FCC Test Report

Report No.: 68.950.15.272.01

FCC ID	:	2AA3EFW200L
Application Purpose	:	Original Equipment
Product Type	:	Fixed Wireless Telephone
Model Name	:	FW200L
Applicant	:	Shenzhen Guo Wei Electronics Co., Ltd.
Date Of Issue	:	October 12, 2015
Standard(S)	:	FCC Part 22H & 24E (2014-10)
Report Version	:	V1.0

TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch
Building12&13, Zhiheng Wisdomland Business Park, Nantou Checkpoint Road 2, Shenzhen, China, 518052

REPORT REVISE RECORD

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	October 20, 2015	Valid	Original Report

TABLE OF CONTENTS

1.No index entries found.VERIFICATION OF COMPLIANCE

Applicant	Shenzhen Guo Wei Electronics Co., Ltd.
Address	No. 3038, Luosha Road, Liantang, Luohu District, Shenzhen, Guangdong, China.
Factory	Shenzhen Guo Wei Electronics Co., Ltd.
Address	No. 3038, Luosha Road, Liantang, Luohu District, Shenzhen, Guangdong, China.
Product Designation	Fixed Wireless Telephone
Test Model	FW200L
Date of test	July 18, 2015 – October 16, 2015
Deviation	None

We hereby certify that:

The above equipment was tested by TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch. The data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C 63.4:2003 and TIA/EIA 603. The sample tested as described in this report is in compliance with the FCC Rules Part 22H, 24E
The test results of this report relate only to the tested sample identified in this report.

Reviewed by:

Cookies Bu
EMC Project Manager

Prepared by:

Felix Li
EMC Project Engineer

2. GENERAL INFORMATION

2.1 PRODUCT DESCRIPTION

A major technical description of EUT is described as following:

Product Designation:	Fixed Wireless Telephone
Hardware version:	V1.0
Software version:	V0001
Frequency Bands:	☒GSM 850 ☒PCS 1900 (U.S. Bands) ☒GSM 900 ☒DCS 1800 (Non-U.S. Bands) ☐UMTS FDD Band II ☐UMTS FDD Band V (U.S. Bands) ☐UMTS FDD Band I ☐UMTS FDD Band VIII (Non-U.S. Bands)
Type of Modulation	GMSK
Battery parameter:	DC3.6V/550 mAh
Adapter model no.:	S005AYV0500050
Adapter Input:	100~240VAC, 50/60Hz, 200mA
Adapter Output:	5.0V, 500mA
Single/Dual Card:	GSM Card Slot
Extreme Vol. Limits:	DC 3.45 V to 4.5 V
Extreme Temp. Tolerance	-10℃ to +55℃
*** Note: The High Voltage DC4.5V and Low Voltage DC3.45V were declared by manufacturer, The EUT couldn't be operating normally with higher or lower voltage.	

***** Note:** The maximum power levels are GSM850 for 5 and PCS1900 for 0, only these modes were used for all tests. We found out the test mode with the highest power level after we analyze all the data rates. So we chose worst case as a representative.

2.2 RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for FCC ID: 2AA3EFW200L filing to comply with the FCC Part 22H&24E.

2.3 TEST METHODOLOGY

The radiated emission testing was performed according to the procedures of ANSI C 63.4: 2003; TIA/EIA 603 and FCC CFR 47 Rules of 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055, 2.1057 KDB 971168 D01 Power Meas License Digital Systems v02r01.

2.4 TEST FACILITY

CTTL,Telecommunication Technology Labs, Academy of Telecommunication Research, MIIT
No. 52, Huayuan North Road, Haidian District, Beijing, P. R. China 100191.
Tel:+86(0)10-62304633-2512, Fax:+86(0)10-62304633-2504
FCC register No.: 342690

2.5 MEASUREMENT INSTRUMENTS

NAME OF EQUIPMENT	TYPE	SERIAL NUMBER	MANUFACTURE	Calibration Due Date
Test Receiver	ESCI	100701	R&S	2016.08.10
BiLog Antenna	VULB9163	9163 329	Schwarzbeck	2017.01.20
Horn Antenna	3117	00066577	ETS-Lindgren	2016.04.01
Universal Radio Communication	CMU200	114544	R&S	2016.09.10
Universal Radio Communication Tester	CMW500	152499	R&S	2016.07.23
Spectrum Analyser	FSP40	100378	R&S	2015.12.19
Universal Radio Communication Tester	CMU200	114828	R&S	2016.01.03
Spectrum Analyzer	FSU	200679	R&S	2016.01.03
Temperature Chamber	SH-241	92007516	ESPECs	2016.01.08
DC Power Supply	U3606A	MY50450012	Agilent Technologies	2015.11.11
RF Switch Matrix	OSP130	100259	R&S	2016.01.03
Vector Signal Generator	SMU200A	104072	R&S	2016.01.03
MXG Analog Signal Generator	N5183A	MY50140012	Agilent Technologies	2016.01.03

2.6 SPECIAL ACCESSORIES

The battery and the charger, earphone supplied by the applicant were used as accessories and being tested with EUT intended for FCC grant together.

2.7 EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.

3. SYSTEM TEST CONFIGURATION

3.1 EUT CONFIGURATION

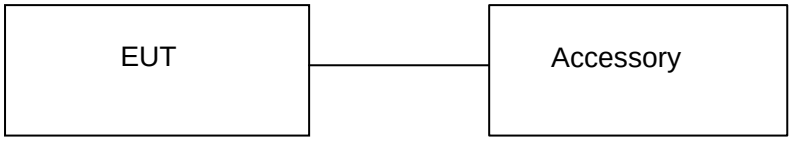
The EUT configuration for testing is installed on RF field strength measurement to meet the Commission's requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

3.2 EUT EXERCISE

The Transmitter was operated in the maximum output power mode through Communication Tester. The TX frequency was fixed which was for the purpose of the measurements.

3.4 CONFIGURATION OF EUT SYSTEM

Fig. 2-1 Configuration of EUT System



4. SUMMARY OF TEST RESULTS

Item Number	Item Description		FCC Rules	Result
1	Output Power	Conducted Output Power	2.1046/22.913(a) (2) / 24.232 (c)	Pass
		Radiated Output Power		
2	Spurious Emission	Conducted Spurious Emission	2.1051 / 22.917 / 24.238	Pass
		Radiated Spurious Emission		
3	Frequency Stability		2.1055/22.355/24.235	Pass
4	Occupied Bandwidth		2.1049 (h)(i)	Pass
5	Emission Bandwidth		22.917(a)/24.238(a)	Pass
6	Band Edge		22.917(a)/24.238(a)	Pass

5. DESCRIPTION OF TEST MODES

During the testing, the EUT was controlled via Rhode & Schwarz Digital Radio Communication Tester (CMU 200) to ensure max power transmission and proper modulation. Three channels (The top channel, the middle channel and the bottom channel) were chosen for testing on both GSM and PCS frequency band.

6. OUTPUT POWER

6.1 Conducted Output Power

6.1.1 MEASUREMENT METHOD

The transmitter output port was connected to base station.

The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator.

The path loss was compensated to the results for each measurement.

Measure the maximum burst average power and average power for other modulation signal.

The EUT was setup for the max output power with pseudo random data modulation. Power was measured with Spectrum Analyzer. The measurements were performed on all modes at 3 typical channels (the Top Channel, the Middle Channel and the Bottom Channel) for each band.

6.1.2 MEASUREMENT RESULT

GSM 850:

Mode	Frequency (MHz)	Reference Power	Peak Power
GSM850	824.2	33	33.36
	836.6	33	33.05
	848.8	33	33.04

PCS 1900:

Mode	Frequency (MHz)	Reference Power	Peak Power
GSM1900	1850.2	30	30.78
	1880	30	30.72
	1909.8	30	30.69

6.2 RADIATED OUTPUT POWER

6.2.1 MEASUREMENT METHOD

The measurements procedures specified in TIA-603C-2004 were applied.

1 In an anechoic antenna test chamber, a half-wave dipole antenna for the frequency band of interest is placed at the reference centre of the chamber. An RF Signal source for the frequency band of interest is connected to the dipole with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A known (measured) power (Pin) is applied to the input of the dipole, and the power received (Pr) at the chamber's probe antenna is recorded.

2 The substitution method is used. Substitution values at each frequency are measured before and saved to the test software. A "reference path loss" is established as ARpl=Pin + 2.15 - Pr. The ARpl is the attenuation of “reference path loss”, and including the gain of receive antenna, the cable loss and the air loss. The measurement results are obtained as described below: Power=PMea+ARpl

3 The EUT is substituted for the dipole at the reference centre of the chamber and a scan is performed to obtain the radiation pattern.

4 From the radiation pattern, the co-ordinates where the maximum antenna gain occurs are identified.

5 The EUT is then put into continuously transmitting mode at its maximum power level.

6 Power mode measurements are performed with the receiving antenna placed at the coordinates determined in Step 3 to determine the output power as defined in Rule 24.232 (b) and (c). The "reference path loss" from Step1 is added to this result.

7 This value is EIRP since the measurement is calibrated using a half-wave dipole antenna of known gain (2.15 dBi) and known input power (Pin).

8 ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP -2.15dBi..

6.2.2 PROVISIONS APPLICABLE

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 “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.”

Mode	Nominal Peak Power
GSM 850	<=38.45 dBm (7W)
PCS 1900	<=33 dBm (2W)
UMTS BANDV	<=38.45 dBm (7W)

6.2.3 MEASUREMENT RESULT

Radiated Power (ERP) for GSM 850				
Mode	Frequency	Result		Conclusion
		Max. Peak ERP (dBm)	Polarization Of Max. ERP	
GSM850	824.2	32.53	Vertical	Pass
	836.6	32.90	Vertical	Pass
	848.8	32.38	Vertical	Pass

Radiated Power (E.I.R.P) for PCS 1900				
Mode	Frequency	Result		Conclusion
		Max. Peak E.I.R.P.(dBm)	Polarization Of Max. E.I.R.P.	
GSM 1900	1850.2	30.50	Vertical	Pass
	1880.0	30.33	Vertical	Pass
	1909.8	28.80	Vertical	Pass

7. SPURIOUS EMISSION

7.1 CONDUCTED SPURIOUS EMISSION

7.1.1 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 GSM 850, data taken from 30 MHz to 9 GHz.
2, Determine EUT transmit frequencies: the following typical channels were chosen to conducted emissions testing.

Typical Channels for testing of GSM 850	
Channel	Frequency (MHz)
128	824.2
190	836.6
251	848.8

Typical Channels for testing of PCS 1900	
Channel	Frequency (MHz)
512	1850.2
661	1880.0
810	1909.8

7.1.2 PROVISIONS APPLICABLE

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

7.1.3 MEASUREMENT RESULT

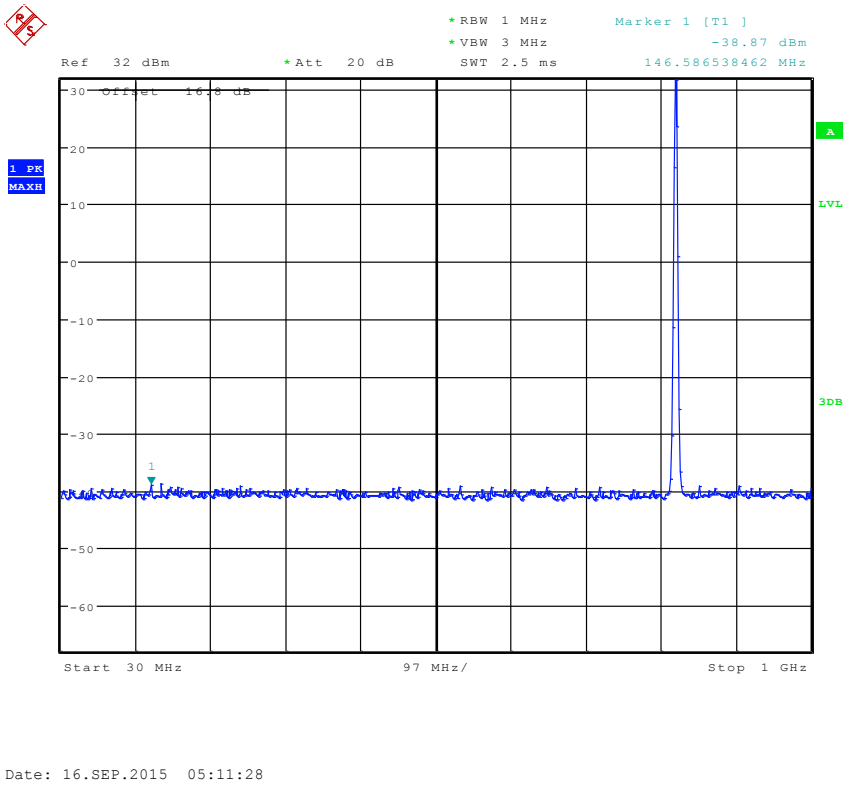
PLEASE REFER TO: APPENDIX I TEST PLOTS FOR CONDUCTED SPURIOUS EMISSION

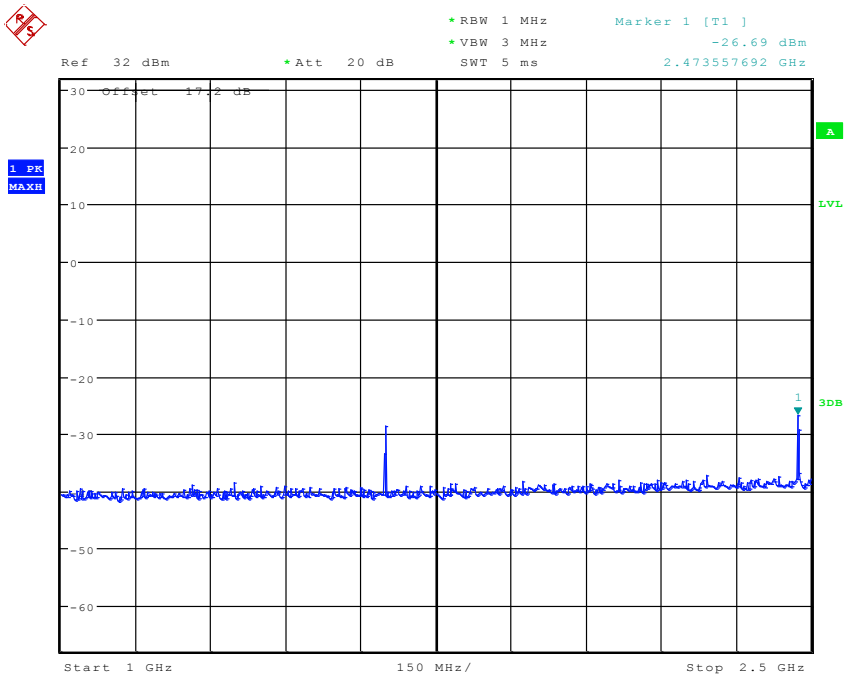
Note: 1. Below 30MHZ no Spurious found and The GSM modes is the worst condition.

2. As no emission found in standby or receive mode, no recording in this report.

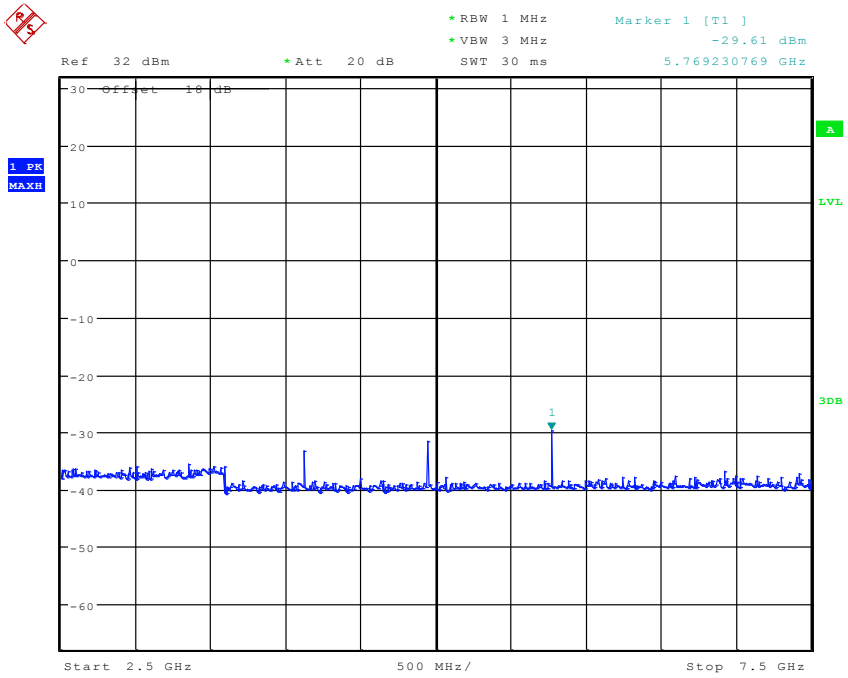
GSM850

channel 128

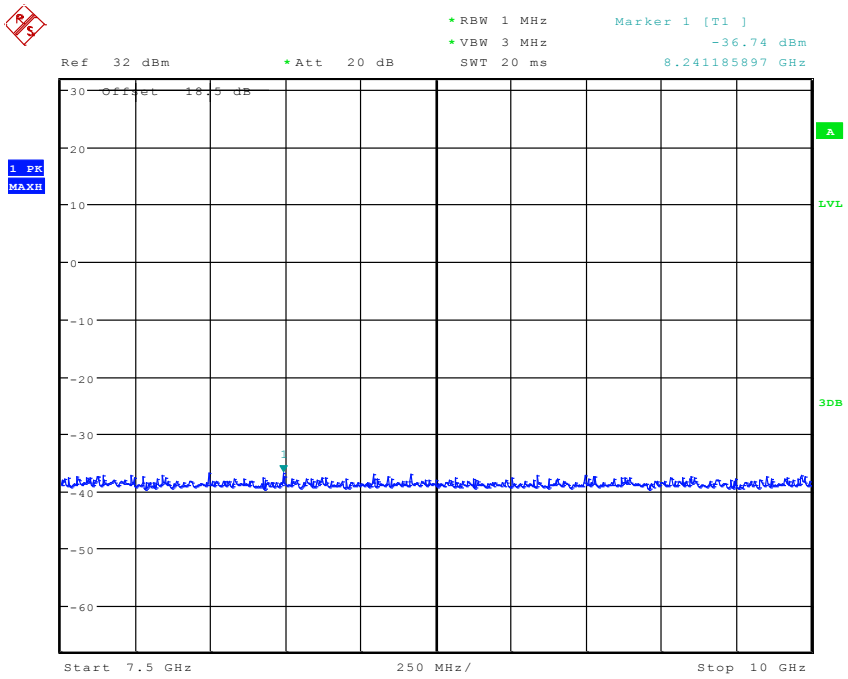




Date: 16.SEP.2015 05:15:00

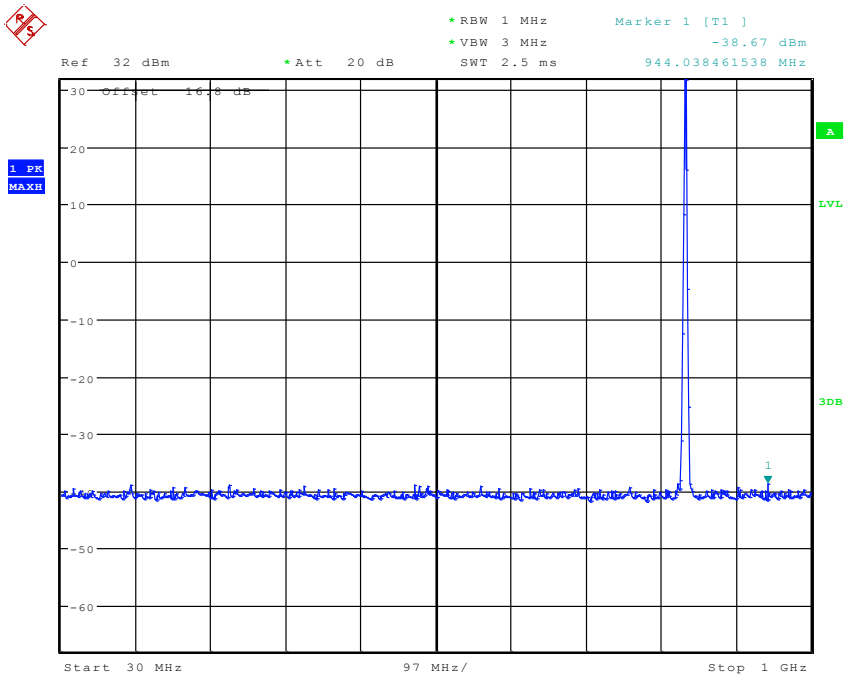


Date: 16.SEP.2015 05:16:14

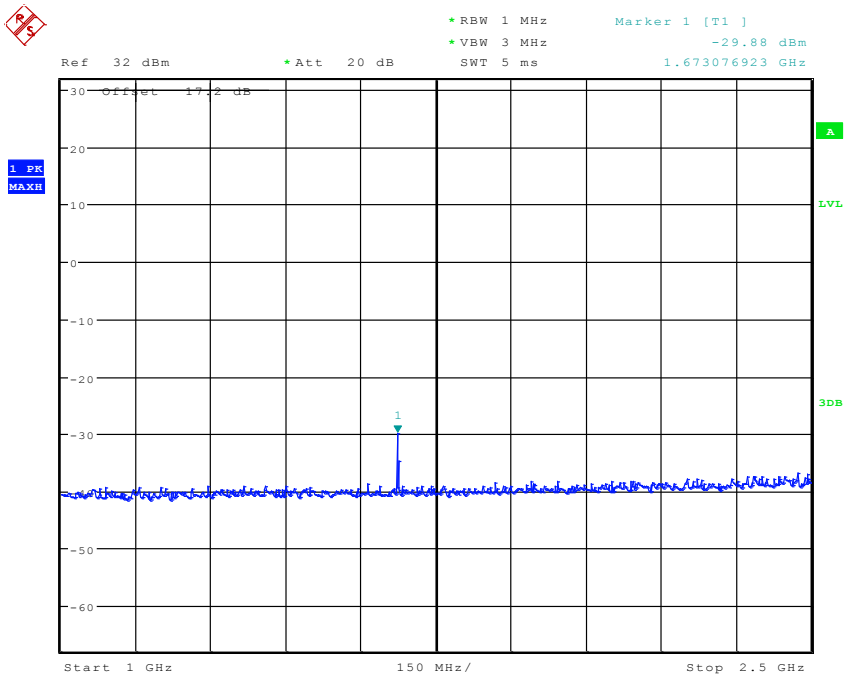


Date: 16.SEP.2015 05:19:56

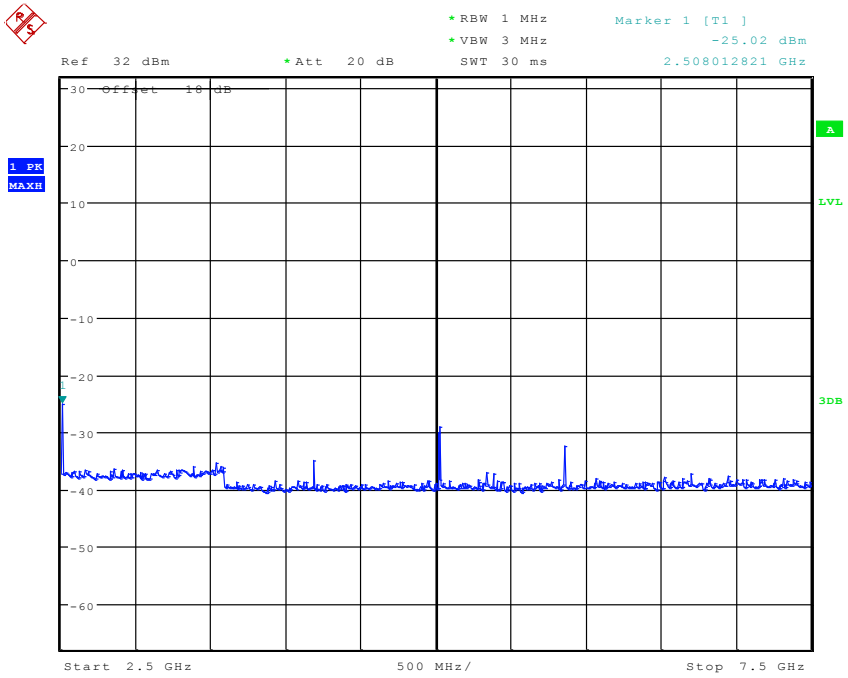
Channel 190



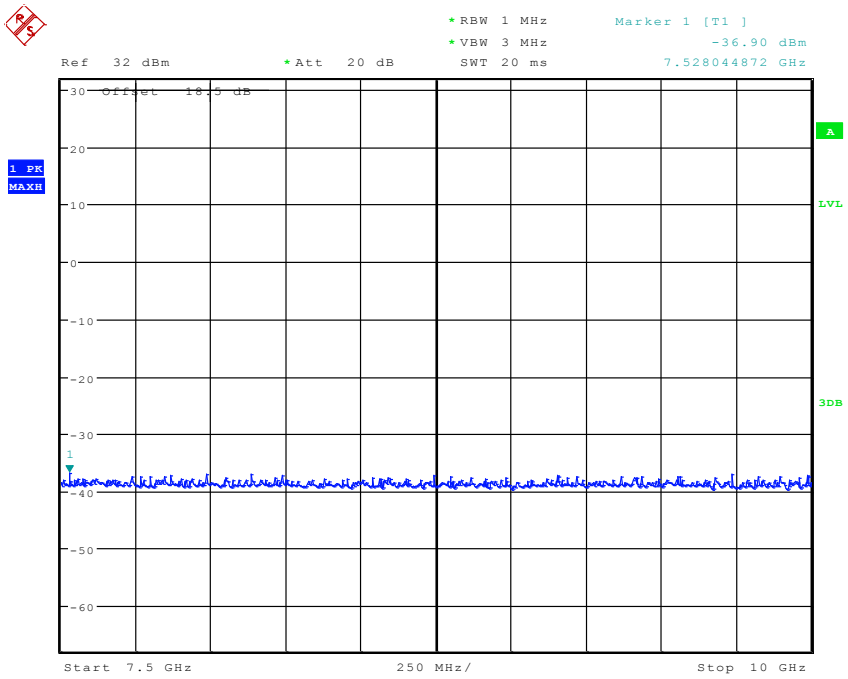
Date: 16.SEP.2015 05:12:17



Date: 16.SEP.2015 05:14:36

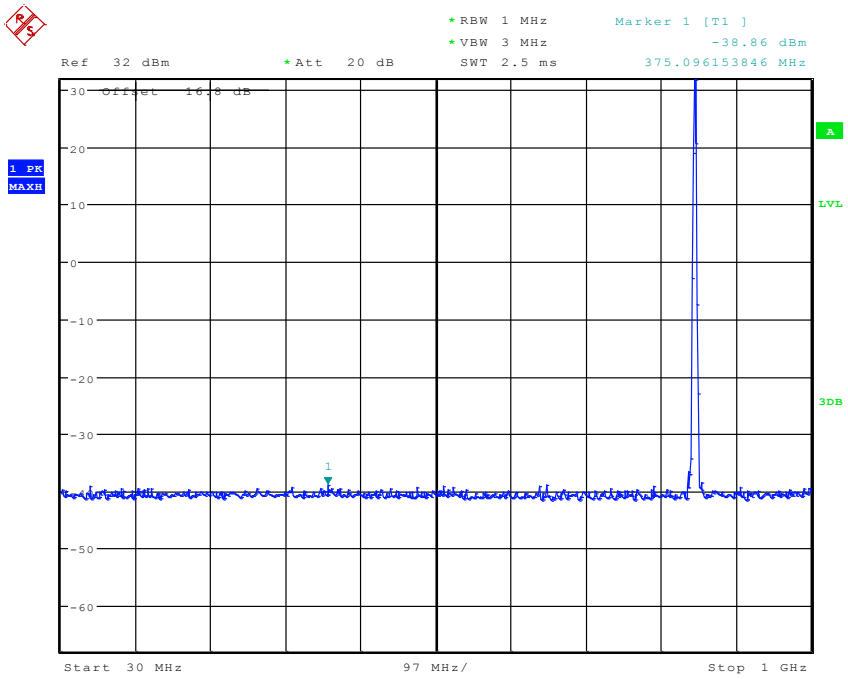


Date: 16.SEP.2015 05:16:48

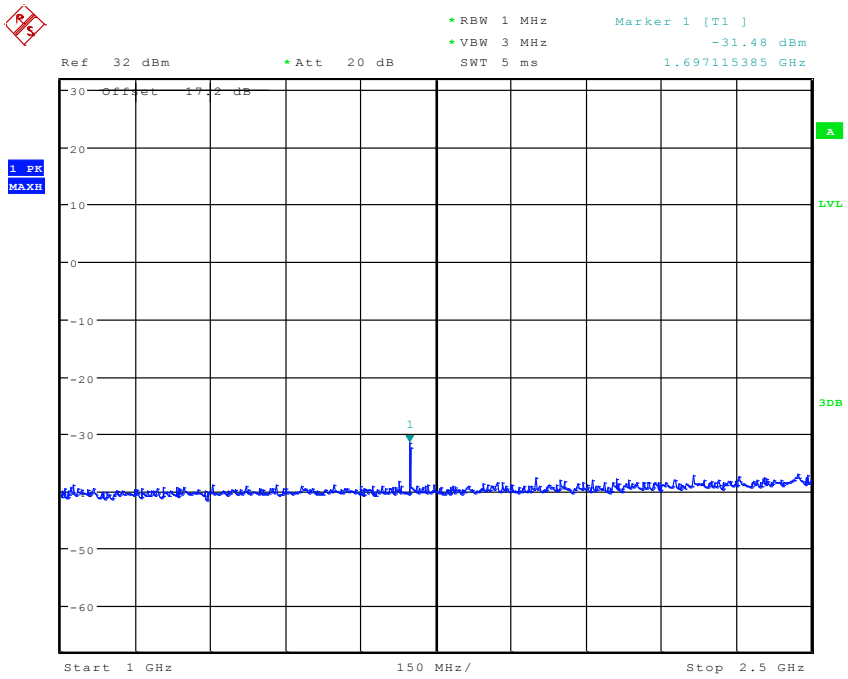


Date: 16.SEP.2015 05:19:26

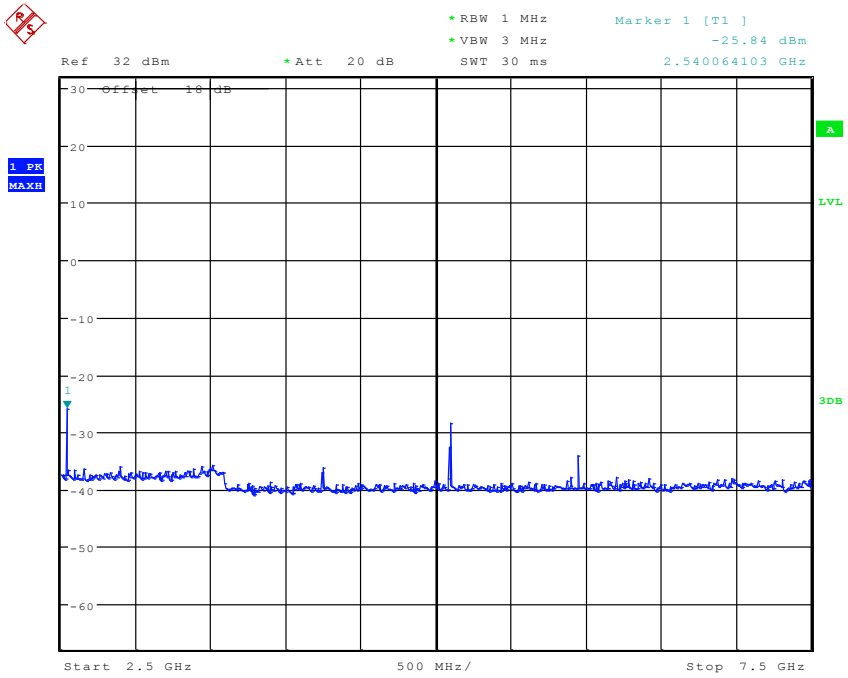
Channel 251



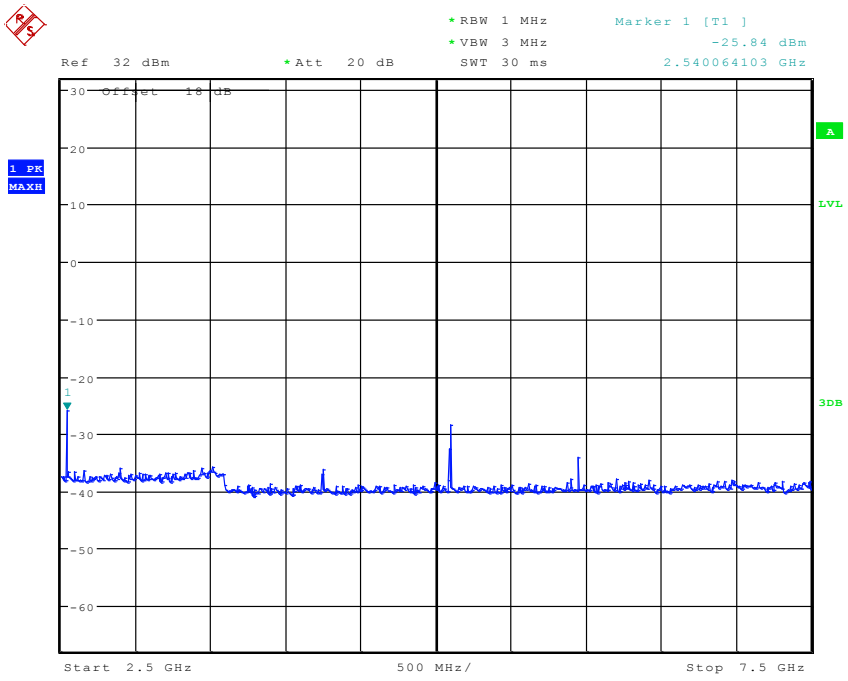
Date: 16.SEP.2015 05:13:06



Date: 16.SEP.2015 05:14:04



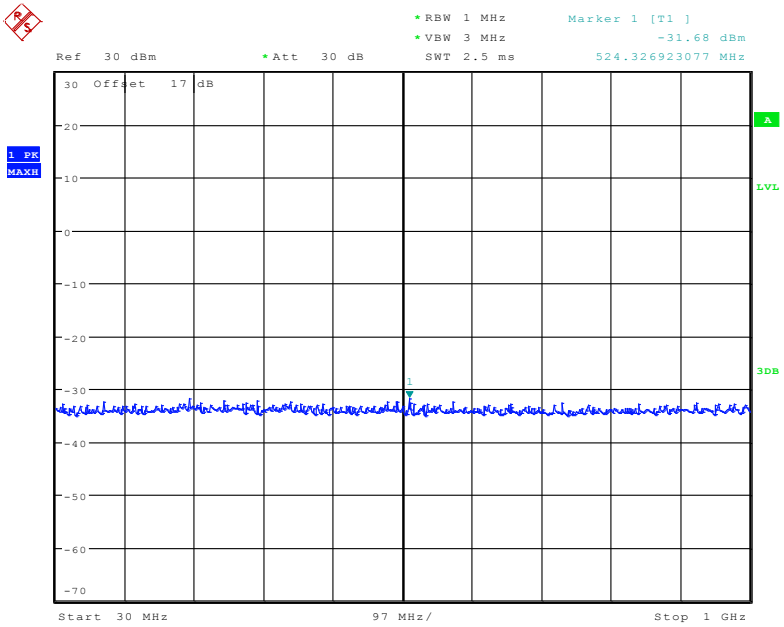
Date: 16.SEP.2015 05:17:17



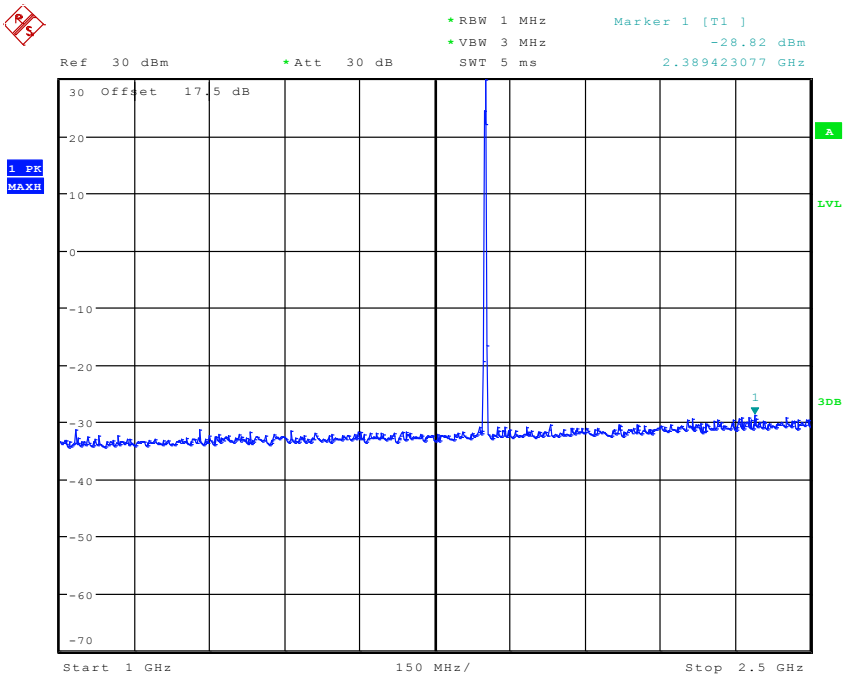
Date: 16.SEP.2015 05:17:17

PCS1900:

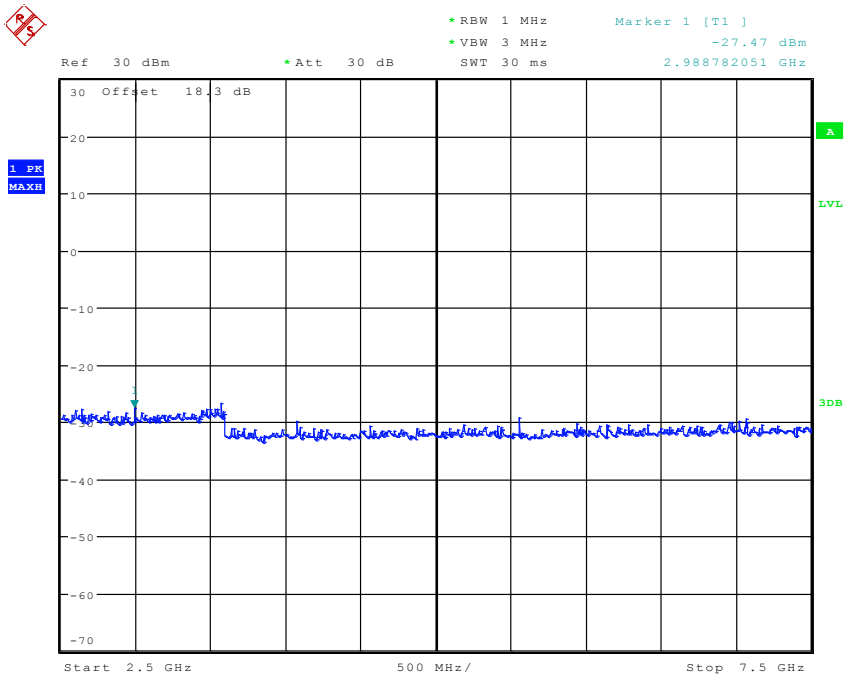
Channel 512:



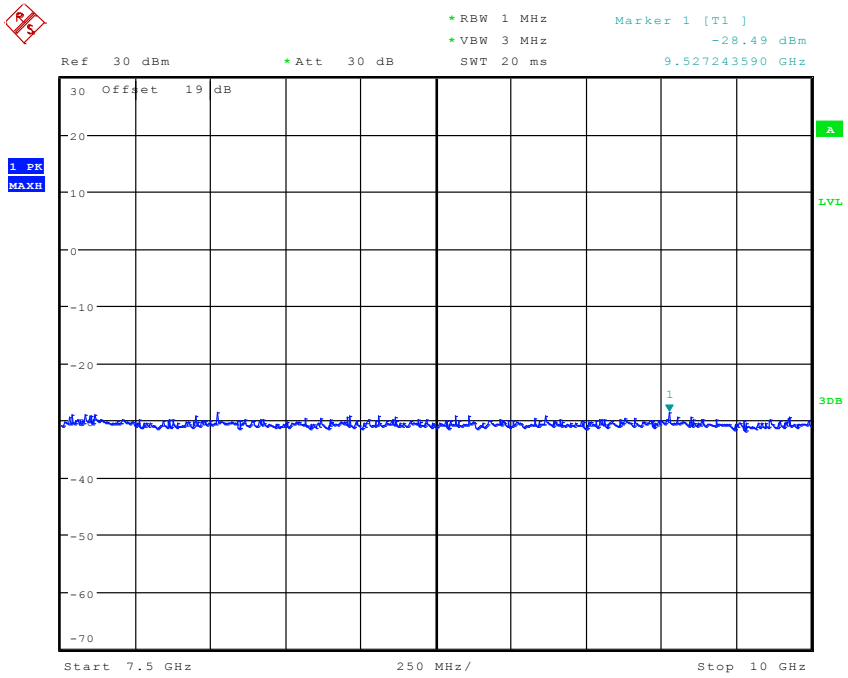
Date: 16.SEP.2015 05:38:43



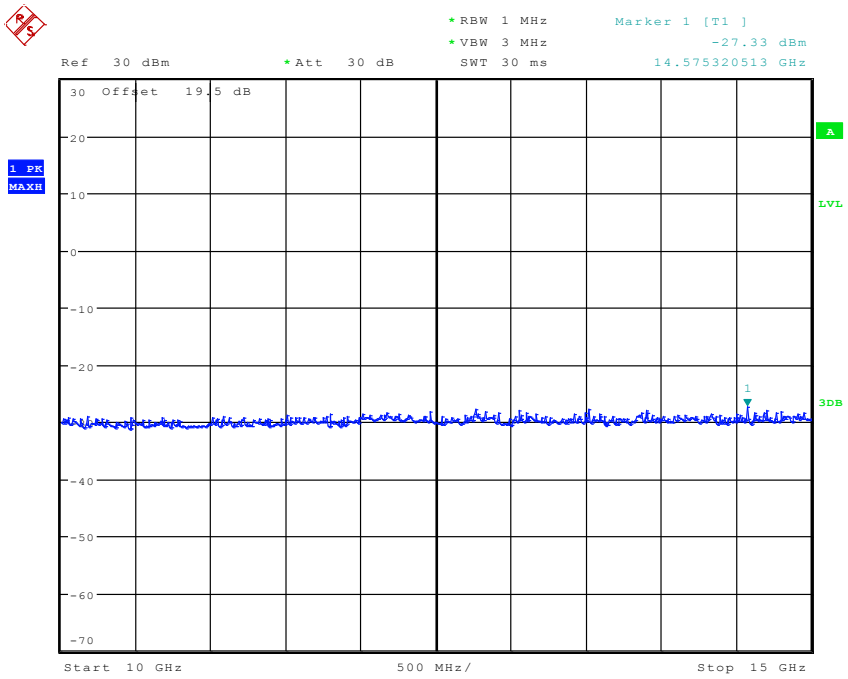
Date: 16.SEP.2015 05:43:02



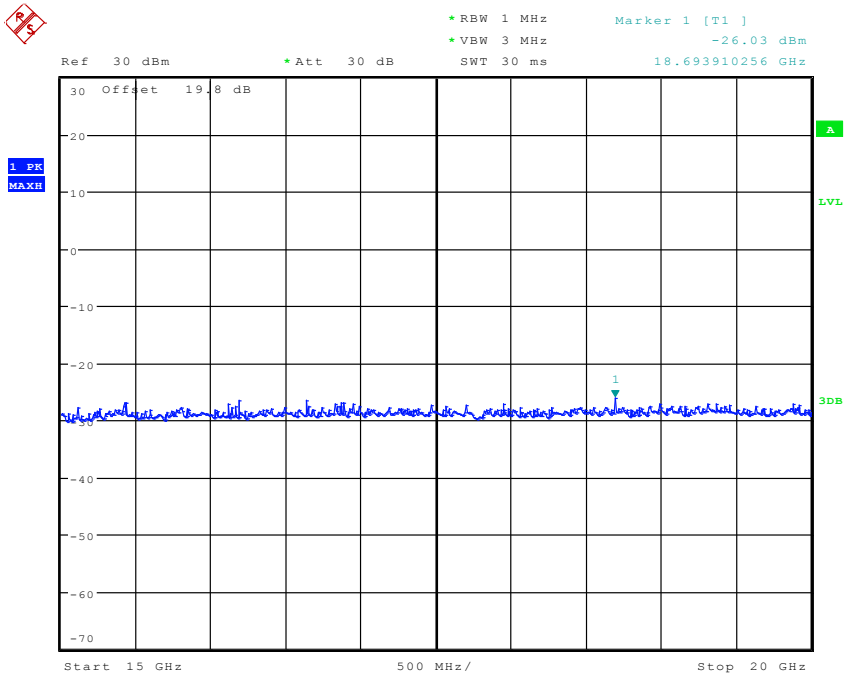
Date: 16.SEP.2015 05:44:25



Date: 16.SEP.2015 05:47:38

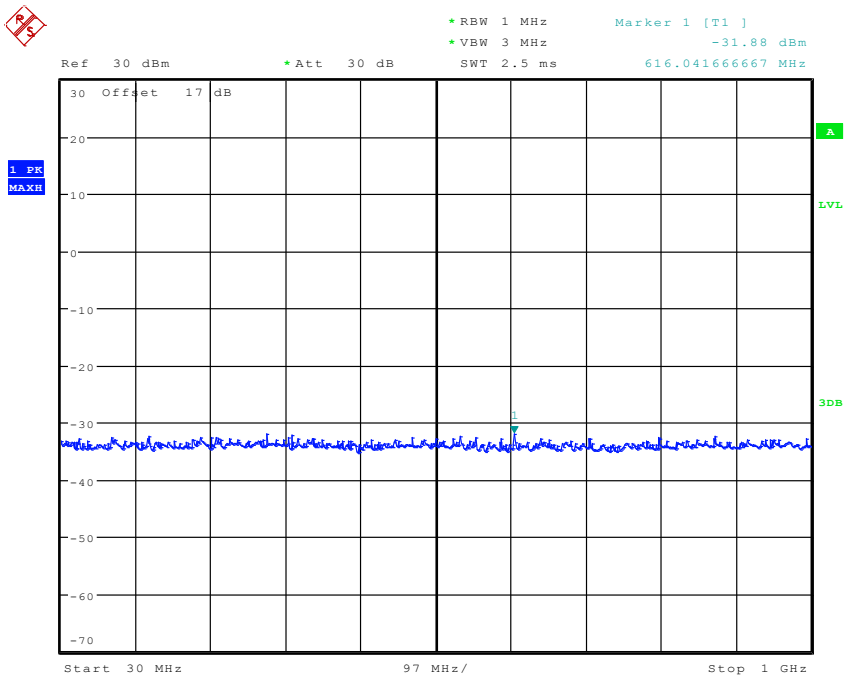


Date: 16.SEP.2015 05:48:33

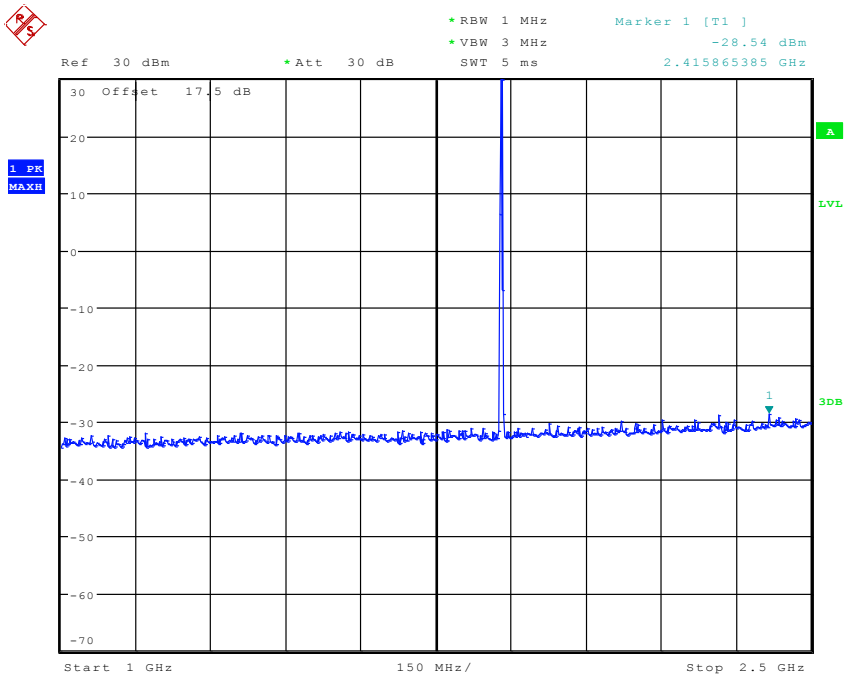


Date: 16.SEP.2015 05:50:47

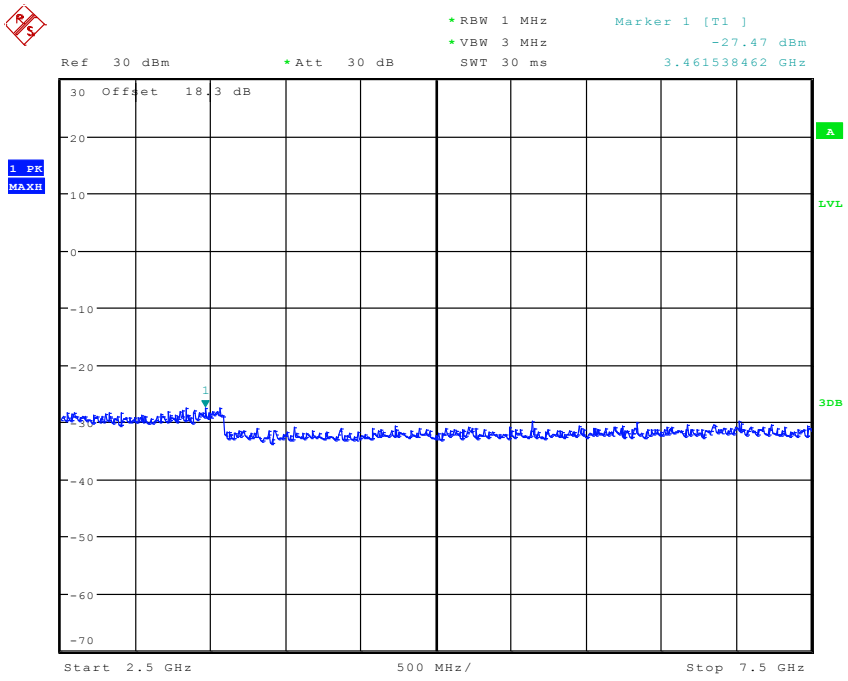
Channel 661



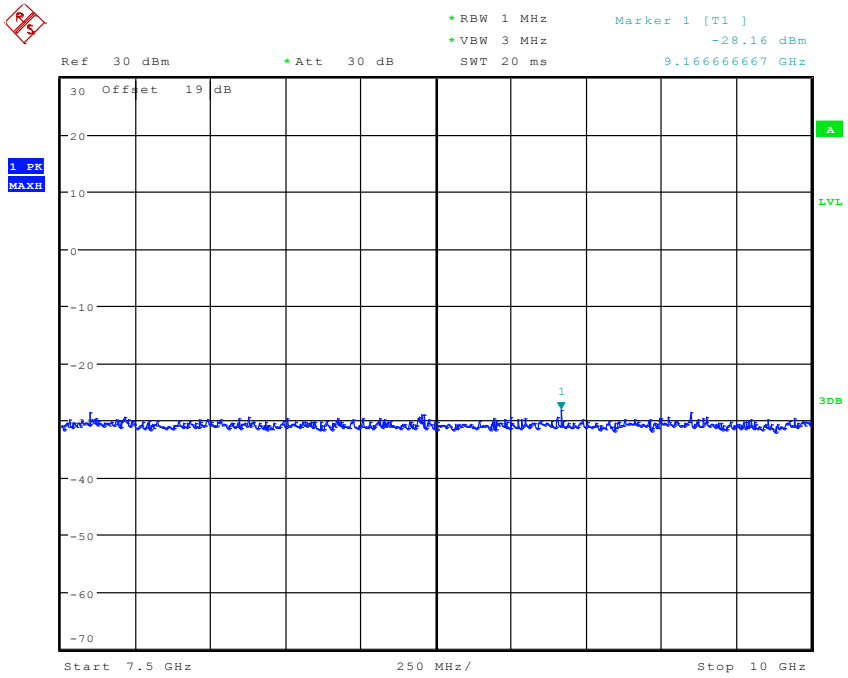
Date: 16.SEP.2015 05:39:23



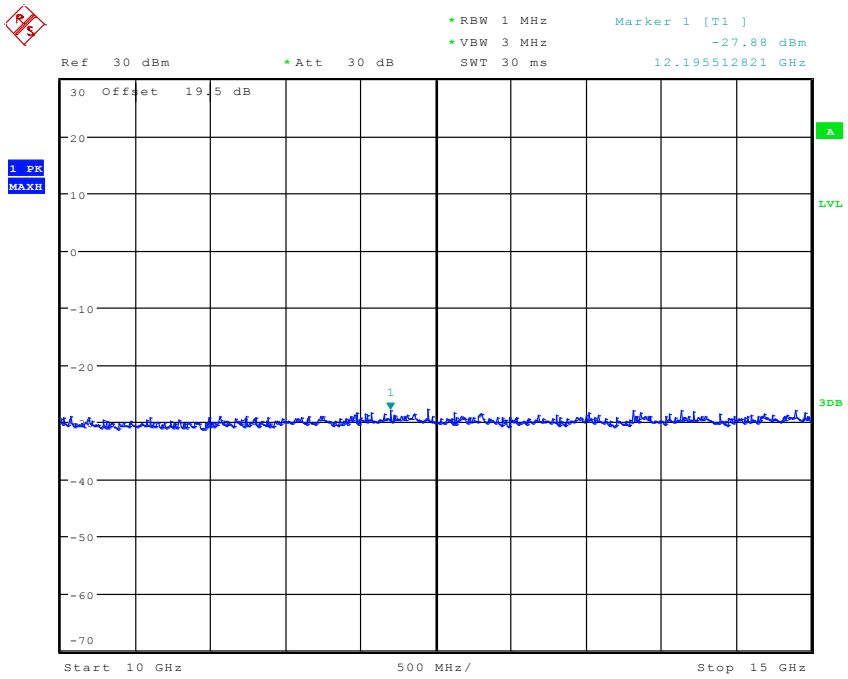
Date: 16.SEP.2015 05:42:25



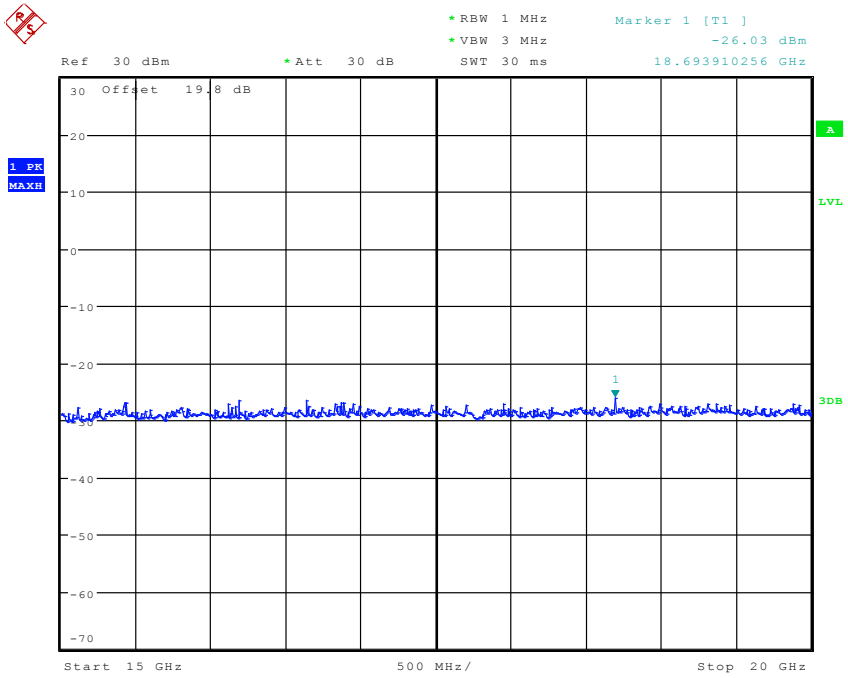
Date: 16.SEP.2015 05:44:48



Date: 16.SEP.2015 05:47:02

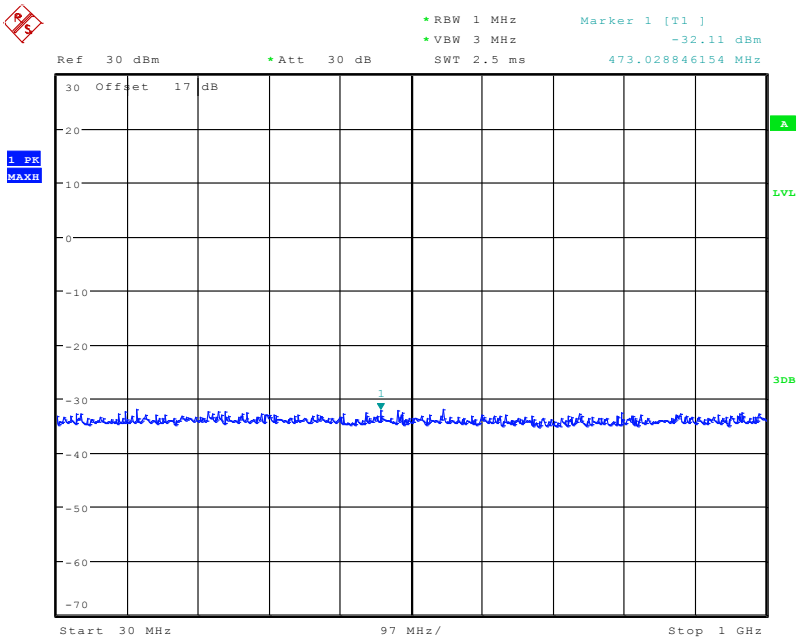


Date: 16.SEP.2015 05:49:01

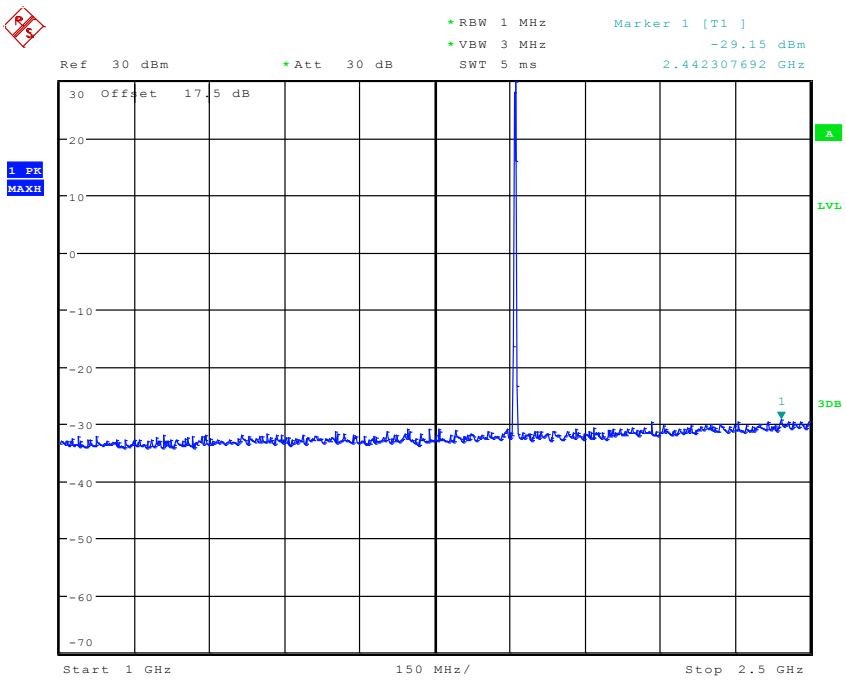


Date: 16.SEP.2015 05:50:47

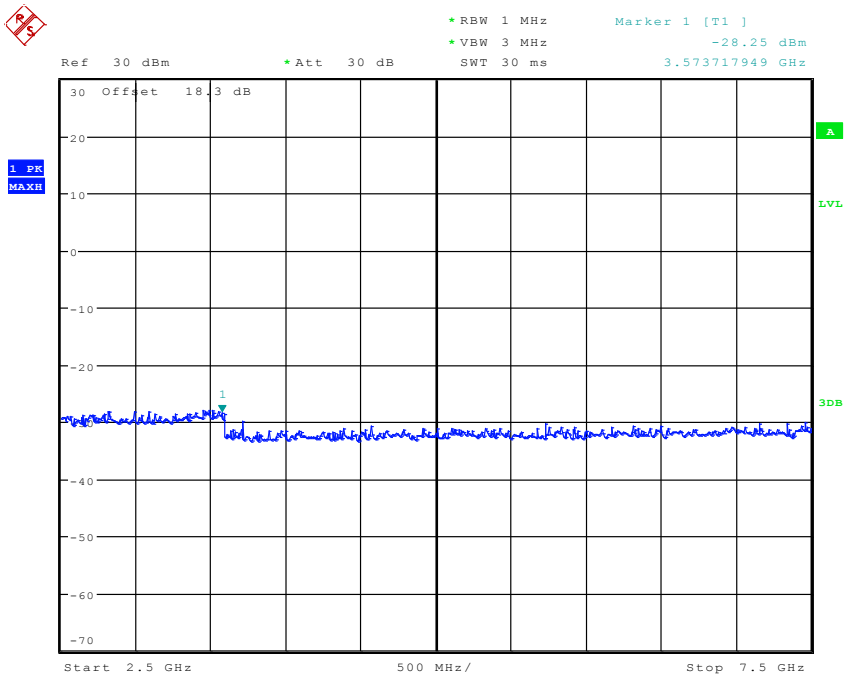
Channel 810



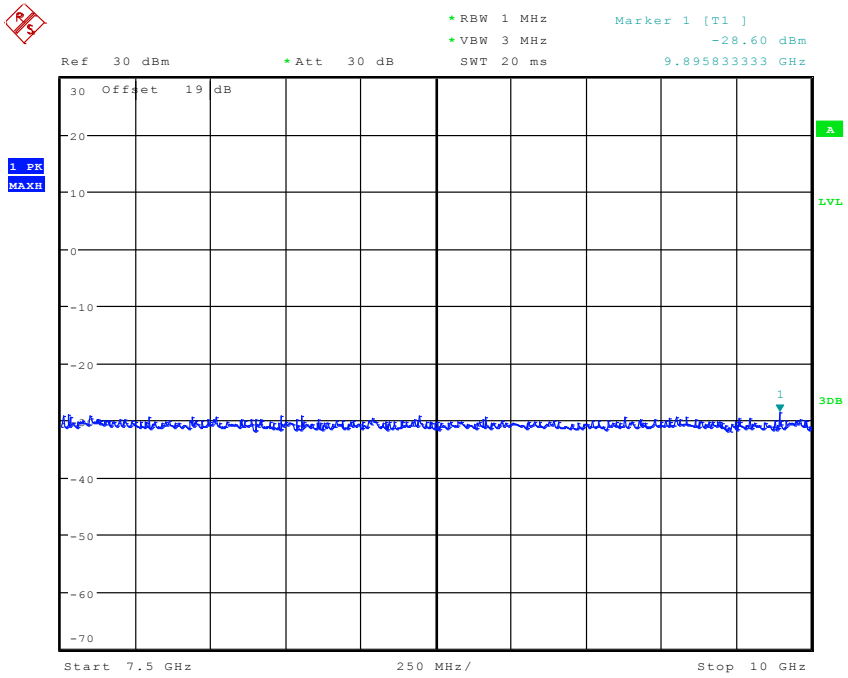
Date: 16.SEP.2015 05:39:55



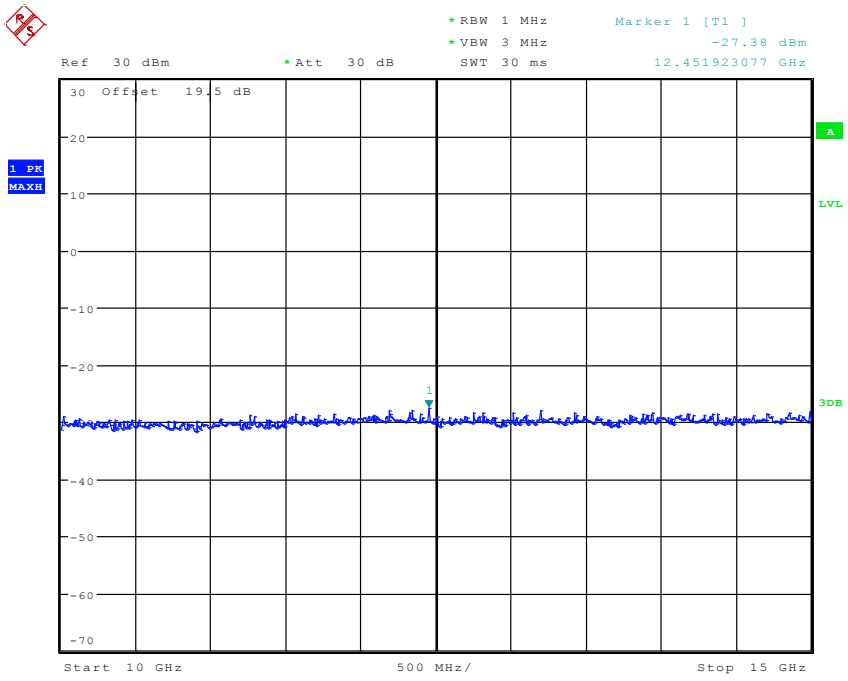
Date: 16.SEP.2015 05:41:50



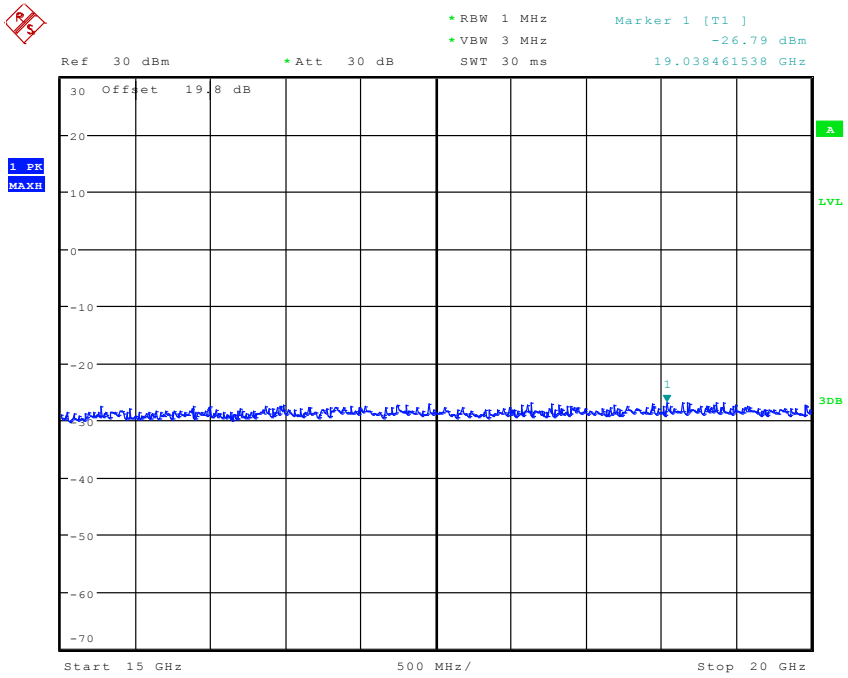
Date: 16.SEP.2015 05:45:26



Date: 16.SEP.2015 05:46:34



Date: 16.SEP.2015 05:49:27



Date: 16.SEP.2015 05:50:20

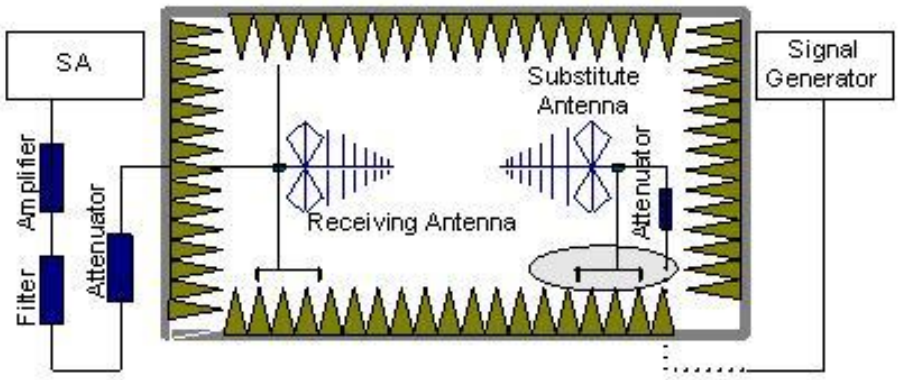
7.2 Radiated Spurious Emission

7.2.1 MEASUREMENT METHOD

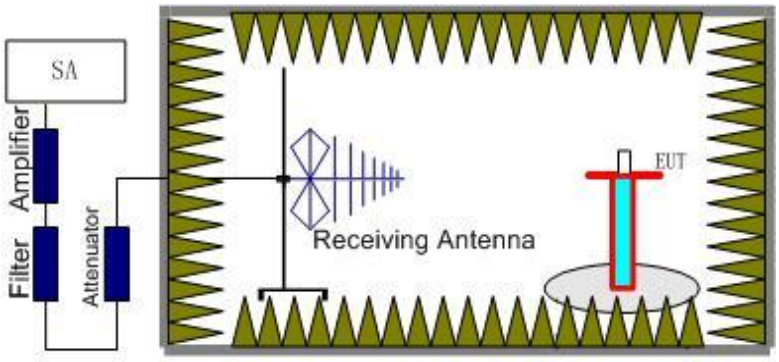
The measurements procedures specified in TIA-603C-2004 were used for testing. The spectrum was scanned from 30 MHz to the 10th harmonic of the highest frequency generated within the equipment. The resolution bandwidth is set 1MHz as outlined in Part 24.238. The measurements were performed on all modes(GPRS 850, GPRS 1900, HSPA band V) at 3 typical channels(the Top Channel, the Middle Channel and the Bottom Channel) for each band.

The procedure of radiated spurious emissions is as follows:

a) Pre-calibration With pre-calibration method, the Radiated Spurious Emissions(RSE) is calculated as, RSE=Rx（dBuV）+CL（dB）+SA（dB）+Gain（dBi）-107（dBuV to dBm）The SA is calibrated using following setup.



b) EUT was placed on a 0.8 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 test item for emission measurements. The height of receiving antenna is 0.8m. The test setup refers to figure below. Detected emissions were maximized at each frequency by rotating the test item 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 and 1MHz bandwidth.



Radiated emissions measurements were made only at the upper, middle, and lower carrier frequencies of the PCS 1900 and (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 any band into any of the other blocks.

The substitution method is used. Substitution values at each frequency are measured before and saved to the test software. A "reference path loss" is established and the A_{Rpl} is the attenuation of “reference path loss”, and including the gain of receive antenna, the gain of the preamplifier, the cable loss and the air loss. The measurement results are obtained as described below: $Power=P_{Mea}+A_{Rpl}-G_a$

7.2.2 PROVISIONS APPLICABLE

(a) On any frequency outside a licensee’s frequency block (e.g. A, D, B, etc.) within the USPCS spectrum, the power of any emission shall be attenuated below the transmitter power (P, in Watts) by at least 43+10Log(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.

7.2.3 MEASUREMENT RESULT

GSM 850:

Test Results for Channel 128/824.2MHz						
frequency(MHz)	P_{Mea}(dBm)	Antenna Gain(dB)	Correction(dB)	ERP(dBm)	Limit(dBm)	Polarization
4121.25	-49.33	-8.4	2.15	-43.08	-13.00	V
5769.75	-53.06	-10	2.15	-45.21	-13.00	V
7121	-56.52	-11.1	2.15	-47.57	-13.00	H
7418.5	-54.88	-11.1	2.15	-45.93	-13.00	V
8615.5	-57.96	-12.3	2.15	-47.81	-13.00	H
9258	-58.13	-12.4	2.15	-47.88	-13.00	V
4121.25	-49.33	-8.4	2.15	-43.08	-13.00	V

Test Results for Channel 190/836.6MHz						
frequency(MHz)	P_{Mea}(dBm)	Antenna Gain(dB)	Correction(dB)	ERP(dBm)	Limit(dBm)	Polarization
9260	-54.05	-12.4	2.15	-43.80	-13.00	V
9330.875	-57.45	-12.3	2.15	-47.30	-13.00	H
9430.5	-58.23	-12.4	2.15	-47.98	-13.00	H
9739.25	-58.39	-12.3	2.15	-48.24	-13.00	H
9872.375	-58.45	-12.3	2.15	-48.30	-13.00	H
9960.125	-57.73	-12.3	2.15	-47.58	-13.00	V
9260	-54.05	-12.4	2.15	-43.80	-13.00	V

Test Results for Channel 251/848.8MHz						
frequency(MHz)	P_{Mea}(dBm)	Antenna Gain(dB)	Correction(dB)	ERP(dBm)	Limit(dBm)	Polarization
4244.25	-50.58	-8.4	2.15	-44.33	-13.00	V
6790.5	-56.03	-10.5	2.15	-47.68	-13.00	V
7061.5	-56.29	-11.1	2.15	-47.34	-13.00	V
7635.5	-56.40	-11.4	2.15	-47.15	-13.00	H
8062	-57.08	-11.6	2.15	-47.63	-13.00	V
8584.5	-58.19	-12.3	2.15	-48.04	-13.00	H
4244.25	-50.58	-8.4	2.15	-44.33	-13.00	V

GSM 1900:

Test Results for Channel 512/1850.2MHz					
frequency(MHz)	P_{Mea}(dBm)	Antenna Gain(dB)	ERP(dBm)	Limit(dBm)	Polarization
17921.0625	-50.85	-13.5	-37.35	-13.00	H
18956.90625	-53.24	-15	-38.24	-13.00	H
19164.4375	-53.13	-15	-38.13	-13.00	H
19293.125	-52.47	-15	-37.47	-13.00	H
19621.1875	-53.25	-15.3	-37.95	-13.00	H
19700.03125	-53.04	-15.3	-37.74	-13.00	H
17921.0625	-50.85	-13.5	-37.35	-13.00	H

Test Results for Channel 661/1880.0MHz					
frequency(MHz)	P_{Mea}(dBm)	Antenna Gain(dB)	ERP(dBm)	Limit(dBm)	Polarization
17927.40625	-49.11	-13.5	-35.61	-13.00	H
18086.90625	-49.48	-13.7	-35.78	-13.00	H
18976.84375	-50.68	-15	-35.68	-13.00	H
19492.5	-51.40	-15	-36.40	-13.00	H
19787.03125	-51.12	-15.3	-35.82	-13.00	H
19897.59375	-50.31	-15.3	-35.01	-13.00	H
17927.40625	-49.11	-13.5	-35.61	-13.00	H

Test Results for Channel 810/1909.8MHz					
frequency(MHz)	P_{Mea}(dBm)	Antenna Gain(dB)	ERP(dBm)	Limit(dBm)	Polarization
18043.40625	-51.14	-13.7	-37.44	-13.00	H
18298.0625	-51.24	-13.7	-37.54	-13.00	H
18606.1875	-52.12	-15	-37.12	-13.00	H
19565	-52.58	-15	-37.58	-13.00	H
19799.71875	-52.50	-15.3	-37.20	-13.00	H
19996.375	-51.75	-15.3	-36.45	-13.00	H
18043.40625	-51.14	-13.7	-37.44	-13.00	H

9. FREQUENCY STABILITY

9.1 MEASUREMENT METHOD

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 -10℃.

3 , With the EUT, powered via nominal voltage, connected to the CMU200 and in a simulated call on channel 661 for PCS 1900 band , channel 190 for GSM 850 band, channel 9400 for UMTS band II and channel 4175 for UMTS band V measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming.

4 , Repeat the above measurements at 10℃ increments from -10℃ to +50℃. Allow at least 1 1/2 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 1/2 hours unpowered, to allow any self-heating to stabilize, before continuing.

6 , Subject the EUT to overnight soak at +50℃.

7 , With the EUT, powered via nominal voltage, connected to the CMU200 and in a simulated call on the centre channel, measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming.

8 , Repeat the above measurements at 10℃ increments from +50℃ to -10℃. Allow at least 1 1/2 hours at each temperature, unpowered, before making measurements.

9 , At all temperature levels hold the temperature to +/- 0.5℃ during the measurement procedure.

9.2 PROVISIONS APPLICABLE

9.2.1 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 6.3VDC and 8.5VDC, with a nominal voltage of 7.4VDC. 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.

9.2.2 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, the normal environment temperature is 20°C.

9.3 MEASUREMENT RESULT (WORST)

Frequency Error Against Voltage for GSM850 band		
Voltage(V)	GSM	
	Frequency error(Hz)	Frequency error(ppm)
3.45	-53	0.063
3.6	-49	0.059
4.5	-59	0.071

Frequency Error Against Temperature for GSM850 band		
temperature(℃)	GSM	
	Frequency error(Hz)	Frequency error(ppm)
-30	-73	0.087
-20	-69	0.082
-10	-63	0.075
0	-55	0.066
10	-58	0.069
20	-51	0.061
30	-48	0.057
40	-55	0.066
50	-57	0.068

Frequency Error Against Voltage for PCS1900 band		
Voltage(V)	GSM	
	Frequency error(Hz)	Frequency error(ppm)
3.45	-74	0.050
3.60	-81	0.043
4.50	-94	0.050

Frequency Error Against Voltage for PCS1900 band		
temperature(℃)	GSM	
	Frequency error(Hz)	Frequency error(ppm)
-30	-94	0.050
-20	-99	0.053
-10	-96	0.051
0	-85	0.045
10	-87	0.046
20	-86	0.046
30	-79	0.042
40	-82	0.044
50	-91	0.048

10. OCCUPIED BANDWIDTH

10.1 MEASUREMENT METHOD

The test set up and general procedure is similar to conducted peak output power test. Only different for setting the measurement configuration of the measuring instrument of Spectrum Analyzer.

10.2 PROVISIONS APPLICABLE

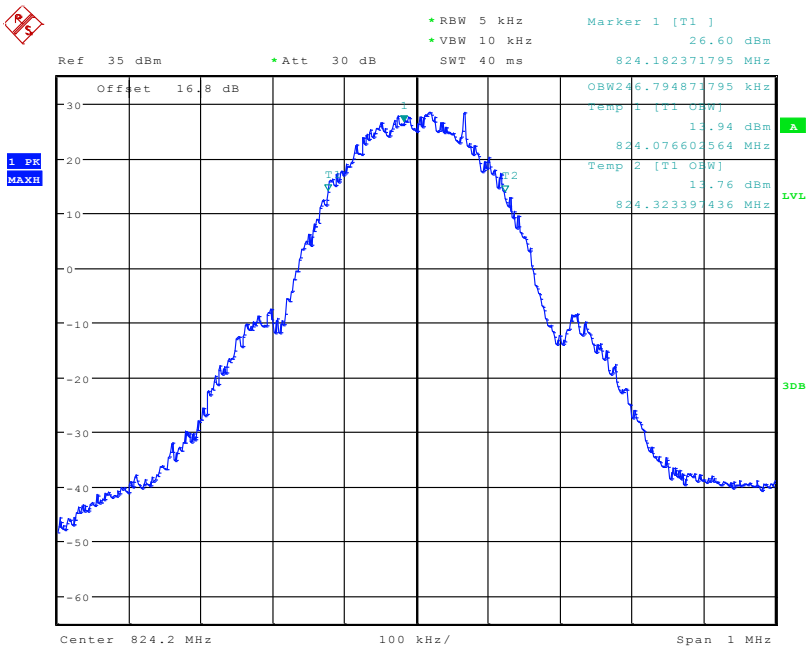
The emission bandwidth is defined as two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26dB below the transmitter power

10.3 MEASUREMENT RESULT

Occupied Bandwidth (99%) for GSM850 band			
GSM	Mode	Frequency(MHz)	Occupied Bandwidth (99%)(kHz)
	Low Channel	824.2	247
	Middle Channel	836.6	244
	High Channel	848.8	244

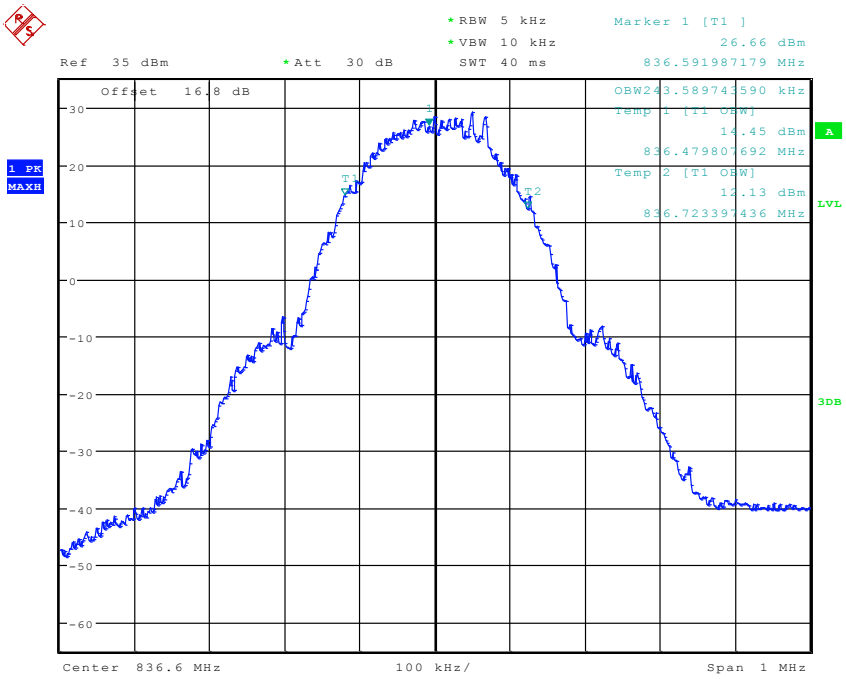
Occupied Bandwidth (99%) for PCS1900 band			
GSM	Mode	Frequency(MHz)	Occupied Bandwidth (99%)(kHz)
	Low Channel	1850.2	240
	Middle Channel	1880.0	245
	High Channel	1909.8	245

GSM850 Channel 128:



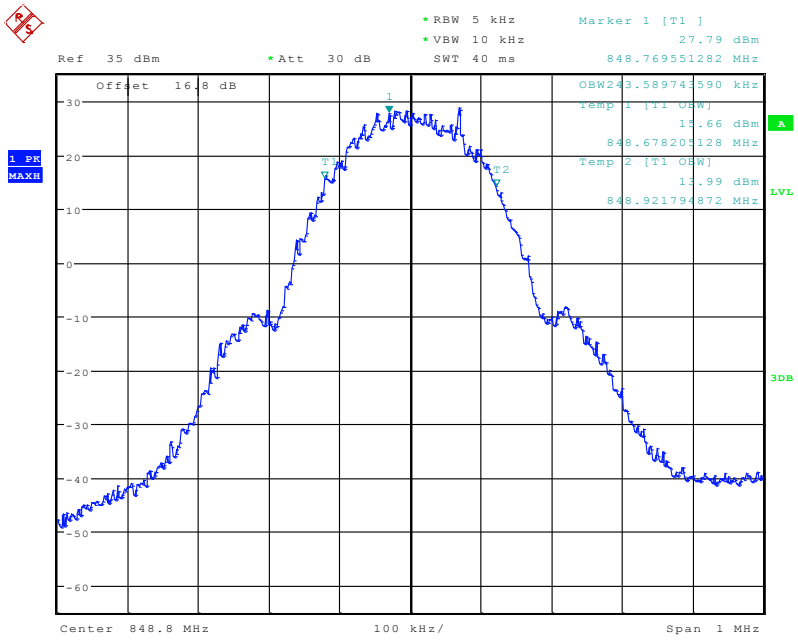
Date: 16.SEP.2015 04:52:29

Channel 190



Date: 16.SEP.2015 04:53:36

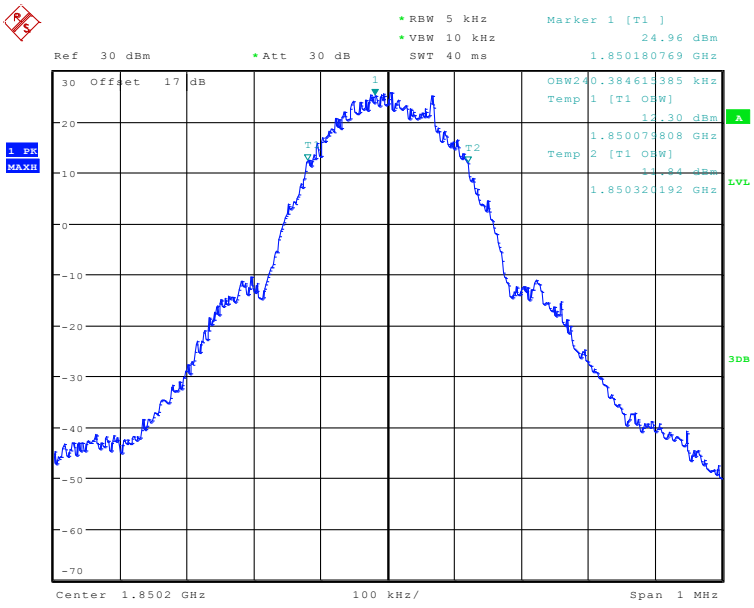
Channel 251



Date: 16.SEP.2015 04:54:17

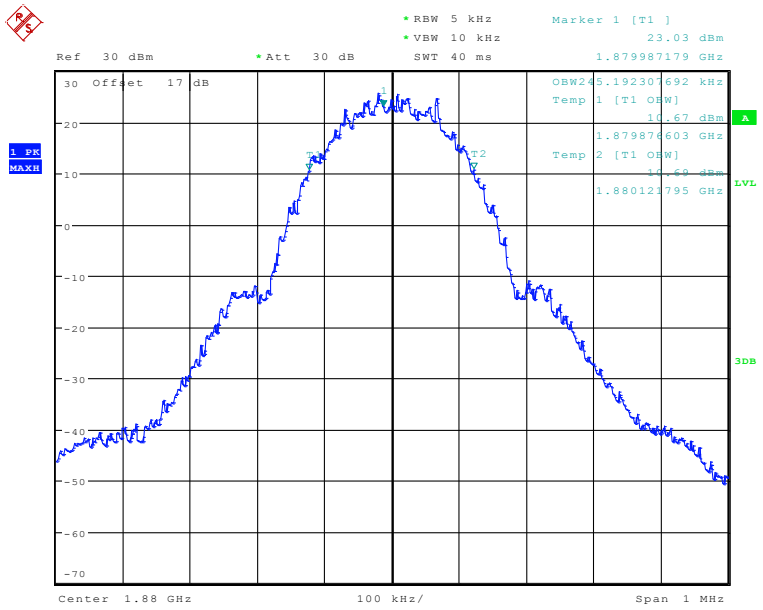
PCS1900

channel 512



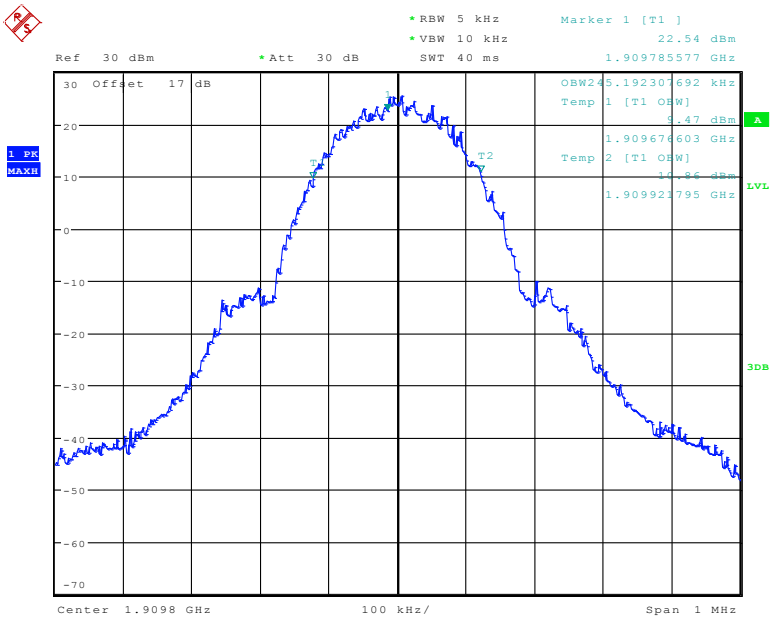
Date: 16.SEP.2015 05:30:15

Channel 661



Date: 16.SEP.2015 05:30:58

Channel 810



Date: 16.SEP.2015 05:32:03

11. EMISSION BANDWIDTH

11.1 MEASUREMENT METHOD

The test set up and general procedure is similar to conducted peak output power test. Only different for setting the measurement configuration of the measuring instrument of Spectrum Analyzer.

11.2 PROVISIONS APPLICABLE

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

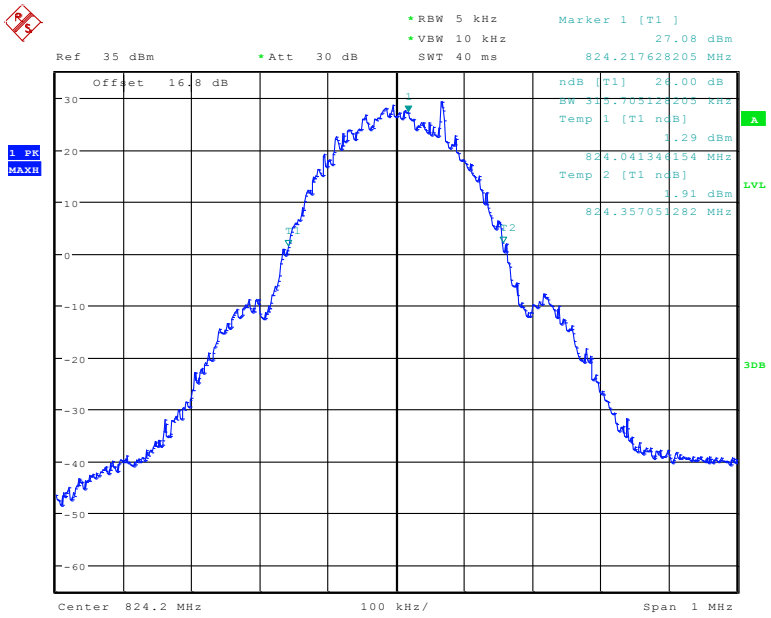
11.3 MEASUREMENT RESULT

Emission Bandwidth (-26dBc) for GSM850 band			
GSM850	Mode	Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)
	Low Channel	824.2	317
	Middle Channel	836.6	316
	High Channel	848.8	322

Emission Bandwidth (-26dBc) for PCS1900 band			
PCS1900	Mode	Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)
	Low Channel	1850.2	324
	Middle Channel	1880.0	321
	High Channel	1909.8	317

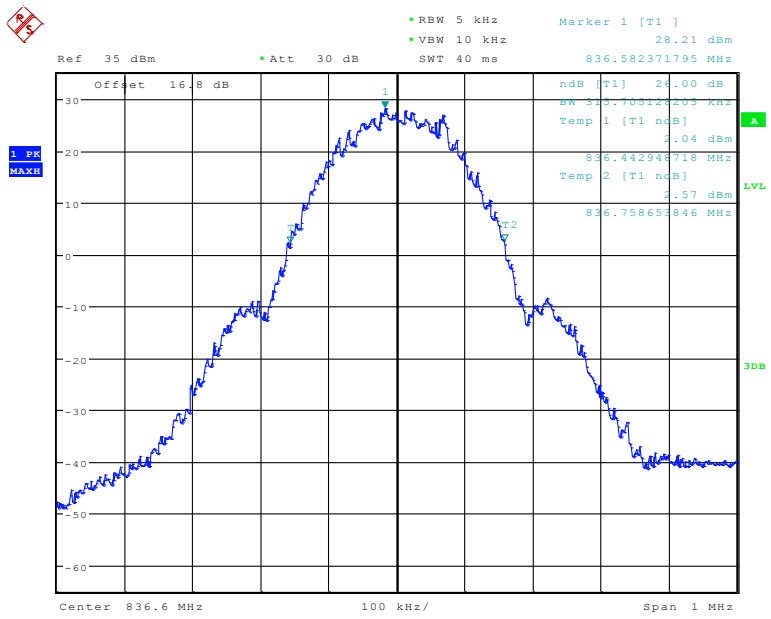
GSM850

Channel 128



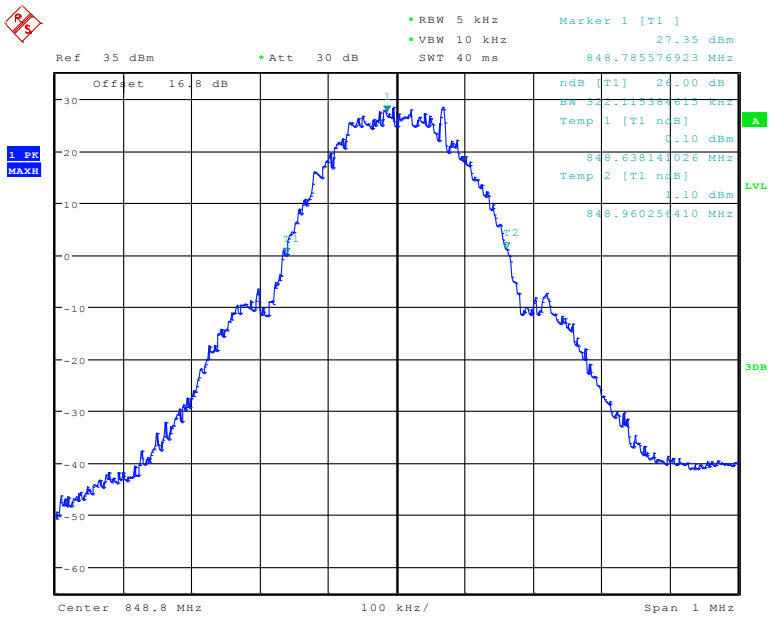
Date: 16.SEP.2015 04:56:36

Channel 190



Date: 16.SEP.2015 04:55:30

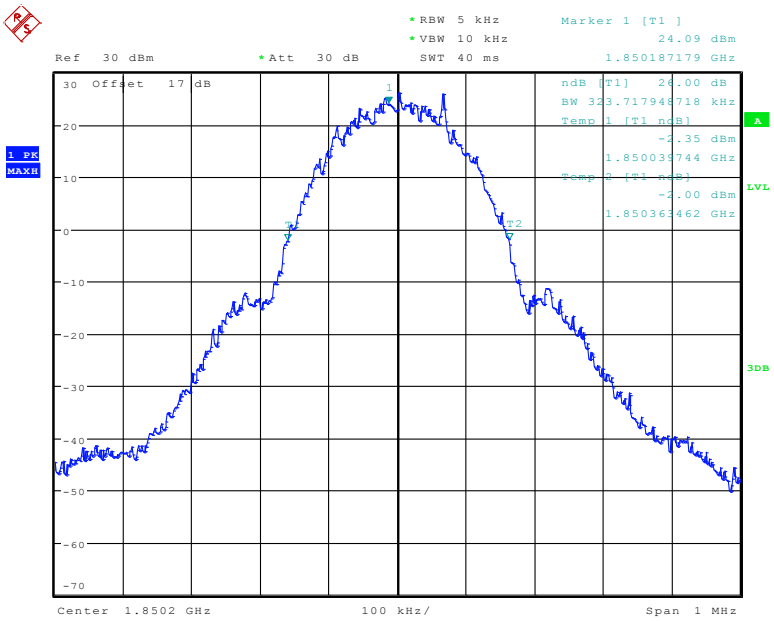
Channel 251



Date: 16.SEP.2015 04:55:00

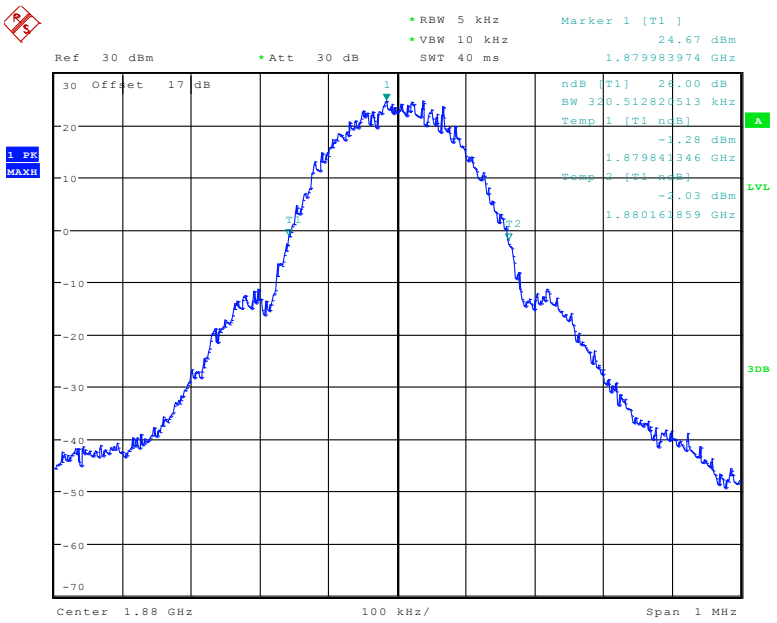
PCS1900:

Channel 512



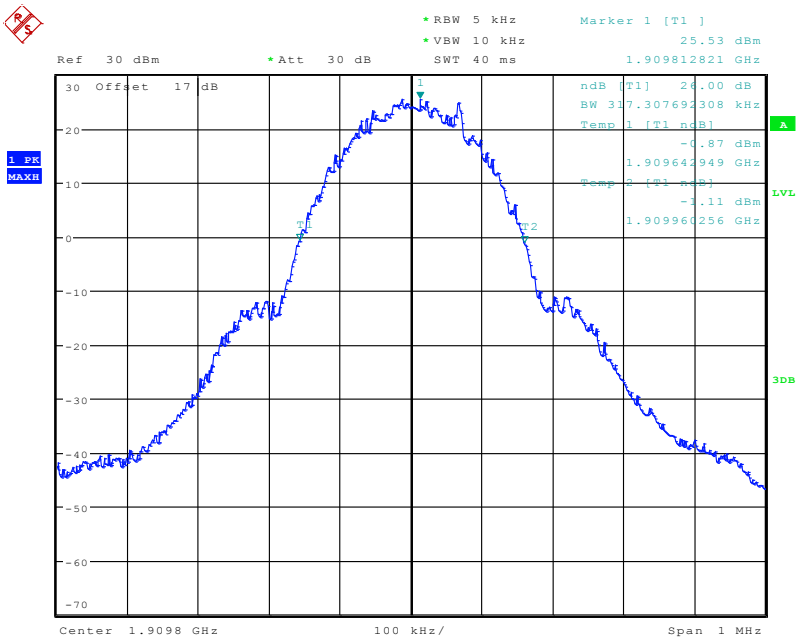
Date: 16.SEP.2015 05:33:52

Channel 661



Date: 16.SEP.2015 05:33:23

Channel 810



Date: 16.SEP.2015 05:32:54

12. BAND EDGE

12.1 MEASUREMENT METHOD

The test set up and general procedure is similar to conducted peak output power test. Only different for setting the measurement configuration of the measuring instrument of Spectrum Analyzer.

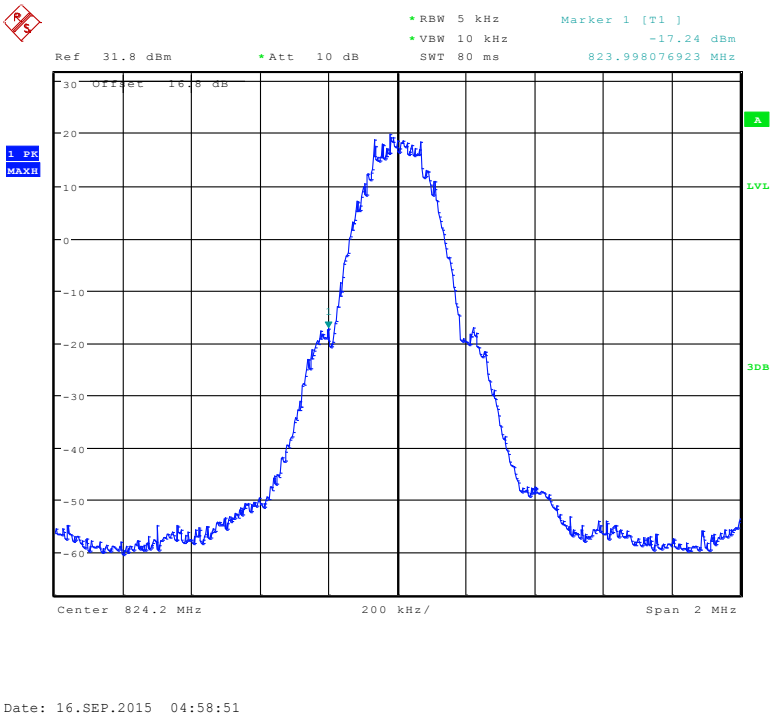
12.2 PROVISIONS APPLICABLE

As Specified in FCC rules of 22.917(a) and 24.238(a)

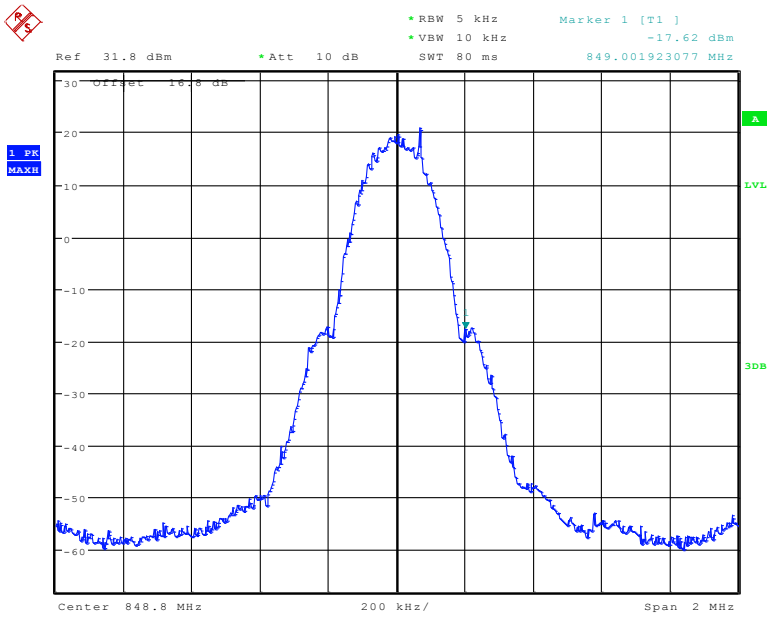
12.3 MEASUREMENT RESULT

GSM850

Channel 128



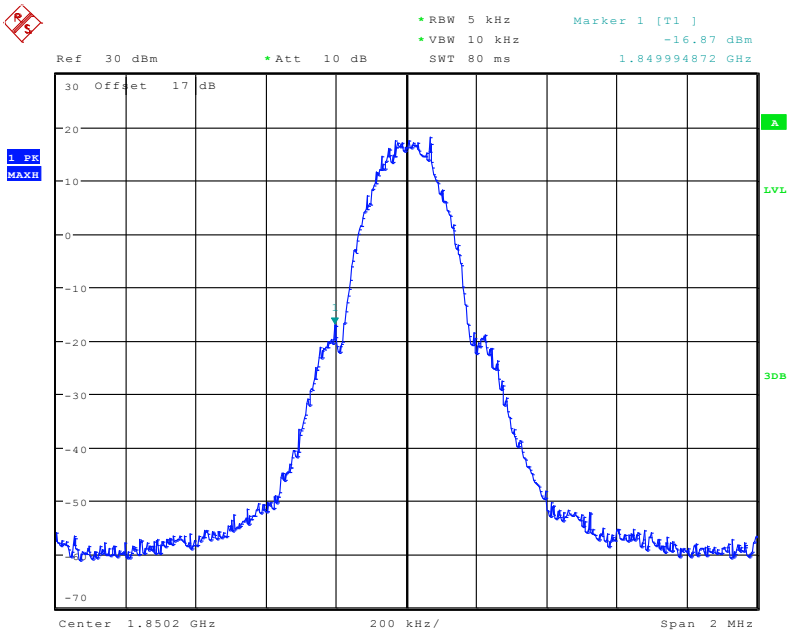
Channel 251



Date: 16.SEP.2015 05:00:47

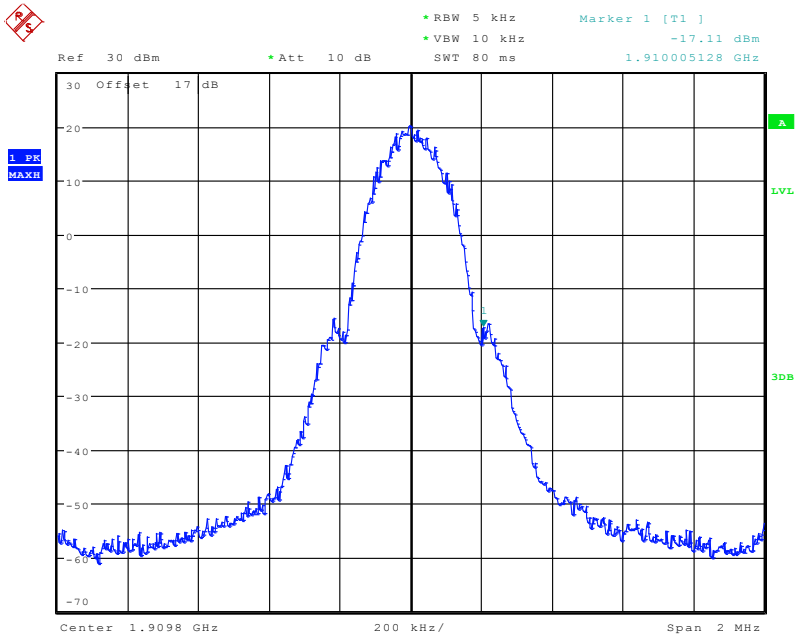
PCS1900

Channel 512



Date: 16.SEP.2015 05:35:50

Channel 810


RBW 5 kHz
VBW 10 kHz
SWT 80 ms
Marker 1 [T1]
-17.11 dBm
1.910005128 GHz
Ref 30 dBm
Att 10 dB
Offset 17 dB
1 PK
MAXH
A
LVL
3DB
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
Center 1.9098 GHz
200 kHz/
Span 2 MHz
Date: 16.SEP.2015 05:37:12