

FCC TEST REPORT

for

47 CFR Part 22H, 24E

Equipment : GSM850/PCS1900 Dual Band Mobile Phone
Trade Name : Arima
Model No. : 2203/2204/2205/2207
FCC ID : PJO2208
Tx Frequency Range : GSM 850: 824.2~848.8MHz
 : PCS 1900: 1850.2~1909.8MHz

	Model	GSM850(W)	PCS1900(W)
	2203	0.621	0.730
Max. RF Output Power :	2204	0.755	0.810
	2205	0.695	0.850
	2207	0.650	0.780

Emission Designator : 300 KGXW
Applicant : Arima Communication Corporation
 No. 16, Lane 658, Ying Tao Road, Yingko Taipei
 Hsien, Taiwan

- The test result refers exclusively to the test presented test model / sample.
- Without written approval of SPORTON International Inc., the test report shall not be reproduced except in full.
- **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 Dec. 10, 2004 at **Sporton International Inc. LAB.**

*Daniel Lee 12/13/2004*Dr. Daniel Lee
EMC/SAR Manager**SPORTON International Inc.**

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

SPORTON International Inc.

TEL : 886-2-2696-2468

FAX : 886-2-2696-2255



Table of Contents

History of this test report.....ii

1. General Information 1

 1.1. Applicant..... 1

 1.2. Manufacturer..... 1

 1.3. Basic Description of Equipment under Test..... 1

 1.4. Feature of Equipment under Test..... 2

 1.5. 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 4

 2.4 Ancillary Equipment List..... 4

3. General Information of Test Site 5

 3.1 Test Voltage..... 5

 3.2 Test in Compliance with 5

 3.3 Frequency Range Investigated..... 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..... 10

 4.5 Conducted Emission 19

 4.6 Field Strength of Spurious Radiation 30

 4.7 Frequency Stability (Temperature Variation) 39

 4.8 Frequency Stability (Voltage Variation) 41

5. List of Measurement Equipments 42

6. Uncertainty Evaluation..... 43

Appendix A. Photographs of EUT External

Appendix B. Photographs of EUT Internal

Appendix C. Photographs of Setup



History of this test report

Original Report Issue Date: Dec. 13, 2004

No additional attachment.

Additional attachment were issued as following record:

Attachment No.	Issue Date	Description



1. General Information

1.1. Applicant

Arima Communication Corporation

No. 16, Lane 658, Ying Tao Road, Yingko Taipei Hsien, Taiwan

1.2 Manufacturer

Arima Communication Corporation

No. 16, Lane 658, Ying Tao Road, Yingko Taipei Hsien, Taiwan

1.3 Basic Description of Equipment under Test

Equipment	: GSM850/PCS1900 Dual Band Mobile Phone
Trade Name	: Arima
Model No.	: 2203/2204/2205/2207
FCC ID	: PJO2208
Accessory	: charger, and headset



1.4 Feature of Equipment under Test

DUT Type :	GSM850/PCS1900 Dual Band Mobile Phone				
Trade Name :	Arima				
Model Name :	2203/2204/2205/2207				
FCC ID :	PJO2208				
Tx Frequency :	GSM 850: 824.2~848.8MHz PCS 1900: 1850.2~1909.8MHz				
Rx Frequency :	GSM 850: 869.2~893.8 PCS 1900: 1930.2~1989.8MHz				
Antenna Type :	Fixed Internal				
Maximum Output Power :	Model	GSM850(W)	GSM850(dBm)	PCS1900(W)	PCS1900(dBm)
	2203	1.698	32.3	0.891	29.5
	2204	1.698	32.3	0.912	29.6
	2205	1.738	32.4	0.955	29.8
	2207	1.698	32.3	0.912	29.6
Maximum EIRP	Model	GSM850(W)	GSM850(dBm)	PCS1900(W)	PCS1900(dBm)
	2203	0.621	27.930	0.730	28.620
	2204	0.755	28.780	0.810	29.090
	2205	0.695	28.420	0.850	29.310
	2207	0.650	28.130	0.780	28.930
HW Version :	P1B				
SW Version :	P1B				
Digital Modulation Emission :	GMSK				
Type of Emission :	300 KGXW				
DUT Stage :	Production Unit				

1.5 Report Date

EUT Received : Dec. 06, 2004

Report Date : Dec. 13, 2004



2 Test Configuration of Equipment under Test

2.1 Test Manner

- a. The spurious emission measurements were carried out in semi-anechoic chamber with 3-meter test range.
- b. During all testings, EUT is in link mode with base station emulator at maximum power level. (PCL=5 for GSM850 and PCL=0 for PCS 1900)
- c. Frequency range investigated: radiated emission 30 MHz to 9000MHz for GSM850 and 30MHz to 19000MHz for PCS19000.

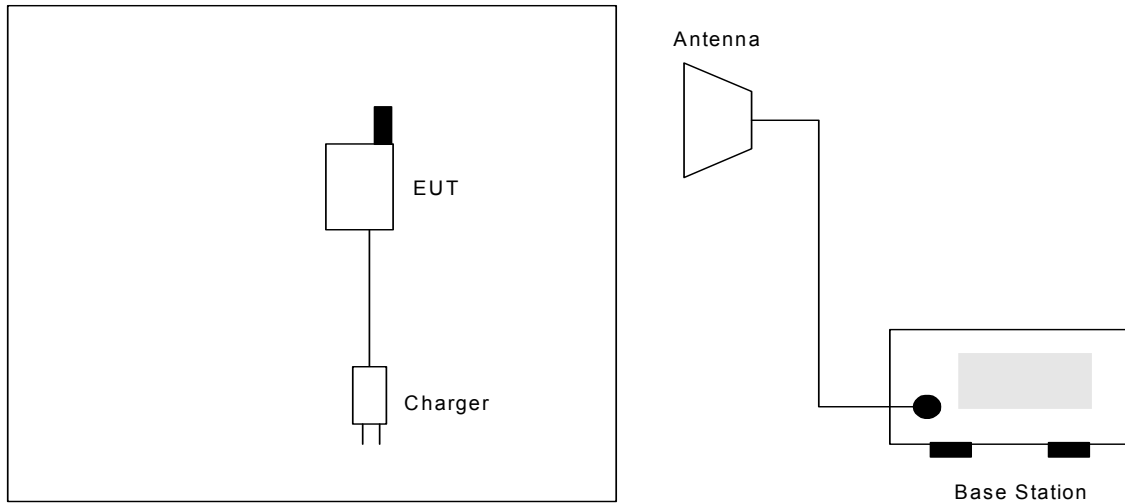
2.2 Test Mode

Application	GSM 850	PCS 1900
Radiated Emission	<input checked="" type="checkbox"/> Mode 1: CH 128	<input checked="" type="checkbox"/> Mode 2: CH 661
Conducted Measurement	<input checked="" type="checkbox"/> Mode 1: CH 128	<input checked="" type="checkbox"/> Mode 2: CH 661

Remark :

- 1. There four EUTs are serial models of 2208. They have the same RF portions, main board and antenna. The differences between them are ID and cover. Therefore, the retested items are conducted power, ERP/EIRP, and the spurious emission to verify them compicance.
- 2. Only the raw data of the worst spurious emission (model 2205) are attached in the report.

2.3 Connection Diagram of Test System



2.4 Ancillary Equipment List

Item	Equipment	Model No.	Serial No.
1.	Base Station	CMU200	105934
2.	Base Station	E5515C	GB43460754
3.	Cable	RJ-11	N/A
4.	Cable	RJ-232	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. The Industry Canada file number for this site is IC 4088.

3.1 Test Voltage

110V/ 60Hz

3.2 Test in Compliance with

47 CFR Part 22H, 24E and Part 2.

3.3 Frequency Range Investigated

- a. Radiation: from 30MHz to 9000MHz for GSM 850.
- b. Radiation: from 30 MHz to 19000 MHz for PCS 1900.

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

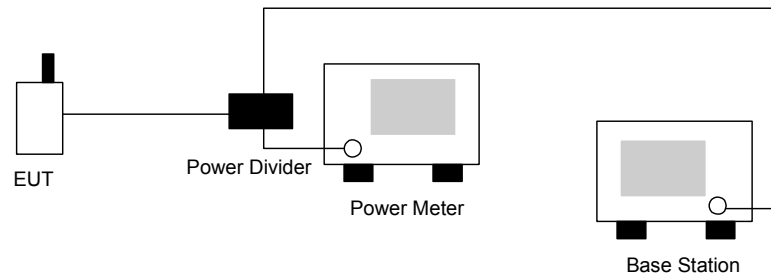
4.2.1 Measurement Instruments :

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 GSM 850 and/or PCL=0 for PCS 1900 through base station.
3. Select lowest, middle, and highest channels for each band.

4.2.3 Test Setup Layout :



4.2.4 Test Result :

Model	Bands	Channel	Frequency (MHz)	Conducted Power (dBm)	Conducted Power (Watts)
2203	GSM 850	128	824.2 (Low)	31.9	1.549
		189	836.4 (Mid)	32.2	1.660
		251	848.8 (High)	32.3	1.698
	PCS 1900	512	1850.2 (Low)	29.5	0.891
		661	1880.0 (Mid)	29.4	0.871
		810	1909.8 (High)	29.3	0.851
2204	GSM 850	128	824.2 (Low)	31.8	1.514
		189	836.4 (Mid)	32.3	1.698
		251	848.8 (High)	32.1	1.622
	PCS 1900	512	1850.2 (Low)	29.6	0.912
		661	1880.0 (Mid)	29.4	0.871
		810	1909.8 (High)	29.1	0.813
2205	GSM 850	128	824.2 (Low)	31.9	1.549
		189	836.4 (Mid)	32.2	1.660
		251	848.8 (High)	32.4	1.738
	PCS 1900	512	1850.2 (Low)	29.8	0.955
		661	1880.0 (Mid)	29.6	0.912
		810	1909.8 (High)	29.4	0.871
2207	GSM 850	128	824.2 (Low)	31.8	1.514
		189	836.4 (Mid)	32.0	1.585
		251	848.8 (High)	32.3	1.698
	PCS 1900	512	1850.2 (Low)	29.6	0.912
		661	1880.0 (Mid)	29.5	0.891
		810	1909.8 (High)	29.2	0.832

4.3 ERP / EIRP Measurement

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

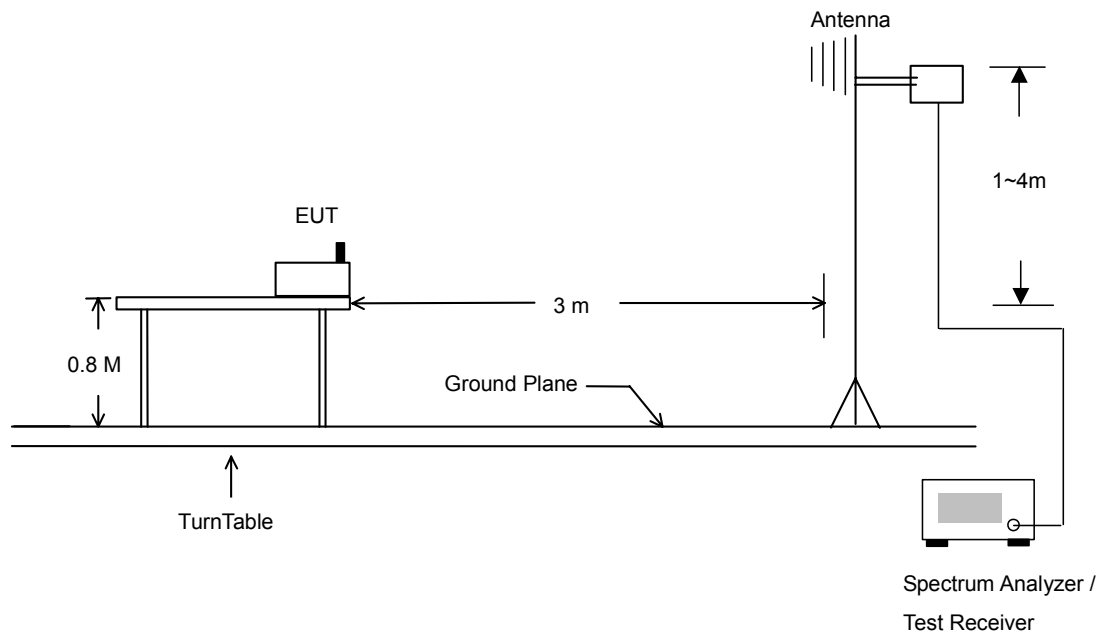
4.3.1 Measurement Instruments

As described in chapter 5 of this test report.

4.3.2 Test Procedure

1. The EUT was placed on a 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 radiated power.
4. The height of the receiving antenna is varied between one meter and four meters to reach the maximum radiated power for both horizontal and vertical polarizations.
5. Taking the record of maximum ERP/EIRP.
6. A Horn antenna was substituted in place of the EUT and was driven by a signal generator.
7. The conducted power at the terminal of the Horn antenna is measured.
8. Repeat step 3 to step 5.

4.3.3 Test Setup Layout of ERP/EIRP





4.3.4 Test Result

Model	GSM850 Radiated Power ERP					
	H Polarization			V Polarization		
	Frequency (MHz)	EIRP (dBm)	EIRP (Watts)	Frequency (MHz)	EIRP (dBm)	EIRP (Watts)
2203	824.090	27.930	0.621	824.240	27.500	0.562
	836.420	24.020	0.250	836.320	25.540	0.360
	848.720	24.670	0.290	848.870	25.920	0.390
2204	824.320	28.780	0.755	824.170	26.560	0.452
	836.340	26.090	0.410	836.470	25.030	0.320
	848.820	24.350	0.270	848.720	24.400	0.280
2205	824.240	28.420	0.695	824.240	27.100	0.512
	836.370	25.790	0.380	836.390	26.720	0.470
	848.840	23.870	0.240	848.740	25.350	0.340
2207	824.220	28.130	0.650	824.140	27.050	0.506
	836.390	24.860	0.310	836.470	24.730	0.300
	848.740	23.530	0.230	848.940	25.920	0.390

Model	PCS1900 Radiated Power EIRP					
	H Polarization			V Polarization		
	Frequency (MHz)	EIRP (dBm)	EIRP (Watts)	Frequency (MHz)	EIRP (dBm)	EIRP (Watts)
2203	1850.270	28.280	0.670	1850.270	28.090	0.640
	1879.970	27.710	0.590	1880.170	28.620	0.730
	1909.790	23.300	0.210	1909.720	26.220	0.420
2204	1850.170	26.280	0.420	1850.190	26.840	0.480
	1880.070	29.090	0.810	1880.120	28.470	0.700
	1909.820	23.490	0.220	1909.870	25.110	0.320
2205	1850.240	29.090	0.810	1850.220	29.310	0.850
	1879.940	28.140	0.652	1880.020	28.270	0.670
	1909.740	25.380	0.350	1909.770	21.370	0.140
2207	1850.170	26.080	0.410	1850.220	28.280	0.670
	1880.020	28.740	0.750	1880.020	28.930	0.780
	1909.630	24.190	0.260	1909.890	25.100	0.320

4.4 Occupied Bandwidth and Band Edge Measurement

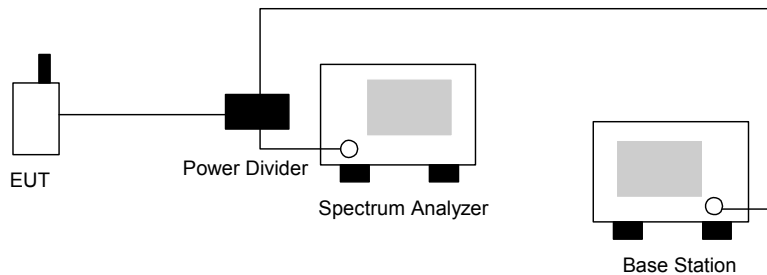
4.4.1 Measurement Instruments

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 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 $BW/10$.

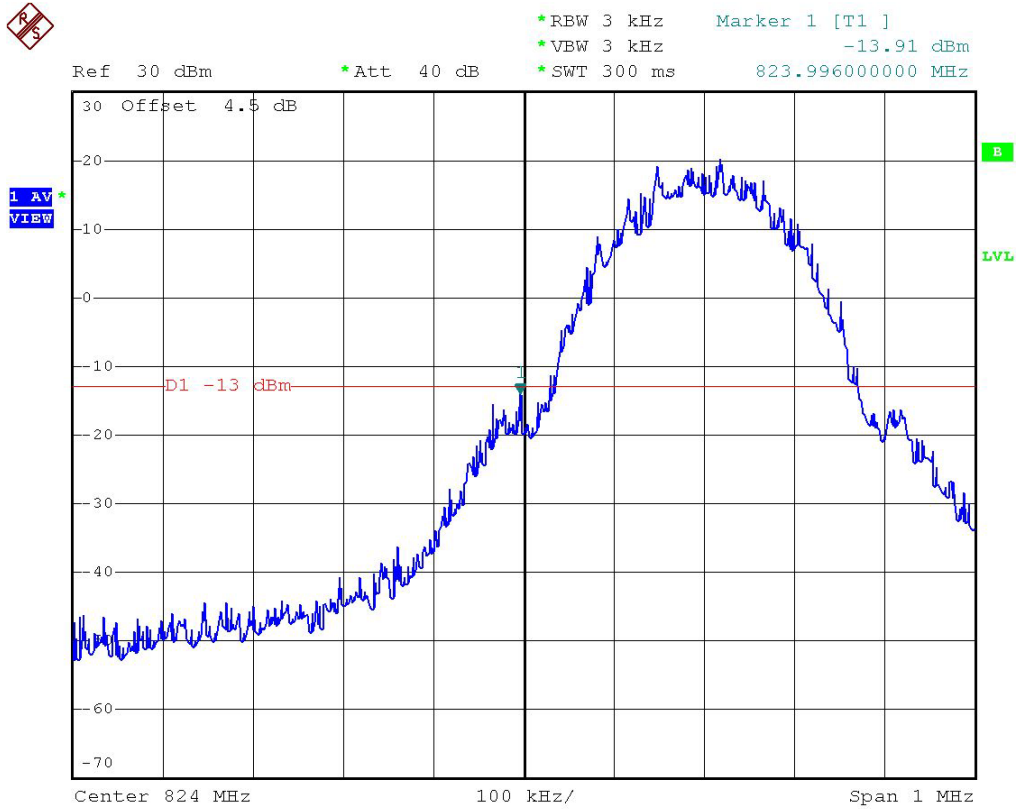
4.4.3 Test Setup Layout





4.4.4 Test Result

- Test Mode : GSM 850 CH189 Lower Band Edge
- Power State : High

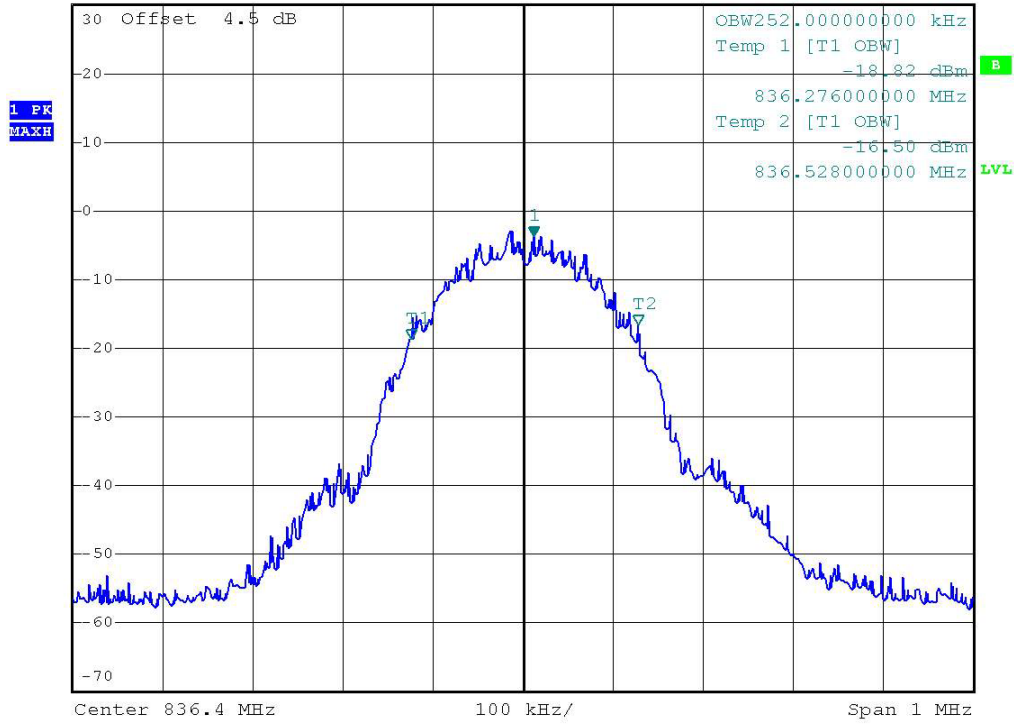




- Test Mode : GSM 850 CH189 99% Occupied Bandwidth
- Power State : Low

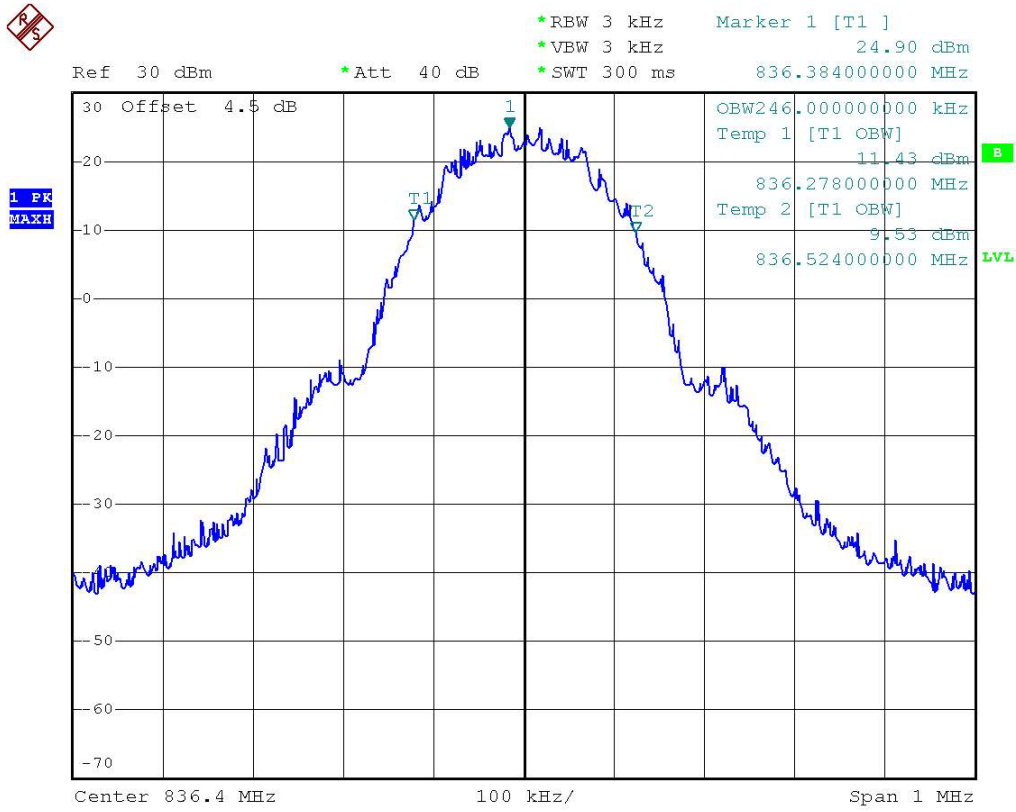


Ref 30 dBm *Att 40 dB *RBW 3 kHz Marker 1 [T1] -3.83 dBm
 *VBW 3 kHz 836.412000000 MHz
 *SWT 300 ms



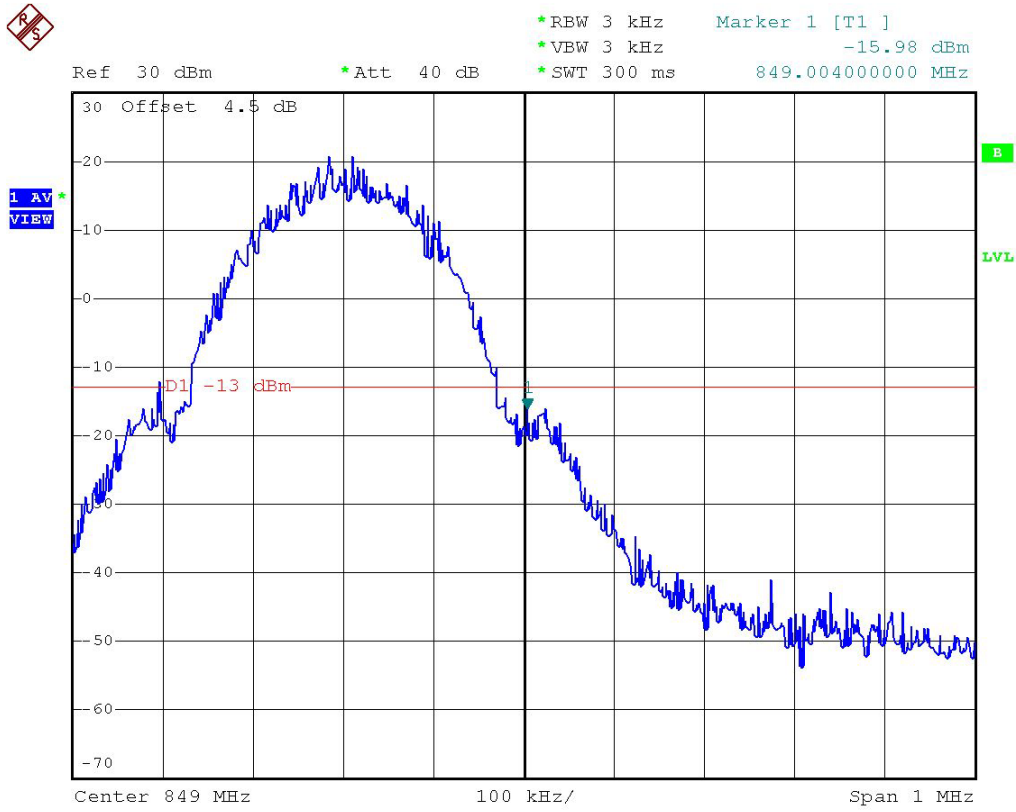


- Test Mode : GSM 850 CH189 99% Occupied Bandwidth
- Power State : High



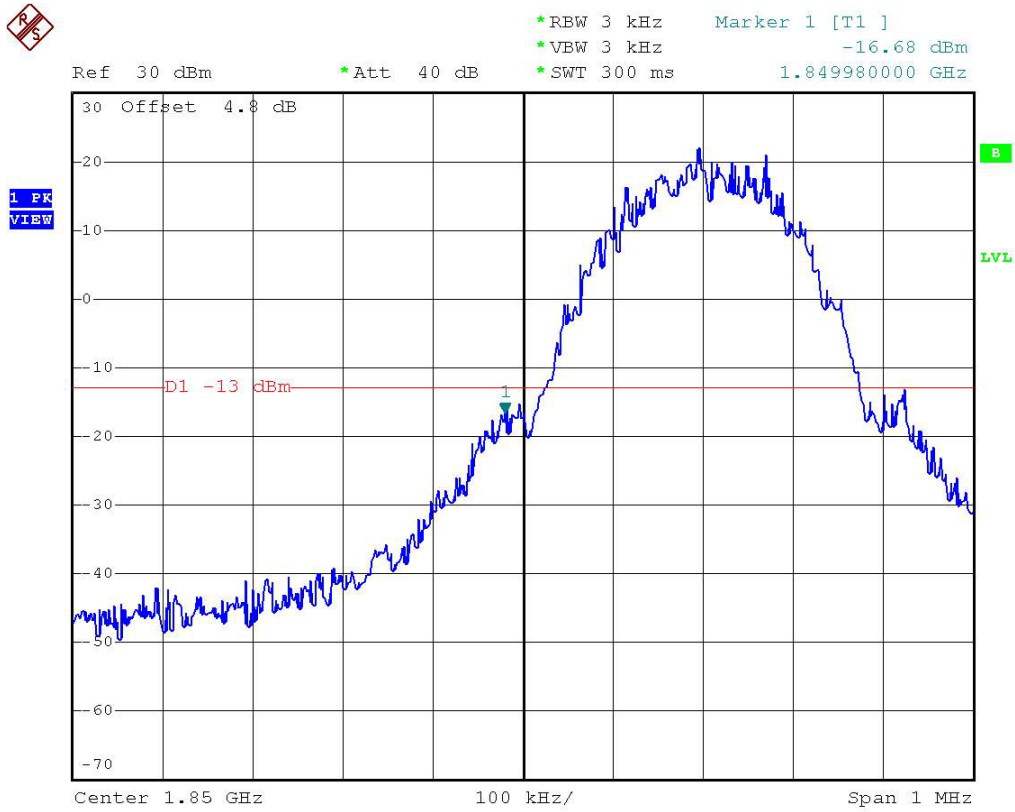


- Test Mode : GSM 850 CH189 upper Band Edge
- Power State : High



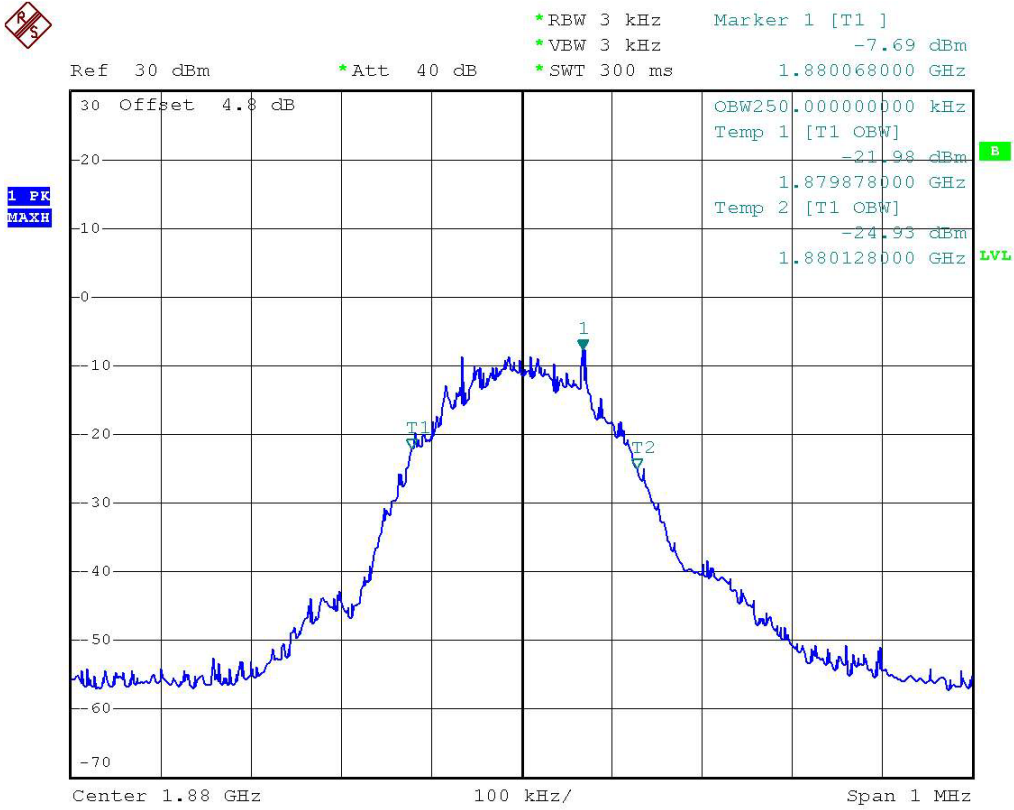


- Test Mode : PCS 1900 CH661 Lower Band Edge
- Power State : High



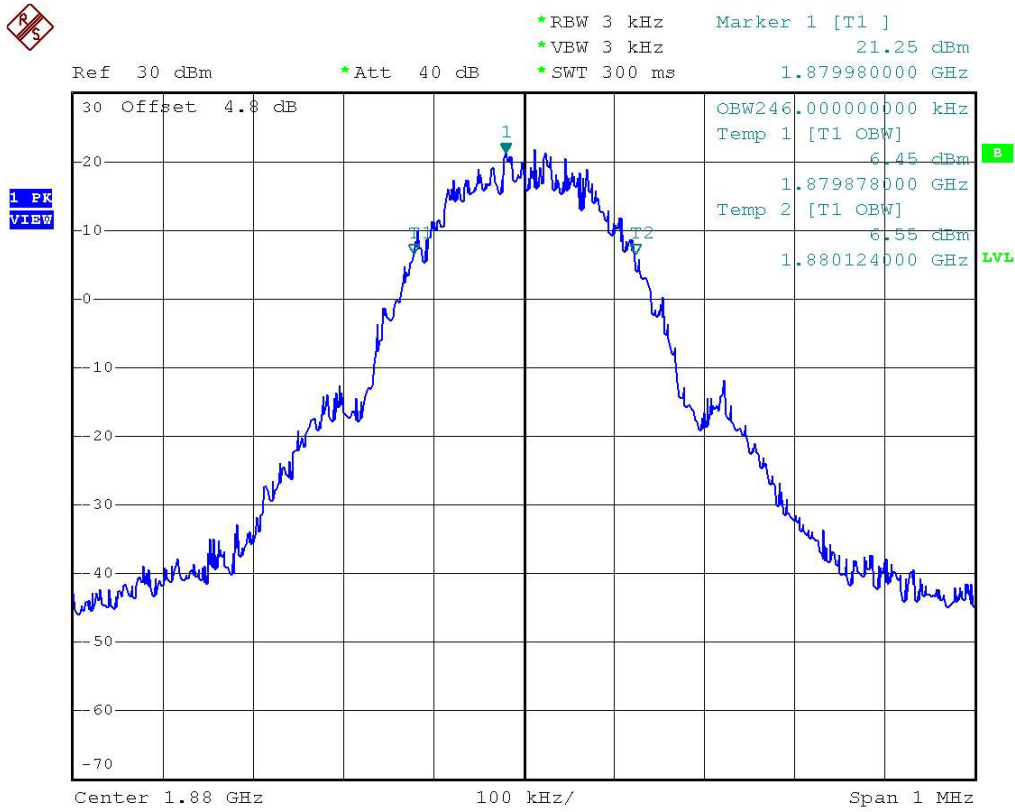


- Test Mode : PCS 1900 CH661 99% Occupied Bandwidth
- Power State : Low



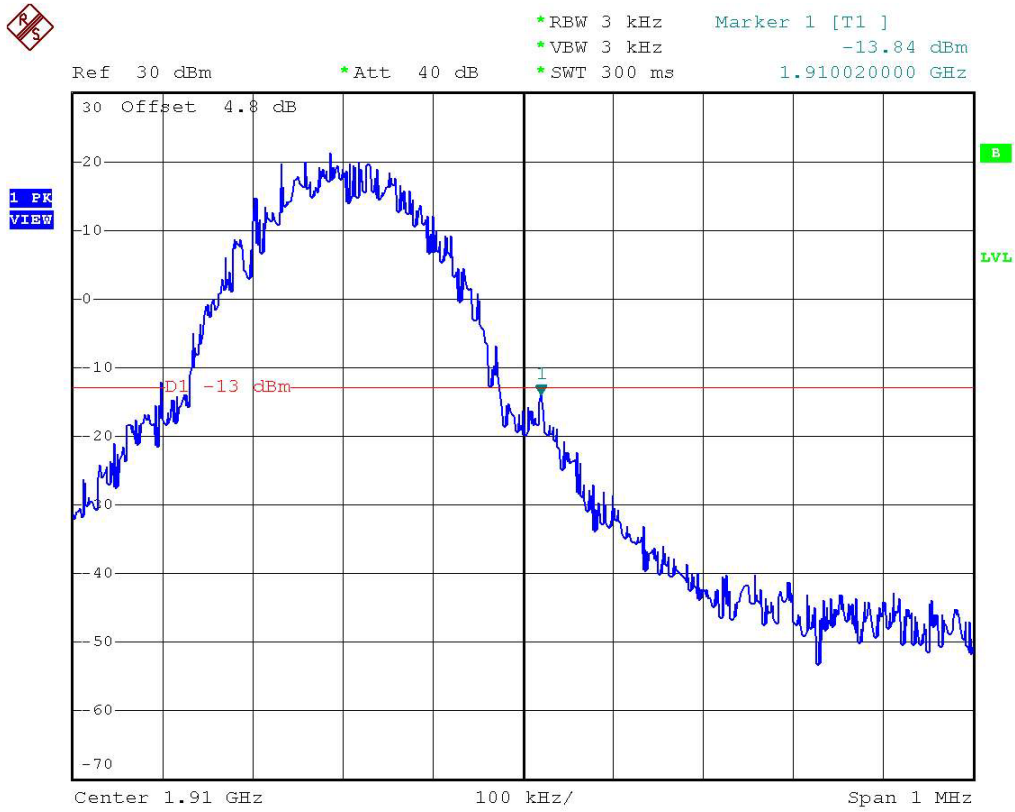


- Test Mode : PCS 1900 CH661 99% Occupied Bandwidth
- Power State : High





- Test Mode : PCS 1900 CH661 Upper Band Edge
- Power State : High



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

