PERFECT TOYS INTERNATIONAL CO., LTD

EASY RIDER

Model Number: 30121

Prepared for : PERFECT TOYS INTERNATIONAL CO., LTD
2/F, Block 3.Wah Lai Industrial Centre, 10-14Kwei Tei Street,
Fo Tan, Shatin, New Territories, Hong Kong

Prepared By : Audix Technology (Shenzhen) Co., Ltd.
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Report Number : ACS-F04138
Date of Test : Jun.21~Aug.06, 2004
Date of Report : Aug.11, 2004

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Test Report Declaration

TEST REPORT DECLARATION

Applicant	:	PERFECT TOYS INTERNATIONAL CO., LTD
Manufacturer	:	XIAN HAO ELECTRIC APPLIANCES & TOYS CO., LTD
EUT Description	:	EASY RIDER

(A) MODEL NO. : 30121
(B) SERIAL NO. : F2004081101
(C) POWER SUPPLY : DC 12V

Test Procedure Used:

FCC Rules and Regulations Part 95 Subpart C.

The device described above is tested by Audix Technology (Shenzhen) Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 95 Subpart C limits for radiated and conducted emissions.
The test results are contained in this test report and Audix Technology (Shenzhen) Co., Ltd. is assumed full responsibility for the accuracy and completeness of tests. Also, this report shows that EUT is technically compliant with FCC requirements.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Audix Technology (Shenzhen) Co., Ltd.

Date of Test : Jun.21~Aug.06, 2004

Prepared by : Shirley Tu / Assistant
Lake Wang / Supervisor

Reviewer :

Approved & Authorized Signer : AUDIX 信華科技(深圳)有限公司 Audix Technology (Shenzhen) Co., Ltd. EMC 部門報告專用章 Stamp only for EMC Dept. Report Signature:
Alex Deng / Assistant Manager

Name of the Representative of the Responsible Party : _____

Signature : _____

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

Description	:	EASY RIDER This report is about transmitter FCC ID and the Receiver FCC DOC report please refer to AUDIX Number ACS-F04227.
Model Number	:	30121
Applicant	:	PERFECT TOYS INTERNATIONAL CO., LTD 2/F, Block 3.Wah Lai Industrial Centre, 10-14Kwei Tei Street, Fo Tan, Shatin, New Territories, Hong Kong
Manufacturer	:	XIAN HAO ELECTRIC APPLIANCES& TOYS CO., LTD Tian Xin Management Zone, Huang Jiang Town, Dong Guan, Guang Dong, P.R.C
Date of Test	:	Jun.21~Aug.06, 2004

1.2. Channel

U.S.A. & TAIWAN

Frequence MHZ	Channel NO.	Frequence MHZ	Channel NO.
72MHZ AIRPLANES			
72.010	11	72.510	36
72.030	12	72.530	37
72.050	13	72.550	38
72.070	14	72.570	39
72.090	15	72.590	40
72.110	16	72.610	41
72.130	17	72.630	42
72.150	18	72.650	43
72.170	19	72.670	44
72.190	20	72.690	45
72.210	21	72.710	46
72.230	22	72.730	47
72.250	23	72.750	48
72.270	24	72.770	49
72.290	25	72.790	50
72.310	26	72.810	51
72.330	27	72.830	52
72.350	28	72.850	53
72.370	29	72.870	54
72.390	30	72.890	55
72.410	31	72.910	56
72.430	32	72.930	57
72.450	33	72.950	58
72.470	34	72.970	59
72.490	35	72.990	60

1.3. Test Facility

Site Description

3m & 10m Anechoic Chamber	:	Certificated by FCC, USA Registration Number: 794232 Mar. 15, 2004
3m Anechoic Chamber	:	Certificated by FCC, USA Registration Number: 90454 Aug. 15, 2003
EMC Lab.	:	Certificated by DATech, German Registration Number: DAT-P-091/99-01 Feb. 02, 2004 Certificated by NVLAP, USA NVLAP Code: 200372-0 Mar. 31, 2004 Certificated by Nemko, Norway Aut.No. : ELA135 April.22, 2004
Name of Firm	:	Audix Technology (Shenzhen) Co., Ltd.
Site Location	:	No. 6, Ke Feng Rd., 52 Block, Shenzhen Science & Industrial Park, Nantou, Shenzhen, Guangdong, China

1.4. Measurement Uncertainty

Conducted Emission Uncertainty	=	±2.66dB
Radiated Emission Uncertainty	=	±4.26dB

2. POWER LINE CONDUCTED EMISSION TEST

According to Paragraph (f) of FCC Part 15 section 15.107, Tests to demonstrate compliance with the conducted limits are not required for devices which only employ battery power for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines.

3. RF OUTPUT POWER AND RADIATED SPURIOUS EMISSIONS

3.1. Test Equipment

The following test equipments are used during the radiated emission Test：

3.1.1. For Anechoic Chamber

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	EMI Analyzer	HP	8591EM	3628A00914	May 24,04	1 Year
2.	Test Receiver	Rohde & Schwarz	ESVS20	830350/005	May 24,04	1 Year
3.	Amplifier	HP	8447D	2944A07794	Mar.17, 04	1/2 Year
4.	Bilog Antenna	Schaffner	CBL6111C	2598	Jan. 13, 04	1 Year
5.	PC	N/A	586ATX3	N/A	N/A	N/A
6.	Printer	HP	Laserjet6P	SGCF019673	N/A	N/A
7.	RF Cable	MIYAZAKI	5D-2W	3# Chamber No.1	Feb.01, 04	1/2 Year
8.	RF Cable	MIYAZAKI	5D-2W	3# Chamber No.2	Feb.01, 04	1/2 Year
9.	RF Cable	FUJIKURA	RG-55/U	3# Chamber No.3	Feb.01, 04	1/2 Year
10.	RF Cable	FUJIKURA	RG-55/U	3# Chamber No.4	Feb.01, 04	1/2 Year
11.	Coaxial Switch	Anritsu	MP59B	M73989	May 27, 04	1/2 Year
12.	Dipole Antenna	Schwarz beck	VHAP/ UHAP	696/674	May 30,04	1 Year
13.	Attenuation	Weinschel	40-6-34	LJ092	May 30,04	1 Year
14.	Power Meter	HP	436A	2016A07891	May 24,04	1 Year
15.	Power Sensor	Agilent	8482B	MY41090514	May 24,04	1 Year

3.2. reference Rule and Specification

FCC Rule Part 95(Section 95.635) and Part 2 Subpart J (Section 2.1053).

3.3. Test Procedure

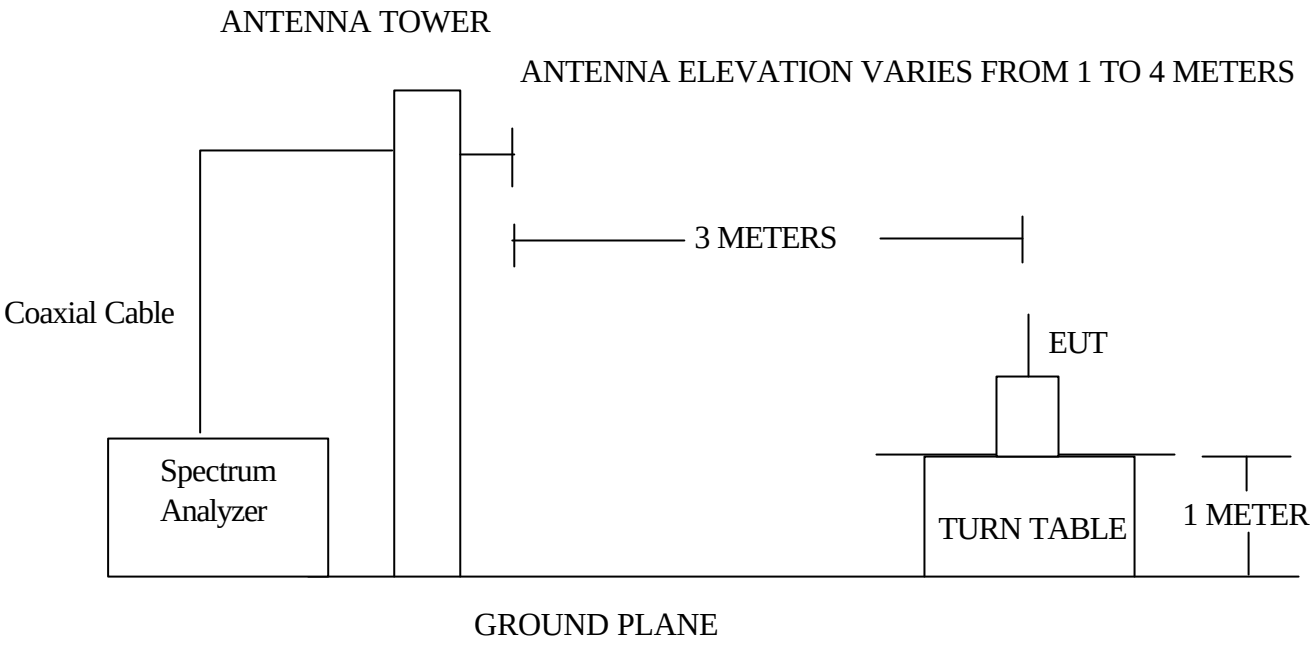
(1) Place the transmitter to be tested (EUT) on the turntable.
(2) Measurement shall be made from the lowest radio frequency generated in the equipment to the tenth harmonic of the carrier.
(3) For each spurious frequency , raise and lower the test antenna from 1m to 4m to obtain a maximum reading on the spectrum analyzer with the test antenna at horizontal polarity. Then the turntable should be rotated 360 to determine the maximum reading. Repeat this procedure to obtain the highest possible reading. Record this maximum reading.
(4) Repeat step(3) for each spurious frequency with the test antenna polarized vertically.
(5) Remove the transmitter and replace it with a substitution antenna (the antenna should be half-wavelength for each frequency involved).The center of the substitution antenna should be approximately at the same location as the center of the transmitter. At the lower frequencies, where the substitution antenna is very long. This will be impossible to achieve when the antenna is polarized vertically. In such case the lower end of the antenna should be 0.3m above the ground.
(6) Feed the substitution antenna at the transmitter end with a signal generator connected to the antenna by means of a non-radiating cable. With the antennas the both ends horizontally polarized and with the signal generator turned to a particular spurious frequency, raise and lower the test antenna to obtain a maximum reading at the spectrum analyzer. Adjust the level of the signal generator output until the previously recorded maximum reading for this set of conditions is obtained. This should be done carefully repeating the adjustment of the test antenna and generator output.
(7) Repeat step (6) with both antennas vertically polarized for each spurious frequency.
(8) Calculate power in dBm into a reference ideal half-wave dipole antenna by reducing the readings obtained in step (6) and (7) by the power loss in the cable between the generator and the antenna and further corrected for the gain of the substitution antenna used relative to an ideal half-wave dipole antenna.
(9) The levels record in step (8) are the absolute levels of radiated spurious emissions in dBm. The radiated spurious emissions in dB can be calculated by the following:

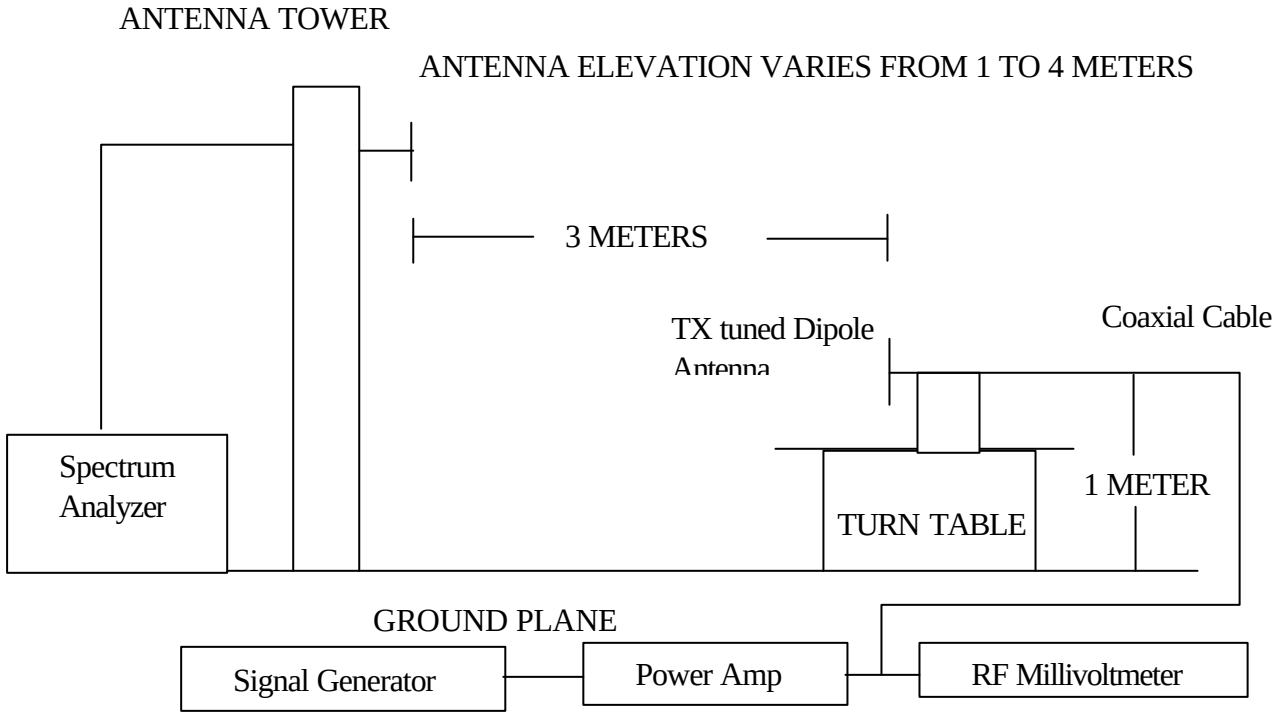
Radiated spurious emissions (dB) =

$10\log_{10}$ [TX power in watts/0.001]–the levels in step (8)

Note : It is permissible to use other antennas provided they can be referenced to a dipole.

3.3.1. Anechoic Chamber Setup Diagram





3.4. Test Resule

Carrier Frequency (MHz)	Power Meter Reading		Correction Factor (*) (dB)	ERP (dBm)	RF Output Power (mW)	Linit (mW)
	Horizontal Polarization (dBm)	Vertical Polarization (dBm)				
72.05	-11.3	-9.3	15.34	6.04	4.018	750

Spurious Emission Frequency (MHz)	Power Meter Reading		Correction Factor (*) (dB)	ERP (dBm)	Separation From Carrier (dBc)	Limit of ERP (dBc)	Margin for Limits (dBc)
	Horizontal Polarization (dBm)	Vertical Polarization (dBm)					
144.1	-21.7	-20.6	-9.89	-30.49	-36.53	-32.04	4.49
216.15	-24.6	-23.7	-10	-33.7	-39.74	-32.04	7.70
288.2	-27.2	-26.8	-10.03	-36.83	-42.87	-32.04	10.83
360.25	-31.7	-30.1	-9.8	-39.9	-45.94	-32.04	13.90
432.3	-32.6	-33.4	-9.9	-33.5	-39.54	-32.04	7.50
504.35	-37.7	-38.6	-9.9	-47.6	-53.64	-32.04	21.60
576.4	-34.3	-33.7	-10.1	-40.8	-46.84	-32.04	14.80
648.45	-36.3	-33.4	-10	-43.4	-49.44	-32.04	17.40
720.5	-37.2	-36.3	-10.05	-46.35	-52.39	-32.04	20.34

Note:

(1) Limit of ERP in dBc:
-56-10Log (Power)=-56-10Log (0.004018)=-32.04dB.

(2) (*):Convection factor is included both of a coupling factor, cable loss and attenuator loss.

Environments

Temperature : 24 C Humidity : 50%

Summary of Test Results

Minimum Margin was 4.49dB at 144.1MHz vertical polarization

Reviewer: Cake Wang

4. BANDWIDTH TEST

4.1. Test Equipment

The following test equipments are used during the bandwidth test:

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum	Agilent	E4407B	MY41440292	May 24,04	1 Y
2.	Attenuation	Weinschel	40-6-34	LJ092	May 30,04	1 Year

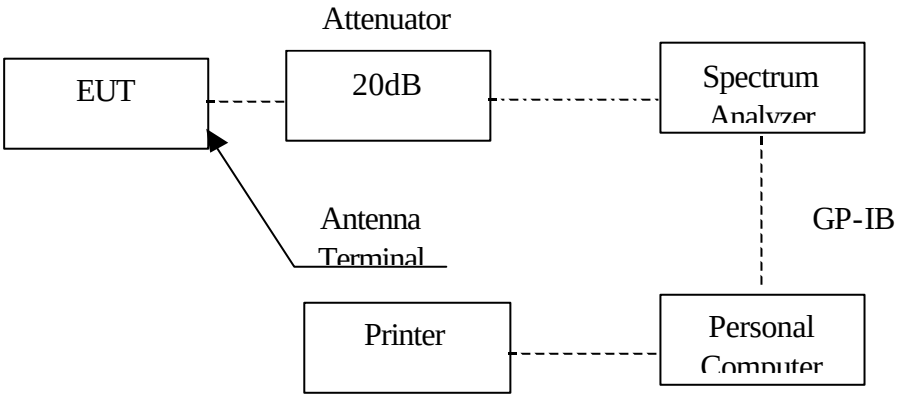
4.2. Test Standard

The test completeness FCC Part 95. 633 (b).

4.3. Bandwidth Limit

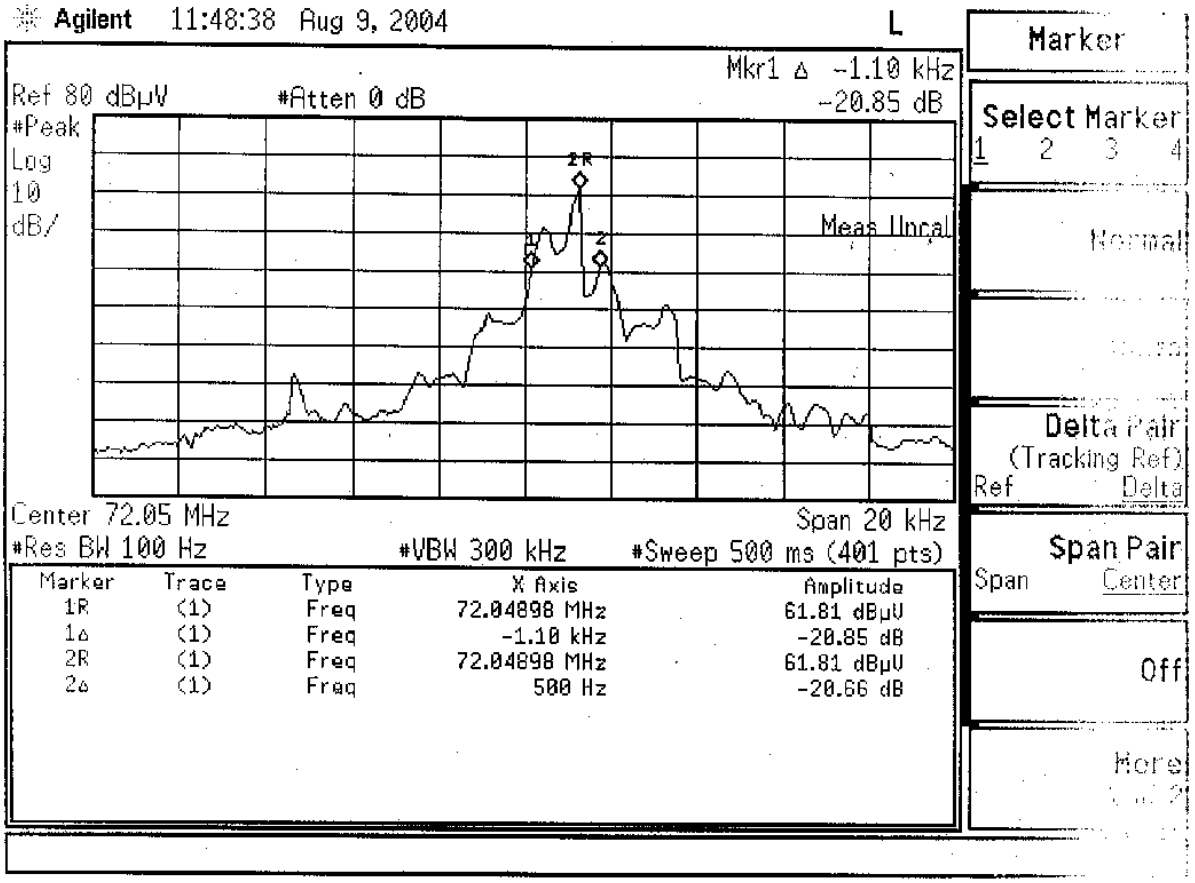
The minimum 20dB bandwidth shall be at least 8KHz.

4.4. Bandwidth Setup Diagram



4.5. Test Result

Occupied Bandwidth : 1.15K



Above data shows that the test device complies with the requirements.

5. FREQUENCY TOLERANCE TEST

5.1. Test Equipment

The following test equipments are used during the bandwidth test:

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
3.	Spectrum	Agilent	E4407B	MY41440292	May 24,04	1 Y
4.	Antenna	EMCO	4610	9410-1274	NCR	NCR

5.2. Test Standard

The test completeness FCC Part 95. 623 (b).

5.3. Frequency Tolerance Limit

R/C transmitters capable of operation in the 72~76 MHz band must be maintained within a frequency tolerance of 0.005%.

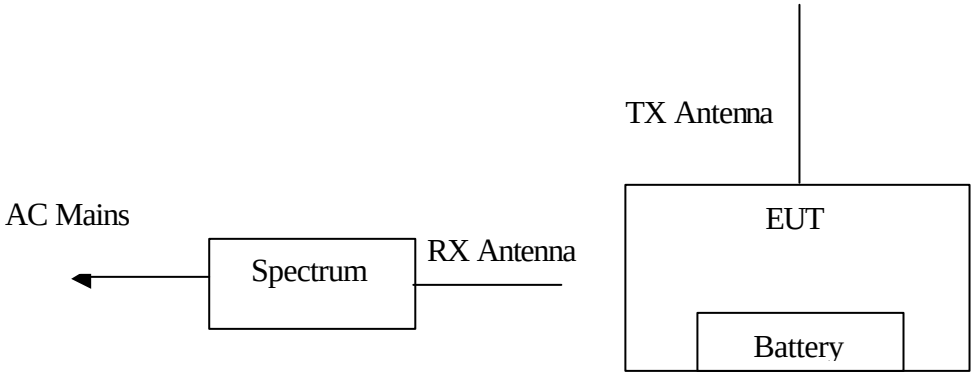
Test Level: 72.04898MHz

Calculation: 72.05-72.04898=0.00102MHz.

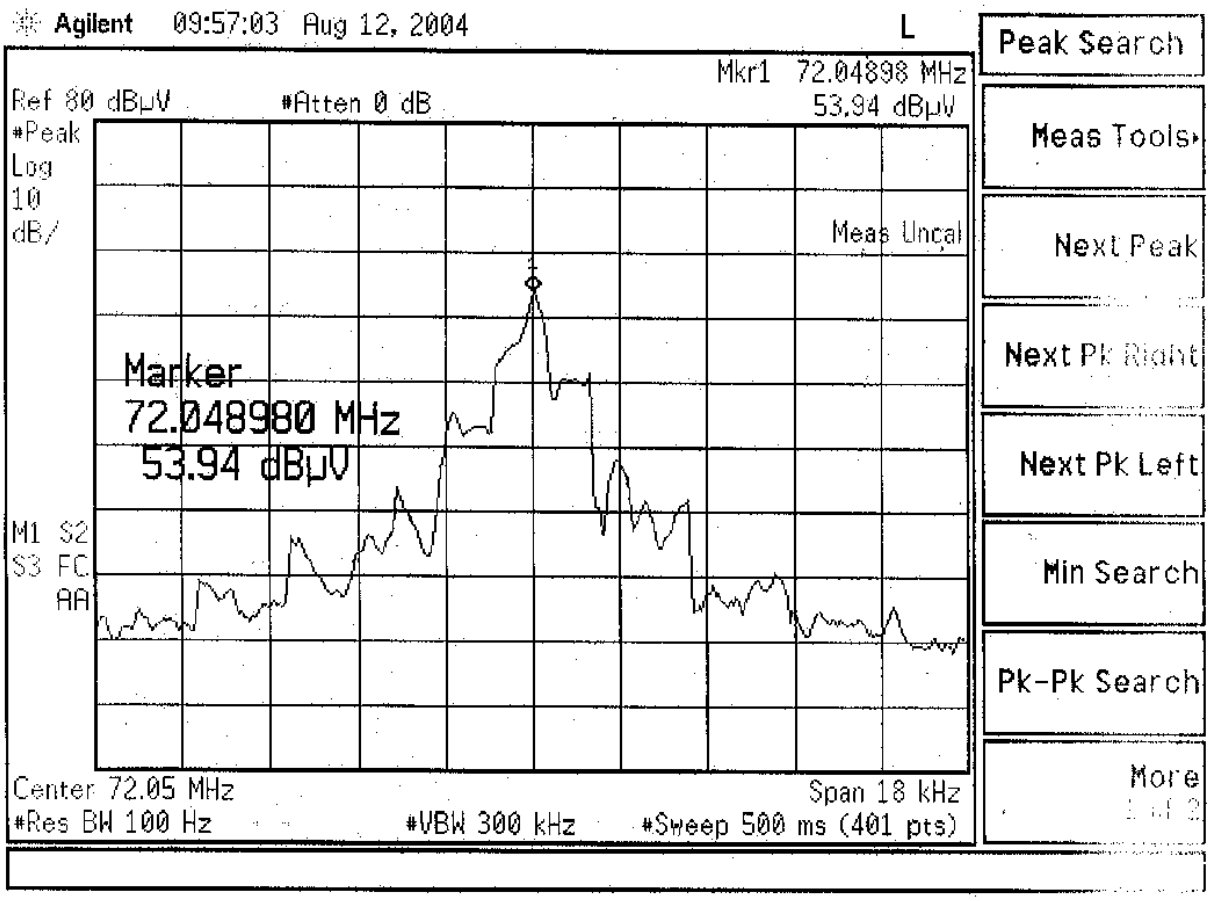
00102÷72.05×100%=0.001415683%

Result: PASS

5.4. Frequency Tolerance Setup Diagram



5.5. Test Procedure


Agilent 09:57:03 Aug 12, 2004
L
Mkr1 72.04898 MHz
53.94 dBµV
Ref 80 dBµV
#Atten 0 dB
#Peak
Log
10
dB/
Meas Uncal
Marker
72.048980 MHz
53.94 dBµV
M1 S2
S3 FC
AA
Center 72.05 MHz
#Res BW 100 Hz
#VBW 300 kHz
Span 18 kHz
#Sweep 500 ms (401 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

6. FREQUENCY STABILITY FOR TEMPERATURE

6.1. Test Equipment

The following test equipments are used during the frequency stability for temperature test:

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Spectrum	HP	85422E	3625A00181	May 23. 04	1 Y
2	Programmable Tem. / Hum. Chamber	Terchy	MHUS-800L	850503	Apr.22, 04	1Y

6.2. Test Standard

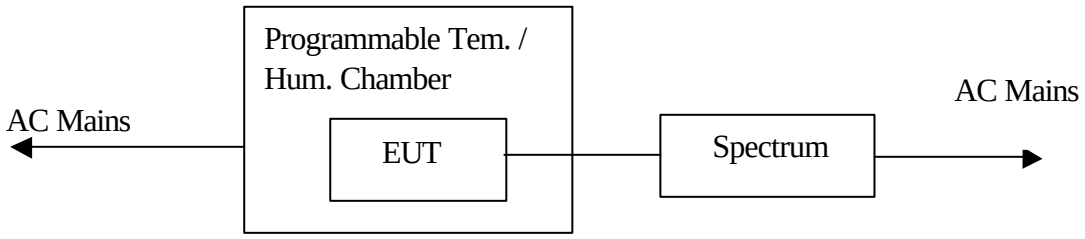
The test completeness FCC Part 2 . 1055 (d).

6.3. Frequency Stability for Temperature Limit

Frequency Tuned: 72.048980

Frequency Accuracy Required: 0.002%

6.4. Frequency Stability for Temperature Setup Diagram



6.5. Test Result

Operating Temperature (C)	Frequency Measured (MHZ)	Frequency Deviation (Hz)	Frequency Deviation (%)
-30	72.048610	-370	0.00000513539
-20	72.048872	-108	0.00000149898
-10	72.049301	321	0.0000044553
0	72.049340	360	0.0000049966
+10	72.049330	350	0.0000048578
+20	72.049190	210	0.00000291468
+30	72.048950	-30	0.00000041638
+40	72.048720	-260	0.00000360865
+50	72.048590	-390	0.00000541298

7. FREQUENCY STABILITY FOR SUPPLY VOLTAGE

7.1. Test Equipment

The following test equipments are used during the frequency stability for supply voltage test:

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Spectrum Analyzer	HP	8591EM	3628A00914	May 23. 04	1 Y
2	DC Power Supply	King Instrument	DPS-1303D	-	NCR	NCR
2	Programmable Tem. / Hum. Chamber	Terchy	MHUS-800L	850503	Apr.22, 04	1Y

7.2. Test Standard

The test completeness FCC Part 2 . 1055 (a).

7.3. Frequency Stability for Supply Voltage Limit

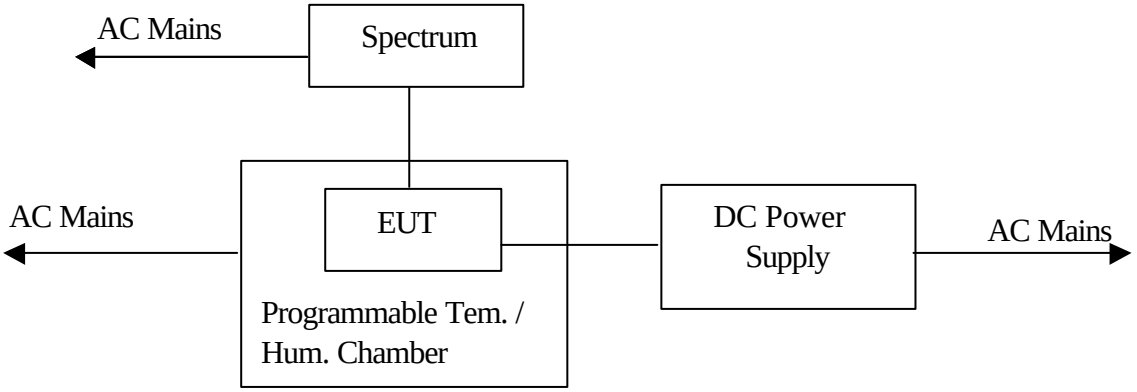
Frequency Tuned: 72.048980

Frequency Accuracy Required: 0.002%

Normal Input Voltage: 12V

Temperature: 20 C

7.4. Frequency Stability for Temperature Setup Diagram



7.5. Test Result

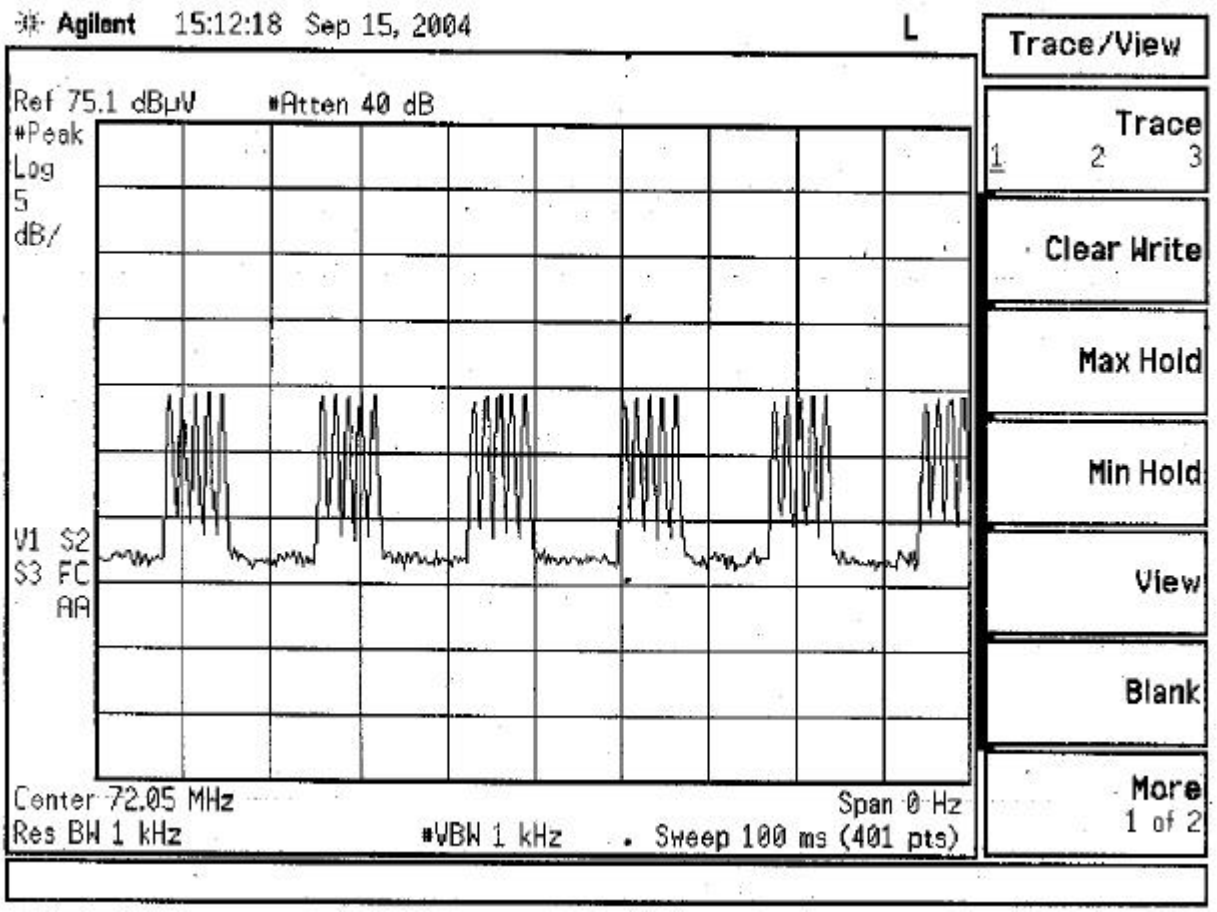
Input Voltage (V)	Frequency Measured (MHz)	Frequency Deviation (Hz)	Frequency Deviation (%)
10.2	72.049086	106	0.00000147122
10.8	72.049079	99	0.00000137406
11.4	72.049032	52	0.00000072173
12	72.049016	36	0.00000049966
12.6	72.049012	32	0.00000044414
13.2	72.049040	66	0.00000091604
13.8	72.049055	81	0.00000112423

8. MODULATION CHARACTERISTICS

8.1. Reference Rule and Specification

FCC Rule Part 2 Subpart J (2.1047)

8.2. Test Result



8.3. Above data shows that Modulation Type of EUT:

FID

9. DEVIATION TO TEST SPECIFICATIONS

[NONE]