

Report Number: 06-0011

Issue Date: April 18, 2006

Customer: Sicom test s.r.l.

Model: GM862-QUAD / GM862-QUAD-PY Modular Transmitter

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## **2.5 Antenna Description**

No antenna is provided (or supplied to the market) together with the product.

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## 2.6 Conducted RF Power Output (FCC Section 2.1046)

§ 2.1046 Measurements required: RF power output.

- (a) For transmitters other than single sideband, independent sideband and controlled carrier radiotelephone, power output shall be measured at the RF output terminals when the transmitter is adjusted in accordance with the tuneup procedure to give the values of current and voltage on the circuit elements specified in § 2.1033(c)(8). The electrical characteristics of the radio frequency load attached to the output terminals when this test is made shall be stated.
- (b) For single sideband, independent sideband, and single channel, controlled carrier radiotelephone transmitters the procedure specified in paragraph (a) of this section shall be employed and, in addition, the transmitter shall be modulated during the test as follows. In all tests, the input level of the modulating signal shall be such as to develop rated peak envelope power or carrier power, as appropriate, for the transmitter.
- (c) For measurements conducted pursuant to paragraphs (a) and (b) of this section, all calculations and methods used by the applicant for determining carrier power or peak envelope power, as appropriate, on the basis of measured power in the radio frequency load attached to the transmitter output terminals shall be shown. Under the test conditions specified, no components of the emission spectrum shall exceed the limits specified in the applicable rule parts as necessary for meeting occupied bandwidth or emission limitations.

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**TABLE 3a**  
**CONDUCTED RF POWER OUTPUT**

**824 MHz to 848 MHz Range**

Frequency of Fundamental (MHz)	Measurement (dBm)	Measurement (Watt)
824.14	30.89	1.227
835.90	31.36	1.368
848.75	31.29	1.346

2.85 dB added for cable and Attenuator loss

Calculation:

 $\text{Antilog}(30.89/10) = 1.227 \text{ W}$ **Test Date: April 5, 2006**

Tester

Signature: Name: Austin Thompson

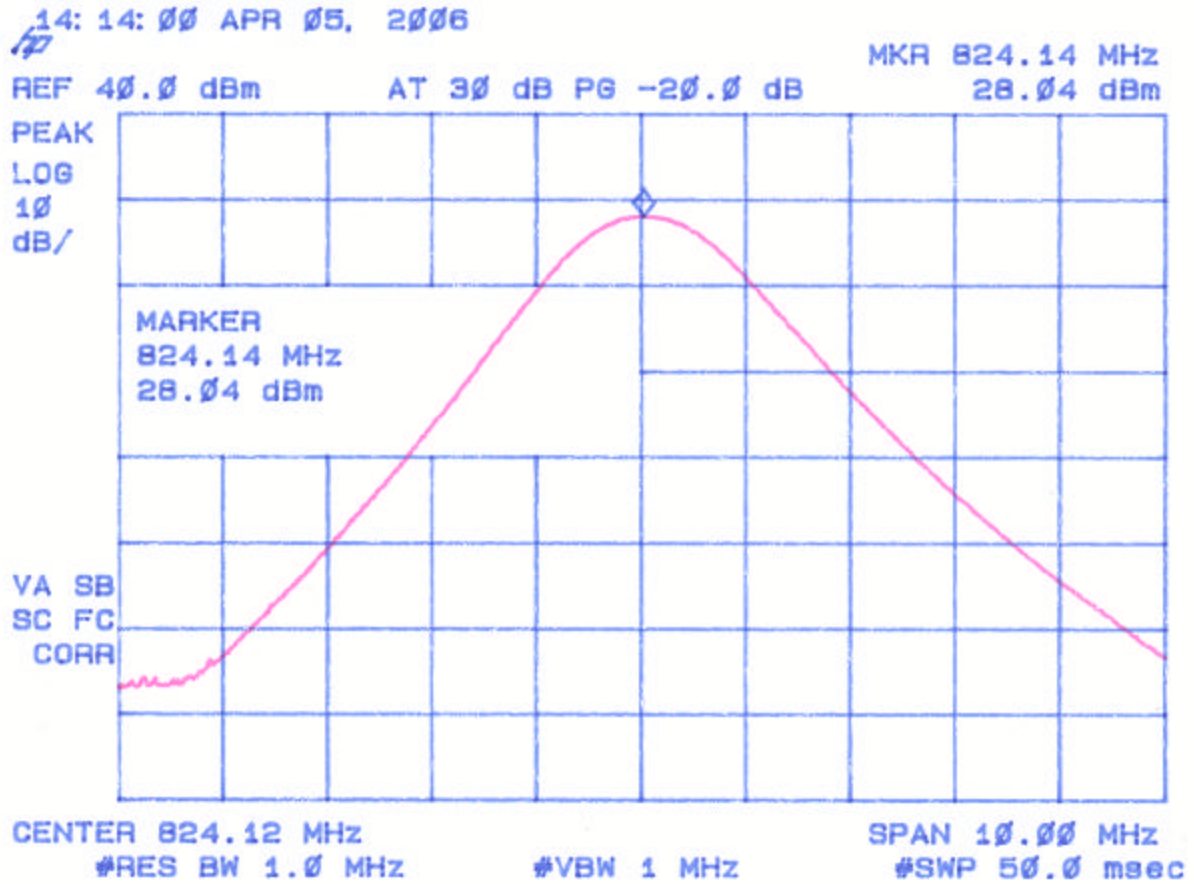
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**Figure 3a.**  
**Conducted RF Power Output**



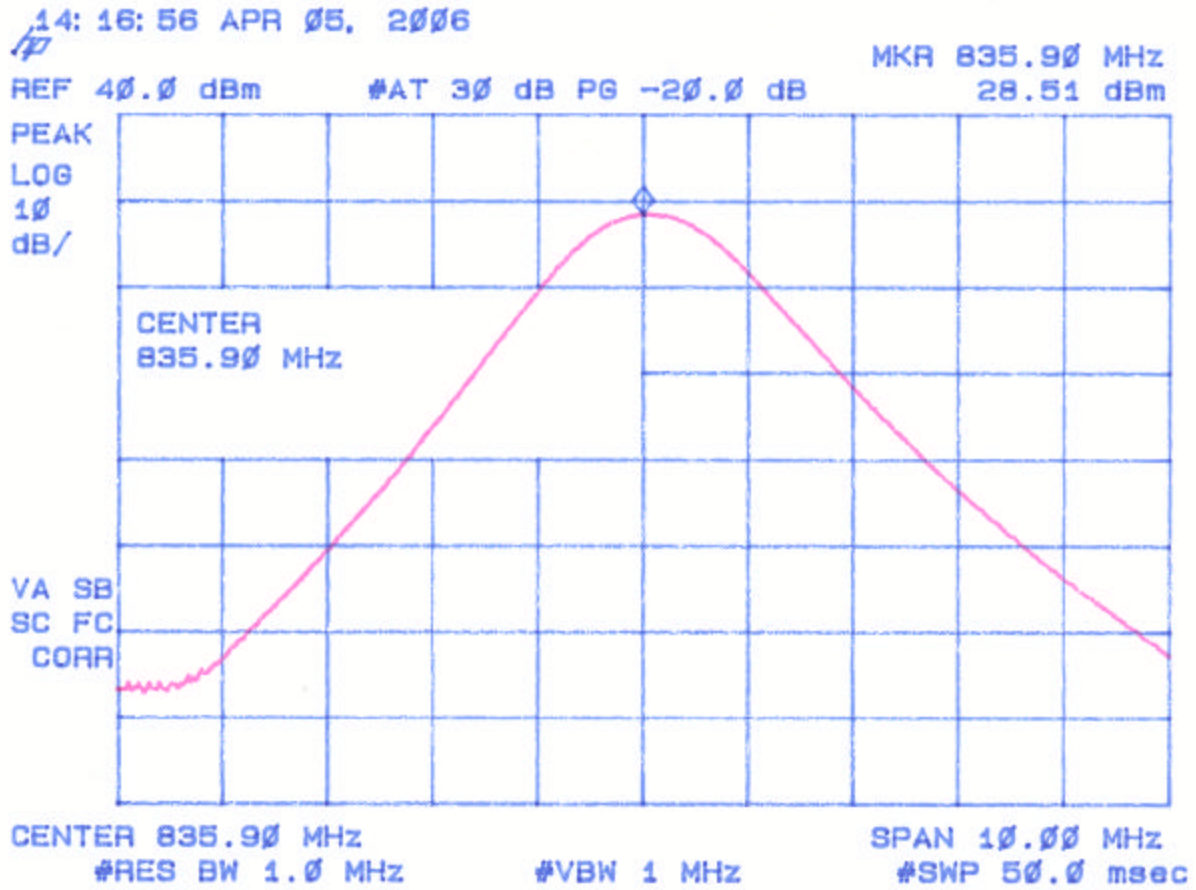
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**Figure 3b.**  
**Conducted RF Power Output**





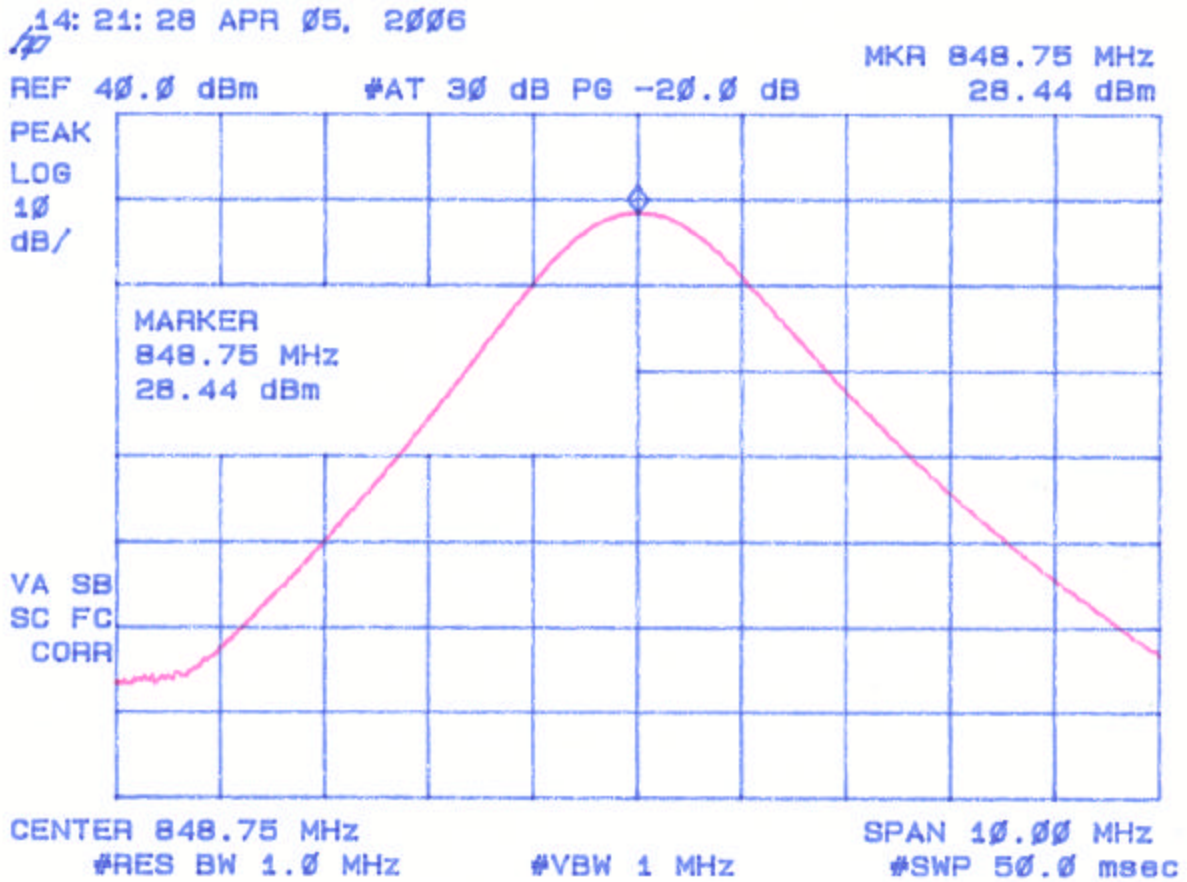
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**Figure 3c.**  
**Conducted RF Power Output**



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**TABLE 3b**  
**CONDUCTED RF POWER OUTPUT**

**1850 MHz to 1909 MHz Range**

Frequency of Fundamental (MHz)	Measurement (dBm)	Measurement (Watt)
1.85010	26.38	0.435
1.87990	27.01	0.502
1.90973	27.69	0.588

1.17dB added for cable and Attenuator loss

Calculation:

 $\text{Antilog}(26.38/10) = 0.435 \text{ W}$ **Test Date: April 5, 2006**

Tester

Signature: Name: Austin Thompson



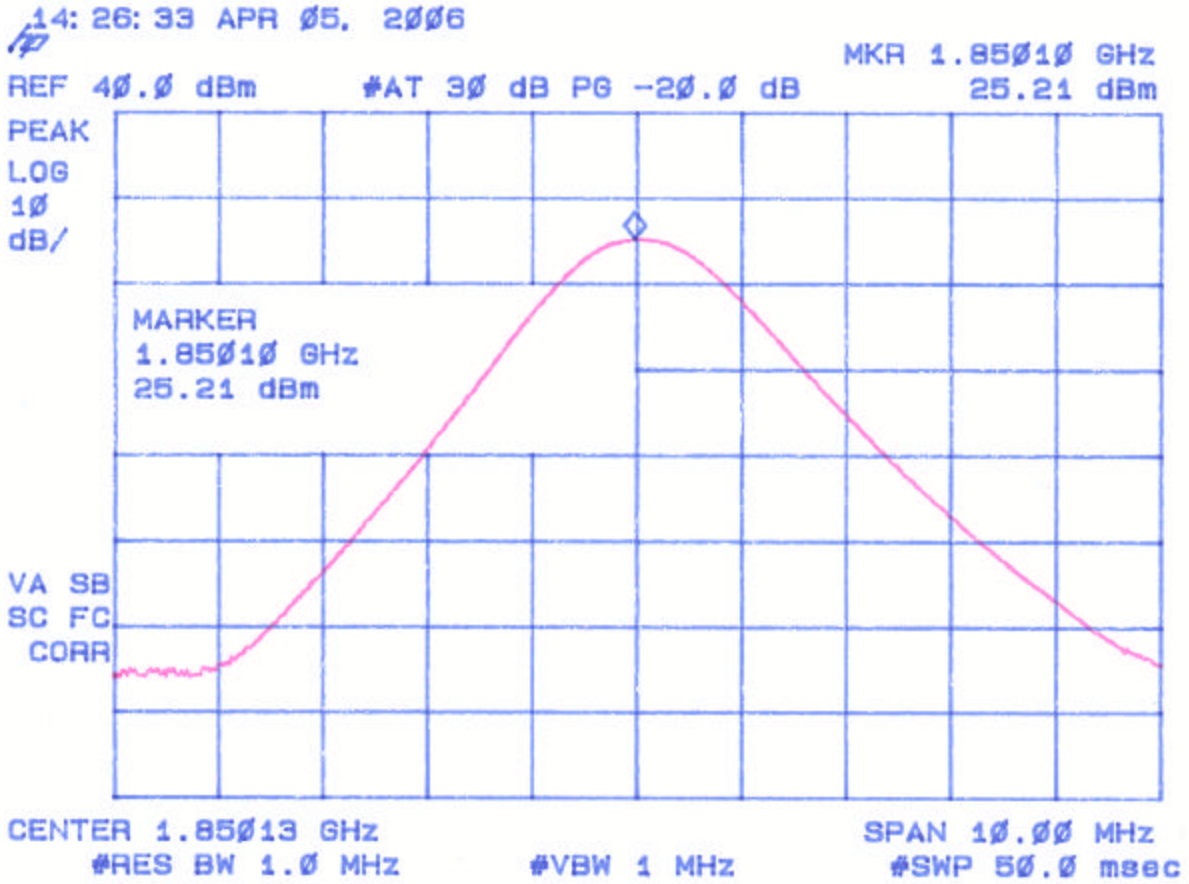
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**Figure 3d.**  
**Conducted RF Power Output**



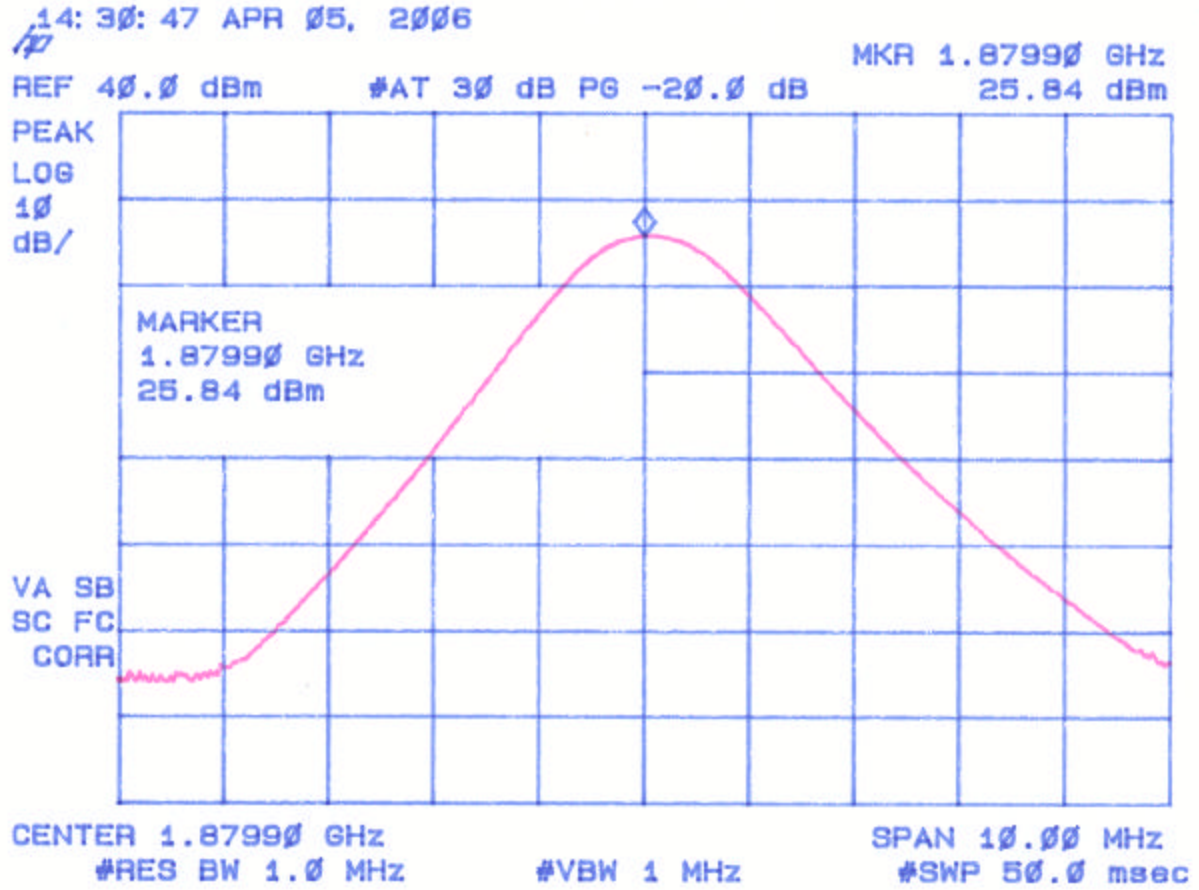
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**Figure 3e.**  
**Conducted RF Power Output**



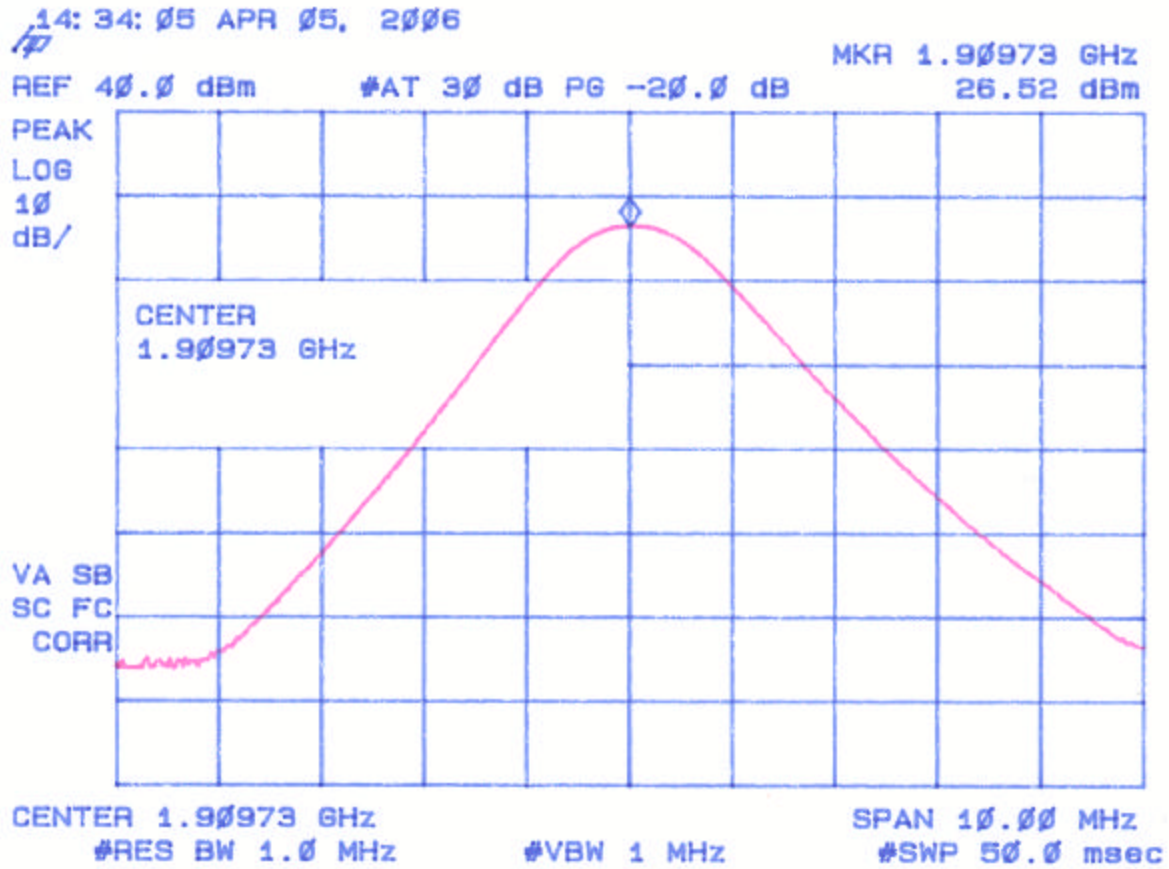
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**Figure 3f.**  
**Conducted RF Power Output**



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## **2.7 Field Strength of Spurious Radiation (FCC Section 2.1053)**

Spurious emissions were evaluated from 30 MHz to 19.1 GHz at an EUT to antenna distance of 1 or 3 meters. The EUT was tested with an external power source and modulated by its own internal sources. A low, middle and high channel were tested. The EUT was placed on an open area test site and the spurious emissions tested as stipulated by EIT/TIA-603: 1992 section 2.2.12. Measurements for 30 to 1000 MHz were made with the analyzer's bandwidth set to 120 kHz. Measurements above 1 GHz were made with the analyzer's bandwidth set to 1 MHz. The worse case results are shown in Table 4a.

Initial measurements were calculated to determine margin in dB from the Limit. Any margin less than 20dB was repeated using the substitution Method of EIA/TIA-603:1992 section 2.2.1.2.

Substitution Method results are shown in table 4b.

### **FCC Minimum Standard (FCC Section 24.238)**

On any frequency outside a licensee's frequency block, the power of any transmission shall be attenuated below the transmitter power (P) by at least  $43 + 10 \log (P)$  dB.

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**TABLE 4a**  
**Field Strength of Spurious Radiation (theoretical)**

Radiated Emissions (Theoretical)								
Test By:	Test:	Substitution Readings for Quad GM862				Client:	Sicom	
AT	Project:	06-0011	Class:		Model:			
Frequency Range		Table	Model		S/N		Valid	Calibrated:
		2hn3mh	Model : SAS-571		S/N 605		Yes	01 APR 05
Frequency	Test Data	AF	Test Data	AF+CA-AMP	Results	Limits	Distance /	Margin
(MHz)	(dBm)	Table	(dBuV)	(dB)	(uV/m)	(uV/m)	Polarity	(dB)
1850.20	-50.9	2hn3mh	56.1	-5.5	340.4	16552.0	3m./HORZ	33.7
3700.3	-54.9	2hn3mh	52.1	2.0	507.3	16552.0	3m./HORZ	30.3
5550.4	-58.3	2hn3mh	48.7	8.1	689.2	16552.0	3m./HORZ	27.6
7400.5	-50.5	2hn3mh	56.5	11.0	2382.5	16552.0	3m./HORZ	16.8
9251.3	-55.8	2hn3mh	51.2	12.9	1604.4	16552.0	3m./HORZ	20.3
1909.6	-53.5	2hn3mh	53.5	-4.8	272.6	16552.0	3m./HORZ	35.7
3819.6	-59.9	2hn3mh	47.1	2.7	307.8	16552.0	3m./HORZ	34.6
5729.6	-54.5	2hn3mh	52.5	8.5	1121.6	16552.0	3m./HORZ	23.4
7639	-49.7	2hn3mh	57.3	11.2	2672.2	16552.0	3m./HORZ	15.8
9549	-58.3	2hn3mh	48.7	13.1	1241.6	16552.0	3m./HORZ	22.5

Test Date: February 27, 2006

Tester

Signature: \_\_\_\_\_


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**TABLE 4b Field Strength of Spurious Radiation (Substitution)**

Frequency	Maximum RX Reading (Units A)	Recreated Reading During Substitution (Using Same Units A)	Difference Column A - B	TX Gain (dBi)	TX Gain Relative to Dipole (dB)	RF Power into TX antenna (Corrected for any CL and Pads to antenna Feed Point) (dBm)	RF Power into substitution TX antenna corrected by TX Gain Relative to Dipole (dBm)	Limit (dBm)	Margin Below Limit (dB)	Theoretical Margin Below Limit
The following applies information from test as performed on Model GM862 Quad										
7400.5	-50.5	-50.8	0.3	11.1	8.96	-42.57	-33.31	-13	20.31	16.8
7639	-49.7	-49.78	0.08	11.4	9.26	-42.7	-33.36	-13	20.36	15.8

**Test Date: February 27, 2006**

**Tester**

**Signature:** \_\_\_\_\_



**Name: Austin Thompson**