



**Nemko USA, Inc.**  
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**Test Report:** 2007 012085-1 ARC FCC

**Project number:** 2085-1

**Applicant:** CalAmp  
2701 Loker Ave. West  
Carlsbad, CA 92010


**Equipment Under Test (EUT):** GSM Module

**Model:** ARC CMM9900

**FCC ID:** FCC ID # APVCMM9900

**In Accordance With:** FCC Part 22, Subpart H  
Industry Canada RSS-132, Issue 2  
  
FCC Part 24, Subpart E  
Industry Canada RSS-133, Issue 3

**Tested By:** Nemko USA Inc.  
11696 Sorrento Valley Road, Suite F  
San Diego, CA 92121

**Authorized By:**   
Michael T. Krumweide, EMC Supervisor

**Date:** JAN. 11, 2007

**Total Number of Pages:** 50

## Report Summary

All measurements are traceable to national standards. These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with FCC Part 22, Subpart H and FCC Part 24, Subpart E.

The assessment summary is as follows:

**Apparatus Assessed:** GSM Module Model ARC CMM9900

**Specification:** FCC Part 22, Subpart H  
Industry Canada RSS-132, Issue 2  
FCC Part 24, Subpart E  
Industry Canada RSS-133, Issue 3

**Compliance Status:** Complies

**Exclusions:** None

**Non-compliances:** None

### Report Release History:

REVISION	DATE	COMMENTS
-	Jan. 11, 2007	Prepared By: Ferdinand Custodio
-	Jan. 11, 2007	Initial Release: Mike T. Krumweide

Note that the results contained in this report relate only to the items tested and were obtained in the period between the date of initial receipt of samples and the date of issue of the report.

This test report has been completed in accordance with the requirements of ISO/IEC 17025.

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Report Number: 2007 012085-1 ARC FCC  
Specification: FCC Part 22 Subpart H, Part 24 Subpart E

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no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

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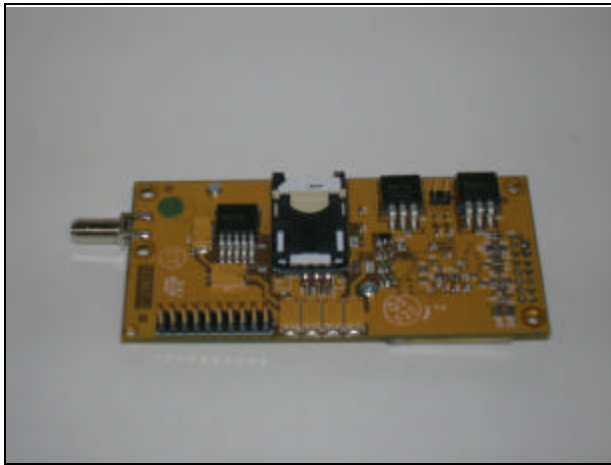
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## Section 1: Equipment Under Test

### 1.1 Product Identification

The Equipment Under Test was identified as follows:

***ARC GSM Module with Serial Number: 355632001921262***



### 1.2 Samples Submitted for Assessment

The following antennas have been submitted for assessment with the EUT:

Antenna # 1 GSM-JC001

- *3.5 dBi Gain*
- *SMA connector*
- *Magnetic Mounting*
- *Vertical Polarization*
- *146 mm antenna length*



Antenna # 2 CMT-800PS

- 3.2 dBi Gain
- SMA connector
- Vertical Polarization
- 305 mm antenna length
- Magnetic Mobile Type



Antenna # 3 GSM-JC00

- 3.0 dBi Gain
- SMA connector
- Vertical Polarization
- 95 mm antenna length
- Rubber Duck type



Antenna # 4 JA-800D-CSMA

- 1.0 dBi Gain (min)
- SMA connector
- Vertical Polarization
- 187 mm antenna length
- Rubber Duck type



### 1.3 Theory of Operation

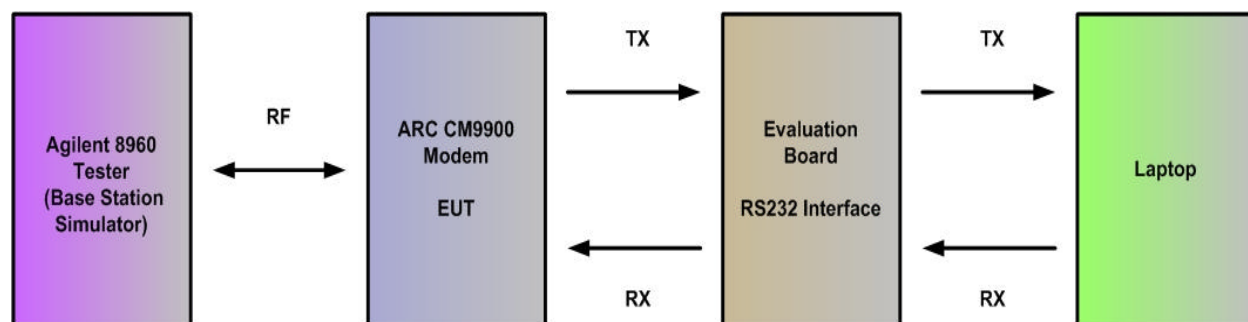
The ARC CMM9900 is a GSM Module. It is a GSM modem that operates in two bands, Cellular 850 MHz and 1900 MHz PCS band. This modem consists of a GSM module along with an Atmel application microcontroller. External to these chips are a crystal, and three voltage regulators. An antenna itself is attached to the modem via an antenna connector. The RF section is completely covered by a shield and is part of the GSM module. The RF Power Amplifier, transmitter, Receiver, and Power Management Unit chip is inside the GSM module and is completely shielded. The digital modulation is done in GSM and follows all the GSM standard protocol. In GSM the modulation is done using GMSK and is done in bursts. The data rate is 6 Kilobytes/sec. The user has no control of the RF power level in GSM. This is all controlled by the Carrier's base station. The user also has no control to change frequency. This is also controlled by the Carrier's base station. The EUT was exercised by using a laptop to give AT commands to the ARC modem. It communicates to the modem via the Evaluation board. The Evaluation board is connected to the laptop via a DB-9 connector over a RS-232 serial interface. The Evaluation board changes the RS-232 signals to TTL signals which are used to communicate to the EUT. The modem gets commands which tell it to send and receive RF signals to the 8960 tester. The 8960 tester acts like a cellular base station. Over its RF link it receives and sends RF data to the ARC modem. The EUT was tested at maximum power setting for both GSM and PCS mode.



### 1.4 Technical Specifications of the EUT

<b>Manufacturer:</b>	CalAmp
<b>Operating Frequency:</b>	824.20 to 848.8 MHz 1850.2 to 1909.8 MHz
<b>Peak Output Power:</b>	4.26 watts
<b>Emission Designator</b>	310KGXW
<b>Modulation:</b>	GMSK
<b>Type of Receiver:</b>	Heterdyne
<b>Antenna Data:</b>	Antenna #1 GSM-JC001 (3.5dBi Gain) Antenna #2 CMT-800PS (3.2dBi Gain) Antenna #3 GSM-JC000 (3.0dBi Gain) Antenna #4 JA-800D-CSMA (1.0dBi Gain)
<b>Antenna Connector:</b>	SMA
<b>Power Source:</b>	10VDC

### 1.5 Block Diagram of the EUT



## **Section 2: Test Conditions**

### **2.1 Specifications**

The apparatus was assessed against the following specifications:

- FCC Part 22, Subpart H Cellular Radiotelephone Service
- FCC Part 24, Subpart E Broadband PCS
- Industry Canada, RSS-132, Issue 2 (Cellular Telephones Employing New Technologies Operating in the Bands 824-849 MHz and 869-894 MHz)
- Industry Canada, RSS-133, Issue 3 (2 GHz Personal Communications Services)

### **2.2 Deviations From Laboratory Test Procedures**

No deviations were made from laboratory test procedures.

### **2.3 Test Environment**

All tests were performed under the following environmental conditions:

Temperature range	:	13 – 22.2 °C
Humidity range	:	32 - 53 %
Pressure range	:	86 - 106 kPa

**2.4 Test Equipment**

Nemko ID	Device	Manufacturer	Model	Serial Number	Cal Date	Cal Due Date
752	Antenna, DRWG	EMCO	3115	4943	10/17/2006	10/17/07
765	Antenna Set, Dipole	EMCO	3121C	1214	6/27/2006	06/27/07
901	Preamp	Sonoma	310 N	130607	Verified 12/28/06	
115	Antenna, Bicon	EMCO	3104	3020	8/7/2006	08/07/07
836	Signal Generator	Agilent	E8254A	US41140229	7/27/2006	07/27/07
-	Wireless Communication Test Set	Agilent	8960 E5515C	GB44051109	5/19/05	5/19/07
117	Antenna	Electro-Metrics	BIA-25	2611	7/5/06	7/5/07
111	Antenna, LPA	EMCO	3146	1382	8/7/06	8/7/07
827	Preamplifier	Com -Power	PA-103	161032	1/11/06	1/11/07
877	Antenna, DRG Horn, .7-18GHz	AH Systems	SAS-571	688	6/20/06	6/20/07
842	Preamp	NA	Nemko	NA	Verified 12/28/06	
897	Spectrum Analyzer	Rohde & Schwarz	FSP7	837620/009	8/11/06	8/11/07
835	Spectrum Analyzer	Rohde & Schwarz	RHDFSEK	829058/005	1/18/06	1/18/07
N149	Environmental Chamber	Cincinnati Sub-Zero	ZPHS-32-2-2-H/AC	ZP0552665	5/11/06	5/11/07

## **Section 3: Observations**

### **3.1 Modifications Performed During Assessment**

No modifications were performed during assessment.

### **3.2 Record Of Technical Judgements**

No technical judgements were made during the assessment.

### **3.3 EUT Parameters Affecting Compliance**

The user of the apparatus could not alter parameters that would affect compliance.

### **3.4 Test Deleted**

No Tests were deleted from this assessment.

### **3.5 Additional Observations**

There were no additional observations made during this assessment.

## Section 4: Results Summary

The results contained in this section are representative of the operation of the apparatus as originally submitted.

Name of Test/Requirements	Para. No.	Result
RF Power Output	2.1046 <i>RSS-132 4.4</i> <i>RSS-133 6.4</i>	COMPLIES
Audio Low Pass Filter Response	2.1047	NA <sup>1</sup>
Audio Frequency Response	2.1047	NA <sup>1</sup>
Modulation Limiting	2.1047	NA <sup>1</sup>
Occupied Bandwidth (WB Data)	2.1049	COMPLIES
Spurious Emissions at antenna Terminals	2.1051 <i>RSS-132 4.5.1</i> <i>RSS-133 6.5.1</i>	COMPLIES
Field Strength of Spurious Emissions	2.1053	COMPLIES
Frequency Stability	2.1055 <i>RSS-132 4.3</i> <i>RSS-133 6.3</i>	COMPLIES
Receiver Spurious Emissions	<i>RSS-132 4.6</i> <i>RSS-133 6.7</i>	COMPLIES
Electronic Serial Numbers (ESN)	<i>RSS-132 3.2</i> <i>RSS-133 5.4</i>	COMPLIES
Radiofrequency radiation exposure evaluation: mobile devices	2.1091	COMPLIES

**Footnotes for N/A's:**      <sup>1</sup>Digital Modulation

## **Appendix A: Test Results/Requirements**

### **RSS-132 3.2 and RSS-133 5.4 Electronic Serial Number**

**RSS-132 3.2**

The electronic serial number (ESN) is a 32-bit number which uniquely identifies a cellular mobile station to any cellular system. (**Note:** Other ESN schemes may be considered by Industry Canada).

**RSS-133 5.4**

The electronic serial number (ESN) is a 32-bit number that uniquely identifies a PCS mobile station to any PCS system. (**Note:** Other ESN schemes may be considered by Industry Canada. However, it is the system designer's responsibility to ensure a secure ESN). The 56-bit Mobile Equipment Identifier (MEID) being developed in 3GPP (3 Generation Partnership Project) and 3GPP2 (3 Generation Partnership Project 2) will be accepted by Industry Canada as complying with the ESN requirements of this section.

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#### **Compliance Status:**

Complies

#### **Remarks:**

The EUT does not use ESN but instead uses IMEI. The International Mobile Equipment Identity (IMEI) is a number unique to every GSM unit. The IMEI is a 15 or 17 digit number which includes information on the origin, model, and serial number of the device. The IMEI of the EUT is: **35-563200-191953-0.**

**Para. No. : 2.1091 Radiofrequency radiation exposure evaluation: mobile devices.**

(a) Requirements of this section are a consequence of Commission responsibilities under the National Environmental Policy Act to evaluate the environmental significance of its actions. See subpart I of part 1 of this chapter, in particular §1.1307(b).

(b) For purposes of this section, a mobile device is defined as a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 centimeters is normally maintained between the transmitter's radiating structure(s) and the body of the user or nearby persons. In this context, the term "fixed location" means that the device is physically secured at one location and is not able to be easily moved to another location. Transmitting devices designed to be used by consumers or workers that can be easily re-located, such as wireless devices associated with a personal computer, are considered to be mobile devices if they meet the 20 centimeter separation requirement.

(c) Mobile devices that operate in the Cellular Radiotelephone Service, the Personal Communications Services, the Satellite Communications Services, the General Wireless Communications Service, the Wireless Communications Service, the Maritime Services and the Specialized Mobile Radio Service authorized under subpart H of part 22 of this chapter, parts 24, 25, 26 and 27 of this chapter, part 80 of this chapter (ship earth stations devices only) and part 90 of this chapter are subject to routine environmental evaluation for RF exposure prior to equipment authorization or use if they operate at frequencies of 1.5 GHz or below and their effective radiated power (ERP) is 1.5 watts or more, or if they operate at frequencies above 1.5 GHz and their ERP is 3 watts or more. Unlicensed personal communications service devices, unlicensed millimeter wave devices and unlicensed NII devices authorized under §§15.253, 15.255, and 15.257, and subparts D and E of part 15 of this chapter are also subject to routine environmental evaluation for RF exposure prior to equipment authorization or use if their ERP is 3 watts or more or if they meet the definition of a portable device as specified in §2.1093(b) requiring evaluation under the provisions of that section. All other mobile and unlicensed transmitting devices are categorically excluded from routine environmental evaluation for RF exposure prior to equipment authorization or use, except as specified in §§1.1307(c) and 1.1307(d) of this chapter. Applications for equipment authorization of mobile and unlicensed transmitting devices subject to routine environmental evaluation must contain a statement confirming compliance with the limits specified in paragraph (d) of this section as part of their application. Technical information showing the basis for this statement must be submitted to the Commission upon request.

(d) The limits to be used for evaluation are specified in §1.1310 of this chapter. All unlicensed personal communications service (PCS) devices and unlicensed NII devices shall be subject to the limits for general population/uncontrolled exposure.

(1) For purposes of analyzing mobile transmitting devices under the occupational/controlled criteria specified in §1.1310 of this chapter, time-averaging provisions of the guidelines may be used in conjunction with typical maximum duty factors to determine maximum likely exposure levels.

(2) Time-averaging provisions may not be used in determining typical exposure levels for devices intended for use by consumers in general population/uncontrolled environments as defined in §1.1310 of this chapter. However, "source-based" time-averaging based on an inherent property or duty-cycle of a device is allowed. An example of this is the determination of exposure from a device that uses digital technology such as a time-division multiple-access (TDMA) scheme for transmission of a signal. In general, maximum average power levels must be used to determine compliance.

**Compliance Status:**

Complies

**Calculations:**

Formula: Average Power = Peak Power – 10 log (8/number of timeslots used)

EUT is classified as a GPRS Multislot Class 6 (Two Up ,Three Down)

Peak Output Power = 4.26 watts  
= 36.294dBm  
Ave. Power = 36.294 -10log(8/2)  
= 36.294 – 6.02  
= 30.273dBm  
= **1,1 watts**

Limit is 1.5 watts



**Para. No. : 2.1046 RF Power Output**

Para.22.913(a). The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts. & Para.24.232, the EIRP must not exceed 2 Watts.

**Test Conditions:**

<b>Sample Number:</b>	355632001921262	<b>Temperature:</b>	55.4°F
<b>Date:</b>	December 28, 2006	<b>Humidity:</b>	53 %
<b>Modification State:</b>	GSM and PCS GSM	<b>Tester:</b>	Ferdinand Custodio
		<b>Laboratory:</b>	Nemko SOATS

**Test Results:**

Complies, see tables below

**Measurement Data:**

**Conductive Measurement**

The measurements were done using the Agilent 8960 while sending and receiving RF signals to the EUT and acting as a cellular base station. Measurements for Part 22 are Average and Peak for Part 24. The EUT was tested at maximum power setting for both GSM and PCS mode.

Modulation	Frequency (MHz)	Measured (dBm)	Antenna Gain (dBi)	ERP/EIRP (dBm)	ERP/EIRP (Watts)
GSM	824.20	32.80 (ave.)	3.5	36.30	4.26
	836.40	32.61(ave.)	3.5	36.11	4.08
	848.80	32.36 (ave.)	3.5	35.86	3.85
PCS GSM	1850.02	29.36 (peak)	3.5	32.86	1.93
	1880.00	28.68 (peak)	3.5	32.18	1.65
	1908.80	28.62 (peak)	3.5	32.12	1.62

*Note: Highest antenna gain used. This is theoretical measurements if the antenna gain is perfectly matched as per specification.*

Measurement/Instrument Screen						
Control	GSM/GPRS Transmit Power				TCH Params	
GSM/GPRS TX Power Setup ▾	Minimum	32.80 dBm		Maximum	32.81 dBm	
	Average	32.80 dBm		Std. Dev.	0.00 dB	
	10 / 10				Single	
	Phase & Frequency Error					
Swap Window Positions		Peak Phase °	RMS Phase °	Frequency Hz		
	Minimum	3.63	1.41	-9.12		
	Maximum	5.48	1.57	1.94		
	Average	4.40	1.49	-2.49		
	Pass/Fail	Pass	Pass	Pass		
10 / 10				Single		
		Active Cell Connected		Sys Type: GSM		
				Logging: No Conn.		
1 of 2		IntRef	Offset			1 of 2
Return						

Measurement/Instrument Screen						
Control	GSM/GPRS Transmit Power				TCH Params	
GSM/GPRS TX Power Setup ▾	Minimum	29.35 dBm		Maximum	29.36 dBm	
	Average	29.35 dBm		Std. Dev.	0.00 dB	
	10 / 10				Single	
	Phase & Frequency Error					
Swap Window Positions		Peak Phase °	RMS Phase °	Frequency Hz		
	Minimum	4.01	1.58	-7.24		
	Maximum	6.12	1.94	4.15		
	Average	5.29	1.74	-2.21		
	Pass/Fail	Pass	Pass	Pass		
10 / 10				Single		
		Active Cell Connected		Sys Type: GSM		
				Logging: No Conn.		
1 of 2		IntRef	Offset			1 of 2
Return						

**Para. No.: 2.1049 Occupied Bandwidth****22.917**

(a) *Out of band emissions.* The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB.

(b) *Measurement procedure.* Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (*i.e.* 100 kHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

(c) *Alternative out of band emission limit.* Licensees in this service may establish an alternative out of band emission limit to be used at specified band edge(s) in specified geographical areas, in lieu of that set forth in this section, pursuant to a private contractual arrangement of all affected licensees and applicants. In this event, each party to such contract shall maintain a copy of the contract in their station files and disclose it to prospective assignees or transferees and, upon request, to the FCC.

(d) *Interference caused by out of band emissions.* If any emission from a transmitter operating in this service results in interference to users of another radio service, the FCC may require a greater attenuation of that emission than specified in this section.

**24.238**

(a) *Out of band emissions.* The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB.

(b) *Measurement procedure.* Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (*i.e.* 1 MHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

(c) *Alternative out of band emission limit.* Licensees in this service may establish an alternative out of band emission limit to be used at specified band edge(s) in specified geographical areas, in lieu of that set forth in this section, pursuant to a private contractual arrangement of all affected licensees and applicants. In this event, each party to such contract shall maintain a copy of the contract in their station files and disclose it to prospective assignees or transferees and, upon request, to the FCC.

(d) *Interference caused by out of band emissions.* If any emission from a transmitter operating in this service results in interference to users of another radio service, the FCC may require a greater attenuation of that emission than specified in this section.

**Test Conditions:**

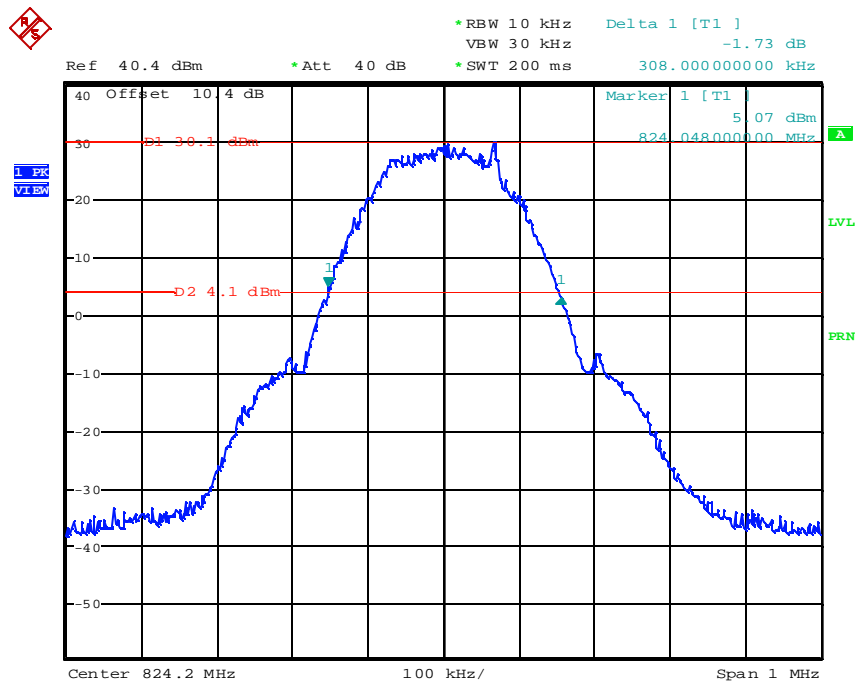
<b>Sample Number:</b>	355632001921262	<b>Temperature:</b>	72°F
<b>Date:</b>	January 31, 2007	<b>Humidity:</b>	41 %
<b>Modification State:</b>	GSM and GSM PCS	<b>Tester:</b>	Ferdinand Custodio
		<b>Laboratory:</b>	On Site

**Test Results:**

Measured Occupied Bandwidth is 310kHz for 850MHz Band and 312kHz for 1900MHz Band. Plots captured with the Spectrum Analyzer thru a 10.4 dB directional coupler.

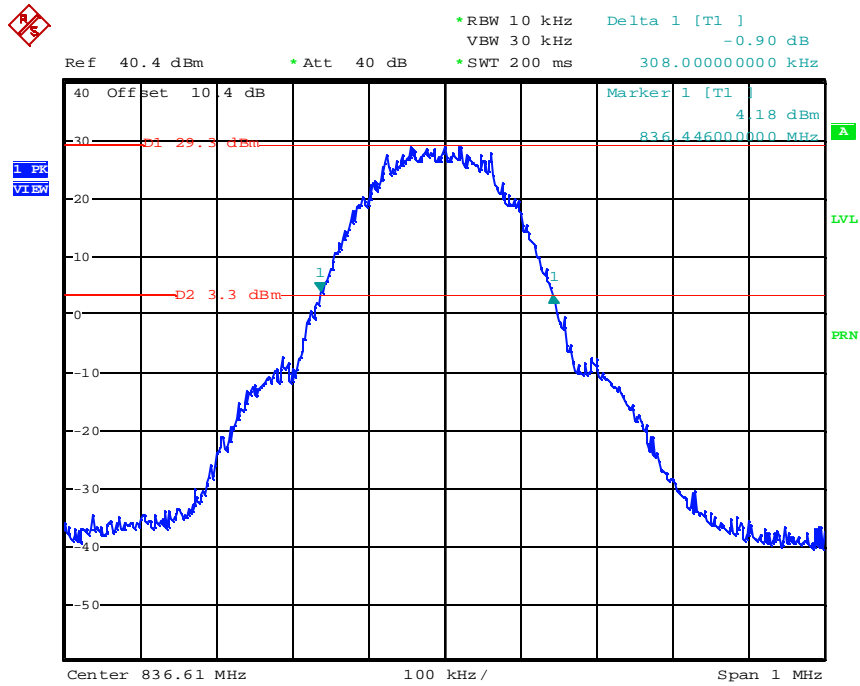
**Test Data:**

See attached Plots



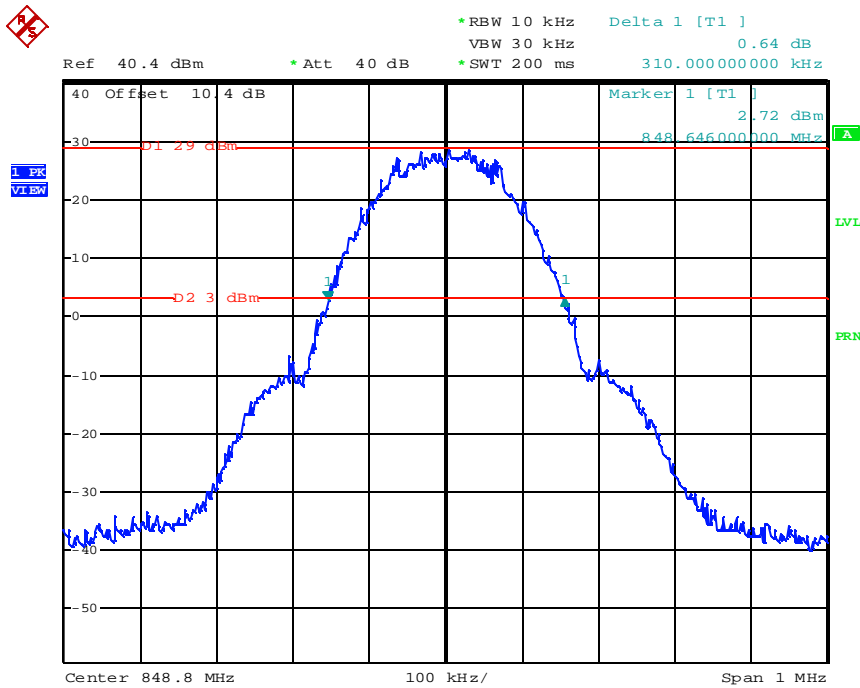
Date: 31.JAN.2007 13:02:58

**LOW Channel GSM 850**



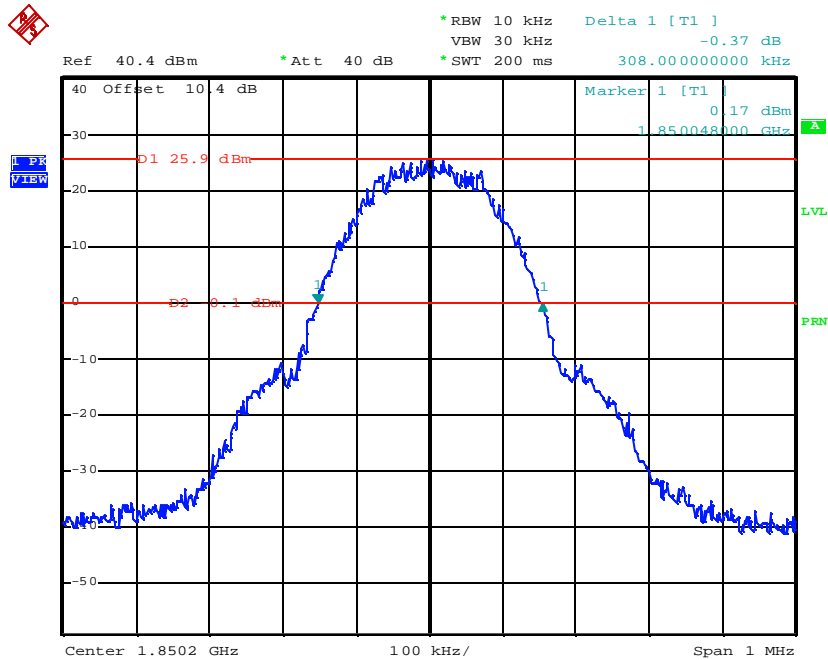
Date: 31.JAN.2007 13:05:25

### MID Channel GSM 850



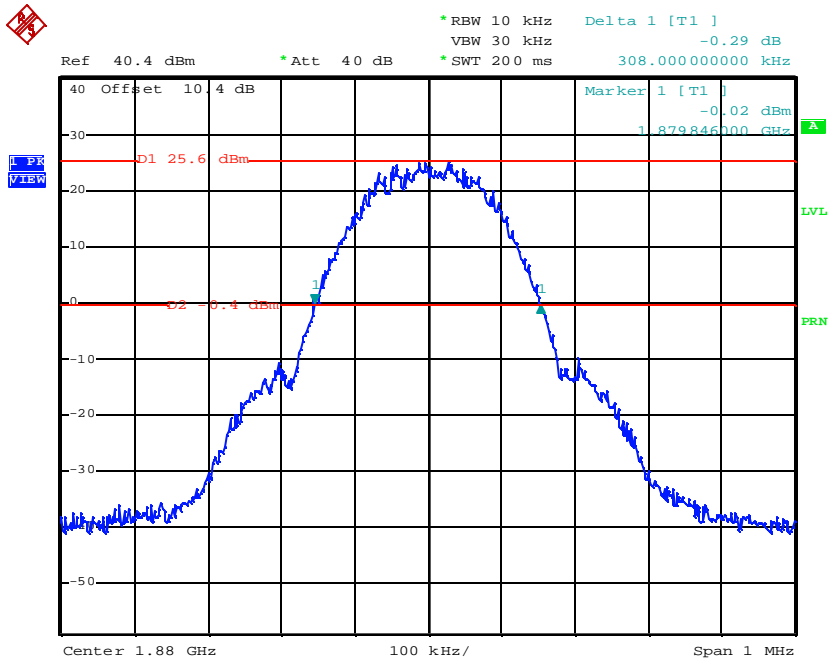
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### HIGH Channel GSM 850



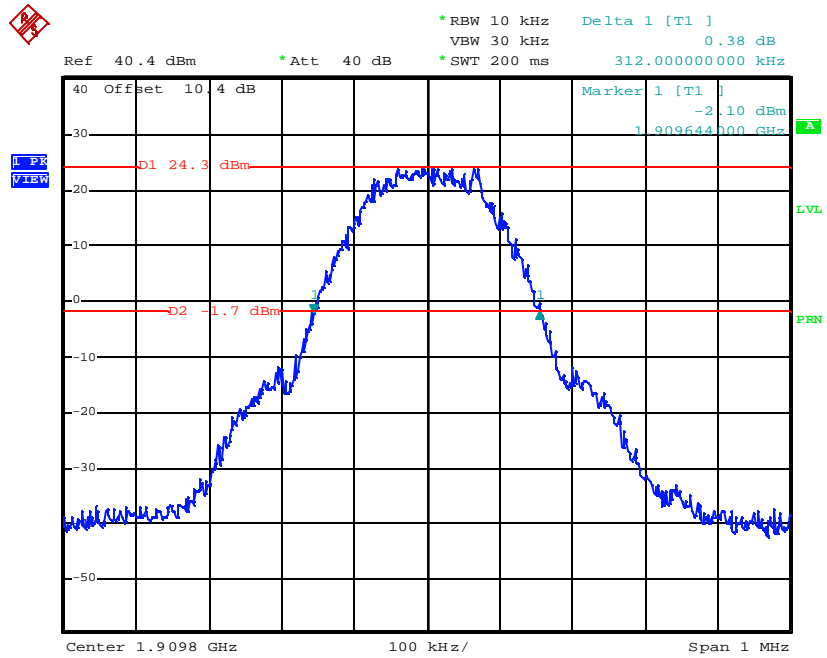
Date: 31.JAN.2007 13:15:26

### LOW Channel PCS 1900



Date: 31.JAN.2007 13:17:03

### MID Channel PCS 1900



Date: 31.JAN.2007 13:25:32

**HIGH Channel PCS 1900**

**Para. No.:2.1051 Spurious Emissions At Antenna Terminals**

Minimum Standard is Part 22.917 and Part 24.238, please see Occupied Bandwidth for description

**Test Conditions:**

<b>Sample Number:</b>	355632001921262	<b>Temperature:</b>	72°F
<b>Date:</b>	January 3, 2007	<b>Humidity:</b>	41 %
<b>Modification State:</b>	GSM and GSM PCS	<b>Tester:</b>	Ferdinand Custodio
		<b>Laboratory:</b>	Nemko

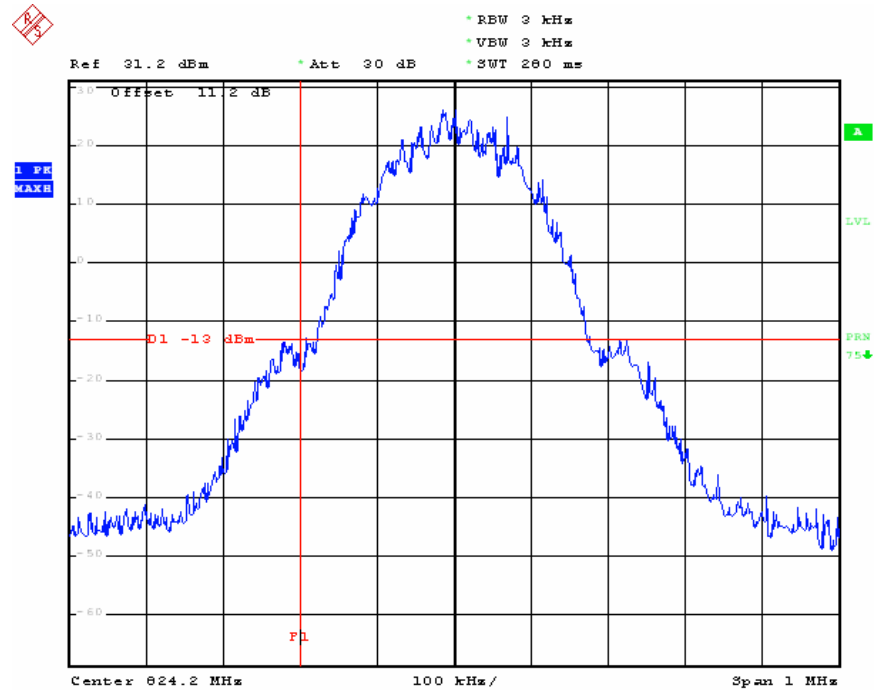
**Test Results:** See attached table. Plots captured on the Spectrum Analyzer thru a 10.4 dB directional coupler.

Mode	Frequency	Max. Spurious	Limit	Comment
GSM Low Channel	1649.55 MHz	-26.63 dBm	-13 dBm	Complies
GSM Mid Channel	2508.00 MHz	-28.14 dBm	-13 dBm	Complies
GSM High Channel	2544.00 MHz	-27.58 dBm	-13 dBm	Complies
PCS/GSM Low Channel	109.37 MHz	-19.76 dBm	-13 dBm	Complies
PCS/GSM Mid Channel	140.90 MHz	-23.69 dBm	-13 dBm	Complies
PCS/GSM High Channel	169.58 MHz	-32.36 dBm	-13 dBm	Complies

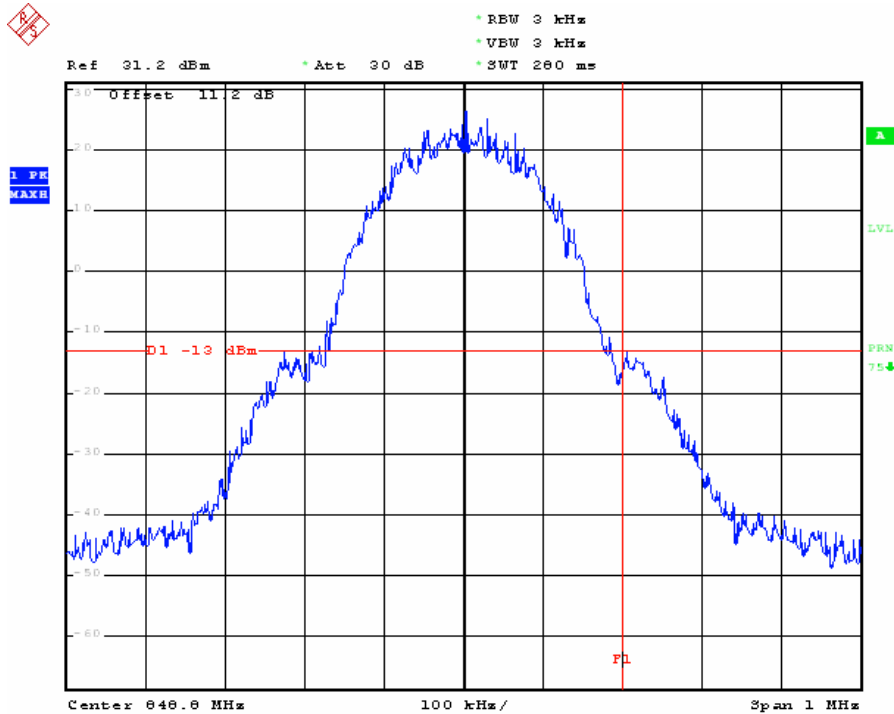
**Test Data:** See attached Plots



### 1. Part 22, GSM Band Edge

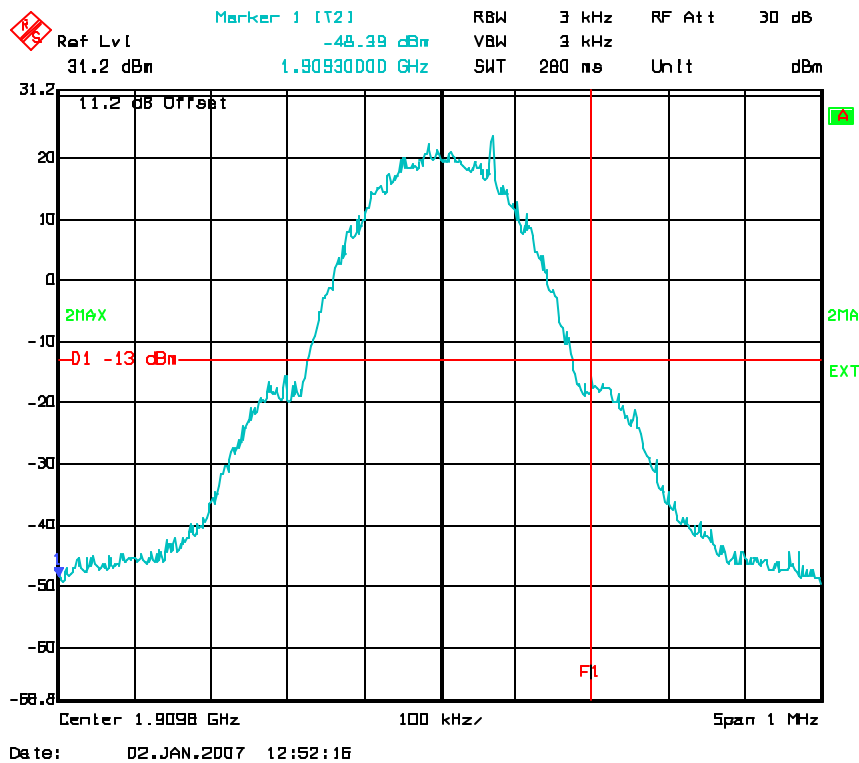
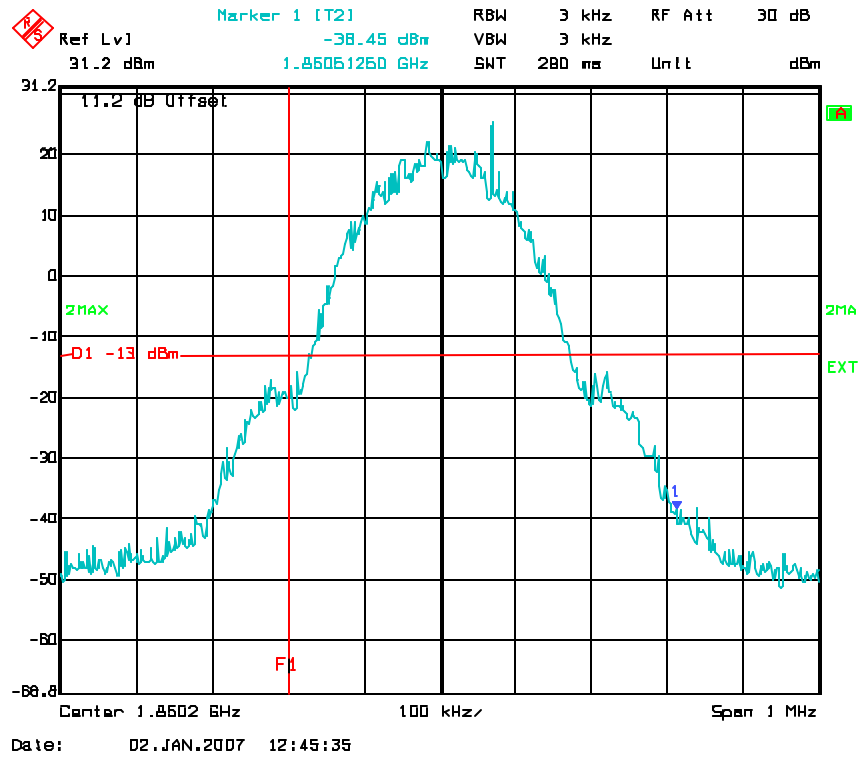


Date: 3.JAN.2007 14:39:11

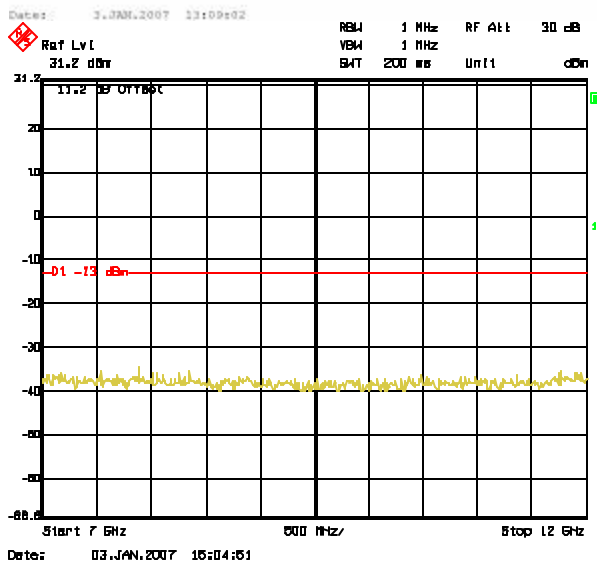
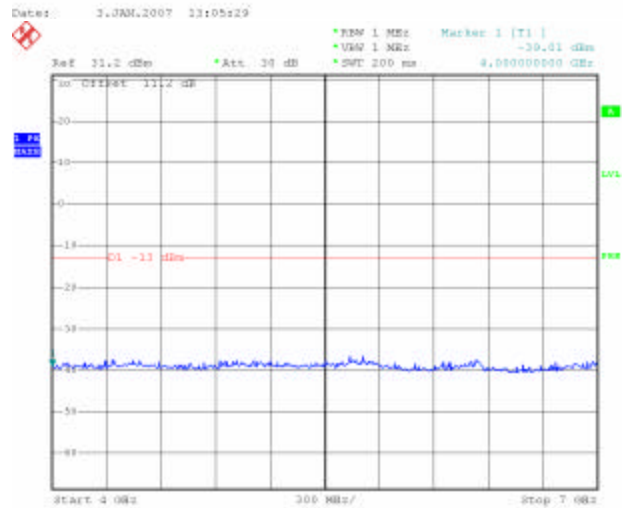
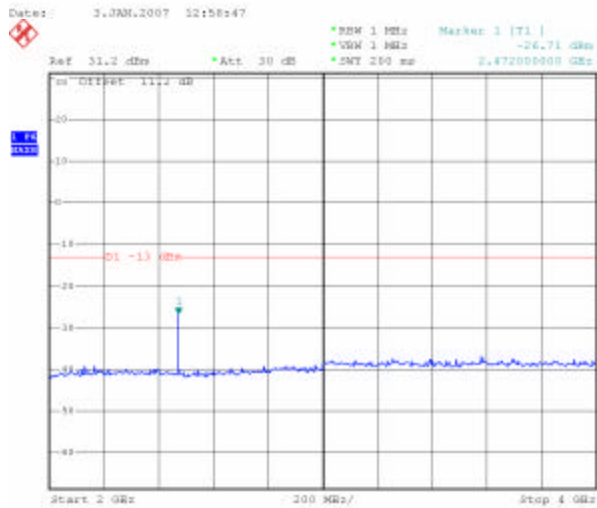
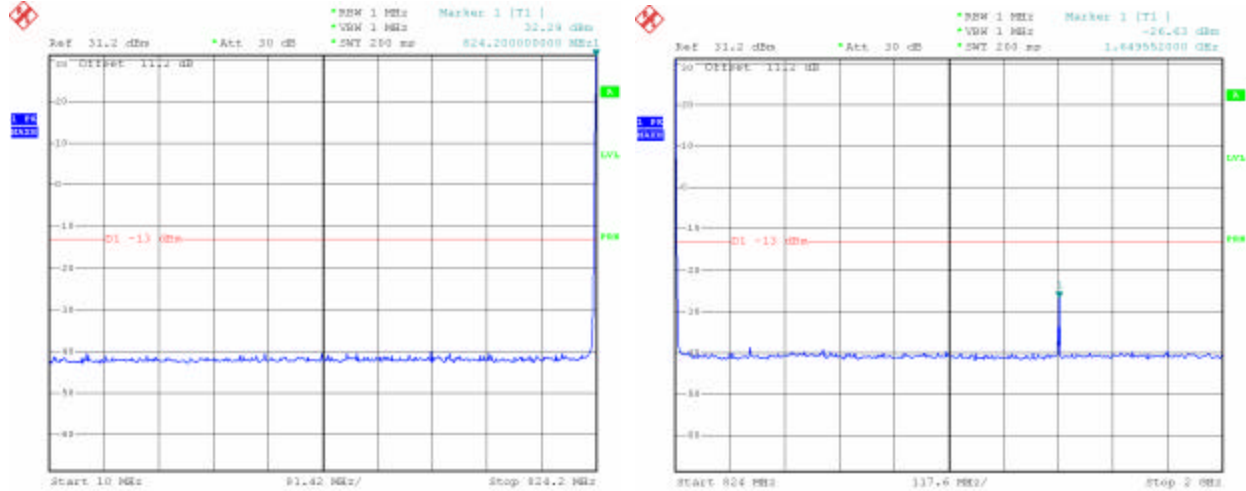


Date: 3.JAN.2007 14:40:04

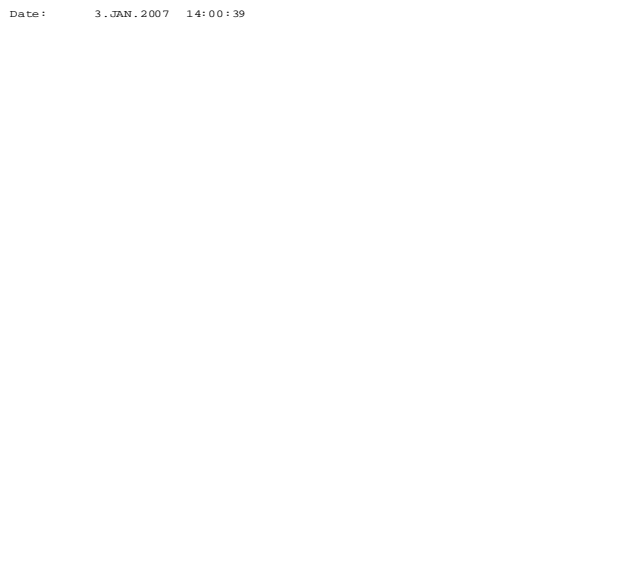
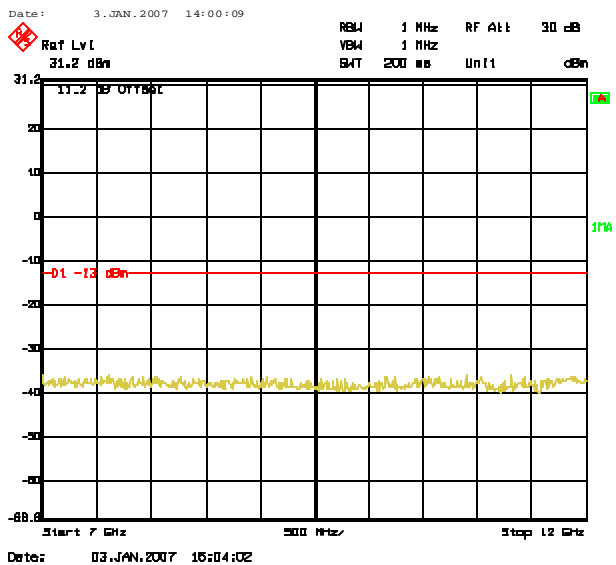
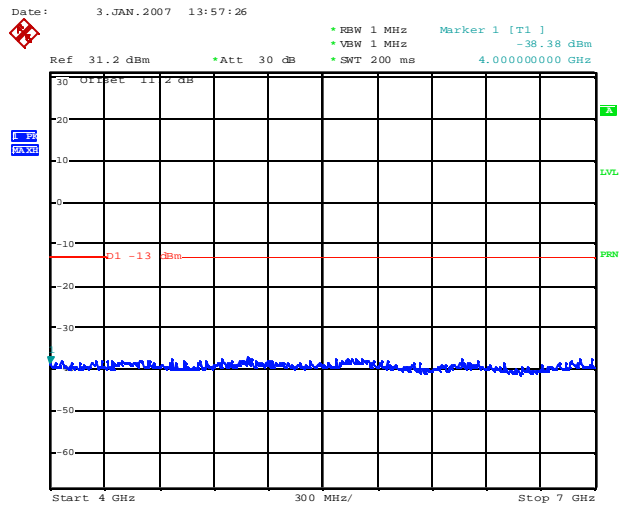
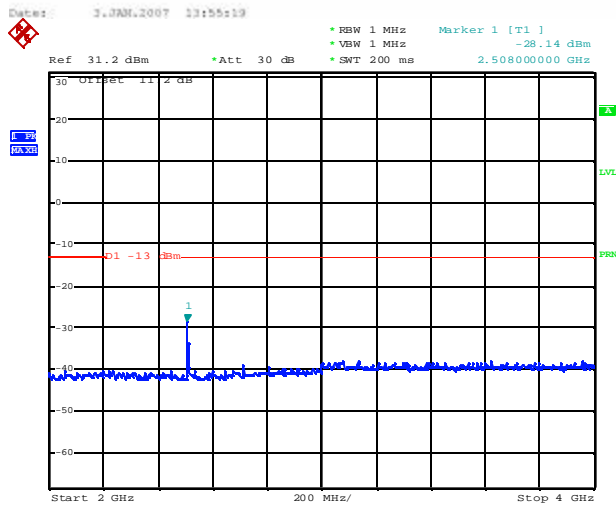
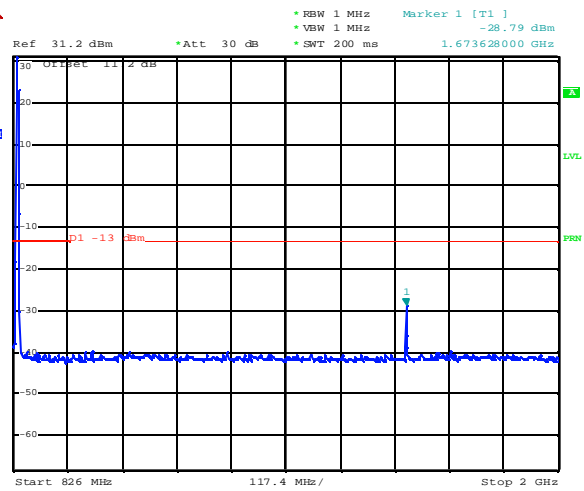
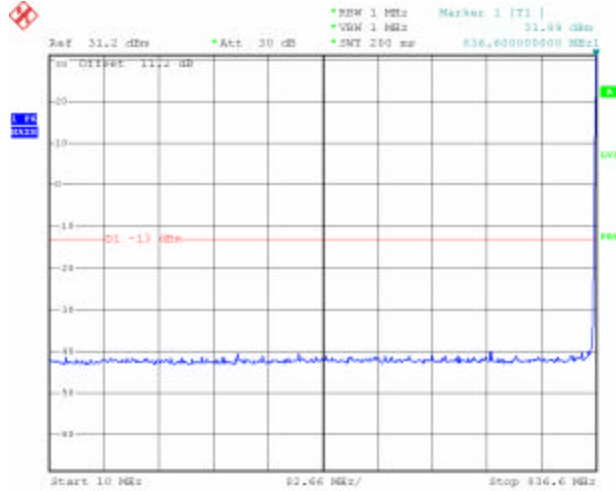
## 2. Part 24, GSM/PCS Band Edge



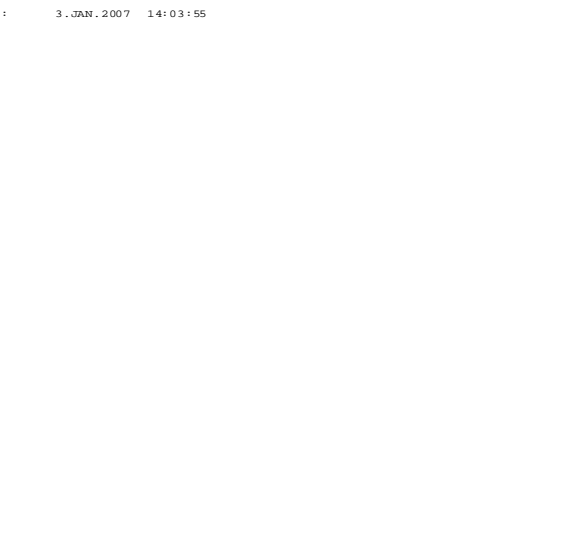
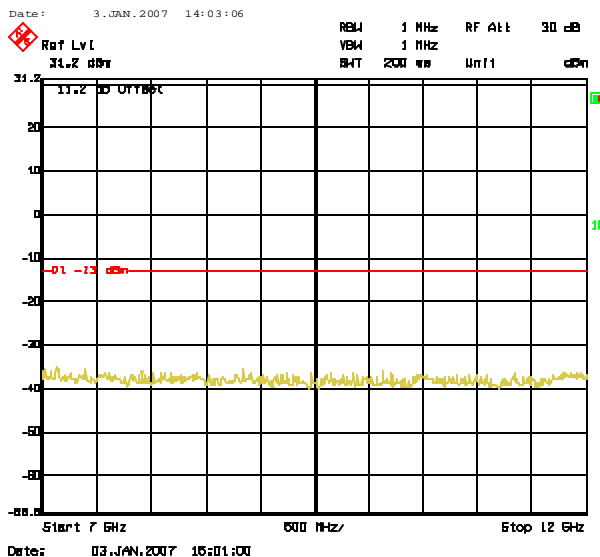
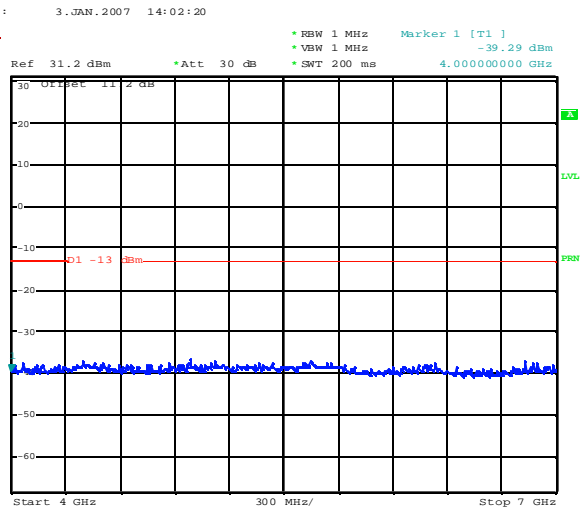
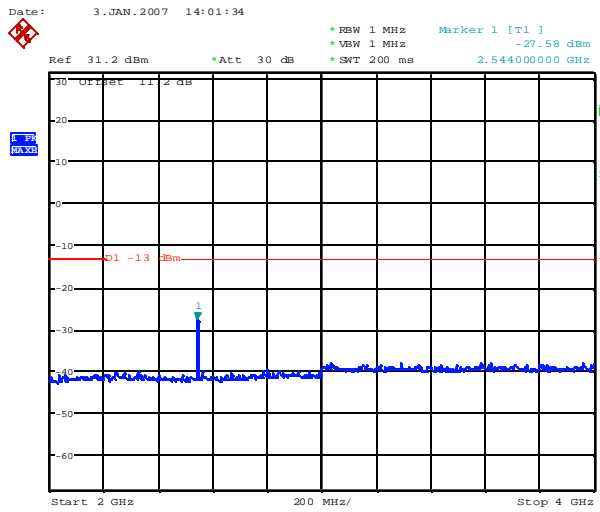
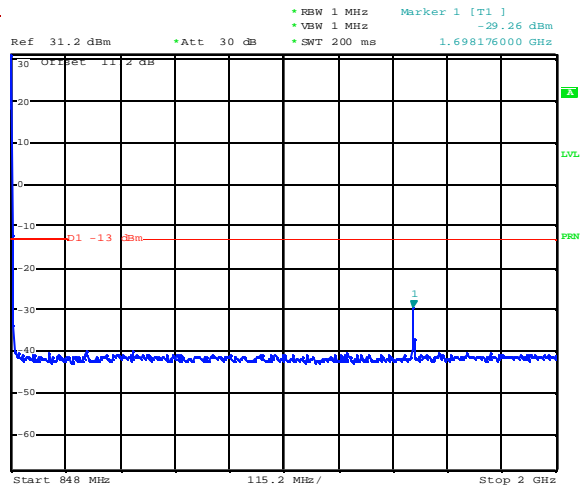
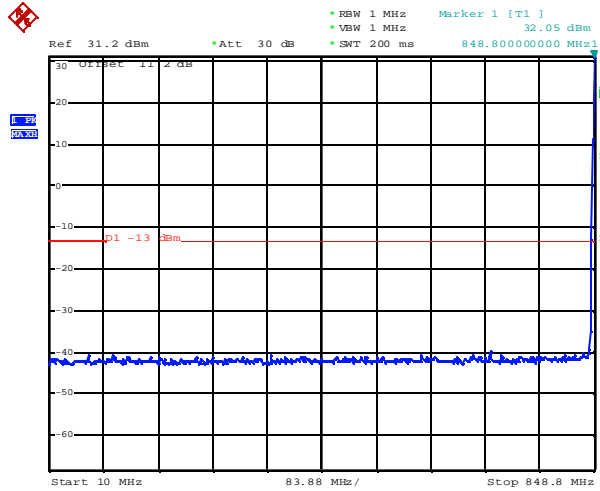
### 3. Part 22 GSM Spurious Low Channel



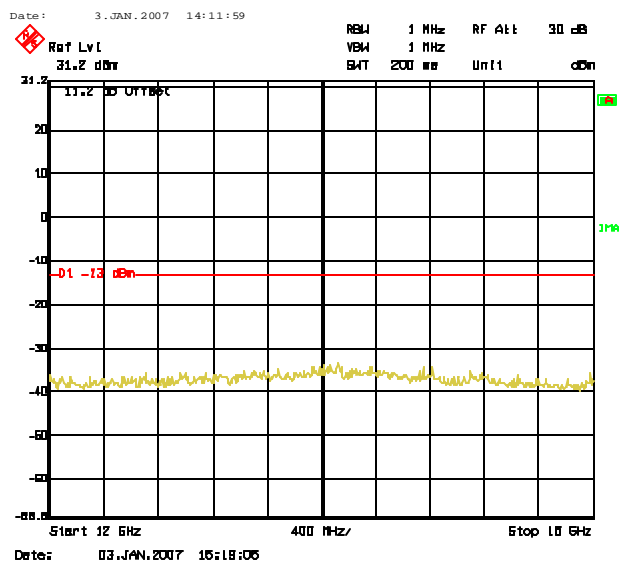
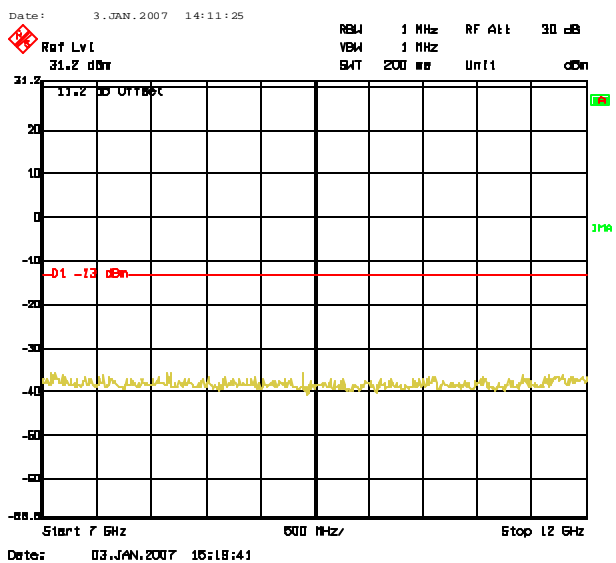
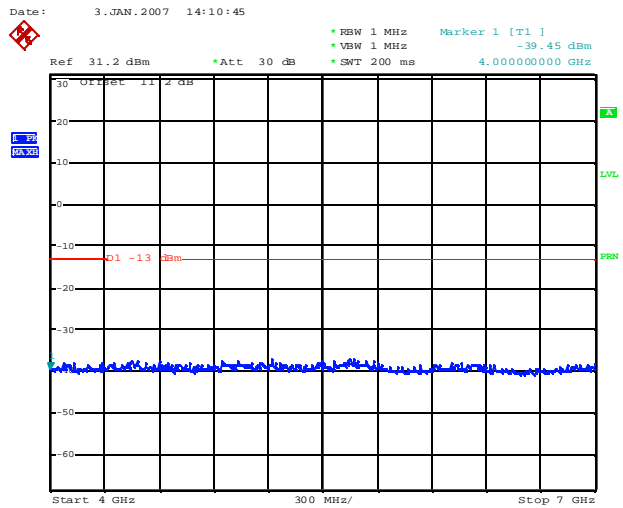
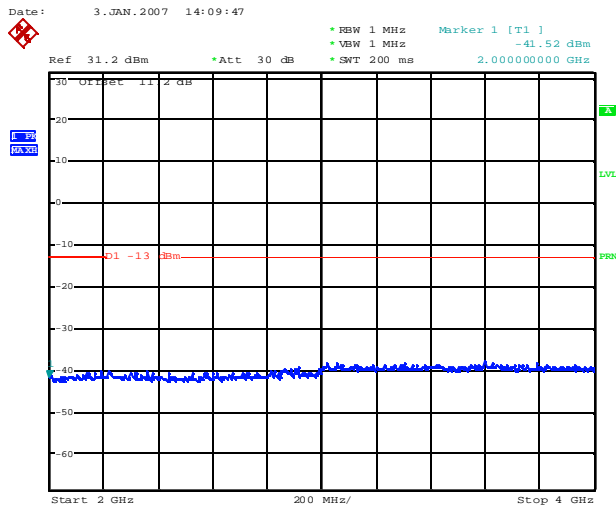
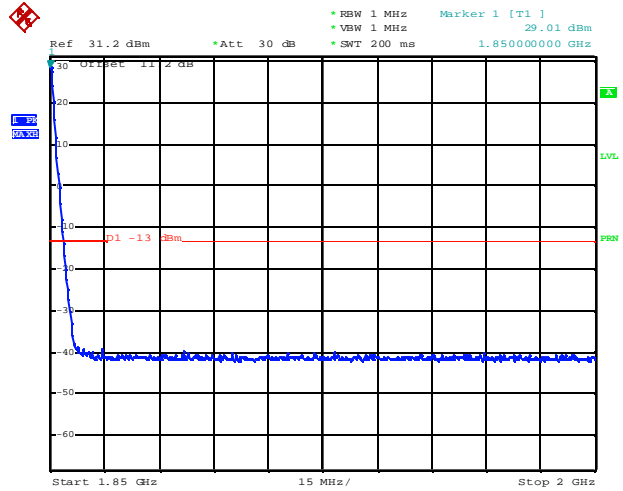
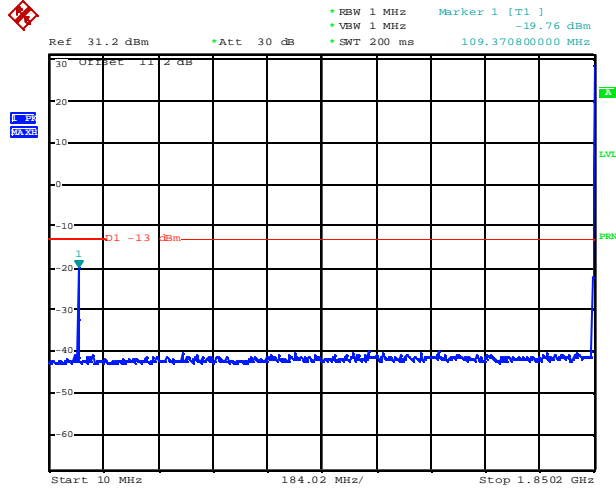
### 4. Part 22 GSM Spurios Mid Channel

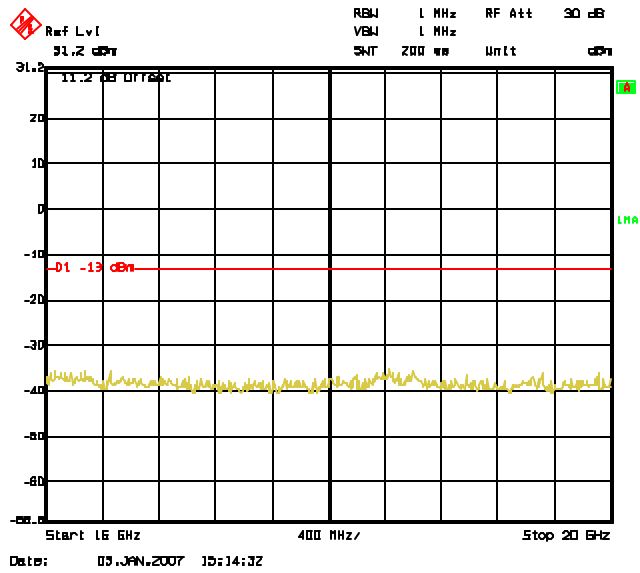


### 5. Part 22 GSM Spurious High Channel

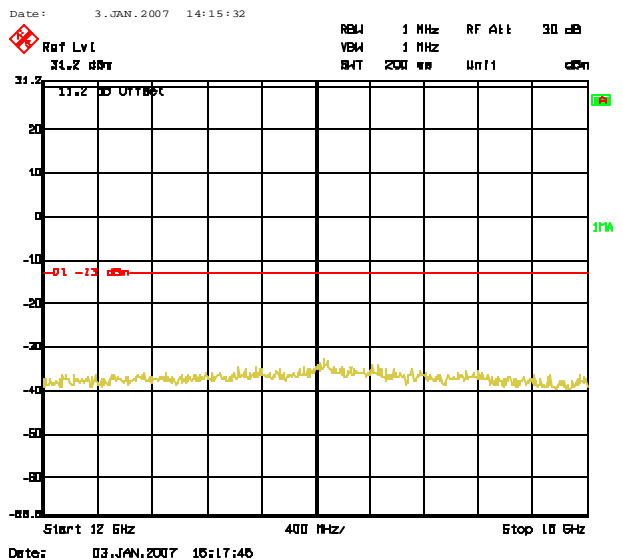
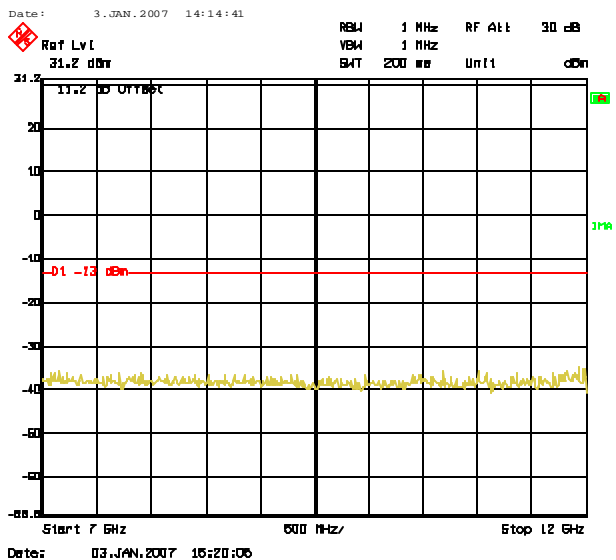
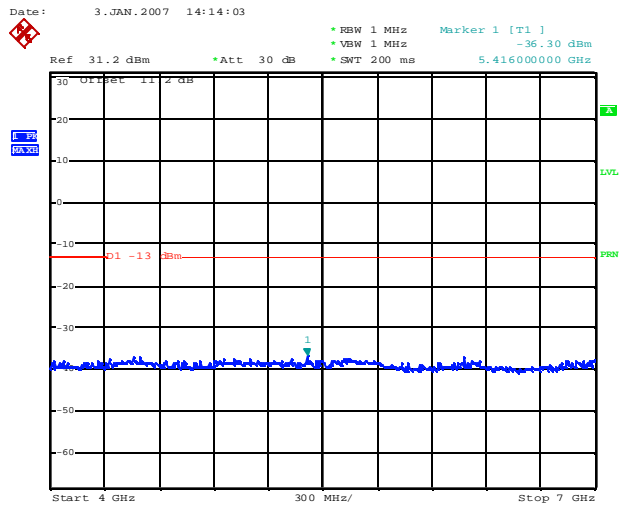
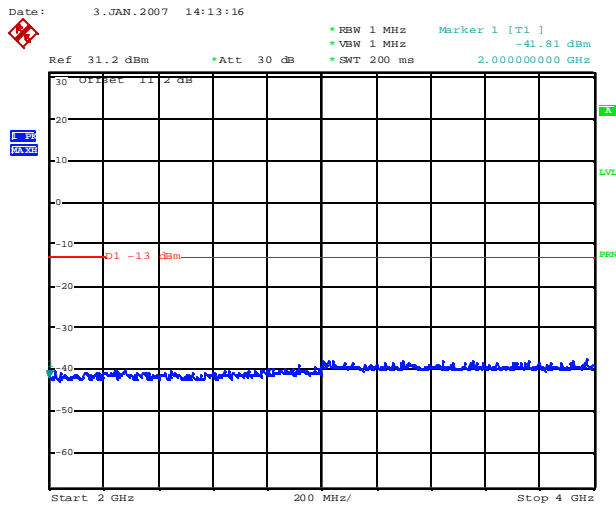
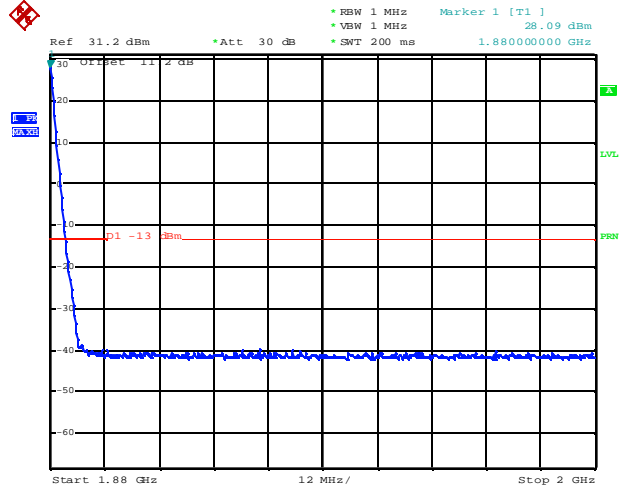
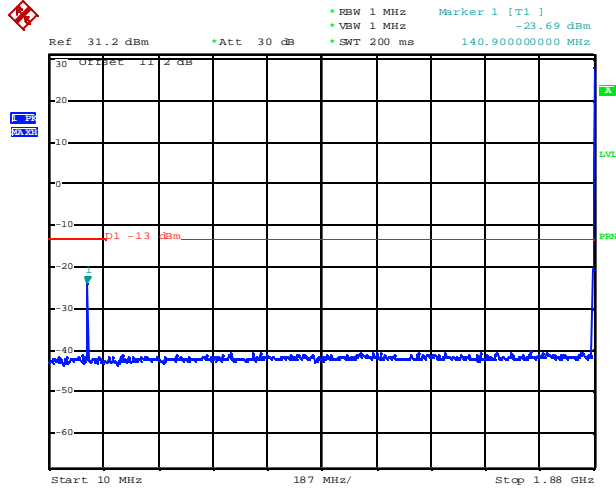


### 6. Part 24 GSM Spurious Low Channel

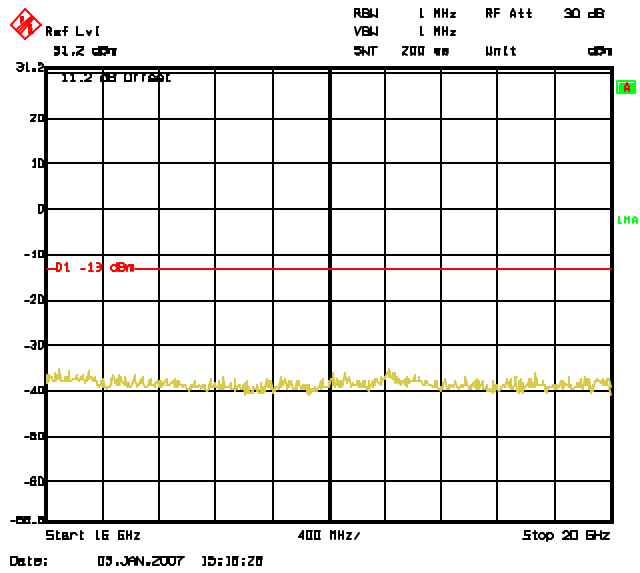




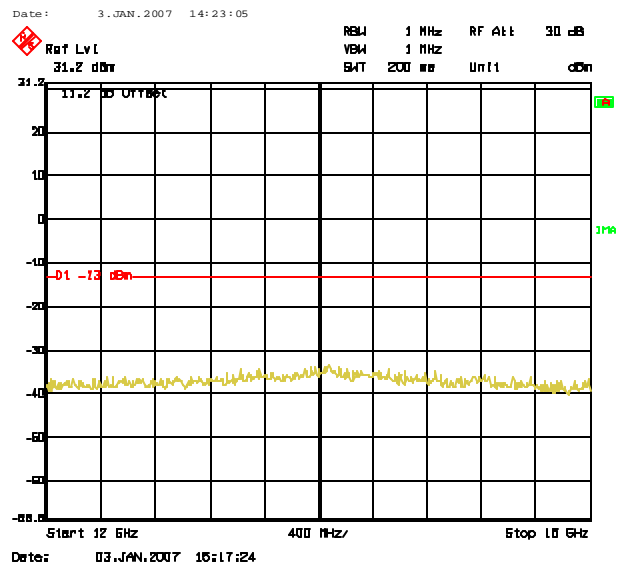
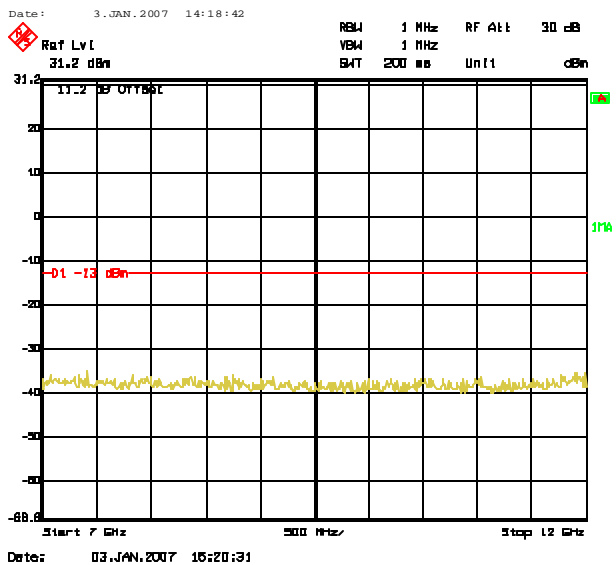
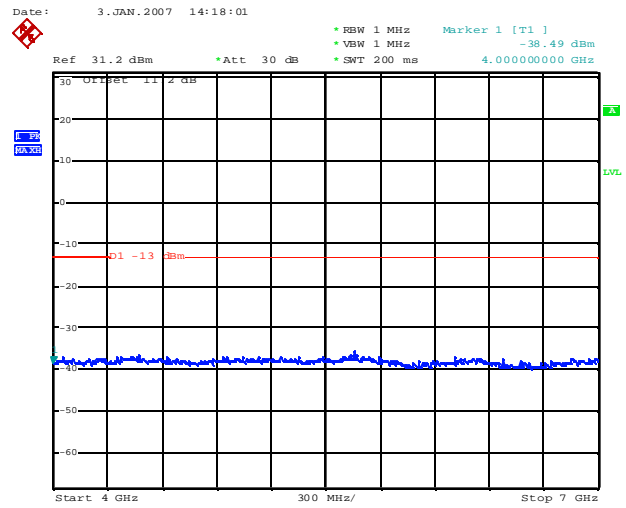
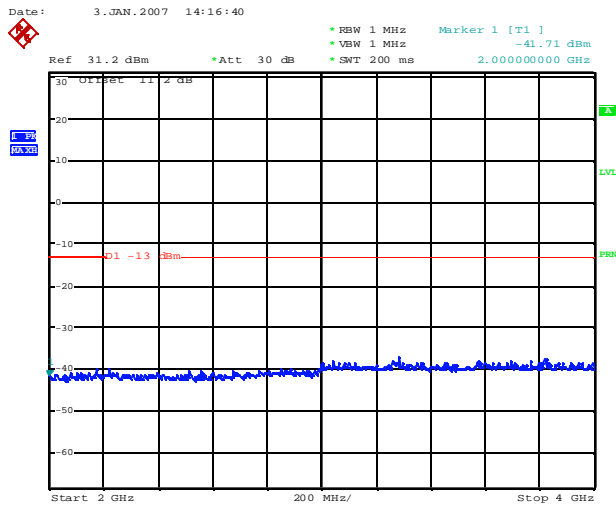
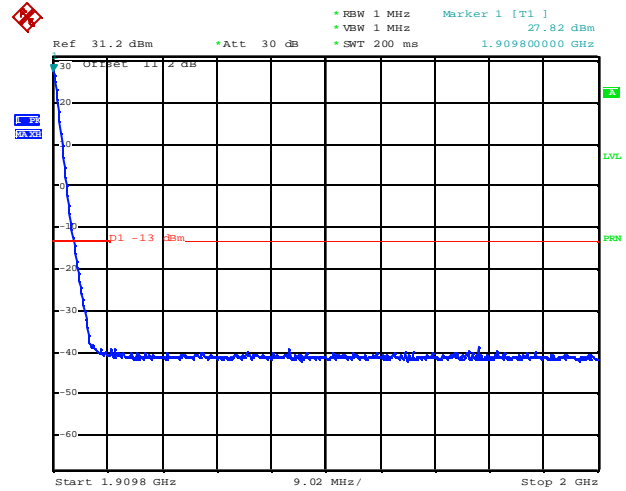
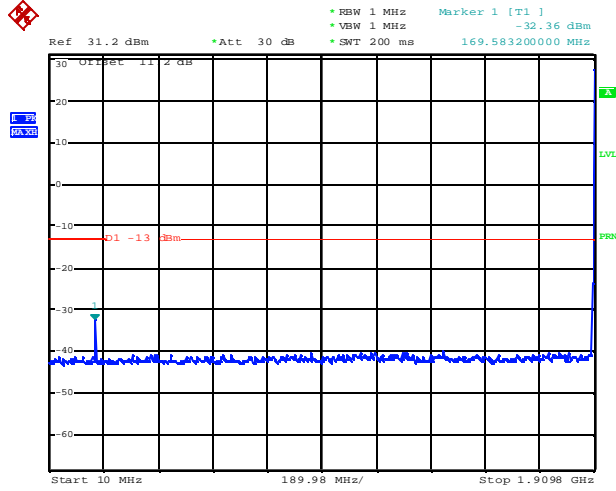
### 7. Part 24 GSM Spurious Mid Channel

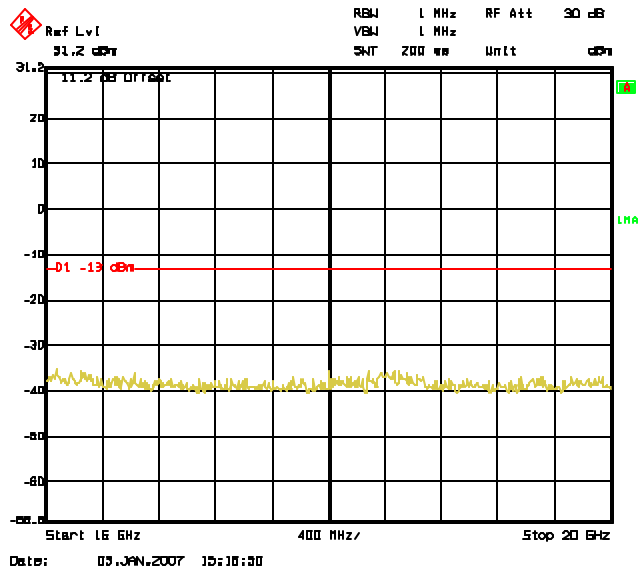






### 8. Part 24 GSM Spurious High Channel





### 22.355 Frequency Stability

Except as otherwise provided in this part, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table C-1 of this section.

Table C-1. - Frequency Tolerance for Transmitters in the Public Mobile Services

Frequency range (MHz)	Base fixed (ppm)	Mobile >3 watts (ppm)	Mobile <=3 watts (ppm)
25 to 50	20.0	20.0	50.0
50 to 450	5.0	5.0	50.0
450 to 512	2.5	5.0	5.0
<b>821 to 896</b>	<b>1.5</b>	<b>2.5</b>	<b>2.5</b>
928 to 929	5.0	n/a	n/a
929 to 960	1.5	n/a	n/a
2110 to 2220	10.0	n/a	n/a

#### Test Conditions:

<b>Sample Number:</b>	355632001921262	<b>Temperature:</b>	72°F
<b>Date:</b>	January 2, 2007	<b>Humidity:</b>	32 %
<b>Modification State:</b>	Mid Channel 836.6MHz	<b>Tester:</b>	Ferdinand Custodio
		<b>Laboratory:</b>	Nemko Burn Out Room

**Test Results:** See Attached Table.

Limit = 2.5 ppm Worst Case is 0.025 ppm @ 20°C 10VDC Nominal Voltage

#### Test Setup:

Frequency stability measurements were made over the temperature range of -30°C to +50°C. The frequency error was measured with the Agilent 8960 Test Set. Climate control was accomplished using a temperature chamber. The unit remained in the chamber during temperature transitions while turned off and during the measurement process, it was turned on and the error was scanned after one minute and recorded the maximum error over the next minute.

**Frequency Stability vs. Temperature**

Temperature	8.5V (85% of nominal) – frequency shift (Hz) and power (dbm)	10V (nominal) – frequency shift (Hz) and power (dbm)	11.5V (115% of nominal) – frequency shift (Hz) and power (dbm)
-30°C	-5.86/31.82	-13.89/31.81	-10.97/31.81
-20°C	-18.09/31.74	-14.03/31.74	-5.76/31.75
-10°C	-11.57/31.72	9.34/31.69	-19.34/31.69
0	11.97/31.58	-7.75/31.58	-10.62/31.58
10	8.28/31.57	-13.91/31.54	-6.3/31.53
20	-9.24/31.42	-21.04/31.42	-18.08/31.42
30	-8.03/31.36	-20.59/31.36	-14.12/31.35
40	12.84/31.28	-5.06/31.30	-11.2/31.32
50	-12.72/31.18	-7.14/31.18	-17.13/31.18

**Frequency Stability over Voltage Range**

Voltage (Volt)	Output Power (dBm)	Frequency Error (Hz)	Frequency Error (PPM)
11.5	31.42	7.17	0.00857
10.0	31.40	-12.16	0.0145
8.5	31.39	-12.28	0.0146
5.0	30.92	-10.27	0.0122
4.1	RF Off		

10.0 Volts is power supply level as specified by Calamp Corp.

5.0 Volts is power supply minimum level as specified by Calamp Corp.

11.5 Volts is specified power supply level x 1.15%.

Ambient 72°F RH 32%

### 24.235 Frequency Stability

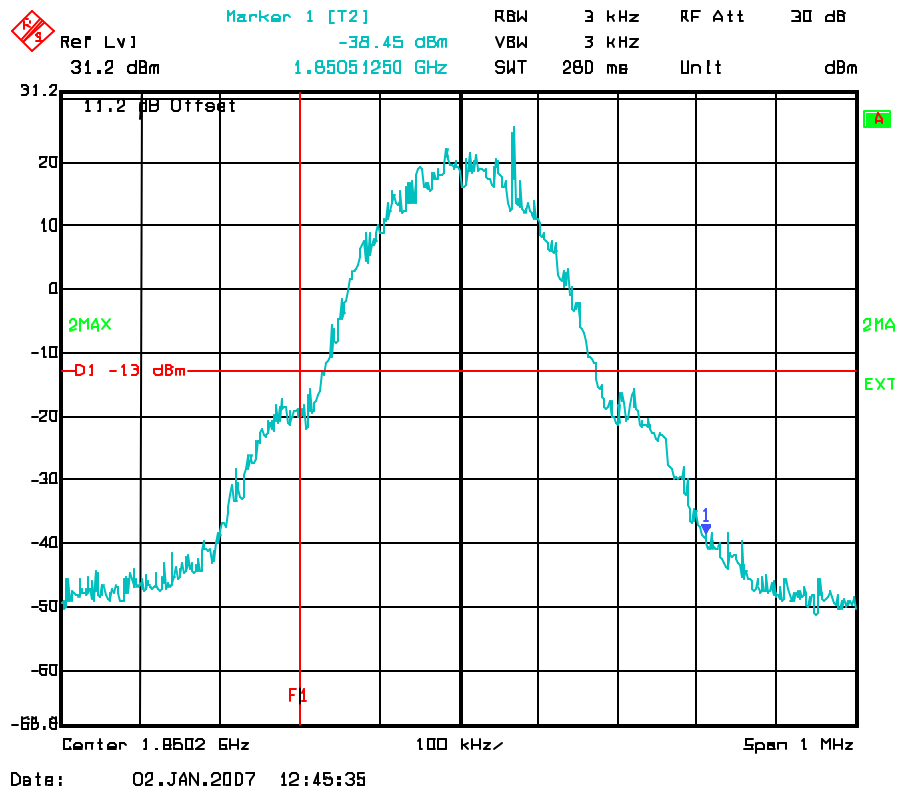
The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

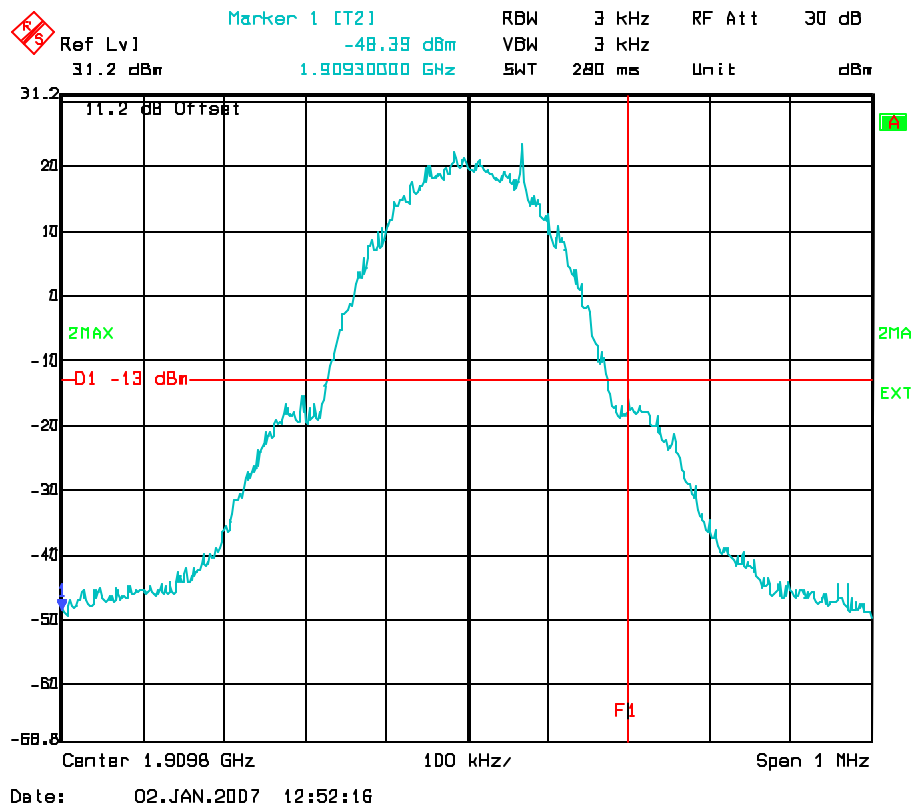
**Test Results:** See Attached Plots.

The fundamental frequency emissions did not stray outside the designated band 1850 to 1910 MHz during all testing within this report. See attached plots @ -30°C for Lower and Upper Bandedges. All plots up to 50°C are similar with hardly noticeable differences.

#### Test Setup:

Frequency stability measurements were made over the temperature range of -30°C to +50°C. Bandedge plots were taken by a Spectrum Analyzer connected to a 10.5dB directional coupler. Climate control was accomplished using a temperature chamber.





**Para. No.:2.1053 Field Strength of Spurious**

Minimum Standard is Part 22.917 and Part 24.238, please see Occupied Bandwidth for description

**Test Conditions:**

<b>Sample Number:</b>	355632001921262	<b>Temperature:</b>	55.4°F
<b>Date:</b>	December 28, 2006	<b>Humidity:</b>	53 %
<b>Modification State:</b>	GSM and PCS GSM	<b>Tester:</b>	Ferdinand Custodio
		<b>Laboratory:</b>	Nemko SOATS

**Test Results:** See attached Tables

- The maximum spurious field strength in GSM mode is 6.8 dB below the limit @ 1697.6 MHz.
- The maximum spurious field strength in PCS GSM mode is 12.5 dB below the limit @ 3700.4 MHz

**Additional Observations:**

- The Spectrum was searched from 30MHz to the 10<sup>th</sup> Harmonic. Emissions within 20 dB of the limit were substituted by a signal generator and matching antenna and were shown to comply.
- Only the worst case antenna configuration reported for both GSM and PCS GSM mode. For GSM, antenna #4 (JA-800D-CSMA) was used and for PCS GSM, antenna #3 (GSM-JC00) was used, please see fundamental measurements using all 4 (four) antenna:

Antenna	Max Level (850MHz)	Max Level (1900MHz)	Margin (850MHz)	Margin (1900MHz)
#1 GSM-JC001	32.6	23.2 dBm	-5.8 dB	-9.8 dB
#2 CMT-800PS	35.9	24.4 dBm	-2.5 dB	-8.6 dB
#3 GSM-JC000	32.5	28.2 dBm	-5.9 dB	-4.8 dB
#4 JA-800D-CSMA	35.9	25.5 dBm	-2.5 dB	-7.5 dB

- For 850MHz band (GSM), antenna #4 has worst spurious measurements than antenna #2. Comparison table attached.





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**San Diego Headquarters:**

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 Fax: (858) 452-1810

**Radiated Emissions Data**

Job #: 2085-1 Test #: 3  
 Page 1 of 1

Client Name : CalAmp  
 EUT Name : GSM Module  
 EUT Model # : ARC  
 EUT Serial # : SN355632001921262  
 EUT Config. : PCS TX Fundamental and Harmonics

Specification : FCC Part 24 with GSM-JC000 Antenna Reference : \_\_\_\_\_  
 Rod. Ant. #: 0 Temp. (°F) : 55.4 Date : 12/28/06  
 Bicon Ant. #: 0 Humidity (%) : 53 Staff : FSCustodio  
 Log Ant. #: 111 EUT Voltage : 10VDC Peak Bandwidth: 1 MHz  
 DRG Ant. # : 877 EUT Frequency : NA Video Bandwidth 1 MHz  
 Dipole Ant. #: 0 Phase: NA  
 Cable#: 40FT Location: RN# 90579  
 Preamp#: 842 Distance: 3m  
 Spec An. #: 897 EIRP conversion factor 5.5

Meas. Freq. (MHz)	Vertical (dBuV) pk	Horizontal (dBuV) pk	CF (db)	Max Level (dBm) pk	Spec. Limit (ERIP) (dBm) pk	Margin dB pk	EUT Rotation	Ant. Height	Pass Fail Unc.	Comment
1850.20	96.7	88.9	26.8	28.2	33.0	-4.8		1.1	Pass	
3700.40	75.6	79.3	-9.5	-25.5	-13.0	-12.5		1.2	Pass	
5550.60	64.0	68.2	-0.9	-27.9	-13.0	-14.9		1.0	Pass	
7400.80	53.6	54.2	3.9	-37.1	-13.0	-24.1		1.1	Pass	
9251.00	50.4	50.1	9.2	-35.6	-13.0	-22.6		1.1	Pass	
11101.20	47.2	46.9	14.8	-33.2	-13.0	-20.2			Pass	Noise Floor
12951.40	46.4	46.4	17.6	-31.2	-13.0	-18.2			Pass	Noise Floor
14801.60	44.8	45.2	20.7	-29.3	-13.0	-16.3			Pass	Noise Floor
16651.80	39.7	42.5	25.4	-27.4	-13.0	-14.4			Pass	Noise Floor
18502.00	40.5	41.1	37.5	-16.6	-13.0	-3.6			Pass	Noise Floor
1880.00	94.3	89.0	26.8	25.8	33.0	-7.2		1.1	Pass	
3760.00	76.9	75.3	-9.5	-27.9	-13.0	-14.9		1.2	Pass	
5640.00	59.0	70.0	-0.9	-26.2	-13.0	-13.2		1.0	Pass	
7520.00	53.6	58.1	4.1	-33.0	-13.0	-20.0		1.1	Pass	
9400.00	47.1	47.2	9.2	-38.9	-13.0	-25.9			Pass	Noise Floor
11280.00	47.2	46.9	14.8	-33.2	-13.0	-20.2			Pass	Noise Floor
13160.00	46.4	46.4	20.5	-28.3	-13.0	-15.3			Pass	Noise Floor
15040.00	44.8	45.2	21.3	-28.7	-13.0	-15.7			Pass	Noise Floor
16920.00	39.7	42.5	25.4	-27.4	-13.0	-14.4			Pass	Noise Floor
18800.00	40.5	41.1	37.5	-16.6	-13.0	-3.6			Pass	Noise Floor
1909.80	89.1	88.4	26.8	20.7	33.0	-12.3		1.2	Pass	
3819.60	76.6	76.6	-9.5	-28.2	-13.0	-15.2		1.0	Pass	
5729.40	57.5	58.8	-0.9	-37.3	-13.0	-24.3		1.1	Pass	
7639.20	52.0	50.7	4.1	-39.2	-13.0	-26.2		1.1	Pass	
9549.00	47.9	48.5	9.4	-37.4	-13.0	-24.4		1.0	Pass	
11458.80	47.2	46.9	14.8	-33.2	-13.0	-20.2			Pass	Noise Floor
13368.60	46.4	46.4	20.5	-28.3	-13.0	-15.3			Pass	Noise Floor
15278.40	44.8	45.2	21.3	-28.7	-13.0	-15.7			Pass	Noise Floor
17188.20	39.7	42.5	30.8	-22.0	-13.0	-9.0			Pass	Noise Floor
19098.00	40.5	41.1	37.5	-16.6	-13.0	-3.6			Pass	Noise Floor



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**Radiated Emissions Data**

Job #: 2085-1 Test #: 2  
 Page 1 of 1

Client Name : CalAmp  
 EUT Name : GSM Module  
 EUT Model # : ARC  
 EUT Serial # : SN355632001921262  
 EUT Config. : GSM 850 Fundamental and Harmonics  
 JA-800D-CSMA antenna  
 Specification : FCC Part 22 Reference : \_\_\_\_\_  
 Rod. Ant. #: 0 Temp. (°C) : 13 Date : 12/28/06  
 Bicon Ant.#: 0 Humidity (%) : 53 Staff : ESCustodio  
 Log Ant.#: 111 EUT Voltage : 10VDC Peak Bandwidth: 1 MHz  
 DRG Ant. # 877 EUT Frequency : NA Video Bandwidth 1 MHz  
 Dipole Ant.#: 0 Phase: NA  
 Cable#: 40FT Location: RN# 90579  
 Preamp#: 842 Distance: 3m  
 Spec An.#: 835 ERP conversion factor 7

Meas. Freq. (MHz)	Vertical (dBuV) pk	Horizontal (dBuV) pk	CF (db)	Max Level (dBm) pk	Spec. Limit (ERP) (dBm) pk	Margin dB pk	EUT Rotation	Ant. Height	Pass Fail Unc.	Comment
824.20	105.2	95.3	27.15	35.1	38.4	-3.3		1.2	Pass	
1648.40	96.0	94.2	-22.34	-23.6	-13.0	-10.6		1.0	Pass	
2472.60	77.2	69.6	-15.8	-35.8	-13.0	-22.8		1.1	Pass	
3296.80	66.1	68.2	-10.34	-39.4	-13.0	-26.4		1.1	Pass	
4121.00	55.0	52.2	-4.952	-47.3	-13.0	-34.3		1.0	Pass	
4945.20	56.8	56.4	-4.252	-44.7	-13.0	-31.7		1.2	Pass	
5769.40	53.6	52.6	-0.871	-44.6	-13.0	-31.6		1.2	Pass	
6593.60	53.5	53.0	0.9822	-42.7	-13.0	-29.7		1.1	Pass	
7417.80	50.5	49.6	3.9067	-42.9	-13.0	-29.9			Pass	Noise Floor
8242.00	49.4	49.2	5.3678	-42.5	-13.0	-29.5			Pass	Noise Floor
836.60	105.2	94.5	27.05	35.0	38.4	-3.4		1.2	Pass	
1673.20	98.0	95.3	-22.34	-21.6	-13.0	-8.6		1.0	Pass	
2509.80	82.5	69.8	-15	-29.8	-13.0	-16.8		1.1	Pass	
3346.40	75.7	73.9	-10.34	-32.0	-13.0	-19.0		1.1	Pass	
4183.00	63.6	54.0	-4.952	-38.6	-13.0	-25.6		1.0	Pass	
5019.60	57.3	58.8	-0.171	-38.6	-13.0	-25.6		1.2	Pass	
5856.20	57.0	54.6	-0.871	-41.2	-13.0	-28.2		1.2	Pass	
6692.80	51.7	51.8	0.9822	-44.5	-13.0	-31.5			Pass	Noise Floor
7529.40	50.7	48.8	4.1067		-13.0				Pass	Noise Floor
8366.00	49.5	48.5	5.3678	-42.4	-13.0	-29.4			Pass	Noise Floor
848.80	106.3	94.3	26.85	35.9	38.4	-2.5		1.1	Pass	
1697.60	99.6	99.8	-22.34	-19.8	-13.0	-6.8		1.0	Pass	
2546.40	83.6	70.8	-15	-28.6	-13.0	-15.6		1.1	Pass	
3395.20	78.0	75.0	-10.34	-29.7	-13.0	-16.7		1.1	Pass	
4244.00	64.0	55.3	-4.952	-38.2	-13.0	-25.2		1.0	Pass	
5092.80	58.6	56.5	-0.171	-38.8	-13.0	-25.8		1.2	Pass	
5941.60	53.4	51.3	-0.871	-44.8	-13.0	-31.8			Pass	Noise Floor
6790.40	50.4	49.7	0.9822	-45.8	-13.0	-32.8			Pass	Noise Floor
7639.20	50.2	50.9	4.1067	-42.3	-13.0	-29.3			Pass	Noise Floor
8488.00	49.50	48.64	5.3678	-42.4	-13.0	-29.4			Pass	Noise Floor



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**Radiated Emissions Data**

Job #: 2085-1 Test #: 4  
 Page 1 of 1

Client Name : CalAmp  
 EUT Name : GSM Module  
 EUT Model # : ARC  
 EUT Serial # : SN355632001921262  
 EUT Config. : GSM 850 Fundamental and Harmonics  
CMT-800PS  
 Specification : FCC Part 22 Reference : \_\_\_\_\_  
 Rod. Ant. #: 0 Temp. (°C) : 13 Date : 12/28/06  
 Bicon Ant.#: 0 Humidity (%) : 53 Staff : FSCustodio  
 Log Ant.#: 111 EUT Voltage : 10VDC Peak Bandwidth: 1 MHz  
 DRG Ant. # 877 EUT Frequency : NA Video Bandwidth 1 MHz  
 Dipole Ant.#: 0 Phase: NA  
 Cable#: 40FT Location: RN# 90579  
 Preamp#: 842 Distance: 3m  
 Spec An.#: 835 ERP conversion factor 7

Meas. Freq. (MHz)	Vertical (dBuV) pk	Horizontal (dBuV) pk	CF (db)	Max Level (dBm) pk	Spec. Limit (ERP) (dBm) pk	Margin dB pk	EUT Rotation	Ant. Height	Pass Fail Unc.	Comment
824.20	95.3	106.0	27.15	35.9	38.4	-2.5		1.2	Pass	
1648.40	95.5	94.2	-22.34	-24.1	-13.0	-11.1		1.0	Pass	
2472.60	77.0	69.6	-15.8	-36.1	-13.0	-23.1		1.1	Pass	
3296.80	66.1	67.3	-10.34	-40.3	-13.0	-27.3		1.1	Pass	
4121.00	54.4	52.2	-4.952	-47.8	-13.0	-34.8		1.0	Pass	
4945.20	56.4	56.4	-4.252	-45.1	-13.0	-32.1		1.2	Pass	
5769.40	52.2	52.6	-0.871	-45.5	-13.0	-32.5		1.2	Pass	
6593.60	53.1	53.0	0.9822	-43.2	-13.0	-30.2		1.1	Pass	
7417.80	50.5	49.6	3.9067	-42.9	-13.0	-29.9			Pass	Noise Floor
8242.00	49.4	49.2	5.3678	-42.5	-13.0	-29.5			Pass	Noise Floor
836.60	95.0	104.4	27.05	34.2	38.4	-4.2		1.2	Pass	
1673.20	96.3	95.3	-22.34	-23.3	-13.0	-10.3		1.0	Pass	
2509.80	81.4	69.8	-15	-30.9	-13.0	-17.9		1.1	Pass	
3346.40	73.3	73.9	-10.34	-33.7	-13.0	-20.7		1.1	Pass	
4183.00	61.3	54.0	-4.952	-40.9	-13.0	-27.9		1.0	Pass	
5019.60	57.3	57.2	-0.171	-40.2	-13.0	-27.2		1.2	Pass	
5856.20	56.2	54.6	-0.871	-41.9	-13.0	-28.9		1.2	Pass	
6692.80	51.7	51.8	0.9822	-44.5	-13.0	-31.5			Pass	Noise Floor
7529.40	50.7	48.8	4.1067	-42.5	-13.0	-29.5			Pass	Noise Floor
8366.00	49.5	48.5	5.3678	-42.4	-13.0	-29.4			Pass	Noise Floor
848.80	94.2	104.6	26.85	34.2	38.4	-4.2		1.1	Pass	
1697.60	99.6	99.5	-22.34	-20.0	-13.0	-7.0		1.0	Pass	
2546.40	81.3	70.8	-15	-30.9	-13.0	-17.9		1.1	Pass	
3395.20	76.3	75.0	-10.34	-31.3	-13.0	-18.3		1.1	Pass	
4244.00	63.2	55.3	-4.952	-39.0	-13.0	-26.0		1.0	Pass	
5092.80	57.5	56.5	-0.171	-39.9	-13.0	-26.9		1.2	Pass	
5941.60	52.6	51.3	-0.871	-45.5	-13.0	-32.5			Pass	Noise Floor
6790.40	50.4	49.7	0.9822	-45.8	-13.0	-32.8			Pass	Noise Floor
7639.20	50.2	50.9	4.1067	-42.3	-13.0	-29.3			Pass	Noise Floor
8488.00	49.50	48.64	5.3678	-42.4	-13.0	-29.4			Pass	Noise Floor

**Para. No.:2.1053 Field Strength of Spurious (Substitution Method)**



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**Substitution Method For Radiated Emissions**

Complete  X  Preliminary \_\_\_\_\_ Job # :  2085-1  Test # :  1   
 Page  1  of  1

Client Name :  CalAmp   
 EUT Name :  ARC   
 EUT Model # :  GSM Module

Specification :  FCC Part 22 and 24  Reference : \_\_\_\_\_  
 Rod. Ant. # :  NA  Temp. (deg. C) :  22  Date :  Jan.4, 2007   
 Bicon Ant.#:  NA  Humidity (%) :  40  Time :  12NN   
 Log Ant.#:  111  EUT Voltage :  NA  Staff :  FSCustodio   
 DRG Ant. # :  527  EUT Frequency :  NA  Photo ID: \_\_\_\_\_  
 Dipole Ant.#:  765  Phase:  NA  Peak Bandwidth:  RBW-1MHz VBW-1MHz   
 Cable#:  60ft and SOATS  Location:  RN# 329550-01   
 Preamp#:  842  Distance:  3m   
 Spec An.#:  835   
 Signal Generator  836

**Part 22 Substitution**

Ant. #4	Target		dipole	Cable loss dB	Signal Generator dBm	Total (ERP) dBm	Spec dBm	Margin dBm
	Frequency MHz	Level dBuV/m						
	824.20	105.2	0	3.90	34.30	30.40	38.5	-8.1
	836.40	105.2	0	3.90	34.20	30.30	38.5	-8.2
	848.80	106.3	0	4.20	35.50	31.30	38.5	-7.2

Ant. #4	Target		Horn Gain dBi	Cable loss dB	Signal Generator dBm	Total (EIRP) dBm	Spec dBm	Margin dBm
	Frequency MHz	Level dBuV/m						
	1648.40	96.0	5.4	5.90	-22.40	-22.90	-13	-9.9
	1673.20	98.0	5.41	6.00	-21.50	-22.09	-13	-9.1
	2509.80	82.5	6.92	7.80	-28.00	-28.88	-13	-15.9
	3346.40	75.7	7.87	10.10	-29.60	-31.83	-13	-18.8
	1697.60	99.8	5.45	6.00	-20.70	-21.25	-13	-8.3
	2546.40	83.6	6.98	7.70	-27.70	-28.42	-13	-15.4
	3395.20	78.0	7.88	10.40	-27.30	-29.82	-13	-16.8

**Part 24 Substitution**

Ant. #3	Target		Horn Gain dBi	Cable loss dB	Signal Generator dBm	Total (EIRP) dBm	Spec dBm	Margin dBm
	Frequency MHz	Level dBuV/m						
	1850.02	96.7	5.73	6.30	28.3	27.73	33	-5.3
	1880.00	94.3	5.78	6.50	26.1	25.38	33	-7.6
	1908.80	89.1	5.83	6.50	21.2	20.53	33	-12.5
	3700.40	79.3	7.94	10.70	-23.8	-26.56	-13	-13.6
	5550.60	68.2	9.27	12.60	-29.2	-32.53	-13	-19.5
	3760.00	76.9	7.95	11.40	-25.9	-29.35	-13	-16.4
	5640.00	70	9.29	12.20	-28.4	-31.31	-13	-18.3
	3819.60	76.6	7.96	10.80	-25.7	-28.54	-13	-15.5

**RSS 132-4.6 / RSS-133 6.7 Receiver Spurious Emissions**

If a radiated measurement is made, all spurious emissions shall comply with the limits of Table 2. The resolution bandwidth of the spectrum analyser shall be 100 kHz for spurious emissions measurements below 1.0 GHz, and 1.0 MHz for measurements above 1.0 GHz.

**Table 2. Spurious Emission Limits for Receivers**

Spurious Frequency (MHz)	Field Strength (microvolts/m at 3 metres)
30-88	100
88-216	150
216-960	200
Above 960	500

**Test Conditions:**

<b>Sample Number:</b>	355632001921262	<b>Temperature:</b>	64.4°F
<b>Date:</b>	December 29, 2006	<b>Humidity:</b>	33 %
<b>Modification State:</b>	GSM and PCS GSM	<b>Tester:</b>	Ferdinand Custodio
		<b>Laboratory:</b>	Nemko SOATS

**Test Results:** See attached Tables

- The maximum receiver spurious field strength is 0.1 dB below the limit @ 160 MHz. GSM (850MHz) and PCS GSM (1900 MHz) bands have identical results.

**Additional Observations:**

- The Spectrum was searched from 30MHz to the 10<sup>th</sup> Harmonic.
- No receiver spurious emissions observed above 1GHz
- For this test, only antenna #2 (CMT-800PS) was reported. All other antenna exhibits similar results.



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**Radiated Emissions Data**

Complete   X   Job #: 2085-1 Test #: \_\_\_\_\_  
 Preliminary \_\_\_\_\_ Page \_\_\_\_\_ of \_\_\_\_\_

Client Name : CalAmp  
 EUT Name : ARC  
 EUT Model # : GSM Module  
 EUT Part # : \_\_\_\_\_  
 EUT Serial # : SN355632001921262  
 EUT Config. : CMT-800PS (3.2 dBi gain antenna) Receive Mode

Specification : CFR47 Part 15, Subpart B, Class B Reference : \_\_\_\_\_  
 Rod. Ant. #: NA Temp. (deg. C) : 18 Date : Dec. 29, 2006  
 Bicon Ant.#: 115 Humidity (%) : 33 Time : \_\_\_\_\_  
 Log Ant.#: 111 EUT Voltage : 10VDC Staff : FSCustodio  
 DRG Ant. # 877 EUT Frequency : NA  
 Dipole Ant.#: NA Phase: NA  
 Cable#: SOATS Location: SOATS  
 Preamp#: 901 Distance: 3 meters  
 Spec An.#: 897  
 QP #: 897  
 PreSelect#: NA

Quasi-Peak RBW: 120 kHz
Video Bandwidth 120 kHz
Average RBW: 1 MHz
Video Bandwidth 10 Hz
Peak RBW: 1 MHz
Video Bandwidth 1 MHz

Measurements below 1 GHz are Quasi-Peak values, unless otherwise stated.  
 Measurements above 1 GHz are Average values, unless otherwise stated.

Meas. Freq. (MHz)	Ant. Pol. (H/V)	Atten. (dB)	Meter Reading (dBuV)	Antenna Factor (dB)	Path Loss (dB)	RF Gain (dB)	Corrected Reading (dBuV/m)	Spec. limit (dBuV/m)	CR/SL Diff. (dB)	Pass Fail Unc.	Comment
48.6	V		50.9	11.1	1.2	31.9	31.3	40.0	-8.7	Pass	Ambient noise
72	V		60.84	8.3	1.3	31.9	38.6	40.0	-1.4	Pass	
116.02	V		48.67	14.5	1.8	31.9	33.1	43.5	-10.5	Pass	
128	V		60.35	11.6	1.8	31.9	41.8	43.5	-1.7	Pass	
132	V		58.5	11.3	1.8	31.9	39.7	43.5	-3.8	Pass	
160	V		58.33	15	2.1	32.0	43.5	43.5	-0.1	Pass	
211.24	V		52.7	10.7	2.4	31.9	33.9	43.5	-9.6	Pass	
248.88	H		61.11	11.1	2.6	31.9	43.0	46.0	-3.0	Pass	
920.73	H		28.7	22.7	5.6	32.0	25.0	46.0	-21.0	Pass	

## Appendix B : Setup Photographs

### 1. Frequency Stability Test Setup:



## 2. Spurious Emissions Setup:





### 3. Conducted RF Emissions Setup:



## Appendix C : Block Diagram of Test Setups

### Test Site For Radiated Emissions

