FCC TEST REPORT

for

47 CFR Part 22H and 24E

Equipment : **Wireless Terminal**

Model No. : **CT-10 / Chia**

FCC ID : **QDJ-0406CHAI1**

Filing Type : **Certification**

Applicant : **Chi Mei Communication Systems, Inc.**
11F, No. 39, Chung Hua RD. Sec. 1, Taipei 100, 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.**

SPORTON International Inc.

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

The applicant has been cautioned as to the following:

15.21 Information to User.

The users manual or instruction manual for an intentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

15.27(a) Special Accessories.

Equipment marketed to a consumer must be capable of complying with the necessary regulations in the configuration in which the equipment is marketed. Where special accessories, such as shielded cables and/or special connectors are required to enable an unintentional or intentional radiator to comply with the emission limits in this part, the equipment must be marketed with, i.e. shipped and sold with, those special accessories. However, in lieu of shipping or packaging the special accessories with the unintentional or intentional radiator, the responsible party may employ other methods of ensuring that the special accessories are provided to the consumer, without additional charge.

Information detailing any alternative method used to supply the special accessories for a grant of equipment authorization or retained in the verification records, as appropriate. The party responsible for the equipment, as detailed in § 2.909 of this chapter, shall ensure that these special accessories are provided with the equipment. The instruction manual for such devices shall include appropriate instructions on the first page of text concerned with the installation of the device that these special accessories must be used with the device. It is the responsibility of the user to use the needed special accessories supplied with the equipment.

Table of Contents

Required information per ISO/IEC Guide 25-1990, paragraph 13.2:

a) **Test Report**

b) Laboratory: Sporton International Inc.
No.52, Hwa-Ya 1st RD., Hwa Ya Technology Park, Kwei-Shan Hsiang, TaoYuan Hsien, Taiwan, R.O.C.

c) Report Number: F462917

d) Client: **Chi Mei Communication Systems, Inc.**
11F, No. 39, Chung Hua RD. Sec.1, Taipei 100, Taiwan

e) Identification: Model Name: CT-10 / Chia
FCC ID : QDJ-0406CHAI1
Description: GSM/GPRS 850/1900 Radio

f) EUT Condition: Not required unless specified in individual tests.

g) Report Date: July 16, 2004
EUT Received: July 05, 2004

h, j, k): As indicated in individual tests.

i) Sampling method: No sampling procedure used.

l) Uncertainty: In accordance with Sporton internal quality manual.

m) Supervised by:

Hendry Yang 2004/7/22

Hendry Yang

n) Results: The results presented in this report relate only to the item tested.

o) Reproduction: This report must not be reproduced, except in full, without written permission from this laboratory.

Accessories Used During Testing:

Type	**Model**
EUT	CT-10 / Chia
RJ-11	N/A
RJ-232	N/A
Base Station Simulator	CMU200
Base Station Simulator	E5515C

List of General Information Required for Certification

In Accordance with FCC Rules and Regulations,
Volume II, Part 2 and
22H, 24E, Confidentiality

Sub-Part 2.1033

(c)(1): **Name and Address of Applicant**:

Chi Mei Communication Systems, Inc.
11F, No. 39, Chung Hua RD. Sec.1, Taipei 100,
Taiwan

Manufacturer

As above

(c)(2): **FCC ID**: QDJ-0406CHAI1

Model Number: CT-10 / Chia

(c)(3): **Instruction Manual(s)**:

Please See Attached Exhibits

(c)(4): **Type of Emission**: 300KGXW

(c)(5): **FREQUENCY RANGE, MHz**: 824.2 to 848.8 GSM/GPRS 850
1850.2 to 1909.8 GSM/GPRS 1900

(c)(6): **Power Rating, Watts**:

GSM 850:	1.854	(conducted)	/	1.164	(ERP)
PCS 1900:	0.899	(conducted)	/	0.697	(EIRP)

Switchable		Variable	N/A
	x		

(c)(7): **Maximum Power Rating, Watts**: 2 (GSM 850)
1 (PCS 1900)

Subpart 2.1033 (continued)
(c)(8): Voltages & Currents in All Elements in Final RF Stage, Including Final Transistor or Solid State Device:

Collector Current, A =	0.5
Collector Voltage, Vdc =	3.7
Supply Voltage, Vdc =	3.7

(c)(9): **Tune-Up Procedure**:

Please See Attached Exhibits

(c)(10): **Circuit Diagram/Circuit Description**:

Please See Attached Exhibits

(c)(11): **Label Information**:

Please See Attached Exhibits

(c)(12): **Photographs**:

Please See Attached Exhibits

(c)(13): **Digital Modulation Description**:

___ Attached Exhibits
_x_ N/A

(c)(14): **Test and Measurement Data**:

Follows

Testimonial
and
Statement of Certification

This is to certify that:

1. **That** the application was prepared either by, or under the direct supervision of, the undersigned.
2. **That** the technical data supplied with the application was taken under my direction and supervision.
3. **That** the data was obtained on representative units, randomly selected.
4. **That**, to the best of my knowledge and belief, the facts set forth in the application and accompanying technical data are true and correct.

Certified by: Daniel Lee

Certificate of NVLAP Accreditation

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

ISO/IEC 17025:1999
ISO 9002:1994

Certificate of Accreditation

DEPARTMENT OF COMMERCE * UNITED STATES OF AMERICA *

SPORTON INTERNATIONAL, INC.
TAIPEI HSIEN 221
TAIWAN

is recognized by the National Voluntary Laboratory Accreditation Program for satisfactory compliance with criteria set forth in NIST Handbook 150:2001, all requirements of ISO/IEC 17025:1999, and relevant requirements of ISO 9002:1994. Accreditation is awarded for specific services, listed on the Scope of Accreditation, for:

ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS

December 31, 2004
Effective through

For the National Institute of Standards and Technology
NVLAP Lab Code: 200079-0

NVLAP-01C (06-01)

Sub-part
2.1033(c)(14): **Test and Measurement Data**

All tests and measurement data shown were performed in accordance with FCC Rules and Regulations, Volume II; Part 2, Sub-part J, Sections 2.947, 2.1033(c), 2.1041, 2.1046, 2.1047, 2.1079, 2.1051, 2.1053, 2.1055, 2.1057 and the following individual Parts:

22 – Public Mobile Services
x 22 Subpart H - Cellular Radiotelephone Service
22.901(d) - Alternative technologies and auxiliary services
x 24 – Personal Communications Services

General Information

Product Feature & Specification	
DUT Type	Wireless Terminal
Model Name	CT-10 / Chia
Tx Frequency	GSM 850: 824 MHz~849 MHz GSM 1900: 1850 MHz~1910 MHz
Rx Frequency	GSM 850: 869 MHz~894 MHz GSM 1900: 1930 MHz~1990 MHz
Channel Spacing	200 kHz
Maximum Output Power to Antenna	GSM850: 32.7 dBm GSM1900: 29.5 dBm
Antenna Gain for each band (850/1900)	GSM850: -4 dBi / PCS1900: -3.5 dBi
Type of Modulation	GMSK
DUT Stage	Production Unit
Application Type	Certification

Standard Test Conditions

and

Engineering Practices

Except as noted herein, the following conditions and procedures were observed during the testing:

In accordance with TIA603, and unless otherwise indicated in the specific measurement results, the ambient temperature of the actual EUT was maintained within the range of 10° to 40°C (50° to 104 °F) unless the particular equipment requirements specify testing over a different temperature range. Also, unless otherwise indicated, the humidity levels were in the range of 10% to 90% relative humidity.

Prior to testing, the EUT was tuned up in accordance with the manufacturer's alignment procedures. All external gain controls were maintained at the position of maximum and/or optimum gain throughout the testing.

Measurement results, unless otherwise noted, are worst-case measurements.

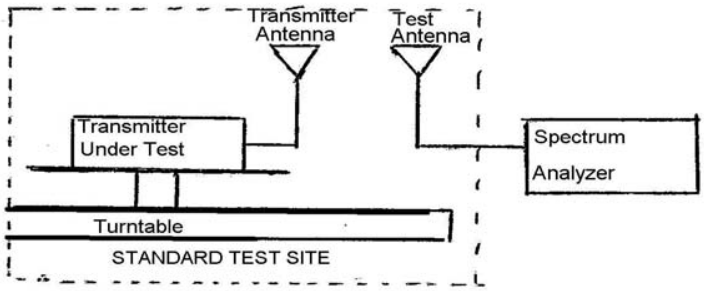
Name of Test: EIRP Carrier Power (Radiated)

Specification: TIA/EIA 603A (Substitution Method)

Definition: The average radiated power of device is the equivalent power required, when delivered to a substitution antenna, to produce at a distant point the same average received power as produced by the licensed device.

Method Of Measurement:

a) Connect the equipment as illustrated. Place the transmitter to be tested on the turntable in the standard test site.



b) Raise and lower the test antenna from 1m to 4m and rotate turntable from 0° to 360°. Record the highest received signal showed in spectrum analyzer as Rt . Calculate electric field strength in receive antenna as Et.

Et = Rt + AF

AF (dB/m): Receive Antenna Factor

c) Replace the transmitter under test with a substitution antenna. The center of the antenna should be at the same location as the transmitter under test. Connect the antenna to a signal generator with a known output power level Ps. Raise and lower the test antenna like in step b) and record the highest received signal showed in spectrum analyzer as R_S. Calculate electric field strength in receive antenna as Es.

Es = Rs + AF

AF (dB/m): Receive Antenna Factor

d) Calculate radiated power as following:

EIRP = Ps + Et – Es + Gs

Ps (dBm): Input Power to Substitution Antenna
Gs (dBi) : Substitution Antenna Gain

Results Attached

Tested By: Tim Kao

Test Results For: ERP/EIRP Carrier Power (Radiated)

Conducted Power

GSM 850

Bands	Channel	Frequency (MHz)	Conducted Power (dBm)	Conducted Power (Watts)
GSM 850	128	824.2 (Low)	32.26	1.683
	189	836.4 (Mid)	32.59	1.816
	251	848.8 (High)	32.68	1.854

PCS 1900

Bands	Channel	Frequency (MHz)	Conducted Power (dBm)	Conducted Power (Watts)
PCS 1900	512	1850.2 (Low)	29.22	0.836
	661	1880.0 (Mid)	29.49	0.889
	810	1909.8 (High)	29.34	0.899

ERP/EIRP

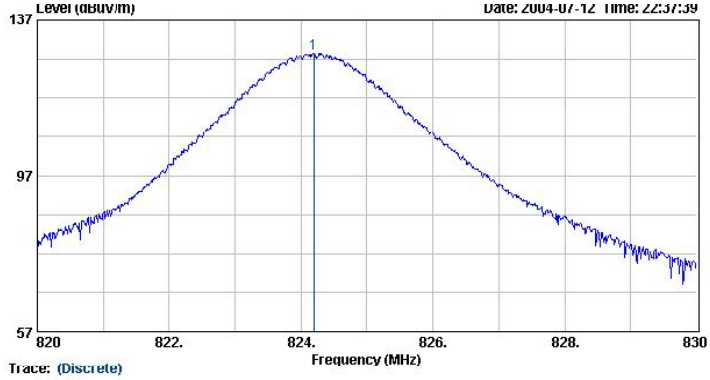
GSM 850 ERP

Freq MHz	Pol	Substitution Antenna Input Power (dBm)	Substitution Antenna Gain (dBd)	Et (dBuV/m)	Es (dBuV/m)	Et - Es (dB)	Radiated Power (dBm)	Radiated Power (Watts)
824.20	H	-2.49	-1.62	128.39	93.63	34.76	30.66	1.164
836.46	H	-2.49	-1.54	125.65	93.85	31.80	27.77	0.599
848.90	H	-2.48	-1.46	124.66	94.09	30.57	26.63	0.461
824.17	V	-2.49	-1.62	122.85	93.62	29.23	25.12	0.325
836.35	V	-2.49	-1.54	123.59	93.85	29.74	25.71	0.373
848.82	V	-2.48	-1.46	123.67	94.09	29.58	25.64	0.367

PCS 1900 EIRP

Freq MHz	Pol	Substitution Antenna Input Power (dBm)	Substitution Antenna Gain (dBi)	Et (dBuV/m)	Es (dBuV/m)	Et - Es (dB)	Radiated Power (dBm)	Radiated Power (Watts)
1850.15	H	-3.76	6.64	123.31	101.70	21.61	24.50	0.282
1879.95	H	-3.78	6.65	125.72	101.64	24.08	26.95	0.495
1909.83	H	-3.81	6.66	127.16	101.58	25.58	28.43	0.697
1850.15	V	-3.76	6.64	118.13	101.70	16.43	19.32	0.085
1850.15	V	-3.78	6.65	118.62	101.64	16.98	19.85	0.097
1909.87	V	-3.81	6.66	121.11	101.58	19.53	22.38	0.173

GSM 850 CH128 Horizontal Polarization



Trace: (Discrete)

Site	: 03CH06
Condition	: 3m BI LOG 2004 0629 HORIZONTAL
eut	: GSM/GPRS With Bluetooth
power	: AC 120V / 60Hz
model	:
memo	: GSM850 CH128 Link mode

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1 @	824.19	128.39	------	------	105.13	20.30	0.00	2.96	

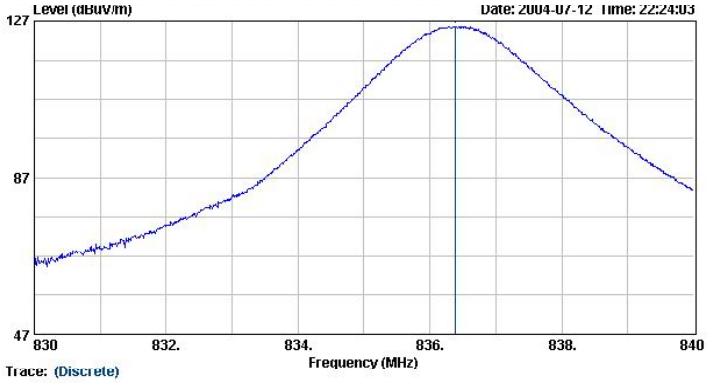
GSM 850 CH128 Vertical Polarization

Trace: (Discrete)

Site	: 03CH06
Condition	: 3m BI LOG 2004 0629 VERTICAL
eut	: GSM/GPRS With Bluetooth
power	: AC 120V / 60Hz
model	:
memo	: GSM850 CH128 Link mode

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1 @	824.11	122.85	------	------	99.59	20.30	0.00	2.96	Peak

GSM 850 CH189 Horizontal Polarization

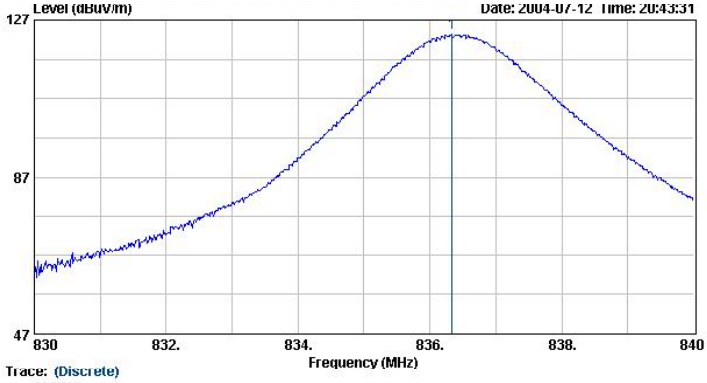


Trace: (Discrete)

Site : 03CH06
Condition : 3m BI LOG 2004 0629 HORIZONTAL
eut : GSM/GPRS With Bluetooth
power : AC 120V / 60Hz
model :
memo : GSM850 CH189 Link mode

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1 @	836.39	125.65	------	------	102.31	20.35	0.00	3.00	

GSM 850 CH189 Vertical Polarization



Trace: (Discrete)

Site : 03CH06
Condition : 3m BI LOG 2004 0629 VERTICAL
eut : GSM/GPRS With Bluetooth
power : AC 120V / 60Hz
model :
memo : GSM850 CH189 Link mode

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1 @	836.34	123.59	------	------	100.25	20.35	0.00	3.00	Peak

GSM 850 CH251 Horizontal Polarization

Trace: (Discrete)

Site : 03CH06
Condition : 3m BI LOG 2004 0629 HORIZONTAL
eut : GSM/GPRS With Bluetooth
power : AC 120V / 60Hz
model :
memo : GSM850 CH251 Link mode

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1 @	848.71	124.66	------	------	101.22	20.40	0.00	3.04	

GSM 850 CH251 Vertical Polarization

Trace: (Discrete)

Site : 03CH06
Condition : 3m BI LOG 2004 0629 VERTICAL
eut : GSM/GPRS With Bluetooth
power : AC 120V / 60Hz
model :
memo : GSM850 CH251 Link mode

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1 @	848.90	123.67	------	------	100.24	20.40	0.00	3.04	Peak

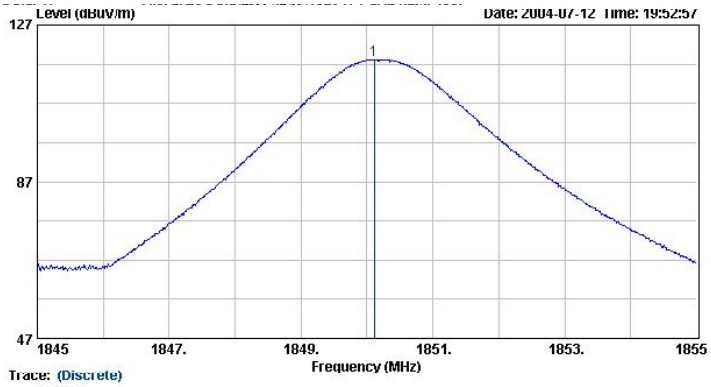
PCS 1900 CH512 Horizontal Polarization

Trace: (Discrete)

Site : 03CH06
Condition : 3m HF-HORN AH-118 HORIZONTAL
eut : GSM/GPRS With Bluetooth
power : AC 120V / 60Hz
model :
memo : PCS CH512 Link mode

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1 @	1850.26	123.31	------	------	93.14	27.25	0.00	2.92	

PCS 1900 CH512 Vertical Polarization

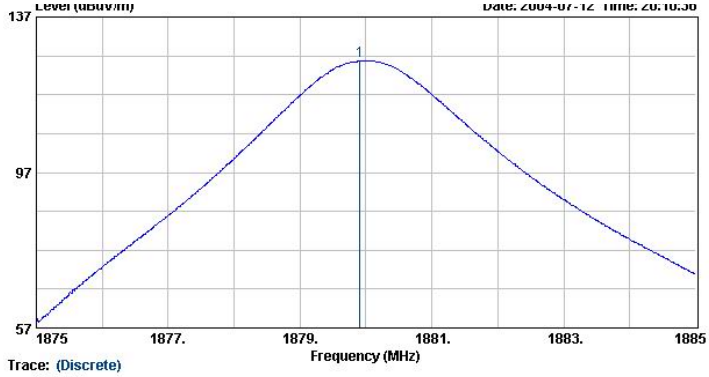


Trace: (Discrete)

Site : 03CH06
Condition : 3m HF-HORN AH-118 VERTICAL
eut : GSM/GPRS With Bluetooth
power : AC 120V / 60Hz
model :
memo : PCS CH512 Link mode

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1 @	1850.11	118.13	------	------	87.96	27.25	0.00	2.92	

PCS 1900 CH661 Horizontal Polarization

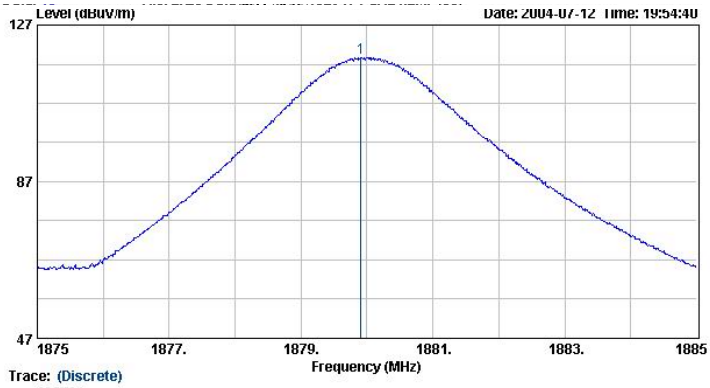


Trace: (Discrete)

Site : 03CH06
Condition : 3m HF-HORN AH-118 HORIZONTAL
eut : GSM/GPRS With Bluetooth
power : AC 120V / 60Hz
model :
memo : PCS CH661 Link mode

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Factor	Preamp Factor	Cable Loss	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1 @	1879.91	125.72	------	------	95.36	27.42	0.00	2.95	

PCS 1900 CH661 Vertical Polarization

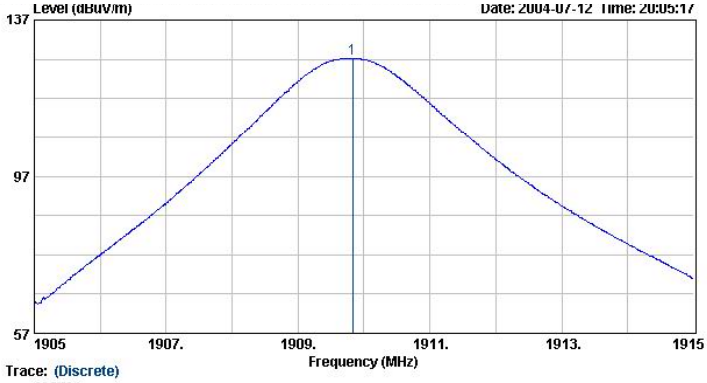


Trace: (Discrete)

Site : 03CH06
Condition : 3m HF-HORN AH-118 VERTICAL
eut : GSM/GPRS With Bluetooth
power : AC 120V / 60Hz
model :
memo : PCS CH661 Link mode

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Factor	Preamp Factor	Cable Loss	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1 @	1879.91	118.62	------	------	88.25	27.42	0.00	2.95	

PCS 1900 CH810 Horizontal Polarization

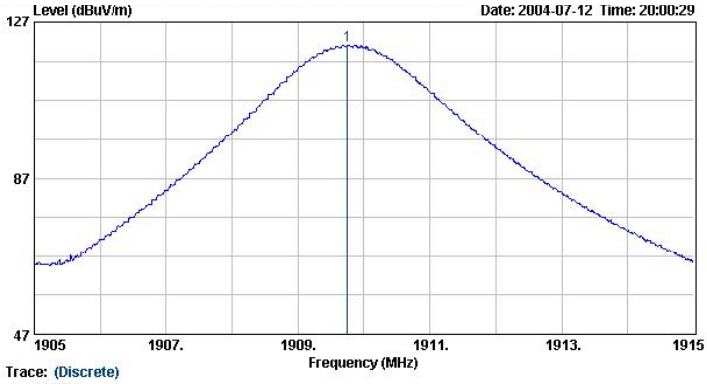


Trace: (Discrete)

Site : 03CH06
Condition : 3m HF-HORN AH-118 HORIZONTAL
eut : GSM/GPRS With Bluetooth
power : AC 120V / 60Hz
model :
memo : PCS CH810 Link mode

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1 @	1909.83	127.16	------	------	96.61	27.58	0.00	2.97	

PCS 1900 CH810 Vertical Polarization



Trace: (Discrete)

Site : 03CH06
Condition : 3m HF-HORN AH-118 VERTICAL
eut : GSM/GPRS With Bluetooth
power : AC 120V / 60Hz
model :
memo : PCS CH810 Link mode

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1 @	1909.75	121.11	------	------	90.55	27.58	0.00	2.97	

Name of Test: Emission Masks (Occupied Bandwidth)

Specification: 47 CFR 2.1049(c)(1), 22

Test Equipment: As per attached page

Measurement Procedure

1. The EUT and test equipment were set up as shown on the following page with the Spectrum Analyzer connected.

2. For EUTs supporting digital modulation, the digital modulation mode was operated to its maximum extent.

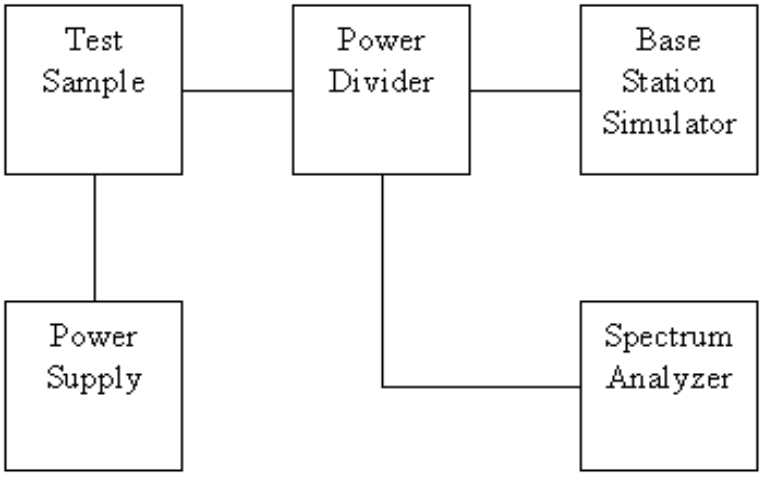
3. The occupied bandwidth was measured with the Spetrum Analyzer controls set as shown on the test results.

4. Measurement Results: Attached

Tested By: Tim Kao

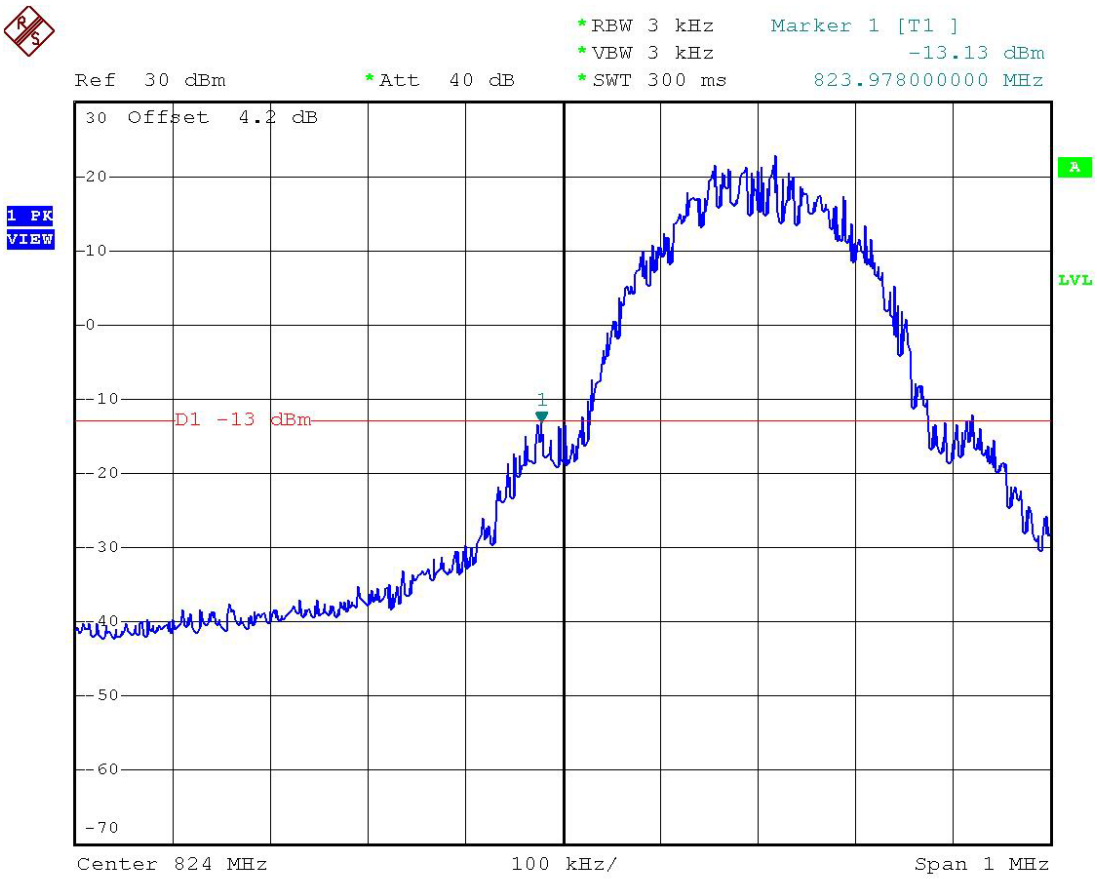
Transmitter Spurious Emission

Test A. Occupied Bandwidth (In-Band Spurious)
Test B. Out-of-Band Spurious



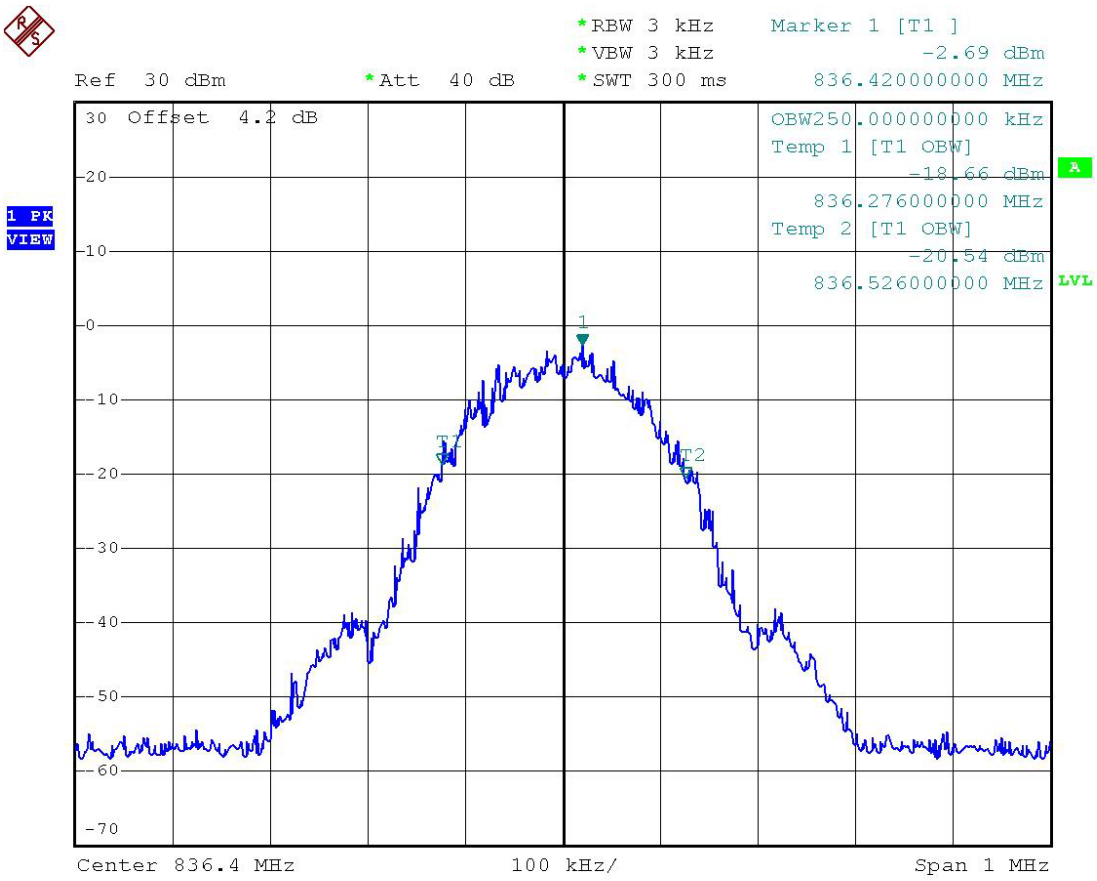
Asset	Model Name	S/N
Base Station Simulator	CMU200	102278
Base Station Simulator	E5515C	GB43460754
Spectrum Analyzer	FSP30	838858/014
AC/DC Power Source	HPA-500W	HPA0100024

Name of Test: Emission Masks (Occupied Bandwidth)
State 2:High Power



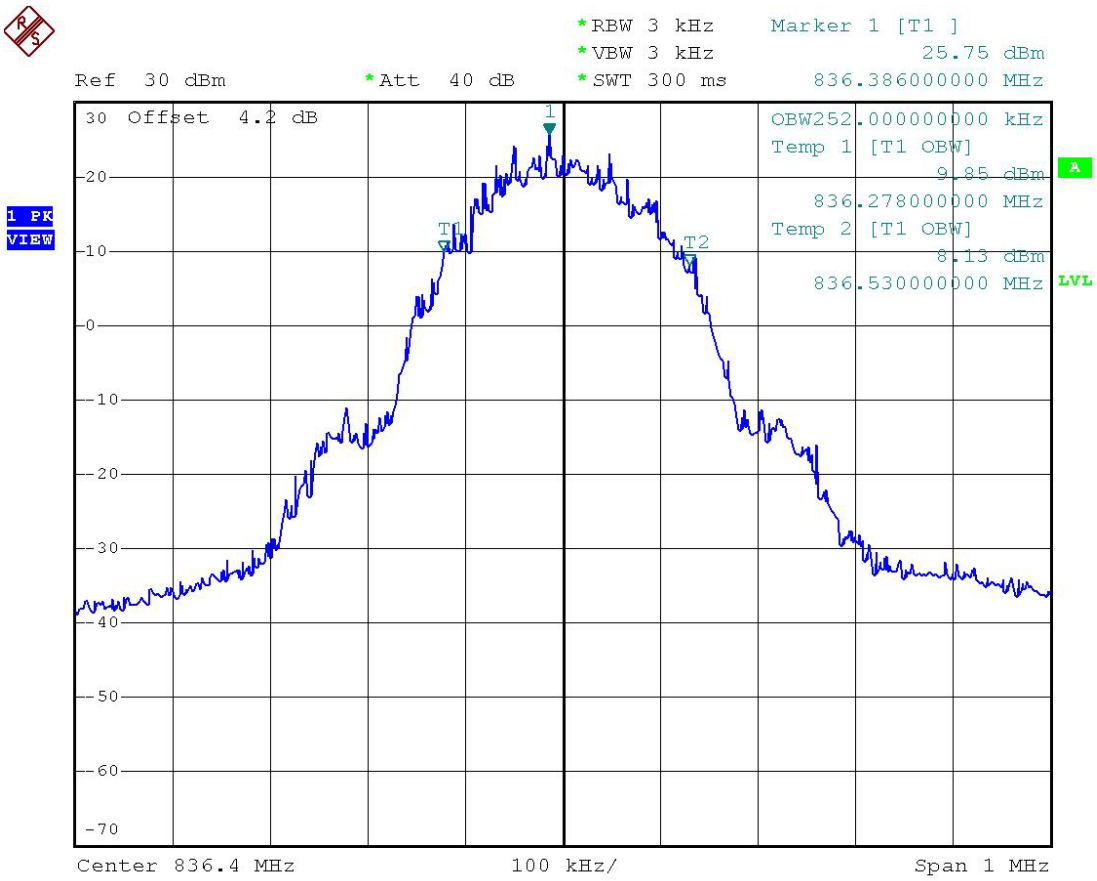
Power: HIGH
Modulation: GSM 850
LOWER BAND EDGE

Name of Test: Emission Masks (Occupied Bandwidth)
State 1:Low Power



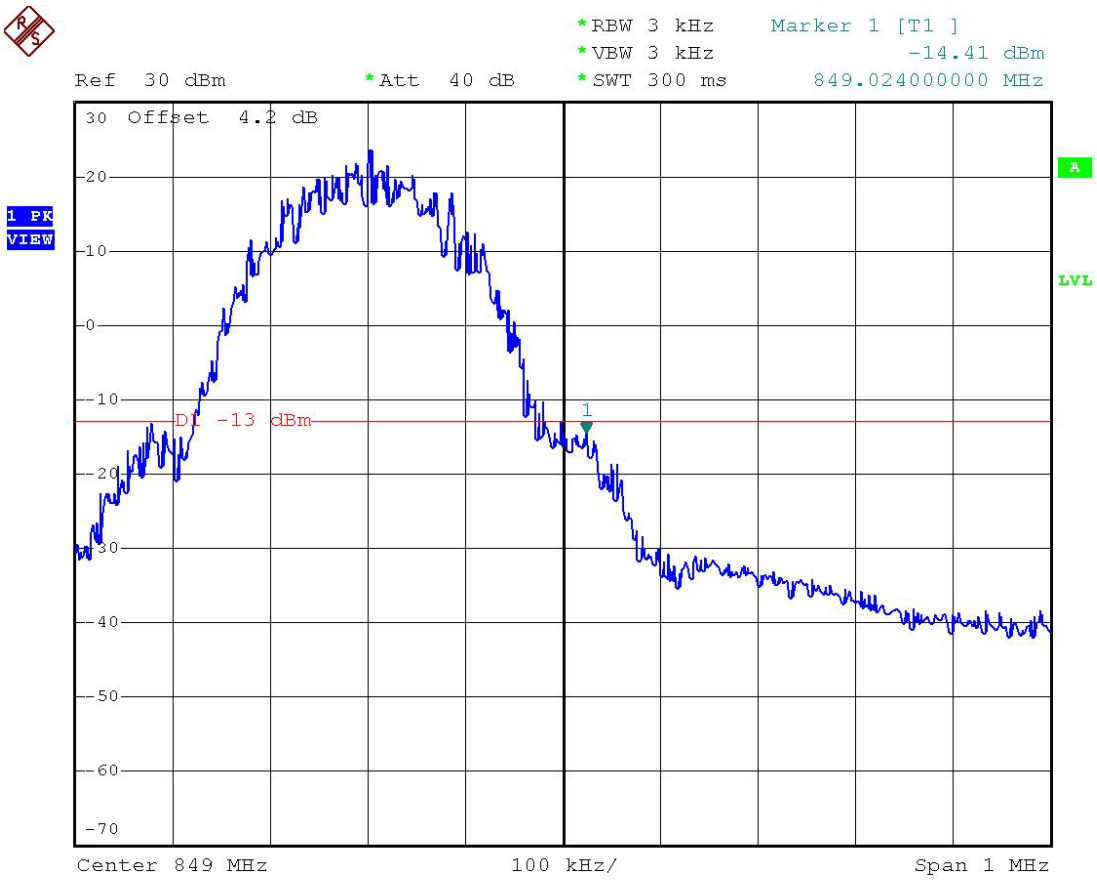
Power: LOW
Modulation: GSM 850
99% BANDWIDTH

Name of Test: Emission Masks (Occupied Bandwidth)
State 2:High Power



Power: HIGH
Modulation: GSM 850
99% BANDWIDTH

Name of Test: Emission Masks (Occupied Bandwidth)
State 2:High Power



Power: HIGH
Modulation: GSM 850
UPPER BAND EDGE

Name of Test: Transmitter Conducted Measurements

Specification: 47 CFR 2.1051: Unwanted (spurious) Emissions
2.1049(c), 24.238(b): Occupied Bandwidth
24: Emissions at Band Edges

Test Equipment: As per attached page

Measurement Procedure

1. The EUT and test equipment were set up as shown on the following page with the Spectrum Analyzer connected.

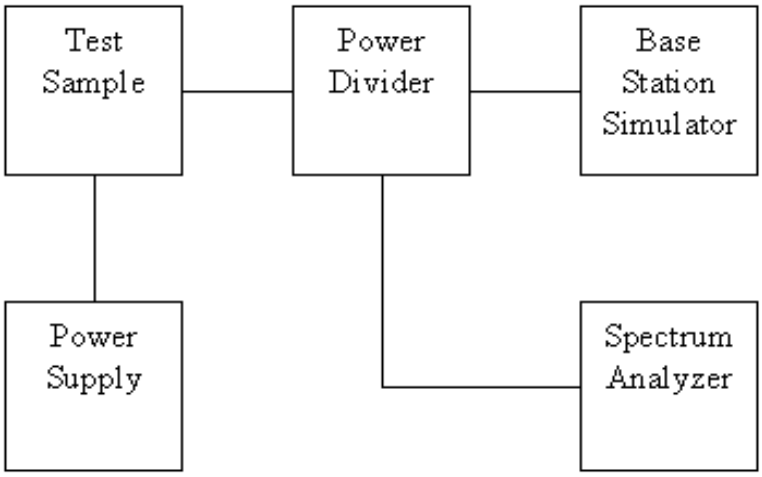
2. The low and high channels for all RF powers within the Transmitting frequency band were measured.

3. Measurement Results: Attached

Tested By: Tim Kao

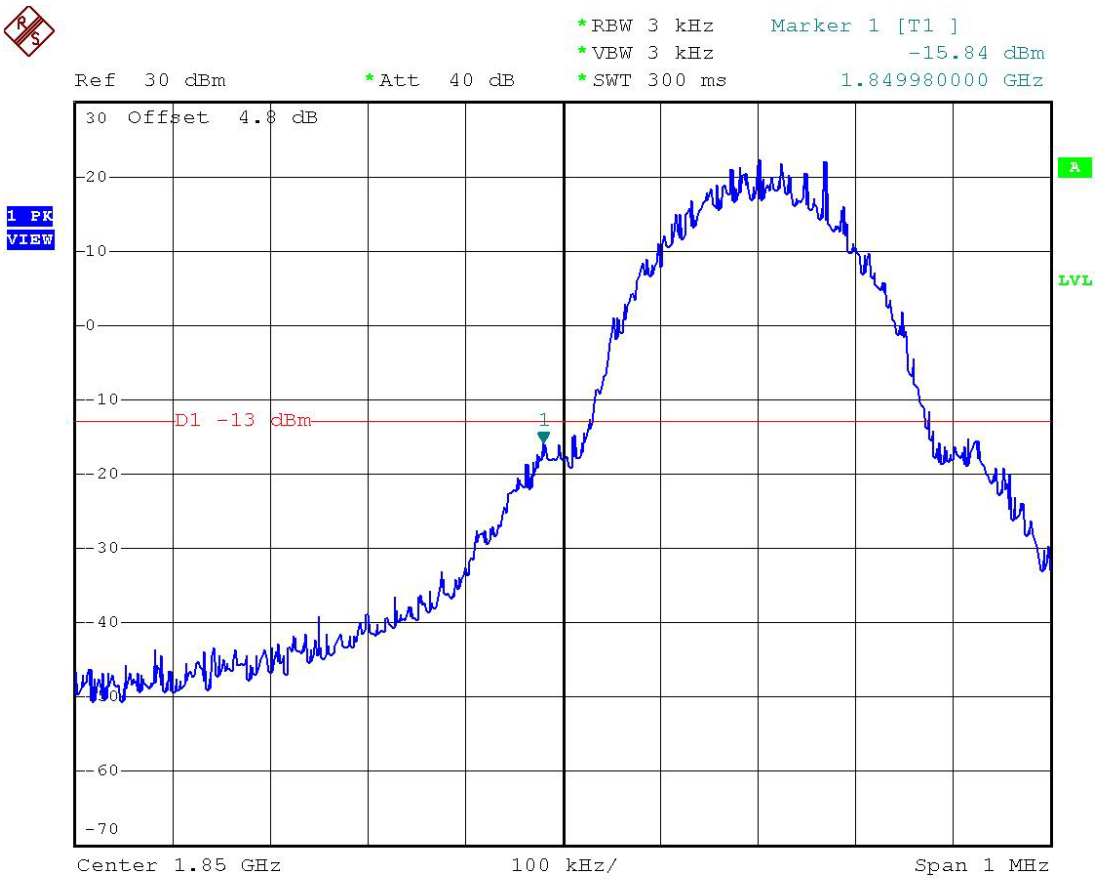
Transmitter Spurious Emission

Test A. Occupied Bandwidth (In-Band Spurious)
Test B. Out-of-Band Spurious



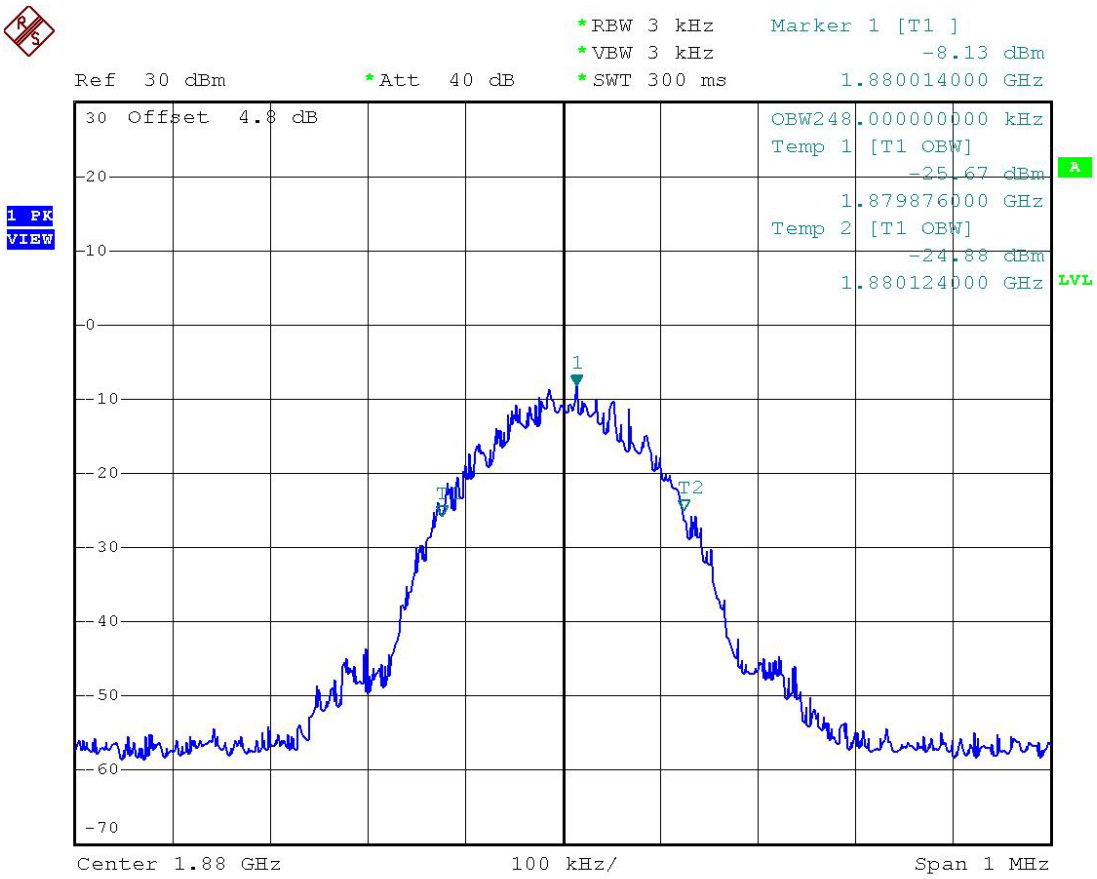
Asset	Model Name	S/N
Base Station Simulator	CMU200	102278
Base Station Simulator	E5515C	GB43460754
Spectrum Analyzer	FSP30	838858/014
AC/DC Power Source	HPA-500W	HPA0100024

Name of Test: Emission Masks (Occupied Bandwidth)
State 2:High Power



Power: HIGH
Modulation: PCS 1900
LOWER BAND EDGE

Name of Test: Emission Masks (Occupied Bandwidth)
State 1:Low Power



Power: LOW
Modulation: PCS 1900
99% BANDWIDTH