FCC - TEST REPORT

Report Number	:	**68.760.12.165.01**	Date of Issue:	5 August 2012

Model	:	**PLL-1C Remote**
Product Type	:	Remote Control paper lantern light
Applicant	:	FORTUNE PRODUCTS INC
Address	:	2824A, OLD HARTFORD RD, LAKE STEVENS, WA 98258, USA
Production Facility	:	TINWING INDUSTRIAL LTD
Address	:	UNIT F, 16/F SUN YING IND. CTR. NO.9 TINWAN CLOSE, ABERDEEN, HONGKONG
Test Result	:	■ **Positive** ☐ **Negative**
Total pages including Appendices	:	24

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1 Table of Contents

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2 Details about the Test Laboratory

Details about the Test Laboratory

Test Site 1

Company name: Jiangsu TÜV Product Service Ltd. – Shenzhen Branch
6th Floor, H Hall,
Century Craftwork Culture Square,
No. 4001, Fuqiang Road,
Futian District 518048,
Shenzhen,P.R.C.

Telephone: 86 755 8828 6998
Fax: 86 755 8828 5299

Test Site 2

Company name: Audix Technology (shenzhen) Co.,Ltd
Block Shenzhen, Science & Industry Park,
Nantou, Shenzhen,
Guangdong,
China

Telephone: 86 755 2663 9496
Fax: 86 755 2663 2877

3 Description of the Equipment Under Test

Description of the Equipment Under Test

Product: Remote Control paper lantern light

Model no.: PLL-1C Remote

Options and accessories: NIL

Rating: DC 12V (VR22 Battery)

RF Transmission Frequency: 433.92MHz

Description of the EUT: NIL

Auxiliary Equipment Used during Test:

DESCRIPTION	MANUFACTURER	MODEL NO.(SHIELD)	S/N(LENGTH)
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4 Summary of Test Standards

Test Standards	
FCC Part 15 Subpart C 10-1-2011 Edition	PART 15 - RADIO FREQUENCY DEVICES Subpart C - Intentional Radiators

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5 Summary of Test Results

Technical Requirements					
FCC Part 15 Subpart C					
Test Condition	Pages	Test Site	Test Result		
			Pass	Fail	N/A
15.207 Conducted Emission AC Power Port *	--	Site 2	☐	☐	☒
15.209 General Requirement	8	Site 2	☒	☐	☐
15.231(b) Radiated Emission Test	12	Site 2	☒	☐	☐
15.231(c) 20dB bandwidth	15	Site 2	☒	☐	☐
15.231(a)(1) Deactivate Test	18	Site 2	☒	☐	☐

Note"*": this product is power supplied by battery, this test item not applicable.

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6 General Remarks

Remarks
This submittal(s) (test report) is intended for FCC ID: WRT-PLL-1CREMOTE complies with Section 15.209, 15.231 of the FCC Part 15, Subpart C Rules.

All the configurations of the product were tested and only the worst test results are listed in the report.

SUMMARY:

All tests according to the regulations cited on page 5 were

■ - Performed

☐ - **Not** Performed

The Equipment Under Test

■ - **Fulfills** the general approval requirements.

☐ - **Does not** fulfill the general approval requirements.

Sample Received Date: 27 July 2012

Testing Start Date: 29 July 2012

Testing End Date: 6 August 2012

- Jiangsu TÜV Product Service Ltd. – Shenzhen Branch -

Reviewed by:	Prepared by:	Tested by:
Phoebe Hu	Felix Li	Sunny Lu
EMC Project Manager	EMC Project Engineer	Test Engineer

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7 Technical Requirement

7.1 Radiated Emission: General Requirement

Test Method

1 The EUT is placed on a turntable, which is 0.8m above ground plane.
2 The turntable shall be rotated for 360 degrees to determine the position of maximum emission level
3 EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4 Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5 Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.

Limit

Frequencies in restricted band are complied to limit on Paragraph 15.209.

Frequency Range (MHz)	Distance (m)	Field strength (dBuV/m)
30-88	3	40.0
88-216	3	43.5
216-960	3	46.0
Above 960	3	54.0

Note: 1. RF Voltage (dBuV) = 20 log RF Voltage (uV)
2. In the Above Table, the tighter limit applies at the band edges.
3. Distance refers to the distance in meters between the measuring instrument antenna and the EUT
4. All scanning using PK detector. And the final emission level was get using QP detector for frequency range from 30-1000MHz.As to 1G-4G, the final emission level got using PK detector. And Average = peak (dBuV/m) – duty cycle(dB)
5. New batteries were installed in the equipment under test for radiated emission testing.
6. This is a handhold device. The radiated emissions should be tested under 3-axes position (Lying, Side, and Stand), after pre-test. It was found that the worse radiated emission was get at the lying position.

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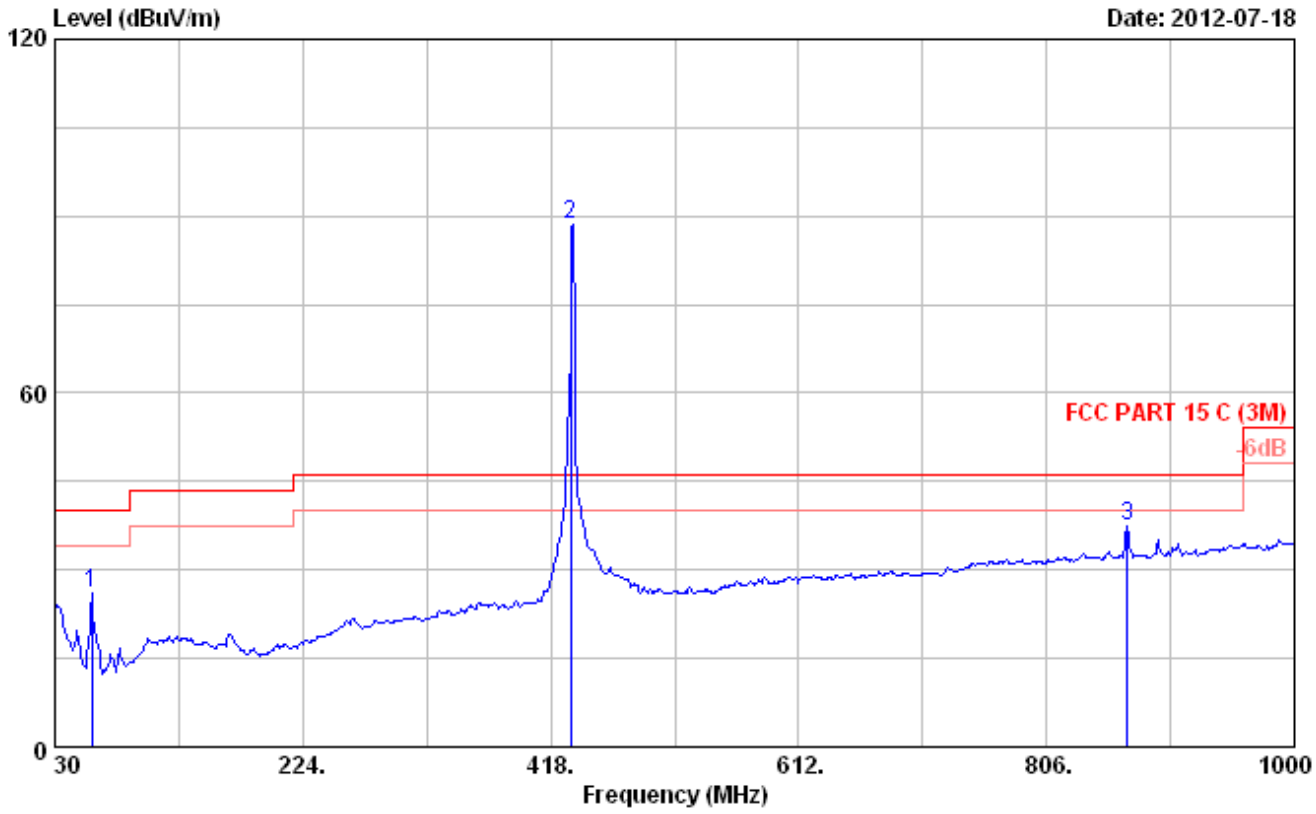
Radiated Emission: General Requirement

EUT: RC paper lantern light : M/N: PLL-1C-remote
Operating Condition: Tx
Test Specification: Vertical



Frequency (MHz)	Level @ 3m (dBuV/m)	Antenna Polarity	Limit @ 3m (dBuV/m)
--	--	V	--

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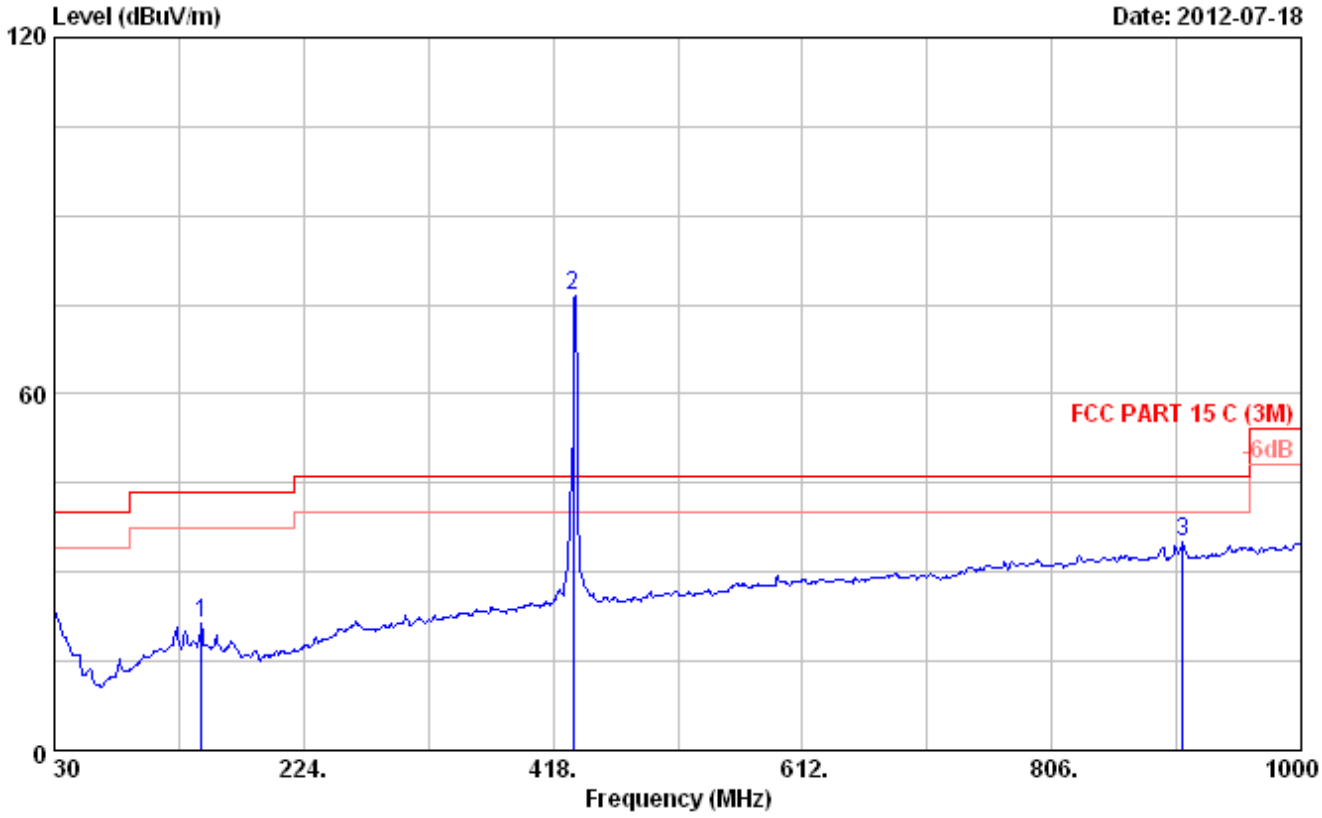
Radiated Emission: General Requirement

EUT: RC paper lantern light : M/N: PLL-1C-remote
Operating Condition: Tx
Test Specification: Horizontal



Frequency (MHz)	Level @ 3m (dBuV/m)	Antenna Polarity	Limit @ 3m (dBuV/m)
--	--	H	--

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Test Equipment List

Radiated Emission: General Requirement

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL DUE DATE
Spectrum	Agilent	E4446A	US44300459	May 07, 2013
Amp	HP	8449B	3008A02495	May 07, 2013
Antenna	EMCO	3115	9607-4877	May 16, 2013
Bilog Antenna	Schaffner	CBL6111C	2598	Dec.13, 2012
HF Cable	Hubersuhne	Sucoflex104	---	May 07, 2013

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7.2 Radiated Emission

Test Method

1 The EUT was tested according to ANSI C63.4 –2003. Peripherals were put on the turntable. All set up is according to ANSI C63.4-2003.
2 The frequency spectrum from 30 MHz to 1 GHz was investigated. All readings from 30 MHz to 1 GHz are quasi-peak values with a resolution bandwidth of 120 kHz. All readings are above 1 GHz, peak values with a resolution bandwidth of 1 MHz. Measurements were made at 3 meters.
3 The antenna high is varied from 1 m to 4 m high to find the maximum emission for each frequency.
4 Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance is with all installation combinations. All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within -4 dB of specification limit), and are distinguished with a "QP" in the data table.
5 The antenna polarization: Vertical polarization and Horizontal polarization.

Limit

FCC Part 15 Subpart C Paragraph 15.231 Limit

Fundamental Frequency (MHz)	Field Strength of Fundamental		Field Strength of Spurious Emission	
	uV/m	dBuV/m	uV/m	dBuV/m
40.66-40.70	2250	67.04	225	47.04
70-130	1250	61.94	125	41.94
130-174	1250-3370	61.94-70.55	125-375	41.94-51.48
174-260	3750	71.48	375	51.48
260-470	3750-12500	71.48-81.94	375-1250	51.48-61.94
Above 470	12500	81.94	1250	61.94

Note: 1. RF Field Strength (dBuV) = 20 log RF Voltage (uV)
2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
3. The emission limit in this paragraph is based on measurement instrumentation employing an average detector.
4. Linear interpolations for frequency ranges 130-174MHz and 260-470MHz
5. The above field strength limits are specified at a distance of 3-meters and the tighter limits apply at the band edges

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Radiated Emission

Test Result:
EUT: RC paper lantern light
M/N: PLL-1C-remote
Operating Condition: Transmitting
Test Result: Pass

Frequency (MHz)	Emission PK/AV (dBuV/m)	Horizontal/ Vertical	Limits PK/AV (dBuV/m)	Margin (dB)
433.92	76.60/59.45	Horizontal	100.83/80.83	24.23/21.38
433.92	88.63/71.48	Vertical	100.83/80.83	12.2/9.35
867.84	35.23/18.08	Horizontal	80.83/60.83	45.60/42.75
867.84	37.44/20.29	Vertical	80.83/60.83	43.39/40.54
1301.76	--	Horizontal	80.83/60.83	--
1301.76	--	Vertical	80.83/60.83	--
1735.68	--	Horizontal	80.83/60.83	--
1735.68	--	Vertical	80.83/60.83	--
2169.60	--	Horizontal	80.83/60.83	--
2169.60	--	Vertical	80.83/60.83	--
2603.52	--	Horizontal	80.83/60.83	--
2603.52	--	Vertical	80.83/60.83	--
3037.44	50.79/33.64	Horizontal	80.83/60.83	30.04/27.19
3037.44	49.92/32.77	Vertical	80.83/60.83	30.91/28.06
3471.36	47.17/30.02	Horizontal	80.83/60.83	33.66/30.81
3471.36	--	Vertical	80.83/60.83	--
3905.28	--	Horizontal	80.83/60.83	--
3905.28	--	Vertical	80.83/60.83	--
4339.2	--	Horizontal	80.83/60.83	--
4339.2	--	Vertical	80.83/60.83	--

Note: Average (dBuV/m) = Peak (dBuV/m) – Duty Cycle Factor (dB)
Note"-": the reading level is lower than the limit more than 10dB.

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Test Equipment List

Radiated Emission

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Spectrum	Agilent	E4446A	US44300459	May 07, 2013
Amp	HP	8449B	3008A02495	May 07, 2013
Antenna	EMCO	3115	9607-4877	May 16, 2013
Bilog Antenna	Schaffner	CBL6111C	2598	Dec.13, 2012
Horn Antenna	EMCO	3115	9607-4877	Nov.24, 2012
HF Cable	Hubersuhne	Sucoflex104	---	May 07, 2013

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7.3 20 dB bandwidth

Test Method

1 Place the EUT on the table and set it in the transmitting mode.
2 Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3 Mark the peak frequency and –20dB (upper and lower) frequency.

Limit

Limit=Frequency x 0.25%=433.92 x 0.25%=1.08MHz

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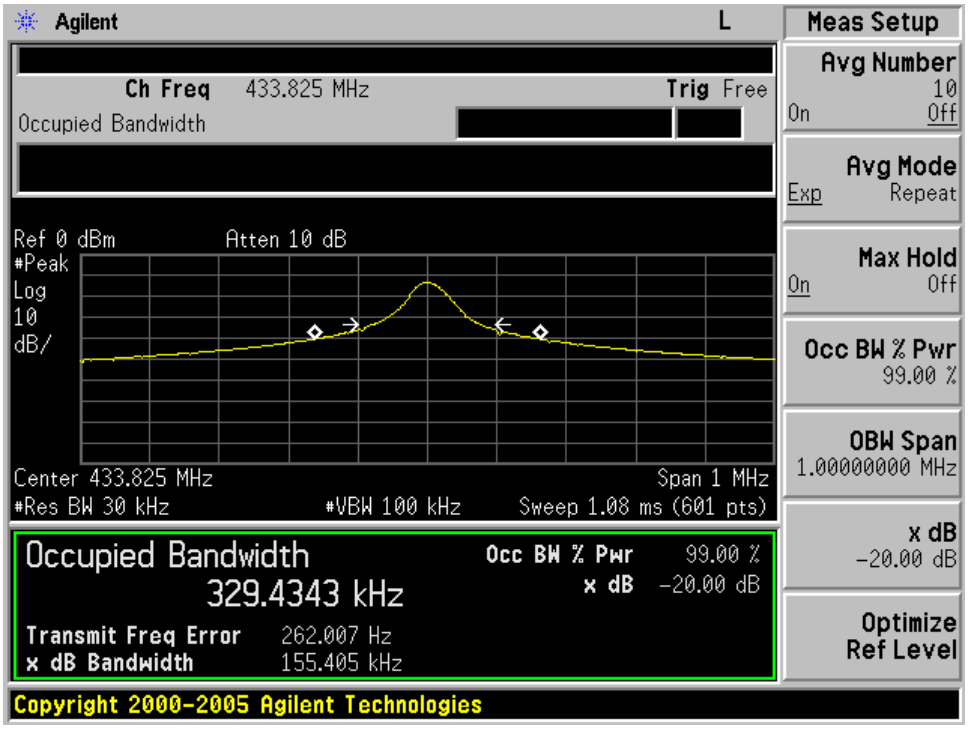
20 dB bandwidth

Test result

Frequency MHz	Bandwidth MHz	Limit MHz	Result
433.92	0.329	1.08	Pass



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Test Equipment

20 dB bandwidth Test

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL.DUE.DATE
Spectrum Analyzer	Agilent	E4446A	US44300459	May 07, 2013

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7.4 Deactivate Test

Requirement

Per 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.

Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

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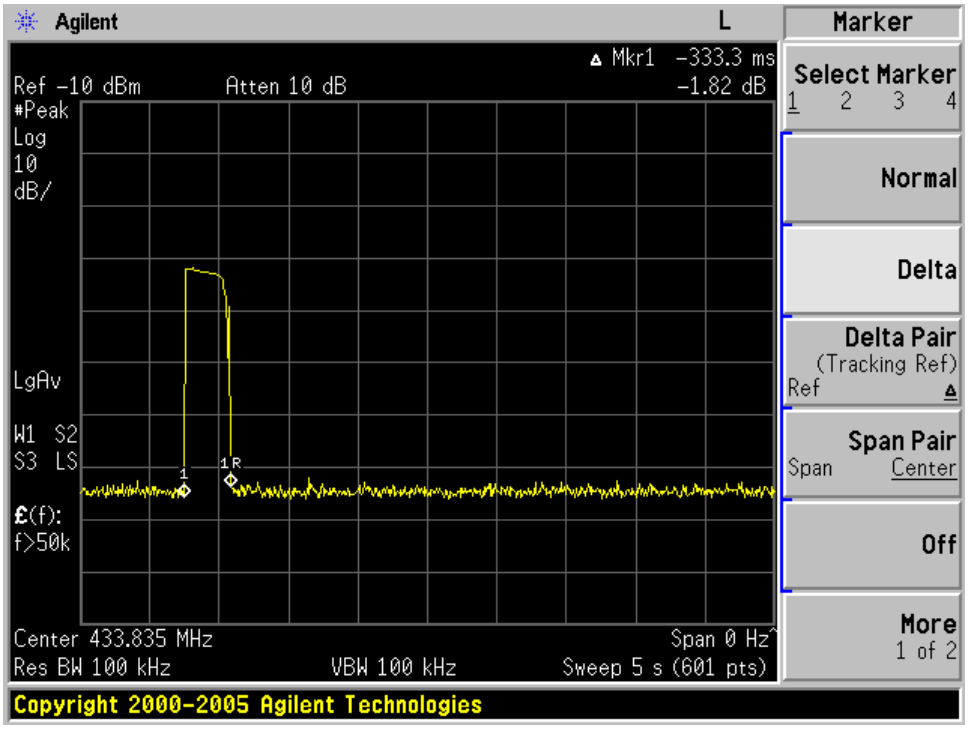
Deactivate Test

Test result

Deactivate Time	Limit	Result
0.333S	5S	Pass



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Test Equipment

Deactivate Test

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Spectrum Analyzer	Agilent	E4446A	US44300459	May 07, 2013

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7.5 Duty Cycle

Limit
Nil (No dedicated limit specified in the Rules).

Test Procedure
1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set center frequency of spectrum analyzer=operating frequency.
4. Set the spectrum analyzer as RBW, VBW=1MHz, Span=0Hz, Adjust Sweep=200ms.
5. Repeat above procedures until all frequency measured were complete.

Test Data

Tp =100 ms
Ton = 0.4083*34 =13.8822 (ms)
Factor = 20 * log (Ton / Tp) = 20 * log (13.8822/100) = - 17.15dB

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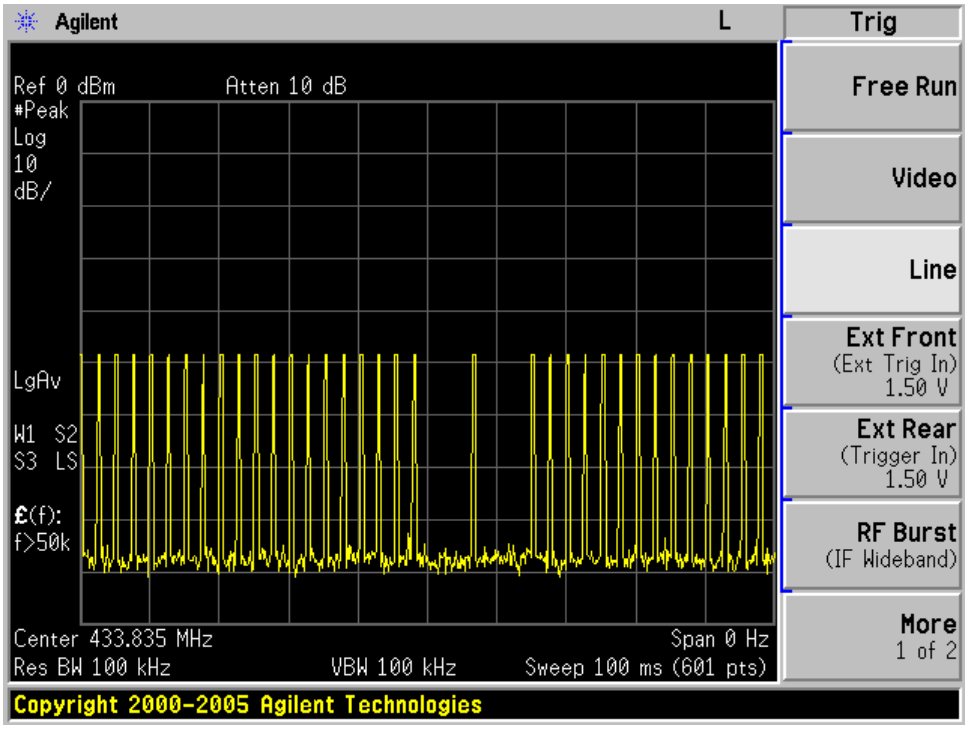
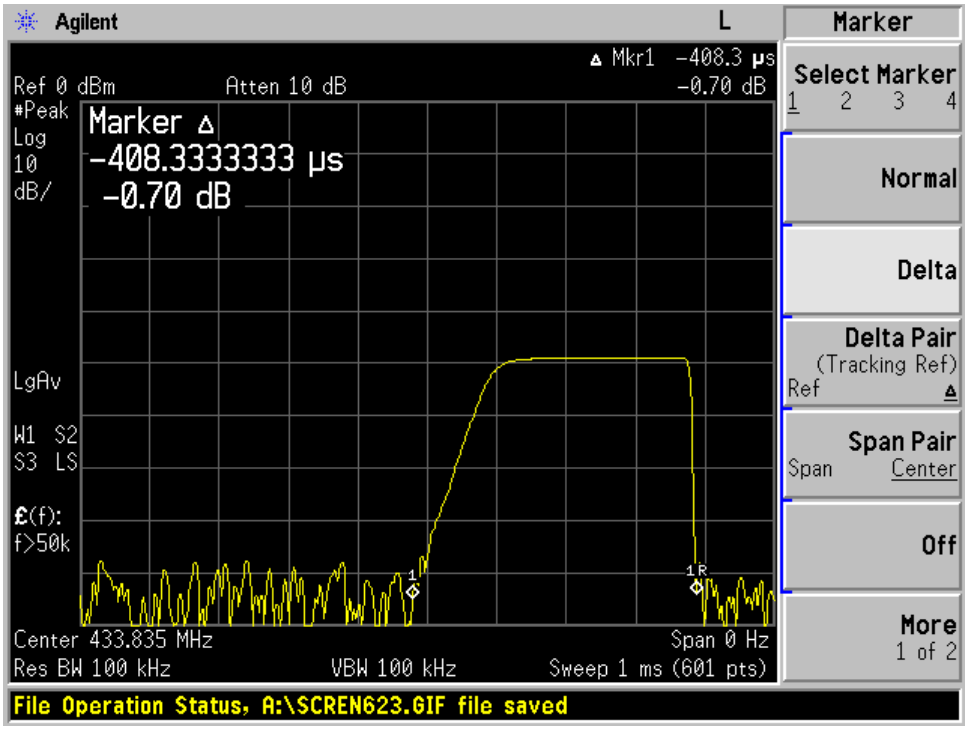
Duty Cycle





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Test Equipment

Deactivate Test

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL.DUE.DATE
Spectrum Analyzer	Agilent	E4446A	US44300459	May 07, 2013

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8 System Measurement Uncertainty

For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 were:

System Measurement Uncertainty

Items		Extended Uncertainty
RE	Field strength (dBμV/m)	U=4.32dB (30MHz-25GHz)
CE	Disturbance Voltage (dBμV)	U=2.4dB

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