

FCC PART 15B

EMI MEASUREMENT AND TEST REPORT

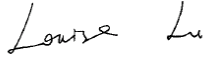
For

Planet Toys (HK) Ltd

1107 Chinachem Golden Plaza, 77 Mody RD, TsimShaTsui East, Kowloon, Hong Kong

FCC ID: SZ23701R49

August 4, 2005

This Report Concerns: ☒ Original Report	Equipment Type: Receiver, Toy Remote Control
Test Engineer: Louise Lu 	
Report No.: RSZ05071404	
Test Date: July 15, 2005	
Reviewed By: Chris Zeng 	
Prepared By: Bay Area Compliance Lab Corp. (ShenZhen) 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone, ShenZhen, Guangdong 518038, P.R.China Tel: 86-755-33320018 Fax: 86-755-33320008	

Note: The test report is specially limited to the above company and this particular sample only. It may not be duplicated without prior written consent of Bay Area Compliance Lab Corp. (ShenZhen). This report **must not** be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the US Government.

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GENERAL INFORMATION

Product Description for Equipment Under Test (EUT)

The Planet Toys (HK) Ltd 's product, model number: 3701 or the "EUT" as referred to in this report is a receiver of Toy Remote Control, the product name is 1:5 scale RC. The EUT is measured approximately 102cm L x 36cm W x 28cm H, rated input voltage: DC 9.6 V battery.

AC/DC Adapter Manufacturer: MUCTIWIN, Model No.: MD-12500
Input: 120 V/60 Hz 12 VA, Output: 12 V DC 500mA

** The test data gathered are from production sample, serial number: 0507025, provided by the manufacturer.*

Objective

This Type approval report is prepared on behalf of *Planet Toys (HK) 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, section 15.109 rules.

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 Lab 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 Lab Corp. (ShenZhen) to collect test data is located in the 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone, ShenZhen, Guangdong 518038, P.R.China.

Test site at Bay Area Compliance Lab 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. 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 Lab 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.

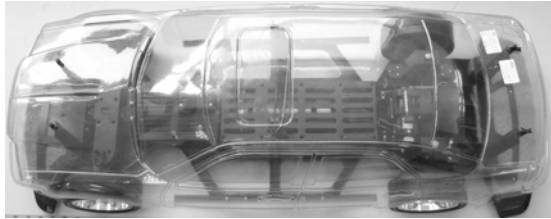
Special Accessories

N/A.

Equipment Modifications

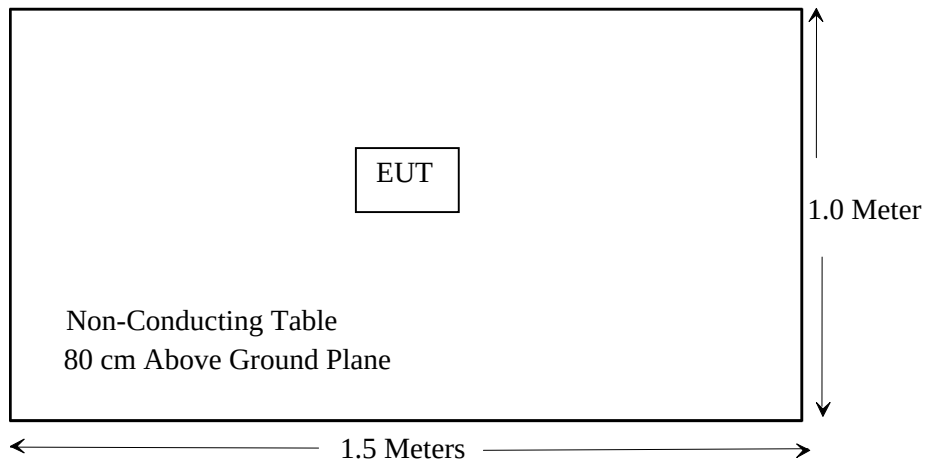
Bay Area Compliance Lab Corp. (ShenZhen) has not done any modification on the EUT.

Configuration of Test Setup



EUT

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§15.107(a)	Conducted Emission	Compliant
§15.109(a)	Radiated Emission	Compliant*

* Within measurement uncertainty

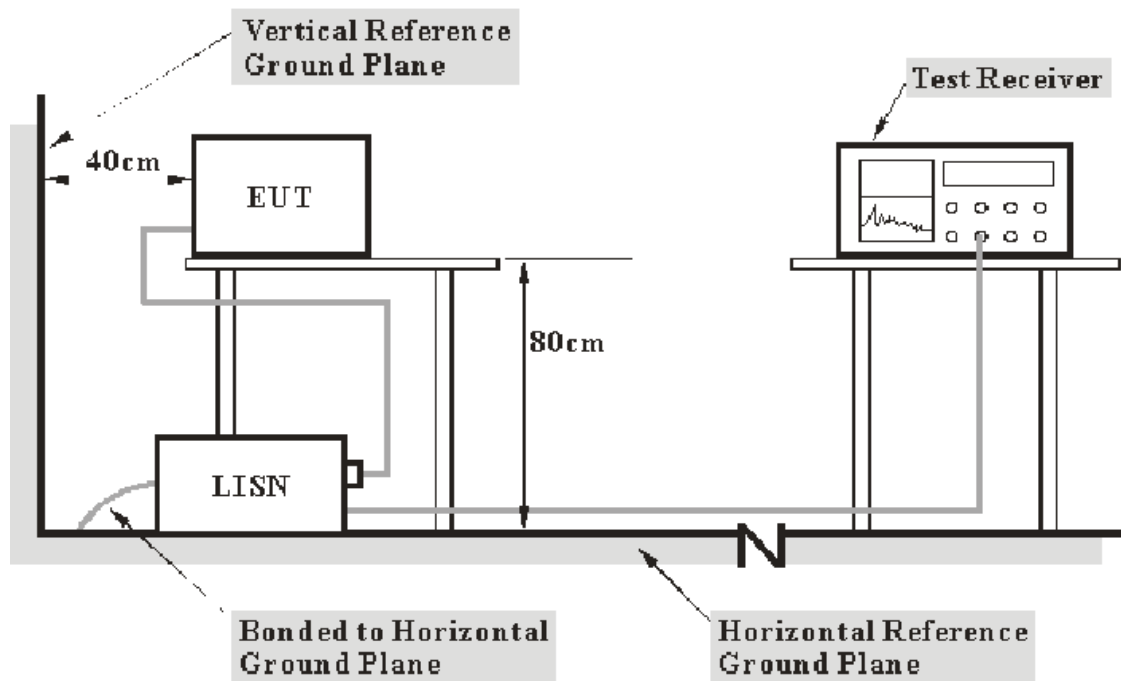
§15.109(a) - CONDUCTED EMISSION

Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, and LISN.

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement at Bay Area Compliance Lab Corp. (ShenZhen) is ± 2.4 dB.

EUT Setup



- Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.4-2003 measurement procedure. The specification used was with the FCC Part 15209.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

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

<u>Frequency Range</u>	<u>IF B/W</u>
150 kHz – 30 MHz	9 kHz

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Com-Power	L.I.S.N.	LI-200	12005	N/A	N/A
Com-Power	L.I.S.N.	LI-200	12008	N/A	N/A
Rohde & Schwarz	EMI Test Receiver	ESCS30	830245/006	2005-1-26	2006-1-26
Rohde & Schwarz	L.I.S.N.	ESH2-Z5	892107/021	2005-2-28	2006-2-28
Rohde & Schwarz	Pulse Limiter	ESH3Z2	DE25985	2004-9-1	2005-8-31

* Com-Power's LISN were used as the supporting equipment.

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

Test Procedure

Maximizing procedure were performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 15.109, with the worst margin reading of:

-13.32 dB at 0.290 MHz in the **Line** conductor mode.

Test Data**Environmental Conditions**

Temperature:	27 °C
Relative Humidity:	65 %
ATM Pressure:	1000mbar

The testing was performed by Louise Lu on 2005-8-12.

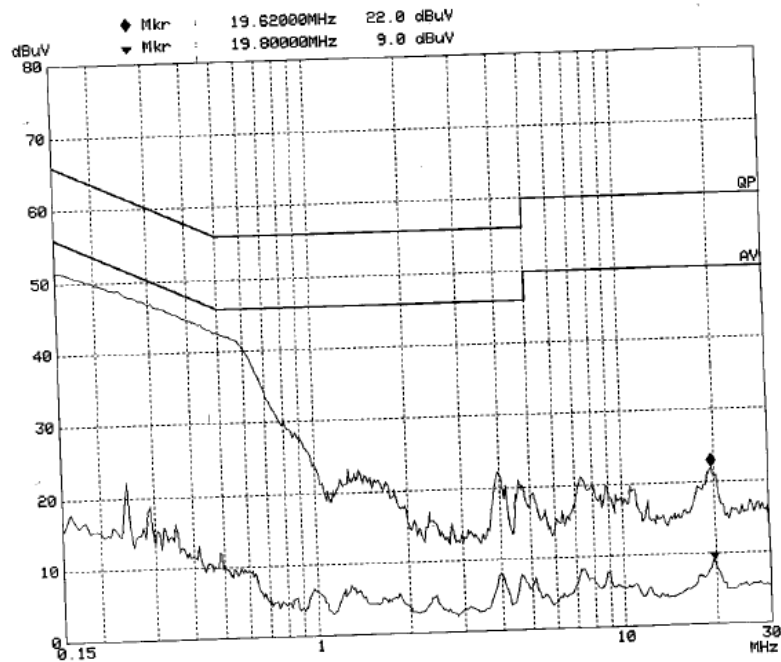
Test Mode: Receiving

LINE CONDUCTED EMISSIONS				FCC PART 15.109	
Frequency MHz	Amplitude dBμV	Detector QP/AV	Phase Line/Neutral	Limit dBμV	Margin dB
0.290	47.20	QP	Line	60.52	-13.32
0.245	48.60	QP	Line	61.92	-13.32
0.155	51.40	QP	Line	65.73	-14.33
0.350	44.00	QP	Neutral	58.96	-14.96
0.245	46.80	QP	Neutral	61.92	-15.12
0.150	50.10	QP	Neutral	66.00	-15.90
1.015	32.00	QP	Neutral	56.00	-24.00
0.350	20.80	AV	Neutral	48.96	-28.16
1.015	16.60	AV	Neutral	46.00	-29.40
0.245	22.30	AV	Line	51.92	-29.62
0.245	21.80	AV	Neutral	51.92	-30.12
1.920	25.40	QP	Neutral	56.00	-30.60
19.520	28.40	QP	Neutral	60.00	-31.60
0.290	18.90	AV	Line	50.52	-31.62
1.285	23.30	QP	Line	56.00	-32.70
3.955	22.20	QP	Line	56.00	-33.80
1.920	11.60	AV	Neutral	46.00	-34.40
19.520	13.70	AV	Neutral	50.00	-36.30
3.955	8.10	AV	Line	46.00	-37.90
19.620	22.00	QP	Line	60.00	-38.00
1.285	7.00	AV	Line	46.00	-39.00
0.155	16.60	AV	Line	55.73	-39.13
0.150	16.60	AV	Neutral	56.00	-39.40
19.620	9.00	AV	Line	50.00	-41.00

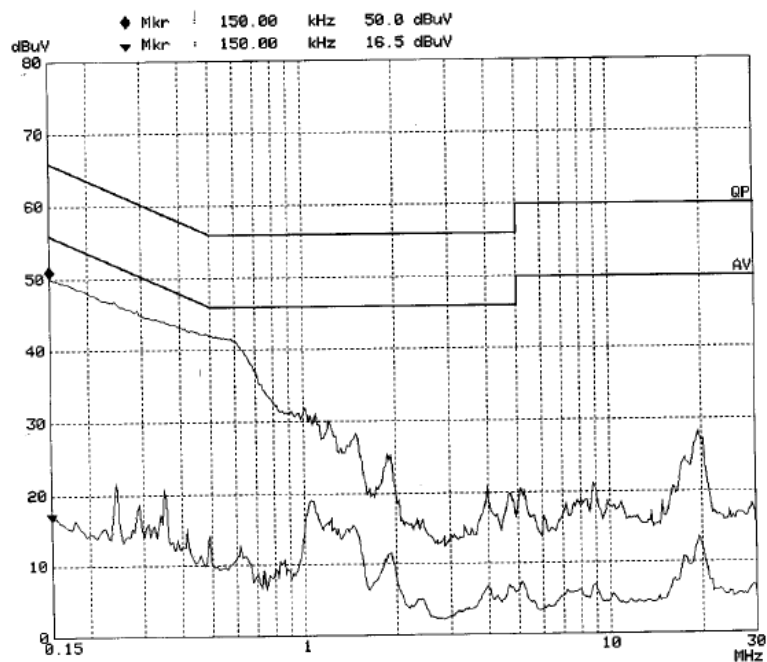
Plot(s) of Test Data

Plot(s) of Test Data is presented hereinafter as reference.

Line:



Neutral:



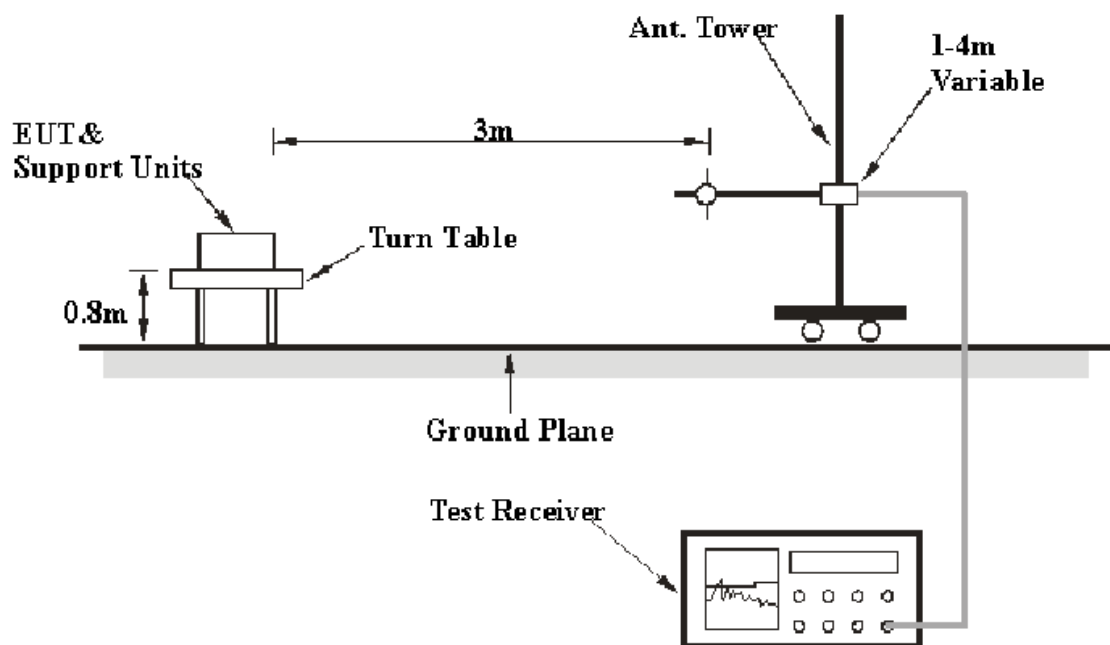
§15.109(a) - RADIATED EMISSION

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 Lab Corp. (ShenZhen) is ± 4.0 dB.

EUT Setup



The radiated emission tests were performed in the chamber B test site, using the setup accordance with the ANSI C63.4-2003. The specification used was the FCC 15.109 limits.

EMI Test Receiver Setup

The system was investigated from 30 MHz to 1000 MHz.

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

<i>Frequency Range</i>	<i>R B/W</i>	<i>Video B/W</i>	<i>IF B/W</i>
30 – 1000 MHz	100 kHz	100 kHz	120 kHz

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	100028	2004-9-15	2005-9-15
HP	Amplifier	HP8447E	1937A01046	2004-9-1	2005-8-31
Sunol Sciences	Broadband Antenna	JB1	A040904-2	2005-4-28	2006-4-28

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

Test Procedure

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

All data was recorded in the Quasi-peak detection mode.

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Loss and Cable Loss, and subtracting the Amplifier Gain from the Meter 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:

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

Test Results Summary

According to the data in the following table, the EUT complied with the FCC Part 15.109, with the worst margin reading of:

-2.8 dB at 166.060 MHz in the Horizontal polarization.

Test Data**Environmental Conditions**

Temperature:	26 °C
Relative Humidity:	56 %
ATM Pressure:	1000mbar

The testing was performed by Louise Lu on 2005-7-15.

Test Mode: Receiving

Meter					Antenna	Cable	Amplifier	Corr.	FCC PART 15.109		
Frequency	Reading	Direction	Height	Polar	Loss	loss	Gain	Ampl.			
MHz	dBuV/m	Degree	Meter	H / V	dB	dB	dB	dBuV/m	Limit dBuV/m	Margin dB	Remark
166.060	52.4	180	1.2	H	12.5	1.6	25.82	40.7	43.5	-2.8	PK
100.933	55.1	35	3.8	H	9.6	1.5	26.23	40.0	43.5	-3.5	PK
132.680	49.2	90	1.2	H	14.5	1.5	25.95	39.2	43.5	-4.3	PK
121.120	48.0	45	1.2	H	14.0	1.4	25.89	37.5	43.5	-6.0	PK
50.760	49.2	289	1.0	V	8.5	1.6	26.27	33.0	40.0	-7.0	PK
82.350	47.7	35	3.8	H	8.4	1.4	26.22	31.3	40.0	-8.7	PK
226.099	49.0	0	1.0	H	11.6	1.6	25.38	36.8	46.0	-9.2	PK
132.680	43.2	45	1.0	V	14.5	1.5	25.95	33.2	43.5	-10.3	PK
100.930	47.8	45	1.2	V	9.6	1.5	26.23	32.7	43.5	-10.8	PK
82.930	45.2	60	1.0	V	8.4	1.4	26.22	28.8	40.0	-11.2	PK
166.068	44.0	45	1.0	V	12.5	1.6	25.82	32.3	43.5	-11.3	PK
121.120	41.9	180	1.2	V	14.0	1.4	25.89	31.4	43.5	-12.1	PK
50.760	42.3	60	1.2	H	8.5	1.6	26.27	26.2	40.0	-13.8	PK
54.070	42.0	289	1.0	V	8.5	1.6	26.27	25.8	40.0	-14.2	PK

Plot(s) of Test Data

Plot(s) of Test Data is presented hereinafter as reference.



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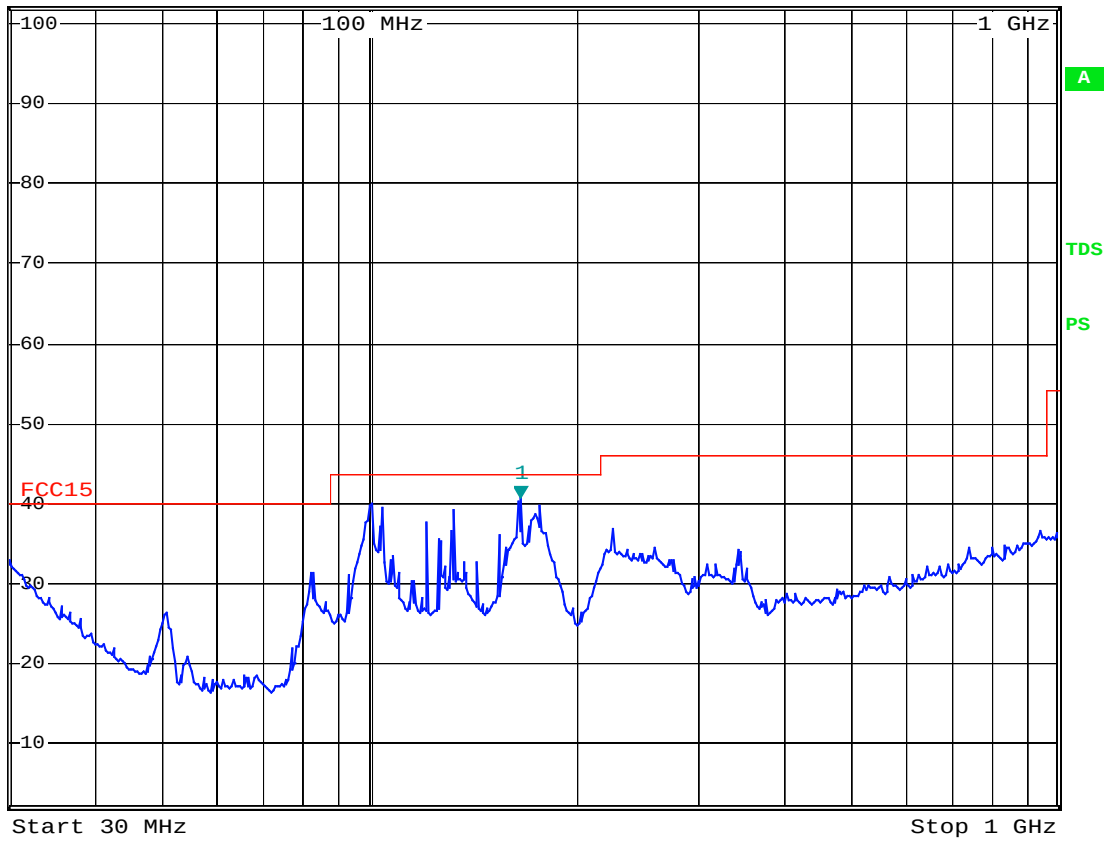
Ref 102 dBμV

* Att 10 dB

* RBW 100 kHz Marker 1 [T1]

* VBW 100 kHz 40.67 dBμV

* SWT 300 ms 166.068048579 MHz

1 PK
VIEW



15.Jul 05 16:03

Ref 102 dBμV

* Att 10 dB

* RBW 100 kHz Marker 1 [T1]

* VBW 100 kHz

33.04 dBμV

* SWT 300 ms

50.763676346 MHz

1 PK
VIEW