TEST REPORT

No. I14Z45243-GTE01

for

VSN Technologies Inc.

Dual GSM/Dual WCDMA Smart Phone

Model Name: V2001

Marketing Name: R.45

FCC ID: 2AA9WV2001

IC ID : 11665A-V2001

with

Hardware Version: P3

Software Version: TBW972323_898B_V007253

Issued Date: 2014-03-13

Test Laboratory:

DAR accreditation (DIN EN ISO/IEC 17025): No. D-PL-12123-01-01

FCC 2.948 Listed: No.733176

IC O.A.T.S listed: No.6629B

TMC Beijing, Telecommunication Metrology Center of Ministry of Industry and Information Technology

No.18A，Kangding Street，Beijing Economical Development Area， Beijing，China 100176

Tel:+86(0)10-67857376, Fax:+86(0)10-67857376 Email:welcome@emcite.com. www.emcite.com

CONTENTS

1. Test Laboratory

1.1. Testing Location

Company Name: TMC Beijing, Telecommunication Metrology Center of MIIT
Address: No.18A，Kangding Street，Beijing Economical Development Area，Beijing，China
Postal Code: 100176
Telephone: 00861067857376
Fax: 00861067857376

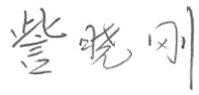
1.2. Testing Environment

Normal Temperature: 15-35℃
Relative Humidity: 20-75%

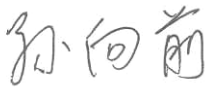
1.3. Project data

Testing Start Date: 2014-02-26
Testing End Date: 2014-03-10

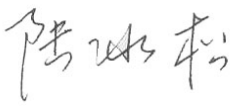
1.4. Signature



Zi Xiaogang
(Prepared this test report)



Sun Xiangqian
(Reviewed this test report)



Lu Bingsong
Deputy Director of the laboratory
(Approved this test report)

2. Client Information

2.1. Applicant Information

Company Name:	VSN Technologies Inc.
Address /Post:	1975 E. Sunrise Blvd., #400 Fort Lauderdale, FL
City:	fort lauderdale
Postal Code:	33323
Country:	United States
Contact Person:	Donghailun
Contact Email	amit.verma@vsnmobil.com
Telephone:	9546094912
Fax:	9543068450

2.2. Manufacturer Information

Company Name:	Beijing Benywave Technology Co. Ltd.
Address /Post:	NO.55 Jiachang 2 Road, OPTO-Mechatronics Industrial Park, Tongzhou District
City:	Beijing
Postal Code:	100111
Country:	China
Telephone:	+86-10-58928917
Fax:	------

3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

Description	Quad GSM/Dual WCDMA Smart Phone
Model Name	V2001
Marketing Name	R.45
FCC ID	2AA9WV2001
IC ID	11665A-V2001
Frequency	GSM850; PCS1900; WCDMA Band II; WCDMA Band V
Antenna	Integrated
Output power	31.68dBm maximum EIRP measured for PCS1900
Extreme vol. Limits	3.6VDC to 4.2VDC (nominal: 3.8VDC)
Extreme temp. Tolerance	-30°C to +50°C

Note: Components list, please refer to documents of the manufacturer; it is also included in the original test record of Telecommunication Metrology Center of MIIT of People's Republic of China.

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version
1445243UT02a	354694028010678	P3	TBW972323_898B_V007253
1445243UT07a	354694028010611	P3	TBW972323_898B_V007253

*EUT ID: is used to identify the test sample in the lab internally.

3.3. Internal Identification of AE used during the test

AE ID*	Decription
AE1	Battery
AE2	Battery
AE3	Travel charger
AE4	USB cable

AE1, AE2

Model	TBT9608
Manufacturer	REVEL
Capacitance	1700mAh
Nominal voltage	3.7V

AE3

Model	/
Manufacturer	REVEL
Length of cable	/

AE4

Model	/
Manufacturer	REVEL

Length of cable	98cm

*AE ID: is used to identify the test sample in the lab internally.

3.4. Normal Accessory setting

Fully charged battery was used during the test.

3.5. General Description

The Equipment Under Test (EUT) is a model of Quad GSM/Dual WCDMA Smart Phone with integrated antenna. It consists of normal options: lithium battery, charger. Manual and specifications of the EUT were provided to fulfil the test.

4. Reference Documents

4.1. Reference Documents for testing

The following documents listed in this section are referred for testing.

Reference	Title	Version
FCC Part 24	PERSONAL COMMUNICATIONS SERVICES	10-1-13 Edition
FCC Part 22	PUBLIC MOBILE SERVICES	10-1-13 Edition
RSS-Gen	RSS-Gen — General Requirements and Information for the Certification of Radiocommunication Equipment	Issue 3, December 2010
RSS-132	Cellular Telephones Employing New Technologies Operating in the Bands 824-849 MHz and 869-894 MHz	Issue 3
RSS-133	2 GHz Personal Communications Services	Issue 6
ANSI/TIA-603-C	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards	2004
ANSI C63.4	Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz	2003
KDB971168 D01	Procedures for Compliance Measurement of the Fundamental Emission Power of Licensed Wideband (> 1 MHz) Digital Transmission Systems	2011

5. LABORATORY ENVIRONMENT

Control room / conducted chamber did not exceed following limits along the EMC testing:

Temperature	Min. = 15 ℃, Max. = 35 ℃
Relative humidity	Min. =20 %, Max. = 80 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 2 MΩ
Ground system resistance	< 0.5 Ω

Fully-anechoic chamber 2 (8.6 meters×6.1 meters×3.85 meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 ℃, Max. = 30 ℃
Relative humidity	Min. = 35 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 2 MΩ
Ground system resistance	< 1 Ω
Site voltage standing-wave ratio (S_{VSWR})	Between 0 and 6 dB, from 1GHz to 18GHz
Uniformity of field strength	Between 0 and 6 dB, from 80 to 4000 MHz

Semi-anechoic chamber 2 / Fully-anechoic chamber 3 (10 meters×6.7 meters×6.15 meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 ℃, Max. = 30 ℃
Relative humidity	Min. = 35 %, Max. = 60 %
Shielding effectiveness	> 100 dB
Electrical insulation	> 2 MΩ
Ground system resistance	< 0.5 Ω
Normalised site attenuation (NSA)	< ±3.5 dB, 3 m distance
Site voltage standing-wave ratio (S_{VSWR})	Between 0 and 6 dB, from 1GHz to 18GHz
Uniformity of field strength	Between 0 and 6 dB, from 80 to 3000 MHz

6. SUMMARY OF TEST RESULTS

GSM 850

Items	Test Name	Clause in FCC rules	Clause in IC rules RSS-Gen and RSS-132	Section in this report	Verdict
1	Output Power	§2.1046(a), 22.913(a)	4.4	A.1	P
2	Emission Limit	22.917, 2.1051	4.5	A.2	P
3	CONDUCTED EMISSION	15.107/15.207		A.3	P
4	Frequency Stability	22.235, 2.1055	4.3	A.4	P
5	Occupied Bandwidth	2.1049(h)(i)	4.1/4.6.1	A.5	P
6	Emission Bandwidth	22.917(b)	4.6.1	A.6	P
7	Band Edge Compliance	22.917(b)	4.5	A.7	P
8	Conducted Spurious Emission	22.917, 2.1057	4.5	A.8	P
9	peak-to-average power ratio		5.4	A.9	P

PCS 1900

Items	Test Name	Clause in FCC rules	Clause in IC rules RSS-Gen and RSS- 133	Section in this report	Verdict
1	Output Power	24.232(b)	6.4	A.1	P
2	Emission Limit	24.238, 2.1051	6.5	A.2	P
3	CONDUCTED EMISSION	15.107/15.207		A.3	P
4	Frequency Stability	24.235, 2.1055	6.3	A.4	P
5	Occupied Bandwidth	2.1049(h)(i)	4.1/4.6.1	A.5	P
6	Emission Bandwidth	24.238(b)	4.6.1	A.6	P
7	Band Edge Compliance	24.238(b)	6.5	A.7	P
8	Conducted Spurious Emission	24.238, 2.1057	6.5	A.8	P
9	peak-to-average power ratio		6.4	A.9	P

Receiver Radiated Emission

Items	Test Name	Clause in FCC rules	Clause in IC rules		Section in this report	Verdict
			RSS-132	RSS-133		
1	Receiver Radiated Emissions	15.109 , 2.1053	4.6	6.6	A.9	P

7. Test Equipments Utilized

NO.	Description	TYPE	SERIES NUMBER	MANUFACTURE	CAL DUE DATE
1	Test Receiver	ESCI	100344	R&S	2014-03-28
2	Test Receiver	ESU26	100376	R&S	2014-11-05
3	EMI Antenna	VULB 9163	514	Schwarzbeck	2014-11-10
4	EMI Antenna	3117	00139065	ETS-Lindgren	2014-07-31
5	LISN	ESH2-Z5	829991/012	R&S	2014-04-14
6	Universal Radio Communication Tester	CMU200	102228	R&S	2014-06-23
7	Universal Radio Communication Tester	E5515C	MY48361083	Agilent	2014-03-16
8	Spectrum Analyzer	E4440A	MY48250642	Agilent	2015-02-27
9	EMI Antenna	9117	177	Schwarzbeck	2014-06-29
10	EMI Antenna	VULB 9163	9163 175	Schwarzbeck	2014-07-13
11	EMI Antenna	3117	00119021	ETS-Lindgren	2014-04-19
12	Signal Generator	N5183A	MY49060052	Agilent	2014-03-18
13	Climate chamber	SH-241	92003546	ESPEC	2014-05-11
14	Loop Antenna	HFH2-Z2	829324/007	R&S	2014-12-12

ANNEX A: MEASUREMENT RESULTS

A.1 OUTPUT POWER

A.1.1 Summary

During the process of testing, the EUT was controlled via Rhode & Schwarz Digital Radio Communication tester (CMU-200) to ensure max power transmission and proper modulation.
This result contains output power and EIRP measurements for the EUT. In all cases, output power is within the specified limits.

A.1.2 Conducted

A.1.2.1 Method of Measurements

The EUT was set up for the max output power with pseudo random data modulation.
The power was measured with Rhode & Schwarz Spectrum Analyzer FSU (peak)
These measurements were done at 3 frequencies, 1850.2 MHz, 1880.0MHz and 1909.8MHz for PCS1900 band; 824.4MHz, 836.6MHz and 848.8MHz for GSM850 band. (bottom, middle and top of operational frequency range).

A.1.2.2 Test Condition

RBW	VBW	Sweep Time	Span
1MHz	1MHz	300ms	10MHz

GSM850

	Power step	Nominal Peak output power (dBm)
GSM	5	33dBm(2W)
GPRS	3	33dBm(2W)
EGPRS	6	27dBm(0.5W)

Measurement result

GSM(GMSK)

Frequency(MHz)	Power Step	Output power(dBm)
824.2	5	32.09
836.6	5	32.07
848.8	5	31.96

GPRS(GMSK，1Slot)

Frequency(MHz)	Power Step	Output power(dBm)
824.2	3	32.13
836.6	3	32.09
848.8	3	32.01

EGPRS(8PSK，1Slot)

Frequency(MHz)	Power Step	Output power(dBm)
824.2	6	26.46
836.6	6	26.42
848.8	6	26.36

PCS1900

	Power step	Nominal Peak output power (dBm)
GSM	0	30dBm(1W)
GPRS	3	30dBm(1W)
EGPRS	5	26dBm(0.4W)

Measurement result

GSM(GMSK)

Frequency(MHz)	Power Step	Output power(dBm)
1850.2	0	29.81
1880.0	0	29.64
1909.8	0	29.51

GPRS(GMSK，1Slot)

Frequency(MHz)	Power Step	Output power(dBm)
1850.2	3	29.75
1880.0	3	29.57
1909.8	3	29.47

EGPRS(8PSK，1Slot)

Frequency(MHz)	Power Step	Output power(dBm)
1850.2	5	26.02
1880.0	5	25.96
1909.8	5	25.70

A.1.3 Radiated

A.1.3.1 Description

This is the test for the maximum radiated power from the EUT.

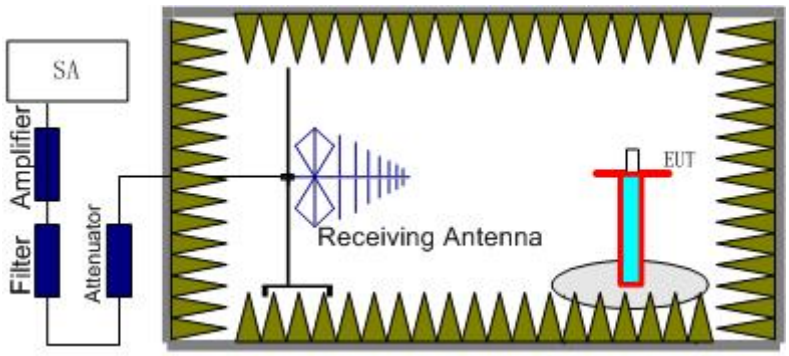
Rule Part 24.232(c) specifies, "Mobile/portable stations are limited to 2 watts e.i.r.p. Peak power" and 24.232(c) specifies that "Peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage."

Rule Part 22.913(a) specifies ” The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.”

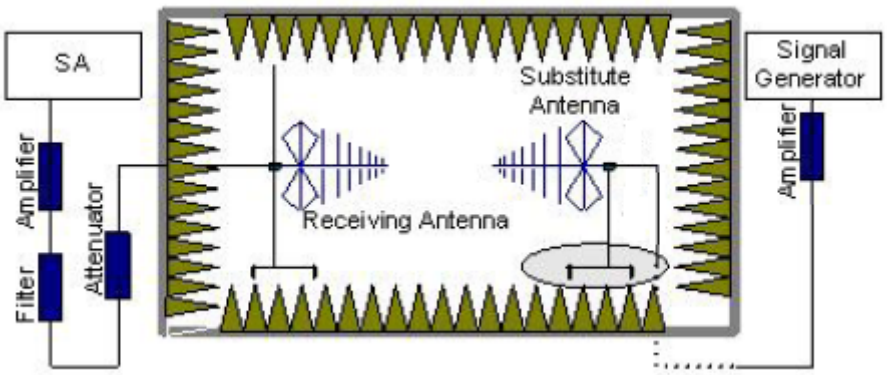
A.1.3.2 Method of Measurement

The measurements procedures in TIA-603C-2004 are used.

1. EUT was placed on a 1.5 meter high non-conductive stand at a 3 meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT for emission measurements. The height of receiving antenna is 1.5m. The test setup refers to figure below. Detected emissions were maximized at each frequency by rotating the EUT through 360° and adjusting the receiving antenna polarization. The radiated emission measurements of all transmit frequencies in three channels (High, Middle, Low) were measured with peak detector.



2. The EUT is then put into continuously transmitting mode at its maximum power level during the test. And the maximum value of the receiver should be recorded as (Pr).
3. The EUT shall be replaced by a substitution antenna. The test setup refers to figure below.



In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is

connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (P_{Mea}) is applied to the input of the substitution antenna, and adjust the level of the signal generator output until the value of the receiver reach the previously recorded (P_r). The power of signal source (P_{Mea}) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.

4. A amplifier should be connected to the Signal Source output port. And the cable should be connect between the Amplifier and the Substitution Antenna.
   The cable loss (P_{cl}) ,the Substitution Antenna Gain (G_a) and the Amplifier Gain (P_{Ag}) should be recorded after test.
   The measurement results are obtained as described below:
   Power(EIRP)=P_{Mea}- P_{Ag} - P_{cl} - G_a
5. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi) and known input power.
6. ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP -2.15dBi.

GSM 850-ERP 22.913(a)

Limits

	Power Step	Burst Peak ERP (dBm)
GSM	5	≤38.45dBm (7W)
GPRS	3	≤38.45dBm (7W)
EGPRS	6	≤38.45dBm (7W)

Measurement result

GSM

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)	P_{Ag}(dB)	G_a Antenna Gain(dB)	Correction (dB)	ERP(dBm)	Limit(dBm)	Margin(dB)	Polarization
824.20	-20.95	2.07	-53.00	0.84	2.15	26.99	38.45	11.46	V
836.60	-19.57	2.08	-53.00	0.90	2.15	**28.30**	38.45	10.15	V
848.80	-20.20	2.09	-53.00	0.95	2.15	27.61	38.45	10.84	V

GPRS

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)	P_{Ag}(dB)	G_a Antenna Gain(dB)	Correction (dB)	ERP(dBm)	Limit(dBm)	Margin(dB)	Polarization
824.20	-20.93	2.07	-53.00	0.84	2.15	27.01	38.45	11.44	V
836.60	-19.58	2.08	-53.00	0.90	2.15	**28.29**	38.45	10.16	V
848.80	-20.16	2.09	-53.00	0.95	2.15	27.65	38.45	10.80	V

EGPRS

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)	P_{Ag}(dB)	G_a Antenna Gain(dB)	Correction (dB)	ERP(dBm)	Limit(dBm)	Margin(dB)	Polarization
824.20	-25.94	2.07	-53.00	0.84	2.15	22.00	38.45	16.45	V
836.60	-25.10	2.08	-53.00	0.90	2.15	**22.77**	38.45	15.68	V
848.80	-25.59	2.09	-53.00	0.95	2.15	22.22	38.45	16.23	V

Frequency: 836.60MHz

Peak ERP(dBm)=P_{Mea}(-19.57dBm) - P_{cl}(2.08dB) - P_{Ag}(-53.00dB) - G_a (0.90dB)-2.15dB=28.30dBm

ANALYZER SETTINGS: RBW = VBW = 3MHz

PCS1900-EIRP 24.232(c)

Limits

	Power Step	Burst Peak EIRP (dBm)
GSM	0	≤33dBm (2W)
GPRS	3	≤33dBm (2W)
EGPRS	5	≤33dBm (2W)

Measurement result

GSM

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)	P_{Ag}(dB)	G_a Antenna Gain(dB)	EIRP(dBm)	Limit(dBm)	Margin(dB)	Polarization
1850.20	-22.12	3.19	-50.00	-4.56	29.25	33.00	3.75	H
1880.00	-21.41	3.11	-50.00	-4.43	29.91	33.00	3.09	H
1909.80	-19.46	3.18	-50.00	-4.30	**31.66**	33.00	1.34	H

GPRS

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)	P_{Ag}(dB)	G_a Antenna Gain(dB)	EIRP(dBm)	Limit(dBm)	Margin(dB)	Polarization
1850.20	-22.15	3.19	-50.00	-4.56	29.22	33.00	3.78	H
1880.00	-21.31	3.11	-50.00	-4.43	30.01	33.00	2.99	H
1909.80	-19.44	3.18	-50.00	-4.30	**31.68**	33.00	1.32	H

EGPRS

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)	P_{Ag}(dB)	G_a Antenna Gain(dB)	EIRP(dBm)	Limit(dBm)	Margin(dB)	Polarization
1850.20	-24.59	3.19	-50.00	-4.56	26.78	33.00	6.22	H
1880.00	-23.71	3.11	-50.00	-4.43	27.61	33.00	5.39	H
1909.80	-21.94	3.18	-50.00	-4.30	**29.18**	33.00	3.82	H

Frequency: 1909.80MHz

Peak EIRP(dBm)= P_{Mea}(-19.44dBm) - P_{cl}(3.18dB) - P_{Ag}(-50.00dB) - G_a (-4.30dB) =31.68dBm

ANALYZER SETTINGS: RBW = VBW = 3MHz

A.2 EMISSION LIMIT

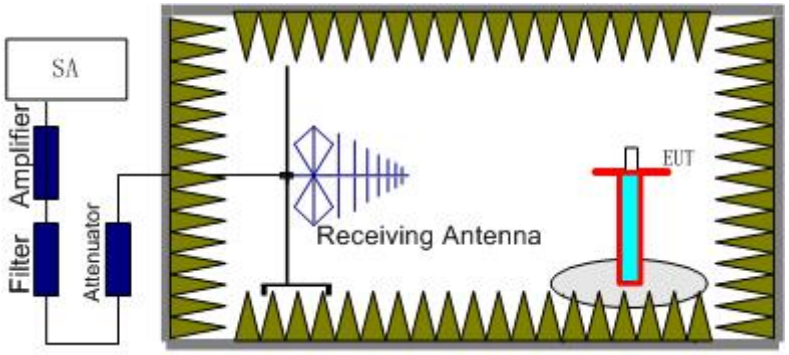
A.2.1 Measurement Method

The measurement procedures in TIA-603C-2004 are used.

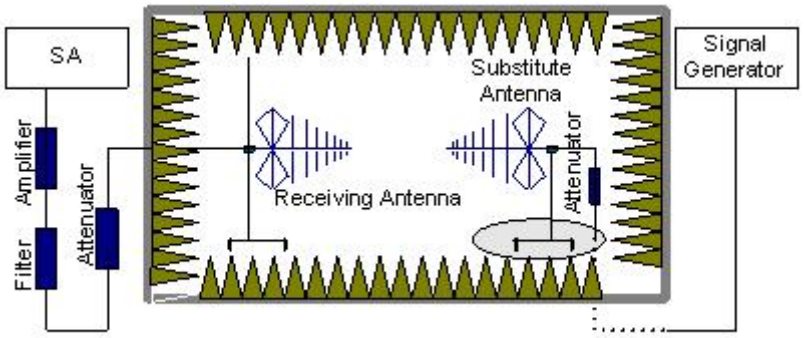
The spectrum was scanned from 30 MHz to the 10th harmonic of the highest frequency generated within the equipment, which is the transmitted carrier that can be as high as 1910 MHz. The resolution bandwidth is set as outlined in Part 24.238 and Part 22.917. The spectrum is scanned with the mobile station transmitting at carrier frequencies that pertain to low, mid and high channels of PCS1900 and GSM850.

The procedure of radiated spurious emissions is as follows:

1. EUT was placed on a 1.5 meter high non-conductive stand at a 3 meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT for emission measurements. The height of receiving antenna is 1.5m. The test setup refers to figure below. Detected emissions were maximized at each frequency by rotating the EUT through 360° and adjusting the receiving antenna polarization. The radiated emission measurements of all non-harmonic and harmonics of the transmit frequency through the 10th harmonic were measured with peak detector.



2. The EUT is then put into continuously transmitting mode at its maximum power level during the test. And the maximum value of the receiver should be recorded as (Pr).
3. The EUT shall be replaced by a substitution antenna. The test setup refers to figure below.



In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (P_{Mea}) is applied to the input of the

substitution antenna, and adjust the level of the signal generator output until the value of the receiver reach the previously recorded (P_r). The power of signal source (P_{Mea}) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.

4. The Path loss (P_{pl}) between the Signal Source with the Substitution Antenna and the Substitution Antenna Gain (G_a) should be recorded after test.
   A amplifier should be connected in for the test.
   The Path loss (P_{pl}) is the summation of the cable loss and the gain of the amplifier.
   The measurement results are obtained as described below:
   Power(EIRP)=P_{Mea} - P_{pl} - G_a
5. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi) and known input power.
6. ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP -2.15dBi.

A.2.2 Measurement Limit

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

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

A.2.3 Measurement Results

Radiated emissions measurements were made only at the upper, middle, and lower carrier frequencies of the PCS1900 band (1850.2 MHz, 1880 MHz and 1909.8 MHz) and GSM850 band (824.2MHz, 836.6MHz, 848.8MHz) . It was decided that measurements at these three carrier frequencies would be sufficient to demonstrate compliance with emissions limits because it was seen that all the significant spurs occur well outside the band and no radiation was seen from a carrier in one block of the PCS1900 ,GSM850 into any of the other blocks. The equipment must still, however, meet emissions requirements with the carrier at all frequencies over which it is capable of operating and it is the manufacturer's responsibility to verify this.

A.2.4 Measurement Results Table

Frequency	Channel	Frequency Range	Result
GSM 850MHz	Low	30MHz-10GHz	Pass
	Middle	9KHz-10GHz	Pass
	High	30MHz-10GHz	Pass
GSM 1900MHz	Low	30MHz-20GHz	Pass
	Middle	9KHz-20GHz	Pass
	High	30MHz-20GHz	Pass

A.2.5 Sweep Table

Working Frequency	Subrange (GHz)	RBW	VBW	Sweep time (s)
850MHz	0.03~1	100KHz	300KHz	10
	1-2	1 MHz	3 MHz	2
	2~5	1 MHz	3 MHz	3
	5~8	1 MHz	3 MHz	3
	8~10	1 MHz	3 MHz	3
1900MHz	0.03~1	100KHz	300KHz	10
	1-2	1 MHz	3 MHz	2
	2~5	1 MHz	3 MHz	3
	5~8	1 MHz	3 MHz	3
	8~11	1 MHz	3 MHz	3
	11~14	1 MHz	3 MHz	3
	14~18	1 MHz	3 MHz	3
	18~20	1 MHz	3 MHz	2

GSM Mode Channel 128/824.2MHz

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Correction (dB)	Peak ERP(dBm)	Limit （dBm）	Margin(dB)	Polarization
1648.19	-46.48	2.91	-5.45	2.15	-46.09	-13.00	33.09	V
3877.12	-67.22	4.52	-8.35	2.15	-65.54	-13.00	52.54	H
4726.65	-61.80	5.00	-9.21	2.15	-59.74	-13.00	46.74	H
5695.57	-65.25	5.52	-10.08	2.15	-62.84	-13.00	49.84	V
6841.69	-66.92	6.17	-10.94	2.15	-64.30	-13.00	51.30	V
7779.34	-64.83	6.63	-11.68	2.15	-61.93	-13.00	48.93	V

GSM Mode Channel 190/836.6MHz

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Correction (dB)	Peak ERP(dBm)	Limit （dBm）	Margin(dB)	Polarization
1673.05	-45.10	2.97	-5.34	2.15	-44.88	-13.00	31.88	V
3108.85	-66.45	4.01	-6.96	2.15	-65.65	-13.00	52.65	V
4182.85	-49.88	4.68	-8.61	2.15	-48.10	-13.00	35.10	V
5856.53	-55.33	5.68	-10.14	2.15	-53.02	-13.00	40.02	H
6441.84	-67.01	5.84	-10.55	2.15	-64.45	-13.00	51.45	V
7284.97	-63.71	6.49	-11.27	2.15	-61.08	-13.00	48.08	H

GSM Mode Channel 251/848.8MHz

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Correction (dB)	Peak ERP(dBm)	Limit （dBm）	Margin(dB)	Polarization
1697.77	-45.68	2.95	-5.23	2.15	-45.55	-13.00	32.55	V
3112.94	-63.24	4.01	-6.97	2.15	-62.43	-13.00	49.43	H
4243.88	-50.59	4.76	-8.65	2.15	-48.85	-13.00	35.85	H
5895.53	-63.55	5.59	-10.16	2.15	-61.13	-13.00	48.13	V
6868.31	-62.95	6.07	-10.97	2.15	-60.20	-13.00	47.20	H
7639.36	-59.84	6.72	-11.54	2.15	-57.17	-13.00	44.17	H

GSM Mode Channel 512/1850.2MHz

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak EIRP(dBm)	Limit （dBm）	Margin(dB)	Polarization
3700.18	-52.94	4.44	-8.14	-49.24	-13.00	36.24	H
4628.32	-63.38	4.96	-9.03	-59.31	-13.00	46.31	H
7400.84	-47.78	6.42	-11.34	-42.86	-13.00	29.86	V
9250.98	-45.14	7.65	-12.60	-40.19	-13.00	27.19	V
9907.54	-65.25	7.49	-12.44	-60.30	-13.00	47.30	H
13234.24	-58.59	9.12	-13.53	-54.18	-13.00	41.18	V

GSM Mode Channel 661/1880.0MHz

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak EIRP(dBm)	Limit （dBm）	Margin(dB)	Polarization
3806.64	-64.52	4.49	-8.27	-60.74	-13.00	47.74	V
5640.05	-54.00	5.45	-10.06	-49.39	-13.00	36.39	V
7520.49	-48.74	6.82	-11.42	-44.14	-13.00	31.14	V
9399.93	-50.65	7.45	-12.60	-45.50	-13.00	32.50	V
11280.39	-48.83	8.55	-12.40	-44.98	-13.00	31.98	V
15040.18	-30.65	9.65	-13.49	-26.81	-13.00	13.81	H

GSM Mode Channel 810/1909.8MHz

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak EIRP(dBm)	Limit （dBm）	Margin(dB)	Polarization
3819.63	-51.88	4.49	-8.28	-48.09	-13.00	35.09	H
5729.31	-53.12	5.55	-10.09	-48.58	-13.00	35.58	V
7185.84	-64.25	6.41	-11.21	-59.45	-13.00	46.45	V
9549.05	-51.81	7.79	-12.58	-47.02	-13.00	34.02	H
13618.11	-58.54	9.14	-13.85	-53.83	-13.00	40.83	H
15278.51	-32.69	9.98	-13.44	-29.23	-13.00	16.23	V

A.3 CONDUCTED EMISSION

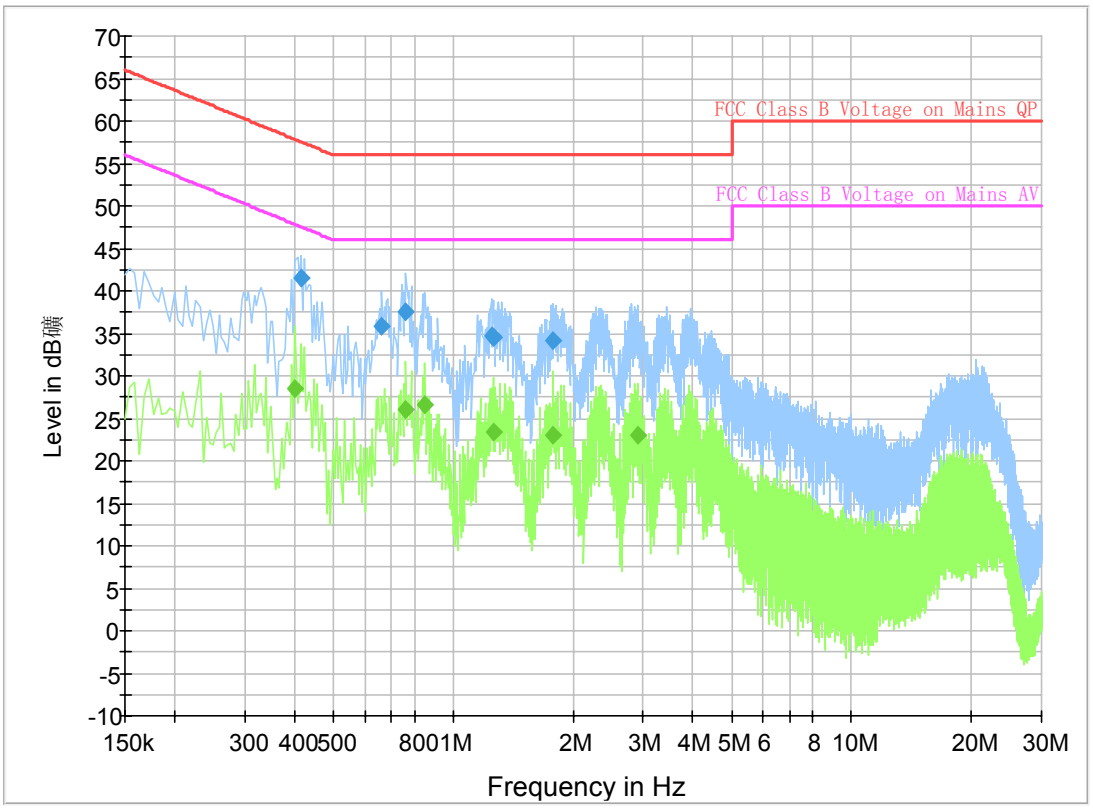
The measurement procedure in ANSI C63.4-1003 is used. Conducted Emission is measured with travel charger.

A.3.1 Limit

Frequency of Emission (MHz)	Conducted Limit (dBμV)	
	Quasi -Peak	Average
0.15 – 0.5	66 to 56*	56 to 46*
0.5 – 5	56	46
5 – 30	60	50
* Decreases with logarithm of the frequency		

A.3.2 Measurement result

GSM850MHz



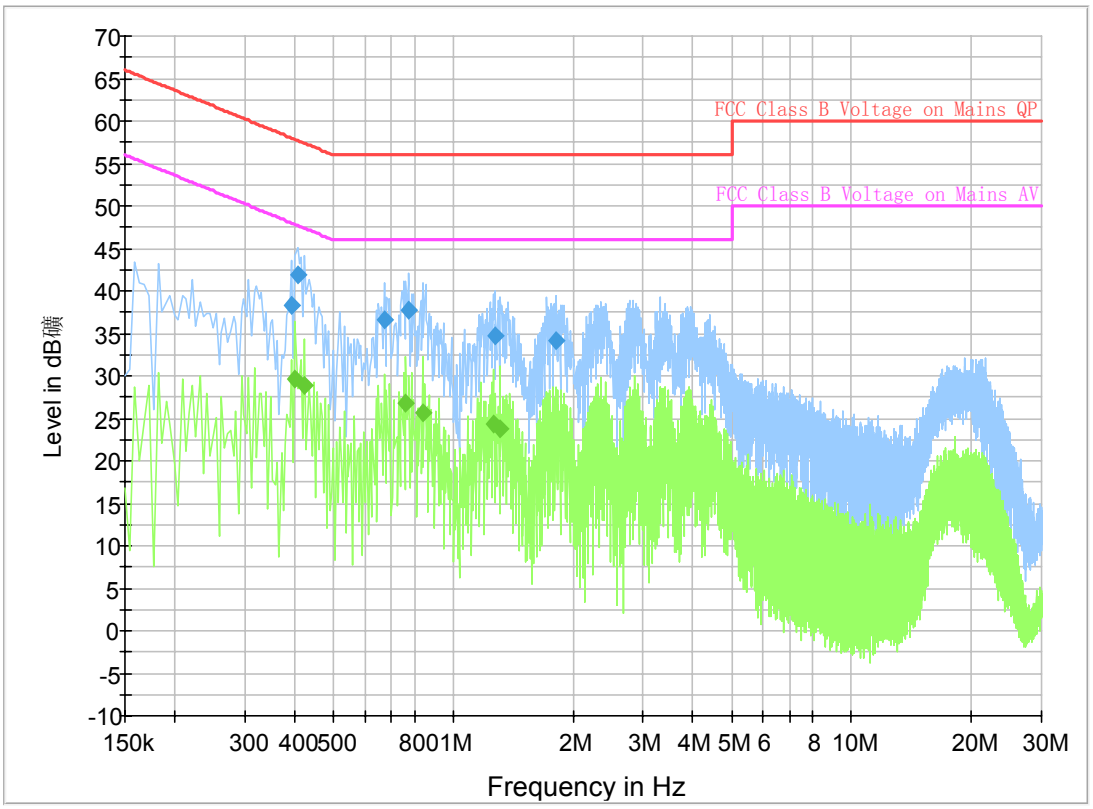
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.415500	41.6	GND	L1	9.8	16.0	57.5
0.663000	35.8	GND	L1	9.8	20.2	56.0
0.762000	37.5	GND	L1	9.8	18.5	56.0
1.248000	34.8	GND	L1	9.7	21.2	56.0
1.257000	34.5	GND	L1	9.7	21.5	56.0
1.774500	34.1	GND	L1	9.7	21.9	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.402000	28.6	GND	L1	9.8	19.2	47.8
0.762000	26.1	GND	L1	9.8	19.9	46.0
0.847500	26.6	GND	L1	9.8	19.4	46.0
1.257000	23.3	GND	L1	9.7	22.7	46.0
1.783500	23.0	GND	L1	9.7	23.0	46.0
2.904000	23.1	GND	L1	9.7	22.9	46.0

PCS1900MHz



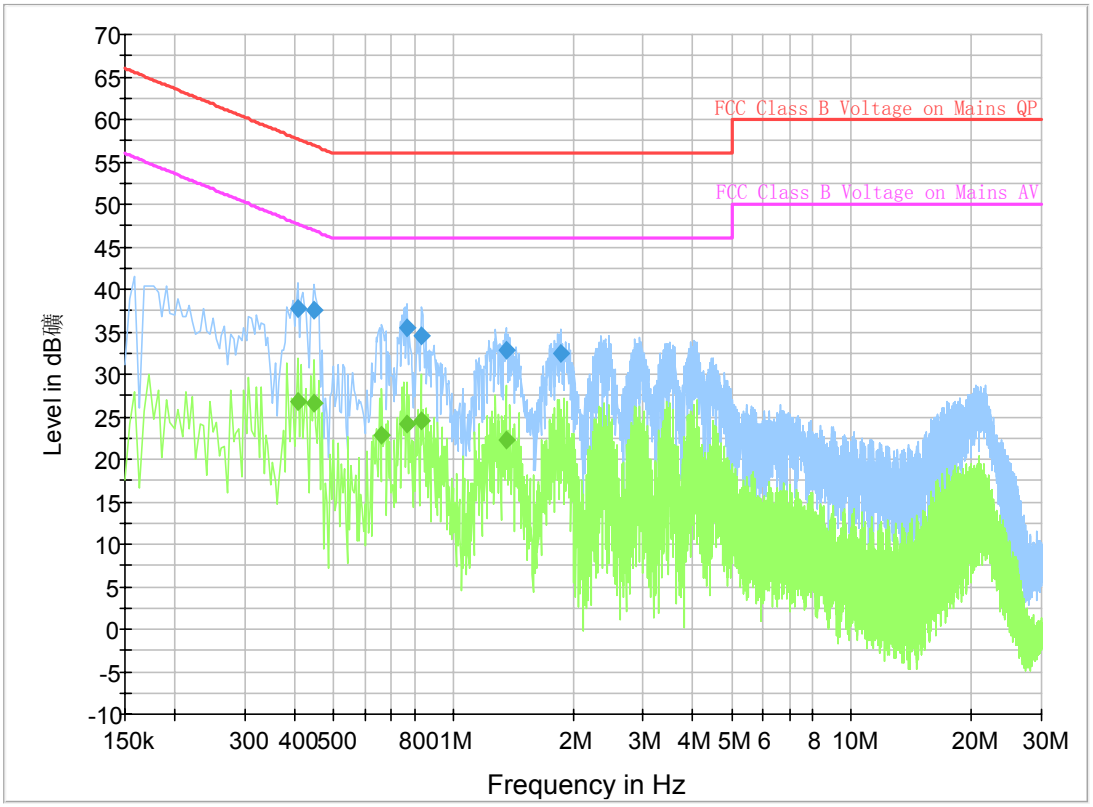
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.393000	38.4	GND	L1	9.8	19.6	58.0
0.406500	42.0	GND	L1	9.8	15.7	57.7
0.672000	36.5	GND	L1	9.8	19.5	56.0
0.775500	37.7	GND	L1	9.8	18.3	56.0
1.270500	34.7	GND	L1	9.7	21.3	56.0
1.819500	34.2	GND	L1	9.7	21.8	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.402000	29.6	GND	L1	9.8	18.2	47.8
0.424500	28.8	GND	L1	9.8	18.6	47.4
0.762000	26.7	GND	L1	9.8	19.3	46.0
0.838500	25.7	GND	L1	9.8	20.3	46.0
1.257000	24.3	GND	L1	9.7	21.7	46.0
1.311000	23.8	GND	L1	9.7	22.2	46.0

MP3



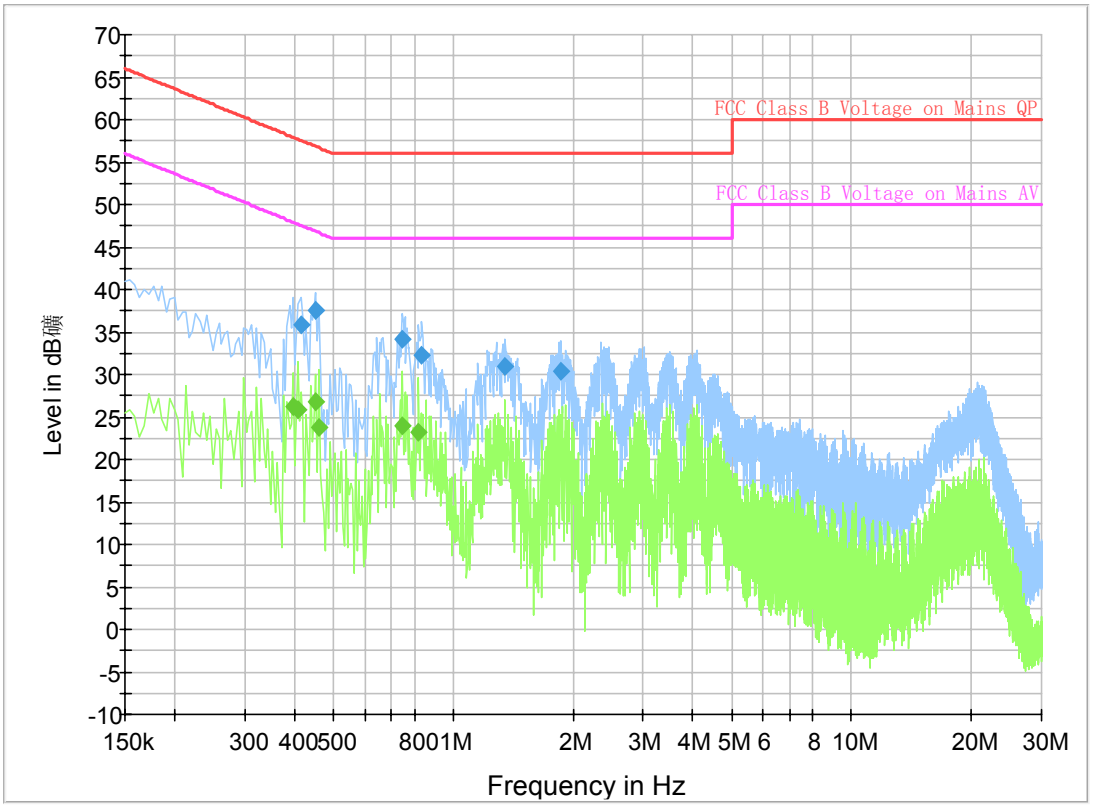
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.406500	37.7	GND	L1	9.8	20.0	57.7
0.447000	37.5	GND	L1	9.8	19.4	56.9
0.766500	35.4	GND	L1	9.8	20.6	56.0
0.834000	34.6	GND	L1	9.8	21.4	56.0
1.356000	32.8	GND	L1	9.7	23.2	56.0
1.860000	32.5	GND	L1	9.7	23.5	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.406500	26.7	GND	L1	9.8	21.0	47.7
0.447000	26.7	GND	L1	9.8	20.3	46.9
0.663000	22.8	GND	L1	9.8	23.2	46.0
0.766500	24.1	GND	L1	9.8	21.9	46.0
0.829500	24.6	GND	L1	9.8	21.4	46.0
1.356000	22.2	GND	L1	9.7	23.8	46.0

CAMERA



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.415500	35.8	GND	L1	9.8	21.8	57.5
0.451500	37.6	GND	L1	9.8	19.2	56.8
0.744000	34.1	GND	L1	9.8	21.9	56.0
0.834000	32.2	GND	L1	9.8	23.8	56.0
1.351500	31.0	GND	L1	9.7	25.0	56.0
1.855500	30.4	GND	L1	9.7	25.6	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.397500	26.2	GND	L1	9.8	21.7	47.9
0.406500	25.9	GND	L1	9.8	21.8	47.7
0.451500	26.9	GND	L1	9.8	20.0	46.8
0.460500	23.8	GND	L1	9.8	22.8	46.7
0.744000	24.0	GND	L1	9.8	22.0	46.0
0.820500	23.2	GND	L1	9.8	22.8	46.0

A.4 FREQUENCY STABILITY

A.4.1 Method of Measurement

In order to measure the carrier frequency under the condition of AFC lock, it is necessary to make measurements with the EUT in a “call mode”. This is accomplished with the use of R&S CMU200 DIGITAL RADIO COMMUNICATION TESTER.

1. Measure the carrier frequency at room temperature.
2. Subject the EUT to overnight soak at -30℃.
3. With the EUT, powered via nominal voltage, connected to the CMU200 and in a simulated call on mid channel of PCS 1900 and GSM850, measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming.
4. Repeat the above measurements at 10℃ increments from -30℃ to +50℃. Allow at least 1 1/2 hours at each temperature, unpowered, before making measurements.
5. Remeasure carrier frequency at room temperature with nominal voltage. Vary supply voltage from minimum voltage to maximum voltage, in 0.1Volt increments remeasuring carrier frequency at each voltage. Pause at nominal voltage for 1 1/2 hours unpowered, to allow any self-heating to stabilize, before continuing.
6. Subject the EUT to overnight soak at +50℃.
7. With the EUT, powered via nominal voltage, connected to the CMU200 and in a simulated call on the centre channel, measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming.
8. Repeat the above measurements at 10 C increments from +50℃ to -30℃. Allow at least 1 1/2 hours at each temperature, unpowered, before making measurements.
9. At all temperature levels hold the temperature to +/- 0.5℃ during the measurement procedure.

A.4.2 Measurement Limit

A.4.2.1 For Hand carried battery powered equipment

According to the JTC standard the frequency stability of the carrier shall be accurate to within 0.1 ppm of the received frequency from the base station. This accuracy is sufficient to meet Sec. 24.235, Frequency Stability. The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. As this transceiver is considered "Hand carried, battery powered equipment" Section 2.1055(d)(2) applies. This requires that the lower voltage for frequency stability testing be specified by the manufacturer. This transceiver is specified to operate with an input voltage of between 3.6VDC and 4.2VDC, with a nominal voltage of 3.8VDC. Operation above or below these voltage limits is prohibited by transceiver software in order to prevent improper operation as well as to protect components from overstress. These voltages represent a tolerance of -10 % and +12.5 %. For the purposes of measuring frequency stability these voltage limits are to be used.

A.4.2.2 For equipment powered by primary supply voltage

According to the JTC standard the frequency stability of the carrier shall be accurate to within 0.1 ppm of the received frequency from the base station. This accuracy is sufficient to meet Sec. 24.235, Frequency Stability. The frequency stability shall be sufficient to ensure that the

fundamental emission stays within the authorized frequency block. For this EUT section 2.1055(d)(1) applies. This requires varying primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment.

A.4.3 Measurement results

GSM 850

Frequency Error vs Voltage

Voltage(V)	Frequency error(Hz)	Frequency error(ppm)
3.6	8	0.010
3.8	3	0.004
4.2	-4	0.005

Frequency Error vs Temperature

temperature(℃)	Frequency error(Hz)	Frequency error(ppm)
-30	3	0.004
-20	2	0.002
-10	9	0.011
0	3	0.004
10	-1	0.001
20	7	0.008
30	3	0.004
40	7	0.008
50	5	0.006

PCS 1900

Frequency Error vs Voltage

Voltage(V)	Frequency error(Hz)	Frequency error(ppm)
3.6	22	0.012
3.8	15	0.008
4.2	24	0.013

Frequency Error vs Temperature

temperature(℃)	Frequency error(Hz)	Frequency error(ppm)
-30	33	0.018
-20	22	0.012
-10	36	0.019
0	18	0.010
10	22	0.012
20	17	0.009
30	11	0.006
40	19	0.010
50	7	0.004

A.5 OCCUPIED BANDWIDTH

A.5.1 Occupied Bandwidth Results

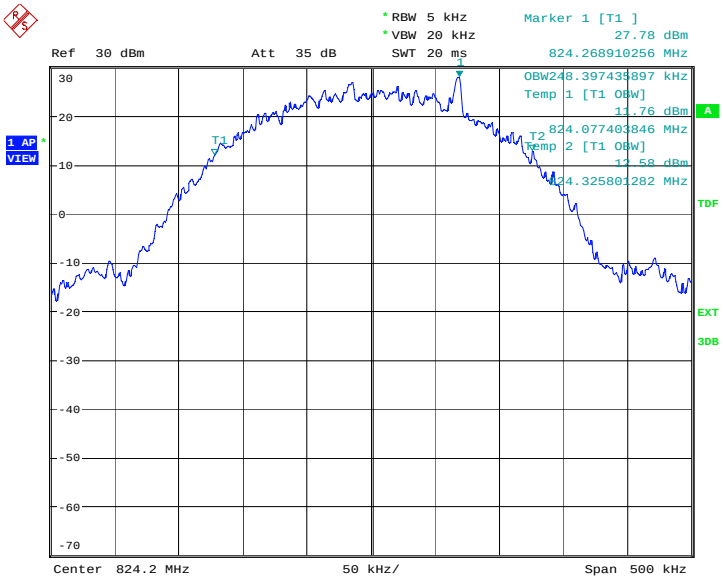
Similar to conducted emissions; occupied bandwidth measurements are only provided for selected frequencies in order to reduce the amount of submitted data. Data were taken at the extreme and mid frequencies of PCS1900 band and GSM850 band. The table below lists the measured 99% BW. Spectrum analyzer plots are included on the following pages.

GSM 850(99% BW)

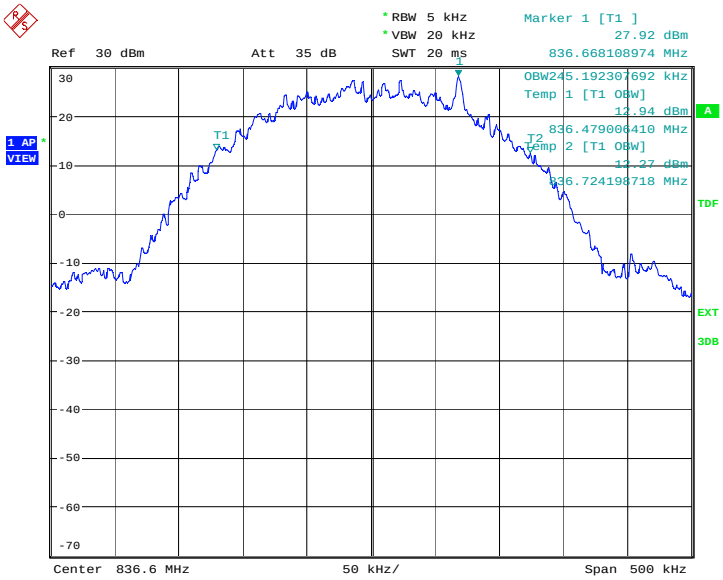
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)
824.2	248.397
836.6	245.192
848.8	244.391

GSM 850

Channel 128-Occupied Bandwidth (99% BW)

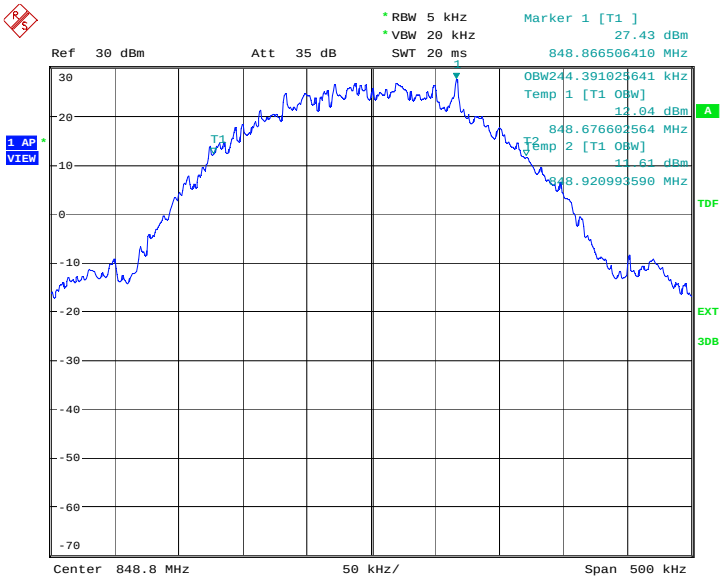


Channel 190-Occupied Bandwidth (99% BW)



Date: 3.MAR.2014 14:01:06

Channel 251-Occupied Bandwidth (99% BW)



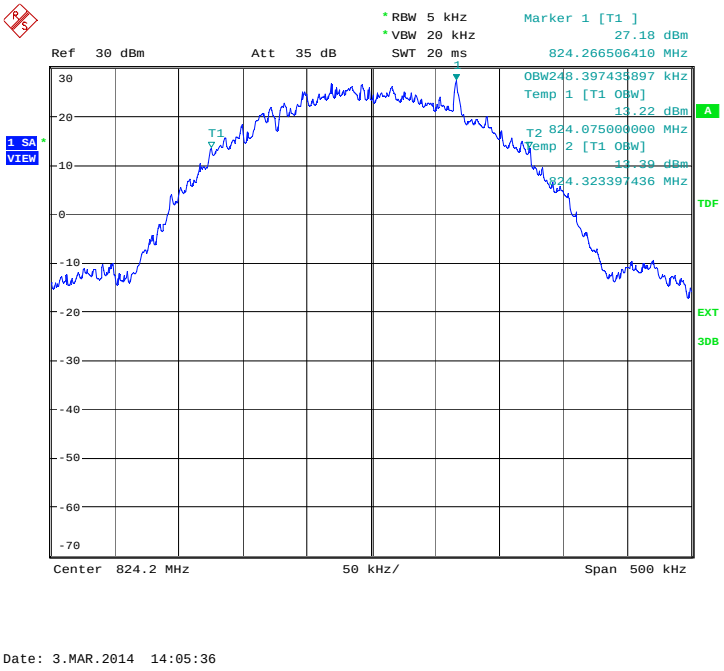
Date: 3.MAR.2014 14:01:51

GSM 850(99% BW)-IC

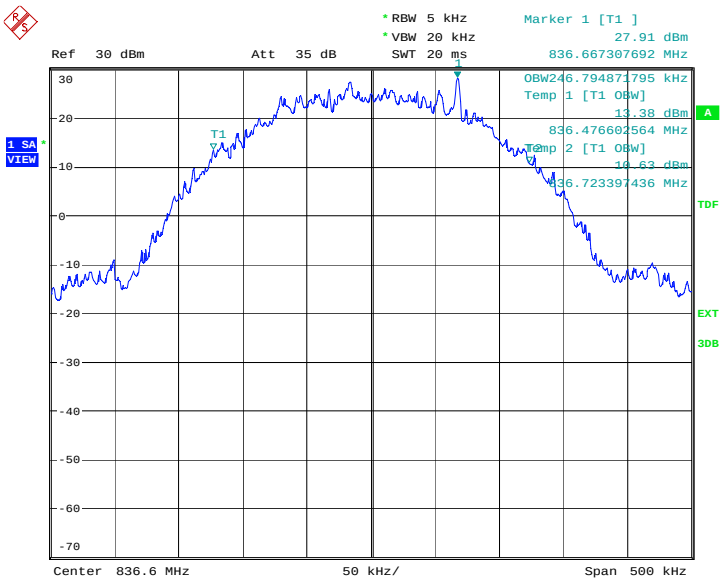
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)
824.2	248.397
836.6	246.795
848.8	248.397

GSM 850

Channel 128-Occupied Bandwidth (99% BW)

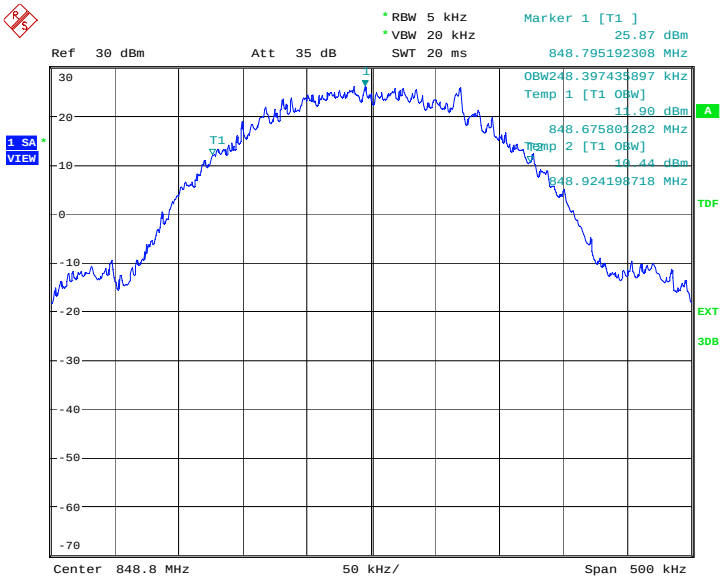


Channel 190-Occupied Bandwidth (99% BW)



Date: 3.MAR.2014 14:06:18

Channel 251-Occupied Bandwidth (99% BW)



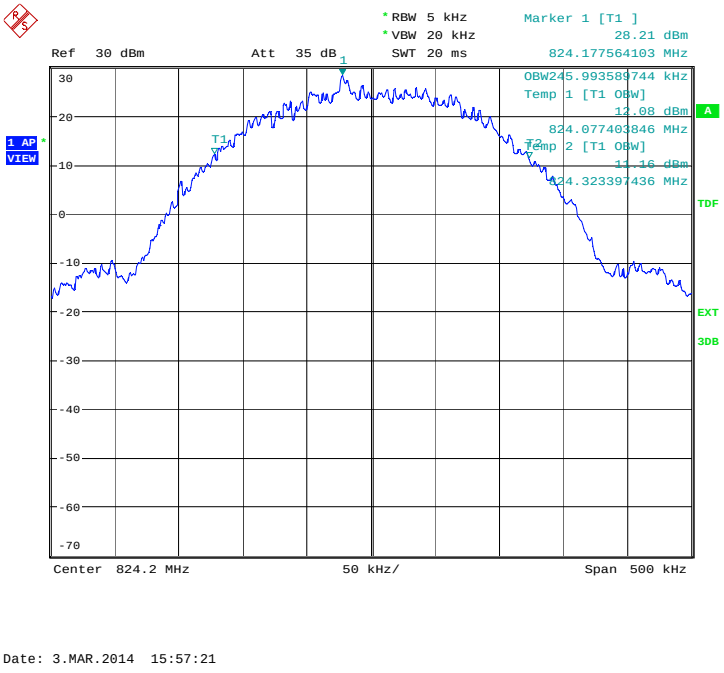
Date: 3.MAR.2014 14:07:49

GPRS 850(99% BW)

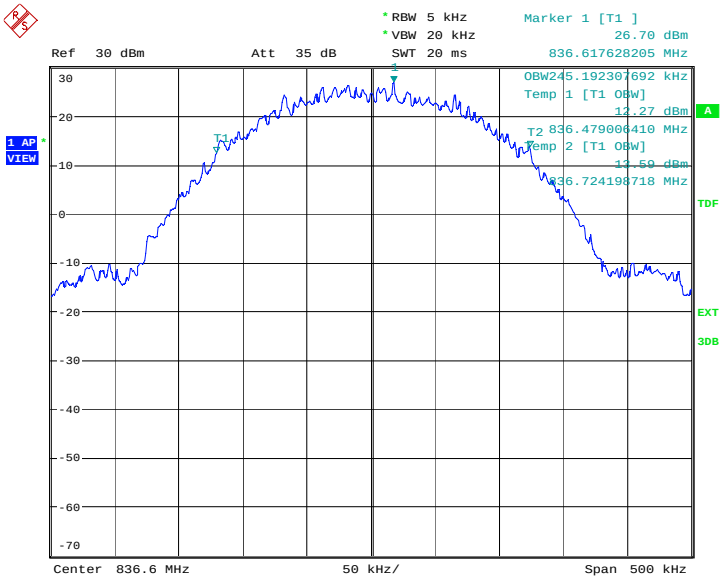
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)
824.2	245.994
836.6	245.192
848.8	245.192

GPRS 850

Channel 128-Occupied Bandwidth (99% BW)

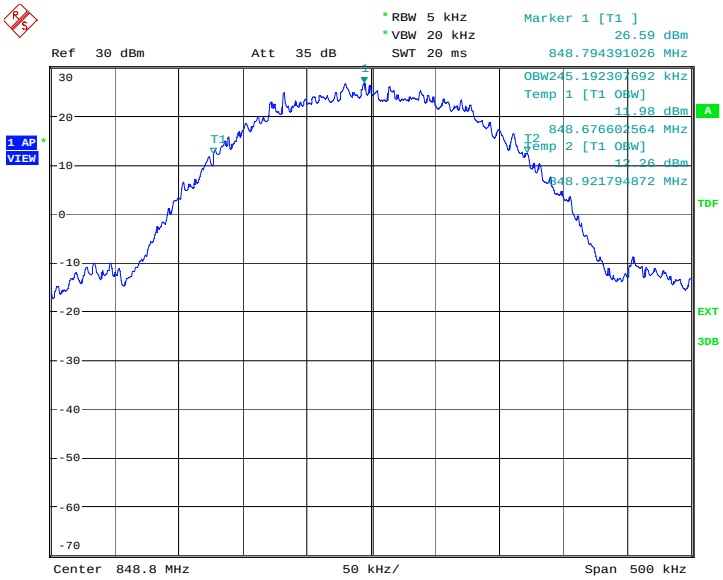


Channel 190-Occupied Bandwidth (99% BW)



Date: 3.MAR.2014 15:58:12

Channel 251-Occupied Bandwidth (99% BW)



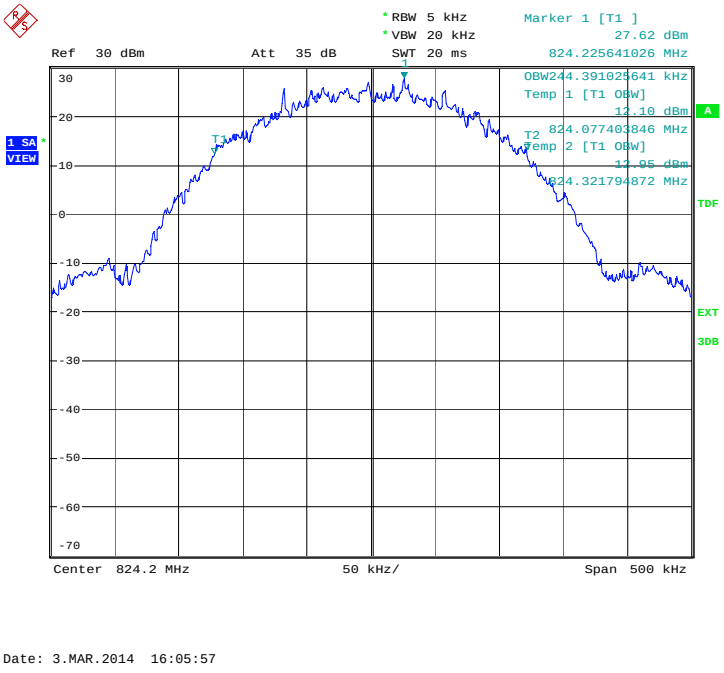
Date: 3.MAR.2014 15:59:10

GPRS 850(99% BW)-IC

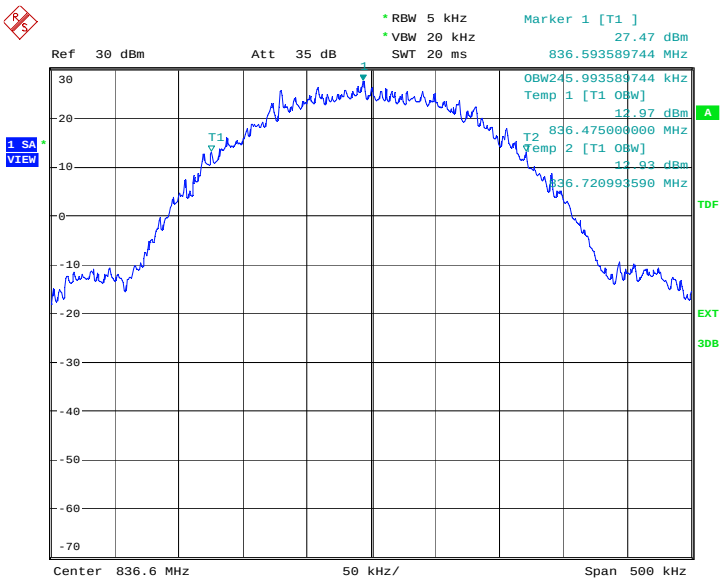
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)
824.2	244.391
836.6	245.994
848.8	242.788

GPRS 850

Channel 128-Occupied Bandwidth (99% BW)

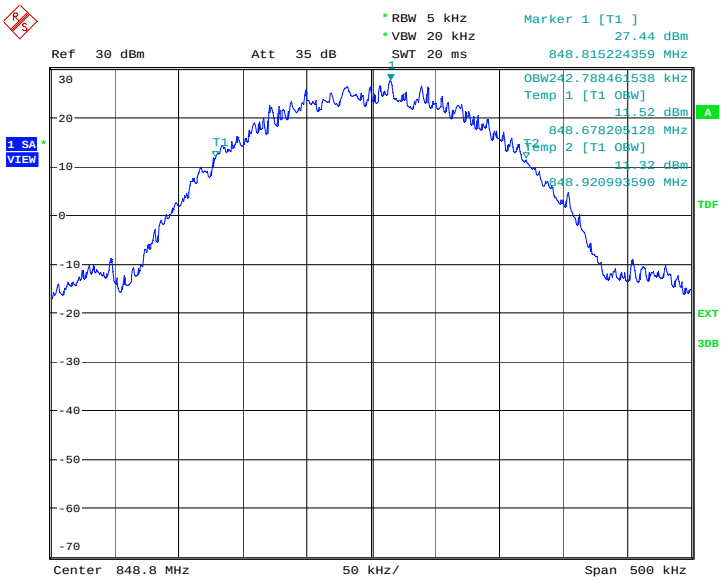


Channel 190-Occupied Bandwidth (99% BW)



Date: 3.MAR.2014 16:06:37

Channel 251-Occupied Bandwidth (99% BW)



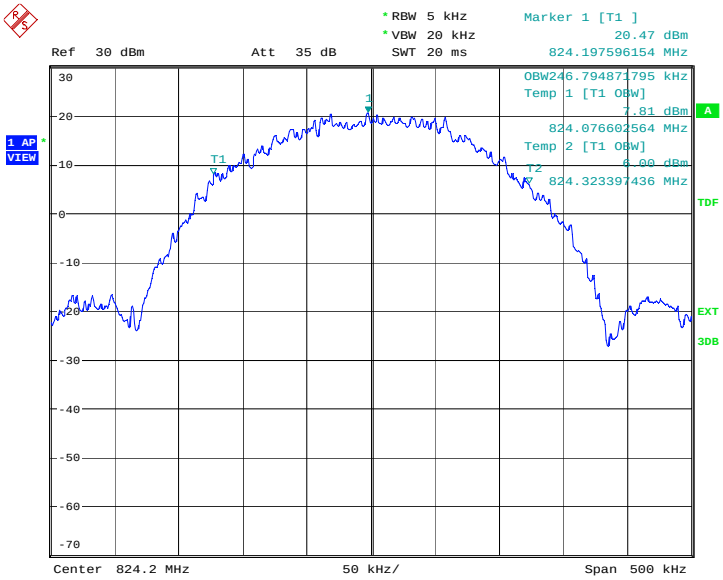
Date: 3.MAR.2014 16:07:16

EGPRS 850-8PSK(99% BW)

Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)
824.2	246.795
836.6	243.590
848.8	243.590

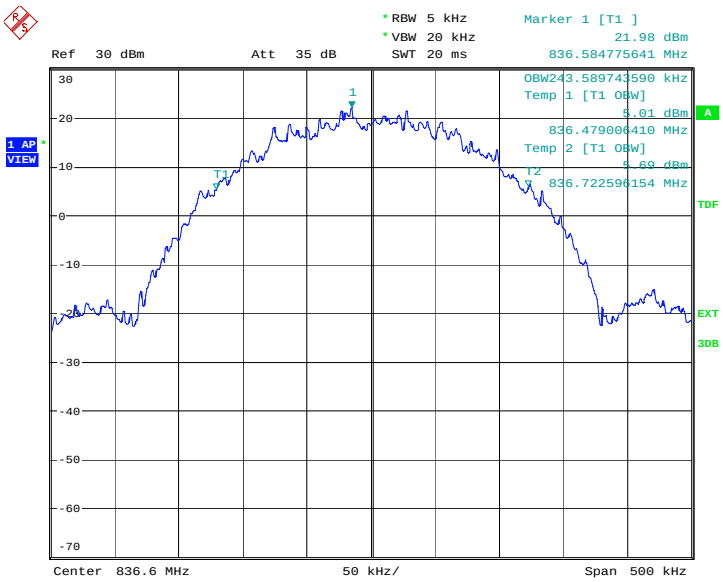
EGPRS 850-8PSK

Channel 128-Occupied Bandwidth (99% BW)



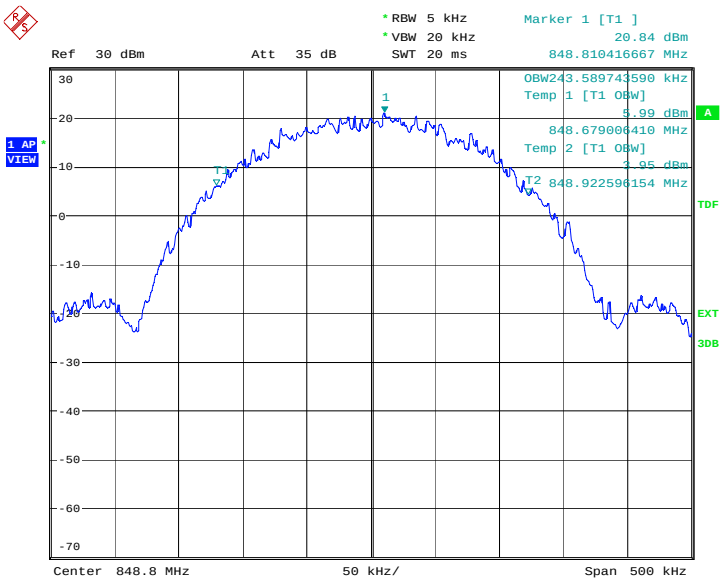
Date: 3.MAR.2014 16:43:27

Channel 190-Occupied Bandwidth (99% BW)



Date: 3.MAR.2014 16:44:52

Channel 251-Occupied Bandwidth (99% BW)



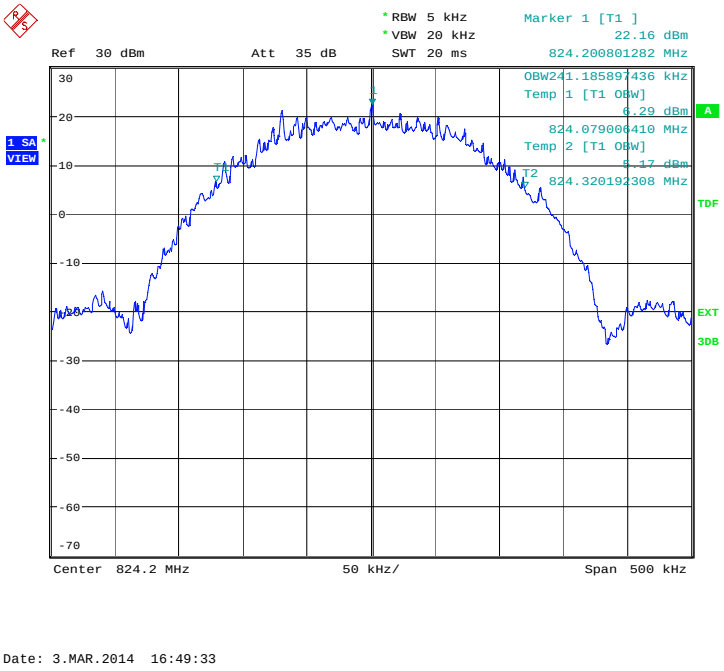
Date: 3.MAR.2014 16:45:31

EGPRS 850-8PSK (99% BW)-IC

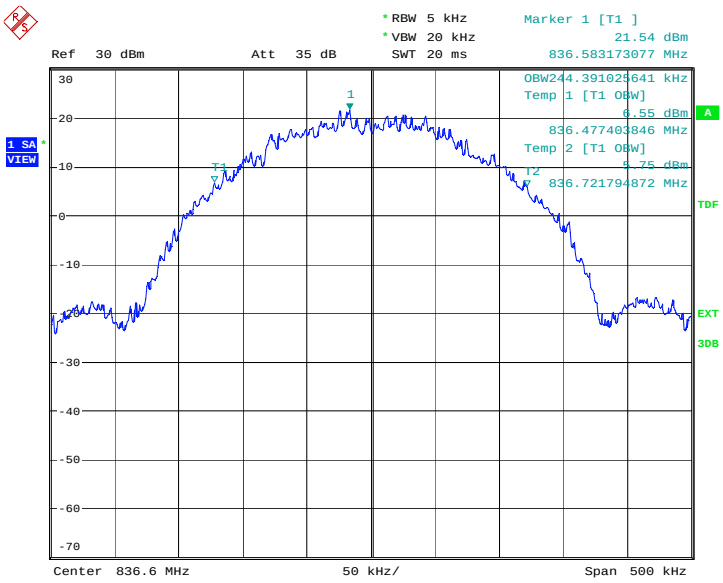
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)
824.2	241.186
836.6	244.391
848.8	243.590

EGPRS 850-8PSK

Channel 128-Occupied Bandwidth (99% BW)

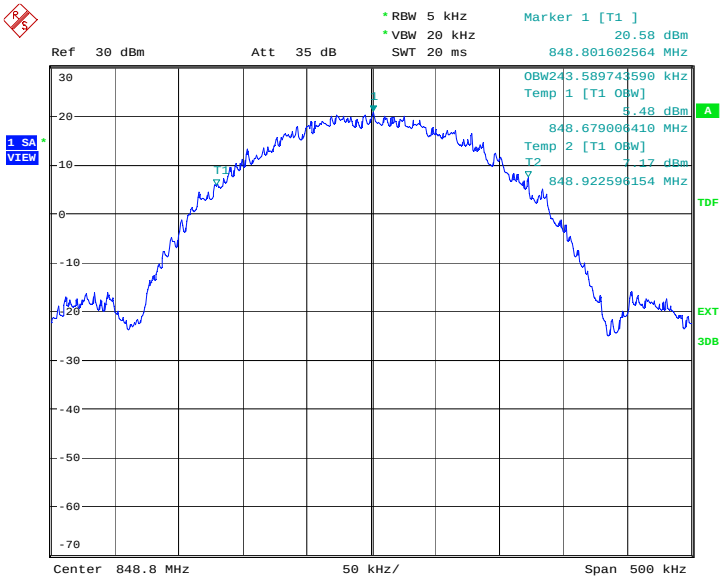


Channel 190-Occupied Bandwidth (99% BW)



Date: 3.MAR.2014 16:50:11

Channel 251-Occupied Bandwidth (99% BW)



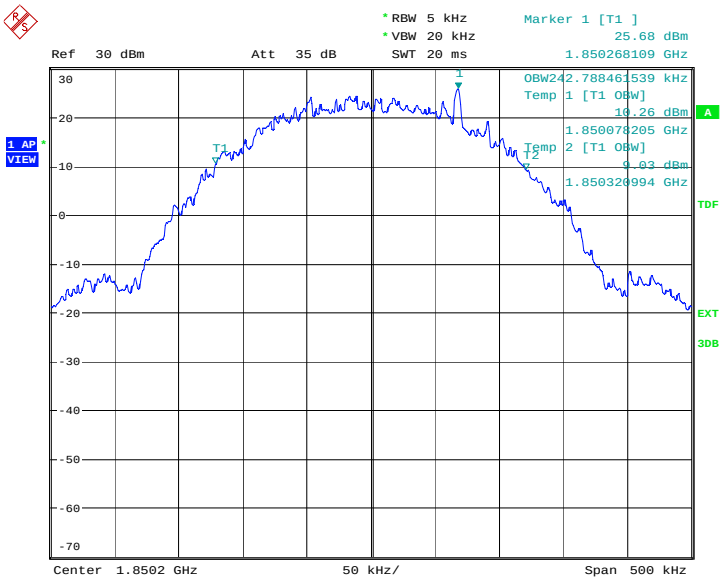
Date: 3.MAR.2014 16:50:54

PCS 1900(99% BW)

Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)
1850.2	242.788
1880.0	245.192
1909.8	245.192

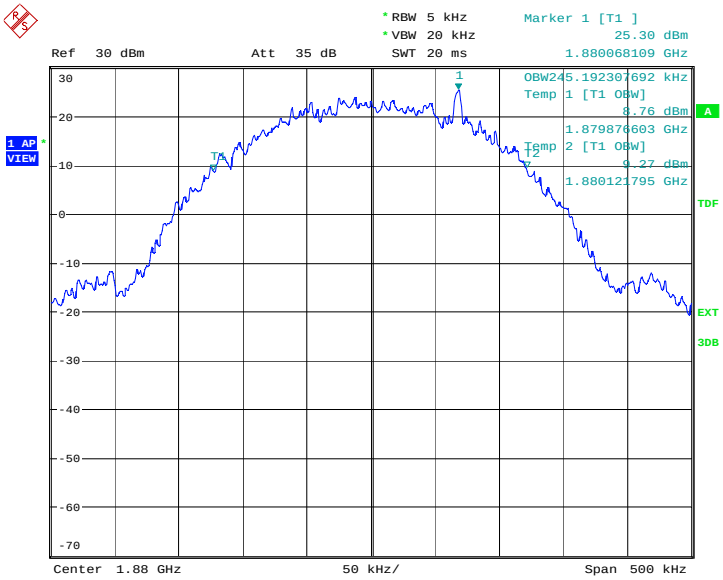
PCS 1900

Channel 512-Occupied Bandwidth (99% BW)



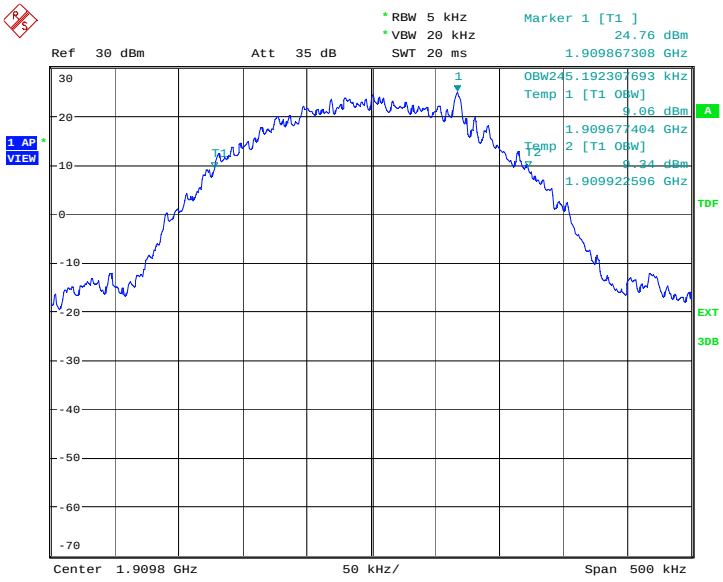
Date: 3.MAR.2014 14:24:53

Channel 661-Occupied Bandwidth (99% BW)



Date: 3.MAR.2014 14:26:06

Channel 810-Occupied Bandwidth (99% BW)



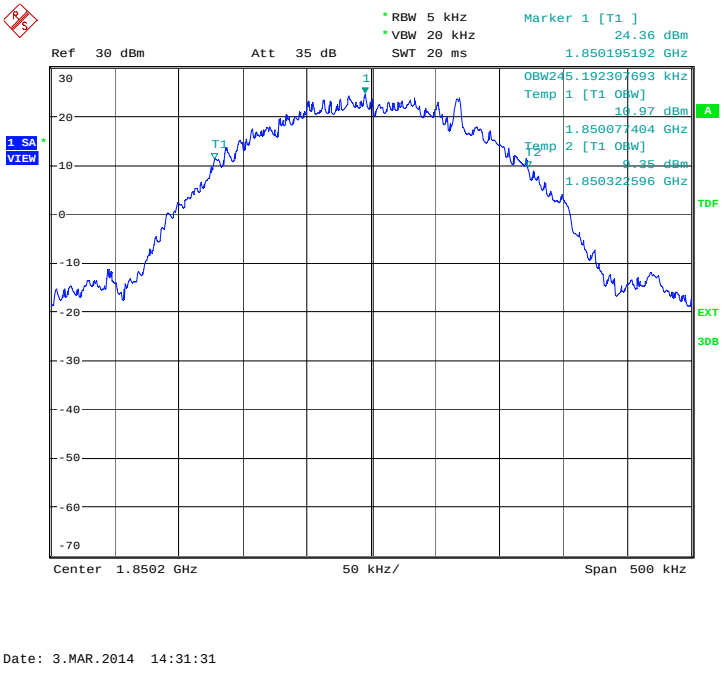
Date: 3.MAR.2014 14:27:02

PCS 1900(99% BW)-IC

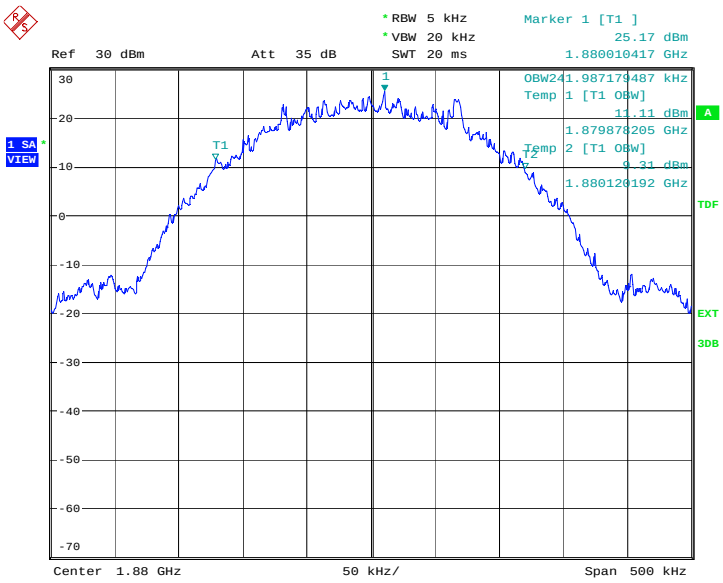
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)
1850.2	245.192
1880.0	241.987
1909.8	244.391

PCS 1900

Channel 512-Occupied Bandwidth (99% BW)

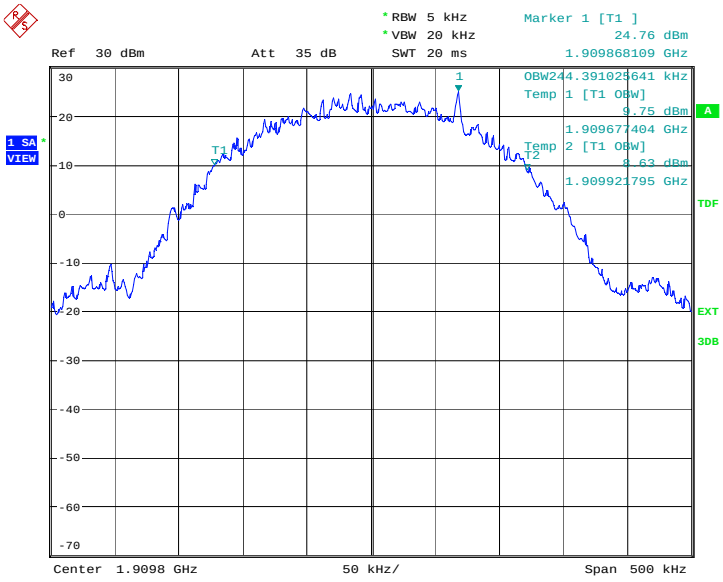


Channel 661-Occupied Bandwidth (99% BW)



Date: 3.MAR.2014 14:32:24

Channel 810-Occupied Bandwidth (99% BW)



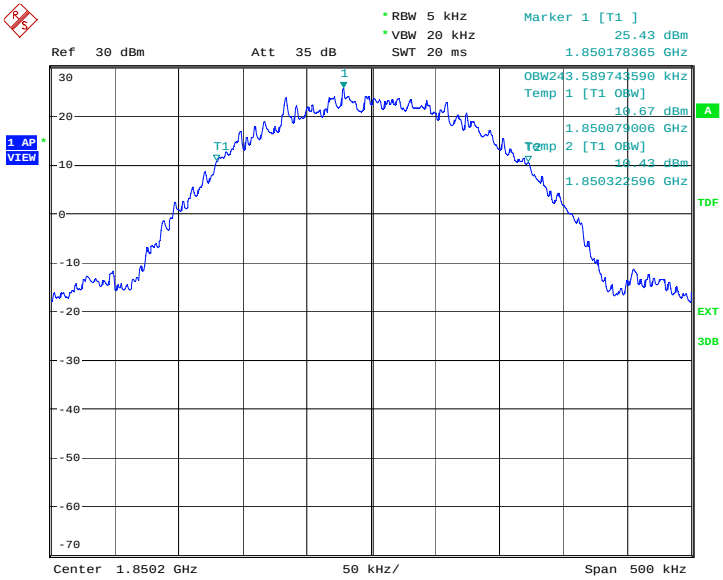
Date: 3.MAR.2014 14:33:08

GPRS 1900(99% BW)

Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)
1850.2	243.590
1880.0	245.192
1909.8	245.192

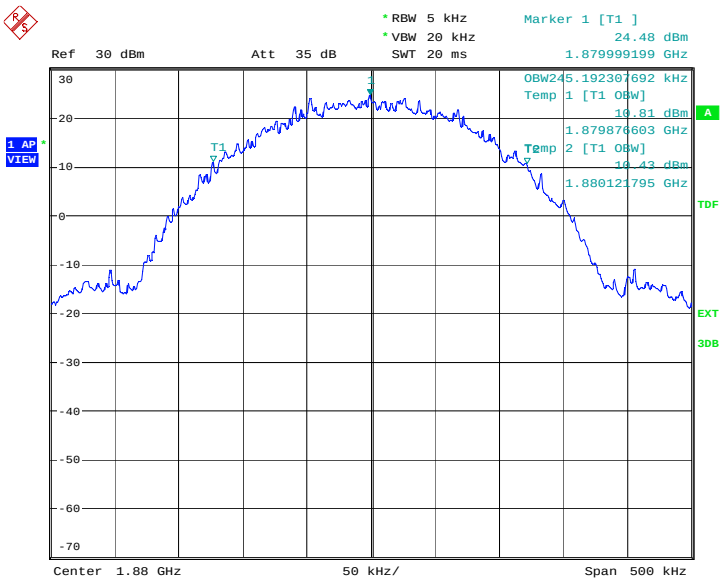
GPRS 1900

Channel 512-Occupied Bandwidth 99% BW)



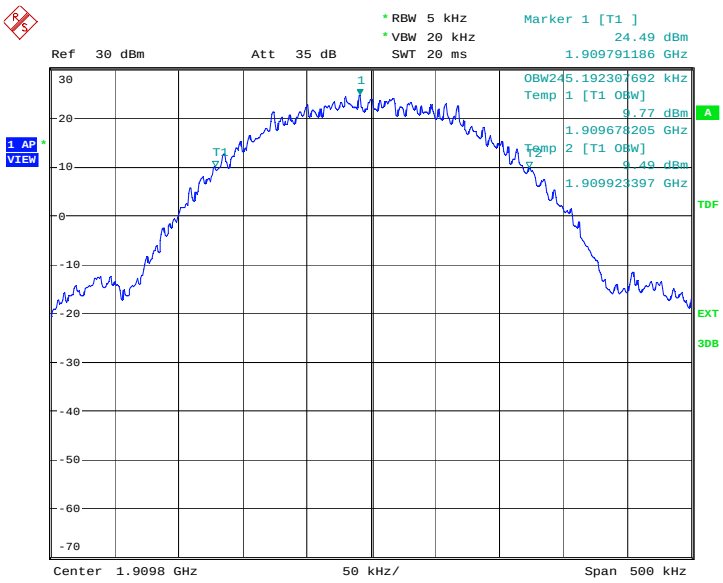
Date: 3.MAR.2014 16:11:51

Channel 661-Occupied Bandwidth (99% BW)



Date: 3.MAR.2014 16:14:30

Channel 810-Occupied Bandwidth (99% BW)



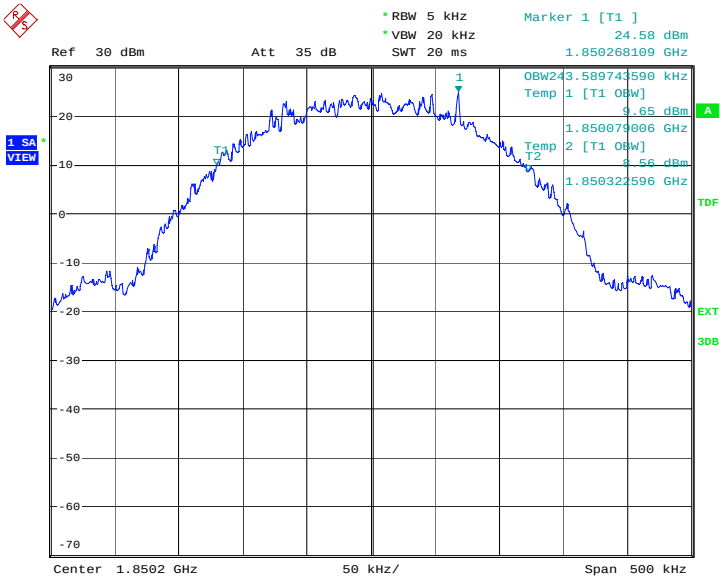
Date: 3.MAR.2014 16:15:15

GPRS 1900(99% BW)-IC

Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)
1850.2	243.590
1880.0	244.391
1909.8	246.795

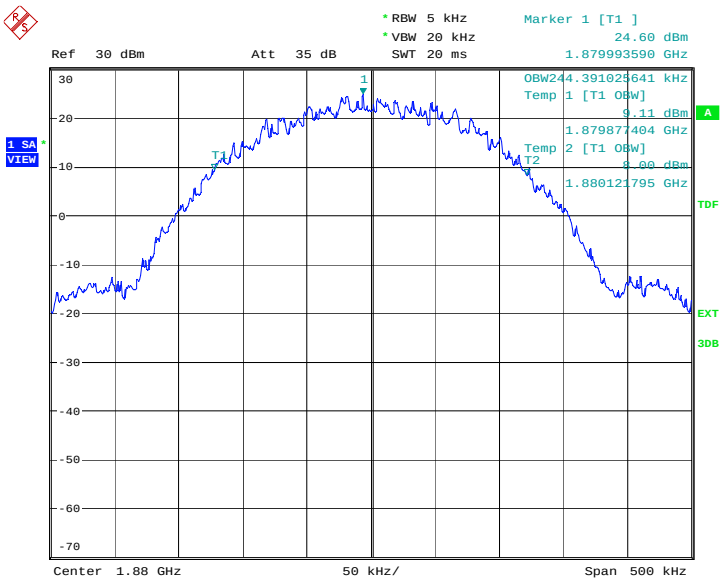
GPRS 1900

Channel 512-Occupied Bandwidth 99% BW)



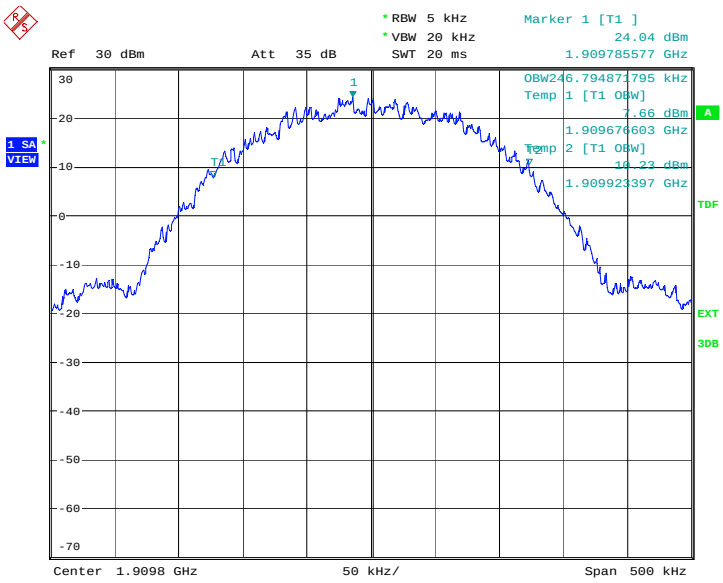
Date: 3.MAR.2014 16:19:23

Channel 661-Occupied Bandwidth (99% BW)



Date: 3.MAR.2014 16:20:09

Channel 810-Occupied Bandwidth (99% BW)



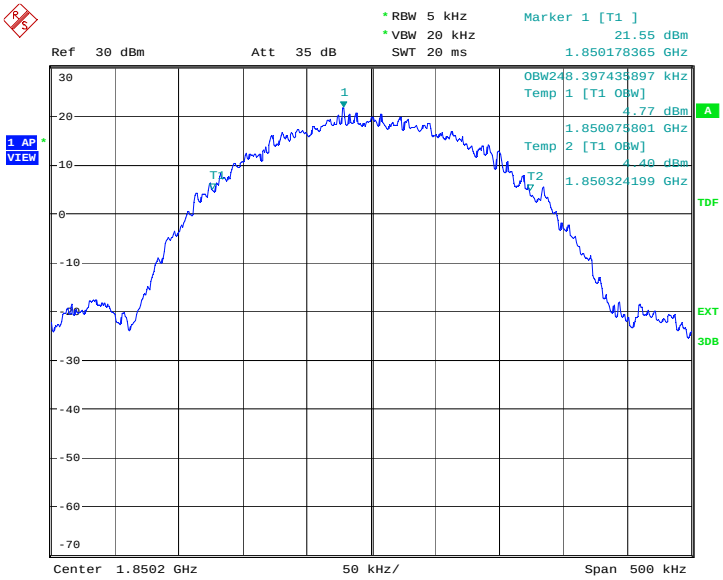
Date: 3.MAR.2014 16:20:59

EGPRS 1900-8PSK (99% BW)

Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)
1850.2	248.397
1880.0	248.397
1909.8	250.000

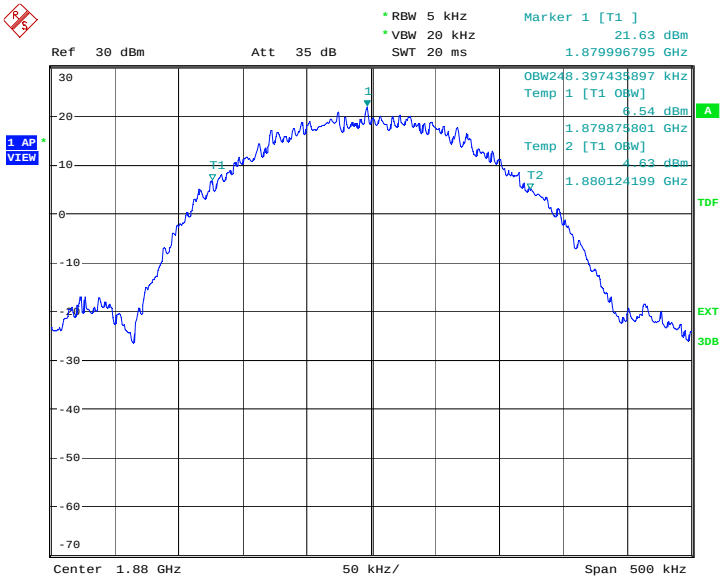
EGPRS 1900-8PSK

Channel 512-Occupied Bandwidth (99% BW)



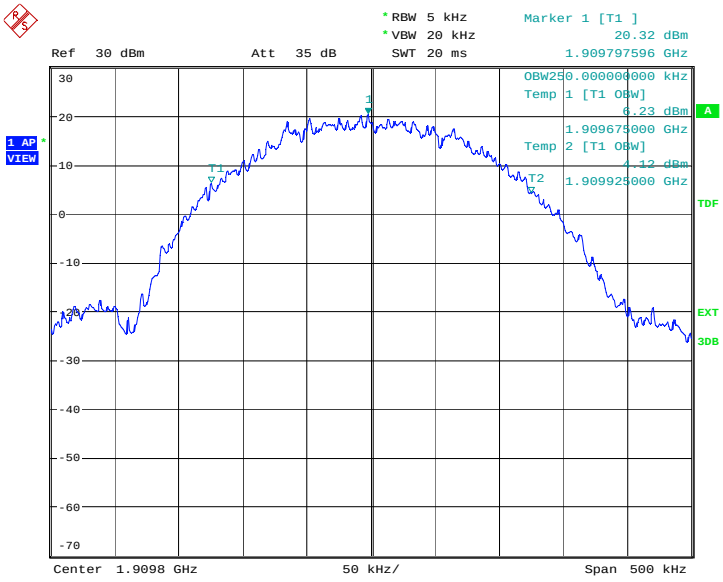
Date: 3.MAR.2014 16:26:58

Channel 661-Occupied Bandwidth (99% BW)



Date: 3.MAR.2014 16:27:42

Channel 810-Occupied Bandwidth (99% BW)



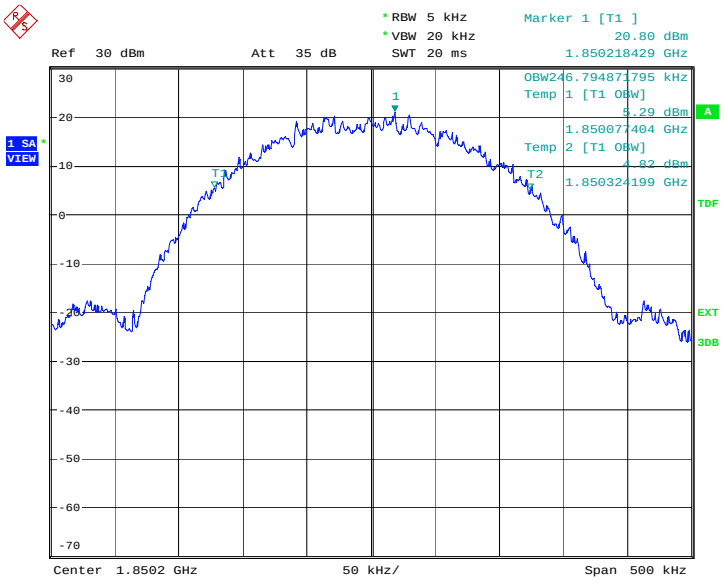
Date: 3.MAR.2014 16:29:16

EGPRS 1900-8PSK (99% BW)-IC

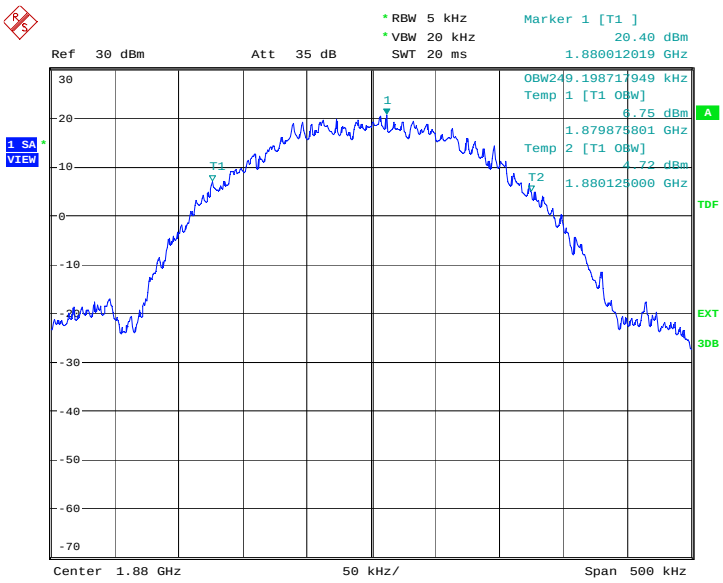
Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)
1850.2	246.795
1880.0	249.199
1909.8	246.795

EGPRS 1900-8PSK

Channel 512-Occupied Bandwidth (99% BW)

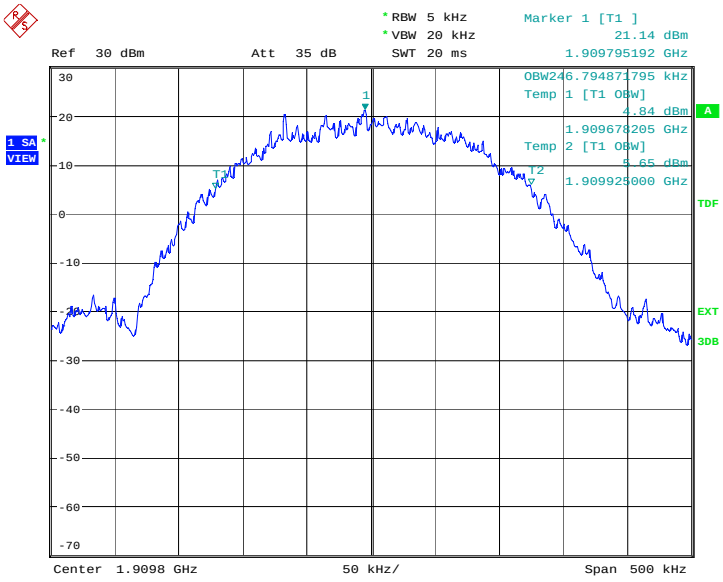


Channel 661-Occupied Bandwidth (99% BW)



Date: 3.MAR.2014 16:35:58

Channel 810-Occupied Bandwidth (99% BW)



Date: 3.MAR.2014 16:36:57

A.6 EMISSION BANDWIDTH

A.6.1Emission Bandwidth Results

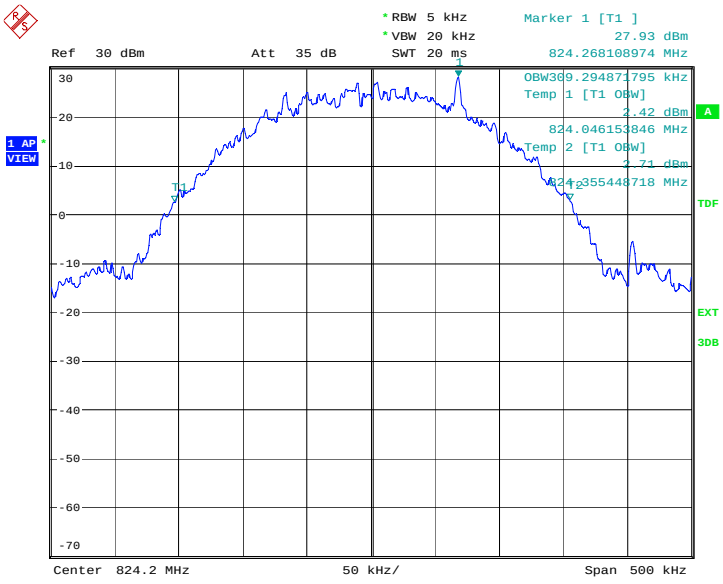
Similar to conducted emissions; Emission bandwidth measurements are only provided for selected frequencies in order to reduce the amount of submitted data. Data were taken at the extreme and mid frequencies of PCS1900 band and GSM850 band. Table below lists the measured 100% BW. Spectrum analyzer plots are included on the following pages.

GSM 850(100% BW)

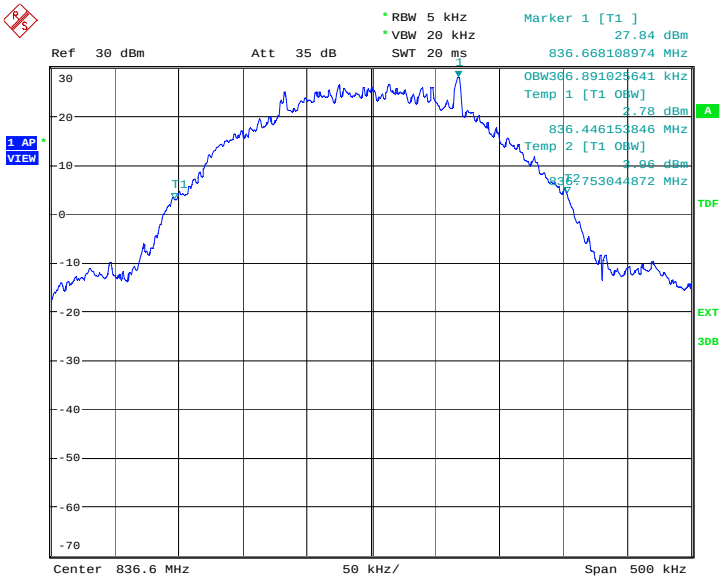
Frequency(MHz)	Emission Bandwidth (100% BW)(kHz)
824.2	309.295
836.6	306.891
848.8	304.487

GSM 850

Channel 128-Emission Bandwidth (100% BW)

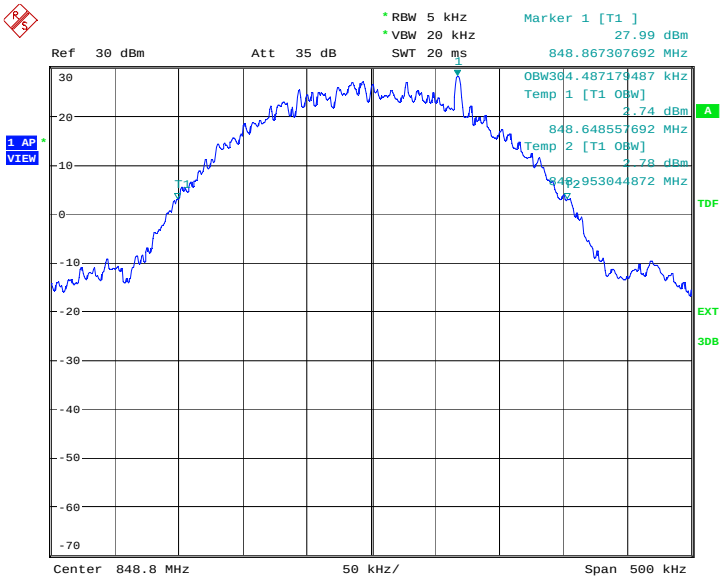


Channel 190-Emission Bandwidth (100% BW)



Date: 3.MAR.2014 14:03:20

Channel 251-Emission Bandwidth (100% BW)



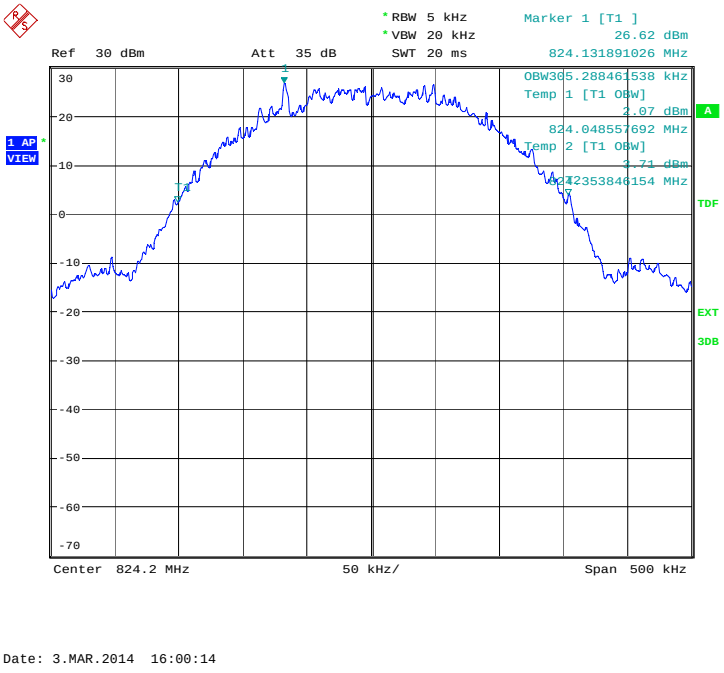
Date: 3.MAR.2014 14:04:01

GPRS 850(100% BW)

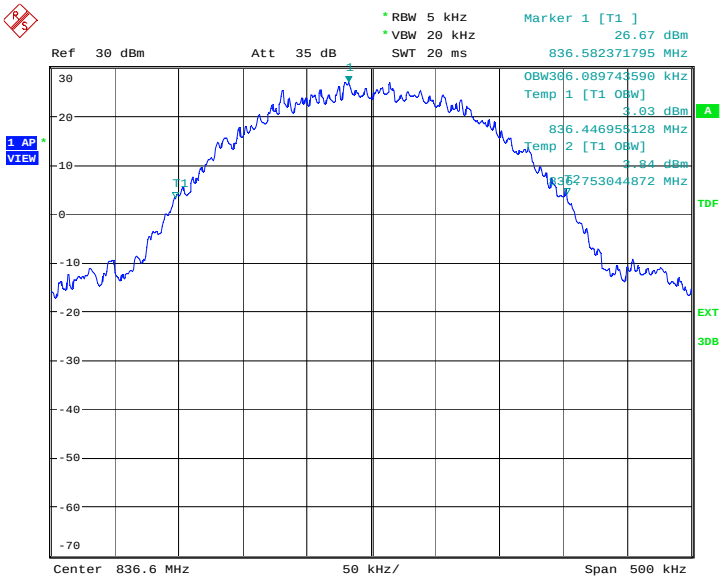
Frequency(MHz)	Emission Bandwidth (100% BW)(kHz)
824.2	305.288
836.6	306.090
848.8	306.891

GPRS 850

Channel 128-Emission Bandwidth (100% BW)

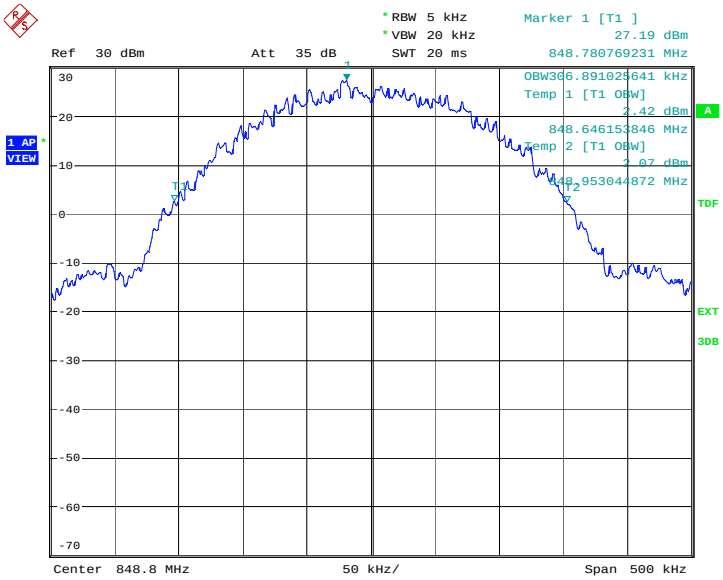


Channel 190-Emission Bandwidth (100% BW)



Date: 3.MAR.2014 16:00:59

Channel 251-Emission Bandwidth (100% BW)



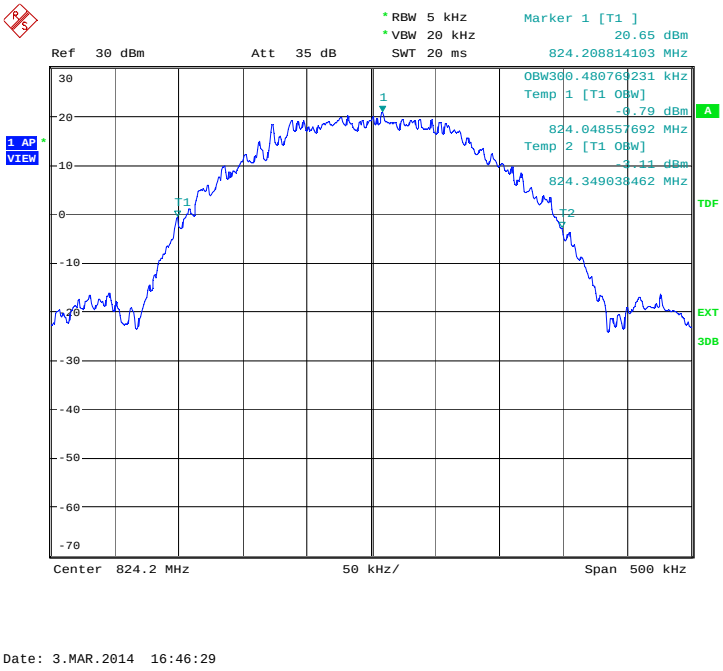
Date: 3.MAR.2014 16:02:40

EGPRS 850-8PSK (100% BW)

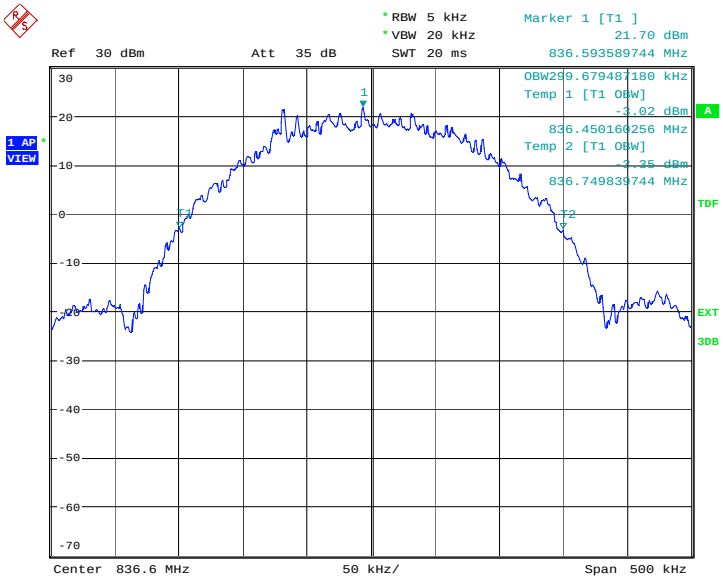
Frequency(MHz)	Emission Bandwidth (100% BW)(kHz)
824.2	300.481
836.6	299.679
848.8	299.679

EGPRS 850-8PSK

Channel 128-Emission Bandwidth (100% BW)

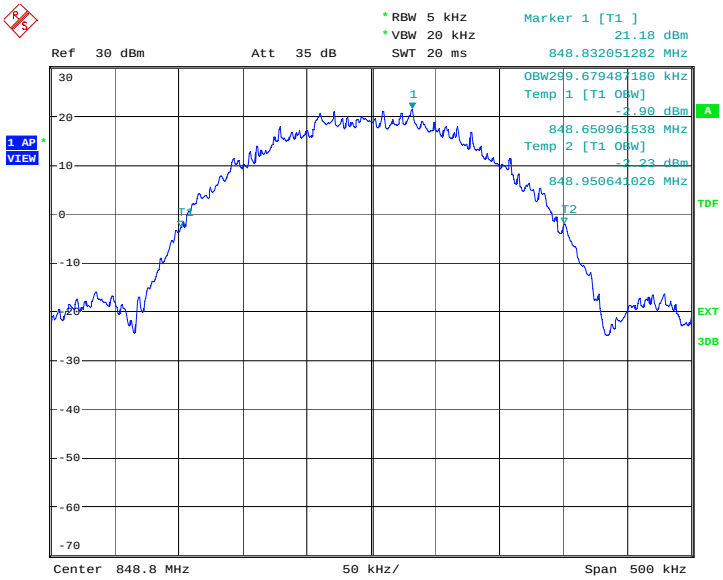


Channel 190-Emission Bandwidth (100% BW)



Date: 3.MAR.2014 16:47:10

Channel 251-Emission Bandwidth (100% BW)



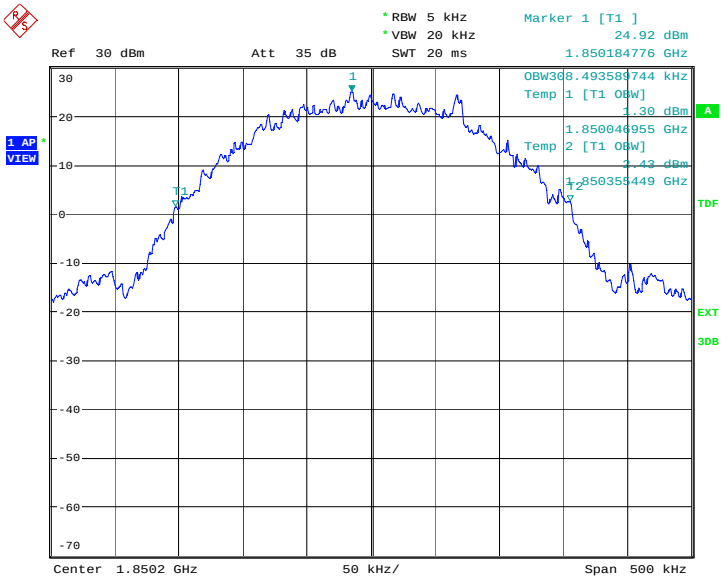
Date: 3.MAR.2014 16:47:51

PCS 1900(100% BW)

Frequency(MHz)	Emission Bandwidth (100% BW)(kHz)
1850.2	308.494
1880.0	306.090
1909.8	306.891

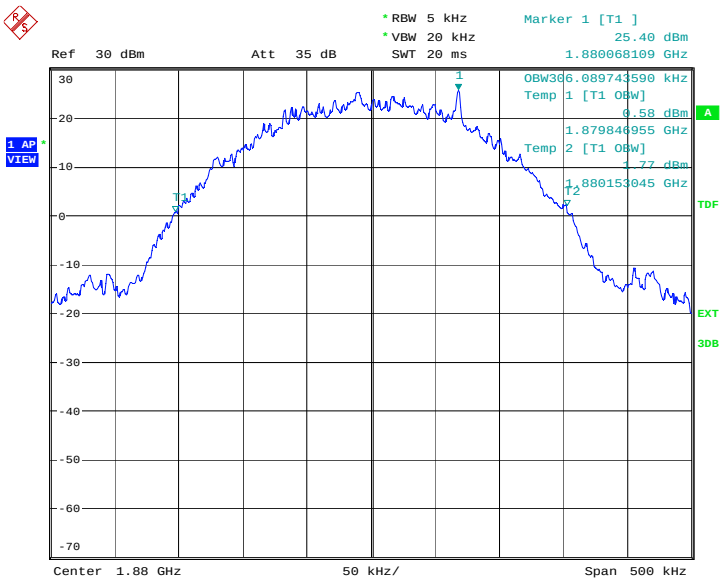
PCS 1900

Channel 512-Emission Bandwidth (100% BW)



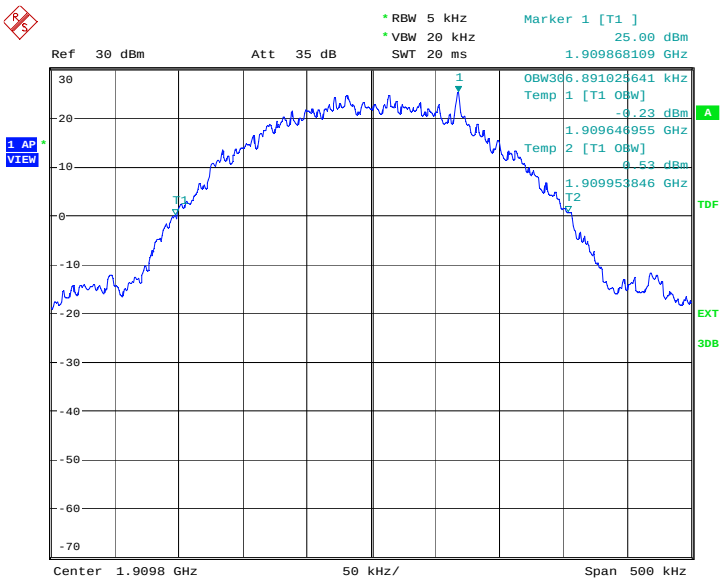
Date: 3.MAR.2014 19:00:33

Channel 661-Emission Bandwidth (100% BW)



Date: 3.MAR.2014 19:01:05

Channel 810-Emission Bandwidth (100% BW)



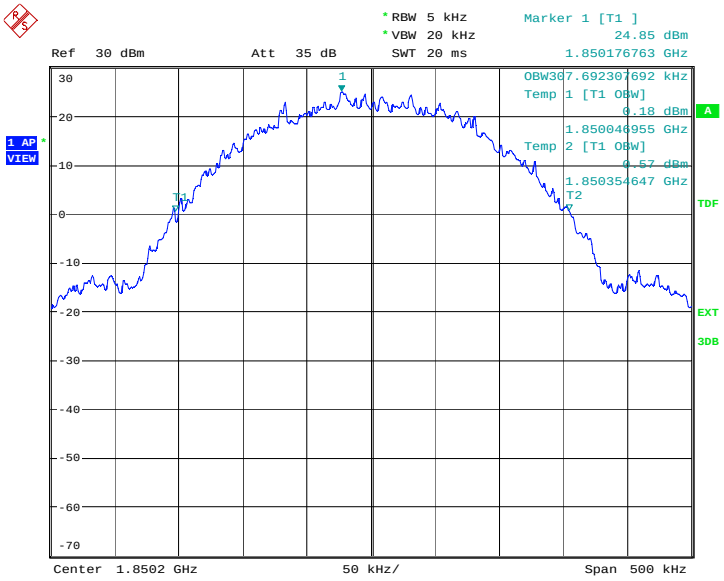
Date: 3.MAR.2014 19:01:37

GPRS 1900(100% BW)

Frequency(MHz)	Emission Bandwidth (100% BW)(kHz)
1850.2	307.692
1880.0	304.487
1909.8	307.692

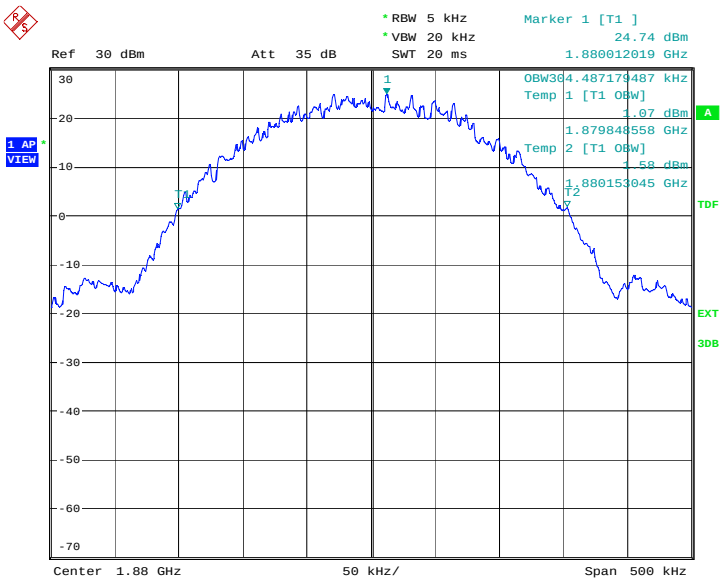
GPRS 1900

Channel 512-Emission Bandwidth (100% BW)



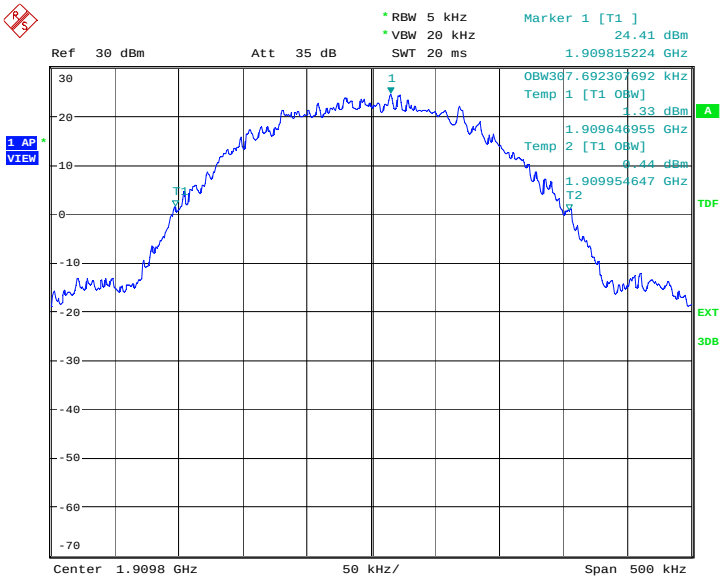
Date: 3.MAR.2014 16:15:55

Channel 661-Emission Bandwidth (100% BW)



Date: 3.MAR.2014 16:16:35

Channel 810-Emission Bandwidth (100% BW)



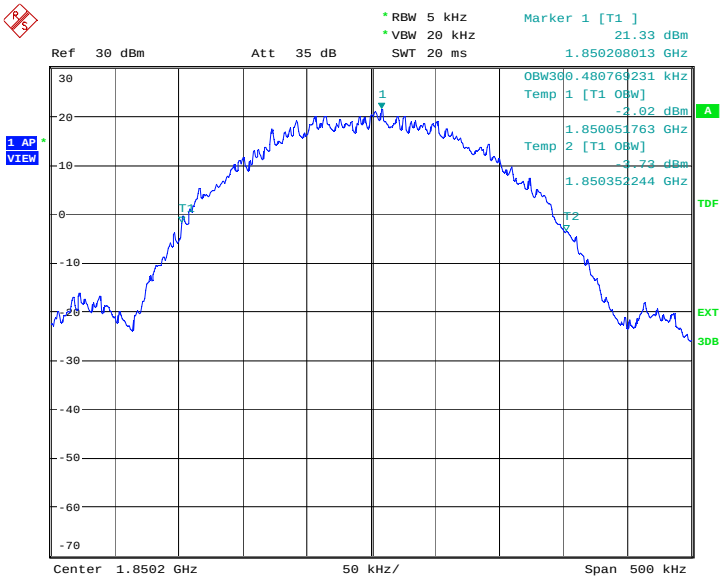
Date: 3.MAR.2014 16:17:31

EGPRS 1900-8PSK (100% BW)

Frequency(MHz)	Emission Bandwidth (100% BW)(kHz)
1850.2	300.481
1880.0	305.288
1909.8	304.487

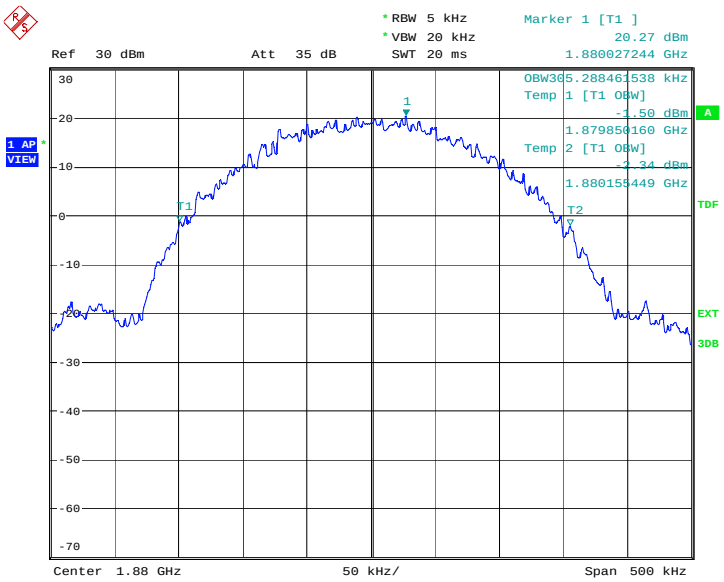
EGPRS 1900-8PSK

Channel 512-Emission Bandwidth (100% BW)



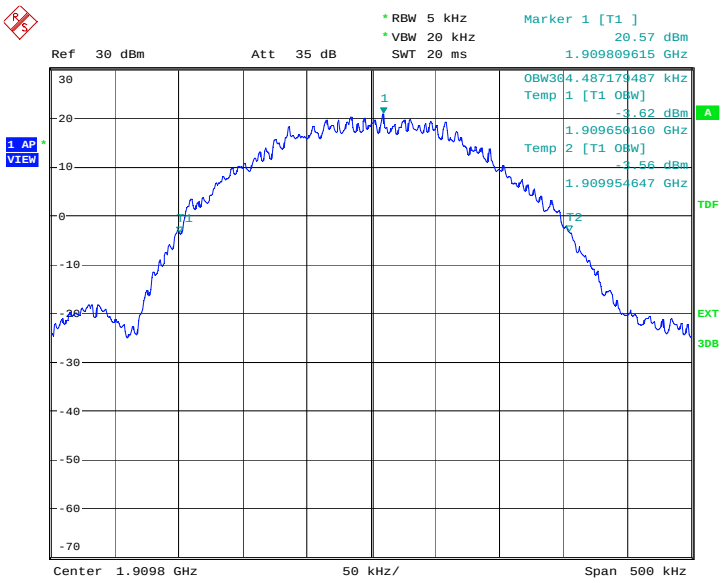
Date: 3.MAR.2014 16:30:20

Channel 661-Emission Bandwidth (100% BW)



Date: 3.MAR.2014 16:31:02

Channel 810-Emission Bandwidth (100% BW)

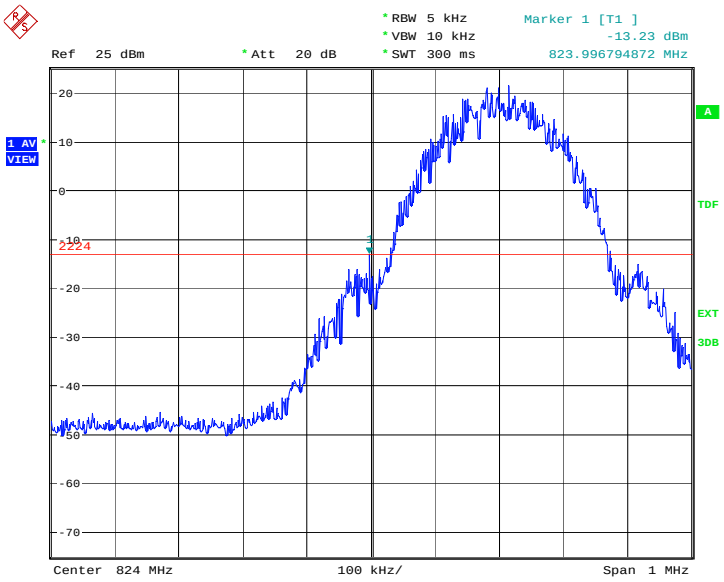


Date: 3.MAR.2014 16:32:21

A.7 BAND EDGE COMPLIANCE

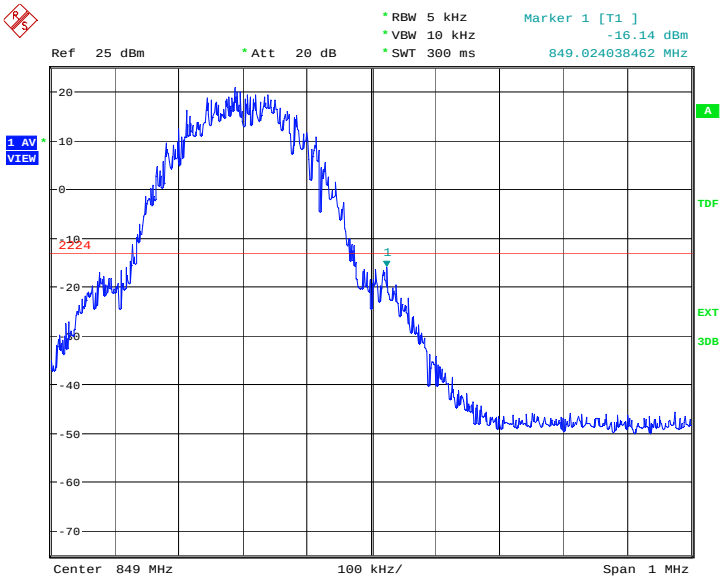
GSM 850

LOW BAND EDGE BLOCK-A (GSM850)-Channel 128



Date: 3.MAR.2014 14:04:23

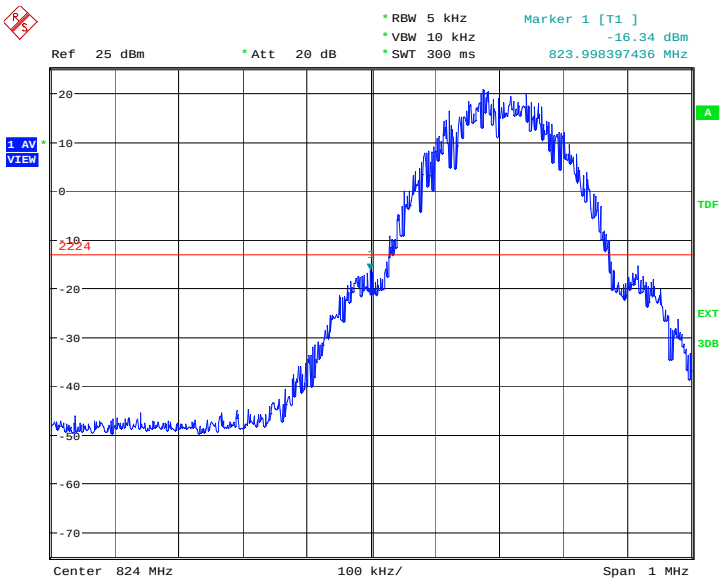
HIGH BAND EDGE BLOCK-C (GSM850) –Channel 251



Date: 3.MAR.2014 14:04:49

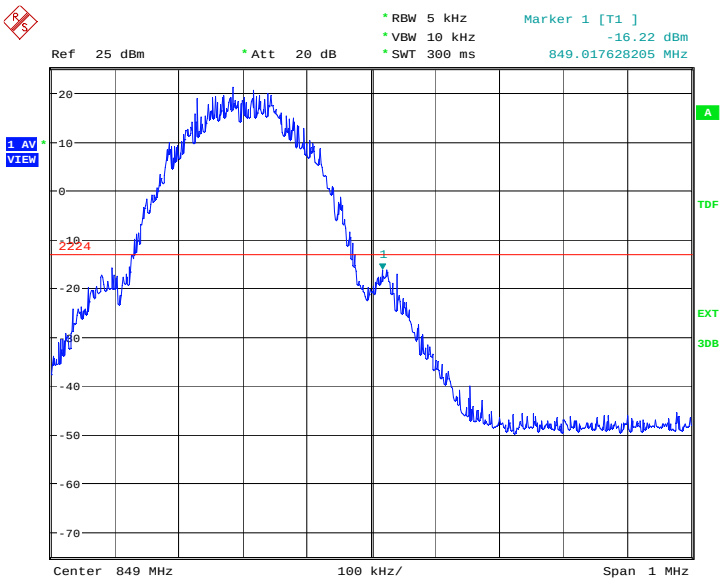
GPRS 850

LOW BAND EDGE BLOCK-A (GSM850)-Channel 128



Date: 3.MAR.2014 16:04:05

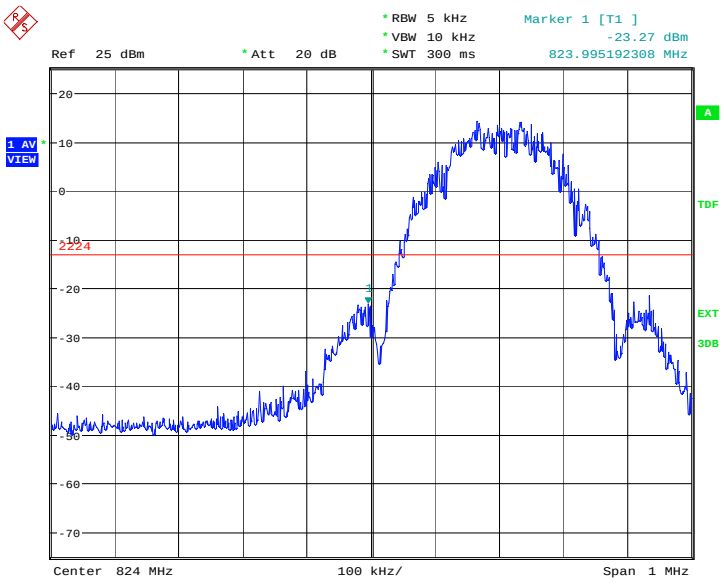
HIGH BAND EDGE BLOCK-C (GSM850) –Channel 251



Date: 3.MAR.2014 16:04:52

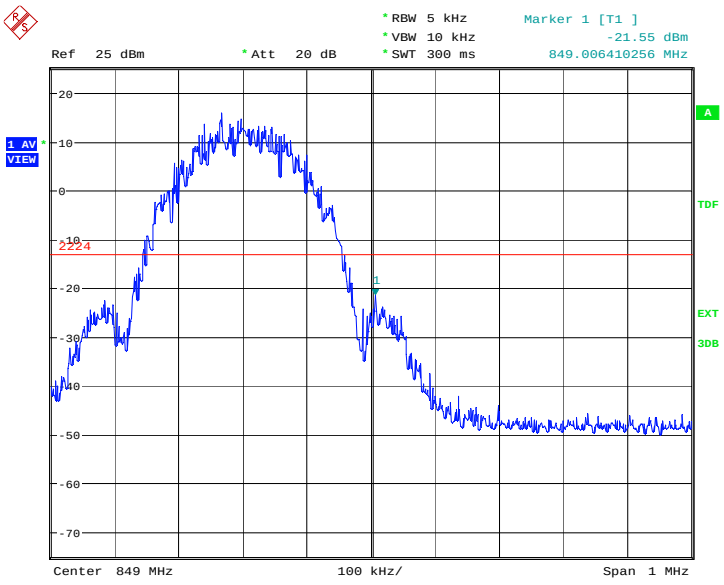
EGPRS 850-8PSK

LOW BAND EDGE BLOCK-A (GSM850)-Channel 128



Date: 3.MAR.2014 16:48:16

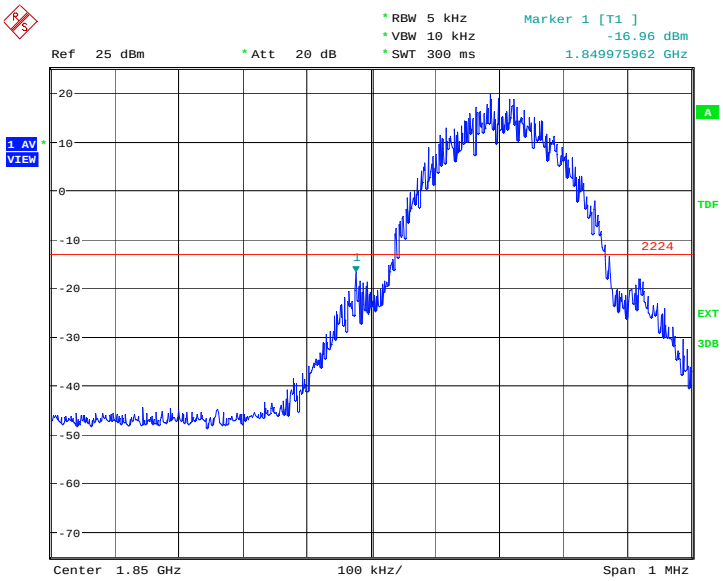
HIGH BAND EDGE BLOCK-C (GSM850) –Channel 251



Date: 3.MAR.2014 16:48:48

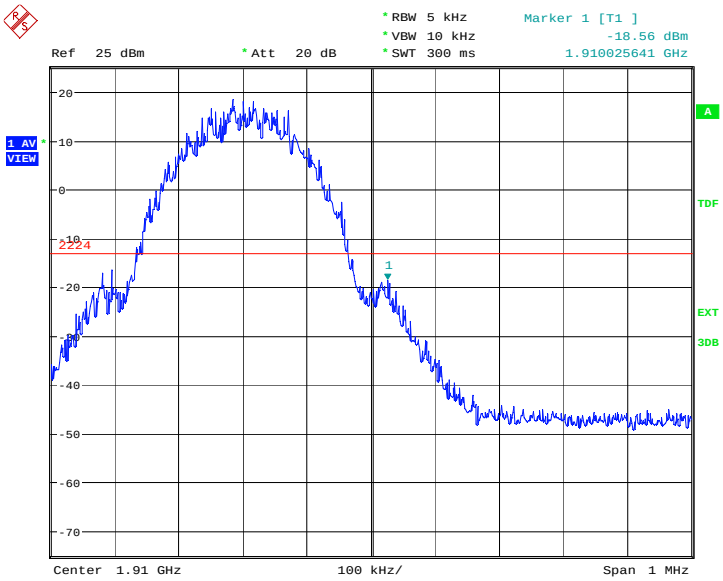
PCS 1900

LOW BAND EDGE BLOCK-A (PCS-1900)-Channel 512



Date: 3.MAR.2014 14:30:02

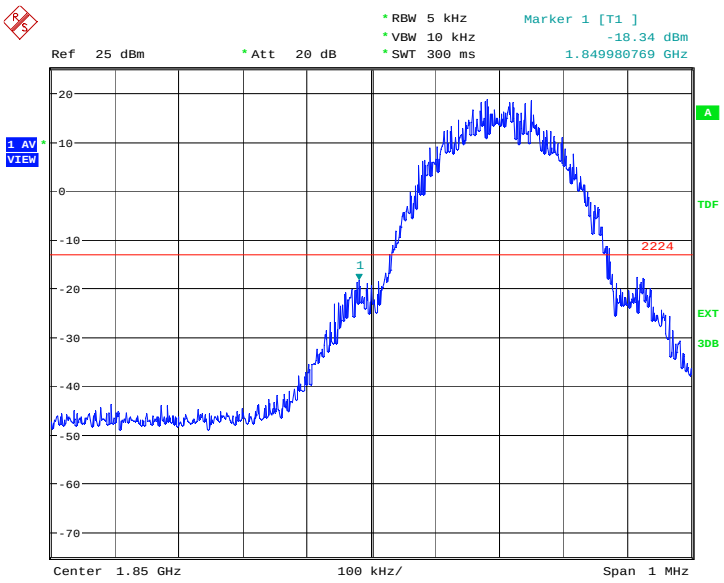
HIGH BAND EDGE BLOCK-C (PCS-1900) –Channel 810



Date: 3.MAR.2014 14:30:37

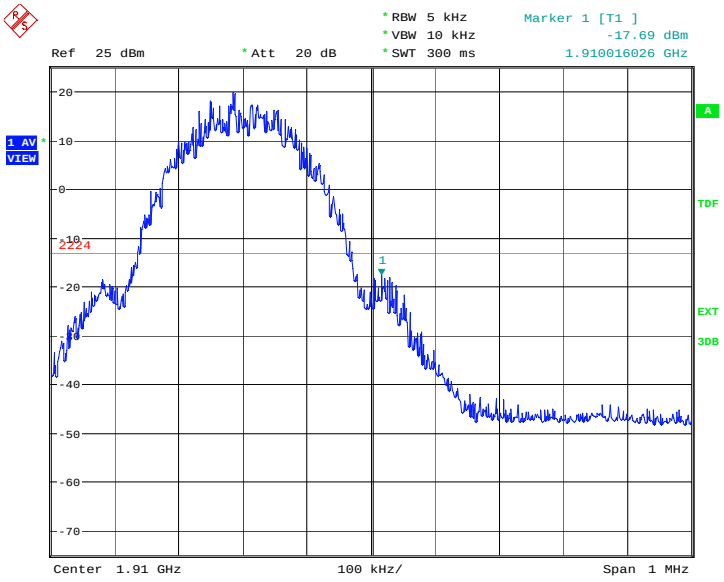
GPRS 1900

LOW BAND EDGE BLOCK-A (PCS-1900)-Channel 512



Date: 3.MAR.2014 16:18:04

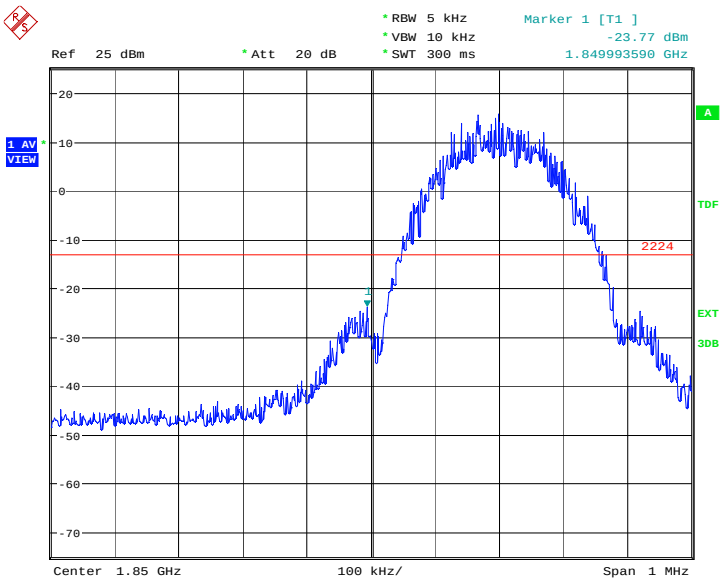
HIGH BAND EDGE BLOCK-C (PCS-1900) –Channel 810



Date: 3.MAR.2014 16:18:39

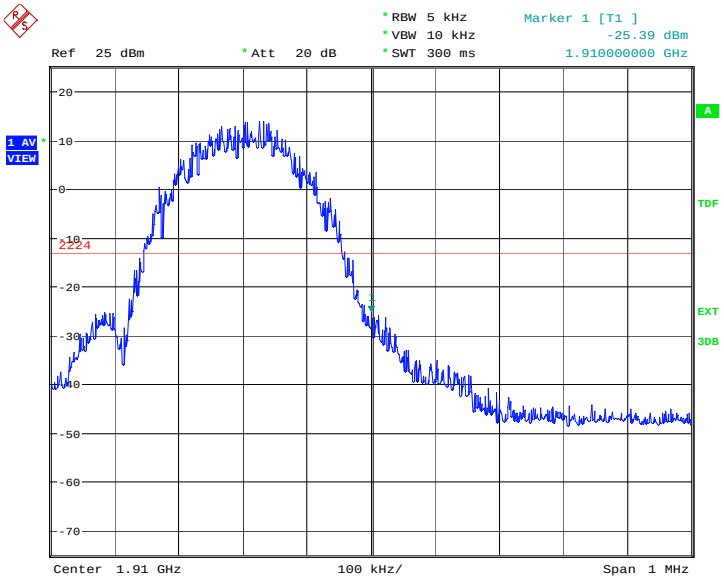
EGPRS 1900-8PSK

LOW BAND EDGE BLOCK-A (PCS-1900)-Channel 512



Date: 3.MAR.2014 16:33:31

HIGH BAND EDGE BLOCK-C (PCS-1900) –Channel 810



Date: 3.MAR.2014 16:33:53

A.8 CONDUCTED SPURIOUS EMISSION

A.8.1 Measurement Method

The following steps outline the procedure used to measure the conducted emissions from the EUT.

1. Determine frequency range for measurements: From CFR 2.1057 the spectrum should be investigated from the lowest radio frequency generated in the equipment up to at least the 10th harmonic of the carrier frequency. For the equipment of PCS1900 band, this equates to a frequency range of 30 MHz to 19.1 GHz, data taken from 30 MHz to 20 GHz. For GSM850, data taken from 30 MHz to 10 GHz.
2. The sweep time is set automatically by instrument itself. That should be the optimal sweep time for the span and the RBW. If the sweep time is too short, that is sweep is too fast, the sweep result is not accurate; If the sweep time is too long, that is sweep is too low, some frequency components may be lost. The instrument will give a optimal sweep time according the selected span and RBW.
3. The procedure to get the conducted spurious emission is as follows:
   The trace mode is set to MaxHold to get the highest signal at each frequency;
   Wait 25 seconds;
   Get the result.
4. Determine EUT transmit frequencies: below outlines the band edge frequencies pertinent to conducted emissions testing.

GSM850 Transmitter

Channel	Frequency (MHz)
128	824.2
190	836.6
251	848.8

PCS1900 Transmitter

Channel	Frequency (MHz)
512	1850.2
661	1880.0
810	1909.8

A. 8.2 Measurement Limit

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

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

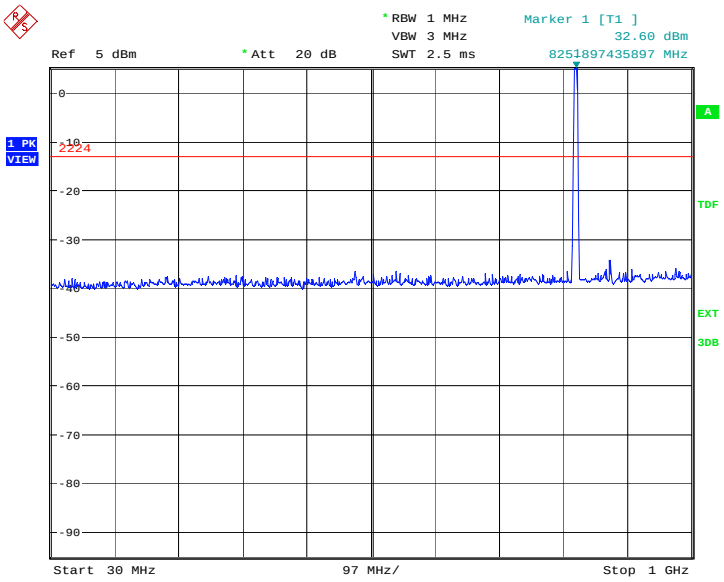
A. 8.3 Measurement result

GSM850

A.8.3.1 Channel 128: 30MHz – 1GHz

Spurious emission limit –13dBm.

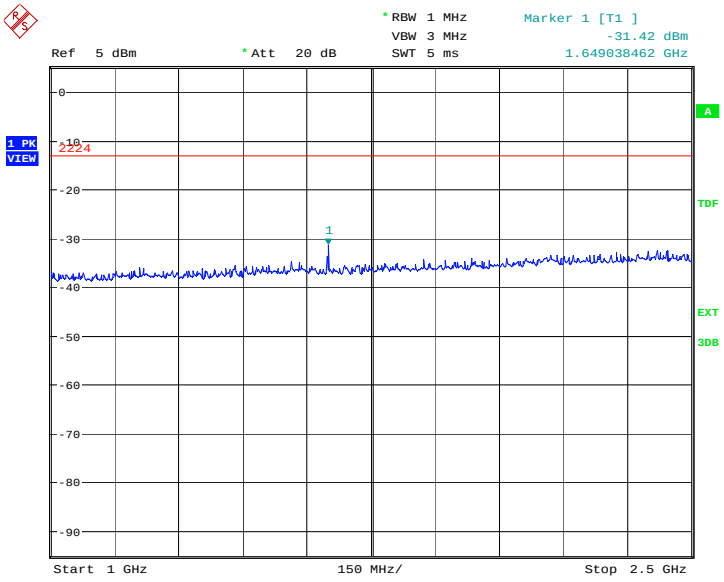
NOTE: peak above the limit line is the carrier frequency.



Date: 3.MAR.2014 14:08:51

A.8.3.2 Channel 128: 1GHz – 2.5GHz

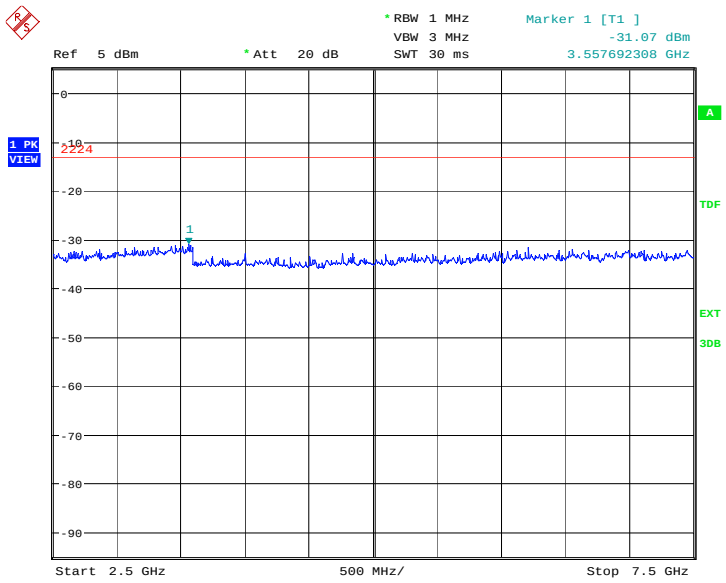
Spurious emission limit –13dBm.



Date: 3.MAR.2014 14:09:19

A.8.3.3 Channel 128: 2.5GHz – 7.5GHz

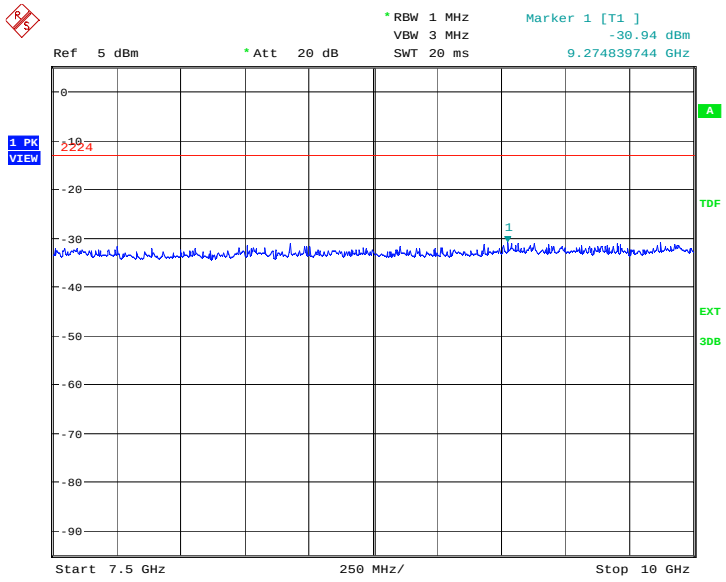
Spurious emission limit –13dBm.



Date: 3.MAR.2014 14:09:47

A.8.3.4 Channel 128: 7.5GHz –10GHz

Spurious emission limit –13dBm.

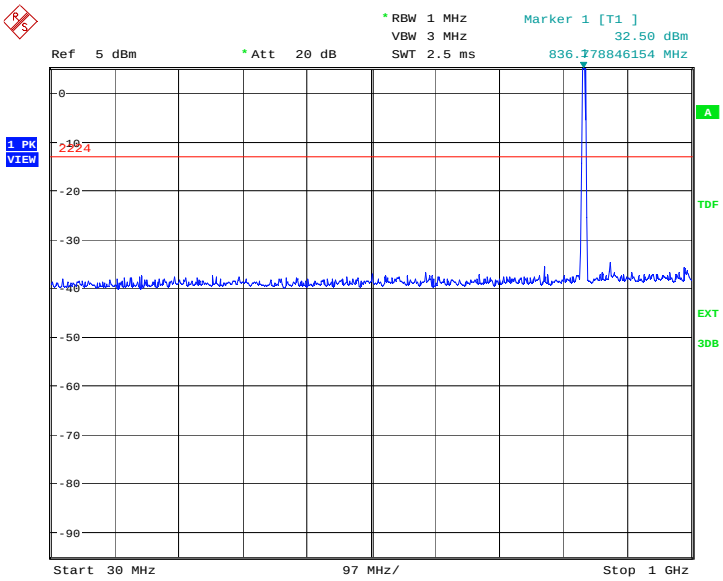


Date: 3.MAR.2014 14:10:15

A.8.3.5 Channel 190: 30MHz – 1GHz

Spurious emission limit –13dBm

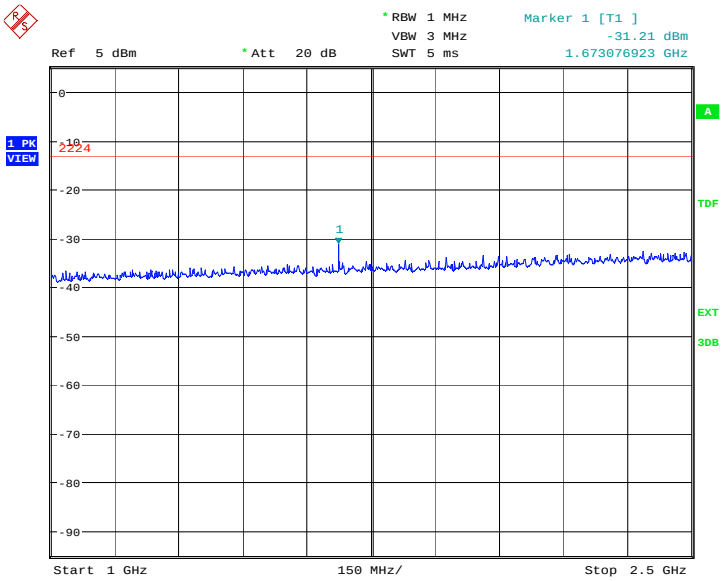
NOTE: peak above the limit line is the carrier frequency.



Date: 3.MAR.2014 14:10:54

A.8.3.6 Channel 190: 1GHz –2.5GHz

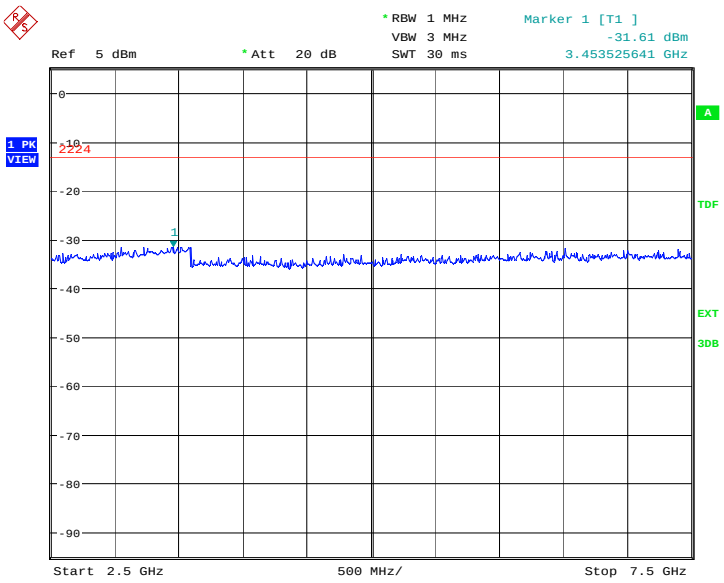
Spurious emission limit –13dBm



Date: 3.MAR.2014 14:11:22

A.8.3.7 Channel 190: 2.5GHz –7.5GHz

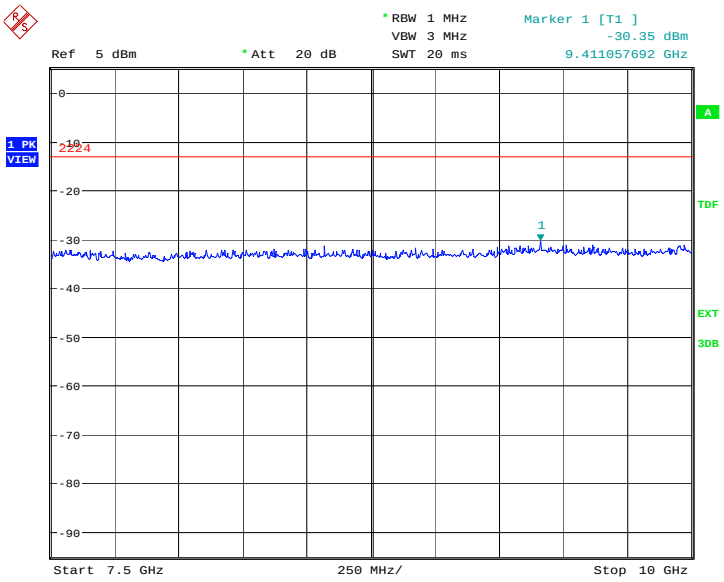
Spurious emission limit –13dBm



Date: 3.MAR.2014 14:11:50

A.8.3.8 Channel 190: 7.5GHz –10GHz

Spurious emission limit –13dBm

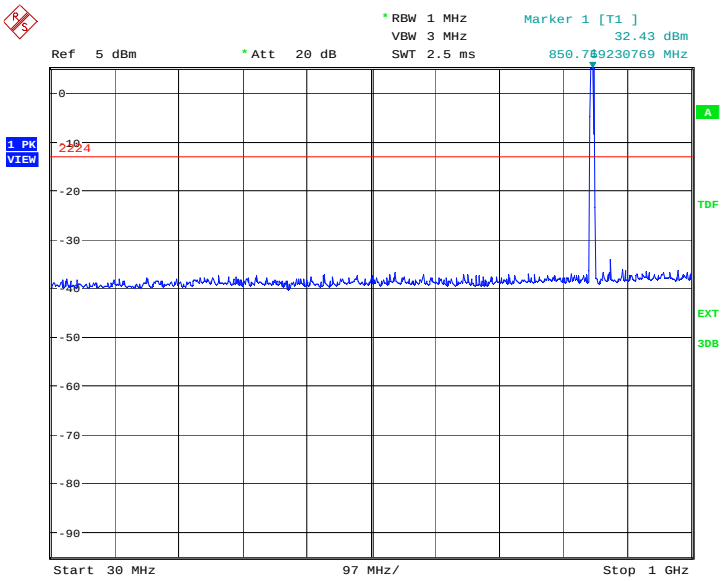


Date: 3.MAR.2014 14:12:18

A.8.3.9 Channel 251: 30MHz – 1GHz

Spurious emission limit –13dBm.

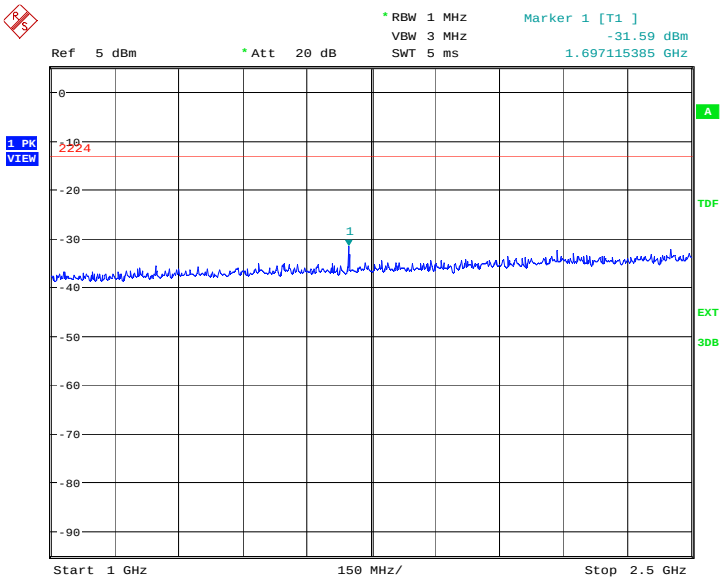
NOTE: peak above the limit line is the carrier frequency.



Date: 3.MAR.2014 14:12:55

A.8.3.10 Channel 251: 1GHz – 2.5GHz

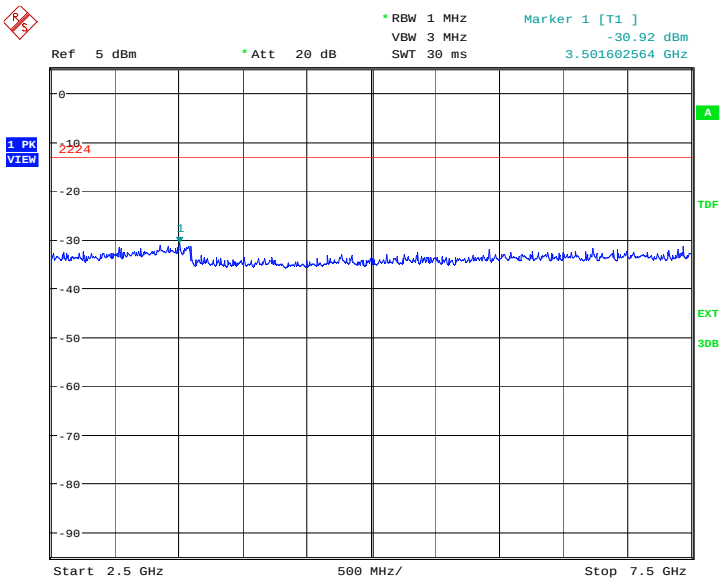
Spurious emission limit –13dBm.



Date: 3.MAR.2014 14:13:23

A.8.3.11 Channel 251:2.5GHz – 7.5GHz

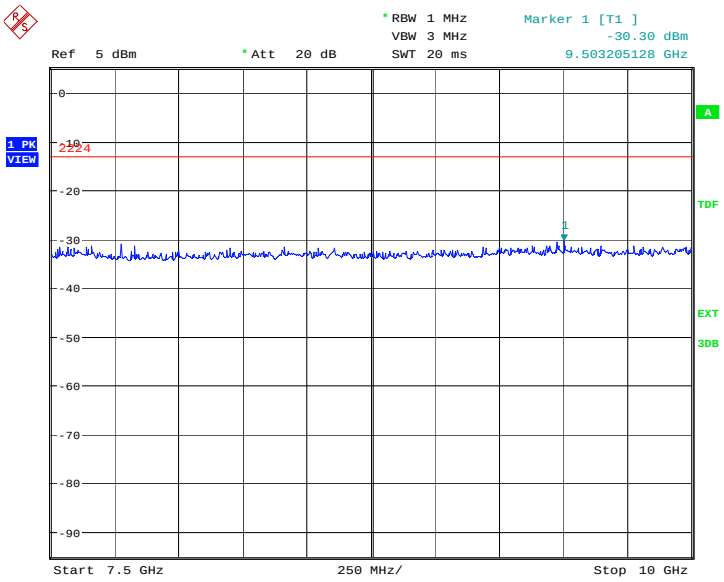
Spurious emission limit –13dBm.



Date: 3.MAR.2014 14:13:52

A.8.3.12 Channel 251: 7.5GHz – 10GHz

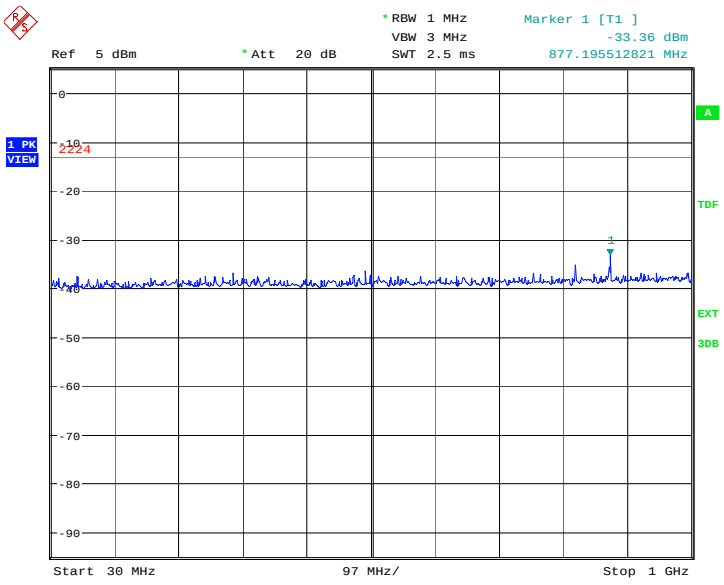
Spurious emission limit –13dBm.



Date: 3.MAR.2014 14:14:20

A.8.3.13 Idle mode: 30MHz – 1GHz

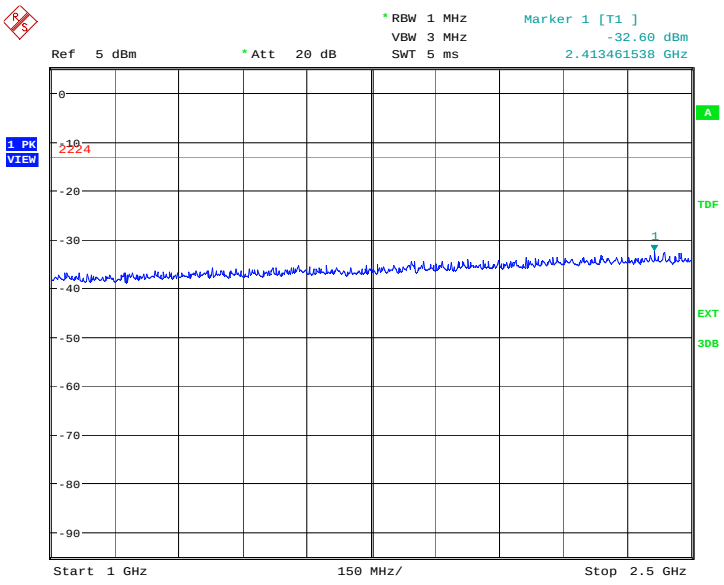
Spurious emission limit –13dBm.



Date: 3.MAR.2014 14:14:58

A.8.3.14 Idle mode: 1GHz – 2.5GHz

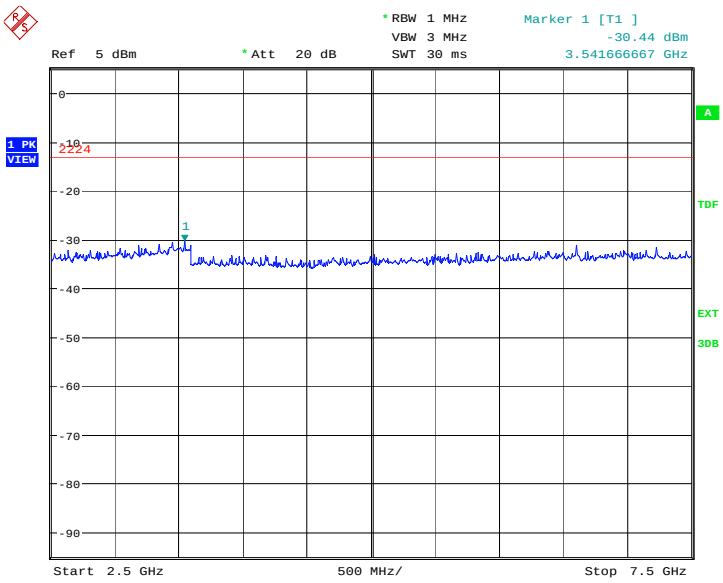
Spurious emission limit –13dBm.



Date: 3.MAR.2014 14:15:27

A.8.3.15 Idle mode: 2.5GHz – 7.5GHz

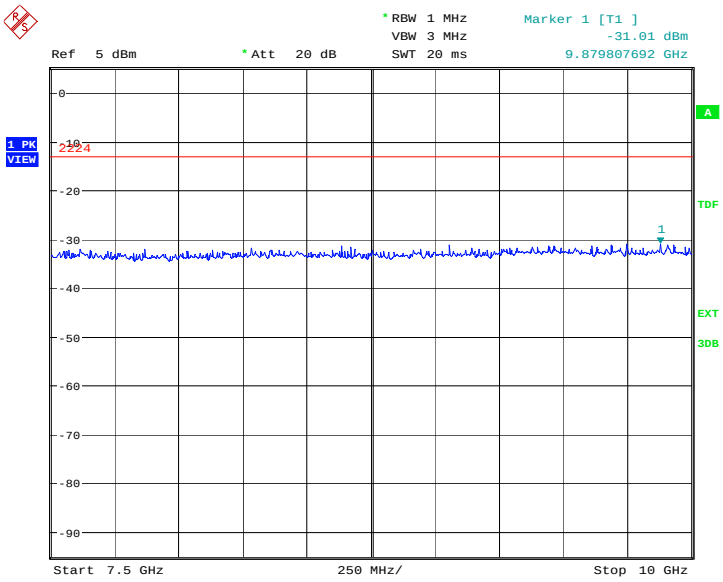
Spurious emission limit –13dBm.



Date: 3.MAR.2014 14:15:55

A.8.3.16 Idle mode: 7.5GHz – 10GHz

Spurious emission limit –13dBm.

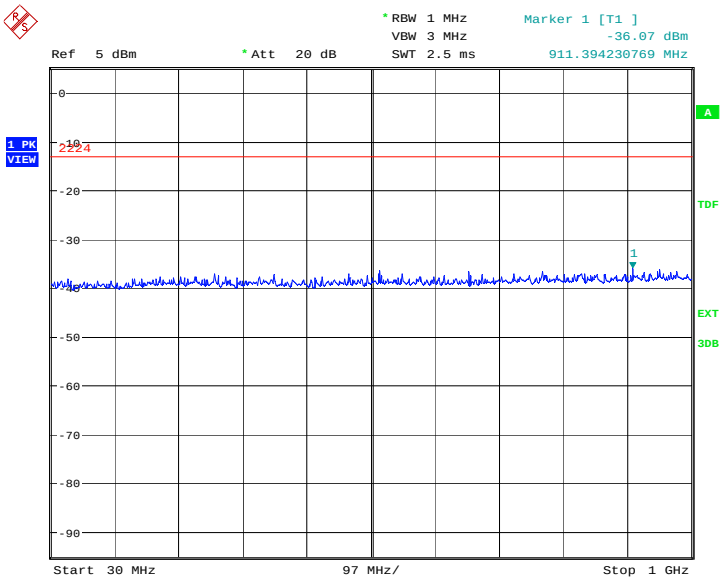


Date: 3.MAR.2014 14:16:23

PCS1900

A.8.3.17 Channel 512: 30MHz – 1GHz

Spurious emission limit –13dBm.

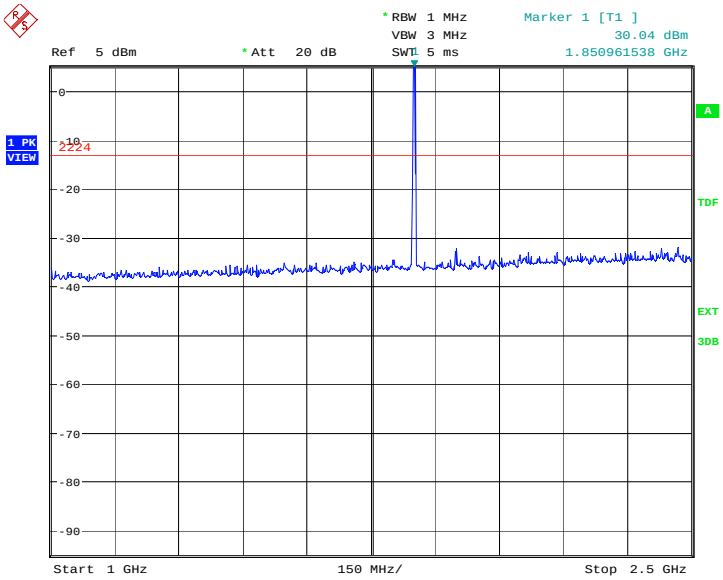


Date: 3.MAR.2014 14:34:18

A.8.3.18 Channel 512: 1GHz – 2.5GHz

Spurious emission limit –13dBm.

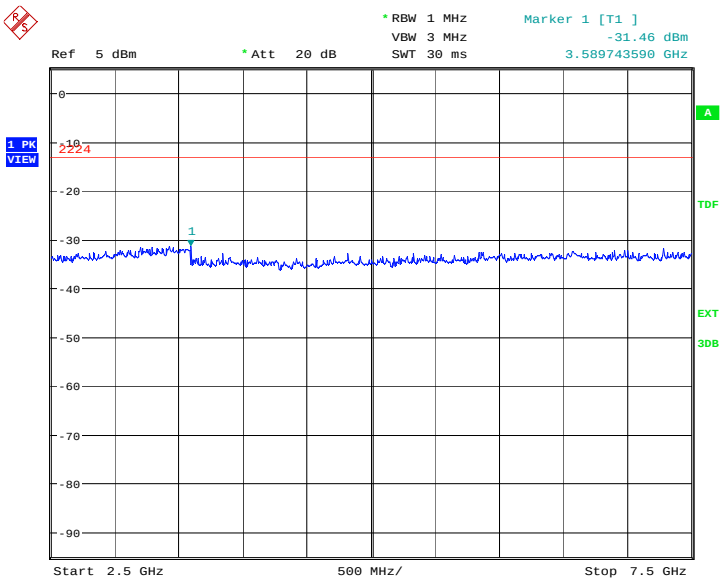
NOTE: peak above the limit line is the carrier frequency.



Date: 3.MAR.2014 14:34:46

A.8.3.19 Channel 512: 2.5GHz – 7.5GHz

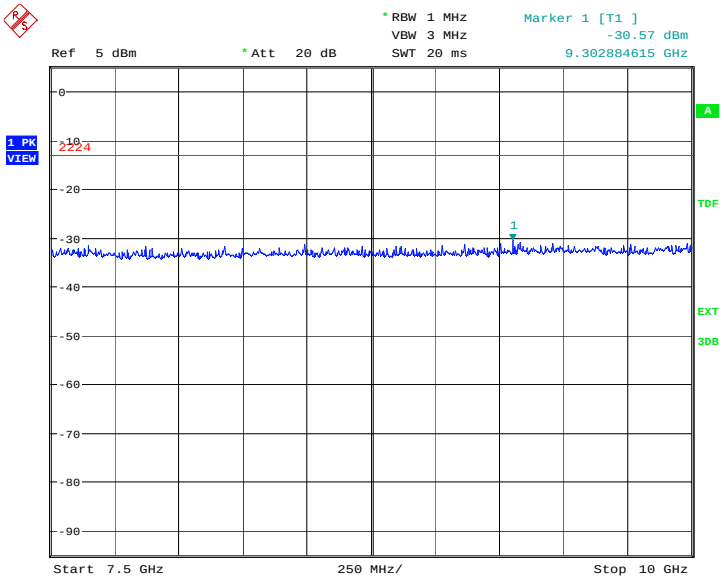
Spurious emission limit –13dBm.



Date: 3.MAR.2014 14:35:14

A.8.3.20 Channel 512: 7.5GHz –10GHz

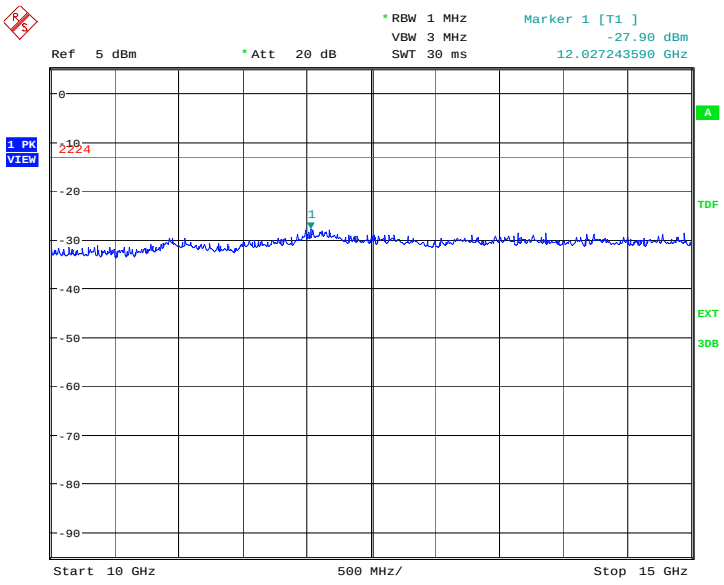
Spurious emission limit –13dBm.



Date: 3.MAR.2014 14:35:42

A.8.3.21 Channel 512: 10GHz –15GHz

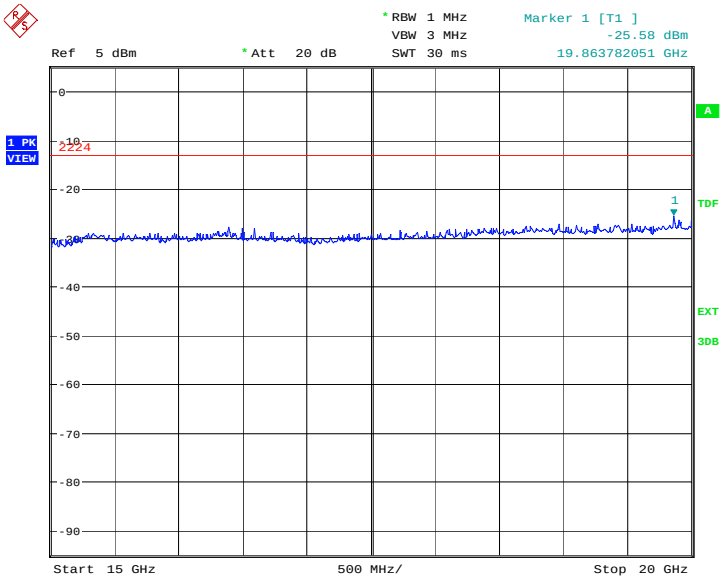
Spurious emission limit –13dBm.



Date: 3.MAR.2014 14:36:11

A.8.3.22 Channel 512: 15GHz –20GHz

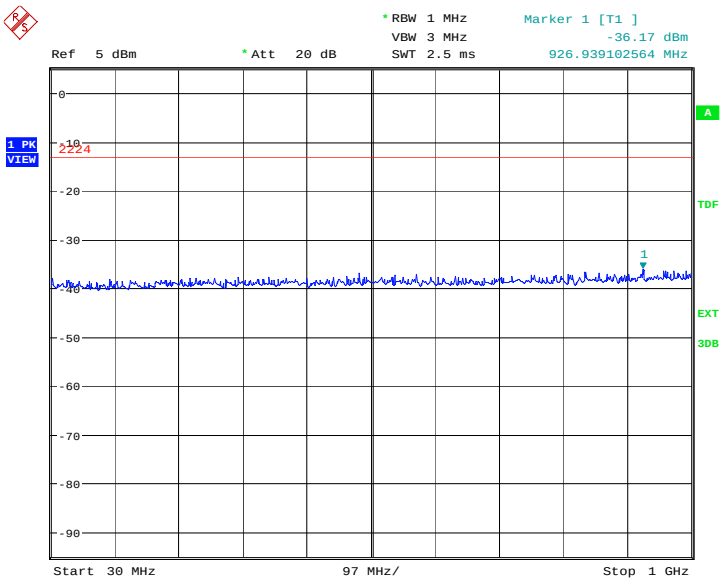
Spurious emission limit –13dBm.



Date: 3.MAR.2014 14:36:39

A.8.3.23 Channel 661: 30MHz – 1GHz

Spurious emission limit –13dBm

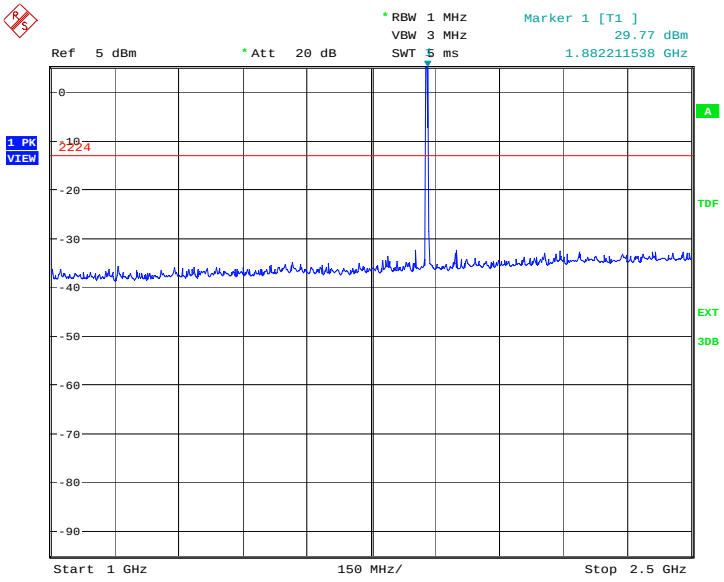


Date: 3.MAR.2014 14:37:37

A.8.3.24 Channel 661: 1GHz –2.5GHz

Spurious emission limit –13dBm

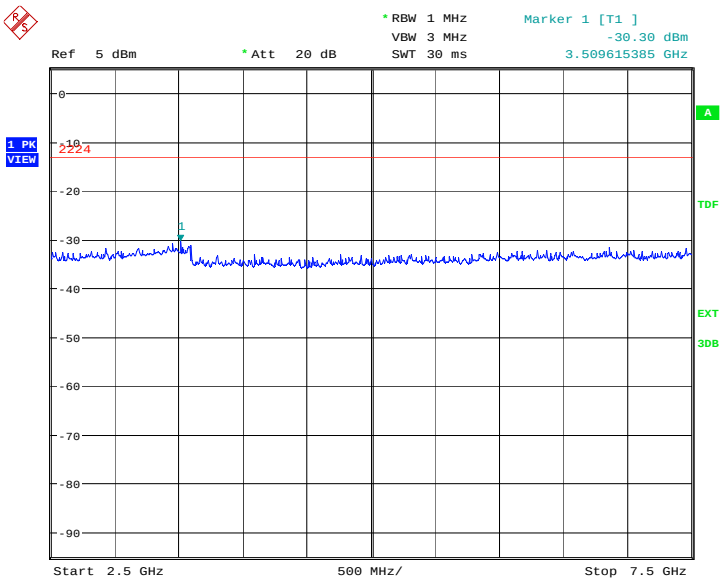
NOTE: peak above the limit line is the carrier frequency.



Date: 3.MAR.2014 14:38:06

A.8.3.25 Channel 661: 2.5GHz –7.5GHz

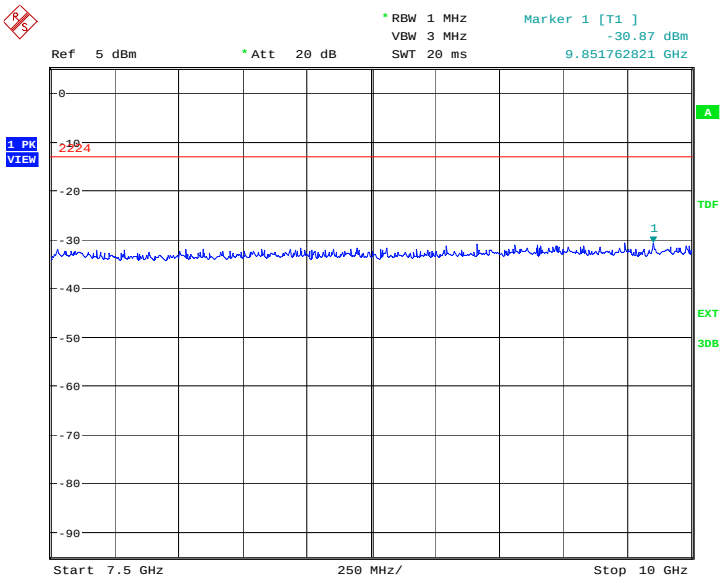
Spurious emission limit –13dBm



Date: 3.MAR.2014 14:38:34

A.8.3.26 Channel 661: 7.5GHz –10GHz

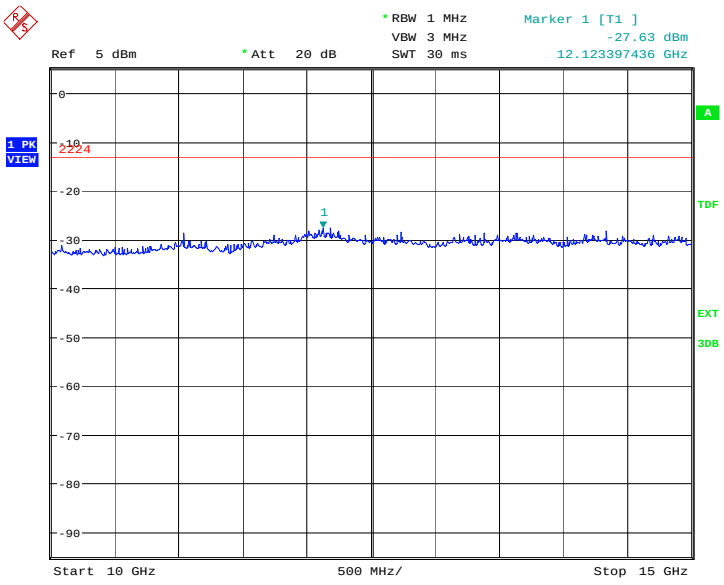
Spurious emission limit –13dBm



Date: 3.MAR.2014 14:39:02

A.8.3.27 Channel 661: 10GHz –15GHz

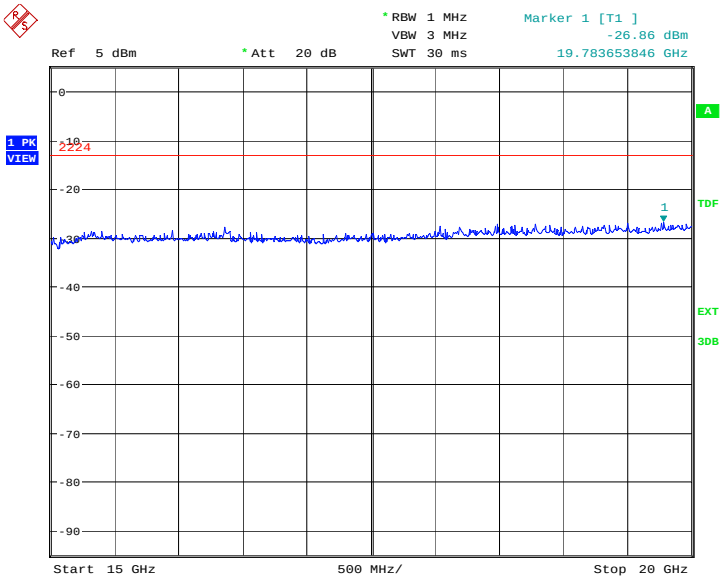
Spurious emission limit –13dBm.



Date: 3.MAR.2014 14:39:30

A.8.3.28 Channel 661: 15GHz –20GHz

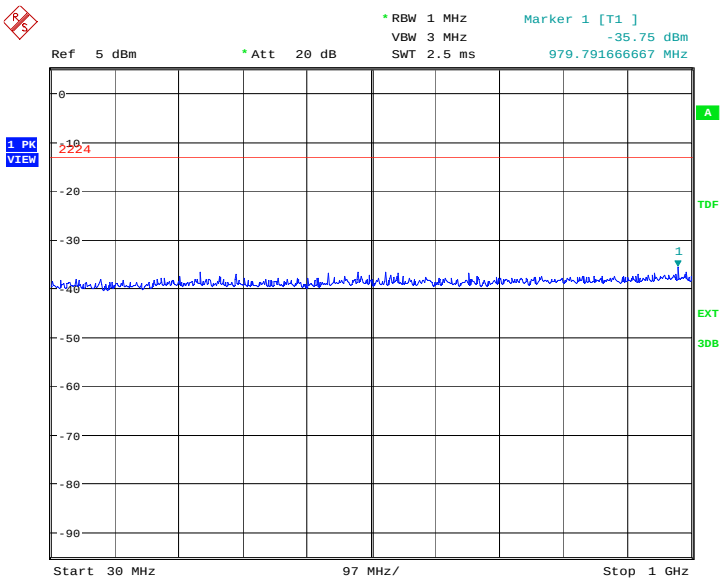
Spurious emission limit –13dBm.



Date: 3.MAR.2014 14:39:58

A.8.3.29 Channel 810: 30MHz – 1GHz

Spurious emission limit –13dBm.

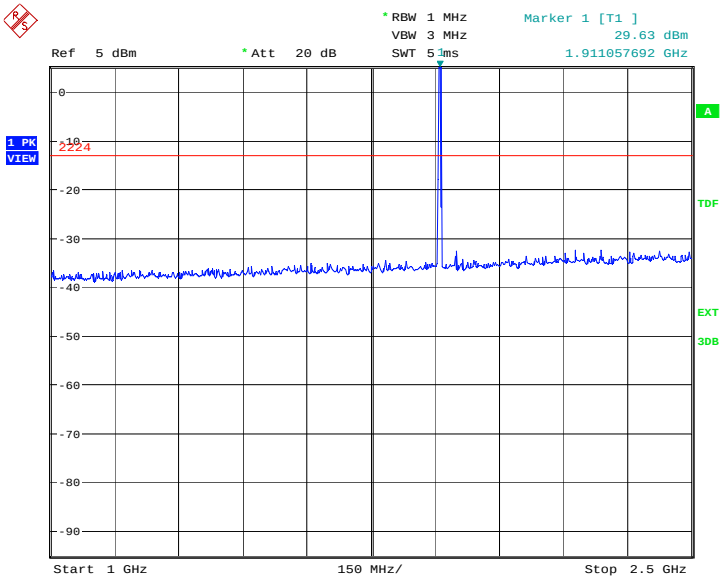


Date: 3.MAR.2014 14:40:44

A.8.3.30 Channel 810: 1GHz – 2.5GHz

Spurious emission limit –13dBm.

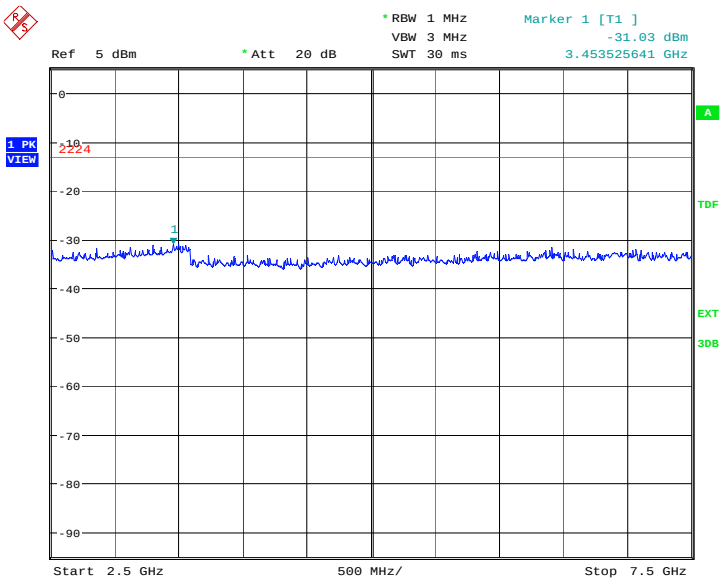
NOTE: peak above the limit line is the carrier frequency.



Date: 3.MAR.2014 14:41:12

A.8.3.31 Channel 810:2.5GHz – 7.5GHz

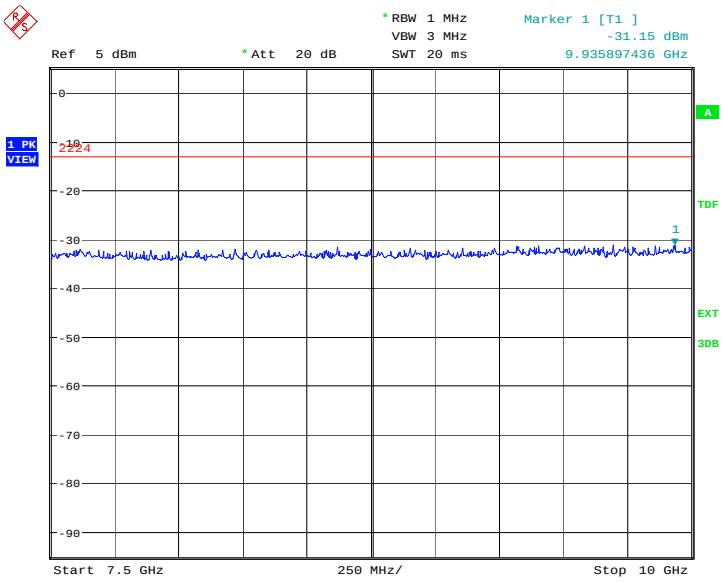
Spurious emission limit –13dBm.



Date: 3.MAR.2014 14:41:40

A.8.3.32 Channel 810: 7.5GHz – 10GHz

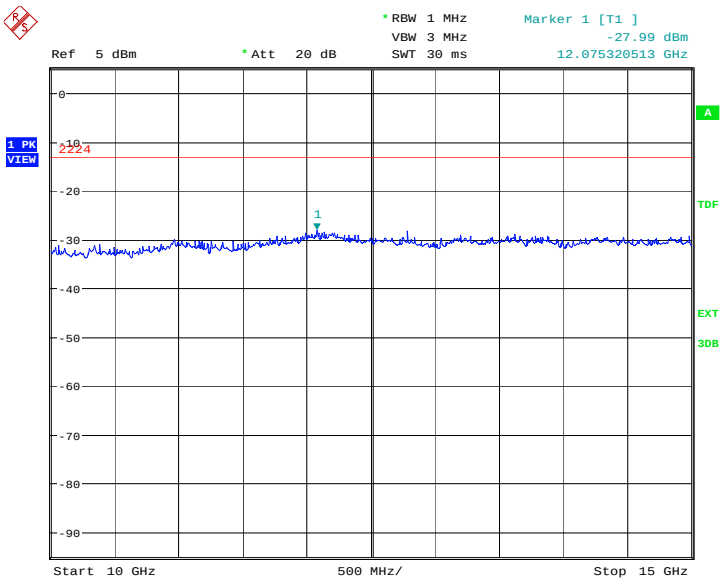
Spurious emission limit –13dBm.



Date: 3.MAR.2014 14:42:08

A.8.3.33 Channel 810: 10GHz –15GHz

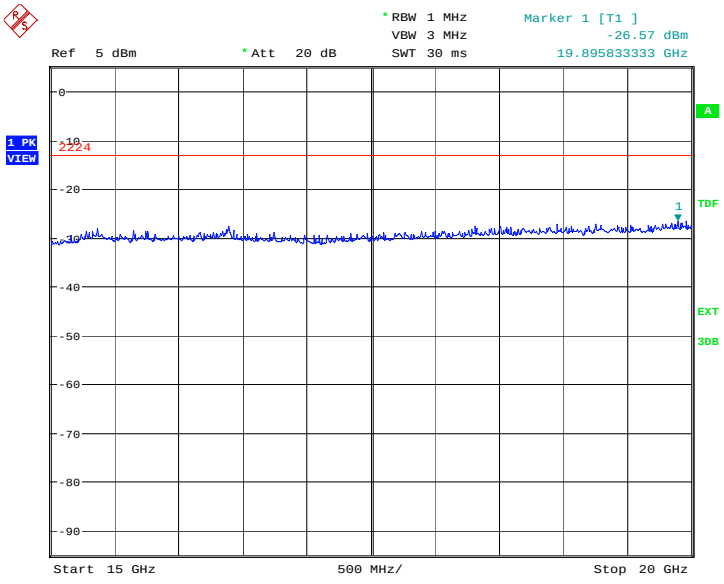
Spurious emission limit –13dBm.



Date: 3.MAR.2014 14:42:36

A.8.3.34 Channel 810: 15GHz –20GHz

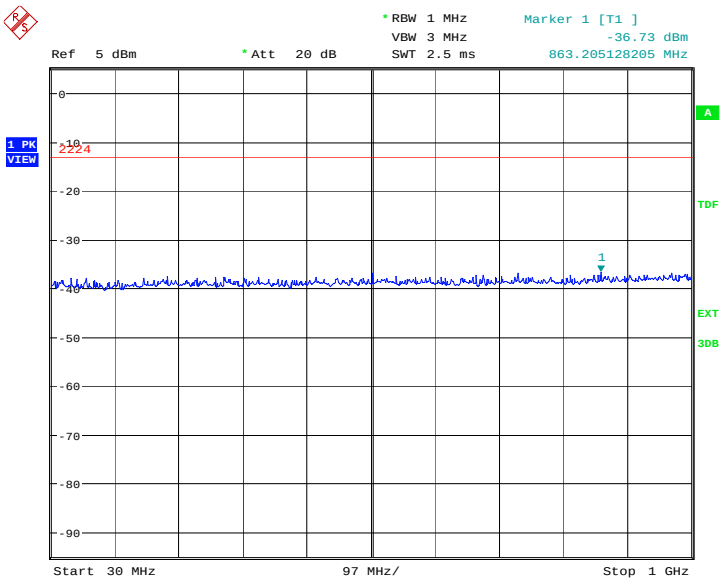
Spurious emission limit –13dBm.



Date: 3.MAR.2014 14:43:05

A.8.3.35 Idle mode: 30MHz – 1GHz

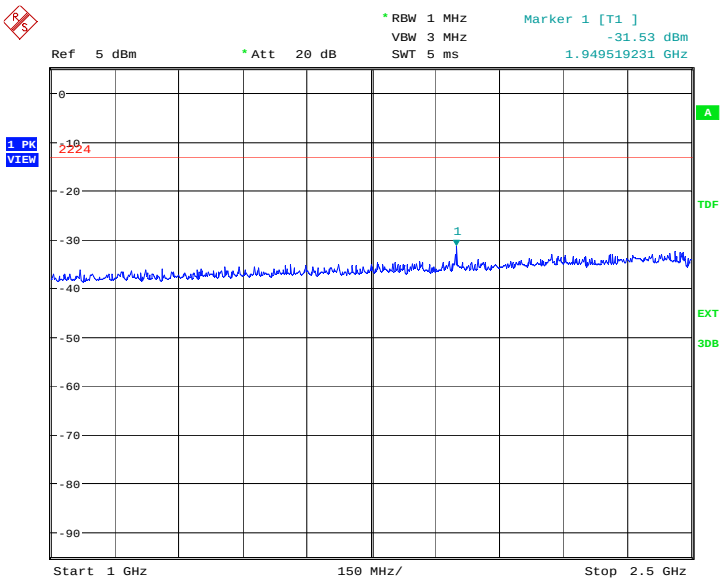
Spurious emission limit –13dBm.



Date: 3.MAR.2014 14:44:39

A.8.3.36 Idle mode: 1GHz – 2.5GHz

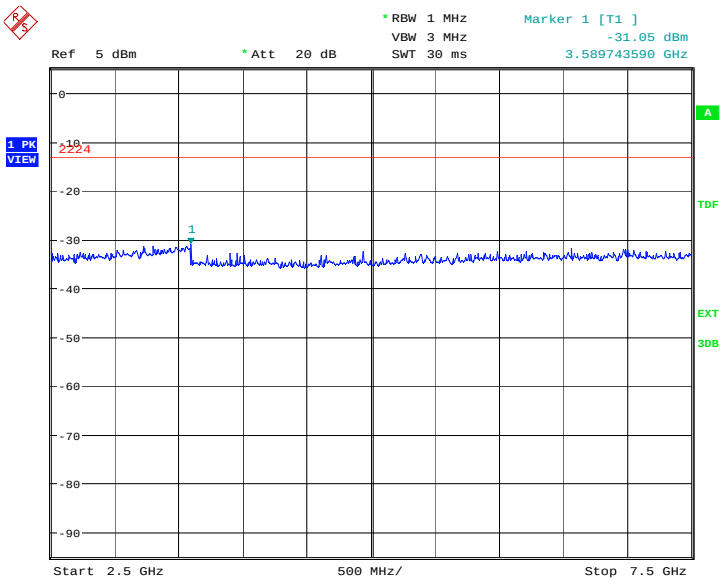
Spurious emission limit –13dBm.



Date: 3.MAR.2014 14:45:08

A.8.3.37 Idle mode: 2.5GHz – 7.5GHz

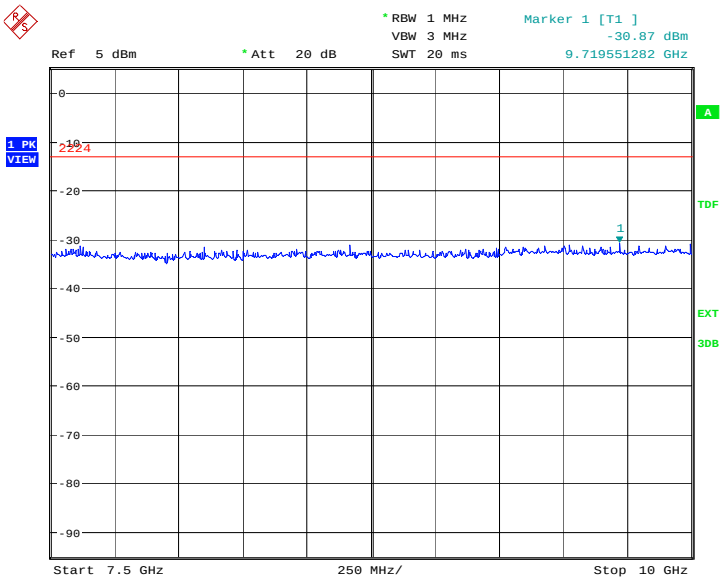
Spurious emission limit –13dBm.



Date: 3.MAR.2014 14:45:36

A.8.3.38 Idle mode: 7.5GHz – 10GHz

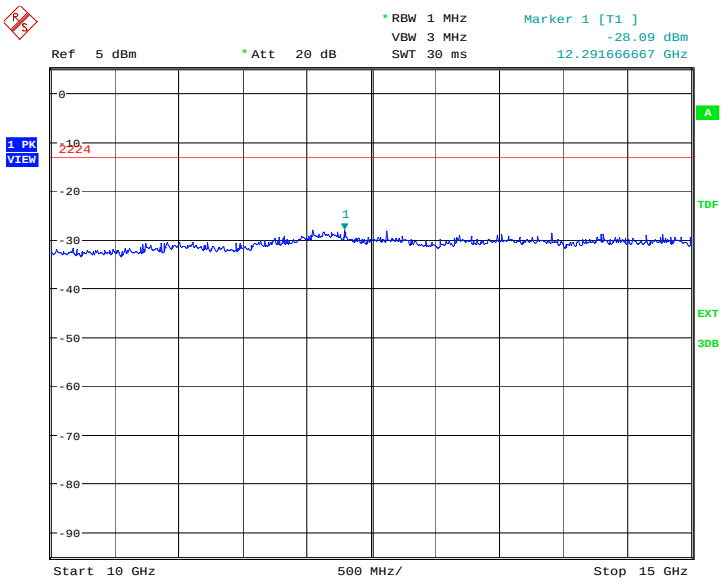
Spurious emission limit –13dBm.



Date: 3.MAR.2014 14:46:04

A.8.3.39 Idle mode: 10GHz –15GHz

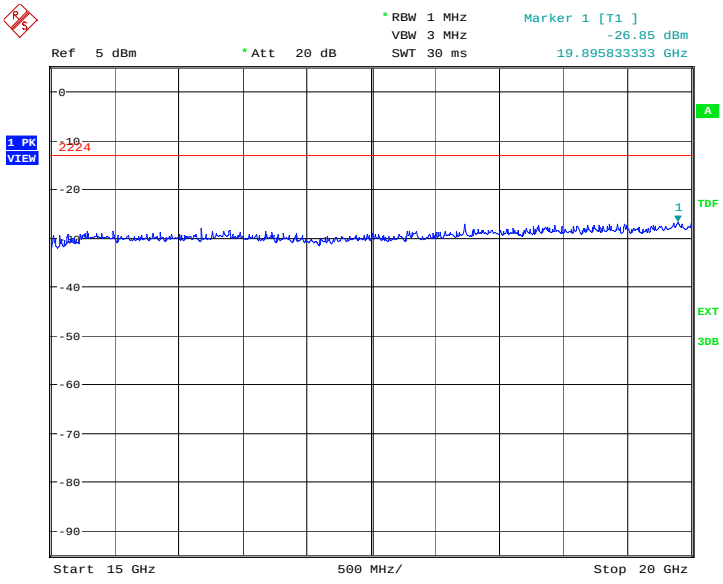
Spurious emission limit –13dBm.



Date: 3.MAR.2014 14:46:32

A.8.3.40 IDLE mode: 15GHz –20GHz

Spurious emission limit –13dBm.



Date: 3.MAR.2014 14:47:00

A.9 PEAK-TO-AVERAGE POWER RATIO

A.9.1 Measurement description

According to RSS 132 and 133, the transmitter's peak-to-average power ratio (PAPR) shall not exceed 13 dB for more than 0.1% of the time using a signal corresponding to the highest PAPR during periods of continuous transmission.

The parameter of spectrum analyzer: RBW = 10MHz, detector = sample, No. of sample = 500,000

A.9.2 Measurement results

Frequency Error vs Temperature

	Frequency(MHz)	PAPR(dB)
GSM850	836.6	7.66
GPRS850	836.6	7.66
EGPRS850	836.6	10.80
PCS1900	1880.0	7.63
GPRS1900	1880.0	7.69
EGPRS1900	1880.0	10.00

A.10 RECEIVER RADIATION EMISSION

A.10.1 Method of Measurement

The measurement procedure in ANSI C64.4-2003 is used. The EUT is placed on a 80cm height non-conductive table locating on the center of turntable. From 30MHz-1GHz, the measurement distance is 10m. For frequency range above 1GHz, the measurement distance is 3m.

The EUT is measured with travel charger and the operating mode is idle without CMU200's signaling.

A.10.2 Method of Measurement

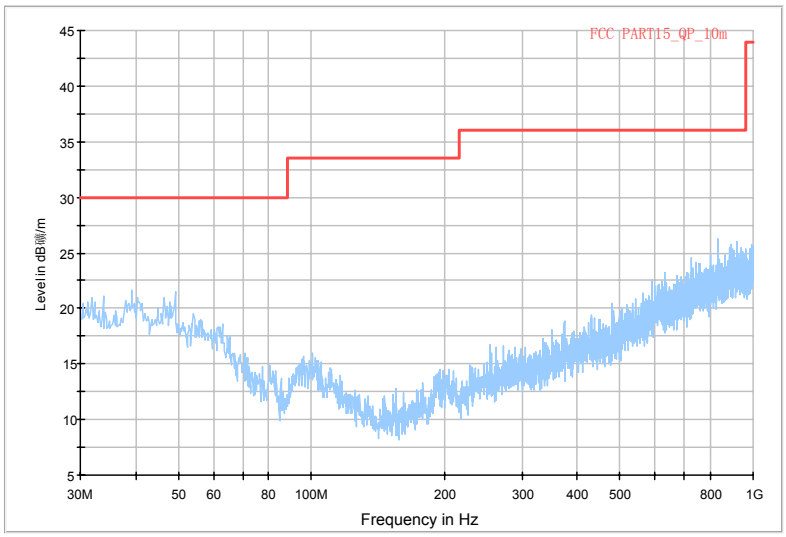
Frequency of Emission (MHz)	Limit (dBμV/m)	Measurement Distance (m)
30-88	30	10
88-216	33.5	10
216-960	36	10
960-1000	44	10
>1000	54	3

A. 10.3 Measurement results

IF bandwidth: 120 kHz

Idle Mode: 30MHz-1GHz

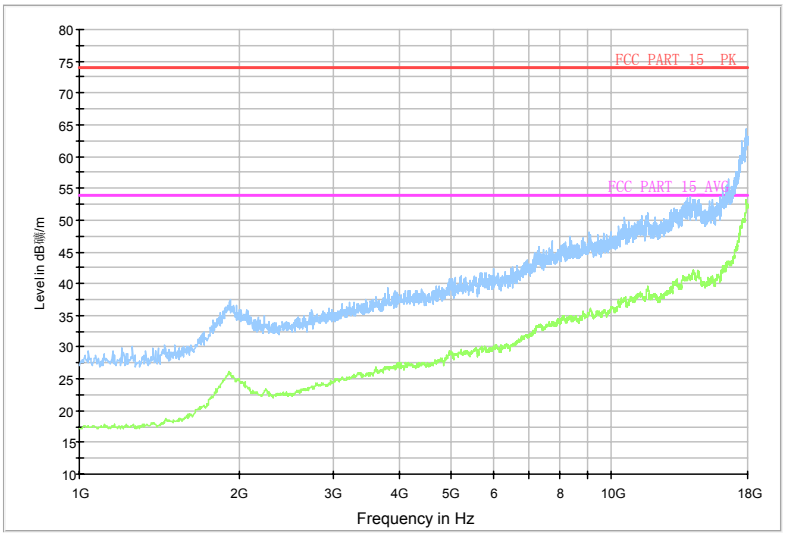
Normal RE_30M-1GHz_10m



RBW / VBW 1 MHz

Idle Mode: 1GHz-18GHz

Normal RE_1G-18GHz_directly



*****END OF REPORT*****