



Measurement of RF Interference from a
Model FGR2 Wireless Digital Transmission
Transceiver
Using Digital Modulation

For : Freewave Technologies
Boulder, CO

P.O. No. : 26871

Date Received : December 3, 2007

Date Tested : December 3 through January 29, 2008

Test Personnel : Richard E. King

Specification : FCC "Code of Federal Regulations" Title 47 Part
15, Subpart C, Section 15.247 for Intentional
Radiators Using Digital Modulation Operating
within the 902MHz to 928MHz band.
RSS 210 Issue 7 June 2007 - Low-power
Licence-exempt Radiocommunication Devices
(All Frequency Bands)

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Richard E. King

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Raymond J. Klouda
Registered Professional Engineer
of Illinois - 44894



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THIS REPORT SHALL NOT BE REPRODUCED, EXCEPT IN FULL, WITHOUT THE WRITTEN APPROVAL OF ELITE ELECTRONIC ENGINEERING INCORPORATED.



REVISION HISTORY

Revision	Date	Description
—	Feb. 4, 2008	Initial release

Measurements of RF Emissions from a Model FGR2 Wireless Digital Transmission Transceiver Using Digital Modulation

1.0 INTRODUCTION:

1.1 Description of Test Item - This document represents the results of the series of radio interference measurements performed on a model FGR2 Wireless Digital Transmission Transceiver, serial number 960-001, (here in after referred to as the test item). The test item is a wireless data transceiver which uses digital modulation. It transmits in the 902MHz to 928MHz band and uses an external antenna. Two antennas were submitted with the test item, a 6dB gain Omni antenna and a 10dB gain Yagi antenna. The test item was manufactured and submitted for testing by Freewave Technologies located in Boulder, CO.

1.2 Purpose - The test series was performed to determine if the test item meets selected portions of the conducted and radiated RF emission requirements of the FCC "Code of Federal Regulations" Title 47, Part 15, Subpart C, Sections 15.247 for Intentional Radiators and RSS 210 Issue 7 June 2007 - Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands). Testing was performed in accordance with ANSI C63.4-2003.

1.3 Deviations, Additions and Exclusions - There were no deviations, additions to, or exclusions from the test specification during this test series.

1.4 Applicable Documents - The following documents of the exact issue designated form part of this document to the extent specified herein:

- Federal Communications Commission "Code of Federal Regulations", Title 47, Part 15, Subpart C, dated 1 October 2007
- FCC 558074, New Guidelines on Measurements for Digital Transmission Systems in Section 15.247
- RSS 210 Issue 7 June 2007 - Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands)
- ANSI C63.4-2003, "American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz"

1.5 Subcontractor Identification - This series of tests was performed by Elite Electronic Engineering Incorporated of Downers Grove, Illinois. The laboratory is accredited by the National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program (NVLAP); NVLAP Lab Code: 100278-0 and the American

Association for Laboratory Accreditation (A2LA): A2LA Lab Code: 1786.01.

1.6 Laboratory Conditions The temperature at the time of the test was 22°C and the relative humidity was 57%.

2.0 TEST ITEM SET-UP AND OPERATION:

The test item is a Wireless Digital Transmission Transceiver, Part No. FGR2. A 6 dBi gain Omni-directional antenna and a 10 dBi gain Yagi antenna were supplied with the test item. The Yagi antenna was submitted with a 100 foot long cable which had 3.9 dB of loss in the 902 to 928MHz range. A block diagram of the test item set-up is shown as Figure 1.

2.1 Power Input - The test item obtained 12VDC power through 2 leads from the secondary of a Tamuracorp step-down transformer, Part No. 420AS12050. The primary of this transformer received 115V 60Hz power through lowpass powerline filters on the wall of the shielded enclosure. The 12VDC power from the secondary of the transformer was provided to the test item through a 2 wire, 6 foot long unshielded cord.

2.2 Grounding - The test item was grounded through the input power supply.

2.3 Support Equipment - A Sony laptop computer was used to put the test item in different test modes by using HyperTerminal. The laptop computer was connected to the test item via a RS232 cable.

2.4 Interconnect Cables - The test item was connected to the laptop computer via a 2-meter long RS232 cable for initial set up only. It was removed for the tests.

2.5 Operational Mode - For all tests, the test item was transmitting at Channel 4 (902.9376MHz), Channel 59 (915.6096MHz) or Channel 109 (927.1296MHz).

3.0 TEST EQUIPMENT:

3.1 Test Equipment List - A list of the test equipment used can be found on Table I. All equipment was calibrated per the instruction manuals supplied by the manufacturer.

3.2 Calibration Traceability Test equipment is maintained and calibrated on a regular basis. All calibrations are traceable to the National Institute of Standards and Technology (NIST).

4.0 REQUIREMENTS, PROCEDURES AND RESULTS:

4.1 Power line Conducted Emissions

4.1.1 Requirements - All radio frequency voltages on the power lines of a Class B device shall be below the values shown below when using a quasi-peak detector:

CONDUCTED LIMITS FOR CLASS B DEVICE

Frequency MHz	RFI Voltage dBuV(QP)	RFI Voltage dBuV(Average)
0.15-0.5	66 decreasing with logarithm of frequency to 56	56 decreasing with logarithm of frequency to 46
0.5-5	56	46
5-30	60	50

Note 1: The lower limit shall apply at the transition frequencies.

Note 2: If the levels measured using the QP detector meet both the QP and the Average limits, the test item is considered to have met both requirements and measurements do not need to be performed using the Average detector.

4.1.2 Procedures - The interference on each power lead was measured by connecting the measuring equipment to the appropriate meter terminal of the LISN. The meter terminal of the LISN not under test was terminated with 50 ohm. Measurements were first made over the entire frequency range from 150kHz through 30MHz with a peak detector and the results were automatically plotted. The data thus obtained was then searched by the computer for the highest levels. Quasi-peak measurements were automatically performed at the frequencies selected from the highest peak measurements, and the results printed.

4.1.3 Results - The plots of the peak preliminary conducted voltage levels on each power line are presented on pages 15 and 16. The conducted limit for the Class B category is shown as a reference. The final quasi-peak results are presented on pages 17 and 18.

4.2 Antenna Conducted Emissions

4.2.1 Requirements - In any 100 kHz bandwidth outside of the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power based on either an RF conducted or a radiated emissions measurement. Attenuation below the general limits specified in 15.209(a) is not required.

4.2.2 Procedures - The antenna port of the test item was connected to a spectrum analyzer through two 20dB attenuators. The resolution bandwidth was set to 100 kHz with a video bandwidth of 1MHz. Conducted emissions plots were made from 30MHz to 10GHz with the test item transmitting at Channel 4 (902.9376MHz), Channel 59 (915.6096MHz) or Channel 109 (927.1296MHz). The display line on the plots represents the 20dB down point

from the transmit frequency.

4.2.3 Results - The antenna conducted emissions plots are shown on data pages 19 through 27. As can be seen by the data, the test item did meet the antenna conducted emissions limits.

4.3 Bandedge Compliance

4.3.1 Requirement - The emissions at the band-edges must be at least 20dB below the highest level measured within the band. In addition, the radiated emissions which fall in the restricted band beginning at 2483.5 MHz, must meet the general limits of 15.209

4.3.2 Procedures - The test item was connected to the spectrum analyzer through 40 dB of attenuation. The frequency hopping channel was set separately to low and high hopping channels. The resolution bandwidth (RBW) was set to 120 kHz (greater than or equal to 1% of the span). The 'Max-Hold' function was engaged. The analyzer was allowed to scan until the envelope of the transmitter bandwidth was defined. The analyzer's display was plotted using a 'screen dump' utility. The measurement was repeated with the frequency hopping function enabled.

4.3.3 Results - Pages 28 through 29 show the band-edge compliance results. As can be seen from these plots, the emissions at the band-edges meet the requirements.

4.4 Duty Cycle

4.4.1 Procedures - The test item was connected to the spectrum analyzer through 40 dB of attenuation. The duty cycle factor is used to convert peak detected readings to average readings. This factor is computed from the time domain trace of the pulse modulation signal. With the transmitter set up to transmit for maximum pulse density, the time domain trace is displayed on the spectrum analyzer. This trace is obtained by tuning center frequency to the transmitter frequency and then setting a zero span width with 2msec/div. The markers are set at the beginning and end of a word period. If the word period exceeds 100 msec the word period is set to 100 msec.

4.4.2 Results - The plots of the duty cycle are shown on data pages 30 and 31. The test item transmits a 380.8 usec pulse in 11 msec, the duty cycle factor was computed over a 11 msec interval. The duty cycle correction factor was calculated to be -29.2dB ($-29.2\text{dB} = 20 \cdot \log(380.8\text{usec}/11\text{msec})$).

4.5 Radiated Measurements

4.5.1 Spurious Radiated Emissions

4.5.1.1 Requirement – Radiated emissions which fall in the restricted bands, as defined in 15.205(a), must comply with the radiated emissions limits specified in 15.209(a).

Paragraph 15.209(a) has the following radiated emissions limits:

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	2400/F(kHz)	30
1.705 - 30	30	3
30.0 - 88.0	100	3
88.0 - 216.0	150	3
216.0 - 960.0	200	3
Above 960	500	3

4.5.1.2 Procedures - Preliminary radiated measurements from 30MHz to 10GHz were performed in a 32ft. x 20ft. x 14ft. high shielded enclosure. The shielded enclosure prevents emissions from other sources such as radio and TV stations from interfering with the measurements. All power lines and signal lines entering the enclosure pass through filters on the enclosure wall. The power line filters prevent extraneous signals from entering the enclosure on these leads.

Final radiated measurements were performed on the following:

- All significant radiated emissions detected in the preliminary tests which were in the restricted bands listed in 15.205(a).
- The harmonics of the transmit frequency which fall in the restricted bands of 15.205(a).

All final radiated emissions measurements were manually performed in a 32ft. x 20ft. x 14ft. high shielded enclosure. Measurements below 1GHz were made using a quasi-peak detector and a bilog antenna. Measurements above 1GHz were made using an average detector and a double ridged waveguide antenna. A high-pass filter was used to block the fundamental frequency and avoid saturation.

To ensure that maximum emission levels were measured, the following steps were taken:

- 1) The test item was rotated so that all of its sides were exposed to the receiving antenna.
- 2) Since the measuring antenna is linearly polarized, both horizontal and vertical field components were measured.

- 3) The measuring antenna was raised and lowered for each antenna polarization to maximize the readings.

4.5.1.3 Results - Photographs of the test item set-up are presented as Figures 2 and 3. The preliminary radiated emissions plots from 30MHz to 10GHz for the omni antenna are presented on data pages 32 through 37. The preliminary radiated emissions plots from 30MHz to 10GHz for the Yagi antenna are presented on data pages 38 through 43. The final radiated emissions data for both the Omni and Yagi antennas are presented on data pages 44 through 55. As can be seen by the data, the test item did meet the emissions limits.

4.6 Power Spectral Density

4.6.1 Requirements - For digitally modulated systems, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3kHz band during any time interval of continuous transmission.

4.6.2 Procedures - The antenna port of the transmitter was connected to a spectrum analyzer through two 20dB attenuators. The resolution bandwidth was set to 3kHz with a video bandwidth of 30kHz. The sweep time was set to automatic. The test item was placed in constant transmit mode. The spectrum analyzer was set to make 100 traces in power averaging mode using a peak detector per FCC publication 558074 PSD, Option 2. A power spectral density plot was made with the test item transmitting at Channel 4 (902.9376MHz), Channel 59 (915.6096MHz) or Channel 109 (927.1296MHz).

4.6.3 Results - A power spectral density plots are shown on data pages 56 through 58. As can be seen for the data, the power spectral density is less than 8 dBm for any 3 kHz band. The display line on the plot represents the 8dBm limit.

4.7 Bandwidth Measurements

4.7.1 Requirements - For digitally modulated systems, the minimum 6dB bandwidth shall be at least 500kHz.

4.7.2 Procedures - The antenna port of the transmitter was connected to a spectrum analyzer through two 20dB attenuators. The resolution bandwidth was set to 100kHz with a video bandwidth of 100kHz and the span was set to 2MHz. A bandwidth plot was made for the test item transmitting at Channel 4 (902.9376MHz), Channel 59 (915.6096MHz) or Channel 109 (927.1296MHz). The markers on the plots represent the 6dB down points from the transmit frequency.

4.7.3 Results - A bandwidth plot is shown on data pages 59 through 61. As can be



seen by the data, the test item did meet the minimum 6dB bandwidth requirements. In addition the 99% bandwidth measurement was 1.8MHz.

4.8 Power Output

4.8.1 Requirements - For digitally modulated systems, the maximum peak output power shall not exceed 1 watt (30dBm).

4.8.2 Procedures - The antenna port of the transmitter was connected to a spectrum analyzer through two 20dB attenuators. The resolution bandwidth was set to 3MHz with a video bandwidth of 3MHz. The test item was placed in constant transmit mode. A peak detector was used to measure the 100 traces in power averaging mode per FCC publication 558074 power output option 2.

4.8.3 Results - Power output data is shown on data pages 62 through 64. The maximum measured peak power output was 29.9dBm. As can be seen by the data, the test item did meet the maximum peak output power requirements. The maximum EIRP measured from the transmitter was 35.9 dBm which meets the De Facto 36 dBm limit.

5.0 CONCLUSIONS:

It was determined that the Freewave Technologies Wireless Data Transceiver, Part No. FGR2, Serial No. 960-001, did fully meet the requirements of the FCC "Code of Federal Regulations" Title 47, Part 15.247, Subpart C, for Intentional Radiators and RSS 210 Issue 7 June 2007 - Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands), when tested per ANSI C63.4-2003.

6.0 CERTIFICATION:

Elite Electronic Engineering Incorporated certifies that the information contained in this report was obtained under conditions which meet or exceed those specified in the test specifications.

The data presented in this test report pertains to the test item at the test. Any electrical or mechanical modification made to the test item subsequent to the specified test date will serve to invalidate the data and void this certification.

7.0 ENDORSEMENT DISCLAIMER:

This report must not be used to claim product endorsement by NVLAP or any agency of the US Government.



TABLE I: TEST EQUIPMENT LIST

ELITE ELECTRONIC ENG. INC.								Page: 1
Eq ID	Equipment Description	Manufacturer	Model No.	Serial No.	Frequency Range	Cal Date	Cal Inv	Due Date
Equipment Type: ACCESSORIES, MISCELLANEOUS								
XLTX	5W, 50 OHM TERMINATION	JFW INDUSTRIES	50T-052	---	DC-2GHZ	11/19/07	12	11/19/08
XZG0	ATTENUATOR/SWITCH DRIVER	HEWLETT PACKARD	11713A	3439A02724	---		N/A	
Equipment Type: AMPLIFIERS								
APK0	PRE-AMPLIFIER	HEWLETT PACKARD	8449B	3008A00662	1-26.5GHZ	03/16/07	12	03/16/08
Equipment Type: ANTENNAS								
NDQ1	TUNED DIPOLE ANTENNA	EMCO	3121C-DB4	313	400-1000MHZ	03/28/07	12	03/28/08
NTA0	BILOG ANTENNA	CHASE EMC LTD.	BILOG CBL611	2057	0.03-2GHZ	06/20/07	12	06/20/08
Equipment Type: ATTENUATORS								
T1N3	10DB 20W ATTENUATOR	NARDA	766-10		DC-4GHZ	09/04/07	12	09/04/08
T2D5	20DB, 25W ATTENUATOR	WEINSCHEL	46-20-43	AY9244	DC-18GHZ	02/22/07	12	02/22/08
T2DG	20DB 25W ATTENUATOR	WEINSCHEL	46-20-34	BN1038	DC-18GHZ	03/01/07	12	03/01/08
Equipment Type: CONTROLLERS								
CMA0	MULTI-DEVICE CONTROLLER	EMCO	2090	9701-1213	---		N/A	
Equipment Type: PROBES; CLAMP-ON & LISNS								
PLL2	50UH LISN 462D	ELITE	462D/70A	003	0.01-400MHZ	02/12/07	12	02/12/08
PLL5	50UH LISN 462D	ELITE	462D/70A	006	0.01-400MHZ	02/12/07	12	02/12/08
Equipment Type: RECEIVERS								
RAC1	SPECTRUM ANALYZER	HEWLETT PACKARD	85660B	3407A08369	100HZ-22GHZ	02/21/07	12	02/21/08
RAF3	QUASISPEAK ADAPTER	HEWLETT PACKARD	85650A	3303A01775	0.01-1000MHZ	02/21/07	12	02/21/08
RBB0	EMI TEST RECEIVER 20HZ TO	ROHDE & SCHWARZ	ESIB40	100250	20 HZ TO 40GHZ	11/05/07	12	11/05/08
Equipment Type: SIGNAL GENERATORS								
GBX1	SYNTHESIZED SWEEPER	HEWLETT PACKARD	83630A	3420A00857	10MHZ-26.5GHZ	02/23/07	12	02/23/08

Cal. Interval: Listed in Months I/O: Initial Only N/A: Not Applicable
 Note 1: For the purpose of this test, the equipment was calibrated over the specified frequency range, pulse rate, or modulation prior to the test or monitored by a calibrated instrument.

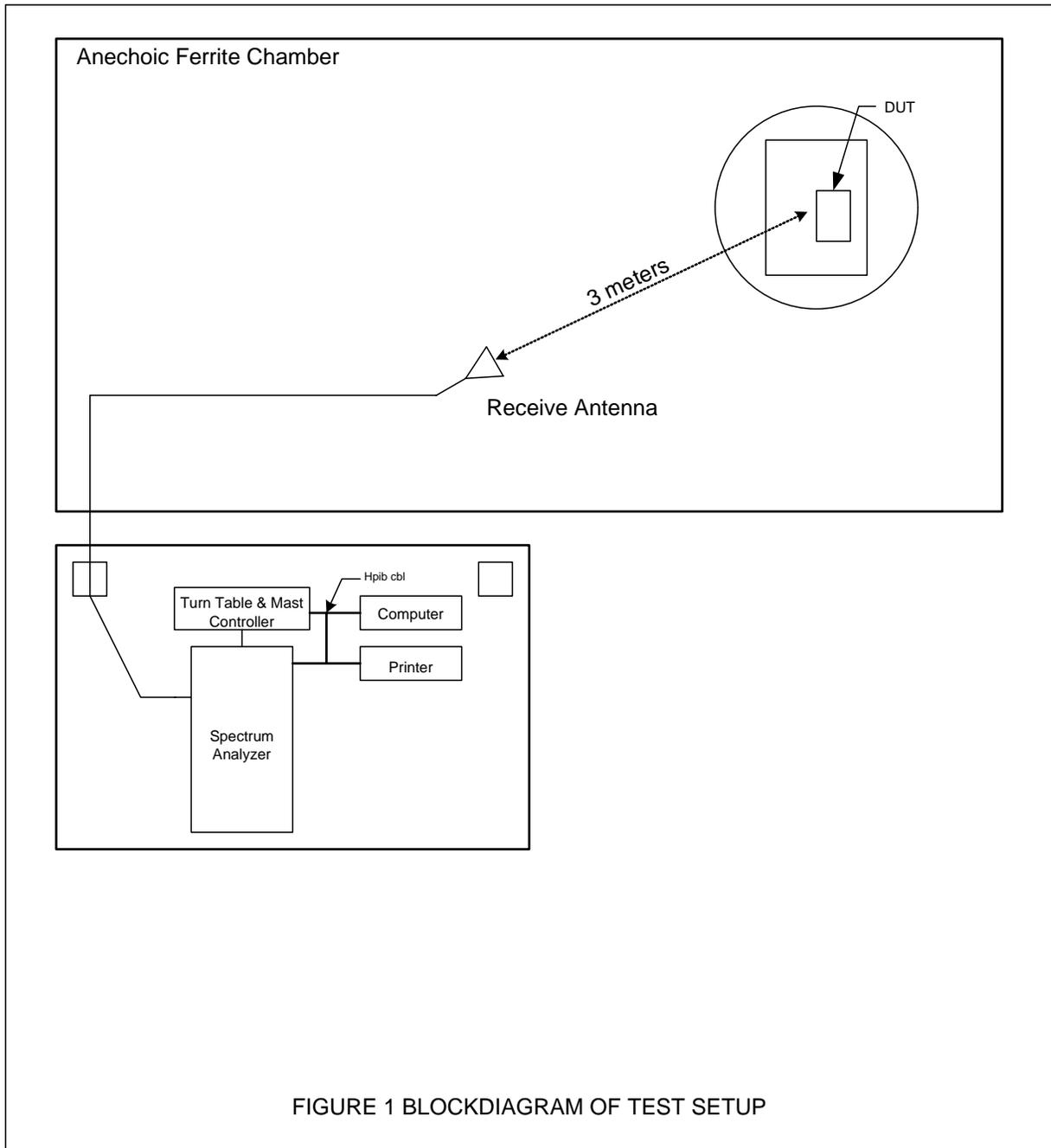


Figure 2

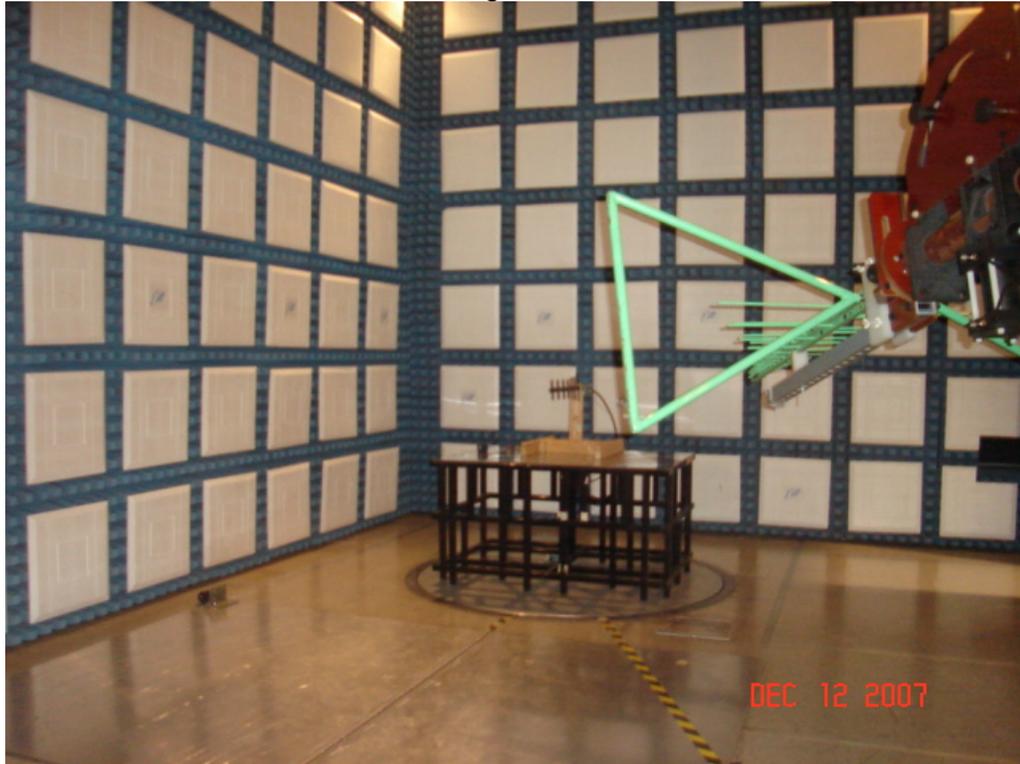


Test Setup for Radiated Emissions Omni Antenna – Horizontal Polarization



Test Setup for Radiated Emissions Omni Antenna – Vertical Polarization

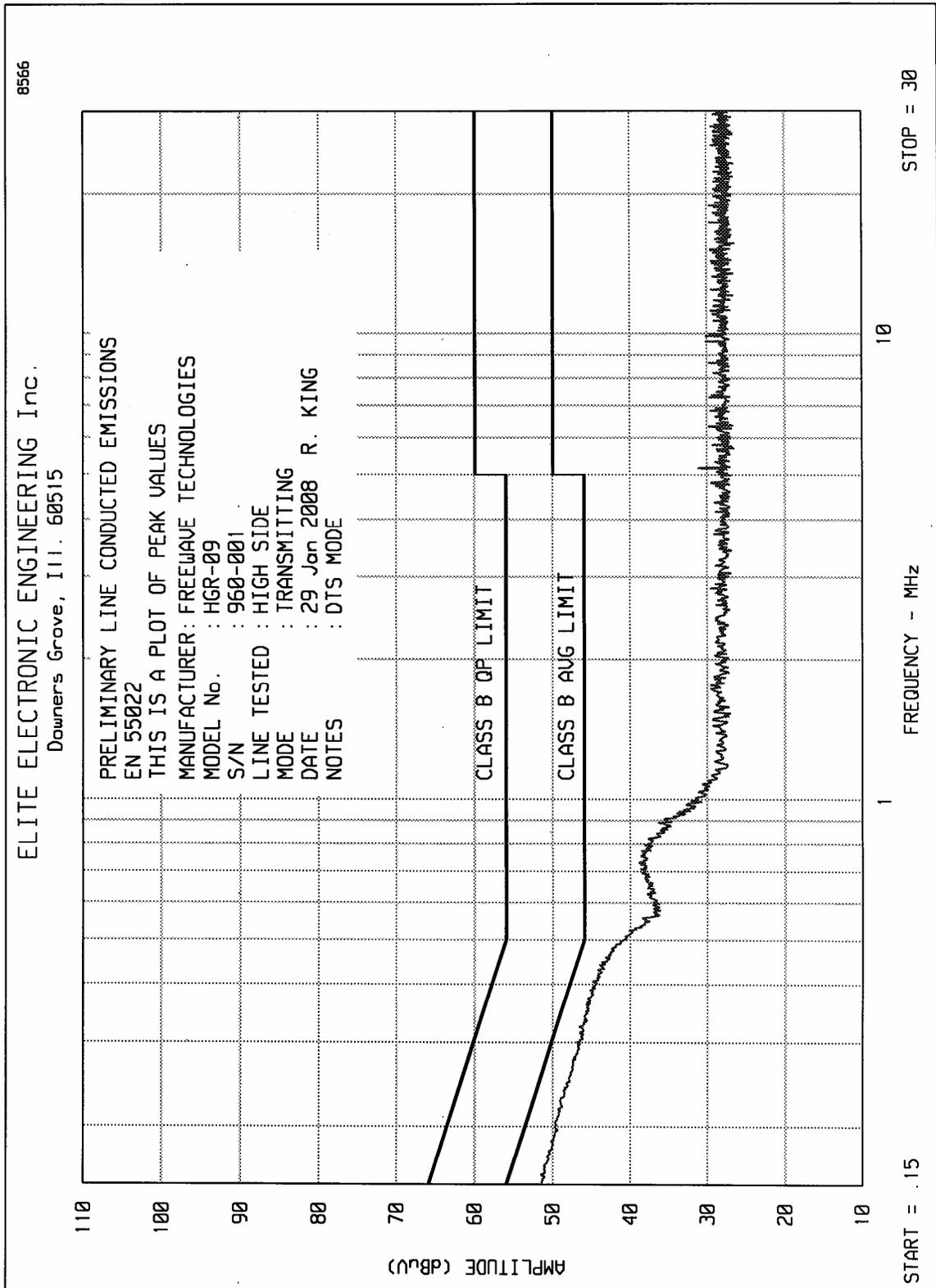
Figure 3

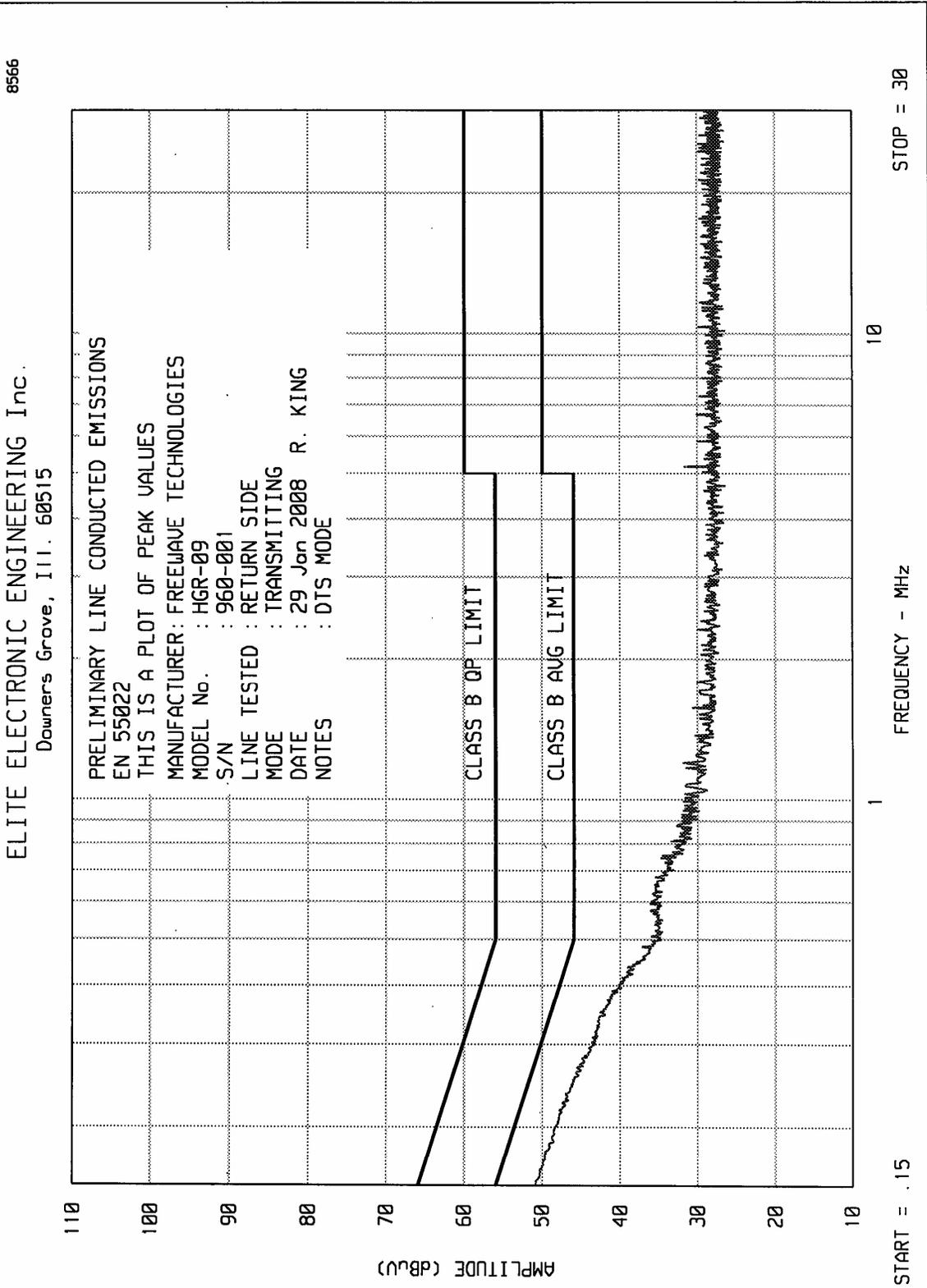


Test Setup for Radiated Emissions Yagi Antenna – Horizontal Polarization



Test Setup for Radiated Emissions Yagi Antenna – Vertical Polarization







ETR No.
ELITE ELECTRONIC ENGINEERING CO.

MANUFACTURER : FREEWAVE TECHNOLOGIES
MODEL : HGR-09
S/N : 960-001
SPECIFICATION : EN 55022, CLASS B
TEST : LINE CONDUCTED EMISSIONS
LINE TESTED : HIGH SIDE
MODE : TRANSMITTING
DATE : 29 Jan 2008
NOTES : DTS MODE
RECEIVER : HP 8566 w/ HP85650A QP ADAPTOR
VALUES MEASURED WITH QP DETECTOR USING 9kHz BANDWIDTH

FREQUENCY MHz	METER RDG. dBuV	QP LIMIT dBuV	AVG RDG dBuV	AVG LIMIT dBuV	NOTES
.152	43.4	65.9		55.9	
.241	40.0	62.1		52.1	
.299	38.2	60.3		50.3	
.354	37.3	58.9		48.9	
.447	34.9	56.9		46.9	
.723	29.8	56.0		46.0	
.813	28.9	56.0		46.0	
1.718	26.1	56.0		46.0	
2.820	25.9	56.0		46.0	
4.792	26.9	56.0		46.0	
7.944	25.6	60.0		50.0	
9.599	25.6	60.0		50.0	
12.433	25.6	60.0		50.0	
15.063	25.6	60.0		50.0	
18.706	25.4	60.0		50.0	
22.258	25.6	60.0		50.0	
23.815	25.6	60.0		50.0	
27.753	25.4	60.0		50.0	

CHECKED BY: Richard E. King
R. KING



ETR No.
ELITE ELECTRONIC ENGINEERING CO.

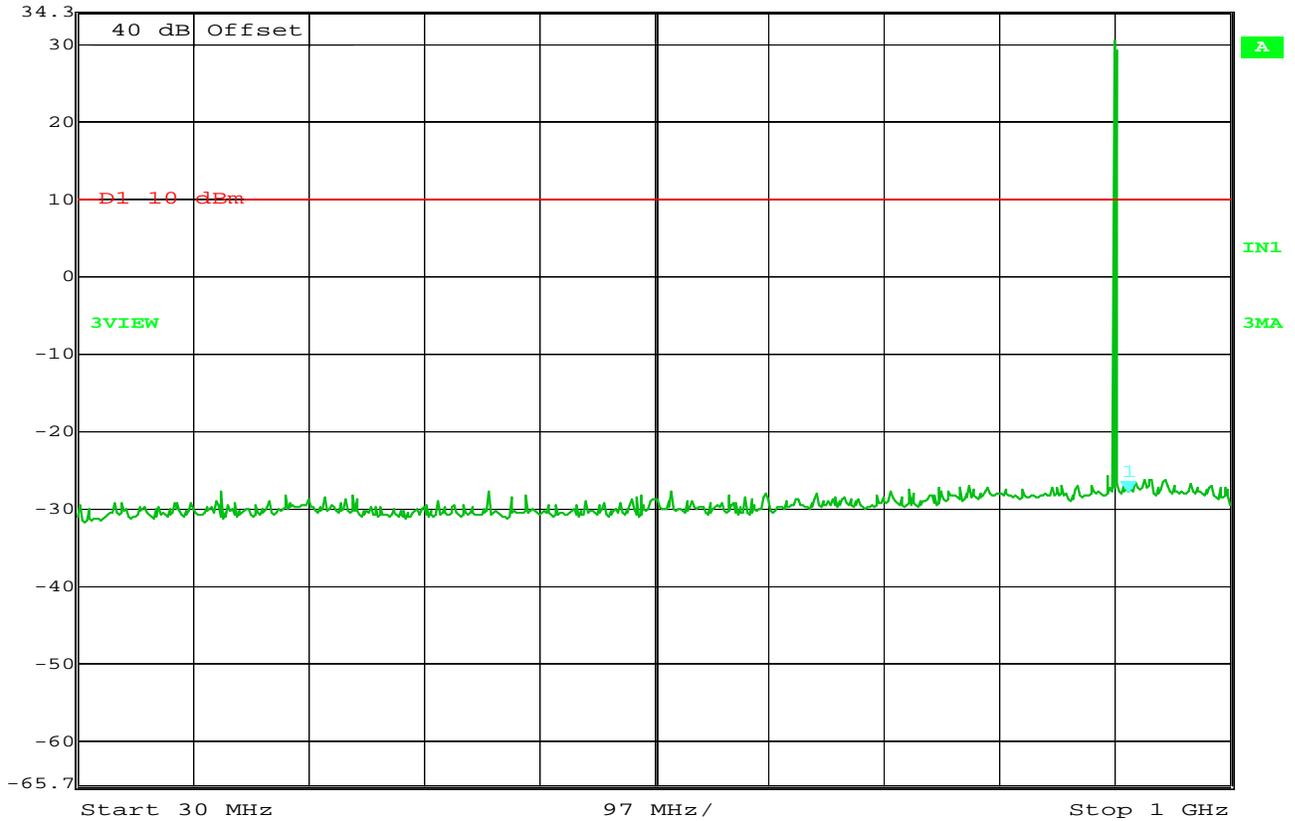
MANUFACTURER : FREEWAVE TECHNOLOGIES
MODEL : HGR-09
S/N : 960-001
SPECIFICATION : EN 55022, CLASS B
TEST : LINE CONDUCTED EMISSIONS
LINE TESTED : RETURN SIDE
MODE : TRANSMITTING
DATE : 29 Jan 2008
NOTES : DTS MODE
RECEIVER : HP 8566 w/ HP85650A QP ADAPTOR
VALUES MEASURED WITH QP DETECTOR USING 9kHz BANDWIDTH

FREQUENCY MHz	METER RDG. dBuV	QP LIMIT dBuV	AVG RDG dBuV	AVG LIMIT dBuV	NOTES
.151	42.3	65.9		55.9	
.244	37.9	61.9		51.9	
.342	34.1	59.1		49.1	
.442	29.2	57.0		47.0	
.660	27.4	56.0		46.0	
.735	27.1	56.0		46.0	
.812	26.4	56.0		46.0	
1.199	26.1	56.0		46.0	
2.408	26.0	56.0		46.0	
4.564	25.9	56.0		46.0	
6.639	25.4	60.0		50.0	
9.486	25.4	60.0		50.0	
12.840	25.6	60.0		50.0	
15.296	25.6	60.0		50.0	
17.618	25.4	60.0		50.0	
21.242	25.4	60.0		50.0	
24.423	25.4	60.0		50.0	
26.753	25.4	60.0		50.0	

CHECKED BY: Richard E. King
R. KING



Marker 1 [T3] RBW 100 kHz RF Att 20 dB
 Ref Lvl -27.78 dBm VBW 1 MHz
 34.3 dBm 914.48703727 MHz SWT 245 ms Unit dBm



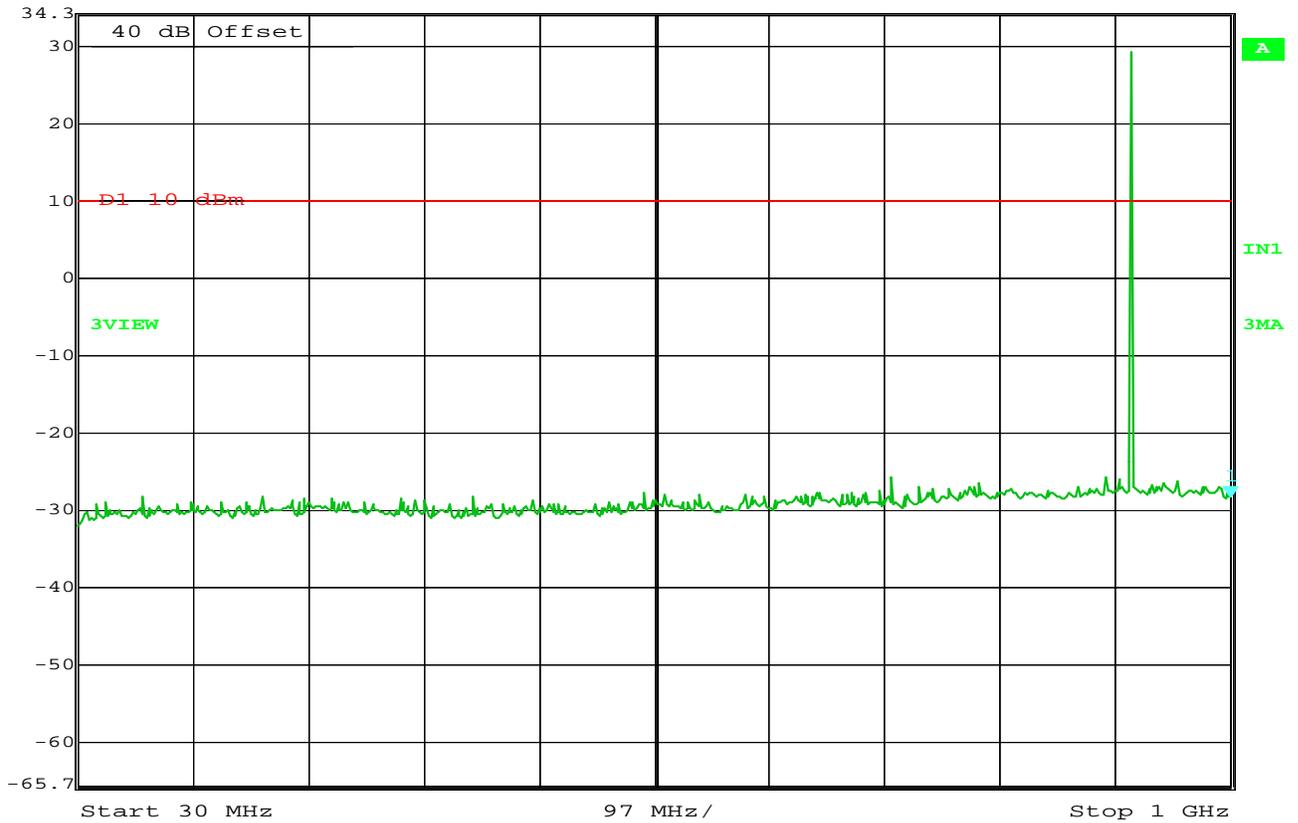
Date: 3.JAN.2008 21:57:05

MANUFACTURER : Freewave Technologies
 MODEL NUMBER : FGR2
 SERIAL NUMBER : 960-001
 TEST MODE : Antenna Conducted Emissions
 TEST PARAMETERS: Tx @ Channel 4 (902.9376MHz)

NOTES



Marker 1 [T3] RBW 100 kHz RF Att 20 dB
 Ref Lvl 34.3 dBm -28.39 dBm VBW 1 MHz
 1.00000000 GHz SWT 245 ms Unit dBm



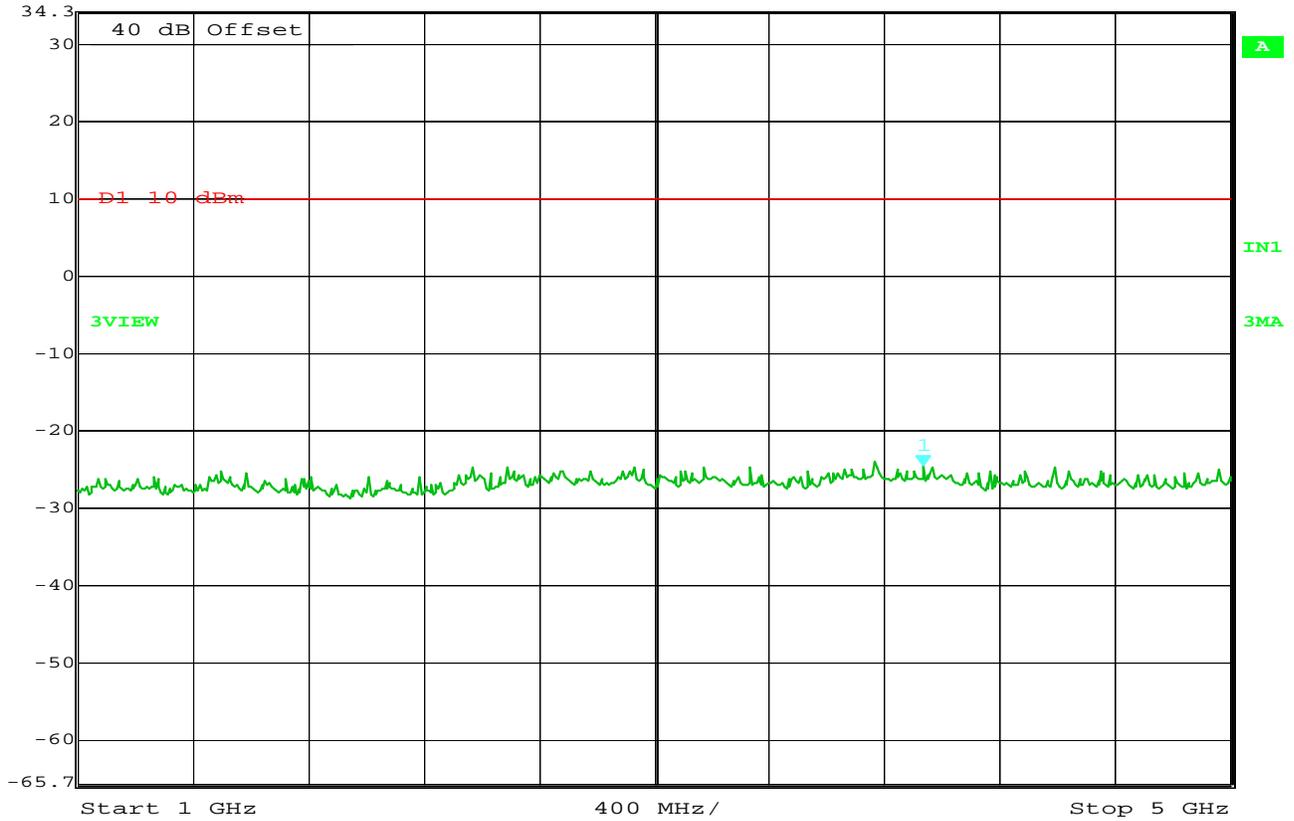
Date: 3.JAN.2008 22:03:59

MANUFACTURER : Freewave Technologies
 MODEL NUMBER : FGR2
 SERIAL NUMBER : 960-001
 TEST MODE : Antenna Conducted Emissions
 TEST PARAMETERS: Tx @ Channel 59 (915.6096MHz)

NOTES



Marker 1 [T3] RBW 100 kHz RF Att 20 dB
 Ref Lvl -24.68 dBm VBW 1 MHz
 34.3 dBm 3.93386774 GHz SWT 1 s Unit dBm



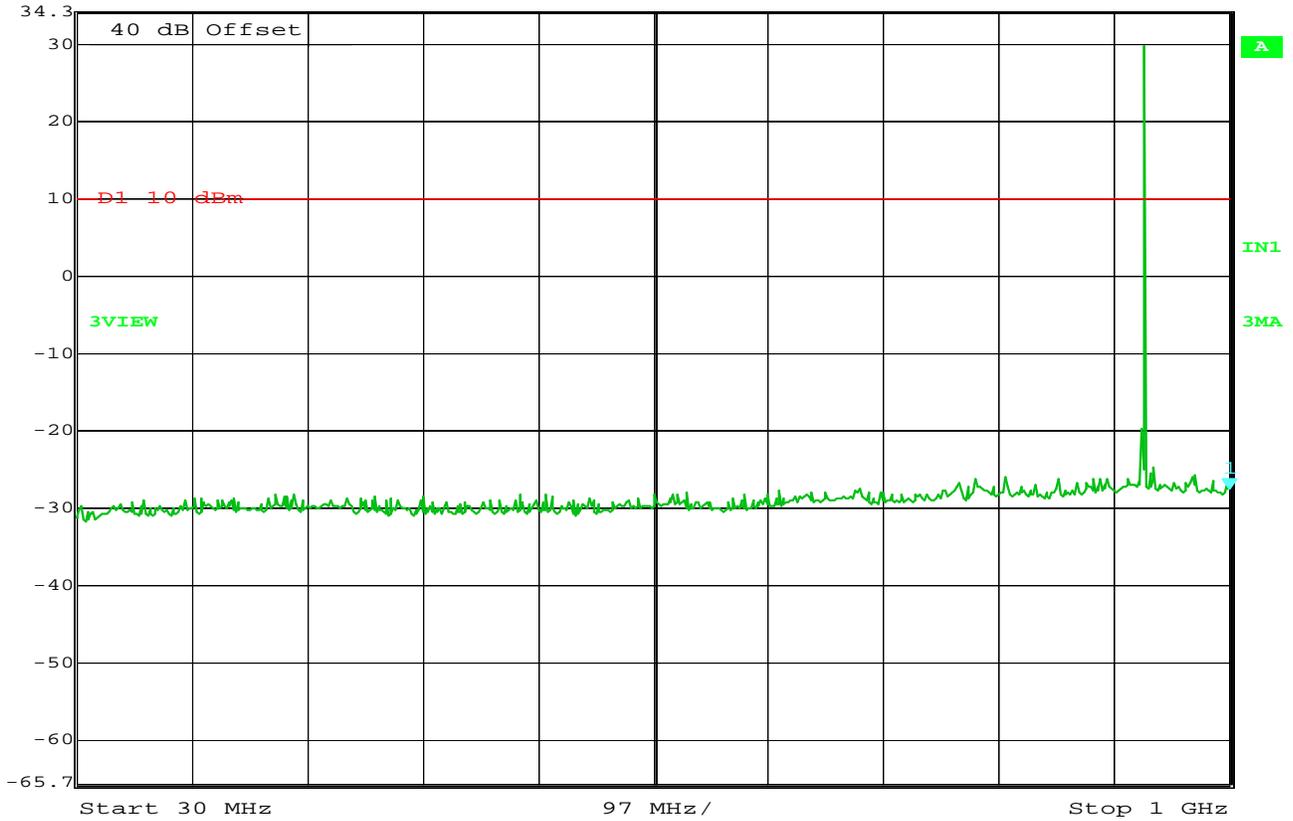
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MANUFACTURER : Freewave Technologies
 MODEL NUMBER : FGR2
 SERIAL NUMBER : 960-001
 TEST MODE : Antenna Conducted Emissions
 TEST PARAMETERS: Tx @ Channel 59 (915.6096MHz)

NOTES



Ref Lvl 34.3 dBm
 Marker 1 [T3] -27.58 dBm
 1.00000000 GHz
 RBW 100 kHz RF Att 20 dB
 VBW 1 MHz
 SWT 245 ms Unit dBm



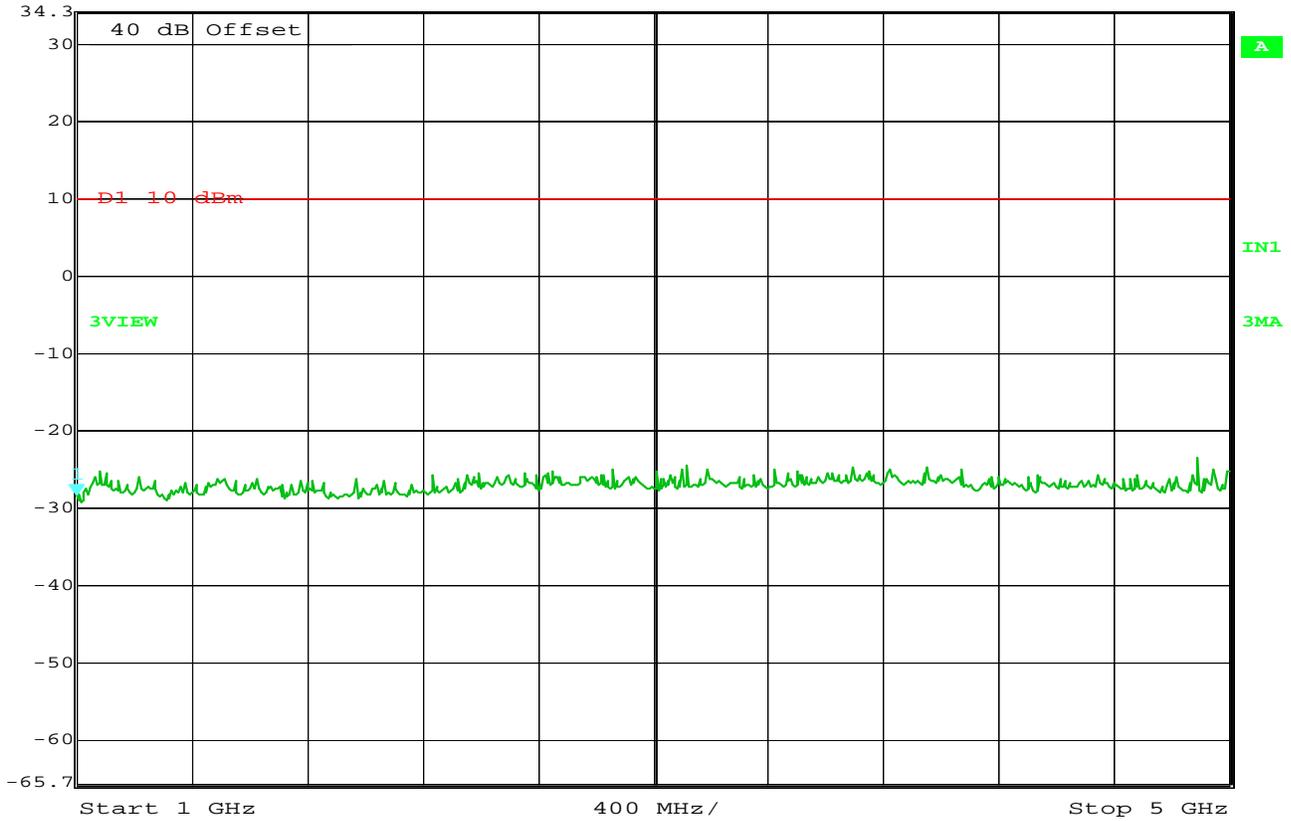
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MANUFACTURER : Freewave Technologies
 MODEL NUMBER : FGR2
 SERIAL NUMBER : 960-001
 TEST MODE : Antenna Conducted Emissions
 TEST PARAMETERS: Tx @ Channel 109 (927.1296MHz)

NOTES



Marker 1 [T3] RBW 100 kHz RF Att 20 dB
 Ref Lvl -28.21 dBm VBW 1 MHz
 34.3 dBm 1.00000000 GHz SWT 1 s Unit dBm



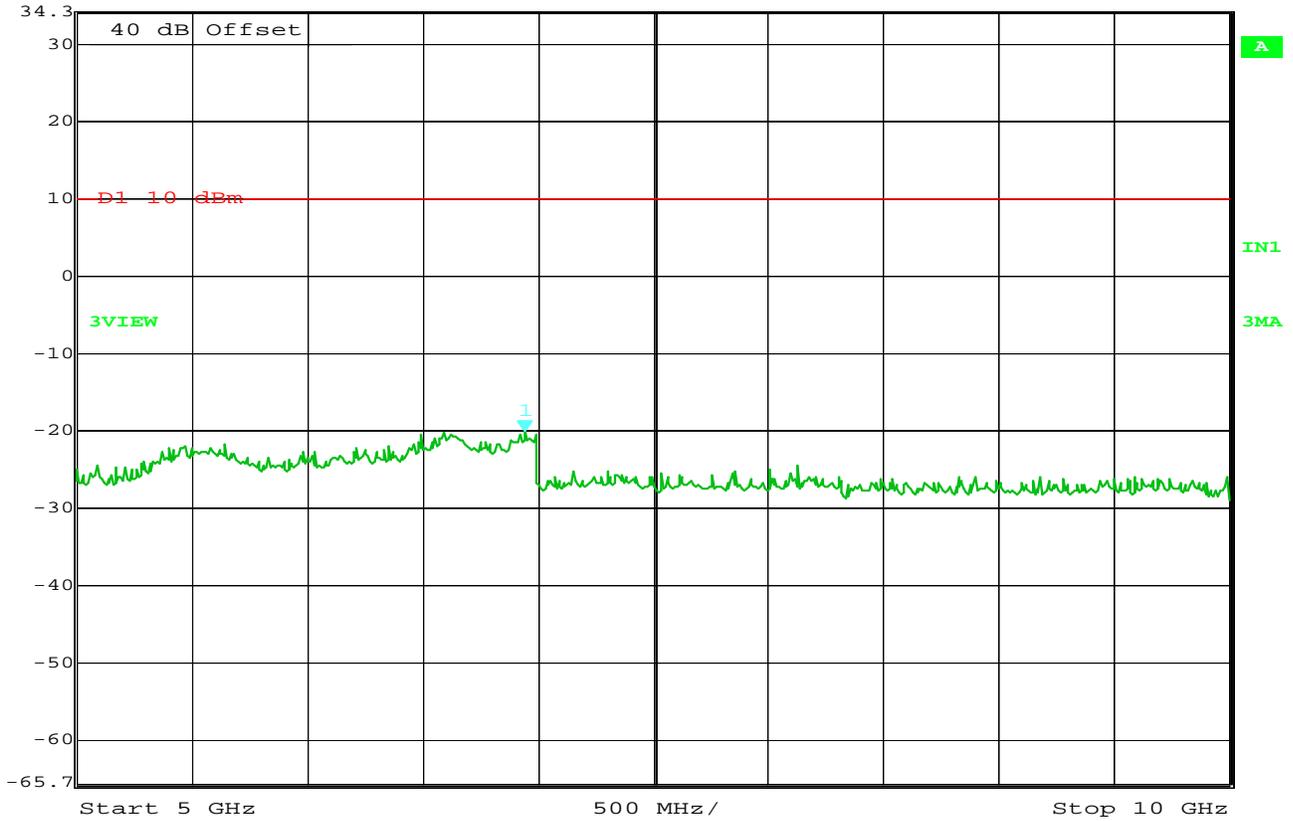
Date: 3.JAN.2008 22:07:09

MANUFACTURER : Freewave Technologies
 MODEL NUMBER : FGR2
 SERIAL NUMBER : 960-001
 TEST MODE : Antenna Conducted Emissions
 TEST PARAMETERS: Tx @ Channel 109 (927.1296MHz)

NOTES



Ref Lvl 34.3 dBm
 Marker 1 [T3] -19.97 dBm
 6.94388778 GHz
 RBW 100 kHz RF Att 20 dB
 VBW 1 MHz
 SWT 1.25 s Unit dBm



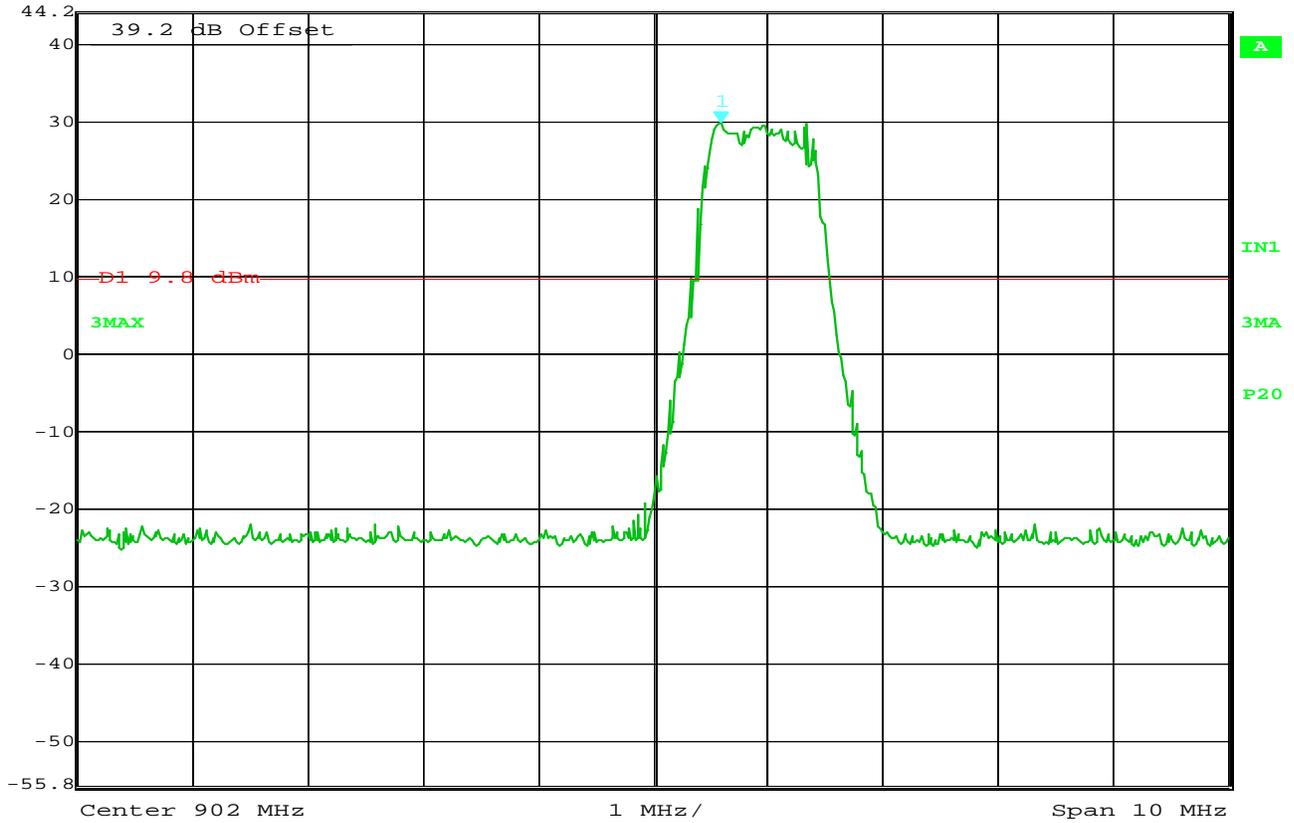
Date: 3.JAN.2008 22:08:06

MANUFACTURER : Freewave Technologies
 MODEL NUMBER : FGR2
 SERIAL NUMBER : 960-001
 TEST MODE : Antenna Conducted Emissions
 TEST PARAMETERS: Tx @ Channel 109 (927.1296MHz)

NOTES



Marker 1 [T3] RBW 120 kHz RF Att 40 dB
 Ref Lvl 29.81 dBm VBW 1 MHz
 44.2 dBm 902.59118236 MHz SWT 5 ms Unit dBm



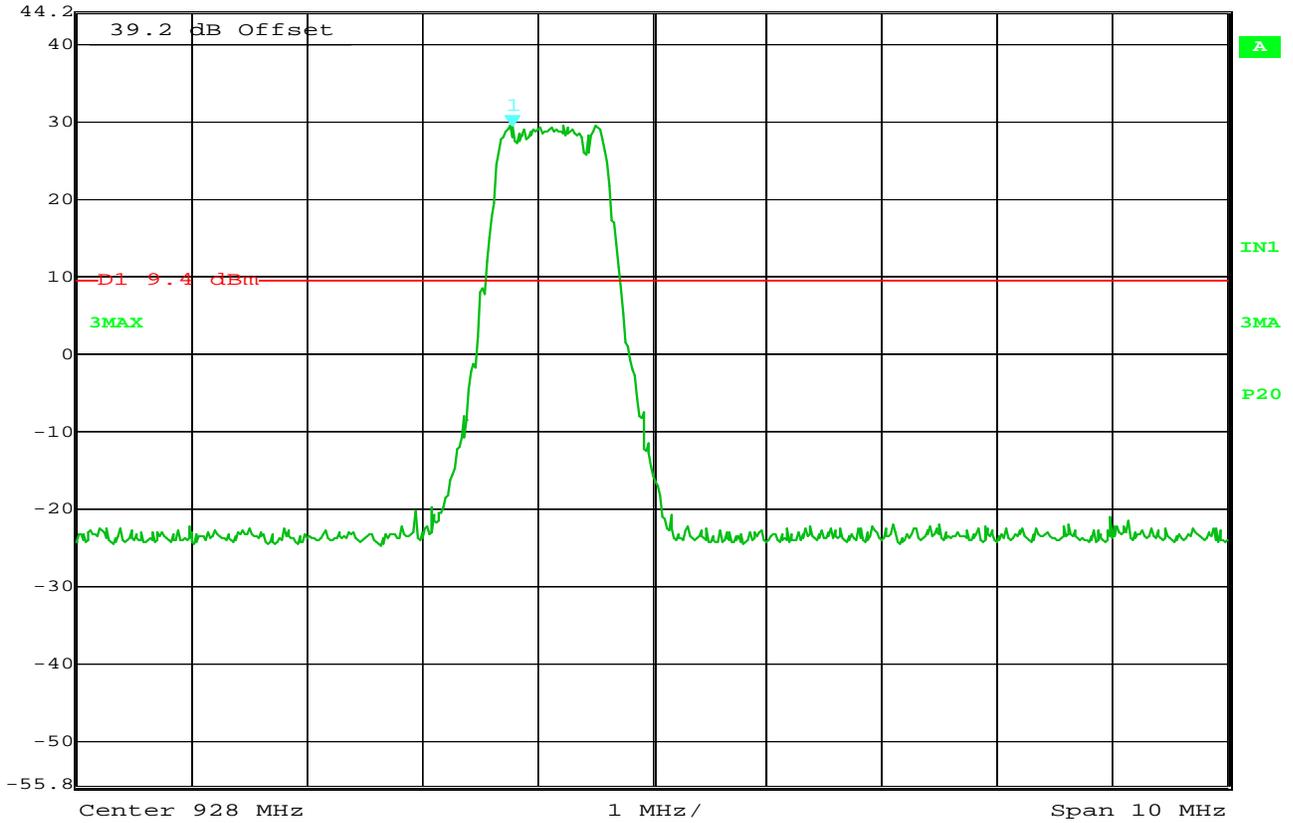
Date: 11.DEC.2007 15:45:22

MANUFACTURER : Freewave Technologies
 MODEL NUMBER : FGR2
 SERIAL NUMBER : 960-001
 TEST MODE : Bandedge Compliance
 TEST PARAMETERS: Tx @ Channel 4 (902.9376MHz)

NOTES



Ref Lvl	Marker 1 [T3]	RBW	120 kHz	RF Att	40 dB
44.2 dBm	29.41 dBm	VBW	1 MHz		
	926.78757515 MHz	SWT	5 ms	Unit	dBm



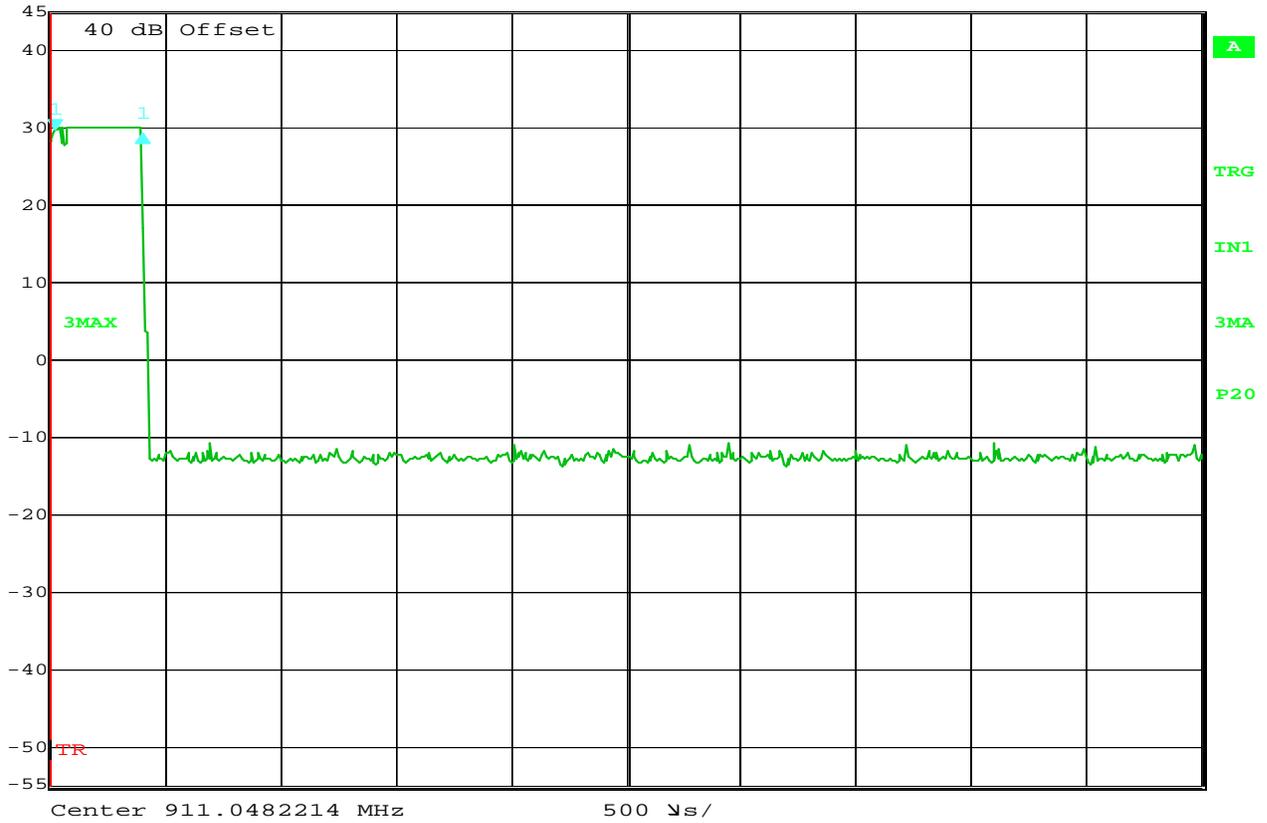
Date: 11.DEC.2007 15:43:41

MANUFACTURER : Freewave Technologies
 MODEL NUMBER : FGR2
 SERIAL NUMBER : 960-001
 TEST MODE : Bandedge Compliance
 TEST PARAMETERS: Tx @ Channel 109 (902.1296MHz)

NOTES



Delta 1 [T3] RBW 1 MHz RF Att 40 dB
 Ref Lvl -0.50 dB VBW 10 MHz
 45 dBm 380.761523 μ s SWT 5 ms Unit dBm



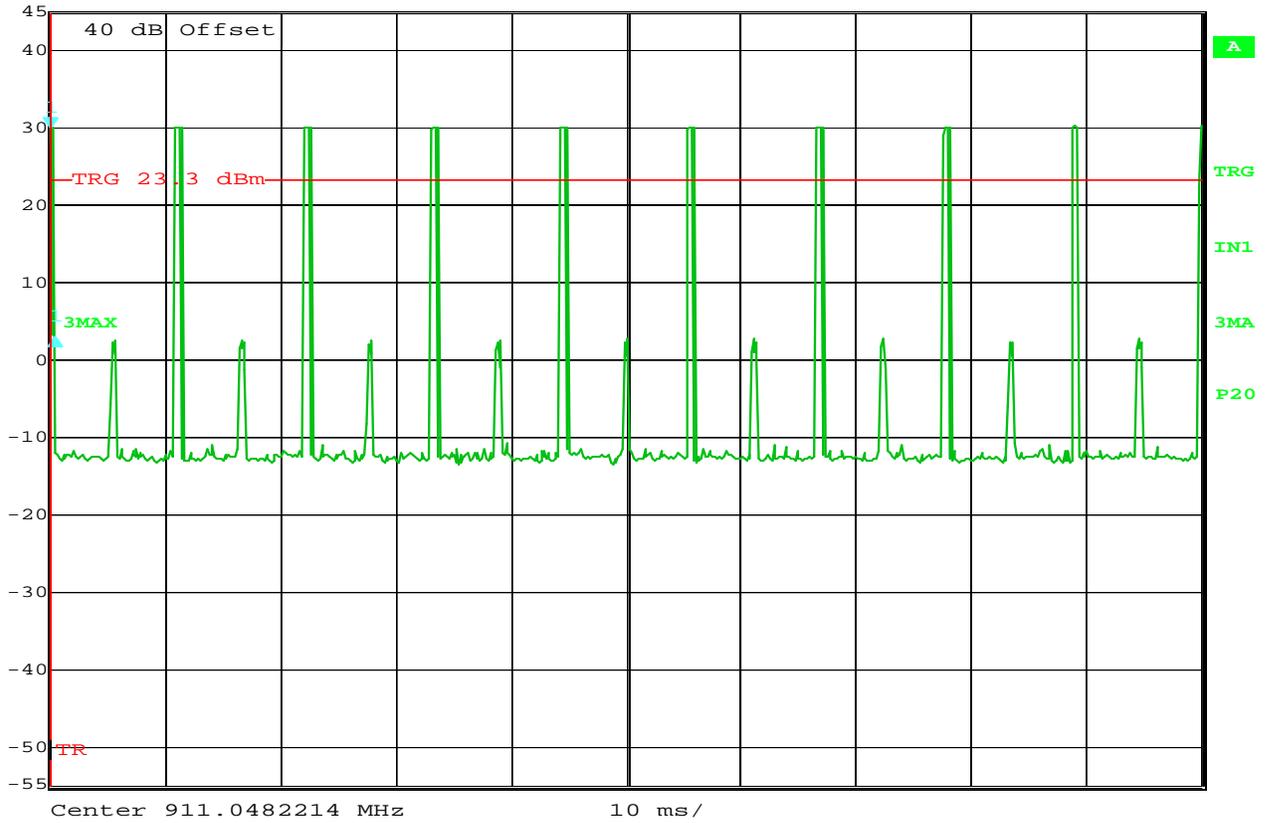
Date: 15.JAN.2008 16:06:55

MANUFACTURER : Freewave Technologies
 MODEL NUMBER : FGR2
 SERIAL NUMBER : 960-001
 TEST MODE : Duty Cycle
 TEST PARAMETERS: Transmitting

NOTES



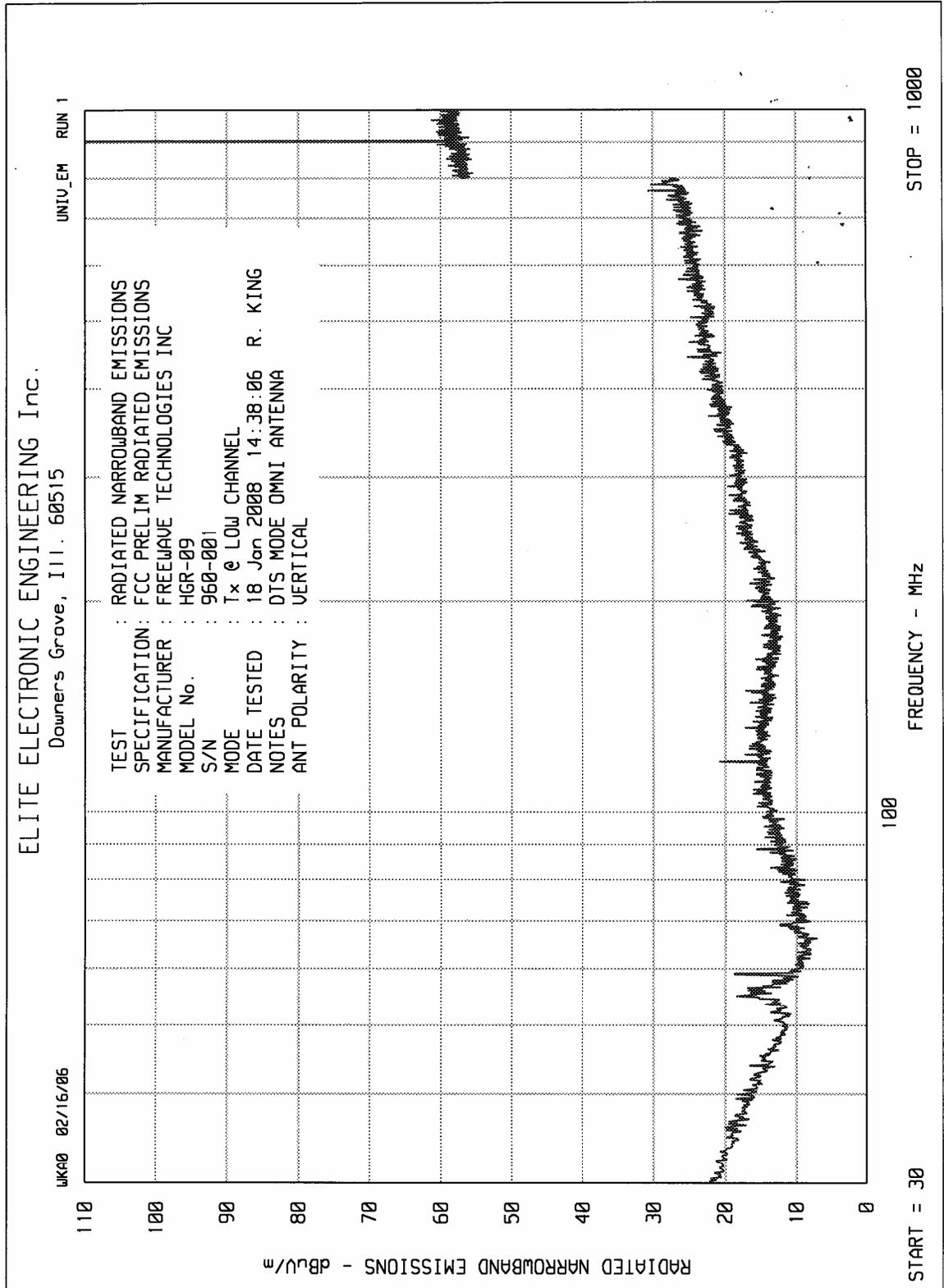
	Delta 1 [T3]	RBW	1 MHz	RF Att	40 dB
Ref Lvl	-26.91 dB	VBW	10 MHz		
45 dBm	380.761523 μ s	SWT	100 ms	Unit	dBm

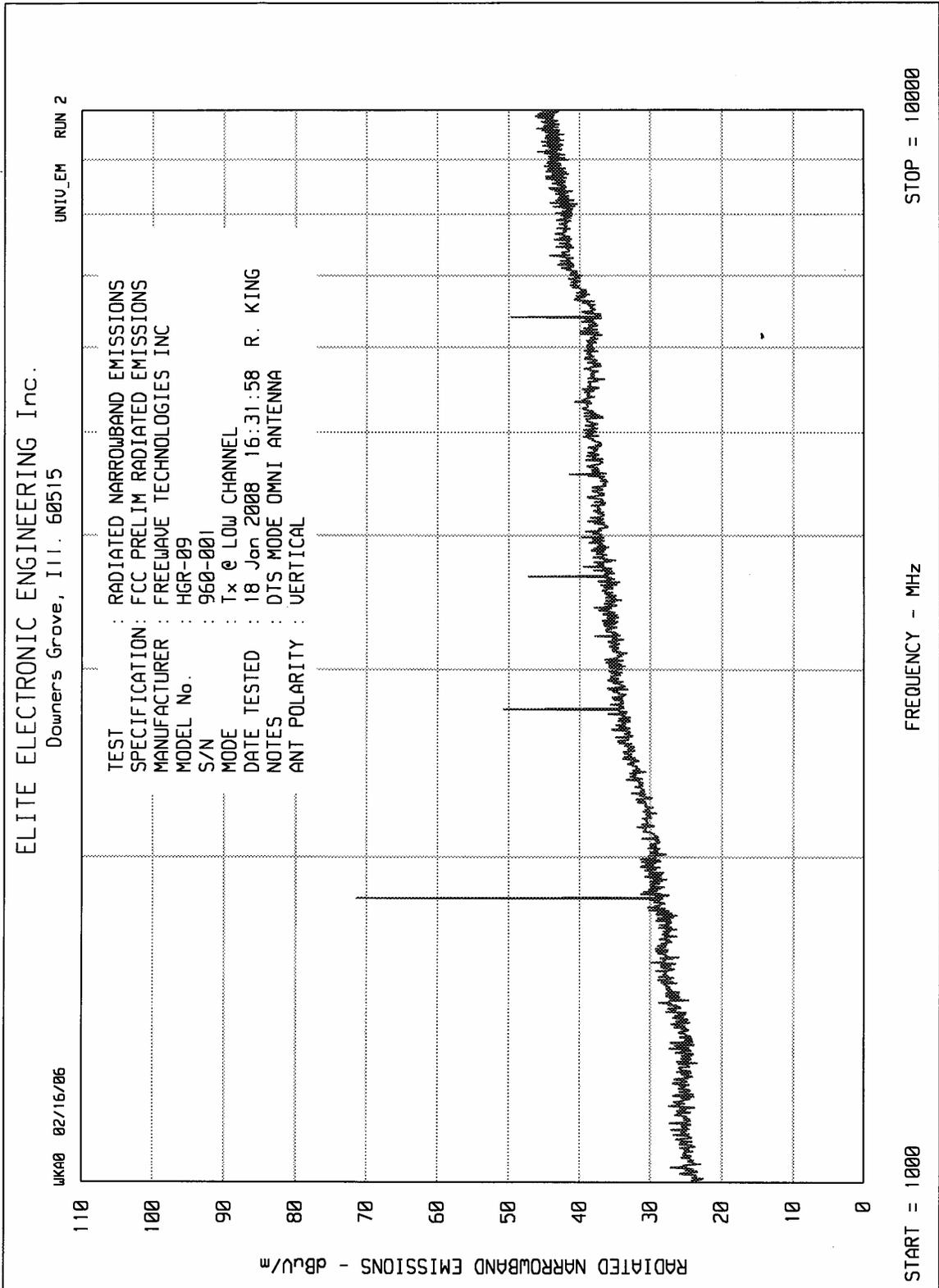


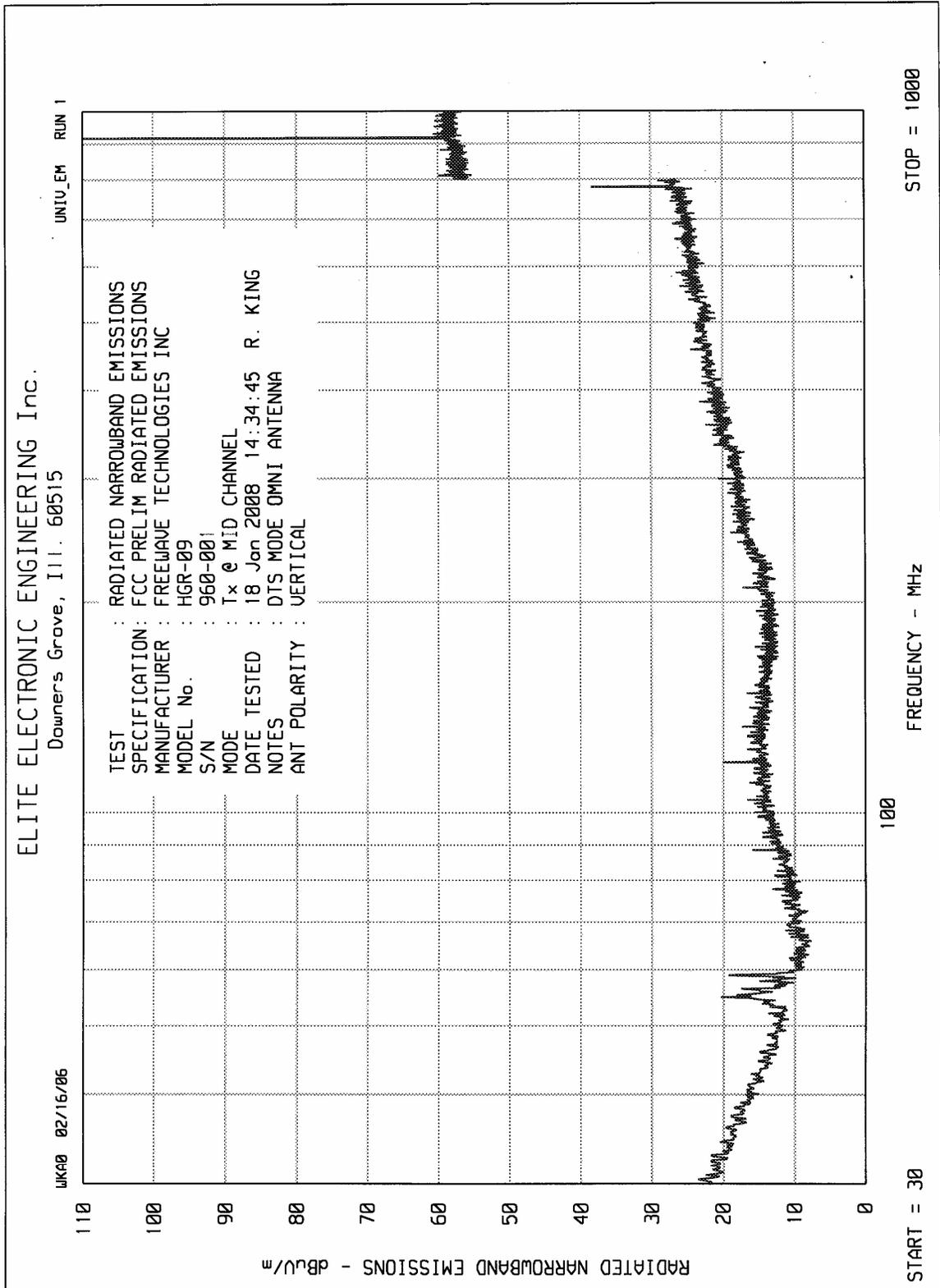
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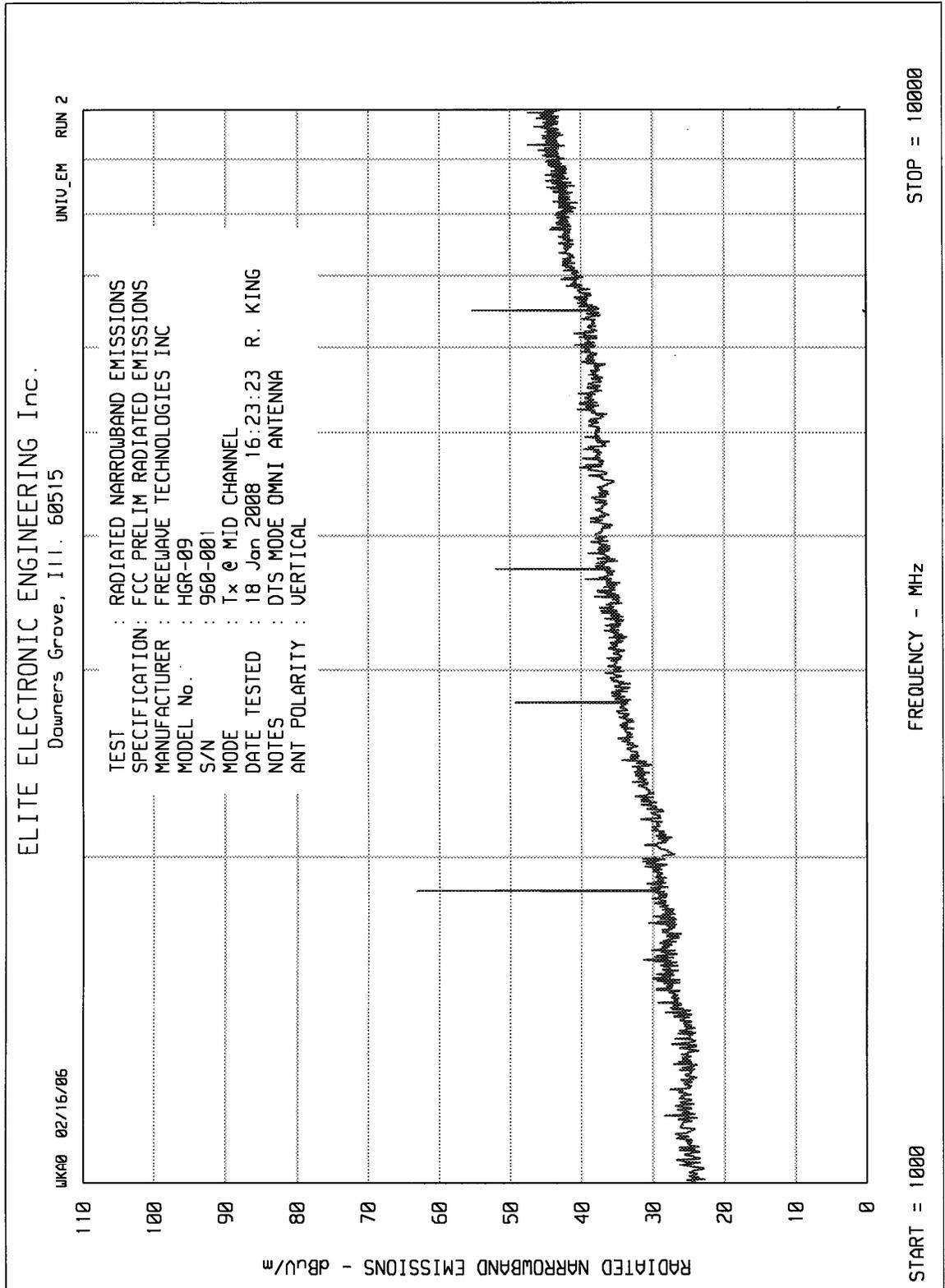
MANUFACTURER : Freewave Technologies
 MODEL NUMBER : FGR2
 SERIAL NUMBER : 960-001
 TEST MODE : Duty Cycle
 TEST PARAMETERS: Transmitting

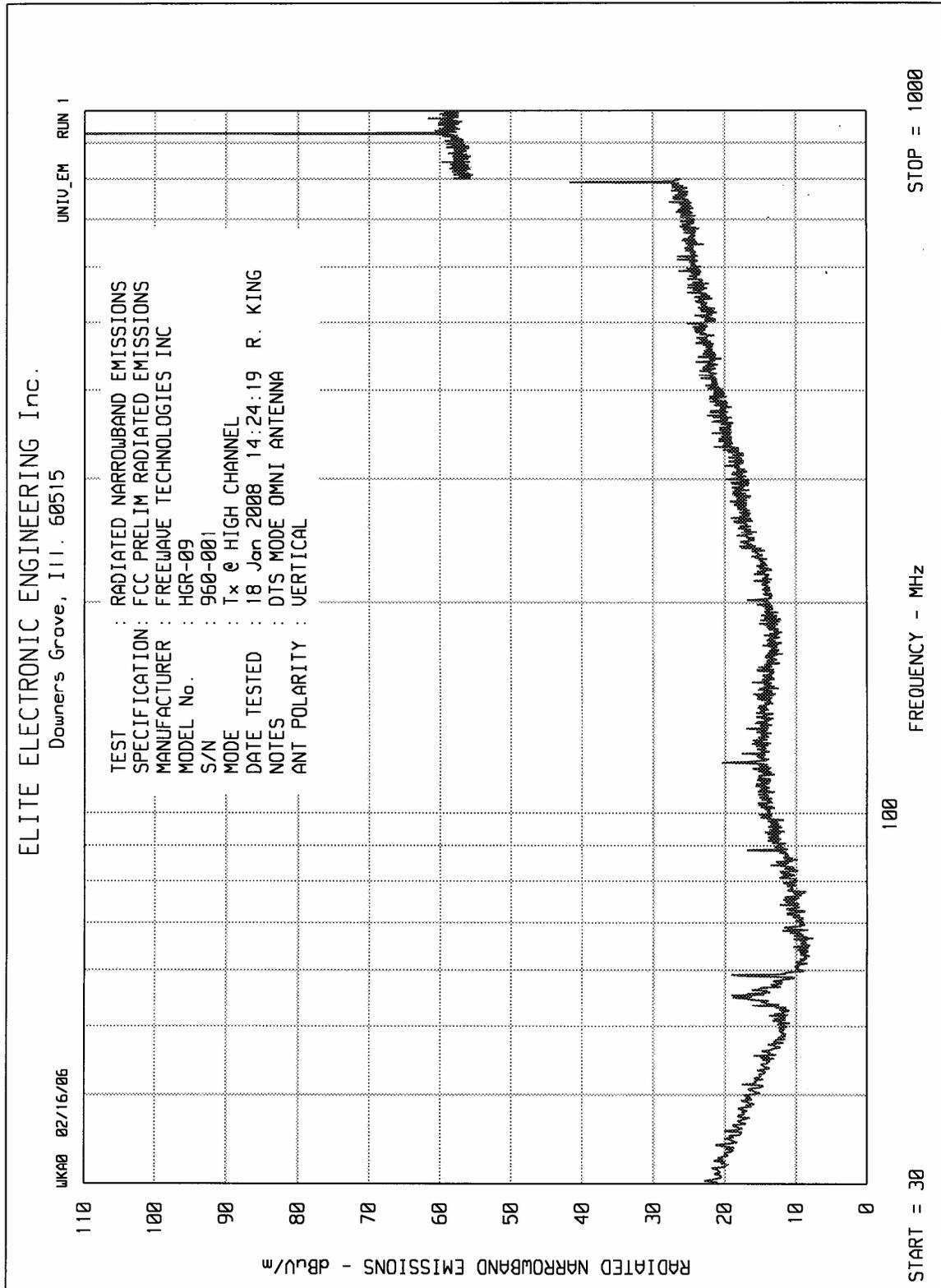
NOTES

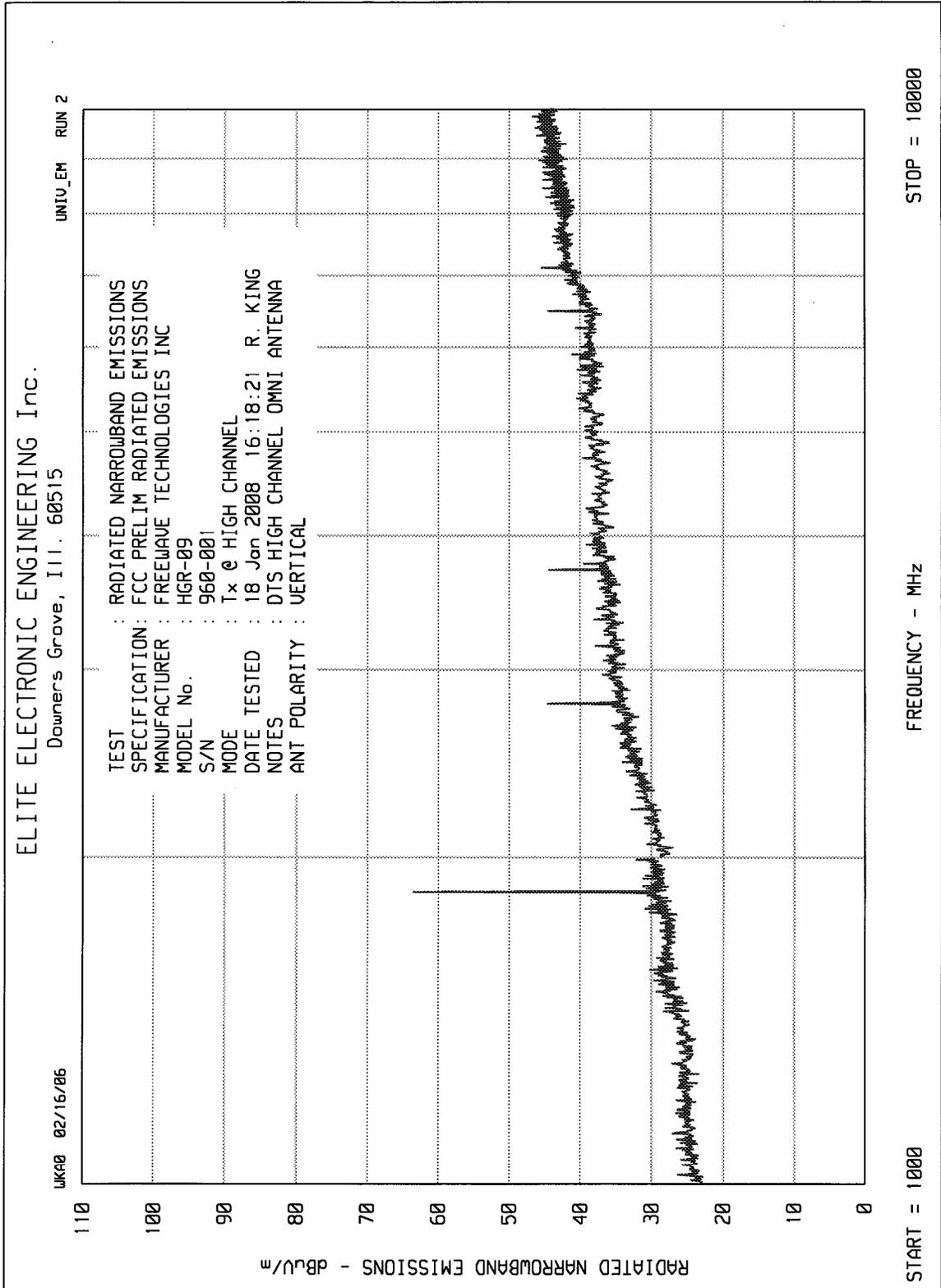


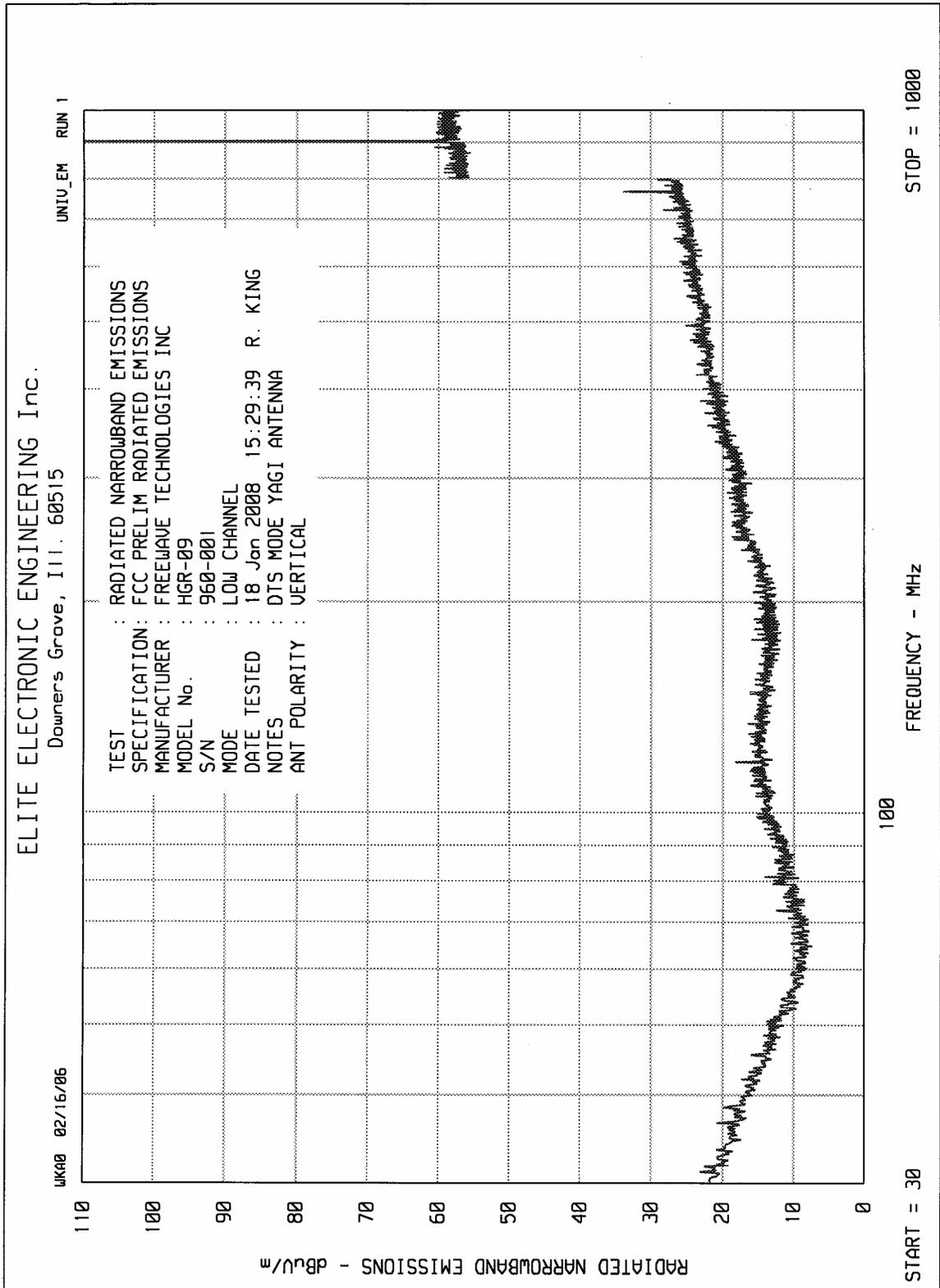


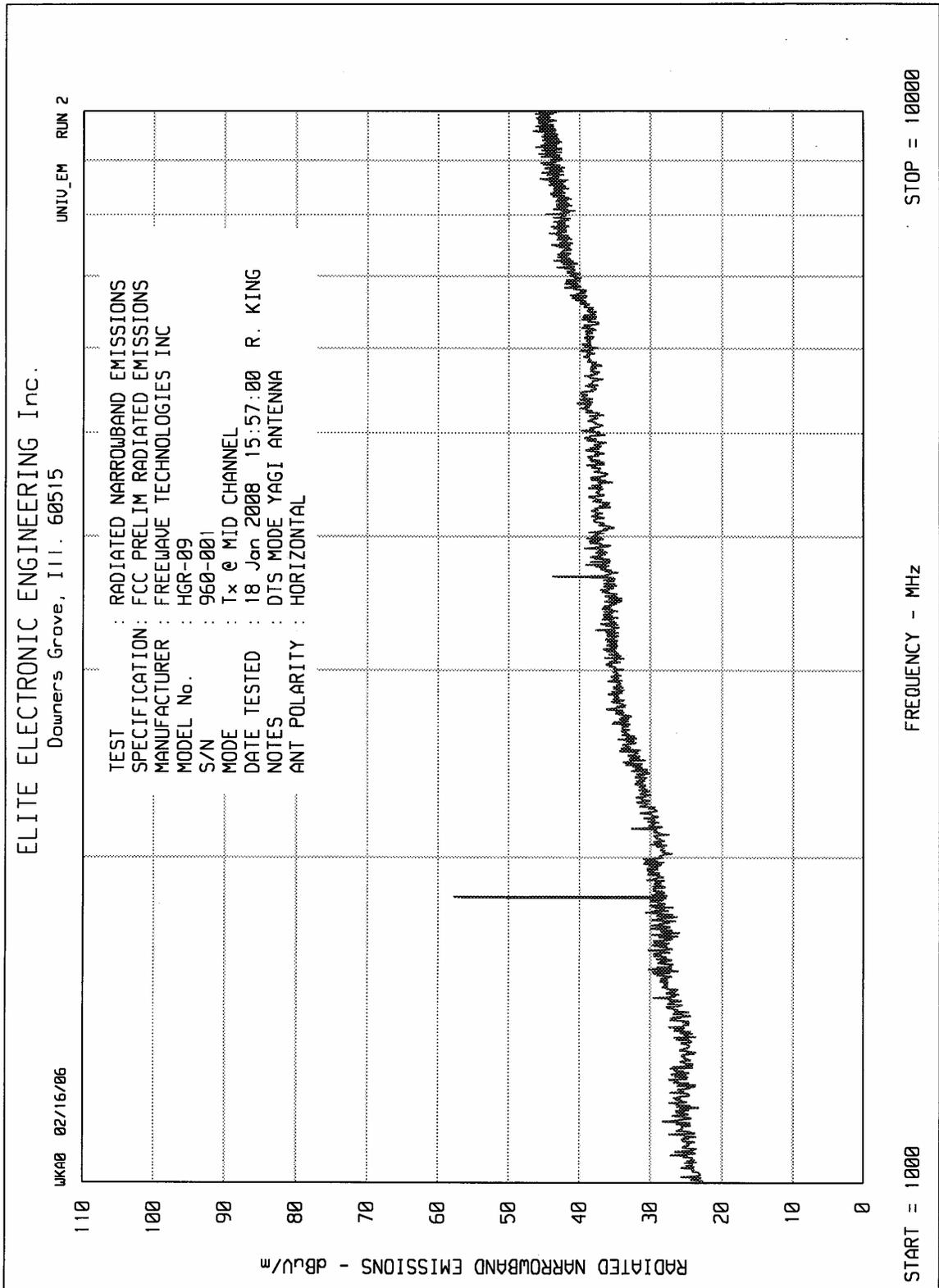


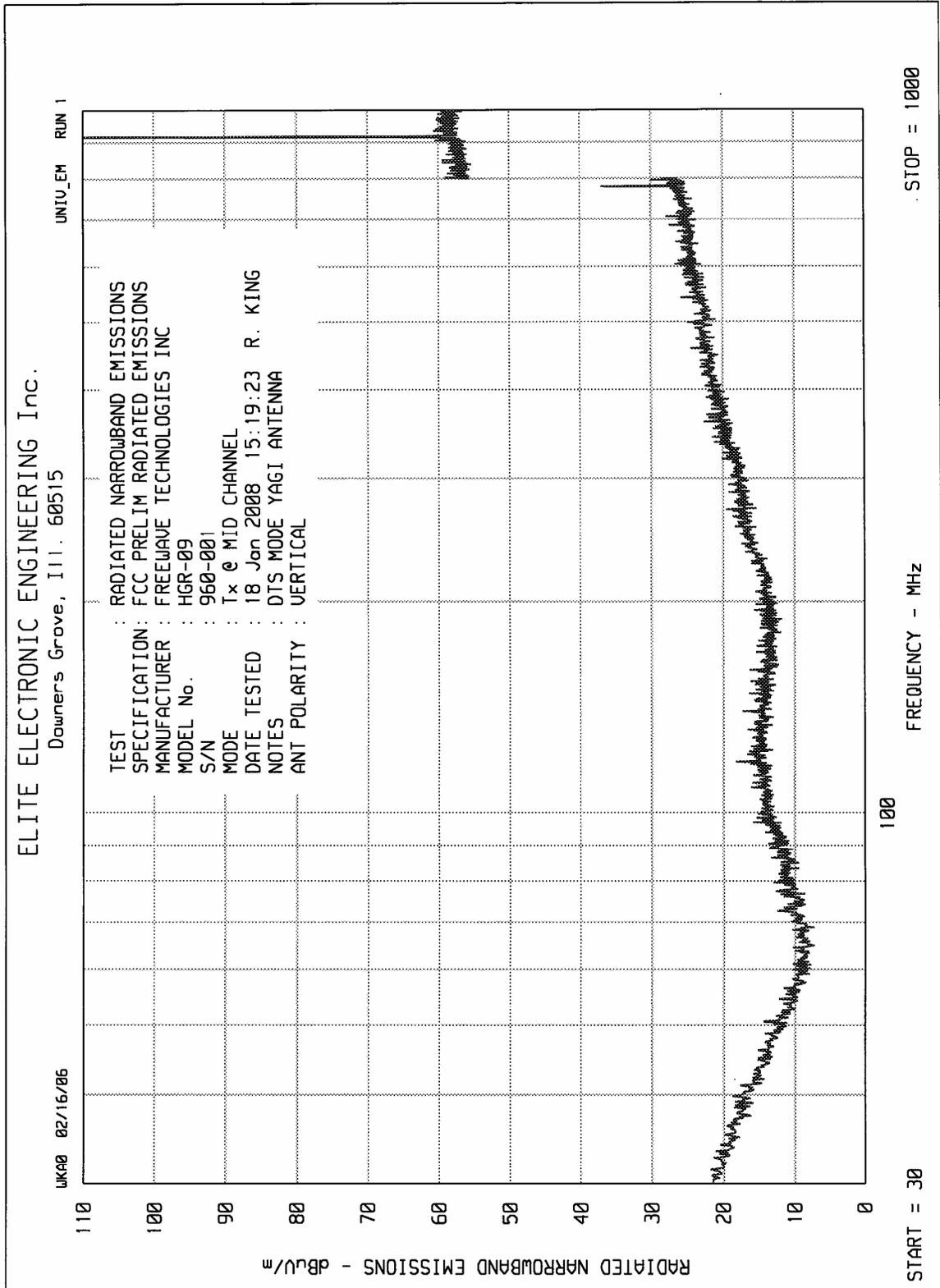


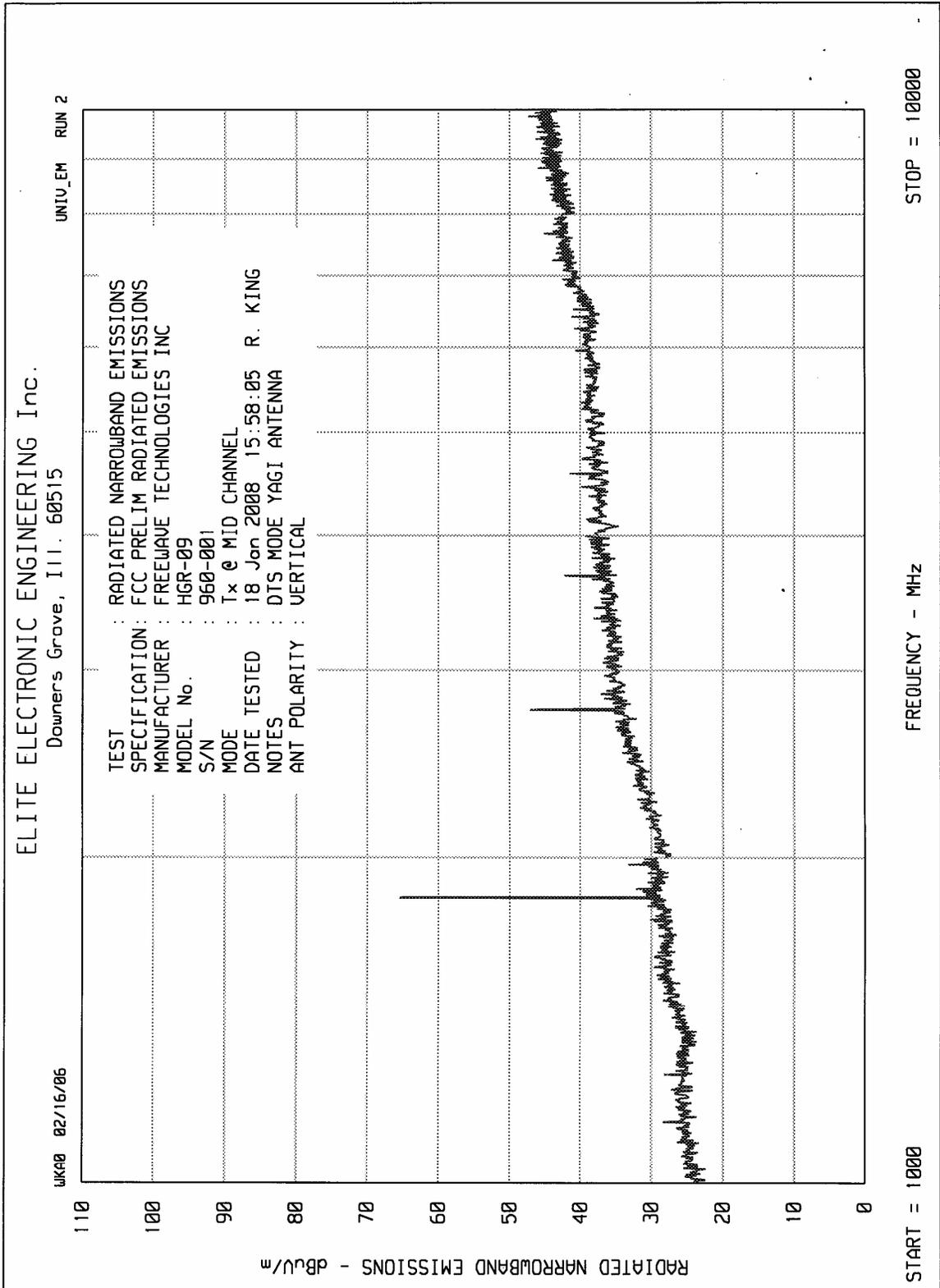


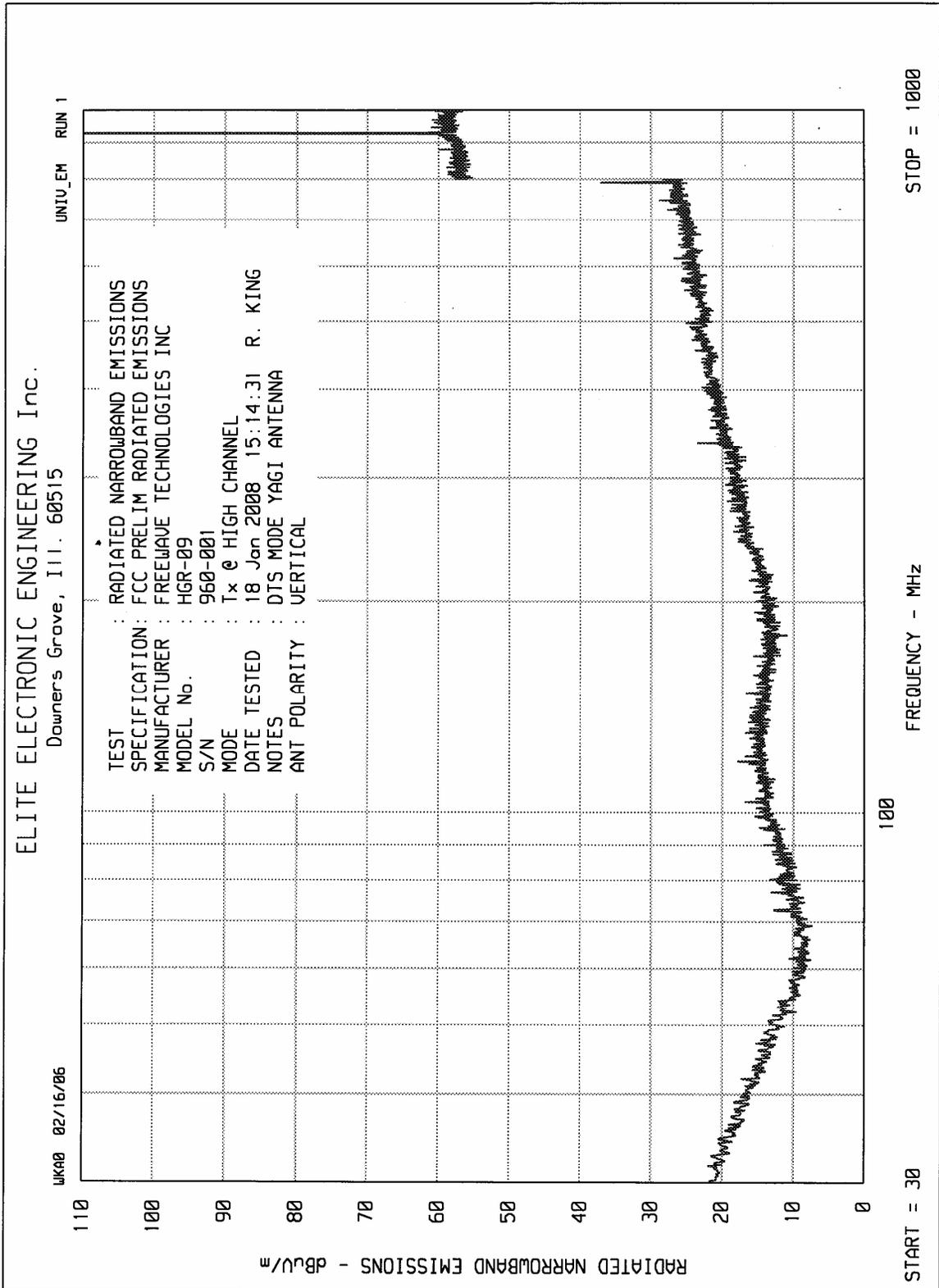


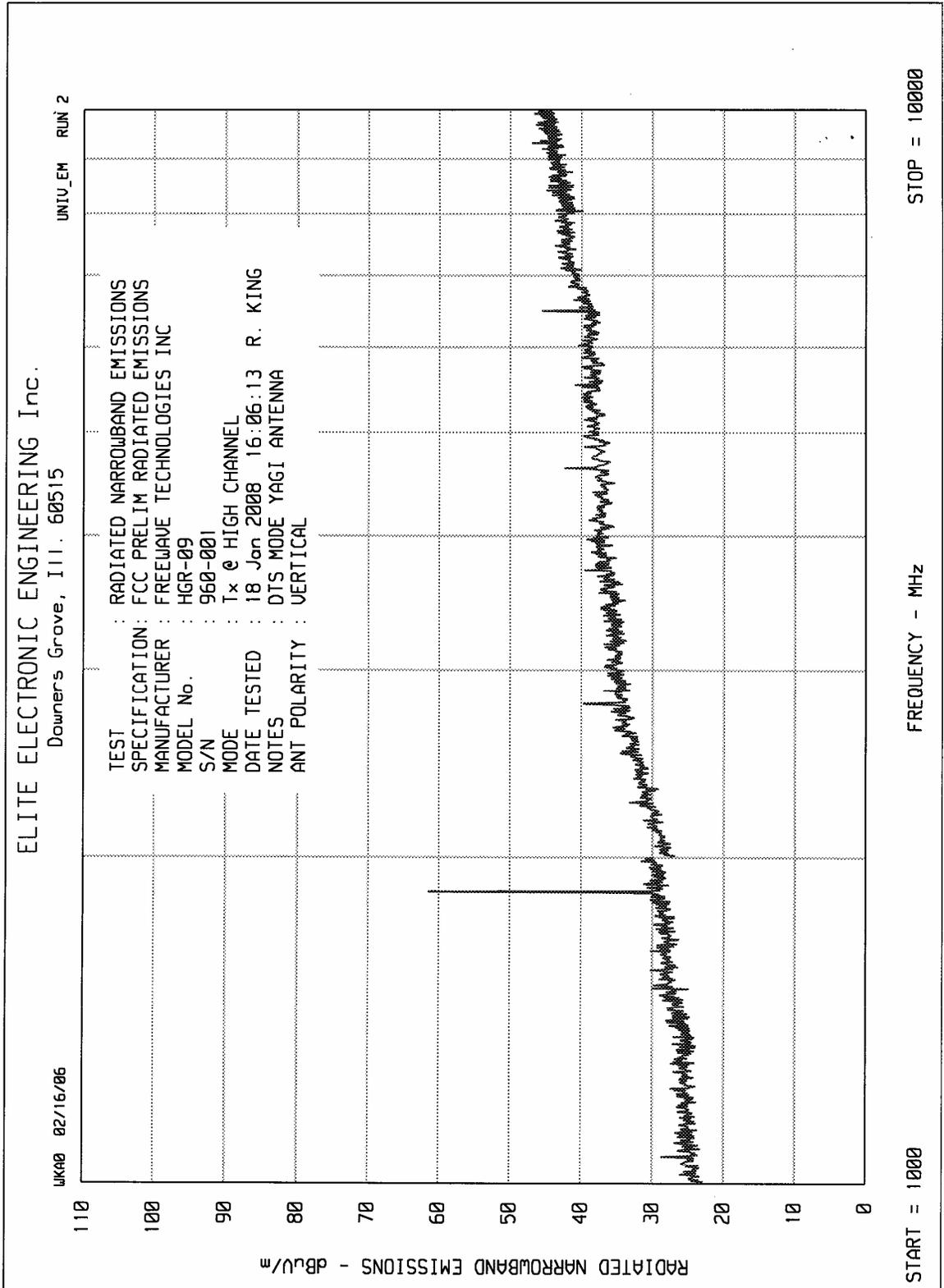














DATA PAGE

MANUFACTURER Freewave Technologies
 TEST ITEM Wireless Digital Transmission Transceiver
 SERIAL NO. 960-001
 SPECIFICATION 15.247 RADIATED SPURIOUS EMISSIONS
 MODE Tx @ Channel 4 (902.9376MHz)
 DATE January 15, 2008
 NOTES TEST DISTANCE IS 3 METERS
 ANTENNA Omni Antenna

FREQ. (MHz)	ANT POL	MTR RDG dBuV	AMBIENT	CABLE LOSS dB	ANT FAC dB	PRE AMP dB	DUTY CYCLE dB	PEAK TOTAL dBuV/m	PEAK TOTAL uV/m	PEAK LIMIT uV
2708.81	H	27.1		3.7	29.7	0.0	0.0	60.6	1074.0	5000.0
2708.81	V	27.8		3.7	29.7	0.0	0.0	61.3	1160.1	5000.0
3611.75	H	28.3		4.4	32.3	0.0	0.0	65.0	1773.5	5000.0
3611.75	V	29.9		4.4	32.3	0.0	0.0	66.6	2139.5	5000.0
4514.69	H	21.8		4.8	33.0	0.0	0.0	59.6	951.3	5000.0
4514.69	V	27.8		4.8	33.0	0.0	0.0	65.6	1900.3	5000.0
5417.63	H	16.3	*	5.2	34.7	0.0	0.0	56.2	648.0	5000.0
5417.63	V	16.6	*	5.2	34.7	0.0	0.0	56.5	669.3	5000.0
8126.44	H	28.5	*	7.1	37.7	0.0	0.0	73.3	4607.8	5000.0
8126.44	V	28.6	*	7.1	37.7	0.0	0.0	73.4	4682.6	5000.0
9029.38	H	27.8	*	7.5	38.1	0.0	0.0	73.4	4685.5	5000.0
9029.38	V	27.3	*	7.5	38.1	0.0	0.0	72.9	4408.1	5000.0

Checked By: *RICHARD E. KING*

Richard E. King



DATA PAGE

MANUFACTURER Freewave Technologies
 TEST ITEM Wireless Digital Transmission Transceiver
 SERIAL NO. 960-001
 SPECIFICATION 15.247 RADIATED SPURIOUS EMISSIONS
 MODE Tx @ Channel 4 (902.9376MHz)
 DATE January 15, 2008
 NOTES TEST DISTANCE IS 3 METERS
 ANTENNA Omni Antenna

FREQ. (MHz)	ANT POL	MTR RDG dBuV	AMBIENT	CABLE LOSS dB	ANT FAC dB	PRE AMP dB	DUTY CYCLE dB	AVG TOTAL dBuV/m	AVG TOTAL uV/m	AVG LIMIT uV
2708.81	H	12.4		3.7	29.7	0.0	-29.2	16.7	6.8	500.0
2708.81	V	13.1		3.7	29.7	0.0	-29.2	17.4	7.4	500.0
3611.75	H	14.4		4.4	32.3	0.0	-29.2	21.9	12.5	500.0
3611.75	V	19.2		4.4	32.3	0.0	-29.2	26.6	21.4	500.0
4514.69	H	10.9		4.8	33.0	0.0	-29.2	19.5	9.4	500.0
4514.69	V	17.4		4.8	33.0	0.0	-29.2	25.9	19.8	500.0
5417.63	H	14.8	*	5.2	34.7	0.0	-29.2	25.5	18.9	500.0
5417.63	V	14.7	*	5.2	34.7	0.0	-29.2	25.4	18.6	500.0
8126.44	H	15.9	*	7.1	37.7	0.0	-29.2	31.5	37.4	500.0
8126.44	V	15.9	*	7.1	37.7	0.0	-29.2	31.5	37.5	500.0
9029.38	H	15.0	*	7.5	38.1	0.0	-29.2	31.4	37.3	500.0
9029.38	V	15.0	*	7.5	38.1	0.0	-29.2	31.4	37.0	500.0

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DATA PAGE

MANUFACTURER Freewave Technologies
 TEST ITEM Wireless Digital Transmission Transceiver
 SERIAL NO. 960-001
 SPECIFICATION 15.247 RADIATED SPURIOUS EMISSIONS
 MODE Tx @ Channel 4 (902.9376MHz)
 DATE January 15, 2008
 NOTES TEST DISTANCE IS 3 METERS
 ANTENNA YAGI Antenna

FREQ. (MHz)	ANT POL	MTR RDG dBuV	AMBIENT	CABLE LOSS dB	ANT FAC dB	PRE AMP dB	DUTY CYCLE dB	PEAK TOTAL dBuV/m	PEAK TOTAL uV/m	PEAK LIMIT uV
2708.8	H	27.4		3.7	29.7	0.0	0.0	60.9	1109.2	5000.0
2708.8	V	28.4		3.7	29.7	0.0	0.0	61.8	1237.3	5000.0
3611.8	H	27.8		4.4	32.3	0.0	0.0	64.5	1676.2	5000.0
3611.8	V	28.0		4.4	32.3	0.0	0.0	64.6	1703.4	5000.0
4514.7	H	28.1		4.8	33.0	0.0	0.0	65.9	1964.8	5000.0
4514.7	V	32.6		4.8	33.0	0.0	0.0	70.4	3302.4	5000.0
5417.6	H	30.9	*	5.2	34.7	0.0	0.0	70.8	3476.2	5000.0
5417.6	V	30.7	*	5.2	34.7	0.0	0.0	70.6	3397.1	5000.0
8126.4	H	28.7	*	7.1	37.7	0.0	0.0	73.5	4753.2	5000.0
8126.4	V	28.6	*	7.1	37.7	0.0	0.0	73.4	4677.3	5000.0
9029.4	H	28.1	*	7.5	38.1	0.0	0.0	73.7	4850.1	5000.0
9029.4	V	28.0	*	7.5	38.1	0.0	0.0	73.6	4767.1	5000.0

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DATA PAGE

MANUFACTURER Freewave Technologies
 TEST ITEM Wireless Digital Transmission Transceiver
 SERIAL NO. 960-001
 SPECIFICATION 15.247 RADIATED SPURIOUS EMISSIONS
 MODE Tx @ Channel 4 (902.9376MHz)
 DATE January 15, 2008
 NOTES TEST DISTANCE IS 3 METERS
 ANTENNA YAGI Antenna

FREQ. (MHz)	ANT POL	MTR RDG dBuV	AMBIENT	CABLE LOSS dB	ANT FAC dB	PRE AMP dB	DUTY CYCLE dB	AVG TOTAL dBuV/m	AVG TOTAL uV/m	AVG LIMIT uV
2708.8	H	14.5		3.7	29.7	0.0	-29.2	18.7	8.6	500.0
2708.8	V	17.0		3.7	29.7	0.0	-29.2	21.3	11.7	500.0
3611.8	H	15.1		4.4	32.3	0.0	-29.2	22.5	13.4	500.0
3611.8	V	15.4		4.4	32.3	0.0	-29.2	22.8	13.9	500.0
4514.7	H	13.0		4.8	33.0	0.0	-29.2	21.6	12.0	500.0
4514.7	V	21.8		4.8	33.0	0.0	-29.2	30.3	32.8	500.0
5417.6	H	11.3	*	5.2	34.7	0.0	-29.2	22.0	12.7	500.0
5417.6	V	12.0	*	5.2	34.7	0.0	-29.2	22.7	13.7	500.0
8126.4	H	15.9	*	7.1	37.7	0.0	-29.2	31.5	37.5	500.0
8126.4	V	15.9	*	7.1	37.7	0.0	-29.2	31.5	37.5	500.0
9029.4	H	15.0	*	7.5	38.1	0.0	-29.2	31.4	37.3	500.0
9029.4	V	14.9	*	7.5	38.1	0.0	-29.2	31.3	36.9	500.0

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Richard E. King



DATA PAGE

MANUFACTURER Freewave Technologies
 TEST ITEM Wireless Digital Transmission Transceiver
 SERIAL NO. 960-001
 SPECIFICATION 15.247 RADIATED SPURIOUS EMISSIONS
 MODE Tx @ Channel 59 (915.6096MHz)
 DATE January 15, 2008
 NOTES TEST DISTANCE IS 3 METERS
 ANTENNA OMNI Antenna

FREQ. (MHz)	ANT POL	MTR RDG dBuV	AMBIENT	CABLE LOSS dB	ANT FAC dB	PRE AMP dB	DUTY CYCLE dB	PEAK TOTAL dBuV/m	PEAK TOTAL uV/m	PEAK LIMIT uV
2746.8	H	16.6		3.8	29.8	0.0	0.0	50.2	324.2	5000.0
2746.8	V	17.5		3.8	29.8	0.0	0.0	51.2	361.7	5000.0
3662.4	H	14.7		4.4	32.4	0.0	0.0	51.5	375.6	5000.0
3662.4	V	14.5		4.4	32.4	0.0	0.0	51.4	370.4	5000.0
4578.0	H	15.9		4.8	33.2	0.0	0.0	53.9	494.5	5000.0
4578.0	V	14.8		4.8	33.2	0.0	0.0	52.8	435.1	5000.0
7324.9	H	28.5	*	6.7	37.3	0.0	0.0	72.5	4206.5	5000.0
7324.9	V	28.6	*	6.7	37.3	0.0	0.0	72.6	4274.8	5000.0
8240.5	H	28.3	*	7.1	37.8	0.0	0.0	73.3	4630.7	5000.0
8240.5	V	27.9	*	7.1	37.8	0.0	0.0	72.9	4417.2	5000.0
9156.1	H	27.0	*	7.5	38.1	0.0	0.0	72.6	4248.6	5000.0
9156.1	V	26.7	*	7.5	38.1	0.0	0.0	72.3	4118.5	5000.0

Checked By: *RICHARD E. KING*

Richard E. King



DATA PAGE

MANUFACTURER Freewave Technologies
 TEST ITEM Wireless Digital Transmission Transceiver
 SERIAL NO. 960-001
 SPECIFICATION 15.247 RADIATED SPURIOUS EMISSIONS
 MODE Tx @ Channel 59 (915.6096MHz)
 DATE January 15, 2008
 NOTES TEST DISTANCE IS 3 METERS
 ANTENNA OMNI Antenna

FREQ. (MHz)	ANT POL	MTR RDG dBuV	AMBIENT	CABLE LOSS dB	ANT FAC dB	PRE AMP dB	DUTY CYCLE dB	AVG TOTAL dBuV/m	AVG TOTAL uV/m	AVG LIMIT uV
2746.8	H	5.4		3.8	29.8	0.0	-29.2	9.8	3.1	500.0
2746.8	V	6.1		3.8	29.8	0.0	-29.2	10.5	3.3	500.0
3662.4	H	2.0		4.4	32.4	0.0	-29.2	9.6	3.0	500.0
3662.4	V	1.7		4.4	32.4	0.0	-29.2	9.4	2.9	500.0
4578.0	H	1.9		4.8	33.2	0.0	-29.2	10.7	3.4	500.0
4578.0	V	2.5		4.8	33.2	0.0	-29.2	11.3	3.7	500.0
7324.9	H	16.5	*	6.7	37.3	0.0	-29.2	31.3	36.9	500.0
7324.9	V	16.6	*	6.7	37.3	0.0	-29.2	31.4	37.4	500.0
8240.5	H	15.9	*	7.1	37.8	0.0	-29.2	31.7	38.4	500.0
8240.5	V	15.9	*	7.1	37.8	0.0	-29.2	31.7	38.5	500.0
9156.1	H	14.8	*	7.5	38.1	0.0	-29.2	31.1	36.0	500.0
9156.1	V	14.7	*	7.5	38.1	0.0	-29.2	31.1	35.7	500.0

Checked By: *RICHARD E. KING*
 Richard E. King



DATA PAGE

MANUFACTURER Freewave Technologies
 TEST ITEM Wireless Digital Transmission Transceiver
 SERIAL NO. 960-001
 SPECIFICATION 15.247 RADIATED SPURIOUS EMISSIONS
 MODE Tx @ Channel 59 (915.6096MHz)
 DATE January 15, 2008
 NOTES TEST DISTANCE IS 3 METERS
 ANTENNA YAGI Antenna

FREQ. (MHz)	ANT POL	MTR RDG dBuV	AMBIENT	CABLE LOSS dB	ANT FAC dB	PRE AMP dB	DUTY CYCLE dB	PEAK TOTAL dBuV/m	PEAK TOTAL uV/m	PEAK LIMIT uV
2746.8	H	25.4		3.8	29.8	0.0	0.0	59.0	888.8	5000.0
2746.8	V	25.9		3.8	29.8	0.0	0.0	59.5	946.9	5000.0
3662.4	H	28.1		4.4	32.4	0.0	0.0	64.9	1760.8	5000.0
3662.4	V	28.9		4.4	32.4	0.0	0.0	65.7	1937.4	5000.0
4578.0	H	25.9		4.8	33.2	0.0	0.0	63.9	1563.6	5000.0
4578.0	V	30.5		4.8	33.2	0.0	0.0	68.5	2667.7	5000.0
7324.9	H	29.4	*	6.7	37.3	0.0	0.0	73.4	4698.1	5000.0
7324.9	V	29.2	*	6.7	37.3	0.0	0.0	73.2	4559.5	5000.0
8240.5	H	28.4	*	7.1	37.8	0.0	0.0	73.3	4641.3	5000.0
8240.5	V	28.8	*	7.1	37.8	0.0	0.0	73.7	4865.7	5000.0
9156.1	H	27.6	*	7.5	38.1	0.0	0.0	73.1	4521.1	5000.0
9156.1	V	28.4	*	7.5	38.1	0.0	0.0	73.9	4963.0	5000.0

Checked By: *RICHARD E. KING*

Richard E. King



DATA PAGE

MANUFACTURER Freewave Technologies
 TEST ITEM Wireless Digital Transmission Transceiver
 SERIAL NO. 960-001
 SPECIFICATION 15.247 RADIATED SPURIOUS EMISSIONS
 MODE Tx @ Channel 59 (915.6096MHz)
 DATE January 15, 2008
 NOTES TEST DISTANCE IS 3 METERS
 ANTENNA YAGI Antenna

FREQ. (MHz)	ANT POL	MTR RDG dBuV	AMBIENT	CABLE LOSS dB	ANT FAC dB	PRE AMP dB	DUTY CYCLE dB	AVG TOTAL dBuV/m	AVG TOTAL uV/m	AVG LIMIT uV
2746.8	H	11.99		3.8	29.8	0.0	-29.2	16.4	6.6	500.0
2746.8	V	12.63		3.8	29.8	0.0	-29.2	17.1	7.1	500.0
3662.4	H	15.77		4.4	32.4	0.0	-29.2	23.4	14.8	500.0
3662.4	V	16.18		4.4	32.4	0.0	-29.2	23.8	15.5	500.0
4578.0	H	12.97		4.8	33.2	0.0	-29.2	21.8	12.2	500.0
4578.0	V	18.15		4.8	33.2	0.0	-29.2	26.9	22.2	500.0
7324.9	H	16.71	*	6.7	37.3	0.0	-29.2	31.5	37.7	500.0
7324.9	V	16.70	*	6.7	37.3	0.0	-29.2	31.5	37.6	500.0
8240.5	H	15.92	*	7.1	37.8	0.0	-29.2	31.7	38.4	500.0
8240.5	V	15.93	*	7.1	37.8	0.0	-29.2	31.7	38.5	500.0
9156.1	H	14.78	*	7.5	38.1	0.0	-29.2	31.1	36.0	500.0
9156.1	V	14.88	*	7.5	38.1	0.0	-29.2	31.2	36.5	500.0

Checked By: *RICHARD E. KING*

Richard E. King



DATA PAGE

MANUFACTURER Freewave Technologies
 TEST ITEM Wireless Digital Transmission Transceiver
 SERIAL NO. 960-001
 SPECIFICATION 15.247 RADIATED SPURIOUS EMISSIONS
 MODE Tx @ Channel 109 (927.1296MHz)
 DATE January 15, 2008
 NOTES TEST DISTANCE IS 3 METERS
 ANTENNA OMNI Antenna

FREQ. (MHz)	ANT POL	MTR RDG dBuV	AMBIENT	CABLE LOSS dB	ANT FAC dB	PRE AMP dB	DUTY CYCLE dB	PEAK TOTAL dBuV/m	PEAK TOTAL uV/m	PEAK LIMIT uV
2781.4	H	18.9		3.8	29.9	0.0	0.0	52.6	428.0	5000.0
2781.4	V	19.7		3.8	29.9	0.0	0.0	53.4	467.7	5000.0
3708.5	H	23.1		4.4	32.6	0.0	0.0	60.1	1006.4	5000.0
3708.5	V	24.6		4.4	32.6	0.0	0.0	61.6	1204.4	5000.0
4635.6	H	20.0		4.9	33.3	0.0	0.0	58.2	812.6	5000.0
4635.6	V	23.5		4.9	33.3	0.0	0.0	61.6	1208.8	5000.0
7417.0	H	28.1	*	6.7	37.5	0.0	0.0	72.3	4108.8	5000.0
7417.0	V	27.5	*	6.7	37.5	0.0	0.0	71.7	3865.6	5000.0
8344.2	H	27.4	*	7.2	37.9	0.0	0.0	72.5	4230.6	5000.0
8344.2	V	26.7	*	7.2	37.9	0.0	0.0	71.9	3921.1	5000.0

Checked By: *RICHARD E. KING*

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MANUFACTURER Freewave Technologies
 TEST ITEM Wireless Digital Transmission Transceiver
 SERIAL NO. 960-001
 SPECIFICATION 15.247 RADIATED SPURIOUS EMISSIONS
 MODE Tx @ Channel 109 (927.1296MHz)
 DATE January 15, 2008
 NOTES TEST DISTANCE IS 3 METERS
 ANTENNA OMNI Antenna

FREQ. (MHz)	ANT POL	MTR RDG dBuV	AMBIENT	CABLE LOSS dB	ANT FAC dB	PRE AMP dB	DUTY CYCLE dB	AVG TOTAL dBuV/m	AVG TOTAL uV/m	AVG LIMIT uV
2781.4	H	7.0		3.8	29.9	0.0	-29.2	11.5	3.8	500.0
2781.4	V	9.8		3.8	29.9	0.0	-29.2	14.3	5.2	500.0
3708.5	H	13.0		4.4	32.6	0.0	-29.2	20.7	10.9	500.0
3708.5	V	15.3		4.4	32.6	0.0	-29.2	23.1	14.3	500.0
4635.6	H	8.3		4.9	33.3	0.0	-29.2	17.2	7.3	500.0
4635.6	V	11.1		4.9	33.3	0.0	-29.2	20.0	10.0	500.0
7417.0	H	16.0	*	6.7	37.5	0.0	-29.2	31.0	35.3	500.0
7417.0	V	16.0	*	6.7	37.5	0.0	-29.2	31.0	35.3	500.0
8344.2	H	15.0	*	7.2	37.9	0.0	-29.2	31.0	35.4	500.0
8344.2	V	15.1	*	7.2	37.9	0.0	-29.2	31.0	35.6	500.0

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MANUFACTURER Freewave Technologies
 TEST ITEM Wireless Digital Transmission Transceiver
 SERIAL NO. 960-001
 SPECIFICATION 15.247 RADIATED SPURIOUS EMISSIONS
 MODE Tx @ Channel 109 (927.1296MHz)
 DATE January 15, 2008
 NOTES TEST DISTANCE IS 3 METERS
 ANTENNA YAGI Antenna

FREQ. (MHz)	ANT POL	MTR RDG dBuV	AMBIENT	CABLE LOSS dB	ANT FAC dB	PRE AMP dB	DUTY CYCLE dB	PEAK TOTAL dBuV/m	PEAK TOTAL uV/m	PEAK LIMIT uV
2781.4	H	26.9		3.8	29.9	0.0	0.0	60.6	1075.1	5000.0
2781.4	V	25.9		3.8	29.9	0.0	0.0	59.6	960.4	5000.0
3708.5	H	26.8		4.4	32.6	0.0	0.0	63.7	1535.6	5000.0
3708.5	V	27.6		4.4	32.6	0.0	0.0	64.5	1683.8	5000.0
4635.6	H	25.3		4.9	33.3	0.0	0.0	63.5	1495.8	5000.0
4635.6	V	26.7		4.9	33.3	0.0	0.0	64.9	1755.4	5000.0
7417.0	H	28.8	*	6.7	37.5	0.0	0.0	73.0	4469.0	5000.0
7417.0	V	28.4	*	6.7	37.5	0.0	0.0	72.6	4267.9	5000.0
8344.2	H	27.2	*	7.2	37.9	0.0	0.0	72.3	4134.3	5000.0
8344.2	V	27.1	*	7.2	37.9	0.0	0.0	72.2	4087.0	5000.0

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MANUFACTURER Freewave Technologies
 TEST ITEM Wireless Digital Transmission Transceiver
 SERIAL NO. 960-001
 SPECIFICATION 15.247 RADIATED SPURIOUS EMISSIONS
 MODE Tx @ Channel 109 (927.1296MHz)
 DATE January 15, 2008
 NOTES TEST DISTANCE IS 3 METERS
 ANTENNA YAGI Antenna

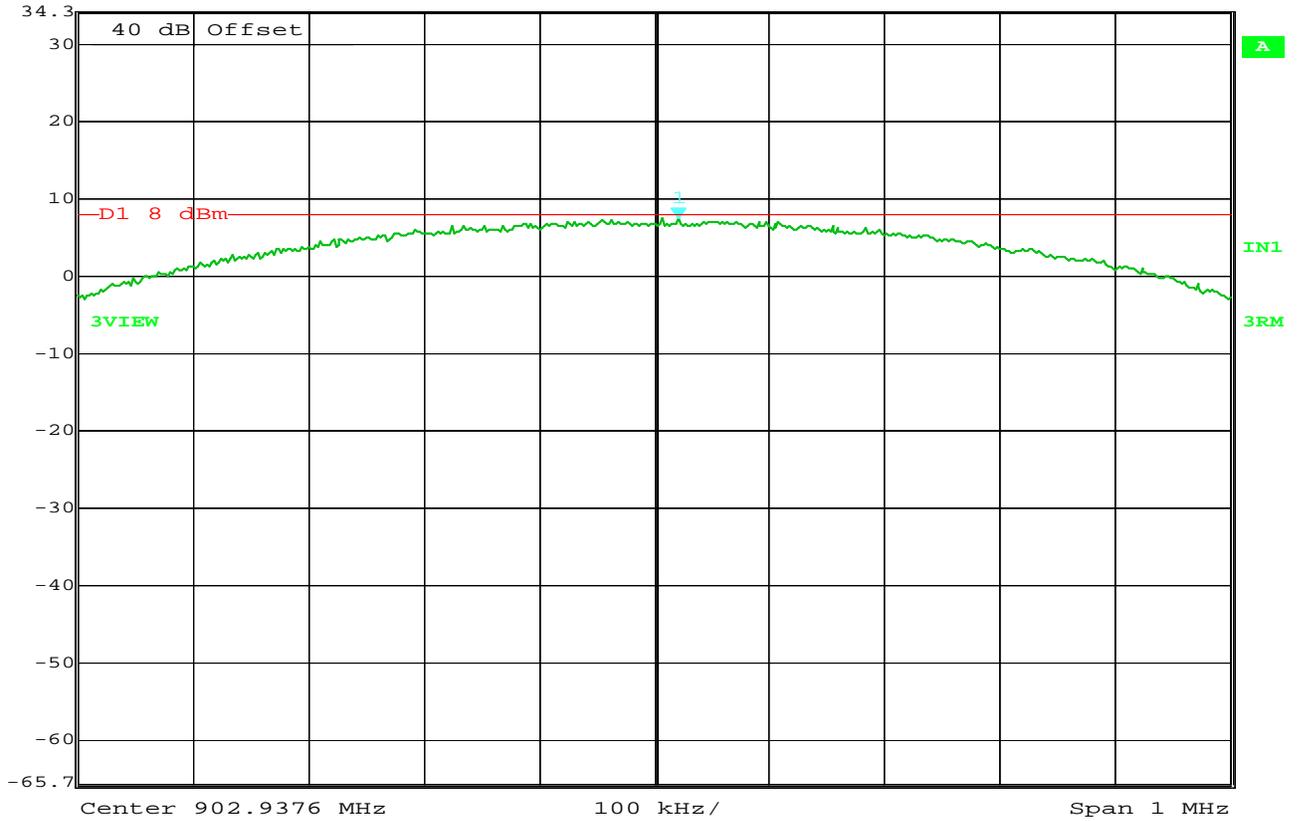
FREQ. (MHz)	ANT POL	MTR RDG dBuV	AMBIENT	CABLE LOSS dB	ANT FAC dB	PRE AMP dB	DUTY CYCLE dB	AVG TOTAL dBuV/m	AVG TOTAL uV/m	AVG LIMIT uV
2781.4	H	12.0		3.8	29.9	0.0	-29.2	16.5	6.7	500.0
2781.4	V	12.7		3.8	29.9	0.0	-29.2	17.2	7.3	500.0
3708.5	H	13.2		4.4	32.6	0.0	-29.2	21.0	11.2	500.0
3708.5	V	15.3		4.4	32.6	0.0	-29.2	23.1	14.2	500.0
4635.6	H	11.2		4.9	33.3	0.0	-29.2	20.2	10.2	500.0
4635.6	V	13.2		4.9	33.3	0.0	-29.2	22.2	12.8	500.0
7417.0	H	16.0	*	6.7	37.5	0.0	-29.2	31.0	35.5	500.0
7417.0	V	16.0	*	6.7	37.5	0.0	-29.2	31.0	35.4	500.0
8344.2	H	15.0	*	7.2	37.9	0.0	-29.2	31.0	35.4	500.0
8344.2	V	15.1	*	7.2	37.9	0.0	-29.2	31.0	35.5	500.0

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Marker 1 [T3] RBW 3 kHz RF Att 20 dB
 Ref Lvl 7.46 dBm VBW 30 kHz
 34.3 dBm 902.95864208 MHz SWT 280 ms Unit dBm



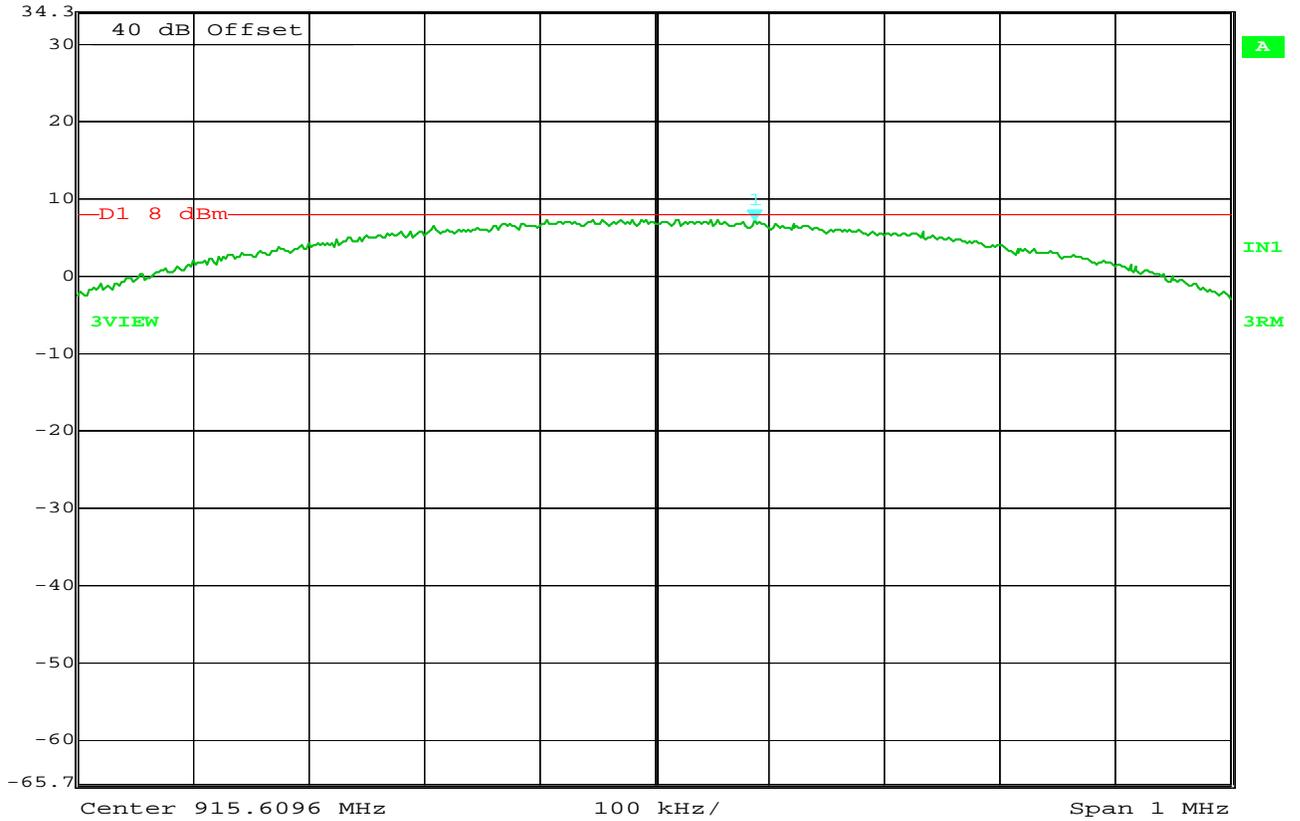
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MANUFACTURER : Freewave Technologies
 MODEL NUMBER : FGR2
 SERIAL NUMBER : 960-001
 TEST MODE : Power Spectral Density
 TEST PARAMETERS: Channel 4 (902.9376MHz)

NOTES



Marker 1 [T3] RBW 3 kHz RF Att 20 dB
 Ref Lvl 7.28 dBm VBW 30 kHz
 34.3 dBm 915.69677435 MHz SWT 280 ms Unit dBm



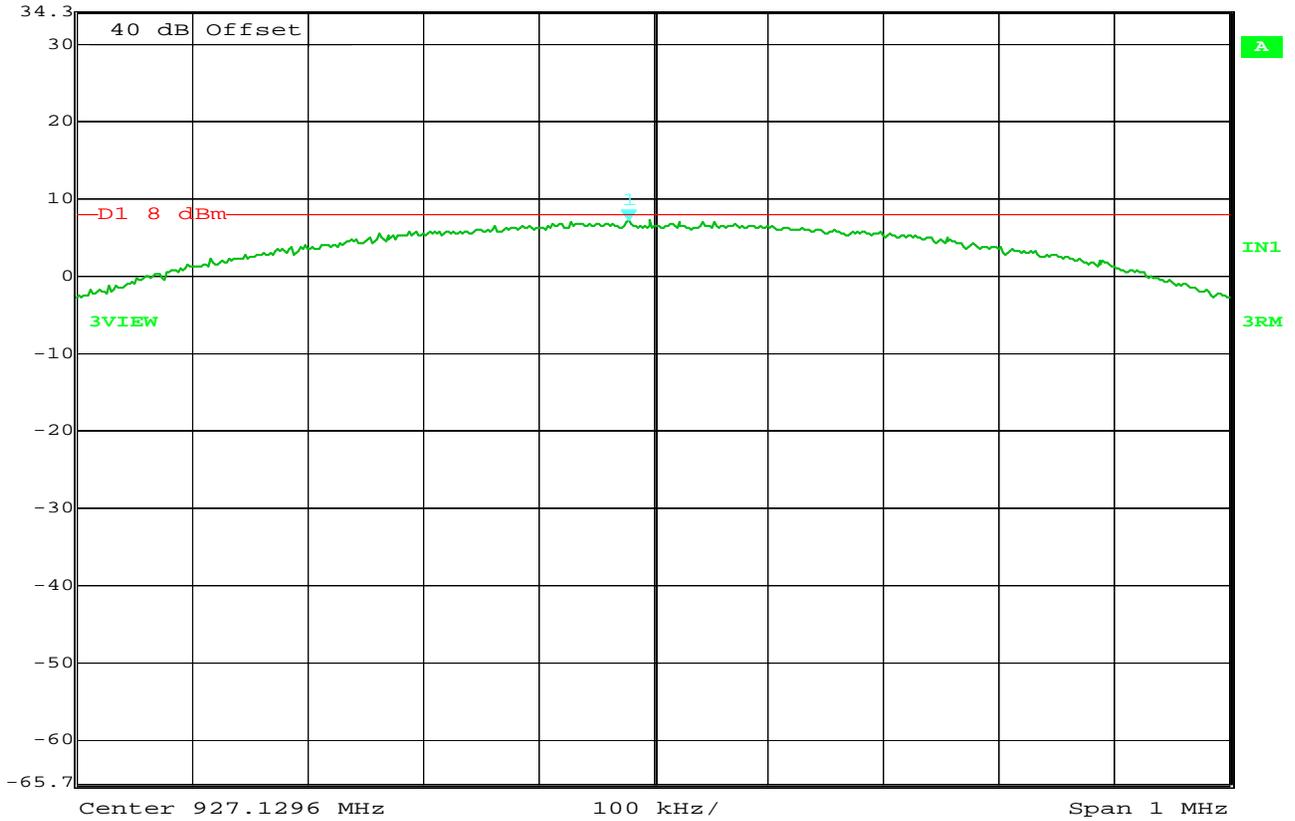
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MANUFACTURER : Freewave Technologies
 MODEL NUMBER : FGR2
 SERIAL NUMBER : 960-001
 TEST MODE : Power Spectral Density
 TEST PARAMETERS: Channel 59 (915.6096MHz)

NOTES



Marker 1 [T3] RBW 3 kHz RF Att 20 dB
 Ref Lvl 7.09 dBm VBW 30 kHz
 34.3 dBm 927.10855792 MHz SWT 280 ms Unit dBm



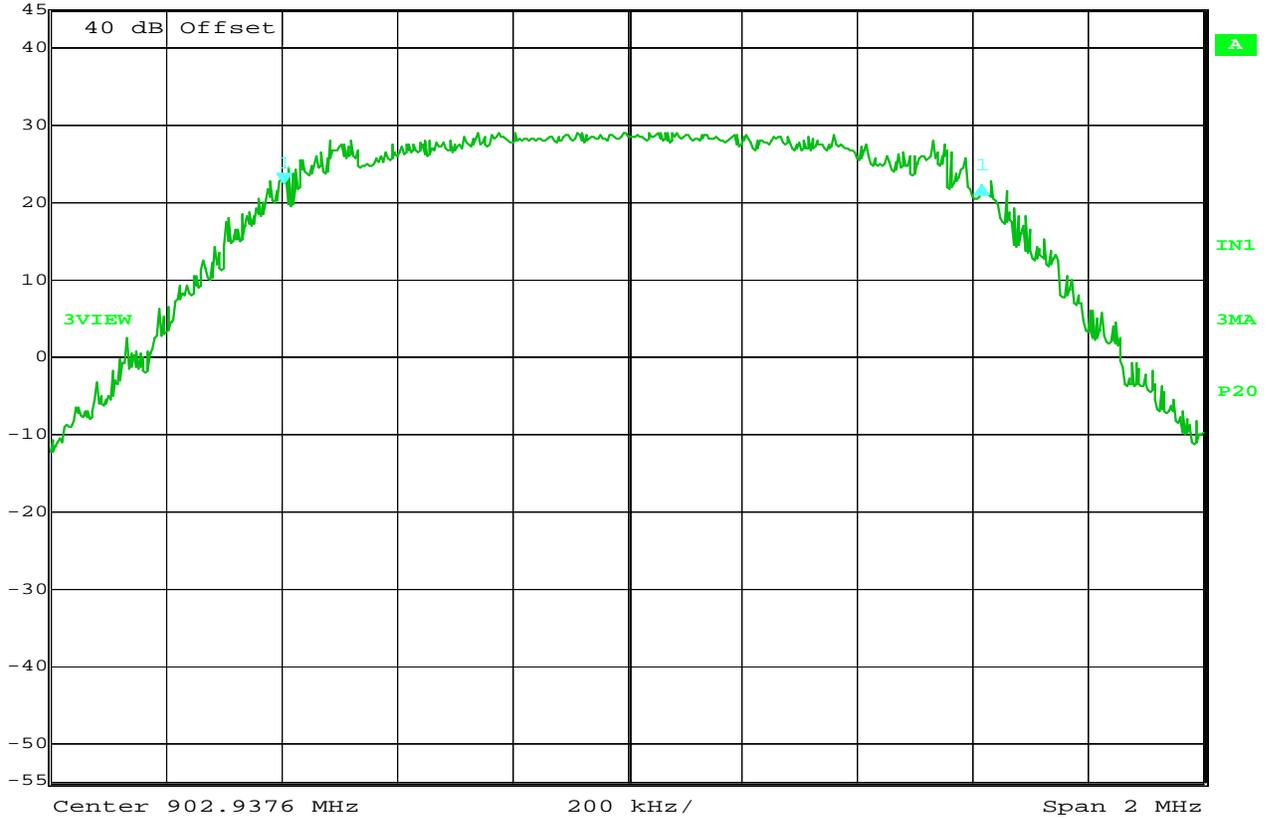
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MANUFACTURER : Freewave Technologies
 MODEL NUMBER : FGR2
 SERIAL NUMBER : 960-001
 TEST MODE : Power Spectral Density
 TEST PARAMETERS: Channel 109 (927.1296MHz)

NOTES



	Delta 1 [T3]	RBW	100 kHz	RF Att	40 dB
Ref Lvl	-0.22 dB	VBW	1 MHz		
45 dBm	1.21042084 MHz	SWT	5 ms	Unit	dBm



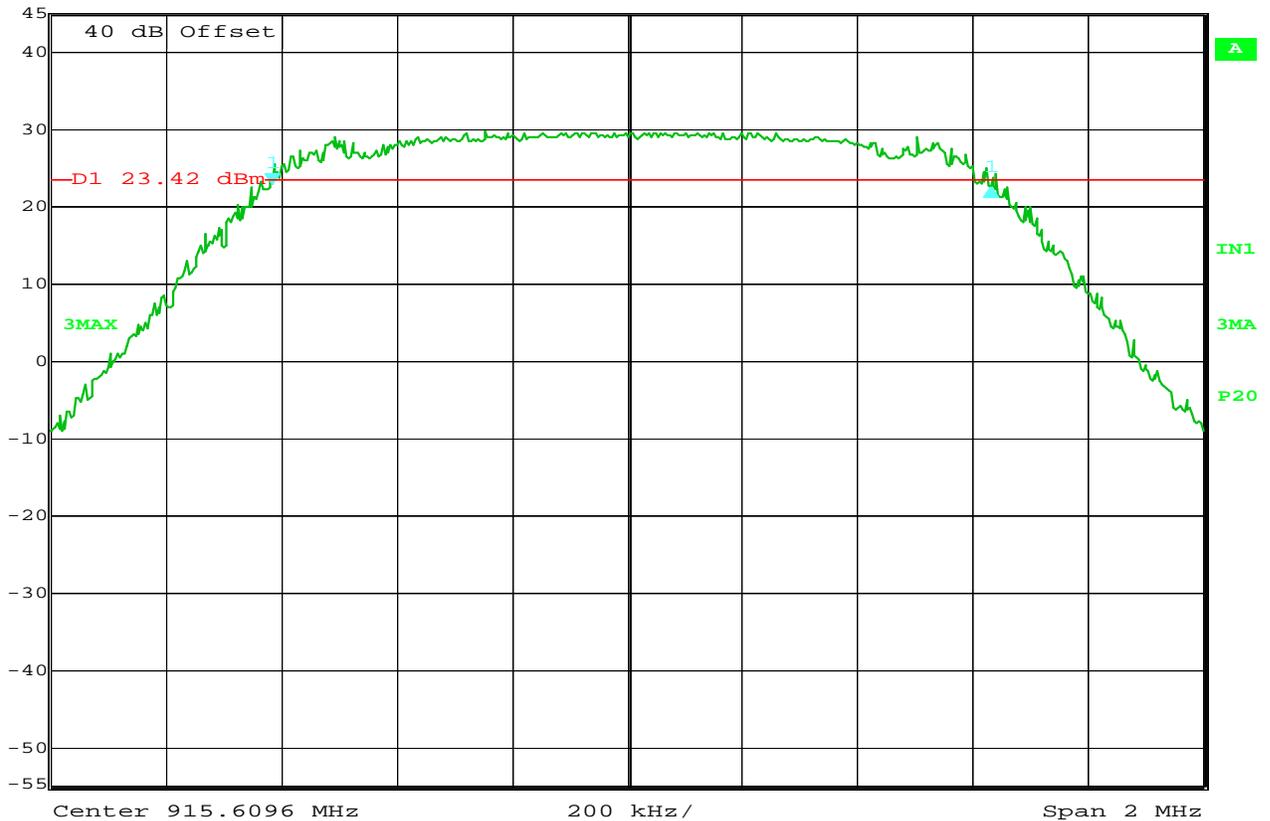
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MANUFACTURER : Freewave Technologies
 MODEL NUMBER : FGR2
 SERIAL NUMBER : 960-001
 TEST MODE : 6 dB Bandwidth
 TEST PARAMETERS: Channel 4 (902.9376MHz)

NOTES



Delta 1 [T3] RBW 100 kHz RF Att 40 dB
 Ref Lvl -0.37 dB VBW 1 MHz
 45 dBm 1.24649299 MHz SWT 5 ms Unit dBm



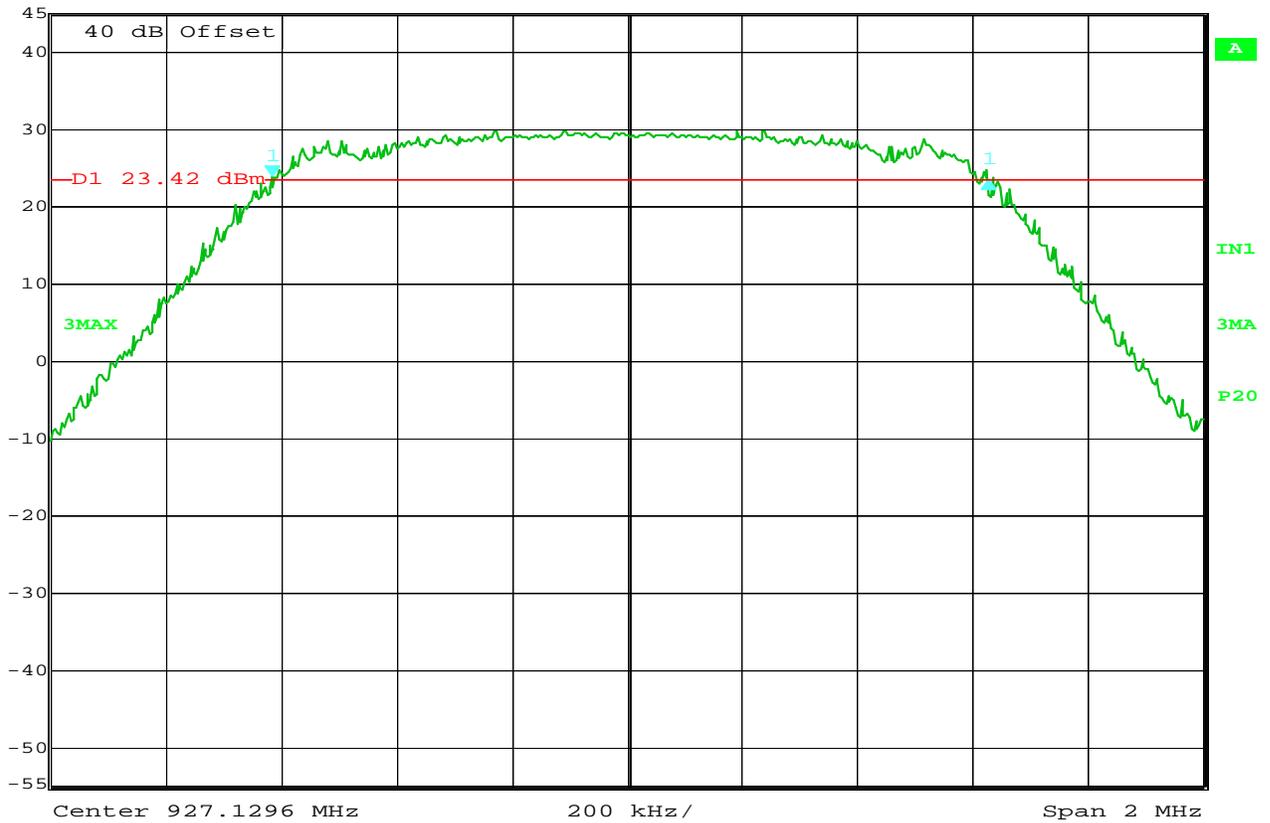
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MANUFACTURER : Freewave Technologies
 MODEL NUMBER : FGR2
 SERIAL NUMBER : 960-001
 TEST MODE : 6 dB Bandwidth
 TEST PARAMETERS: Channel 59 (915.6096MHz)

NOTES



Delta 1 [T3] RBW 100 kHz RF Att 40 dB
Ref Lvl 45 dBm -0.35 dB VBW 1 MHz
1.24248497 MHz SWT 5 ms Unit dBm



Date: 15.JAN.2008 16:03:06

MANUFACTURER : Freewave Technologies
MODEL NUMBER : FGR2
SERIAL NUMBER : 960-001
TEST MODE : 6 dB Bandwidth
TEST PARAMETERS: Channel 109 (927.1296MHz)

NOTES



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MANUFACTURER : Freewave Technologies
MODEL NO. : FGR2
SERIAL NO. : 960-001
SPECIFICATION : FCC 15.247 Digital Transmission Systems
TEST PERFORMED : RF Output Power
DATE : December 18, 2007
NOTES :

UNIT	Rated Power (Watts)	Frequency (MHz)	Meter Reading (dBm)	Attenuation (dB)	Total (dBm)	Limit (dBm)	Total (Watts)	Limit (Watts)
FGR2	1	902.9376	-10.1	40.0	29.9	30.0	0.977	1.000
FGR2	1	915.6096	-10.3	40.0	29.7	30.0	0.933	1.000
FGR2	1	927.1296	-10.5	40.0	29.5	30.0	0.891	1.000

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Data Page

MANUFACTURER : Freewave Technologies
MODEL NO. : FGR2
SERIAL NO. : 960-001
SPECIFICATION : FCC 15.247 Digital Transmission System
TEST PERFORMED : RF Output Power – Omni Antenna
DATE : December 18, 2007
NOTES : Test Distance is 3 meters

EIRP = Sig. Gen. Reading + Antenna Gain – Cable Loss

Frequency MHz	Antenna Polarity	Meter Reading dBuV	Matched Signal Generator Reading dBm	Antenna Gain dB	Cable Loss dB	EIRP dBm	Limit dBm
902.9	H	90.6	22.0	0.0	1.6	20.4	36
902.9	V	105.4	36.8	0.0	1.6	35.2	36
915.6	H	87.4	18.2	0.0	1.6	16.6	36
915.6	V	105.6	36.4	0.0	1.6	34.8	36
927.1	H	89.5	20.1	0.0	1.6	18.5	36
927.1	V	105.2	36.2	0.0	1.6	34.6	36

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Data Page

MANUFACTURER : Freewave Technologies
MODEL NO. : FGR2
SERIAL NO. : 960-001
SPECIFICATION : FCC 15.247 Digital Transmission System
TEST PERFORMED : RF Output Power – Yagi Antenna
DATE : December 18, 2007
NOTES : Test Distance is 3 meters

EIRP = Sig. Gen. Reading + Antenna Gain – Cable Loss

Frequency MHz	Antenna Polarity	Meter Reading dBuV	Matched Signal Generator Reading dBm	Antenna Gain dB	Cable Loss dB	EIRP dBm	Limit dBm
902.9	H	92.6	23.0	0.0	1.6	21.4	36
902.9	V	105.6	36.4	0.0	1.6	34.8	36
915.6	H	92.7	23.5	0.0	1.6	21.9	36
915.6	V	106.6	37.5	0.0	1.6	35.9	36
927.1	H	89.5	20.5	0.0	1.6	18.9	36
927.1	V	106.1	37.1	0.0	1.6	35.5	36

Checked BY : *RICHARD E. KING*

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