FCC Test Report

According to

47 CFR Part 22H, 24E

Equipment	:	**PDA Phone**
Model Name	:	**RAPH100**
FCC ID	:	**NM8RPLV**
Tx Frequency Range	:	**GSM850 : 824.2 ~ 848.8MHz** **GSM1900 : 1850.2 ~ 1909.8 MHz**
Max. ERP/EIRP Power	:	**GSM850(GSM) : 0.49 W** **GSM850(EDGE) : 0.16 W** **GSM1900(GSM) : 0.57 W** **GSM1900(EDGE) : 0.28 W**
Emission Designator	:	**GSM : 300KGXW** **EDGE : 300KG7W**
Applicant	:	**HTC Corporation** 23 Xinghua Rd., Taoyuan 330, Taiwan

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- **Certificate or Test Report must not be used by the applicant to claim the product in this test report endorsement by NVLAP or any agency of U.S. government.**
- The data shown in this test report were carried out on Jul. 01, 2008 at **Sporton International Inc. LAB.**
- Report No.: FG830418-01, Report Version: Rev. 01.

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.

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History of This Test Report

Report Issue Date: Jul. 03, 2008

Report No.	Description

1. General Information

1.1 Applicant

HTC Corporation
23 Xinghua Rd., Taoyuan 330, Taiwan

1.2 Manufacturer

HTC Corporation
23 Xinghua Rd., Taoyuan 330, Taiwan

1.3 Basic Description of Equipment under Test

Sample A	PDA Phone with Photo Camera 1 + Video Camera 1
Sample B	PDA Phone with Photo Camera 2 + Video Camera 2

1.4 Feature of Equipment under Test

Product Feature & Specification	
DUT Type :	PDA Phone
Model Name :	RAPH100
FCC ID :	NM8RPLV
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 : 32.42 dBm GSM1900 : 29.96 dBm
Maximum ERP/EIRP :	GSM850(GSM) : 0.49 W (26.87 dBm) GSM850(EDGE) : 0.16 W (22.12 dBm) GSM1900(GSM) : 0.57 W (27.54 dBm) GSM1900(EDGE) : 0.28 W (24.41 dBm)
Antenna Type :	PIFA Antenna
Antenna Gain :	0 dBi
Type of Modulation :	GSM / GPRS : GMSK EDGE : 8PSK
Type of Emission :	GSM : 300KGXW EDGE : 300KG7W
DUT Stage :	Identical Prototype

1.5 Report Date

EUT Received : Mar. 03, 2008
Report Date : Jul. 03, 2008

2. Test Configuration of Equipment under Test

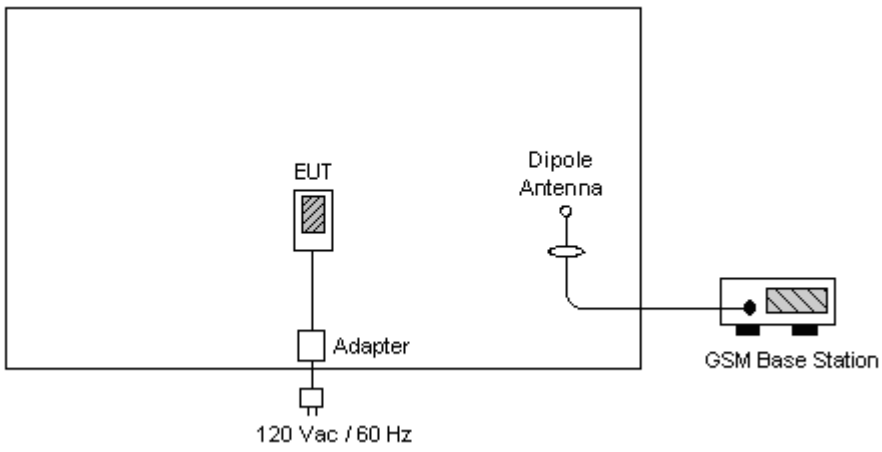
2.1 Test Manner

1. The spurious emission measurements were carried out in semi-anechoic chamber with 3-meter test range.
2. During all testings, EUT is in link mode with base station emulator at maximum power level.
3. Frequency range investigated: radiated emission 30 MHz to 9000 MHz for GSM850; 30MHz to 19000 MHz for GSM1900.

2.2 Test Mode

Application	GSM850	GSM1900
Radiated Emission	☒ Mode 1: GSM Link ☒ Mode 2: EDGE Link ☒ Mode 9: GSM Link + WLAN Link	☒ Mode 3: GSM Link ☒ Mode 4: EDGE Link
Conducted Measurement	☒ Mode 1: GSM Link ☒ Mode 2: EDGE Link	☒ Mode 3: GSM Link ☒ Mode 4: EDGE Link

2.3 Connection Diagram of Test System



2.4 Ancillary Equipment List

Item	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Code
1.	GSM Base Station	R&S	CMU200	N/A	N/A	Unshielded, 1.8m

3. General Information of Test Site

Test Site Location	:	No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL : 886-3-327-3456 FAX : 886-3-328-4978
Test Site No	:	03CH07-HY ; TH02-HY
FCC Designation No	:	TW1022

The chamber meets the characteristics of ANSI C63.4-2003. This site is on file with the FCC.

3.1 Test Voltage

AC 120V / 60Hz

3.2 Test Compliance

47 CFR Part 22H, 24E, Part 2

3.3 Frequency Range

a. Radiation: from 30MHz to 9000MHz for GSM850.
b. Radiation: from 30 MHz to 19000 MHz for GSM1900.

3.4 Test Distance

The test distance of radiated emission from antenna to EUT is 3 m.

4. Test Data and Test Result

4.1 List of Measurements and Examinations

FCC Rule	Description of Test	Result	Section
§2.1046	RF Output Power	Passed	4.2
§22.913 §24.232	ERP / EIRP	Passed	4.3
§2.1049, §22.917, §24.238(b)	Occupied Bandwidth & Band Edge Measurement	Passed	4.4
§2.1051	Conducted Emission	Passed	4.5
§2.1053	Field Strength of Spurious Radiation	Passed	4.6
§2.1055, §22.355, §24.235	Frequency Stability vs. Temperature	Passed	4.7
§2.1055, §22.355, §24.235	Frequency Stability vs. Voltage	Passed	4.8

4.2 RF Output Power

4.2.1 Measurement Instruments

As described in chapter 5 of this test report.

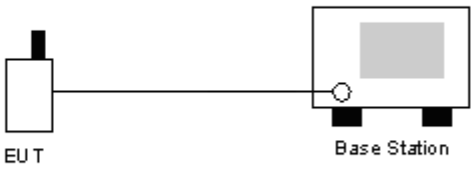
4.2.2 Test Procedure

a. The transmitter output was connected to base station.

b. Set the EUT at maximum power through base station by using below setting:
PCL=5 for GSM850, PCL=0 for PCS1900.

c. Select lowest, middle, and highest channels for each band.

4.2.3 Test Setup Layout



4.2.4 Test Result

Bands	Channel	Frequency (MHz)	Conducted Power (dBm)	Conducted Power (Watts)
GSM850 (GSM)	128	824.2 (Low)	32.42	1.746
	189	836.4 (Mid)	32.42	1.746
	251	848.8 (High)	32.37	1.726
GSM850 (EDGE)	128	824.2 (Low)	26.04	0.402
	189	836.4 (Mid)	26.04	0.402
	251	848.8 (High)	25.97	0.395
GSM1900 (GSM)	512	1850.2 (Low)	29.79	0.953
	661	1880.0 (Mid)	29.88	0.973
	810	1909.8 (High)	29.96	0.991
GSM1900 (EDGE)	512	1850.2 (Low)	24.84	0.305
	661	1880.0 (Mid)	24.92	0.310
	810	1909.8 (High)	25.02	0.318

4.3 ERP / EIRP Measurement

Equivalent isotropic radiated power measurements by substitution method according to ANSI/TIA/EIA-603-C.

4.3.1 Measurement Instruments

As described in chapter 5 of this test report.

4.3.2 Test Procedure

a. The EUT was placed on a tutntable with 1.0 meter height in an fully anechoic chamber.
b. The EUT was set 1.2 meters from the receiving antenna which was mounted on the antenna tower.
c. The table was rotated 360 degrees to determine the position of the highest radiated power.
d. The height of the receiving antenna is also kept at 1.0M height.
e. Taking the record of maximum ERP/EIRP.
f. A dipole antenna was substituted in place of the EUT and was driven by a signal generator.
g. The conducted power at the terminal of the dipole antenna is measured.
h. Repeat step 3 to step 5 to get the maximum ERP/EIRP of the substitution antenna.
i. ERP/EIRP = Ps + Et – Es + Gs = Ps + Rt – Rs + Gs

Ps (dBm)：Input power to substitution antenna.

Gs (dBi or dBd)：Substitution antenna Gain.

Et = Rt + AF

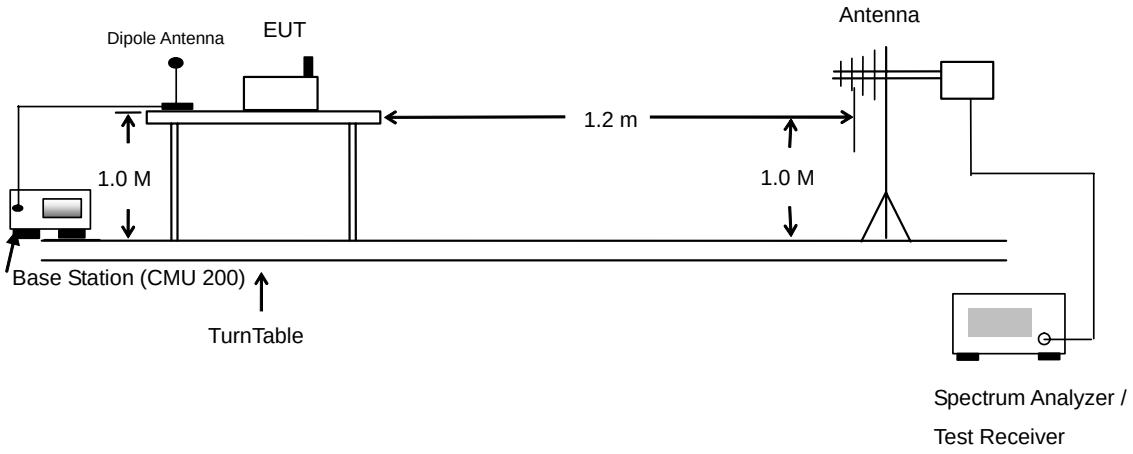
Es = Rs + AF

AF (dB/m)：Receive antenna factor

Rt：The highest received signal in Spectrum Analyzer for EUT.

Rs：The highest received signal in spectrum analyzer for substitution antenna.

4.3.3 Test Setup Layout of ERP/EIRP



4.3.4 Test Result

GSM850 (GSM) Radiated Power ERP						
Horizontal Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	ERP (dBm)	ERP (W)
824.20	-29.34	-48.12	0.00	-1.08	17.70	0.06
836.40	-29.79	-48.28	0.00	-0.93	17.56	0.06
848.80	-30.76	-48.35	0.00	-0.76	16.83	0.05
Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	ERP (dBm)	ERP (W)
824.20	-20.02	-47.97	0.00	-1.08	26.87	0.49
836.40	-20.47	-48.01	0.00	-0.93	26.61	0.46
848.80	-21.77	-48.05	0.00	-0.76	25.52	0.36

GSM850 (EDGE) Radiated Power ERP						
Horizontal Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	ERP (dBm)	ERP (W)
824.20	-33.34	-48.12	0.00	-1.08	13.70	0.02
836.40	-33.47	-48.28	0.00	-0.93	13.88	0.02
848.80	-34.39	-48.35	0.00	-0.76	13.20	0.02
Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	ERP (dBm)	ERP (W)
824.20	-24.97	-47.97	0.00	-1.08	21.92	0.16
836.40	-24.96	-48.01	0.00	-0.93	22.12	0.16
848.80	-26.01	-48.05	0.00	-0.76	21.28	0.13

GSM1900 (GSM) Radiated Power EIRP						
Horizontal Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1850.20	-27.74	-51.88	0.00	1.96	26.10	0.41
1880.00	-27.78	-52.99	0.00	2.00	27.21	0.53
1909.80	-28.89	-54.28	0.00	1.98	27.37	0.55
Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1850.20	-28.73	-52.13	0.00	1.96	25.36	0.34
1880.00	-28.28	-53.17	0.00	2.00	26.89	0.49
1909.80	-28.57	-54.13	0.00	1.98	27.54	0.57

GSM1900 (EDGE) Radiated Power EIRP						
Horizontal Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1850.20	-30.74	-51.88	0.00	1.96	23.10	0.20
1880.00	-31.46	-52.99	0.00	2.00	23.53	0.23
1909.80	-32.23	-54.28	0.00	1.98	24.03	0.25
Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1850.20	-31.44	-52.13	0.00	1.96	22.65	0.18
1880.00	-32.31	-53.17	0.00	2.00	22.86	0.19
1909.80	-31.70	-54.13	0.00	1.98	24.41	0.28

4.4 Occupied Bandwidth and Band Edge Measurement

4.4.1 Measurement Instruments

As described in chapter 5 of this test report.

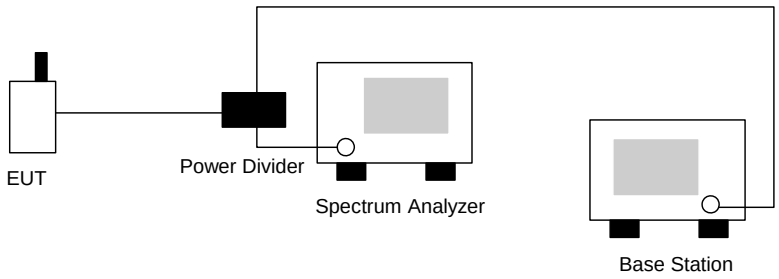
4.4.2 Test Procedure

a. The EUT was connected to Spectrum Analyzer and Base Station via power divider.

b. The 99% occupied bandwidth of middle channel for the highest and lowest RF powers were measured.

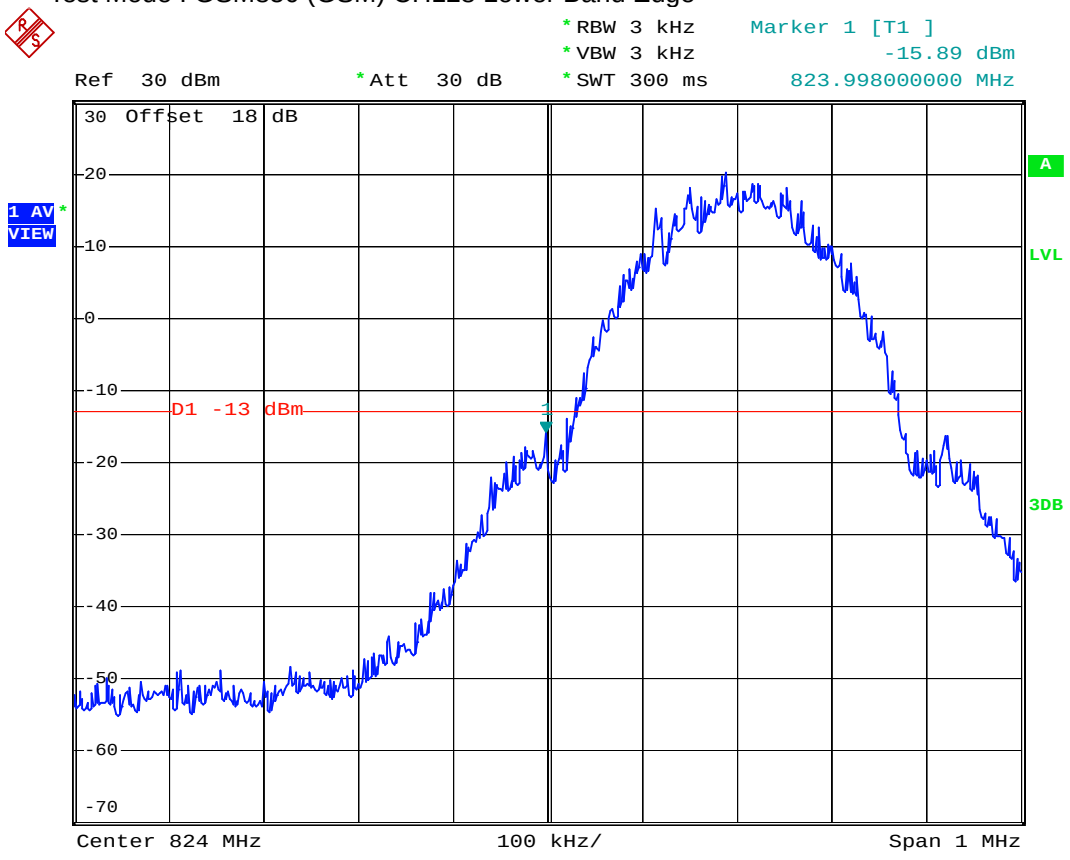
c. The bandedge of low and high channels for the highest RF powers within the transmitting frequency band were measured. Setting RBW as roughly BW/100.

4.4.3 Test Setup Layout



4.4.4 Test Result

- Mode 1
- Test Mode : GSM850 (GSM) CH128 Lower Band Edge



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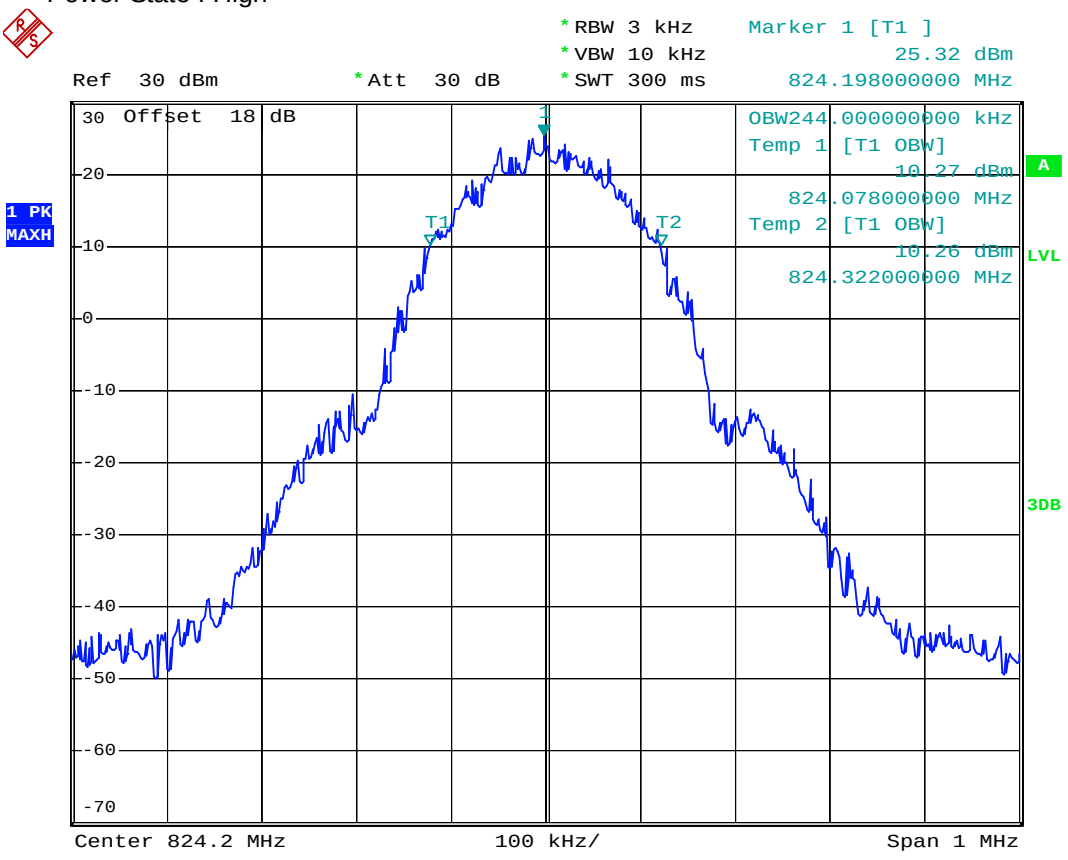
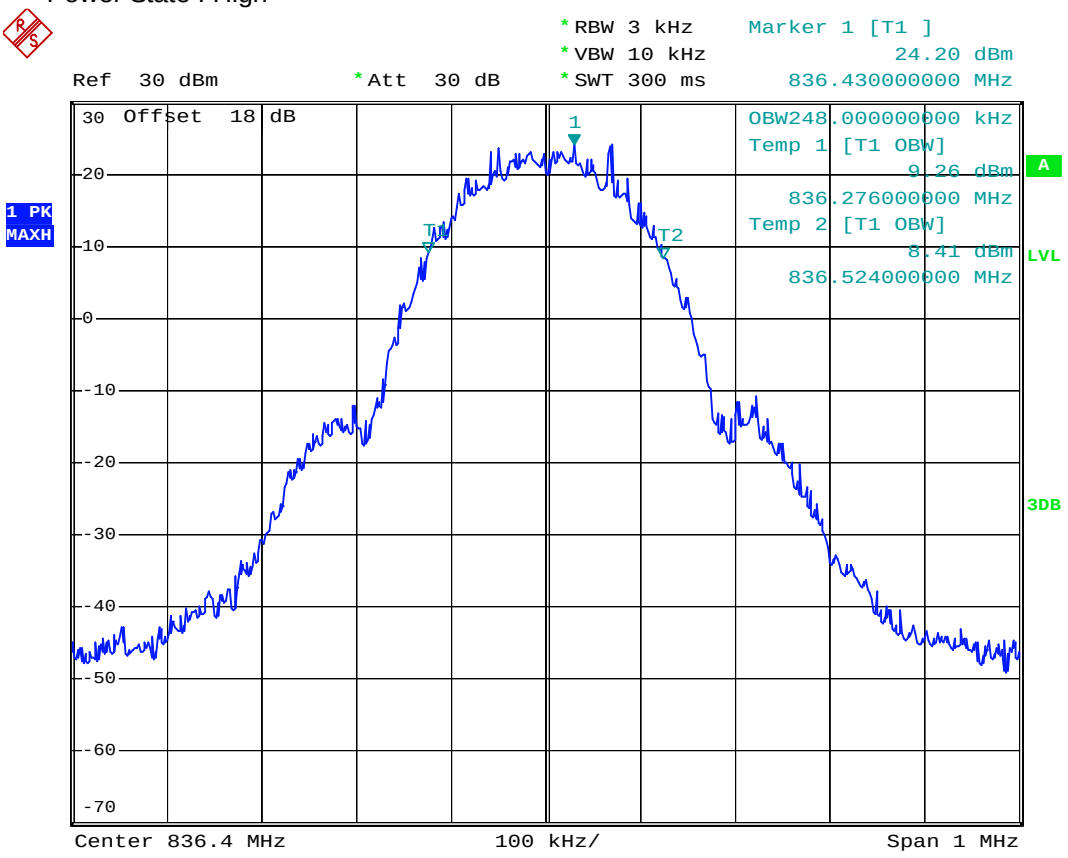
- Test Mode : GSM850 (GSM) CH128 99% Occupid Bandwidth
- Power State : High



Date: 10.MAR.2008 22:54:22

- Test Mode : GSM850 (GSM) CH189 99% Occupid Bandwidth
- Power State : High



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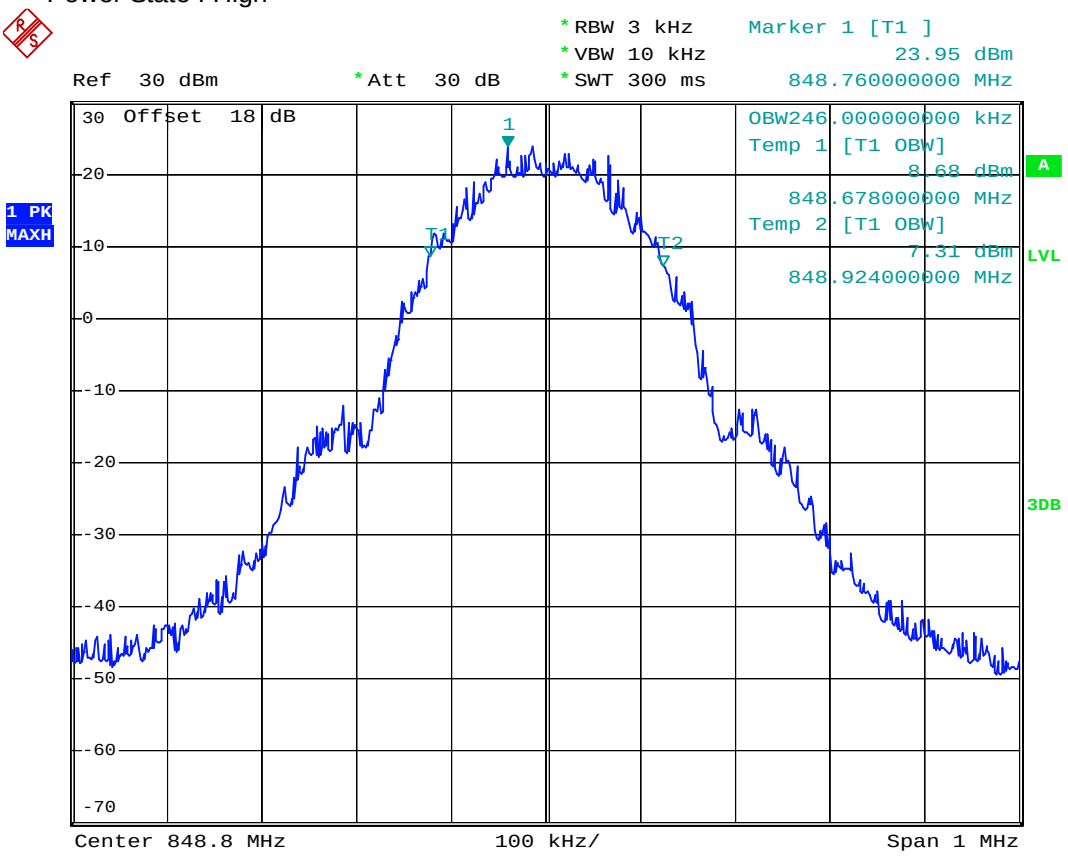
- Test Mode : GSM850 (GSM) CH 251 99% Occupid Bandwidth
- Power State : High



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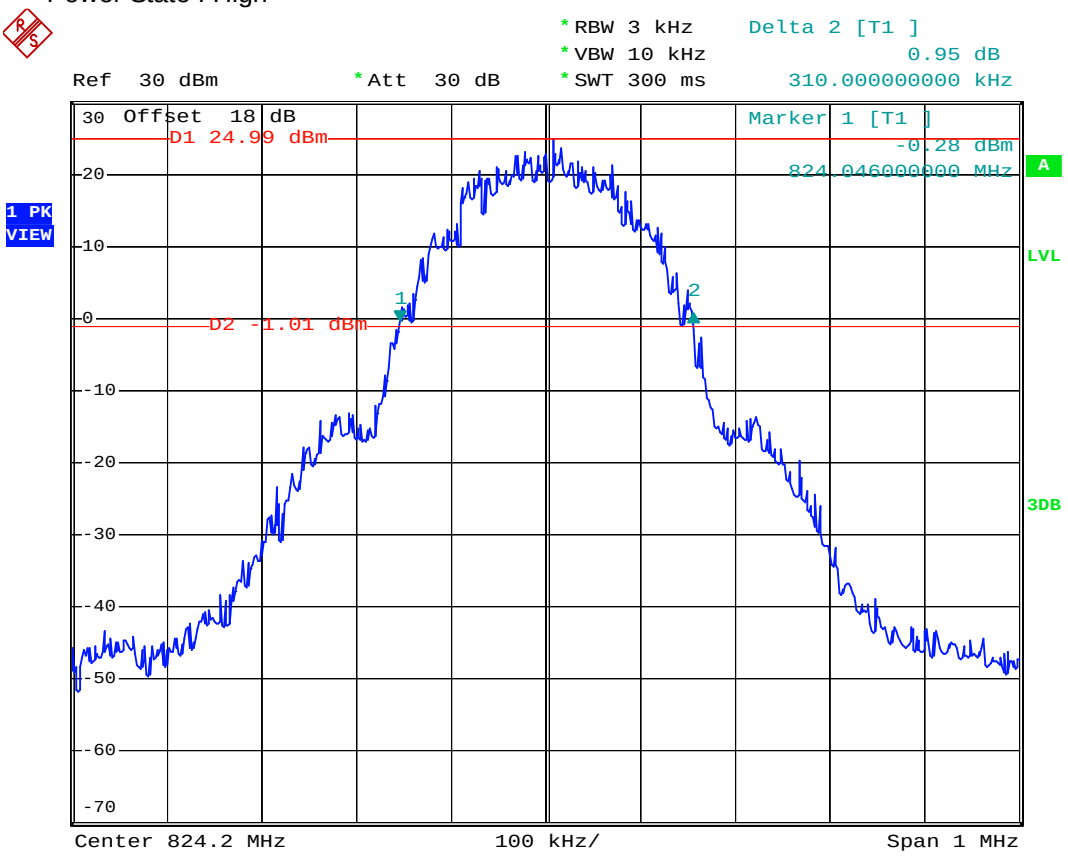
- Test Mode : GSM850 (GSM) CH128 26dB Bandwidth
- Power State : High



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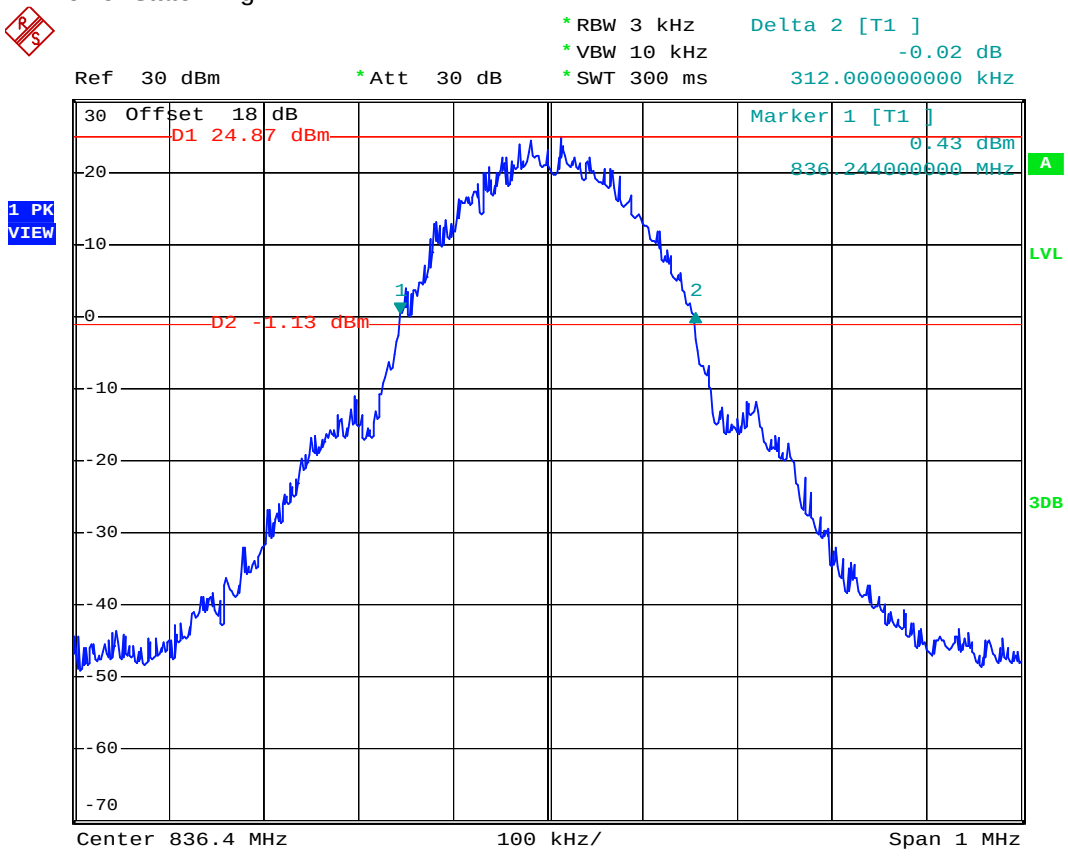
- Test Mode : GSM850 (GSM) CH189 26dB Bandwidth
- Power State : High



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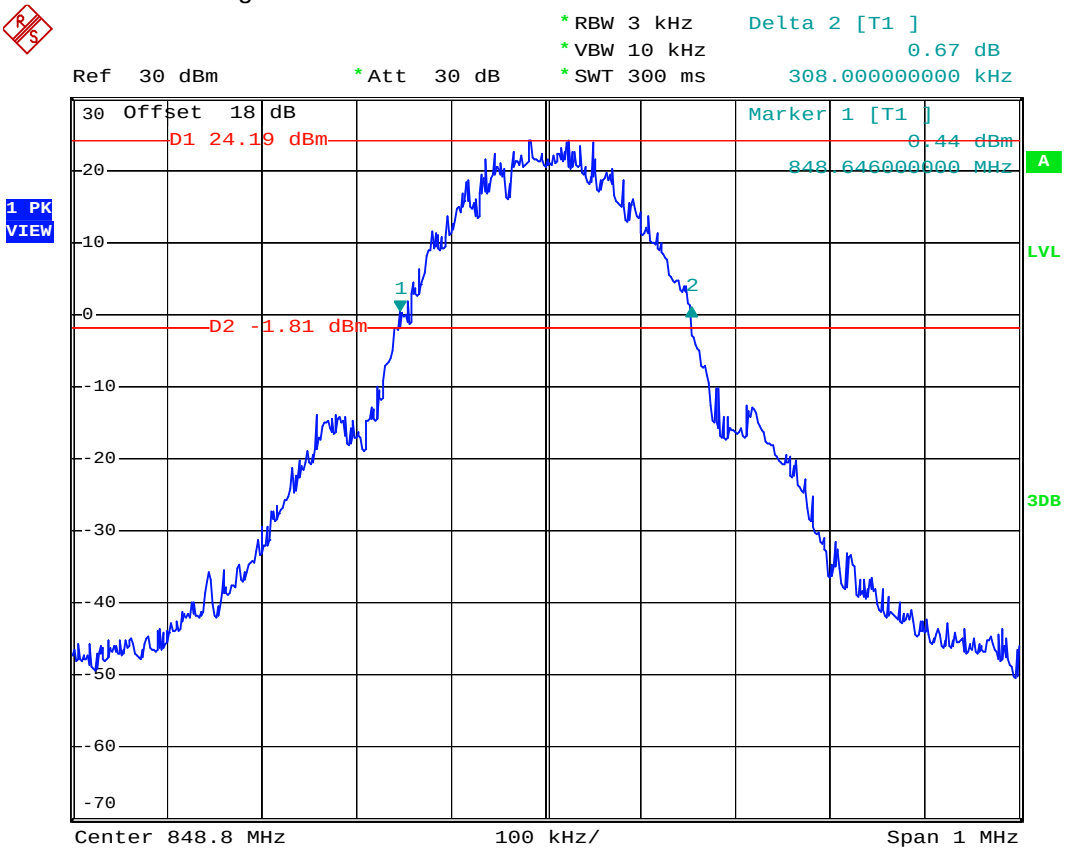
- Test Mode : GSM850 (GSM) CH 251 26dB Bandwidth
- Power State : High



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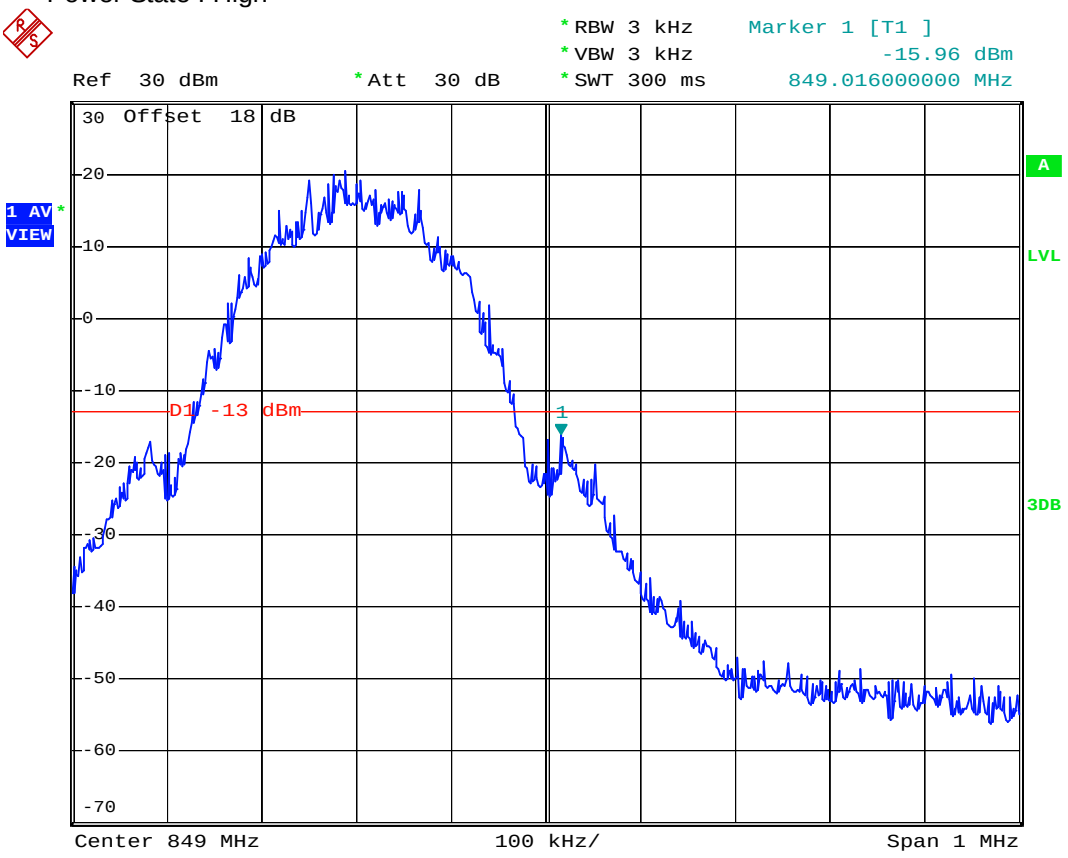
- Test Mode : GSM850 (GSM) CH251 Higher Band Edge
- Power State : High



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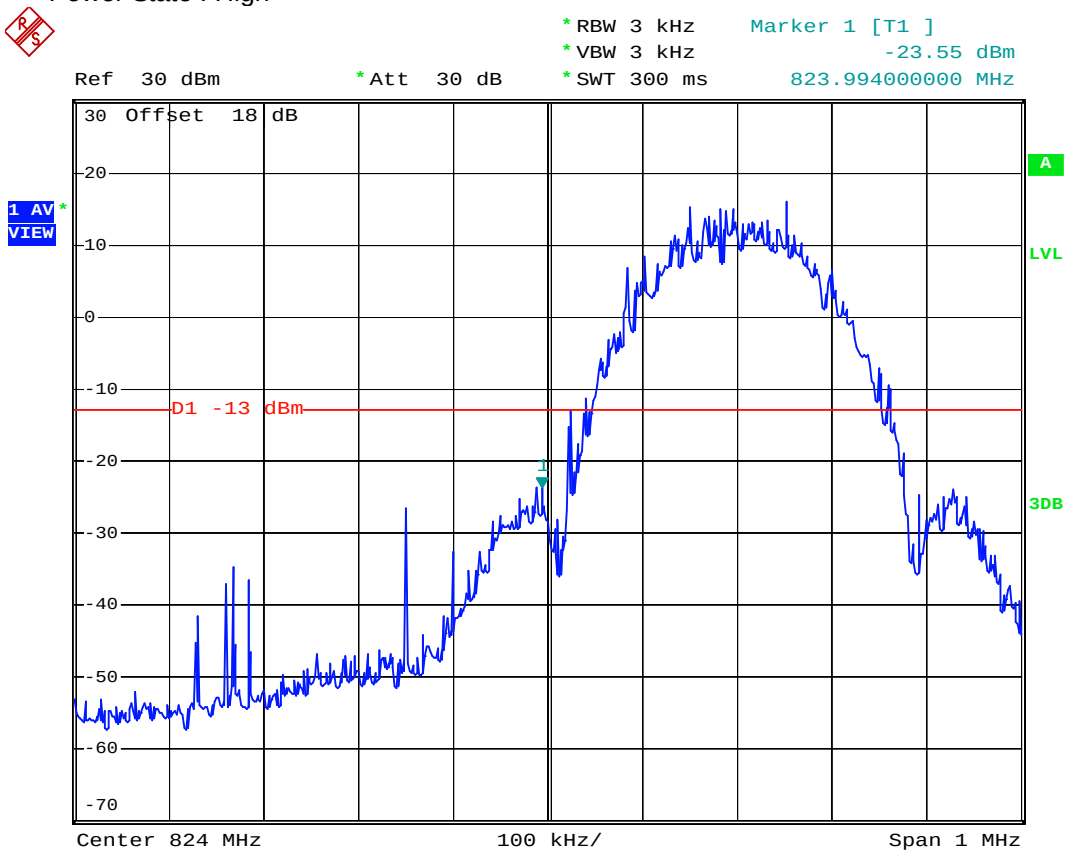
- Mode 2
- Test Mode : GSM850 (EDGE) CH128 Lower Band Edge
- Power State : High



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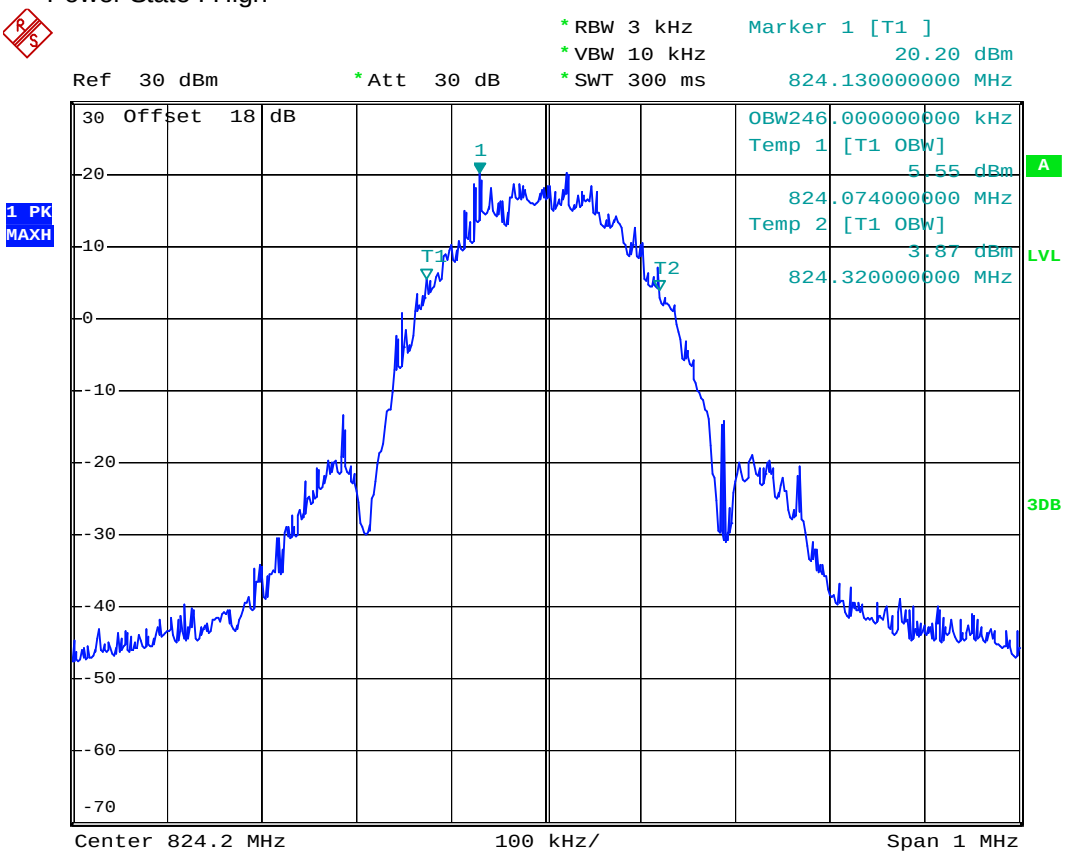
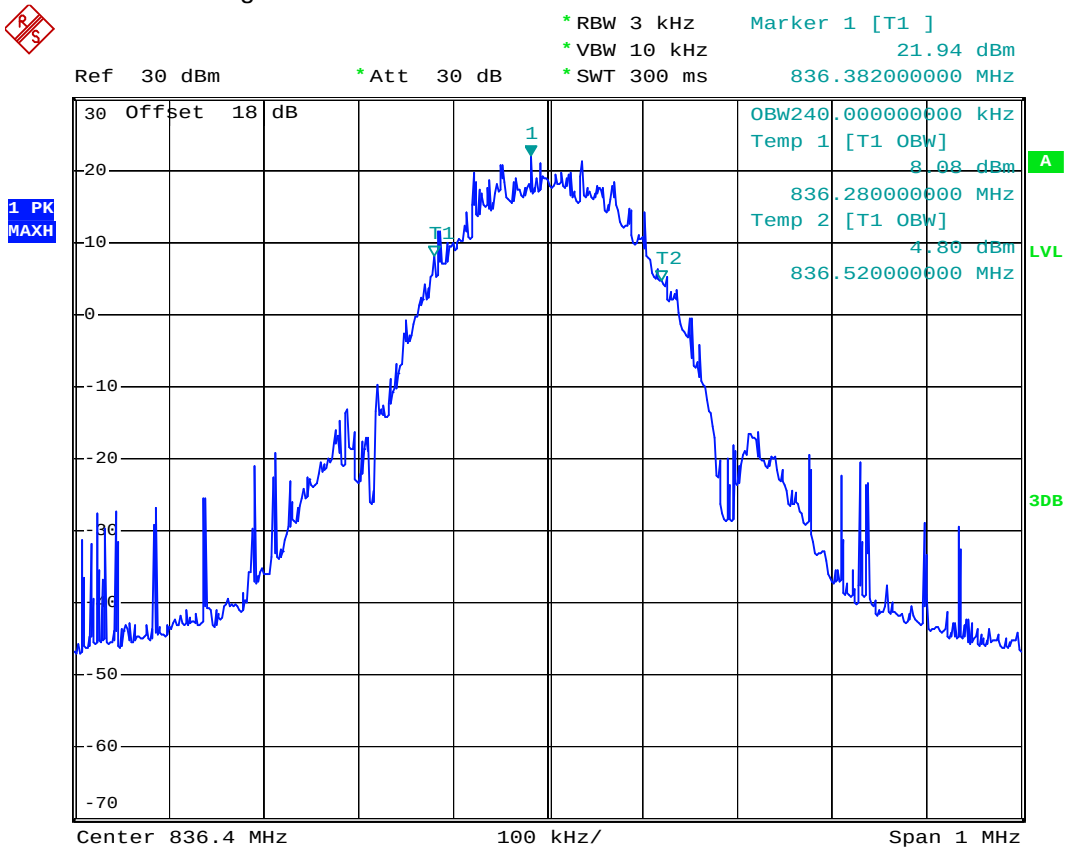
- Test Mode : GSM850 (EDGE) CH128 99% Occupid Bandwidth
- Power State : High



- Test Mode : GSM850 (EDGE) CH189 99% Occupid Bandwidth
- Power State : High



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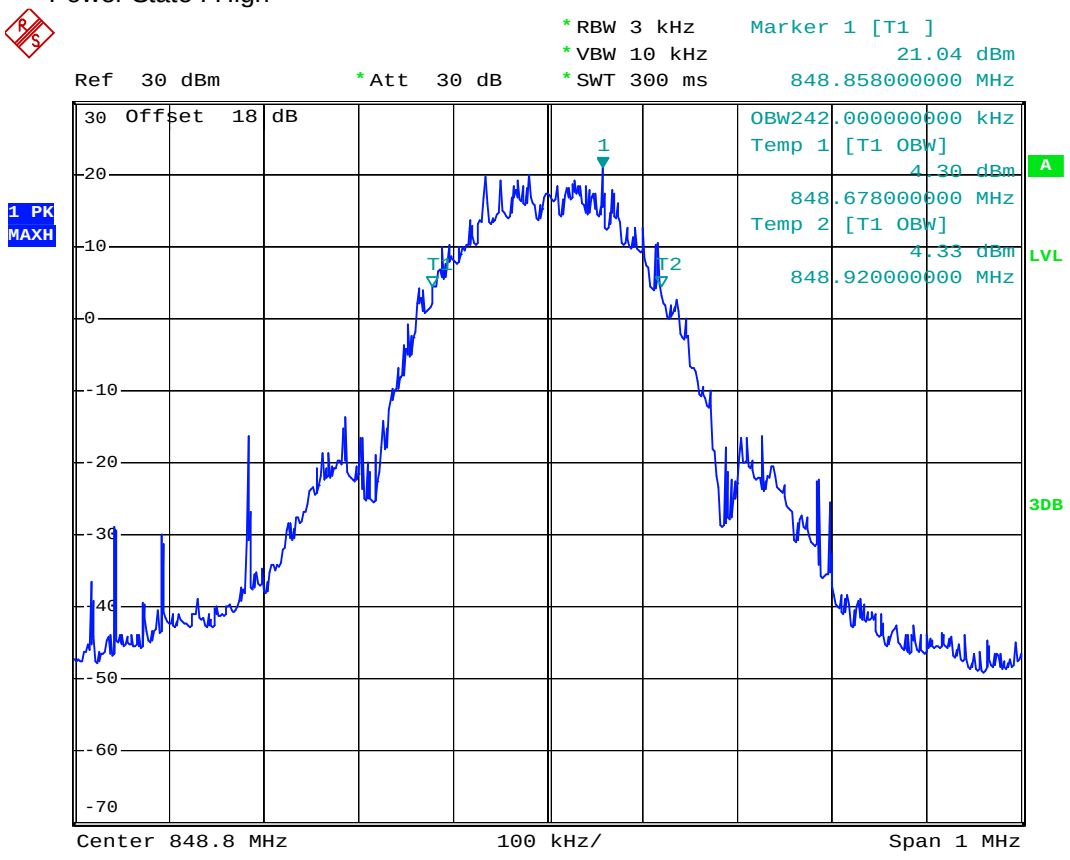
- Test Mode : GSM850 (EDGE) CH 251 99% Occupid Bandwidth
- Power State : High



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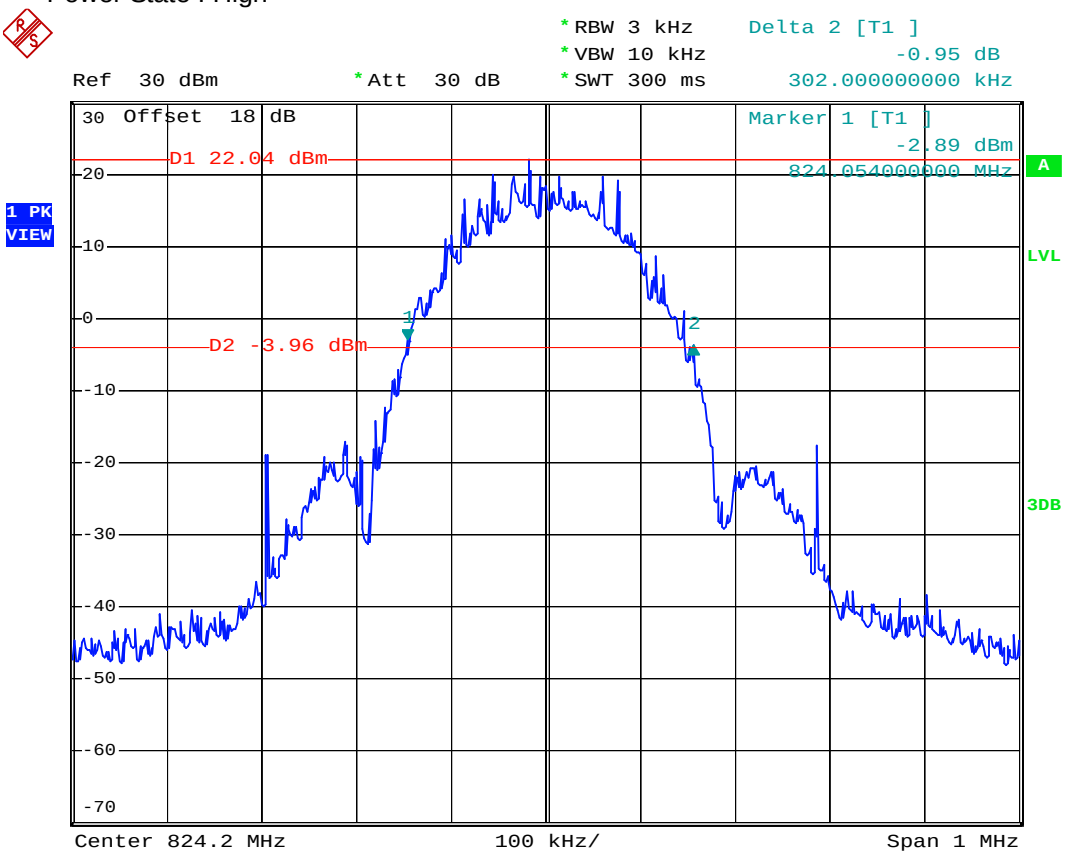
- Test Mode : GSM850 (EDGE) CH128 26dB Bandwidth
- Power State : High



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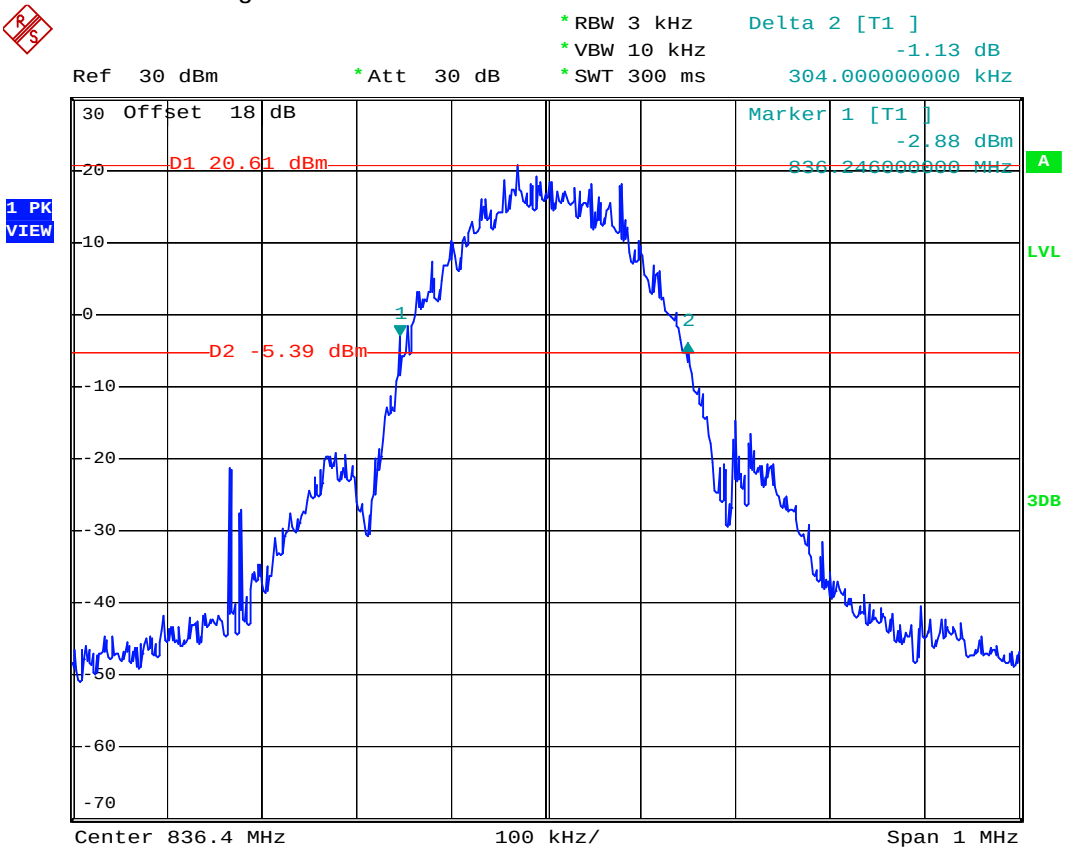
- Test Mode : GSM850 (EDGE) CH189 26dB Bandwidth
- Power State : High



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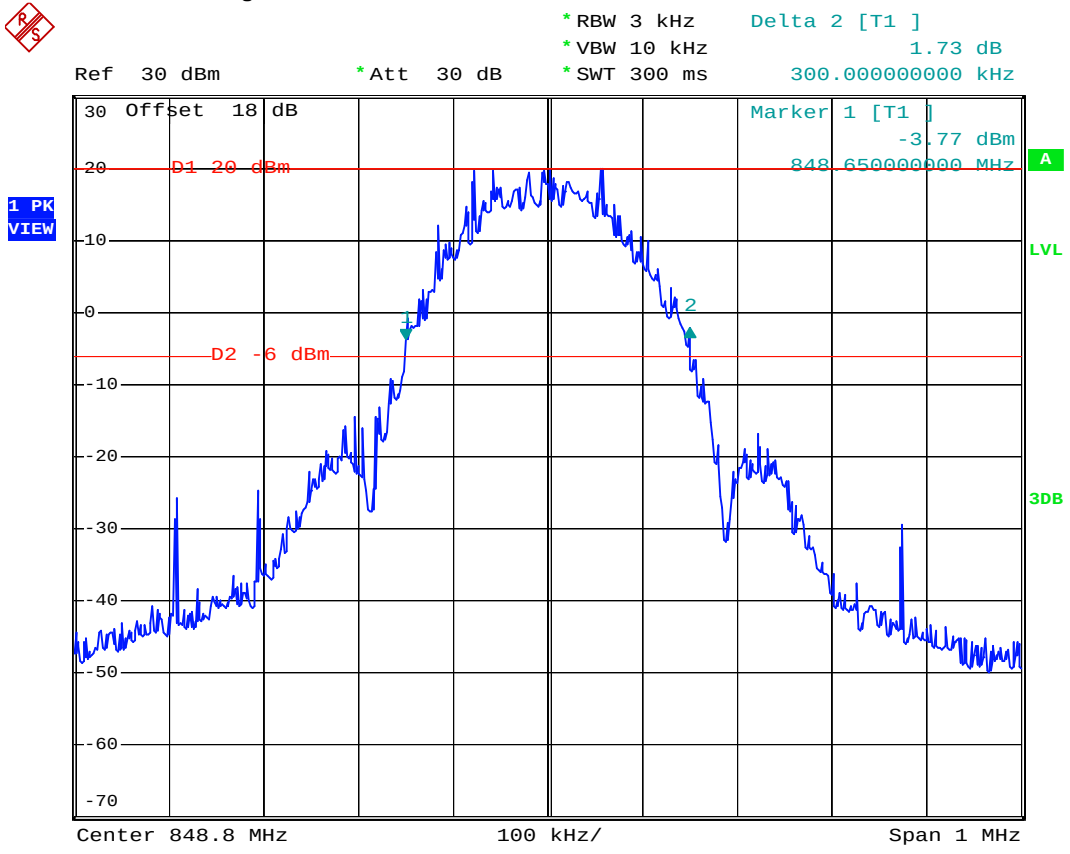
- Test Mode : GSM850 (EDGE) CH 251 26dB Bandwidth
- Power State : High



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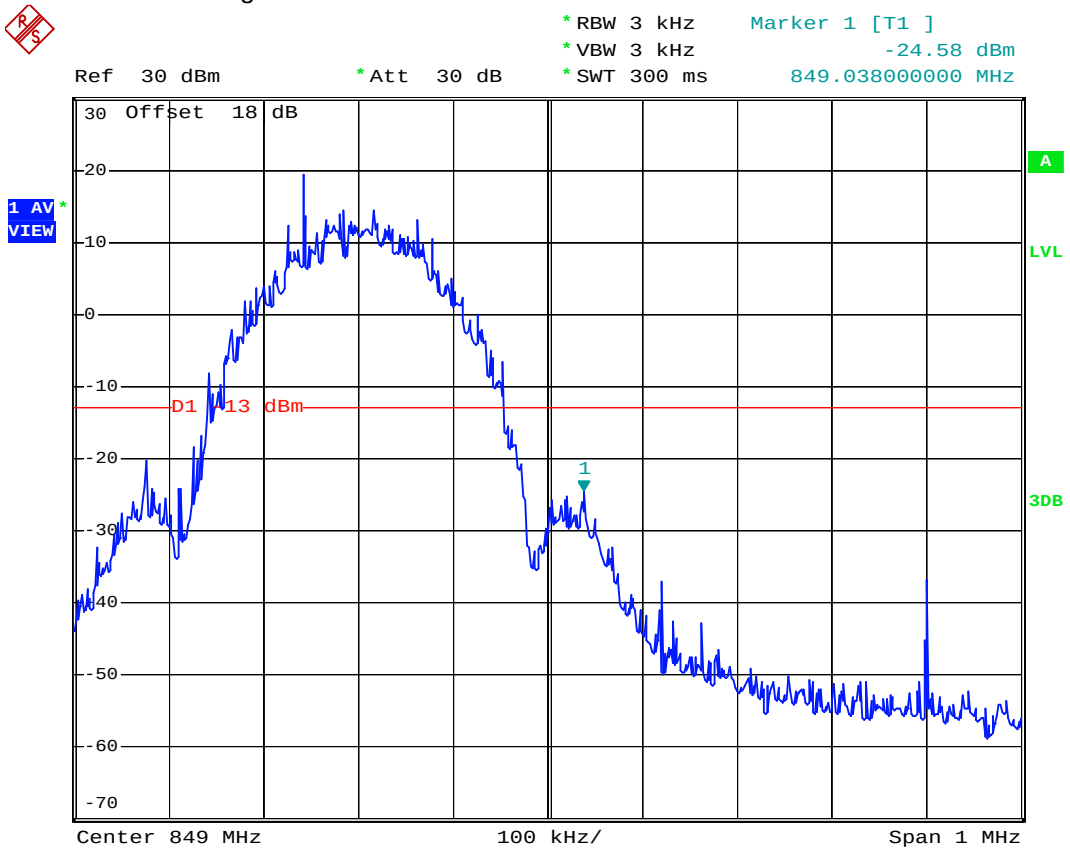
- Test Mode : GSM850 (EDGE) CH251 Higher Band Edge
- Power State : High



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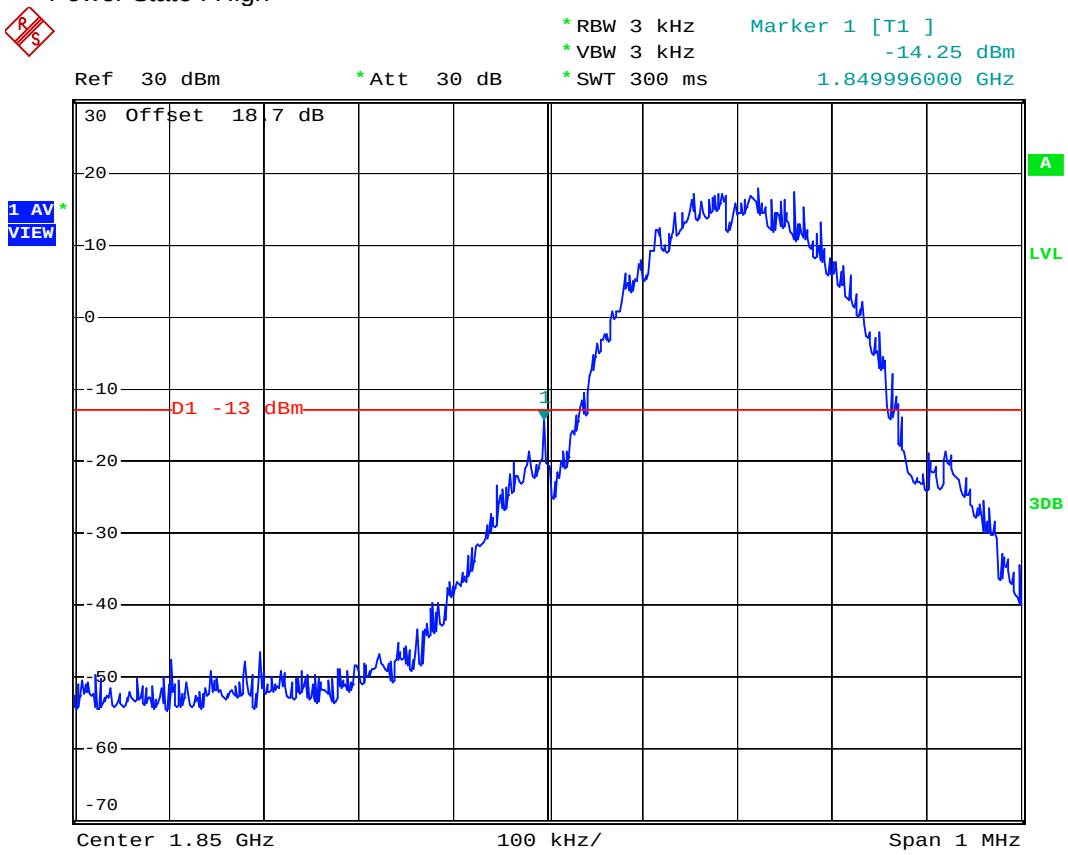
- Mode 3
- Test Mode : GSM1900 (GSM) CH512 Lower Band Edge
- Power State : High



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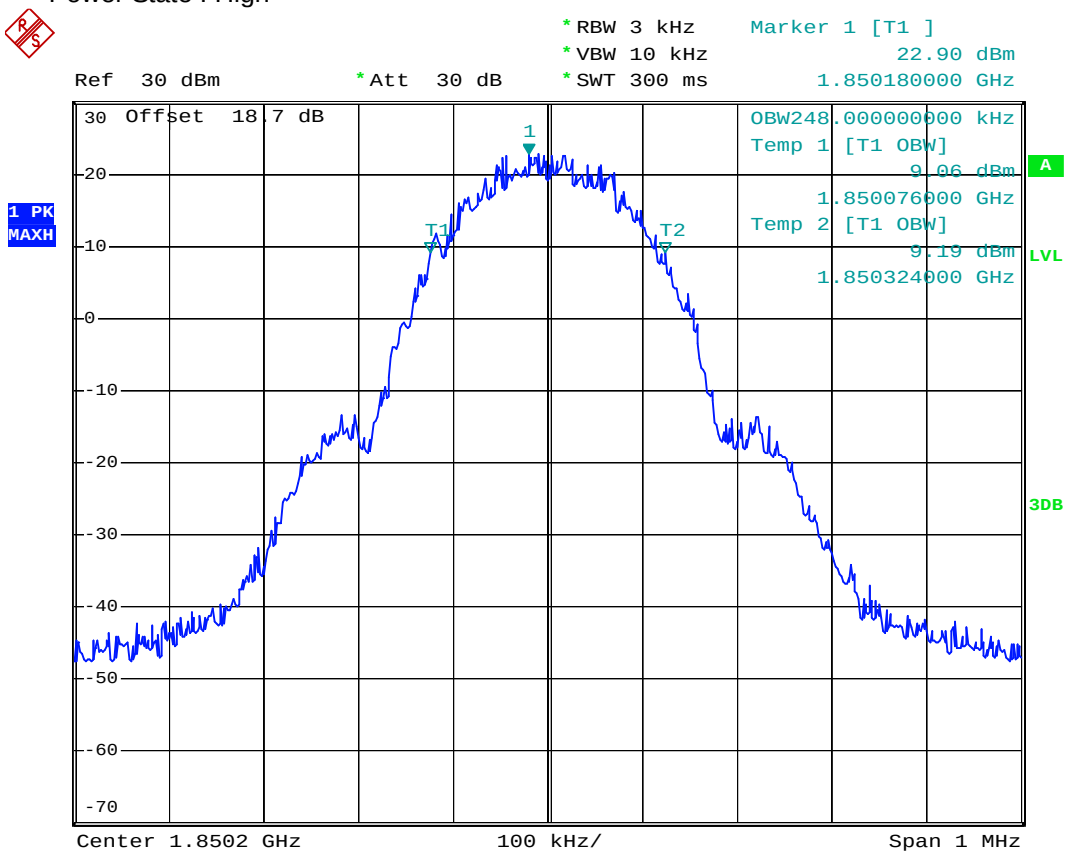
- Test Mode : GSM1900 (GSM) CH512 99% Occupid Bandwidth
- Power State : High



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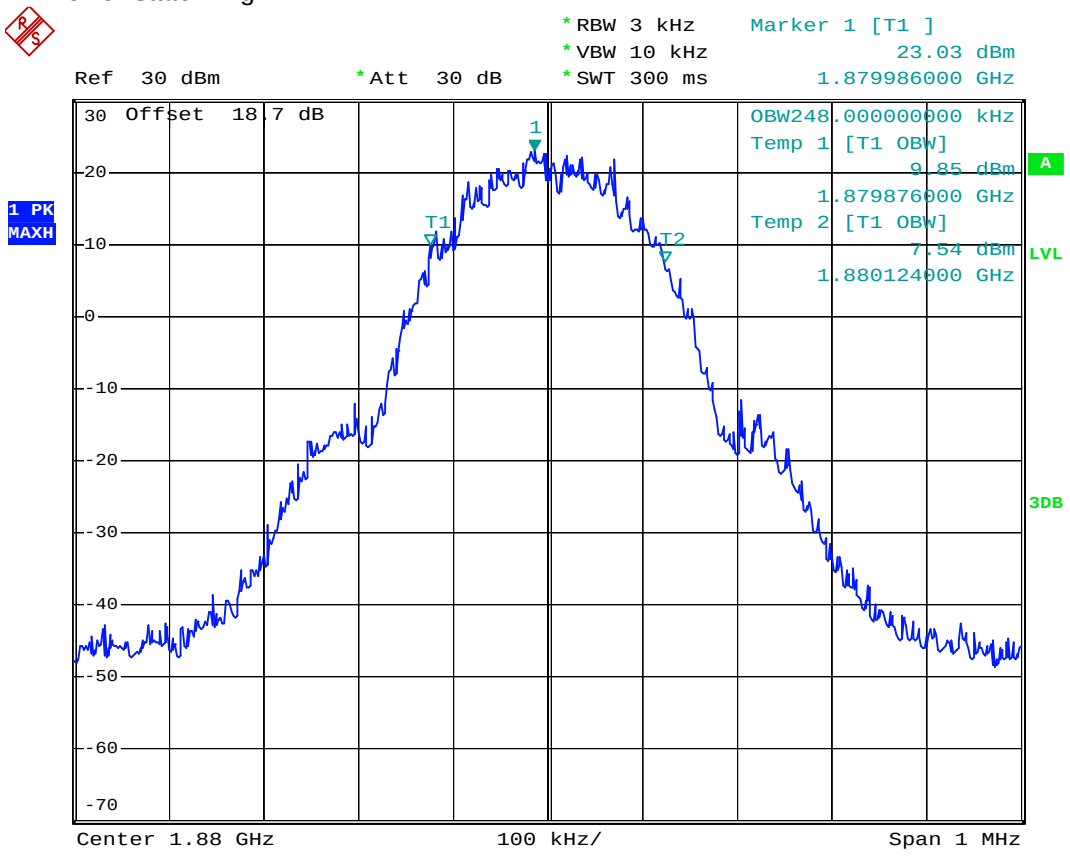
- Test Mode : GSM1900 (GSM) CH661 99% Occupid Bandwidth
- Power State : High



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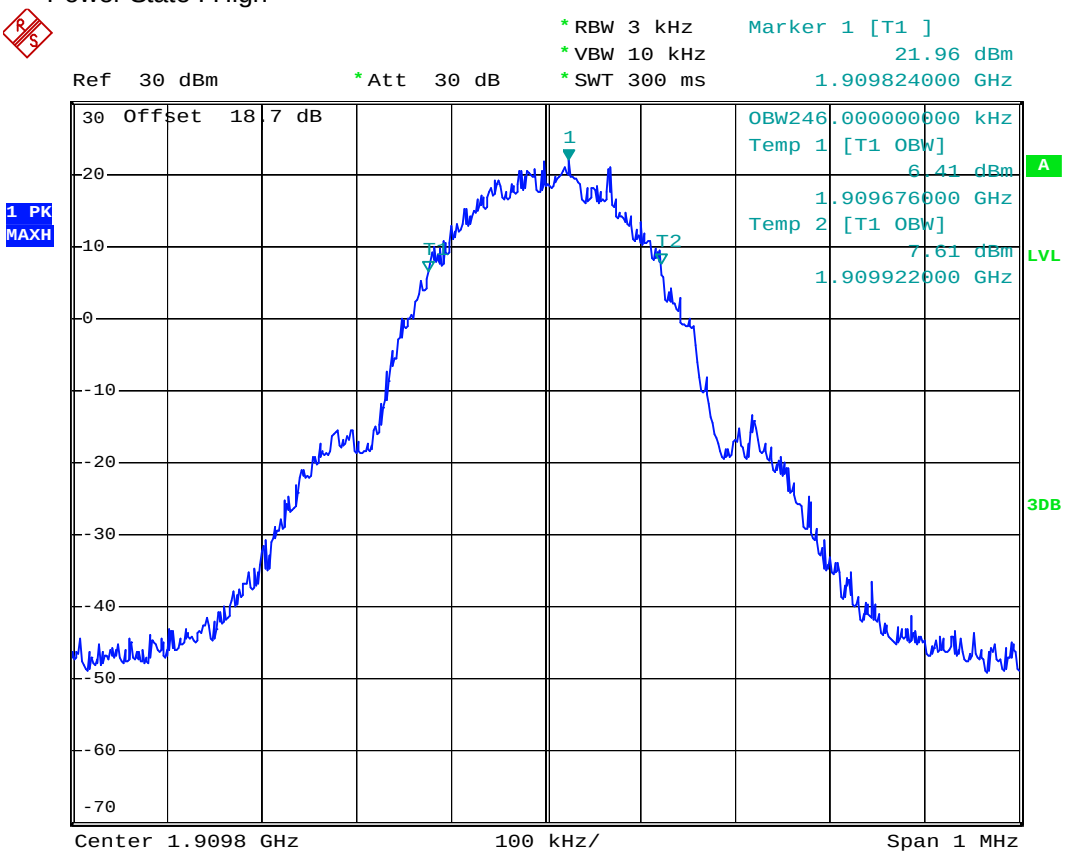
- Test Mode : GSM1900 (GSM) CH810 99% Occupid Bandwidth
- Power State : High



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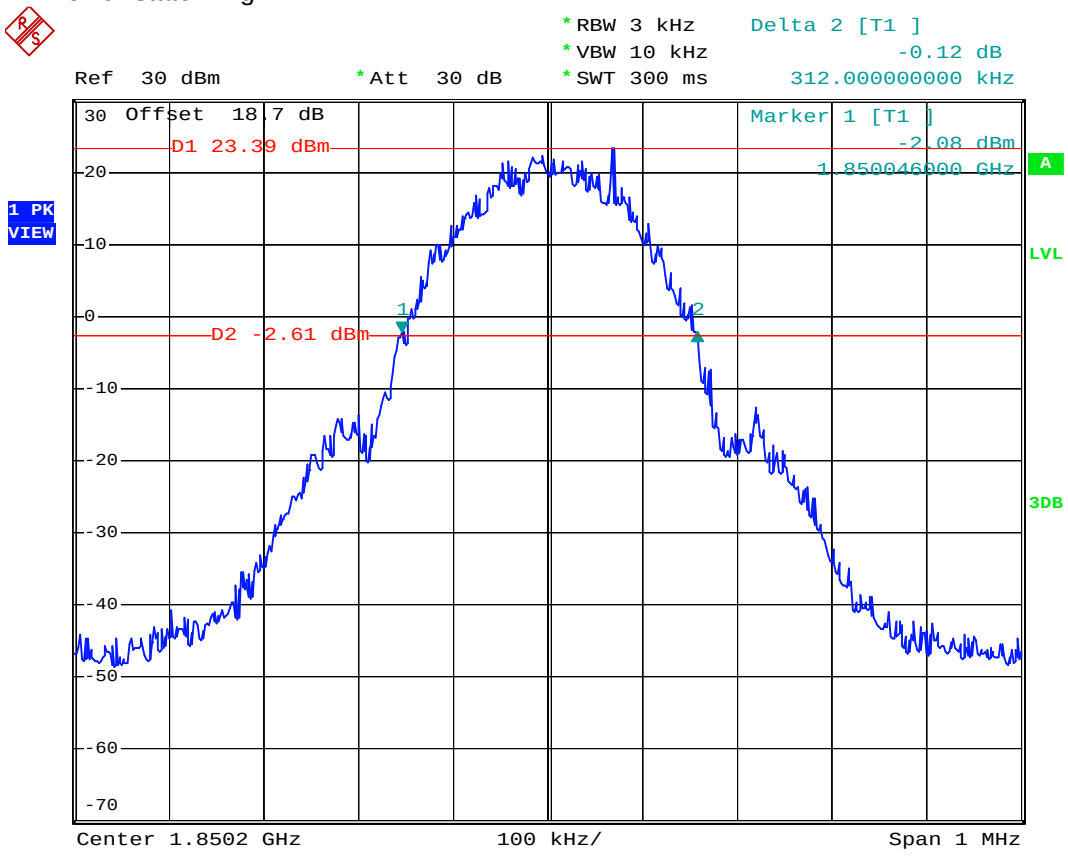
- Test Mode : GSM1900 (GSM) CH512 26dB Bandwidth
- Power State : High



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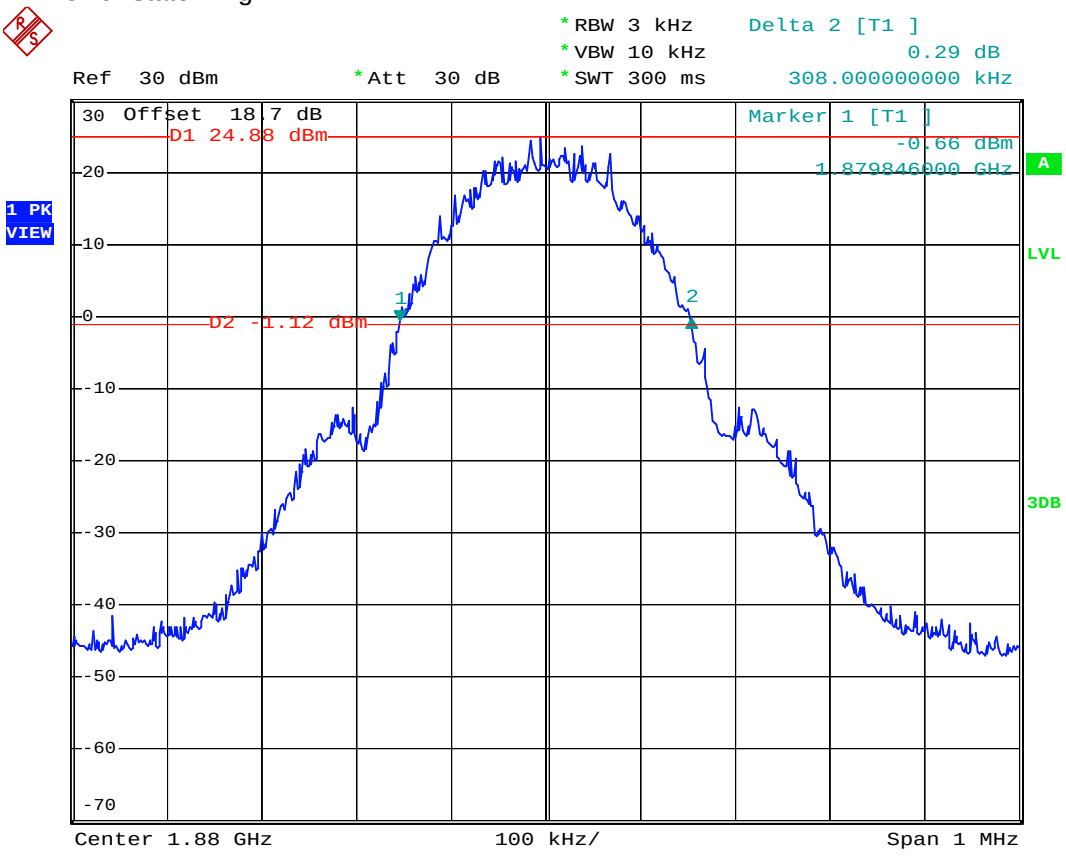
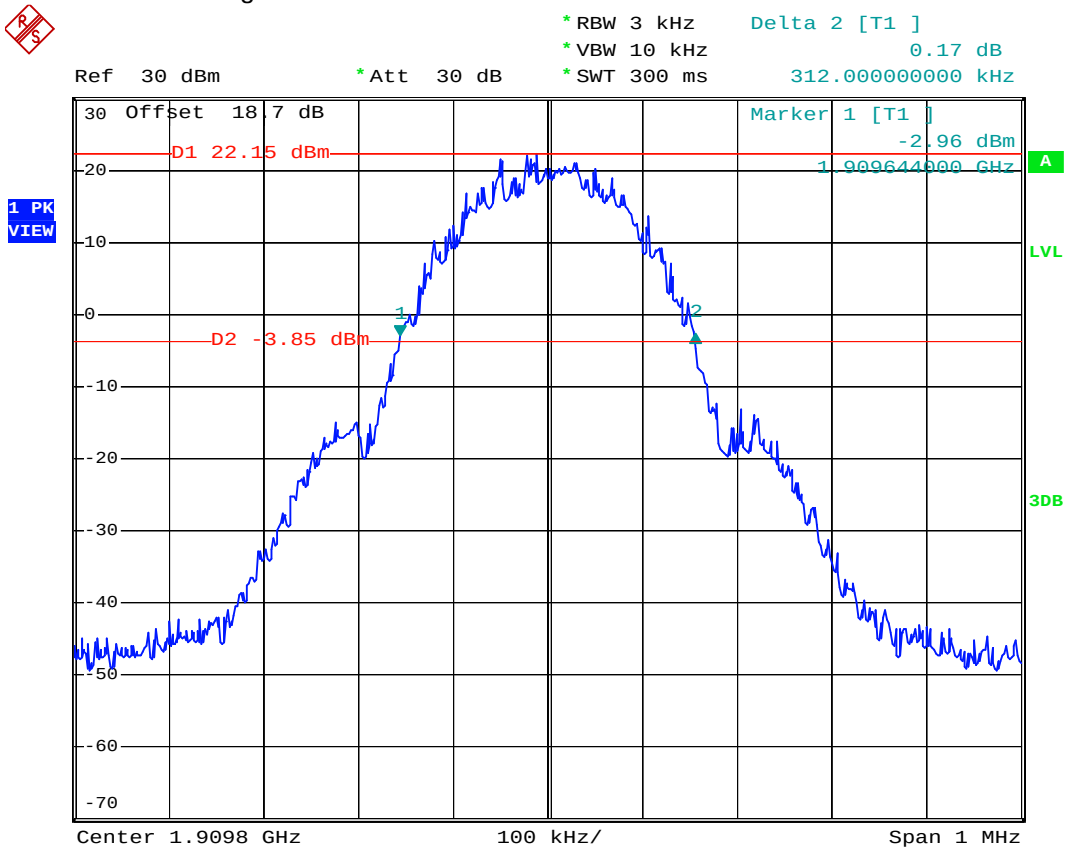
- Test Mode : GSM1900 (GSM) CH661 26dB Bandwidth
- Power State : High



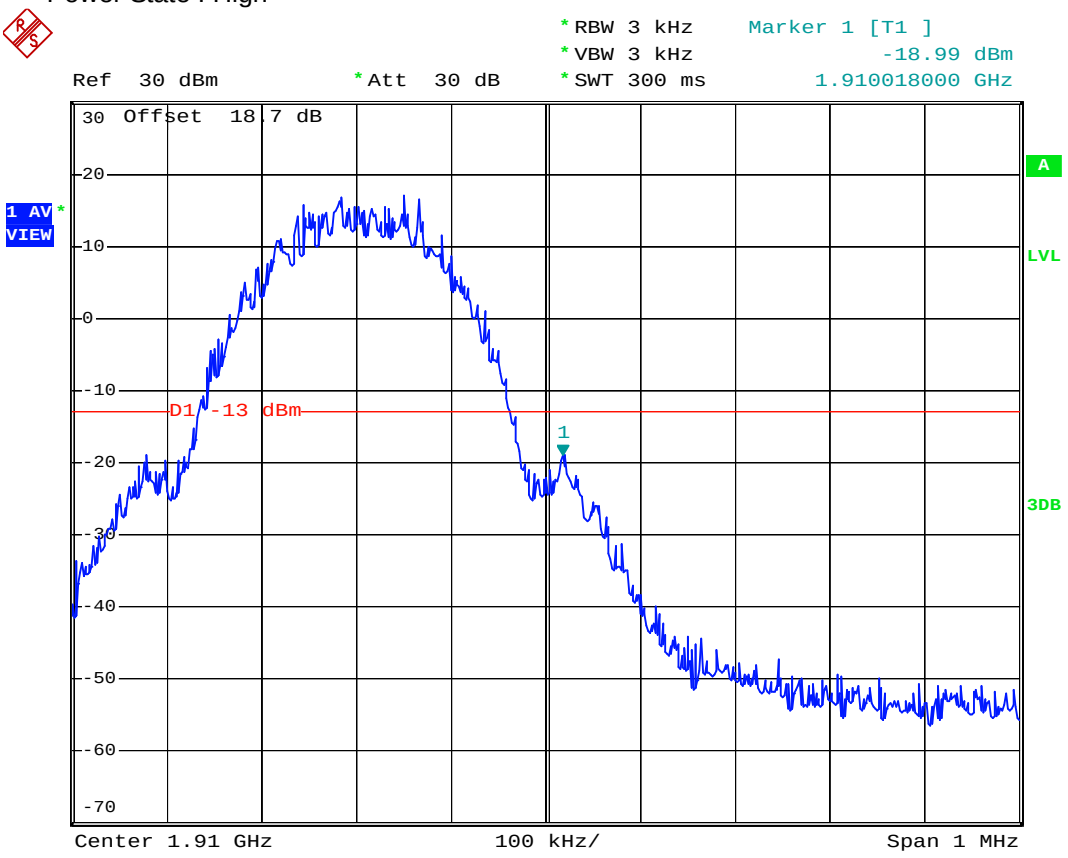
Date: 11.MAR.2008 00:40:16

- Test Mode : GSM1900 (GSM) CH810 26dB Bandwidth
- Power State : High



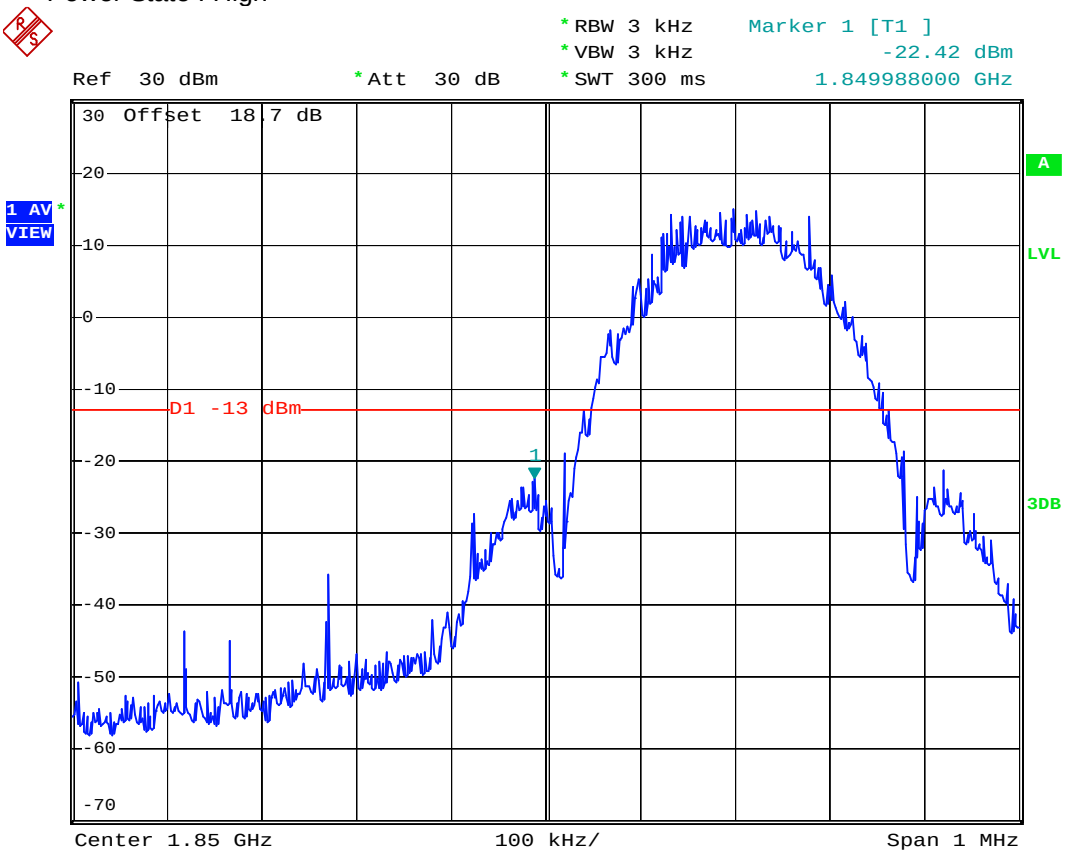
Date: 11.MAR.2008 00:42:34

- Test Mode : GSM1900 (GSM) CH810 Higher Band Edge
- Power State : High



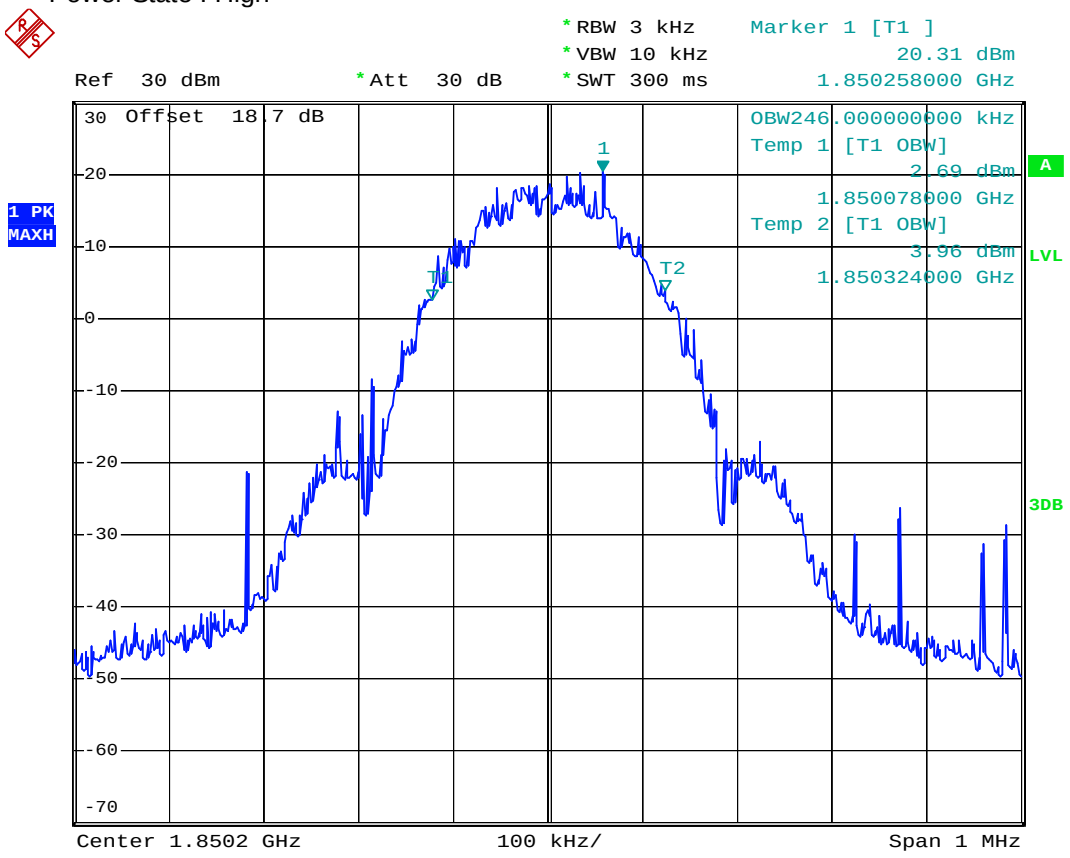
Date: 11.MAR.2008 00:56:07

- Mode 4
- Test Mode : GSM1900 (EDGE) CH512 Lower Band Edge
- Power State : High



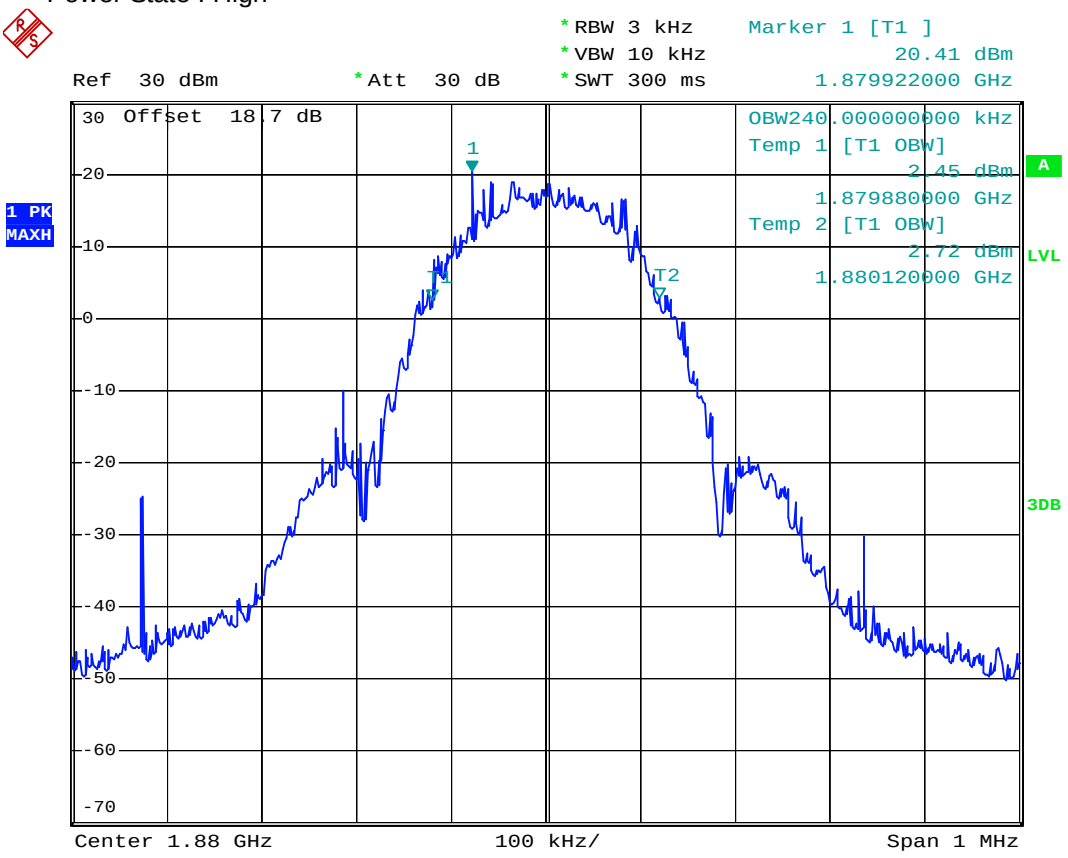
Date: 11.MAR.2008 02:45:50

- Test Mode : GSM1900 (EDGE) CH512 99% Occupid Bandwidth
- Power State : High



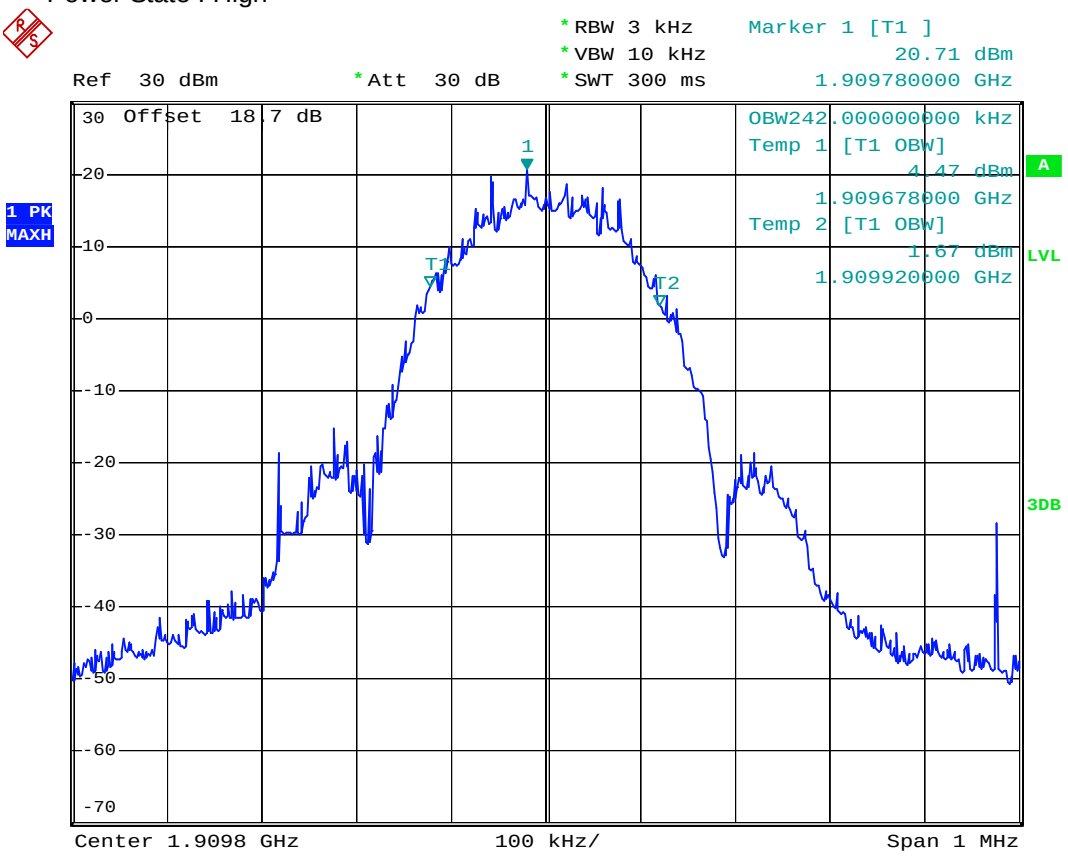
Date: 11.MAR.2008 02:40:00

- Test Mode : GSM1900 (EDGE) CH661 99% Occupid Bandwidth
- Power State : High



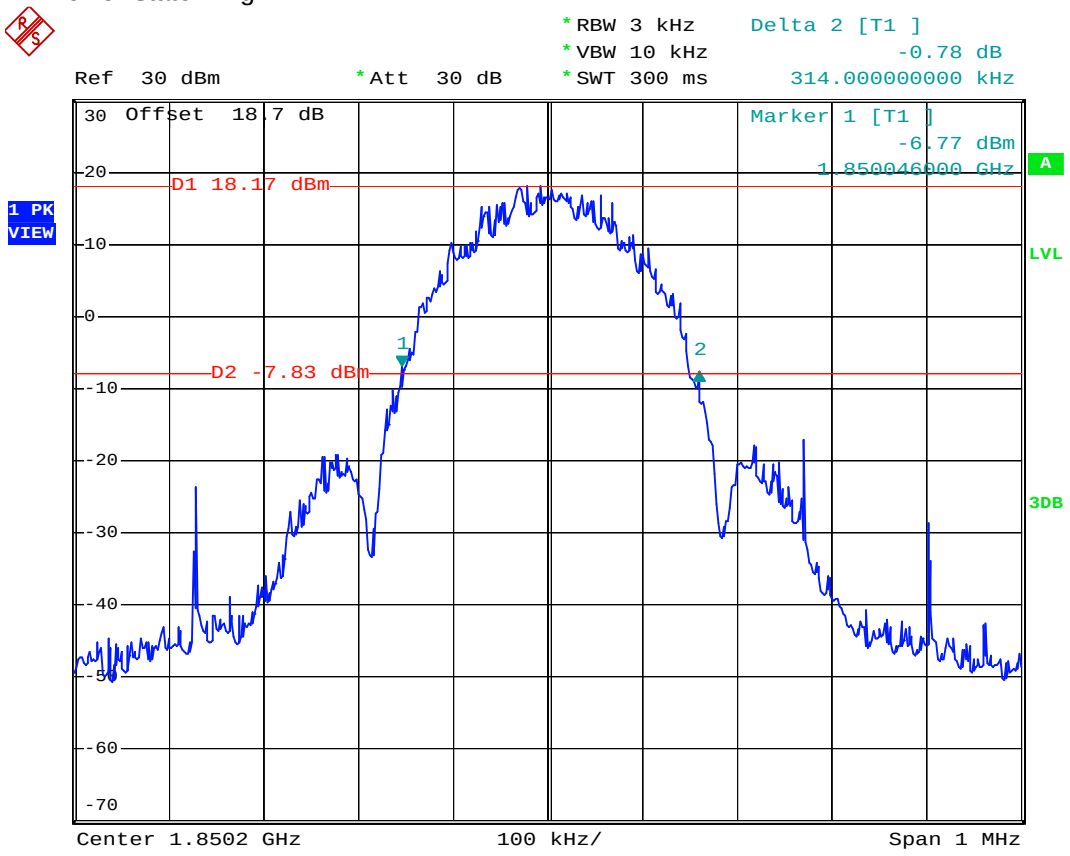
Date: 11.MAR.2008 02:40:47

- Test Mode : GSM1900 (EDGE) CH810 99% Occupid Bandwidth
- Power State : High



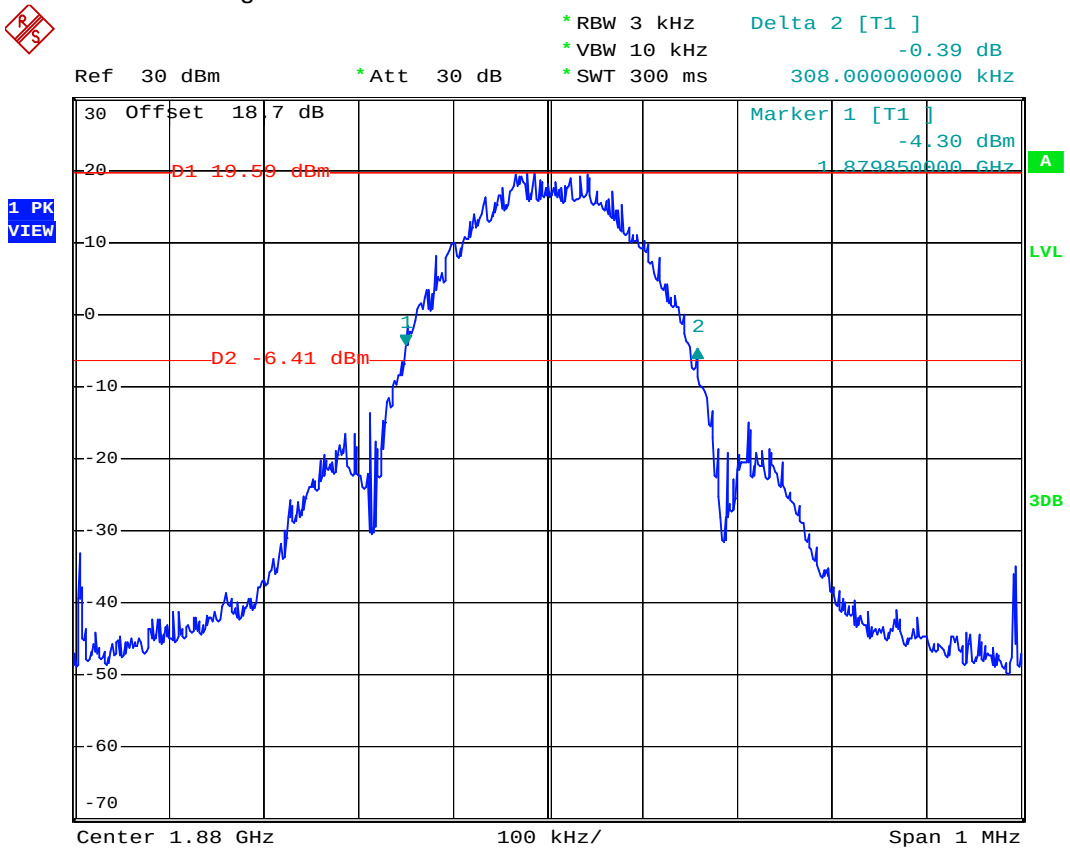
Date: 11.MAR.2008 02:43:10

- Test Mode : GSM1900 (EDGE) CH512 26dB Bandwidth
- Power State : High



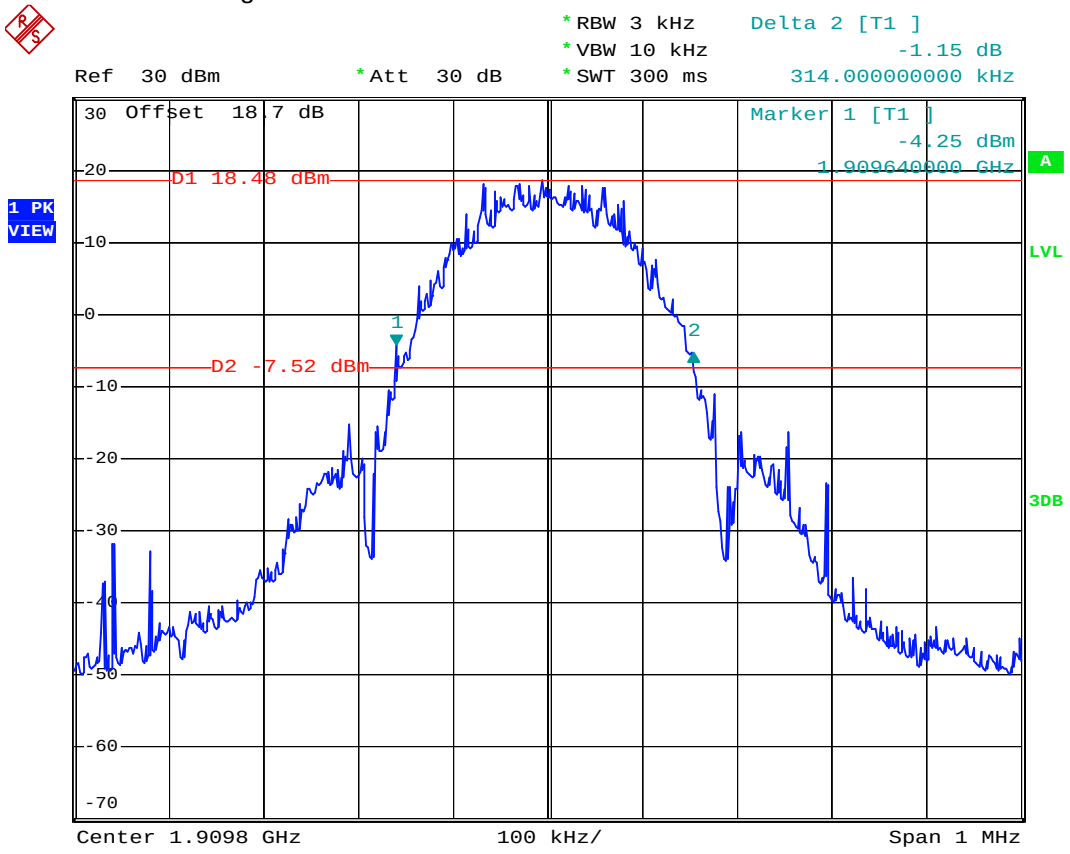
Date: 11.MAR.2008 02:38:11

- Test Mode : GSM1900 (EDGE) CH661 26dB Bandwidth
- Power State : High



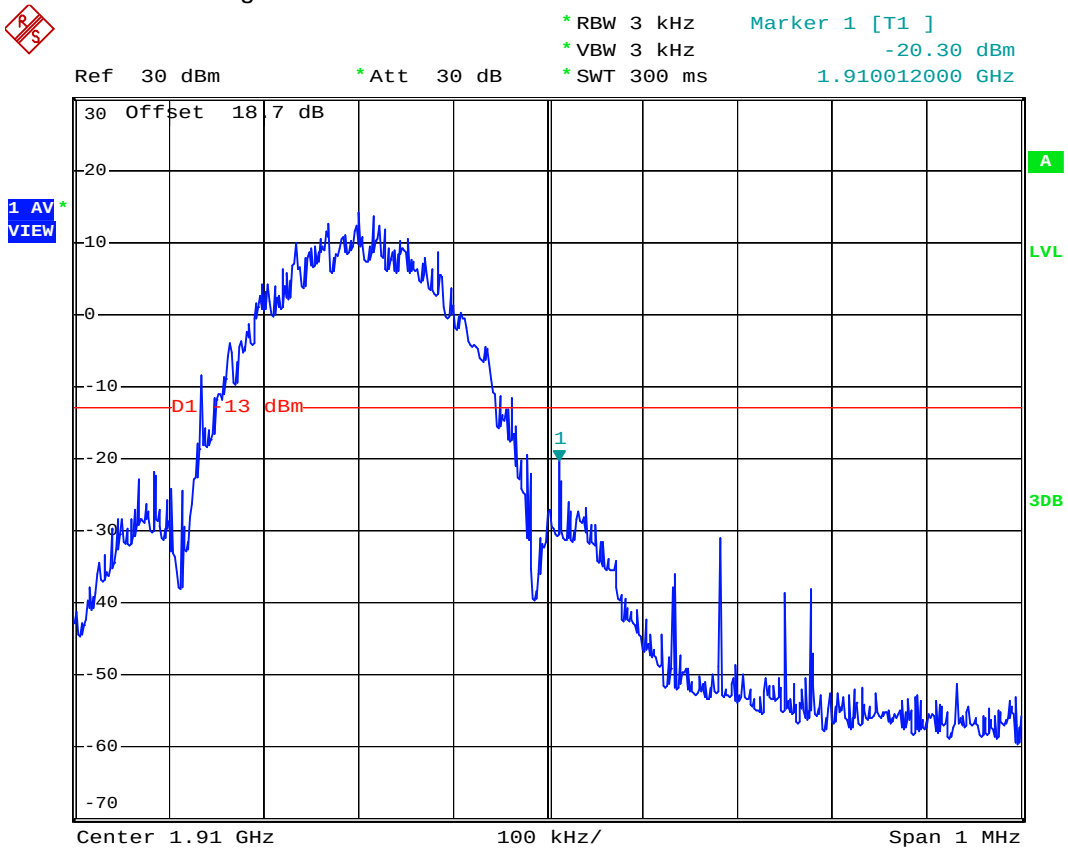
Date: 11.MAR.2008 02:36:35

- Test Mode : GSM1900 (EDGE) CH810 26dB Bandwidth
- Power State : High



Date: 11.MAR.2008 02:33:42

- Test Mode : GSM1900(EDGE) CH810 Higher Band Edge
- Power State : High



Date: 11.MAR.2008 02:48:37

4.5 Conducted Emission

4.5.1 Measurement Instruments

As described in chapter 5 of this test report.

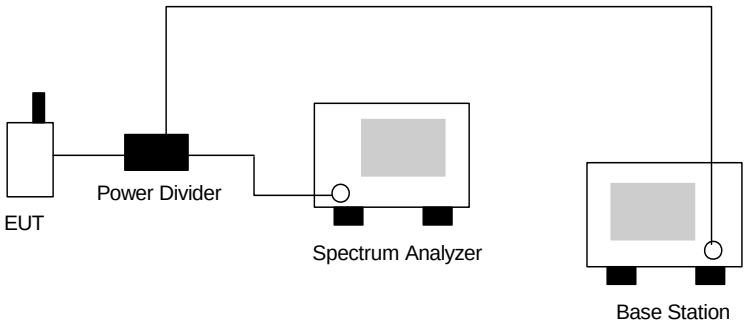
4.5.2 Test Procedure

a. The EUT was connected to Spectrum Analyzer and Base Station via power divider.

b. The middle channel for the highest RF power within the transmitting frequency was measured.

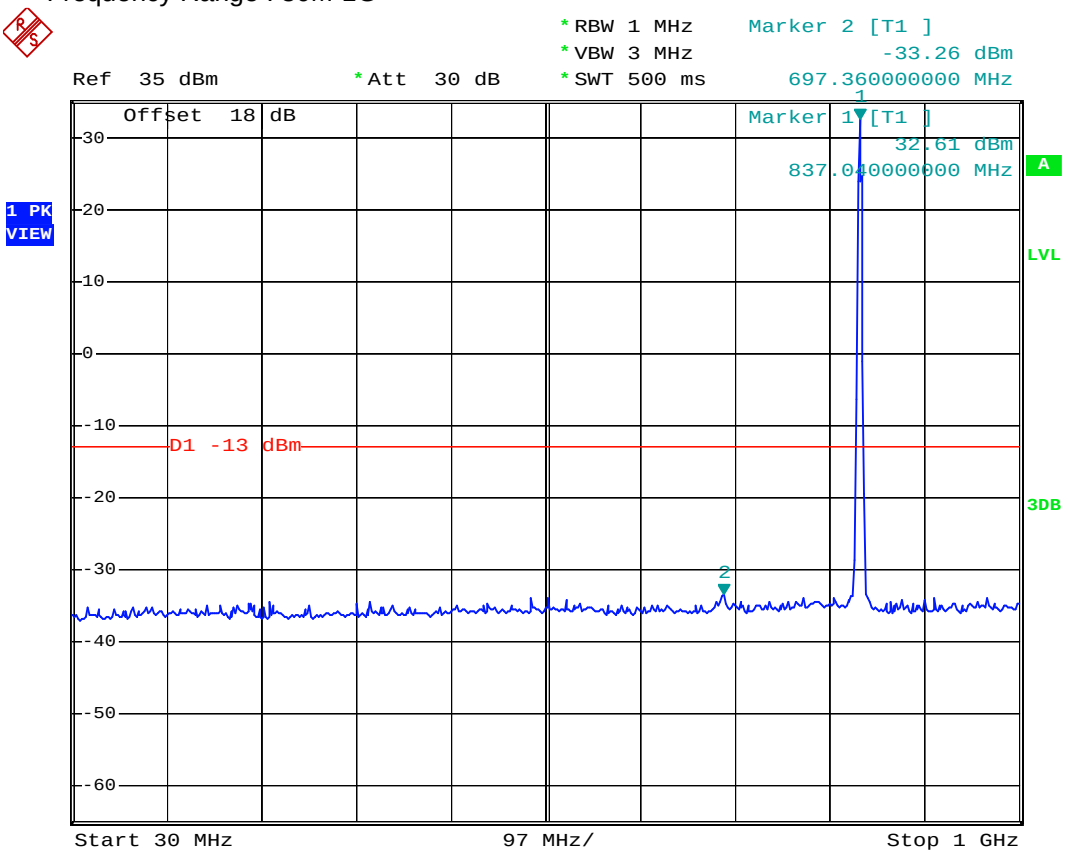
c. The conducted spurious emission for the whole frequency range was taken.

4.5.3 Test Setup Layout



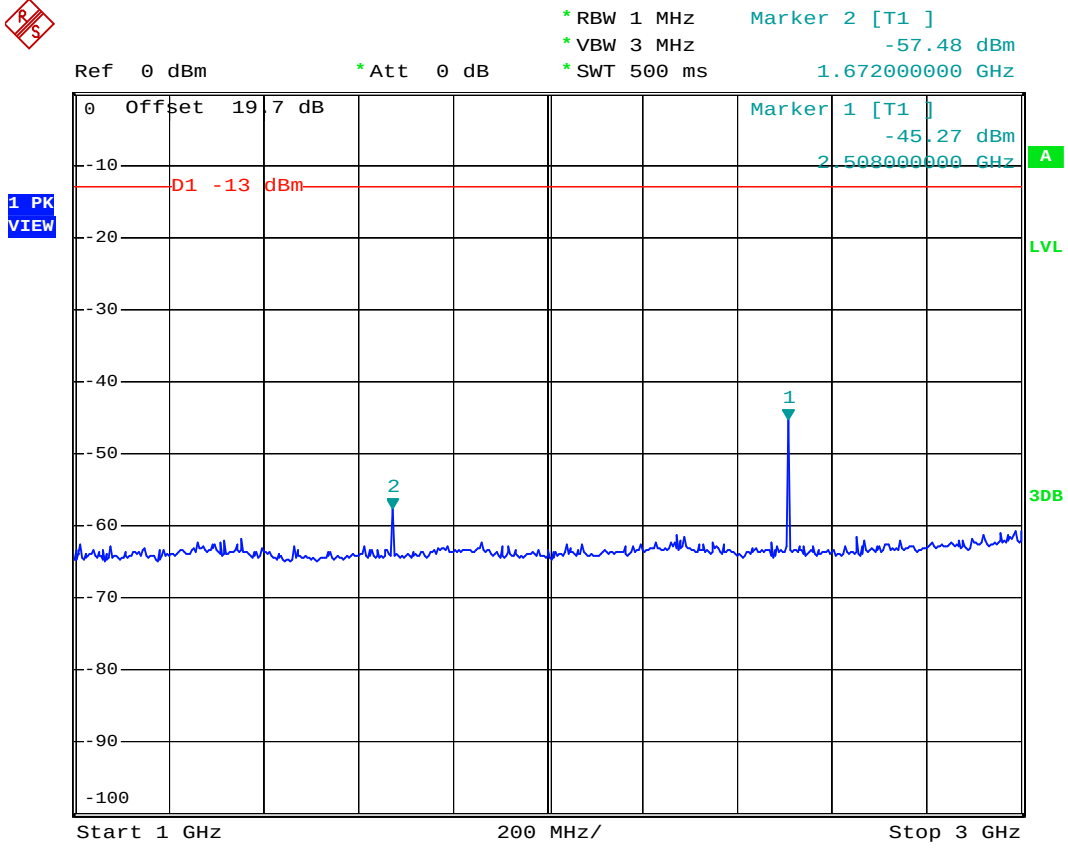
4.5.4 Test Result

- Mode 1
- Test Mode : GSM850 (GSM) CH189
- Frequency Range : 30M-1G



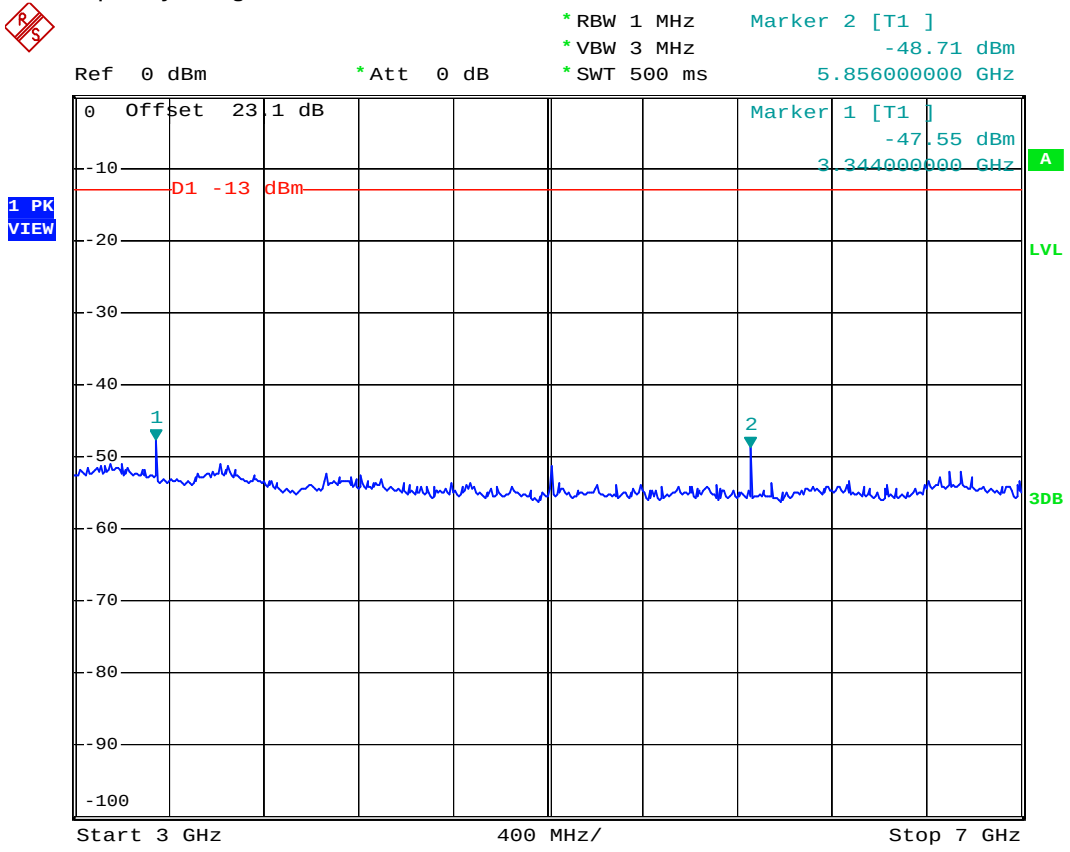
Date: 11.MAR.2008 03:01:24

- Test Mode : GSM850 (GSM) CH189
- Frequency Range : 1G-3G



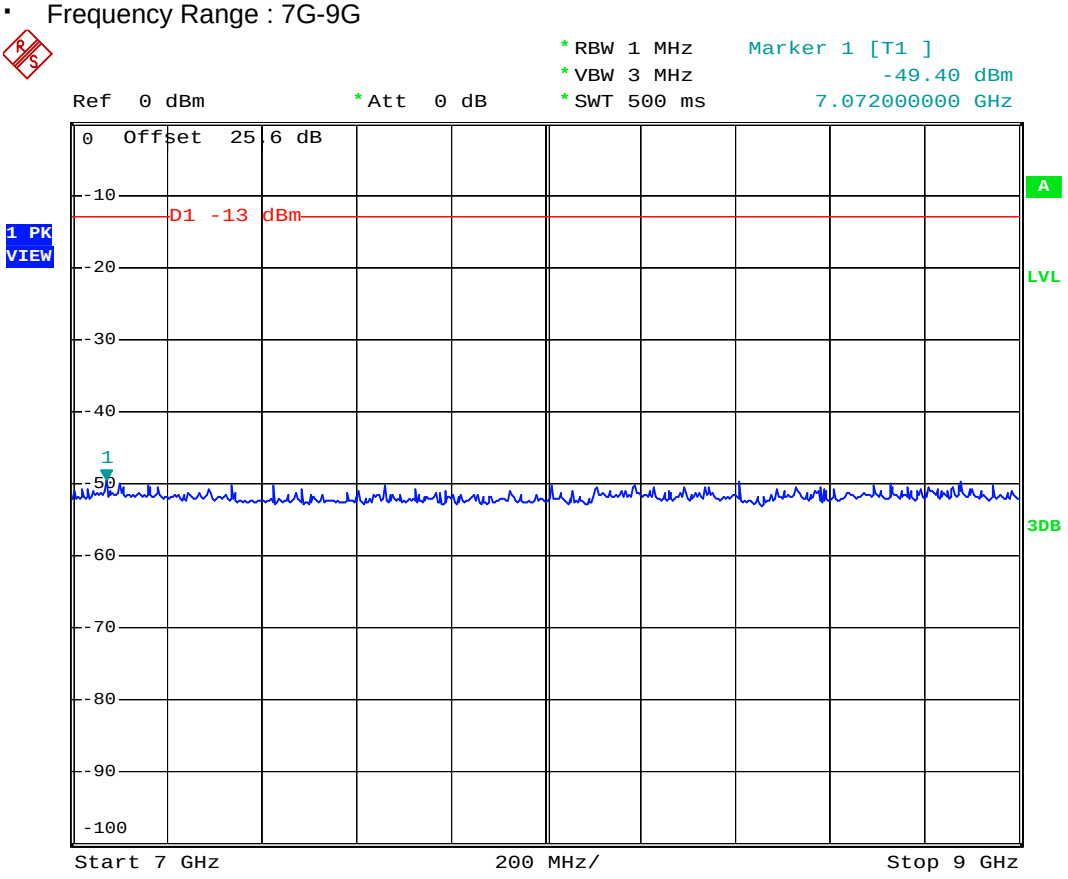
Date: 11.MAR.2008 03:12:54

- Test Mode : GSM850 (GSM) CH189
- Frequency Range : 3G-7G



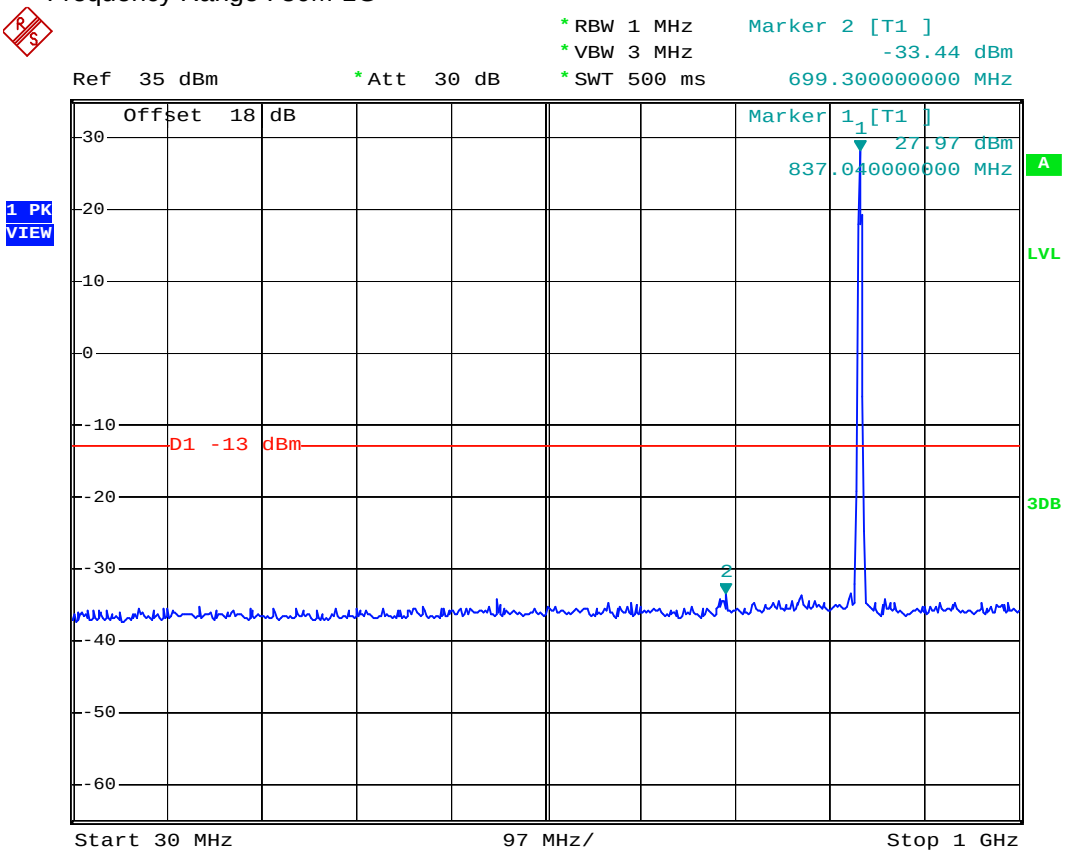
Date: 11.MAR.2008 03:13:59

- Test Mode : GSM850 (GSM) CH189
- Frequency Range : 7G-9G



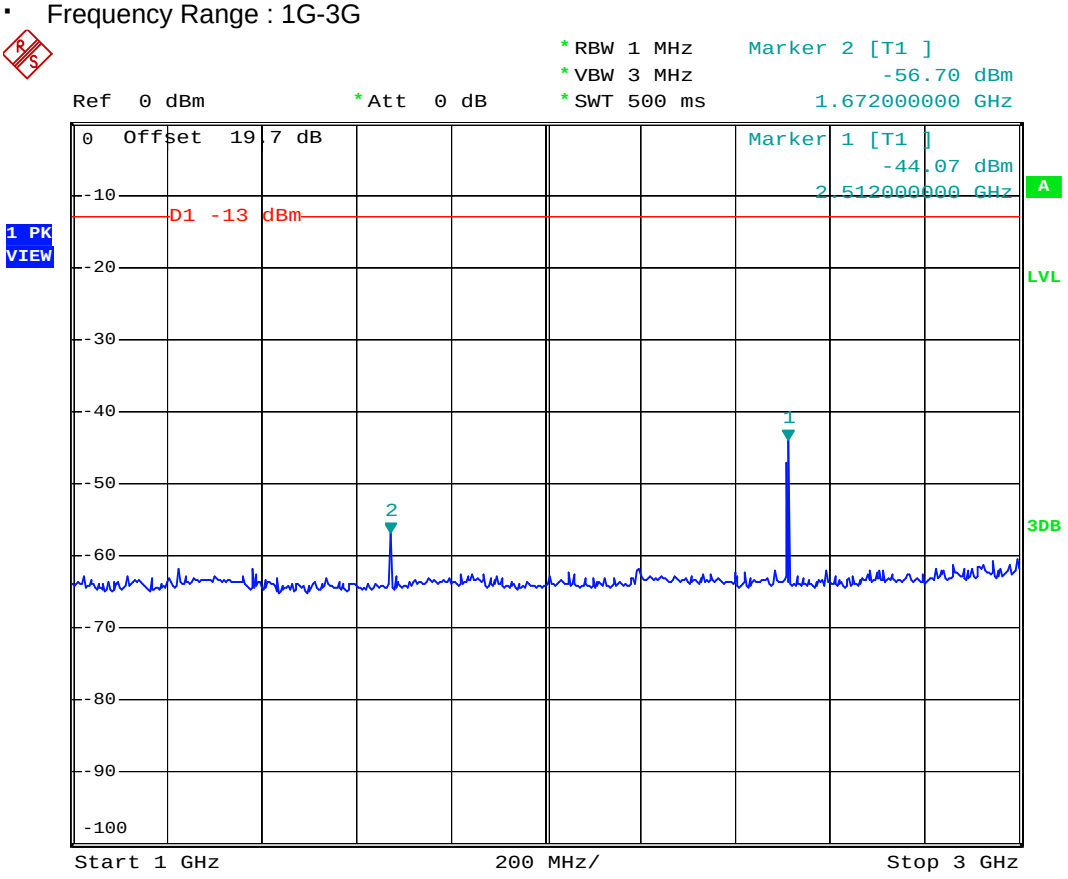
Date: 11.MAR.2008 03:17:37

- Mode 2
- Test Mode : GSM850 (EDGE) CH189
- Frequency Range : 30M-1G



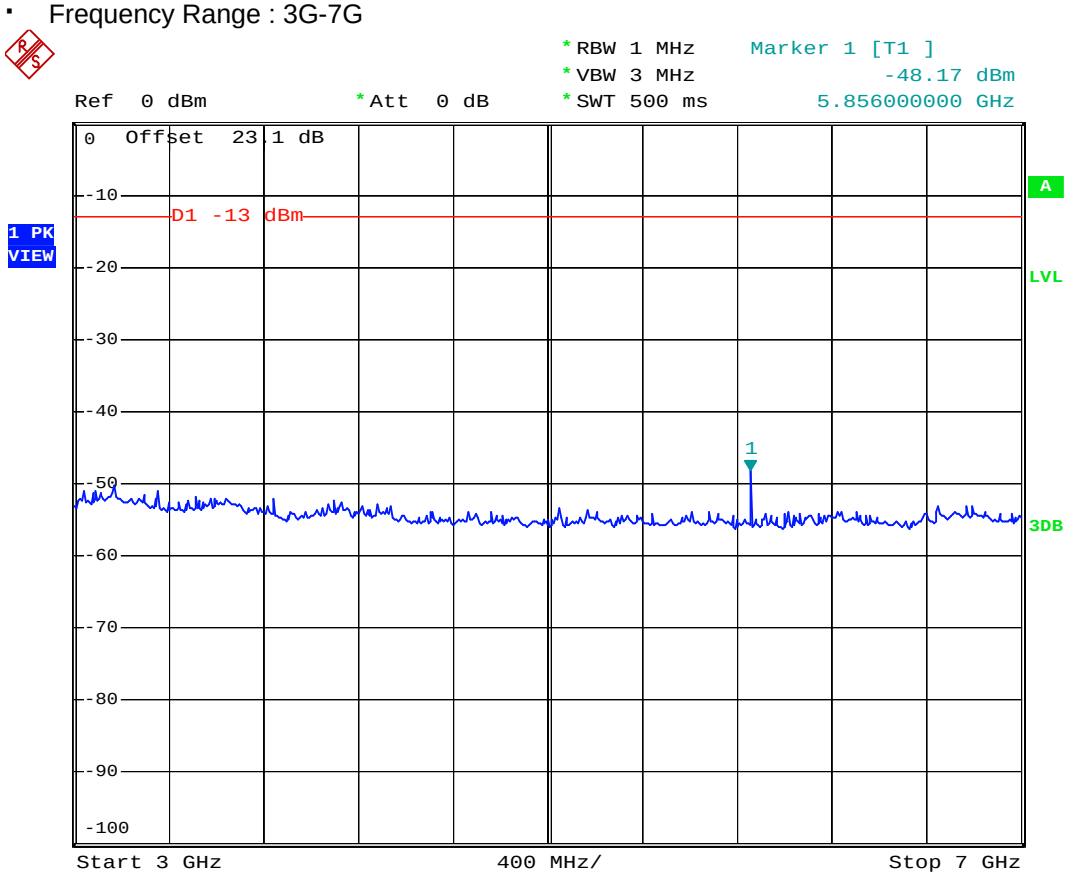
Date: 11.MAR.2008 02:59:20

- Test Mode : GSM850 (EDGE) CH189
- Frequency Range : 1G-3G



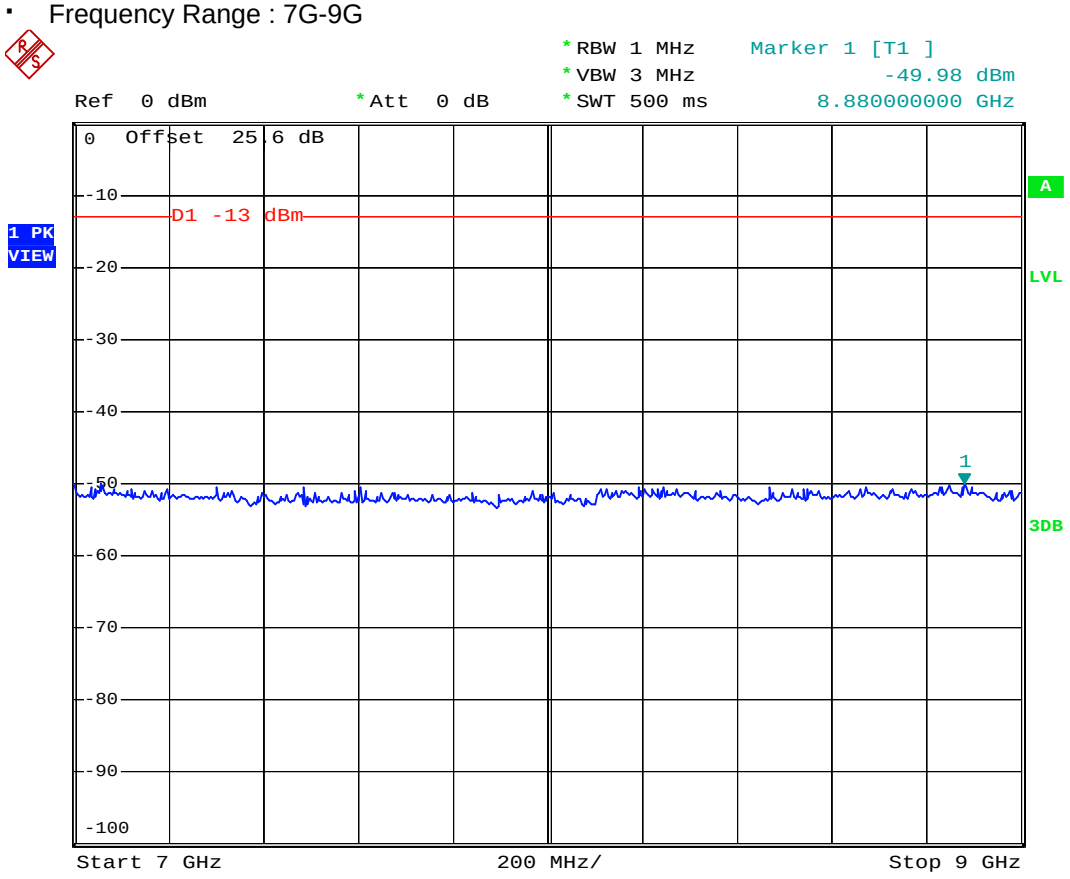
Date: 11.MAR.2008 03:07:32

- Test Mode : GSM850 (EDGE) CH189
- Frequency Range : 3G-7G



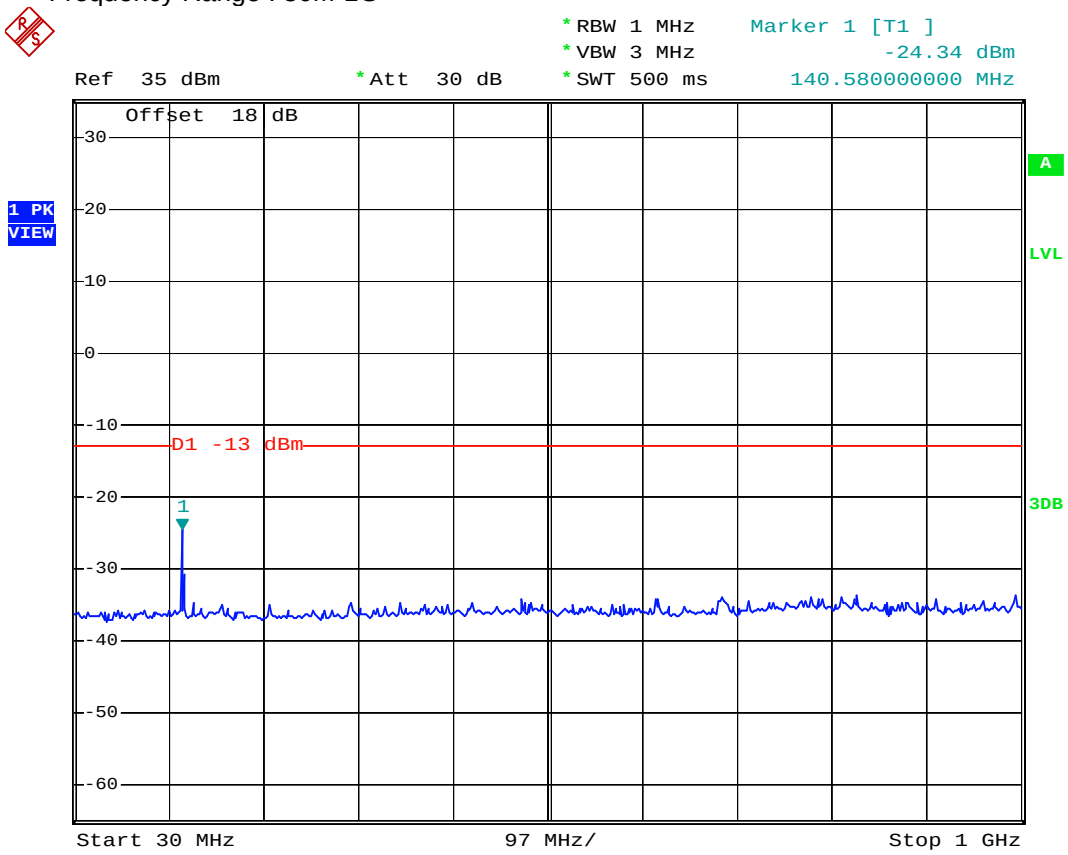
Date: 11.MAR.2008 03:15:03

- Test Mode : GSM850 (EDGE) CH189
- Frequency Range : 7G-9G



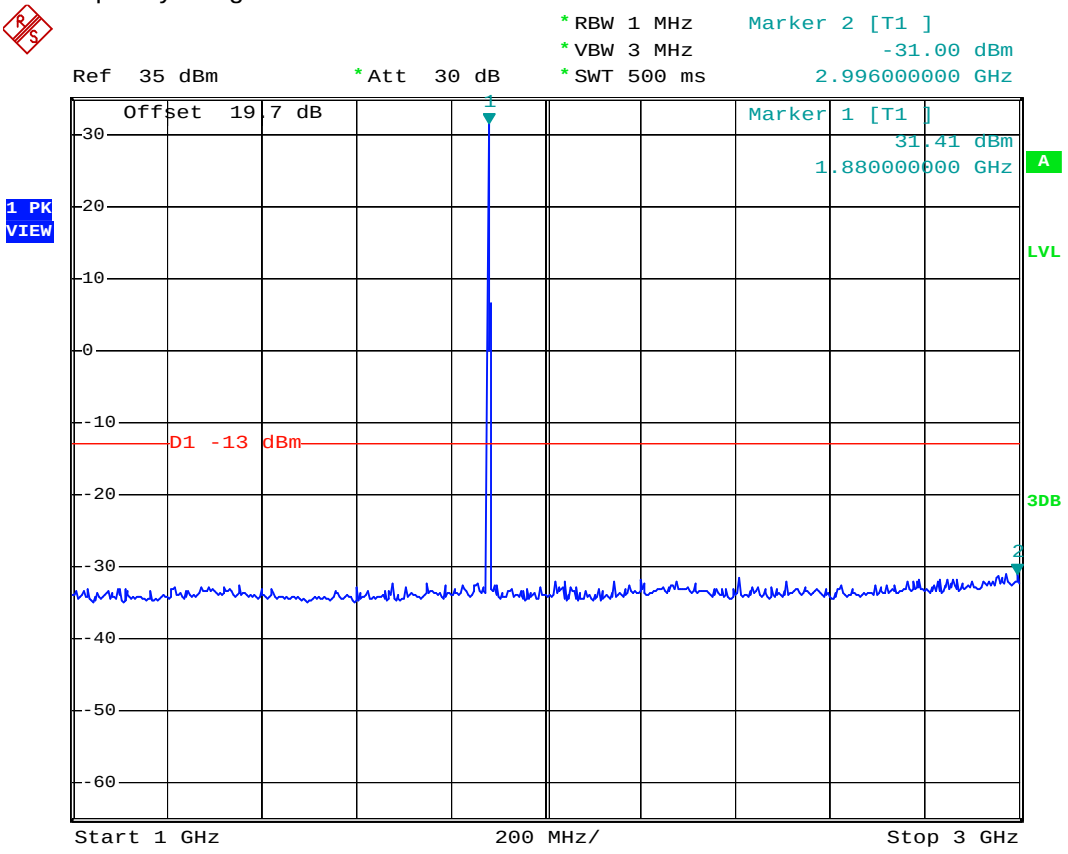
Date: 11.MAR.2008 03:16:48

- Mode 3
- Test Mode : GSM1900 (GSM) CH661
- Frequency Range : 30M-1G



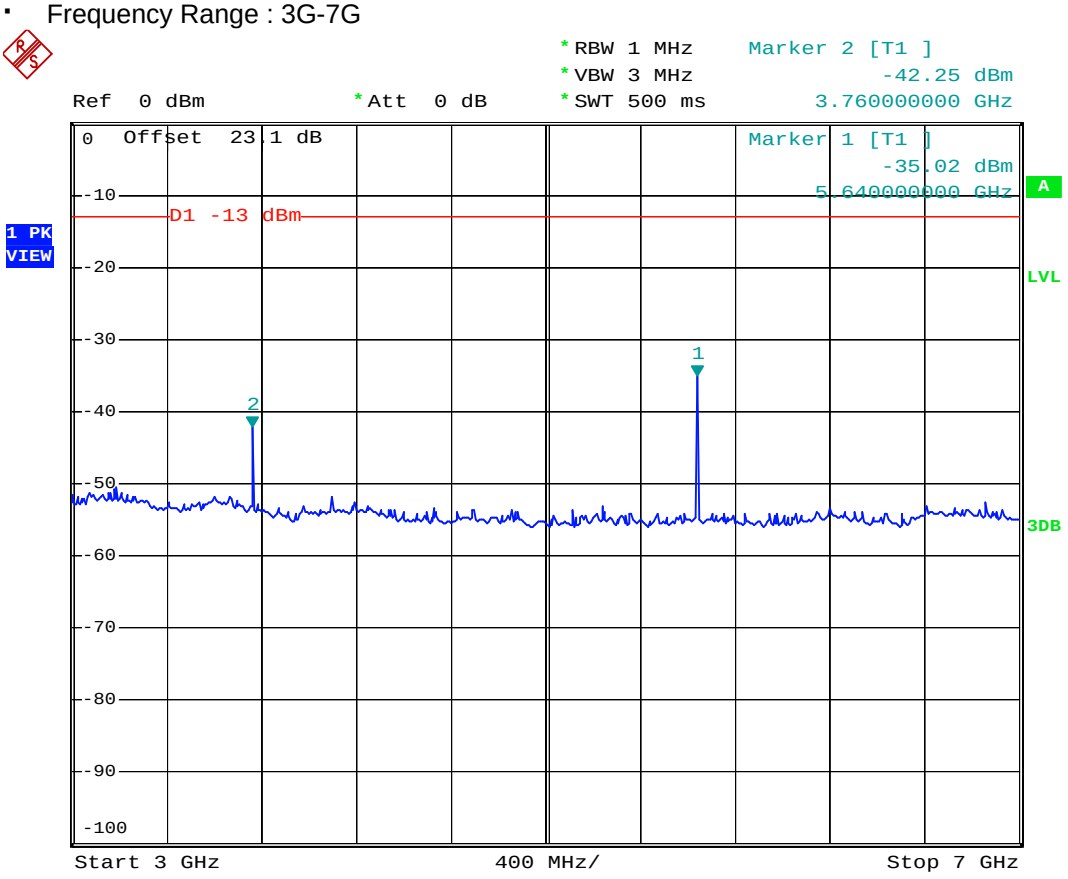
Date: 11.MAR.2008 02:57:07

- Test Mode : GSM1900 (GSM) CH661
- Frequency Range : 1G-3G



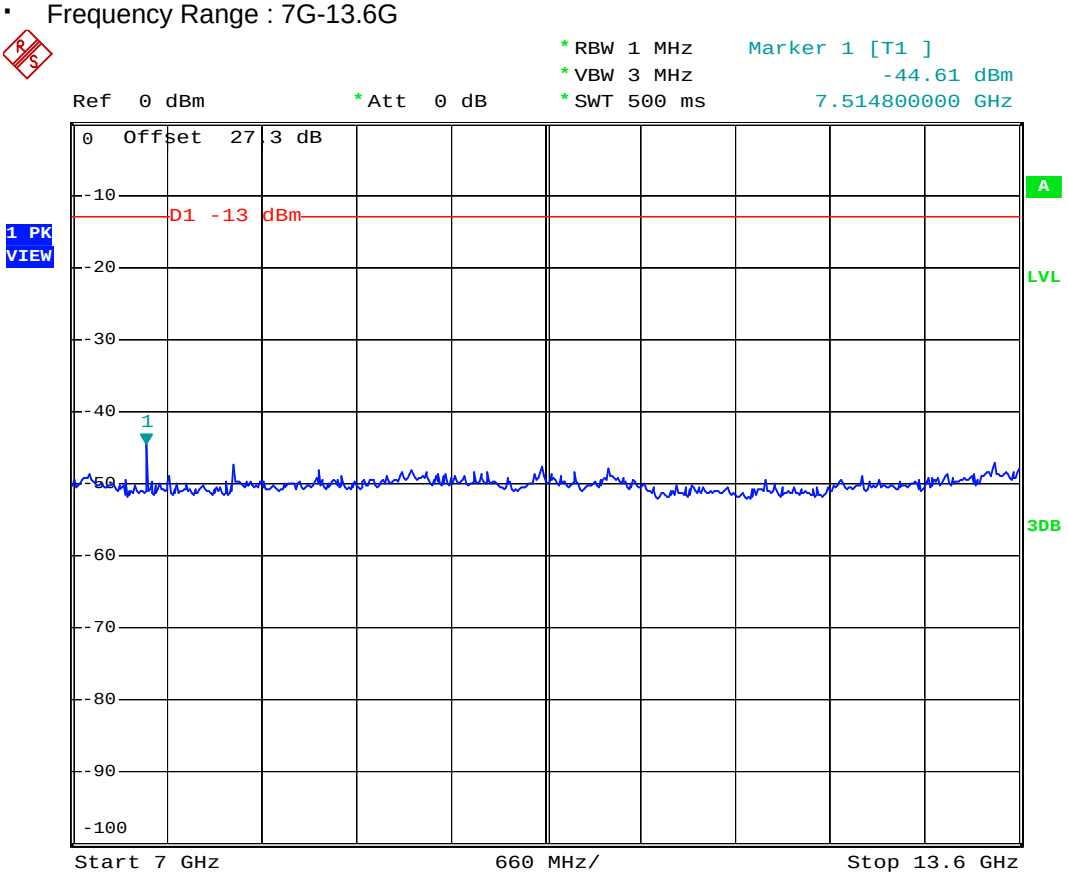
Date: 11.MAR.2008 03:04:12

- Test Mode : GSM1900 (GSM) CH661
- Frequency Range : 3G-7G



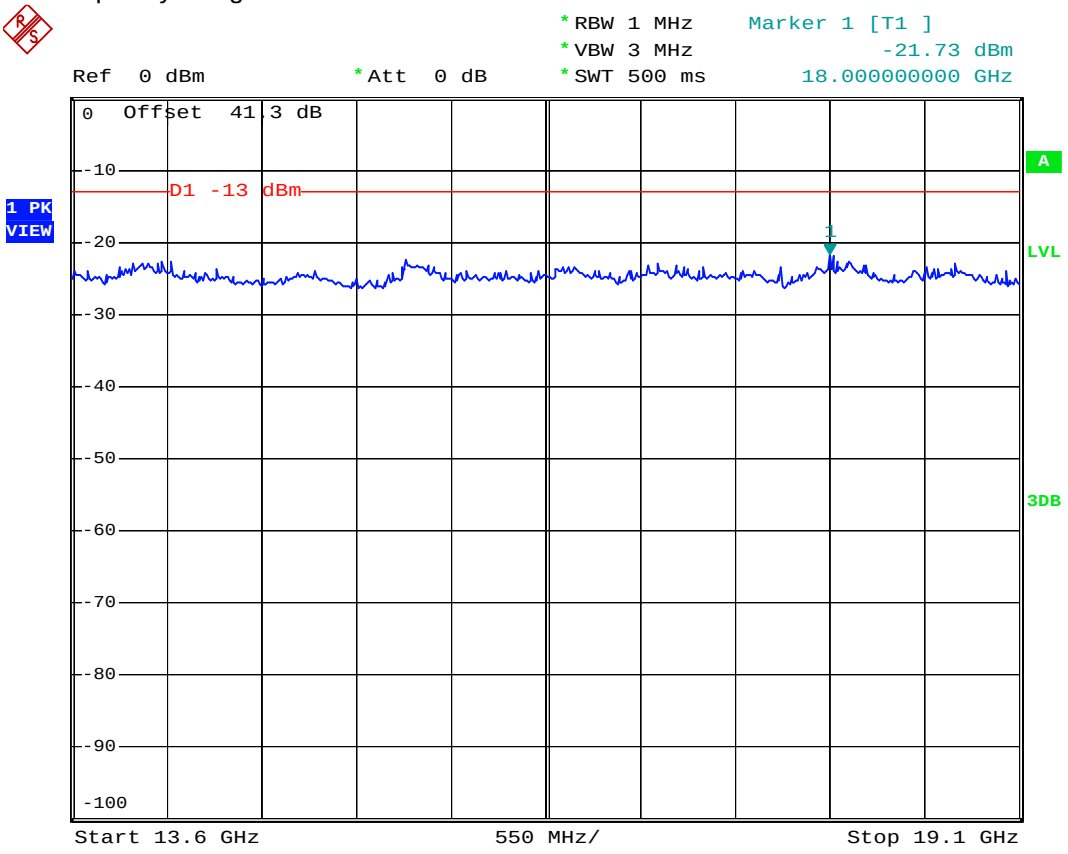
Date: 11.MAR.2008 03:14:29

- Test Mode : GSM1900 (GSM) CH661
- Frequency Range : 7G-13.6G



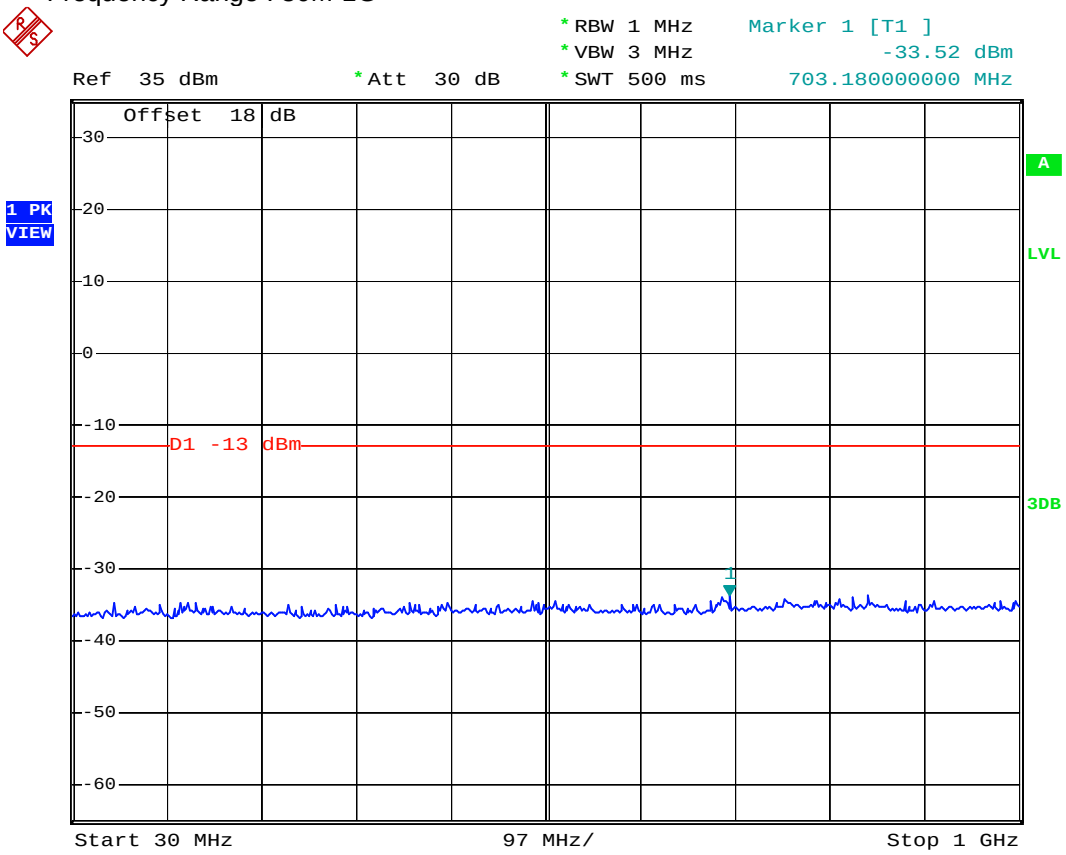
Date: 11.MAR.2008 03:20:03

- Test Mode : GSM1900 (GSM) CH661
- Frequency Range : 13.6G-19.1G



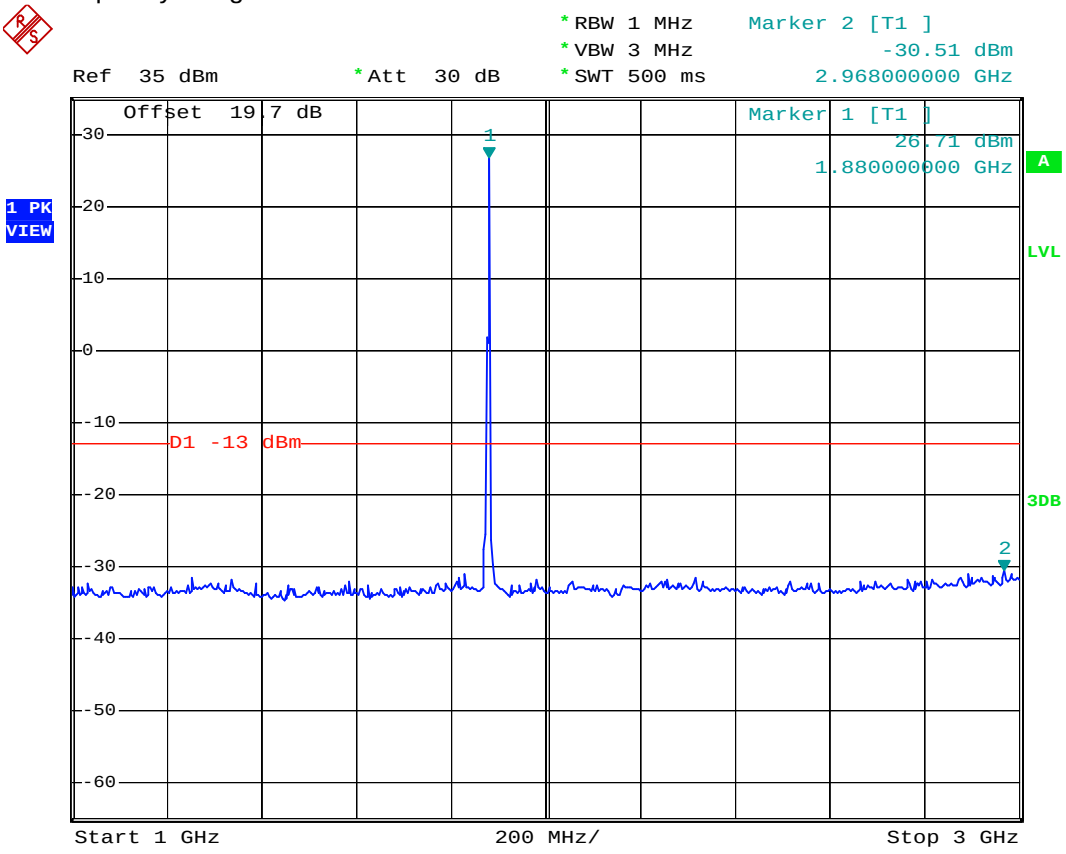
Date: 11.MAR.2008 03:20:57

- Mode 4
- Test Mode : GSM1900 (EDGE) CH661
- Frequency Range : 30M-1G



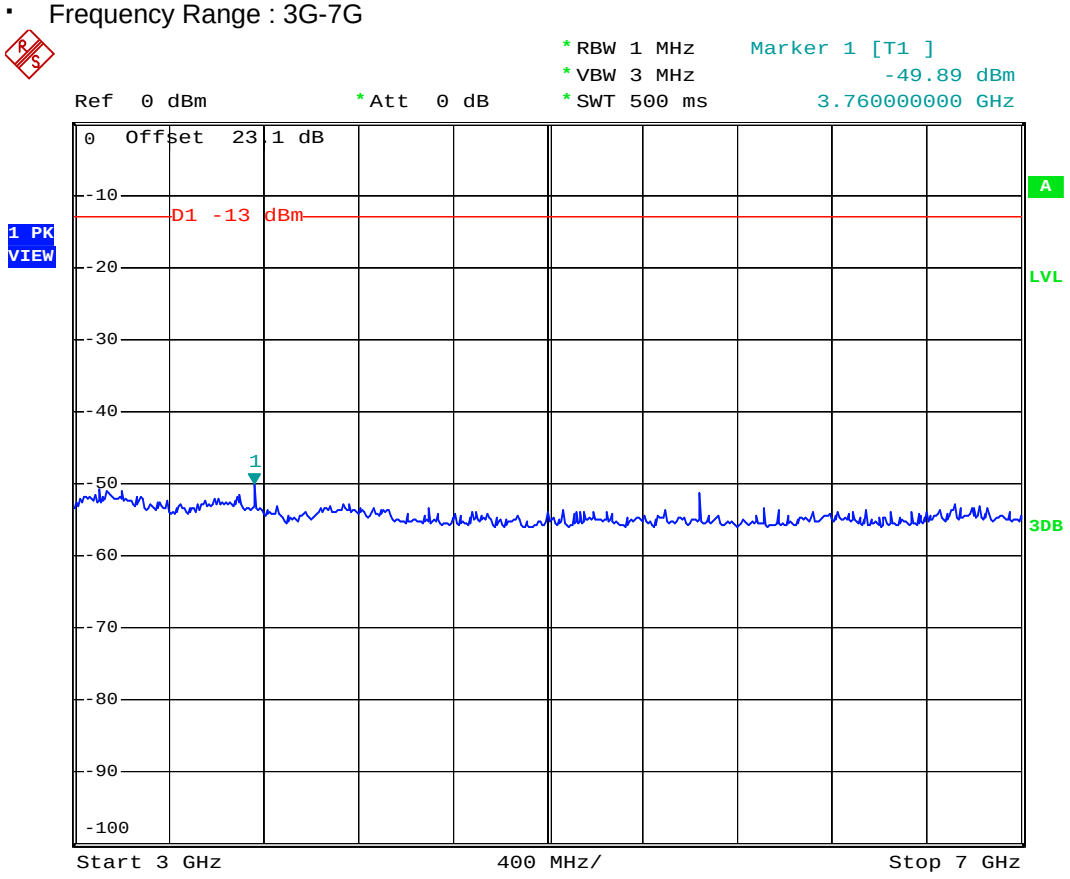
Date: 11.MAR.2008 03:00:18

- Test Mode : GSM1900 (EDGE) CH661
- Frequency Range : 1G-3G



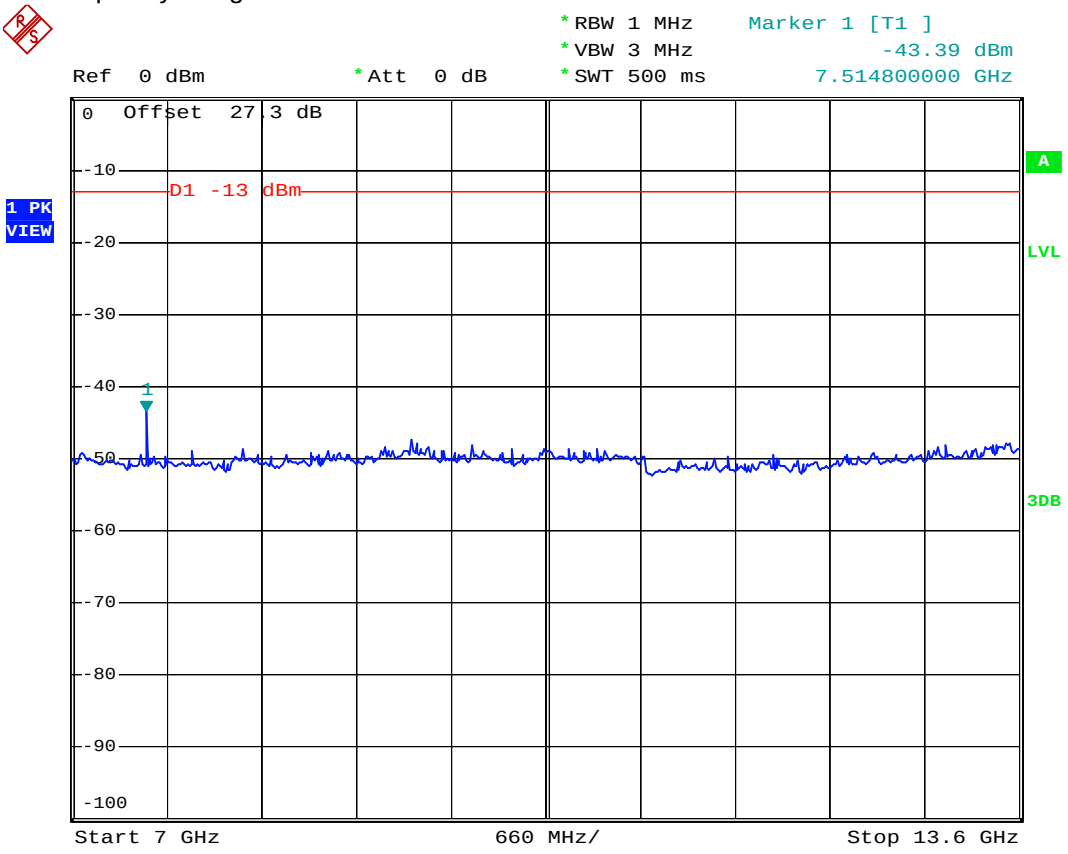
Date: 11.MAR.2008 03:06:08

- Test Mode : GSM1900 (EDGE) CH661
- Frequency Range : 3G-7G



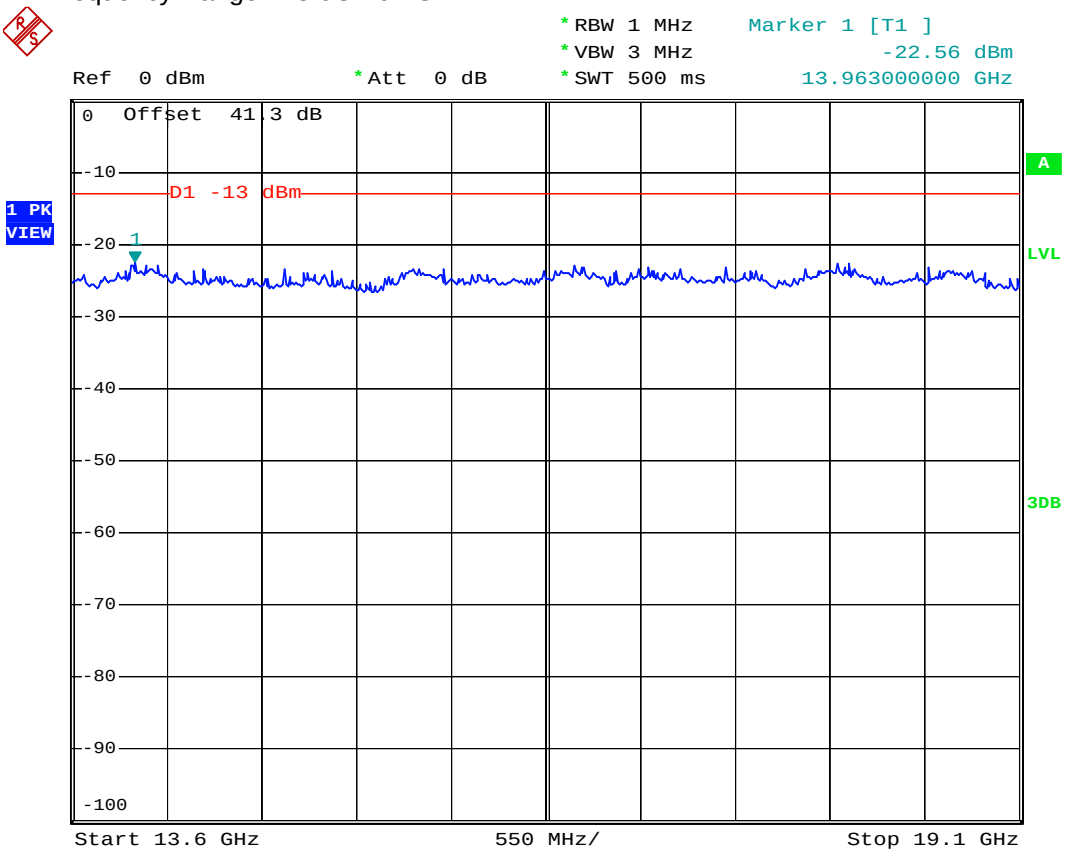
Date: 11.MAR.2008 03:15:28

- Test Mode : GSM1900 (EDGE) CH661
- Frequency Range : 7G-13.6G



Date: 11.MAR.2008 03:19:24

- Test Mode : GSM1900 (EDGE) CH661
- Frequency Range : 13.6G-19.1G



Date: 11.MAR.2008 03:21:31

4.6 Field Strength of Spurious Radiation

Equivalent isotropic radiated Power Measurements by substitution method according to ANSI/TIA/EIA-603-C.

4.6.1 Measurement Instruments

As described in chapter 5 of this test report.

4.6.2 Test Procedure

a. The EUT was placed on a rotatable wooden table with 0.8 meter about ground.

b. The EUT was set 3 meters from the receiving antenna which was mounted on the antenna tower.

c. The table was rotated 360 degrees to determine the position of the highest spurious emission.

d. The height of the receiving antenna is varied between one meter and four meters to reach the maximum spurious emission for both horizontal and vertical polarizations.

e. Taking the record of maximum spurious emission.

f. A Horn antenna was substituted in place of the EUT and was driven by a signal generator.

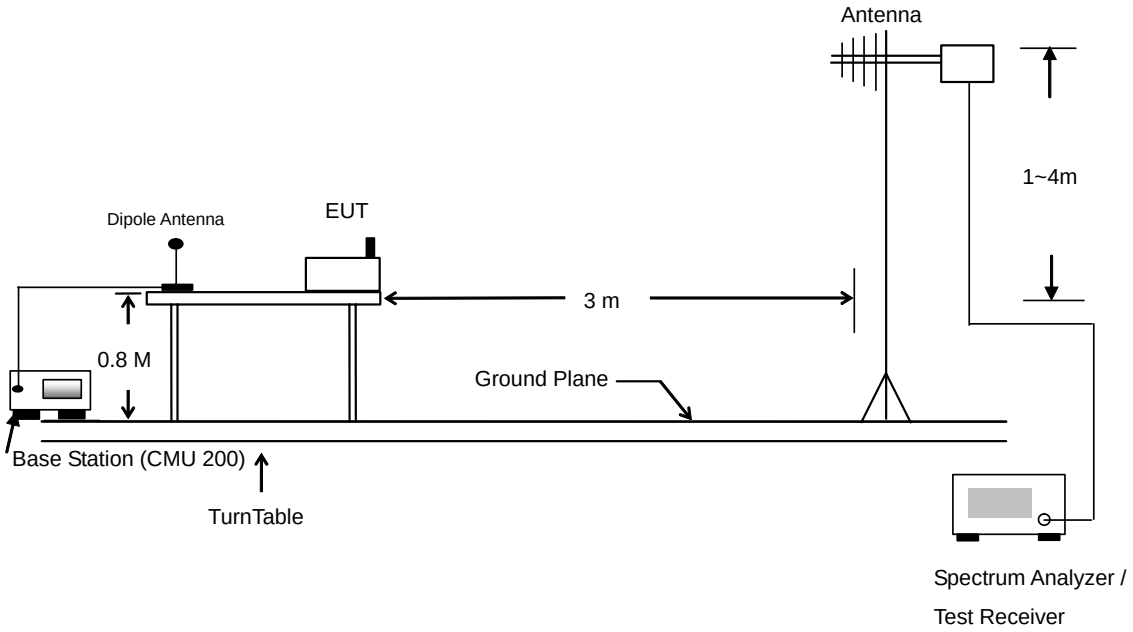
g. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.

h. Taking the recored of output power at antenna port.

i. Repeat step 7 to step 8 for another polarization.

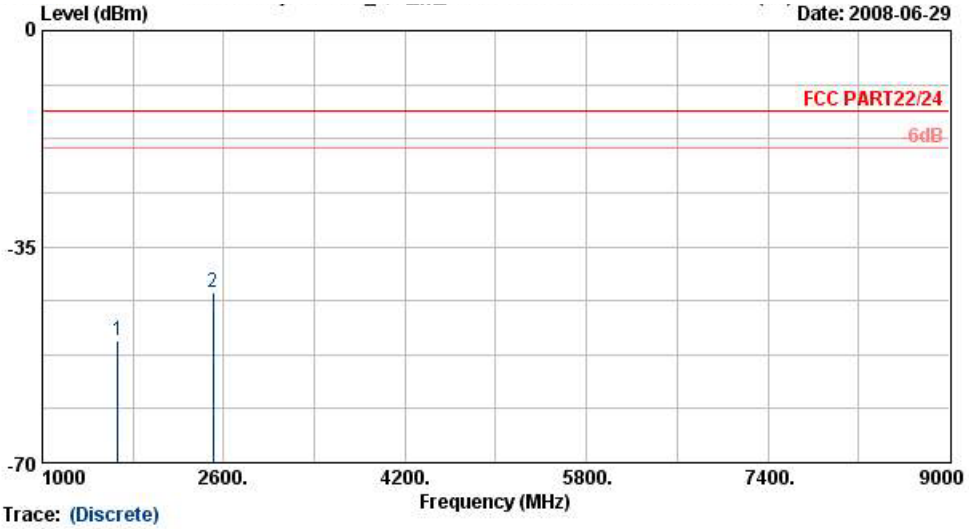
j. Emission level (dBm) = output power + substitution Gain.

4.6.3 Test Setup Layout



4.6.4 Test Data

- Mode 1
- Horizontal Polarization

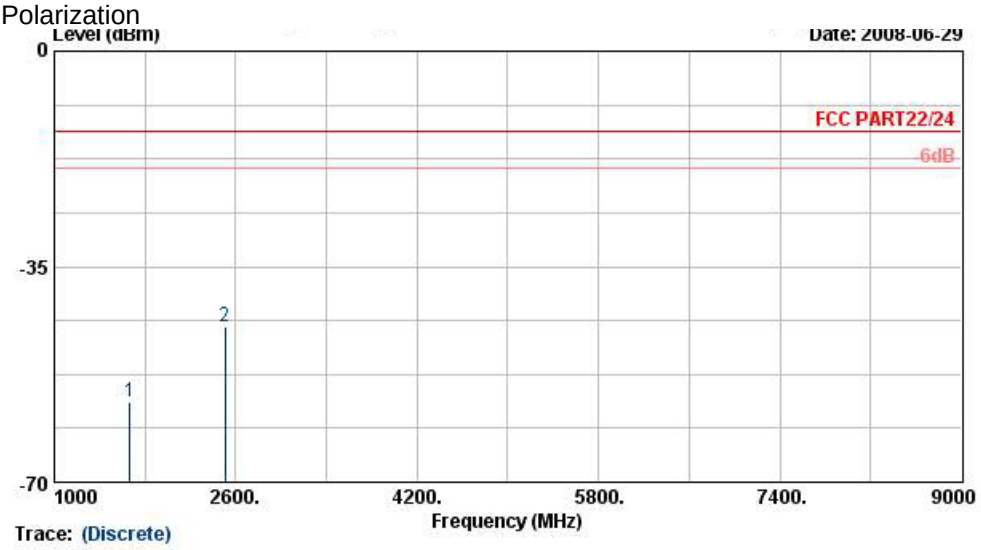


Site : 03CH07-HY
Condition : HF-EIRP(080306) HORIZONTAL
EUT : Smart Phone WCDMA(band I/VIII)
: + GSM/GPRS/EDGE(850/900/1800/1900)
Power : 120Vac/60Hz
Model : FG 830418-01
Mode : GSM 850 Link ; Ch189 + Adaptor B
IMEI : 35835301006688501
Plane : E2(Side On)

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1669	-50.14	-13	-37.14	-56.68	-49.15	3.39	4.55	H	Pass
2509	-42.30	-13	-29.30	-50.18	-42.36	3.71	5.92	H	Pass

Remark : Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

- Vertical Polarization

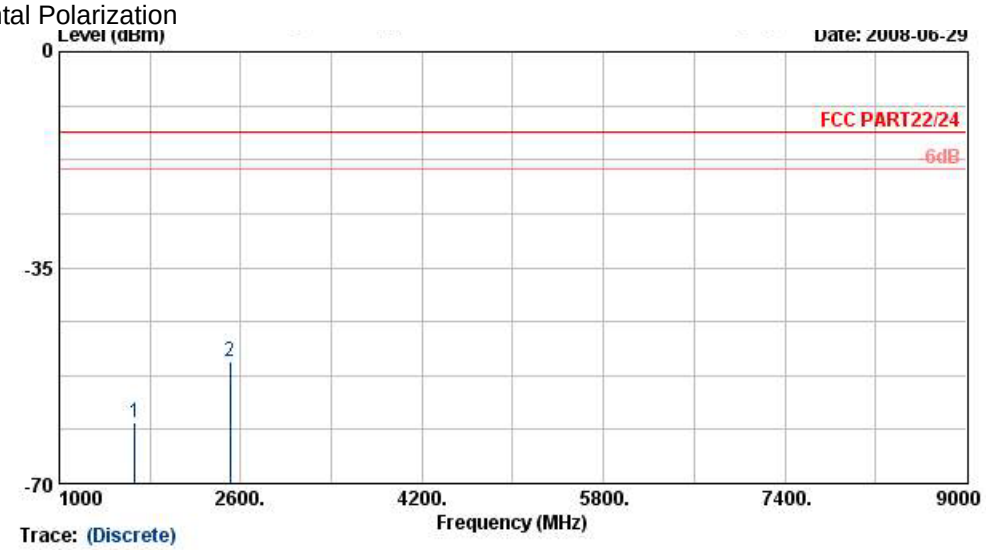


Site : 03CH07-HY
Condition : HF-EIRP(080306) VERTICAL
EUT : Smart Phone WCDMA(band I/VIII)
: + GSM/GPRS/EDGE(850/900/1800/1900)
Power : 120Vac/60Hz
Model : FG 830418-01
Mode : GSM 850 Link ; Ch189 + Adaptor B
IMEI : 35835301006688501
Plane : E2(Side On)

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1669	-57.05	-13	-44.05	-64.97	-55.67	3.39	4.16	V	Pass
2509	-44.87	-13	-31.87	-55.11	-44.73	3.71	5.72	V	Pass

Remark : Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

- Mode 2
- Horizontal Polarization



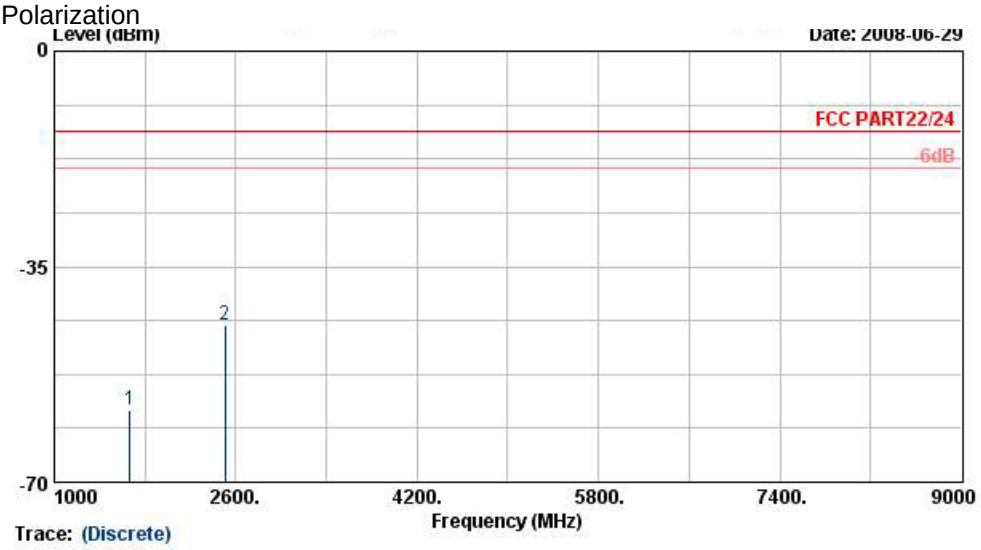
Trace: (Discrete)

Site : 03CH07-HY
Condition : HF-EIRP(080306) HORIZONTAL
EUT : Smart Phone WCDMA(band I/VIII)
: + GSM/GPRS/EDGE(850/900/1800/1900)
Power : 120Vac/60Hz
Model : FG830418-01
Mode : EDGE Link Ch189 + Adaptor B
IMEI : 35835301006688501
Plane : E2(Side On)

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1669	-60.01	-13	-47.01	-65.70	-59.02	3.39	4.55	H	Pass
2509	-50.30	-13	-37.30	-56.92	-50.36	3.71	5.92	H	Pass

Remark : Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

- Vertical Polarization

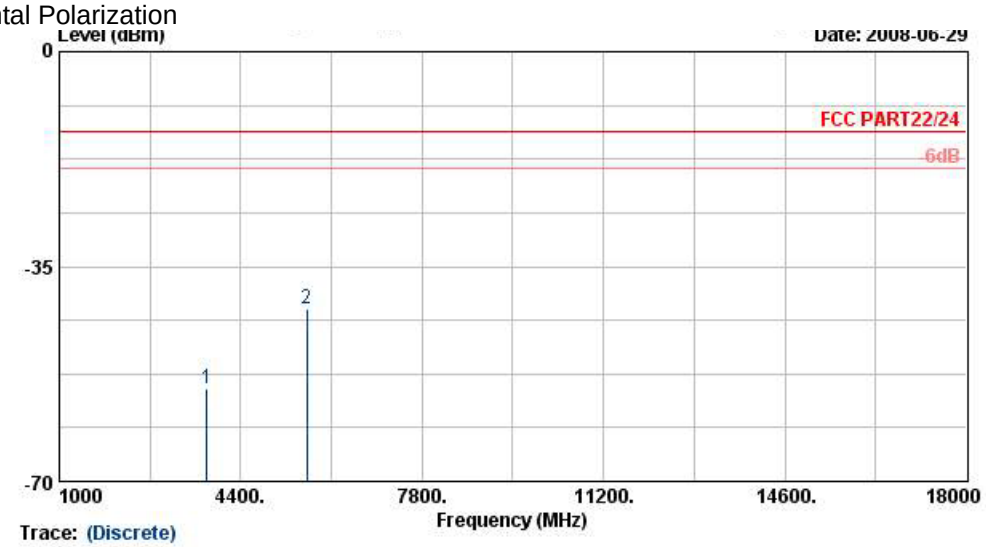


Site : 03CH07-HY
Condition : HF-EIRP(080306) VERTICAL
EUT : Smart Phone WCDMA(band I/VIII)
: + GSM/GPRS/EDGE(850/900/1800/1900)
Power : 120Vac/60Hz
Model : FG 830418-01
Mode : EDGE Link Ch189 + Adaptor B
IMEI : 35835301006688501
Plane : E2(Side On)

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1669	-58.25	-13	-45.25	-66.17	-56.87	3.39	4.16	V	Pass
2509	-44.45	-13	-31.45	-55.04	-44.31	3.71	5.72	V	Pass

Remark : Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

- Mode 3
- Horizontal Polarization

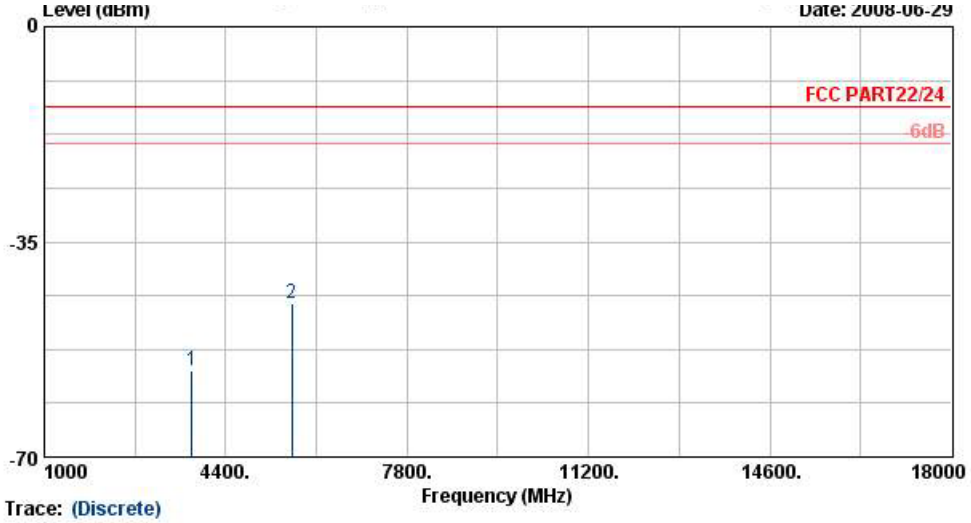


Site : 03CH07-HY
Condition : HF-EIRP(080306) HORIZONTAL
EUT : Smart Phone WCDMA(band I/VIII)
: + GSM/GPRS/EDGE(850/900/1800/1900)
Power : 120Vac/60Hz
Model : FG830418-01
Mode : PCS 1900 Link ; Ch661 + Adaptor B
IMEI : 358353010066885O1
Plane : E2(Side On)

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	-54.90	-13	-41.90	-65.26	-58.27	4.03	7.40	H	Pass
5636	-41.96	-13	-28.96	-62.04	-46.9	3.87	8.81	H	Pass

Remark : Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

- Vertical Polarization



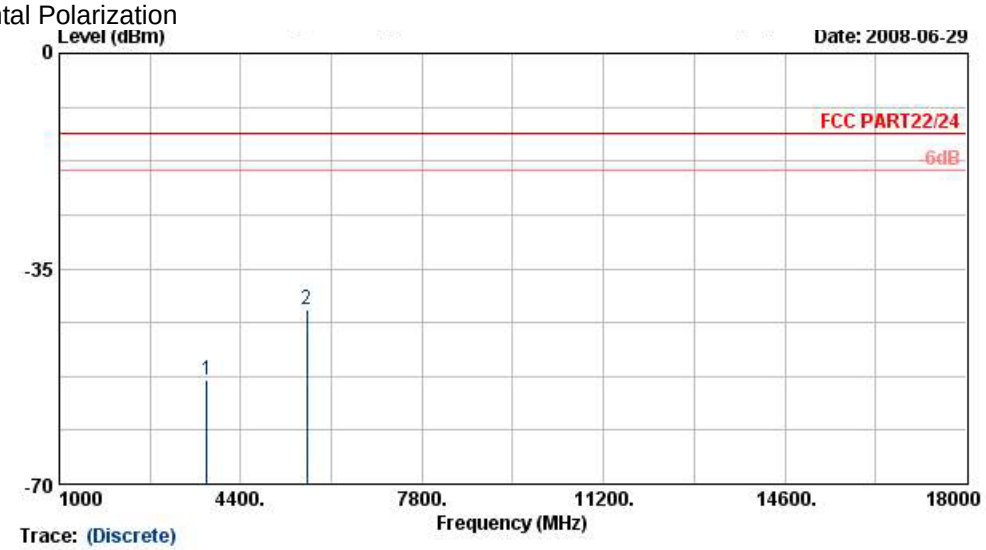
Trace: (Discrete)

Site : 03CH07-HY
Condition : HF-EIRP(080306) VERTICAL
EUT : Smart Phone WCDMA(band I/VIII)
: + GSM/GPRS/EDGE(850/900/1800/1900)
Power : 120Vac/60Hz
Model : FG 830418-01
Mode : PCS 1900 Link ; Ch661 + Adaptor B
IMEI : 35835301006688501
Plane : E2(Side On)

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	-55.85	-13	-42.85	-68.21	-59.73	4.03	7.91	V	Pass
5636	-44.91	-13	-31.91	-64.76	-50.81	3.87	9.77	V	Pass

Remark : Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

- Mode 4
- Horizontal Polarization

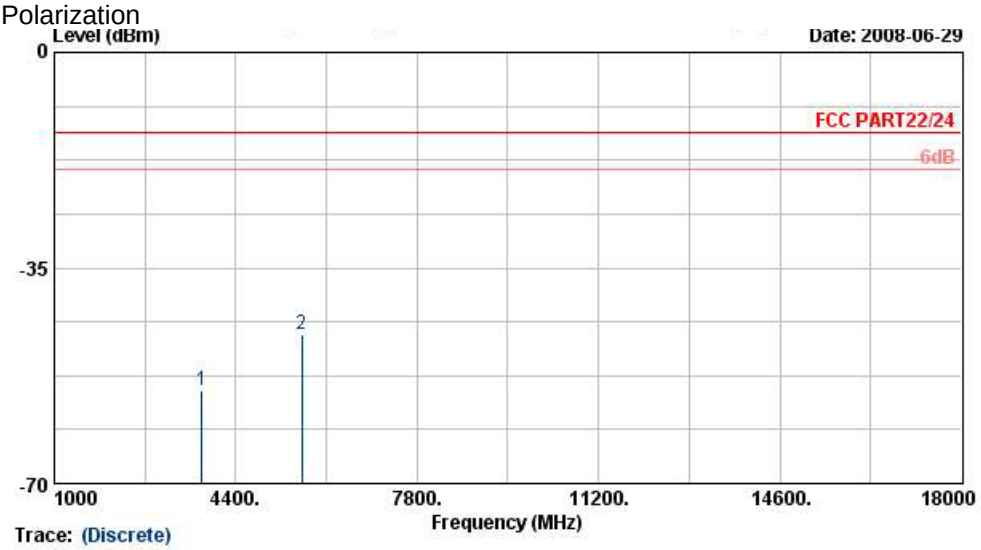


Site : 03CH07-HY
Condition : HF-EIRP(080306) HORIZONTAL
EUT : Smart Phone WCDMA(band I/VIII)
: + GSM/GPRS/EDGE(850/900/1800/1900)
Power : 120Vac/60Hz
Model : FG830418-01
Mode : EDGE Link Ch661 + Adaptor B
IMEI : 35835301006688501
Plane : E2(Side On)

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	-53.05	-13	-40.05	-64.13	-56.42	4.03	7.40	H	Pass
5636	-41.74	-13	-28.74	-61.76	-46.68	3.87	8.81	H	Pass

Remark : Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

- Vertical Polarization

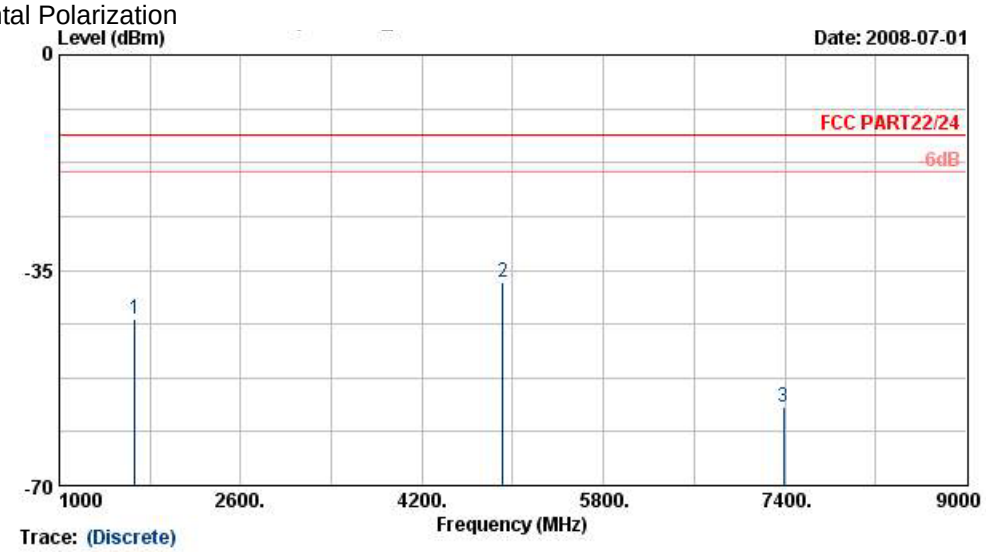


Site : 03CH07-HY
Condition : HF-EIRP(080306) VERTICAL
EUT : Smart Phone WCDMA(band I/VIII)
: + GSM/GPRS/EDGE(850/900/1800/1900)
Power : 120Vac/60Hz
Model : FG 830418-01
Mode : EDGE Link Ch661 + Adaptor B
IMEI : 35835301006688501
Plane : E2(Side On)

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	-54.83	-13	-41.83	-66.88	-58.71	4.03	7.91	V	Pass
5636	-45.87	-13	-32.87	-65.26	-51.77	3.87	9.77	V	Pass

Remark : Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

- Mode 5
- Horizontal Polarization



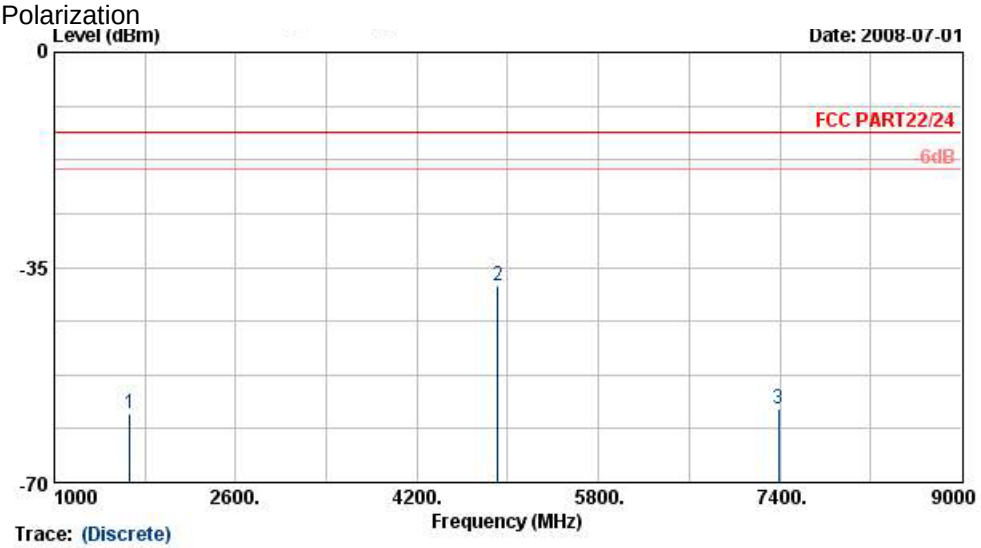
Trace: (Discrete)

Site : 03CH07-HY
Condition : HF-EIRP(080306) HORIZONTAL
EUT : Smart Phone WCDMA(band I/VIII)
: + GSM/GPRS/EDGE(850/900/1800/1900)
Power : 120Vac/60Hz
Model : FG 830418-01
Mode : GSM 850 Link ; Ch189 + WLAN 11b Tx_Ch11
: + Adaptor B
IMEI : 35835301006688501
Plane : E2(Slide On)

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1669	-42.88	-13	-29.88	-50.5	-41.89	3.39	4.55	H	Pass
4915	-36.90	-13	-23.90	-51.55	-40.65	2.61	8.51	H	Pass
7390	-57.22	-13	-44.22	-69.1	-58.56	6.22	9.71	H	Pass

Remark : Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

- Vertical Polarization



Site : 03CH07-HY
Condition : HF-EIRP(080306) VERTICAL
EUT : Smart Phone WCDMA(band I/VIII)
: + GSM/GPRS/EDGE(850/900/1800/1900)
Power : 120Vac/60Hz
Model : FG 830418-01
Mode : GSM 850 Link ; Ch189 + WLAN 11b Tx_Ch11
: + Adaptor B
IMEI : 35835301006688501
Plane : E2(Side On)

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1669	-58.81	-13	-45.81	-60.52	-57.43	3.39	4.16	V	Pass
4915	-38.00	-13	-25.00	-54.09	-42.36	2.61	9.12	V	Pass
7390	-58.14	-13	-45.14	-71.14	-60.58	6.22	10.81	V	Pass

Remark : Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

4.7 Frequency Stability (Temperature Variation)

4.7.1 Measurement Instrument

As decribed in chapter 5 of this test report.

4.7.2 Test Procedure

a. The EUT and test equipment were set up as shown on the following section.

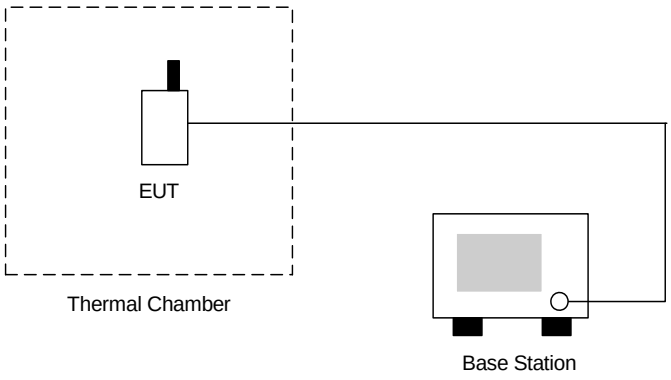
b. With all power removed, the temperature was decreased to -30°C and permitted to stabilize for three hours. Power was applied and the maximum change in frequency was note within one minute.

c. With power OFF, the temperature was raised in 10°C steps. The sample was permitted to stabilize at each step for at least one-half hour. Power was applied and the maximum frequency change ws noted within one minute.

d. The temperature tests were performed for the worst case.

e. Test data was recorded.

4.7.3 Test Setup Layout



4.7.4 Test Result

- Test Mode : GSM850 (GSM) CH189

Temperature(℃)	Change (Hz)	Change (ppm)	Limit (ppm)	Result
-30	66	0.03	2.5	Passed
-20	70	0.08		
-10	20	0.02		
0	19	0.02		
10	21	0.02		
20	24	0.03		
30	19	0.02		
40	23	0.03		
50	-45	-0.05		

- Test Mode : GSM850 (EDGE) CH189

Temperature(℃)	Change (Hz)	Change (ppm)	Limit (ppm)	Result
-30	29	0.02	2.5	Passed
-20	-51	-0.06		
-10	-54	-0.06		
0	-48	-0.06		
10	46	0.05		
20	-33	-0.04		
30	-29	-0.03		
40	-24	-0.03		
50	30	0.04		

- Test Mode : GSM1900 (GSM) CH661

Temperature(℃)	Change (Hz)	Change (ppm)	Limit (ppm)	Result
-30	26	0.01	2.5	Passed
-20	34	0.02		
-10	-49	-0.03		
0	-23	-0.01		
10	51	0.03		
20	-26	-0.01		
30	-32	-0.02		
40	-18	-0.01		
50	-52	-0.03		

- Test Mode : GSM1900 (EDGE) CH661

Temperature(℃)	Change (Hz)	Change (ppm)	Limit (ppm)	Result
-30	85	0.04	2.5	Passed
-20	40	0.02		
-10	38	0.02		
0	41	0.02		
10	63	0.03		
20	45	0.02		
30	42	0.02		
40	39	0.02		
50	67	0.04		

4.8 Frequency Stability (Voltage Variation)

4.8.1 Measurement Instrument

As described in chapter 5 of this test report.

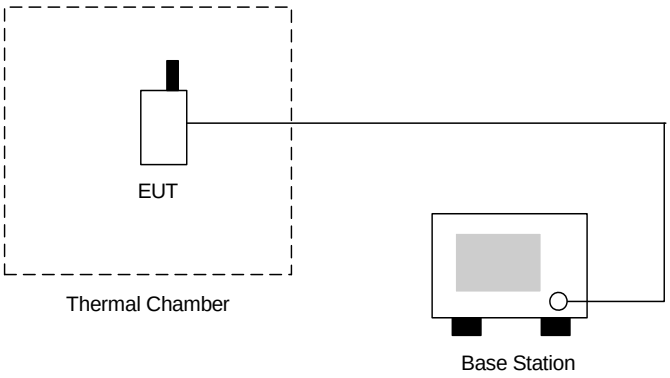
4.8.2 Test Procedure

a. The EUT was placed in a temperature chamber at 25±5 °C and connected as the following section.

b. The power supply voltage to the EUT was varied from BEP to 115% of the nominal value measured at the input to the EUT.

c. The variation in frequency was measured for the worst case.

4.8.3 Test Setup Layout



4.8.4 Test Result

- Test Mode : GSM850 (GSM) CH189

Voltage(Volt)	Change (Hz)	Change (ppm)	Limit (ppm)	Result
3.7	-22.0	-0.03	2.5	Passed
BEP	30.0	0.04		
4.2	33.0	0.04		

- Test Mode : GSM850 (EDGE) CH189

Voltage(Volt)	Change (Hz)	Change (ppm)	Limit (ppm)	Result
3.7	23.0	0.03	2.5	Passed
BEP	-21.0	-0.02		
4.2	-17.0	-0.02		

- Test Mode : GSM1900 (GSM) CH661

Voltage(Volt)	Change (Hz)	Change (ppm)	Limit (ppm)	Result
3.7	46.0	0.02	2.5	Passed
BEP	-33.0	-0.02		
4.2	-35.0	-0.02		

- Test Mode : GSM1900 (EDGE) CH661

Voltage(Volt)	Change (Hz)	Change (ppm)	Limit (ppm)	Result
3.7	48.0	0.03	2.5	Passed
BEP	-43.0	-0.02		
4.2	-36.0	-0.02		

Remark:

1. Normal Voltage= 3.7V.
2. Battery End Point (BEP)= 3.6 V.

5. List of Measurement Equipments

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Due Date	Remark
Thermal Chamber	Tenyi	TTH-D35P	TBN-930701	N/A	Aug. 02, 2007	Aug. 01, 2008	Conducted (TH02-HY)
Bluetooth Test	ANRITSU	MT8852B	6K00005722	N/A	Oct. 23, 2007	Oct. 22, 2008	Conducted (TH02-HY)
Power Meter	Agilent	E4416A	GB41292344	N/A	Feb. 21, 2008	Feb. 20, 2009	Conducted (TH02-HY)
Power Sensor	Agilent	E9327A	US40441548	N/A	Feb. 21, 2008	Feb. 20, 2009	Conducted (TH02-HY)
Spectrum	R&S	FSP40	100055	9KHz~40GHz	Jun. 26, 2008	Jun. 25, 2009	Conducted (TH02-HY)
Double Ridge Horn Antenna	ESCO	3117	75962	1G~18G	Dec. 20, 2007	Dec. 19, 2008	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	66584	1G~18G	Dec. 20, 2007	Dec. 19, 2008	Radiation (03CH07-HY)
Bilog Antenna	SCHAFFNER	CBL6111C	2726	30MHz-1GHz	Dec. 01, 2007	Nov. 31, 2008	Radiation (03CH07-HY)
Spectrum Analyzer	R & S	FSP	101067	9KHz~30GHz	Dec. 05, 2007	Dec. 04, 2008	Radiation (03CH07-HY)

6. Uncertainty Evaluation

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

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 (1GHz ~ 40GHz)

Contribution	Uncertainty of x_i		$u(x_i)$	Ci	$Ci*u(x_i)$
	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 Γ1= 0.197 Antenna VSWR Γ2= 0.194 Uncertainty=20log(1-Γ1*Γ2*Γ3)	+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**				

END OF TEST REPORT

Appendix A. Photographs of EUT

Please refer to Sporton report number EP830418-01 as below.