



TEST REPORT

No. 2011TAR224

for

TCT Mobile Limited

HSDPA/UMTS dual band / GSM four bands mobile phone

Model Name: BrandyS

Marketing Name: one touch 990S

FCC ID: RAD159

with

Hardware Version: PIO

Software Version: V520

Issued Date: May 13, 2011

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

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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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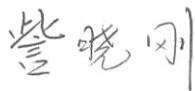
1.2. Testing Environment

Normal Temperature: 15-35°C
Relative Humidity: 20-75%

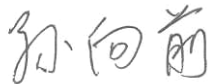
1.3. Project data

Testing Start Date: Mar 27, 2011
Testing End Date: May 13, 2011

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
Telephone: 0086-21-61460890
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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
Fax: 0086-21-61460602

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

3.1. About EUT

Description	HSDPA/UMTS dual band / GSM four bands mobile phone
Model Name	BrandyS
Marketing Name	one touch 990S
FCC ID	RAD159
Frequency	GSM 850MHz; PCS 1900MHz; WCDMA BAND IV;
Antenna	Internal
Power supply	Battery or Charger (AC Adaptor)
Output power	31.52 dBm maximum ERP measured for PCS1900
Extreme vol. Limits	3.5VDC to 4.2VDC (nominal: 3.8VDC)
Extreme temp. Tolerance	-30°C to +50°C

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

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version
N18	012579000000322	PIO	V520
N19	012579000000249	PIO	V520

*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	Charger	/
AE3	Charger	/
AE4	Charger	/

AE1

Model	CAB31P0000C1
Manufacturer	BYD
Capacitance	1300mAh
Nominal Voltage	3.7V

AE2

Model	CBA3001AG0C1
Manufacturer	BYD
Length of DC line	120cm

AE3

Model	CBA3001AG0C2
Manufacturer	Tenpao
Length of DC line	120cm

AE4

Model	CBA3000AG0C1
Manufacturer	Tenpao
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 HSDPA/UMTS dual band / GSM four bands mobile phone with integrated antenna. It consists of normal options: lithium battery, charger 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
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 °C, Max. = 30 °C
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 °C, Max. = 35 °C
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 °C, Max. = 30 °C
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 °C, Max. = 30 °C
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	Frequency Stability	22.235, 2.1055	4.3	A.4	P
4	Occupied Bandwidth	2.1049(h)(i)	4.6.1	A.5	P
5	Emission Bandwidth	22.917(b)	4.6.1	A.6	P
6	Band Edge Compliance	22.917(b)	4.5	A.7	P
7	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	Frequency Stability	24.235, 2.1055	6.3	A.4	P
4	Occupied Bandwidth	2.1049(h)(i)	4.6.1	A.5	P
5	Emission Bandwidth	24.238(b)	4.6.1	A.6	P
6	Band Edge Compliance	24.238(b)	6.5	A.7	P
7	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.2	P

7. Test Equipments Utilized

NO.	NAME	TYPE	SERIES NUMBER	PRODUCER	CAL DUE DATE
1	Test Receiver	ESCI	100766	R&S	2011-12-06
2	Test Receiver	ESI40	831564/002	R&S	2011-07-12
3	BiLog Antenna	VULB9163	9163-175	Schwarzbeck	2011-07-05
4	BiLog Antenna	VULB9163	9163-302	Schwarzbeck	2011-07-10
5	Signal Generator	SMB100A	102063	R&S	2011-07-05
7	LISN	ESH2-Z5	829991/012	R&S	2011-07-20
8	Spectrum Analyzer	FSU26	200030	R&S	2011-12-18
9	Spectrum Analyzer	FSU46	100054	R&S	2011-10-14
10	Universal Radio Communication Tester	CMU200	100680	R&S	2011-12-23
11	Universal Radio Communication Tester	CMU200	109914	R&S	2011-07-21
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	2011-07-01
15	Dual-Ridge Waveguide Horn Antenna	3116	2661	EMCO	2011-07-01
16	Climatic chamber	PL-2G	343074	ESPEC	2011-12-15

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)	Target (dB)
GSM	5	33dBm(2W)	33±1
GPRS	3	33dBm(2W)	32±1
EGPRS	6	27dBm(0.5W)	27±2

Measurement result

GSM (GMSK)

Frequency(MHz)	Power Step	Peak output power(dBm)
824.2	5	33.34
836.6	5	33.26
848.8	5	33.21

GPRS (GMSK, 1Slot)

Frequency(MHz)	Power Step	Peak output power(dBm)
824.2	3	32.09
836.6	3	31.95
848.8	3	31.81

EGPRS (8PSK, 1Slot)

Frequency(MHz)	Power Step	Peak output power(dBm)
824.2	6	28.05
836.6	6	27.82
848.8	6	28.22

ANALYZER SETTINGS: VBW=RBW=1MHz; SPAN=10MHz;SWT=300ms

PCS1900

Limit

	Power step	Nominal Peak output power (dBm)	Target (dB)
GSM	0	30dBm(1W)	30±1
GPRS	3	30dBm(1W)	28±1
EGPRS	5	26dBm(0.4W)	26±3

Measurement result

GSM (GMSK)

Frequency(MHz)	Power Step	Peak output power(dBm)
1850.2	0	30.97
1880.0	0	30.95
1909.8	0	30.96

GPRS (GMSK, 1Slot)

Frequency(MHz)	Power Step	Peak output power(dBm)
1850.2	3	28.89
1880.0	3	28.98
1909.8	3	28.95

EGPRS (8PSK, 1Slot)

Frequency(MHz)	Power Step	Peak output power(dBm)
1850.2	5	27.62
1880.0	5	27.83
1909.8	5	28.17

ANALYZER SETTINGS: VBW=RBW=1MHz; SPAN=10MHz;SWT=300ms

A.1.3 Radiated

A.1.3.1 Description

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

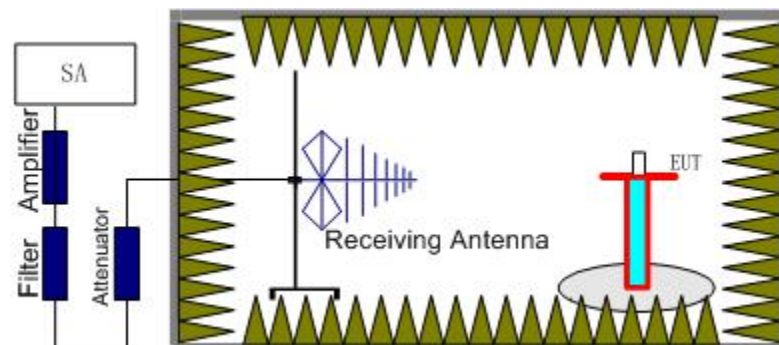
Rule Part 24.232(b) specifies, "Mobile/portable stations are limited to 2 watts e.i.r.p. Peak power" and 24.232(c) specifies that "Peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage."

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

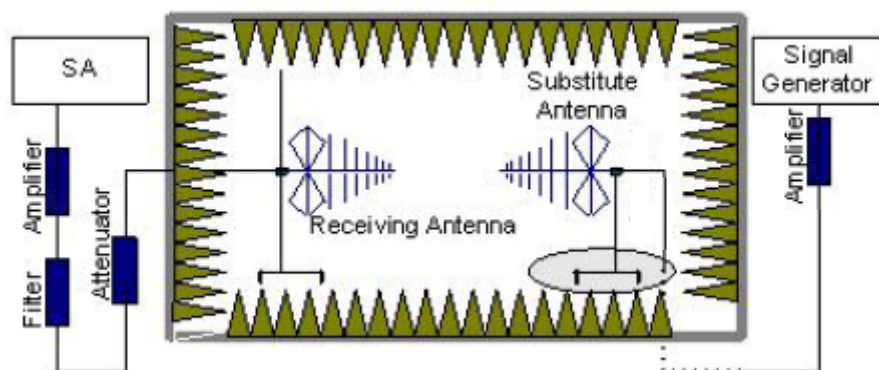
A.1.3.2 Method of Measurement

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:

$$\text{Power(EIRP)} = P_{Mea} + P_{Ag} + P_{cl} + G_a$$

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, $ERP = EIRP - 2.15\text{dBi}$.

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)	Peak ERP(dBm)	P _{cl} (dB)	P _{Ag} (dB)	G _a Antenna Gain(dB)	Correction (dBm)	P _{Mea} (dBm)	Polarization
824.2	30.39	-2.73	53.00	-0.84	2.15	-16.90	H
836.6	30.82	-2.75	53.00	-0.90	2.15	-16.39	H
848.8	29.52	-2.75	53.00	-0.95	2.15	-17.62	V

GPRS

Frequency(MHz)	Peak ERP(dBm)	P _{cl} (dB)	P _{Ag} (dB)	G _a Antenna Gain(dB)	Correction (dBm)	P _{Mea} (dBm)	Polarization
824.2	30.59	-2.73	53.00	-0.84	2.15	-16.70	H
836.6	31.03	-2.75	53.00	-0.90	2.15	-16.18	H
848.8	29.75	-2.75	53.00	-0.95	2.15	-17.39	V

EGPRS

Frequency(MHz)	Peak ERP(dBm)	P _{cl} (dB)	P _{Ag} (dB)	G _a Antenna Gain(dB)	Correction (dBm)	P _{Mea} (dBm)	Polarization
824.2	29.54	-2.73	53.00	-0.84	2.15	-17.74	H
836.6	30.38	-2.75	53.00	-0.90	2.15	-16.83	V
848.8	28.15	-2.75	53.00	-0.95	2.15	-18.99	V

Frequency: 836.6MHz

Peak ERP(dBm)= P_{Mea}(-16.18dBm)+ P_{cl}(-2.75dB)+ P_{Ag}(53.00dB)+G_a (-0.90dB)-2.15dBm
=31.03dBm

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)	Peak ERP(dBm)	P _{cl} (dB)	P _{Ag} (dB)	G _a Antenna Gain(dB)	P _{Mea} (dBm)	Polarization
1850.2	31.52	-4.29	50.00	4.56	-18.75	H
1880	29.29	-4.24	50.00	4.43	-20.91	H
1909.8	28.82	-4.25	50.00	4.30	-21.24	H

GPRS

Frequency(MHz)	Peak ERP(dBm)	P _{cl} (dB)	P _{Ag} (dB)	G _a Antenna Gain(dB)	P _{Mea} (dBm)	Polarization
1850.2	25.31	-4.29	50.00	4.56	-24.96	V
1880	25.71	-4.24	50.00	4.43	-24.49	V
1909.8	22.83	-4.25	50.00	4.30	-27.23	H

EGPRS

Frequency(MHz)	Peak ERP(dBm)	P _{cl} (dB)	P _{Ag} (dB)	G _a Antenna Gain(dB)	P _{Mea} (dBm)	Polarization
1850.2	22.08	-4.29	50.00	4.56	-28.19	H
1880	21.34	-4.24	50.00	4.43	-28.86	V
1909.8	19.10	-4.25	50.00	4.30	-30.95	V

Frequency: 1850.2MHz

Peak EIRP(dBm)= P_{Mea}(-18.75dBm)+ P_{cl}(-4.29dB)+ P_{Ag}(50.00dB)+G_a (4.56dB) =31.52dBm

ANALYZER SETTINGS: RBW = VBW = 3MHz

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

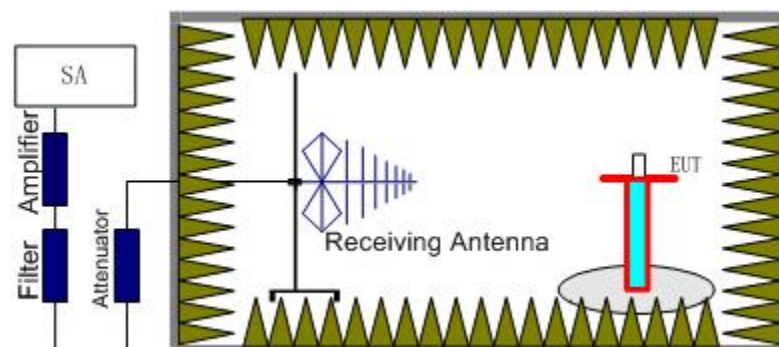
A.2.1 Measurement Method

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

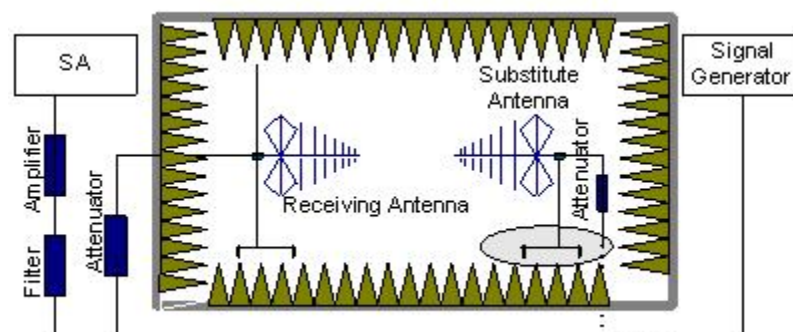
The spectrum was scanned from 30 MHz to the 10th harmonic of the highest frequency generated within the equipment, which is the transmitted carrier that can be as high as 1910 MHz. The resolution bandwidth is set as outlined in Part 24.238 and Part 22.917. The spectrum is scanned with the mobile station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

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:

$$\text{Power(EIRP)} = P_{Mea} + P_{pl} + G_a$$

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, $ERP = EIRP - 2.15\text{dBi}$.

A.2.2 Measurement Limit

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

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

A.2.3 Measurement Results

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

A.2.4 Measurement Results Table

Frequency	Channel	Frequency Range	Result
GSM 850MHz	Low	30MHz-10GHz	Pass
	Middle	30MHz-10GHz	Pass
	High	30MHz-10GHz	Pass
GSM 1900MHz	Low	30MHz-20GHz	Pass
	Middle	30MHz-20GHz	Pass
	High	30MHz-20GHz	Pass
GSM 850MHz	Low	9KHz-30MHz	Pass
	Middle	9KHz-30MHz	Pass
	High	9KHz-30MHz	Pass
GSM 1900MHz	Low	9KHz-30MHz	Pass
	Middle	9KHz-30MHz	Pass
	High	9KHz-30MHz	Pass
Received GSM 850MHz	Idle Mode	9KHz-10GHz	Pass
Received GSM 1900MHz	Idle Mode	9KHz-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)	Peak ERP(dBm)	Path Loss	Antenna Gain	Correction	P _{Mea} (dBm)	Limit (dBm)	Polarization
				(dBm)			
1648.37	-49.63	3.88	-5.45	2.15	-50.21	-13	V
2472.92	-50.45	5.00	-5.32	2.15	-52.28	-13	V
4013.84	-68.86	6.24	-8.51	2.15	-68.74	-13	H
5172.11	-68.95	7.27	-9.80	2.15	-68.57	-13	H
6966.60	-70.61	7.94	-11.07	2.15	-69.63	-13	V
8762.30	-67.04	8.72	-12.41	2.15	-65.50	-13	H

GSM Mode Channel 190/836.6MHz

Frequency(MHz)	Peak ERP(dBm)	Path Loss	Antenna Gain	Correction	P _{Mea} (dBm)	Limit (dBm)	Polarization
				(dBm)			
2464.76	-36.03	5.00	-5.29	2.15	-37.89	-13	H
3338.66	-67.10	5.51	-7.51	2.15	-67.25	-13	H
3878.50	-68.11	6.11	-8.35	2.15	-68.02	-13	H
5496.45	-69.32	7.45	-10.00	2.15	-68.92	-13	H
6505.90	-66.29	7.76	-10.61	2.15	-65.59	-13	H
9914.56	-66.03	9.14	-12.43	2.15	-64.89	-13	H

GSM Mode Channel 251/848.8MHz

Frequency(MHz)	Peak ERP(dBm)	Path Loss	Antenna Gain	Correction	P _{Mea} (dBm)	Limit (dBm)	Polarization
				(dBm)			
2546.19	-54.77	5.10	-5.52	2.15	-56.50	-13	H
3229.66	-66.97	5.35	-7.25	2.15	-67.22	-13	V
4138.88	-69.27	6.40	-8.58	2.15	-69.24	-13	H
5079.69	-67.69	7.21	-9.75	2.15	-67.30	-13	V
5821.45	-67.31	7.73	-10.13	2.15	-67.06	-13	H
8735.72	-66.67	8.56	-12.39	2.15	-64.99	-13	V

GSM Mode Channel 512/1850.2MHz

Frequency(MHz)	Peak EIRP(dBm)	Path Loss	Antenna Gain	P _{Mea} (dBm)	Limit (dBm)	Polarization
3763.52	-65.53	5.92	-8.22	-63.23	-13	H
5055.00	-69.56	7.15	-9.73	-66.98	-13	V
7001.42	-67.52	8.51	-11.10	-64.93	-13	V
8858.00	-67.90	8.73	-12.49	-64.14	-13	H
10178.97	-65.90	8.88	-12.44	-62.34	-13	V
13574.37	-66.26	9.96	-13.83	-62.39	-13	H

GSM Mode Channel 661/1880.0MHz

Frequency(MHz)	Peak EIRP(dBm)	Path Loss	Antenna Gain	P _{Mea} (dBm)	Limit (dBm)	Polarization
3759.88	-58.87	5.94	-8.21	-56.60	-13	H
5050.83	-67.91	7.14	-9.73	-65.32	-13	V
7006.95	-68.89	8.43	-11.10	-66.22	-13	H
8859.74	-62.79	8.73	-12.49	-59.03	-13	H
10174.31	-64.88	8.89	-12.43	-61.34	-13	V
13572.68	-65.89	9.96	-13.83	-62.02	-13	H

GSM Mode Channel 810/1909.8MHz

Frequency(MHz)	Peak EIRP(dBm)	Path Loss	Antenna Gain	P _{Mea} (dBm)	Limit (dBm)	Polarization
4063.84	-68.15	6.31	-8.54	-65.92	-13	H
5292.98	-69.12	7.38	-9.88	-66.62	-13	V
6871.39	-66.24	7.97	-10.97	-63.24	-13	H
9108.54	-68.50	8.43	-12.60	-64.33	-13	V
10239.66	-63.24	9.01	-12.45	-59.80	-13	V
13083.89	-64.68	9.80	-13.38	-61.10	-13	V

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.

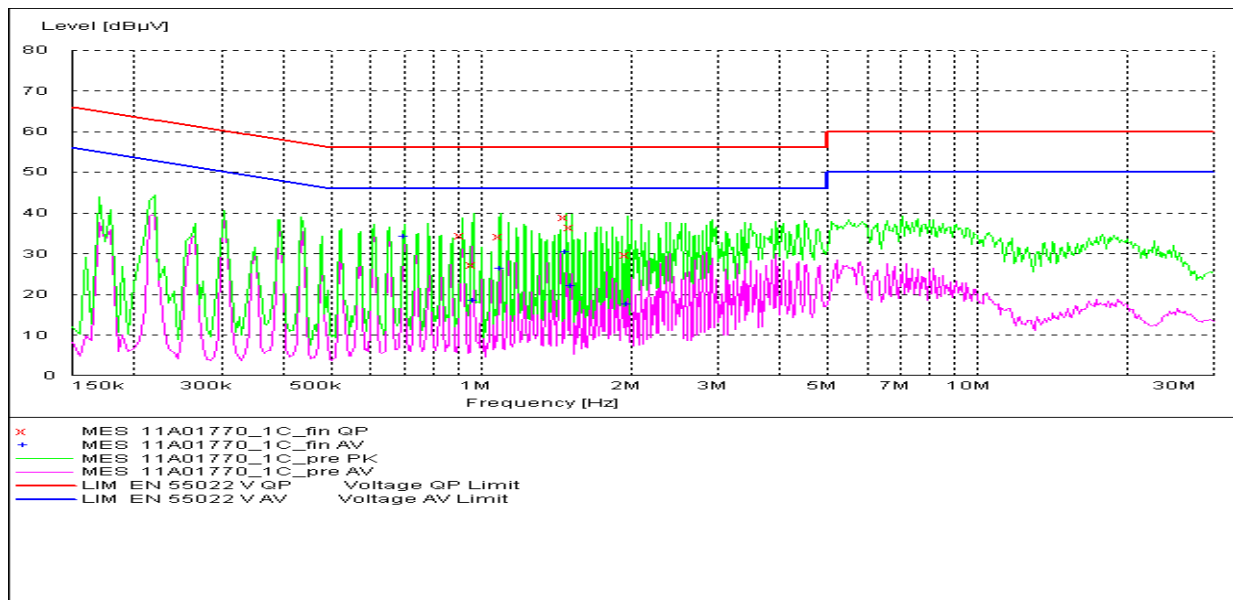
A.3.1 Limit

Frequency of Emission (MHz)	Conducted Limit (dB μ V)	
	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 –AE2



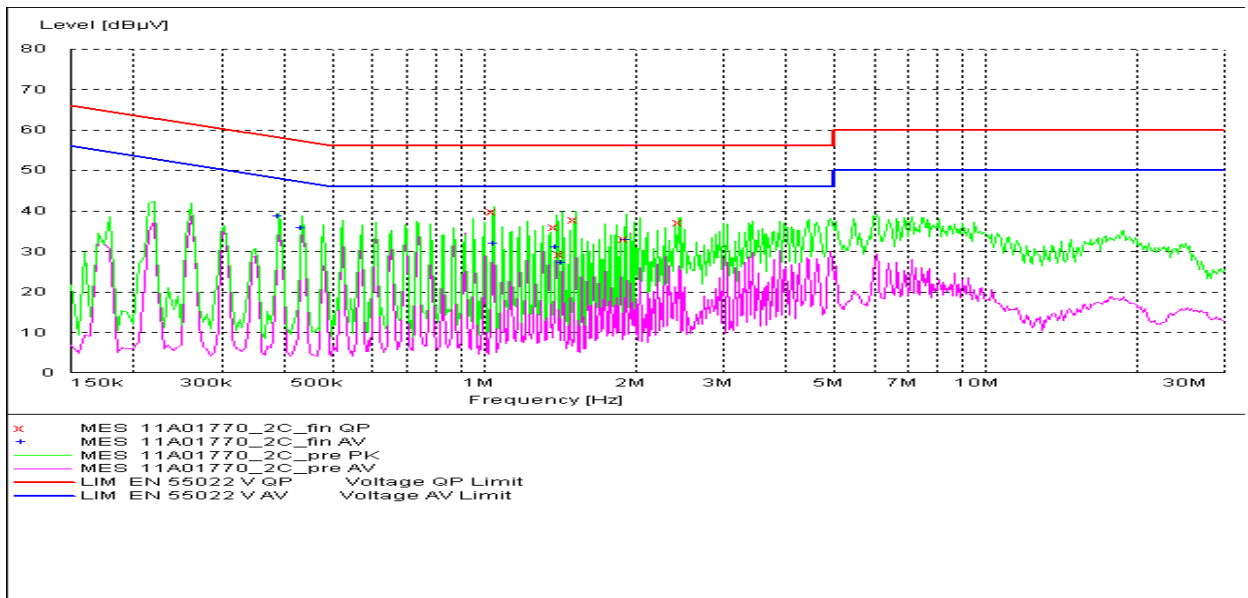
MEASUREMENT RESULT: "11A01770_1C_fin QP"

Frequency MHz	Level dB μ V	Transd	Limit dB	Margin dB μ V	Line dB	PE
0.920000	34.40	10.1	56	21.6	N	GND
0.965000	27.20	10.1	56	28.8	L1	GND
1.095000	34.30	10.1	56	21.7	N	GND
1.485000	38.90	10.1	56	17.2	N	GND
1.530000	36.50	10.1	56	19.5	N	GND
1.970000	29.60	10.1	56	26.4	N	GND

MEASUREMENT RESULT: "11A01770_1C_fin AV"

Frequency MHz	Level dB μ V	Transd	Limit dB	Margin dB μ V	Line	PE
0.700000	34.10	10.1	46	11.9	L1	GND
0.965000	18.50	10.1	46	27.5	L1	GND
1.095000	26.30	10.1	46	19.7	N	GND
1.485000	30.40	10.1	46	15.6	N	GND
1.530000	22.00	10.1	46	24.0	L1	GND
1.970000	17.60	10.1	46	28.4	N	GND

PCS1900MHz –AE2



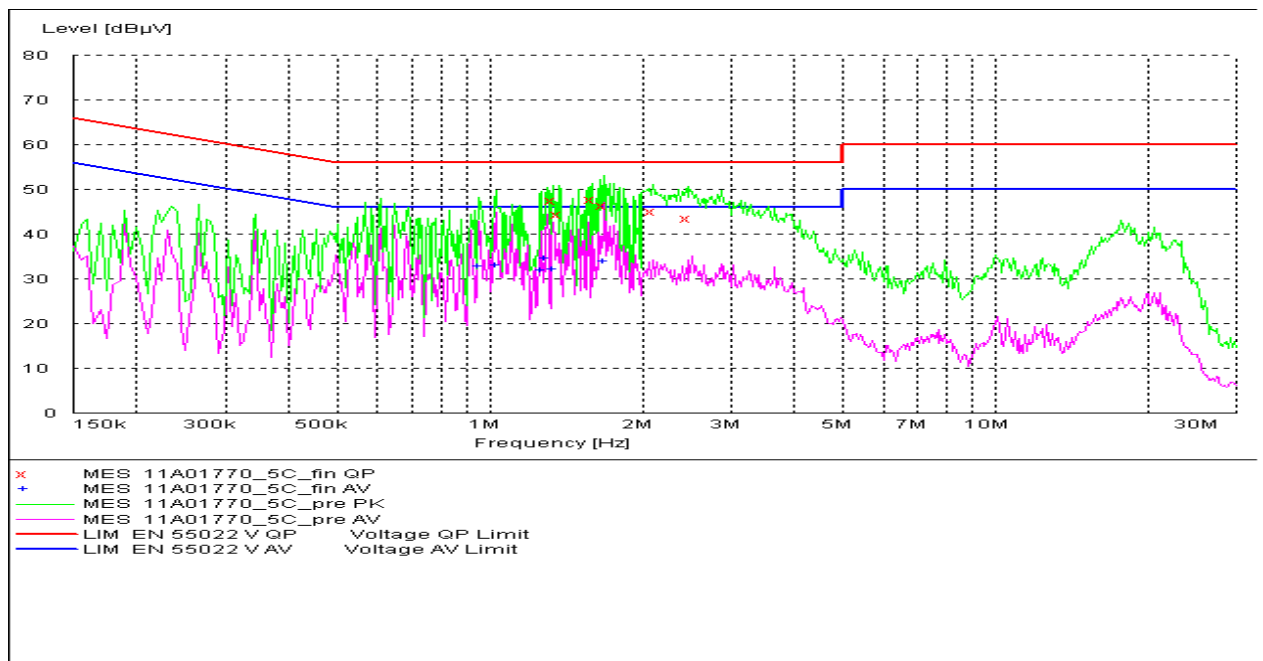
MEASUREMENT RESULT: "11A01770_2C_fin QP"

Frequency MHz	Level dB μ V	Transd	Limit dB	Margin dB μ V	Line	PE
1.045000	39.70	10.1	56	16.3	N	GND
1.395000	36.10	10.1	56	19.9	N	GND
1.440000	29.30	10.1	56	26.7	L1	GND
1.525000	37.70	10.1	56	18.3	N	GND
1.915000	33.10	10.1	56	22.9	L1	GND
2.480072	37.00	10.1	56	19.0	N	GND

MEASUREMENT RESULT: "11A01770_2C_fin AV"

Frequency MHz	Level dB μ V	Transd	Limit dB	Margin dB μ V	Line	PE
0.390000	38.60	10.1	48	9.5	N	GND
0.435000	35.80	10.1	47	11.3	N	GND
1.045000	32.00	10.1	46	14.0	N	GND
1.395000	30.90	10.1	46	15.1	N	GND
1.440000	27.10	10.1	46	18.9	N	GND
1.915000	32.70	10.1	46	13.3	N	GND

GSM850MHz –AE3



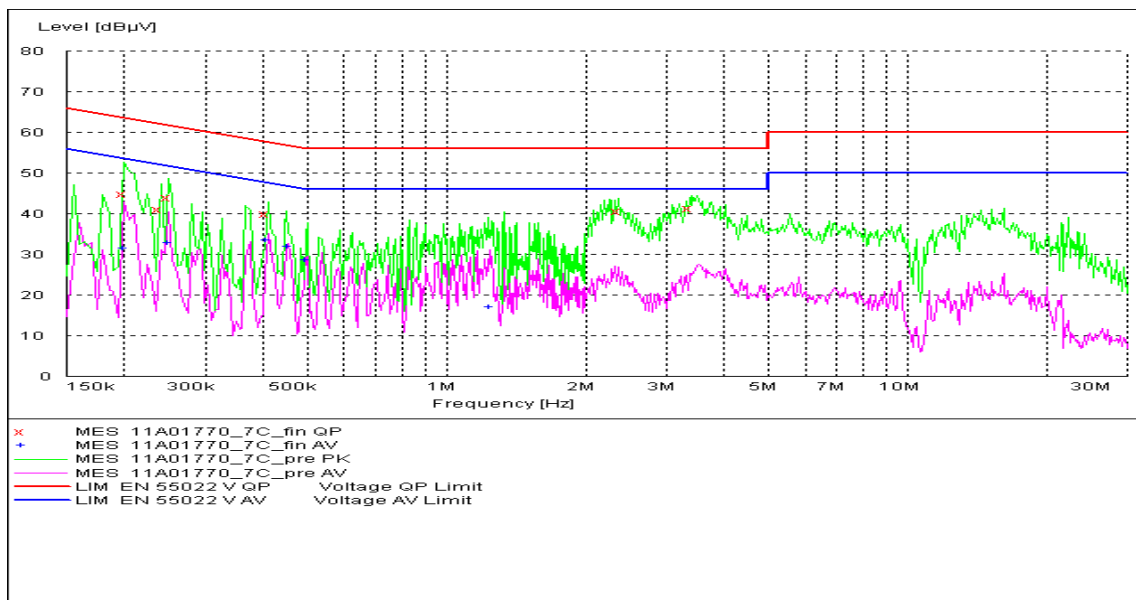
MEASUREMENT RESULT: "11A01770_5C_fin QP"

Frequency MHz	Level dB μ V	Transd	Limit dB	Margin dB μ V	Line	PE
1.330000	47.50	10.1	56	8.5	N	GND
1.375000	44.30	10.1	56	11.7	N	GND
1.600000	47.60	10.1	56	8.4	N	GND
1.680000	46.40	10.1	56	9.6	L1	GND
2.097941	45.10	10.1	56	10.9	N	GND
2.480072	43.40	10.1	56	12.6	L1	GND

MEASUREMENT RESULT: "11A01770_5C_fin AV"

Frequency MHz	Level dBμV	Transd	Limit dB	Margin dBμV	Line	PE
0.955000	32.70	10.1	46	13.3	N	GND
1.030000	33.10	10.1	46	12.9	N	GND
1.260000	32.00	10.1	46	14.0	N	GND
1.295000	34.60	10.1	46	11.5	N	GND
1.340000	32.10	10.1	46	13.9	N	GND
1.680000	34.00	10.1	46	12.0	L1	GND

GSM850MHz -AE4



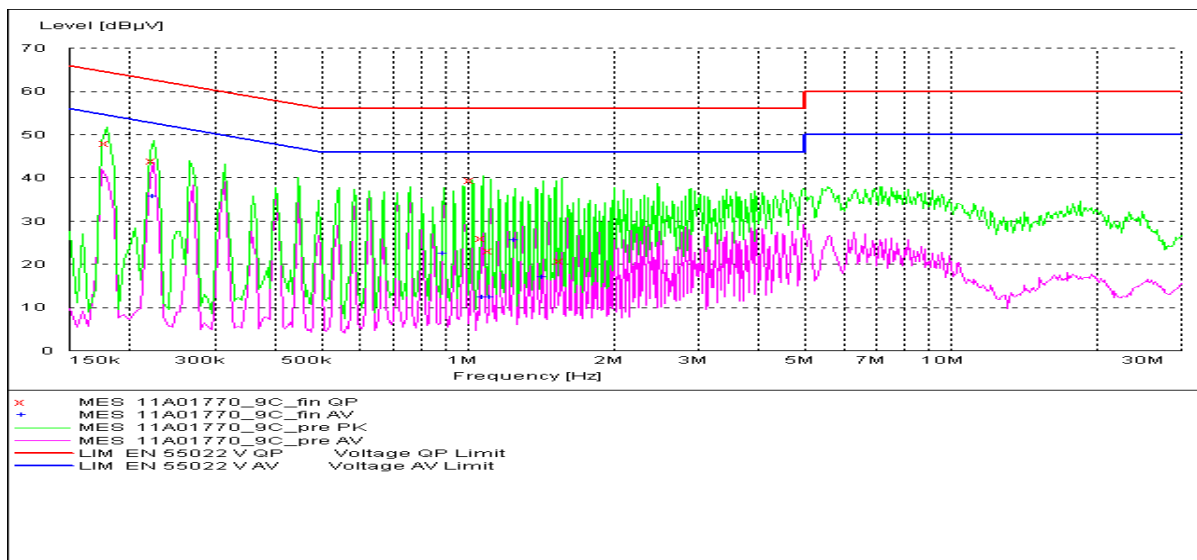
MEASUREMENT RESULT: "11A01770_7C_fin QP"

Frequency MHz	Level dBμV	Transd	Limit dB	Margin dBμV	Line	PE
0.200000	44.90	10.1	64	18.7	L1	GND
0.240000	41.00	10.1	62	21.1	L1	GND
0.250000	43.90	10.1	62	17.8	L1	GND
0.410000	40.00	10.1	58	17.6	N	GND
2.364292	40.50	10.1	56	15.5	N	GND
3.383959	41.30	10.1	56	14.7	N	GND

MEASUREMENT RESULT: "11A01770_7C_fin AV"

Frequency MHz	Level dB μ V	Transd	Limit dB	Margin dB μ V	Line	PE
0.200000	31.60	10.1	54	22.0	L1	GND
0.250000	32.90	10.1	52	18.9	L1	GND
0.410000	33.60	10.1	48	14.1	L1	GND
0.455000	32.00	10.1	47	14.8	L1	GND
0.495000	28.60	10.1	46	17.5	N	GND
1.245000	17.10	10.1	46	28.9	L1	GND

MP3



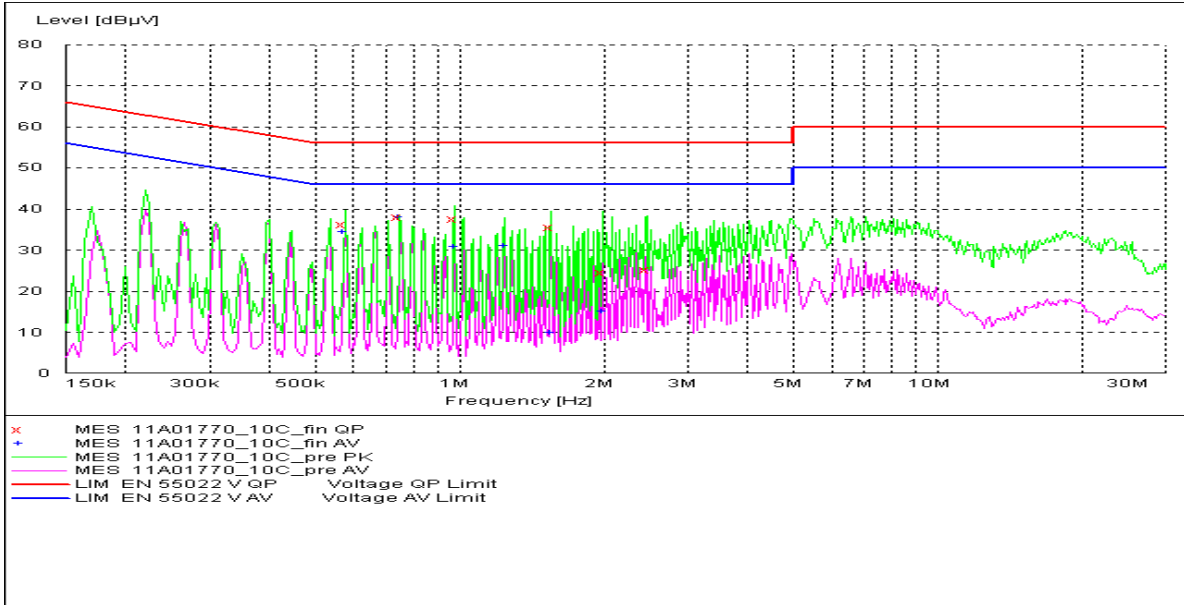
MEASUREMENT RESULT: "11A01770_9C_fin QP"

Frequency MHz	Level dB μ V	Transd	Limit dB	Margin dB μ V	Line	PE
0.180000	48.00	10.1	65	16.5	N	GND
0.225000	43.90	10.1	63	18.7	N	GND
1.025000	39.40	10.1	56	16.6	N	GND
1.075000	26.00	10.1	56	30.0	N	GND
1.120000	23.00	10.1	56	33.0	N	GND
1.565000	20.80	10.1	56	35.2	L1	GND

MEASUREMENT RESULT: "11A01770_9C_fin AV"

Frequency MHz	Level dBμV	Transd	Limit dB	Margin dBμV	Line	PE
0.225000	35.70	10.1	53	17.0	N	GND
0.895000	22.60	10.1	46	23.4	N	GND
1.075000	12.40	10.1	46	33.6	L1	GND
1.120000	12.40	10.1	46	33.6	N	GND
1.250000	25.70	10.1	46	20.3	L1	GND
1.430000	17.00	10.1	46	29.0	N	GND

CAMERA



MEASUREMENT RESULT: "11A01770_10C_fin QP"

Frequency MHz	Level dBμV	Transd	Limit dB	Margin dBμV	Line	PE
0.575000	36.30	10.1	56	19.8	L1	GND
0.750000	37.90	10.1	56	18.1	L1	GND
0.975000	37.60	10.1	56	18.4	N	GND
1.550000	35.40	10.1	56	20.6	N	GND
1.995000	24.50	10.1	56	31.5	N	GND
2.480072	25.10	10.1	56	30.9	L1	GND

MEASUREMENT RESULT: "11A01770_10C_fin AV"

Frequency MHz	Level dB μ V	Transd	Limit dB	Margin dB μ V	Line dB	PE
0.575000	34.50	10.1	46	11.5	N	GND
0.750000	38.00	10.1	46	8.0	L1	GND
0.975000	30.70	10.1	46	15.3	N	GND
1.240000	31.00	10.1	46	15.0	L1	GND
1.550000	10.00	10.1	46	36.0	N	GND
1.995000	15.10	10.1	46	30.9	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°C.
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°C increments from -30°C to +50°C. 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°C.
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°C to -30°C. 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°C 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 3.8VDC. Operation above or below these voltage limits is prohibited by transceiver software in order to prevent improper operation as well as to protect components from overstress. These voltages represent a tolerance of -10 % and +12.5 %. For the purposes of measuring frequency stability these voltage limits are to be used.

A.4.2.2 For equipment powered by primary supply voltage

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

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

A.4.3 Measurement results

GSM 850

Frequency Error vs Voltage

Voltage(V)	Frequency error(Hz)	Frequency error(ppm)
3.5	-17	0.031
3.8	-18	0.033
4.2	-18	0.033

Frequency Error vs Temperature

temperature(°C)	Frequency error(Hz)	Frequency error(ppm)
-30	-19	0.035
-20	-19	0.035
-10	-18	0.033
0	-18	0.033
10	-17	0.031
20	-17	0.031
30	-17	0.031
40	-18	0.033
50	-18	0.033

PCS 1900

Frequency Error vs Voltage

Voltage(V)	Frequency error(Hz)	Frequency error(ppm)
3.5	-46	0.028
3.8	-46	0.067
4.2	-48	0.070

Frequency Error vs Temperature

temperature(°C)	Frequency error(Hz)	Frequency error(ppm)
-30	-48	0.070
-20	-48	0.070
-10	-47	0.068
0	-47	0.068
10	-46	0.067
20	-46	0.067
30	-46	0.067
40	-47	0.068
50	-48	0.070

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

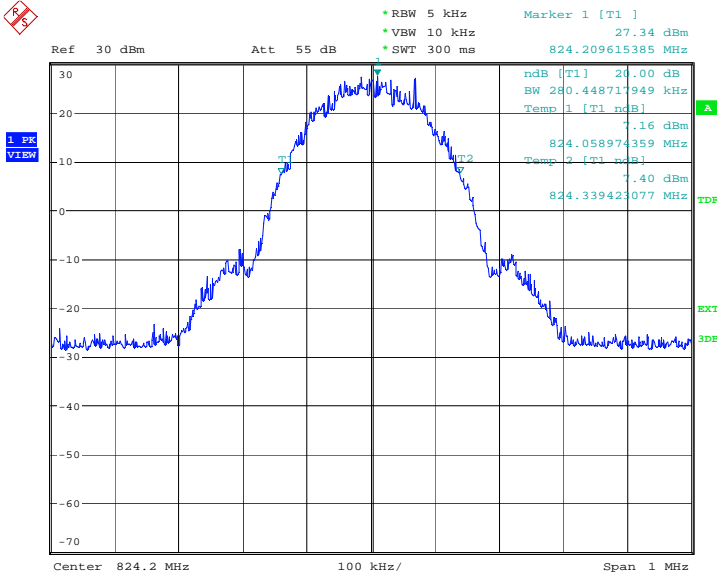
A.5.1 Occupied Bandwidth Results

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)

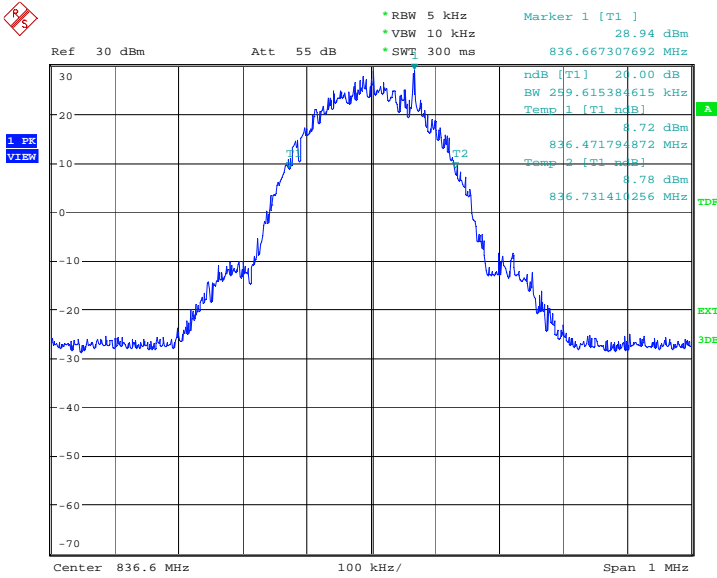
Frequency(MHz)	Occupied Bandwidth (-20dBc BW)(kHz)
824.2	280.449
836.6	259.615
848.8	275.641

**GSM 850
 Channel 128-Occupied Bandwidth (-20dBc BW)**



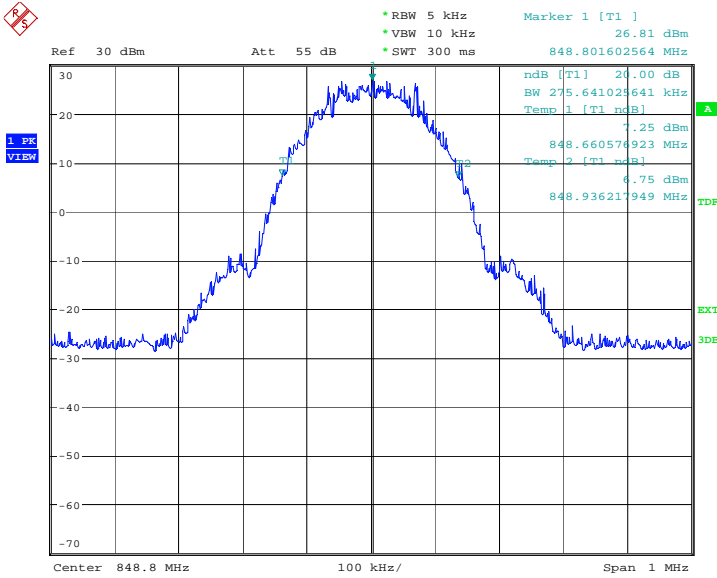
Date: 13.APR.2011 06:02:37

Channel 190-Occupied Bandwidth (-20dBc BW)



Date: 13.APR.2011 06:03:05

Channel 251-Occupied Bandwidth (-20dBc BW)

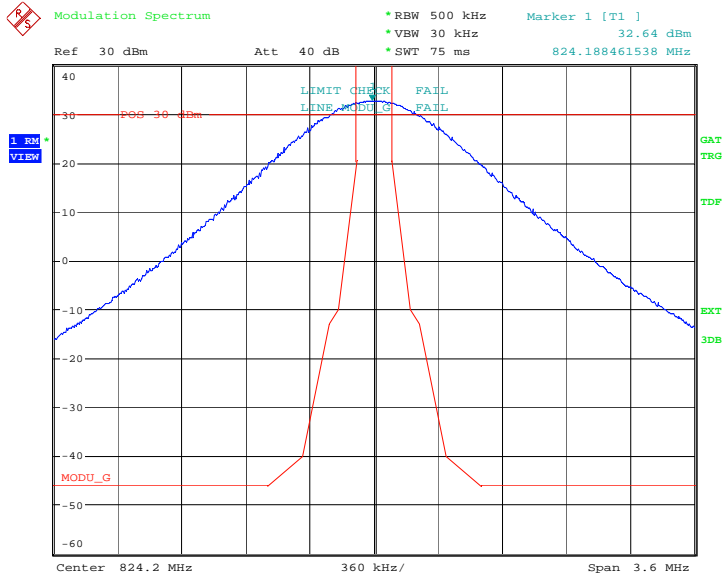


Date: 13.APR.2011 06:03:32

GSM 850(-20dBc)-IC

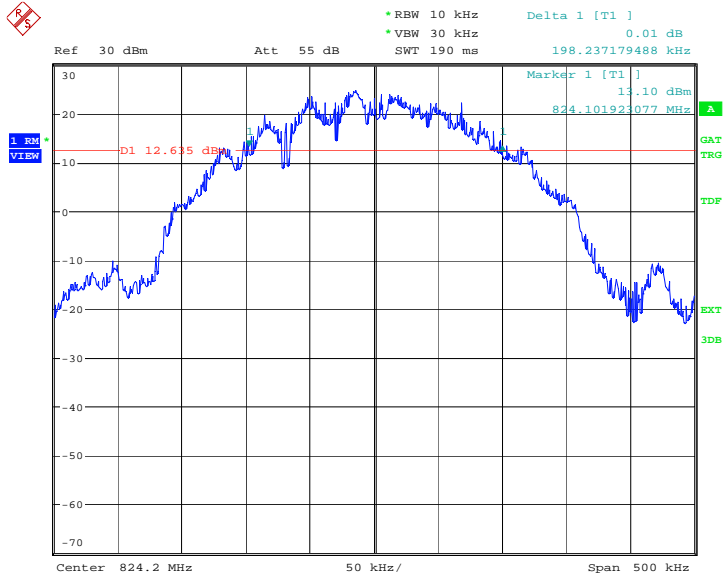
Frequency(MHz)	Occupied Bandwidth (-20dBc BW)(kHz)
824.2	198.237
836.6	234.455
848.8	226.122

**GSM 850
Channel 128-Occupied Bandwidth Reference Level**



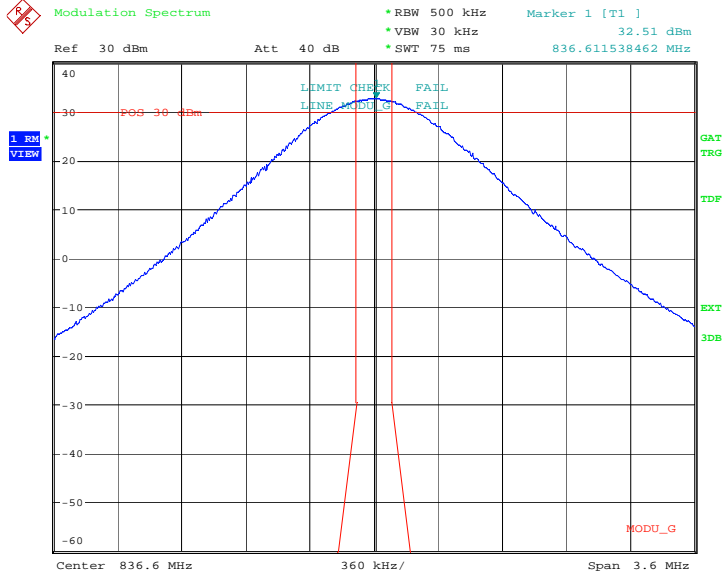
Date: 12.MAY.2011 06:47:04

Channel 128-Occupied Bandwidth (-20dBc BW)



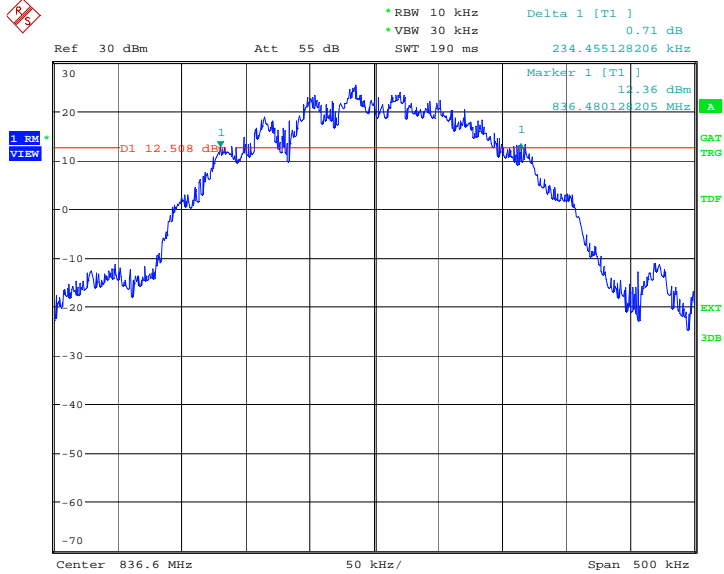
Date: 12.MAY.2011 06:54:11

Channel 190-Occupied Bandwidth Reference Level



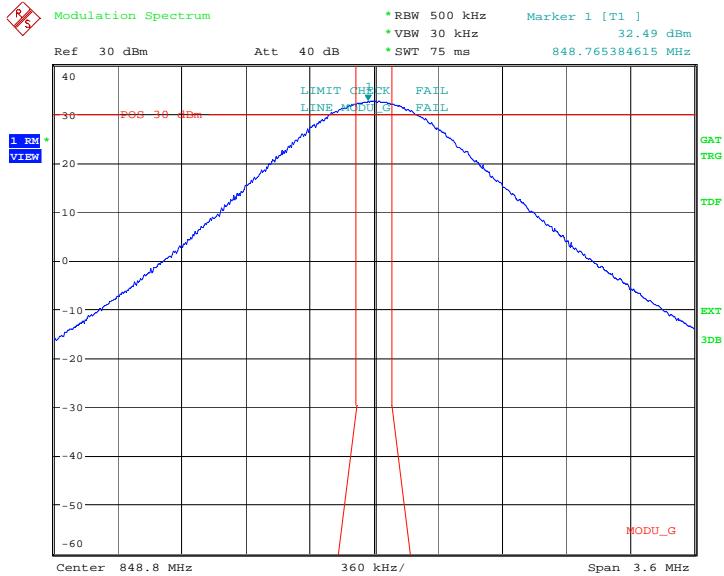
Date: 12.MAY.2011 06:55:50

Channel 190-Occupied Bandwidth (-20dBc BW)



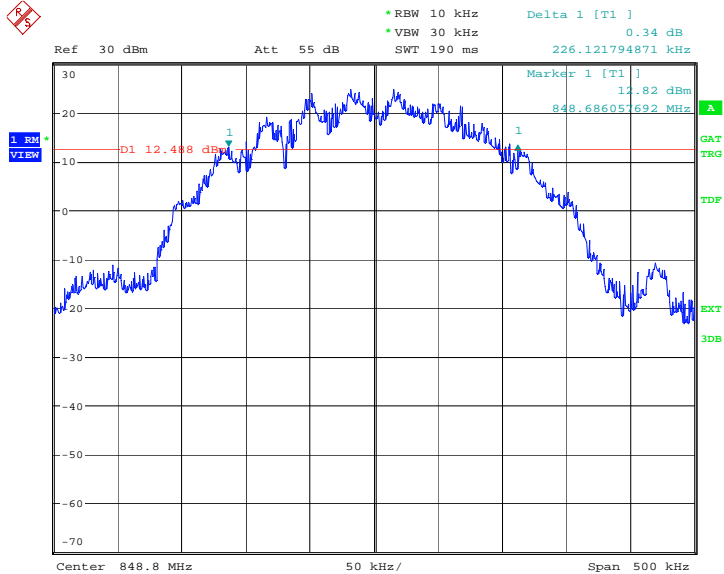
Date: 12.MAY.2011 06:58:03

Channel 251-Occupied Bandwidth Reference Level



Date: 12.MAY.2011 07:00:19

Channel 251-Occupied Bandwidth (-20dBc BW)

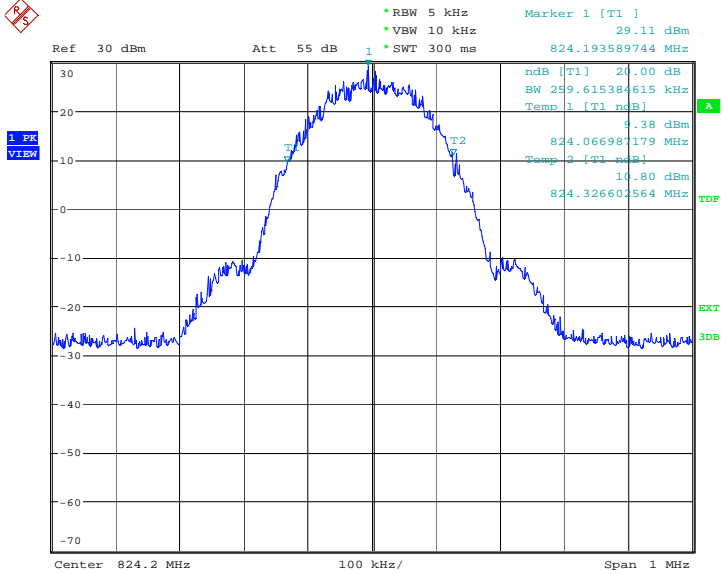


Date: 12.MAY.2011 07:01:20

GPRS 850(-20dBc)

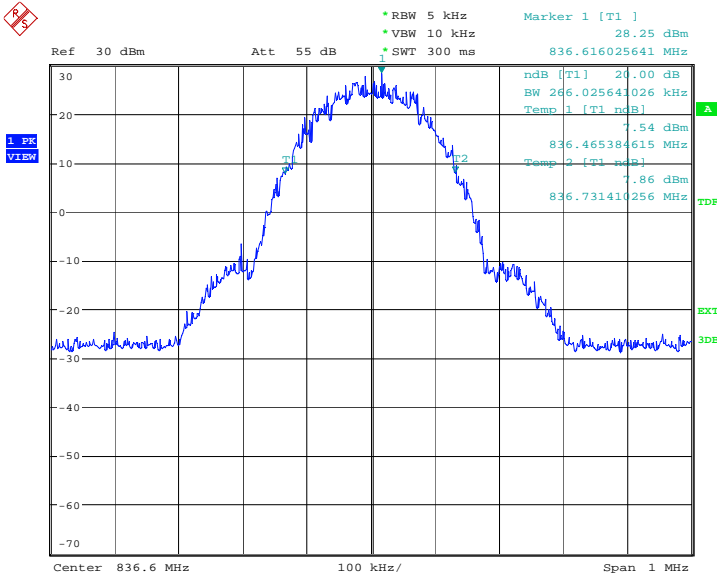
Frequency(MHz)	Occupied Bandwidth (-20dBc BW)(kHz)
824.2	259.615
836.6	266.026
848.8	264.423

**GPRS 850
 Channel 128-Occupied Bandwidth (-20dBc BW)**



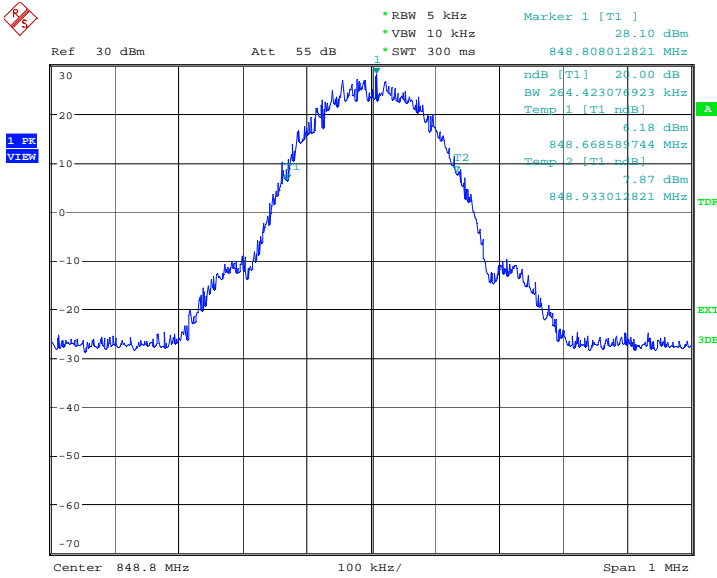
Date: 13.APR.2011 06:45:43

Channel 190-Occupied Bandwidth (-20dBc BW)



Date: 13.APR.2011 06:46:10

Channel 251-Occupied Bandwidth (-20dBc BW)

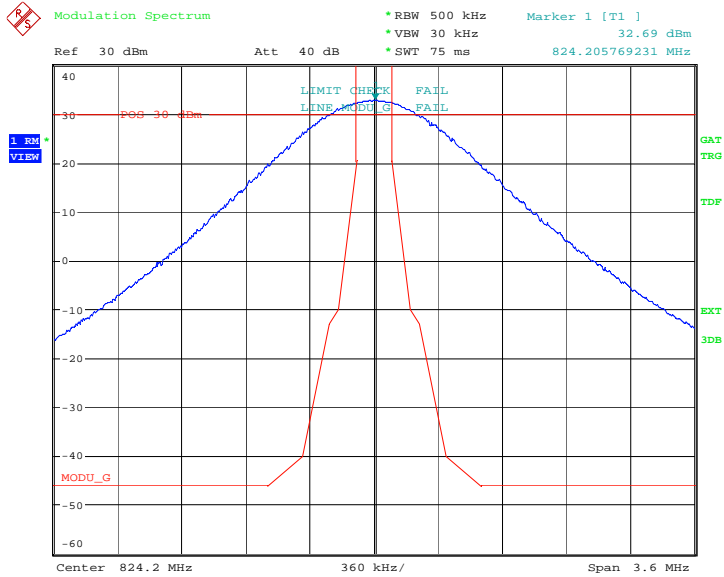


Date: 13.APR.2011 06:46:38

GPRS 850(-20dBc)-IC

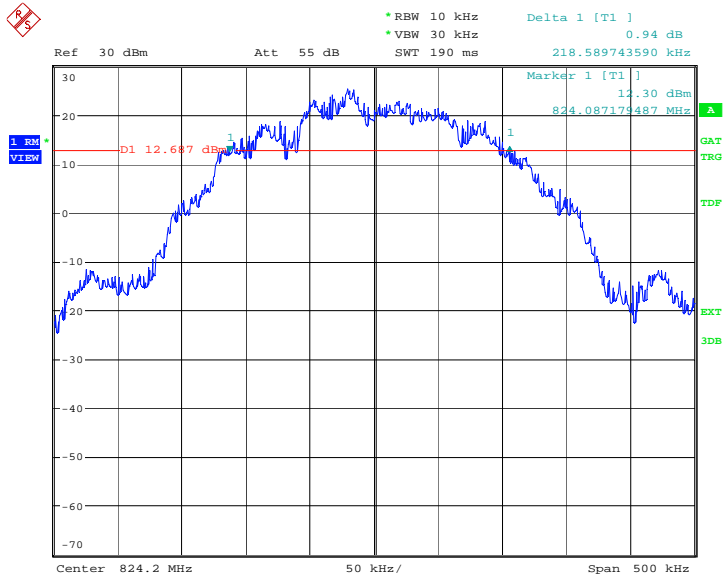
Frequency(MHz)	Occupied Bandwidth (-20dBc BW)(kHz)
824.2	218.590
836.6	219.551
848.8	220.833

**GPRS 850
Channel 128-Occupied Bandwidth Reference Level**



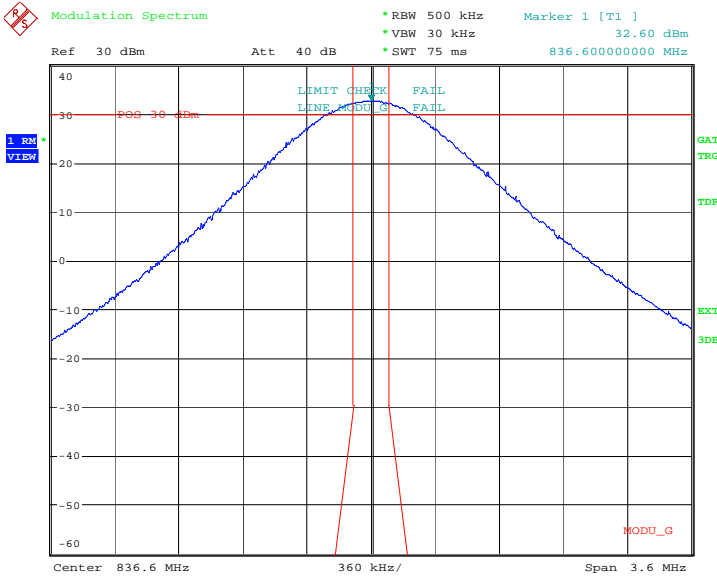
Date: 12.MAY.2011 07:15:00

Channel 128-Occupied Bandwidth (-20dBc BW)



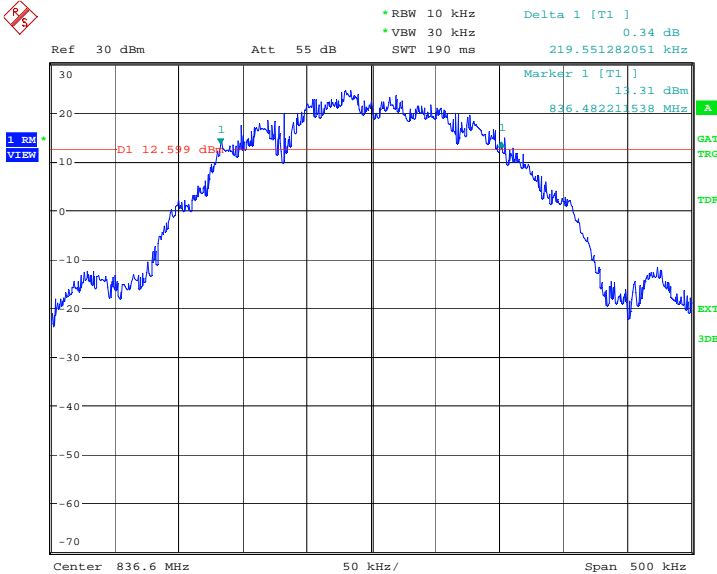
Date: 12.MAY.2011 07:16:04

Channel 190-Occupied Bandwidth Reference Level



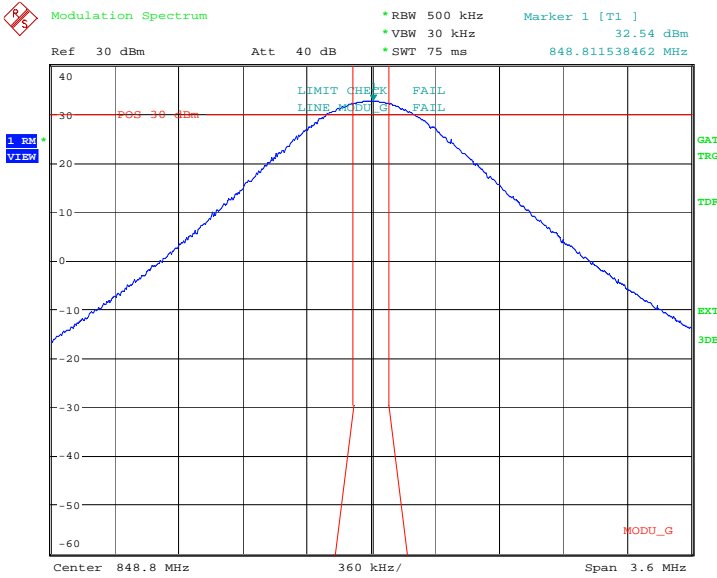
Date: 12.MAY.2011 07:17:21

Channel 190-Occupied Bandwidth (-20dBc BW)



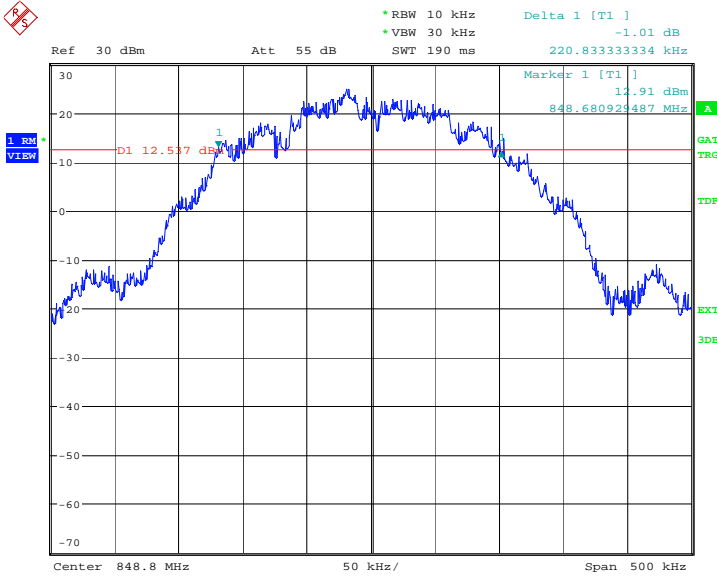
Date: 12.MAY.2011 07:18:39

Channel 251-Occupied Bandwidth Reference Level



Date: 12.MAY.2011 07:20:21

Channel 251-Occupied Bandwidth (-20dBc BW)

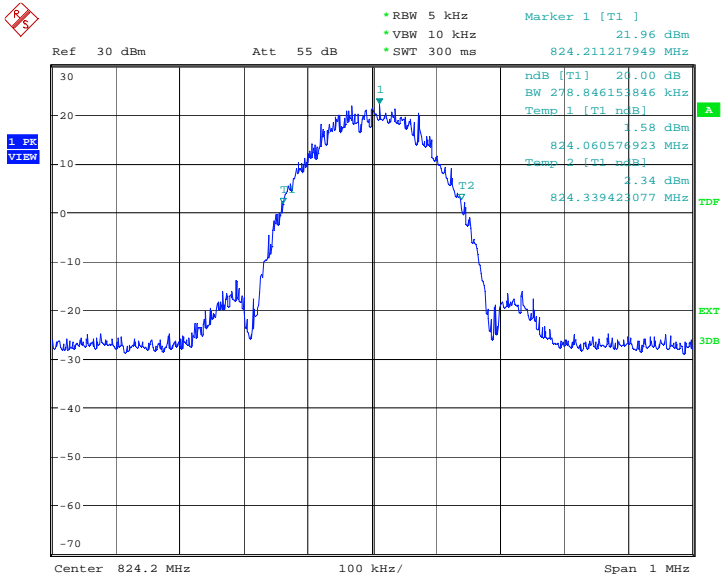


Date: 12.MAY.2011 07:21:05

EGPRS 850(-20dBc)

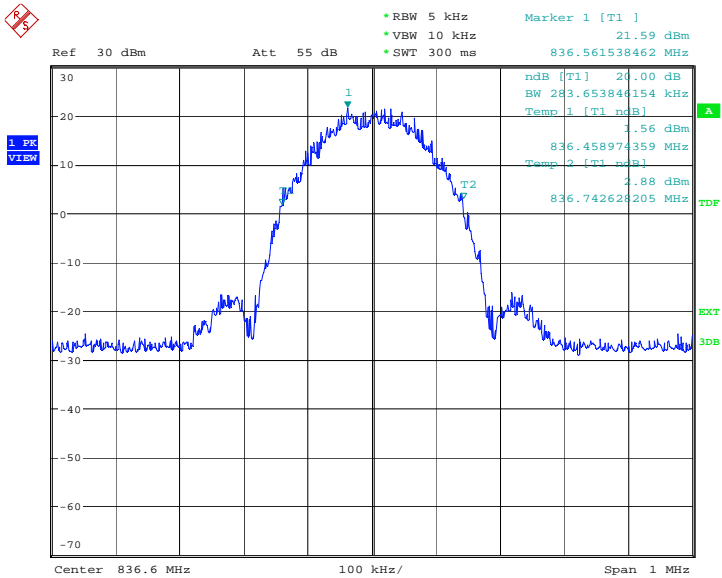
Frequency(MHz)	Occupied Bandwidth (-20Bc BW)(kHz)
824.2	278.846
836.6	283.654
848.8	283.654

**EGPRS 850
Channel 128-Occupied Bandwidth (-20dBc BW)**



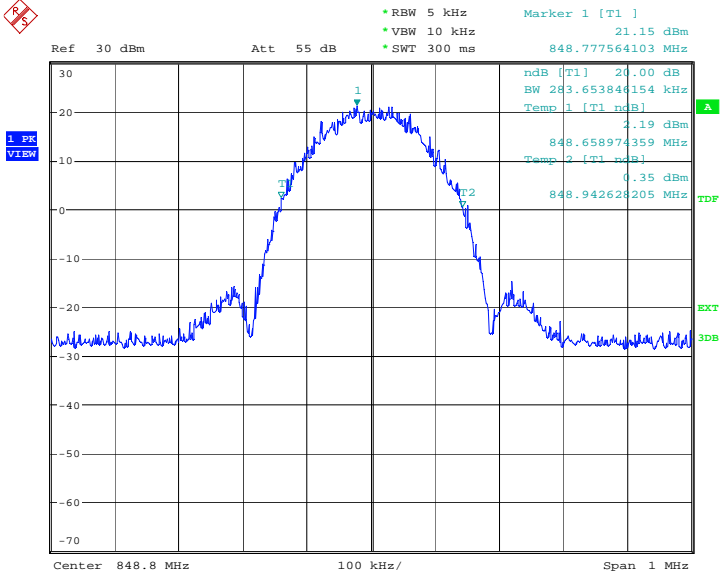
Date: 13.APR.2011 07:00:30

Channel 190-Occupied Bandwidth (-20dBc BW)



Date: 13.APR.2011 07:00:58

Channel 251-Occupied Bandwidth (-20dBc BW)

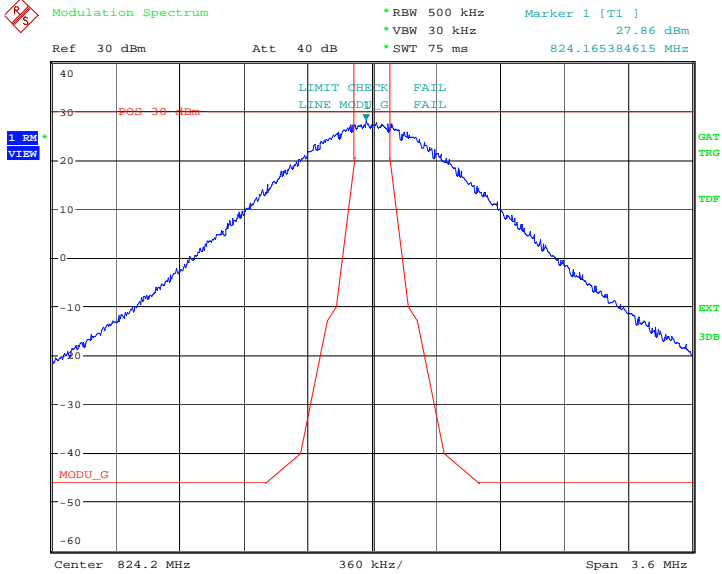


Date: 13.APR.2011 07:01:25

EGPRS 850(-20dBc)-IC

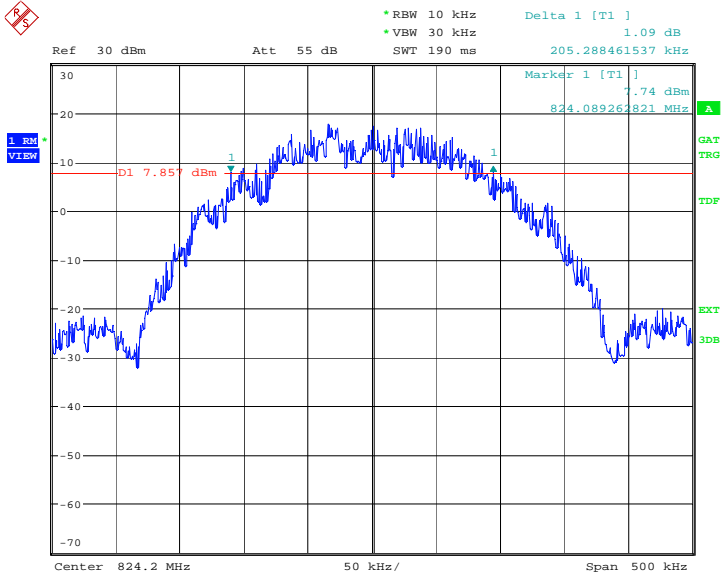
Frequency(MHz)	Occupied Bandwidth (-20Bc BW)(kHz)
824.2	205.288
836.6	186.218
848.8	205.128

**EGPRS 850
 Channel 128-Occupied Reference level**



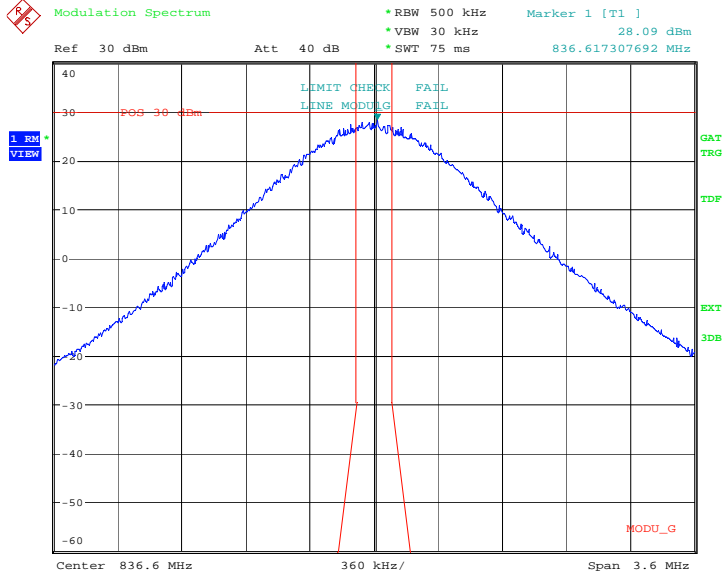
Date: 12.MAY.2011 07:34:03

Channel 128-Occupied Bandwidth (-20dBc BW)



Date: 12.MAY.2011 07:35:13

Channel 190-Occupied Bandwidth Reference level



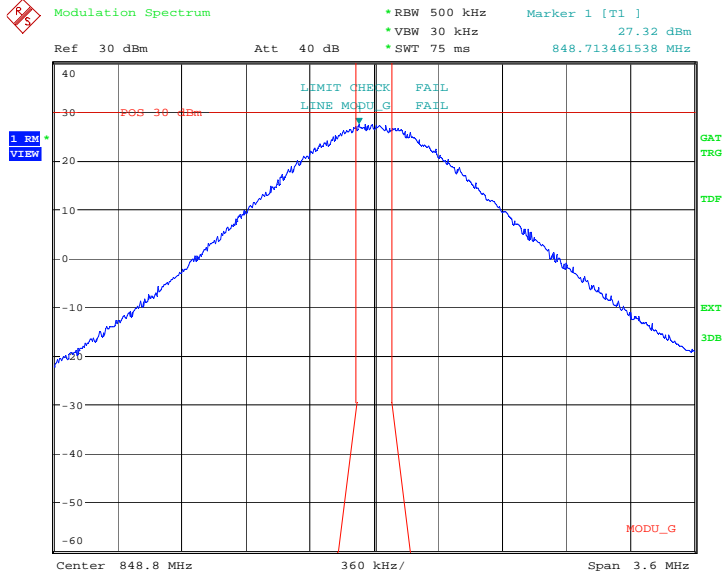
Date: 12.MAY.2011 07:36:19

Channel 190-Occupied Bandwidth (-20dBc BW)



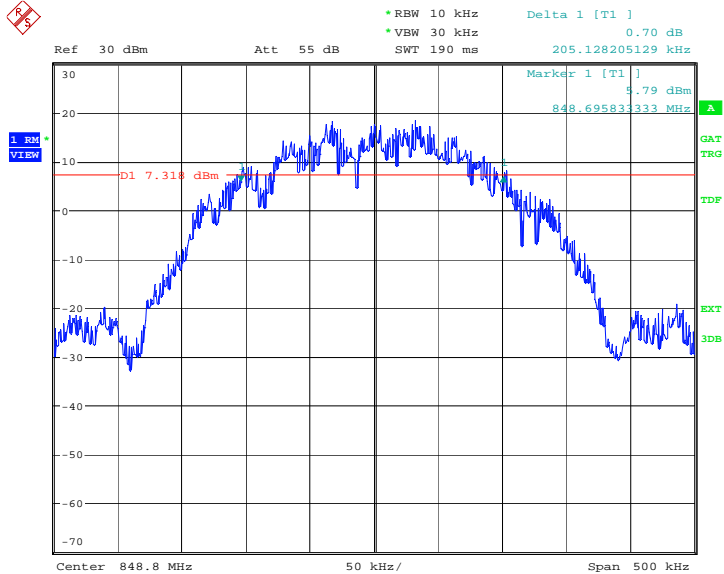
Date: 12.MAY.2011 07:37:11

Channel 251-Occupied Reference Level



Date: 12.MAY.2011 07:38:17

Channel 251-Occupied Bandwidth (-20dBc BW)

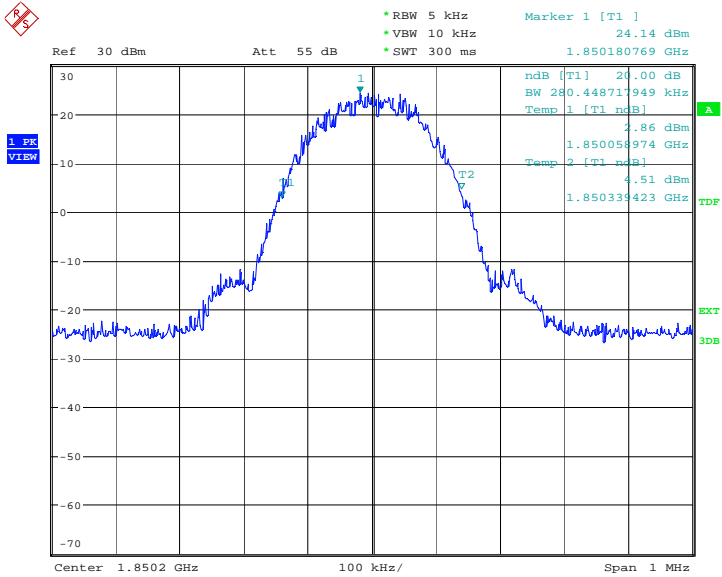


Date: 12.MAY.2011 07:39:03

PCS 1900(-20dBc)

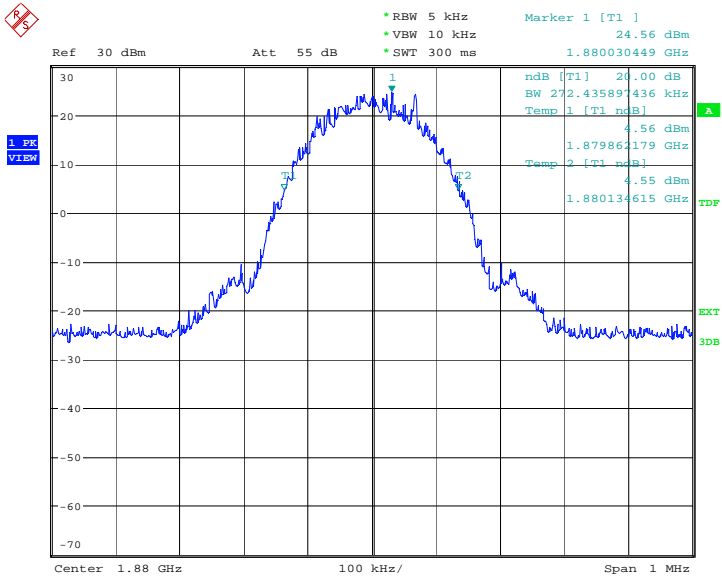
Frequency(MHz)	Occupied Bandwidth (-20dBc BW)(kHz)
1850.2	280.449
1880.0	272.436
1909.8	267.628

**PCS 1900
Channel 512-Occupied Bandwidth (-20dBc BW)**



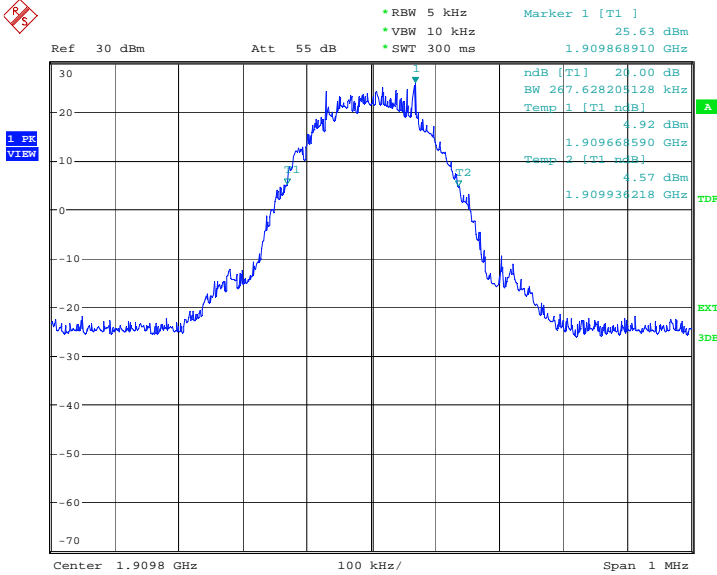
Date: 13.APR.2011 06:18:03

Channel 661-Occupied Bandwidth (-20dBc BW)



Date: 13.APR.2011 06:18:30

Channel 810-Occupied Bandwidth (-20dBc BW)

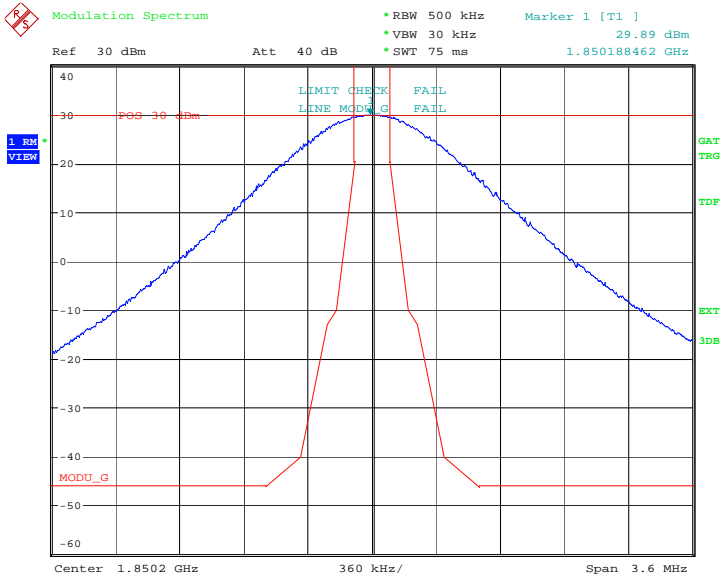


Date: 13.APR.2011 06:18:58

PCS 1900(-20dBc)-IC

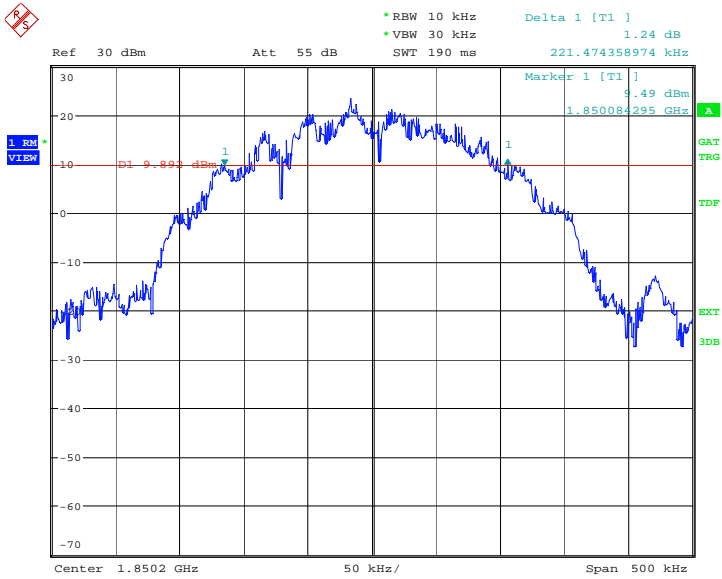
Frequency(MHz)	Occupied Bandwidth (-20dBc BW)(kHz)
1850.2	221.474
1880.0	231.571
1909.8	232.051

**PCS 1900
 Channel 512-Occupied Bandwidth Reference Level**



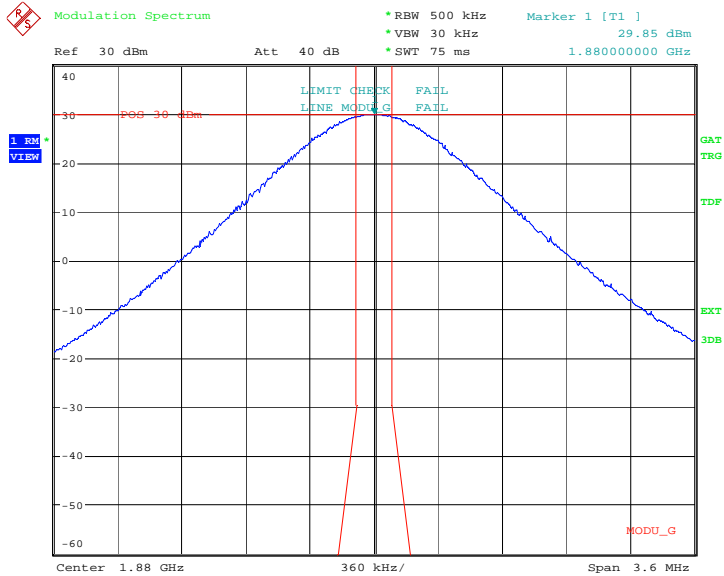
Date: 12.MAY.2011 07:07:21

Channel 512-Occupied Bandwidth (-20dBc BW)



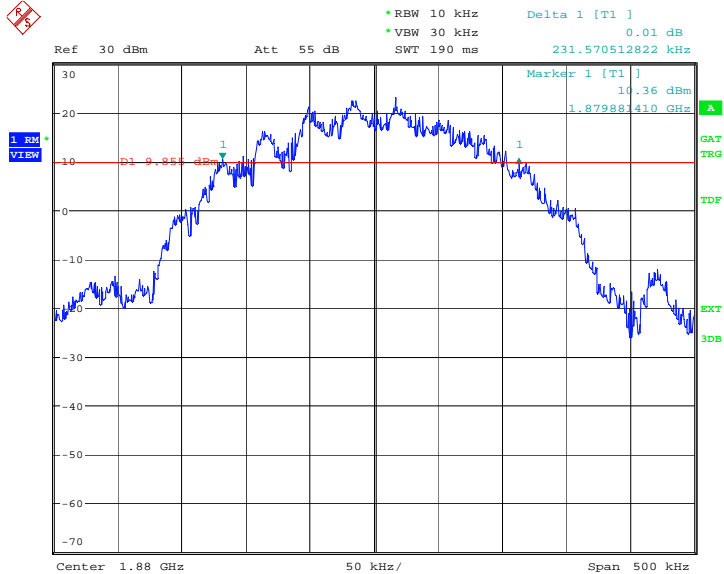
Date: 12.MAY.2011 07:08:20

Channel 661-Occupied Reference Level



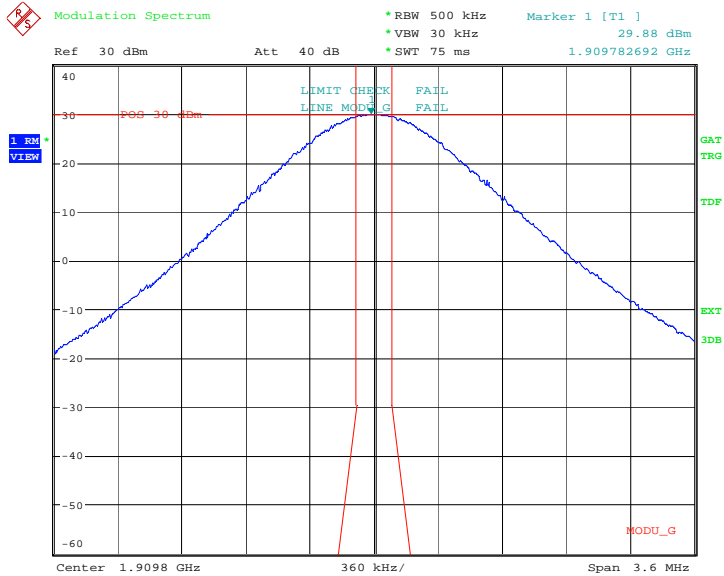
Date: 12.MAY.2011 07:09:27

Channel 661-Occupied Bandwidth (-20dBc BW)



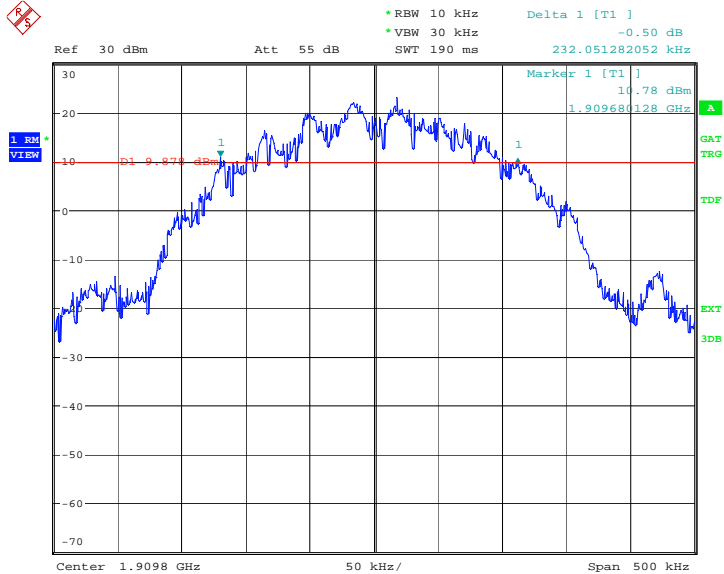
Date: 12.MAY.2011 07:10:10

Channel 810-Occupied Bandwidth Reference Level



Date: 12.MAY.2011 07:11:13

Channel 810-Occupied Bandwidth (-20dBc BW)

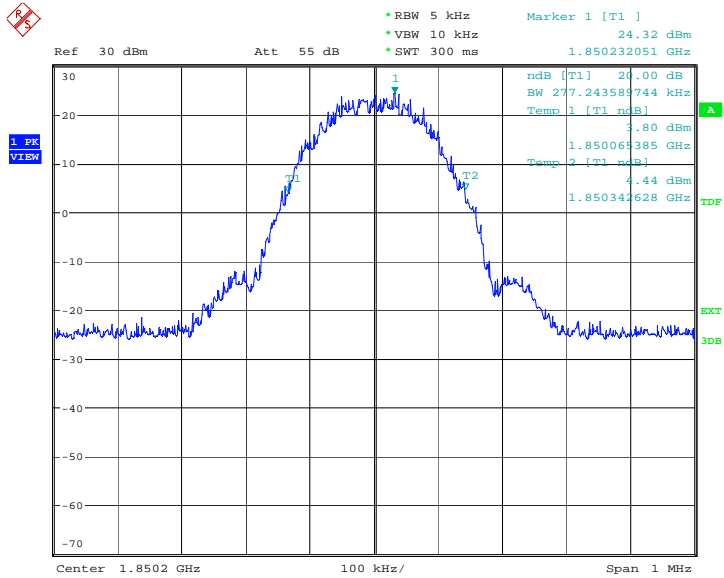


Date: 12.MAY.2011 07:11:47

GPRS 1900(-20dBc)

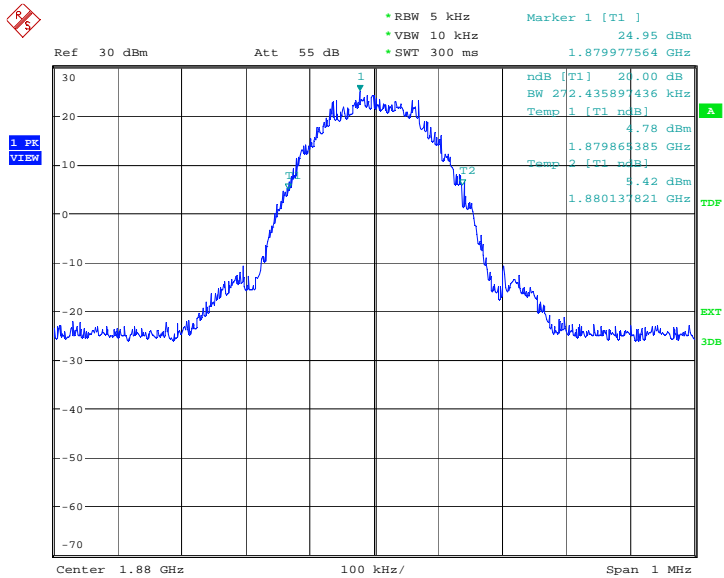
Frequency(MHz)	Occupied Bandwidth (-20dBc BW)(kHz)
1850.2	277.244
1880.0	272.436
1909.8	274.038

**GPRS 1900
 Channel 512-Occupied Bandwidth -20dBc BW)**



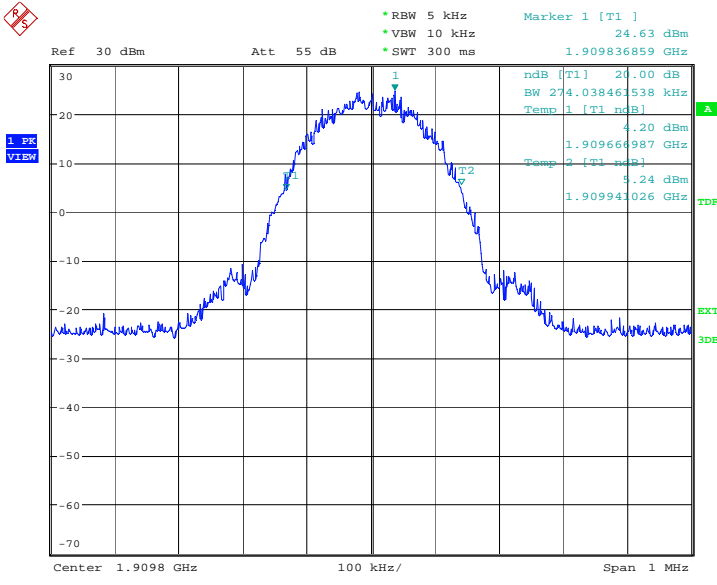
Date: 13.APR.2011 06:53:04

Channel 661-Occupied Bandwidth (-20dBc BW)



Date: 13.APR.2011 06:53:31

Channel 810-Occupied Bandwidth (-20dBc BW)

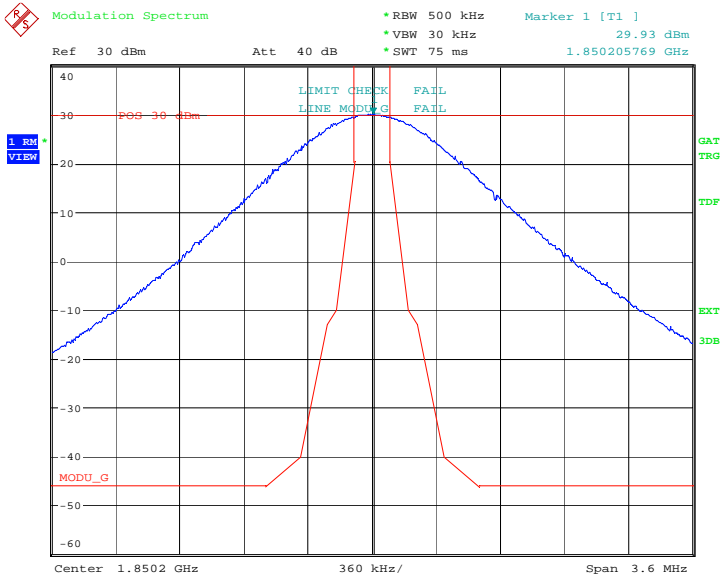


Date: 13.APR.2011 06:53:59

GPRS 1900(-20dBc)-IC

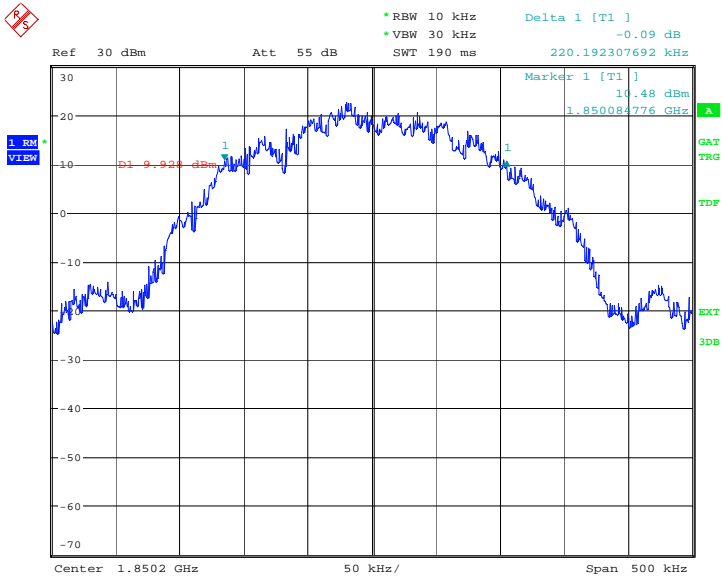
Frequency(MHz)	Occupied Bandwidth (-20dBc BW)(kHz)
1850.2	220.192
1880.0	222.917
1909.8	220.192

**GPRS 1900
 Channel 512-Occupied Bandwidth Reference Level**



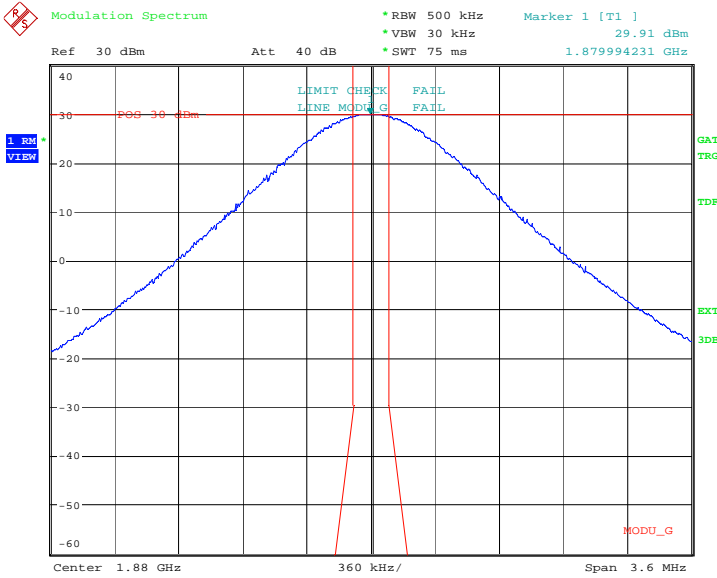
Date: 12.MAY.2011 07:24:35

Channel 512-Occupied Bandwidth -20dBc BW)



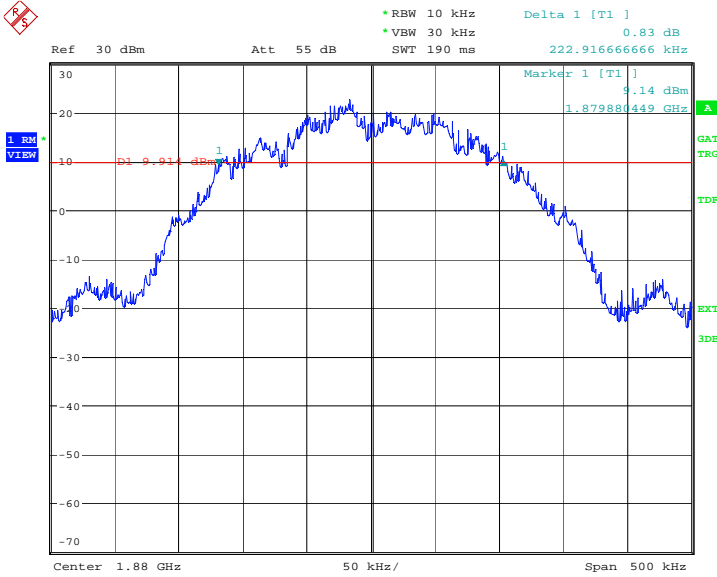
Date: 12.MAY.2011 07:25:28

Channel 661-Occupied Bandwidth Reference Level



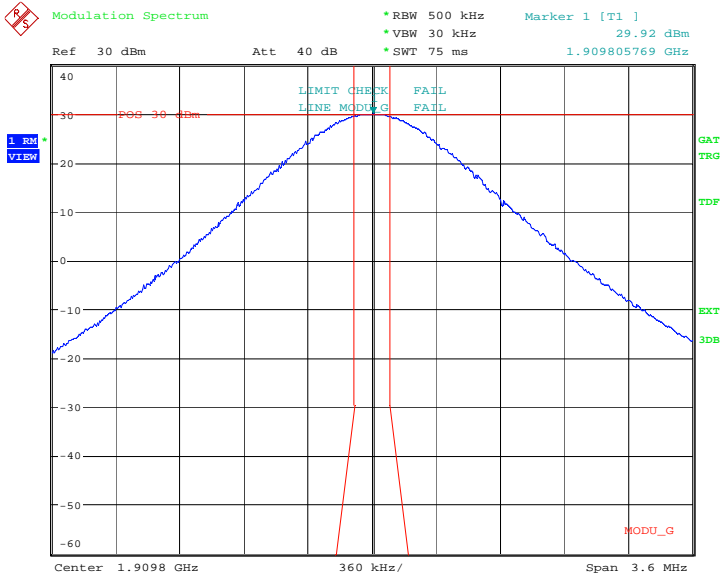
Date: 12.MAY.2011 07:26:29

Channel 661-Occupied Bandwidth (-20dBc BW)



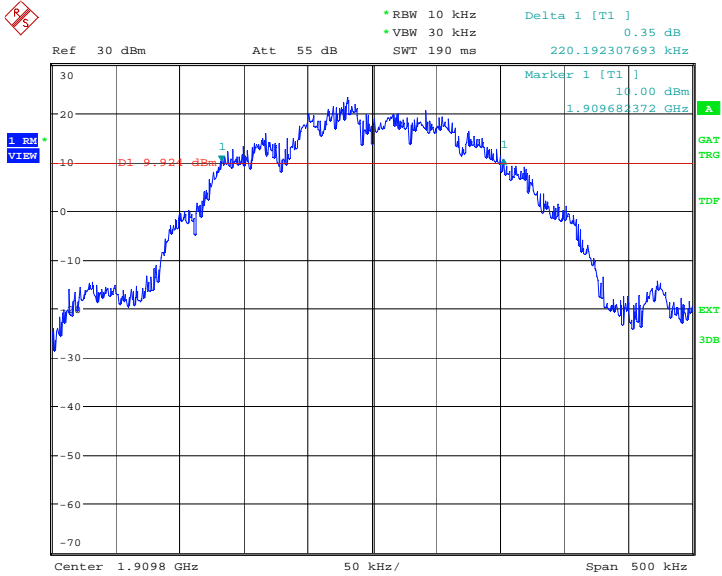
Date: 12.MAY.2011 07:27:28

Channel 810-Occupied Reference Level



Date: 12.MAY.2011 07:28:32

Channel 810-Occupied Bandwidth (-20dBc BW)

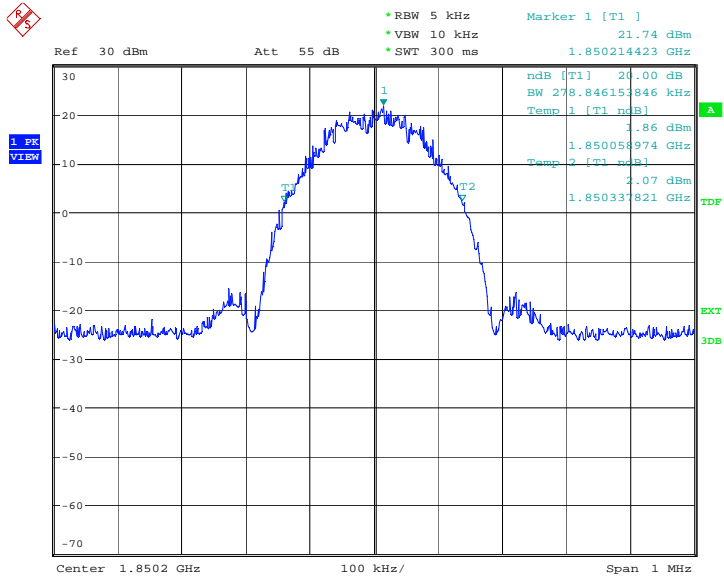


Date: 12.MAY.2011 07:29:34

EGPRS 1900(-20dBc)

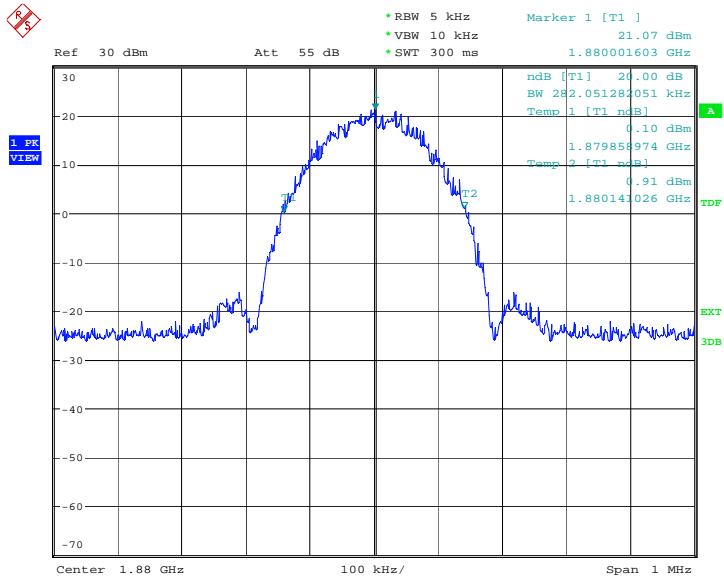
Frequency(MHz)	Occupied Bandwidth (-20dBc BW)(kHz)
1850.2	278.846
1880.0	282.051
1909.8	267.628

**EGPRS 1900
Channel 512-Occupied Bandwidth (-20dBc BW)**



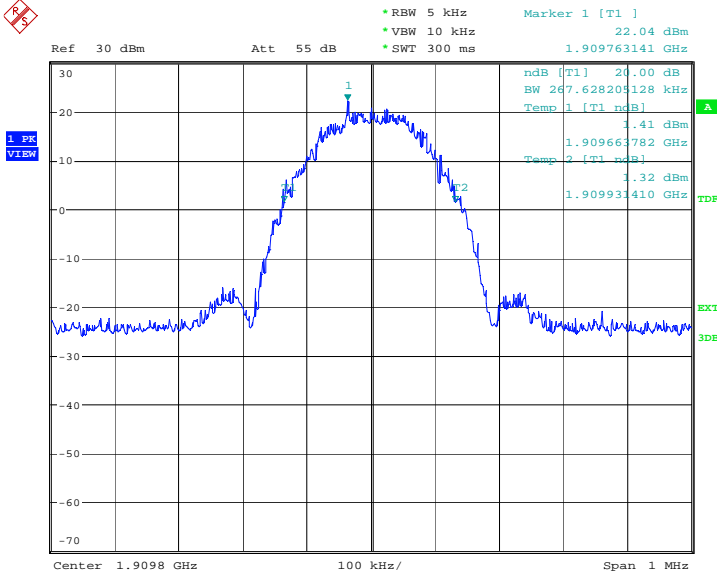
Date: 13.APR.2011 07:18:59

Channel 661-Occupied Bandwidth (-20dBc BW)



Date: 13.APR.2011 07:19:26

Channel 810-Occupied Bandwidth (-20dBc BW)

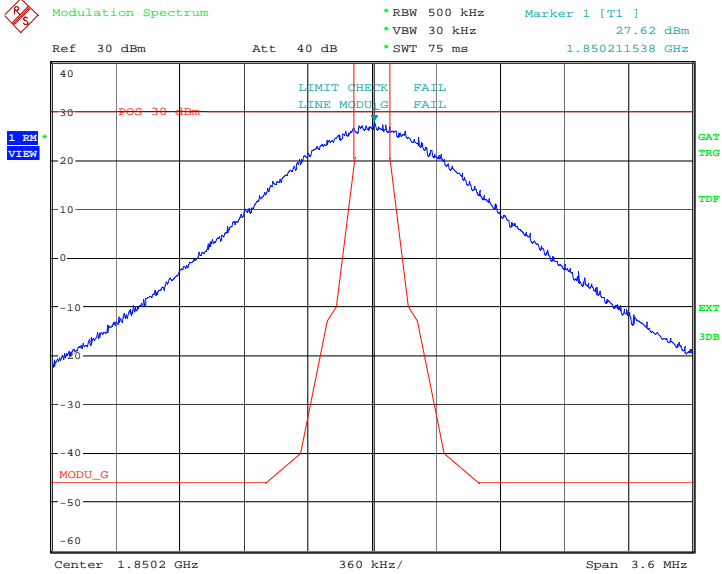


Date: 13.APR.2011 07:19:54

EGPRS 1900(-20dBc)-IC

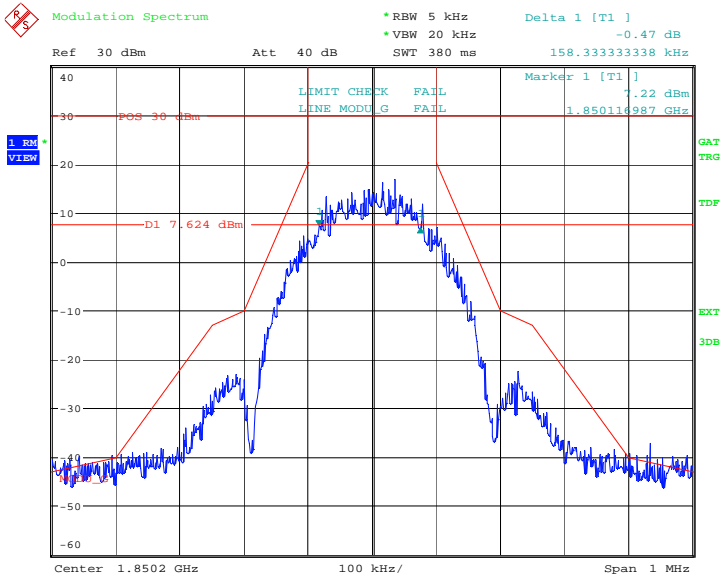
Frequency(MHz)	Occupied Bandwidth (-20dBc BW)(kHz)
1850.2	158.333
1880.0	163.141
1909.8	165.385

**EGPRS 1900
 Channel 512-Occupied Reference Level**



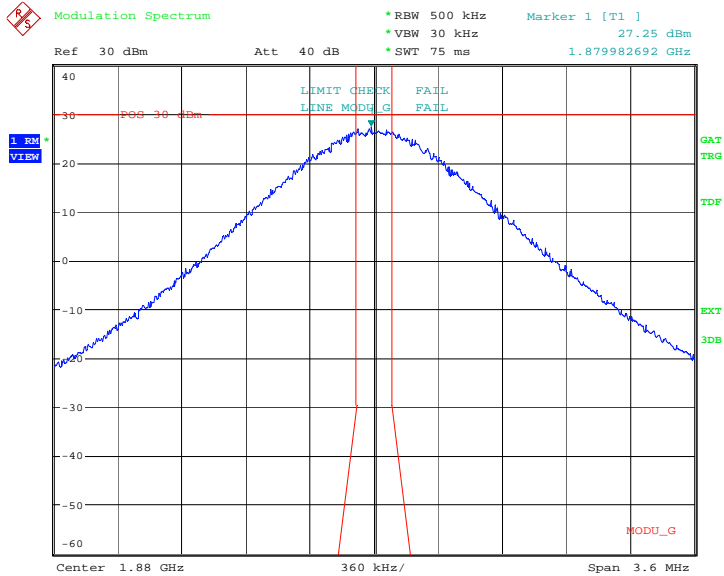
Date: 13.MAY.2011 04:53:41

Channel 512-Occupied Bandwidth (-20dBc BW)



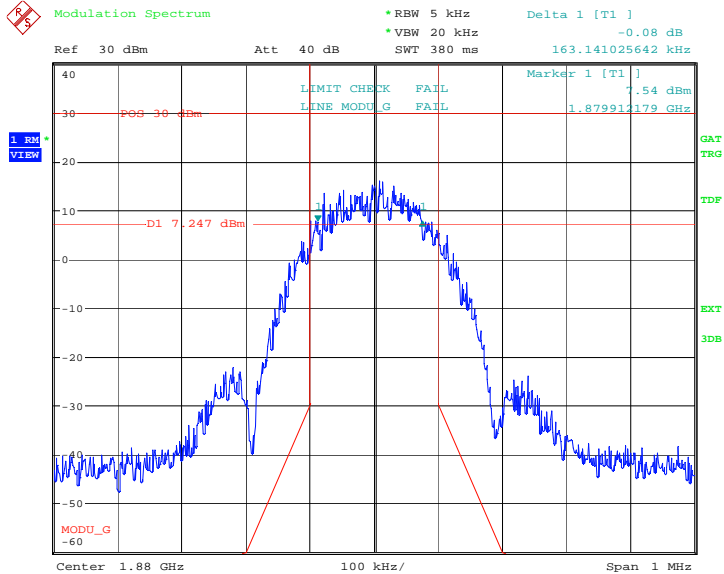
Date: 13.MAY.2011 04:55:20

Channel 661-Occupied Reference Level



Date: 13.MAY.2011 04:56:53

Channel 661-Occupied Bandwidth (-20dBc BW)



Date: 13.MAY.2011 04:57:46

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

A.6.1 Emission Bandwidth Results

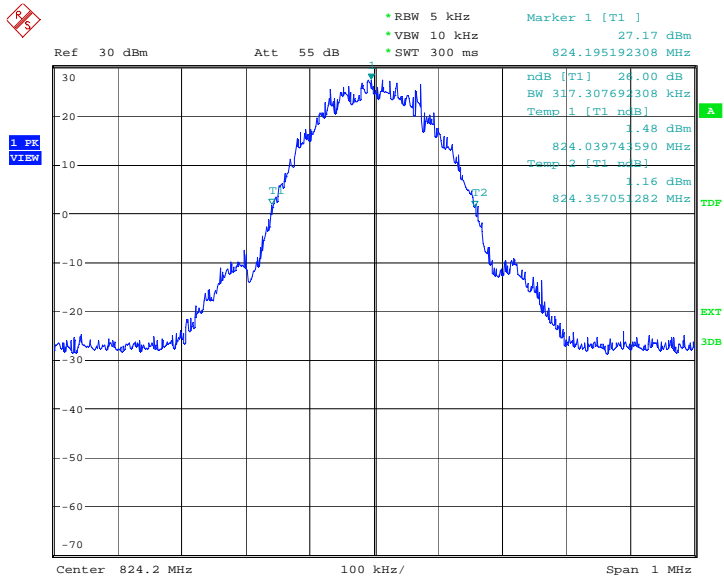
Similar to conducted emissions; Emission bandwidth measurements are only provided for selected frequencies in order to reduce the amount of submitted data. Data were taken at the extreme and mid frequencies of PCS1900 band and GSM850 band. Table below lists the measured -26dBc BW. Spectrum analyzer plots are included on the following pages.

GSM 850(-26dBc)

Frequency(MHz)	Occupied Bandwidth (-26dBc BW)(kHz)
824.2	317.308
836.6	306.090
848.8	315.705

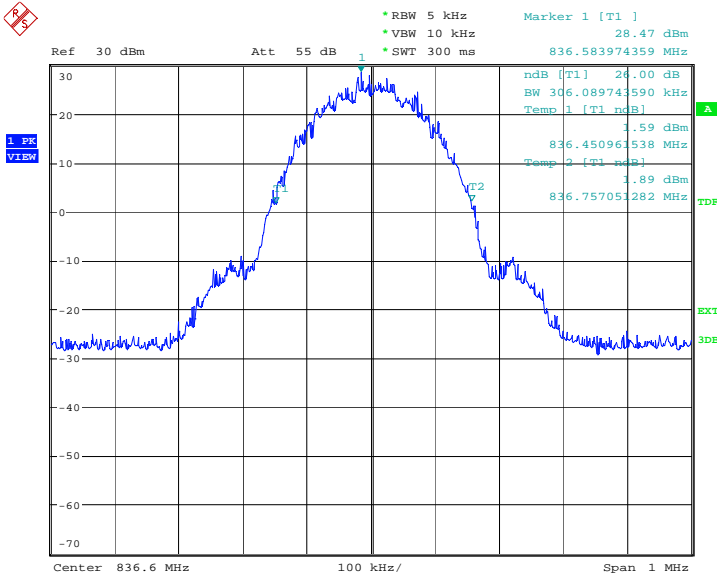
GSM 850

Channel 128-Occupied Bandwidth (-26dBc BW)



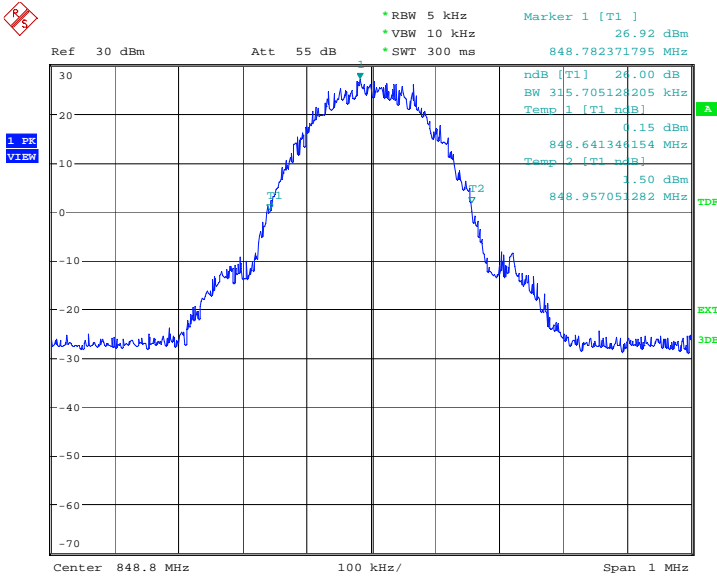
Date: 13.APR.2011 06:04:01

Channel 190-Occupied Bandwidth (-26dBc BW)



Date: 13.APR.2011 06:04:28

Channel 251-Occupied Bandwidth (-26dBc BW)

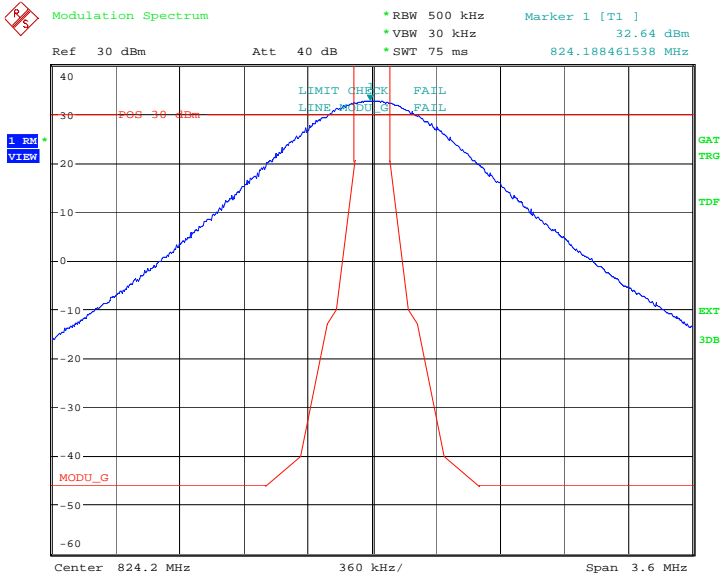


Date: 13.APR.2011 06:04:55

GSM 850(-26dBc)-IC

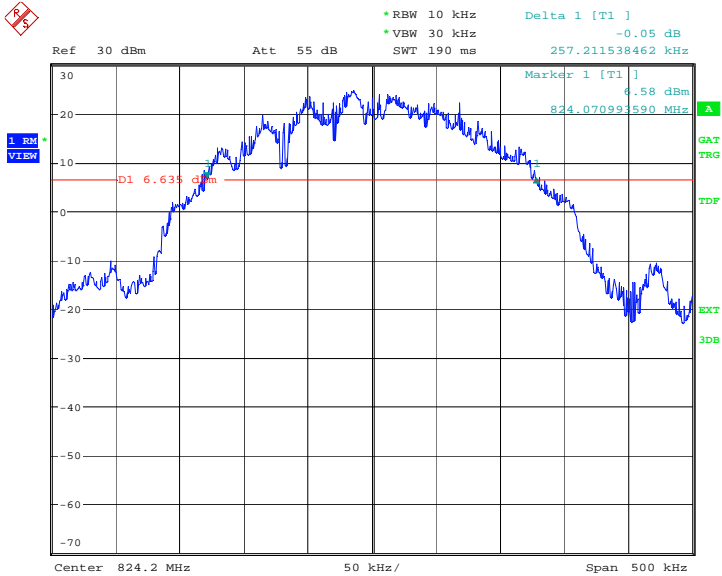
Frequency(MHz)	Occupied Bandwidth (-26dBc BW)(kHz)
824.2	257.212
836.6	262.821
848.8	255.609

**GSM 850
 Channel 128-Occupied Bandwidth Reference Level**



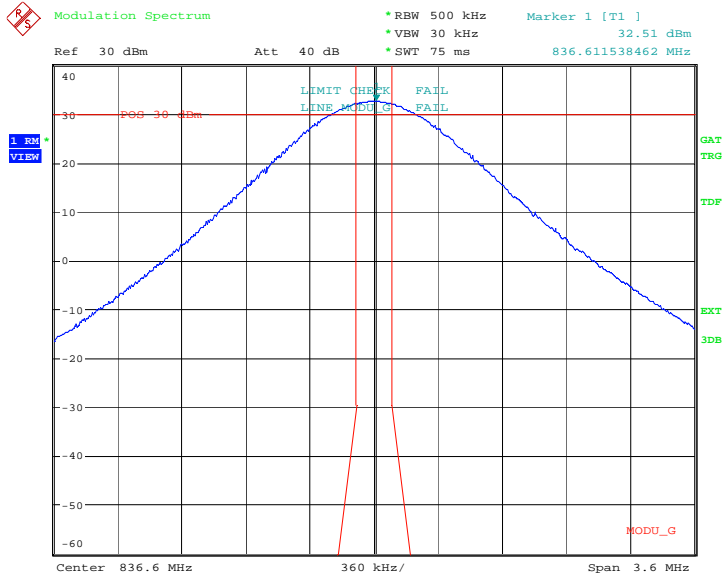
Date: 12.MAY.2011 06:47:04

Channel 128-Occupied Bandwidth (-26dBc BW)



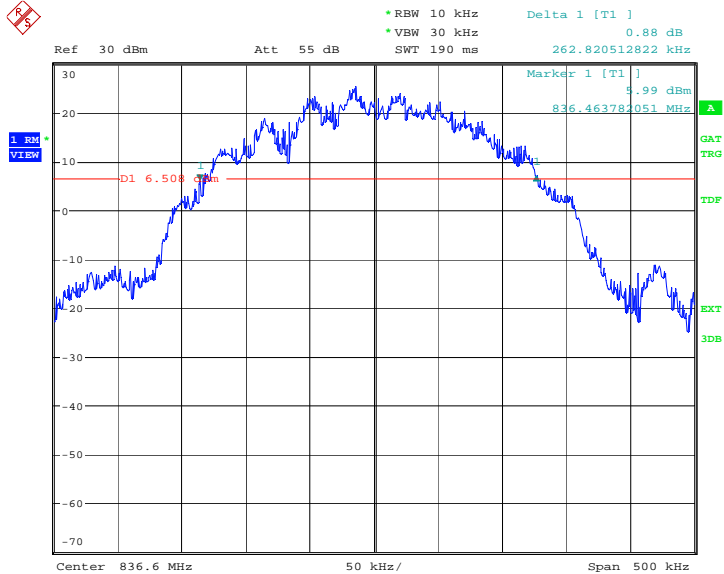
Date: 12.MAY.2011 06:55:34

Channel 190-Occupied Bandwidth Reference Level



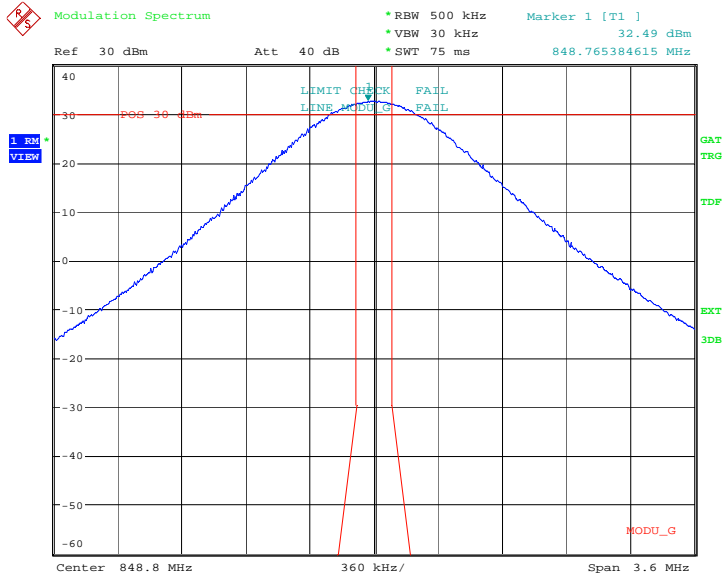
Date: 12.MAY.2011 06:55:50

Channel 190-Occupied Bandwidth (-26dBc BW)



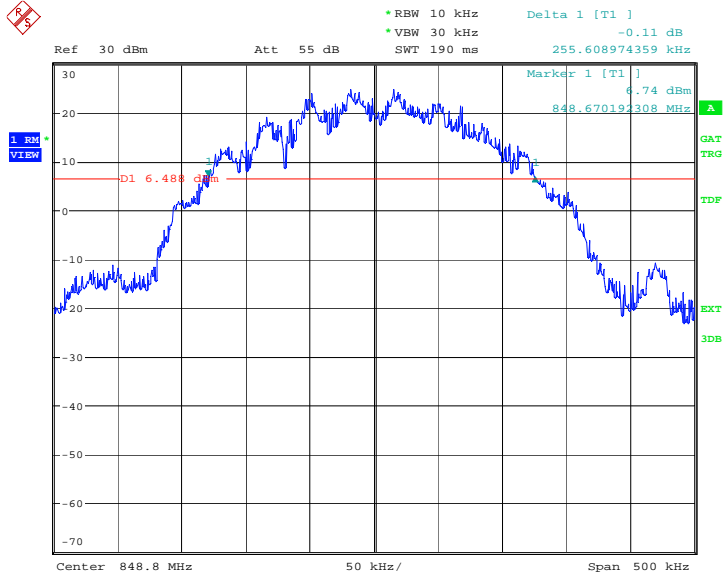
Date: 12.MAY.2011 07:00:03

Channel 251-Occupied Bandwidth Reference Level



Date: 12.MAY.2011 07:00:19

Channel 251-Occupied Bandwidth (-26dBc BW)

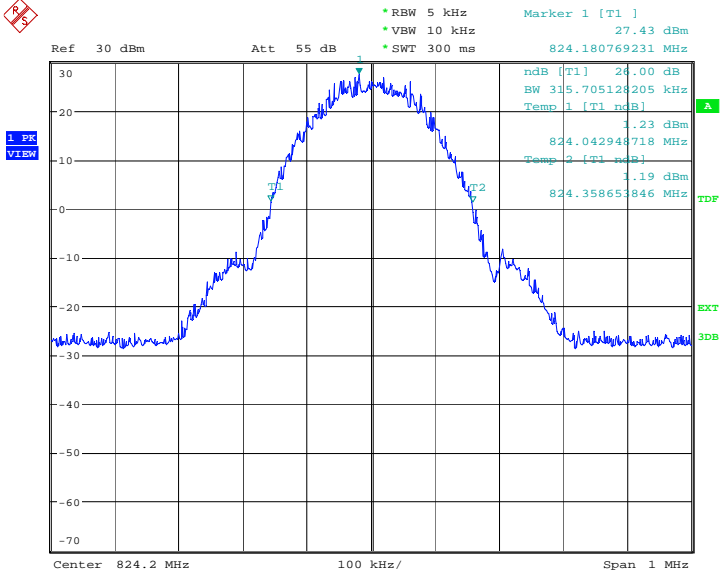


Date: 12.MAY.2011 07:02:00

GPRS 850(-26dBc)

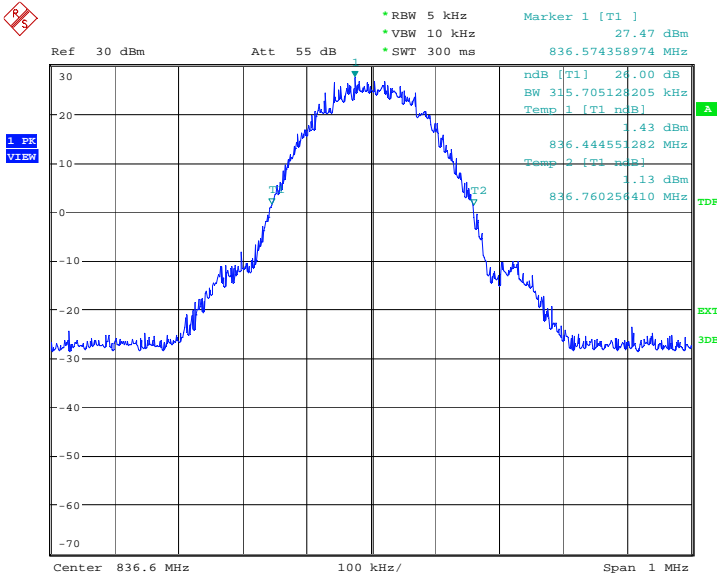
Frequency(MHz)	Occupied Bandwidth (-26dBc BW)(kHz)
824.2	315.705
836.6	315.705
848.8	310.897

**GPRS 850
 Channel 128-Occupied Bandwidth (-26dBc BW)**



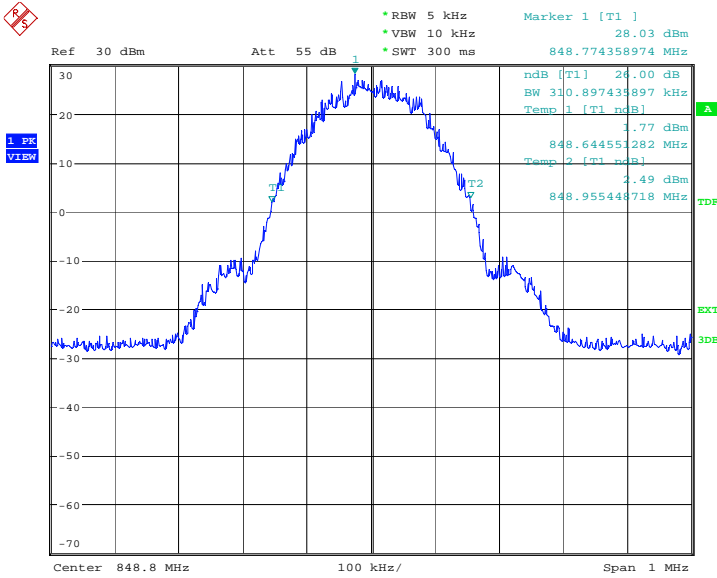
Date: 13.APR.2011 06:47:06

Channel 190-Occupied Bandwidth (-26dBc BW)



Date: 13.APR.2011 06:47:34

Channel 251-Occupied Bandwidth (-26dBc BW)

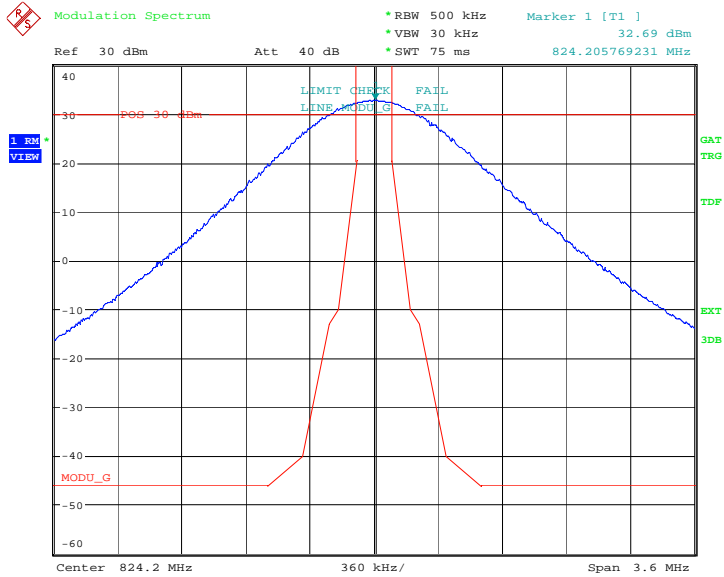


Date: 13.APR.2011 06:48:01

GPRS 850(-26dBc)-IC

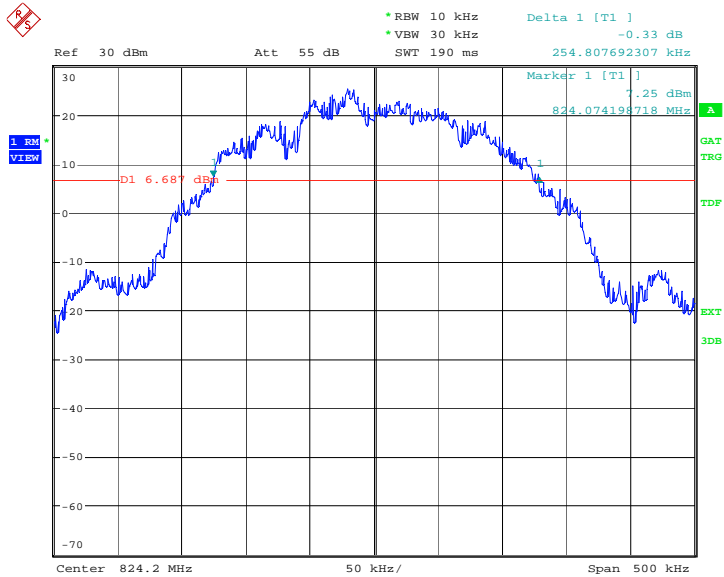
Frequency(MHz)	Occupied Bandwidth (-26dBc BW)(kHz)
824.2	254.808
836.6	258.013
848.8	251.603

**GPRS 850
Channel 128-Occupied Bandwidth Reference Level**



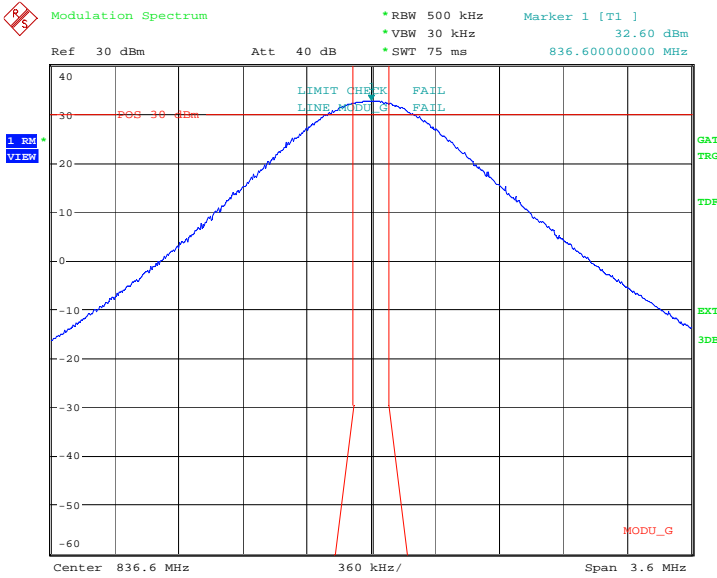
Date: 12.MAY.2011 07:15:00

Channel 128-Occupied Bandwidth (-26dBc BW)



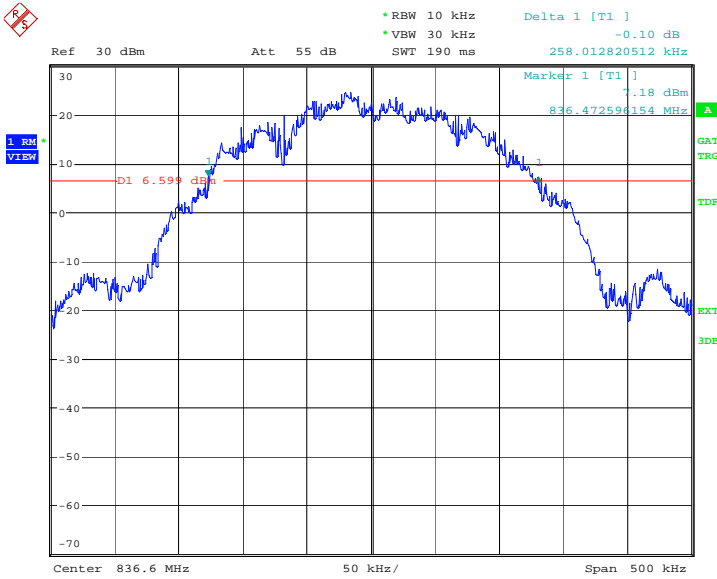
Date: 12.MAY.2011 07:17:06

Channel 190-Occupied Bandwidth (-20dBc BW)



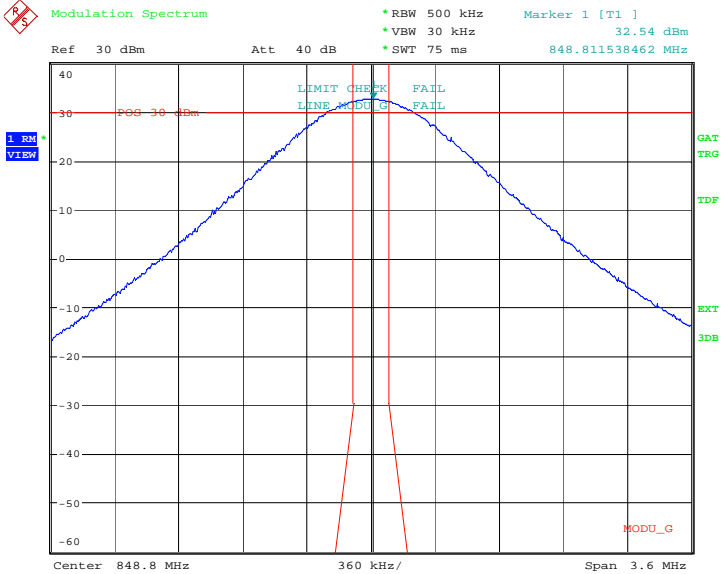
Date: 12.MAY.2011 07:17:21

Channel 190-Occupied Bandwidth (-20dBc BW)



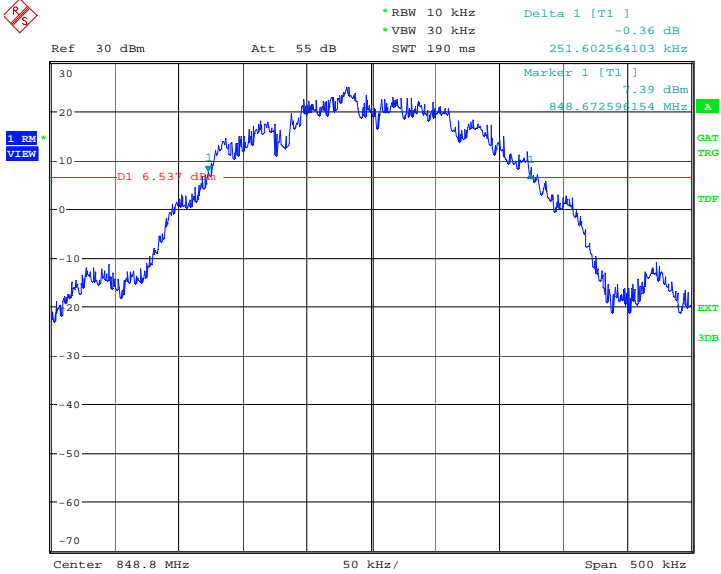
Date: 12.MAY.2011 07:20:06

Channel 251-Occupied Bandwidth Reference Level



Date: 12.MAY.2011 07:20:21

Channel 251-Occupied Bandwidth (-26dBc BW)

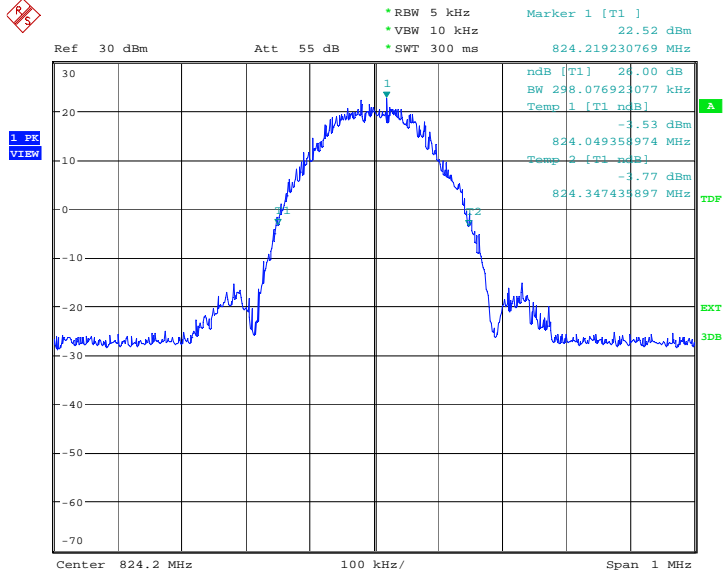


Date: 12.MAY.2011 07:21:57

EGPRS 850(-26dBc)

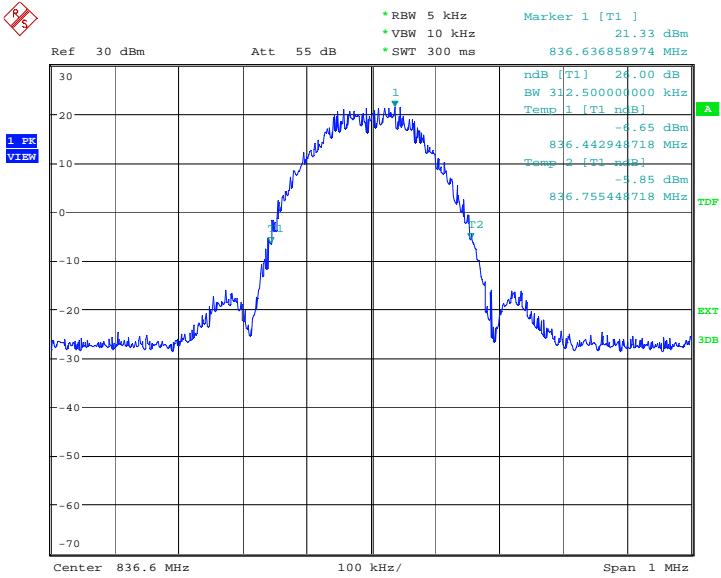
Frequency(MHz)	Occupied Bandwidth (-26dBc BW)(kHz)
824.2	298.077
836.6	312.500
848.8	302.885

**EGPRS 850
 Channel 128-Occupied Bandwidth (-26dBc BW)**



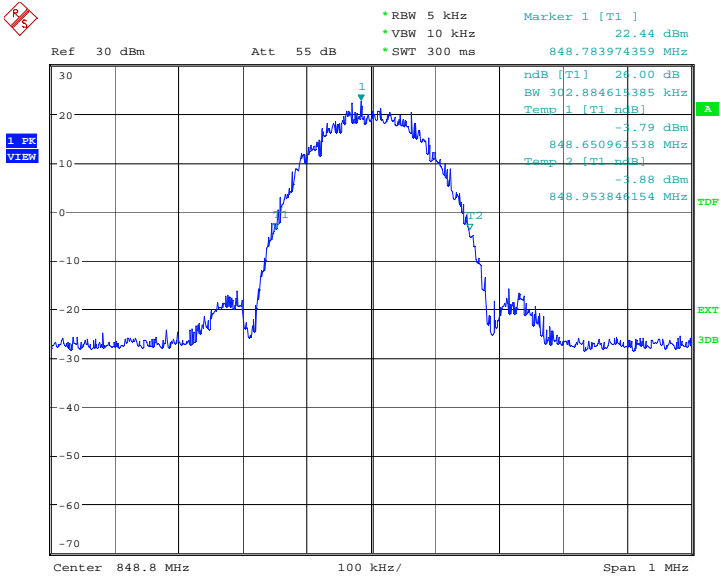
Date: 13.APR.2011 07:01:54

Channel 190-Occupied Bandwidth (-26dBc BW)



Date: 13.APR.2011 07:02:21

Channel 251-Occupied Bandwidth (-26dBc BW)

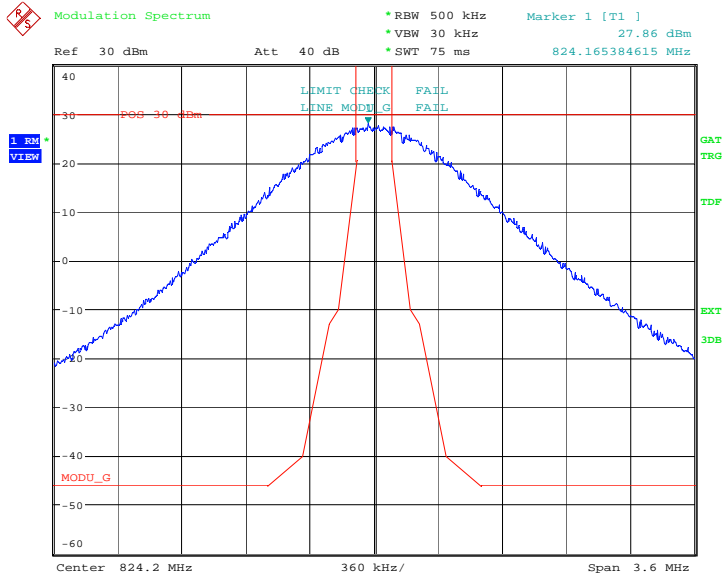


Date: 13.APR.2011 07:02:48

EGPRS 850(-26dBc)-IC

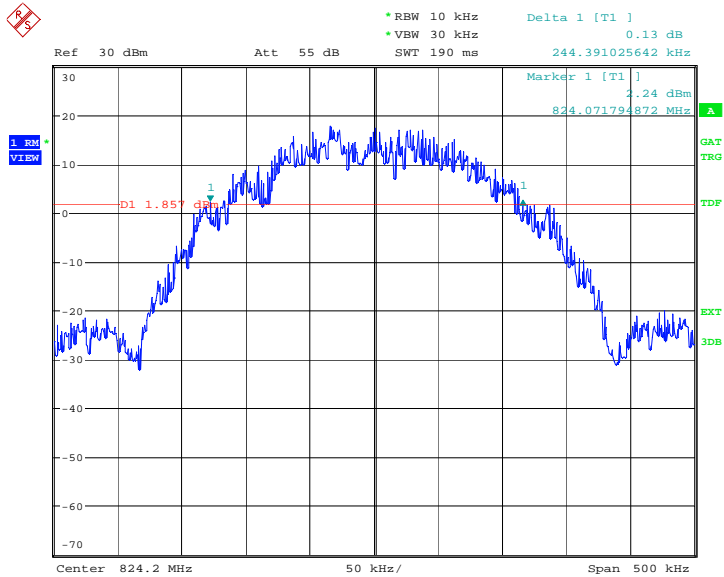
Frequency(MHz)	Occupied Bandwidth (-26dBc BW)(kHz)
824.2	244.391
836.6	237.179
848.8	273.237

**EGPRS 850
 Channel 128-Occupied Reference level**



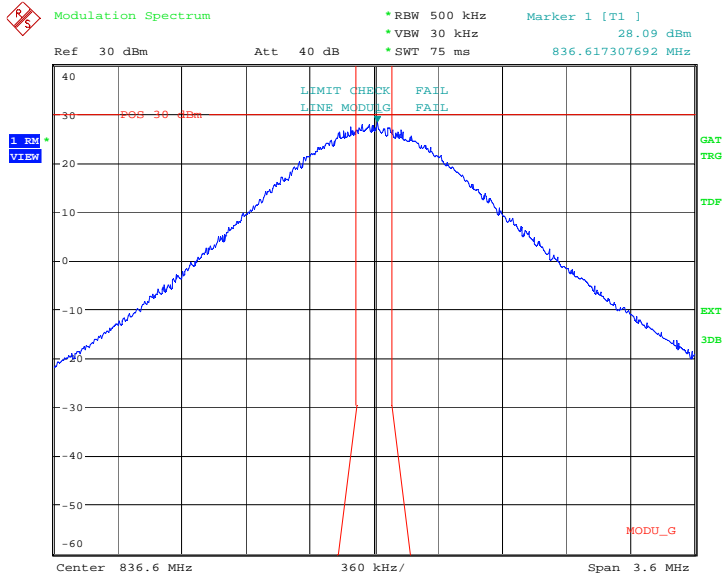
Date: 12.MAY.2011 07:34:03

Channel 128-Occupied Bandwidth (-26dBc BW)



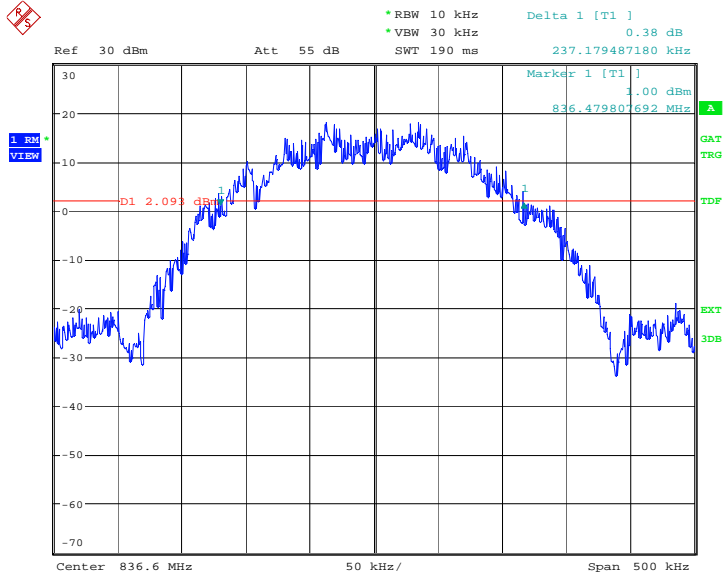
Date: 12.MAY.2011 07:36:05

Channel 190-Occupied Bandwidth Reference level



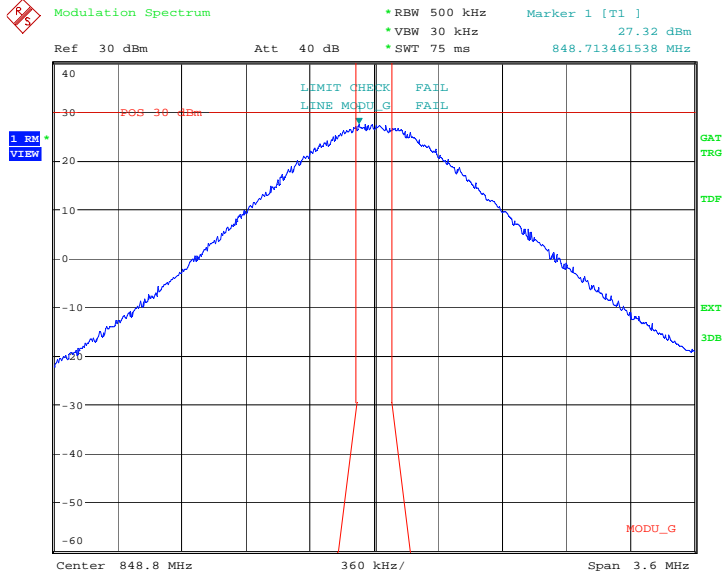
Date: 12.MAY.2011 07:36:19

Channel 190-Occupied Bandwidth (-26dBc BW)



Date: 12.MAY.2011 07:38:03

Channel 251-Occupied Bandwidth Reference Level



Date: 12.MAY.2011 07:38:17

Channel 251-Occupied Bandwidth (-26dBc BW)

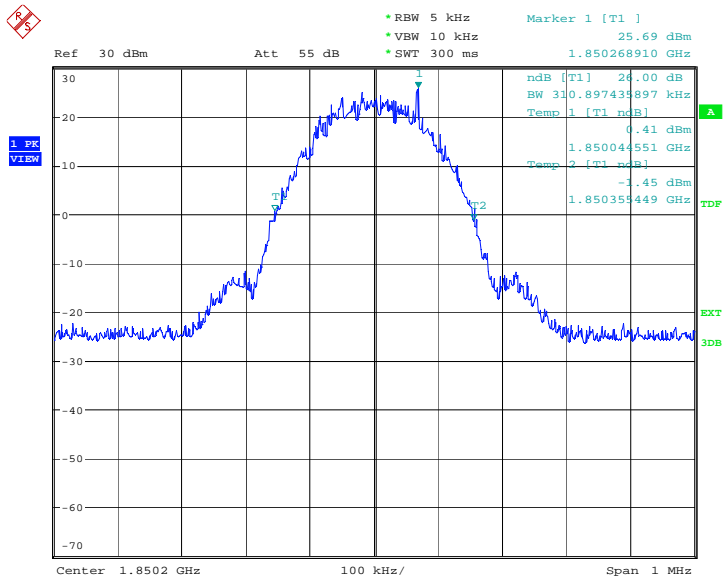


Date: 12.MAY.2011 07:39:46

PCS 1900(-26dBc)

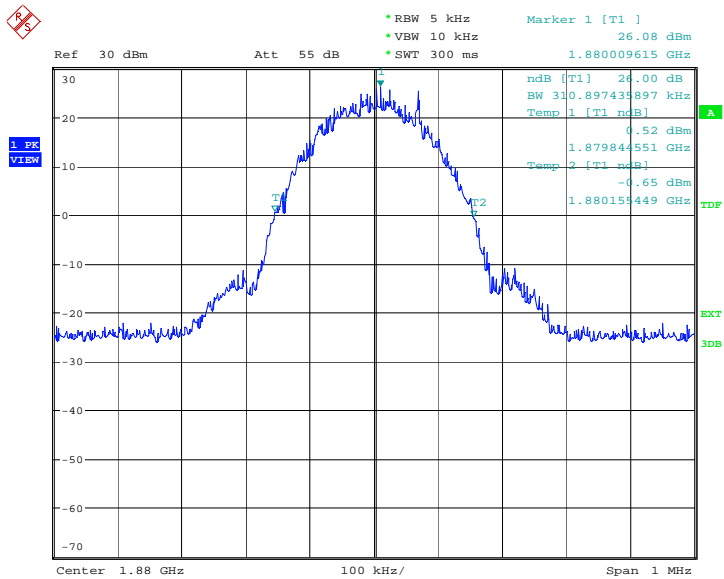
Frequency(MHz)	Occupied Bandwidth (-26dBc BW)(kHz)
1850.2	310.897
1880.0	310.897
1909.8	312.500

**PCS 1900
Channel 512-Occupied Bandwidth (-26dBc BW)**



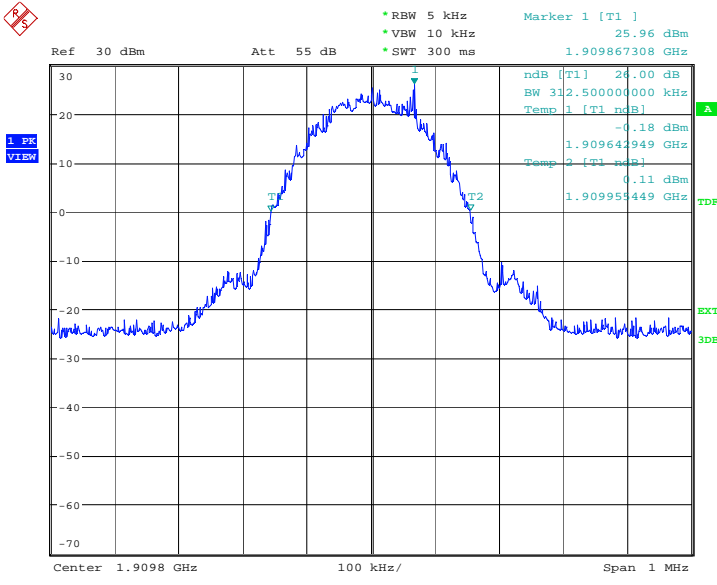
Date: 13.APR.2011 06:19:27

Channel 661-Occupied Bandwidth (-26dBc BW)



Date: 13.APR.2011 06:19:54

Channel 810-Occupied Bandwidth (-26dBc BW)

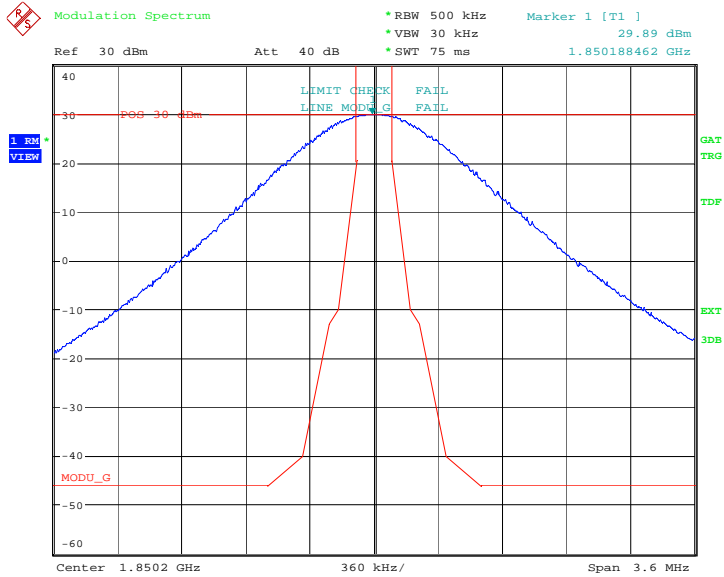


Date: 13.APR.2011 06:20:21

PCS 1900(-26dBc)-IC

Frequency(MHz)	Occupied Bandwidth (-26dBc BW)(kHz)
1850.2	258.013
1880.0	265.224
1909.8	262.821

**PCS 1900
Channel 512-Occupied Bandwidth Reference Level**



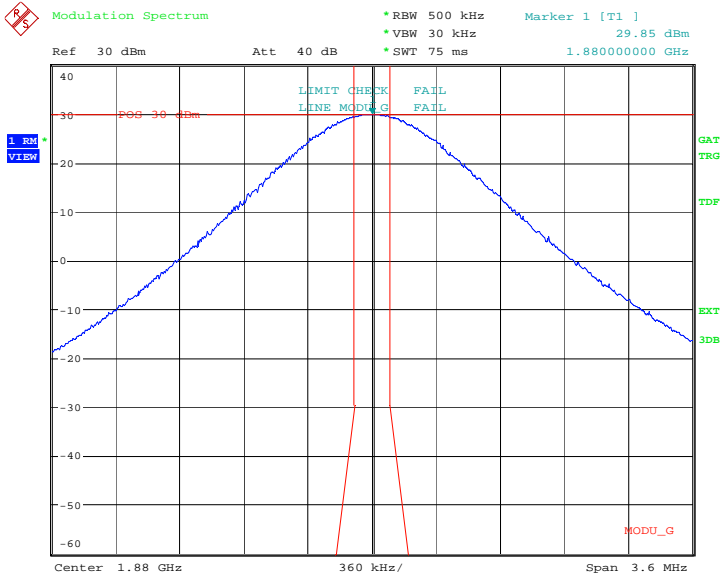
Date: 12.MAY.2011 07:07:21

Channel 512-Occupied Bandwidth (-26dBc BW)



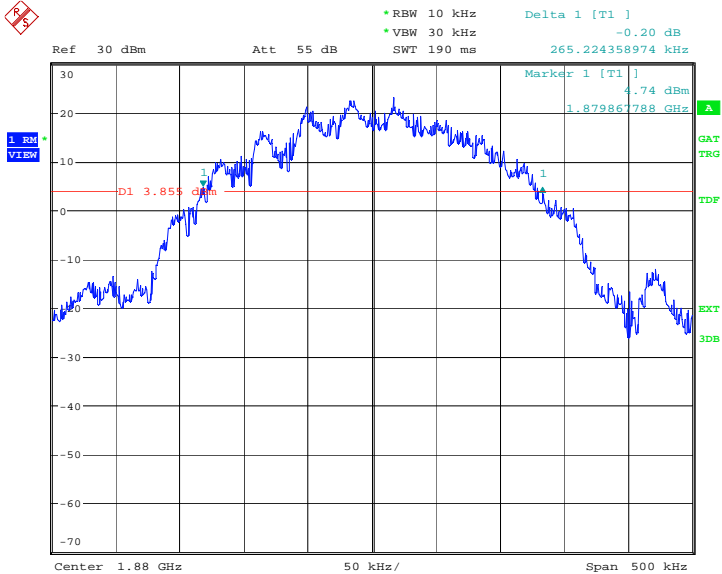
Date: 12.MAY.2011 07:09:11

Channel 661-Occupied Reference Level



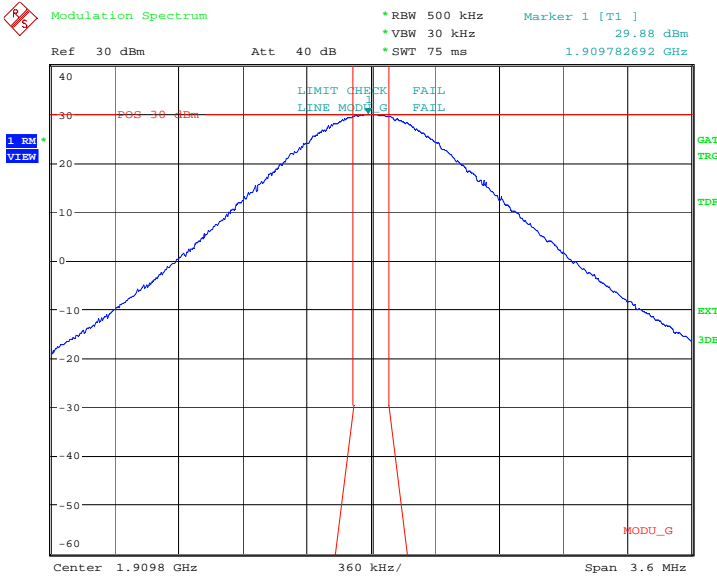
Date: 12.MAY.2011 07:09:27

Channel 661-Occupied Bandwidth (-26dBc BW)



Date: 12.MAY.2011 07:10:57

Channel 810-Occupied Bandwidth Reference Level



Date: 12.MAY.2011 07:11:13

Channel 810-Occupied Bandwidth (-26dBc BW)

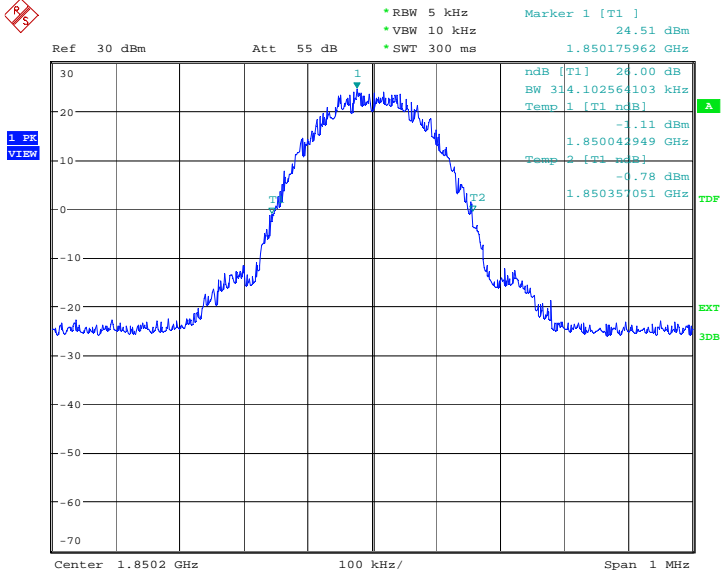


Date: 12.MAY.2011 07:12:33

GPRS 1900(-26dBc)

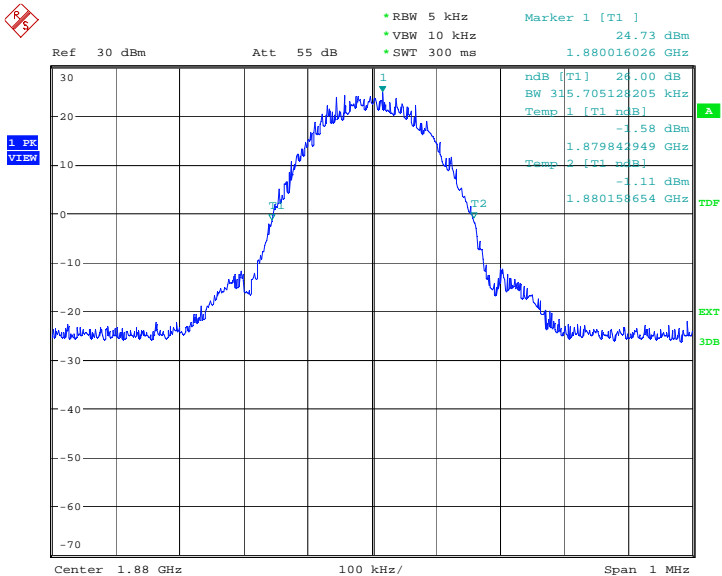
Frequency(MHz)	Occupied Bandwidth (-26dBc BW)(kHz)
1850.2	314.103
1880.0	315.705
1909.8	317.308

**GPRS 1900
Channel 512-Occupied Bandwidth (-26dBc BW)**



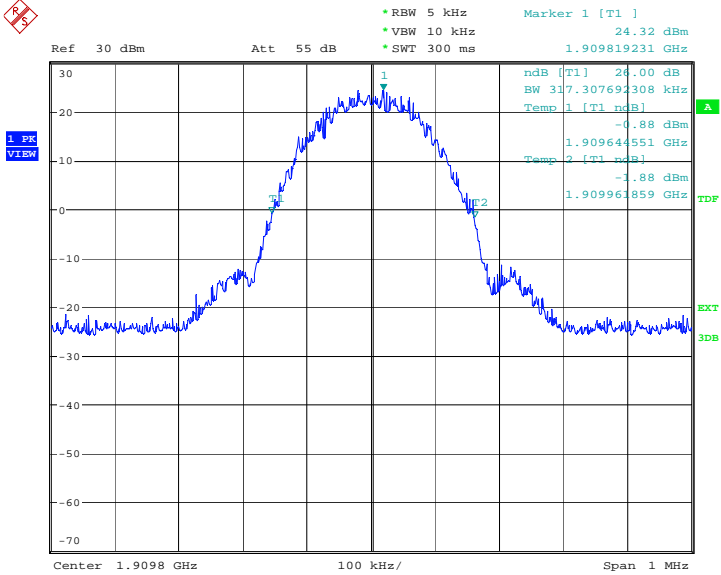
Date: 13.APR.2011 06:54:27

Channel 661-Occupied Bandwidth (-26dBc BW)



Date: 13.APR.2011 06:54:55

Channel 810-Occupied Bandwidth (-26dBc BW)

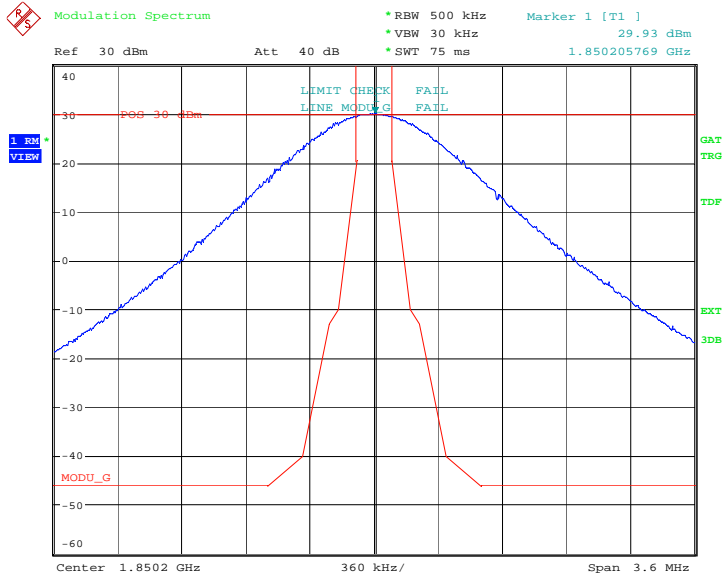


Date: 13.APR.2011 06:55:22

GPRS 1900(-26dBc)-IC

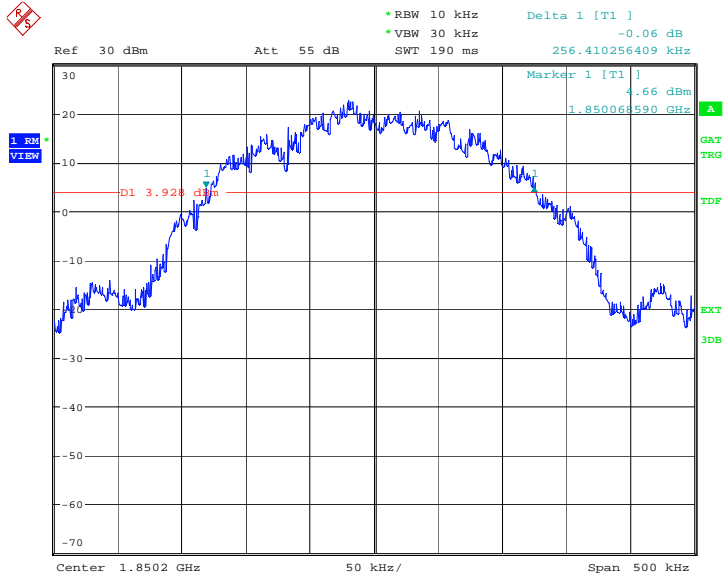
Frequency(MHz)	Occupied Bandwidth (-26dBc BW)(kHz)
1850.2	256.410
1880.0	257.212
1909.8	254.808

**GPRS 1900
 Channel 512-Occupied Bandwidth Reference Level**



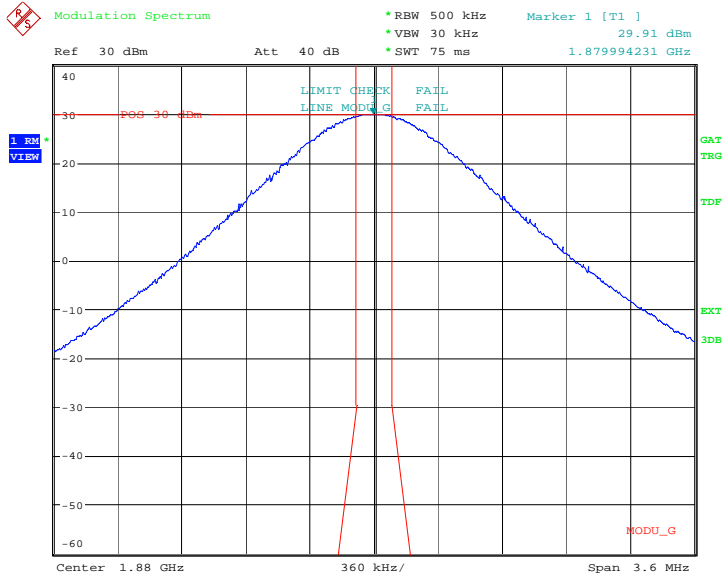
Date: 12.MAY.2011 07:24:35

Channel 512-Occupied Bandwidth -26dBc BW)



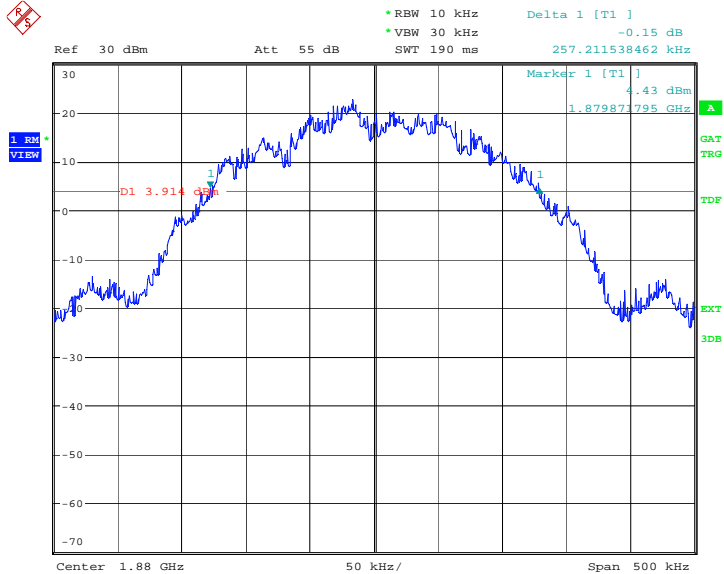
Date: 12.MAY.2011 07:26:14

Channel 661-Occupied Bandwidth Reference Level



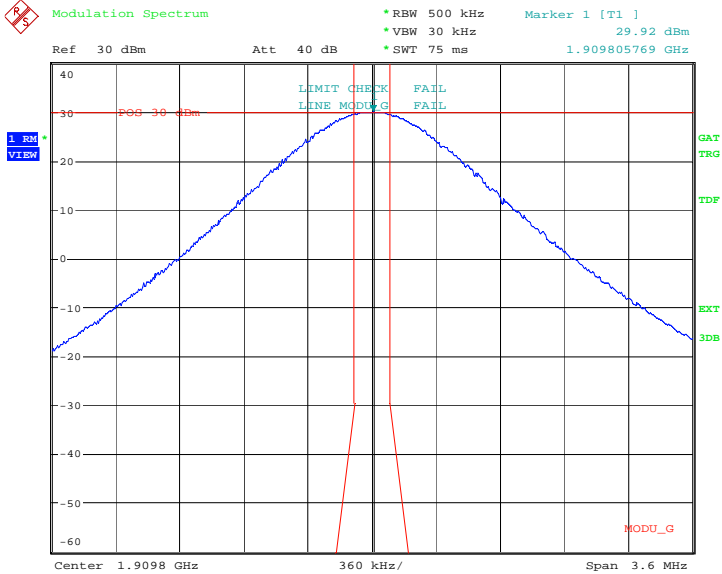
Date: 12.MAY.2011 07:26:29

Channel 661-Occupied Bandwidth (-26dBc BW)



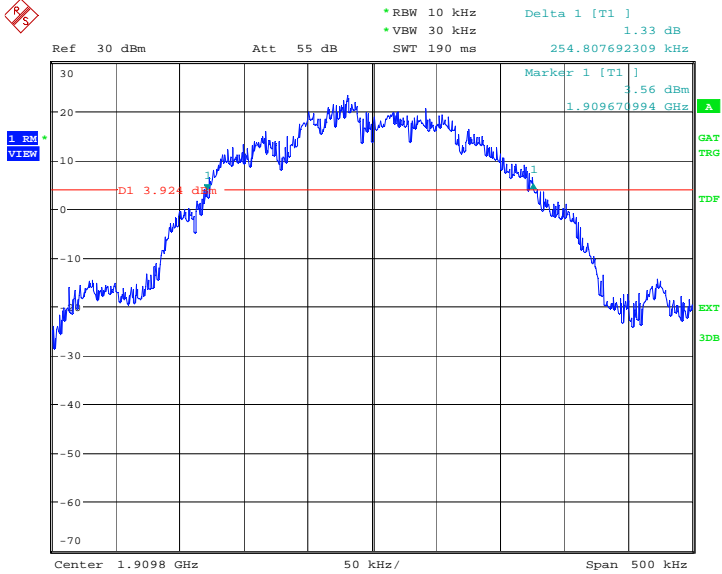
Date: 12.MAY.2011 07:28:17

Channel 810-Occupied Reference Level



Date: 12.MAY.2011 07:28:32

Channel 810-Occupied Bandwidth (-26dBc BW)

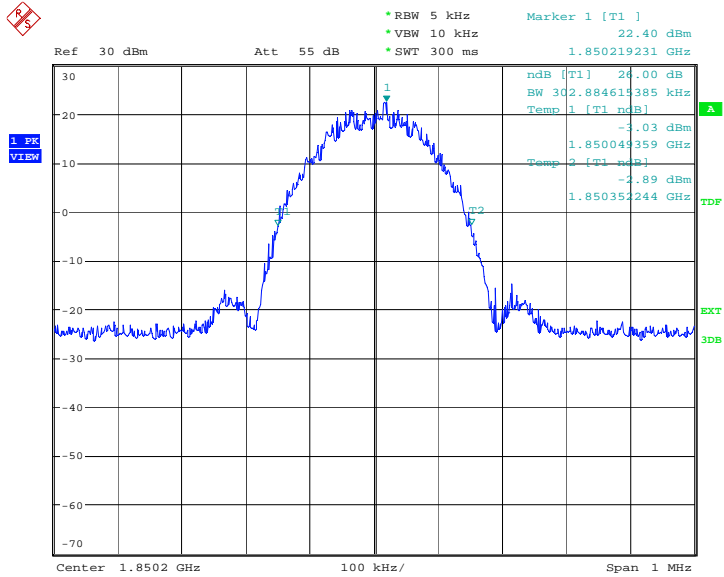


Date: 12.MAY.2011 07:31:02

EGPRS 1900(-26dBc)

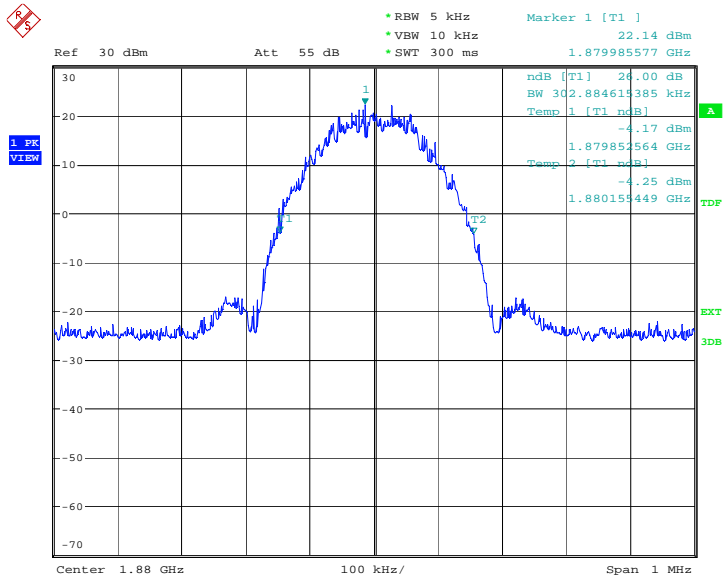
Frequency(MHz)	Occupied Bandwidth (-26dBc BW)(kHz)
1850.2	302.885
1880.0	302.885
1909.8	309.295

**EGPRS 1900
Channel 512-Occupied Bandwidth (-26dBc BW)**



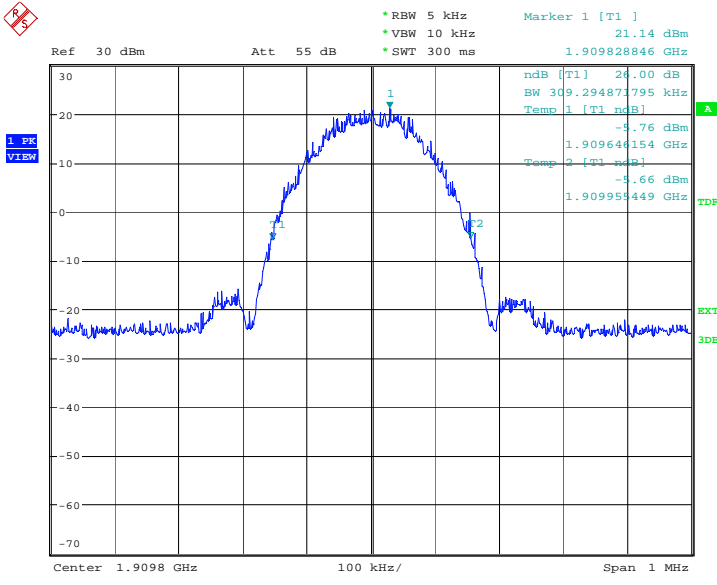
Date: 13.APR.2011 07:20:22

Channel 661-Occupied Bandwidth (-26dBc BW)



Date: 13.APR.2011 07:20:50

Channel 810-Occupied Bandwidth (-26dBc BW)

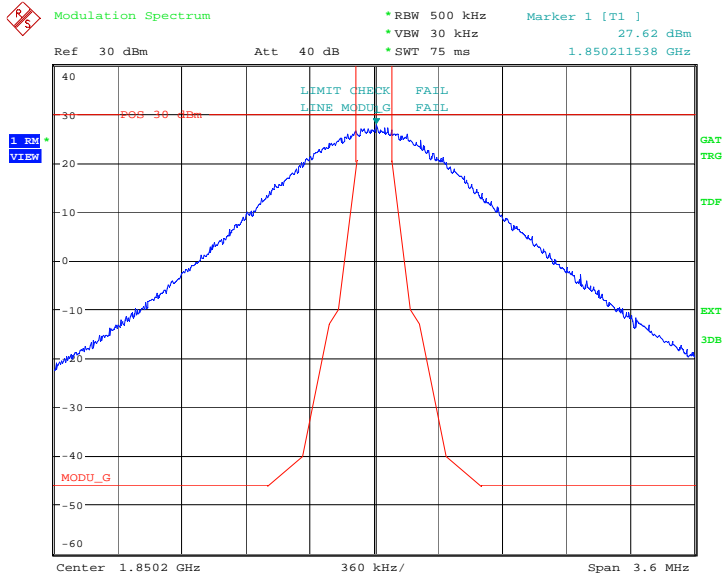


Date: 13.APR.2011 07:21:17

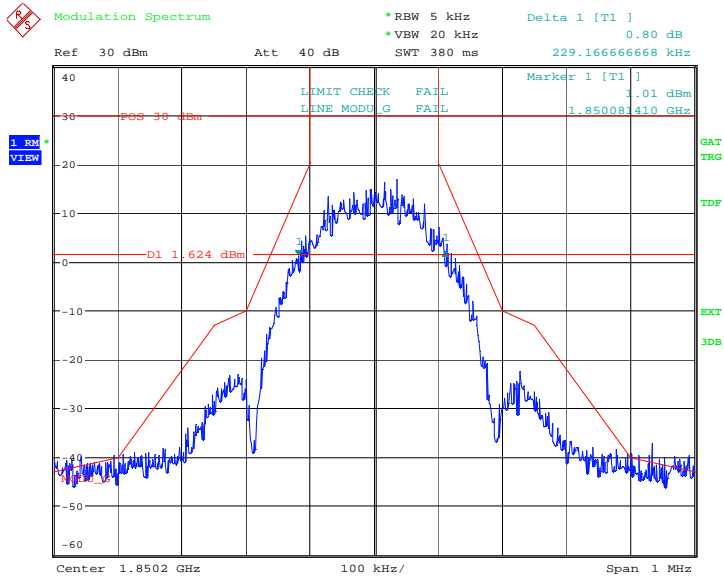
EGPRS 1900(-26dBc)-IC

Frequency(MHz)	Occupied Bandwidth (-26dBc BW)(kHz)
1850.2	229.167
1880.0	216.346
1909.8	216.346

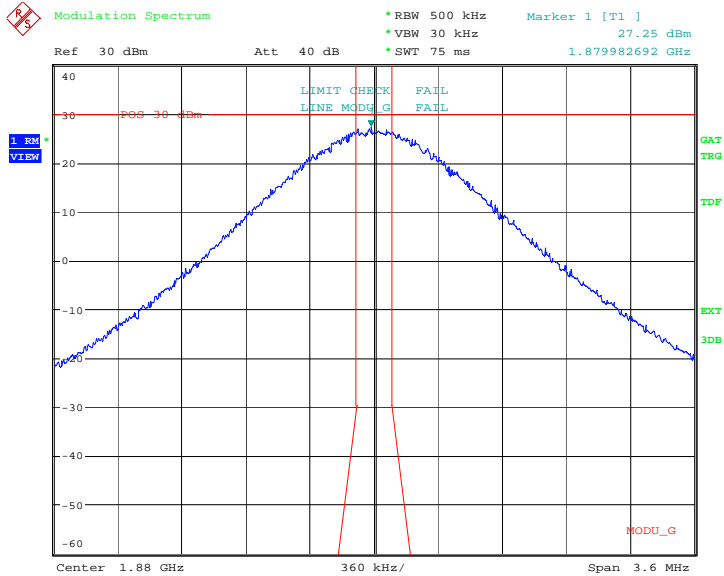
**EGPRS 1900
Channel 512-Occupied Reference Level**



Channel 512-Occupied Bandwidth (-26dBc BW)

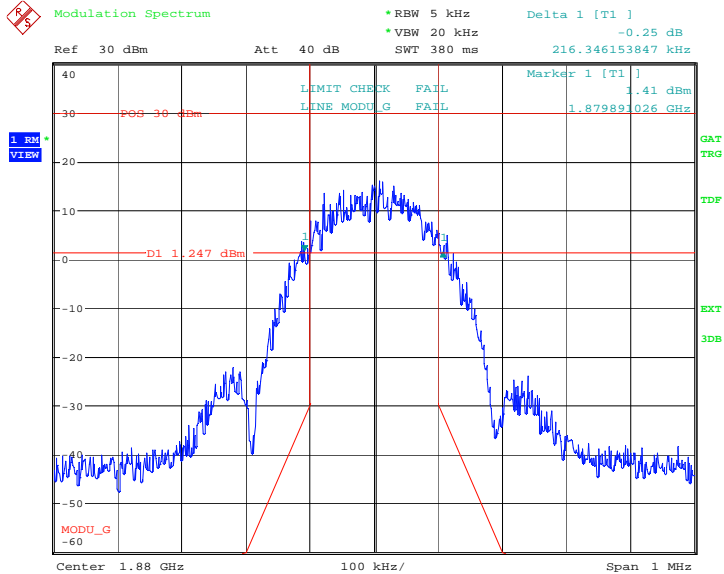


Channel 661-Occupied Reference Level



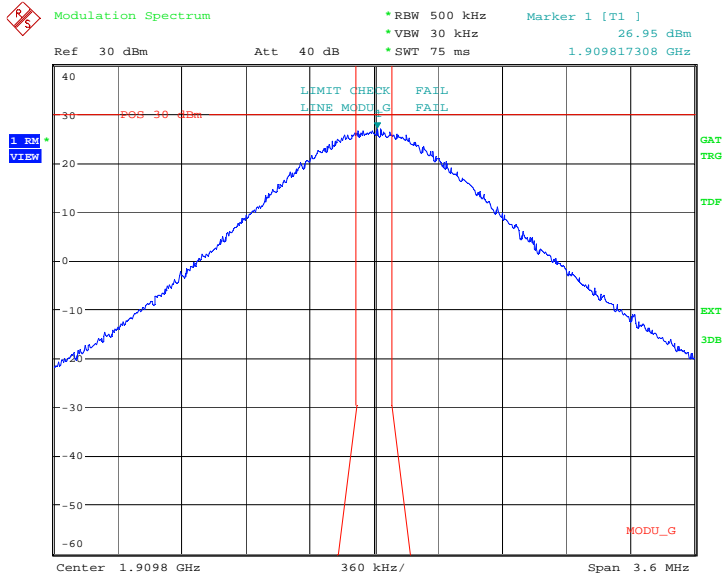
Date: 13.MAY.2011 04:56:53

Channel 661-Occupied Bandwidth (-26dBc BW)



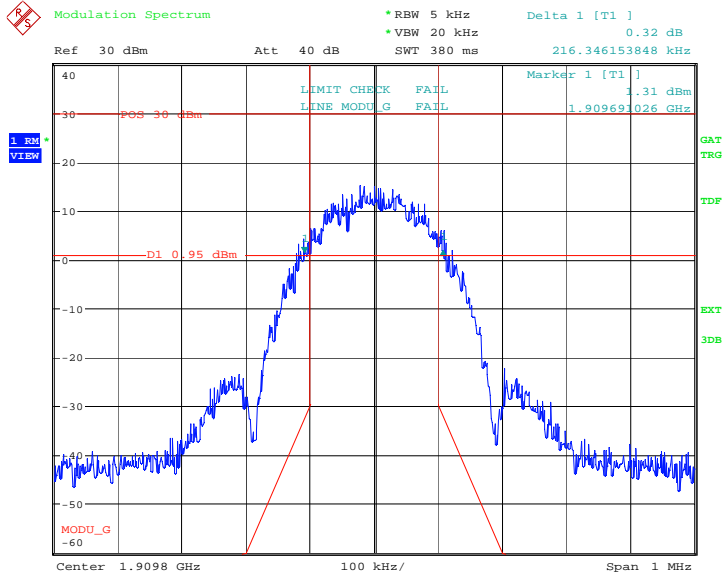
Date: 13.MAY.2011 04:58:34

Channel 810-Occupied Reference Level



Date: 13.MAY.2011 04:58:48

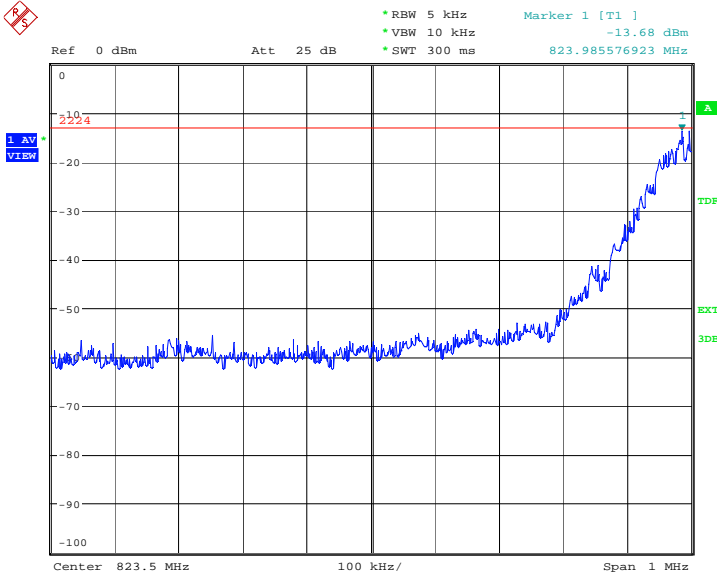
Channel 810-Occupied Bandwidth (-26dBc BW)



Date: 13.MAY.2011 05:00:37

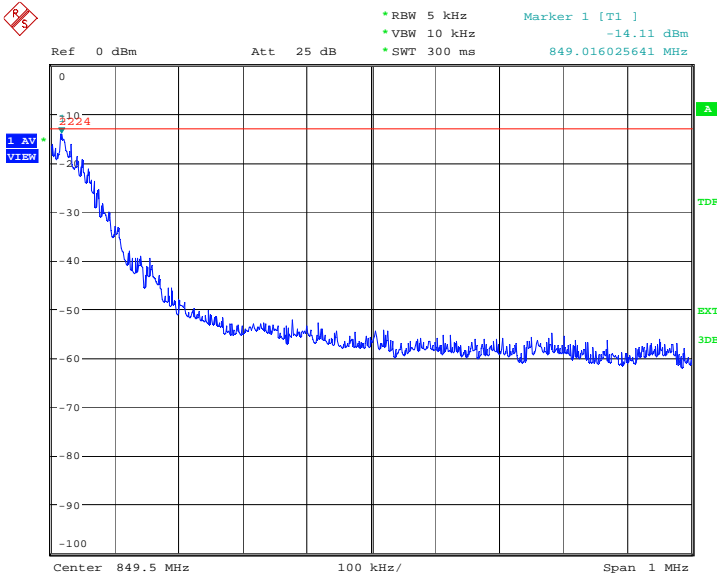
A.7 BAND EDGE COMPLIANCE (\$22.917(b)/\$24.238(b))

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



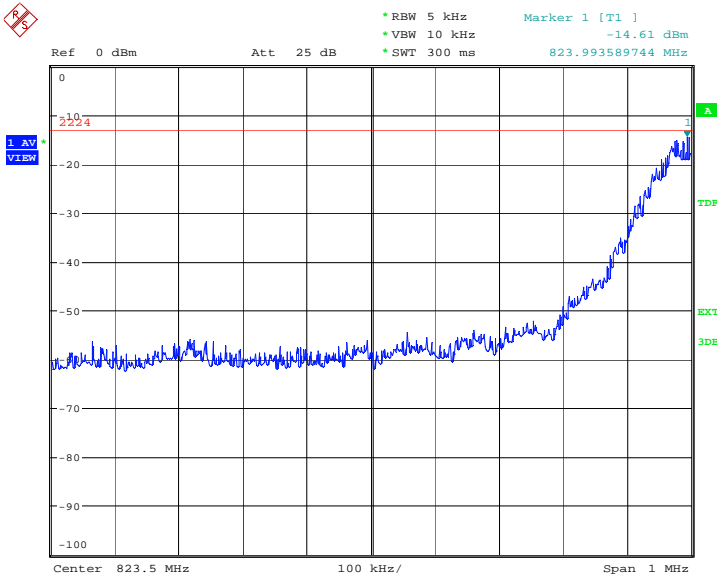
Date: 13.APR.2011 06:05:24

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



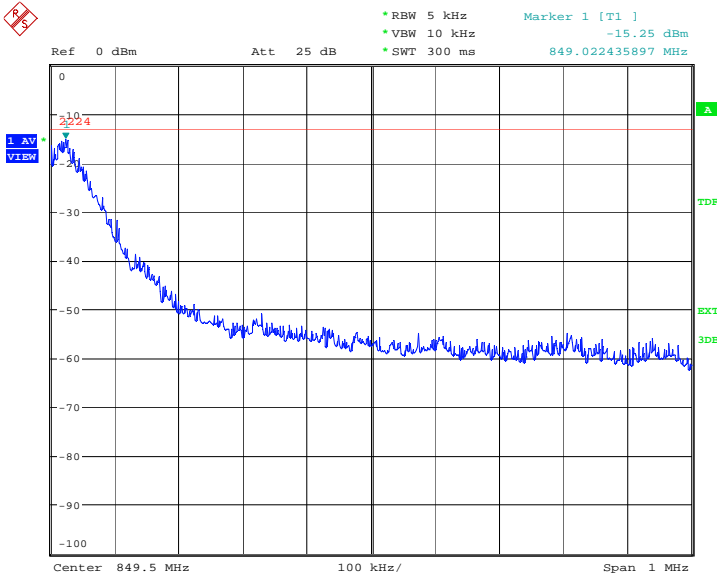
Date: 13.APR.2011 06:05:53

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



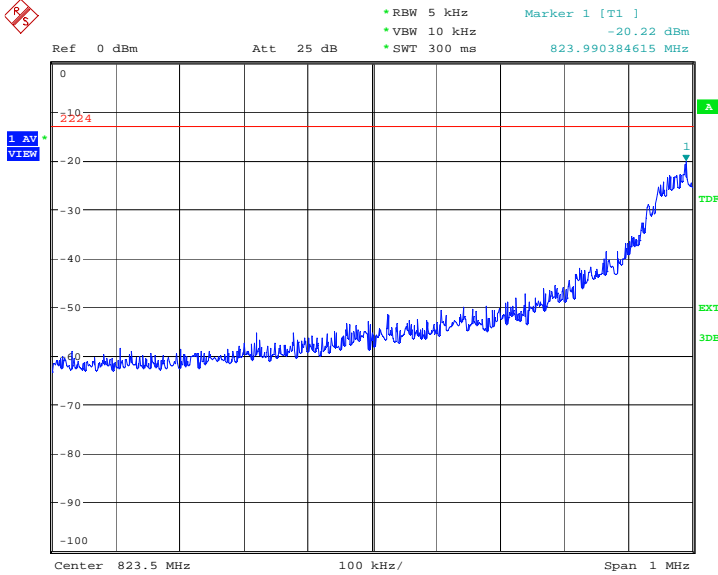
Date: 13.APR.2011 06:48:30

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



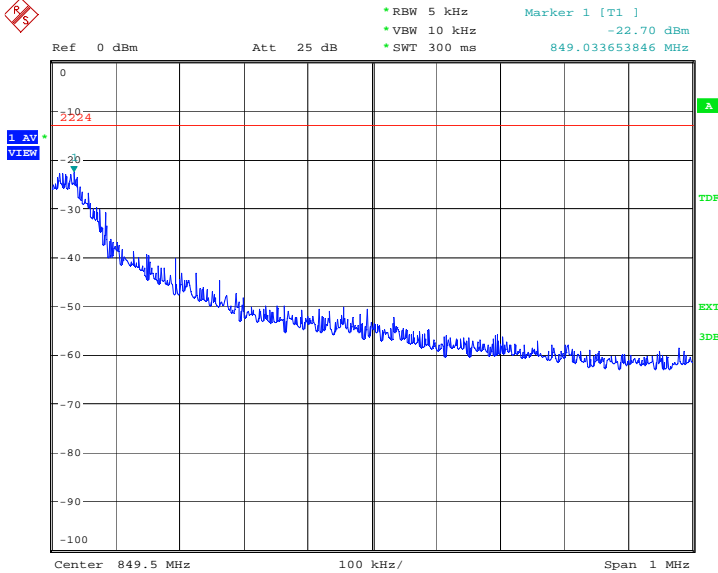
Date: 13.APR.2011 06:48:59

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



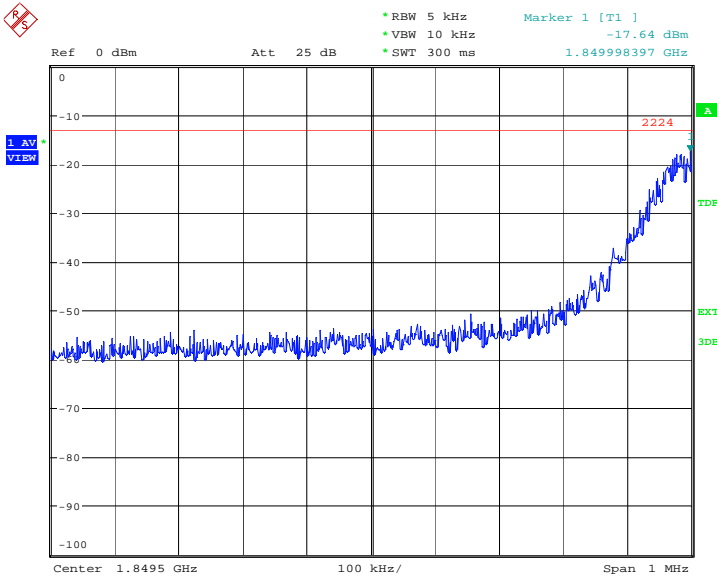
Date: 13.APR.2011 07:03:17

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



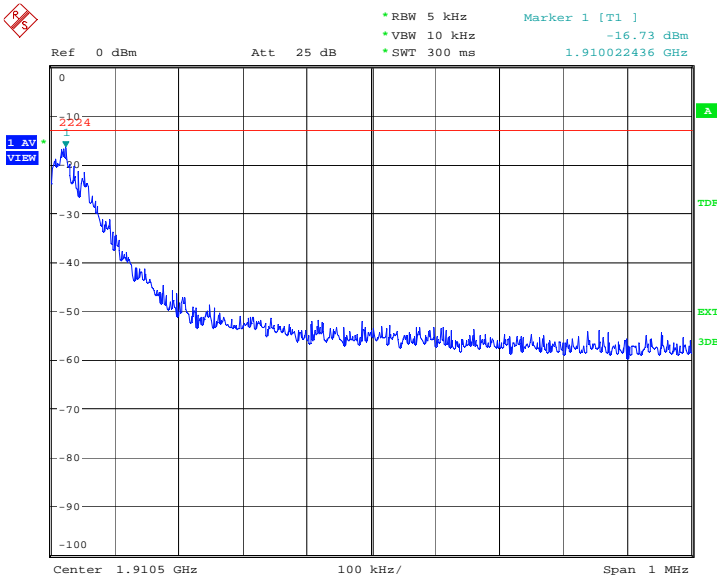
Date: 13.APR.2011 07:03:46

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



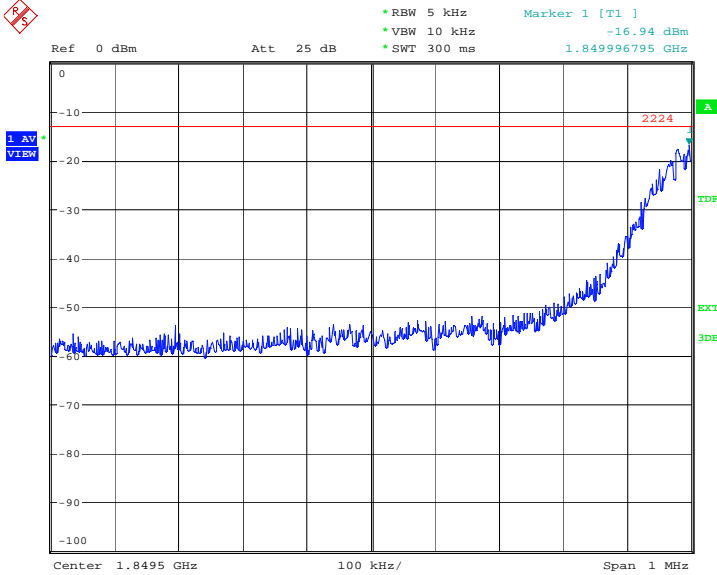
Date: 13.APR.2011 06:20:50

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



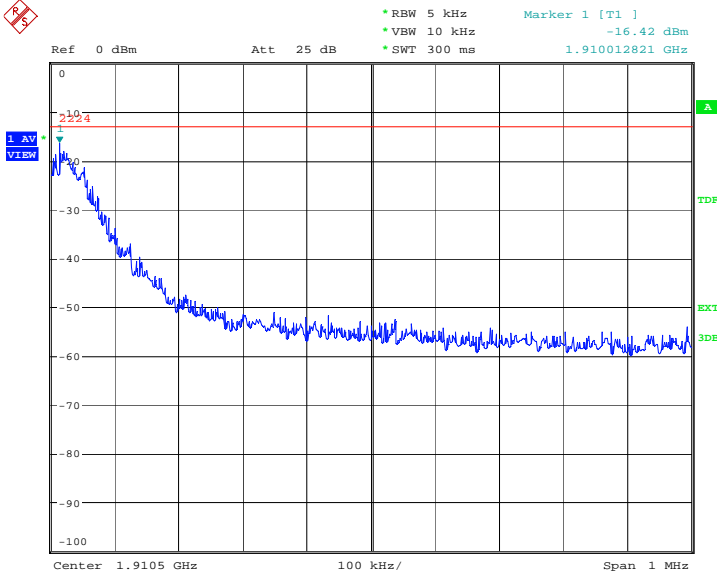
Date: 13.APR.2011 06:21:19

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



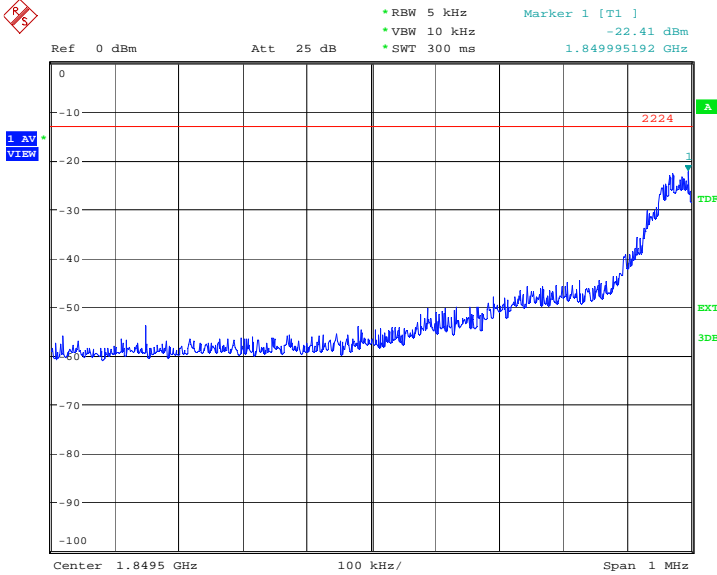
Date: 13.APR.2011 06:55:51

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



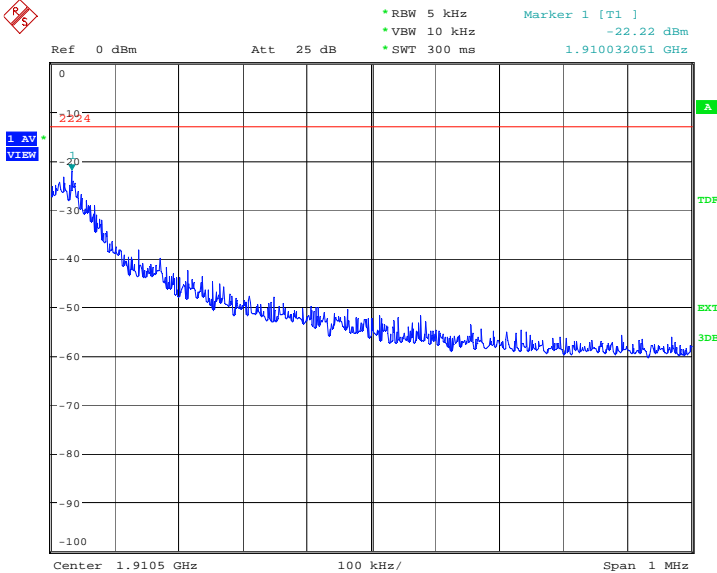
Date: 13.APR.2011 06:56:20

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



Date: 13.APR.2011 07:21:46

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



Date: 13.APR.2011 07:22:15

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. 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.

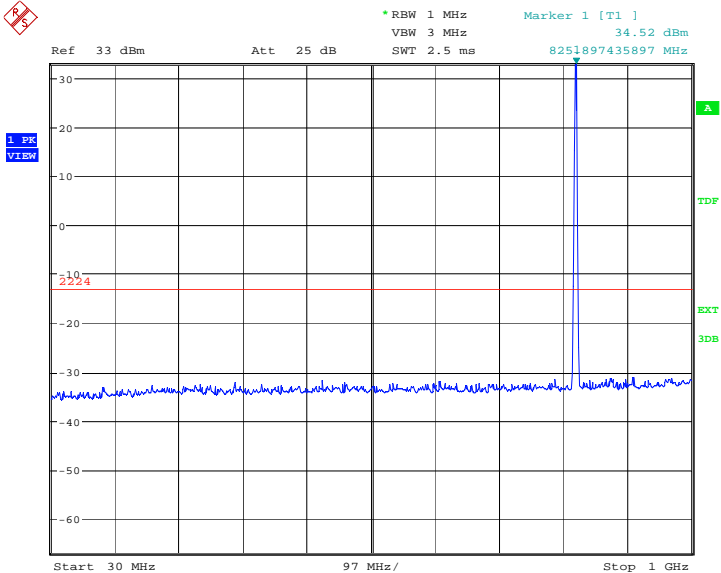
A. 7.3 Measurement result

GSM850

A.8.3.1 Channel 128: 30MHz – 1GHz

Spurious emission limit –13dBm.

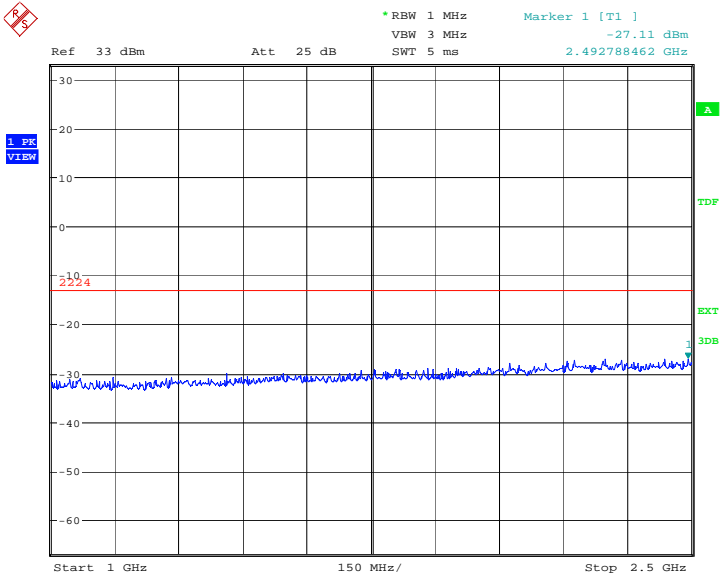
NOTE: peak above the limit line is the carrier frequency.



Date: 13.APR.2011 06:06:21

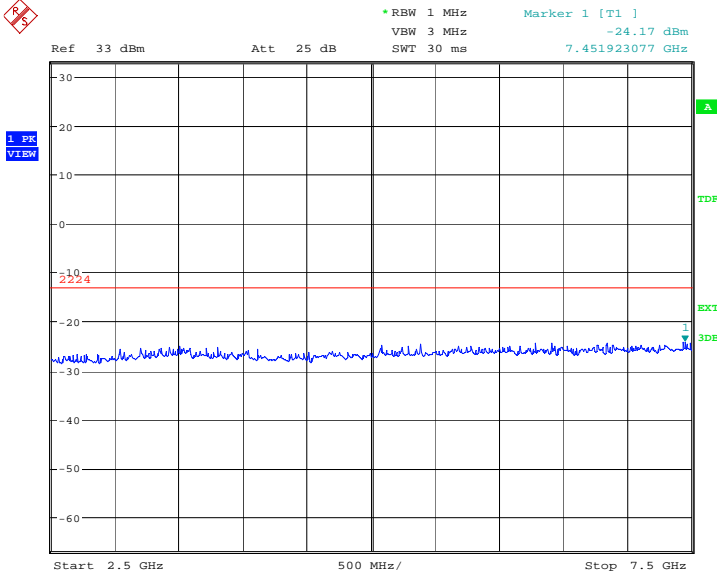
A.8.3.2 Channel 128: 1GHz – 2.5GHz

Spurious emission limit –13dBm.



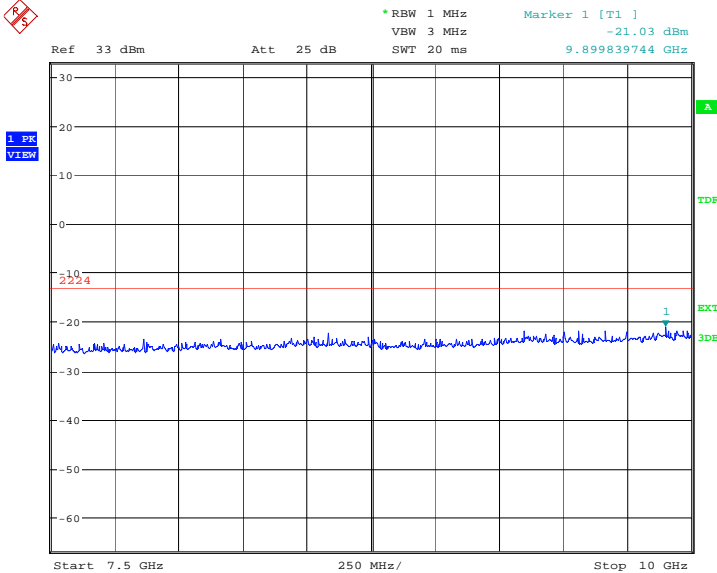
Date: 13.APR.2011 06:06:50

A.8.3.3 Channel 128: 2.5GHz – 7.5GHz
Spurious emission limit –13dBm.



Date: 13.APR.2011 06:07:18

A.8.3.4 Channel 128: 7.5GHz –10GHz
Spurious emission limit –13dBm.

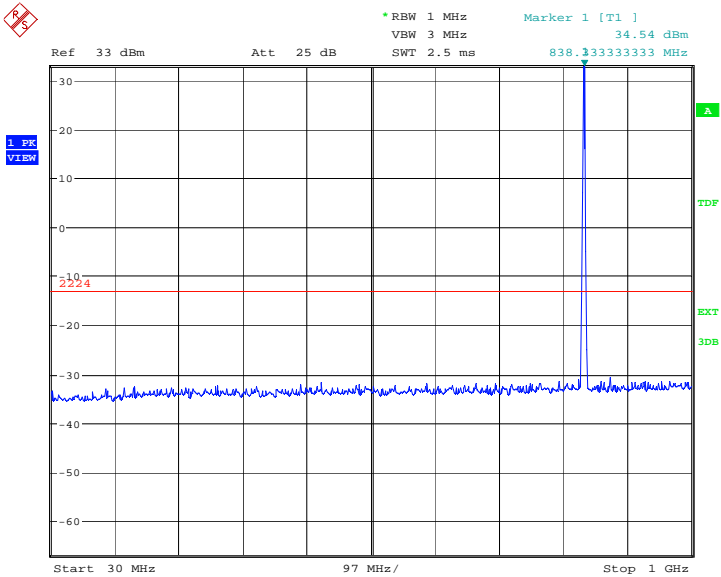


Date: 13.APR.2011 06:07:46

A.8.3.5 Channel 190: 30MHz – 1GHz

Spurious emission limit –13dBm

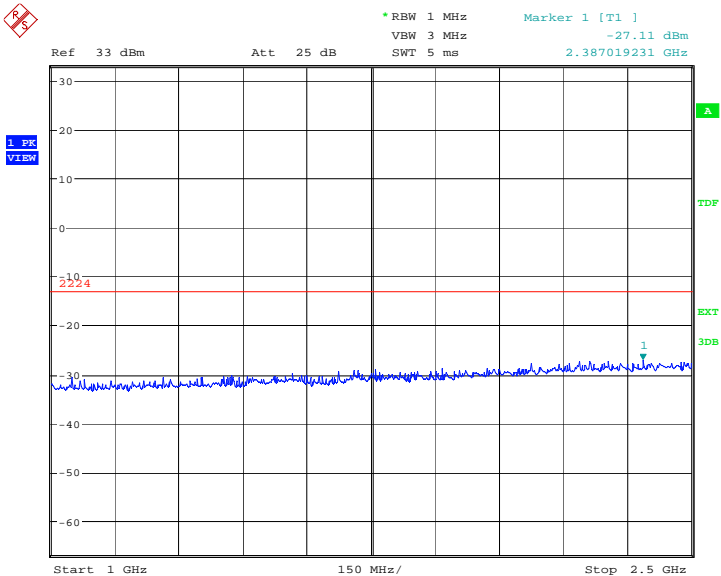
NOTE: peak above the limit line is the carrier frequency.



Date: 13.APR.2011 06:08:15

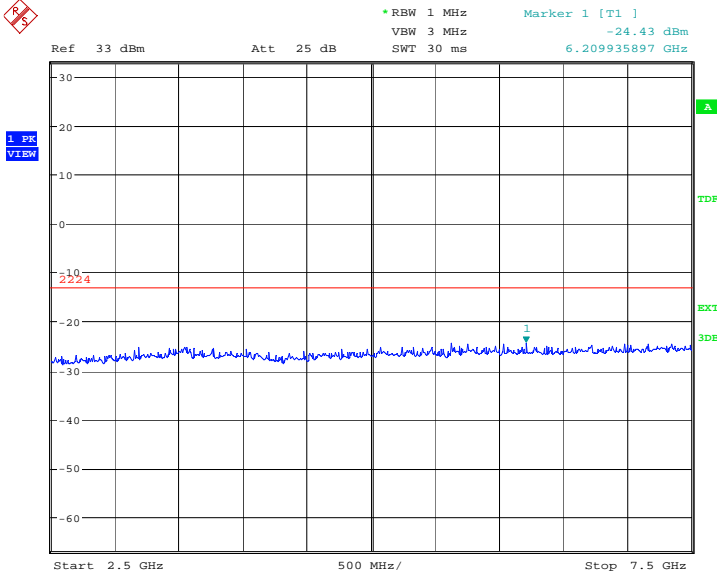
A.8.3.6 Channel 190: 1GHz –2.5GHz

Spurious emission limit –13dBm



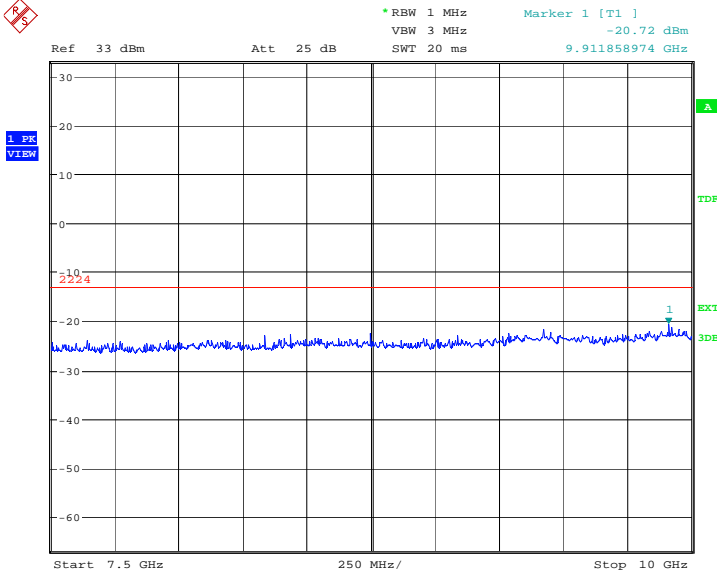
Date: 13.APR.2011 06:08:43

A.8.3.7 Channel 190: 2.5GHz –7.5GHz
Spurious emission limit –13dBm



Date: 13.APR.2011 06:09:12

A.8.3.8 Channel 190: 7.5GHz –10GHz
Spurious emission limit –13dBm

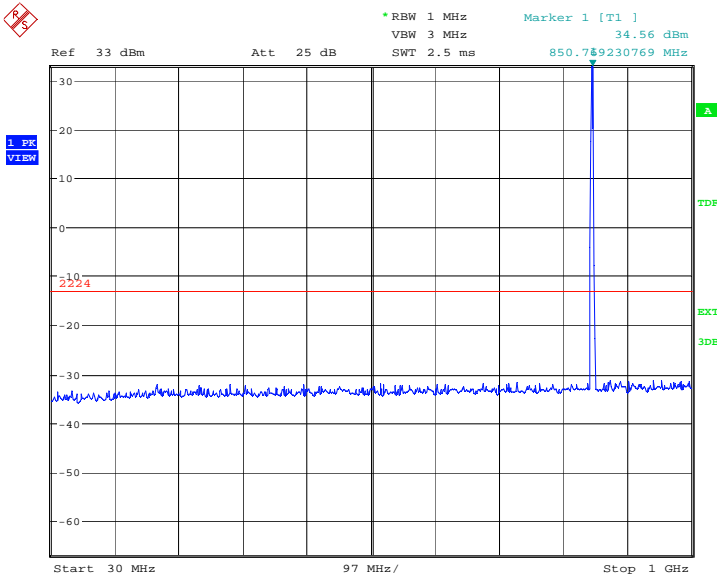


Date: 13.APR.2011 06:09:40

A.8.3.9 Channel 251: 30MHz – 1GHz

Spurious emission limit –13dBm.

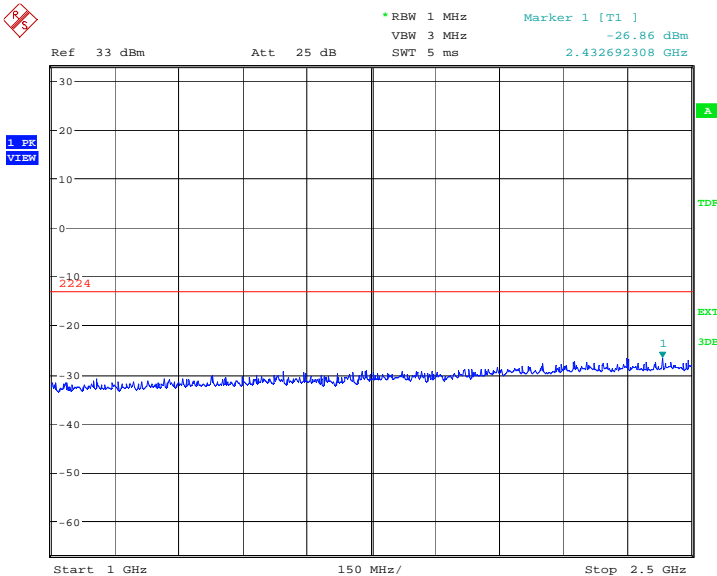
NOTE: peak above the limit line is the carrier frequency.



Date: 13.APR.2011 06:10:08

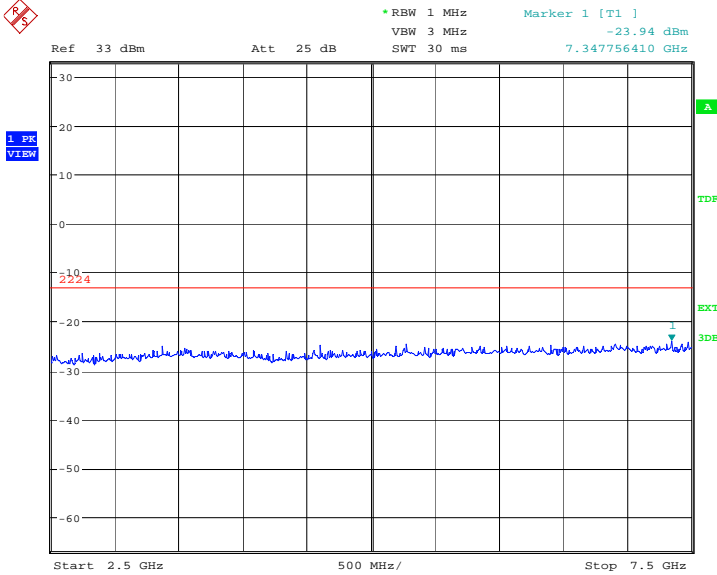
A.8.3.10 Channel 251: 1GHz – 2.5GHz

Spurious emission limit –13dBm.



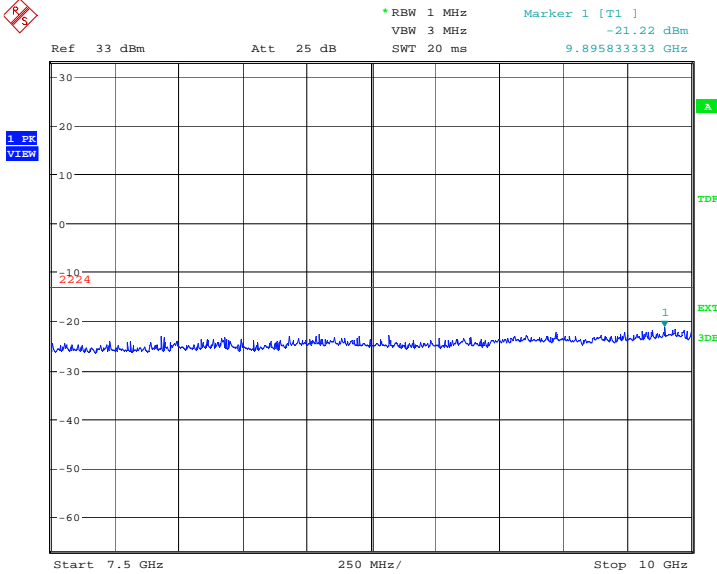
Date: 13.APR.2011 06:10:37

A.8.3.11 Channel 251:2.5GHz – 7.5GHz
Spurious emission limit –13dBm.



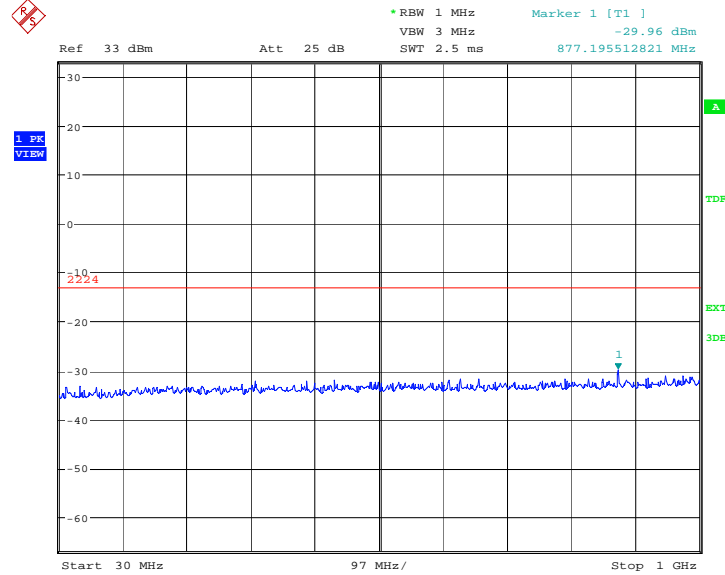
Date: 13.APR.2011 06:11:05

A.8.3.12 Channel 251: 7.5GHz – 10GHz
Spurious emission limit –13dBm.



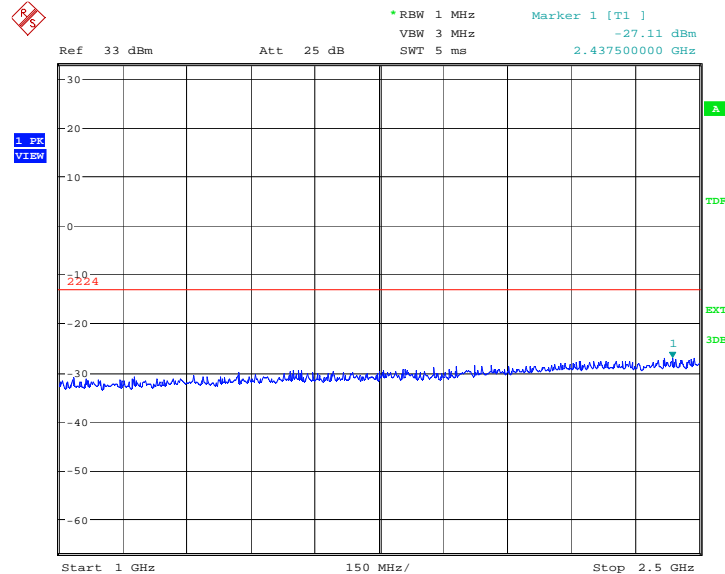
Date: 13.APR.2011 06:11:33

A.8.3.13 Idle mode: 30MHz – 1GHz
Spurious emission limit –13dBm.



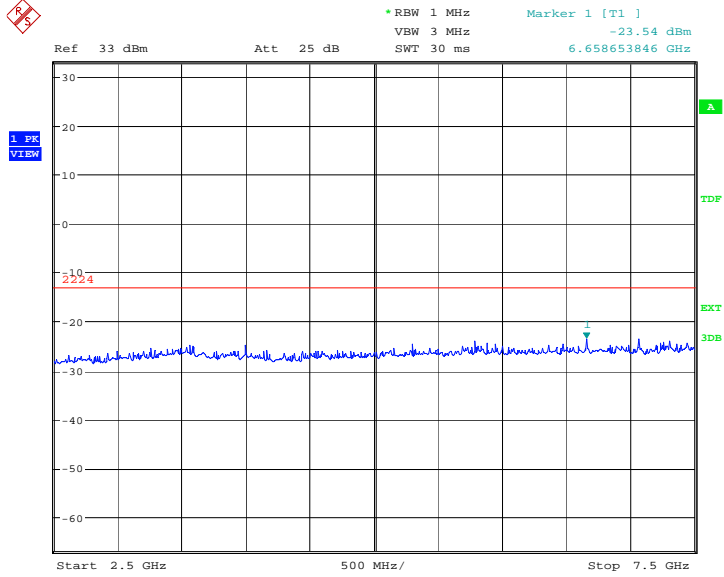
Date: 13.APR.2011 06:12:02

A.8.3.14 Idle mode: 1GHz – 2.5GHz
Spurious emission limit –13dBm.



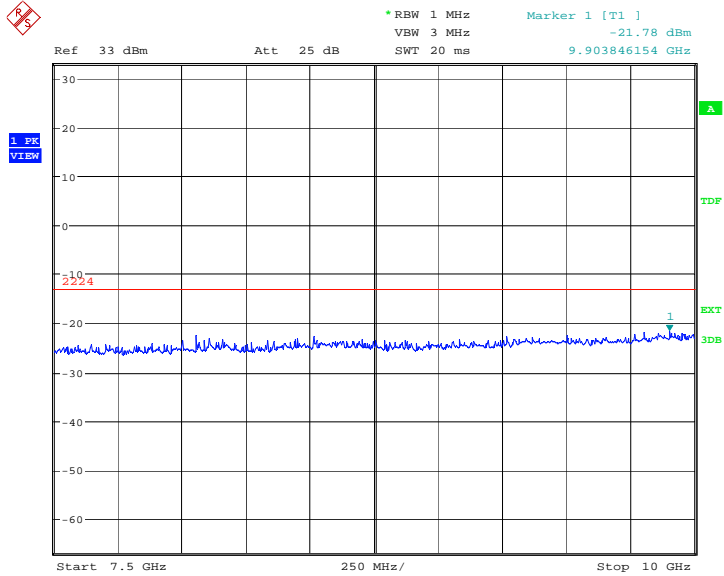
Date: 13.APR.2011 06:12:30

A.8.3.15 Idle mode: 2.5GHz – 7.5GHz
Spurious emission limit –13dBm.



Date: 13.APR.2011 06:12:58

A.8.3.16 Idle mode: 7.5GHz – 10GHz
Spurious emission limit –13dBm.



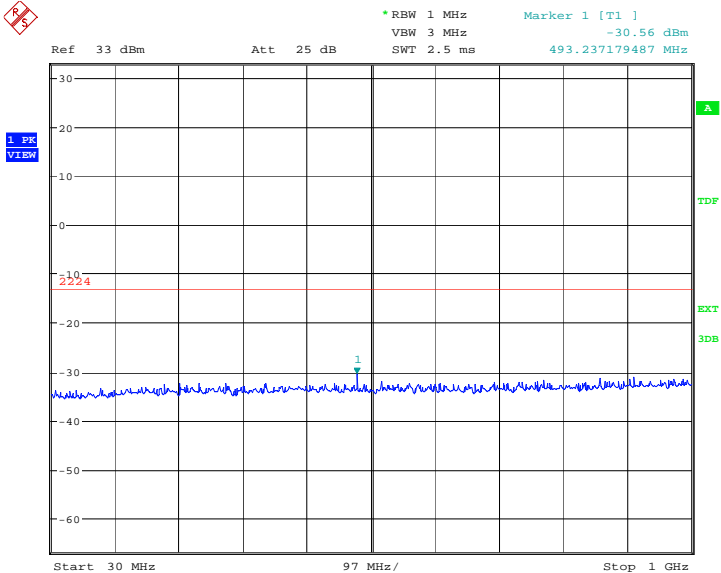
Date: 13.APR.2011 06:13:27

PCS1900

A.8.3.17 Channel 512: 30MHz – 1GHz

Spurious emission limit –13dBm.

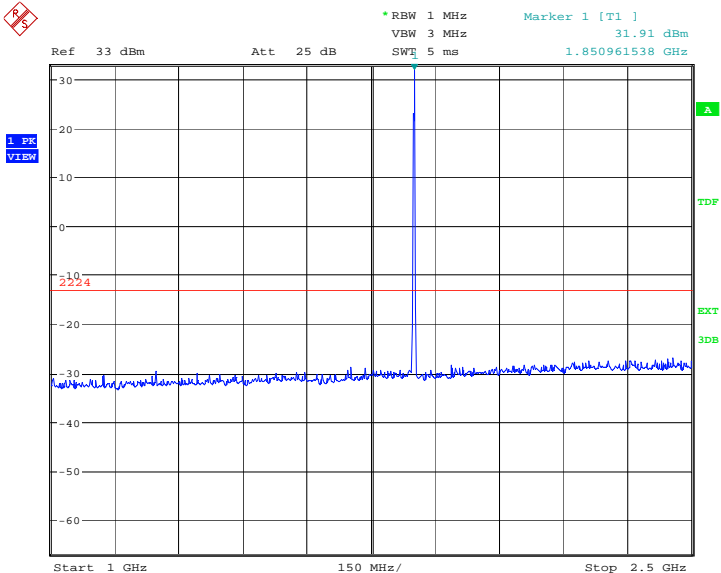
NOTE: peak above the limit line is the carrier frequency.



Date: 13.APR.2011 06:21:48

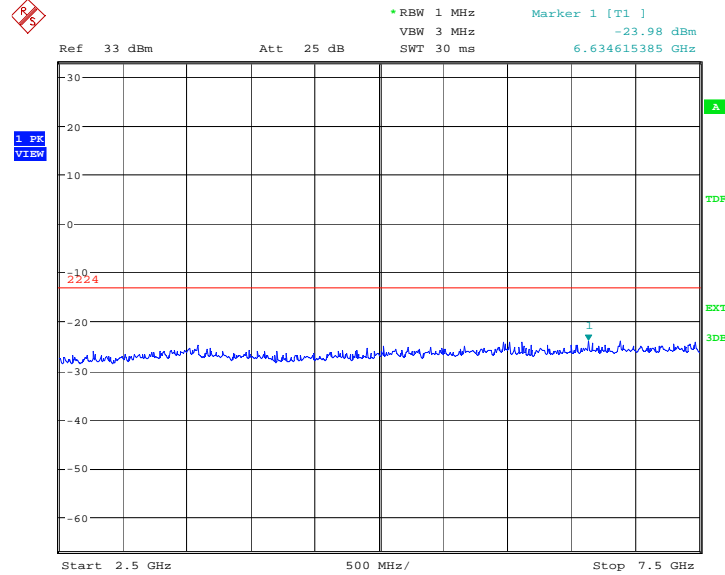
A.8.3.18 Channel 512: 1GHz – 2.5GHz

Spurious emission limit –13dBm.



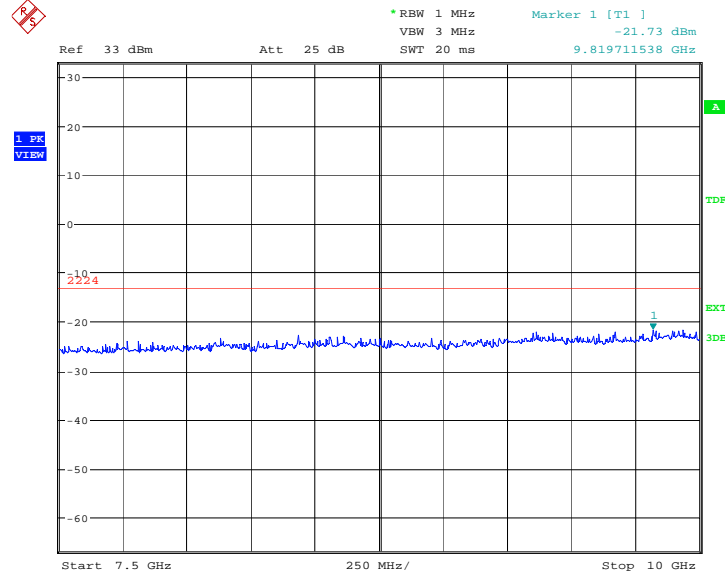
Date: 13.APR.2011 06:22:16

A.8.3.19 Channel 512: 2.5GHz – 7.5GHz
Spurious emission limit –13dBm.



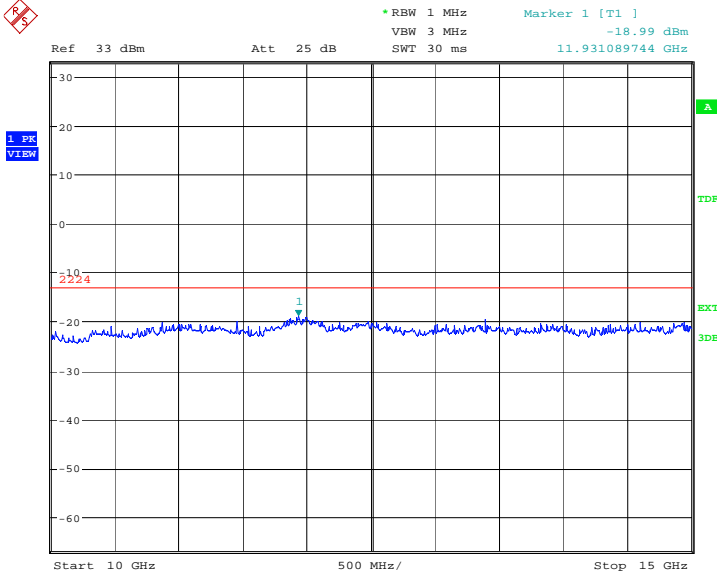
Date: 13.APR.2011 06:22:44

A.8.3.20 Channel 512: 7.5GHz –10GHz
Spurious emission limit –13dBm.



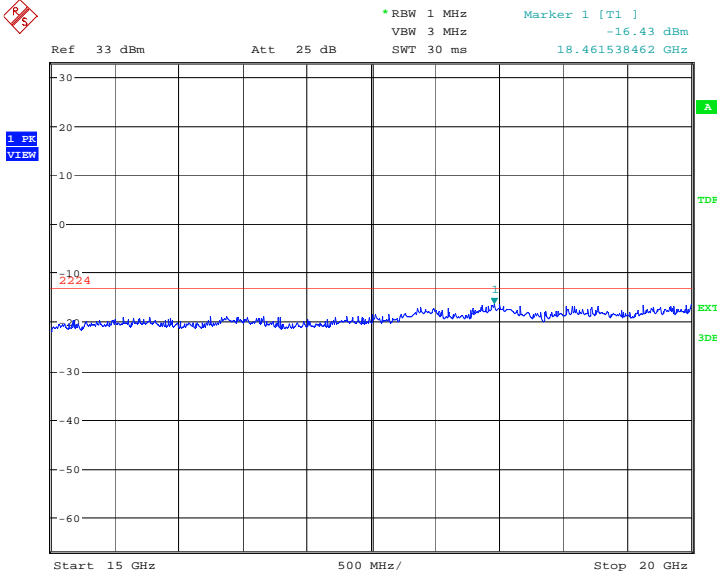
Date: 13.APR.2011 06:23:12

A.8.3.21 Channel 512: 10GHz –15GHz
Spurious emission limit –13dBm.



Date: 13.APR.2011 06:23:41

A.8.3.22 Channel 512: 15GHz –20GHz
Spurious emission limit –13dBm.

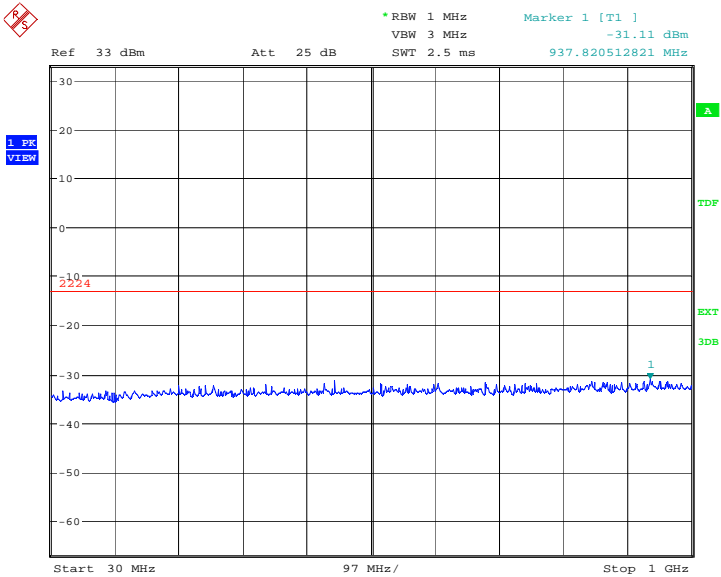


Date: 13.APR.2011 06:24:09

A.8.3.23 Channel 661: 30MHz – 1GHz

Spurious emission limit –13dBm

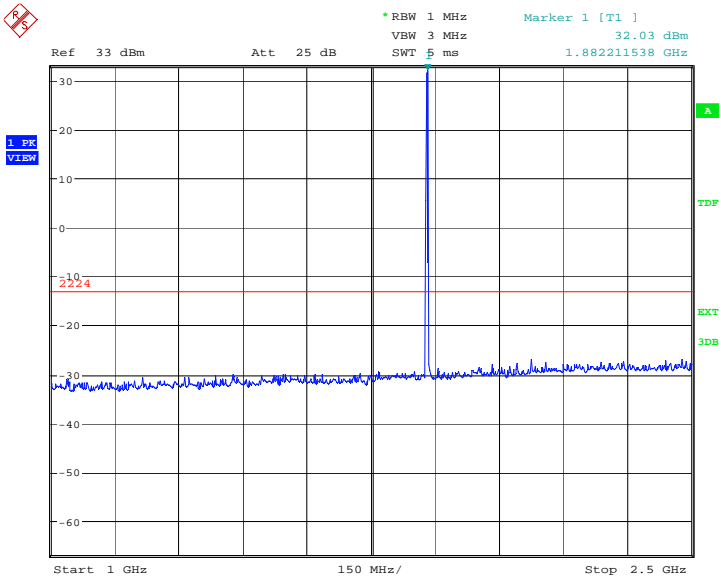
NOTE: peak above the limit line is the carrier frequency.



Date: 13.APR.2011 06:24:38

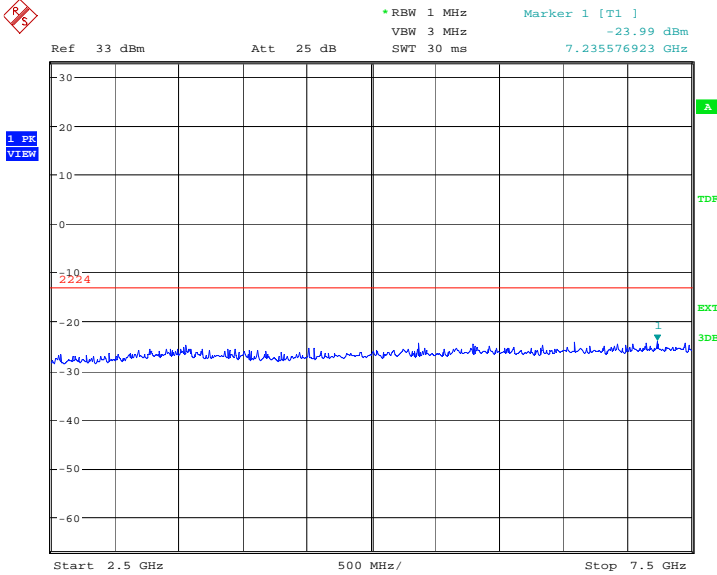
A.8.3.24 Channel 661: 1GHz –2.5GHz

Spurious emission limit –13dBm



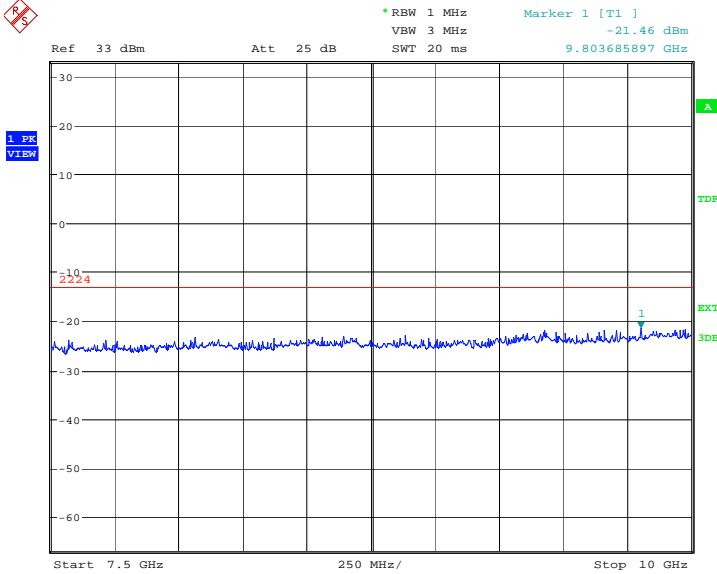
Date: 13.APR.2011 06:25:06

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



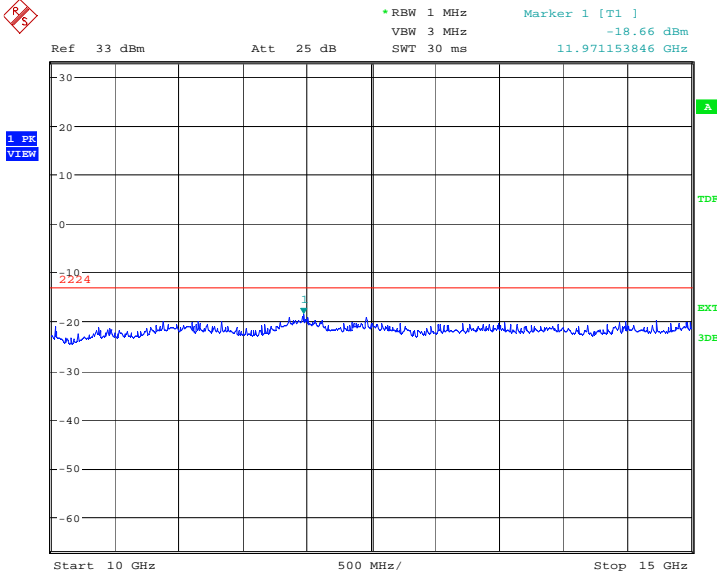
Date: 13.APR.2011 06:25:35

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



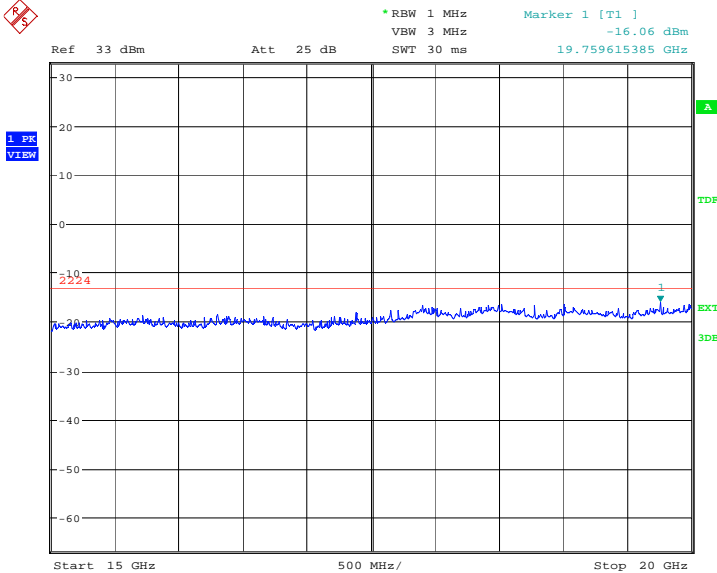
Date: 13.APR.2011 06:26:03

A.8.3.27 Channel 661: 10GHz –15GHz
Spurious emission limit –13dBm.



Date: 13.APR.2011 06:26:31

A.8.3.28 Channel 661: 15GHz –20GHz
Spurious emission limit –13dBm.

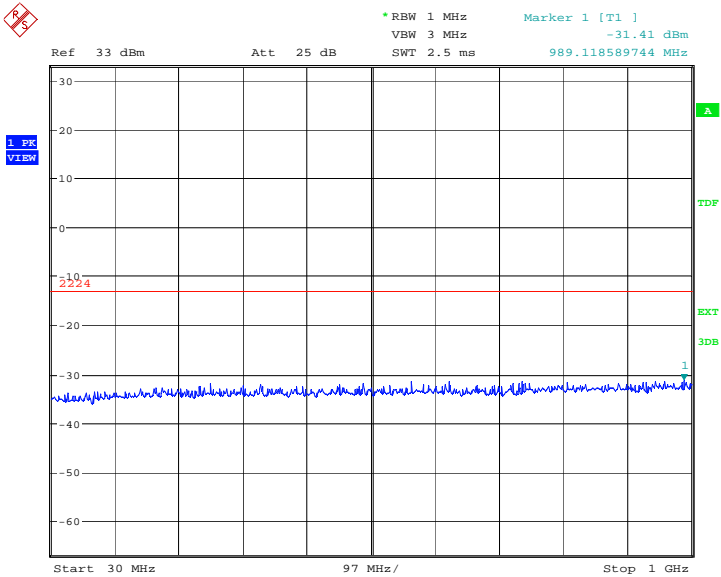


Date: 13.APR.2011 06:26:59

A.8.3.29 Channel 810: 30MHz – 1GHz

Spurious emission limit –13dBm.

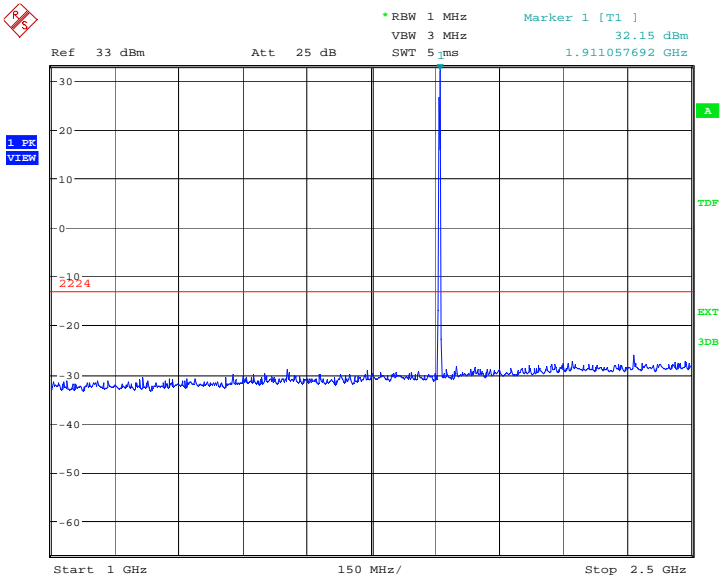
NOTE: peak above the limit line is the carrier frequency.



Date: 13.APR.2011 06:27:28

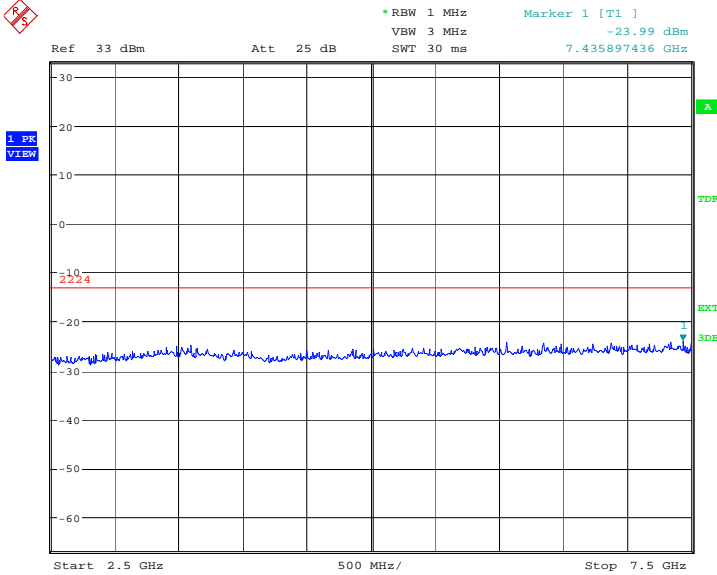
A.8.3.30 Channel 810: 1GHz – 2.5GHz

Spurious emission limit –13dBm.



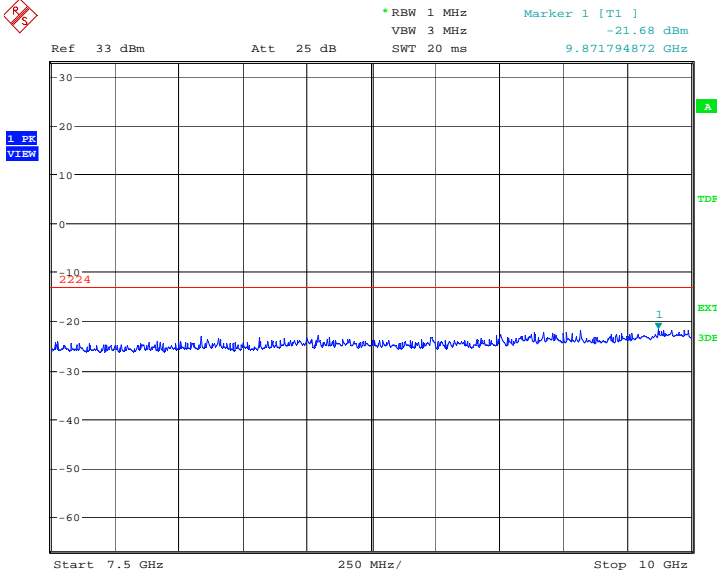
Date: 13.APR.2011 06:27:57

A.8.3.31 Channel 810:2.5GHz – 7.5GHz
Spurious emission limit –13dBm.



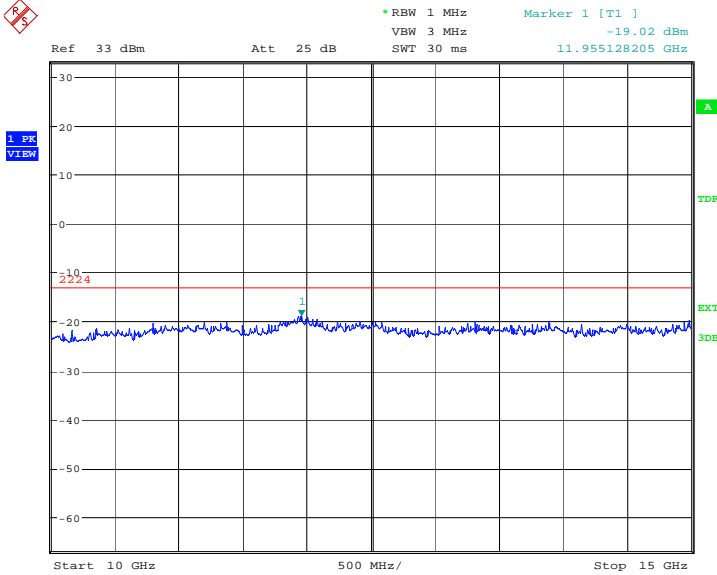
Date: 13.APR.2011 06:28:25

A.8.3.32 Channel 810: 7.5GHz – 10GHz
Spurious emission limit –13dBm.



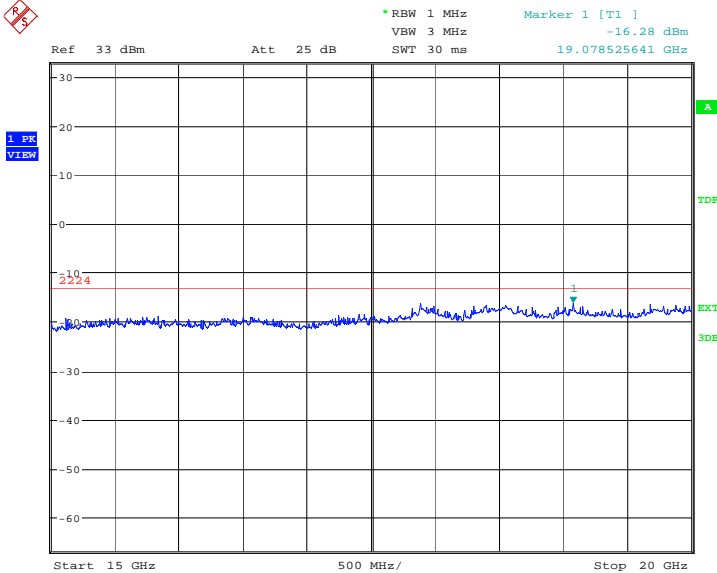
Date: 13.APR.2011 06:28:53

A.8.3.33 Channel 810: 10GHz –15GHz
Spurious emission limit –13dBm.



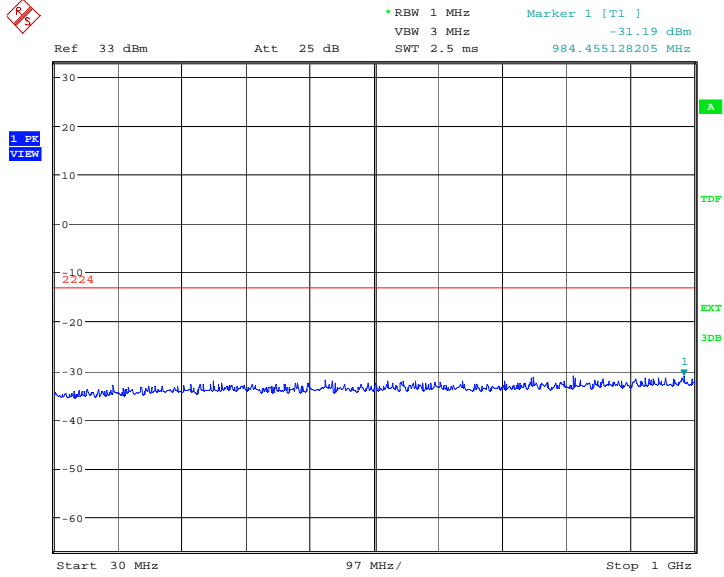
Date: 13.APR.2011 06:29:21

A.8.3.34 Channel 810: 15GHz –20GHz
Spurious emission limit –13dBm.



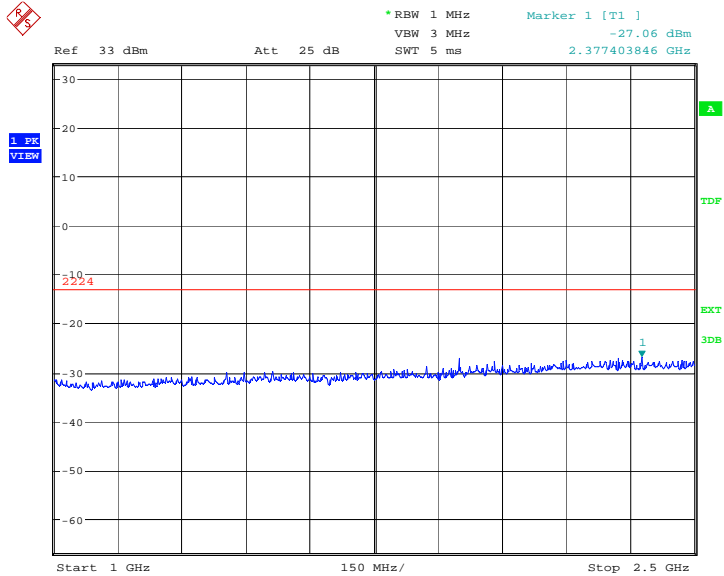
Date: 13.APR.2011 06:29:50

A.8.3.35 Idle mode: 30MHz – 1GHz
Spurious emission limit –13dBm.



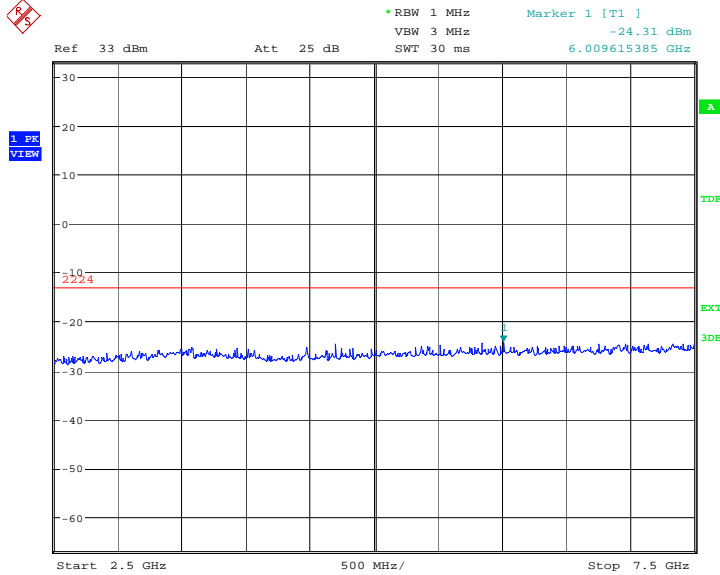
Date: 13.APR.2011 06:30:18

A.8.3.36 Idle mode: 1GHz – 2.5GHz
Spurious emission limit –13dBm.



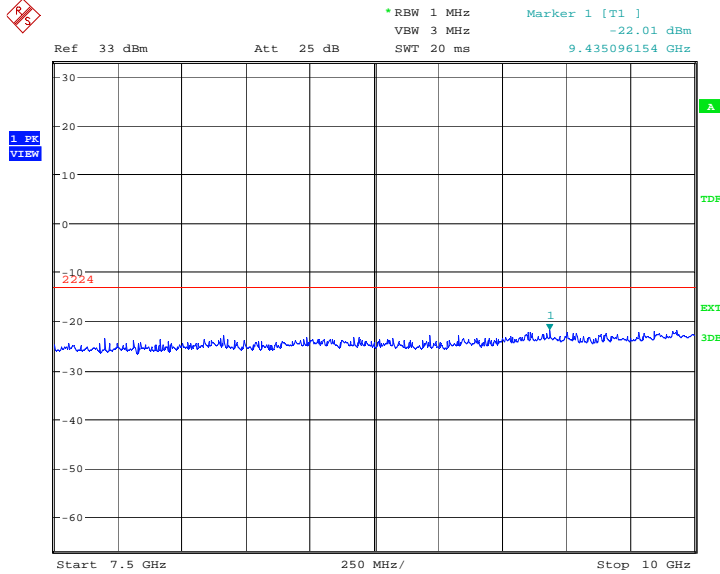
Date: 13.APR.2011 06:30:46

A.8.3.37 Idle mode: 2.5GHz – 7.5GHz
Spurious emission limit –13dBm.



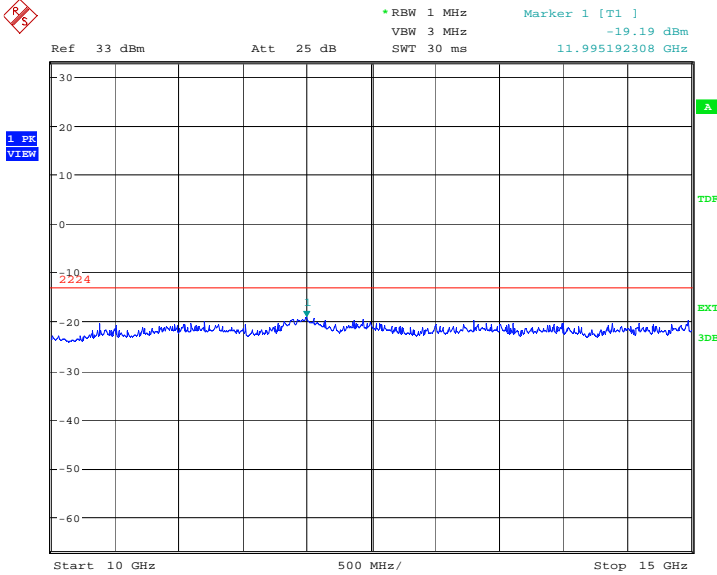
Date: 13.APR.2011 06:31:15

A.8.3.38 Idle mode: 7.5GHz – 10GHz
Spurious emission limit –13dBm.



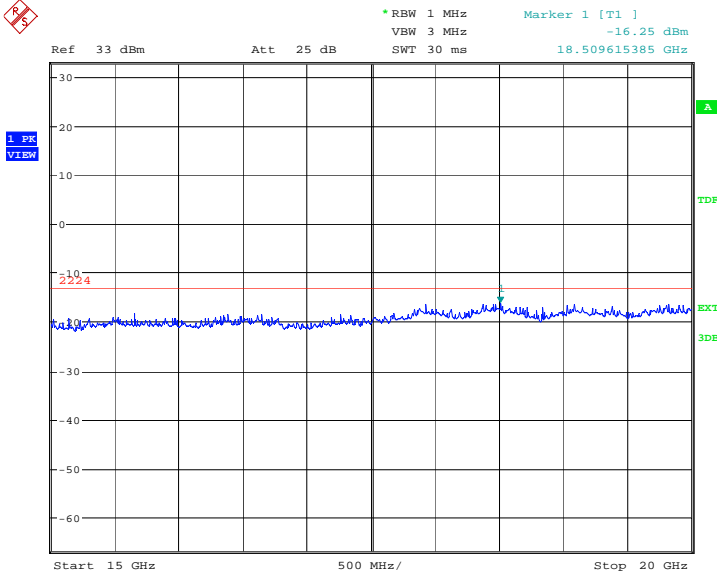
Date: 13.APR.2011 06:31:43

A.8.3.39 Idle mode: 10GHz –15GHz
Spurious emission limit –13dBm.



Date: 13.APR.2011 06:32:11

A.8.3.40 IDLE mode: 15GHz –20GHz
Spurious emission limit –13dBm.



Date: 13.APR.2011 06:32:39

END OF REPORT