



FCC Test Report

for

47 CFR Part 22H, 24E

Equipment : Pocket PC Phone
Trade Name : glofiish
Model No. : X650 / X600
FCC ID : SPUX650
Tx Frequency Range : GSM850 : 824.2 ~ 848.8MHz
PCS1900 : 1850.2 ~1909.8 MHz
Max. ERP/EIRP Power : GGSM850(GSM) : 0.43 W
GSM850(EDGE) : 0.11 W
PCS1900(GSM) : 1.77 W
PCS1900(EDGE) : 0.62 W
Emission Designator : GSM : 300KGXW
EDGE : 300KG7W
Applicant : E-TEN Information Systems Co., Ltd.
9F., No. 256, Yangguang Street, Neihu Chiu, Taipei,
Taiwan 114, R.O.C.

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- The data shown in this test report were carried out on Oct. 04, 2007 at **Sporton International Inc. LAB.**
- Report No.: FG790604A, Report Version: Rev. 02.

Jones Tsai
Manager

SPORTON International Inc.

6F, No.106, Sec. 1, Hsin Tai Wu Rd., Hsi Chih, Taipei Hsiang, Taiwan, R.O.C.



Table of Contents

History of this test report.....	ii
1. General Information	1
1.2 Applicant	1
1.3 Manufacturer.....	1
1.4 Basic Description of Equipment under Test.....	1
1.5 Feature of Equipment under Test	2
1.6 Report Date.....	2
2 Test Configuration of Equipment under Test.....	3
2.1 Test Manner.....	3
2.2 Test Mode	3
2.3 Connection Diagram of Test System	3
2.4 Ancillary Equipment List.....	4
3. General Information of Test Site.....	5
3.1 Test Voltage.....	5
3.2 Test Compliance.....	5
3.3 Frequency Range	5
3.4 Test Distance	5
4. Test Data and Test Result.....	6
4.1 List of Measurements and Examinations.....	6
4.2 RF Output Power	7
4.3 ERP / EIRP Measurement	8
4.4 Occupied Bandwidth and Band Edge Measurement	12
4.5 Conducted Emission.....	57
4.6 Field Strength of Spurious Radiation	76
4.7 Frequency Stability (Temperature Variation)	90
4.8 Frequency Stability (Voltage Variation).....	93
5. List of Measurement Equipments	95
6. Uncertainty Evaluation.....	96
 Appendix A - External Photographs	
Appendix B - Internal Photographs	
Appendix C - Setup Photographs	



History of this test report

Report Issue Date: Dec. 14, 2007

Report No.	Description



1. General Information

1.2 Applicant

E-TEN Information Systems Co., Ltd.

9F., No. 256, Yangguang Street, Neihu Chiu, Taipei, Taiwan 114, R.O.C.

1.3 Manufacturer

E-TEN Information Systems Co., Ltd.

9F., No. 256, Yangguang Street, Neihu Chiu, Taipei, Taiwan 114, R.O.C.

1.4 Basic Description of Equipment under Test

Equipment		Pocket PC Phone
Trade Name		glofiish
Model Name		X650 / X600
FCC ID		SPUX650
AC Adapter	Brand Name	Phihong
	Model Name	PSC05R-050 PH
	Power Rating	I/P:AC 100-240V, 0.2A, 50-60Hz, 14-19VA; O/P: DC 5V, 1A
	AC Power Cord Type	1.9 meter shielded core cable
Battery	Brand Name	Foxlink
	Model Name	AHL03716016
	Rating	3.7V, 1530mAh
	Type	Li-ion
Earphone	Brand Name	Merry
	Model Name	EMC147-018-01
	Signal line Type	1.3 meter non-shielded cable without ferrite core
USB Cable	Brand Name	Golden Bridge
	Model Name	AS52-07080050
	Signal line Type	0.9 meter shielded cable without ferrite core

Remark: Above EUT's information was declared by manufacturer. Please refer to the specifications of manufacturer or User's Manual for more detailed features description.

**1.5 Feature of Equipment under Test**

DUT Type :	Pocket PC Phone
Trade Name :	glofiish
Model Name :	X650 / X600
FCC ID :	SPUX650
Tx Frequency :	GSM850 : 826 ~ 847 MHz PCS1900 : 1852 ~1908 MHz WLAN / Bluetooth : 2400 ~ 2483.5 MHz
Rx Frequency :	GSM850 : 871 ~ 892 MHz PCS1900 : 1932 ~ 1988 MHz WLAN / Bluetooth : 2400 ~ 2483.5 MHz
Maximum Output Power to Antenna :	GSM850 : 32.57 dBm (GSM) / 32.55 dBm (GPRS) / 27.15 dBm (EDGE) PCS1900 : 29.89 dBm (GSM) / 29.83 dBm (GPRS) / 26.44 dBm (EDGE) WLAN : 16.36 dBm (802.11b) / 15.90 dBm (802.11g)
Maximum ERP/EIRP :	GSM850(GSM) : 0.43 W (26.29 dBm) GSM850(EDGE) : 0.11 W (20.56 dBm) PCS1900(GSM) : 1.77 W (32.47 dBm) PCS1900(EDGE) : 0.62 W (27.91 dBm)
HW Version :	1.0
SW Version :	VER A42 CHT V030 170 (for X650) VER A42 CHT V030 170ET (for X600)
Antenna Type :	PCS1900 : Fixed Internal Bluetooth: Chip Antenna WLAN: PIFA Antenna
Antenna Gain :	Bluetooth : 0 dBi WLAN : -4 dBi
Type of Antenna Connector	N/A
Power Rating (DC/AC , Voltage and Current of RF element or PA) :	DC 2.3A / 5V
GPRS / EGPRS Multislot class :	10
Digital Modulation Emission :	GSM : GMSK EDGE : 8PSK WLAN : DSSS / OFDM Bluetooth : GFSK
Type of Emission :	GSM : 300KGXW EDGE : 300KG7W
DUT Stage :	Identical Prototype

1.6 Report Date

EUT Received : Sep. 06, 2007

Report Date : Dec. 14, 2007

2 Test Configuration of Equipment under Test

2.1 Test Manner

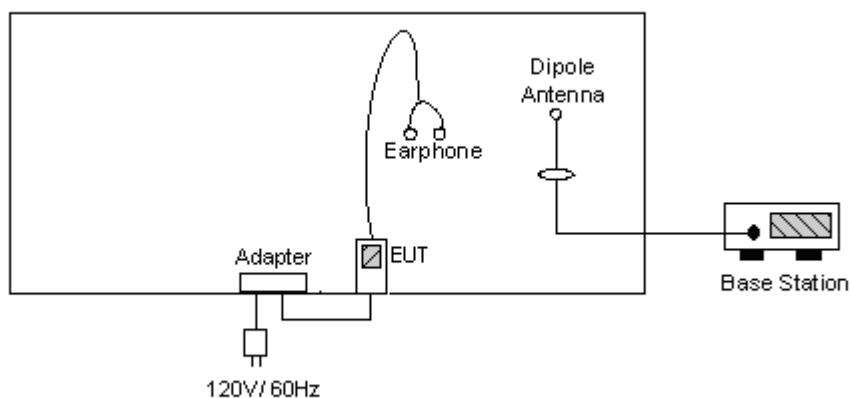
1. The spurious emission measurements were carried out in semi-anechoic chamber with 3-meter test range.
2. During all testings, EUT is in link mode with base station emulator at maximum power level.
3. Frequency range investigated: radiated emission 30 MHz to 9000 MHz for GSM850; 30MHz to 19000 MHz for PCS1900.

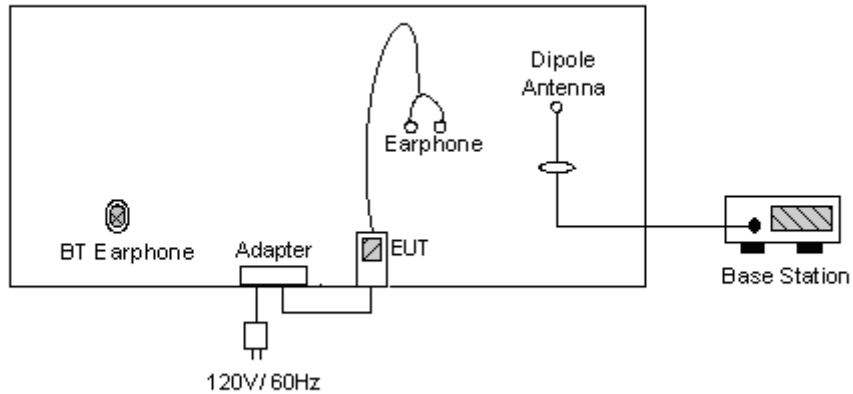
2.2 Test Mode

Application	GSM850	PCS1900
Radiated Emission	☒ Mode 1: GSM Link	☒ Mode 3: GSM Link
	☒ Mode 2: EDGE Link	☒ Mode 4: EDGE Link
	☒ Mode 5: GSM Link + BT Link	
Conducted Measurement	☒ Mode 1: GSM Link	☒ Mode 3: GSM Link
	☒ Mode 2: EDGE Link	☒ Mode 4: EDGE Link

2.3 Connection Diagram of Test System

<Phone Link Mode>



**<Phone with Bluetooth Link Mode>****2.4 Ancillary Equipment List**

Item	Equipment	Trade Name	Model No.	FCC ID	Cable Cord / Power Code
1.	Base Station	R&S	CMU200	N/A	Unshielded, 1.8m
2.	Bluetooth Earphone	Engotech	ET-BH111	PQY471087	N/A



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 : 03CH06-HY

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 PCS1900.

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

In order to compliance with FCC rule, EMC test was performed according worst case scenario.

4.2 RF Output Power

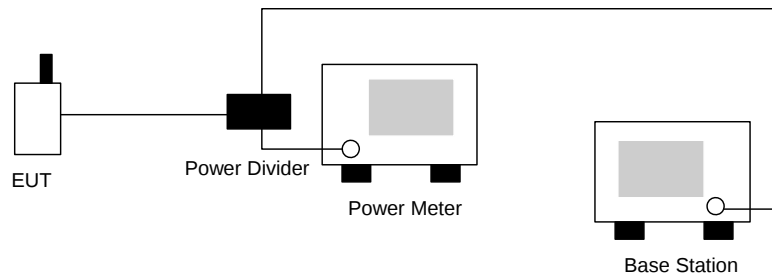
4.2.1 Measurement Instruments :

As described in chapter 5 of this test report.

4.2.2 Test Procedure :

1. The transmitter output was connected to power meter and base station through power divider.
2. Set EUT at PCL=5 for GSM850 and/or PCL=0 for PCS1900 maximum power through base station.
3. 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)	32.53	1.791
	189	836.4 (Mid)	32.45	1.758
	251	848.8 (High)	32.57	1.807
GSM850 (EDGE)	128	824.2 (Low)	27.09	0.512
	189	836.4 (Mid)	27.11	0.514
	251	848.8 (High)	27.15	0.519
PCS1900 (GSM)	512	1850.2 (Low)	29.89	0.975
	661	1880.0 (Mid)	29.60	0.912
	810	1909.8 (High)	29.31	0.853
PCS1900 (EDGE)	512	1850.2 (Low)	26.44	0.441
	661	1880.0 (Mid)	26.16	0.413
	810	1909.8 (High)	25.92	0.391



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

1. The EUT was placed on a table with 1.0 meter height in an fully anechoic chamber.
2. The EUT was set 1.2 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 radiated power.
4. The height of the receiving antenna is also kept at 1.0M height.
5. Taking the record of maximum ERP/EIRP.
6. A dipole antenna was substituted in place of the EUT and was driven by a signal generator.
7. The conducted power at the terminal of the dipole antenna is measured.
8. Repeat step 3 to step 5 to get the maximum ERP/EIRP of the substitution antenna.
9. $ERP/EIRP = P_s + E_t - E_s + G_s = P_s + R_t - R_s + G_s$

P_s (dBm) : Input power to substitution antenna.

G_s (dBi or dBd) : Substitution antenna Gain.

$E_t = R_t + AF$

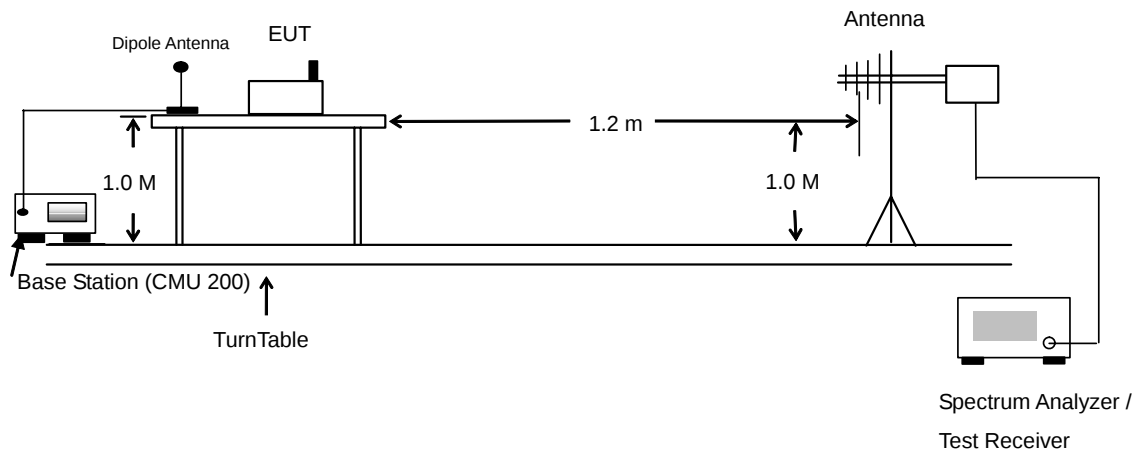
$E_s = R_s + AF$

AF (dB/m) : Receive antenna factor

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

R_s : 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	-24.10	-48.12	0.00	-1.08	22.94	0.20
836.40	-22.96	-48.28	0.00	-0.93	24.39	0.27
848.80	-21.30	-48.35	0.00	-0.76	26.29	0.43
Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	ERP (dBm)	ERP (W)
824.20	-30.92	-47.97	0.00	-1.08	15.97	0.04
836.40	-29.80	-48.01	0.00	-0.93	17.28	0.05
848.80	-28.13	-48.05	0.00	-0.76	19.16	0.08

GSM850 (EDGE) 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	-28.54	-48.28	0.00	-0.93	18.81	0.08
848.80	-27.03	-48.35	0.00	-0.76	20.56	0.11
Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	ERP (dBm)	ERP (W)
824.20	-36.17	-47.97	0.00	-1.08	10.72	0.01
836.40	-35.21	-48.01	0.00	-0.93	11.87	0.02
848.80	-33.41	-48.05	0.00	-0.76	13.88	0.02



PCS1900 (GSM) Radiated Power EIRP						
Horizontal Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1850.20	-21.37	-51.88	0.00	1.96	32.47	1.77
1880.00	-23.98	-52.99	0.00	2.00	31.01	1.26
1909.80	-27.27	-54.28	0.00	1.98	28.99	0.79
Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1850.20	-23.30	-52.13	0.00	1.96	30.79	1.20
1880.00	-25.62	-53.17	0.00	2.00	29.55	0.90
1909.80	-28.41	-54.13	0.00	1.98	27.70	0.59

PCS1900 (EDGE) Radiated Power EIRP						
Horizontal Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1850.20	-25.93	-51.88	0.00	1.96	27.91	0.62
1880.00	-28.56	-52.99	0.00	2.00	26.43	0.44
1909.80	-31.73	-54.28	0.00	1.98	24.53	0.28
Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1850.20	-27.78	-52.13	0.00	1.96	26.31	0.43
1880.00	-30.17	-53.17	0.00	2.00	25.00	0.32
1909.80	-32.63	-54.13	0.00	1.98	23.48	0.22

4.4 Occupied Bandwidth and Band Edge Measurement

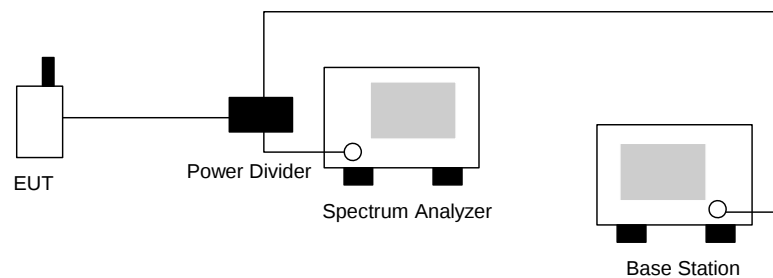
4.4.1 Measurement Instruments

As described in chapter 5 of this test report.

4.4.2 Test Procedure

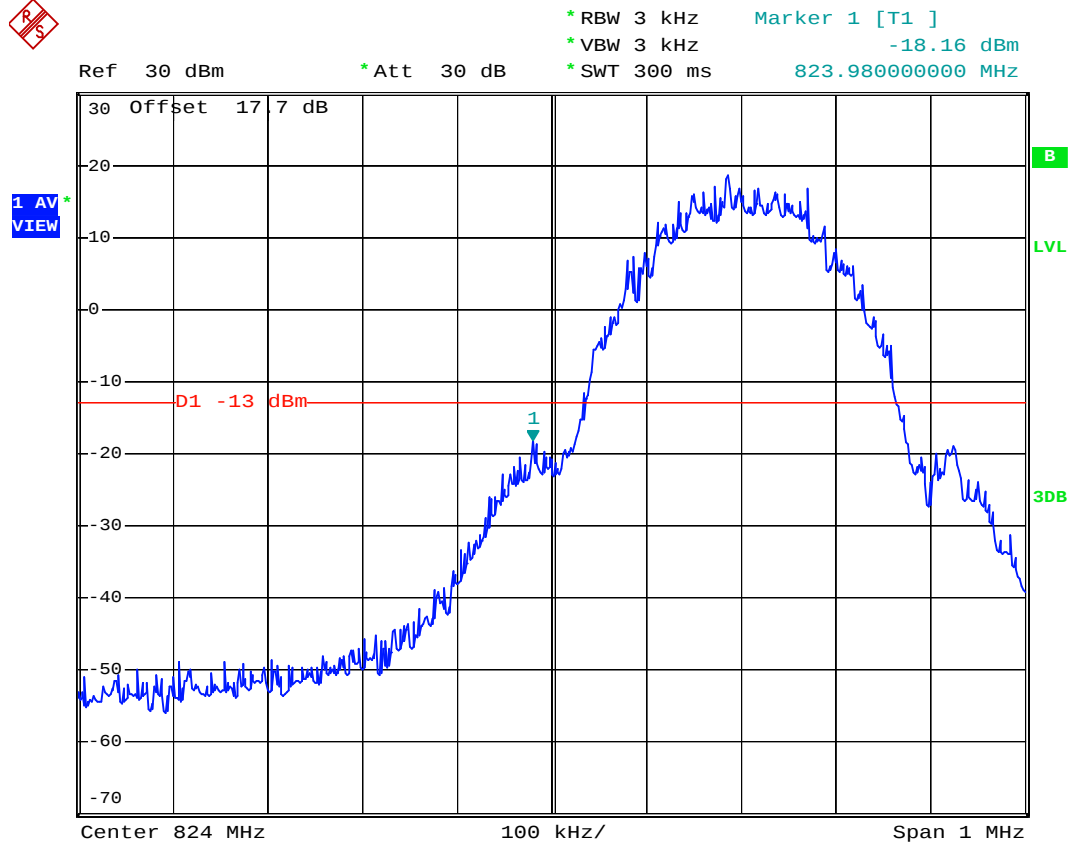
1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
2. The 99% occupied bandwidth of middle channel for the highest and lowest RF powers were measured.
3. The bandedge of low and high channels for the highest RF powers within the transmitting frequency band were measured. 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
- Power State : High



Date: 3.OCT.2007 22:07:13

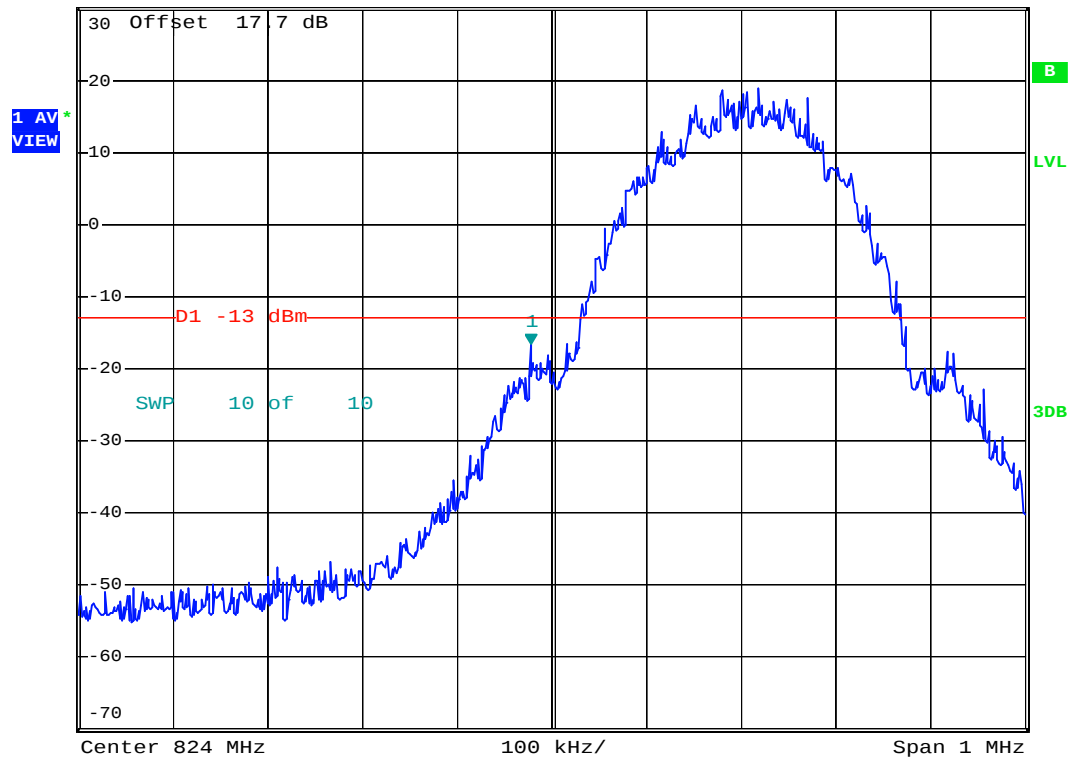


FCC TEST REPORT

Report No. : FG790604A



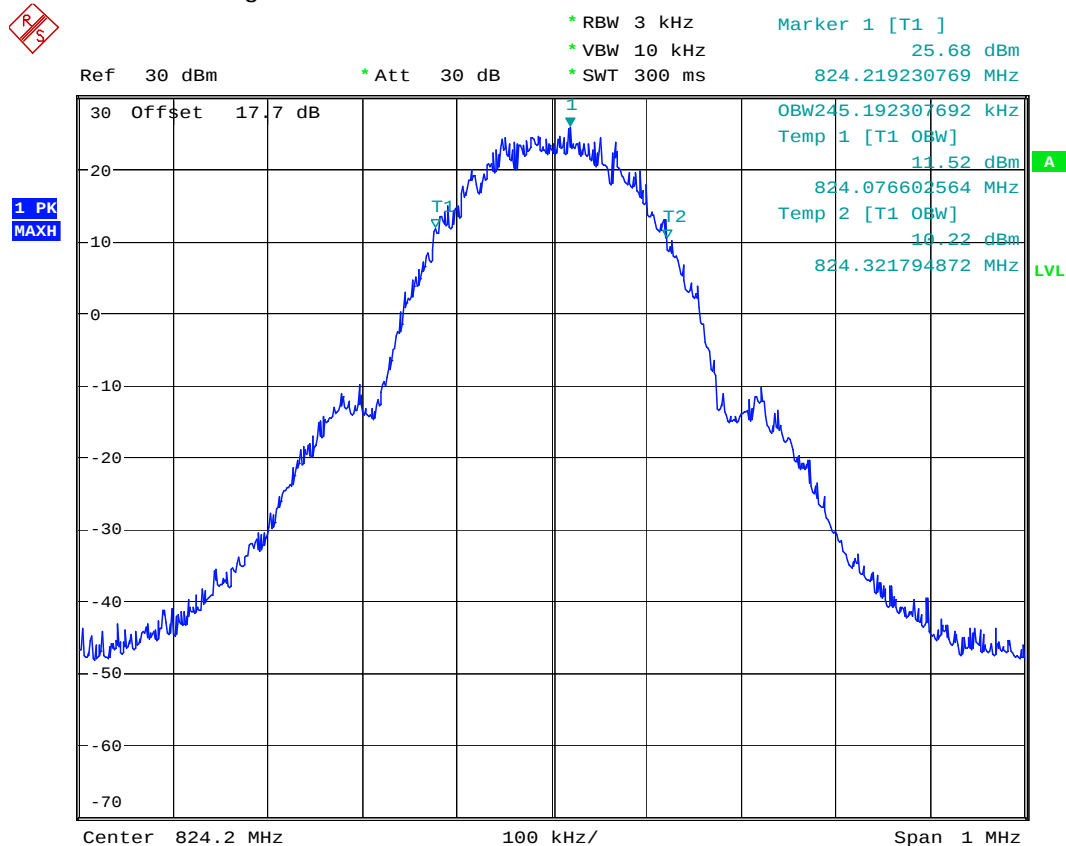
Ref 30 dBm *Att 30 dB *RBW 3 kHz *VBW 10 kHz *SWT 300 ms Marker 1 [T1]
-16.47 dBm
823.978000000 MHz



Date: 3.OCT.2007 22:08:44



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



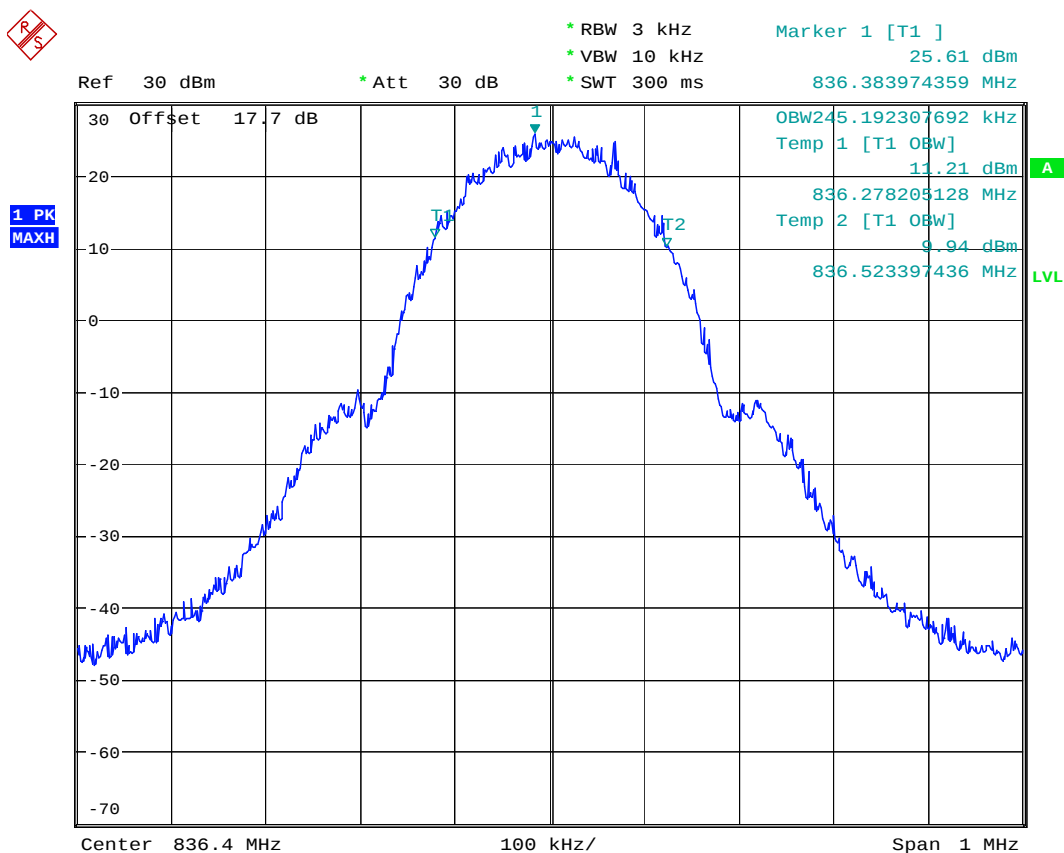
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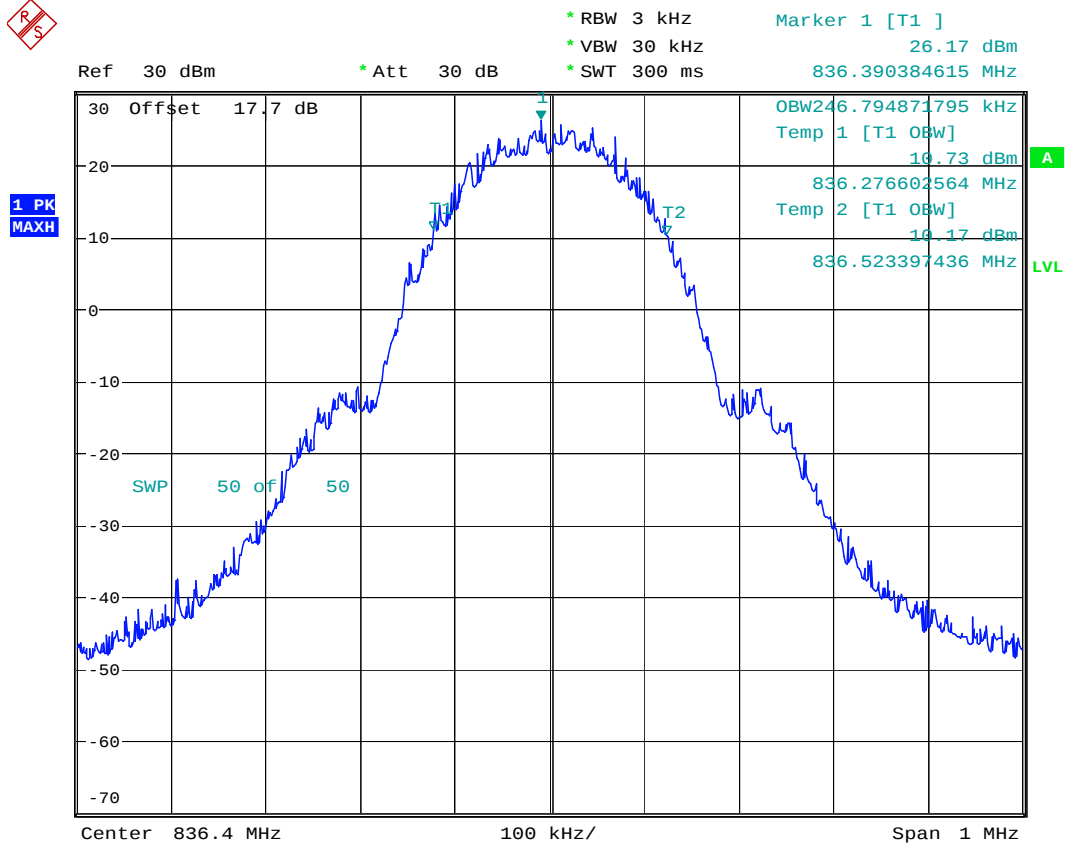
Report No. : FG790604A

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



444

Date: 25.SEP.2007 04:17:00



444

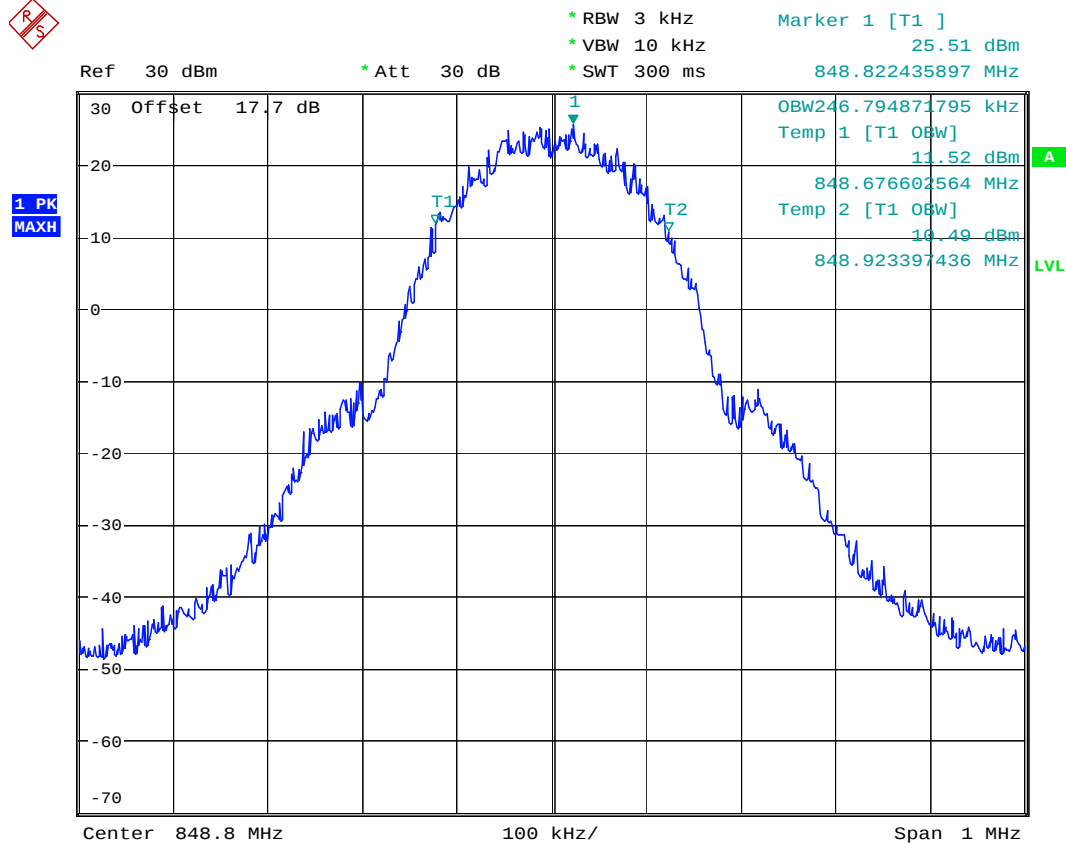
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FCC TEST REPORT

Report No. : FG790604A

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

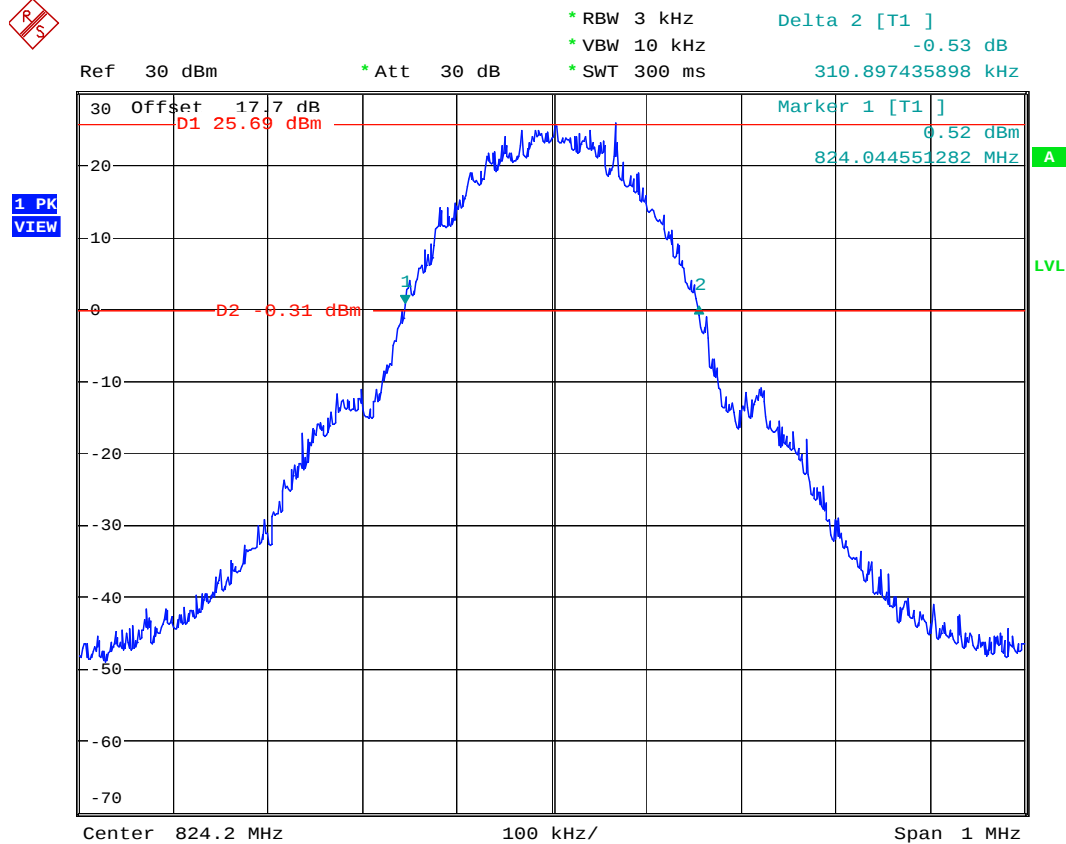


444

Date: 25.SEP.2007 04:19:42



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

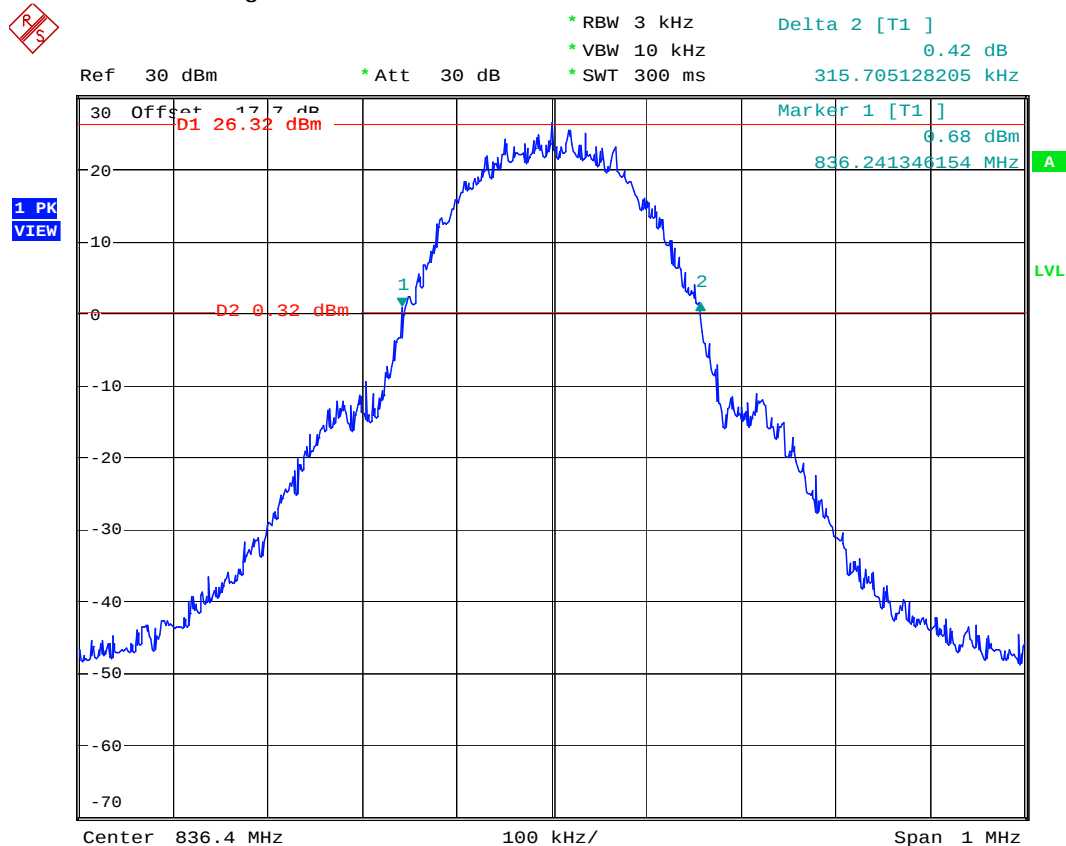


444

Date: 25.SEP.2007 04:26:01



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



444

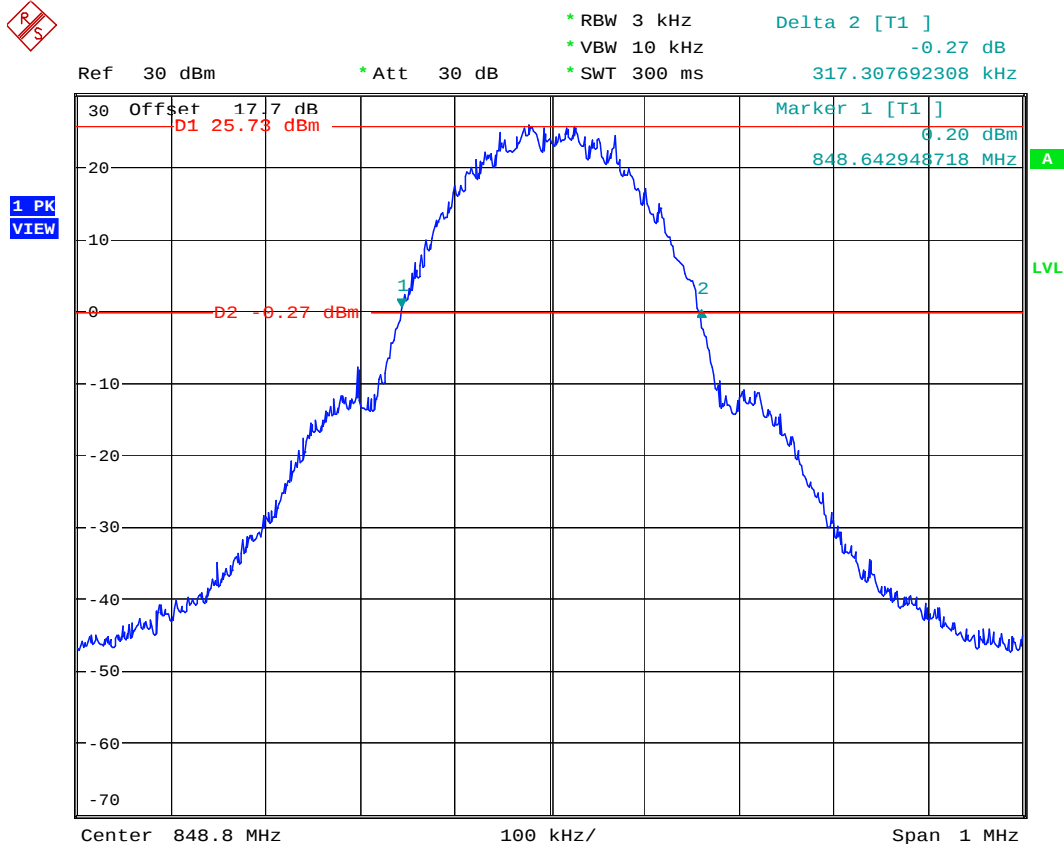
Date: 25.SEP.2007 04:24:10



FCC TEST REPORT

Report No. : FG790604A

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



444

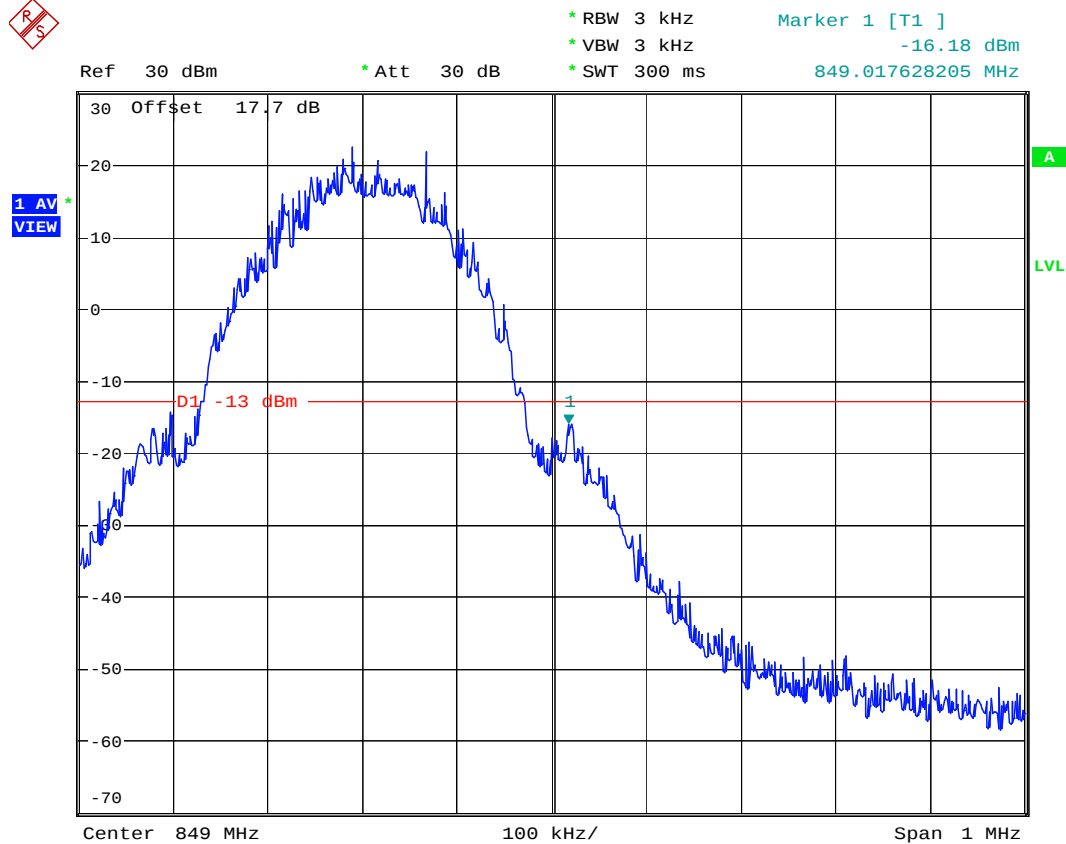
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FCC TEST REPORT

Report No. : FG790604A

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

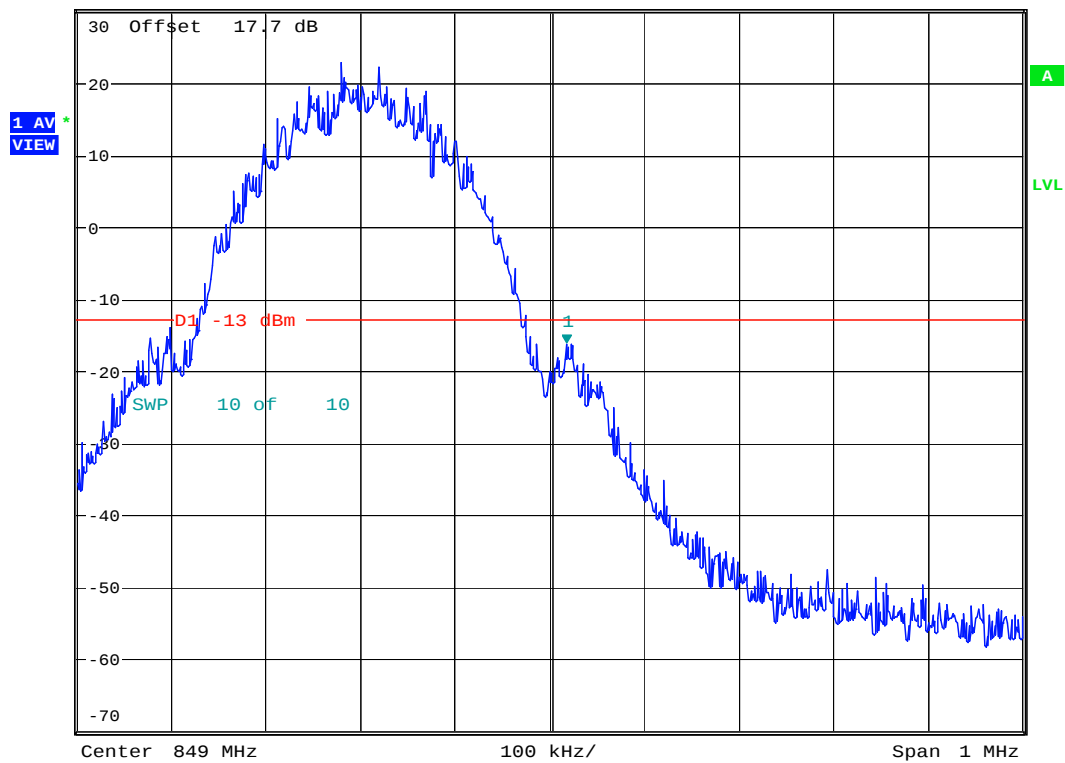


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Date: 25.SEP.2007 04:34:15



Ref 30 dBm * Att 30 dB * RBW 3 kHz * VBW 10 kHz * SWT 300 ms Marker 1 [T1] -16.29 dBm 849.017628205 MHz

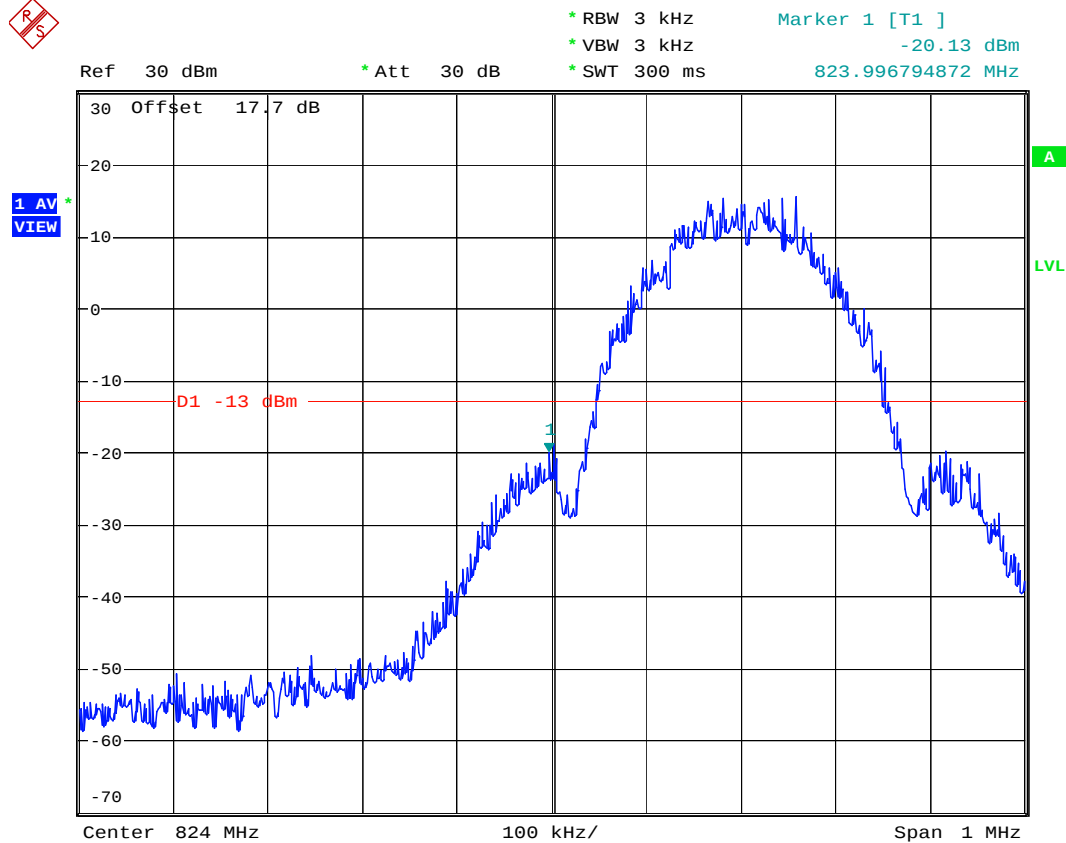


444

Date: 25.SEP.2007 04:35:06



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



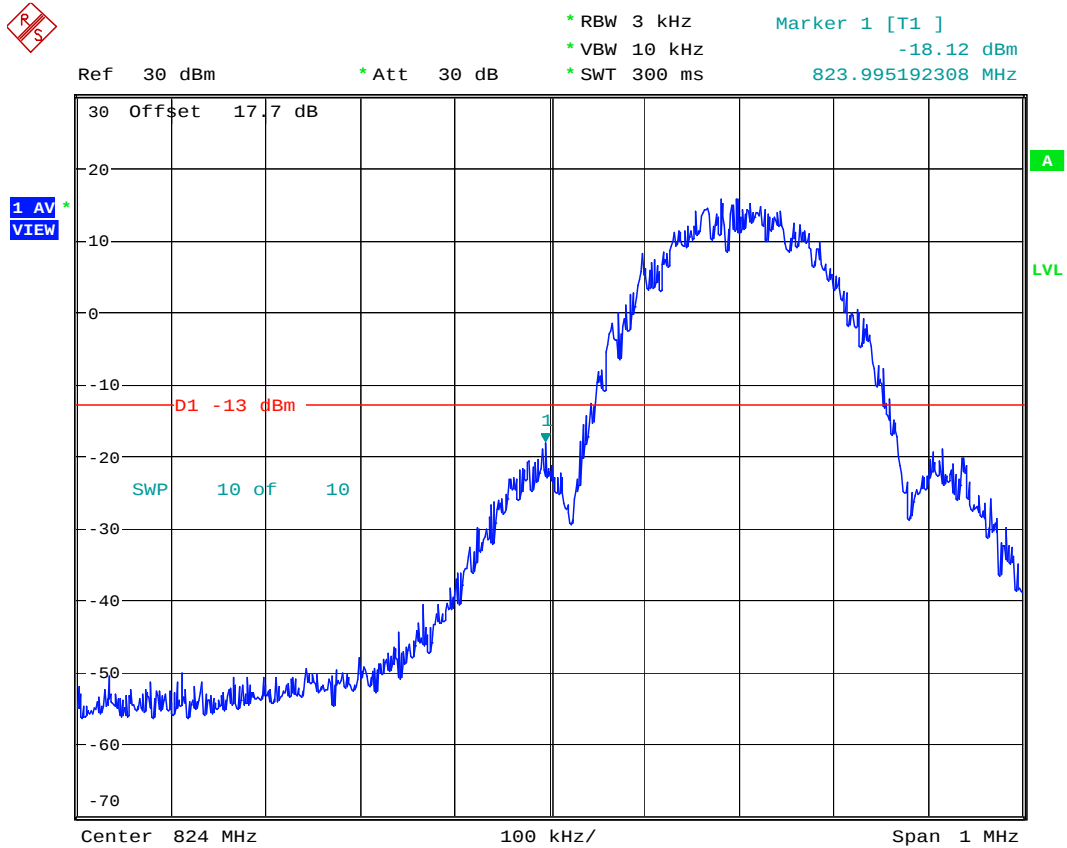
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Date: 25.SEP.2007 04:51:48



FCC TEST REPORT

Report No. : FG790604A

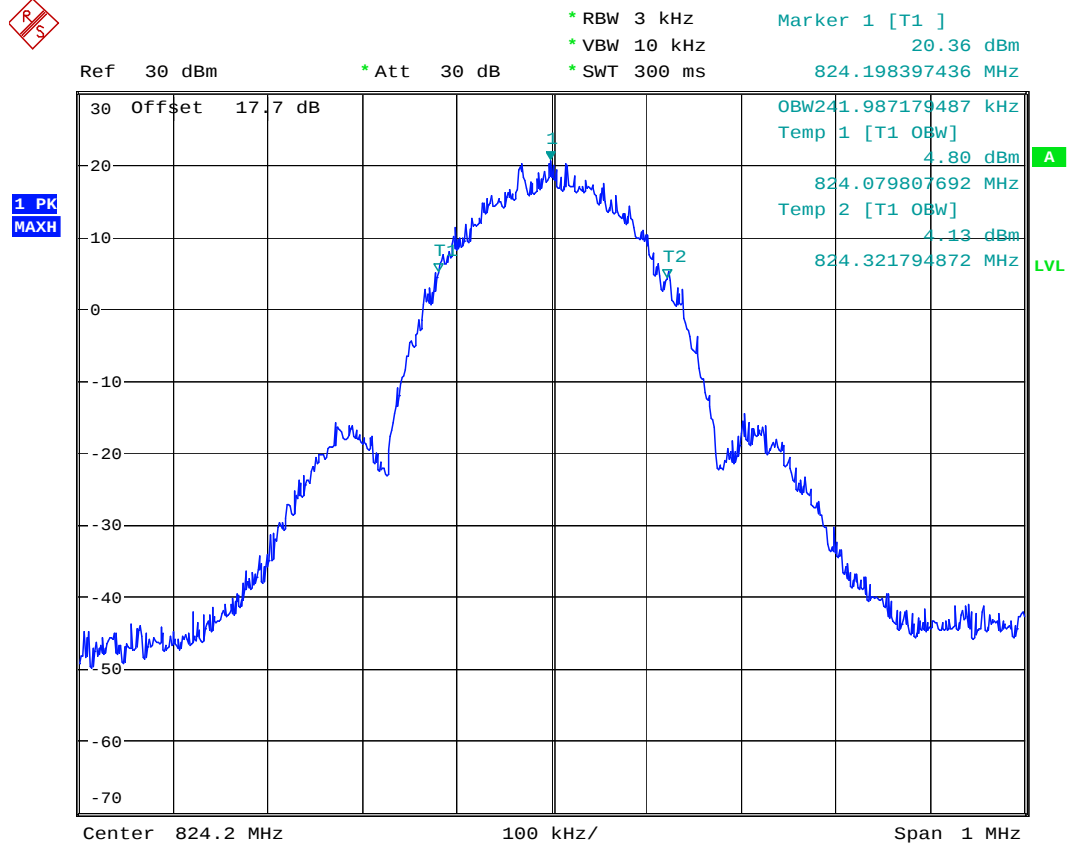


444

Date: 25.SEP.2007 04:46:56



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

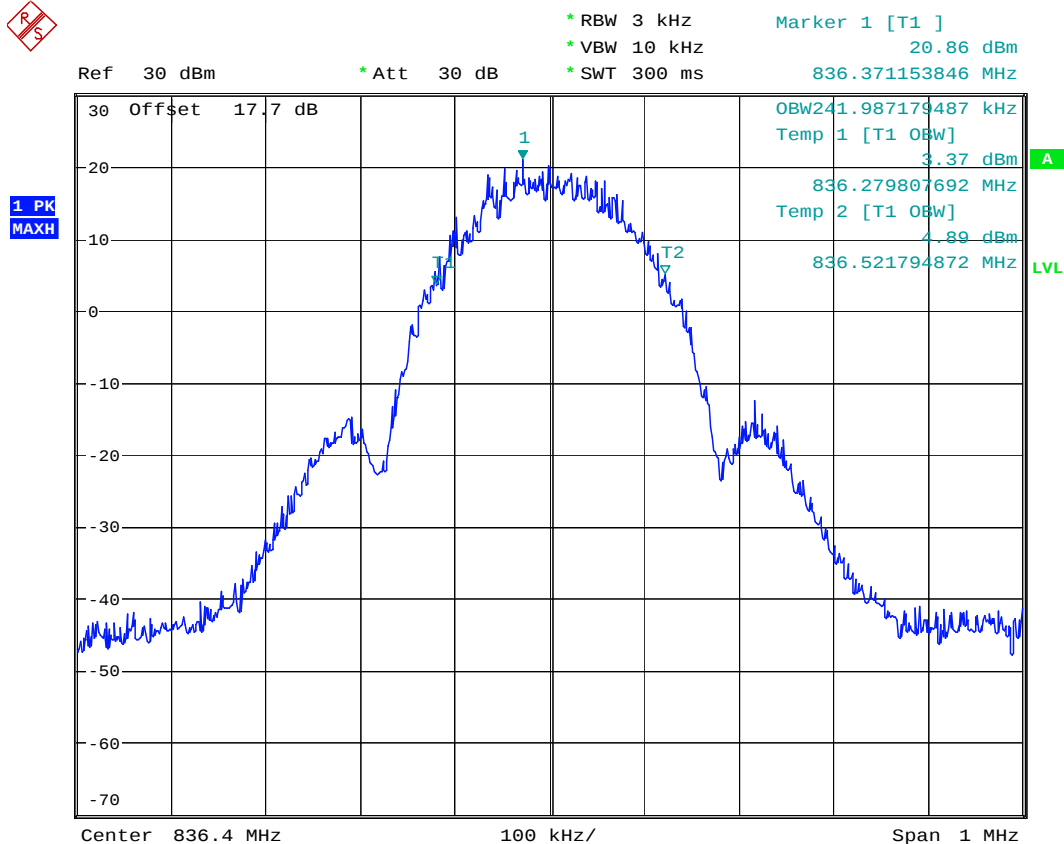


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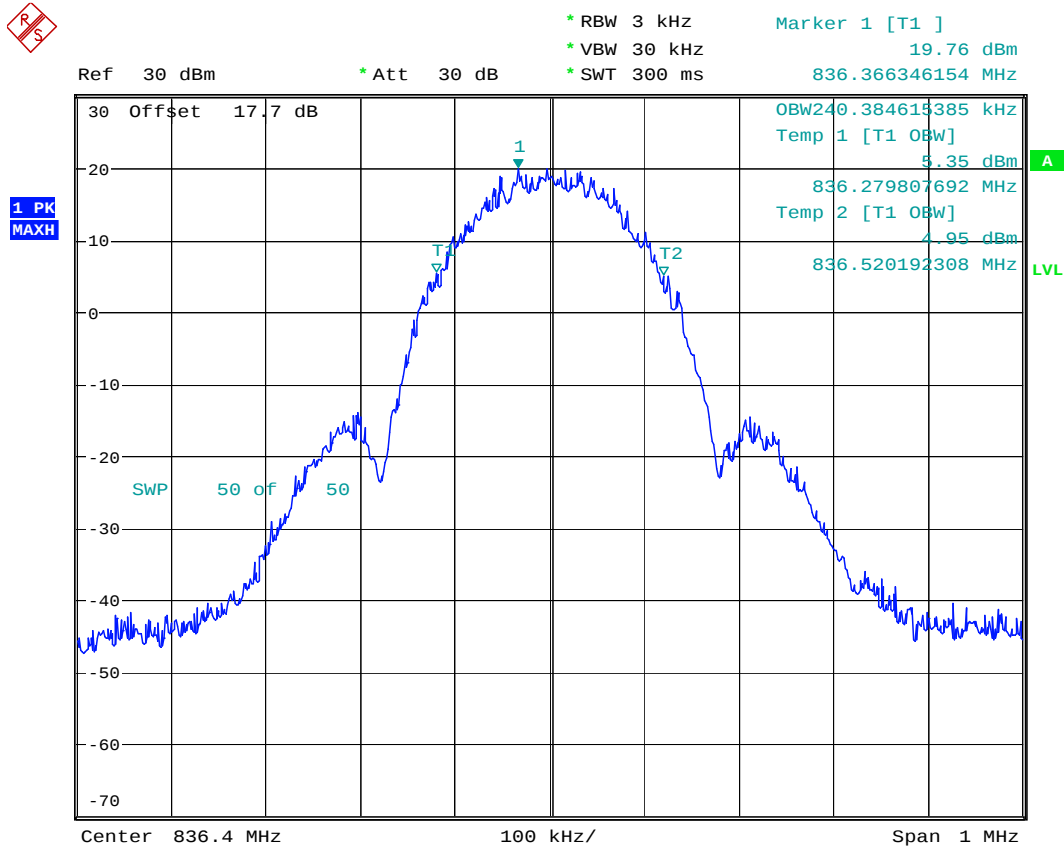


- Test Mode : GSM850 (EDGE) CH189 99% Occupied Bandwidth
- Power State : High



444

Date: 25.SEP.2007 04:59:26

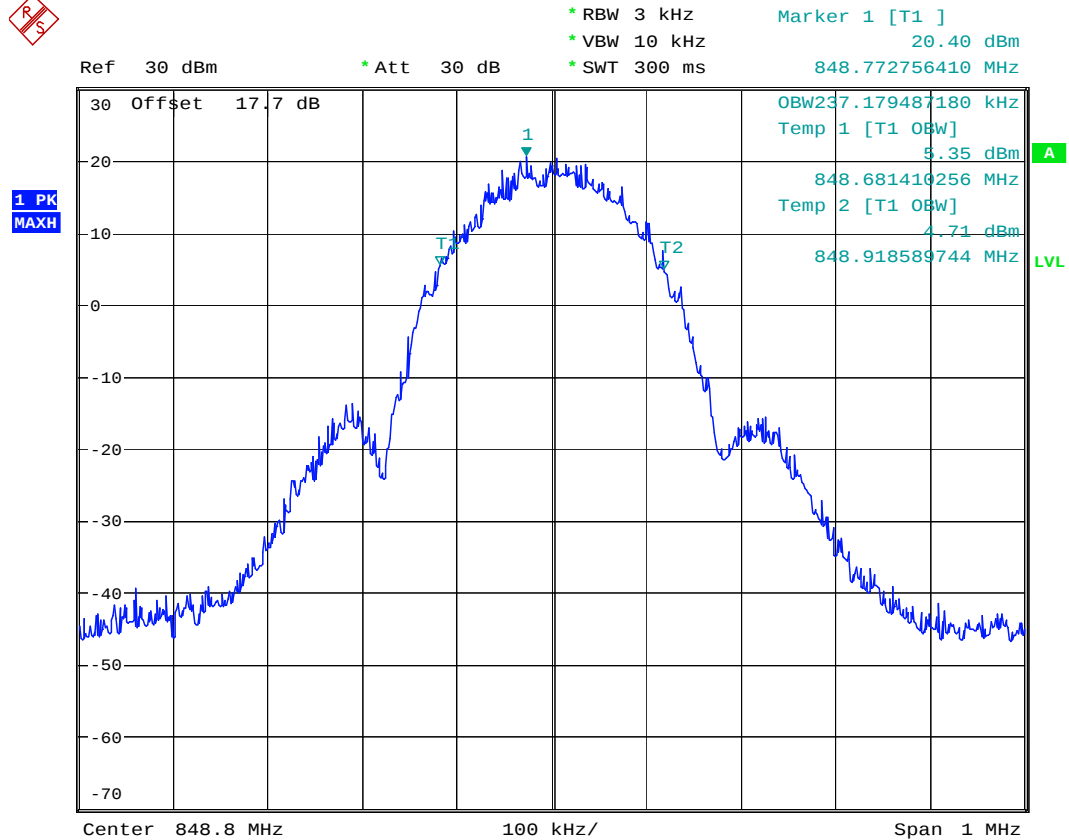


444

Date: 25.SEP.2007 05:01:48



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



444

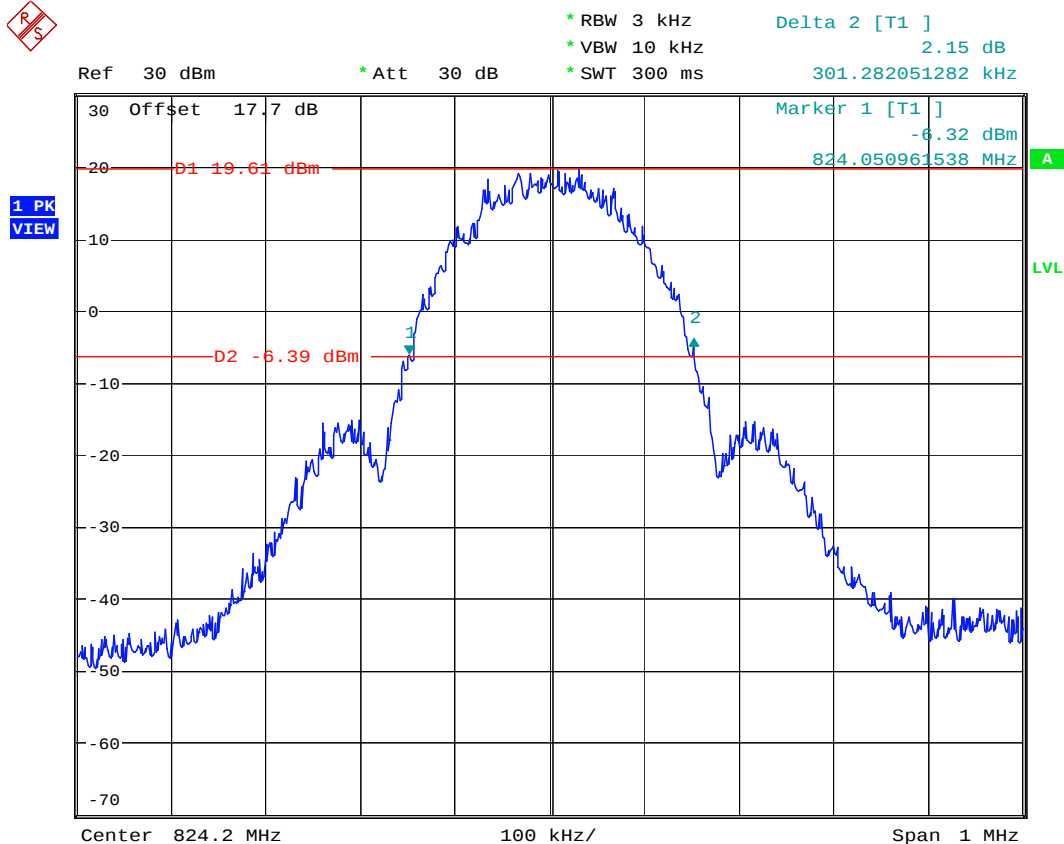
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FCC TEST REPORT

Report No. : FG790604A

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

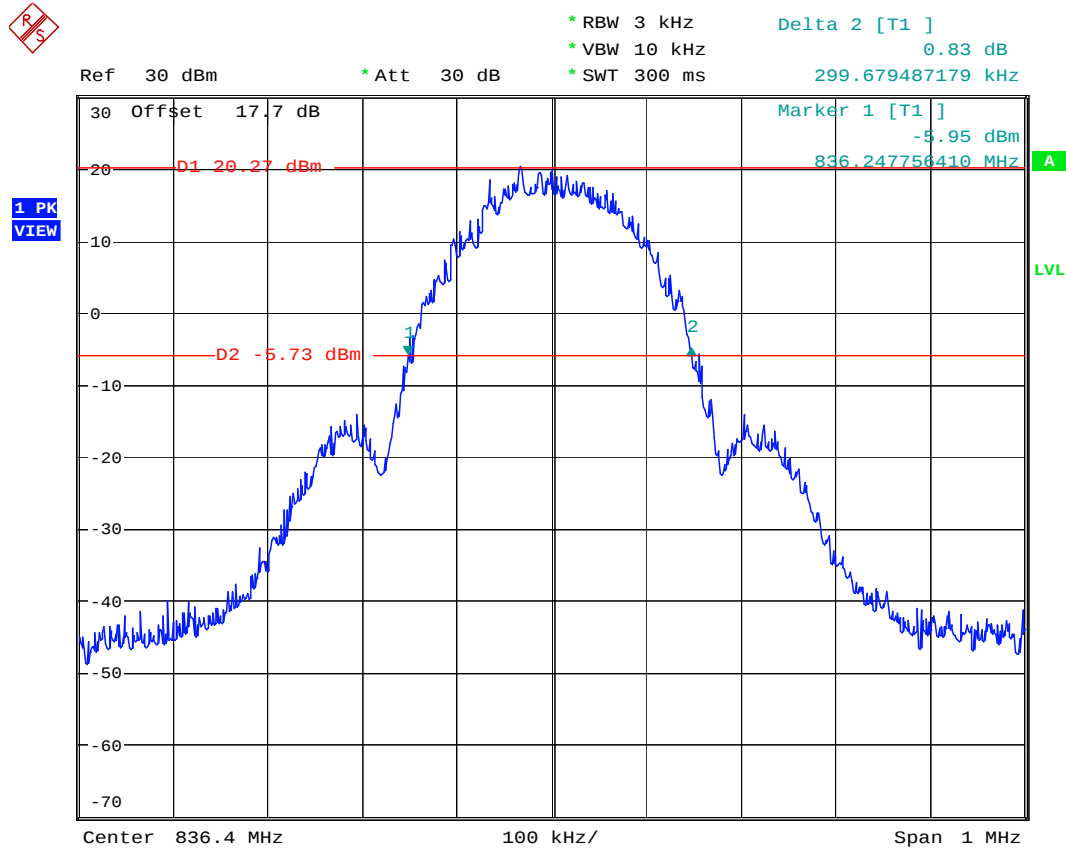


444

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

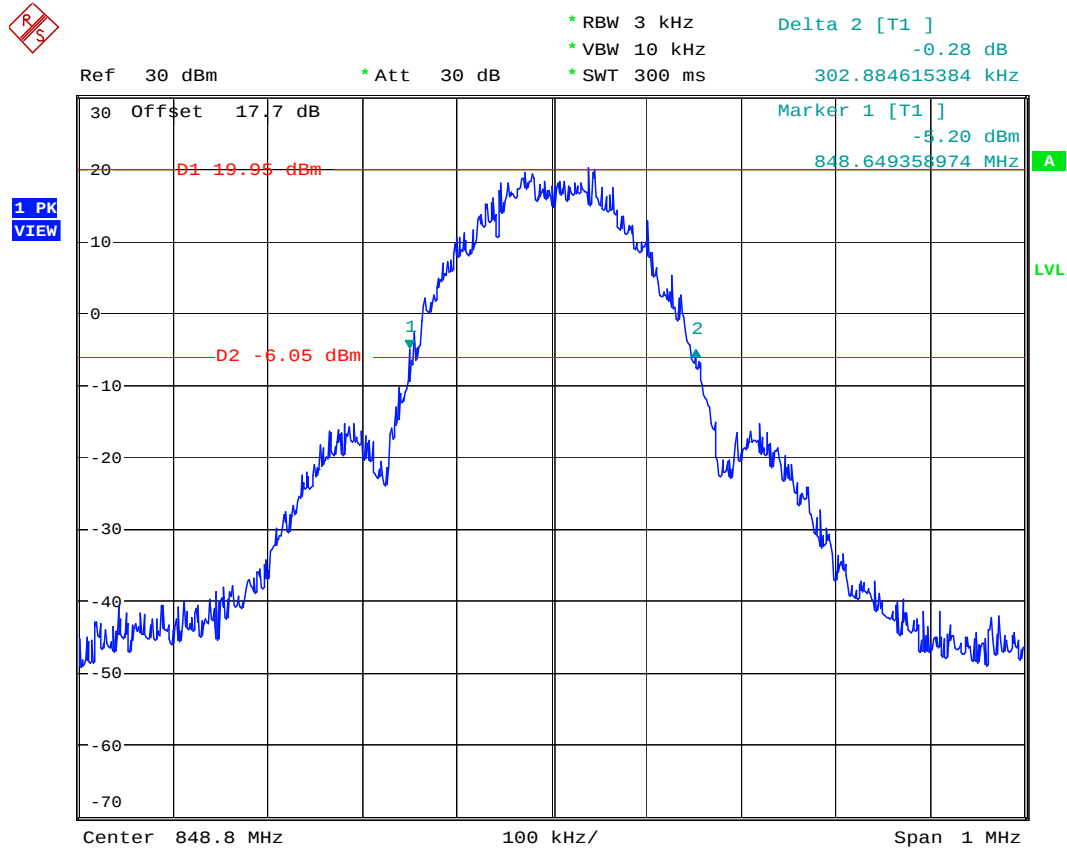


444

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

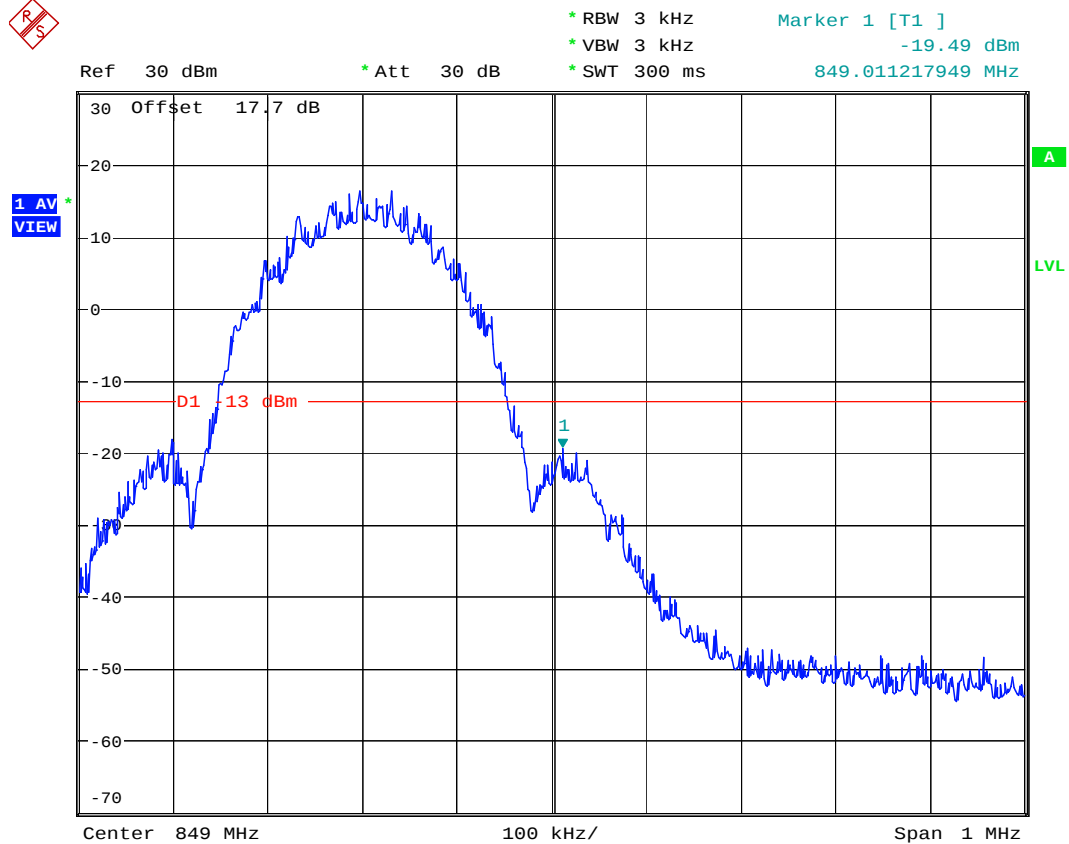


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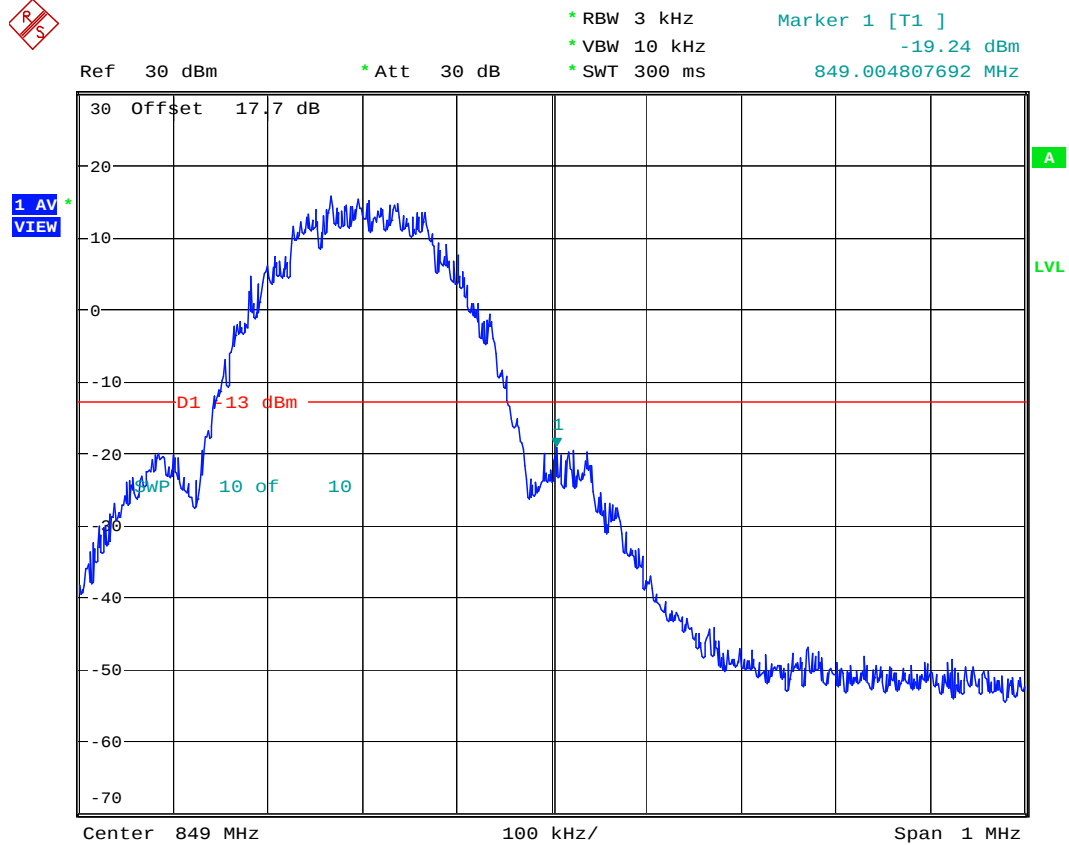


- Test Mode : GSM850 (EDGE) CH251 Higher Band Edge
- Power State : High



444

Date: 25.SEP.2007 04:50:38



444

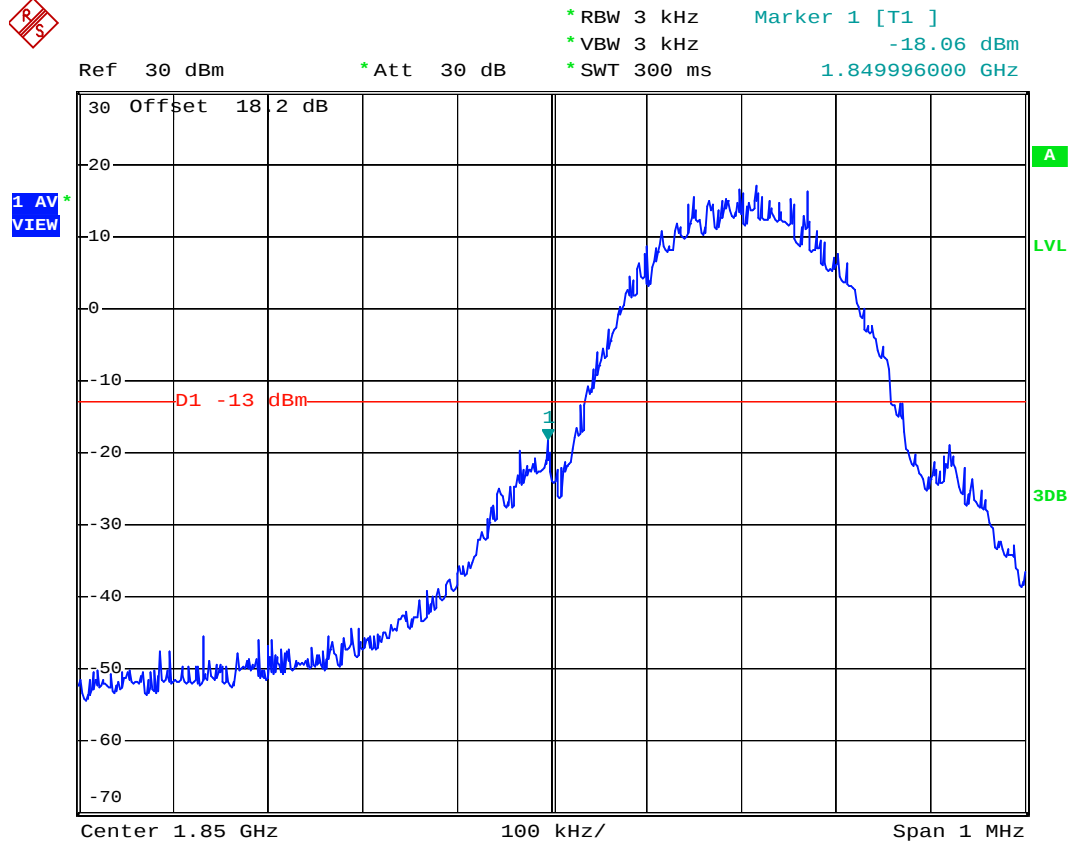
Date: 25.SEP.2007 04:48:37



FCC TEST REPORT

Report No. : FG790604A

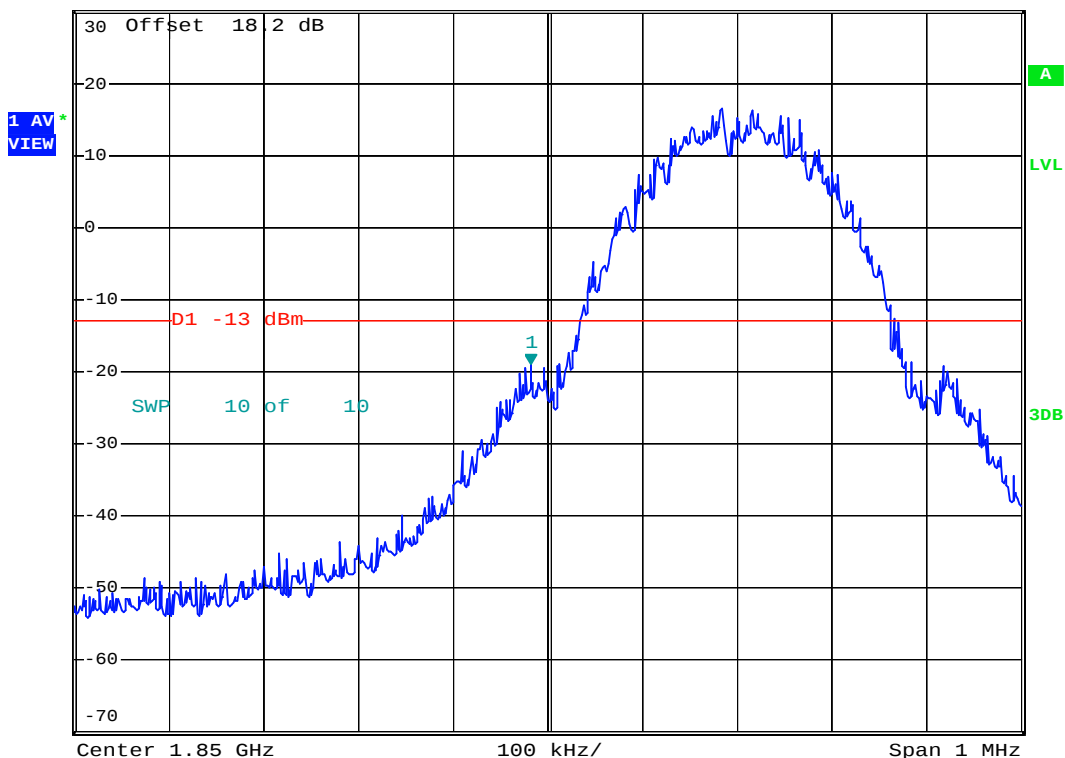
- Mode 3
- Test Mode : PCS1900 (GSM) CH512 Lower Band Edge
- Power State : High



Date: 3.OCT.2007 08:27:16



Ref 30 dBm *Att 30 dB *RBW 3 kHz Marker 1 [T1] -19.07 dBm
*VBW 10 kHz 1.849982000 GHz
*SWT 300 ms



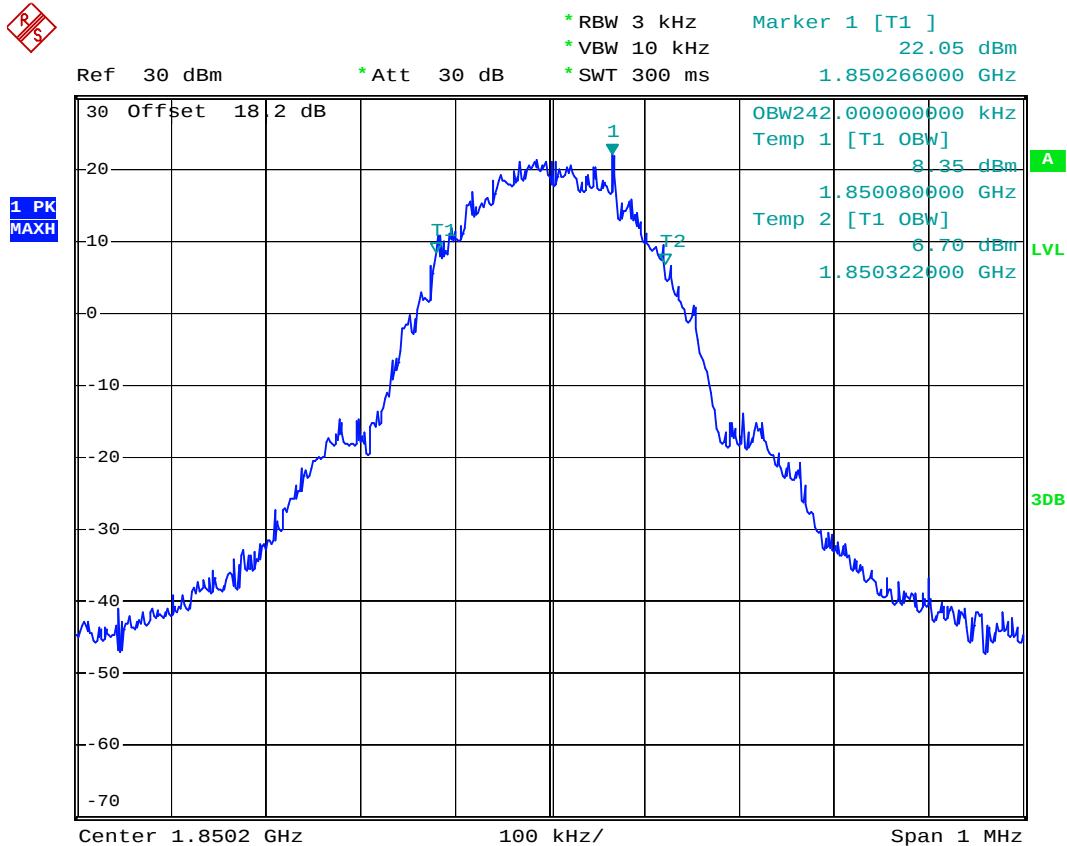
Date: 3.OCT.2007 08:28:13



FCC TEST REPORT

Report No. : FG790604A

- Test Mode : PCS1900 (GSM) CH512 99% Occupied Bandwidth
- Power State : High



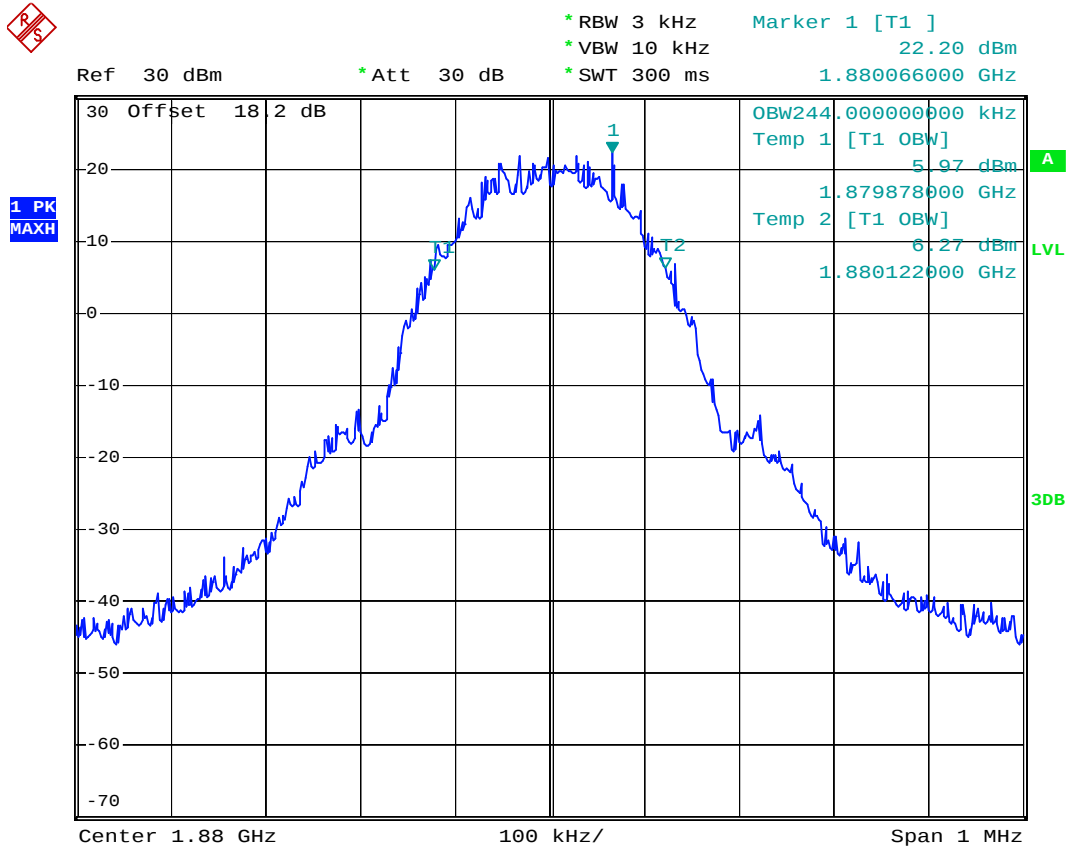
Date: 3.OCT.2007 08:24:03



FCC TEST REPORT

Report No. : FG790604A

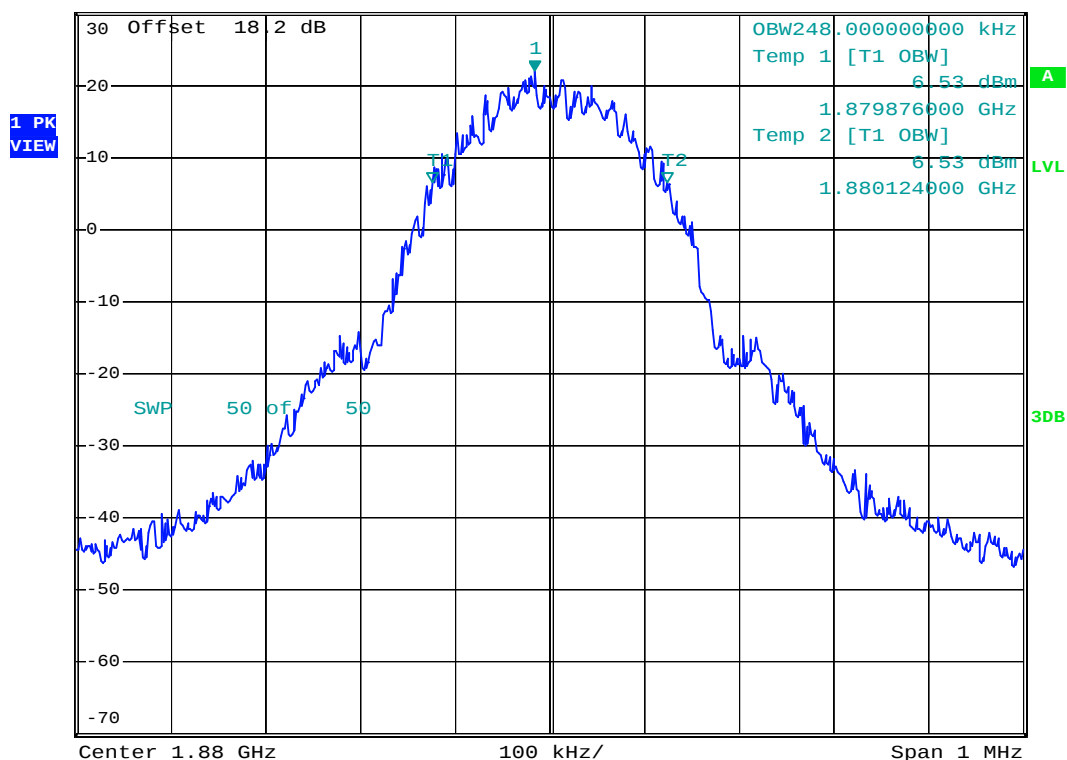
- Test Mode : PCS1900 (GSM) CH661 99% Occupied Bandwidth
- Power State : High



Date: 3.OCT.2007 08:22:38



Ref 30 dBm *Att 30 dB *RBW 3 kHz *VBW 30 kHz *SWT 300 ms Marker 1 [T1] 21.87 dBm 1.879984000 GHz



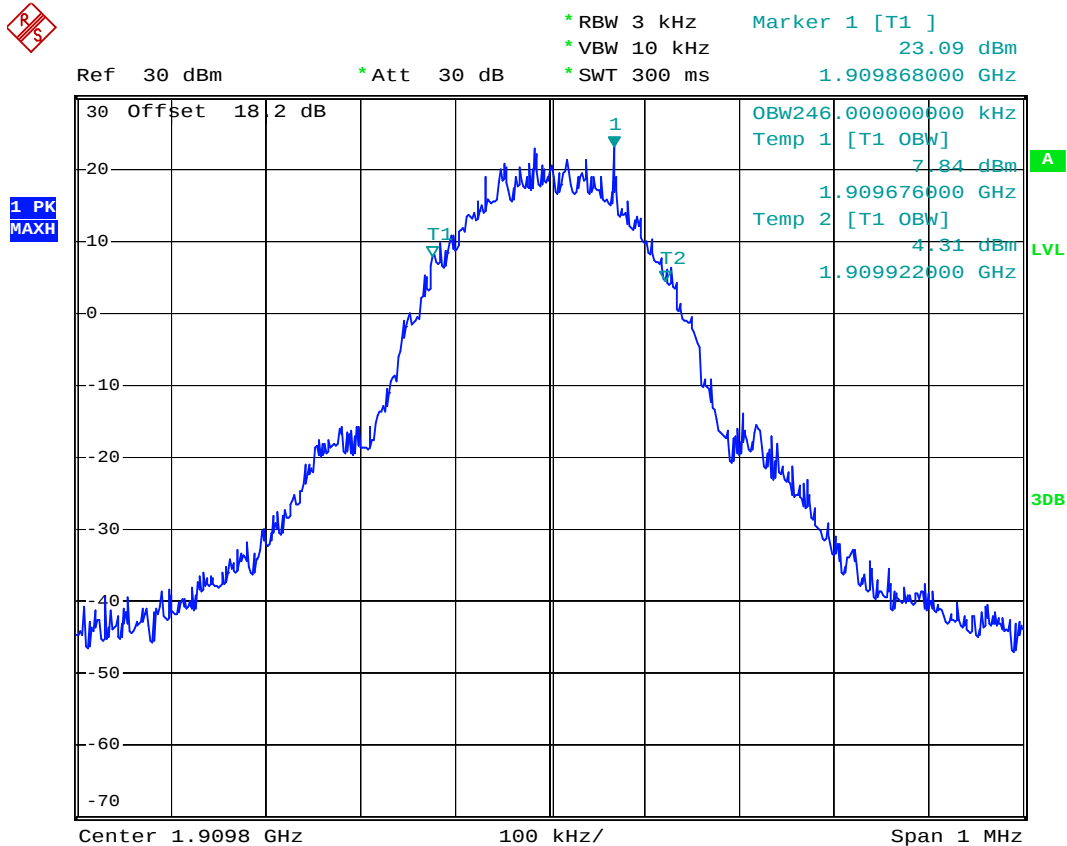
Date: 3.OCT.2007 08:21:32



FCC TEST REPORT

Report No. : FG790604A

- Test Mode : PCS1900 (GSM) CH810 99% Occupied Bandwidth
- Power State : High



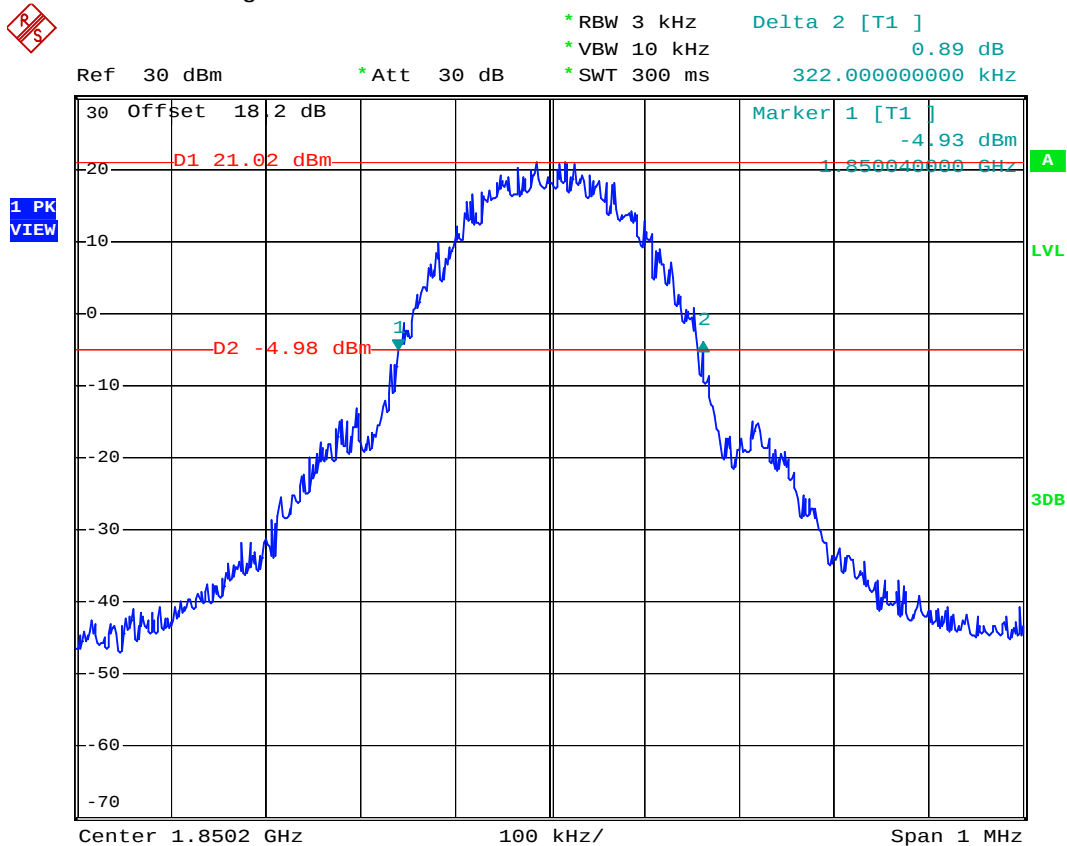
Date: 3.OCT.2007 08:23:06



FCC TEST REPORT

Report No. : FG790604A

- Test Mode : PCS1900 (GSM) CH512 26dB Bandwidth
- Power State : High



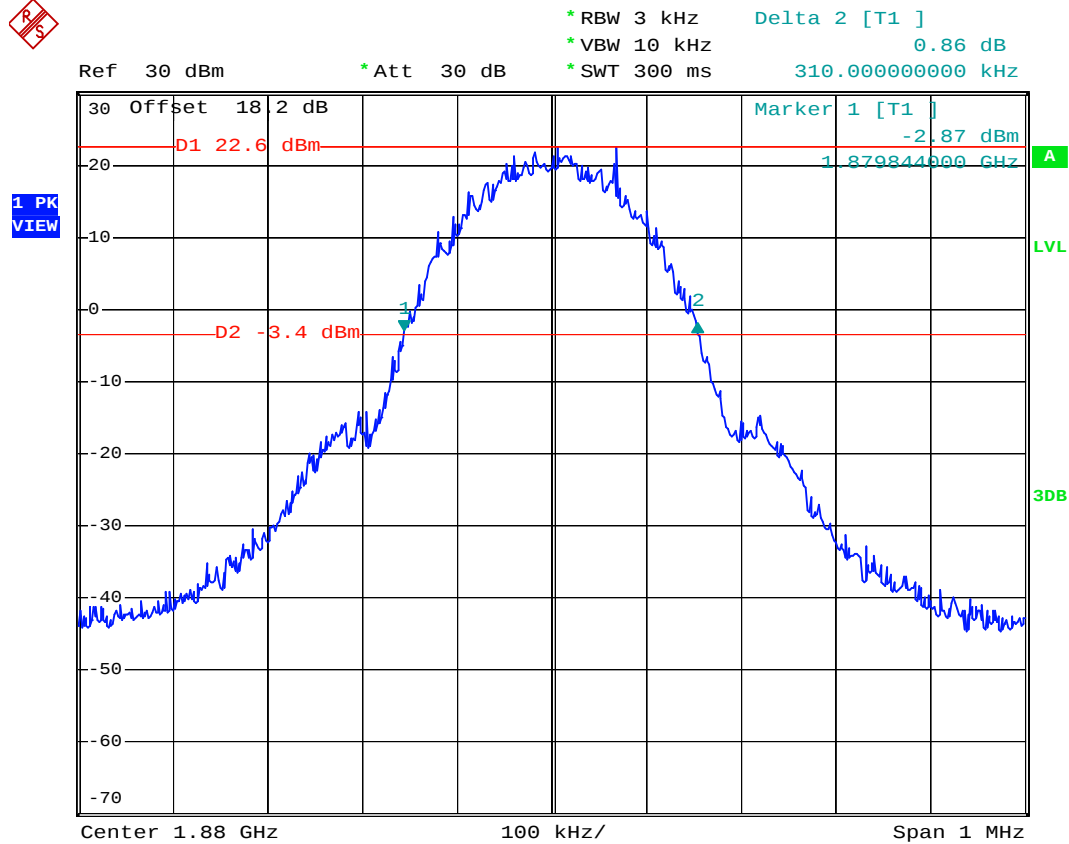
Date: 3.OCT.2007 08:08:37



FCC TEST REPORT

Report No. : FG790604A

- Test Mode : PCS1900 (GSM) CH661 26dB Bandwidth
- Power State : High



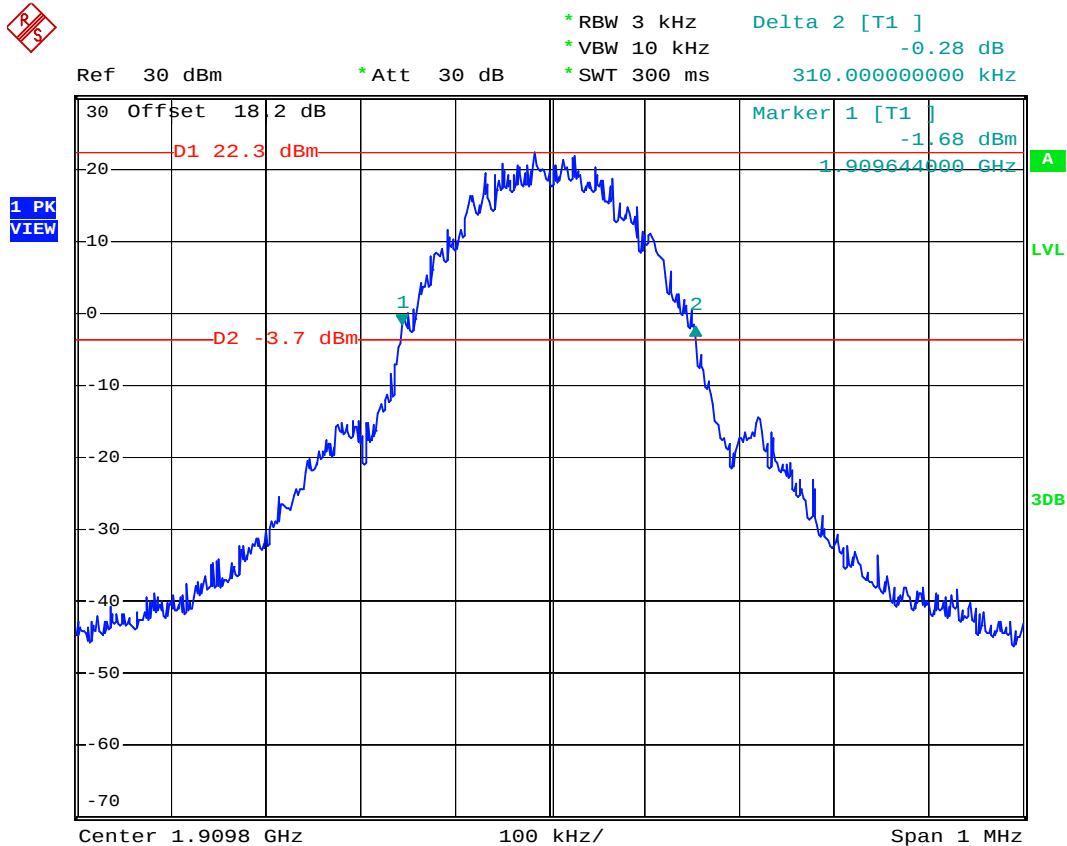
Date: 3.OCT.2007 08:10:31



FCC TEST REPORT

Report No. : FG790604A

- Test Mode : PCS1900 (GSM) CH810 26dB Bandwidth
- Power State : High



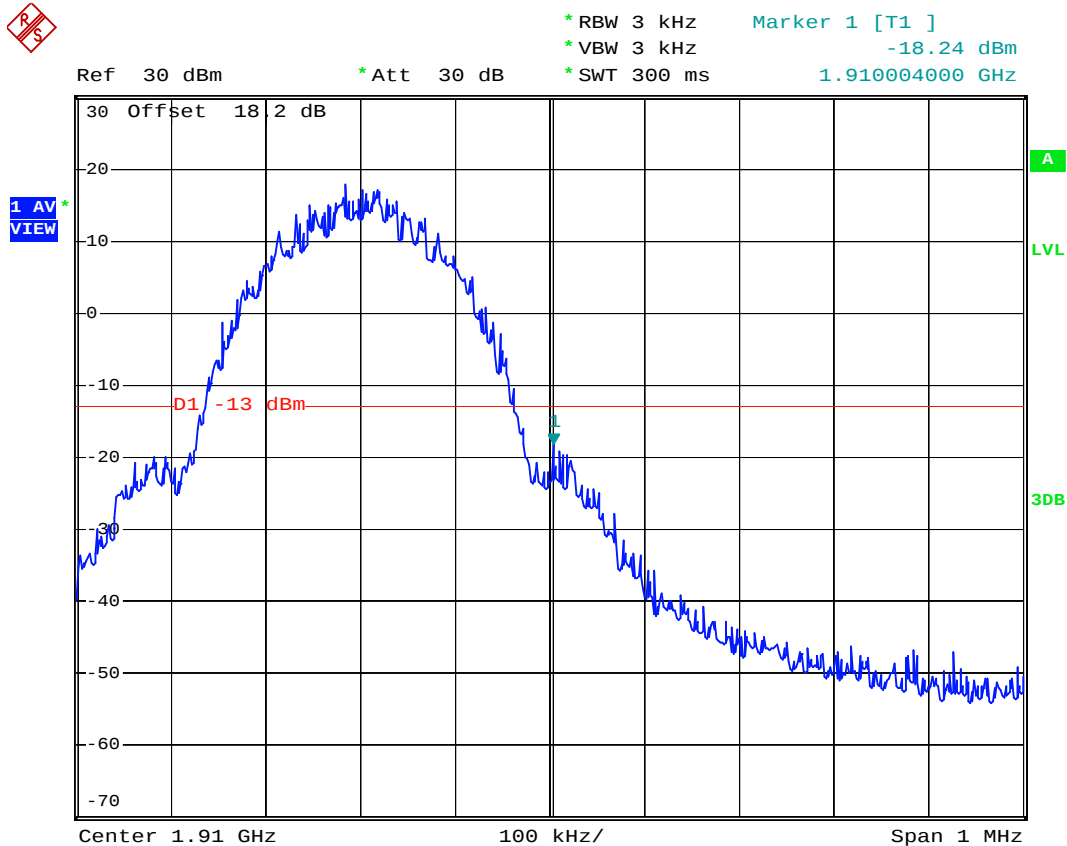
Date: 3.OCT.2007 08:11:36



FCC TEST REPORT

Report No. : FG790604A

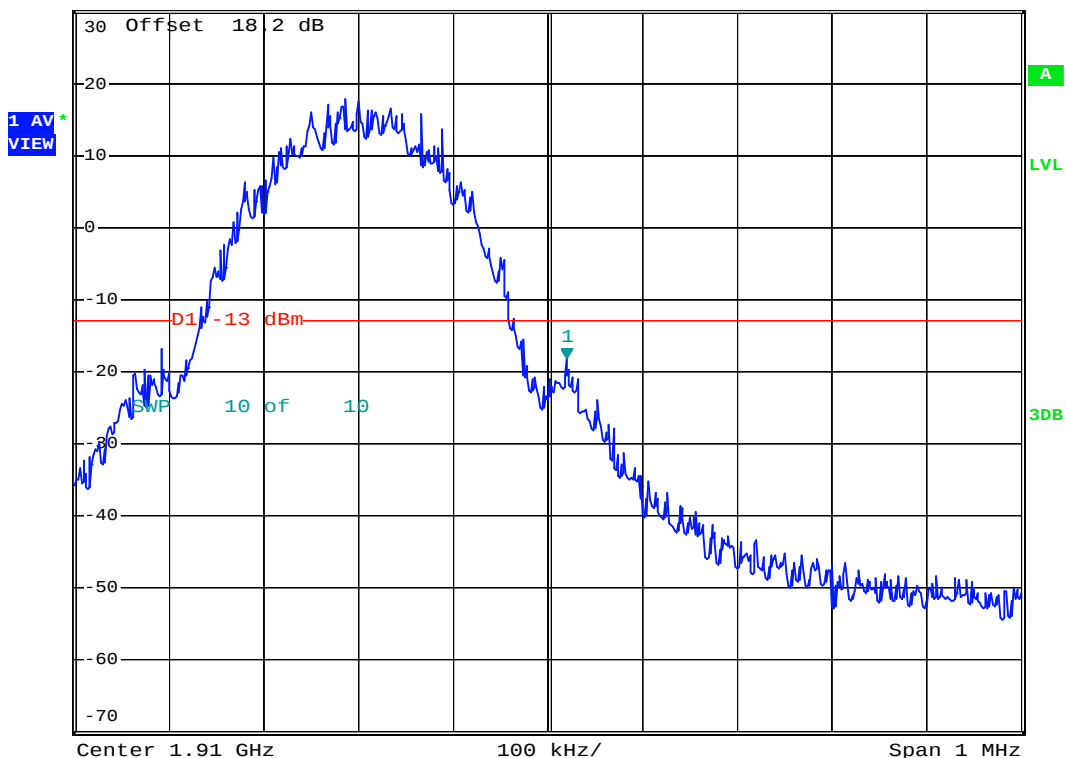
- Test Mode : PCS1900 (GSM) CH810 Higher Band Edge
- Power State : High



Date: 3.OCT.2007 08:30:35



Ref 30 dBm *Att 30 dB *RBW 3 kHz Marker 1 [T1] -18.18 dBm
*VBW 10 kHz 1.910020000 GHz
*SWT 300 ms



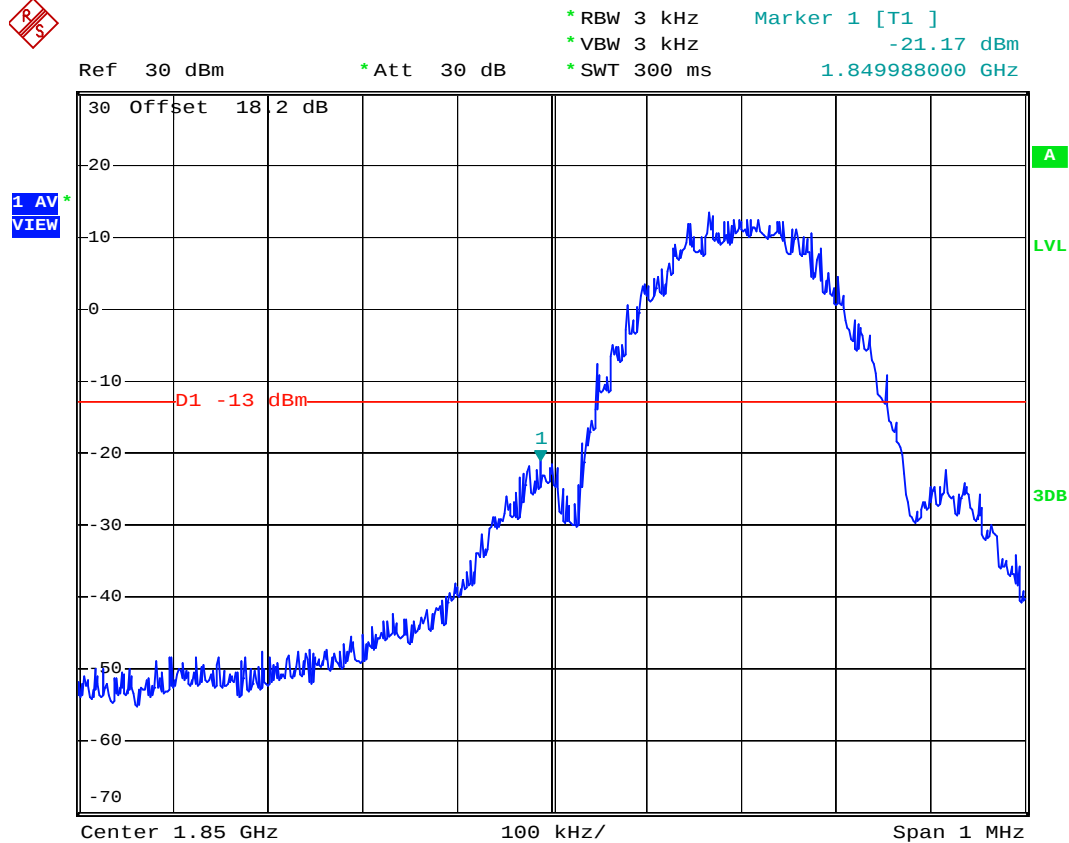
Date: 3.OCT.2007 08:29:26



FCC TEST REPORT

Report No. : FG790604A

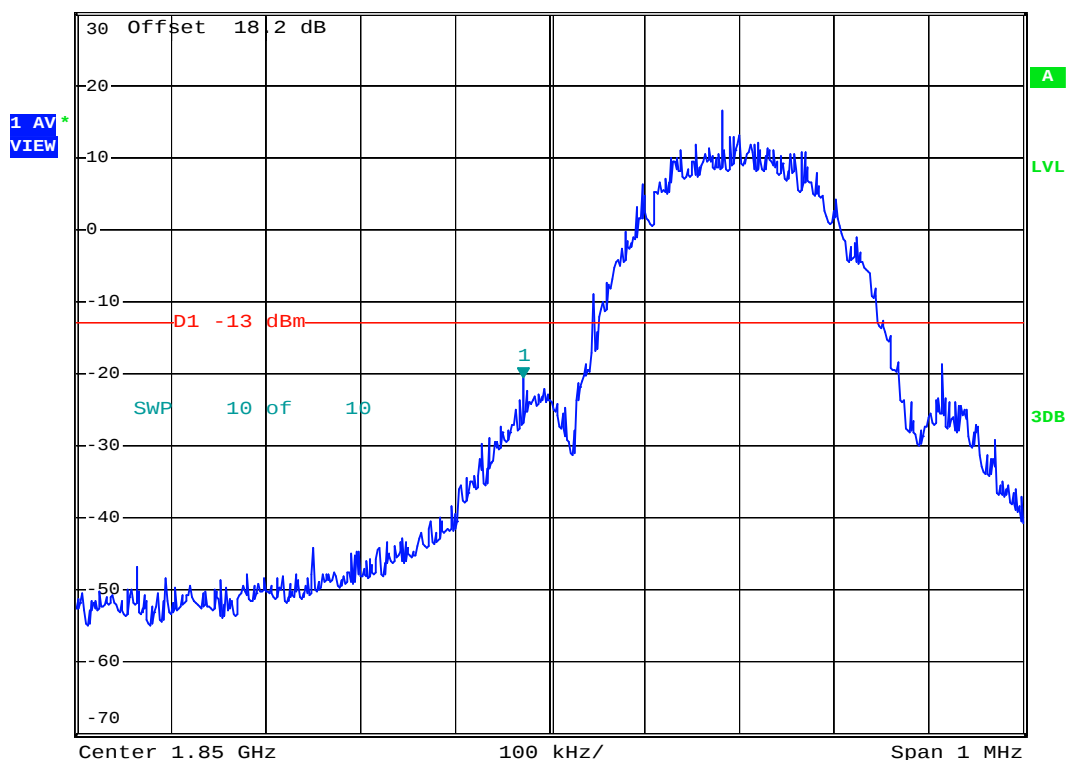
- Mode 4
- Test Mode : PCS1900 (EDGE) CH512 Lower Band Edge
- Power State : High



Date: 3.OCT.2007 08:37:04



Ref 30 dBm *Att 30 dB *RBW 3 kHz *VBW 10 kHz *SWT 300 ms Marker 1 [T1]
-20.49 dBm
1.849972000 GHz



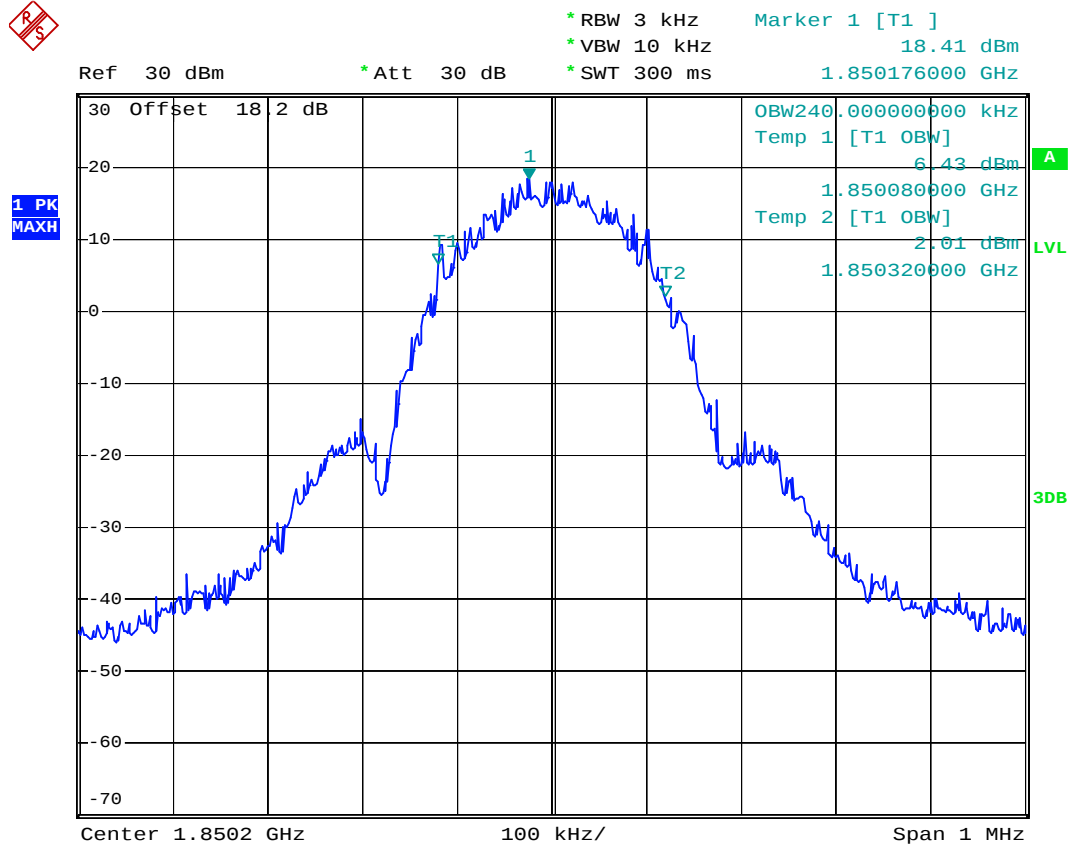
Date: 3.OCT.2007 08:35:58



FCC TEST REPORT

Report No. : FG790604A

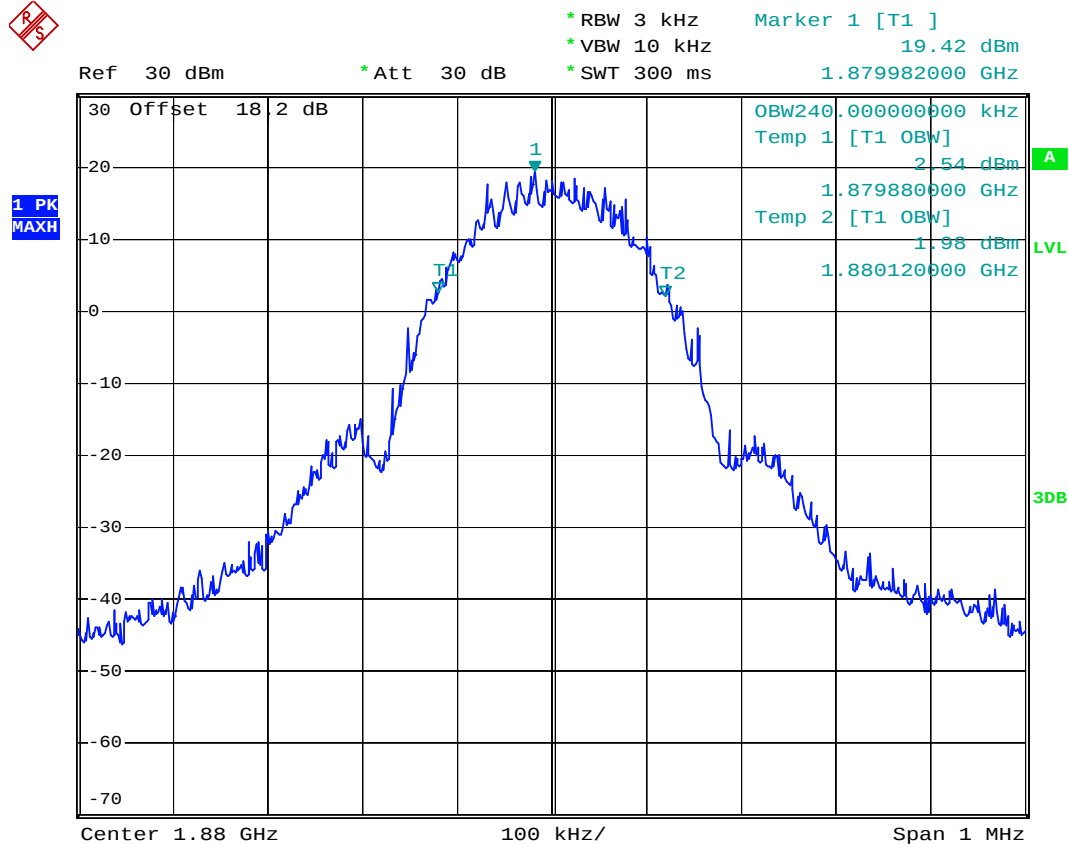
- Test Mode : PCS1900 (EDGE) CH512 99% Occupied Bandwidth
- Power State : High



Date: 3.OCT.2007 08:16:34



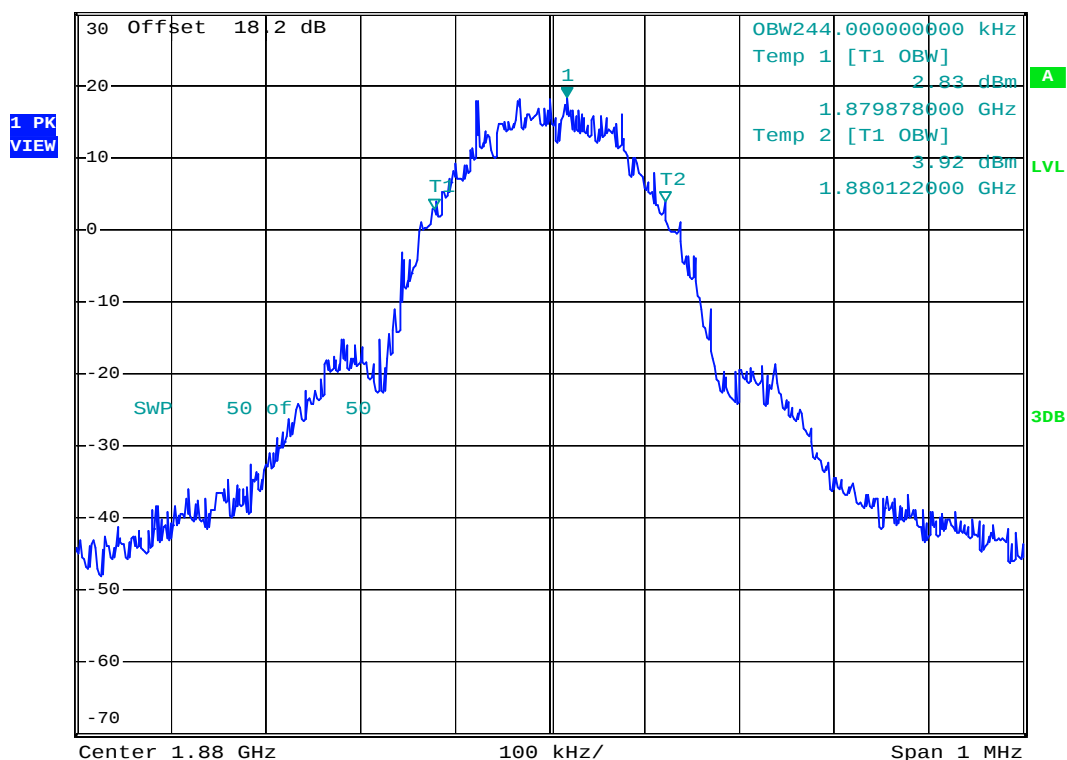
- Test Mode : PCS1900 (EDGE) CH661 99% Occupied Bandwidth
- Power State : High



Date: 3.OCT.2007 08:18:27



Ref 30 dBm *Att 30 dB *RBW 3 kHz *VBW 30 kHz *SWT 300 ms Marker 1 [T1] 18.34 dBm 1.880018000 GHz



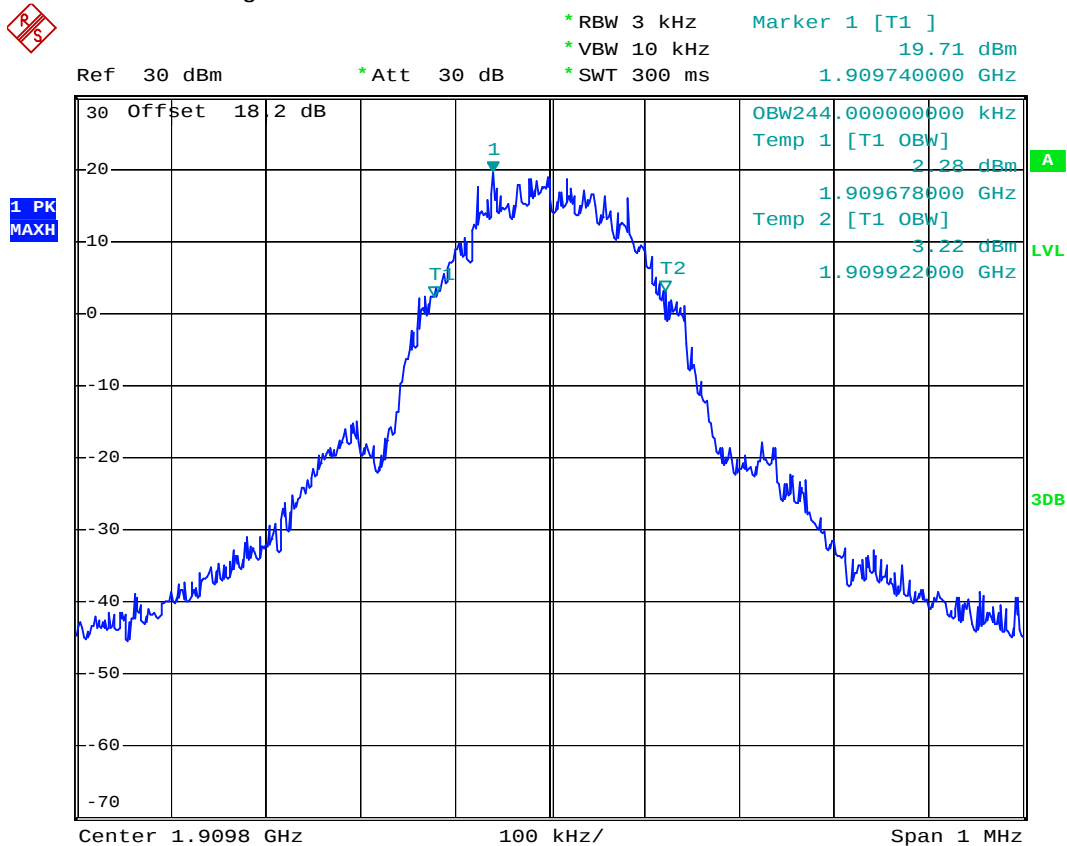
Date: 3.OCT.2007 08:20:25



FCC TEST REPORT

Report No. : FG790604A

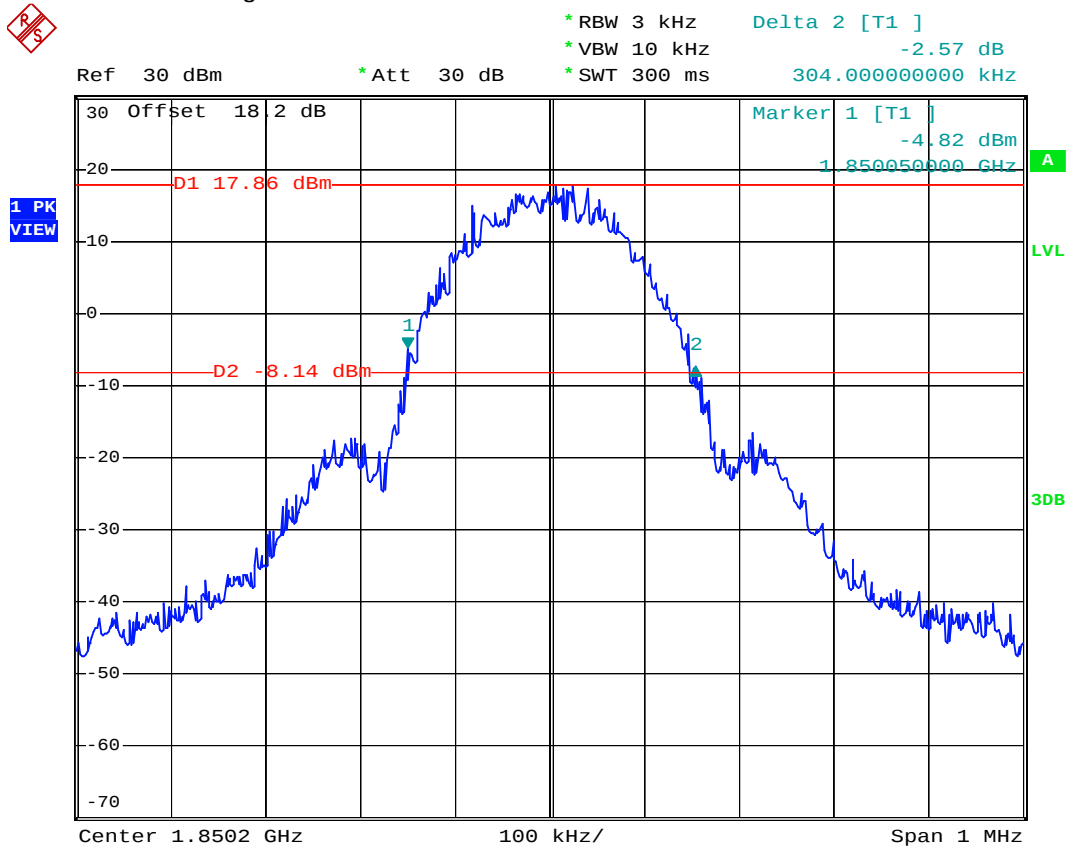
- Test Mode : PCS1900 (EDGE) CH810 99% Occupied Bandwidth
- Power State : High



Date: 3.OCT.2007 08:19:09



- Test Mode : PCS1900 (EDGE) CH512 26dB Bandwidth
- Power State : High



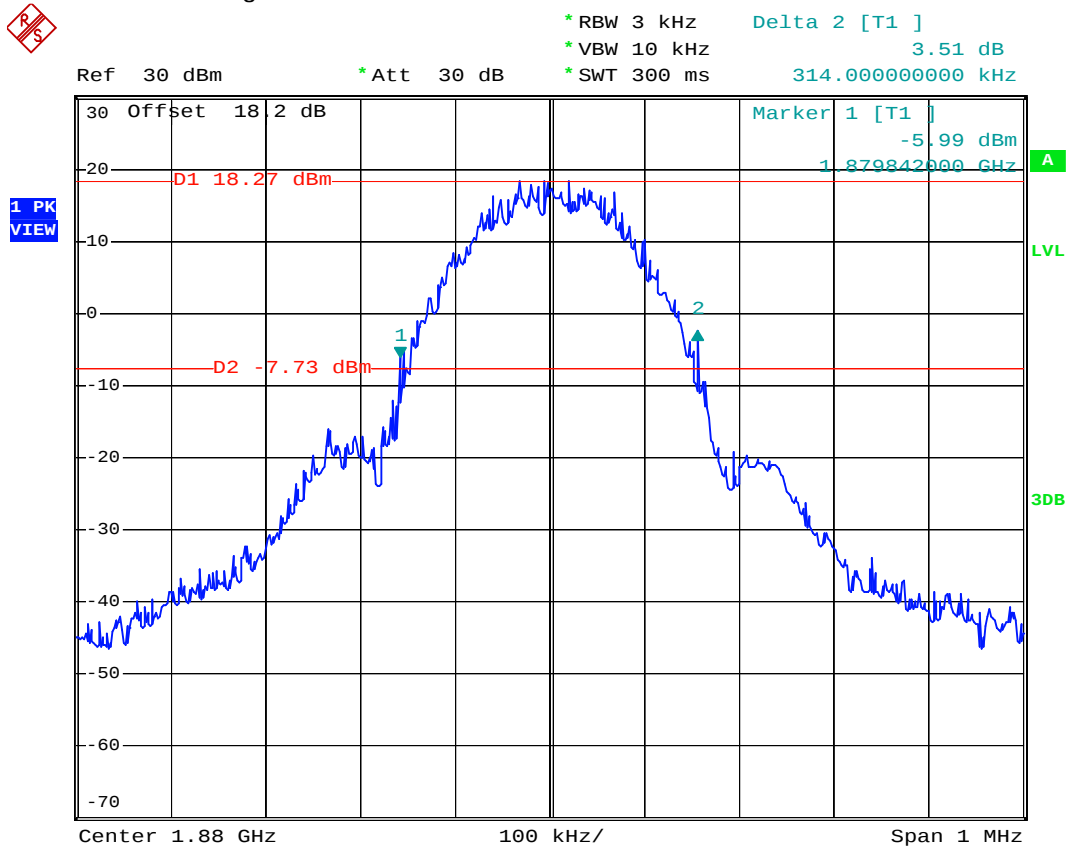
Date: 3.OCT.2007 08:15:25



FCC TEST REPORT

Report No. : FG790604A

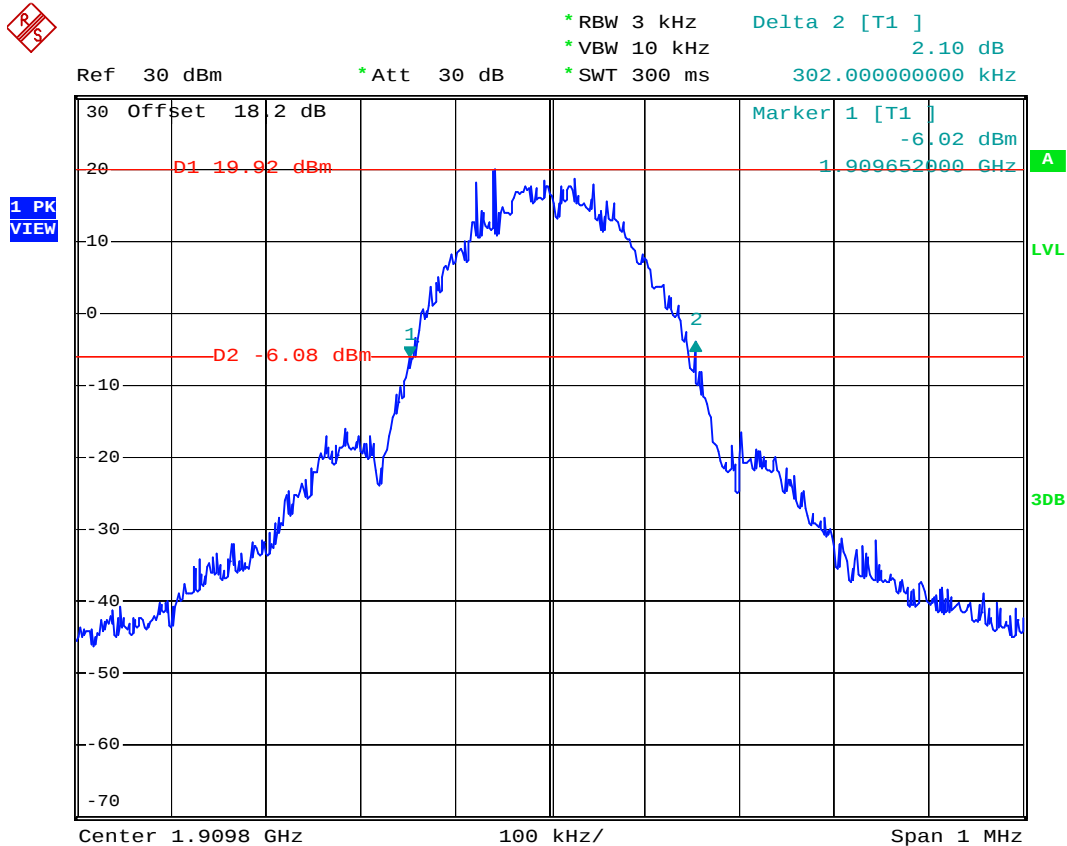
- Test Mode : PCS1900 (EDGE) CH661 26dB Bandwidth
- Power State : High



Date: 3.OCT.2007 08:14:22



- Test Mode : PCS1900 (EDGE) CH810 26dB Bandwidth
- Power State : High



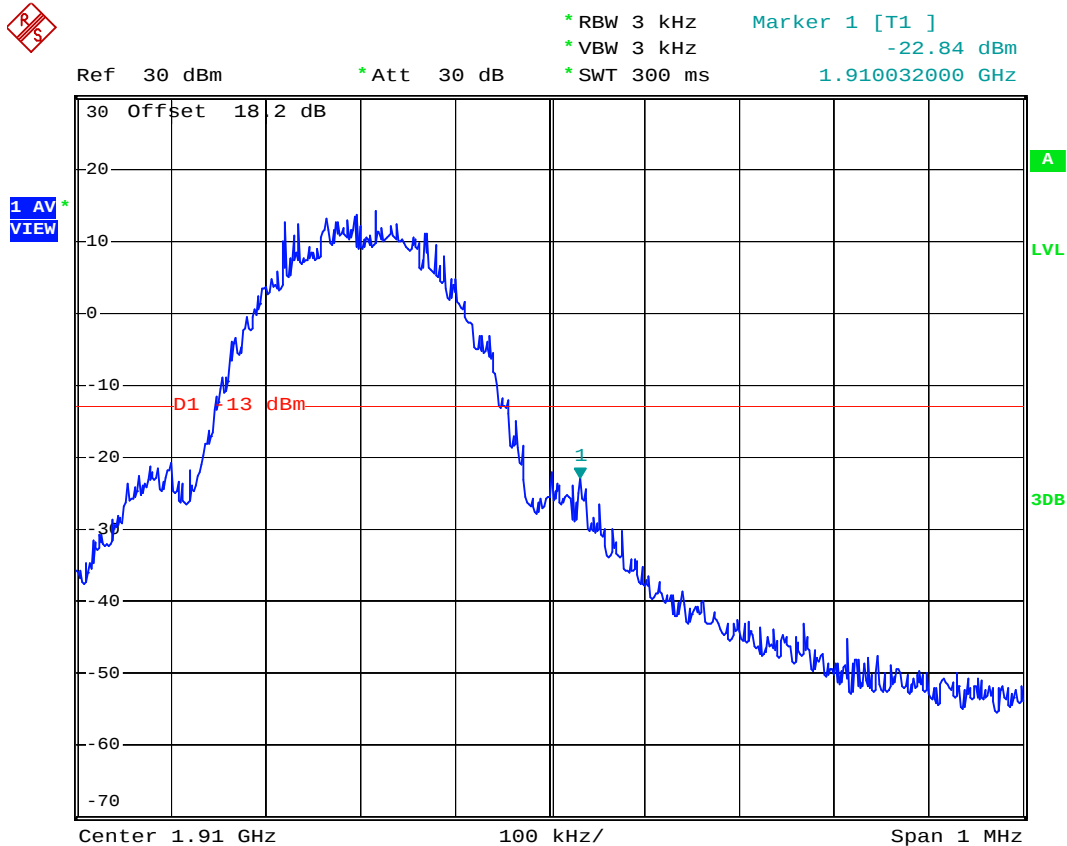
Date: 3.OCT.2007 08:13:12



FCC TEST REPORT

Report No. : FG790604A

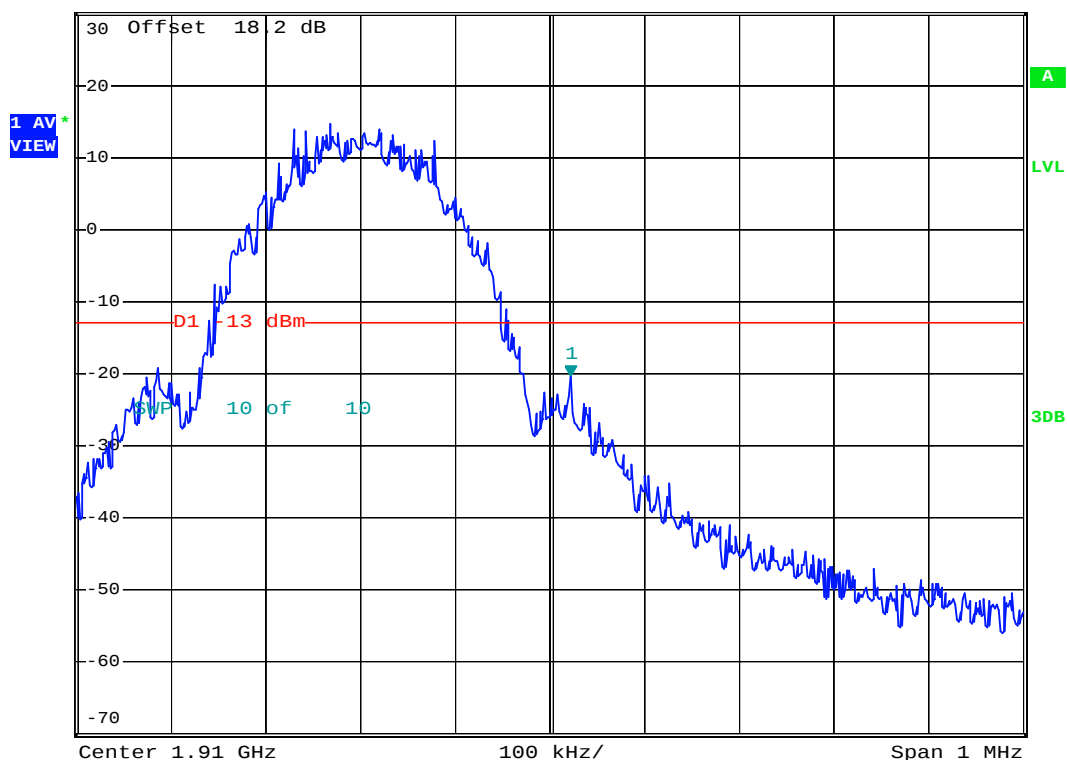
- Test Mode : PCS1900(EDGE) CH810 Higher Band Edge
- Power State : High



Date: 3.OCT.2007 08:32:26



Ref 30 dBm *Att 30 dB *RBW 3 kHz *VBW 10 kHz *SWT 300 ms Marker 1 [T1]
-20.36 dBm
1.910022000 GHz



Date: 3.OCT.2007 08:34:41

4.5 Conducted Emission

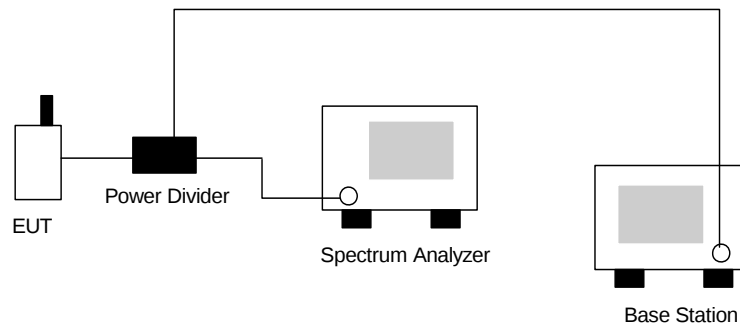
4.5.1 Measurement Instruments

As described in chapter 5 of this test report.

4.5.2 Test Procedure

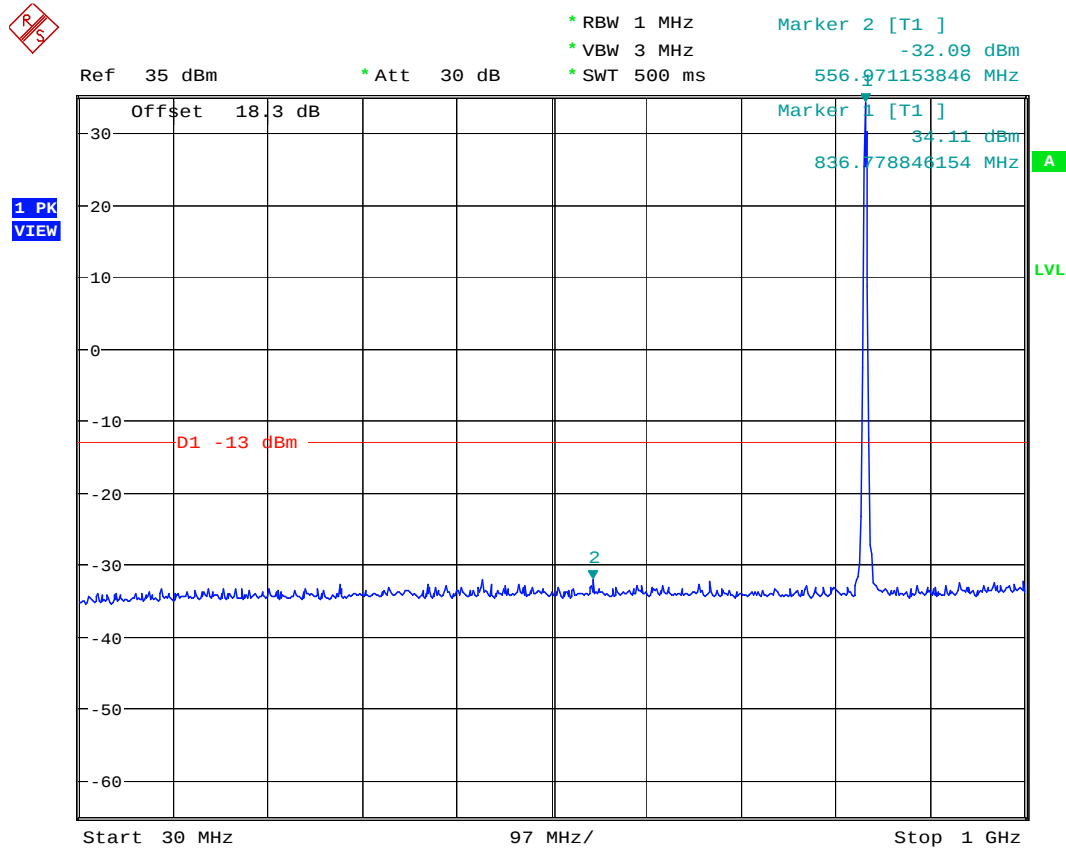
1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
2. The middle channel for the highest RF power within the transmitting frequency was measured.
3. The conducted spurious emission for the whole frequency range was taken.

4.5.3 Test Setup Layout



**4.5.4 Test Result**

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

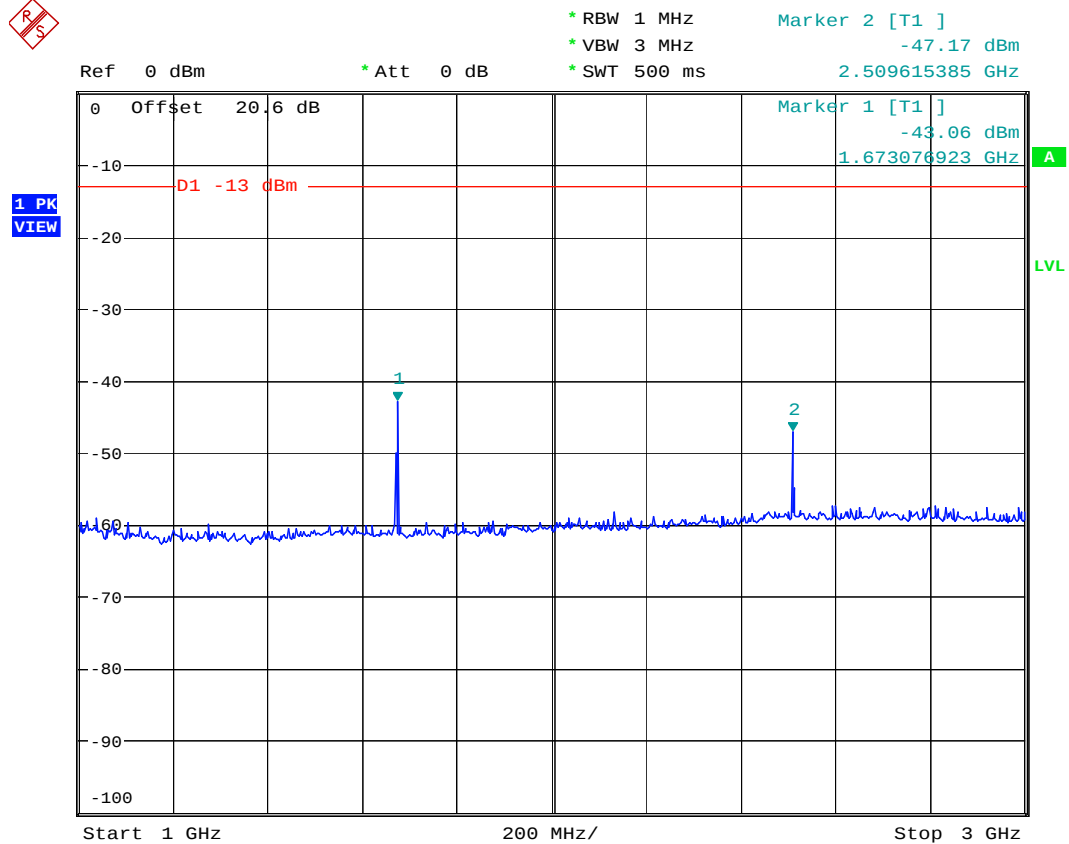


444

Date: 25.SEP.2007 05:20:26



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

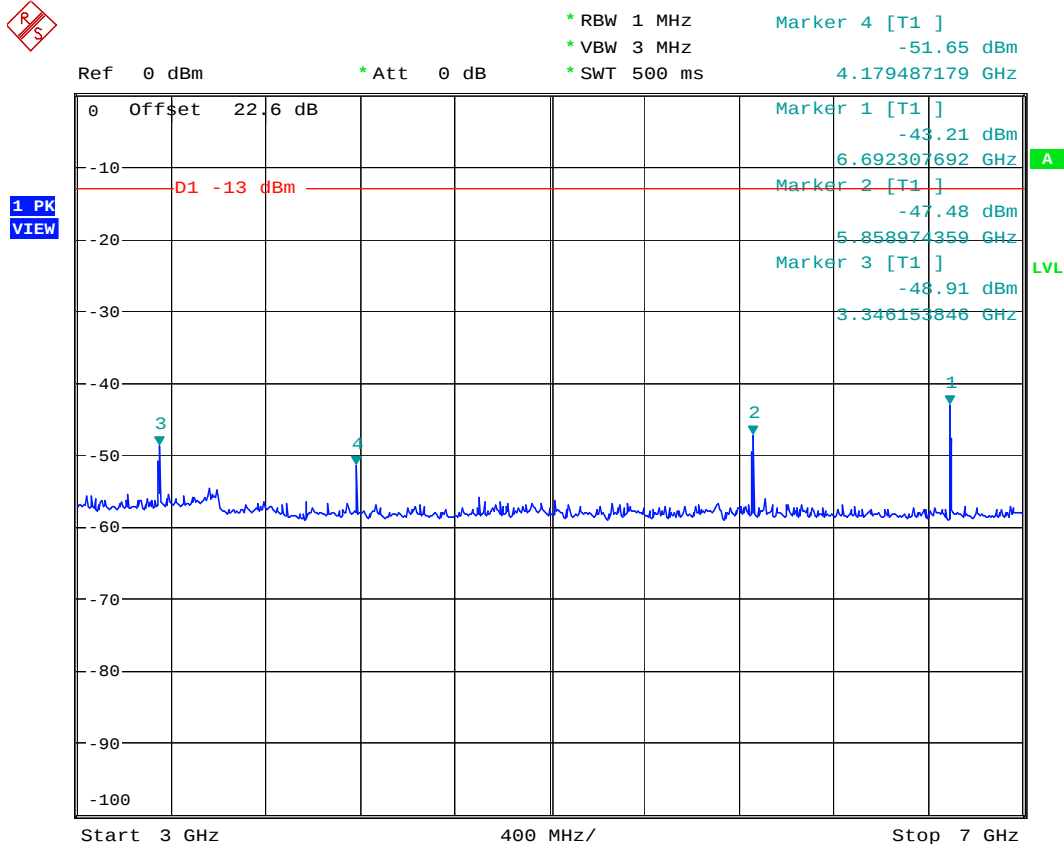


444

Date: 25.SEP.2007 05:18:37



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



444

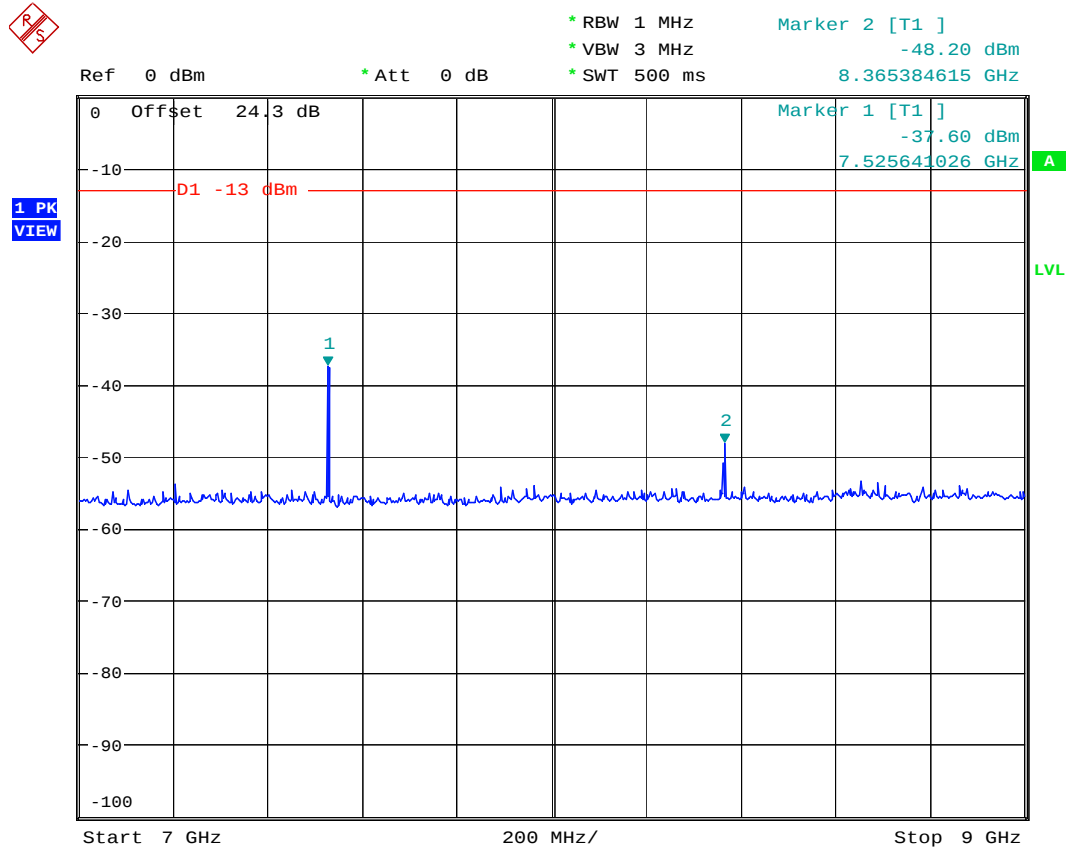
Date: 25.SEP.2007 05:17:47



FCC TEST REPORT

Report No. : FG790604A

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



444

Date: 25.SEP.2007 05:16:57



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

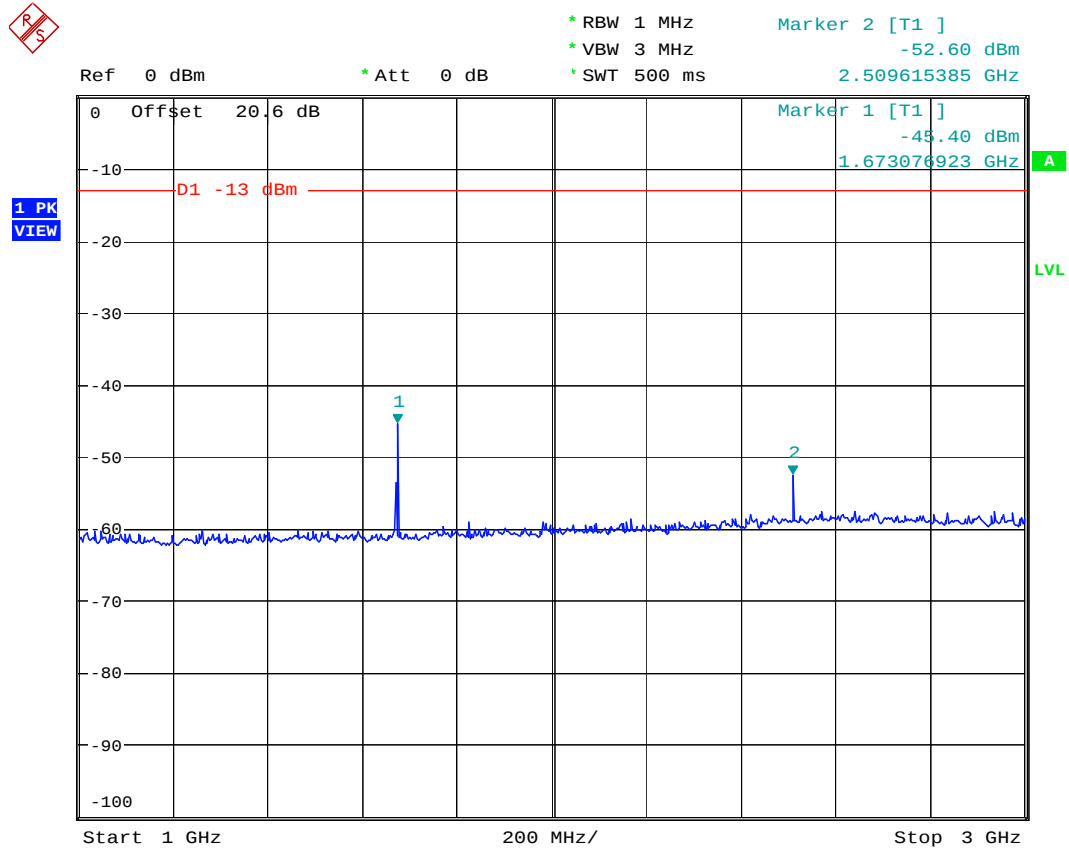


SPORTON International Inc.
TEL : 886-2-2696-2468
FAX : 886-2-2696-2255
FCC ID : SPUX650

Page No. : 62 of 96
Report Issued Date : Dec. 14, 2007
Report Version : Rev. 02



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



444

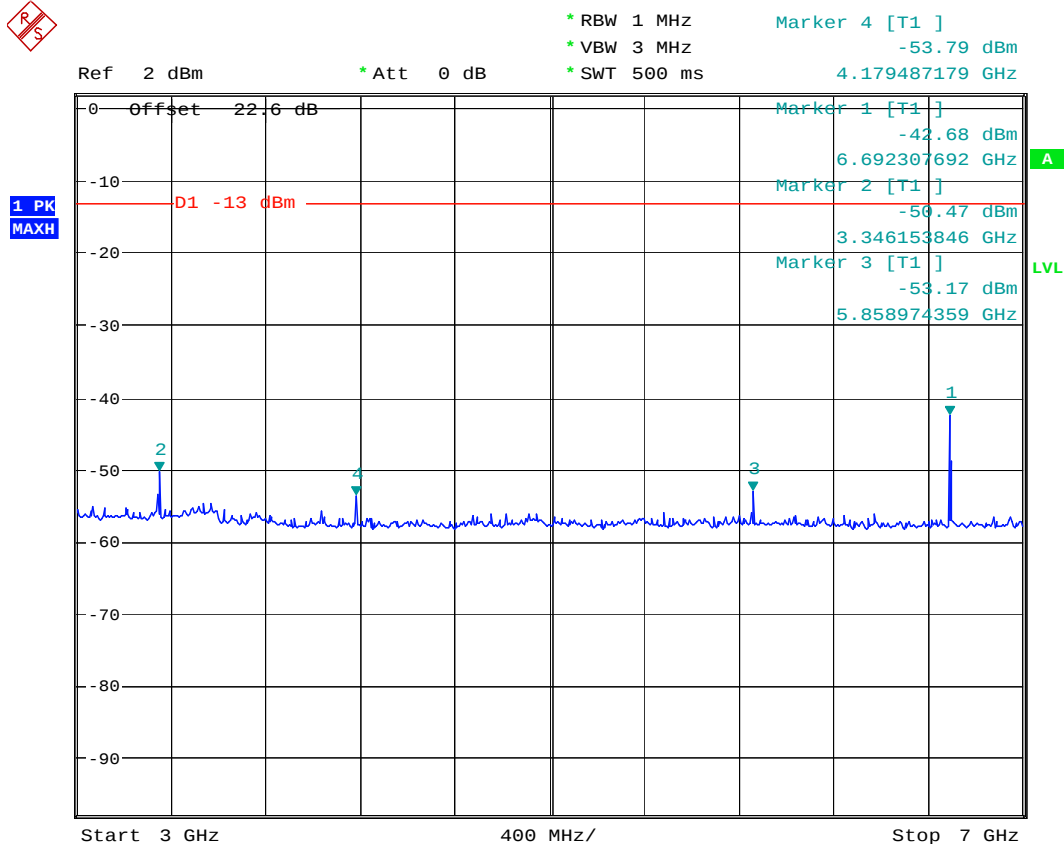
Date: 25.SEP.2007 05:12:37



FCC TEST REPORT

Report No. : FG790604A

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



444

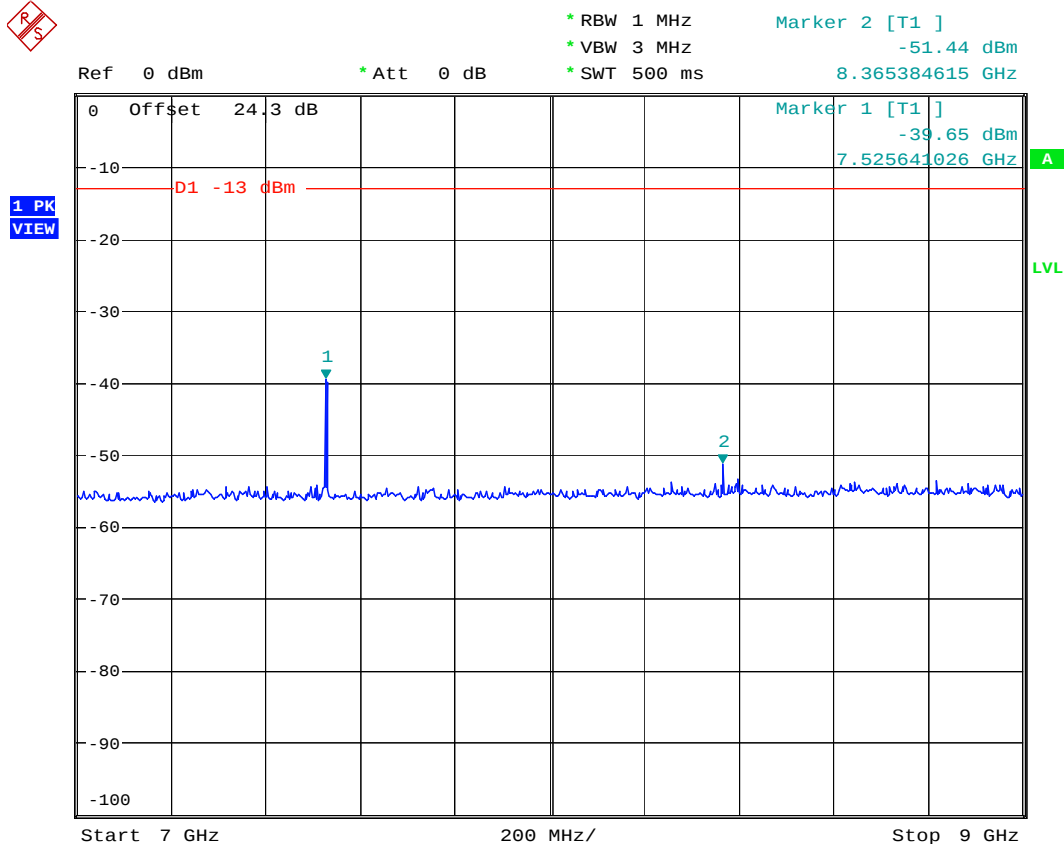
Date: 25.SEP.2007 05:14:02



FCC TEST REPORT

Report No. : FG790604A

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



444

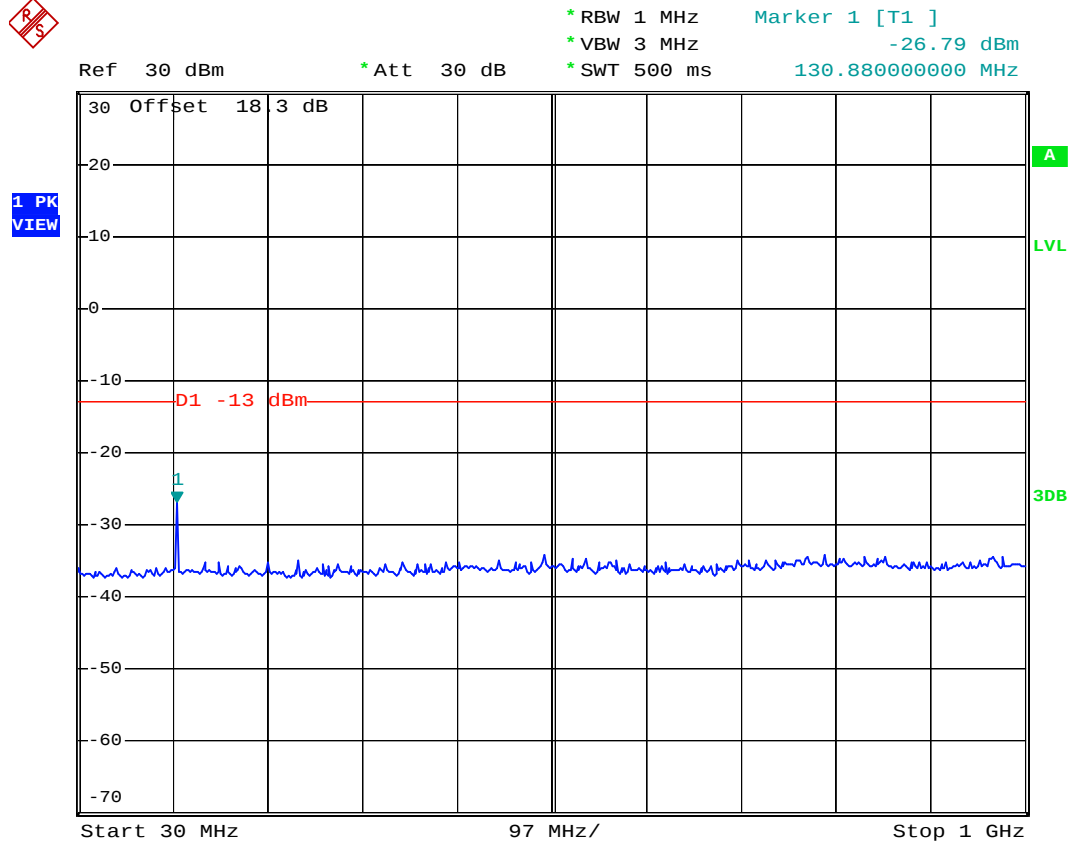
Date: 25.SEP.2007 05:15:16



FCC TEST REPORT

Report No. : FG790604A

- Mode 3
- Test Mode : PCS1900 (GSM) CH661
- Frequency Range : 30M-1G



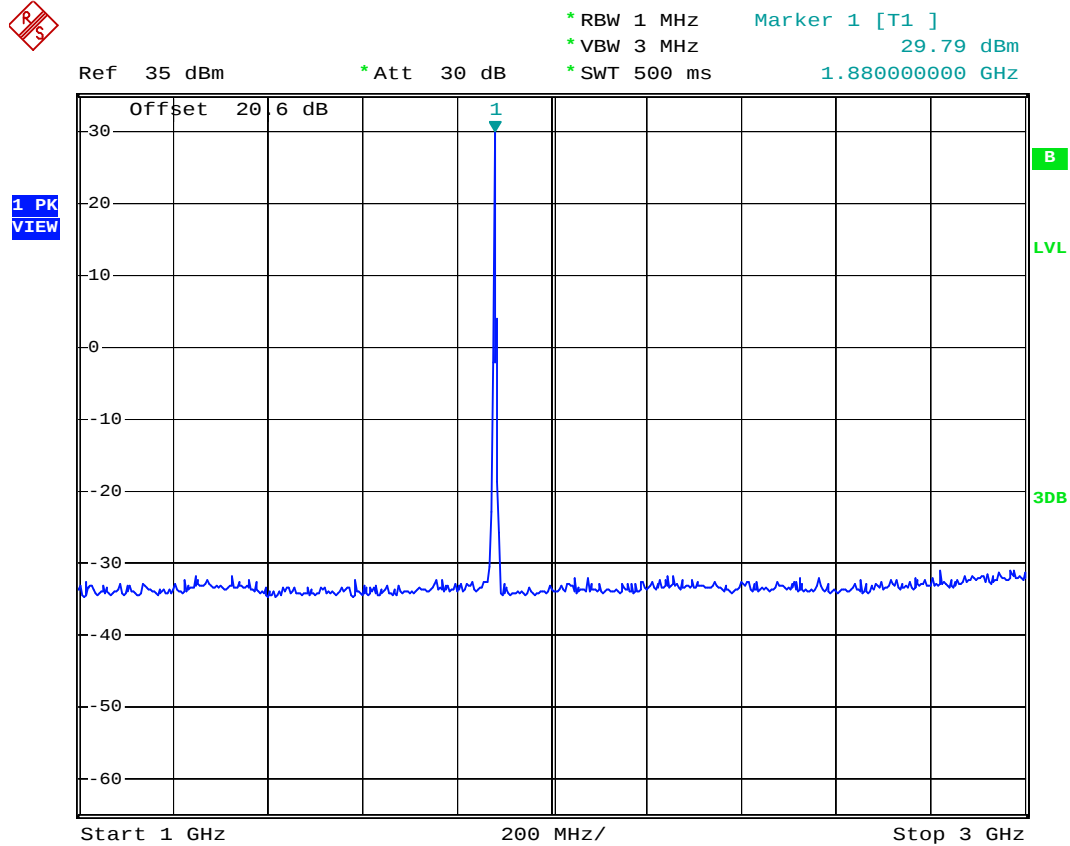
Date: 3.OCT.2007 08:42:53



FCC TEST REPORT

Report No. : FG790604A

- Test Mode : PCS1900 (GSM) CH661
- Frequency Range : 1G-3G



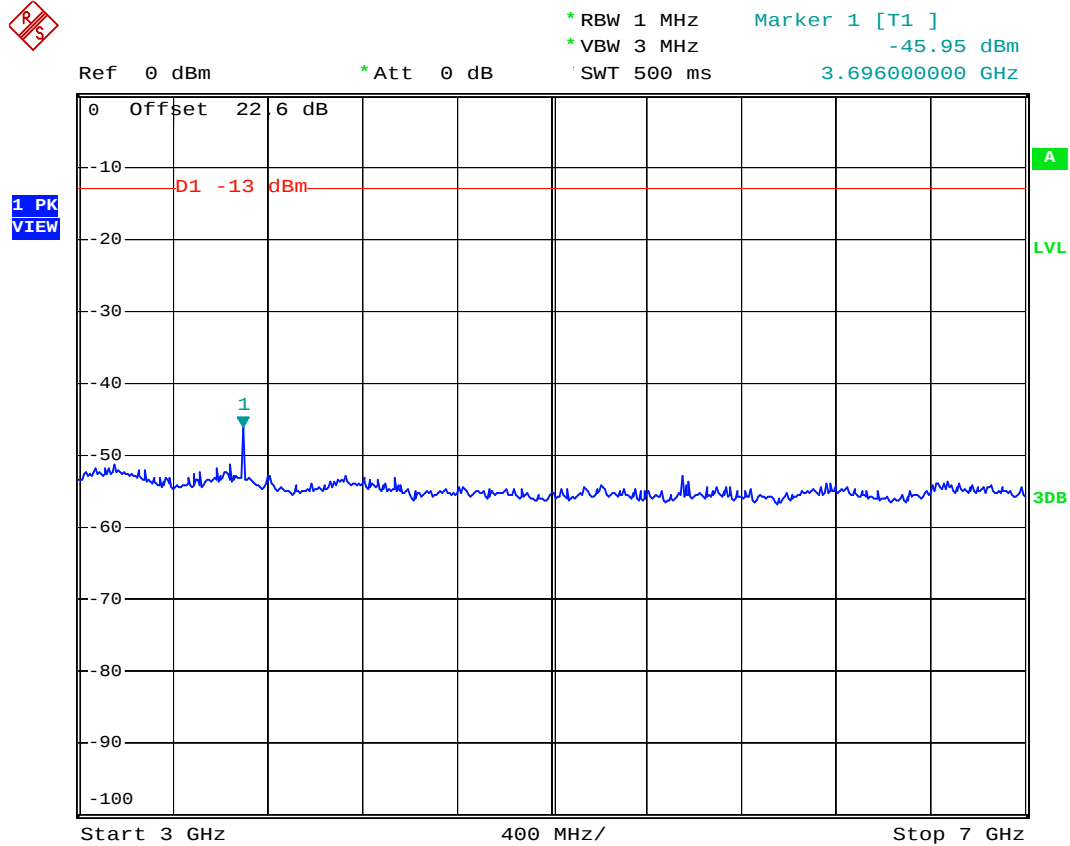
Date: 3.OCT.2007 21:40:09



FCC TEST REPORT

Report No. : FG790604A

- Test Mode : PCS1900 (GSM) CH661
- Frequency Range : 3G-7G



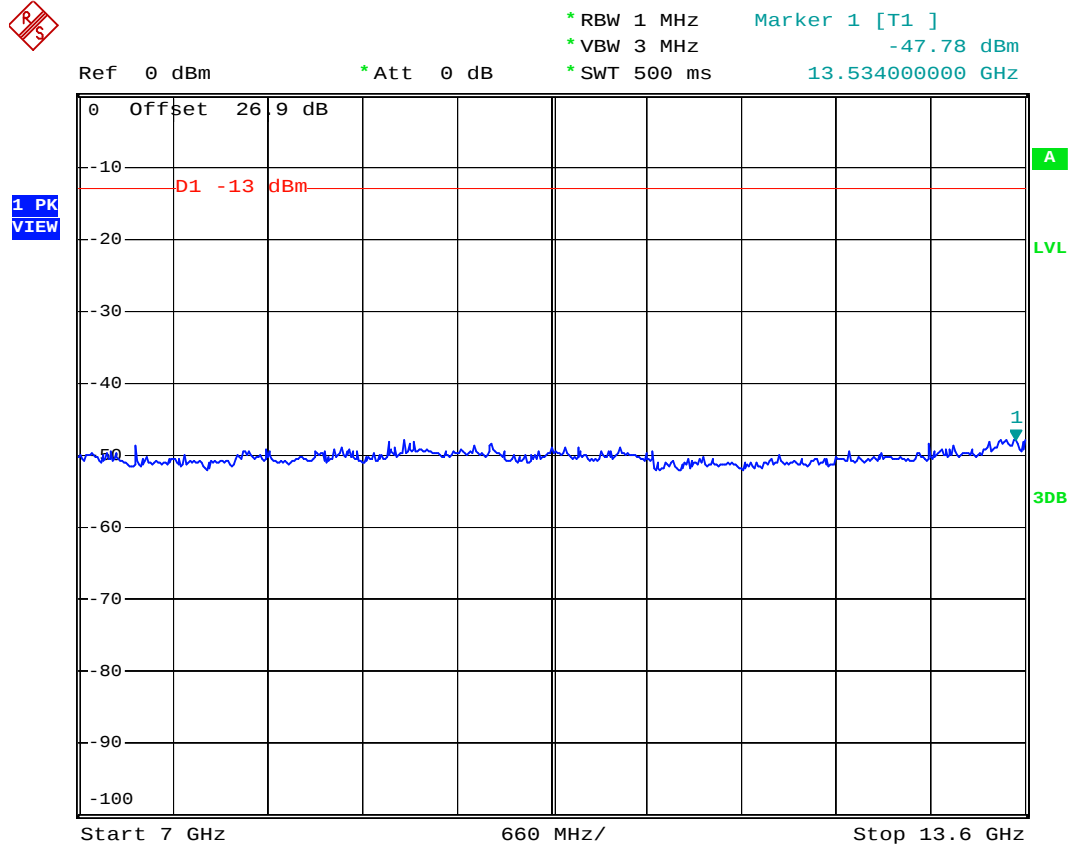
Date: 3.OCT.2007 08:55:42



FCC TEST REPORT

Report No. : FG790604A

- Test Mode : PCS1900 (GSM) CH661
- Frequency Range : 7G-13.6G



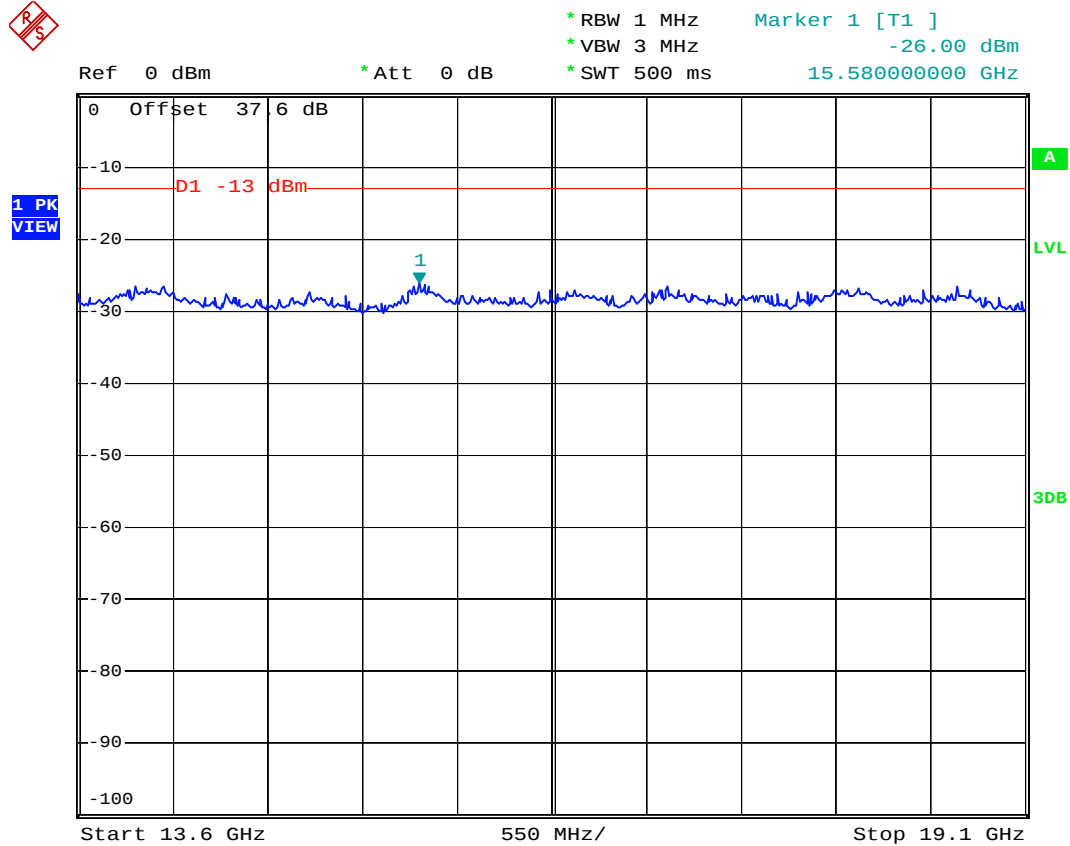
Date: 3.OCT.2007 08:59:36



FCC TEST REPORT

Report No. : FG790604A

- Test Mode : PCS1900 (GSM) CH661
- Frequency Range : 13.6G-19.1G



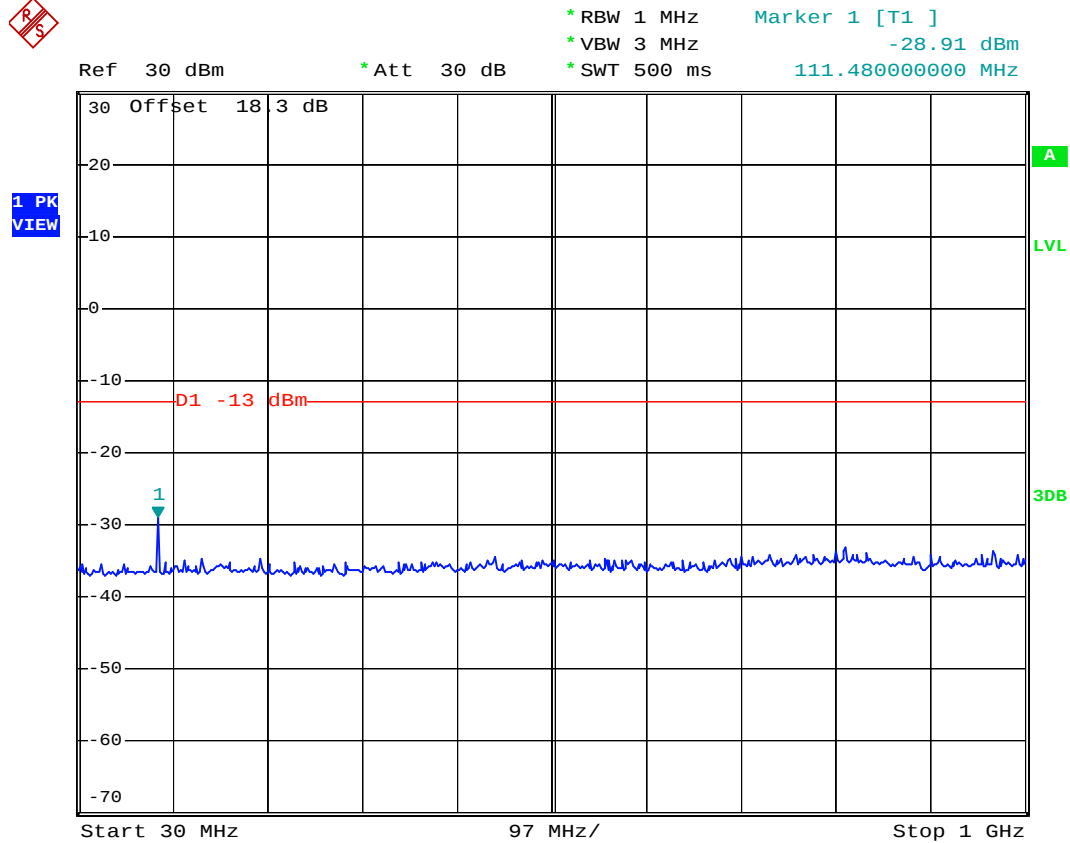
Date: 3.OCT.2007 09:00:49



FCC TEST REPORT

Report No. : FG790604A

- Mode 4
- Test Mode : PCS1900 (EDGE) CH661
- Frequency Range : 30M-1G



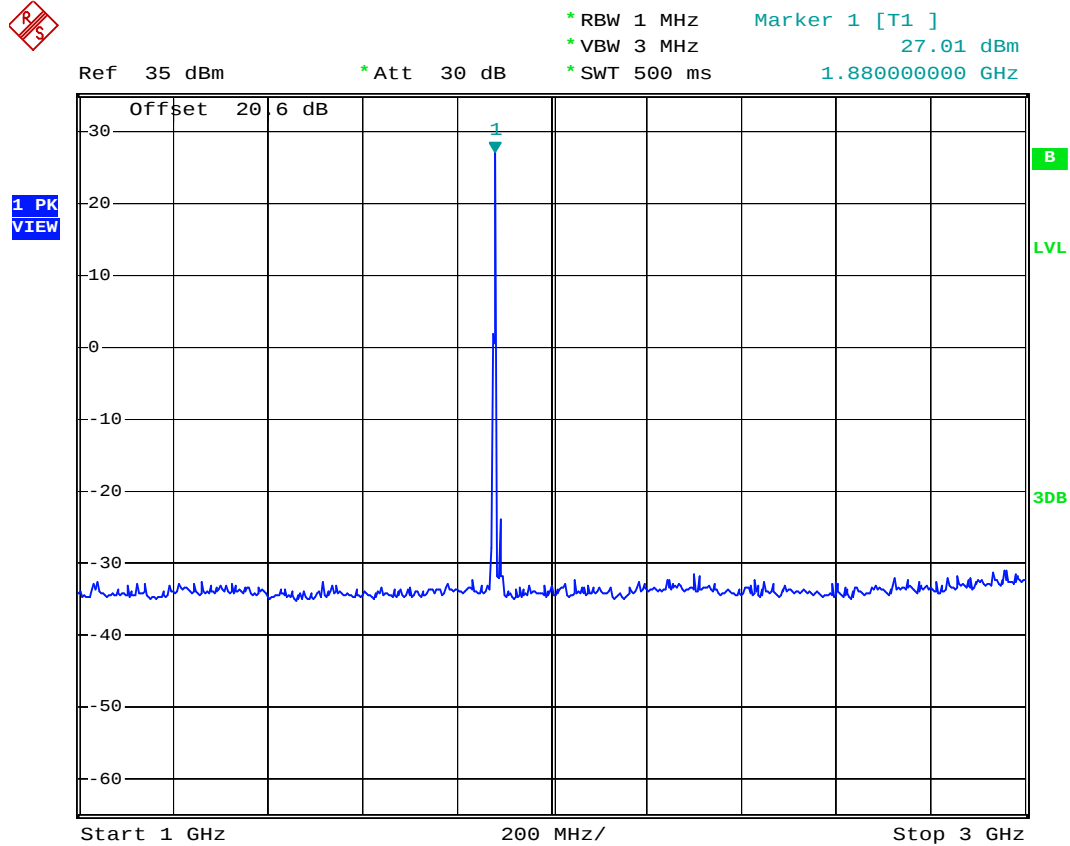
Date: 3.OCT.2007 08:42:06



FCC TEST REPORT

Report No. : FG790604A

- Test Mode : PCS1900 (EDGE) CH661
- Frequency Range : 1G-3G



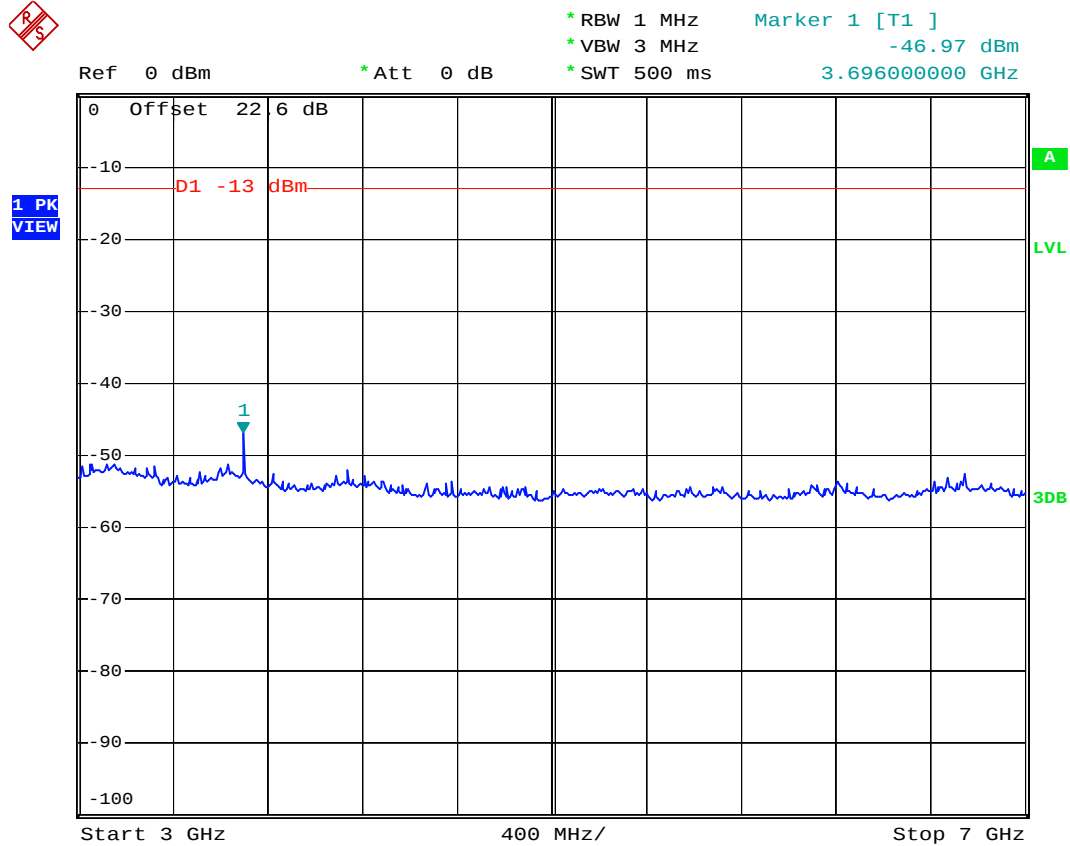
Date: 3.OCT.2007 21:48:33



FCC TEST REPORT

Report No. : FG790604A

- Test Mode : PCS1900 (EDGE) CH661
- Frequency Range : 3G-7G



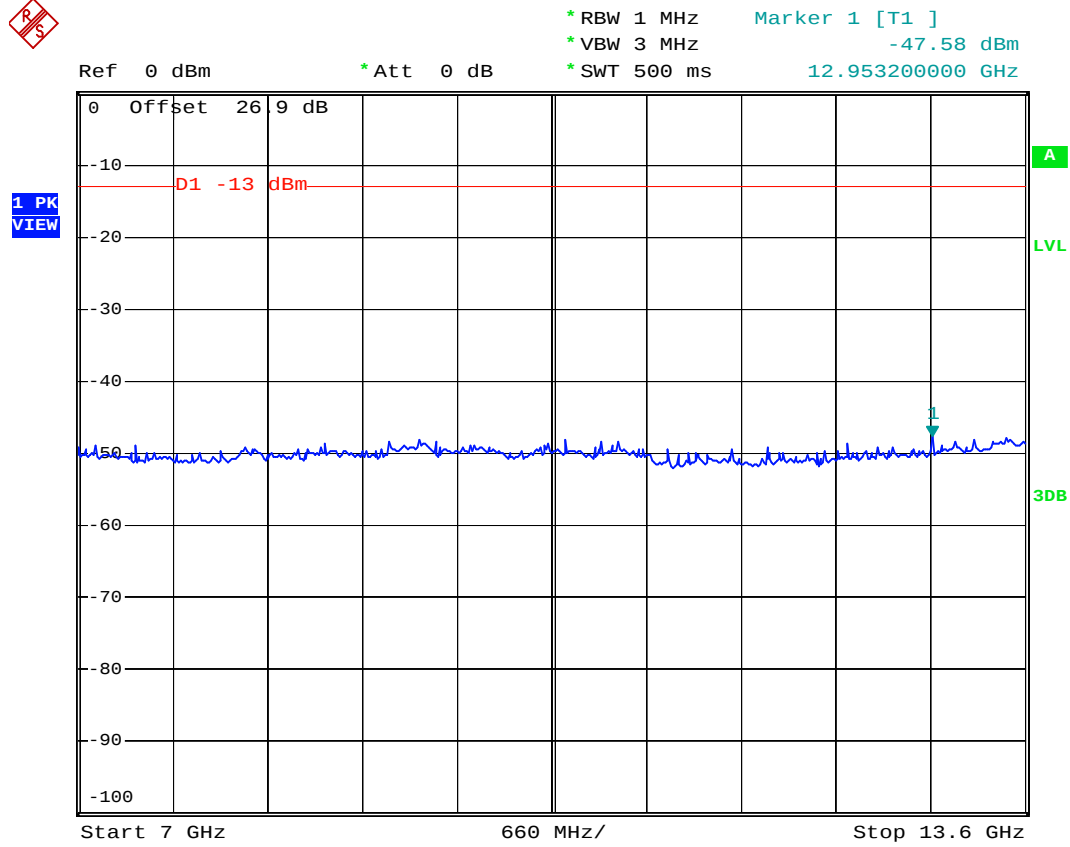
Date: 3.OCT.2007 08:56:47



FCC TEST REPORT

Report No. : FG790604A

- Test Mode : PCS1900 (EDGE) CH661
- Frequency Range : 7G-13.6G



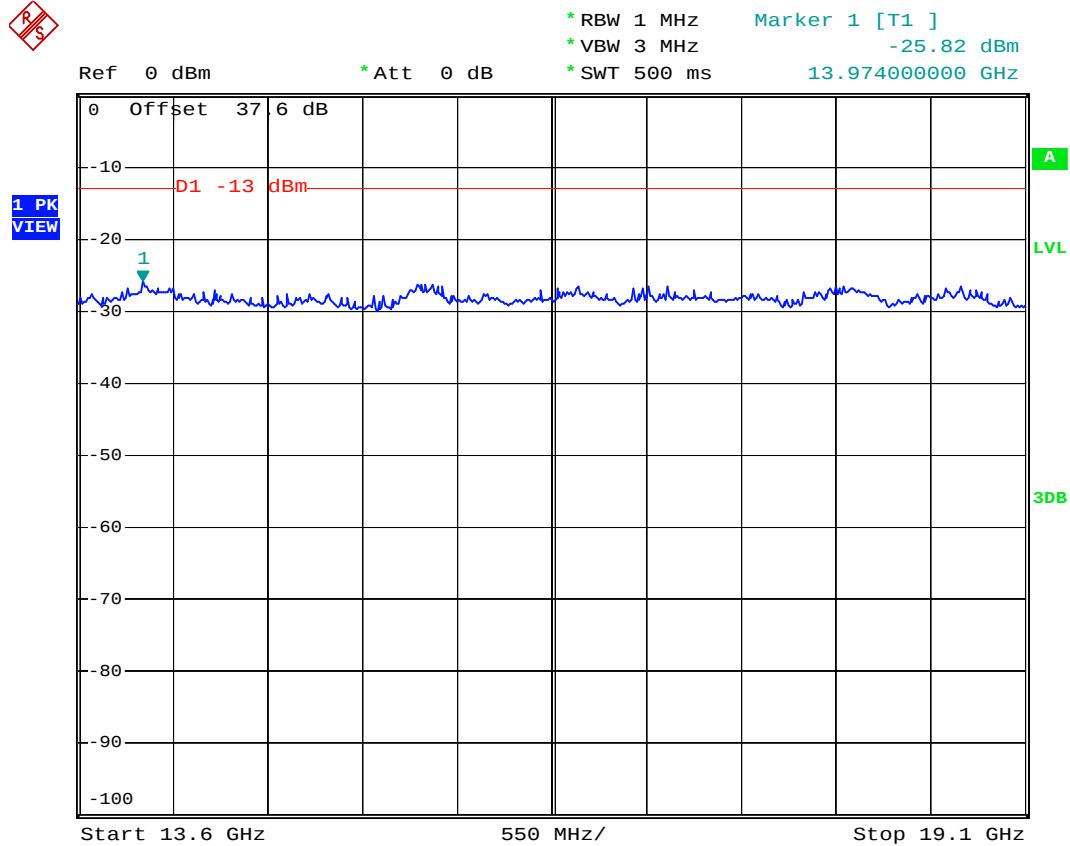
Date: 3.OCT.2007 08:58:50



FCC TEST REPORT

Report No. : FG790604A

- Test Mode : PCS1900 (EDGE) CH661
- Frequency Range : 13.6G-19.1G



Date: 3.OCT.2007 09:01:45

4.6 Field Strength of Spurious Radiation

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

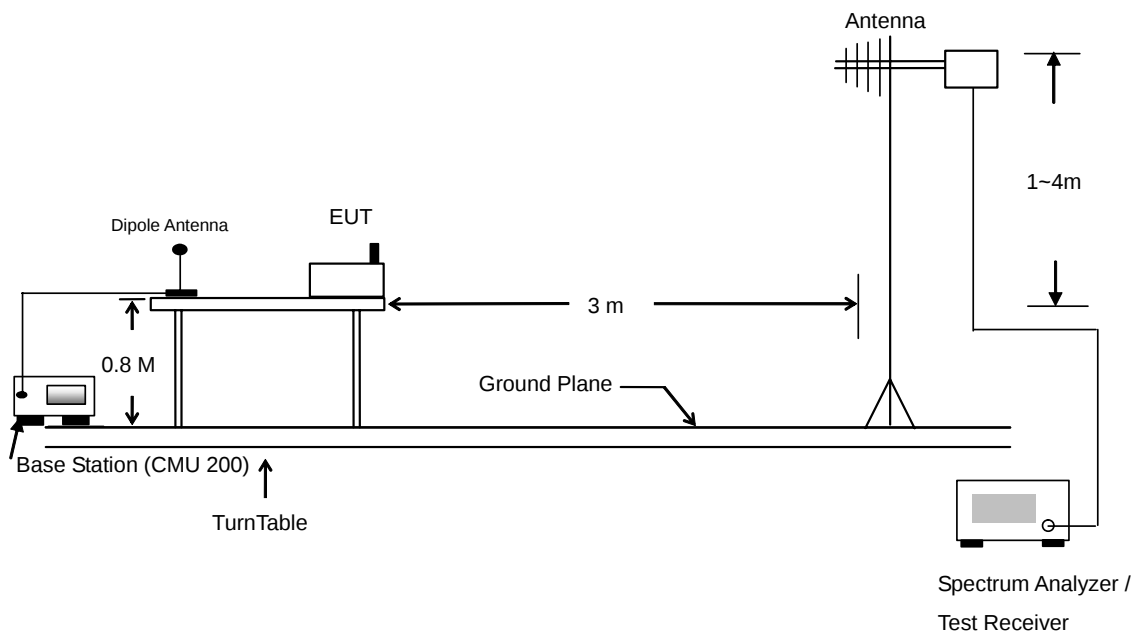
4.6.1 Measurement Instruments

As described in chapter 5 of this test report.

4.6.2 Test Procedure

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 reach the maximum spurious emission for both horizontal and vertical polarizations.
5. Taking the record of maximum spurious emission.
6. A Horn antenna was substituted in place of the EUT and was driven by a signal generator.
7. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
8. Taking the record of output power at antenna port.
9. Repeat step 7 to step 8 for another polarization.
10. Emission level (dBm) = output power + substitution Gain.

4.6.3 Test Setup Layout



**4.6.4 Test Result**

▪ Test Mode : Mode 1

GSM850 (GSM) Radiated Spurious ERP							
H Polarization				V Polarization			
Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)
34.590	-59.170	-13	-46.17	167.430	-62.660	-13	-49.66
68.880	-67.900	-13	-54.90	175.530	-63.520	-13	-50.52
165.540	-73.510	-13	-60.51	224.130	-65.380	-13	-52.38
673.800	-66.590	-13	-53.59	978.300	-63.390	-13	-50.39
1674.000	-30.340	-13	-17.34	1674.000	-22.280	-13	-9.28
2508.000	-36.860	-13	-23.86	2508.000	-32.030	-13	-19.03
3344.000	-46.000	-13	-33.00	3344.000	-43.460	-13	-30.46
4178.000	-45.240	-13	-32.24	4178.000	-41.290	-13	-28.29
5854.000	-35.950	-13	-22.95	5854.000	-35.600	-13	-22.60
6694.000	-41.820	-13	-28.82	6694.000	-43.890	-13	-30.89
6694.000	-41.820	-13	-28.82	6694.000	-43.890	-13	-30.89

▪ Test Mode : Mode 2

GSM850 (EDGE) Radiated Spurious ERP							
H Polarization				V Polarization			
Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)
33.240	-60.390	-13	-47.39	66.180	-70.110	-13	-57.11
67.530	-67.700	-13	-54.70	167.430	-62.600	-13	-49.60
227.640	-70.960	-13	-57.96	175.530	-63.180	-13	-50.18
1674.000	-32.450	-13	-19.45	320.300	-69.670	-13	-56.67
2508.000	-36.260	-13	-23.26	1674.000	-24.200	-13	-11.20
3348.000	-45.800	-13	-32.80	2508.000	-34.540	-13	-21.54
4184.000	-39.320	-13	-26.32	3348.000	-43.650	-13	-30.65
5858.000	-35.670	-13	-22.67	4184.000	-47.000	-13	-34.00
6694.000	-41.970	-13	-28.97	5858.000	-34.890	-13	-21.89
7534.000	-41.310	-13	-28.31	6694.000	-44.490	-13	-31.49
				7534.000	-43.560	-13	-30.56



- Test Mode : Mode 3

PCS1900 (GSM) Radiated Spurious EIRP							
H Polarization				V Polarization			
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)
33.780	-56.490	-13	-43.49	66.990	-67.940	-13	-54.94
71.580	-63.020	-13	-50.02	170.130	-59.780	-13	-46.78
130.440	-53.410	-13	-40.41	287.580	-65.510	-13	-52.51
455.400	-63.860	-13	-50.86	864.900	-61.690	-13	-48.69
714.400	-62.690	-13	-49.69	1958.000	-42.120	-13	-29.12
1958.000	-43.360	-13	-30.36	3758.000	-49.900	-13	-36.90
3758.000	-47.630	-13	-34.63	5638.000	-34.390	-13	-21.39
5638.000	-33.500	-13	-20.50	5638.000	-34.390	-13	-21.39
9398.000	-40.700	-13	-27.70				

- Test Mode : Mode 4

PCS1900 (EDGE) Radiated Spurious EIRP							
H Polarization				V Polarization			
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)
33.780	-57.950	-13	-44.95	170.130	-59.870	-13	-46.87
72.390	-62.320	-13	-49.32	221.430	-61.770	-13	-48.77
230.880	-71.090	-13	-58.09	226.290	-57.590	-13	-44.59
992.300	-63.940	-13	-50.94	988.800	-61.750	-13	-48.75
3758.000	-46.820	-13	-33.82	3758.000	-49.920	-13	-36.92
5638.000	-37.970	-13	-24.97	5638.000	-33.770	-13	-20.77
				9398.000	-41.600	-13	-28.60



▪ Test Mode : Mode 5

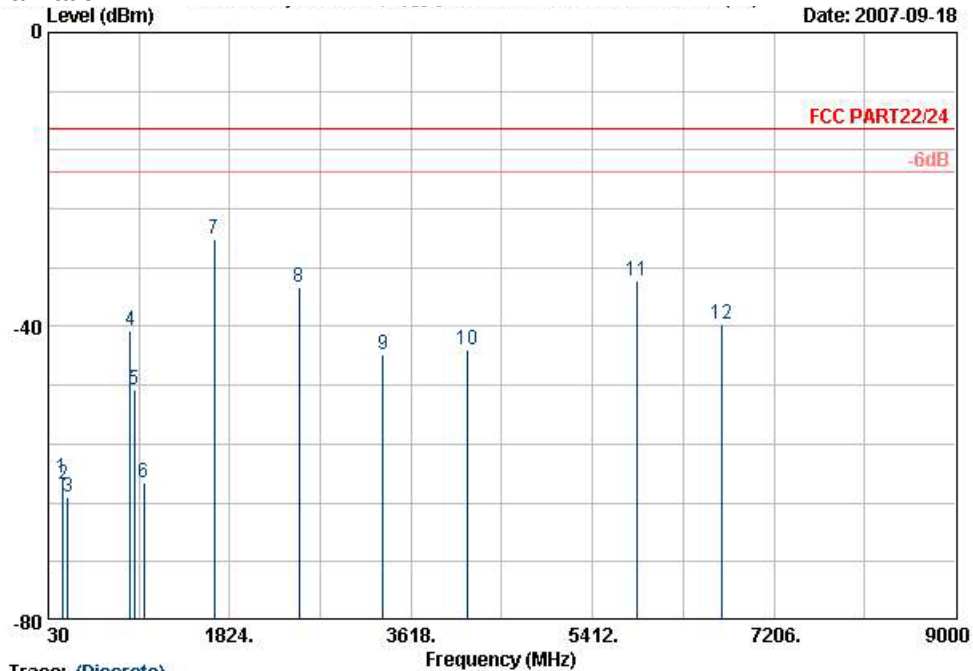
GSM850 (GSM) with Bluetooth Co-location Radiated Spurious ERP							
H Polarization				V Polarization			
Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)
30.000	-57.620	-13	-44.62	30.540	-55.750	-13	-42.75
99.930	-58.240	-13	-45.24	66.180	-54.330	-13	-41.33
221.430	-60.870	-13	-47.87	169.590	-56.790	-13	-43.79
1234.000	-49.940	-13	-36.94	1674.000	-29.610	-13	-16.61
1674.000	-35.800	-13	-22.80	2508.000	-34.870	-13	-21.87
2508.000	-37.820	-13	-24.82	3344.000	-43.350	-13	-30.35
3344.000	-44.560	-13	-31.56	4184.000	-42.800	-13	-29.80
4178.000	-39.050	-13	-26.05	4914.000	-35.630	-13	-22.63
4834.000	-32.460	-13	-19.46	5854.000	-45.620	-13	-32.62
5854.000	-44.470	-13	-31.47				



4.6.5 Test Data

4.6.5.1 Mode 1

Horizontal Polarization



Site : 09CH06-HY
 Condition : HF-SPURIOUS-060929 HORIZONTAL
 EUT : GSM/EDGE 850/900/1800/1900 Smart Phone
 (Class 10)
 Power : 120Vac/60Hz
 Model : FG 790604
 Mode : GSM 850 Link Mode;Ch189 + Adaptor
 Plane : + Earphone
 : E1

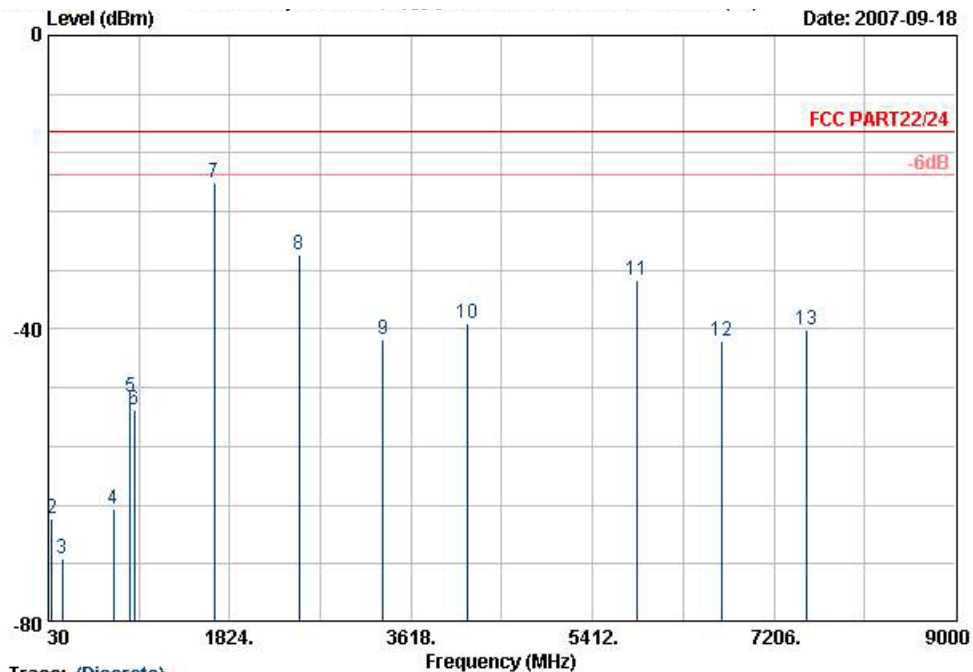
	Freq	Level	Over	Limit	Read		
	MHz	dBm	Limit	Line	Level	Factor	Remark
			dB	dBm	dBm	dB	
1	167.4	-60.51	-47.51	-13.00	-52.21	-8.30	Peak
2	175.5	-61.37	-48.37	-13.00	-53.00	-8.37	Peak
3	224.1	-63.23	-50.23	-13.00	-55.16	-8.07	Peak
4	840.4	-40.53			-41.92	1.39	Peak
5	880.3	-48.65			-50.36	1.71	Peak
6	978.3	-61.24	-48.24	-13.00	-63.73	2.49	Peak
7	1674.0	-28.19	-15.19	-13.00	-30.55	2.36	Peak
8	2508.0	-34.71	-21.71	-13.00	-41.40	6.69	Peak
9	3344.0	-43.85	-30.85	-13.00	-53.24	9.40	Peak
10	4178.0	-43.09	-30.09	-13.00	-55.07	11.98	Peak
11	5854.0	-33.80	-20.80	-13.00	-53.66	19.85	Peak
12	6694.0	-39.67	-26.67	-13.00	-59.85	20.19	Peak

Remark:

- #4: MS Signal
- #5: BS Signal



Vertical Polarization



Trace: (Discrete)

Site : 03CH06-HY
 Condition : HF-SPURIOUS-060929 VERTICAL
 EUT : GSM/EDGE 850/900/1800/1900 Smart Phone
 : (Class 10)
 Power : 120Wac/60Hz
 Model : FG 790604
 Mode : GSM 850 Link Mode; CH189 + Adaptor
 : + Earphone
 Plane : E1

	Freq	Level	Over	Limit	Read		
	MHz	dBm	Limit	Line	Level	Factor	Remark
			dB	dBm	dBm	dB	
1	34.6	-57.02	-44.02	-13.00	-54.34	-2.69	Peak
2	68.9	-65.75	-52.75	-13.00	-53.39	-12.36	Peak
3	165.5	-71.36	-58.36	-13.00	-58.36	-13.00	Peak
4	673.8	-64.44	-51.44	-13.00	-61.46	-2.98	Peak
5	840.4	-49.30			-47.99	-1.31	Peak
6	880.3	-51.01			-50.10	-0.91	Peak
7 @	1674.0	-20.13	-7.13	-13.00	-22.29	2.16	Peak
8	2508.0	-29.88	-16.88	-13.00	-37.06	7.18	Peak
9	3344.0	-41.31	-28.31	-13.00	-49.86	8.55	Peak
10	4178.0	-39.14	-26.14	-13.00	-50.49	11.36	Peak
11	5854.0	-33.45	-20.45	-13.00	-51.94	18.49	Peak
12	6694.0	-41.74	-28.74	-13.00	-60.42	18.68	Peak
13	7528.0	-40.01	-27.01	-13.00	-59.52	19.51	Peak

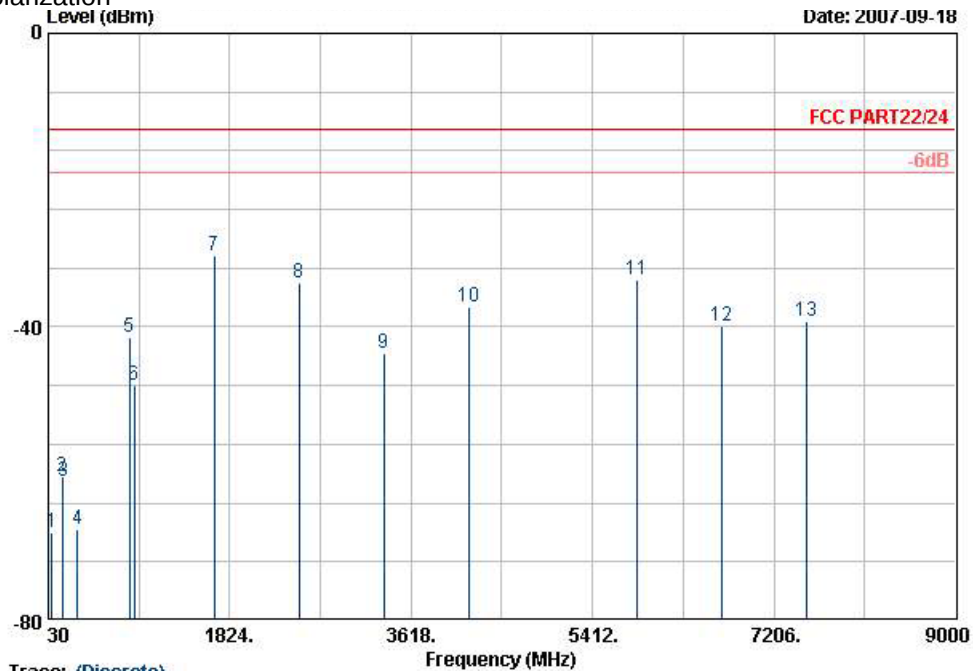
Remark:

- #5: MS Signal
- #6: BS Signal
- There is no more obvious emission except the listings above.



4.6.5.2 Mode 2

Horizontal Polarization



Trace: (Discrete)

Site : 08CH06-HY
 Condition : HP-SFURIOUS-060929 HORIZONTAL
 EUT : GSM/EDGE 850/900/1800/1900 Smart Phone
 : (Class 10)
 Power : 120Vac/60Hz
 Model : FG 790604
 Mode : EDGE Link Mode; Ch189 + Adaptor
 : + Earphone
 Plane : E1

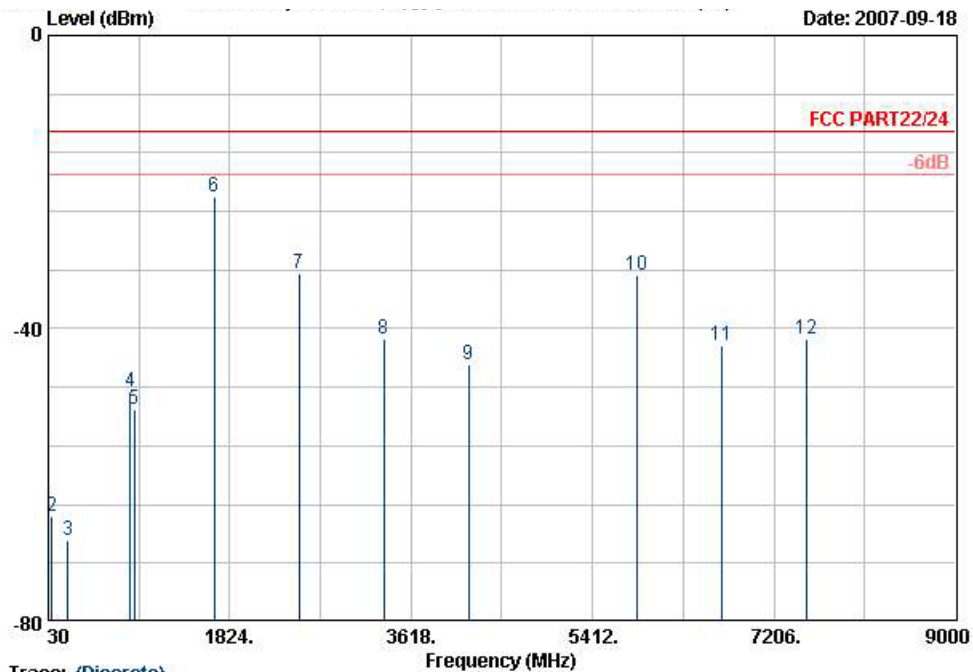
	Freq	Level	Over	Limit	Read		
	MHz	dBm	Limit	Line	Level	Factor	Remark
	MHz	dBm	dB	dBm	dBm	dB	
1	66.2	-67.96	-54.96	-13.00	-55.38	-12.58	Peak
2	167.4	-60.45	-47.45	-13.00	-52.15	-8.30	Peak
3	175.5	-61.03	-48.03	-13.00	-52.66	-8.37	Peak
4	320.3	-67.52	-54.52	-13.00	-61.50	-6.03	Peak
5	831.3	-41.37			-42.68	1.32	Peak
6	880.3	-48.05			-49.76	1.71	Peak
7	1674.0	-30.30	-17.30	-13.00	-32.65	2.36	Peak
8	2508.0	-34.11	-21.11	-13.00	-40.79	6.69	Peak
9	3348.0	-43.65	-30.65	-13.00	-53.04	9.40	Peak
10	4184.0	-37.17	-24.17	-13.00	-49.15	11.98	Peak
11	5858.0	-33.52	-20.52	-13.00	-53.37	19.85	Peak
12	6694.0	-39.82	-26.82	-13.00	-60.01	20.19	Peak
13	7534.0	-39.16	-26.16	-13.00	-60.47	21.31	Peak

Remark:

- #5: MS Signal
- #6: BS Signal



Vertical Polarization



Site : 03CH06-HY
 Condition : HF-SPURIOUS-060929 VERTICAL
 EUT : GSM/EDGE 850/900/1800/1900 Smart Phone
 (Class 10)
 Power : 120Wac/60Hz
 Model : FG 790604
 Mode : EDGE Link Mode;Ch189 + Adaptor
 : + Earphone
 Plane : E1

	Freq	Level	Over	Limit	Read		
	MHz	dBm	Limit	Line	Level	Factor	Remark
			dB	dBm	dBm	dB	
1	33.2	-58.24	-45.24	-13.00	-56.77	-1.47	Peak
2	67.5	-65.55	-52.55	-13.00	-53.19	-12.36	Peak
3	227.6	-68.81	-55.81	-13.00	-56.39	-12.42	Peak
4	840.4	-48.61			-47.30	-1.31	Peak
5	880.3	-50.95			-50.04	-0.91	Peak
6 @	1674.0	-22.05	-9.05	-13.00	-24.21	2.16	Peak
7	2508.0	-32.39	-19.39	-13.00	-39.57	7.18	Peak
8	3348.0	-41.50	-28.50	-13.00	-50.05	8.55	Peak
9	4184.0	-44.85	-31.85	-13.00	-56.20	11.36	Peak
10	5858.0	-32.74	-19.74	-13.00	-51.22	18.49	Peak
11	6694.0	-42.34	-29.34	-13.00	-61.03	18.68	Peak
12	7534.0	-41.41	-28.41	-13.00	-60.92	19.51	Peak

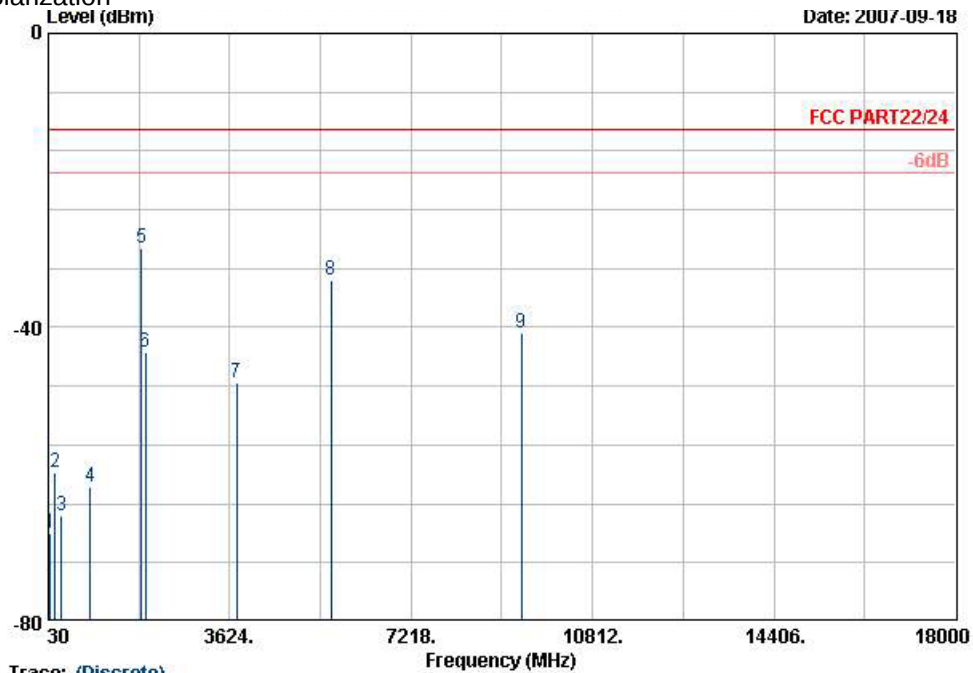
Remark:

- #4: MS Signal
- #5: BS Signal
- There is no more obvious emission except the listings above.



4.6.5.3 Mode 3

Horizontal Polarization



Site : 09CH06-HY
 Condition : HP-SPURIOUS-060929 HORIZONTAL
 EUT : GSM/EDGE 850/900/1800/1900 Smart Phone
 : (Class 10)
 Power : 120Vac/60Hz
 Model : FG 790604
 Mode : PCS1900 Link Mode;Ch661 + Adaptor
 : + Earphone
 Plane : E1

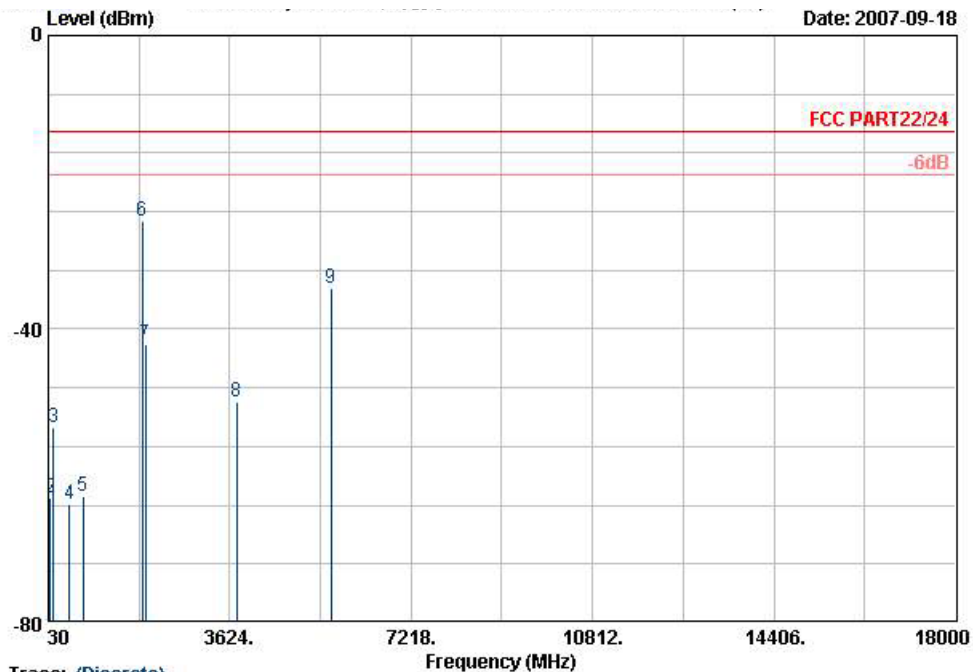
	Freq	Level	Over	Limit	Read		
	MHz	dBm	Limit	Line	Level	Factor	Remark
			dB	dBm	dBm	dB	
1	67.0	-67.94	-54.94	-13.00	-55.49	-12.44	Peak
2	170.1	-59.78	-46.78	-13.00	-51.46	-8.32	Peak
3	287.6	-65.51	-52.51	-13.00	-58.81	-6.71	Peak
4	864.9	-61.69	-48.69	-13.00	-63.28	1.59	Peak
5	1884.0	-29.32			-33.22	3.90	Peak
6	1958.0	-43.36			-47.78	4.41	Peak
7	3758.0	-47.63	-34.63	-13.00	-58.03	10.41	Peak
8	5638.0	-33.50	-20.50	-13.00	-51.95	18.45	Peak
9	9398.0	-40.70	-27.70	-13.00	-62.11	21.40	Peak

Remark:

- #5: MS Signal
- #6: BS Signal



Vertical Polarization



Site : 03CH06-HY
 Condition : HF-SPURIOUS-060929 VERTICAL
 EUT : GSM/EDGE 850/900/1800/1900 Smart Phone
 : (Class 10)
 Power : 120Vac/60Hz
 Model : FG 790604
 Mode : PCS1900 Link Mode;Ch661 + Adaptor
 : + Earphone
 Plane : E1

	Freq	Level	Over	Limit	Read		
	MHz	dBm	Limit	Line	Level	Factor	Remark
			dB	dBm	dBm	dB	
1	33.8	-56.49	-43.49	-13.00	-54.41	-2.08	Peak
2	71.6	-63.02	-50.02	-13.00	-50.67	-12.35	Peak
3	130.4	-53.41	-40.41	-13.00	-40.81	-12.60	Peak
4	455.4	-63.86	-50.86	-13.00	-58.14	-5.73	Peak
5	714.4	-62.69	-49.69	-13.00	-60.12	-2.57	Peak
6 @	1888.0	-25.33			-29.62	4.29	Peak
7	1958.0	-42.12			-47.13	5.01	Peak
8	3758.0	-49.90	-36.90	-13.00	-59.79	9.89	Peak
9	5638.0	-34.39	-21.39	-13.00	-51.36	16.97	Peak

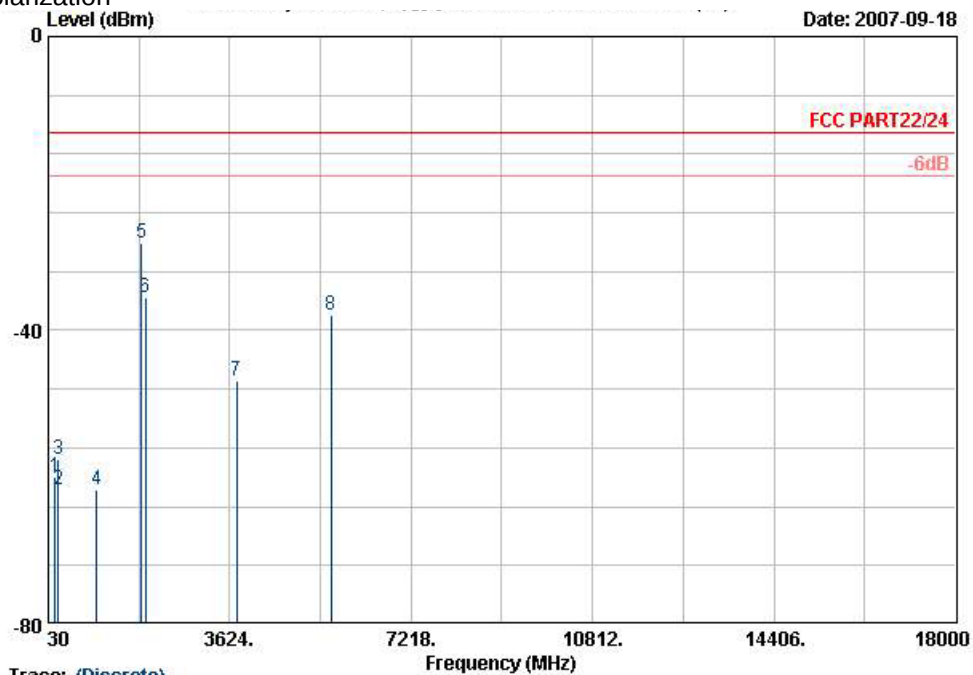
Remark:

- #6: MS Signal
- #7: BS Signal
- There is no more obvious emission except the listings above.



4.6.5.4 Mode 4

Horizontal Polarization



Trace: (Discrete)

Site : 03CH06-HY
 Condition : HF-SPURIOUS-060929 HORIZONTAL
 EUT : GSM/EDGE 850/900/1800/1900 Smart Phone
 : (Class 10)
 Power : 120Vac/60Hz
 Model : FG 790604
 Mode : EDGE Link Mode; CM661 + Adaptor
 : + Earphone
 Plane : E1

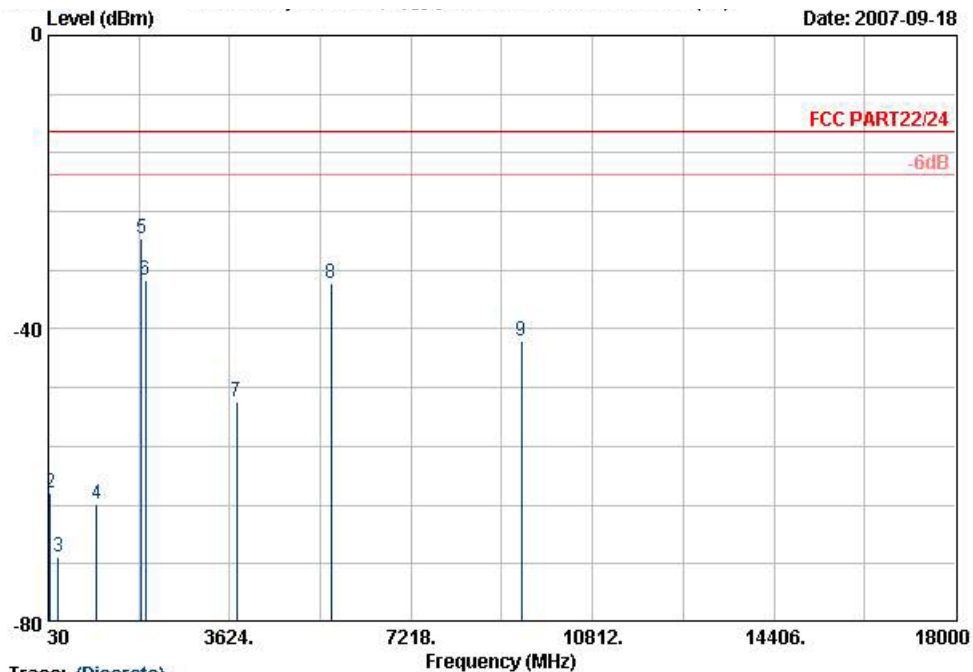
	Freq	Level	Over	Limit	Read		
	MHz	dBm	Limit	Line	Level	Factor	Remark
			dB	dBm	dBm	dB	
1	170.1	-59.87	-46.87	-13.00	-51.55	-8.32	Peak
2	221.4	-61.77	-48.77	-13.00	-53.64	-8.14	Peak
3	226.3	-57.59	-44.59	-13.00	-49.55	-8.03	Peak
4	988.8	-61.75	-48.75	-13.00	-64.31	2.57	Peak
5	1884.0	-28.03			-31.93	3.90	Peak
6	1958.0	-35.49			-39.90	4.41	Peak
7	3758.0	-46.82	-33.82	-13.00	-57.22	10.41	Peak
8	5638.0	-37.97	-24.97	-13.00	-56.42	18.45	Peak

Remark:

1. #5: MS Signal
2. #6: BS Signal



Vertical Polarization



Trace: (Discrete)

Site : 03CH06-HY
 Condition : HF-SPURIOUS-060929 VERTICAL
 EUT : GSM/EDGE 850/900/1800/1900 Smart Phone
 : (Class 10)
 Power : 120Vac/60Hz
 Model : FG 790604
 Mode : EDGE Link Mode, Ch661 + Adaptor
 : + Earphone
 Plane : E1

	Freq	Level	Over	Limit	Read		
	MHz	dBm	Limit	Line	Level	Factor	Remark
			dB	dBm	dBm	dB	
1	33.8	-57.95	-44.95	-13.00	-55.88	-2.08	Peak
2	72.4	-62.32	-49.32	-13.00	-49.98	-12.34	Peak
3	230.9	-71.09	-58.09	-13.00	-58.77	-12.32	Peak
4	992.3	-63.94	-50.94	-13.00	-64.10	0.17	Peak
5 @	1884.0	-27.62			-31.91	4.29	Peak
6	1958.0	-33.45			-38.45	5.01	Peak
7	3758.0	-49.92	-36.92	-13.00	-59.81	9.89	Peak
8	5638.0	-33.77	-20.77	-13.00	-50.74	16.97	Peak
9	9398.0	-41.60	-28.60	-13.00	-61.49	19.89	Peak

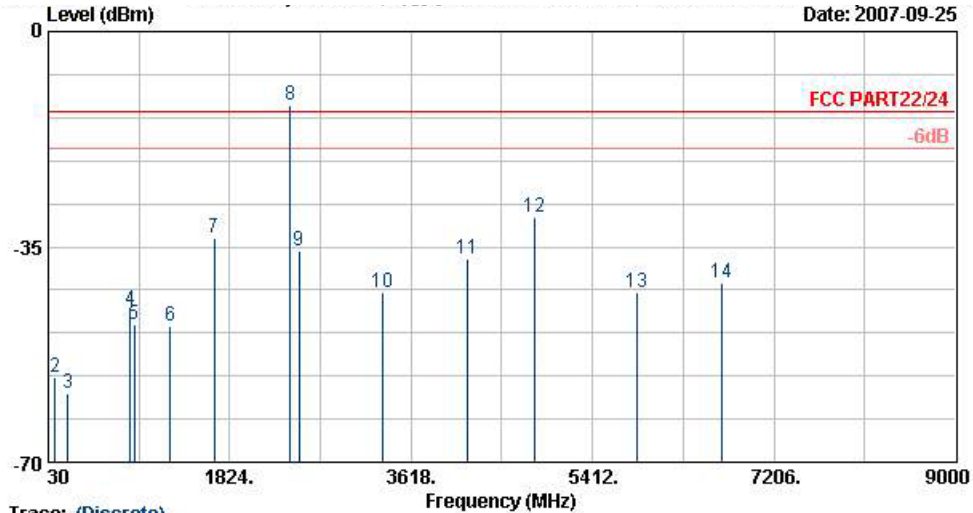
Remark:

- #5: MS Signal
- #6: BS Signal
- There is no more obvious emission except the listings above.



4.6.5.5 Mode 5

Horizontal Polarization



Site : 08CH06-HY
Condition : HF-SPURIOUS-060929 HORIZONTAL
EUT : GSM/EDGE 850/900/1800/1900 Smart Phone
(Class 10)
Power : 120Vac/60Hz
Model : FG 790604
Mode : GSM 850 Link Mode;Ch189 + BT Link
+ Earphone + Adaptor
Plane : EI

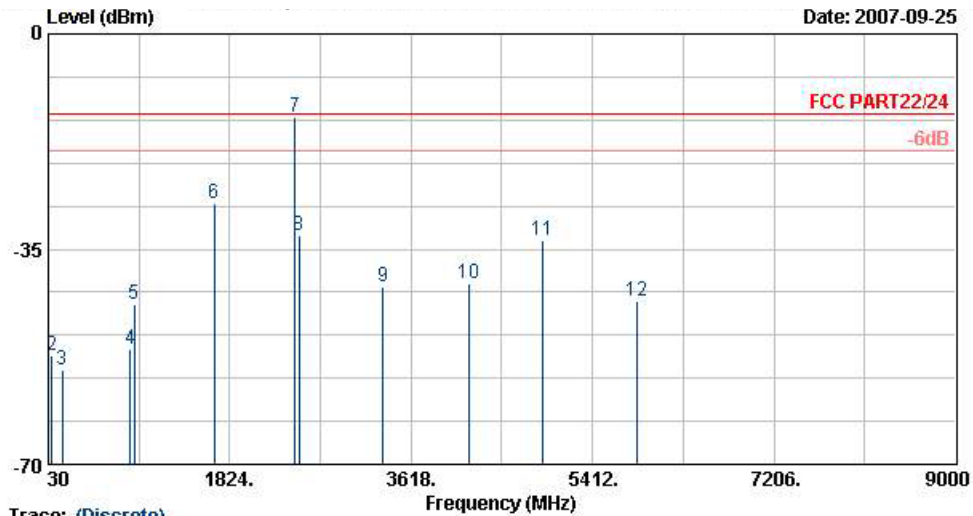
	Freq	Level	Over	Limit	Read			
	MHz	dBm	Limit	Line	Level	Factor	Remark	Pol/Phase
	MHz	dBm	dB	dBm	dBm	dB		
1	30.0	-55.47	-42.47	-13.00	-55.83	0.36	Peak	HORIZONTAL
2	99.9	-56.09	-43.09	-13.00	-43.85	-12.24	Peak	HORIZONTAL
3	221.4	-58.72	-45.72	-13.00	-46.07	-12.65	Peak	HORIZONTAL
4	840.4	-45.24			-43.93	-1.31	Peak	HORIZONTAL
5	880.3	-47.60			-46.68	-0.91	Peak	HORIZONTAL
6	1234.0	-47.79	-34.79	-13.00	-46.82	-0.97	Peak	HORIZONTAL
7	1674.0	-33.65	-20.65	-13.00	-36.01	2.36	Peak	HORIZONTAL
8 @	2424.0	-11.88			-18.26	6.38	Peak	HORIZONTAL
9	2508.0	-35.67	-22.67	-13.00	-42.36	6.69	Peak	HORIZONTAL
10	3344.0	-42.41	-29.41	-13.00	-51.81	9.40	Peak	HORIZONTAL
11	4178.0	-36.90	-23.90	-13.00	-48.88	11.98	Peak	HORIZONTAL
12	4834.0	-30.31	-17.31	-13.00	-45.66	15.35	Peak	HORIZONTAL
13	5854.0	-42.32	-29.32	-13.00	-62.17	19.85	Peak	HORIZONTAL
14	6688.0	-40.90	-27.90	-13.00	-61.09	20.19	Peak	HORIZONTAL

Remark:

1. #4: MS Signal
2. #5: BS Signal
3. #8: BT Signal



Vertical Polarization



Site : 08CH06-HY
 Condition : HF-SPURIOUS-060929 VERTICAL
 EUT : GSM/EDGE 850/900/1800/1900 Smart Phone
 : (Class 10)
 Power : 120V_{ac}/60Hz
 Model : FG 790604
 Mode : GSM 850 Link Mode; CH189 + BT Link
 : + Earphone + Adaptor
 Plane : E1

	Freq	Level	Over	Limit	Read			
	MHz	dBm	Limit	Line	Level	Factor	Remark	Pol/Phase
			dB	dBm	dBm	dB		
1	30.5	-53.60	-40.60	-13.00	-44.26	-9.34	Peak	VERTICAL
2	66.2	-52.18	-39.18	-13.00	-39.60	-12.58	Peak	VERTICAL
3	169.6	-54.64	-41.64	-13.00	-46.32	-8.32	Peak	VERTICAL
4	840.4	-51.33			-52.71	1.39	Peak	VERTICAL
5	880.3	-44.09			-45.80	1.71	Peak	VERTICAL
6	1674.0	-27.46	-14.46	-13.00	-29.62	2.16	Peak	VERTICAL
7 @	2474.0	-13.59			-20.70	7.11	Peak	VERTICAL
8	2508.0	-32.72	-19.72	-13.00	-39.90	7.18	Peak	VERTICAL
9	3344.0	-41.20	-28.20	-13.00	-49.74	8.55	Peak	VERTICAL
10	4184.0	-40.65	-27.65	-13.00	-52.00	11.36	Peak	VERTICAL
11	4914.0	-33.48	-20.48	-13.00	-47.78	14.31	Peak	VERTICAL
12	5854.0	-43.47	-30.47	-13.00	-61.96	18.49	Peak	VERTICAL

Remark:

- #4: MS Signal
- #5: BS Signal
- #7: BT Signal
- There is no more obvious emission except the listings above.

4.7 Frequency Stability (Temperature Variation)

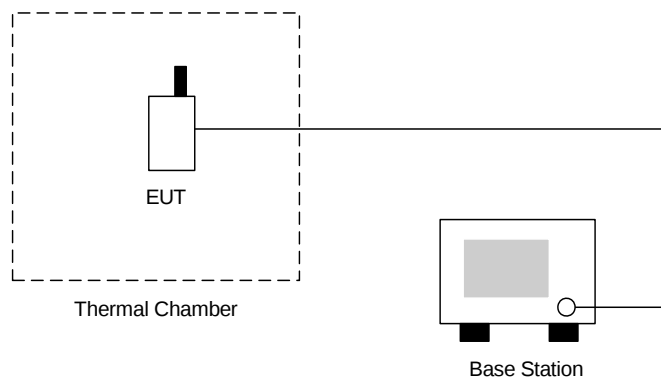
4.7.1 Measurement Instrument

As described in chapter 5 of this test report.

4.7.2 Test Procedure

1. The EUT and test equipment were set up as shown on the following section.
2. 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 noted within one minute.
3. 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 was noted within one minute.
4. The temperature tests were performed for the worst case.
5. Test data was recorded.

4.7.3 Test Setup Layout



**4.7.4 Test Result**

- Test Mode : GSM850 (GSM) CH189

Temperature(°C)	Change (Hz)	Change (ppm)	Limit (ppm)	Result
-30	-57	-0.03	2.5	Passed
-20	-43	-0.05		
-10	58	0.07		
0	36	0.04		
10	44	0.05		
20	71	0.08		
30	-50	-0.06		
40	-61	-0.07		
50	-53	-0.06		

- Test Mode : GSM850 (EDGE) CH189

Temperature(°C)	Change (Hz)	Change (ppm)	Limit (ppm)	Result
-30	-37	-0.02	2.5	Passed
-20	45	0.05		
-10	49	0.06		
0	-28	-0.03		
10	-41	-0.05		
20	37	0.04		
30	-79	-0.09		
40	64	0.08		
50	-43	-0.05		

- Test Mode : PCS1900 (GSM) CH661

Temperature(°C)	Change (Hz)	Change (ppm)	Limit (ppm)	Result
-30	-67	-0.04	2.5	Passed
-20	-72	-0.04		
-10	64	0.03		
0	-77	-0.04		
10	70	0.04		
20	86	0.05		
30	-79	-0.04		
40	68	0.04		
50	-105	-0.06		



▪ Test Mode : PCS1900 (EDGE) CH661

Temperature(℃)	Change (Hz)	Change (ppm)	Limit (ppm)	Result
-30	-72	-0.04	2.5	Passed
-20	85	0.04		
-10	-69	-0.04		
0	71	0.04		
10	59	0.03		
20	-72	-0.04		
30	-47	-0.02		
40	-53	-0.03		
50	-96	-0.05		

4.8 Frequency Stability (Voltage Variation)

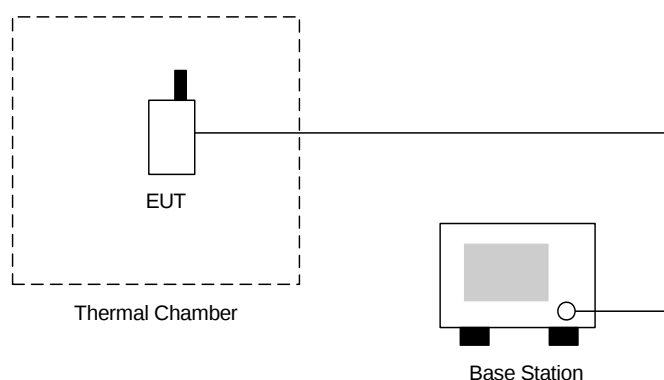
4.8.1 Measurement Instrument

As described in chapter 5 of this test report.

4.8.2 Test Procedure

1. The EUT was placed in a temperature chamber at $25 \pm 5^{\circ}\text{C}$ and connected as the following section.
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.

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	-50.0	-0.06	2.5	Passed
BEP	-49.0	-0.06		
4.2	-42.0	-0.05		

- Test Mode : GSM850 (EDGE) CH189

Voltage(Volt)	Change (Hz)	Change (ppm)	Limit (ppm)	Result
3.7	33.0	0.04	2.5	Passed
BEP	-51.0	-0.06		
4.2	-28.0	-0.03		



- Test Mode : PCS1900 (GSM) CH661

Voltage(Volt)	Change (Hz)	Change (ppm)	Limit (ppm)	Result
3.7	109.0	0.06	2.5	Passed
BEP	-88.0	-0.05		
4.2	-78.0	-0.04		

- Test Mode : PCS1900 (EDGE) CH661

Voltage(Volt)	Change (Hz)	Change (ppm)	Limit (ppm)	Result
3.7	-54.0	-0.03	2.5	Passed
BEP	-86.0	-0.05		
4.2	68.0	0.04		

Remark:

1. Normal Voltage=3.7V.
2. Battery End Point (BEP)= 3.3 V.



5. List of Measurement Equipments

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Due Date	Remark
Spectrum Analyzer	Agilent	E4408B	MY44211028	9KHz-26.5GHz	Oct. 17, 2007	Oct. 16, 2008	Radiation (03CH06-HY)
EMI Test Receiver	R&S	ESCS30	100356	9KHz-2.75GHz	Jul. 26, 200	Jul. 25, 2008	Radiation (03CH06-HY)
Bilog Antenna	SCHAFFNER	CBL6112B	2885	30MHz -2GHz	Nov. 20, 2006	Nov. 19, 2007	Radiation (03CH06-HY)
Double Ridge Horn Antenna	Com-Power	AH118	071025	1G~18G	Jun. 04, 2007	Jun. 03, 2008	Radiation (03CH06-HY)
SHF-EHF Horn	SCHWARZBECK	BBHA 9170	9170-249	14G - 40G	Nov. 20, 2006	Nov. 19, 2008	Radiation (03CH06-HY)
Pre Amplifier	Agilent	8449B	3008A01917	1G - 26.5G	Nov. 15, 2006	Nov. 14, 2007	Radiation (03CH06-HY)
Pre Amplifier	Mini Circuits	ZKL-2	D092004-1	10~2500MHz	Nov. 15, 2006	Nov. 14, 2007	Radiation (03CH06-HY)
Base Station Simulator	R & S	CMU200	106656	WCDMA	Nov. 20, 2006	Nov. 19, 2007	Radiation (03CH06-HY)
Thermal Chamber	Tenyi technology	TTH-D35P	TBN-930701	N/A	Aug. 02, 2007	Aug. 01, 2008	Conduction (TH02-HY)
Spectrum	R&S	FSP40	100055	9KHz~40GHz	Jun. 25, 2007	Jun. 24, 2008	Conduction (TH02-HY)
Bluetooth Test	ANRITSU	MT8852A	6K00003939	N/A	N/A	N/A	Conduction (TH02-HY)
Power Divider	ARRA	5200-1	3871	N/A	Oct. 01, 2007	Sep. 30, 2008	Conduction (TH02-HY)
DC Power Supply	TOPWARD	3303D	740889	N/A	May 25, 2007	May 24, 2009	Conduction (TH02-HY)
Power Meter	Agilent	E4416A	GB41292344	N/A	Feb. 08, 2007	Feb. 07, 2008	Conduction (TH02-HY)
Power Sensor	Agilent	E9327A	US40441548	N/A	Feb. 08, 2007	Feb. 07, 2008	Conduction (TH02-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		$u(x_i)$	C_i	$C_i * u(x_i)$
	dB	Probability Distribution			
Receiver reading	±0.10	Normal(k=1)	0.10	1	0.10
Antenna factor calibration	±1.70	Normal(k=2)	0.85	1	0.85
Cable loss calibration	±0.50	Normal(k=2)	0.25	1	0.25
Receiver Correction	±2.00	Rectangular	1.15	1	1.15
Antenna Factor Directional	±1.50	Rectangular	0.87	1	0.87
Site imperfection	±2.80	Triangular	1.14	1	1.14
Mismatch Receiver VSWR $\Gamma_1 = 0.197$ Antenna VSWR $\Gamma_2 = 0.194$ Uncertainty = $20 \log(1 - \Gamma_1 \Gamma_2)$	+0.34/-0.35	U-shaped	0.244	1	0.244
Combined standard uncertainty Uc(y)	2.36				
Measuring uncertainty for a level of confidence of 95% U=2Uc(y)	4.72				

END OF TEST REPORT