FCC/IC RF Test Report

APPLICANT	:	PSION INC.
EQUIPMENT	:	EP10 Hand-Held Computer
BRAND NAME	:	psion
MODEL NAME	:	7515U
FCC ID	:	GM37515UA
IC		2739D-7515UA
STANDARD	:	FCC 47 CFR Part 2, 22(H), 24(E), 27(L) IC RSS-132 Issue 2 IC RSS-133 Issue 5 IC RSS-139 Issue 2
CLASSIFICATION	:	PCS Licensed Transmitter (PCB)
Tx/Rx FREQUENCY RANGE	:	GSM850 : 824.2 ~ 848.8 MHz / 869.2 ~ 893.8 MHz GSM1900 : 1850.2 ~ 1909.8 MHz / 1930.2 ~ 1989.8 MHz WCDMA Band V : 826.4 ~ 846.6 MHz / 871.4 ~ 891.6 MHz WCDMA Band IV : 1712.4 MHz ~ 1752.6 MHz 2112.4 MHz ~ 2152.6 MHz WCDMA Band II : 1852.4 ~ 1907.6 MHz / 1932.4 ~ 1987.6 MHz
MAX. ERP/EIRP POWER	:	GSM850 (GPRS 8) : 0.23 W GSM850 (EDGE 8) : 0.06 W GSM1900 (GPRS 8) : 0.26 W GSM1900 (EDGE 8) : 0.10 W WCDMA Band V (RMC 12.2Kbps) : 0.05 W WCDMA Band IV (RMC 12.2Kbps) : 0.16 W WCDMA Band II (RMC 12.2Kbps) : 0.14 W
EMISSION DESIGNATOR	:	GMSK : 248KGXW 8PSK : 242KG7W QPSK : 4M16F9W

The product was received on Apr. 09, 2011 and completely tested on Jun. 15, 2011. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI / TIA / EIA-603-C-2004 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by:

Jones Tsai / Manager

Testing Laboratory
1190

SPORTON INTERNATIONAL INC.

No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.

TABLE OF CONTENTS

REVISION HISTORY **4**

SUMMARY OF TEST RESULT **5**

1 GENERAL DESCRIPTION **6**

1.1 Applicant 6
1.2 Manufacturer 6
1.3 Feature of Equipment Under Test 7
1.4 Testing Site 8
1.5 Applied Standards 9
1.6 Ancillary Equipment List 9

2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST **10**

2.1 Test Mode 10
2.2 Connection Diagram of Test System 12

3 TEST RESULT **13**

3.1 Conducted Output Power Measurement 13
3.2 Effective Radiated Power and Effective Isotropic Radiated Power Measurement 15
3.3 Occupied Bandwidth Measurement 21
3.4 Band Edge Measurement 36
3.5 Conducted Emission Measurement 51
3.6 Field Strength of Spurious Radiation Measurement 70
3.7 Frequency Stability Measurement 86

4 LIST OF MEASURING EQUIPMENTS **94**

5 UNCERTAINTY OF EVALUATION **95**

APPENDIX A. PHOTOGRAPHS OF EUT

APPENDIX B. SETUP PHOTOGRAPHS

REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG140905	Rev. 01	Initial issue of report	Jul. 04, 2011

SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	§2.1046	N/A	Conducted Output Power	N/A	PASS	-
3.2	§22.913(a)(2)	RSS-132(4.4) SRSP-503(5.1.3)	Effective Radiated Power	< 7 Watts	PASS	-
3.2	§24.232(c)	RSS-133 (6.4) SRSP-510(5.1.2)	Equivalent Isotropic Radiated Power	< 2 Watts	PASS	-
3.2	§27.50(d)(2)	RSS-139 (6.4) SRSP-513(5.1.2)	Equivalent Isotropic Radiated Power	< 1 Watts	PASS	-
3.3	§2.1049 §22.917(a) §24.238(a) §27.53(g)	N/A	Occupied Bandwidth	N/A	PASS	-
3.4	§2.1051 §22.917(a) §24.238(a) §27.53(g)	RSS-132 (4.5.1) RSS-133 (6.5.1) RSS-139 (6.5)	Band Edge Measurement	< $43+10\log_{10}$(P[Watts])	PASS	-
3.5	§2.1051 §22.917(a) §24.238(a) §27.53(g)	RSS-132 (4.5.1) RSS-133 (6.5.1) RSS-139 (6.5)	Conducted Emission	< $43+10\log_{10}$(P[Watts])	PASS	-
3.6	§2.1053 §22.917(a) §24.238(a) §27.53(g)	RSS-132 (4.5.1) RSS-133 (6.5.1) RSS-139 (6.5)	Field Strength of Spurious Radiation	< $43+10\log_{10}$(P[Watts])	PASS	Under limit 22.61 dB at 3460 MHz
3.7	§2.1055 §22.355 §24.235 §27.54	RSS-132 (4.3) RSS-133 (6.3) RSS-139 (6.3)	Frequency Stability for Temperature & Voltage	< 2.5 ppm	PASS	-

1 General Description

1.1 Applicant

PSION INC.
2100 Meadowvale Blvd, Mississauga ON L5N 7J9, CANADA

1.2 Manufacturer

PSION INC.
2100 Meadowvale Blvd, Mississauga ON L5N 7J9, CANADA

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	EP10 Hand-Held Computer
Brand Name	psion
Model Name	7515U
FCC ID	GM37515UA
IC	2739D-7515UA
Tx Frequency	GSM850 : 824 MHz ~ 849 MHz GSM1900 : 1850 MHz ~ 1910 MHz WCDMA Band V : 824 MHz ~ 849 MHz WCDMA Band IV : 1710 MHz ~ 1755 MHz WCDMA Band II : 1850 MHz ~ 1910 MHz
Rx Frequency	GSM850 : 869 MHz ~ 894 MHz GSM1900 : 1930 MHz ~ 1990 MHz WCDMA Band V : 869 MHz ~ 894 MHz WCDMA Band IV : 2110 MHz ~ 2155 MHz WCDMA Band II : 1930 MHz ~ 1990 MHz
Maximum Output Power to Antenna	GSM850 : 33.21 dBm GSM1900 : 30.19 dBm WCDMA Band V : 24.20 dBm WCDMA Band IV : 24.44 dBm WCDMA Band II : 24.08 dBm
Maximum ERP/EIRP	GSM850 (GPRS 8) : 0.23 W (23.59 dBm) GSM850 (EDGE 8) : 0.06 W (18.09 dBm) GSM1900 (GPRS 8) : 0.26 W (24.13 dBm) GSM1900 (EDGE 8) : 0.10 W (20.19 dBm) WCDMA Band V (RMC 12.2Kbps) : 0.05 W (16.94 dBm) WCDMA Band IV (RMC 12.2Kbps) : 0.16 W (21.91 dBm) WCDMA Band II (RMC 12.2Kbps) : 0.14 W (21.33 dBm)
Antenna Type	Fixed Internal Antenna
HW Version	2
SW Version	1.1
Type of Modulation	GSM / GPRS : GMSK EDGE : 8PSK WCDMA : QPSK HSDPA : QPSK / 16QAM HSUPA : QPSK
Type of Emission	GMSK : 248KGXW 8PSK : 242KG7W QPSK : 4M16F9W
EUT Stage	Identical Prototype

Remark:

1. For other wireless features of this EUT, the test report will be issued separately.
2. This test report recorded only product characteristics and test results of PCS Licensed Transmitter (PCB).
3. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

List of Accessory:

Specification of Accessory		
AC Adapter 1	**Brand Name**	Leader
	Model Name	IU18-2050300-WP
AC Adapter 2	**Brand Name**	Phihong
	Model Name	PSA15R-050P
Battery	**Brand Name**	PSION / ETI
	Model Name	RV3010 / BP08-000760
Car Charger	**Brand Name**	AOEM
	Model Name	C15C-0520CD0-C0
Desktop Charger Cradle (Single Dock)	**Brand Name**	PSION
	Model Name	RV4000
Desktop Charger Cradle (AC Adapter)	**Brand Name**	FSP
	Model Name	FSP050-DBAB1
Charger Snap Module 1	**Brand Name**	PSION
	Model Name	RV4001
Charger Snap Module 2	**Brand Name**	PSION
	Model Name	RV4002
LCD Panel	**Brand Name**	Sharp
	Model Name	LS037V7DW01
Pouch	**Brand Name**	Psion
	Model Name	RV6091

Remark: For accessories equipped with this EUT, please refer to Appendix A.

1.4 Testing Site

Test Site	SPORTON INTERNATIONAL INC.		
Test Site Location	No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-327-3456 FAX: +886-3-328-4978		
Test Site No.	**Sporton Site No.**		**FCC/IC Registration No.**
	TH02-HY	03CH07-HY	722060/4086B-1

1.5 Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- Preliminary Guidance for Receiving Applications for Certification of 3G Device. May 9, 2006.
- 47 CFR Part 2, 22(H), 24(E), 27(L)
- ANSI / TIA / EIA-603-C-2004
- IC RSS-132 Issue 2
- IC RSS-133 Issue 5
- IC RSS-139 Issue 2

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.

2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B (DoC), recorded in a separate test report.

1.6 Ancillary Equipment List

Item	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord
1.	System Simulator	R&S	CMU200	N/A	N/A	Unshielded, 1.8 m

2 Test Configuration of Equipment Under Test

2.1 Test Mode

During all testing, EUT is in link mode with base station emulator at maximum power level. The spurious emission measurements were carried out in semi-anechoic chamber with 3-meter test range.

Frequency range investigated for radiated emission is as follows:

1. 30 MHz to 9000 MHz for GSM850 and WCDMA Band V.
2. 30 MHz to 18000 MHz for WCDMA Band IV.
3. 30 MHz to 19000 MHz for GSM1900 and WCDMA Band II.

Test Modes		
Band	**Radiated TCs**	**Conducted TCs**
GSM 850	■ GPRS 8 Link ■ EDGE 8 Link	■ GPRS 8 Link ■ EDGE 8 Link
GSM 1900	■ GPRS 8 Link ■ EDGE 8 Link	■ GPRS 8 Link ■ EDGE 8 Link
WCDMA Band V	■ RMC 12.2Kbps Link	■ RMC 12.2Kbps Link
WCDMA Band IV	■ RMC 12.2Kbps Link	■ RMC 12.2Kbps Link
WCDMA Band II	■ RMC 12.2Kbps Link	■ RMC 12.2Kbps Link

Note:

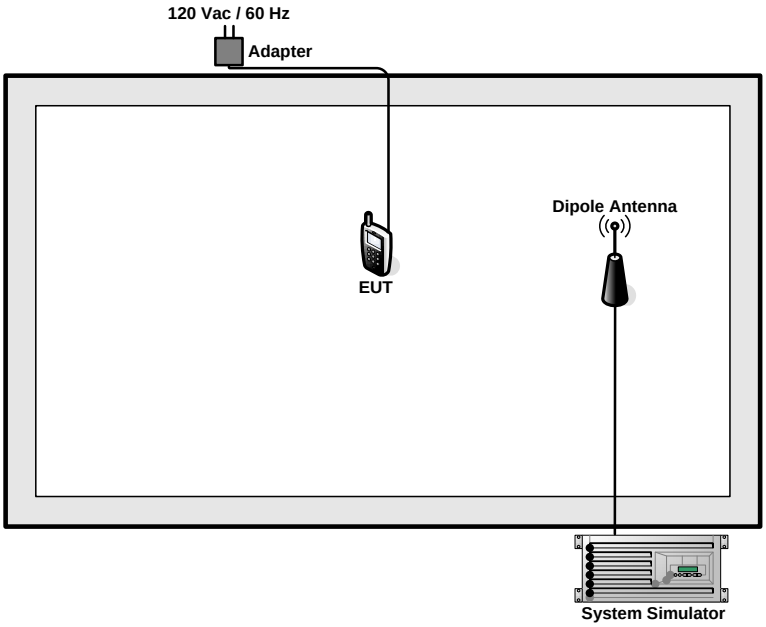
1. The maximum power levels are GPRS multi-slot class 8 mode for GMSK link, EDGE multi-slot class 8 mode for 8PSK link, RMC 12.2Kbps mode for WCDMA band V, RMC 12.2Kbps mode for WCDMA band IV, and RMC 12.2Kbps mode for WCDMA band II, only these modes were used for all tests.
2. Because there are individual antennas for each WWAN, WLAN, and Bluetooth, the co-location test modes are not required.

The conducted power tables are as follows:

Conducted Power (*Unit: dBm)						
Band	**GSM850**			**GSM1900**		
Channel	**128**	**189**	**251**	**512**	**661**	**810**
Frequency	**824.2**	**836.4**	**848.8**	**1850.2**	**1880**	**1909.8**
GSM	33.19	32.98	33.06	29.57	30.12	29.78
GPRS 8	**33.21**	32.99	33.08	29.62	**30.19**	29.85
GPRS 10	30.12	29.80	29.72	26.60	26.64	26.50
EGPRS 8 (MCS1)	33.19	33.01	33.09	29.60	30.19	29.85
EGPRS 10 (MCS1)	30.12	29.85	29.86	26.50	26.64	26.60
EGPRS 8 (MCS9)	**27.13**	27.18	26.86	25.82	**25.90**	25.80
EGPRS 10 (MCS9)	26.90	26.97	26.72	25.50	25.62	25.64

Conducted Power (*Unit: dBm)									
Band	**WCDMA Band V**			**WCDMA Band II**			**WCDMA Band IV**		
Tx Channel	**4132**	**4182**	**4233**	**9262**	**9400**	**9538**	**1312**	**1413**	**1513**
Rx Channel	**4357**	**4408**	**4458**	**9662**	**9800**	**9938**	**1537**	**1638**	**1738**
Frequency	**826.4**	**836.4**	**846.6**	**1852.4**	**1880**	**1907.6**	**1712.4**	**1732.6**	**1752.6**
RMC 12.2K	23.67	**24.20**	23.87	**24.44**	23.40	24.25	22.94	**24.08**	23.86
HSDPA Subtest-1	23.45	23.61	23.15	23.48	23.42	23.39	22.83	24.04	24.00
HSDPA Subtest-2	23.57	23.70	23.34	23.74	23.46	23.65	22.92	23.99	23.82
HSDPA Subtest-3	22.65	22.90	22.47	23.01	22.84	23.38	22.23	23.37	23.45
HSDPA Subtest-4	23.00	23.27	22.59	23.07	23.02	23.09	23.51	23.27	22.56
HSUPA Subtest-1	23.11	22.88	23.07	22.62	22.51	22.47	22.54	23.24	23.34
HSUPA Subtest-2	21.84	21.88	21.68	22.20	21.85	22.04	22.07	22.27	21.93
HSUPA Subtest-3	22.01	22.39	22.40	21.85	21.80	21.85	22.12	22.64	22.45
HSUPA Subtest-4	22.35	22.20	21.64	21.97	21.90	21.67	21.89	22.29	22.23
HSUPA Subtest-5	22.81	23.16	22.81	22.11	23.17	22.34	22.89	23.41	23.40

2.2 Connection Diagram of Test System



3 Test Result

3.1 Conducted Output Power Measurement

3.1.1 Description of the Conducted Output Power Measurement

A base station simulator was used to establish communication with the EUT. Its parameters were set to transmit the maximum power on the EUT. The measured power in the radio frequency on the transmitter output terminals shall be reported.

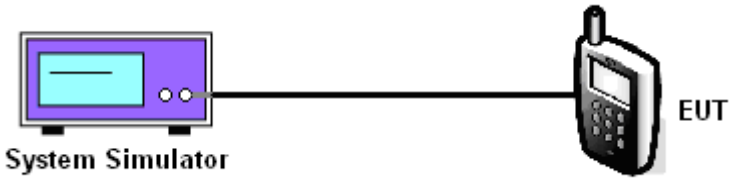
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedures

1. The transmitter output port was connected to base station.
2. Set EUT at maximum power through base station.
3. Select lowest, middle, and highest channels for each band and different modulation.

3.1.4 Test Setup



3.1.5 Test Result of Conducted Output Power

Cellular Band				
Modes	**Channel**	**Frequency (MHz)**	**Conducted Power (dBm)**	**Conducted Power (Watts)**
GSM850 (GPRS 8)	128 (Low)	824.2	33.21	2.09
	189 (Mid)	836.4	32.99	1.99
	251 (High)	848.8	33.08	2.03
GSM850 (EDGE 8)	128 (Low)	824.2	27.13	0.52
	189 (Mid)	836.4	27.18	0.52
	251 (High)	848.8	26.86	0.49
WCDMA Band V (RMC 12.2Kbps)	4132 (Low)	826.4	23.67	0.23
	4182 (Mid)	836.4	24.20	0.26
	4233 (High)	846.6	23.87	0.24

PCS Band				
Modes	**Channel**	**Frequency (MHz)**	**Conducted Power (dBm)**	**Conducted Power (Watts)**
GSM1900 (GPRS 8)	512 (Low)	1850.2	29.62	0.92
	661 (Mid)	1880.0	30.19	1.04
	810 (High)	1909.8	29.85	0.97
GSM1900 (EDGE 8)	512 (Low)	1850.2	25.82	0.38
	661 (Mid)	1880.0	25.9	0.39
	810 (High)	1909.8	25.8	0.38
WCDMA Band II (RMC 12.2Kbps)	9262 (Low)	1852.4	24.44	0.28
	9400 (Mid)	1880.0	23.40	0.22
	9538 (High)	1907.6	24.25	0.27

AWS Band				
Modes	**Channel**	**Frequency (MHz)**	**Conducted Power (dBm)**	**Conducted Power (Watts)**
WCDMA Band IV (RMC 12.2Kbps)	1312 (Low)	1712.4	22.94	0.20
	1413 (Mid)	1732.6	24.08	0.26
	1513 (High)	1752.6	23.86	0.24

3.2 Effective Radiated Power and Effective Isotropic Radiated Power Measurement

3.2.1 Description of the ERP/EIRP Measurement

ERP/EIRP is measured by substitution method according to ANSI / TIA / EIA-603-C-2004. The ERP of mobile transmitters must not exceed 7 Watts. The EIRP of mobile transmitters are limited to 2 Watts for 1850~1910 MHz and 1 watt for 1710~1755 MHz.

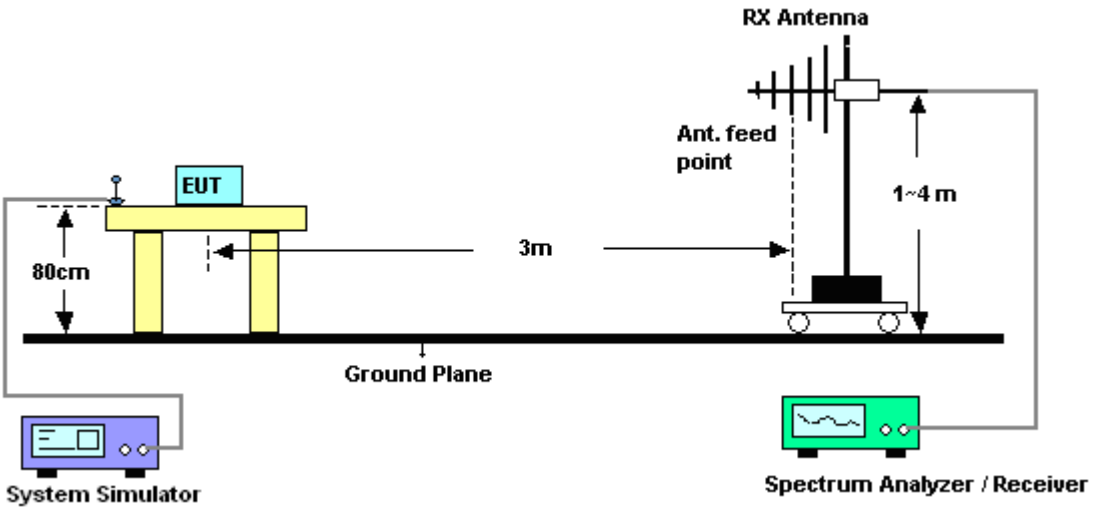
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

1. The EUT was placed on an non-conductive rotating platform with 0.8 meter height in a semi-anechoic chamber. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and a spectrum analyzer with RBW= 3MHz,VBW= 3MHz, and peak detector settings.
2. During the measurement, the EUT was enforced in maximum power and linked with a base station. The highest emission was recorded from analyzer power level (LVL) from the 360 degrees rotation of the turntable and the test antenna raised and lowered over a range from 1 to 4 meters in both horizontally and vertically polarized orientations.
3. Effective Isotropic Radiated Power (EIRP) was measured by substitution method according to TIA/EIA-603-C. The EUT was replaced by dipole antenna (substitution antenna) at same location, and then a known power from S.G. was applied into the dipole antenna through a Tx cable, and then recorded the maximum Analyzer reading through raised and lowered the test antenna. The correction factor (in dB) = S.G. - Tx Cable loss + Substitution antenna gain - Analyzer reading. Then the EUT's EIRP was calculated with the correction factor, EIRP= LVL + Correction factor and ERP = EIRP – 2.15.

3.2.4 Test Setup



3.2.5 Test Result of ERP

GSM850 (GPRS 8) Radiated Power ERP				
Horizontal Polarization				
Frequency (MHz)	**LVL (dBm)**	**Correction Factor (dB)**	**ERP (dBm)**	**ERP (W)**
824.2	-6.11	30.89	22.63	0.18
836.4	-6.48	31.13	22.50	0.18
848.8	-6.44	31.62	23.03	0.20
Vertical Polarization				
Frequency (MHz)	**LVL (dBm)**	**Correction Factor (dB)**	**ERP (dBm)**	**ERP (W)**
824.2	-10.19	35.93	23.59	0.23
836.4	-9.52	34.95	23.28	0.21
848.8	-9.59	34.71	22.97	0.20

* ERP = LVL (dBm) + Correction Factor (dB) – 2.15

GSM850 (EDGE 8) Radiated Power ERP				
Horizontal Polarization				
Frequency (MHz)	**LVL (dBm)**	**Correction Factor (dB)**	**ERP (dBm)**	**ERP (W)**
824.2	-11.06	30.89	17.68	0.06
836.4	-11.59	31.13	17.39	0.05
848.8	-11.77	31.62	17.70	0.06
Vertical Polarization				
Frequency (MHz)	**LVL (dBm)**	**Correction Factor (dB)**	**ERP (dBm)**	**ERP (W)**
824.2	-15.69	35.93	18.09	0.06
836.4	-15.23	34.95	17.57	0.06
848.8	-14.77	34.71	17.79	0.06

* ERP = LVL (dBm) + Correction Factor (dB) – 2.15

WCDMA Band V (RMC 12.2Kbps) Radiated Power ERP				
Horizontal Polarization				
Frequency (MHz)	**LVL (dBm)**	**Correction Factor (dB)**	**ERP (dBm)**	**ERP (W)**
826.4	-12.53	30.89	16.21	0.04
836.4	-12.07	31.13	16.91	0.05
846.6	-12.98	31.62	16.49	0.04
Vertical Polarization				
Frequency (MHz)	**LVL (dBm)**	**Correction Factor (dB)**	**ERP (dBm)**	**ERP (W)**
826.4	-16.84	35.93	16.94	0.05
836.4	-16.01	34.95	16.79	0.05
846.6	-16.20	34.71	16.36	0.04

* ERP = LVL (dBm) + Correction Factor (dB) – 2.15

3.2.6 Test Result of EIRP

GSM1900 (GPRS 8) Radiated Power EIRP				
Horizontal Polarization				
Frequency (MHz)	**LVL (dBm)**	**Correction Factor (dB)**	**EIRP (dBm)**	**EIRP (W)**
1850.2	-17.92	41.24	23.32	0.21
1880.0	-18.13	41.46	23.33	0.22
1909.8	-17.08	41.21	24.13	0.26
Vertical Polarization				
Frequency (MHz)	**LVL (dBm)**	**Correction Factor (dB)**	**EIRP (dBm)**	**EIRP (W)**
1850.2	-24.67	41.52	16.85	0.05
1880.0	-24.78	43.10	18.32	0.07
1909.8	-26.29	42.73	16.44	0.04

* EIRP = LVL (dBm) + Correction Factor (dB)

GSM1900 (EDGE 8) Radiated Power EIRP				
Horizontal Polarization				
Frequency (MHz)	**LVL (dBm)**	**Correction Factor (dB)**	**EIRP (dBm)**	**EIRP (W)**
1850.2	-21.58	41.24	19.66	0.09
1880.0	-21.87	41.46	19.59	0.09
1909.8	-21.02	41.21	20.19	0.10
Vertical Polarization				
Frequency (MHz)	**LVL (dBm)**	**Correction Factor (dB)**	**EIRP (dBm)**	**EIRP (W)**
1850.2	-28.31	41.52	13.21	0.02
1880.0	-28.32	43.10	14.78	0.03
1909.8	-30.64	42.73	12.09	0.02

* EIRP = LVL (dBm) + Correction Factor (dB)

WCDMA Band IV (RMC 12.2Kbps) Radiated Power EIRP				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1712.4	-19.42	39.24	19.82	0.10
1732.6	-18.56	40.25	21.69	0.15
1752.6	-18.40	40.31	21.91	0.16
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1712.4	-23.10	44.11	21.01	0.13
1732.6	-22.77	42.66	19.89	0.10
1752.6	-21.56	41.70	20.14	0.10

* EIRP = LVL (dBm) + Correction Factor (dB)

WCDMA Band II (RMC 12.2Kbps) Radiated Power EIRP				
Horizontal Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1852.4	-21.89	41.24	19.35	0.09
1880.0	-20.67	41.46	20.79	0.12
1907.6	-19.88	41.21	21.33	0.14
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1852.4	-27.18	41.52	14.34	0.03
1880.0	-27.57	43.10	15.53	0.04
1907.6	-28.00	42.73	14.73	0.03

* EIRP = LVL (dBm) + Correction Factor (dB)

3.3 Occupied Bandwidth Measurement

3.3.1 Description of Occupied Bandwidth Measurement

The emission bandwidth is defined as the width of the signal between two points, located at the 2 sides of the carrier frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

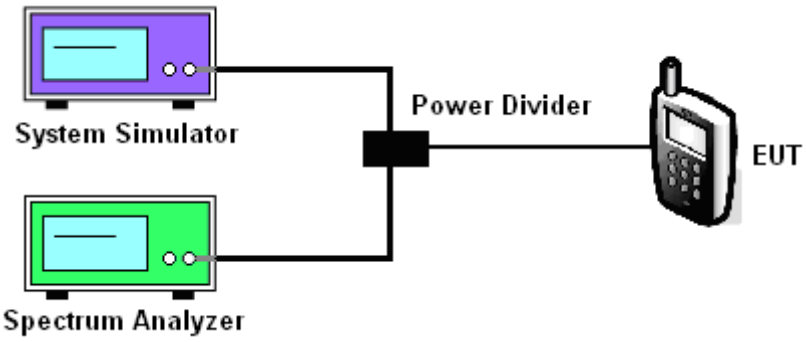
3.3.2 Measuring Instruments

See list of measuring instruments of this test report.

3.3.3 Test Procedures

1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
2. The 99% and 26 dB occupied bandwidth (BW) of the middle channel for the highest RF powers were measured.

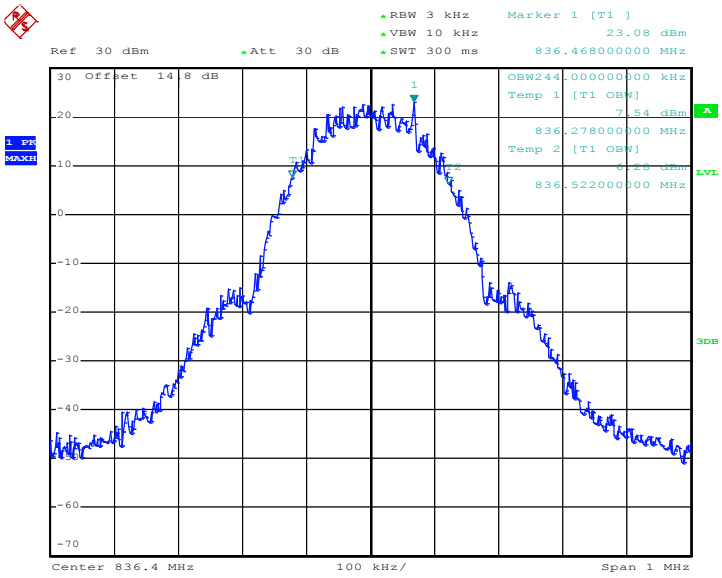
3.3.4 Test Setup



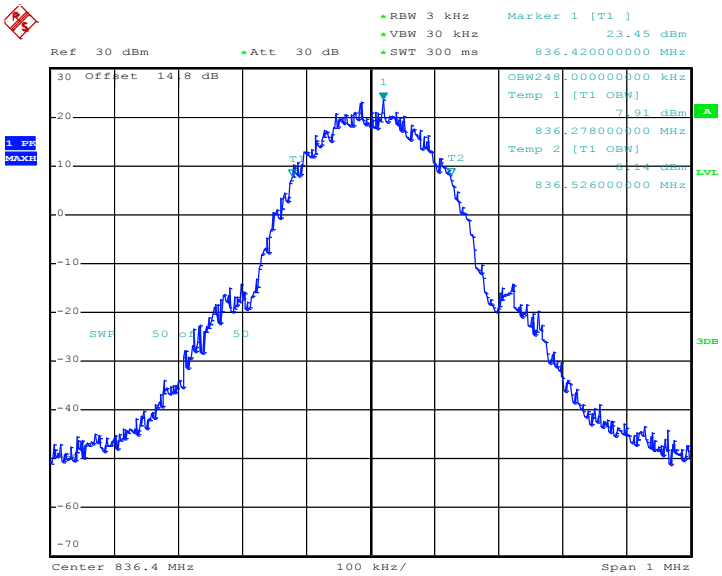
3.3.5 Test Result (Plots) of Occupied Bandwidth

Band :	GSM 850	Power Stage :	High
Test Mode :	GPRS 8 Link		

99% Occupied Bandwidth Plot on Channel 189

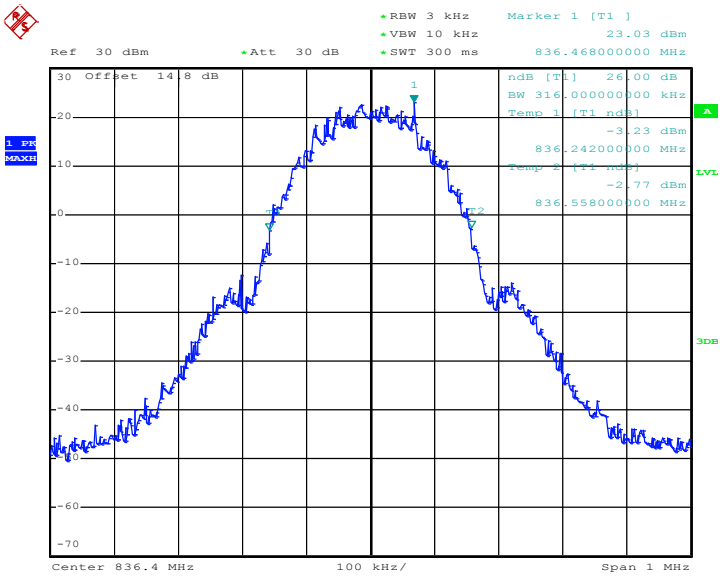


Date: 8.MAR.2011 08:11:07



Date: 8.MAR.2011 08:12:13

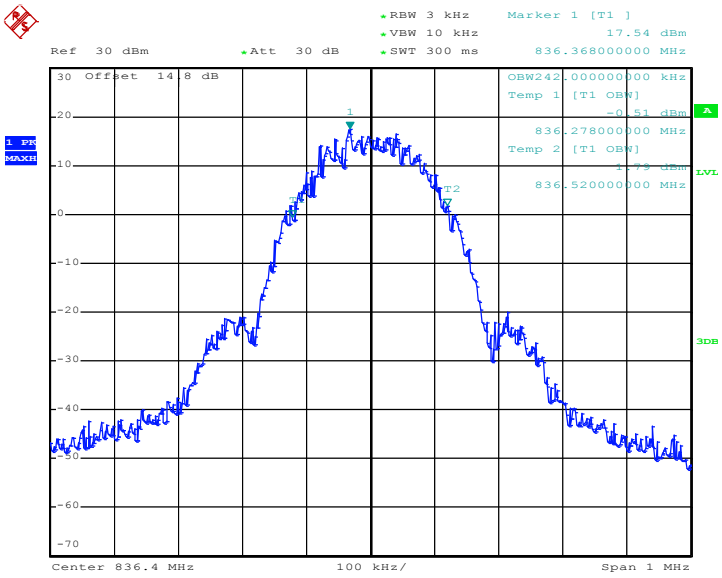
26dB Bandwidth Plot on Channel 189



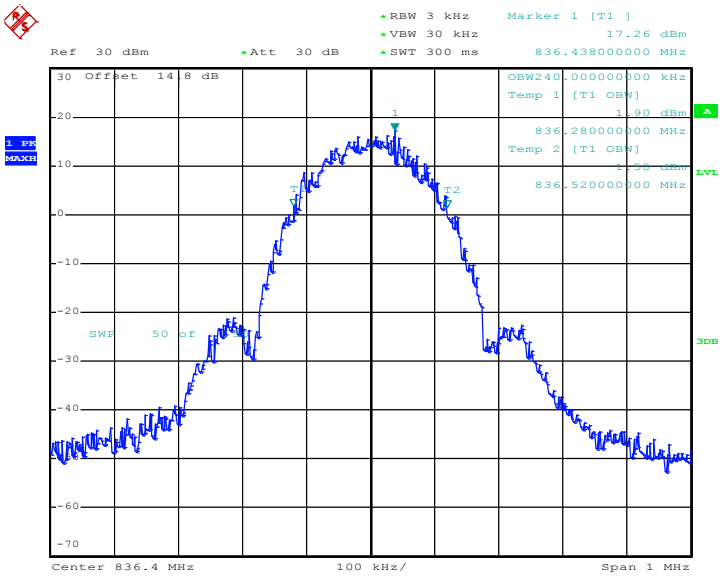
Date: 8.MAR.2011 08:09:49

Band :	GSM 850	Power Stage :	High
Test Mode :	EDGE 8 Link		

99% Occupied Bandwidth Plot on Channel 189

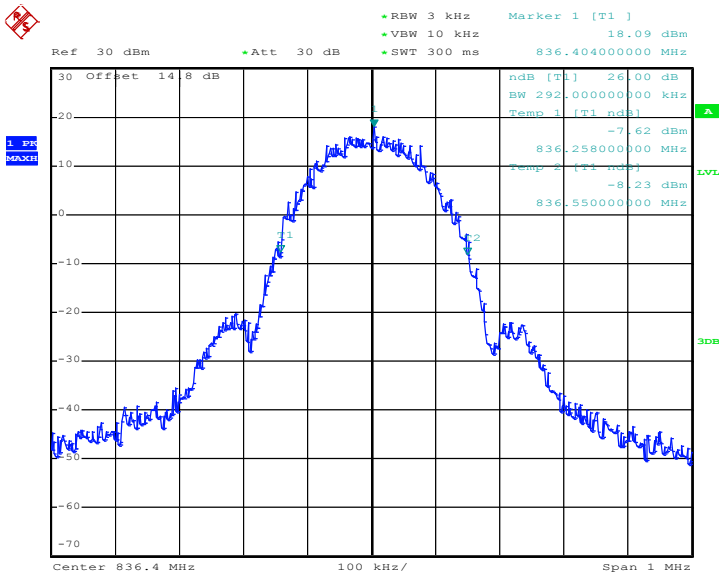


Date: 8.MAR.2011 07:58:00



Date: 8.MAR.2011 07:59:06

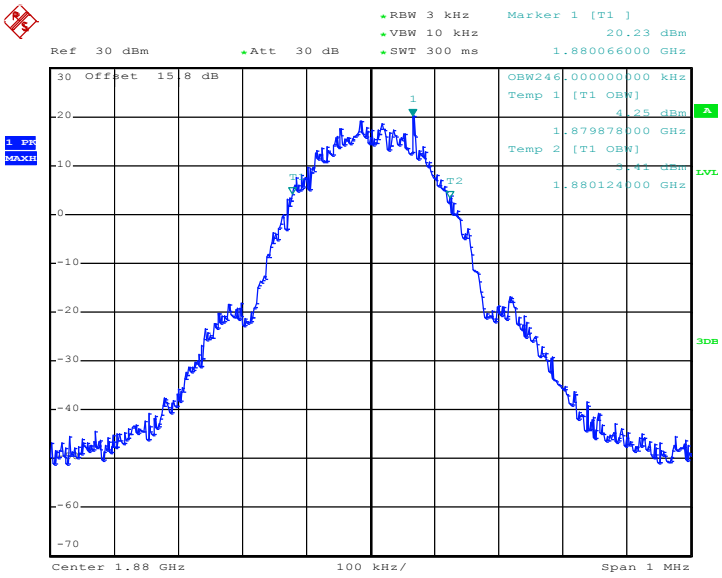
26dB Bandwidth Plot on Channel 189



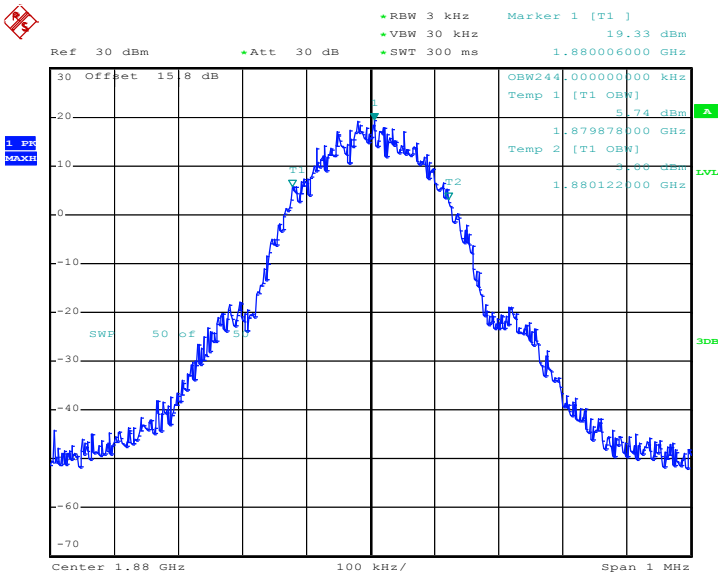
Date: 8.MAR.2011 07:56:42

Band :	GSM 1900	Power Stage :	High
Test Mode :	GPRS 8 Link		

99% Occupied Bandwidth Plot on Channel 661

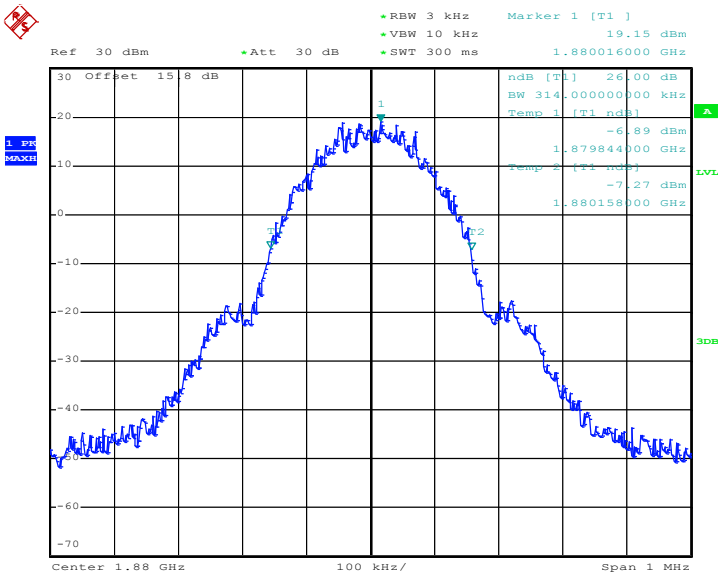


Date: 8.MAR.2011 08:53:45



Date: 8.MAR.2011 08:54:50

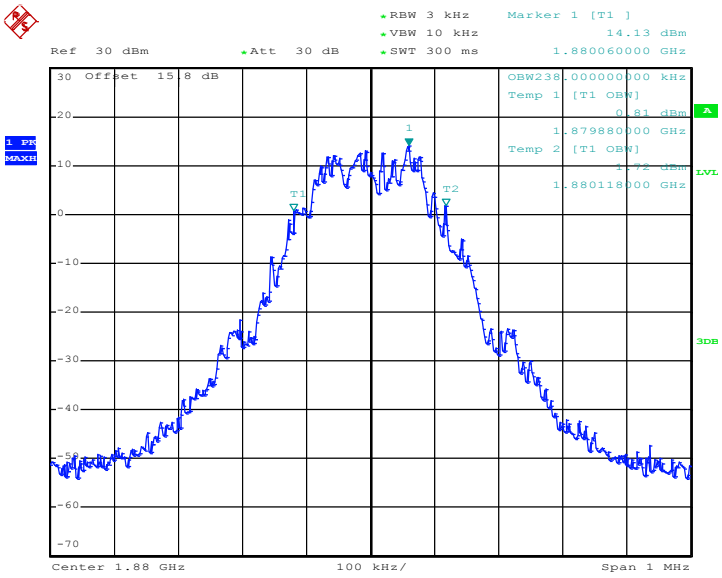
26dB Bandwidth Plot on Channel 661



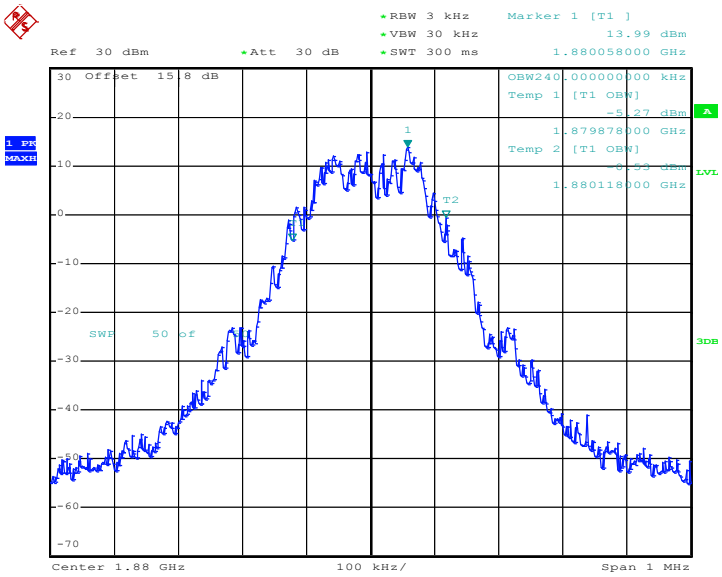
Date: 8.MAR.2011 08:52:27

Band :	GSM 1900	Power Stage :	High
Test Mode :	EDGE 8 Link		

99% Occupied Bandwidth Plot on Channel 661

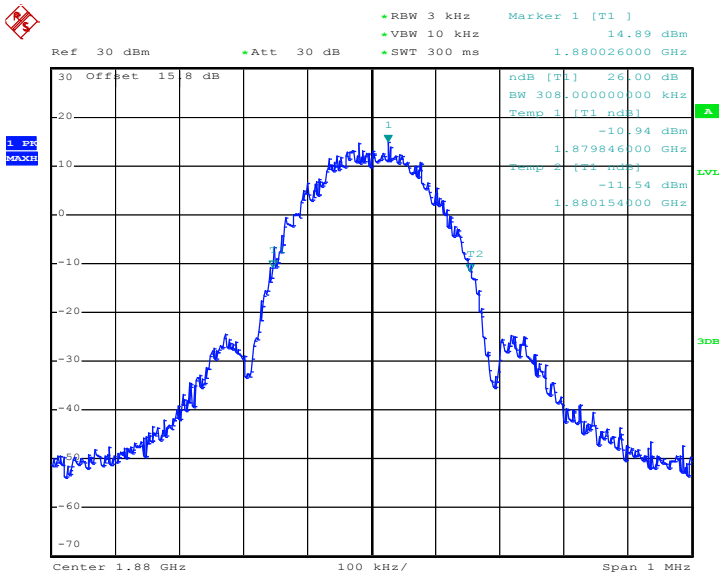


Date: 8.MAR.2011 09:07:24



Date: 8.MAR.2011 09:08:29

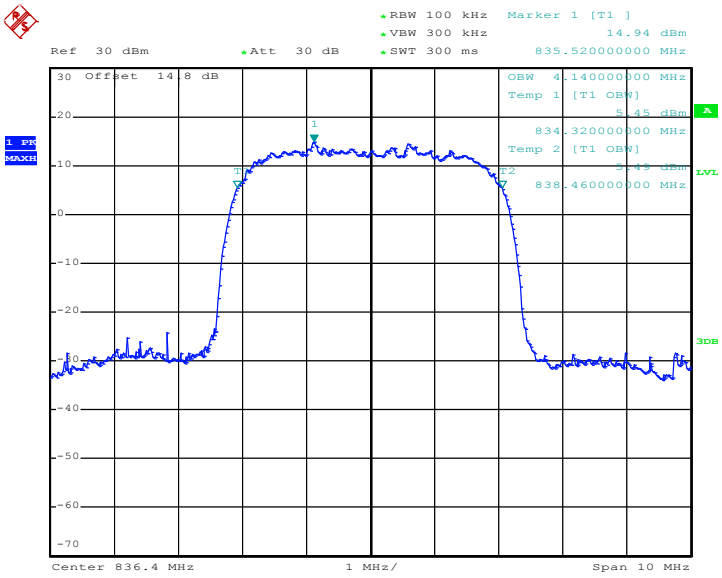
26dB Bandwidth Plot on Channel 661



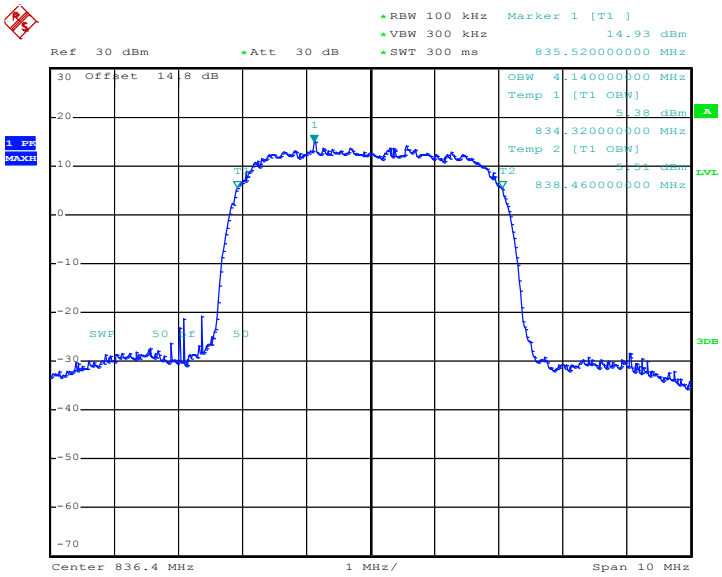
Date: 8.MAR.2011 09:06:06

Band :	WCDMA Band V	Power Stage :	High
Test Mode :	RMC 12.2Kbps Link		

99% Occupied Bandwidth Plot on Channel 4182

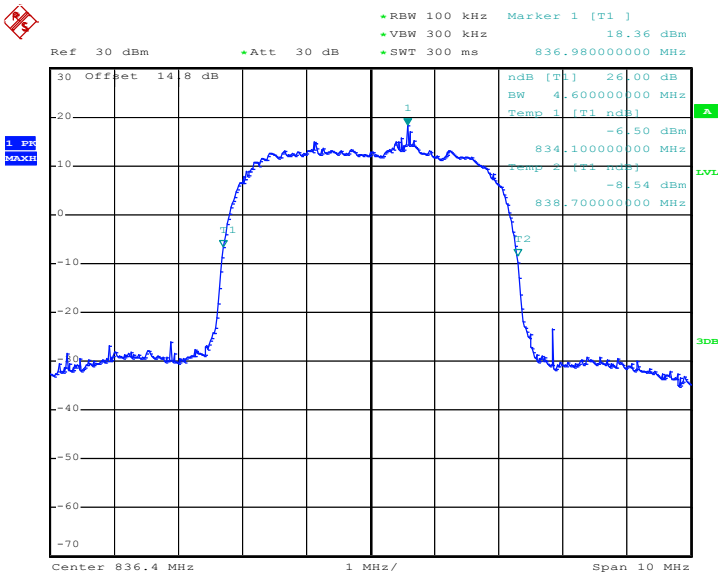


Date: 8.MAR.2011 09:33:33



Date: 8.MAR.2011 09:34:39

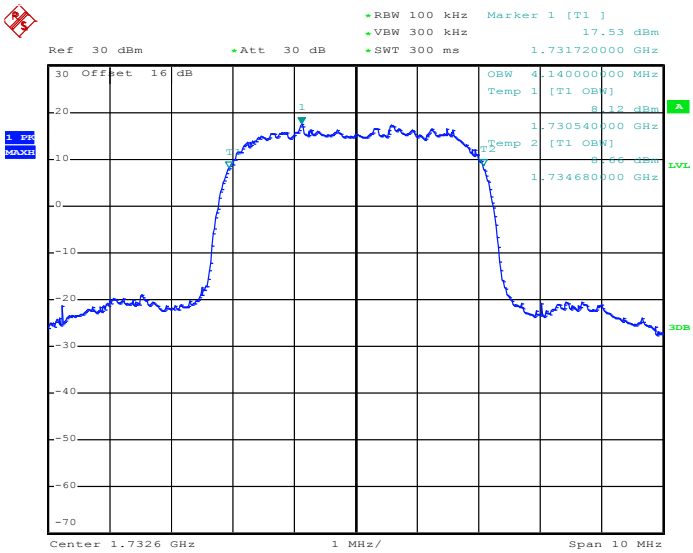
26dB Bandwidth Plot on Channel 4182



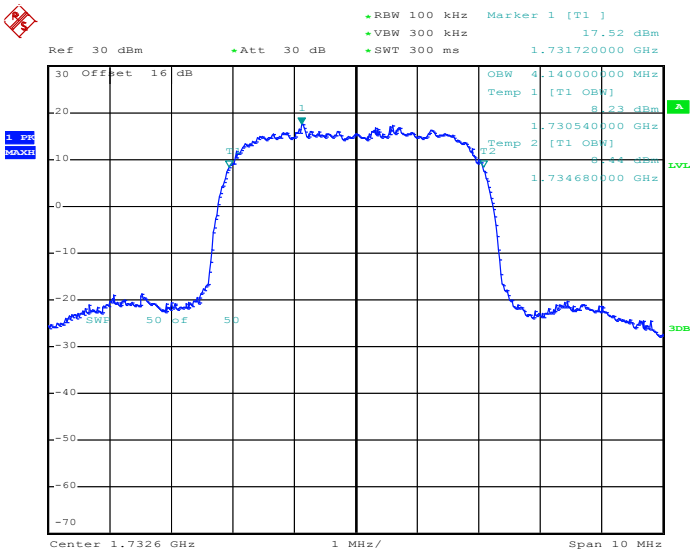
Date: 8.MAR.2011 09:32:14

Band :	WCDMA Band IV	Power Stage :	High
Test Mode :	RMC 12.2Kbps Link		

99% Occupied Bandwidth Plot on Channel 1413

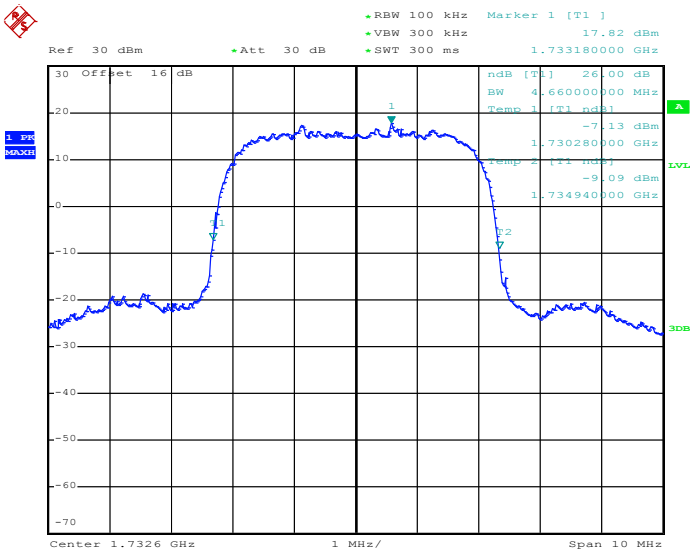


Date: 23.JUN.2011 14:04:11



Date: 23.JUN.2011 14:05:17

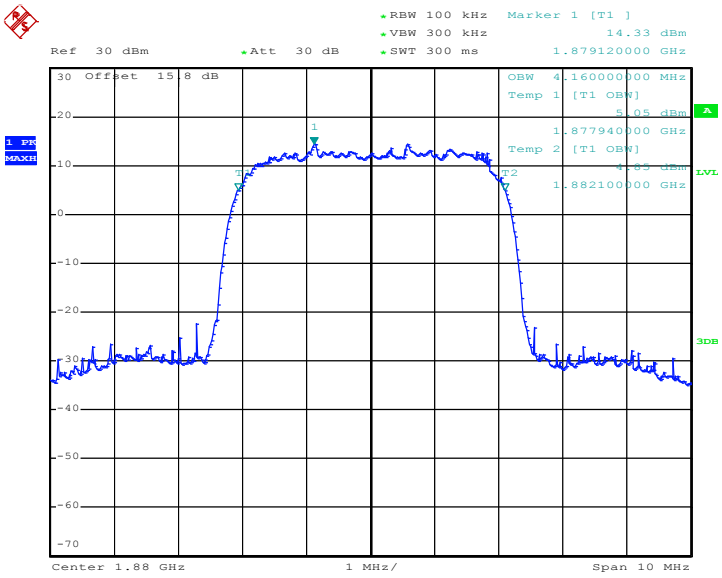
26dB Bandwidth Plot on Channel 1413



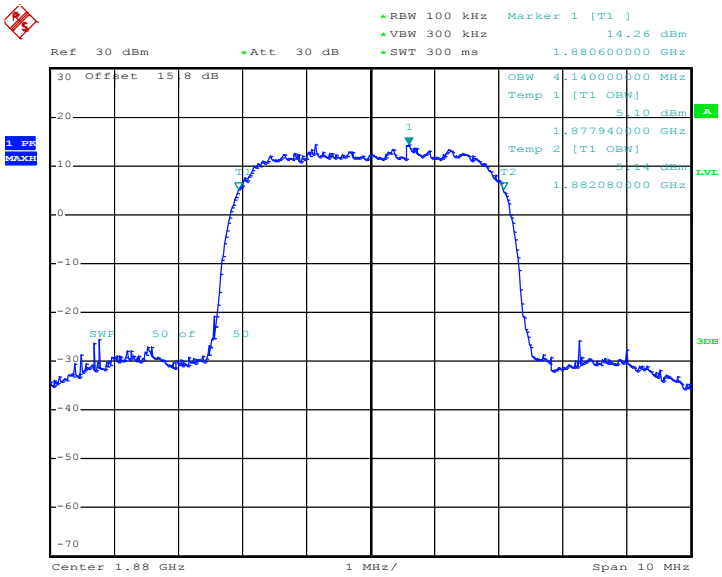
Date: 23.JUN.2011 14:02:52

Band :	WCDMA Band II	Power Stage :	High
Test Mode :	RMC 12.2Kbps Link		

99% Occupied Bandwidth Plot on Channel 9400

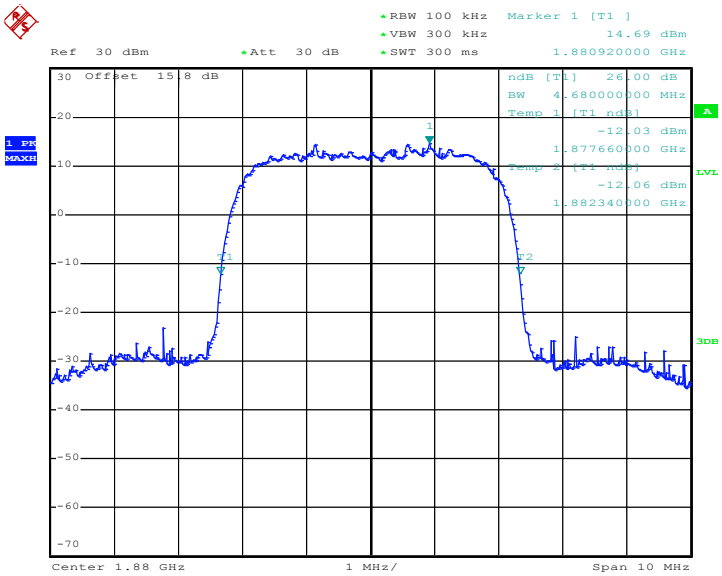


Date: 8.MAR.2011 09:20:55



Date: 8.MAR.2011 09:22:02

26dB Bandwidth Plot on Channel 9400



Date: 8.MAR.2011 09:19:36

3.4 Band Edge Measurement

3.4.1 Description of Band Edge Measurement

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least 43 + 10 log (P) dB.

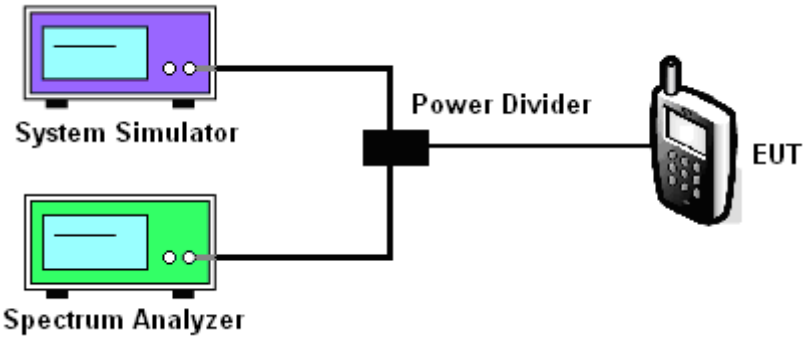
3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

3.4.3 Test Procedures

1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
2. The band edges of low and high channels for the highest RF powers were measured. Setting RBW as roughly BW/100.

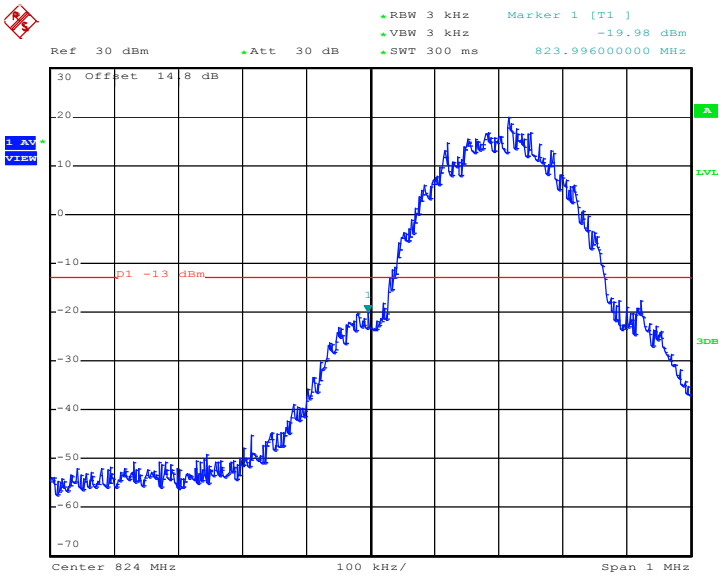
3.4.4 Test Setup



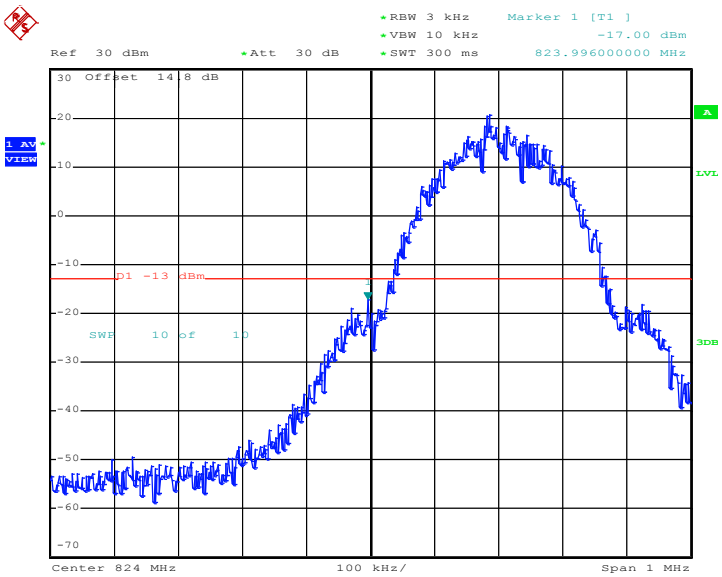
3.4.5 Test Result (Plots) of Conducted Band Edge

Band :	GSM850	Power Stage :	High
Test Mode :	GPRS 8 Link		

Lower Band Edge Plot on Channel 128

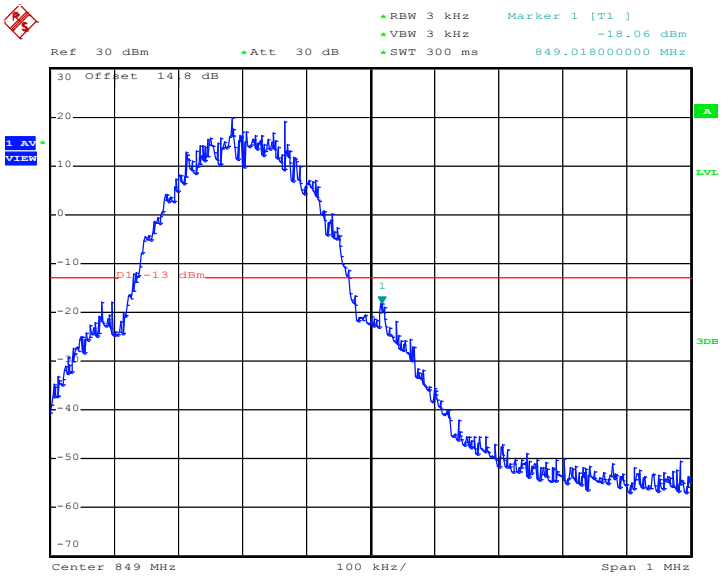


Date: 8.MAR.2011 08:13:00

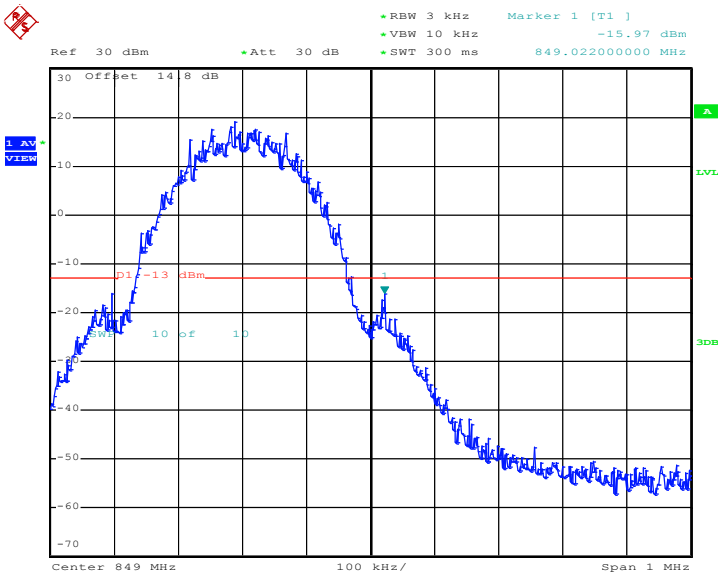


Date: 8.MAR.2011 08:13:55

Higher Band Edge Plot on Channel 251



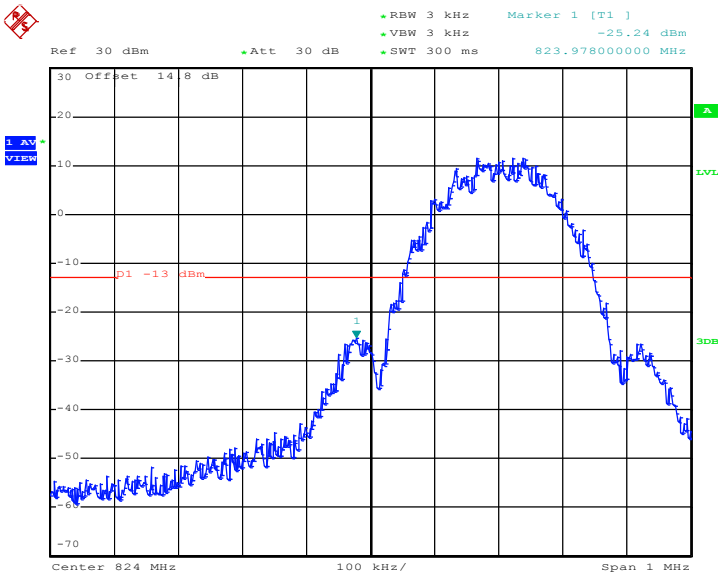
Date: 8.MAR.2011 08:13:26



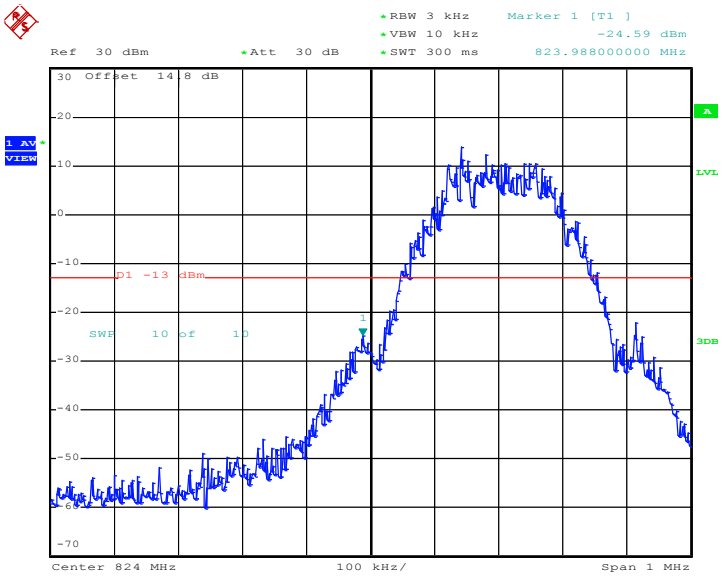
Date: 8.MAR.2011 08:14:25

Band :	GSM850	Power Stage :	High
Test Mode :	EDGE 8 Link		

Lower Band Edge Plot on Channel 128

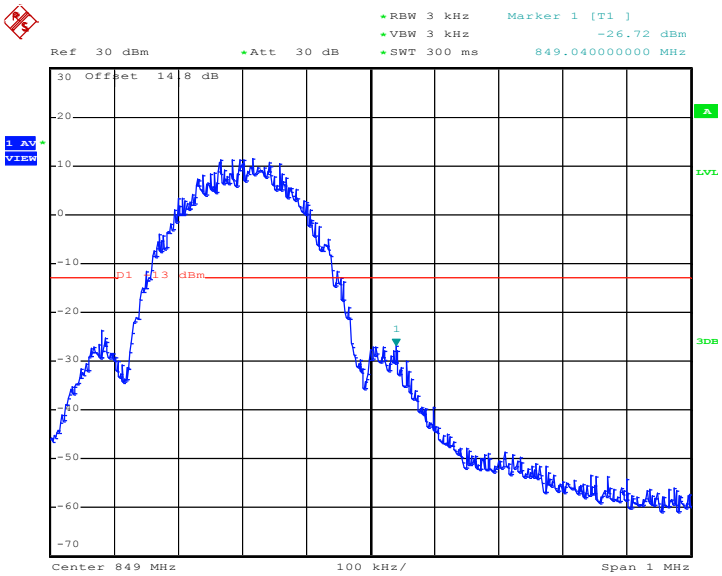


Date: 8.MAR.2011 07:59:52

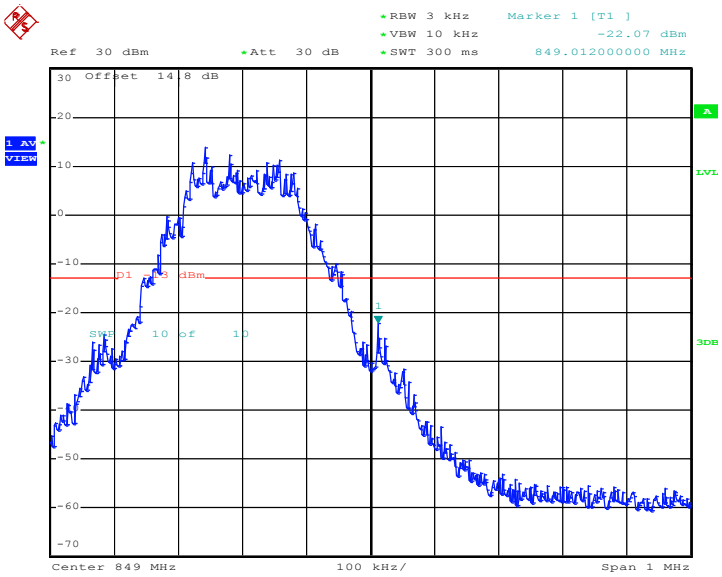


Date: 8.MAR.2011 08:00:48

Higher Band Edge Plot on Channel 251



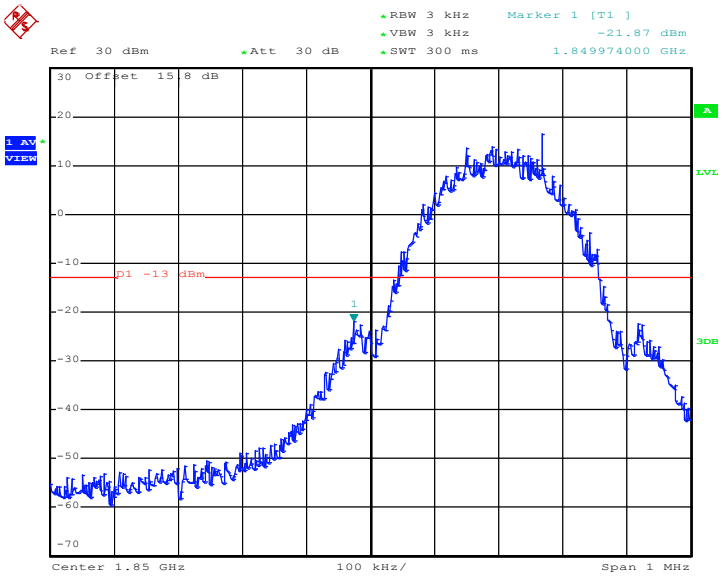
Date: 8.MAR.2011 08:00:19



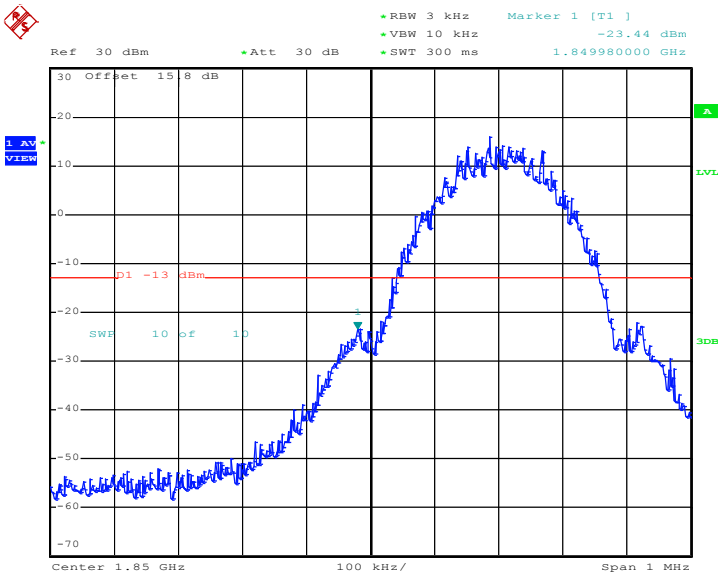
Date: 8.MAR.2011 08:01:18

Band :	GSM1900	Power Stage :	High
Test Mode :	GPRS 8 Link		

Lower Band Edge Plot on Channel 512

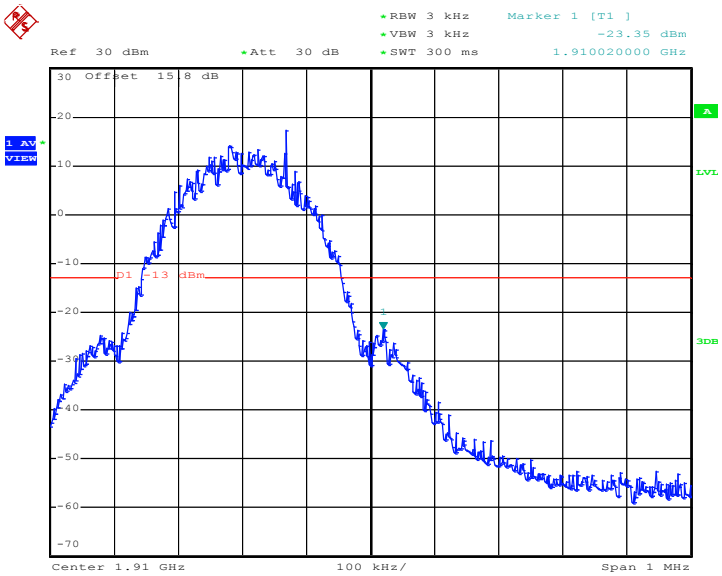


Date: 8.MAR.2011 09:15:22

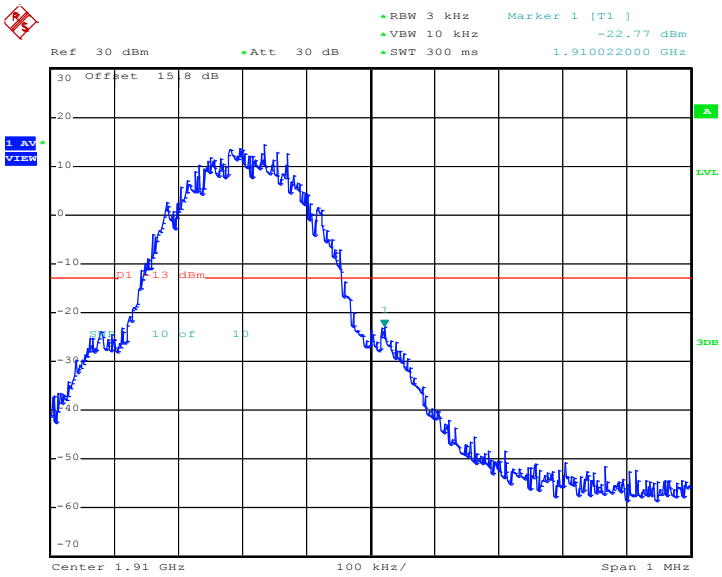


Date: 8.MAR.2011 08:56:33

Higher Band Edge Plot on Channel 810



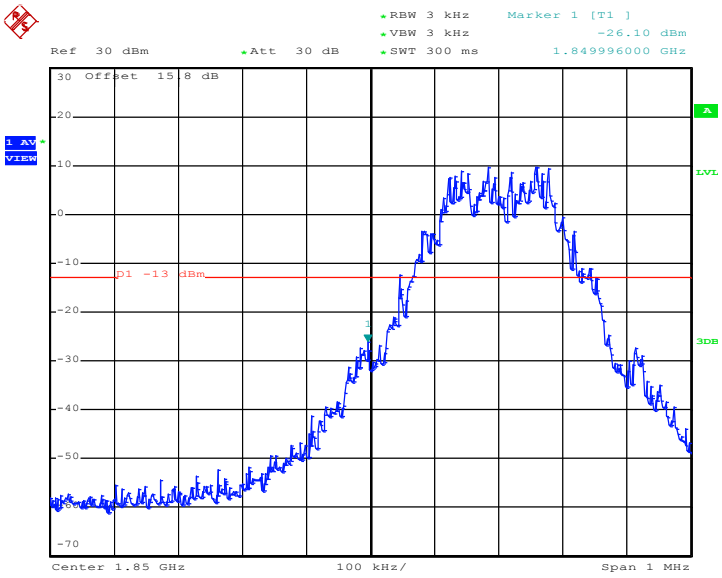
Date: 8.MAR.2011 09:15:49



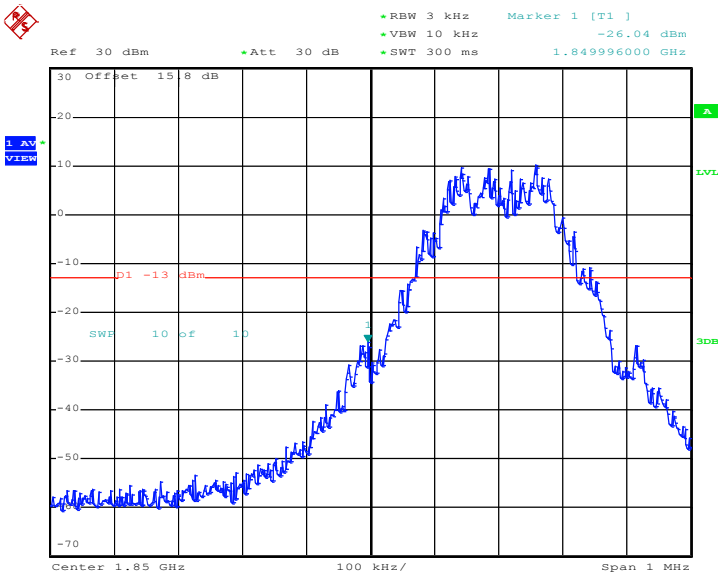
Date: 8.MAR.2011 08:57:02

Band :	GSM1900	Power Stage :	High
Test Mode :	EDGE 8 Link		

Lower Band Edge Plot on Channel 512

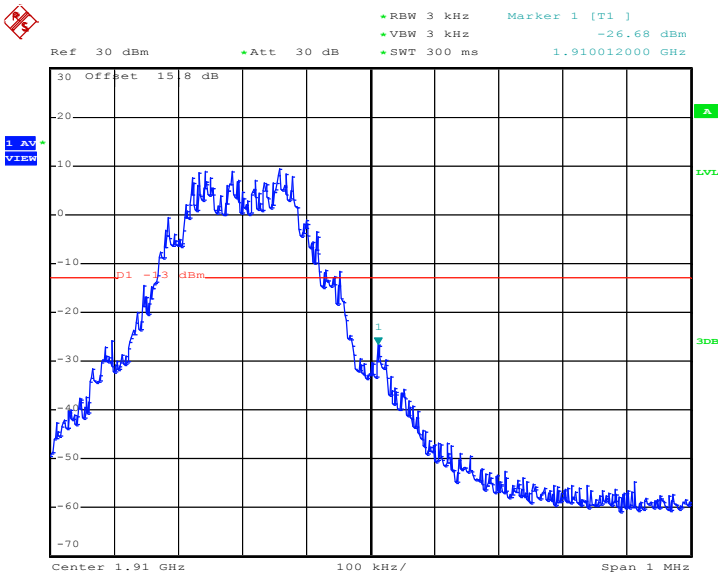


Date: 8.MAR.2011 09:09:16

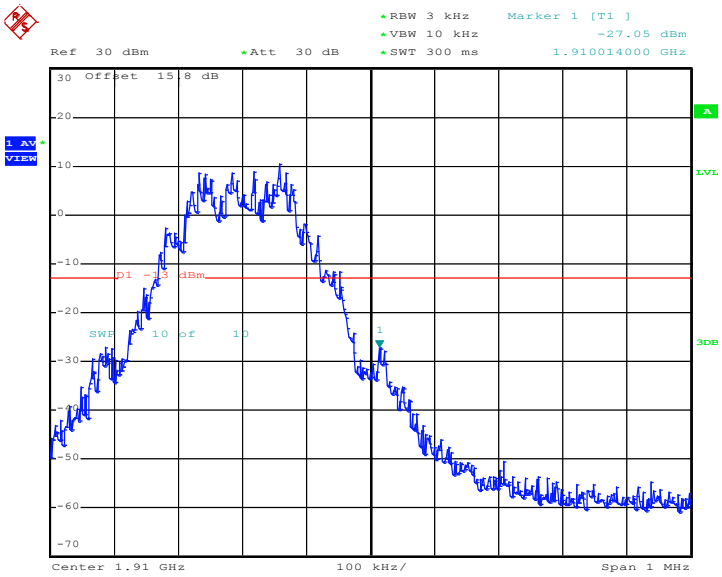


Date: 8.MAR.2011 09:10:12

Higher Band Edge Plot on Channel 810



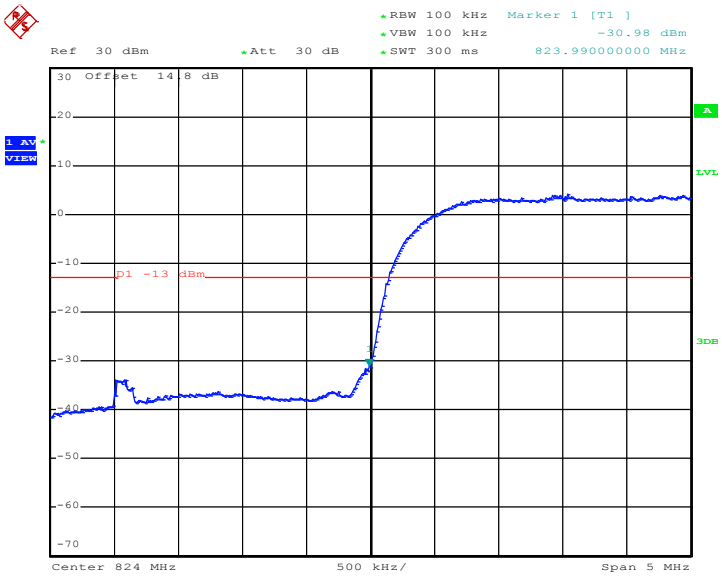
Date: 8.MAR.2011 09:09:42



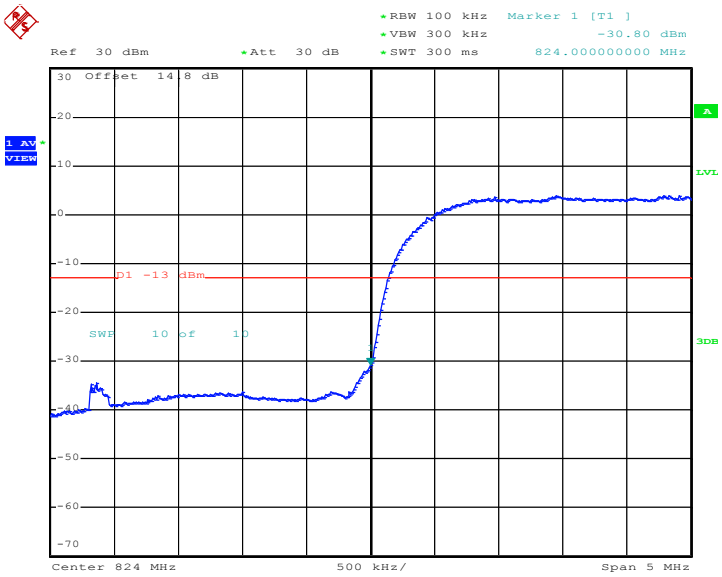
Date: 8.MAR.2011 09:10:41

Band :	WCDMA Band V	Power Stage :	High
Test Mode :	RMC 12.2Kbps Link		

Lower Band Edge Plot on Channel 4132

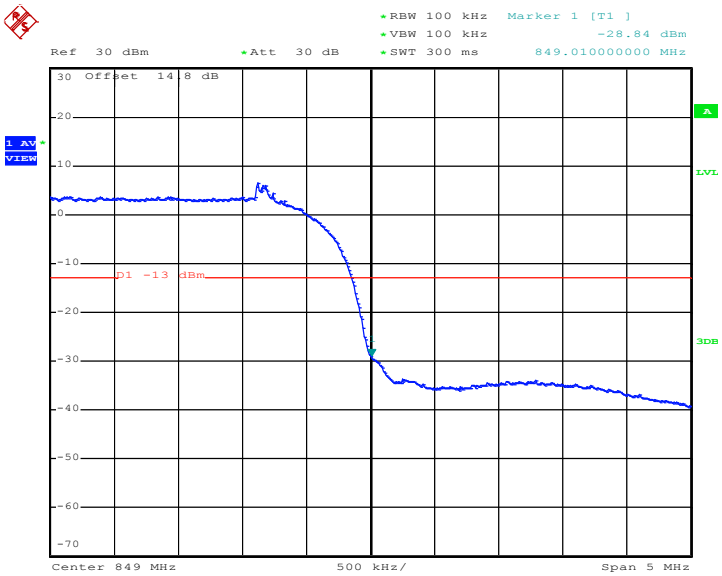


Date: 8.MAR.2011 09:35:27

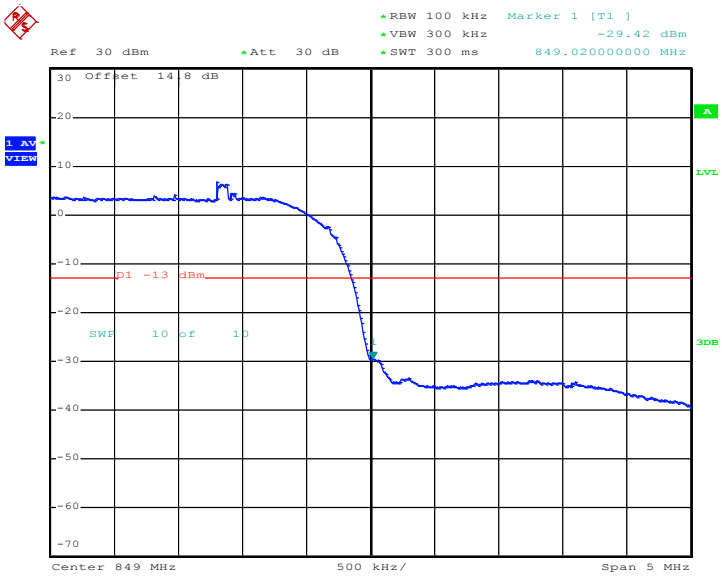


Date: 8.MAR.2011 09:36:23

Higher Band Edge Plot on Channel 4233



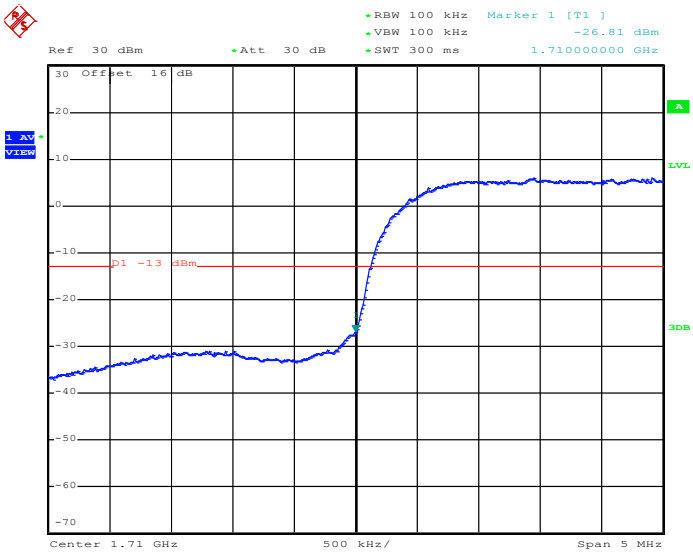
Date: 8.MAR.2011 09:35:53



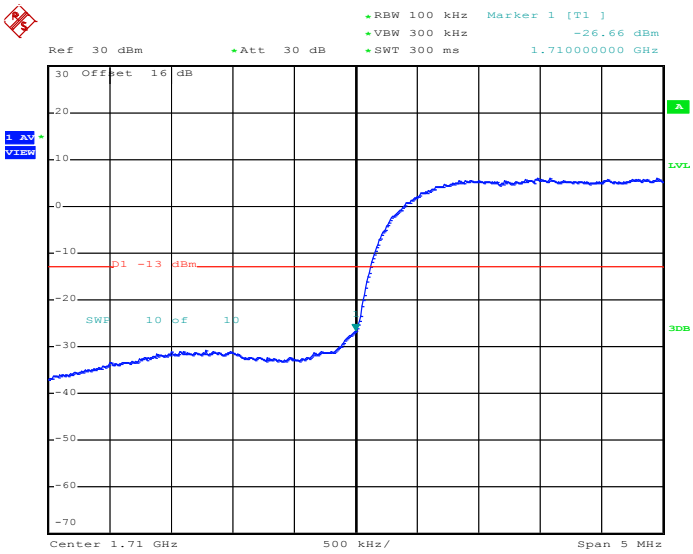
Date: 8.MAR.2011 09:36:52

Band :	WCDMA Band IV	Power Stage :	High
Test Mode :	RMC 12.2Kbps Link		

Lower Band Edge Plot on Channel 1312

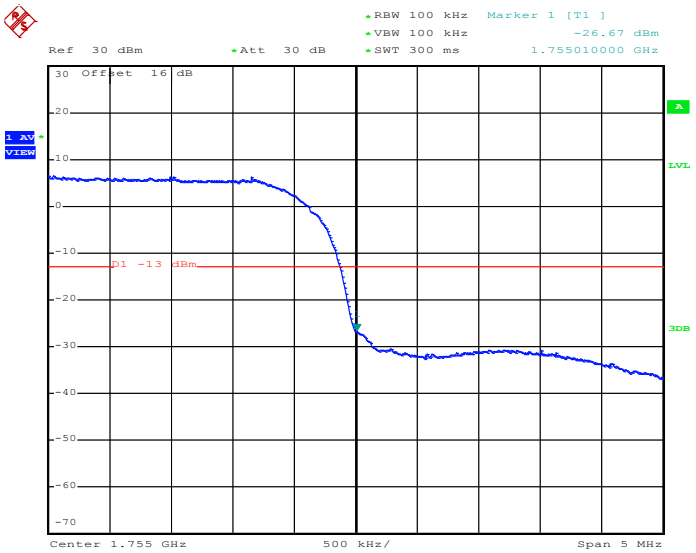


Date: 23.JUN.2011 14:06:04

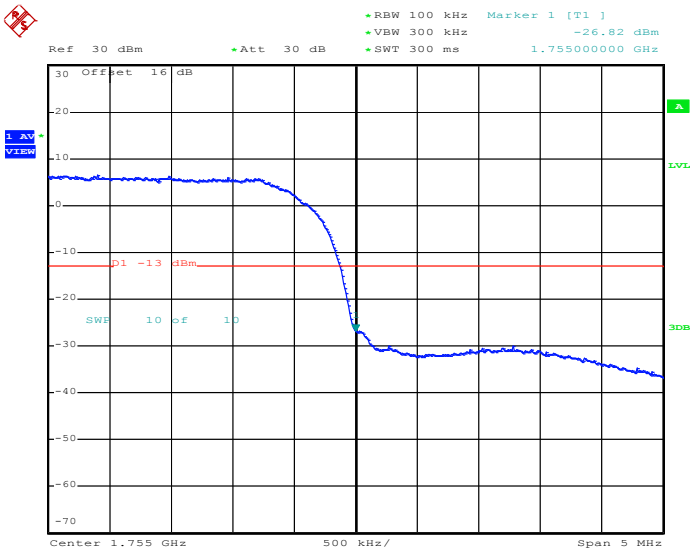


Date: 23.JUN.2011 14:07:00

Higher Band Edge Plot on Channel 1513



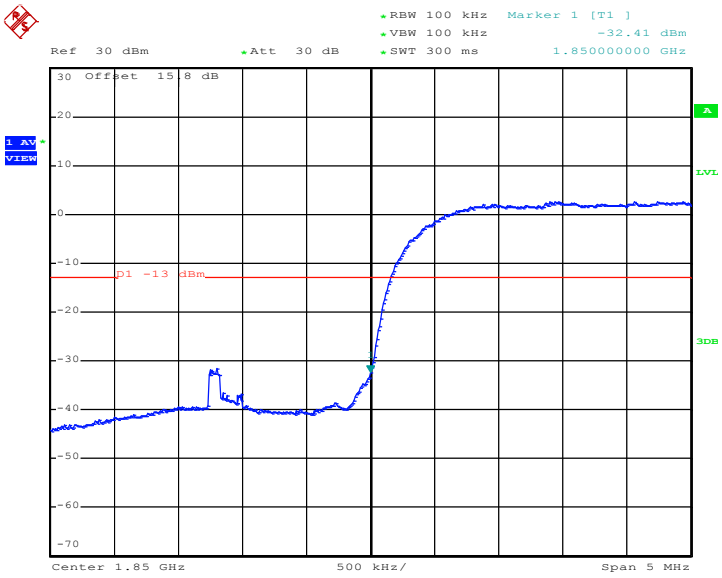
Date: 23.JUN.2011 14:06:30



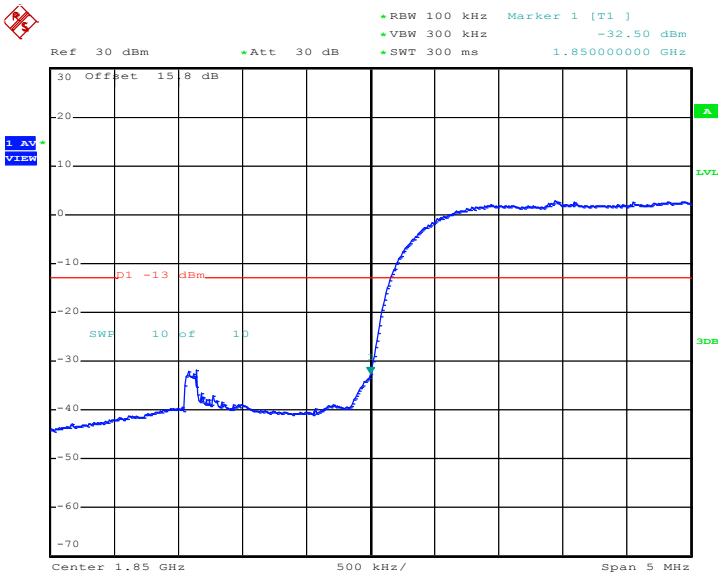
Date: 23.JUN.2011 14:07:29

Band :	WCDMA Band II	Power Stage :	High
Test Mode :	RMC 12.2Kbps Link		

Lower Band Edge Plot on Channel 9262

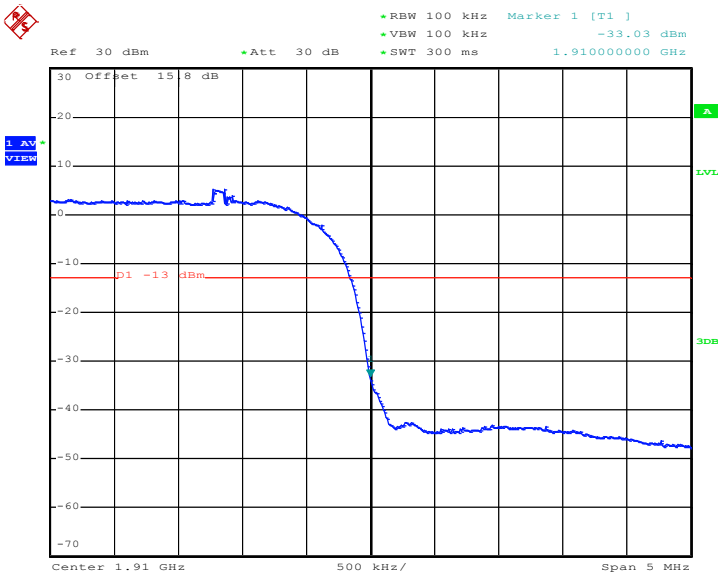


Date: 8.MAR.2011 09:22:49

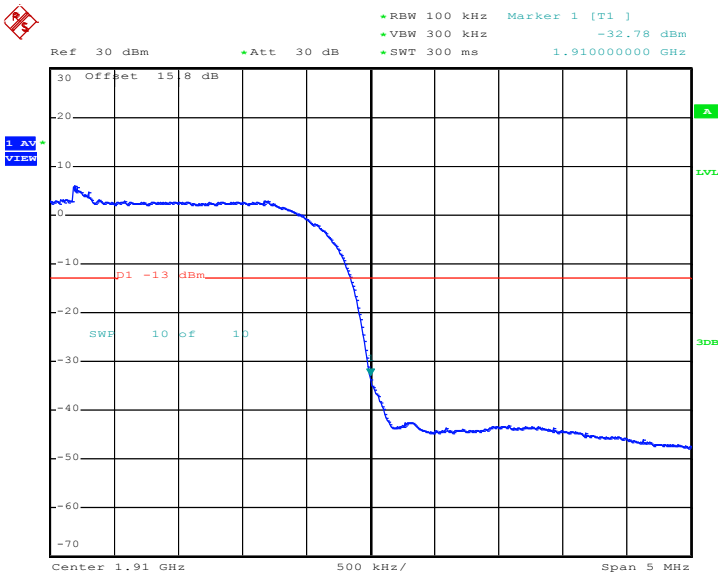


Date: 8.MAR.2011 09:23:45

Higher Band Edge Plot on Channel 9538



Date: 8.MAR.2011 09:23:15



Date: 8.MAR.2011 09:24:14

3.5 Conducted Emission Measurement

3.5.1 Description of Conducted Emission Measurement

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least 43 + 10 log (P) dB.

It is measured by means of a calibrated spectrum analyzer and scanned from 30 MHz up to a frequency including its 10th harmonic.

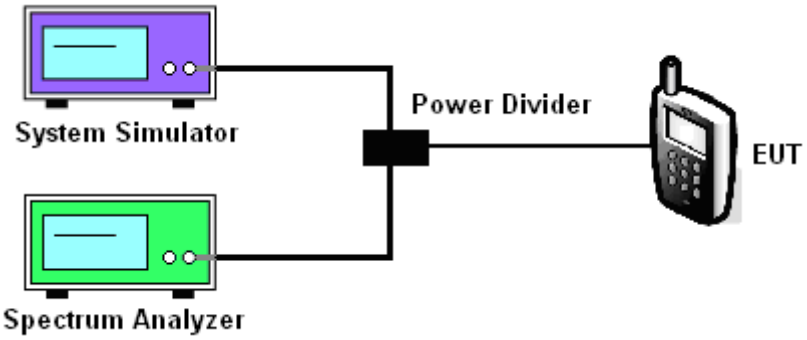
3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

3.5.3 Test Procedures

3. The EUT was connected to spectrum analyzer and base station via power divider.
4. The middle channel for the highest RF power within the transmitting frequency was measured.
5. The conducted spurious emission for the whole frequency range was taken.

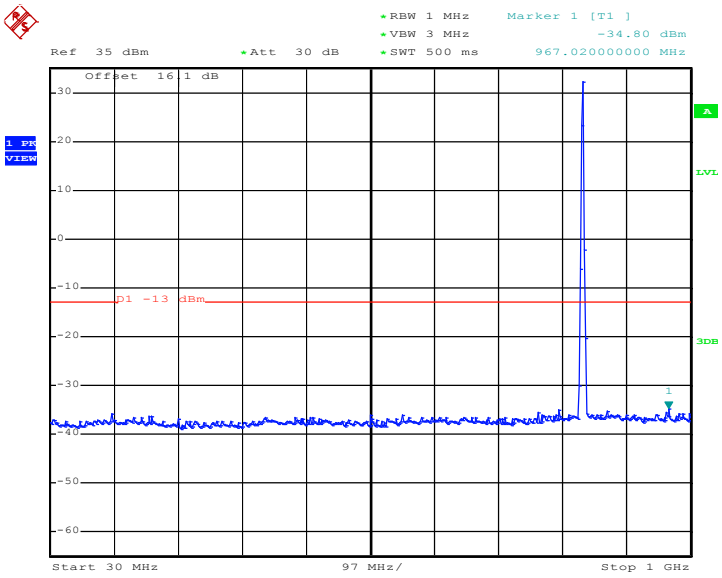
3.5.4 Test Setup



3.5.5 Test Result (Plots) of Conducted Emission

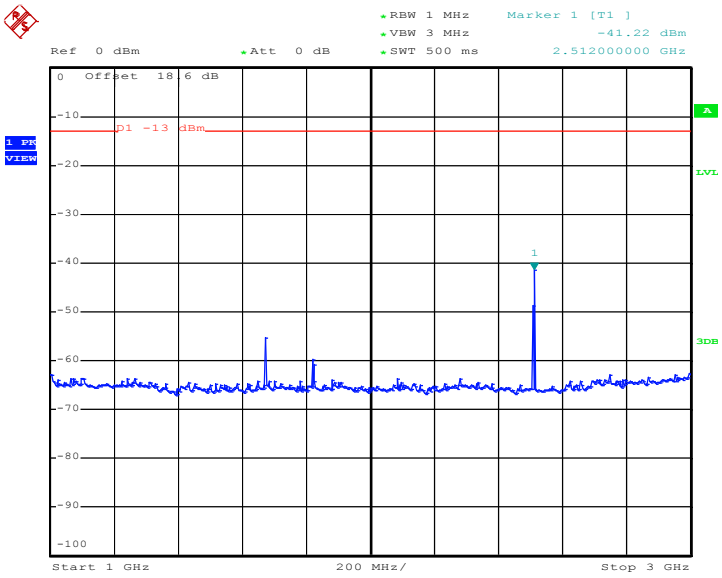
Band :	GSM850	Channel :	CH189
Test Mode :	GPRS 8 Link		

Conducted Emission Plot between 30MHz ~ 1GHz



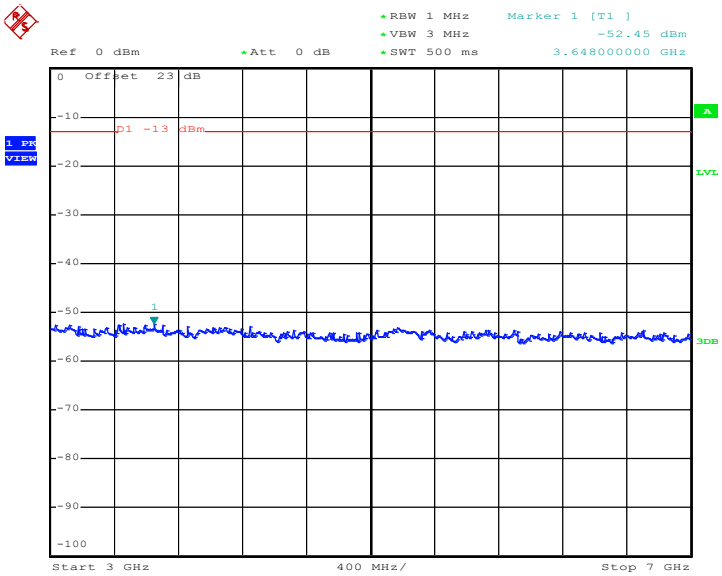
Date: 8.MAR.2011 08:06:27

Conducted Emission Plot between 1GHz ~ 3GHz



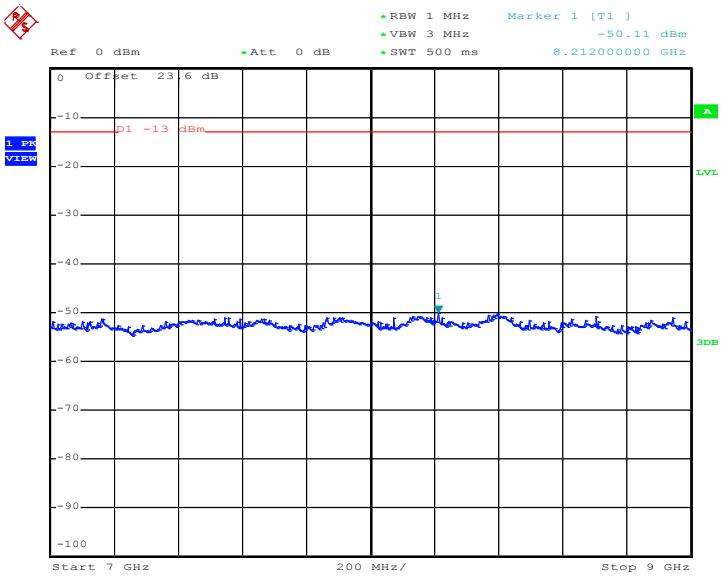
Date: 8.MAR.2011 08:06:42

Conducted Emission Plot between 3GHz ~ 7GHz



Date: 8.MAR.2011 08:06:55

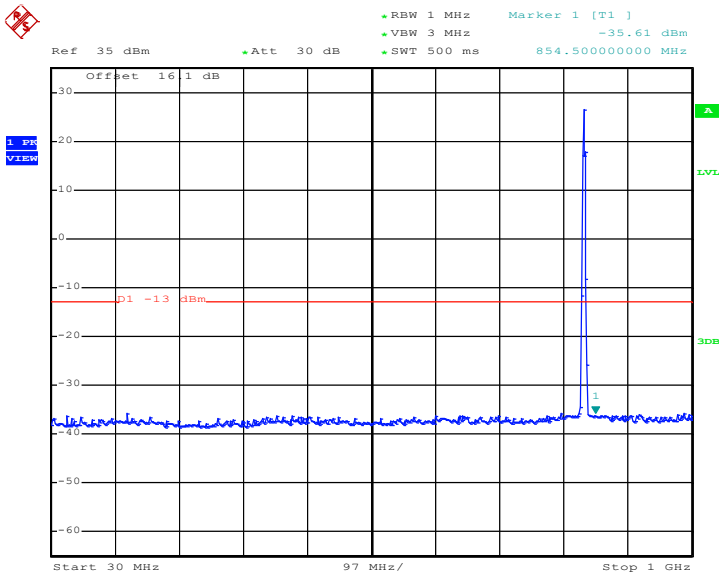
Conducted Emission Plot between 7GHz ~ 9GHz



Date: 8.MAR.2011 08:07:07

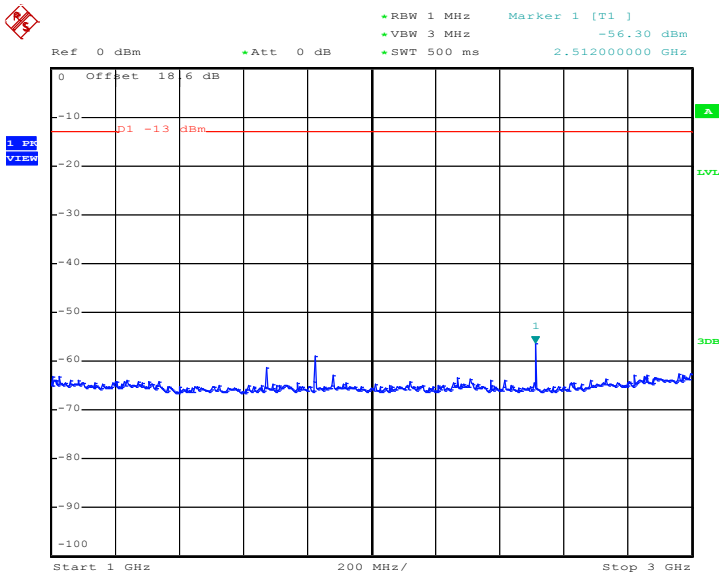
Band :	GSM850	Channel :	CH189
Test Mode :	EDGE 8 Link		

Conducted Emission Plot between 30MHz ~ 1GHz



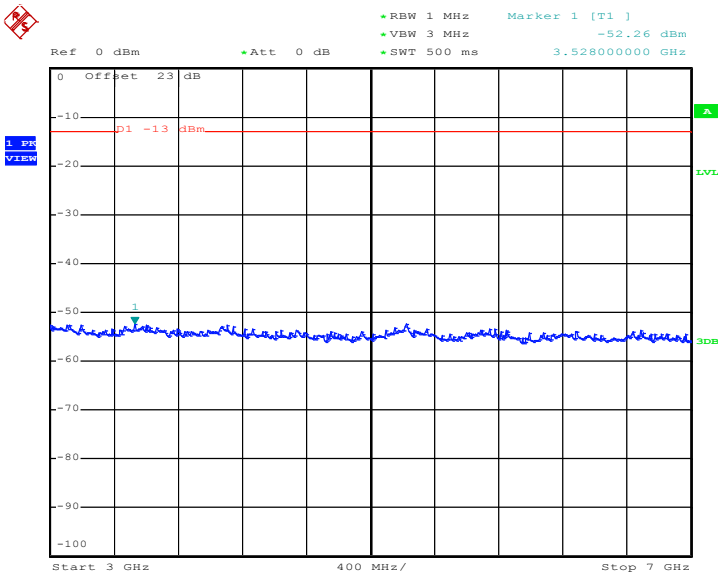
Date: 8.MAR.2011 08:02:41

Conducted Emission Plot between 1GHz ~ 3GHz



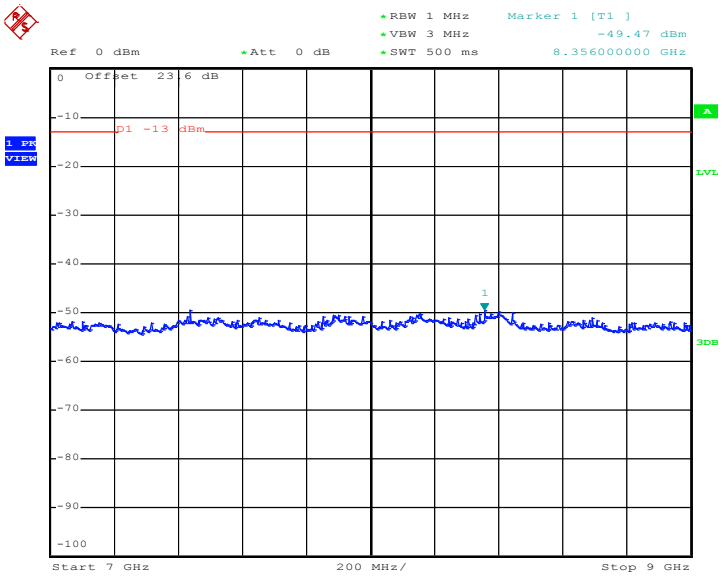
Date: 8.MAR.2011 08:02:57

Conducted Emission Plot between 3GHz ~ 7GHz



Date: 8.MAR.2011 08:03:09

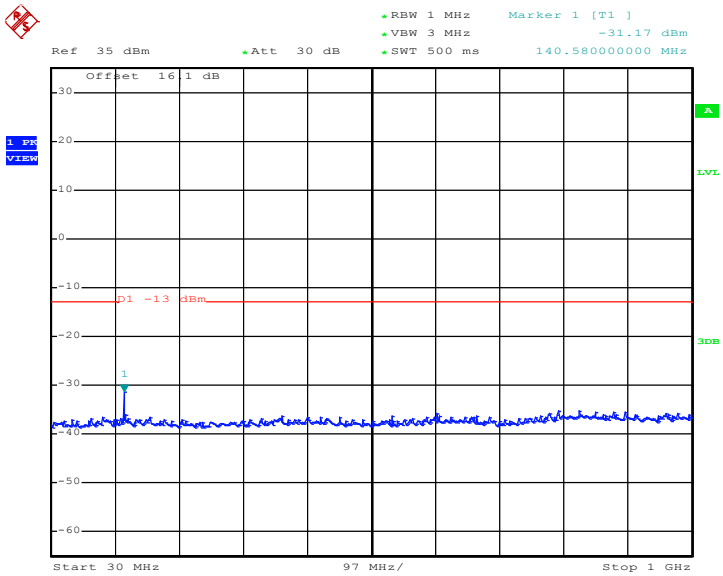
Conducted Emission Plot between 7GHz ~ 9GHz



Date: 8.MAR.2011 08:03:22

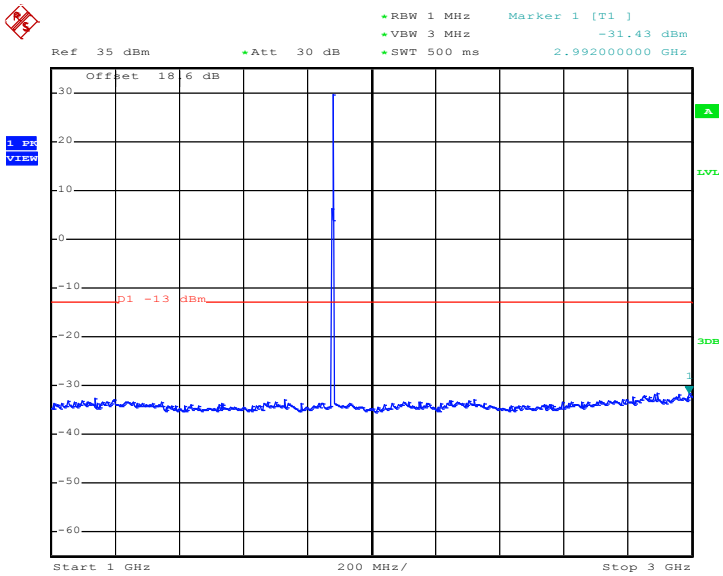
Band :	GSM1900	Channel :	CH661
Test Mode :	GPRS 8 Link		

Conducted Emission Plot between 30MHz ~ 1GHz



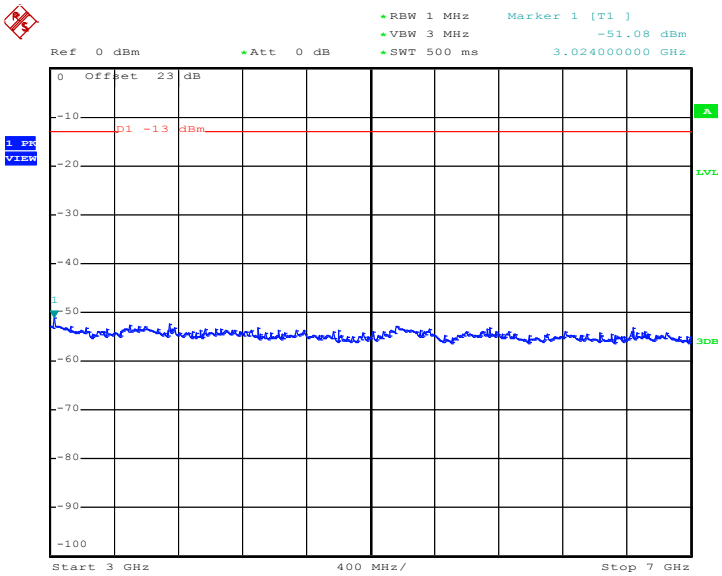
Date: 8.MAR.2011 08:58:31

Conducted Emission Plot between 1GHz ~ 3GHz



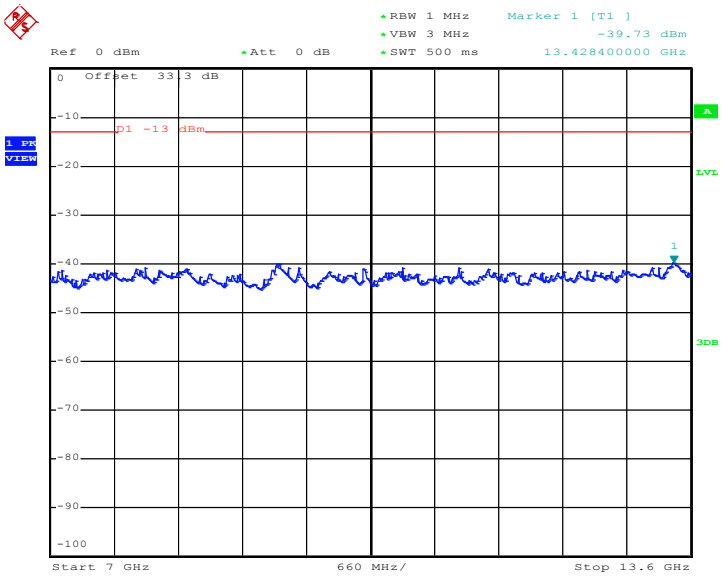
Date: 8.MAR.2011 08:58:43

Conducted Emission Plot between 3GHz ~ 7GHz



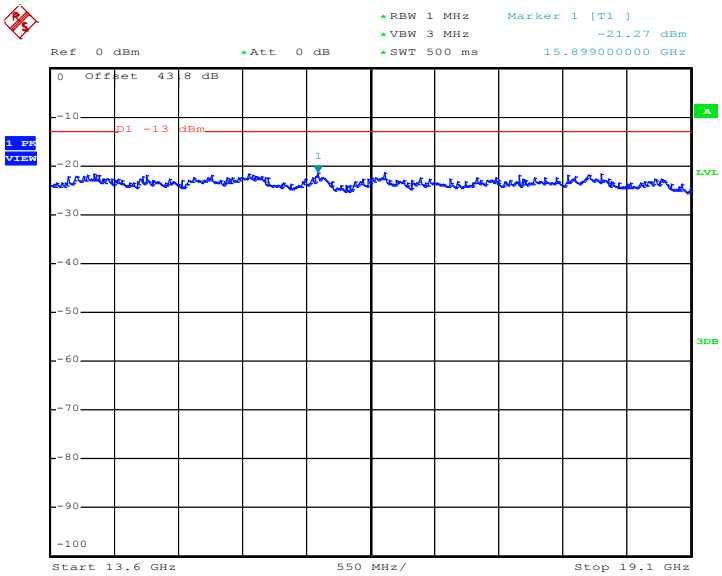
Date: 8.MAR.2011 08:58:59

Conducted Emission Plot between 7GHz ~ 13.6G



Date: 8.MAR.2011 08:59:11

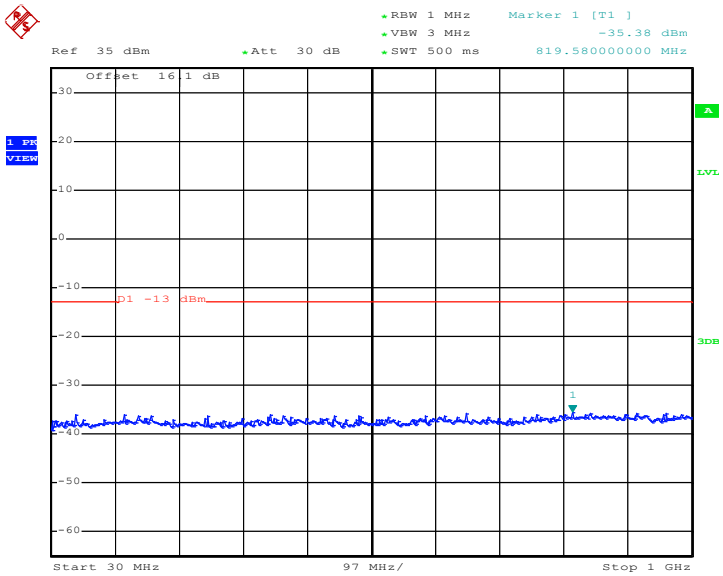
Conducted Emission Plot between 13.6GHz ~ 19.1GHz



Date: 8.MAR.2011 08:59:24

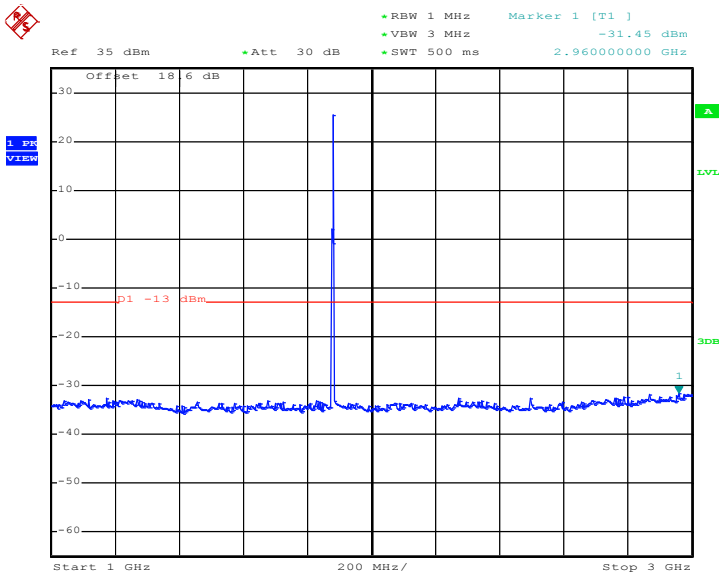
Band :	GSM1900	Channel :	CH661
Test Mode :	EDGE 8 Link		

Conducted Emission Plot between 30MHz ~ 1GHz



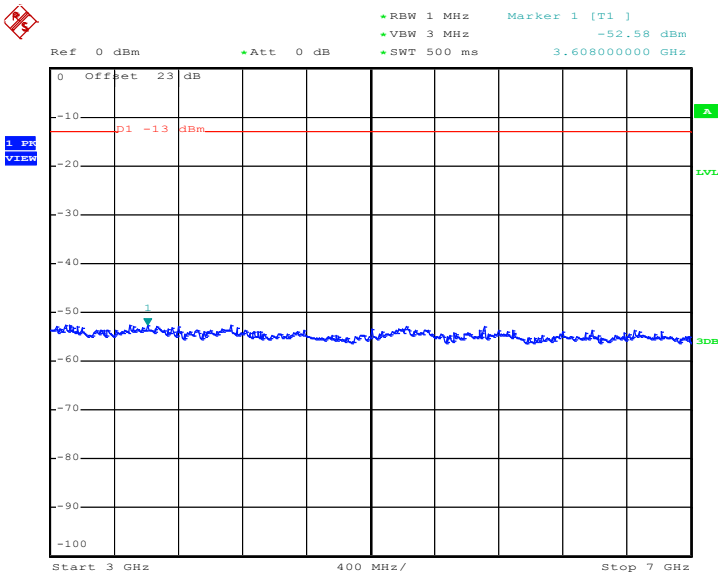
Date: 8.MAR.2011 09:11:46

Conducted Emission Plot between 1GHz ~ 3GHz



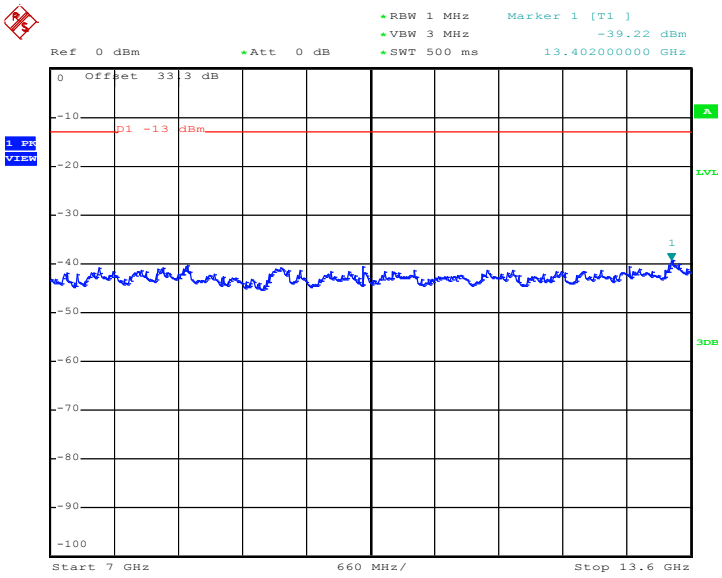
Date: 8.MAR.2011 09:11:58

Conducted Emission Plot between 3GHz ~ 7GHz



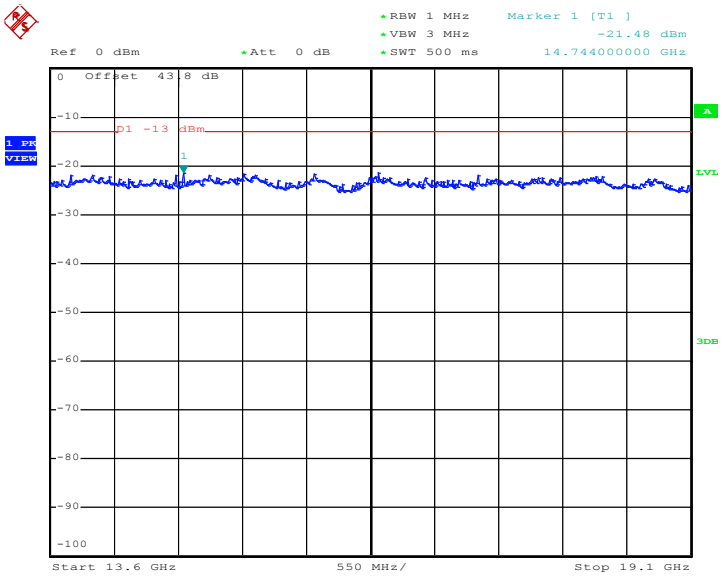
Date: 8.MAR.2011 09:12:14

Conducted Emission Plot between 7GHz ~ 13.6GHz



Date: 8.MAR.2011 09:12:26

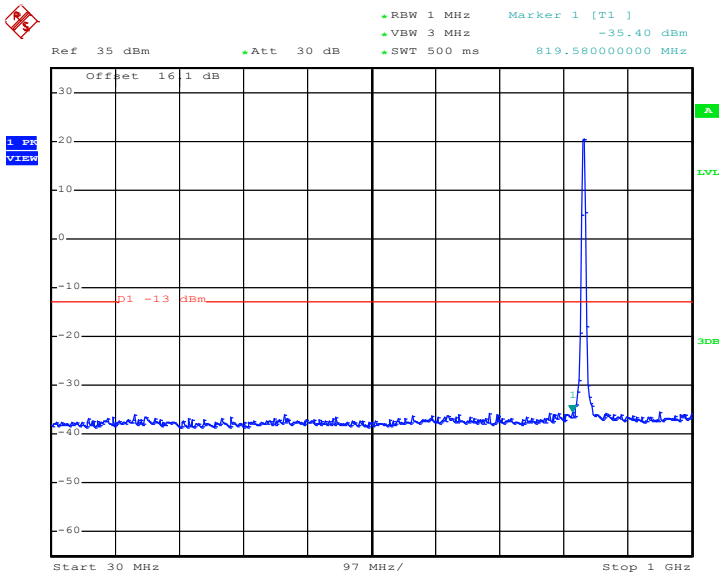
Conducted Emission Plot between 13.6GHz ~ 19.1GHz



Date: 8.MAR.2011 09:12:39

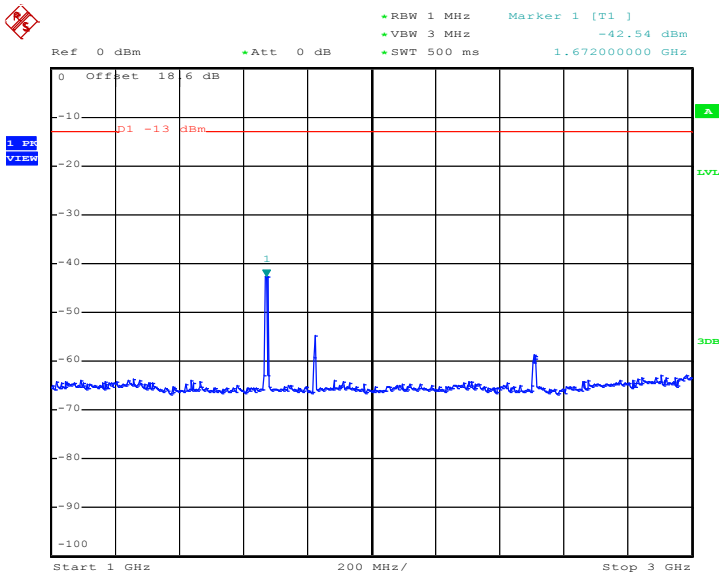
Band :	WCDMA Band V	Channel :	CH4182
Test Mode :	RMC 12.2Kbps Link		

Conducted Emission Plot between 30MHz ~ 1GHz



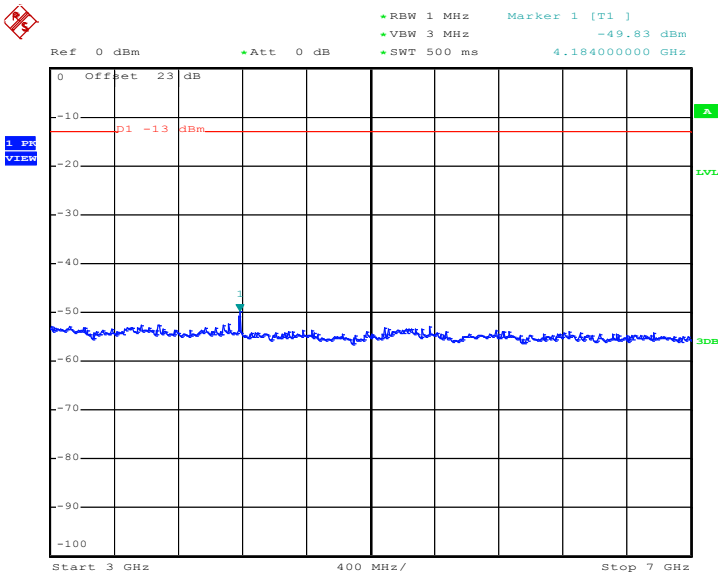
Date: 8.MAR.2011 09:30:22

Conducted Emission Plot between 1GHz ~ 3GHz



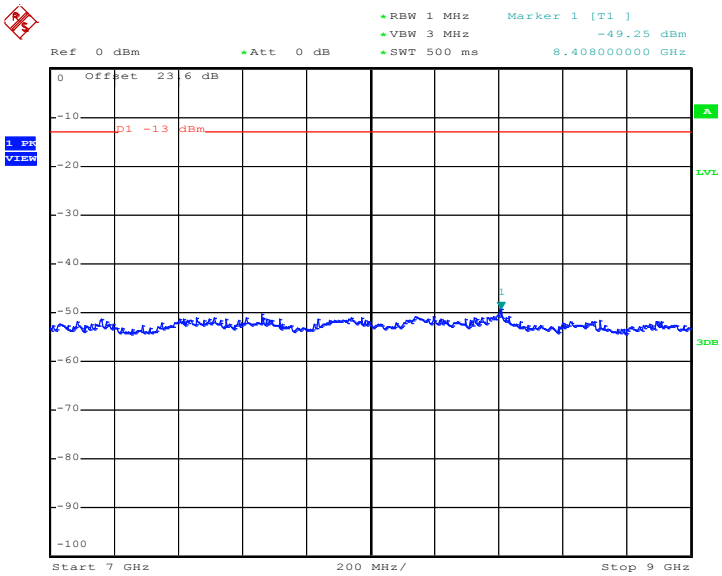
Date: 8.MAR.2011 09:30:39

Conducted Emission Plot between 3GHz ~ 7GHz



Date: 8.MAR.2011 09:30:51

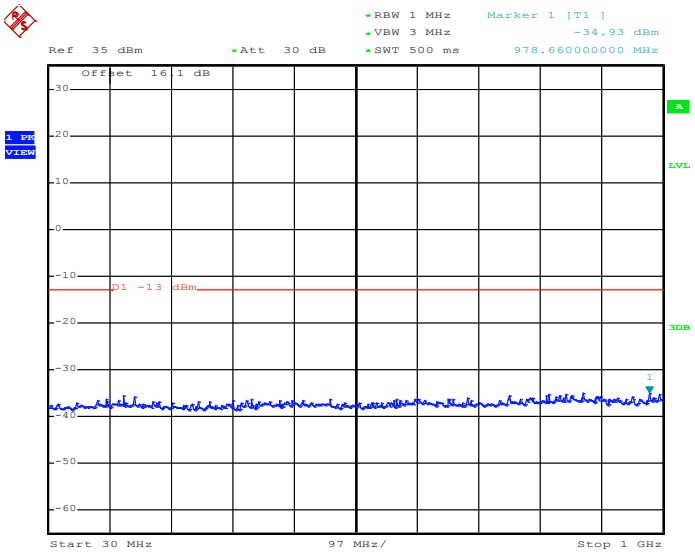
Conducted Emission Plot between 7GHz ~ 9GHz



Date: 8.MAR.2011 09:31:03

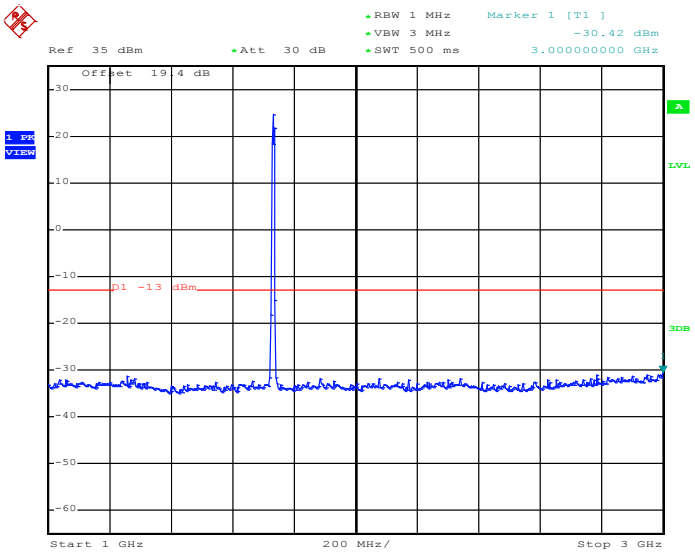
Band :	WCDMA Band IV	Channel :	CH1413
Test Mode :	RMC 12.2Kbps Link		

Conducted Emission Plot between 30MHz ~ 1GHz



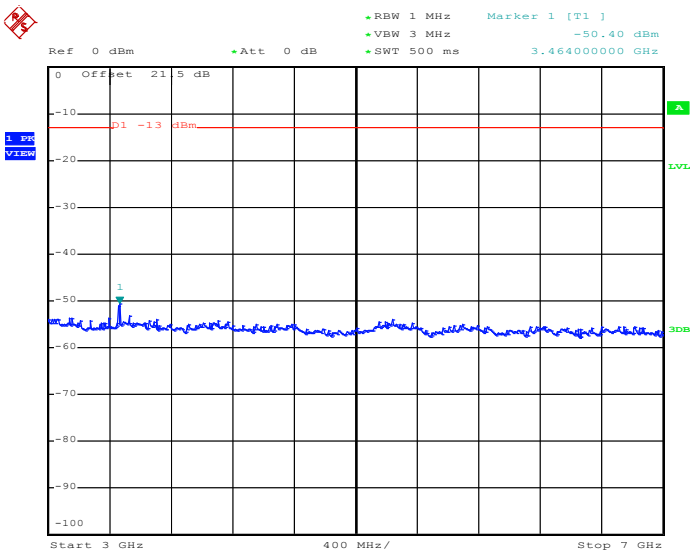
Date: 23.JUN.2011 14:10:11

Conducted Emission Plot between 1GHz ~ 3GHz



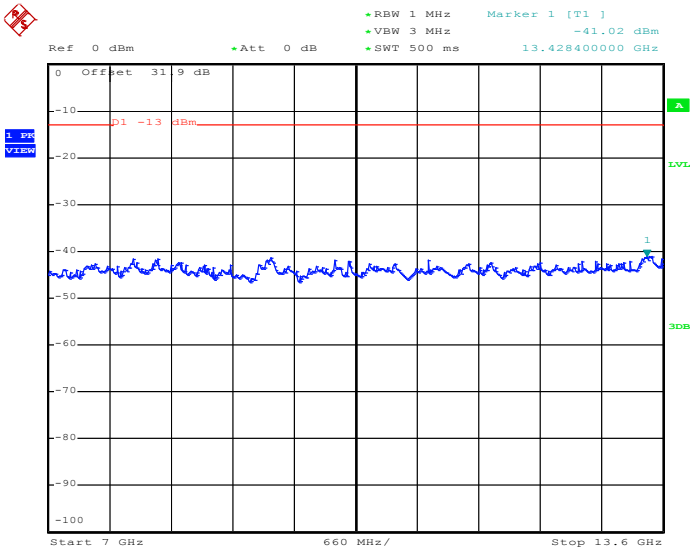
Date: 23.JUN.2011 14:10:23

Conducted Emission Plot between 3GHz ~ 7GHz



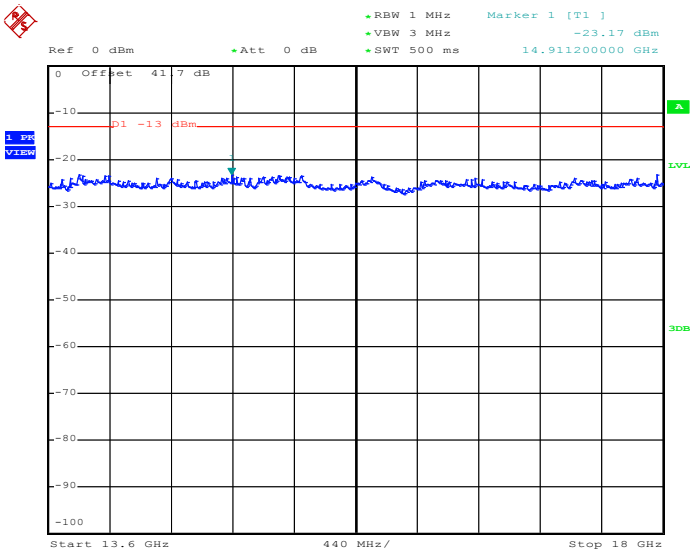
Date: 23.JUN.2011 14:10:48

Conducted Emission Plot between 7GHz ~ 13.6GHz



Date: 23.JUN.2011 14:11:01

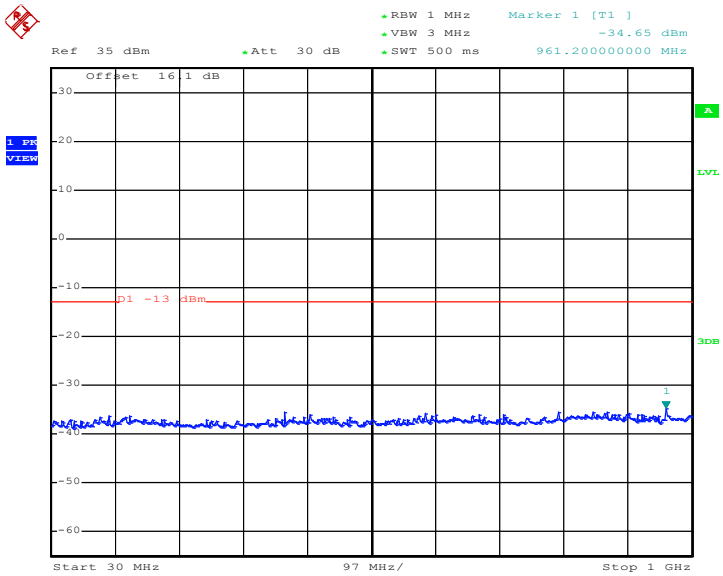
Conducted Emission Plot between 13.6GHz ~ 18GHz



Date: 23.JUN.2011 14:11:13

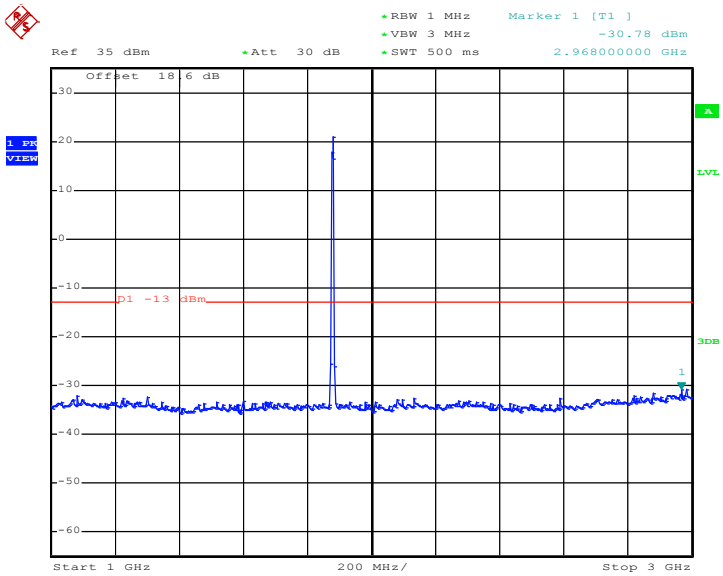
Band :	WCDMA Band II	Channel :	CH9400
Test Mode :	RMC 12.2Kbps Link		

Conducted Emission Plot between 30MHz ~ 1GHz



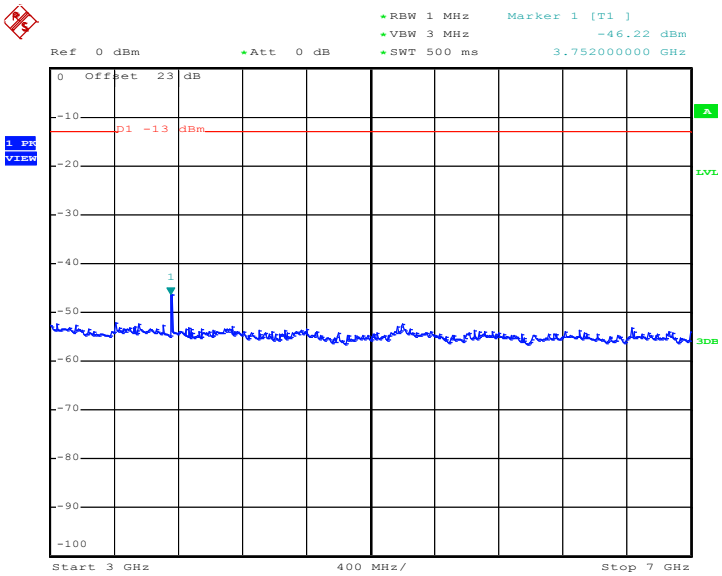
Date: 8.MAR.2011 09:26:08

Conducted Emission Plot between 1GHz ~ 3GHz



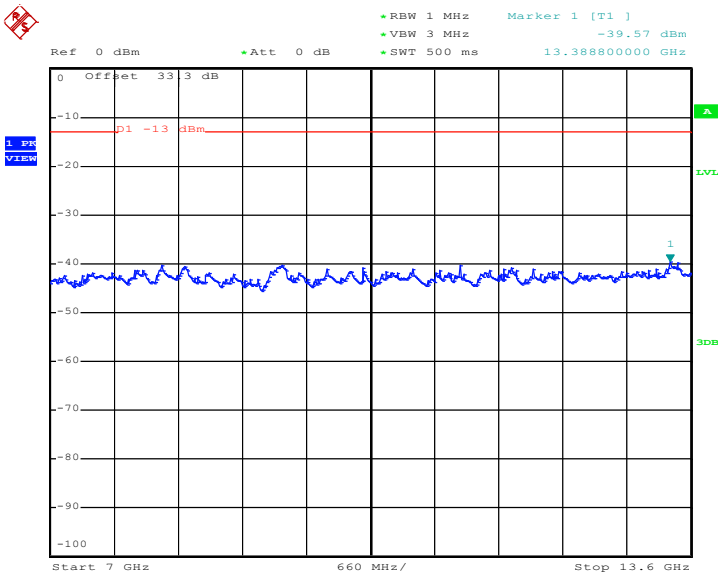
Date: 8.MAR.2011 09:26:20

Conducted Emission Plot between 3GHz ~ 7GHz



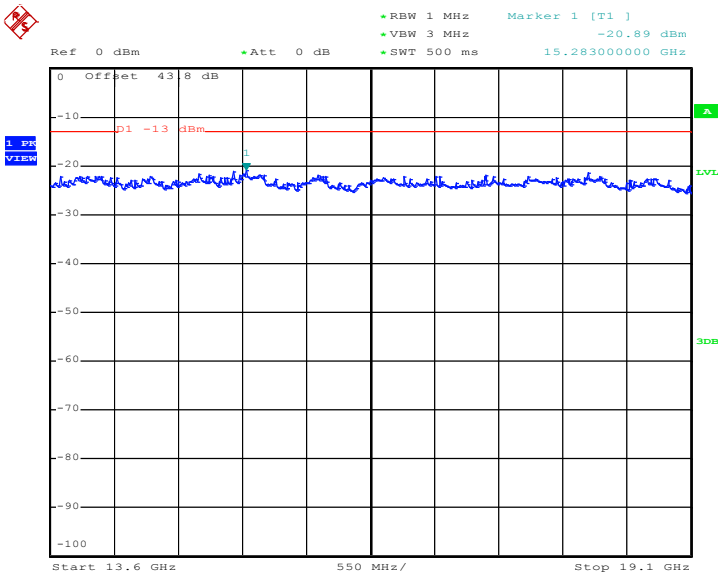
Date: 8.MAR.2011 09:26:35

Conducted Emission Plot between 7GHz ~ 13.6GHz



Date: 8.MAR.2011 09:26:47

Conducted Emission Plot between 13.6GHz ~ 19.1GHz



Date: 8.MAR.2011 09:27:00

3.6 Field Strength of Spurious Radiation Measurement

3.6.1 Description of Field Strength of Spurious Radiated Measurement

The radiated spurious emission was measured by substitution method according to ANSI / TIA / EIA-603-C-2004. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least 43 + 10 log (P) dB. The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

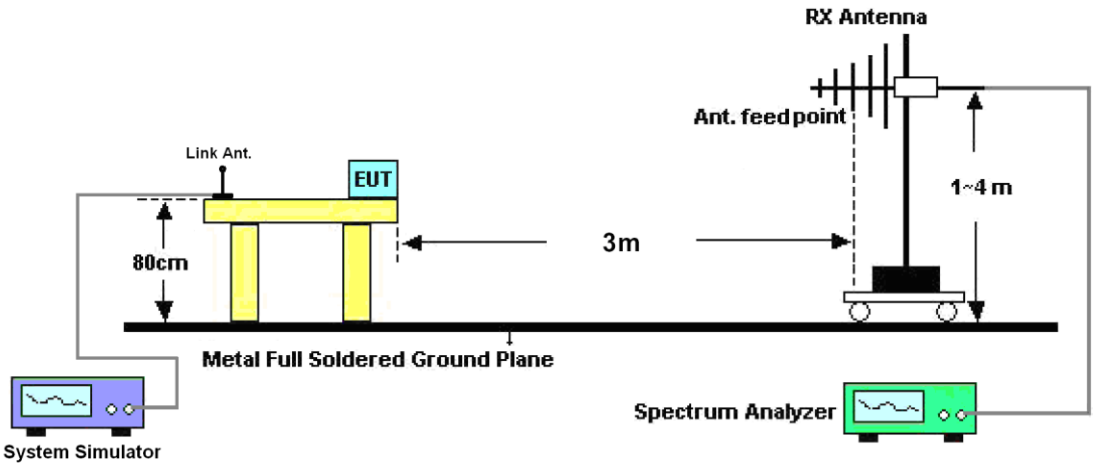
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

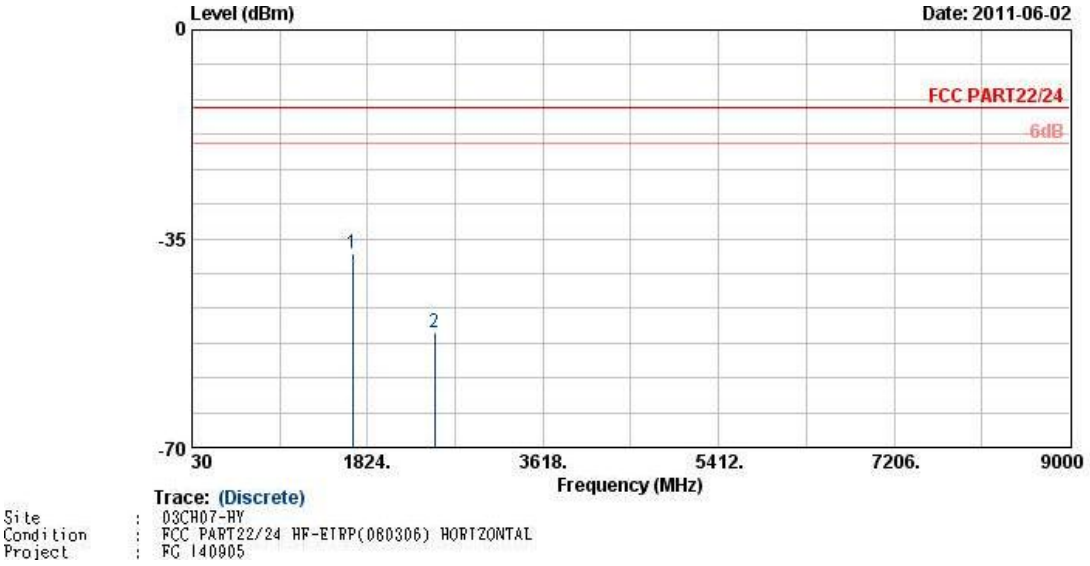
1. The EUT was placed on a rotatable wooden table with 0.8 meter about ground.
2. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
4. The height of the receiving antenna is varied between one meter and four meters to search the maximum spurious emission for both horizontal and vertical polarizations.
5. Taking the record of maximum spurious emission.
6. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
7. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
8. Taking the record of output power at antenna port.
9. Repeat step 7 to step 8 for another polarization.
10. EIRP (dBm) = S.G. Power – Tx Cable Loss + Tx Antenna Gain
11. ERP (dBm) = EIRP - 2.15

3.6.4 Test Setup



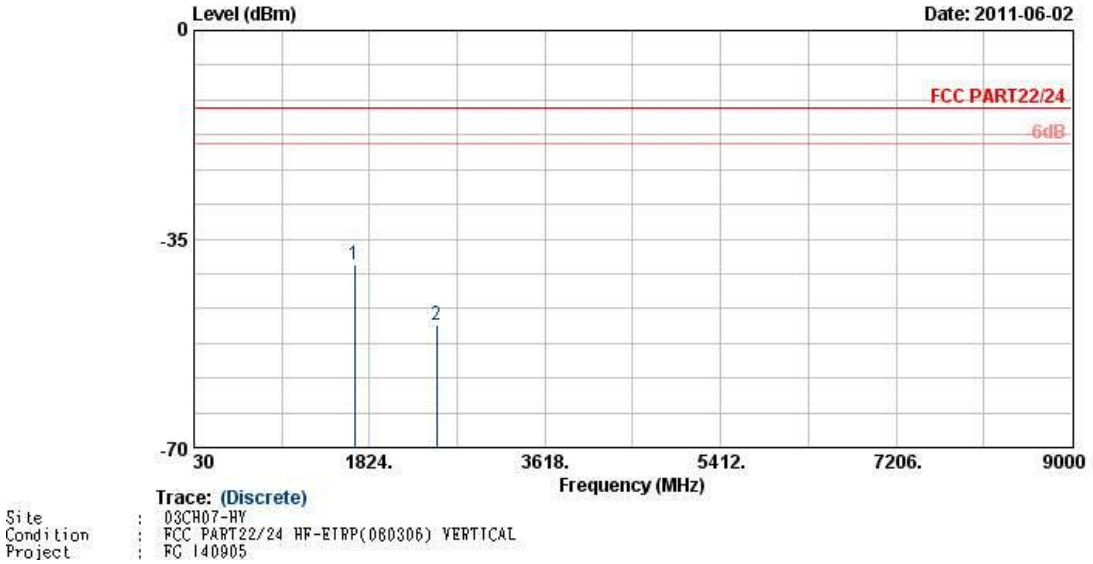
3.6.5 Test Result of Field Strength of Spurious Radiated

Band :	GSM850	**Temperature :**	23~24°C
Test Mode :	GPRS 8 Link	**Relative Humidity :**	50~51%
Test Engineer :	Ivan Chiang	**Polarization :**	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



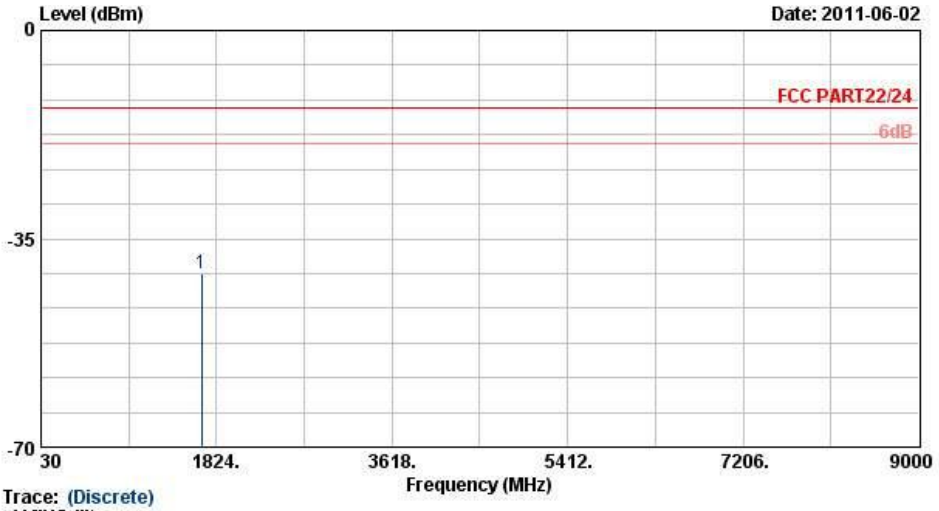
Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1669	-37.39	-13	-24.39	-46.3	-39.11	1.62	5.49	H	Pass
2509	-50.70	-13	-37.70	-64.12	-52.67	2.1	6.22	H	Pass

Band :	GSM850	**Temperature :**	23~24°C
Test Mode :	GPRS 8 Link	**Relative Humidity :**	50~51%
Test Engineer :	Ivan Chiang	**Polarization :**	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1669	-39.34	-13	-26.34	-50.53	-41.06	1.62	5.49	V	Pass
2509	-49.45	-13	-36.45	-63.37	-51.42	2.1	6.22	V	Pass

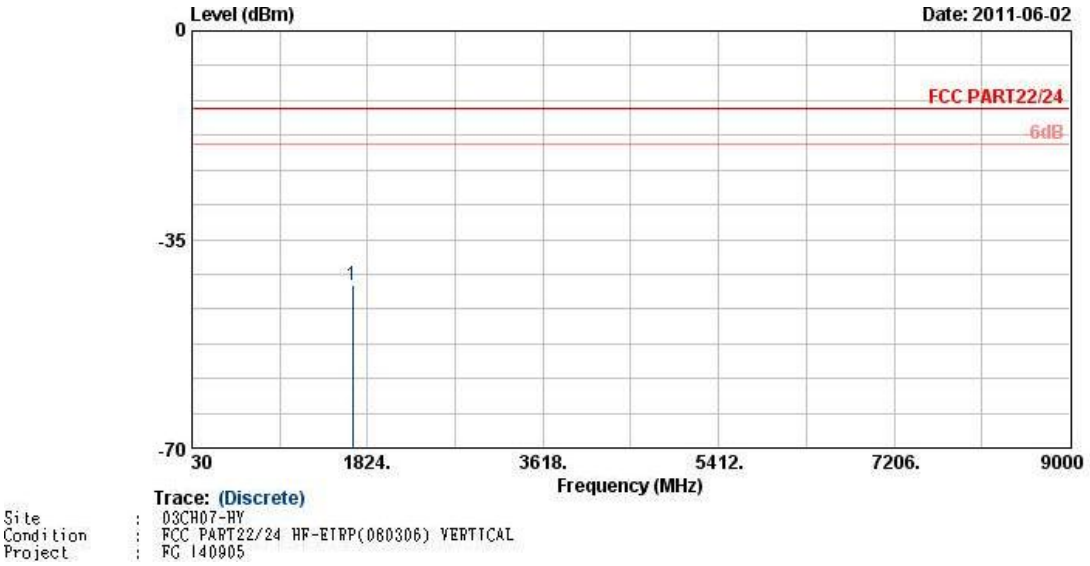
Band :	GSM850	**Temperature :**	23~24°C
Test Mode :	EDGE 8 Link	**Relative Humidity :**	50~51%
Test Engineer :	Ivan Chiang	**Polarization :**	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Site : 03CH07-HY
Condition : FCC PART22/24 HF-ETRP(060306) HORTZONTAL
Project : FG 140905

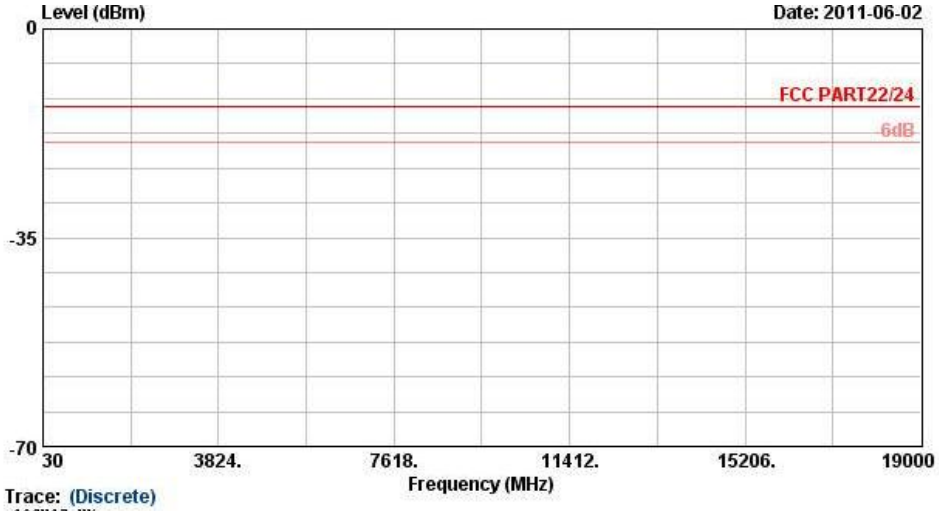
Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1669	-40.75	-13	-27.75	-49.74	-42.47	1.62	5.49	H	Pass

Band :	GSM850	**Temperature :**	23~24°C
Test Mode :	EDGE 8 Link	**Relative Humidity :**	50~51%
Test Engineer :	Ivan Chiang	**Polarization :**	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1669	-42.67	-13	-29.67	-53.94	-44.39	1.62	5.49	V	Pass

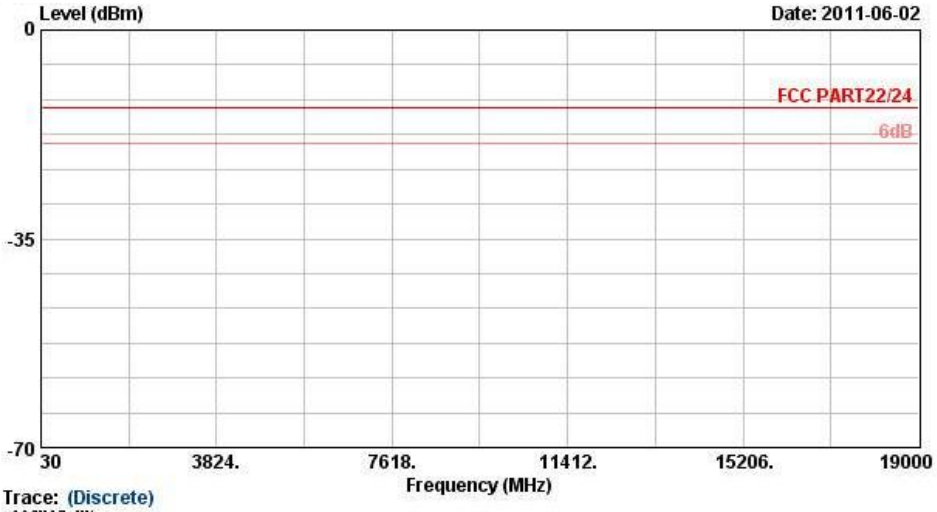
Band :	GSM1900	**Temperature :**	23~24°C
Test Mode :	GPRS 8 Link	**Relative Humidity :**	50~51%
Test Engineer :	Ivan Chiang	**Polarization :**	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line. Spurious emissions within 1000MHz ~ 10th harmonic were not found any signals.		



Trace: (Discrete)

Site : 03CH07-HY
Condition : FCC PART22/24 HF-ETRP(080306) HORTZONTAL
Project : FG 140905

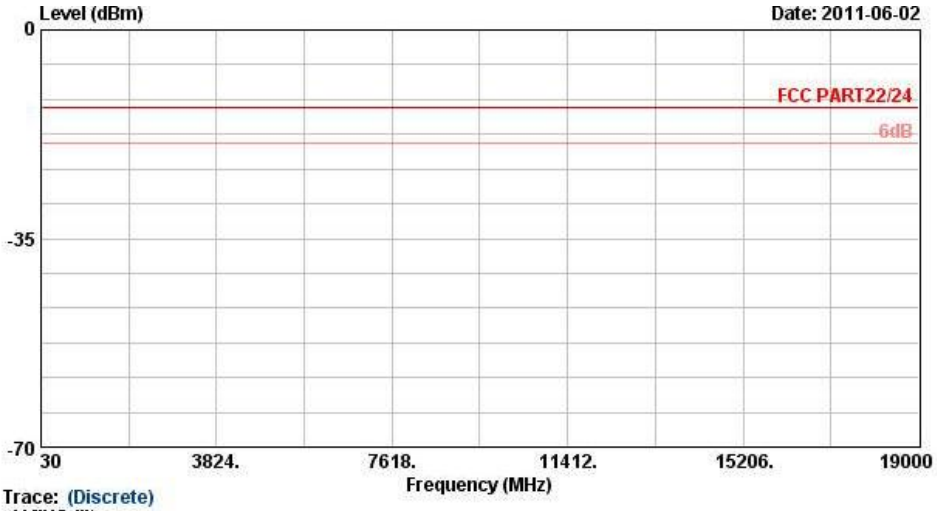
Band :	GSM1900	**Temperature :**	23~24°C
Test Mode :	GPRS 8 Link	**Relative Humidity :**	50~51%
Test Engineer :	Ivan Chiang	**Polarization :**	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line. Spurious emissions within 1000MHz ~ 10th harmonic were not found any signals.		



Trace: (Discrete)

Site : 03CH07-HY
Condition : FCC PART22/24 HF-ETRP(080306) VERTICAL
Project : FG 140905

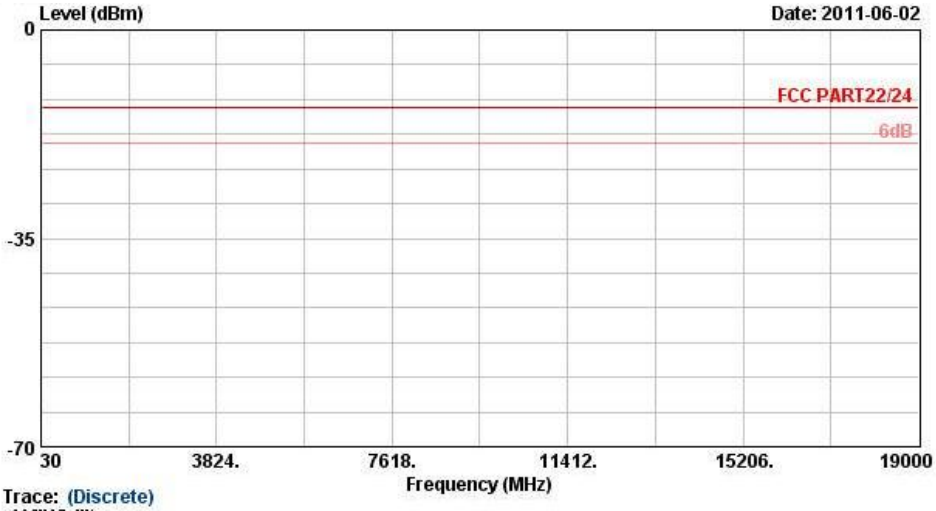
Band :	GSM1900	**Temperature :**	23~24°C
Test Mode :	EDGE 8 Link	**Relative Humidity :**	50~51%
Test Engineer :	Ivan Chiang	**Polarization :**	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line. Spurious emissions within 1000MHz ~ 10th harmonic were not found any signals.		



Trace: (Discrete)

Site : 03CH07-HY
Condition : FCC PART22/24 HF-ETRP(080306) HORTZONTAL
Project : FG 140905

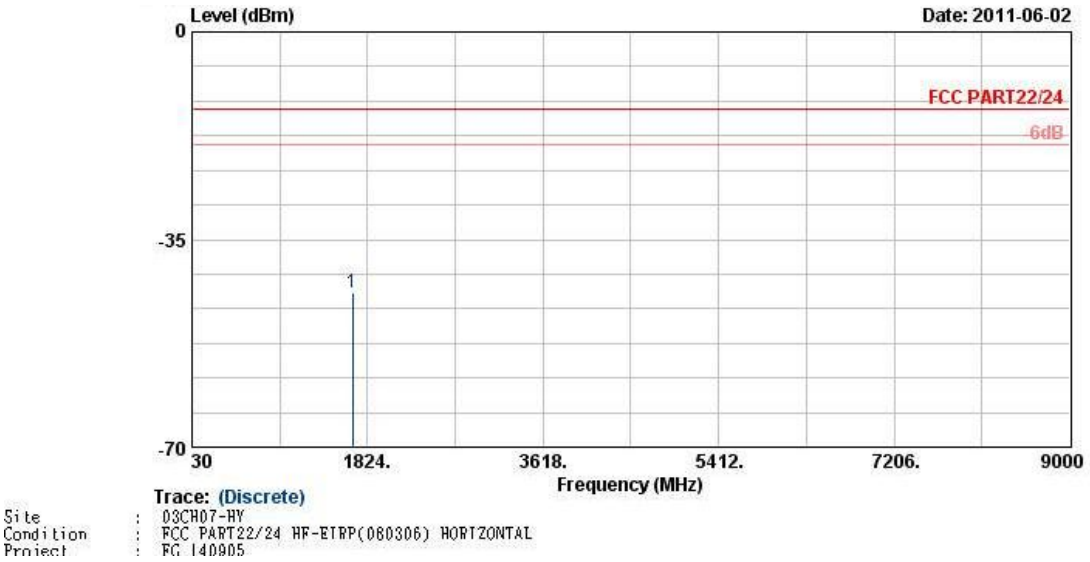
Band :	GSM1900	**Temperature :**	23~24°C
Test Mode :	EDGE 8 Link	**Relative Humidity :**	50~51%
Test Engineer :	Ivan Chiang	**Polarization :**	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line. Spurious emissions within 1000MHz ~ 10th harmonic were not found any signals.		



Trace: (Discrete)

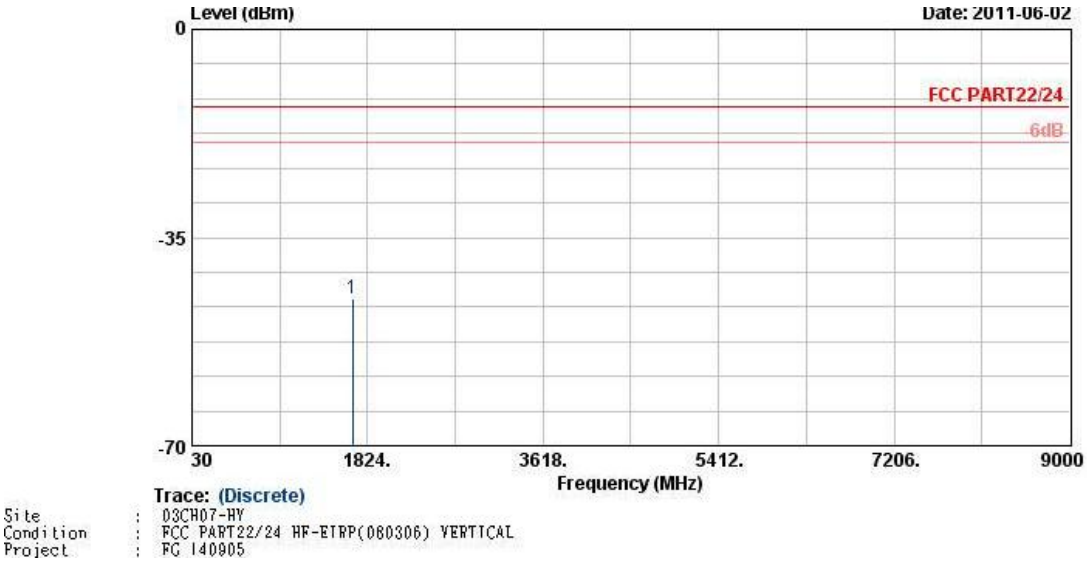
Site : 03CH07-HY
Condition : FCC PART22/24 HF-ETRP(080306) VERTICAL
Project : FG 140905

Band :	WCDMA Band V	**Temperature :**	23~24°C
Test Mode :	RMC 12.2Kbps Link	**Relative Humidity :**	50~51%
Test Engineer :	Ivan Chiang	**Polarization :**	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



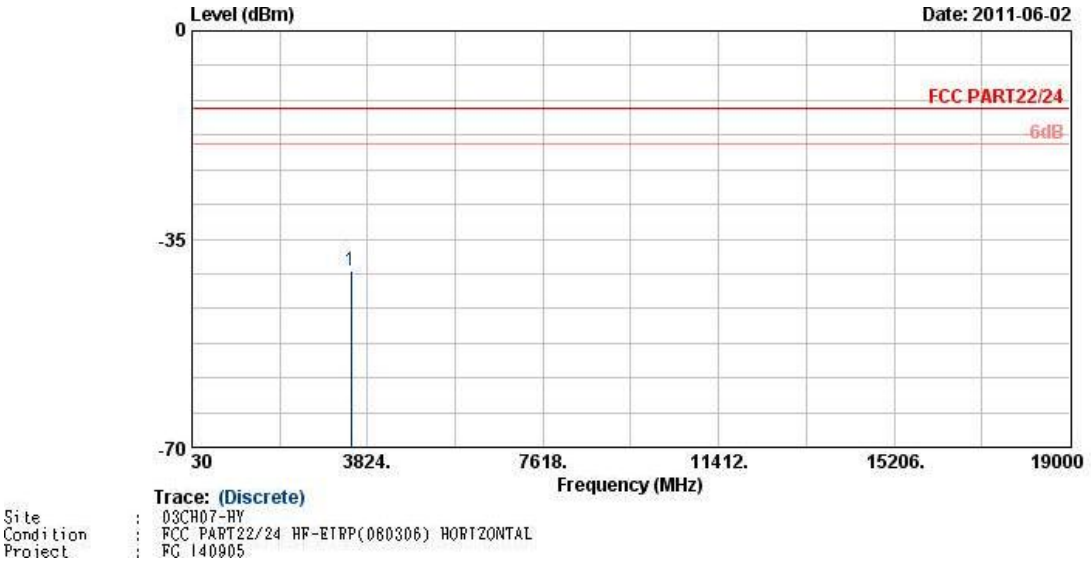
Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1669	-43.94	-13	-30.94	-52.85	-45.66	1.62	5.49	H	Pass

Band :	WCDMA Band V	**Temperature :**	23~24°C
Test Mode :	RMC 12.2Kbps Link	**Relative Humidity :**	50~51%
Test Engineer :	Ivan Chiang	**Polarization :**	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



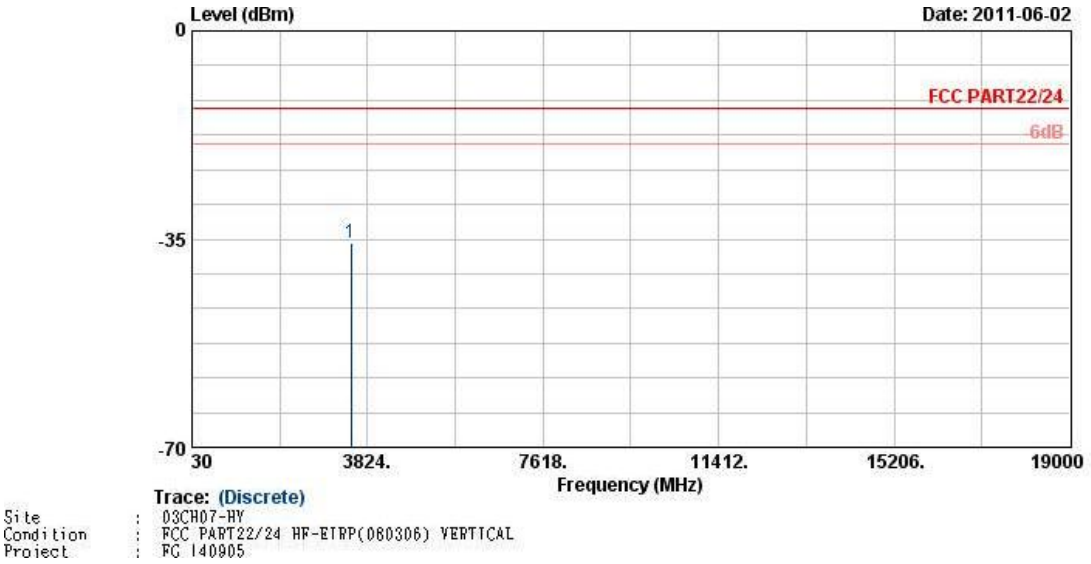
Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1669	-45.28	-13	-32.28	-56.63	-47	1.62	5.49	V	Pass

Band :	WCDMA Band IV	**Temperature :**	23~24°C
Test Mode :	RMC 12.2Kbps Link	**Relative Humidity :**	50~51%
Test Engineer :	Ivan Chiang	**Polarization :**	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



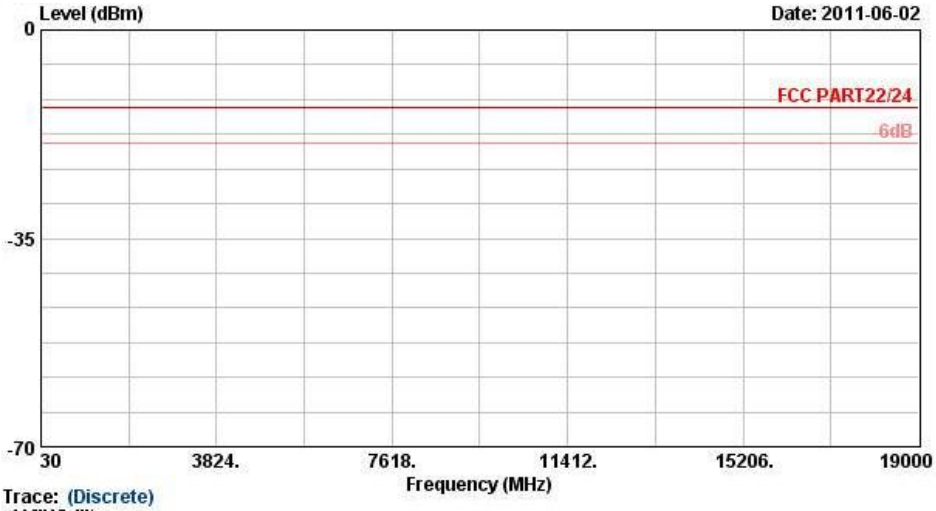
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
3460	-40.43	-13	-27.43	-54.87	-44.26	4.48	8.31	H	Pass

Band :	WCDMA Band IV	**Temperature :**	23~24°C
Test Mode :	RMC 12.2Kbps Link	**Relative Humidity :**	50~51%
Test Engineer :	Ivan Chiang	**Polarization :**	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
3460	-35.61	-13	-22.61	-51.4	-39.44	4.48	8.31	V	Pass

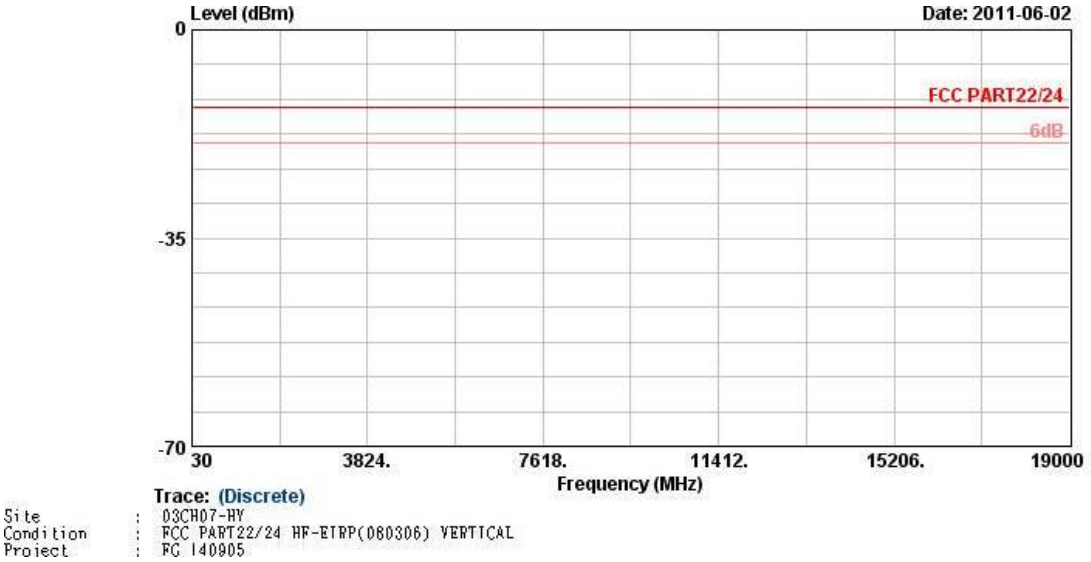
Band :	WCDMA Band II	**Temperature :**	23~24°C
Test Mode :	RMC 12.2Kbps Link	**Relative Humidity :**	50~51%
Test Engineer :	Ivan Chiang	**Polarization :**	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line. Spurious emissions within 1000MHz ~ 10th harmonic were not found any signals.		



Trace: (Discrete)

Site : 03CH07-HY
Condition : FCC PART22/24 HF-ETRP(080306) HORTZONTAL
Project : FG 140905

Band :	WCDMA Band II	**Temperature :**	23~24°C
Test Mode :	RMC 12.2Kbps Link	**Relative Humidity :**	50~51%
Test Engineer :	Ivan Chiang	**Polarization :**	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line. Spurious emissions within 1000MHz ~ 10th harmonic were not found any signals.		



3.7 Frequency Stability Measurement

3.7.1 Description of Frequency Stability Measurement

The frequency stability shall be measured by variation of ambient temperature and variation of primary supply voltage to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within ±0.00025% (±2.5ppm) of the center frequency.

3.7.2 Measuring Instruments

See list of measuring instruments of this test report.

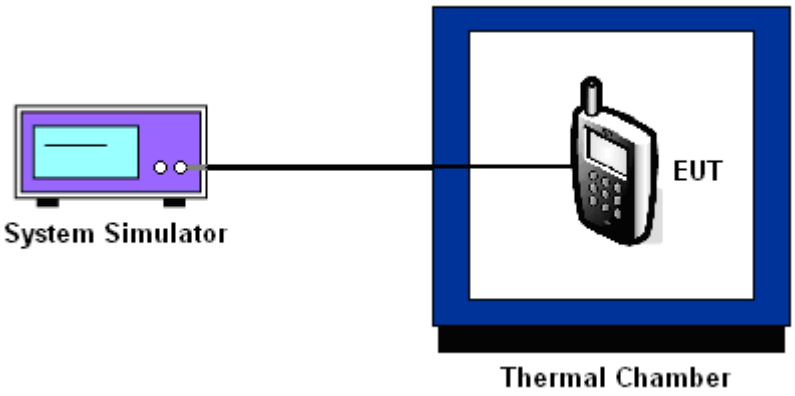
3.7.3 Test Procedures for Temperature Variation

1. The EUT was set up in the thermal chamber and connected with the base station.
2. With power OFF, the temperature was decreased to -30°C and the EUT was stabilized for three hours. Power was applied and the maximum change in frequency was recorded within one minute.
3. With power OFF, the temperature was raised in 10°C step up to 50°C. The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum frequency change was recorded within one minute.
4. If the EUT can not be turned on at -30°C, the testing lowest temperature will be raised in 10°C step until the EUT can be turned on.

3.7.4 Test Procedures for Voltage Variation

1. The EUT was placed in a temperature chamber at 25±5° C and connected with the base station.
2. The power supply voltage to the EUT was varied from BEP to 115% of the nominal value measured at the input to the EUT.
3. The variation in frequency was measured for the worst case.

3.7.5 Test Setup



3.7.6 Test Result of Temperature Variation

Band :	GPRS 850	Channel :	189
Limit (ppm) :	2.5		

Temperature (°C)	GPRS 8		EDGE 8		Result
	Freq. Dev. (Hz)	Deviation (ppm)	Freq. Dev. (Hz)	Deviation (ppm)	
-30	N/A	N/A	N/A	N/A	PASS
-20	N/A	N/A	N/A	N/A	
-10	-61	-0.07	-57	-0.07	
0	-64	-0.08	-54	-0.06	
10	-66	-0.08	-50	-0.06	
20	-59	-0.07	-45	-0.05	
30	-54	-0.06	-48	-0.06	
40	-49	-0.06	-43	-0.05	
50	-52	-0.06	-39	-0.05	

Note:

1. The EUT stops transmitting at temperatures -20°C and -30°C.
2. The manufacturer declared that the EUT could work properly between temperatures -10°C~50°C.

Band :	GPRS 1900	Channel :	661
Limit (ppm) :	2.5		

Temperature (°C)	GPRS 8		EDGE 8		Result
	Freq. Dev. (Hz)	Deviation (ppm)	Freq. Dev. (Hz)	Deviation (ppm)	
-30	N/A	N/A	N/A	N/A	PASS
-20	N/A	N/A	N/A	N/A	
-10	-91	-0.05	-83	-0.04	
0	-89	-0.05	-77	-0.04	
10	-68	-0.04	-80	-0.04	
20	-75	-0.04	-73	-0.04	
30	-80	-0.04	-71	-0.04	
40	-72	-0.04	-64	-0.03	
50	-63	-0.03	-66	-0.03	

Note:

1. The EUT stops transmitting at temperatures -20°C and -30°C.
2. The manufacturer declared that the EUT could work properly between temperatures -10°C~50°C.

Band :	WCDMA Band V	Channel :	4182
Limit (ppm) :	2.5		

Temperature (°C)	RMC 12.2Kbps		Result
	Freq. Dev. (Hz)	Deviation (ppm)	
-30	N/A	N/A	PASS
-20	N/A	N/A	
-10	-35	-0.04	
0	-39	-0.05	
10	-36	-0.04	
20	-41	-0.05	
30	-38	-0.04	
40	-43	-0.05	
50	-40	-0.05	

Note:

1. The EUT stops transmitting at temperatures -20°C and -30°C.
2. The manufacturer declared that the EUT could work properly between temperatures -10°C~50°C.

Band :	WCDMA Band IV	Channel :	1413
Limit (ppm) :	2.5		

Temperature (°C)	RMC 12.2Kbps		Result
	Freq. Dev. (Hz)	Deviation (ppm)	
-30	N/A	N/A	PASS
-20	N/A	N/A	
-10	32	0.02	
0	-33	-0.02	
10	-30	-0.02	
20	-27	-0.02	
30	-25	-0.01	
40	21	0.01	
50	-23	-0.01	

Note:

1. The EUT stops transmitting at temperatures -20°C and -30°C.
2. The manufacturer declared that the EUT could work properly between temperatures -10°C~50°C.

Band :	WCDMA Band II	Channel :	9400
Limit (ppm) :	2.5		

Temperature (°C)	RMC 12.2Kbps		Result
	Freq. Dev. (Hz)	Deviation (ppm)	
-30	N/A	N/A	PASS
-20	N/A	N/A	
-10	-79	-0.04	
0	-77	-0.04	
10	-72	-0.04	
20	-64	-0.03	
30	-69	-0.04	
40	-53	-0.03	
50	-56	-0.03	

Note:

1. The EUT stops transmitting at temperatures -20°C and -30°C.
2. The manufacturer declared that the EUT could work properly between temperatures -10°C~50°C.

3.7.7 Test Result of Voltage Variation

Band & Channel	Mode	Voltage (Volt)	Freq. Dev. (Hz)	Deviation (ppm)	Limit (ppm)	Result
GSM 850 CH189	GPRS 8	3.7	57	0.07	2.5	PASS
		BEP	-54	-0.06		
		4.2	-63	-0.07		
	EDGE 8	3.7	-48	-0.06		
		BEP	-45	-0.05		
		4.2	-50	-0.06		
GSM 1900 CH661	GPRS 8	3.7	-78	-0.04		
		BEP	-71	-0.04		
		4.2	-83	-0.04		
	EDGE 8	3.7	-69	-0.04		
		BEP	-60	-0.03		
		4.2	-72	-0.04		
WCDMA Band V CH4182	RMC 12.2Kbps	3.7	-44	-0.05		
		BEP	-39	-0.05		
		4.2	-46	-0.05		
WCDMA Band IV CH1413	RMC 12.2Kbps	3.7	-22	-0.01		
		BEP	-18	-0.01		
		4.2	-23	-0.01		
WCDMA Band II CH9400	RMC 12.2Kbps	3.7	-67	-0.04		
		BEP	-59	-0.03		
		4.2	-71	-0.04		

Note:

1. Normal Voltage = 3.7V.
2. Battery End Point (BEP) = 3.4 V.

4 List of Measuring Equipments

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Due Date	Remark
System Simulator	R&S	CMU200	117995	N/A	Aug. 11, 2010	Aug.10, 2011	Conducted (TH02-HY)
Spectrum Analyzer	R&S	FSP30	101329	9kHz~30GHz	May. 03, [illegible]	May. 02, [illegible]	Conducted (TH02-HY)
Power Sensor	Agilent	E9327A	US40441548	N/A	Feb. 18, 2011	Feb. 17, 2012	Conducted (TH02-HY)
Bilog Antenna	SCHAFFNER	CBL6111C	2726	30MHz ~ 1GHz	Oct. 31, 2010	Oct. 30, 2011	Radiation (03CH07-HY)
Spectrum Analyzer	R&S	FSP	101067	9KHz ~ 30GHz	Dec. 03, 2010	Dec. 02, 2011	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00075962	1GHz ~ 18GHz	Aug. 19, 2010	Aug. 18, 2011	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz- 40GHz	Oct. 18, 2010	Oct. 17, 2011	Radiation (03CH07-HY)
Pre Amplifier	Agilent	8449B	3008A02362	1GHz~ 26.5GHz	Dec. 06, 2010	Dec. 05, 2011	Radiation (03CH07-HY)
Pre Amplifier	COM-POWER	PA-103A	161241	10-1000MHz.32dB. GAIN	Mar. 29, 2011	Mar. 28, 2012	Radiation (03CH07-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz~30 MHz	Jul. 29, 2010	Jul. 28, 2011	Radiation (03CH07-HY)
Bluetooth Base Station	Anritsu	MT8852B	6K00005722	N/A	N/A	N/A	Radiation (03CH07-HY)

5 Uncertainty of Evaluation

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Contribution	Uncertainty of X_i		$u(X_i)$
	dB	Probability Distribution	
Receiver Reading	0.41	Normal (k=2)	0.21
Antenna Factor Calibration	0.83	Normal (k=2)	0.42
Cable Loss Calibration	0.25	Normal (k=2)	0.13
Pre-Amplifier Gain Calibration	0.27	Normal (k=2)	0.14
RCV/SPA Specification	2.50	Rectangular	0.72
Antenna Factor Interpolation for Frequency	1.00	Rectangular	0.29
Site Imperfection	1.43	Rectangular	0.83
Mismatch	+0.39 / -0.41	U-Shape	0.28
Combined Standard Uncertainty Uc(y)	**1.27**		
Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.54**		

Uncertainty of Radiated Emission Measurement (1 GHz ~ 40 GHz)

Contribution	Uncertainty of X_i		$u(X_i)$	C_i	$C_i * u(X_i)$
	dB	Probability Distribution			
Receiver Reading	±0.10	Normal (k=2)	0.10	1	0.10
Antenna Factor Calibration	±1.70	Normal (k=2)	0.85	1	0.85
Cable Loss Calibration	±0.50	Normal (k=2)	0.25	1	0.25
Receiver Correction	±2.00	Rectangular	1.15	1	1.15
Antenna Factor Directional	±1.50	Rectangular	0.87	1	0.87
Site Imperfection	±2.80	Triangular	1.14	1	1.14
Mismatch Receiver VSWR Γ1 = 0.197 Antenna VSWR Γ2 = 0.194 Uncertainty = 20Log(1-Γ1*Γ2)	+0.34 / -0.35	U-Shape	0.244	1	0.244
Combined Standard Uncertainty Uc(y)	**2.36**				
Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.72**				

Appendix A. Photographs of EUT

Please refer to Sporton report number EP140905 as below.