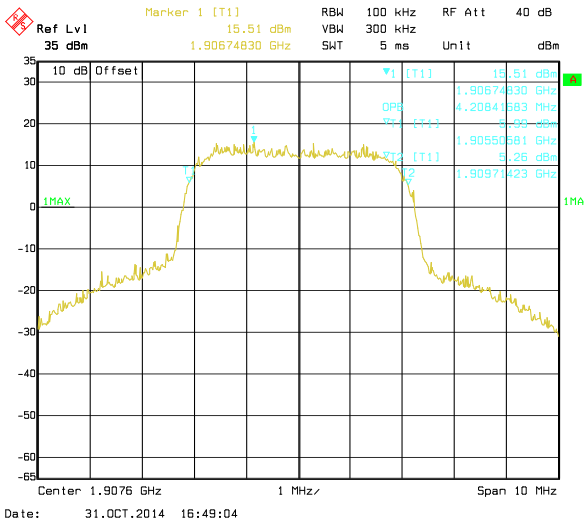
Test Item: 99% Occupy bandwidth Test Mode: UMTS 1900 12.2k RMC



Lowest channel

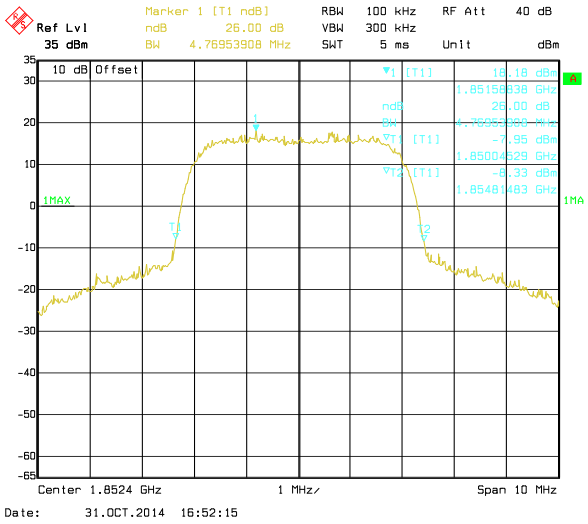


Middle channel

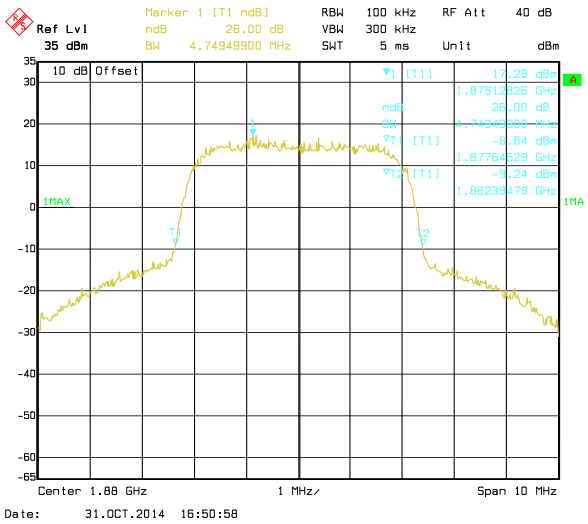


Highest channel

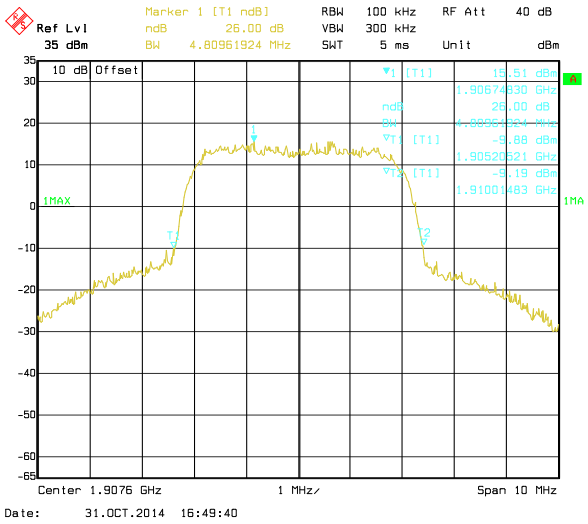
Test Item: -26dB bandwidth Test Mode: UMTS 1900 12.2k RMC



Lowest channel



Middle channel

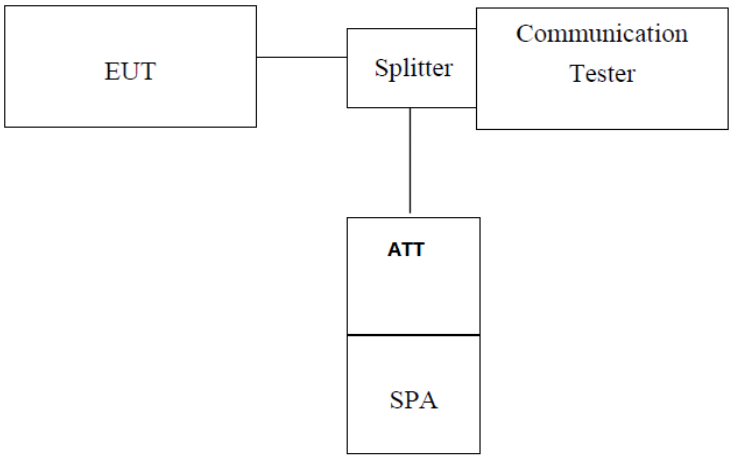


Highest channel

6.7 Modulation Characteristic

According to FCC § 2.1047(d), Part 22H & 24E there is no specific requirement for digital modulation, therefore modulation characteristic is not presented.

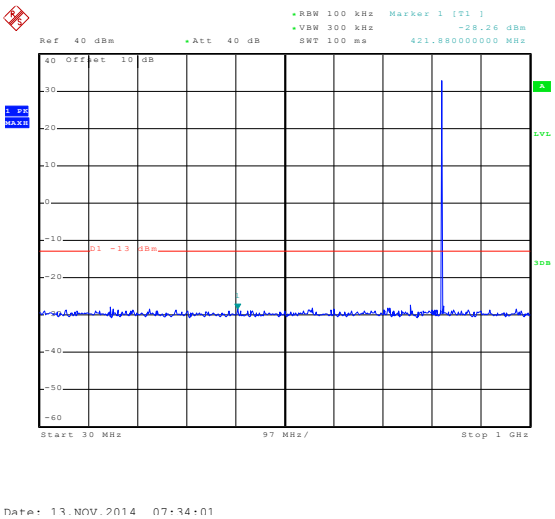
6.8 Out of band emission at antenna terminals

Test Requirement:	FCC part22.917(a) and FCC part24.238(a)
Test Method:	FCC part2.1051
Limit:	-13dBm
Test setup:	 ***Note:*** *Measurement setup for testing on Antenna connector*
Test Procedure:	1 The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. 2 The resolution bandwidth of the spectrum analyzer was set at 100 kHz when below 1GHz, 1MHz when above 1 GHz; sufficient scans were taken to show the out of band Emissions if any up to 10th harmonic. 3 For the out of band: Set the RBW=100 kHz, VBW=300 kHz when below 1 GHz, RBW =1 MHz, VBW=3 MHz when above 1 GHz, Start=30MHz, Stop= 10th harmonic. 4 Band Edge Requirements: In the 1 MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 1 percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to measure the out of band Emissions.
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

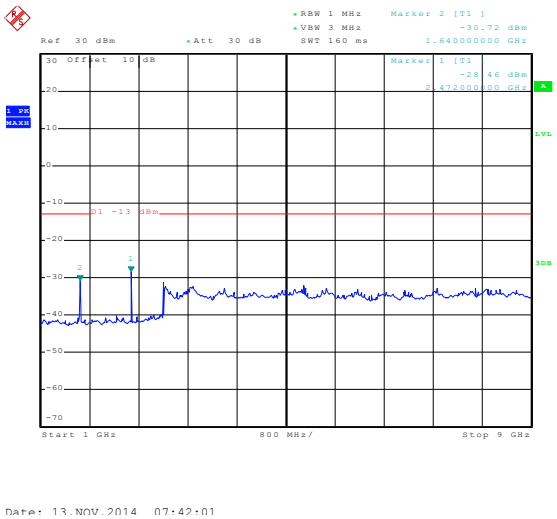
Test plots as follows:

Spurious emission

Test Mode:	GSM850	Test Channel:	Lowest channel

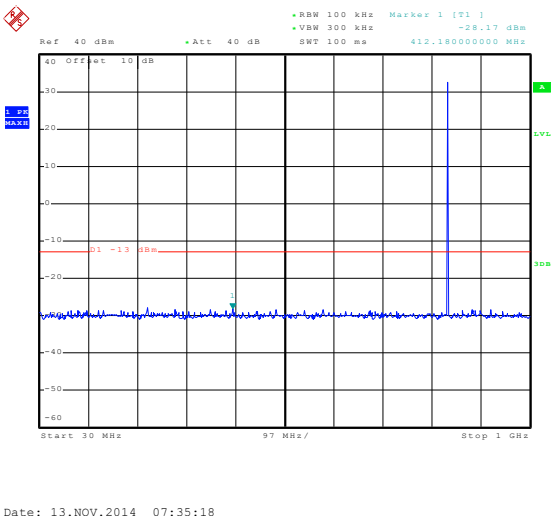


30MHz~1GHz

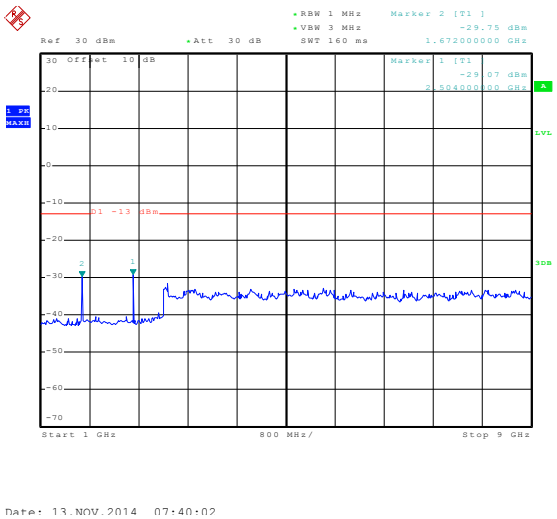


1GHz~9GHz

Test Mode:	GSM850	Test Channel:	Middle channel

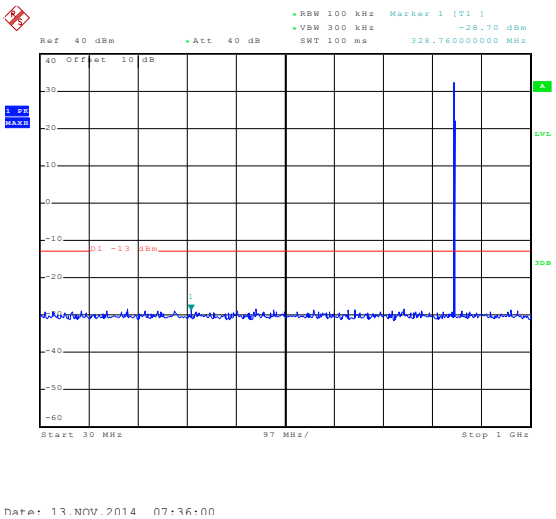


30MHz~1GHz

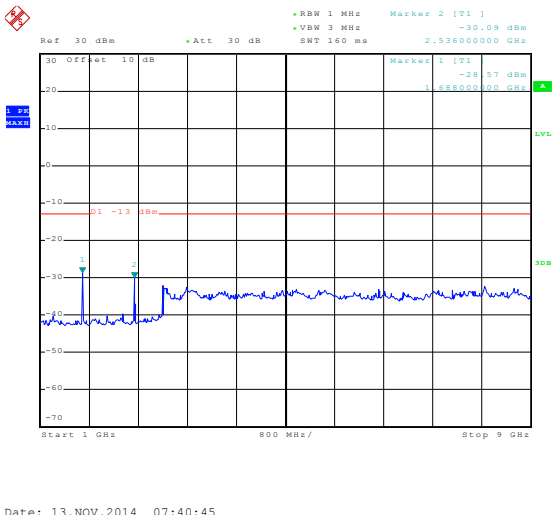


1GHz~9GHz

Test Mode:	GSM850	Test Channel:	Highest channel

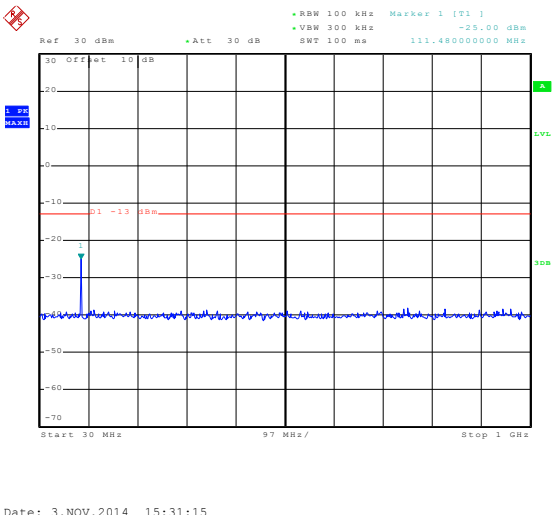


30MHz~1GHz

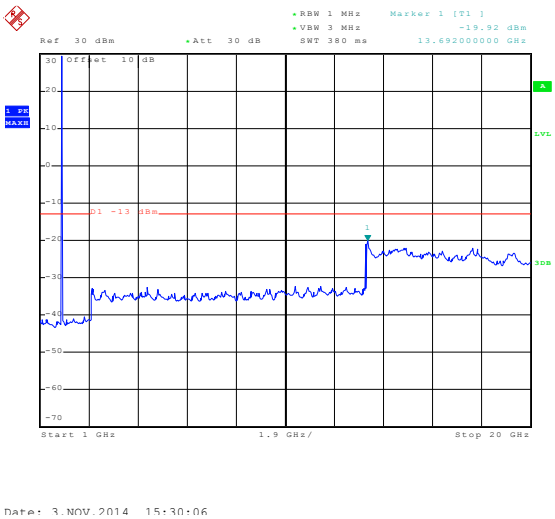


1GHz~9GHz

Test Mode:	PCS1900	Test Channel:	Lowest channel

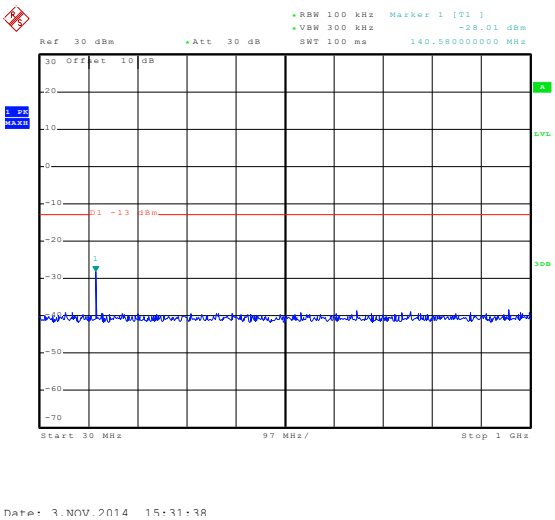


30MHz~1GHz

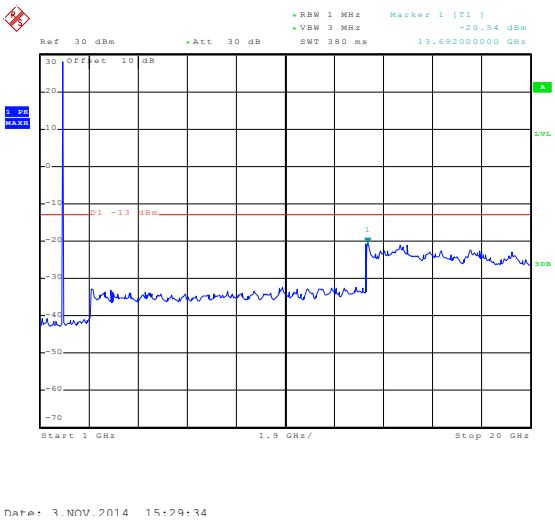


1GHz~20GHz

Test Mode:	PCS1900	Test Channel:	Middle channel

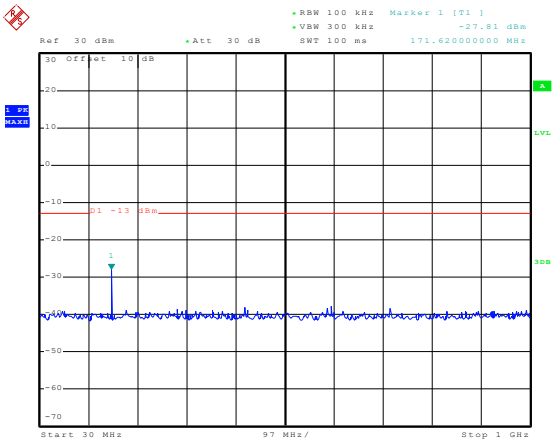


30MHz~1GHz



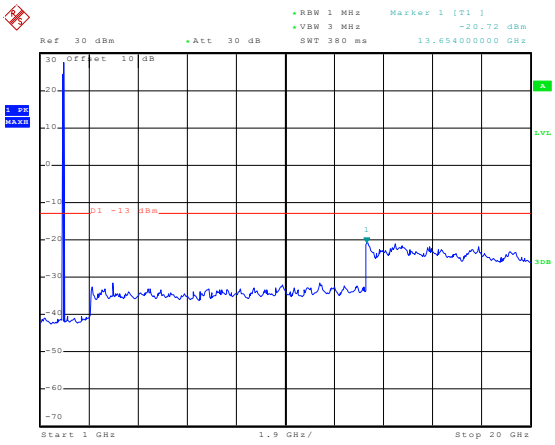
1GHz~20GHz

Test Mode:	PCS1900	Test Channel:	Highest channel



Date: 3.NOV.2014 15:32:05

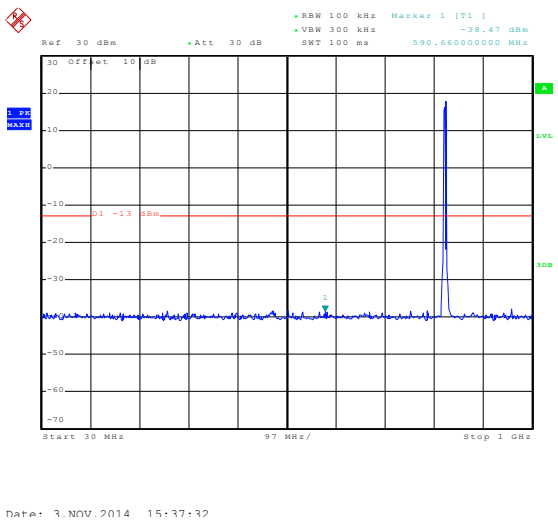
30MHz~1GHz



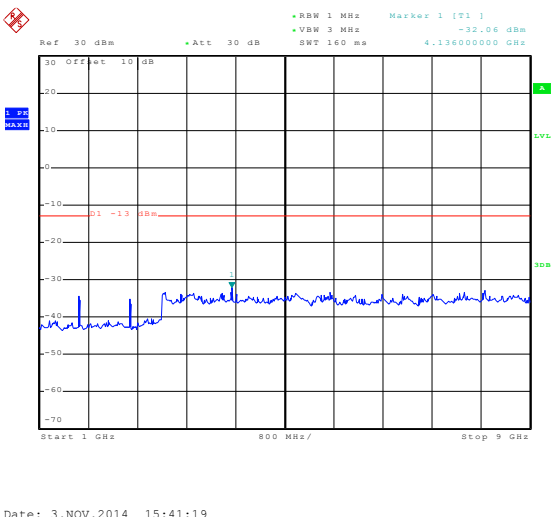
Date: 3.NOV.2014 15:28:53

1GHz~20GHz

Test Mode:	UMTS 850 12.2k RMC	Test Channel:	Lowest channel

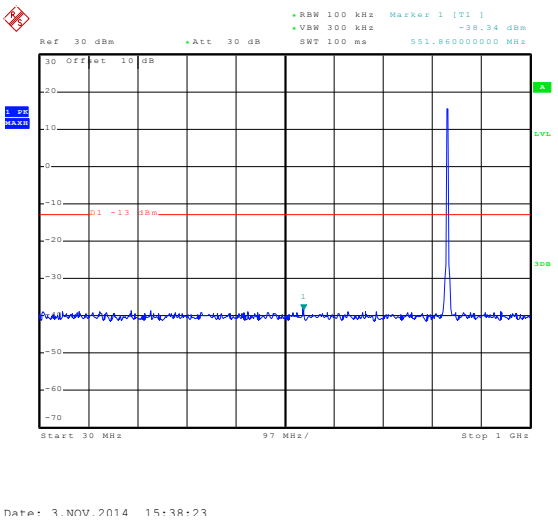


30MHz~1GHz

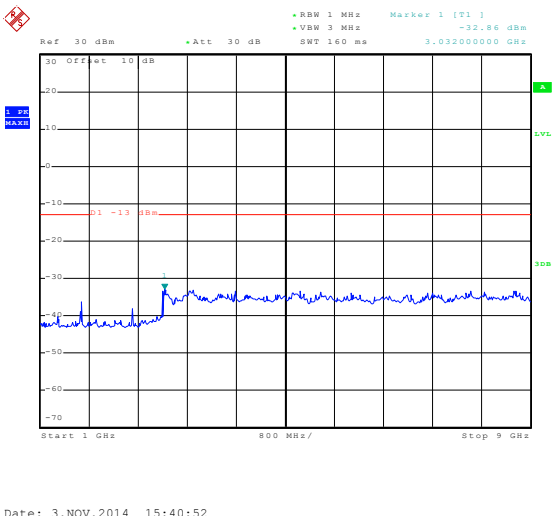


1GHz~9GHz

Test Mode:	UMTS 850 12.2k RMC	Test Channel:	Middle channel

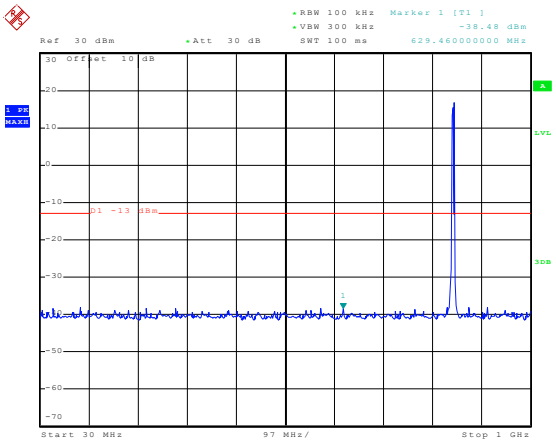


30MHz~1GHz

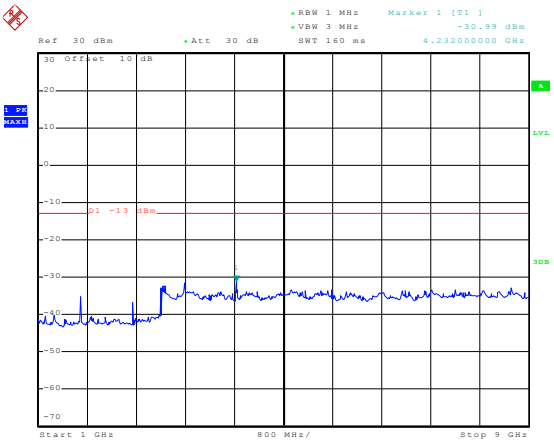


1GHz~9GHz

Test Mode:	UMTS 850 12.2k RMC	Test Channel:	Highest channel

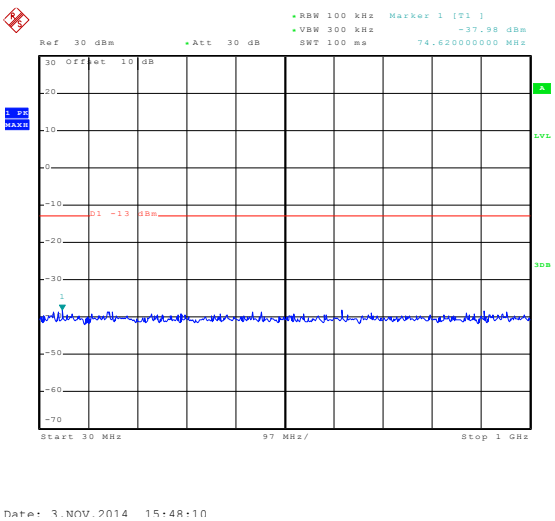


30MHz~1GHz

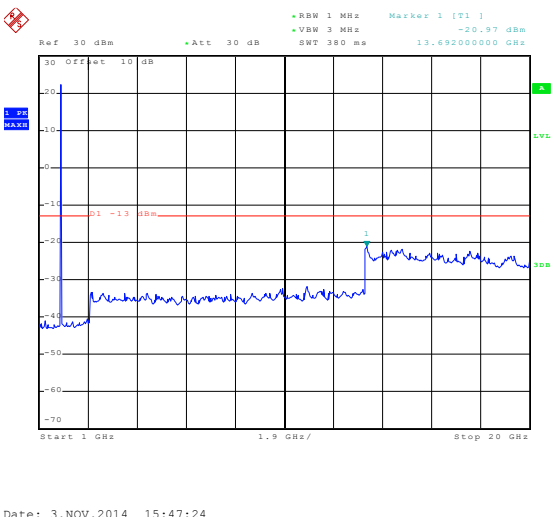


1GHz~9GHz

Test Mode:	UMTS 1900 12.2k RMC	Test Channel:	Lowest channel

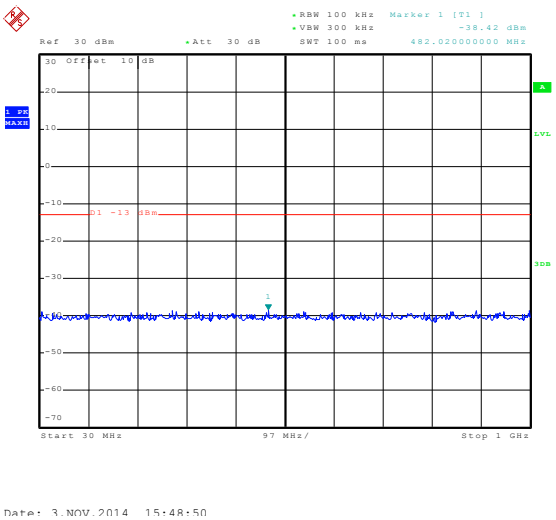


30MHz~1GHz

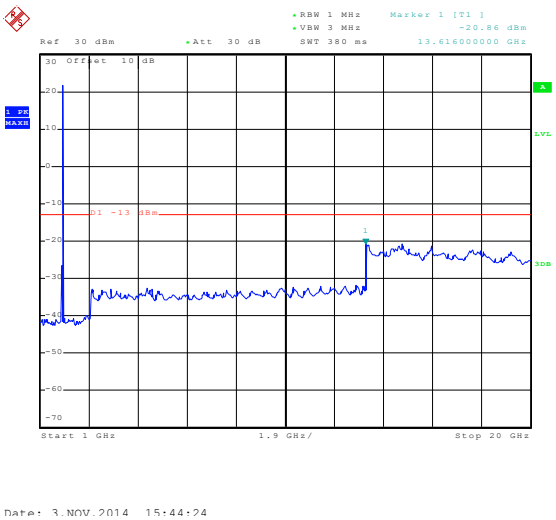


1GHz~20GHz

Test Mode:	UMTS 1900 12.2k RMC	Test Channel:	Middle channel

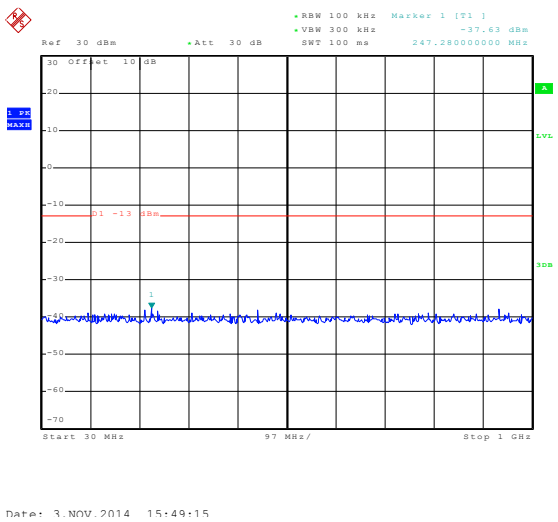


30MHz~1GHz

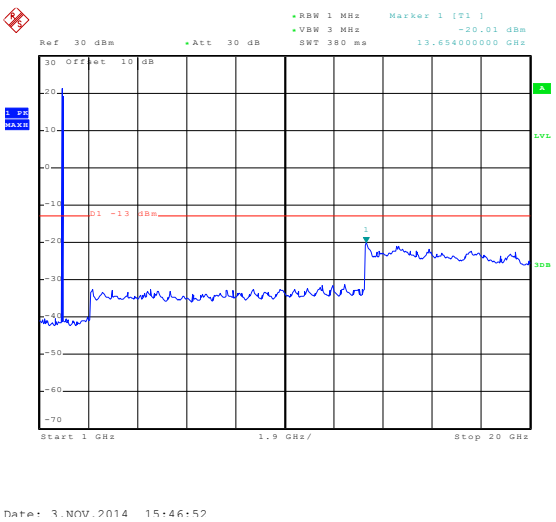


1GHz~20GHz

Test Mode:	UMTS 1900 12.2k RMC	Test Channel:	Highest channel



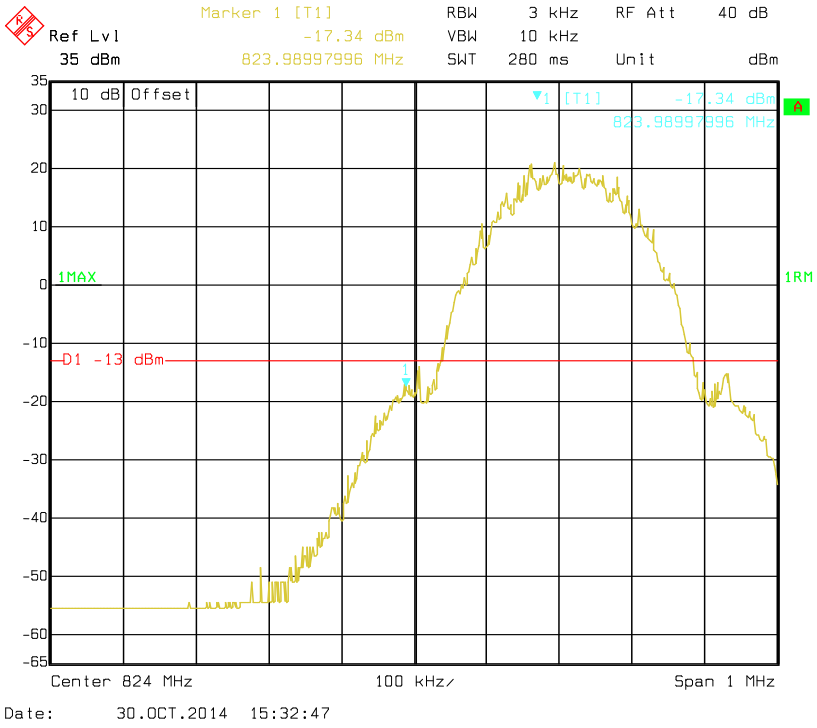
30MHz~1GHz



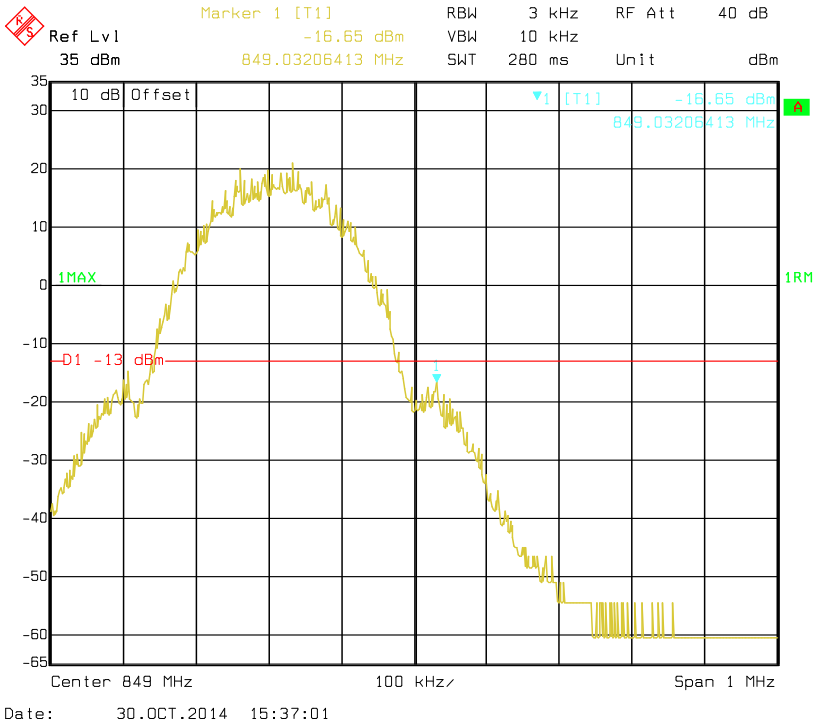
1GHz~20GHz

Band edge emission:

Test Mode: GSM850

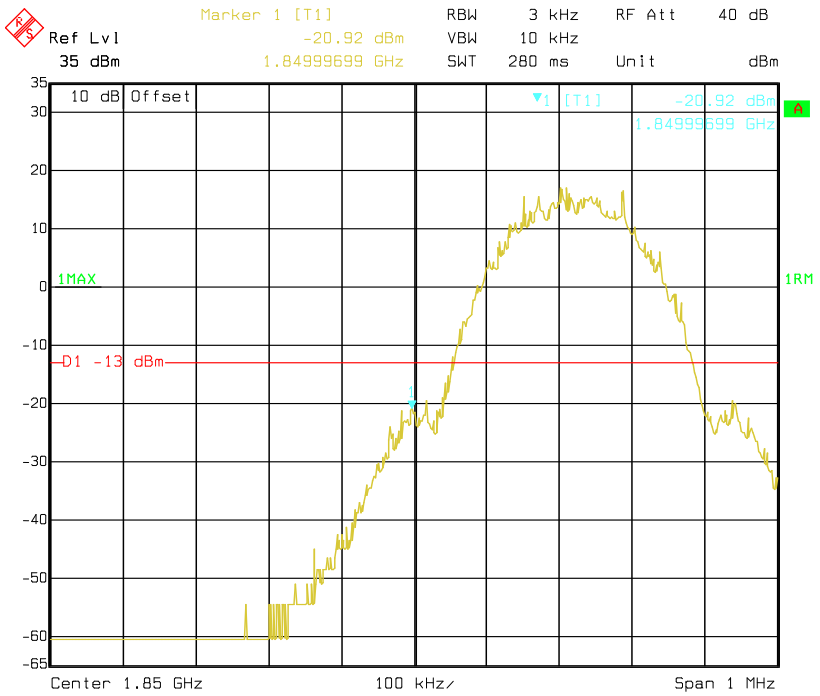


Lowest channel

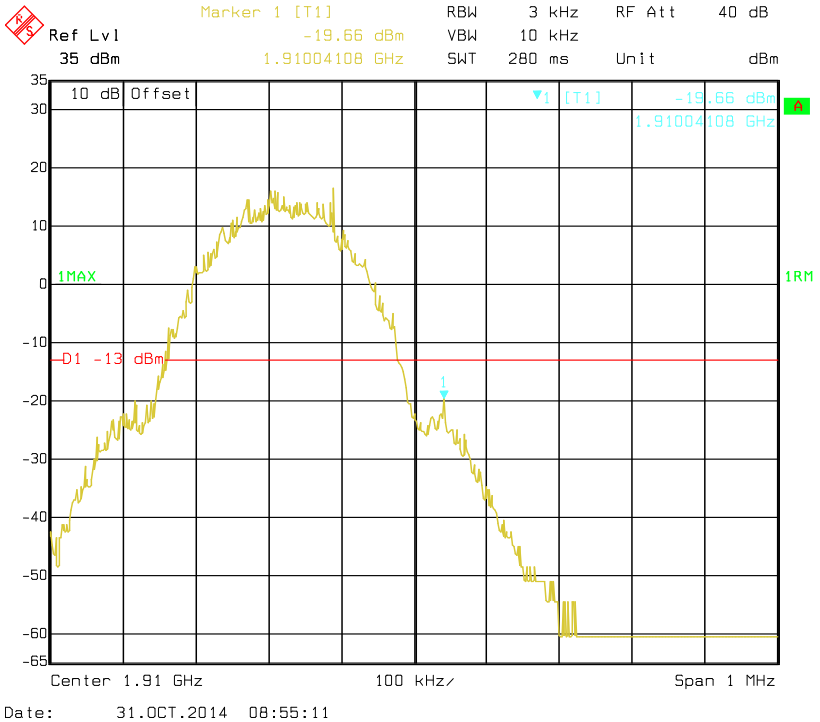


Highest channel

Test Mode: PCS1900

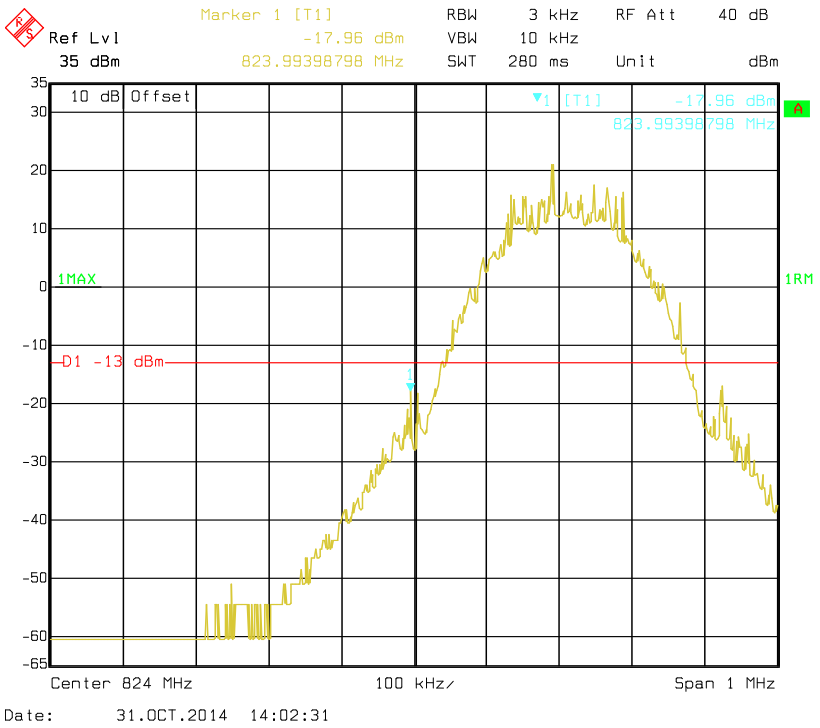


Lowest channel

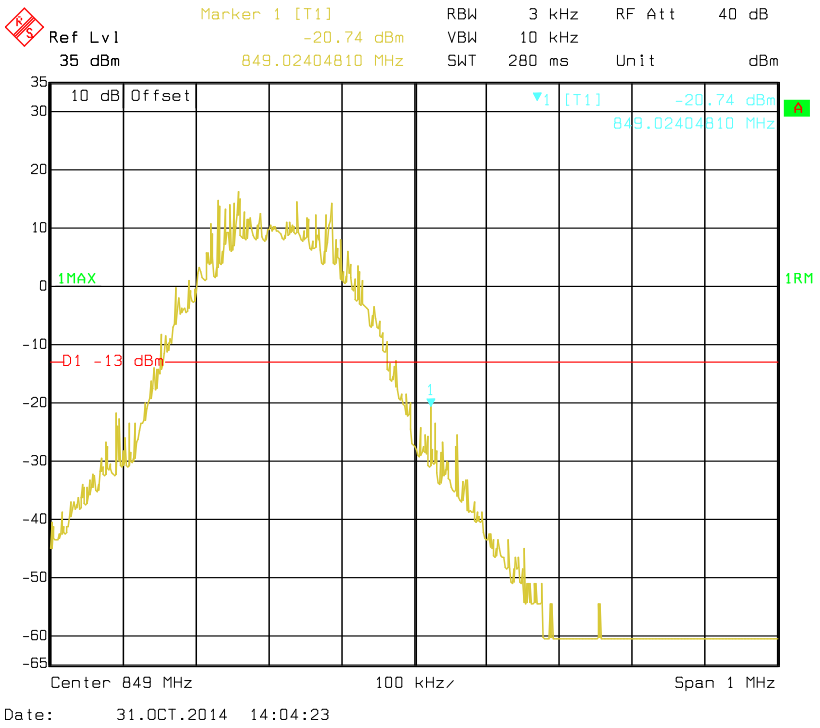


Highest channel

Test Mode: EGPRS 850

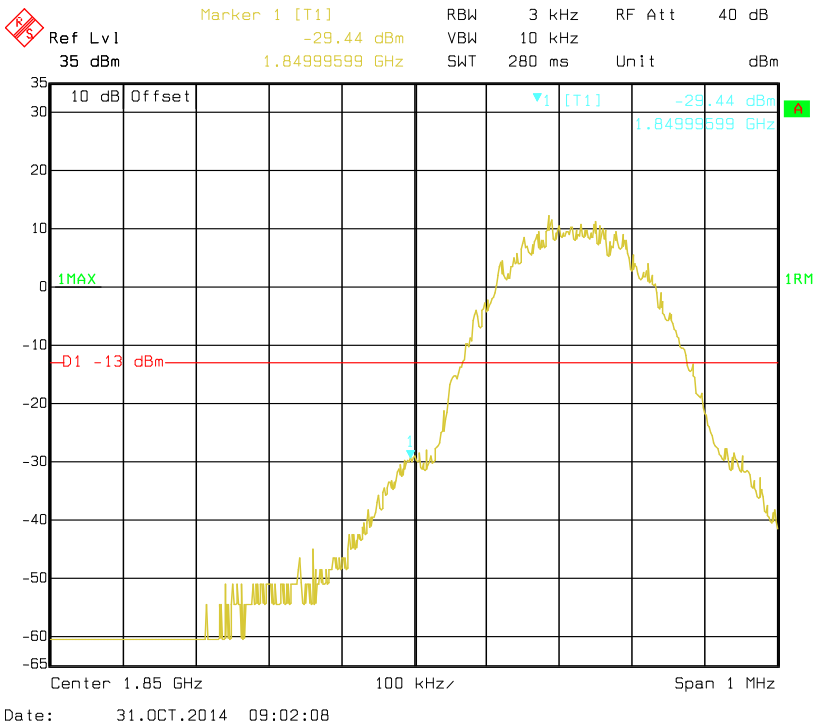


Lowest channel

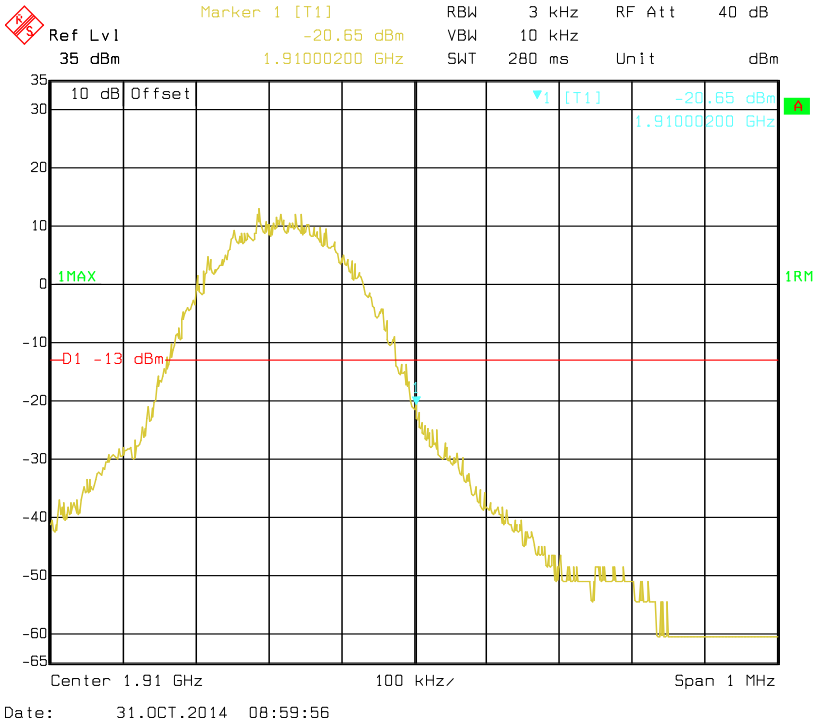


Highest channel

Test Mode: EGPRS1900

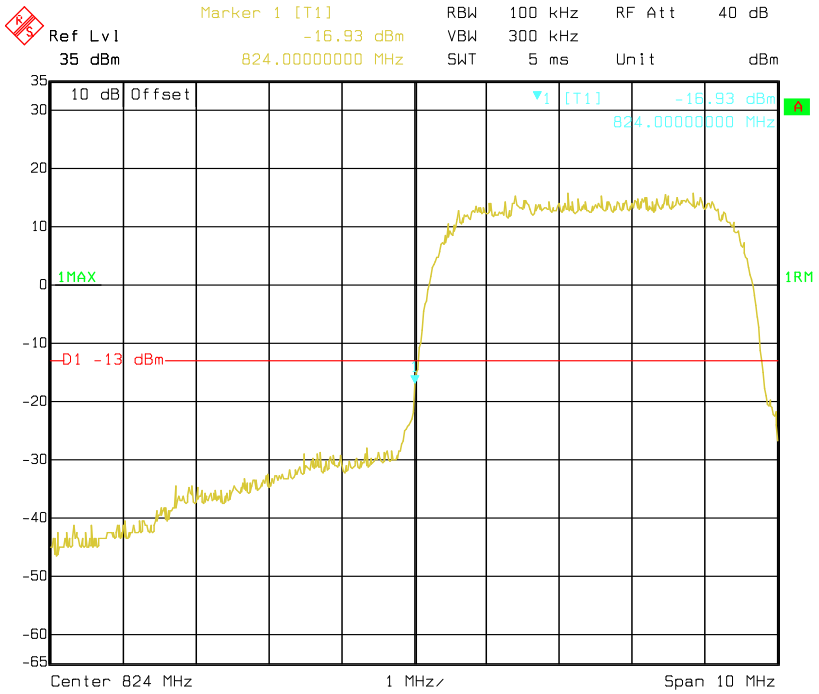


Lowest channel

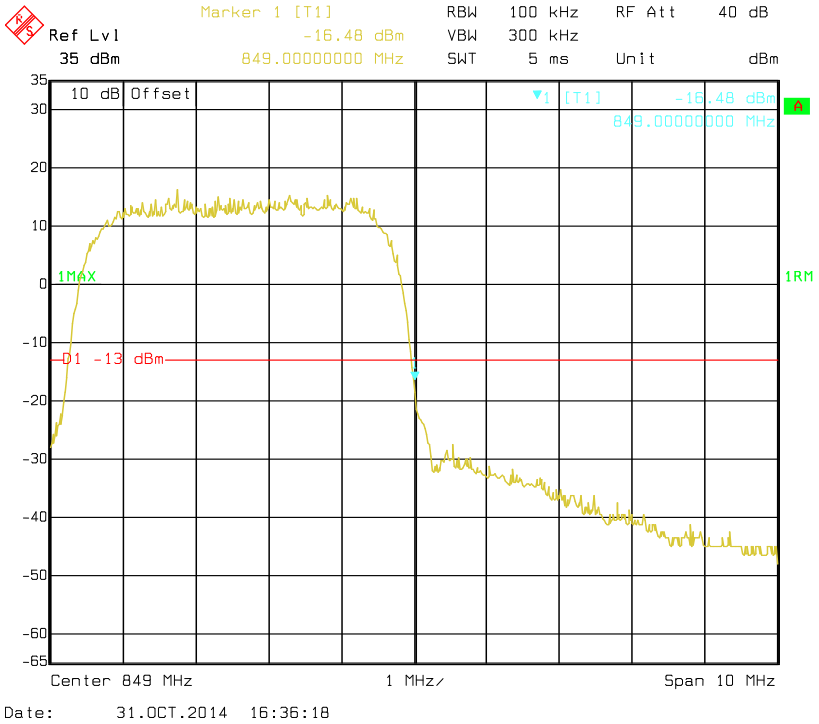


Highest channel

Test Mode: UMTS850 12.2k RMC

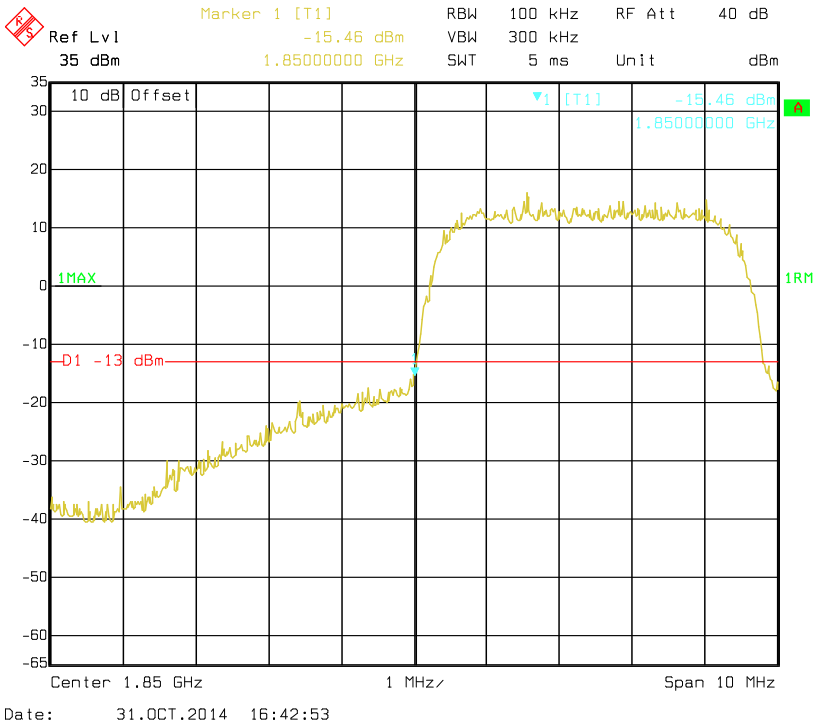


Lowest channel

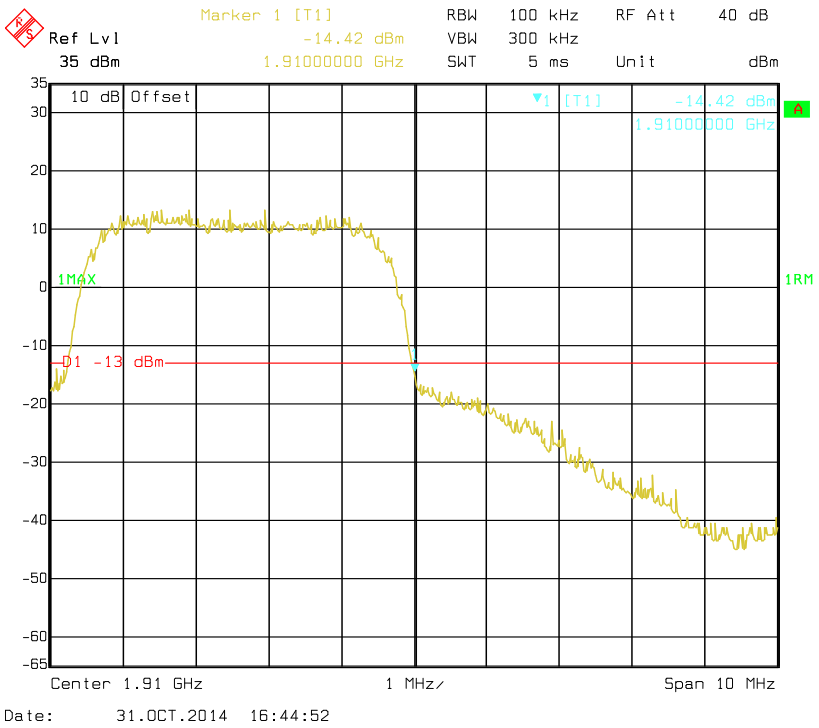


Highest channel

Test Mode: UMTS 1900 12.2k RMC

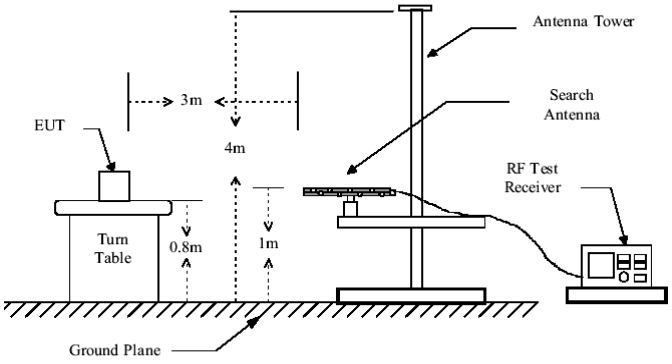
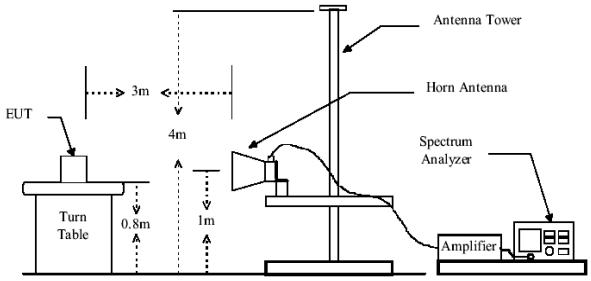
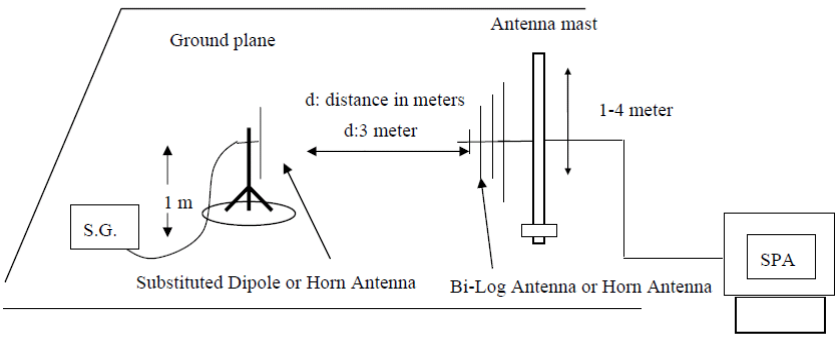


Lowest channel



Highest channel

6.9 ERP, EIRP Measurement

Test Requirement:	FCC part 22.913(a) and FCC part 24.232(b)
Test Method:	FCC part 2.1046
Limit:	GSM850 7W ERP PCS1900 2W EIRP WCDMA Band V: 7W ERP WCDMA Band II: 2W EIRP
Test setup:	Below 1GHz  Above 1GHz  Substituted method: 

Test Procedure:	1. The EUT was placed on an non-conductive turntable using a non-conductive support. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and EMI spectrum analyzer. 2. During the measurement, the EUT was communication with the station. The highest emission was recorded with the rotation of the turntable and the lowering of the test antenna from 4m to 1m. The reading was recorded and the field strength (E in dBuV/m) was calculated. 3. ERP in frequency band 824.2 –848.80.8MHz were measured using a substitution method. The EUT was replaced by dipole antenna connected, the S.G. output was recorded and ERP was calculated as follows: ERP = S.G. output (dBm) + Antenna Gain (dBd) – Cable Loss (dB) 4. EIRP in frequency band 1850.2 –1909.8MHz were measured using a substitution method. The EUT was replaced by or horn antenna connected, the S.G. output was recorded and EIRP was calculated as follows: EIRP = S.G. output (dBm) + Antenna Gain (dBi) – Cable Loss (dB) 5. The worse case was relating to the conducted output power.
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Measurement Data (worst case)

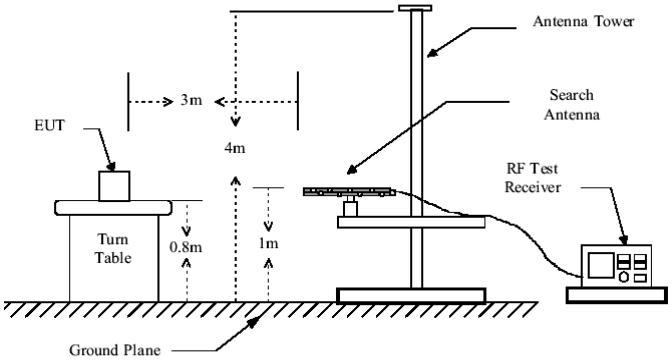
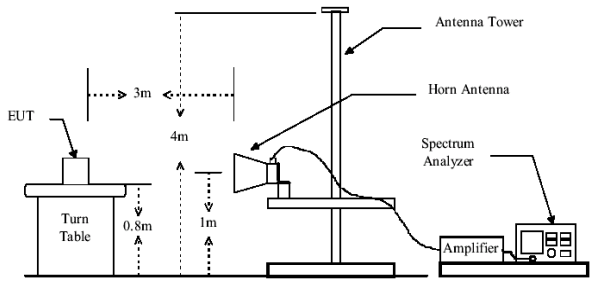
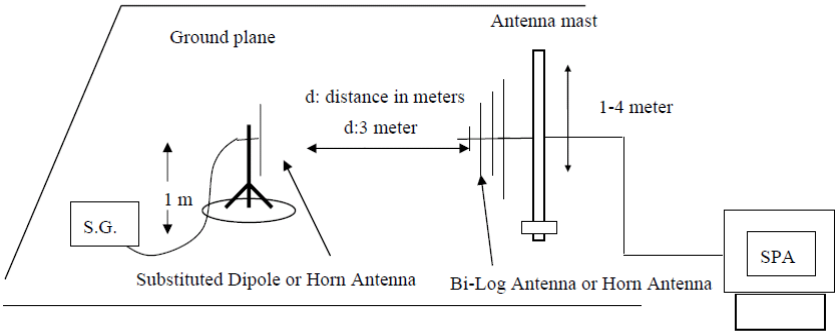
EUT mode	Channel	EUT Pol.	Antenna Pol.	ERP(dBm)	Limit (dBm)	Result
GSM850	190	H	V	12.50	38.45	Pass
			H	18.26		
		E1	V	11.89		
			H	18.25		
		E2	V	11.78		
			H	18.19		
EUT mode	**Channel**	**EUT Pol.**	**Antenna Pol.**	**ERP(dBm)**	**Limit (dBm)**	**Result**
EGPRS850	128	H	V	13.37	38.45	Pass
			H	13.11		
		E1	V	13.34		
			H	13.04		
		E2	V	13.02		
			H	12.88		

EUT mode	Channel	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result
PCS1900	512	H	V	26.00	33.00	Pass
			H	21.97		
		E1	V	25.87		
			H	21.64		
		E2	V	25.49		
			H	25.47		
EUT mode	**Channel**	**EUT Pol.**	**Antenna Pol.**	**EIRP(dBm)**	**Limit (dBm)**	**Result**
EGPRS1900	661	H	V	23.64	33.00	Pass
			H	22.30		
		E1	V	23.51		
			H	22.23		
		E2	V	23.18		
			H	22.04		

EUT mode	Channel	EUT Pol.	Antenna Pol.	ERP(dBm)	Limit (dBm)	Result
UMTS 850 12.2k RMC	4233	H	V	7.24	38.45	Pass
			H	11.04		
		E1	V	7.13		
			H	10.92		
		E2	V	7.05		
			H	10.81		

EUT mode	Channel	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result
UMTS 1900 12.2k RMC	9400	H	V	19.44	33.00	Pass
			H	18.19		
		E1	V	19.31		
			H	18.08		
		E2	V	19.21		
			H	17.86		

6.10 Field strength of spurious radiation measurement

Test Requirement:	FCC part 22.917(a) and FCC part 24.238(a)
Test Method:	FCC part 2.1053
Limit:	-13dBm
Test setup:	Below 1GHz  Above 1GHz  Substituted method: 
Test Procedure:	1. The EUT was placed on an non-conductive turntable using a non-conductive support. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and EMI spectrum analyzer. 2. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations. 3. The frequency range up to tenth harmonic was investigated for each of three fundamental frequency (low, middle and high channels). Once spurious emission was identified, the power of the emission was determined using the substitution method.

	4. The spurious emissions attenuation was calculated as the difference between radiated power at the fundamental frequency and the spurious emissions frequency. ERP / EIRP = S.G. output (dBm) + Antenna Gain(dB/dBi) – Cable Loss (dB)
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details. Based on the ERP/EIRP results, we selected GSM850, PCS1900, UMTS RMC 850 and UMTS RMC 1900 for Radiated spurious emission test, other modes were not test.
Test results:	Passed

Measurement Data (worst case)

Test mode:	GSM850		Test channel:	Lowest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1648.40	Vertical	-45.79	-13.00	Pass
2472.60	V	-47.25		
1648.40	Horizontal	-49.21		
2472.60	H	-48.32		
Test mode:	**GSM850**		**Test channel:**	**Middle**
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1673.20	Vertical	-47.72	-13.00	Pass
2509.80	V	-47.46		
3346.40	V	-46.78		
1673.20	Horizontal	-50.32		
2509.80	H	-45.77		
Test mode:	**GSM850**		**Test channel:**	**Highest**
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1697.60	Vertical	-46.57	-13.00	Pass
2546.40	V	-47.40		
3395.20	V	-46.42		
1697.60	Horizontal	-50.57		
2546.40	H	-45.81		
3395.20	H	-47.62		

Remark：

1. The emission behavior belongs to narrowband spurious emission.
2. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

Test mode:	PCS1900		Test channel:	Lowest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3700.40	Vertical	-43.79	-13.00	Pass
3700.40	Horizontal	-48.10		
5550.60	H	-43.25		
Test mode:	**PCS1900**		**Test channel:**	**Middle**
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3760.00	Vertical	-45.42	-13.00	Pass
5640.00	V	-44.08		
3760.00	Horizontal	-47.67		
5640.00	H	-43.54		
Test mode:	**PCS1900**		**Test channel:**	**Highest**
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3819.60	Vertical	-44.39	-13.00	Pass
3819.60	Horizontal	-56.03		

Remark：

1. The emission behavior belongs to narrowband spurious emission.
2. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

Test mode:	UMTS850 12.2k RMC		Test channel:	Lowest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1652.80	Vertical	-43.71	-13.00	Pass
2479.20	V	-42.25		
4132.00	V	-47.46		
1652.80	Horizontal	-47.47		
2479.20	H	-41.88		
4132.00	H	-46.87		
Test mode:	**UMTS850 12.2k RMC**		**Test channel:**	**Middle**
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1673.20	Vertical	-49.96	-13.00	Pass
2509.80	V	-45.94		
1673.20	Horizontal	-53.02		
2509.80	H	-44.66		
Test mode:	**UMTS850 12.2k RMC**		**Test channel:**	**Highest**
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1693.20	Vertical	-45.32	-13.00	Pass
2539.80	V	-45.95		
3386.40	V	-44.20		
4233.00	V	-47.10		
1693.20	Horizontal	-47.02		
2539.80	H	-44.40		
3386.40	H	-48.34		
4233.00	H	-47.80		

Remark：

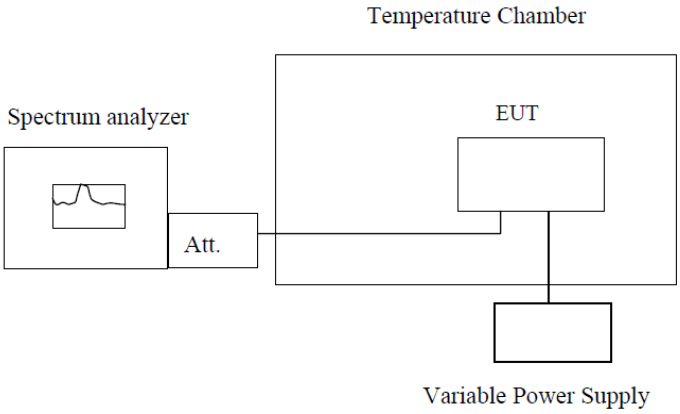
1. The emission behavior belongs to narrowband spurious emission.
2. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

Test mode:	UMTS 1900 12.2k RMC		Test channel:	Lowest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3704.80	Vertical	-42.68	-13.00	Pass
3704.80	Horizontal	-44.65		
Test mode:	**UMTS 1900 12.2k RMC**		**Test channel:**	**Middle**
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3760.00	Vertical	-40.17	-13.00	Pass
3760.00	Horizontal	-43.60		
Test mode:	**UMTS 1900 12.2k RMC**		**Test channel:**	**Highest**
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3815.20	Vertical	-38.05	-13.00	Pass
3815.20	Horizontal	-42.73		

Remark：

1. The emission behavior belongs to narrowband spurious emission.
2. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

6.11 Frequency stability V.S. Temperature measurement

Test Requirement:	FCC Part 2.1055(a)(1)(b)
Test Method:	FCC Part 2.1055(a)(1)(b)
Limit:	2.5 ppm
Test setup:	 **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 Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed
Remark:	All three channels of all modulations have been tested, but only the worst channel and the worst modulation show in this test item.

Measurement Data:

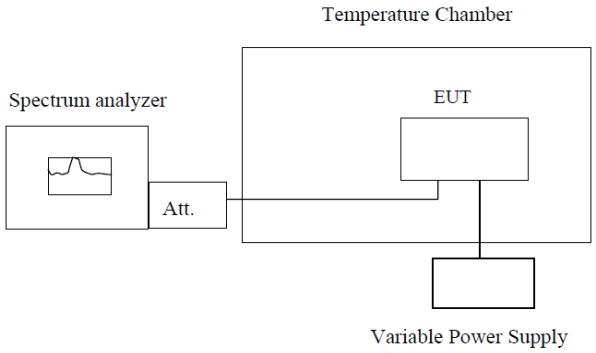
Reference Frequency: GSM850 Middle channel=190 channel=836.6MHz					
Power supplied (Vdc)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.70	-30	172	0.205594	2.5	Pass
	-20	138	0.164953		
	-10	121	0.144633		
	0	87	0.103992		
	10	72	0.086063		
	20	129	0.154196		
	30	112	0.133875		
	40	127	0.151805		
	50	81	0.096820		
Reference Frequency: PCS1900 Middle channel=661 channel=1880MHz					
Power supplied (Vdc)	Temperature (℃)	Frequency error			Result
		Hz	ppm		
3.70	-30	168	0.089362	2.5	Pass
	-20	72	0.038298		
	-10	87	0.046277		
	0	61	0.032447		
	10	92	0.048936		
	20	81	0.043085		
	30	108	0.057447		
	40	91	0.048404		
	50	93	0.049468		

Reference Frequency: EGPRS850 Middle channel=190 channel=836.6MHz					
Power supplied (Vdc)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.70	-30	166	0.198422	2.5	Pass
	-20	132	0.157781		
	-10	91	0.108774		
	0	92	0.109969		
	10	106	0.126703		
	20	101	0.120727		
	30	97	0.115945		
	40	84	0.100406		
	50	77	0.092039		

Reference Frequency: EGPRS 1900 Middle channel=661 channel=1880MHz					
Power supplied (Vdc)	Temperature (℃)	Frequency error			Result
		Hz	ppm		
3.70	-30	133	0.070745	2.5	Pass
	-20	57	0.030319		
	-10	74	0.039362		
	0	81	0.043085		
	10	67	0.035638		
	20	53	0.028191		
	30	87	0.046277		
	40	78	0.041489		
	50	63	0.033511		

Reference Frequency: UMTS850 12.2k RMC Middle channel=4183 channel=836.6MHz					
Power supplied (Vdc)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.70	-30	97	0.115945	2.5	Pass
	-20	62	0.074109		
	-10	54	0.064547		
	0	72	0.086063		
	10	41	0.049008		
	20	87	0.103992		
	30	62	0.074109		
	40	67	0.080086		
	50	54	0.064547		
Reference Frequency: UMTS1900 12.2k RMC Middle channel=9400 channel=1880MHz					
Power supplied (Vdc)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.70	-30	82	0.043617	2.5	Pass
	-20	73	0.038830		
	-10	67	0.035638		
	0	52	0.027660		
	10	57	0.030319		
	20	63	0.033511		
	30	45	0.023936		
	40	47	0.025000		
	50	33	0.017553		

6.12 Frequency stability V.S. Voltage measurement

Test Requirement:	FCC Part 2.1055(d)(1)(2)
Test Method:	FCC Part 2.1055(d)(1)(2)
Limit:	2.5ppm
Test setup:	 **Note :** Measurement setup for testing on Antenna connector
Test procedure:	1. Set chamber temperature to 25℃. Use a variable DC power source to power the EUT and set the voltage to rated voltage. 2. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency. 3. Reduce the input voltage to specify extreme voltage variation (+/- 15%) and endpoint, record the maximum frequency change.
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details, and all channels have been tested, only shows the worst channel data in this report.
Test results:	Passed

Measurement Data (the worst channel):

Reference Frequency: GSM850 Middle channel=190 channel=836.6MHz					
Temperature（℃）	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.25	61	0.072914	2.5	Pass
	3.70	77	0.092039		
	3.40	55	0.065742		
Reference Frequency: PCS1900 Middle channel=661 channel=1880MHz					
Temperature（℃）	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.25	72	0.038298	2.5	Pass
	3.70	63	0.033511		
	3.40	55	0.029255		
Reference Frequency: EGPRS 850 Middle channel= 190 channel=836.6MHz					
Temperature（℃）	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.25	74	0.088453	2.5	Pass
	3.70	51	0.060961		
	3.40	47	0.056180		
Reference Frequency: EGPRS 1900 Middle channel= 661 channel=1880MHz					
Temperature（℃）	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.25	88	0.046809	2.5	Pass
	3.70	72	0.038298		
	3.40	62	0.032979		

Reference Frequency: UMTS 850 12.2k RMC Middle channel=4183 channel=836.6MHz					
Temperature（℃）	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.25	78	0.093235	2.5	Pass
	3.70	52	0.062156		
	3.40	36	0.043031		
Reference Frequency: UMTS 1900 12.2k RMC Middle channel=9400 channel=1880MHz					
Temperature（℃）	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.25	64	0.034043	2.5	Pass
	3.70	58	0.030851		
	3.40	52	0.027660		