
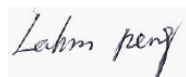
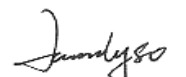


FCC PART 15.231
MEASUREMENT AND TEST REPORT
FOR

FUFU LIFESTYLE CO., LIMITED

**UNIT 706, HALESAN BUILDING, NO. 1 JUBILEE STREET, CENTRAL,
HONG KONG**

FCC ID: ZF566888

Report Concerns: Original Report	Equipment Type: Rechargeable Remote
Model:	<u>C1</u>
Report No.:	<u>STR11048008I-1</u>
Test Date:	<u>2011-04-01 to 2011-04-12</u>
Issue Date:	<u>2011-04-22</u>
Tested By:	<u>Galy He / Engineer</u> 
Reviewed By:	<u>Lahm Peng / EMC Manager</u> 
Approved & Authorized By:	<u>Jandy so/PSQ Manager</u> 
Prepared By:	SEM.Test Compliance Service Co., Ltd 3/F, Jinbao Commerce Building, Xin'an Fanshen Road, Bao'an District, Shenzhen, P.R.C. (518101) Tel.: +86-755-33663308 Fax.: +86-755-33663309 Website: www.semtest.com.cn

Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior permitted by SEM.Test Compliance Service Co., Ltd.

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1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant: FUFU LIFESTYLE CO., LIMITED
Address of applicant: UNIT 706, HALESON BUILDING, NO. 1 JUBILEE STREET
CENTRAL, HONG KONG

Manufacturer: BLUE OCEAN INNOVATION LIMITED
Address of manufacturer: Sima Village, Chang Ping Town, Dongguan, Guangdong,
China

General Description of E.U.T

Items	Description
EUT Description:	Rechargeable Remote
Trade Name:	EXTASE
Model No.:	C1
Rated Voltage:	3.7 V Battery
Frequency Range:	433.92MHz
RF Output Power:	<0 dBm
Antenna Type:	Integral Antenna
Size:	7.0X3.2X2.2 cm
For more information refer to the circuit diagram form and the user's manual.	

The test data is gathered from a production sample, provided by the manufacturer,

1.2 Test Standards

The following report is prepared on behalf of the FUFU LIFESTYLE CO., LIMITED in accordance with FCC Part 15, Subpart C, and section 15.231, 15.203, 15.205 and 15.209 of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC Part 15, Subpart C, and section 15.231, 15.203, 15.205 and 15.209 of the Federal Communication Commissions rules.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product, which result in lowering the emission/immunity, should be checked to ensure compliance has been maintained.

1.3 Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2003, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

The equipment under test (EUT) was configured to measure its highest possible emission level. The test modes were adapted accordingly in reference to the Operating Instructions. The EUT was set to keep transmitting during the test.

1.4 Test Facility

- **FCC – Registration No.: 994117**

SEM.Test Compliance Services Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files and the Registration is 994117.

- **Industry Canada (IC) Registration No.: 7673A**

The 3m Semi-anechoic chamber of SEM.Test Compliance Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 7673A.

- **CNAS Registration No.: L4062**

Shenzhen SEM.Test Electronics Service Co., Ltd. is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L4062. All measurement facilities used to collect the measurement data are located at 3/F, Jinbao Commerce Building, Xin'an Fanshen Road, Bao'an District, Shenzhen, P.R.C (518101)

1.5 EUT Exercise Software

The EUT exercise program used during the testing was designed to exercise the system components. The test software, provided by the customer, is started while the whole system is running.

1.6 Accessories Equipment List and Details

Description	Manufacturer	Model	Serial Number
Notebook	ASUS	XR55	/
/	/	/	/

1.7 EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
Charging Cable	1.1	Unshielded	Without Core
/	/	/	/

2. SUMMARY OF TEST RESULTS

Description of Test	Result
§15.203 Antenna Requirement	Compliant
§15.205 Restricted Band	Compliant
§15.207 Conducted Emission	Compliant
§15.209 General Requirement	Compliant
§15.231 (a) Deactivation Testing	Compliant
§15.231 (c) 20dB Band Width Testing	Compliant
§15.231 (b) Radiated Emission	Compliant

3. §15.203 ANTENNA REQUIREMENT

3.1 Standard Applicable

According to FCC 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

3.2 Test Result

This product has a permanent antenna, fulfill the requirement of this section.

4. §15.207 (a) CONDUCTED EMISSION

4.1 Measurement Uncertainty

Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement is ± 2.88 dB.

4.2 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2010-12-20	2011-12-19
L.I.S.N	Schwarz beck	NSLK8126	8126-224	2010-12-20	2011-12-19
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2010-12-20	2011-12-19

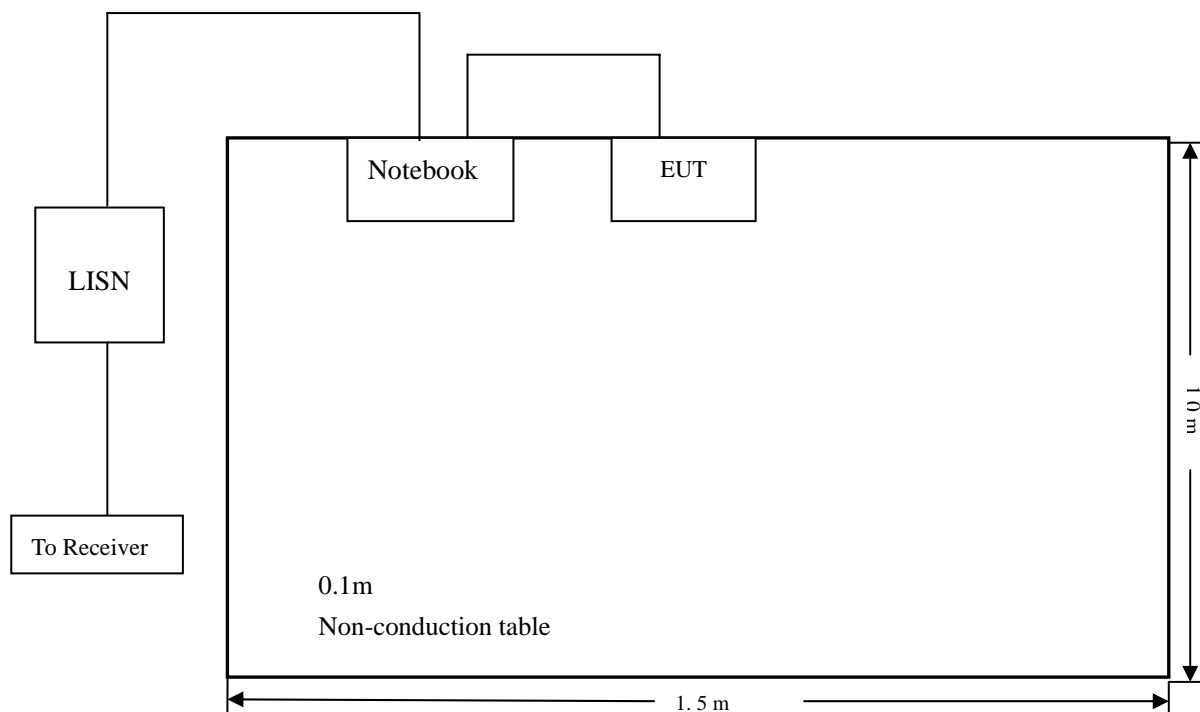
4.3 Test Procedure

The setup of EUT is according with per ANSI C63.4-2003 measurement procedure. The specification used was with the FCC Part 15.207 Limit.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

4.4 Basic Test Setup Block Diagram



4.5 Environmental Conditions

Temperature:	25 °C
Relative Humidity:	52%
ATM Pressure:	1012 mbar

4.6 Test Receiver Setup

During the conducted emission test, the test receiver was set with the following configurations:

Start Frequency 150 kHz
Stop Frequency..... 30 MHz
Sweep Speed Auto
IF Bandwidth..... 10 kHz
Quasi-Peak Adapter Bandwidth 9 kHz
Quasi-Peak Adapter Mode Normal

4.7 Summary of Test Results/Plots

According to the data in section 3.8, the EUT complied with the FCC 15.207 Conducted margin for a Class B device, with the *worst* margin reading of:

-12.74 dBµV at 1.698 MHz in the Line mode, Pk detector, 0.15-30MHz

4.8 Conducted Emissions Test Data

Plot of Conducted Emissions Test Data

Conducted Disturbance

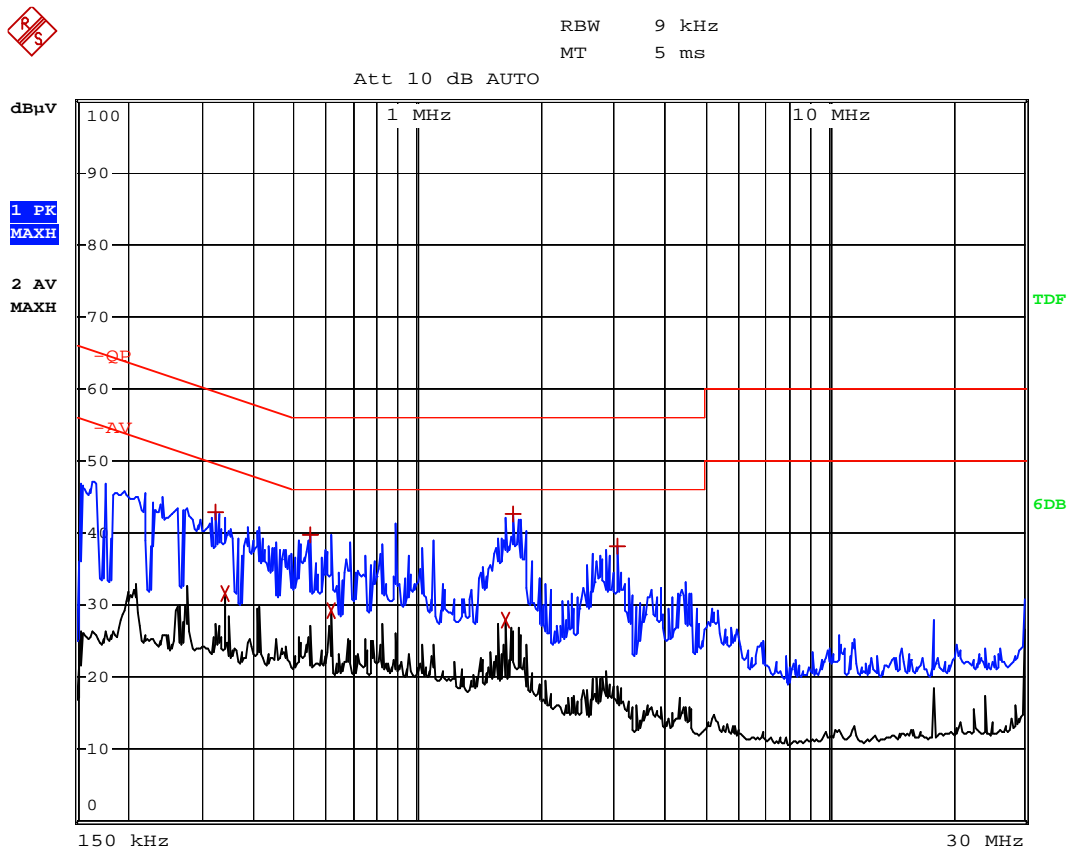
EUT: Rechargeable Remote

M/N: C1

Operating Condition: Charging

Test Specification: N

Comment: AC 120V/60Hz, USB 5V



EDIT PEAK LIST (Prescan Results)			
Trace1:	-QP		
Trace2:	-AV		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBµV	DELTA LIMIT dB
1 Max Peak	322 kHz	43.02	-16.63
2 Average	338 kHz	31.62	-17.62
1 Max Peak	546 kHz	39.78	-16.21
2 Average	614 kHz	29.22	-16.77
2 Average	1.638 MHz	27.97	-18.02
1 Max Peak	1.71 MHz	42.58	-13.41
1 Max Peak	3.07 MHz	38.20	-17.79

Plot of Conducted Emissions Test Data

Conducted Disturbance

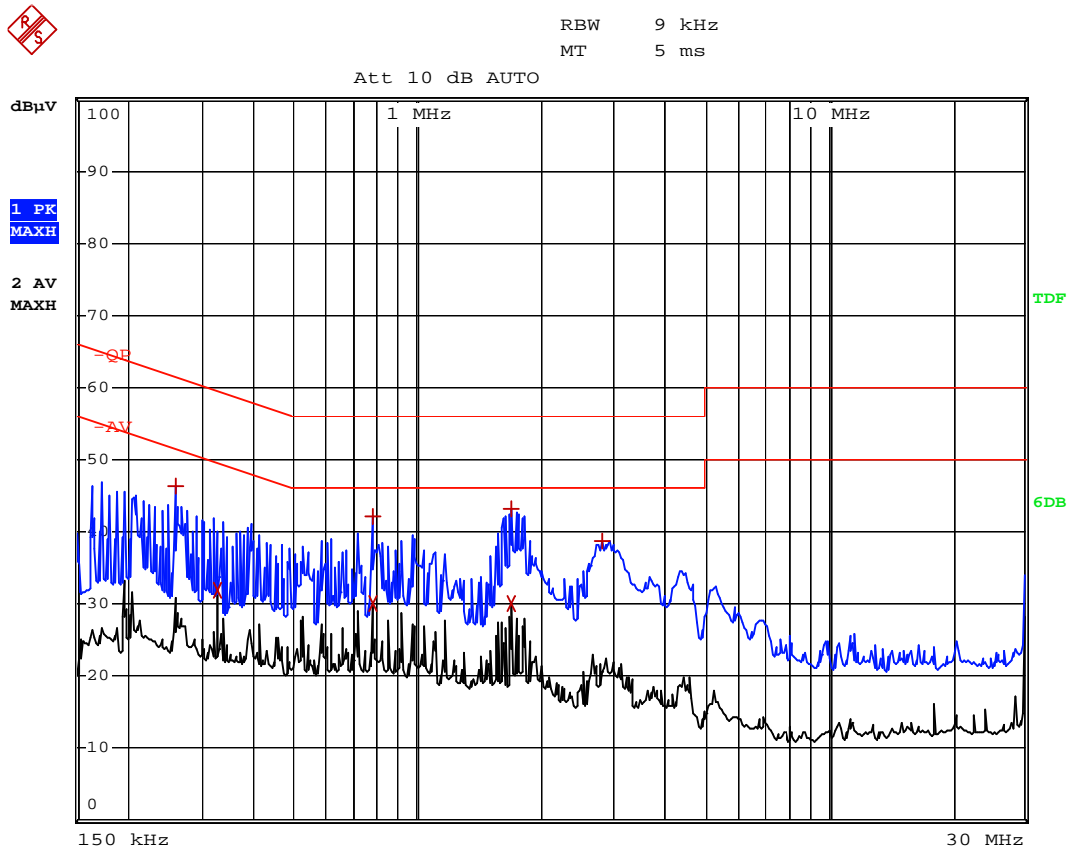
EUT: Rechargeable Remote

M/N: C1

Operating Condition: Charging

Test Specification: L

Comment: AC 120V/60Hz, USB 5V



EDIT PEAK LIST (Prescan Results)			
Trace1:	-QP		
Trace2:	-AV		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBμV	DELTA LIMIT dB
1 Max Peak	258 kHz	46.22	-15.27
2 Average	326 kHz	31.90	-17.64
1 Max Peak	778 kHz	42.17	-13.82
2 Average	778 kHz	29.93	-16.06
1 Max Peak	1.698 MHz	43.25	-12.74
2 Average	1.698 MHz	30.07	-15.92
1 Max Peak	2.81 MHz	38.75	-17.24

5. §15.205, §15.209, §15.231 (b) RADIATED EMISSION

5.1 Measurement Uncertainty

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement is ± 5.10 dB.

5.2 Standard Applicable

According to §15.231(b), the field strength of emissions from intentional radiators operated under this section shall not exceed the following:

Fundamental frequency (MHz)	Field strength of fundamental (microvolts/meter)	Field strength of spurious emissions (microvolts/meter)
40.66-40.70.....	2,250.....	225
70-130.....	1,250.....	125
130-174.....	\1\ 1,250 to 3,750	\1\ 125 to 375
174-260.....	3,750.....	375
260-470.....	\1\ 3,750 to 12,500	\1\ 375 to 1,250
Above 470.....	12,500.....	1,250

\1\ Linear interpolations.

The limits on the field strength of the spurious emissions in the above table are based on the fundamental frequency of the intentional radiator. Spurious emissions shall be attenuated to the average (or, alternatively, CISPR quasi-peak) limits shown in this table or to the general limits shown in §15.209, whichever limit permits a higher field strength.

compliance with the provisions of §15.205 shall be demonstrated using the measurement instrumentation specified in that section.

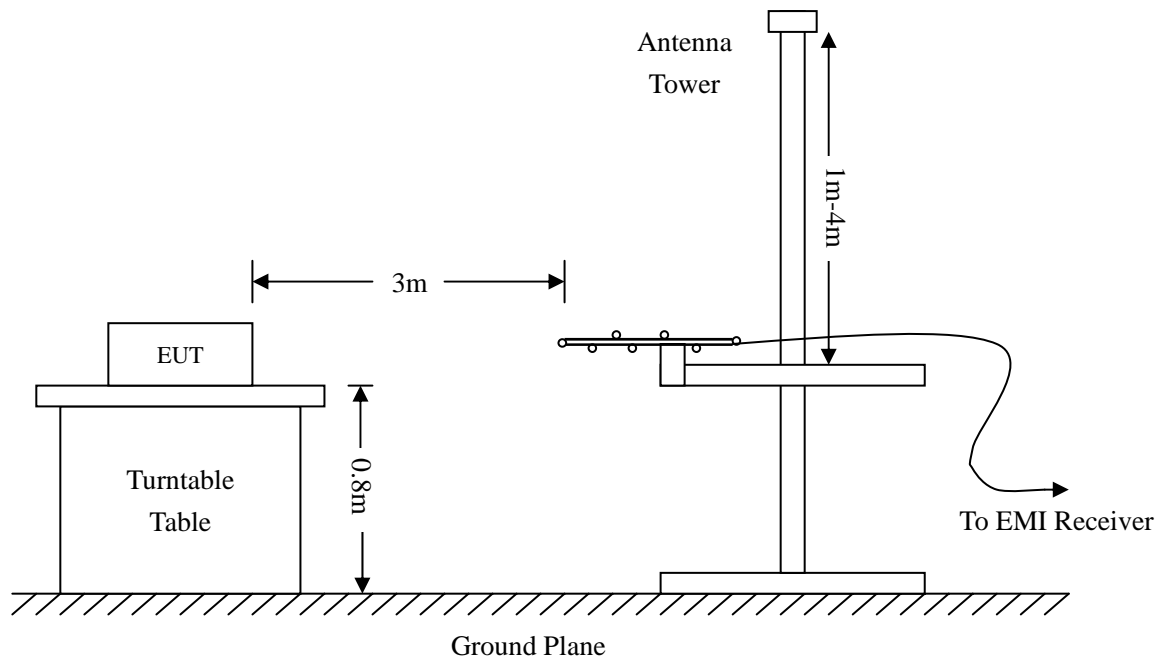
5.3 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	R&S	FSP	836079/035	2010-12-20	2011-12-19
EMI Test Receiver	R&S	ESVB	825471/005	2010-12-20	2011-12-19
Positioning Controller	C&C	CC-C-1F	N/A	2010-12-20	2011-12-19
RF Switch	EM	EMSW18	SW060023	2010-12-20	2011-12-19
Pre-amplifier	Agilent	8447F	3113A06717	2010-12-20	2011-12-19
Pre-amplifier	Compliance Direction	PAP-0118	24002	2010-12-20	2011-12-19
Trilog Broadband Antenna	SCHWARZBECK	VULB9163	9163-333	2011-01-09	2012-01-08
Horn Antenna	ETS	3117	00086197	2011-01-09	2012-01-08

Statement of Traceability: All calibrations have been performed per the NVLAP requirements traceable to the NIST.

5.4 Test Procedure

The setup of EUT is according with per ANSI C63.4-2003 measurement procedure. The specification used was with the FCC Part 15.205 15.231(b) and FCC Part 15.209 Limit.



5.5 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Ant. Loss} + \text{Cab. Loss} - \text{Ampl. Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dB μ V means the emission is 6dB μ V below the maximum limit for Class B. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{FCC Part 15.231 Limit}$$

5.6 Environmental Conditions

Temperature:	21° C
Relative Humidity:	50%
ATM Pressure:	1011 mbar

5.7 Summary of Test Results/Plots

According to the data below, the FCC Part 15.205, 15.209 and 15.231 standards, and had the worst margin of:

-9.53 dB μ V at 30.4238MHz in the Horizontal, Peak Detector polarization, Charging Model, 30 MHz to 5 GHz, 3Meters

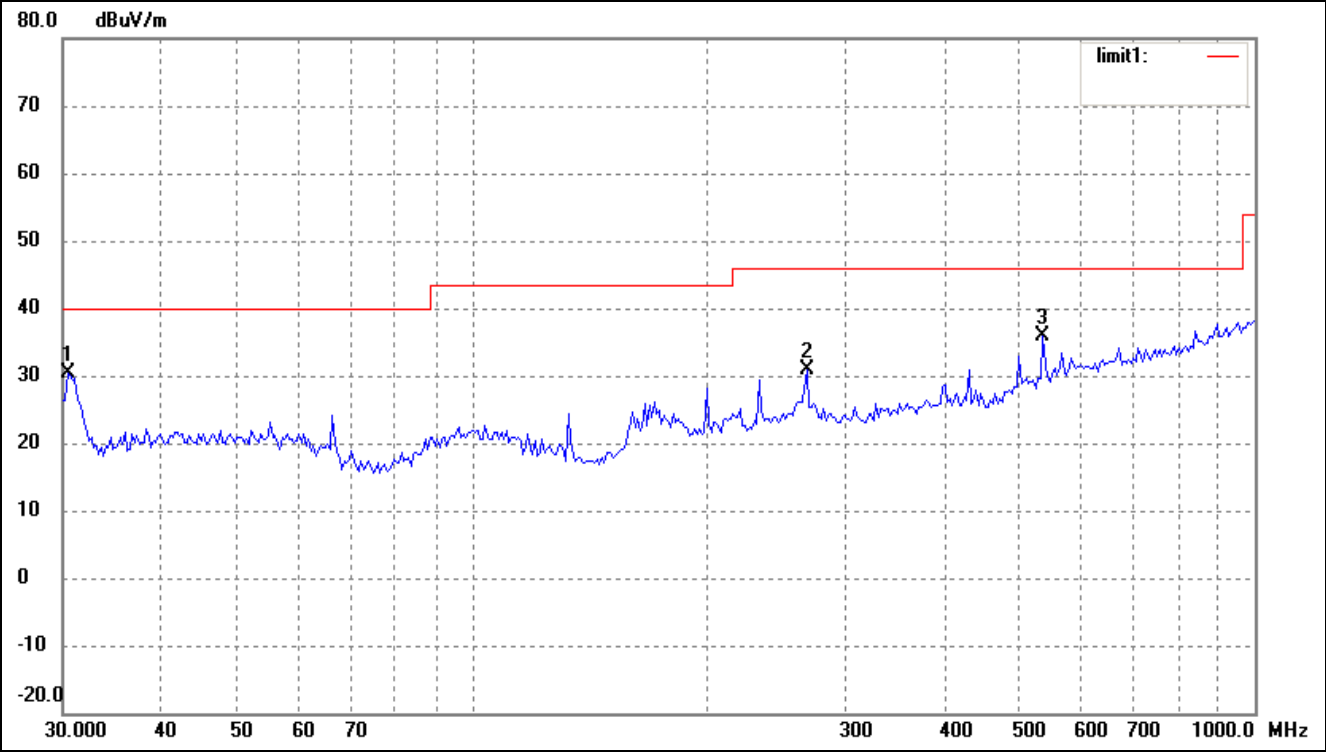
-9.36 dB μ V at 30.0000MHz in the Vertical, Peak Detector polarization, Transmitting Model, 30 MHz to 5 GHz, 3Meters

***Note:** this EUT was tested in 3 orthogonal positions and the worst case position data was reported.*

Plot of Radiation Emissions Test

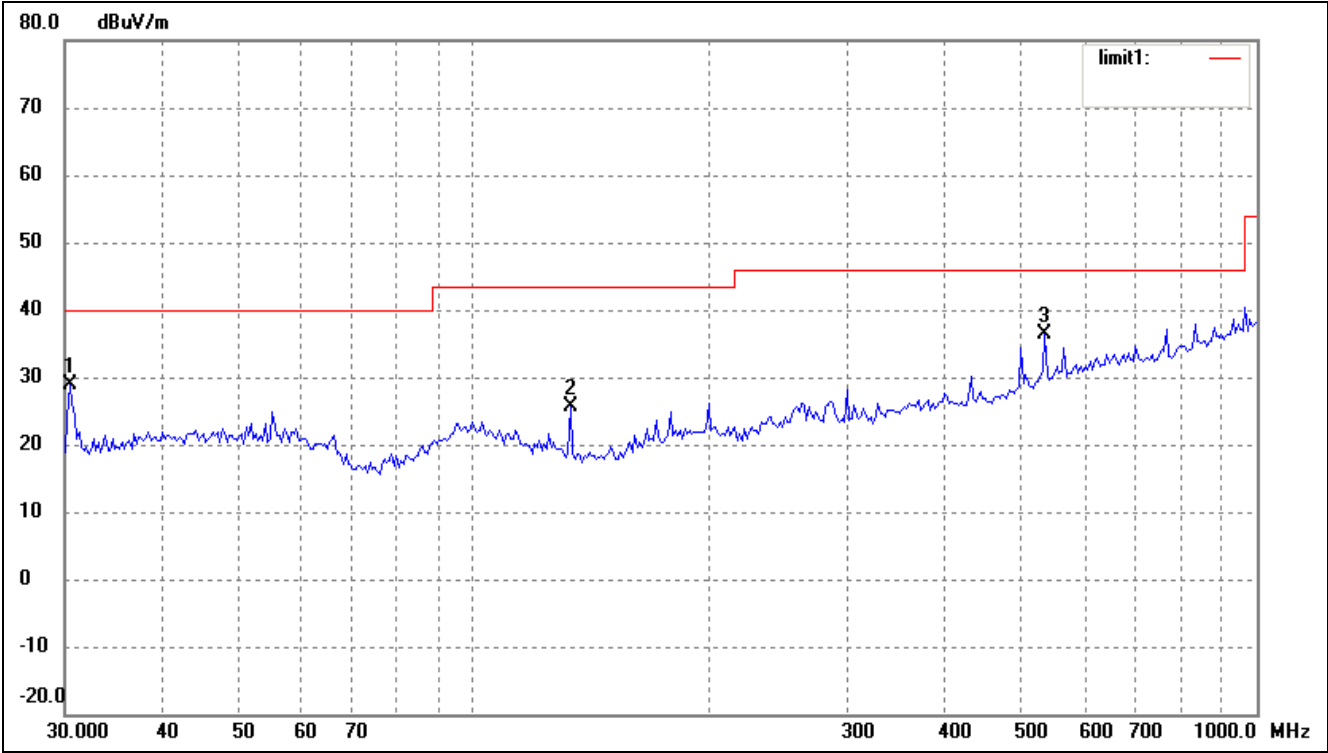
Test Model: Charging

Horizontal:



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	30.4238	23.70	6.77	30.47	40.00	-9.53	360	100	peak
2	267.5455	21.66	9.17	30.83	46.00	-15.17	360	100	peak
3	535.7073	20.66	15.21	35.87	46.00	-10.13	360	100	peak

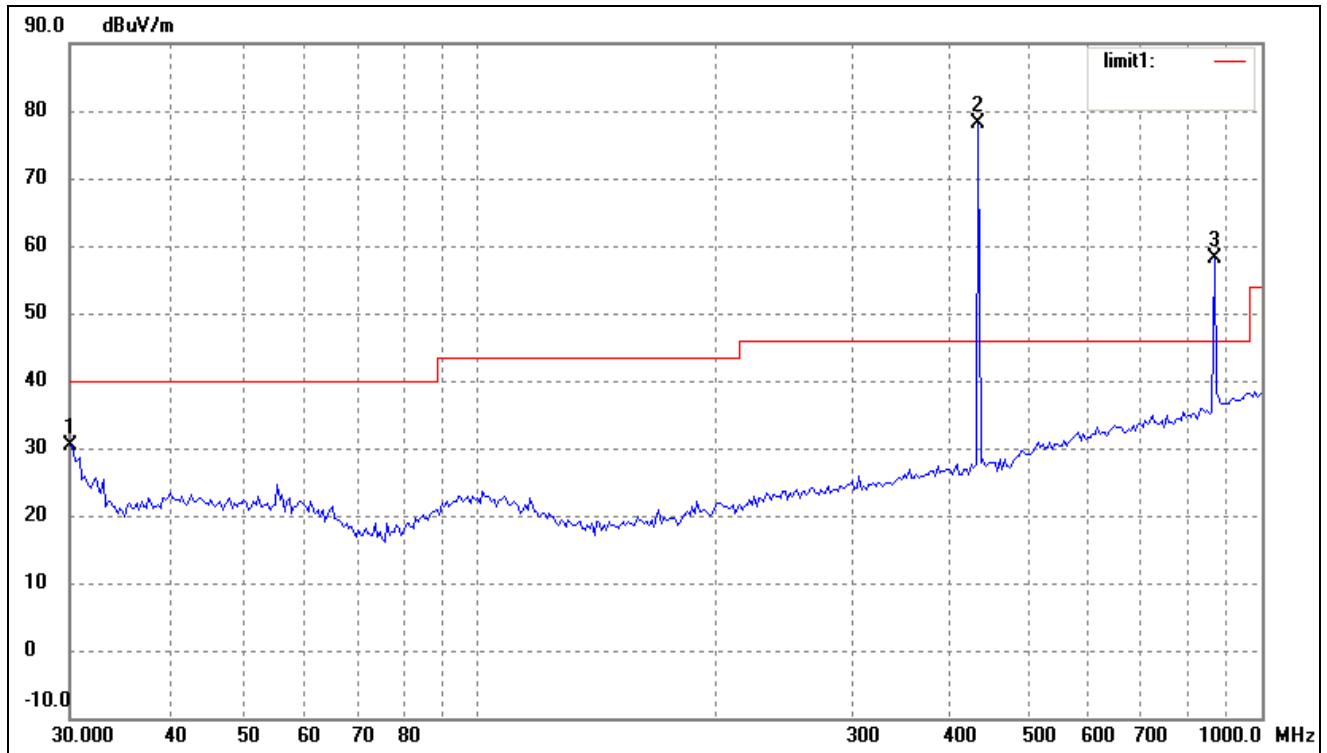
Vertical:



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	30.4238	22.10	6.77	28.87	40.00	-11.13	360	100	peak
2	132.6850	21.34	4.40	25.74	43.50	-17.76	360	100	peak
3	535.7073	21.10	15.21	36.31	46.00	-9.69	360	100	peak

Test Model: Transmitting

Horizontal:

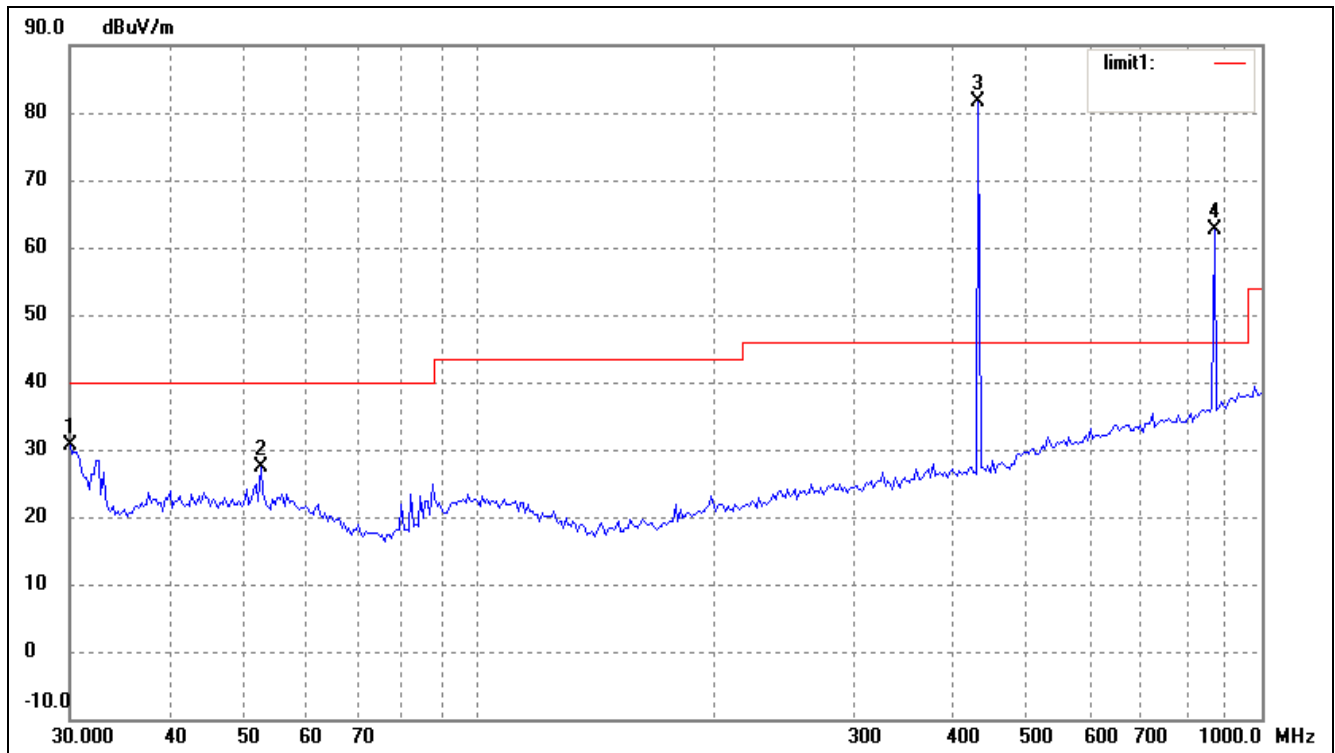


No.	Frequency MHz	Reading dBuV/m	Corr. Factor(dB)	Dutycycle Factor (dB)	Result dBuV/m	Limit dBuV/m	Margin (dB)	Deg. (°)	Height (cm)	Remark
1	30.2110	23.56	6.77	N/A	30.33	40.00	-9.67	360	100	peak
2	433.9200	66.10	11.93	N/A	78.03	100.81	-22.78	230	100	peak
3	869.1301	37.84	20.32	N/A	58.16	80.83	-22.67	360	100	peak
	433.9200	/	/	-12.06	65.97	80.81	-14.84	265	160	Ave
	869.1301	/	/	-12.06	46.1	60.83	-14.73	249	150	Ave

Above 1GHz

No.	Frequency MHz	Reading dBuV/m	Corr. Factor (dB)	Dutycycle Factor (dB)	Result dBuV/m	Limit dBuV/m	Margin dB	Deg. (°)	Height (cm)	Remark
1	1303.20	29.57	26.95	N/A	56.52	74.00	-17.48	360	100	Peak
2	1738.70	24.26	27.77	N/A	52.03	74.00	-21.97	360	100	Peak
	1303.20	/	/	-12.06	44.46	54.00	-9.54	280	150	Ave
	1738.70	/	/	-12.06	39.97	54.00	-14.03	275	150	Ave

Vertical:



No.	Frequency MHz	Reading dBuV/m	Corr. Factor(dB)	Dutycycle Factor (dB)	Result dBuV/m	Limit dBuV/m	Margin (dB)	Deg. (°)	Height (cm)	Remark
1	30.0000	23.87	6.77	N/A	30.64	40.00	-9.36	360	100	peak
2	52.5752	19.58	7.87	N/A	27.45	40.00	-12.55	360	100	peak
3	433.9200	69.72	11.93	N/A	81.65	100.81	-19.16	360	100	peak
4	869.1301	42.26	20.32	N/A	62.58	80.83	-18.25	360	100	peak
	433.9200	/	/	-12.06	69.59	80.81	-11.22	85	100	Ave
	869.1301	/	/	-12.06	50.52	60.83	-10.31	80	100	Ave

Above 1GHz

No.	Frequency MHz	Reading dBuV/m	Corr. Factor (dB)	Dutycycle Factor (dB)	Result dBuV/m	Limit dBuV/m	Margin dB	Deg. (°)	Height (cm)	Remark
1	1303.20	29.19	26.95	N/A	56.14	74.00	-17.86	360	100	Peak
2	1738.70	26.85	27.77	N/A	54.62	74.00	-19.38	360	100	Peak
	1303.20	/	/	-12.06	44.08	54.00	-9.92	78	150	Ave
	1738.70	/	/	-12.06	42.56	54.00	-11.44	92	150	Ave

Note: The EUT was tested in all three orthogonal planes and frequency rang 30MHz to the tenth harmonics.

Emissions attenuated closely to the noise base are not reported.

The fundamental frequency is 433.92MHz, so the fundamental and spurious emissions radiated limit base on the the operating frequency 433.92MHz.

6. §15.231(c) 20dB BANDWIDTH TESTING

6.1 Standard Applicable

According to FCC 15.231(c), The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. Bandwidth is determined at the points 20 dB down from the modulated carrier.

6.2 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	Agilent	E4402B	US41192821	2010-12-20	2011-12-19
Attenuator	ATTEN	ATS100-4-20	/	2010-12-20	2011-12-19

Statement of Traceability: All calibrations have been performed per the NVLAP requirements traceable to the NIST.

6.3 Test Procedure

With the EUT's antenna attached, the EUT's 20dB Bandwidth power was received by the test antenna, which was connected to the spectrum analyzer with the START, and STOP frequencies set to the EUT's operation band.

6.4 Environmental Conditions

Temperature:	21° C
Relative Humidity:	52%
ATM Pressure:	1011 mbar

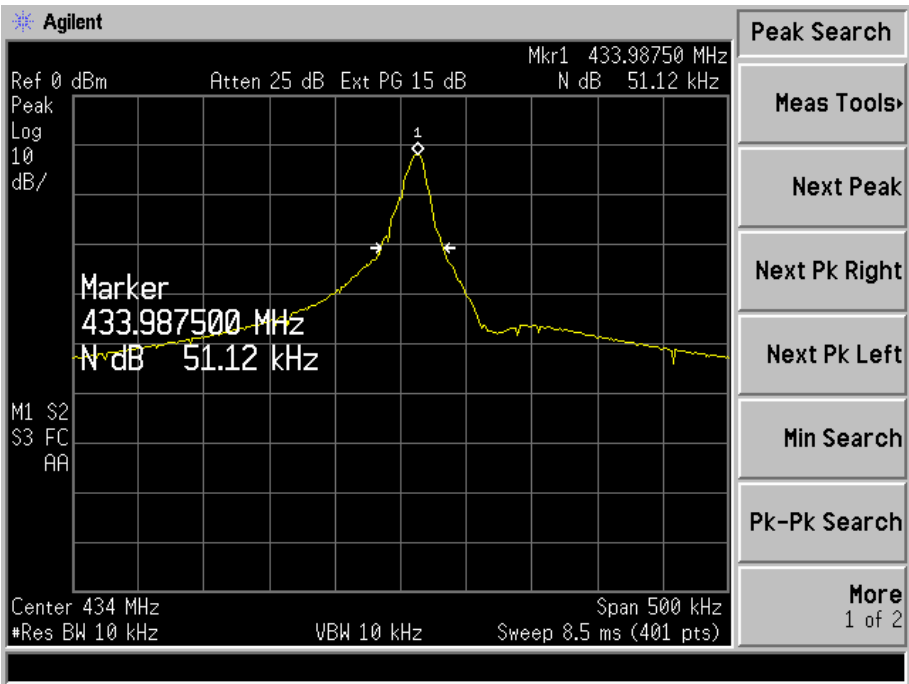
6.5 Summary of Test Results/Plots

Frequency MHz	20dB Bandwidth KHz	Limit kHz
433.987	51.12	1085

Limit=Fundamental Frequency×0.25%=433.987×0.25%=1085kHz

Test Result Pass

Refer to the attached plots.



7. §15.231(a) DEACTIVATION TESTING

7.1 Standard Applicable

According to FCC 15.231 (a)(1) A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.

7.2 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	Agilent	E4402B	US41192821	2010-12-20	2011-12-19
Attenuator	ATTEN	ATS100-4-20	/	2010-12-20	2011-12-19

Statement of Traceability: All calibrations have been performed per the NVLAP requirements traceable to the NIST.

7.3 Test Procedure

With the EUT's antenna attached, the EUT's output signal was received by the test antenna, which was connected to the spectrum analyzer. Set the center frequency to 433.92MHz, than set the spectrum analyzer to Zero Span for the release time reading. During the testing, the switch was released then the EUT automatically deactivated.

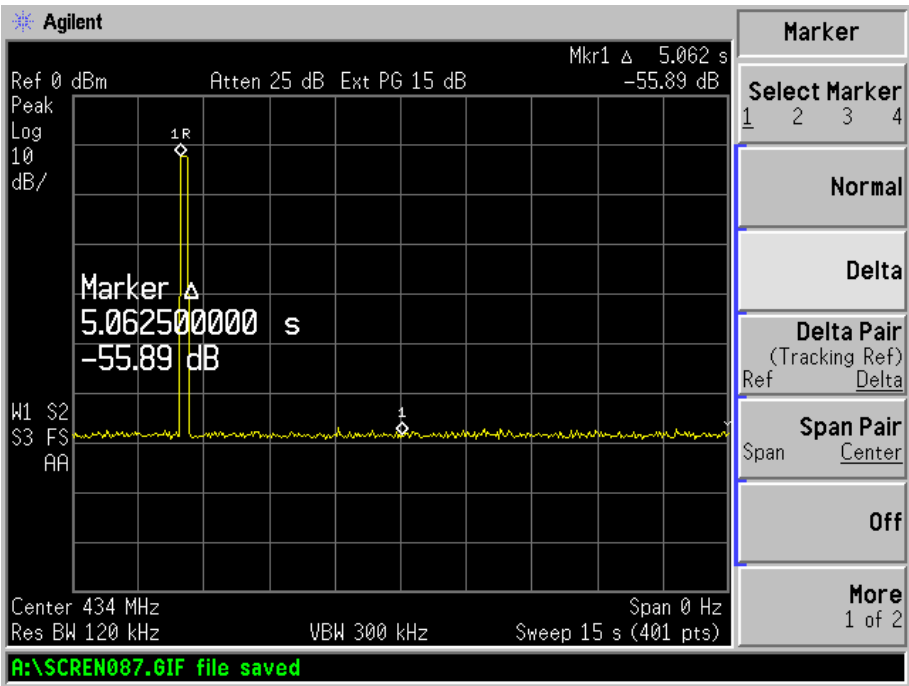
7.4 Environmental Conditions

Temperature:	20° C
Relative Humidity:	52%
ATM Pressure:	1011 mbar

7.5 Summary of Test Results/Plots

Refer to the attached plots.

The transmission time <5s



Result: Pass

8. §15.231(b) Duty Cycle

8.1 Standard Applicable

According to FCC 15.231 (b)(2) and 15.35 (c), For pulse operation transmitter, the averaging pulsed emissions are calculated by peak value of measured emission plus duty cycle factor.

8.2 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	Agilent	E4402B	US41192821	2010-12-20	2011-12-19
Attenuator	ATTEN	ATS100-4-20		2010-12-20	2011-12-19

Statement of Traceability: All calibrations have been performed per the NVLAP requirements traceable to the NIST.

8.3 Test Procedure

With the EUT's antenna attached, the EUT's output signal was received by the test antenna, which was connected to the spectrum analyzer. Set the center frequency to 433.92MHz, than set the spectrum analyzer to Zero Span for the release time reading. During the testing, the switch was released then the EUT automatically deactivated.

8.4 Environmental Conditions

Temperature:	20° C
Relative Humidity:	52%
ATM Pressure:	1011 mbar

8.5 Summary of Test Results/Plots

$T_p = 79.375 \text{ ms}$

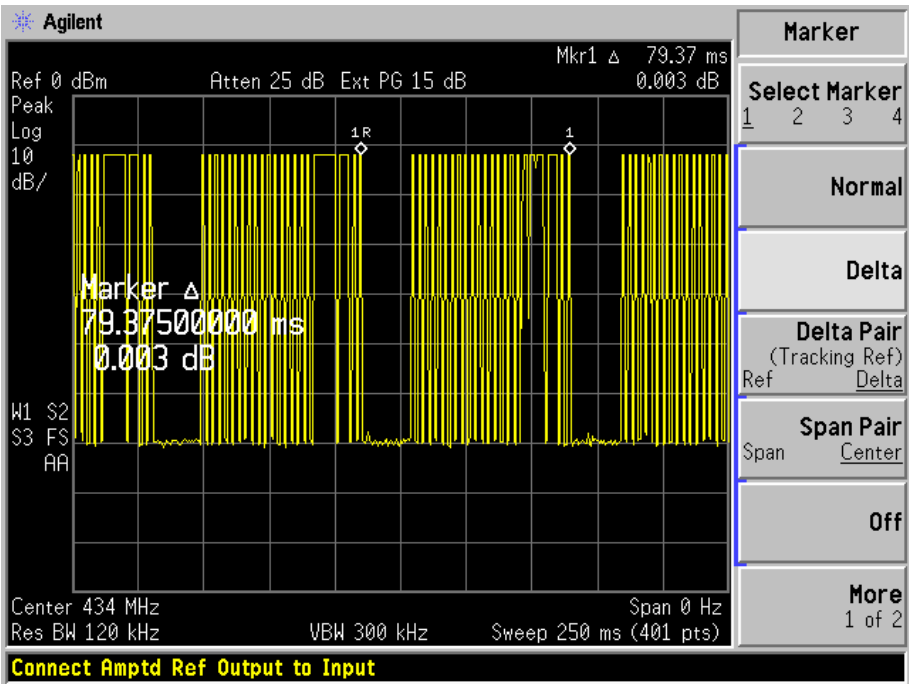
$T_{on} = T_{on1} * \text{Number} + T_{on2} * \text{Number} = 0.6 * 21 + 1.8 * 4 = 19.8$

$\text{Duty Cycle} = T_{on} / T_p * 100\% = 24.95\%$

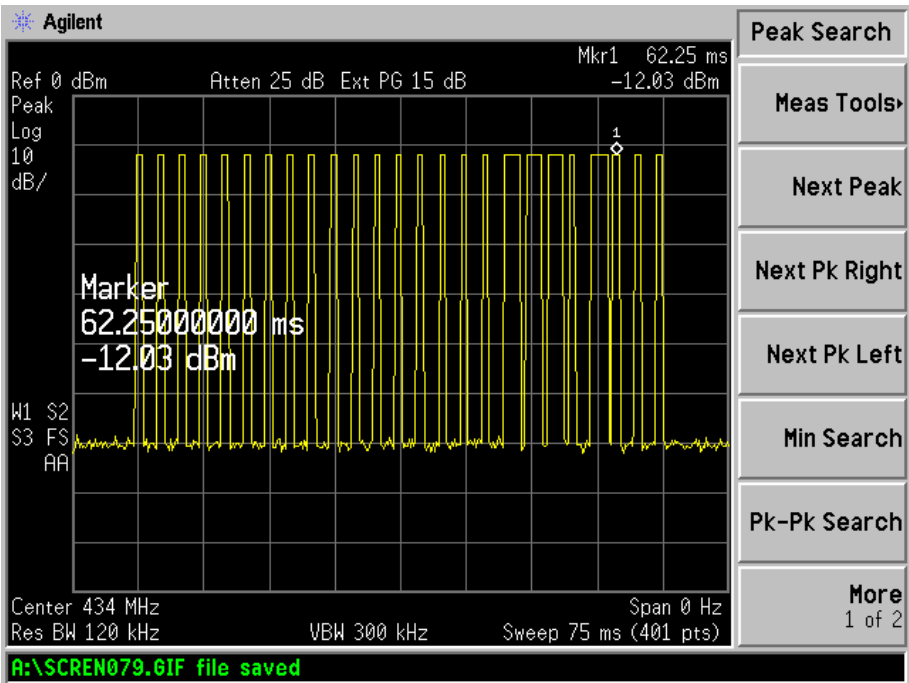
$\text{Factor} = 20 * \log (T_{on}/T_p) = -12.06$

Refer to the attached plots.

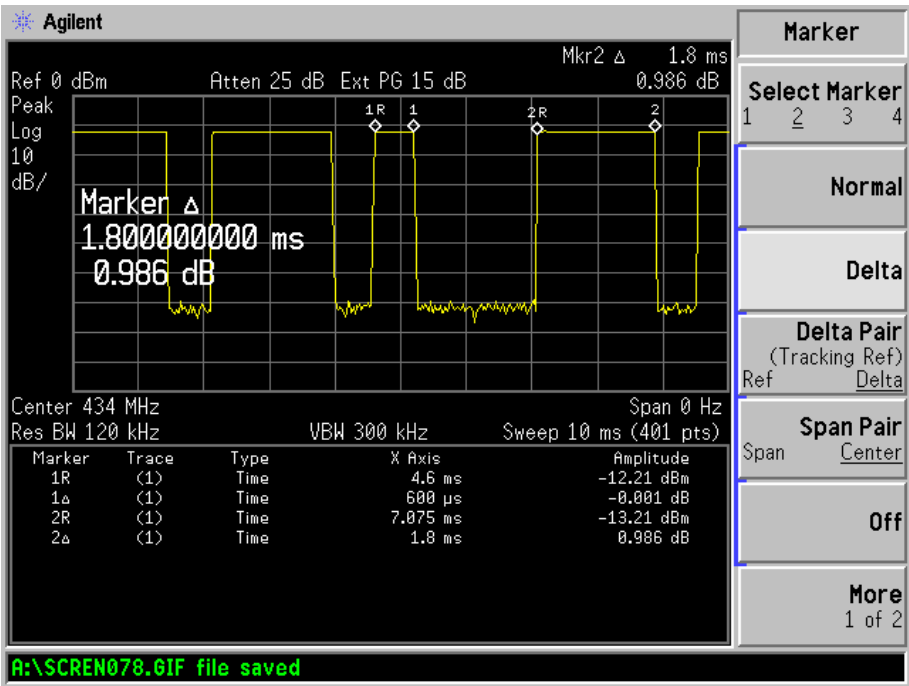
Test Plot 1:



Test Plot 2:



Test Plot 3:



***** END OF REPORT *****