

*FCC PART 15, SUBPART C  
TEST REPORT  
TEST METHOD: ANSI C63.4: 2009*

*For*

**REMOTE KEYPAD  
MODEL: 2GIG-TS1-E**

Prepared for

2GIG TECHNOLOGIES, INC.  
2961 WEST MAPLE LOOP DRIVE  
LEHI, UTAH 84043

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DATE: AUGUST 15, 2011

	REPORT BODY	APPENDICES					TOTAL
		A	B	C	D	E	
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## GENERAL REPORT SUMMARY

This electromagnetic emission report is generated by Compatible Electronics Inc., which is an independent testing and consulting firm. The test report is based on testing performed by Compatible Electronics personnel according to the measurement procedures described in the test specifications given below and in the "Test Procedures" section of this report.

The measurement data and conclusions appearing herein relate only to the sample tested and this report may not be reproduced in any form except in full, without the written permission of Compatible Electronics.

This report must not be used to claim product endorsement by NVLAP, NIST or any other agency of the U.S. Government.

Device Tested: Remote Keypad  
Model: 2GIG-TS1-E  
S/N: 001

Product Description: See expository statement.

Modifications: The EUT was not modified during the testing.

Manufacturer: 2GIG Technologies, Inc.  
2961 West Maple Loop Drive  
Lehi, Utah 84043

Test Date: July 13, 15, and 20, 2011

Test Specifications: Emissions requirements  
FCC CFR Title 47, Part 15 Subpart B, Class B  
FCC CFR Title 47, Part 15 Subpart C, Section 15.205, 15.209, and 15.247  
Test Procedure: ANSI C63.4: 2009

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**SUMMARY OF TEST RESULTS**

<b>TEST</b>	<b>DESCRIPTION</b>	<b>RESULTS</b>
1	Conducted RF Emissions, 150 kHz - 30 MHz.	Complies with the <b>Class B</b> limits of CFR Title 47, Part 15 Subpart B; and the limits of CFR Title 47, Part 15, Subpart C, section 15.207.
2	Spurious Radiated RF Emissions, 10 kHz – 1000 MHz and 1000 MHz – 9300 MHz	Complies with the <b>Class B</b> limits of CFR Title 47, Part 15, Subpart B; and CFR Title 47, Part 15, Subpart C, section 15.209, and 15.247(d)
3	Fundamental and Emissions produced by the intentional radiator in non-restricted bands, 10 kHz – 9.3 GHz	Complies with the relevant requirements of CFR Title 47, Part 15, Subpart C, section 15.247(d)
4	Emissions produced by the intentional radiator in restricted bands, 10 kHz – 9.3 GHz	Complies with the relevant requirements of CFR Title 47, Part 15, Subpart C, section 15.205, 15.209, and section 15.247 (d)
5	20 dB Bandwidth	Complies with the relevant requirements of FCC Title 47, Part 15, Subpart C, section 15.247 (a)(1) and (a)(1)(i)
6	Peak Power Output	Complies with the relevant requirements of FCC Title 47, Part 15, Subpart C, section 15.247 (b)(2)
7	RF Conducted Antenna Test	Complies with the relevant requirements of FCC Title 47, Part 15, Subpart C, section 15.247 (d)
8	Carrier Frequency Separation	Complies with the relevant requirements of CFR Title 47, Part 15, Subpart C, section 15.247 (a)(1) and 15.247 (a)(1)(i)
9	Average Time of Occupancy	Complies with the relevant requirements of CFR Title 47, Part 15, Subpart C, section 15.247 (a)(1)(i)
10	Peak Power Spectral Density from the Intentional Radiator to the Antenna	This test was not performed because the EUT is a frequency hopping device only.

## 1. PURPOSE

This document is a qualification test report based on the Emissions tests performed on the Remote Keypad, Model: 2GIG-TS1-E. The emissions measurements were performed according to the measurement procedure described in ANSI C63.4: 2009. The tests were performed in order to determine whether the electromagnetic emissions from the equipment under test, referred to as EUT hereafter, are within the Class B specification limits defined by CFR Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 15.209, and 15.247.

Note: For the unintentional radiator portion of the test, the EUT was within the **Class B** specification limits defined by CFR Title 47, Part 15, Subpart B.

## 2. ADMINISTRATIVE DATA

### 2.1 Location of Testing

The emissions tests described herein were performed at the test facility of Compatible Electronics, 114 Olinda Drive, Brea, California 92823.

### 2.2 Traceability Statement

The calibration certificates of all test equipment used during the test are on file at the location of the test. The calibration is traceable to the National Institute of Standards and Technology (NIST).

### 2.3 Cognizant Personnel

2GIG Technologies, Inc.

Scott Simon                                      Engineering Vice President

Compatible Electronics Inc.

Kyle Fujimoto                                      Test Engineer  
David Tran    Test Technician  
James Ross    Test Engineer

### 2.4 Date Test Sample was Received

The test sample was received on July 13, 2011.

### 2.5 Disposition of the Test Sample

The test sample has not been returned to 2GIG Technologies, Inc. as of August 1, 2011.

### 2.6 Abbreviations and Acronyms

The following abbreviations and acronyms may be used in this document.

RF	Radio Frequency
EMI	Electromagnetic Interference
EUT	Equipment Under Test
P/N	Part Number
S/N	Serial Number
HP	Hewlett Packard
ITE	Information Technology Equipment
CML	Corrected Meter Limit
LISN	Line Impedance Stabilization Network
Inc.	Incorporated

### 3. APPLICABLE DOCUMENTS

The following documents are referenced or used in the preparation of this test report.

SPEC	TITLE
FCC Title 47, Part 15 Subpart C	FCC Rules - Radio frequency devices (including digital devices) – Intentional Radiators
FCC Title 47, Part 15 Subpart B	FCC Rules - Radio frequency devices (including digital devices) – Unintentional Radiators
ANSI C63.4 2009	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



#### **4. DESCRIPTION OF TEST CONFIGURATION**

##### **4.1 Description of Test Configuration – Emissions**

The EUT was tested connected to power supply via power ports, respectively. The EUT was continuously transmitting and receiving on a continuous basis.

Note: A special program was on the EUT to allow the EUT to be tested at the low, middle, and high channels along with allowing the EUT to transmit and receive at the same time.

The highest emissions were found when the EUT was running in the above configuration. The cables were moved to maximize the emissions. The final conducted and radiated data was taken in this mode of operation. All initial investigations were performed with the spectrum analyzer in manual mode scanning the frequency range continuously. The cables were bundled and routed as shown in the photographs in Appendix D.

#### 4.1.2 Cable Construction and Termination

##### Cable 1

This is a 1.1-meter unshielded cable connecting the EUT to the AC adapter. The cable is hard wired into the + and - power ports on the terminal block inside the EUT and is hard wired at the AC adapter end.

**5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT****5.1 EUT and Accessory List**

<b>EQUIPMENT TYPE</b>	<b>MANUFACTURER</b>	<b>MODEL</b>	<b>SERIAL NUMBER</b>	<b>FCC ID</b>
REMOTE KEYPAD (EUT)	2GIG TECHNOLOGIES, INC.	2GIG-TS1-E	001	WDQ-TS1X
POWER SUPPLY	SURE POWER	SW-140180A	N/A	N/A

**5.2 Emissions Test Equipment**

EQUIPMENT TYPE	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	CAL. DATE	CAL. CYCLE
<b>GENERAL TEST EQUIPMENT USED FOR ALL RF EMISSIONS TESTS</b>					
Spectrum Analyzer – Main Section	Hewlett Packard	8566B	2637A03618	May 27, 2011	1 Year
Spectrum Analyzer – Display Section	Hewlett Packard	85662A	2648A13404	May 27, 2011	1 Year
Quasi-Peak Adapter	Hewlett Packard	85650A	2811A01363	May 27, 2011	1 Year
Monitor	Hewlett Packard	D5258A	TW74500641	N/A	N/A
Computer	Hewlett Packard	4530	US91912319	N/A	N/A
<b>RF RADIATED EMISSIONS TEST EQUIPMENT</b>					
Radiated Emissions Data Capture Program	Compatible Electronics	2.0	N/A	N/A	N/A
Biconical Antenna	Com Power	AB-900	15250	June 8, 2011	1 Year
Log Periodic Antenna	Com Power	AL-100	16252	June 8, 2011	1 Year
HF Horn Antenna	Com-Power	AH-118	071175	March 18, 2010	2 Year
Preamplifier	Com-Power	PA-102	1017	January 11, 2011	1 Year
HF Preamplifier	Com-Power	PA-118	181656	December 22, 2010	1 Year
Loop Antenna	Com-Power	AL-130	17089	January 21, 2011	1 Year
Turntable	Com Power	TT-100	N/A	N/A	N/A
Antenna Mast	Com Power	AM-100	N/A	N/A	N/A
<b>RF CONDUCTED EMISSIONS TEST EQUIPMENT</b>					
Emissions Program	Compatible Electronics	2.3 (SR19)	N/A	N/A	N/A
LISN	Com Power	LI-215	12078	June 20, 2011	1 Year
LISN	Com Power	LI-215	12082	June 20, 2011	1 Year
Transient Limiter	Com Power	252A910	K39-0220	November 2, 2010	1 Year

**6. TEST SITE DESCRIPTION****6.1 Test Facility Description**

Please refer to section 2.1 and 7.1.2 of this report for test location.

**6.2 EUT Mounting, Bonding and Grounding**

The EUT was mounted on a 1.0 by 1.5 meter non-conductive table 0.8 meters above the ground plane.

The EUT was not grounded.

## 7. TEST PROCEDURES

The following sections describe the test methods and the specifications for the tests. Test results are also included in this section.

### 7.1 RF Emissions

#### 7.1.1 Conducted Emissions Test

The spectrum analyzer was used as a measuring meter. The data was collected with the spectrum analyzer in the peak detect mode with the "Max Hold" feature activated. The quasi-peak was used only where indicated in the data sheets. A transient limiter was used for the protection of the spectrum analyzer input stage, and the offset was adjusted accordingly to read the actual data measured. The LISN output was measured using the spectrum analyzer. The output of the second LISN was terminated by a 50-ohm termination. The effective measurement bandwidth used for this test was 9 kHz.

Please see section 6.2 of this report for mounting, bonding and grounding of the EUT. The EUT was powered through the LISN, which was bonded to the ground plane. The LISN power was filtered and the filter was bonded to the ground plane. The EUT was set up with the minimum distances from any conductive surfaces as specified in ANSI C63.4. The excess power cord was wrapped in a figure eight pattern to form a bundle not exceeding 0.4 meters in length.

The conducted emissions from the EUT were maximized for operating mode as well as cable placement. The final data was collected under program control by the Compatible Electronics conducted emissions software in several overlapping sweeps by running the spectrum analyzer at a minimum scan rate of 10 seconds per octave. The final qualification data is located in Appendix E

The final data was collected under program control by the computer in several overlapping sweeps by running the spectrum analyzer at a minimum scan rate of 10 seconds per octave. The six highest emissions are listed in Table 1.

#### **Test Results:**

The EUT complies with the **Class B** limits of CFR Title 47, Part 15 Subpart B; and the limits of CFR Title 47, Part 15, Subpart C, section 15.207.

### 7.1.2 Radiated Emissions Test

The spectrum analyzer and EMI Receiver were used as a measuring meter along with the quasi-peak adapter. Amplifiers were used to increase the sensitivity of the instrument. The Com Power Preamplifier Model: PA-102 was used for frequencies from 30 MHz to 1 GHz, the Com Power Microwave Preamplifier Model: PA-118 was used for frequencies above 1 GHz. The spectrum analyzer and EMI Receiver were used in the peak detect mode with the "Max Hold" feature activated. In this mode, the spectrum analyzer or EMI Receiver records the highest measured reading over all the sweeps.

The quasi-peak adapter was used only for those readings which are marked accordingly on the data sheets.

The frequencies above 1 GHz were adjusted by a "duty cycle correction factor", derived from 20 log (dwell time / 100 ms).

The measurement bandwidths and transducers used for the radiated emissions test were:

FREQUENCY RANGE	EFFECTIVE MEASUREMENT BANDWIDTH	TRANSDUCER
10 kHz to 150 kHz	200 Hz	Active Loop Antenna
150 kHz to 30 MHz	9 kHz	Active Loop Antenna
30 MHz to 300 MHz	120 kHz	Biconical Antenna
300 MHz to 1 GHz	120 kHz	Log Periodic Antenna
1 GHz to 9.3 GHz	1 MHz	Horn Antenna

The open field test site of Compatible Electronics, Inc. was used for radiated emission testing. This test site is set up according to ANSI C63.4: 2009. Please see section 6.2 of this report for mounting, bonding and grounding of the EUT. The turntable supporting the EUT is remote controlled using a motor. The turntable permits EUT rotation of 360 degrees in order to maximize emissions. Also, the antenna mast allows height variation of the antenna from 1 meter to 4 meters. Data was collected in the worst case (highest emission) configuration of the EUT by the Radiated Emission Manual Test software. At each reading, the EUT was rotated 360 degrees and the antenna height was varied from 1 to 4 meters (for E field radiated field strength). The gunsight method was used when measuring with the horn antenna in order to ensure accurate results.

### **Radiated Emissions Test (Continued)**

The presence of ambient signals was verified by turning the EUT off. In case an ambient signal was detected, the measurement bandwidth was reduced temporarily and verification was made that an additional adjacent peak did not exist. This ensures that the ambient signal does not hide any emissions from the EUT. The EUT was tested at a 10-meter test distance from 10 kHz to 30 MHz, and at a 3-meter test distance from 30 MHz to 9.3 GHz to obtain the final test data.

### **Test Results:**

The EUT complies with the **Class B** limits of CFR Title 47, Part 15, Subpart B; and the limits of CFR Title 47, Part 15, Subpart C, Sections 15.209 and 15.247 for radiated emissions. Please see Appendix E for the data sheets.



**7.1.3 RF Emissions Test Results**

 Table 1.0 CONDUCTED EMISSION RESULTS (120V)  
 REMOTE KEYPAD, Model: 2GIG-TS1-E

Frequency MHz	Emission Level* dBuV	Specification Limit dBuV	Delta dB
0.300 (Black Lead)	48.09 (A)	50.23	-2.14
0.299 (Black Lead)	57.25 (QP)	60.28	-3.03
0.299 (White Lead)	52.16 (QP)	60.18	-8.12
0.735 (Black Lead)	37.56 (QP)	46.00	-8.44
1.032 (Black Lead)	37.44 (A)	46.00	-8.56
0.300 (White Lead)	41.42 (A)	50.23	-8.81

 Table 2.0 RADIATED EMISSION RESULTS  
 REMOTE KEYPAD, Model: 2GIG-TS1-E

Frequency MHz	Corrected Reading* dBuV/m	Spec. Limit dBuV/m	Delta dB
2730.00 (Horizontal)	52.39 (A)	54.00	-1.61
2730.00 (Vertical)	51.34 (A)	54.00	-2.66
3680.00 (Horizontal)	50.94 (A)	54.00	-3.06
2760.00 (Horizontal)	50.58 (A)	54.00	-3.42
5520.00 (Vertical)	49.90 (A)	54.00	-4.10
2760.00 (Vertical)	49.58 (A)	54.00	-4.42

## Notes:

\* The complete emissions data is given in Appendix E of this report.

**QP** Quasi-Peak Reading

**A** Average Reading

## 8.2 20 dB Bandwidth

The 20 dB Bandwidth was measured using the EMI Receiver. The bandwidth was measured using a direct connection from the RF output of the EUT. The resolution bandwidth was 30 kHz and the video bandwidth was 100 kHz.

### **Test Results:**

The EUT complies with the relevant requirements of FCC Title 47, Part 15, Subpart C section 15.247 (a)(1) and (a)(1)(i). The 20 dB bandwidth is less than the separation between channels. Please see the data sheets located in Appendix E.

### 8.3 Peak Output Power

The Peak Output Power was measured using the EMI Receiver. The EUT did not have an antenna connector so a radiated test as described in section 7.1.2 was used to determine compliance with the limit specified in section 15.247 (b)(1).

The peak level of the fundamental was then used as part of the following formula below to determine compliance with the limit of section 15.247 (b) (1).

$$P = (E*d)^2 / 30G$$

Where:

P = Power in Watts

E = Field Strength in V/m

G = Numeric Gain of the Antenna

d = Test Distance in meters

The low, middle, and high channels were tested.

#### **Test Results:**

The EUT complies with the relevant requirements of FCC Title 47, Part 15, Subpart C section 15.247 (b)(2). The maximum peak output power is less than 250 mW. Please see the data sheets located in Appendix E.

### 8.4 RF Antenna Conducted Test

The RF antenna conducted test was performed using the EMI Receiver. The RF antenna conducted test measured using a direct connection from the RF out on the EUT into the input of the EMI Receiver. The resolution bandwidth was 100 kHz, and the video bandwidth was 300 kHz. The spans were wide enough to include all the harmonics and emissions that were produced by the intentional radiator.

#### **Test Results:**

This test was not performed because the EUT has no external antenna connector. This test was done via the radiated method instead described in section 7.1.2 instead.

## 8.5 RF Band Edges

The RF band edges were taken at the edges of the ISM spectrum (902 MHz when the EUT was on the low channel and 928 MHz when the EUT was on the high channel) using the EMI Receiver. The RBW was set to 100 kHz and the VBW was set to 300 kHz. Plots of the fundamental were taken to ensure the amplitude at the band edges were at least 20 dB down from the peak of the fundamental emission.

### **Test Results:**

The EUT complies with the relevant requirements of FCC Title 47, Part 15, Subpart C section 15.247 (d). The RF power at the band edges at 902 MHz and 928 MHz meet the requirements of FCC Title 47, Part 15, Subpart C section 15.247 (d). Please see the data sheets located in Appendix E.

## 8.6 Carrier Frequency Separation

The Channel Hopping Separation Test was measured using the EMI Receiver. The EUT was operating in its normal operating mode. The resolution bandwidth was 100 kHz, and the video bandwidth 300 kHz. The frequency span was wide enough to include the peaks of two adjacent channels.

### **Test Results:**

The EUT complies with the relevant requirements of FCC Title 47, Part 15, Subpart C section 15.247 (a)(1) and 15.247 (a)(1)(i). The Channel Hopping Separation is greater than the 20 dB bandwidth. Please see the data sheets located in Appendix D.

## 8.7 Number of Hopping Frequencies

The Channel Hopping Separation Test was measured using the EMI Receiver. The EUT was operating in its normal operating mode. The resolution bandwidth was 100 kHz, and the video bandwidth was 300 kHz. The frequency span was wide enough to include all of the peaks in the frequency band of operation.

### **Test Results:**

The EUT complies with the relevant requirements of FCC Title 47, Part 15, Subpart C section 15.247 (a)(1) and 15.247 (a)(1)(i). The number of hopping frequencies is 25. Please see the data sheets located in Appendix E.

## 8.8 Average Time of Occupancy Test

The Average Time of Occupancy Test was measured using the EMI Receiver. The EUT was operating in normal operating mode. The frequency span was taken to 0 Hz with a sweep time of 200 msec to determine the time for each transmission.

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 10 seconds.

The sweep time was then changed to 10 seconds and the number of pulses taken. The number of pulses in a 10 second period was then multiplied by the time for each of the pulses to determine the average time of occupancy.

### **Test Results:**

The EUT complies with the relevant requirements of FCC Title 47, Part 15, Subpart C section 15.247 (a)(1)(i). The EUT does not transmit for more than 400 msec in a 10 second period on any frequency. Please see the data sheets located in Appendix E.

## 8.9 Spectral Density Test

The spectrum density output was measured using the EMI Receiver. The spectral density output was measured using a direct connection from the RF out on the EUT into the input of the EMI Receiver. The resolution bandwidth 3 kHz, and the video bandwidth was 10 kHz. The highest 1.5 MHz of the signal was used as the frequency span with the sweep rate being 1 second for every 3 kHz of span.

### **Test Results:**

This test was not performed because the EUT is a frequency hopping device only.

## 8 CHARACTERISTICS OF THE TRANSMITTER

### 8.1 Transmitter Power

Power	Channel
19.511 dBm	LOW
19.891 dBm	MIDDLE
19.961 dBm	HIGH

### 8.2 Channel Number and Frequencies

There are a total of 25 channels. The low channel is at 910.00 MHz and the high channel is at 920.00 MHz. There is a 400 kHz separation between channels.

Channel 1: 910 MHz  
Channel 2: 910.400 MHz  
(Etc.)

### 8.3 Antenna Gain

The antenna has a gain of -10.17 dBi.

**8. DEVIATIONS FROM THE TEST PROCEDURES**

There were no deviations from the test procedures.

**9. CONCLUSIONS**

The Remote Keypad, Model: 2GIG-TS1-E, as tested, meets all of the specification limits defined in FCC Title 47, Part 15, Subpart C, sections 15.205, 15.207, 15.209, and 15.247.

Note: For the unintentional radiator portion of the test, the EUT was within the **Class B** specification limits defined by CFR Title 47, Part 15, Subpart B.

**APPENDIX A**

***LABORATORY ACCREDITATIONS AND RECOGNITIONS***



## LABORATORY ACCREDITATIONS AND RECOGNITIONS



NVLAP LAB CODES 200063-0,  
200528-0, 200527-0

For US, Canada, Australia/New Zealand, Taiwan and the European Union, Compatible Electronics is currently accredited by NVLAP to ISO/IEC 17025 an ISO 9002 equivalent. Please follow the link to the NIST site for each of our facilities NVLAP certificate and scope of accreditation.

### NVLAP listing links

Agoura Division - <http://ts.nist.gov/Standards/scopes/2000630.htm>

Brea Division - <http://ts.nist.gov/Standards/scopes/2005280.htm>

Silverado/Lake Forest Division - <http://ts.nist.gov/Standards/scopes/2005270.htm>



### ANSI listing

[CETCB](https://www.ansica.org/wwwversion2/outside/ALLdirectoryDetails.asp?menuID=1&prgID=3&orgID=123&status=4) <https://www.ansica.org/wwwversion2/outside/ALLdirectoryDetails.asp?menuID=1&prgID=3&orgID=123&status=4>



Compatible Electronics has been nominated as a Conformity Assessment Body (CAB) for EMC under the US/EU Mutual Recognition Agreement (MRA).



Compatible Electronics has been nominated as a Conformity Assessment Body (CAB) for Taiwan/BSMI under the US/APEC (Asia-Pacific Economic Cooperation) Mutual Recognition Agreement (MRA).

We are also certified/listed for IT products by the following country/agency:



### VCCI Listing, from VCCI site

[Enter "Compatible" in search form](http://www.vcci.or.jp/vcci_e/activity/registration/setsubi.html) [http://www.vcci.or.jp/vcci\\_e/activity/registration/setsubi.html](http://www.vcci.or.jp/vcci_e/activity/registration/setsubi.html)



### FCC Listing, from FCC OET site

[FCC test lab search](https://fjallfoss.fcc.gov/oetcf/eas/reports/TestFirmSearch.cfm) <https://fjallfoss.fcc.gov/oetcf/eas/reports/TestFirmSearch.cfm>



Compatible Electronics IC listing can be found at:

<http://www.ic.gc.ca/eic/site/ic1.nsf/eng/home>

**APPENDIX B**

***MODIFICATIONS TO THE EUT***

## **MODIFICATIONS TO THE EUT**

There were no modifications made to the EUT during the test.

**APPENDIX C**

***ADDITIONAL MODELS COVERED  
UNDER THIS REPORT***

## **ADDITIONAL MODELS COVERED UNDER THIS REPORT**

USED FOR THE PRIMARY TEST

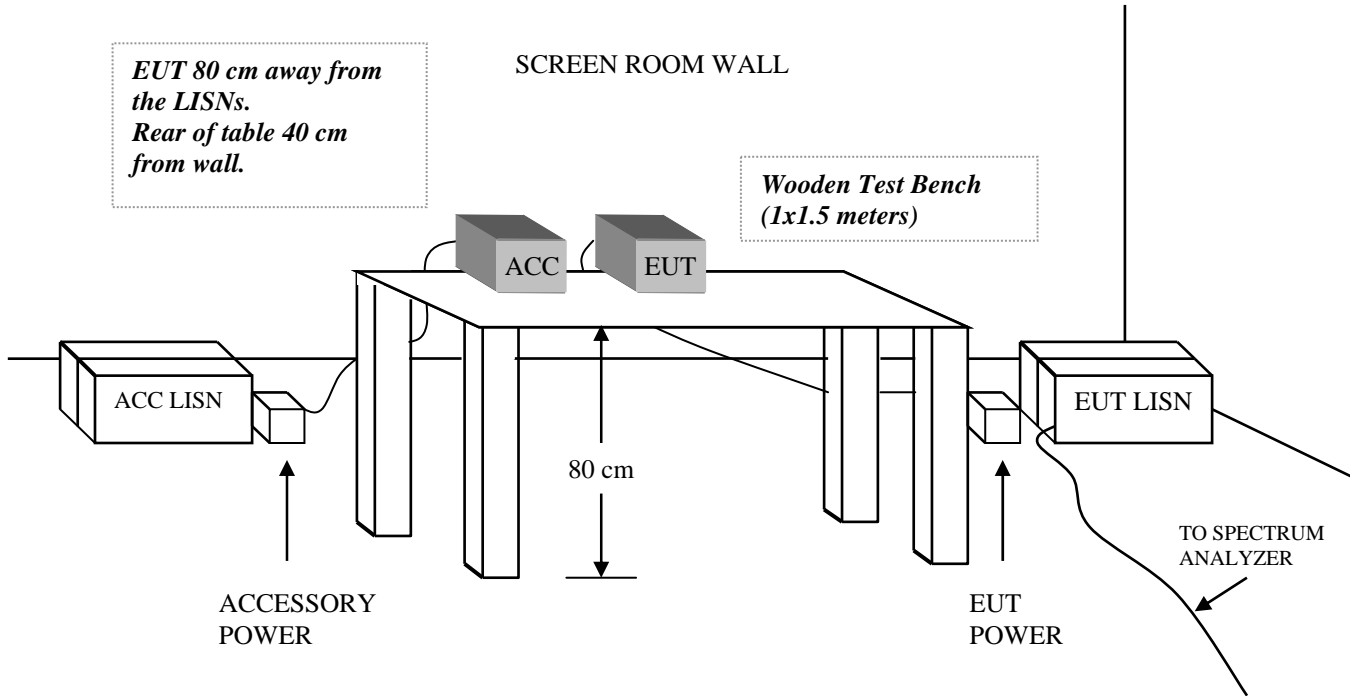
Remote Keypad  
Model: 2GIG-TS1-E  
S/N: 001

There were no additional models covered under this report.

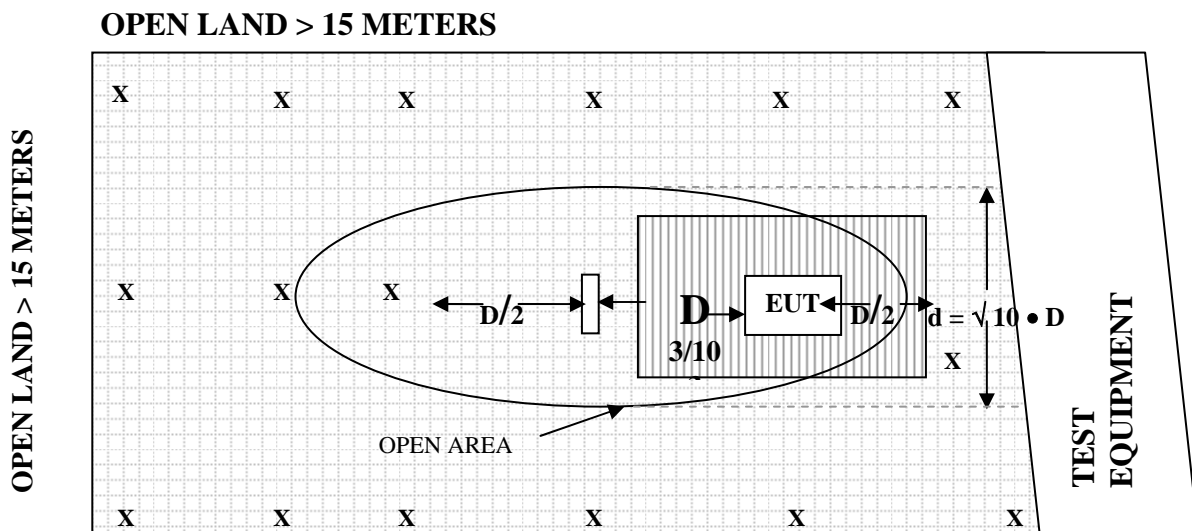
**APPENDIX D**

***DIAGRAMS, CHARTS AND PHOTOS***

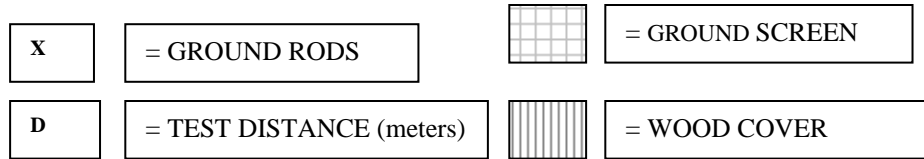
**FIGURE 1: CONDUCTED EMISSIONS TEST SETUP**



**FIGURE 2: PLOT MAP AND LAYOUT OF RADIATED SITE**

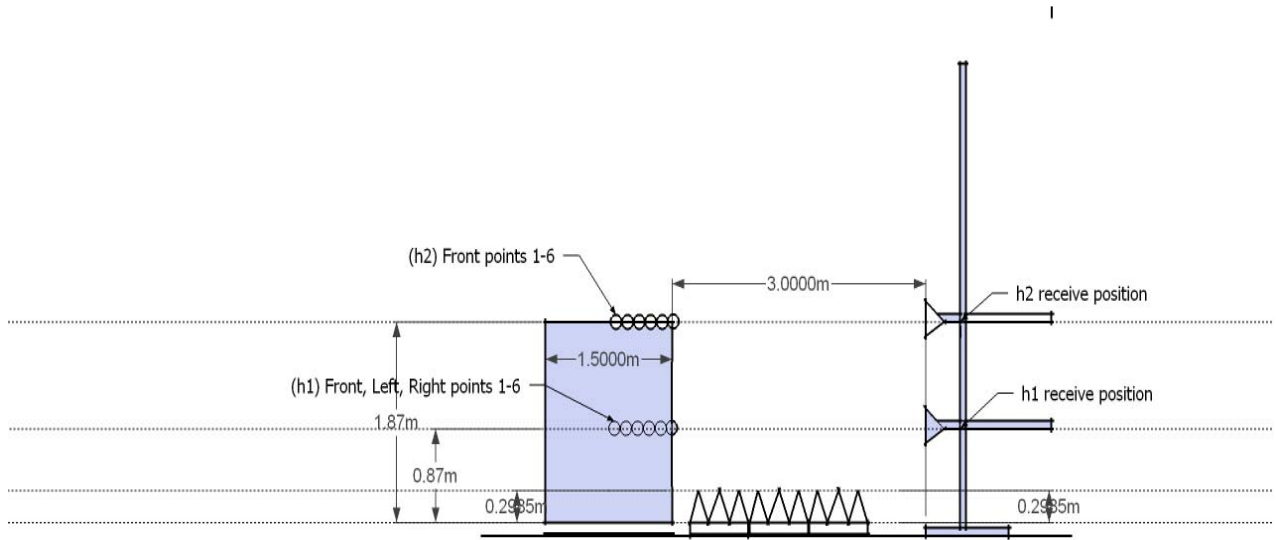


**OPEN LAND > 15 METERS**





**FIGURE 3: HIGH FREQUENCY TEST VOLUME**



COM-POWER AB-900  
BICONICAL ANTENNA

S/N: 15250

CALIBRATION DATE: JUNE 8, 2011

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	10.90	160	12.40
35	11.00	180	15.70
40	11.80	200	16.20
45	11.60	250	16.10
50	11.40	300	19.00
60	9.80		
70	7.00		
80	5.70		
90	7.00		
100	9.50		
120	12.10		
140	11.40		

COM-POWER AL-100

LOG PERIODIC ANTENNA

S/N: 16252

CALIBRATION DATE: JUNE 8, 2011

<b>FREQUENCY (MHz)</b>	<b>FACTOR (dB)</b>
300	13.30
400	15.50
500	15.80
600	20.20
700	20.40
800	20.60
900	20.10
1000	22.80

**COM-POWER PA-102****PREAMPLIFIER****S/N: 1017****CALIBRATION DATE: JANUARY 11, 2011**

<b>FREQUENCY (MHz)</b>	<b>FACTOR (dB)</b>	<b>FREQUENCY (MHz)</b>	<b>FACTOR (dB)</b>
30	38.1	300	38.1
40	38.2	350	38.0
50	38.2	400	37.9
60	38.2	450	37.7
70	38.2	500	37.6
80	38.2	550	37.9
90	38.2	600	37.9
100	38.1	650	37.7
125	38.2	700	37.9
150	38.2	750	37.5
175	38.2	800	37.6
200	38.2	850	37.6
225	38.2	900	37.0
250	38.2	950	37.2
275	38.2	1000	36.8

**COM-POWER AH-118****HORN ANTENNA**

S/N: 071175

CALIBRATION DATE: MARCH 18, 2010

<b>FREQUENCY (MHz)</b>	<b>FACTOR (dB)</b>	<b>FREQUENCY (MHz)</b>	<b>FACTOR (dB)</b>
1000	22.2	10000	39.8
1500	24.2	10500	40.2
2000	27.2	11000	39.7
2500	27.8	11500	39.9
3000	30.5	12000	41.7
3500	30.9	12500	42.7
4000	31.9	13000	42.3
4500	33.2	13500	40.3
5000	33.6	14000	42.6
5500	36.2	14500	43.4
6000	35.8	15000	41.9
6500	36.1	15500	40.8
7000	37.9	16000	41.0
7500	37.4	16500	41.5
8000	38.0	17000	44.5
8500	38.8	17500	47.6
9000	38.0	18000	50.8
9500	39.2		

**COM-POWER PA-118****PREAMPLIFIER**

S/N: 181656

CALIBRATION DATE: DECEMBER 22, 2010

<b>FREQUENCY (MHz)</b>	<b>FACTOR (dB)</b>	<b>FREQUENCY (MHz)</b>	<b>FACTOR (dB)</b>
1000	24.90	12500	24.92
1500	26.50	13000	24.52
2000	26.79	13500	24.33
2500	26.90	14000	24.56
3000	27.03	14500	24.99
3500	26.94	15000	26.06
4000	27.18	15500	26.87
4500	26.79	16000	25.95
5000	26.25	16500	24.69
5500	26.16	17000	24.20
6000	25.52	17500	25.12
6500	25.29	18000	26.03
7000	24.45		
7500	24.18		
8000	24.02		
8500	24.54		
9000	24.91		
9500	25.42		
10000	26.07		
10500	24.97		
11000	24.79		
11500	24.33		
12000	24.24		

**COM-POWER AL-130****LOOP ANTENNA**

S/N: 17089

CALIBRATION DATE: JANUARY 21, 2011

<b>FREQUENCY (MHz)</b>	<b>MAGNETIC (dB/m)</b>	<b>ELECTRIC (dB/m)</b>
0.009	-41.9	9.6
0.01	-41.79	9.71
0.02	-41.43	10.07
0.05	-41.53	9.97
0.07	-41.47	10.03
0.1	-41.44	10.06
0.2	-41.61	9.89
0.3	-41.62	9.88
0.5	-41.66	9.84
0.7	-41.48	10.02
1	-41.13	10.37
2	-40.89	10.61
3	-41.00	10.50
4	-41.14	10.36
5	-41.02	10.48
10	-40.69	10.82
15	-40.41	11.09
20	-41.07	10.43
25	-42.10	9.40
30	-41.15	10.35



**FRONT VIEW**

2GIG TECHNOLOGIES, INC.  
REMOTE KEYPAD  
Model: 2GIG-TS1-E  
FCC SUBPART B and C – RADIATED EMISSIONS

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION  
FOR MAXIMUM EMISSIONS**





**REAR VIEW**

2GIG TECHNOLOGIES, INC.  
REMOTE KEYPAD  
Model: 2GIG-TS1-E  
FCC SUBPART B and C – RADIATED EMISSIONS

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION  
FOR MAXIMUM EMISSIONS**



**FRONT VIEW**

2GIG TECHNOLOGIES, INC.  
REMOTE KEYPAD  
Model: 2GIG-TS1-E  
FCC SUBPART B and C – CONDUCTED EMISSIONS

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION  
FOR MAXIMUM EMISSIONS**



**REAR VIEW**

2GIG TECHNOLOGIES, INC.  
REMOTE KEYPAD  
Model: 2GIG-TS1-E  
FCC SUBPART B and C – CONDUCTED EMISSIONS

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION  
FOR MAXIMUM EMISSIONS**

**APPENDIX E**

***DATA SHEETS***

***RADIATED EMISIONS***

***DATA SHEETS***

**FCC 15.247**

 Linear, LLC  
 Remote Keypad  
 Model: 2GIG-TS1-E

 Date: 07/13/2011  
 Labs: B and D  
 Tested By: Kyle Fujimoto

**Low Channel - Fundamental and Harmonics  
 Duty Cycle = 42.89%**

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
910	104.47	V	--	--	Peak	1	45	
910	97.12	V	--	--	Avg	1	45	
1820	61.53	V	84.47	-22.94	Peak	1	1.25	Not in
1820	54.18	V	77.12	-22.94	Avg	1	1.25	Restricted Band
2730	58.69	V	74	-15.31	Peak	1.25	150	
2730	51.34	V	54	-2.66	Avg	1.25	150	
3640	50.76	V	74	-23.24	Peak	1.25	135	
3640	43.41	V	54	-10.59	Avg	1.25	135	
4550	51.93	V	74	-22.07	Peak	1.35	145	
4550	44.58	V	54	-9.42	Avg	1.35	145	
5460	55.76	V	74	-18.24	Peak	1.25	155	
5460	48.41	V	54	-5.59	Avg	1.25	155	
6370	56.21	V	84.47	-28.26	Peak	1.25	45	Not in
6370	48.86	V	77.12	-28.26	Avg	1.25	45	Restricted Band
7280								<b>No Emission</b>
7280								<b>Detected</b>
8190								<b>No Emission</b>
8190								<b>Detected</b>
9100								<b>No Emission</b>
9100								<b>Detected</b>

**FCC 15.247**

Linear, LLC

Remote Keypad

Model: 2GIG-TS1-E

Date: 07/13/2011

Labs: B and D

Tested By: Kyle Fujimoto

**Low Channel - Fundamental and Harmonics**
**Duty Cycle = 42.89%**

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
910	104.57	H	--	--	Peak	1	90	
910	97.22	H	--	--	Avg	1	90	
1820	61.83	H	84.57	-22.74	Peak	1.25	155	Not in
1820	54.48	H	77.22	-22.74	Avg	1.25	155	Restricted Band
2730	59.74	H	74	-14.26	Peak	1.25	155	
2730	52.39	H	54	-1.61	Avg	1.25	155	
3640	48.95	H	74	-25.05	Peak	1.25	165	
3640	41.6	H	54	-12.4	Avg	1.25	165	
4550	51.27	H	74	-22.73	Peak	1.25	175	
4550	43.92	H	54	-10.08	Avg	1.25	175	
5460	56.81	H	74	-17.19	Peak	1.25	185	
5460	49.46	H	54	-4.54	Avg	1.25	185	
6370	57.55	H	84.57	-27.02	Peak	1.25	155	Not in
6370	50.2	H	77.22	-27.02	Avg	1.25	155	Restricted Band
7280								<b>No Emission</b>
7280								<b>Detected</b>
8190								<b>No Emission</b>
8190								<b>Detected</b>
9100								<b>No Emission</b>
9100								<b>Detected</b>

**FCC 15.247**

Linear, LLC

Remote Keypad

Model: 2GIG-TS1-E

Date: 07/13/2011

Labs: B and D

Tested By: Kyle Fujimoto

**Middle Channel - Fundamental and Harmonics**
**Duty Cycle = 42.89%**

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
915	104.95	V	--	--	Peak	1.25	135	
915	97.6	V	--	--	Avg	1.25	135	
1830	57.81	V	84.95	-27.14	Peak	1.25	135	Not in
1830	50.46	V	77.6	-27.14	Avg	1.25	135	Restricted Band
2745	54.66	V	74	-19.34	Peak	1.25	145	
2745	47.31	V	54	-6.69	Avg	1.25	145	
3660	48.45	V	74	-25.55	Peak	1.25	135	
3660	41.1	V	54	-12.9	Avg	1.25	135	
4575	51.78	V	74	-22.22	Peak	1.25	135	
4575	44.43	V	54	-9.57	Avg	1.25	135	
5490	55.99	V	74	-18.01	Peak	1.25	135	
5490	48.64	V	54	-5.36	Avg	1.25	135	
6405	57.15	V	84.95	-27.8	Peak	1.25	145	Not in
6405	49.8	V	77.6	-27.8	Avg	1.25	145	Restricted Band
7320								<b>No Emission</b>
7320								<b>Detected</b>
8235								<b>No Emission</b>
8235								<b>Detected</b>
9150								<b>No Emission</b>
9150								<b>Detected</b>



**FCC 15.247**

Linear, LLC

Remote Keypad

Model: 2GIG-TS1-E

Date: 07/13/2011

Labs: B and D

Tested By: Kyle Fujimoto

**Middle Channel - Fundamental and Harmonics**
**Duty Cycle = 42.89%**

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
915	104.74	H	--	--	Peak	1.25	135	
915	97.39	H	--	--	Avg	1.25	135	
1830	66.13	H	84.74	-18.61	Peak	1.25	135	Not in
1830	58.78	H	77.39	-18.61	Avg	1.25	135	Restricted Band
2745	56.61	H	74	-17.39	Peak	1.25	155	
2745	49.26	H	54	-4.74	Avg	1.25	155	
3660	47.66	H	74	-26.34	Peak	1.25	135	
3660	40.31	H	54	-13.69	Avg	1.25	135	
4575	52.08	H	74	-21.92	Peak	1.35	145	
4575	44.73	H	54	-9.27	Avg	1.35	145	
5490	56.06	H	74	-17.94	Peak	1.25	135	
5490	48.71	H	54	-5.29	Avg	1.25	135	
6405	58.24	H	84.74	-26.5	Peak	1.35	155	Not in
6405	50.89	H	77.39	-26.5	Avg	1.35	155	Restricted Band
7320								<b>No Emission</b>
7320								<b>Detected</b>
8235								<b>No Emission</b>
8235								<b>Detected</b>
9150								<b>No Emission</b>
9150								<b>Detected</b>

**FCC 15.247**

Linear, LLC

Remote Keypad

Model: 2GIG-TS1-E

Date: 07/13/2011

Labs: B and D

Tested By: Kyle Fujimoto

**High Channel - Fundamental and Harmonics**
**Duty Cycle = 42.89%**

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
920	105.02	V	--	--	Peak	1.25	135	
920	97.67	V	--	--	Avg	1.25	135	
1840	66.19	V	85.02	-18.83	Peak	1.25	135	Not in
1840	58.84	V	77.67	-18.83	Avg	1.25	135	Restricted Band
2760	56.93	V	74	-17.07	Peak	1.25	145	
2760	49.58	V	54	-4.42	Avg	1.25	145	
3680	55.24	V	74	-18.76	Peak	1.25	135	
3680	47.89	V	54	-6.11	Avg	1.25	135	
4600	51.43	V	74	-22.57	Peak	1.25	155	
4600	44.08	V	54	-9.92	Avg	1.25	155	
5520	57.25	V	74	-16.75	Peak	1.25	165	
5520	49.9	V	54	-4.1	Avg	1.25	165	
6440	52.36	V	85.02	-32.66	Peak	1.35	175	Not in
6440	45.01	V	77.67	-32.66	Avg	1.35	175	Restricted Band
7360								<b>No Emission</b>
7360								<b>Detected</b>
8280								<b>No Emission</b>
8280								<b>Detected</b>
9200								<b>No Emission</b>
9200								<b>Detected</b>

**FCC 15.247**

Linear, LLC

Remote Keypad

Model: 2GIG-TS1-E

Date: 07/13/2011

Labs: B and D

Tested By: Kyle Fujimoto

**High Channel - Fundamental and Harmonics**
**Duty Cycle = 42.89%**

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
920	105.02	H	--	--	Peak	1	155	
920	97.67	H	--	--	Avg	1	155	
1840	65.01	H	85.02	-20.01	Peak	1.25	135	Not in
1840	57.66	H	77.67	-20.01	Avg	1.25	135	Restricted Band
2760	57.93	H	74	-16.07	Peak	1.25	135	
2760	50.58	H	54	-3.42	Avg	1.25	135	
3680	58.29	H	74	-15.71	Peak	1.35	145	
3680	50.94	H	54	-3.06	Avg	1.35	145	
4600	52.01	H	74	-21.99	Peak	1.25	155	
4600	44.66	H	54	-9.34	Avg	1.25	155	
5520	56.28	H	74	-17.72	Peak	1.35	165	
5520	48.93	H	54	-5.07	Avg	1.35	165	
6440	52.26	H	85.02	-32.76	Peak	1.25	135	Not in
6440	44.91	H	77.67	-32.76	Avg	1.25	135	Restricted Band
7360								<b>No Emission</b>
7360								<b>Detected</b>
8280								<b>No Emission</b>
8280								<b>Detected</b>
9200								<b>No Emission</b>
9200								<b>Detected</b>

**FCC 15.249, FCC Class B, and RSS-210**

Linear, LLC  
 Remote Keypad  
 Model: 2GIG-TS1-E

Date: 07/15/2011  
 Labs: B and D  
 Tested By: Kyle Fujimoto

**Digital Portion and Non-Harmonics from the EUT - 10 kHz to 9300 MHz**

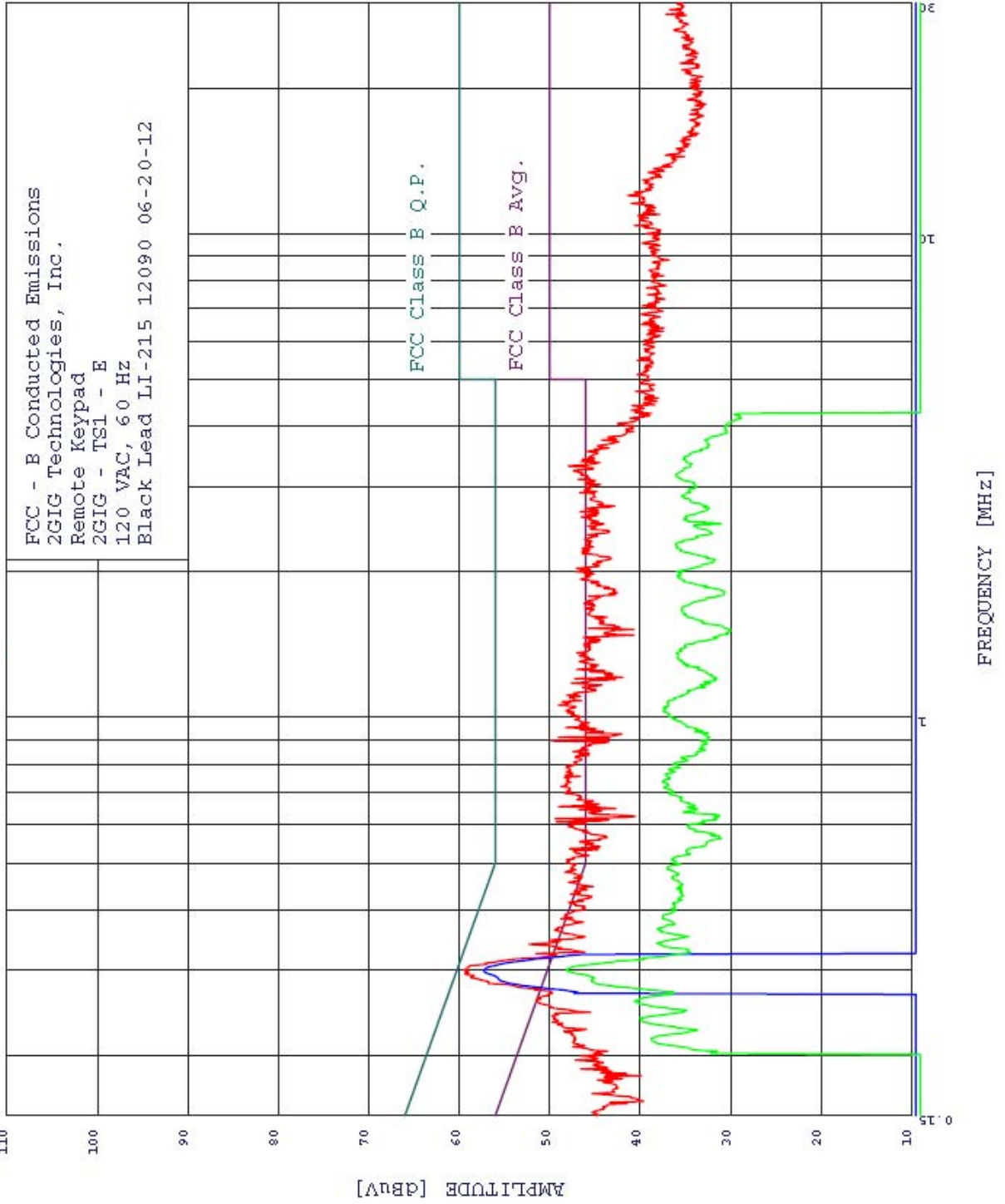
Freq. (MHz)	Level (dBuV)	Poi (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
39.23	27.96	V	40	-12.04	Peak	1	90	
47.91	29.20	V	40	-10.80	Peak	1	90	
48.52	19.00	H	40	-21.00	Peak	1	45	
48.58	25.00	V	40	-15.00	Peak	1	45	
58.71	24.27	V	40	-15.73	Peak	1	90	
59.52	16.96	H	40	-23.04	Peak	1	145	
71.16	21.26	V	40	-18.74	Peak	1	165	
87.00	24.91	V	40	-15.09	Peak	1	155	
120.64	14.56	H	43.5	-28.94	Peak	1	135	
157.26	31.50	H	43.5	-12.00	Peak	1	270	
157.26	27.60	V	43.5	-15.90	Peak	1	90	
171.80	15.08	V	43.5	-28.42	Peak	1	180	
275.91	16.28	V	46	-29.72	Peak	1	150	
300.74	29.12	H	46	-16.88	Peak	1	175	
314.55	25.82	H	46	-20.18	Peak	1	270	
315.43	20.35	V	46	-25.65	Peak	2.25	135	
323.35	19.07	H	46	-26.93	Peak	2.25	135	
413.75	18.70	H	46	-27.30	Peak	2.25	150	
471.99	20.11	V	46	-25.89	Peak	2.55	165	
650.53	27.30	H	46	-18.70	Peak	2.55	155	
								No Spurious Emissions Detected below 30 MHz
								No Spurious Emissions Detected above 1 GHz

***CONDUCTED EMISSIONS***

***DATA SHEETS***

EMISSION LEVEL [dBuV] PEAK  
 Graph for Peak, Quasi-Peak & Average

7/20/2011 13:43:57



FCC - B Conducted Emissions  
2GIG Technologies, Inc.  
Remote Keypad  
2GIG - TS1 - E  
120 VAC, 60 Hz  
Black Lead LI-215 12090 06-20-11  
Test Engineer : David Tran

7/20/2011 13:43:57

49 highest peaks above -50.00 dB of FCC Class B Q.P. limit line

Peak criteria : 1.00 dB, Curve : Peak

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	0.300	59.45	60.23	-0.78**
2	0.895	49.82	56.00	-6.18**
3	0.618	49.38	56.00	-6.62**
4	0.608	49.28	56.00	-6.72**
5	0.339	52.28	59.22	-6.94**
6	0.909	49.02	56.00	-6.98**
7	1.060	49.00	56.00	-7.00**
8	0.655	48.97	56.00	-7.03**
9	0.720	48.76	56.00	-7.24**
10	0.759	48.25	56.00	-7.75**
11	0.953	48.21	56.00	-7.79**
12	1.032	48.20	56.00	-7.80**
13	0.508	48.11	56.00	-7.89**
14	1.112	48.10	56.00	-7.90**
15	0.595	47.98	56.00	-8.02**
16	3.311	47.96	56.00	-8.04**
17	0.479	48.29	56.36	-8.07**
18	0.325	51.51	59.57	-8.07**
19	0.535	47.83	56.00	-8.17**
20	1.100	47.80	56.00	-8.20**
21	1.178	47.60	56.00	-8.40**
22	0.849	47.43	56.00	-8.57**
23	0.530	47.42	56.00	-8.58**
24	3.243	47.36	56.00	-8.64**
25	1.204	47.20	56.00	-8.80**
26	0.457	47.89	56.76	-8.87**
27	2.002	47.10	56.00	-8.90**
28	1.256	47.00	56.00	-9.00**
29	1.359	47.00	56.00	-9.00**
30	2.034	47.00	56.00	-9.00**
31	0.347	49.97	59.04	-9.08**
32	3.107	46.86	56.00	-9.14**
33	0.363	49.47	58.65	-9.18**
34	0.644	46.77	56.00	-9.23**
35	0.839	46.73	56.00	-9.27**
36	1.304	46.70	56.00	-9.30**
37	2.916	46.65	56.00	-9.35**
38	0.552	46.64	56.00	-9.36**
39	0.944	46.61	56.00	-9.39**
40	2.665	46.61	56.00	-9.39**
41	1.929	46.60	56.00	-9.40**
42	0.383	48.77	58.21	-9.44**
43	3.383	46.55	56.00	-9.45**
44	2.596	46.50	56.00	-9.50**
45	0.431	47.68	57.24	-9.56**
46	1.154	46.40	56.00	-9.60**
47	2.179	46.39	56.00	-9.61**
48	3.419	46.35	56.00	-9.65**
49	0.415	47.88	57.55	-9.67**

FCC - B Conducted Emissions  
2GIG Technologies, Inc.  
Remote Keypad  
2GIG - TS1 - E  
120 VAC, 60 Hz  
Black Lead LI-215 12090 06-20-12  
Test Engineer : David Tran

7/20/2011 13:43:57

-----  
1 highest peaks above -50.00 dB of FCC Class B Q.P. limit line  
Peak criteria : 1.00 dB, Curve : Quasi-peak  
Peak# Freq(MHz) Amp(dBuV) Limit(dB) Delta(dB)  
1 0.299 57.25 60.28 -3.03  
-----

The above reading is the results of the Quasi-Peak readings.



FCC - B Conducted Emissions  
2GIG Technologies, Inc.  
Remote Keypad  
2GIG - TS1 - E  
120 VAC, 60 Hz  
Black Lead LI-215 12090 06-20-12  
Test Engineer : David Tran

7/20/2011 13:43:57

49 highest peaks above -50.00 dB of FCC Class B Avg. limit line

Peak criteria : 1.00 dB, Curve : Peak

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	0.300	59.45	50.23	9.22**
2	0.895	49.82	46.00	3.82**
3	0.618	49.38	46.00	3.38**
4	0.608	49.28	46.00	3.28**
5	0.339	52.28	49.22	3.06**
6	0.909	49.02	46.00	3.02**
7	1.060	49.00	46.00	3.00**
8	0.655	48.97	46.00	2.97**
9	0.720	48.76	46.00	2.76**
10	0.759	48.25	46.00	2.25**
11	0.953	48.21	46.00	2.21**
12	1.032	48.20	46.00	2.20**
13	0.508	48.11	46.00	2.11**
14	1.112	48.10	46.00	2.10**
15	0.595	47.98	46.00	1.98**
16	3.311	47.96	46.00	1.96**
17	0.479	48.29	46.36	1.93**
18	0.325	51.51	49.57	1.93**
19	0.535	47.83	46.00	1.83**
20	1.100	47.80	46.00	1.80**
21	1.178	47.60	46.00	1.60**
22	0.849	47.43	46.00	1.43**
23	0.530	47.42	46.00	1.42**
24	3.243	47.36	46.00	1.36**
25	1.204	47.20	46.00	1.20**
26	0.457	47.89	46.76	1.13**
27	2.002	47.10	46.00	1.10**
28	1.256	47.00	46.00	1.00**
29	1.359	47.00	46.00	1.00**
30	2.034	47.00	46.00	1.00**
31	0.347	49.97	49.04	0.92**
32	3.107	46.86	46.00	0.86**
33	0.363	49.47	48.65	0.82**
34	0.644	46.77	46.00	0.77**
35	0.839	46.73	46.00	0.73**
36	1.304	46.70	46.00	0.70**
37	2.916	46.65	46.00	0.65**
38	0.552	46.64	46.00	0.64**
39	0.944	46.61	46.00	0.61**
40	2.665	46.61	46.00	0.61**
41	1.929	46.60	46.00	0.60**
42	0.383	48.77	48.21	0.56**
43	3.383	46.55	46.00	0.55**
44	2.596	46.50	46.00	0.50**
45	0.431	47.68	47.24	0.44**
46	1.154	46.40	46.00	0.40**
47	2.179	46.39	46.00	0.39**
48	3.419	46.35	46.00	0.35**
49	0.415	47.88	47.55	0.33**

FCC - B Conducted Emissions  
2GIG Technologies, Inc.  
Remote Keypad  
2GIG - TS1 - E  
120 VAC, 60 Hz  
BlackLead LI-215 12090 06-20-12  
Test Engineer : David Tran

7/20/2011 13:43:57

-----  
21 highest peaks above -50.00 dB of FCC Class B Avg. limit line

Peak criteria : 1.00 dB, Curve : Average

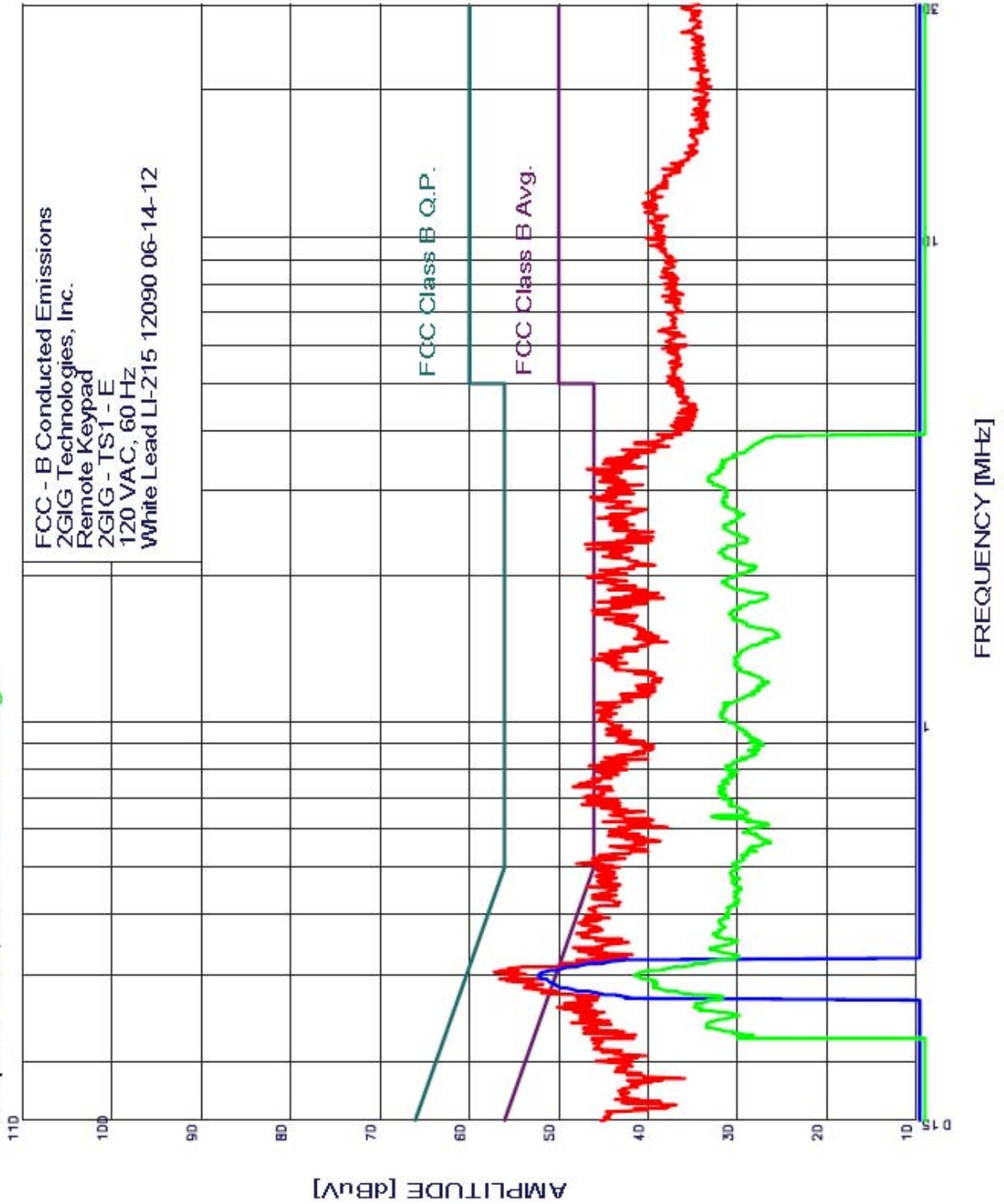
Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	0.300	48.09	50.23	-2.14
2	0.735	37.56	46.00	-8.44
3	1.032	37.44	46.00	-8.56
4	0.486	37.02	46.23	-9.21
5	0.508	36.58	46.00	-9.42
6	2.286	36.10	46.00	-9.90
7	3.158	36.02	46.00	-9.98
8	1.359	36.01	46.00	-9.99
9	1.960	35.92	46.00	-10.08
10	0.365	38.10	48.61	-10.51
11	2.870	35.46	46.00	-10.54
12	1.663	35.45	46.00	-10.55
13	0.387	37.54	48.12	-10.58
14	0.637	35.26	46.00	-10.74
15	2.568	35.21	46.00	-10.79
16	0.259	40.60	51.47	-10.87
17	0.341	38.17	49.18	-11.01
18	0.598	34.78	46.00	-11.22
19	2.488	34.12	46.00	-11.88
20	0.239	39.99	52.12	-12.13
21	0.217	38.73	52.91	-14.19

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The above readings are the results of the Averaged readings.

7/20/2011 14:29:05

EMISSION LEVEL [dBuV] PEAK  
Graph for Peak Quasi-Peak & Average



FCC - B Conducted Emissions  
2GIG Technologies, Inc.  
Remote Keypad  
2GIG - TS1 - E  
120 VAC, 60 Hz  
White Lead LI-215 12090 06-14-12  
Test Engineer : David Tran

7/20/2011 14:29:05

-----  
49 highest peaks above -50.00 dB of FCC Class B Q.P. limit line

Peak criteria : 1.00 dB, Curve : Peak

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	0.304	57.24	60.14	-2.90**
2	0.296	56.54	60.36	-3.82**
3	0.310	55.53	59.97	-4.43**
4	0.293	55.73	60.45	-4.72**
5	0.282	53.91	60.76	-6.85**
6	0.285	53.72	60.67	-6.95**
7	0.735	48.35	56.00	-7.65**
8	0.510	48.01	56.00	-7.99**
9	0.676	47.26	56.00	-8.74**
10	0.698	47.06	56.00	-8.94**
11	2.322	46.89	56.00	-9.11**
12	0.686	46.86	56.00	-9.14**
13	0.276	51.80	60.94	-9.14**
14	1.992	46.80	56.00	-9.20**
15	2.274	46.79	56.00	-9.21**
16	3.311	46.76	56.00	-9.24**
17	0.809	46.64	56.00	-9.36**
18	2.900	46.35	56.00	-9.65**
19	0.763	46.25	56.00	-9.75**
20	0.524	46.22	56.00	-9.78**
21	1.345	46.20	56.00	-9.80**
22	1.699	46.20	56.00	-9.80**
23	0.457	46.79	56.76	-9.97**
24	0.728	45.95	56.00	-10.05**
25	1.671	45.90	56.00	-10.10**
26	3.243	45.86	56.00	-10.14**
27	1.049	45.80	56.00	-10.20**
28	0.788	45.74	56.00	-10.26**
29	1.083	45.70	56.00	-10.30**
30	0.497	45.70	56.05	-10.35**
31	2.855	45.64	56.00	-10.36**
32	1.772	45.60	56.00	-10.40**
33	0.385	47.67	58.16	-10.49**
34	2.637	45.51	56.00	-10.49**
35	1.939	45.50	56.00	-10.50**
36	0.367	47.97	58.56	-10.60**
37	0.481	45.70	56.32	-10.62**
38	3.124	45.36	56.00	-10.64**
39	0.492	45.50	56.14	-10.64**
40	0.532	45.33	56.00	-10.67**
41	1.006	45.30	56.00	-10.70**
42	1.374	45.30	56.00	-10.70**
43	2.044	45.30	56.00	-10.70**
44	0.665	45.17	56.00	-10.83**
45	0.391	47.17	58.03	-10.86**
46	0.826	45.13	56.00	-10.87**
47	0.440	46.18	57.06	-10.88**
48	0.341	48.28	59.18	-10.90**
49	1.032	45.10	56.00	-10.90**

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FCC - B Conducted Emissions  
2GIG Technologies, Inc.  
Remote Keypad  
2GIG - TS1 - E  
120 VAC, 60 Hz  
White Lead LI-215 12090 06-20-12  
Test Engineer : David Tran

7/20/2011 14:29:0

-----  
1 highest peaks above -50.00 dB of FCC Class B Q.P. limit line  
Peak criteria : 1.00 dB, Curve : Quasi-peak  
Peak# Freq(MHz) Amp(dBuV) Limit(dB) Delta(dB)  
1 0.299 52.16 60.28 -8.12  
-----

The above readings are the results of the Quasi-Peak readings.

FCC - B Conducted Emissions  
2GIG Technologies, Inc.  
Remote Keypad  
2GIG - TS1 - E  
120 VAC, 60 Hz  
White Lead LI-215 12090 06-20-12  
Test Engineer : David Tran

7/20/2011 14:29:05

49 highest peaks above -50.00 dB of FCC Class B Avg. limit line

Peak criteria : 1.00 dB, Curve : Peak

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	0.304	57.24	50.14	7.10**
2	0.296	56.54	50.36	6.18**
3	0.310	55.53	49.97	5.57**
4	0.293	55.73	50.45	5.28**
5	0.282	53.91	50.76	3.15**
6	0.285	53.72	50.67	3.05**
7	0.735	48.35	46.00	2.35**
8	0.510	48.01	46.00	2.01**
9	0.676	47.26	46.00	1.26**
10	0.698	47.06	46.00	1.06**
11	2.322	46.89	46.00	0.89**
12	0.686	46.86	46.00	0.86**
13	0.276	51.80	50.94	0.86**
14	1.992	46.80	46.00	0.80**
15	2.274	46.79	46.00	0.79**
16	3.311	46.76	46.00	0.76**
17	0.809	46.64	46.00	0.64**
18	2.900	46.35	46.00	0.35**
19	0.763	46.25	46.00	0.25**
20	0.524	46.22	46.00	0.22**
21	1.345	46.20	46.00	0.20**
22	1.699	46.20	46.00	0.20**
23	0.457	46.79	46.76	0.03**
24	0.728	45.95	46.00	-0.05**
25	1.671	45.90	46.00	-0.10**
26	3.243	45.86	46.00	-0.14**
27	1.049	45.80	46.00	-0.20**
28	0.788	45.74	46.00	-0.26**
29	1.083	45.70	46.00	-0.30**
30	0.497	45.70	46.05	-0.35**
31	2.855	45.64	46.00	-0.36**
32	1.772	45.60	46.00	-0.40**
33	0.385	47.67	48.16	-0.49**
34	2.637	45.51	46.00	-0.49**
35	1.939	45.50	46.00	-0.50**
36	0.367	47.97	48.56	-0.60**
37	0.481	45.70	46.32	-0.62**
38	3.124	45.36	46.00	-0.64**
39	0.492	45.50	46.14	-0.64**
40	0.532	45.33	46.00	-0.67**
41	1.006	45.30	46.00	-0.70**
42	1.374	45.30	46.00	-0.70**
43	2.044	45.30	46.00	-0.70**
44	0.665	45.17	46.00	-0.83**
45	0.391	47.17	48.03	-0.86**
46	0.826	45.13	46.00	-0.87**
47	0.440	46.18	47.06	-0.88**
48	0.341	48.28	49.18	-0.90**
49	1.032	45.10	46.00	-0.90**

FCC - B Conducted Emissions  
2GIG Technologies, Inc.  
Remote Keypad  
2GIG - TS1 - E  
120 VAC, 60 Hz  
White Lead LI-215 12090 06-20-12  
Test Engineer : David Tran

7/20/2011 14:29:05

-----  
19 highest peaks above -50.00 dB of FCC Class B Avg. limit line

Peak criteria : 1.00 dB, Curve : Average

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	0.300	41.42	50.23	-8.81
2	3.141	33.20	46.00	-12.80
3	0.637	32.76	46.00	-13.24
4	0.716	32.16	46.00	-13.84
5	2.238	32.07	46.00	-13.93
6	1.021	31.89	46.00	-14.11
7	1.939	31.67	46.00	-14.33
8	2.514	31.42	46.00	-14.58
9	0.809	31.33	46.00	-14.67
10	1.671	30.80	46.00	-15.20
11	0.484	30.73	46.27	-15.55
12	1.311	30.27	46.00	-15.73
13	0.365	32.58	48.61	-16.03
14	0.339	33.02	49.22	-16.20
15	0.592	29.26	46.00	-16.74
16	0.258	34.73	51.51	-16.77
17	0.909	28.52	46.00	-17.48
18	0.237	33.46	52.21	-18.75
19	0.223	29.83	52.70	-22.87


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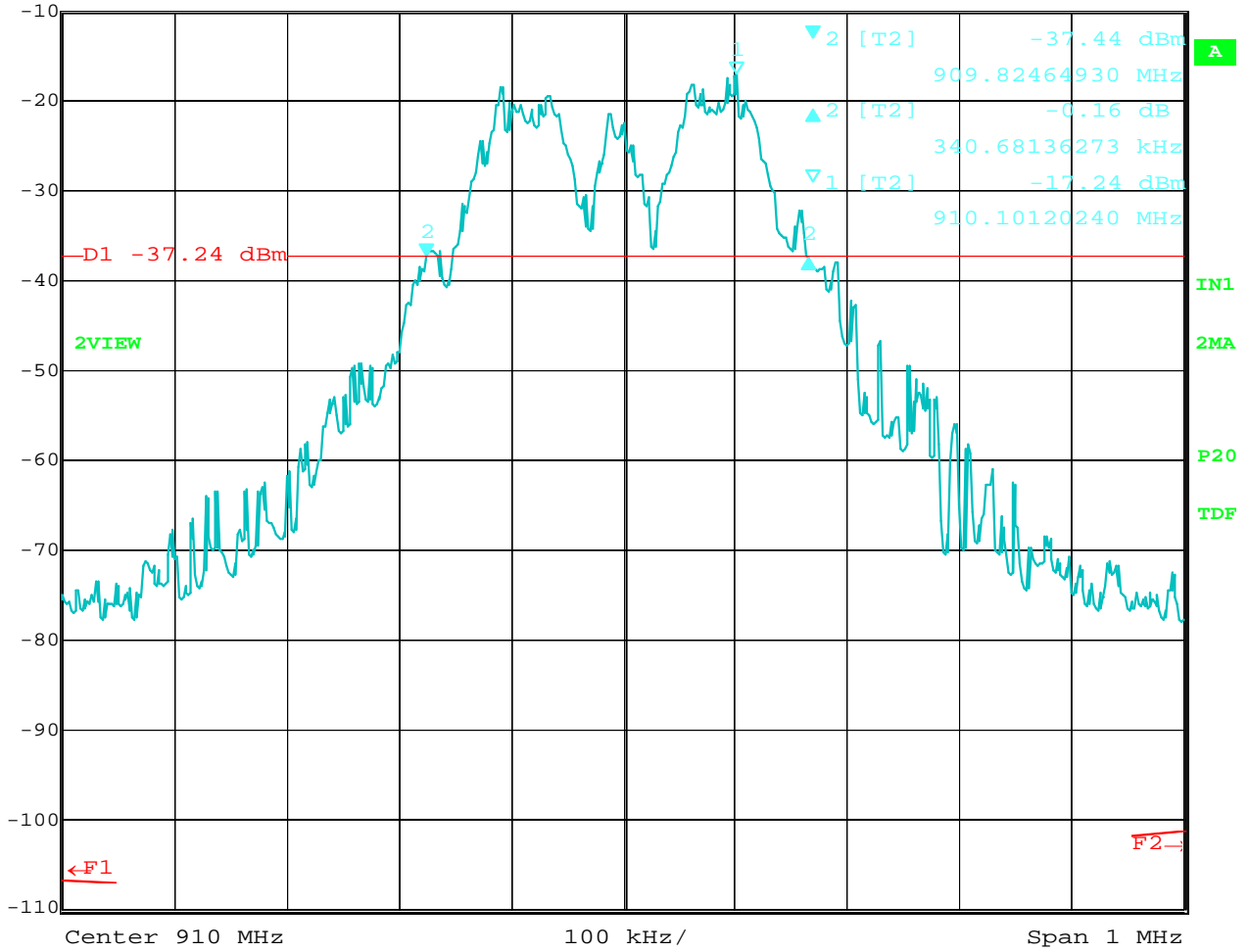
The above readings are the results of the Averaged readings.

***-20 dB BANDWIDTH***

***DATA SHEETS***




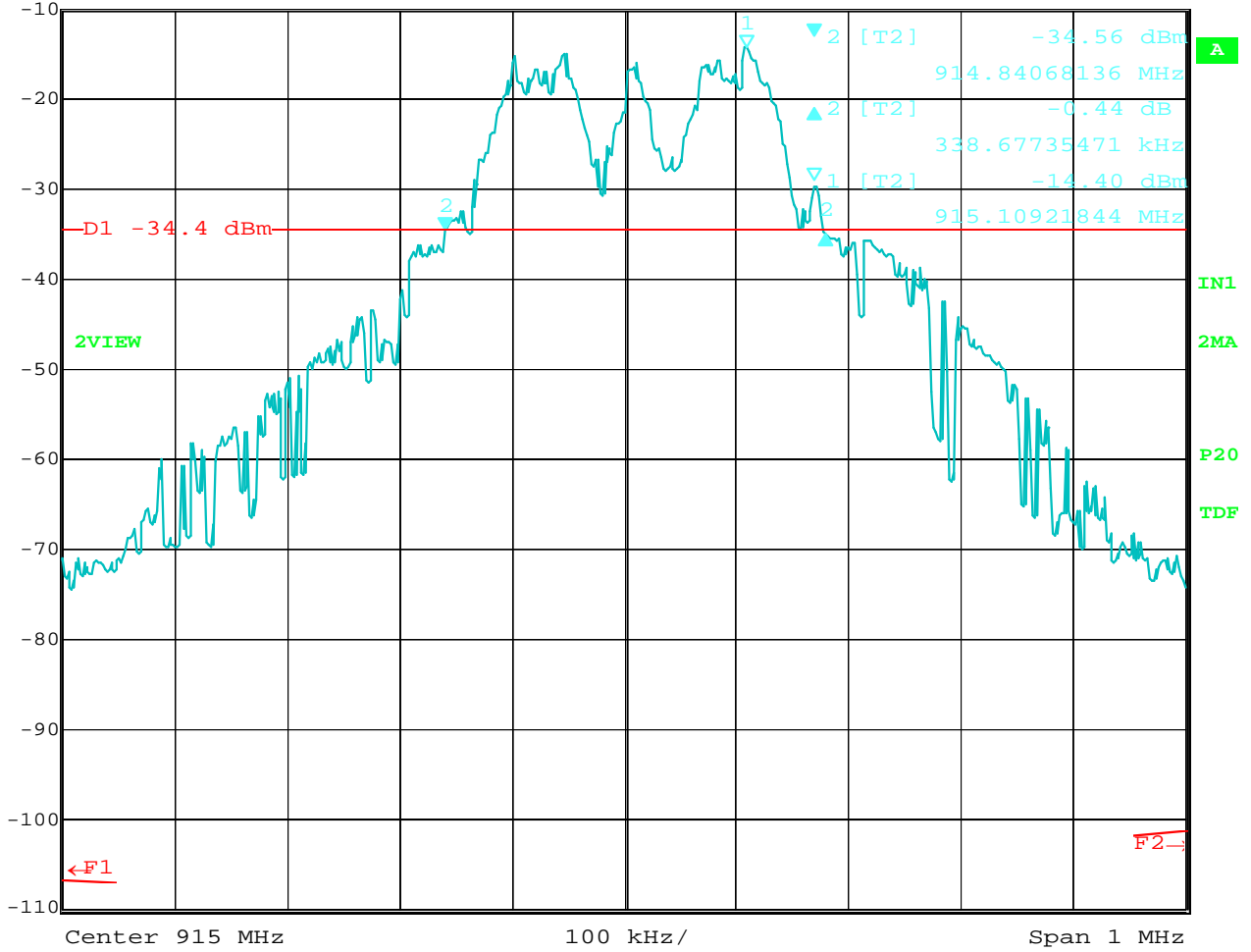
	Delta 2 [T2]	RBW	10 kHz	RF Att	30 dB
	Ref Lvl	-0.16 dB	VBW	30 kHz	
	-10 dBm	340.68136273 kHz	SWT	25 ms	Unit dBm



Date: 15.JUL.2011 09:49:40

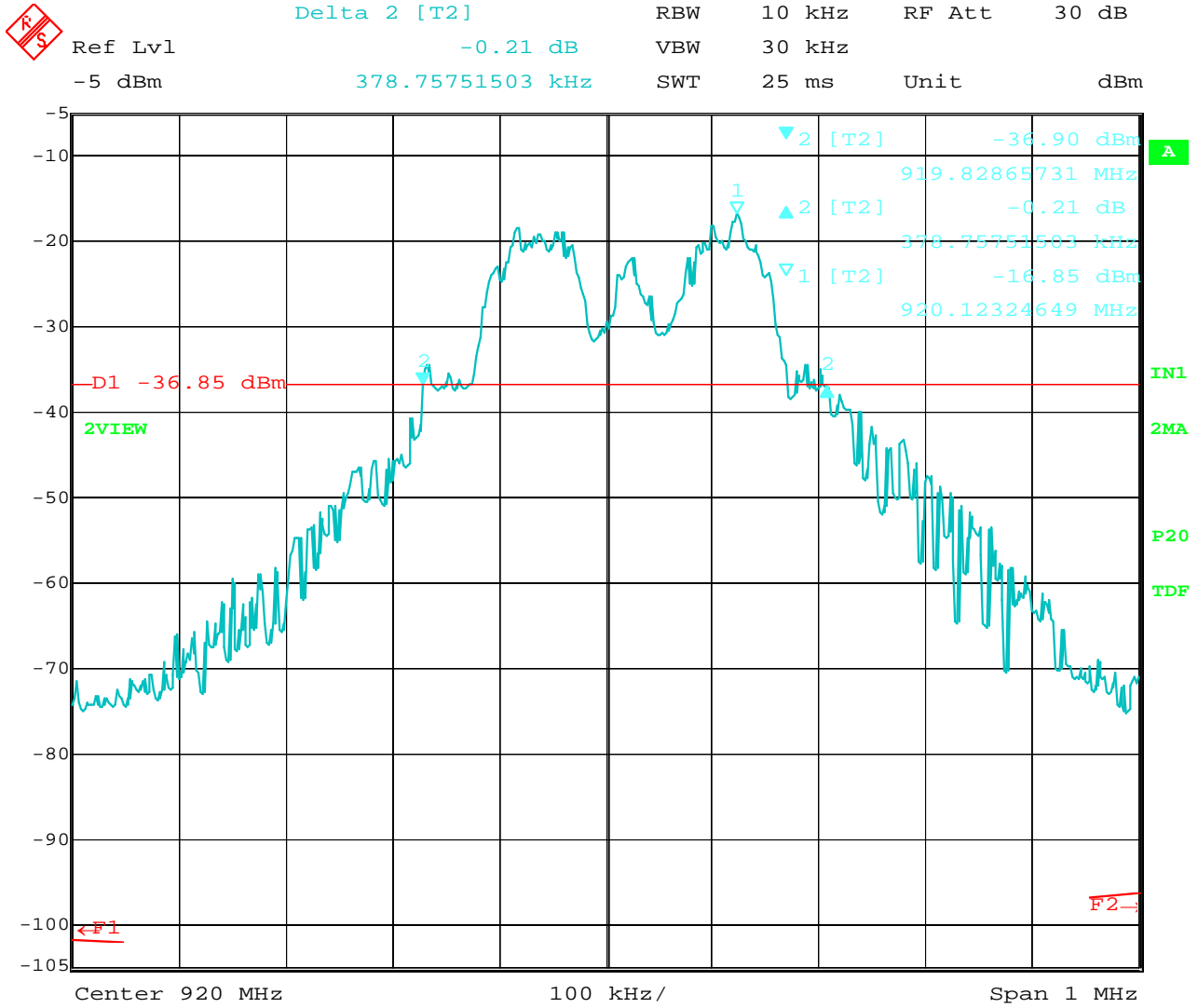
-20 dB Bandwidth of the Low Channel

	Delta 2 [T2]	RBW	10 kHz	RF Att	30 dB
	Ref Lvl	-0.44 dB	VBW	30 kHz	
	-10 dBm	338.67735471 kHz	SWT	25 ms	Unit dBm



Date: 15.JUL.2011 10:03:03

-20 dB Bandwidth of the Middle Channel



Date: 15.JUL.2011 10:16:58

-20 dB Bandwidth of the High Channel

***PEAK POWER OUTPUT***

***DATA SHEETS***

**FCC 15.247**

Linear, LLC  
 Remote Keypad  
 Model: 2GIG-TS1-E

Date: 07/13/2011  
 Lab: D  
 Tested By: Kyle Fujimoto

**Peak Output Power  
 Radiated Emissions Method**

Freq. (MHz)	Level (dBuV)	Level (V/m)	Antenna Gain (dBi)	Numeric Gain	Power Output (Watts)	Power Output (mW)	Power Output (dBm)	Comments
910	104.47	0.1673016	-10.17	0.09616	0.0873215	87.3215	19.411	Vertical
915	104.95	0.1768072	-10.17	0.09616	0.0975262	97.5262	19.891	Vertical
920	105.02	0.18	-10.17	0.10	0.10	99.11	19.96	Vertical
910	104.57	0.1692388	-10.17	0.09616	0.0893555	89.3555	19.511	Horizontal
915	104.74	0.1725838	-10.17	0.09616	0.0929226	92.9226	19.681	Horizontal
920	105.02	0.1782379	-10.17	0.09616	0.0991109	99.1109	19.961	Horizontal

The Power in Watts is obtained by the following Formula Below:

$$P = \frac{(E \cdot D)^2}{30 \cdot G}$$

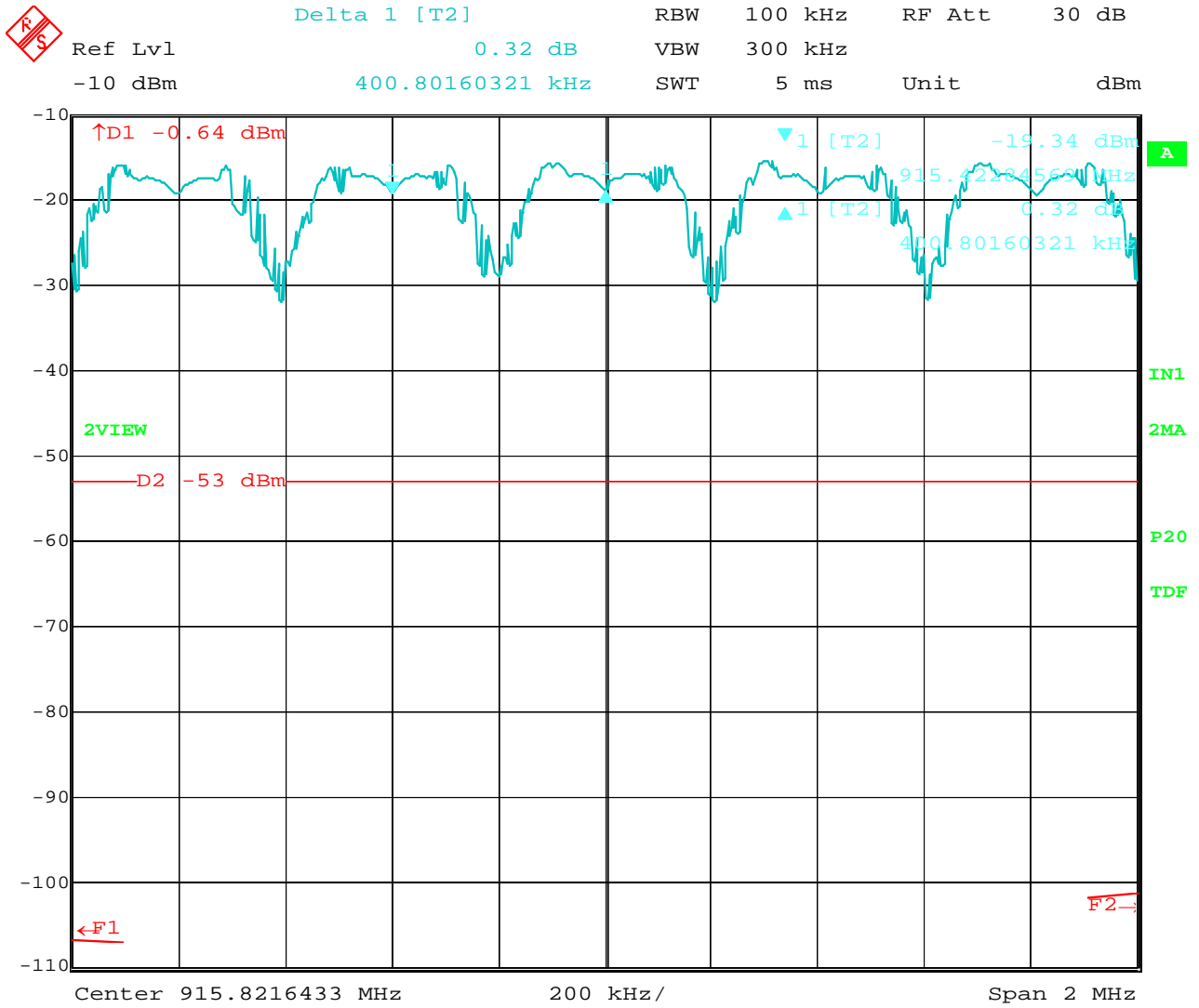
P = Power in Watts

E = The Measured Maximum Field Strength in V/m

G = The Numeric Gain of the Transmitting Antenna over an Isotropic Radiator

***CHANNEL HOPPING SEPARATION***

***DATA SHEET***



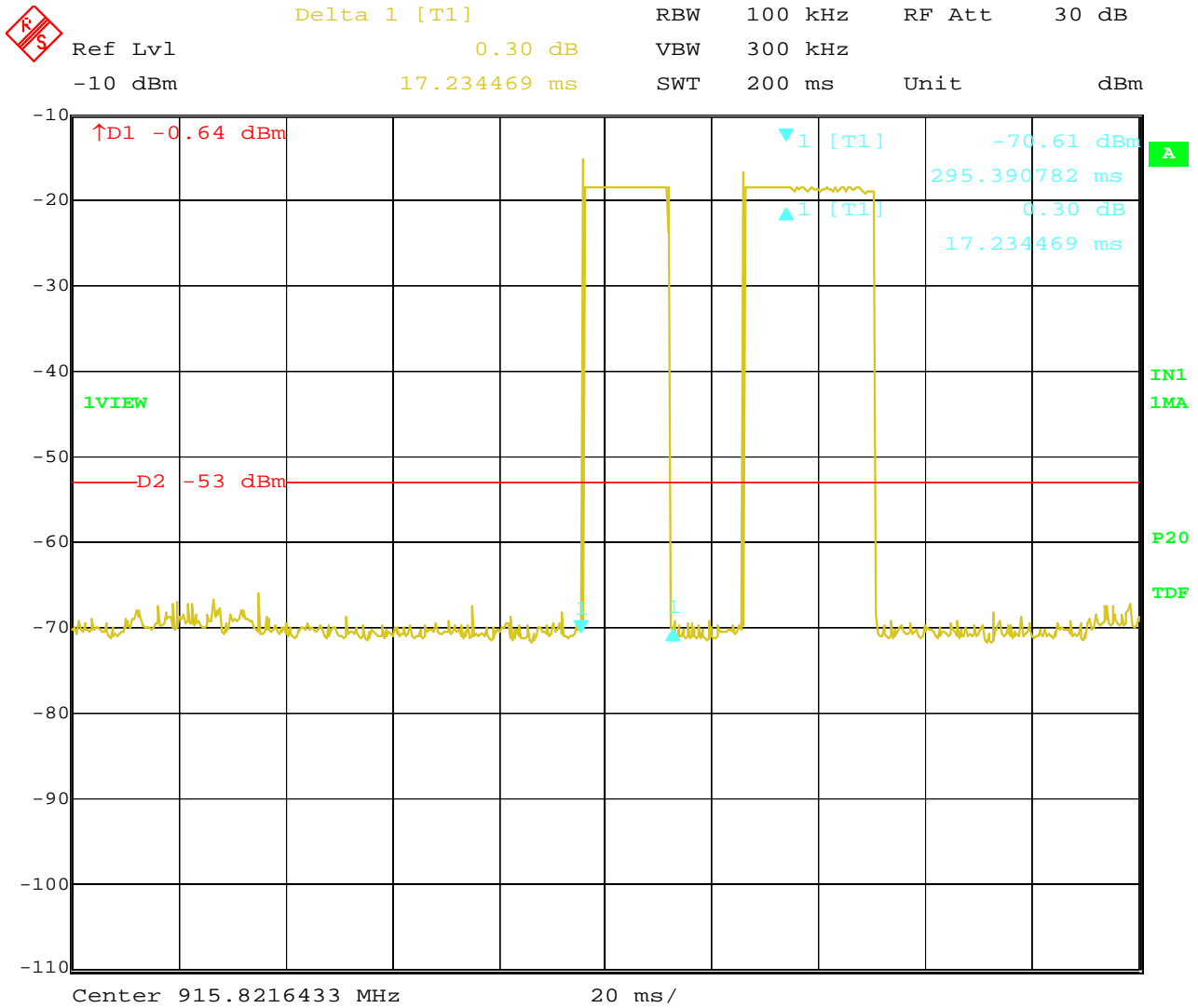
Date: 15.JUL.2011 09:34:54

Carrier Frequency Separation Test

***AVERAGE TIME OF OCCUPANCY***

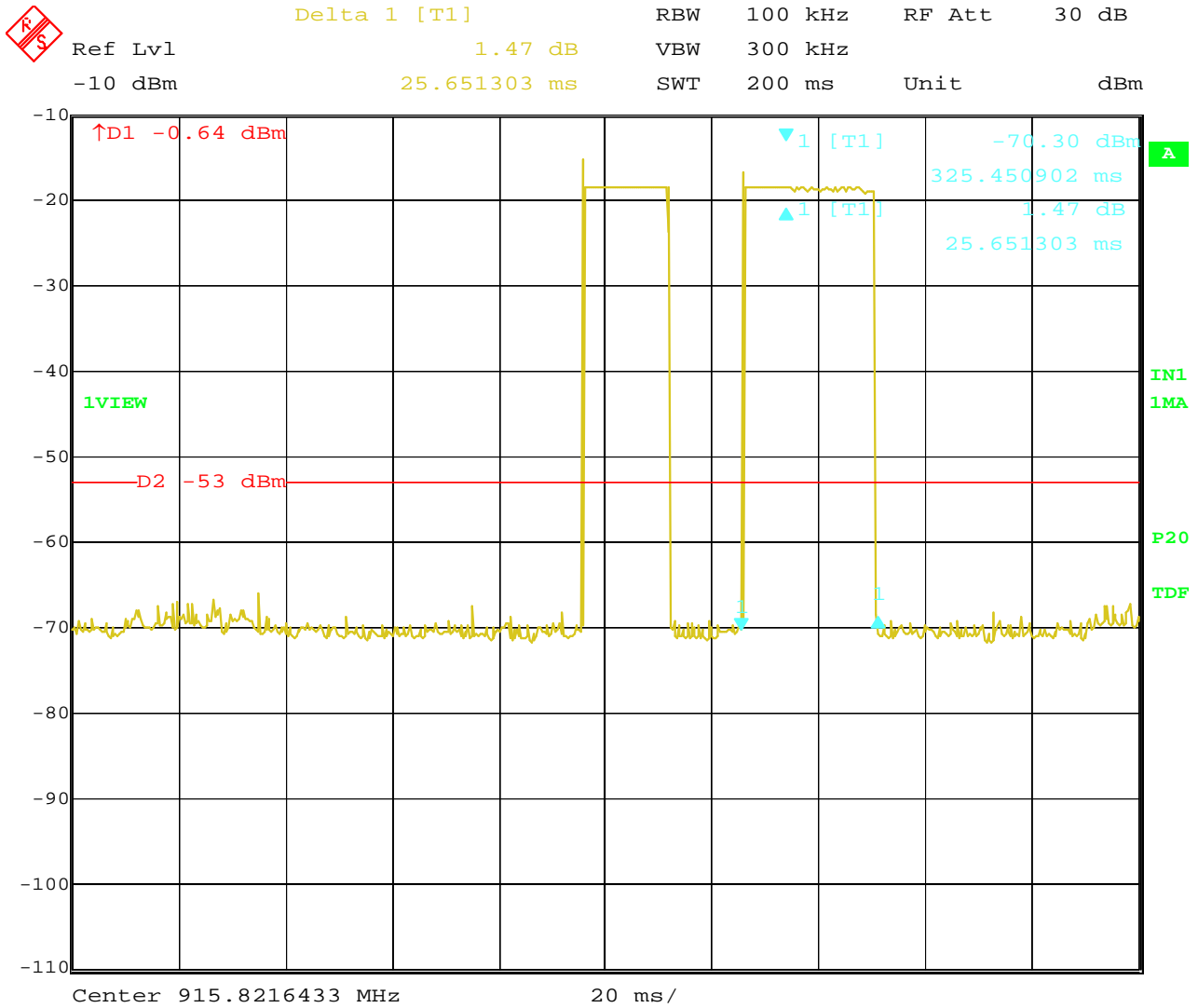
***DATA SHEETS***





Date: 15.JUL.2011 09:35:42

Time of Small Pulse = 17.234469 ms

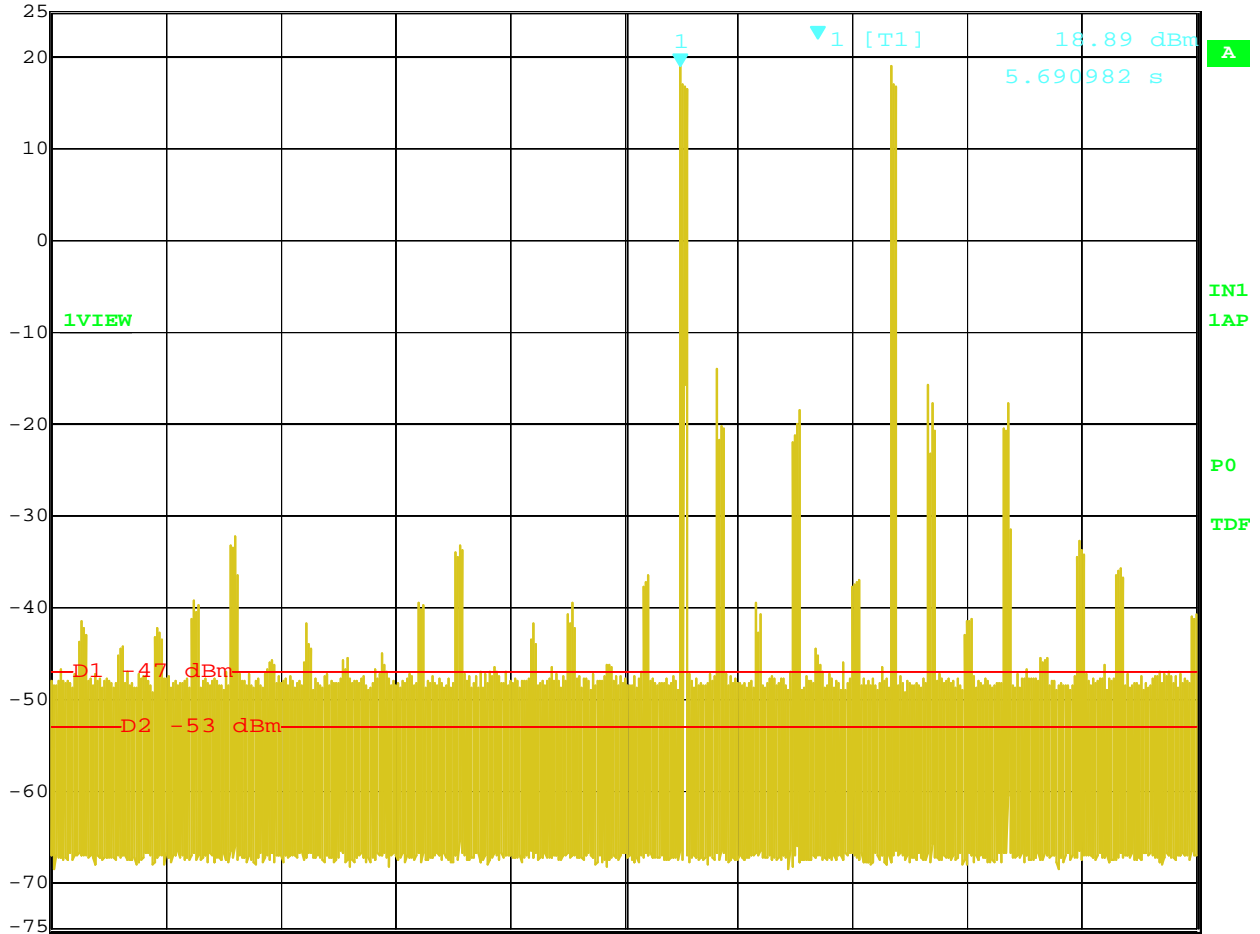


Date: 15.JUL.2011 09:36:04

Time of Large Pulse = 25.651303 mS



Ref Lvl	Marker 1 [T1]	RBW	100 kHz	RF Att	40 dB
25 dBm	18.89 dBm	VBW	300 kHz		
	5.690982 s	SWT	10 s	Unit	dBm



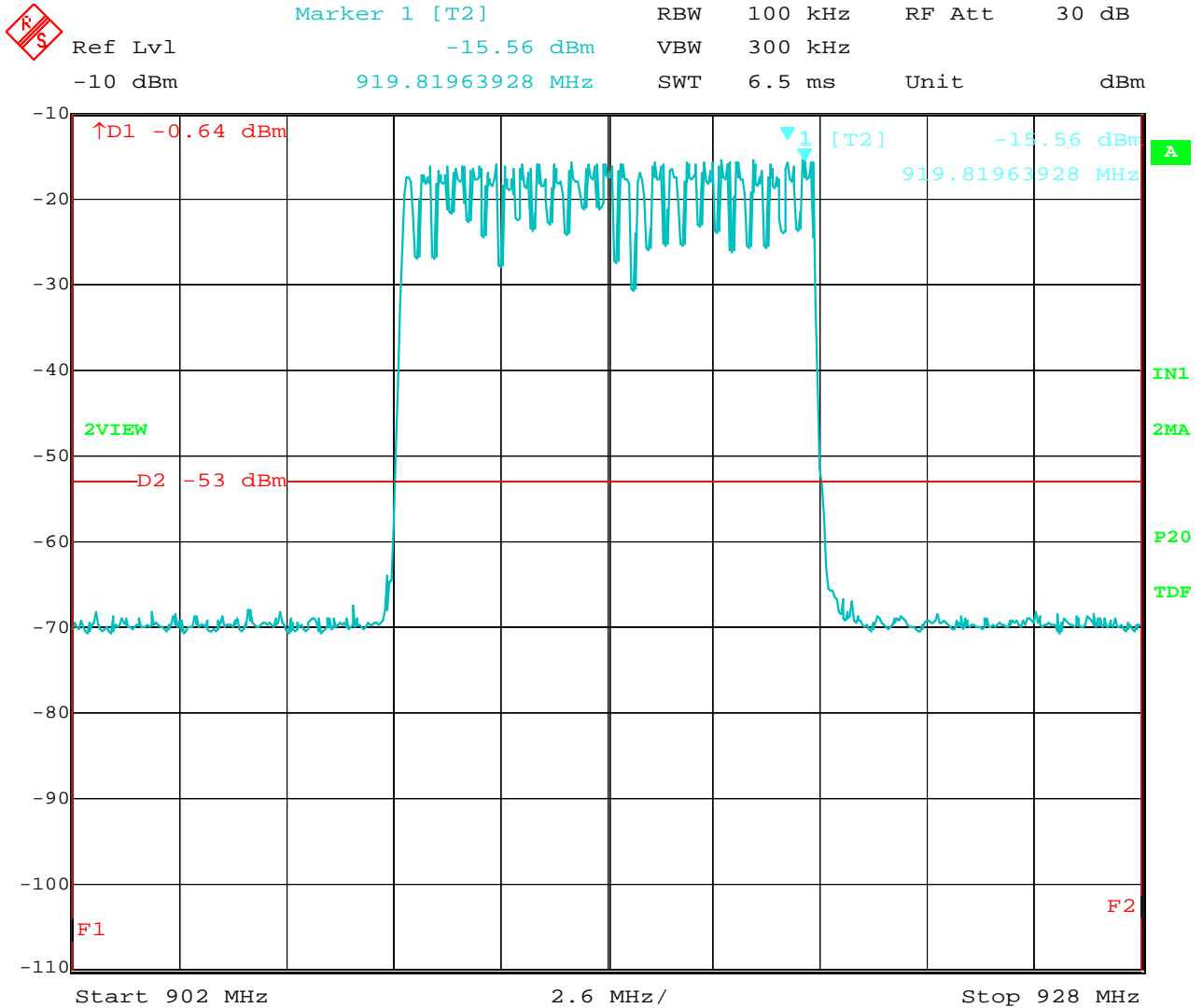
Center 915.0260521 MHz 1 s/

Date: 15.JUL.2011 07:33:40

Number of Pulses in 10 second = 2  
 Time of Occupancy = (17.234469 ms + 25.651303 ms) \* 2 = 85.771544 ms  
 Limit = 400 ms per 10 seconds

***NUMBER OF HOPPING FREQUENCIES***

***DATA SHEET***

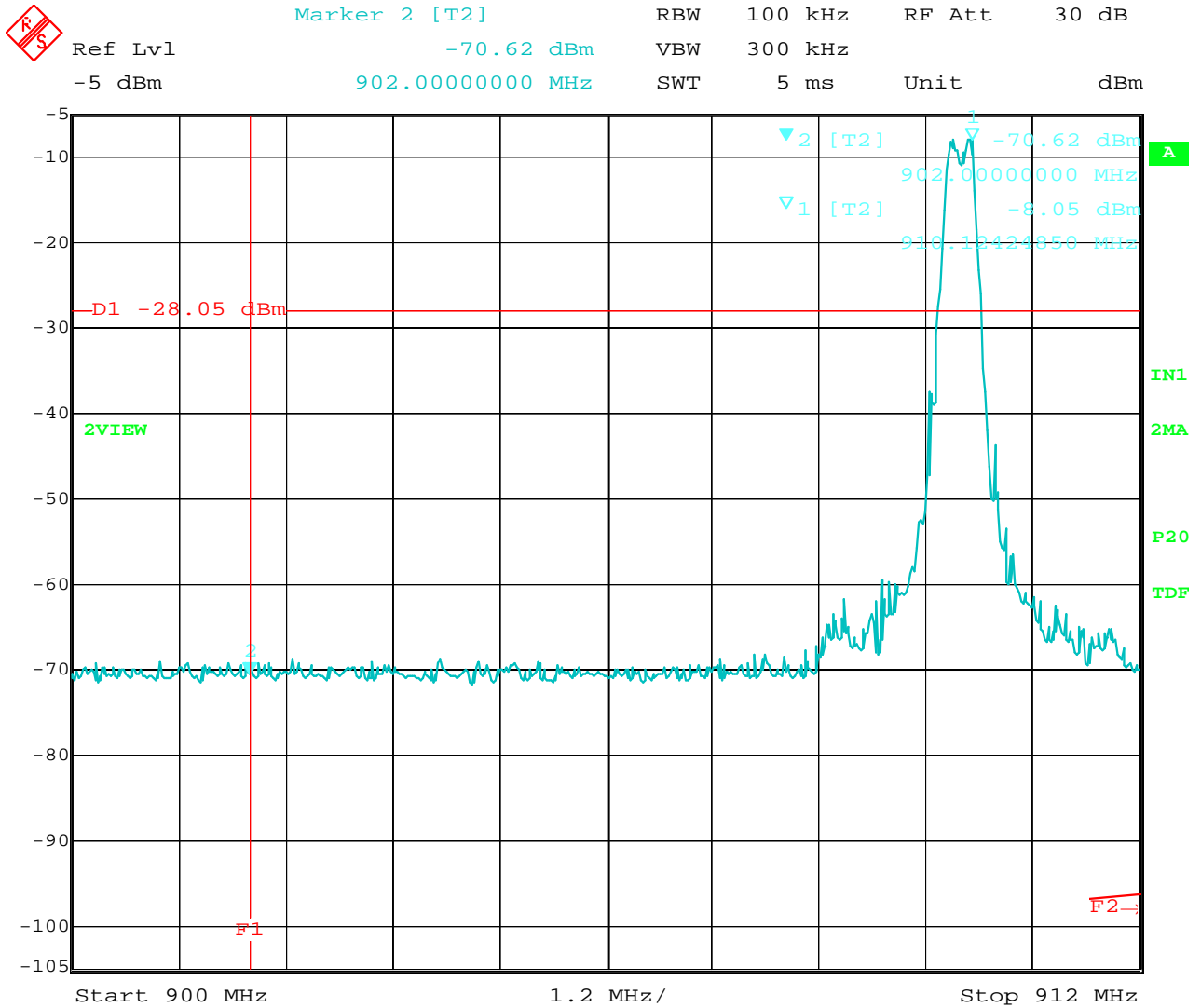


Date: 15.JUL.2011 09:31:14

Number of Channel = 25

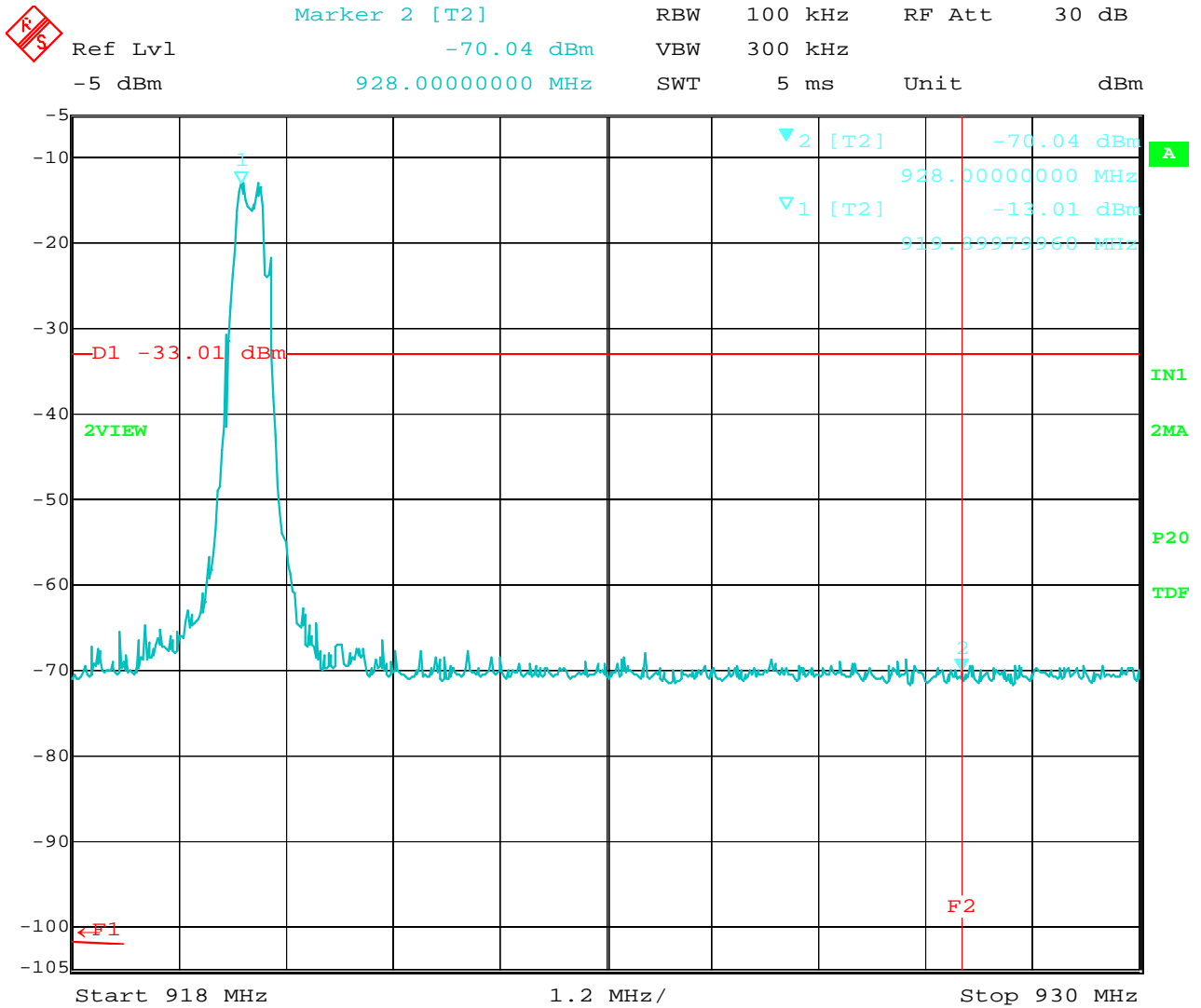
***BAND EDGES***

***DATA SHEETS***



Date: 15.JUL.2011 10:26:46

Band Edge – Low Channel

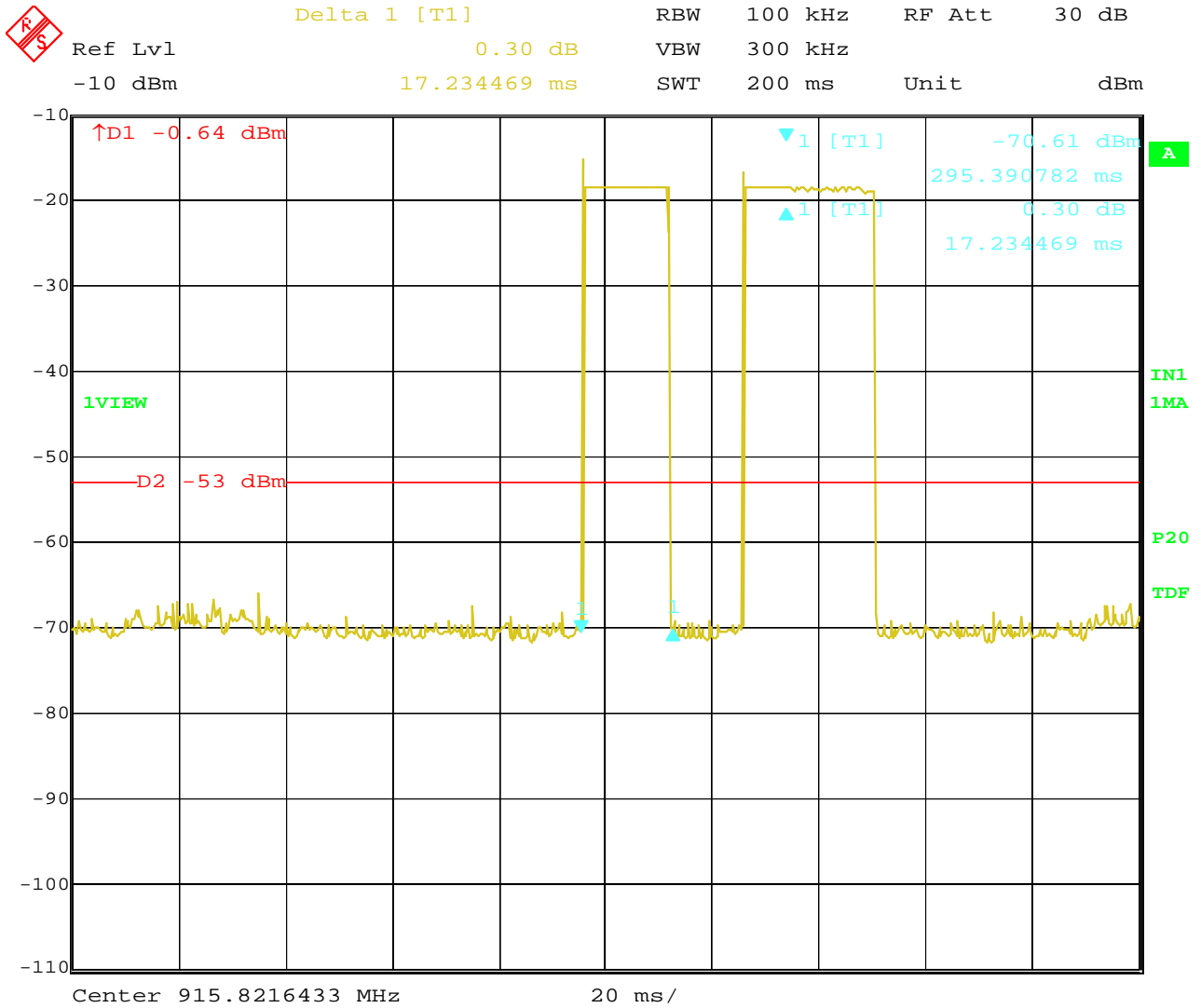


Band Edge – High Channel



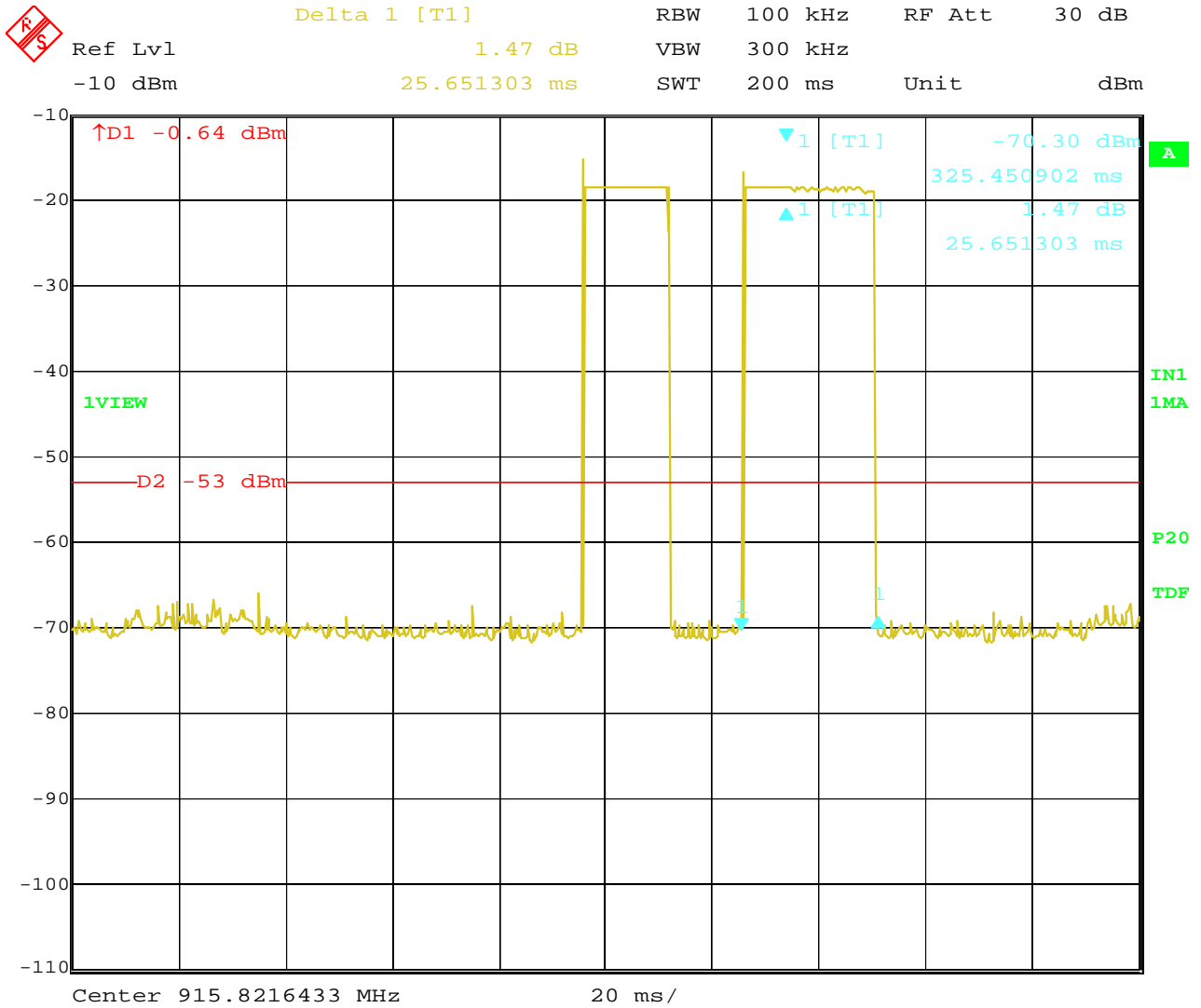
***DUTY CYCLE INFORMATION***

***DATA SHEETS***



Date: 15.JUL.2011 09:35:42

Time of Small Pulse = 17.234469 ms



Date: 15.JUL.2011 09:36:04

Time of Large Pulse = 25.651303 mS

Note the Pulse only repeats once in a 100 mS period so the duty cycle is  
 $(17.234469 \text{ ms} + 25.651303 \text{ ms}) = 42.885772 \text{ ms} / 100 \text{ mS} = 42.89\%$