TEST REPORT

Report Number: 3074983-001
Project Number: 3074983
6/28/2005

Evaluation of the
GMRS Transceiver
Model Number: GMOR
FCC ID: JOFGMOR
ICID: 5855A-GMOR

FCC Part 95 Subpart A and
RSS-210, Issue 5: Amendment No. 4

For

Radio Sound

Test Performed by:	Test Authorized by:
Intertek 731 Enterprise Drive Lexington, KY 40510	Radio Sound 1713 Cobalt Drive Louisville, KY 40299

Prepared By:_____ **Date:** 6/28/2005
Jason Centers, Project Engineer

Approved By:_____ **Date:** 6/28/2005
Bryan C. Taylor, EMC Team Leader

The results contained in this report were derived from measurements performed on the identified test samples. Any implied performance of other samples based on this report is dependent on the representative adequacy of the samples tested.

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1 EXECUTIVE SUMMARY

Testing performed for: Radio Sound

Equipment Under Test: GMOR

FCC RULE	IC RULE	DESCRIPTION OF TEST	RESULT	PAGE
§95.621(a)	RSS-210(a)	Transmitted Frequencies	**Compliant**	9
§95.135	RSS-210(2)(d)	RF Power Output	**Compliant**	11
§1.1310	RSS-210(g)	Maximum Permissible Exposure (MPE) Calculations	**Compliant**	14
§95.637(a)(b)	RSS-210(2)(b)	Modulation Characteristics	**Compliant**	15
§95.633(a)	RSS-210 (2)(c)	Occupied Bandwidth	**Compliant**	19
§95.635(a)(b)	RSS-210 (e)(1)	Unwanted Spurious Emissions	**Compliant**	29
§2.1055, 95.621	RSS-210 (f)	Frequency Stability	**Compliant**	32
§15.109	RSS-210 (e)(1)	Receiver Spurious Emissions	**Compliant**	34

N/S: Not under scope of this evaluation

2 JOB DESCRIPTION

2.1 General Information

Applicant Name / Address:	Radio Sound 1713 Cobalt Drive Louisville KY 40299
Name of contact:	Eric Weber
Telephone:	(502)-267-6768
Fax:	(502)-267-6794

FCCID	JOFGMOR
ICID	5855A-GMOR
Product	GMRS Transceiver
EUT Model Number	GMOR
EUT Serial Number	GMRS Unit FCC#1
Quantity Production Planned	Quantity production is planned.
Modulation(s)	The GMOR transmits only frequency modulated (FM) signals
Emission Designators	F3E
Maximum Frequency Error (Measured)	0.86 PPM
Maximum Effective Radiated Output Power (Measured)	1.95 Watts
Frequency Range	462.5625 to 462.7250 MHz
Antenna	Vehicle mounted vertically polarized sleeve dipole antenna with a gain of 2.2dBi, and an impedance of 50 Ohms.
Related Submittals / Grants	None
EUT receive date:	4/26/2005
EUT receive condition:	The EUT was received in good condition with no apparent damage.
Test start date:	4/27/2005
Test completion date:	6/28/2005
FCC Rule Part(s)	47 CFR Part 95-Personal Radio Services (USA)
Industry Canada Rule Part(s)	RSS-210, Issue 5: Amendment No. 4: General Mobile Radio Service (GMRS) Devices (Canada)
Modifications Required For Compliance	No modifications were implemented by the Intertek staff.

The test results in this report pertain only to the item tested.

2.2 Equipment Under Test (EUT)

The Equipment Under Test (EUT) was a GMRS Transceiver that was designed to be installed on an Arctic Cat snowmobile. It allows for "push to talk" communications between other GMRS type transceivers. The GMOR is intended to be installed as a factory option or as an aftermarket add on by a trained crafts person. It operates off the typical 12VDC battery voltage present on Arctic Cat snowmobiles.

2.2.1 Cables associated with EUT

Table 2-1 contains the details of the cables associated with the EUT.

Table 2-1: Interconnecting cables between modules of EUT

Cables Used in Test Setup					
Description	**Length**	**Shielding**	**Ferrites**	**Connection**	
				From	**To**
12 AWG DC Power Cable	6 ft	None	None	DC Power Supply	DC Power Input
Antenna Cable	3 ft	Coax	None	Antenna Port	Antenna
Headset Cable	4 ft	None	None	Headset Port	Headset
Main Electrical Wiring Harness[1]	8 ft	None	None	Headset, Transmitter Controls, Power Terminals, and Speakers	Headset, Transmitter Controls, Power Terminals, and Speakers

2.2.2 Mode(s) of operation

The GMRS Transceiver was powered by a 12VDC bench top power supply and tested in a stand alone condition. For some tests, the power was varied to ±15% of this nominal value. All tests were performed with the transmitter set to output at maximum RF level unless otherwise noted.

[1] This wiring harness interconnects all items listed in the "connection" column.

3 TEST FACILITY

The INTERTEK-Lexington is located at 731 Enterprise Drive, Lexington Kentucky, 40510. The radiated emission test site is a 10-meter semi-anechoic chamber. The chamber meets the characteristics of CISPR 16-1: 1993 and ANSI C63.4: 1992. For measurements, a remotely controlled flush-mount metal-top turntable is used to rotate the EUT a full 360 degrees. A remote controlled non-conductive antenna mast is used to scan the antenna height from one to four meters. The FCC Registration Number for this test site is 485103. The Industry Canada Registration Number for this site is IC2055.

Figure 3-1: 10-Meter EMC Site

3.1 Test Equipment

The following test equipment was used for the evaluation.

Description	Manufacturer	Model Number	Asset Number	Calibration Due Date
Modulation Analyzer	HP	8901A	1374	2/8/2006
Signal Generator	HP	8920B	2065	9/24/2005
Synthesizer	HP	3325A	1030	9/6/2005
Test Receiver	Rohde & Schwarz	ESI26	2327	9/23/2005
Audio Analyzer	HP	8903B	1014	9/14/2005
Dipole Antenna	CDI	Roberts	1883	1/31/2006
Horn Antenna	AH Systems	DRG118A	1858	6/26/2005
Horn Antenna	ETS	3115	2360	7/21/2005
Bilog Antenna	ETS	3142B	2362	10/6/2005
Environmental Chamber	Thermotron	SE-1000-5-5	2150	10/26/2005
Digital Multimeter	Fluke	Fluke87	1704	2/16/2006
RF Power Meter	Boonton	5232	2115	1/11/2006
DC Power Supply	HP	6038A	1423	Time of Use

4 TRANSMITTED FREQUENCIES

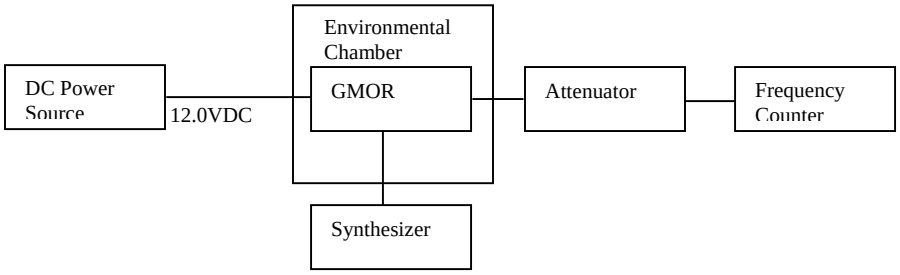
4.1 Criteria

The FCC Part 95.621 and RS-210(a) limitations for frequency stability is ±5ppm.

4.2 Test Procedure

The GMRS Transceiver was placed in an environmental chamber set to 20 degrees Celsius. All cables connecting to the GMRS Transceiver were routed through a port in the side of the chamber. The GMRS Transceiver antenna output connector was connected to an attenuator, which was in turn connected to the input of a spectrum analyzer set to frequency counter mode located outside the chamber. The GMRS Transceiver was then powered on and channel 1 was selected. The microphone was then keyed and the frequency was then measured to determine compliance with the frequency tolerance criteria.

4.3 Block Diagram



4.4 Test Results

In all cases shown below, the output frequency is well within the ±5ppm tolerance required.

Table 4-1 Transmitted Frequency Data

Transmit Channel	Target (MHz)	Freq. (MHz)	Difference (Hz)	% Error	Frequency Stability (ppm)
1	462.5625	462.5625	0.000	0	0.0
2	462.5875	462.58775	-250.000	5.40438E-05	-0.5
3	462.6125	462.6125	0.000	0	0.0
4	462.6375	462.6377	-200.000	4.32304E-05	-0.4
5	462.6625	462.66225	250.000	-5.40351E-05	0.5
6	462.6875	462.68775	-250.000	5.40321E-05	-0.5
7	462.7125	462.71225	250.000	-5.40292E-05	0.5
8	462.5750	462.5751	-100.000	2.16181E-05	-0.2
9	462.6250	462.6251	-100.000	2.16158E-05	-0.2
10	462.6750	462.67525	-250.000	5.40336E-05	-0.5
11	462.5500	462.5502	-200.000	4.32386E-05	-0.4
12	462.6000	462.6	0.000	0	0.0
13	462.6500	462.6502	-200.000	4.32292E-05	-0.4
14	462.7000	462.70025	-250.000	5.40307E-05	-0.5
15	462.7250	462.725	0.000	0	0.0

5 RF POWER OUTPUT

5.1 Criteria

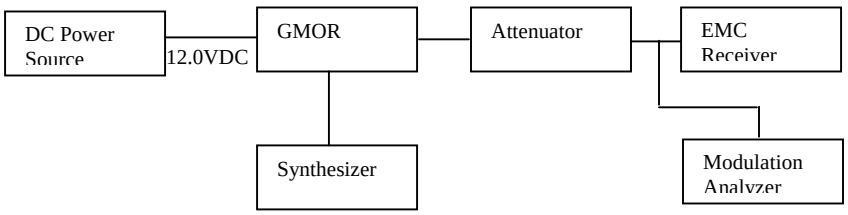
FCC Part 95.135 allows no more than 5 watts ERP for a small base station and no more than 50 watts ERP for any station. RSS-210(2)(d) allows no more than 2 watts ERP.

5.2 Test Procedure for Conducted Output Power

The transmitter output was connected to a calibrated coaxial cable, the other end of which was connected through a 20 dB attenuator to an EMC receiver. The transmitter was keyed and the output power at the EMC receiver was recorded. The RF output power at the antenna terminal was then determined by added the insertion loss of the attenuator and cable to the receiver reading.

Tests were performed at three frequencies (low, middle, and high channels) and on the highest power levels, which can be setup on the transmitter. Power measurements were made with an un-modulated carrier and with a carrier modulated with a 1kHz and 2.5kHz sine wave at a level 16 dB above that necessary to produce 50% modulation.

5.3 Block Diagram for Conducted Output Power



5.4 Test Procedure for Radiated Output Power

The GMRS Transceiver was placed on a non-conductive turntable. It was then set to operate at the maximum output power.

The radiated emission at the fundamental frequency was measured at 3m with a test antenna and EMI receiver. This was performed with the antenna in both vertical and horizontal polarities.

During the measurement of the EUT, the receiver resolution bandwidth was set to 3 MHz and the video bandwidth was set to 3 MHz. The highest emission was recorded with the rotation of the turntable and the raising and lowering of the test antenna. The receiver reading was recorded (E in dBuV).

The radiated power was measured using a substitution method as described in TIA-603-B Section 2.2.17 (Radiated Power Output). The EUT was replaced with a substitution antenna (tuned dipole below 1 GHz; Horn antenna above 1 GHz) and was fed with an input power from a signal generator set to output 15 dBm. The cable loss between the signal generator and substituting antenna was a known value. The receiver reading was recorded and ERP (below 1GHZ) or EIRP (above 1GHz) was calculated as follows:

$$EIRP = E_1 - E_2 + Vsub + G$$

where,

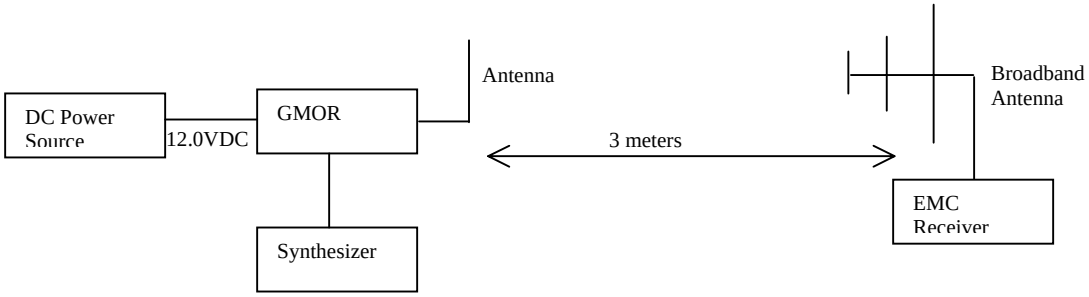
$\mathbf{E_1}$ is the receiver reading in dBμV when measuring the field strength of the EUT

$\mathbf{E_2}$ is the receiver reading in dBμV when measured field strength from the generator

$\mathbf{V_{sub}}$ is the power delivered to the substitution antenna (generator output in dBm – cable loss between the generator and the substitution antenna)

G is the gain of the transmitting antenna in dBi.

5.5 Block Diagram for Radiated Output Power



5.6 Test Results

The GMRS Transceiver met the conducted and radiated RF power output requirements of FCC Part 95.135 and RSS-210. The conducted test results are located in Table 5-1. The radiated test results are located in Table 5-2.

Table 5-1 Conducted RF Power Output

EUT Mode	Frequency (MHz)	Channel	Measured Conducted Power (Watts)	IC Limit (Watts ERP)	FCC Limit (Watts ERP)
Un-Modulated	462.5625	1	1.81	2	5
	462.7125	7	1.84	2	5
	462.5500	15	1.86	2	5
Modulated with a 1kHz sine wave at a level 16 dB greater than necessary to produce 50% modulation.	462.5625	1	1.87	2	5
	462.7125	7	1.88	2	5
	462.5500	15	1.88	2	5
Modulated with a 2.5 kHz sine wave at a level 16 dB greater than necessary to produce 50% modulation.	462.5625	1	1.86	2	5
	462.7125	7	1.87	2	5
	462.5500	15	1.89	2	5

Table 5-2 Radiated RF Power Output

TX Channel	Polarity	TX Frequency (MHz)	Device Reading (dBuV)	Sub. Reading (dBuV)	Cable Loss (dB)	Tx Antenna Gain (dBi)	Signal Generator Output (dBm)	ERP (dBm)	ERP (Watts)
1	V	462.55	113.73	95.32	1.64	0	15	31.77	1.50
7	V	462.625	114.85	95.3	1.64	0	15	32.91	**1.95**
15	V	462.725	113	95.48	1.64	0	15	30.88	1.22
1	H	462.55	98.76	96.29	1.64	0	15	15.83	0.04
7	H	462.625	98.1	96.11	1.64	0	15	15.35	0.03
15	H	462.725	97.98	96.27	1.64	0	15	15.07	0.03

6 MAXIMUM PERMISSIBLE EXPOSURE (MPE) CALCULATIONS

6.1 Criteria

The Radiofrequency radiation exposure limits for FCC Rule § 1.1310 are listed in the table below.

	Frequency Range (MHz)	Power Density Limit (mW/cm^2)
Limits for Occupational/Controlled Exposures	0.3-3.0	100
	3.0-30	900/ Frequency2
	30-300	1.0
	300-1500	Frequency/300
	1500-100,000	5.0
Limits for General Population/Uncontrolled Exposure	0.3-1.34	100
	1.34-30	180/Frequency2
	30-300	0.2
	300-1500	Frequency/1500
	1500-100,000	1.0

6.2 Test Procedure

The ERP was measured in section 5, RF Power Output. The radiated RF power was used to calculate the maximum RF exposure at a 20 cm distance using the formula:

$$\text{Maximum RF Exposure at 20cm} = (\text{EIRP in mW})/(4\text{Pi}(20\text{cm})^2)$$

Where ERP was measured, a 2.15dB conversion factor was added to the reading to convert it to EIRP before applying the Maximum RF Exposure formula above. Once the Maximum RF Exposure calculations were complete the results were compared to the MPE limits above.

6.3 Test Results

The following calculations show the Maximum RF Exposure from the GMRS Transceiver at 20cm for the GMOR does not exceed the limit for Maximum Permissible Exposure when taking into account the 50% duty cycle for "push to talk" operation.

$$\text{MPE} = (32.91\text{dBm} + 2.15\text{dB}) / (4\text{Pi}(20\text{cm})^2)$$

$$\text{MPE} = (35.06\ \text{dBm}) / (4\text{Pi}(20\text{cm})^2)$$

$$\text{MPE} = (3206\ \text{mW} / (4\text{Pi}(20\text{cm})^2)$$

Taking the 50% duty cycle into account for "push to talk mode" we then have…

$$\text{MPE}_{50\%} = [(3206\ \text{mW} / (4\text{Pi}(20\text{cm})^2)] / 2$$

$$\text{MPE}_{50\%} = .31\ (\text{mW/cm}^2)$$

7 MODULATION CHARACTERISTICS

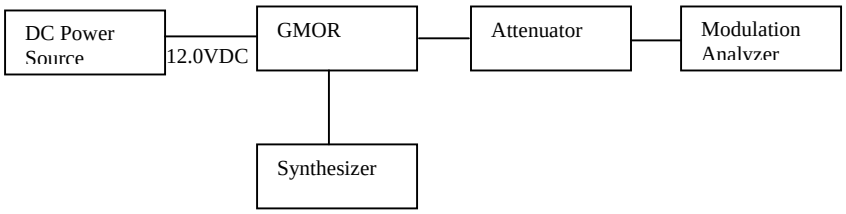
7.1 Criteria

FCC Part 95.637(a) and RSS-210(2) allow no more than ±5kHz peak frequency deviation. FCC Part 95.637(b) and RSS-210(2) also specify that an audio filter positioned between the modulation limiter and the modulated stage of the transmitter must be in place and must have an attenuation of at least 60 $\log_{10}(f/3)$ greater than the attenuation at 1kHz.

7.2 Test Procedure

The antenna output connector was connected to an attenuator, which was in turn connected to a modulation analyzer. The GMRS Transceiver was then powered on and channel 7 was selected. A function generator / synthesizer was coupled to the microphone input, which was used to feed a modulating tone to the GMRS Transceiver. The modulated input frequency and voltage was then varied and the modulation deviation was recorded.

7.3 Block Diagram



7.4 Test Results

The GMRS Transceiver met the requirements of FCC Part 95.637(a)(b) and RSS-210(2)(b). The graphical data presented below show that the peak frequency deviation never exceeds the ±5kHz limit and that the audio low pass filter response meets the attenuation curve from FCC Part 95.637(b).

Figure 7-1 Modulation Frequency Response

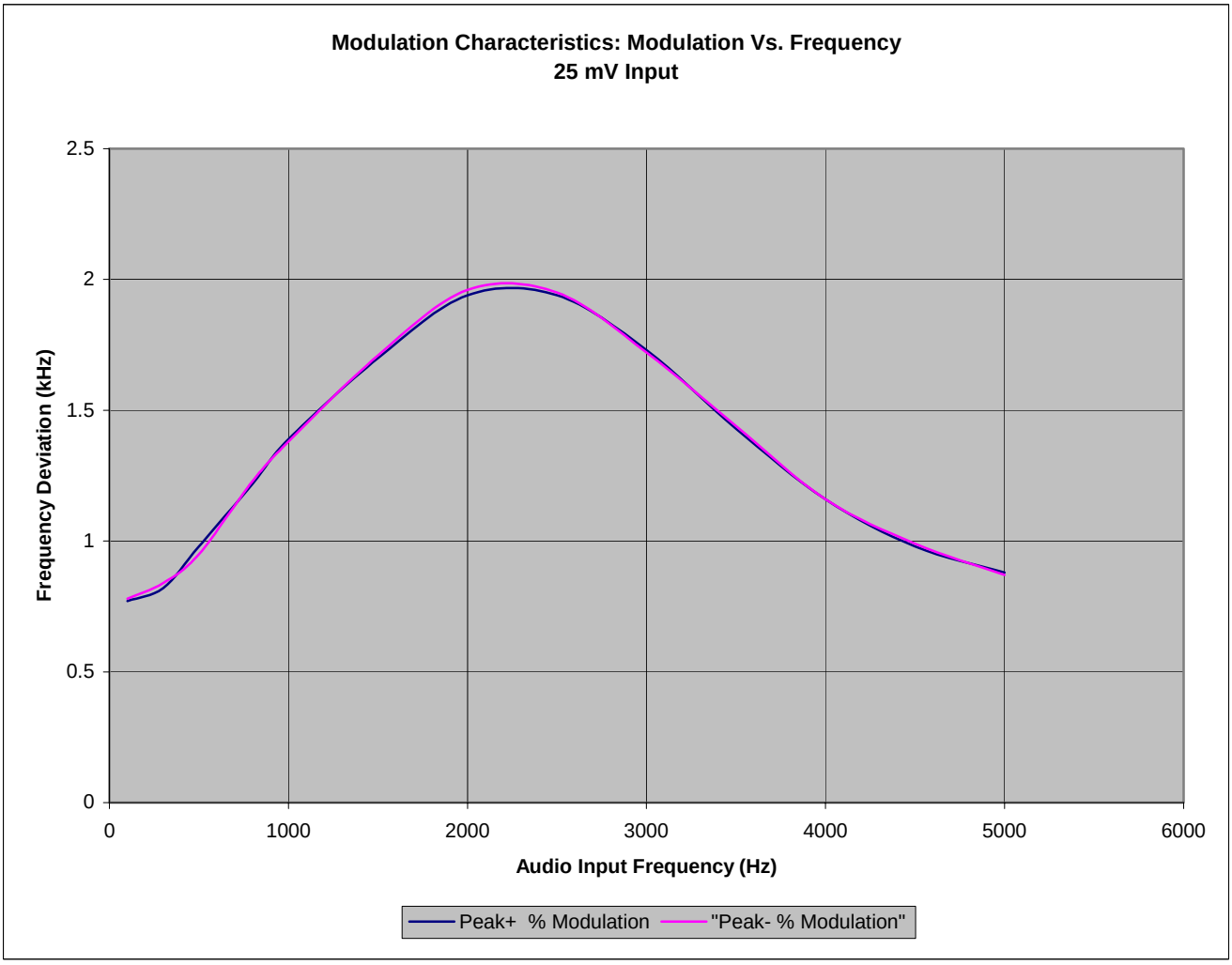


Figure 7-2 Modulation Limiting

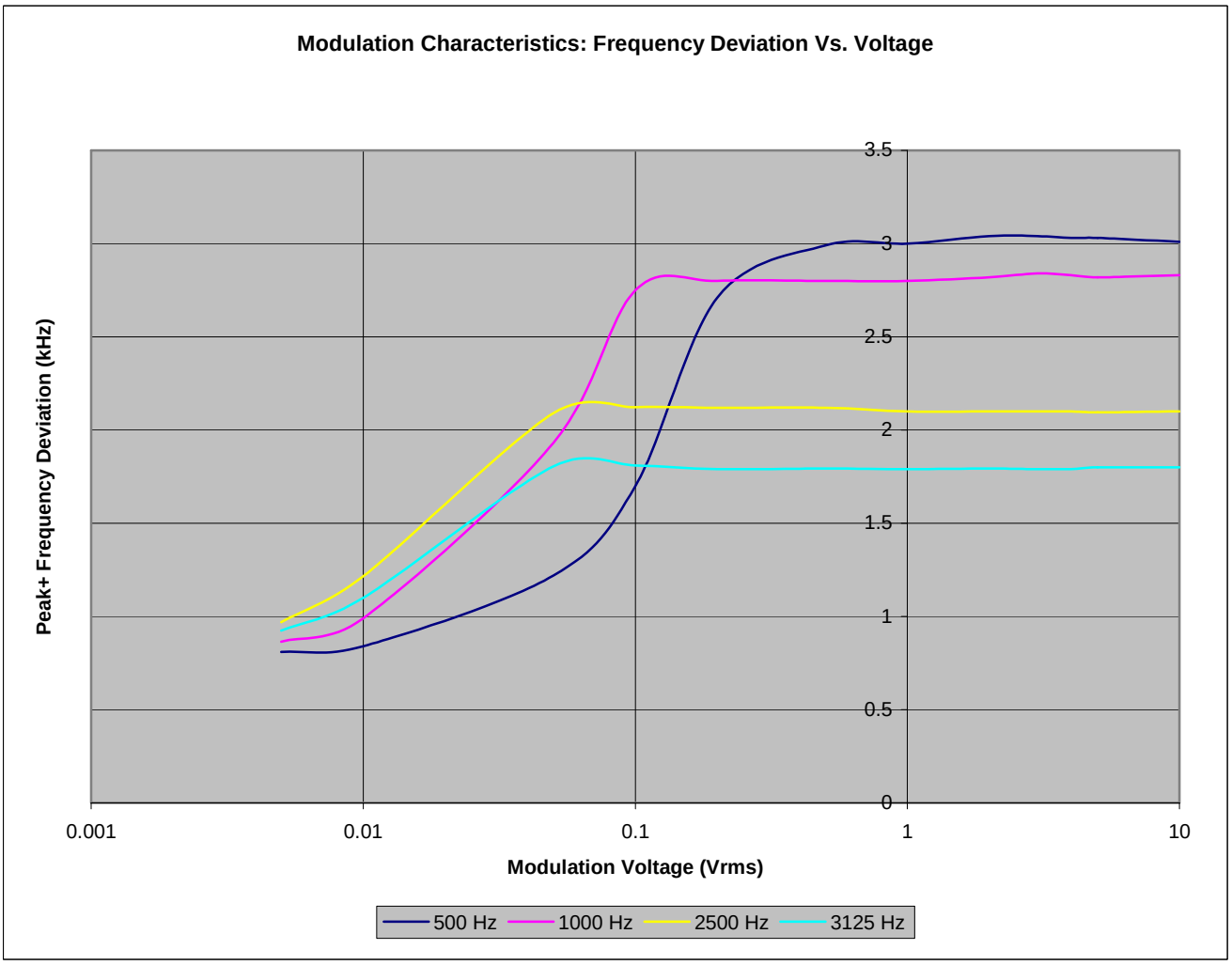
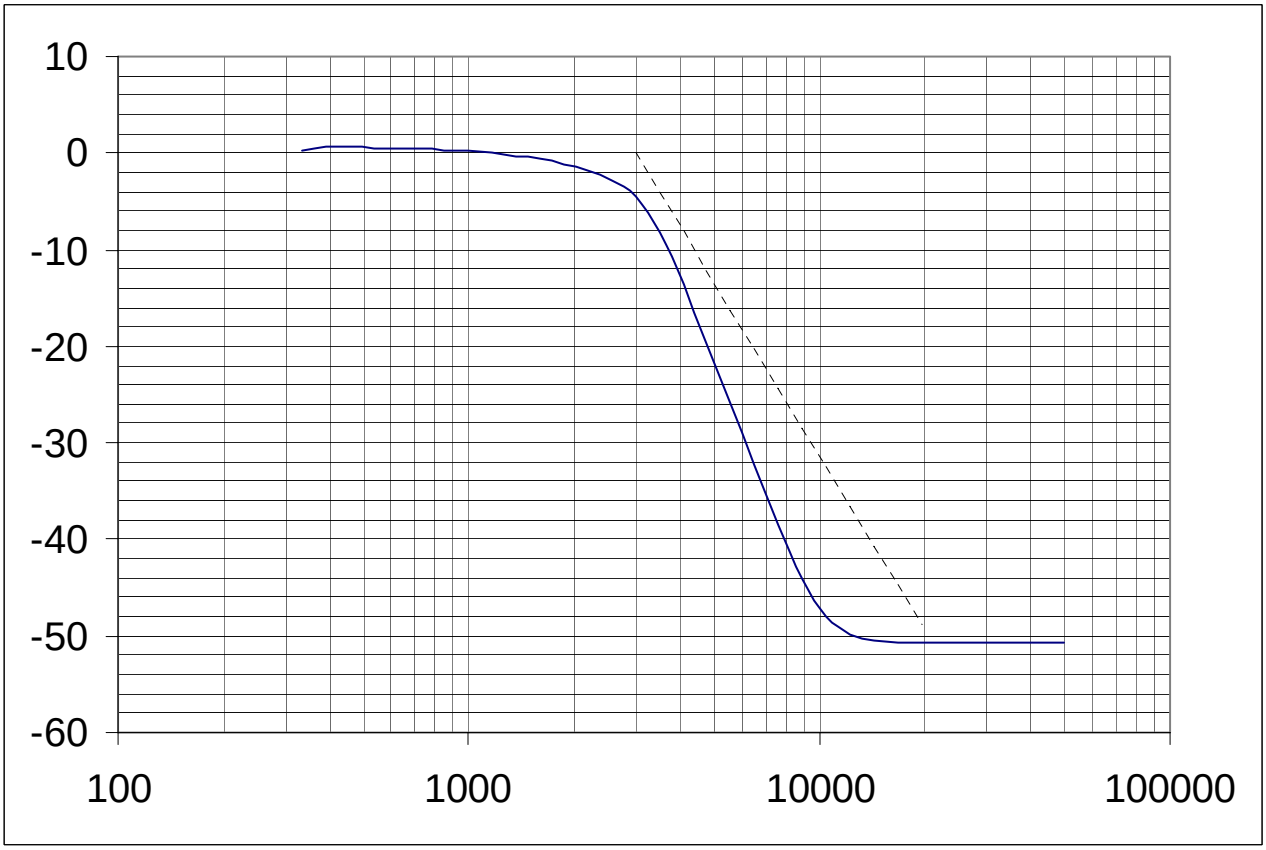


Figure 7-3 Audio Low Pass Filter Response



8 OCCUPIED BANDWIDTH

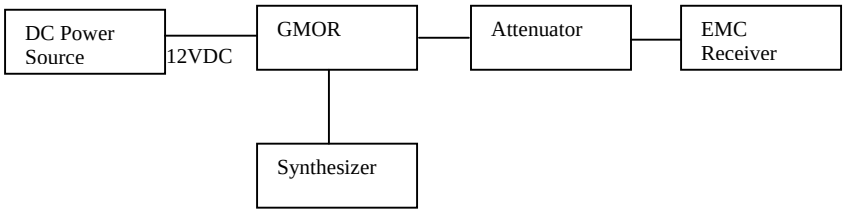
8.1 Criteria

For emission type F3E, the allowable occupied bandwidth for FCC part 95.633(a) is 20kHz. RSS-210 allows 12.5kHz for emission type F3E.

8.2 Test Procedure

The antenna output connector was connected to an attenuator, which was connected to an EMC receiver. The GMRS Transceiver was powered on and channel 1 was selected. The microphone was then keyed and subjected to a 1 and 2.5 kHz tone using a function generator which was coupled into the microphone input jack. The occupied bandwidth function of the EMC receiver was then used to generate plots of each configuration. This test was then performed on channels 7 and 15 under modulated and un-modulated conditions.

8.3 Block Diagram



8.4 Test Results

The following is the occupied bandwidth data for the GMRS Transceiver. All occupied bandwidth measurements were less than the allowable bandwidth specified in FCC Part 95.633(a) and RSS-210.

Table 8-1: Occupied bandwidth measurements

Mode	Channel	Resolution Bandwidth	Video Bandwidth	Sweep time	Measured Bandwidth (KHz)
Un-Modulated	1	300 Hz	300 Hz	5 seconds	0.801
Un-Modulated	7	300 Hz	300 Hz	5 seconds	0.801
Un-Modulated	15	300 Hz	300 Hz	5 seconds	0.801
1kHz Tone	1	300 Hz	300 Hz	5 seconds	2.4
1kHz Tone	7	300 Hz	300 Hz	5 seconds	2.4
1kHz Tone	15	300 Hz	300 Hz	5 seconds	2.4
2.5 kHz Tone	1	300 Hz	300 Hz	5 seconds	5.4
2.5 kHz Tone	7	300 Hz	300 Hz	5 seconds	5.2
2.5 kHz Tone	15	300 Hz	300 Hz	5 seconds	5.2

Figure 8-1: Occupied Bandwidth – Channel 1 Un-Modulated

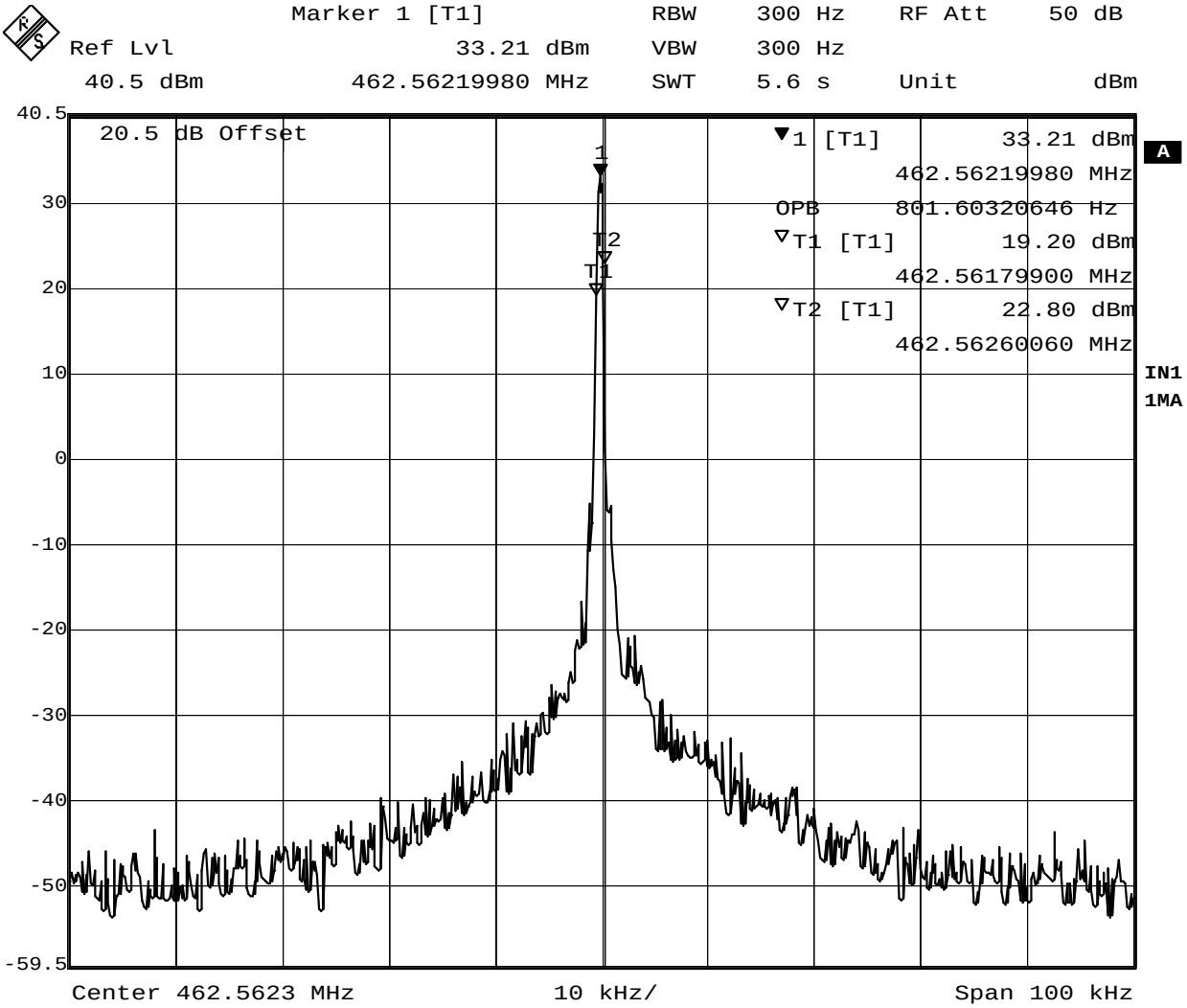


Figure 8-3: Occupied Bandwidth – Channel 7 Un-Modulated

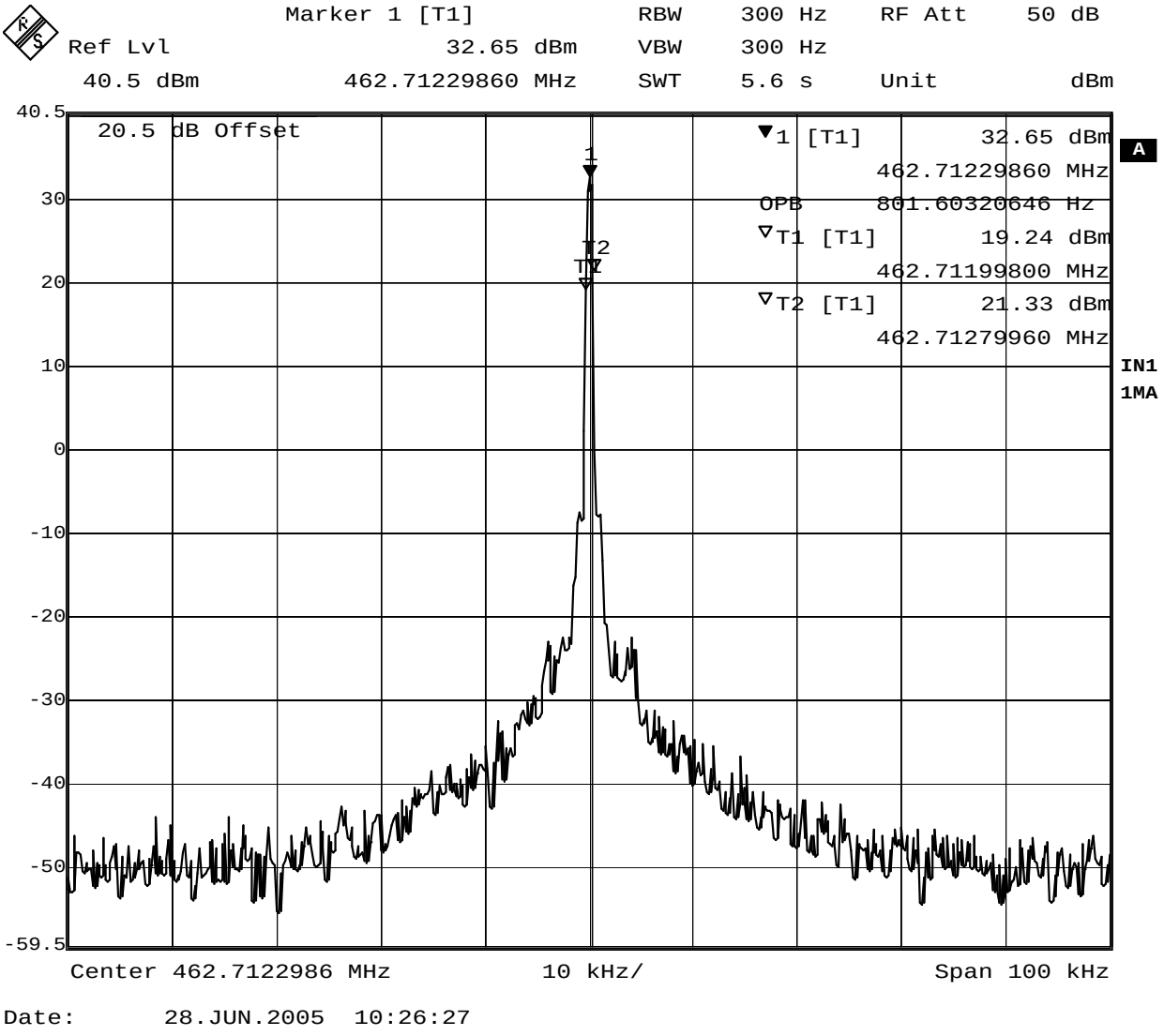


Figure 8-5: Occupied Bandwidth – Channel 15 Un-Modulated

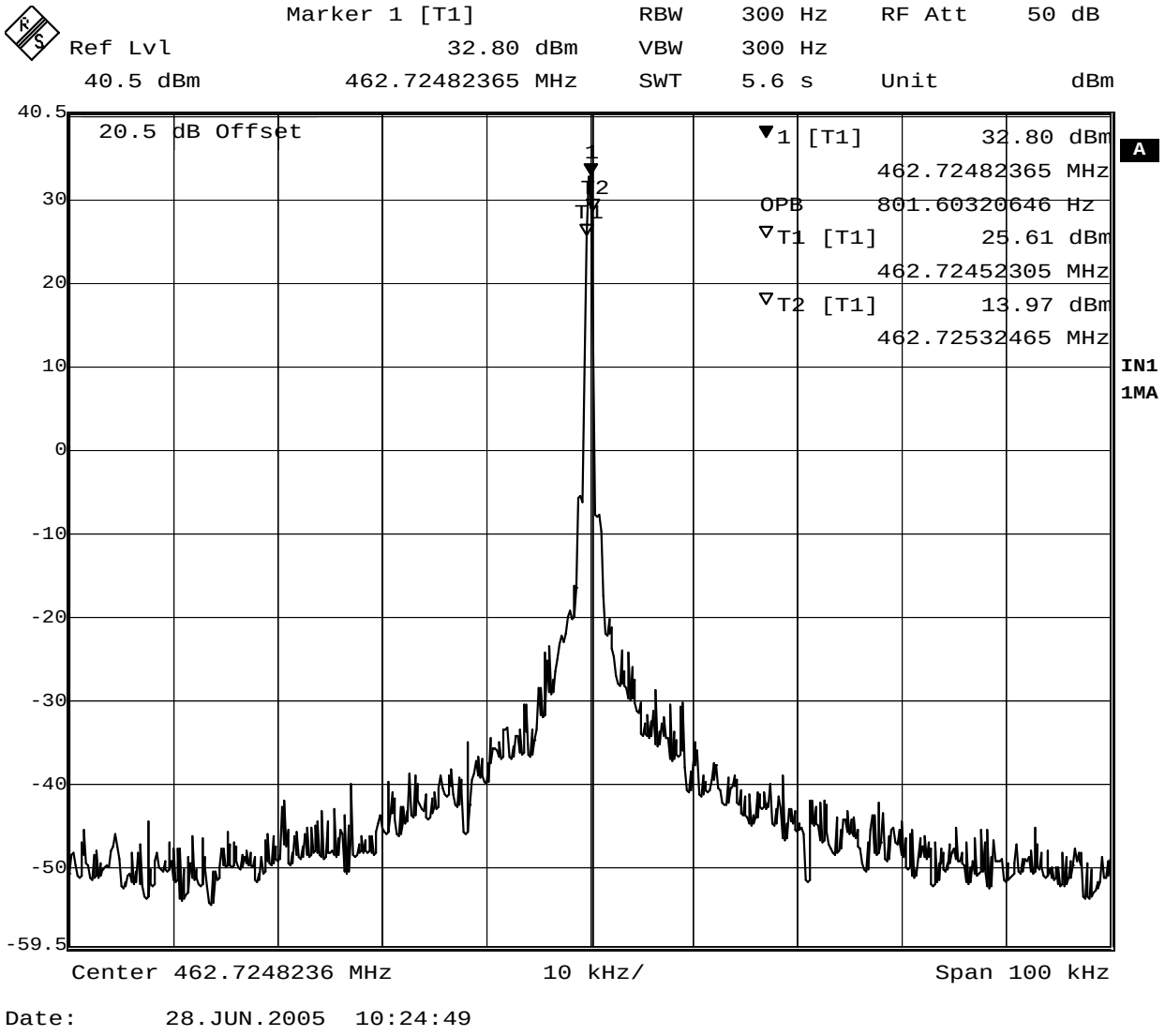


Figure 8-7: Occupied Bandwidth – Channel 1 Modulated with 1kHz Tone

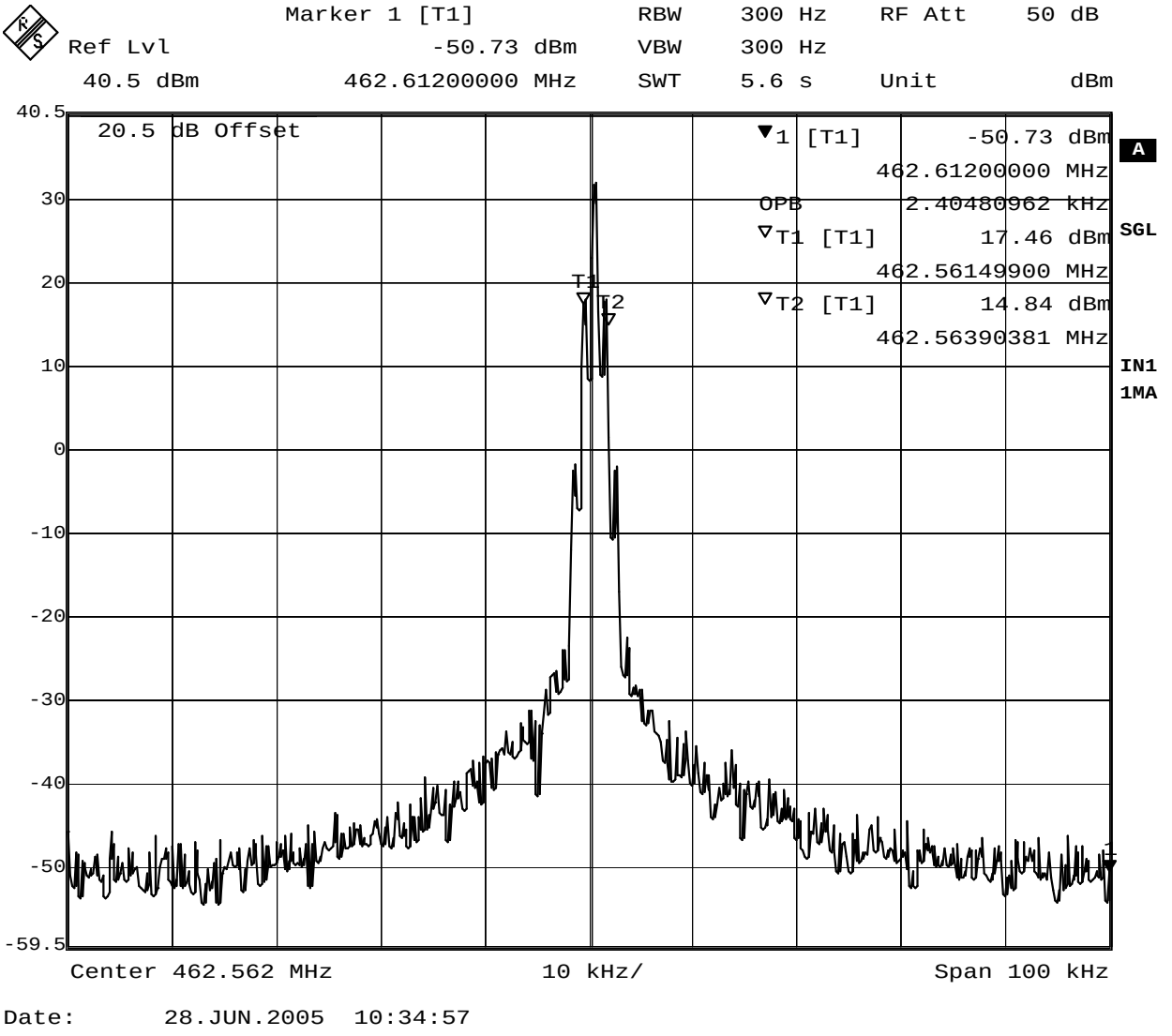


Figure 8-9: Occupied Bandwidth – Channel 7 Modulated with 1kHz Tone

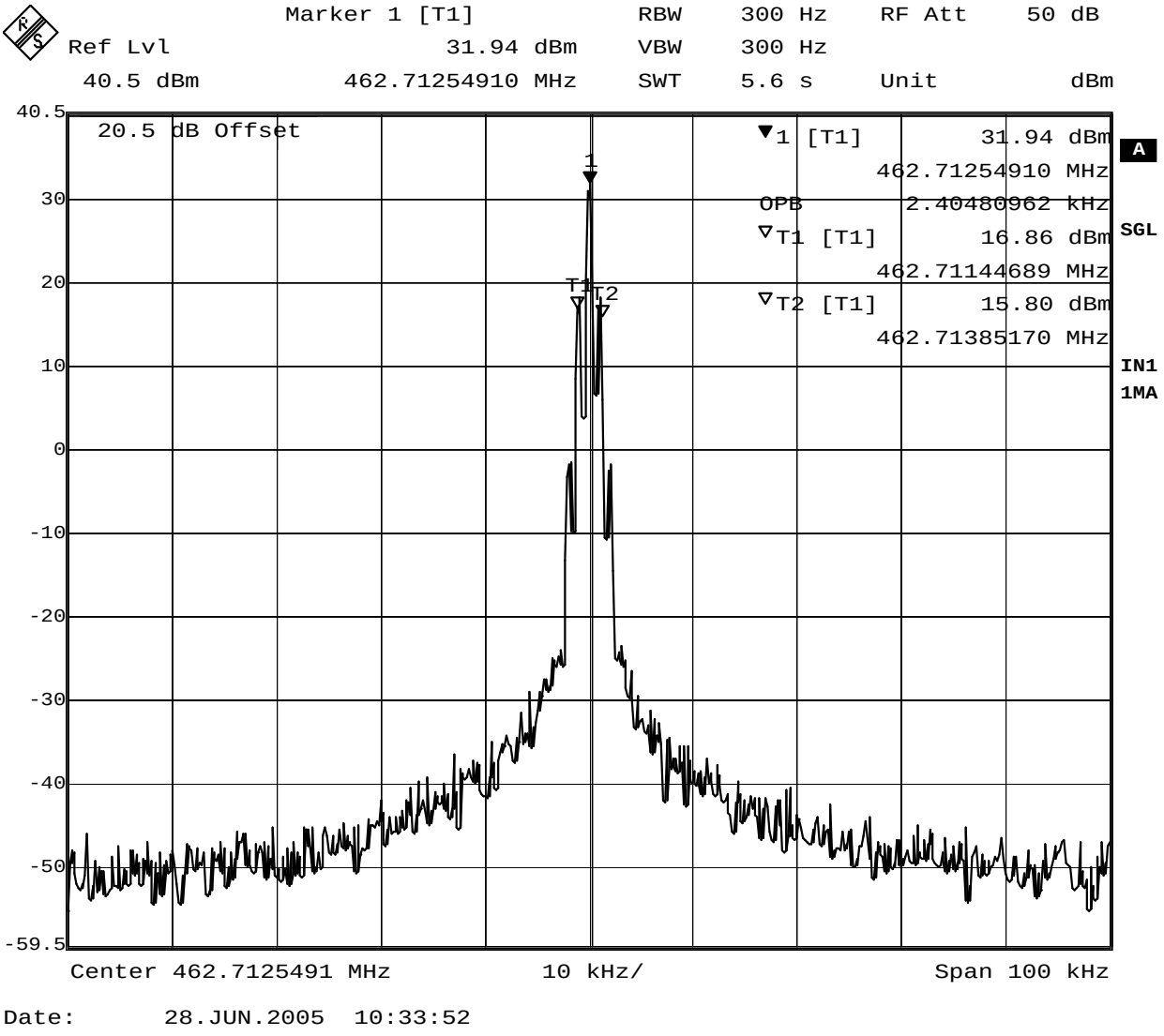


Figure 8-11: Occupied Bandwidth – Channel 15 Modulated with 1kHz Tone

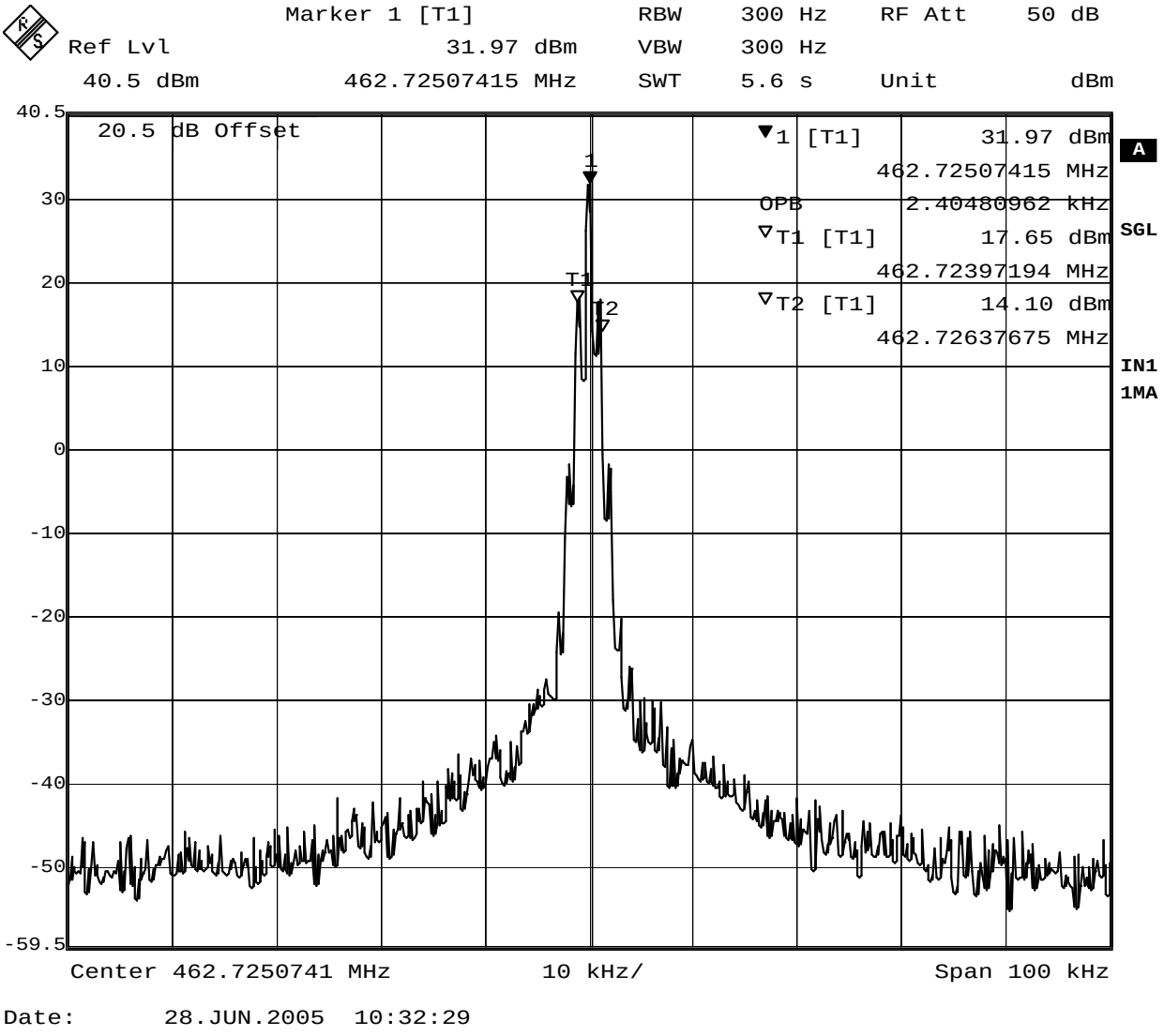


Figure 8-12: Occupied Bandwidth – Channel 1 Modulated with 2.5kHz Tone

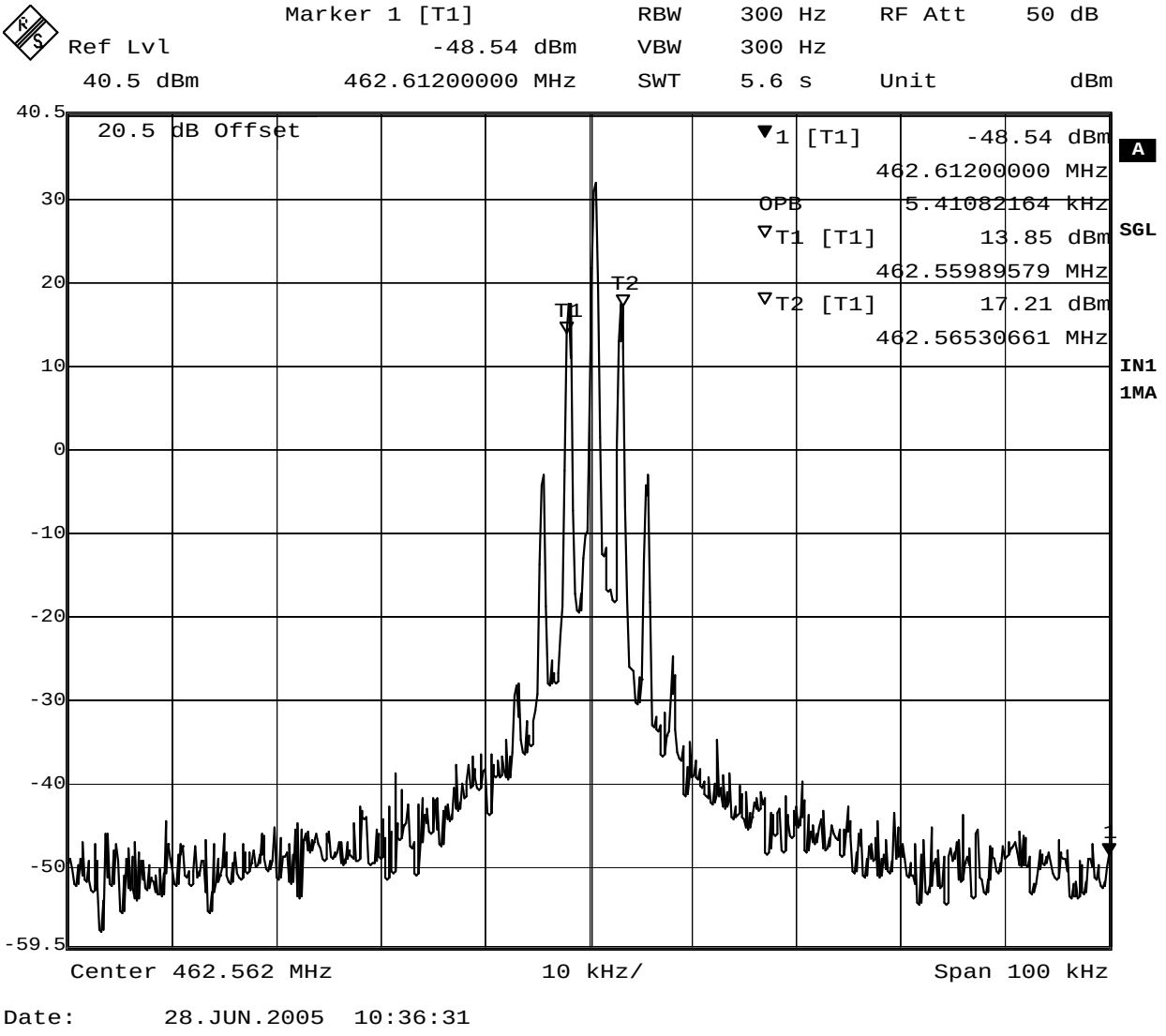


Figure 8-13: Occupied Bandwidth – Channel 7 Modulated with 2.5kHz Tone

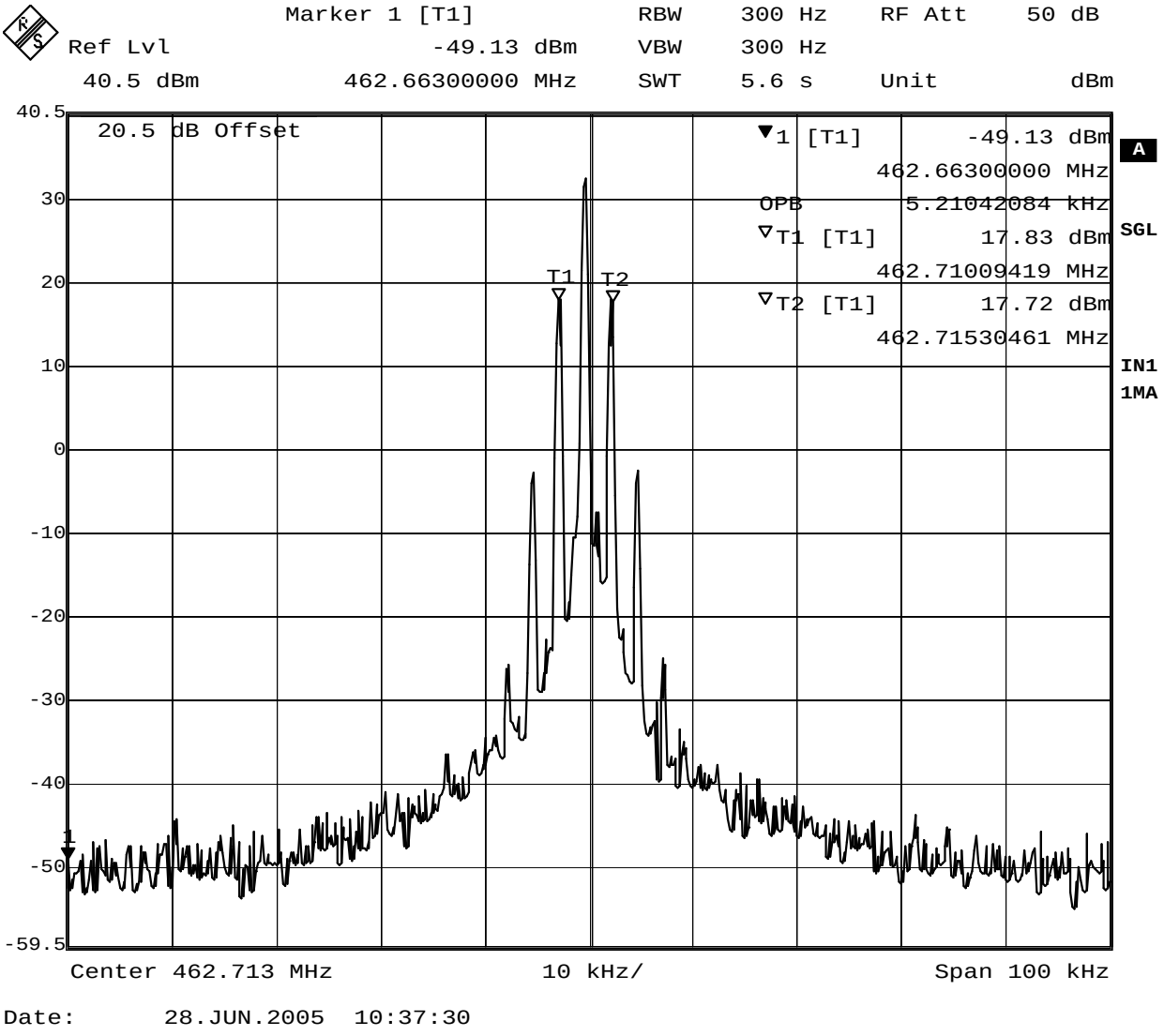
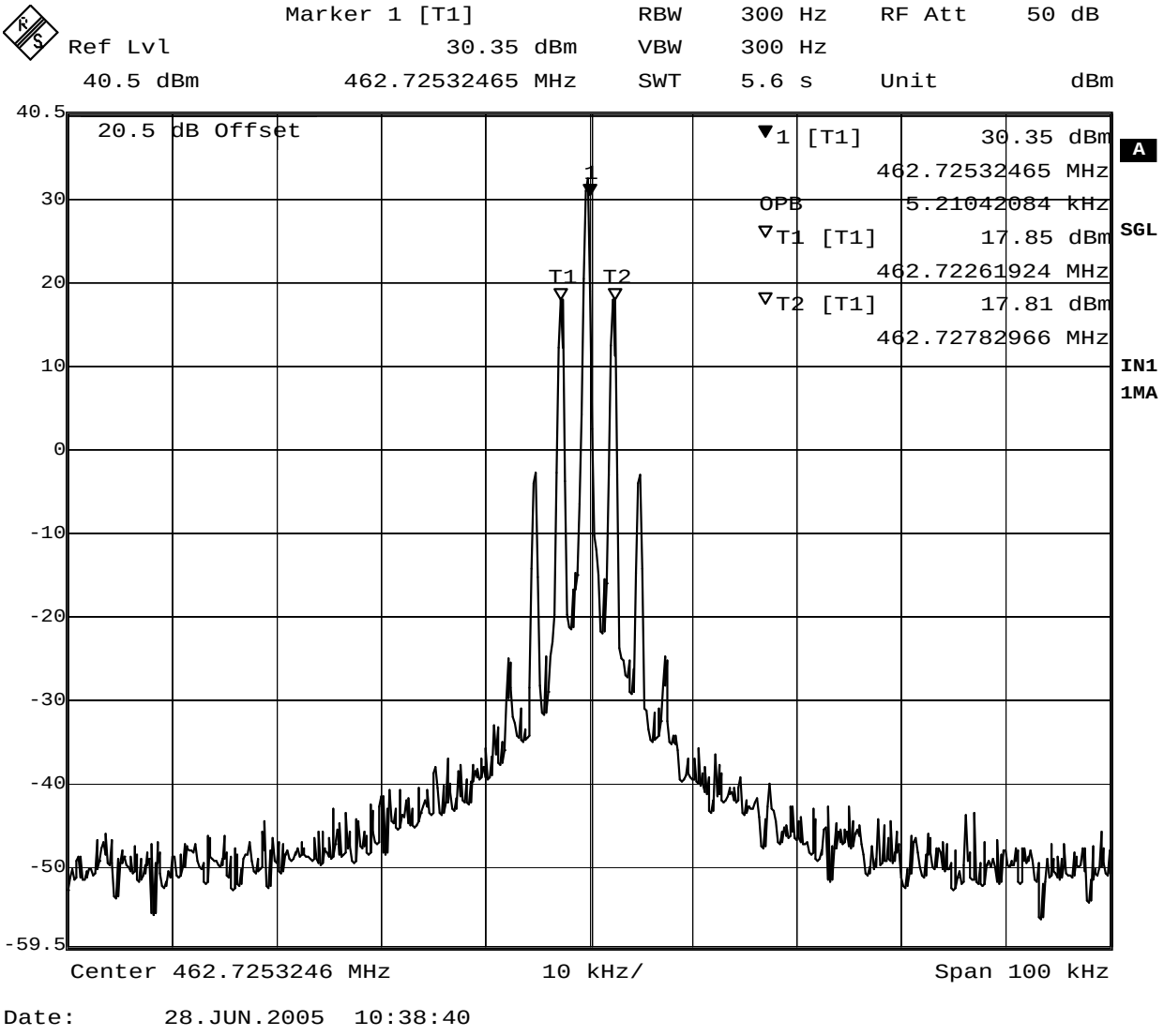


Figure 8-14: Occupied Bandwidth – Channel 15 Modulated with 2.5kHz Tone



9 UNWANTED SPURIOUS EMISSIONS

9.1 Criteria

The FCC Part 95.635(b)(1)(3)(7) and RS-210(e)(1) limitations for unwanted spurious emissions state that unwanted spurious emissions shall be attenuated below the un-modulated carrier power as follows:

- at least 25 dB, measured with a bandwidth of 300 Hz, on any frequency removed from the center frequency of the authorized bandwidth by more than 50% up to and including 100% of the authorized bandwidth;
- at least 35 dB, measured with a bandwidth of 300 Hz, on any frequency removed from the center frequency of the authorized bandwidth by more than 100% up to and including 250% of the authorized bandwidth;
- at least 43 dB + 10 Log10 (carrier power in watts) dB, measured with a bandwidth of at least 30 kHz, on any frequency removed from the centre frequency of the authorized bandwidth by more than 250% (the search shall be from 30 MHz to at least 5 times the highest channel frequency or 5 times the local oscillator frequency, whichever is the higher frequency).

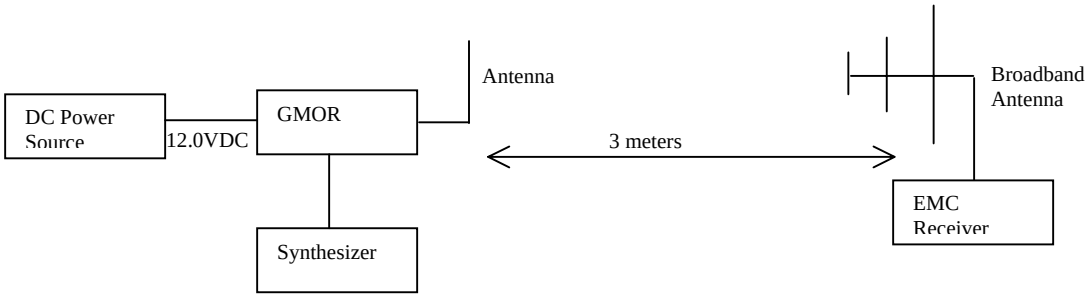
9.2 Test Procedure

The EUT was placed on a non-conductive 80 cm high turntable. During this test, the antenna normally used was connected. All equipment was arranged on the 80 cm high table to closely resemble the geometry during actual installation. The GMRS Transceiver was powered and the microphone was keyed at channels 1, 7, and 15.

The broadband measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The frequency range up to tenth harmonic was investigated for each of three fundamental frequencies (low, middle, and high channels).

Unwanted spurious emissions that were detected were then measured using the identical substitution procedure outlined in the RF Power Output section of this report.

9.3 Block Diagram



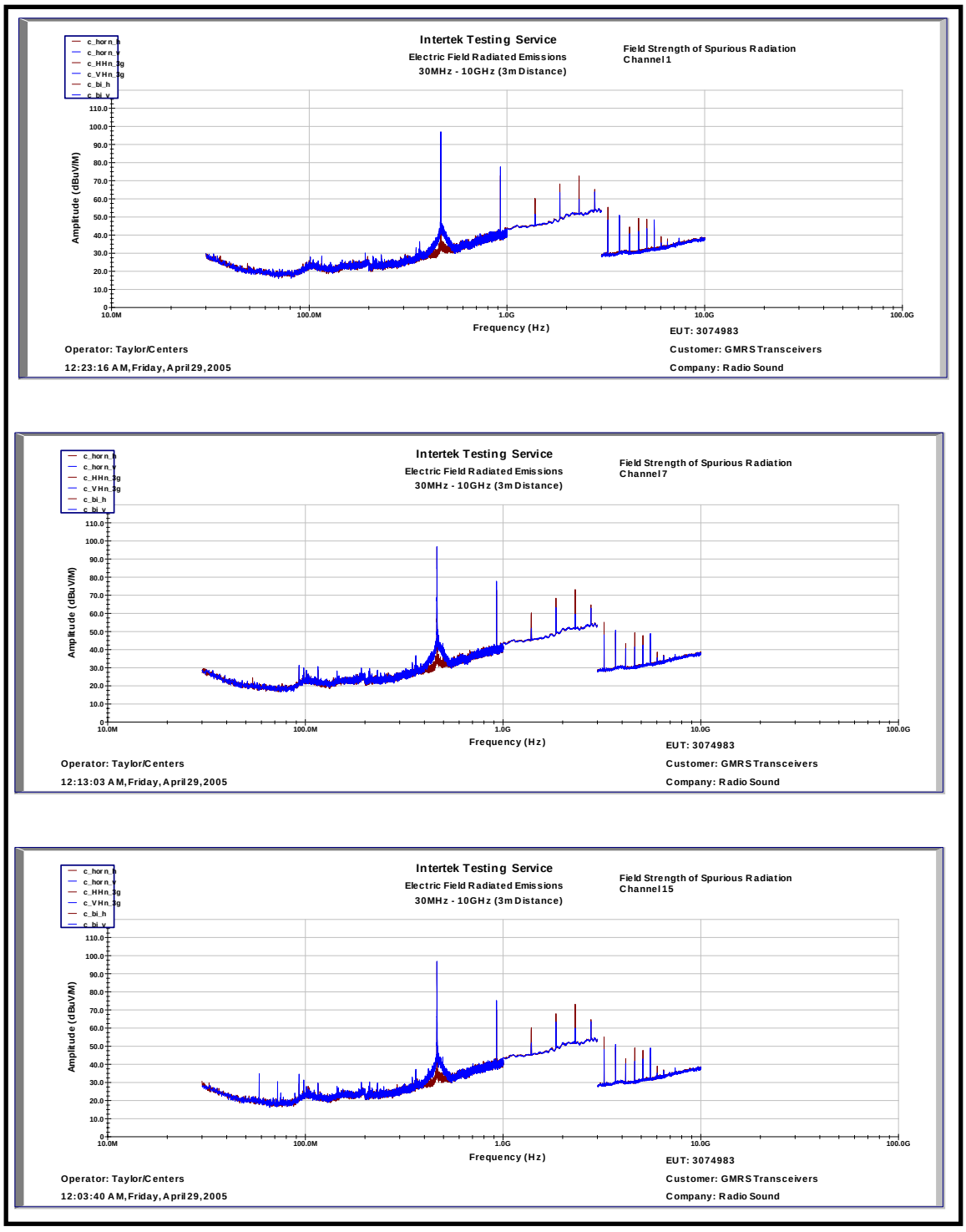
9.4 Test Results

The GMRS Transceiver met the field strength of spurious radiation requirements of FCC Part 95.635(b, 1, 3, and 7) and RSS210(e, 1). All spurious emissions were attenuated below the transmitter power by at least the levels required. See Figure 9-1 for the measured effective radiated power (below 1GHz) and effective isotropic radiated power (above 1GHz) for each of the detected unwanted spurious emissions.

Figure 9-1: Unwanted Spurious Emissions

TX Channel	Measured Frequency (MHz)	Device Reading (dBuV)	Sub. Reading (dBuV)	Cable Loss (dB)	Tx Antenna Gain (dBi)	Signal Generator Output (dBm)	ERP / EIRP (dBm)
1	925.1	48.34	83.8	2.3	0	15	-22.76
	1384.77	35.46	85.71	2.7	7.5	15	-30.45
	1849.69	38.53	82.5	3.4	8	15	-24.37
	2312.82	36.31	80.44	3.88	8.5	15	-24.51
	2775.51	36.28	77.38	4.18	9.4	15	-20.88
7	925.4	47.76	83.8	2.3	0	15	-23.34
	1388.01	35.1	85.71	2.7	7.5	15	-30.81
	1850.62	38.37	82.5	3.4	8	15	-24.53
	2313.58	35.84	80.44	3.88	8.5	15	-24.98
	2776.24	36.35	77.38	4.18	9.4	15	-20.81
15	925.5	49.23	83.8	2.3	0	15	-21.87
	1388.02	35.68	85.71	2.7	7.5	15	-30.23
	1850.69	39.12	82.5	3.4	8	15	-23.78
	2313.59	35.82	80.44	3.88	8.5	15	-25
	2775.51	36.95	77.38	4.18	9.4	15	-20.21

Figure 9-2: Unwanted Spurious Emissions (Channels 1, 7 and 15)



10 FREQUENCY STABILITY

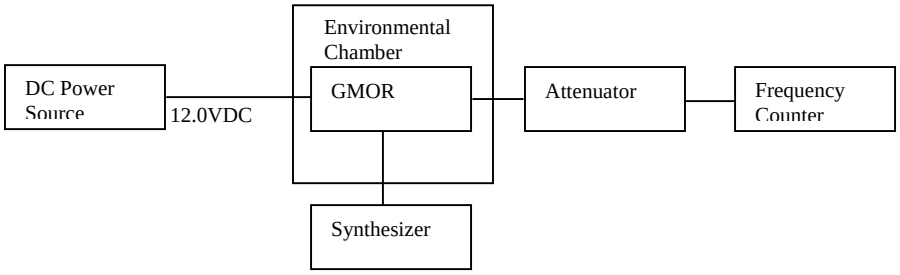
10.1 Criteria

The FCC Part 95.621 and RS-210(f) limitations for frequency stability is ±5ppm.

10.2 Test Procedure

The GMRS Transceiver was placed in an environmental chamber. All cables connecting to the GMRS Transceiver were routed through a port in the side of the chamber. The GMRS Transceiver antenna output connector was connected to an attenuator, which was in turn connected to the input of a spectrum analyzer set to frequency counter mode located outside the chamber. The GMRS Transceiver was then powered on and channel 1 was selected. The microphone was then keyed and the frequency was then measured to determine compliance with the frequency tolerance criteria. This procedure was then performed on channels 7 and 15. The procedure was repeated while varying the temperature from -30 to +50 degrees Celsius using 10 degree increments. At 20 degrees the input DC voltage was varied from 85% to 115% of nominal and the frequency measured on channels 1, 7 and 15.

10.3 Block Diagram



10.4 Test Results

In all cases shown below, the output frequency is well within the ±5ppm tolerance required.

Table 10-1 Frequency Stability vs. Temperature Data

	Ch.1		Ch.7		Ch.15	
Temp (C)	**462.5625**	**Error (ppm)**	**462.7125**	**Error (ppm)**	**462.725**	**Error (ppm)**
-30	462.5623	0.4324	462.7122	0.6484	462.7247	0.6483
-20	462.5622	0.6486	462.7121	0.8645	462.7246	0.8644
-10	462.5623	0.4324	462.7123	0.4322	462.7248	0.4322
0	462.5624	0.2162	462.7123	0.4322	462.7248	0.4322
10	462.5624	0.2162	462.7123	0.4322	462.7248	0.4322
20	462.5624	0.2162	462.7124	0.2161	462.7249	0.2161
30	462.5624	0.2162	462.7124	0.2161	462.7249	0.2161
40	462.5625	0.0000	462.7125	0.0000	462.7249	0.2161
50	462.5626	-0.2162	462.7126	-0.2161	462.7251	-0.2161

Table 10-2 Frequency Stability vs. Input Voltage Data

		85% (10.2 VDC)		100%(12 VDC)		115% (13.8 VDC)	
Transmit Channel	**Target (MHz)**	**Freq. (MHz)**	**Error (ppm)**	**Freq. (MHz)**	**Error (ppm)**	**Freq. (MHz)**	**Error (ppm)**
Ch. 1	462.5625	462.5624	0.2162	462.5624	0.2162	462.5624	0.2162
Ch. 7	462.7125	462.7124	0.2161	462.7124	0.2161	462.7124	0.2161
Ch. 15	462.7250	462.7249	0.2161	462.7249	0.2161	462.7249	0.2161

11 RECEIVER SPURIOUS EMISSIONS

11.1 Test Limits

Table 11-1 Radiated Emission Limit for FCC §15.109

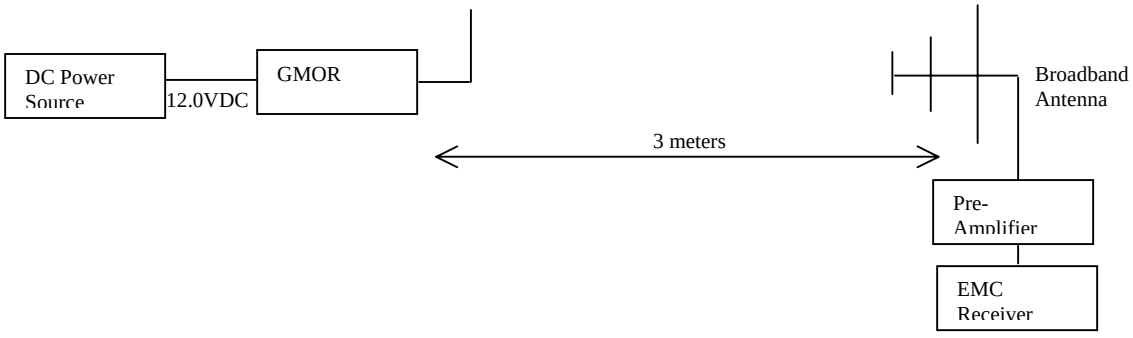
Radiated Emission Limits at 3 meters	
Frequency (MHz)	**Quasi-Peak limits, dB (µV/m)**
25 to 30[2]	32.04
30 to 88	40.0
88 to 216	43.5
216 to 960	46.0
960 and up	54.0

11.2 Test Procedure

Measurements were made over the frequency range of 30 MHz to five times the highest frequency operating within the device. The measuring receiver met the requirements of Section One of CISPR 16 and the measuring antenna was correlated to a balanced dipole. From 30 to 1000 MHz, a quasi-peak detector was used for measurement. Above 1000 MHz, average measurements were performed.

Measurements of the radiated field were made with the antenna located at a distance of 3 meters from the EUT and in vertical and horizontal polarities. The EUT was rotated from 0 to 360 degrees and the antenna adjusted between 1m and 4m in height above the ground plane for maximum meter reading at each test frequency.

11.3 Block Diagram



[2] This frequency range is for part 15.109 (d) for CB receivers.

11.4 Test Results

The GMRS Transceiver was **compliant** with the radiated disturbance requirements of FCC §15.109. The graphical data is shown in Figure 11-1. All peaks were at least 10dB below the limit.

Figure 11-1 FCC §15.109Worse Case Receiver Spurious Emission