FCC REPORT

(GSM & WCDMA)

Applicant:	Simgomobile Pte Ltd
Address of Applicant:	12 Eu Tong Sen Street, 08-169 Singapore 059819
Equipment Under Test (EUT)	
Product Name:	COMPANION vSIM HOTSPOT
Model No.:	SG800
FCC ID:	2AIVY-SG800
Applicable standards:	FCC CFR Title 47 Part 2 FCC CFR Title 47 Part 22 Subpart H FCC CFR Title 47 Part 24 Subpart E FCC CFR Title 47 Part 27 Subpart L
Date of sample receipt:	15 Jun., 2016
Date of Test:	15 Jun., to 14 Jul., 2016
Date of report issued:	15 Jul., 2016
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	*15 Jul., 2016*	*Original*

Tested by: Carey Chen ***Date:*** *15 Jul., 2016*

Test Engineer

Reviewed by: Wimer Zhang ***Date:*** *15 Jul., 2016*

Project Engineer

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4. Test Summary

Test Item	Section in CFR 47	Result
RF Exposure (SAR)	Part 1.1307 Part 2.1093	Pass (Please refer to SAR Report)
RF Output Power	Part 2.1046 Part 22.913 (a)(2) Part 24.232 (c) Part 27.50 (d)(4)	Pass
Peak-to-Average Power Ratio	Part 24.232 (d)	Pass
Modulation Characteristics	Part 2.1047	Pass
99% & -26 dB Occupied Bandwidth	Part 2.1049 Part 22.917(b) Part 24.238(b) Part 27.53(h)	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

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

5. General Information

5.1 Client Information

Applicant:	Simgomobile Pte Ltd
Address of Applicant:	12 Eu Tong Sen Street, 08-169 Singapore 059819
Manufacturer	IDEA INTERNATIONAL DEVELOPMENT LIMITED
Address of Manufacturer:	7/F, Buliding 2, Block C, software industry Base, Nanshan District, Shenzhen, China
Factory:	Shenzhen Qiaoxun Informotion Electronics CO., Ltd
Address of Factory:	Xinzhongqiao Industry Park, Baolong 6th Road, Longgang District, Shenzhen, China

5.2 General Description of E.U.T.

Product Name:	COMPANION vSIM HOTSPOT
Model No.:	SG800
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 WCDMA Band IV: 1712.4 MHz -1752.6 MHz
Modulation type:	GPRS: GMSK, UMTS: QPSK, EGPRS: 8PSK
Antenna type:	Internal Antenna
Antenna gain:	GSM 850: 0 dBi PCS 1900: 0 dBi WCDMA Band V: 0 dBi WCDMA Band II: 0 dBi WCDMA Band IV: 0 dBi
Power supply:	Rechargeable Li-ion Battery DC3.8V-2800mAh

Operation Frequency List:

GSM 850	
Channel:	Frequency (MHz)
128	824.20
129	824.40
….	….
189	836.40
190	836.60
191	836.80
…	…
250	848.60
251	848.80

PCS1900	
Channel:	Frequency (MHz)
512	1850.20
513	1850.40
….	….
660	1879.80
661	1880.00
662	1880.20
…	…
809	1909.60
810	1909.80

WCDMA Band V	
Channel:	Frequency (MHz)
4132	826.40
4133	826.60
….	….
4182	836.40
4183	836.60
4184	836.80
…	…
4232	846.40
4233	846.60

WCDMA Band II	
Channel:	Frequency (MHz)
9262	1852.40
9263	1852.60
….	….
9399	1879.80
9400	1880.00
9401	1880.20
…	…
9537	1907.40
9538	1907.60

WCDMA Band IV	
Channel:	Frequency (MHz)
1312	1712.40
1313	1712.60
….	….
1412	1732.40
1413	1732.60
1414	1732.80
…	…
1512	1752.40
1513	1752.60

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		
Channel		Frequency(MHz)
Lowest channel	128	824.20
Middle channel	190	836.60
Highest channel	251	848.80

PCS1900		
Channel		Frequency(MHz)
Lowest channel	512	1850.20
Middle channel	661	1880.00
Highest channel	810	1909.80

WCDMA Band V		
Channel		Frequency(MHz)
Lowest channel	4132	826.40
Middle channel	4183	836.60
Highest channel	4233	846.60

WCDMA Band II		
Channel		Frequency(MHz)
Lowest channel	9262	1852.40
Middle channel	9400	1880.00
Highest channel	9538	1907.60

WCDMA Band IV		
Channel		Frequency(MHz)
Lowest channel	1312	1712.40
Middle channel	1413	1732.60
Highest channel	1513	1752.60

5.3 Test modes

Data mode (GPRS)	Keep the EUT in GPRS mode on GSM 850 and PCS 1900 respectively.
Data mode (EGPRS)	Keep the EUT in EGPRS mode on GSM 850 and PCS 1900 respectively.
Voice mode (AMR 12.2 kbps)	Keep the EUT in voice mode on WCDMA Band II, IV and V respectively.
Data mode (RMC 12.2kbps)	Keep the EUT in RMC on WCDMA Band II and V respectively.
Data mode (HSDPA Subtest 1~4)	Keep the EUT in HSDPA mode on WCDMA Band II, IV and V respectively.
Data mode (HSUPA Subtest 1~5)	Keep the EUT in HSUPA mode on WCDMA Band II, IV and V respectively.
Remark:	Just the worst case mode shown in report.

5.4 Measurement Uncertainty

Items	Expanded Uncertainty (Confidence of 95%)
Conducted Emission (9kHz ~ 30MHz)	2.14 dB (k=2)
Radiated Emission (9kHz ~ 30MHz)	4.24 dB (k=2)
Radiated Emission (30MHz ~ 1000MHz)	4.35 dB (k=2)
Radiated Emission (1GHz ~ 18GHz)	4.44 dB (k=2)
Radiated Emission (18GHz ~ 26.5GHz)	4.56 dB (k=2)

5.5 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 and Part 27 subpart L of the FCC CFR 47 Rules.

5.6 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

5.7 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.

5.8 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

5.9 Test Instruments list

Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
3m Semi- Anechoic Chamber	SAEMC	9(L)*6(W)* 6(H)	CCIS0001	08-23-2014	08-22-2017
BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	CCIS0005	03-25-2016	03-25-2017
Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA9120D	CCIS0006	03-25-2016	03-25-2017
EMI Test Software	AUDIX	E3	N/A	N/A	N/A
Amplifier (10kHz-1.3GHz)	HP	8447D	CCIS0003	04-01-2016	03-31-2017
Amplifier (1GHz-18GHz)	Compliance Direction Systems Inc.	PAP-1G18	CCIS0011	04-01-2016	03-31-2017
Pre-amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	04-01-2016	03-31-2017
Horn Antenna	ETS-LINDGREN	3160	GTS217	04-01-2016	03-31-2017
Printer	HP	HP LaserJet P1007	N/A	N/A	N/A
Positioning Controller	UC	UC3000	CCIS0015	N/A	N/A
Spectrum analyzer 9k-30GHz	Rohde & Schwarz	FSP 30	CCIS0023	03-28-2016	03-28-2017
EMI Test Receiver	Rohde & Schwarz	ESPI	CCIS0022	03-28-2016	03-28-2017
EMI Test Receiver	Rohde & Schwarz	ESRP7	CCIS0167	03-24-2016	03-24-2017
Loop antenna	Laplace instrument	RF300	EMC0701	04-01-2016	03-31-2017
Universal radio communication tester	Rhode & Schwarz	CMU200	CCIS0069	03-28-2016	03-28-2017
Signal Analyzer	Rohde & Schwarz	FSIQ3	CCIS0088	04-08-2016	04-08-2017
DC Power Supply	Shenzhen XinNuoEr Technologies Co., Ltd.	WYK-10020K	CCIS0201	10-31-2015	10-30-2016
Temperature Humidity Chamber	Fo Shan Heng Pu Electronics Co., Ltd.	HPGDS-500	CCIS0240	11-18-2015	11-27-2016

6. System test configuration

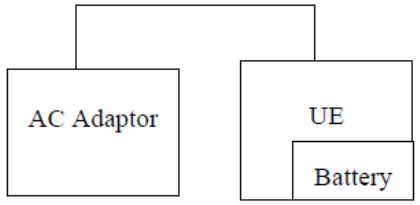
6.1 EUT Configuration

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.

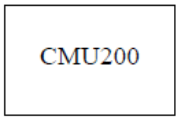
6.2 EUT Exercise

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



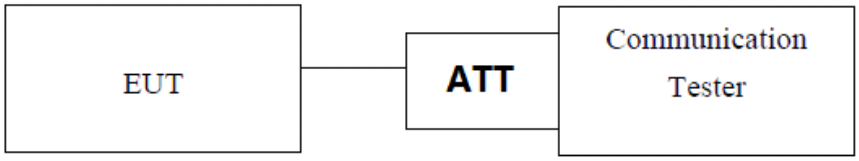
Remote Side



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, WCDMA Band II and Band IV) with power adaptor, earphone and Data cable. The worst-case H mode for GSM850, PCS1900, WCDMA Band V, WCDMA Band II and Band IV.

6.5 Conducted Output Power

Test Requirement:	FCC part 22.913(a), FCC part 24.232(b) and FCC part 27.50(d)
Test Method:	FCC part 2.1046
Limit:	GSM 850: 7W PCS 1900: 2W WCDMA Band V: 7W WCDMA Band II: 2W WCDMA Band IV: 1W
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 simulated station. 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:

HSPA+ Wireless Module part :

EUT Mode	Burst Average power (dBm)			Limit(dBm)
	128	190	251	
	824.20MHz	836.60MHz	848.80MHz	
GPRS 850 (1 Uplink slot)	32.22	32.31	32.34	38.45
GPRS 850 (2 Uplink slot)	32.15	32.27	32.27	
EGPRS 850 (1 Uplink slot)	25.84	25.84	25.88	
EGPRS 850 (2 Uplink slot)	25.67	25.74	25.71	
EUT Mode	Burst Average power (dBm)			Limit(dBm)
	512	661	810	
	1850.20MHz	1880.00MHz	1909.80MHz	
GPRS 1900 (1 Uplink slot)	28.88	28.67	28.43	33.00
GPRS 1900 (2 Uplink slot)	28.81	28.62	28.41	
EGPRS 1900 (1 Uplink slot)	25.23	25.02	24.74	
EGPRS 1900 (2 Uplink slot)	25.08	24.87	24.65	

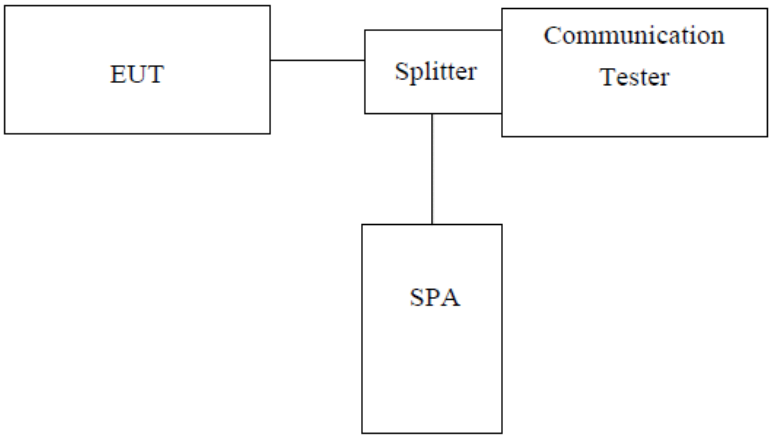
EUT Mode		Burst Average power (dBm)			Limit(dBm)
		9262	9400	9538	
		1852.40MHz	1880.00MHz	1907.60MHz	
UMTS 1900 HSDPA	Subtest 1	22.46	22.67	22.90	33.00
	Subtest 2	21.81	22.01	22.22	
	Subtest 3	21.39	21.62	21.86	
	Subtest 4	20.56	20.86	21.42	
UMTS 1900 RMC	12.2kbps	22.53	22.7	22.91	

Main Board part

EUT Mode	Burst Average power (dBm)			Limit(dBm)
	128	190	251	
	824.20MHz	836.60MHz	848.80MHz	
GPRS 850 (1 Uplink slot)	32.94	32.78	32.91	38.45
GPRS 850 (2 Uplink slot)	30.87	31.13	31.54	
GPRS 850 (3 Uplink slot)	29.70	30.10	30.42	
GPRS 850 (4 Uplink slot)	28.69	29.16	29.34	
EGPRS 850 (1 Uplink slot)	26.96	27.04	27.07	
EGPRS 850 (2 Uplink slot)	25.33	25.56	25.62	
EGPRS 850 (3 Uplink slot)	24.24	24.40	24.51	
EGPRS 850 (4 Uplink slot)	23.11	23.39	23.44	
EUT Mode	Burst Average power (dBm)			Limit(dBm)
	512	661	810	
	1850.20MHz	1880.00MHz	1909.80MHz	
GPRS 1900 (1 Uplink slot)	29.32	29.22	29.52	33.00
GPRS 1900 (2 Uplink slot)	27.86	27.63	27.48	
GPRS 1900 (3 Uplink slot)	26.46	26.33	26.12	
GPRS 1900 (4 Uplink slot)	25.26	25.19	25.03	
EGPRS 1900 (1 Uplink slot)	25.65	25.61	25.58	
EGPRS 1900 (2 Uplink slot)	22.48	22.29	22.22	
EGPRS 1900 (3 Uplink slot)	21.05	20.89	20.77	
EGPRS 1900 (4 Uplink slot)	19.78	19.80	19.64	

EUT Mode		Burst Average power (dBm)			Limit(dBm)
		4132	4183	4233	
		826.40MHz	836.60MHz	846.60MHz	
UMTS 850 HSDPA	Subtest 1	21.99	22.15	22.12	38.45
	Subtest 2	21.94	21.99	22.07	
	Subtest 3	21.03	21.11	21.04	
	Subtest 4	20.92	21.13	21.09	
UMTS 850 HSUPA	Subtest 1	21.24	21.39	21.37	
	Subtest 2	21.85	22.03	21.96	
	Subtest 3	21.30	21.57	21.51	
	Subtest 4	22.03	22.09	22.03	
	Subtest 5	21.29	21.26	21.23	
UMTS 850 RMC	12.2kbps	23.19	23.17	23.18	
EUT Mode		Burst Average power (dBm)			Limit(dBm)
		9262	9400	9538	
		1852.40MHz	1880.00MHz	1907.60MHz	
UMTS 1900 HSDPA	Subtest 1	22.35	22.14	22.15	33.00
	Subtest 2	22.22	22.15	22.13	
	Subtest 3	21.20	21.16	21.05	
	Subtest 4	21.01	21.15	21.13	
UMTS 1900 HSUPA	Subtest 1	21.57	21.41	21.49	
	Subtest 2	22.18	22.12	22.14	
	Subtest 3	21.59	21.59	21.55	
	Subtest 4	22.25	22.21	22.19	
	Subtest 5	21.50	21.38	21.47	
UMTS 1900 RMC	12.2kbps	23.28	23.06	23.17	
EUT Mode		Burst Average power (dBm)			Limit(dBm)
		1312	1413	1513	
		1712.40MHz	1732.40MHz	1752.60MHz	
UMTS 1700 HSDPA	Subtest 1	21.83	21.87	21.72	33.00
	Subtest 2	21.71	21.64	21.72	
	Subtest 3	20.24	20.29	20.18	
	Subtest 4	20.21	19.94	20.07	
UMTS 1700 HSUPA	Subtest 1	21.11	21.15	21.70	
	Subtest 2	21.87	21.81	21.76	
	Subtest 3	20.63	20.65	20.72	
	Subtest 4	21.98	21.93	21.91	
	Subtest 5	20.95	20.98	20.97	
UMTS 1700 RMC	12.2kbps	22.68	22.77	22.74	

6.6 Occupy Bandwidth

Test Requirement:	FCC part 22.913(a), FCC part 24.232(b) and FCC Part 27.53(h)
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:

HSPA + Wireless Module part

EUT Mode	Channel	Frequency (MHz)	99% Occupy bandwidth (kHz)	-26dB bandwidth (kHz)
GPRS 850	128	824.2	250	322
	190	836.6	250	314
	251	848.8	240	320
EGPRS 850	128	824.2	240	280
	190	836.6	246	306
	251	848.8	250	302
GPRS 1900	512	1850.2	246	322
	661	1880.0	244	314
	810	1909.8	248	326
EGPRS 1900	512	1850.2	242	298
	661	1880.0	248	312
	810	1909.8	248	310
WCDMA BAND II 12.2k RMC	9262	1852.4	4180	4720
	9400	1880.0	4160	4680
	9538	1907.6	4180	4700

Main Board part

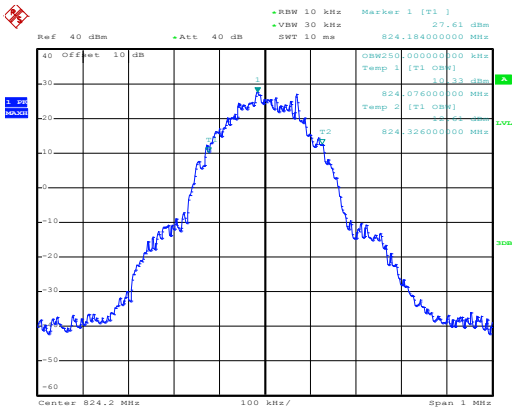
EUT Mode	Channel	Frequency (MHz)	99% Occupy bandwidth (kHz)	-26dB bandwidth (kHz)
GPRS 850	128	824.2	246	314
	190	836.6	246	318
	251	848.8	246	314
EGPRS 850	128	824.2	246	312
	190	836.6	240	312
	251	848.8	250	318
GPRS 1900	512	1850.2	238	324
	661	1880.0	246	314
	810	1909.8	248	316
EGPRS 1900	512	1850.2	238	318
	661	1880.0	238	306
	810	1909.8	244	316
WCDMA BAND V 12.2k RMC	4132	826.4	4140	4680
	4183	836.6	4160	4720
	4233	846.6	4140	4720
WCDMA BAND II 12.2k RMC	9262	1852.4	4180	4800
	9400	1880.0	4160	4760
	9538	1907.6	4180	4740
UMTS1700 12.2k RMC	1312	1712.40	4200	4800
	1413	1732.60	4180	4760
	1513	1752.60	4180	4760

Test plot as follows:

HSPA + Wireless Module part

99% Occupy bandwidth

GPRS 850



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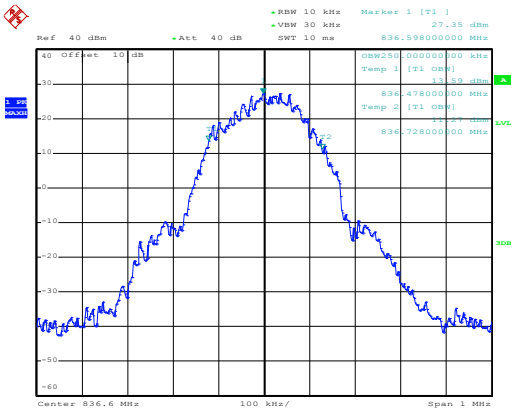
Lowest channel



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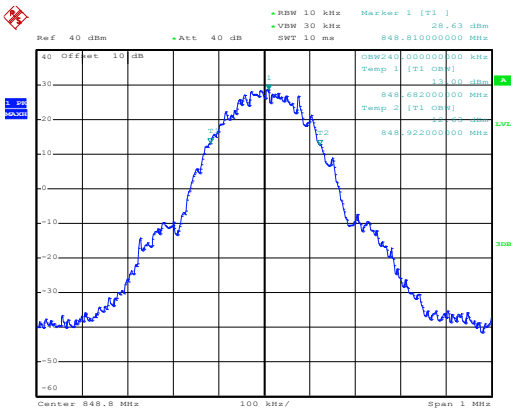
Middle channel



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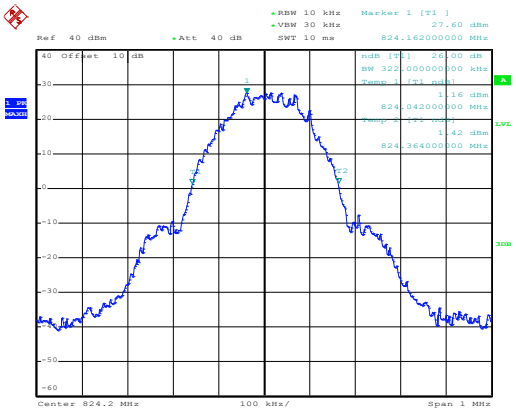
Highest channel

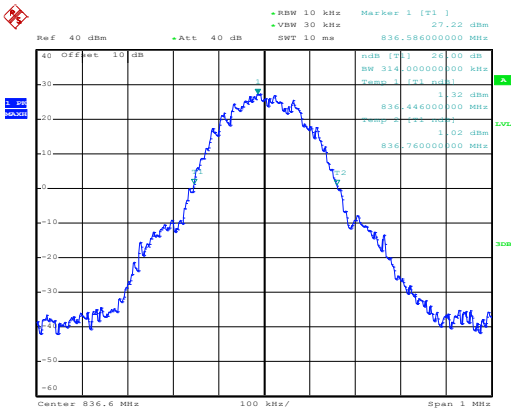
26dB Emission Bandwidth

GPRS 850



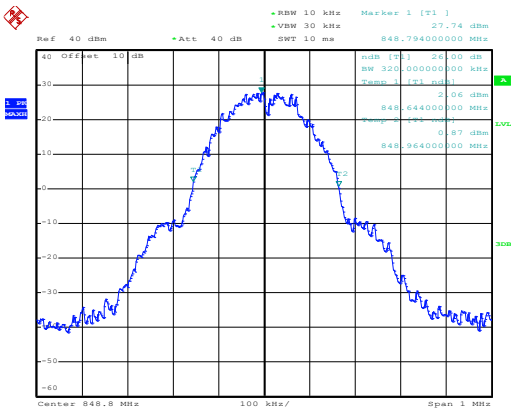
Date: 16.JUN.2016 21:21:28

Lowest channel



Date: 16.JUN.2016 21:21:56

Middle channel

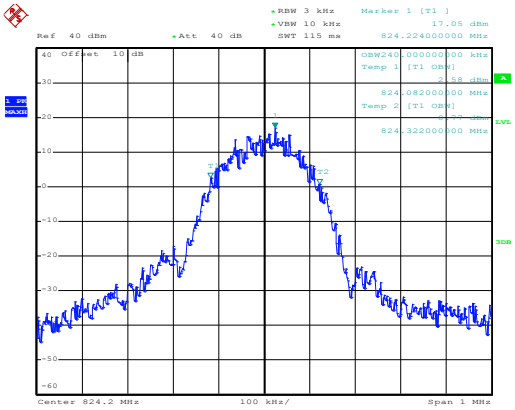


Date: 16.JUN.2016 21:22:11

Highest channel

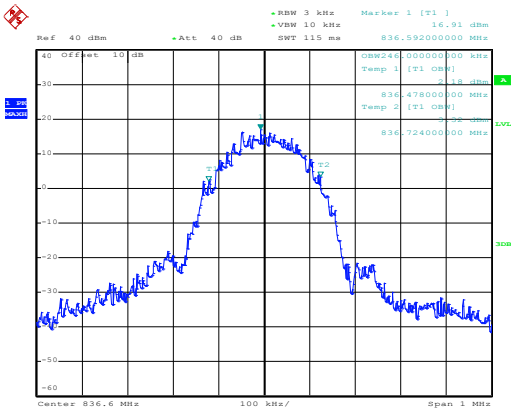
99% Occupy bandwidth

EGPRS 850



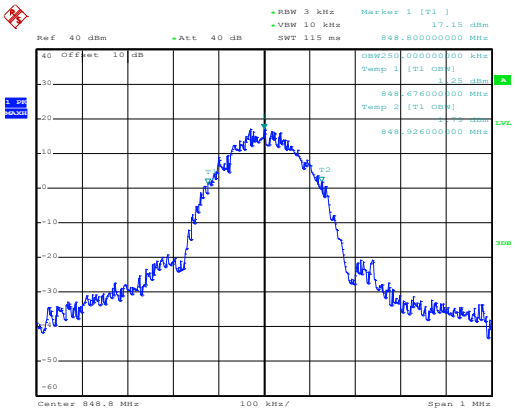
Date: 16.JUN.2016 21:30:50

Lowest channel



Date: 16.JUN.2016 21:30:30

Middle channel

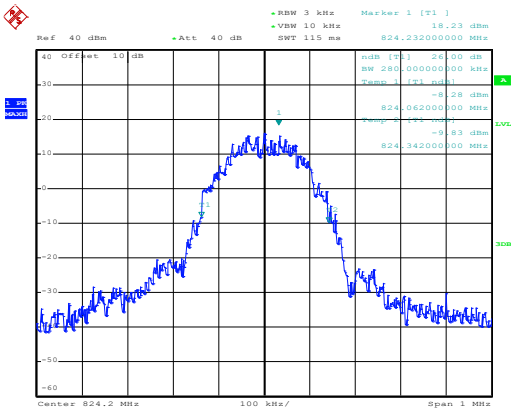


Date: 16.JUN.2016 21:29:32

Highest channel

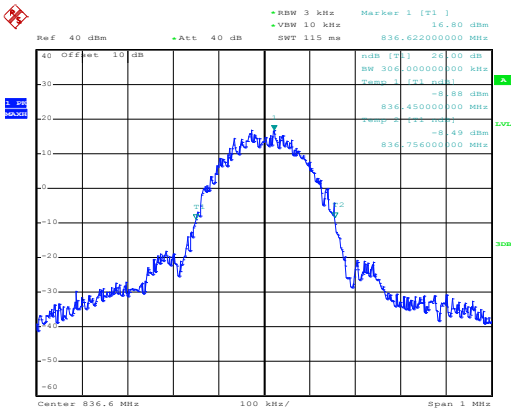
26dB Emission Bandwidth

EGPRS 850



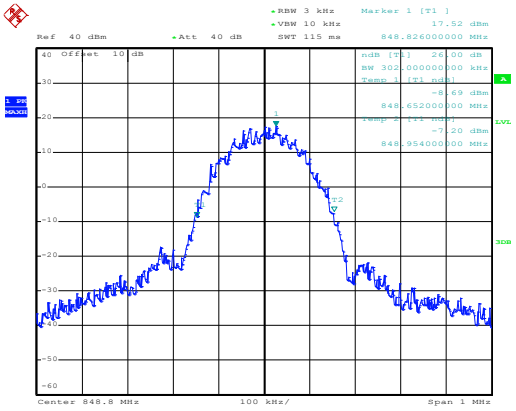
Date: 16.JUN.2016 21:31:00

Lowest channel



Date: 16.JUN.2016 21:30:16

Middle channel

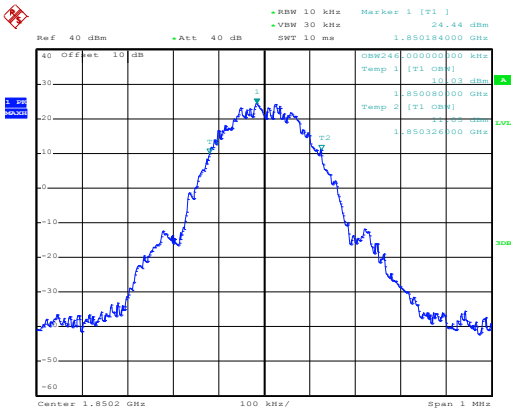


Date: 16.JUN.2016 21:29:50

Highest channel

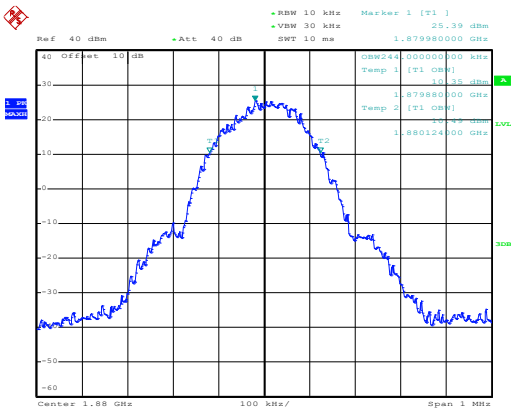
99% Occupy bandwidth

GPRS 1900



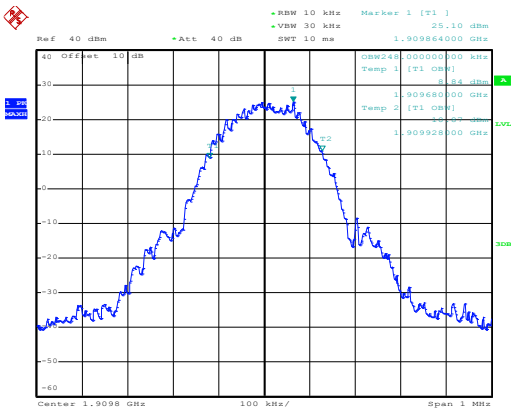
Date: 16.JUN.2016 21:19:40

Lowest channel



Date: 16.JUN.2016 21:19:26

Middle channel

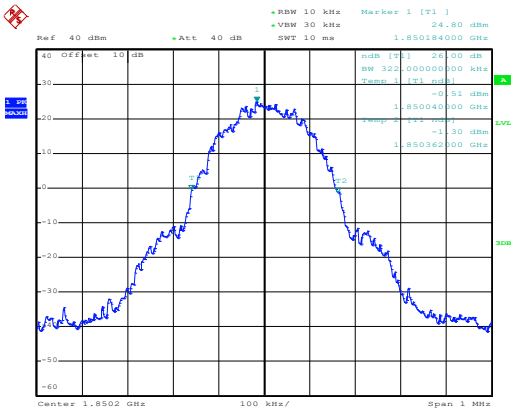


Date: 16.JUN.2016 21:18:41

Highest channel

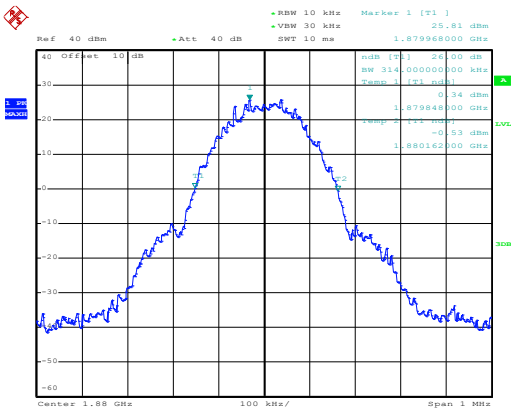
26dB Emission Bandwidth

PCS 1900



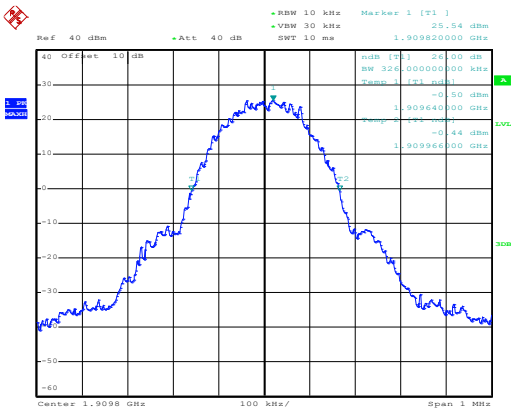
Date: 16.JUN.2016 21:19:52

Lowest channel



Date: 16.JUN.2016 21:19:16

Middle channel

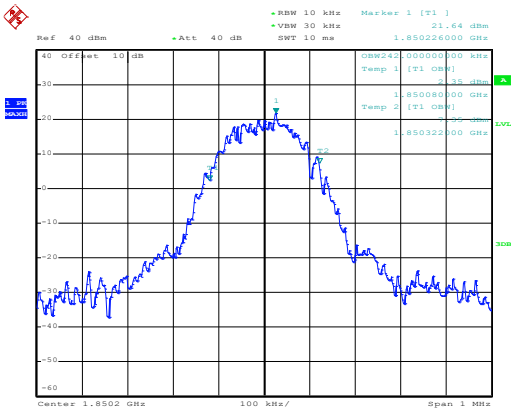


Date: 16.JUN.2016 21:18:58

Highest channel

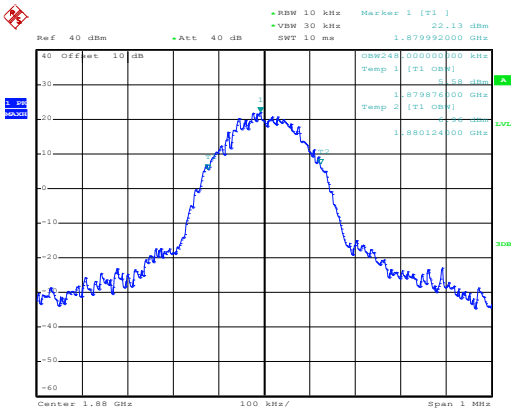
99% Occupy bandwidth

EGPRS 1900



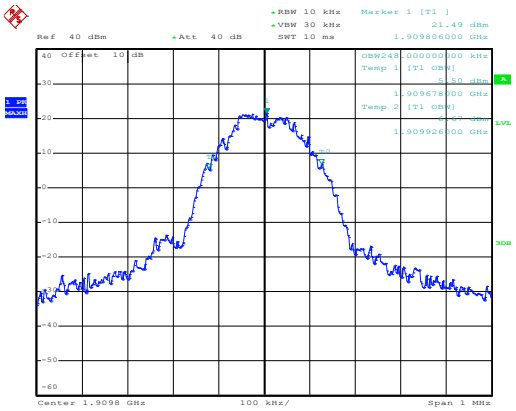
Date: 16.JUN.2016 20:57:44

Lowest channel



Date: 16.JUN.2016 20:58:48

Middle channel

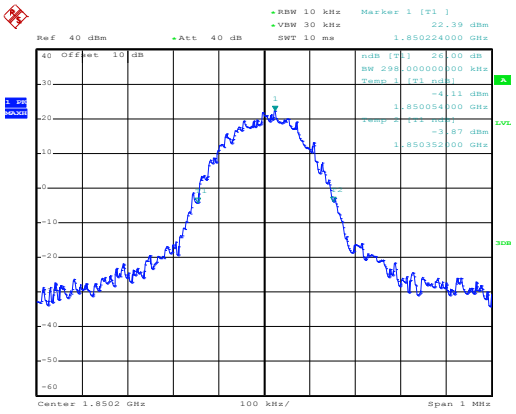


Date: 16.JUN.2016 20:59:31

Highest channel

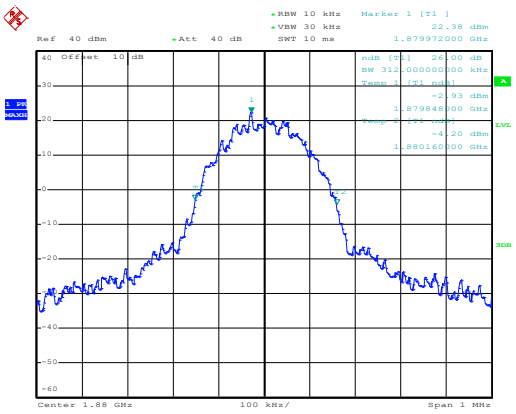
26dB Emission Bandwidth

EGPRS 1900



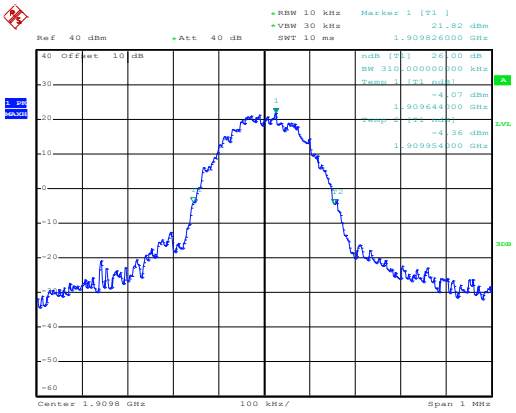
Date: 16.JUN.2016 20:57:34

Lowest channel



Date: 16.JUN.2016 20:58:56

Middle channel

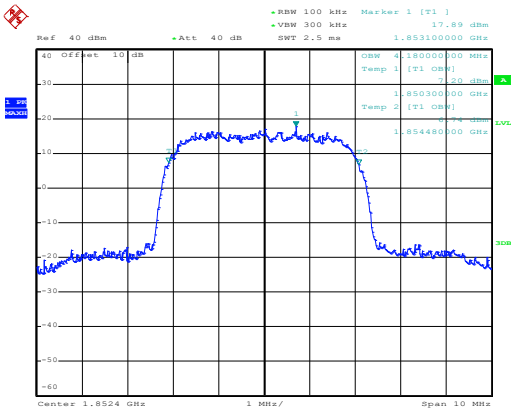


Date: 16.JUN.2016 20:59:11

Highest channel

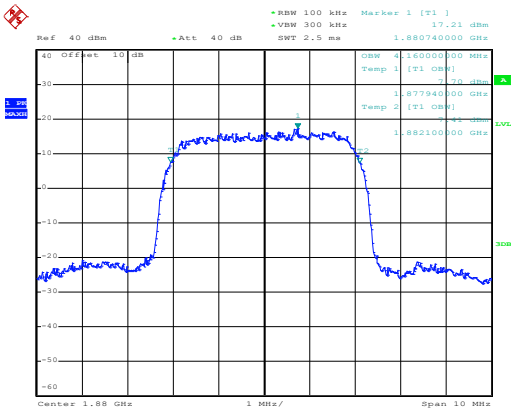
99% Occupy bandwidth

UMTS 1900 12.2k RMC



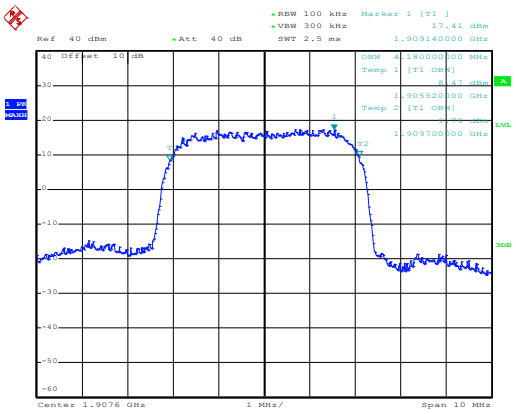
Date: 16.JUN.2016 21:32:40

Lowest channel



Date: 16.JUN.2016 21:32:53

Middle channel

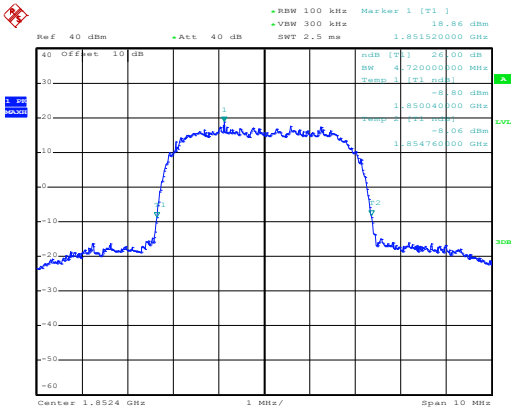


Date: 16.JUN.2016 21:33:25

Highest channel

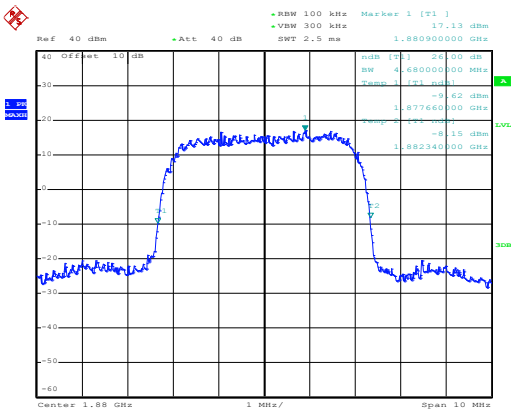
26dB Emission Bandwidth

UMTS 1900 12.2k RMC



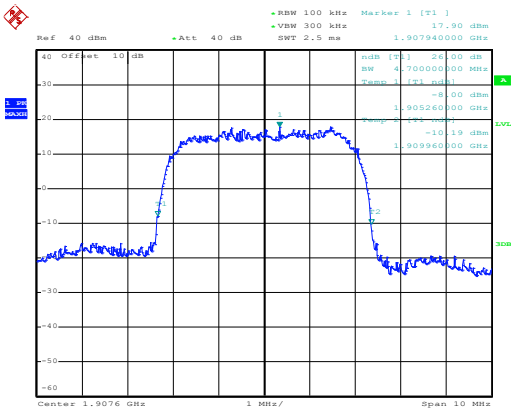
Date: 16.JUN.2016 21:32:33

Lowest channel



Date: 16.JUN.2016 21:33:00

Middle channel



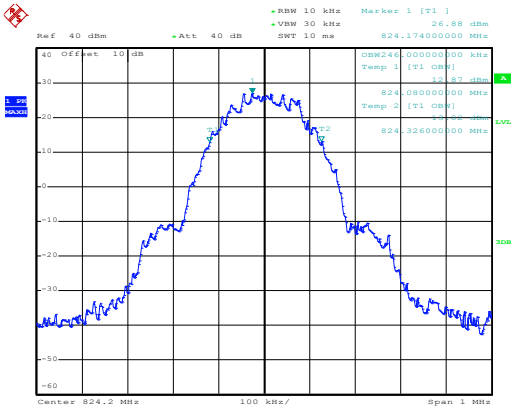
Date: 16.JUN.2016 21:33:11

Highest channel

Main Board part

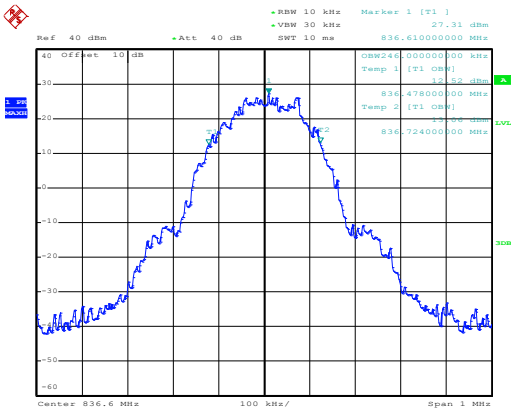
99% Occupy bandwidth

GPRS 850



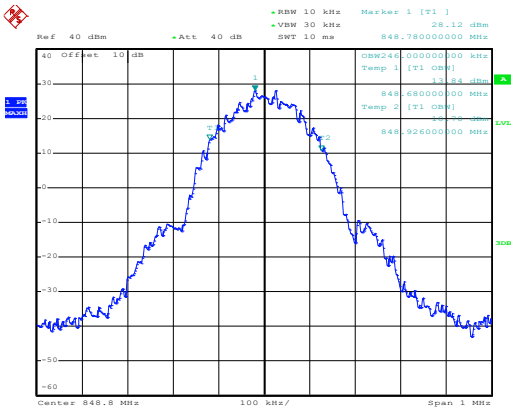
Date: 16.JUN.2016 19:19:46

Lowest channel



Date: 16.JUN.2016 19:20:13

Middle channel

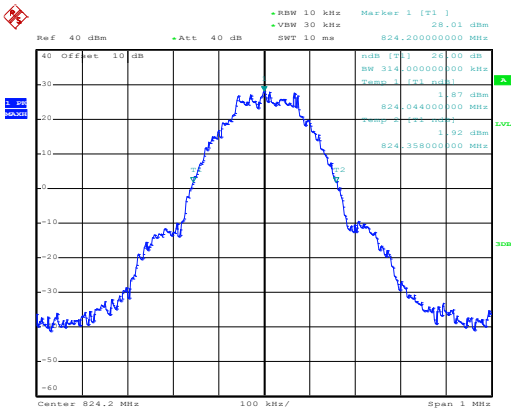


Date: 16.JUN.2016 19:20:24

Highest channel

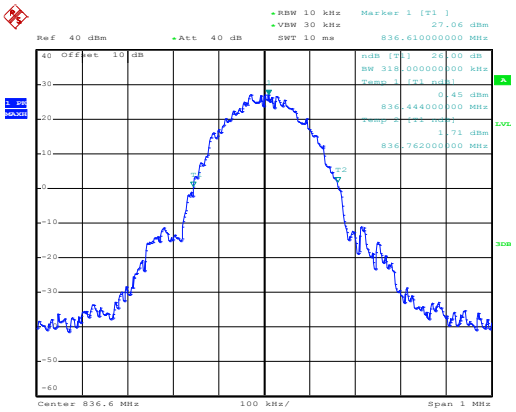
26dB Emission Bandwidth

GPRS 850



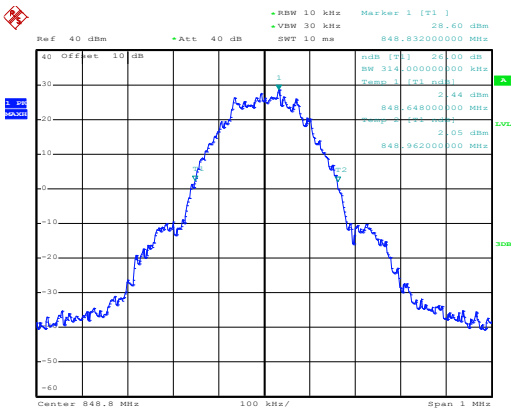
Date: 16.JUN.2016 19:19:55

Lowest channel



Date: 16.JUN.2016 19:20:05

Middle channel

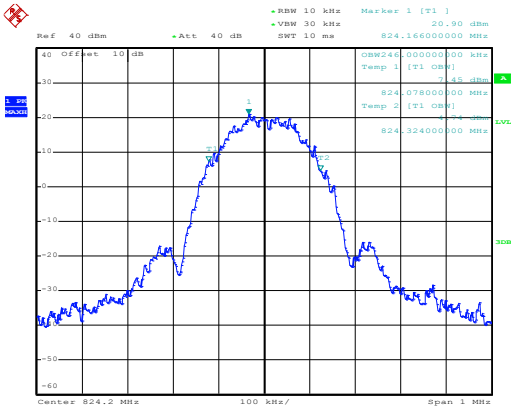


Date: 16.JUN.2016 19:20:35

Highest channel

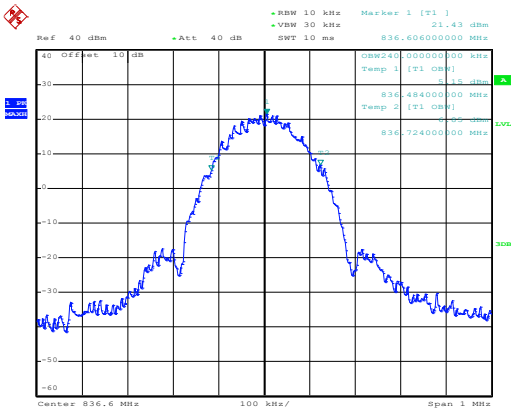
99% Occupy bandwidth

EGPRS 850



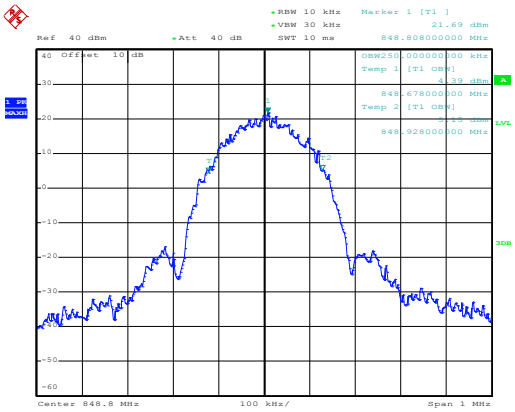
Date: 16.JUN.2016 19:26:04

Lowest channel



Date: 16.JUN.2016 19:25:51

Middle channel

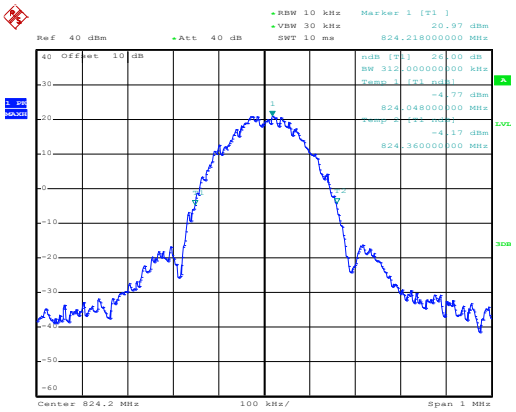


Date: 16.JUN.2016 19:25:13

Highest channel

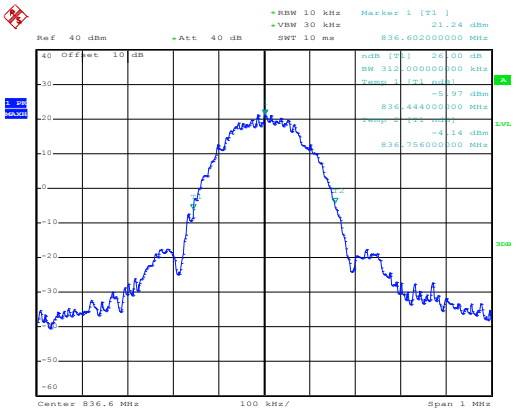
26dB Emission Bandwidth

EGPRS 850



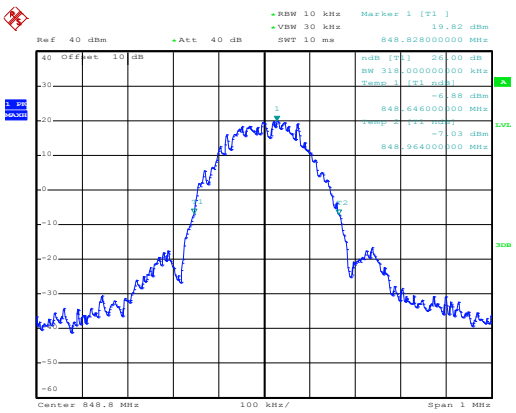
Date: 16.JUN.2016 19:26:17

Lowest channel



Date: 16.JUN.2016 19:25:42

Middle channel

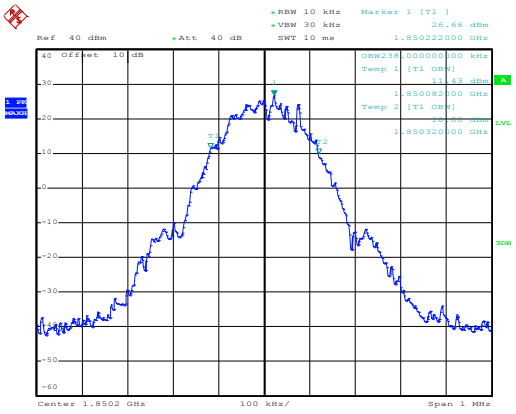


Date: 16.JUN.2016 19:25:21

Highest channel

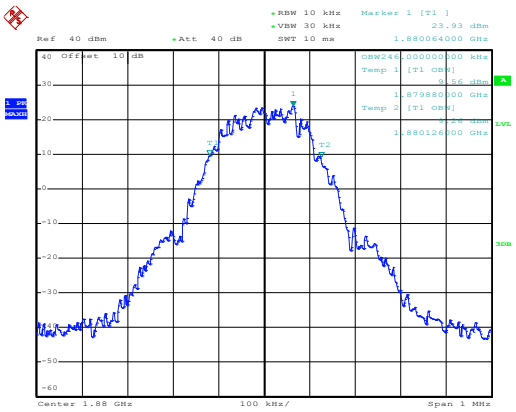
99% Occupy bandwidth

GPRS 1900



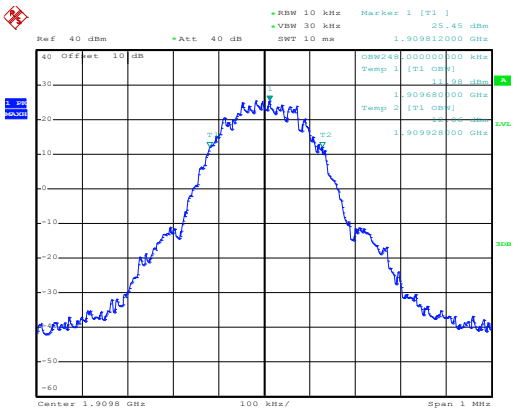
Date: 16.JUN.2016 19:30:50

Lowest channel



Date: 16.JUN.2016 19:31:07

Middle channel

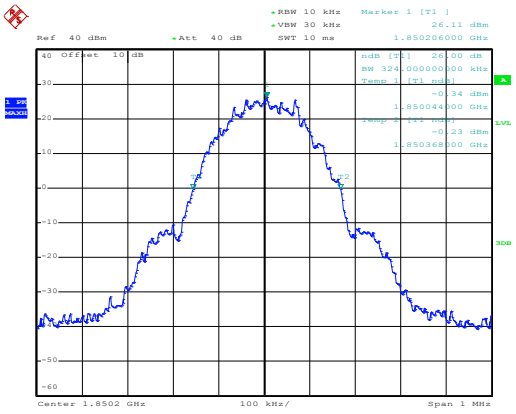


Date: 16.JUN.2016 19:31:54

Highest channel

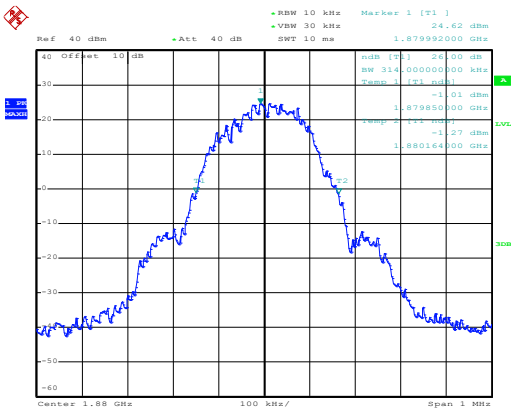
26dB Emission Bandwidth

GPRS 1900



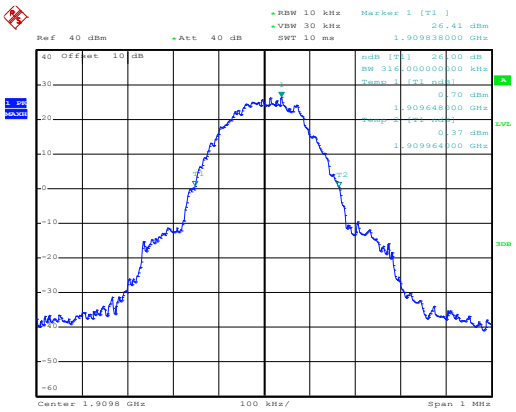
Date: 16.JUN.2016 19:30:42

Lowest channel



Date: 16.JUN.2016 19:31:15

Middle channel

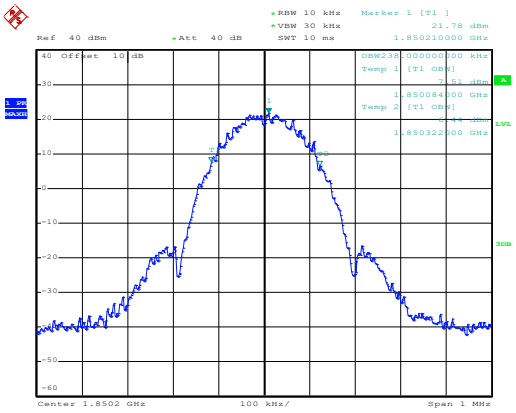


Date: 16.JUN.2016 19:31:43

Highest channel

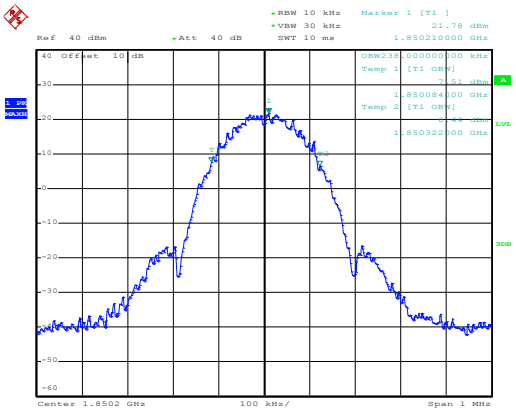
99% Occupy bandwidth

EGPRS 1900



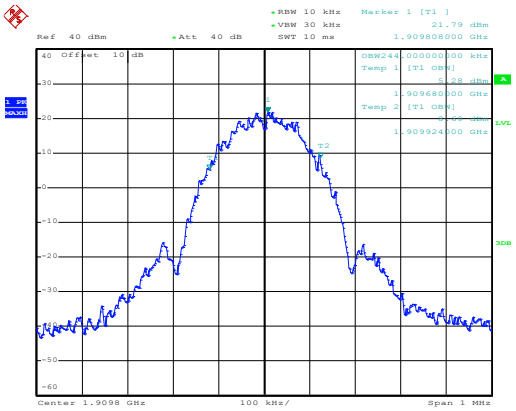
Date: 16.JUN.2016 19:40:01

Lowest channel



Date: 16.JUN.2016 19:40:01

Middle channel

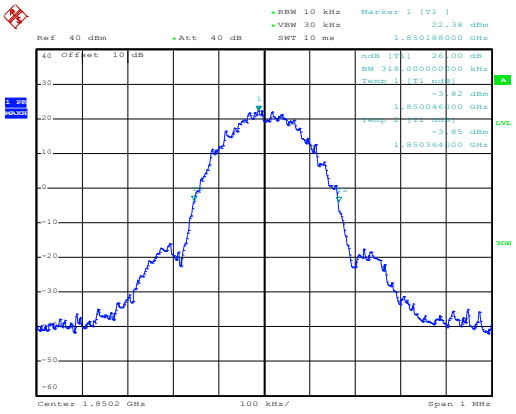


Date: 16.JUN.2016 19:39:07

Highest channel

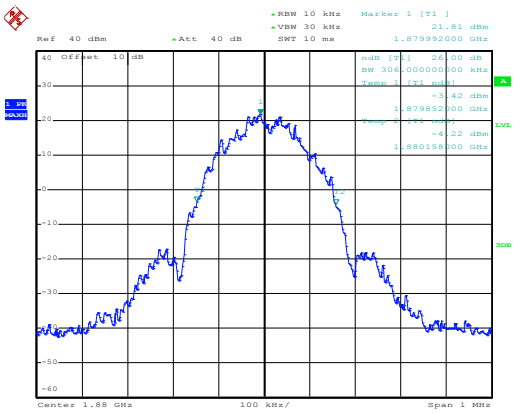
26dB Emission Bandwidth

EGPRS 1900



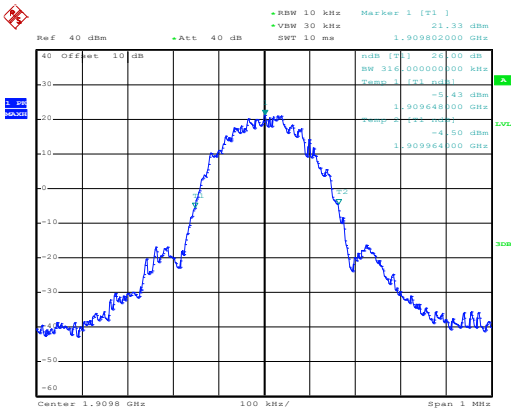
Date: 16.JUN.2016 19:40:19

Lowest channel



Date: 16.JUN.2016 19:39:32

Middle channel

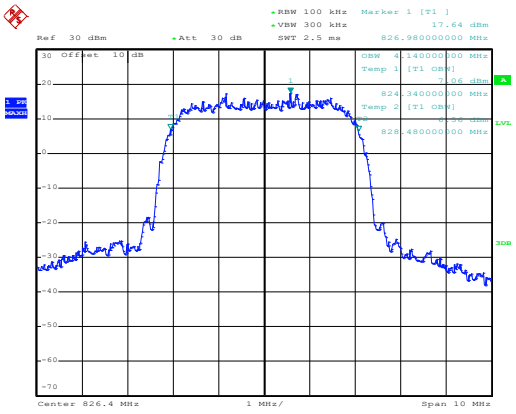


Date: 16.JUN.2016 19:39:15

Highest channel

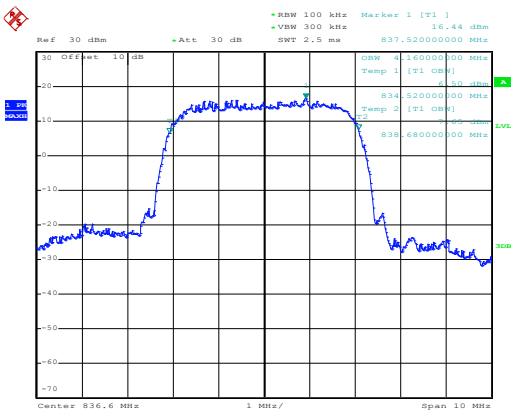
99% Occupy bandwidth

UMTS 850 12.2k RMC



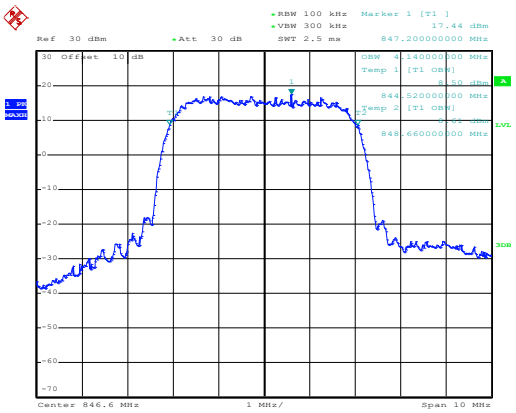
Date: 16.JUN.2016 19:09:59

Lowest channel



Date: 16.JUN.2016 19:10:29

Middle channel

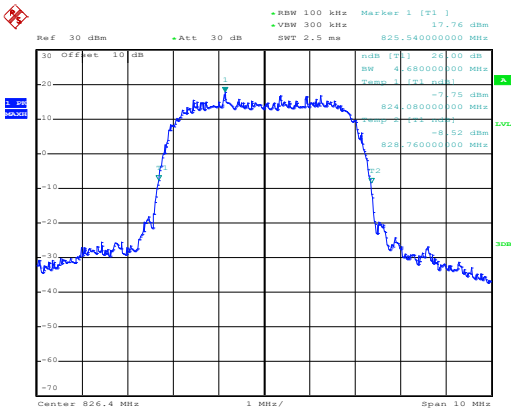


Date: 16.JUN.2016 19:10:57

Highest channel

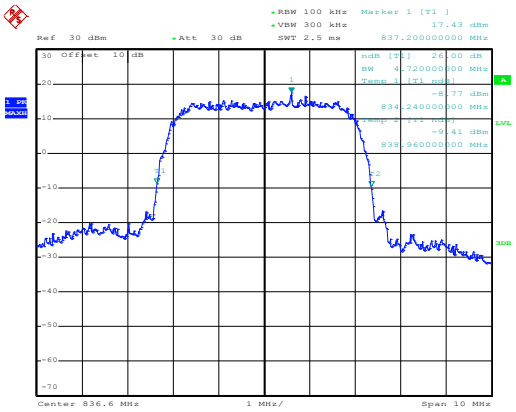
26dB Emission Bandwidth

UMTS 850 12.2k RMC



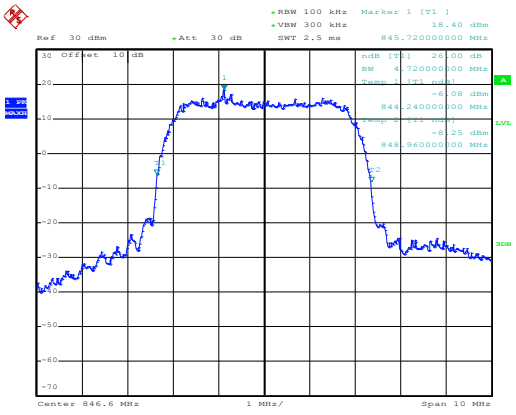
Date: 16.JUN.2016 19:10:06

Lowest channel



Date: 16.JUN.2016 19:10:18

Middle channel

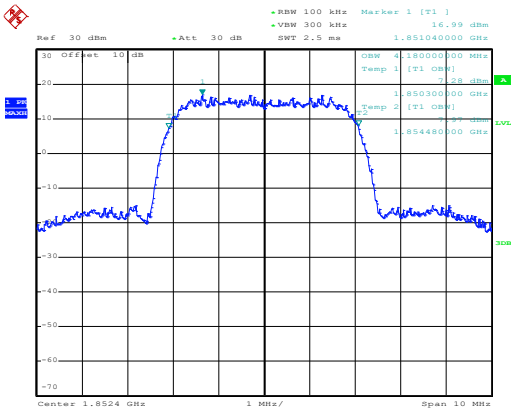


Date: 16.JUN.2016 19:11:04

Highest channel

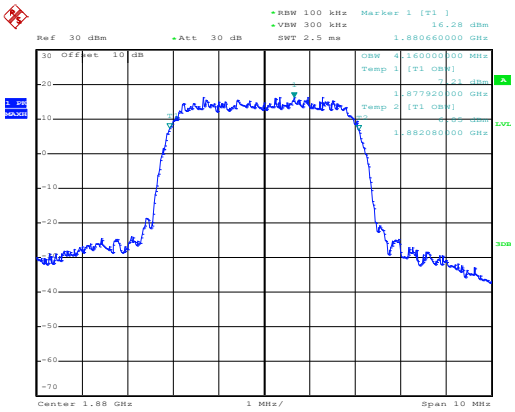
99% Occupy bandwidth

UMTS 1900 12.2k RMC



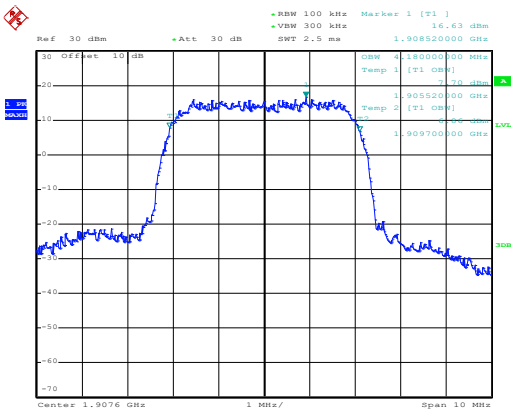
Date: 16.JUN.2016 19:14:49

Lowest channel



Date: 16.JUN.2016 19:15:11

Middle channel

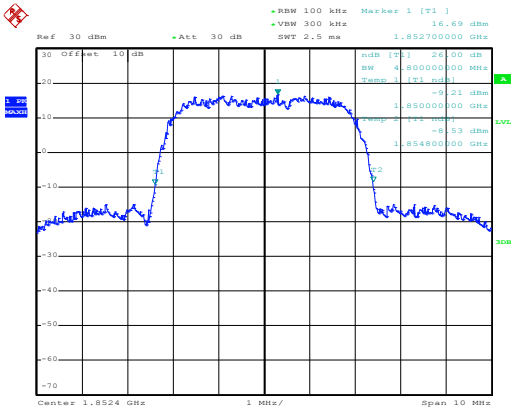


Date: 16.JUN.2016 19:15:22

Highest channel

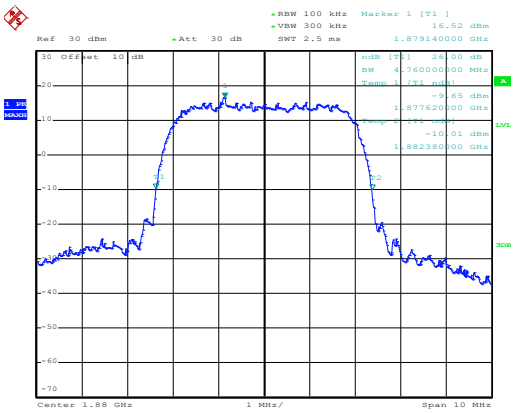
26dB Emission Bandwidth

UMTS 1900 12.2k RMC



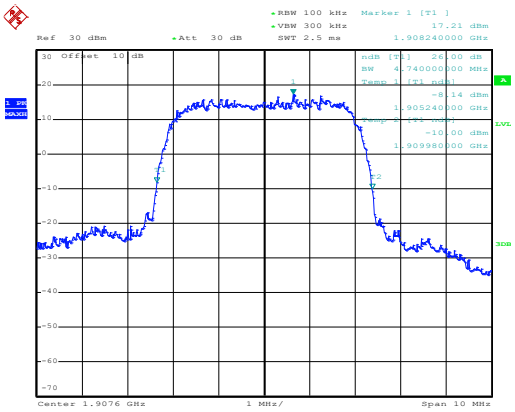
Date: 16.JUN.2016 19:14:55

Lowest channel



Date: 14.JUL.2016 17:43:22

Middle channel

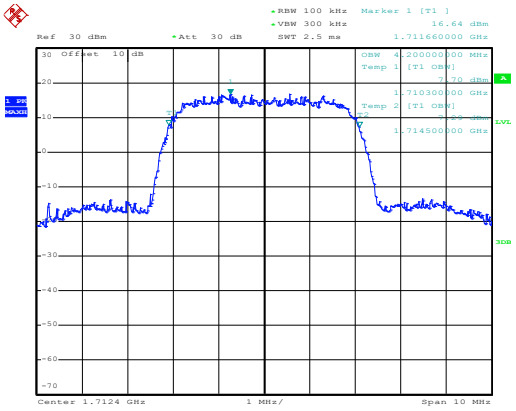


Date: 16.JUN.2016 19:15:30

Highest channel

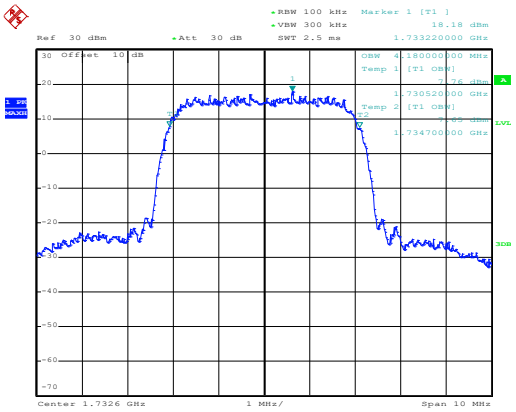
99% Occupy bandwidth

UMTS 1700 12.2k RMC



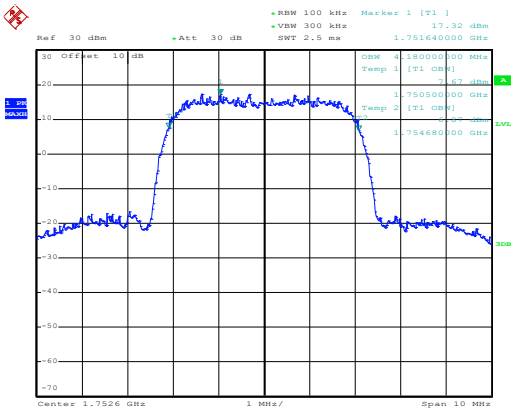
Date: 16.JUN.2016 19:06:15

Lowest channel



Date: 16.JUN.2016 19:06:00

Middle channel

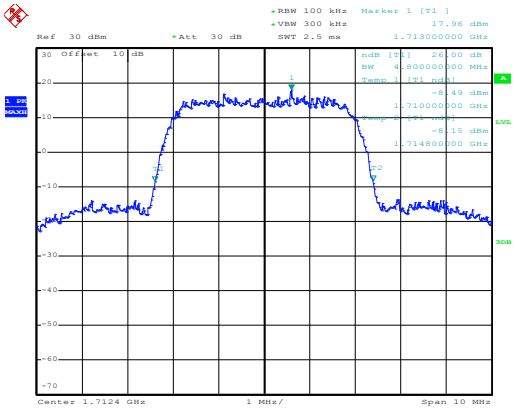


Date: 16.JUN.2016 19:06:43

Highest channel

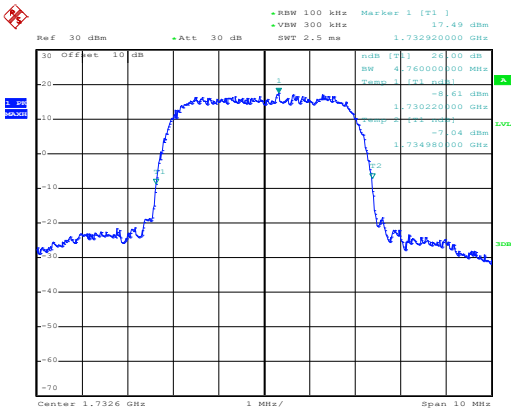
26dB Emission Bandwidth

UMTS 1700 12.2k RMC



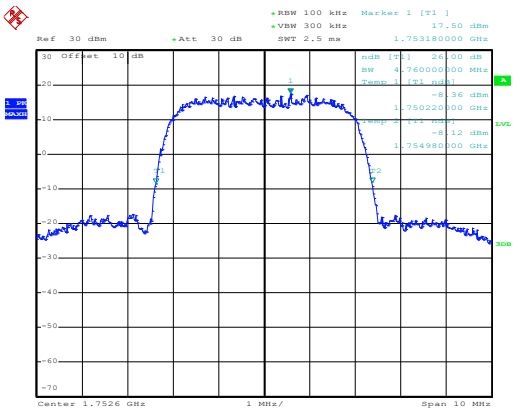
Date: 16.JUN.2016 19:06:22

Lowest channel



Date: 16.JUN.2016 19:05:52

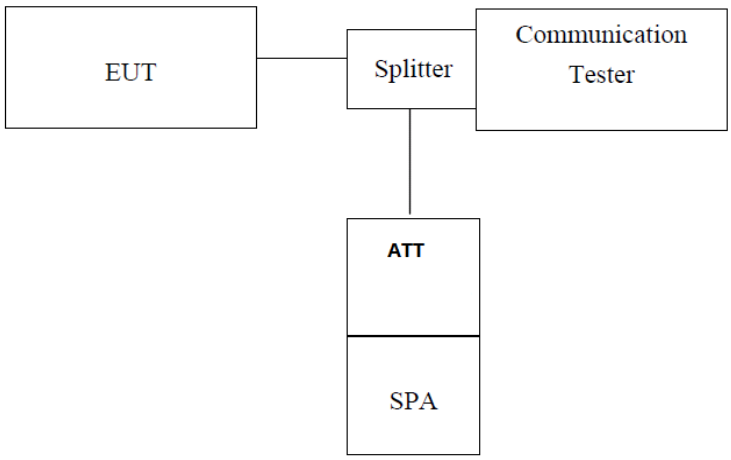
Middle channel



Date: 16.JUN.2016 19:06:34

Highest channel

6.7 Peak-to-Average Power Ratio

Test Requirement:	FCC part 24.232(d)
Limit:	The peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.
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 Set the CCDF option in spectrum analyzer, RBW ≥ OBW, 3 Set the EUT working in highest power level, measured and recorded the 0.1% as PAPR level. 4 Repeat step 1~3 at other frequency and modulations.
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):

HSPA + Wireless Module part

Modulation	Test channel	PAPR
GPRS 850	190	0.07
EGPRS 850	190	0.16
GPRS 1900	661	0.09
EGPRS 1900	661	0.12
UMTS 1900 RMC	9400	3.12

Main Board part

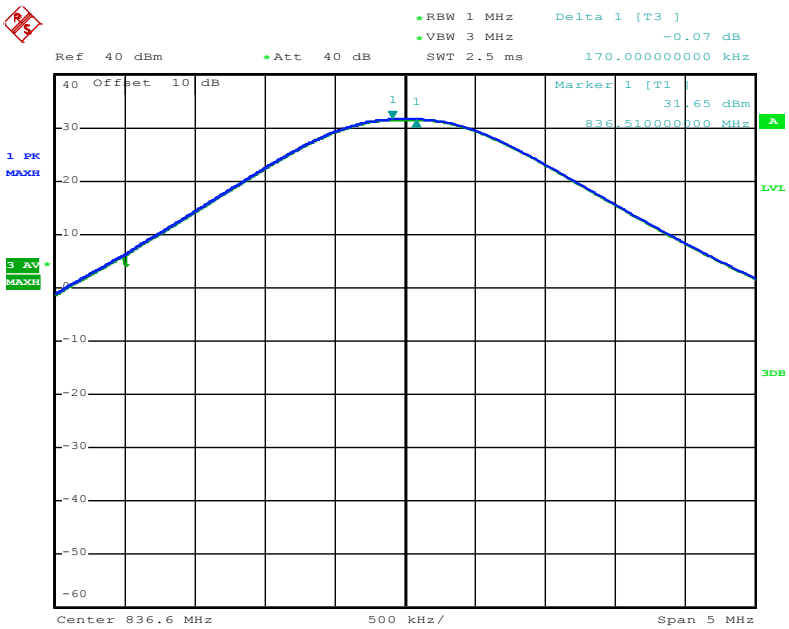
Modulation	Test channel	PAPR
GPRS 850	190	0.07
EGPRS 850	190	0.13
GPRS 1900	661	0.08
EGPRS 1900	661	0.11
UMTS 850 RMC	4183	3.28
UMTS1700 RMC	1413	2.96
UMTS 1900 RMC	9400	3.00

Test plots as below:

HSPA + Wireless Module part

Middle channel

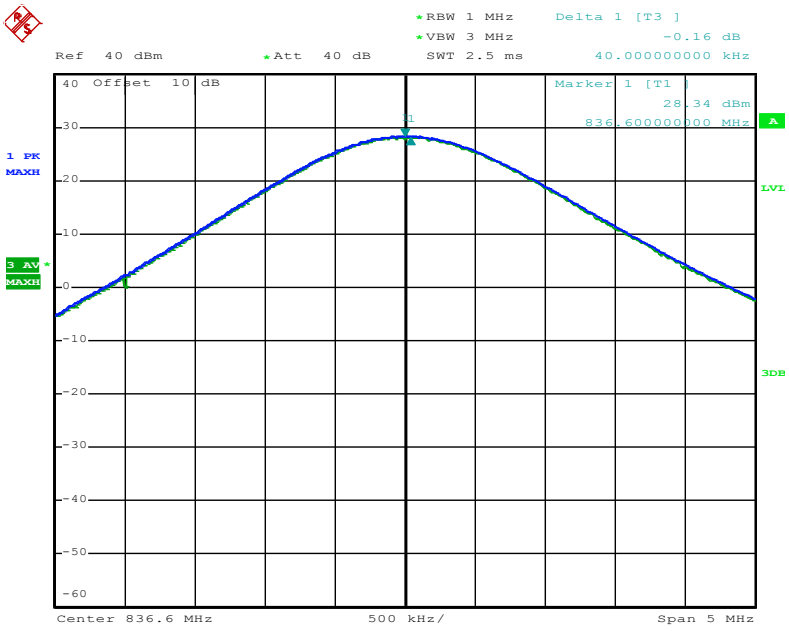
Modulation: GPRS 850



Date: 16.JUN.2016 21:25:43

Middle channel

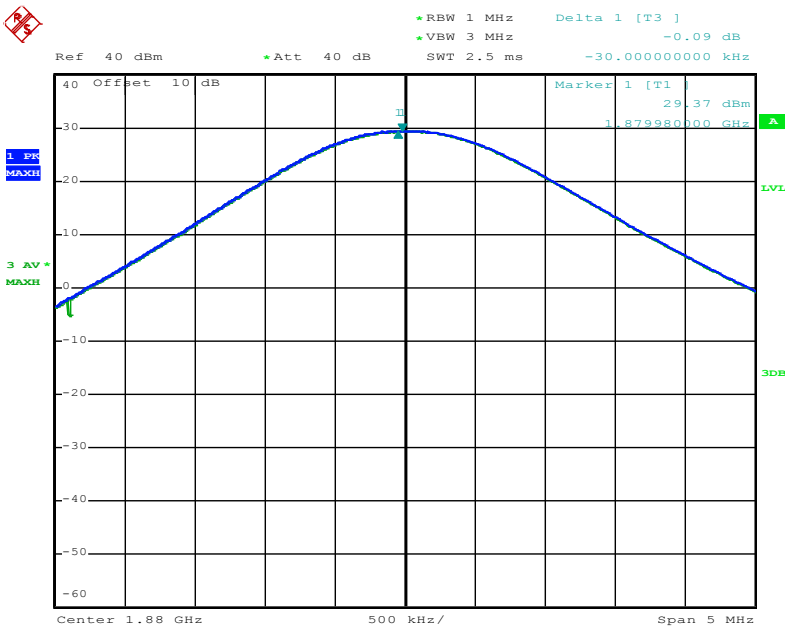
Modulation: EGPRS 850



Date: 16.JUN.2016 21:27:01

Middle channel

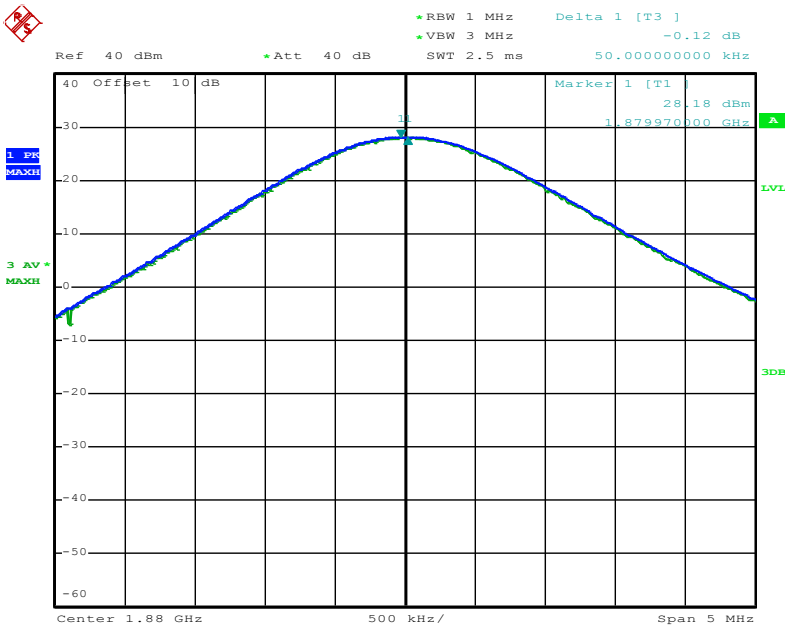
Modulation: GPRS 1900



Date: 16.JUN.2016 21:14:25

Middle channel

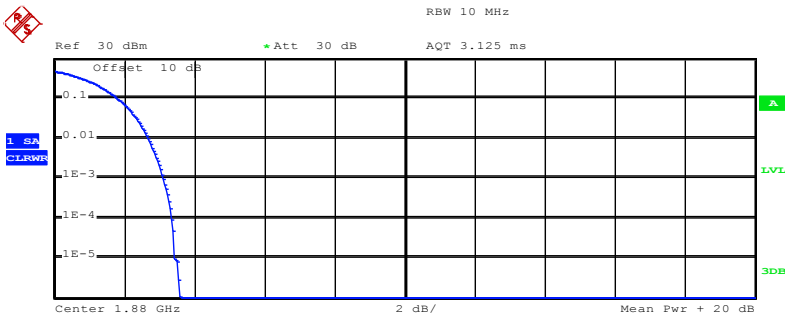
Modulation: EGPRS 1900



Date: 16.JUN.2016 21:01:29

Middle channel

Modulation: WCDMA BAND II RMC



Complementary Cumulative Distribution Function (100000 samples)

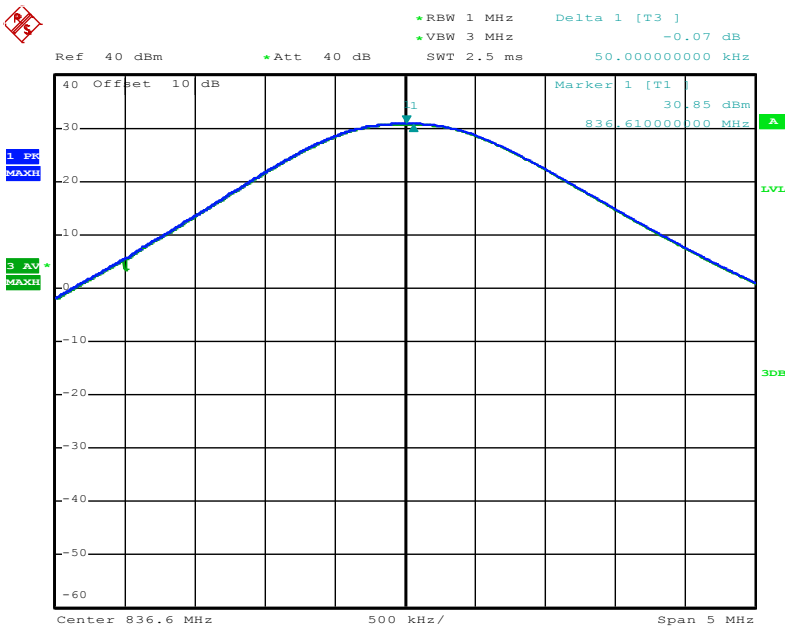
	Trace 1
Mean	22.26 dBm
Peak	25.84 dBm
Crest	3.57 dB
10 %	1.84 dB
1 %	2.68 dB
.1 %	3.12 dB
.01 %	3.36 dB

Date: 16.JUN.2016 21:37:10

Main Board part

Middle channel

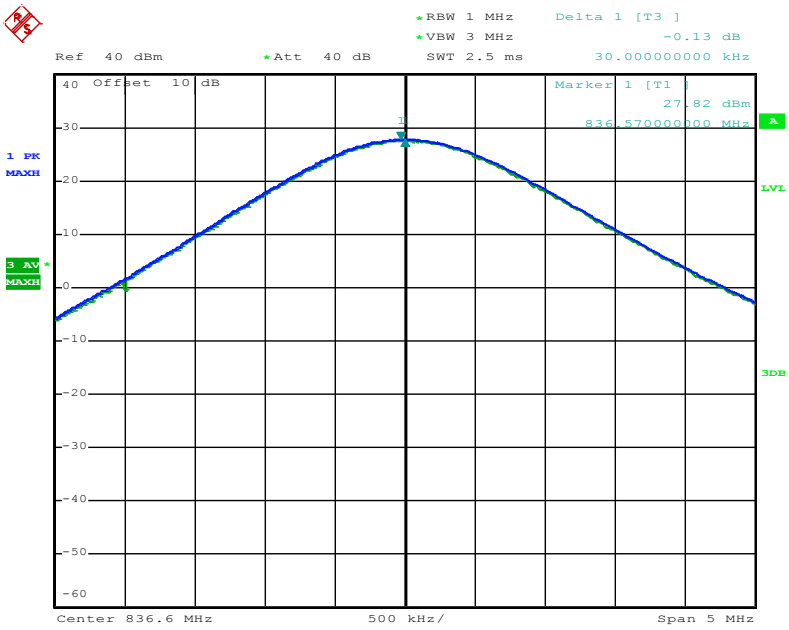
Modulation: GPRS 850



Date: 16.JUN.2016 19:21:12

Middle channel

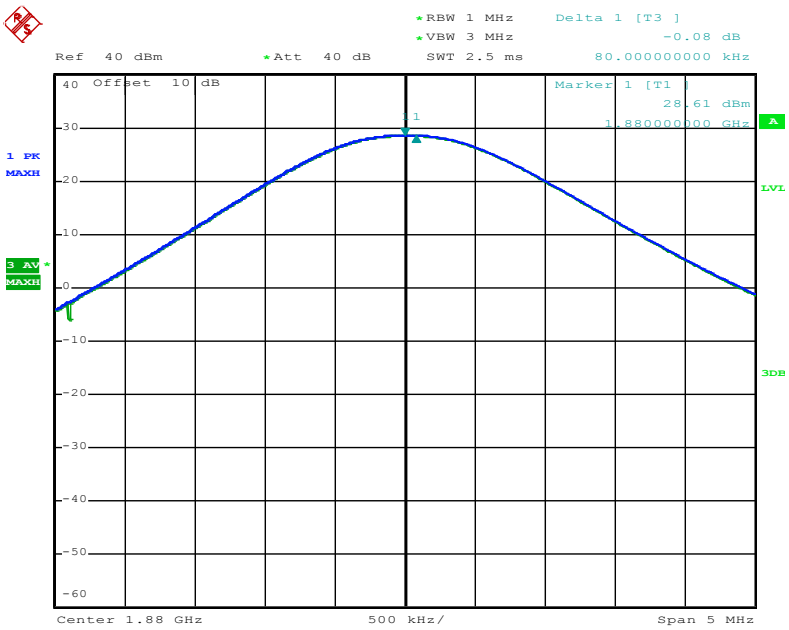
Modulation: EGPRS 850



Date: 16.JUN.2016 19:23:29

Middle channel

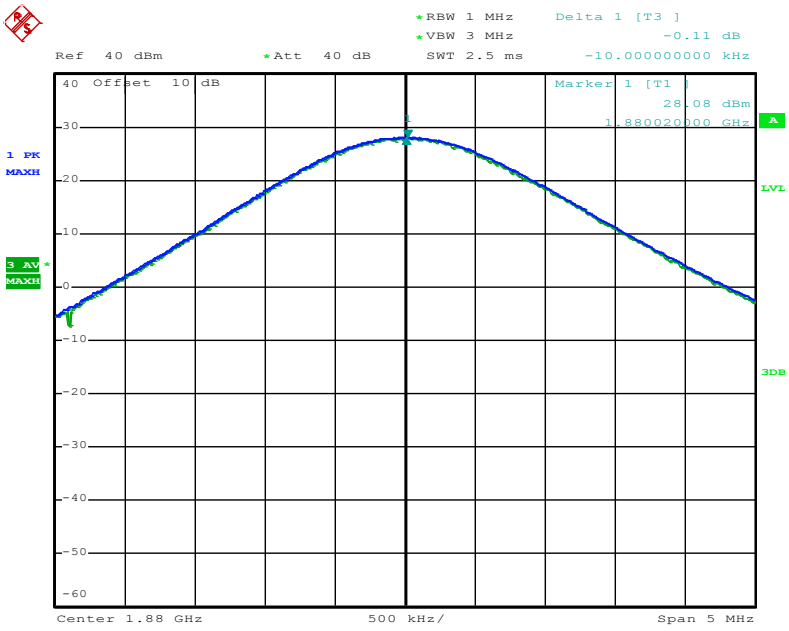
Modulation: GPRS 1900



Date: 16.JUN.2016 19:36:19

Middle channel

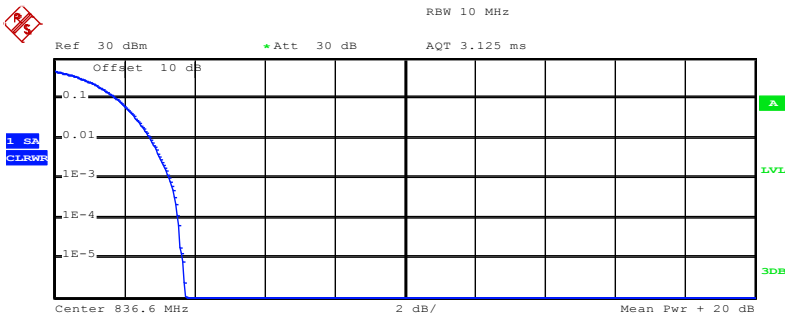
Modulation: EGPRS 1900



Date: 16.JUN.2016 19:37:23

Middle channel

Modulation: WCDMA Band V RMC



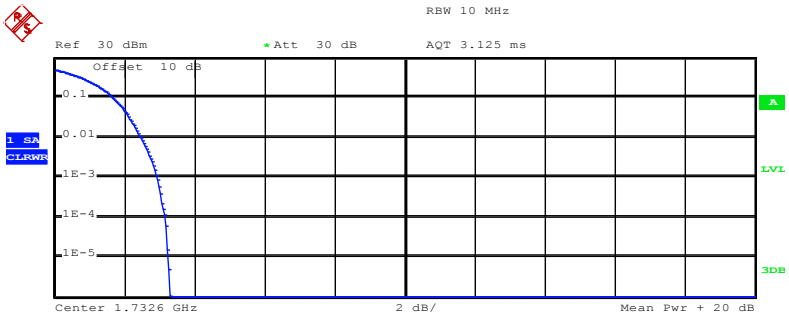
Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	21.61 dBm
Peak	25.34 dBm
Crest	3.73 dB
10 %	1.80 dB
1 %	2.76 dB
.1 %	3.28 dB
.01 %	3.52 dB

Date: 16.JUN.2016 19:07:54

Middle channel

Modulation: UMTS IV RMC



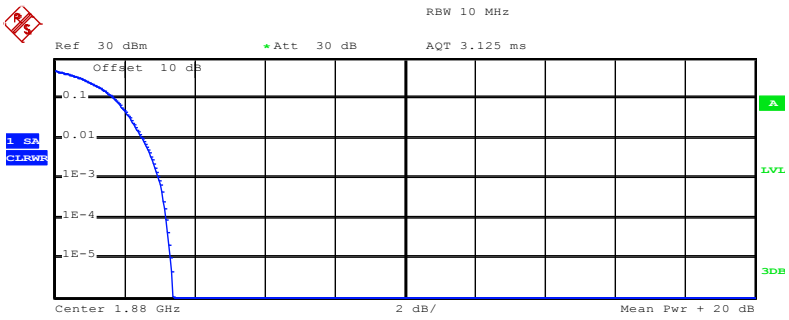
Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	22.55 dBm
Peak	25.84 dBm
Crest	3.29 dB
10 %	1.68 dB
1 %	2.48 dB
.1 %	2.96 dB
.01 %	3.16 dB

Date: 16.JUN.2016 19:07:26

Middle channel

Modulation: WCDMA BAND II RMC



Complementary Cumulative Distribution Function (100000 samples)

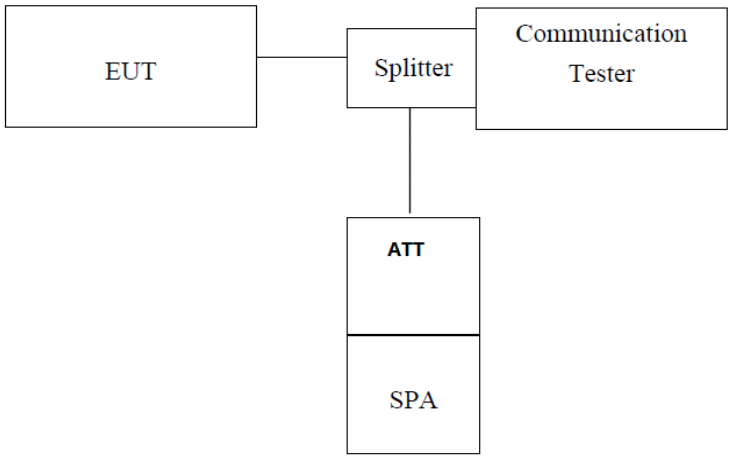
	Trace 1
Mean	21.67 dBm
Peak	25.06 dBm
Crest	3.39 dB
10 %	1.72 dB
1 %	2.52 dB
.1 %	3.00 dB
.01 %	3.20 dB

Date: 16.JUN.2016 19:15:53

6.8 Modulation Characteristic

According to FCC § 2.1047(d), Part 22H & 24E& 27L there is no specific requirement for digital modulation, therefore modulation characteristic is not presented.

6.9 Out of band emission at antenna terminals

Test Requirement:	FCC part 22.917(a), FCC part 24.238(a) and FCC Part 27.53 (h)
Test Method:	FCC part 2.1051
Limit:	-13dBm
Test setup:	 *Note: Measurement setup for testing on Antenna connector*
Test Procedure:	5 The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. 6 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. 7 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. 8 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

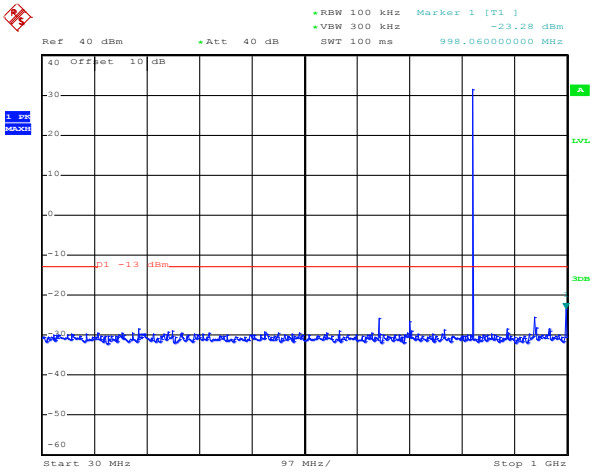
Test plots as follows:

Spurious emission:

HSPA + Wireless Module part

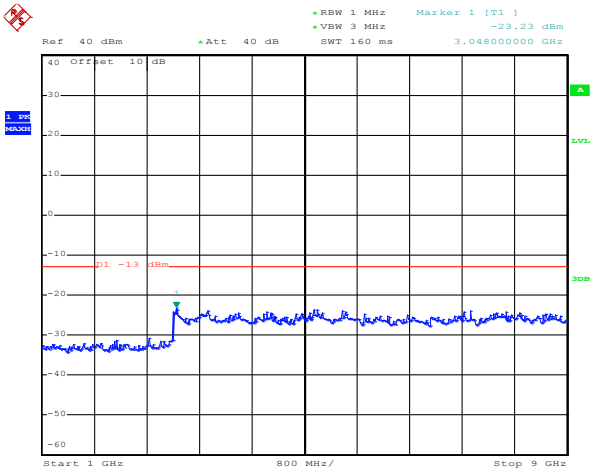
GPRS 850

Lowest Channel



Date: 16.JUN.2016 21:23:53

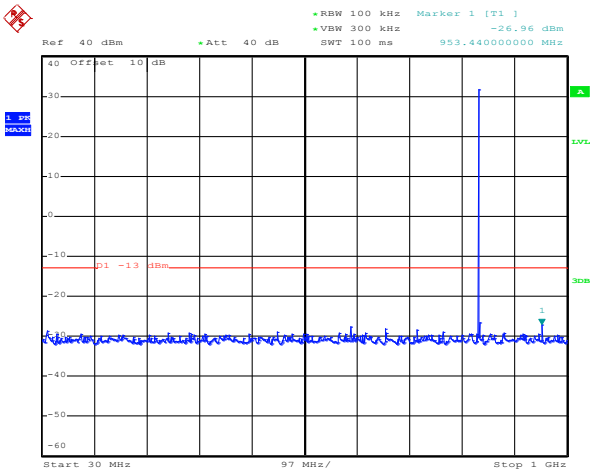
30MHz~1GHz



Date: 16.JUN.2016 21:25:06

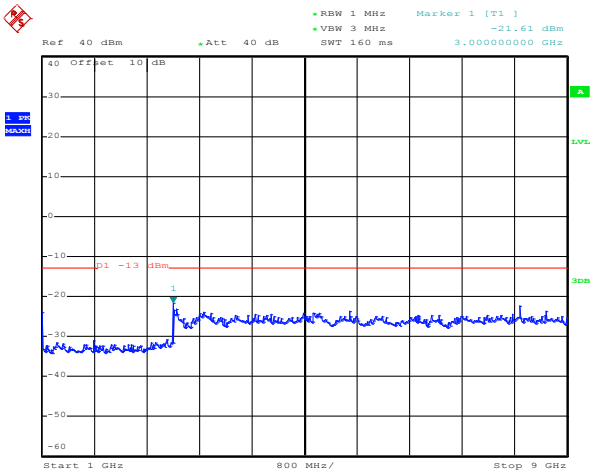
1GHz~9GHz

Middle channel



Date: 16.JUN.2016 21:24:13

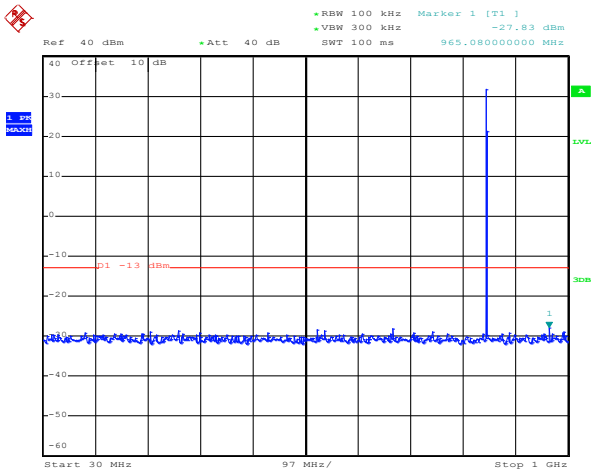
30MHz~1GHz



Date: 16.JUN.2016 21:24:57

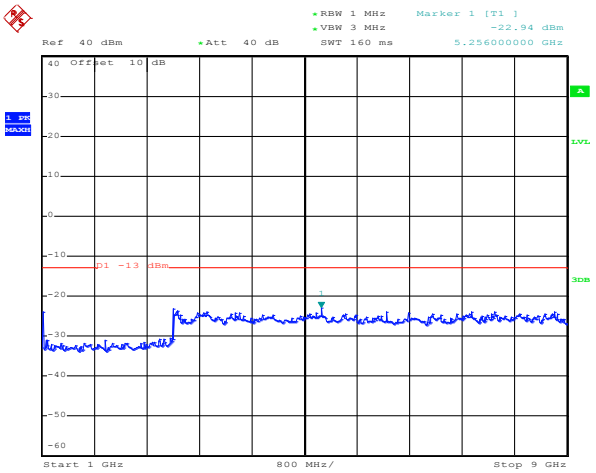
1GHz~9GHz

Highest Channel



Date: 16.JUN.2016 21:24:31

30MHz~1GHz

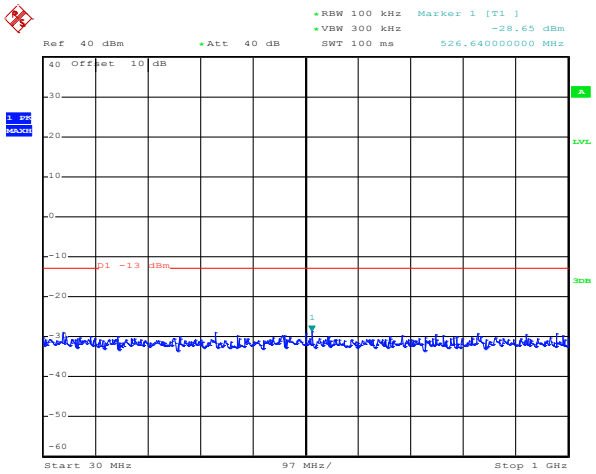


Date: 16.JUN.2016 21:24:45

1GHz~9GHz

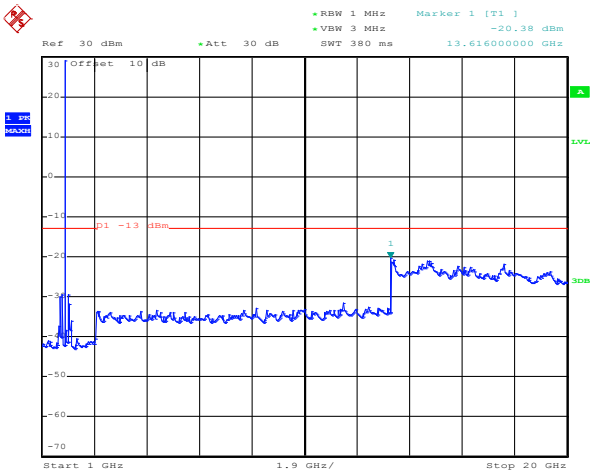
GPRS 1900

Lowest Channel



Date: 16.JUN.2016 21:16:51

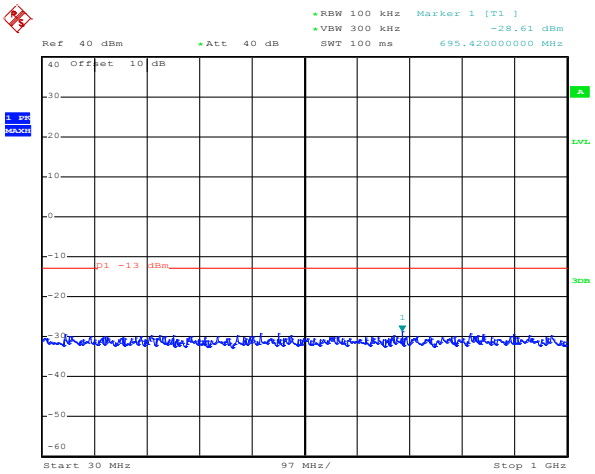
30MHz~1GHz



Date: 16.JUN.2016 21:17:42

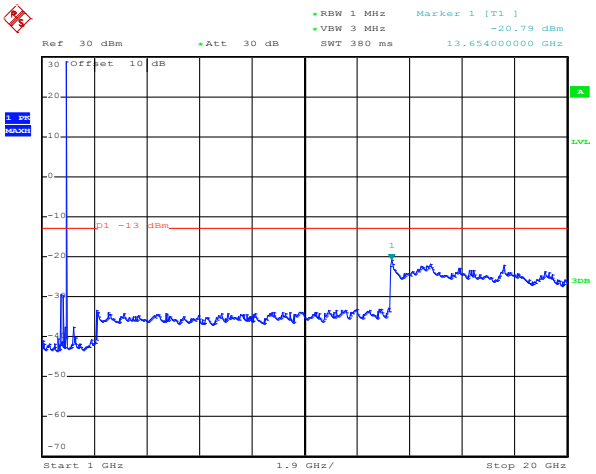
1GHz~20GHz

Middle Channel



Date: 16.JUN.2016 21:16:58

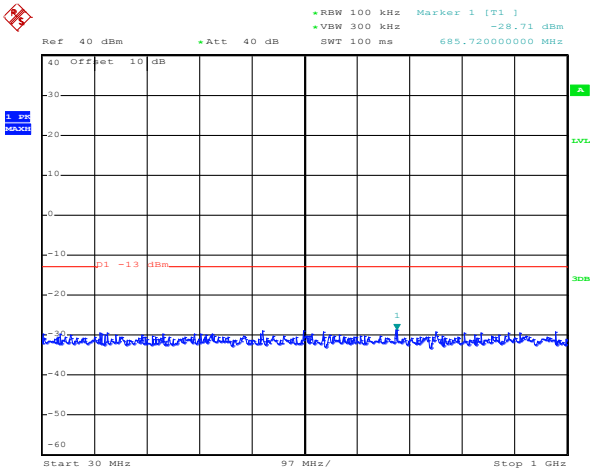
30MHz~1GHz



Date: 16.JUN.2016 21:18:00

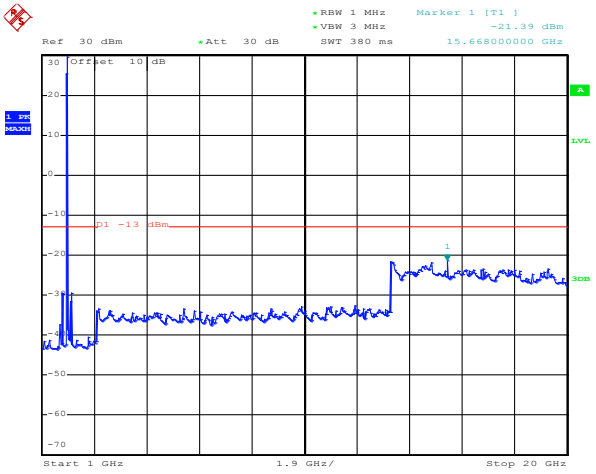
1GHz~20GHz

Highest Channel



Date: 16.JUN.2016 21:17:04

30MHz~1GHz

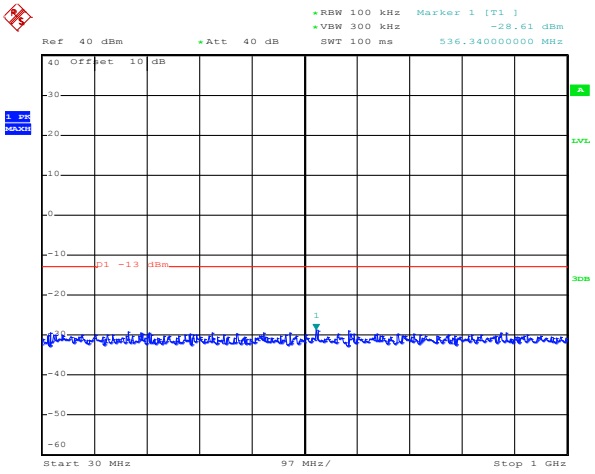


Date: 16.JUN.2016 21:18:11

1GHz~20GHz

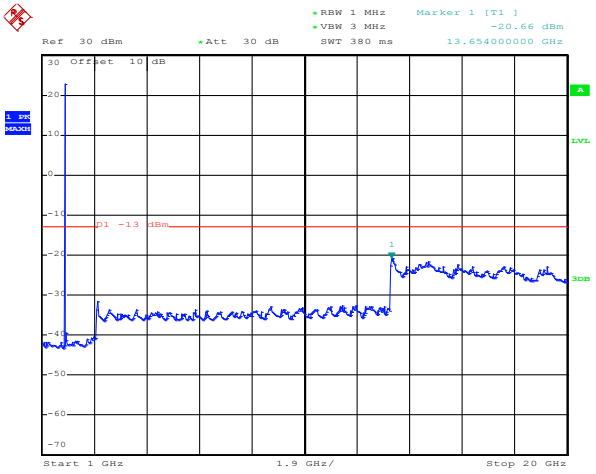
WCDMA Band II 12.2k RMC

Lowest Channel



Date: 16.JUN.2016 21:35:18

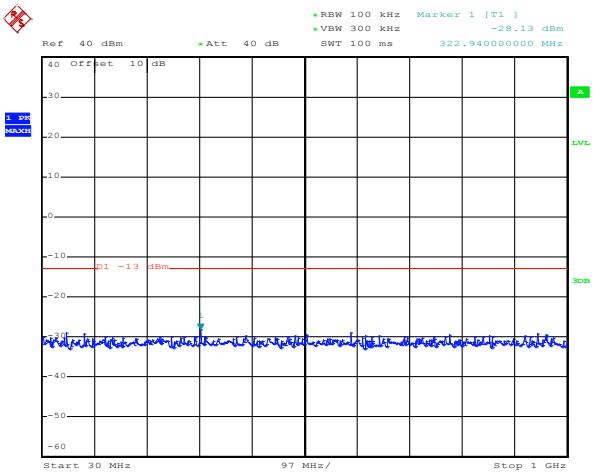
30MHz~1GHz



Date: 16.JUN.2016 21:36:15

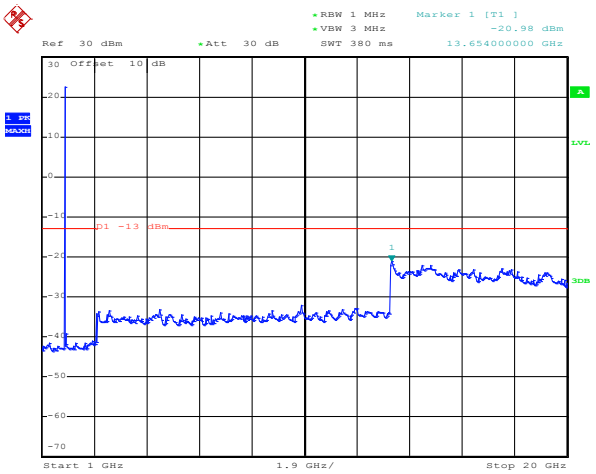
1GHz~20GHz

Middle Channel



Date: 16.JUN.2016 21:35:27

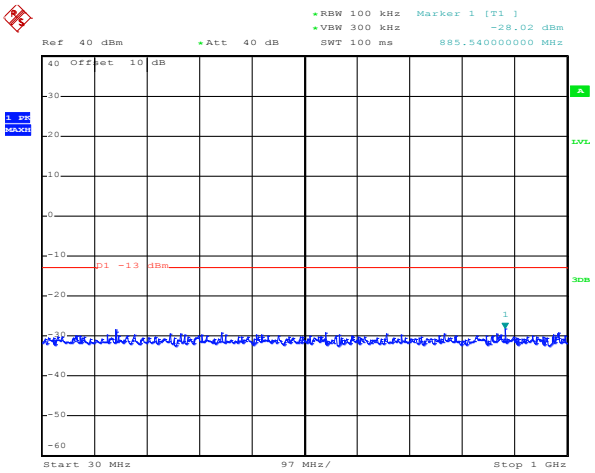
30MHz~1GHz



Date: 16.JUN.2016 21:36:30

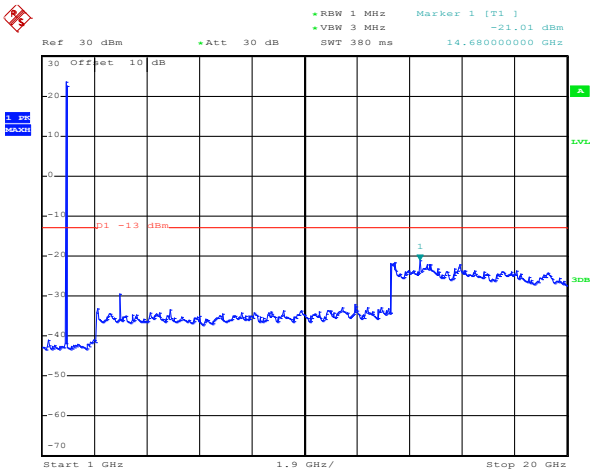
1GHz~20GHz

Highest Channel



Date: 16.JUN.2016 21:35:36

30MHz~1GHz



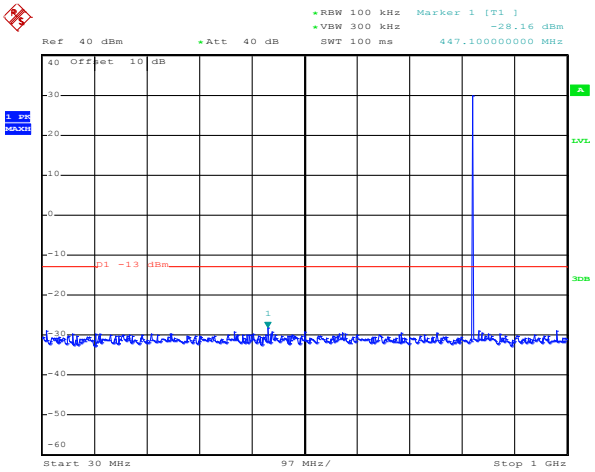
Date: 16.JUN.2016 21:36:50

1GHz~20GHz

Main Board part

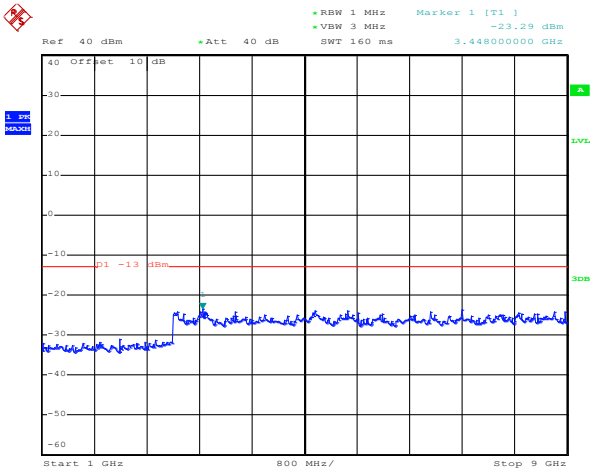
GPRS 850

Lowest Channel



Date: 16.JUN.2016 19:19:26

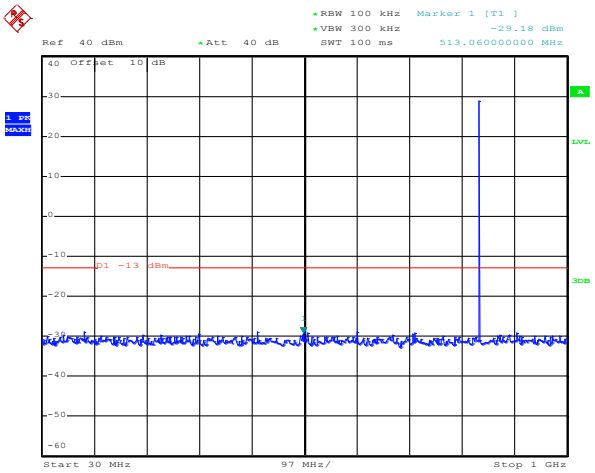
30MHz~1GHz



Date: 16.JUN.2016 19:18:39

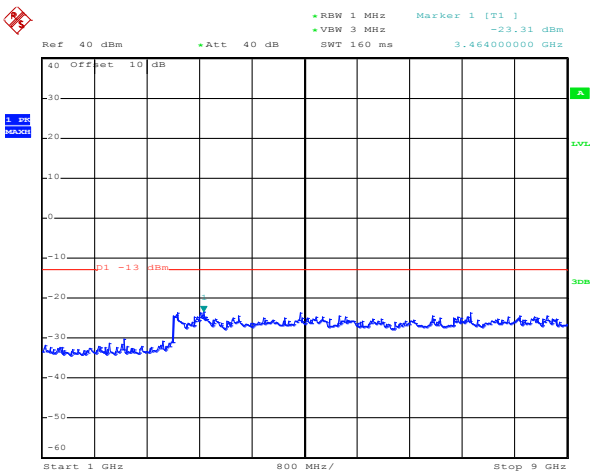
1GHz~9GHz

Middle channel



Date: 16.JUN.2016 19:19:13

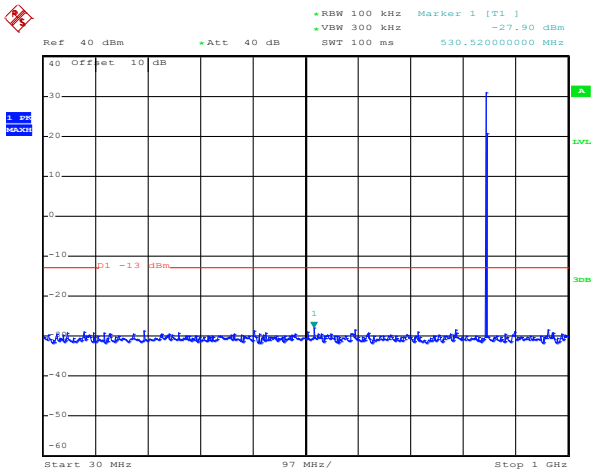
30MHz~1GHz



Date: 16.JUN.2016 19:18:34

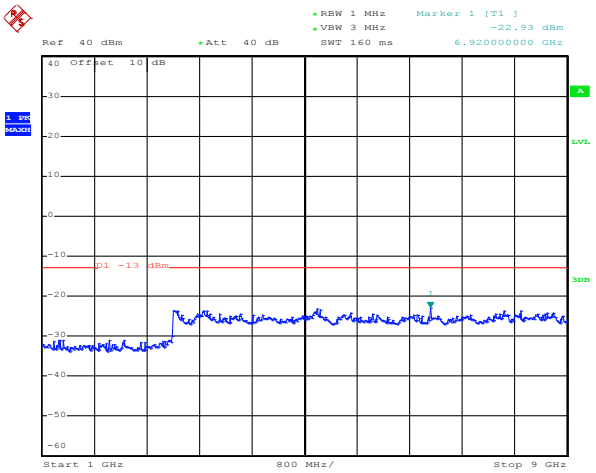
1GHz~9GHz

Highest Channel



Date: 16.JUN.2016 19:19:03

30MHz~1GHz

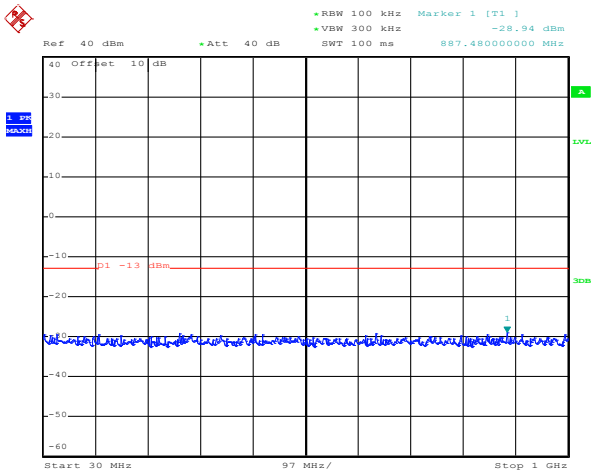


Date: 16.JUN.2016 19:18:28

1GHz~9GHz

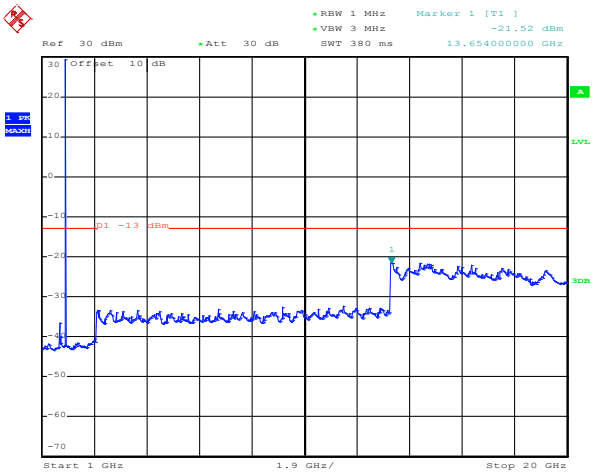
GPRS 1900

Lowest Channel



Date: 16.JUN.2016 19:33:03

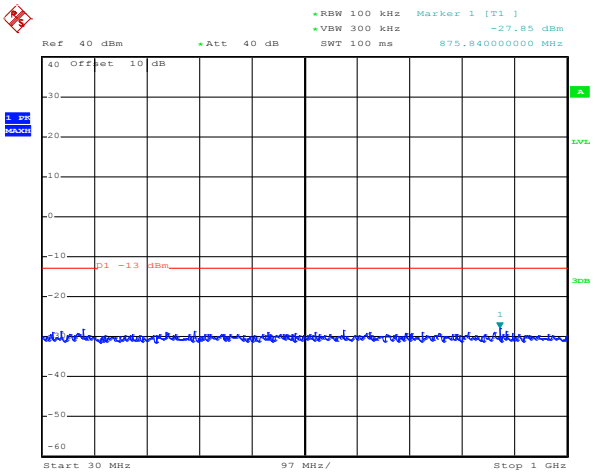
30MHz~1GHz



Date: 16.JUN.2016 19:34:31

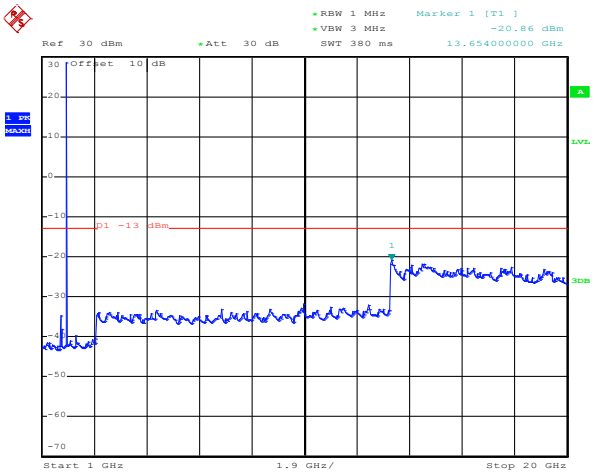
1GHz~20GHz

Middle Channel



Date: 16.JUN.2016 19:33:32

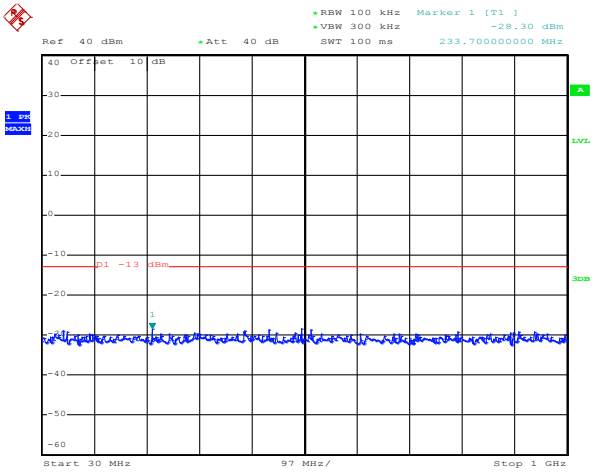
30MHz~1GHz



Date: 16.JUN.2016 19:34:55

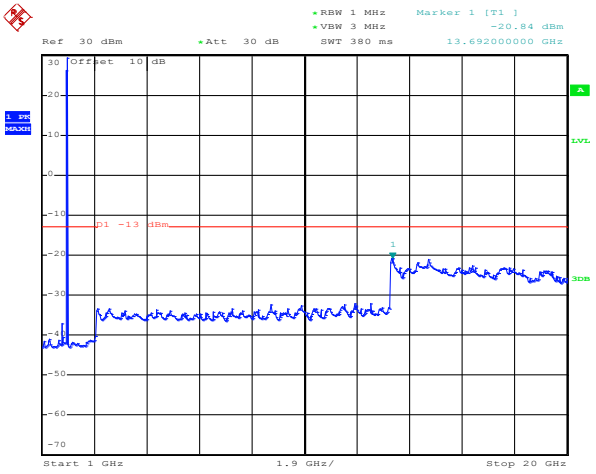
1GHz~20GHz

Highest Channel



Date: 16.JUN.2016 19:33:43

30MHz~1GHz

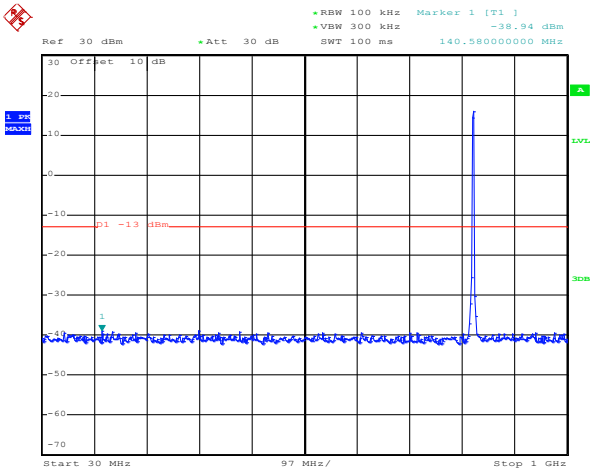


Date: 16.JUN.2016 19:35:20

1GHz~20GHz

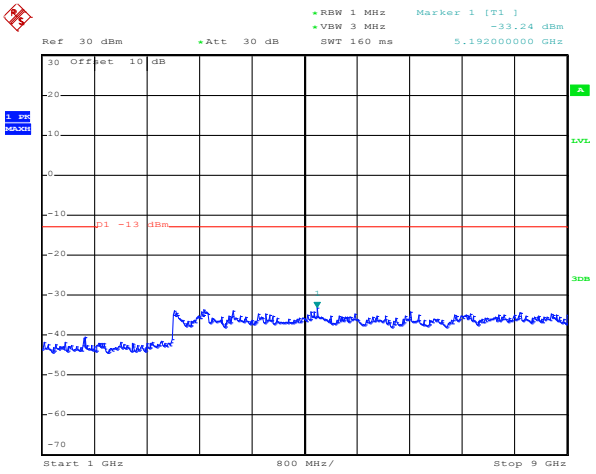
WCDMA Band V 12.2k RMC

Lowest Channel



Date: 16.JUN.2016 19:08:46

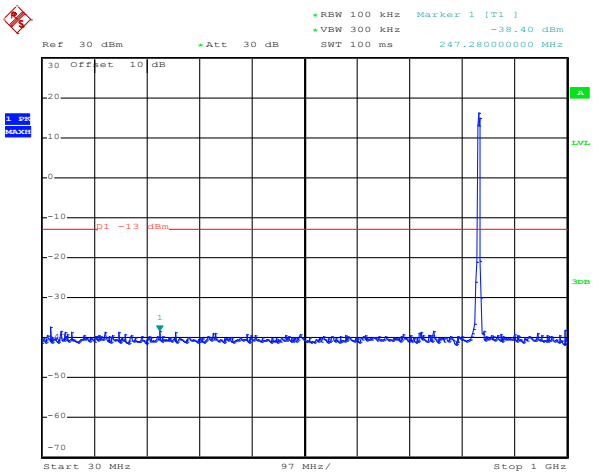
30MHz~1GHz



Date: 16.JUN.2016 19:09:36

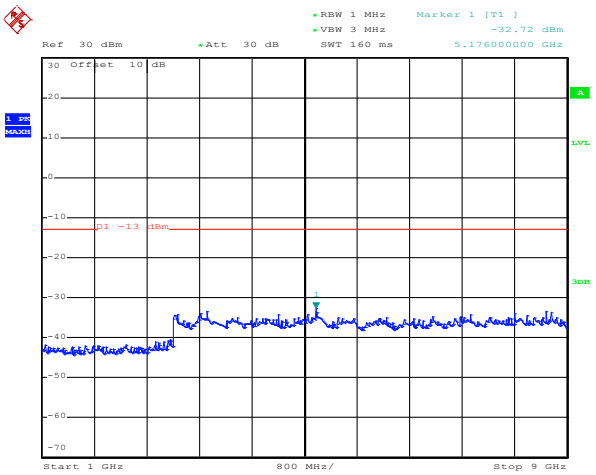
1GHz~9GHz

Middle Channel



Date: 16.JUN.2016 19:08:32

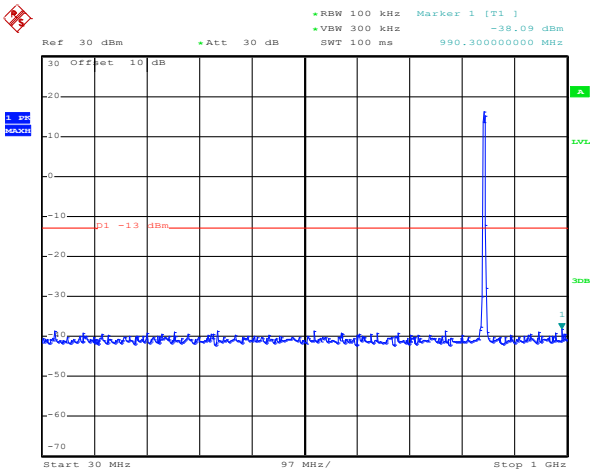
30MHz~1GHz



Date: 16.JUN.2016 19:09:26

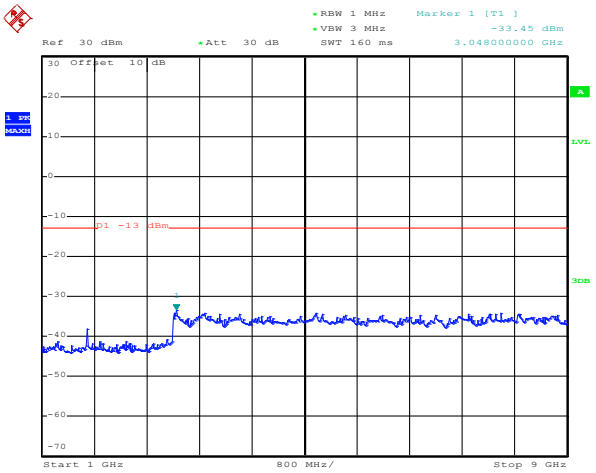
1GHz~9GHz

Highest Channel



Date: 16.JUN.2016 19:09:02

30MHz~1GHz

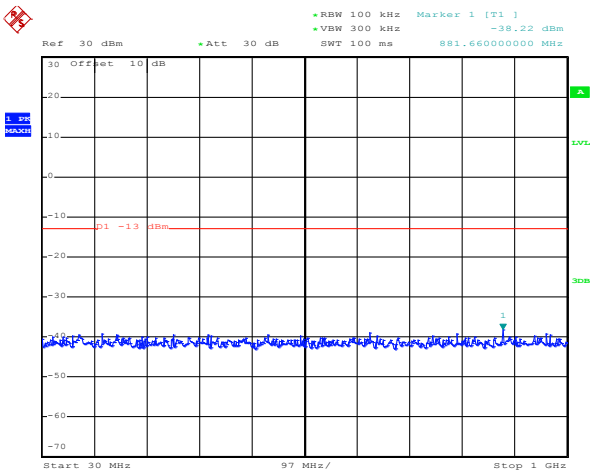


Date: 16.JUN.2016 19:09:15

1GHz~9GHz

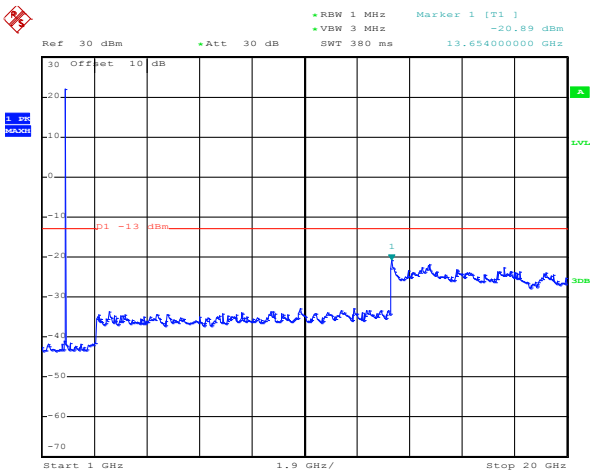
WCDMA Band II 12.2k RMC

Lowest Channel



Date: 16.JUN.2016 19:13:24

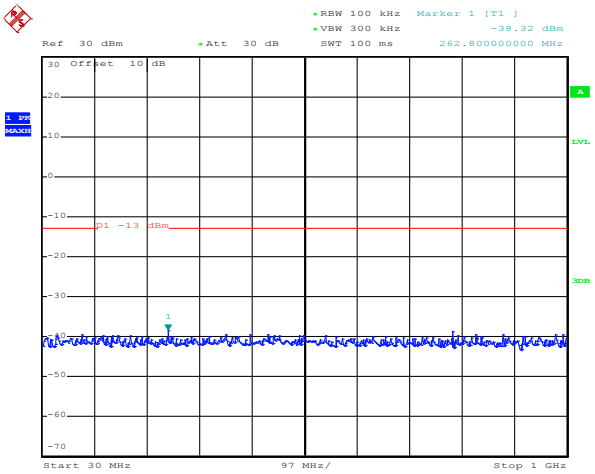
30MHz~1GHz



Date: 16.JUN.2016 19:14:17

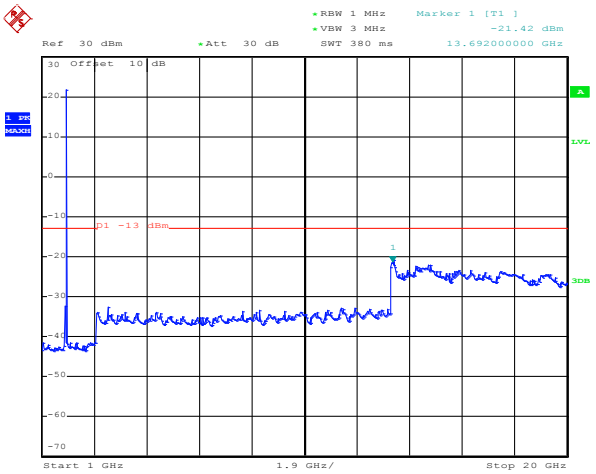
1GHz~20GHz

Middle Channel



Date: 16.JUN.2016 19:13:18

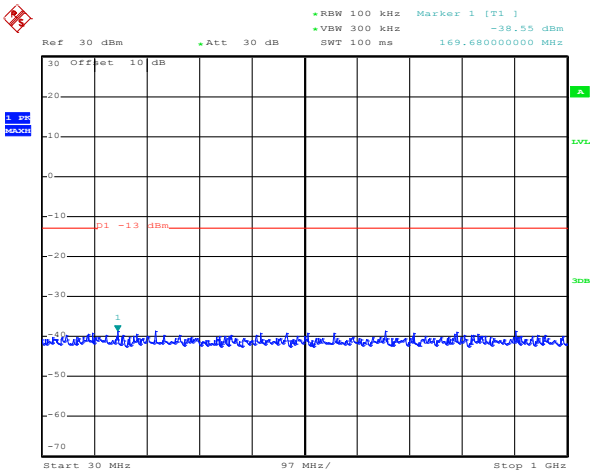
30MHz~1GHz



Date: 16.JUN.2016 19:14:04

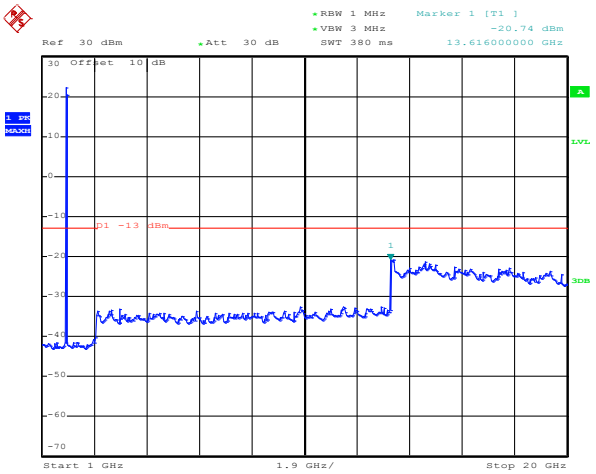
1GHz~20GHz

Highest Channel



Date: 16.JUN.2016 19:13:11

30MHz~1GHz

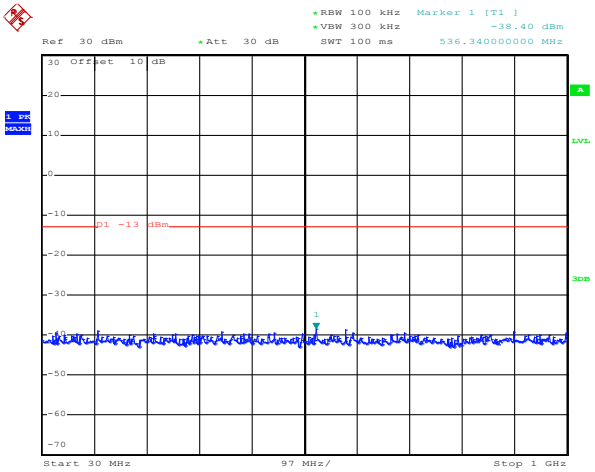


Date: 16.JUN.2016 19:13:52

1GHz~20GHz

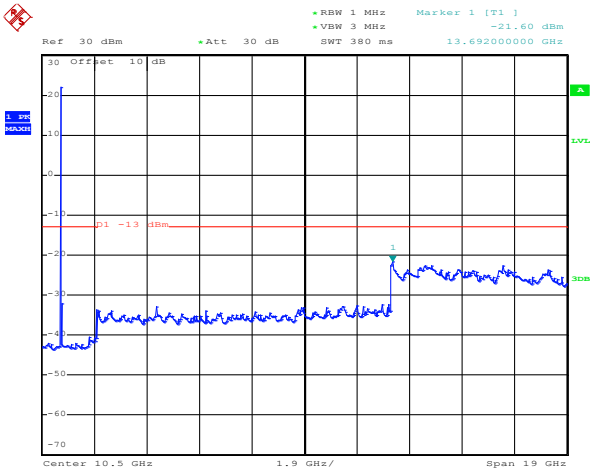
UMTS 1700 12.2k RMC

Lowest Channel



Date: 16.JUN.2016 19:05:03

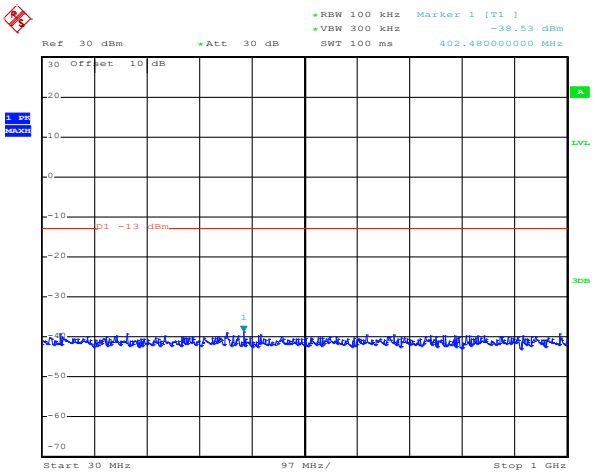
30MHz~1GHz



Date: 16.JUN.2016 19:04:08

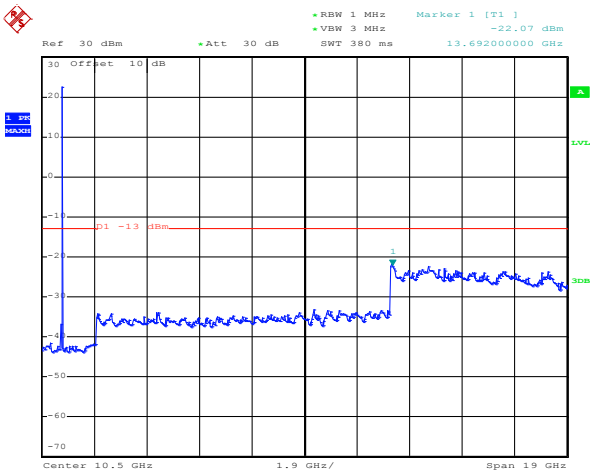
1GHz~20GHz

Middle Channel



Date: 16.JUN.2016 19:04:57

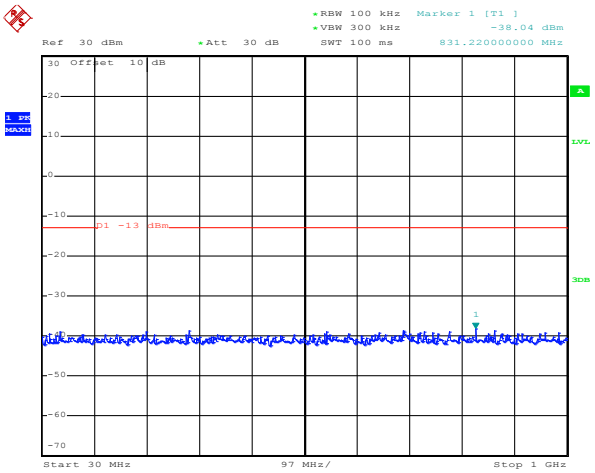
30MHz~1GHz



Date: 16.JUN.2016 19:04:21

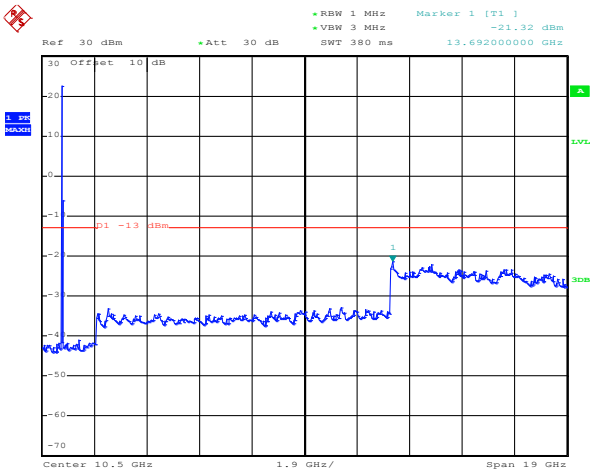
1GHz~20GHz

Highest Channel



Date: 16.JUN.2016 19:04:50

30MHz~1GHz



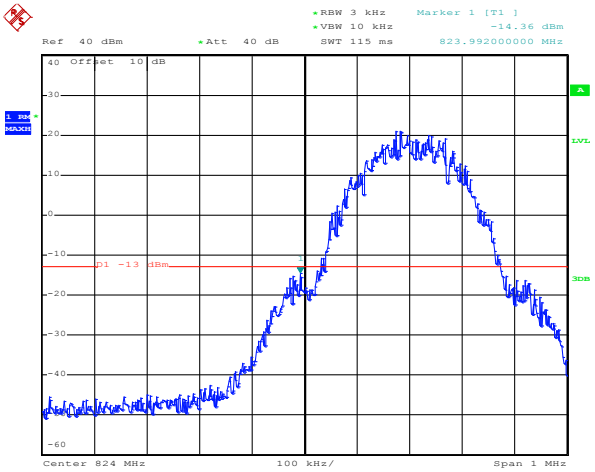
Date: 16.JUN.2016 19:04:34

1GHz~20GHz

HSPA + Wireless Module part

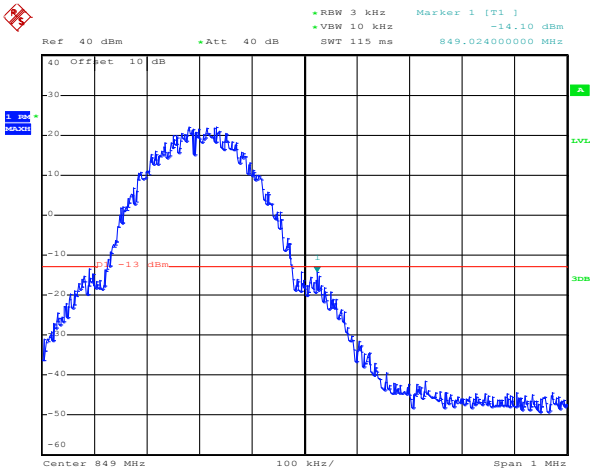
Band edge emission:

GPRS 850



Date: 16.JUN.2016 21:23:21

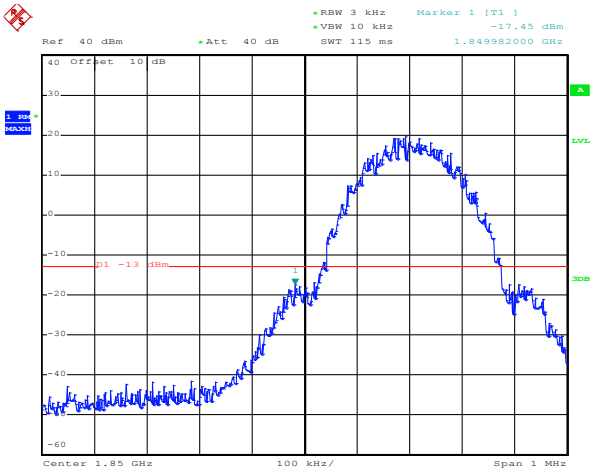
Lowest channel



Date: 16.JUN.2016 21:23:05

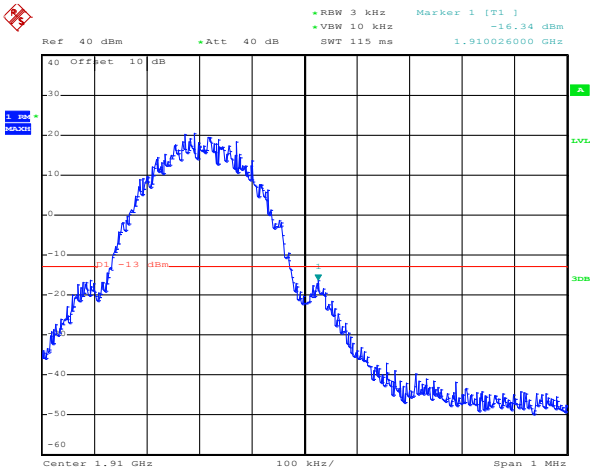
Highest channel

GPRS 1900



Date: 16.JUN.2016 21:15:12

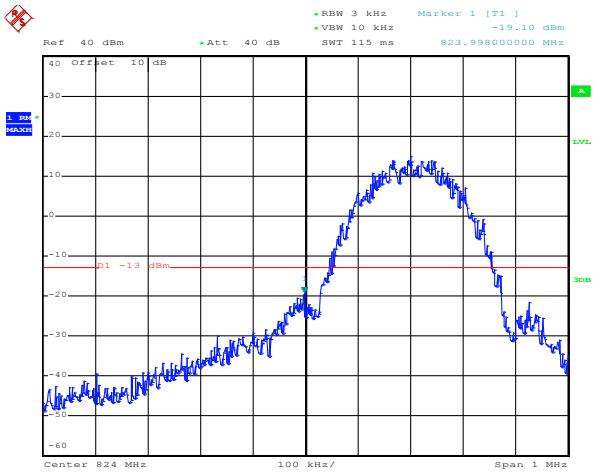
Lowest channel



Date: 16.JUN.2016 21:15:36

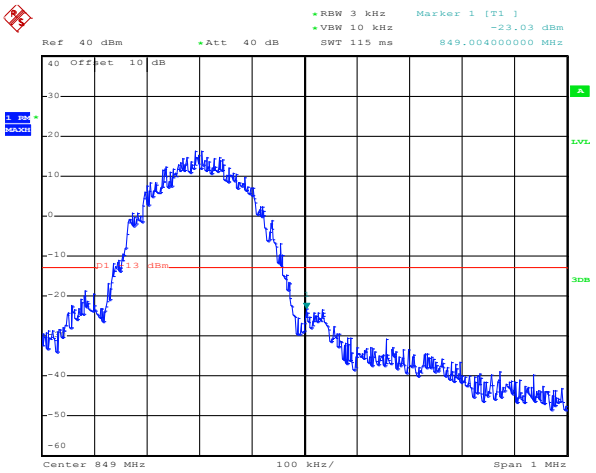
Highest channel

EGPRS 850



Date: 16.JUN.2016 21:28:46

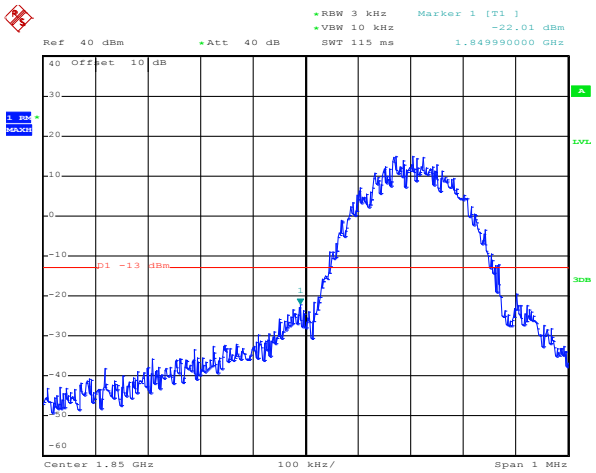
Lowest channel



Date: 16.JUN.2016 21:29:08

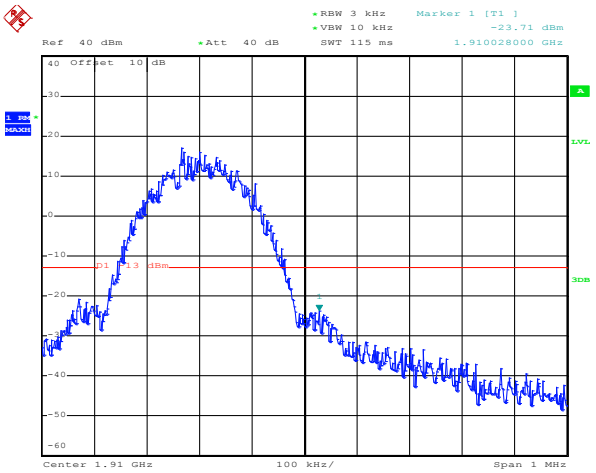
Highest channel

EGPRS 1900



Date: 16.JUN.2016 21:00:32

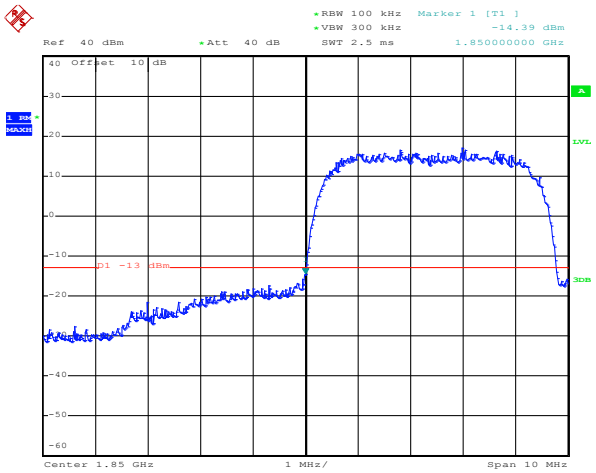
Lowest channel



Date: 16.JUN.2016 21:00:10

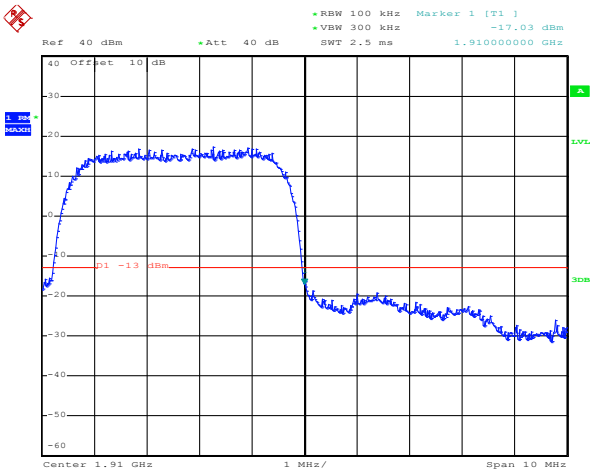
Highest channel

WCDMA Band II RMC 12.2kbps



Date: 16.JUN.2016 21:35:02

Lowest channel



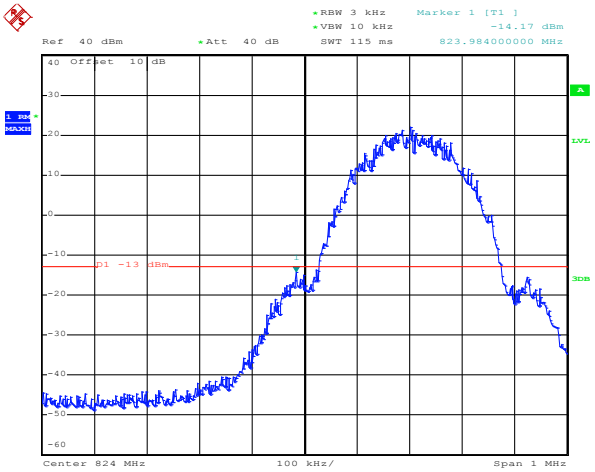
Date: 16.JUN.2016 21:33:50

Highest channel

Main Board part

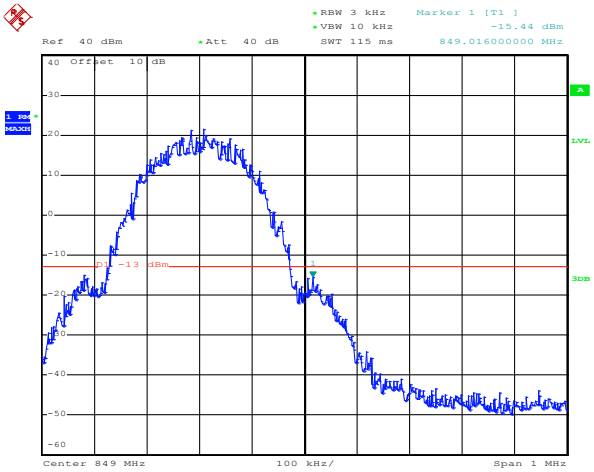
Band edge emission:

GPRS 850



Date: 16.JUN.2016 19:17:42

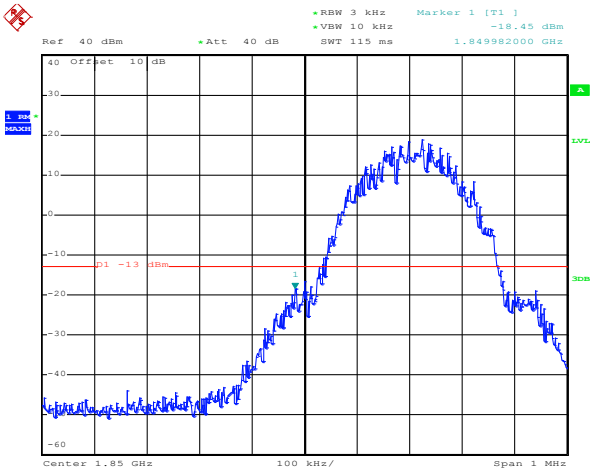
Lowest channel



Date: 16.JUN.2016 19:18:06

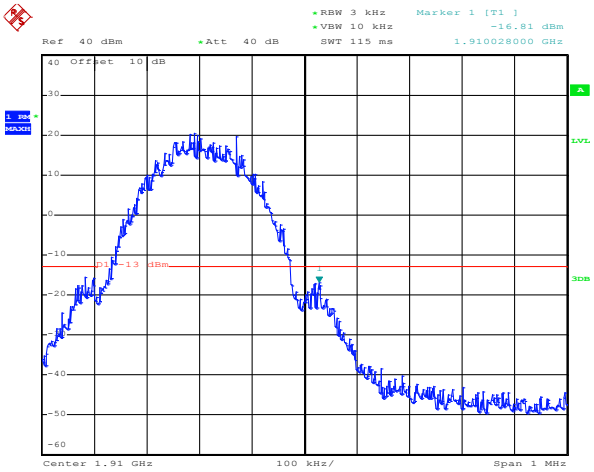
Highest channel

GPRS 1900



Date: 16.JUN.2016 19:32:46

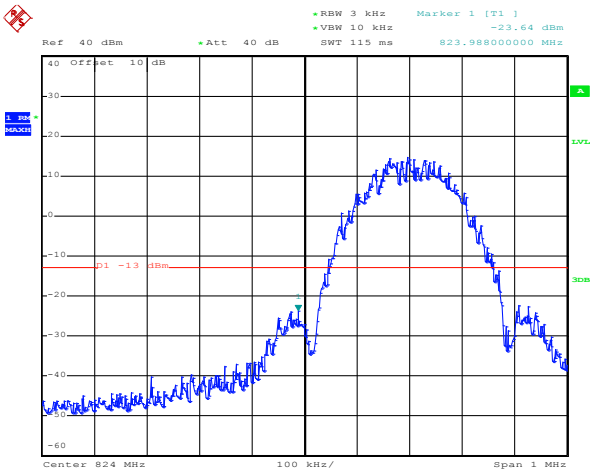
Lowest channel



Date: 16.JUN.2016 19:32:30

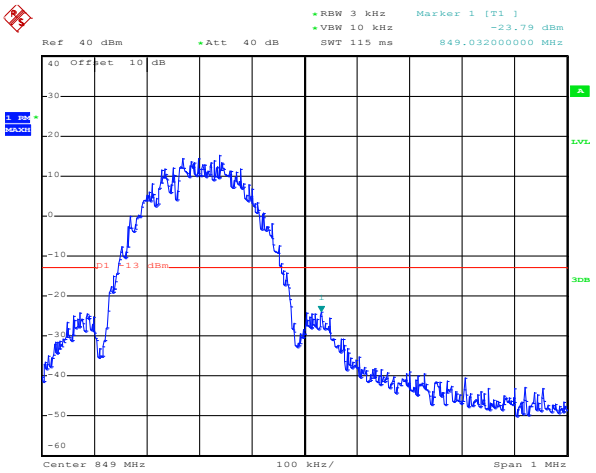
Highest channel

EGPRS 850



Date: 16.JUN.2016 19:24:20

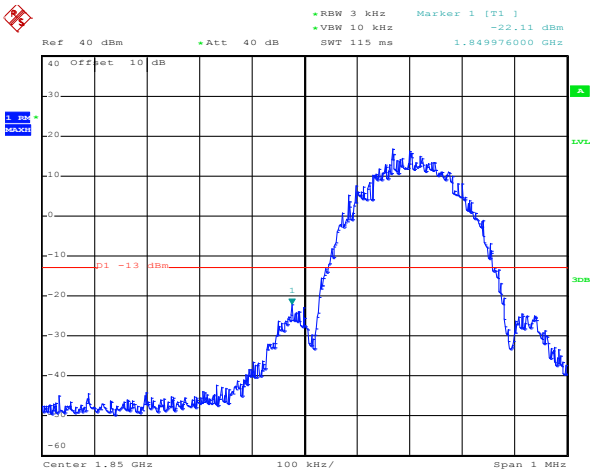
Lowest channel



Date: 16.JUN.2016 19:24:47

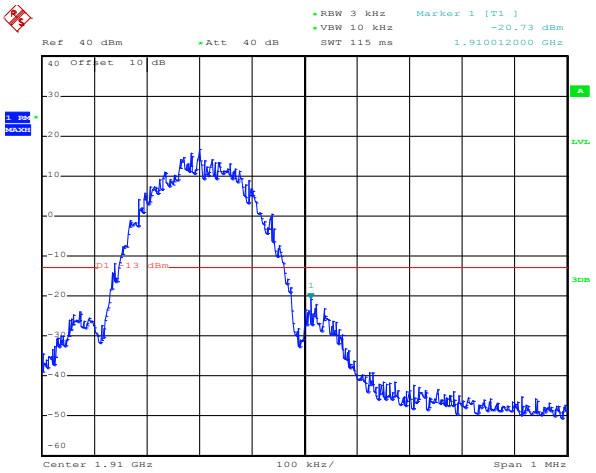
Highest channel

EGPRS 1900



Date: 16.JUN.2016 19:38:15

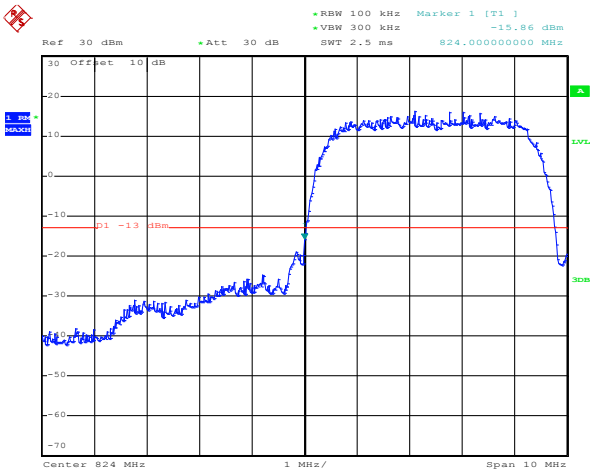
Lowest channel



Date: 16.JUN.2016 19:38:42

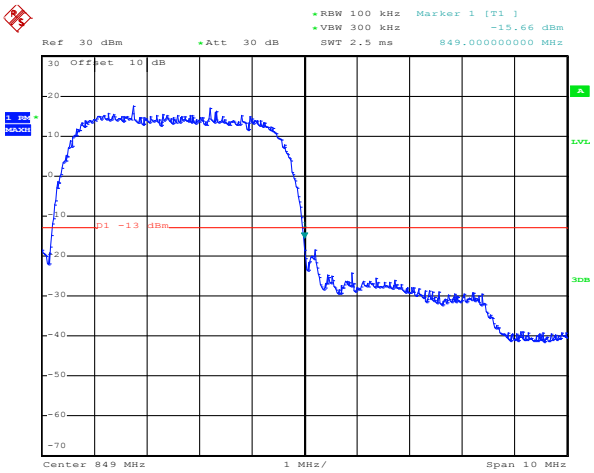
Highest channel

WCDMA BAND V RMC 12.2kbps



Date: 16.JUN.2016 19:11:54

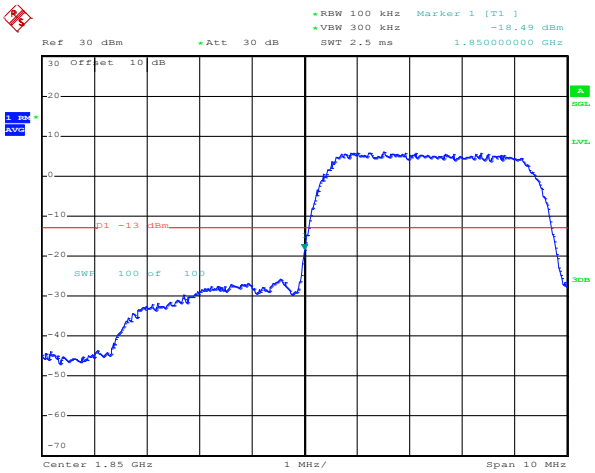
Lowest channel



Date: 16.JUN.2016 19:11:41

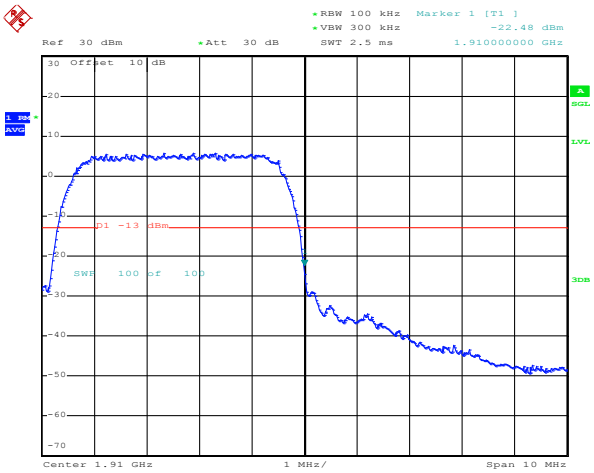
Highest channel

WCDMA Band II RMC 12.2kbps



Date: 16.JUN.2016 19:12:34

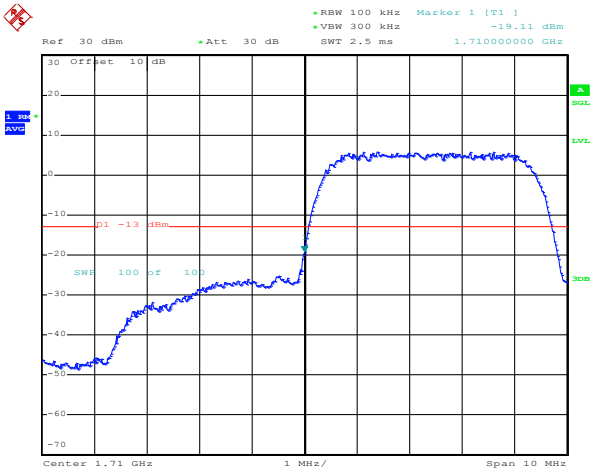
Lowest channel



Date: 16.JUN.2016 19:12:51

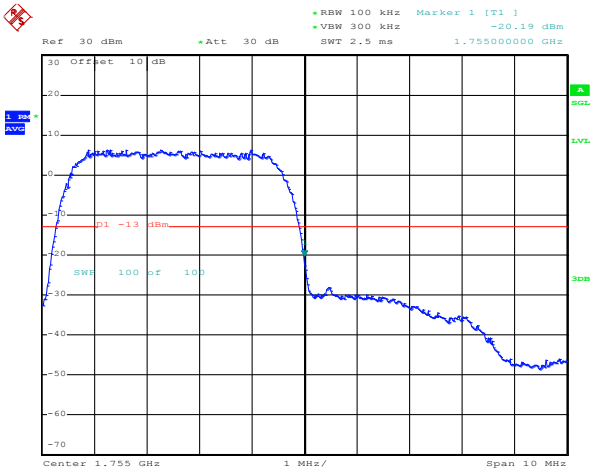
Highest channel

WCDMA Band IV RMC 12.2kbps



Date: 16.JUN.2016 19:00:45

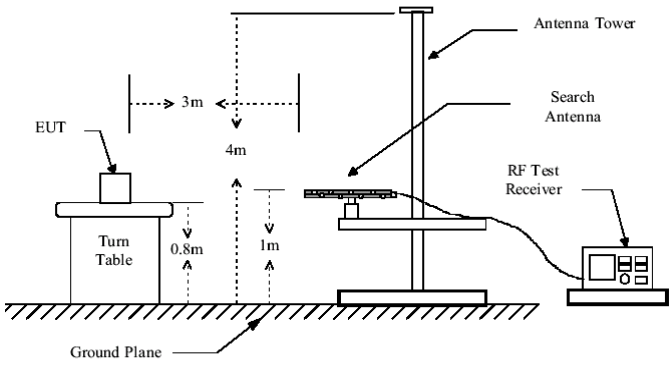
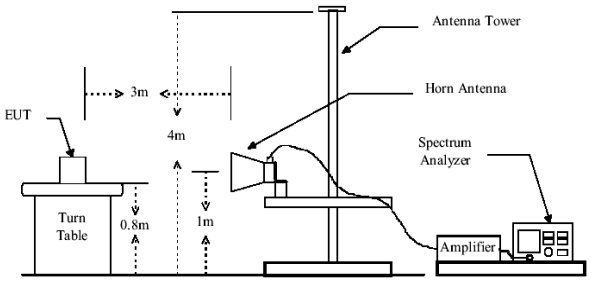
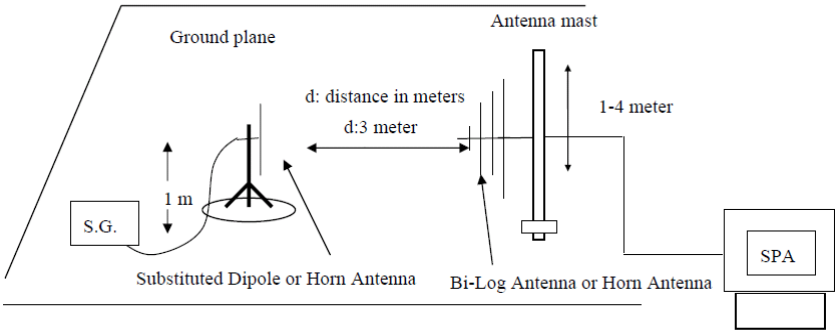
Lowest channel



Date: 16.JUN.2016 19:01:06

Highest channel

6.10 ERP, EIRP Measurement

Test Requirement:	FCC part 22.913(a), FCC part 24.232(b) and FCC part 27.50(d)
Test Method:	FCC part 2.1046
Limit:	GMS 850 7W: ERP PCS 1900 2W: EIRP WCDMA Band V: 7W ERP WCDMA Band II: 2W EIRP WCDMA Band IV: 1W 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 and 1712.4 – 1752.6MHz 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 (All three channels were tested, and just the worst case data were shown in the report.)

Measurement Data (worst case):

HSPA + Wireless Module part

EUT mode	Channel	EUT Pol.	Antenna Pol.	ERP(dBm)	Limit (dBm)	Result
GPRS 850	251	H	V	23.92	38.45	Pass
			H	27.41		
EGPRS 850	251	H	V	23.39		
			H	23.95		

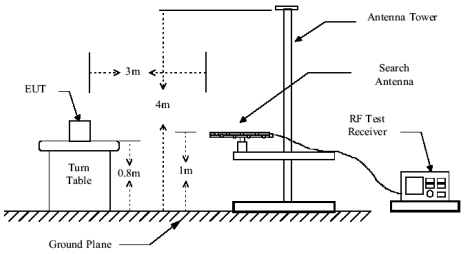
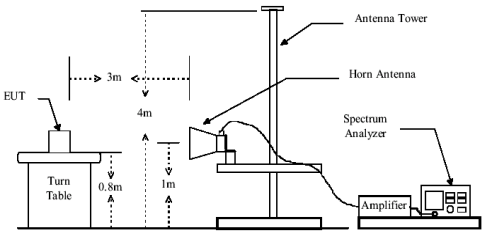
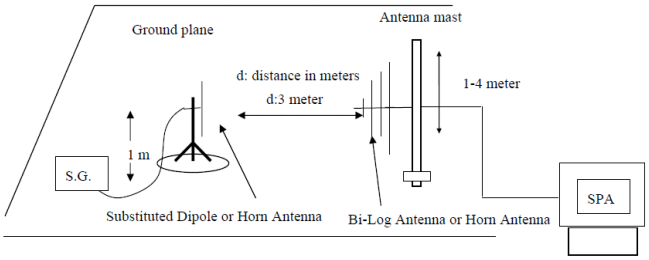
EUT mode	Channel	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result
GPRS 1900	512	H	V	22.95	33	Pass
			H	21.06		
EGPRS 1900	661	H	V	20.04		
			H	17.40		
UMTS 1900 12.2k RMC	9538	H	V	15.32		
			H	17.70		

Main Board part

EUT mode	Channel	EUT Pol.	Antenna Pol.	ERP(dBm)	Limit (dBm)	Result
GPRS 850	128	H	V	31.70	38.45	Pass
			H	28.97		
EGPRS 850	251	H	V	25.03		
			H	21.08		
UMTS 850 12.2k RMC	4132	H	V	22.36		
			H	18.54		

EUT mode	Channel	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result
GPRS 1900	810	H	V	21.86	33	Pass
			H	22.20		
EGPRS 1900	512	H	V	20.71		
			H	21.86		
UMTS 1900 12.2k RMC	9262	H	V	18.63		
			H	17.00		
UMTS 1700 12.2k RMC	1413	H	V	19.77		
			H	14.39		

6.11 Field strength of spurious radiation measurement

Test Requirement:	FCC part 22.917(a), FCC part 24.238(a) and FCC part 27.53(h)
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 Uncertainty:	± 4.88 dB
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):

HSPA + Wireless Module part

Test mode:	GPRS 850		Test channel:	Lowest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1648.40	Vertical	-42.64	-13.00	Pass
2472.60	V	-48.86		
3296.80	V	-52.20		
1648.40	Horizontal	-47.50	-13.00	Pass
2472.60	H	-41.99		
3296.80	H	-52.88		
Test mode:	**GPRS 850**		**Test channel:**	**Middle**
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1673.20	Vertical	-39.87	-13.00	Pass
2509.80	V	-51.04		
3346.40	V	-52.20		
1673.20	Horizontal	-46.13	-13.00	Pass
2509.80	H	-42.84		
3346.40	H	-51.74		
Test mode:	**GPRS 850**		**Test channel:**	**Highest**
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1697.60	Vertical	-36.43	-13.00	Pass
2546.40	V	-43.98		
3395.20	V	-46.08		
1697.60	Horizontal	-43.89	-13.00	Pass
2546.40	H	-39.35		
3395.20	H	-44.10		

Remark:

1. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

Test mode:	GPRS 1900		Test channel:	Lowest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3700.40	Vertical	-29.17	-13.00	Pass
5550.60	V	-25.30		
3700.40	Horizontal	-31.58	-13.00	Pass
5550.60	H	-24.48		
Test mode:	**GPRS 1900**		**Test channel:**	**Middle**
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3760.00	Vertical	-30.05	-13.00	Pass
5640.00	V	-26.93		
3760.00	Horizontal	-35.45	-13.00	Pass
5640.00	H	-27.40		
Test mode:	**GPRS 1900**		**Test channel:**	**Highest**
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3819.60	Vertical	-26.52	-13.00	Pass
5729.40	V	-28.50		
3819.60	Horizontal	-38.89	-13.00	Pass
5729.40	H	-31.35		

Remark:
1. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

Test mode:	WCDMA Band II 12.2k RMC		Test channel:	Lowest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3704.80	Vertical	-15.50	-13.00	Pass
5557.20	V	-26.55		
3704.80	Horizontal	-17.70		
5557.20	H	-21.40		
Test mode:	**WCDMA Band II 12.2k RMC**		**Test channel:**	**Middle**
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3760.00	Vertical	-21.41	-13.00	Pass
5640.00	V	-25.60		
3760.00	Horizontal	-19.38		
5640.00	H	-24.08		
Test mode:	**WCDMA Band II 12.2k RMC**		**Test channel:**	**Highest**
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3815.20	Vertical	-23.98	-13.00	Pass
5722.80	V	-31.94		
3815.20	Horizontal	-21.84		
5722.80	H	-31.63		

Remark:

1. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

Main Board part

Test mode:	GPRS 850		Test channel:	Lowest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1648.40	Vertical	-47.22	-13.00	Pass
2472.60	V	-55.52		
3296.80	V	-49.10		
1648.40	Horizontal	-52.79	-13.00	Pass
2472.60	H	-44.47		
3296.80	H	-49.72		
Test mode:	**GPRS 850**		**Test channel:**	**Middle**
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1673.20	Vertical	-49.46	-13.00	Pass
2509.80	V	-54.88		
3346.40	V	-49.49		
1673.20	Horizontal	-54.74	-13.00	Pass
2509.80	H	-54.97		
3346.40	H	-48.19		
Test mode:	**GPRS 850**		**Test channel:**	**Highest**
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1697.60	Vertical	-50.73	-13.00	Pass
2546.40	V	-54.50		
3395.20	V	-47.81		
1697.60	Horizontal	-55.69	-13.00	Pass
2546.40	H	-52.57		
3395.20	H	-50.78		

Remark:

1. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

Test mode:	GPRS 1900		Test channel:	Lowest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3700.40	Vertical	-52.33	-13.00	Pass
5550.60	V	-30.16		
3700.40	Horizontal	-50.86	-13.00	Pass
5550.60	H	-33.59		
Test mode:	**GPRS 1900**		**Test channel:**	**Middle**
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3760.00	Vertical	-52.34	-13.00	Pass
5640.00	V	-31.78		
3760.00	Horizontal	-52.43	-13.00	Pass
5640.00	H	-34.47		
Test mode:	**GPRS 1900**		**Test channel:**	**Highest**
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3819.60	Vertical	-49.62	-13.00	Pass
5729.40	V	-33.74		
3819.60	Horizontal	-51.10	-13.00	Pass
5729.40	H	-40.63		

Remark:
1. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

Test mode:	WCDMA BAND V 12.2k RMC		Test channel:	Lowest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1652.80	Vertical	-54.87	-13.00	Pass
2479.20	V	-53.42		
3305.60	V	-50.18		
1652.80	Horizontal	-61.31	-13.00	Pass
2479.20	H	-55.12		
3305.60	H	-51.47		
Test mode:	**WCDMA BAND V 12.2k RMC**		**Test channel:**	**Middle**
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1673.20	Vertical	-52.48	-13.00	Pass
2509.80	V	-49.87		
3346.40	V	-51.42		
1673.20	Horizontal	-56.28	-13.00	Pass
2509.80	H	-54.97		
3346.40	H	-51.06		
Test mode:	**WCDMA BAND V 12.2k RMC**		**Test channel:**	**Highest**
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1693.20	Vertical	-54.73	-13.00	Pass
2539.80	V	-54.95		
3386.40	V	-50.88		
1693.20	Horizontal	-57.44	-13.00	Pass
2539.80	H	-55.52		
3386.40	H	-50.54		

Remark:

1. *The emission levels of below 1 GHz are very lower than the limit and not show in test report.*

Test mode:	WCDMA Band II 12.2k RMC		Test channel:	Lowest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3704.80	Vertical	-50.00	-13.00	Pass
5557.20	V	-41.86		
3704.80	Horizontal	-50.77		
5557.20	H	-40.06		
Test mode:	**WCDMA Band II 12.2k RMC**		**Test channel:**	**Middle**
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3760.00	Vertical	-47.01	-13.00	Pass
5640.00	V	-43.26		
3760.00	Horizontal	-49.59		
5640.00	H	-44.81		
Test mode:	**WCDMA Band II 12.2k RMC**		**Test channel:**	**Highest**
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3815.20	Vertical	-50.37	-13.00	Pass
5722.80	V	-46.24		
3815.20	Horizontal	-50.19		
5722.80	H	-43.24		

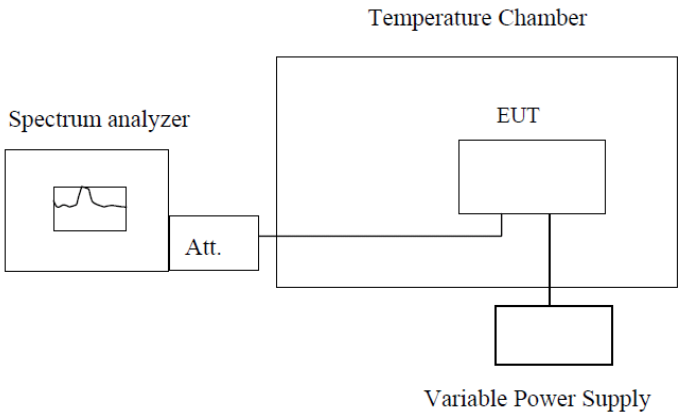
Remark:

1. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

Test mode:	UMTS 1700 12.2k RMC		Test channel:	Lowest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3424.40	Vertical	-48.25	-13.00	Pass
5136.60	V	-45.13		
3424.40	Horizontal	-50.02		
5136.60	H	-47.37		
Test mode:	**UMTS 1700 12.2k RMC**		**Test channel:**	**Middle**
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3464.80	Vertical	-48.17	-13.00	Pass
5197.20	V	-45.32		
3464.80	Horizontal	-50.79		
5197.20	H	-47.26		
Test mode:	**UMTS 1700 12.2k RMC**		Test channel:	Highest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3505.20	Vertical	-50.59	-13.00	Pass
5257.80	V	-45.45		
3505.20	Horizontal	-50.48		
5257.80	H	-45.46		

Remark:
1. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

6.12 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 (the worst channel):

HSPA + Wireless Module part

Reference Frequency: GPRS 850 Middle channel=190 channel=836.6MHz					
Power supplied (Vdc)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.80	-30	180	0.215157	±2.5	Pass
	-20	155	0.185274		
	-10	136	0.162563		
	0	127	0.151805		
	10	133	0.158977		
	20	135	0.161367		
	30	156	0.186469		
	40	141	0.168539		
	50	132	0.157781		
Reference Frequency: GPRS 1900 Middle channel=661 channel=1880MHz					
Power supplied (Vdc)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.80	-30	177	0.094149	±2.5	Pass
	-20	152	0.080851		
	-10	141	0.075000		
	0	136	0.072340		
	10	142	0.075532		
	20	133	0.070745		
	30	135	0.071809		
	40	120	0.063830		
	50	117	0.062234		

Reference Frequency: EGPRS 850 Middle channel=190 channel=836.6MHz					
Power supplied (Vdc)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.80	-30	166	0.198422	±2.5	Pass
	-20	137	0.163758		
	-10	128	0.153000		
	0	150	0.179297		
	10	126	0.150610		
	20	142	0.169735		
	30	141	0.168539		
	40	136	0.162563		
	50	138	0.164953		
Reference Frequency: EGPRS 1900 Middle channel=661 channel=1880MHz					
Power supplied (Vdc)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.80	-30	174	0.092553	±2.5	Pass
	-20	130	0.069149		
	-10	136	0.072340		
	0	145	0.077128		
	10	120	0.063830		
	20	141	0.075000		
	30	140	0.074468		
	40	133	0.070745		
	50	150	0.079787		

Reference Frequency: WCDMA BAND II 12.2k RMC Middle channel=9400 channel=1880MHz					
Power supplied (Vdc)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.80	-30	178	0.094681	±2.5	Pass
	-20	163	0.086702		
	-10	158	0.084043		
	0	140	0.074468		
	10	123	0.065426		
	20	124	0.065957		
	30	140	0.074468		
	40	145	0.077128		
	50	126	0.067021		

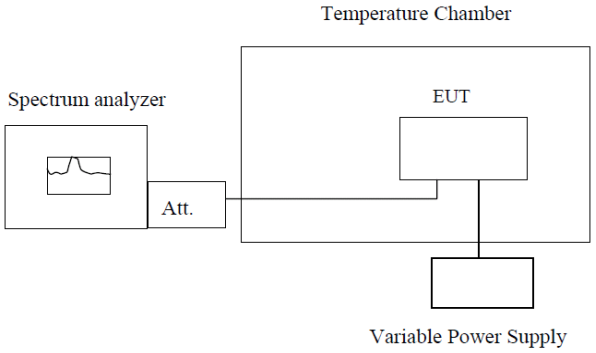
Main Board part

Reference Frequency: GPRS 850 Middle channel=190 channel=836.6MHz					
Power supplied (Vdc)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.80	-30	180	0.215157	±2.5	Pass
	-20	177	0.211571		
	-10	163	0.194836		
	0	140	0.167344		
	10	128	0.153000		
	20	127	0.151805		
	30	147	0.175711		
	40	152	0.181688		
	50	130	0.155391		
Reference Frequency: GPRS 1900 Middle channel=661 channel=1880MHz					
Power supplied (Vdc)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.80	-30	166	0.088298	±2.5	Pass
	-20	134	0.071277		
	-10	145	0.077128		
	0	152	0.080851		
	10	130	0.069149		
	20	127	0.067553		
	30	150	0.079787		
	40	128	0.068085		
	50	144	0.076596		

Reference Frequency: EGPRS 850 Middle channel=190 channel=836.6MHz					
Power supplied (Vdc)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.80	-30	177	0.211571	±2.5	Pass
	-20	175	0.209180		
	-10	125	0.149414		
	0	136	0.162563		
	10	145	0.173321		
	20	108	0.129094		
	30	107	0.127899		
	40	129	0.154196		
	50	127	0.151805		
Reference Frequency: EGPRS 1900 Middle channel=661 channel=1880MHz					
Power supplied (Vdc)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.80	-30	156	0.082979	±2.5	Pass
	-20	103	0.054787		
	-10	115	0.061170		
	0	137	0.072872		
	10	120	0.063830		
	20	141	0.075000		
	30	130	0.069149		
	40	125	0.066489		
	50	126	0.067021		

Reference Frequency: WCDMA BAND V 12.2k RMC Middle channel=4183 channel=836.6MHz					
Power supplied (Vdc)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.80	-30	185	0.221133	±2.5	Pass
	-20	163	0.194836		
	-10	134	0.160172		
	0	141	0.168539		
	10	140	0.167344		
	20	125	0.149414		
	30	120	0.143438		
	40	130	0.155391		
	50	133	0.158977		
Reference Frequency: WCDMA BAND II 12.2k RMC Middle channel=9400 channel=1880MHz					
Power supplied (Vdc)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.80	-30	190	0.101064	±2.5	Pass
	-20	145	0.077128		
	-10	136	0.072340		
	0	152	0.080851		
	10	146	0.077660		
	20	125	0.066489		
	30	132	0.070213		
	40	130	0.069149		
	50	122	0.064894		
Reference Frequency: UMTS1700 12.2k RMC Middle channel=1413 channel=1732.6MHz					
Power supplied (Vdc)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.80	-30	169	0.097541	2.5	Pass
	-20	129	0.074455		
	-10	124	0.071569		
	0	129	0.074455		
	10	104	0.060025		
	20	123	0.070992		
	30	152	0.087729		
	40	143	0.082535		
	50	136	0.078495		

6.13 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):

HSPA + Wireless Module part

Reference Frequency: GPRS 850 Middle channel=190 channel=836.6MHz					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.37	85	0.101602	±2.5	Pass
	3.80	74	0.088453		
	3.23	63	0.075305		
Reference Frequency: GPRS 1900 Middle channel=661 channel=1880MHz					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.37	90	0.047872	±2.5	Pass
	3.80	67	0.035638		
	3.23	58	0.030851		

Reference Frequency: EGPRS 850 Middle channel= 190 channel=836.6MHz					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.37	86	0.102797	±2.5	Pass
	3.80	55	0.065742		
	3.23	63	0.075305		
Reference Frequency: EGPRS 1900 Middle channel= 661 channel=1880MHz					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.37	68	0.036170	±2.5	Pass
	3.80	49	0.026064		
	3.23	50	0.026596		

Reference Frequency: UMTS 1900 12.2k RMC Middle channel=9400 channel=1880MHz					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.37	85	0.045213	±2.5	Pass
	3.80	63	0.033511		
	3.23	74	0.039362		

Main Board part

Reference Frequency: GPRS 850 Middle channel=190 channel=836.6MHz					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.37	85	0.101602	±2.5	Pass
	3.80	74	0.088453		
	3.23	60	0.071719		
Reference Frequency: GPRS 1900 Middle channel=661 channel=1880MHz					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.37	70	0.037234	±2.5	Pass
	3.80	63	0.033511		
	3.23	58	0.030851		
Reference Frequency: EGPRS 850 Middle channel= 190 channel=836.6MHz					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.37	80	0.095625	±2.5	Pass
	3.80	74	0.088453		
	3.23	60	0.071719		
Reference Frequency: EGPRS 1900 Middle channel= 661 channel=1880MHz					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.37	80	0.042553	±2.5	Pass
	3.80	75	0.039894		
	3.23	36	0.019149		

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	4.37	88	0.105188	±2.5	Pass
	3.80	63	0.075305		
	3.23	90	0.107578		
Reference Frequency: UMTS 1900 12.2k RMC Middle channel=9400 channel=1880MHz					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.37	70	0.037234	±2.5	Pass
	3.80	56	0.029787		
	3.23	96	0.051064		
Reference Frequency: UMTS1700 12.2k RMC Middle channel=1413 channel=1732.6MHz					
Temperature（℃）	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.37	85	0.049059	2.5	Pass
	3.80	77	0.044442		
	3.23	63	0.036362		