



# FCC Test Report

for

## 47 CFR Part 22H, 24E

**Equipment** : Express  
**Trade Name** : Dash  
**Model No.** : HXD8  
**FCC ID** : EUNHXD8V2  
**Tx Frequency Range** : GSM850 : 824.2~848.8 MHz  
PCS1900 : 1850.2~1909.8 MHz  
**Max. ERP/EIRP Power** : GSM850 : 0.72 W  
PCS1900 : 0.92 W  
**Emission Designator** : 300KGXW  
**Applicant** : **FIC (First International Computer, Inc.)**  
No. 300, Yang Guang St., NeiHu, Taipei 114, Taiwan,  
R.O.C.

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- The data shown in this test report were carried out on Sep. 27, 2007 at **Sporton International Inc. LAB.**
- Report No.: FG791006, Report Version: Rev. 01.

Jones Tsai  
Manager

### **SPORTON International Inc.**

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



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## 1. General Information

### 1.2 Applicant

**FIC (First International Computer, Inc.)**

No. 300, Yang Guang St., NeiHu, Taipei 114, Taiwan, R.O.C.

### 1.3 Manufacturer

**FIC (First International Computer, Inc.)**

No. 300, Yang Guang St., NeiHu, Taipei 114, Taiwan, R.O.C.

Export Processing Zone, No. 200 Central SuHong Road, SuZhou Industrial Park, China

### 1.4 Basic Description of Equipment under Test

<b>Equipment</b>		Express
<b>Trade Name</b>		Dash
<b>Model Name</b>		HXD8
<b>FCC ID</b>		EUNHXD8V2
<b>AC Adapter</b>	<b>Brand Name</b>	AKII
	<b>P/N</b>	A10P1-05MP
	<b>Power Rating</b>	I/P:100-240V, 47~63Hz, 10.3A
	<b>AC Power Cord Type</b>	1.5 meter shielded cable without ferrite core
<b>Car Charger</b>	<b>Brand Name</b>	Protop
	<b>P/N</b>	CLA-1000
	<b>Power Rating</b>	AC12V
	<b>Power Cord Type</b>	1.8 meter non-shielded cable without ferrite core
<b>Battery</b>	<b>Brand Name</b>	HL
	<b>P/N</b>	PL-HL-0002-B
	<b>Rating</b>	3.7~4.2Vdc,
	<b>Type</b>	Li-ion
<b>USB Cable</b>	<b>Brand Name</b>	N/A
	<b>P/N</b>	N/A
	<b>AC Power Cord Type</b>	1.8 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**

<b>DUT Type :</b>	Express
<b>Trade Name :</b>	Dash
<b>Model Name :</b>	HXD8
<b>FCC ID :</b>	EUNHXD8V2
<b>Tx Frequency :</b>	GSM850 : 824 ~ 849 MHz PCS1900 : 1850 ~ 1910 MHz WLAN : 2400 ~ 2483.5 MHz
<b>Rx Frequency :</b>	GSM850 : 869 ~ 894 MHz PCS1900 : 1930 ~ 1990 MHz WLAN : 2400 ~ 2483.5 MHz
<b>Maximum Output Power to Antenna :</b>	GSM850 : 32.9 dBm (GSM) / PCS1900 : 29.8 dBm (GSM) / WLAN : 18.65 dBm (802.11b) / 21.17 dBm (802.11g)
<b>Maximum ERP/EIRP :</b>	GSM850(GSM) : 0.72 W ( 28.60 dBm) PCS1900(GSM) : 0.92 W ( 29.64 dBm)
<b>HW Version :</b>	HXD8-001-99-98
<b>SW Version :</b>	HXD80 REV:023
<b>Antenna Type :</b>	Patch Antenna
<b>Type of Antenna Connector</b>	N/A
<b>Digital Modulation Emission :</b>	GSM : GMSK WLAN : DSSS / OFDM
<b>Type of Emission :</b>	300KGXW
<b>Device Power Class :</b>	GSM850 : 4 PCS1900 : 1
<b>DUT Stage :</b>	Production Unit

**1.6 Report Date**

EUT Received : Sep. 10, 2007

Report Date : Oct. 11, 2007

## 2. Test Configuration of Equipment under Test

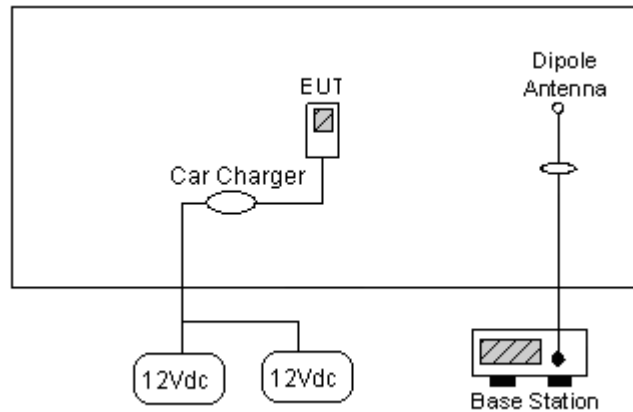
### 2.1 Test Manner

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	<input checked="" type="checkbox"/> Mode 1: GSM Link	<input checked="" type="checkbox"/> Mode 2: GSM Link
	<input checked="" type="checkbox"/> Mode 3: GSM Link + WLAN Link	
Conducted Measurement	<input checked="" type="checkbox"/> Mode 1: GSM Link	<input checked="" type="checkbox"/> Mode 2: GSM Link

### 2.3 Connection Diagram of Test System



### 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.	Battery	YUASA	46B241(S)	N/A	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 : 886-3-318-0055

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**

DC 24V

#### **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



**4.2 RF Output Power**

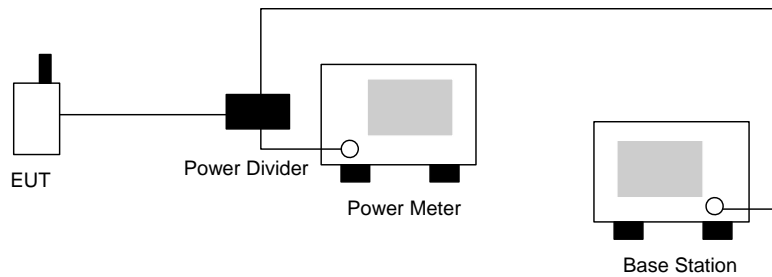
4.2.1 Measurement Instruments :

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	128	824.2 (Low)	32.9	1.950
	189	836.4 (Mid)	32.8	1.905
	251	848.8 (High)	32.6	1.820
PCS1900	512	1850.2 (Low)	29.6	0.912
	661	1880.0 (Mid)	29.8	0.955
	810	1909.8 (High)	29.5	0.891



### 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 tutable 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.

$E_t = R_t + AF$

$E_s = R_s + AF$

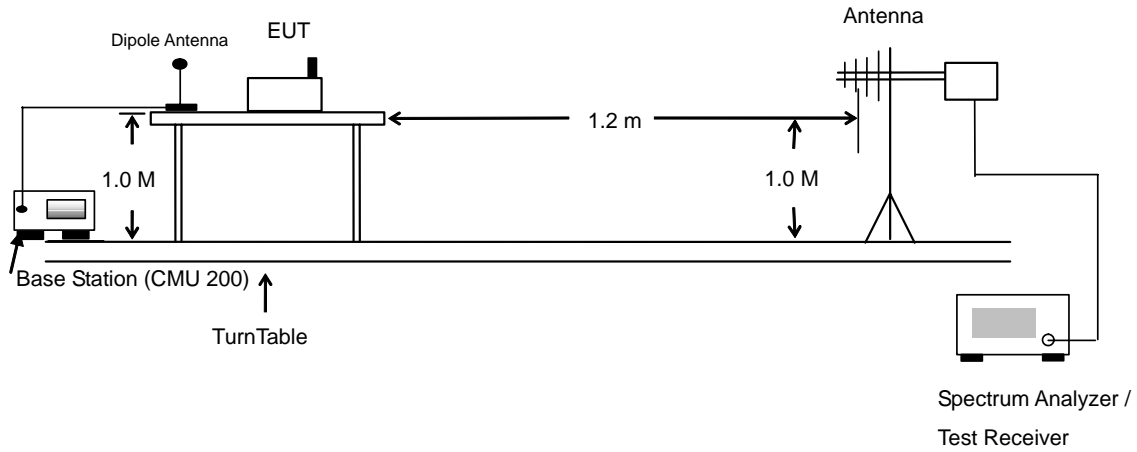
$AF$  (dB/m) : Receive antenna factor

$R_t$  : 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

<b>GSM850 Radiated Power ERP</b>						
<b>Horizontal Polarization</b>						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	ERP (dBm)	ERP (W)
824.20	-20.02	-48.12	0.00	-1.08	27.02	0.50
836.40	-19.69	-48.28	0.00	-0.93	27.66	0.58
848.80	-19.55	-48.35	0.00	-0.76	28.04	0.64
<b>Vertical Polarization</b>						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	ERP (dBm)	ERP (W)
824.20	-19.44	-47.97	0.00	-1.08	27.45	0.56
836.40	-18.92	-48.01	0.00	-0.93	28.16	0.65
848.80	-18.69	-48.05	0.00	-0.76	28.60	0.72

<b>PCS1900 Radiated Power EIRP</b>						
<b>Horizontal Polarization</b>						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1850.20	-27.15	-51.88	0.00	1.96	26.69	0.47
1880.00	-27.18	-52.99	0.00	2.00	27.81	0.60
1909.80	-26.62	-54.28	0.00	1.98	29.64	0.92
<b>Vertical Polarization</b>						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1850.20	-27.48	-52.13	0.00	1.96	26.61	0.46
1880.00	-28.04	-53.17	0.00	2.00	27.13	0.52
1909.80	-27.42	-54.13	0.00	1.98	28.69	0.74

## 4.4 Occupied Bandwidth and Band Edge Measurement

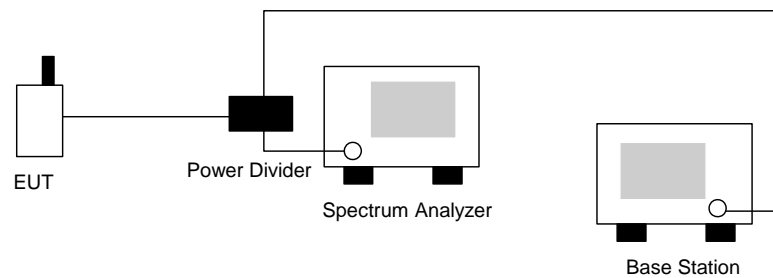
### 4.4.1 Measurement Instruments

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  $BW/100$ .

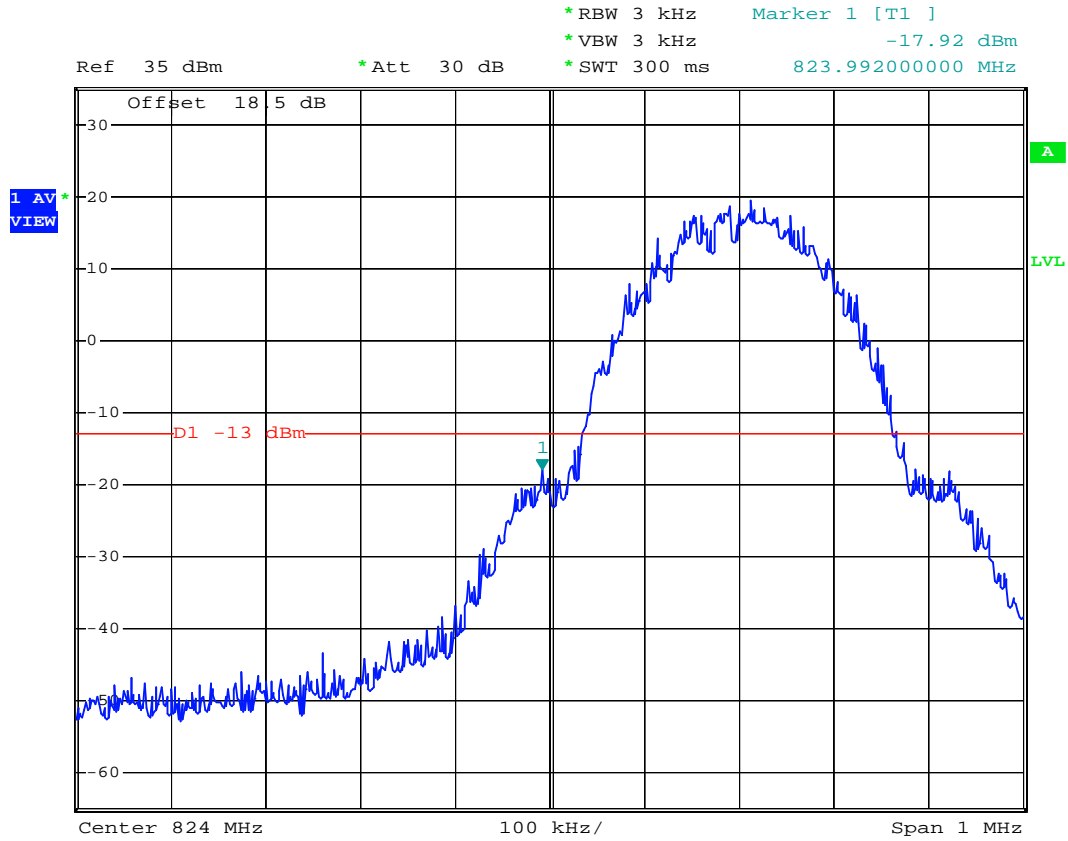
### 4.4.3 Test Setup Layout





4.4.4 Test Result

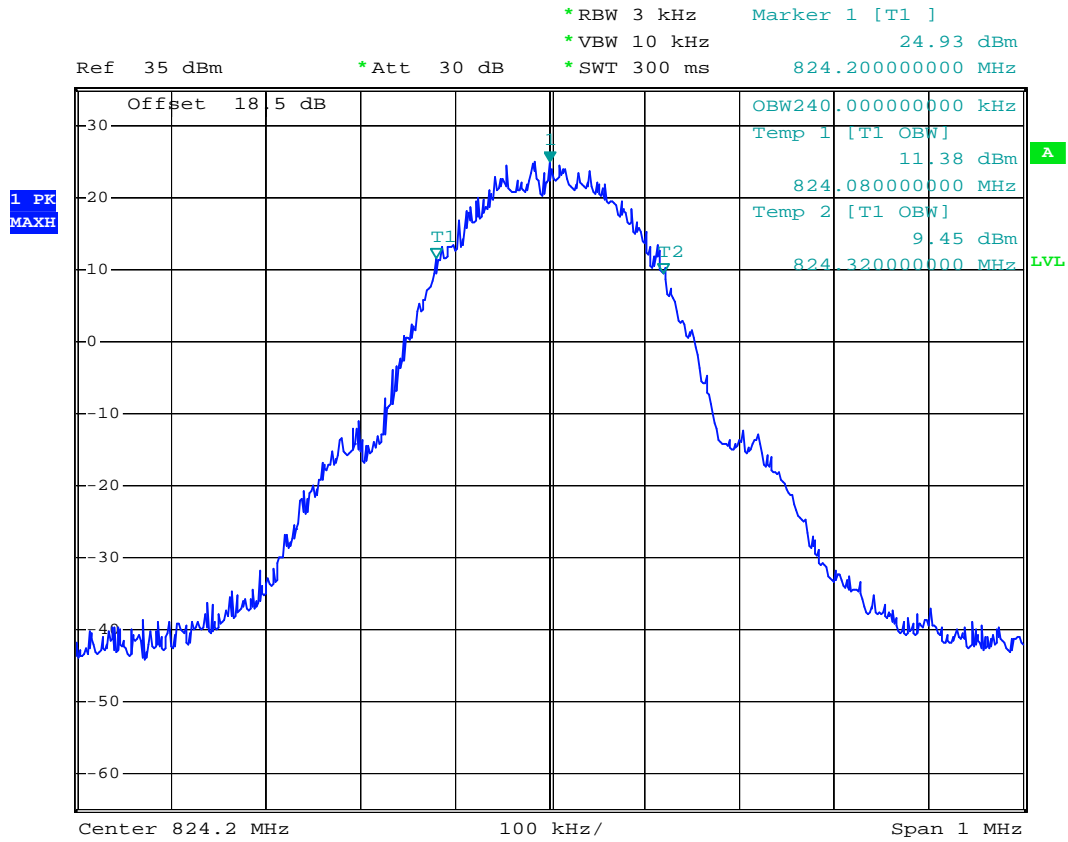
- Mode 1
- Test Mode : GSM850 (GSM) CH128 Lower Band Edge
- Power State : High



Date: 30.AUG.2007 15:33:37



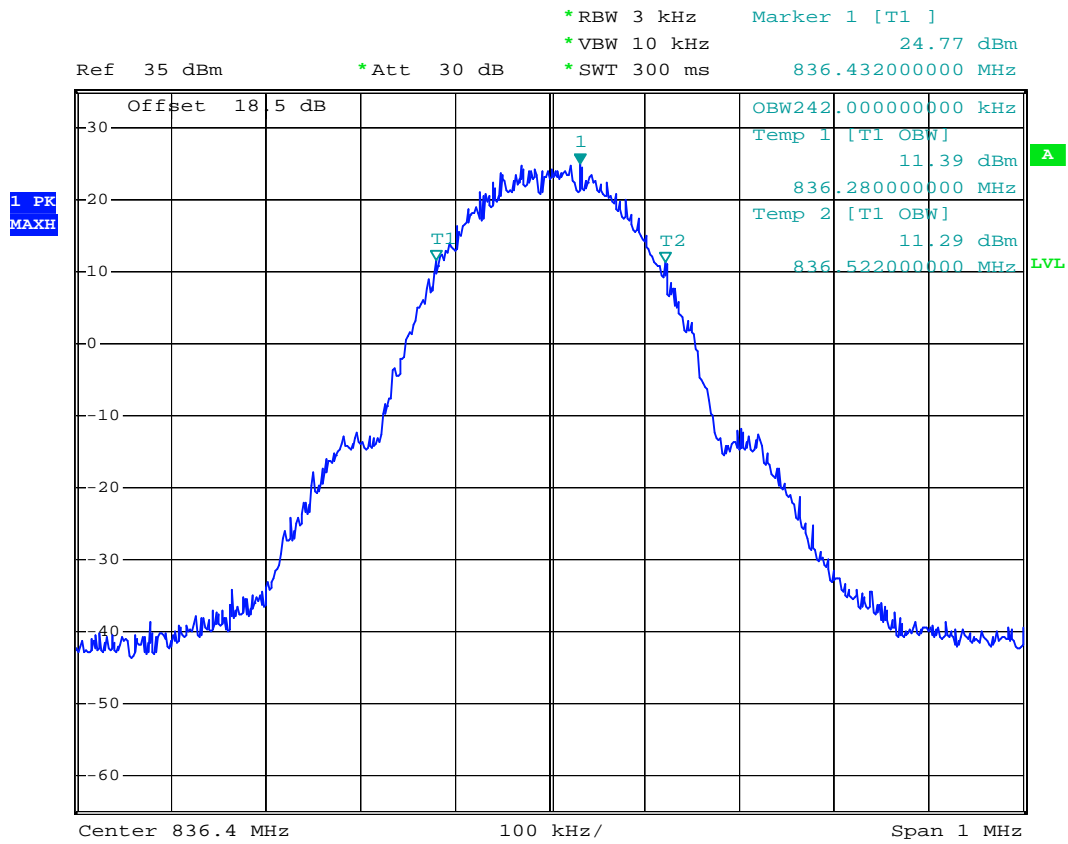
- Test Mode : GSM850 (GSM) CH128 99% Occupied Bandwidth
- Power State : High



Date: 30.AUG.2007 15:30:11



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

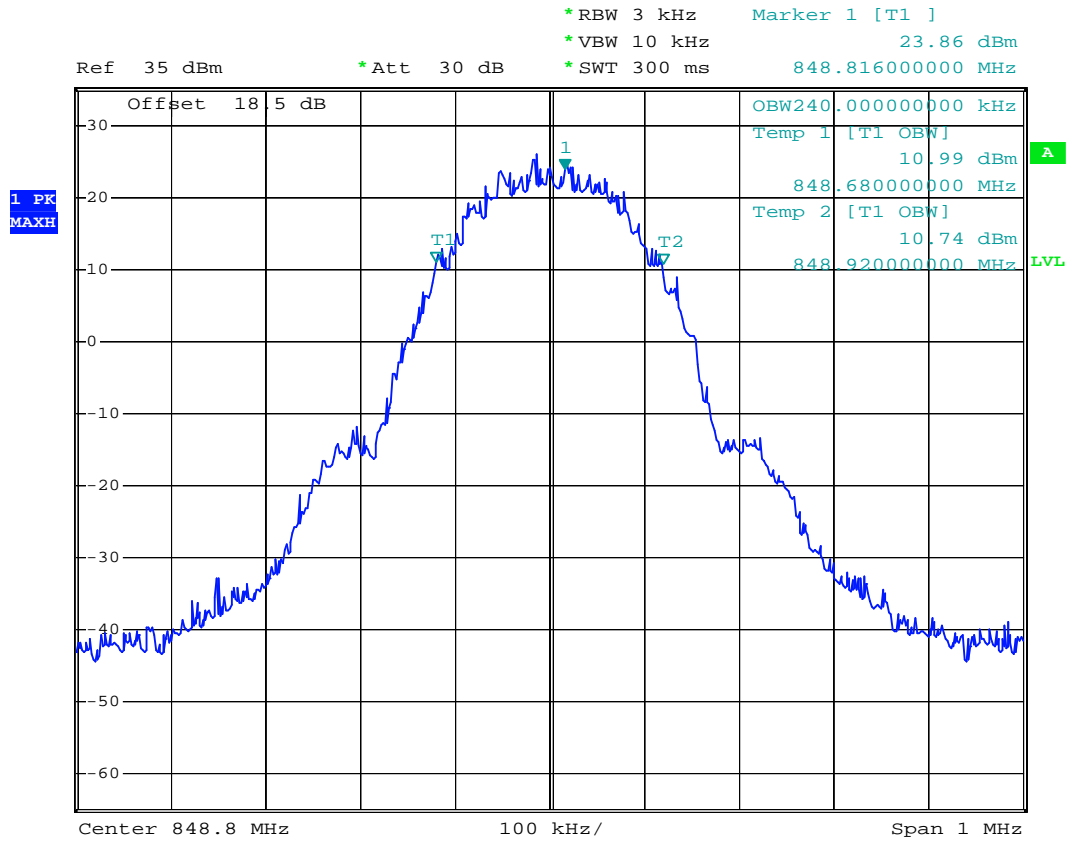


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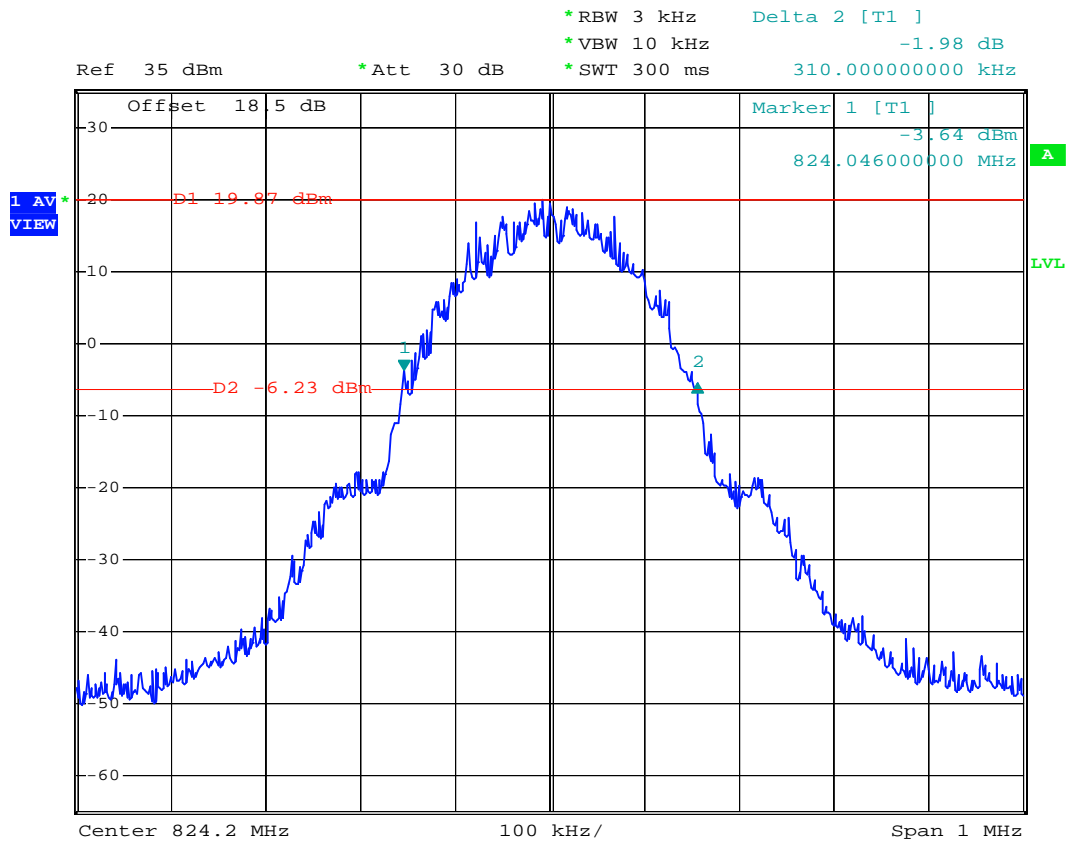
- Test Mode : GSM850 (GSM) CH 251 99% Occupied Bandwidth
- Power State : High



Date: 30.AUG.2007 15:31:09



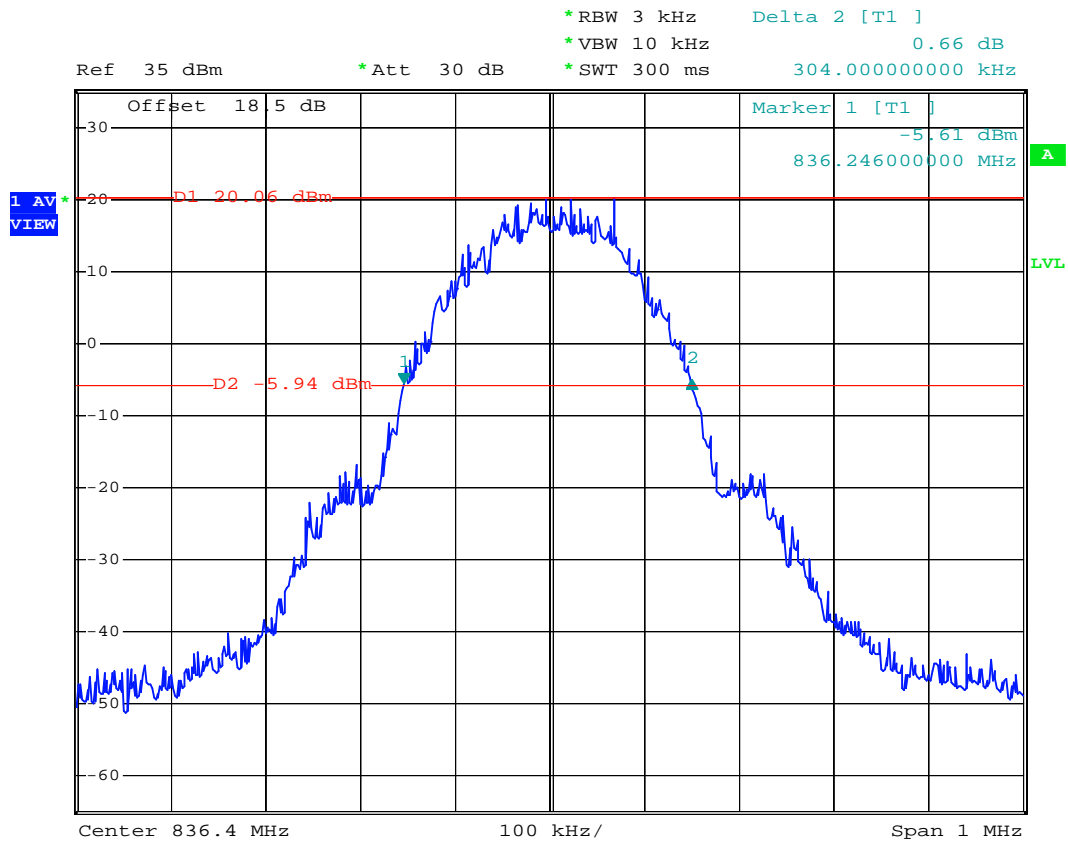
- Test Mode : GSM850 (GSM) CH128 26dB Bandwidth
- Power State : High



Date: 30.AUG.2007 15:22:23



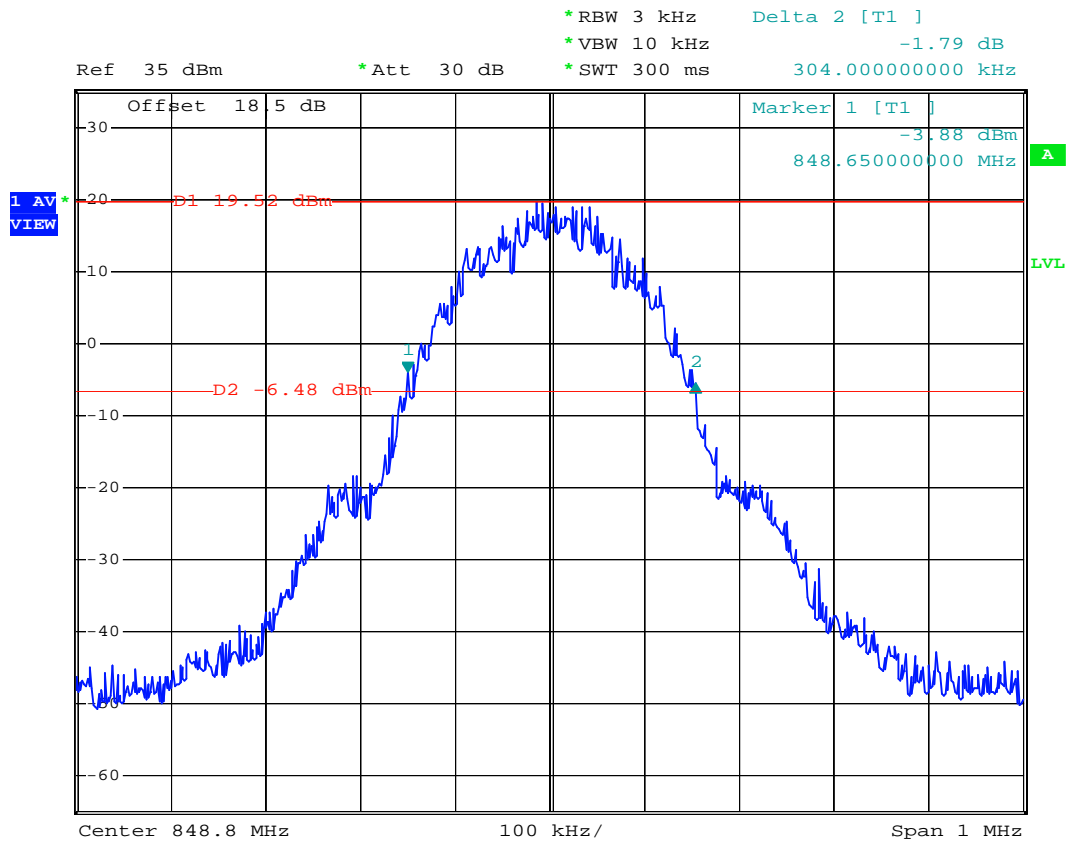
- Test Mode : GSM850 (GSM) CH189 26dB Bandwidth
- Power State : High



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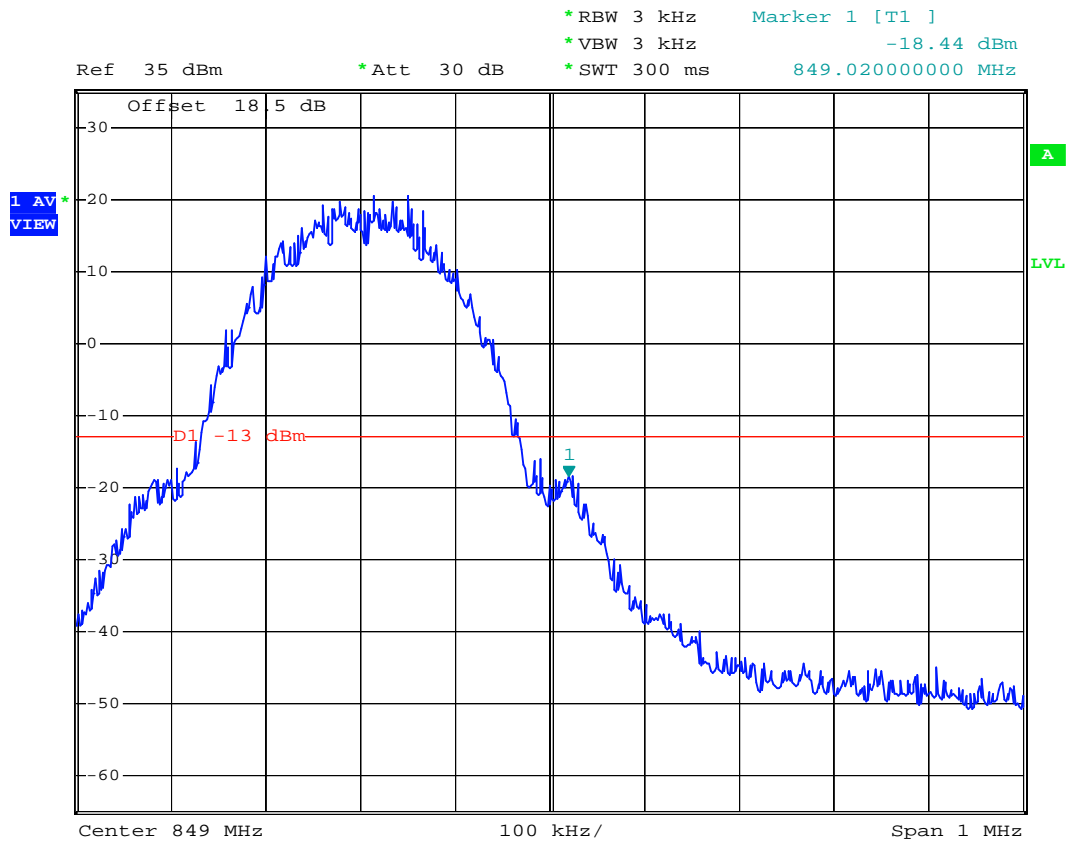
- Test Mode : GSM850 (GSM) CH 251 26dB Bandwidth
- Power State : High



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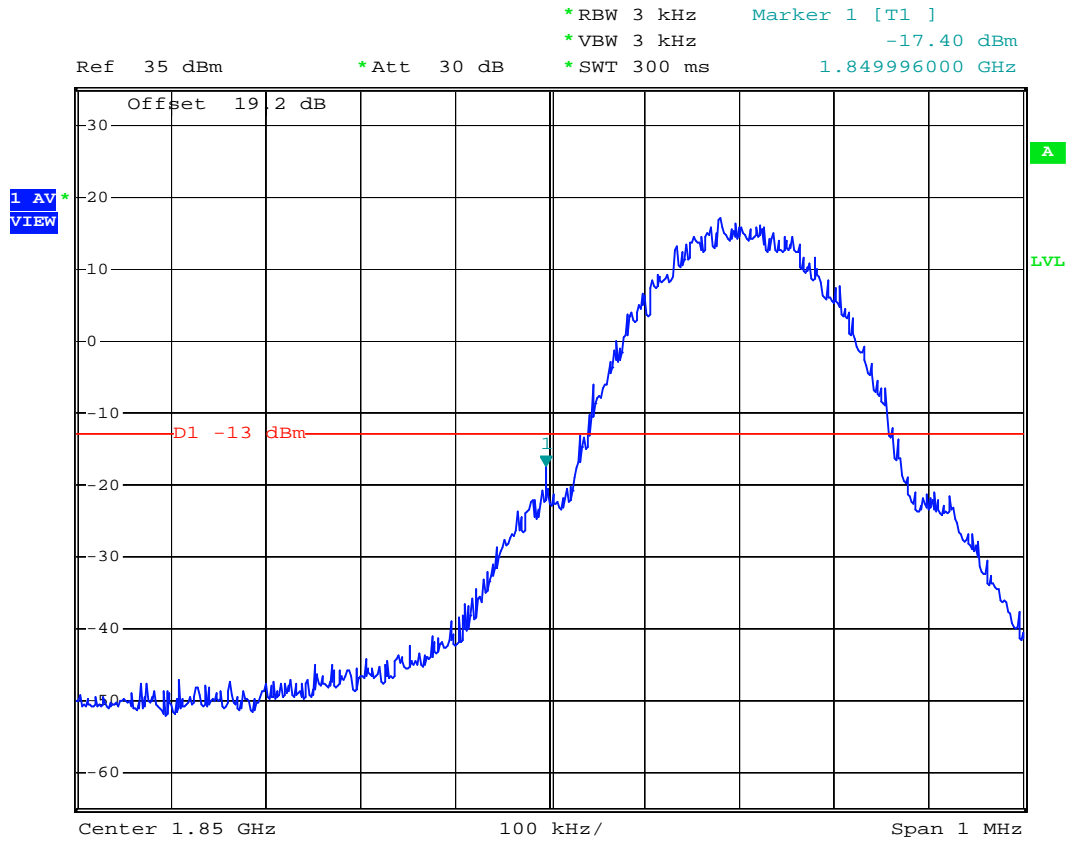
- Test Mode : GSM850 (GSM) CH251 Higher Band Edge
- Power State : High



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- Mode 2
- Test Mode : PCS1900 (GSM) CH512 Lower Band Edge
- Power State : High



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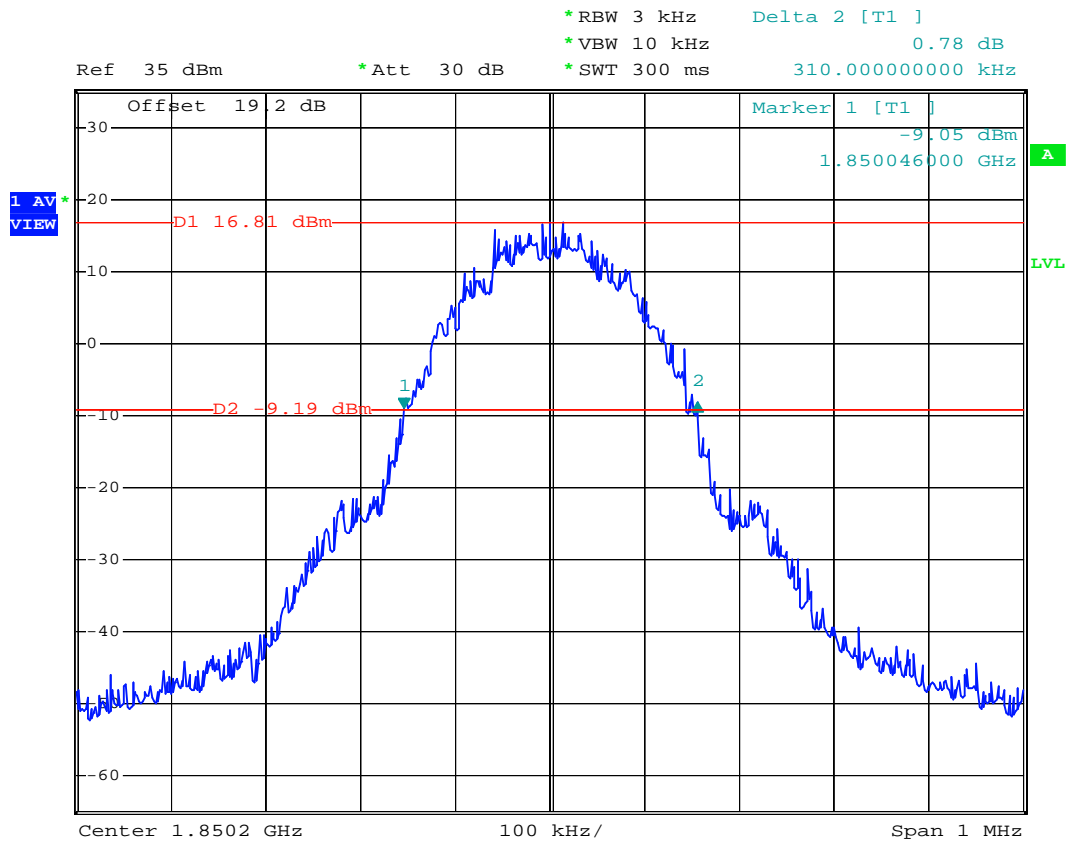








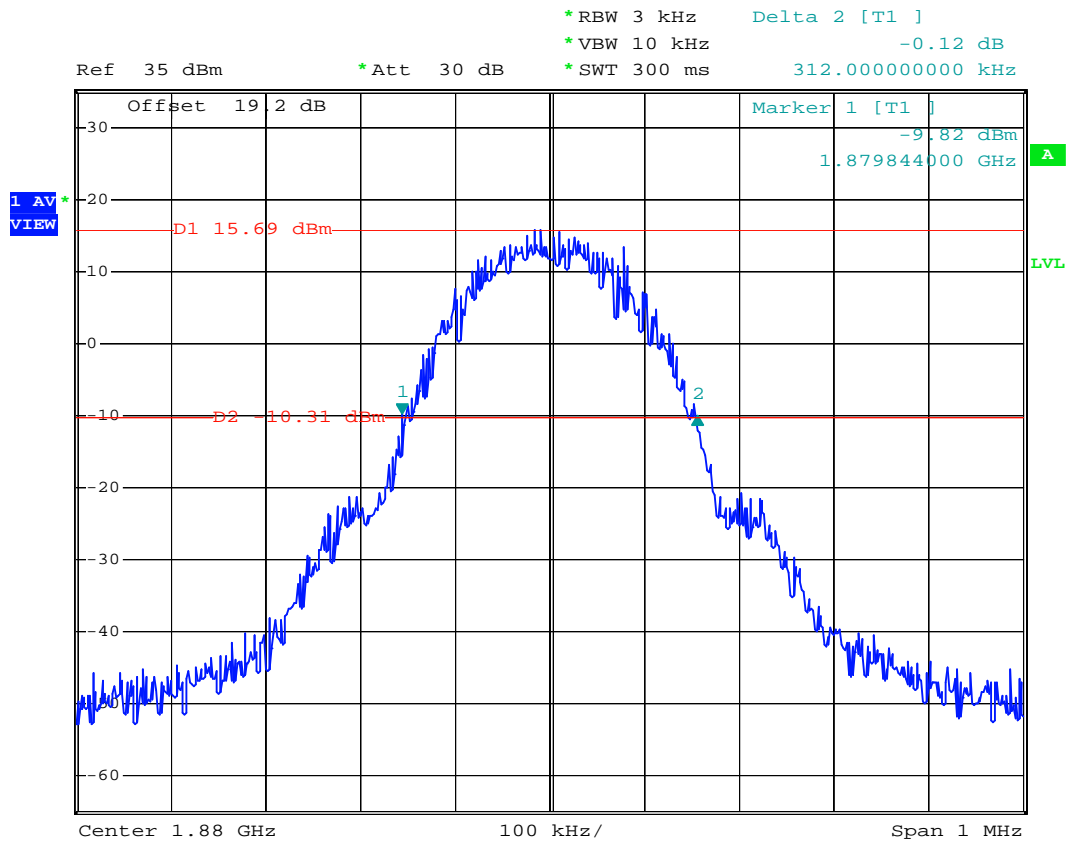
- Test Mode : PCS1900 (GSM) CH512 26dB Bandwidth
- Power State : High



Date: 30.AUG.2007 12:29:24



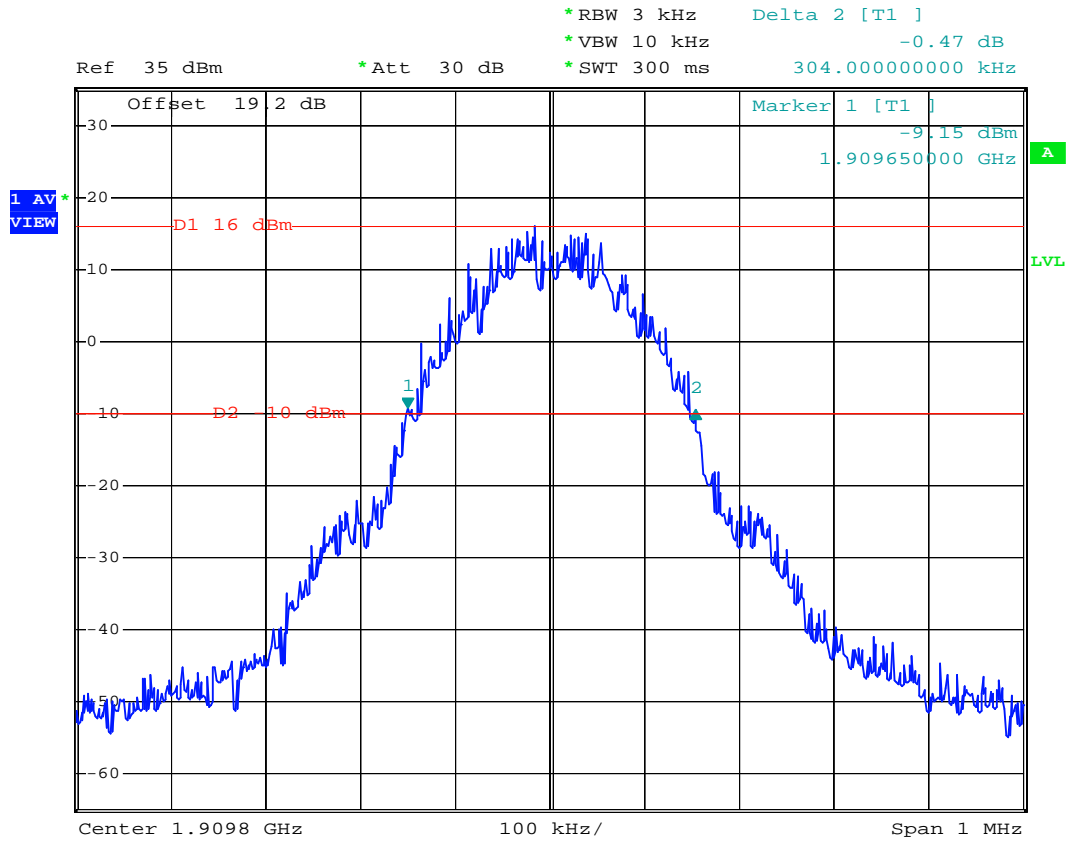
- Test Mode : PCS1900 (GSM) CH661 26dB Bandwidth
- Power State : High



Date: 30.AUG.2007 12:33:27



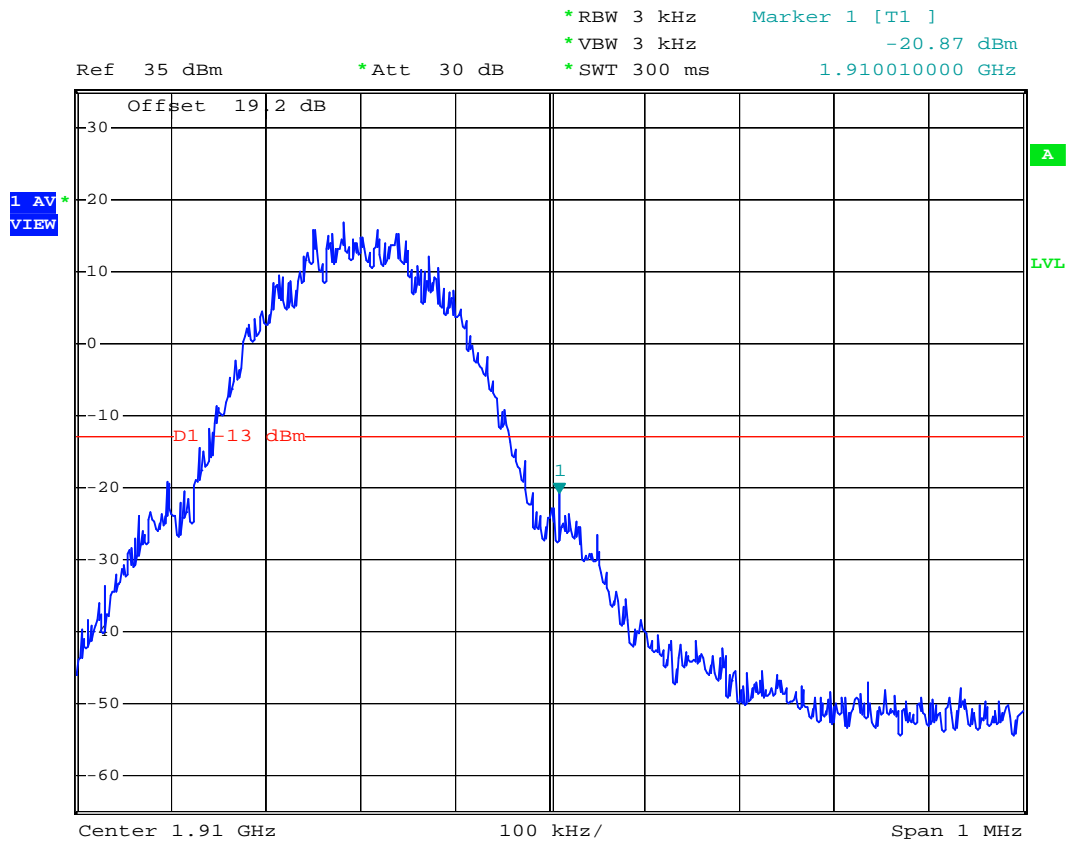
- Test Mode : PCS1900 (GSM) CH810 26dB Bandwidth
- Power State : High



Date: 30.AUG.2007 12:34:41



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



Date: 30.AUG.2007 12:25:22

## 4.5 Conducted Emission

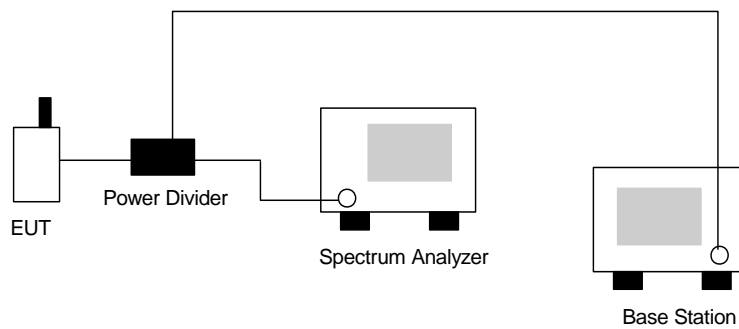
### 4.5.1 Measurement Instruments

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.

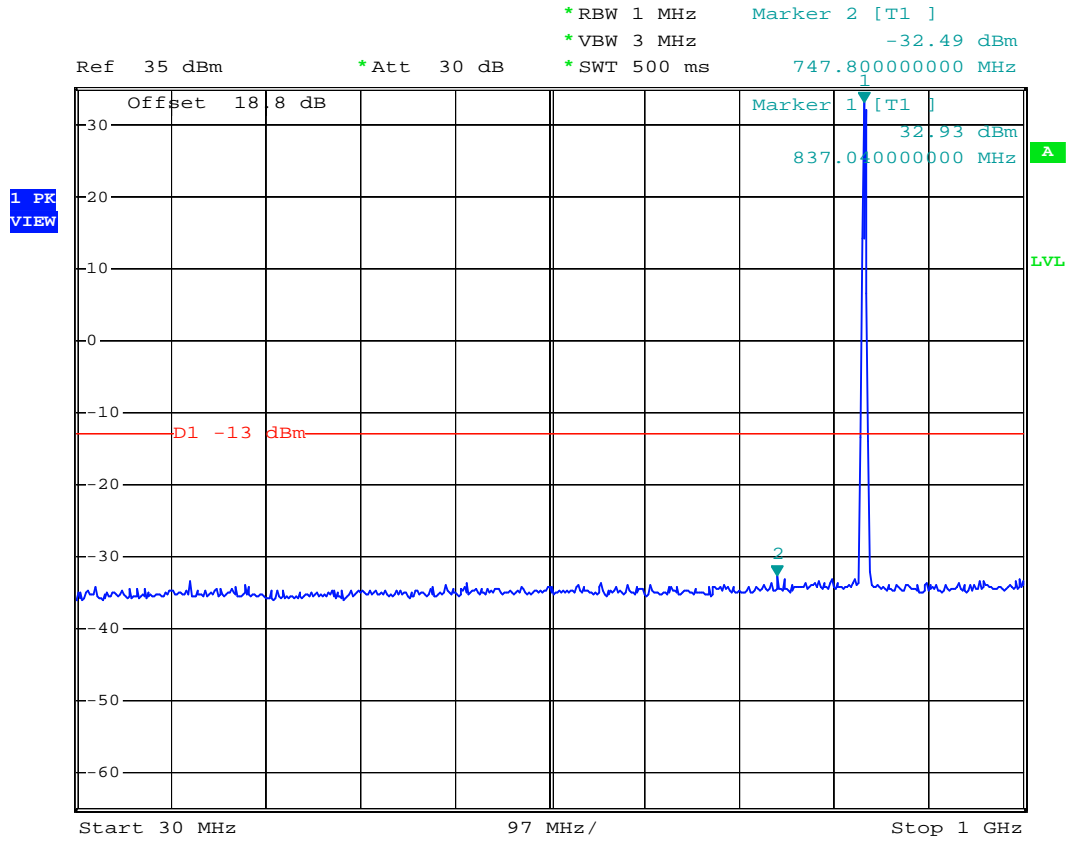
### 4.5.3 Test Setup Layout





4.5.4 Test Result

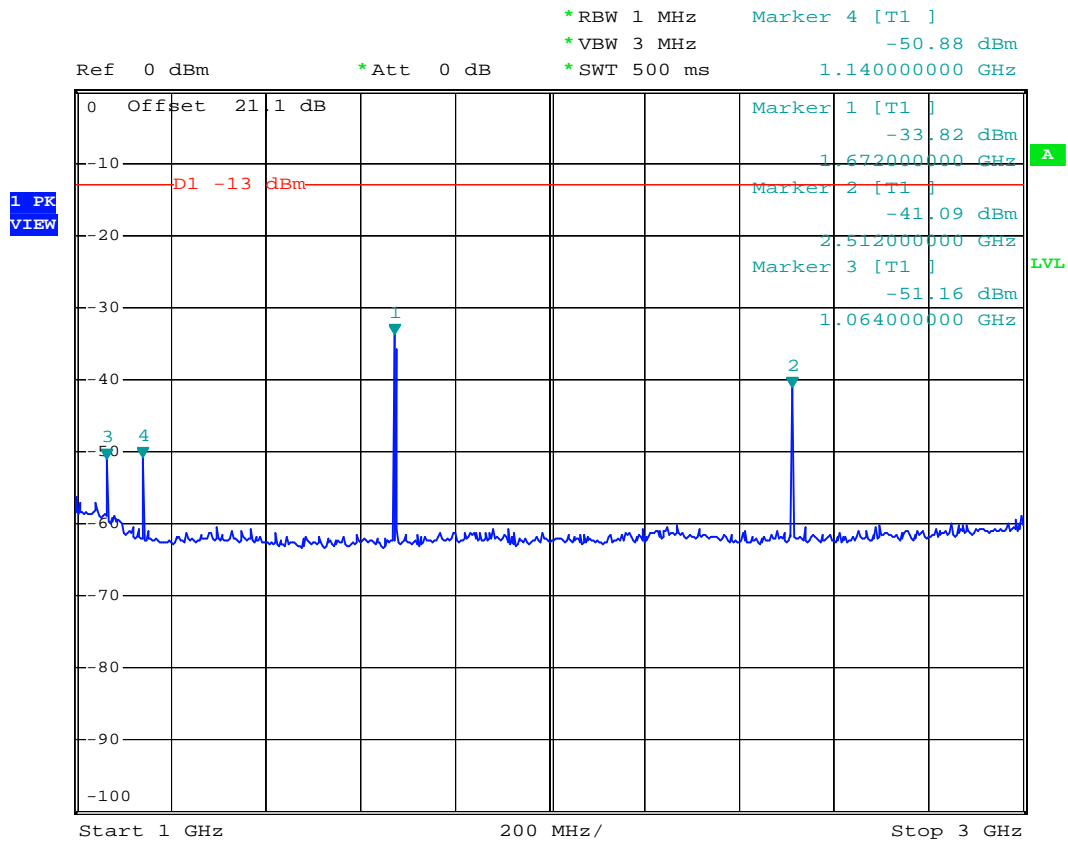
- Mode 1
- Test Mode : GSM850 (GSM) CH189
- Frequency Range : 30M-1G



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

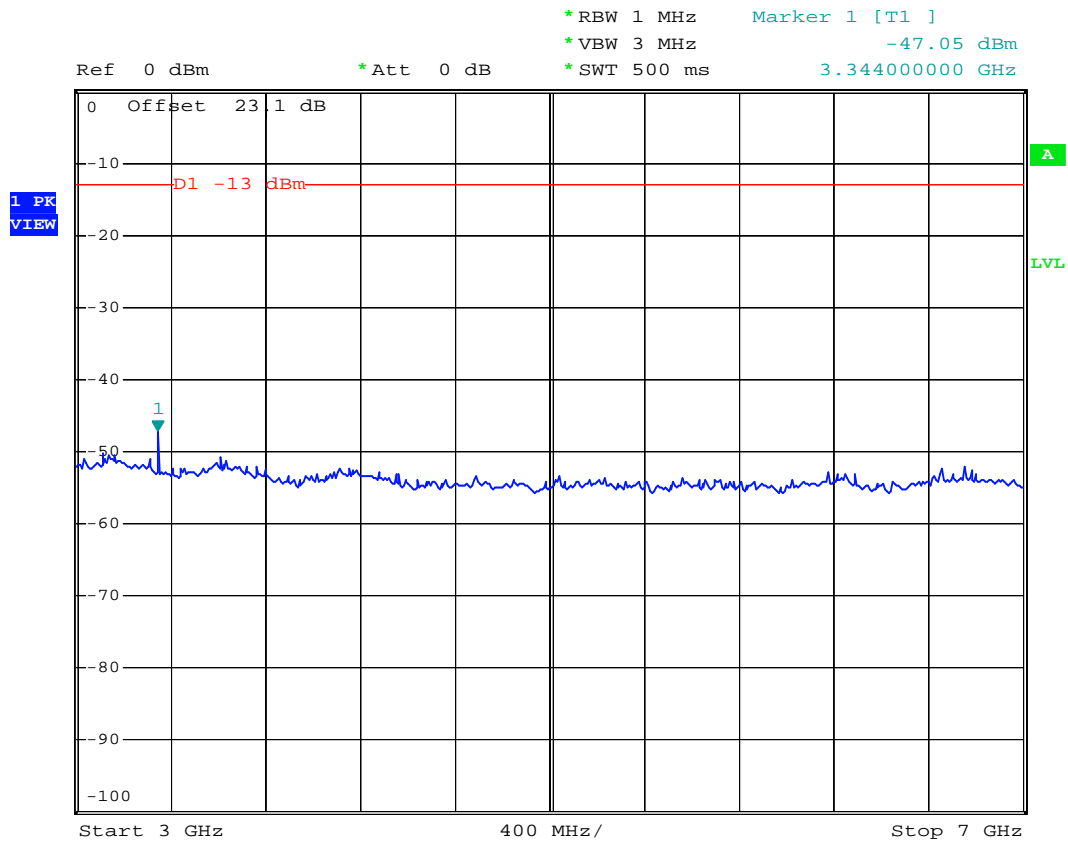


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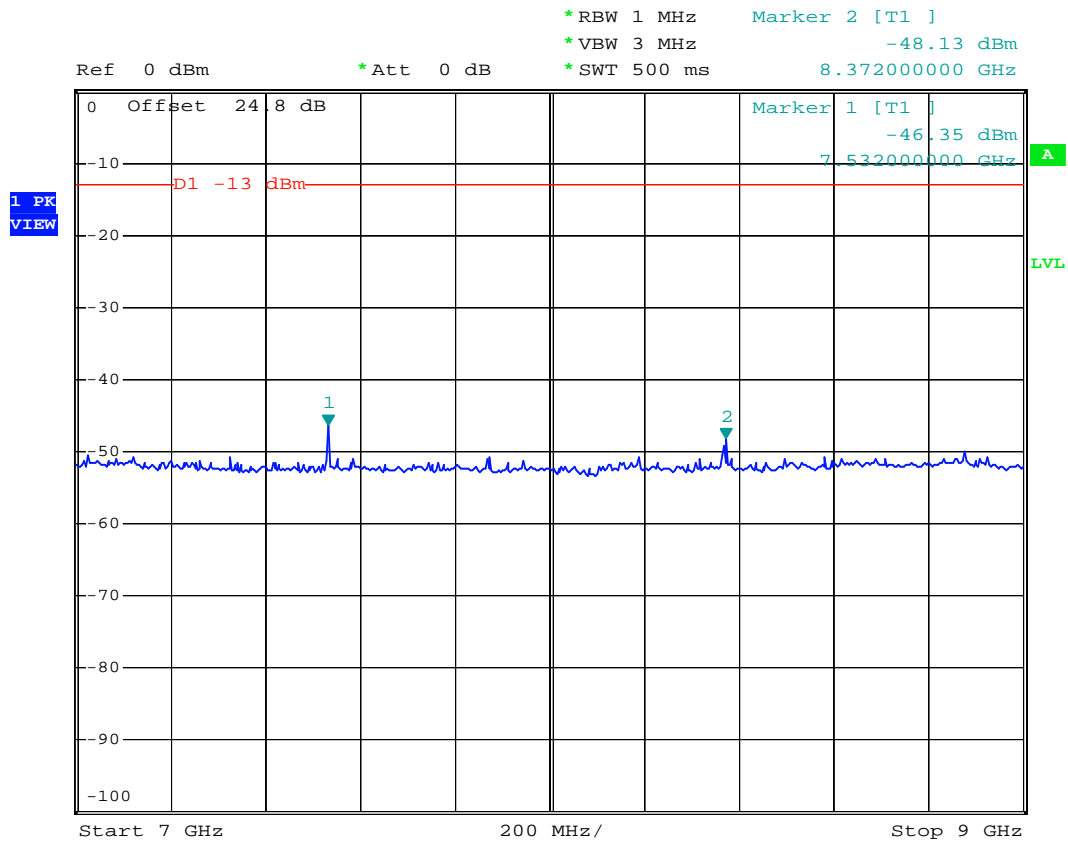
- Test Mode : GSM850 (GSM) CH189
- Frequency Range : 3G-7G



Date: 30.AUG.2007 15:00:35



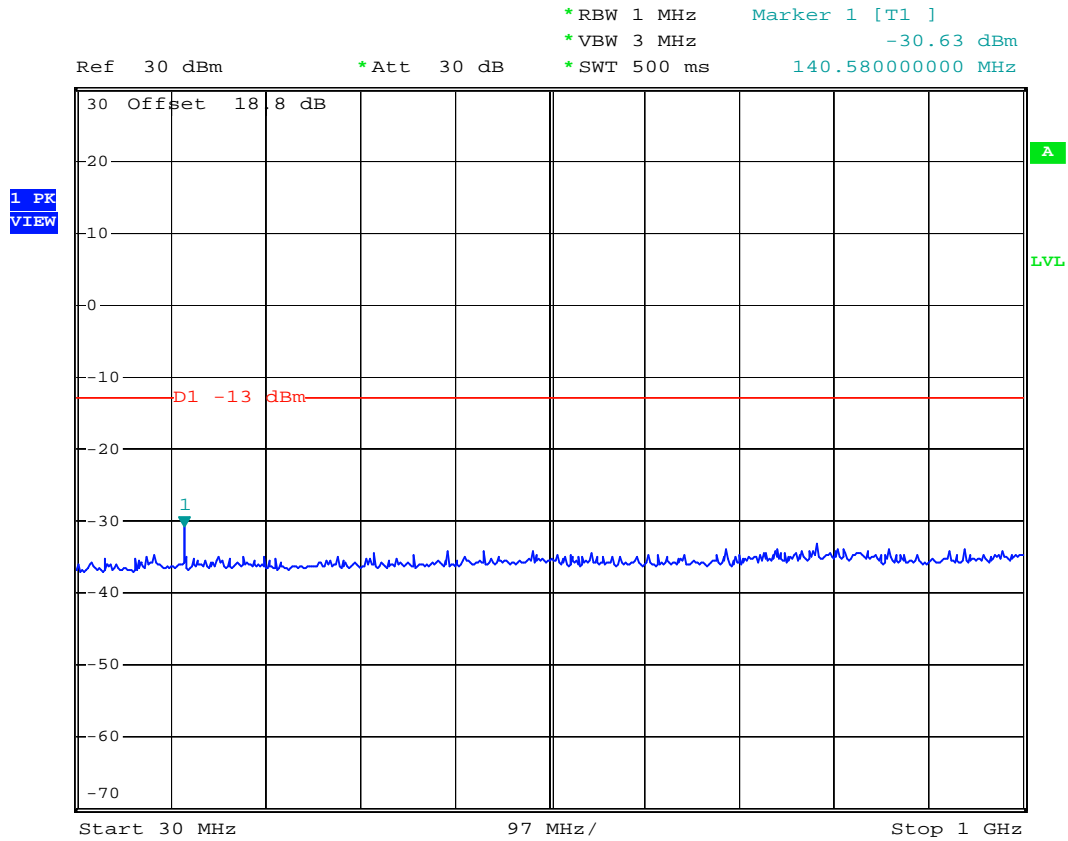
- Test Mode : GSM850 (GSM) CH189
- Frequency Range : 7G-9G



Date: 30.AUG.2007 15:04:20



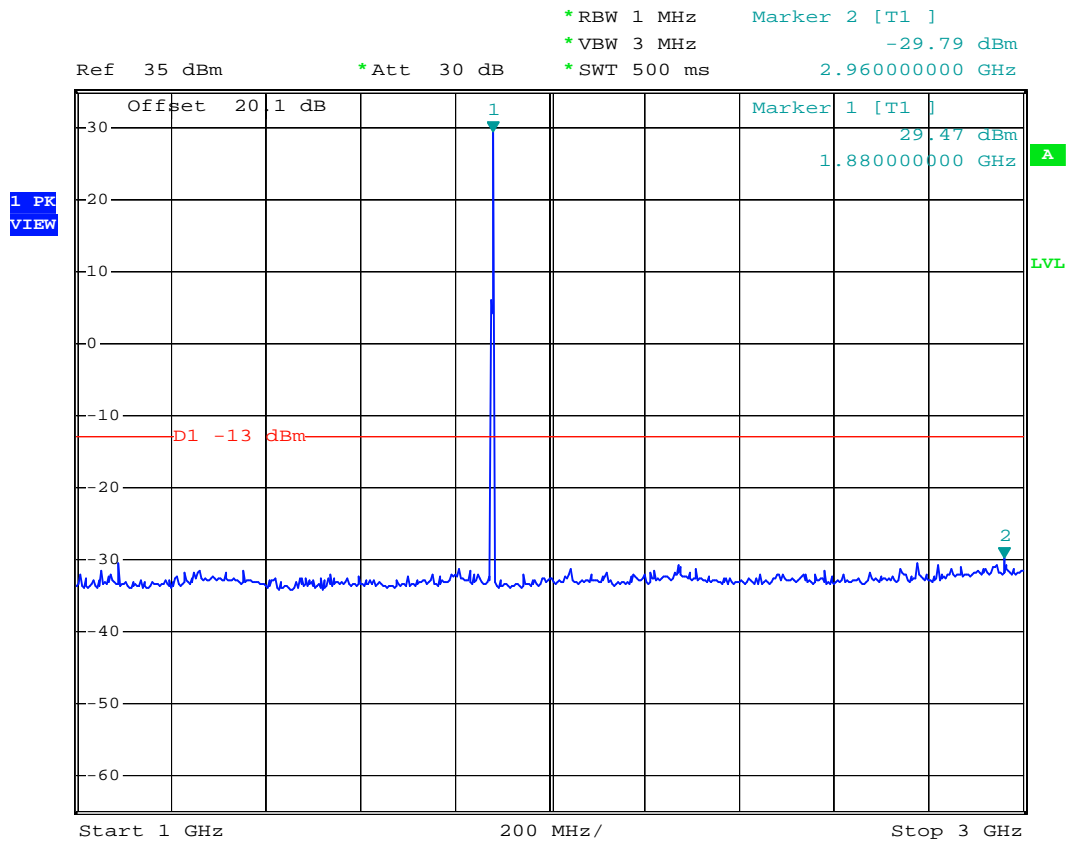
- Mode 2
- Test Mode : PCS1900 (GSM) CH661
- Frequency Range : 30M-1G



Date: 30.AUG.2007 14:21:06



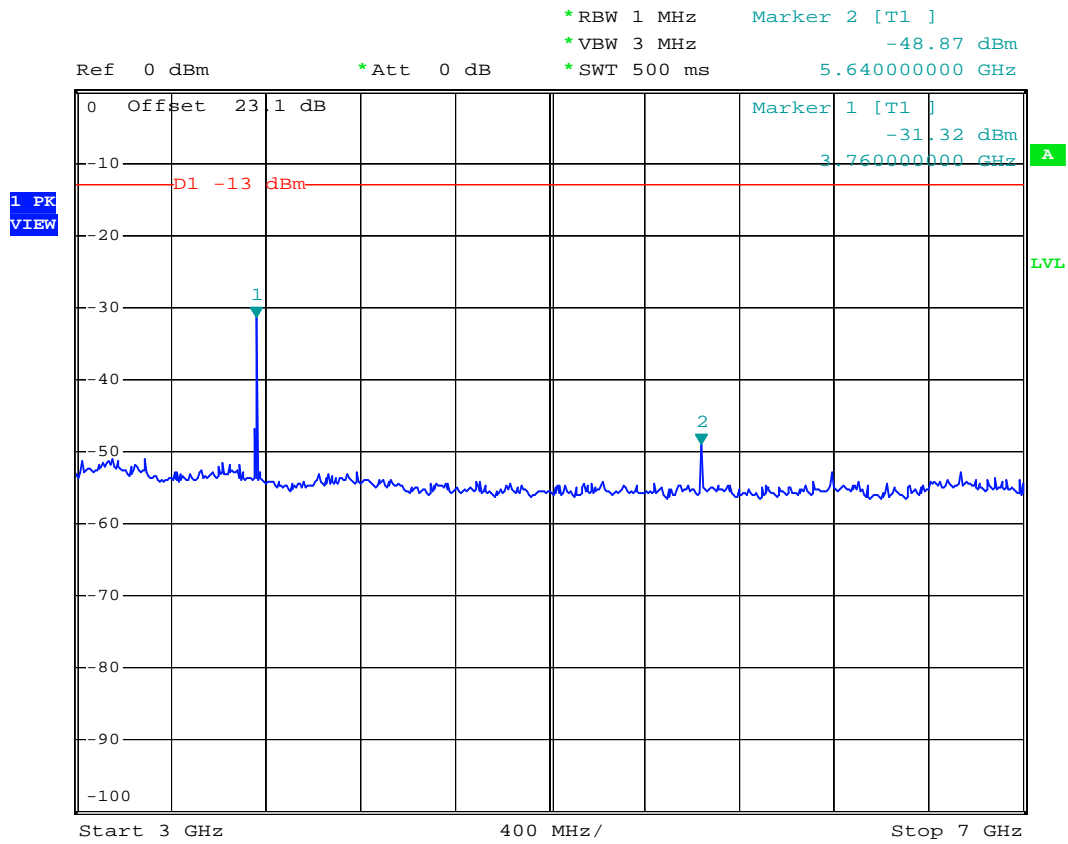
- Test Mode : PCS1900 (GSM) CH661
- Frequency Range : 1G-3G



Date: 30.AUG.2007 14:23:17



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

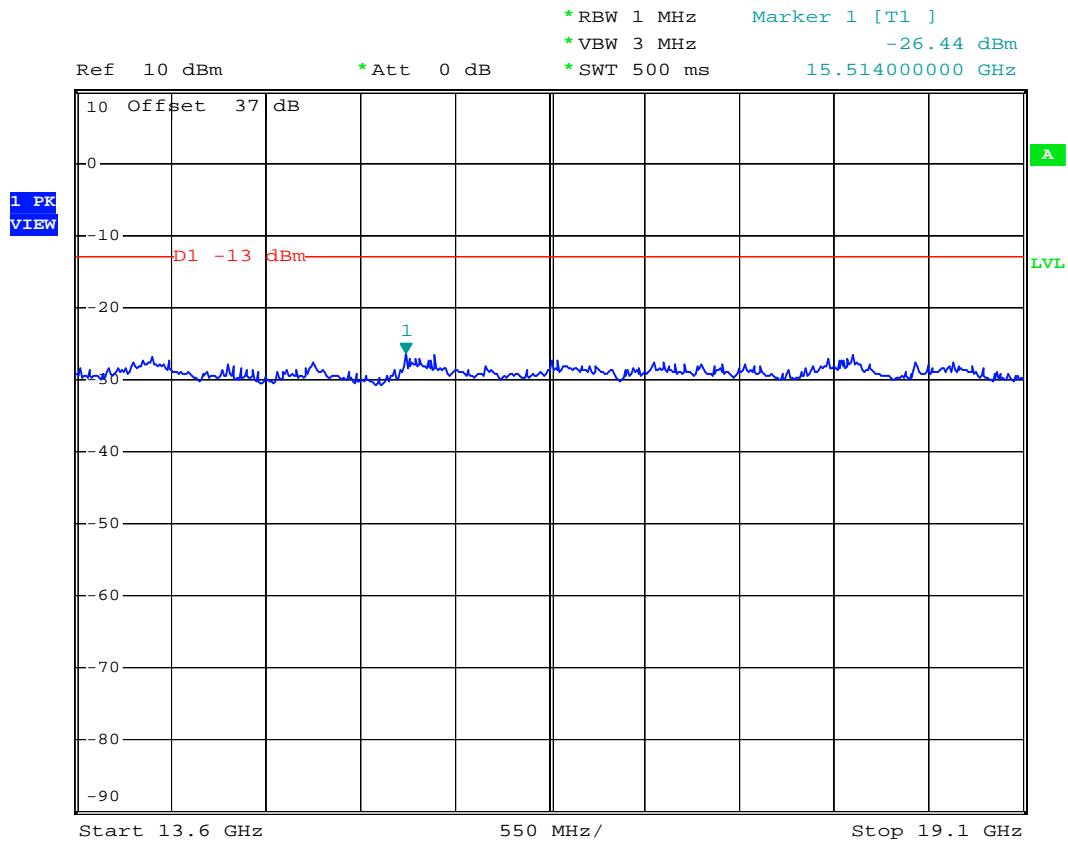


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- Test Mode : PCS1900 (GSM) CH661
- Frequency Range : 13.6G-19.1G



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## 4.6 Field Strength of Spurious Radiation

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

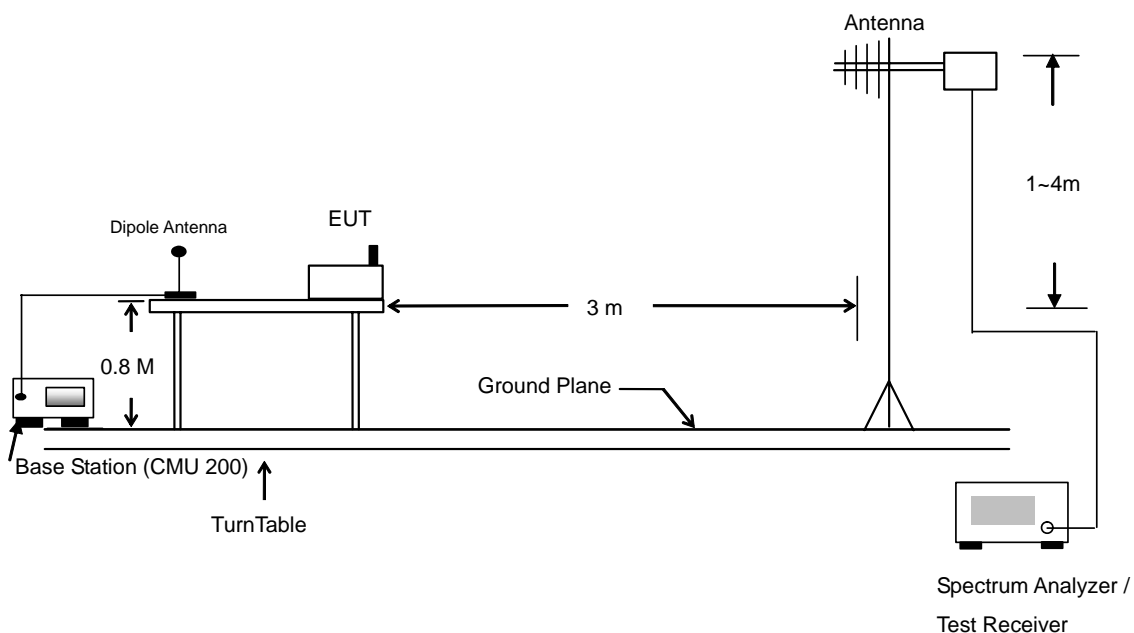
### 4.6.1 Measurement Instruments

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 Radiated Spurious ERP							
H Polarization				V Polarization			
Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)
153.390	-58.150	-13	-45.15	39.180	-52.730	-13	-39.73
199.830	-57.520	-13	-44.52	98.040	-51.640	-13	-38.64
254.640	-54.580	-13	-41.58	157.440	-51.650	-13	-38.65
789.300	-64.280	-13	-51.28	300.000	-55.070	-13	-42.07
1674.000	-35.640	-13	-22.64	1674.000	-38.380	-13	-25.38
2508.000	-40.440	-13	-27.44	2508.000	-40.350	-13	-27.35
3344.000	-46.490	-13	-33.49	3344.000	-48.440	-13	-35.44

• Test Mode : Mode 2

PCS1900 Radiated Spurious EIRP							
H Polarization				V Polarization			
Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)
153.930	-55.940	-13	-42.94	174.990	-52.240	-13	-39.24
199.830	-54.490	-13	-41.49	191.190	-52.440	-13	-39.44
289.740	-50.490	-13	-37.49	224.940	-50.010	-13	-37.01
300.000	-56.710	-13	-43.71	306.300	-60.230	-13	-47.23
332.900	-60.040	-13	-47.04	332.900	-60.890	-13	-47.89
983.900	-64.070	-13	-51.07	997.900	-62.130	-13	-49.13
1164.000	-57.820	-13	-44.82	1000.000	-58.300	-13	-45.30
1498.000	-54.710	-13	-41.71	1058.000	-56.550	-13	-43.55
1588.000	-55.570	-13	-42.57	1148.000	-58.640	-13	-45.64
3758.000	-44.380	-13	-31.38	1194.000	-57.190	-13	-44.19
				1324.000	-48.950	-13	-35.95
				1498.000	-54.560	-13	-41.56
				1588.000	-52.950	-13	-39.95
				3758.000	-48.040	-13	-35.04



• Test Mode : Mode 3

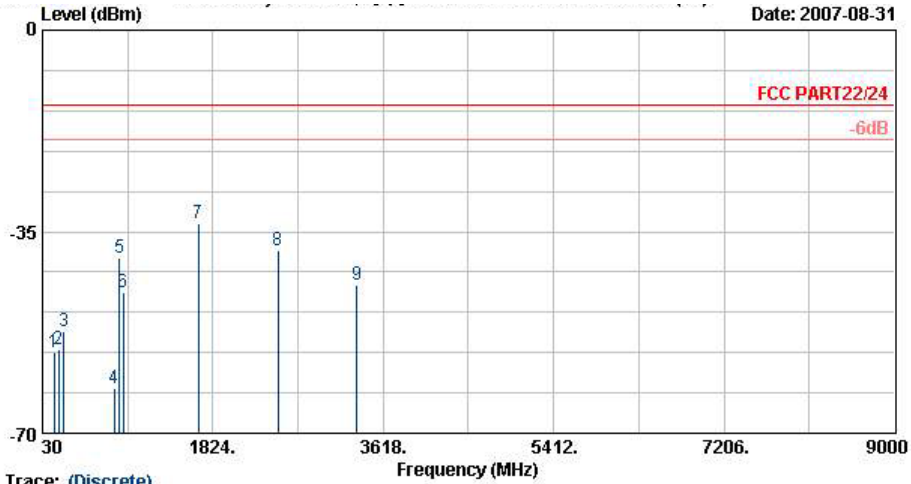
GSM850 (GSM) with WLAN Co-location Radiated Spurious ERP							
H Polarization				V Polarization			
Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)
143.130	-58.450	-13	-45.45	40.530	-52.770	-13	-39.77
199.290	-56.930	-13	-43.93	97.230	-51.780	-13	-38.78
255.990	-54.650	-13	-41.65	155.280	-51.810	-13	-38.81
787.900	-63.040	-13	-50.04	300.000	-54.670	-13	-41.67
1628.000	-51.400	-13	-38.40	1674.000	-40.370	-13	-27.37
1674.000	-38.200	-13	-25.20	2508.000	-40.450	-13	-27.45
2508.000	-38.950	-13	-25.95	3344.000	-49.370	-13	-36.37
3298.000	-46.150	-13	-33.15	4924.000	-36.430	-13	-23.43
3344.000	-47.530	-13	-34.53	7384.000	-41.630	-13	-28.63
4928.000	-33.850	-13	-20.85				
6028.000	-44.100	-13	-31.10				
7384.000	-33.600	-13	-20.60				



4.6.5 Test Data

4.6.6 Mode 1

Horizontal Polarization



Trace: (Discrete)

Site : 08CH06-HY  
 Condition : HF-SPURIOUS-060929 HORIZONTAL  
 EUT : AGFS  
 Power : 120Vac/50Hz  
 Model : FG 791006  
 Mode : GSM 850 Link Mode;Ch189 + Adaptor  
 Plane : E2

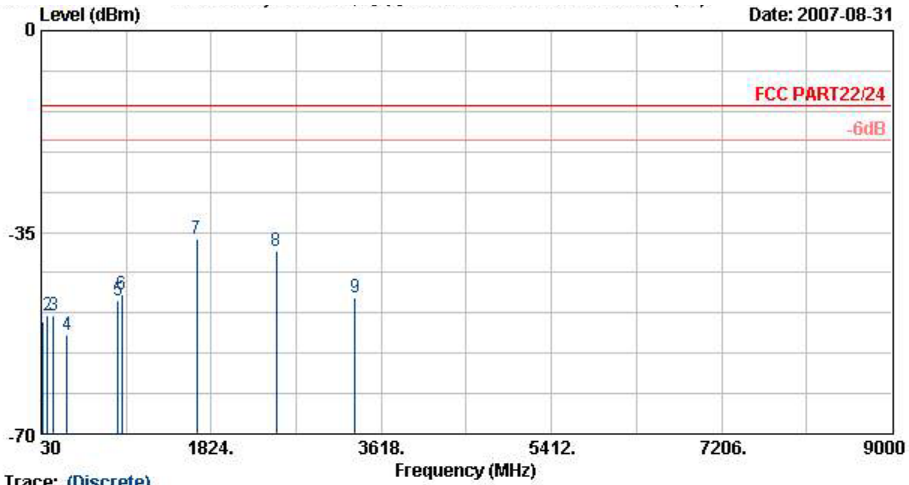
	Freq	Level	Over	Limit	Read	Factor	Remark
	MHz	dBm	dB	dBm	dBm	dB	
1	153.4	-56.00	-43.00	-13.00	-43.15	-12.85	Peak
2	199.8	-55.37	-42.37	-13.00	-41.98	-13.39	Peak
3	254.6	-52.43	-39.43	-13.00	-40.94	-11.48	Peak
4	789.3	-62.13	-49.13	-13.00	-60.33	-1.80	Peak
5	836.9	-39.66			-38.33	-1.33	Peak
6	880.3	-45.41			-44.50	-0.91	Peak
<b>7 @</b>	<b>1674.0</b>	<b>-33.49</b>	<b>-20.49</b>	<b>-13.00</b>	<b>-35.85</b>	<b>2.36</b>	<b>Peak</b>
8	2508.0	-38.29	-25.29	-13.00	-44.97	6.69	Peak
9	3344.0	-44.34	-31.34	-13.00	-53.74	9.40	Peak

Remark:

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



Vertical Polarization



Trace: (Discrete)

Site : 08CH06-HY  
 Condition : HF-SFURIOUS-060929 VERTICAL  
 EUT : AGFS  
 Power : 120V<sub>ac</sub>/60Hz  
 Model : FG 791006  
 Mode : GSM 850 Link Mode;CH189 + Adaptor  
 Plane : E2

	Freq	Level	Over	Limit	Read	Factor	Remark
	MHz	dBm	dB	dBm	dBm	dB	
1	39.2	-50.58	-37.58	-13.00	-39.05	-11.53	Peak
2	98.0	-49.49	-36.49	-13.00	-41.52	-7.97	Peak
3	157.4	-49.50	-36.50	-13.00	-41.30	-8.21	Peak
4	300.0	-52.92	-39.92	-13.00	-46.46	-6.46	Peak
5	836.9	-46.79			-48.16	1.36	Peak
6	880.3	-45.67			-47.38	1.71	Peak
7 @	1674.0	-36.23	-23.23	-13.00	-38.39	2.16	Peak
8	2508.0	-38.20	-25.20	-13.00	-45.38	7.18	Peak
9	3344.0	-46.29	-33.29	-13.00	-54.84	8.55	Peak

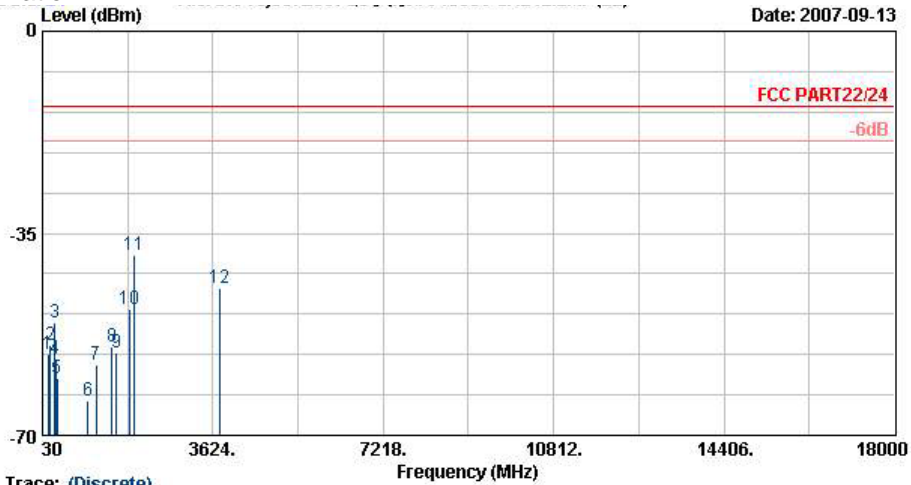
Remark:

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



4.6.7 Mode 2

Horizontal Polarization



Trace: (Discrete)  
 Site : 08CH06-HY  
 Condition : HF-SPURIOUS-060929 HORIZONTAL  
 EUT : AGFS  
 Power : 120Vac/60Hz  
 Model : FG 791006  
 Mode : PCS1900 Link Mode;Ch661+ DC Charge(24V)  
 Plane : E2

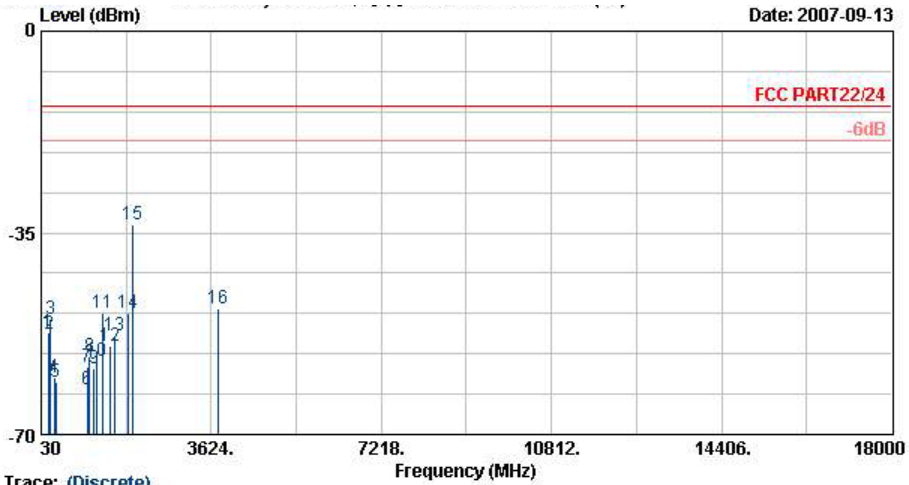
	Freq	Level	Over	Limit	Read		
	MHz	dBm	Limit	Line	Level	Factor	Remark
			dB	dBm	dBm	dB	
1	153.9	-55.94	-42.94	-13.00	-43.07	-12.87	Peak
2	199.8	-54.49	-41.49	-13.00	-41.10	-13.39	Peak
3	289.7	-50.49	-37.49	-13.00	-40.21	-10.28	Peak
4	300.0	-56.71	-43.71	-13.00	-46.76	-9.95	Peak
5	332.9	-60.04	-47.04	-13.00	-51.23	-8.81	Peak
6	983.9	-64.07	-51.07	-13.00	-64.15	0.08	Peak
7	1164.0	-57.82	-44.82	-13.00	-56.35	-1.48	Peak
8	1498.0	-54.71	-41.71	-13.00	-55.65	0.94	Peak
9	1588.0	-55.57	-42.57	-13.00	-57.28	1.71	Peak
10	1878.0	-48.02			-51.92	3.90	Peak
11 @	1958.0	-38.70			-43.11	4.41	Peak
12	3758.0	-44.38	-31.38	-13.00	-54.78	10.41	Peak

Remark:

- #10: MS Signal
- #11: BS Signal



Vertical Polarization



Date: 2007-09-13

Trace: (Discrete)

Site : 08CH06-HY  
 Condition : HF-SPURIOUS-060929 VERTICAL  
 EUT : AGFS  
 Power : 24Vdc  
 Model : FG 791006  
 Mode : PCS1900 Link Mode;Ch661+ DC Charger(24V)  
 Plane : E2

	Freq	Level	Over	Limit	Read	Factor	Remark
	MHz	dBm	dB	dBm	dBm	dB	
1	175.0	-52.24	-39.24	-13.00	-43.88	-8.36	Peak
2	191.2	-52.44	-39.44	-13.00	-43.92	-8.51	Peak
3	224.9	-50.01	-37.01	-13.00	-41.96	-8.05	Peak
4	306.3	-60.23	-47.23	-13.00	-53.91	-6.32	Peak
5	332.9	-60.89	-47.89	-13.00	-55.13	-5.76	Peak
6	997.9	-62.13	-49.13	-13.00	-64.77	2.64	Peak
7	1000.0	-58.30	-45.30	-13.00	-54.25	-4.05	Peak
8	1058.0	-56.55	-43.55	-13.00	-52.94	-3.61	Peak
9	1148.0	-58.64	-45.64	-13.00	-55.91	-2.73	Peak
10	1194.0	-57.19	-44.19	-13.00	-54.76	-2.44	Peak
11	1324.0	-48.95	-35.95	-13.00	-47.69	-1.27	Peak
12	1498.0	-54.56	-41.56	-13.00	-54.76	0.20	Peak
13	1588.0	-52.95	-39.95	-13.00	-54.22	1.27	Peak
14	1878.0	-48.88			-53.17	4.29	Peak
15 @	1958.0	-33.66			-38.66	5.01	Peak
16	3758.0	-48.04	-35.04	-13.00	-57.93	9.89	Peak

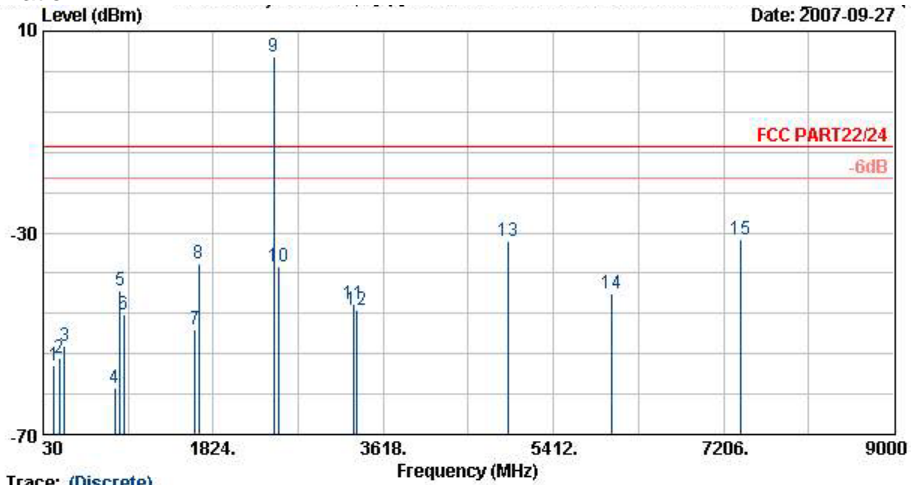
Remark:

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



4.6.8 Mode 3

Horizontal Polarization



Trace: (Discrete)  
 Site : 08CH06-HY  
 Condition : HF-SPURIOUS-060929 HORIZONTAL  
 EUT : AGFS  
 Power : 120Wac/60Hz  
 Model : FG 791006  
 Mode : GSM 850 Link;Ch189 + 11b Tx\_Ch11;2462MHz  
 + Adaptor  
 Plane : E2

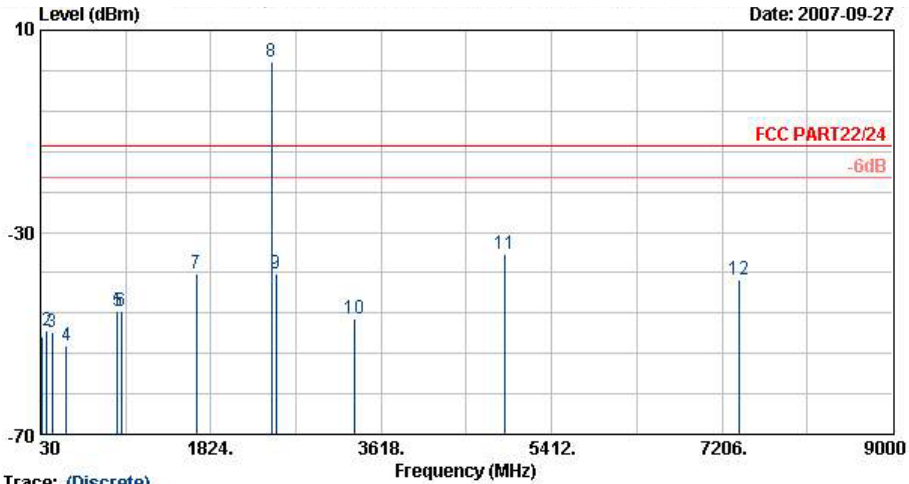
	Freq	Level	Over	Limit	Read	Factor	Remark
	MHz	dBm	dB	dBm	dBm	dB	
1	143.1	-56.30	-43.30	-13.00	-43.56	-12.74	Peak
2	199.3	-54.78	-41.78	-13.00	-41.39	-13.39	Peak
3	256.0	-52.50	-39.50	-13.00	-41.05	-11.45	Peak
4	787.9	-60.89	-47.89	-13.00	-59.07	-1.82	Peak
5	836.9	-41.44			-40.11	-1.33	Peak
6	880.3	-46.08			-45.17	-0.91	Peak
7	1628.0	-49.25	-36.25	-13.00	-51.22	1.97	Peak
8	1674.0	-36.05	-23.05	-13.00	-38.41	2.36	Peak
9 @	2464.0	5.02			-1.49	6.50	Peak
10	2508.0	-36.80	-23.80	-13.00	-43.49	6.69	Peak
11	3298.0	-44.00	-31.00	-13.00	-53.24	9.23	Peak
12	3344.0	-45.38	-32.38	-13.00	-54.78	9.40	Peak
13	4928.0	-31.70	-18.70	-13.00	-47.42	15.72	Peak
14	6028.0	-41.95	-28.95	-13.00	-62.56	20.61	Peak
15	7384.0	-31.45	-18.45	-13.00	-52.84	21.38	Peak

Remark:

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



Vertical Polarization



Trace: (Discrete)

Site : 08CH06-HY  
 Condition : HF-SFURIOUS-060929 VERTICAL  
 EUT : AGFS  
 Power : 120Vac/60Hz  
 Model : FG 791006  
 Mode : GSM 850 Link;Ch189 + 11b Tx\_Ch11;2462MHz  
 + Adaptive  
 Plane : E2

	Freq	Level	Over	Limit	Read		
	MHz	dBm	Limit	Line	Level	Factor	Remark
			dB	dBm	dBm	dB	
1	40.5	-50.62	-37.62	-13.00	-38.54	-12.08	Peak
2	97.2	-49.63	-36.63	-13.00	-41.52	-8.11	Peak
3	155.3	-49.66	-36.66	-13.00	-41.47	-8.19	Peak
4	300.0	-52.52	-39.52	-13.00	-46.06	-6.46	Peak
5	836.9	-45.62			-46.98	1.36	Peak
6	880.3	-45.74			-47.45	1.71	Peak
7	1674.0	-38.22	-25.22	-13.00	-40.37	2.16	Peak
8 @	2464.0	3.84			-3.21	7.06	Peak
9	2508.0	-38.30	-25.30	-13.00	-45.48	7.18	Peak
10	3344.0	-47.22	-34.22	-13.00	-55.77	8.55	Peak
11	4924.0	-34.28	-21.28	-13.00	-48.67	14.38	Peak
12	7384.0	-39.48	-26.48	-13.00	-59.22	19.73	Peak

Remark:

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



## 4.7 Frequency Stability (Temperature Variation)

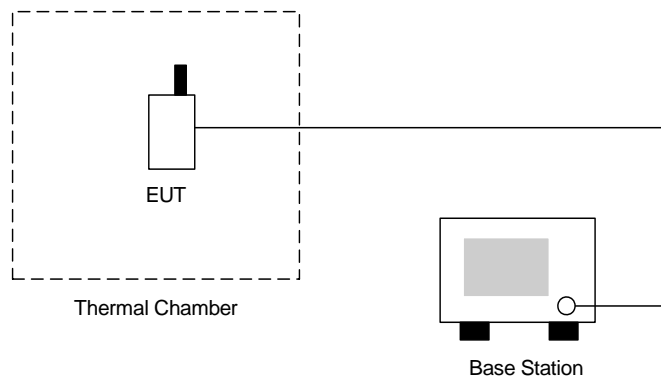
### 4.7.1 Measurement Instrument

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  $-30^{\circ}\text{C}$  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  $10^{\circ}\text{C}$  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 CH189

Temperature(°C)	Change (Hz)	Change (ppm)	Limit (ppm)	Result
-30	N/A	N/A	2.5	Passed
-20	-51	-0.06		
-10	-38	-0.04		
0	26	0.03		
10	19	0.02		
20	-14	-0.02		
30	16	0.02		
40	33	0.04		
50	45	0.05		

Remark : The EUT operating temperature range is -20 to 50°C.

• Test Mode : PCS1900 CH661

Temperature(°C)	Change (Hz)	Change (ppm)	Limit (ppm)	Result
-30	N/A	N/A	2.5	Passed
-20	38	0.02		
-10	29	0.02		
0	27	0.01		
10	-18	-0.01		
20	16	0.01		
30	-24	-0.01		
40	-25	-0.01		
50	-34	-0.02		

Remark : The EUT operating temperature range is -20 to 50°C.

## 4.8 Frequency Stability (Voltage Variation)

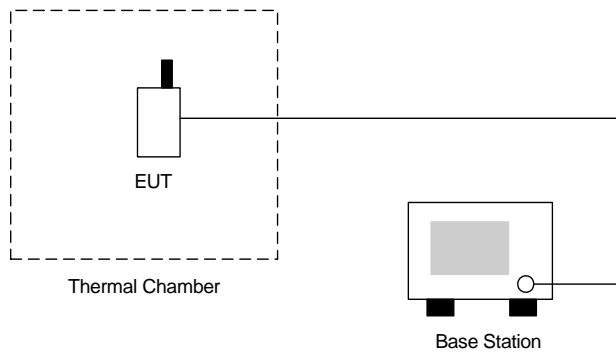
### 4.8.1 Measurement Instrument

As described in chapter 5 of this test report.

### 4.8.2 Test Procedure

1. The EUT was placed in a temperature chamber at  $25 \pm 5$  °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 CH189

Voltage(Volt)	Change (Hz)	Change (ppm)	Limit (ppm)	Result
3.9	-26.0	-0.03	2.5	Passed
BEP	-23.0	-0.03		
4.2	-22.0	-0.03		

- Test Mode : PCS1900 CH661

Voltage(Volt)	Change (Hz)	Change (ppm)	Limit (ppm)	Result
3.9	30.0	0.02	2.5	Passed
BEP	27.0	0.01		
4.2	-28.0	-0.01		

Remark:

1. Normal Voltage=3.9 V.
2. Battery End Point (BEP)= 3.7 V.



**5. List of Measurement Equipments**

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Due Date	Remark
Spectrum Analyzer	Agilent	E4408B	MY44211030	9KHz-26.5GHz	Oct. 05, 2007	Oct. 04, 2008	Radiation (03CH06-HY)
EMI Test Receiver	R&S	ESCS30	100356	9KHz-2.75GHz	Jul. 26, 2007	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)
Dc Power Supply	TOPWARD	3303D	740889	N/A	May 25, 2005	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
<b>Combined standard uncertainty Uc(y)</b>	<b>1.27</b>		
<b>Measuring uncertainty for a level of Confidence of 95% U=2Uc(y)</b>	<b>2.54</b>		

### 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 = $20 \log(1 - \Gamma_1 * \Gamma_2 * \Gamma_3)$	+0.34/-0.35	U-shaped	0.244	1	0.244
<b>Combined standard uncertainty Uc(y)</b>	<b>2.36</b>				
<b>Measuring uncertainty for a level of Confidence of 95% U=2Uc(y)</b>	<b>4.72</b>				

END OF TEST REPORT