



EMC TEST REPORT

No. I15Z40514-EMC11

for

Sony Mobile Communications Inc.

GSM/WCDMA/LTE device

FCC ID: PY7-PM0796

with

Hardware Version: A

Software Version: 28.0.A.0.684

Issued Date: 2015-05-19

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 CTTL Beijing.

Test Laboratory:

FCC 2.948 Listed: No. 525429

IC O.A.T.S listed: No. 12389A-1

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REPORT HISTORY

Report Number	Revision	Description	Issue Date
I15Z40514-EMC11	Rev.0	1st edition	2015-04-24
I15Z40514-EMC11	Rev.1	2st edition	2015-05-19

CONTENTS

1. TEST LABORATORY	4
1.1. TESTING LOCATION	4
1.2. TESTING ENVIRONMENT	4
1.3. PROJECT DATA	4
1.4. SIGNATURE	4
2. CLIENT INFORMATION	5
2.1. APPLICANT INFORMATION.....	5
2.2. MANUFACTURER INFORMATION.....	5
3. EQUIPMENT UNDER TEST (EUT) AND ANCILLARY EQUIPMENT (AE)	6
3.1. ABOUT EUT	6
3.2. INTERNAL IDENTIFICATION OF EUT USED DURING THE TEST	6
3.3. INTERNAL IDENTIFICATION OF AE USED DURING THE TEST.....	6
3.4. GENERAL DESCRIPTION	7
3.5. EUT SET-UPS	7
4. REFERENCE DOCUMENTS.....	8
4.1. REFERENCE DOCUMENTS FOR TESTING.....	8
5. LABORATORY ENVIRONMENT.....	9
6. SUMMARY OF TEST RESULTS.....	10
6.1. SUMMARY OF TEST RESULTS	10
6.2. STATEMENTS.....	10
7. TEST EQUIPMENTS UTILIZED.....	11
ANNEX A: MEASUREMENT RESULTS	12
A.1 OUTPUT POWER	12
A.2 EMISSION LIMIT	17
A.3 FREQUENCY STABILITY	21
A.4 OCCUPIED BANDWIDTH.....	24
A.5 EMISSION BANDWIDTH	37
A.6 BAND EDGE COMPLIANCE.....	49
A.7 CONDUCTED SPURIOUS EMISSION	56

1. Test Laboratory

1.1. Testing Location

Location 2: CTTL(Shouxiang)

Address: No. 51 Shouxiang Science Building, Xueyuan Road,
Haidian District, Beijing, P. R. China 100191

1.2. Testing Environment

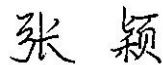
Normal Temperature: 15-35°C
Relative Humidity: 20-75%
Air pressure 980 - 1040 hPa

The climatic requirements above are general exclude the special requirements for dedicated test environments listed in section 5 and some specific test cases in other parts of this report.

1.3. Project data

Receipt of Sample 2015-03-20
Testing Start Date: 2015-03-27
Testing End Date: 2015-04-22

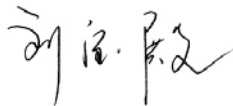
1.4. Signature



Zhang Ying
(Prepared this test report)



Qu Pengfei
(Reviewed this test report)



Liu Baodian
(Approved this test report)



2. Client Information

2.1. Applicant Information

Company Name: Sony Mobile Communications (China) Co. Ltd
Address /Post: Sony Mobile R&D Center, No. 16, Guangshun South Street,
Chaoyang District
City: Beijing
Postal Code: 100102
Country: China
Contact Person: Ma, Gang
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2.2. Manufacturer Information

Company Name: Sony Mobile Communications Inc.
Address /Post: 1-8-15 Konan, Minato-ku, Tokyo, 108-0075, Japan
City: Tokyo
Postal Code: 108-0075
Country: Japan

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

3.1. About EUT

Description	GSM, GPRS, EDGE, WCDMA, HSDPA, HSUPA, LTE Bluetooth (EDR and BLE), ANT+, WLAN (802.11 a/ac/b/g/n), NFC, FM, GPS device
FCC ID	PY7-PM0796
Antenna	Internal
Power supply	Battery (charged by travel adapter or vehicle charger)
Extreme vol. Limits	3.6VDC to 4.2VDC (nominal: 3.8VDC)
Extreme temp. Tolerance	-10°C to +55°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	IMEI	HW Version	SW Version
EUT9	CB5A24YCVK	004402148060381	A	28.0.A.0.684
EUT11	/	004402148060001	A	28.0.A.0.684

*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	Revision
AE21	Embedded Battery	/	/

AE21

Model name	1288-9125
Manufacturer	Sony Mobile
Minimum Capacitance	2930 mAh
Nominal Voltage	3.8 V

*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 GSM/WCDMA/LTE Device with integrated antenna and embedded battery.

The EUT supports GSM, WCDMA and LTE. It supports GPRS service with multi-slots class 33 and EGPRS service with multi-slots class 33. The HSDPA (Cat 24) and HSUPA (Cat 6) features are also supported.

It has MP3, camera, USB memory, FM radio, GPS receiver, NFC, Bluetooth (EDR, BLE), ANT+, WLAN (802.11 a/ac/b/g/n) and Wi-Fi hotspot functions.

It consists of normal options: embedded battery.

Manual and specifications of the EUT were provided to fulfil the test.

Samples undergoing test were selected by the client.

3.5. EUT set-ups

EUT Set-up No.	Combination of EUT and AE	Remarks
Set.4	EUT9 + AE21	ERP/EIRP/RSE tests
Set.20	AE11	Conducted RF tests



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 22	PUBLIC MOBILE SERVICES	10-1-13 Edition
FCC Part 24	PERSONAL COMMUNICATIONS SERVICES	10-1-13 Edition
ANSI/TIA-603-C	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards	2004

5. LABORATORY ENVIRONMENT

Semi-anechoic chamber SAC-1 (23 meters×17meters×10meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. = 15 %, Max. = 75 %
Shielding effectiveness	0.014MHz - 1MHz, >60dB; 1MHz - 1000MHz, >90dB.
Electrical insulation	> 2 MΩ
Ground system resistance	< 4Ω
Normalised site attenuation (NSA)	< ± 4 dB, 3m/10m distance, from 30 to 1000 MHz
Site voltage standing-wave ratio (S_{VSWR})	Between 0 and 6 dB, from 1GHz to 18GHz
Uniformity of field strength	Between 0 and 6 dB, from 80 to 3000 MHz

Fully-anechoic chamber FAC-3 (9 meters×6.5 meters×4 meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. = 15 %, Max. = 75 %
Shielding effectiveness	0.014MHz - 1MHz, >60dB; 1MHz - 1000MHz, >90dB.
Electrical insulation	> 2 MΩ
Ground system resistance	< 4 Ω
Site voltage standing-wave ratio (S_{VSWR})	Between 0 and 6 dB, from 1GHz to 18GHz
Uniformity of field strength	Between 0 and 6 dB, from 80 to 4000 MHz

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

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. = 20 %, Max. = 75 %
Shielding effectiveness	0.014MHz - 1MHz, >60dB; 1MHz - 1000MHz, >90dB.
Electrical insulation	> 2 MΩ
Ground system resistance	< 4 Ω

6. SUMMARY OF TEST RESULTS

6.1. Summary of test results

Abbreviations used in this clause:		
Verdict Column	P	Pass
	F	Fail
	NA	Not applicable
	NM	Not measured
Location Column	1/2/3/4	The test is performed in test location 1, 2, 3 or 4 which are described in section 1.1 of this report

GSM 850

Items	Test Name	Clause in FCC rules	Section in this report	Verdict	Test Location
1	Output Power	22.913(a)	A.1	P	2
2	Emission Limit	22.917, 2.1051	A.2	P	2
3	Frequency Stability	22.355, 2.1055	A.3	P	2
4	Occupied Bandwidth	2.1049(h)(i)	A.4	P	2
5	Emission Bandwidth	22.917(b)	A.5	P	2
6	Band Edge Compliance	22.917(b)	A.6	P	2
7	Conducted Spurious Emission	22.917, 2.1057	A.7	P	2

PCS 1900

Items	Test Name	Clause in FCC rules	Section in this report	Verdict	Test Location
1	Output Power	24.232(c)	A.1	P	2
2	Emission Limit	24.238, 2.1051	A.2	P	2
3	Frequency Stability	24.235, 2.1055	A.3	P	2
4	Occupied Bandwidth	2.1049(h)(i)	A.4	P	2
5	Emission Bandwidth	24.238(b)	A.5	P	2
6	Band Edge Compliance	24.238(b)	A.6	P	2
7	Conducted Spurious Emission	24.238, 2.1057	A.7	P	2

6.2. Statements

The test cases listed in section 6.1 of this report for the EUT specified in section 3 were performed by TMC according to the standards or reference documents in section 4.1.

The EUT met all applicable requirements of the standards or reference documents in section 4.1.

This report only deals with the GSM/GPRS/EGPRS functions among the features described in section 3.

7. Test Equipments Utilized

NO.	NAME	TYPE	SERIES NUMBER	PRODUCER	CAL. DUE DATE	CAL. INTERVAL
1.	EMI Antenna	VULB 9163	9163-235	Schwarzbeck	2017-10-29	3 Years
2.	EMI Antenna	3117	00119024	ETS-Lindgren	2017-01-20	3 Years
3.	EMI Antenna	9117	167	Schwarzbeck	2016-04-01	3 Years
4.	EMI Antenna	3117	00058889	ETS-Lindgren	2017-12-15	3 Years
5.	Signal Generator	N5183A	MY49060052	Agilent	2016-03-02	1 Year
6.	Power Amplifier	5S1G4	0341863	AR	/	1 Year
7.	Universal Radio Communication Tester	E5515C	MY48363198	Agilent	2015-07-06	1 Year
8.	Spectrum Analyzer	E4440A	MY48250642	Agilent	2016-03-02	1 Year
9.	Climatic chamber	SH-641	92014694	ESPEC	2015-11-27	1 Year
10.	Universal Radio Communication Tester	CMW500	101675	2015-07-13	2015-07-13	1 Year

ANNEX A: MEASUREMENT RESULTS

A.1 OUTPUT POWER

Reference

FCC: CFR Part 22.913(a), 24.232(c).

A.1.1 Summary

During the process of testing, the EUT was controlled via Rhode & Schwarz Digital Radio Communication tester (CMU200) to ensure max power transmission and proper modulation.

This result contains peak output power and ERP/EIRP measurements for the EUT.

In all cases, output power is within the specified limits.

A.1.2 Conducted Power

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 spectrum analyzer's peak detector.

These measurements were done at 3 frequencies (bottom, middle and top of operational frequency range) for each band: 1850.2 MHz, 1880.0MHz and 1909.8MHz for PCS1900 band; 824.2MHz, 836.6MHz and 848.8MHz for GSM850 band.

GSM850

Limit

	Power step	Nominal Peak output power (dBm)	Tolerance (dB)	Target (dBm)
GSM	5	33dBm(2W)	± 2	33±1
GPRS	3	33dBm(2W)	± 2	33±1
EGPRS	6	33dBm(2W)	± 2	33±1

Measurement result

GSM (GMSK)

Frequency(MHz)	Power Step	Peak output power(dBm)
824.2	5	32.06
836.6	5	32.14
848.8	5	32.22

GPRS (GMSK, Time Slot 1)

Frequency(MHz)	Power Step	Peak output power(dBm)
824.2	3	32.11
836.6	3	32.19
848.8	3	32.30

EGPRS (8PSK, Time Slot 1)

Frequency(MHz)	Power Step	Peak output power(dBm)
824.2	6	26.09
836.6	6	26.23
848.8	6	26.37

Note: Expanded measurement uncertainty for GSM850 is $U = 0.52$ dB, $k = 2$.

PCS1900

Limit

	Power step	Nominal Peak output power (dBm)	Tolerance (dB)	Target (dBm)
GSM	0	30dBm(1W)	± 2	30 ± 1
GPRS	3	30dBm(1W)	± 2	30 ± 1
EGPRS	5	30dBm(1W)	± 2	30 ± 1

Measurement result

GSM (GMSK)

Frequency(MHz)	Power Step	Peak output power(dBm)
1850.2	0	29.11
1880.0	0	29.16
1909.8	0	29.23

GPRS (GMSK, Time Slot 1)

Frequency(MHz)	Power Step	Peak output power(dBm)
1850.2	3	29.23
1880.0	3	29.25
1909.8	3	29.33

EGPRS (8PSK, Time Slot 1)

Frequency(MHz)	Power Step	Peak output power(dBm)
1850.2	5	25.12
1880.0	5	25.11
1909.8	5	25.23

Note: Expanded measurement uncertainty for PCS1900 is $U = 0.83$ dB, $k = 2$.

A.1.3 Radiated Power

A.1.3.1 Description

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

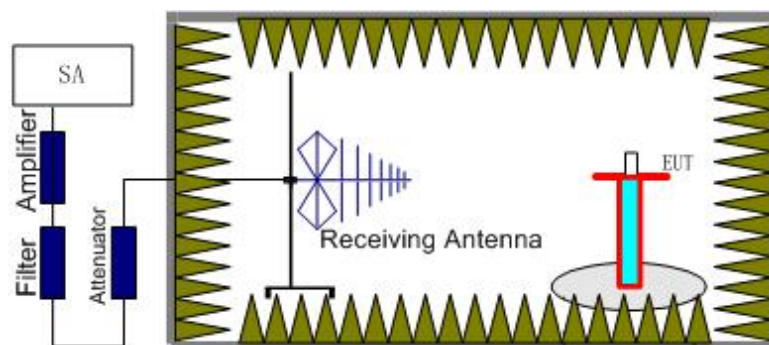
Rule Part 24.232(c) specifies "Mobile and portable stations are limited to 2 watts EIRP" and 24.232(e) specifies that "Peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage."

Rule Part 22.913(a) specifies "Maximum ERP. The effective radiated power (ERP) of base transmitters and cellular repeaters must not exceed 500 Watts. The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts."

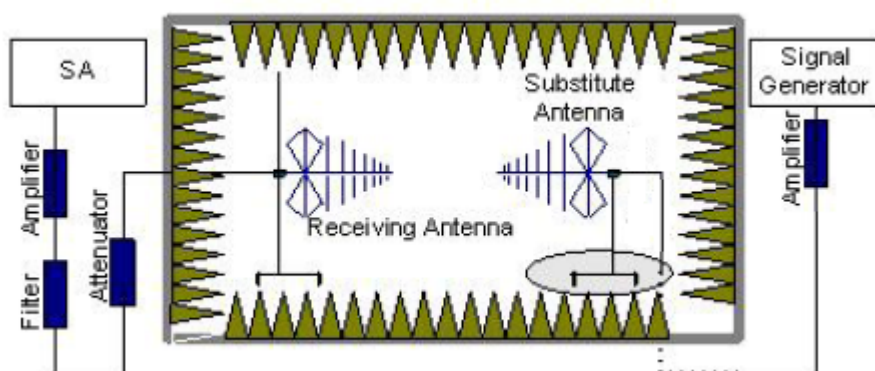
A.1.3.2 Method of Measurement

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, a 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. Adjust the level of the signal generator output until the value of the receiver reaches 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. An amplifier should be connected to the Signal Source output port. And the cable should be connected 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 (Unit: dBi) and known input power.
 6. ERP can be calculated from EIRP by subtracting the gain of the dipole, $ERP = EIRP - 2.15$.
- For test layout photo, please refer to Pic.1 in Annex B.

GSM 850- ERP 22.913(a)

Limits

	Power Step	Burst Peak ERP (dBm)
GSM	5	$\leq 38.45\text{dBm}$ (7W)
GPRS	3	$\leq 38.45\text{dBm}$ (7W)
EGPRS	6	$\leq 38.45\text{dBm}$ (7W)

Measurement result

GSM (GMSK)

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	Correction (dB)	Peak ERP(dBm)	Polarization
824.20	-14.87	2.26	-45.79	-0.96	2.15	27.47	Vertical
836.60	-13.50	2.26	-45.66	-0.82	2.15	28.57	Vertical
848.80	-12.86	2.28	-45.54	-0.79	2.15	29.04	Vertical

GPRS (GMSK)

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	Correction (dB)	Peak ERP(dBm)	Polarization
824.20	-14.88	2.26	-45.79	-0.96	2.15	27.46	Vertical
836.60	-13.51	2.26	-45.66	-0.82	2.15	28.56	Vertical
848.80	-12.88	2.28	-45.54	-0.79	2.15	29.02	Vertical

EGPRS (8PSK)

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	Correction (dB)	Peak ERP(dBm)	Polarization
824.20	-21.55	2.26	-45.79	-0.96	2.15	20.79	Vertical
836.60	-20.28	2.26	-45.66	-0.82	2.15	21.79	Vertical
848.80	-19.61	2.28	-45.54	-0.79	2.15	22.29	Vertical

Sample calculation: GSM, 848.80MHz

$$\text{Peak ERP(dBm)} = P_{\text{Mea}}(-12.86\text{dBm}) - G_a(-0.79\text{dBi}) - P_{\text{Ag}}(-45.54\text{dB}) - P_{\text{cl}}(2.28\text{ dB}) - 2.15\text{ dB} \\ = 29.04\text{ dBm}$$

ANALYZER SETTINGS: RBW = VBW = 3MHz

Note: Expanded measurement uncertainty for GSM850 is $U = 0.96\text{dB}$, $k = 2$.

PCS1900- EIRP 24.232(c)

Limits

	Power Step	Burst Peak EIRP (dBm)
GSM	0	$\leq 33\text{dBm}$ (2W)
GPRS	3	$\leq 33\text{dBm}$ (2W)
EGPRS	5	$\leq 33\text{dBm}$ (2W)

Measurement result

GSM (GMSK)

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	Peak EIRP(dBm)	Polarization
1850.20	-20.49	2.93	-43.75	-4.87	25.20	Vertical
1880.00	-17.34	2.85	-43.75	-4.82	28.38	Horizontal
1909.80	-16.28	2.89	-43.77	-4.76	29.36	Horizontal

GPRS (GMSK)

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	Peak EIRP(dBm)	Polarization
1850.20	-20.50	2.93	-43.75	-4.87	25.19	Vertical
1880.00	-17.29	2.85	-43.75	-4.82	28.43	Horizontal
1909.80	-16.27	2.89	-43.77	-4.76	29.37	Horizontal

EGPRS (8PSK)

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	Peak EIRP(dBm)	Polarization
1850.20	-24.94	2.93	-43.75	-4.87	20.75	Vertical
1880.00	-22.09	2.85	-43.75	-4.82	23.63	Horizontal
1909.80	-20.74	2.89	-43.77	-4.76	24.90	Horizontal

Sample calculation: GSM, 1909.80MHz

$$\text{Peak EIRP(dBm)} = P_{\text{Mea}}(-16.27\text{dBm}) - G_a(-4.76\text{ dBi}) - P_{\text{Ag}}(-43.77\text{ dB}) - P_{\text{cl}}(2.89\text{ dB}) = 29.37\text{ dBm}$$

ANALYZER SETTINGS: RBW = VBW = 3MHz

Note: Expanded measurement uncertainty for PCS1900 is $U = 1.07\text{ dB}$, $k = 2$.

A.2 EMISSION LIMIT

Reference

FCC: CFR 2.1051, Part 22.917(a), 24.238(a).

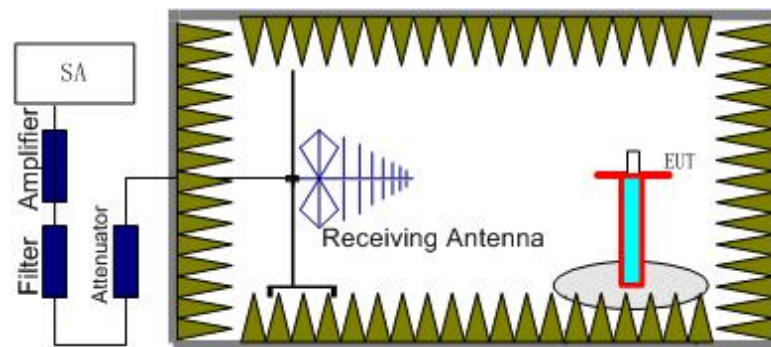
A.2.1 Measurement Method

The measurements procedures in TIA-603C-2004 are used. This measurement is carried out in fully-anechoic chamber FAC-3.

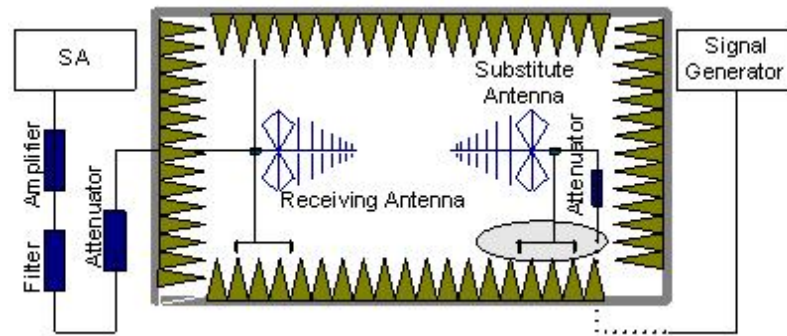
The spectrum was scanned from 30 MHz to the 10th harmonic of the highest frequency generated within the equipment, which is the transmitted carrier that can be as high as 1910 MHz. The resolution bandwidth is set 1MHz as outlined in Part 24.238. The spectrum was scanned with the mobile station transmitting at carrier frequencies that pertain to low, mid and high channels of the PCS1900 band, 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. Adjust the level of the signal generator output until the value of the receiver reaches 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.

An 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 (unit: dBi) and known input power.
6. ERP can be calculated from EIRP by subtracting the gain of the dipole, $ERP = EIRP - 2.15\text{dB}$.

A.2.2 Measurement Limit

Part 24.238 specifies 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 PCS band (1850.2 MHz, 1880 MHz and 1909.8 MHz), GSM850 band (824.2MHz, 836.6MHz and 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 GSM850 or PCS1900 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.

GSM Mode Channel 128/824.2MHz

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction (dB)	Peak ERP(dBm)	Limit (dBm)	Polarization
2472.81	-29.27	4.43	-6.02	2.15	-29.83	-13.00	Horizontal
3334.80	-59.72	5.18	-7.80	2.15	-59.25	-13.00	Vertical
4494.30	-56.27	5.94	-9.39	2.15	-54.97	-13.00	Vertical
5113.15	-58.48	6.51	-10.06	2.15	-57.08	-13.00	Horizontal
5613.53	-58.35	6.82	-10.58	2.15	-56.74	-13.00	Vertical
6802.56	-57.96	7.08	-11.36	2.15	-55.83	-13.00	Vertical

GSM Mode Channel 190/836.6MHz

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction (dB)	Peak ERP(dBm)	Limit (dBm)	Polarization
1673.54	-48.52	3.54	-5.19	2.15	-49.02	-13.00	Vertical
2510.09	-34.31	4.48	-6.12	2.15	-34.82	-13.00	Horizontal
3203.71	-60.27	5.24	-7.49	2.15	-60.17	-13.00	Vertical
4031.88	-59.21	5.63	-8.93	2.15	-58.06	-13.00	Horizontal
6283.48	-58.22	6.80	-10.78	2.15	-56.39	-13.00	Vertical
8641.41	-57.26	7.64	-13.03	2.15	-54.02	-13.00	Horizontal

GSM Mode Channel 251/848.8MHz

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction (dB)	Peak ERP(dBm)	Limit (dBm)	Polarization
2546.11	-31.40	4.48	-6.18	2.15	-31.85	-13.00	Horizontal
3509.28	-60.24	5.39	-8.21	2.15	-59.57	-13.00	Vertical
4162.78	-59.47	5.82	-9.06	2.15	-58.38	-13.00	Horizontal
5338.61	-58.65	6.59	-10.37	2.15	-57.02	-13.00	Horizontal
7343.18	-55.41	7.11	-12.01	2.15	-52.66	-13.00	Horizontal
9368.99	-55.24	7.94	-13.32	2.15	-52.01	-13.00	Horizontal

GSM Mode Channel 512/1850.2MHz

Frequency (MHz)	P _{Mea} (dBm)	P _{pl} (dB)	G _a (dBi)	Peak EIRP (dBm)	Limit (dBm)	Polarity
3700.27	-54.04	5.34	-8.48	-50.90	-13.00	Horizontal
5550.48	-51.22	6.61	-10.59	-47.24	-13.00	Horizontal
7974.08	-57.17	7.45	-12.58	-52.04	-13.00	Horizontal
10942.02	-55.02	9.02	-13.19	-50.85	-13.00	Horizontal
13650.72	-49.23	10.51	-14.29	-45.45	-13.00	Vertical
16275.65	-45.43	10.98	-13.64	-42.77	-13.00	Horizontal

GSM Mode Channel 661/1880.0MHz

Frequency (MHz)	P _{Mea} (dBm)	P _{pl} (dB)	G _a (dBi)	Peak EIRP (dBm)	Limit (dBm)	Polarity
3760.22	-50.55	5.14	-8.56	-47.13	-13.00	Horizontal
5639.59	-50.09	6.85	-10.57	-46.37	-13.00	Vertical
7981.25	-57.30	7.38	-12.58	-52.10	-13.00	Horizontal
10113.54	-54.06	8.32	-12.95	-49.43	-13.00	Vertical
13407.12	-49.95	9.92	-14.07	-45.80	-13.00	Horizontal
15308.67	-47.80	10.73	-13.81	-44.72	-13.00	Vertical

GSM Mode Channel 810/1909.8MHz

Frequency (MHz)	P _{Mea} (dBm)	P _{pl} (dB)	G _a (dBi)	Peak EIRP (dBm)	Limit (dBm)	Polarity
3819.64	-47.95	5.48	-8.65	-44.78	-13.00	Horizontal
5729.45	-45.33	6.76	-10.55	-41.54	-13.00	Vertical
9080.34	-56.42	8.05	-13.15	-51.32	-13.00	Horizontal
11897.70	-53.66	9.47	-13.02	-50.11	-13.00	Horizontal
13395.00	-50.08	9.87	-14.05	-45.90	-13.00	Vertical
16846.14	-42.50	11.36	-13.74	-40.12	-13.00	Vertical

Note: Expanded measurement uncertainty for this test item is $U = 4.2$ dB, $k = 2$.

A.3 FREQUENCY STABILITY

Reference

FCC: CFR Part 2.1055, 22.355, 24.235.

A.3.1 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, 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 1.5 hours at each temperature, unpowered, before making measurements.
5. Re-measure carrier frequency at room temperature with nominal voltage. Vary supply voltage from minimum voltage to maximum voltage, in 0.1Volt increments re-measuring carrier frequency at each voltage. Pause at nominal voltage for 1.5 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 1.5 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.3.2 Measurement Limit

According to the JTC standard the frequency stability of the carrier shall be accurate to within 0.1 ppm of the received frequency from the base station. This accuracy is sufficient to meet Sec. 24.235, Frequency Stability. The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. As this transceiver is considered "Hand carried, battery powered equipment" Section 2.1055(d) (2) applies. This requires that the lower voltage for frequency stability testing be specified by the manufacturer. This transceiver is specified to operate with an input voltage of between 3.6VDC and 4.2VDC, with a nominal voltage of 4.2VDC. 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 from -5.4% to 10.8%. For the purposes of measuring frequency stability these voltage limits are to be used.

A.3.3 Measurement results**GSM 850**

Room Temperature: 24 °C

Frequency Error vs Voltage

Voltage(V)	Frequency error(Hz)	Frequency error(ppm)
4.2	20	0.024
3.8	31	0.037
3.6	19	0.022

Frequency Error vs Temperature

Temperature(°C)	Frequency error(Hz)	Frequency error(ppm)
50°	15	0.018
40°	15	0.017
30°	27	0.033
20°	10	0.011
10°	17	0.020
0°	34	0.040
- 10°	11	0.014
- 20°	10	0.012
- 30°	16	0.019

Expanded measurement uncertainty for this test item is 10 Hz, $k=2$

PCS 1900**Room Temperature: 24°C****Frequency Error vs Voltage**

Voltage(V)	Frequency error(Hz)	Frequency error(ppm)
3.8	38	0.020
4.2	35	0.019
3.6	58	0.031

Frequency Error vs Temperature

Temperature(°C)	Frequency error(Hz)	Frequency error(ppm)
50°	36	0.019
40°	37	0.020
30°	32	0.017
20°	37	0.020
10°	38	0.020
0°	36	0.019
- 10°	34	0.018
- 20°	39	0.021
- 30°	36	0.019

Expanded measurement uncertainty for this test item is 10 Hz, $k = 2$.

A.4 OCCUPIED BANDWIDTH

Reference

FCC: CFR Part 2.1049(h)(i).

A.4.1 Occupied Bandwidth Results

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 the US Cellular/PCS frequency bands. The table below lists the measured 99% BW. Spectrum analyzer plots are included on the following pages.

The measurement method is from KDB 971168 v02r01 4.2:

- a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be set wide enough to capture all modulation products including the emission skirts (i.e., two to five times the OBW).
- b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1 to 5 % of the anticipated OBW, and the VBW shall be at least 3 times the RBW.
- c) Set the reference level of the instrument as required to keep the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope must be at least $10\log(\text{OBW} / \text{RBW})$ below the reference level.
- d) Set the detection mode to peak, and the trace mode to max hold.
- e) Use the 99 % power bandwidth function of the spectrum analyzer and report the measured bandwidth.

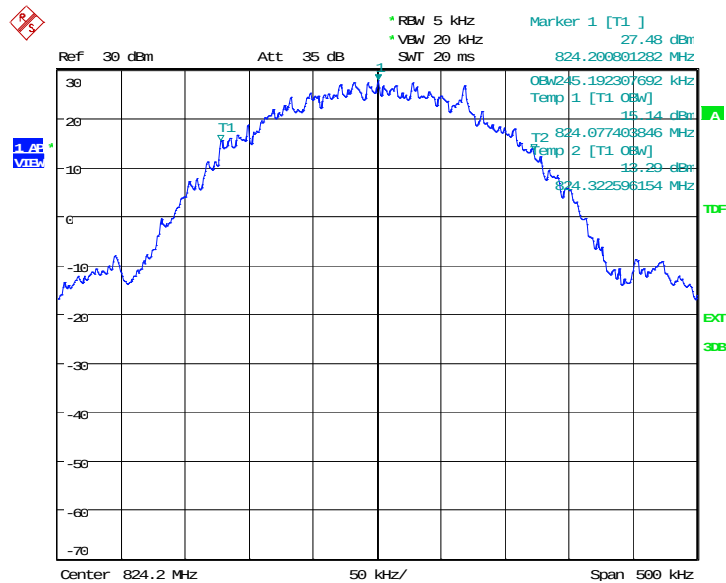
GSM 850(99% BW) per FCC rules

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

Expanded measurement uncertainty for this test item is 1.1 kHz, $k=2$.

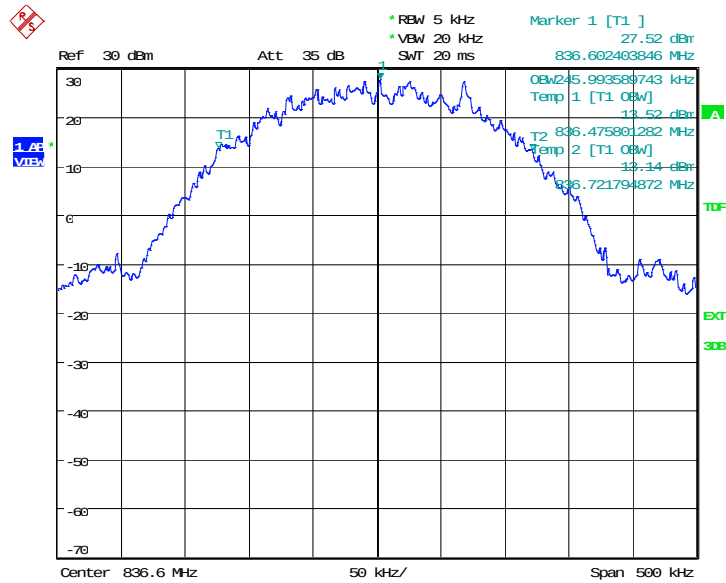
GSM 850

Channel 128-Occupied Bandwidth (99% BW)



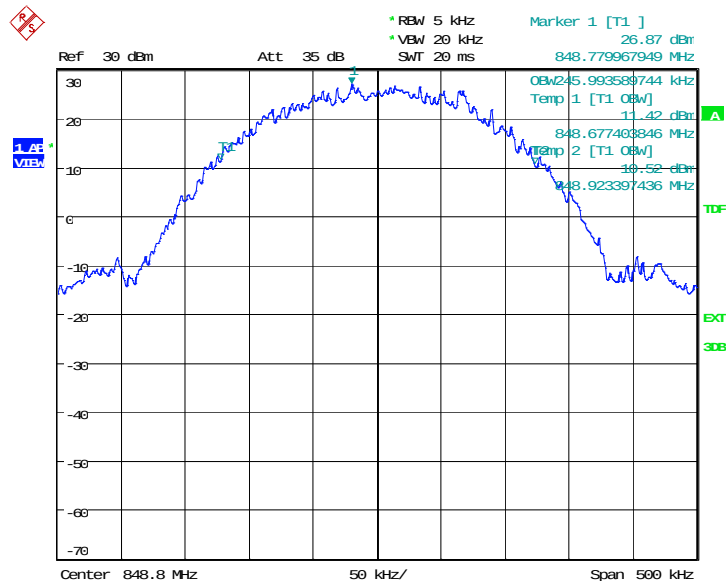
Date: 31.MAR.2015 16:08:37

Channel 190-Occupied Bandwidth (99% BW)



Date: 31.MAR.2015 16:09:09

Channel 251-Occupied Bandwidth (99% BW)



Date: 31.MAR.2015 16:09:41

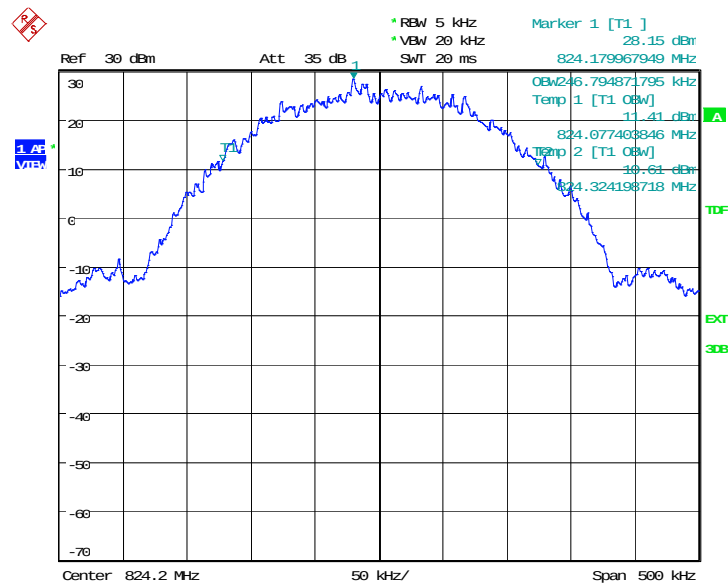
GPRS 850(99% BW) per FCC rules

Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)
824.2	246.795
836.6	245.192
848.8	244.391

Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

GPRS 850

Channel 128-Occupied Bandwidth (99% BW)



Date: 31.MAR.2015 17:56:00

Date: 31.MAR.2015 17:56:32

Date: 31.MAR.2015 17:57:04

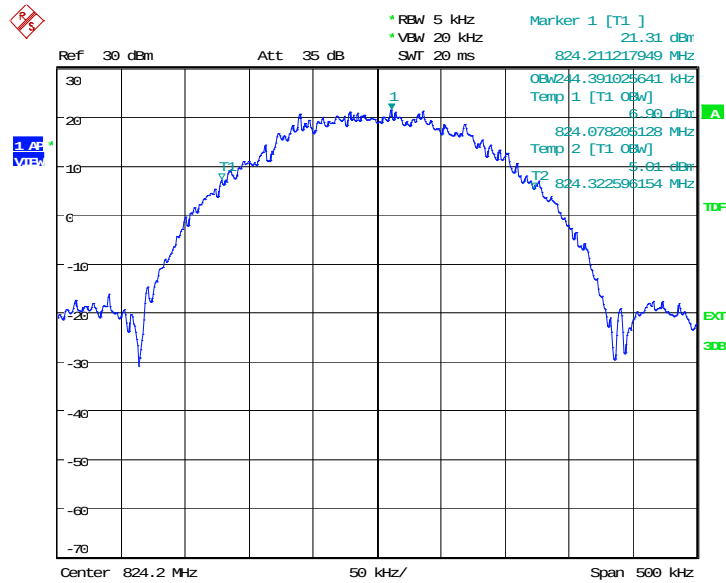
EGPRS 850(99% BW) per FCC rules

Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)
824.2	244.391
836.6	248.397
848.8	249.199

Expanded measurement uncertainty for this test item is 1.1 kHz, $k=2$

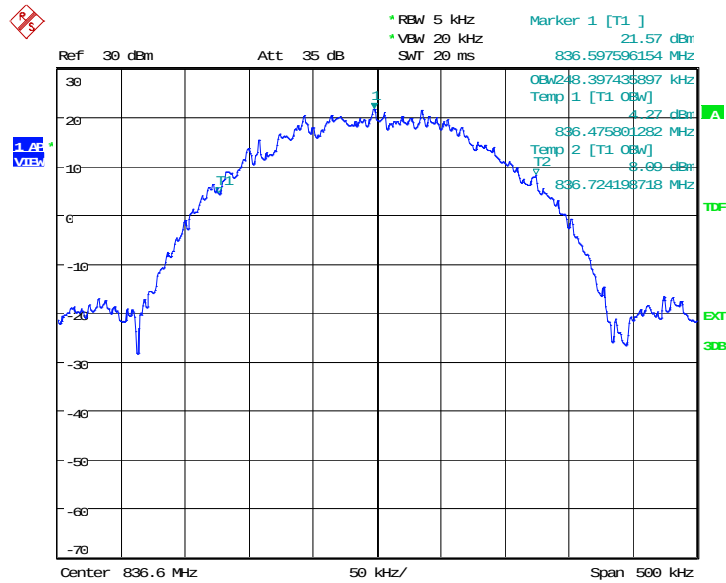
EGPRS 850

Channel 128-Occupied Bandwidth (99% BW)



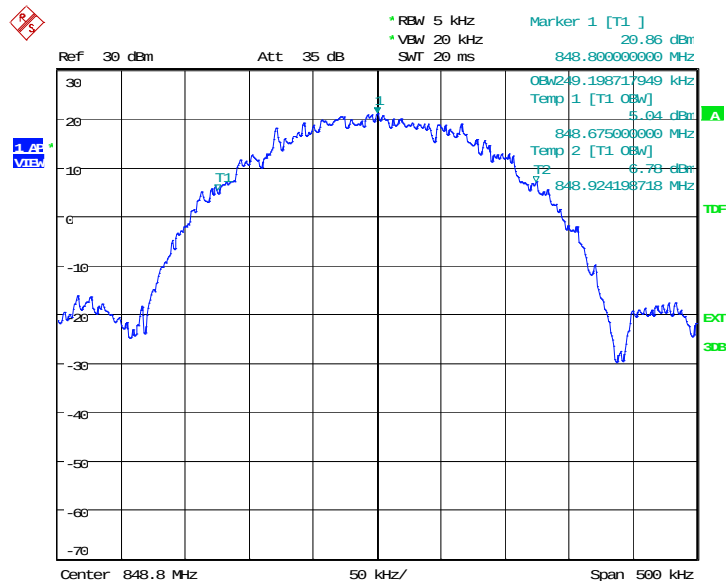
Date: 31.MAR.2015 18:21:40

Channel 190-Occupied Bandwidth (99% BW)



Date: 31.MAR.2015 18:22:12

Channel 251-Occupied Bandwidth (99% BW)



Date: 31.MAR.2015 18:22:44

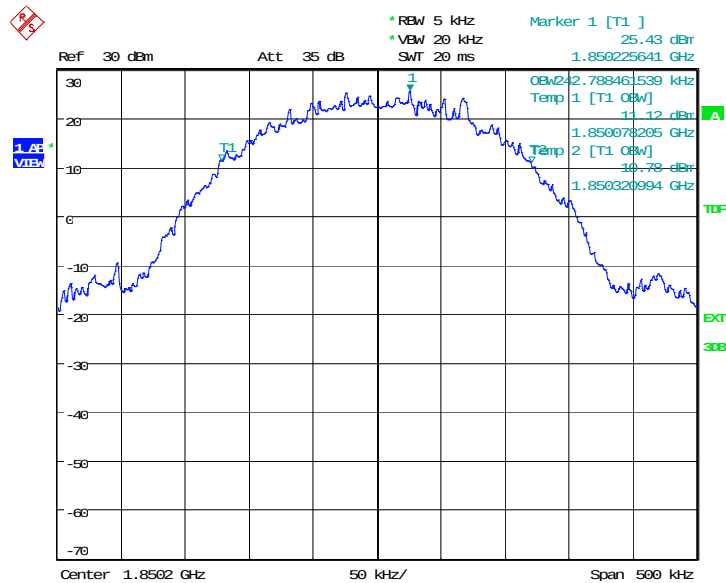
PCS 1900(99% BW) per FCC rules

Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)
1850.2	242.788
1880.0	244.391
1909.8	244.391

Expanded measurement uncertainty for this test item is 1.1 kHz, $k=2$

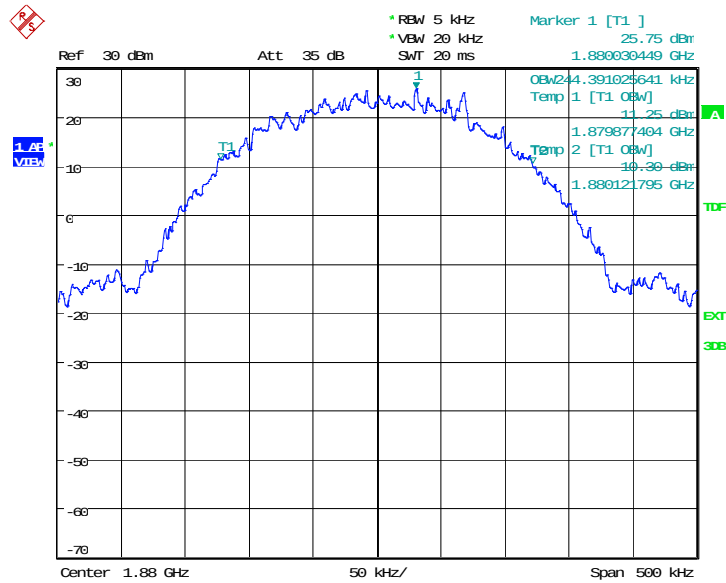
PCS 1900

Channel 512-Occupied Bandwidth (99% BW)



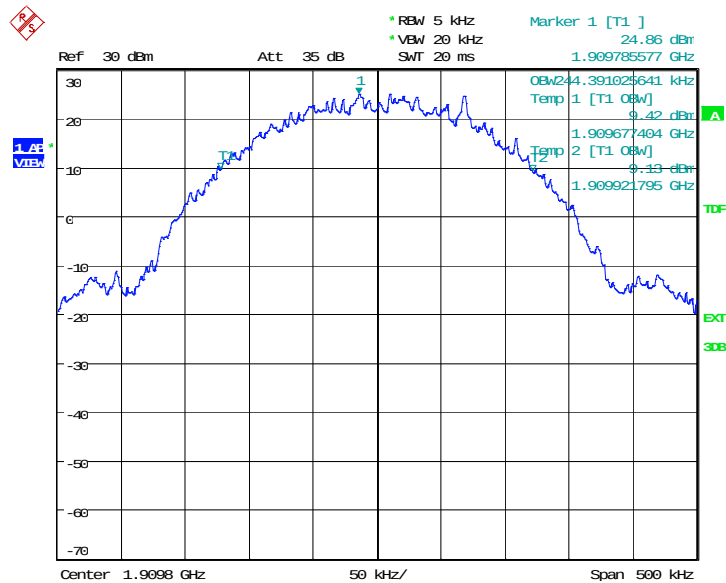
Date: 31.MAR.2015 16:26:30

Channel 661-Occupied Bandwidth (99% BW)



Date: 31.MAR.2015 16:27:02

Channel 810-Occupied Bandwidth (99% BW)



Date: 31.MAR.2015 16:27:34

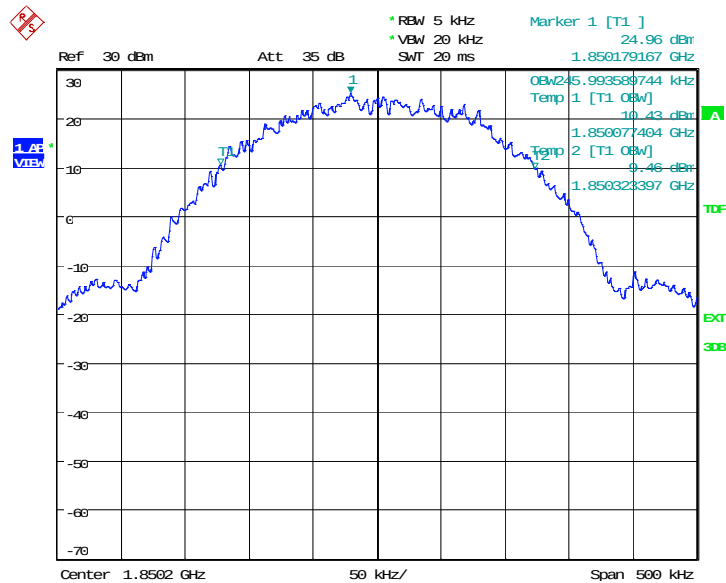
GPRS 1900(99% BW) per FCC rules

Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)
1850.2	245.994
1880.0	244.391
1909.8	242.788

Expanded measurement uncertainty for this test item is 1.1 kHz, $k=2$

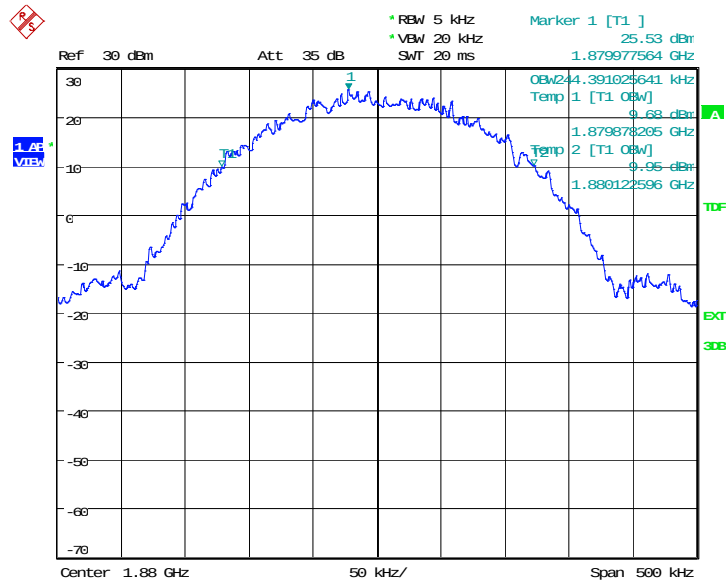
GPRS 1900

Channel 512-Occupied Bandwidth 99% BW)



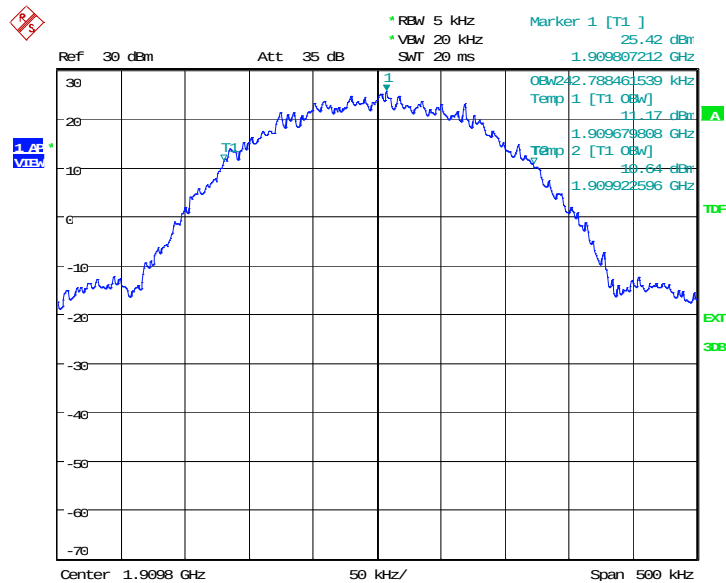
Date: 31.MAR.2015 18:11:57

Channel 661-Occupied Bandwidth (99% BW)



Date: 31.MAR.2015 18:12:29

Channel 810-Occupied Bandwidth (99% BW)



Date: 31.MAR.2015 18:13:01

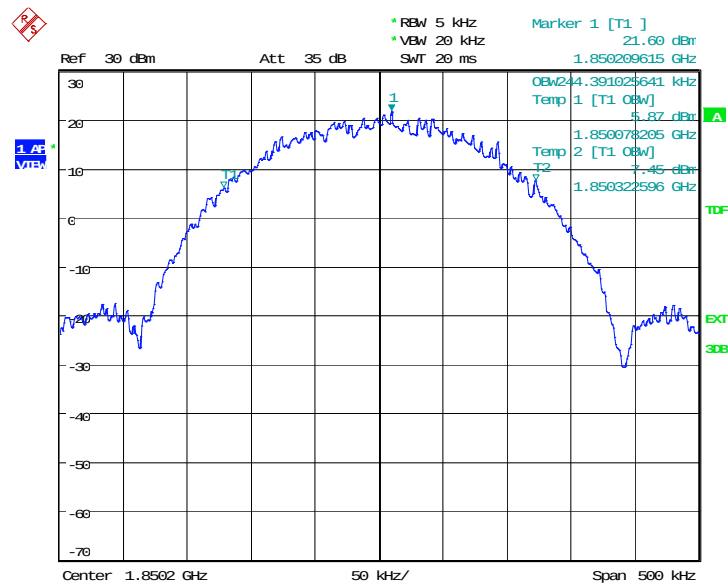
EGPRS 1900(99% BW) per FCC rules

Frequency(MHz)	Occupied Bandwidth (99% BW)(kHz)
1850.2	244.391
1880.0	245.192
1909.8	247.596

Expanded measurement uncertainty for this test item is 1.1 kHz, $k=2$

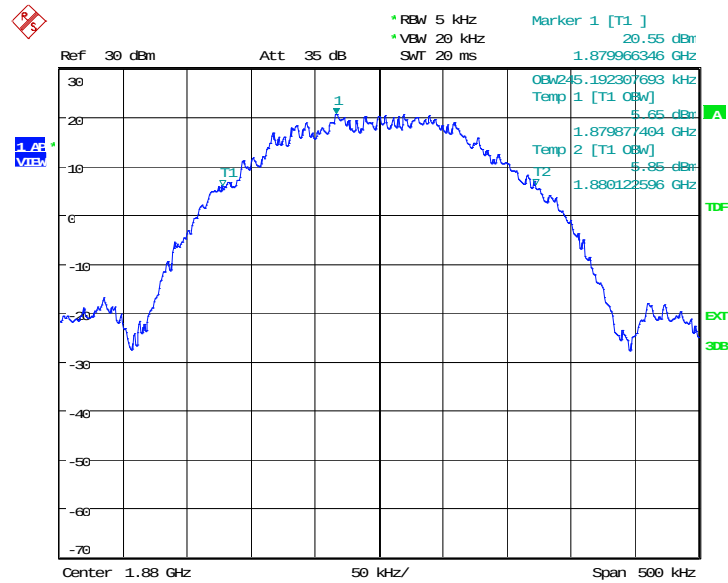
EGPRS 1900

Channel 512-Occupied Bandwidth (99% BW)

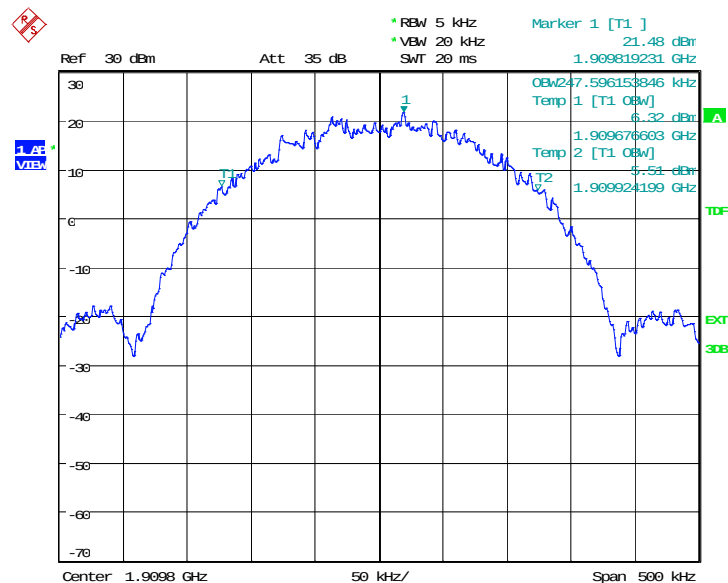


Date: 31.MAR.2015 18:31:27

Channel 661-Occupied Bandwidth (99% BW)



Channel 810-Occupied Bandwidth (99% BW)



A.5 EMISSION BANDWIDTH

Reference

FCC: CFR Part 22.917(b), 24.238(b).

A.5.1 Emission Bandwidth Results

The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

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

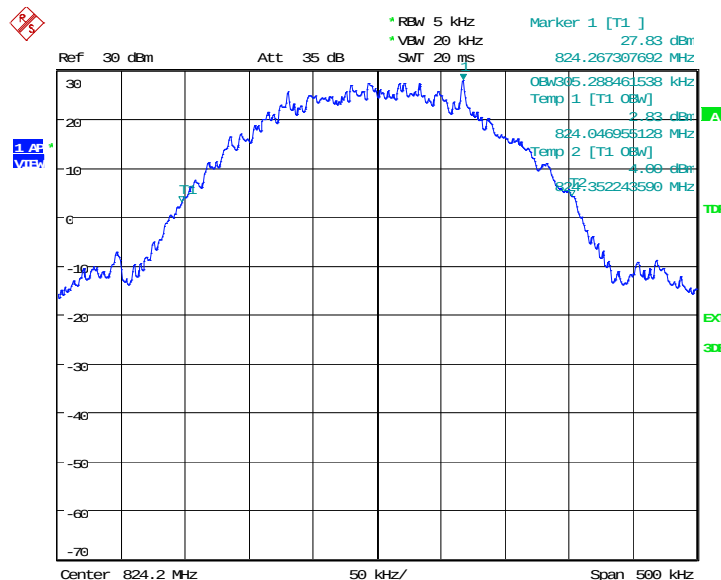
GSM 850(100% BW)

Frequency(MHz)	Emission Bandwidth (100% BW)(kHz)
824.2	305.288
836.6	306.891
848.8	307.692

Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

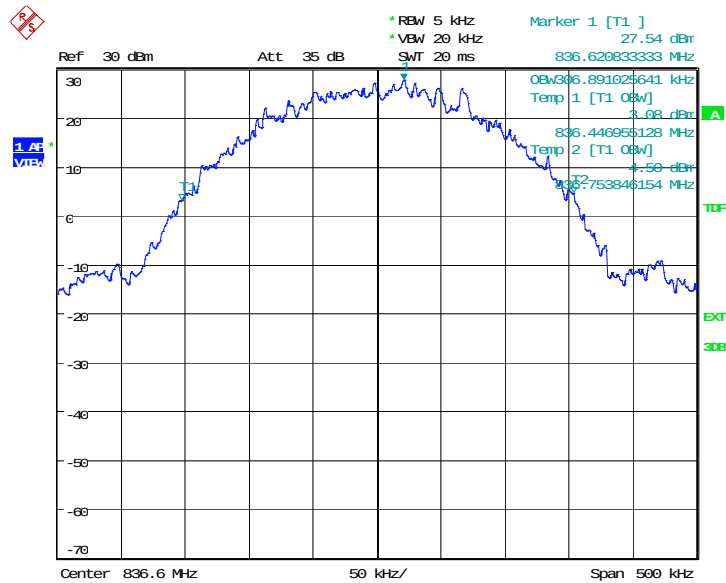
GSM 850

Channel 128-Emission Bandwidth (100% BW)



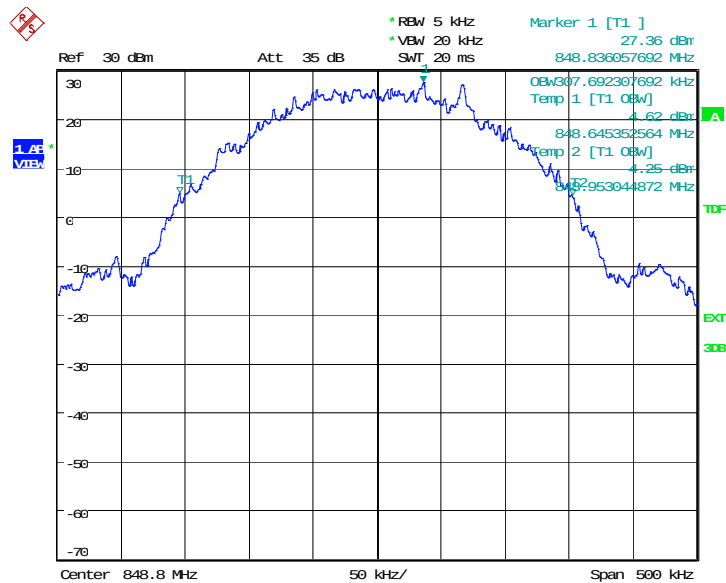
Date: 31.MAR.2015 16:10:15

Channel 190-Emission Bandwidth (100% BW)



Date: 31.MAR.2015 16:10:47

Channel 251-Emission Bandwidth (100% BW)



Date: 31.MAR.2015 16:11:19

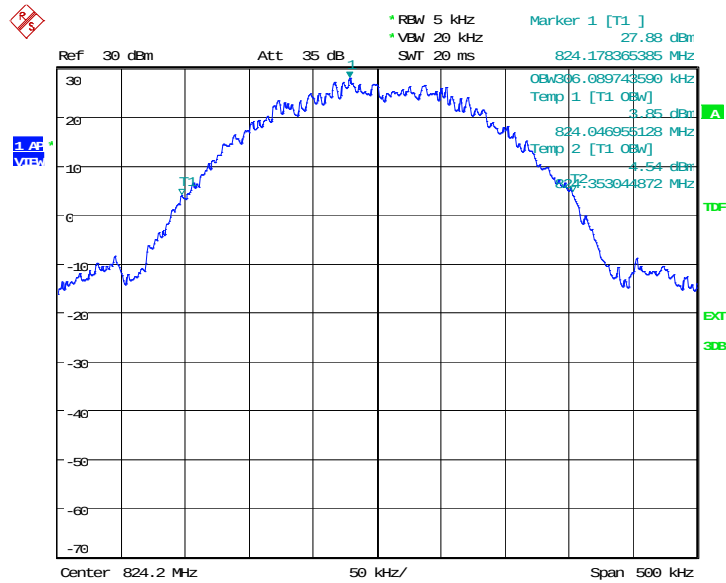
GPRS 850(100% BW)

Frequency(MHz)	Emission Bandwidth (100% BW)(kHz)
824.2	306.090
836.6	304.487
848.8	308.494

Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

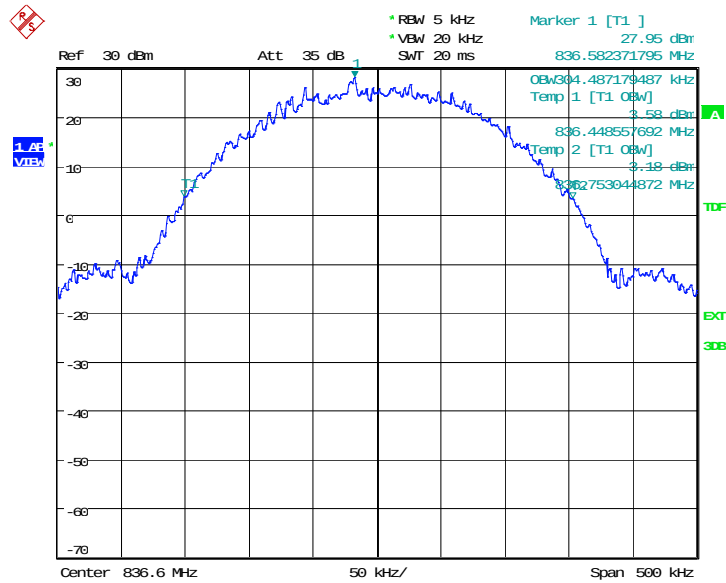
GPRS 850

Channel 128-Emission Bandwidth (100% BW)



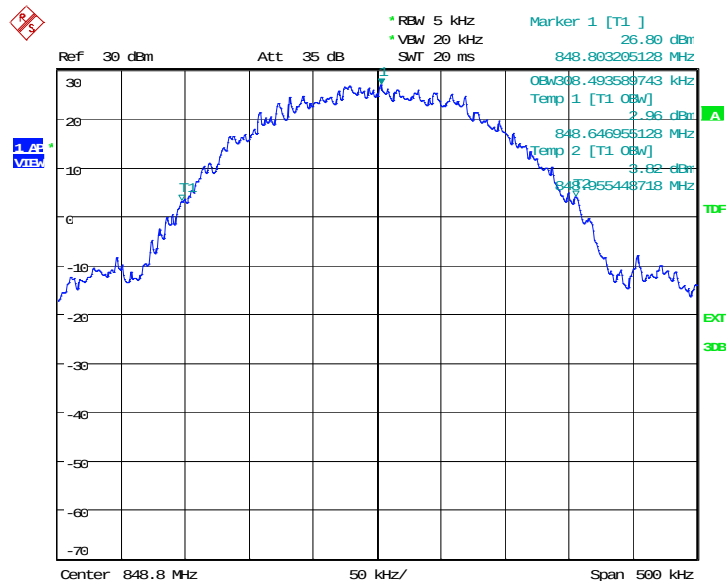
Date: 31.MAR.2015 17:57:38

Channel 190-Emission Bandwidth (100% BW)



Date: 31.MAR.2015 17:58:10

Channel 251-Emission Bandwidth (100% BW)



Date: 31.MAR.2015 17:58:42

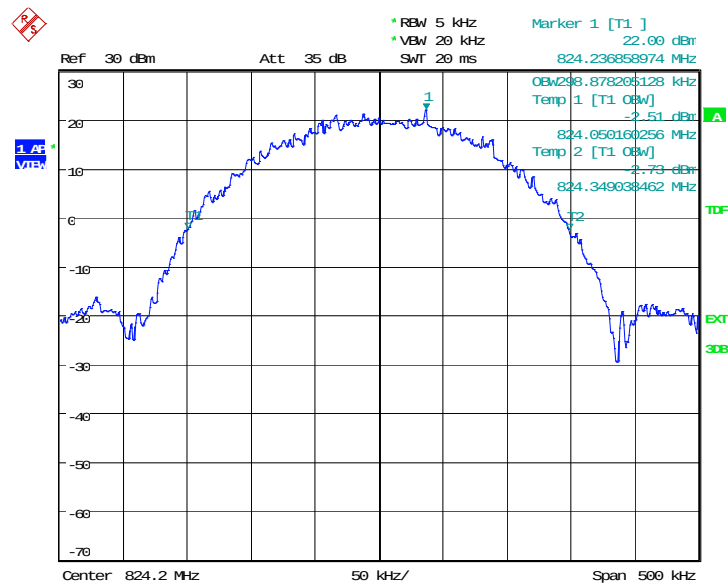
EGPRS 850(100%)

Frequency(MHz)	Emission Bandwidth (100% BW)(kHz)
824.2	298.878
836.6	296.474
848.8	300.481

Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

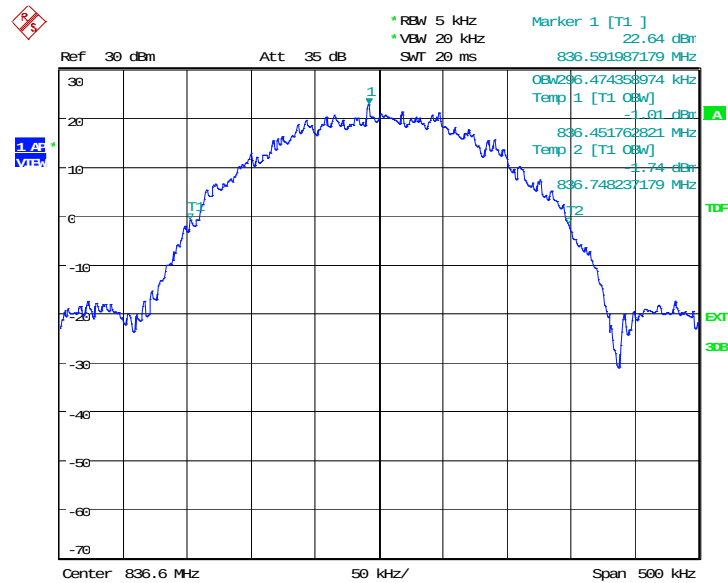
EGPRS 850

Channel 128-Emission Bandwidth (100% BW)



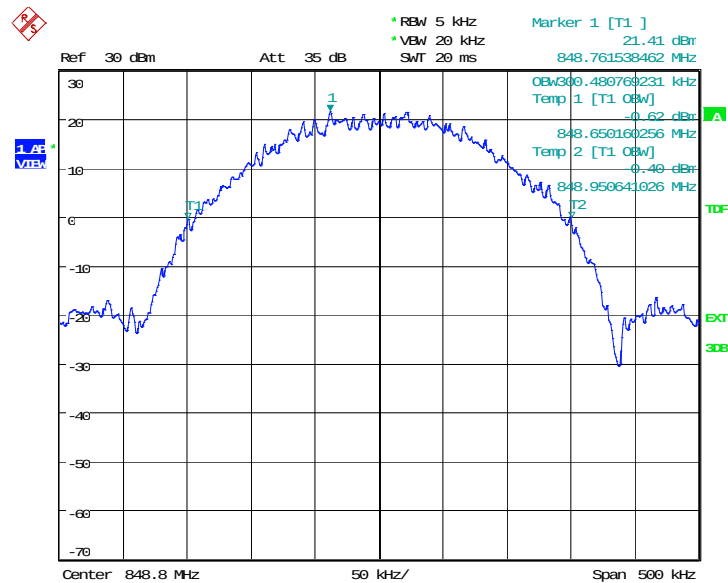
Date: 31.MAR.2015 18:23:18

Channel 190-Emission Bandwidth (100% BW)



Date: 31.MAR.2015 18:23:50

Channel 251-Emission Bandwidth (100% BW)



Date: 31.MAR.2015 18:24:22

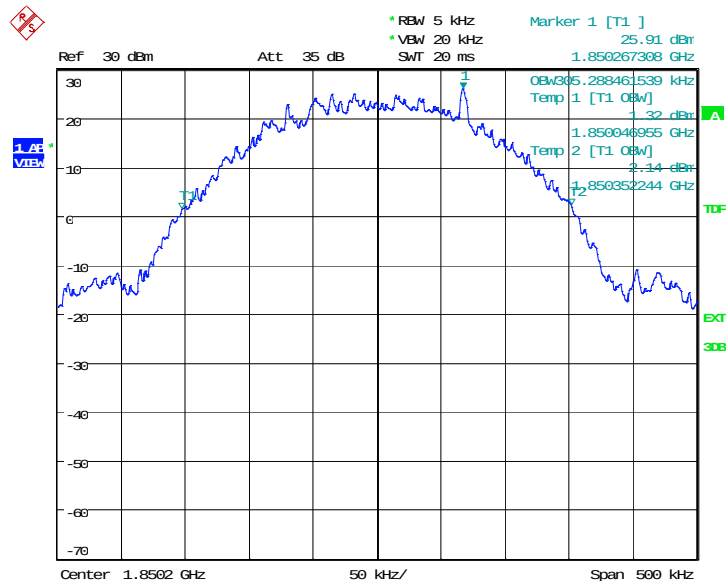
PCS 1900(100% BW)

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

Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

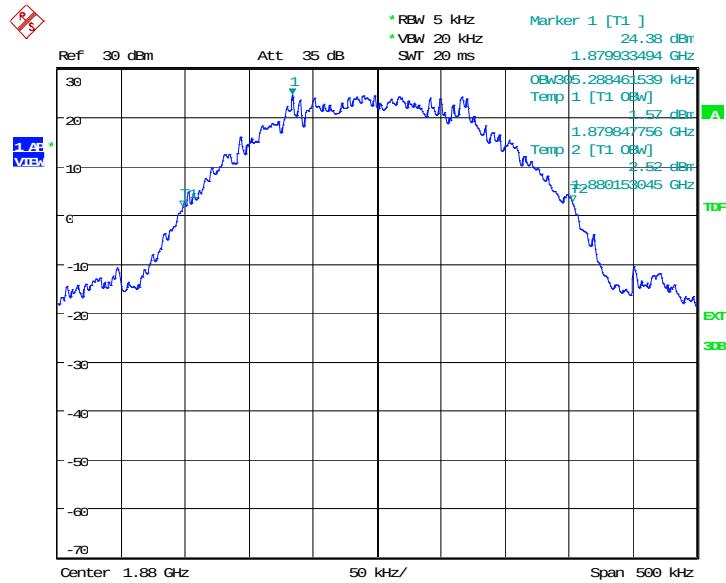
PCS 1900

Channel 512-Emission Bandwidth (100% BW)



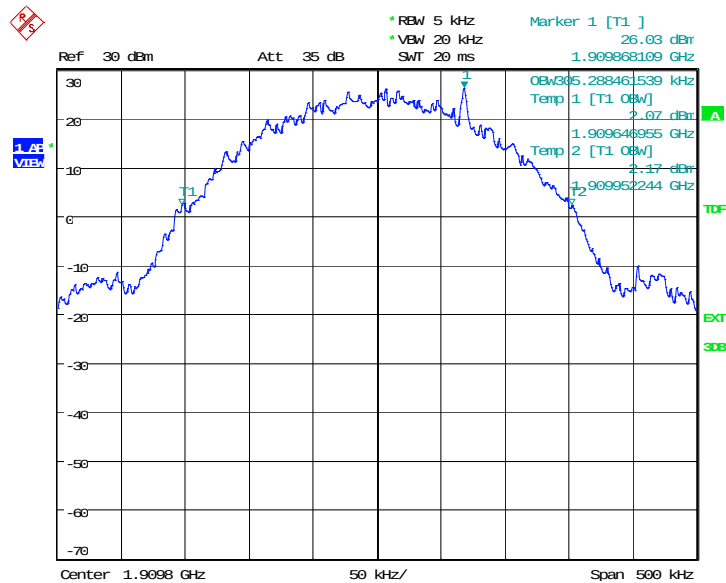
Date: 31.MAR.2015 16:28:08

Channel 661-Emission Bandwidth (100% BW)



Date: 31.MAR.2015 16:28:40

Channel 810-Emission Bandwidth (100% BW)



Date: 31.MAR.2015 16:29:12

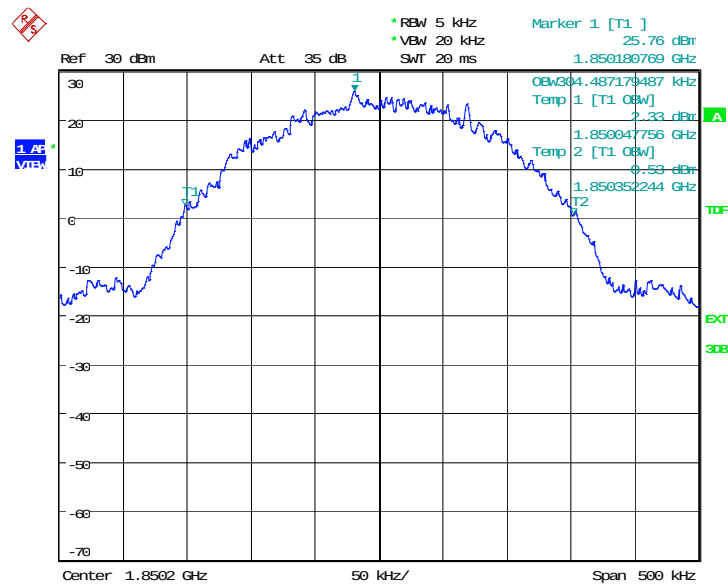
GPRS 1900(100%)

Frequency(MHz)	Emission Bandwidth (100% BW)(kHz)
1850.2	304.487
1880.0	306.090
1909.8	306.090

Expanded measurement uncertainty for this test item is 1.1 kHz, $k=2$

GPRS 1900

Channel 512-Emission Bandwidth (100% BW)



Date: 31.MAR.2015 18:13:35

Ref 30 dBm Att 35 dB

*RBW 5 kHz
*VBW 20 kHz
SWT 20 ms

Marker 1 [T1] 25.68 dBm
1.879980769 GHz

OBW306.089743590 kHz
Temp 1 [T1 OBW] 0.22 dBm
1.879846955 GHz
Temp 2 [T1 OBW] 0.65 dBm
1.880153045 GHz
T2

Center 1.88 GHz 50 kHz/ Span 500 kHz

* RBW 5 kHz
 * VBW 20 kHz
 SWT 20 ms

Marker 1 [T1]
 25.05 dBm
 1.909791987 GHz

Ref 30 dBm
 Att 35 dB

OBW306.089743590 kHz
 Temp 1 [T1 OBW]
 0.38 dBm
 1.909546955 GHz
 Temp 2 [T1 OBW]
 0.65 dBm
 1.909953045 GHz
 T2

Center 1.9098 GHz
 50 kHz/
 Span 500 kHz

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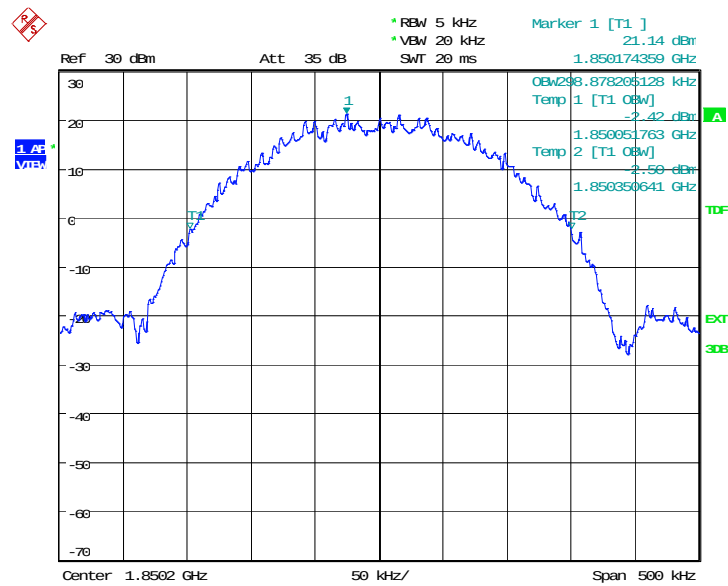
EGPRS 1900(100% BW)

Frequency(MHz)	Emission Bandwidth (100% BW)(kHz)
1850.2	298.878
1880.0	299.679
1909.8	301.282

Expanded measurement uncertainty for this test item is 1.1 kHz, k=2

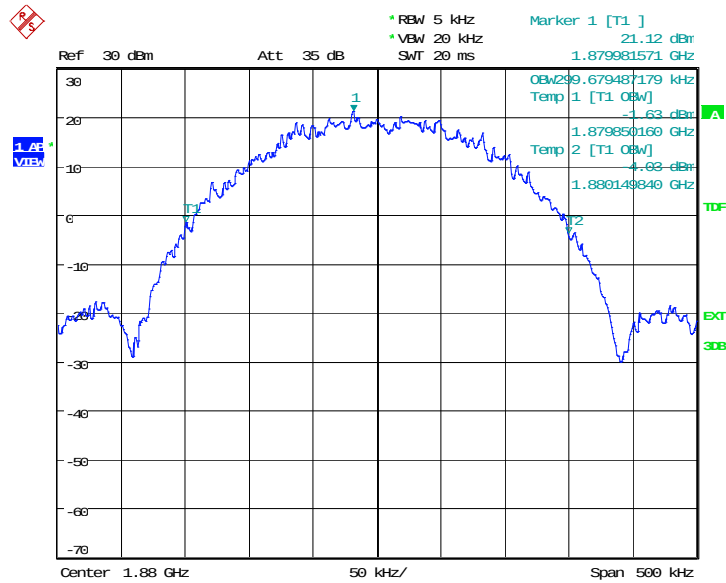
EGPRS 1900

Channel 512-Emission Bandwidth (100% BW)



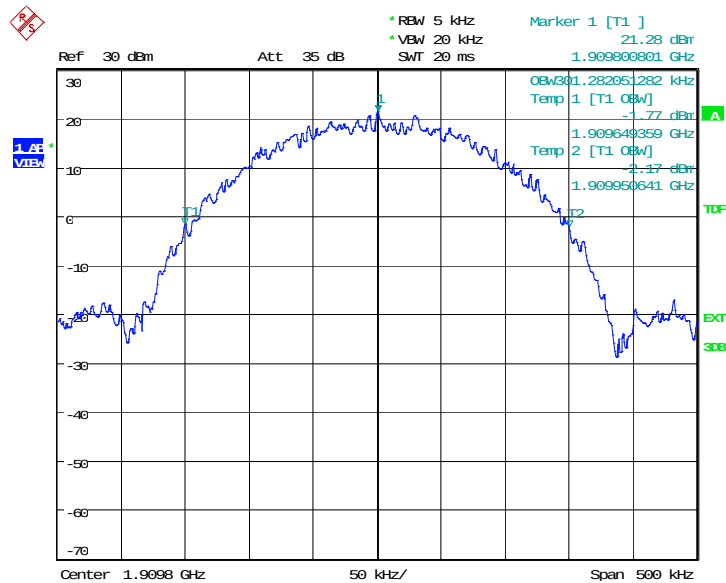
Date: 31.MAR.2015 18:33:05

Channel 661-Emission Bandwidth (100% BW)



Date: 31.MAR.2015 18:33:37

Channel 810-Emission Bandwidth (100% BW)



Date: 31.MAR.2015 18:34:09

A.6 BAND EDGE COMPLIANCE

Reference

FCC: CFR Part 22.917(b), 24.238(b).

A.6.1 Measurement limit

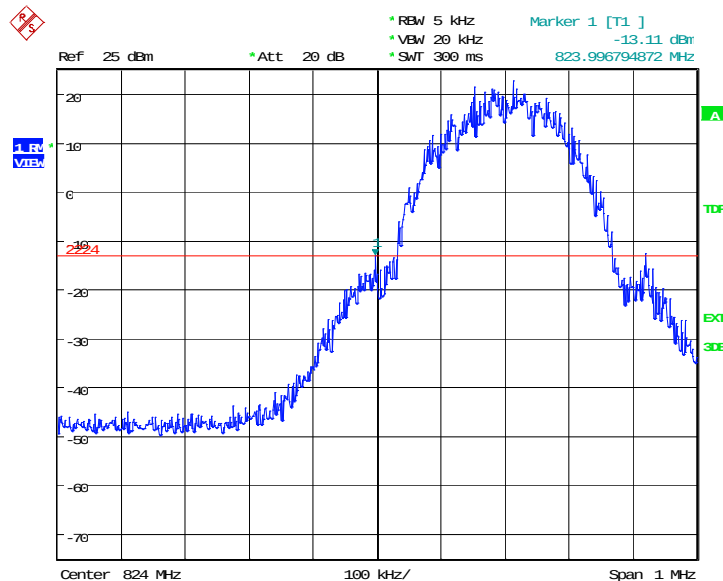
On any frequency outside frequency band of the US Cellular/PCS spectrum, the power of any emission shall be attenuated below the transmitter power (P, in Watts) by at least $43+10\log(P)$ dB. For all power levels +30 dBm to 0 dBm, this becomes a constant specification limit of -13 dBm.

According to KDB 971168 v02r01 6.0, a relaxation of the reference bandwidth is often provided for measurements within a specified frequency range at the edge of the authorized frequency block/band. This is often implemented by permitting the use of a narrower RBW (typically limited to a minimum RBW of 1% of the OBW) for measuring the out-of-band emissions without a requirement to integrate the result over the full reference bandwidth.

A.6.2 Measurement result

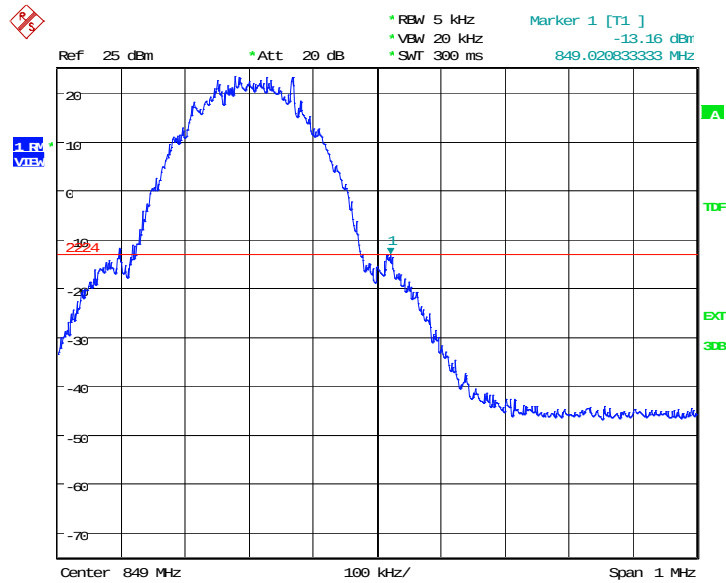
GSM 850

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



Date: 31.MAR.2015 16:11:28

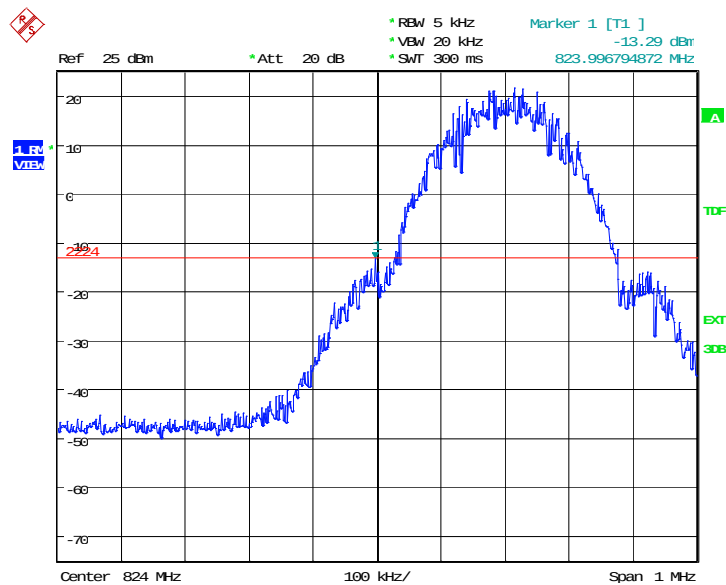
HIGH BAND EDGE BLOCK-C (GSM850) –Channel 251



Date: 31.MAR.2015 16:13:33

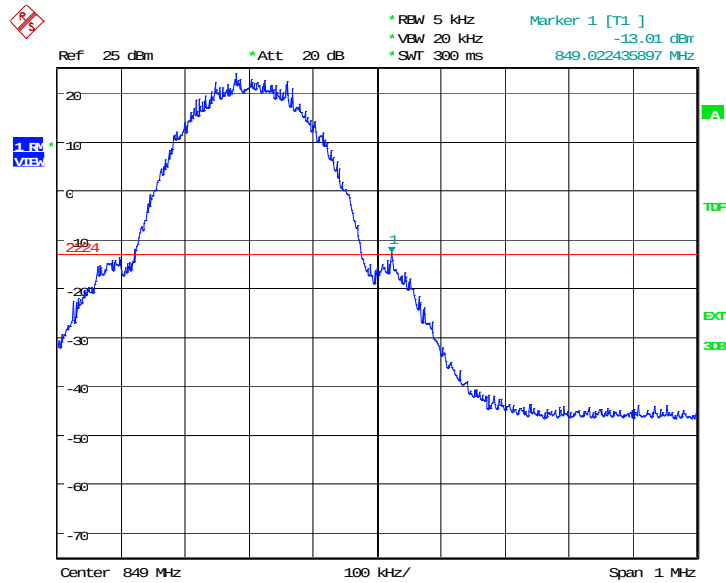
GPRS 850

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



Date: 31.MAR.2015 17:58:51

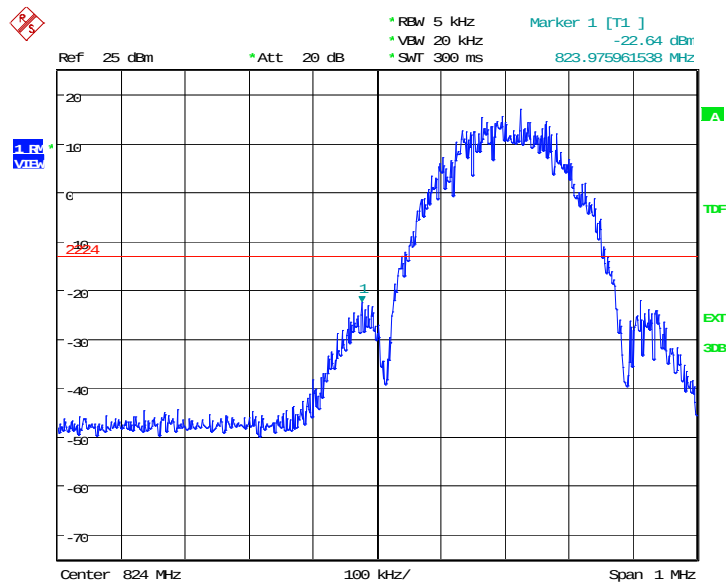
HIGH BAND EDGE BLOCK-C (GSM850) –Channel 251



Date: 31.MAR.2015 18:00:55

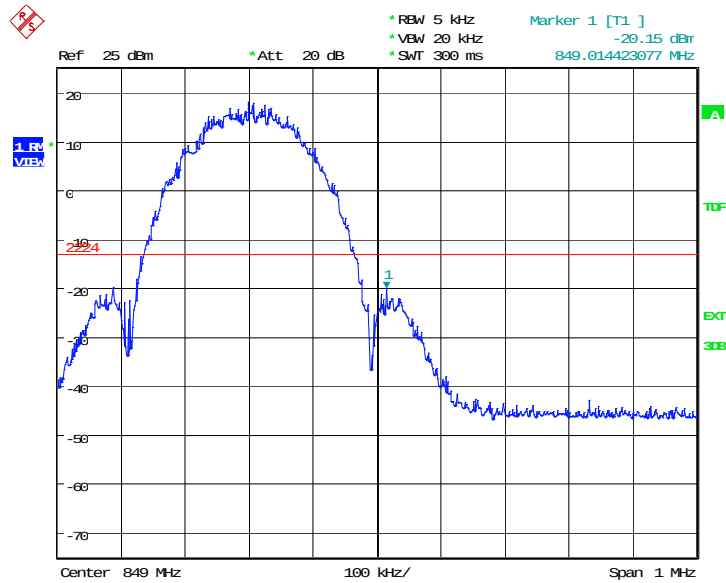
EGPRS 850-8PSK

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



Date: 31.MAR.2015 18:24:31

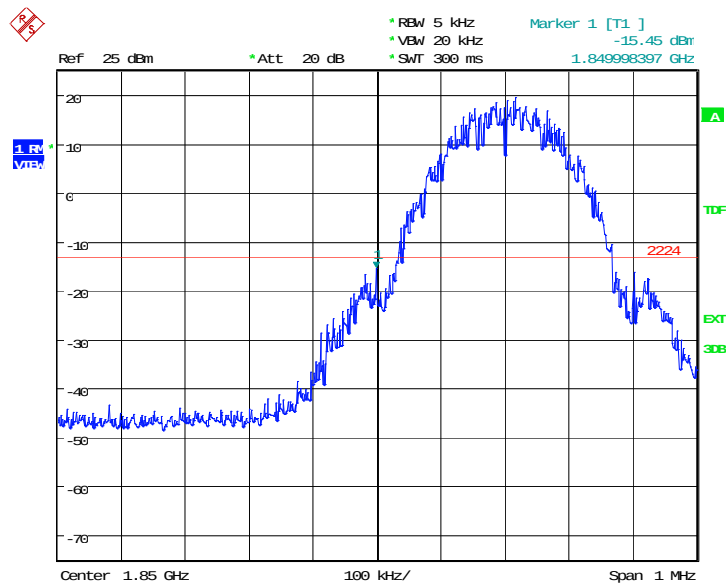
HIGH BAND EDGE BLOCK-C (GSM850) –Channel 251



Date: 31.MAR.2015 18:26:35

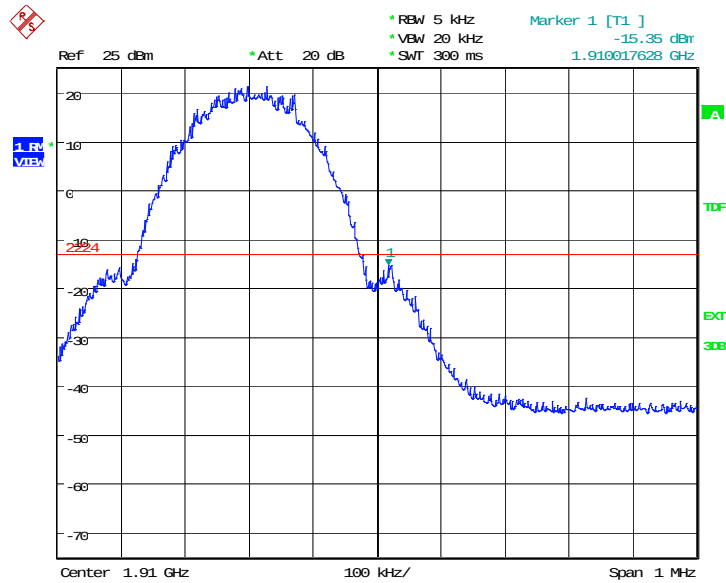
PCS 1900

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



Date: 31.MAR.2015 16:29:21

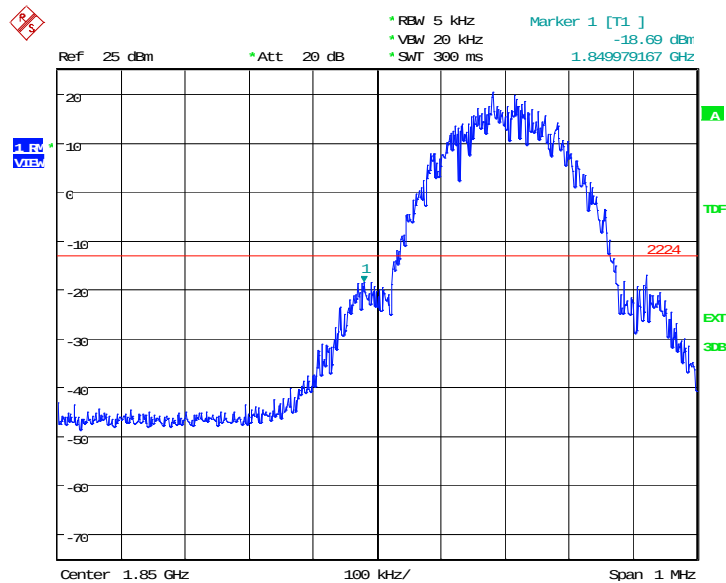
HIGH BAND EDGE BLOCK-C (PCS-1900) –Channel 810



Date: 31.MAR.2015 16:31:25

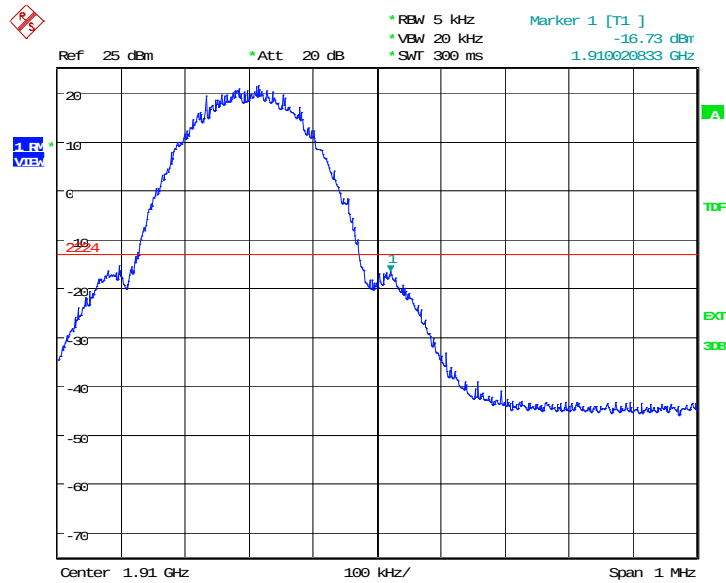
GPRS 1900

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



Date: 31.MAR.2015 18:14:48

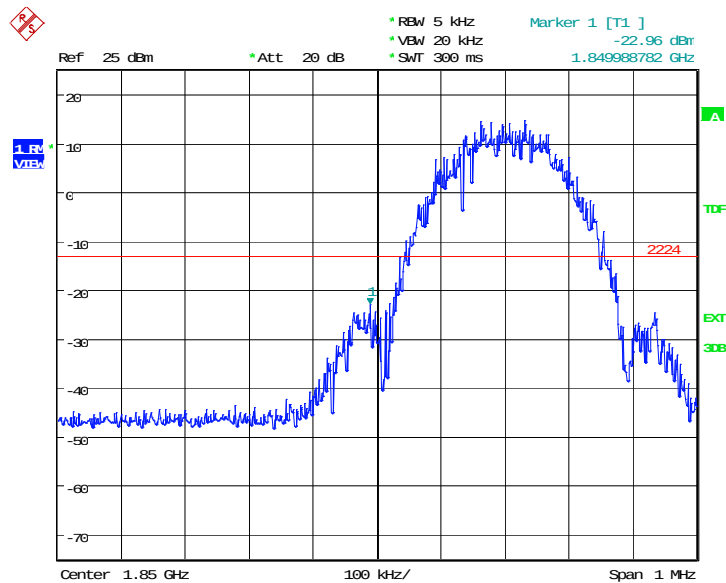
HIGH BAND EDGE BLOCK-C (PCS-1900) –Channel 810



Date: 31.MAR.2015 18:16:52

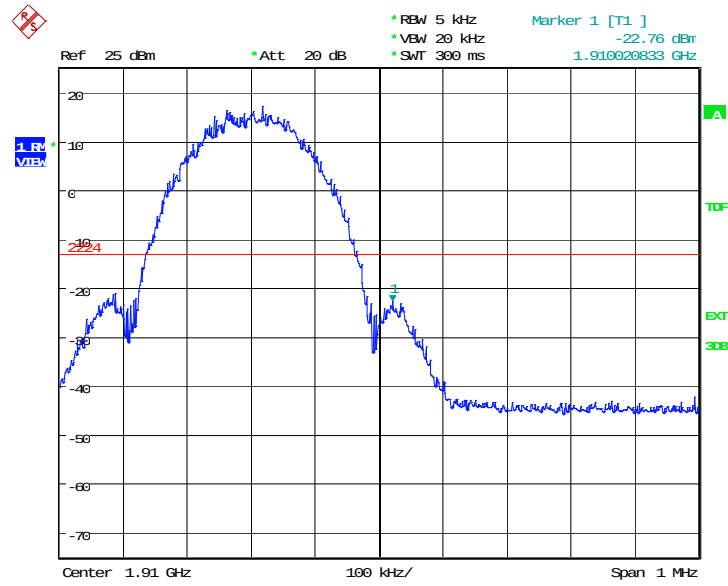
EGPRS 1900-8PSK

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



Date: 31.MAR.2015 18:34:18

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



Date: 31.MAR.2015 18:36:22

A.7 CONDUCTED SPURIOUS EMISSION

Reference

FCC: CFR Part 2.1057, 22.917, 24.238.

A.7.1 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 mobile station equipment tested, this equates to a frequency range of 13 MHz to 9 GHz, data taken from 10 MHz to 25 GHz.
2. Determine EUT transmit frequencies: below outlines the band edge frequencies pertinent to conducted emissions testing.
3. According to KDB 971168 v02r01 6.0, the applicable rule part specifies the reference bandwidth for measuring unwanted emission levels (typically, 100 kHz if the authorized frequency band/block is at or below 1 GHz and 1 MHz if the authorized frequency band/block is above 1 GHz)

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.7.2 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

Measurement Uncertainty: 0.3dB

GSM850

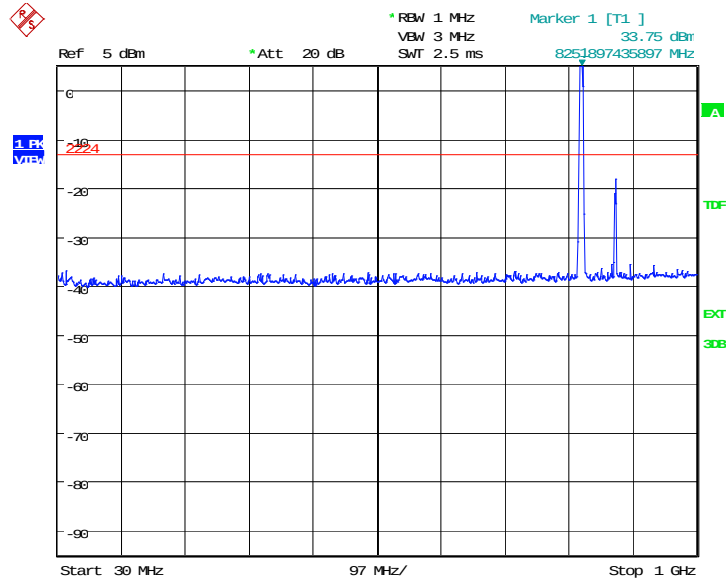
Harmonic	Tx ch. 128 Freq. (MHz)	Level (dBm)	Tx ch. 190 Freq. (MHz)	Level (dBm)	Tx ch. 251 Freq. (MHz)	Level (dBm)
2	1648.4	nf	1673.2	31.44	1697.6	-31.83
3	2472.6	nf	2509.8	nf	2546.4	nf
4	3296.8	nf	3346.4	nf	3395.2	nf
5	4121	nf	4183	nf	4244	nf
6	4945.2	nf	5019.6	nf	5092.8	nf
7	5769.4	nf	5856.2	nf	5941.6	nf
8	6593.6	nf	6692.8	nf	6790.4	nf
9	7417.8	nf	7529.4	nf	7639.2	nf
10	8242	nf	8366	nf	8488	nf
nf: Noise floor						

GSM850

A.7.3.1 Channel 128: 30MHz – 1GHz

Spurious emission limit –13dBm.

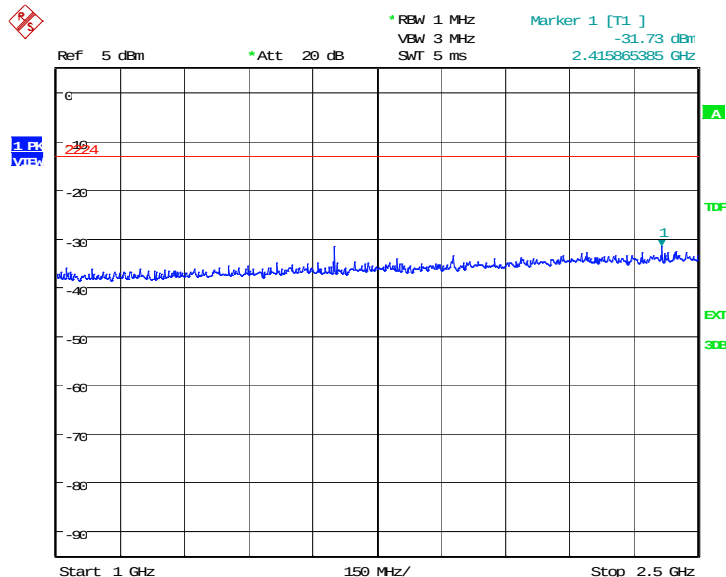
NOTE: peak above the limit line is the carrier frequency.



Date: 31.MAR.2015 16:15:59

A.7.3.2 Channel 128: 1GHz – 2.5GHz

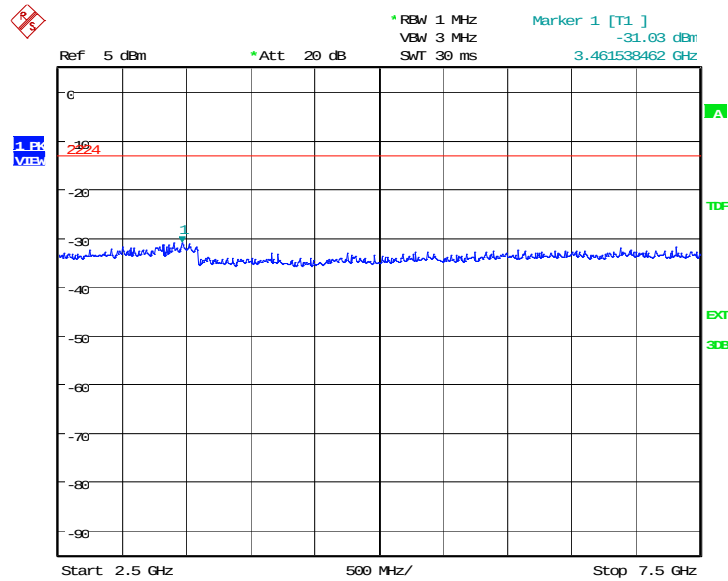
Spurious emission limit –13dBm.



Date: 31.MAR.2015 16:16:27

A.7.3.3 Channel 128: 2.5GHz – 7.5GHz

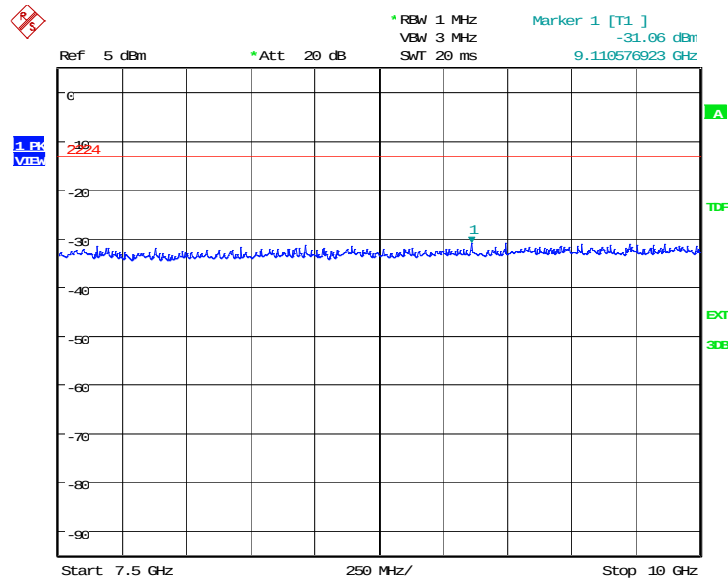
Spurious emission limit –13dBm.



Date: 31.MAR.2015 16:16:55

A.7.3.4 Channel 128: 7.5GHz –10GHz

Spurious emission limit –13dBm.

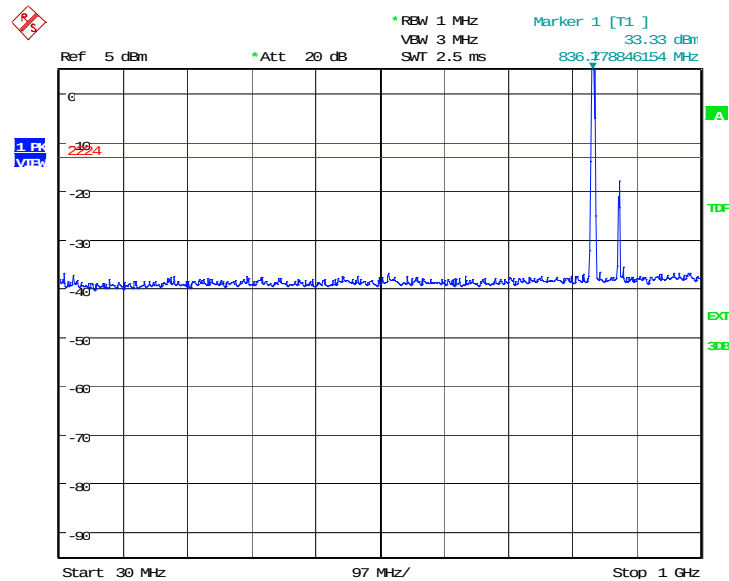


Date: 31.MAR.2015 16:17:23

A.7.3.5 Channel 190: 30MHz – 1GHz

Spurious emission limit –13dBm

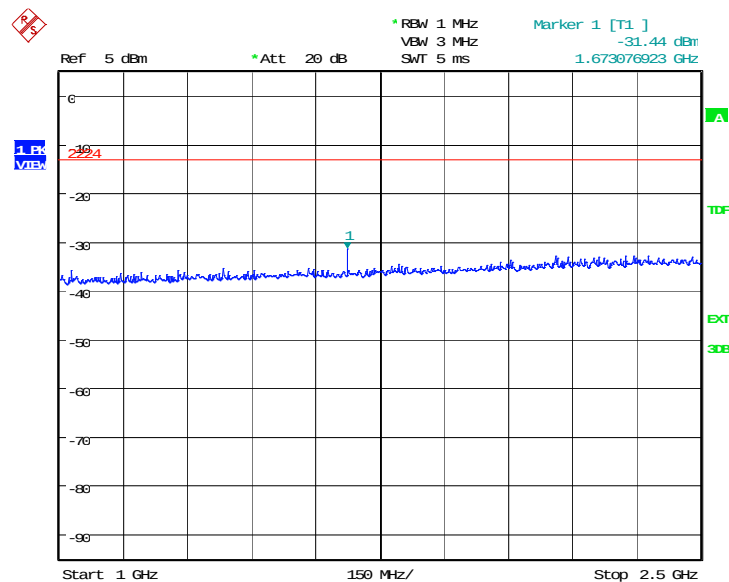
NOTE: peak above the limit line is the carrier frequency.



Date: 31.MAR.2015 16:17:52

A.7.3.6 Channel 190: 1GHz – 2.5GHz

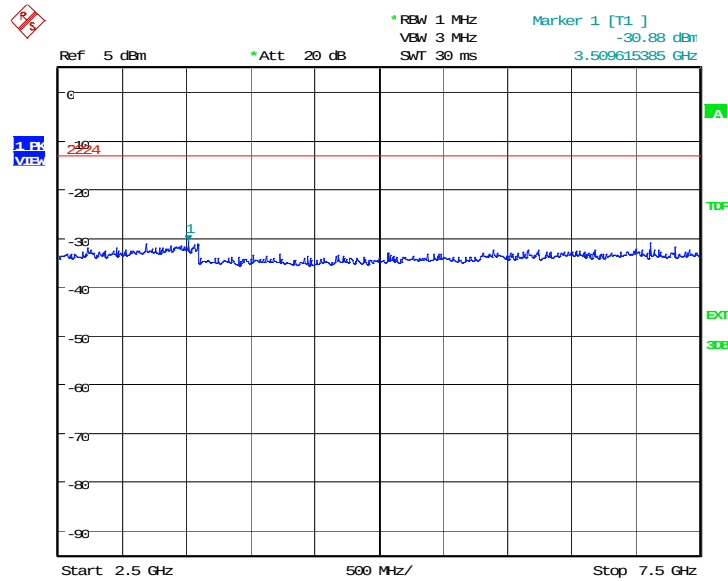
Spurious emission limit –13dBm



Date: 31.MAR.2015 16:18:20

A.7.3.7 Channel 190: 2.5GHz –7.5GHz

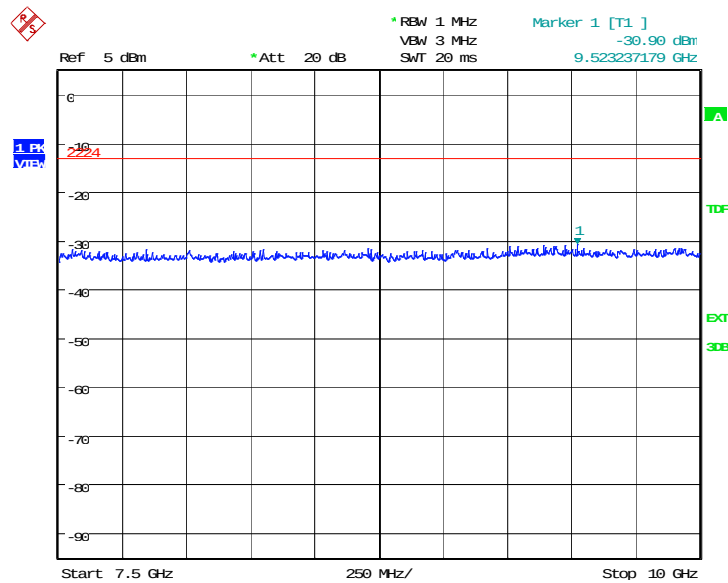
Spurious emission limit –13dBm



Date: 31.MAR.2015 16:18:48

A.7.3.8 Channel 190: 7.5GHz –10GHz

Spurious emission limit –13dBm

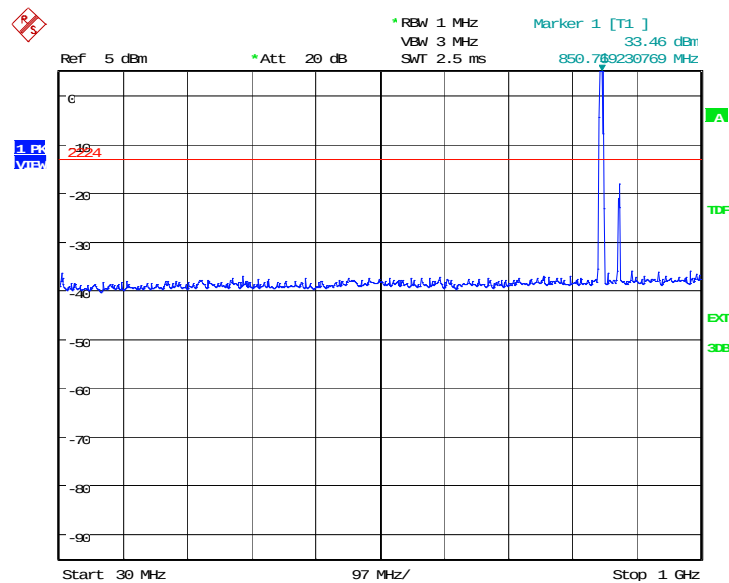


Date: 31.MAR.2015 16:19:16

A.7.3.9 Channel 251: 30MHz – 1GHz

Spurious emission limit –13dBm.

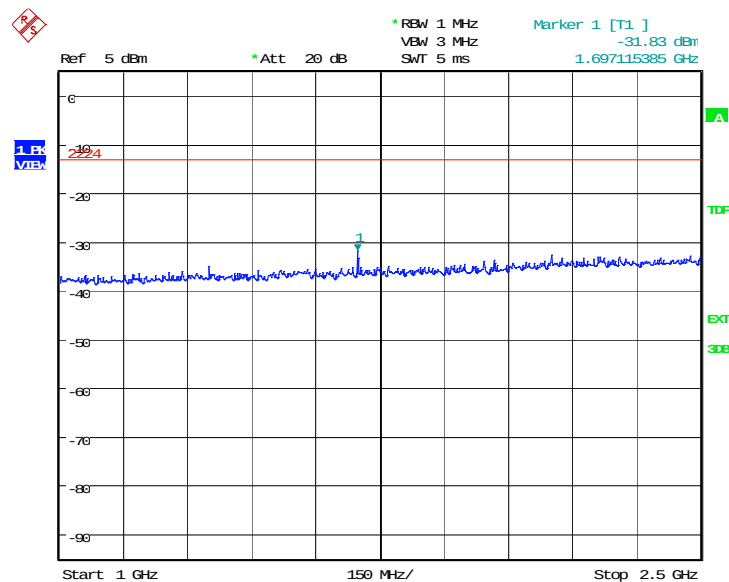
NOTE: peak above the limit line is the carrier frequency.



Date: 31.MAR.2015 16:19:45

A.7.3.10 Channel 251: 1GHz – 2.5GHz

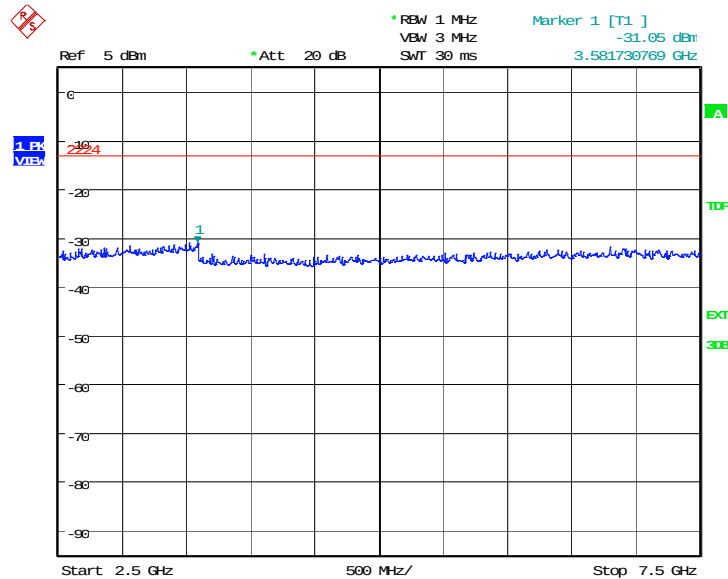
Spurious emission limit –13dBm.



Date: 31.MAR.2015 16:20:13

A.7.3.11 Channel 251: 2.5GHz – 7.5GHz

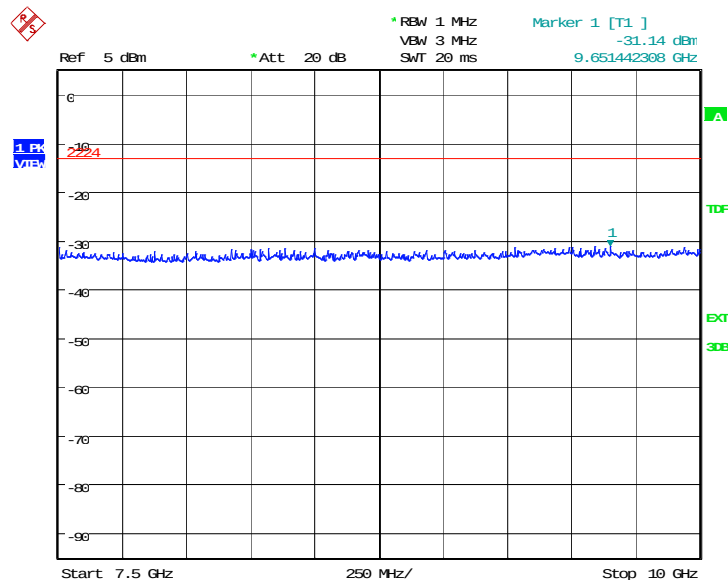
Spurious emission limit –13dBm.



Date: 31.MAR.2015 16:20:41

A.7.3.12 Channel 251: 7.5GHz – 10GHz

Spurious emission limit –13dBm.



Date: 31.MAR.2015 16:21:09

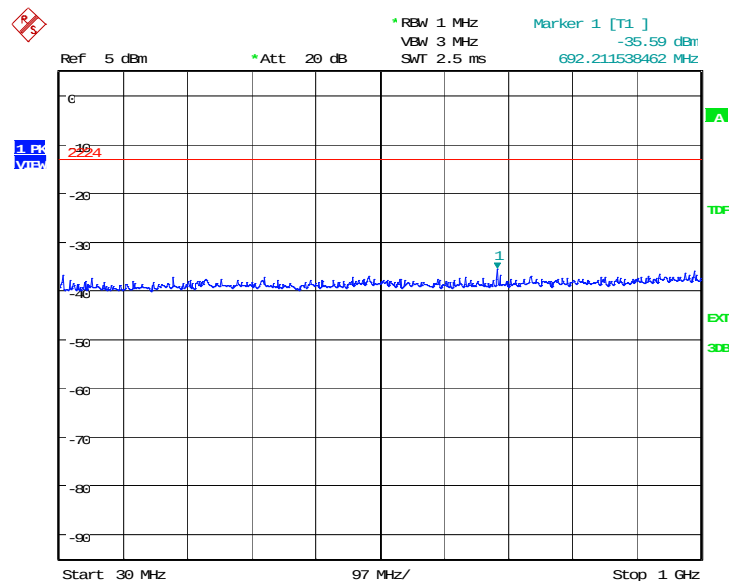
PCS1900

Harmonic	Tx ch. 512 Freq. (MHz)	Level (dBm)	Tx ch. 661 Freq. (MHz)	Level (dBm)	Tx ch. 810 Freq. (MHz)	Level (dBm)
2	3700.4	nf	3760	nf	3819.6	nf
3	5550.6	nf	5640	nf	5729.4	nf
4	7400.8	nf	7520	nf	7639.2	nf
5	9251.0	nf	9400	nf	9549.0	nf
6	11101.2	nf	11280	nf	11458.8	nf
7	12951.4	nf	13160	nf	13368.6	nf
8	14801.6	nf	15040	nf	15278.4	nf
9	16651.8	nf	16920	nf	17188.2	nf
10	18502.0	nf	18800	nf	19098.0	nf
nf: Noise floor						

PCS1900

A.7.3.17 Channel 512: 30MHz – 1GHz

Spurious emission limit –13dBm.

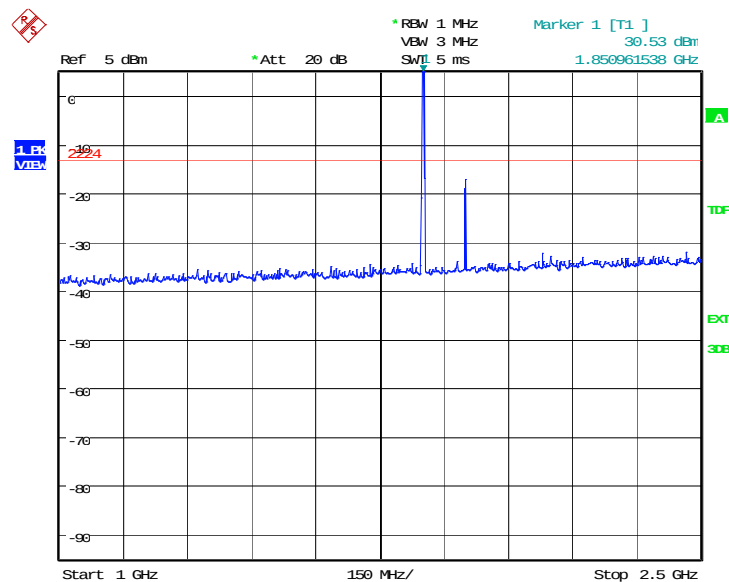


Date: 31.MAR.2015 16:33:51

A.7.3.18 Channel 512: 1GHz – 2.5GHz

Spurious emission limit –13dBm.

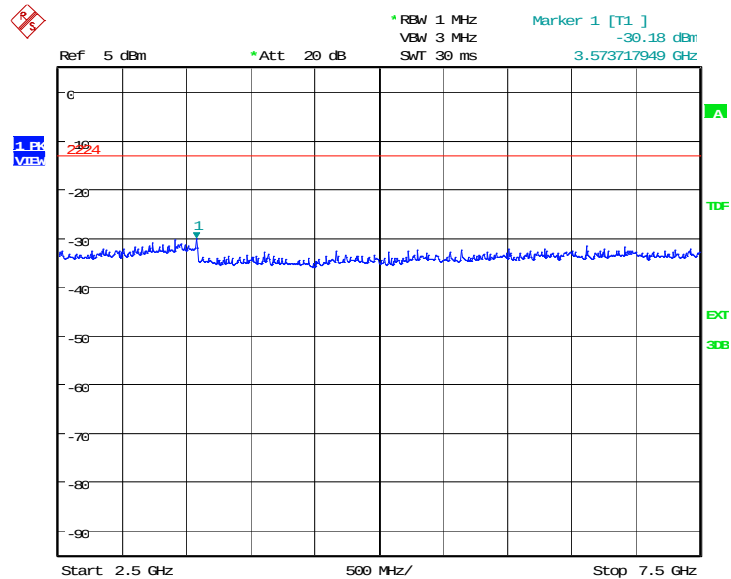
NOTE: peak above the limit line is the carrier frequency.



Date: 31.MAR.2015 16:34:19

A.7.3.19 Channel 512: 2.5GHz – 7.5GHz

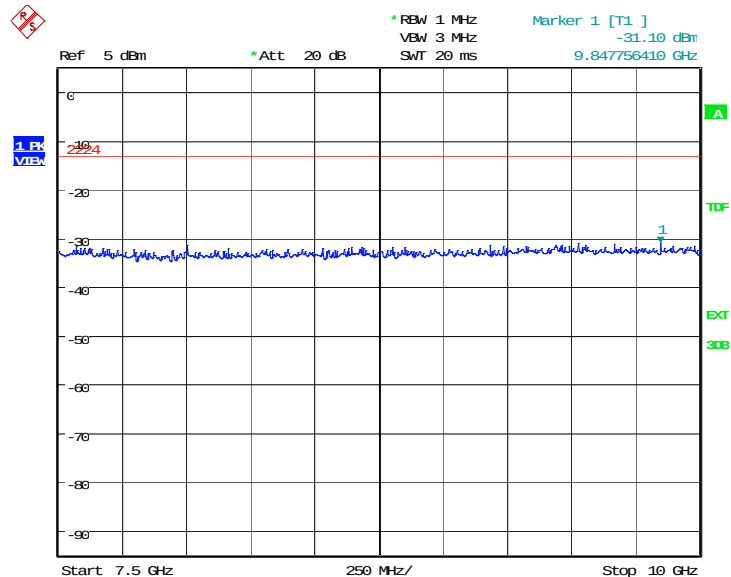
Spurious emission limit –13dBm.



Date: 31.MAR.2015 16:34:47

A.7.3.20 Channel 512: 7.5GHz –10GHz

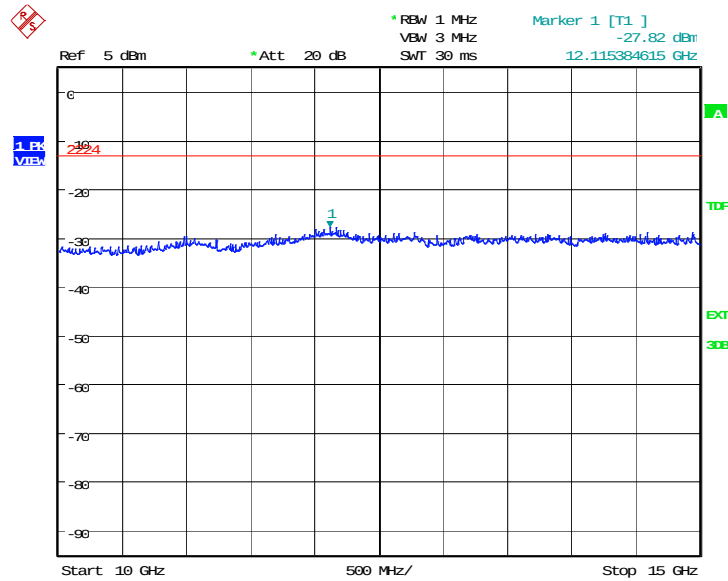
Spurious emission limit –13dBm.



Date: 31.MAR.2015 16:35:16

A.7.3.21 Channel 512: 10GHz –15GHz

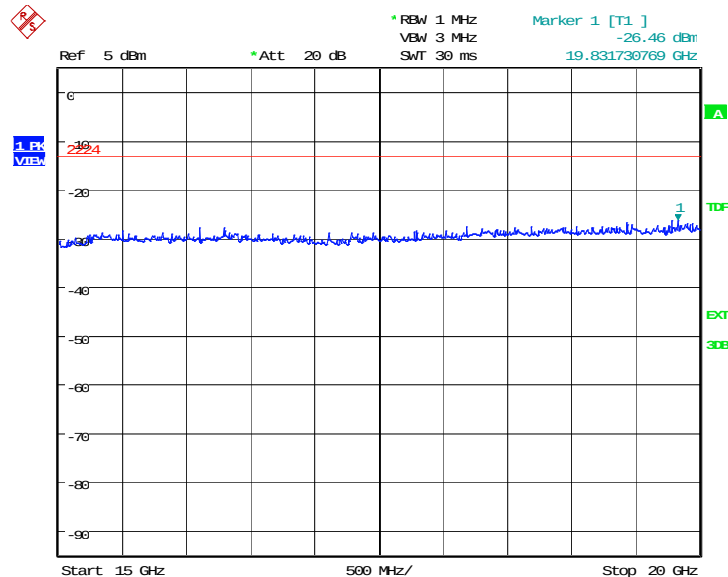
Spurious emission limit –13dBm.



Date: 31.MAR.2015 16:35:44

A.7.3.22 Channel 512: 15GHz –20GHz

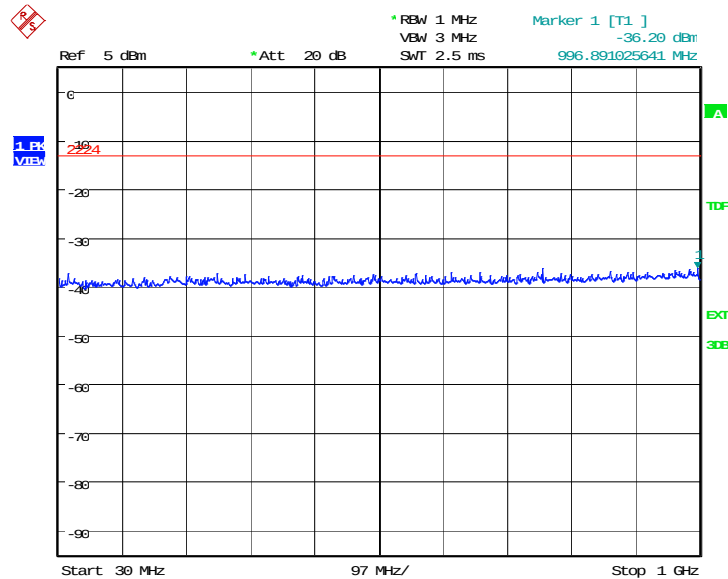
Spurious emission limit –13dBm.



Date: 31.MAR.2015 16:36:12

A.7.3.23 Channel 661: 30MHz – 1GHz

Spurious emission limit –13dBm

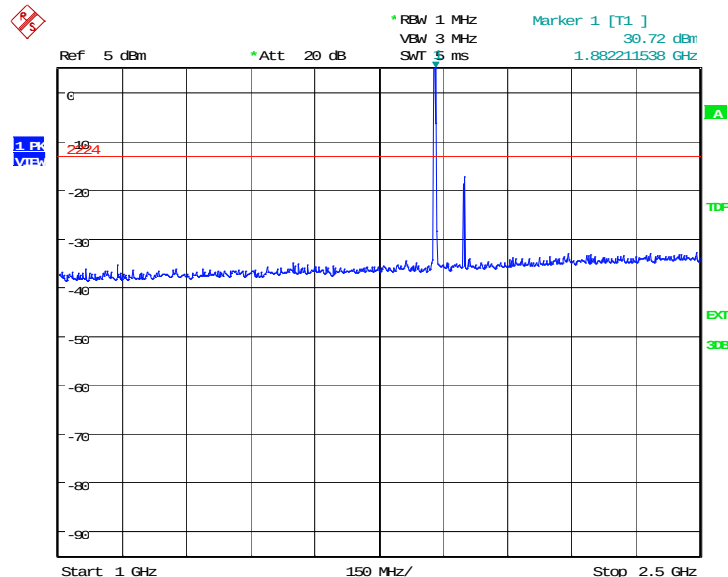


Date: 31.MAR.2015 16:36:41

A.7.3.24 Channel 661: 1GHz – 2.5GHz

Spurious emission limit –13dBm

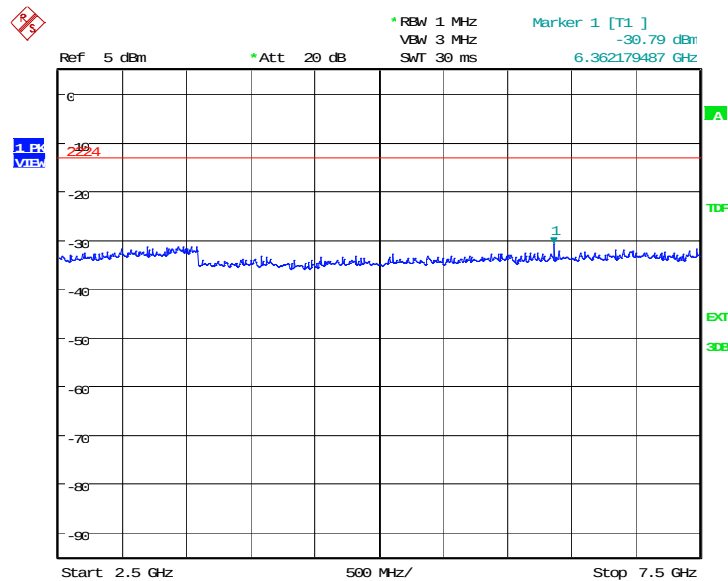
NOTE: peak above the limit line is the carrier frequency.



Date: 31.MAR.2015 16:37:09

A.7.3.25 Channel 661: 2.5GHz –7.5GHz

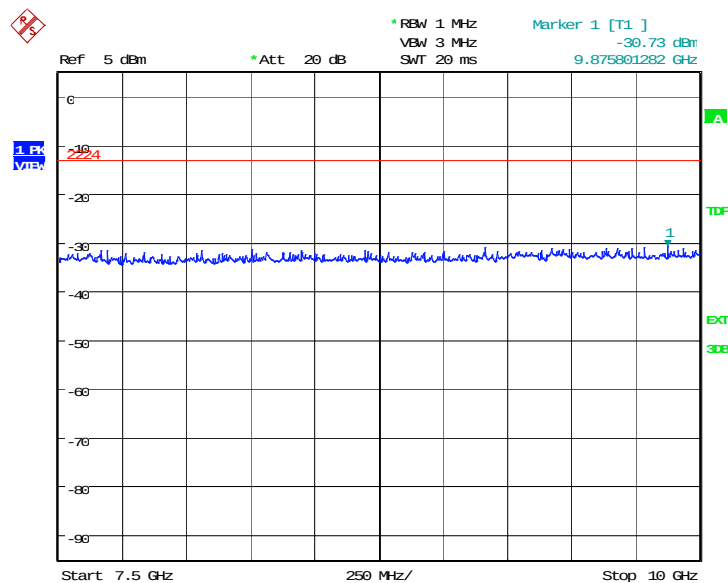
Spurious emission limit –13dBm



Date: 31.MAR.2015 16:37:37

A.7.3.26 Channel 661: 7.5GHz –10GHz

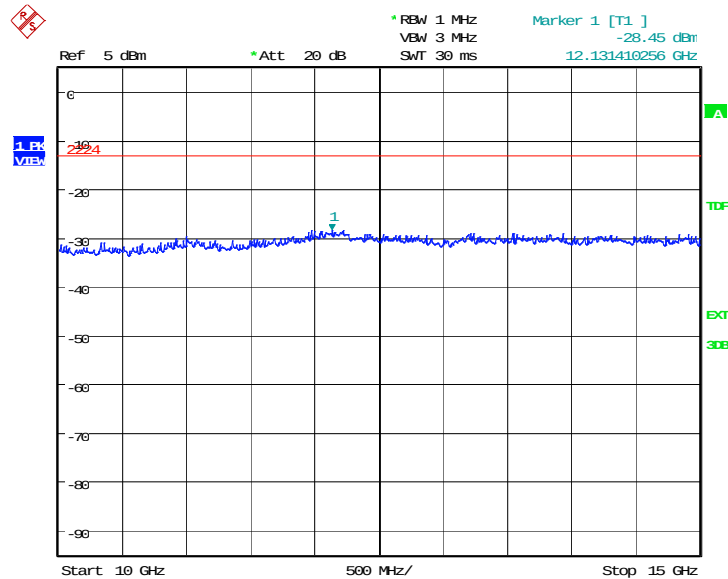
Spurious emission limit –13dBm



Date: 31.MAR.2015 16:38:05

A.7.3.27 Channel 661: 10GHz –15GHz

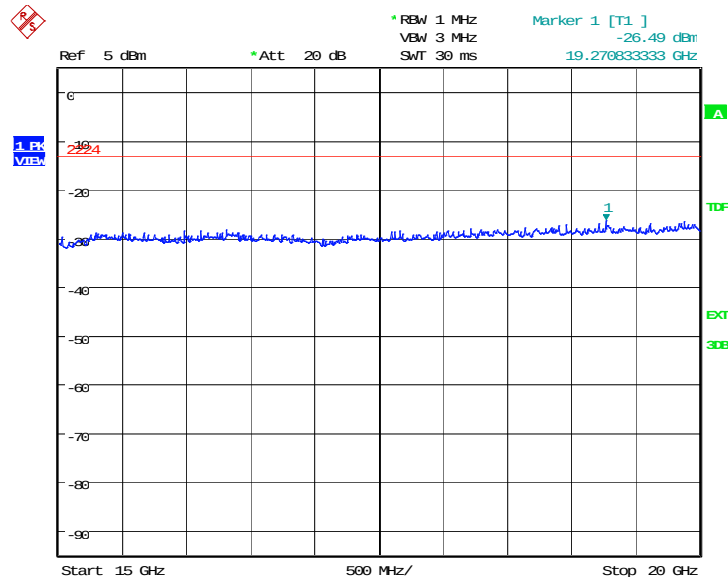
Spurious emission limit –13dBm.



Date: 31.MAR.2015 16:38:33

A.7.3.28 Channel 661: 15GHz –20GHz

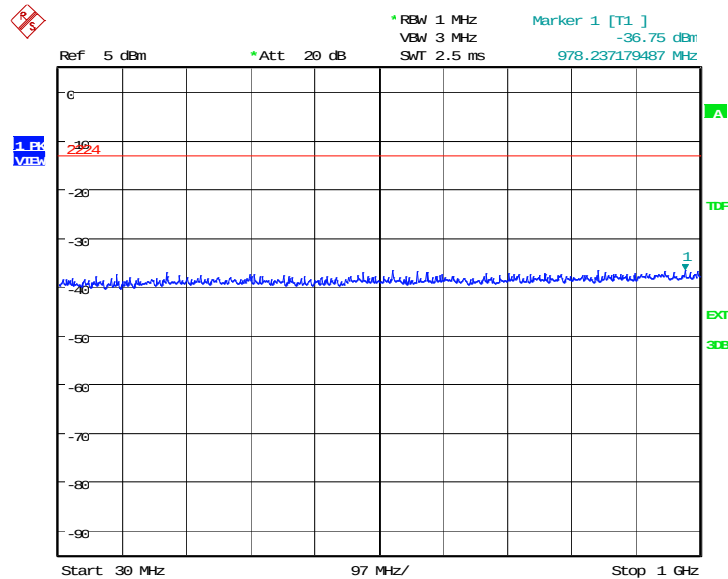
Spurious emission limit –13dBm.



Date: 31.MAR.2015 16:39:02

A.7.3.29 Channel 810: 30MHz – 1GHz

Spurious emission limit –13dBm.

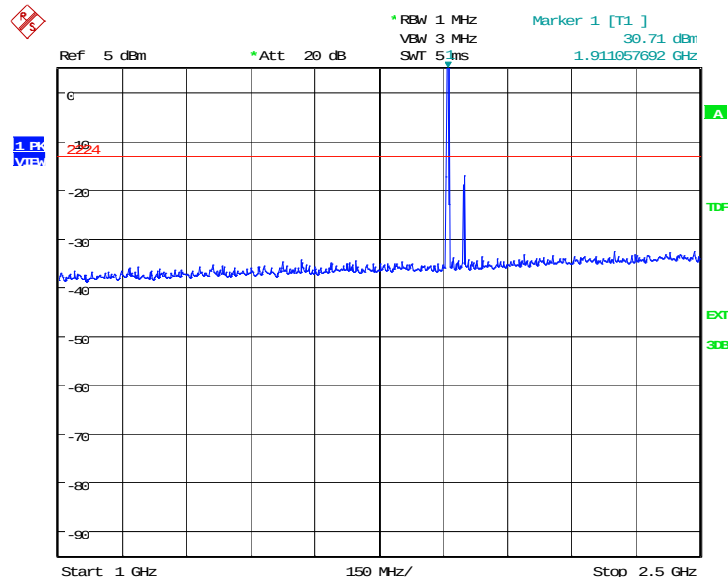


Date: 31.MAR.2015 16:39:30

A.7.3.30 Channel 810: 1GHz – 2.5GHz

Spurious emission limit –13dBm.

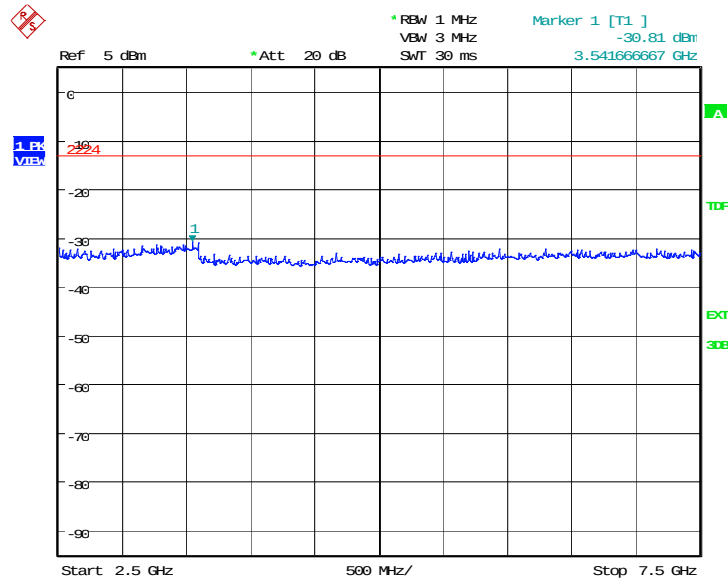
NOTE: peak above the limit line is the carrier frequency.



Date: 31.MAR.2015 16:39:58

A.7.3.31 Channel 810: 2.5GHz – 7.5GHz

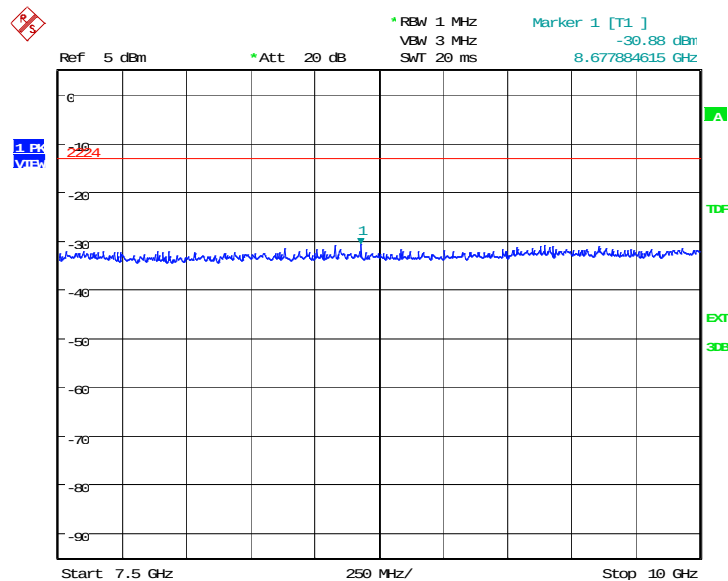
Spurious emission limit –13dBm.



Date: 31.MAR.2015 16:40:26

A.7.3.32 Channel 810: 7.5GHz – 10GHz

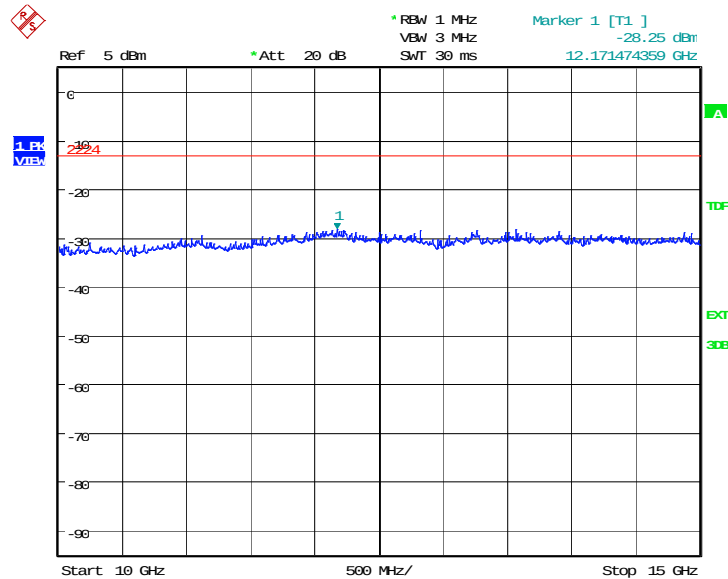
Spurious emission limit –13dBm.



Date: 31.MAR.2015 16:40:55

A.7.3.33 Channel 810: 10GHz –15GHz

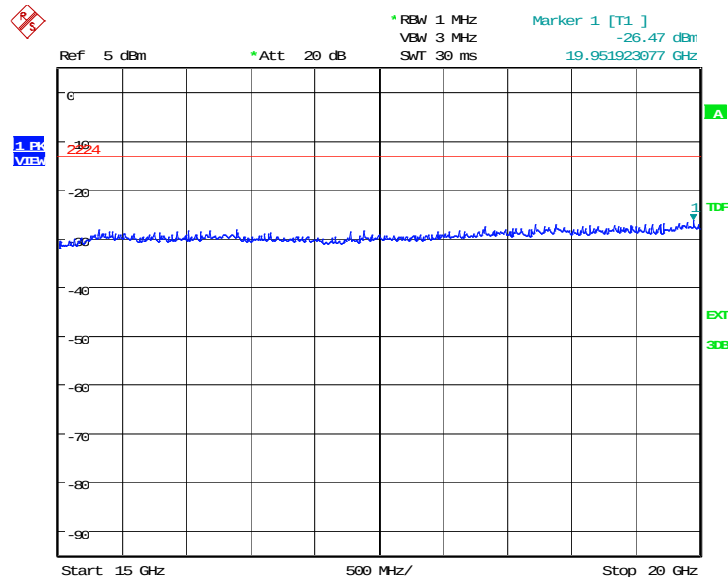
Spurious emission limit –13dBm.



Date: 31.MAR.2015 16:41:23

A.7.3.34 Channel 810: 15GHz –20GHz

Spurious emission limit –13dBm.



Date: 31.MAR.2015 16:41:51

END OF REPORT