LS RESEARCH, LLC
WIRELESS PRODUCT DEVELOPMENT
ACCREDITED
TESTING CERT #1255.01
W66 N220 Commerce Court ● Cedarburg, WI 53012 ● USA
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TEST REPORT # 311183
LSR Job #: C-1226

Compliance Testing of:
RF1060 900 MHz Wireless Headset

Test Date(s):
August 10, September 15-16, 27, 29, October 6, November 28, 2011

Prepared For:
R.F. Technologies
Attn: Scott Crause
542 South Prairie Street
Bethalto, IL 62010

In accordance with:
Federal Communications Commission (FCC)
Part 15, Subpart C, Section 15.249
Industry Canada (IC) RSS 210 Annex 2
Transmitters Operating in the
Frequency Band 902 MHz – 928 MHz

This Test Report is issued under the Authority of:
Peter Feilen, EMC Engineer

Signature: Peter Feilen Date:11/04/11

Test Report Reviewed by:	**Tested by:**
Aidi Zainal, Senior EMC Engineer	Peter Feilen, EMC Engineer
Signature: Date: 10/26/11	Signature: Peter Feilen Date: 10/13/11

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EXHIBIT 1. INTRODUCTION

1.1 SCOPE

References:	FCC Part 15, Subpart C, Section 15.249 and 15.209 FCC Part 2, Section 2.1043 paragraph (b)1. RSS GEN and RSS 210 Annex 2
Title:	FCC : Telecommunication – Code of Federal Regulations, CFR 47, Part 15. IC : Low-power License-exempt Radio-communication Devices (All Frequency Bands): Category I Equipment
Purpose of Test:	To gain FCC and IC Certification Authorization for Low-Power License-Exempt Transmitters.
Test Procedures:	Both conducted and radiated emissions measurements were conducted in accordance with American National Standards Institute ANSI C63.4 – 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.
Environmental Classification:	• Commercial, Industrial or Business • Residential

1.2 NORMATIVE REFERENCES

Publication	Title
47 CFR, Parts 0-15 (FCC)	Code of Federal Regulations - Telecommunications
RSS 210	Low-power License-exempt Radio-communication Devices (All Frequency Bands): Category I Equipment
ANSI C63.4	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.
CISPR 16-1-1	Specification for radio disturbance and immunity measuring apparatus and methods. Part 1-1: Measuring Apparatus.

1.3 LS Research, LLC TEST FACILITY

LS Research, LLC is accredited by A2LA (American Association for Laboratory Accreditation) to conform to ISO/IEC 17025, 2005 "General Requirements for the Competence of Calibration and Testing Laboratories".

LS Research, LLC's scope of accreditation includes all test methods listed herein, unless otherwise noted. A copy of the accreditation may be accessed on our web site: www.lsr.com. Accreditation status can be verified at A2LA's web site: www.a2la2.net.

1.4 LOCATION OF TESTING

All testing was performed at LS Research, LLC, W66 N220 Commerce Court, Cedarburg, Wisconsin, 53012 USA, utilizing the facilities listed below, unless otherwise noted.

List of Facilities Located at LS Research, LLC:

- Compact Chamber
- Semi-Anechoic Chamber
- Open Area Test Site (OATS)

1.5 TEST EQUIPMENT UTILIZED

A complete list of equipment utilized in testing is provided in Appendix A of this test report. Calibration dates are indicated in Appendix A. All test equipment is calibrated in accordance with A2LA standards.

EXHIBIT 2. PERFORMANCE ASSESSMENT

2.1 CLIENT INFORMATION

Manufacturer Name:	**RF Technologies**
Address:	**542 South Prairie Street, Bethalto, IL 62010**
Contact Name:	**Scott Crause**

2.2 EQUIPMENT UNDER TEST (EUT) INFORMATION

The following information has been supplied by the applicant.

Product Name:	RF 1060
Model Number:	RF1060
Serial Number:	0057082011

2.3 ASSOCIATED ANTENNA DESCRIPTION

A wire antenna is used in this product. It is wrapped in a 180 degree arc, inside of the plastic headset housing, that the radio board is also contained inside.

2.4 EUT'S TECHNICAL SPECIFICATIONS

Additional Information:

EUT Frequency Range (in MHz)	903.25-907.80
RF Power in Watts	0.00032 W
Maximum Field Strength at 3 meters	90.3 dBuV/m @ 3m @ 904.93MHz
Occupied Bandwidth	133 kHz
Type of Modulation	FM
Emission Designator	133KF3E
MAX EIRP (in W) Note: As measured over a conductive ground plane	0.00032 W
Transmitter Spurious (worst case) at 3 meters	48.5 dBuV/m @ 4952 MHz
Receiver Spurious (worst case) at 3 meters	45.5 dBuV/m @ 4956 MHz
Stepped (Y/N)	N
Step Value:	N/A
Frequency Tolerance %, Hz, ppm	Better than 100 ppm
Microprocessor Model # (if applicable)	Texas Instruments MSP430F133
Antenna Information	
Detachable/non-detachable	Non-detachable
Type	wire
Gain (in dBi) Note: As measured over a conductive ground plane	0 dBi
EUT will be operated under FCC Rule Part(s)	15.249
EUT will be operated under RSS Rule Part(s)	RSS 210
Modular Filing	☐ Yes ☒ No
Portable or Mobile?	Portable

RF Technical Information:

Type of Evaluation (check one)	X	SAR Evaluation: Device Used in the Vicinity of the Human Head
		SAR Evaluation: Body-worn Device
		RF Evaluation

Procedure for Portable RF Exposure from KDB 447498:

$$Output\ Power\ \leq \frac{60}{f\ (GHz)}(mW)$$

$$0.324\ mW\ \leq 66.37\ mW$$

Since the peak output power of 0.646 mW is below the low threshold of 66.37mW this device does not need SAR evaluation

2.5 PRODUCT DESCRIPTION

Used in the Drive-Thru industry to communicate between the employee and the customer placing an order.

EXHIBIT 3. EUT OPERATION CONDITIONS & CONFIGURATION DURING TESTS

3.1 CLIMATE TEST CONDITIONS

Temperature:	70-75° F
Humidity:	40-46%

3.2 APPLICABILITY & SUMMARY OF EMC EMISSION TEST RESULTS

FCC and IC Paragraph	Test Requirements	Compliance (yes/no)
FCC : 15.207 IC : RSS GEN sect. 7.2.2	Power Line Conducted Emissions Measurements	N/A
IC : RSS GEN section 4.6.1	20 dB Bandwidth	YES
FCC : 15.249(A) & 1.1310 IC : RSS 210 A2.9 (a)	Maximum Output Power	YES
FCC : 1.1307, 1.1310, 2.1091 & 2.1093 IC : RSS 102	RF Exposure Limit	YES
FCC : 15.249(a) IC : RSS 210 A2.9(a)	Transmitter harmonics	YES
FCC : 15.249(d), 15.209 & 15.205 IC : RSS 210 A2.9(b),	Transmitter Radiated Emissions	YES
The digital circuit portion of the EUT has been tested and verified to comply with FCC Part 15, Subpart B, Class B Digital Devices (RSS GEN and RSS 210 of IC) and the associated Radio Receiver has also been tested and found to comply with Part 15, Subpart B – Radio Receivers (RSS GEN and RSS 210 of IC). The Receiver Test Report is available upon request.		

3.3 MODIFICATIONS INCORPORATED IN THE EUT FOR COMPLIANCE PURPOSES

☒ **None** ☐ **Yes (explain below)**

3.4 DEVIATIONS & EXCLUSIONS FROM TEST SPECIFICATIONS

☒ **None** ☐ **Yes (explain below)**

EXHIBIT 4. DECLARATION OF CONFORMITY

The EUT was found to MEET the requirements as described within the specification of FCC Title 47, CFR Part 15.249, and Industry Canada RSS-210, Annex 2.9.

If some emissions are seen to be within 3 dB of their respective limits:
As these levels are within the tolerances of the test equipment and site employed, there is a possibility that this unit, or a similar unit selected out of production may not meet the required limit specification if tested by another agency.

LS Research, LLC certifies that the data contained herein was taken under conditions that meet or exceed the requirements of the test specifications. The results in this Test Report apply only to the item(s) tested on the above-specified dates. Any modifications made to the EUT subsequent to the indicated test date(s) will invalidate the data herein, and void this certification.

EXHIBIT 5. RADIATED EMISSIONS TEST

5.1 Test Setup

The test setup was assembled in accordance with Title 47, CFR FCC Part 15, RSS GEN and ANSI C63.4. The EUT was placed on an 80cm high non-conductive pedestal, centered on a flush mounted 2-meter diameter turntable inside a 3 meter Semi-Anechoic, FCC listed Chamber. The EUT was operated in continuously transmitting modulated mode using power as provided by a battery. The unit has the capability to operate on 10 channels, controllable a programming station using Infrared, as provided by the manufacturer.

The applicable limits apply at a 3 meter distance. Measurements above 3 GHz were performed at a 1.0 meter separation distance. The calculations to determine these limits are detailed in the following pages. Please refer to Appendix A for a complete list of test equipment. The test sample was operated on one of three (3) standard channels: **903.25 MHz, 904.93 MHz and 907.80 MHz** to comply with FCC Part 15.31(m).

5.2 Test Procedure

Radiated RF measurements were performed on the EUT in a 3 meter Semi-Anechoic, FCC listed Chamber. The frequency range from 30 MHz to 10000 MHz was scanned and investigated. The radiated RF emission levels were manually noted at the various fixed degree settings of azimuth on the turntable and antenna height. The EUT was placed on a non-conductive pedestal in the 3 meter Semi-Anechoic Chamber, with the antenna mast placed such that the antenna was 3 meters from the EUT. A Biconical Antenna was used to measure emissions from 30 MHz to 300 MHz, and a Log Periodic Antenna was used to measure emissions from 300 MHz to 1000 MHz. A Double-Ridged Waveguide Horn Antenna was used from 1 GHz to 10 GHz.
In the frequency range of 30 MHz to 10 GHz, the maximum radiated RF emissions were found by raising and lowering the antenna between 1 and 4 meters in height while for the range of 4 GHz to 10 GHz the antenna was raised and lowered between 1 and 1.8 meters in height. In addition, the polarity of the antenna was switched between horizontal and vertical polarity.

The EUT was positioned in three orthogonal positions for the test.

Battery Voltage was periodically checked to ensure sufficient supply.

5.3 Test Equipment Utilized

A list of the test equipment and antennas utilized for the Radiated Emissions test can be found in Appendix A. This list includes calibration information and equipment descriptions. All equipment is calibrated and used according to the operation manuals supplied by the manufacturers. All calibrations of the antennas used were performed at an IEC/ISO 17025 accredited calibration laboratory, traceable to the SI standard. In addition, the Connecting Cables were measured for losses using a calibrated Signal Generator and an EMI Receiver. The resulting correction factors and the cable loss factors from these calibrations were entered into the EMI Receiver database. As a result, the data taken from the EMI Receiver accounts for the antenna correction factor as well as cable loss or other corrections, and can therefore be entered into the database as a corrected meter reading. The EMI Receiver was operated with resolution bandwidths as prescribed in ANSI C63.4.

5.4 Test Results

The EUT was found to **MEET** the Radiated Emissions requirements of Title 47 CFR, FCC Part 15.249 and Canada RSS-210, Annex 2.9. The frequencies with significant RF signal strength were recorded and plotted as shown in the Data Charts and Graphs.

5.5 CALCULATION OF RADIATED EMISSIONS LIMITS

Field Strength of Fundamental Frequencies:
The fundamental emissions for an intentional radiator in the 902-928 MHz band, operating under FCC part 15.249 and RSS 210 A2.9 limits, must have electric field strength of no greater than 50 mV/m, for the fundamental frequency, when measured at 3 meters, and harmonic field strength of no greater than 500 µV/m, when measured at 3 meters. Spurious emissions outside the 902-928 MHz band shall be attenuated by at least 50 dB below the level of the fundamental, or meet the limits expressed in FCC part 15.209 under general emission limits.
Field Strength of Fundamental Frequencies is Limited to 50,000 µV/m, or 94 dBµV/m.
Field Strength of Harmonic and Spurious Frequencies is Limited by FCC 15.249 a and d
The harmonic limit of –50 dBc with respect to the fundamental limit would be:

94 dBµV/m – 50 dB = 44 dBµV/m,

*****with the exception of where FCC 15.209***** allows for a higher limit to be used.

Frequency (MHz)	3 m Limit (µV/m)	3 m Limit (dBµV/m)
902-928	50,000	94.0
30-88 ; 88-216	159	44.0
216-902 ; 928-960	500	46.0*****
960-40,000	500	54.0*****

The following table depicts the general radiated emission limits obtained from Title 47 CFR, part 15.209a, for radiated emissions measurements, including restricted band limits as expressed in 47 CFR, part 15.205.

Frequency (MHz)	3 m Limit (µV/m)	3 m Limit (dBµV/m)
30-88	100	40.0
88-216	150	43.5
216-960	200	46.0
960-40,000	500	54.0

Sample conversion from field strength µV/m to dBµV/m:

$$dB\mu V/m = 20 \log_{10} (3m\ limit)$$

from 30 - 88 MHz for example: $dB\mu V/m = 20 \log_{10} (100)$

$40.0\ dB\mu V/m = 20 \log_{10} (100)$

For measurements made at 1 meter, a 9.5 dB correction may be been invoked.

960 MHz to 40,000 MHz
500 µV/m or 54.0 dBµV/m at 3 meters
54.0 + 9.5 = 63.5 dBµV/m at 1 meter

Note: Limits are conservatively rounded to the nearest tenth of a whole number.

Sample Calculation using correction factors

Formula
Raw Receiver Data + Antenna Factor + Cable Factor = Reported Value

Generic example of reported data at 299 MHz
Reported Measurement data = 8.2 (raw receiver measurement) + 22.2 (antenna factor) + 1.6(cable factor) = 32.0 dBµV

5.6 RADIATED EMISSIONS TEST DATA CHART

Measurements of Electromagnetic Radiated Emissions
Frequency Range Inspected: 30 MHz to 10000 MHz

Manufacturer:	RF Technologies						
Test Dates:	August 10, September 15-16, 27, 29, October 6, November 28, 2011						
Project Engineer:	Peter Feilen						
Test Engineer(s):	Peter Feilen						
Voltage:	3.7 VDC						
Operation Mode:	Constant Transmit Mode						
Environmental Conditions in the Lab:	Temperature: 71˚F Relative Humidity: 42 %						
EUT Power:		Single Phase 120 VAC		3 Phase ___VAC			
	X	Battery		Other:			
EUT Placement:	X	80cm non-conductive table		10cm Spacers			
EUT Test Location:	X	3 Meter Semi-Anechoic FCC Listed Chamber		3/10m OATS			
Measurements:		Pre-Compliance		Preliminary	X	Final	
Detectors Used:	X	Peak	X	Quasi-Peak	X	Average	

Table of Maximum Fundamental Emissions

FREQ (MHz)	ANT Polarity	EUT Position	HEIGHT (m)	AZIMUTH (°)	Electric Field Strength (dBµv/m)	LIMIT (dBµv/m)	MARGIN (dB)
903.25	H	Side	1.42	0	90.2	94.0	3.7
904.93	H	Side	1.44	0	90.3	94.0	3.7
907.80	H	Side	1.39	0	90.0	94.0	4.0

Note: The use of a CISPR quasi-peak detector was used in the measurement of the radiated fundamental electric field strength

The following table depicts the level of radiated emissions:

FREQ (MHz)	ANT	EUT	HEIGHT (m)	AZIMUTH (degrees)	PEAK (dBµv/m)	Q.PEAK (dBµv/m)	AVERAGE (dBµv/m)	LIMIT (dBµv/m)	MARGIN (dB)	NOTES
994.41	S	V	1.00	0	35.6	29.6	23.1	54.0	24.4	CHANNEL 1
991.95	H	S	1.28	0	39.6	36.0	32.0	54.0	18.0	CHANNEL 8
775.73	H	S	1.00	0	33.2	26.5	19.9	46.0	19.5	CHANNEL 8
991.95	V	S	1.59	0	37.5	33.1	28.0	54.0	20.9	CHANNEL 8
299.05	H	S	1.00	0	32.0	26.1	19.6	46.0	19.9	CHANNEL 8
291.49	V	S	1.00	0	31.4	24.3	17.9	46.0	21.7	CHANNEL 8
3967.76	H	S	1.39	330	49.5		44.5	54.0	9.5	CHANNEL 8
1983.38	H	S	1.48	30	46.6		43.9	54.0	10.1	CHANNEL 8
1983.83	V	S	1.00	302	43.7		39.3	54.0	14.7	CHANNEL 8
1983.90	V	V	1.19	356	45.9		42.6	54.0	11.4	CHANNEL 8
4952.00	H	F	1.03	204	51.5		48.5	54.0	5.5	CHANNEL 5
5951.00	H	V	1.08	26	49.6		42.4	63.5	63.5	CHANNEL 5
6334.46	H	V	1.00	283	46.7		36.1	63.5	63.5	CHANNEL 5
6943.58	H	V	1.00	251	49.0		38.8	63.5	63.5	CHANNEL 5
8927.48	H	V	1.12	309	49.8		40.3	63.5	63.5	CHANNEL 5
5951.68	V	V	1.07	303	49.9		44.7	63.5	63.5	CHANNEL 5
6943.63	V	V	1.09	255	48.9		38.7	63.5	63.5	CHANNEL 5
5951.68	V	S	1.13	283	49.7		44.2	63.5	63.5	CHANNEL 5
6943.63	V	S	1.35	280	49.4		39.8	63.5	63.5	CHANNEL 5
8927.51	V	S	1.29	0	48.7		38.8	63.5	63.5	CHANNEL 5
5951.69	H	S	1.16	0	47.9		39.2	63.5	63.5	CHANNEL 5
6943.59	H	S	1.04	67	47.6		37.8	63.5	63.5	CHANNEL 5
5951.72	H	F	1.17	329	49.8		43.1	63.5	63.5	CHANNEL 5
6943.58	H	F	1.00	345	47.0		36.4	63.5	63.5	CHANNEL 5
5951.70	V	F	1.12	184	47.6		39.1	63.5	63.5	CHANNEL 5
6334.58	V	F	1.10	305	47.1		36.4	63.5	63.5	CHANNEL 5
6943.56	V	F	1.19	244	47.9		37.4	63.5	63.5	CHANNEL 5
5429.00	V	S	1.21	272	49.4		37.7	63.5	63.5	CHANNEL 8
5951.68	V	S	1.01	94	49.5		42.5	63.5	21.0	CHANNEL 8
6943.63	V	S	1.36	292	48.3		39.5	63.5	24.0	CHANNEL 8
5951.70	H	S	1.22	12	47.7		39.6	63.5	24.0	CHANNEL 8
6943.62	H	S	1.01	79	47.8		37.8	63.5	25.7	CHANNEL 8
5419.48	V	S	1.28	265	46.9		37.9	63.5	25.6	CHANNEL 1
5941.6	V	S	1.4	270.0	49.5		45.1	63.5	18.4	CHANNEL 1
6322.8	V	S	1.5	353.0	46.1		35.5	63.5	28.0	CHANNEL 1
6931.9	V	S	1.3	284.0	49.1		40.6	63.5	22.9	CHANNEL 1
5419.0	H	S	1.3	0.0	46.5		34.8	63.5	28.7	CHANNEL 1
5941.6	H	S	1.1	0.0	47.7		39.1	63.5	24.4	CHANNEL 1
6322.7	H	S	1.0	298.0	45.9		34.8	63.5	28.7	CHANNEL 1

RADIATED EMISSIONS DATA *(continued)*

The following table depicts the level of harmonic emissions seen on the low channel:

FREQ (MHz)	ANT	EUT	HEIGHT (m)	AZIMUTH (°)	Peak (dBµv/m)	AVERAGE (dBµv/m)	LIMIT (dBµv/m)	MARGIN (dBµv/m)	NOTES
1806.48	H	F	1.16	283	38.7	36.4	54.0	20.6	
2709.72									Note 1
3612.96									Note 1
4516.20	V	S	1.00	31	45.1	42.9	54.0	14.1	
5419.44									Note 1
6322.68									Note 1
7225.92									Note 1
8129.16									Note 1
9032.4									Note 1

The following table depicts the level of harmonic emissions seen on middle channel:

FREQ (MHz)	ANT	EUT	HEIGHT (m)	AZIMUTH (°)	Peak (dBµv/m)	AVERAGE (dBµv/m)	LIMIT (dBµv/m)	MARGIN (dBµv/m)	NOTES
1809.84	H	F	1.13	282	39.6	37.7	54.0	19.2	
2714.76	H	S							Note 1
3619.68	V	V							Note 1
4524.60	V	S	1.03	29	44.6	42.3	54.0	15.0	
5429.52	V	S							Note 1
6334.44	V	S							Note 1
7239.36	V	S							Note 1
8144.28	V	S							Note 1
9049.2	V	S							Note 1

The following table depicts the level of harmonic emissions seen on high channel:

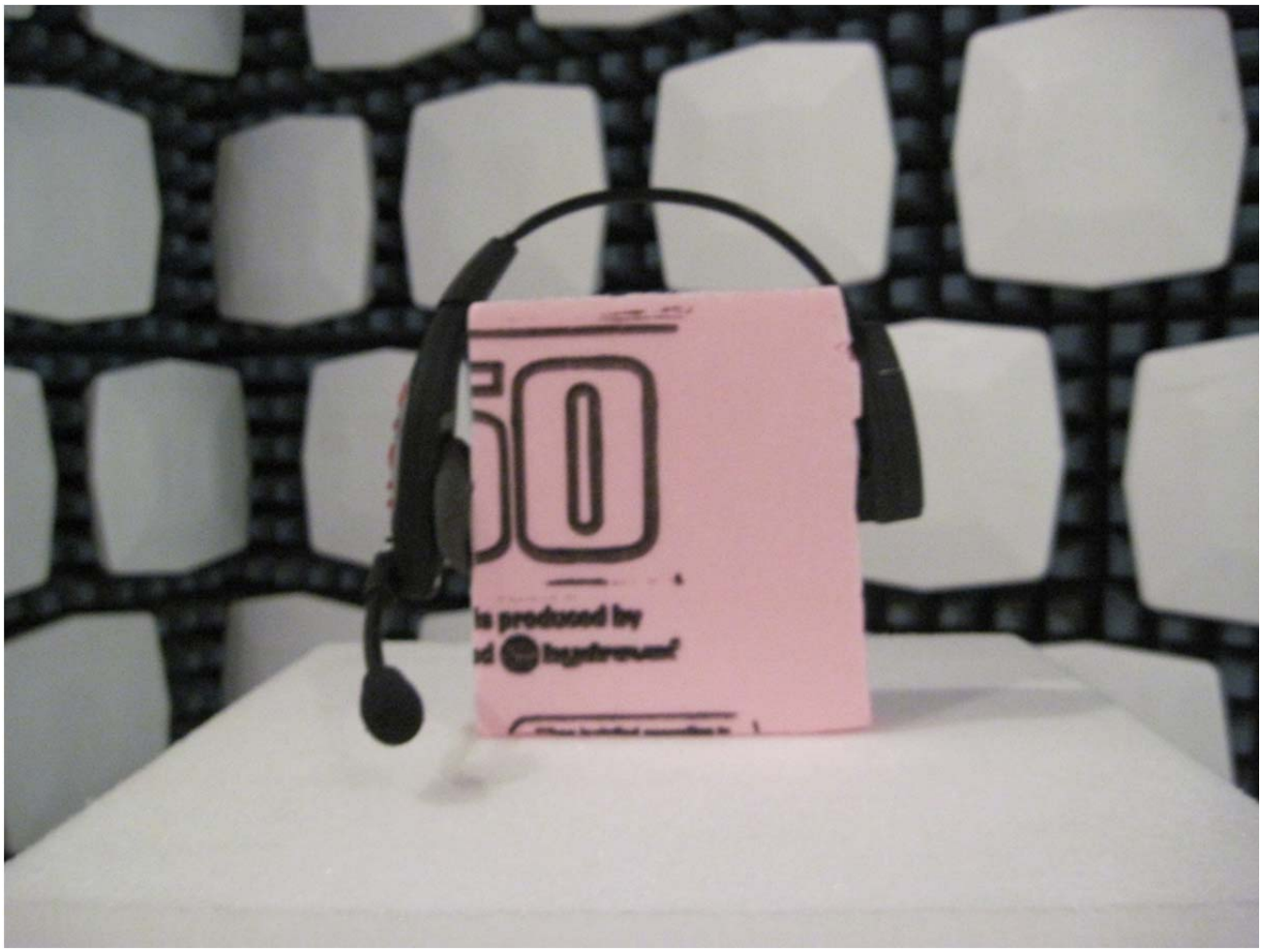
FREQ (MHz)	ANT	EUT	HEIGHT (m)	AZIMUTH (°)	Peak (dBµv/m)	AVERAGE (dBµv/m)	LIMIT (dBµv/m)	MARGIN (dBµv/m)	NOTES
1815.60	H	F	1.13	271	37.6	31.0	54.0	23.0	
2723.40	H	S							Note 1
3631.20	V	V							Note 1
4539.00	V	S	1.12	33	43.0	35.8	54.0	18.2	
5446.80	V	S							Note 1
6354.60	V	S							Note 1
7262.40	V	S							Note 1
8170.20	V	S							Note 1
9078.00	V	S							Note 1

Notes applying to spurious emission measurements:

1) Measurement at receiver system noise floor
2) Measurements above 5 GHz were made at 1 meter of separation from the EUT.
3) A Peak Detector was used in measurements above 1 GHz, for average measurement, the peak detector was used with lower VBW. The peak detector was used to ensure the peak emissions did not exceed 20 dB above the limits.

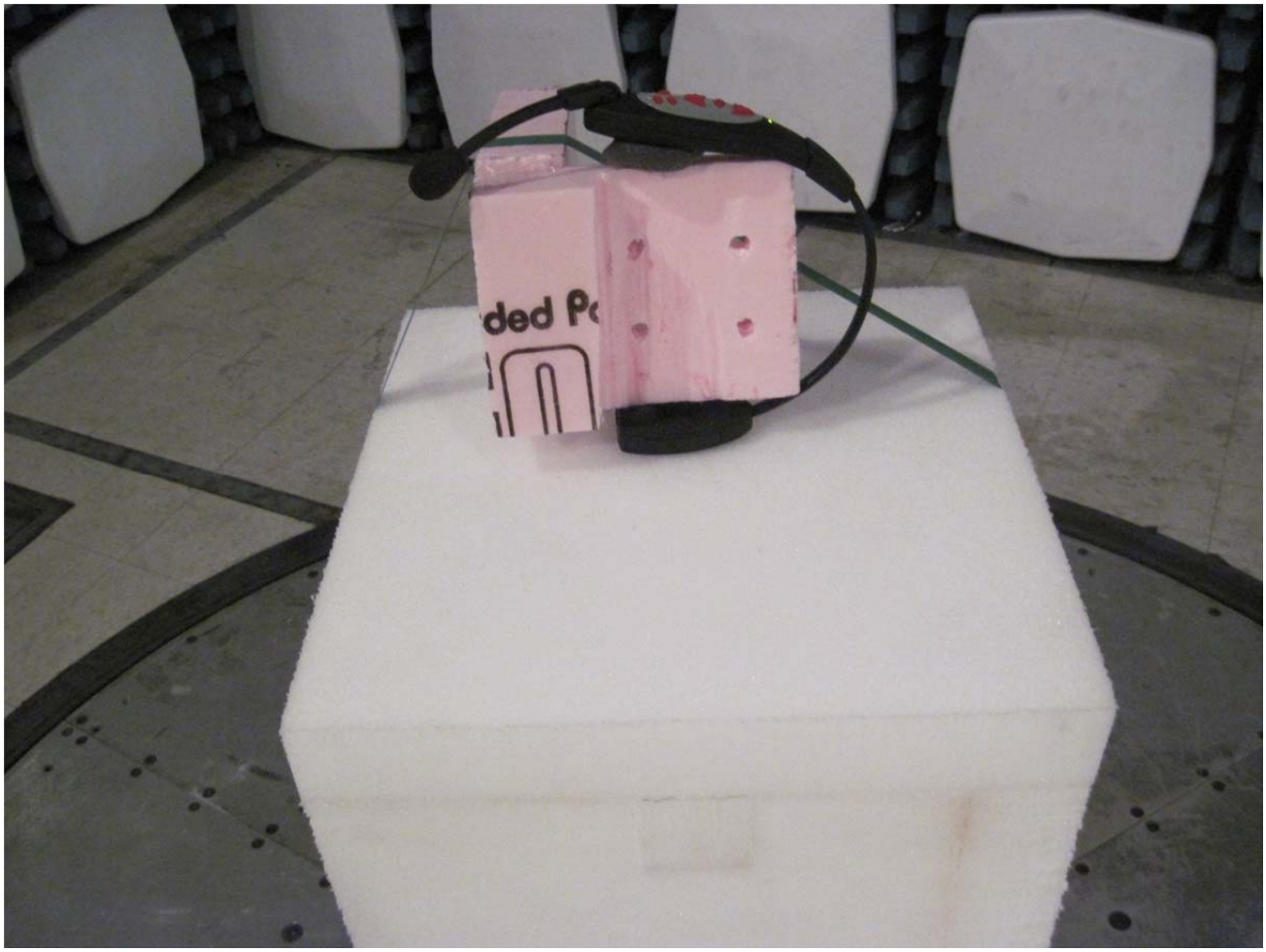
5.7 Test Setup Photo(s) – Radiated Emissions Test

E.U.T. VERTICAL POSITION



E.U.T. HORIZONTAL POSITION

E.U.T. SIDE POSITION

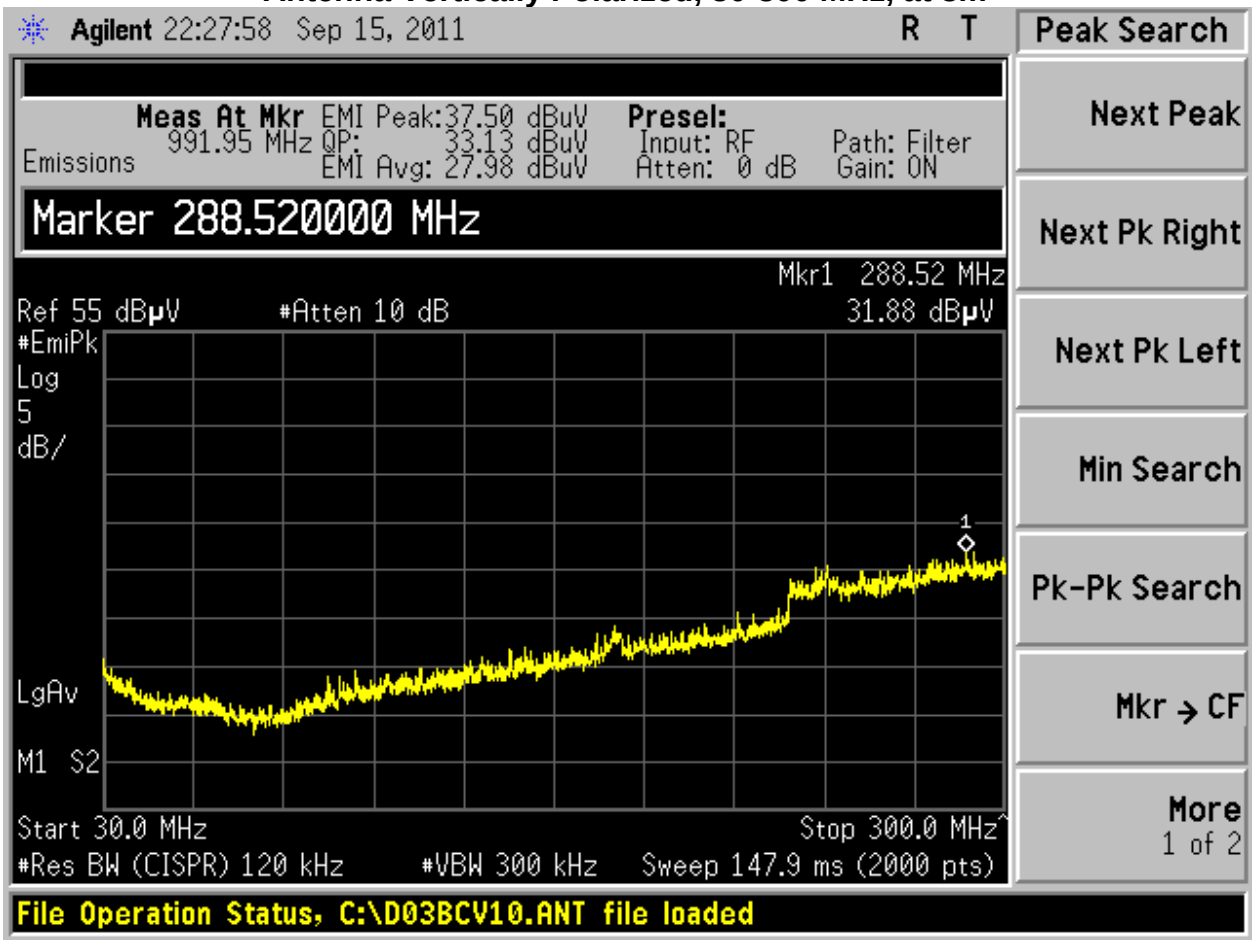


5.8 Screen Captures - Radiated Emissions Test

These screen captures represent Peak Emissions. For radiated emission measurements, a Quasi-Peak detector function is utilized when measuring frequencies below 1 GHz, and a peak detector with video averaging is utilized when measuring frequencies above 1 GHz.

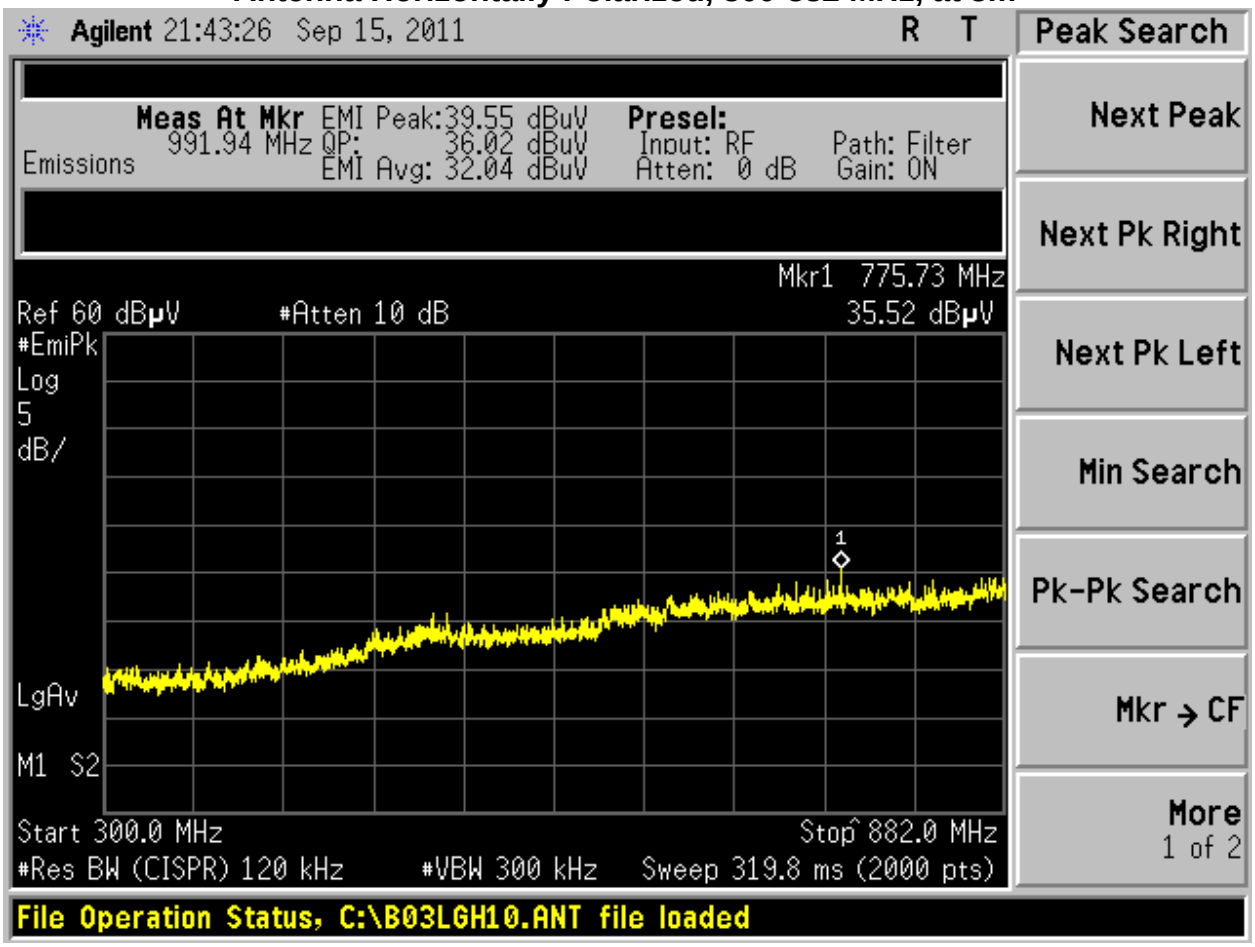
The signature scans shown here are from worst-case emissions, as measured on channels low, middle and hign, with the sense antenna both in vertical and horizontal polarity for worst case presentations.

Antenna Vertically Polarized, 30-300 MHz, at 3m



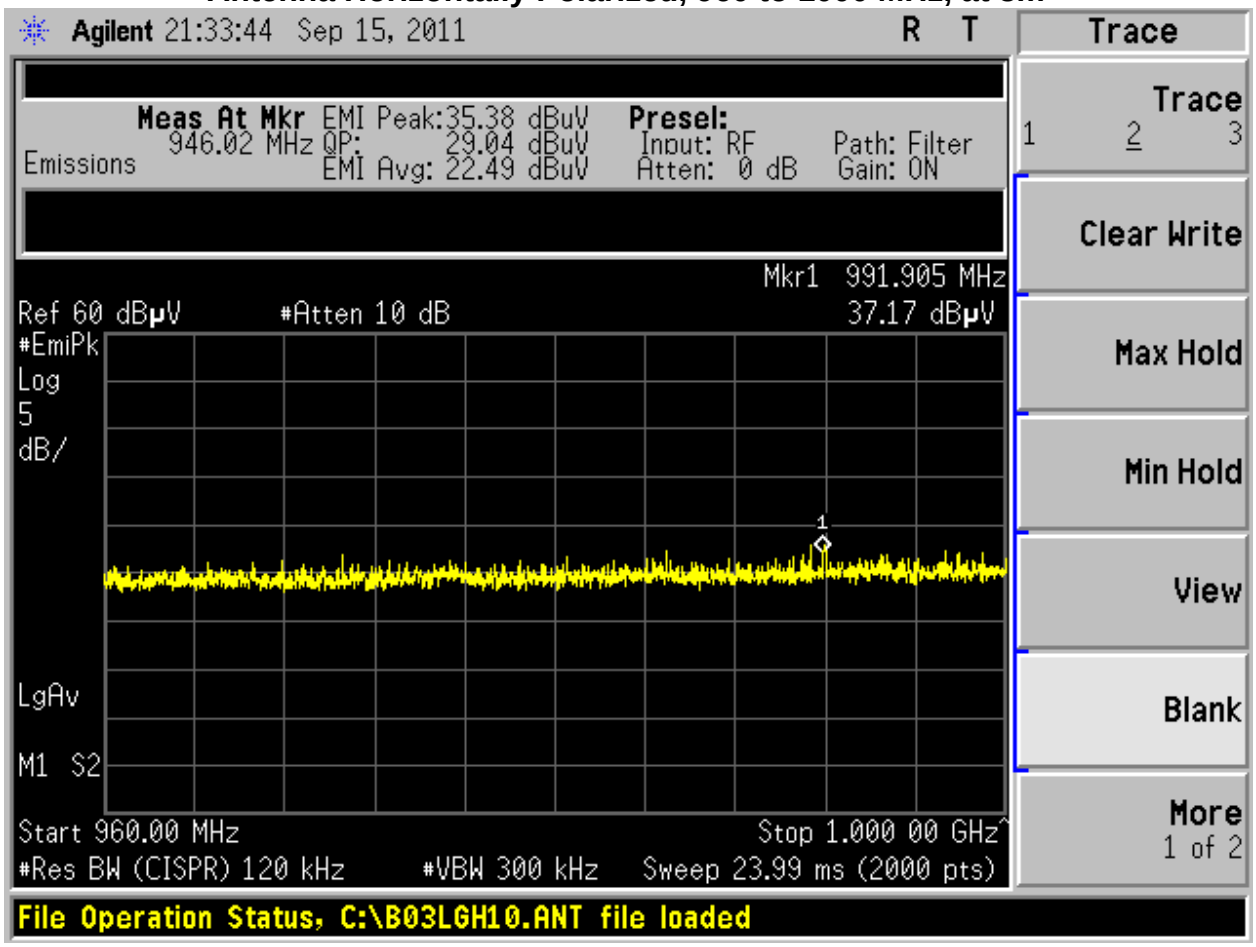
Screen Captures - Radiated Emissions Testing *(continued)*

Antenna Horizontally Polarized, 300-882 MHz, at 3m



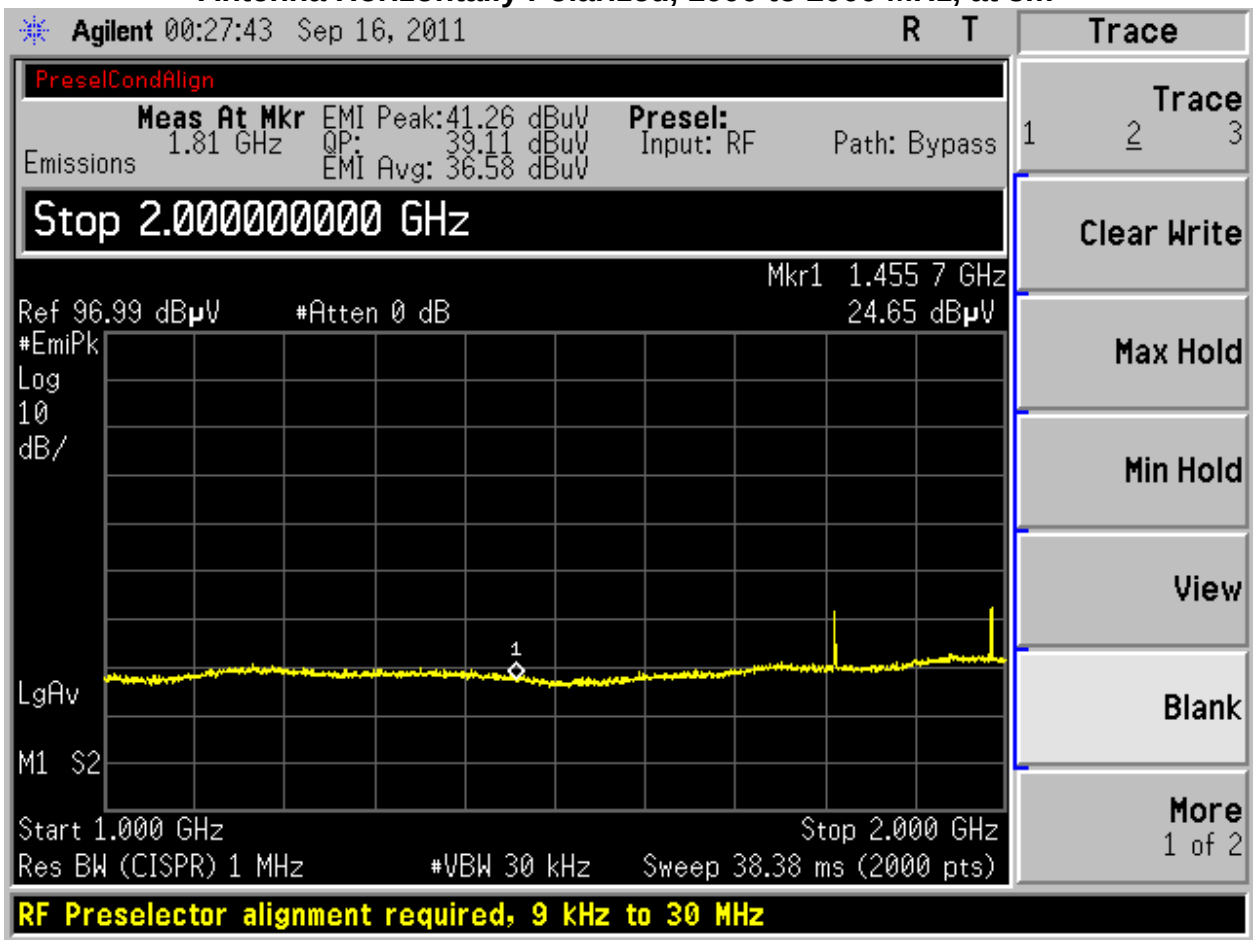
Screen Captures - Radiated Emissions Testing *(continued)*

Antenna Horizontally Polarized, 960 to 1000 MHz, at 3m



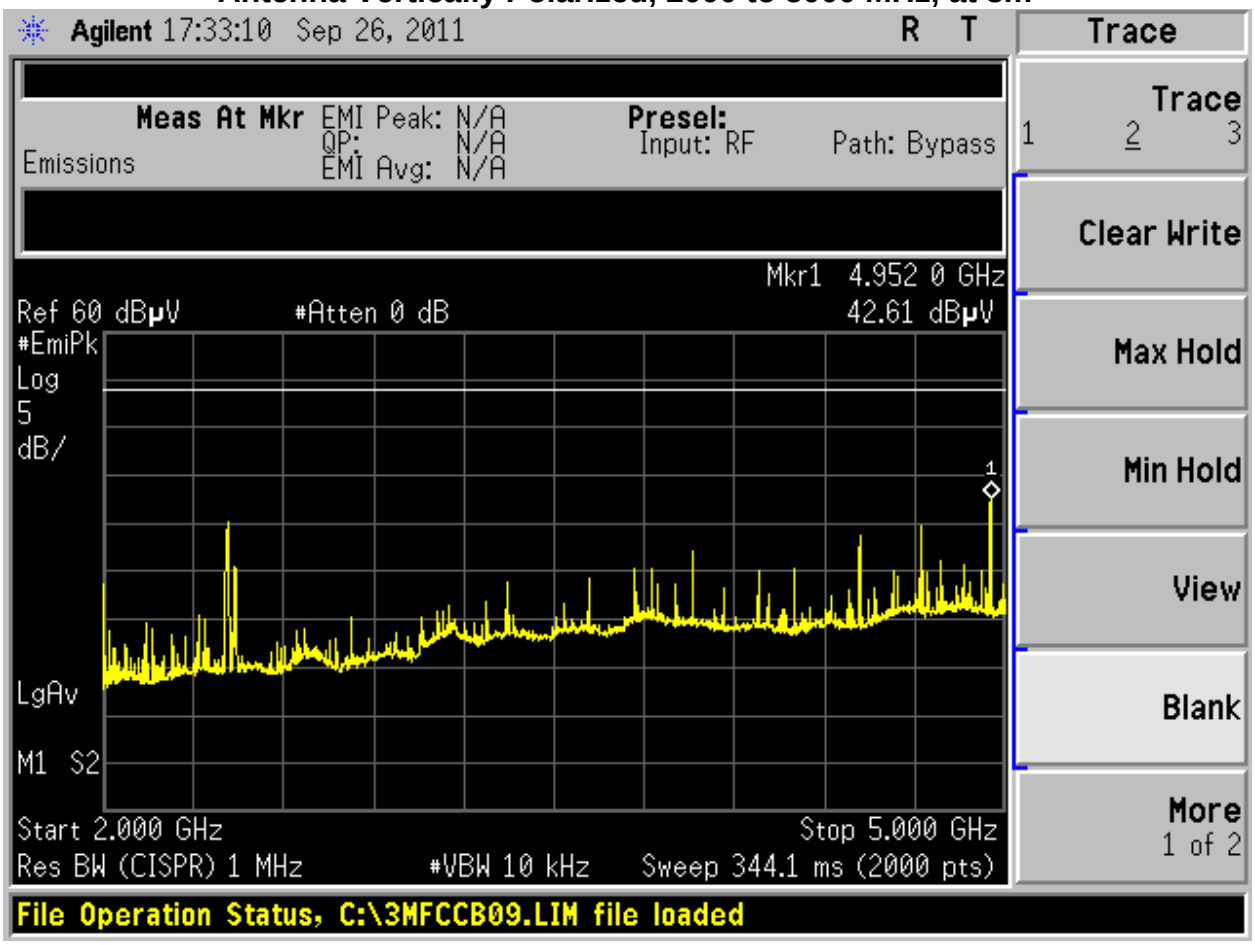
Screen Captures - Radiated Emissions Testing (continued)

Antenna Horizontally Polarized, 1000 to 2000 MHz, at 3m



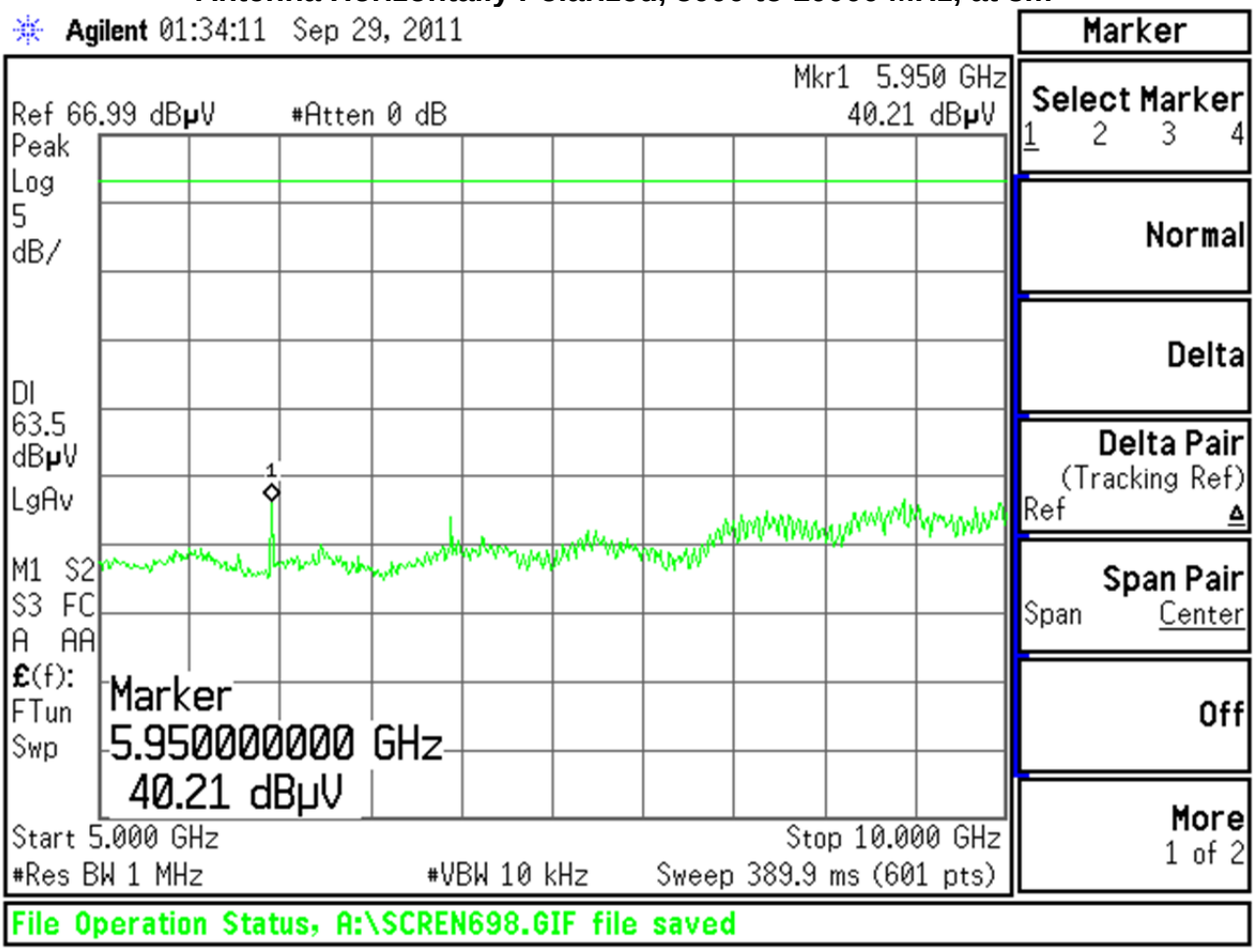
Screen Captures - Radiated Emissions Testing *(continued)*

Antenna Vertically Polarized, 2000 to 5000 MHz, at 3m



Screen Captures - Radiated Emissions Testing (continued)

Antenna Horizontally Polarized, 5000 to 10000 MHz, at 3m



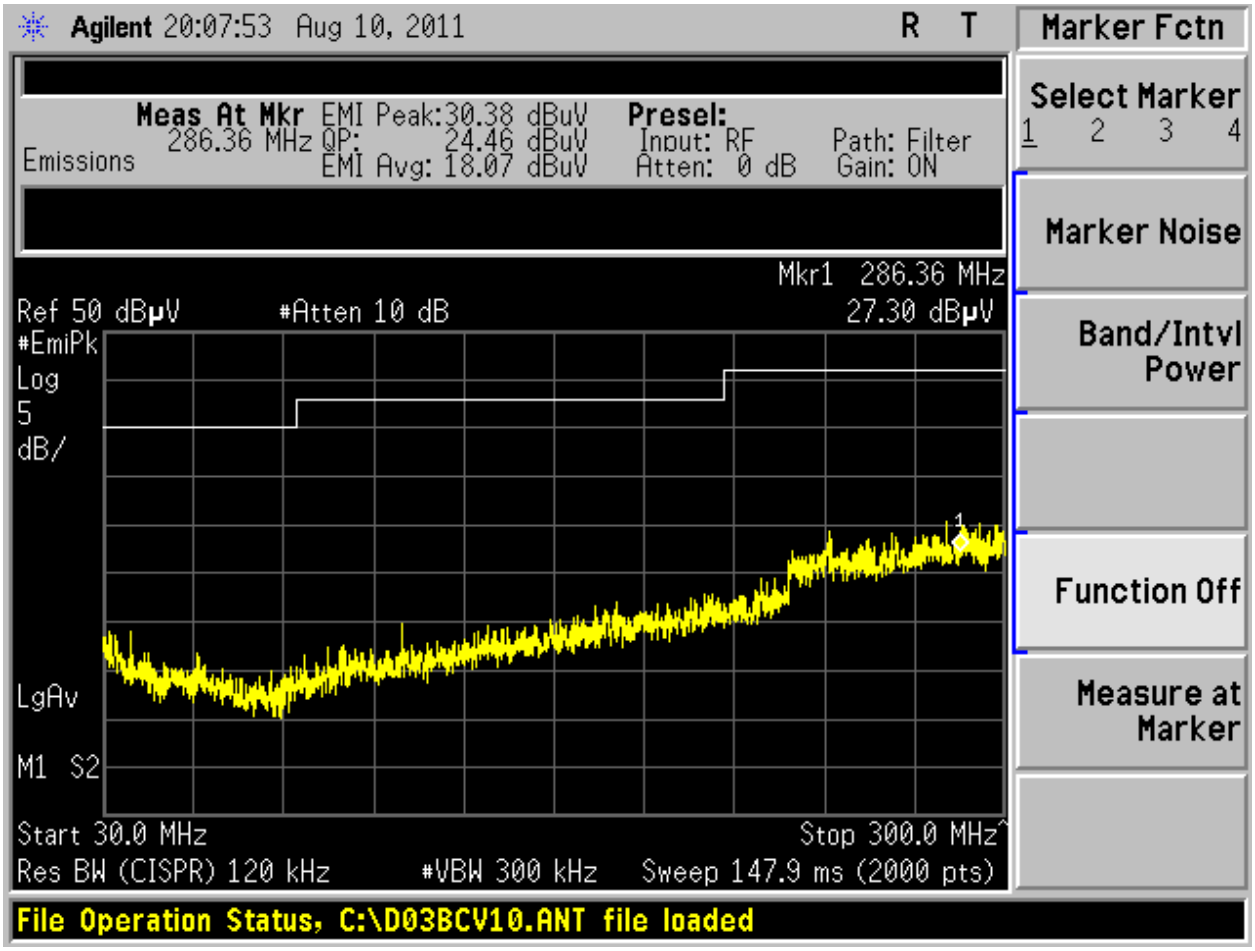
5.9 RECEIVE MODE

TABLE OF SIGNIFICANT VALUES

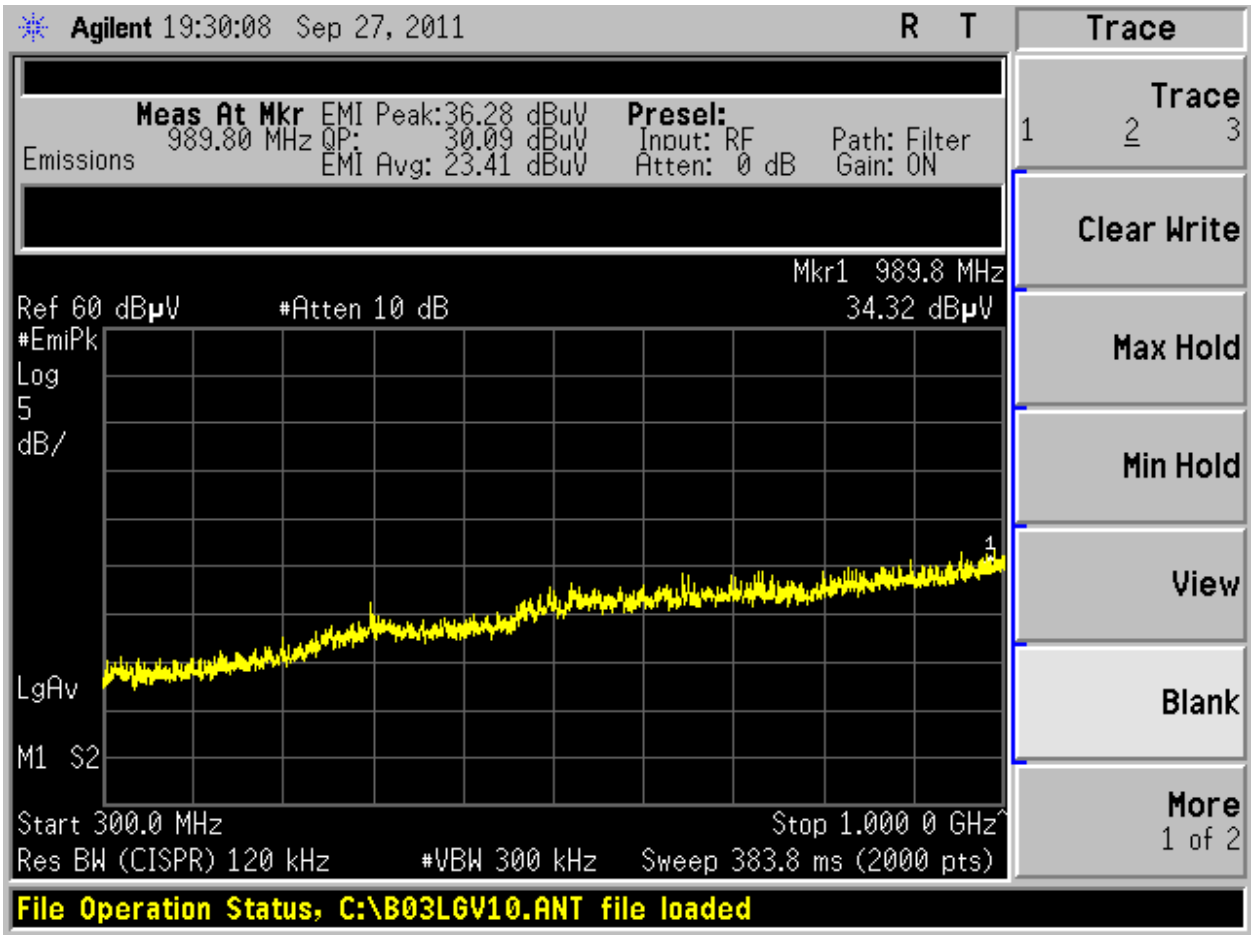
FREQ (MHz)	ANT	EUT	HEIGHT (m)	AZIMUTH (degrees)	PEAK (dBµv/m)	Q.PEAK (dBµv/m)	AVERAGE (dBµv/m)	LIMIT (dBµv/m)	MARGIN (dB)
1982.46	V	V	1.36	284	44.5		40.7	54.0	13.3
1982.47	H	V	1.18	321	40.2		36.0	54.0	18.0
4956.13	H	V	1.41	0	46.7		40.5	54.0	13.5
4956.19	V	V	1.14	315	49.2		45.5	54.0	8.5
299.34	V	V	1.00	0	30.6	24.8	18.4	46.0	21.2
299.54	H	V	1.00	0	30.5	24.8	18.4	46.0	21.2
298.71	H	V	1.00	0	30.7	24.9	18.6	46.0	21.1
978.60	H	H	1.00	0	36.6	29.7	23.0	54.0	24.3
995.10	H	V	1.00	0	35.9	29.4	22.7	54.0	31.3
989.80	V	H	1.00	0	36.3	30.1	23.4	54.0	23.9
994.40	V	V	1.00	0	36.5	29.7	23.1	54.0	24.3
5951.68	H	S	1.24	341	47.8		39.5	63.5	24.0
6943.60	H	S	1.03	79	47.6		37.7	63.5	25.8
5951.67	V	S	1.53	276	49.5		44.2	63.5	19.3
6943.63	V	S	1.35	292	48.6		39.6	63.5	23.9
5941.57	H	S	1.14	0	48.0		39.3	63.5	24.2
6931.83	H	S	1.10	61	48.5		38.4	63.5	25.1
5941.61	V	S	1.35	272	50.1		45.2	63.5	18.3
6931.86	V	S	1.21	277	49.5		40.3	63.5	23.2
5947.37	V	S	1.36	275	49.4		44.7	63.5	18.8
6938.58	V	S	1.06	284	49.3		40.0	63.5	23.5
5947.35	H	S	1.20	1	48.4		40.0	63.5	23.5
6938.59	H	S	1.03	62	48.9		38.4	63.5	25.1

SCREEN CAPTURES

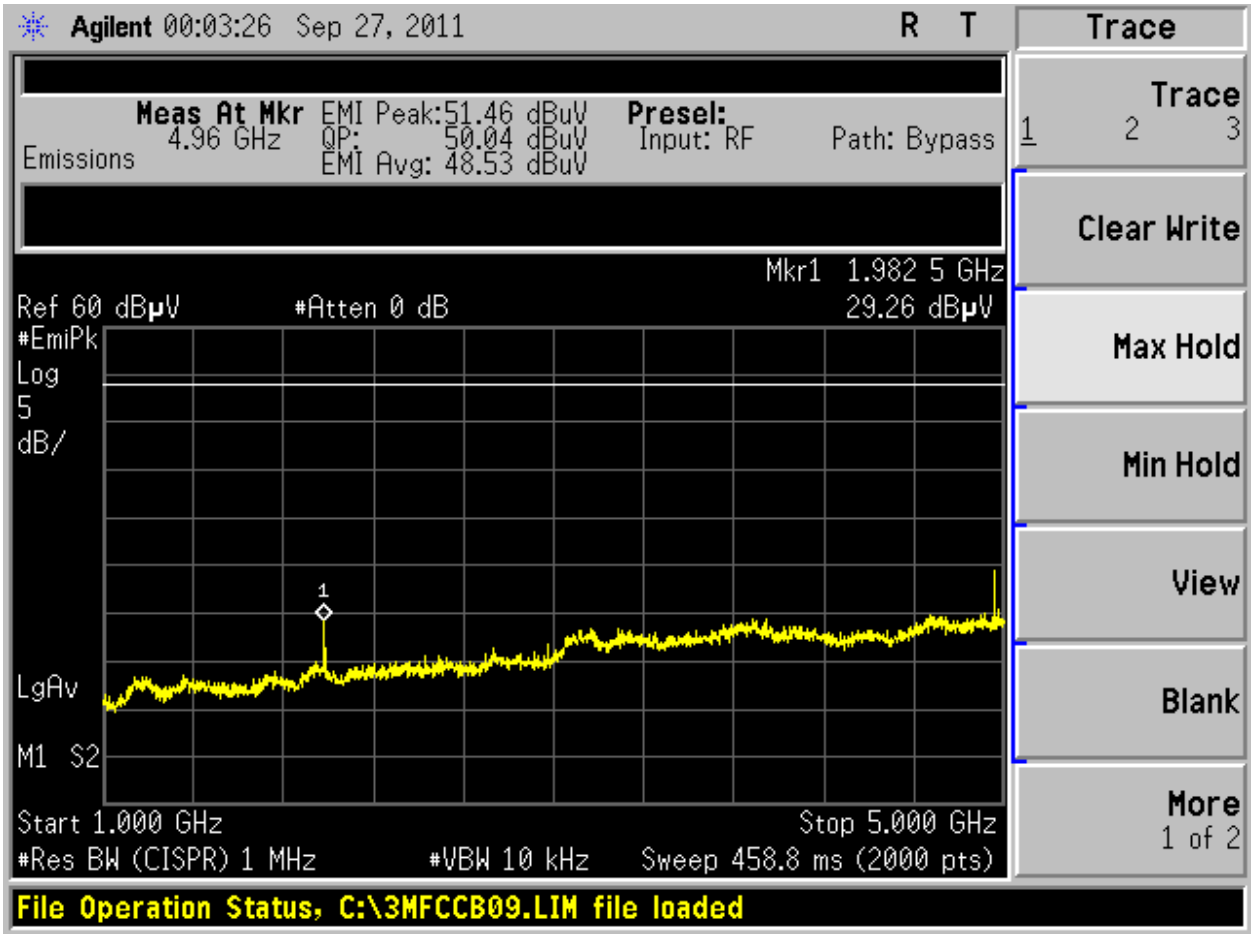
VERTICAL SENSE ANTENNA, 30 TO 300 MHz



VERTICAL SENSE ANTENNA, 300 TO 1000 MHz



VERTICAL SENSE ANTENNA, 1000 TO 5000 MHz



VERTICAL SENSE ANTENNA, 5000 TO 10000 MHz

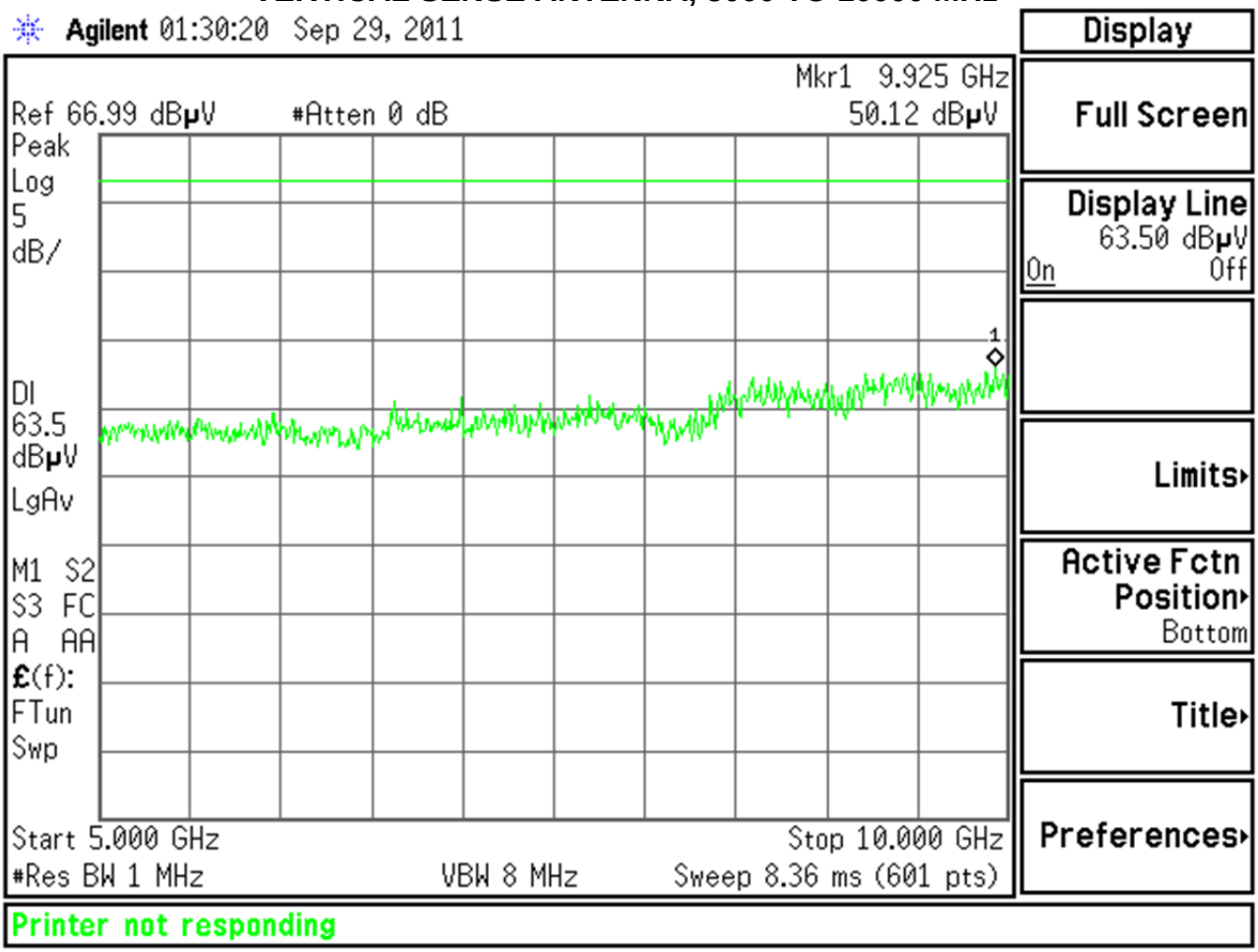


EXHIBIT 6. OCCUPIED BANDWIDTH:

6.1 Limits

There are no limits specified. The occupied bandwidth need only be reported.

6.2 Method of Measurements

This test was performed radiated in a 3-meter semi-anechoic chamber. The spectrum analyzer measurement function, built-in to the Agilent E4446A spectrum analyzer, was utilitzed for these measurements.

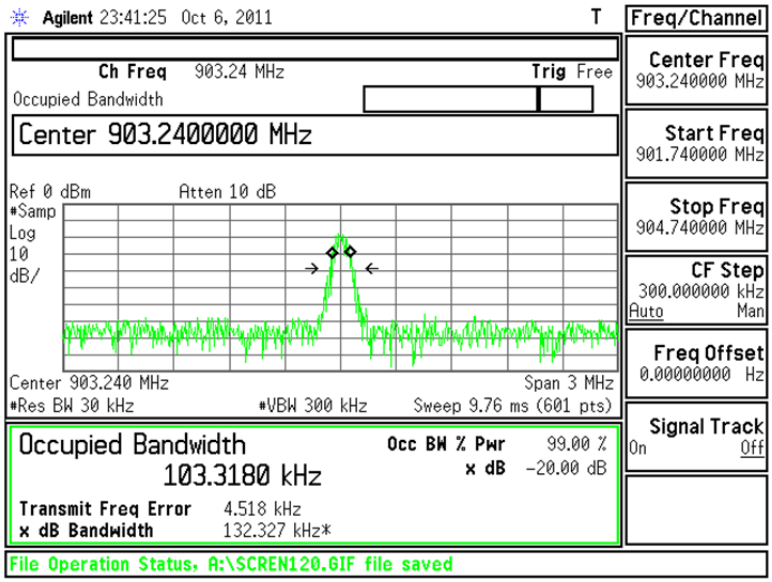
The resolution bandwidth was then set to a value that was greater than or equal to 1% of the bandwidth. Using the built-in function of the analyzer, the bandwidths were measured.

6.3 Test Data

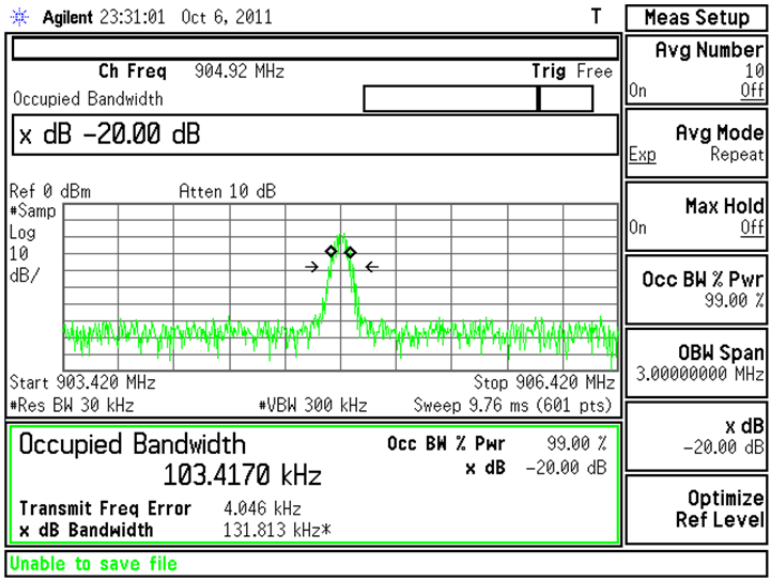
Center Frequency (MHz)	Measured -20 dBc Occ.Bw (kHz)
903.24	132.33
904.92	131.81
907.80	124.60

6.4 Screen Captures - OCCUPIED BANDWIDTH

Low channel Occupied Bandwidth



Middle channel Occupied Bandwidth



High channel Occupied Bandwidth

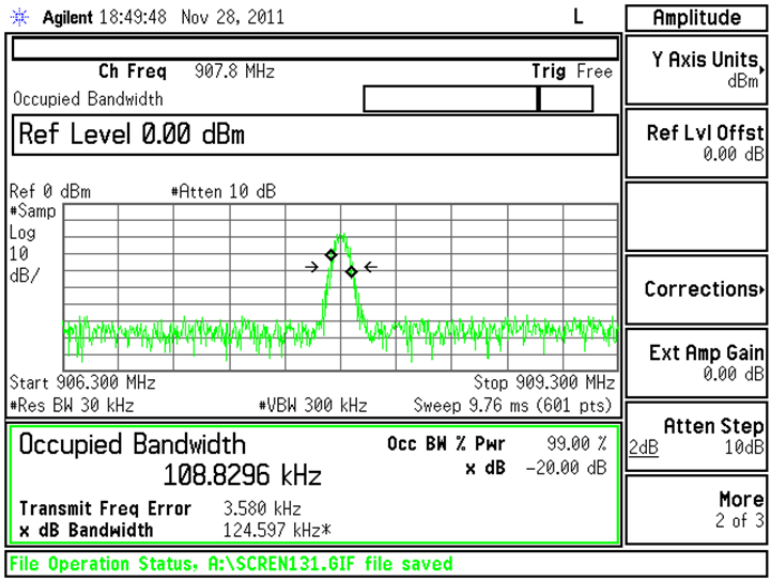
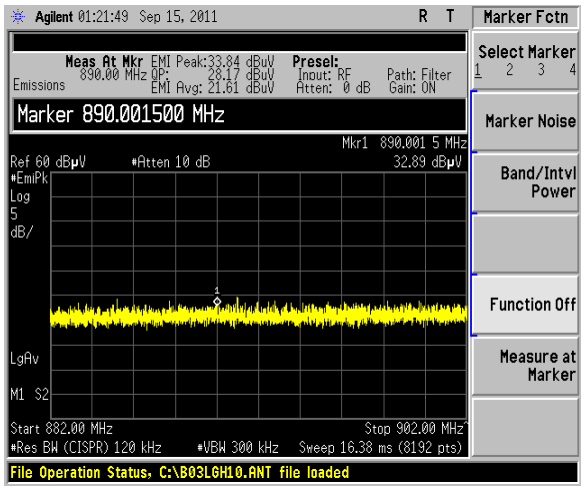


EXHIBIT 7. BAND-EDGE MEASUREMENTS

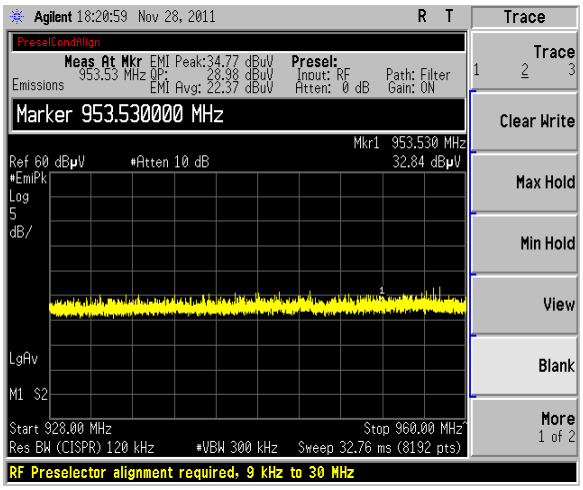
7.1 Method of Measurements

FCC 15.209(b) and 15.249(d) require a measurement of spurious emission levels to be at least 20 dB lower than the fundamental emission level, in particular at the Band-Edges where the intentional radiator operates. Also, RSS 210 Section 2.2 requires that unwanted emissions meet limits listed in tables 2 and 3 of the same standard and also to the limits in the applicable annex. The following screen captures demonstrate compliance of the intentional radiator at the 902-928 MHz Band-Edges. The EUT was operated in continuous transmit mode with continuous modulation, with internally generated data as the modulating source. The EUT was operated at the lowest channel (903.25 MHz) for the investigation of the lower Band-Edge, and at the highest channel (907.80 MHz) for the investigation of the upper Band-Edge.

Screen Capture Demonstrating Compliance at the **Band-Edges**



Lower band edge



Upper band edge

EXHIBIT 8. FREQUENCY & POWER STABILITY OVER VOLTAGE VARIATIONS

The stability of the device was examined as a function of the input voltage available to the EUT. A Spectrum Analyzer was used to measure the frequency at the appropriate frequency markers.

In this case, the EUT is powered via a battery. Therefore, using a variable DC power supply, the voltage was varied by - 15%.

A spectrum analyzer was used to measure the frequency at the appropriate frequency markers. For this test, the EUT was placed in continuous transmit CW mode.

	3.15		3.70		4.25			
Channel	Frequency (Hz)	Power (dBuV/m)	Frequency (Hz)	Power (dBuV/m)	Frequency (Hz)	Power (dBuV/m)	Deviation (Hz)	Deviation (dBm)
Low	903.421	90.160	903.421	90.230	903.421	90.220	0.000	0.070
Middle	904.890	90.21	904.930	90.27	904.940	90.290	0.050	0.080
High	907.796	89.92	907.798	90.00	907.796	90.040	0.002	0.040

Maximum Frequency Deviation	0.05	Hz
Maximum Power deviation	0.080	dBm

The power was then cycled On/Off to observe system response. No unusual response was observed, the emission characteristics were well behaved, and the system returned to the same state of operation as before the power cycle.

No anomalies were noted in the measured transmit power and the frequency stability was better than 100 ppm during the voltage variation tests.

APPENDIX A

LS RESEARCH LLC
Wireless Product Development
Equipment Calibration

Date : 27-Jun-2011 Type Test : Spurious Emissions Job # : C-1226

Prepared By: Peter Customer : R.F. Technologies Quote #: 311183

No.	Asset #	Description	Manufacturer	Model #	Serial #	Cal Date	Cal Due Date	Equipment Status
1	AA 960007	Double Ridge Horn Antenna	EMCO	3115	9311-4138	4/27/2011	4/27/2012	Active Calibration
2	AA 960155	900MHz High Pass Filter	KWM	HPF-L-14185	7272-03	2/28/2011	2/28/2012	Active Calibration
3	EE 960147	Pre-Amp	Adv. Micro	WLA612	123101	1/4/2011	1/4/2012	Active Calibration
4	AA 960078	Log Periodic Antenna	EMCO	93146	9701-4855	10/19/2010	10/19/2011	Active Calibration
5	AA 960150	Bicon Antenna	ETS	3110B	0003-3346	10/19/2010	10/19/2011	Active Calibration
6	AA 960007		EMCO	3115	9311-4138	4/27/2011	4/27/2012	Active Calibration
7	EE 960159	0.8 - 21GHz LNA	Mini-Circuits	ZVA-213X-S+	740411007	8/19/2010	8/19/2011	Active Calibration

Project Engineer: Peter Fiduccia Quality Assurance:

LS RESEARCH LLC
Wireless Product Development
Equipment Calibration

Date : 10/6/11 and 11/28/11 Type Test : Occupied Bandwidth (99%) Job # : C-1226

Prepared By: Aidi Customer : R.F. Technologies Quote #: 311183

No.	Asset #	Description	Manufacturer	Model #	Serial #	Cal Date	Cal Due Date	Equipment Status
1	EE 960157	3Hz-13.2GHz Spectrum Analyzer	Agilent	E4445A	MY48250225	6/6/2011	6/6/2012	Active Calibration
2	EE 960158	RF Preselecter	Agilent	N9039A	MY46520110	6/11/2011	6/11/2012	Active Calibration
3	AA 960078	Log Periodic Antenna	EMCO	93146	9701-4855	10/19/2010	10/19/2011	Active Calibration
4	AA 960004	Log Periodic Antenna	EMCO	93146	9512-4276	9/19/2011	9/19/2012	Active Calibration

Project Engineer: Aidi Quality Assurance: Peter

LS RESEARCH LLC
Wireless Product Development
Equipment Calibration

Date : 27-Jun-2011 Type Test : Radiated Fundamental Job # : C-1226

Prepared By: AIDI Customer : R.F. Technologies Quote #: 311183

No.	Asset #	Description	Manufacturer	Model #	Serial #	Cal Date	Cal Due Date	Equipment Status
1	EE 960157	3Hz-13.2GHz Spectrum Analyzer	Agilent	E4445A	MY48250225	6/6/2011	6/6/2012	Active Calibration
2	EE 960158	RF Preselecter	Agilent	N9039A	MY46520110	6/11/2011	6/11/2012	Active Calibration
3	AA 960078	Log Periodic Antenna	EMCO	93146	9701-4855	10/19/2010	10/19/2011	Active Calibration
4	AA 960004	Log Periodic Antenna	EMCO	93146	9512-4276	9/19/2011	9/19/2012	Active Calibration

Project Engineer: AIDI Quality Assurance: PETER

APPENDIX B

TEST STANDARDS – CURRENT PUBLICATION DATES RADIO

STANDARD #	DATE	Am. 1	Am. 2
ANSI C63.4	2003		
ANSI C63.10	2009		
CISPR 11	2009-05	2009-12 P	
CISPR 12	2007-05		
CISPR 14-1	2005-11	2008-11	
CISPR 14-2	2001-11	2001-11	2008-05
CISPR 16-1-1 Note 1	2010-01		
CISPR 16-1-2 Note 1	2003	2004-04	2006-07
CISPR 22	2008-09		
CISPR 24	1997-09	2001-07	2002-10
EN 55011	2009		
EN 55014-1	2006		
EN 55014-2	1997		
EN 55022	2006	2007	
EN 60601-1-2	2007-03		
EN 61000-3-2	2006-05		
EN 61000-3-3	2008-12		
EN 61000-4-2	2009-05		
EN 61000-4-3	2006-07	2008-05	
EN 61000-4-4	2004		
EN 61000-4-5	2006-12		
EN 61000-4-6	2009-05		
EN 61000-4-8	1994	2001	
EN 61000-4-11	2004-10		
EN 61000-6-1	2007-02		
EN 61000-6-2	2005-12		
EN 61000-6-3	2007-02		
EN 61000-6-4	2007-02		
FCC 47 CFR, Parts 0-15, 18, 90, 95	2009		
FCC Public Notice DA 00-1407	2000		
FCC ET Docket # 99-231	2002		
FCC Procedures	2007		
ICES 001	2006-06		
ICES 002	2009-08		
ICES 003	2004-02		
IEC 60601-1-2 Note 1	2007-03		
IEC 61000-3-2	2005-11	2008-03	2009-02
IEC 61000-3-3	2008-06		
IEC 61000-4-2	2008-12		
IEC 61000-4-3	2008-04	incl in 2008-04	2009-12 FD

STANDARD #	DATE	Am. 1	Am. 2
IEC 61000-4-4	2004-07	2010-10	
IEC 61000-4-5	2005-11		
IEC 61000-4-6	2008-10		
IEC 61000-4-8	2009-09		
IEC 61000-4-11	2004-03		
IEC 61000-6-1	2005-03		
IEC 61326-1	2006-06		
ISO 14982	1998-07		
MIL Std. 461E	1999-08		
RSS GEN	2010		
RSS 119	2007-06		
RSS 123	1999-11		
RSS 125	2000-03		
RSS 131	2003-07		
RSS 136	2002-10		
RSS 137	2009-02		
RSS 210	2010		
RSS 213	2005-12		
RSS 243	2010-02		
RSS 310	2007-06		

APPENDIX C

Uncertainty Statement

This uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level, using a coverage factor of k=2.

Table of Expanded Uncertainty Values, (K=2) for Specified Measurements

Measurement Type	Particular Configuration	Uncertainty Values
Radiated Emissions	3 – Meter chamber, Biconical Antenna	4.24 dB
Radiated Emissions	3-Meter Chamber, Log Periodic Antenna	4.8 dB
Radiated Emissions	10-Meter OATS, Biconical Antenna	4.18 dB
Radiated Emissions	10-Meter OATS, Log Periodic Antenna	3.92 dB
Conducted Emissions	Shielded Room/EMCO LISN	1.60 dB
Radiated Immunity	3 Volts/Meter in 3-Meter Chamber	1.128 Volts/Meter
Conducted Immunity	3 Volts level	1.0 V