TEST REPORT

No. 2012TAR072

for

TCT Mobile Limited

HSUPA/HSDPA/UMTS dual band / GSM quad bands mobile phone

Model Name: GIN S

Marketing Name：one touch 918S

FCC ID: RAD260

IC：9238A-0008

with

Hardware Version: PIO

Software Version: SW31H_AWS

Issued Date: Mar 20, 2012

Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of TMC Beijing.

Test Laboratory:

DAR accreditation (DIN EN ISO/IEC 17025): No. DGA-PL-114/01-02

FCC 2.948 Listed: No.733176

IC O.A.T.S listed: No.6629A-1

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

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CONTENTS

1. Test Laboratory

1.1. Testing Location

Company Name: TMC Beijing, Telecommunication Metrology Center of MIIT

Address: 3/F Shou Xiang Technology Building, No.51 Xueyuan Road, Hai Dian District, Beijing, P. R. China

Postal Code: 100191

Telephone: 00861062304633

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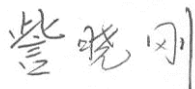
1.2. Testing Environment

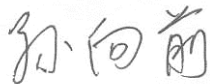Normal Temperature: 15-35℃

Relative Humidity: 20-75%

1.3. Project data

Testing Start Date: Feb 07, 2012

Testing End Date: Mar 20, 2012
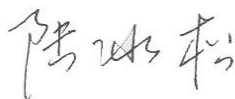
1.4. Signature

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:	TCT Mobile Limited
Address /Post:	5F, E building, No. 232, Liang Jing Road ZhangJiang High-Tech Park, Pudong Area Shanghai, P.R. China. 201203
City:	Shanghai
Country:	China
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2.2. Manufacturer Information

Company Name:	TCT Mobile Limited
Address /Post:	5F, E building, No. 232, Liang Jing Road ZhangJiang High-Tech Park, Pudong Area Shanghai, P.R. China. 201203
City:	Shanghai
Country:	China
Telephone:	0086-21-61460890
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3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

Description	HSUPA/HSDPA/UMTS dual band / GSM quad bands mobile phone
Model Name	GIN S
Marketing Name	one touch 918S
FCC ID	RAD260
IC	9238A-0008
Frequency	GSM850MHz; PCS 1900MHz; WCDMA BAND IV
Antenna	Internal
Output power	30.87 dBm maximum ERP measured for PCS1900
Extreme vol. Limits	3.5VDC to 4.2VDC (nominal: 3.7VDC)
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
N05	013122000000965	PIO	SW31H_AWS
N06	013122000000767	PIO	SW31H_AWS

*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*	Description	SN
AE1	Battery	/
AE2	Battery	/
AE3	Charger	/

AE1

Model	CAB31P0000C1
Manufacturer	BYD
Capacitance	1300mAh
Nominal Voltage	3.7V

AE2

Model	CAB31P0000C2
Manufacturer	BAK
Capacitance	1300mAh
Nominal Voltage	3.7V

AE3
  Model   CBA3002AG0C1
  Manufacturer   BYD
  Length of DC line   120cm

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

3.4. General Description

The Equipment Under Test (EUT) is a model of HSUPA/HSDPA/UMTS dual band / GSM quad bands mobile phone with integrated antenna. Manual and specifications of the EUT were provided to fulfil the test. Samples undergoing test were selected by the Client.

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	V 10.1.06
FCC Part 22	PUBLIC MOBILE SERVICES	V 10.1.06
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 2, September 2005
RSS-133	2 GHz Personal Communications Services	Issue 5, February 2009
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

5. LABORATORY ENVIRONMENT

Semi-anechoic chamber (23 meters×17meters×10meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 ℃, Max. = 30 ℃
Relative humidity	Min. = 30 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 10 kΩ
Ground system resistance	< 0.5 Ω
Normalised site attenuation (NSA)	< ±3.2 dB, 10 m distance, from 30 to 1000 MHz
Uniformity of field strength	Between 0 and 6 dB, from 80 to 2000 MHz

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

Temperature	Min. = 15 ℃, Max. = 35 ℃
Relative humidity	Min. =30 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 10 kΩ
Ground system resistance	< 0.5 Ω

Conducted chamber did not exceed following limits along the EMC testing:

Temperature	Min. = 15 ℃, Max. = 30 ℃
Relative humidity	Min. = 30 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 10 kΩ
Ground system resistance	< 0.5 Ω

Fully-anechoic chamber (6.8 meters×3.08 meters×3.53 meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 ℃, Max. = 30 ℃
Relative humidity	Min. = 30 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 10 kΩ
Ground system resistance	< 0.5 Ω
Uniformity of field strength	Between 0 and 6 dB, from 80 to 2000 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			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

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			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

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.	NAME	TYPE	SERIES NUMBER	PRODUCER	CAL DUE DATE
1	Test Receiver	ESCI	100766	R&S	2012-06-06
2	Test Receiver	ESI40	831564/002	R&S	2012-07-12
3	BiLog Antenna	VULB9163	9163-175	Schwarzbeck	2012-07-05
4	BiLog Antenna	VULB9163	9163-302	Schwarzbeck	2012-07-10
5	Signal Generator	SMB100A	102063	R&S	2012-07-05
7	LISN	ESH2-Z5	829991/012	R&S	2012-07-20
8	Spectrum Analyzer	FSU26	200030	R&S	2012-03-18
9	Spectrum Analyzer	FSU46	100054	R&S	2012-09-14
10	Universal Radio Communication Tester	CMU200	100680	R&S	2012-02-23
11	Universal Radio Communication Tester	CMU200	109914	R&S	2012-07-21
12	Dual-Ridge Waveguide Horn Antenna	3117	00119024	ETS	2012-08-31
13	Dual-Ridge Waveguide Horn Antenna	3117	00119021	ETS	2013-07-09
14	Dual-Ridge Waveguide Horn Antenna	3116	2663	EMCO	2012-07-01
15	Dual-Ridge Waveguide Horn Antenna	3116	2661	EMCO	2012-07-01
16	Climatic chamber	PL-2G	343074	ESPEC	2012-02-15

ANNEX A: MEASUREMENT RESULTS

A.1　OUTPUT POWER　　(§22.913(a)/§24.232(b))

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 peak 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

Limit

	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	Peak output power(dBm)
824.2	5	32.34
836.6	5	32.37
848.8	5	32.36

GPRS（GMSK，1Slot）

Frequency(MHz)	Power Step	Peak output power(dBm)
824.2	3	32.38
836.6	3	32.39
848.8	3	32.33

EGPRS（GMSK，1Slot）

Frequency(MHz)	Power Step	Peak output power(dBm)
824.2	6	26.54
836.6	6	26.52
848.8	6	26.53

PCS1900

Limit

	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	Peak output power(dBm)
1850.2	0	28.79
1880.0	0	28.88
1909.8	0	28.90

GPRS（GMSK，1Slot）

Frequency(MHz)	Power Step	Peak output power(dBm)
1850.2	3	28.84
1880.0	3	28.93
1909.8	3	28.96

EGPRS（GMSK，1Slot）

Frequency(MHz)	Power Step	Peak output power(dBm)
1850.2	5	25.41
1880.0	5	25.55
1909.8	5	25.62

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(b) 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 (dBm)	Peak ERP(dBm)	Polarization
824.2	-17.33	2.26	-53.00	0.84	2.15	**30.42**	V
836.6	-17.78	2.26	-53.00	0.90	2.15	29.91	V
848.8	-17.78	2.28	-53.00	0.95	2.15	29.84	H

GPRS

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)	P_{Ag}(dB)	G_a Antenna Gain(dB)	Correction (dBm)	Peak ERP(dBm)	Polarization
824.2	-23.52	2.26	-53.00	0.84	2.15	24.23	H
836.6	-23.18	2.26	-53.00	0.90	2.15	**24.51**	H
848.8	-23.73	2.28	-53.00	0.95	2.15	23.89	H

EGPRS

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)	P_{Ag}(dB)	G_a Antenna Gain(dB)	Correction (dBm)	Peak ERP(dBm)	Polarization
824.2	-23.48	2.26	-53.00	0.84	2.15	**24.27**	V
836.6	-23.62	2.26	-53.00	0.90	2.15	24.07	H
848.8	-23.91	2.28	-53.00	0.95	2.15	23.71	H

Frequency**:** 824.2MHz

Peak ERP(dBm)= P_{Mea}(-17.33dBm)- P_{cl}(2.26dB) - P_{Ag}(-53.00dB) - G_a (0.84dB)-2.15dBm
            =30.42dBm

ANALYZER SETTINGS: RBW = VBW = 3MHz

PCS1900-EIRP   24.232(b)

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)	Peak EIRP(dBm)	Polarization
1850.20	-17.74	5.95	-50.00	-4.56	**30.87**	H
1880.00	-17.90	7.05	-50.00	-4.43	29.48	H
1909.80	-15.71	9.12	-50.00	-4.30	29.47	H

GPRS

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)	P_{Ag}(dB)	G_a Antenna Gain(dB)	Peak EIRP(dBm)	Polarization
1850.20	-20.72	5.95	-50.00	-4.56	**27.89**	H
1880.00	-20.25	7.05	-50.00	-4.43	27.13	H
1909.80	-17.84	9.12	-50.00	-4.30	27.34	V

EGPRS

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)	P_{Ag}(dB)	G_a Antenna Gain(dB)	Peak EIRP(dBm)	Polarization
1850.20	-21.89	5.95	-50.00	-4.56	**26.72**	H
1880.00	-20.97	7.05	-50.00	-4.43	26.41	H
1909.80	-18.78	9.12	-50.00	-4.30	26.40	H

Frequency**:** 1850.2MHz

Peak EIRP(dBm)= P_{Mea}(-17.74dBm) - P_{cl}(5.95dB) - P_{Ag}(-50.00dB) - G_a (-4.56dB) =30.87dBm

ANALYZER SETTINGS: RBW = VBW = 3MHz

A.2   EMISSION LIMT   (§2.1051/§22.917§24.238)

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 PCS1900 (1850.2 MHz, 1880 MHz and 1909.8 MHz) and GSM850 (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 and 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	30MHz-10GHz	Pass
	High	30MHz-10GHz	Pass
GSM 1900MHz	Low	30MHz-20GHz	Pass
	Middle	30MHz-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 (dBm)	Peak ERP(dBm)	Limit (dBm)	Polarization
1648.33	-47.04	3.56	-5.45	2.15	-47.30	-13.00	V
3296.96	-39.65	4.93	-7.41	2.15	-39.32	-13.00	V
4121.02	-44.61	6.00	-8.57	2.15	-44.19	-13.00	V
4945.04	-50.04	7.17	-9.60	2.15	-49.76	-13.00	H
5769.23	-52.80	11.00	-10.11	2.15	-55.84	-13.00	V
6831.77	-67.28	7.69	-10.93	2.15	-66.19	-13.00	H

GSM Mode Channel 190/836.6MHz

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Correction (dBm)	Peak ERP(dBm)	Limit (dBm)	Polarization
1673.36	-48.73	3.47	-5.34	2.15	-49.01	-13.00	V
3346.54	-39.66	5.53	-7.53	2.15	-39.81	-13.00	V
4183.00	-43.24	6.41	-8.61	2.15	-43.19	-13.00	H
5019.95	-45.47	6.77	-9.71	2.15	-44.68	-13.00	H
5856.66	-53.69	12.02	-10.14	2.15	-57.72	-13.00	V
6692.89	-55.62	7.55	-10.79	2.15	-54.53	-13.00	H

GSM Mode Channel 251/848.8MHz

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Correction (dBm)	Peak ERP(dBm)	Limit (dBm)	Polarization
1697.78	-47.08	3.62	-5.23	2.15	-47.62	-13.00	V
3395.20	-40.95	5.05	-7.65	2.15	-40.50	-13.00	V
4244.12	-44.68	6.02	-8.65	2.15	-44.20	-13.00	V
5092.87	-43.34	7.53	-9.76	2.15	-43.26	-13.00	V
5942.20	-54.91	13.51	-10.18	2.15	-60.39	-13.00	H
6790.61	-51.44	7.52	-10.89	2.15	-50.22	-13.00	H

GSM Mode Channel 512/1850.2MHz

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak EIRP(dBm)	Limit (dBm)	Polarization
3700.48	-45.13	5.31	-8.14	-42.30	-13.00	V
7400.87	-48.14	9.07	-11.34	-45.87	-13.00	V
9251.32	-44.91	7.91	-12.60	-40.22	-13.00	V
10322.38	-64.89	8.63	-12.46	-61.06	-13.00	H
12950.80	-44.64	9.95	-13.24	-41.35	-13.00	V
14801.42	-51.53	11.61	-13.54	-49.60	-13.00	H

GSM Mode Channel 661/1880.0MHz

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak EIRP(dBm)	Limit (dBm)	Polarization
3760.05	-46.27	5.97	-8.21	-44.03	-13.00	V
7519.99	-51.99	8.11	-11.42	-48.68	-13.00	V
9399.97	-45.01	8.24	-12.60	-40.65	-13.00	V
10238.59	-64.39	8.60	-12.45	-60.54	-13.00	V
13159.39	-42.17	10.27	-13.46	-38.98	-13.00	H
15069.90	-62.54	11.33	-13.49	-60.38	-13.00	V

GSM Mode Channel 810/1909.8MHz

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak EIRP(dBm)	Limit (dBm)	Polarization
3819.59	-51.47	5.56	-8.28	-48.75	-13.00	V
7639.01	-53.15	7.83	-11.54	-49.44	-13.00	V
9548.76	-46.25	8.35	-12.58	-42.02	-13.00	V
10309.41	-66.16	8.62	-12.46	-62.32	-13.00	V
13369.05	-47.43	10.52	-13.67	-44.28	-13.00	H
15503.70	-64.47	10.97	-13.40	-62.04	-13.00	H

A.3   CONDUCTED EMISSION   (§15.107§15.207)

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
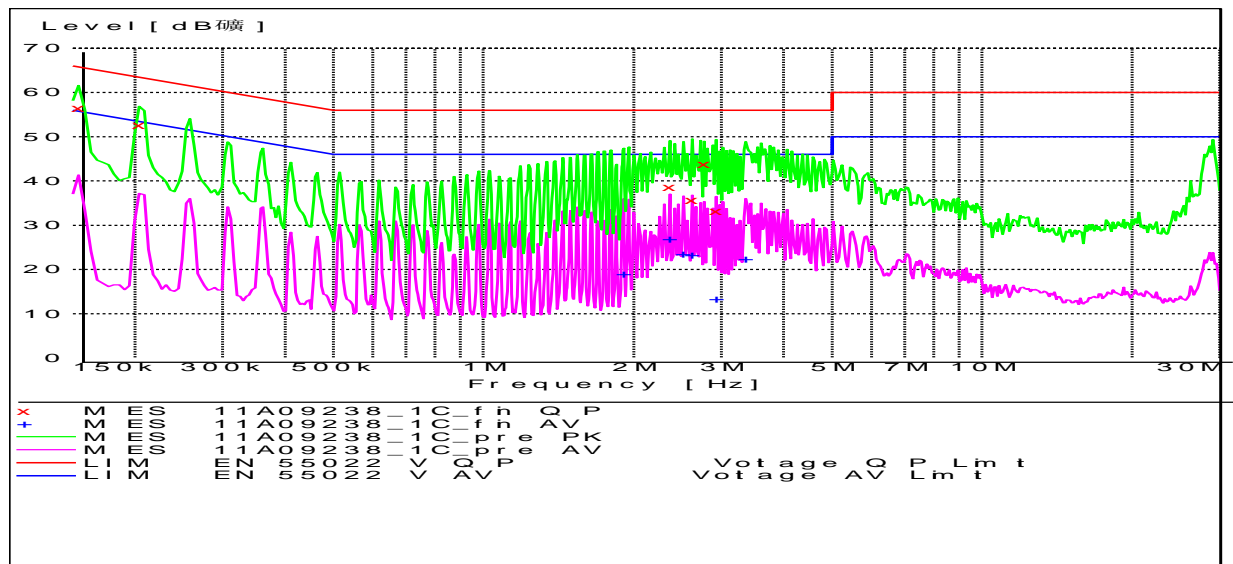
MEASUREMENT RESULT: "11A09238_1C_fin QP"

Frequency	Level	Transd	Limit	Margin	Line	PE
MHz	dBμV	dB	dB	dBμV	dB	
0.154500	56.50	10.2	66	9.3	N	GND
0.204000	52.60	10.2	63	10.9	N	GND
2.364292	38.60	10.2	56	17.4	L1	GND
2.622334	35.60	10.2	56	20.4	L1	GND
2.772757	43.90	10.2	56	12.1	L1	GND
2.931808	33.10	10.2	56	22.9	L1	GND

MEASUREMENT RESULT: "11A09238_1C_fin AV"

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
1.909500	18.90	10.2	46	27.1	N	GND
2.364292	26.80	10.2	46	19.2	N	GND
2.519912	23.60	10.2	46	22.4	N	GND
2.622334	23.30	10.2	46	22.7	N	GND
2.931808	13.40	10.2	46	32.6	N	GND
3.357102	22.40	10.2	46	23.6	N	GND

PCS1900MHz
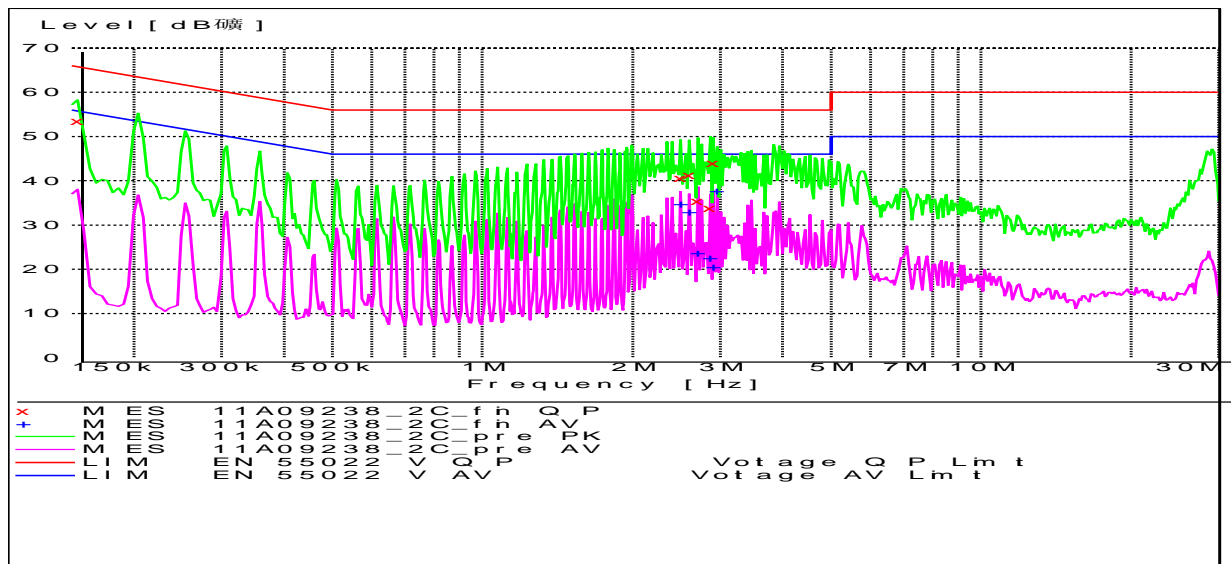
MEASUREMENT RESULT: "11A09238_2C_fin QP"

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.154500	53.40	10.2	66	12.3	N	GND
2.499913	40.70	10.2	56	15.3	N	GND
2.601522	41.20	10.2	56	14.8	N	GND
2.707262	35.40	10.2	56	20.6	L1	GND
2.862556	33.80	10.2	56	22.2	L1	GND
2.908540	44.00	10.2	56	12.0	L1	GND

MEASUREMENT RESULT: "11A09238_2C_fin AV"

Frequency	Level	Transd	Limit	Margin	Line	PE
MHz	dBμV	dB	dBμV		dB	
2.499913	34.80	10.2	46	11.2	N	GND
2.601522	33.00	10.2	46	13.0	N	GND
2.707262	23.60	10.2	46	22.4	N	GND
2.862556	22.50	10.2	46	23.5	N	GND
2.908540	20.60	10.2	46	25.4	N	GND
2.955263	37.80	10.2	46	8.2	N	GND

MP3

MEASUREMENT RESULT: "11A09238_MC_fin QP"

Frequency	Level	Transd	Limit	Margin	Line	PE
MHz	dBμV	dB	dBμV		dB	
1.684500	40.20	10.2	56	15.9	L1	GND
1.788000	44.60	10.2	56	11.4	N	GND
1.887000	46.20	10.2	56	9.8	N	GND
1.990500	41.10	10.2	56	15.0	L1	GND
2.707262	47.50	10.2	56	8.5	N	GND
2.908540	42.90	10.2	56	13.1	L1	GND

MEASUREMENT RESULT: "11A09238_MC_fin AV"

Frequency	Level	Transd	Limit	Margin	Line	PE
MHz	dBμV	dB	dBμV	dB		
1.941000	34.80	10.2	46	11.2	N	GND
2.345528	35.10	10.2	46	10.9	N	GND
2.499913	34.80	10.2	46	11.2	N	GND
2.707262	35.40	10.2	46	10.6	N	GND
2.862556	35.20	10.2	46	10.8	N	GND
2.908540	35.60	10.2	46	10.4	N	GND

CAMERA
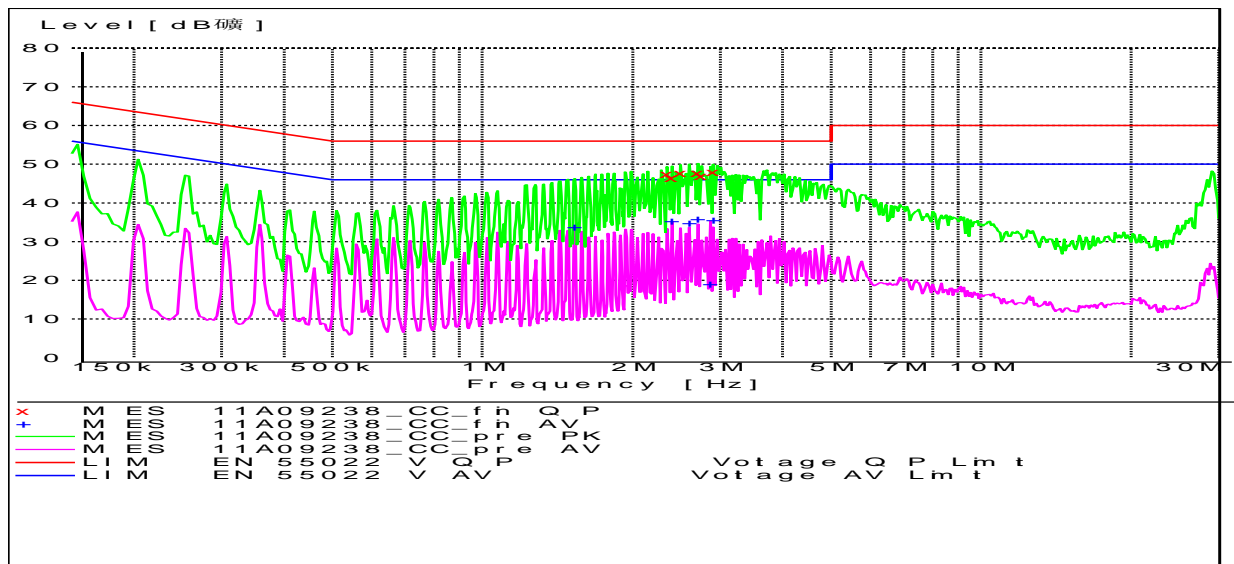
MEASUREMENT RESULT: "11A09238_CC_fin QP"

Frequency	Level	Transd	Limit	Margin	Line	PE
MHz	dBμV	dB	dBμV	dB		
2.345528	47.40	10.2	56	8.6	N	GND
2.402272	46.50	10.2	56	9.5	N	GND
2.499913	47.70	10.2	56	8.3	N	GND
2.707262	47.80	10.2	56	8.2	N	GND
2.750751	46.90	10.2	56	9.1	N	GND
2.908540	47.90	10.2	56	8.1	N	GND

MEASUREMENT RESULT: "11A09238_CC_fin AV"

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
1.531500	33.70	10.2	46	12.3	N	GND
2.402272	35.30	10.2	46	10.7	N	GND
2.601522	34.90	10.2	46	11.1	N	GND
2.707262	35.80	10.2	46	10.2	N	GND
2.862556	19.10	10.2	46	26.9	N	GND
2.908540	35.50	10.2	46	10.5	N	GND

A.4 FREQUENCY STABILITY   (§2.1055/§24.235)

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 channel 661 for PCS 1900 and channel 190 for 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 3.5VDC and 4.2VDC, with a nominal voltage of 3.7VDC. 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)
3.5	-25	0.032
3.7	-23	0.029
4.2	-26	0.033

Frequency Error vs Temperature

temperature(℃)	Frequency error(Hz)	Frequency error(ppm)
-30	-26	0.033
-20	-25	0.032
-10	-25	0.032
0	-23	0.029
10	-23	0.029
20	-23	0.029
30	-25	0.032
40	-25	0.032
50	-26	0.033

PCS 1900
Frequency Error vs Voltage

Voltage(V)	Frequency error(Hz)	Frequency error(ppm)
3.5	-23	0.043
3.7	-20	0.037
4.2	-25	0.046

Frequency Error vs Temperature

temperature(℃)	Frequency error(Hz)	Frequency error(ppm)
-30	-25	0.046
-20	-23	0.043
-10	-23	0.043
0	-20	0.037
10	-20	0.037
20	-20	0.037
30	-23	0.043
40	-23	0.043
50	-25	0.046

A.5 OCCUPIED BANDWIDTH   (§2.1049(h)(i))

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 -20dBc BW. Spectrum analyzer plots are included on the following pages.

GSM 850(-20dBc)

Frequency(MHz)	Occupied Bandwidth (-20dBc BW)(kHz)
824.2	250.000
836.6	250.000
848.8	245.192

GSM 850

Channel 128-Occupied Bandwidth (-20dBc BW)
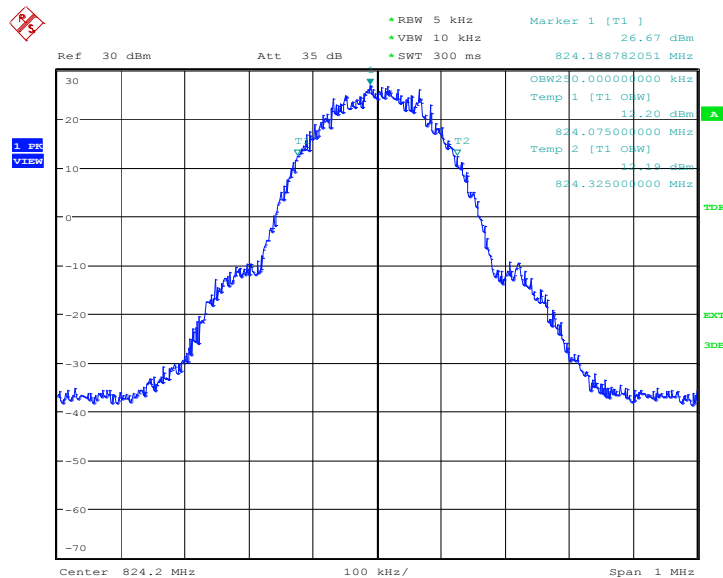
Date: 7.DEC.2011 23:43:03

Channel 190-Occupied Bandwidth (-20dBc BW)
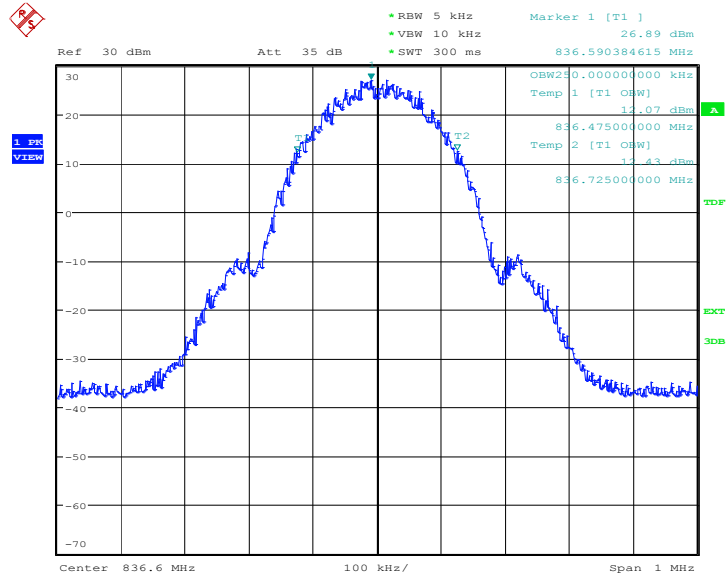
Date: 7.DEC.2011 23:43:36

Channel 251-Occupied Bandwidth (-20dBc BW)
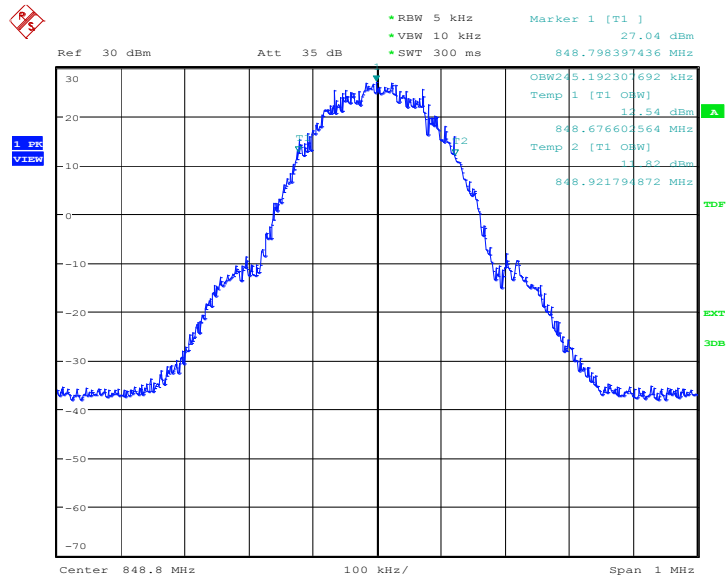
Date: 7.DEC.2011 23:44:08

GSM 850(-20dBc)-IC

Frequency(MHz)	Occupied Bandwidth (-20dBc BW)(kHz)
824.2	232.692
836.6	210.096
848.8	210.416

GSM 850

Channel 128-Occupied Bandwidth Reference Level
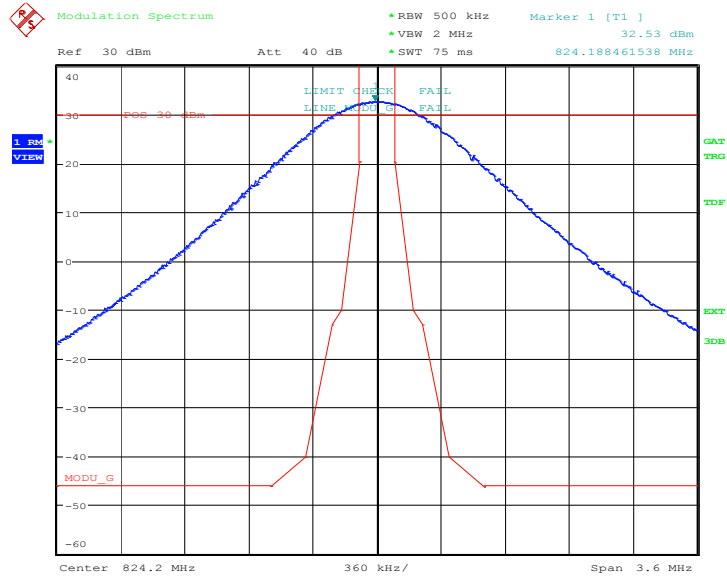
Date: 10.FEB.2012 07:11:06

Channel 128-Occupied Bandwidth (-20dBc BW)
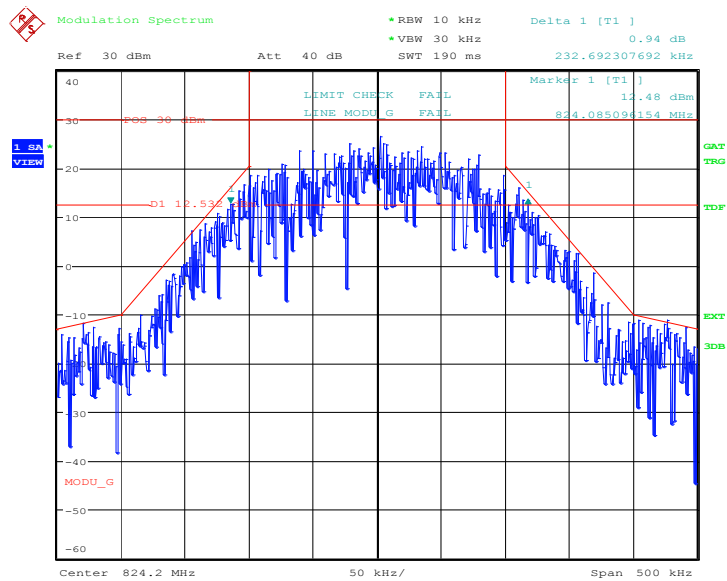
Date: 10.FEB.2012 07:12:21

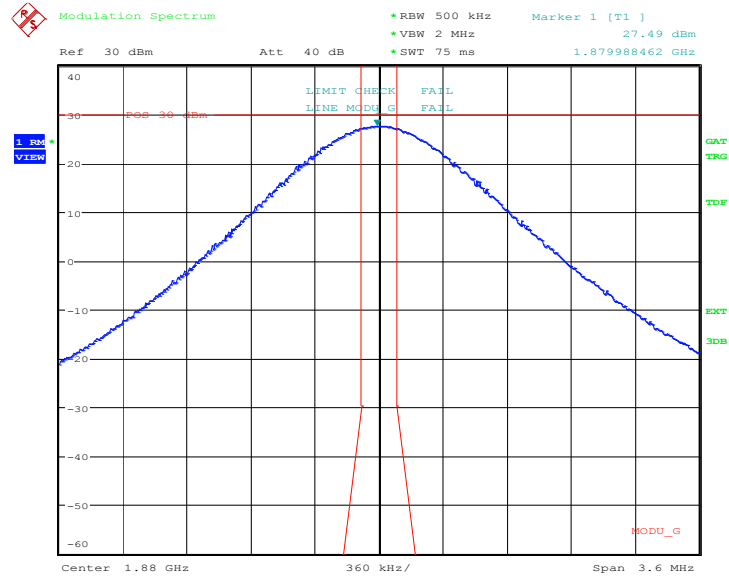## Channel 190-Occupied Bandwidth Reference Level
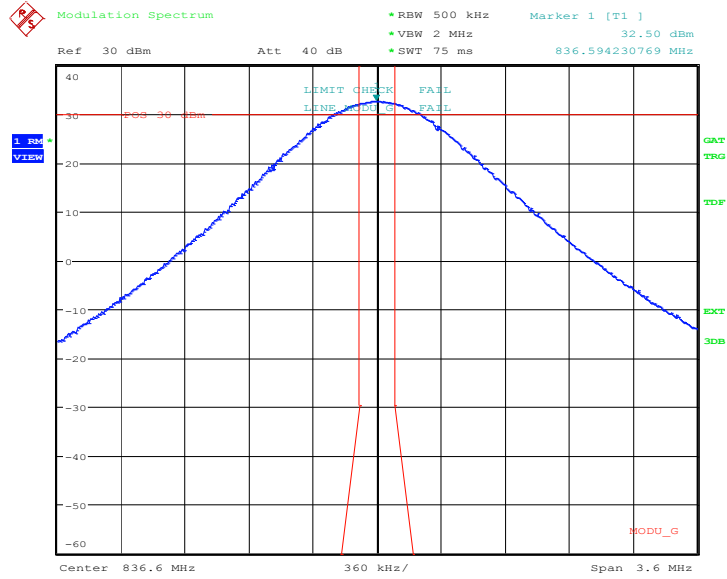
Date: 10.FEB.2012 07:13:28

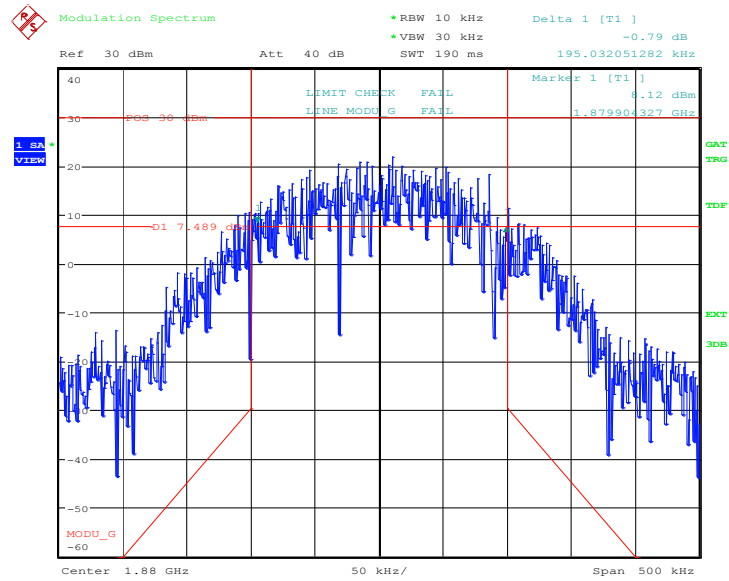## Channel 190-Occupied Bandwidth (-20dBc BW)
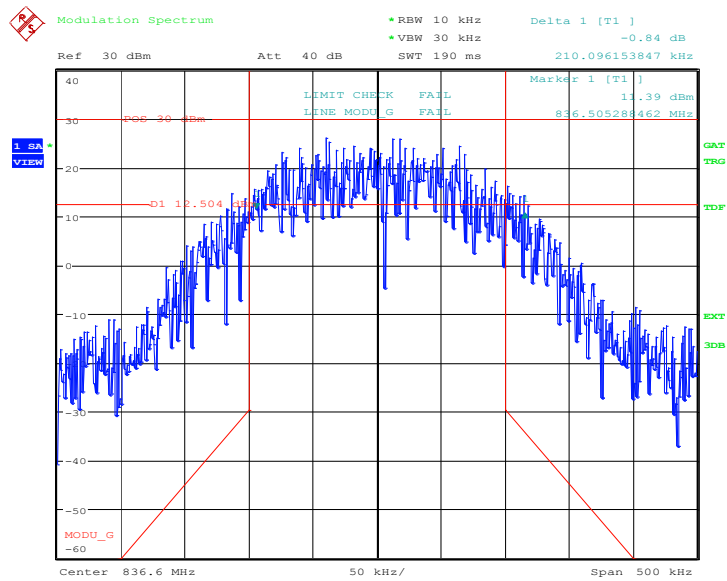
Date: 10.FEB.2012 07:14:15

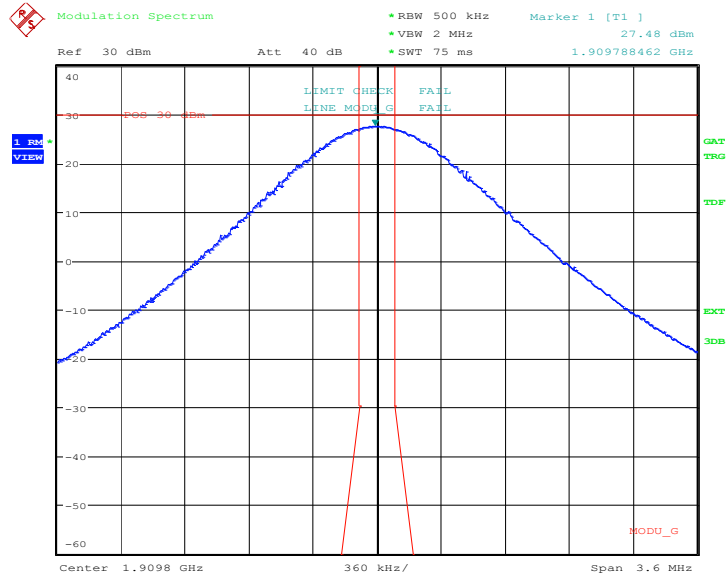## Channel 251-Occupied Bandwidth Reference Level
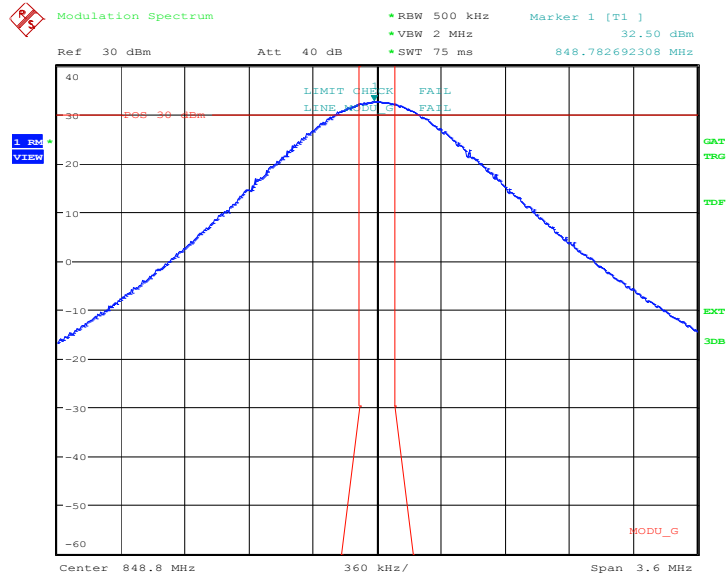
Date: 10.FEB.2012 07:15:20

Channel 251-Occupied Bandwidth (-20dBc BW)
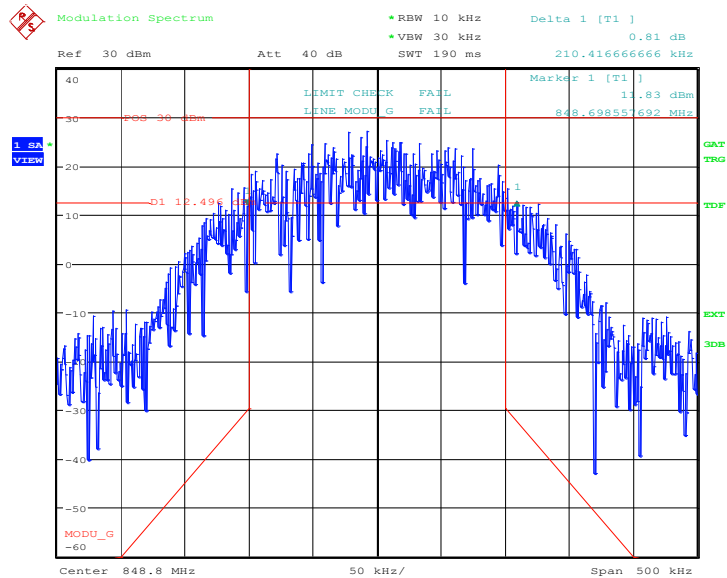
Date: 10.FEB.2012 07:16:17

GPRS 850(-20dBc)

Frequency(MHz)	Occupied Bandwidth (-20dBc BW)(kHz)
824.2	245.192
836.6	246.794
848.8	246.794

GPRS 850

Channel 128-Occupied Bandwidth (-20dBc BW)
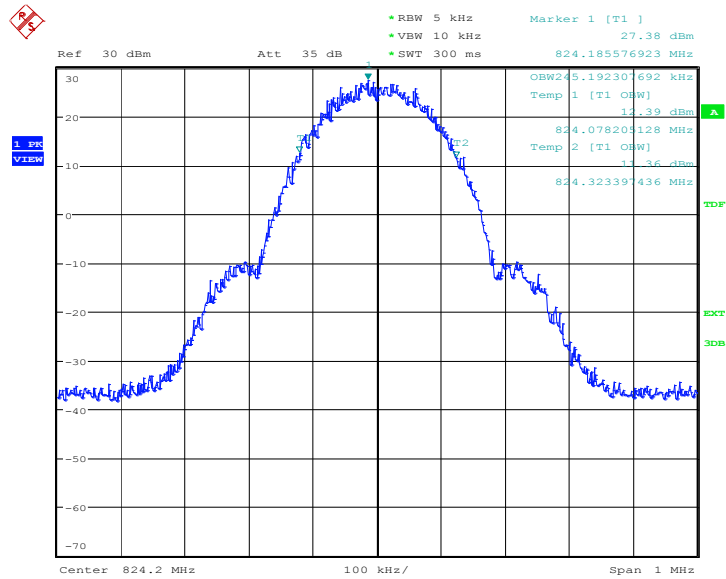
Date: 12.DEC.2011 05:58:29

Channel 190-Occupied Bandwidth (-20dBc BW)

```
                                    * RBW  5 kHz        Marker 1 [T1 ]
                                    * VBW  10 kHz                   27.29 dBm
      Ref  30 dBm        Att  35 dB * SWT 300 ms         836.596794872 MHz
```

OBW 246.794871795 kHz
Temp 1 [T1 OBW]
13.66 dBm
836.476602564 MHz
Temp 2 [T1 OBW]
13.61 dBm
836.723397436 MHz

```
Center  836.6 MHz           100 kHz/              Span  1 MHz
```
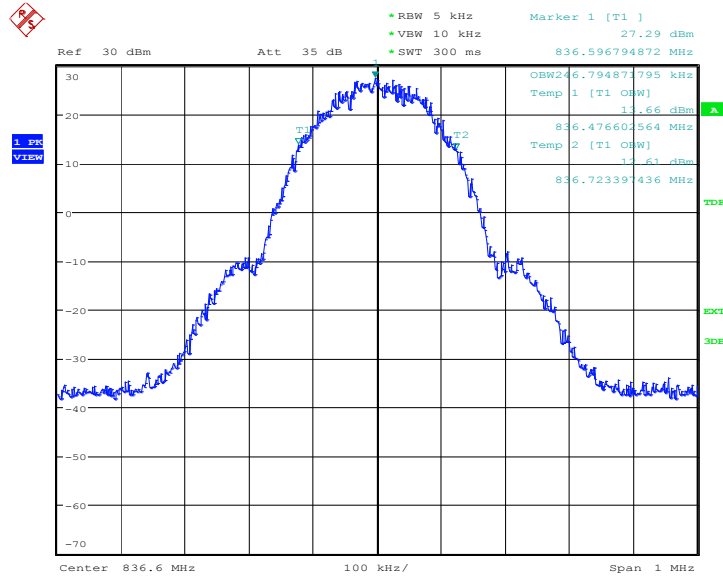
Date: 12.DEC.2011 05:59:01

Channel 251-Occupied Bandwidth (-20dBc BW)

```
                                    * RBW  5 kHz        Marker 1 [T1 ]
                                    * VBW  10 kHz                   27.55 dBm
      Ref  30 dBm        Att  35 dB * SWT 300 ms         848.811217949 MHz
```

OBW 246.794871795 kHz
Temp 1 [T1 OBW]
13.58 dBm
848.676602564 MHz
Temp 2 [T1 OBW]
13.89 dBm
848.923397436 MHz

```
Center  848.8 MHz           100 kHz/              Span  1 MHz
```
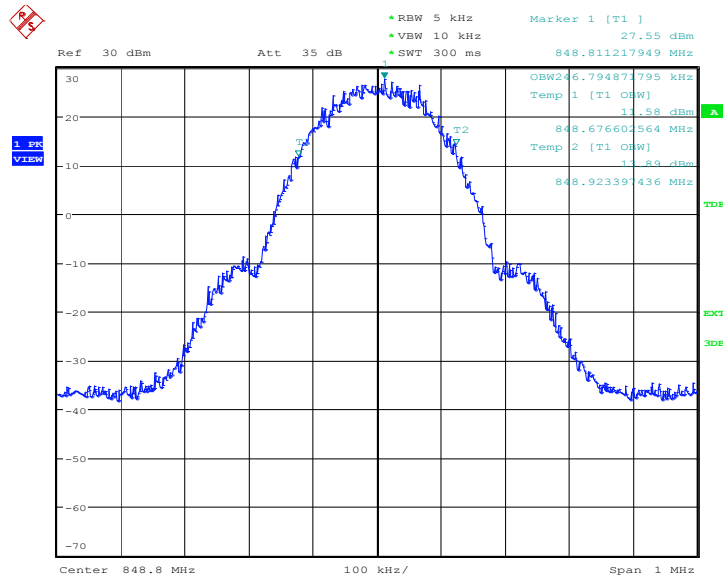
Date: 12.DEC.2011 05:59:33

GPRS 850(-20dBc)-IC

Frequency(MHz)	Occupied Bandwidth (-20dBc BW)(kHz)
824.2	207.211
836.6	223.878
848.8	225.160

GPRS 850

Channel 128-Occupied Bandwidth Reference Level
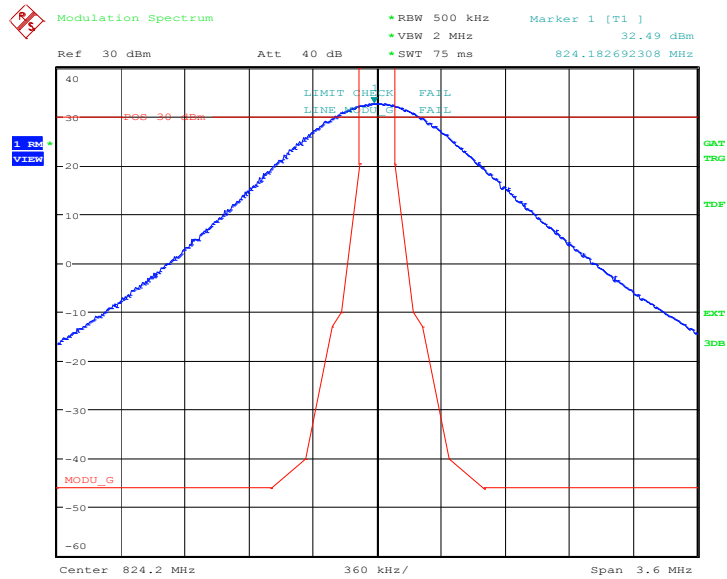
Date: 10.FEB.2012 07:37:02

Channel 128-Occupied Bandwidth (-20dBc BW)
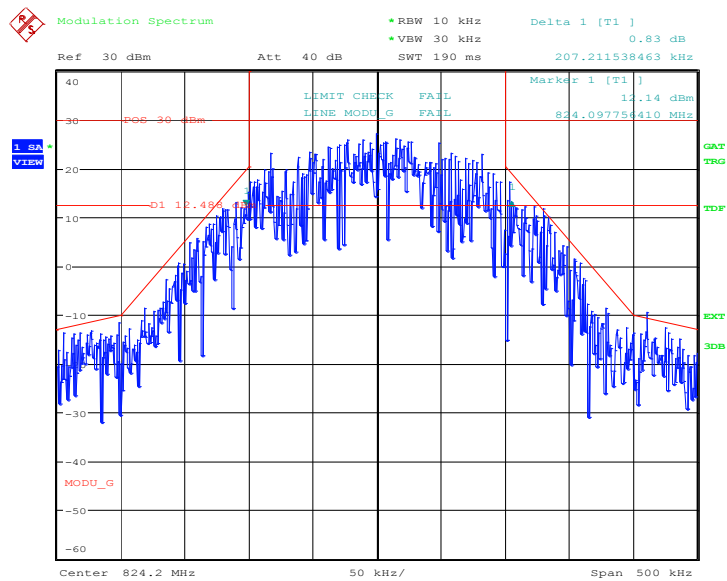
Date: 10.FEB.2012 07:38:10

Channel 190-Occupied Bandwidth Reference Level
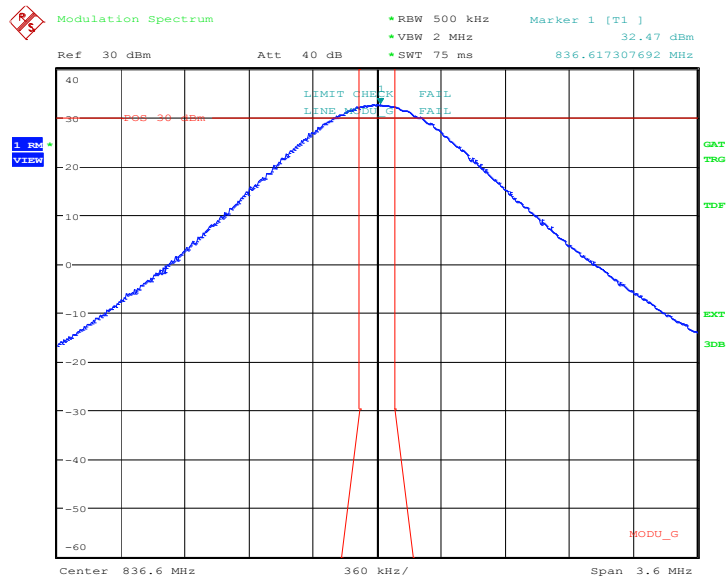
Date: 10.FEB.2012 07:39:15
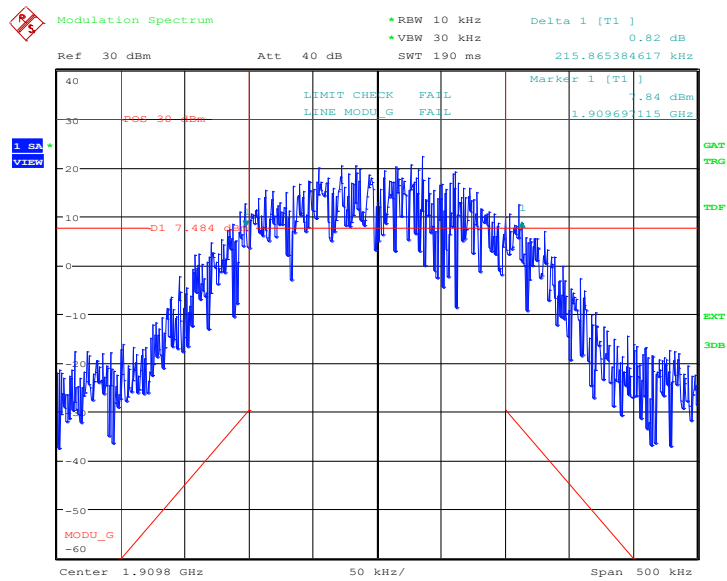
Channel 190-Occupied Bandwidth (-20dBc BW)
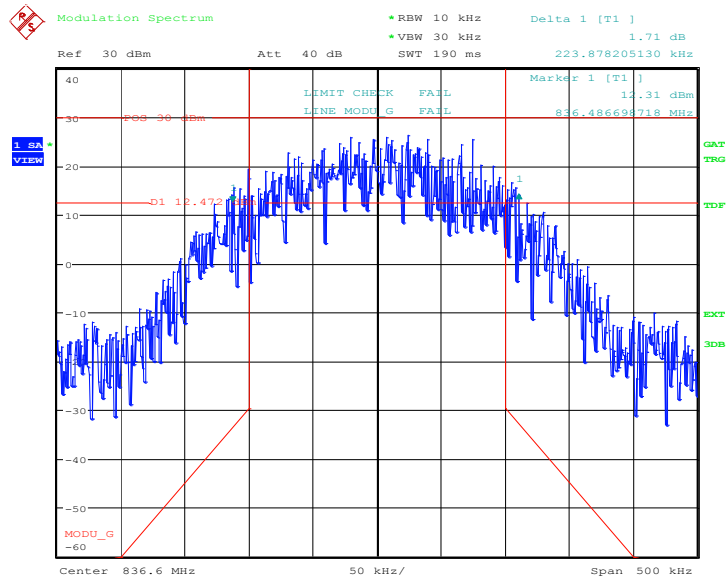
Date: 10.FEB.2012 07:40:52

Channel 251-Occupied Bandwidth Reference Level
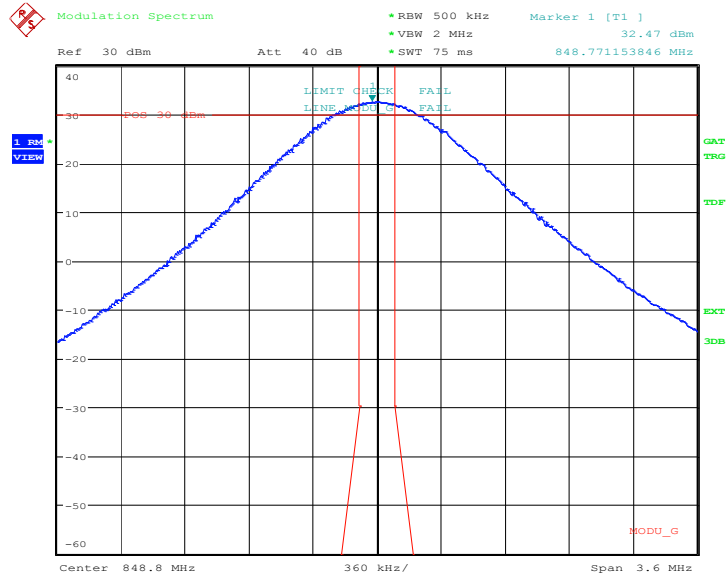
Date: 10.FEB.2012 07:42:30

Channel 251-Occupied Bandwidth (-20dBc BW)
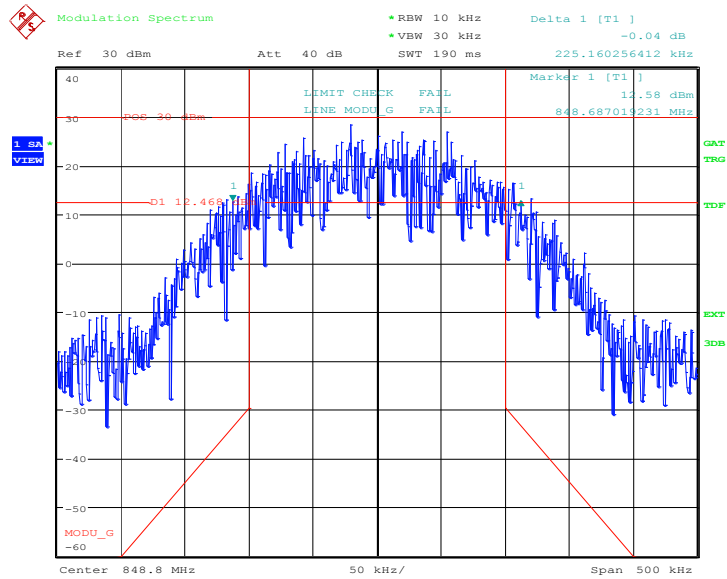
Date: 10.FEB.2012 07:43:27

EGPRS 850(-20dBc)

Frequency(MHz)	Occupied Bandwidth (-20Bc BW)(kHz)
824.2	245.192
836.6	246.794
848.8	246.794

EGPRS 850
Channel 128-Occupied Bandwidth (-20dBc BW)
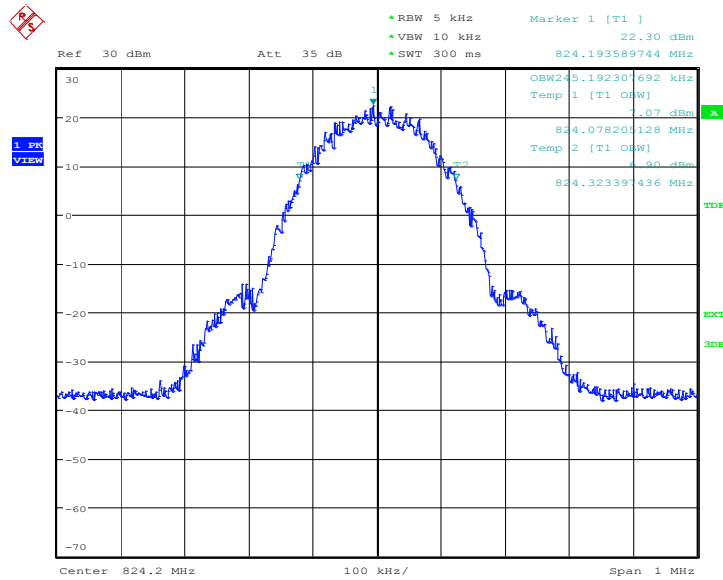
Date: 12.DEC.2011 06:05:32

Channel 190-Occupied Bandwidth (-20dBc BW)
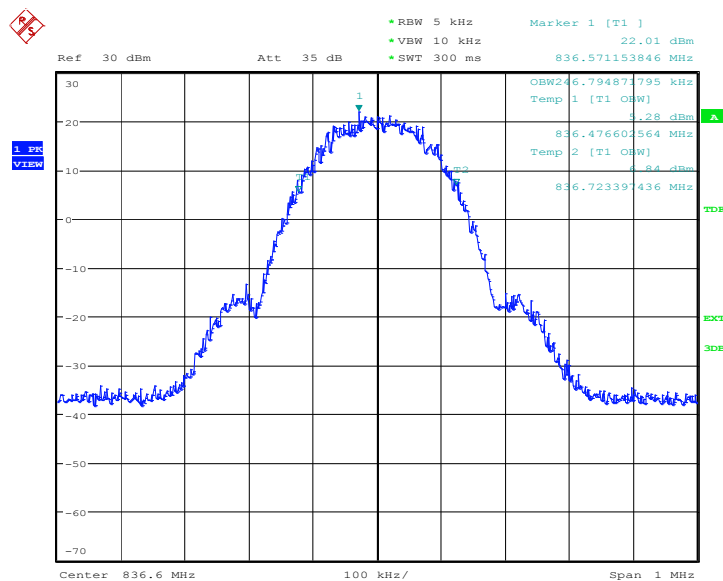
Date: 12.DEC.2011 06:06:04

Channel 251-Occupied Bandwidth (-20dBc BW)
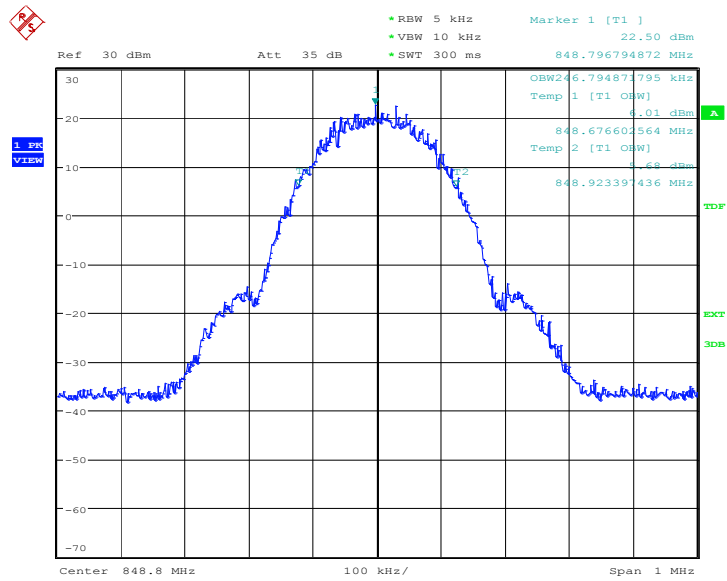
Date: 12.DEC.2011 06:06:37

EGPRS 850(-20dBc)-IC

Frequency(MHz)	Occupied Bandwidth (-20Bc BW)(kHz)
824.2	225.480
836.6	213.782
848.8	228.365

EGPRS 850

Channel 128-Occupied Reference level
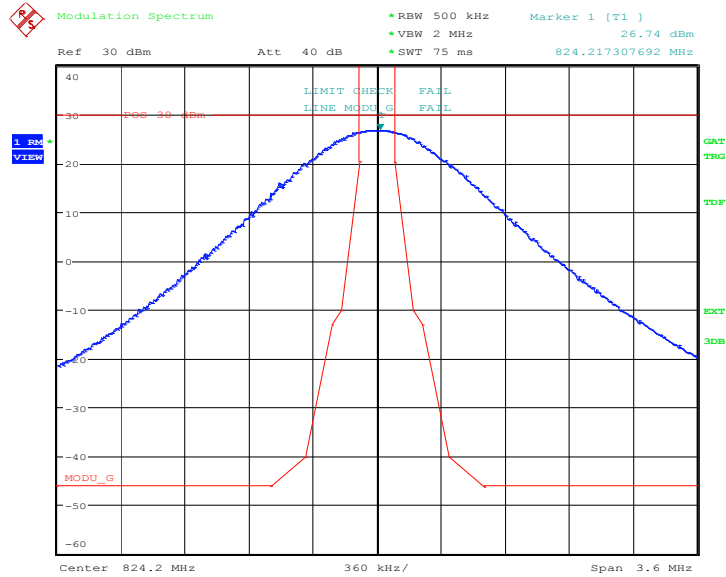
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Channel 128-Occupied Bandwidth (-20dBc BW)
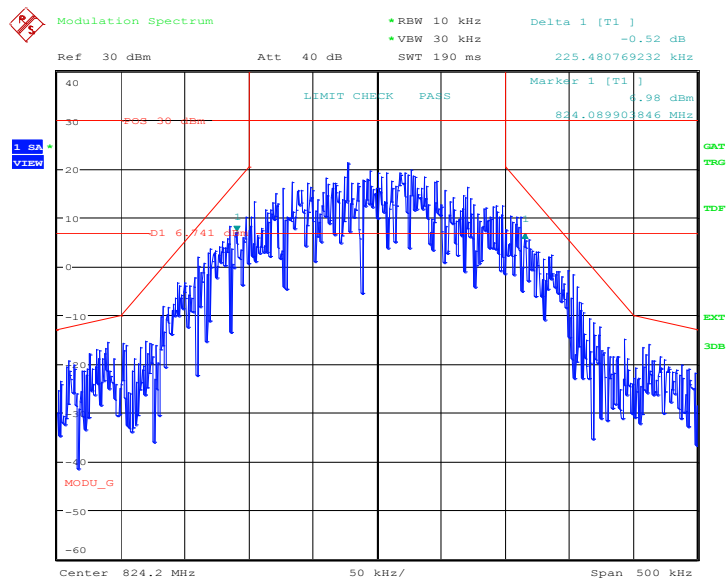
Date: 10.FEB.2012 08:03:08

Channel 190-Occupied Bandwidth Reference level
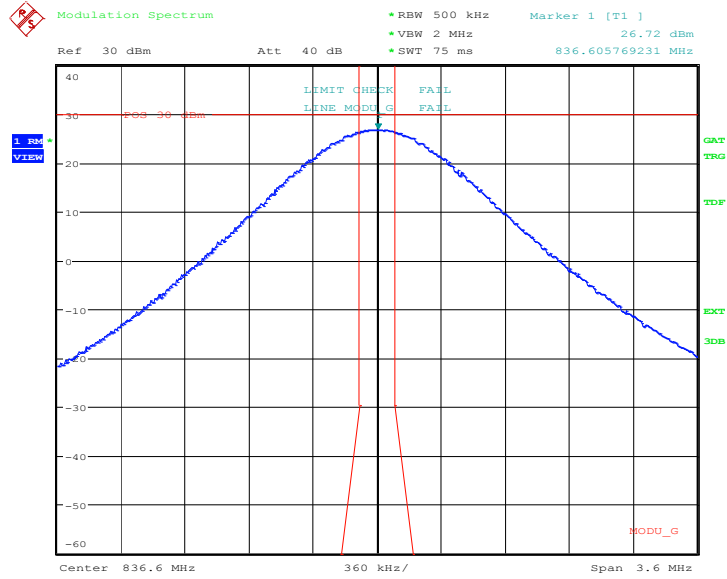
Date: 10.FEB.2012 08:04:24

Channel 190-Occupied Bandwidth (-20dBc BW)
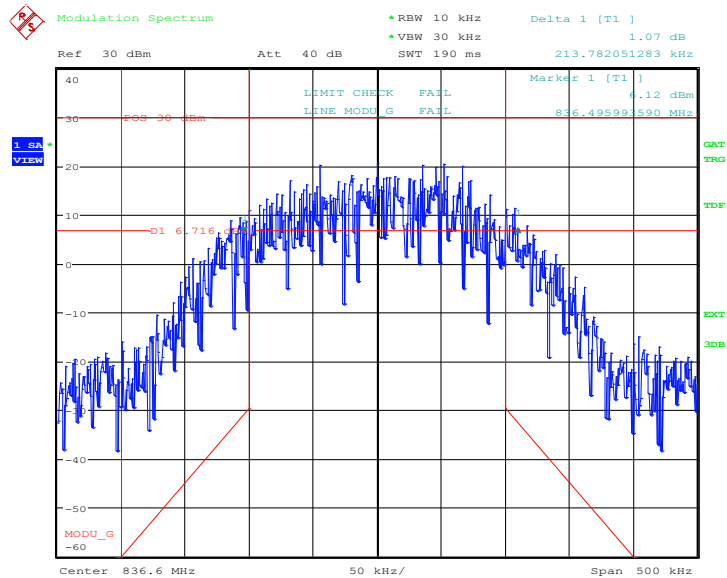
Date: 10.FEB.2012 08:05:19

Channel 251-Occupied Reference Level

Modulation Spectrum
Ref 30 dBm   Att 40 dB
*RBW 500 kHz   Marker 1 [T1]
*VBW 2 MHz   26.71 dBm
*SWT 75 ms   848.800000000 MHz

LIMIT CHECK   FAIL
LINE MODU_G   FAIL

Center 848.8 MHz   360 kHz/   Span 3.6 MHz

Date: 10.FEB.2012 08:06:34

Channel 251-Occupied Bandwidth (-20dBc BW)

Modulation Spectrum
Ref 30 dBm   Att 40 dB
*RBW 10 kHz   Delta 1 [T1]
*VBW 30 kHz   0.63 dB
SWT 190 ms   228.365384616 kHz
                Marker 1 [T1]
LIMIT CHECK   FAIL   .49 dBm
LINE MODU_G   FAIL   848.690224359 MHz

D1 6.715 d

Center 848.8 MHz   50 kHz/   Span 500 kHz
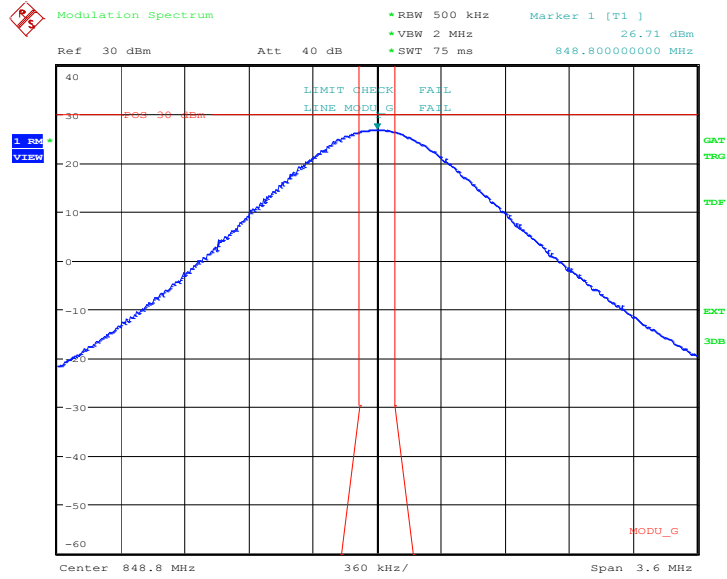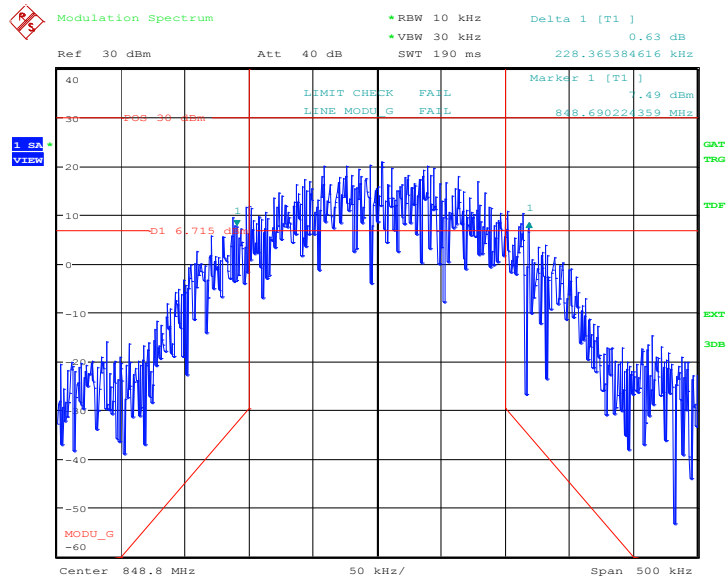
Date: 10.FEB.2012 08:07:36

PCS 1900(-20dBc)

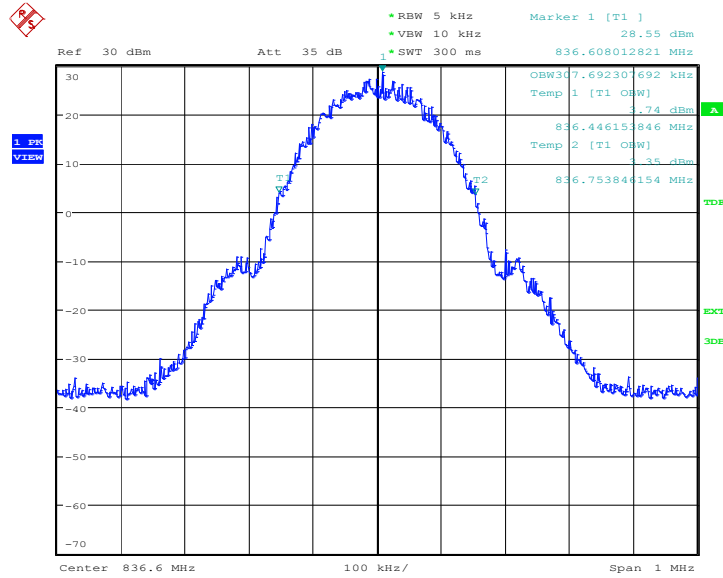| Frequency(MHz)	Occupied Bandwidth (-20dBc BW)(kHz)
1850.2	248.397
1880.0	248.397
1909.8	246.794

PCS 1900

Channel 512-Occupied Bandwidth (-20dBc BW)
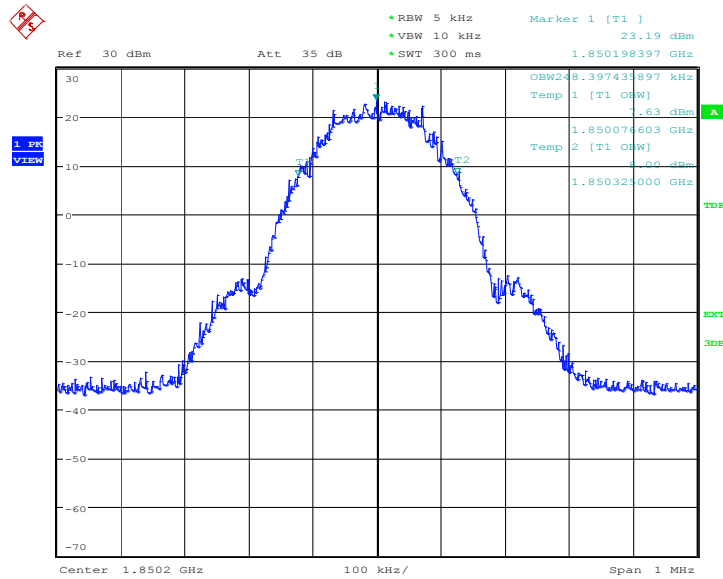
Date: 7.DEC.2011 23:58:01

Channel 661-Occupied Bandwidth (-20dBc BW)
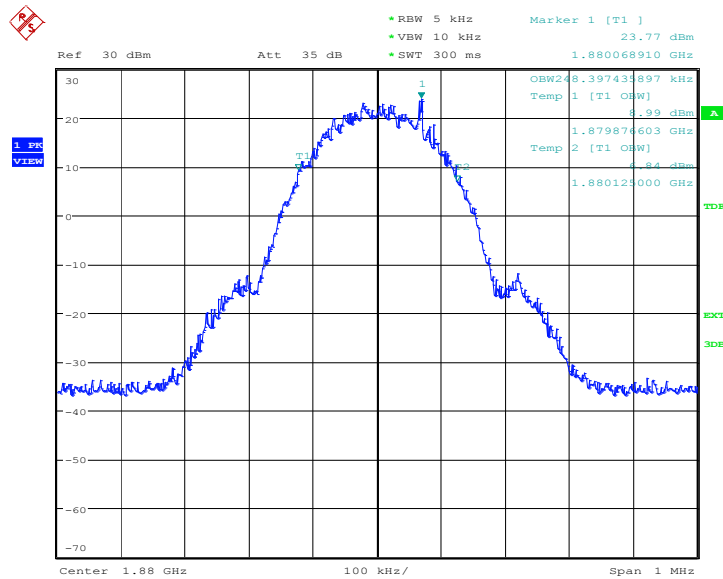
Date: 7.DEC.2011 23:58:33
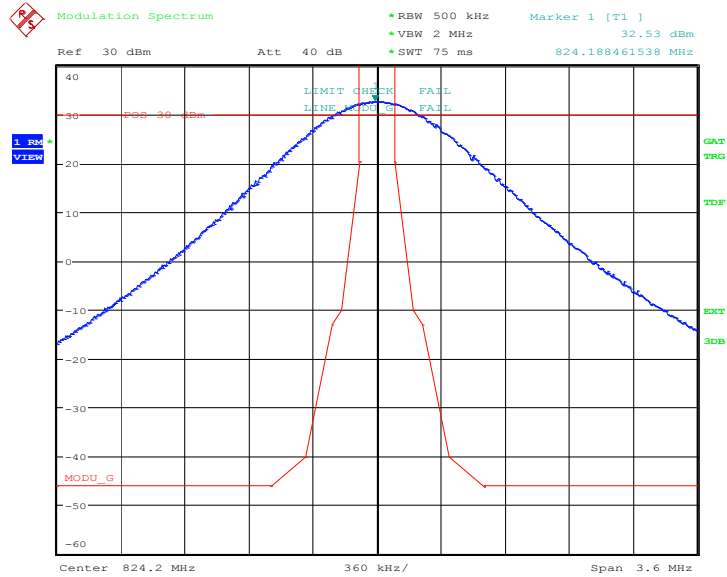
Channel 810-Occupied Bandwidth (-20dBc BW)


```
                                    *RBW 5 kHz      Marker 1 [T1 ]
                                    *VBW 10 kHz              23.44 dBm
        Ref  30 dBm      Att  35 dB *SWT 300 ms      1.909812821 GHz
```
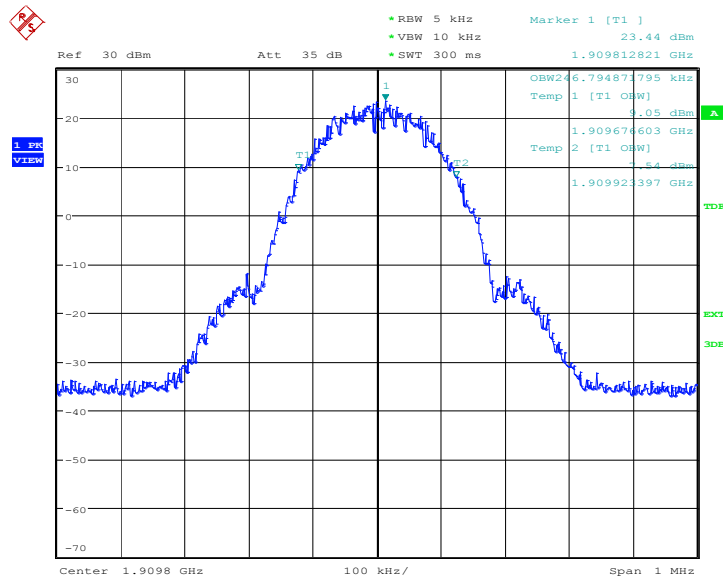
Date: 7.DEC.2011 23:59:05

PCS 1900(-20dBc)-IC

| Frequency(MHz)	Occupied Bandwidth (-20dBc BW)(kHz)
1850.2	219.871
1880.0	227.724
1909.8	220.192

PCS 1900

Channel 512-Occupied Bandwidth Reference Level
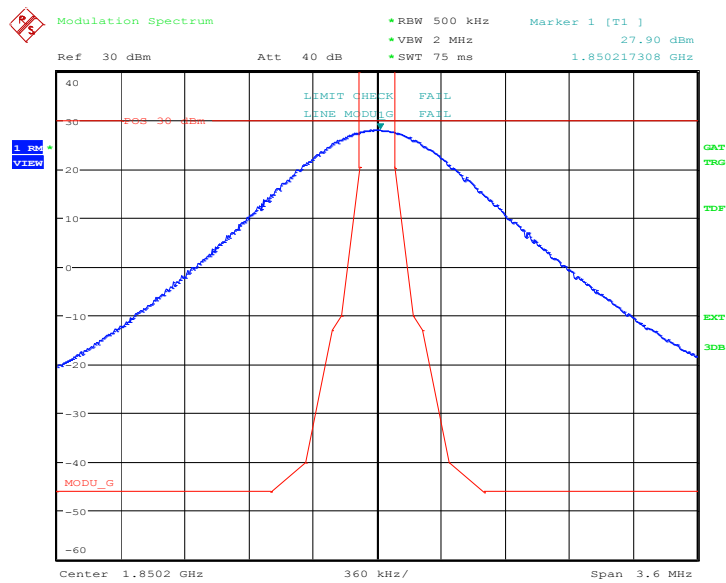
Date: 10.FEB.2012 07:25:07

Channel 512-Occupied Bandwidth (-20dBc BW)
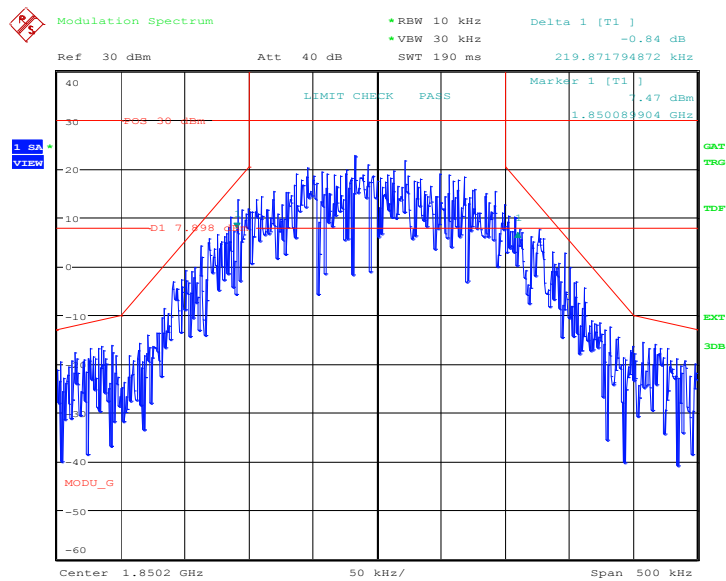
Date: 10.FEB.2012 07:26:01

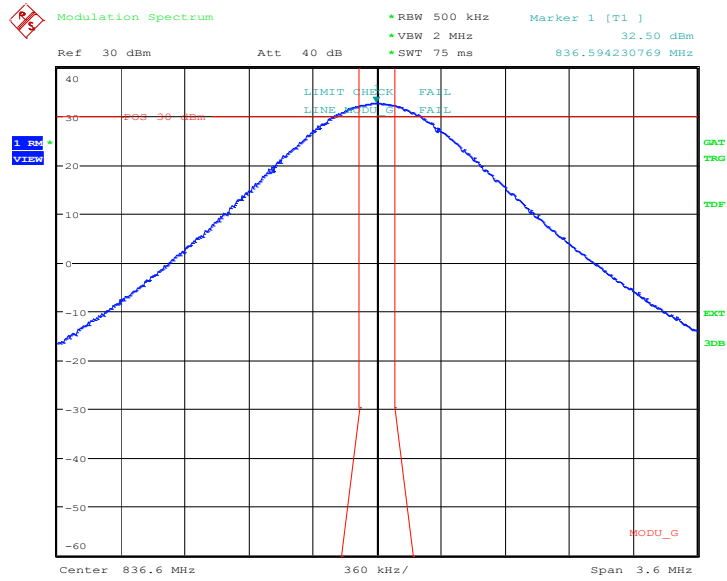## Channel 661-Occupied Reference Level
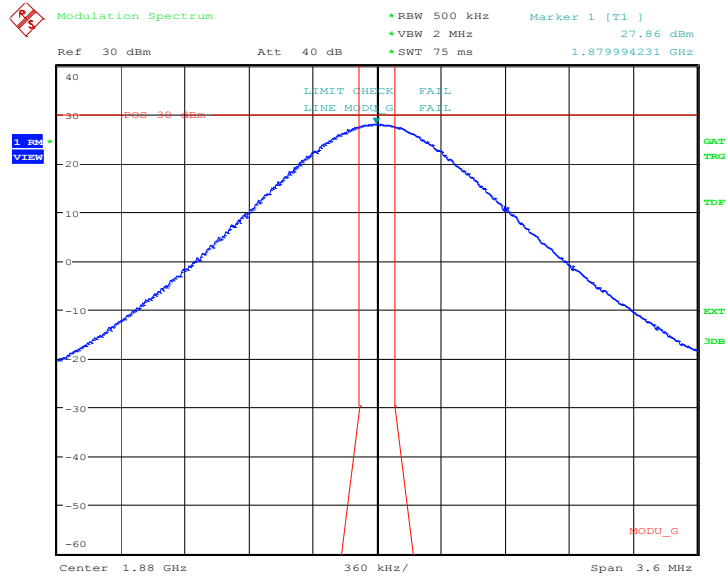
Date: 10.FEB.2012 07:27:05

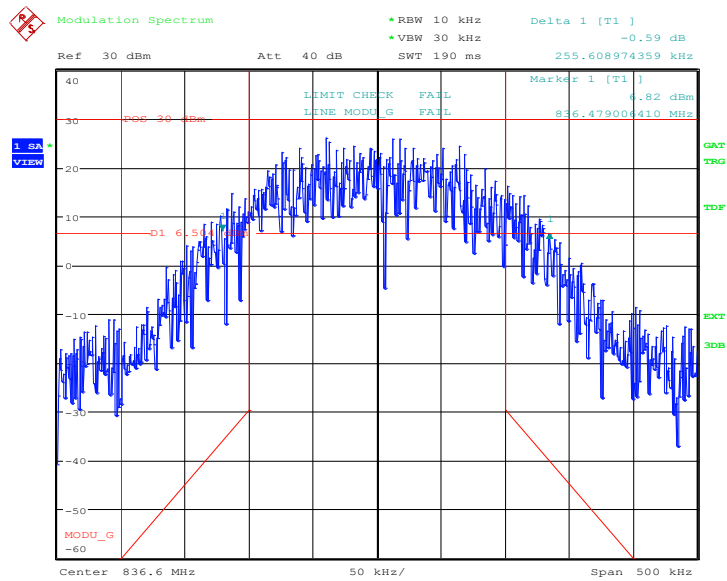## Channel 661-Occupied Bandwidth (-20dBc BW)
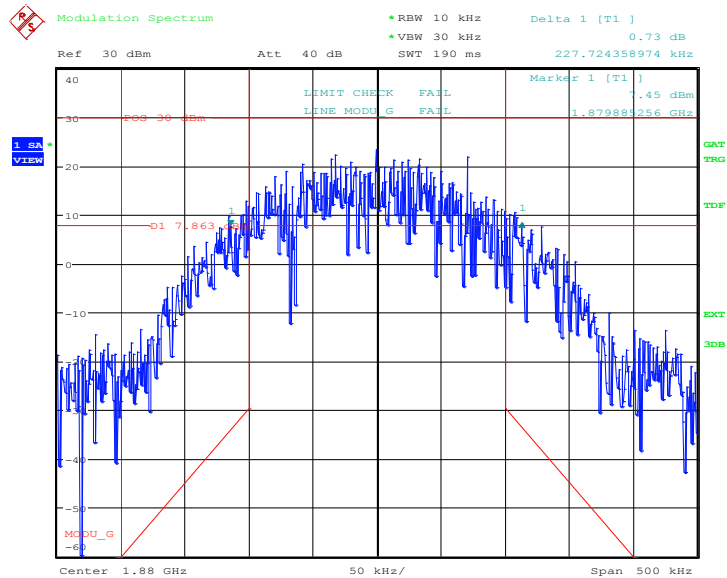
Date: 10.FEB.2012 07:28:18

Channel 810-Occupied Bandwidth Reference Level
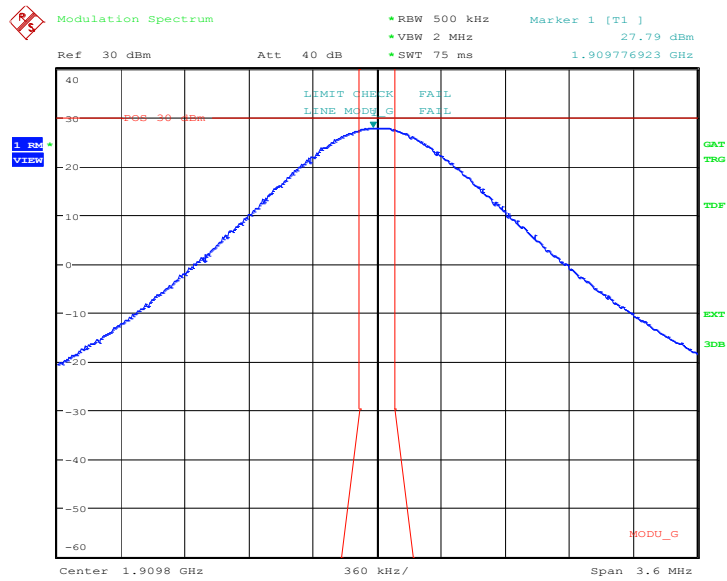
Date: 10.FEB.2012 07:29:29

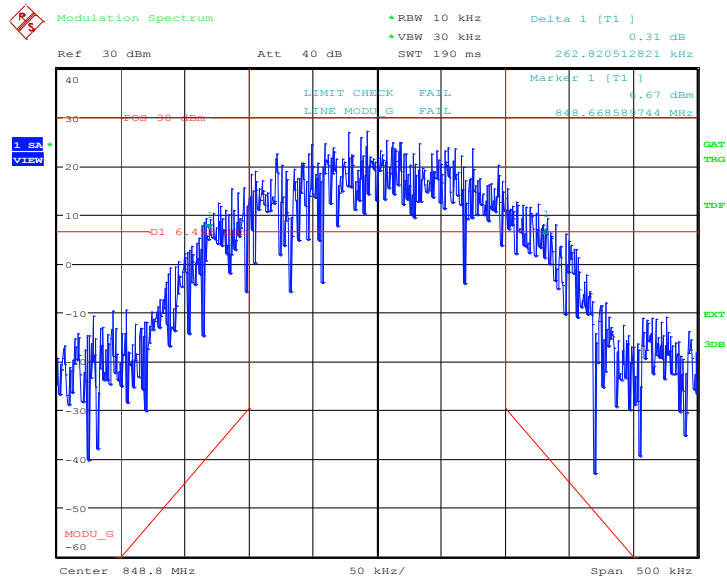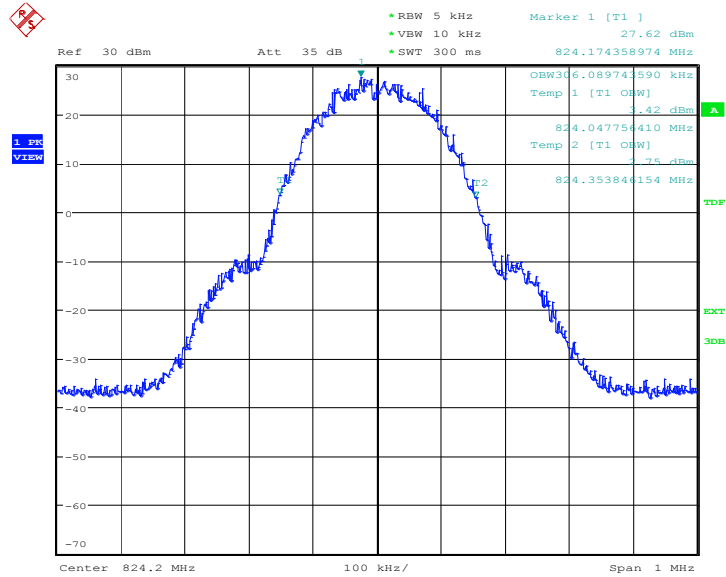## Channel 810-Occupied Bandwidth (-20dBc BW)
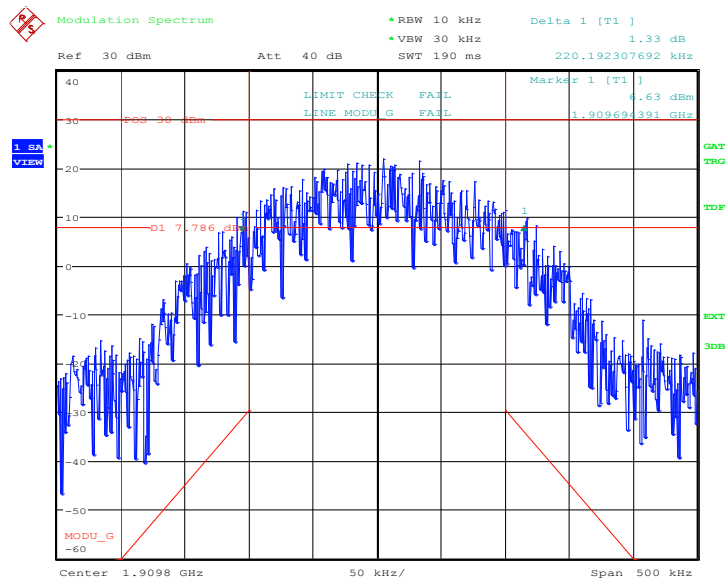
Date: 10.FEB.2012 07:30:57

GPRS 1900(-20dBc)

Frequency(MHz)	Occupied Bandwidth (-20dBc BW)(kHz)
1850.2	245.192
1880.0	250.000
1909.8	243.589

GPRS 1900

Channel 512-Occupied Bandwidth -20dBc BW)
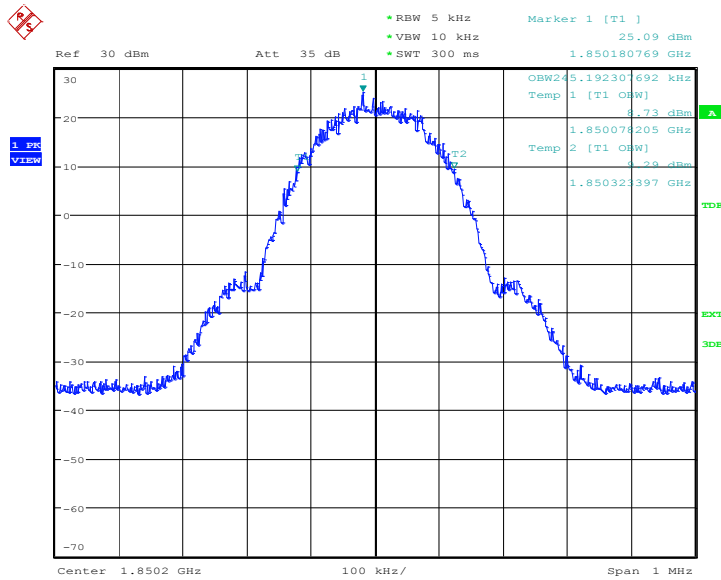
Date: 8.DEC.2011 00:26:49

Channel 661-Occupied Bandwidth (-20dBc BW)
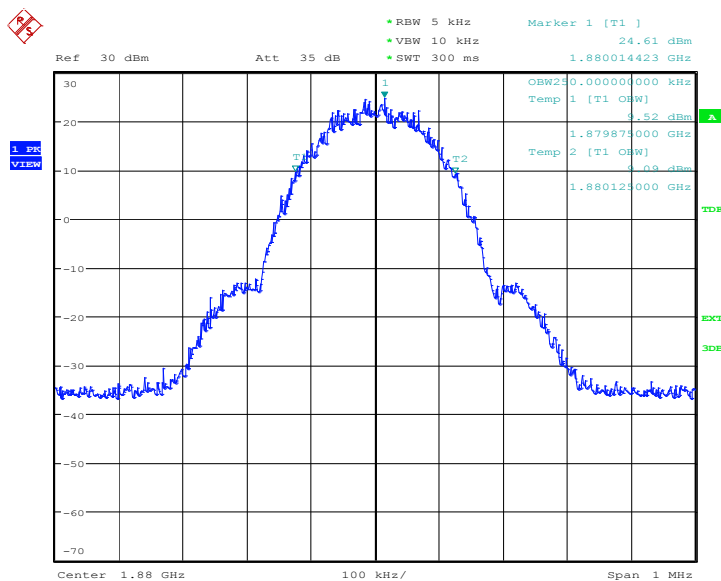
Date: 8.DEC.2011 00:27:21

Channel 810-Occupied Bandwidth (-20dBc BW)
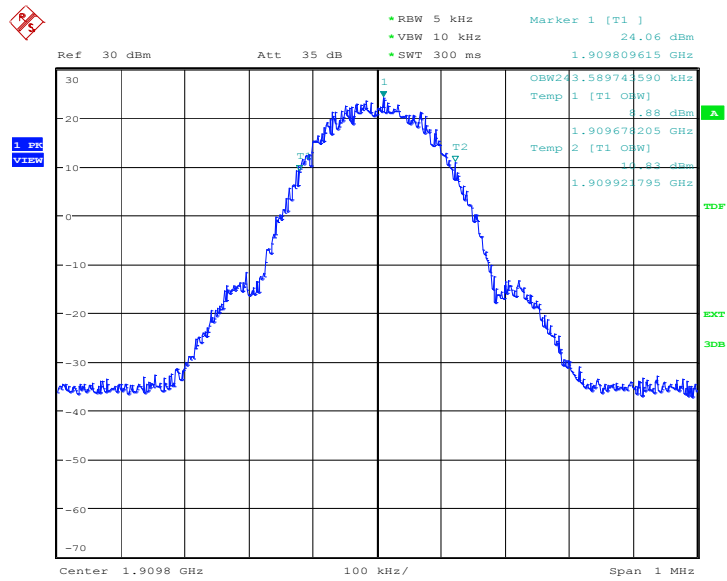
Date: 8.DEC.2011 00:27:53

GPRS 1900(-20dBc)-IC

Frequency(MHz)	Occupied Bandwidth (-20dBc BW)(kHz)
1850.2	225.160
1880.0	195.032
1909.8	215.865

GPRS 1900

Channel 512-Occupied Bandwidth Reference Level
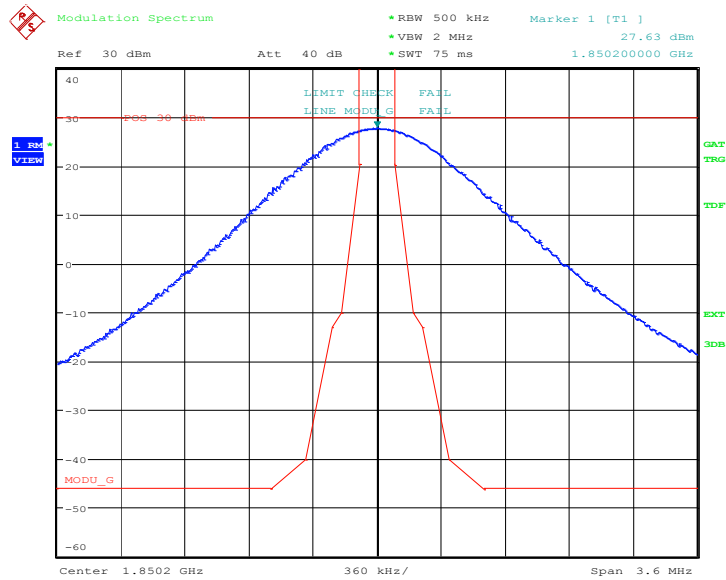
Date: 10.FEB.2012 07:53:58

Channel 512-Occupied Bandwidth -20dBc BW)
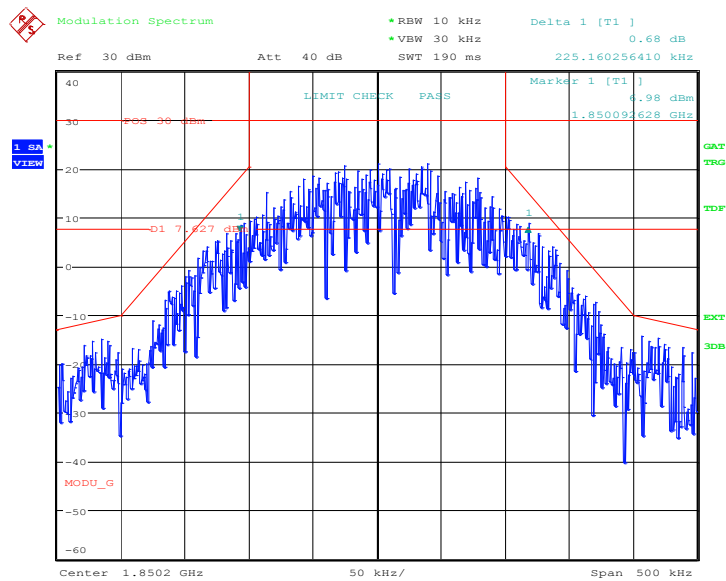
Date: 10.FEB.2012 07:54:41

Channel 661-Occupied Bandwidth Reference Level

Date: 10.FEB.2012 07:55:38

Channel 661-Occupied Bandwidth (-20dBc BW)

Date: 10.FEB.2012 07:56:24

Channel 810-Occupied Reference Level

```
R&S   Modulation Spectrum          * RBW  500 kHz     Marker 1 [T1 ]
                                   * VBW  2 MHz                   27.48 dBm
      Ref  30 dBm       Att  40 dB  * SWT  75 ms        1.909788462 GHz

   40
                              LIMIT CHECK    FAIL                           GAT
   30  POS 30 dBm            LINE MODU_G     FAIL                           TRG
1 RM
VIEW                                                                        TDF
   20
   10
    0                                                                       EXT
  -10                                                                       3DB
  -20
  -30
  -40
  -50
  -60                                                          MODU_G
      Center  1.9098 GHz         360 kHz/              Span  3.6 MHz
```

Date: 10.FEB.2012 07:57:27

Channel 810-Occupied Bandwidth (-20dBc BW)

```
R&S   Modulation Spectrum          * RBW  10 kHz     Delta 1 [T1 ]
                                   * VBW  30 kHz                   0.82 dB
      Ref  30 dBm       Att  40 dB   SWT  190 ms     215.865384617 kHz

   40                                                Marker 1 [T1 ]
   30  POS 30 dBm           LIMIT CHECK    FAIL                 7.84 dBm     GAT
1 SA                        LINE MODU_G    FAIL       1.909697115 GHz        TRG
VIEW
   20                                                                       TDF
   10  D1 7.484 dB
    0                                                                       EXT
  -10                                                                       3DB
  -20
  -30
  -40
  -50
MODU_G
  -60
      Center  1.9098 GHz          50 kHz/              Span  500 kHz
```

Date: 10.FEB.2012 07:58:22

EGPRS 1900(-20dBc)

Frequency(MHz)	Occupied Bandwidth (-20dBc BW)(kHz)
1850.2	248.397
1880.0	248.397
1909.8	245.192

EGPRS 1900

Channel 512-Occupied Bandwidth (-20dBc BW)
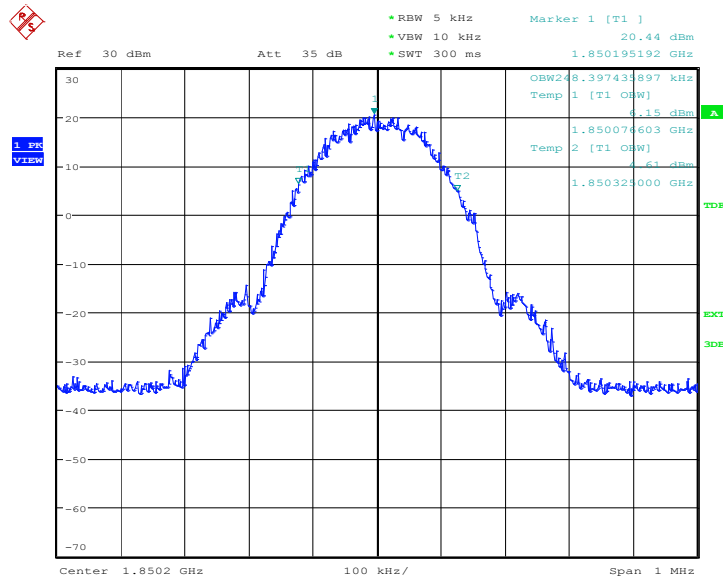
Date: 12.DEC.2011 06:16:46

Channel 661-Occupied Bandwidth (-20dBc BW)
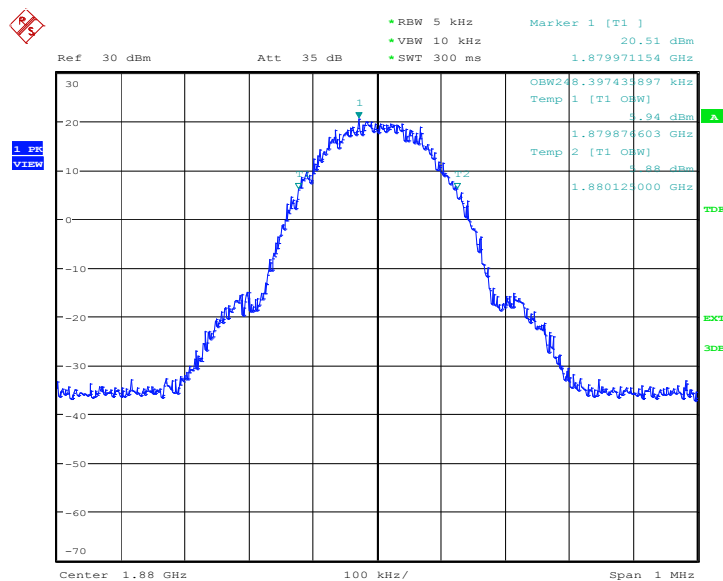
Date: 12.DEC.2011 06:17:18
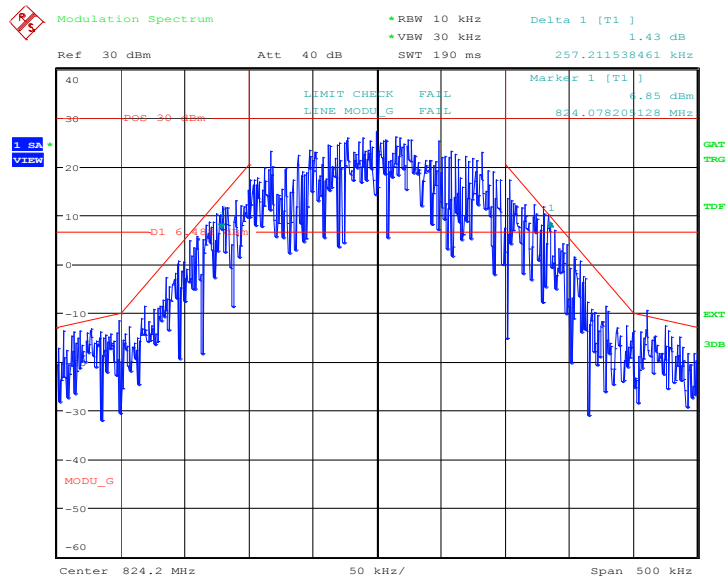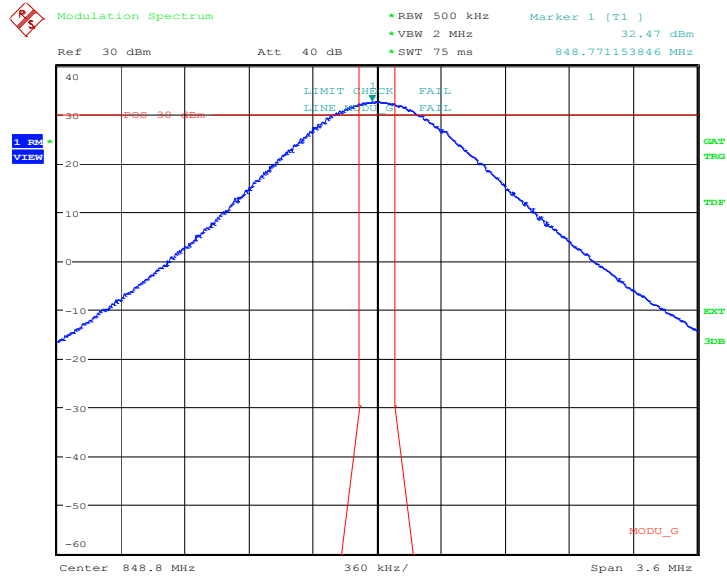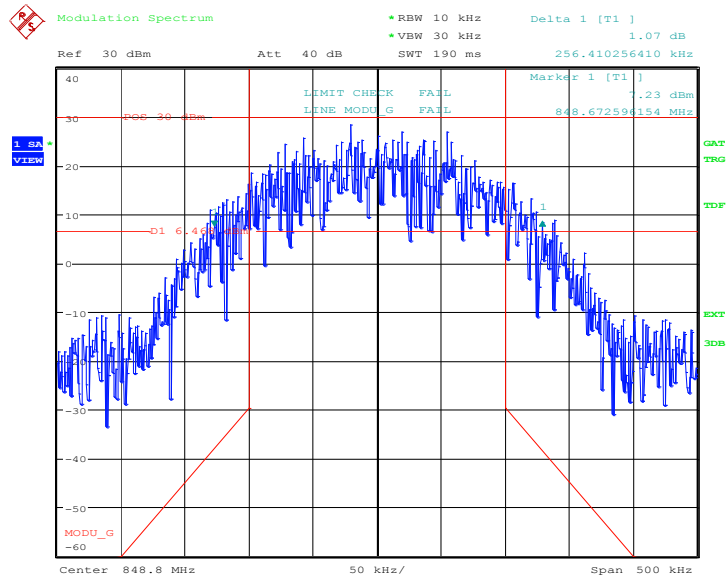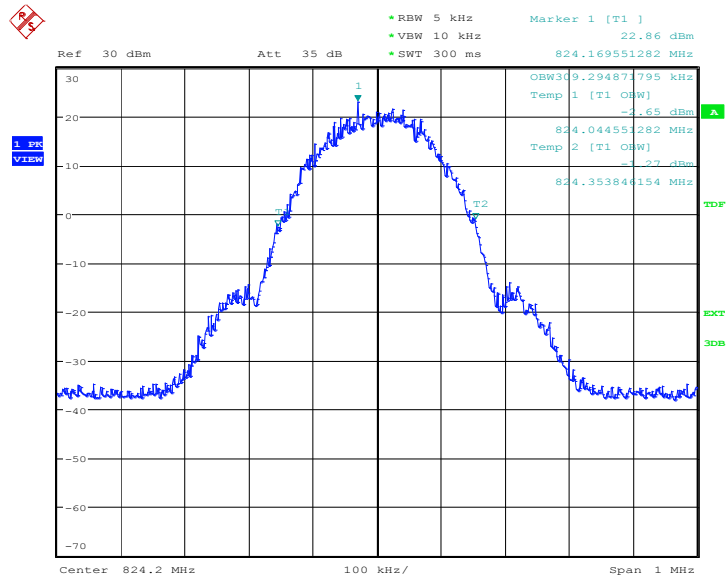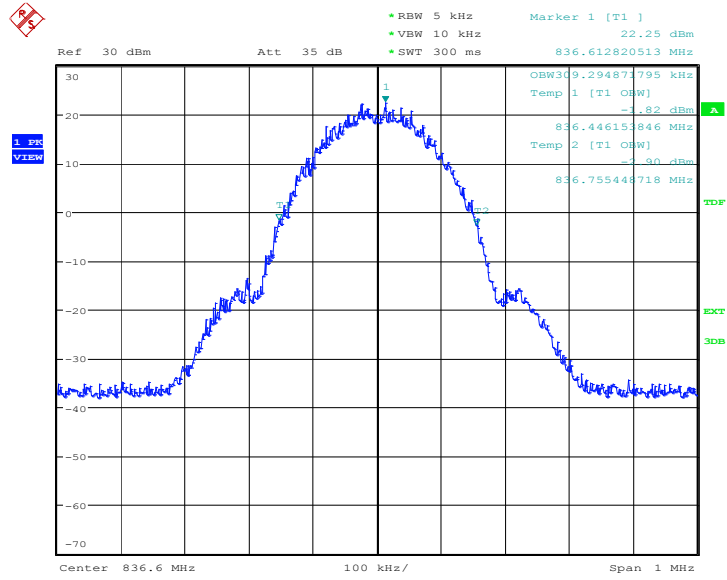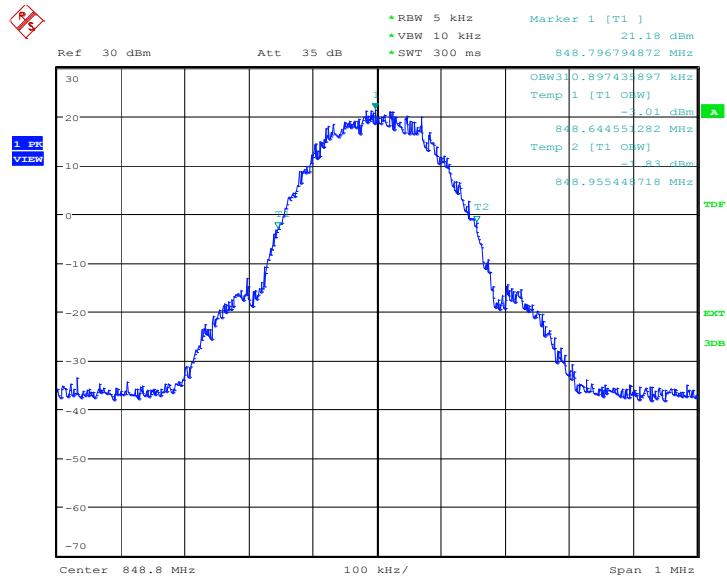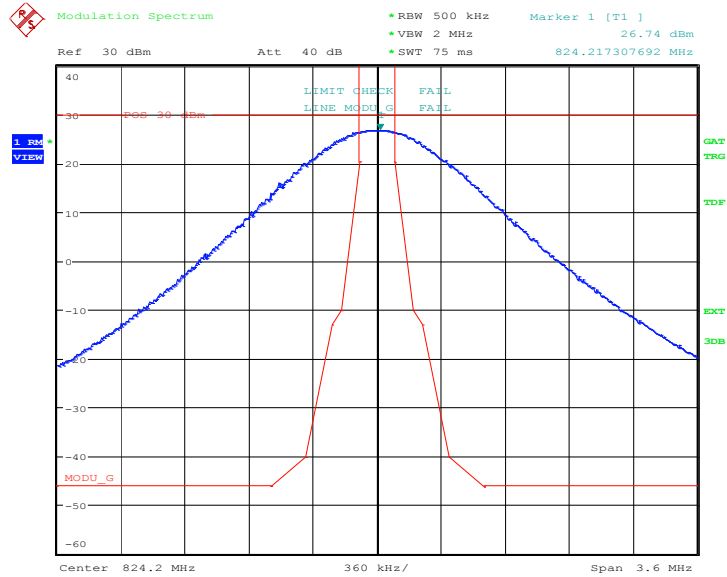
Channel 810-Occupied Bandwidth (-20dBc BW)


```
                                    *RBW  5 kHz          Marker 1 [T1 ]
                                    *VBW  10 kHz                    21.61 dBm
       Ref  30 dBm      Att  35 dB  *SWT  300 ms         1.909809615 GHz
```
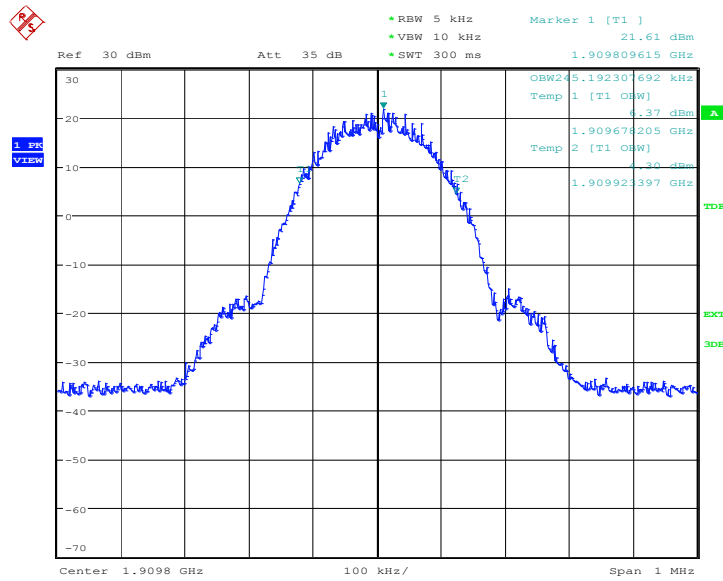
Date: 12.DEC.2011 06:17:50

EGPRS 1900(-20dBc)-IC

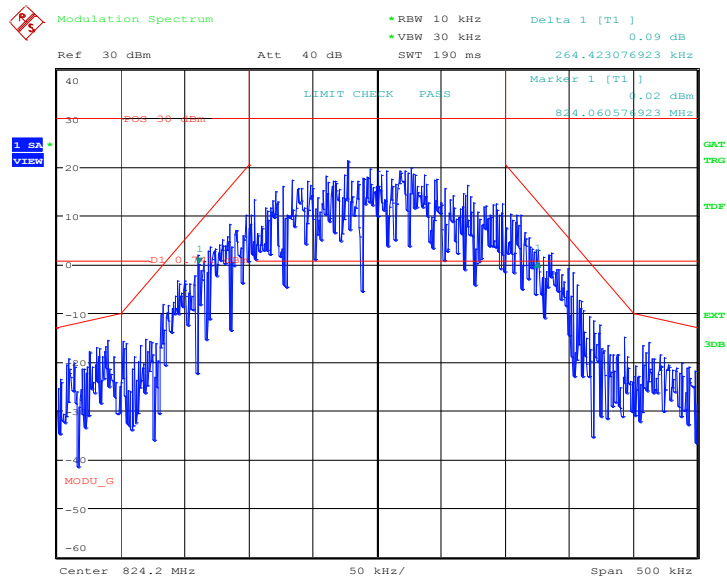| Frequency(MHz)	Occupied Bandwidth (-20dBc BW)(kHz)
1850.2	206.089
1880.0	213.461
1909.8	213.782

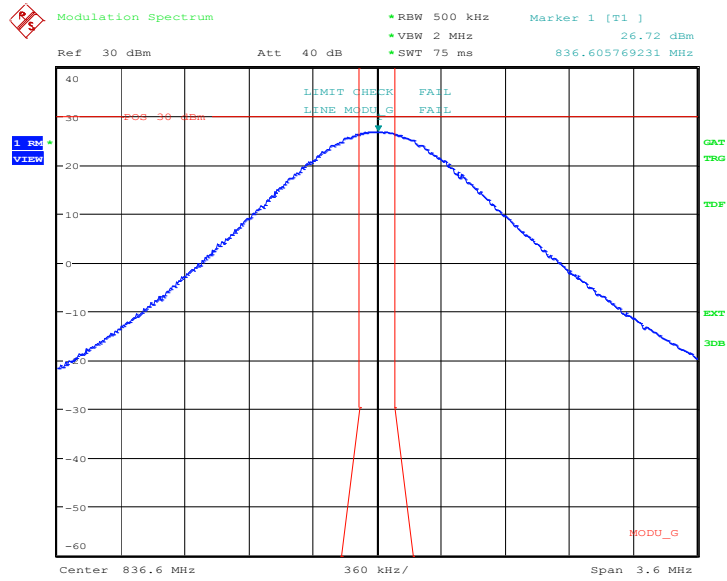**EGPRS 1900**
Channel 512-Occupied Reference Level
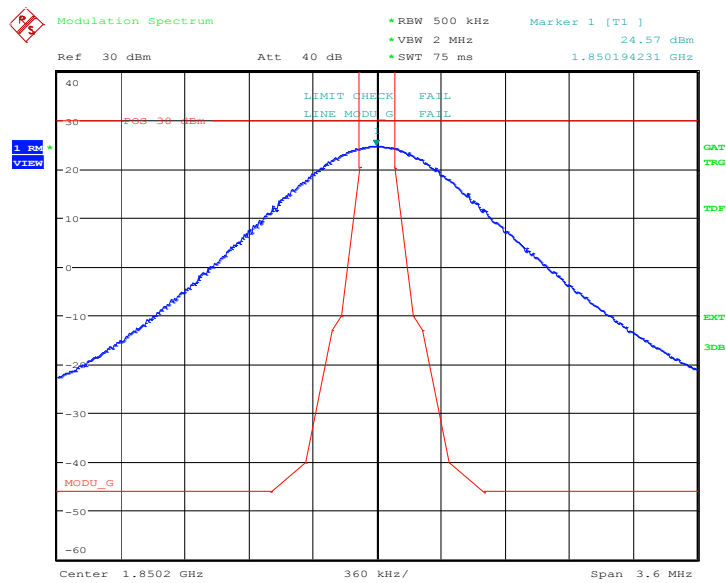
Date: 10.FEB.2012 08:14:33

Channel 512-Occupied Bandwidth (-20dBc BW)
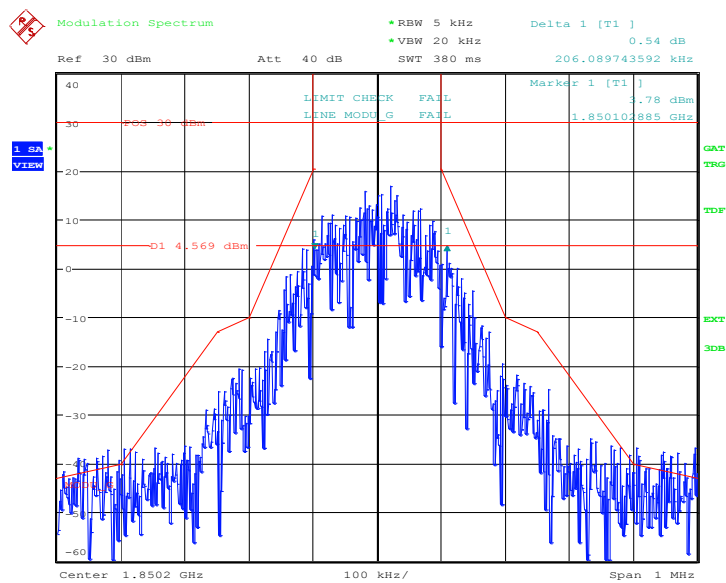
Date: 10.FEB.2012 08:15:25

Channel 661-Occupied Reference Level
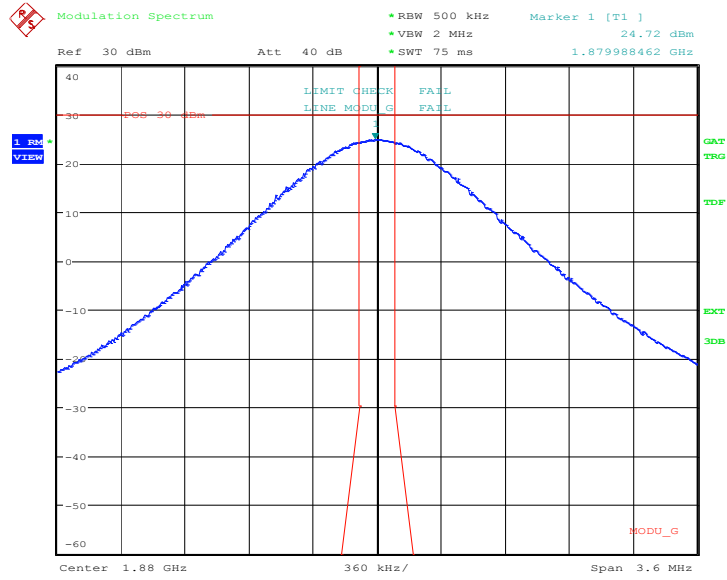
Date: 10.FEB.2012 08:16:38
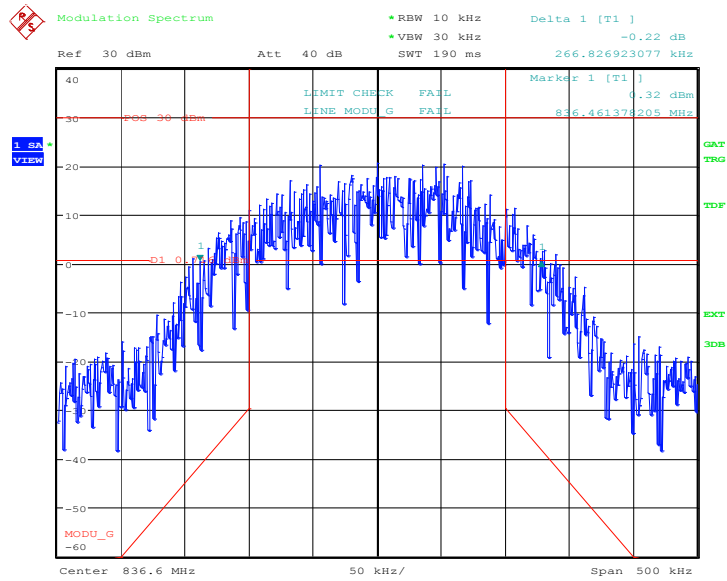
Channel 661-Occupied Bandwidth (-20dBc BW)
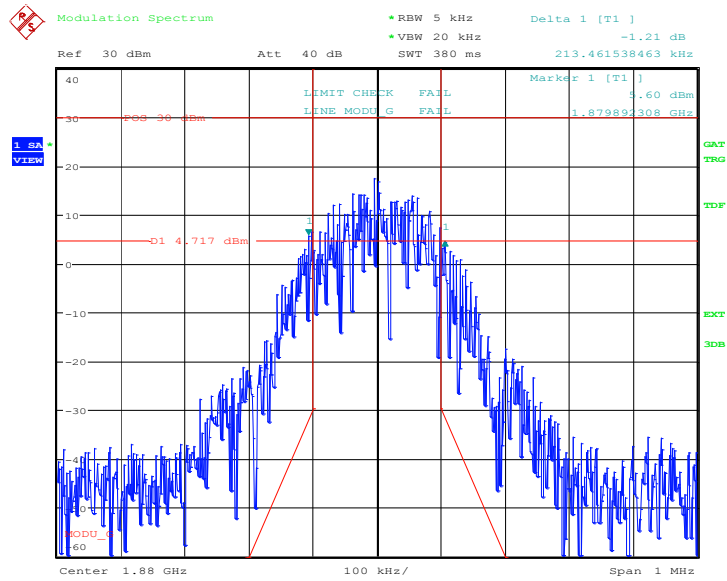
Date: 10.FEB.2012 08:17:34

Channel 810-Occupied Reference Level
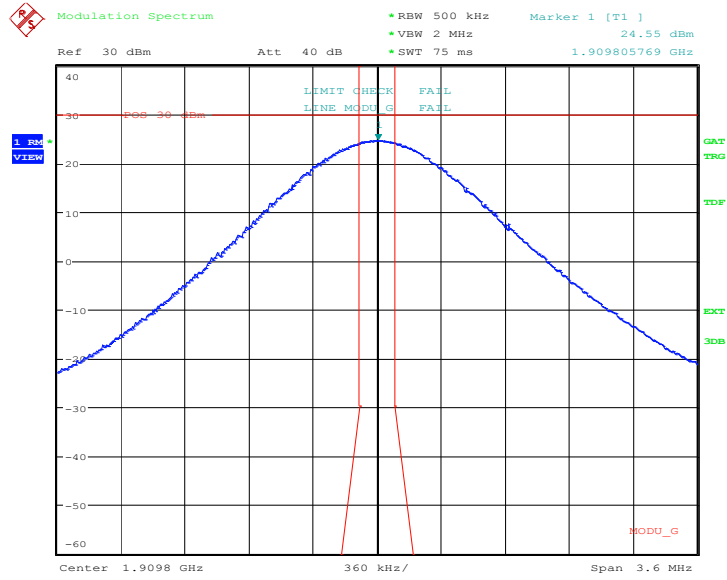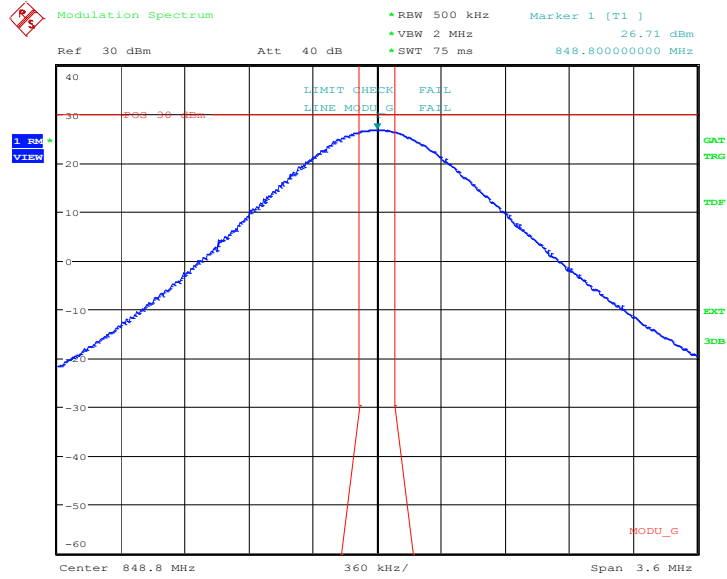

Date: 10.FEB.2012 08:18:36

Channel 810-Occupied Bandwidth (-20dBc BW)
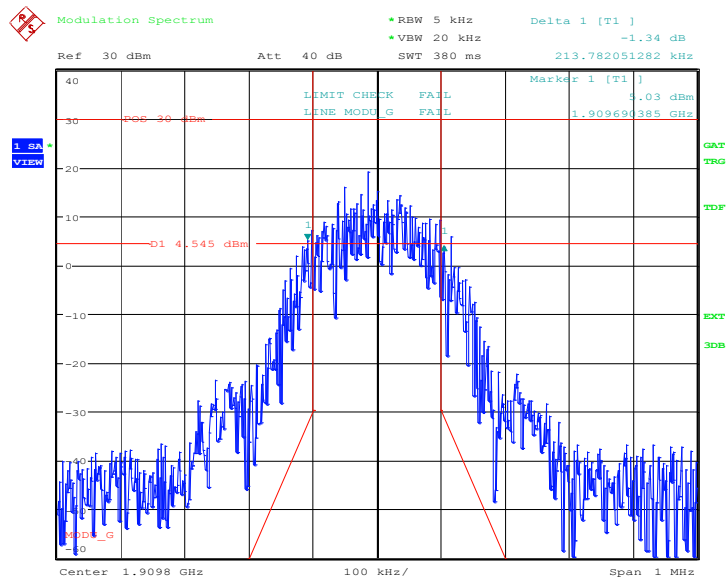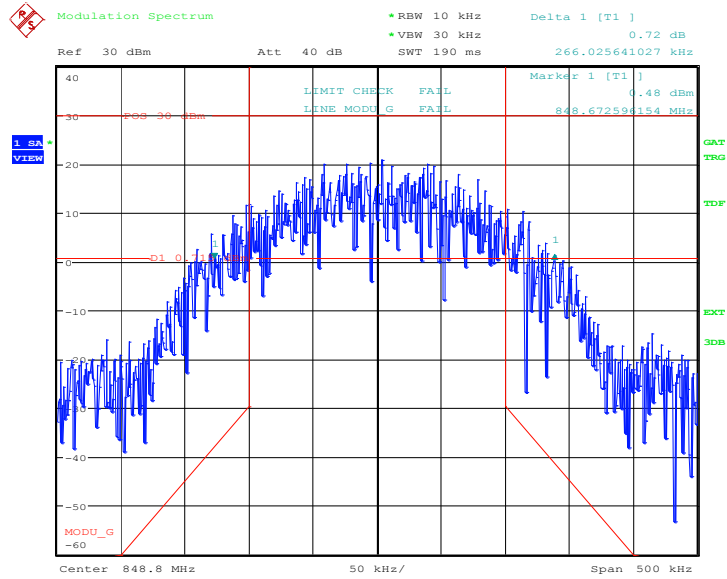

Date: 10.FEB.2012 08:19:36

A.6 EMISSION BANDWIDTH   (§22.917(b)/§24.238(b))

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 -26dBc BW. Spectrum analyzer plots are included on the following pages.

GSM 850(-26dBc)

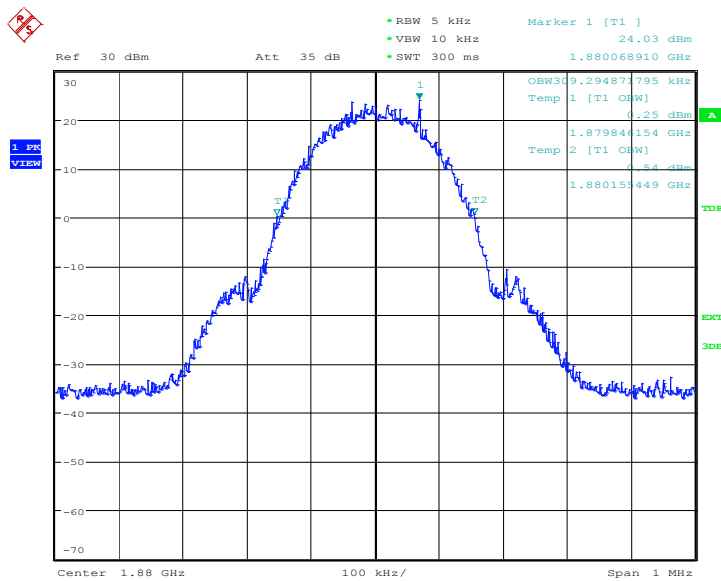| Frequency(MHz)	Occupied Bandwidth (–26dBc BW)(kHz)
824.2	307.692
836.6	307.692
848.8	307.692

GSM 850

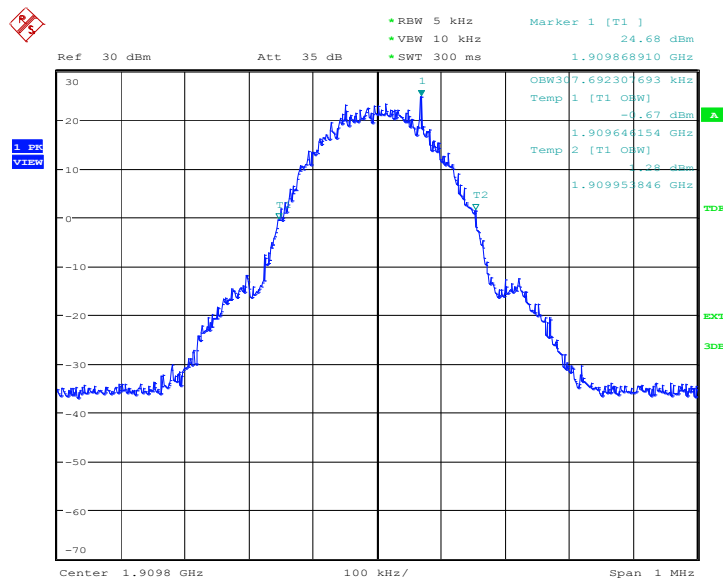**Channel 128-Occupied Bandwidth (-26dBc BW)**
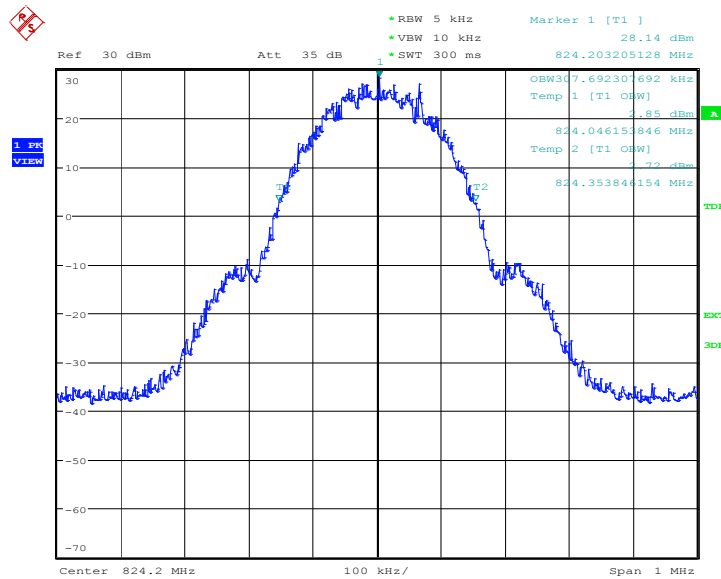
Date: 7.DEC.2011 23:44:42

Channel 190-Occupied Bandwidth (-26dBc BW)

Date: 7.DEC.2011 23:45:14

Channel 251-Occupied Bandwidth (-26dBc BW)
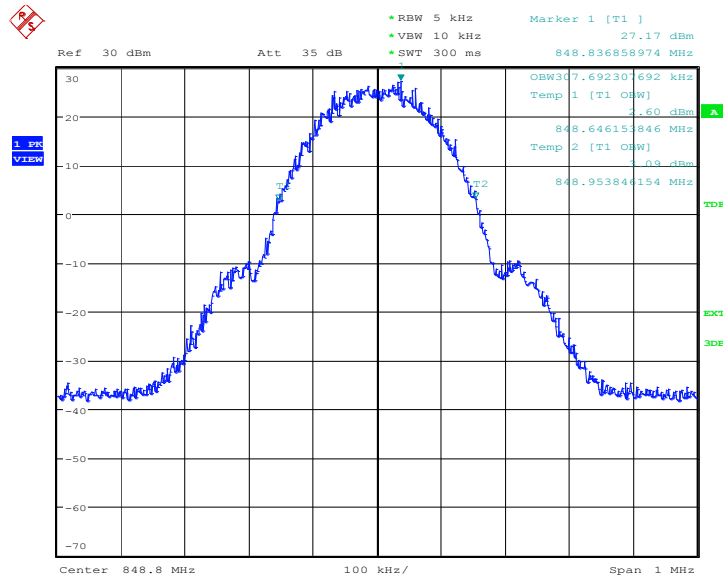
Date: 7.DEC.2011 23:45:47

GSM 850(-26dBc)-IC

Frequency(MHz)	Occupied Bandwidth (–26dBc BW)(kHz)
824.2	261.217
836.6	255.608
848.8	262.820

GSM 850

Channel 128-Occupied Bandwidth Reference Level

Date: 10.FEB.2012 07:11:06

Channel 128-Occupied Bandwidth (-26dBc BW)
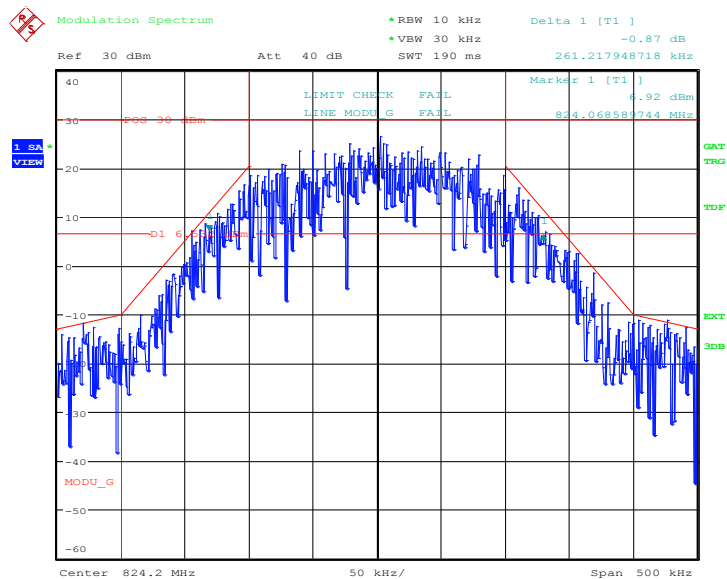
Date: 10.FEB.2012 07:13:14

Channel 190-Occupied Bandwidth Reference Level

Date: 10.FEB.2012 07:13:28

Channel 190-Occupied Bandwidth (-26dBc BW)
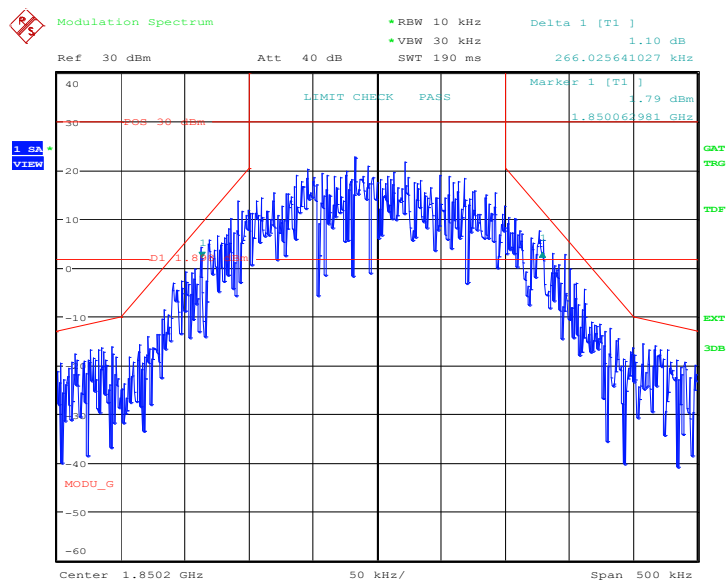

Date: 10.FEB.2012 07:15:06

Channel 251-Occupied Bandwidth Reference Level
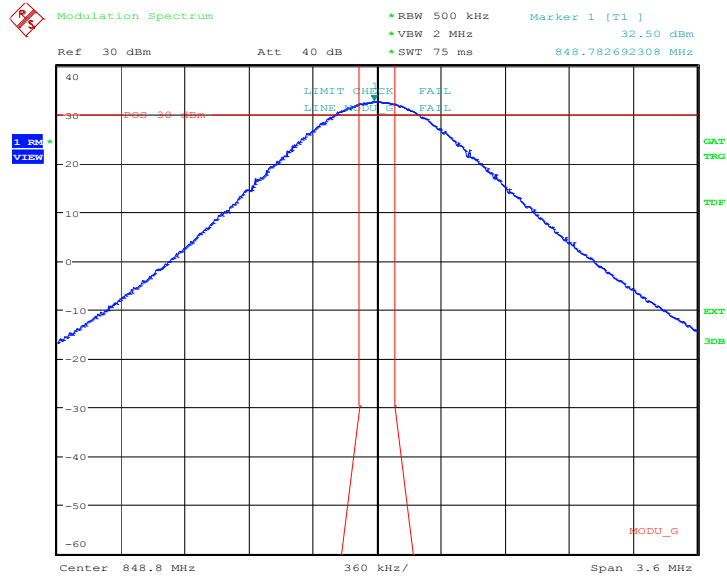
Date: 10.FEB.2012 07:15:20

Channel 251-Occupied Bandwidth (-26dBc BW)

Date: 10.FEB.2012 07:16:59

GPRS 850(-26dBc)

Frequency(MHz)	Occupied Bandwidth (–26dBc BW)(kHz)
824.2	306.089
836.6	307.692
848.8	309.294

GPRS 850

Channel 128-Occupied Bandwidth (-26dBc BW)

Date: 12.DEC.2011 06:00:07

Channel 190-Occupied Bandwidth (-26dBc BW)

```
                                        * RBW 5 kHz          Marker 1 [T1 ]
                                        * VBW 10 kHz                    27.15 dBm
        Ref  30 dBm         Att  35 dB  * SWT 300 ms           836.579166667 MHz

          30                                          OBW 307.692307692 kHz
                                                      Temp 1 [T1 OBW]
          20                                                        2.41 dBm      A
                                                            836.446153846 MHz
          10                                          Temp 2 [T1 OBW]
                                                                    .12 dBm
           0                                T2          836.753846154 MHz         TDF

         -10

         -20                                                                      EXT
                                                                                  3DB
         -30

         -40

         -50

         -60

         -70

        Center 836.6 MHz             100 kHz/              Span 1 MHz
```
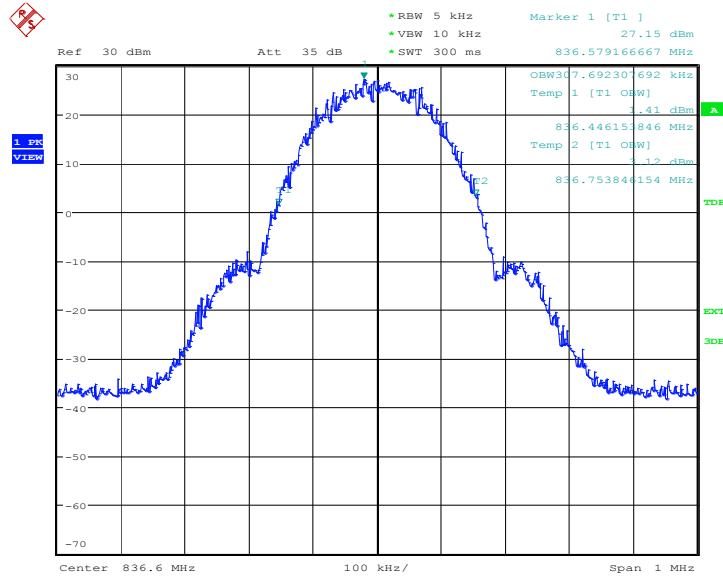
Date: 12.DEC.2011 06:00:39

Channel 251-Occupied Bandwidth (-26dBc BW)

```
                                        * RBW 5 kHz          Marker 1 [T1 ]
                                        * VBW 10 kHz                    27.65 dBm
        Ref  30 dBm         Att  35 dB  * SWT 300 ms           848.806410256 MHz

          30                                          OBW 309.294871795 kHz
                                                      Temp 1 [T1 OBW]
          20                                                        2.68 dBm      A
                                                            848.646153846 MHz
          10                                T2          Temp 2 [T1 OBW]
                                                                    .65 dBm
           0                                            848.955448718 MHz         TDF

         -10

         -20                                                                      EXT
                                                                                  3DB
         -30

         -40

         -50

         -60

         -70

        Center 848.8 MHz             100 kHz/              Span 1 MHz
```
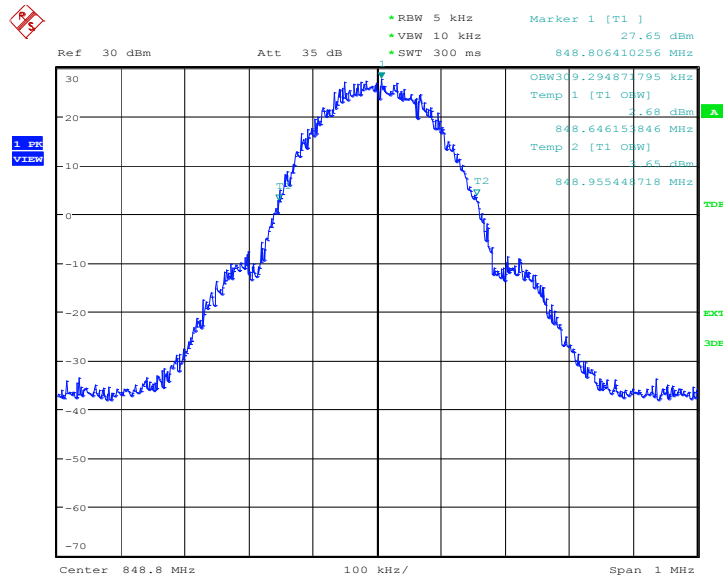
Date: 12.DEC.2011 06:01:12

GPRS 850(-26dBc)-IC

Frequency(MHz)	Occupied Bandwidth (–26dBc BW)(kHz)
824.2	257.211
836.6	253.205
848.8	256.410

GPRS 850

Channel 128-Occupied Bandwidth Reference Level
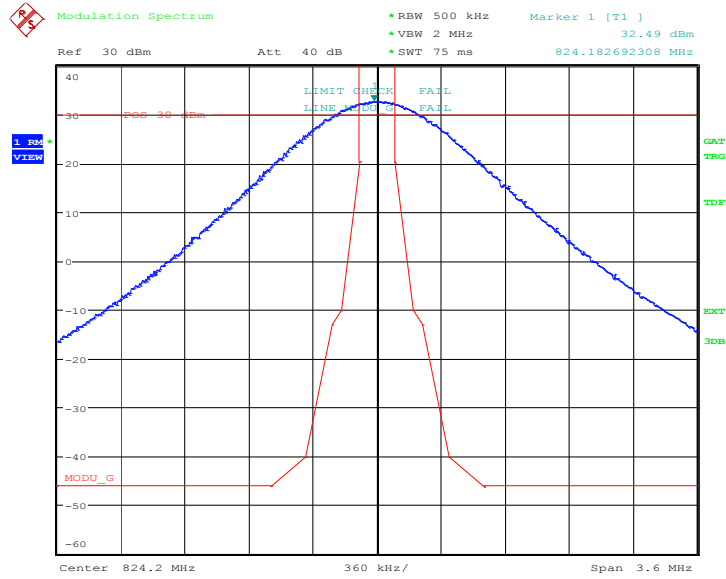
Date: 10.FEB.2012 07:37:02

Channel 128-Occupied Bandwidth (-26dBc BW)

Date: 10.FEB.2012 07:39:01

Channel 190-Occupied Bandwidth (-20dBc BW)
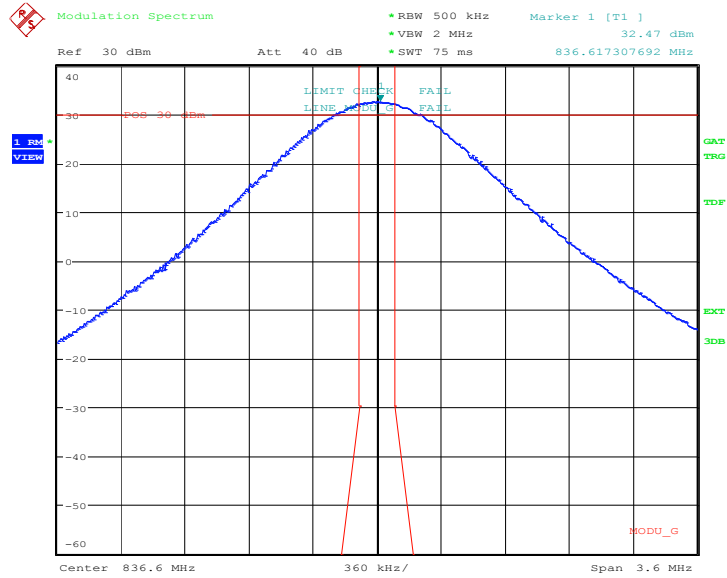
Date: 10.FEB.2012 07:39:15
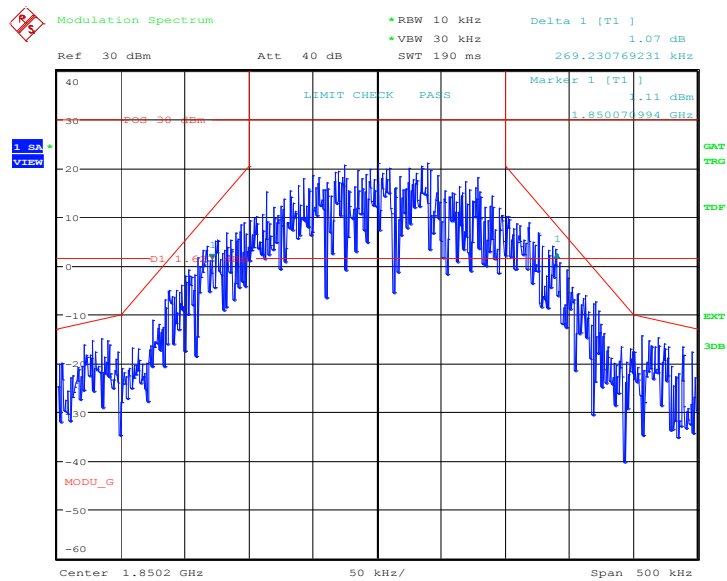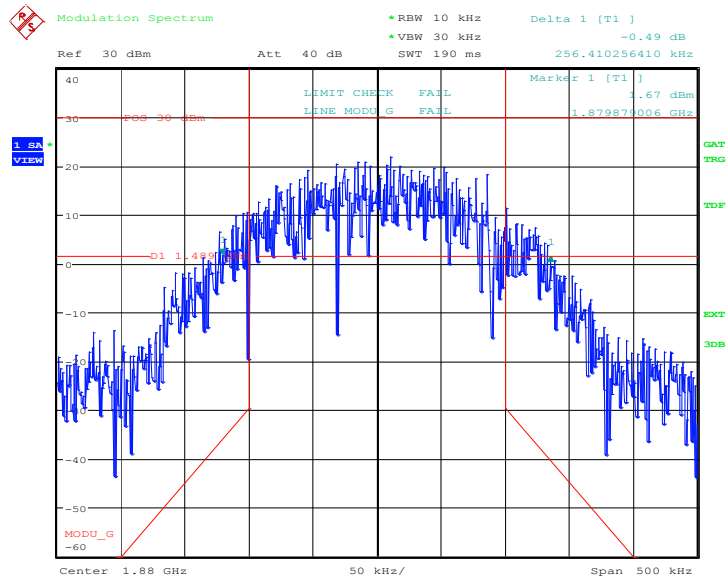
Channel 190-Occupied Bandwidth (-20dBc BW)
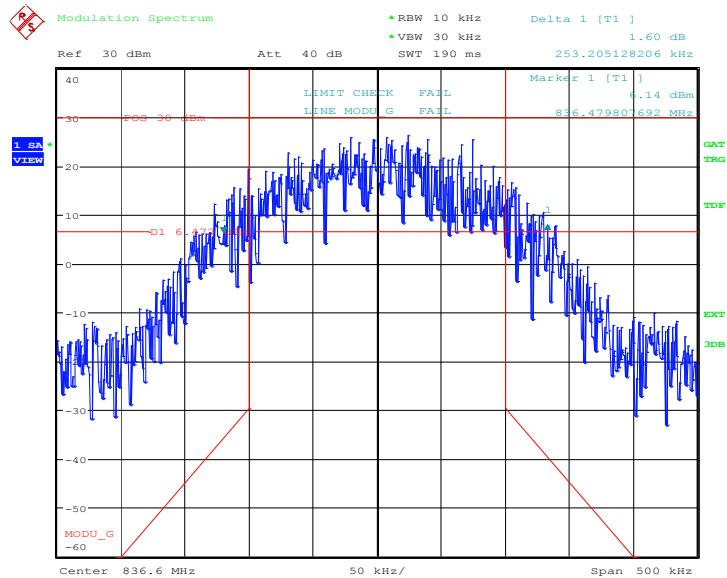
Date: 10.FEB.2012 07:42:15

Channel 251-Occupied Bandwidth Reference Level

Date: 10.FEB.2012 07:42:30
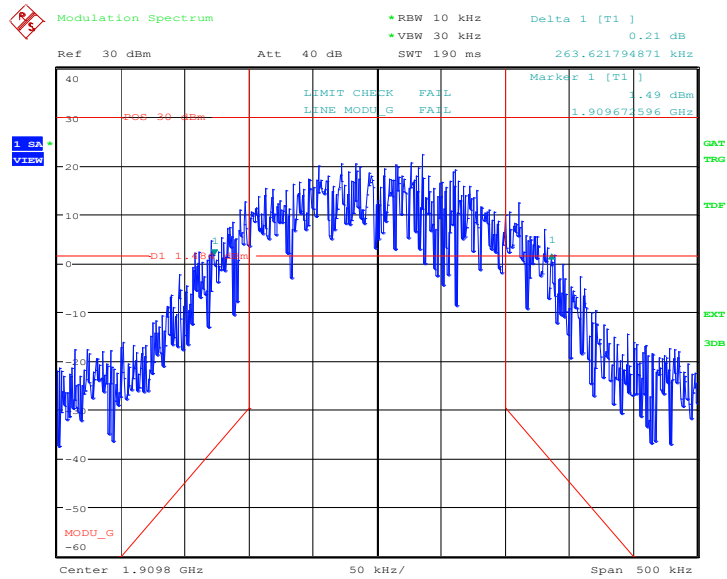
Channel 251-Occupied Bandwidth (-26dBc BW)

Date: 10.FEB.2012 07:44:37

EGPRS 850(-26dBc)

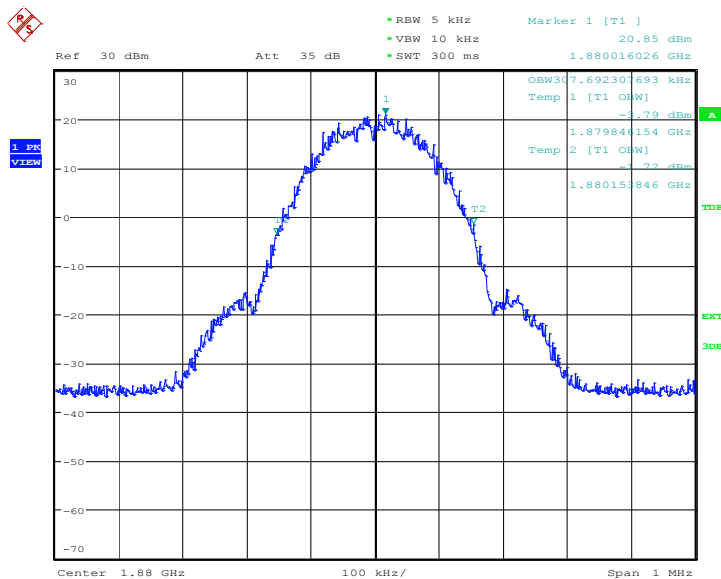| Frequency(MHz)	Occupied Bandwidth (–26dBc BW)(kHz)
824.2	309.294
836.6	309.294
848.8	310.897

EGPRS 850

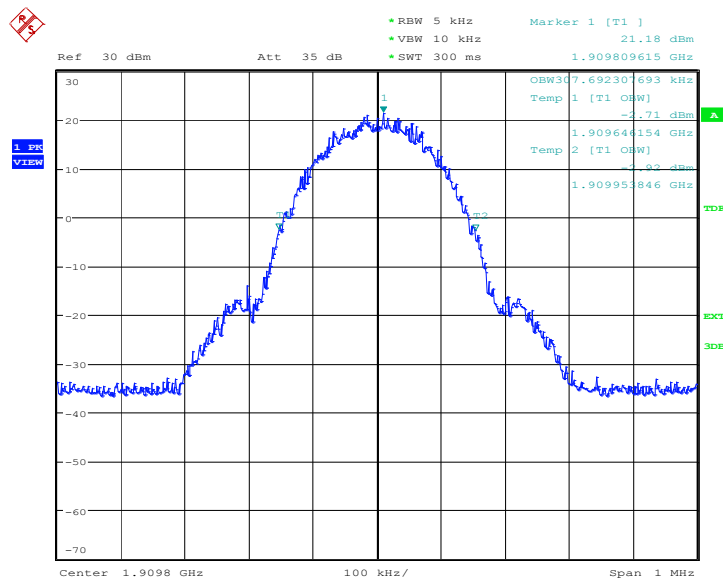**Channel 128-Occupied Bandwidth (-26dBc BW)**

Date: 12.DEC.2011 06:07:11

Channel 190-Occupied Bandwidth (-26dBc BW)

Date: 12.DEC.2011 06:07:43

Channel 251-Occupied Bandwidth (-26dBc BW)

Date: 12.DEC.2011 06:08:15

EGPRS 850(-26dBc)-IC

Frequency(MHz)	Occupied Bandwidth (–26dBc BW)(kHz)
824.2	264.423
836.6	266.826
848.8	266.025

EGPRS 850

Channel 128-Occupied Reference level

Date: 10.FEB.2012 08:01:16

Channel 128-Occupied Bandwidth (-26dBc BW)

Date: 10.FEB.2012 08:04:10

Channel 190-Occupied Bandwidth Reference level

Date: 10.FEB.2012 08:04:24

Channel 190-Occupied Bandwidth (-26dBc BW)
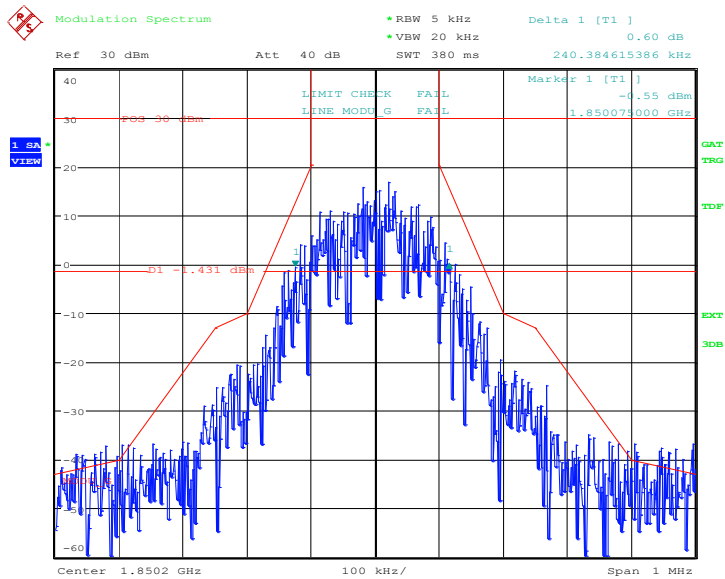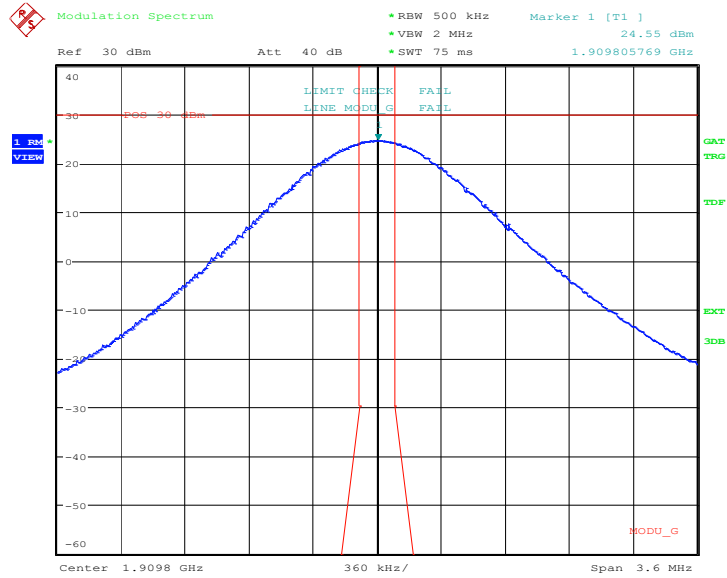

Date: 10.FEB.2012 08:06:19

Channel 251-Occupied Bandwidth Reference Level

Date: 10.FEB.2012 08:06:34

Channel 251-Occupied Bandwidth (-26dBc BW)

Date: 10.FEB.2012 08:08:20

PCS 1900(-26dBc)

Frequency(MHz)	Occupied Bandwidth (–26dBc BW)(kHz)
1850.2	310.897
1880.0	309.294
1909.8	307.692

PCS 1900

Channel 512-Occupied Bandwidth (-26dBc BW)
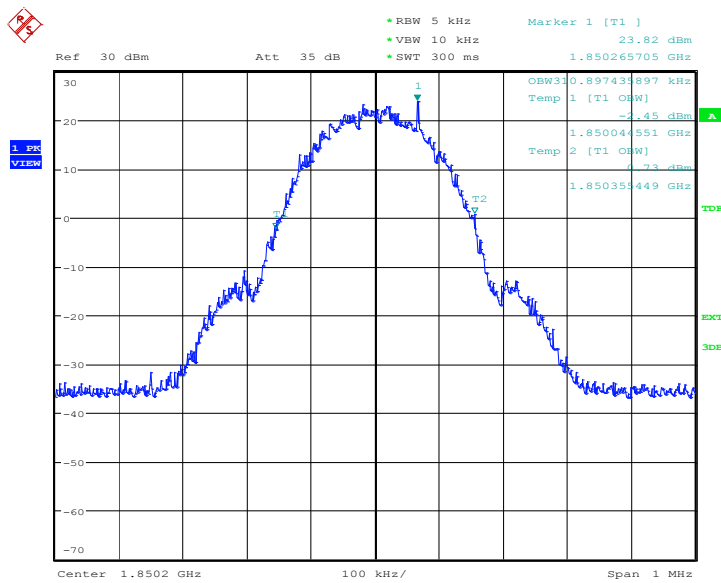
Date: 7.DEC.2011 23:59:39

Channel 661-Occupied Bandwidth (-26dBc BW)

Date: 8.DEC.2011 00:00:11

Channel 810-Occupied Bandwidth (-26dBc BW)


```
                                          *RBW  5 kHz         Marker 1 [T1 ]
                                          *VBW  10 kHz                   24.68 dBm
       Ref  30 dBm            Att  35 dB  *SWT  300 ms        1.909868910 GHz
        30                                          1   OBW307.692307693 kHz
                                                         Temp 1 [T1 OBW]
          20                                                      -0.67 dBm  A
 1 PK                                                    1.909646154 GHz
 VIEW     10                                             Temp 2 [T1 OBW]
                                                                  -.28  dBm
           0                              T2            1.909953846 GHz
                                                                          TDF
         -10

         -20                                                              EXT
                                                                          3DB
         -30

         -40

         -50

         -60

         -70
       Center  1.9098 GHz          100 kHz/              Span 1 MHz
```

Date: 8.DEC.2011 00:00:43

PCS 1900(-26dBc)-IC

Frequency(MHz)	Occupied Bandwidth (–26dBc BW)(kHz)
1850.2	266.025
1880.0	269.230
1909.8	250.801

PCS 1900

Channel 512-Occupied Bandwidth Reference Level
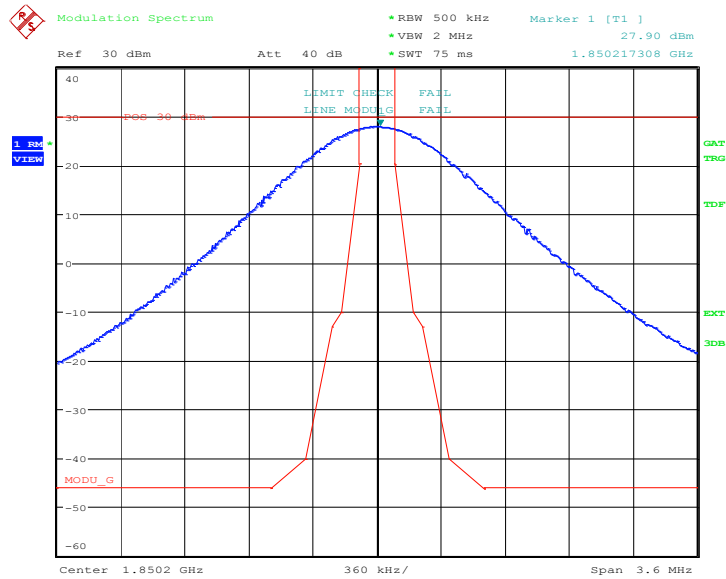
Date: 10.FEB.2012 07:25:07

Channel 512-Occupied Bandwidth (-26dBc BW)

Date: 10.FEB.2012 07:26:50

Channel 661-Occupied Reference Level
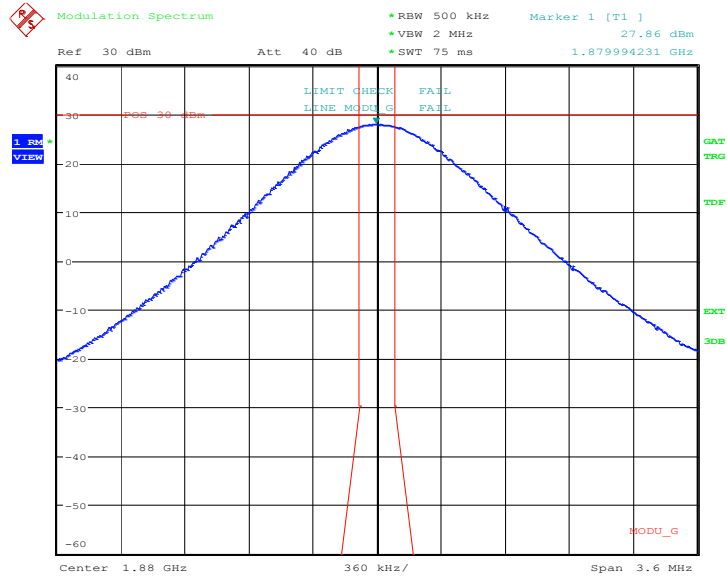
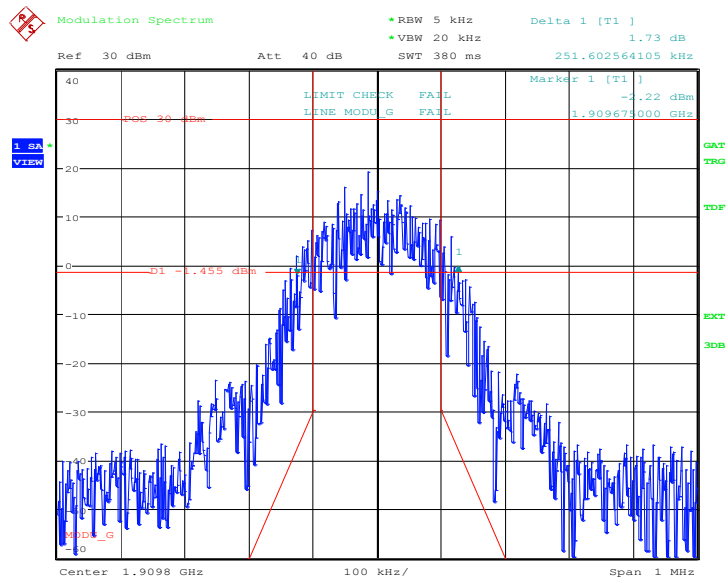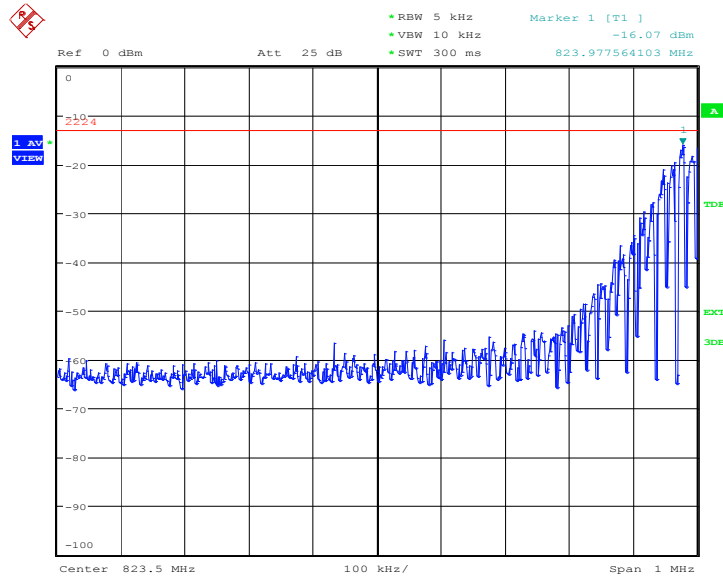Date: 10.FEB.2012 07:27:05

Channel 661-Occupied Bandwidth (-26dBc BW)
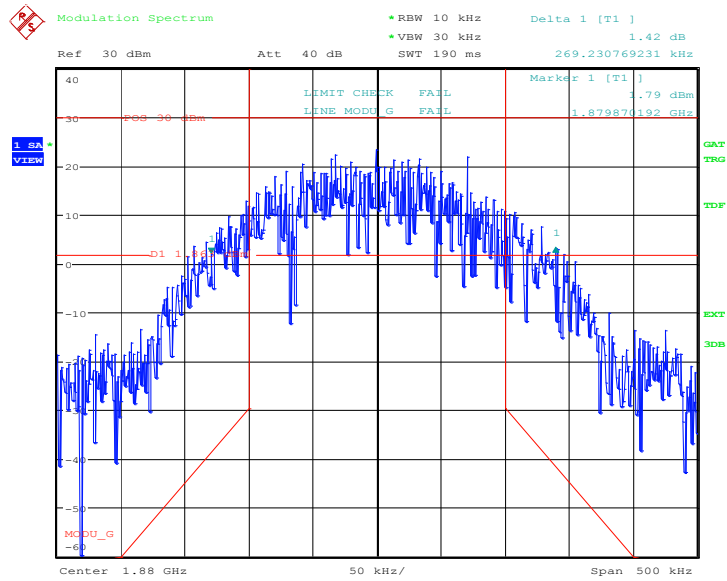
Date: 10.FEB.2012 07:29:14

Channel 810-Occupied Bandwidth Reference Level
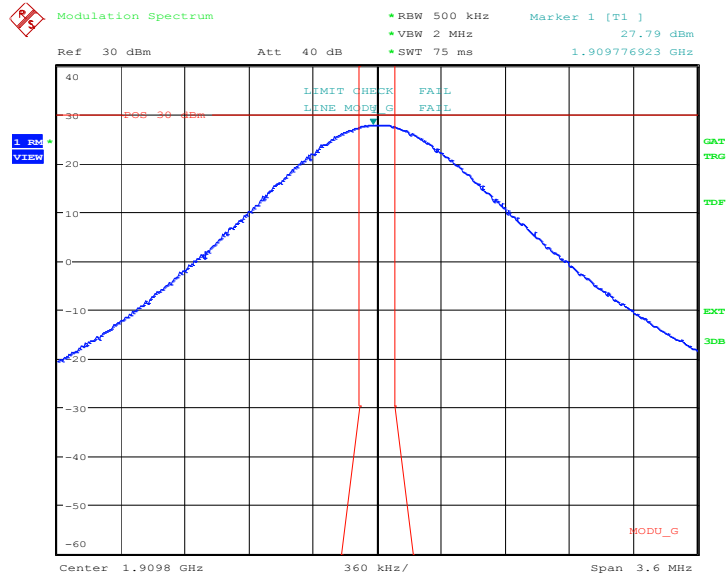
Date: 10.FEB.2012 07:29:29

Channel 810-Occupied Bandwidth (-26dBc BW)
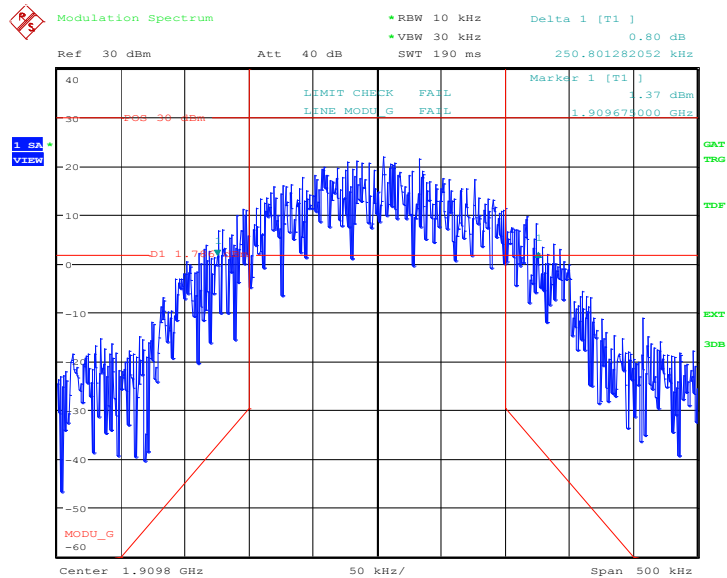
Date: 10.FEB.2012 07:32:46

GPRS 1900(-26dBc)

Frequency(MHz)	Occupied Bandwidth (–26dBc BW)(kHz)
1850.2	310.897
1880.0	310.897
1909.8	309.294

GPRS 1900

Channel 512-Occupied Bandwidth (-26dBc BW)
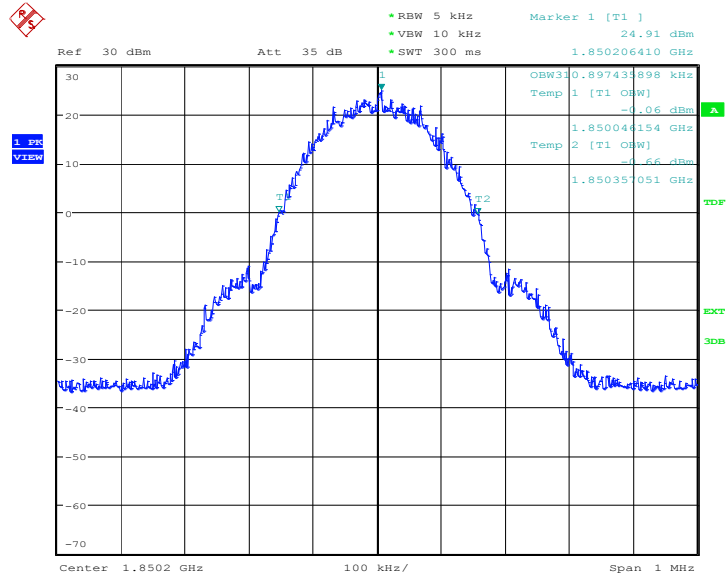
Date: 8.DEC.2011 00:28:27

Channel 661-Occupied Bandwidth (-26dBc BW)
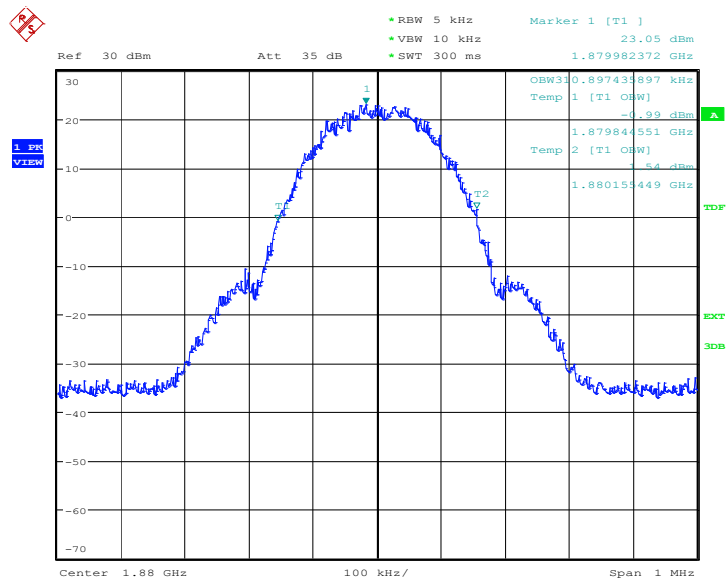
Date: 8.DEC.2011 00:28:59

Channel 810-Occupied Bandwidth (-26dBc BW)


```
                                        * RBW  5 kHz        Marker 1 [T1 ]
                                        * VBW  10 kHz                    23.73 dBm
      Ref   30 dBm        Att   35 dB   * SWT  300 ms       1.909806410 GHz
  30                                                  OBW 309.294871795 kHz
                                                      Temp 1 [T1 OBW]
  20                                                            -0.04 dBm    A
                                                      1.909646154 GHz
  10                                                  Temp 2 [T1 OBW]
                                                            -2.63 dBm
   0                                                  1.909955449 GHz        TDF
 -10
 -20                                                                         EXT
 -30                                                                         3DB
 -40
 -50
 -60
 -70
      Center  1.9098 GHz              100 kHz/               Span  1 MHz
```
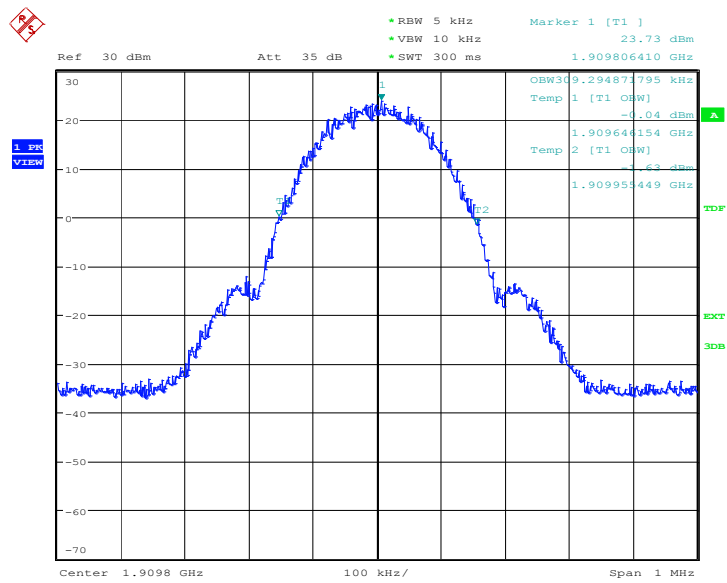
Date: 8.DEC.2011 00:29:31

GPRS 1900(-26dBc)-IC

Frequency(MHz)	Occupied Bandwidth (–26dBc BW)(kHz)
1850.2	269.230
1880.0	256.410
1909.8	263.621

GPRS 1900

Channel 512-Occupied Bandwidth Reference Level
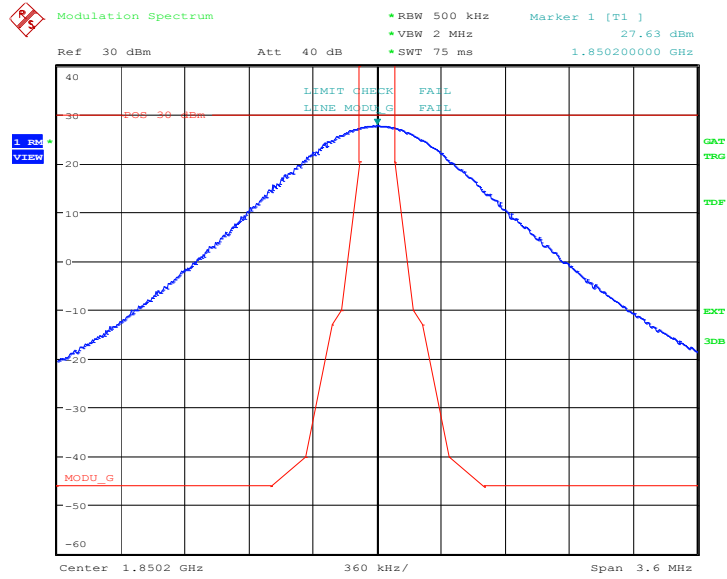
Date: 10.FEB.2012 07:53:58

Channel 512-Occupied Bandwidth -26dBc BW)

Date: 10.FEB.2012 07:55:24

Channel 661-Occupied Bandwidth Reference Level
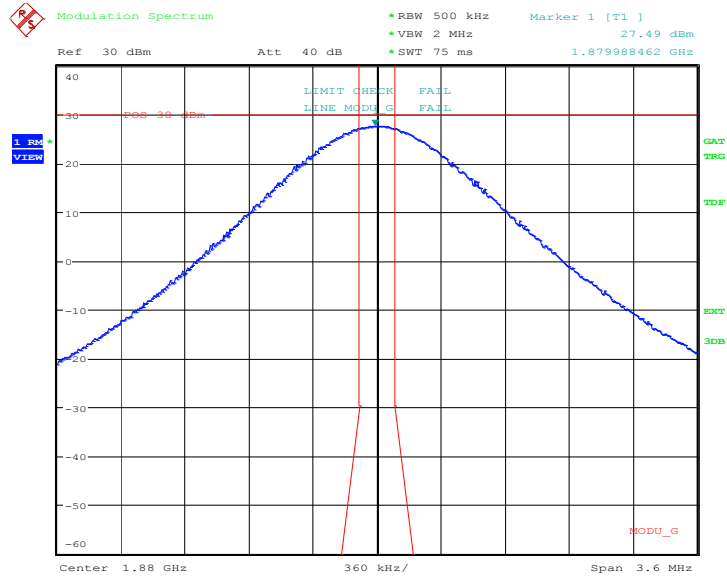
Date: 10.FEB.2012 07:55:38

Channel 661-Occupied Bandwidth (-26dBc BW)

Date: 10.FEB.2012 07:57:13

Channel 810-Occupied Reference Level
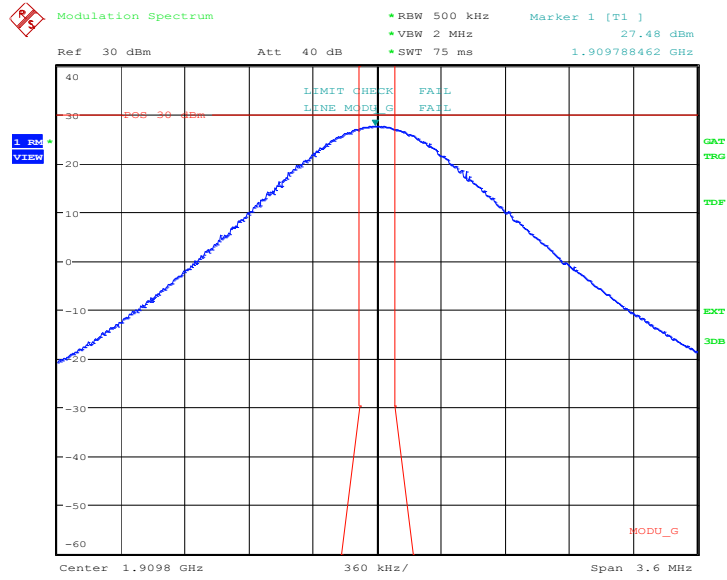
Date: 10.FEB.2012 07:57:27

Channel 810-Occupied Bandwidth (-26dBc BW)

Date: 10.FEB.2012 07:59:16

EGPRS 1900(-26dBc)

Frequency(MHz)	Occupied Bandwidth (–26dBc BW)(kHz)
1850.2	309.294
1880.0	307.692
1909.8	307.692

EGPRS 1900

Channel 512-Occupied Bandwidth (-26dBc BW)
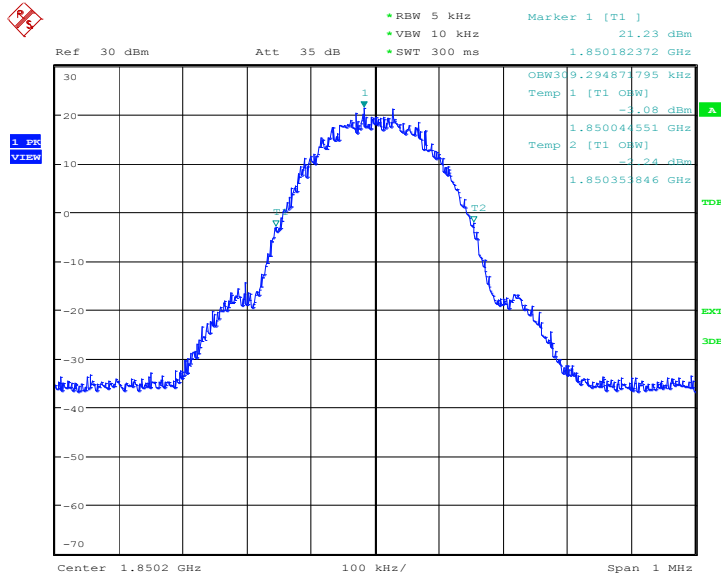
Date: 12.DEC.2011 06:18:24

Channel 661-Occupied Bandwidth (-26dBc BW)

Date: 12.DEC.2011 06:18:56

Channel 810-Occupied Bandwidth (-26dBc BW)

Date: 12.DEC.2011 06:19:29

EGPRS 1900(-26dBc)-IC

Frequency(MHz)	Occupied Bandwidth (–26dBc BW)(kHz)
1850.2	240.384
1880.0	264.423
1909.8	251.602

EGPRS 1900

Channel 512-Occupied Reference Level
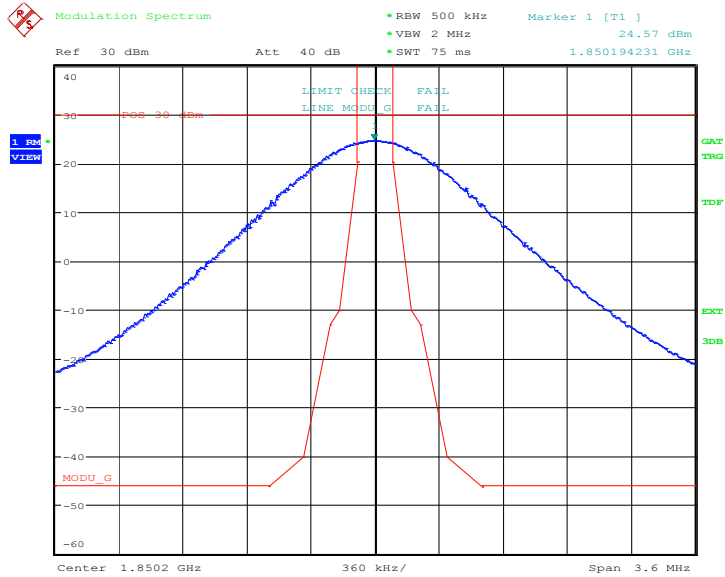
Date: 10.FEB.2012 08:14:33

Channel 512-Occupied Bandwidth (-26dBc BW)

Date: 10.FEB.2012 08:16:24

Channel 661-Occupied Reference Level
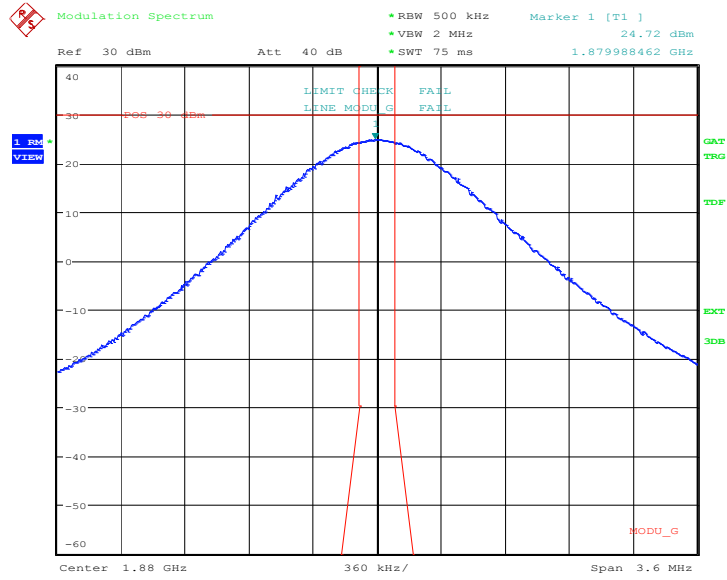
Date: 10.FEB.2012 08:16:38

Channel 661-Occupied Bandwidth (-26dBc BW)
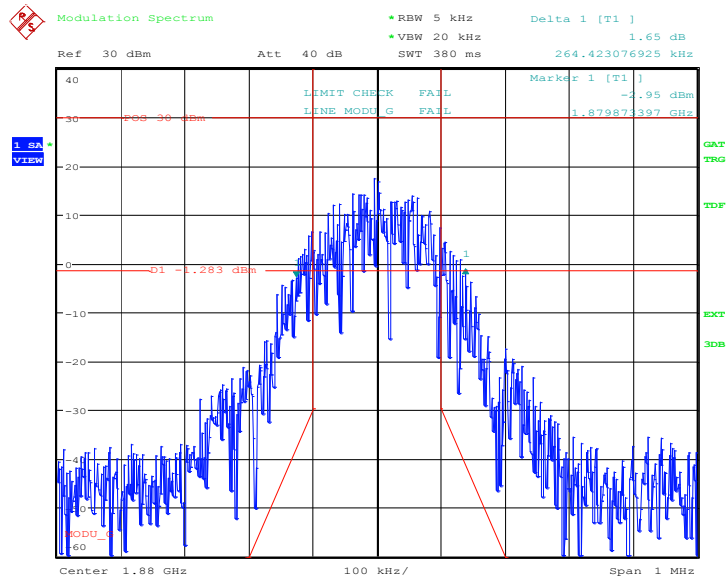
Date: 10.FEB.2012 08:18:22

Channel 810-Occupied Reference Level

Date: 10.FEB.2012 08:18:36

Channel 810-Occupied Bandwidth (-26dBc BW)

Date: 10.FEB.2012 08:20:17

A.7 BAND EDGE COMPLIANCE   (§22.917(b)/§24.238(b))

GSM 850
LOW BAND EDGE BLOCK-A (GSM850)-Channel 128

```
                                    * RBW  5 kHz      Marker 1 [T1 ]
                                    * VBW  10 kHz            -16.07 dBm
         Ref   0 dBm        Att  25 dB   * SWT  300 ms     823.977564103 MHz
```

Date: 7.DEC.2011 23:45:56

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

```
                                    * RBW  5 kHz      Marker 1 [T1 ]
                                    * VBW  10 kHz            -15.33 dBm
         Ref   0 dBm        Att  25 dB   * SWT  300 ms     849.017628205 MHz
```
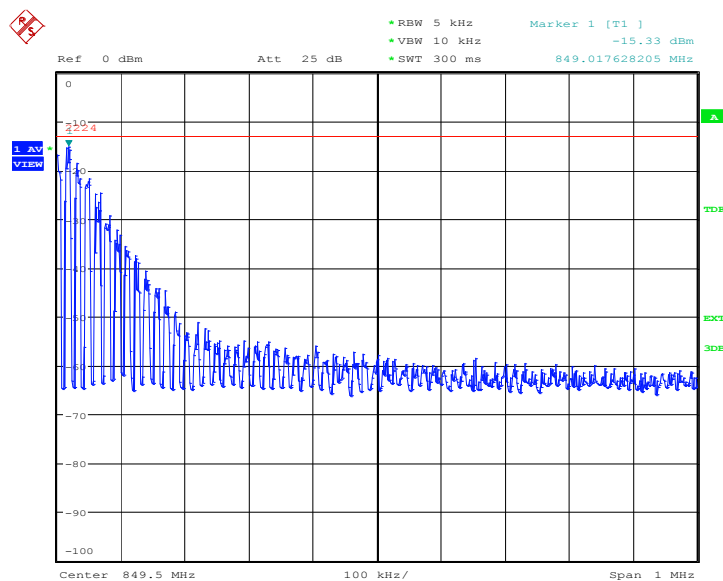
Date: 7.DEC.2011 23:46:05

GPRS 850
LOW BAND EDGE BLOCK-A (GSM850)-Channel 128
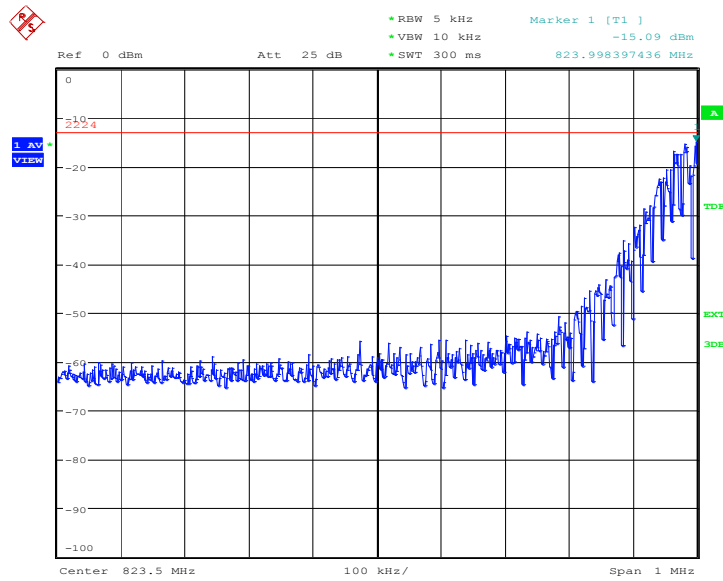
Date: 12.DEC.2011 06:01:21

HIGH BAND EDGE BLOCK-C (GSM850) –Channel 251
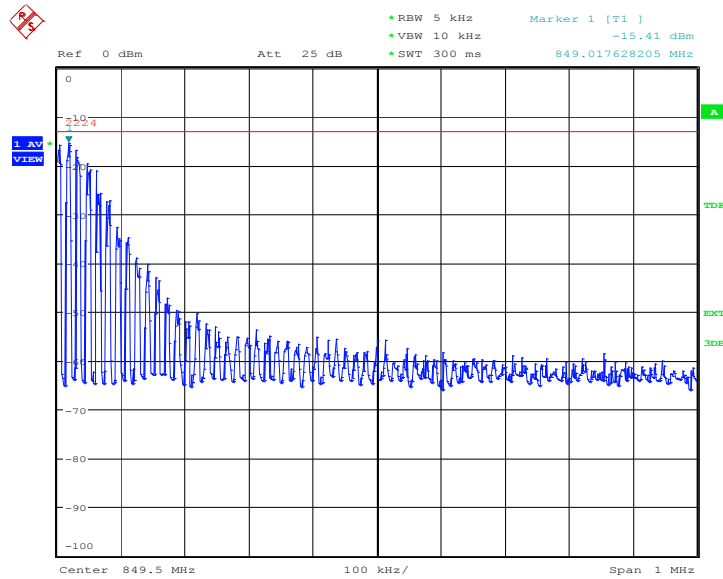
Date: 12.DEC.2011 06:01:30

EGPRS 850

LOW BAND EDGE BLOCK-A (GSM850)-Channel 128
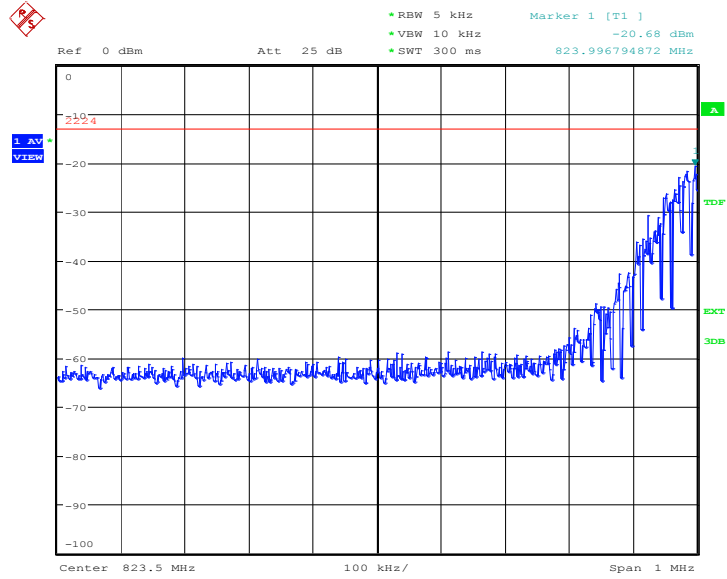
Date: 12.DEC.2011 06:08:24

HIGH BAND EDGE BLOCK-C (GSM850) –Channel 251
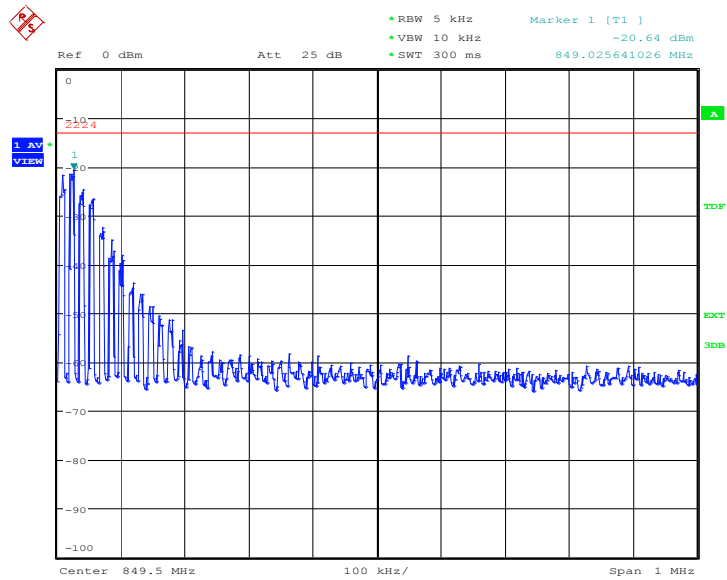
Date: 12.DEC.2011 06:08:33

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

* RBW 5 kHz		Marker 1 [T1]
* VBW 10 kHz		-18.29 dBm
Ref 0 dBm	Att 25 dB	* SWT 300 ms	1.849983974 GHz

Center 1.8495 GHz   100 kHz/   Span 1 MHz
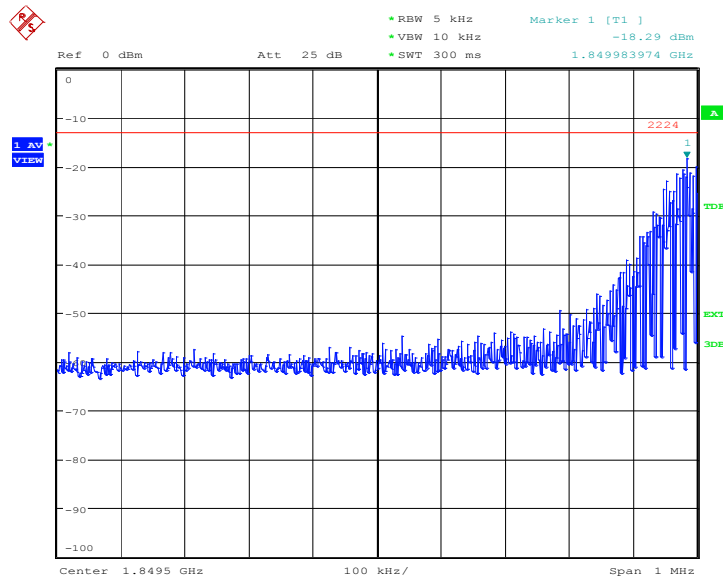
Date: 8.DEC.2011 00:00:52

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

* RBW 5 kHz		Marker 1 [T1]
* VBW 10 kHz		-19.64 dBm
Ref 0 dBm	Att 25 dB	* SWT 300 ms	1.910022436 GHz

Center 1.9105 GHz   100 kHz/   Span 1 MHz
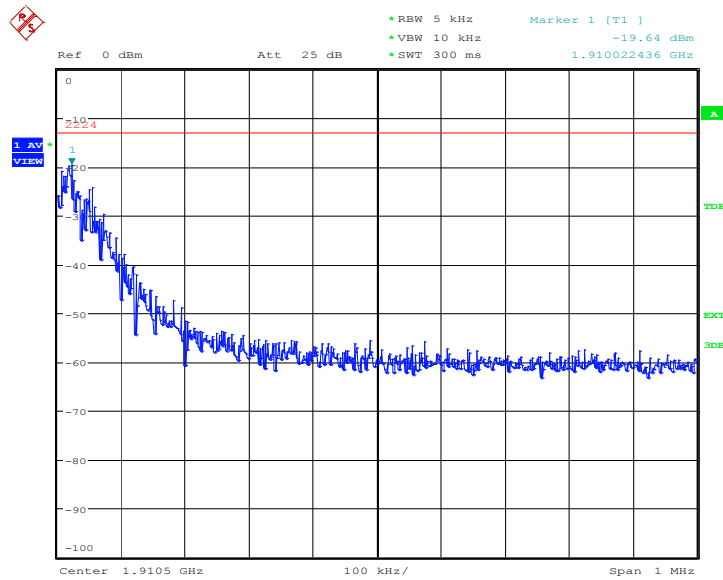
Date: 8.DEC.2011 00:01:01

GPRS 1900

LOW BAND EDGE BLOCK-A (PCS-1900)-Channel 512
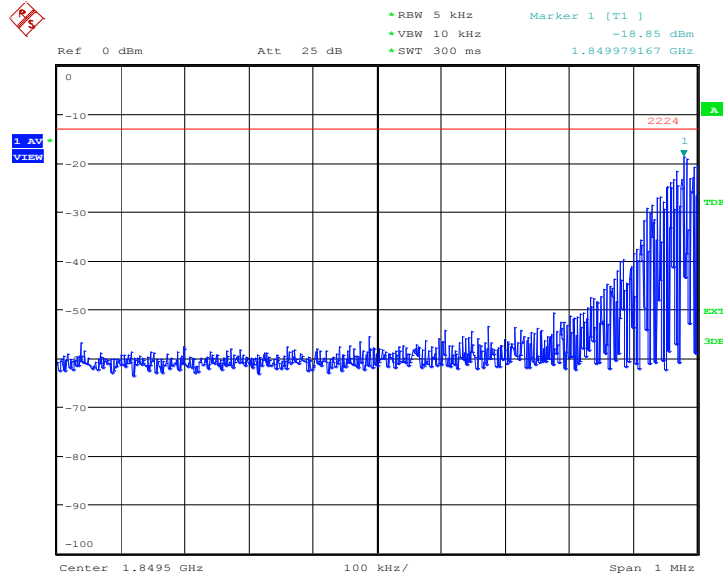
Date: 8.DEC.2011 00:29:40

HIGH BAND EDGE BLOCK-C (PCS-1900) –Channel 810
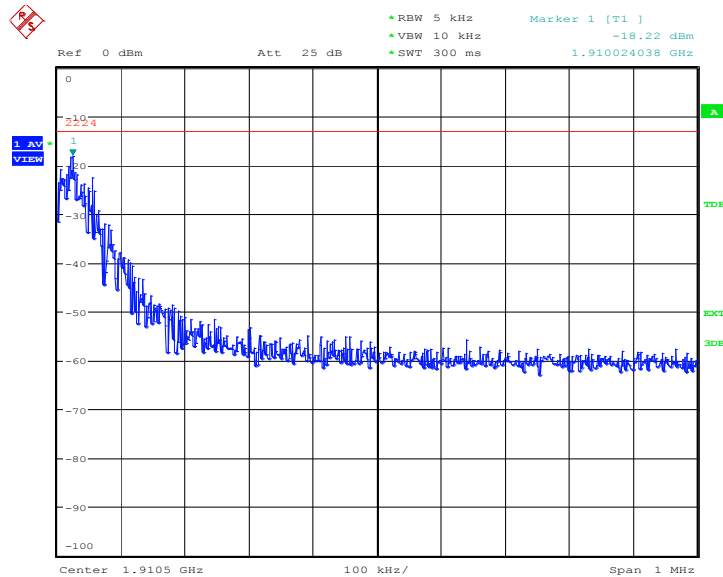
Date: 8.DEC.2011 00:29:49

EGPRS 1900
LOW BAND EDGE BLOCK-A (PCS-1900)-Channel 512
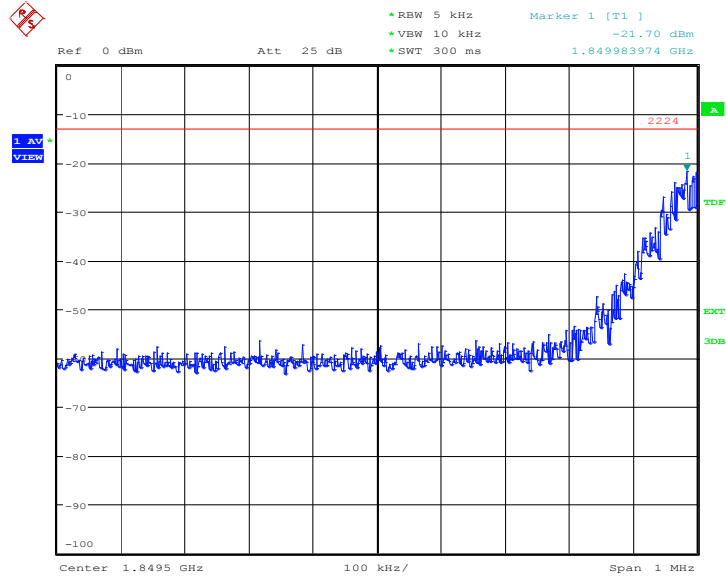
Date: 12.DEC.2011 06:19:38

HIGH BAND EDGE BLOCK-C (PCS-1900) –Channel 810
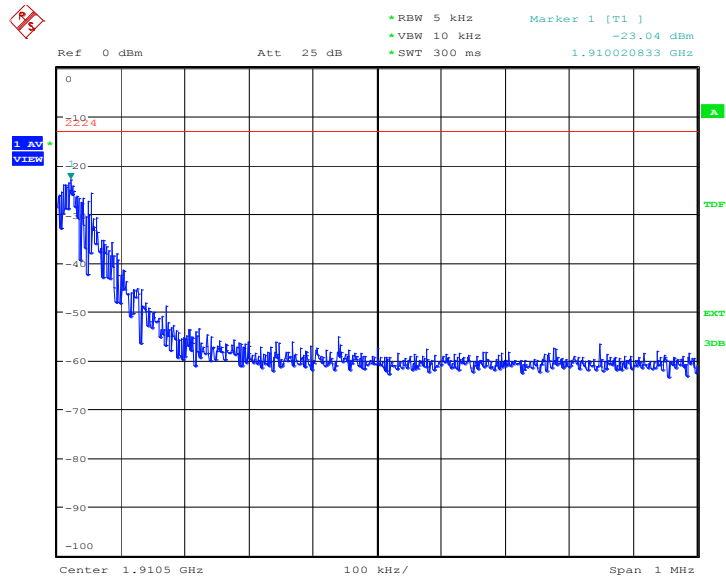
Date: 12.DEC.2011 06:19:47

A.8 CONDUCTED SPURIOUS EMISSION (§2.1057/§22.917/§24.238)

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

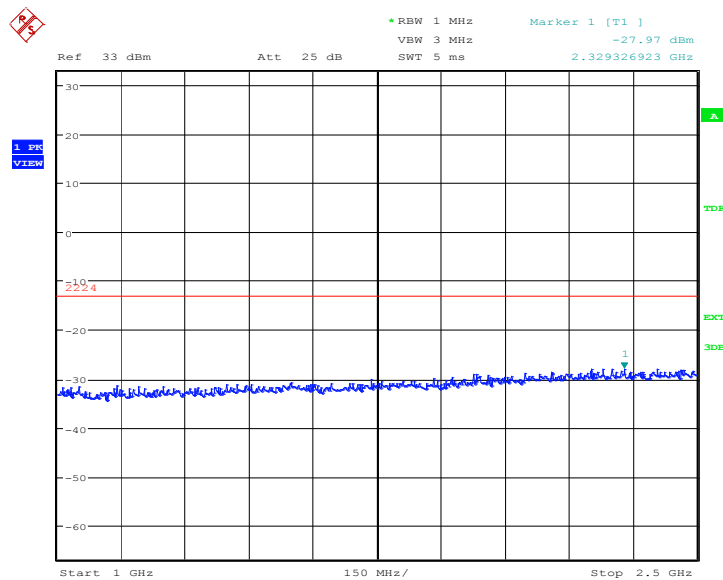Spurious emission limit –13dBm.

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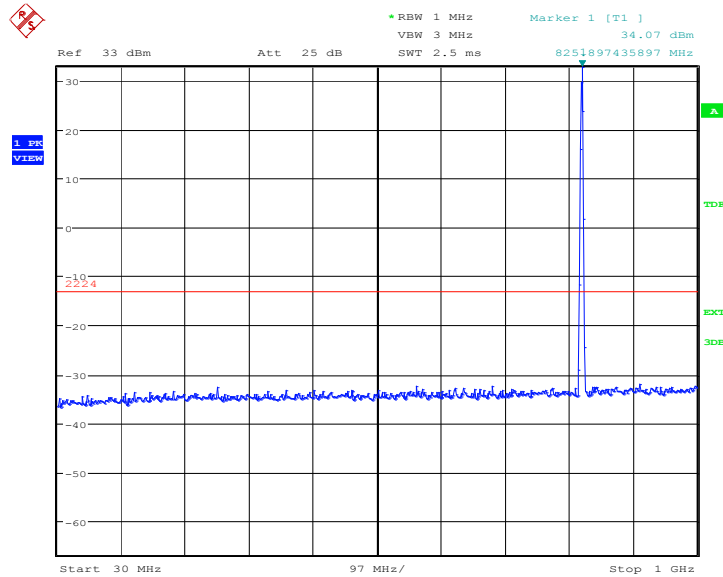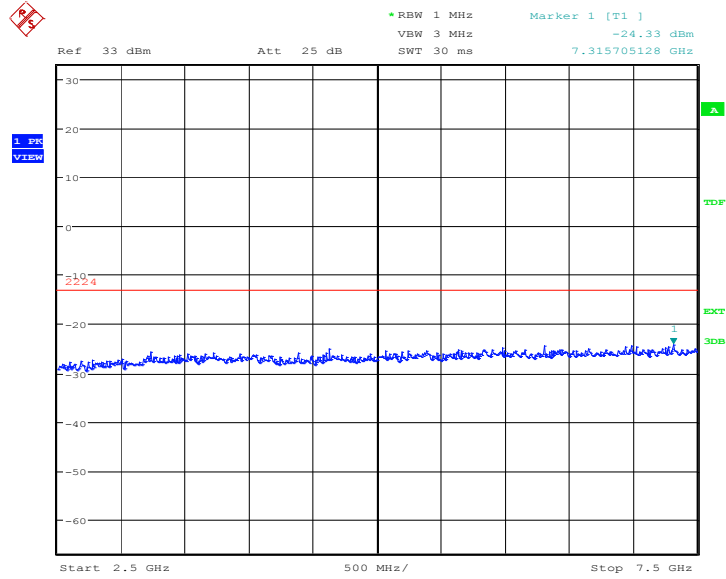

Date: 7.DEC.2011 23:46:34

A.8.3.2 Channel 128: 1GHz – 2.5GHz
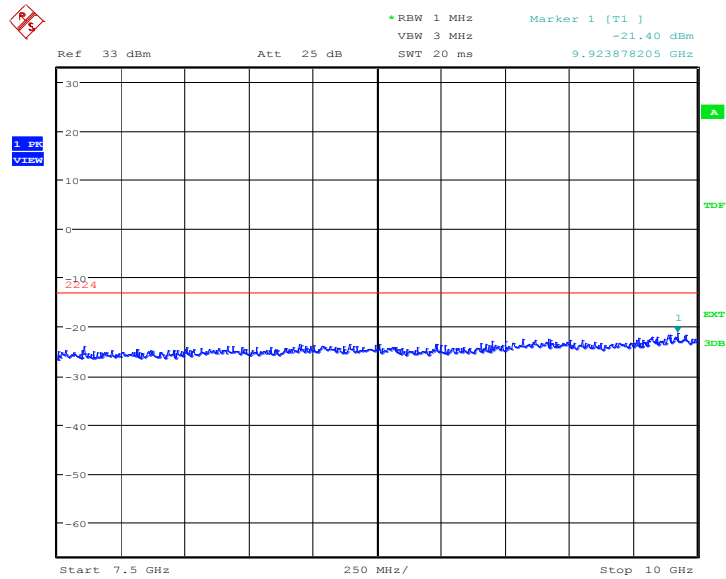
Spurious emission limit –13dBm.
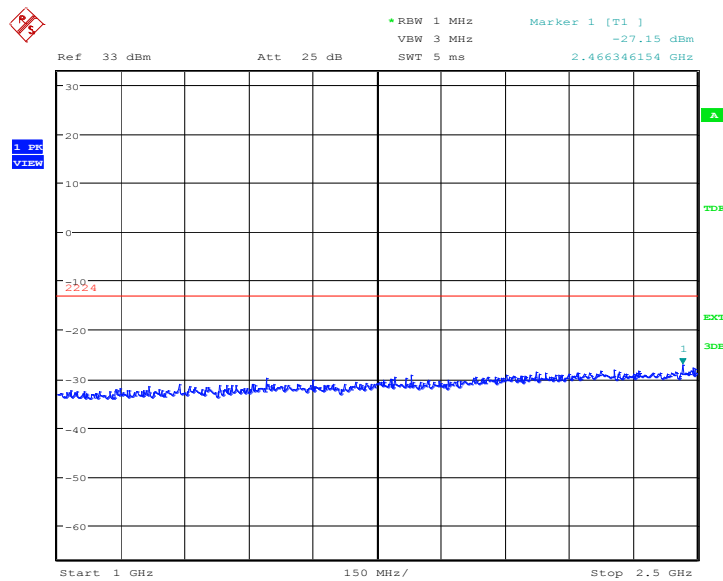
Date: 7.DEC.2011 23:47:02

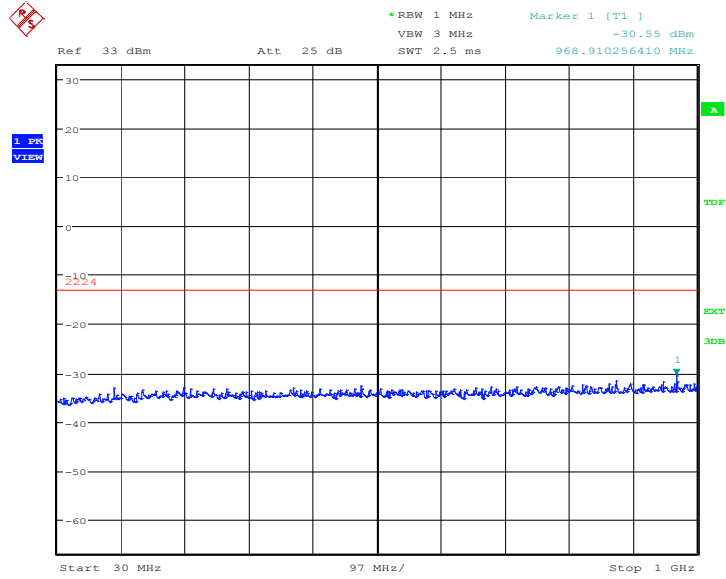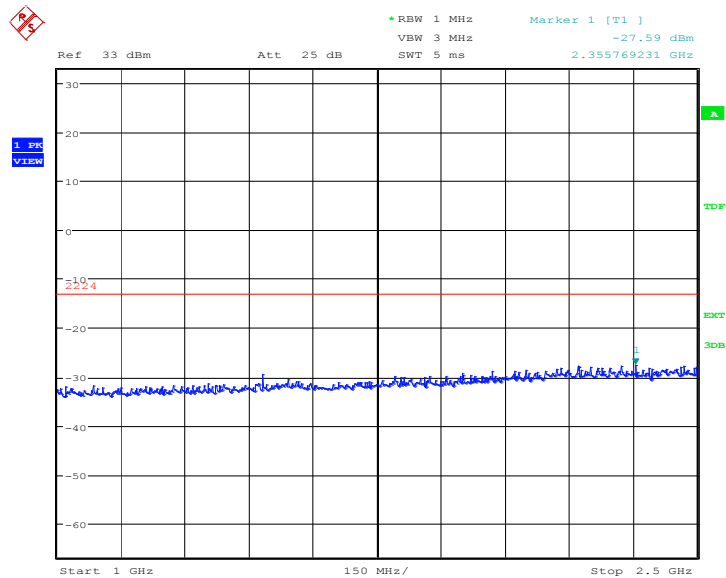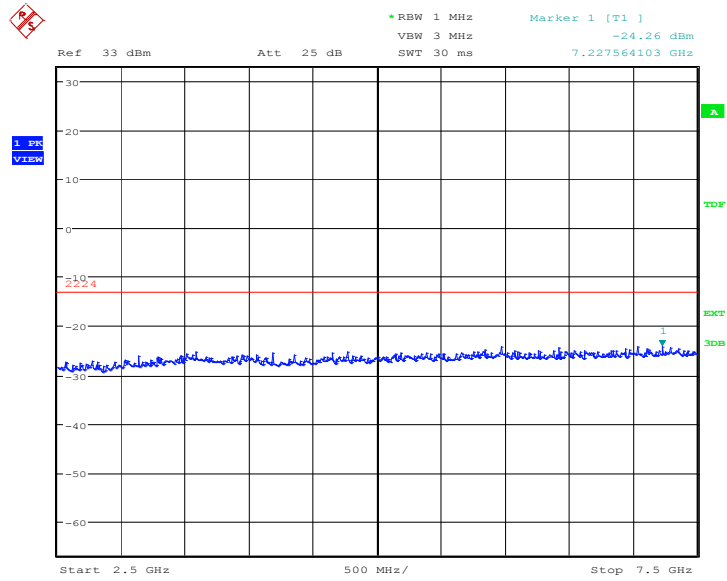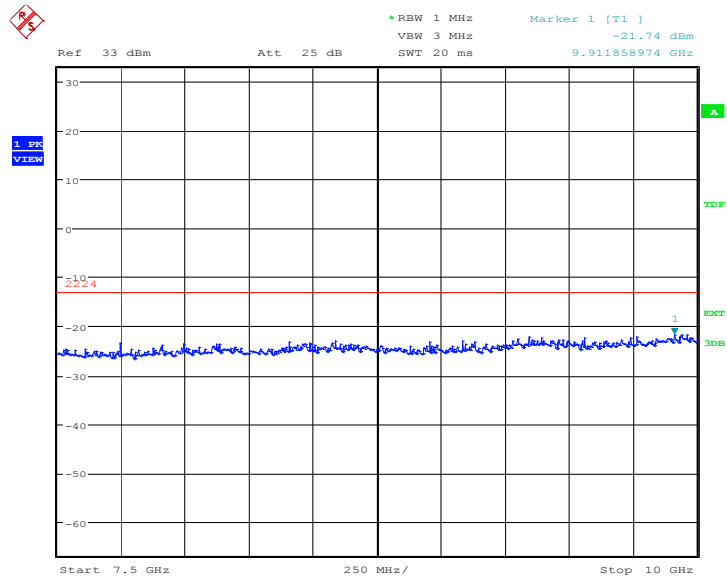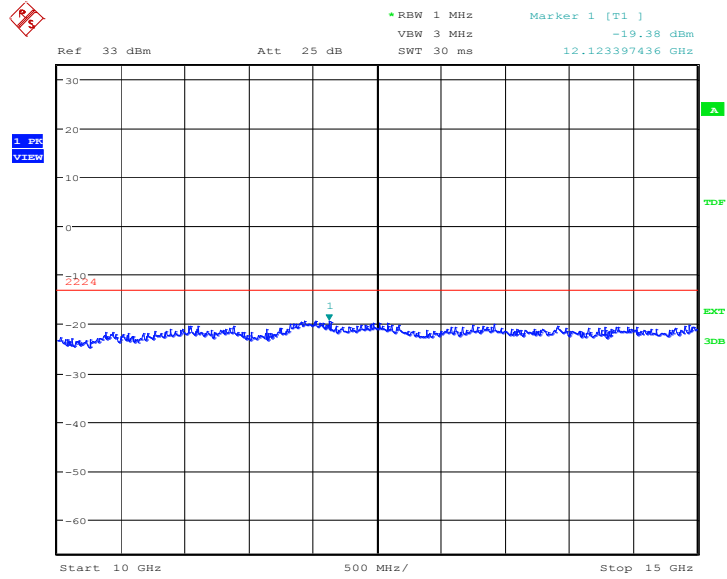### A.8.3.3 Channel 128: 2.5GHz – 7.5GHz

Spurious emission limit –13dBm.
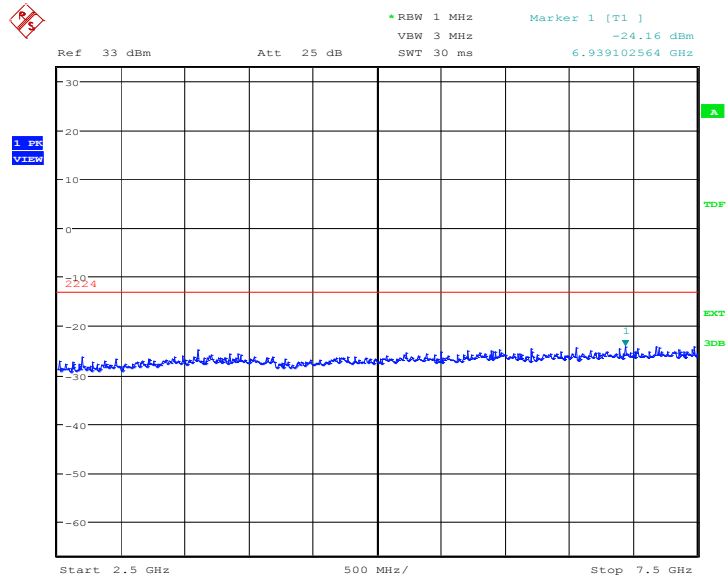
Date: 7.DEC.2011 23:47:31

A.8.3.4 Channel 128: 7.5GHz –10GHz
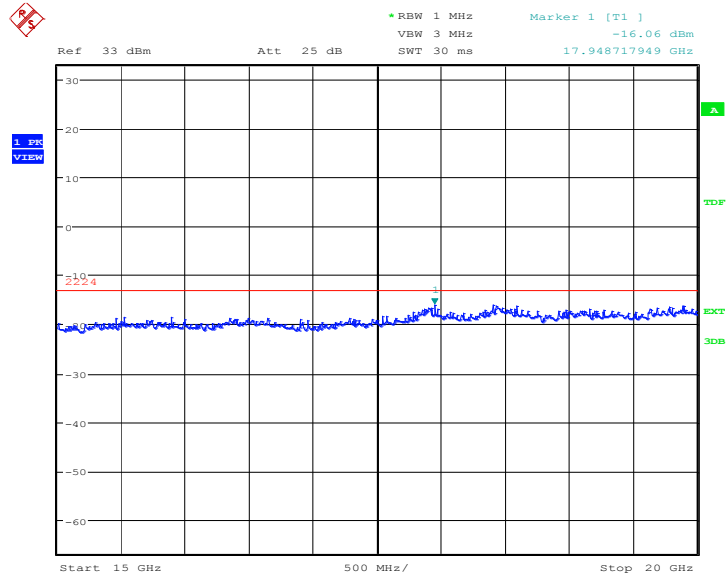
Spurious emission limit –13dBm.
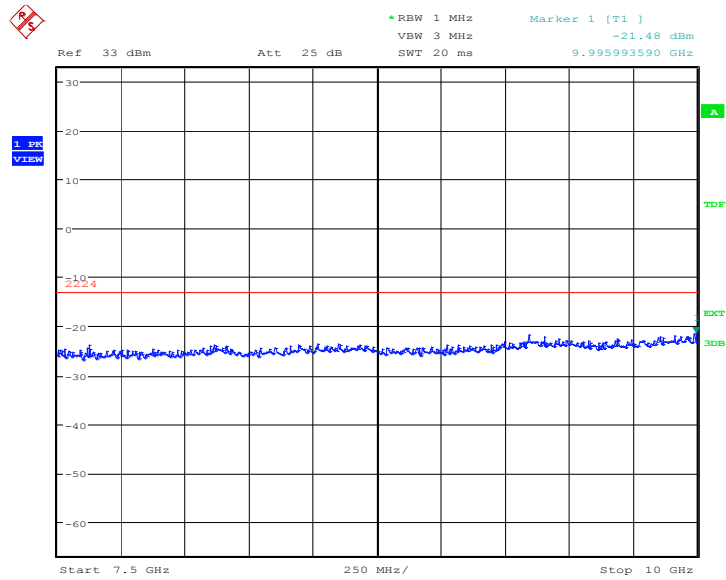
Date: 7.DEC.2011 23:47:59

A.8.3.5 Channel 190: 30MHz – 1GHz

Spurious emission limit –13dBm

NOTE: peak above the limit line is the carrier frequency.
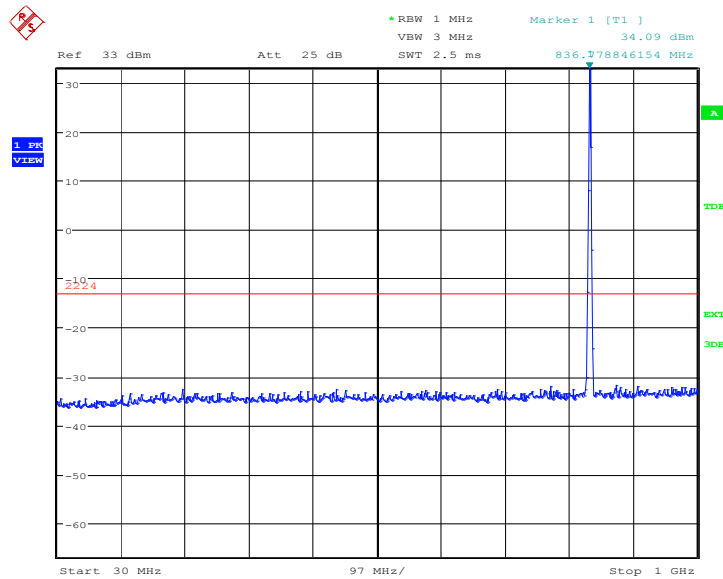
Date: 7.DEC.2011 23:48:28

A.8.3.6 Channel 190: 1GHz –2.5GHz

Spurious emission limit –13dBm
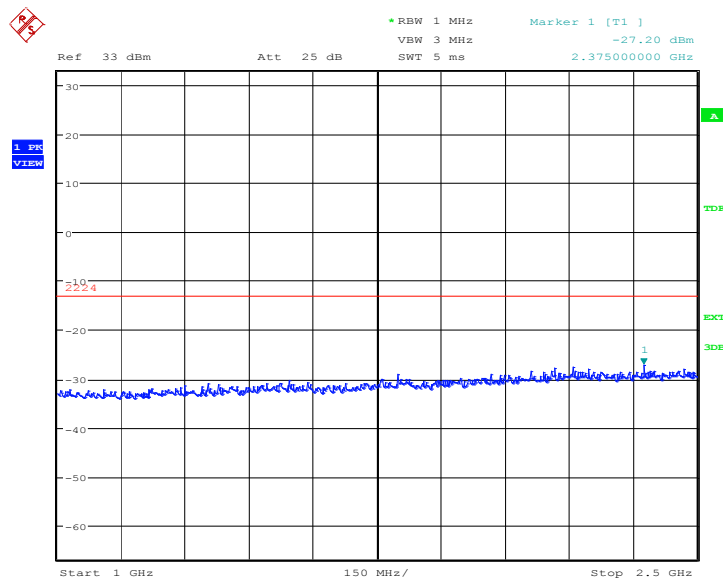
Date: 7.DEC.2011 23:48:57

A.8.3.7 Channel 190: 2.5GHz –7.5GHz

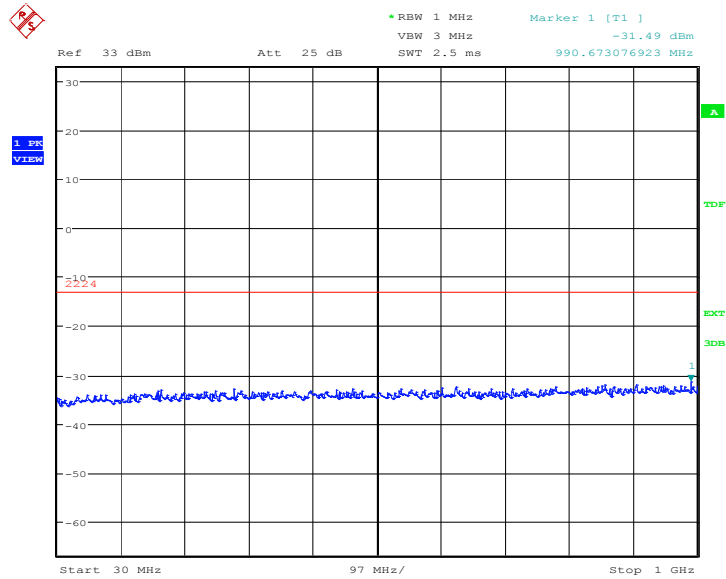Spurious emission limit –13dBm
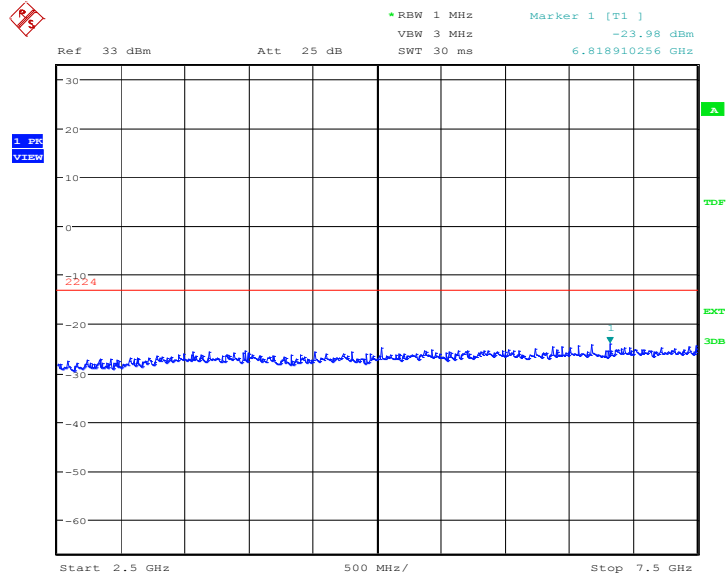
Date: 7.DEC.2011 23:49:25

A.8.3.8 Channel 190: 7.5GHz –10GHz

Spurious emission limit –13dBm
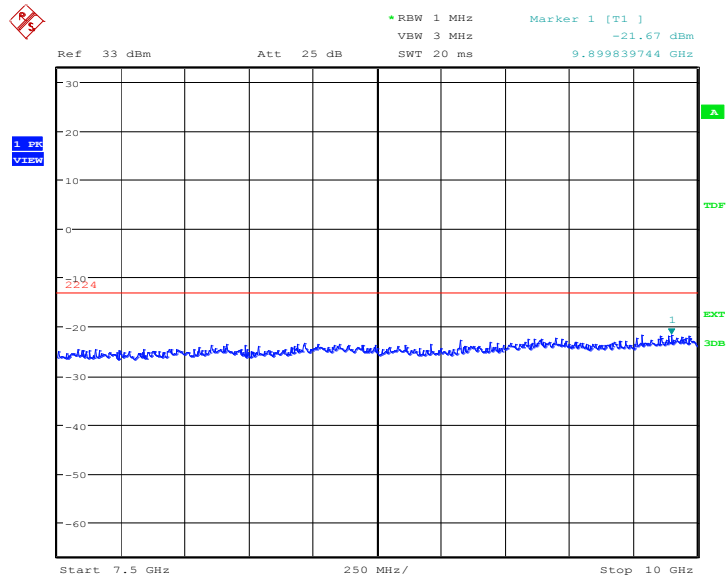
Date: 7.DEC.2011 23:49:53

A.8.3.9 Channel 251: 30MHz – 1GHz
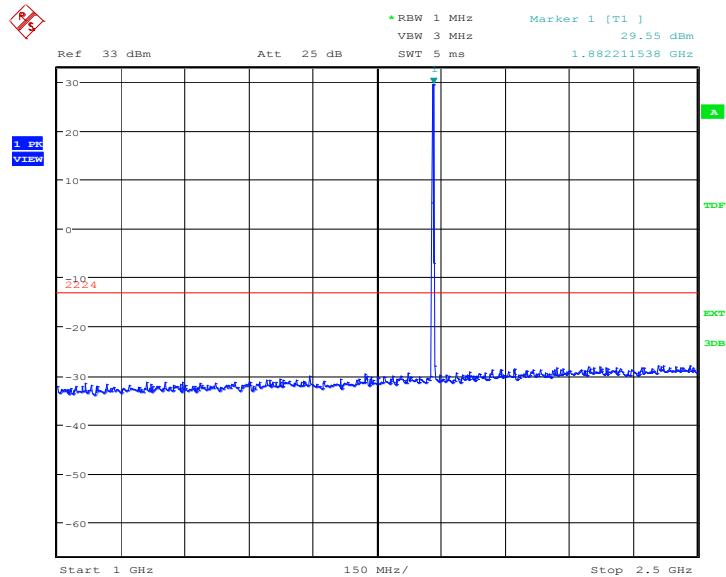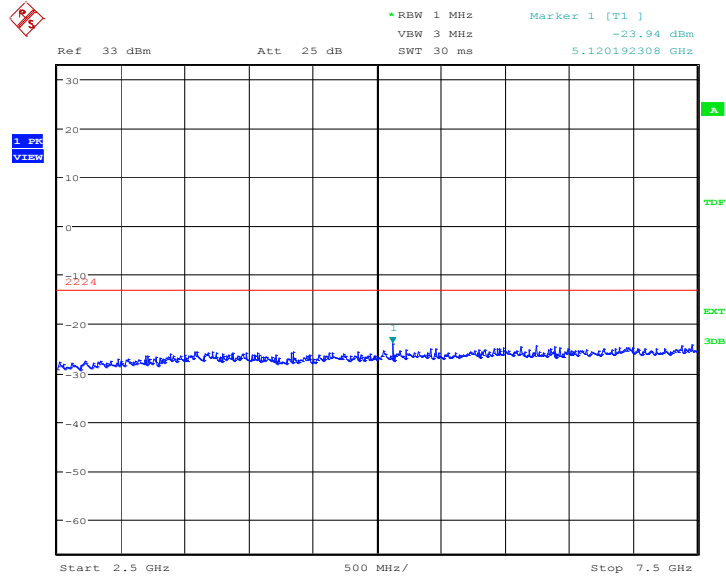
Spurious emission limit –13dBm.

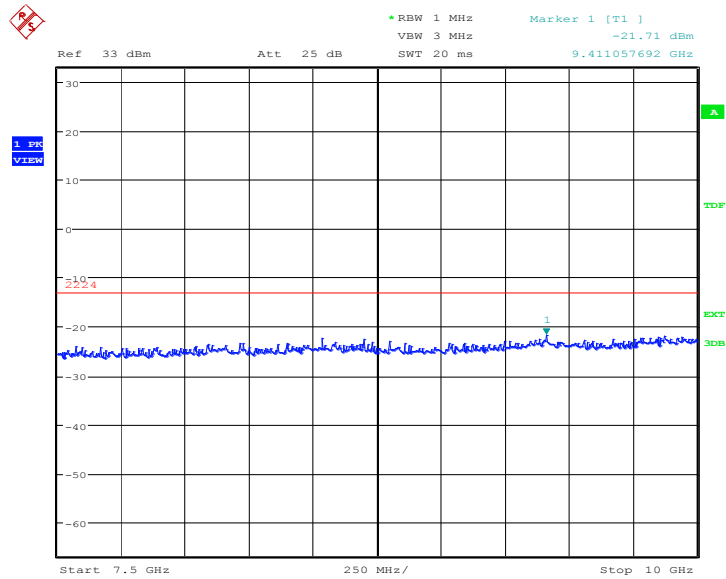**NOTE: peak above the limit line is the carrier frequency.**
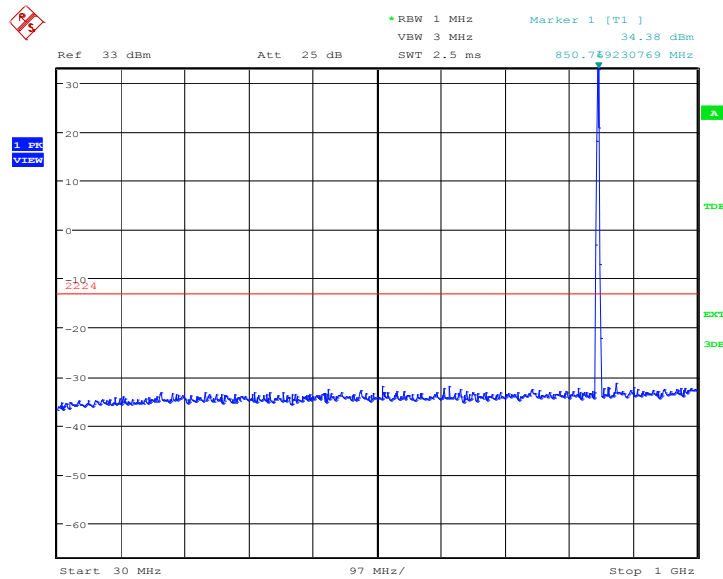
Date: 7.DEC.2011 23:50:22

A.8.3.10 Channel 251: 1GHz – 2.5GHz

Spurious emission limit –13dBm.


Date: 7.DEC.2011 23:50:51

A.8.3.11 Channel 251:2.5GHz – 7.5GHz

Spurious emission limit –13dBm.

Date: 7.DEC.2011 23:51:19

A.8.3.12 Channel 251: 7.5GHz – 10GHz

Spurious emission limit –13dBm.

Date: 7.DEC.2011 23:51:48

A.8.3.13 Idle mode: 30MHz – 1GHz

Spurious emission limit –13dBm.

Date: 7.DEC.2011 23:52:17

A.8.3.14 Idle mode: 1GHz – 2.5GHz

Spurious emission limit –13dBm.

Date: 7.DEC.2011 23:52:45

A.8.3.15 Idle mode: 2.5GHz – 7.5GHz

Spurious emission limit –13dBm.
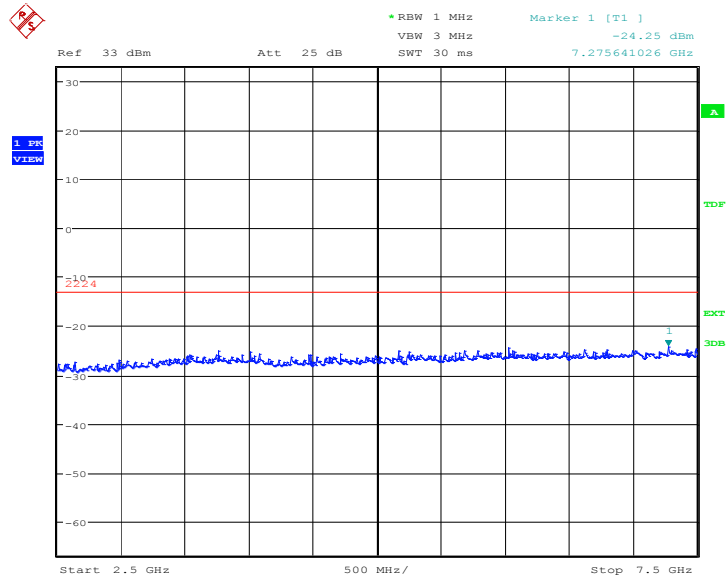
Date: 7.DEC.2011 23:53:13

A.8.3.16 Idle mode: 7.5GHz – 10GHz

Spurious emission limit –13dBm.
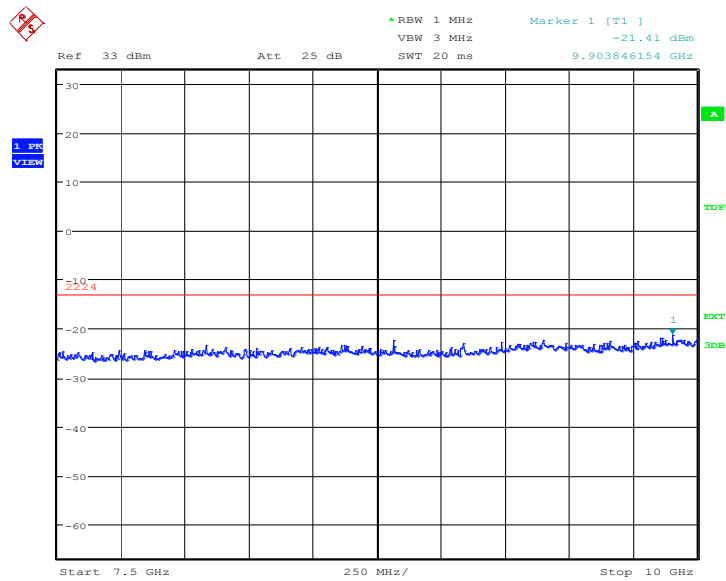
Date: 7.DEC.2011 23:53:41

PCS1900

A.8.3.17 Channel 512: 30MHz – 1GHz

Spurious emission limit –13dBm.
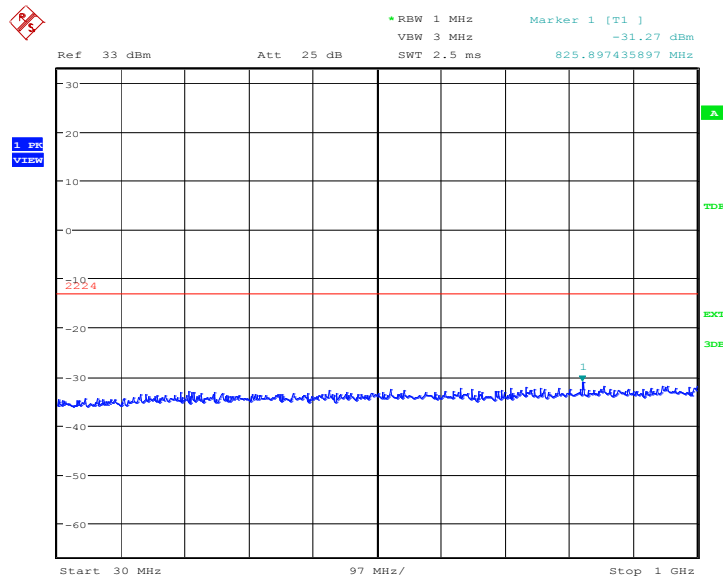
Date: 8.DEC.2011 00:01:30

A.8.3.18 Channel 512: 1GHz – 2.5GHz

Spurious emission limit –13dBm.

NOTE: peak above the limit line is the carrier frequency.
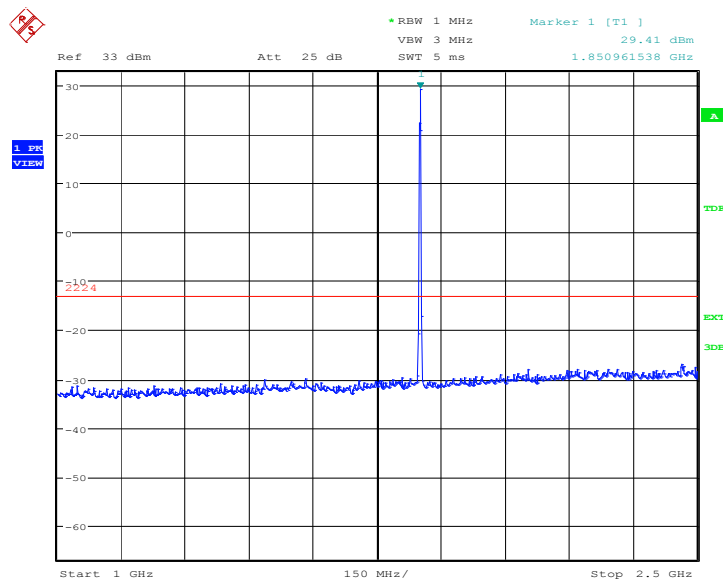
Date: 8.DEC.2011 00:01:58

A.8.3.19 Channel 512: 2.5GHz – 7.5GHz

Spurious emission limit –13dBm.


```
                              *RBW 1 MHz        Marker 1 [T1 ]
                               VBW 3 MHz              -24.26 dBm
Ref  33 dBm      Att  25 dB    SWT 30 ms         7.227564103 GHz
```

Date: 8.DEC.2011 00:02:27

A.8.3.20 Channel 512: 7.5GHz –10GHz

Spurious emission limit –13dBm.


```
                              *RBW 1 MHz        Marker 1 [T1 ]
                               VBW 3 MHz              -21.74 dBm
Ref  33 dBm      Att  25 dB    SWT 20 ms         9.911858974 GHz
```

Date: 8.DEC.2011 00:02:55

A.8.3.21 Channel 512: 10GHz –15GHz

Spurious emission limit –13dBm.

Date: 8.DEC.2011 00:03:23

A.8.3.22 Channel 512: 15GHz –20GHz

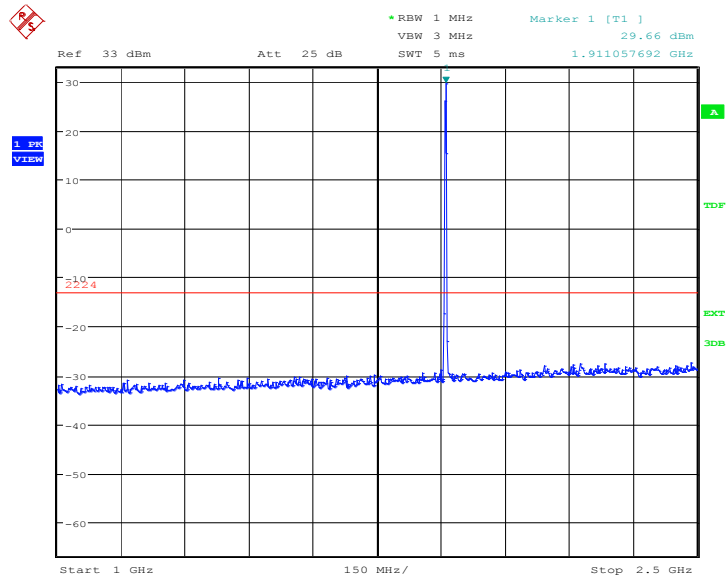Spurious emission limit –13dBm.

Date: 8.DEC.2011 00:03:51

A.8.3.23 Channel 661: 30MHz – 1GHz
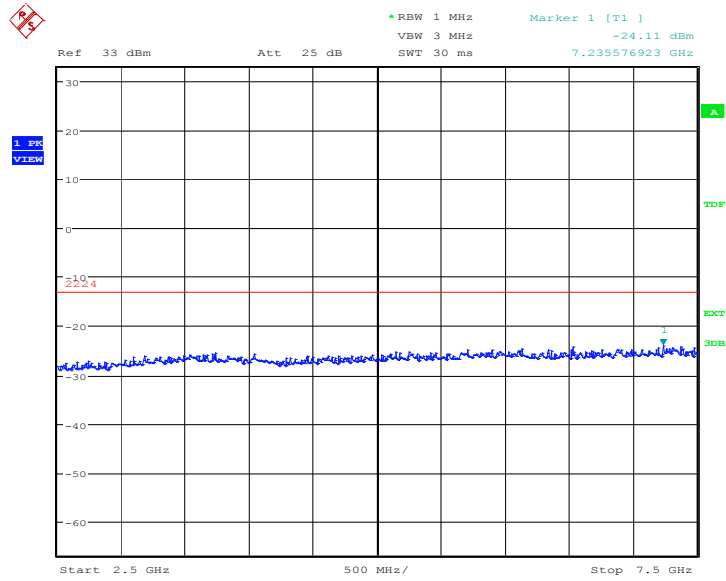
Spurious emission limit –13dBm

Date: 8.DEC.2011 00:04:20

A.8.3.24 Channel 661: 1GHz –2.5GHz

Spurious emission limit –13dBm

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

Date: 8.DEC.2011 00:04:48

A.8.3.25 Channel 661: 2.5GHz –7.5GHz
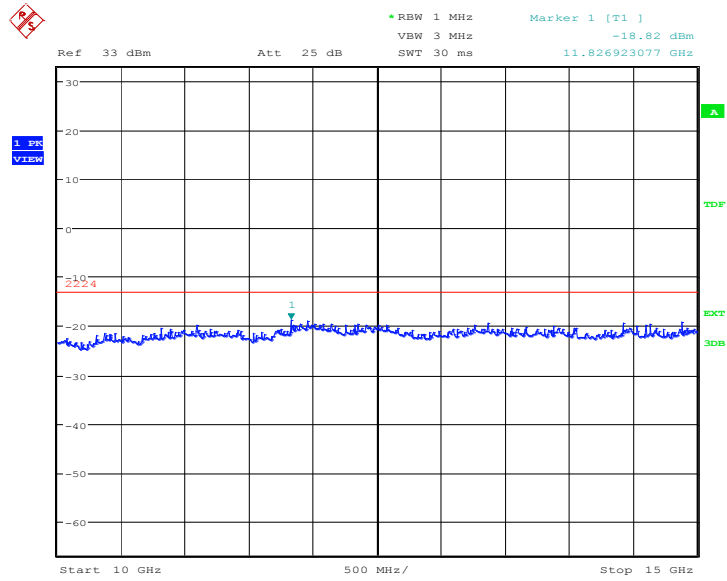
Spurious emission limit –13dBm

Date: 8.DEC.2011 00:05:16

A.8.3.26 Channel 661: 7.5GHz –10GHz
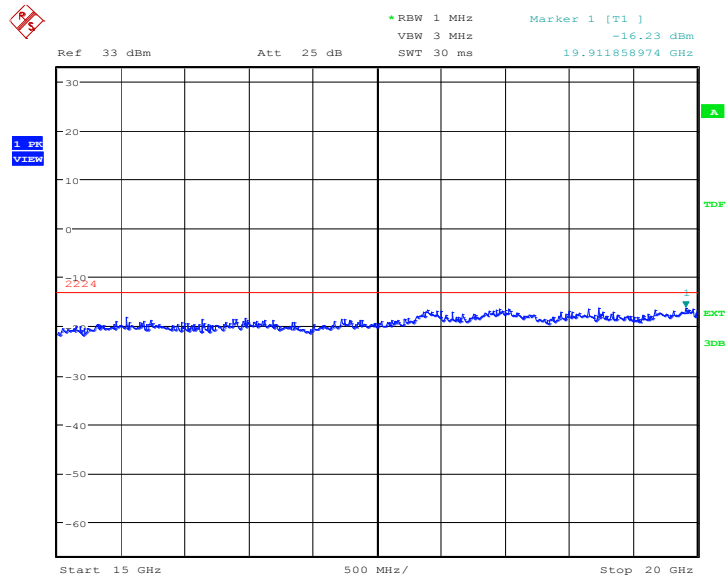
Spurious emission limit –13dBm

Date: 8.DEC.2011 00:05:45

A.8.3.27 Channel 661: 10GHz –15GHz
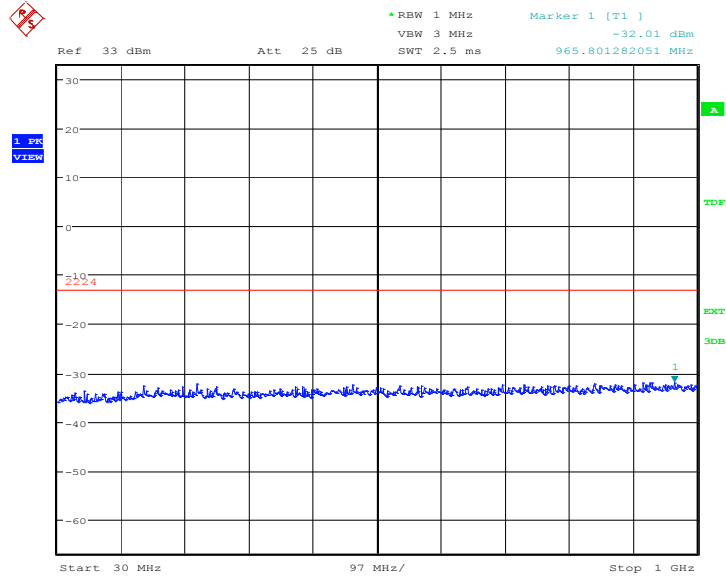
Spurious emission limit –13dBm.
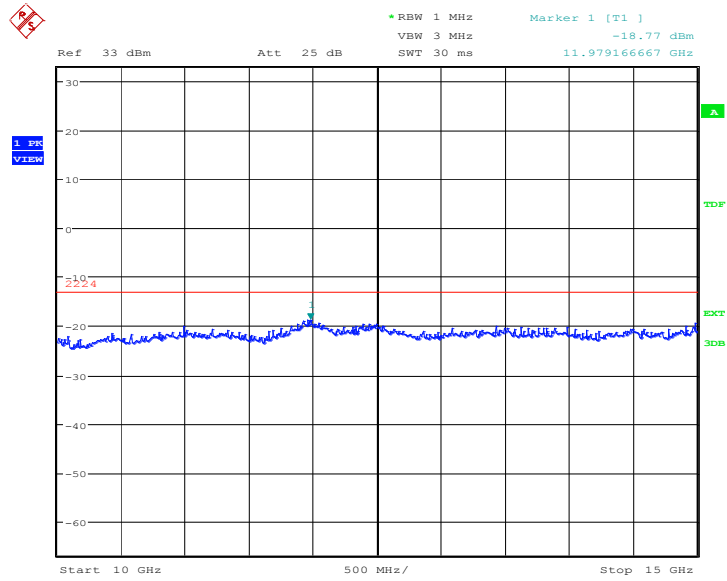
Date: 8.DEC.2011 00:06:13

A.8.3.28 Channel 661: 15GHz –20GHz

Spurious emission limit –13dBm.
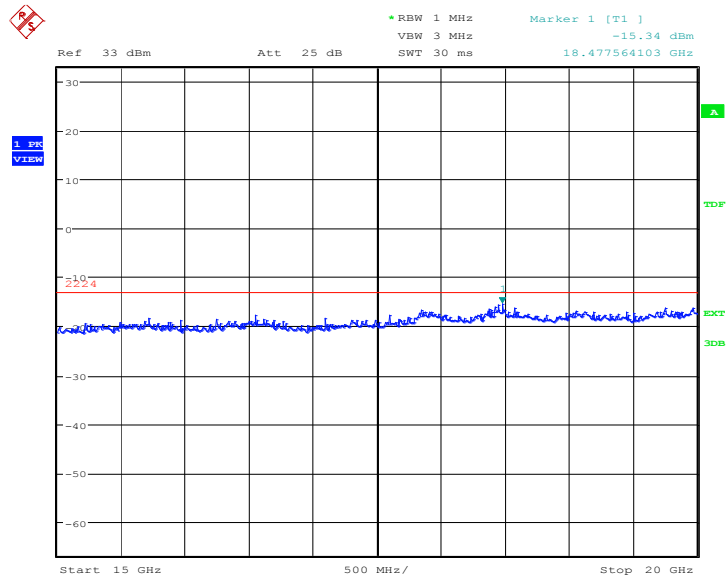
Date: 8.DEC.2011 00:06:41

A.8.3.29 Channel 810: 30MHz – 1GHz

Spurious emission limit –13dBm.
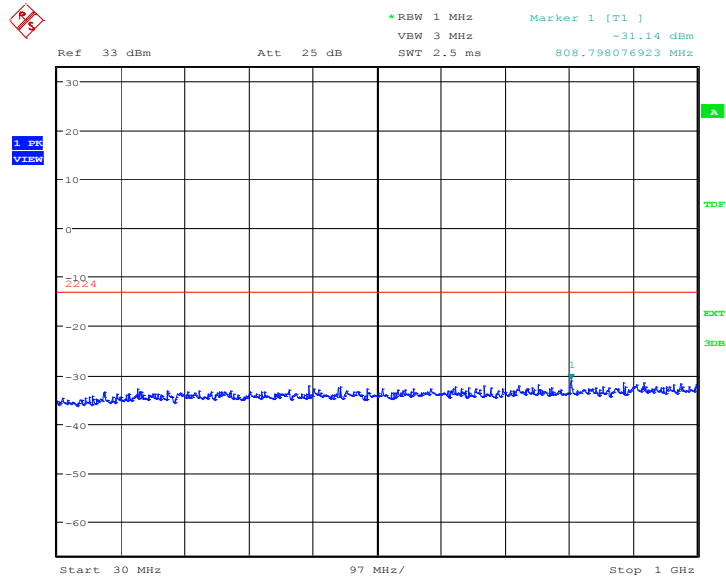
Date: 8.DEC.2011 00:07:10

A.8.3.30 Channel 810: 1GHz – 2.5GHz

Spurious emission limit –13dBm.

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

Date: 8.DEC.2011 00:07:38

A.8.3.31 Channel 810:2.5GHz – 7.5GHz

Spurious emission limit –13dBm.

Date: 8.DEC.2011 00:08:06

A.8.3.32 Channel 810: 7.5GHz – 10GHz

Spurious emission limit –13dBm.
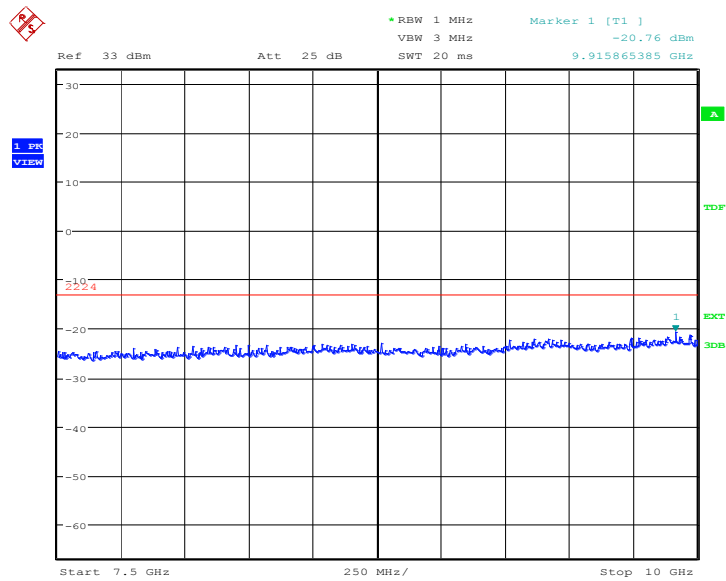
Date: 8.DEC.2011 00:08:35

A.8.3.33 Channel 810: 10GHz –15GHz

Spurious emission limit –13dBm.

Date: 8.DEC.2011 00:09:03

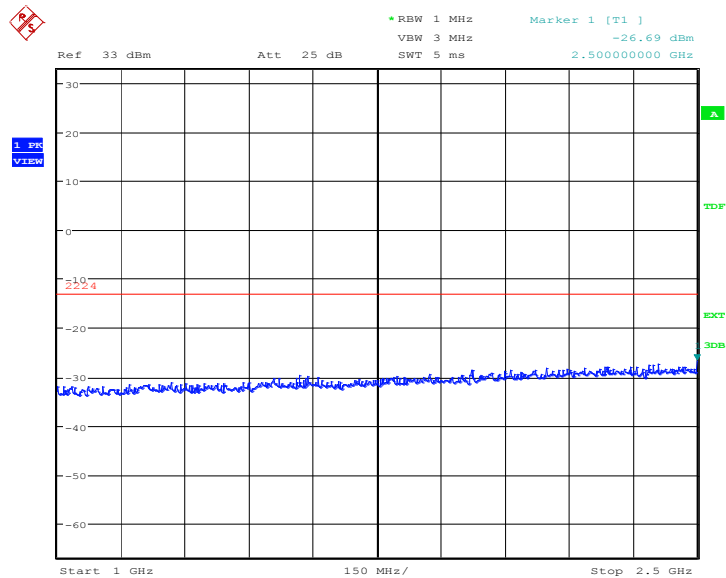### A.8.3.34 Channel 810: 15GHz –20GHz

Spurious emission limit –13dBm.

Date: 8.DEC.2011 00:09:31

A.8.3.35 Idle mode: 30MHz – 1GHz

Spurious emission limit –13dBm.

Date: 8.DEC.2011 00:10:00

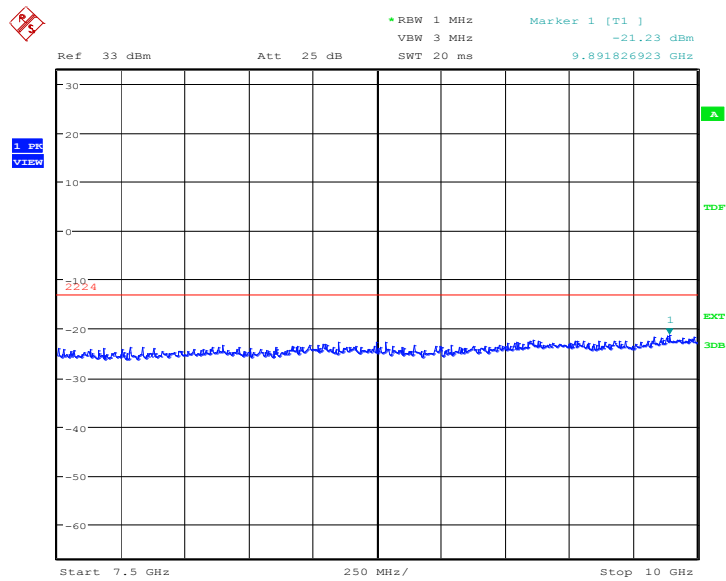### A.8.3.36 Idle mode: 1GHz – 2.5GHz

Spurious emission limit –13dBm.

Date: 8.DEC.2011 00:10:28

A.8.3.37 Idle mode: 2.5GHz – 7.5GHz
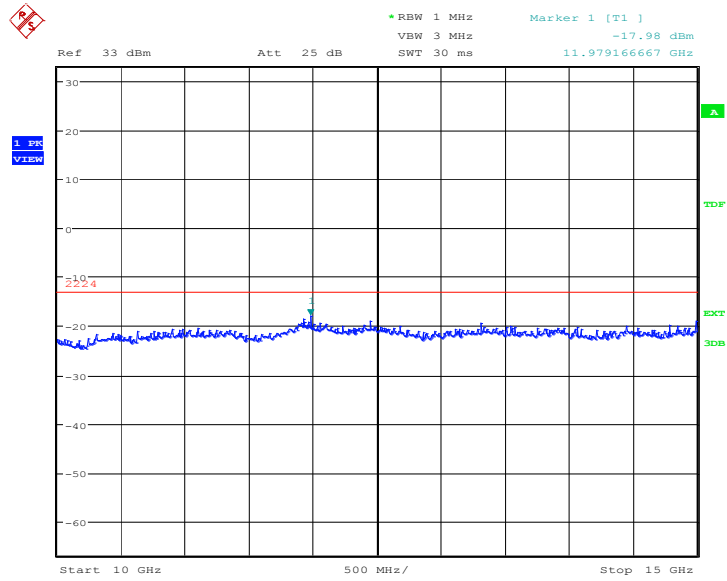
Spurious emission limit –13dBm.
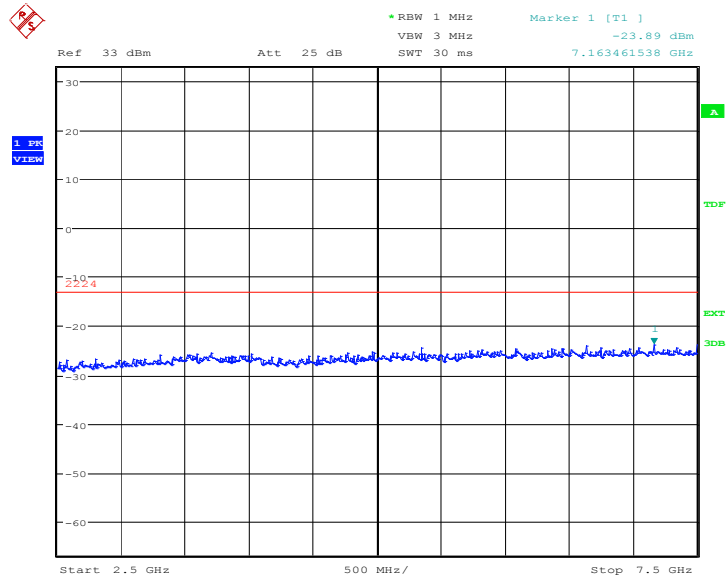
Date: 8.DEC.2011 00:10:56

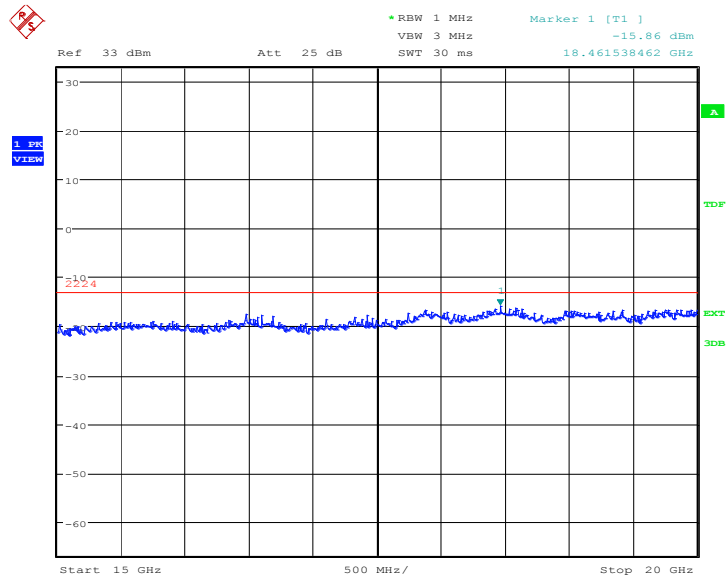### A.8.3.38 Idle mode: 7.5GHz – 10GHz

Spurious emission limit –13dBm.

Date: 8.DEC.2011 00:11:24

A.8.3.39 Idle mode: 10GHz –15GHz

Spurious emission limit –13dBm.

Date: 8.DEC.2011 00:11:53

A.8.3.40 IDLE mode: 15GHz –20GHz

Spurious emission limit –13dBm.

Date: 8.DEC.2011 00:12:21

A.9 RECEIVER RADIATION EMISSION

Reference
FCC: CFR Part 15.109, 2.1053
IC: RSS 132, Issue 2, Section 4.6. RSS 133, Issue 5, Section 6.6
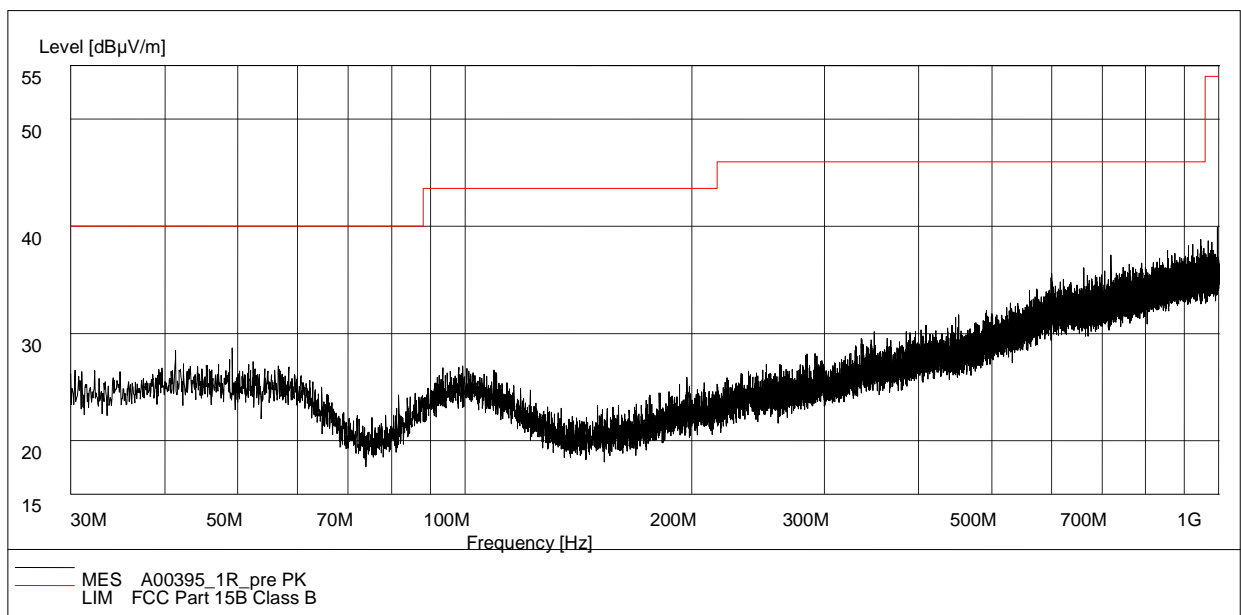
A.9.1 Method of Measurement

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.
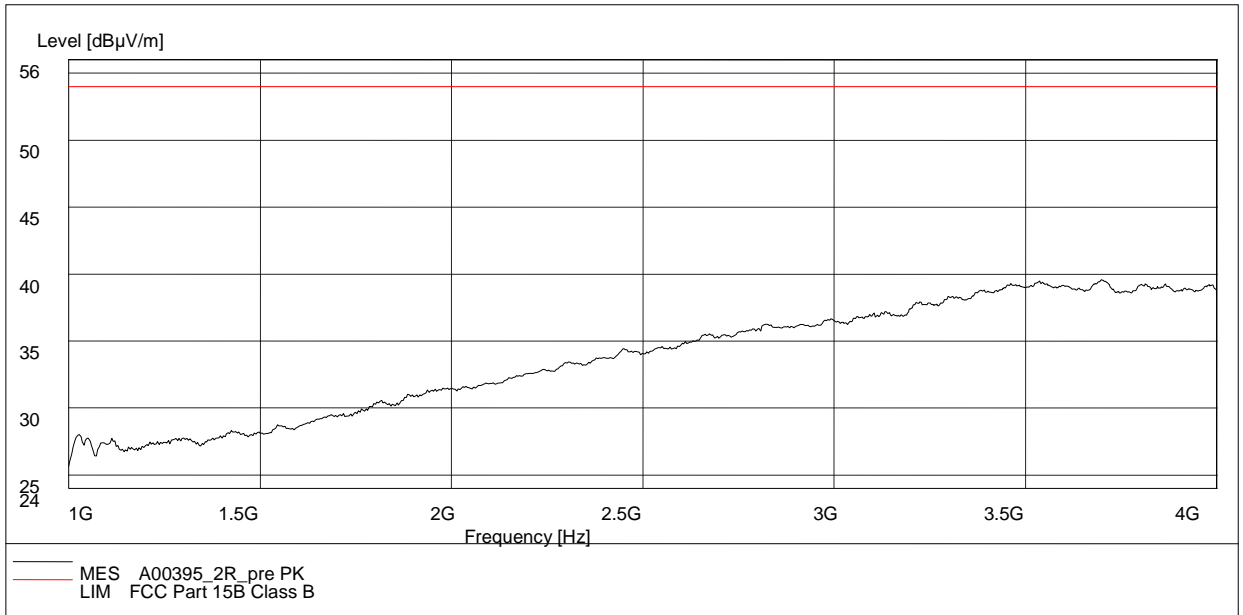
A.9.2 Method of Measurement

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. 9.3 Measurement results

IF bandwidth: 120 kHz

Idle Mode: 30MHz-1GHz

Level [dBµV/m]

MES   A00395_2R_pre PK
LIM   FCC Part 15B Class B

RBW / VBW 1 MHz

Idle Mode: 1GHz-4GHz

FCC 4-18G

Level in dBµV/m

Frequency in GHz
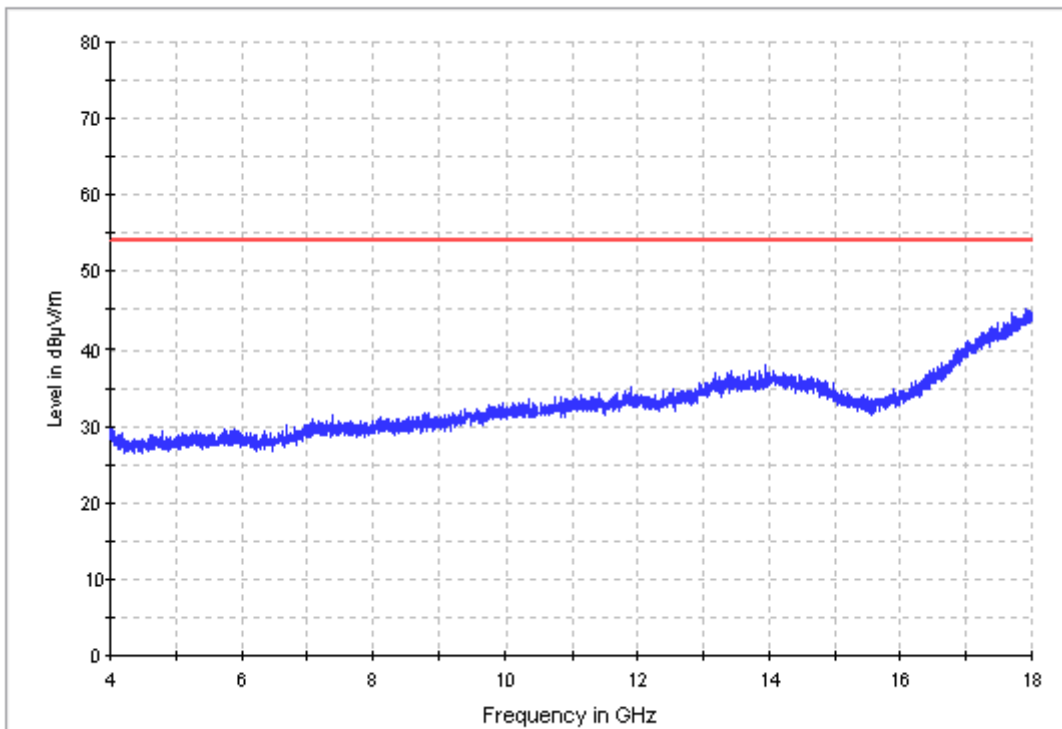
RBW / VBW 1 MHz

Idle Mode: 4GHz-18GHz

END OF REPORT