

FCC/IC Test Report

APPLICANT : Nokia Corporation
EQUIPMENT : Internet Stick
BRAND NAME : Nokia
MODEL NAME : RD-10
MARKETING NAME : CS-15
FCC ID : PYARD-10
IC : 661V-RD10
STANDARD : 47 CFR Part 2, 22(H), 24(E),
RSS-132 Issued 2, RSS-133 Issued 5
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
MAX. ERP/EIRP POWER : GSM850 (GPRS 8) : 0.19 W
GSM850 (EDGE 8) : 0.12 W
GSM1900 (GPRS 8) : 0.36 W
GSM1900 (EDGE 8) : 0.67 W
EMISSION DESIGNATOR : GSM : 246KGXW
EDGE : 252KG7W

The product sample received on May 19, 2009 and completely tested on Jun. 18, 2009. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.4-2003 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:



Roy Wu / Manager



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	3
SUMMARY OF TEST RESULT	4
1 GENERAL DESCRIPTION	5
1.1 Applicant.....	5
1.2 Manufacturer	5
1.3 Feature of Equipment Under Test.....	6
1.4 Testing Site.....	7
1.5 Applied Standards	7
1.6 Ancillary Equipment List.....	7
2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST	8
2.1 Test Mode.....	8
2.2 Connection Diagram of Test System	9
3 TEST RESULT	10
3.1 Conducted Output Power Measurement.....	10
3.2 Effective Radiated Power and Effective Isotropic Radiated Power Measurement	12
3.3 Occupied Bandwidth Measurement	16
3.4 Band Edge Measurement.....	25
3.5 Conducted Emission Measurement	51
3.6 Field Strength of Spurious Radiation Measurement	82
3.7 Frequency Stability Measurement.....	112
4 LIST OF MEASURING EQUIPMENT	115
5 UNCERTAINTY OF EVALUATION	116
6 CERTIFICATION OF TAF ACCREDITATION	117
APPENDIX A. PHOTOGRAPHS OF EUT	
APPENDIX B. SETUP PHOTOGRAPHS	



REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG8D1611-05	Rev. 01	Initial issue of report	Jul. 20, 2009



SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result
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 for FCC (<6.3 Watts for IC)	PASS
3.2	§24.232(c)	RSS-133 (6.4) SRSP-510(5.1.2)	Equivalent Isotropic Radiated Power	< 2 Watts	PASS
3.3	§2.1049 §22.917(a) §24.238(a)	N/A	Occupied Bandwidth	N/A	PASS
3.4	§2.1051 §22.917(a) §24.238(a)	RSS-132 (4.5.1) RSS-133 (6.5.1)	Band Edge Measurement	< 43+10log ₁₀ (P[Watts])	PASS
3.5	§2.1051 §22.917(a) §24.238(a)	RSS-132 (4.5.1) RSS-133 (6.5.1)	Conducted Emission	< 43+10log ₁₀ (P[Watts])	PASS
3.6	§2.1053 §22.917(a) §24.238(a)	RSS-132 (4.5.1) RSS-133 (6.5.1)	Field Strength of Spurious Radiation	< 43+10log ₁₀ (P[Watts])	PASS
3.7	§2.1055 §22.355 §24.235	RSS-132(4.3) RSS-133(6.3)	Frequency Stability for Temperature & Voltage	< 2.5 ppm	PASS



1 General Description

1.1 Applicant

Nokia Corporation

Elektroniikkatie 10, PO box., Oulu City, 90571. Finland.

1.2 Manufacturer

Nokia Corporation

Elektroniikkatie 10, PO box., Oulu City, 90571. Finland.

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	Internet Stick
Brand Name	Nokia
Model Name	RD-10
Marketing Name	CS-15
FCC ID	PYARD-10
IC	661V-RD10
Tx Frequency	GSM850 : 824 MHz ~ 849 MHz GSM1900 : 1850 MHz ~ 1910 MHz
Rx Frequency	GSM850 : 869 MHz ~ 894 MHz GSM1900 : 1930 MHz ~ 1990 MHz
Maximum Output Power to Antenna	GSM850 : 28.50 dBm GSM1900 : 26.33 dBm
Maximum ERP/EIRP	GSM850 (GPRS 8) : 0.19 W (22.71 dBm) GSM850 (EDGE 8) : 0.12 W (20.75 dBm) GSM1900 (GPRS 8) : 0.36 W (25.54 dBm) GSM1900 (EDGE 8) : 0.67 W (28.27 dBm)
Antenna Type	Fixed Internal Antenna
HW Version	1.4
SW Version	2.4
Mechanical Version	3.0
Type of Modulation	GSM / GPRS : GMSK EDGE : 8PSK
Type of Emission	GSM : 246KGXW EDGE : 252KG7W
EUT Stage	Production Unit

Remark:

- For other wireless features of this EUT, the test report will be issued separately.
- This test report recorded only product characteristics and test results of PCS Licensed Transmitter (PCB).

List of Accessory:

Specification of Accessory		
USB Cable	Brand Name	Nokia
	Model Name	CA-150D
	Signal Line Type	0.24 meter shielded cable with ferrite core

Remark:

- The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.
- For accessories equipped with this EUT, please refer to the appendix of the external photo.

1.4 Testing Site

Test Site	SPORTON INTERNATIONAL INC.		
Test Site Location	No. 52, Hwa Ya 1 st 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	TW1022/4086B-1

1.5 Applied Standards

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

- ♦ 47 CFR Part 2, 22(H), 24(E)
- ♦ ANSI C63.4-2003
- ♦ ANSI / TIA / EIA-603-C-2004
- ♦ IC RSS-132 Issue 2
- ♦ IC RSS-133 Issue 5

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.	Notebook	DELL	Vostro 1510	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 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, and EUT is rotated on three test planes to find out the worst emission.

Frequency range investigated for radiated emission is as follows:

1. 30 MHz to 9000 MHz for GSM850.
2. 30MHz to 19000 MHz for GSM1900.

Test Modes		
Band	Radiated TCs	Conducted TCs
GSM 850	■ GPRS 8 Link (EUT with Cable) ■ EDGE 8 Link (EUT with Cable) ■ GPRS 8 Link (EUT without Cable)	■ GPRS 8 Link ■ EDGE 8 Link
GSM 1900	■ GPRS 8 Link (EUT with Cable) ■ EDGE 8 Link (EUT with Cable) ■ GPRS 8 Link (EUT without Cable)	■ GPRS 8 Link ■ EDGE 8 Link

Note:

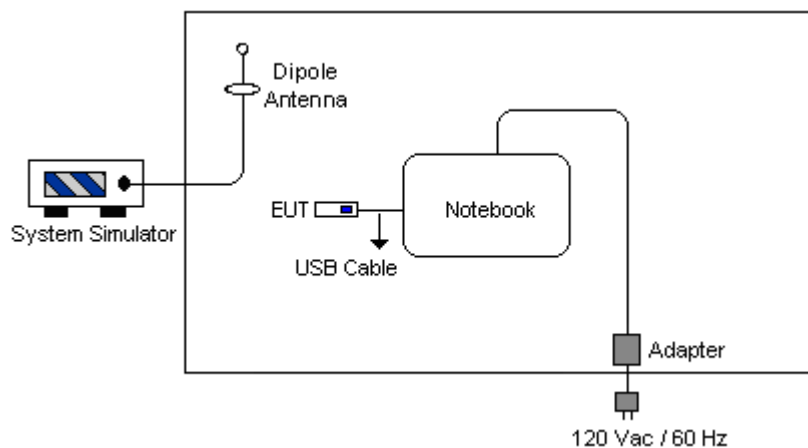
1. The direct USB port connection mode of RSE was tested on the worst mode of EUT with cable.
2. The maximum power levels are GPRS multi-slot class 8 mode for GMSK link, EDGE multi-slot class 8 mode for 8PSK link, only these modes were used for all tests. The power tables are listed as follows:

Conducted Power						
Band	GSM850			GSM1900		
Channel	128	189	251	512	661	810
Frequency	824.2	836.4	848.8	1850.2	1880.0	1909.8
GPRS 8	28.43	28.50	28.45	25.10	24.80	25.06
GPRS 10	25.74	25.75	25.71	22.88	22.56	22.84
EGPRS 8	25.16	25.24	25.25	24.68	24.40	24.40
EGPRS 10	22.84	23.03	22.71	22.16	22.00	21.99

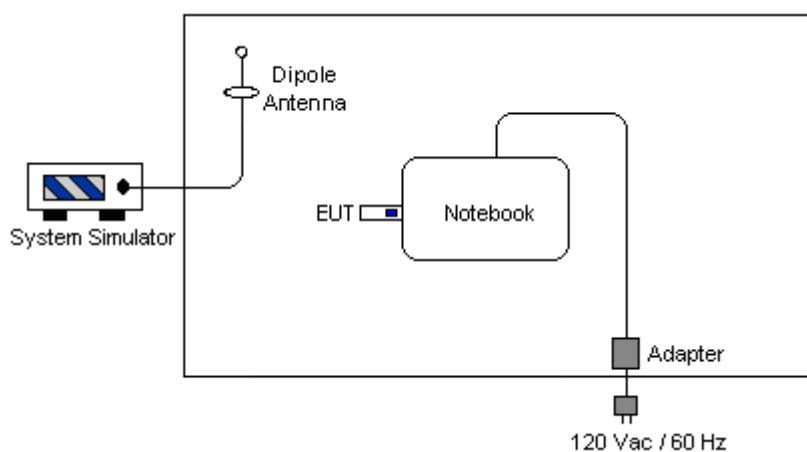
(*Unit: dBm)

2.2 Connection Diagram of Test System

<EUT with USB Cable>



<EUT without USB Cable>



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.

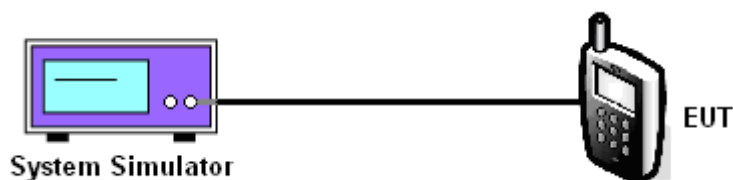
3.1.2 Measuring Instruments

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)
GPRS 8	128 (Low)	824.2	28.43
	189 (Mid)	836.4	28.50
	251 (High)	848.8	28.45
EDGE 8	128 (Low)	824.2	25.16
	189 (Mid)	836.4	25.24
	251 (High)	848.8	25.25

PCS Band			
Modes	Channel	Frequency (MHz)	Conducted Power (dBm)
GPRS 8	512 (Low)	1850.2	25.10
	661 (Mid)	1880.0	24.80
	810 (High)	1909.8	25.06
EDGE 8	512 (Low)	1850.2	24.68
	661 (Mid)	1880.0	24.40
	810 (High)	1909.8	24.40

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 and the EIRP of mobile transmitters are limited to 2 Watts.

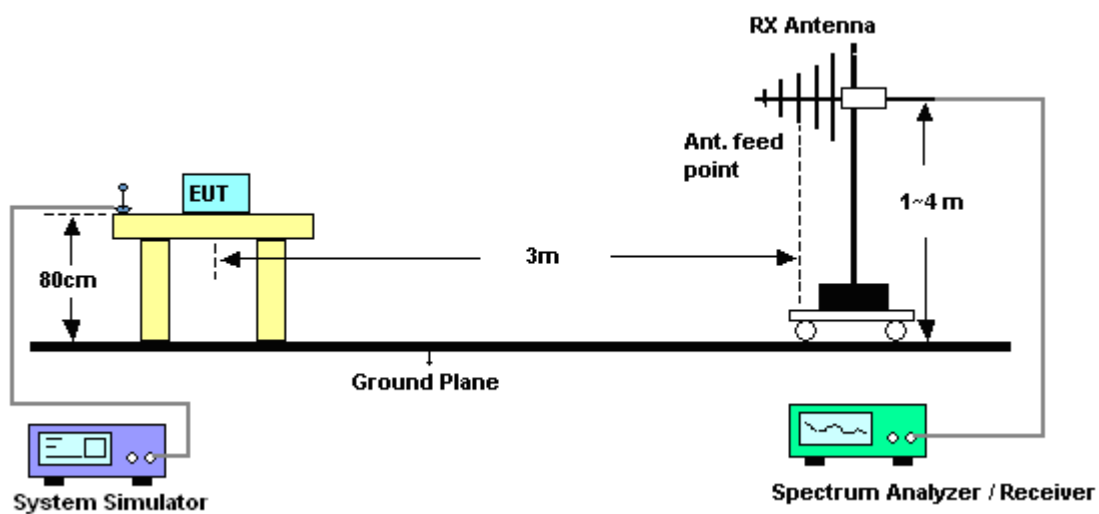
3.2.2 Measuring Instruments

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, $EIRP = LVL + \text{Correction factor}$ 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	-7.45	32.04	22.44	0.18
836.4	-8.05	32.91	22.71	0.19
848.8	-9.01	32.84	21.68	0.15
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
824.2	-12.71	36.10	21.24	0.13
836.4	-12.54	34.41	19.72	0.09
848.8	-12.32	34.65	20.18	0.10

* 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	-9.49	32.04	20.40	0.11
836.4	-10.01	32.91	20.75	0.12
848.8	-10.02	32.84	20.67	0.12
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (W)
824.2	-14.70	36.10	19.25	0.08
836.4	-14.68	34.41	17.58	0.06
848.8	-14.51	34.65	17.99	0.06

* 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	-16.32	40.91	24.59	0.29
1880.0	-17.80	42.38	24.58	0.29
1909.8	-16.76	42.30	25.54	0.36
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1850.2	-23.57	43.63	20.06	0.10
1880.0	-23.55	43.55	20.00	0.10
1909.8	-22.09	44.84	22.75	0.19

* 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	-12.64	40.91	28.27	0.67
1880.0	-14.34	42.38	28.04	0.64
1909.8	-14.11	42.3	28.19	0.66
Vertical Polarization				
Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (W)
1850.2	-18.82	43.63	24.81	0.30
1880.0	-21.94	43.55	21.61	0.14
1909.8	-19.56	44.84	25.28	0.34

* 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.

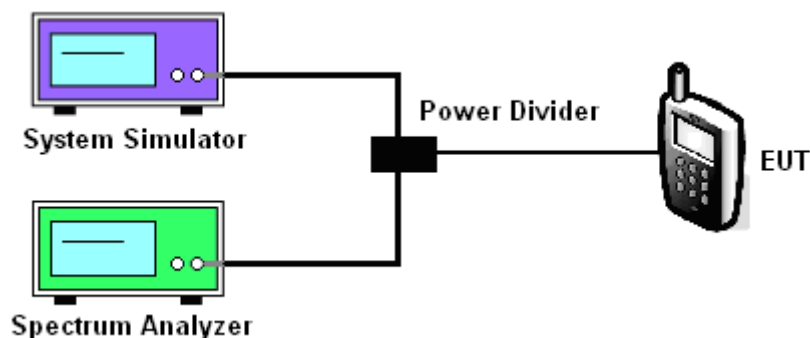
3.3.2 Measuring Instruments

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. The RBW was replaced by 10 kHz, due to the spectrum analyzer IF-Filter including an excess of the limit. A worst case correction factor of $10 \log (1\% \text{ BW/measurement RBW})$ was implemented.

3.3.4 Test Setup

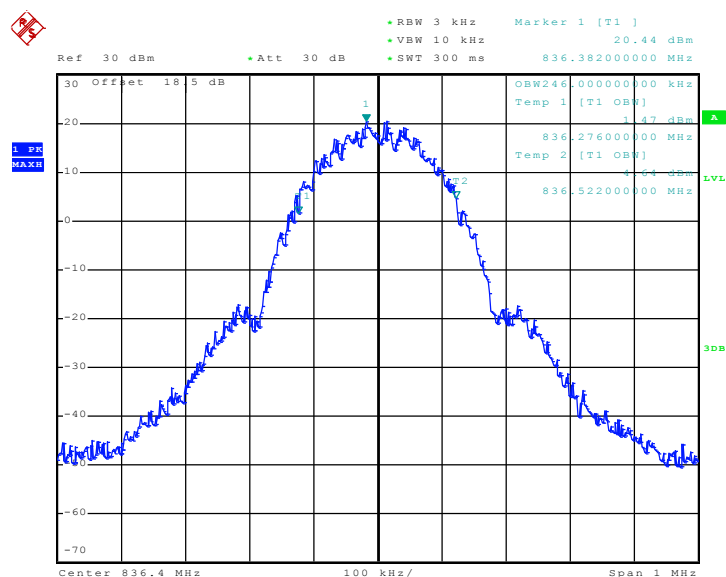




3.3.5 Test Result (Plots) of Occupied Bandwidth

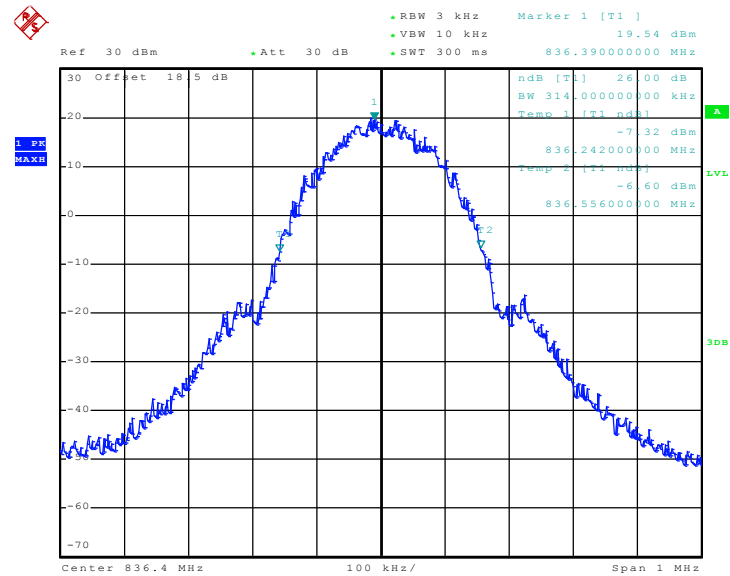
Band :	GSM 850	Power Stage :	High
Test Mode :	GPRS 8 Link		

99% Occupied Bandwidth Plot on Channel 189





26dB Bandwidth Plot on Channel 189

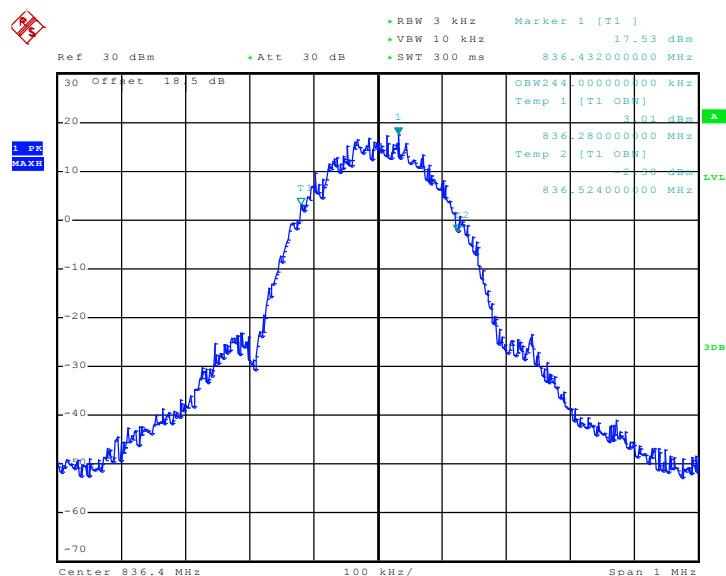


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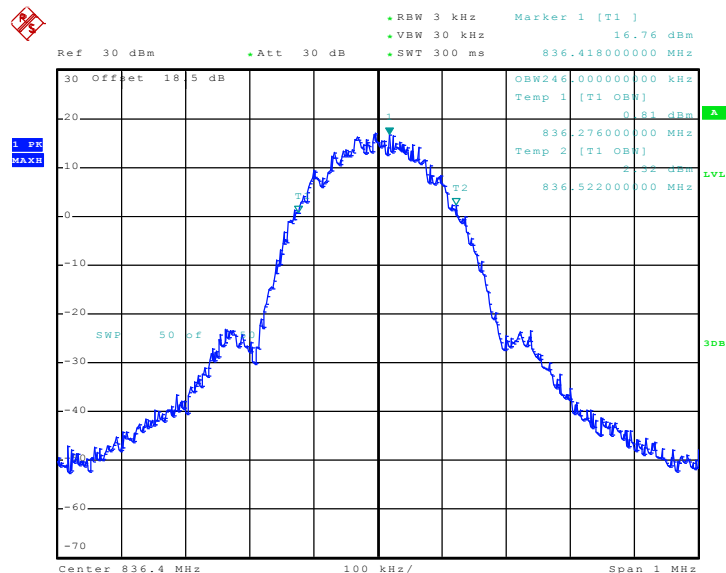


Band :	GSM 850	Power Stage :	High
Test Mode :	EDGE 8 Link		

99% Occupied Bandwidth Plot on Channel 189



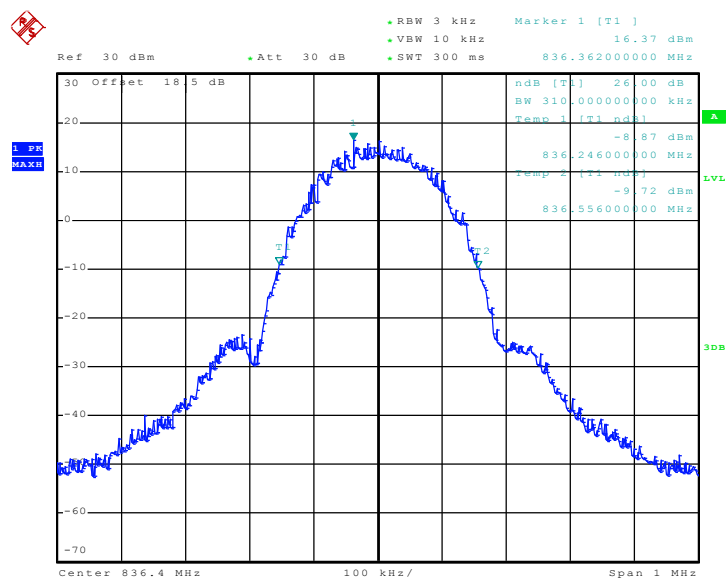
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26dB Bandwidth Plot on Channel 189

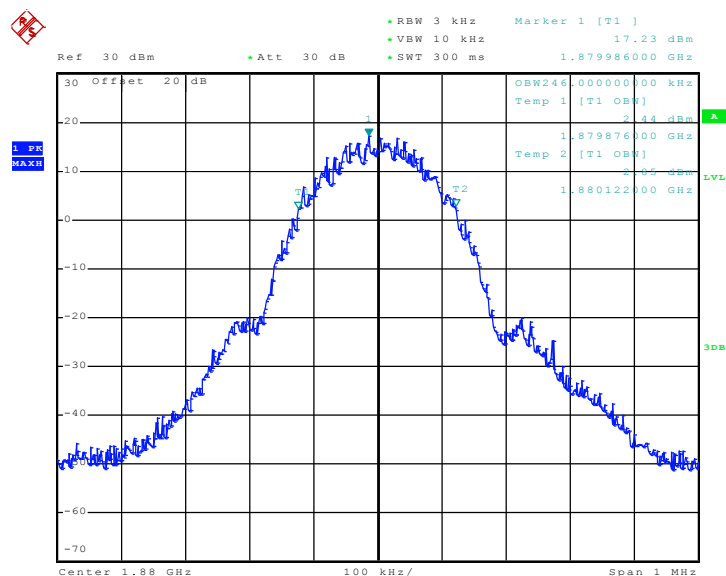


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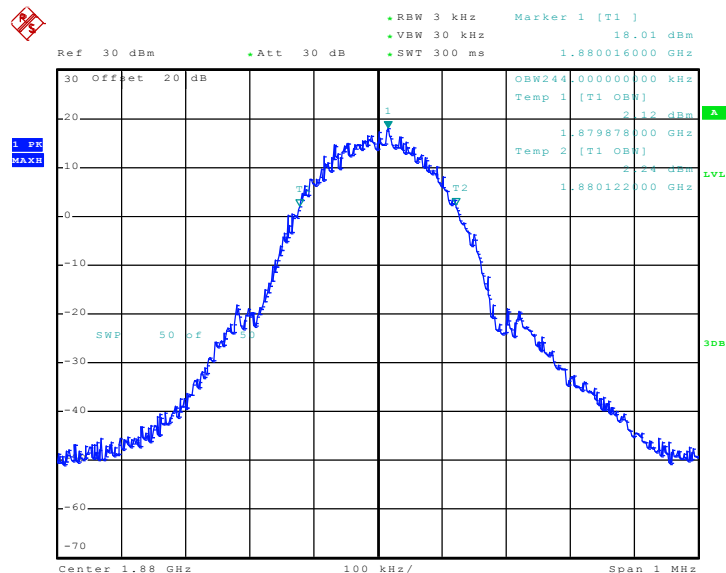


Band :	GSM 1900	Power Stage :	High
Test Mode :	GPRS 8 Link		

99% Occupied Bandwidth Plot on Channel 661



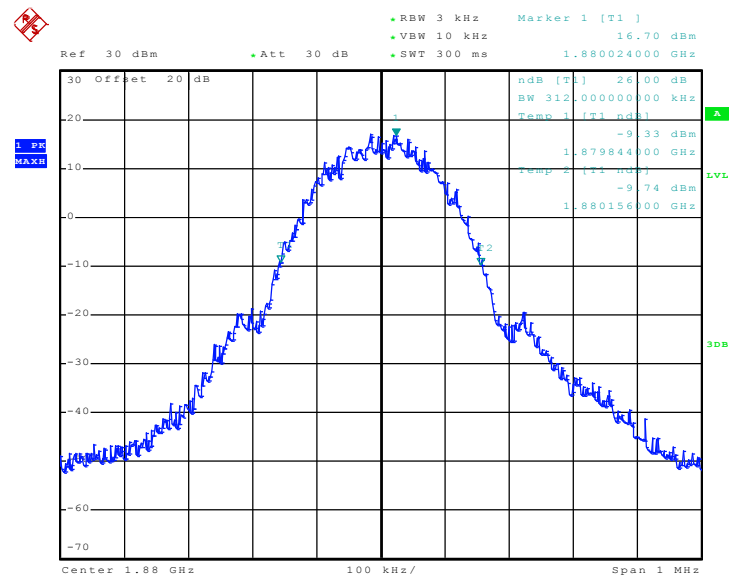
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26dB Bandwidth Plot on Channel 661

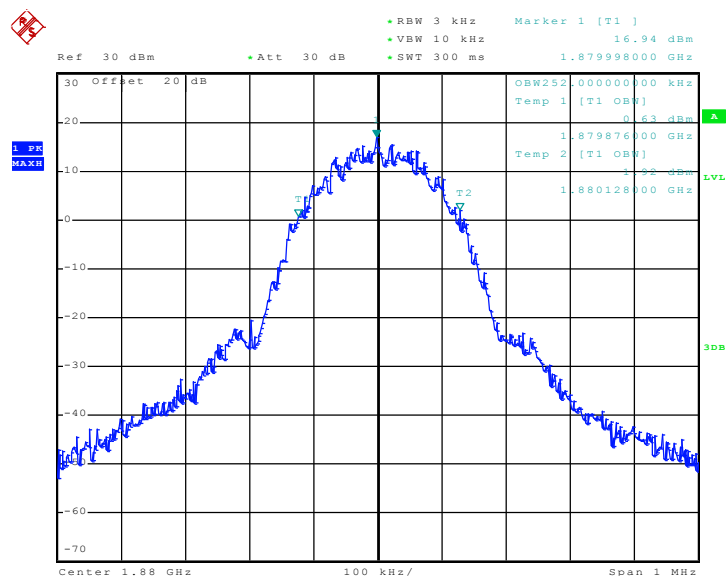


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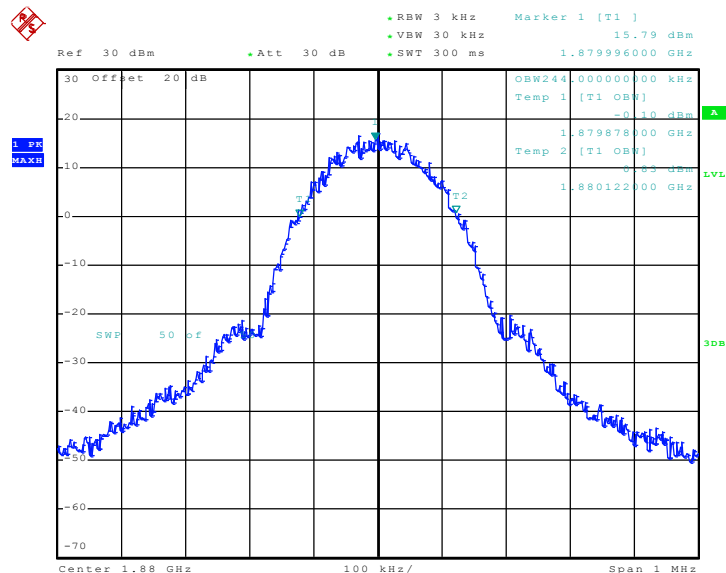


Band :	GSM 1900	Power Stage :	High
Test Mode :	EDGE 8 Link		

99% Occupied Bandwidth Plot on Channel 661



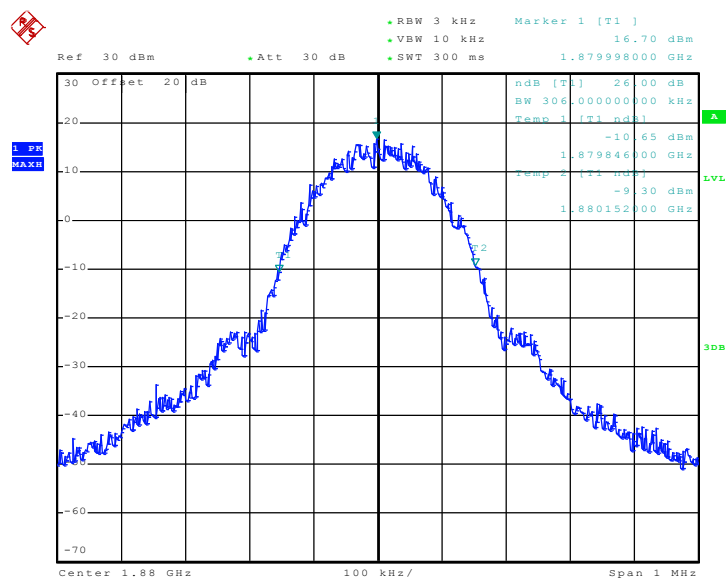
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Date: 3..JUN.2009 01:08:54



26dB Bandwidth Plot on Channel 661



Date: 3.JUL.2009 01:05:19

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

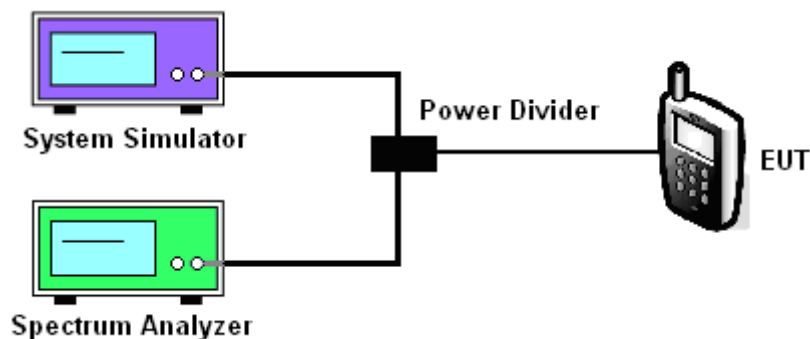
See list of measuring instruments of this test report.

3.4.3 Test Procedures

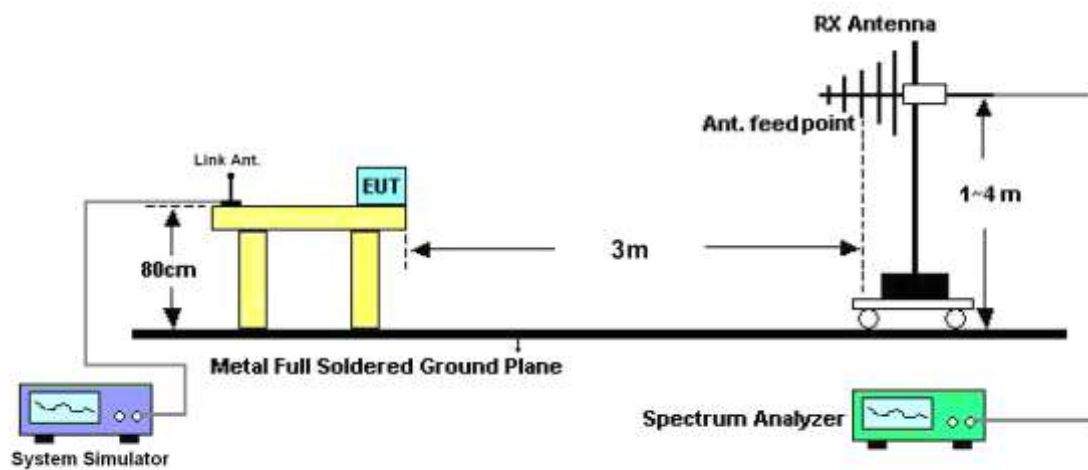
1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
2. The band edges of low and high channels for the highest RF powers were measured. Setting RBW as roughly BW/100.

3.4.4 Test Setup

<Conducted Band Edge >



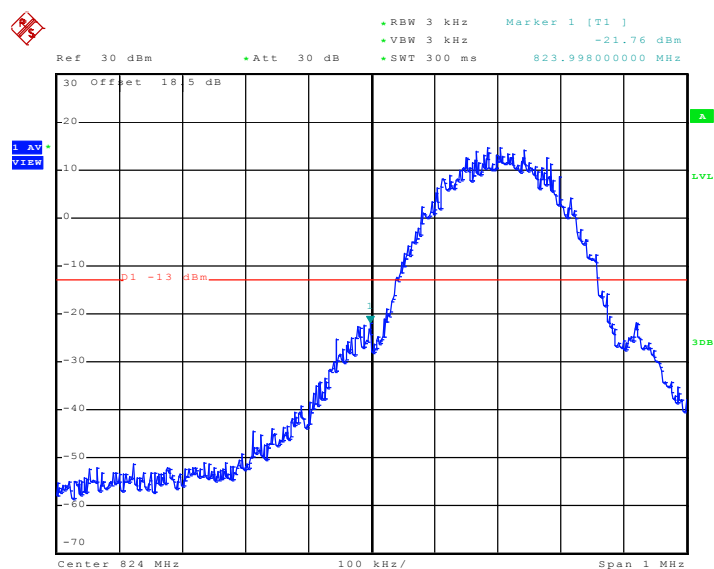
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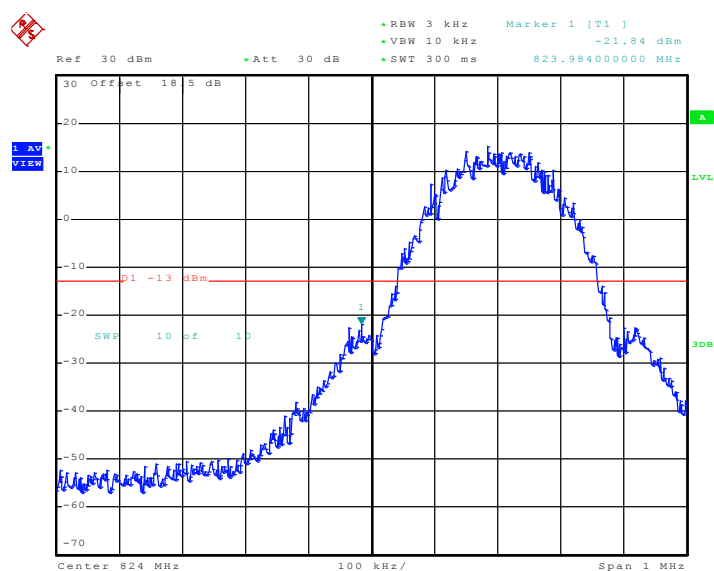


Band :	GSM850	Power Stage :	High
Test Mode :	GPRS 8 Link		

Lower Band Edge Plot on Channel 128



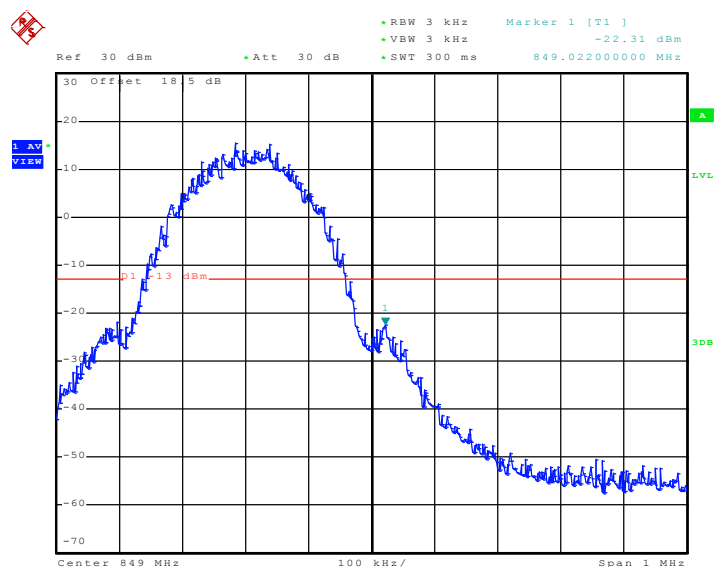
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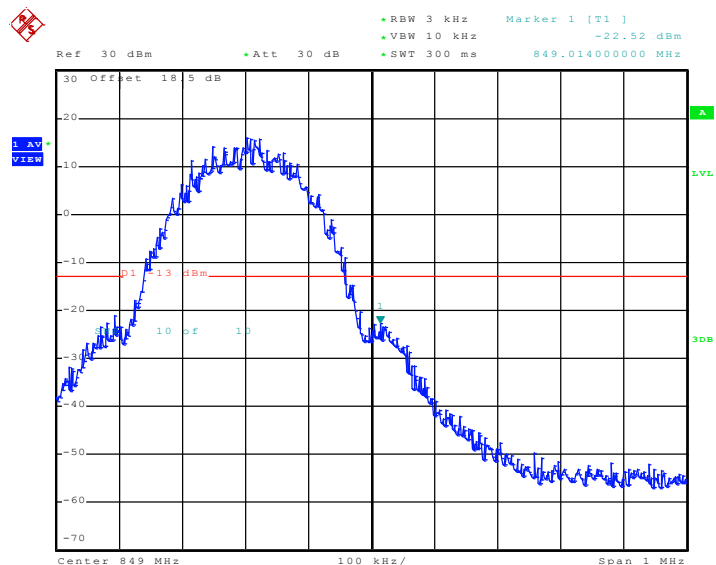
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Higher Band Edge Plot on Channel 251



Date: 2.JUN.2009 23:13:47

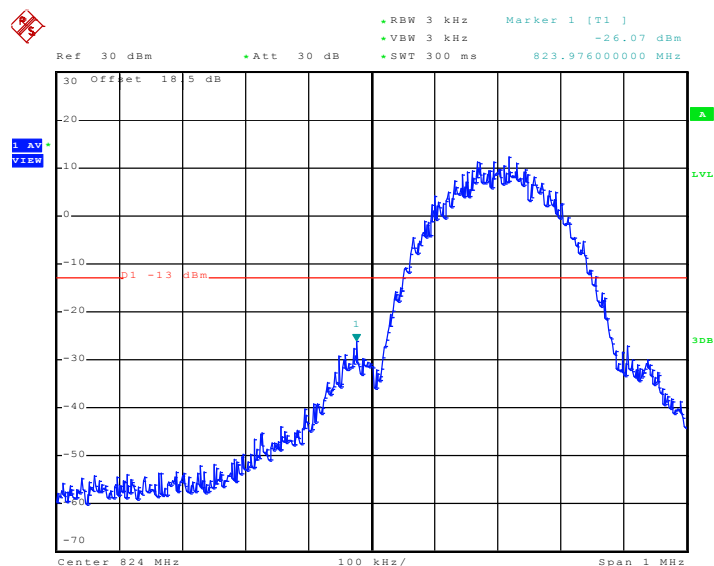


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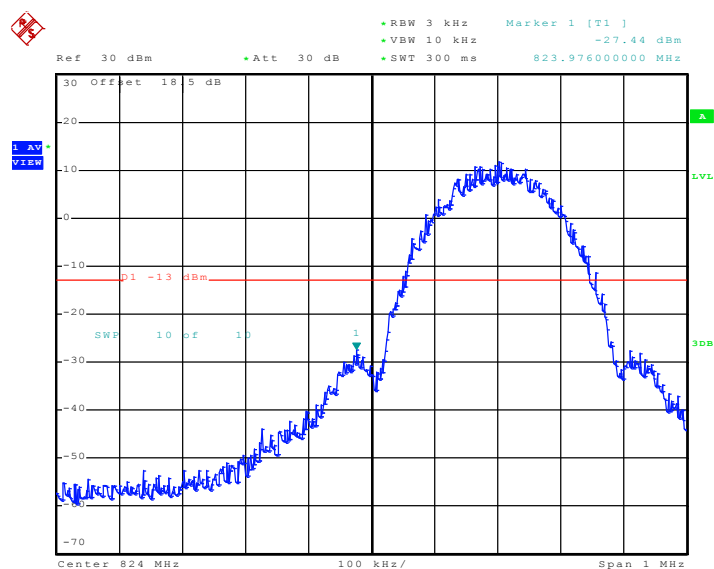


Band :	GSM850	Power Stage :	High
Test Mode :	EDGE 8 Link		

Lower Band Edge Plot on Channel 128

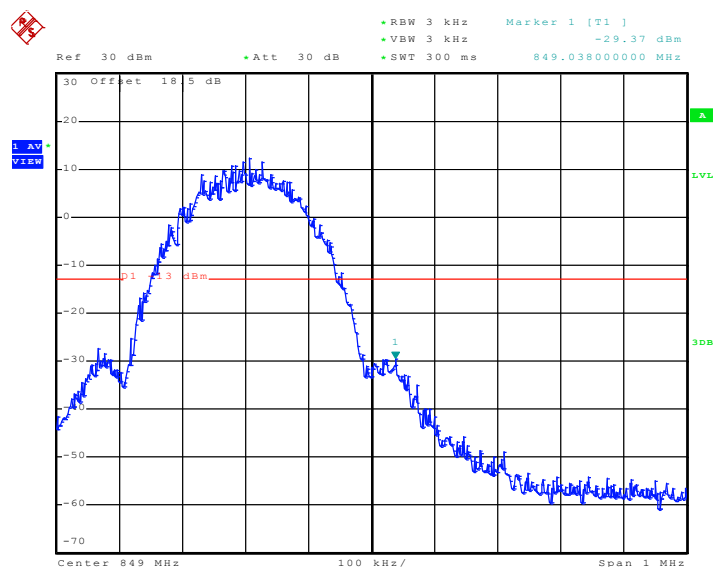


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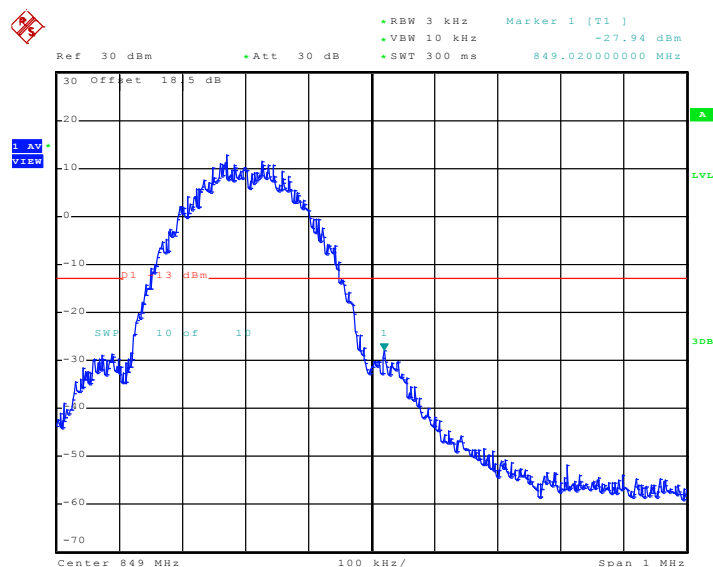


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Higher Band Edge Plot on Channel 251



Date: 3.JUN.2009 00:08:31

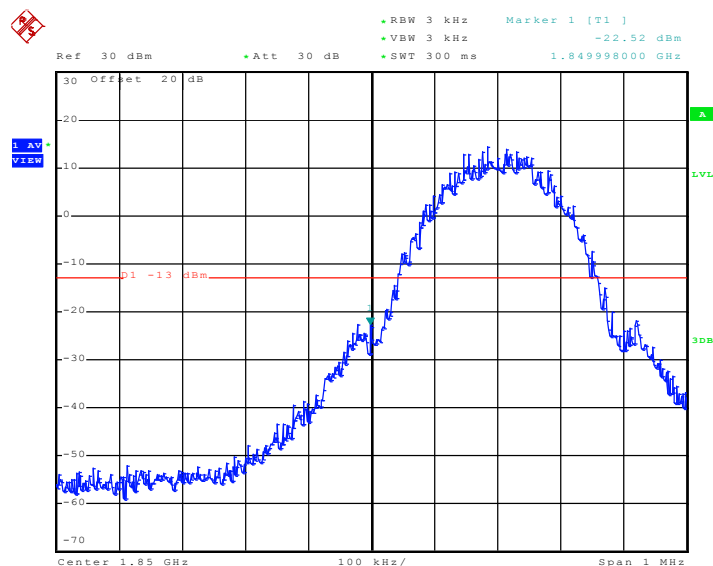


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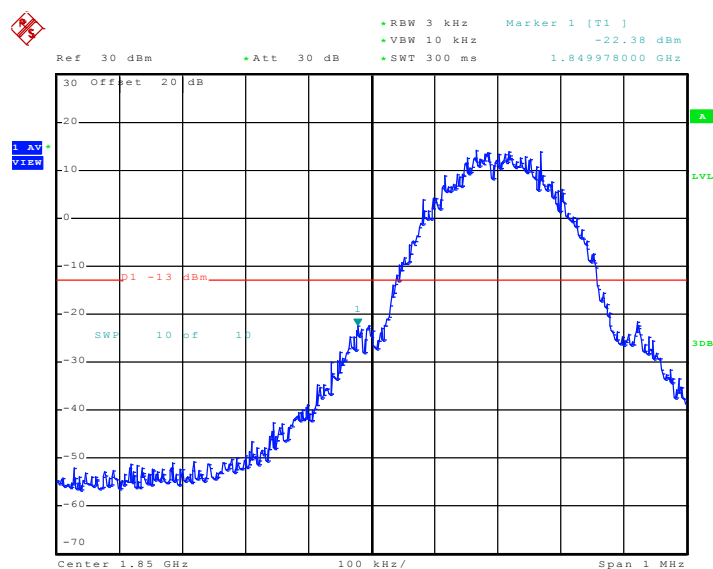


Band :	GSM1900	Power Stage :	High
Test Mode :	GPRS 8 Link		

Lower Band Edge Plot on Channel 512



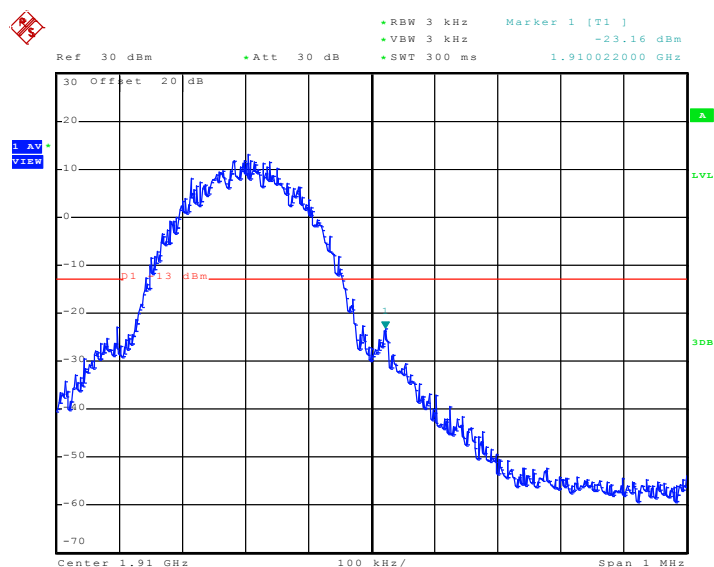
Date: 3.JUN.2009 00:24:23



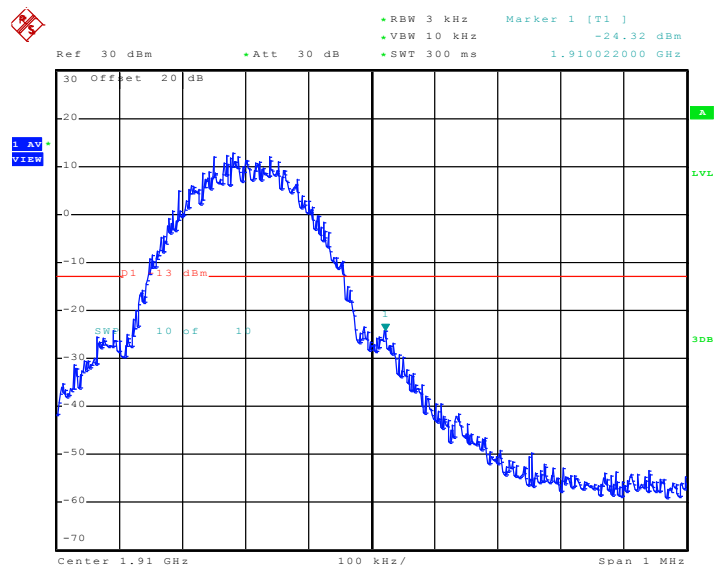
Date: 3.JUN.2009 00:25:36



Higher Band Edge Plot on Channel 810



Date: 3.JUN.2009 00:28:03

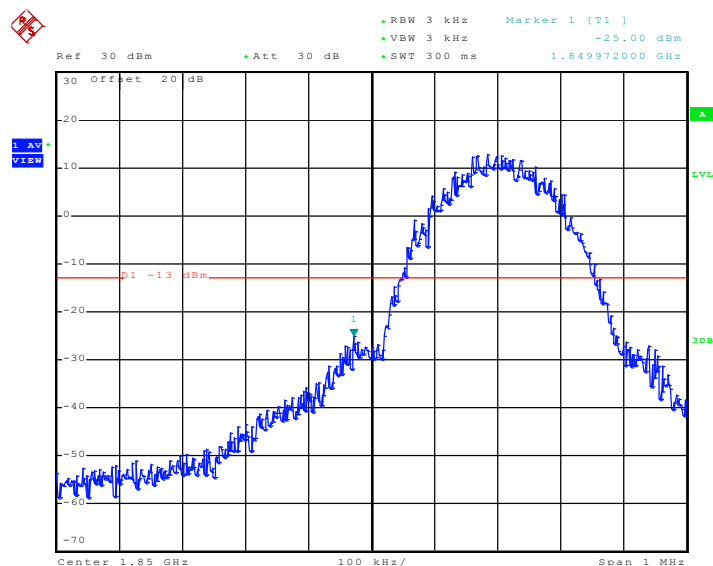


Date: 3.JUN.2009 00:26:28

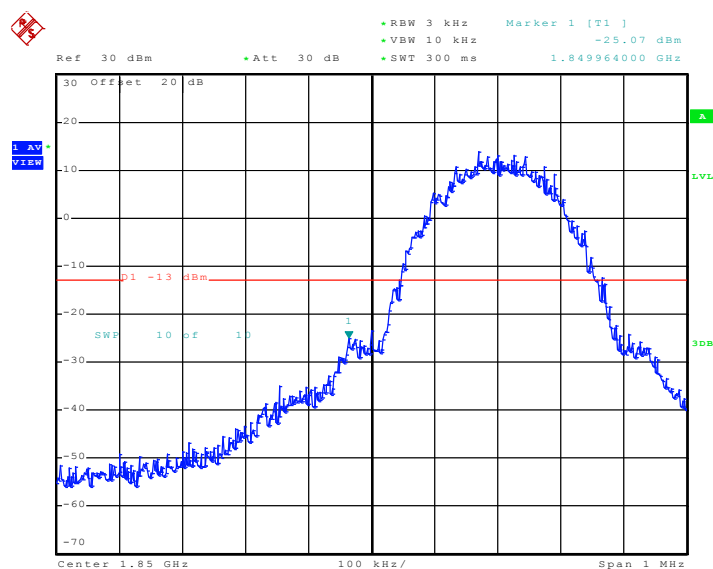


Band :	GSM1900	Power Stage :	High
Test Mode :	EDGE 8 Link		

Lower Band Edge Plot on Channel 512

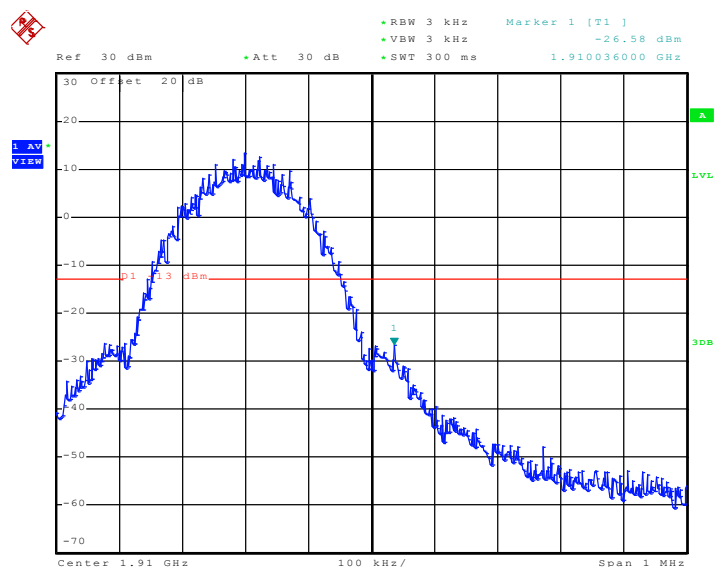


Date: 3.JUN.2009 01:09:56

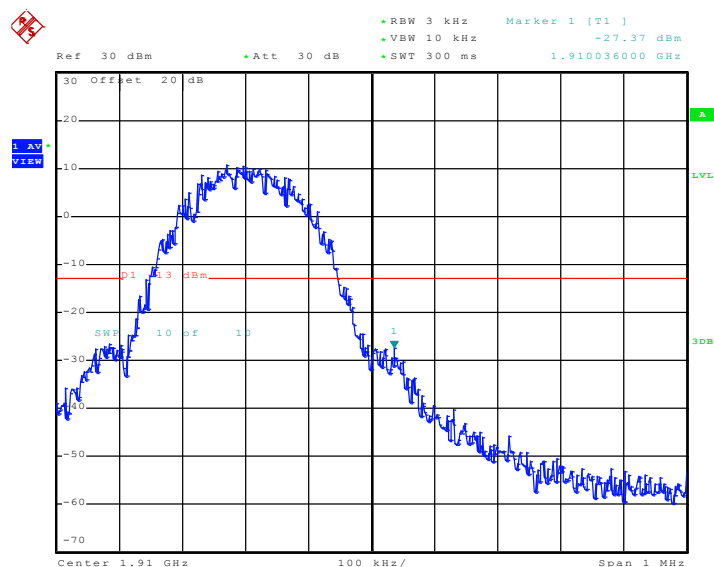


Date: 3.JUN.2009 01:10:58

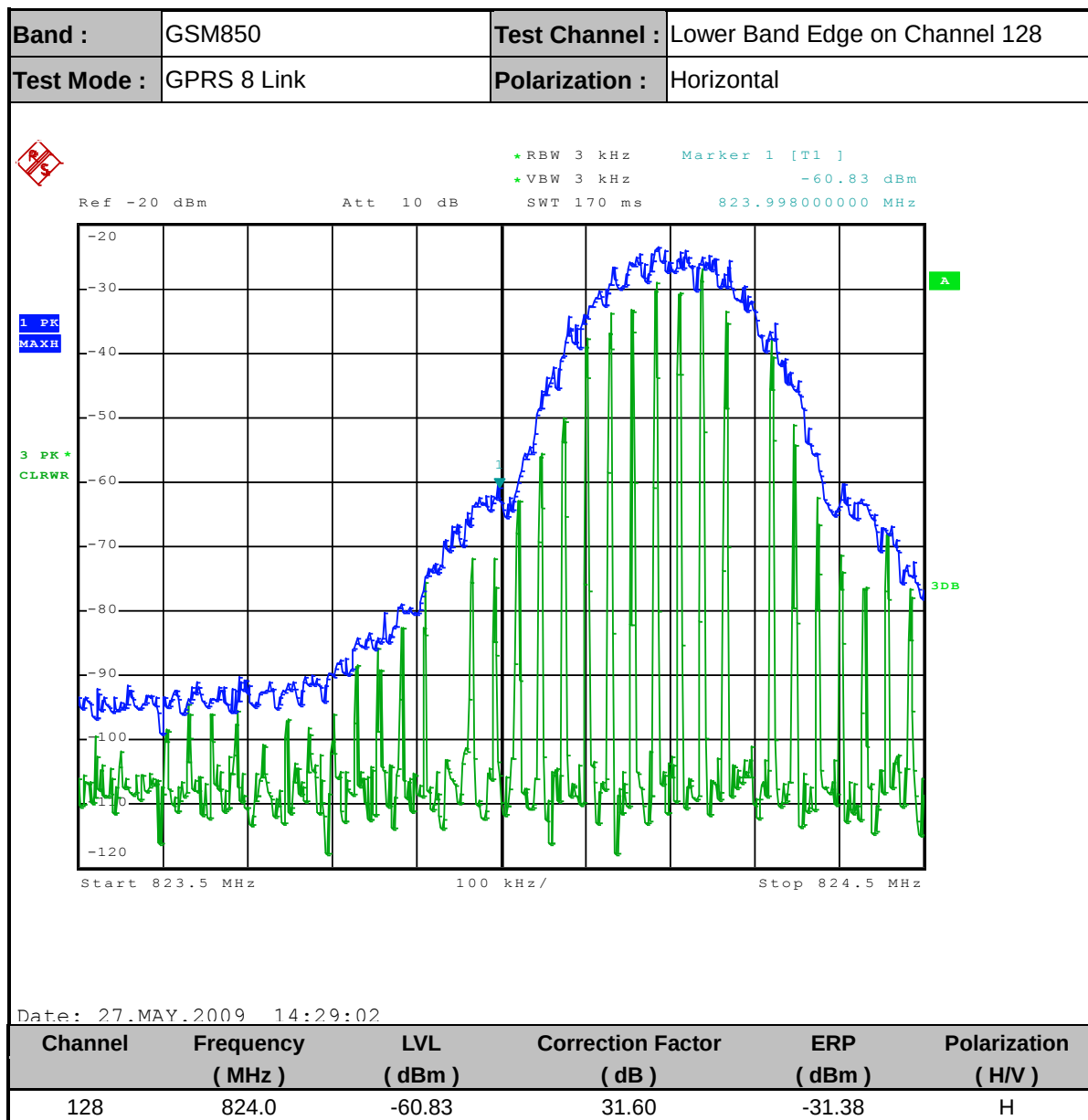
Higher Band Edge Plot on Channel 810

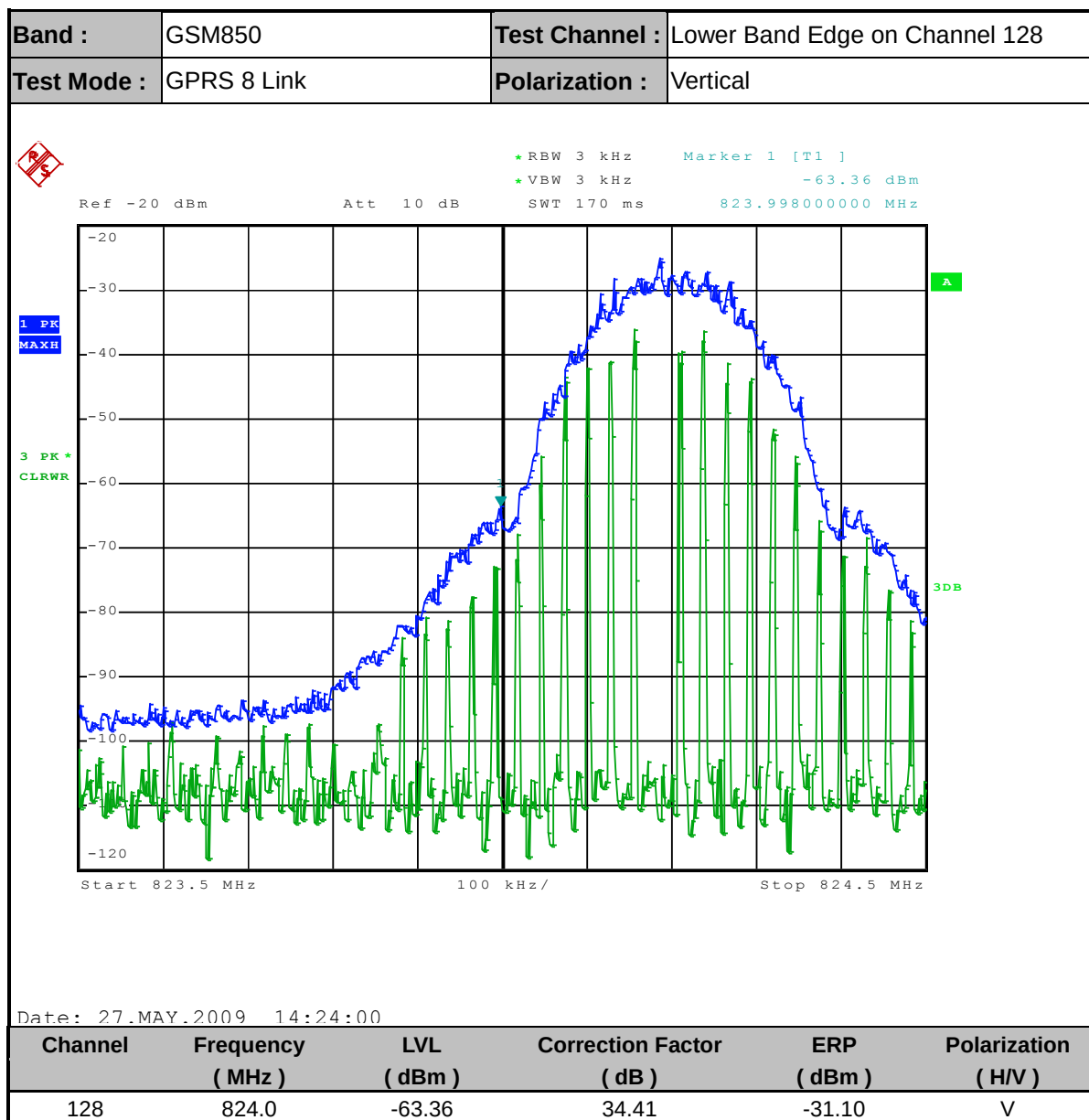


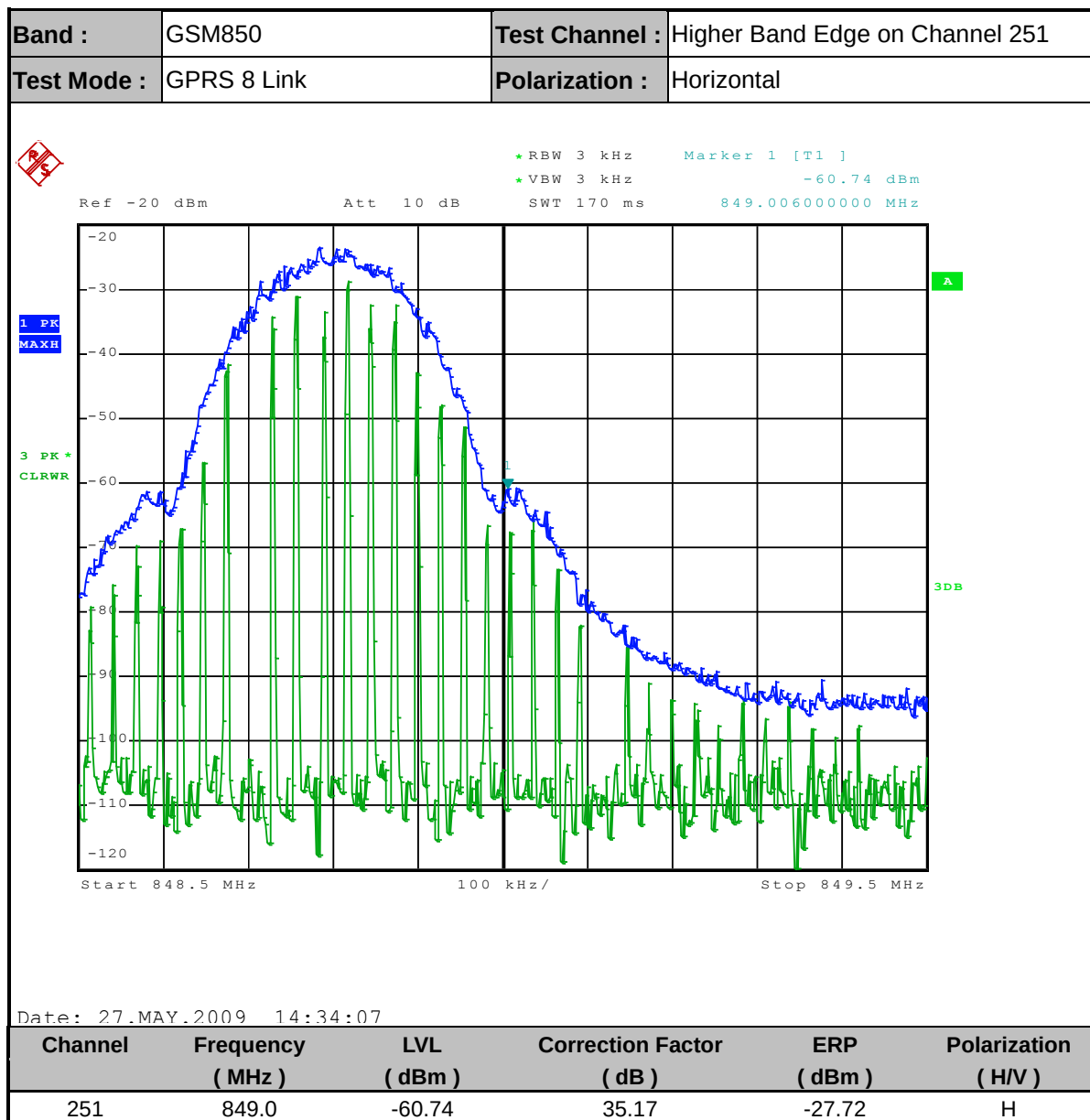
Date: 3.JUN.2009 01:13:05

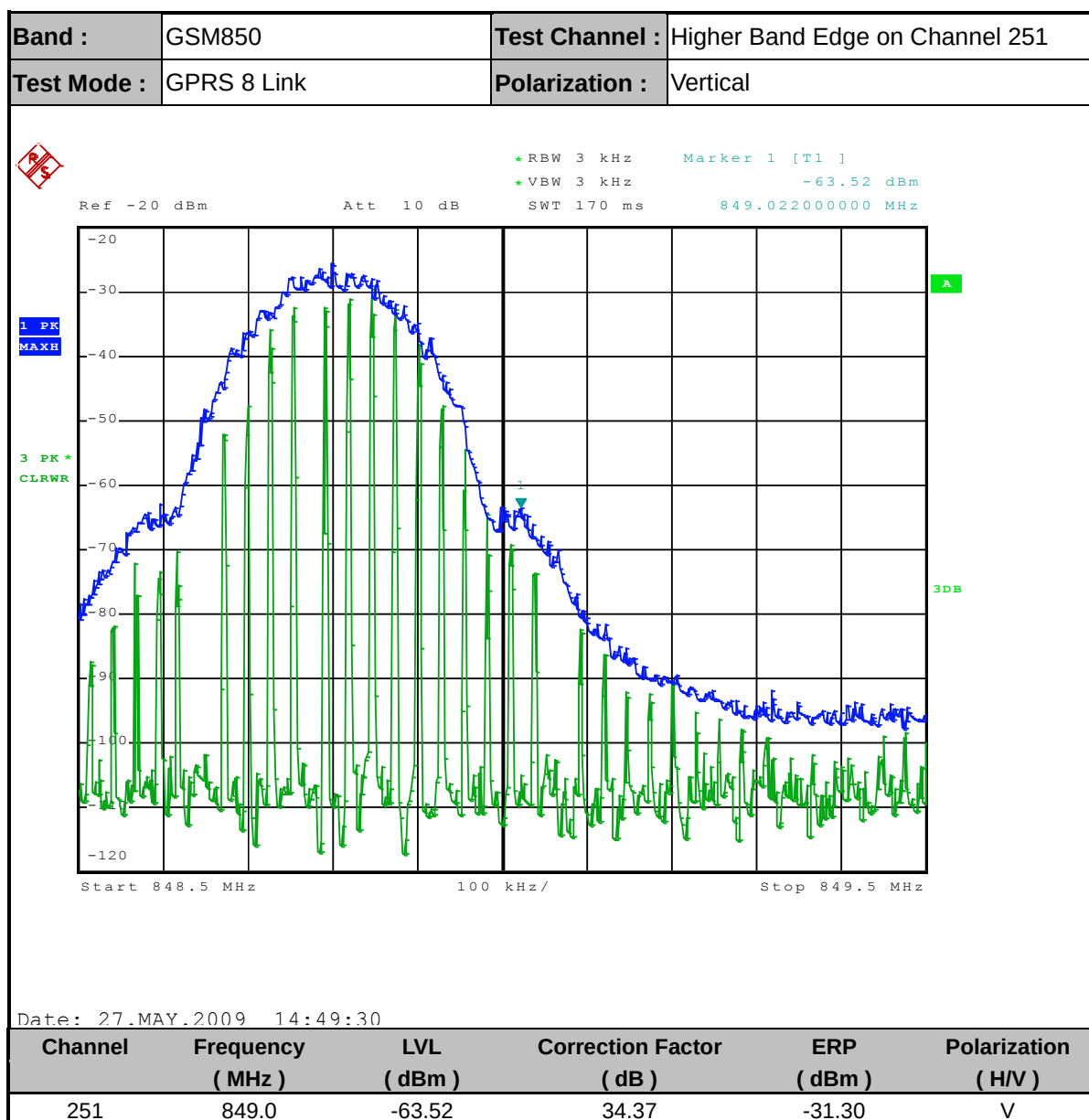


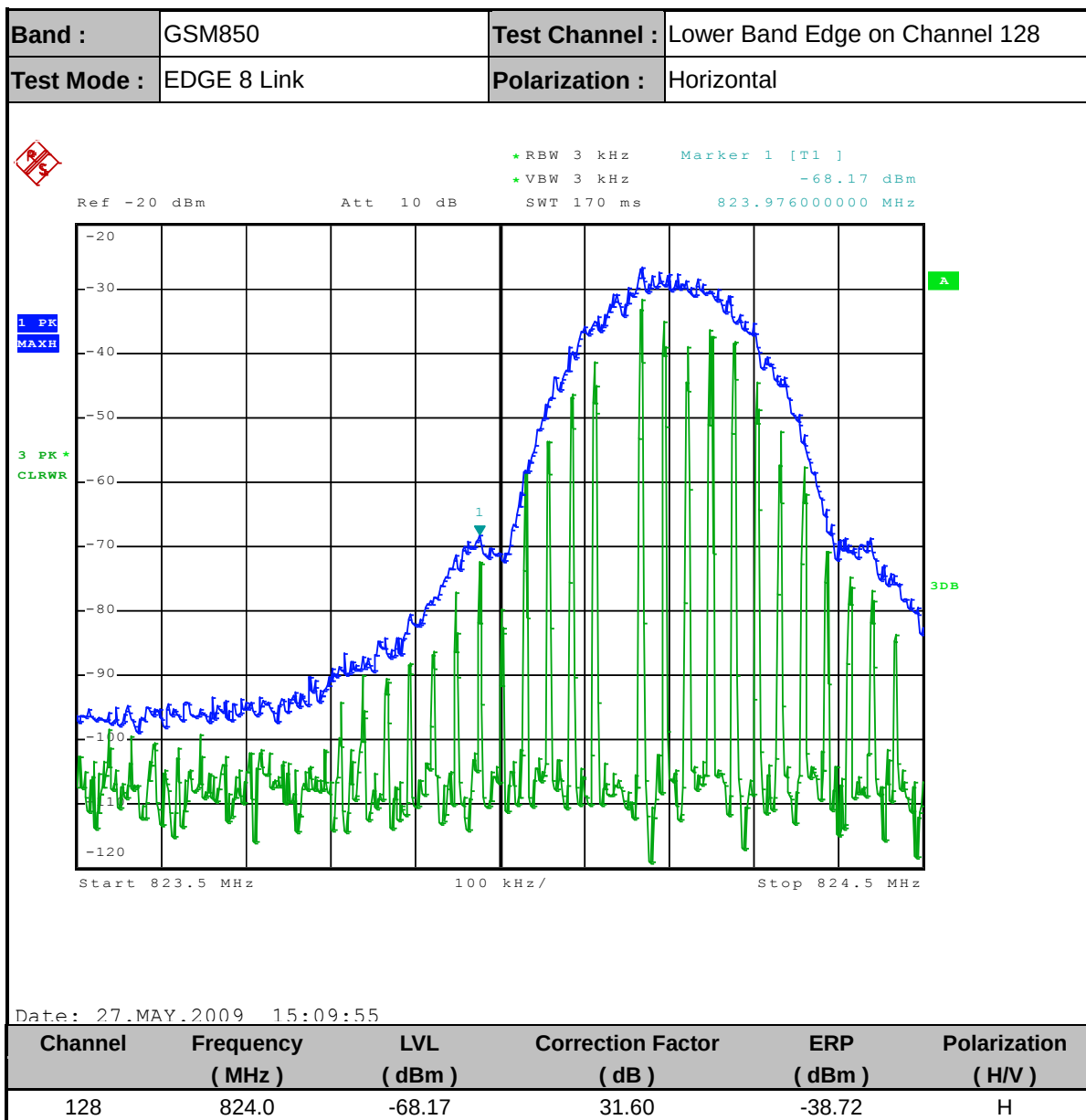
Date: 3.JUN.2009 01:11:48

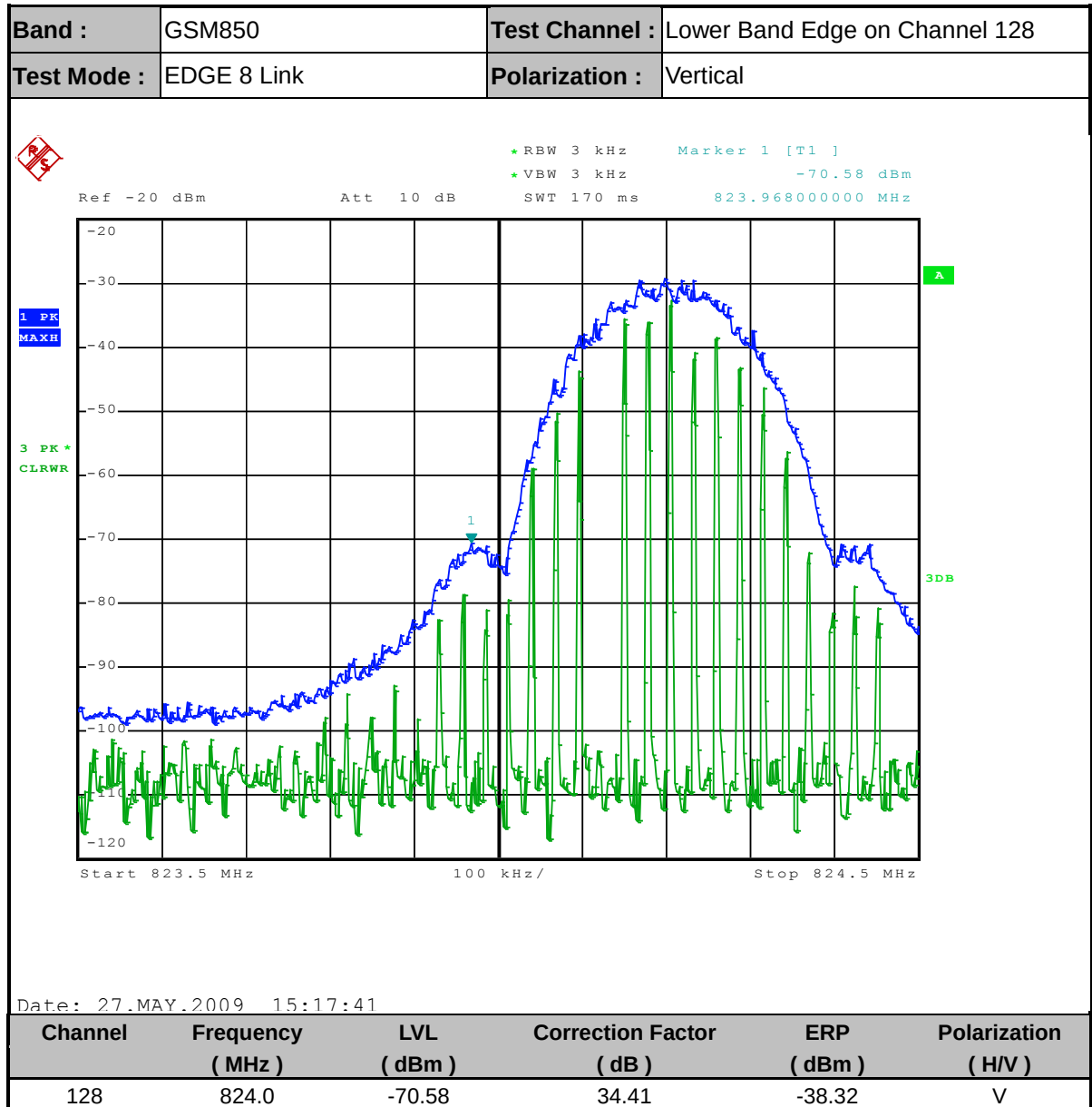
3.4.6 Test Result of Radiated Band Edge


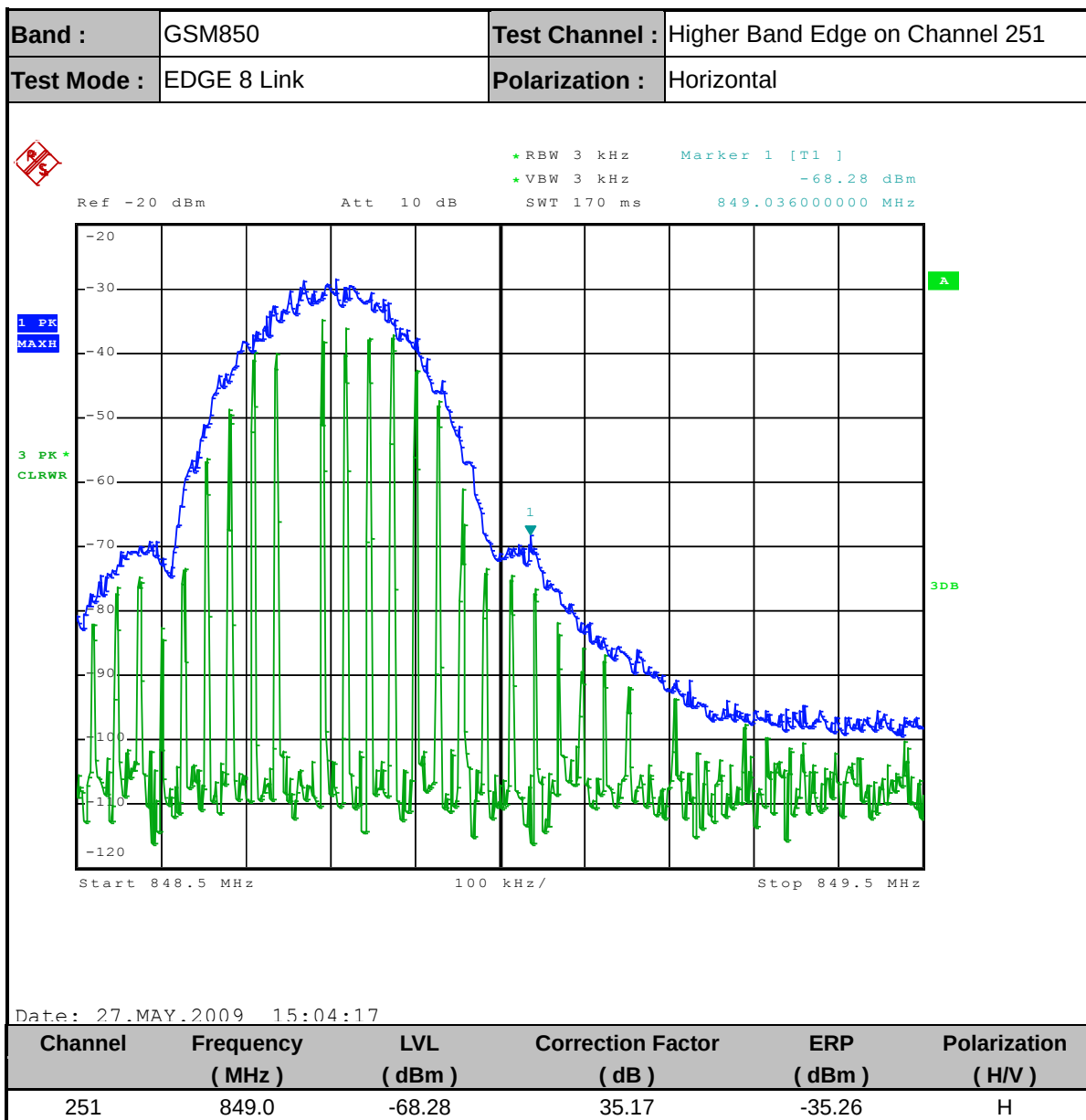


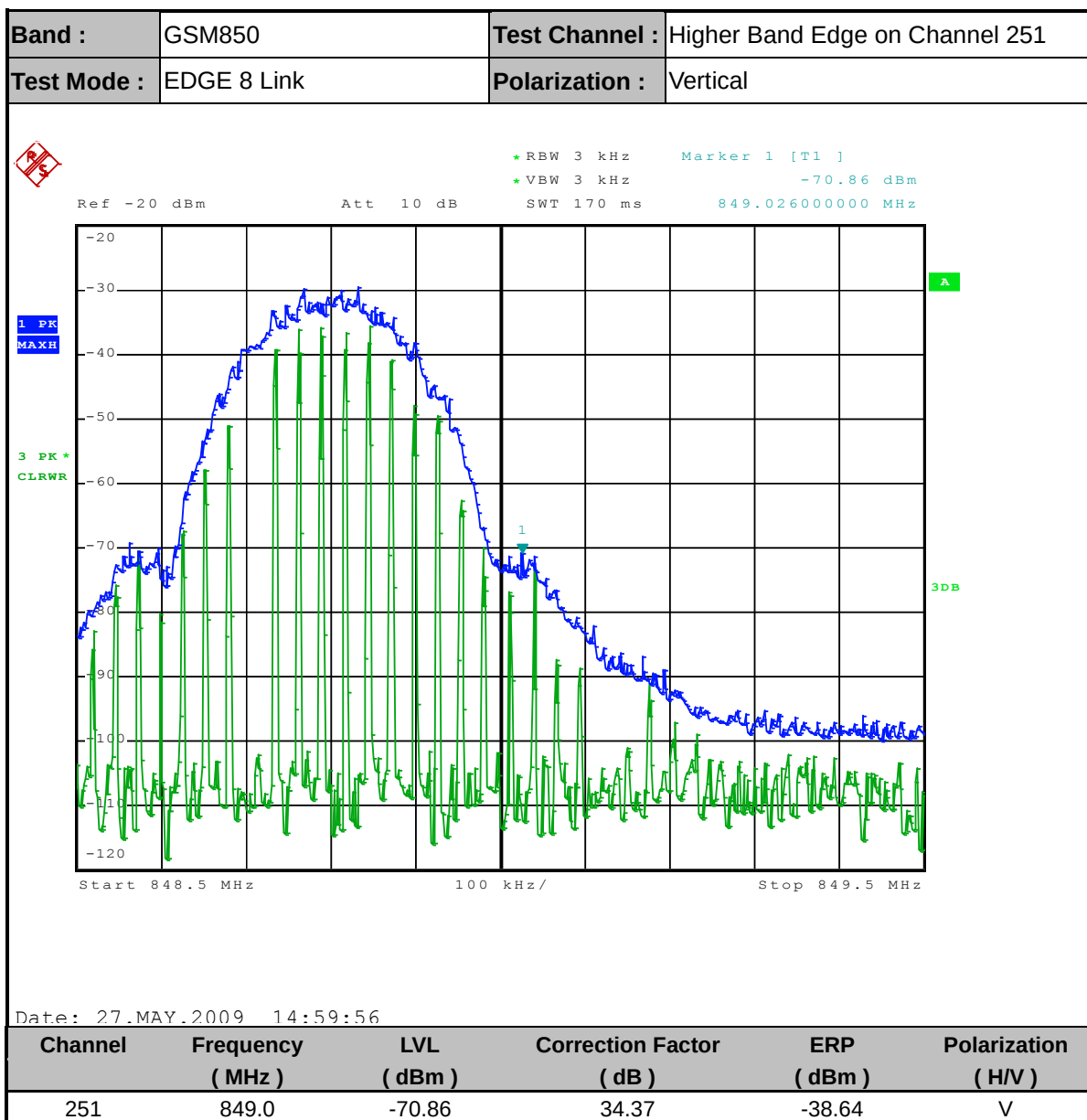


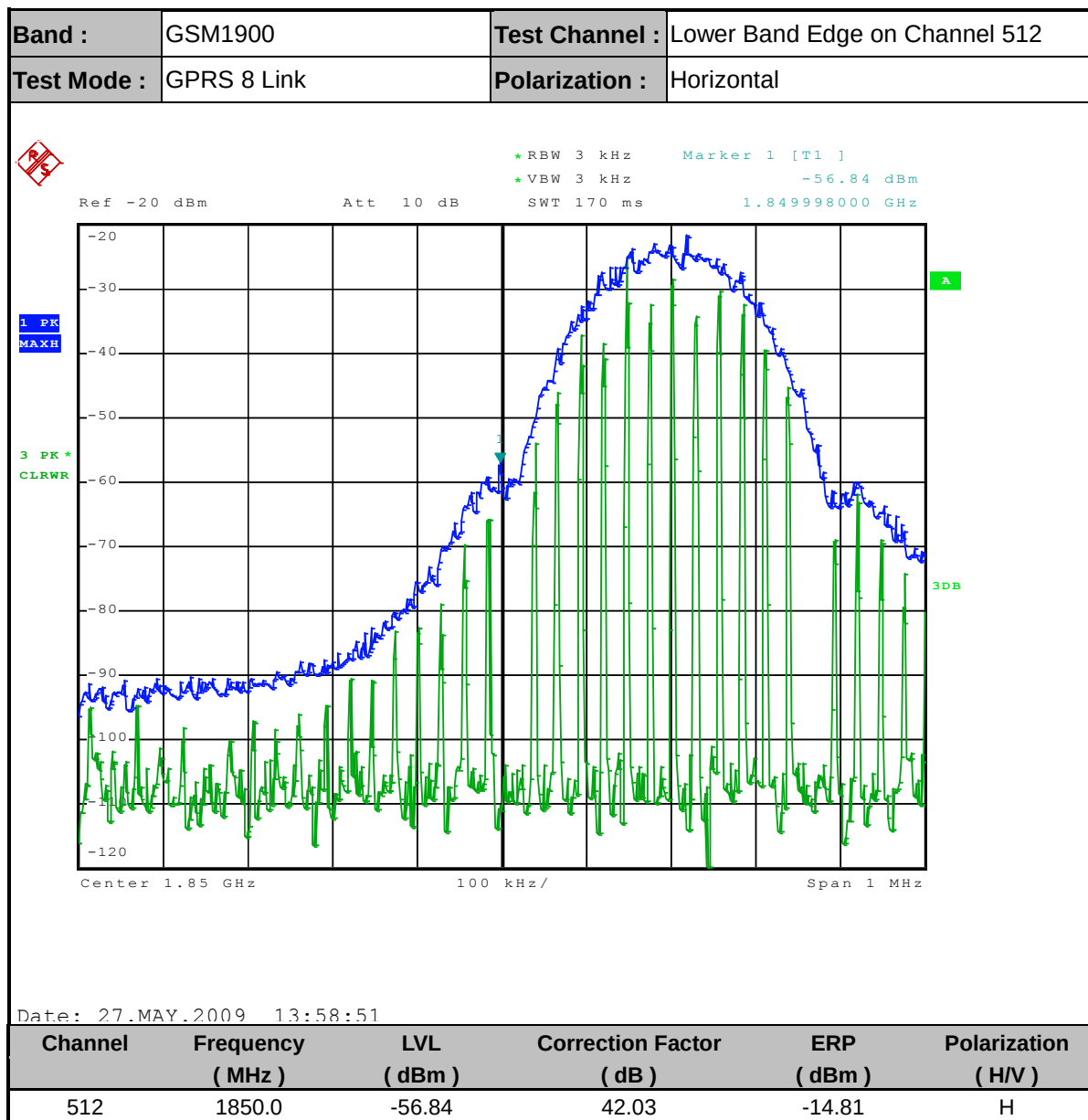






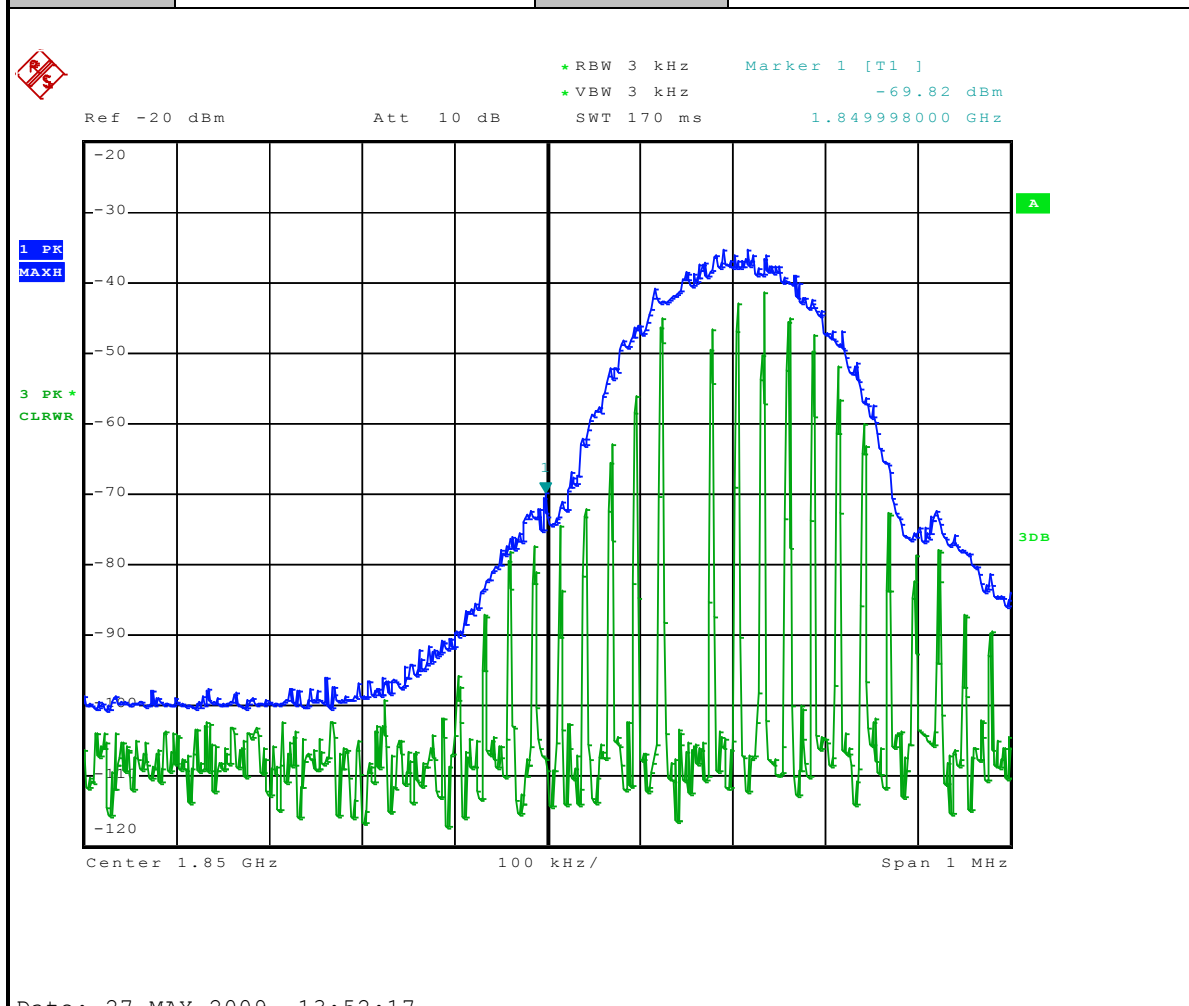




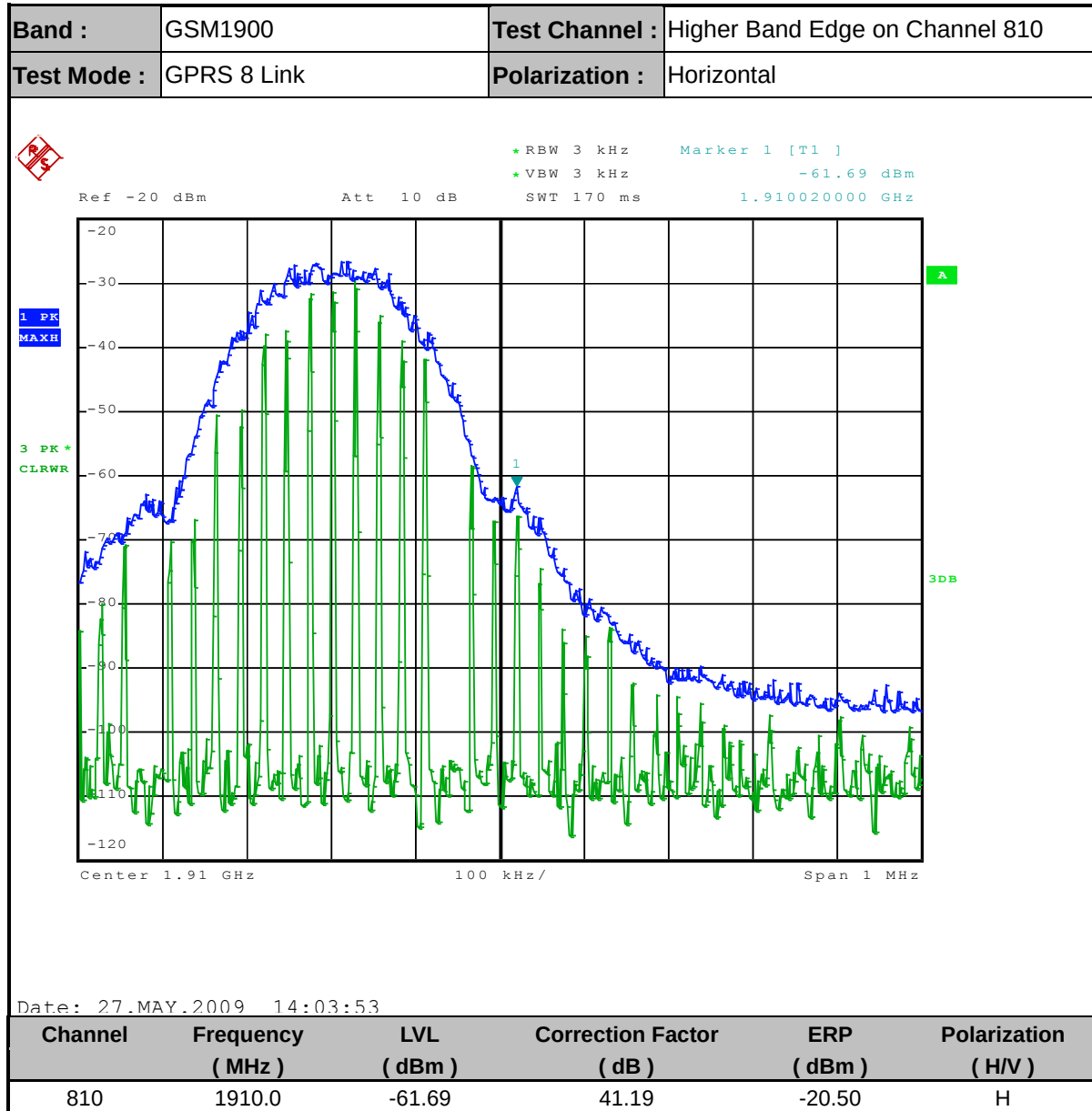




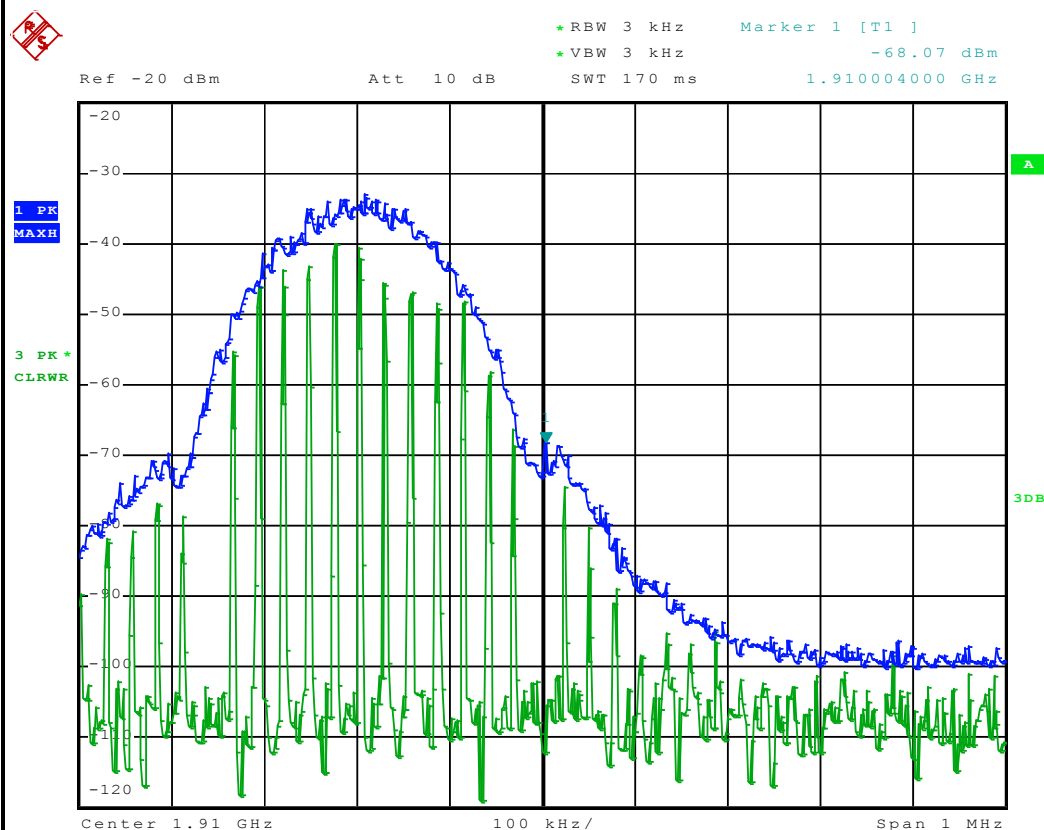
Band :	GSM1900	Test Channel :	Lower Band Edge on Channel 512
Test Mode :	GPRS 8 Link	Polarization :	Vertical



Channel	Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	Polarization (H/V)
512	1850.0	-69.82	45.32	-24.50	V

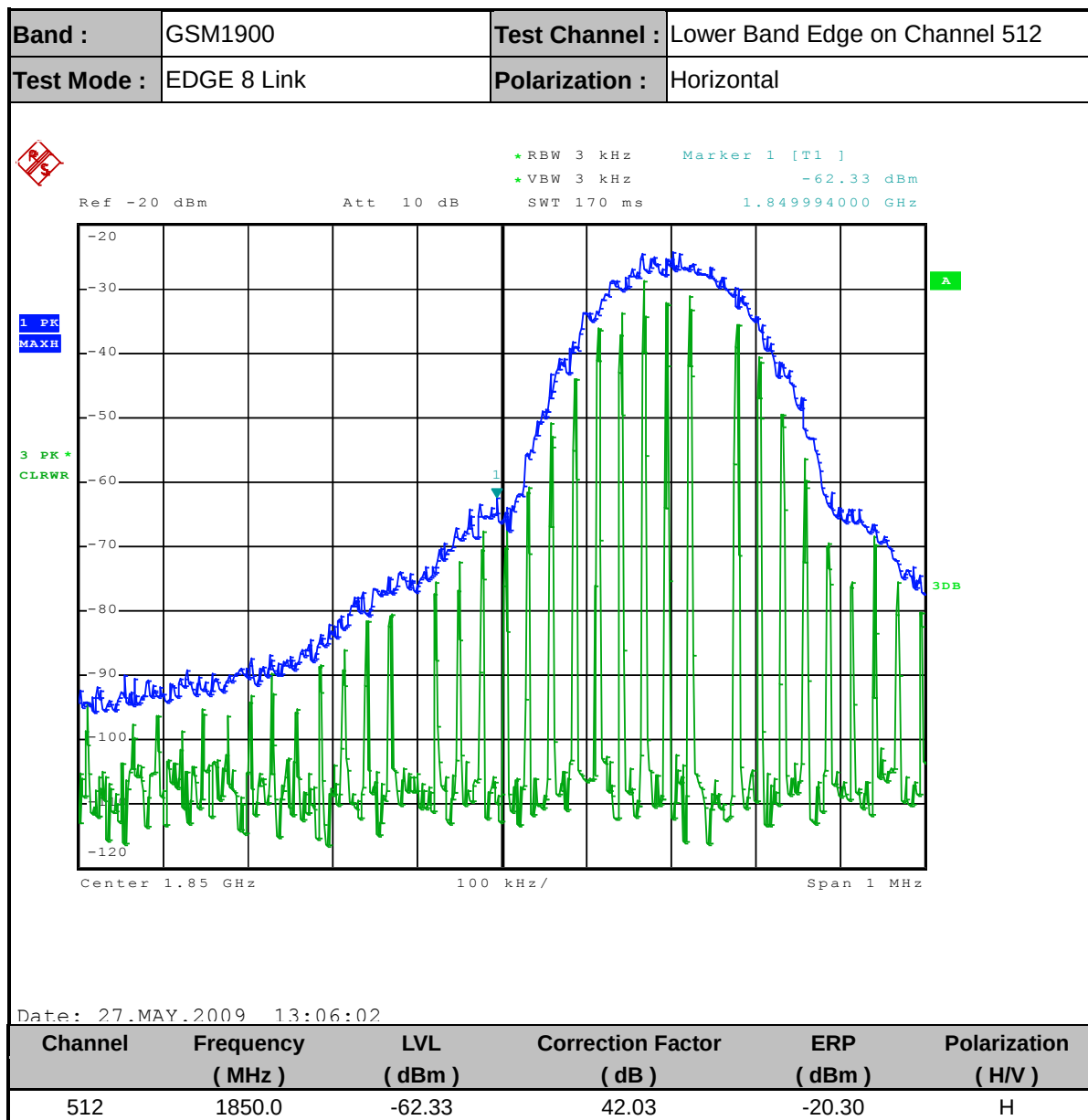


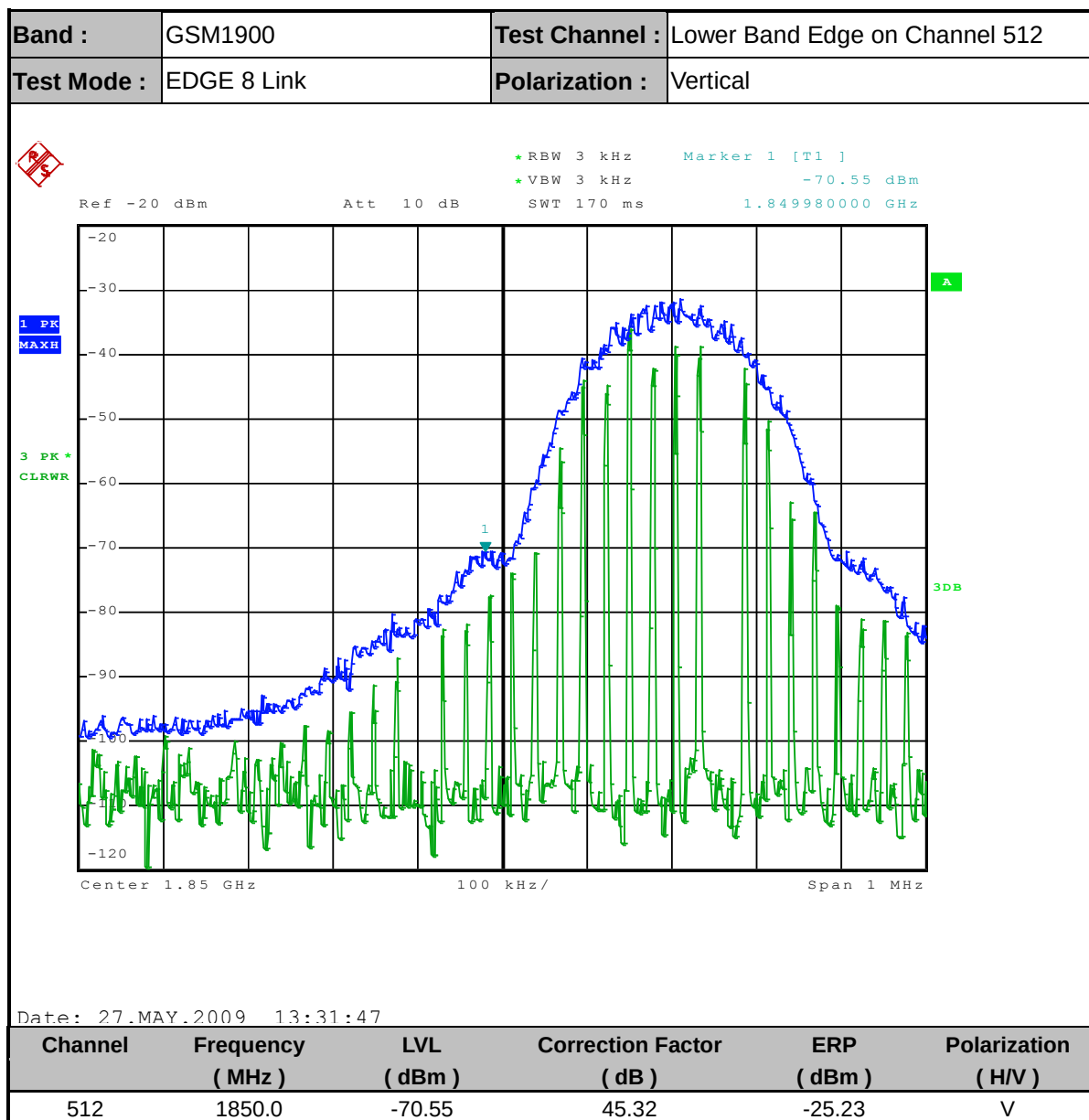
Band :	GSM1900	Test Channel :	Higher Band Edge on Channel 810
Test Mode :	GPRS 8 Link	Polarization :	Vertical

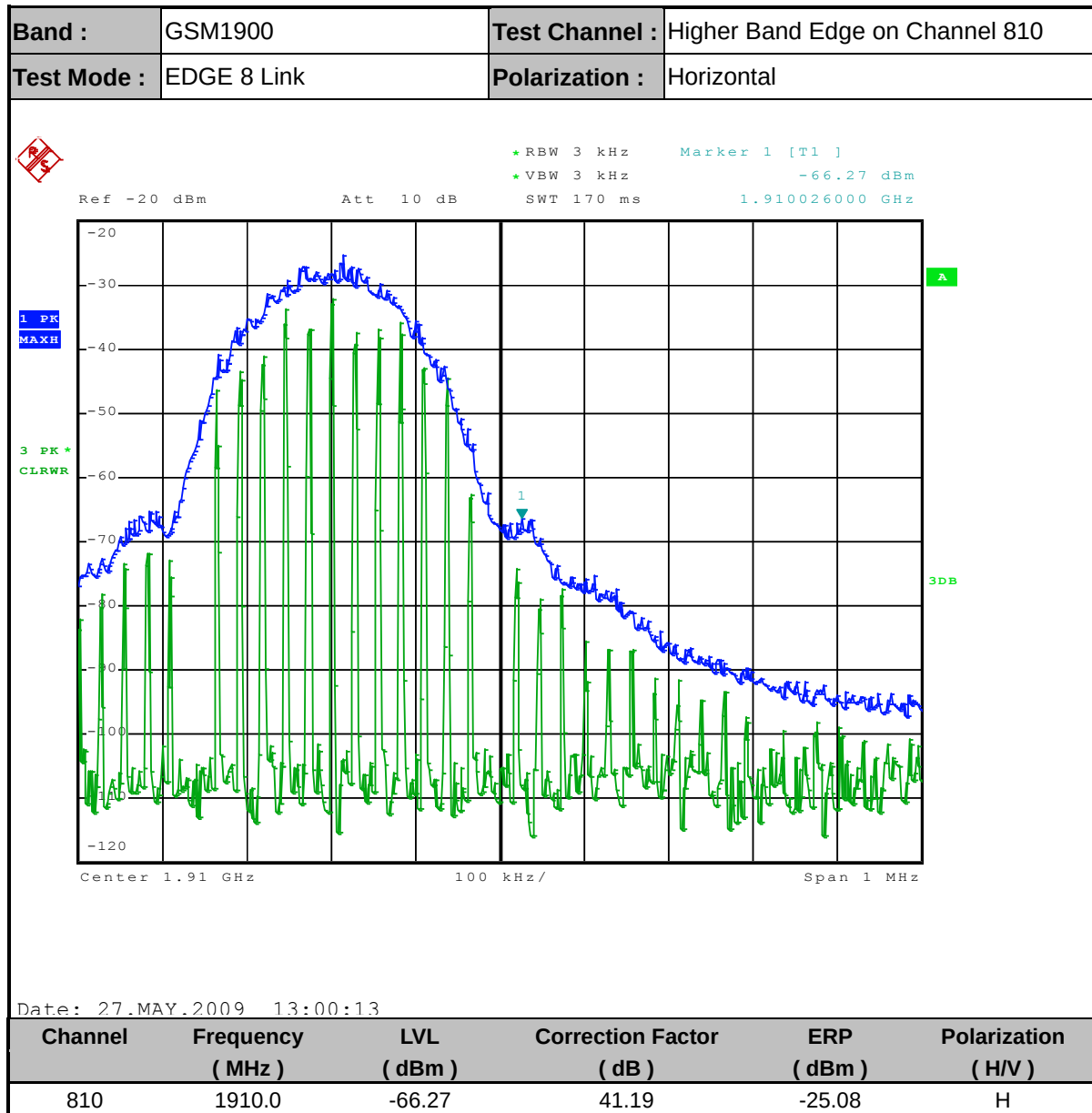


Date: 27.MAY.2009 14:08:31

Channel	Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	Polarization (H/V)
810	1910.0	-68.07	44.45	-23.62	V

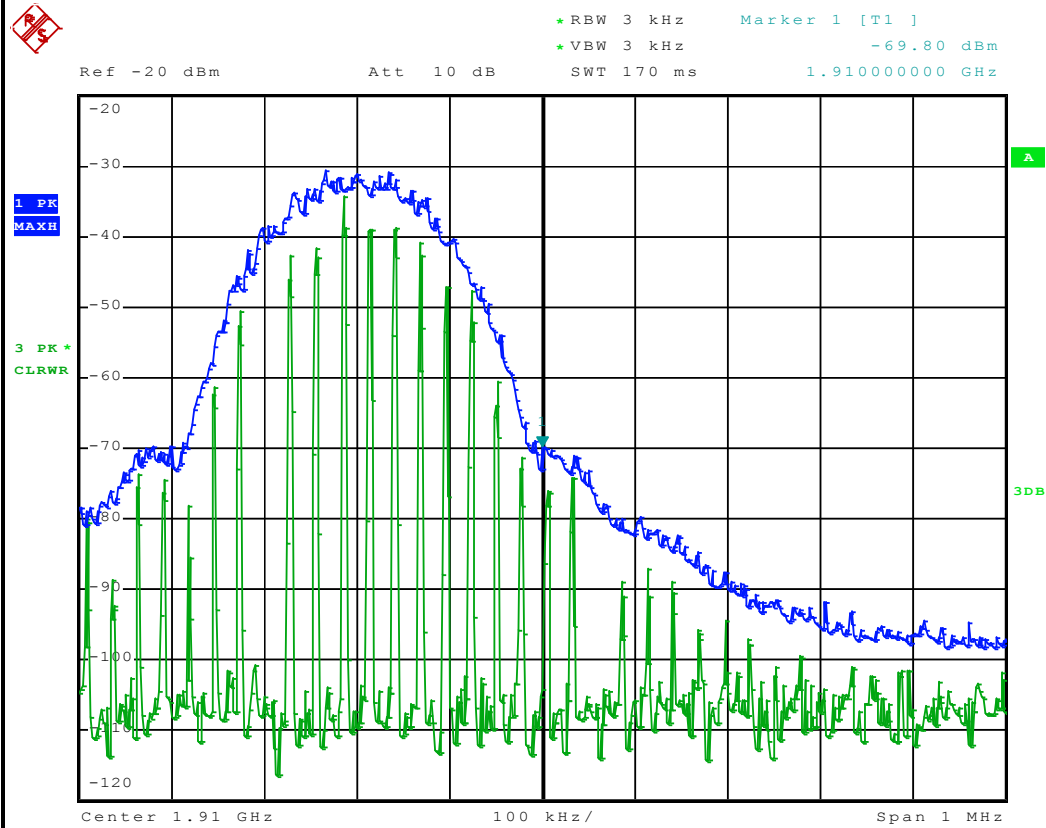








Band :	GSM1900	Test Channel :	Higher Band Edge on Channel 810
Test Mode :	EDGE 8 Link	Polarization :	Vertical



Date: 27.MAY.2009 12:53:16

Channel	Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	Polarization (H/V)
810	1910.0	-69.80	44.45	-25.35	V

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.

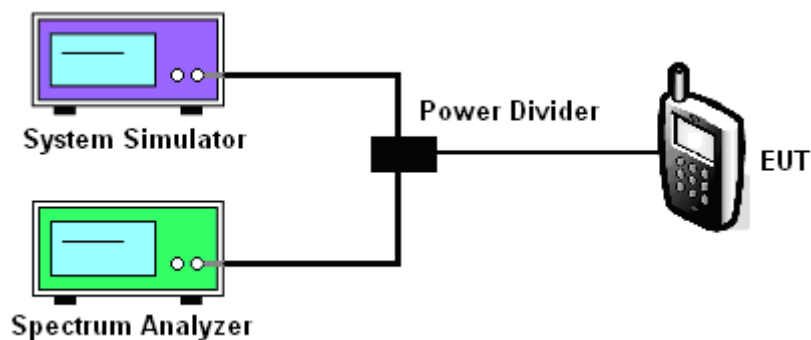
3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

3.5.3 Test Procedures

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

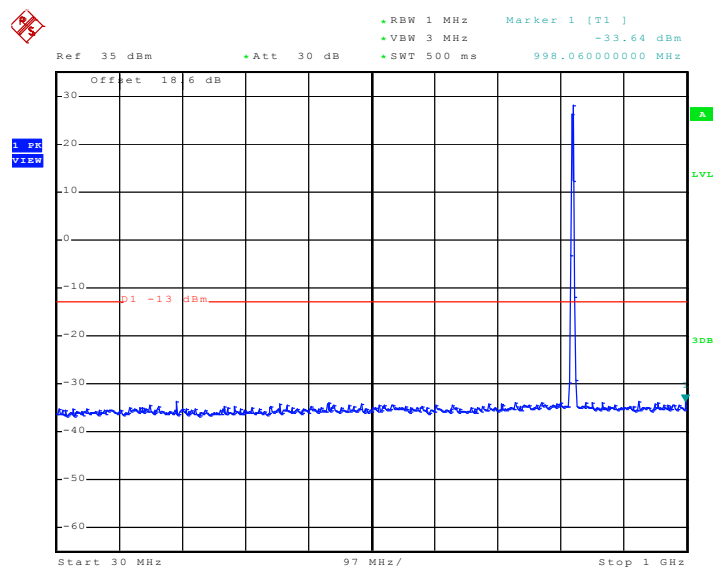
3.5.4 Test Setup





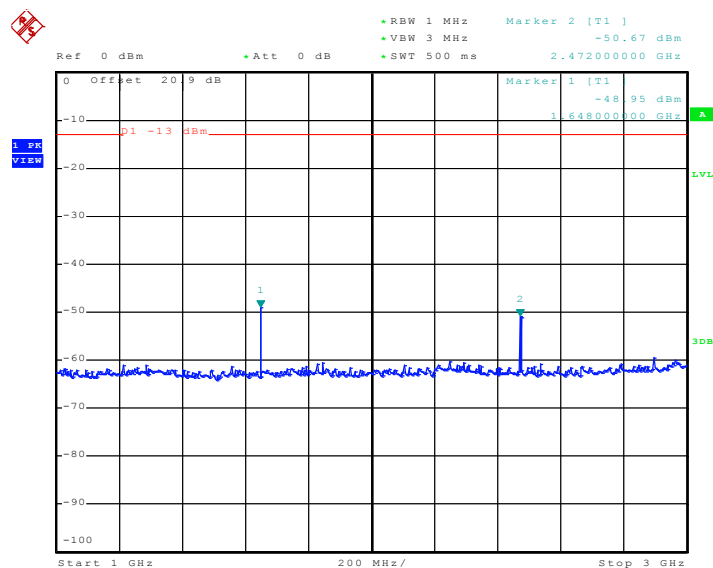
Band :	GSM850	Channel :	CH128
Test Mode :	GPRS 8 Link		

Conducted Emission Plot between 30MHz ~ 1GHz



Date: 2.JUN.2009 23:27:36

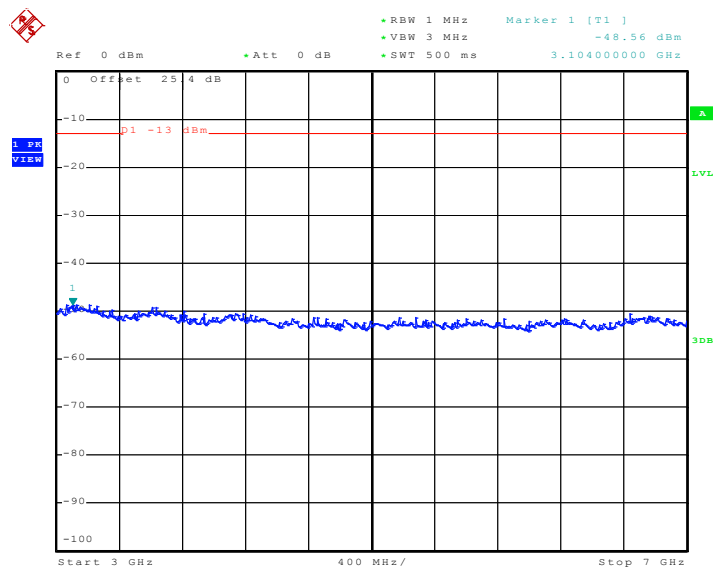
Conducted Emission Plot between 1GHz ~ 3GHz



Date: 2.JUN.2009 23:30:10

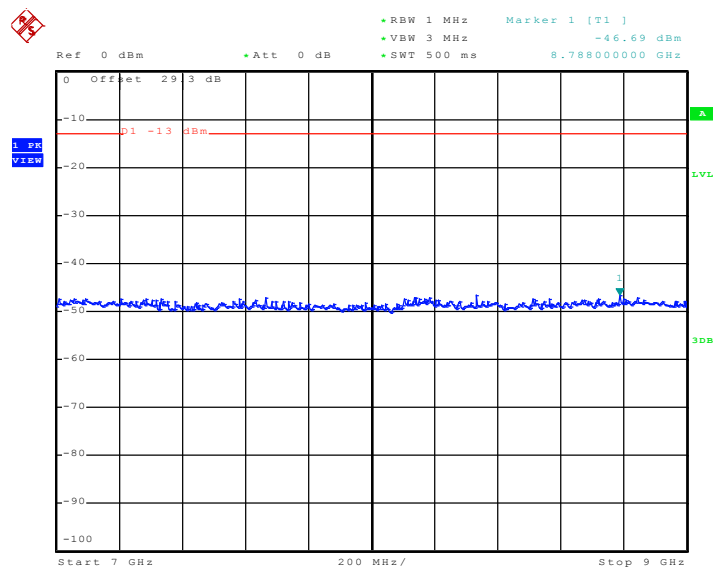


Conducted Emission Plot between 3GHz ~ 7GHz



Date: 2.JUN.2009 23:31:57

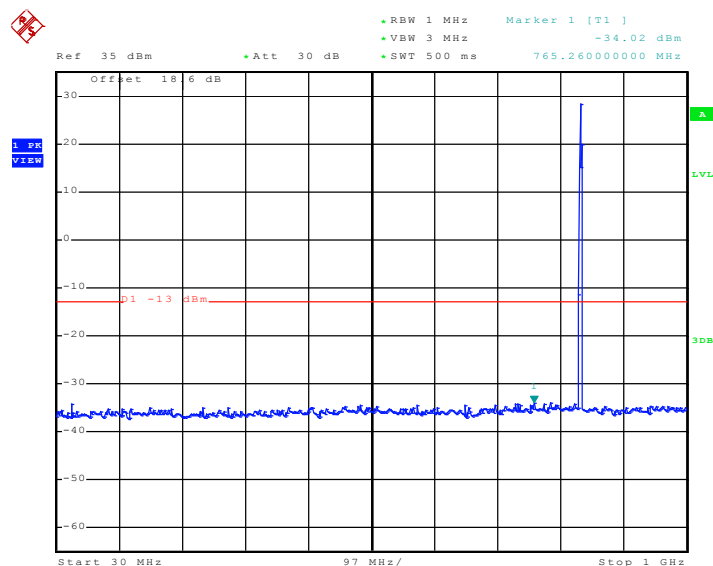
Conducted Emission Plot between 7GHz ~ 9GHz



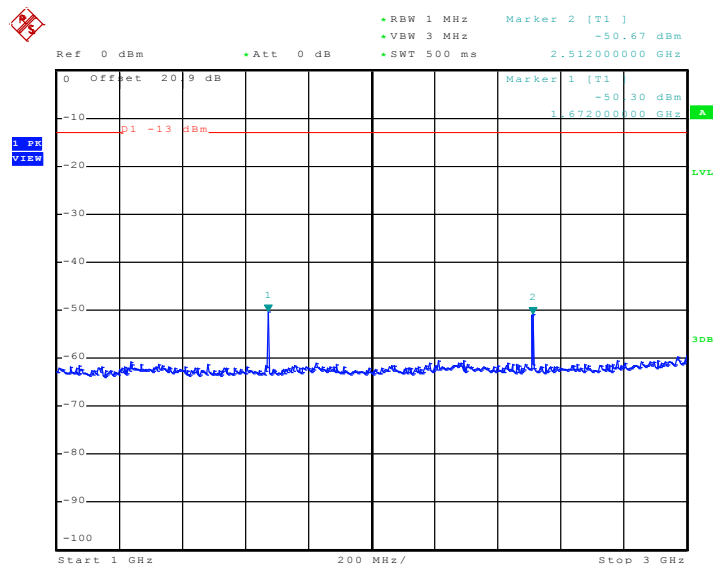
Date: 2.JUN.2009 23:33:24



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

Conducted Emission Plot between 30MHz ~ 1GHz

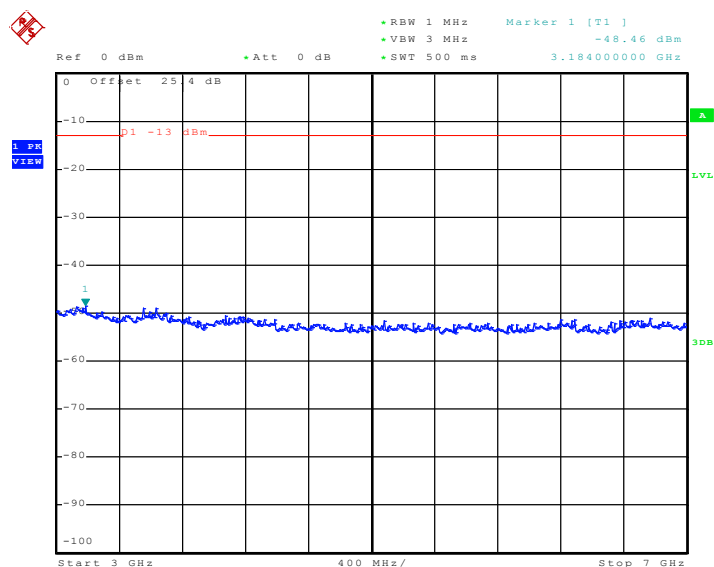
Date: 2..JUN.2009 23:26:59

Conducted Emission Plot between 1GHz ~ 3GHz

Date: 2.JUN.2009 23:30:34

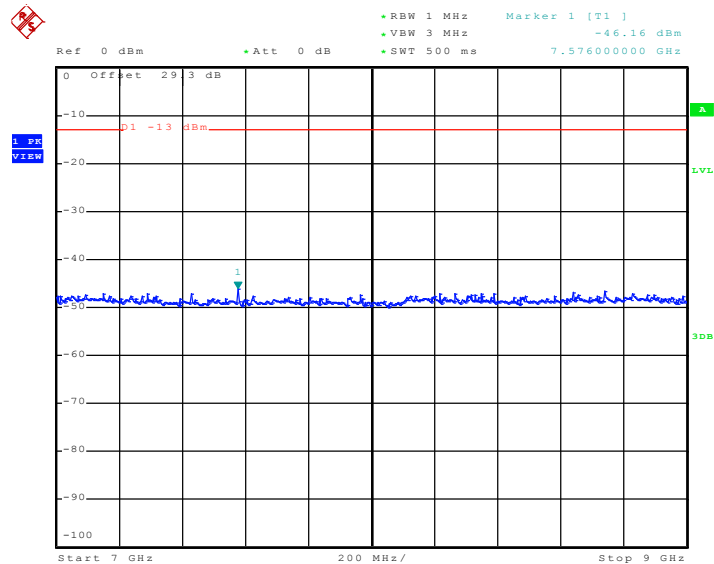


Conducted Emission Plot between 3GHz ~ 7GHz



Date: 2.JUN.2009 23:32:14

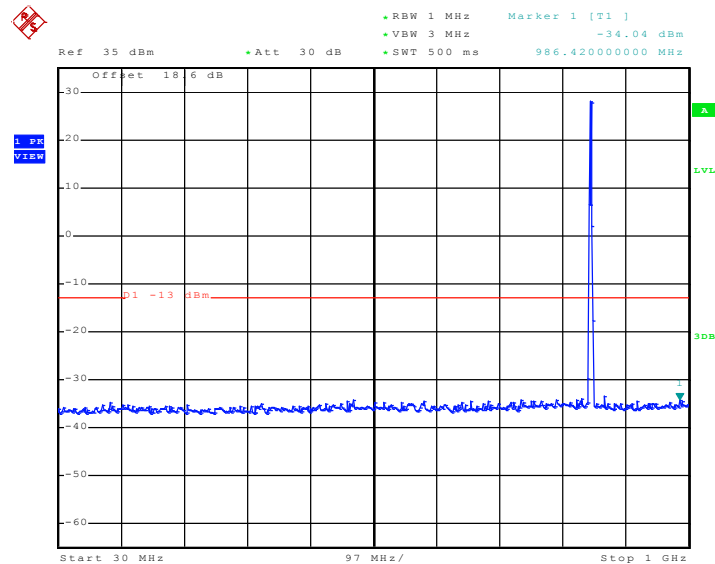
Conducted Emission Plot between 7GHz ~ 9GHz



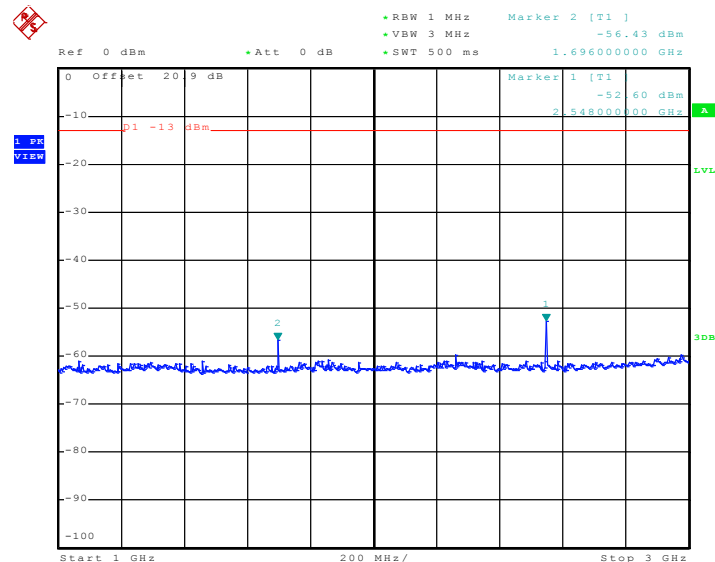
Date: 2.JUN.2009 23:33:48



Band :	GSM850	Channel :	CH251
Test Mode :	GPRS 8 Link		

Conducted Emission Plot between 30MHz ~ 1GHz

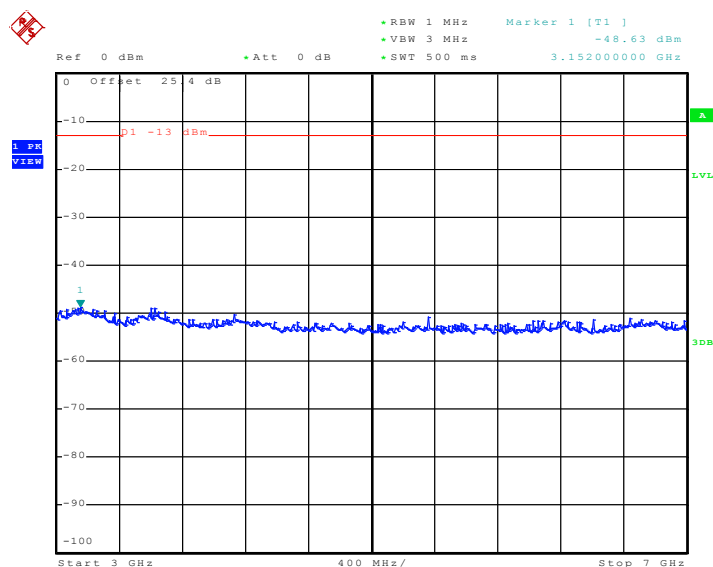
Date: 2..JUN.2009 23:28:11

Conducted Emission Plot between 1GHz ~ 3GHz

Date: 2.JUN.2009 23:31:08

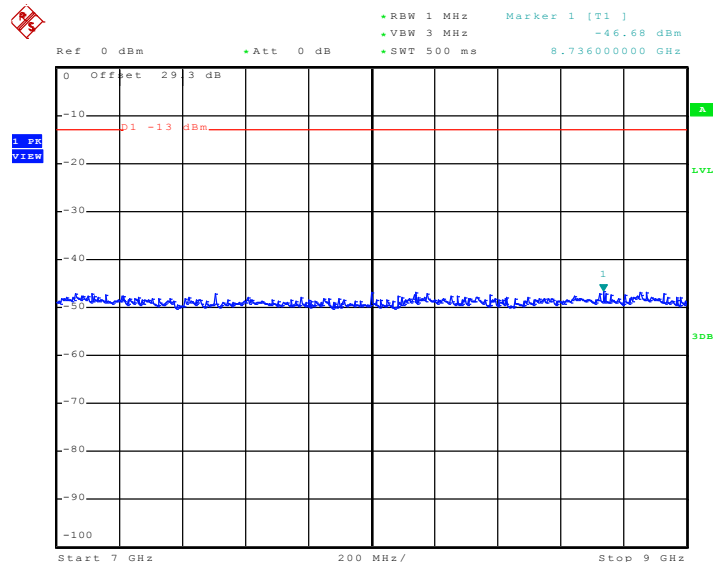


Conducted Emission Plot between 3GHz ~ 7GHz



Date: 2.JUN.2009 23:32:43

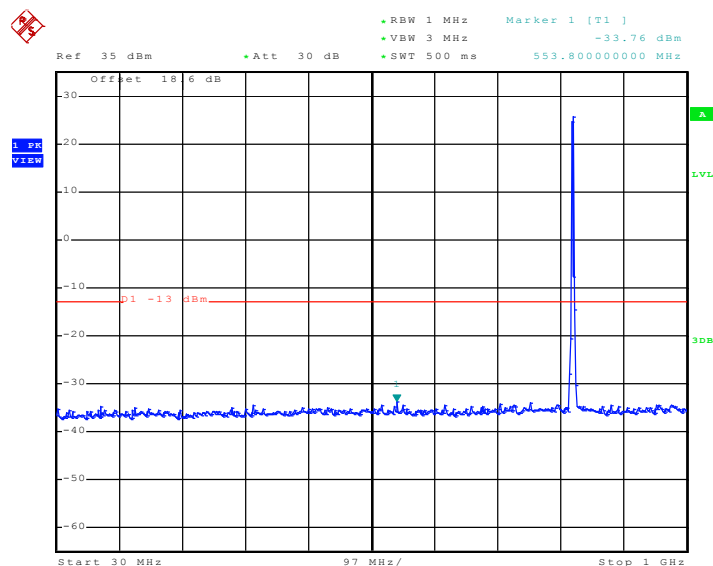
Conducted Emission Plot between 7GHz ~ 9GHz



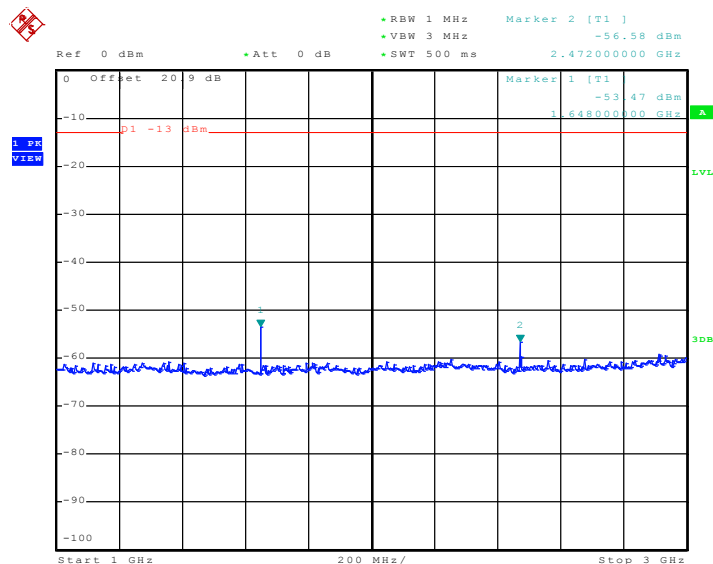
Date: 2.JUN.2009 23:34:02



Band :	GSM850	Channel :	CH128
Test Mode :	EDGE 8 Link		

Conducted Emission Plot between 30MHz ~ 1GHz

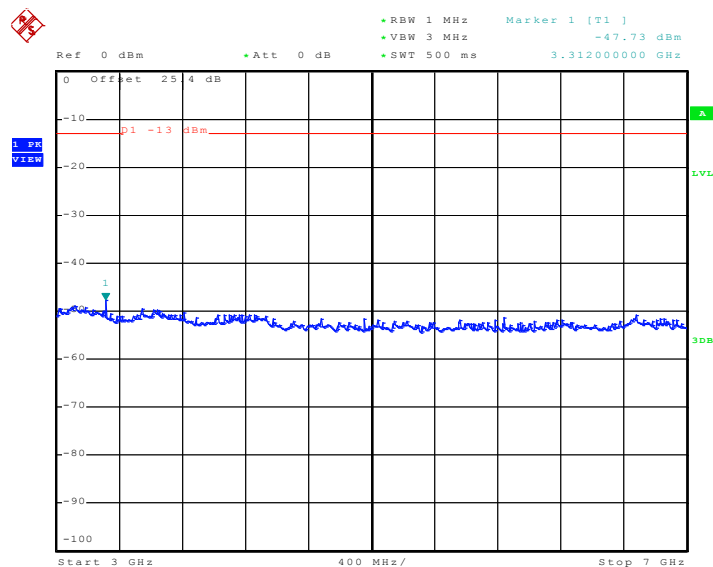
Date: 2..JUN.2009 23:47:49

Conducted Emission Plot between 1GHz ~ 3GHz

Date: 2.JUN.2009 23:44:45

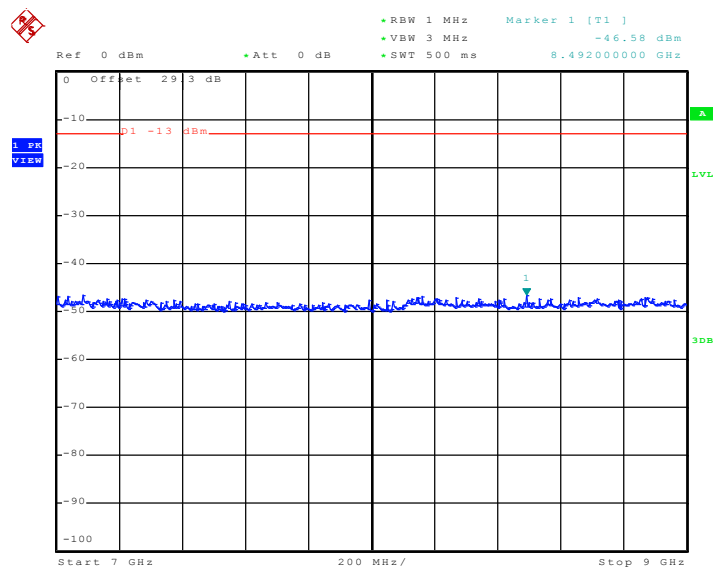


Conducted Emission Plot between 3GHz ~ 7GHz



Date: 2.JUN.2009 23:41:47

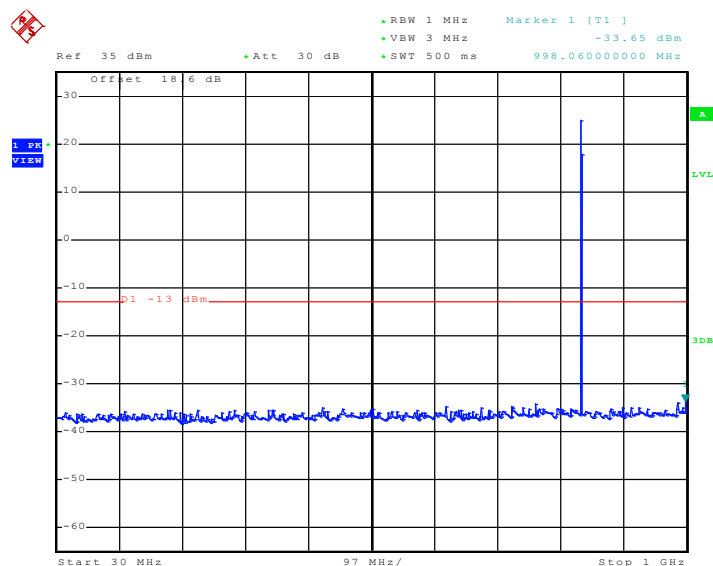
Conducted Emission Plot between 7GHz ~ 9GHz



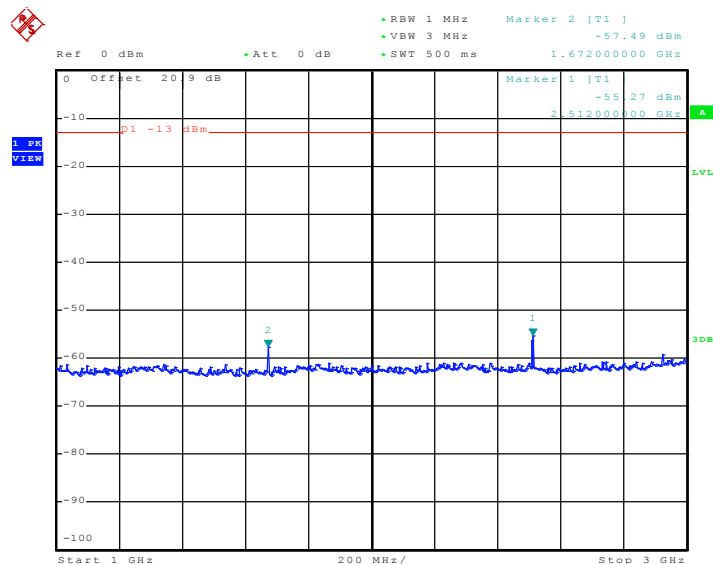
Date: 2.JUN.2009 23:40:35



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

Conducted Emission Plot between 30MHz ~ 1GHz

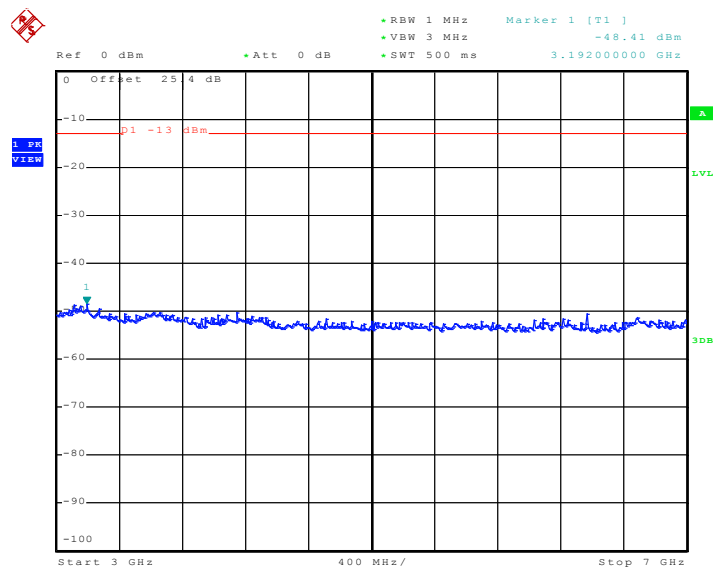
Date: 2..JUN.2009 23:56:46

Conducted Emission Plot between 1GHz ~ 3GHz

Date: 2.JUN.2009 23:44:19

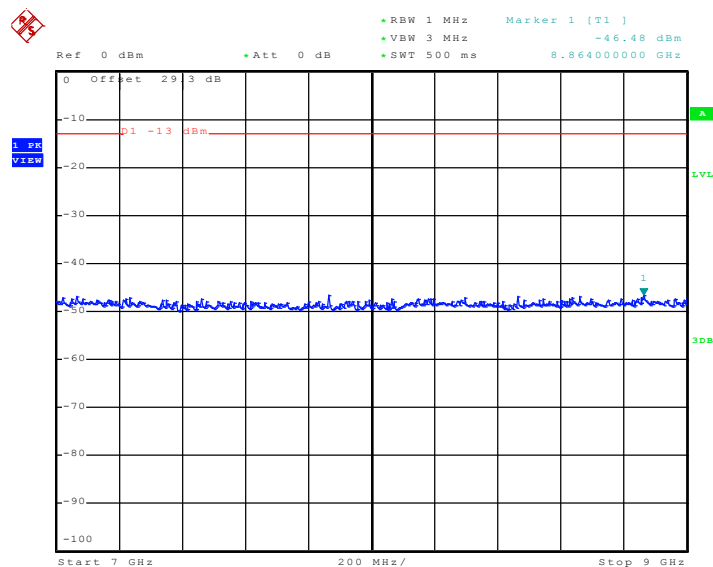


Conducted Emission Plot between 3GHz ~ 7GHz



Date: 2.JUN.2009 23:42:03

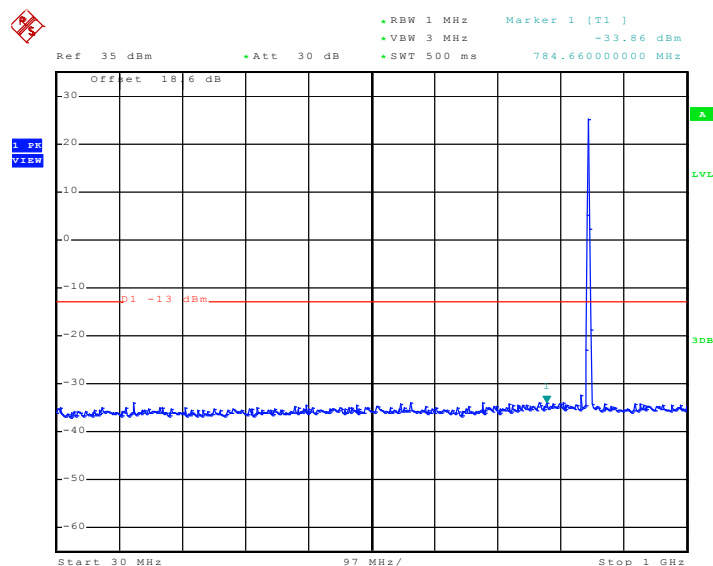
Conducted Emission Plot between 7GHz ~ 9GHz



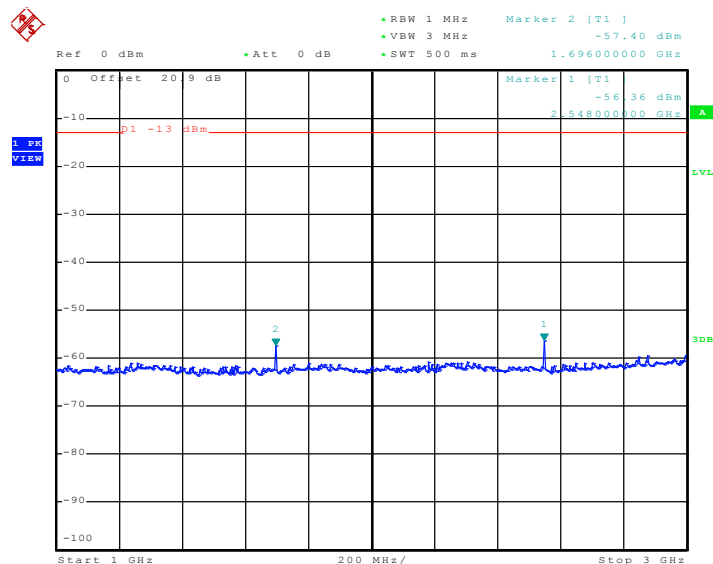
Date: 2.JUN.2009 23:40:52



Band :	GSM850	Channel :	CH251
Test Mode :	EDGE 8 Link		

Conducted Emission Plot between 30MHz ~ 1GHz

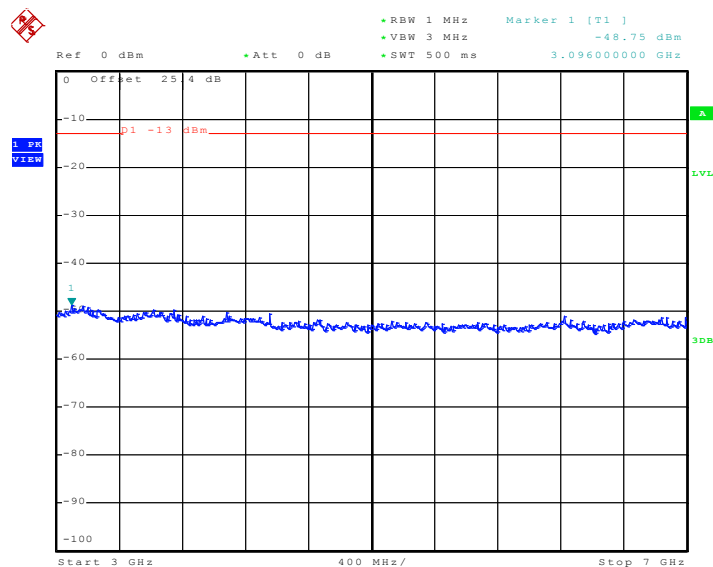
Date: 2..JUN.2009 23:58:00

Conducted Emission Plot between 1GHz ~ 3GHz

Date: 2.JUN.2009 23:45:42

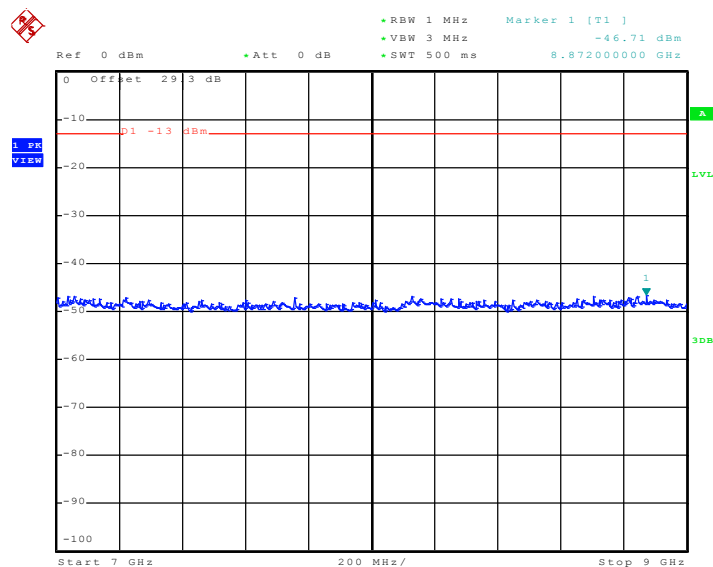


Conducted Emission Plot between 3GHz ~ 7GHz



Date: 2.JUN.2009 23:42:28

Conducted Emission Plot between 7GHz ~ 9GHz

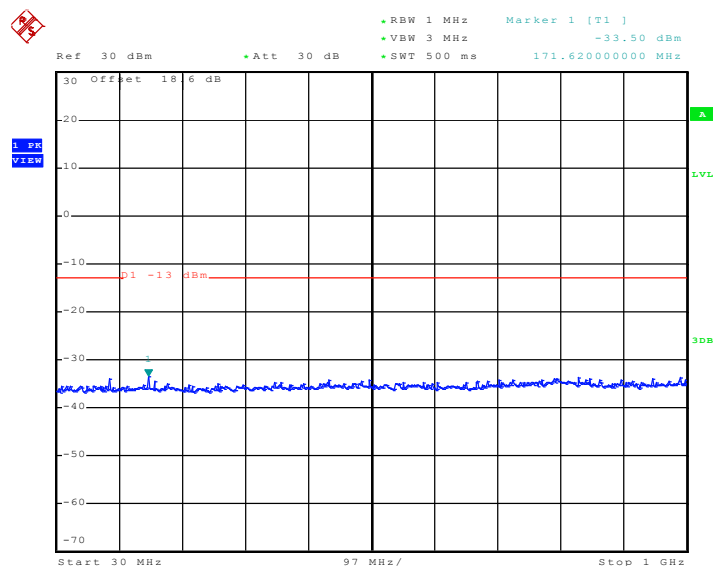


Date: 2.JUN.2009 23:41:08



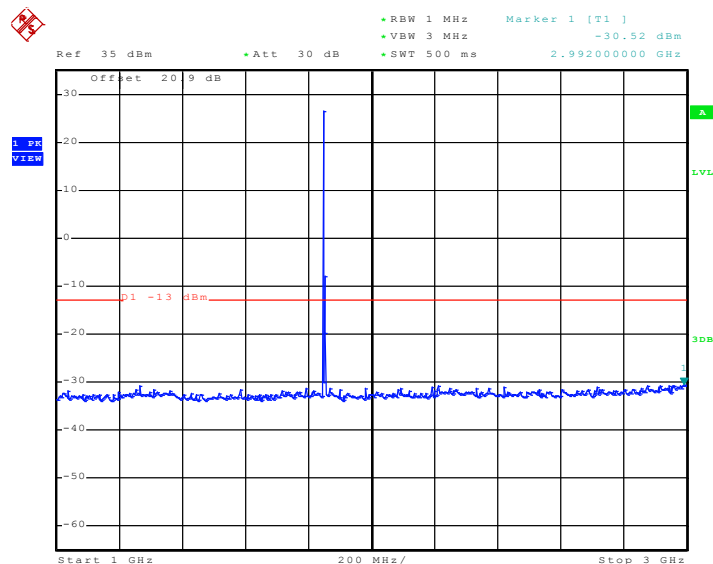
Band :	GSM1900	Channel :	CH512
Test Mode :	GPRS 8 Link		

Conducted Emission Plot between 30MHz ~ 1GHz



Date: 3.JUN.2009 00:29:32

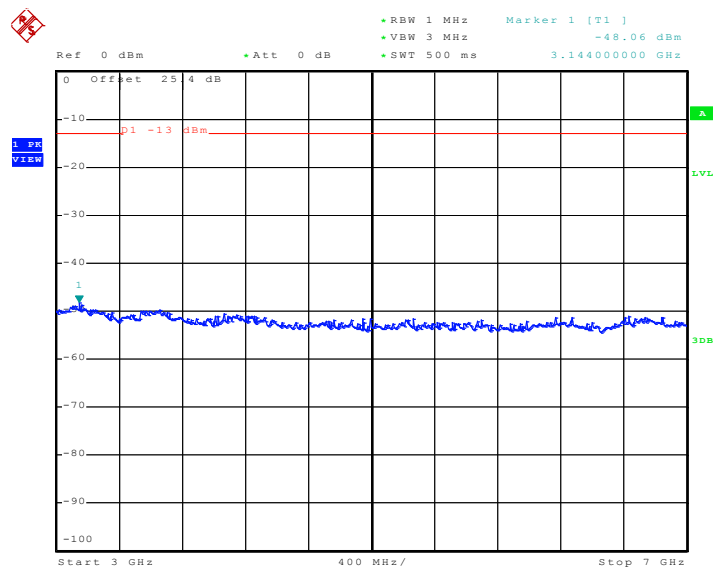
Conducted Emission Plot between 1GHz ~ 3GHz



Date: 3.JUN.2009 00:34:37

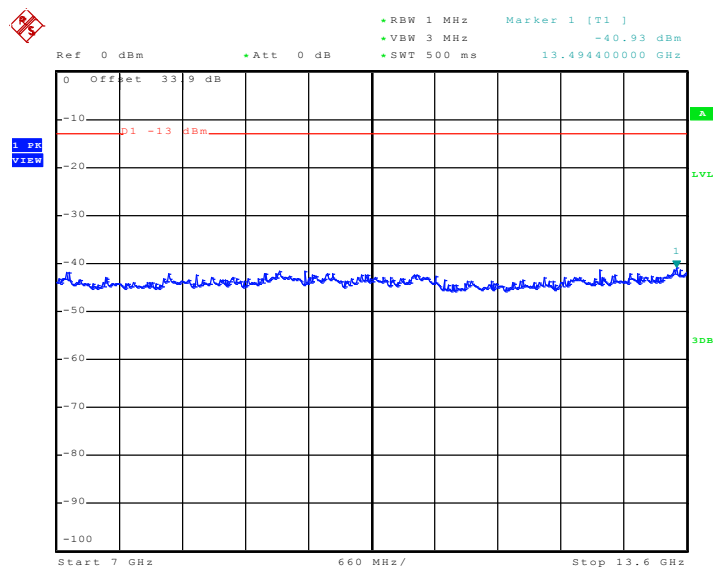


Conducted Emission Plot between 3GHz ~ 7GHz



Date: 3.JUN.2009 00:36:54

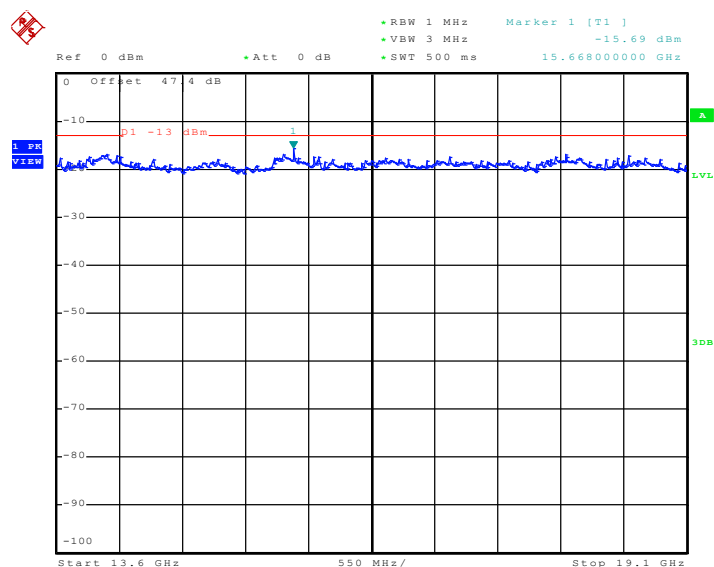
Conducted Emission Plot between 7GHz ~ 13.6GHz



Date: 3.JUN.2009 00:38:13



Conducted Emission Plot between 13.6GHz ~ 19.1GHz

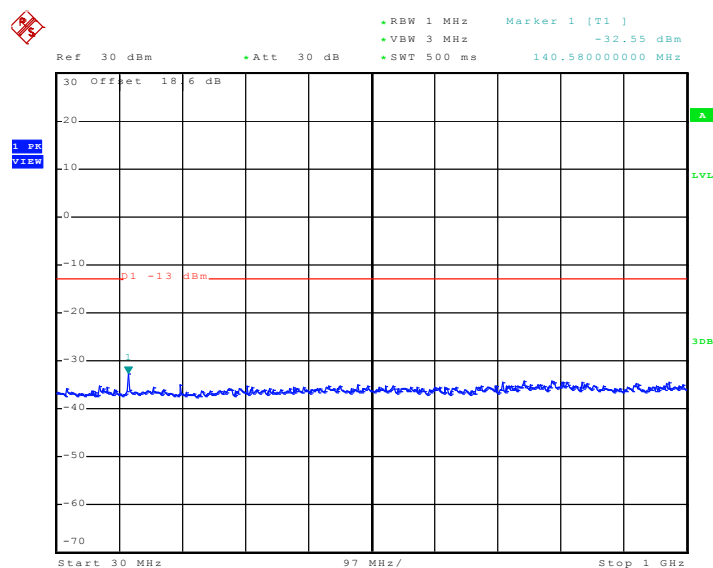


Date: 3.JUN.2009 00:39:33



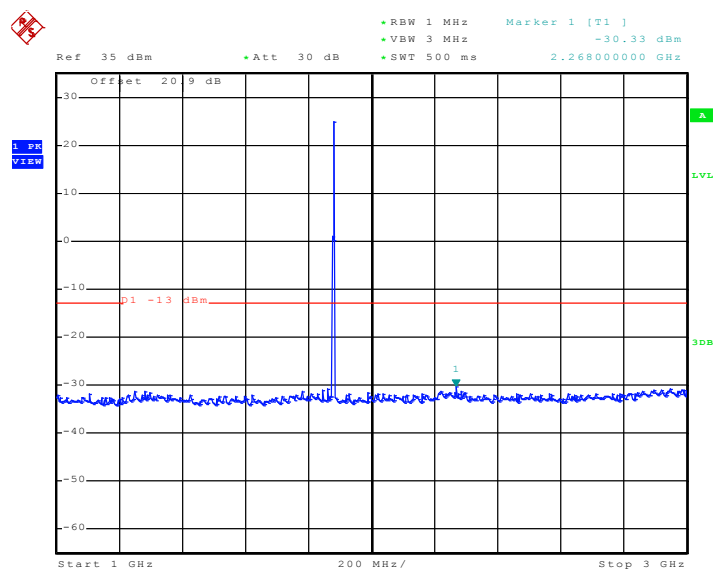
Band :	GSM1900	Channel :	CH661
Test Mode :	GPRS 8 Link		

Conducted Emission Plot between 30MHz ~ 1GHz



Date: 3.JUN.2009 00:29:54

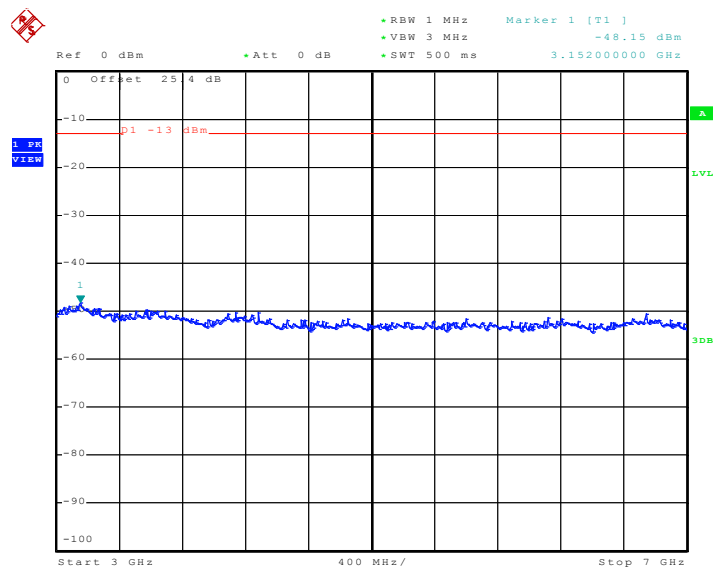
Conducted Emission Plot between 1GHz ~ 3GHz



Date: 3.JUN.2009 00:35:05

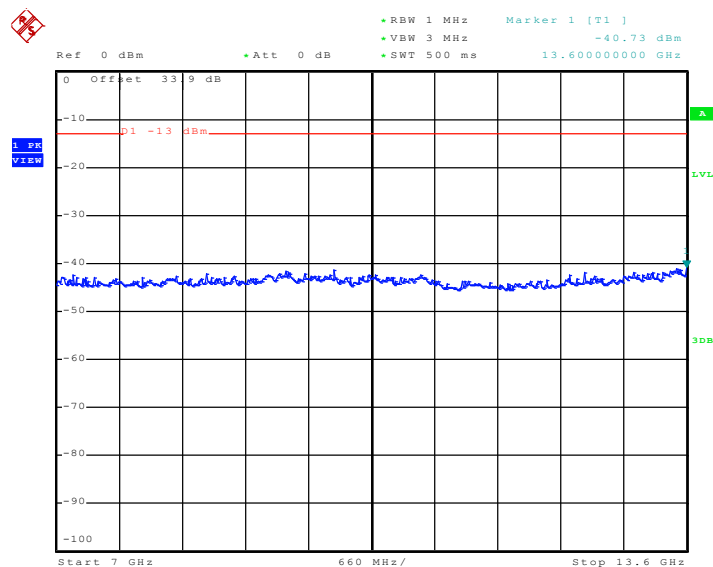


Conducted Emission Plot between 3GHz ~ 7GHz



Date: 3.JUN.2009 00:37:13

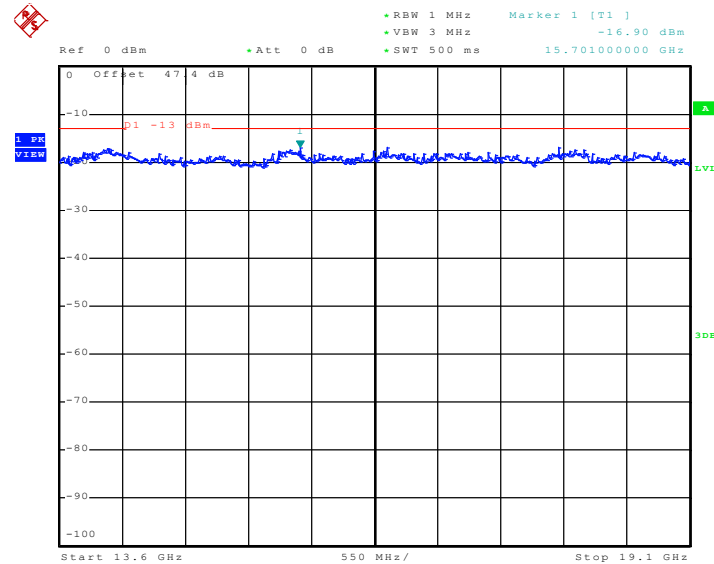
Conducted Emission Plot between 7GHz ~ 13.6GHz



Date: 3.JUN.2009 00:38:53



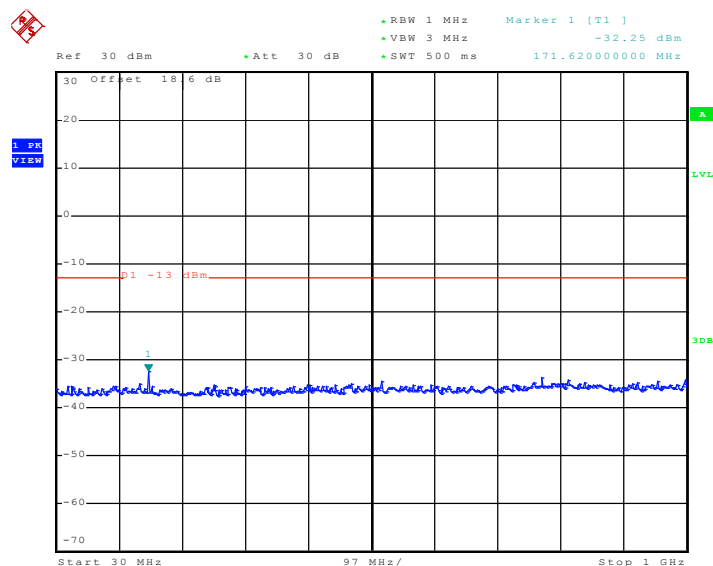
Conducted Emission Plot between 13.6GHz ~ 19.1GHz



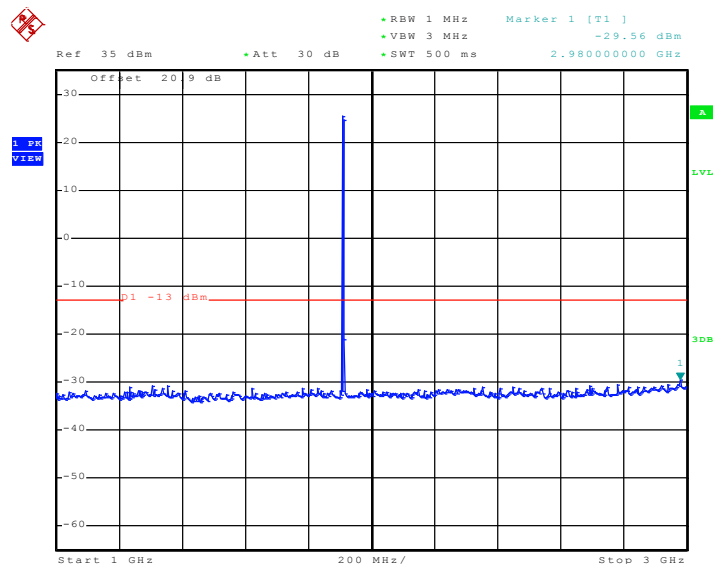
Date: 3.JUN.2009 00:39:51



Band :	GSM1900	Channel :	CH810
Test Mode :	GPRS 8 Link		

Conducted Emission Plot between 30MHz ~ 1GHz

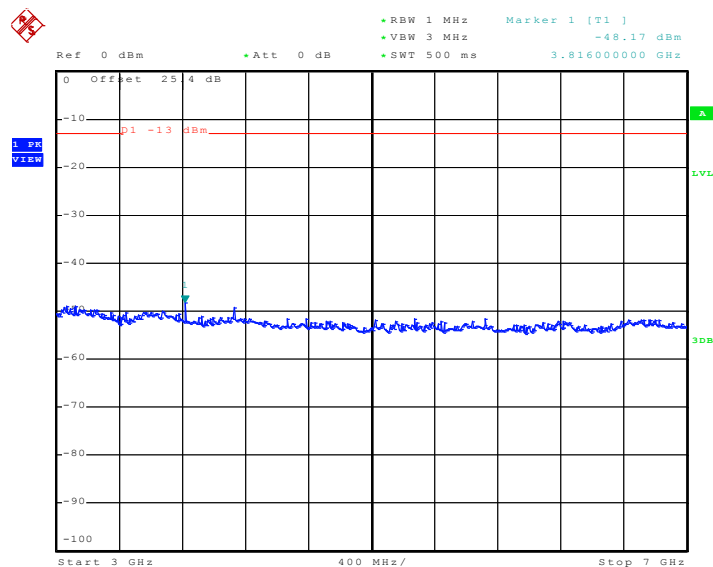
Date: 3.JUN.2009 00:30:13

Conducted Emission Plot between 1GHz ~ 3GHz

Date: 3.JUN.2009 00:35:43

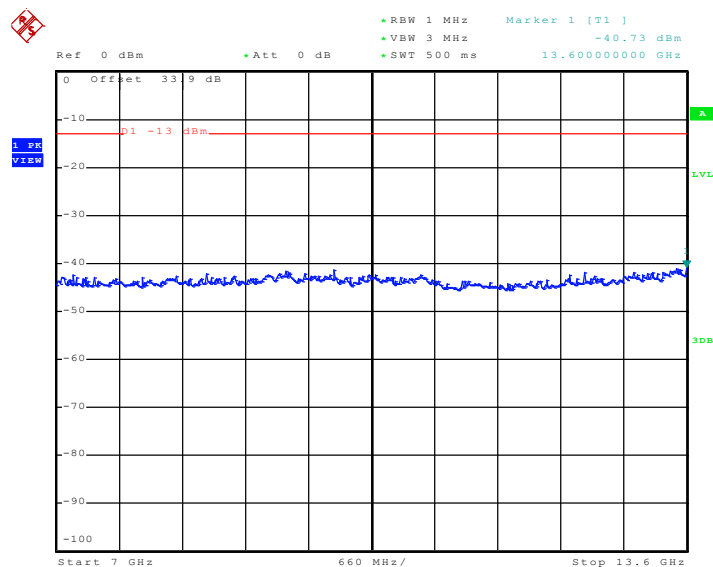


Conducted Emission Plot between 3GHz ~ 7GHz



Date: 3.JUN.2009 00:37:31

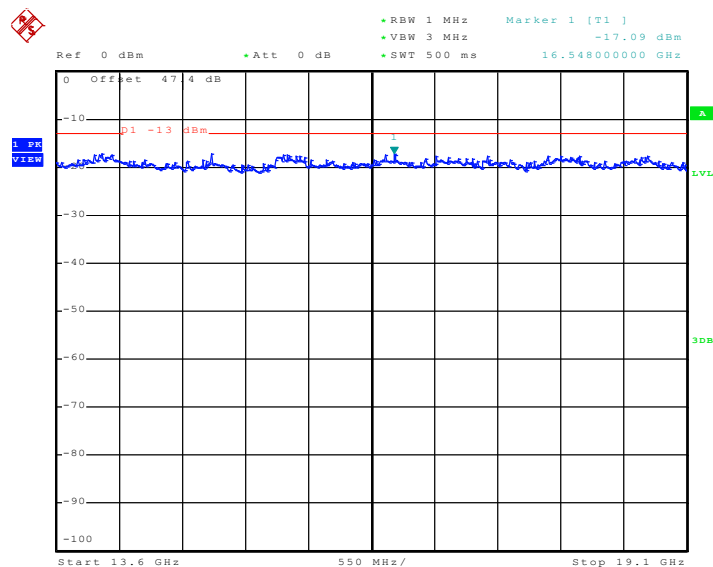
Conducted Emission Plot between 7GHz ~ 13.6GHz



Date: 3.JUN.2009 00:38:53



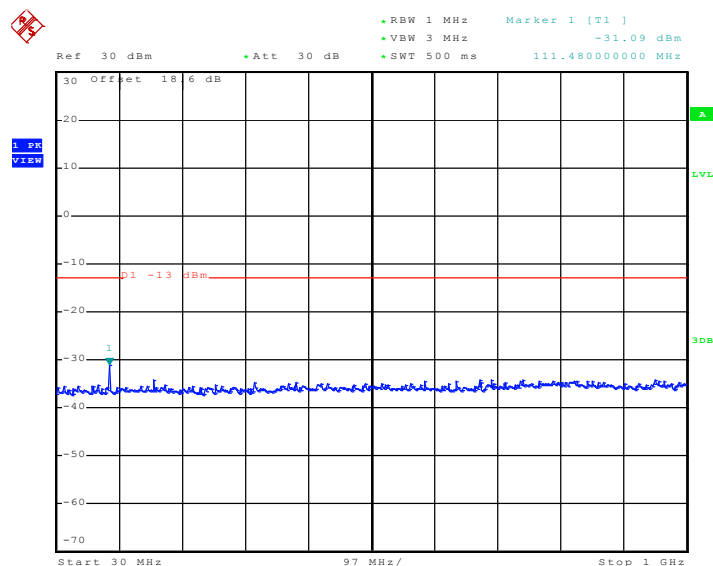
Conducted Emission Plot between 13.6GHz ~ 19.1GHz



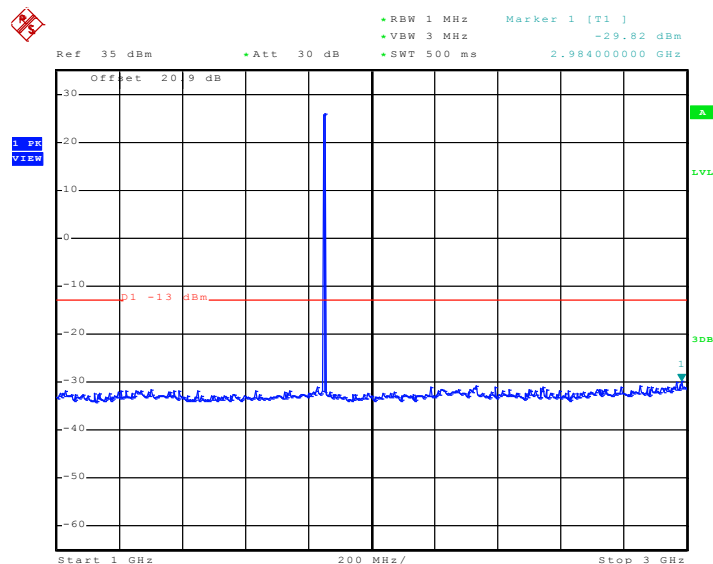
Date: 3.JUN.2009 00:40:09



Band :	GSM1900	Channel :	CH512
Test Mode :	EDGE 8 Link		

Conducted Emission Plot between 30MHz ~ 1GHz

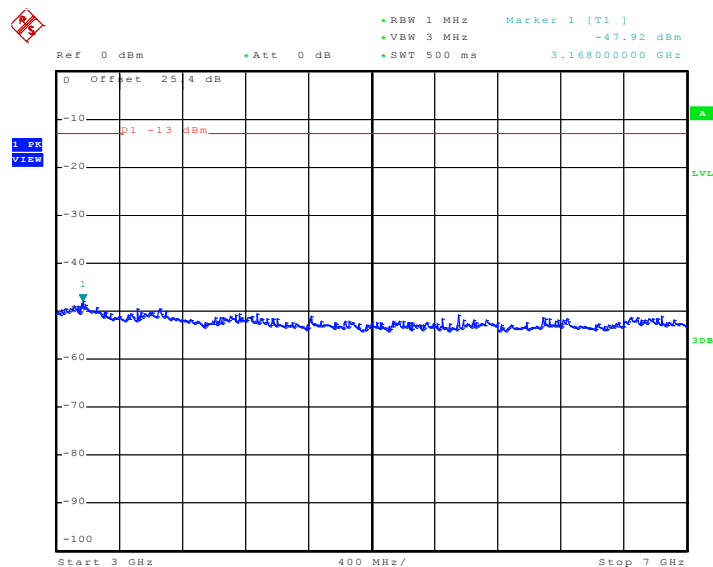
Date: 3.JUN.2009 00:54:20

Conducted Emission Plot between 1GHz ~ 3GHz

Date: 3.JUN.2009 00:57:14

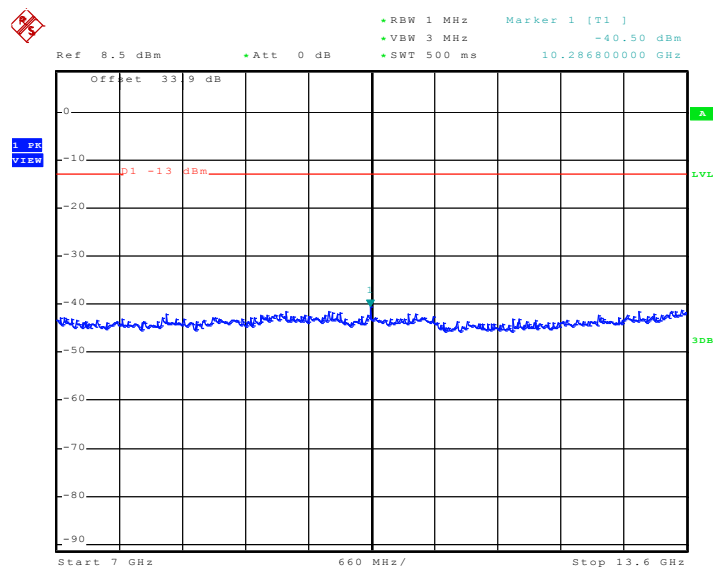


Conducted Emission Plot between 3GHz ~ 7GHz



Date: 3.JUN.2009 01:00:10

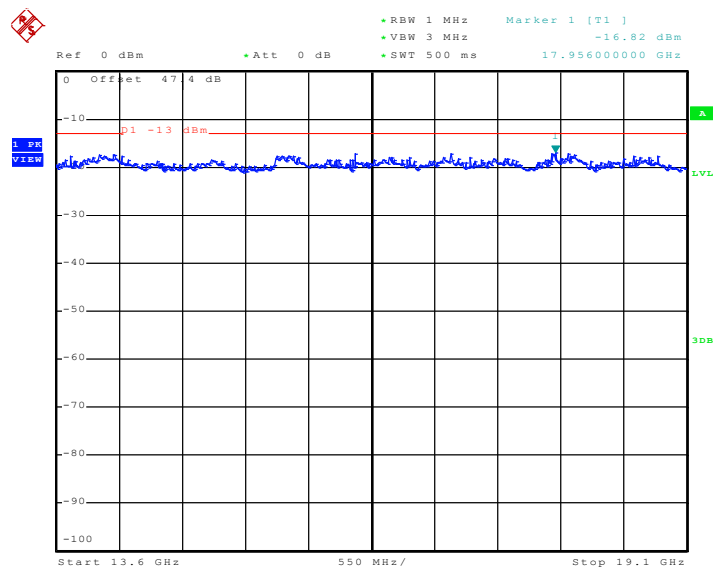
Conducted Emission Plot between 7GHz ~ 13.6GHz



Date: 3.JUN.2009 01:02:02



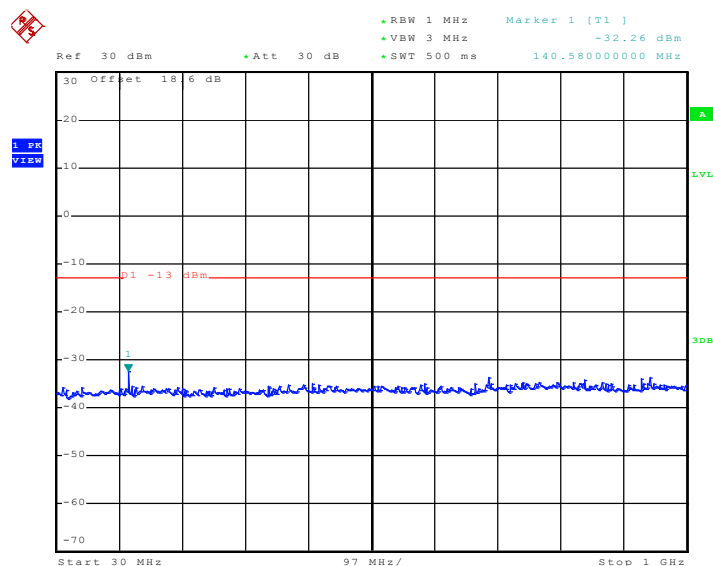
Conducted Emission Plot between 13.6GHz ~ 19.1GHz



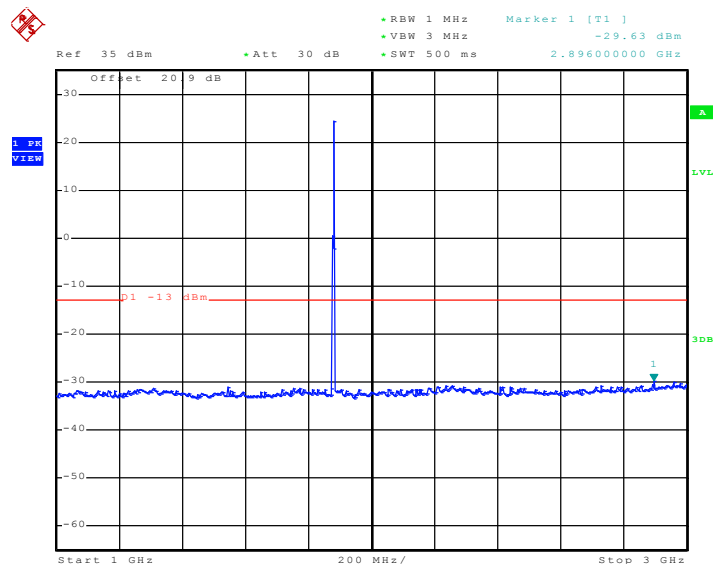
Date: 3.JUN.2009 01:02:35



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

Conducted Emission Plot between 30MHz ~ 1GHz

Date: 3.JUN.2009 00:54:37

Conducted Emission Plot between 1GHz ~ 3GHz

Date: 3.JUN.2009 00:58:20

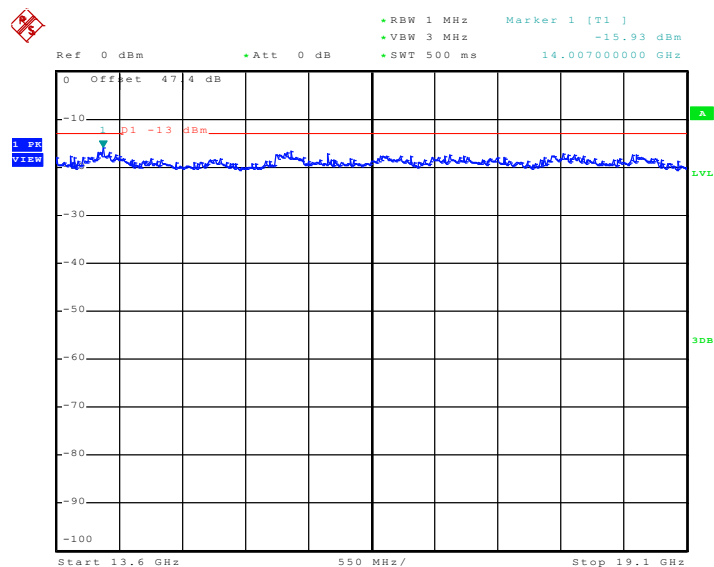


Conducted Emission Plot between 7GHz ~ 13.6GHz





Conducted Emission Plot between 13.6GHz ~ 19.1GHz



Date: 3.JUN.2009 01:02:57



Band :	GSM1900	Channel :	CH810
Test Mode :	EDGE 8 Link		

The screenshot shows a Spectrum Analyzer interface with the following details:

- Top Bar:**
 - Left: A red square icon with a white 'X' and a small '1'.
 - Center: A green status bar with the text "1.9K" and "VIEW".
 - Right: A green status bar with the text "A" and "1V1".
- Parameters:**
 - Ref 30 dBm
 - Att 30 dB
 - RBW 1 MHz
 - VBW 3 MHz
 - SWT 500 ms
 - Marker 1 [T1] -30.01 dBm
 - 171.620000000 MHz
- Grid and Trace:**
 - The grid is a 10x10 square grid.
 - The horizontal axis (frequency) ranges from 30 MHz to 1 GHz, with major ticks every 100 MHz.
 - The vertical axis (power) ranges from -70 dBm to 30 dBm, with major ticks every 10 dBm.
 - A blue trace shows a signal at 30 MHz, with a peak labeled "1" at -30.01 dBm.
 - A red horizontal line is drawn at -13 dBm, labeled "D1 -13 dBm".
- Bottom Bar:**
 - Start 30 MHz
 - 97 MHz/
 - Stop 1 GHz

Date: 3.JUN.2009 00:55:03

Ref 35 dBm • Att 30 dB • RBW 1 MHz Marker 1 [T1] -30.21 dBm
 • VBW 3 MHz • SWT 500 ms 2.972000000 GHz

Offset 20 9 dB

1. 20
VIZM

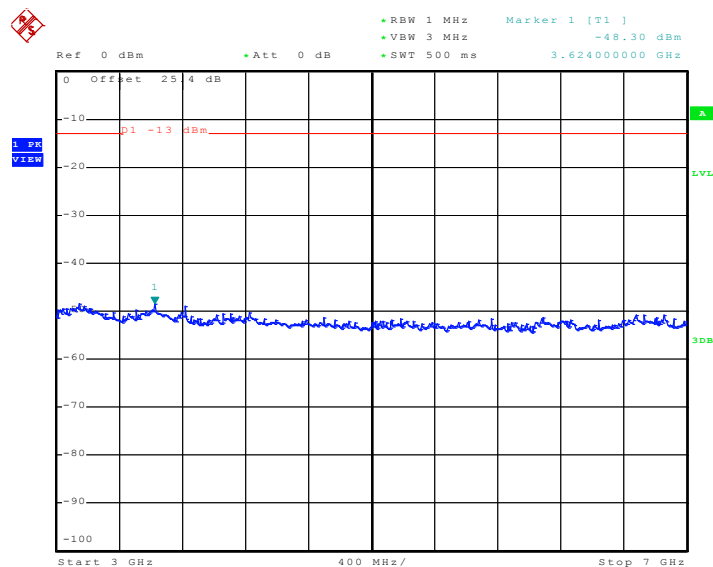
D1 -13 dBm

1

Start 1 GHz 200 MHz/ Stop 3 GHz

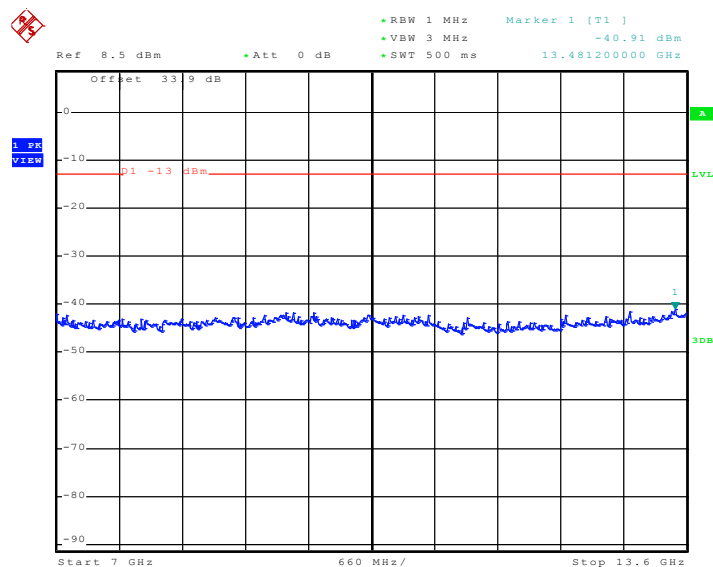
Date: 3.JUN.2009 00:59:11

Conducted Emission Plot between 3GHz ~ 7GHz



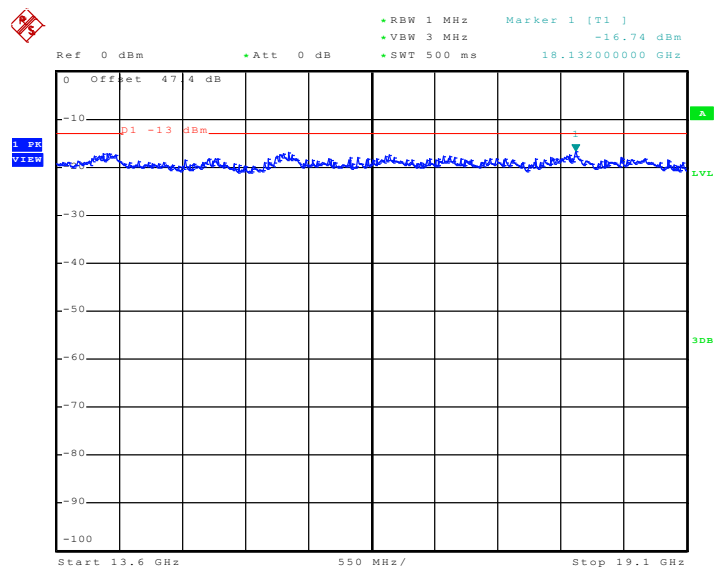
Date: 3.JUN.2009 01:00:52

Conducted Emission Plot between 7GHz ~ 13.6GHz



Date: 3.JUN.2009 01:01:23

Conducted Emission Plot between 13.6GHz ~ 19.1GHz



Date: 3.JUN.2009 01:03:22

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.

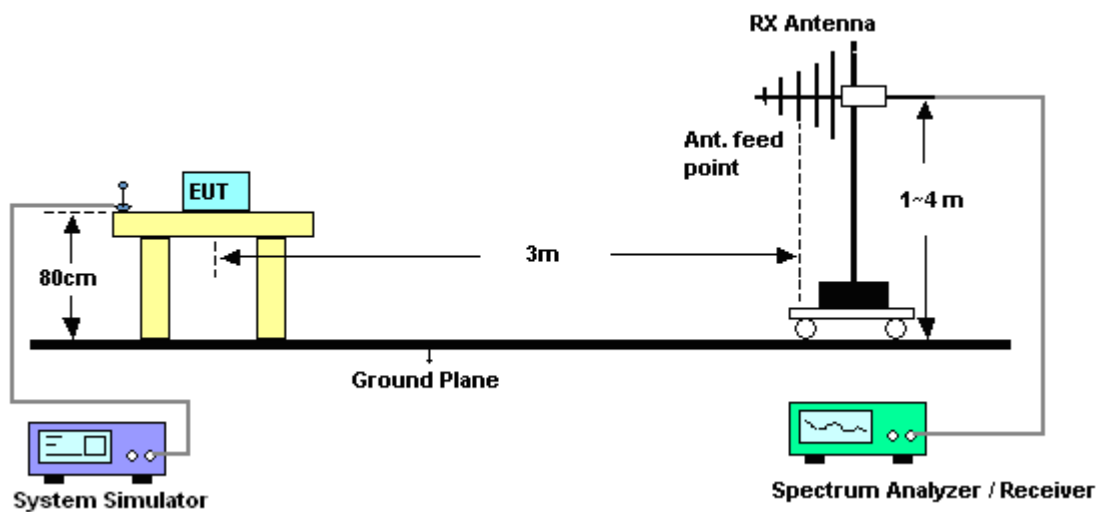
3.6.2 Measuring Instruments

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. $EIRP \text{ (dBm)} = S.G. \text{ Power} - Tx \text{ Cable Loss} + Tx \text{ Antenna Gain}$
11. $ERP \text{ (dBm)} = EIRP - 2.15$

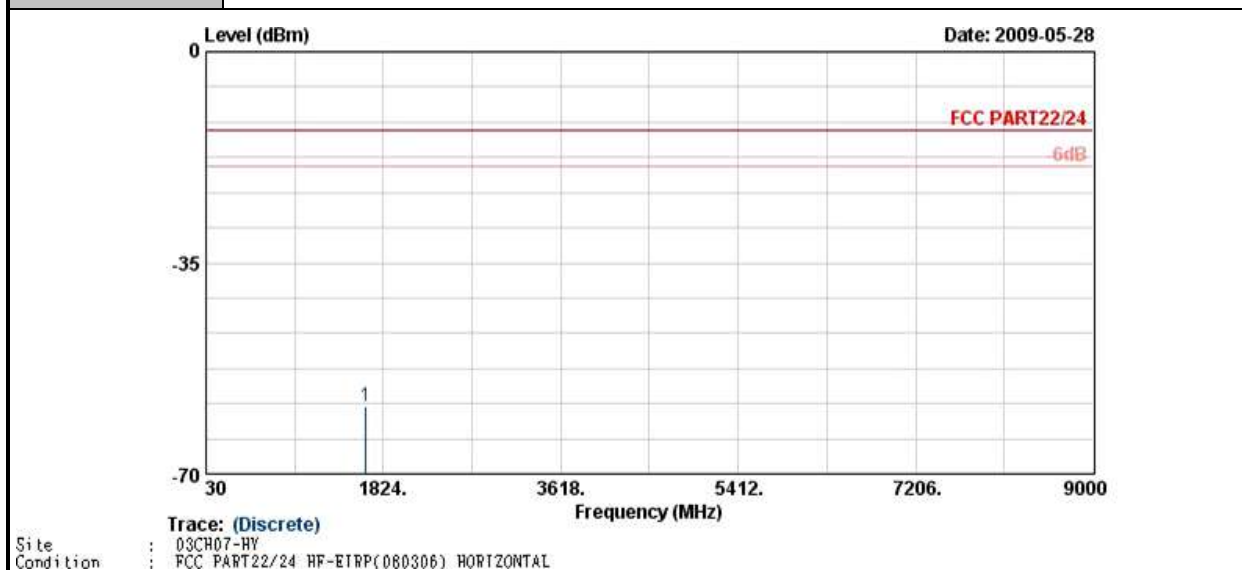
3.6.4 Test Setup





3.6.5 Test Result of Field Strength of Spurious Radiated

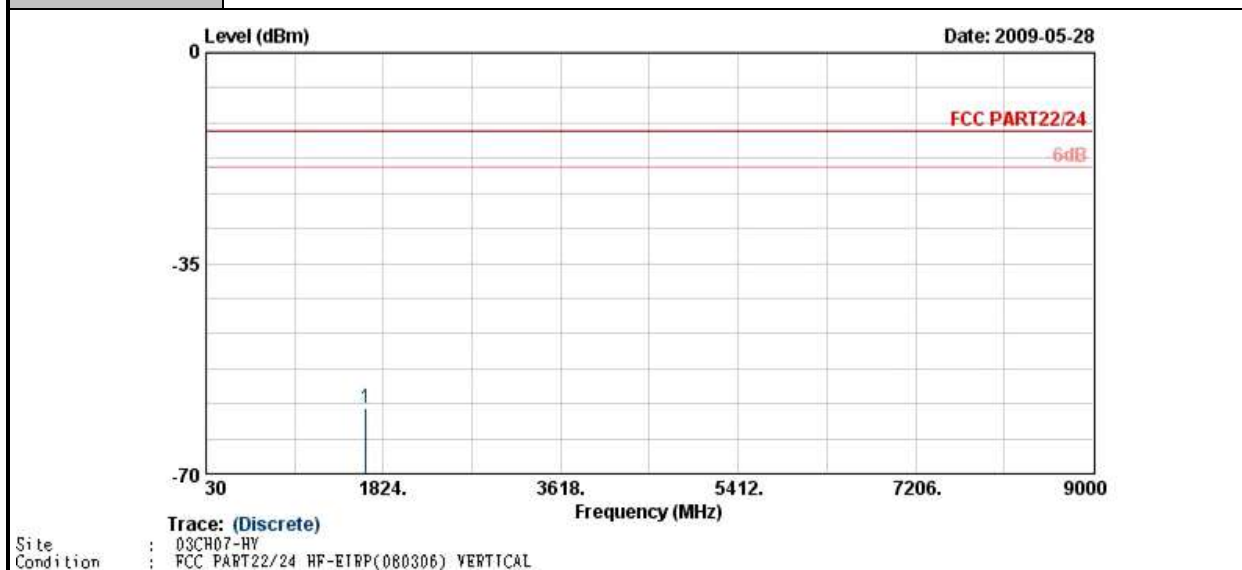
Band :	GSM850	Temperature :	26.5~27.5°C
Test Mode :	GPRS 8 Link_Channel 128 _EUT with USB Cable	Relative Humidity :	43~44%
Test Engineer :	Nadir Wang	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



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
1645.00	-58.91	-13.00	-45.91	-62.59	-59.09	3.10	5.43	H	Pass



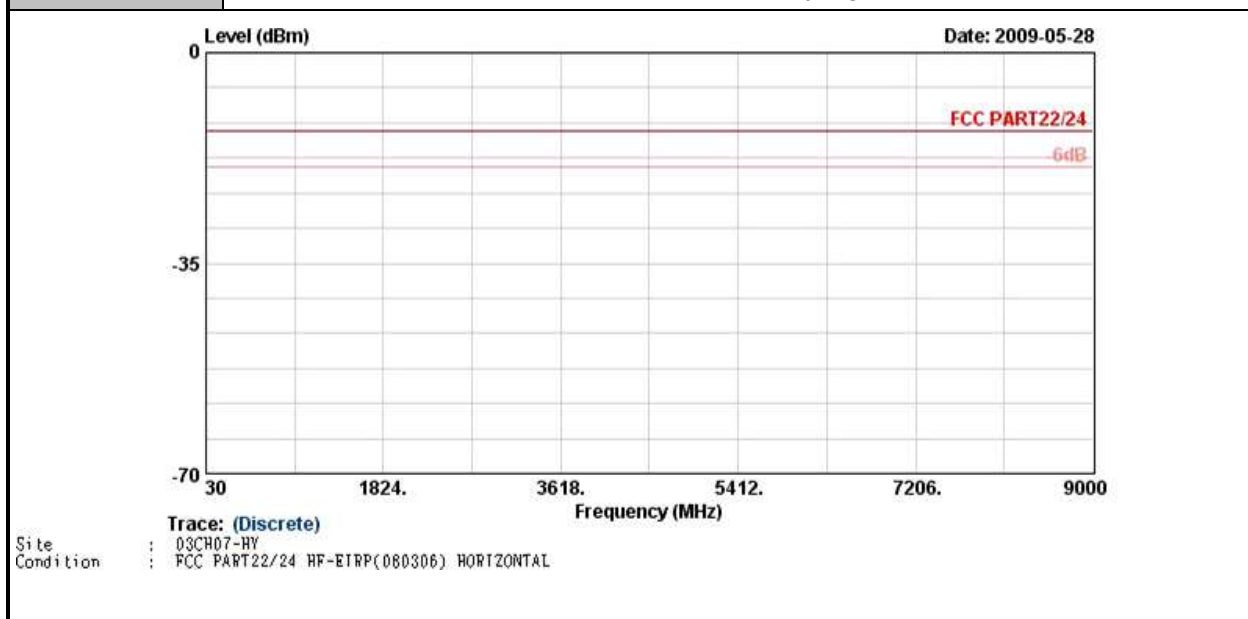
Band :	GSM850	Temperature :	26.5~27.5°C
Test Mode :	GPRS 8 Link_Channel 128 _EUT with USB Cable	Relative Humidity :	43~44%
Test Engineer :	Nadir Wang	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



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
1645.00	-58.97	-13.00	-45.97	-61.75	-59.15	3.10	5.43	V	Pass

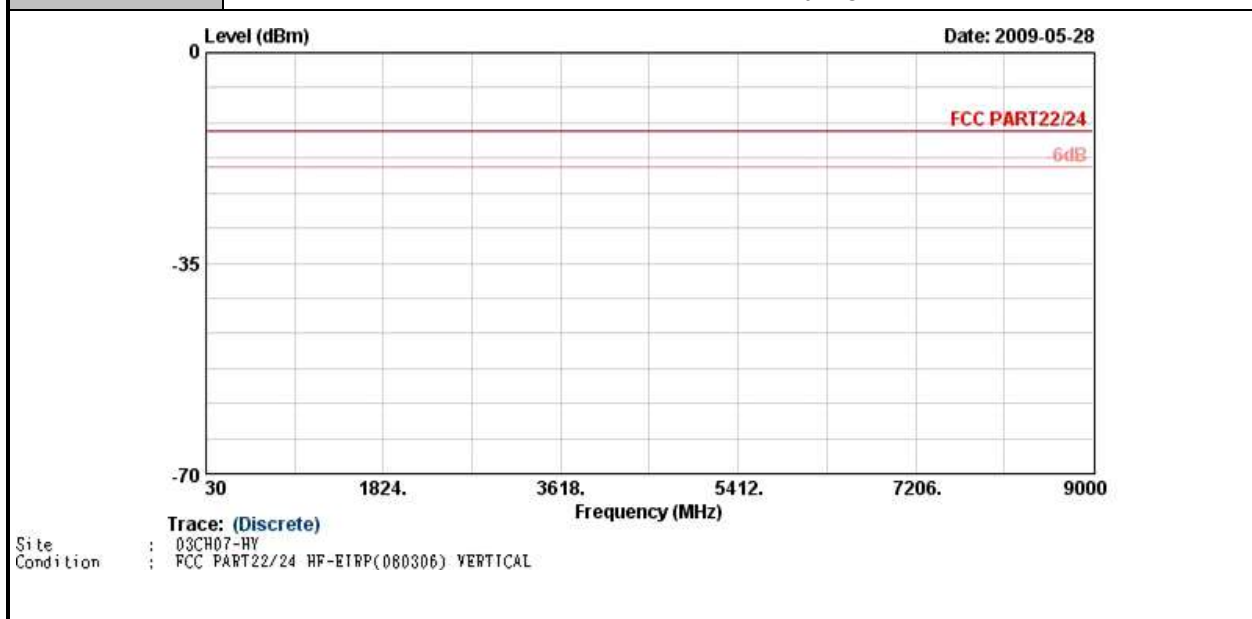


Band :	GSM850	Temperature :	26.5~27°C
Test Mode :	GPRS 8 Link_Channel 189 _EUT with USB Cable	Relative Humidity :	43~44%
Test Engineer :	Nadir Wang	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line and within 1000-9000MHz were found without any signal.		



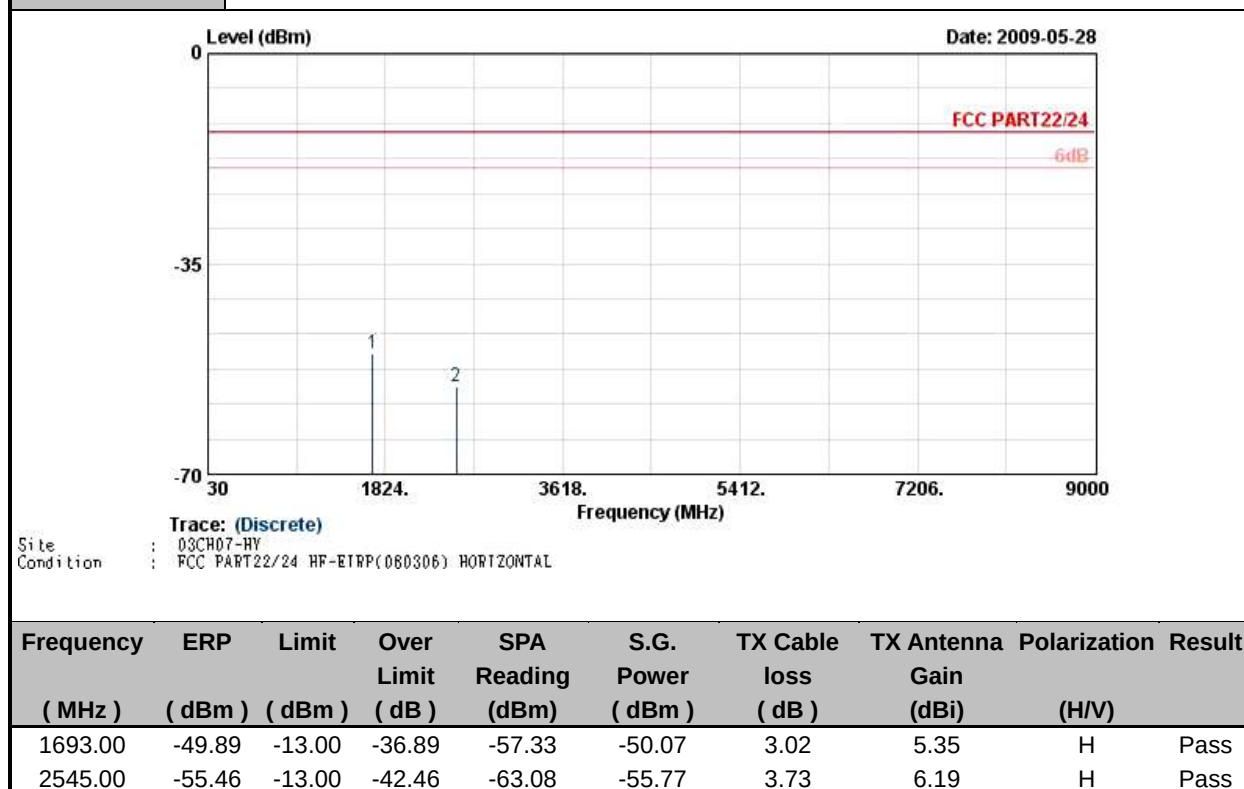


Band :	GSM850	Temperature :	26.5~27.5°C
Test Mode :	GPRS 8 Link_Channel 189 _EUT with USB Cable	Relative Humidity :	43~44%
Test Engineer :	Nadir Wang	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line and within 1000-9000MHz were found without any signal.		



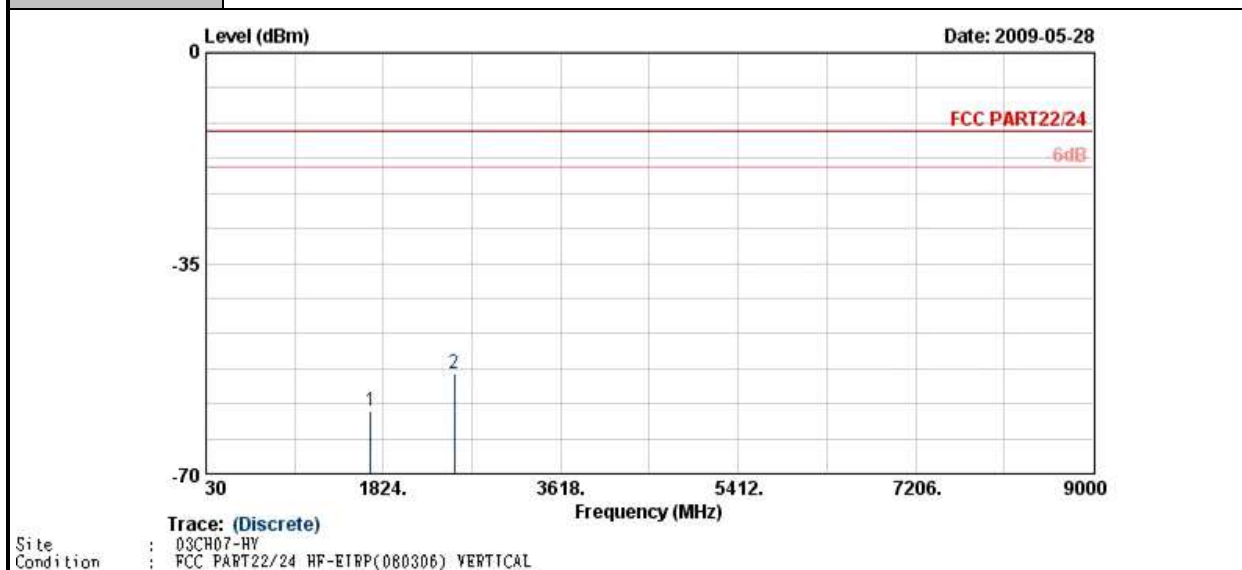


Band :	GSM850	Temperature :	26.5~27°C
Test Mode :	GPRS 8 Link_Channel 251 _EUT with USB Cable	Relative Humidity :	43~44%
Test Engineer :	Nadir Wang	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line		





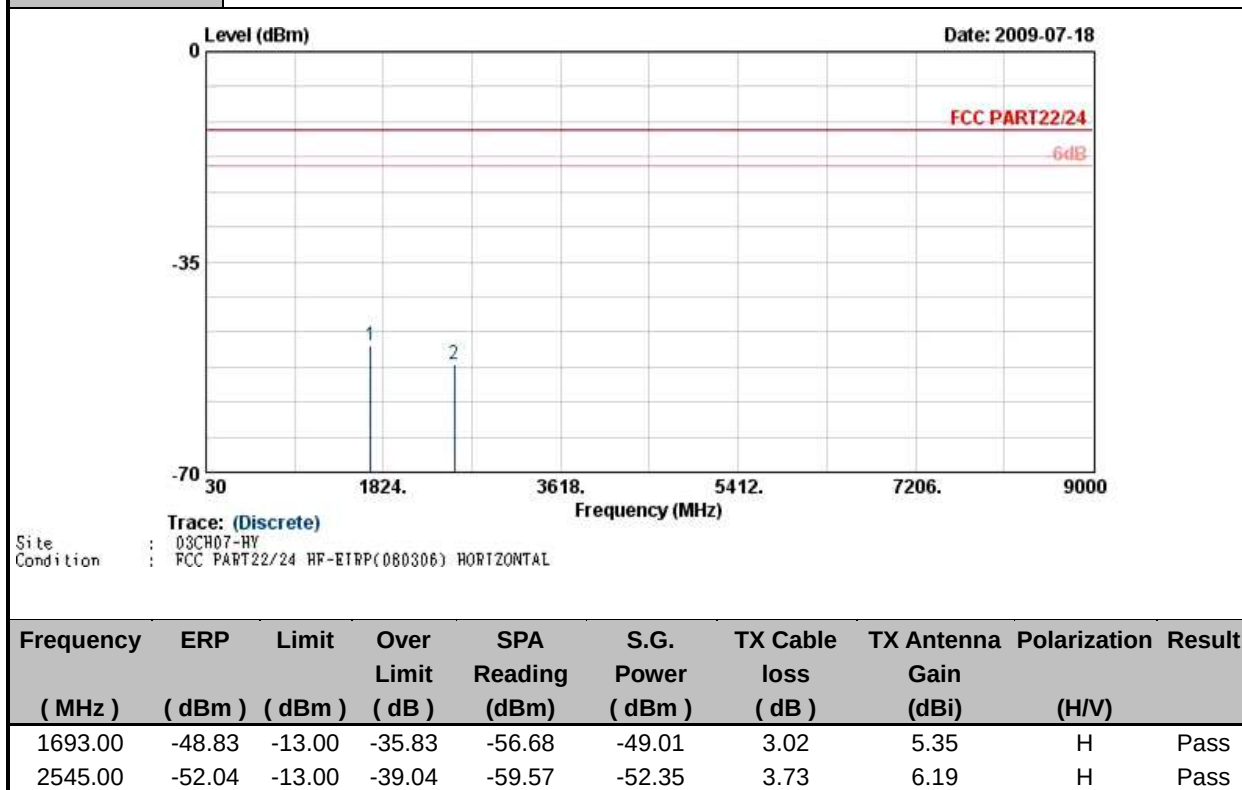
Band :	GSM850	Temperature :	26.5~27.5°C
Test Mode :	GPRS 8 Link_Channel 251 _EUT with USB Cable	Relative Humidity :	43~44%
Test Engineer :	Nadir Wang	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



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
1693.00	-59.55	-13.00	-46.55	-62.35	-59.73	3.02	5.35	V	Pass
2545.00	-53.37	-13.00	-40.37	-63.35	-53.68	3.73	6.19	V	Pass

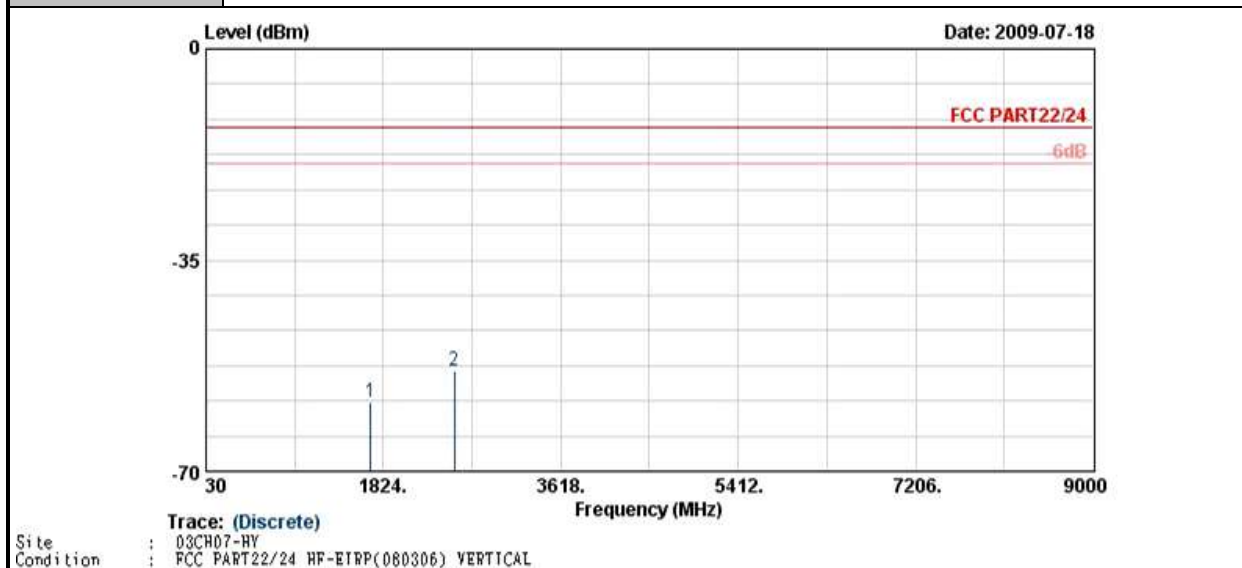


Band :	GSM850	Temperature :	26~28°C
Test Mode :	GPRS 8 Link_Channel 251 _EUT without USB Cable	Relative Humidity :	42~45%
Test Engineer :	Kai Wang	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line		





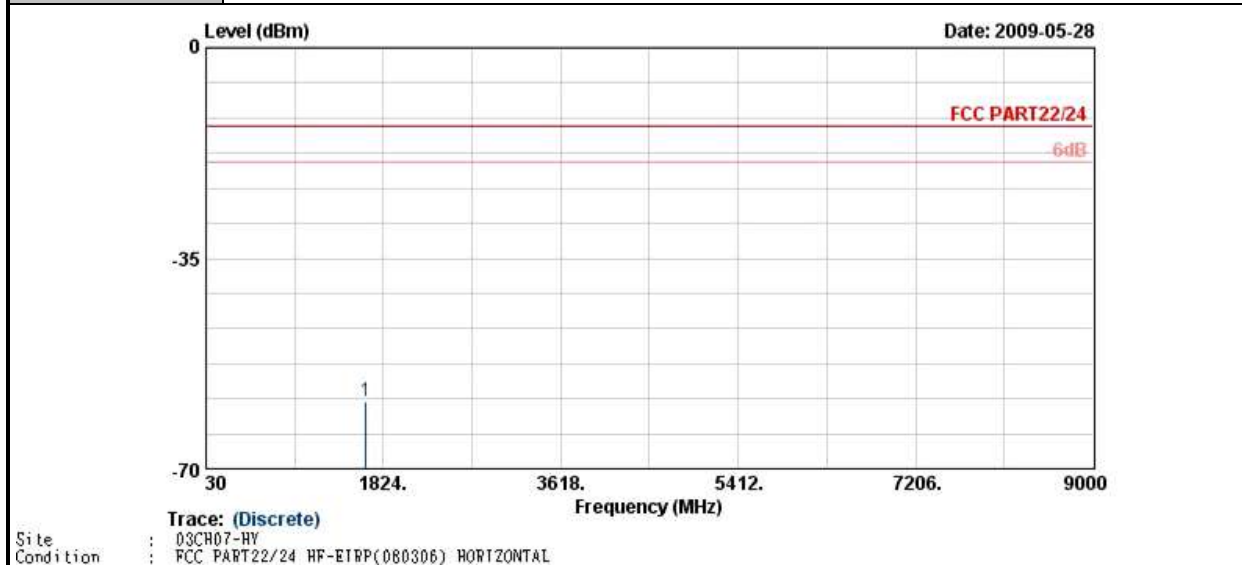
Band :	GSM850	Temperature :	26~28°C
Test Mode :	GPRS 8 Link_Channel 251 _EUT without USB Cable	Relative Humidity :	42~45%
Test Engineer :	Kai Wang	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



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
1693.00	-58.45	-13.00	-45.45	-61.50	-58.63	3.02	5.35	V	Pass
2545.00	-53.23	-13.00	-40.23	-63.67	-53.54	3.73	6.19	V	Pass



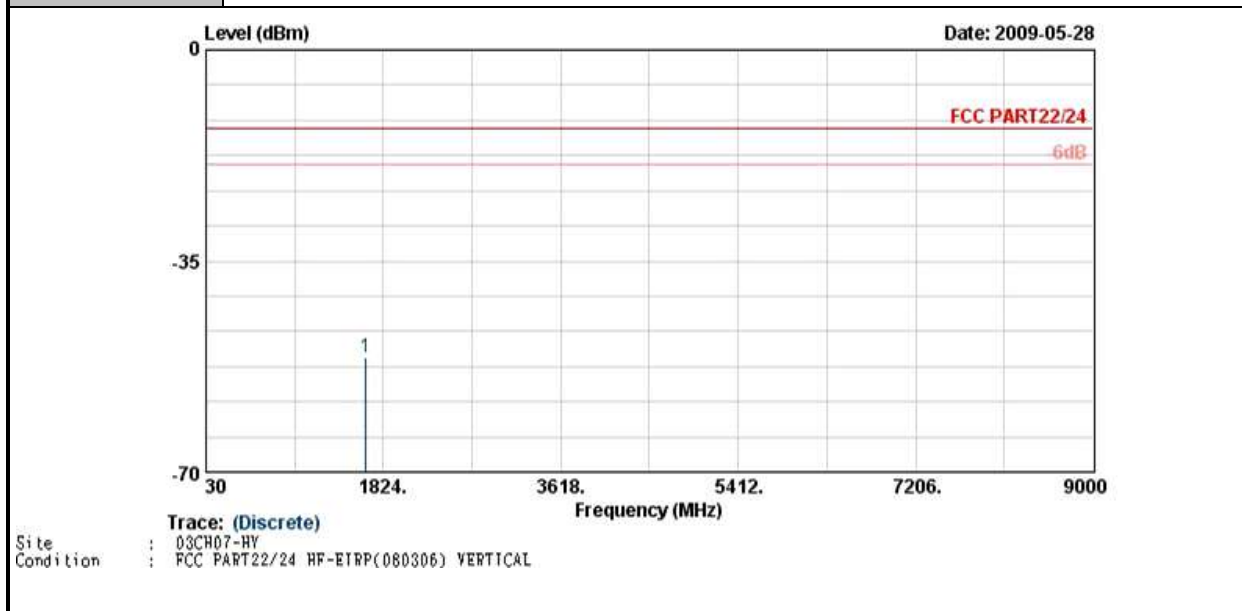
Band :	GSM850	Temperature :	26.5~27.5°C
Test Mode :	EDGE 8 Link_Channel 128 _EUT with USB Cable	Relative Humidity :	43~44%
Test Engineer :	Nadir Wang	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



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
1645.00	-58.86	-13.00	-45.86	-62.64	-59.04	3.10	5.43	H	Pass



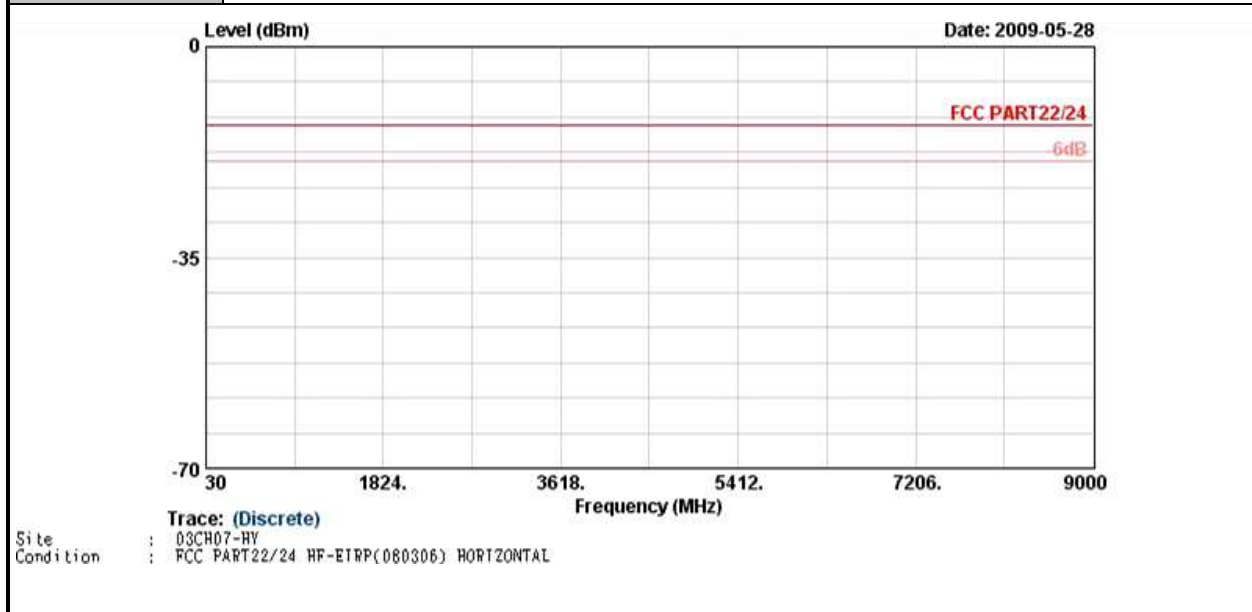
Band :	GSM850	Temperature :	26.5~27.5°C
Test Mode :	EDGE 8 Link_Channel 128 _EUT with USB Cable	Relative Humidity :	43~44%
Test Engineer :	Nadir Wang	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



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
1645.00	-50.91	-13.00	-37.91	-61.69	-51.09	3.10	5.43	V	Pass

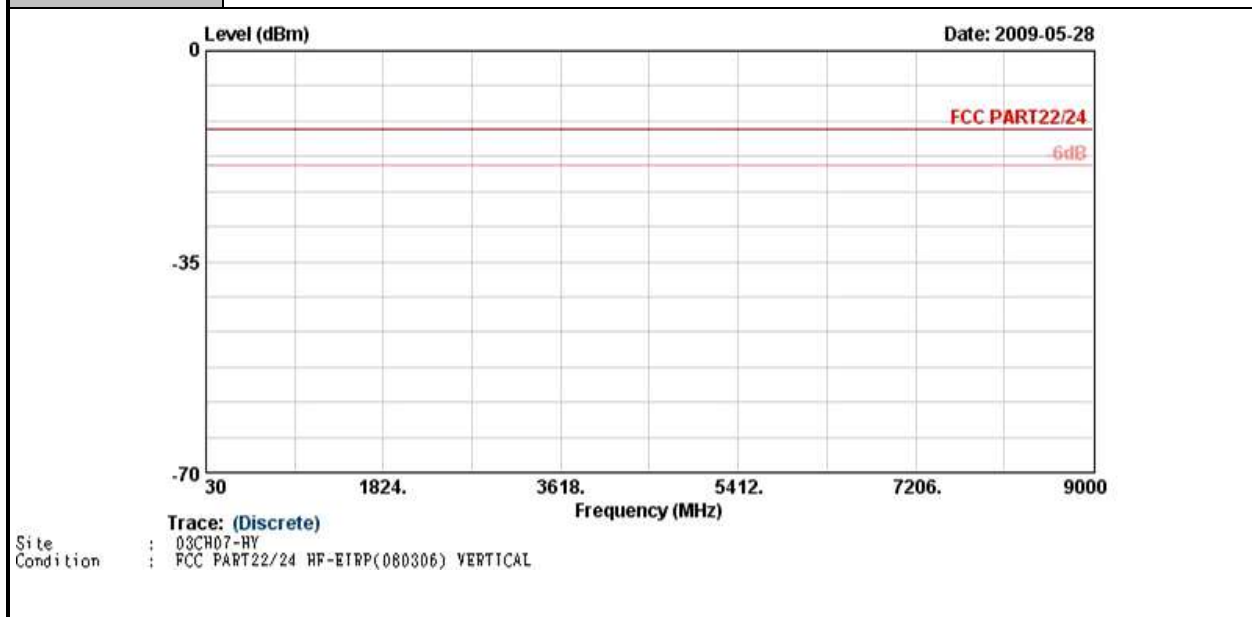


Band :	GSM850	Temperature :	26.5~27.5°C
Test Mode :	EDGE 8 Link_Channel 189 _EUT with USB Cable	Relative Humidity :	43~44%
Test Engineer :	Nadir Wang	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line and within 1000-9000MHz were found without any signal.		



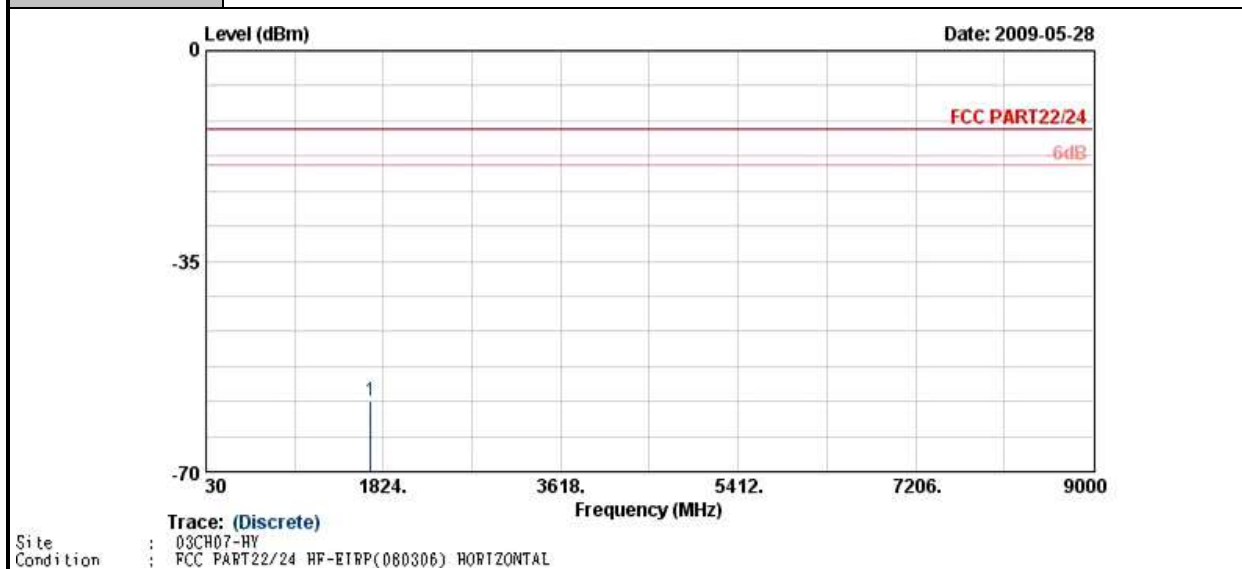


Band :	GSM850	Temperature :	26.5~27.5°C
Test Mode :	EDGE 8 Link_Channel 189 _EUT with USB Cable	Relative Humidity :	43~44%
Test Engineer :	Nadir Wang	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line and within 1000-9000MHz were found without any signal.		





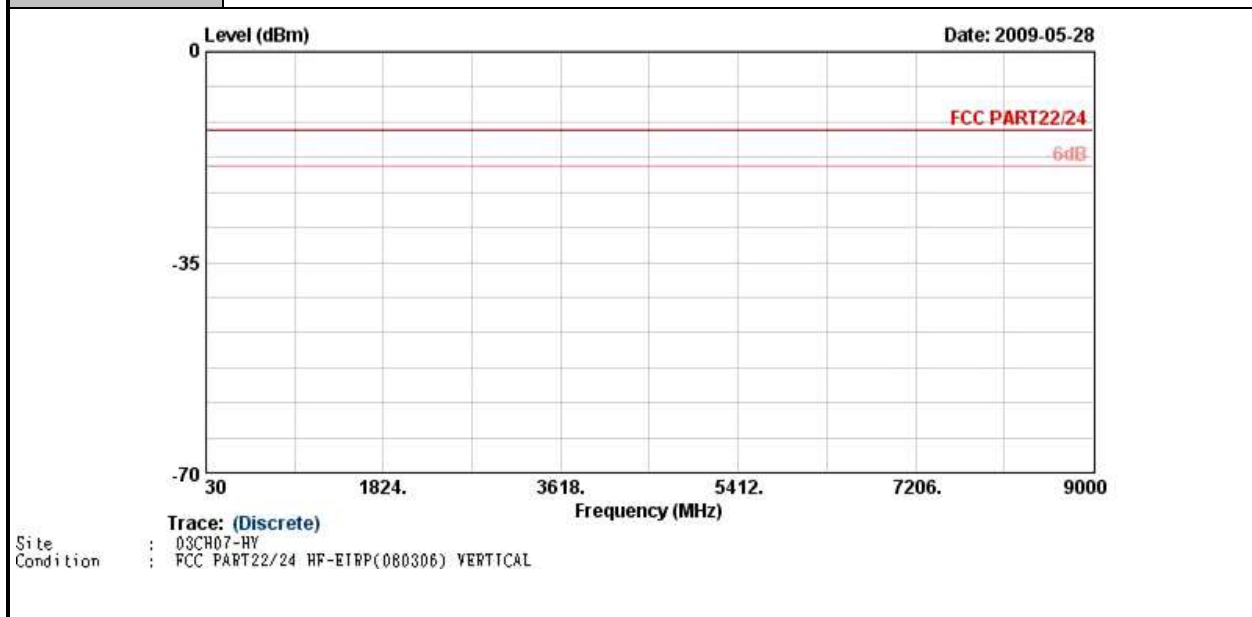
Band :	GSM850	Temperature :	26.5~27.5°C
Test Mode :	EDGE 8 Link_Channel 251 _EUT with USB Cable	Relative Humidity :	43~44%
Test Engineer :	Nadir Wang	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



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
1696.00	-58.38	-13.00	-45.38	-66.57	-58.56	3.02	5.35	H	Pass

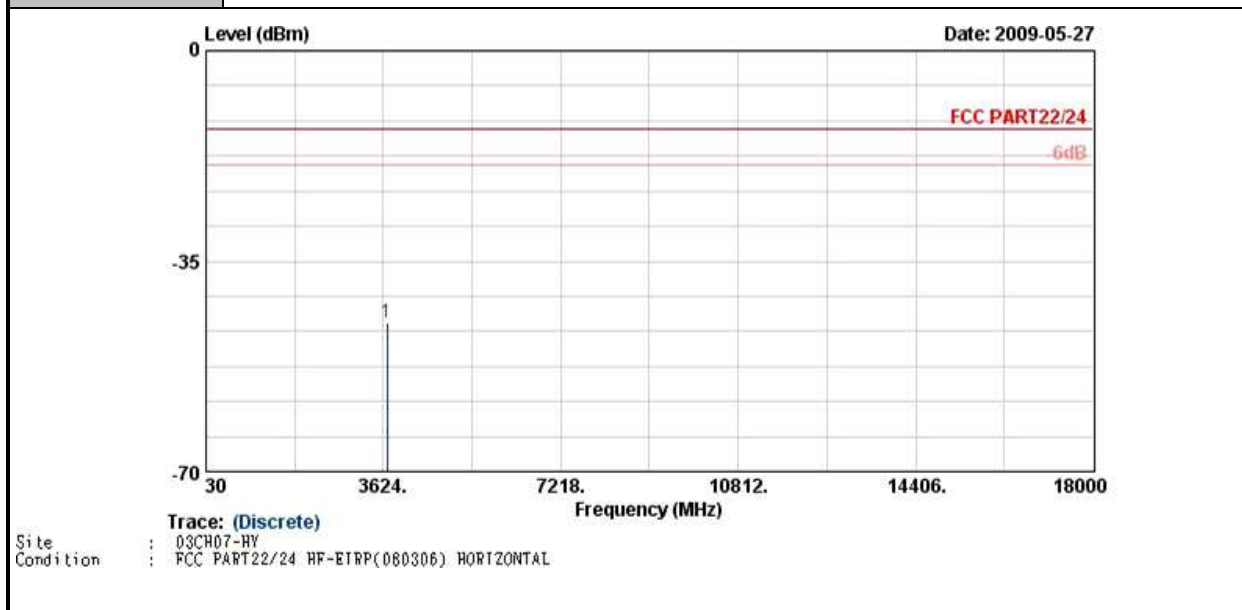


Band :	GSM850	Temperature :	26.5~27.5°C
Test Mode :	EDGE 8 Link_Channel 251 _EUT with USB Cable	Relative Humidity :	43~44%
Test Engineer :	Nadir Wang	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line and within 1000-9000MHz were found without any signal.		





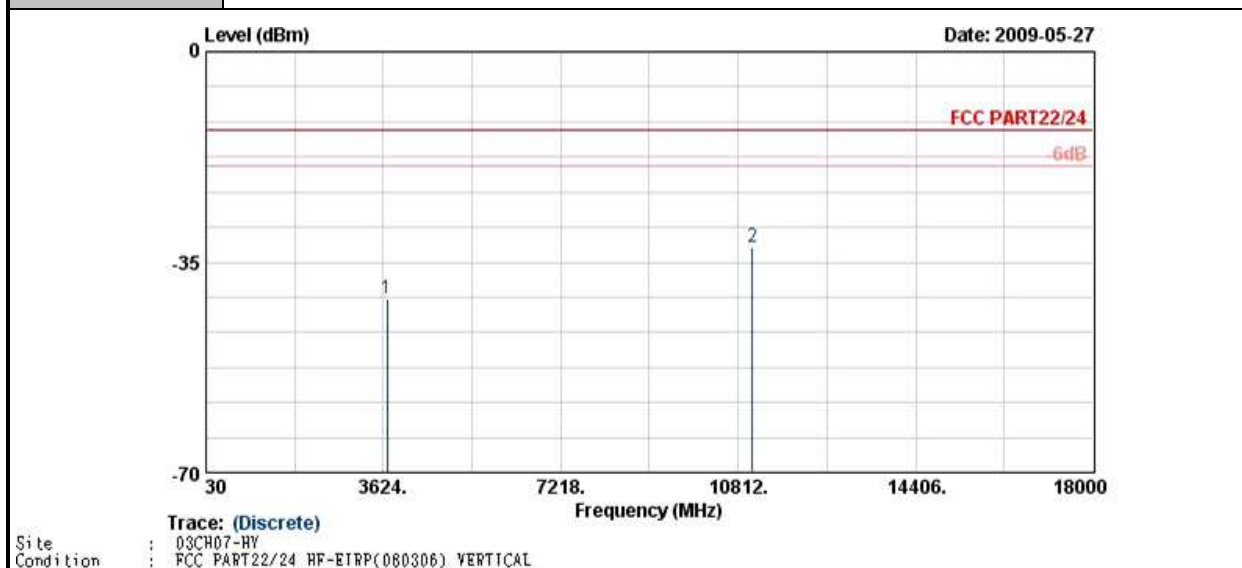
Band :	GSM1900	Temperature :	26.5~27.5°C
Test Mode :	GPRS 8 Link_Channel 512 _EUT with USB Cable	Relative Humidity :	43~44%
Test Engineer :	Nadir Wang	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



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
3696.00	-45.19	-13.00	-32.19	-59.93	-49.31	4.52	8.64	H	Pass



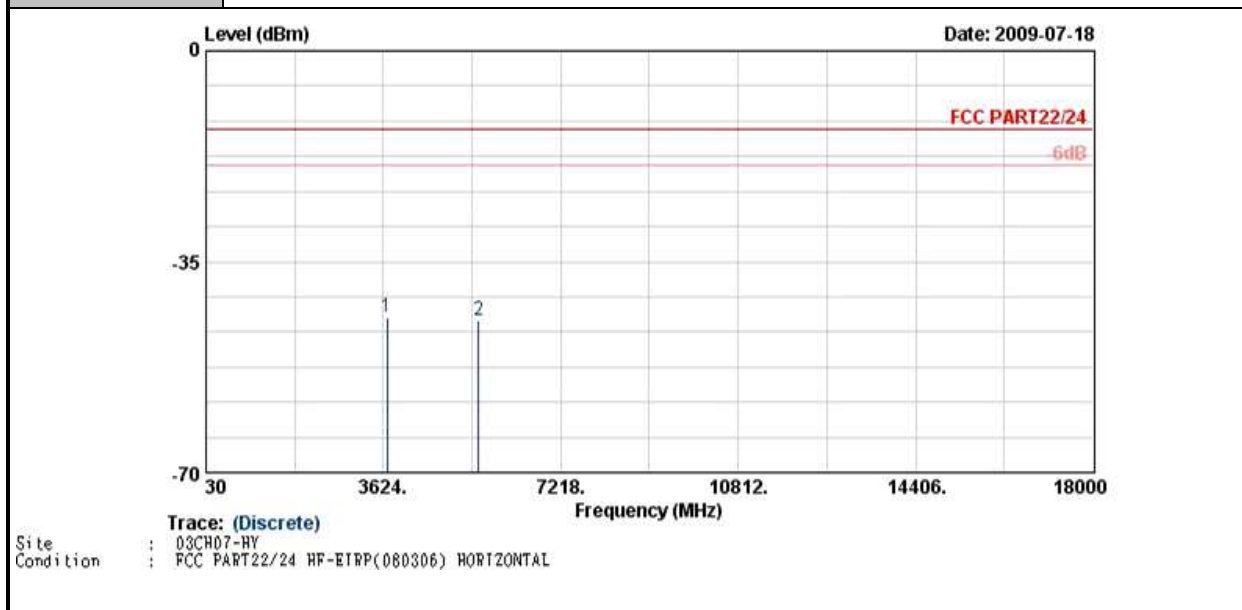
Band :	GSM1900	Temperature :	26.5~27.5°C
Test Mode :	GPRS 8 Link_Channel 512 _EUT with USB Cable	Relative Humidity :	43~44%
Test Engineer :	Nadir Wang	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



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
3696.00	-41.14	-13.00	-28.14	-58.62	-45.26	4.52	8.64	V	Pass
11092.00	-32.49	-13.00	-19.49	-66.49	-37.00	8.85	13.36	V	Pass



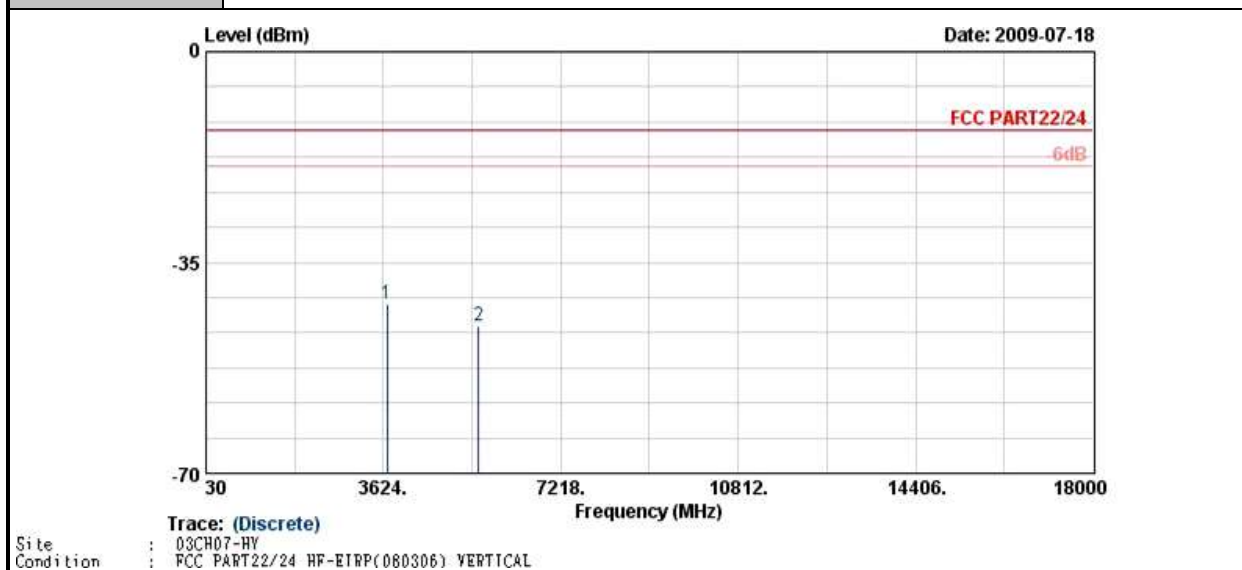
Band :	GSM1900	Temperature :	26~28°C
Test Mode :	GPRS 8 Link_Channel 512 _EUT without USB Cable	Relative Humidity :	42~45%
Test Engineer :	Kai Wang	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



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
3696.00	-44.30	-13.00	-31.30	-59.15	-48.42	4.52	8.64	H	Pass
5552.00	-44.74	-13.00	-31.74	-64.28	-49.94	5.20	10.40	H	Pass



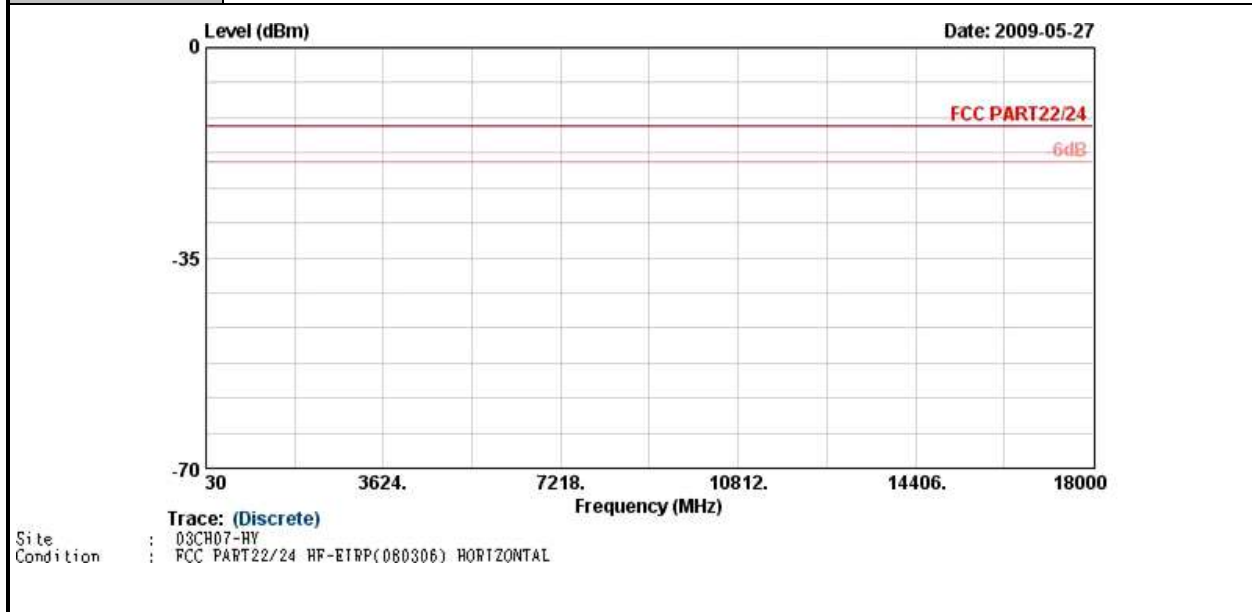
Band :	GSM1900	Temperature :	26~28°C
Test Mode :	GPRS 8 Link_Channel 512 _EUT without USB Cable	Relative Humidity :	42~45%
Test Engineer :	Kai Wang	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



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
3696.00	-41.93	-13.00	-28.93	-59.37	-46.05	4.52	8.64	V	Pass
5552.00	-45.51	-13.00	-32.51	-64.73	-50.71	5.20	10.40	V	Pass

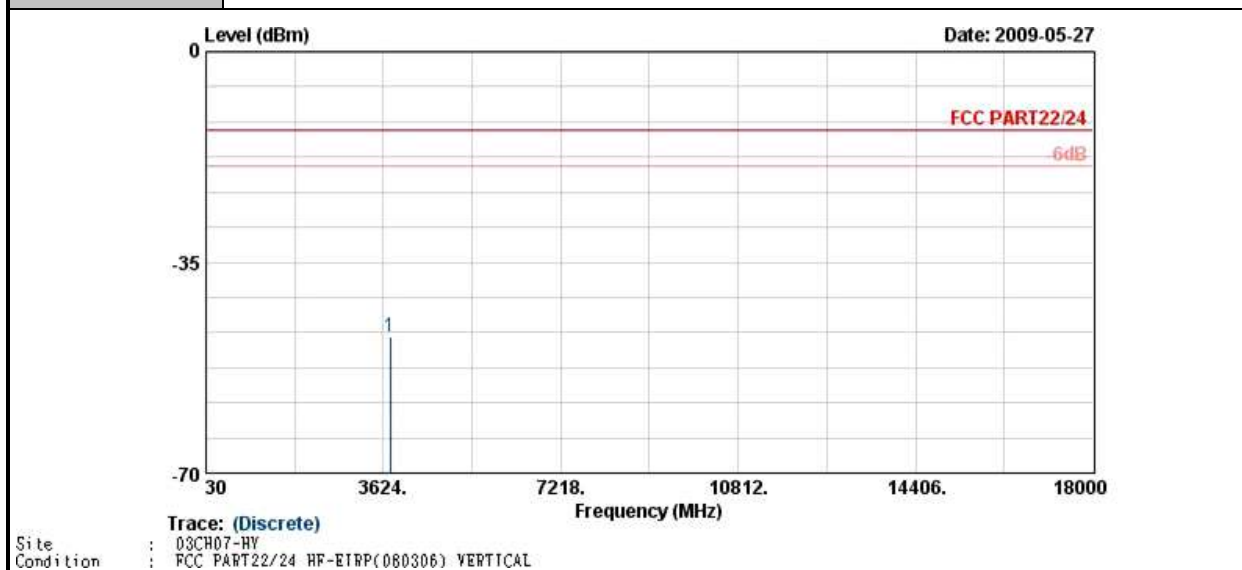


Band :	GSM1900	Temperature :	26.5~27.5°C
Test Mode :	GPRS 8 Link_Channel 661 _EUT with USB Cable	Relative Humidity :	43~44%
Test Engineer :	Nadir Wang	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line and within 1000-18000MHz were found without any signal.		





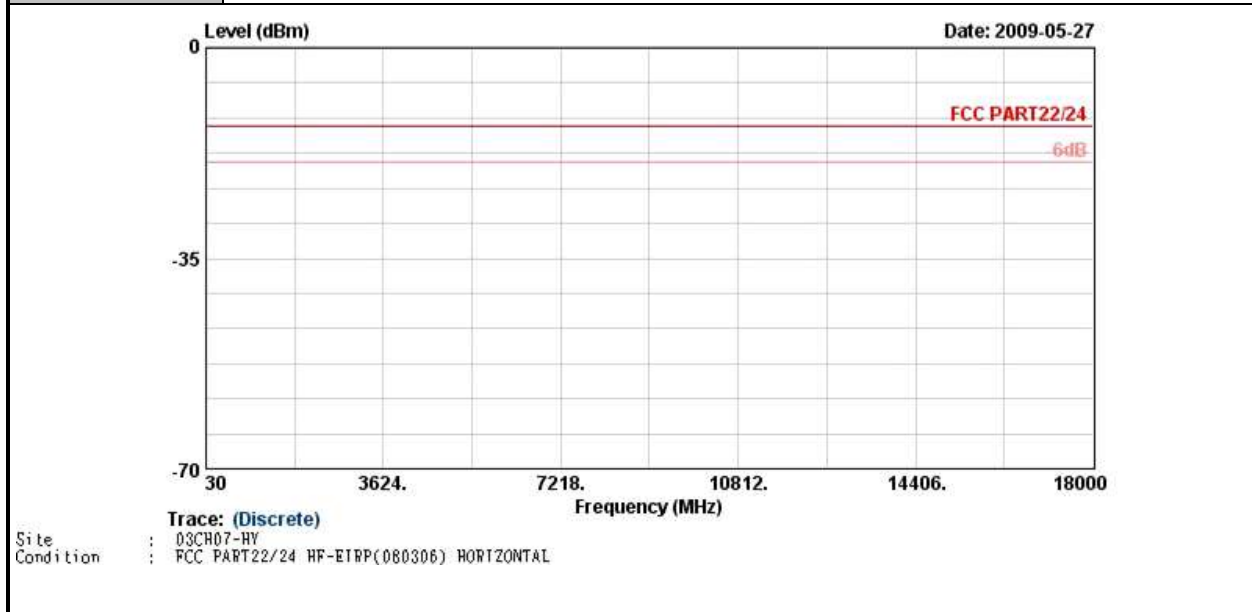
Band :	GSM1900	Temperature :	26.5~27.5°C
Test Mode :	GPRS 8 Link_Channel 661 _EUT with USB Cable	Relative Humidity :	43~44%
Test Engineer :	Nadir Wang	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



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
3760.00	-47.24	-13.00	-34.24	-62.29	-50.27	4.88	7.91	V	Pass

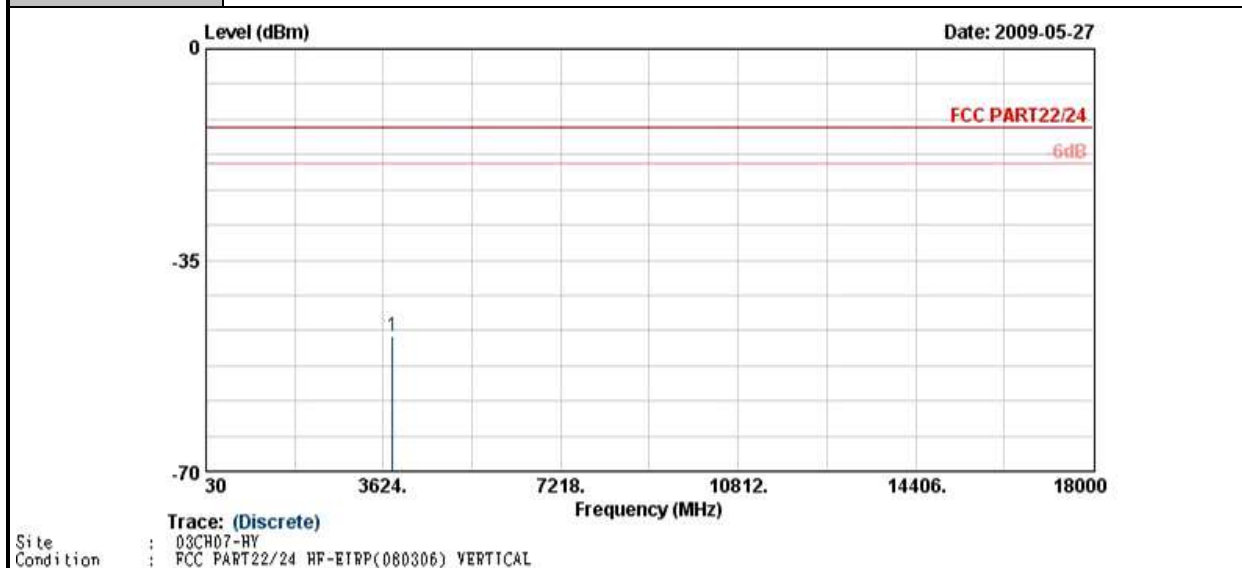


Band :	GSM1900	Temperature :	26.5~27.5°C
Test Mode :	GPRS 8 Link_Channel 810 _EUT with USB Cable	Relative Humidity :	43~44%
Test Engineer :	Nadir Wang	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line and within 1000-18000MHz were found without any signal.		





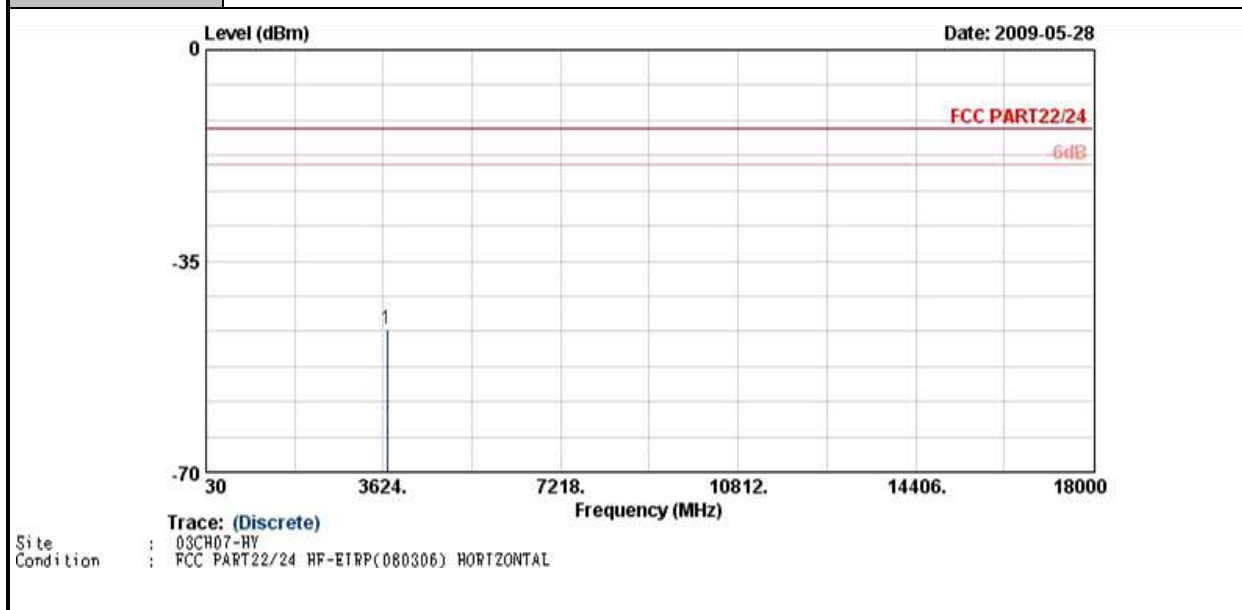
Band :	GSM1900	Temperature :	26.5~27.5°C
Test Mode :	GPRS 8 Link_Channel 810 _EUT with USB Cable	Relative Humidity :	43~44%
Test Engineer :	Nadir Wang	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



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
3812.00	-47.72	-13.00	-34.72	-62.50	-51.72	4.78	8.78	V	Pass



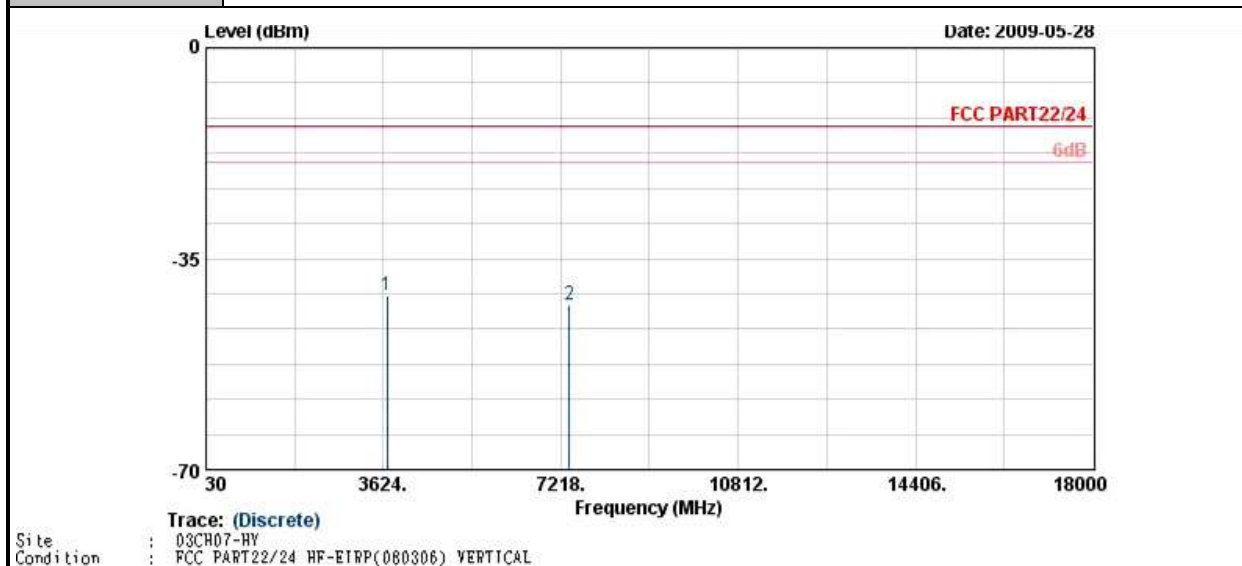
Band :	GSM1900	Temperature :	26.5~27.5°C
Test Mode :	EDGE 8 Link_Channel 512 _EUT with USB Cable	Relative Humidity :	43~44%
Test Engineer :	Nadir Wang	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



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
3696.00	-46.28	-13.00	-33.28	-60.93	-50.40	4.52	8.64	H	Pass



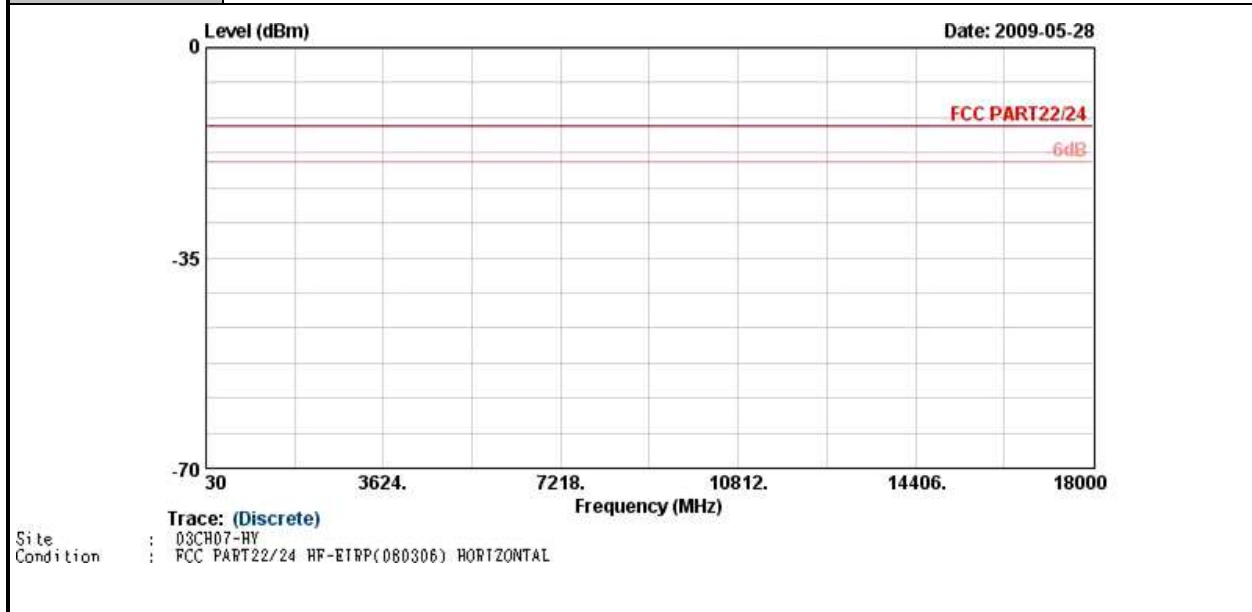
Band :	GSM1900	Temperature :	26.5~27.5°C
Test Mode :	EDGE 8 Link_Channel 512 _EUT with USB Cable	Relative Humidity :	43~44%
Test Engineer :	Nadir Wang	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



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
3696.00	-41.02	-13.00	-28.02	-58.38	-45.14	4.52	8.64	V	Pass
7396.00	-42.57	-13.00	-29.57	-65.09	-48.60	6.02	12.05	V	Pass

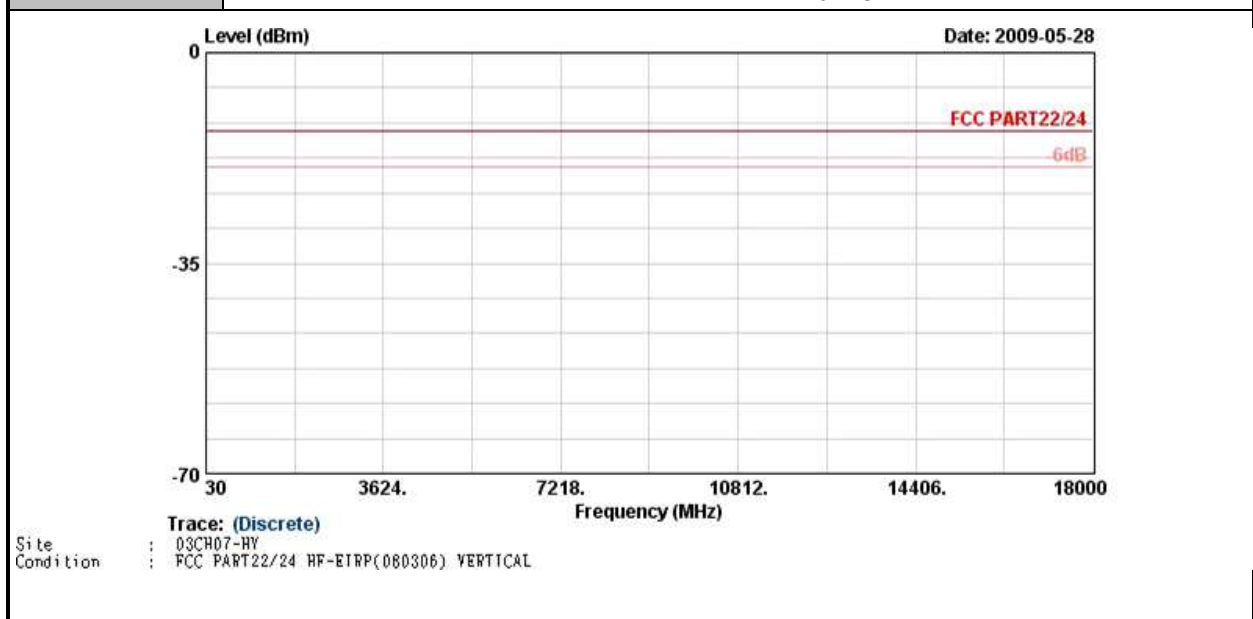


Band :	GSM1900	Temperature :	26.5~27.5°C
Test Mode :	EDGE 8 Link_Channel 661 _EUT with USB Cable	Relative Humidity :	43~44%
Test Engineer :	Nadir Wang	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line and within 1000-18000MHz were found without any signal.		



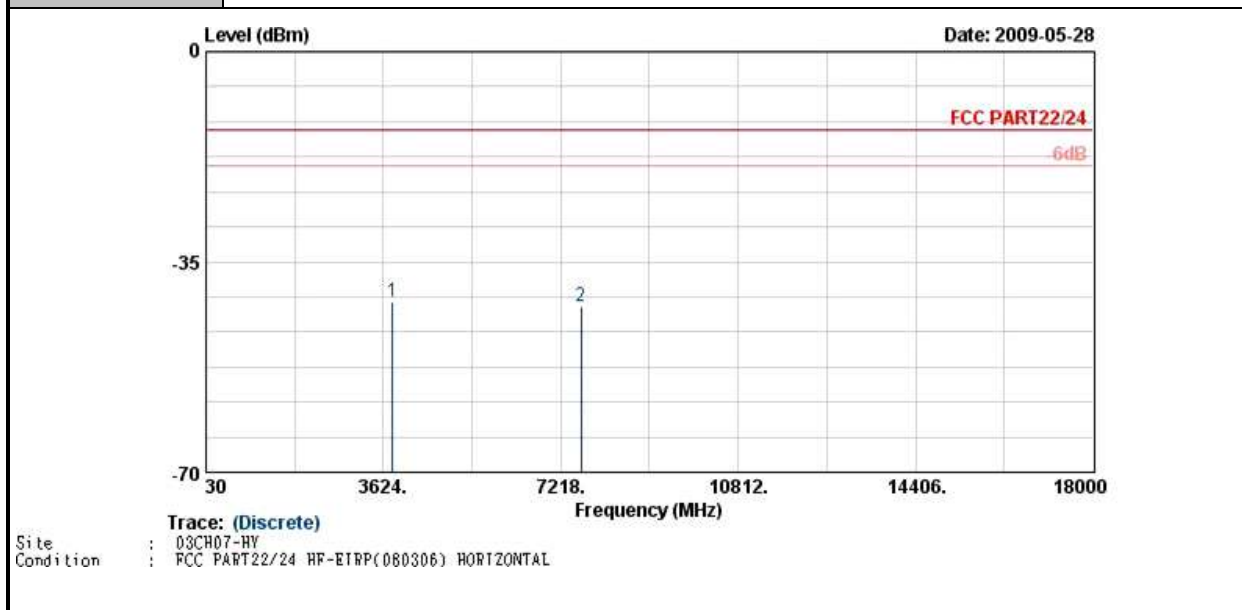


Band :	GSM1900	Temperature :	26.5~27.5°C
Test Mode :	EDGE 8 Link_Channel 661 _EUT with USB Cable	Relative Humidity :	43~44%
Test Engineer :	Nadir Wang	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line and within 1000-18000MHz were found without any signal.		





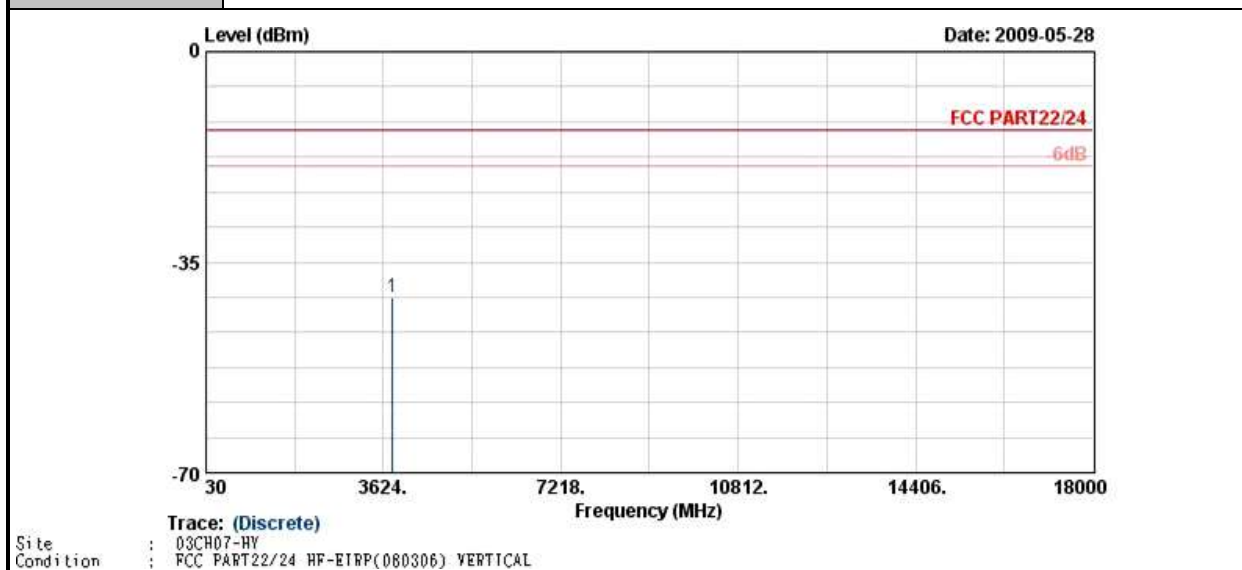
Band :	GSM1900	Temperature :	26.5~27.5°C
Test Mode :	EDGE 8 Link_Channel 810 _EUT with USB Cable	Relative Humidity :	43~44%
Test Engineer :	Nadir Wang	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



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
3812.00	-41.54	-13.00	-28.54	-56.89	-45.54	4.78	8.78	H	Pass
7636.00	-42.51	-13.00	-29.51	-65.15	-48.54	6.28	12.31	H	Pass



Band :	GSM1900	Temperature :	26.5~27.5°C
Test Mode :	EDGE 8 Link_Channel 810 _EUT with USB Cable	Relative Humidity :	43~44%
Test Engineer :	Nadir Wang	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
3812.00	-40.90	-13.00	-27.90	-58.15	-44.90	4.78	8.78	V	Pass

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 $\pm 0.00025\%$ ($\pm 2.5\text{ppm}$) of the center frequency.

3.7.2 Measuring Instruments

See list of measuring instruments of this test report.

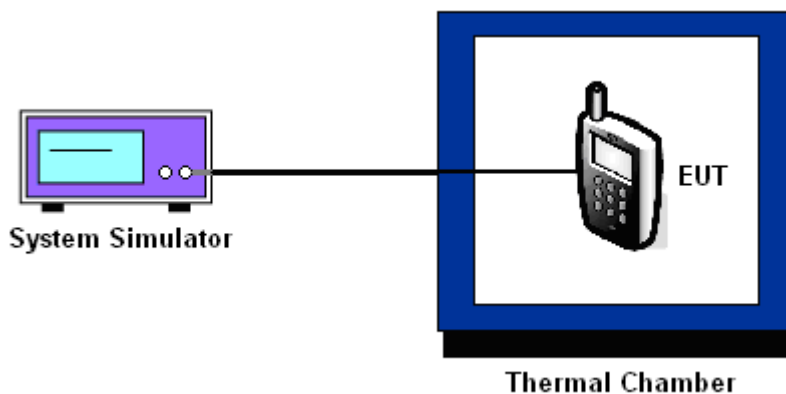
3.7.3 Test Procedures for Temperature Variation

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 $25\pm 5^{\circ}\text{C}$ 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 :	GSM 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	
-15	7	0.01	-6	-0.01	
-10	-7	-0.01	-12	-0.01	
0	9	0.01	-15	-0.02	
10	8	0.01	-18	-0.02	
20	-8	-0.01	-16	-0.02	
30	-9	-0.01	-14	-0.02	
40	10	0.01	-20	-0.02	
50	6	0.01	-10	-0.01	

Note: The EUT only operated at -15°C to 55°C which was declared by manufacturer.

Band :	GSM 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	
-15	23	0.01	19	0.01	
-10	18	0.01	-21	-0.01	
0	22	0.01	15	0.01	
10	17	0.01	16	0.01	
20	-15	-0.01	20	0.01	
30	27	0.01	17	0.01	
40	20	0.01	22	0.01	
50	21	0.01	14	0.01	

Note: The EUT only operated at -15°C to 55°C which was declared by manufacturer.

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	5.0	11	0.01	2.5	PASS
		4.2	9	0.01		
		5.5	8	0.01		
	EDGE 8	5.0	-16	-0.02		
		4.2	-13	-0.02		
		5.5	-17	-0.02		
GSM 1900 CH661	GPRS 8	5.0	17	0.01		
		4.2	15	0.01		
		5.5	19	0.01		
	EDGE 8	5.0	-21	-0.01		
		4.2	-11	-0.01		
		5.5	-31	-0.02		

Note: Normal Voltage = 5.0V.



4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Due Date	Remark
System Simulator	R&S	CMU200	116456	N/A	Jun. 05, 2008	Jun. 04, 2010	Conducted (TH02-HY)
Spectrum Analyzer	R&S	FSP40	100055	9kHz~40GHz	Jun. 23, 2009	Jun. 22, 2010	Conducted (TH02-HY)
Thermal Chamber	TEN BILLION	TTH-D35P	TBN-930701	N/A	Aug. 01, 2008	Jul. 31, 2009	Conducted (TH02-HY)
Bilog Antenna	SCHAFFNER	CBL6111C	2726	30MHz~1GHz	Nov. 20, 2008	Nov. 19, 2009	Radiation (03CH07-HY)
Spectrum Analyzer	R&S	FSP	101067	9kHz~30GHz	Dec. 02, 2008	Dec. 01, 2009	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00075962	1G~18GHz	Aug. 18, 2008	Aug. 17, 2009	Radiation (03CH07-HY)
Pre Amplifier	Agilent	8449B	3008A02362	1G~26.5GHz	Dec. 17, 2008	Dec. 16, 2009	Radiation (03CH07-HY)
Pre Amplifier	COM-POWER	PA-103A	161241	10~1000MHz. 32dB.GAIN	Mar. 27, 2009	Mar. 26, 2010	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00066584	1G~18GHz	Aug. 06, 2008	Aug. 05, 2009	Radiation (03CH07-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz~30 MHz	May 22, 2008	May 21, 2010	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-shaped	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=1)	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 $\Gamma_1 = 0.197$ Antenna VSWR $\Gamma_2 = 0.194$ Uncertainty = $20 \log(1 - \Gamma_1 * \Gamma_2)$	+0.34/-0.35	U-shaped	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				

6 Certification of TAF Accreditation


財團法人全國認證基金會
Taiwan Accreditation Foundation

Certificate No. : L1190-090417

Certificate of Accreditation

This is to certify that

Sporton International Inc.
EMC & Wireless Communications Laboratory
No.52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien,
Taiwan, R.O.C.

is accredited in respect of laboratory

Accreditation Criteria	: ISO/IEC 17025:2005
Accreditation Number	: 1190
Originally Accredited	: December 15, 2003
Effective Period	: January 10, 2007 to January 09, 2010
Accredited Scope	: Testing Field, see described in the Appendix
Specific Accreditation Program	: Accreditation Program for Designated Testing Laboratory for Commodities Inspection Accreditation Program for Telecommunication Equipment Testing Laboratory Accreditation Program for BSMI Mutual Recognition Arrangement with Foreign Authorities


Jay-San Chen
President, Taiwan Accreditation Foundation
Date : April 17, 2009

P1, total 20 pages

The Appendix forms an integral part of this Certificate, which shall be invalid when use without the Appendix



Appendix A. Photographs of EUT

Please refer to Sporton report number EP8D1611-05 as below.