



Measurement of RF Emissions from a
52067 Battery Powered Hand Soap Dispenser
Transmitter

For Georgia Pacific
1915 Marathon Ave
Neenah, WI 54956

P.O. Number 7700109919
Date Tested 6/24/2013
Test Personnel Ian Carnegie
Test Specification FCC "Code of Federal Regulations" Title 47
Part15, Subpart C

Test Report By:

A handwritten signature in black ink, appearing to read "Ian Carnegie".

Ian Carnegie
EMC Engineer

Requested By:

Andre Lanouette
Georgia Pacific

Approved By:

A handwritten signature in black ink, appearing to read "Raymond J. Klouda".

Raymond J. Klouda
Registered Professional
Engineer of Illinois - 44894



TABLE OF CONTENTS

PARAGRAPH	DESCRIPTION OF CONTENTS	PAGE NO.
1.	Introduction.....	5
1.1.	Scope of Tests.....	5
1.2.	Purpose	5
1.3.	Deviations, Additions and Exclusions.....	5
1.4.	EMC Laboratory Identification	5
1.5.	Laboratory Conditions.....	5
2.	Applicable Documents.....	5
3.	EUT Setup and Operation	5
3.1.	General Description	5
3.1.1.	Power Input.....	6
3.1.2.	Peripheral Equipment	6
3.1.3.	Signal Input/Output Leads	6
3.1.4.	Grounding	6
3.2.	Software.....	6
3.3.	Operational Mode	6
3.4.	EUT Modifications.....	6
4.	Test Facility and Test Instrumentation	6
4.1.	Shielded Enclosure.....	6
4.2.	Test Instrumentation.....	6
4.3.	Calibration Traceability	6
4.4.	Measurement Uncertainty	7
5.	Test Procedures	7
5.1.	Timing Measurements	7
5.1.1.	Requirements.....	7
5.1.2.	Procedures.....	7
5.1.3.	Results	7
5.2.	Duty Cycle Factor Measurements	7
5.2.1.	Procedures.....	7
5.2.2.	Results	8
5.3.	Radiated Measurements	8
5.3.1.	Requirements.....	8
5.3.2.	Procedures.....	9
5.3.3.	Results	9
5.4.	Occupied Bandwidth Measurements.....	9
5.4.1.	Requirement.....	9
5.4.2.	Procedures.....	9
5.4.3.	Results	10
6.	Other Test Conditions	10
6.1.	Test Personnel and Witnesses.....	10
6.2.	Disposition of the EUT	10
7.	Conclusions.....	10

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TABLE OF CONTENTS

<u>PARAGRAPH</u>	<u>DESCRIPTION OF CONTENTS</u>	<u>PAGE NO.</u>
8.	Certification.....	10
9.	Equipment List.....	11

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REVISION HISTORY

Revision	Date	Description
—	22 July 2013	Initial release



Measurement of RF Emissions from a Battery Powered Hand Soap Dispenser, Model No. 52067 Transmitter

1. INTRODUCTION

1.1. Scope of Tests

This report presents the results of the RF emissions measurements performed on a Battery Powered Hand Soap Dispenser code named Starfish 1.5, Model No. 52067, Serial No. FCC CW, (hereinafter referred to as the Equipment Under Test (EUT)). The EUT was designed to transmit at approximately 433.92 MHz using an integral antenna. The EUT was manufactured and submitted for testing by Georgia Pacific located in Neenah, WI.

1.2. Purpose

The test series was performed to determine if the EUT meets the conducted and radiated RF emission requirements of the FCC "Code of Federal Regulations" Title 47, Part 15, Subpart C, Section 231 for Intentional Radiators.

1.3. Deviations, Additions and Exclusions

There were no deviations, additions to, or exclusions from the test specification during this test series.

1.4. EMC Laboratory Identification

This series of tests was performed by Elite Electronic Engineering Incorporated of Downers Grove, Illinois. The laboratory is accredited by The American Association for Laboratory Accreditation (A2LA). A2LA Certificate Number: 1786.01.

1.5. Laboratory Conditions

The temperature at the time of the test was 24.4°C and the relative humidity was 53%.

2. 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 2011
- 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"

3. EUT SETUP AND OPERATION

3.1. General Description

The EUT is a Battery Powered Hand Soap Dispenser, Model No. 52067. The EUT has a 433.92MHz transmitter which sends the soap levels in the unit to a base station (the base station not included in this setup or report). There are two ways the EUT can send an RF transmission. The first way is an automatic activation. The EUT uses a short range IR sensor/emitter setup to sense when something (hands) are placed under it. The second is an automatic transmission at a periodic rate.

The EUT contains two boards. The primary circuit board is the main control board with part number-rev PCB-0215-06 (revision 06 hardware) and firmware version 4. The secondary circuit board is a communications board with part number/version BS11510.



3.1.1. Power Input

The EUT was powered by four D cell batteries configured to provide 6 VDC.

3.1.2. Peripheral Equipment

There was no peripheral equipment submitted with the EUT.

3.1.3. Signal Input/Output Leads

No signal leads present.

3.1.4. Grounding

The EUT was not grounded.

3.2. Software

The EUT ran using firmware version 4 to control the device during testing. A slightly modified version of this firmware was loaded onto the EUT for testing which kept it transmitting constantly at 433.92MHz.

3.3. Operational Mode

For all tests the EUT was placed on an 80cm high non-conductive stand. The EUT was energized.

The EUT was programmed to continuously transmit at 433.92MHz when powered on. In normal operation, the EUT will only transmit occasionally, however this was ideal to provide the worst case scenario for testing.

Always-On Tx Mode – The EUT was programmed to constantly transmit to create a worst case scenario for testing. This mode was entered automatically after powering the EUT on.

3.4. EUT Modifications

No modifications were required for compliance.

4. TEST FACILITY AND TEST INSTRUMENTATION

4.1. Shielded Enclosure

All tests were performed in a 32ft. x 20ft. x 18ft. hybrid ferrite-tile/anechoic absorber lined test chamber. With the exception of the floor, the reflective surfaces of the shielded chamber are lined with ferrite tiles on the walls and ceiling. Anechoic absorber material is installed over the ferrite tile. The floor of the chamber is used as the ground plane. The chamber complies with ANSI C63.4-2009 for site attenuation.

4.2. Test Instrumentation

The test instrumentation and auxiliary equipment used during the tests are listed in Table 9-1.

4.3. 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).

4.4. Measurement Uncertainty

All measurements are an estimate of their true value. The measurement uncertainty characterizes, with a specified confidence level, the spread of values which may be possible for a given measurement system.

The measurement uncertainty for these tests is presented below:

Radiated Emissions Measurements		
Combined Standard Uncertainty	2.26	-2.18
Expanded Uncertainty (95% confidence)	4.5	-4.4

5. TEST PROCEDURES

5.1. Timing Measurements

5.1.1. Requirements

A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released. Also, a transmitter activated automatically shall cease transmission within 5 seconds after activation.

A transmitter that periodically transmits shall be provided with a means for automatically limiting operation so that the duration of each transmission shall not be greater than one second and the silent period between transmissions shall be at least 30 times the duration of the transmission but in no case less than 10 seconds.

5.1.2. Procedures

The spectrum analyzer was setup to display the time domain trace. The EUT was set to transmit normally. The spectrum analyzer was used to record the amount of time that the EUT remained active following activation.

5.1.3. Results

The plots of the timing measurements are shown on pages 15 through 17. As can be seen from the data, the EUT meets the requirements for both an automatically activated transmitter and a periodic operation transmitter. According to the manufacturer, the periodic operation transmitter will activate every 260 seconds to 280 seconds.

5.2. Duty Cycle Factor Measurements

5.2.1. Procedures

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.

The duty cycle factor was calculated from information supplied by the manufacturer. Since this EUT utilizes a rolling code modulation, the duty is calculated based on the worst case. The following procedure was used to measure a representative sample:

- a) With the transmitter set up to transmit for maximum pulse density, the time domain trace is displayed on the spectrum analyzer.
- b) The pulse width is measured and a plot of this measurement is recorded.
- c) Next the number of pulses in the word period is measured and a plot is recorded.
- d) Finally the length of the word period is measured and a third plot is recorded. If the word period exceeds 100 msec, the word period is limited to 100 msec.
- e) The pulse width and number of pulses for the word period are used to compute the on-time. The duty



cycle is then computed as the (on-time/ word period).

- f) The duty cycle factor is computed from the duty cycle.

5.2.2.Results

Representative plots of the duty cycle are shown on pages 18 and 19. Since the transmitter uses a rolling code, the duty cycle correction factor used was calculated based on the maximum case. The following maximum case information was supplied by Georgia Pacific:

An encoded transmission consists of defined train of Forty-three 206uSec pulses. The encoding of the logical 1's and 0's is determined by the space (off time) between the pulses. The off time of approximately 1.04mSec determines the logical "0" (zero). The off time of approximately 1.61mSec determines the logical "1" (one). The pulse train consists of:

1. Four Preamble pulses separated by approximately 1.04mSec off time
2. An 'off' time of approximately 6.2mSec.
3. Forty-Two pulses separated by 'off' time of either 1.04mSec or 1.61mS.

If all forty-two encoding pulses are separated by 1.04mS, then the maximum value of the emission is calculated as follows:

Pulse on time:

- | | |
|-------------------------------|---------|
| 1. Total on time 46 x 0.225mS | 8.85 mS |
|-------------------------------|---------|

Pulse word period:

- | | |
|---------------------------------|----------|
| 1. Preamble on time 4 x .206mS | 0.824 mS |
| 2. Preamble off time 3 x 1.04mS | 3.12 mS |
| 3. Preamble space time 6.20mS | 6.20 mS |
| 4. Encoded pulses 42 x 0.206mS | 8.652 mS |
| 5. Encoded off time 41 x 1.04mS | 42.64 mS |

TOTAL pulse word period: 61.44 mS

Duty cycle factor (maximum time on) is:

1. Duty cycle: $(8.85\text{mS} / 61.44\text{mS}) = 0.14$
2. Duty cycle factor: $20 * \log (0.16) = -16.8\text{dB}$

With the test item transmitting at 433.9MHz, the maximum case duty cycle correction factor was calculated to be -16.8dB.

5.3. Radiated Measurements

5.3.1.Requirements

The EUT must comply with the requirements of FCC "Code of Federal Regulations Title 47", Part 15, Subpart C, Section 15.205 et seq.



Example Paragraph 15.231(e) has the following radiated emission limits:

Fundamental Frequency MHz	Field Intensity uV/m @ 3 meters	Field Strength Harmonics and Spurious @ 3 meters
260 to 470	1,500 to 5,000*	150 to 500*

* - Linear Interpolation

Example For 433.92MHz, the limit at the fundamental is 4398.7uV/m @ 3m and the limit on the harmonics is 439.9uV/m @ 3m.

In addition, emissions appearing in the Restricted Bands of Operation listed in paragraph 15.205(a) shall not exceed the general requirements shown in paragraph 15.209.

5.3.2.Procedures

All tests were performed in a 32ft. x 20ft. x 18ft. hybrid ferrite-tile/anechoic absorber lined test chamber. The walls and ceiling of the shielded chamber are lined with ferrite tiles. Anechoic absorber material is installed over the ferrite tile. The floor of the chamber is used as the ground plane. The chamber complies with ANSI C63.4-2009 for site attenuation.

The shielded enclosure prevents emissions from other sources, such as radio and TV stations from interfering with the measurements. All powerlines and signal lines entering the enclosure pass through filters on the enclosure wall. The powerline filters prevent extraneous signals from entering the enclosure on these leads.

A preliminary radiated emissions test was performed to determine the emission characteristics of the EUT. For the preliminary test, a broadband measuring antenna was positioned at a 3 meter distance from the EUT. The entire frequency range from 30MHz to 5.0GHz was investigated using a peak detector function. The data was then processed by the computer to calculate equivalent field intensity.

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

- 1) The EUT 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 from 1 to 4 meters for each antenna polarization to maximize the readings.

5.3.3.Results

The preliminary plots and final measurements with the EUT transmitting at 433.92 MHz are presented on data pages 21 through 25. The plots are presented for a reference only, and are not used to determine compliance.

As can be seen from the data, all emissions measured from the EUT were within the specification limits. See data page 26 for details. Photographs of the test configuration which yielded the highest/worst case, radiated emission levels are shown on Figure 2.

5.4. Occupied Bandwidth Measurements

5.4.1.Requirement

In accordance with paragraph 15.231(c), all emissions within 20dB of the peak amplitude level of the center frequency are required to be within a band less than 0.25% of the center frequency wide.

5.4.2.Procedures

The EUT was placed on an 80cm high non-conductive stand. The unit was set to transmit continuously. With an antenna positioned nearby, occupied bandwidth emissions were displayed on the spectrum analyzer. The



frequency spectrum near the fundamental was plotted. The 99% bandwidth was measured.

5.4.3.Results

The plot of the emissions near the fundamental frequency is presented on data page 27. As can be seen from this data page, the transmitter met the occupied bandwidth requirements. The 99% bandwidth was measured to be 51.28 kHz and the plot for this measurement can be found on page 20.

6. OTHER TEST CONDITIONS

6.1. Test Personnel and Witnesses

All tests were performed by qualified personnel from Elite Electronic Engineering Incorporated.

6.2. Disposition of the EUT

The EUT and all associated equipment were returned to Georgia Pacific upon completion of the tests.

7. CONCLUSIONS

It was determined that the Georgia Pacific Battery Powered Hand Soap Dispenser, Model No. 52067, Serial No. FCC CW, did fully meet the conducted and radiated emission requirements of the FCC "Code of Federal Regulations" Title 47, Part 15, Subpart C, Section 15.205 et seq. for Intentional Radiators, when tested per ANSI C63.4-2009.

8. 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 EUT at the test date. Any electrical or mechanical modification made to the EUT subsequent to the specified test date will serve to invalidate the data and void this certification.

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



9. EQUIPMENT LIST

Table 9-1 Equipment List

Eq ID	Equipment Description	Manufacturer	Model No.	Serial No.	Frequency Range	Cal Date	Due Date
CDX8	COMPUTER	ELITE	WORKSTATION			N/A	
NTA3	BILOG ANTENNA	TESEQ	6112D	28040	25-1000MHz	2/15/2013	2/15/2014
NWQ1	DOUBLE RIDGED WAVEGUIDE ANTENNA	ETS-LINDGREN	3117	66655	1GHZ-18GHZ	3/18/2013	3/18/2014
RAKI	RF SECTION	HEWLETT PACKARD	85462A	3411A00181	0.009-6500MHZ	3/15/2013	3/15/2014
RAKJ	RF FILTER SECTION	HEWLETT PACKARD	85460A	3330A00154	---	3/15/2013	3/15/2014
RBA0	EMI TEST RECEIVER	ROHDE & SCHWARZ	ESIB26	100145	20HZ-26.5GHZ	3/12/2013	3/12/2014
WKA1	SOFTWARE, UNIVERSAL RCV EMI	ELITE	UNIV_RCV_EMI	1	---	I/O	

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.

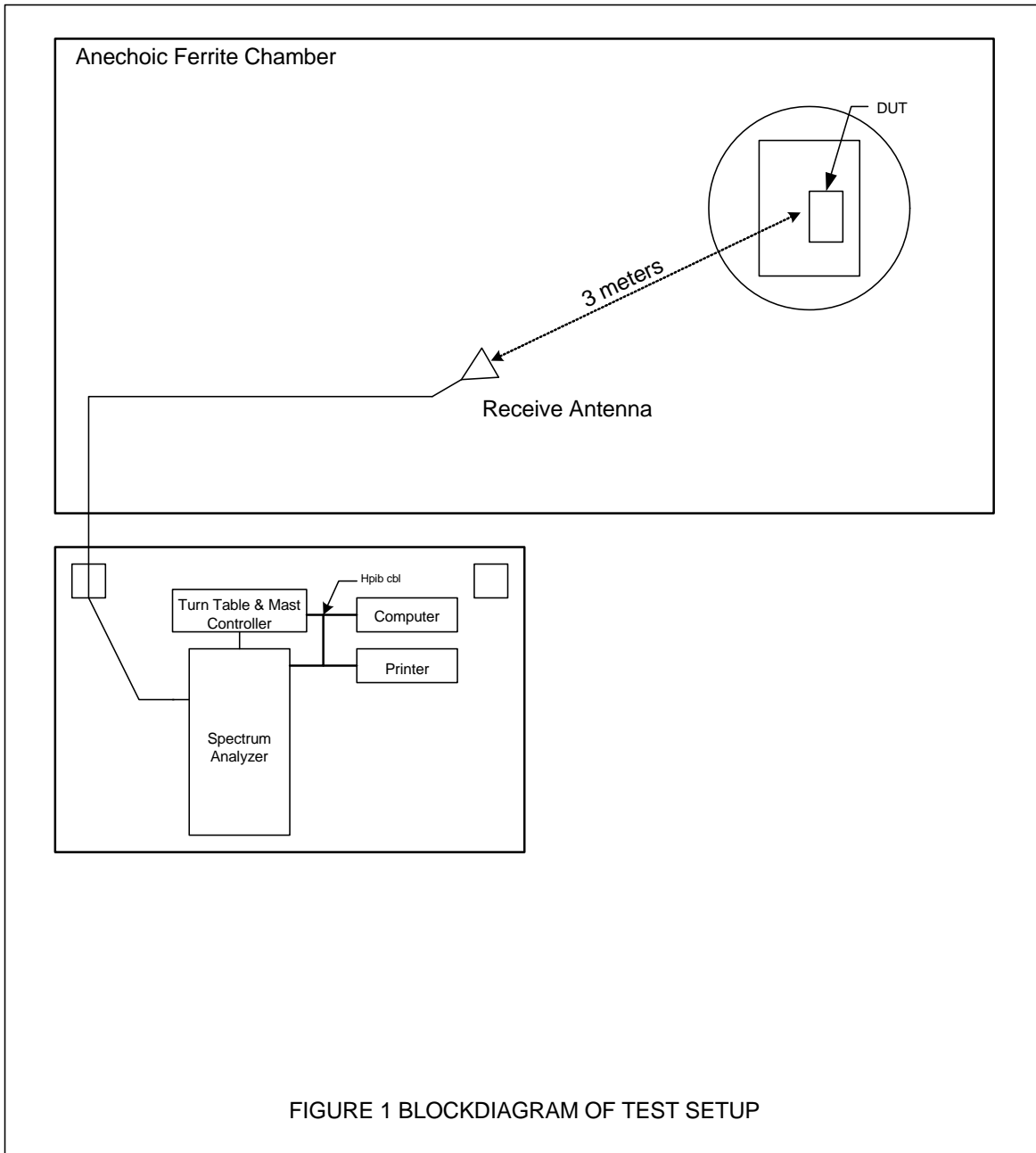


FIGURE 1 BLOCKDIAGRAM OF TEST SETUP

Figure 2

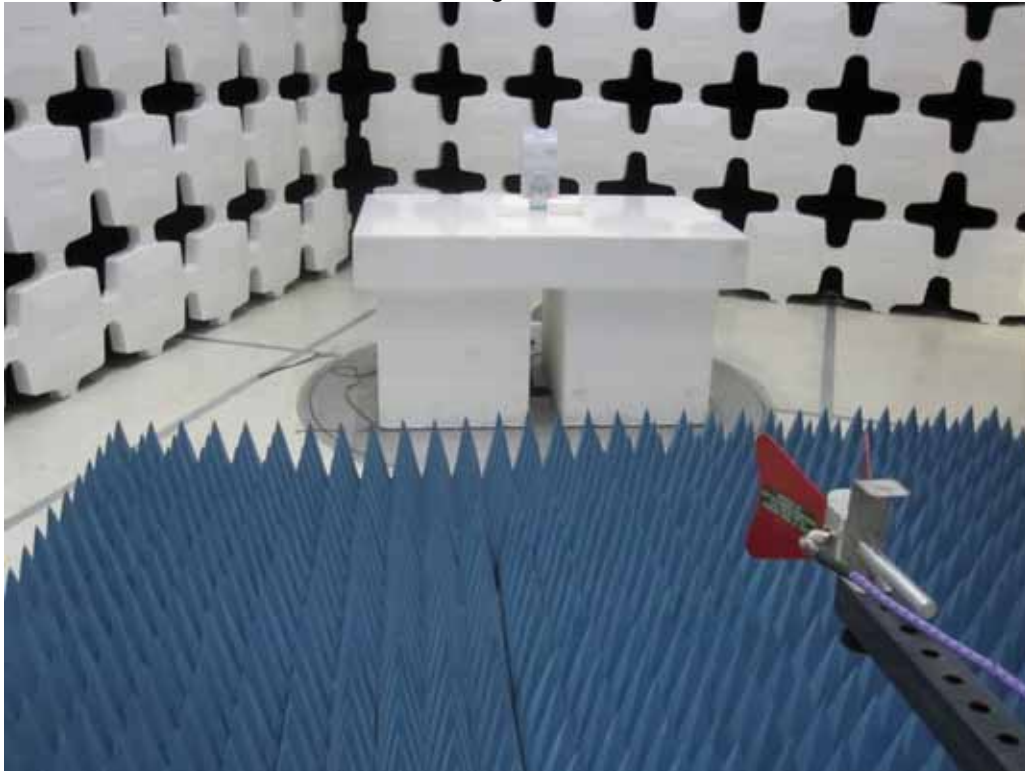


Test Setup for Radiated Emissions, 30MHz to 1GHz – Horizontal Polarization

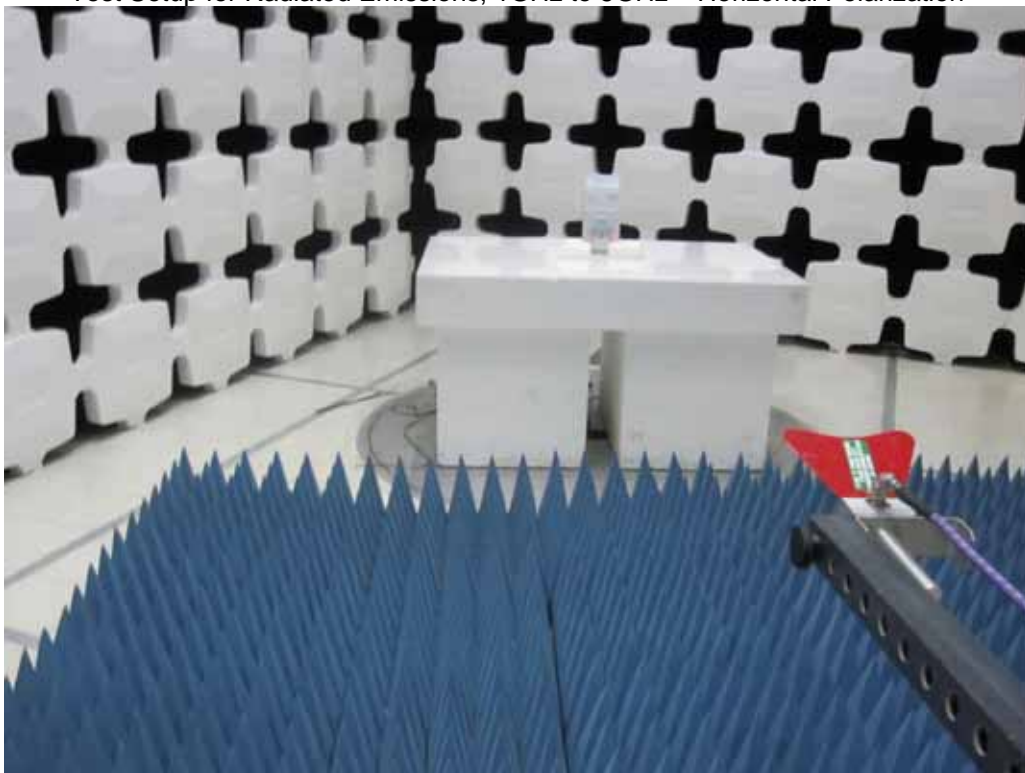


Test Setup for Radiated Emissions, 30MHz to 1GHz – Vertical Polarization

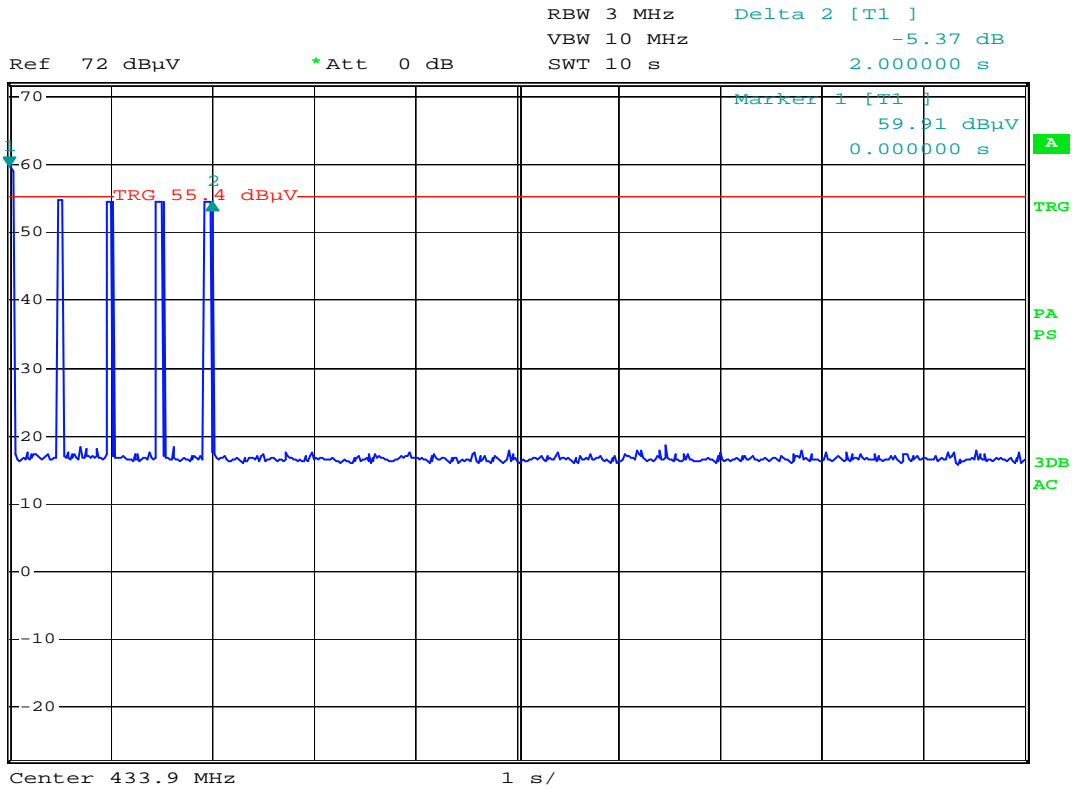
Figure 2



Test Setup for Radiated Emissions, 1GHz to 5GHz – Horizontal Polarization



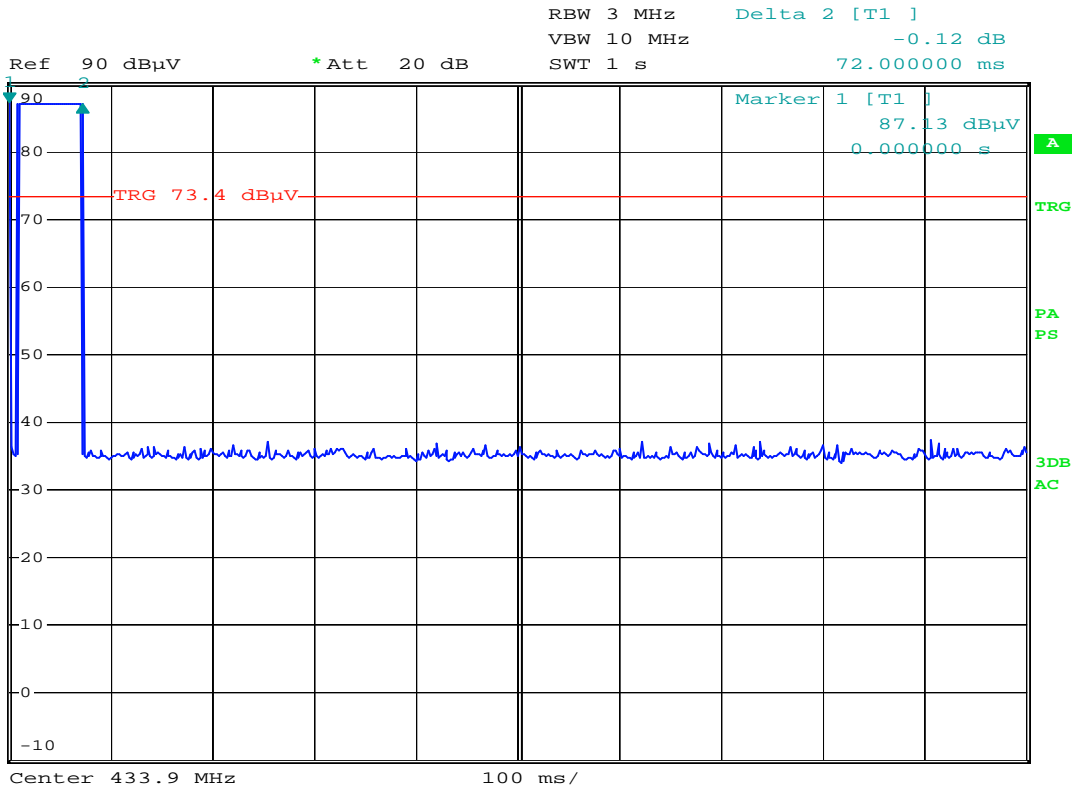
Test Setup for Radiated Emissions, 1GHz to 5GHz – Vertical Polarization



Date: 12.JUL.2013 17:09:55

Timing Measurement for Automatic Activation

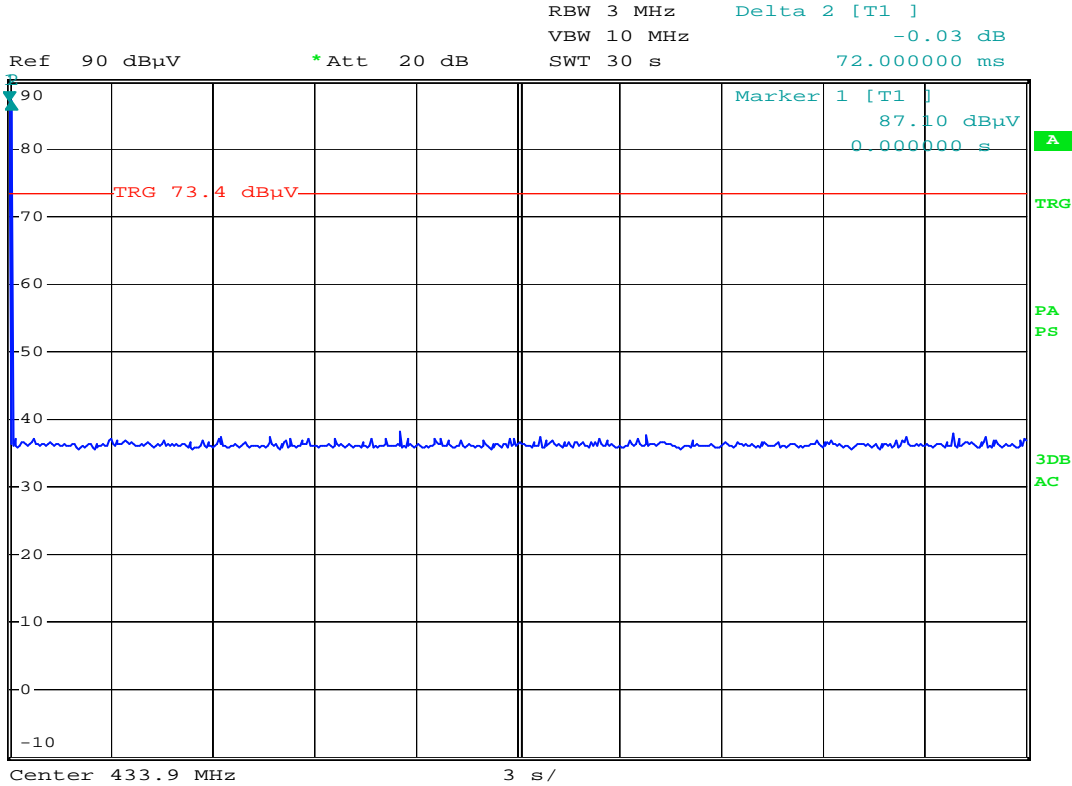
MANUFACTURER : Georgia Pacific
 MODEL NUMBER : 52067
 SERIAL NUMBER : "FCC"
 TEST MODE : Tx @ 433.92MHz
 TEST PARAMETERS : The EUT shuts off after 2 seconds which less than the required 5 seconds.
 EQUIPMENT USED : RBE0, PHA0



Date: 12.JUL.2013 17:46:40

Timing Measurement for Periodic Transmission

MANUFACTURER : Georgia Pacific
 MODEL NUMBER : 52067
 SERIAL NUMBER : "FCC"
 TEST MODE : Tx @ 433.92MHz
 TEST PARAMETERS : The EUT is active for 72mSec which is less than the maximum requirement of 1 second.
 EQUIPMENT USED : RBE0, PHA0



Date: 12.JUL.2013 17:41:36

Timing Measurement for Periodic Transmission

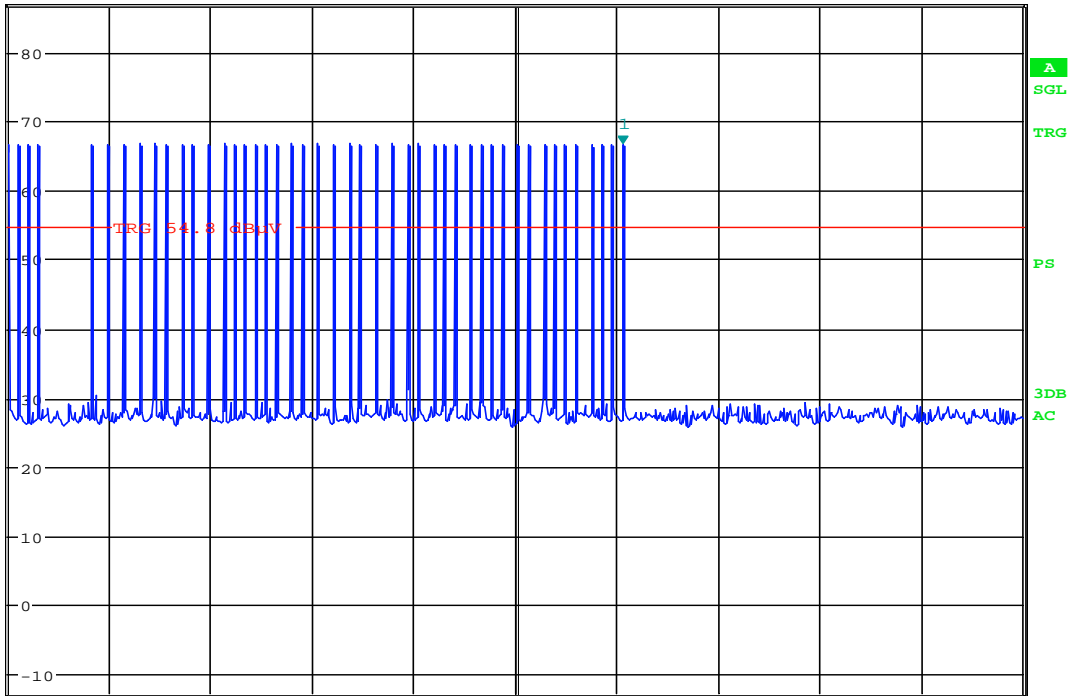
MANUFACTURER : Georgia Pacific
 MODEL NUMBER : 52067
 SERIAL NUMBER : "FCC"
 TEST MODE : Tx @ 433.92MHz
 TEST PARAMETERS : Calculation for minimum time between transmissions (72ms * 30 = 2.16s). Since the calculation is less than 10 sec the minimum time between transmissions shall be greater than 10 sec. The plot shows that the time between transmissions is greater than 10sec as required.

EQUIPMENT USED : RBE0, PHA0



Ref 87 dBμV * Att 10 dB RBW 1 MHz Marker 1 [T1]
 VBW 3 MHz 66.79 dBμV
 SWT 120 ms 72.692308 ms

1 PK
VIEW



Center 433.92 MHz 12 ms/

Date: 26.JUN.2013 14:14:22

Duty Cycle

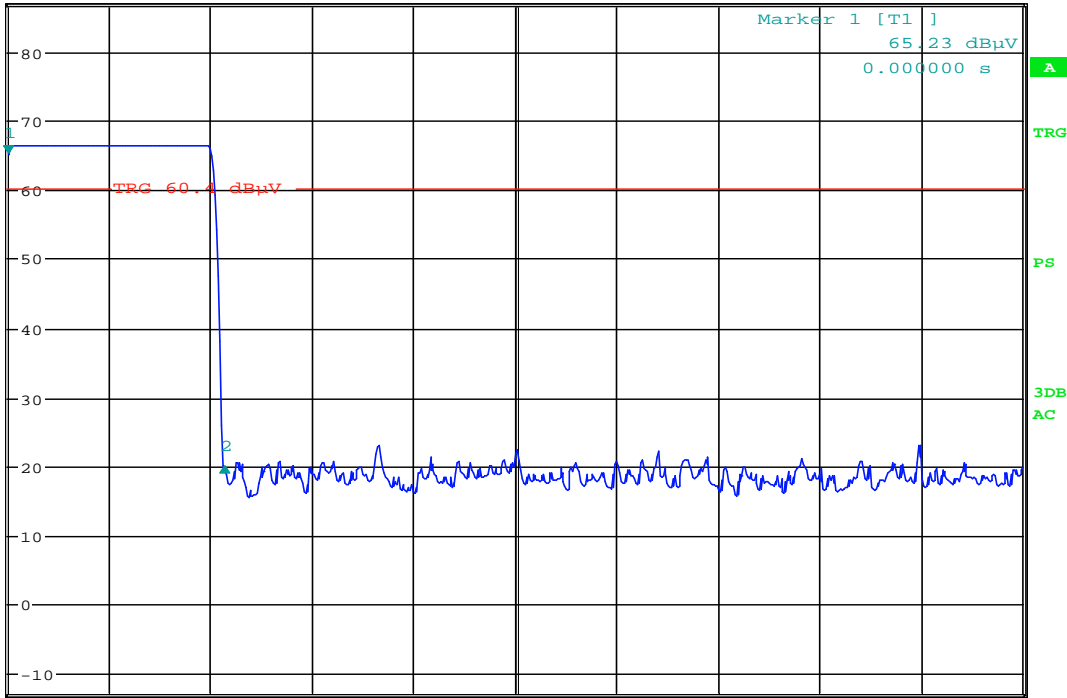
MANUFACTURER : Georgia Pacific
 MODEL NUMBER : 52067
 SERIAL NUMBER : "FCC"
 TEST MODE : Tx @ 433.92MHz
 TEST PARAMETERS : Expected 46 pulses
 EQUIPMENT USED : RBE0, PHA0

NOTES – Counted 46 pulses of the expected 46



Ref 87 dB μ V * Att 10 dB RBW 100 kHz Delta 2 [T1]
 VEW 300 kHz -45.38 dB
 SWT 940 μ s 199.935897 μ s

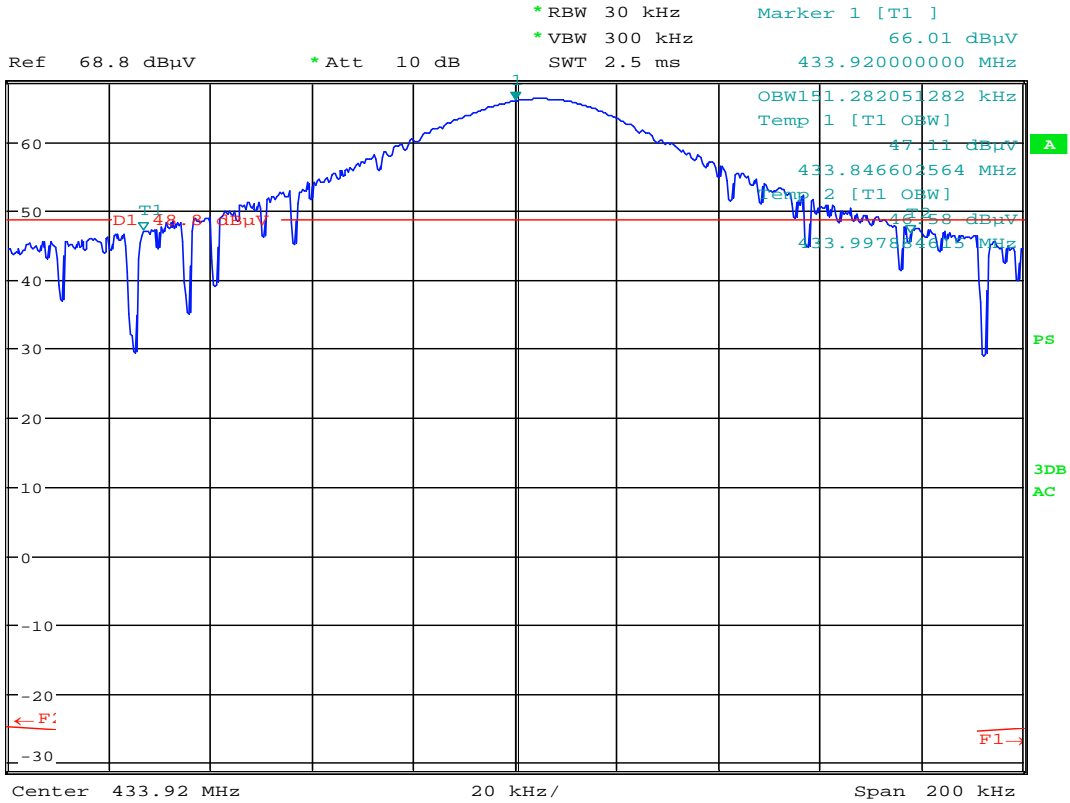
1 PK VIEW



Date: 26.JUN.2013 14:22:54

Duty Cycle

MANUFACTURER : Georgia Pacific
 MODEL NUMBER : 52067
 SERIAL NUMBER : "FCC"
 TEST MODE : Tx @ 433.92MHz
 TEST PARAMETERS : Expected 200 μ s
 EQUIPMENT USED : RBE0, PHA0



Date: 26.JUN.2013 14:05:20

99% Bandwidth

MANUFACTURER : Georgia Pacific
 MODEL NUMBER : 52067
 SERIAL NUMBER : "FCC"
 TEST MODE : Normal Operation
 TEST PARAMETERS : The 99% bandwidth shall be less than 0.25% of the center frequency
 EQUIPMENT USED : RBE0

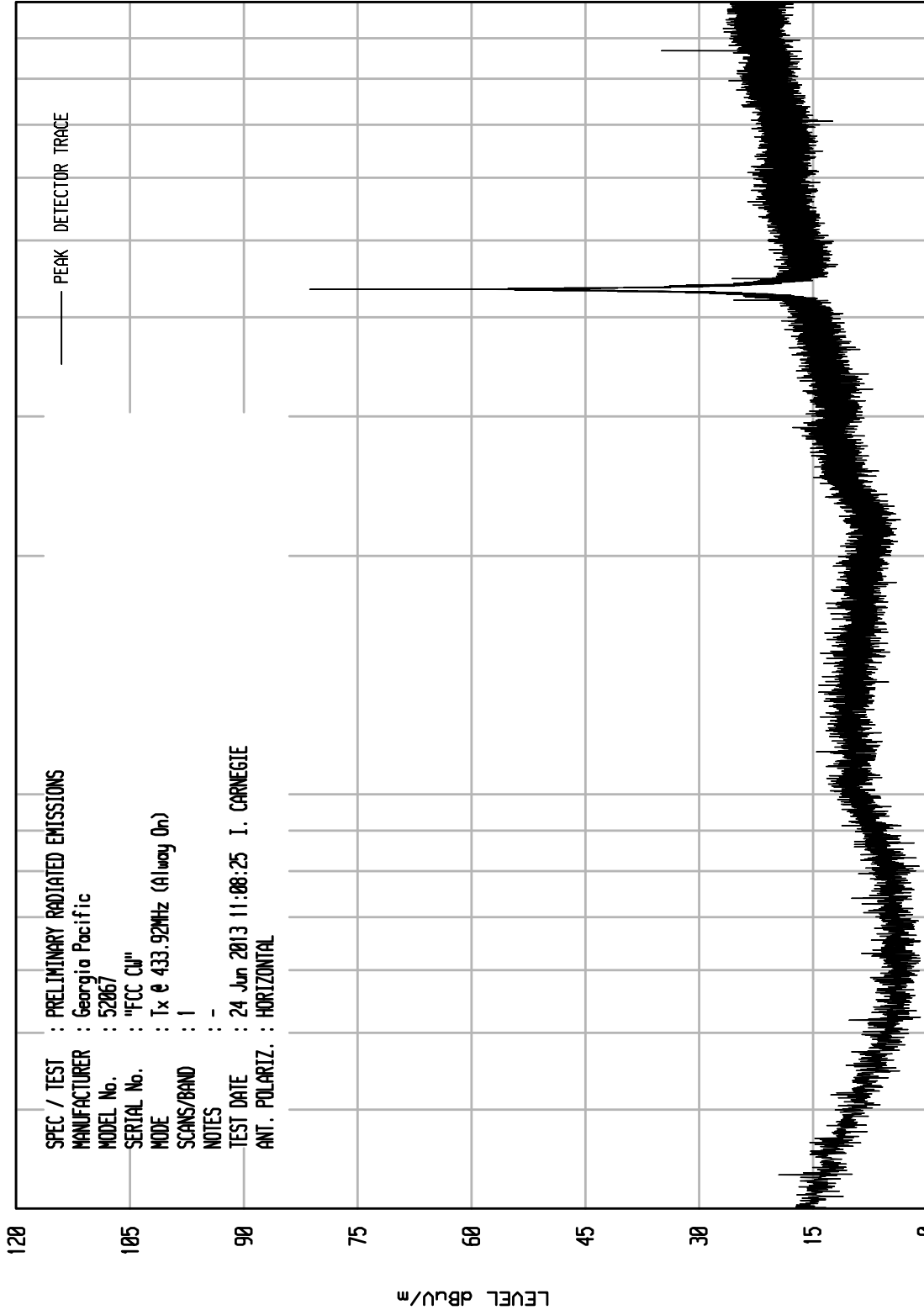
NOTES

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UNITU RCU ENI RUN 4

UKA1 04/24/13

SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
 MANUFACTURER : Georgia Pacific
 MODEL No. : 52867
 SERIAL No. : "FCC CU"
 MODE : Tx @ 433.92MHz (Always On)
 SCANS/BAND : 1
 NOTES : -
 TEST DATE : 24 Jun 2013 11:08:25 I. CARNEGIE
 ANT. POLARIZ. : HORIZONTAL



STOP = 1000

FREQUENCY MHz

100

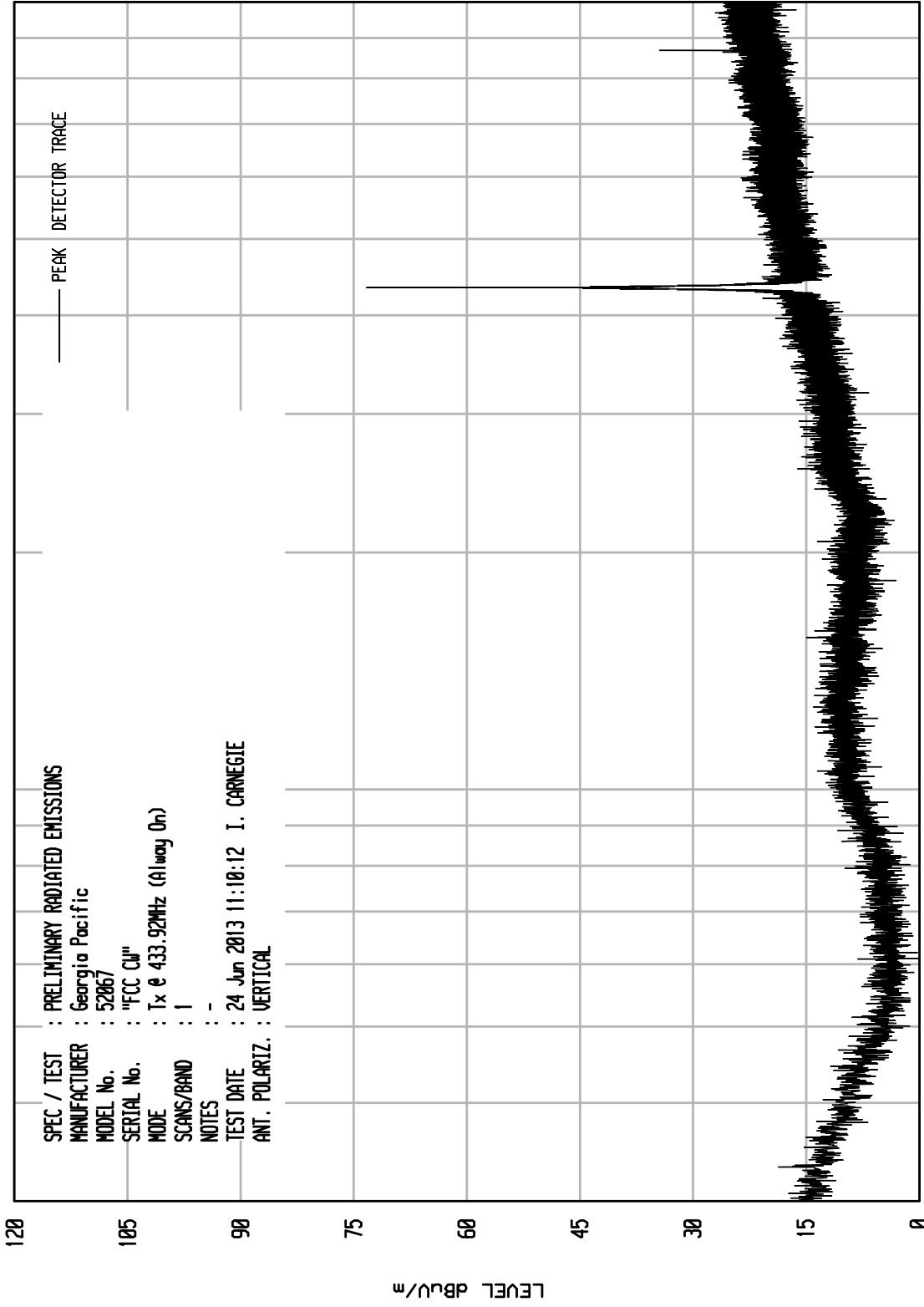
START = 30

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UNIT01 RCU ENH RUN 5

UKA1 04/24/13

SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
 MANUFACTURER : Georgia Pacific
 MODEL No. : 52867
 SERIAL No. : "FCC CU"
 MODE : Tx @ 433.92MHz (Always On)
 SCANS/BAND : 1
 NOTES : -
 TEST DATE : 24 Jun 2013 11:10:12 I. CARNEGIE
 ANT. POLARIZ. : VERTICAL



STOP = 1000

FREQUENCY MHz

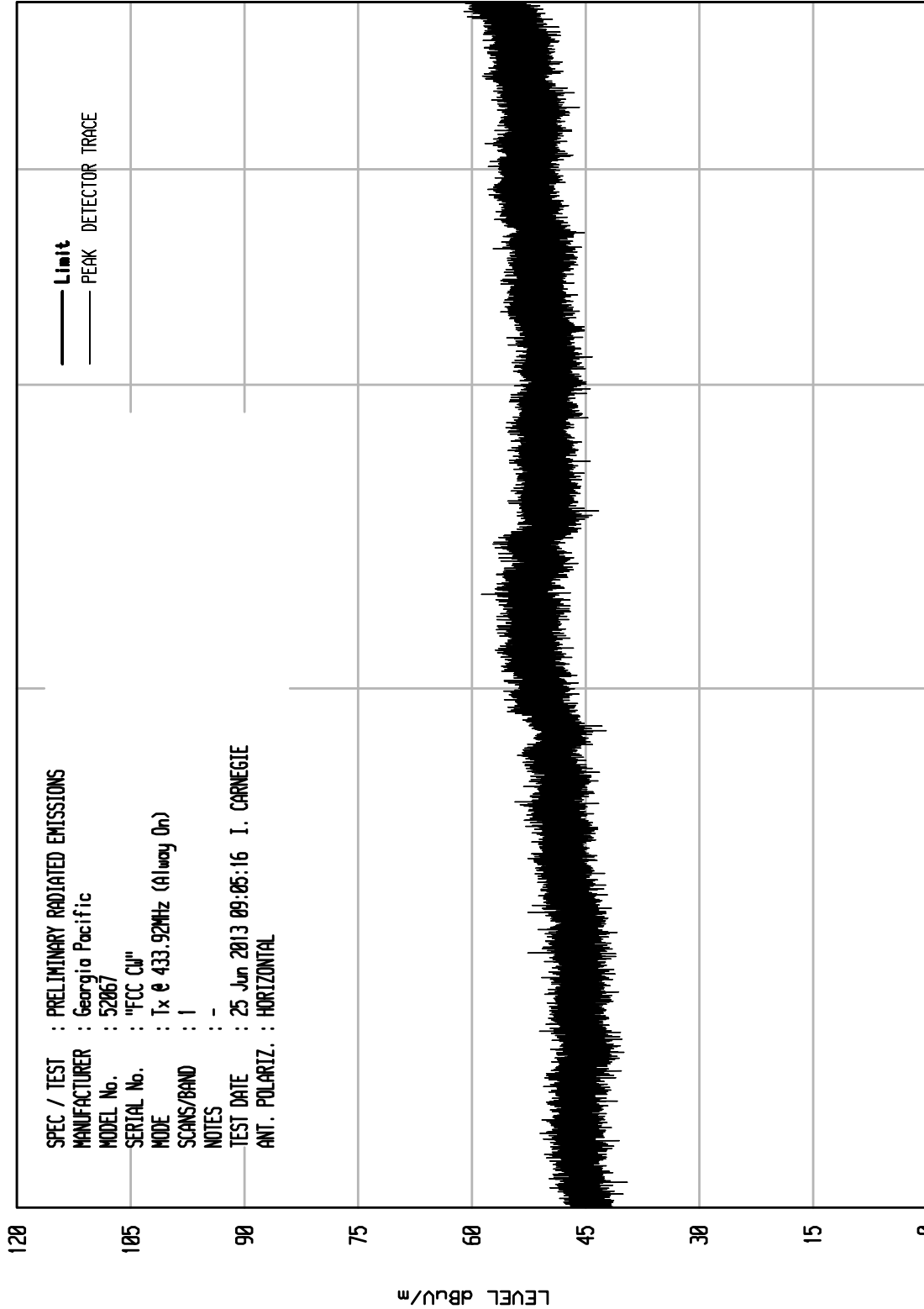
100

START = 30

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UNITU RCU EMI RUN 10

UKA1 04/24/13



SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
 MANUFACTURER : Georgia Pacific
 MODEL No. : 52067
 SERIAL No. : "FCC CU"
 MODE : Tx @ 433.92MHz (Always On)
 SCANS/BAND : 1
 NOTES : -
 TEST DATE : 25 Jun 2013 09:05:16 I. CARNEGIE
 ANT. POLARIZ. : HORIZONTAL

STOP = 5000

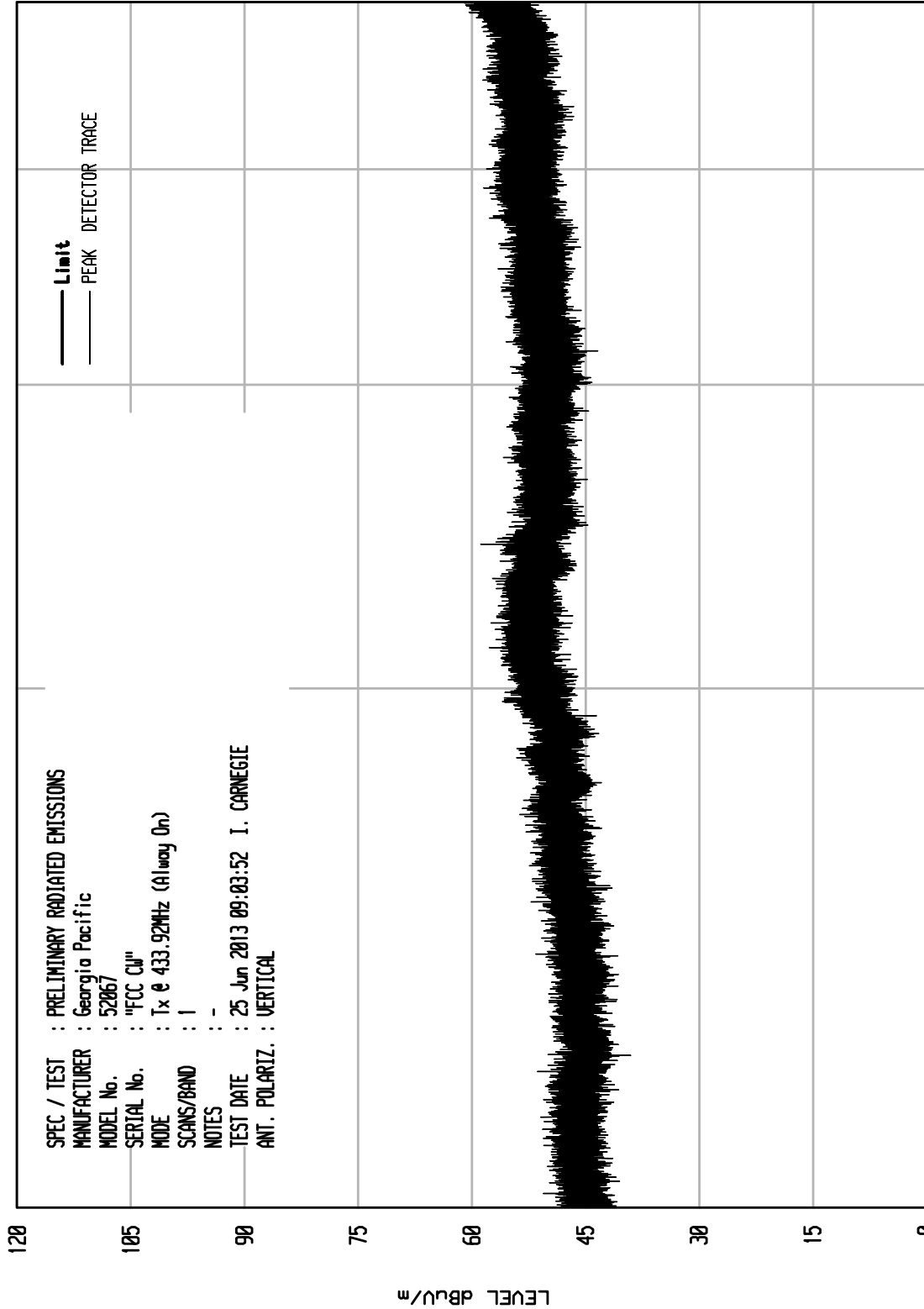
FREQUENCY MHz

START = 1000

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515

UNITU RCU EMI RUN 9

UKA1 04/24/13



SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
 MANUFACTURER : Georgia Pacific
 MODEL No. : 52067
 SERIAL No. : "FCC CU"
 MODE : Tx @ 433.92MHz (Always On)
 SCANS/BAND : 1
 NOTES : -
 TEST DATE : 25 Jun 2013 09:03:52 I. CARNEGIE
 ANT. POLARIZ. : VERTICAL

STOP = 5000

FREQUENCY MHz

START = 1000



ETR No. EEE1302296

854

6A

DATA SHEET

TEST NO. 2

RADIATED QP EMISSION MEASUREMENTS in a 3 m SEMI-ANECHOIC ROOM

SPECIFICATION : CISPR 22/EN 55022 CLASS B

MANUFACTURER : Georgia Pacific

MODEL NO. : 52067

SERIAL NO. : "FCC"


TEST MODE : Normal Operation

NOTES : Tx @ 433.92MHz

TEST DATE : 24 Jun 2013 14:24:26

TEST DISTANCE : 3 m (DATA EXTRAPOLATED TO 10 m)

FREQUENCY	QP	ANT	CBL	EXT	DIST	TOTAL	QP	AZ	ANT	POLAR
MHz	READING	FAC	FAC	ATTN	FAC	dBuV/m	LIMIT	deg	HT	cm
	dBuV	dB	dB	dB	dB		dBuV/m			
60.03	-6.2	6.1	.5	0.0	-10.5	-10.1	30.0	180	340	H
95.98	-1.0	10.3	.5	0.0	-10.5	-.6	30.0	45	200	V
116.48	-8.4	11.7	.6	0.0	-10.5	-6.6	30.0	135	120	H
130.85	-8.4	11.6	.7	0.0	-10.5	-6.6	30.0	180	200	V
146.55	-8.5	10.6	.8	0.0	-10.5	-7.6	30.0	0	120	V
173.99	-7.0	9.5	.9	0.0	-10.5	-7.1	30.0	180	200	H
231.97	-4.2	10.2	1.0	0.0	-10.5	-3.4	37.0	270	120	H
359.62	-7.3	14.7	1.3	0.0	-10.5	-1.8	37.0	45	200	H
431.97	.5	16.5	1.5	0.0	-10.5	8.1	37.0	315	340	V
540.23	-8.0	18.3	1.5	0.0	-10.5	1.4	37.0	180	120	H
683.01	-7.3	18.4	1.7	0.0	-10.5	2.4	37.0	45	120	V
774.95	-7.3	19.8	1.9	0.0	-10.5	4.0	37.0	0	120	V
895.12	-6.5	20.9	2.0	0.0	-10.5	5.9	37.0	315	340	H
992.37	-6.8	20.9	2.0	0.0	-10.5	5.7	37.0	225	340	V

Checked By: 
Ian Carnegie

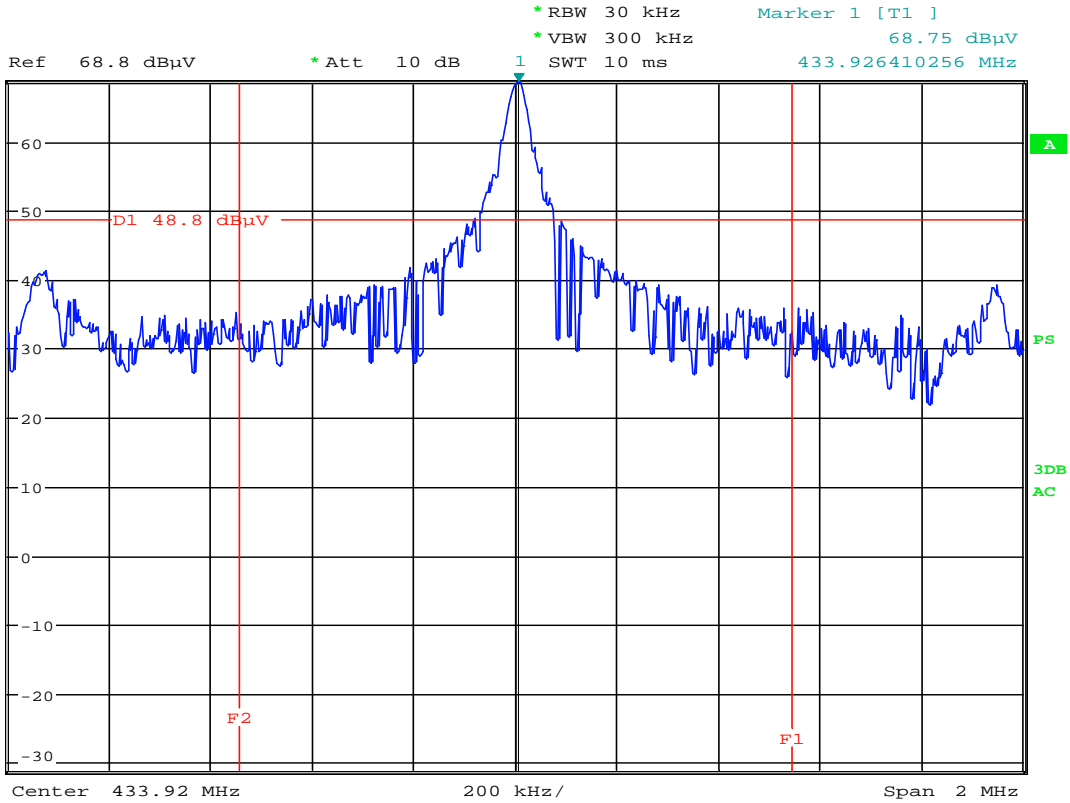


Manufacturer : Georgia Pacific
 Test Item : Battery Powered Hand Soap Dispenser
 Model No. : 52067
 Serial No. : FCC CW
 Mode : Transmit at 433.92MHz
 Test Specification : FCC 15.231e
 Date : June 25, 2013
 Test Distance : 3 meters
 Note : Peak readings

Freq. (MHz)	Ant Pol	Meter Reading (dBUV)	Ambient	CBL Fac (dB)	Ant Fac (dB)	Pre Amp (dB)	Duty Cycle (dB)	Total (dBUV/m)	Total (uV/m)	Limit (uV/m)	Margin (dB)
433.920	H	65.3		1.4	16.5	0.0	-16.8	66.4	2098.9	4398.7	-6.4
433.920	V	65.6		1.4	16.5	0.0	-16.8	66.7	2152.7	4398.7	-6.2
867.840	H	27.1	Ambient	2.0	19.9	0.0	-16.8	32.2	40.6	439.9	-20.7
867.840	V	27.6	Ambient	2.0	19.9	0.0	-16.8	32.7	43.4	439.9	-20.1
1301.760	H	27.7	Ambient	2.5	28.6	0.0	-16.8	42.0	125.2	500.0	-12.0
1301.760	V	26.8	Ambient	2.5	28.6	0.0	-16.8	41.1	113.3	500.0	-12.9
1735.680	H	27.5	Ambient	2.9	30.3	0.0	-16.8	43.9	156.6	500.0	-10.1
1735.680	V	28.3	Ambient	2.9	30.3	0.0	-16.8	44.7	170.9	500.0	-9.3
2169.600	H	27.1	Ambient	3.2	31.5	0.0	-16.8	45.1	179.7	500.0	-8.9
2169.600	V	27.3	Ambient	3.2	31.5	0.0	-16.8	45.3	184.3	500.0	-8.7
2603.520	H	27.7	Ambient	3.6	32.5	0.0	-16.8	47.0	224.1	500.0	-7.0
2603.520	V	28.3	Ambient	3.6	32.5	0.0	-16.8	47.6	240.4	500.0	-6.4
3037.440	H	27.9	Ambient	3.9	32.8	0.0	-16.8	47.8	245.8	500.0	-6.2
3037.440	V	27.4	Ambient	3.9	32.8	0.0	-16.8	47.3	230.7	500.0	-6.7
3471.360	H	27.0	Ambient	4.2	33.0	0.0	-16.8	47.4	235.1	500.0	-6.6
3471.360	V	26.6	Ambient	4.2	33.0	0.0	-16.8	47.0	225.0	500.0	-6.9
3905.280	H	25.0	Ambient	4.4	33.6	0.0	-16.8	46.2	203.5	500.0	-7.8
3905.280	V	25.5	Ambient	4.4	33.6	0.0	-16.8	46.7	215.8	500.0	-7.3
4339.200	H	24.0	Ambient	4.6	34.3	0.0	-16.8	46.2	203.0	500.0	-7.8
4339.200	V	24.9	Ambient	4.6	34.3	0.0	-16.8	47.1	225.2	500.0	-6.9

Total (dBUV/m) = Meter Reading + CBL FAC + Ant Fac + Pre Amp

Checked By: 
Ian Carnegie



Date: 26.JUN.2013 13:48:56

FCC 90: Occupied Bandwidth

MANUFACTURER : Georgia Pacific
MODEL NUMBER : 52067
SERIAL NUMBER : "FCC"
TEST MODE : Tx @ 433.92MHz
TEST PARAMETERS : 0.25% bandwidth
EQUIPMENT USED : RBE0, PHA0

NOTES