



NVLAP LAB CODE 200707-0



FCC PART 15.227
EMI MEASUREMENT AND TEST REPORT

For

MEISIDA ELECTRONIC TOYS CO., LTD.

ANPING INDUSTRY PARK (ANHAI), FUJIAN, CHINA

FCC ID: PV5MSD05221989

This Report Concerns: <input checked="" type="checkbox"/> Original Report	Equipment Type: WATER-BLAST CRUISER
Test Engineer: Deny Xiong	<i>Deny Xiong</i>
Report No.: RSZ07012303	
Test Date: 2007-01-25 to 2007-01-26	
Report Date: 2007-01-30	
Reviewed By: EMC Manager: Boni Baniqued	<i>Boni Baniqued</i>
Prepared By:	Bay Area Compliance Laboratory Corp. (Shenzhen) 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China. Tel: +86-755-33320018 Fax: +86-755-33320008

Note: This test report is for the customer shown above and their specific product only. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratory Corp. (Shenzhen). This report **must not** be used by the customer to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *MEISIDA ELECTRONIC TOYS CO., LTD.*'s product, model number: *MSD-Y0522* or the "EUT" as referred to in this report is a *WATER-BLAST CRUISER*. The EUT is measured approximately 13.8 cm L x 4.5 cm W x 10.4 cm H. rated input voltage: DC 9V battery.

** The test data gathered are from production sample, serial number: 0701021 provided by the manufacturer, we received EUT on 2007-01-02.*

Objective

This Type approval report is prepared on behalf of *MEISIDA ELECTRONIC TOYS CO., LTD.* in accordance with Part 2, Subpart J, and Part 15, Subparts A, B and C of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC rules, sec 15.203, 15.205, 15.209 and sec 15.227.

Related Submittal(s)/Grant(s)

No Related Submittals.

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.

All radiated and conducted emissions measurement was performed at Bay Area Compliance Laboratory Corp. (Shenzhen). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Test Facility

The Test site used by Bay Area Compliance Laboratory Corp. (Shenzhen) to collect radiated and conducted emission measurement data is located in the 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China.

Test site at Bay Area Compliance Laboratory Corp. (Shenzhen) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on November 04, 2004. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2003.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 382179 and Industrial Canada registration test site No.: 5500A. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, Bay Area Compliance Laboratory Corp. (Shenzhen) is a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (Lab Code 200707-0). The current scope of accreditations can be found at <http://ts.nist.gov/ts/htdocs/210/214/scopes/2007070.htm>

SYSTEM TEST CONFIGURATION

Justification

The system was configured for testing in a typical fashion (as normally used by a typical user).

EUT Exercise Software

N/A

Special Accessories

N/A

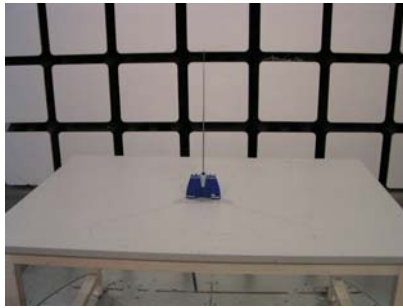
Schematics and Block Diagram

Please refer to the Exhibit D.

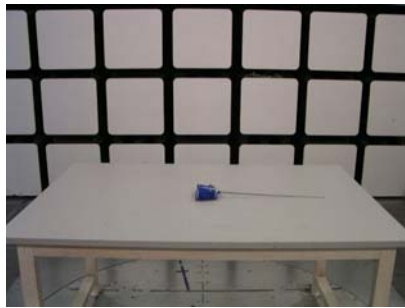
Equipment Modifications

Bay Area Compliance Laboratory Corp. (Shenzhen) has not done any modification on the EUT.

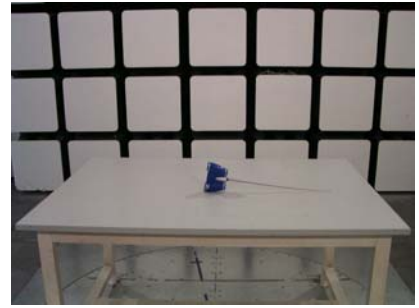
Configuration of Test Setup



Stand

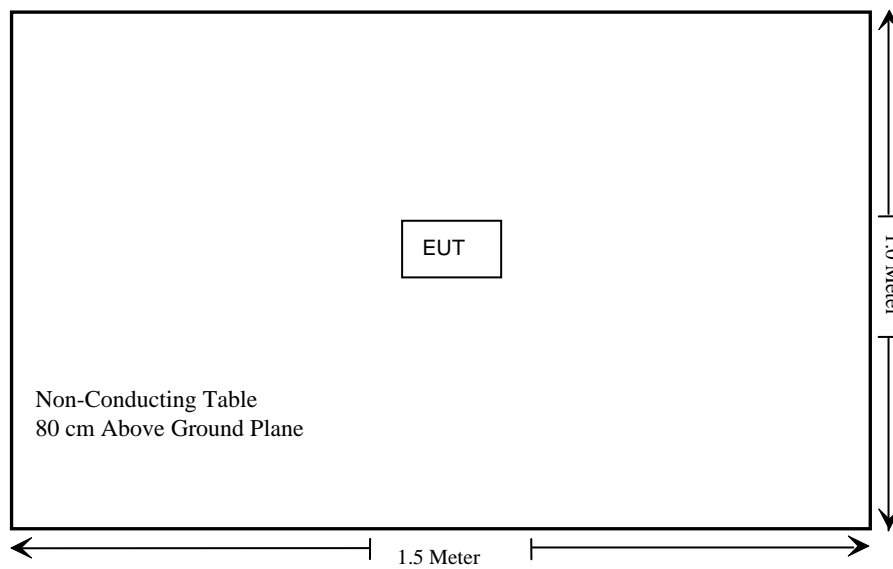


Lie



Side

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§15.203	Antenna requirement	Compliant
§15.205	Restricted Band of operation	Compliant
§15.209	Radiated Emission Limit	Compliant
§15.227(a)	Field Strength	Compliant
§15.227(b)	Out of band emission	Compliant

§15.203 - ANTENNA REQUIREMENT

Standard Applicable

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.

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

Result: Compliance.

§15.205, §15.209, §15.227(a) - RADIATED EMISSIONS TEST

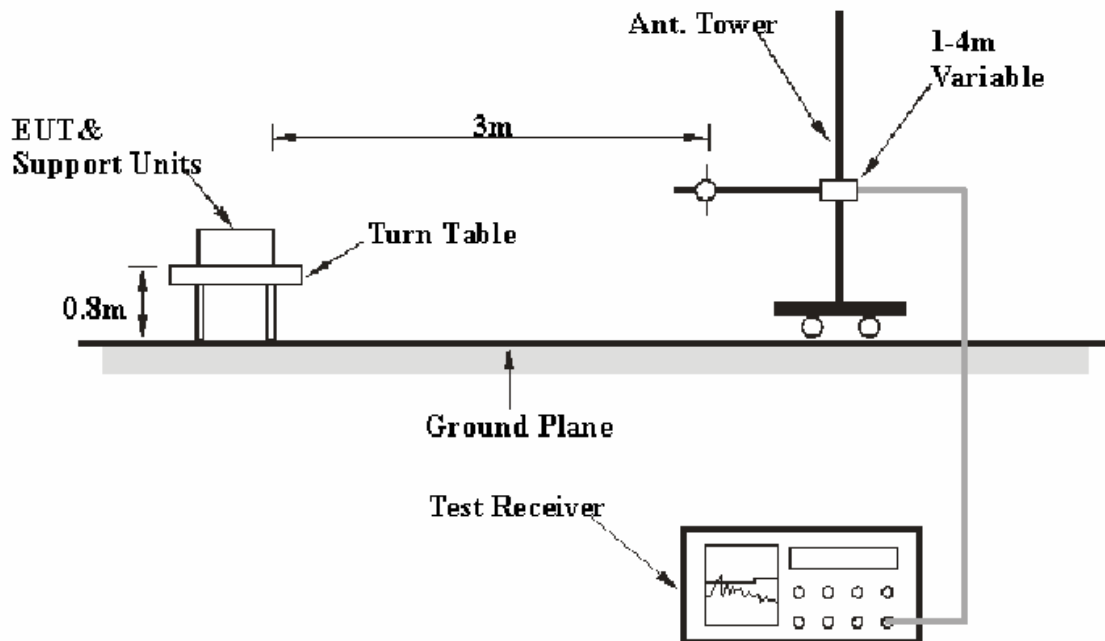
Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement at Bay Area Compliance Laboratory Corp. (Shenzhen) is ± 4.0 dB.

The fundamental data was measured in average and peak detection mode: set the VBW AVE on, then record the data.

EUT Setup



The radiated emission tests were performed in the 3-meter chamber A test site, using the setup accordance with the ANSI C63.4-2003. The specification used was the FCC Part 15.227 limits.

EMI Test Receiver Setup

According to FCC Rules, 47 CFR 15.33, the EUT emissions were investigated from 27 to 1000 MHz.

During the radiated emission test, the EMI test Receiver was set with the following configurations:

<i>Frequency Range</i>	<i>RBW</i>	<i>Video B/W</i>
Below 30 MHz	10 kHz	30 kHz
30 – 1000 MHz	100 kHz	300 kHz

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	Amplifier	HP8447E	1937A01046	2006-11-15	2007-11-15
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2006-09-29	2007-09-29
Sunol Sciences	Broadband Antenna	JB1	A040904-2	2006-08-14	2007-08-14
ETS	Passive Loop Antenna	6512	00029604	2006-08-25	2007-08-25

* **Statement of Traceability:** Bay Area Compliance Laboratory Corp. (Shenzhen) attests that all calibrations have been performed per the NVLAP requirements, traceable to NIST.

Corrected Amplitude & Margin Calculation

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

$$\text{Corr. Ampl.} = \text{Meter Reading} + \text{Antenna Loss} + \text{Cable Loss} - \text{Amplifier Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB means the emission is 7dB below the maximum limit. The equation for margin calculation is as follows:

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

Test Results Summary

According to the data in the following table, the EUT complied with the FCC Part 15.227, with the worst margin reading of:

3.8 dB at 54.285850 MHz in the Vertical polarization

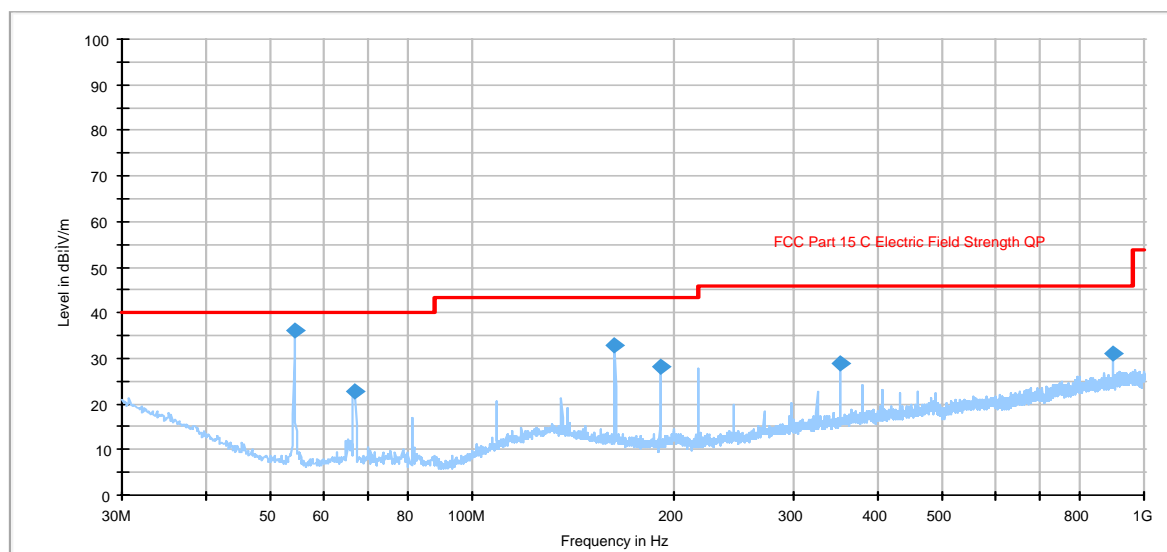
Test Data

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	53 %
ATM Pressure:	1010 mbar

The testing was performed by Deny Xiong on 2007-01-26.

Test mode: Transmitting



Frequency (MHz)	Quasi Peak (dB μ V/m)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Limit (dB μ V/m)	Margin (dB)
54.285850	36.2	99.0	V	256.0	-18.3	40.0	3.8
66.481050	22.8	262.0	V	359.0	-17.6	40.0	17.2
162.864150	32.7	100.0	V	99.0	-12.2	43.5	10.8
190.009450	28.2	233.0	V	194.0	-13.1	43.5	15.3
352.889650	28.7	114.0	V	278.0	-8.0	46.0	17.3
897.236600	31.2	100.0	V	130.0	-0.2	46.0	14.8

Fundamental:

Frequency MHz	Meter Reading dBuV/m	Detector PK/AV	Direction Degree	Height Meter	Antenna Loss dB	Cable loss dB	Duty Cycle dB	Amplifier Gain dB	Corr. Ampl. dB uV/m	FCC PART 15.227		
										Limit dBuV/m	Margin dB	Remarks
27.145	39.17	PK	153	1.0	31.9	0.5	0	26.8	44.77	100	55.23	Fundamental
27.145	39.17	AV	246	1.0	31.9	0.5	-6.21	26.8	38.56	80	41.44	Fundamental

§15.227(b) - Out of Band Emission

Standard Applicable

The field strength of any emissions which appear outside of this band shall not exceed the general radiated emission limits in §15.209.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	Amplifier	8447E	1937A01046	2006-11-15	2007-11-15
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2006-09-29	2007-09-29
ETS	Passive Loop Antenna	6512	00029604	2006-08-25	2007-08-25

* **Statement of Traceability:** Bay Area Compliance Laboratory Corp. (Shenzhen) attests that all calibrations have been performed per the NVLAP requirements, traceable to NIST.

Test Data

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	53 %
ATM Pressure:	1010 mbar

The testing was performed by Deny Xiong on 2007-01-25.

The result has been complied with the 15.227(b), see the following plot:



*RBW 10 kHz Marker 1 [T1]
VBW 30 kHz 8.20 dBμV
SWT 5 ms 26.95000000 MHz

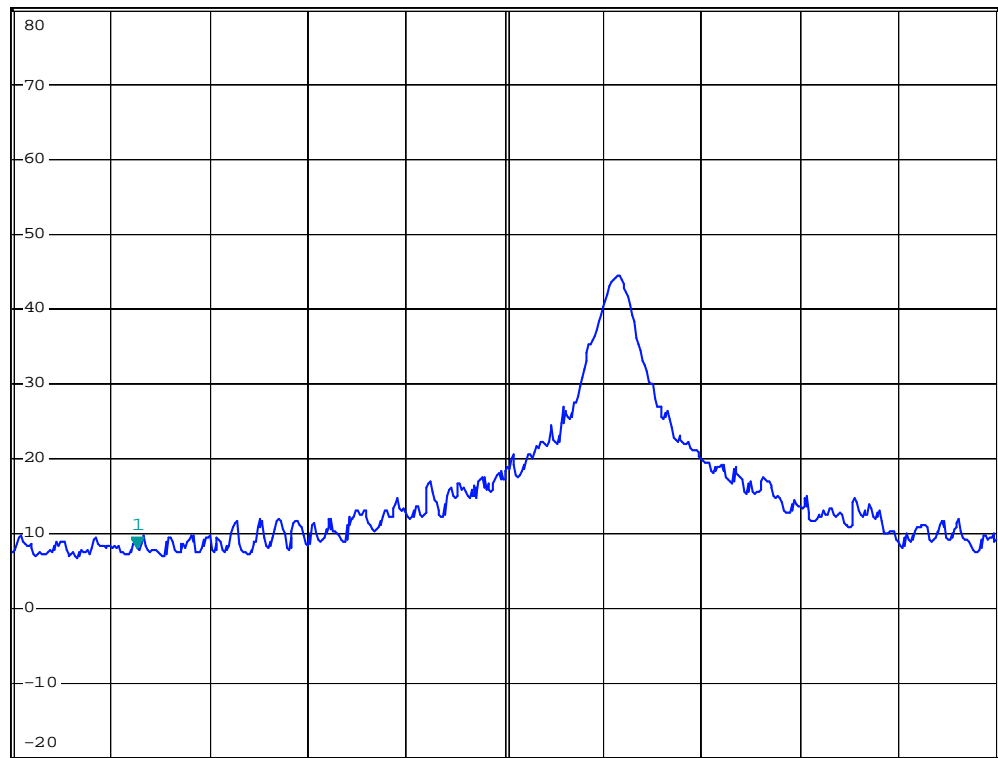
Ref 80 dBμV

*Att 10 dB

SWT 5 ms

26.95000000 MHz

1 PK
VIEW



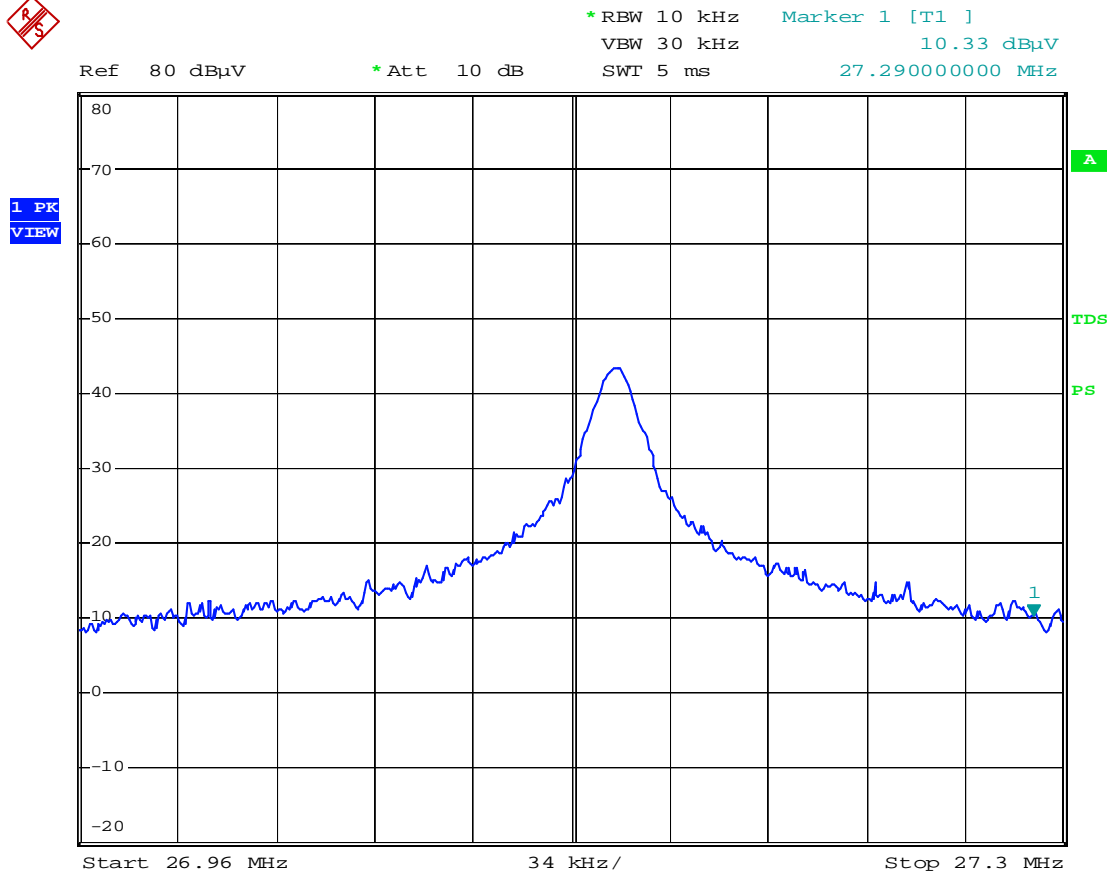
Start 26.9 MHz

40 kHz /

Stop 27.3 MHz

bandedgel

Date: 25.JAN.2007 14:33:03



bandedge2

Date: 25.JAN.2007 14:32:05

§15.227- DUTY CYCLE

Limit

Nil (No dedicated limit specified in the Rules).

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde&Schwarz	Spectrum Analyzer	ESCI	100224	2006-11-07	2007-11-07

* **Statement of Traceability:** Bay Area Compliance Laboratory Corp. (ShenZhen) attests that all calibrations have been performed per the NVLAP requirements, traceable to NIST.

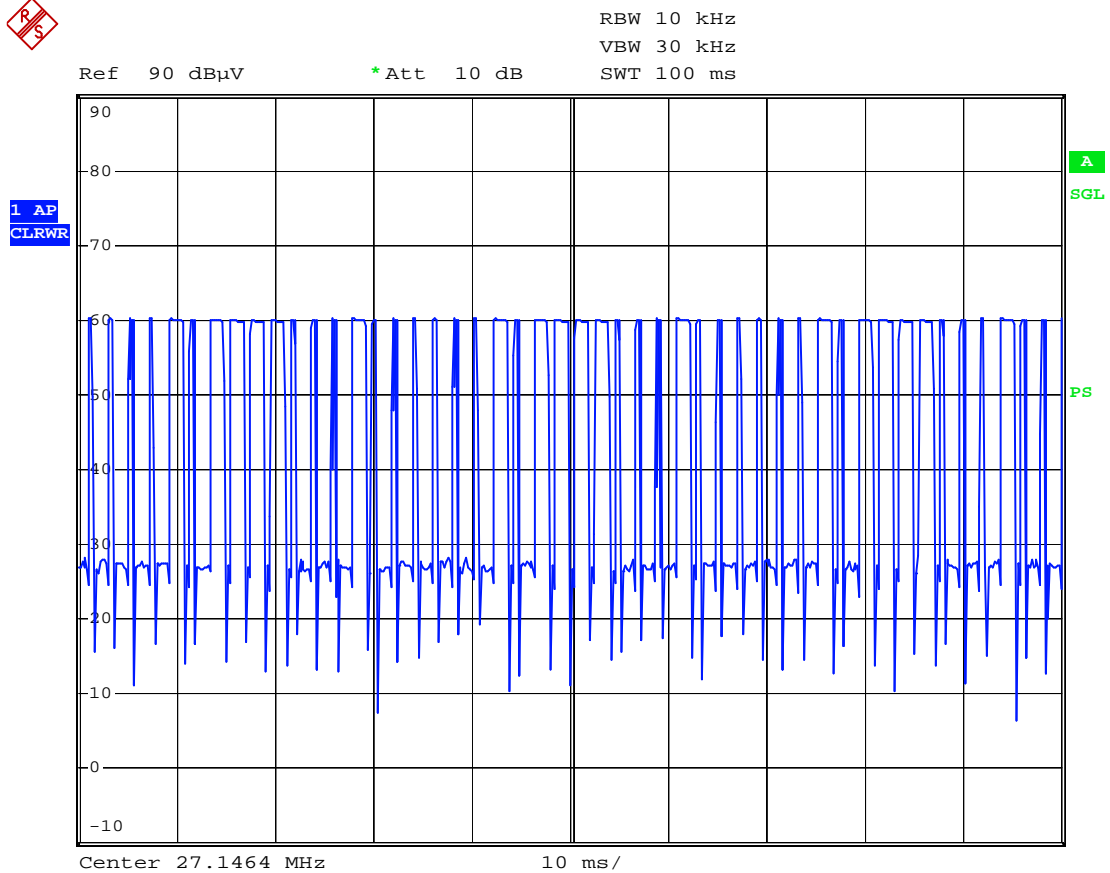
Test Procedure

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=100KHz, Span=0Hz, Adjust Sweep=100ms.
5. Repeat above procedures until all frequency measured were complete.

Test Data

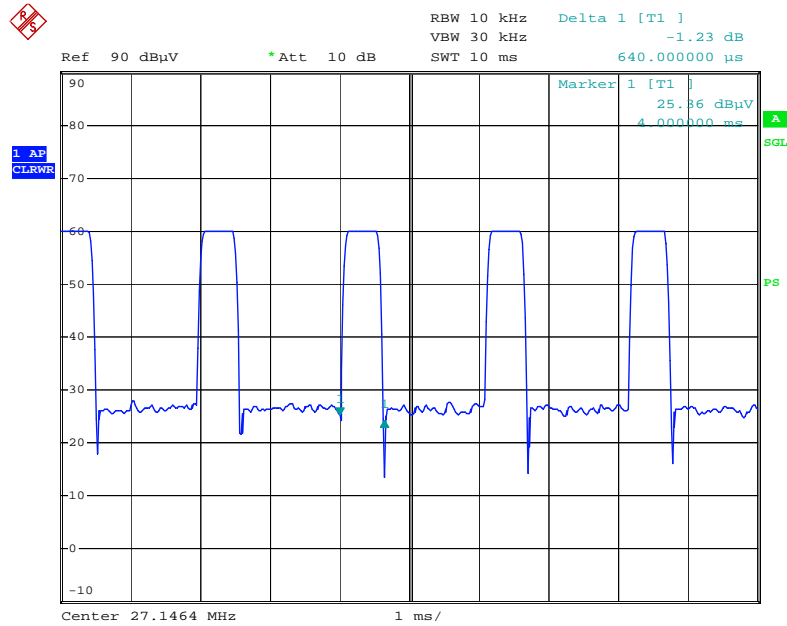
Duty cycle= $(30 \times 0.64\text{ms} + 18 \times 1.65\text{ms}) / 100\text{ms} = 48.9\%$

Duty cycle factor= $20 \lg 0.489 = -6.21 \text{ dB}$



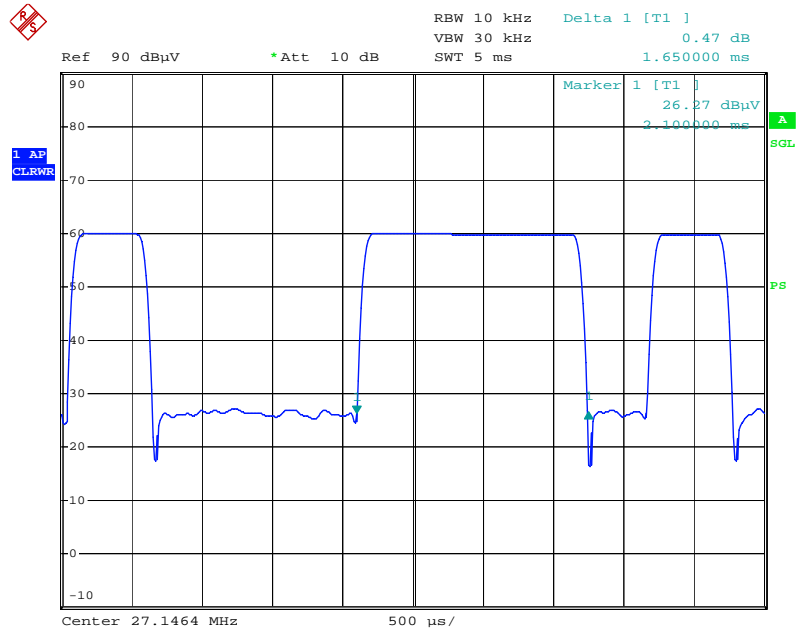
duty cycle1

Date: 25.JAN.2007 15:35:21



duty cycle2

Date: 25.JAN.2007 15:46:23



duty cycle3

Date: 25.JAN.2007 15:46:58