

Partial FCC/IC RF Test Report

APPLICANT : Nokia Corporation
EQUIPMENT : Internet Stick
BRAND NAME : Nokia
MODEL NAME : CS-11-1
TYPE DESIGNATION : RD-16
MARKETING NAME : Nokia Internet Stick CS-11
FCC ID : PYARD-16
IC : 661V-RD16
STANDARD : FCC 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
EMISSION DESIGNATOR : GMSK : 244KGXW
8PSK : 248KG7W

This is a partial report which only contains conducted test and radiated emission test results. The product was received on Mar. 03, 2010 and completely tested on Mar. 15, 2010. 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:



Anderson Chiu / Deputy 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.....	6
1.4 Testing Site.....	8
1.5 Applied Standards	8
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	11
3 TEST RESULT	12
3.1 Conducted Output Power Measurement.....	12
3.2 Occupied Bandwidth Measurement	14
3.3 Band Edge Measurement.....	23
3.4 Conducted Emission Measurement	41
3.5 Field Strength of Spurious Radiation Measurement	72
3.6 Frequency Stability Measurement.....	102
4 LIST OF MEASURING EQUIPMENT	105
5 UNCERTAINTY OF EVALUATION	106
6 CERTIFICATION OF TAF ACCREDITATION	107
APPENDIX A. PHOTOGRAPHS OF EUT	



REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG030309-02B	Rev. 01	Initial issue of report	Dec. 21, 2010
FG030309-02B	Rev. 02	Add information of test sample	Dec. 28, 2010

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	§2.1049 §22.917(a) §24.238(a)	N/A	Occupied Bandwidth	N/A	PASS	-
3.3	§2.1051 §22.917(a) §24.238(a)	RSS-132 (4.5.1) RSS-133 (6.5.1)	Band Edge Measurement	$< 43 + 10\log_{10}(P[\text{Watts}])$	PASS	-
3.4	§2.1051 §22.917(a) §24.238(a)	RSS-132 (4.5.1) RSS-133 (6.5.1)	Conducted Emission	$< 43 + 10\log_{10}(P[\text{Watts}])$	PASS	-
3.5	§2.1053 §22.917(a) §24.238(a)	RSS-132 (4.5.1) RSS-133 (6.5.1)	Field Strength of Spurious Radiation	$< 43 + 10\log_{10}(P[\text{Watts}])$	PASS	Under limit 22.69 dB at 12951.4 MHz
3.6	§2.1055 §22.355 §24.235	RSS-132(4.3) RSS-133(6.3)	Frequency Stability for Temperature & Voltage	$< 2.5 \text{ ppm}$	PASS	-

Remark: The test results of PYARD-15 are re-used for certification of the PYARD-16. The table above indicates the results, which will be re-used.



1 General Description

1.1 Applicant

Nokia Corporation
Joensuunkatu 7
24100 Salo
FINLAND

1.2 Manufacturer

Nokia Corporation
Joensuunkatu 7
24100 Salo
FINLAND

1.3 Feature of Equipment

Product Feature & Specification	
Equipment	Internet Stick
Brand Name	Nokia
Model Name	CS-11-1
Type Designation	RD-16
Marketing Name	Nokia Internet Stick CS-11
FCC ID	PYARD-16
IC	661V-RD16
IMEI Code	004402130193968
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 : 29.51 dBm GSM1900 : 26.04 dBm
Antenna Type	Fixed Internal Antenna
HW Version	1.0
SW Version	2.16
ME Version	2.0
Type of Modulation	GSM / GPRS : GMSK EDGE : 8PSK
Type of Emission	GMSK : 244KGXW 8PSK : 248KG7W
EUT Stage	Production Unit

Remark: This test report recorded only product characteristics and test results of PCS Licensed Transmitter (PCB).

<Test Sample>

Product Feature & Specification	
Equipment	Internet Stick
Brand Name	Nokia
Model Name	CS-11
Type Designation	RD-15
Marketing Name	Nokia Internet Stick CS-11
FCC ID	PYARD-15
IC	661V-RD15
IMEI Code	004402130193968
Tx Frequency	GSM850 : 824 MHz ~ 849 MHz GSM1900 : 1850 MHz ~ 1910 MHz WCDMA Band V : 824 MHz ~ 849 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 II : 1930 MHz ~ 1990 MHz
Maximum Output Power to Antenna	GSM850 : 29.51 dBm GSM1900 : 26.04 dBm WCDMA Band V : 21.12 dBm WCDMA Band II : 21.11 dBm
Antenna Type	Fixed Internal Antenna
HW Version	1.8
SW Version	2.11
ME Version	2.0
Type of Modulation	GSM / GPRS : GMSK EDGE : 8PSK WCDMA : QPSK HSDPA : QPSK / 16QAM HSUPA : BPSK
Type of Emission	GMSK : 244KGXW 8PSK : 248KG7W QPSK : 4M16F9W
EUT Stage	Production Unit

List of Accessory:

Specification of Accessory		
USB Cable	Brand Name	Nokia
	Model Name	CA-175D
	Signal Line Type	0.22 meter shielded cable without ferrite core
	HW Version	1.0
	Mechanical Version	1.0

Remark:

1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.
2. 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:

- ♦ Preliminary Guidance for Receiving Applications for Certification of 3G Device. May 9, 2006.
- ♦ FCC 47 CFR Part 2, 22(H), 24(E)
- ♦ 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. 30 MHz to 19000 MHz for GSM1900.

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

Note: The maximum power levels are GPRS multi-slot class 8 mode for GMSK link, and EDGE multi-slot class 8 mode for 8PSK link, only these modes were used for all tests.

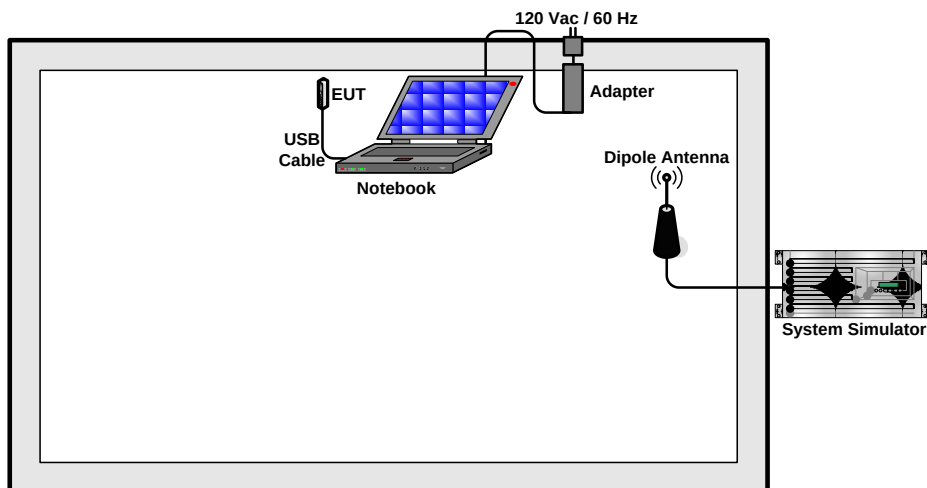
The conducted power tables are as follows:

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	29.43	29.43	29.51	26.00	25.94	26.04
GPRS 10	26.43	26.44	26.48	23.55	23.44	23.61
GPRS 12	23.83	23.86	23.82	20.70	20.66	20.77
EGPRS 8	26.60	26.56	26.65	25.58	25.56	25.64
EGPRS 10	24.38	24.42	24.40	23.03	23.04	23.04
EGPRS 12	21.26	21.30	21.30	19.93	19.81	19.81

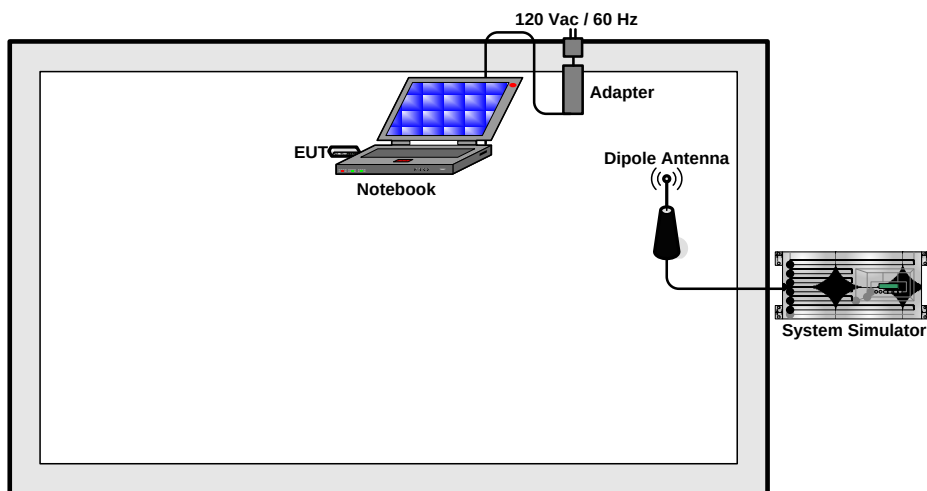
(*Unit: dBm)

2.2 Connection Diagram of Test System

<EUT Link with USB Cable>



<EUT Link 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.

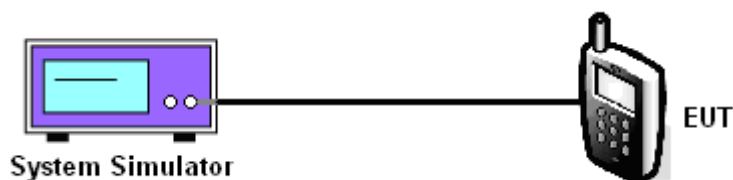
3.1.2 Measuring Instruments

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)	Conducted Power (Watts)
GSM850 (GPRS 8)	128 (Low)	824.2	29.43	0.88
	189 (Mid)	836.4	29.43	0.88
	251 (High)	848.8	29.51	0.89
GSM850 (EDGE 8)	128 (Low)	824.2	26.60	0.46
	189 (Mid)	836.4	26.56	0.45
	251 (High)	848.8	26.65	0.46

PCS Band				
Modes	Channel	Frequency (MHz)	Conducted Power (dBm)	Conducted Power (Watts)
GSM1900 (GPRS 8)	512 (Low)	1850.2	26.00	0.40
	661 (Mid)	1880.0	25.94	0.39
	810 (High)	1909.8	26.04	0.40
GSM1900 (EDGE 8)	512 (Low)	1850.2	25.58	0.36
	661 (Mid)	1880.0	25.56	0.36
	810 (High)	1909.8	25.64	0.37

3.2 Occupied Bandwidth Measurement

3.2.1 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.

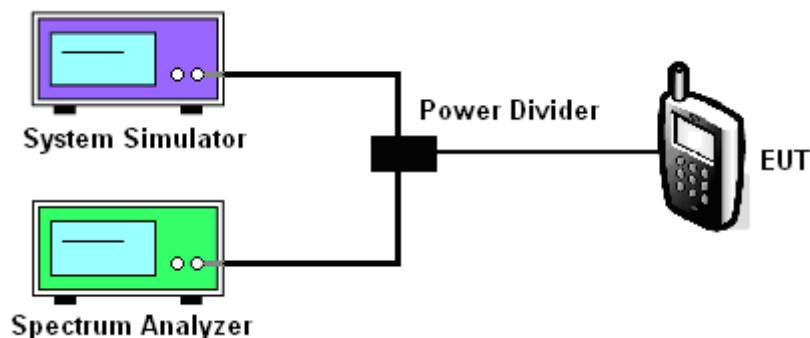
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

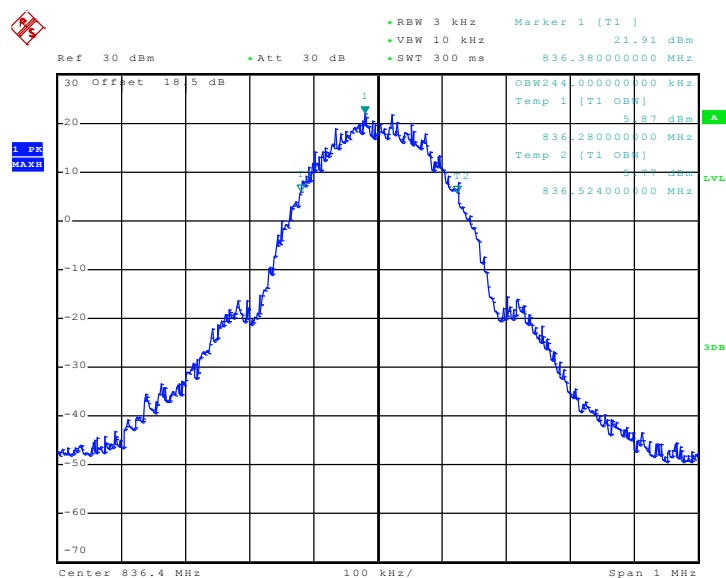
1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
2. The 99% and 26 dB occupied bandwidth (BW) of the middle channel for the highest RF powers were measured.
3. The RBW was replaced by 10 kHz, due to the spectrum analyzer IF-Filter including an excess of the limit. A worst case correction factor of $10 \log (1\% \text{ BW/measurement RBW})$ was implemented.

3.2.4 Test Setup

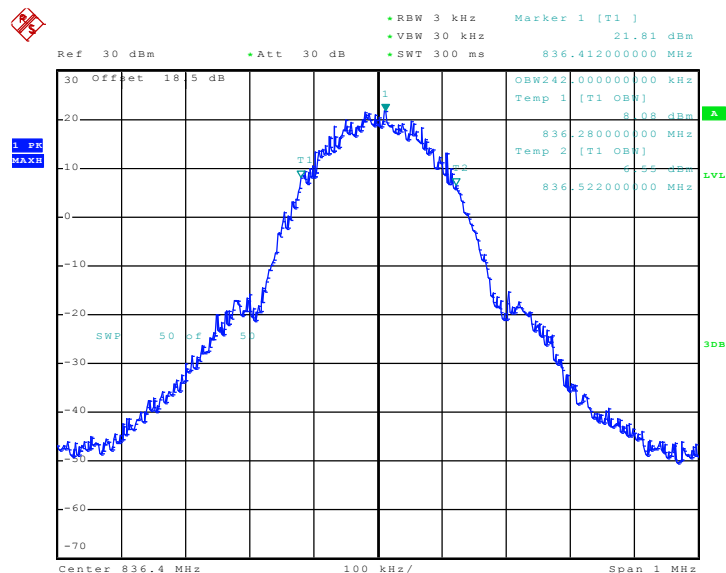


3.2.5 Test Result (Plots) of Occupied Bandwidth

Band :	GSM 850	Power Stage :	High
Test Mode :	GPRS 8 Link	Channel :	CH 189

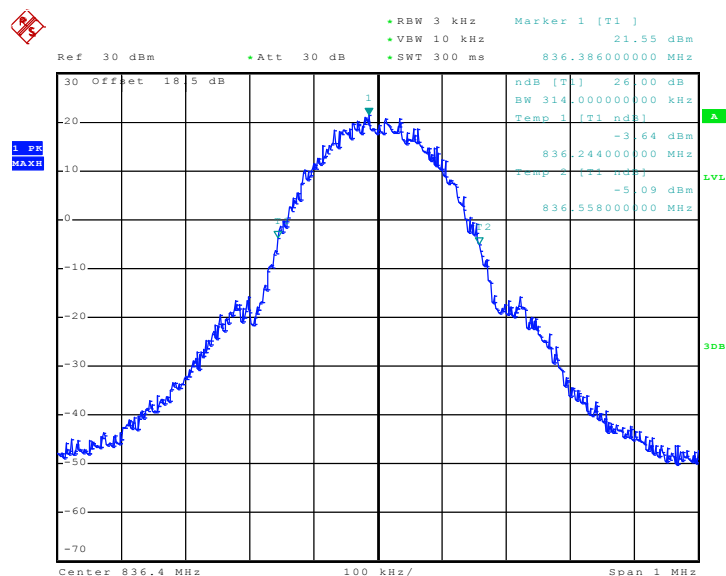
99% Occupied Bandwidth Plot on Channel 189


Date: 13.MAR.2010 04:47:58



Date: 13.MAR.2010 04:50:07

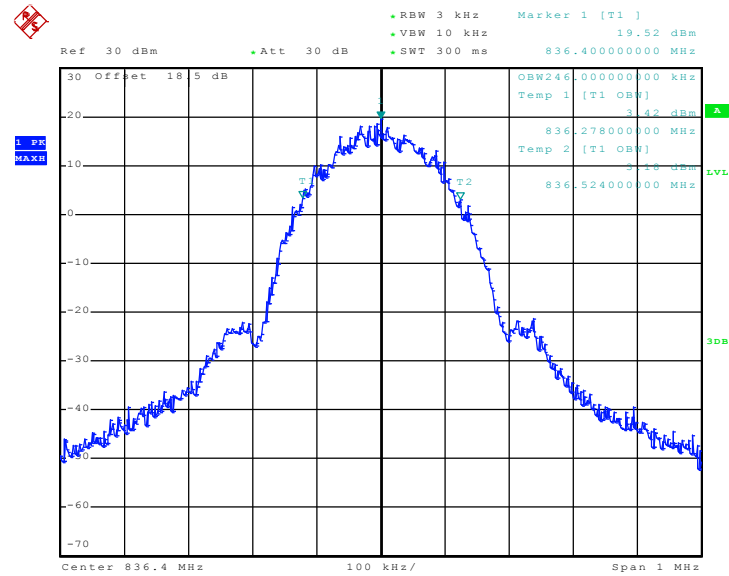
26dB Bandwidth Plot



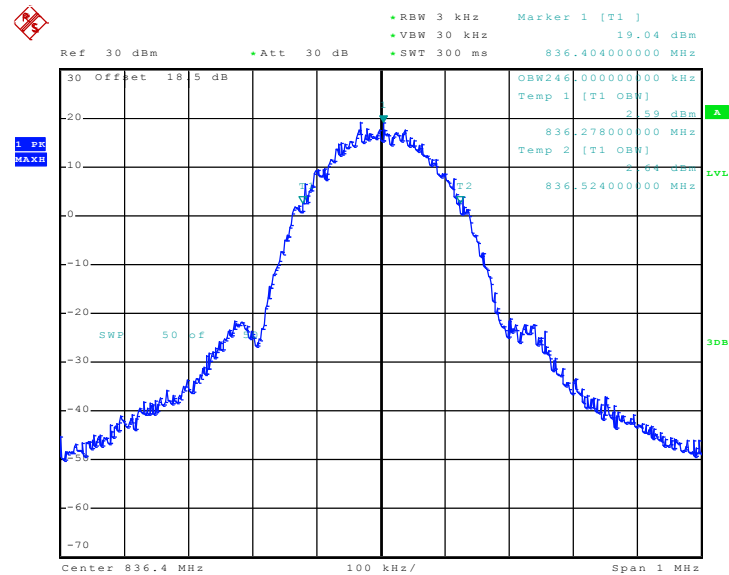
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Band :	GSM 850	Power Stage :	High
Test Mode :	EDGE 8 Link	Channel :	CH 189

99% Occupied Bandwidth Plot on

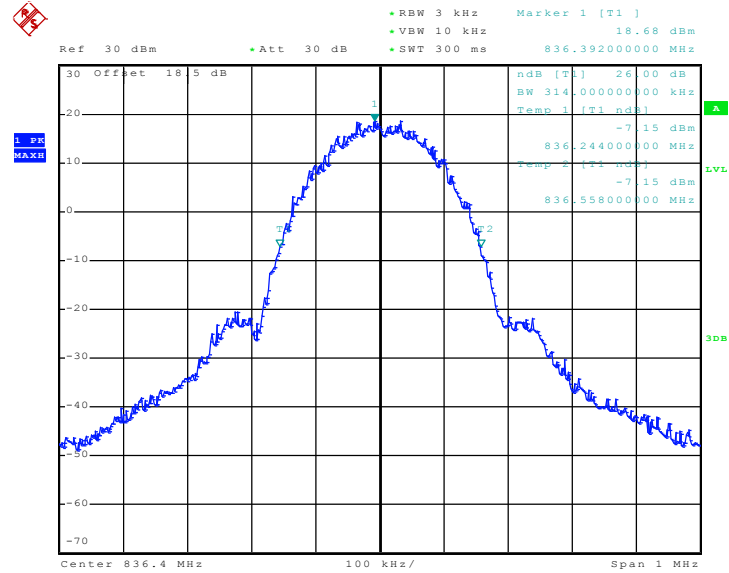
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Date: 13.MAR.2010 02:02:46



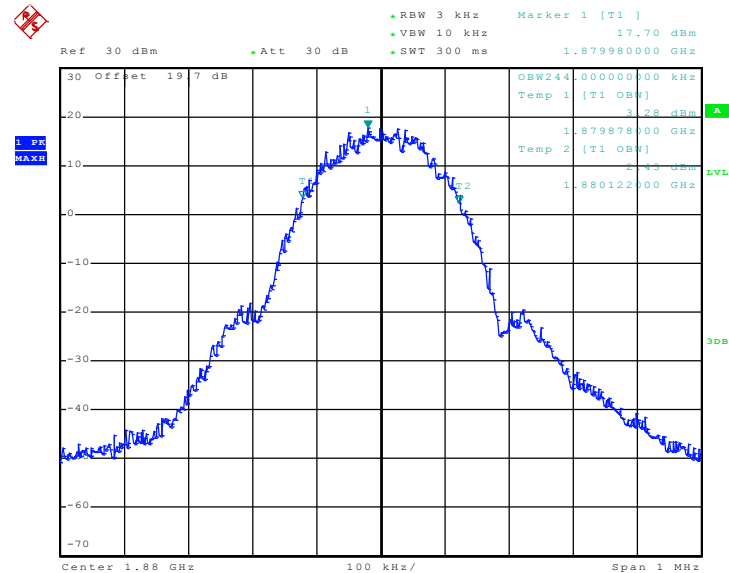
26dB Bandwidth Plot



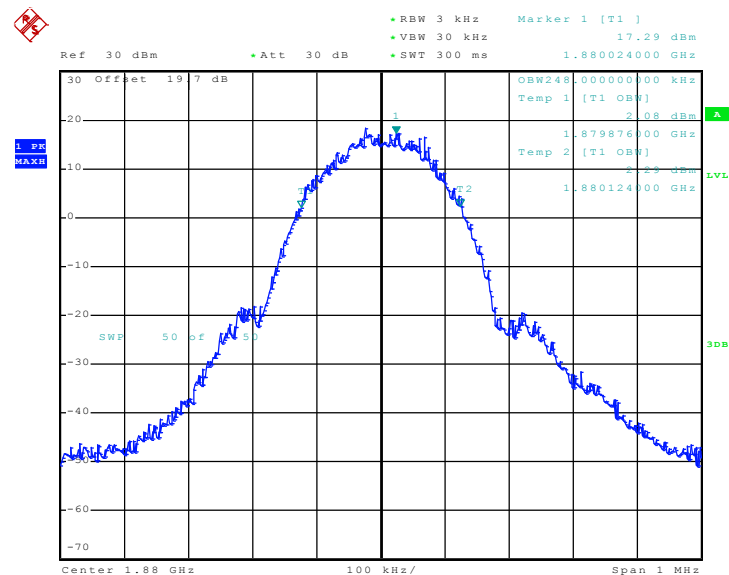
Date: 13.MAR.2010 01:54:53



Band :	GSM 1900	Power Stage :	High
Test Mode :	GPRS 8 Link	Channel :	CH 661

99% Occupied Bandwidth Plot

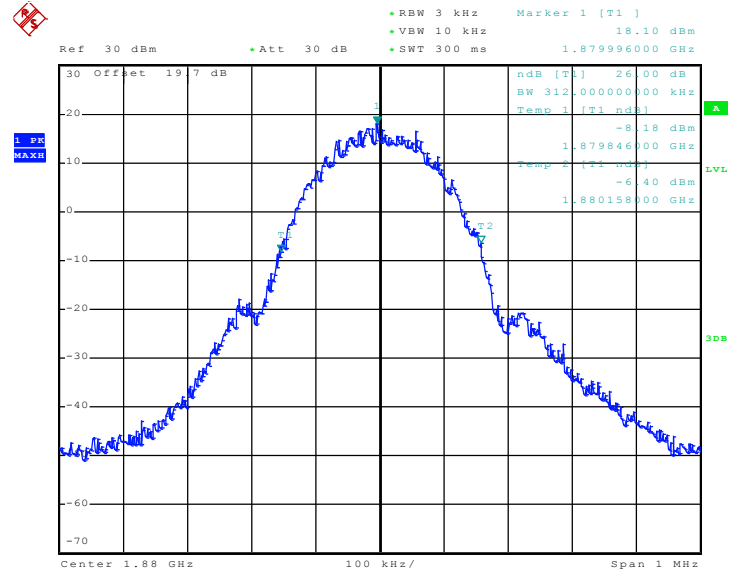
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Date: 13.MAR.2010 05:14:16



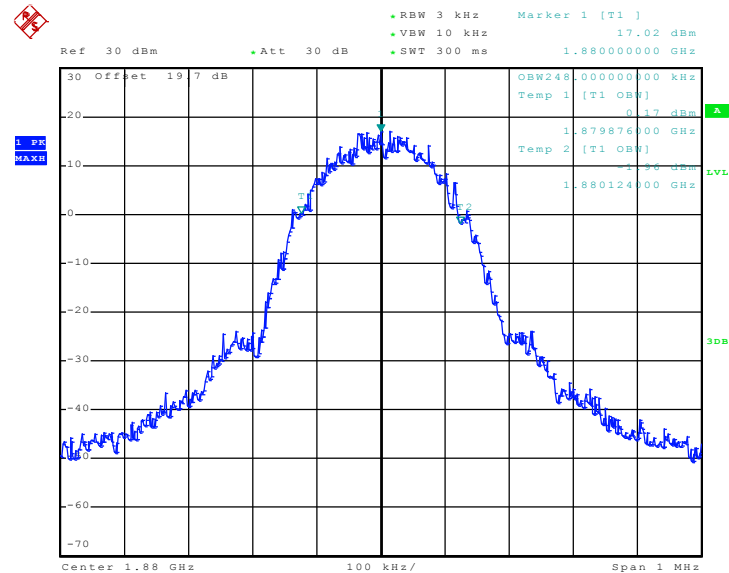
26dB Bandwidth Plot



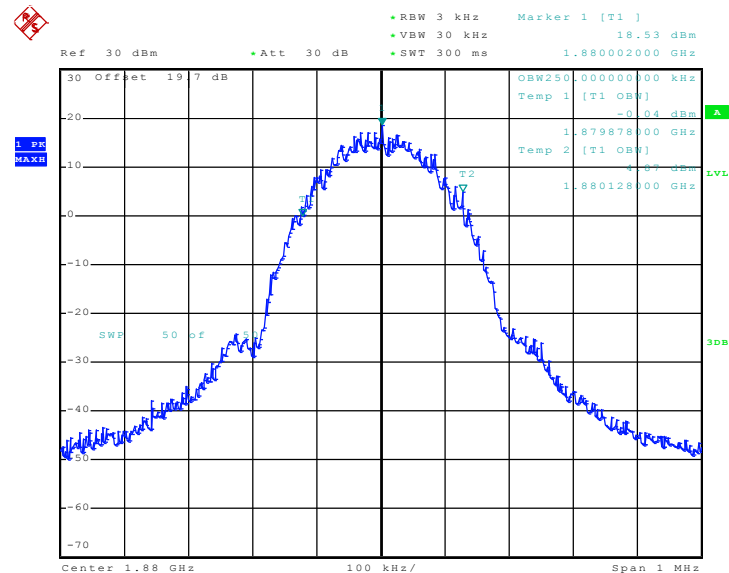
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Band :	GSM 1900	Power Stage :	High
Test Mode :	EDGE 8 Link	Channel :	CH 661

99% Occupied Bandwidth Plot

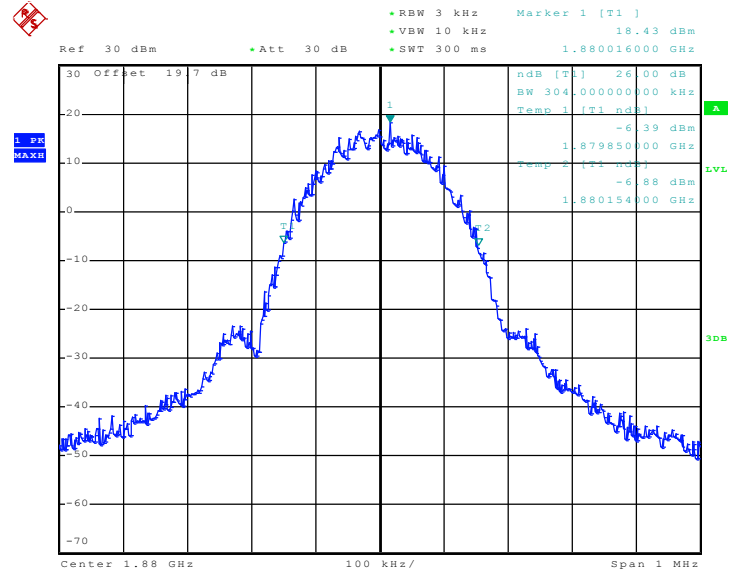
Date: 13.MAR.2010 05:21:43



Date: 13.MAR.2010 05:10:16



26dB Bandwidth Plot



Date: 13.MAR.2010 05:24:26

3.3 Band Edge Measurement

3.3.1 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.

3.3.2 Measuring Instruments

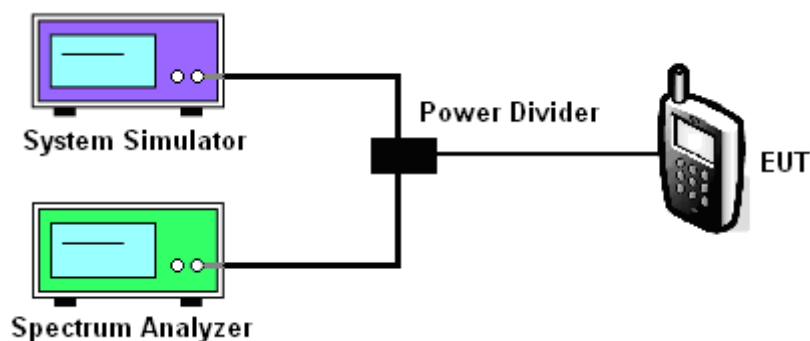
See list of measuring instruments of this test report.

3.3.3 Test Procedures

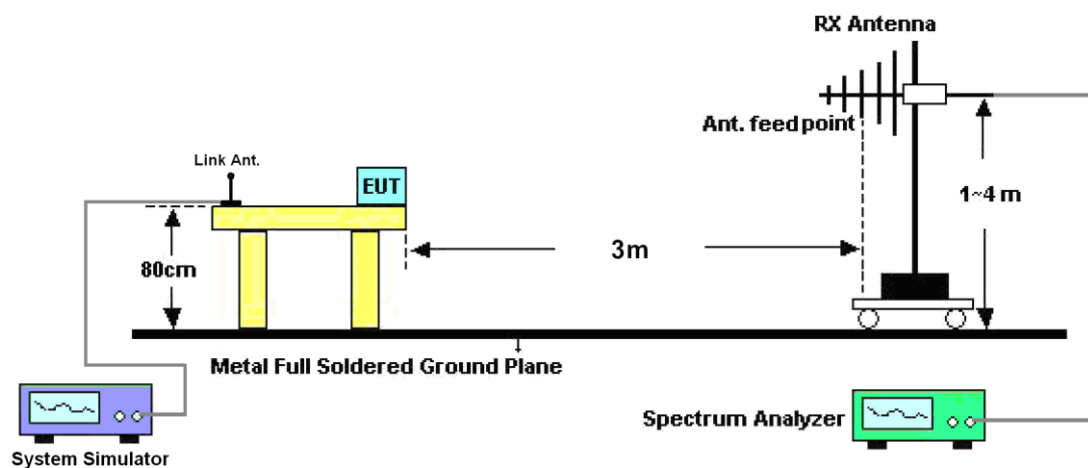
1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
2. The band edges of low and high channels for the highest RF powers were measured. Setting RBW as roughly $BW/100$.

3.3.4 Test Setup

<Conducted Band Edge >



<Radiated Band Edge>

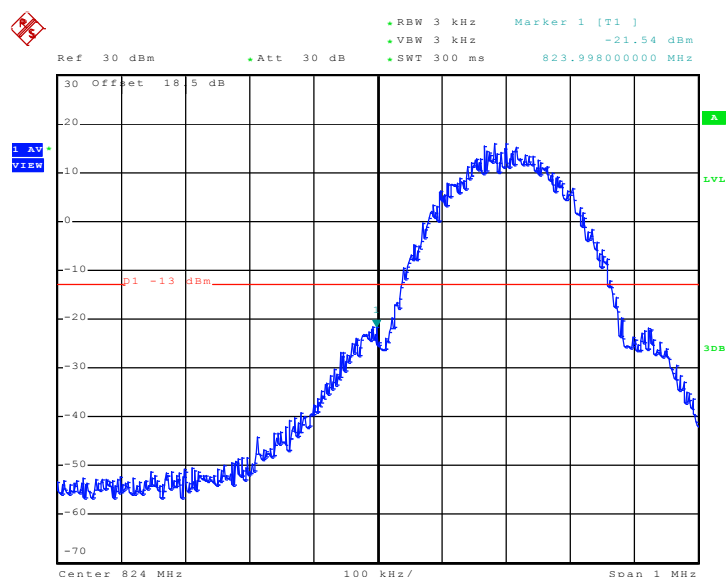




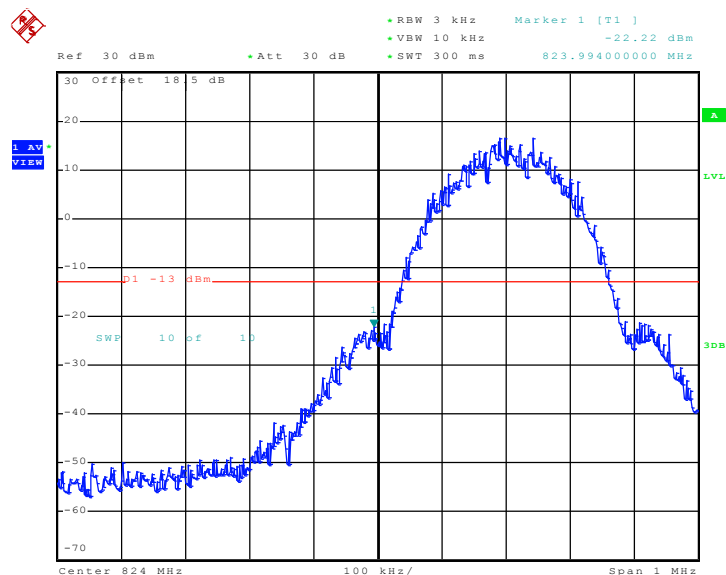
3.3.5 Test Result (Plots) of Conducted Band Edge

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

Lower Band Edge Plot on Channel 128



Date: 13.MAR.2010 04:36:57



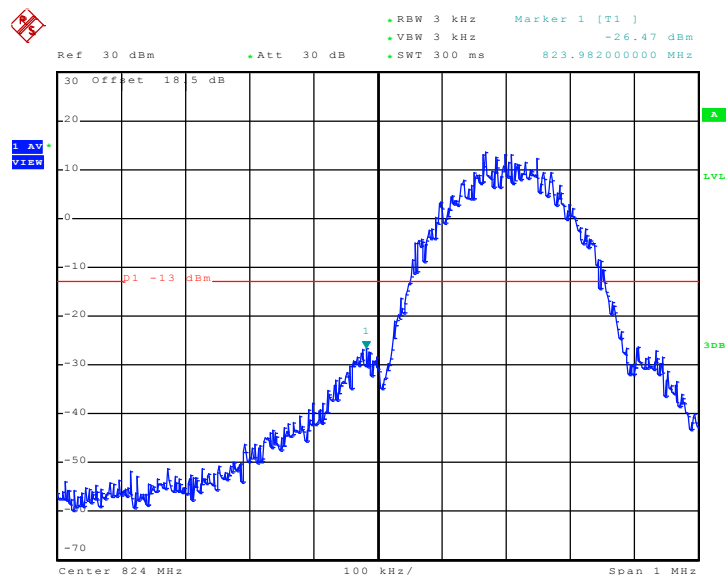
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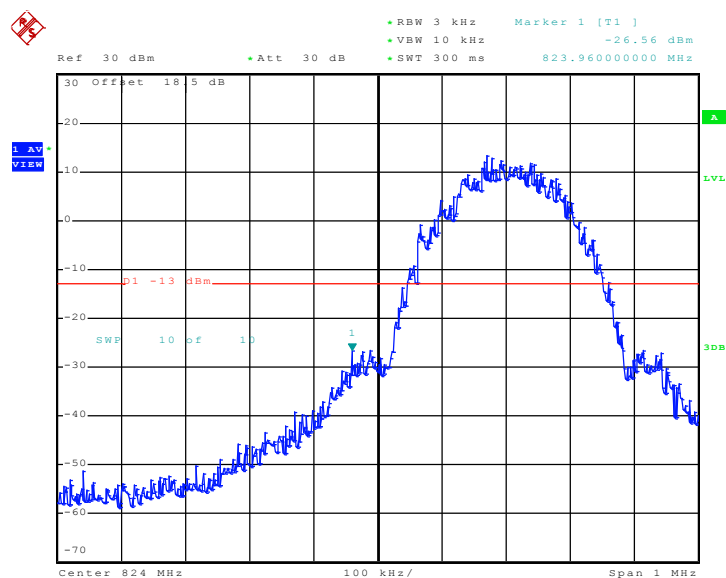


Band :	GSM850	Power Stage :	High
Test Mode :	EDGE 8 Link		

Lower Band Edge Plot on Channel 128



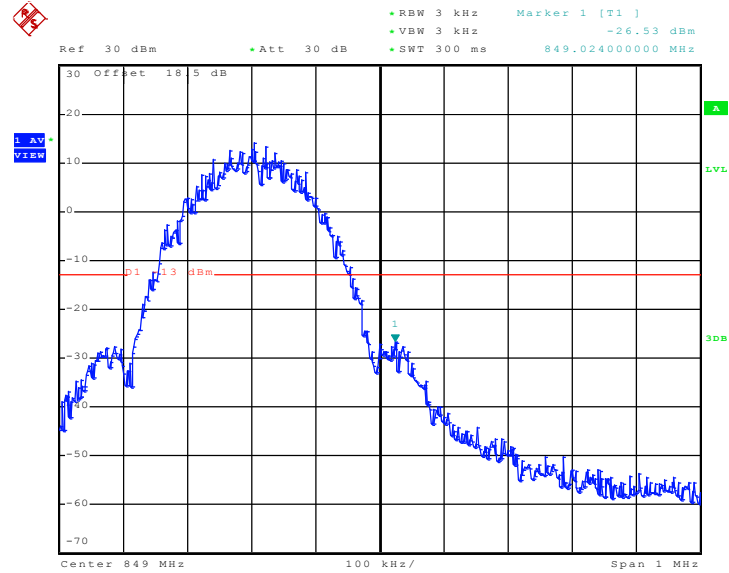
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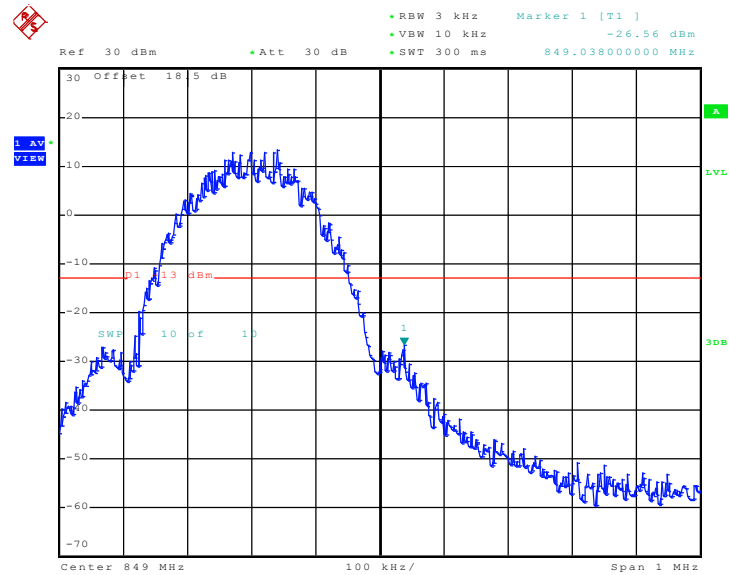
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Higher Band Edge Plot on Channel 251



Date: 13.MAR.2010 03:24:15

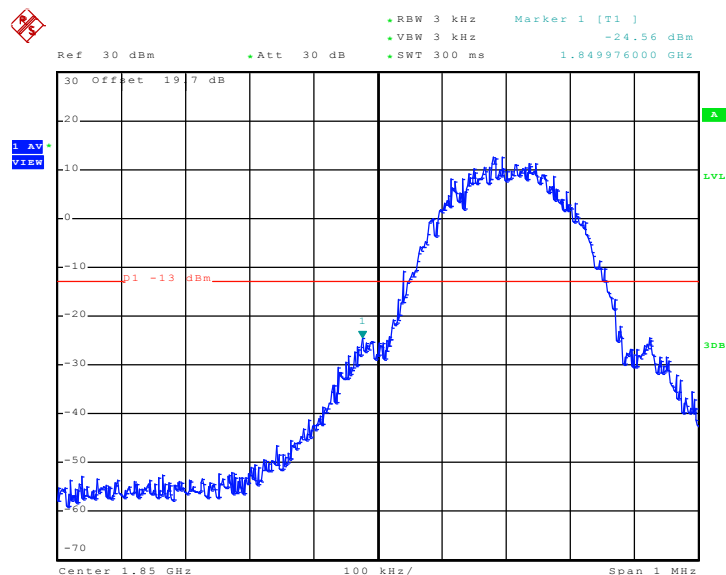


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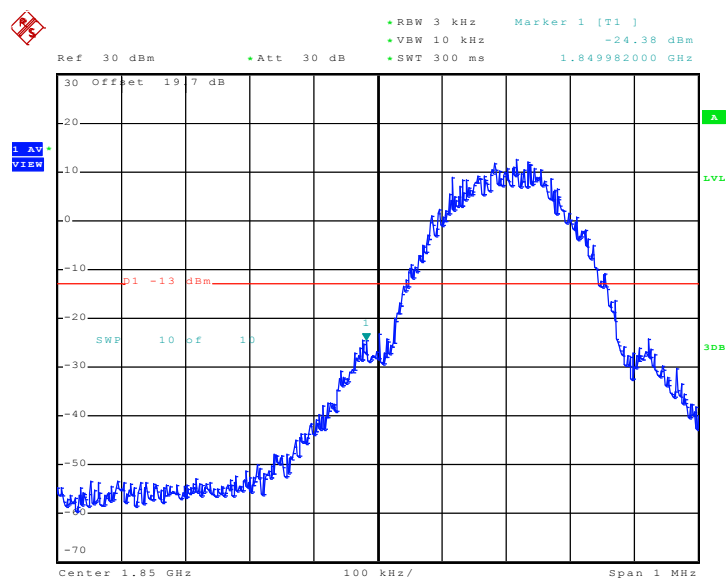


Band :	GSM1900	Power Stage :	High
Test Mode :	GPRS 8 Link		

Lower Band Edge Plot on Channel 512



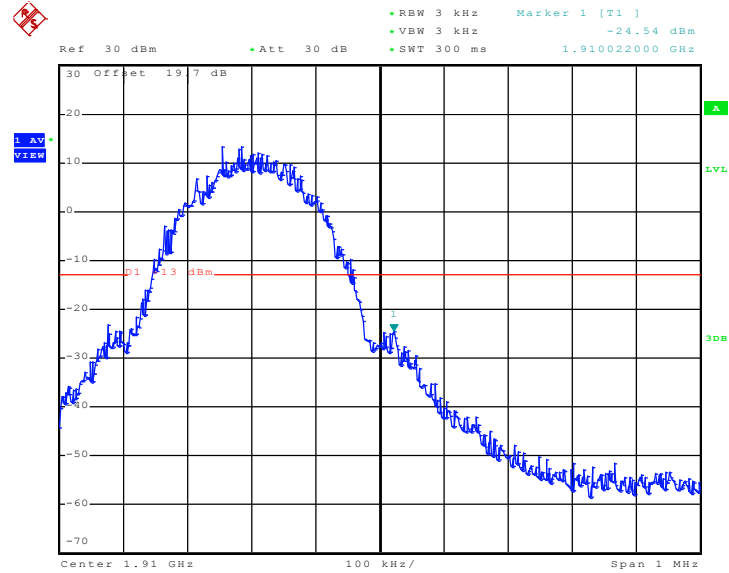
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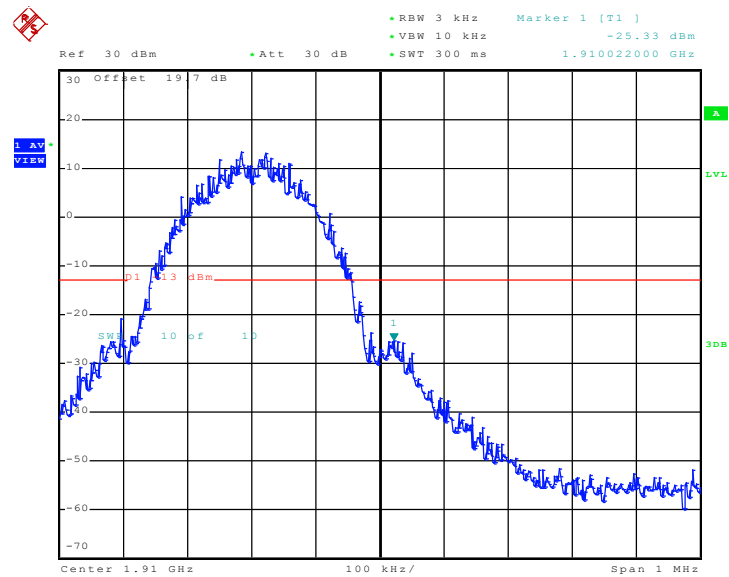
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Higher Band Edge Plot on Channel 810



Date: 13.MAR.2010 05:38:31

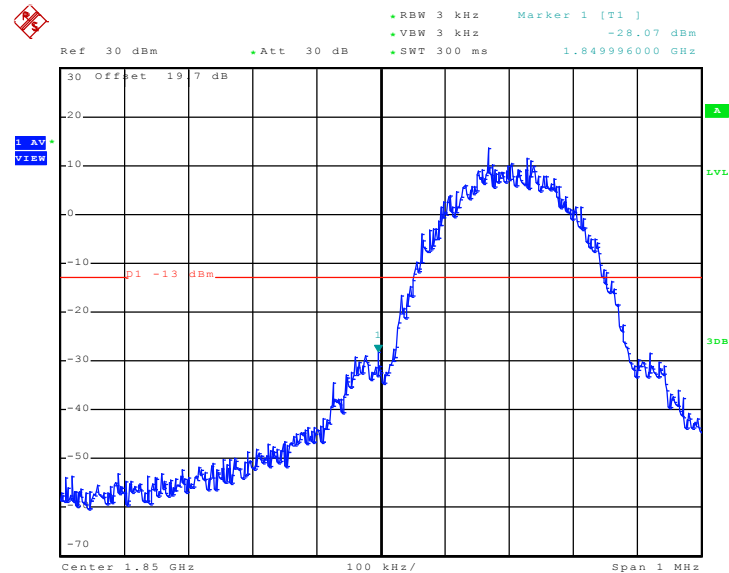


Date: 13.MAR.2010 05:31:34

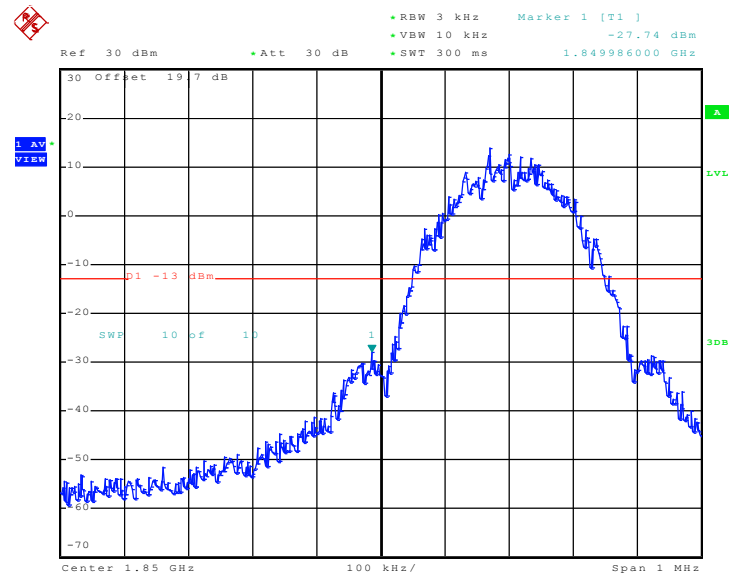


Band :	GSM1900	Power Stage :	High
Test Mode :	EDGE 8 Link		

Lower Band Edge Plot on Channel 512

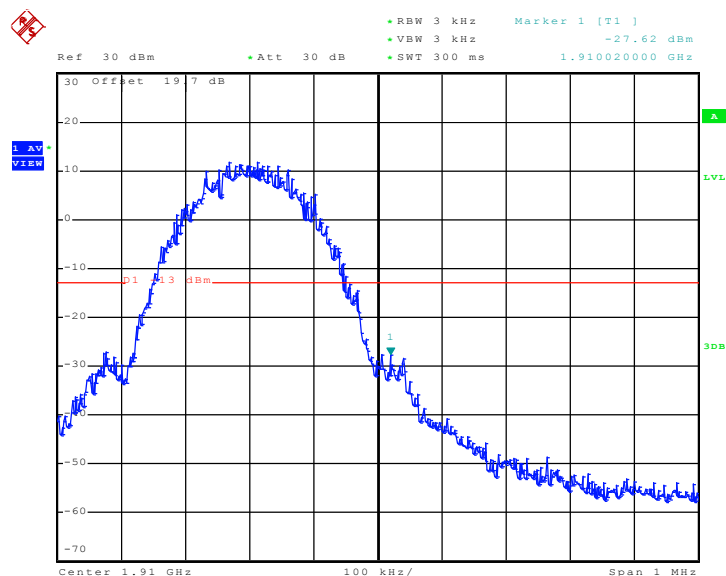


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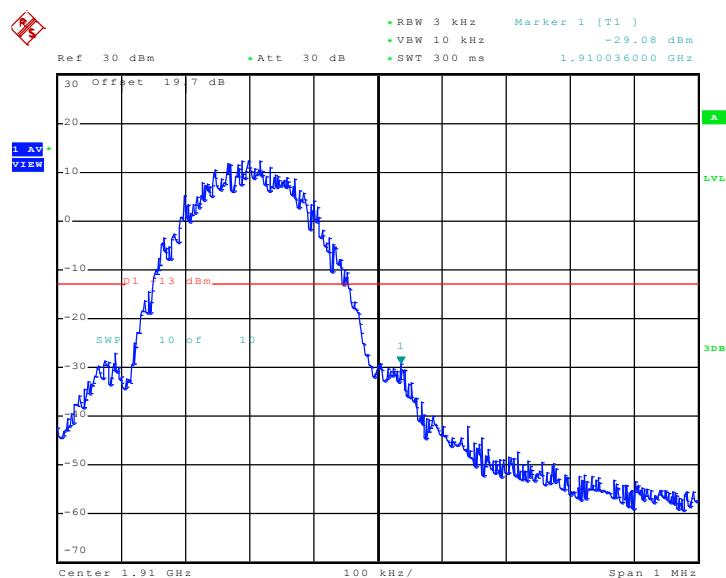


Date: 13.MAR.2010 05:33:32

Higher Band Edge Plot on Channel 810

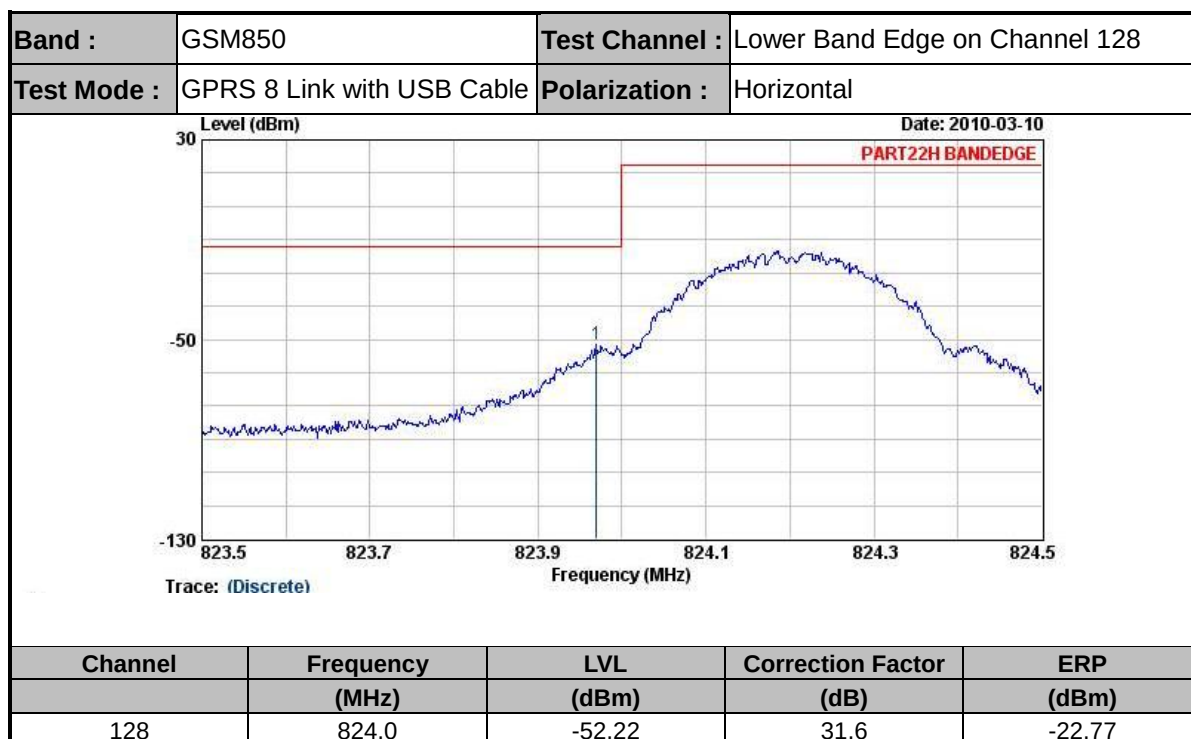


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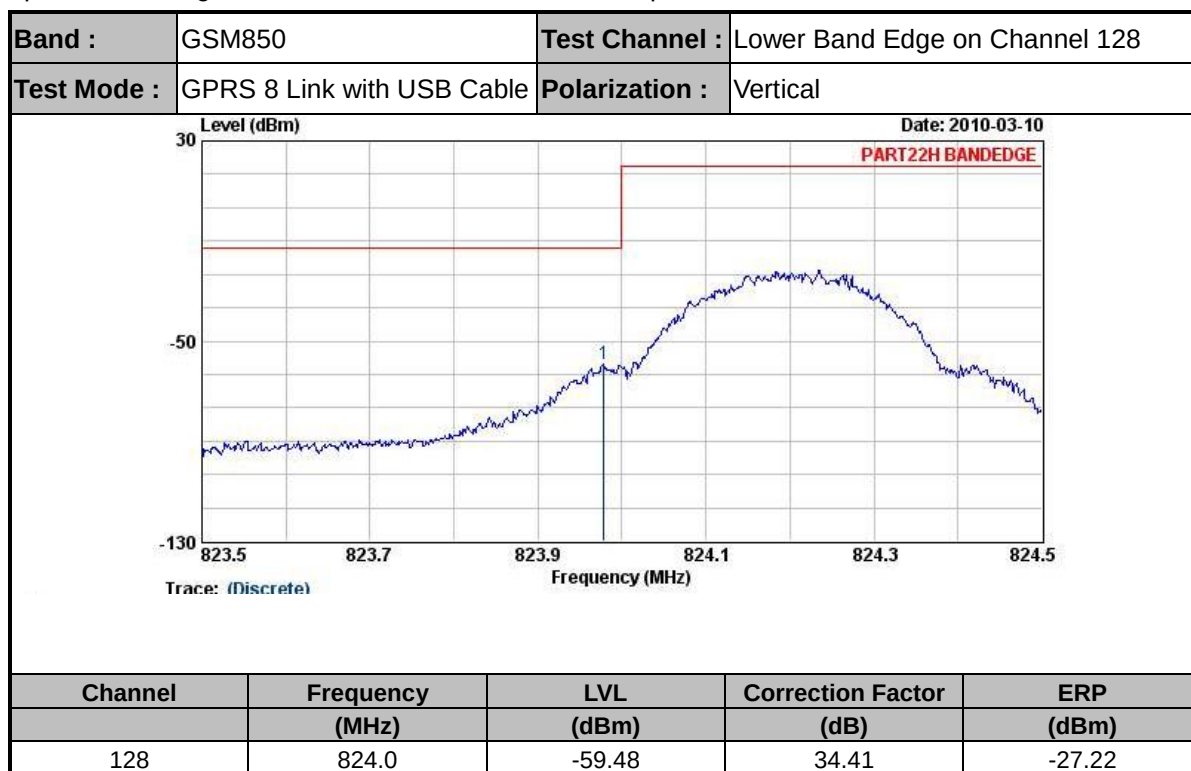


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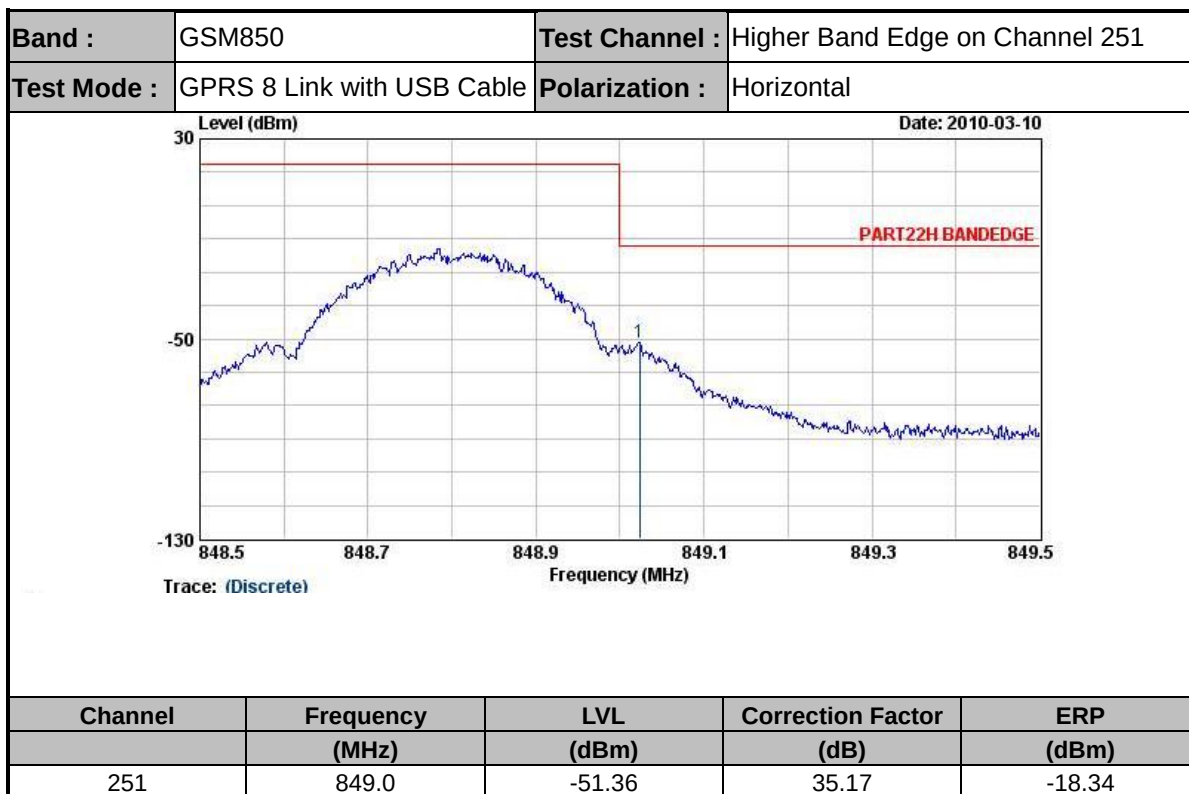
3.3.6 Test Result of Radiated Band Edge



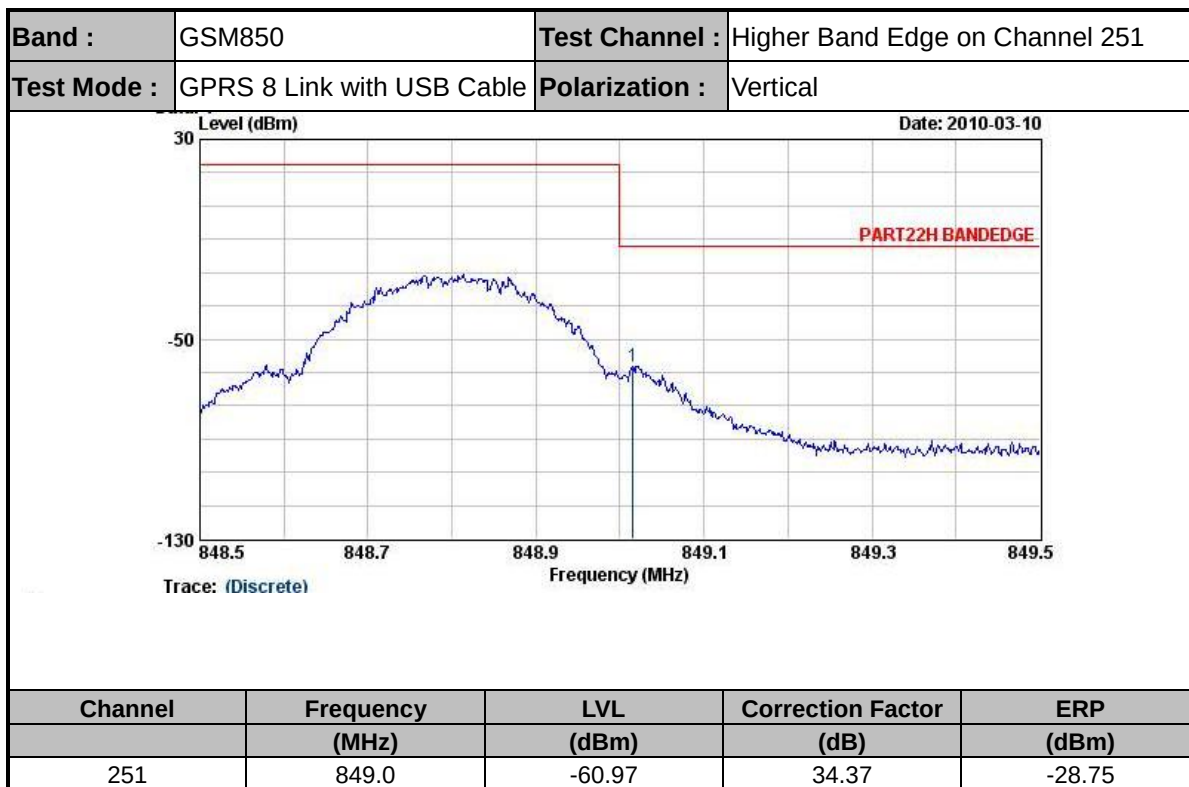
Spectrum Setting : RBW = 3 kHz, VBW = 3 kHz, Sweep = 300 ms



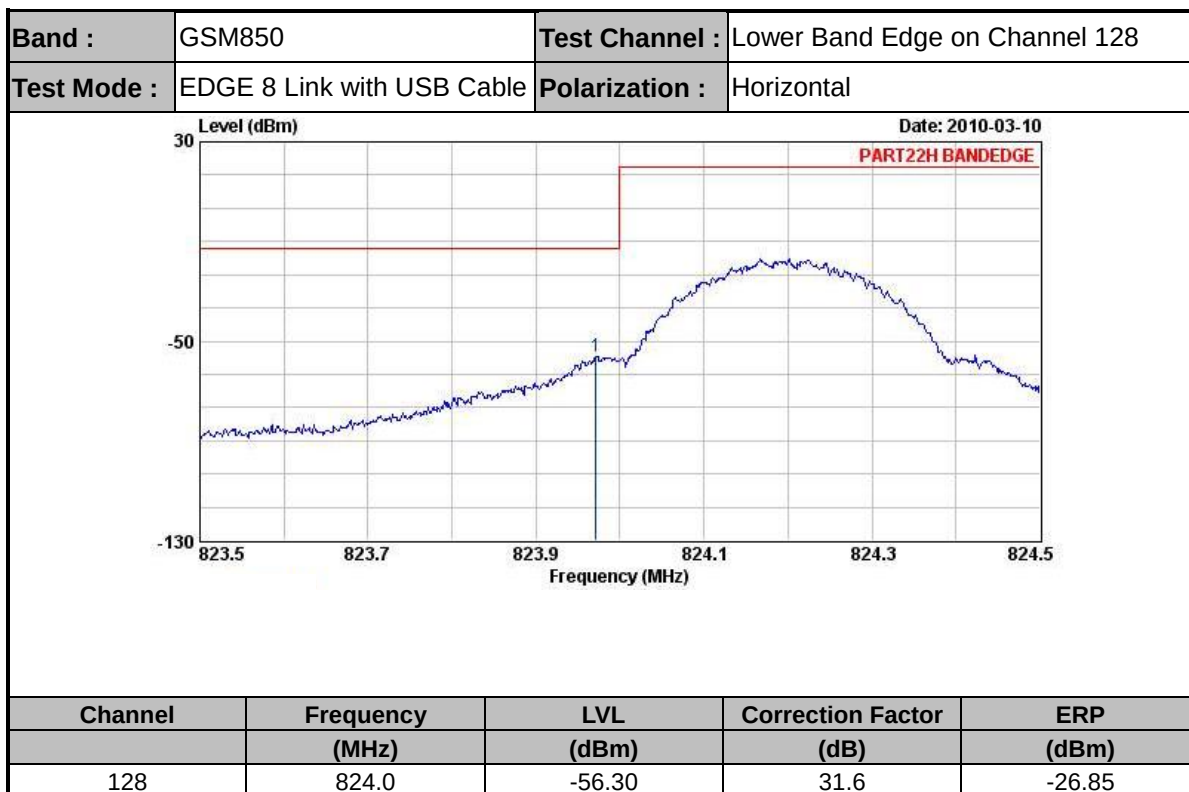
Spectrum Setting : RBW = 3 kHz, VBW = 3 kHz, Sweep = 300 ms



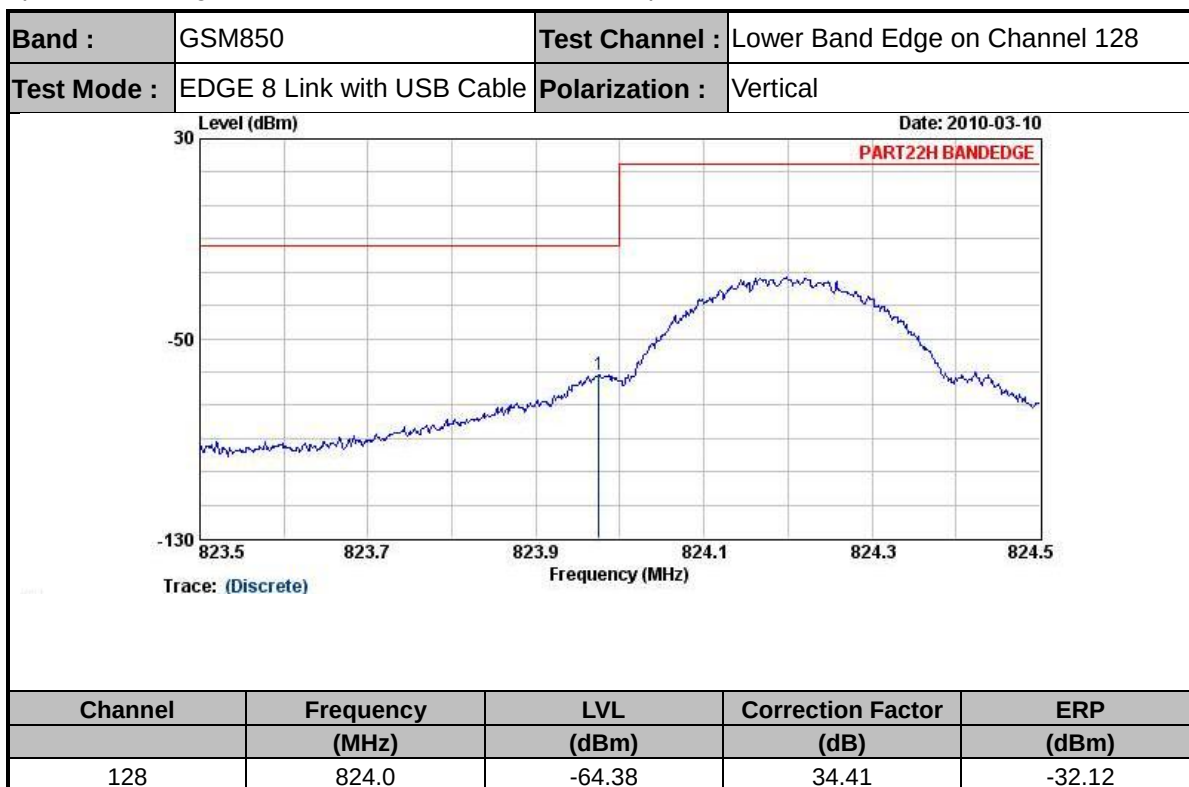
Spectrum Setting : RBW = 3 kHz, VBW = 3 kHz, Sweep = 300 ms



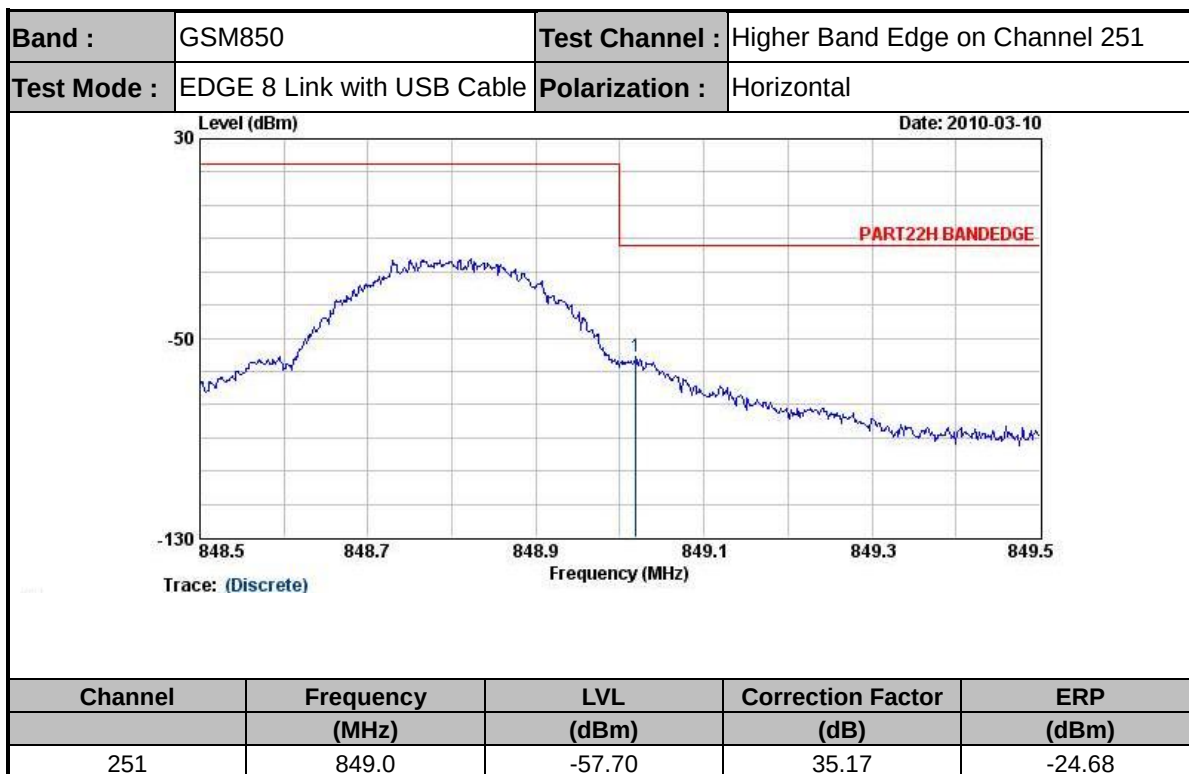
Spectrum Setting : RBW = 3 kHz, VBW = 3 kHz, Sweep = 300 ms



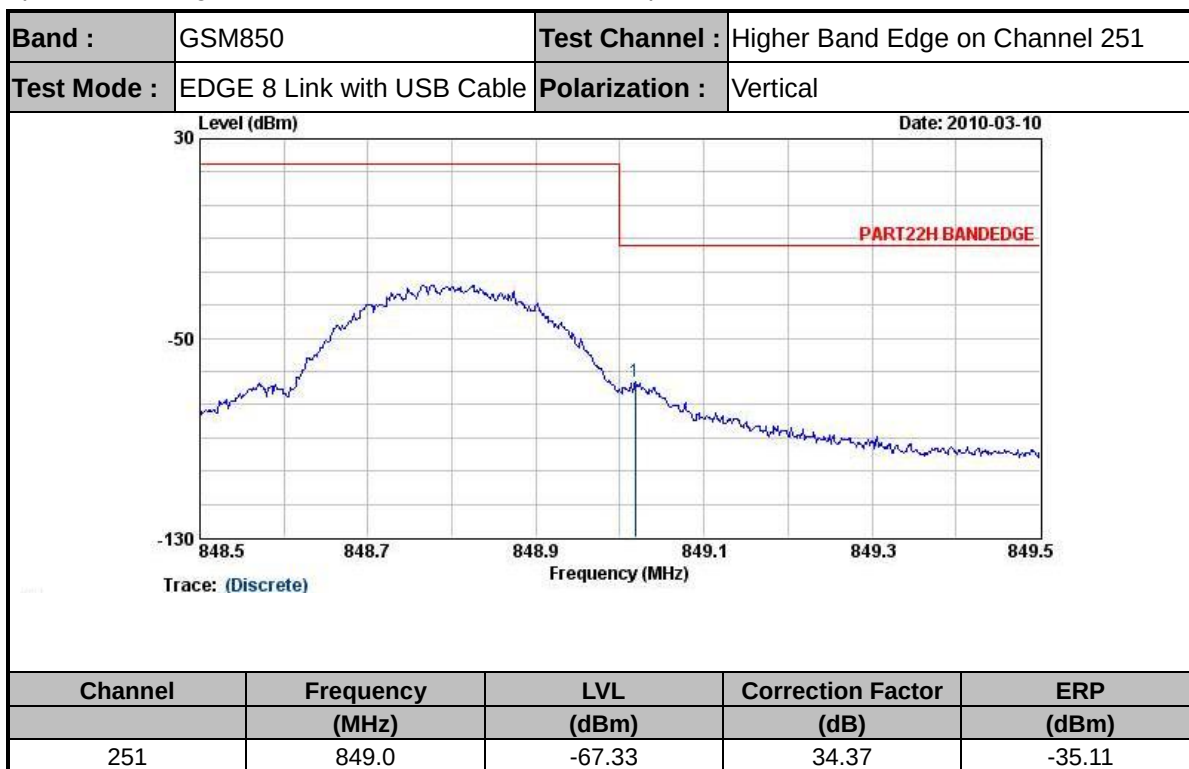
Spectrum Setting : RBW = 3 kHz, VBW = 3 kHz, Sweep = 300 ms



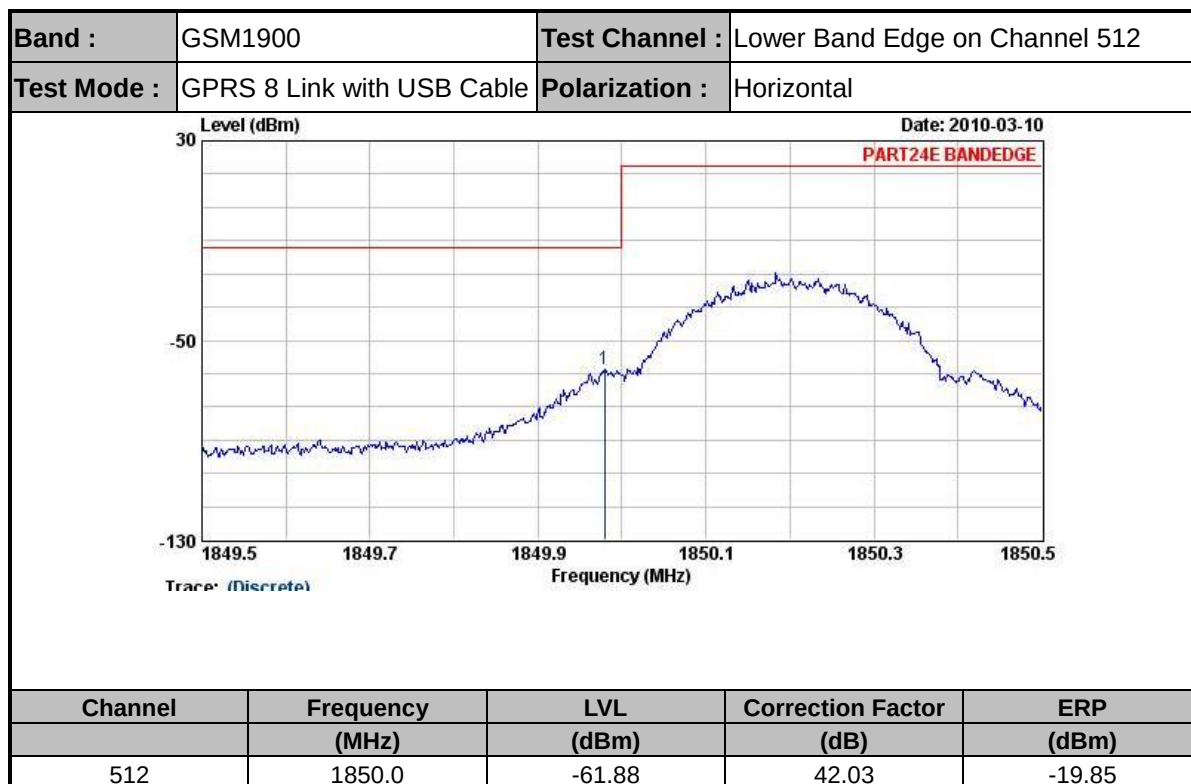
Spectrum Setting : RBW = 3 kHz, VBW = 3 kHz, Sweep = 300 ms



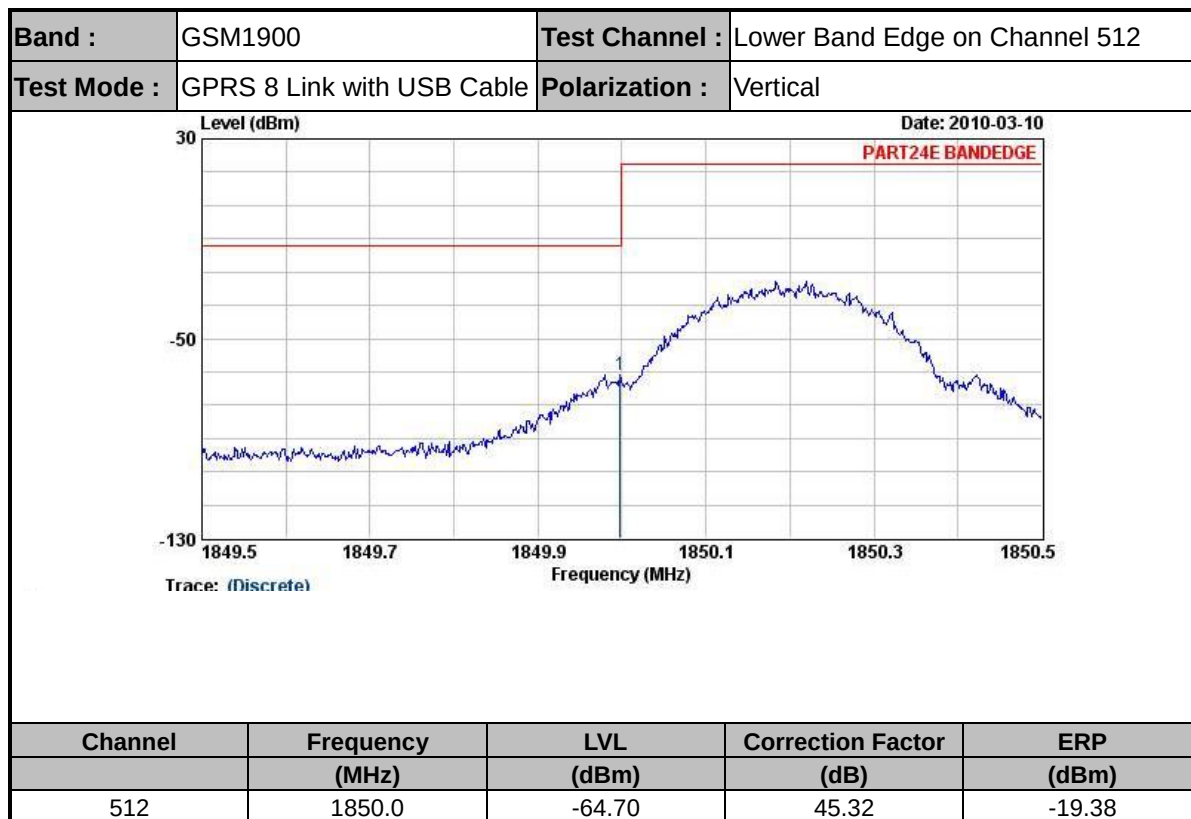
Spectrum Setting : RBW = 3 kHz, VBW = 3 kHz, Sweep = 300 ms



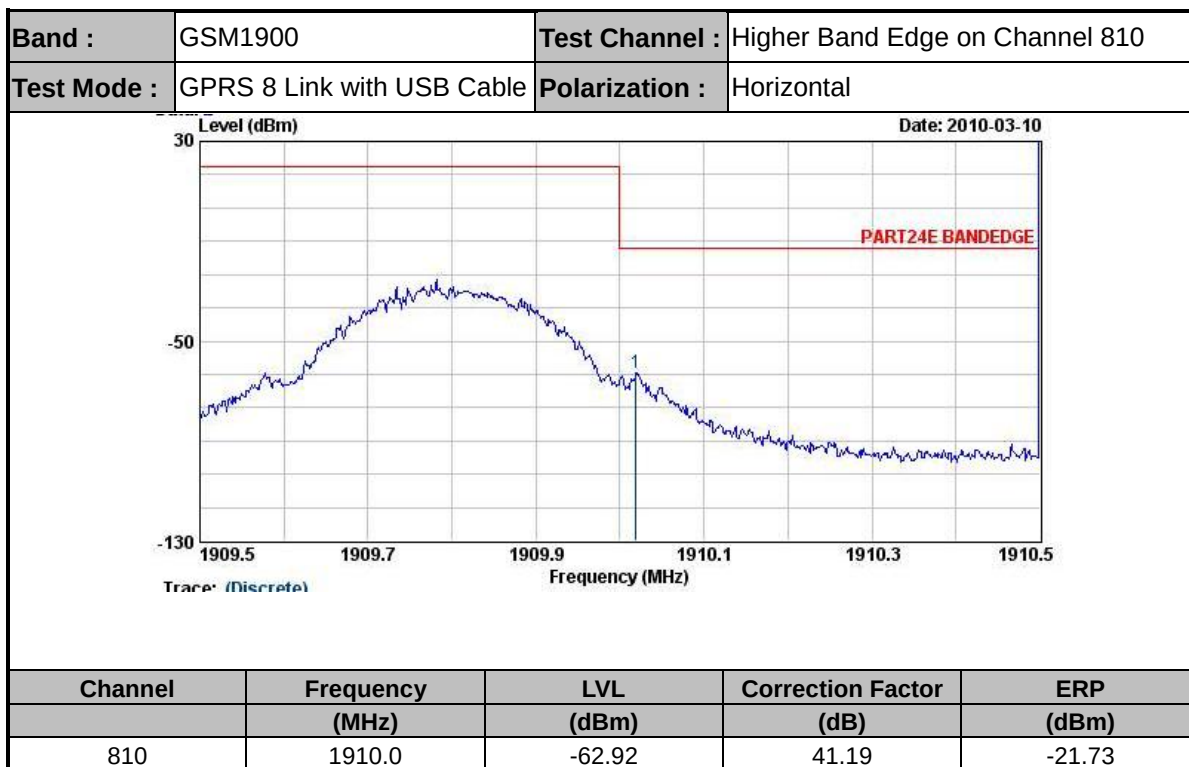
Spectrum Setting : RBW = 3 kHz, VBW = 3 kHz, Sweep = 300 ms



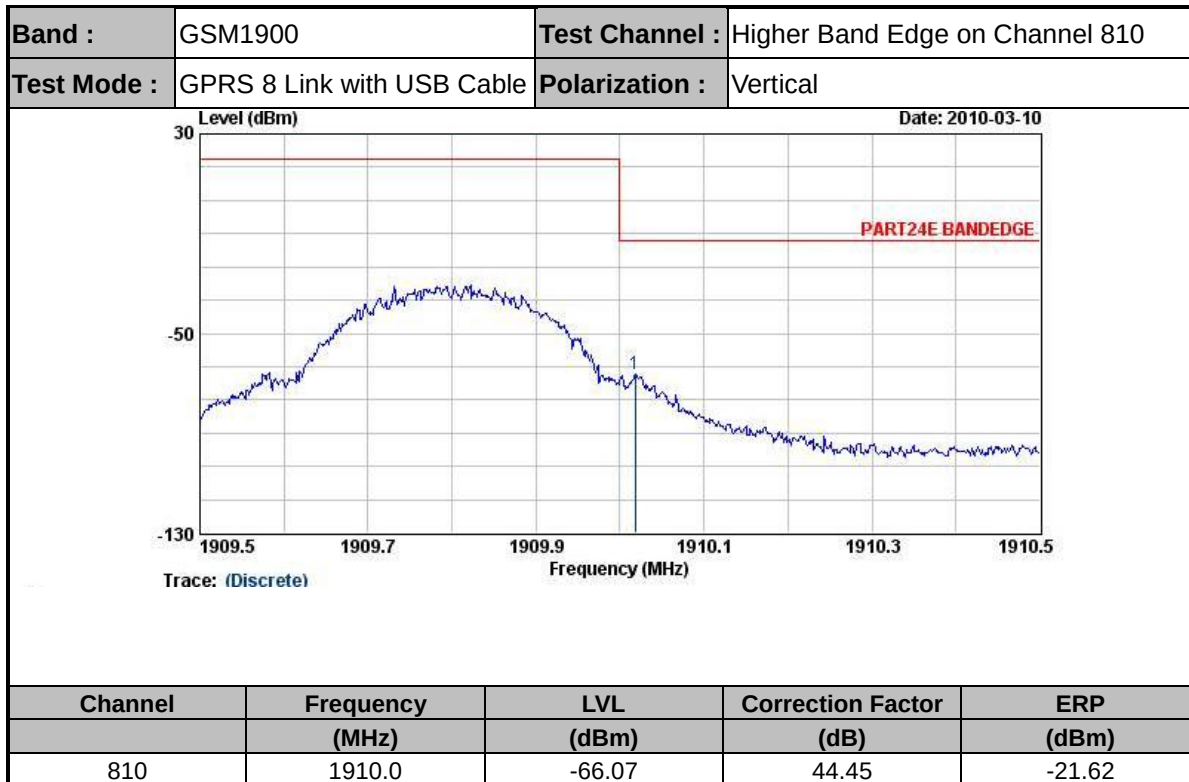
Spectrum Setting : RBW = 3 kHz, VBW = 3 kHz, Sweep = 300 ms



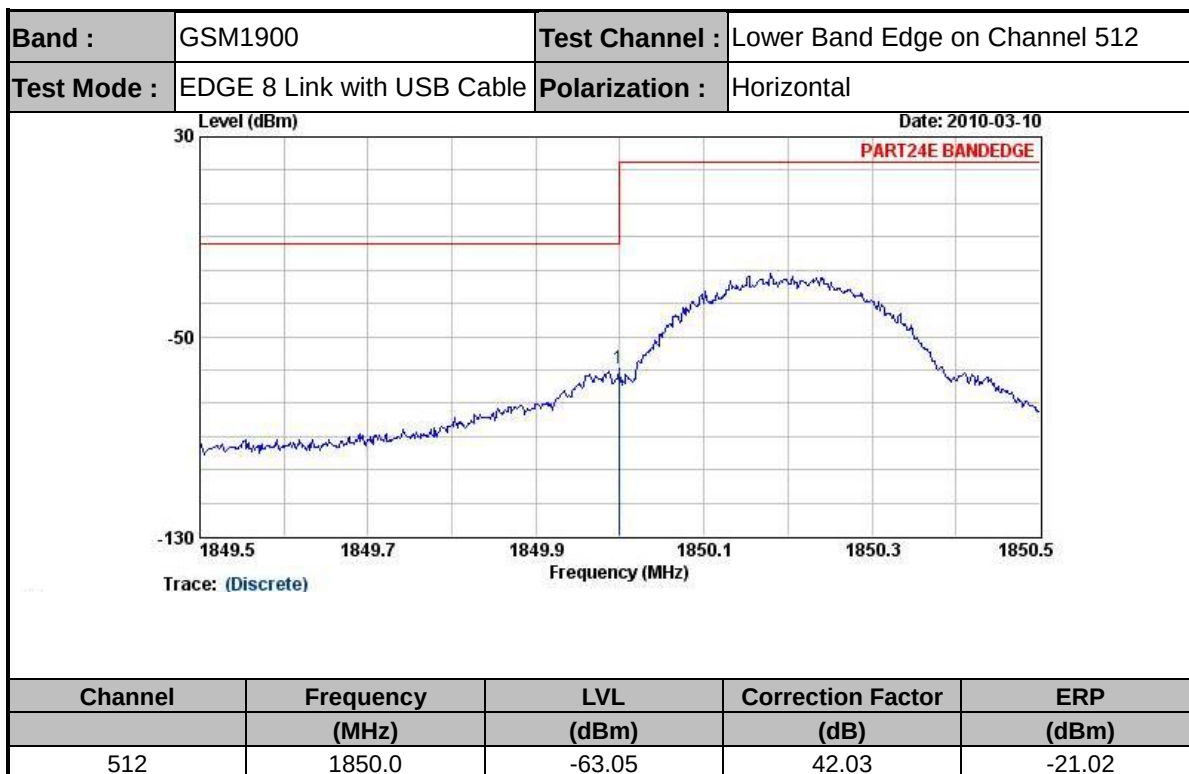
Spectrum Setting : RBW = 3 kHz, VBW = 3 kHz, Sweep = 300 ms



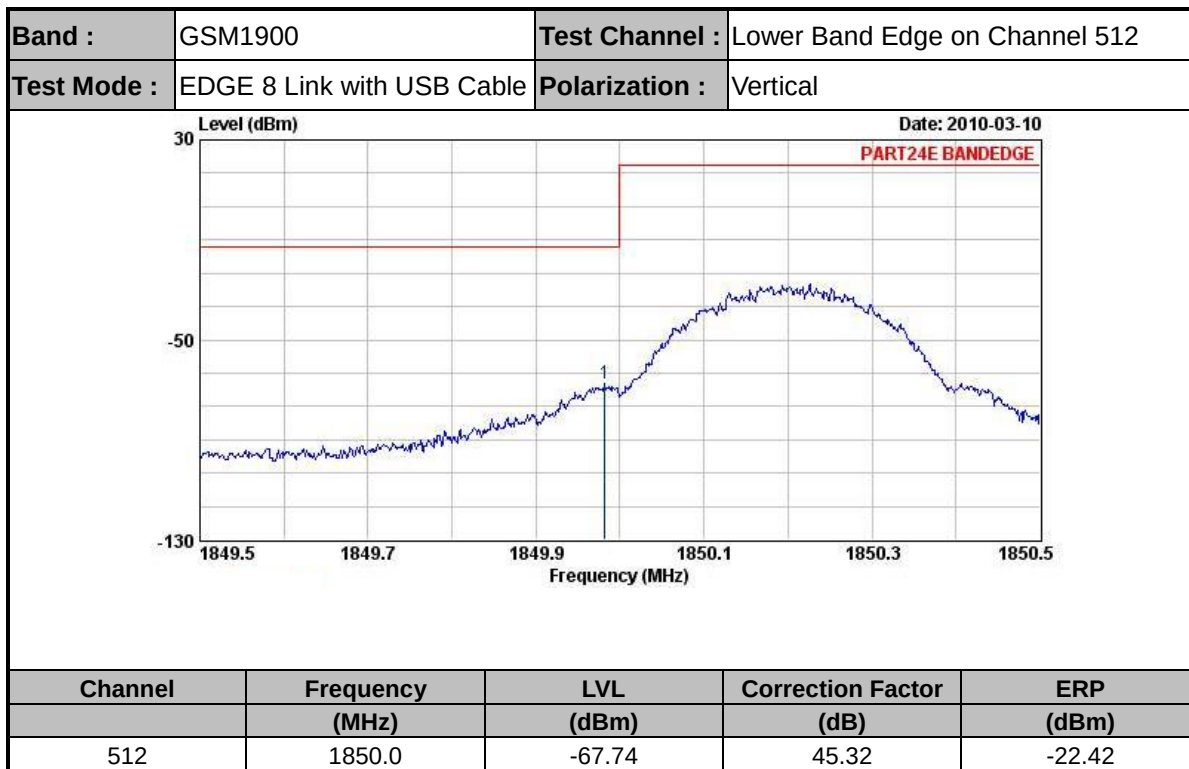
Spectrum Setting : RBW = 3 kHz, VBW = 3 kHz, Sweep = 300 ms



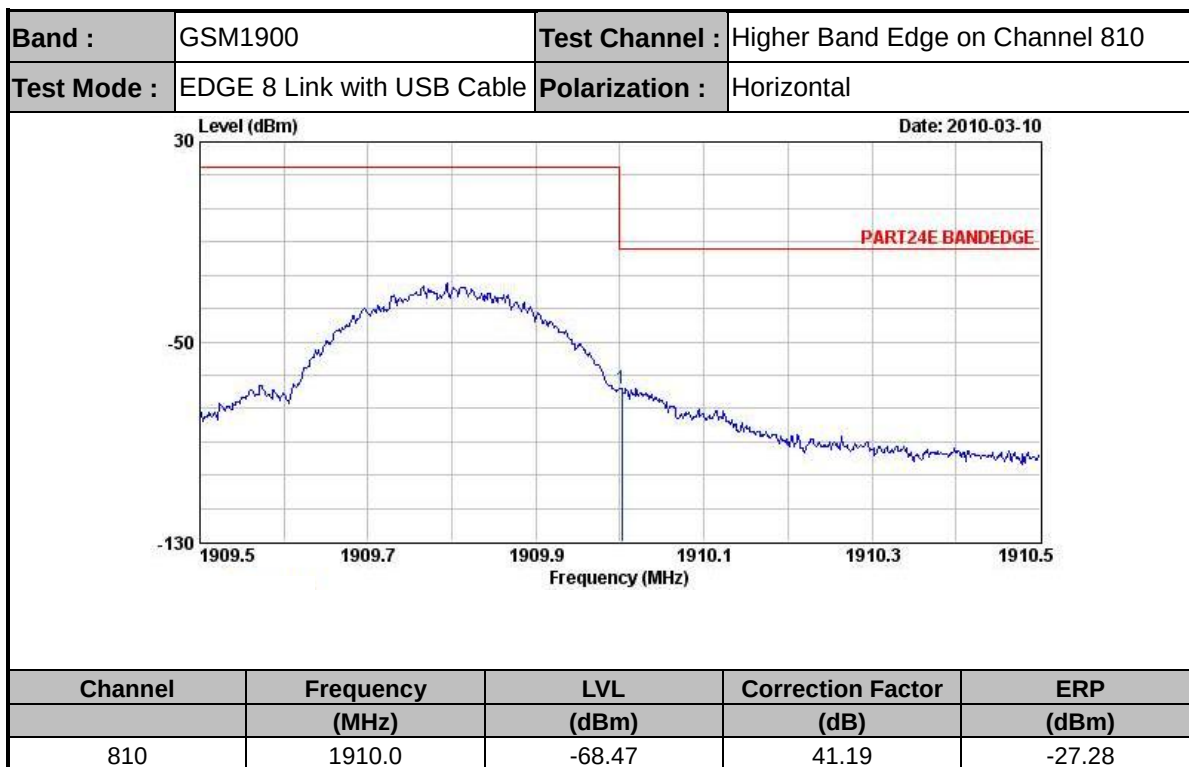
Spectrum Setting : RBW = 3 kHz, VBW = 3 kHz, Sweep = 300 ms



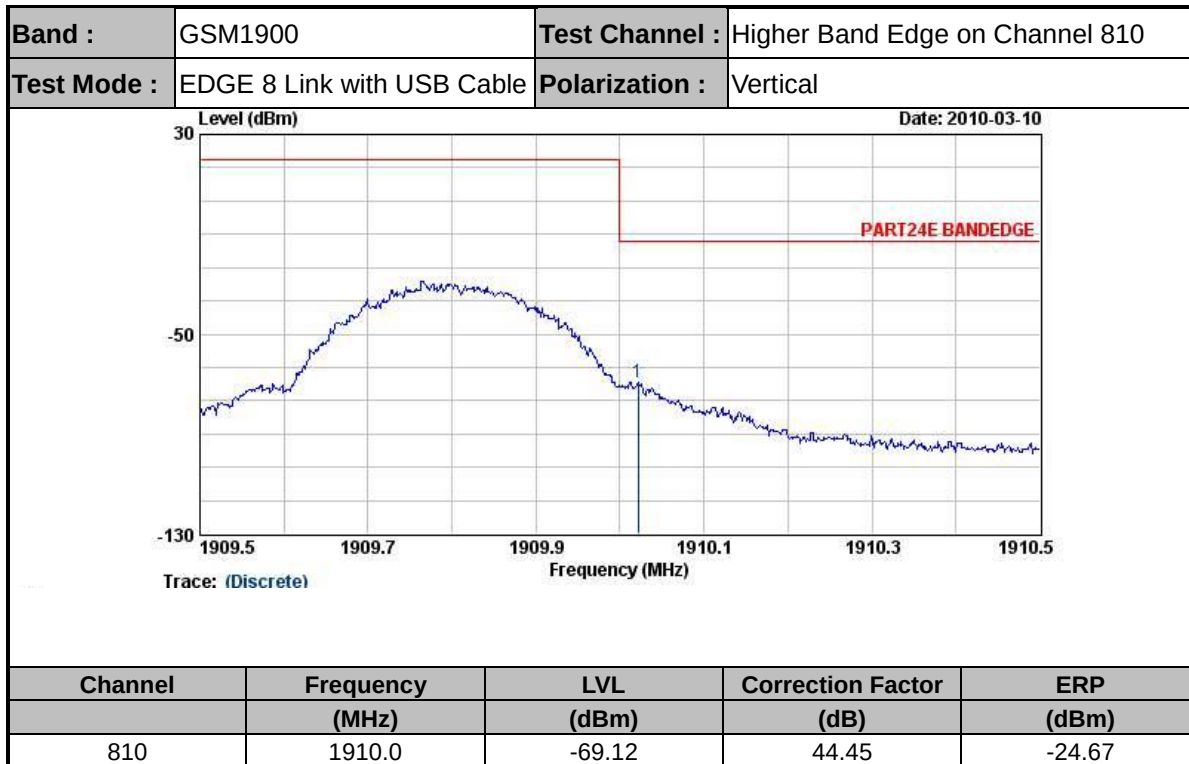
Spectrum Setting : RBW = 3 kHz, VBW = 3 kHz, Sweep = 300 ms



Spectrum Setting : RBW = 3 kHz, VBW = 3 kHz, Sweep = 300 ms



Spectrum Setting : RBW = 3 kHz, VBW = 3 kHz, Sweep = 300 ms



Spectrum Setting : RBW = 3 kHz, VBW = 3 kHz, Sweep = 300 ms

3.4 Conducted Emission Measurement

3.4.1 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.

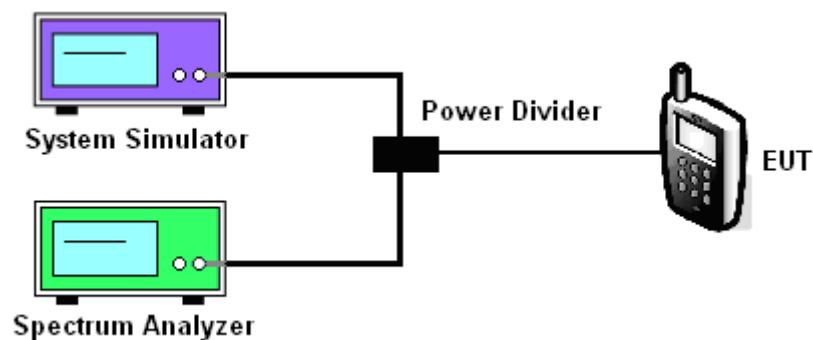
3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

3.4.3 Test Procedures

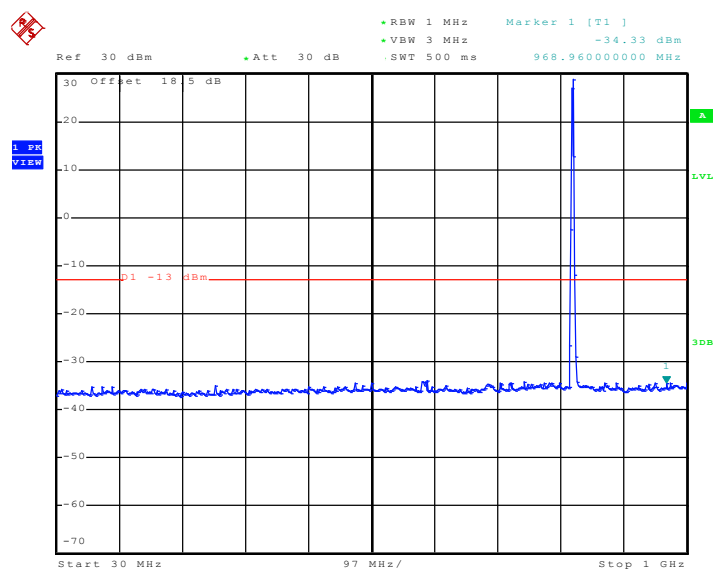
1. The EUT was connected to spectrum analyzer and base station via power divider.
2. The middle channel for the highest RF power within the transmitting frequency was measured.
3. The conducted spurious emission for the whole frequency range was taken.

3.4.4 Test Setup

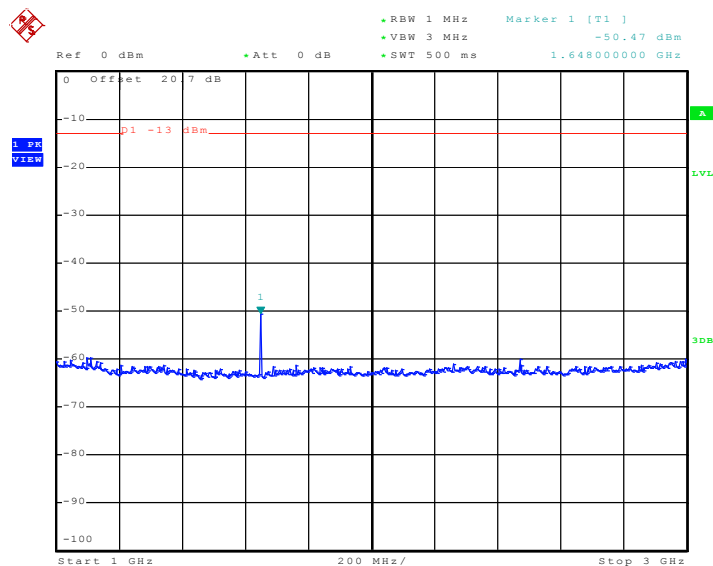


3.4.5 Test Result (Plots) of Conducted Emission

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

Conducted Emission Plot between 30MHz ~ 1GHz


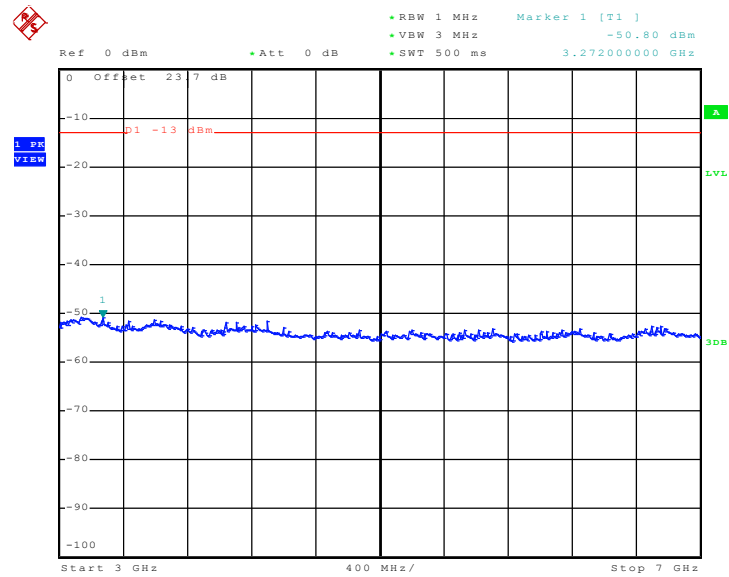
Date: 13.MAR.2010 06:48:10

Conducted Emission Plot between 1GHz ~ 3GHz


Date: 13.MAR.2010 06:55:03

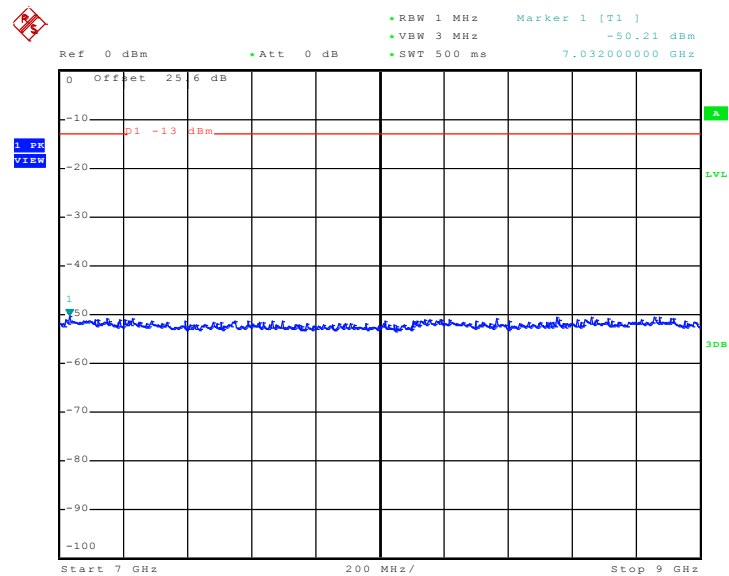


Conducted Emission Plot between 3GHz ~ 7GHz



Date: 13.MAR.2010 06:56:16

Conducted Emission Plot between 7GHz ~ 9GHz

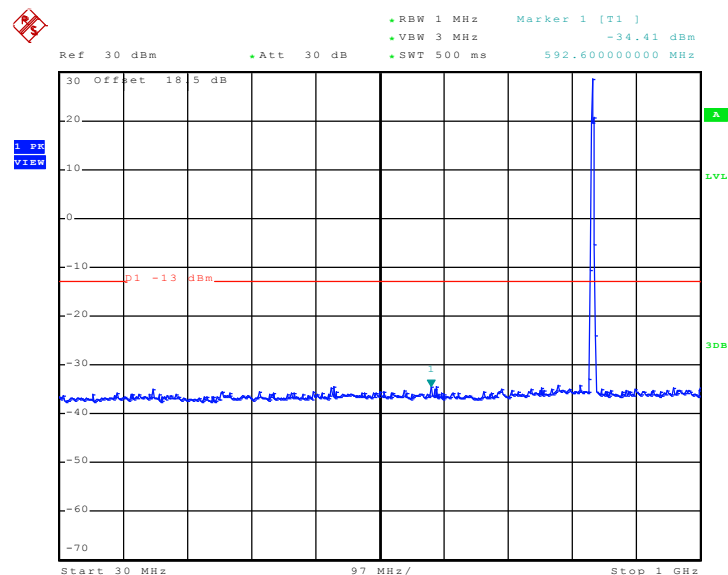


Date: 13.MAR.2010 07:00:42



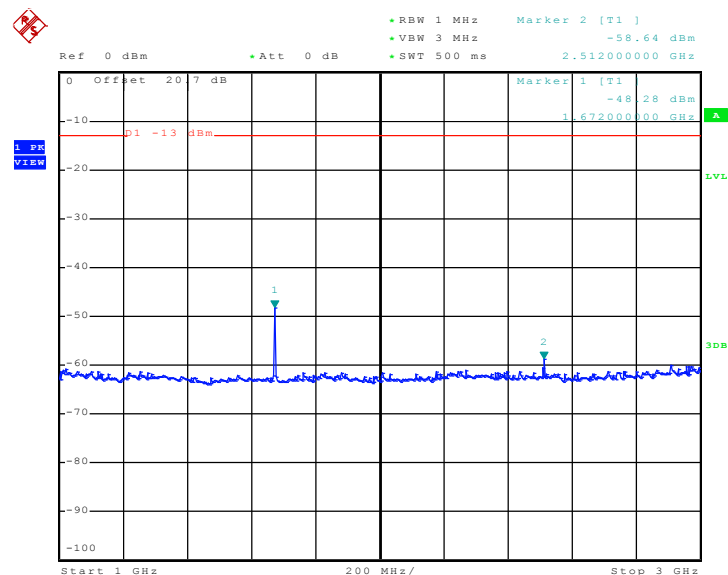
Band :	GSM850	Channel :	CH189
Test Mode :	GPRS 8 Link		

Conducted Emission Plot between 30MHz ~ 1GHz



Date: 13.MAR.2010 06:50:28

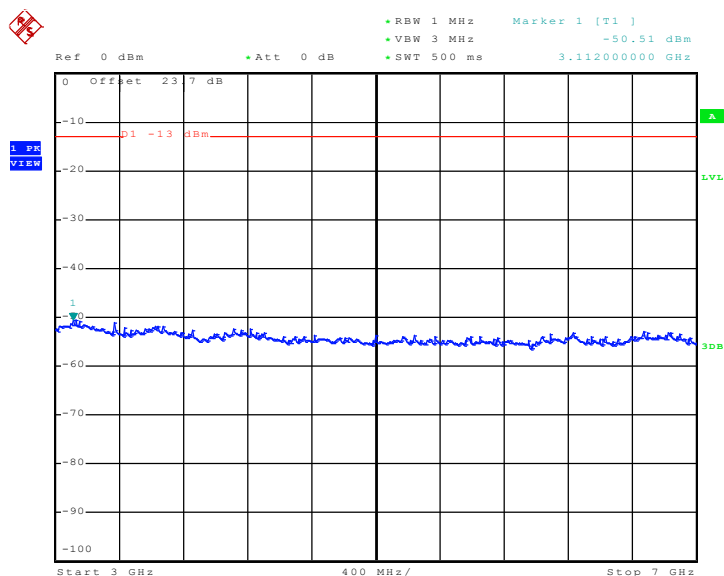
Conducted Emission Plot between 1GHz ~ 3GHz



Date: 13.MAR.2010 06:54:23

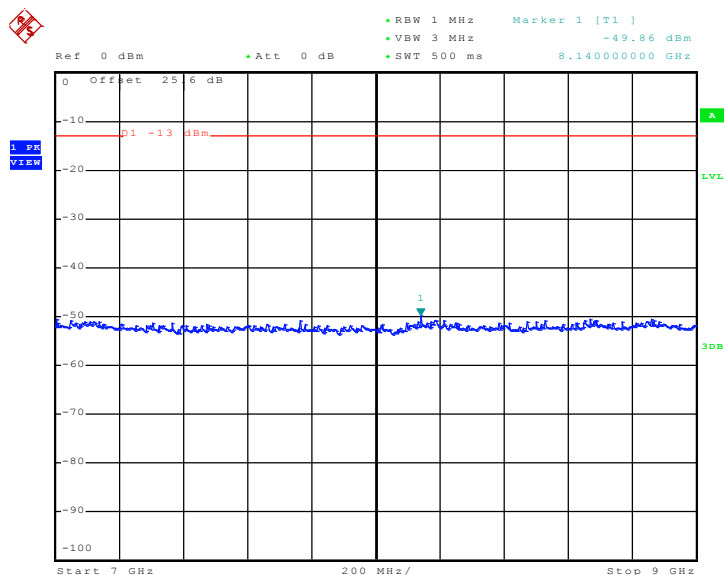


Conducted Emission Plot between 3GHz ~ 7GHz



Date: 13.MAR.2010 06:57:09

Conducted Emission Plot between 7GHz ~ 9GHz

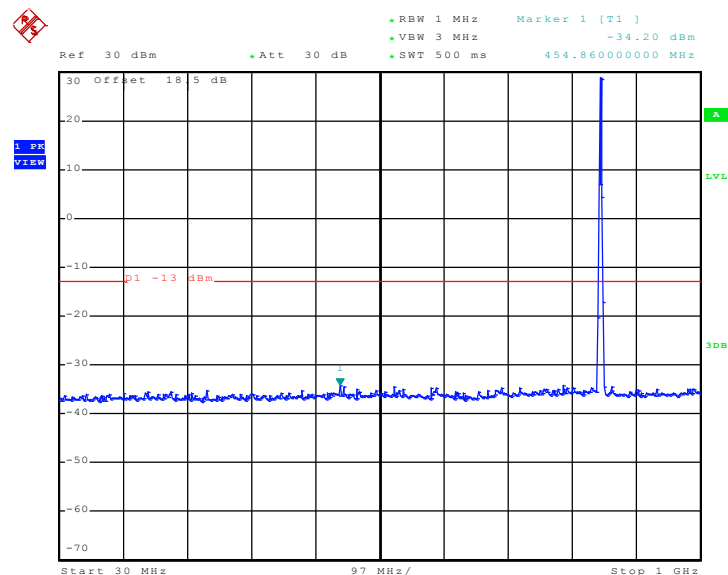


Date: 13.MAR.2010 06:59:39



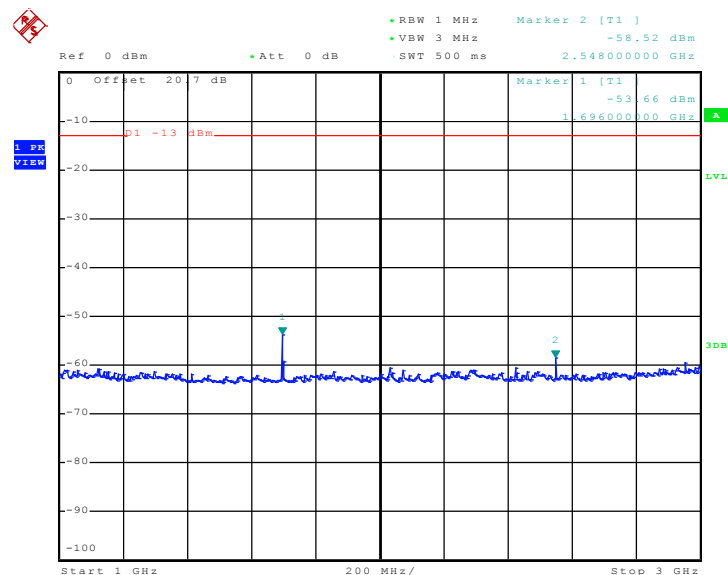
Band :	GSM850	Channel :	CH251
Test Mode :	GPRS 8 Link		

Conducted Emission Plot between 30MHz ~ 1GHz

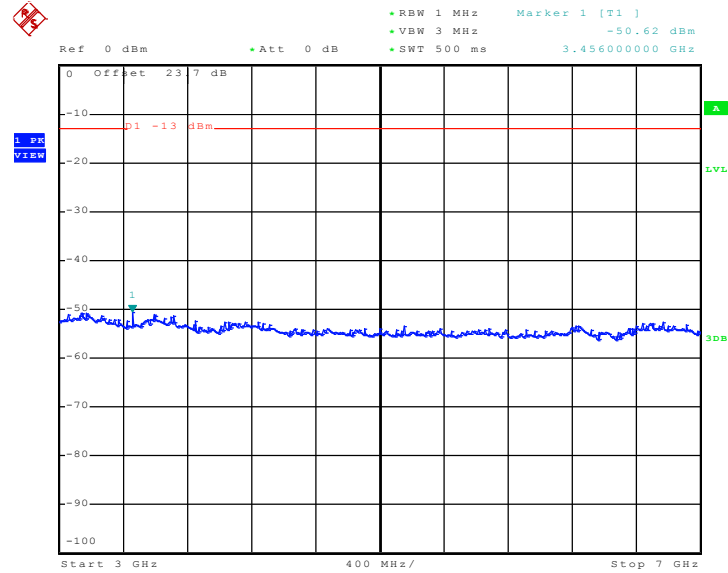


Date: 13.MAR.2010 06:51:35

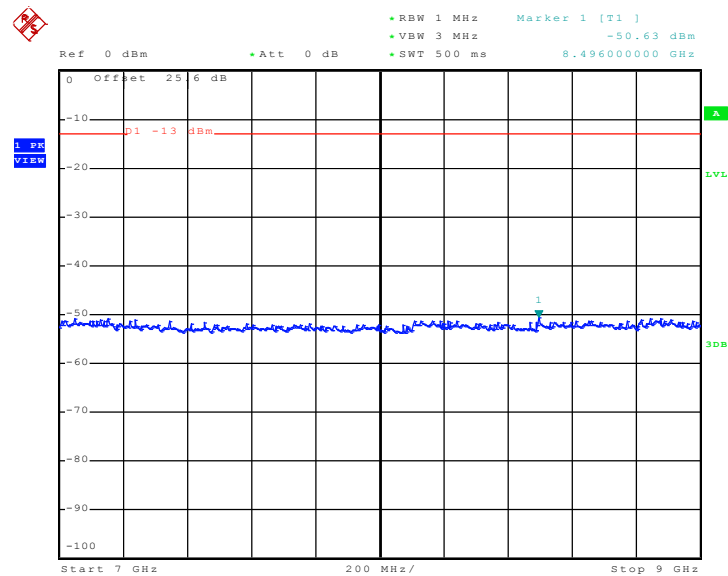
Conducted Emission Plot between 1GHz ~ 3GHz



Date: 13.MAR.2010 06:53:22

Conducted Emission Plot between 3GHz ~ 7GHz


Date: 13.MAR.2010 06:57:49

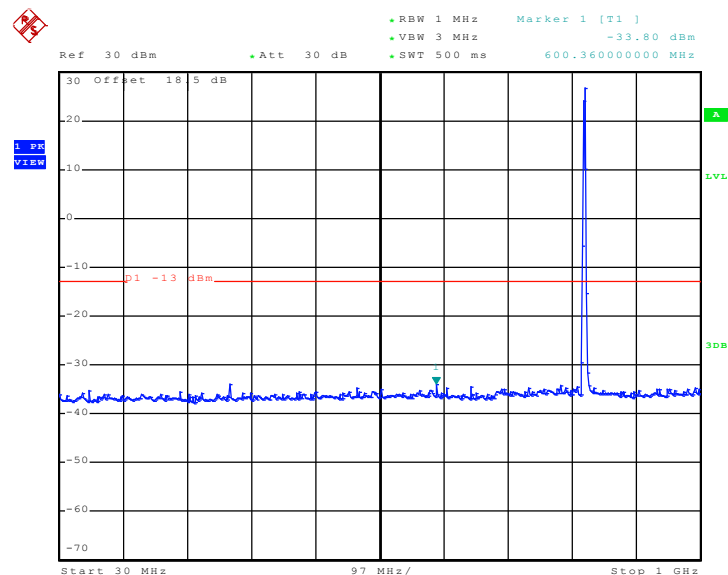
Conducted Emission Plot between 7GHz ~ 9GHz


Date: 13.MAR.2010 06:58:49



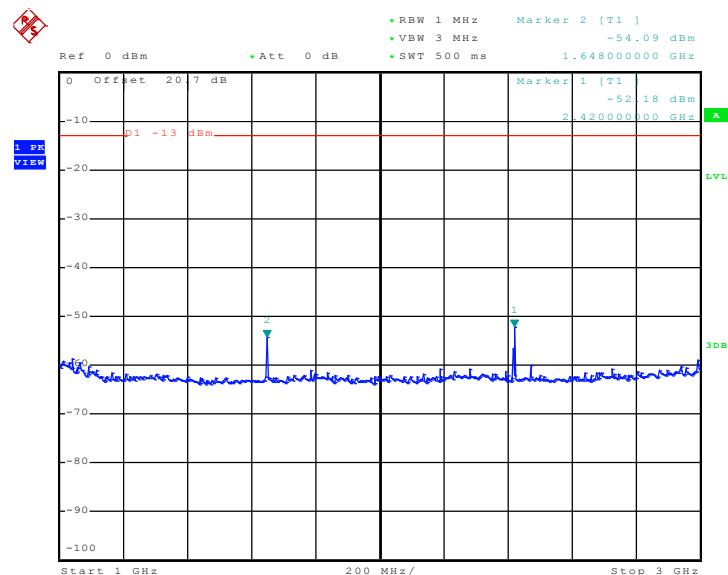
Band :	GSM850	Channel :	CH128
Test Mode :	EDGE 8 Link		

Conducted Emission Plot between 30MHz ~ 1GHz



Date: 13.MAR.2010 07:23:50

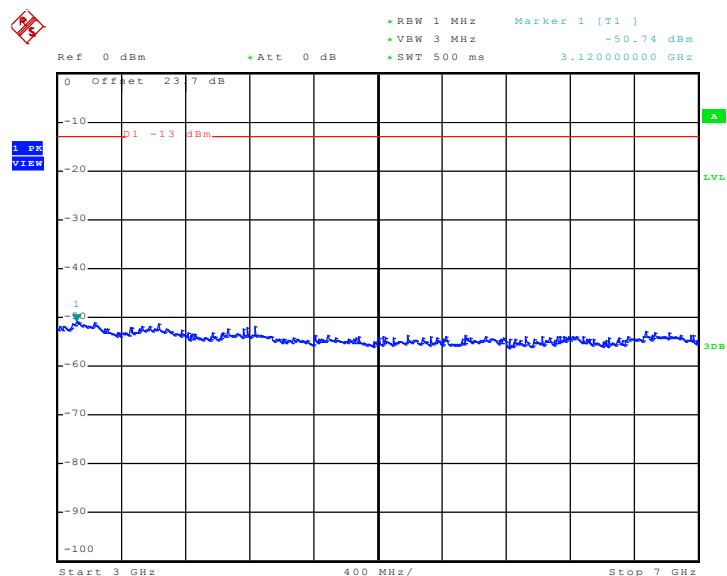
Conducted Emission Plot between 1GHz ~ 3GHz



Date: 13.MAR.2010 07:07:03

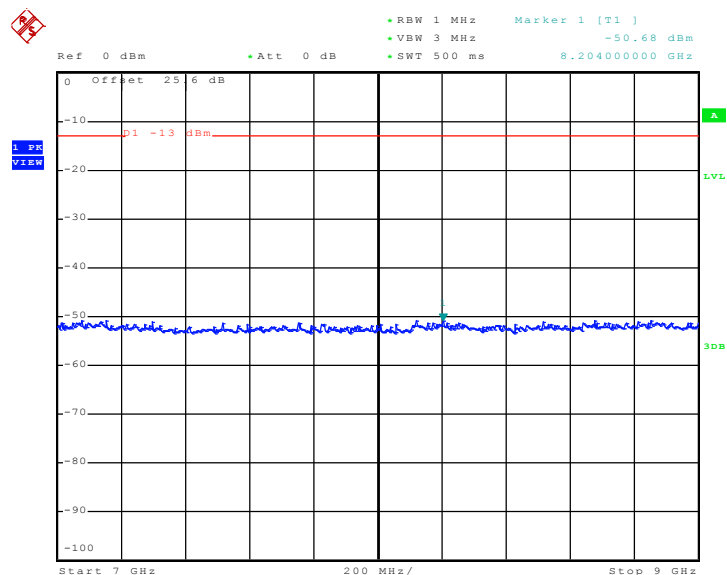


Conducted Emission Plot between 3GHz ~ 7GHz



Date: 13.MAR.2010 07:05:58

Conducted Emission Plot between 7GHz ~ 9GHz

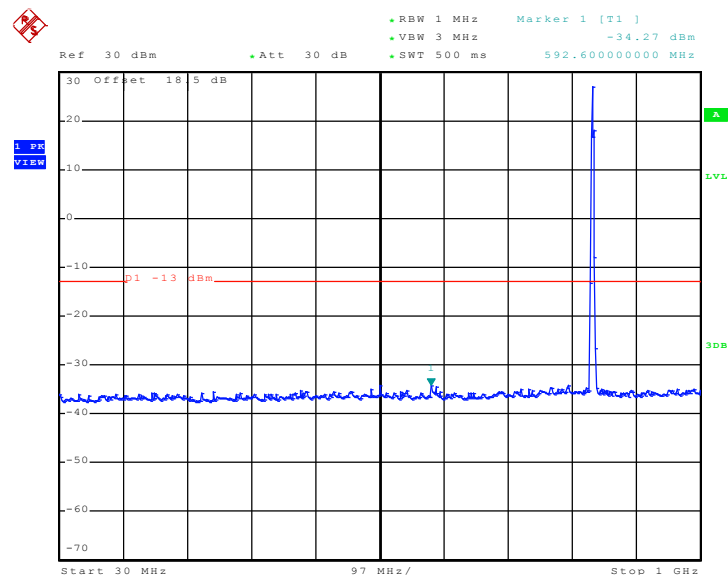


Date: 13.MAR.2010 07:01:57



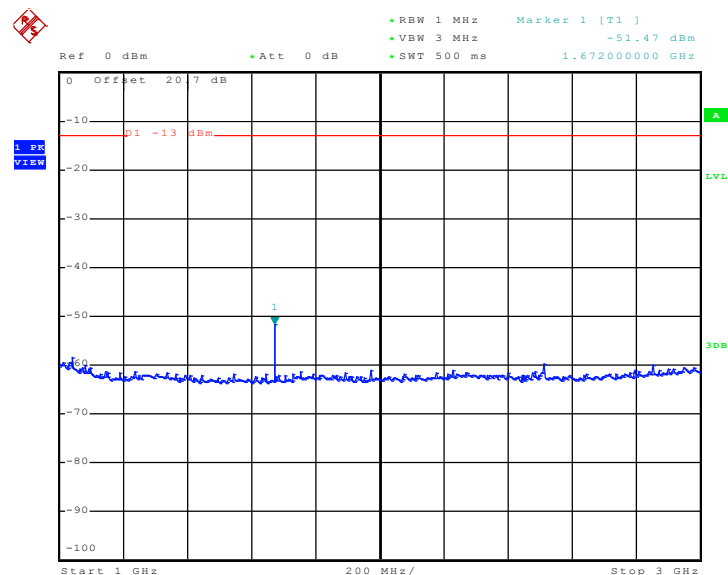
Band :	GSM850	Channel :	CH189
Test Mode :	EDGE 8 Link		

Conducted Emission Plot between 30MHz ~ 1GHz



Date: 13.MAR.2010 07:12:10

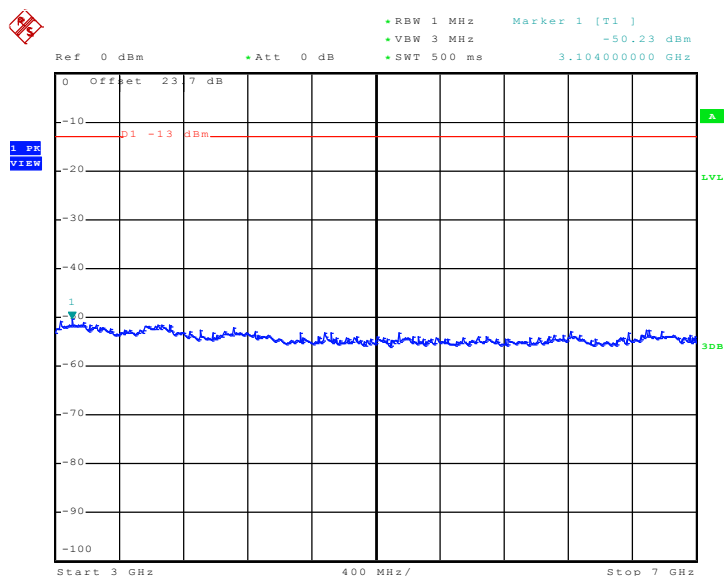
Conducted Emission Plot between 1GHz ~ 3GHz



Date: 13.MAR.2010 07:07:58

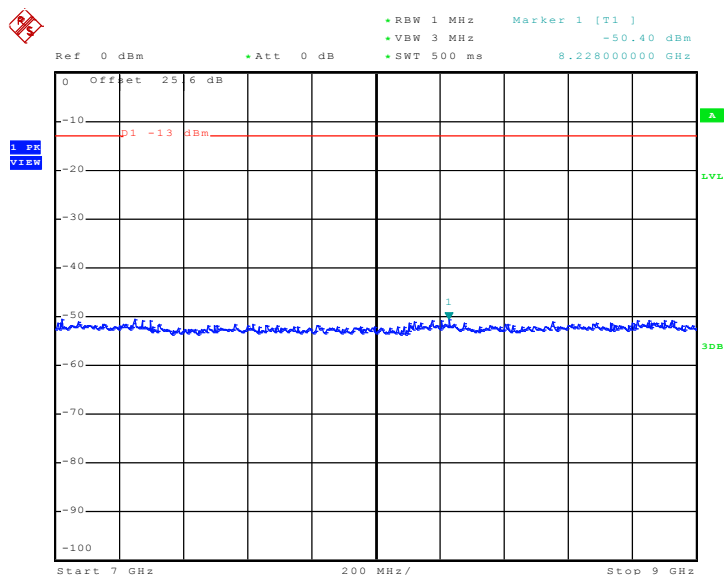


Conducted Emission Plot between 3GHz ~ 7GHz



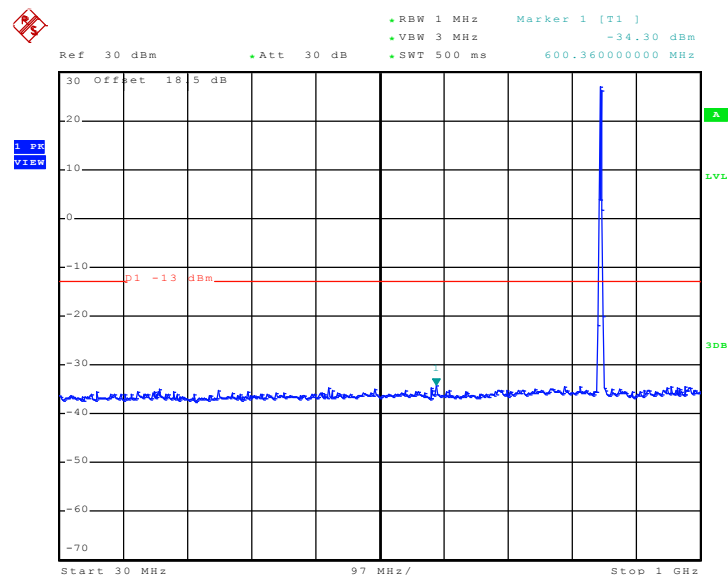
Date: 13.MAR.2010 07:05:08

Conducted Emission Plot between 7GHz ~ 9GHz

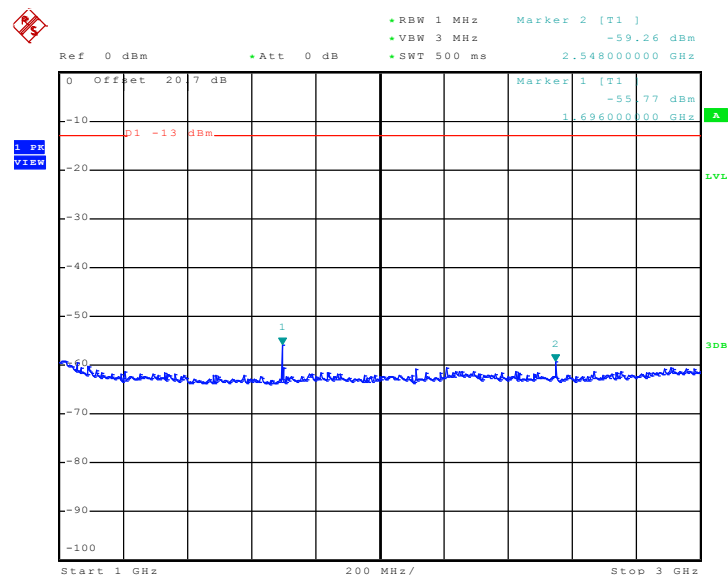


Date: 13.MAR.2010 07:02:31

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

Conducted Emission Plot between 30MHz ~ 1GHz


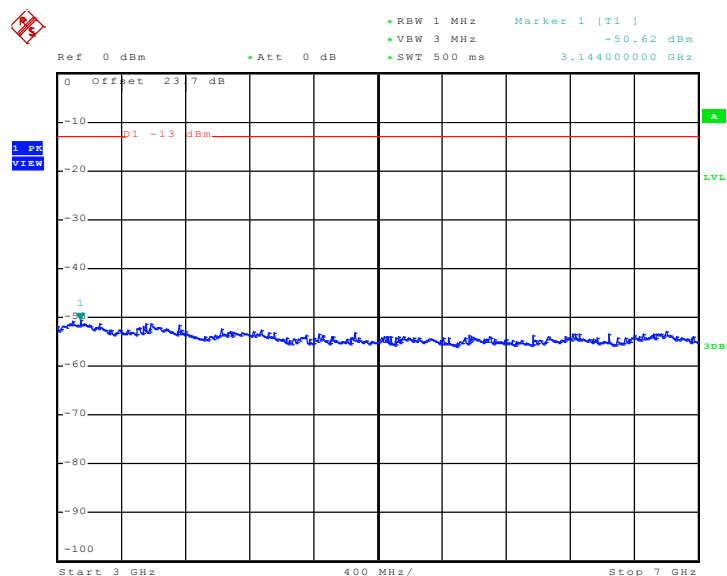
Date: 13.MAR.2010 07:11:30

Conducted Emission Plot between 1GHz ~ 3GHz


Date: 13.MAR.2010 07:08:54

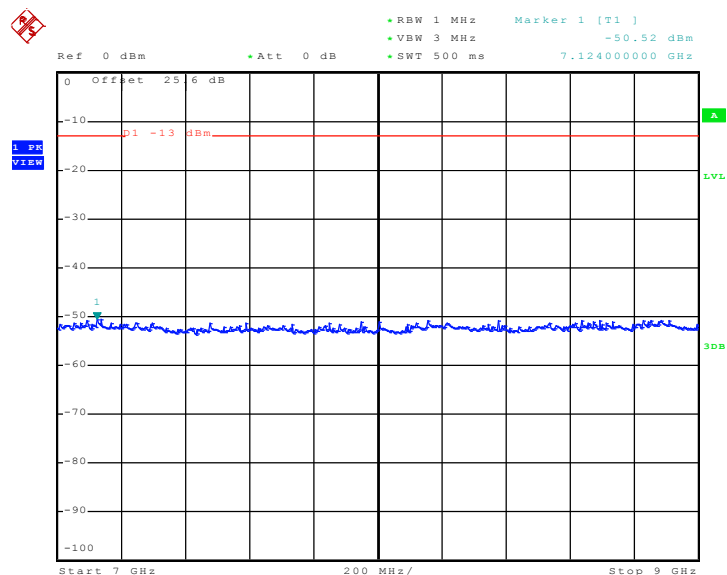


Conducted Emission Plot between 3GHz ~ 7GHz



Date: 13.MAR.2010 07:04:26

Conducted Emission Plot between 7GHz ~ 9GHz

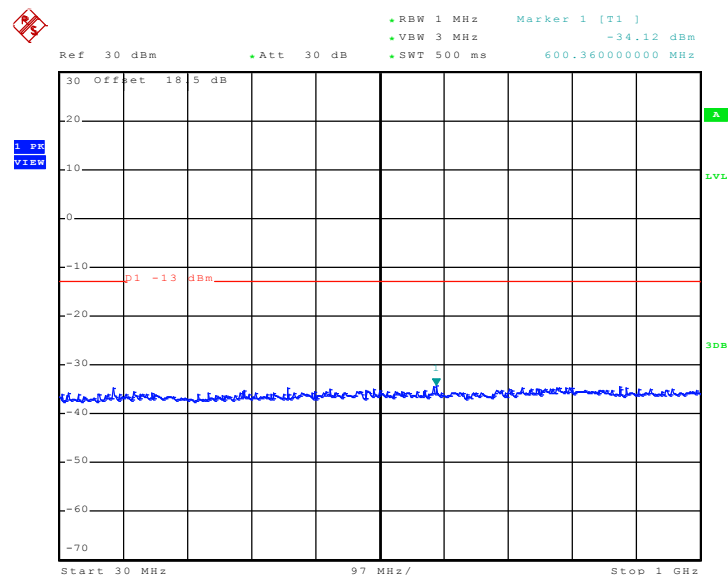


Date: 13.MAR.2010 07:03:23



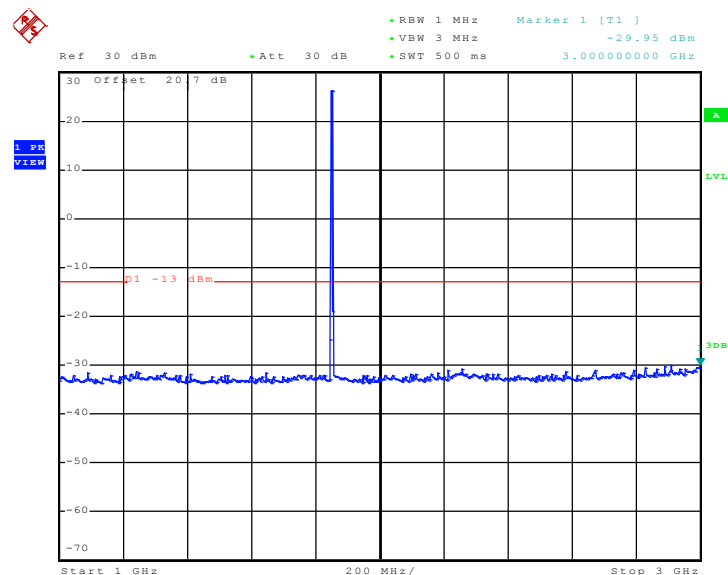
Band :	GSM1900	Channel :	CH512
Test Mode :	GPRS 8 Link		

Conducted Emission Plot between 30MHz ~ 1GHz



Date: 13.MAR.2010 06:01:07

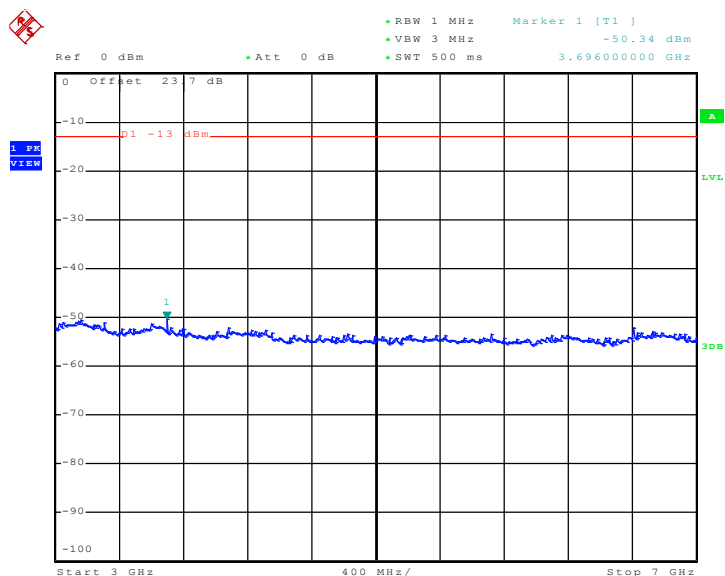
Conducted Emission Plot between 1GHz ~ 3GHz



Date: 13.MAR.2010 06:04:55

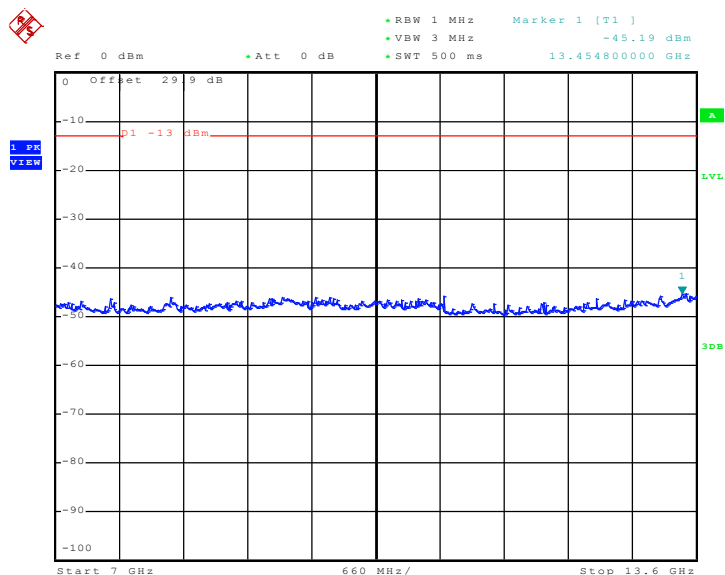


Conducted Emission Plot between 3GHz ~ 7GHz



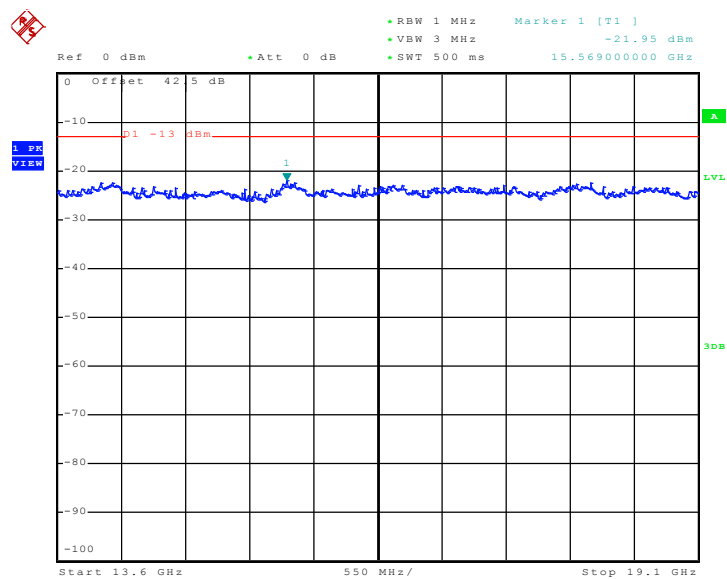
Date: 13.MAR.2010 06:11:15

Conducted Emission Plot between 7GHz ~ 13.6GHz



Date: 13.MAR.2010 06:12:37

Conducted Emission Plot between 13.6GHz ~ 19.1GHz

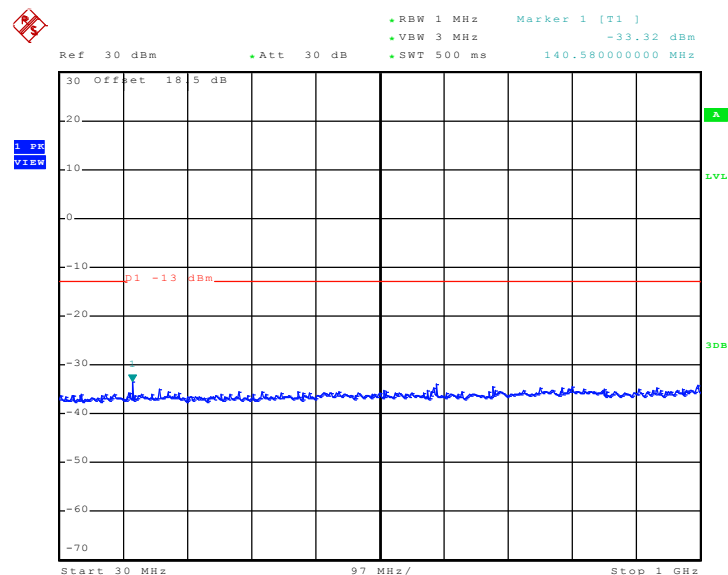


Date: 13.MAR.2010 06:16:15



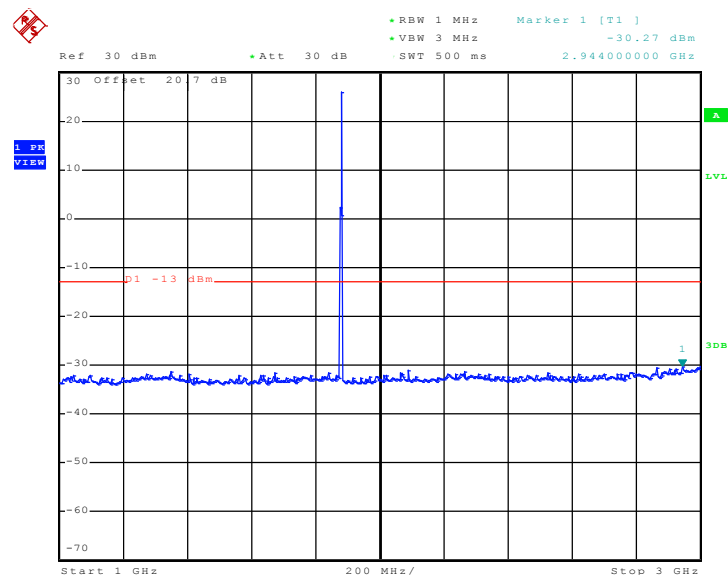
Band :	GSM1900	Channel :	CH661
Test Mode :	GPRS 8 Link		

Conducted Emission Plot between 30MHz ~ 1GHz



Date: 13.MAR.2010 06:01:59

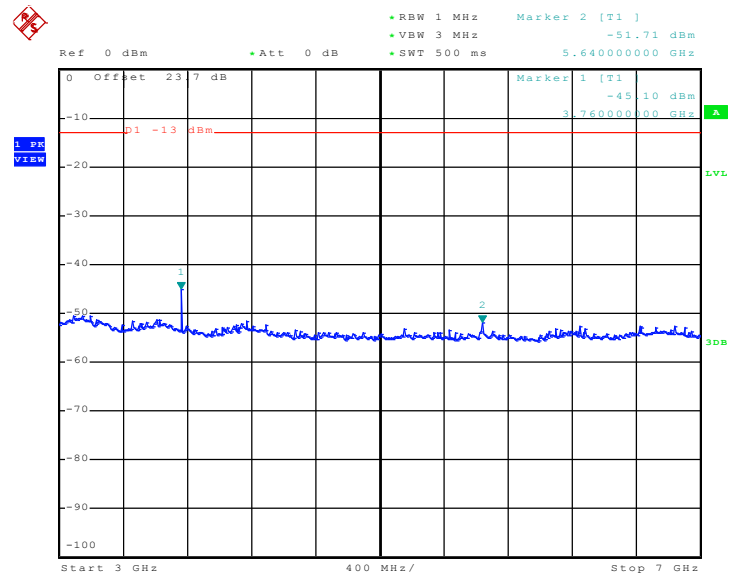
Conducted Emission Plot between 1GHz ~ 3GHz



Date: 13.MAR.2010 06:20:35

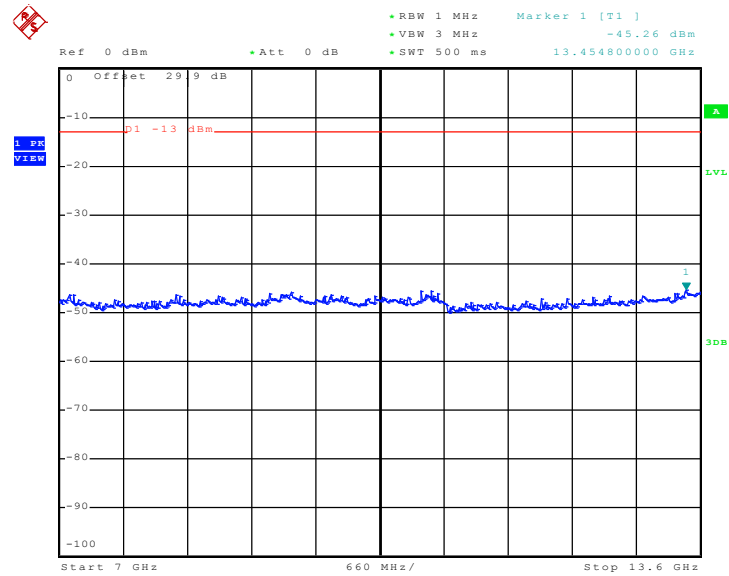


Conducted Emission Plot between 3GHz ~ 7GHz



Date: 13.MAR.2010 06:09:47

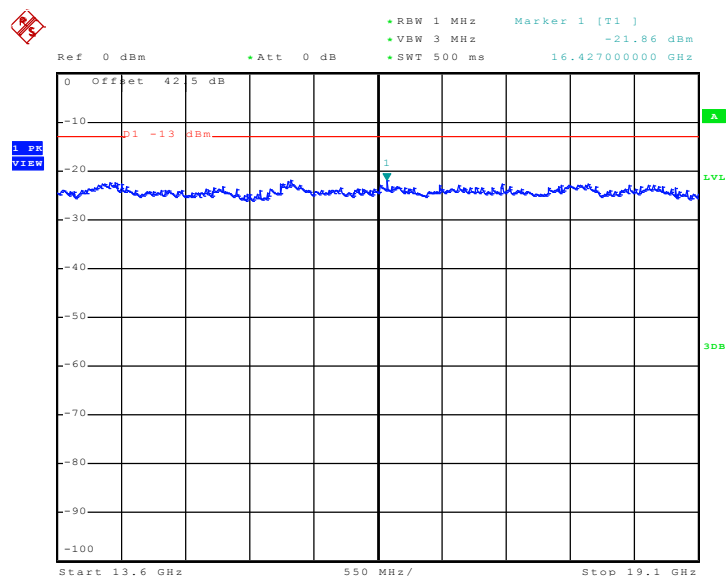
Conducted Emission Plot between 7GHz ~ 13.6GHz



Date: 13.MAR.2010 06:13:23



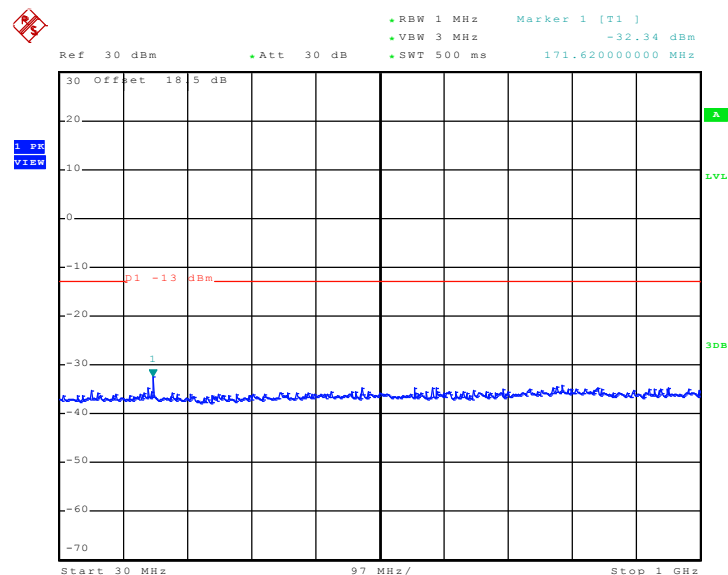
Conducted Emission Plot between 13.6GHz ~ 19.1GHz



Date: 13.MAR.2010 06:15:45

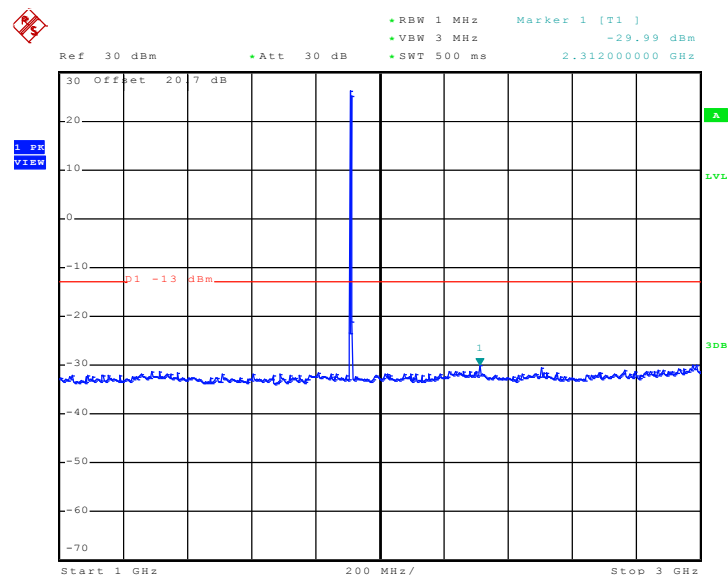
Band :	GSM1900	Channel :	CH810
Test Mode :	GPRS 8 Link		

Conducted Emission Plot between 30MHz ~ 1GHz



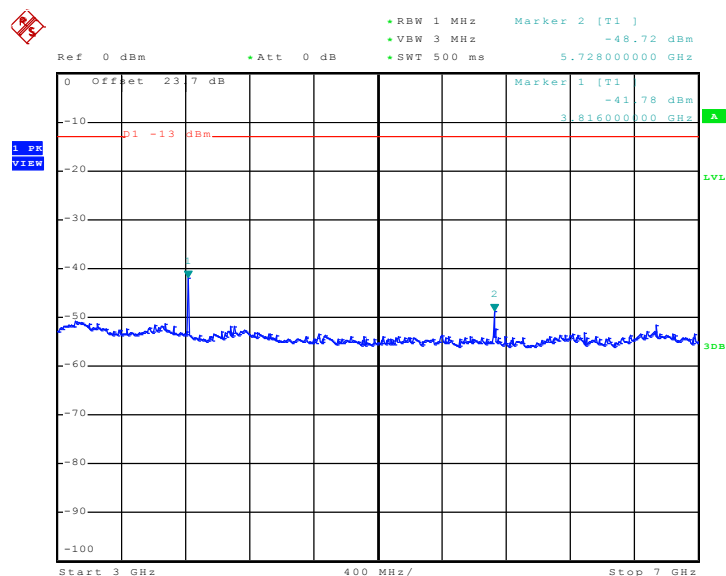
Date: 13.MAR.2010 06:02:29

Conducted Emission Plot between 1GHz ~ 3GHz



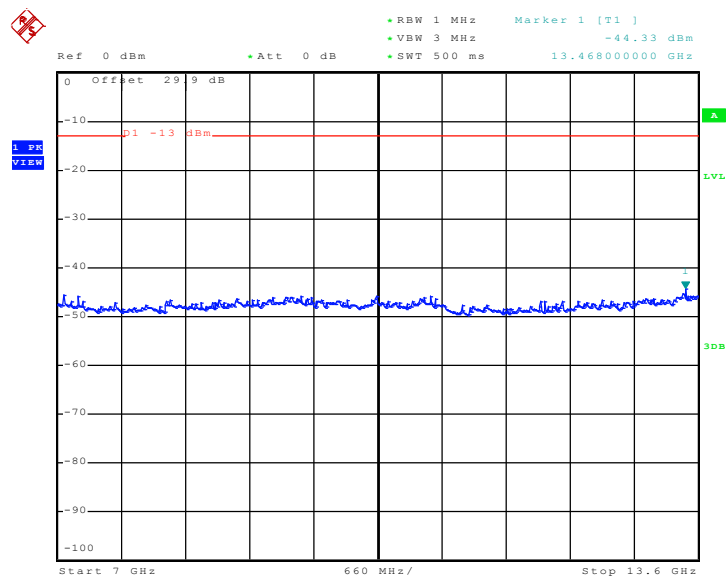
Date: 13.MAR.2010 06:07:11

Conducted Emission Plot between 3GHz ~ 7GHz



Date: 13.MAR.2010 06:08:46

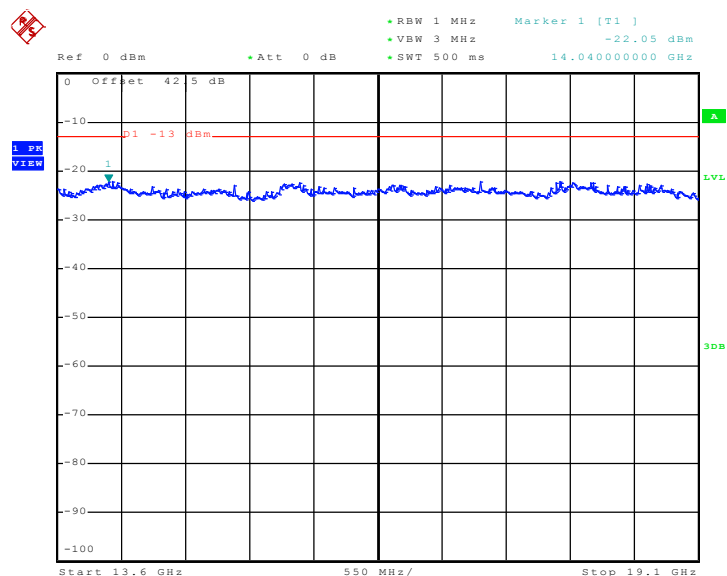
Conducted Emission Plot between 7GHz ~ 13.6GHz



Date: 13.MAR.2010 06:14:17



Conducted Emission Plot between 13.6GHz ~ 19.1GHz

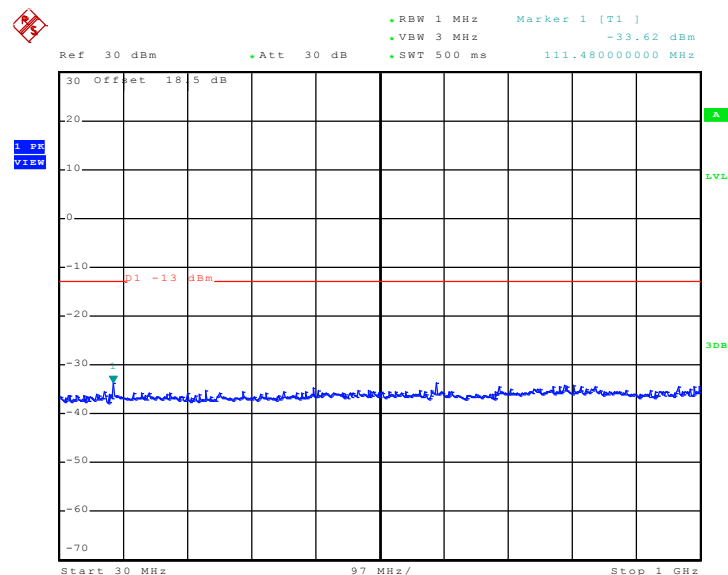


Date: 13.MAR.2010 06:15:09



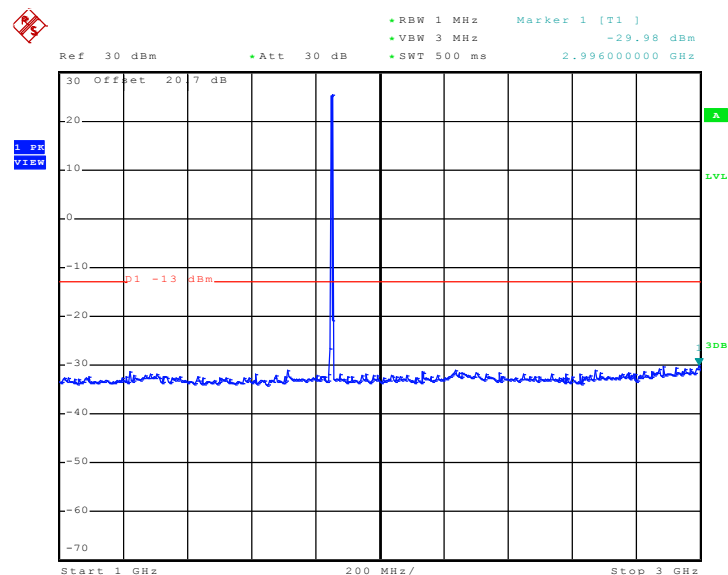
Band :	GSM1900	Channel :	CH512
Test Mode :	EDGE 8 Link		

Conducted Emission Plot between 30MHz ~ 1GHz



Date: 13.MAR.2010 06:25:19

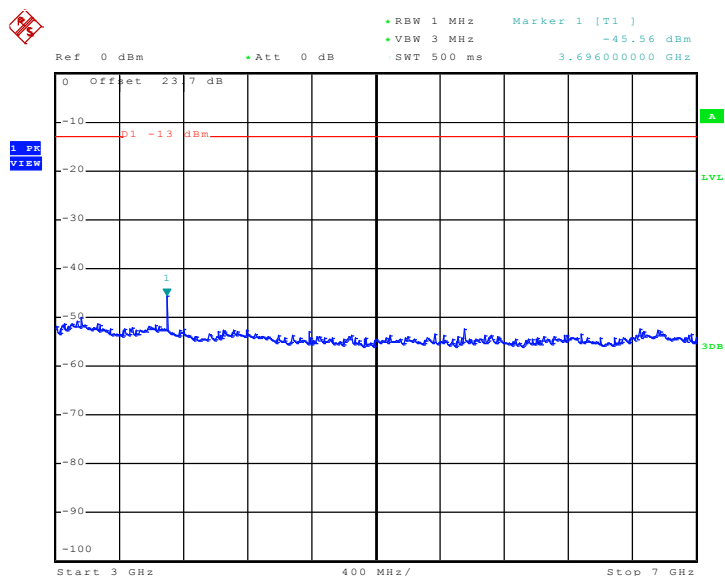
Conducted Emission Plot between 1GHz ~ 3GHz



Date: 13.MAR.2010 06:30:51

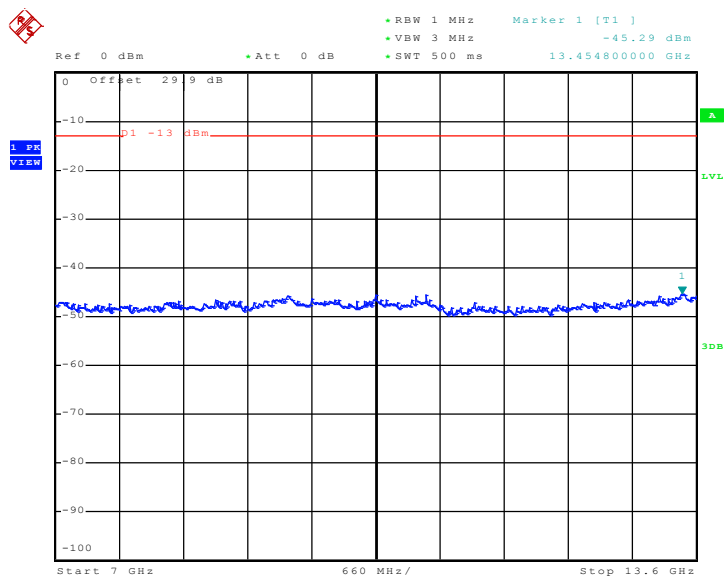


Conducted Emission Plot between 3GHz ~ 7GHz



Date: 13.MAR.2010 06:32:42

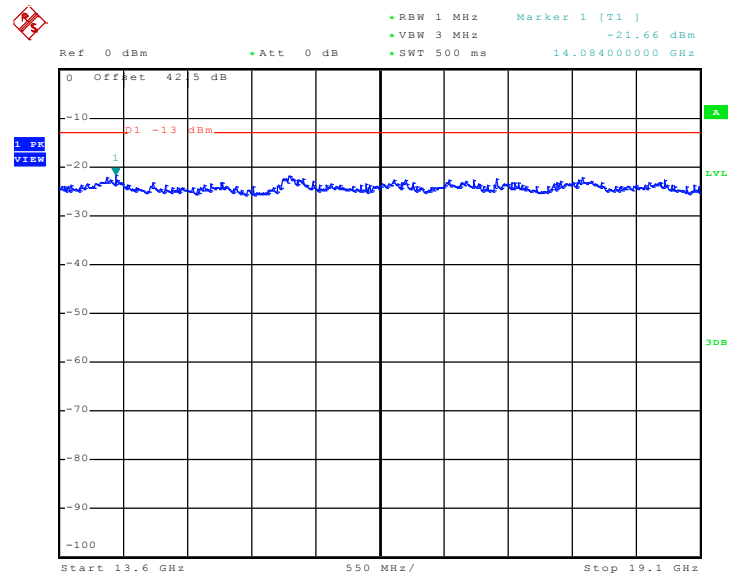
Conducted Emission Plot between 7GHz ~ 13.6GHz



Date: 13.MAR.2010 06:36:43



Conducted Emission Plot between 13.6GHz ~ 19.1GHz

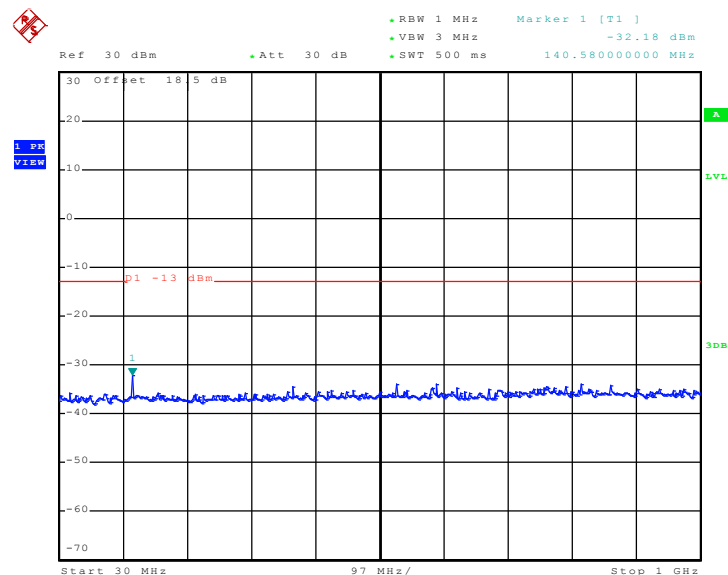


Date: 13.MAR.2010 06:37:44



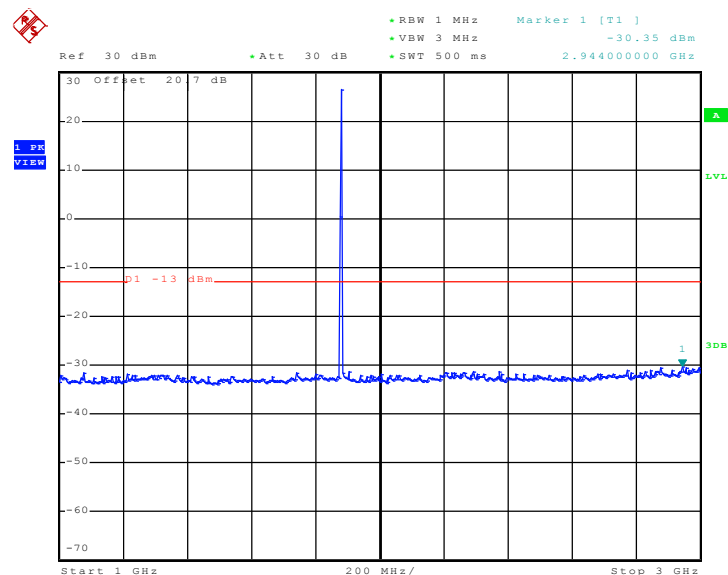
Band :	GSM1900	Channel :	CH661
Test Mode :	EDGE 8 Link		

Conducted Emission Plot between 30MHz ~ 1GHz



Date: 13.MAR.2010 06:24:43

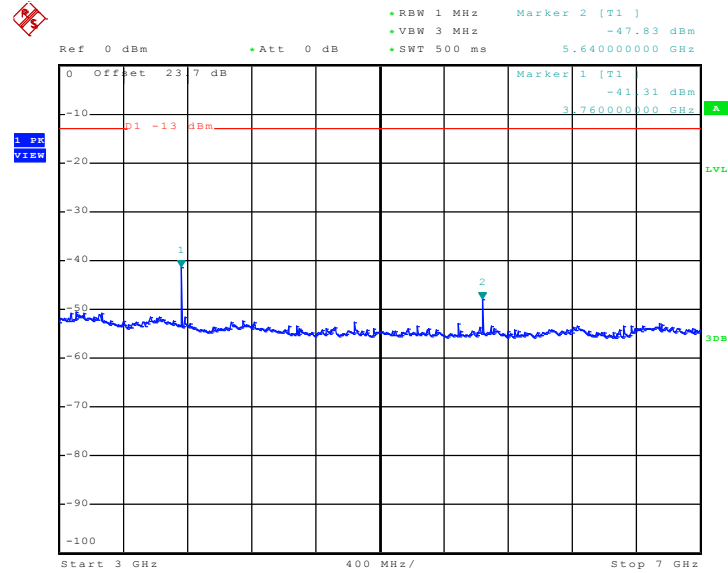
Conducted Emission Plot between 1GHz ~ 3GHz



Date: 13.MAR.2010 06:29:37

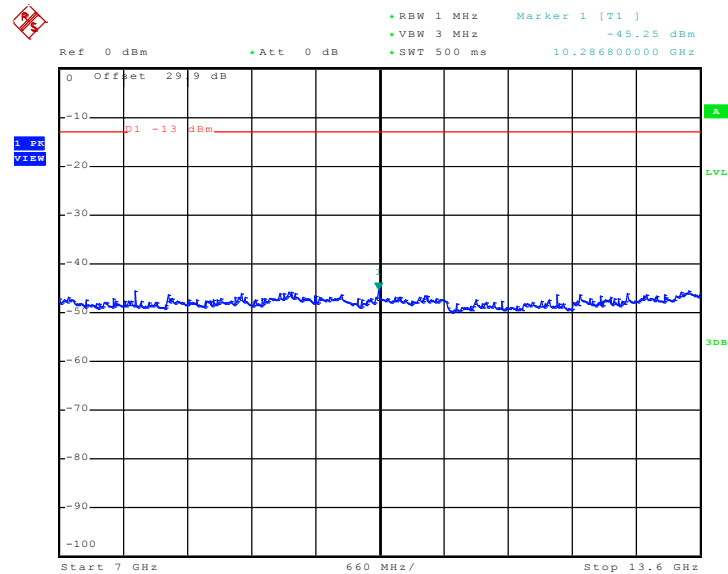


Conducted Emission Plot between 3GHz ~ 7GHz



Date: 13.MAR.2010 06:33:29

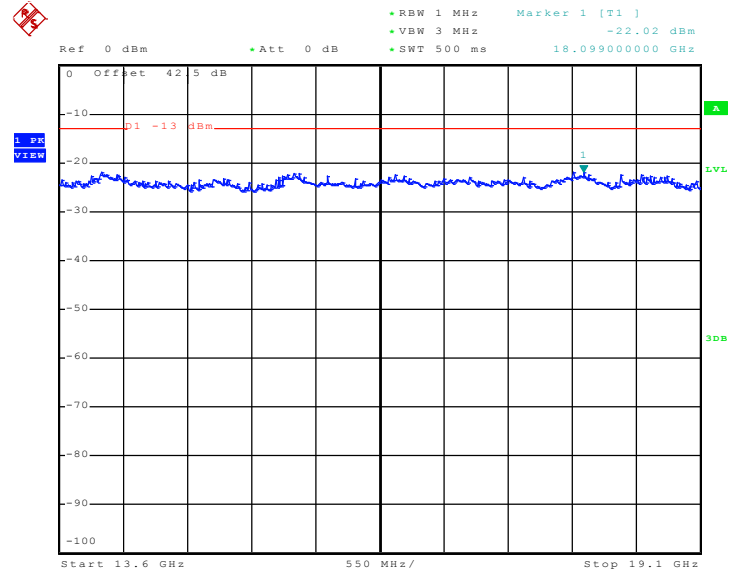
Conducted Emission Plot between 7GHz ~ 13.6GHz



Date: 13.MAR.2010 06:36:01



Conducted Emission Plot between 13.6GHz ~ 19.1GHz

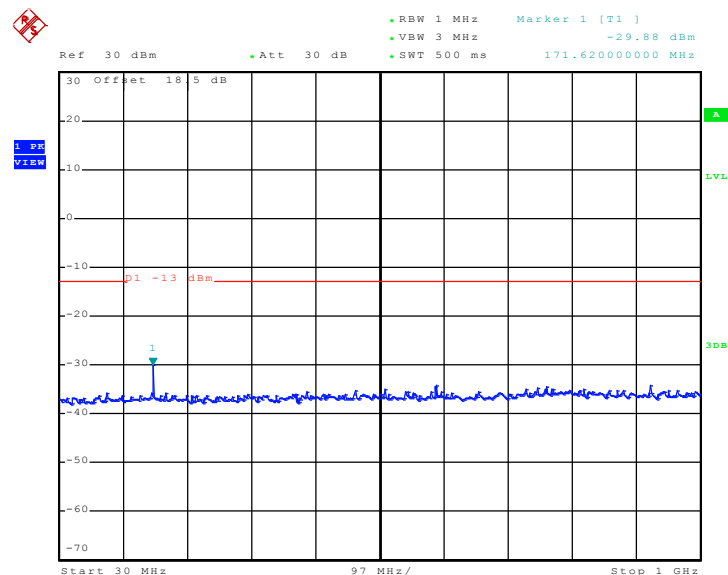


Date: 13.MAR.2010 06:38:46



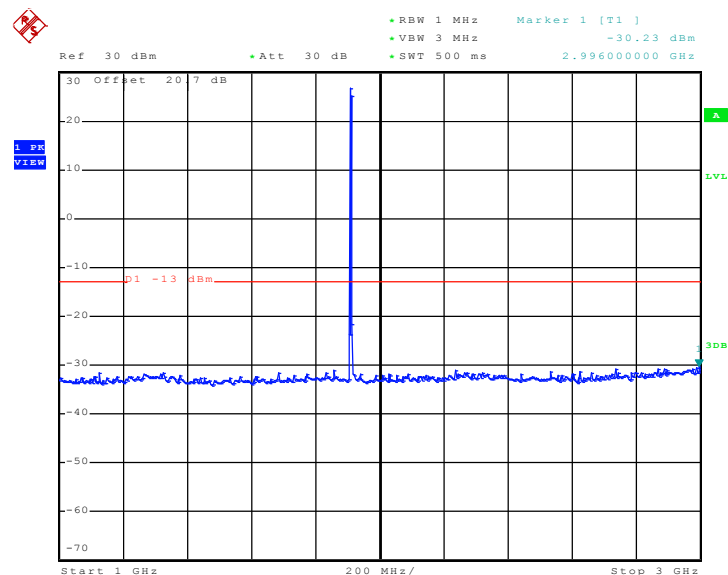
Band :	GSM1900	Channel :	CH810
Test Mode :	EDGE 8 Link		

Conducted Emission Plot between 30MHz ~ 1GHz



Date: 13.MAR.2010 06:25:42

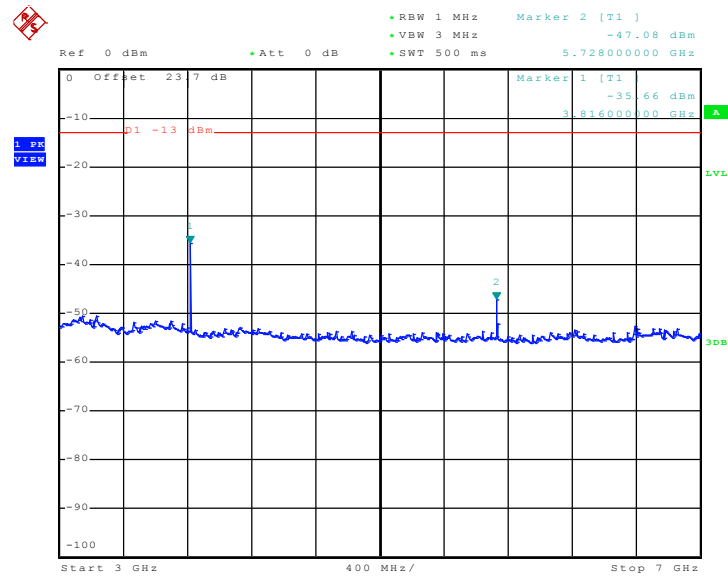
Conducted Emission Plot between 1GHz ~ 3GHz



Date: 13.MAR.2010 06:28:41

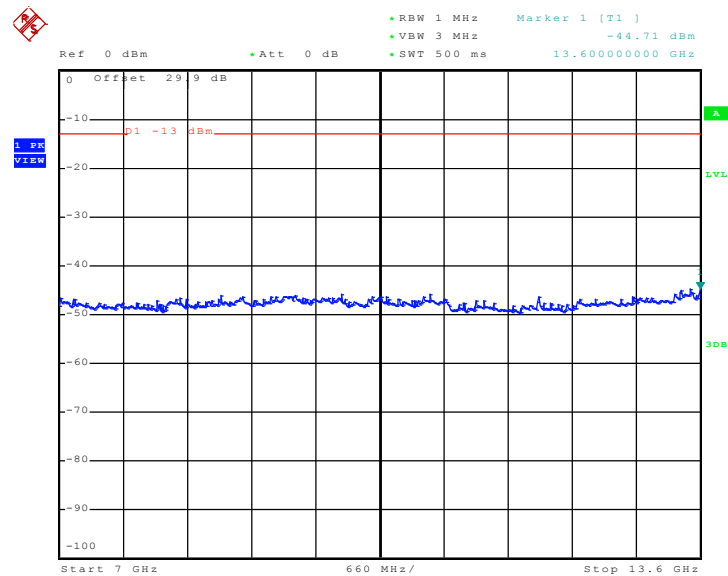


Conducted Emission Plot between 3GHz ~ 7GHz



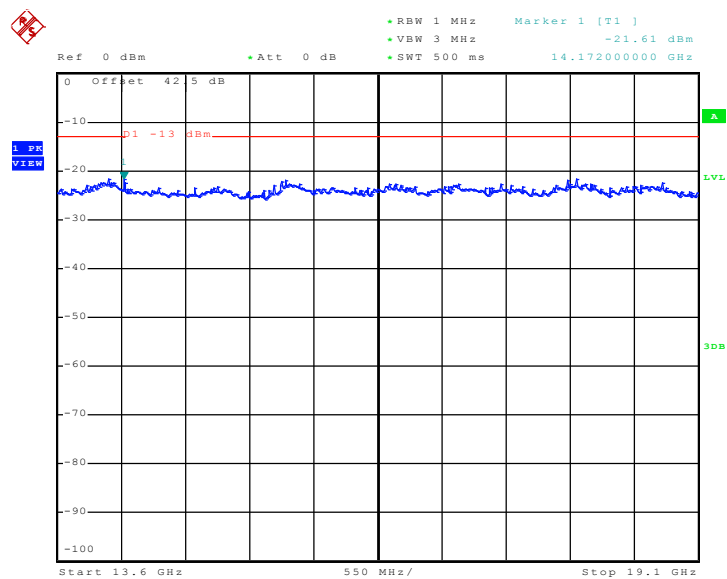
Date: 13.MAR.2010 06:34:06

Conducted Emission Plot between 7GHz ~ 13.6GHz



Date: 13.MAR.2010 06:35:18

Conducted Emission Plot between 13.6GHz ~ 19.1GHz



Date: 13.MAR.2010 06:39:30

3.5 Field Strength of Spurious Radiation Measurement

3.5.1 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.

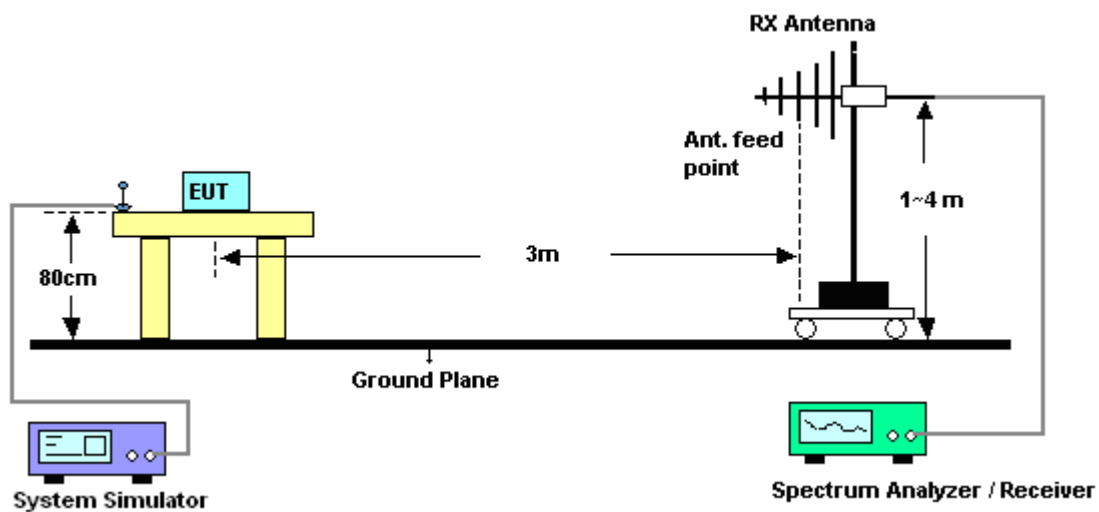
3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

3.5.3 Test Procedures

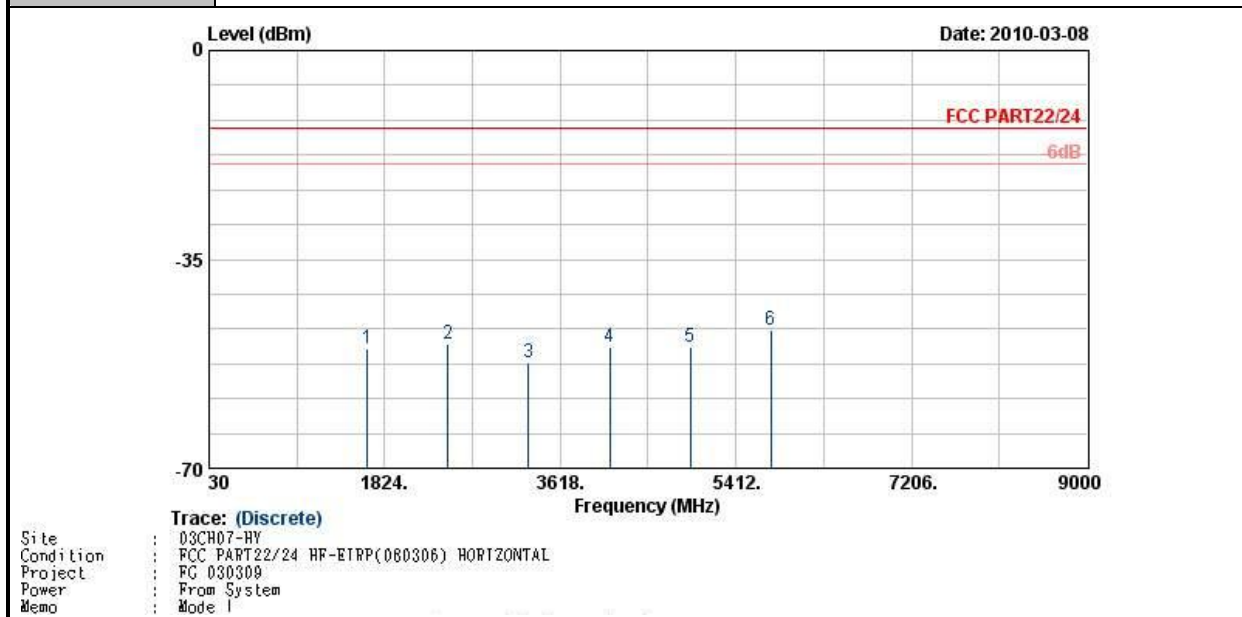
1. The EUT was placed on a rotatable wooden table with 0.8 meter about ground.
2. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
4. The height of the receiving antenna is varied between one meter and four meters to search the maximum spurious emission for both horizontal and vertical polarizations.
5. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, Sweep = 500ms, 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. $ERP \text{ (dBm)} = EIRP - 2.15$

3.5.4 Test Setup



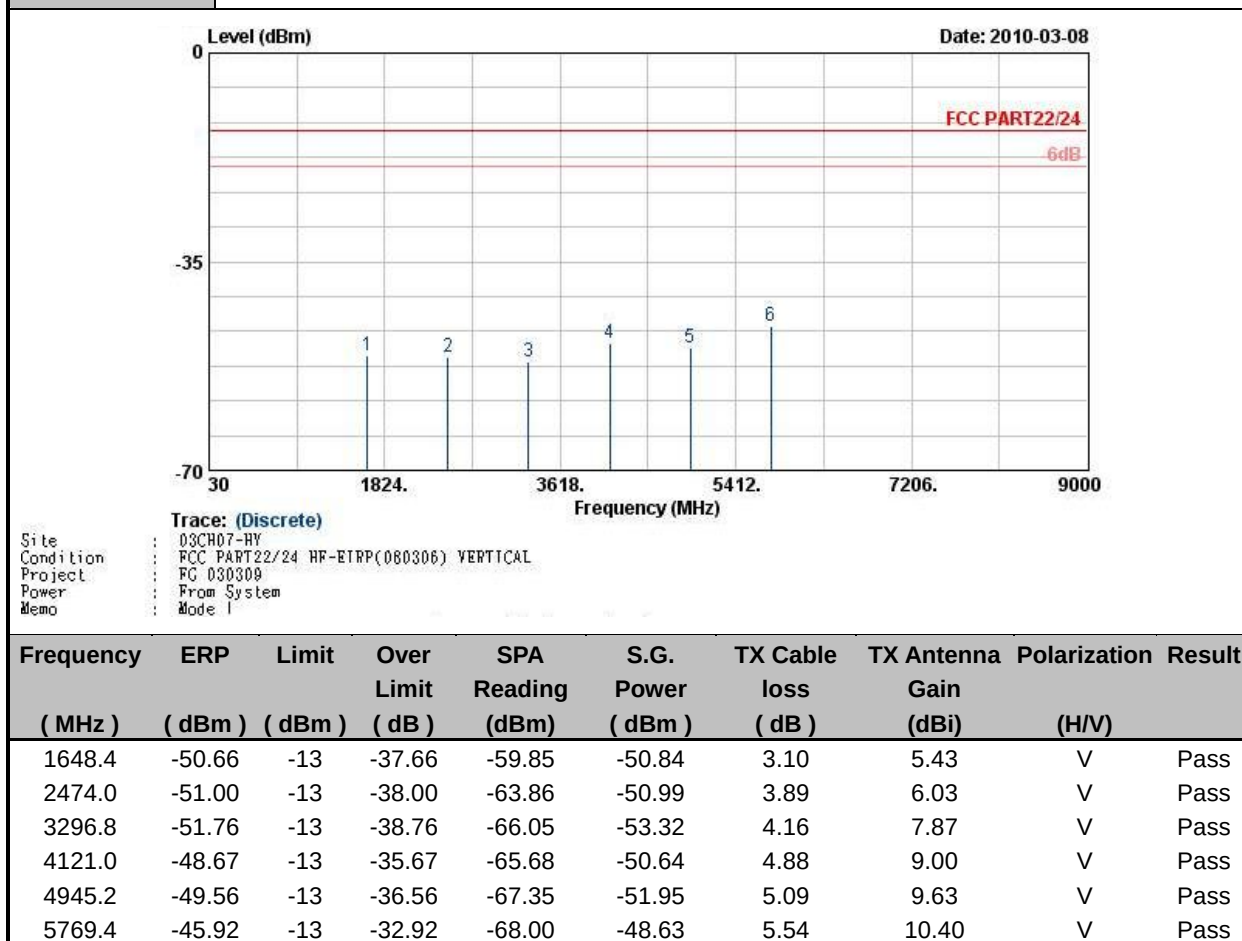
3.5.5 Test Result of Field Strength of Spurious Radiated

Band :	GSM850	Temperature :	23~24°C
Test Mode :	GPRS 8 Link_Channel 128 (With USB Cable)	Relative Humidity :	49~54%
Test Engineer :	Cona Huang	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



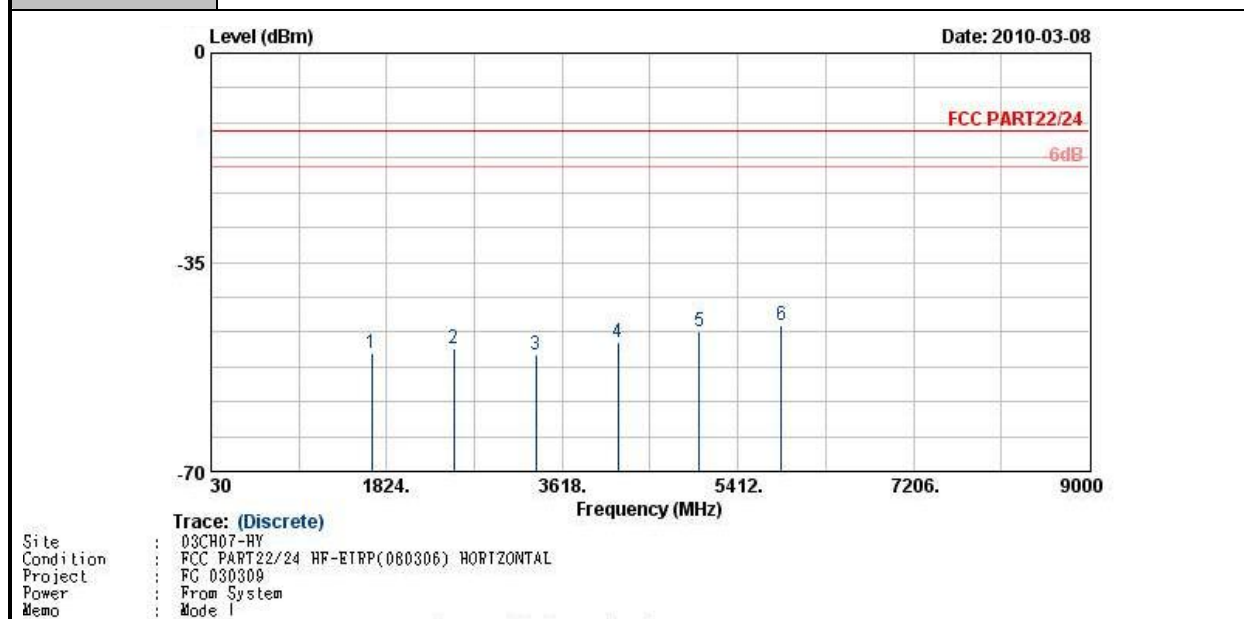
Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1648.4	-49.99	-13	-36.99	-59.18	-50.17	3.10	5.43	H	Pass
2472.6	-49.08	-13	-36.08	-62.46	-49.07	3.89	6.03	H	Pass
3296.8	-52.43	-13	-39.43	-66.14	-53.99	4.16	7.87	H	Pass
4121.0	-49.64	-13	-36.64	-66.27	-51.61	4.88	9.00	H	Pass
4945.2	-49.76	-13	-36.76	-67.39	-52.15	5.09	9.63	H	Pass
5769.4	-46.93	-13	-33.93	-68.58	-49.64	5.54	10.40	H	Pass

Band :	GSM850	Temperature :	23~24°C
Test Mode :	GPRS 8 Link_Channel 128 (With USB Cable)	Relative Humidity :	49~54%
Test Engineer :	Cona Huang	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



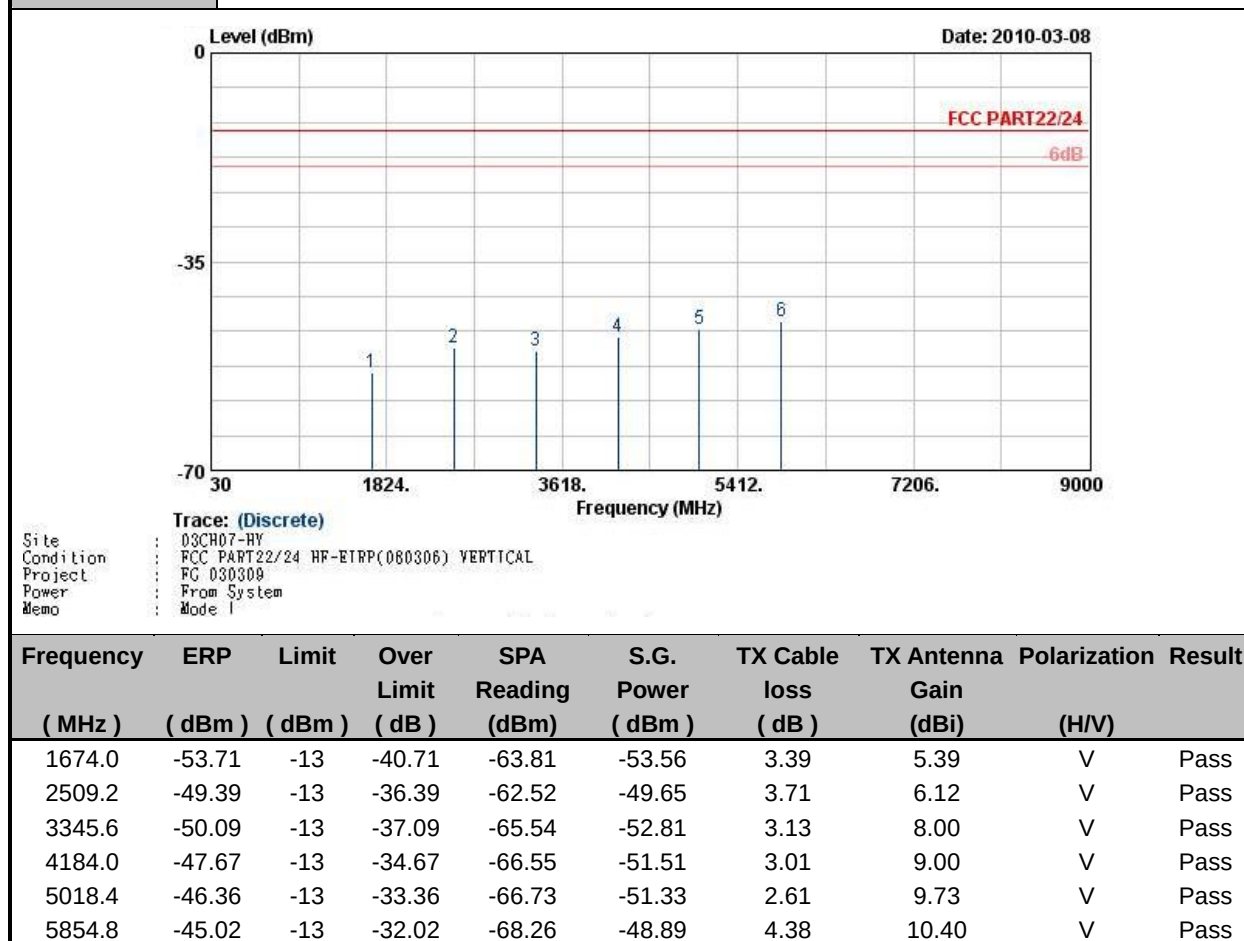


Band :	GSM850	Temperature :	25~26°C
Test Mode :	GPRS 8 Link_Channel 189 (With USB Cable)	Relative Humidity :	47~48%
Test Engineer :	Kay Wang	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		

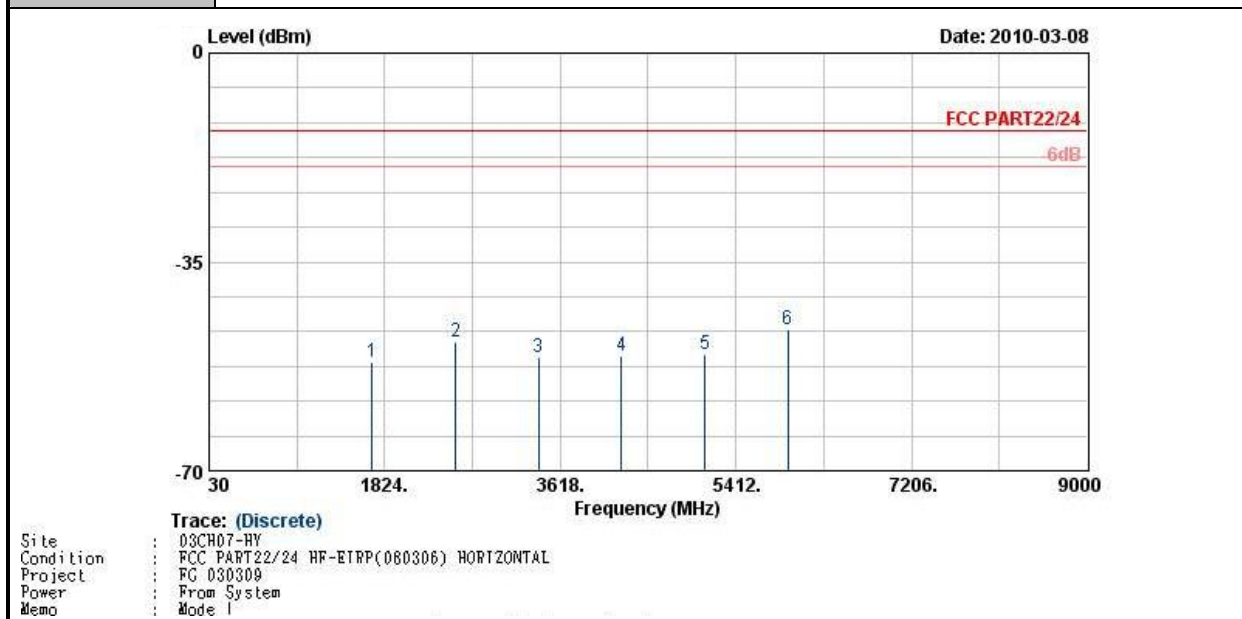


Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1674.0	-50.26	-13	-37.26	-59.12	-50.11	3.39	5.39	H	Pass
2509.2	-49.48	-13	-36.48	-63.13	-49.74	3.71	6.12	H	Pass
3345.6	-50.40	-13	-37.40	-65.27	-53.12	3.13	8.00	H	Pass
4184	-48.35	-13	-35.35	-66.85	-52.19	3.01	9.00	H	Pass
5018.4	-46.52	-13	-33.52	-66.73	-51.49	2.61	9.73	H	Pass
5854.8	-45.45	-13	-32.45	-68.26	-49.32	4.38	10.40	H	Pass

Band :	GSM850	Temperature :	23~24°C
Test Mode :	GPRS 8 Link_Channel 189 (With USB Cable)	Relative Humidity :	49~54%
Test Engineer :	Cona Huang	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		

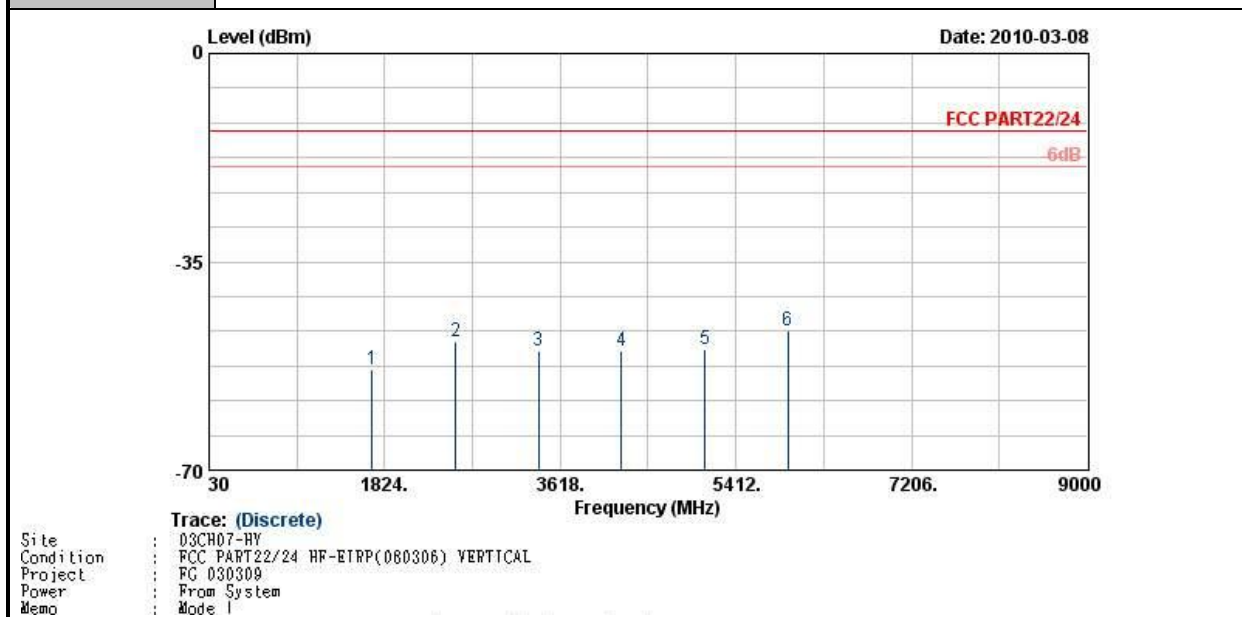


Band :	GSM850	Temperature :	25~26°C
Test Mode :	GPRS 8 Link_Channel 251 (With USB Cable)	Relative Humidity :	47~48%
Test Engineer :	Kay Wang	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



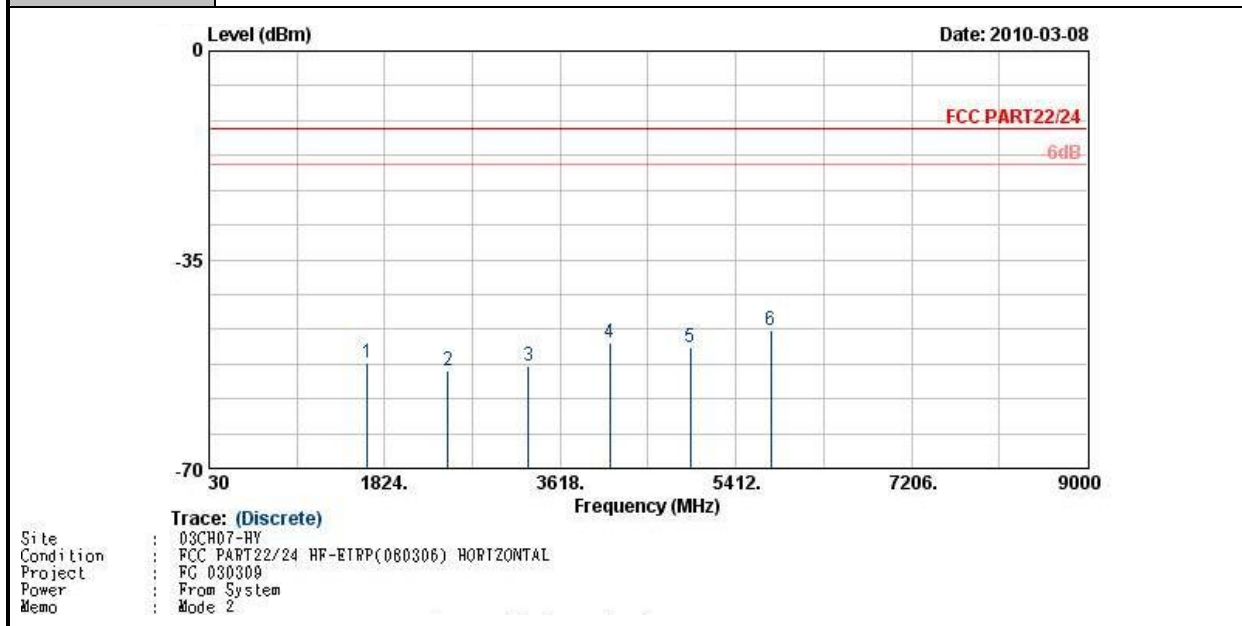
Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1697.6	-51.68	-13	-38.68	-60.87	-51.86	3.02	5.35	H	Pass
2546.4	-48.50	-13	-35.50	-62.2	-48.81	3.73	6.19	H	Pass
3395.2	-50.93	-13	-37.93	-65.07	-52.92	3.98	8.12	H	Pass
4244.0	-50.71	-13	-37.71	-67.38	-52.72	4.84	9.00	H	Pass
5092.8	-50.40	-13	-37.40	-67.95	-52.71	5.36	9.82	H	Pass
5941.6	-46.33	-13	-33.33	-67.69	-48.75	5.83	10.40	H	Pass

Band :	GSM850	Temperature :	23~24°C
Test Mode :	GPRS 8 Link_Channel 251 (With USB Cable)	Relative Humidity :	49~54%
Test Engineer :	Cona Huang	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



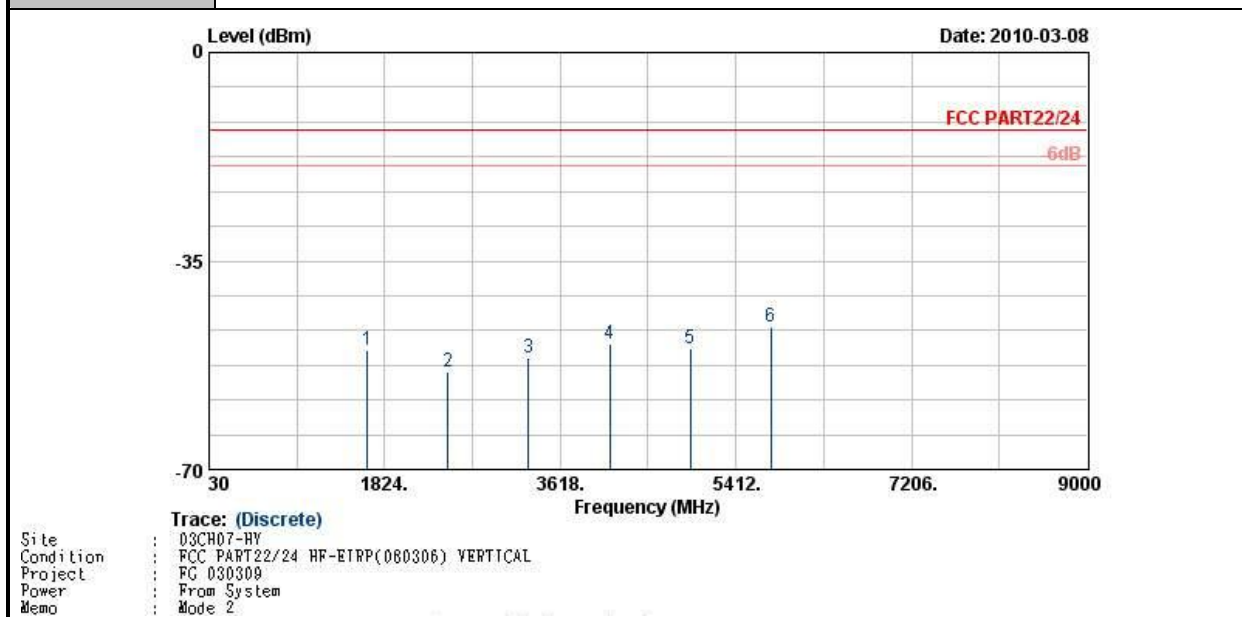
Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1697.6	-53.02	-13	-40.02	-63.45	-53.2	3.02	5.35	V	Pass
2546.4	-48.32	-13	-35.32	-61.50	-48.63	3.73	6.19	V	Pass
3395.2	-50.02	-13	-37.02	-64.74	-52.01	3.98	8.12	V	Pass
4244.0	-50.00	-13	-37.00	-67.05	-52.01	4.84	9.00	V	Pass
5092.8	-49.73	-13	-36.73	-67.44	-52.04	5.36	9.82	V	Pass
5941.6	-46.70	-13	-33.70	-68.49	-49.12	5.83	10.40	V	Pass

Band :	GSM850	Temperature :	23~24°C
Test Mode :	EDGE 8 Link_Channel 128 (With USB Cable)	Relative Humidity :	49~54%
Test Engineer :	Cona Huang	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



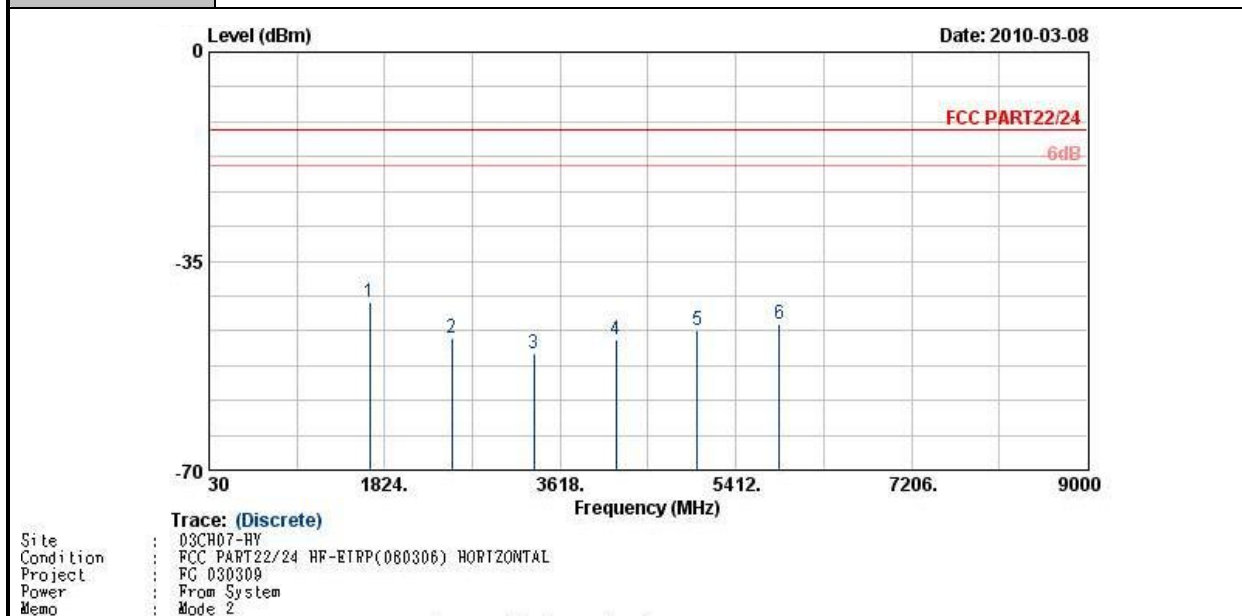
Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1648.4	-52.32	-13	-39.32	-61.51	-52.50	3.10	5.43	H	Pass
2472.6	-53.71	-13	-40.71	-67.09	-53.70	3.89	6.03	H	Pass
3296.8	-52.75	-13	-39.75	-66.46	-54.31	4.16	7.87	H	Pass
4121.0	-49.03	-13	-36.03	-65.66	-51.00	4.88	9.00	H	Pass
4945.2	-49.81	-13	-36.81	-67.44	-52.20	5.09	9.63	H	Pass
5769.4	-46.76	-13	-33.76	-68.41	-49.47	5.54	10.40	H	Pass

Band :	GSM850	Temperature :	23~24°C
Test Mode :	EDGE 8 Link_Channel 128 (With USB Cable)	Relative Humidity :	49~54%
Test Engineer :	Cona Huang	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



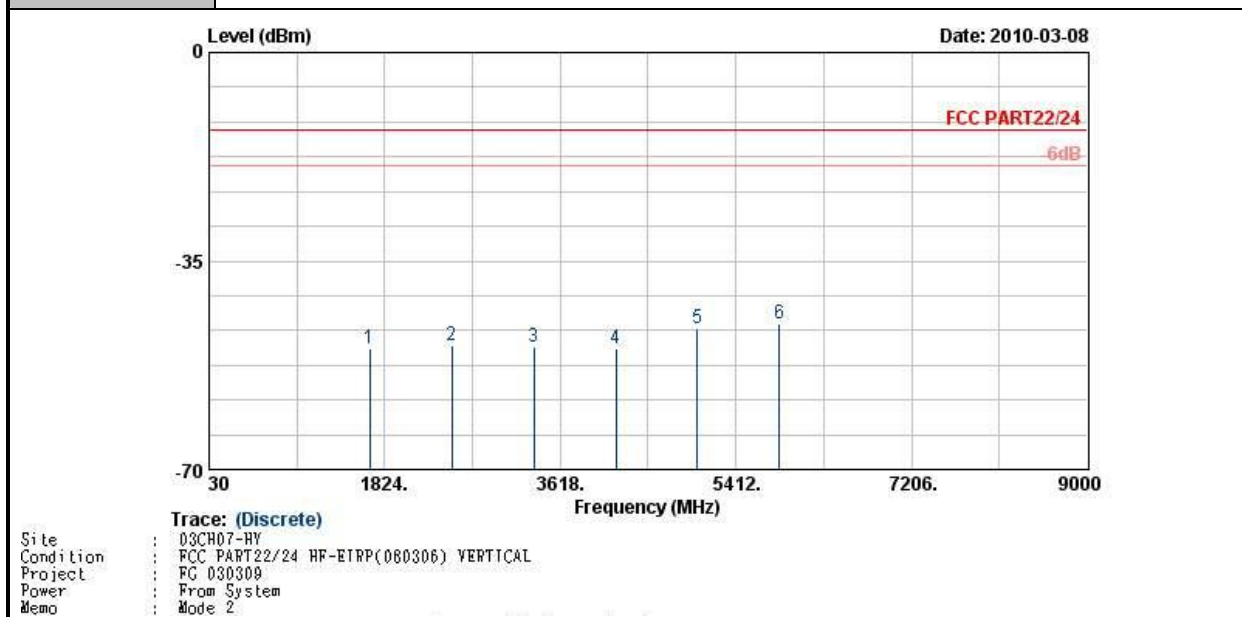
Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1648.4	-50.02	-13	-37.02	-62.45	-50.20	3.10	5.43	V	Pass
2474.0	-53.58	-13	-40.58	-66.44	-53.57	3.89	6.03	V	Pass
3296.8	-51.18	-13	-38.18	-65.47	-52.74	4.16	7.87	V	Pass
4121.0	-48.95	-13	-35.95	-65.96	-50.92	4.88	9.00	V	Pass
4945.2	-49.64	-13	-36.64	-67.43	-52.03	5.09	9.63	V	Pass
5769.4	-46.08	-13	-33.08	-68.16	-48.79	5.54	10.40	V	Pass

Band :	GSM850	Temperature :	23~24°C
Test Mode :	EDGE 8 Link_Channel 189 (With USB Cable)	Relative Humidity :	49~54%
Test Engineer :	Cona Huang	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
1674.0	-41.95	-13	-28.95	-50.81	-41.8	3.39	5.39	H	Pass
2509.2	-47.96	-13	-34.96	-61.61	-48.22	3.71	6.12	H	Pass
3345.6	-50.47	-13	-37.47	-65.34	-53.19	3.13	8.00	H	Pass
4184.0	-48.18	-13	-35.18	-66.68	-52.02	3.01	9.00	H	Pass
5018.4	-46.63	-13	-33.63	-66.84	-51.60	2.61	9.73	H	Pass
5854.8	-45.49	-13	-32.49	-68.3	-49.36	4.38	10.40	H	Pass

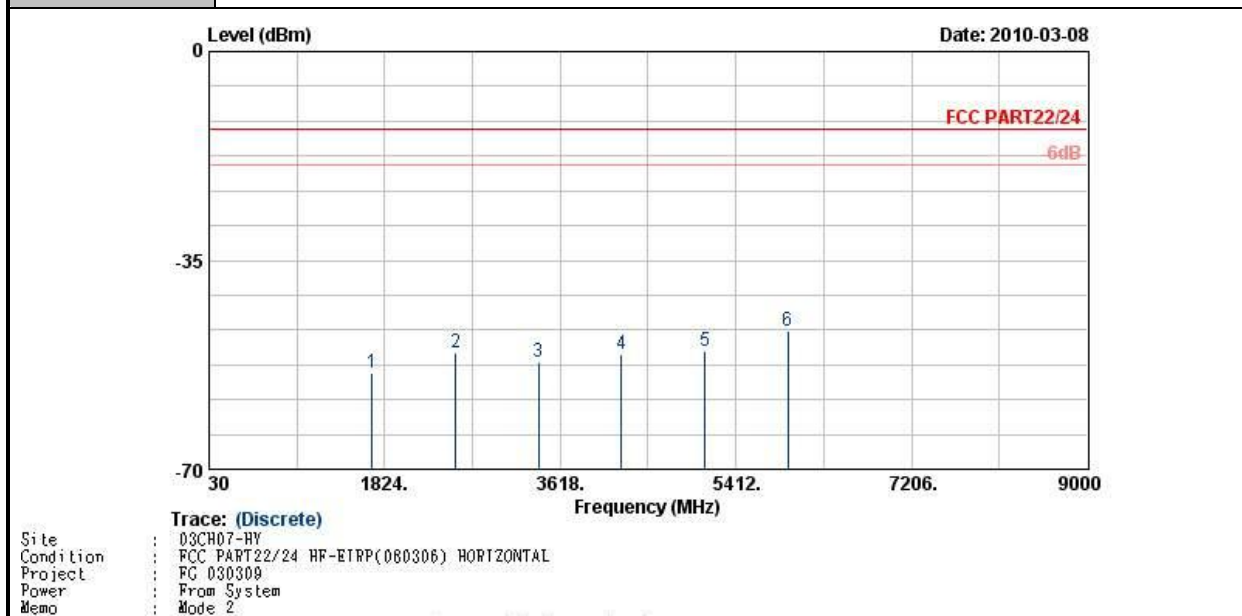
Band :	GSM850	Temperature :	23~24°C
Test Mode :	EDGE 8 Link_Channel 189 (With USB Cable)	Relative Humidity :	49~54%
Test Engineer :	Cona Huang	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



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
1674.0	-49.74	-13	-36.74	-59.84	-49.59	3.39	5.39	V	Pass
2509.2	-49.15	-13	-36.15	-62.28	-49.41	3.71	6.12	V	Pass
3345.6	-49.37	-13	-36.37	-64.82	-52.09	3.13	8.00	V	Pass
4184.0	-47.64	-13	-34.64	-66.52	-51.48	3.01	9.00	V	Pass
5018.4	-46.38	-13	-33.38	-66.75	-51.35	2.61	9.73	V	Pass
5854.8	-45.41	-13	-32.41	-68.65	-49.28	4.38	10.40	V	Pass



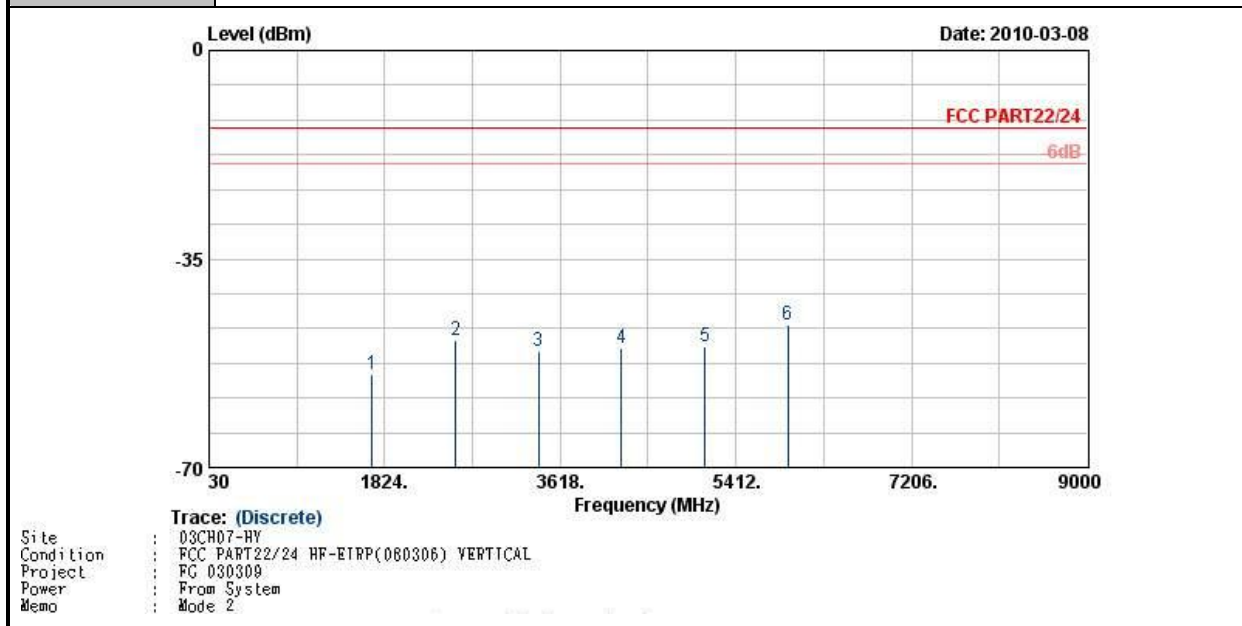
Band :	GSM850	Temperature :	23~24°C
Test Mode :	EDGE 8 Link_Channel 251 (With USB Cable)	Relative Humidity :	49~54%
Test Engineer :	Cona Huang	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



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
1697.6	-53.97	-13	-40.97	-63.16	-54.15	3.02	5.35	H	Pass
2546.4	-50.42	-13	-37.42	-64.12	-50.73	3.73	6.19	H	Pass
3395.2	-51.96	-13	-38.96	-66.10	-53.95	3.98	8.12	H	Pass
4244.0	-50.79	-13	-37.79	-67.46	-52.8	4.84	9.00	H	Pass
5092.8	-50.20	-13	-37.20	-67.75	-52.51	5.36	9.82	H	Pass
5941.6	-46.83	-13	-33.83	-68.19	-49.25	5.83	10.40	H	Pass



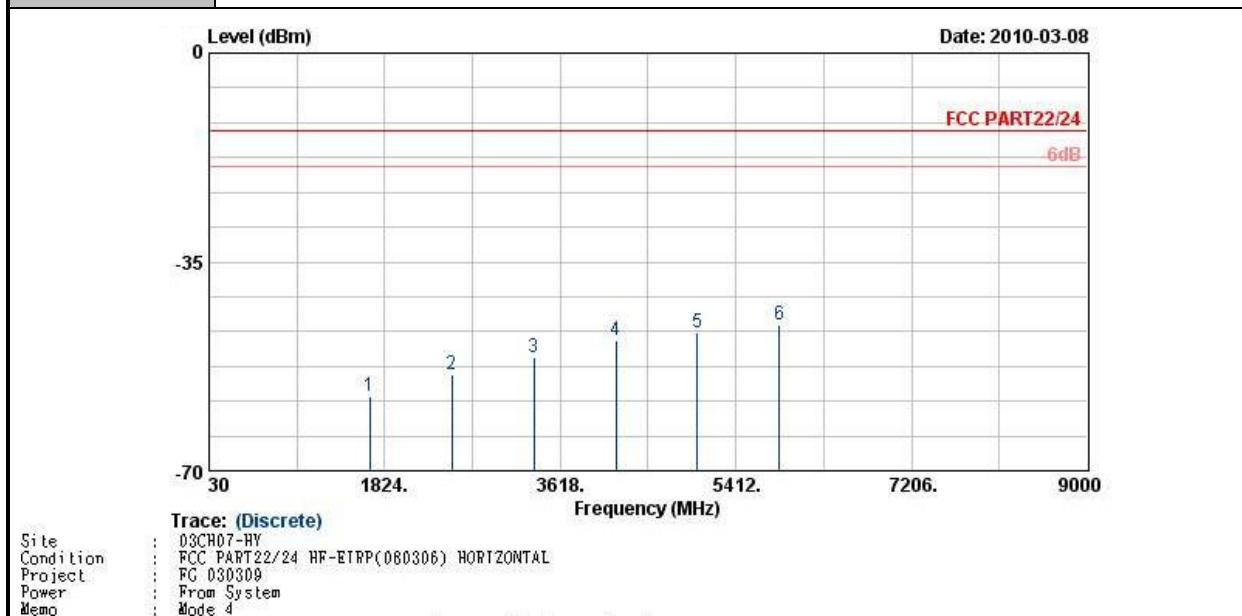
Band :	GSM850	Temperature :	23~24°C
Test Mode :	EDGE 8 Link_Channel 251 (With USB Cable)	Relative Humidity :	49~54%
Test Engineer :	Cona Huang	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



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
1697.6	-54.48	-13	-41.48	-64.91	-54.66	3.02	5.35	V	Pass
2546.4	-48.58	-13	-35.58	-61.76	-48.89	3.73	6.19	V	Pass
3395.2	-50.45	-13	-37.45	-65.17	-52.44	3.98	8.12	V	Pass
4244.0	-49.84	-13	-36.84	-66.89	-51.85	4.84	9.00	V	Pass
5092.8	-49.73	-13	-36.73	-67.44	-52.04	5.36	9.82	V	Pass
5941.6	-46.15	-13	-33.15	-67.94	-48.57	5.83	10.40	V	Pass



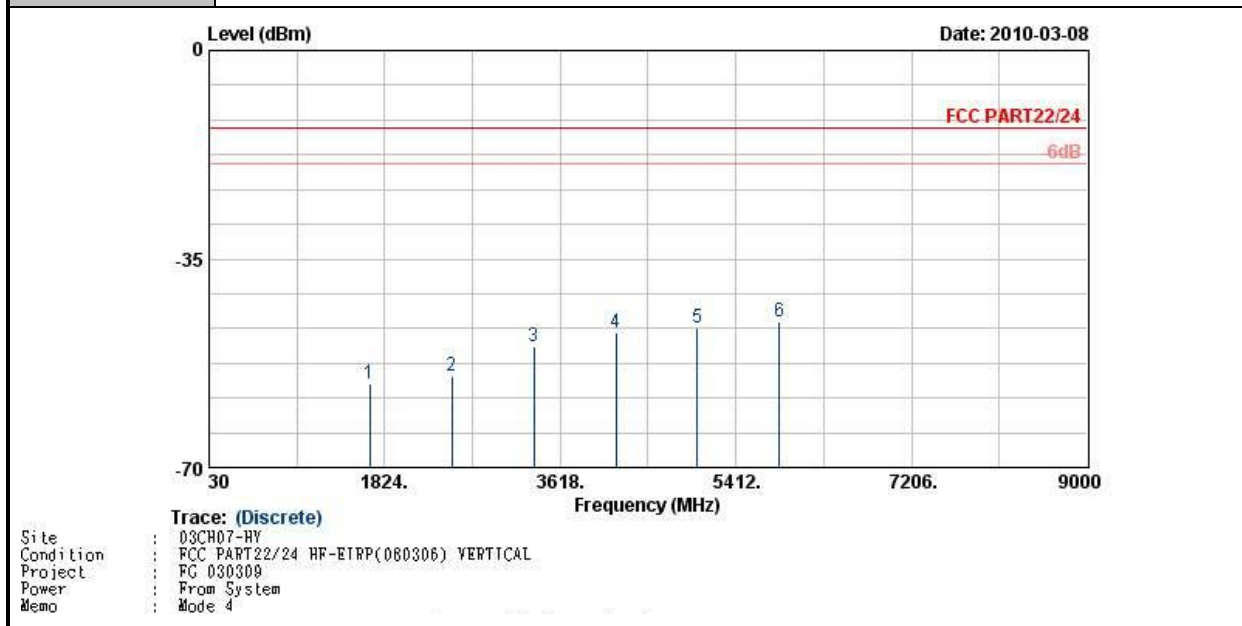
Band :	GSM850	Temperature :	23~24°C
Test Mode :	EDGE 8 Link_Channel 189 (Without USB Cable)	Relative Humidity :	49~54%
Test Engineer :	Cona Huang	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



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
1674.0	-57.52	-13	-44.52	-66.38	-57.37	3.39	5.39	H	Pass
2509.2	-53.88	-13	-40.88	-67.53	-54.14	3.71	6.12	H	Pass
3345.6	-50.93	-13	-37.93	-65.80	-53.65	3.13	8.00	H	Pass
4184.0	-48.16	-13	-35.16	-66.66	-52.00	3.01	9.00	H	Pass
5018.4	-46.90	-13	-33.90	-67.11	-51.87	2.61	9.73	H	Pass
5854.8	-45.50	-13	-32.50	-68.31	-49.37	4.38	10.40	H	Pass

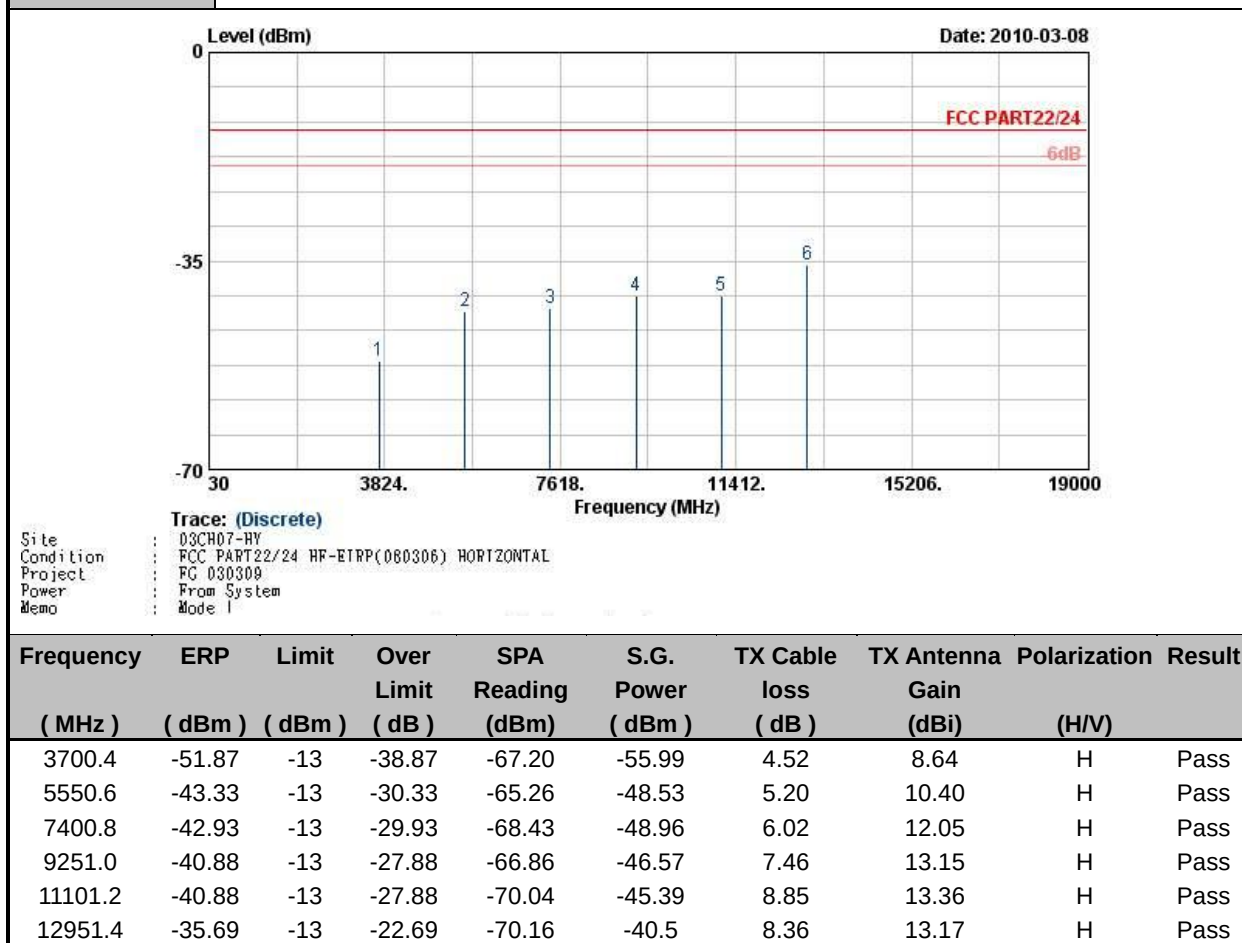


Band :	GSM850	Temperature :	23~24°C
Test Mode :	EDGE 8 Link_Channel 189 (Without USB Cable)	Relative Humidity :	49~54%
Test Engineer :	Cona Huang	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		

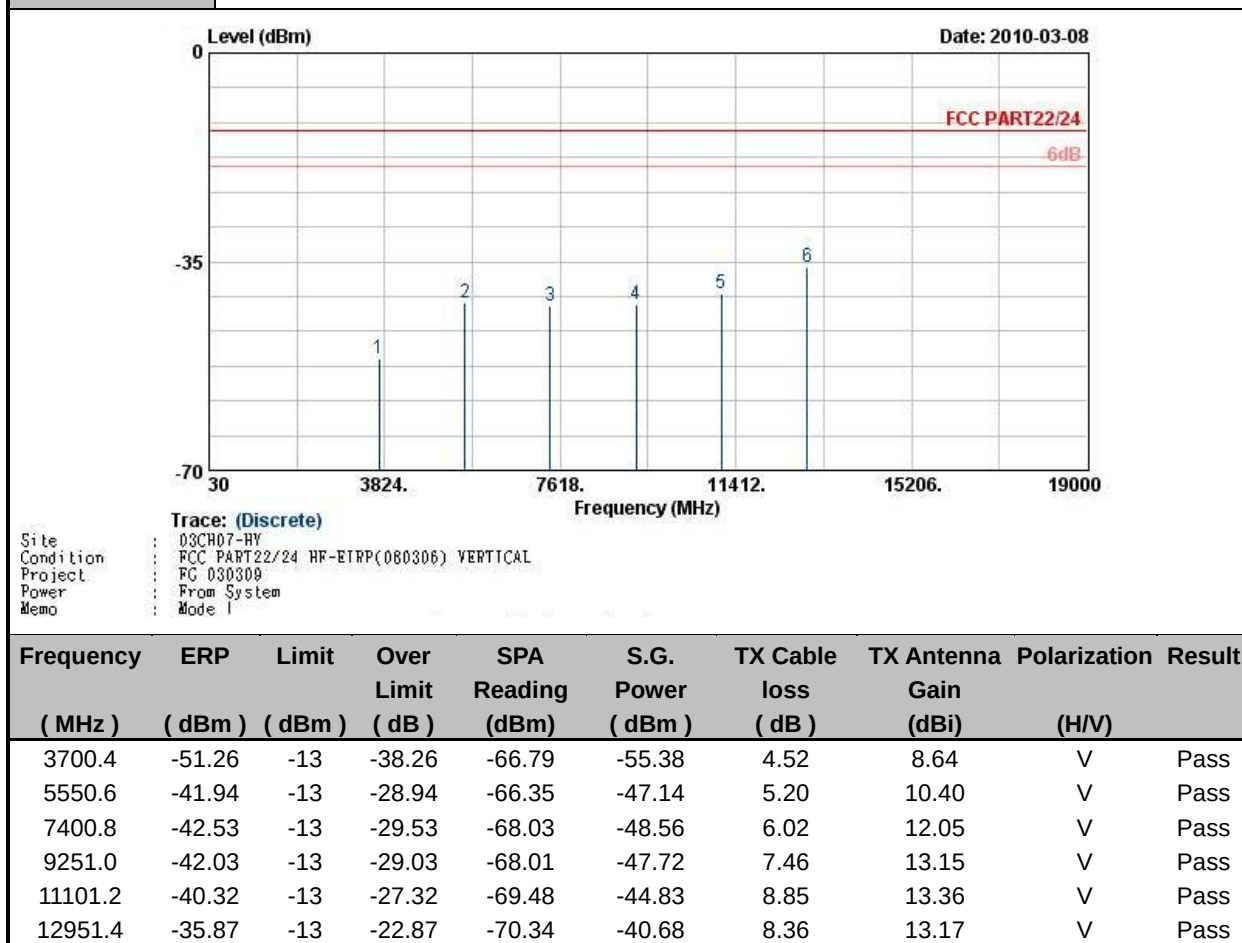


Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1674.0	-56.03	-13	-43.03	-66.13	-55.88	3.39	5.39	V	Pass
2509.2	-54.65	-13	-41.65	-67.78	-54.91	3.71	6.12	V	Pass
3345.6	-49.79	-13	-36.79	-65.24	-52.51	3.13	8.00	V	Pass
4184.0	-47.39	-13	-34.39	-66.27	-51.23	3.01	9.00	V	Pass
5018.4	-46.49	-13	-33.49	-66.86	-51.46	2.61	9.73	V	Pass
5854.8	-45.66	-13	-32.66	-68.90	-49.53	4.38	10.40	V	Pass

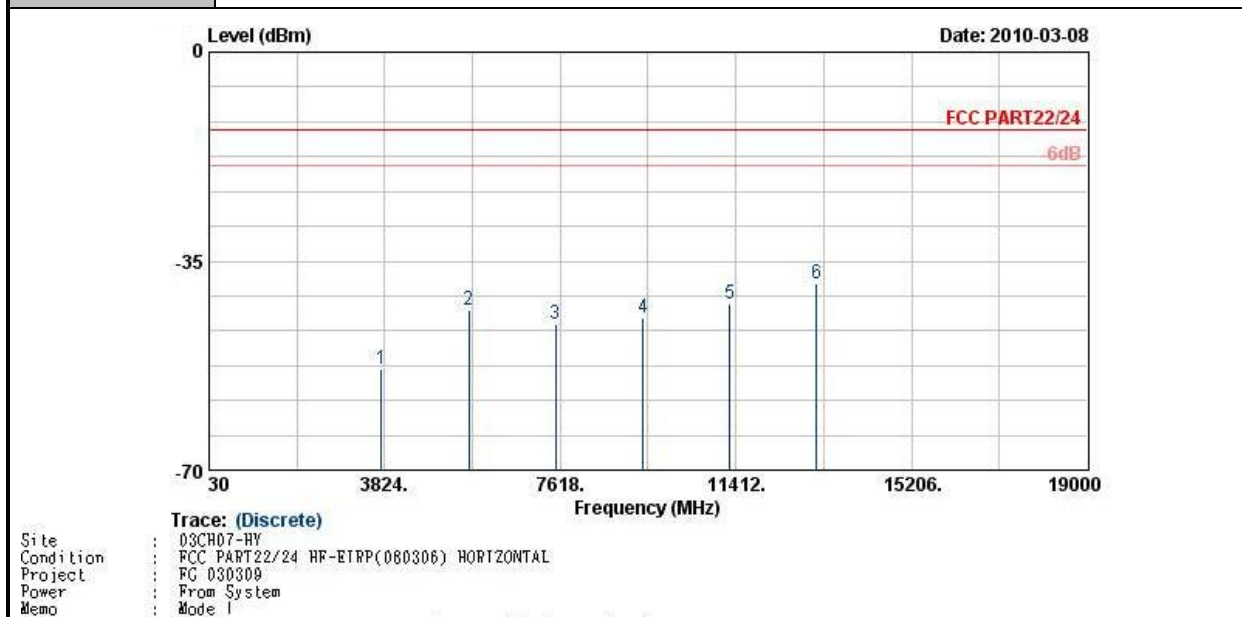
Band :	GSM1900	Temperature :	23~24°C
Test Mode :	GPRS 8 Link_Channel 512 (With USB Cable)	Relative Humidity :	49~54%
Test Engineer :	Cona Huang	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Band :	GSM1900	Temperature :	23~24°C
Test Mode :	GPRS 8 Link_Channel 512 (With USB Cable)	Relative Humidity :	49~54%
Test Engineer :	Cona Huang	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		

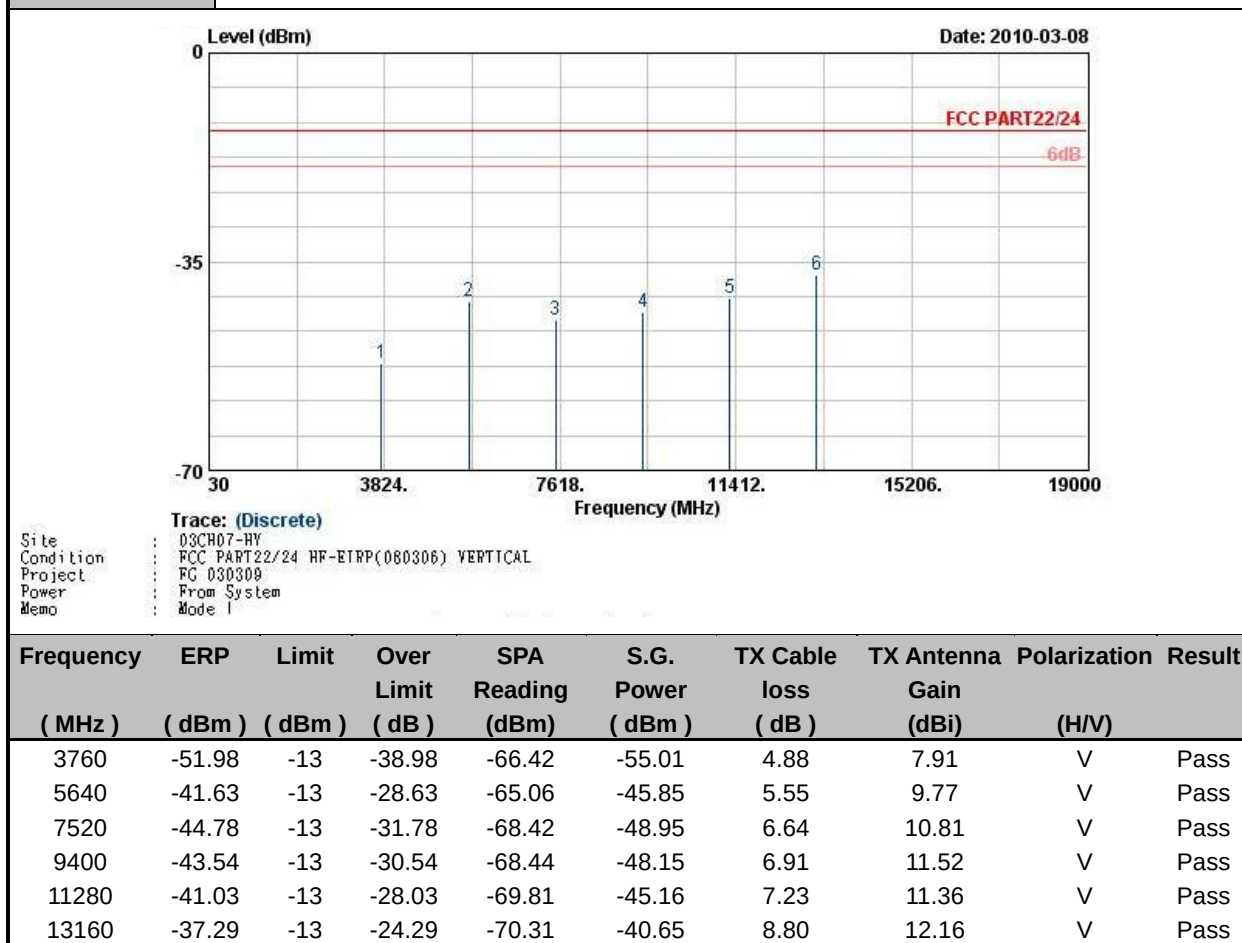


Band :	GSM1900	Temperature :	23~24°C
Test Mode :	GPRS 8 Link_Channel 661 (With USB Cable)	Relative Humidity :	49~54%
Test Engineer :	Cona Huang	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		

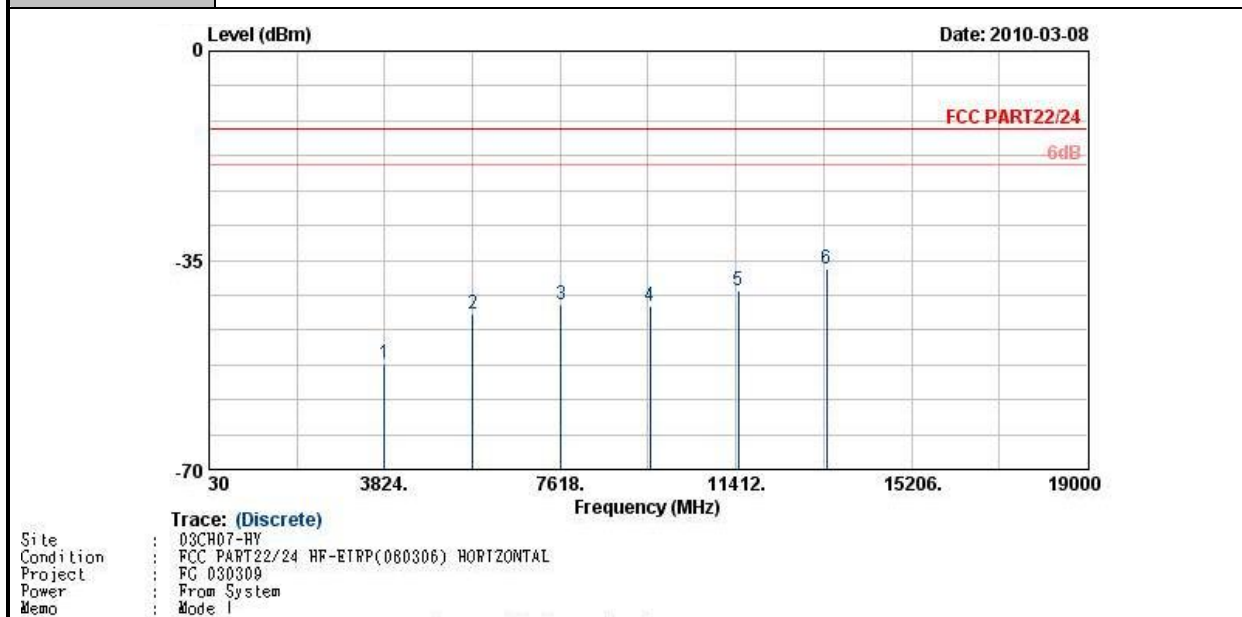


Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
3760	-53.02	-13	-40.02	-66.75	-55.54	4.88	7.40	H	Pass
5640	-43.22	-13	-30.22	-65.69	-46.48	5.55	8.81	H	Pass
7520	-45.50	-13	-32.50	-68.04	-48.57	6.64	9.71	H	Pass
9400	-44.41	-13	-31.41	-68.51	-48.22	6.91	10.72	H	Pass
11280	-42.05	-13	-29.05	-70.23	-45.58	7.23	10.76	H	Pass
13160	-38.73	-13	-25.73	-70.62	-40.96	8.80	11.03	H	Pass

Band :	GSM1900	Temperature :	23~24°C
Test Mode :	GPRS 8 Link_Channel 661 (With USB Cable)	Relative Humidity :	49~54%
Test Engineer :	Cona Huang	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		

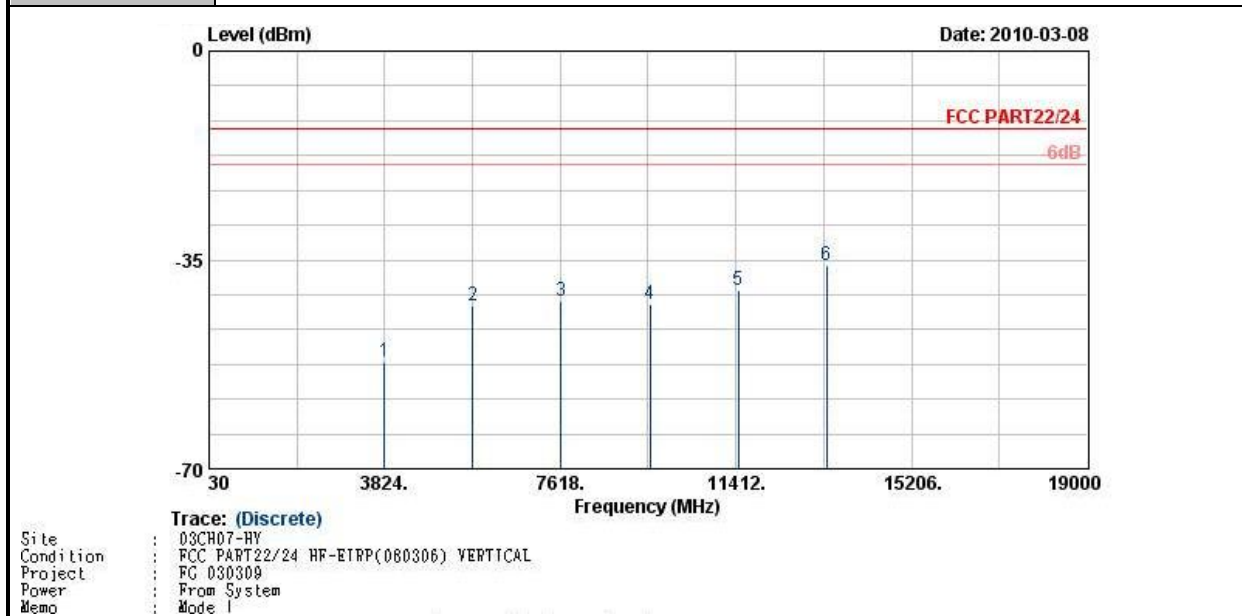


Band :	GSM1900	Temperature :	23~24°C
Test Mode :	GPRS 8 Link_Channel 810 (With USB Cable)	Relative Humidity :	49~54%
Test Engineer :	Cona Huang	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



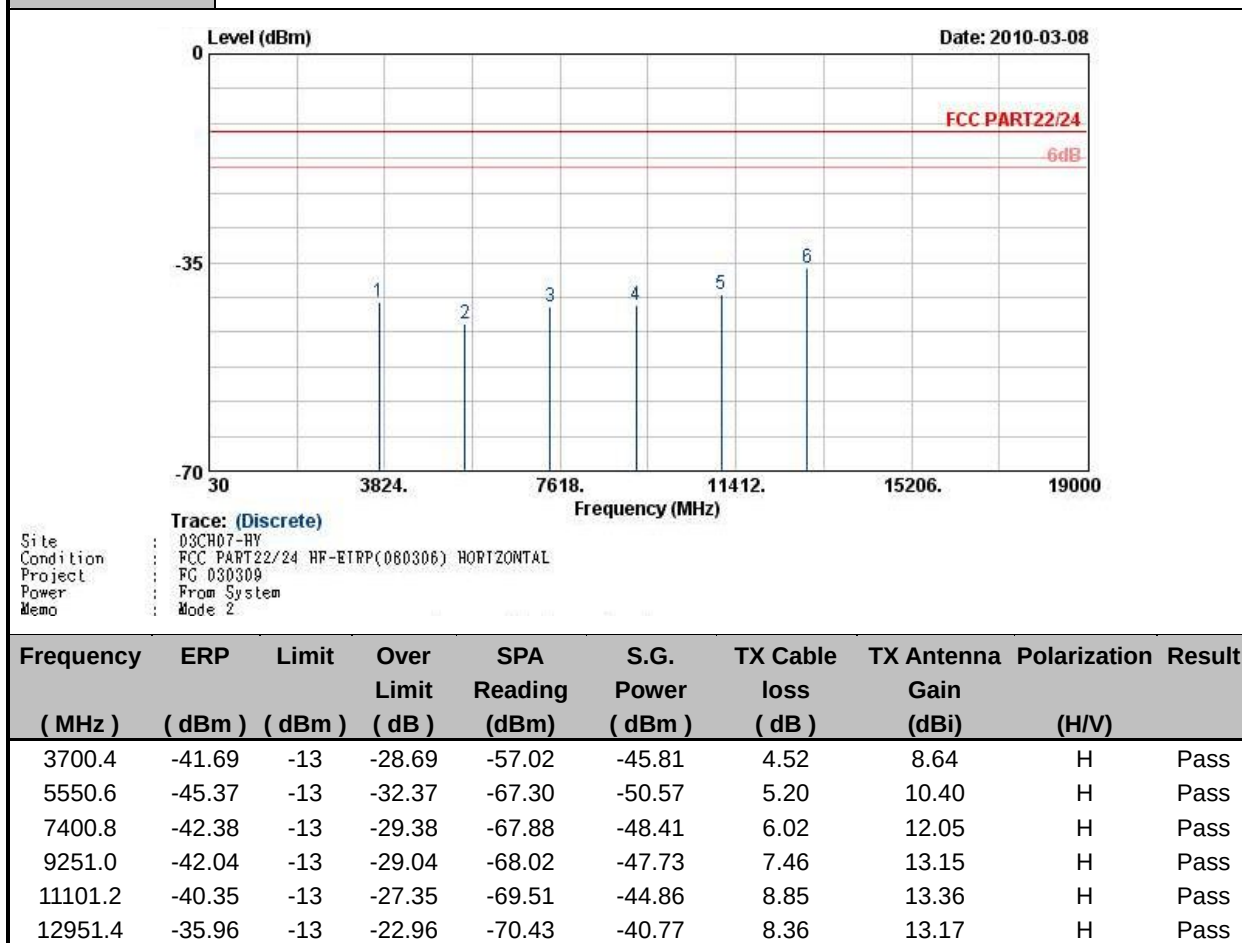
Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
3819.6	-52.24	-13	-39.24	-67.45	-56.24	4.78	8.78	H	Pass
5726.0	-43.89	-13	-30.89	-65.36	-48.63	5.66	10.40	H	Pass
7639.2	-42.46	-13	-29.46	-67.96	-48.49	6.28	12.31	H	Pass
9549.0	-42.56	-13	-29.56	-68.84	-48.55	7.20	13.19	H	Pass
11458.8	-40.10	-13	-27.10	-69.38	-44.73	8.59	13.22	H	Pass
13368.6	-36.52	-13	-23.52	-70.49	-40.83	9.4	13.71	H	Pass

Band :	GSM1900	Temperature :	23~24°C
Test Mode :	GPRS 8 Link_Channel 810 (With USB Cable)	Relative Humidity :	49~54%
Test Engineer :	Cona Huang	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		

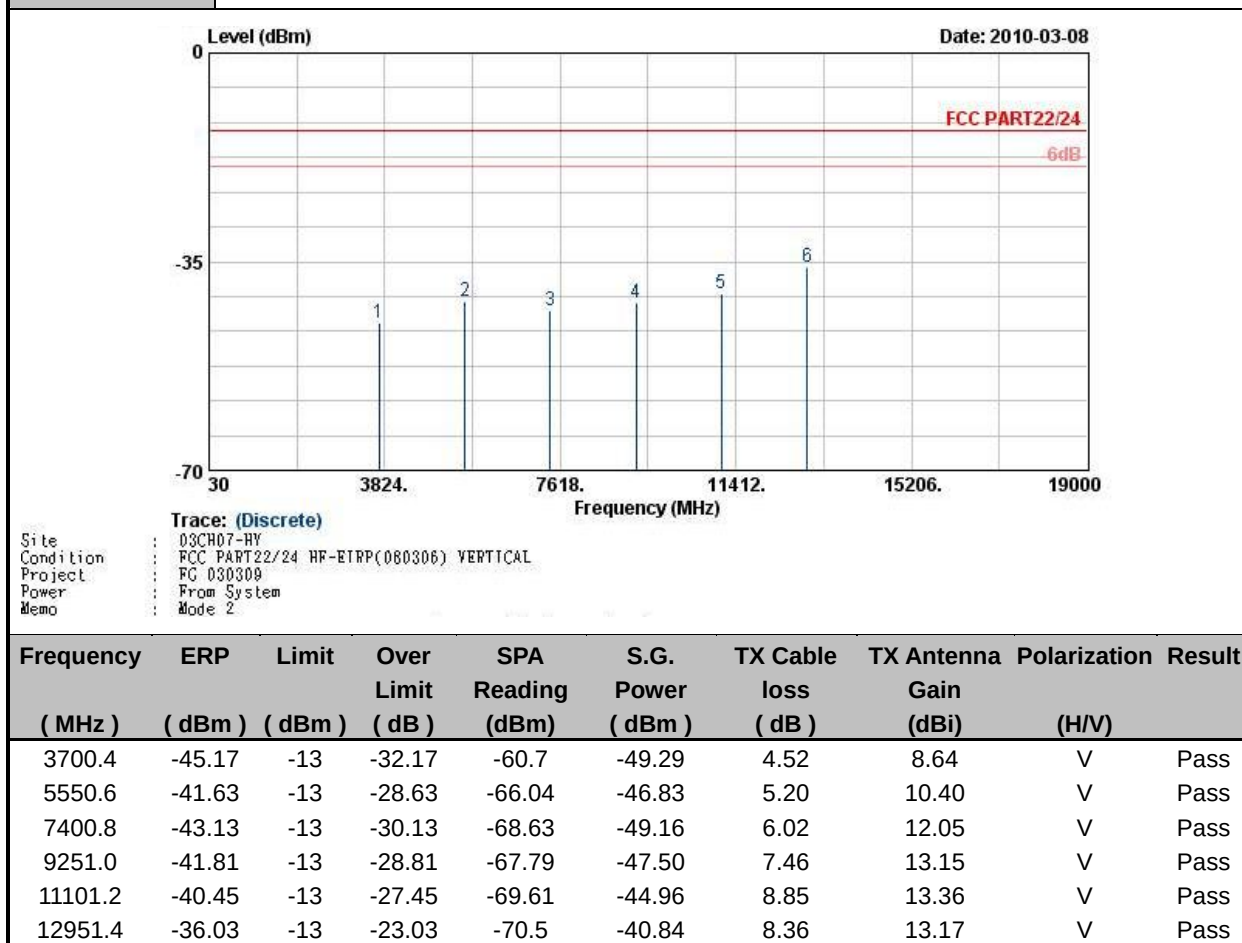


Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
3819.6	-52.14	-13	-39.14	-67.55	-56.14	4.78	8.78	V	Pass
5726.0	-42.65	-13	-29.65	-66.60	-47.39	5.66	10.40	V	Pass
7639.2	-41.81	-13	-28.81	-67.31	-47.84	6.28	12.31	V	Pass
9549.0	-42.53	-13	-29.53	-68.81	-48.52	7.20	13.19	V	Pass
11458.8	-40.06	-13	-27.06	-69.34	-44.69	8.59	13.22	V	Pass
13368.6	-36.04	-13	-23.04	-70.01	-40.35	9.4	13.71	V	Pass

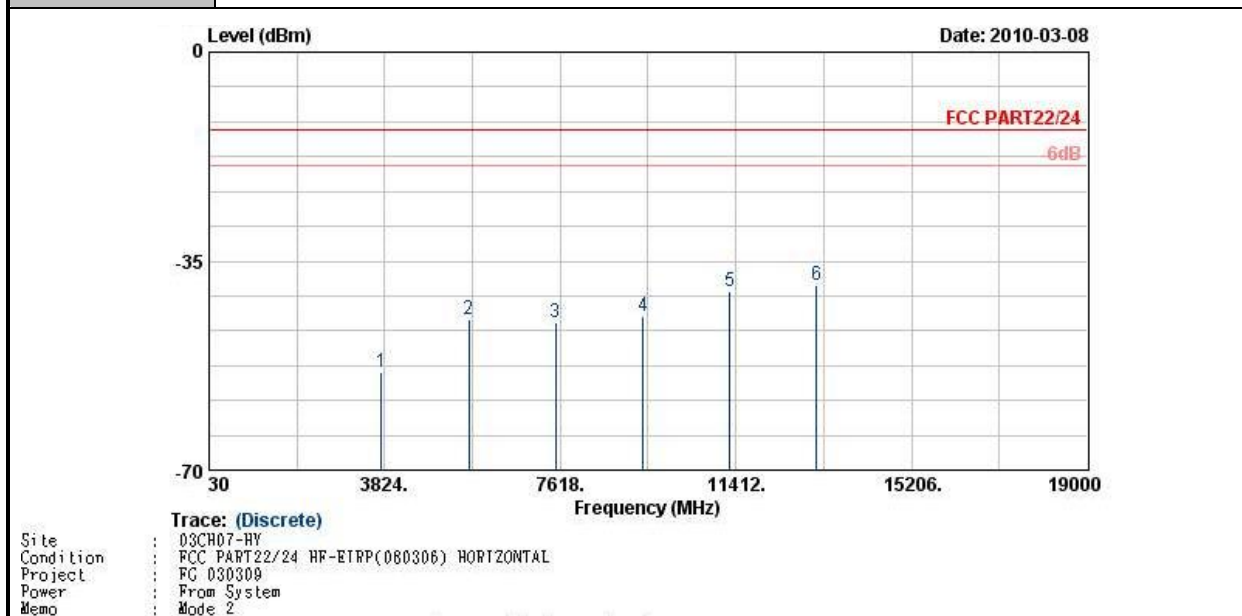
Band :	GSM1900	Temperature :	23~24°C
Test Mode :	EDGE 8 Link_Channel 512 (With USB Cable)	Relative Humidity :	49~54%
Test Engineer :	Cona Huang	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Band :	GSM1900	Temperature :	23~24°C
Test Mode :	EDGE 8 Link_Channel 512 (With USB Cable)	Relative Humidity :	49~54%
Test Engineer :	Cona Huang	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		

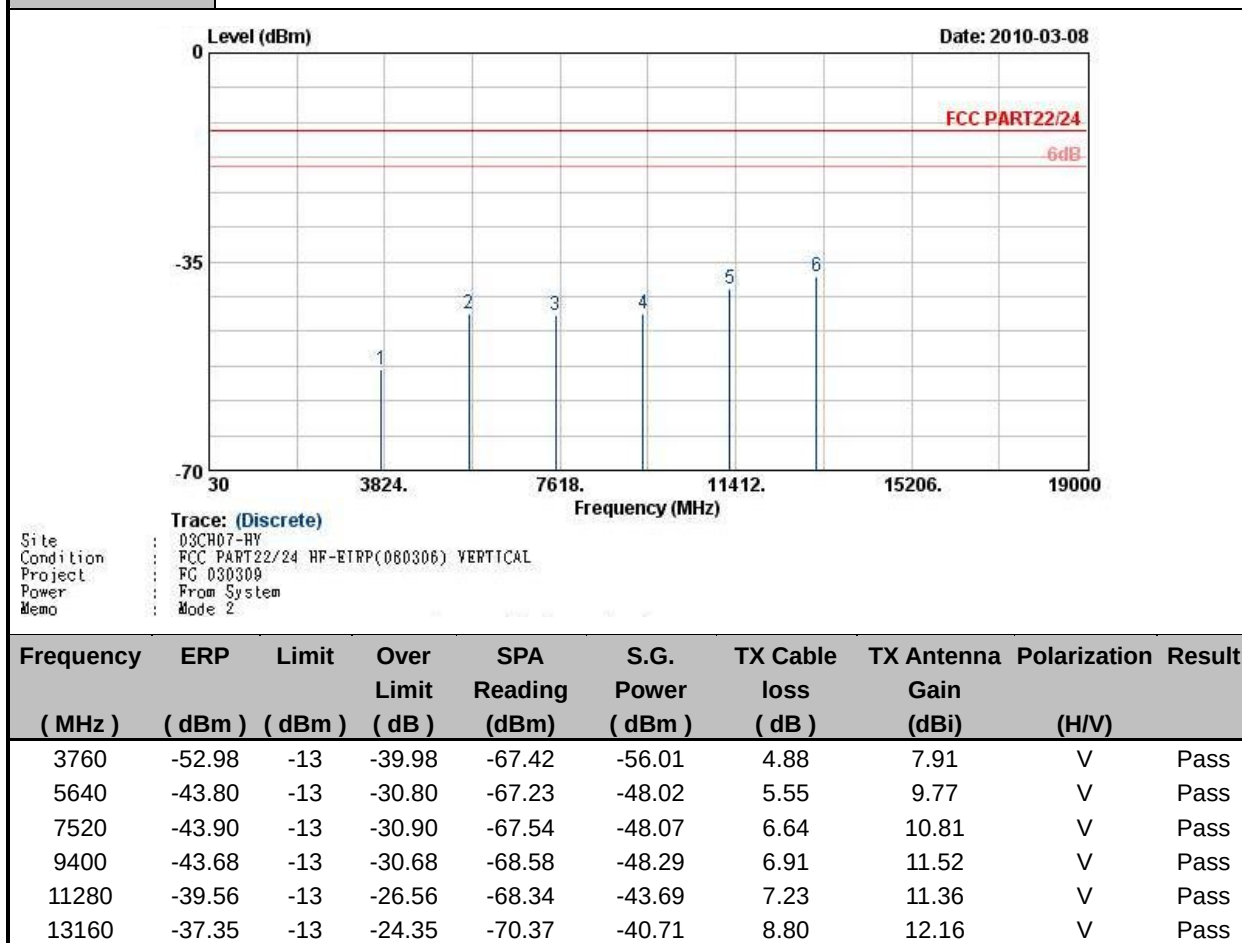


Band :	GSM1900	Temperature :	23~24°C
Test Mode :	EDGE 8 Link_Channel 661 (With USB Cable)	Relative Humidity :	49~54%
Test Engineer :	Cona Huang	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		

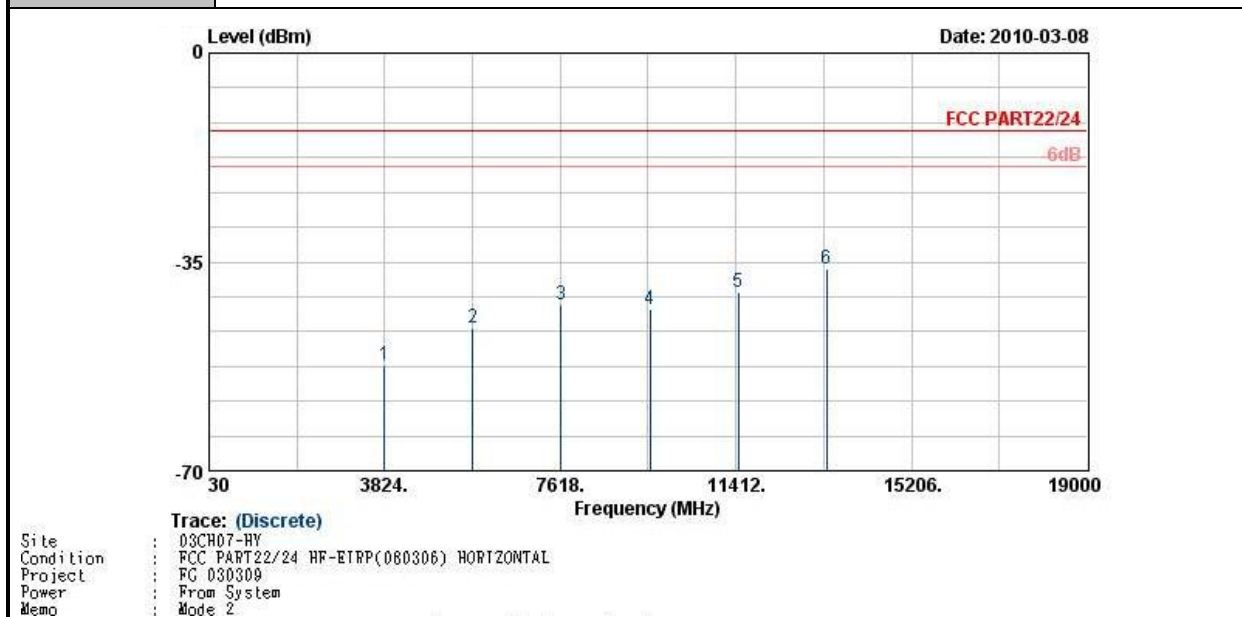


Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
3760	-53.72	-13	-40.72	-67.45	-56.24	4.88	7.40	H	Pass
5640	-44.85	-13	-31.85	-67.32	-48.11	5.55	8.81	H	Pass
7520	-45.30	-13	-32.30	-67.84	-48.37	6.64	9.71	H	Pass
9400	-44.28	-13	-31.28	-68.38	-48.09	6.91	10.72	H	Pass
11280	-40.17	-13	-27.17	-68.35	-43.7	7.23	10.76	H	Pass
13160	-38.95	-13	-25.95	-70.84	-41.18	8.80	11.03	H	Pass

Band :	GSM1900	Temperature :	23~24°C
Test Mode :	EDGE 8 Link_Channel 661 (With USB Cable)	Relative Humidity :	49~54%
Test Engineer :	Cona Huang	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		

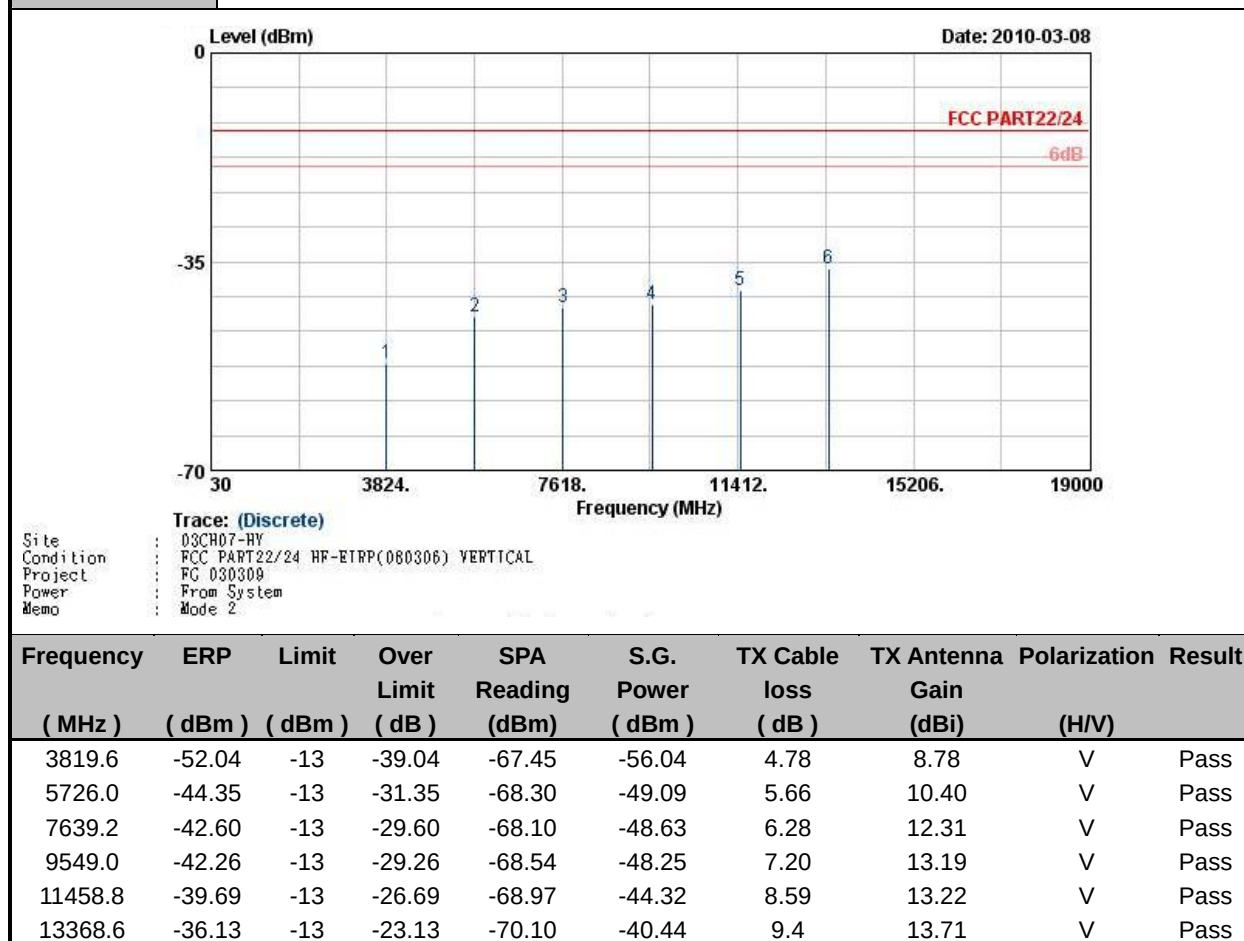


Band :	GSM1900	Temperature :	23~24°C
Test Mode :	EDGE 8 Link_Channel 810 (With USB Cable)	Relative Humidity :	49~54%
Test Engineer :	Cona Huang	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		

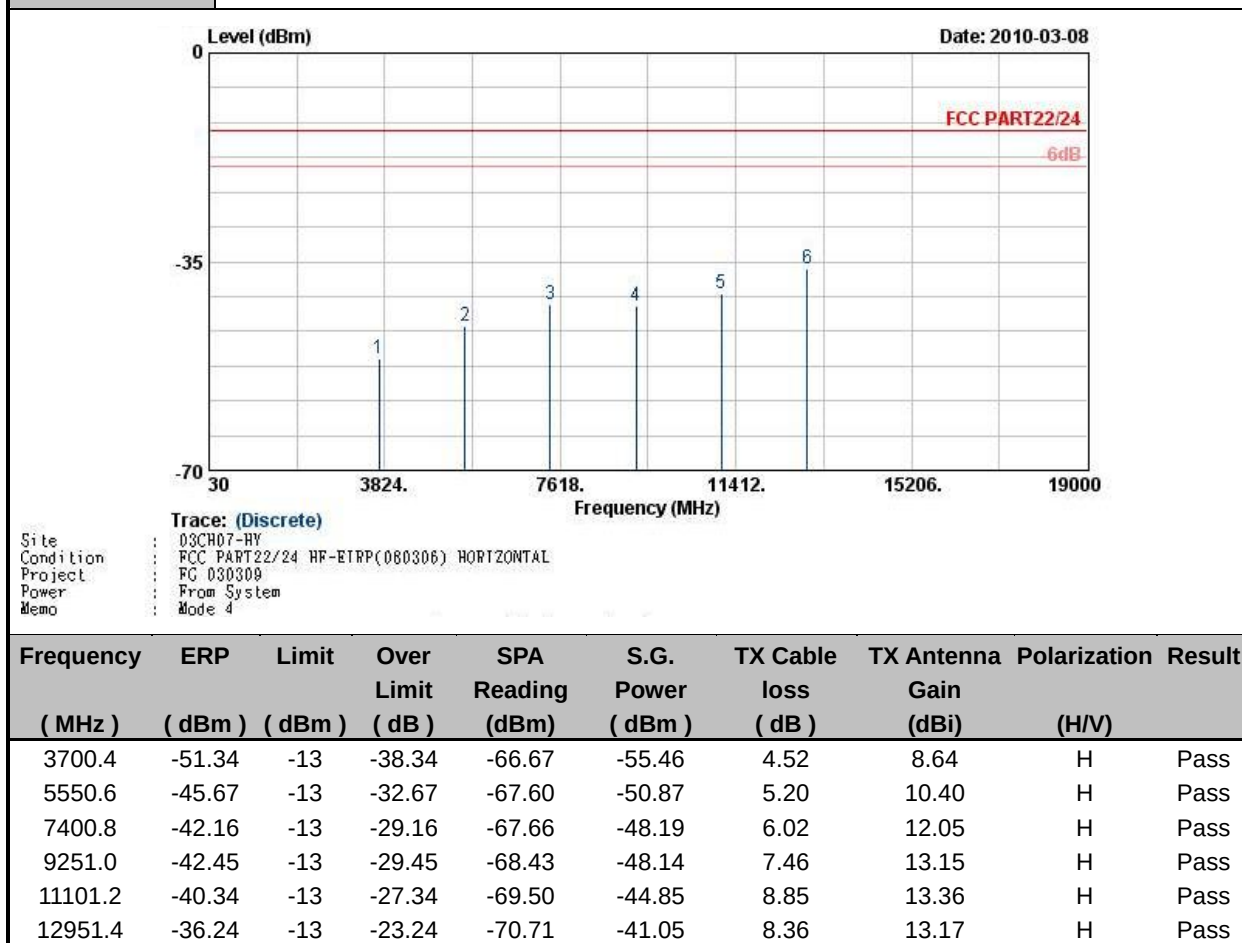


Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
3819.6	-52.43	-13	-39.43	-67.64	-56.43	4.78	8.78	H	Pass
5726.0	-45.99	-13	-32.99	-67.46	-50.73	5.66	10.40	H	Pass
7639.2	-42.12	-13	-29.12	-67.62	-48.15	6.28	12.31	H	Pass
9549.0	-42.87	-13	-29.87	-69.15	-48.86	7.20	13.19	H	Pass
11458.8	-40.01	-13	-27.01	-69.29	-44.64	8.59	13.22	H	Pass
13368.6	-36.29	-13	-23.29	-70.26	-40.6	9.4	13.71	H	Pass

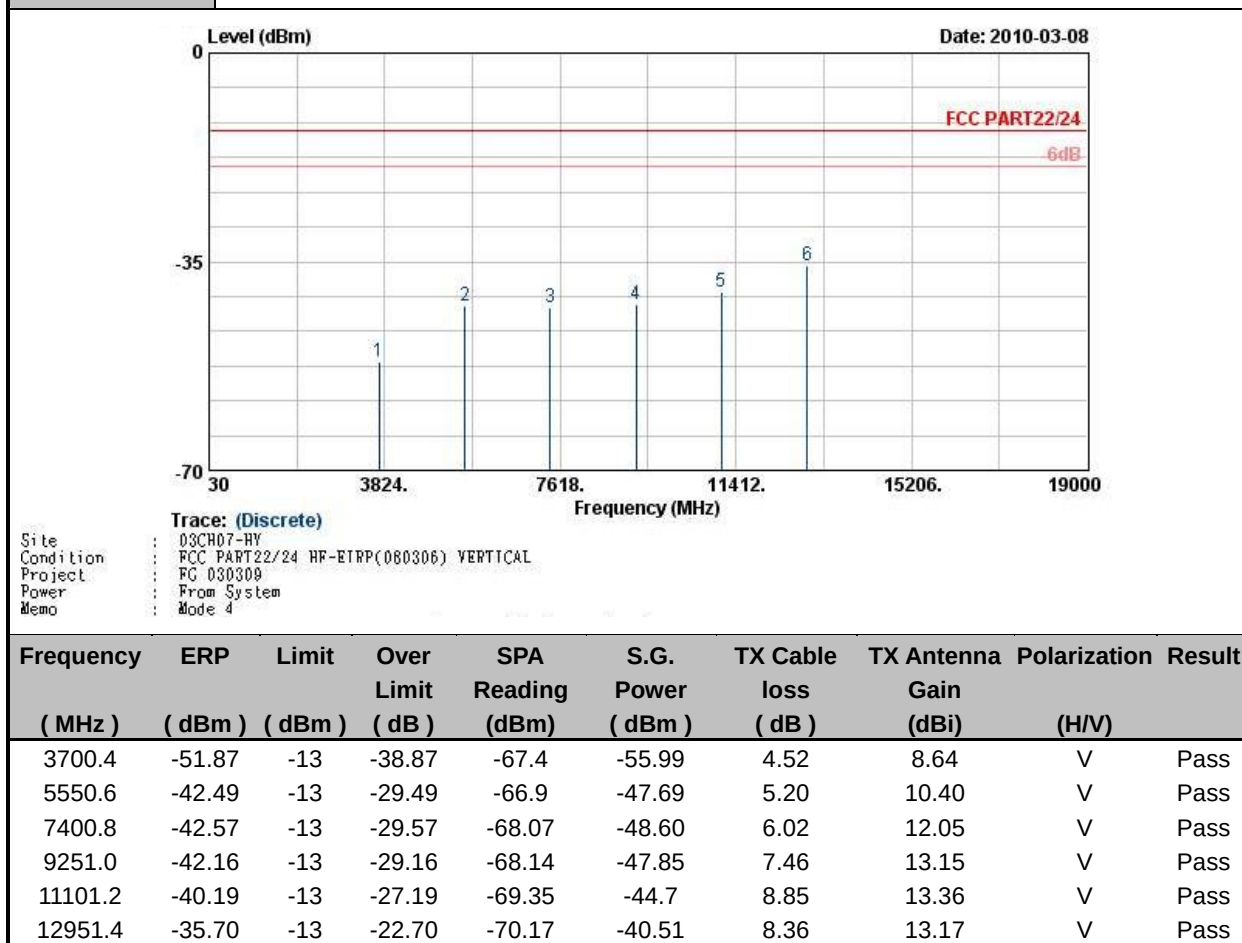
Band :	GSM1900	Temperature :	23~24°C
Test Mode :	EDGE 8 Link_Channel 810 (With USB Cable)	Relative Humidity :	49~54%
Test Engineer :	Cona Huang	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Band :	GSM1900	Temperature :	23~24°C
Test Mode :	EDGE 8 Link_Channel 512 (Without USB Cable)	Relative Humidity :	49~54%
Test Engineer :	Cona Huang	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Band :	GSM1900	Temperature :	23~24°C
Test Mode :	EDGE 8 Link_Channel 512 (Without USB Cable)	Relative Humidity :	49~54%
Test Engineer :	Cona Huang	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



3.6 Frequency Stability Measurement

3.6.1 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.

3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

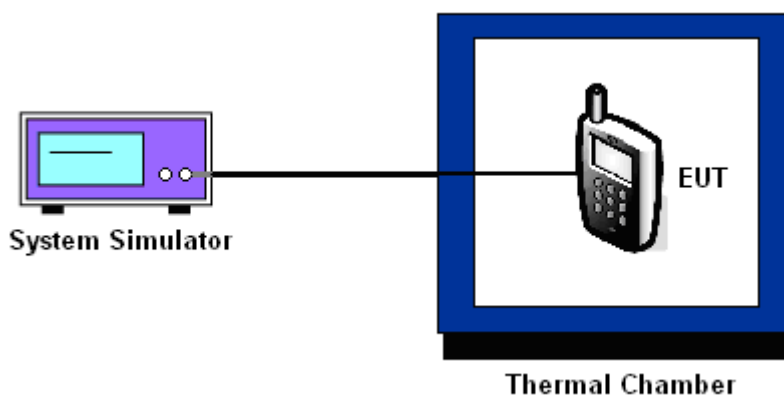
3.6.3 Test Procedures for Temperature Variation

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.

3.6.4 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.

3.6.5 Test Setup



3.6.6 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	-43	-41	-0.05	-0.05	
-10	33	-47	0.04	-0.06	
0	42	-36	0.05	-0.04	
10	41	39	0.05	0.05	
20	39	24	0.05	0.03	
30	-33	41	-0.04	0.05	
40	-22	31	-0.03	0.04	
50	19	-33	0.02	-0.04	

Note: The manufacturer declared that the EUT could work properly between temperatures -15°C~55°C.

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	-41	-0.02	-42	-0.02	
-10	44	0.02	33	0.02	
0	39	0.02	42	0.02	
10	42	0.02	41	0.02	
20	-31	-0.02	-29	-0.02	
30	-37	-0.02	-33	-0.02	
40	-45	-0.02	34	0.02	
50	-42	-0.02	-42	-0.02	

Note: The manufacturer declared that the EUT could work properly between temperatures -15°C~55°C.

3.6.7 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	34	0.04	2.5	PASS
	EDGE 8	5.0	40	0.05		
GSM 1900 CH661	GPRS 8	5.0	-40	-0.02		
	EDGE 8	5.0	38	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	Jul. 29, 2009	Jul. 28, 2010	Conducted (TH02-HY)
Bilog Antenna	SCHAFFNER	CBL6111C	2726	30MHz ~ 1GHz	Oct. 31, 2009	Oct. 30, 2010	Radiation (03CH07-HY)
Spectrum Analyzer	R&S	FSP	101067	9KHz ~ 30GHz	Dec. 04, 2009	Dec. 03, 2010	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00075962	1GHz ~ 18GHz	Aug. 20, 2009	Aug. 19, 2010	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz- 40GHz	Oct. 14, 2009	Oct. 13, 2010	Radiation (03CH07-HY)
Pre Amplifier	Agilent	8449B	3008A02362	1GHz~ 26.5GHz	Dec.09,2009	Dec. 08, 2010	Radiation (03CH07-HY)
Pre Amplifier	COM-POWER	PA-103A	161241	10-1000MHz.32dB. GAIN	Mar. 27, 2009	Mar. 26, 2010	Radiation (03CH07-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 KHz~30 MHz	May 22, 2008	May 21, 2010	Radiation (03CH07-HY)
System Simulator	R&S	CMU200	117997	N/A	May 14, 2009	May 13, 2011	-

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 $U_c(y)$	1.27		
Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	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 $\Gamma_1 = 0.197$ Antenna VSWR $\Gamma_2 = 0.194$ Uncertainty = $20\log(1-\Gamma_1\Gamma_2)$	+0.34 / -0.35	U-Shape	0.244	1	0.244
Combined Standard Uncertainty $U_c(y)$	2.36				
Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	4.72				

6 Certification of TAF Accreditation



Certificate No. : L1190-100107

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

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, 2010 to January 09, 2013
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 : January 07, 2010

Pl, total 21 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 EP030309-02 as below.