SGS-CSTC Standards Technical Services Co., Ltd.

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TEST REPORT

Application No.:	GZEM1212005199RF
Applicant:	Disney Interactive Studios, Inc.
FCC ID:	QOF-8032386
Product Name:	Disney Infinity Base INF-8032386
Product Description:	Radio Frequency Identification with 13.56 MHz as carrier.
Model No:	INF-8032386
Standards:	47 CFR PART 15 SUBPART B:2011
Date of Receipt:	2012-12-07
Date of Test:	2012-12-07 to 2012-12-14
Date of Issue:	2013-01-17
Test Result :	**Pass***

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:

Strong Yao
Manager

2 Version

Revision Record				
Version	**Chapter**	**Date**	**Modifier**	**Remark**
00		2013-01-17		Original

Authorized for issue by:				
Tested By		 **(Daniel He) /Project Engineer**		2012-12-07 to 2012-12-14 **Date**
Prepared By		 **(Daniel He) /Clerk**		2013-01-17 **Date**
Checked By		 **(Strong Yao)/Reviewer**		2013-01-17 **Date**

3 Test Summary

Electromagnetic Interference (EMI)				
Test	**Test Requirement**	**Test Method**	**Class / Severity**	**Result**
Conducted Emission (150 KHz to 30 MHz)	FCC PART 15 SUBPART B:2011	ANSI C63.4:2009	Class B	PASS
Radiated Emission (30 MHz to 1 GHz)	FCC PART 15 SUBPART B:2011	ANSI C63.4:2009	Class B	PASS
Radiated Emission above 1 GHz	FCC PART 15 SUBPART B:2011	ANSI C63.4:2009	Class B	N/A
Remark : **EUT:** In this whole report EUT means Equipment Under Test. **N/A:** Not applicable, please refer to section 7.3 of this report for details.				

4 Contents

5 General Information

5.1 Client Information

Applicant: Disney Interactive Studios, Inc.

Address of Applicant: 1200 Grand Central Avenue, Glendale, California, 91201 United States

5.2 General Description of E.U.T.

Product Name: Disney Infinity Base INF-8032386

Product Description: Radio Frequency Identification with 13.56 MHz as carrier.

Model No: INF-8032386

5.3 Details of E.U.T.

Rated Supply (Voltage): DC 5.0V (supplied by PC via USB cord)

Power Cord: 1.8m unscreened USB cord

5.4 Description of Support Units

Description	Manufacturer	Model No.	SN/Certificate NO
Personal Computer	DELL	OPTIPLEX755	D6JF82X
Monitor	SAMSUNG	225MS	CR22HVMP900646W
Mouse	DELL	MOC5UO	G1B02ZP5
Keyboard	DELL	SK-8135	N/A
Printer	DELL	4470-AD1 (926B)	CN-OGH204-48734-69Q-7K78
MODEM	xianxingzhe	ALPHA 56K EXT	031200037

5.5 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **NVLAP (Lab Code: 200611-0)**

  SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory is recognized under the National Voluntary Laboratory Accreditation Program (NVLAP/NIST). NVLAP Code: 200611-0.

- **ACMA**

  SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our NVLAP accreditation.

- **SGS UK(Certificate No.: 32), SGS-TUV SAARLAND and SGS-FIMKO**

  Have approved SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory as a supplier of EMC TESTING SERVICES and SAFETY TESTING SERVICES.

- **CNAS (Lab Code: L0167)**

  SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been assessed and in compliance with CNAS-CL01:2006 accreditation criteria for testing laboratories (identical to ISO/IEC 17025:2005 General Requirements) for the Competence of Testing Laboratories.

- **FCC (Registration No.: 282399)**

  SGS-CSTC Standards Technical 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. Registration 282399, May 31, 2002.

- **Industry Canada (Registration No.: 4620B-1)**

  The 3m/10m Alternate Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. has been registered by Certification and Engineering of Industry Canada for radio equipment testing with Registration No. 4620B-1.

- **VCCI (Registration No.: R-2460, C-2584, G-449 and T-1179)**

  The 10m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-2460, C-2584，G-449 and T-1179 respectively.

- **CBTL (Lab Code: TL129)**

  SGS-CSTC Standards Technical Services Co., Ltd., E&E Laboratory has been assessed and fully comply with the requirements of ISO/IEC 17025:2005, the Basic Rules, IECEE 01:2006-10 and Rules of procedure IECEE 02:2006-10, and the relevant IECEE CB-Scheme Operational documents.

5.6 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory,

198 Kezhu Road, Scientech Park, Guangzhou Economic & Technology Development District,

Guangzhou, China 510663

Tel: +86 20 82155555 Fax: +86 20 82075059

No tests were sub-contracted.

5.7 Deviation from Standards

None.

5.8 Abnormalities from Standard Conditions

None.

5.1 General Test Climate During Testing

Temperature: 15-30 °C Humidity: 30~70 %RH Atmospheric Pressure: 886~1086 mbar

6 Equipment Used during Test

Conducted Emission						
No.	Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Due date (YYYY-MM-DD)	Calibration Interval
EMC0306	Shielding Room	Zhong Yu	8 x 3 x 3.8 m^3	N/A	N/A	N/A
EMC0118	Two-line v-netwok	R&S	ENV216	100359	2013-03-12	1Y
EMC0102	LISN	SCHAFFNER CHASE	MN2050D/1	1421	2013-9-6	1Y
EMC2046	Artificial Mains Network (LISN)	AFJ Instruments	LT32C	S.N.32031120150	2013-03-12	1Y
EMC0506	EMI Test Receiver	Rohde & Schwarz	ESCS30	100085	2013-03-12	1Y
EMC0107	Coaxial Cable	SGS	2m	N/A	2013-07-10	1Y
EMC0106	Voltage Probe	SGS	N/A	N/A	N/A	1Y
EMC0120	8 Line ISN	Fischer Custom Communications Inc.	FCC-TLISN-T8-02	20550	2013-11-5	1Y
EMC0121	4 Line ISN	Fischer Custom Communications Inc.	FCC-TLISN-T4-02	20549	2013-11-5	1Y
EMC0122	2 Line ISN	Fischer Custom Communications Inc.	FCC-TLISN-T2-02	20548	2013-11-5	1Y
EMC2047	CDN	Elektronik-Feinmechanik	L-801:AF2	2793	2014-11-11	3Y
EMC2048	CDN	Elektronik-Feinmechanik	L-801:M2/M3	2738	2014-11-11	3Y
EMC2062	6dB Attenuator	HP	8491A	24487	2013-01-11	1Y
EMC167	Conical metal housing	SGS-EMC	N/A	N/A	2013-02-16	1Y

RE in Chamber						
No.	Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Due date (YYYY-MM-DD)	Calibration Interval
EMC0525	Compact Semi-Anechoic Chamber	ChangZhou ZhongYu	N/A	N/A	2014-08-30	2Y
EMC0522	EMI Test Receiver	Rohde & Schwarz	ESIB26	100283	2013-06-29	1Y
EMC0056	EMI Test Receiver	Rohde & Schwarz	ESCI	100236	2013-03-12	1Y
EMC0528	RI High frequency Cable	SGS	20 m	N/A	2013-06-01	1Y
EMC2025	Trilog Broadband Antenna 30-3000MHz	SCHWARZBECK MESS-ELEKTRONIK	VULB 9163	9163-450	2013-12-17	2Y
EMC0524	Bi-log Type Antenna	Schaffner -Chase	CBL6112B	2966	2013-11-27	2Y
EMC0519	Bilog Type Antenna	Schaffner -Chase	CBL6143	5070	2013-03-26	2Y
EMC2026	Horn Antenna 1-18GHz	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120D	9120D-841	2013-11-28	2Y
EMC0518	Horn Antenna	Rohde & Schwarz	HF906	100096	2014-07-01	2Y
EMC0521	1-26.5 GHz Pre-Amplifier	Agilent	8449B	3008A01649	2013-03-12	1Y
EMC0049	Amplifier	Agilent	8447D	2944A10862	2013-03-12	1Y
EMC0075	310N Amplifier	Sonama	310N	272683	2013-03-12	1Y
EMC0523	Active Loop Antenna	EMCO	6502	42963	2014-04-07	2Y
EMC2041	Broad-Band Horn Antenna (14)15-26.5(40)GHz	SCHWARZBECK MESS-ELEKTRONI	BBHA 9170	9170-375	2014-06-01	3Y
EMC0530	10m Semi-Anechoic Chamber	ETS	N/A	N/A	2014-04-27	2Y

General used equipment						
No.	Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Due date (YYYY-MM-DD)	Calibration Interval
EMC0006	DMM	Fluke	73	70681569	2013-11-5	1Y
EMC0007	DMM	Fluke	73	70671122	2013-11-5	1Y

7 Emission Test Results

7.1 Conducted Emissions Mains Terminals, 150 kHz to 30 MHz

Test Requirement: FCC Part15 B

Test Method: ANSI C63.4

Test Voltage: 120V AC, 60Hz

Test Date: 2012-12-13

Frequency Range: 150 kHz to 30 MHz

Detector: Peak for pre-scan
Quasi-Peak and Average at frequency with maximum peak
(9 kHz resolution bandwidth)

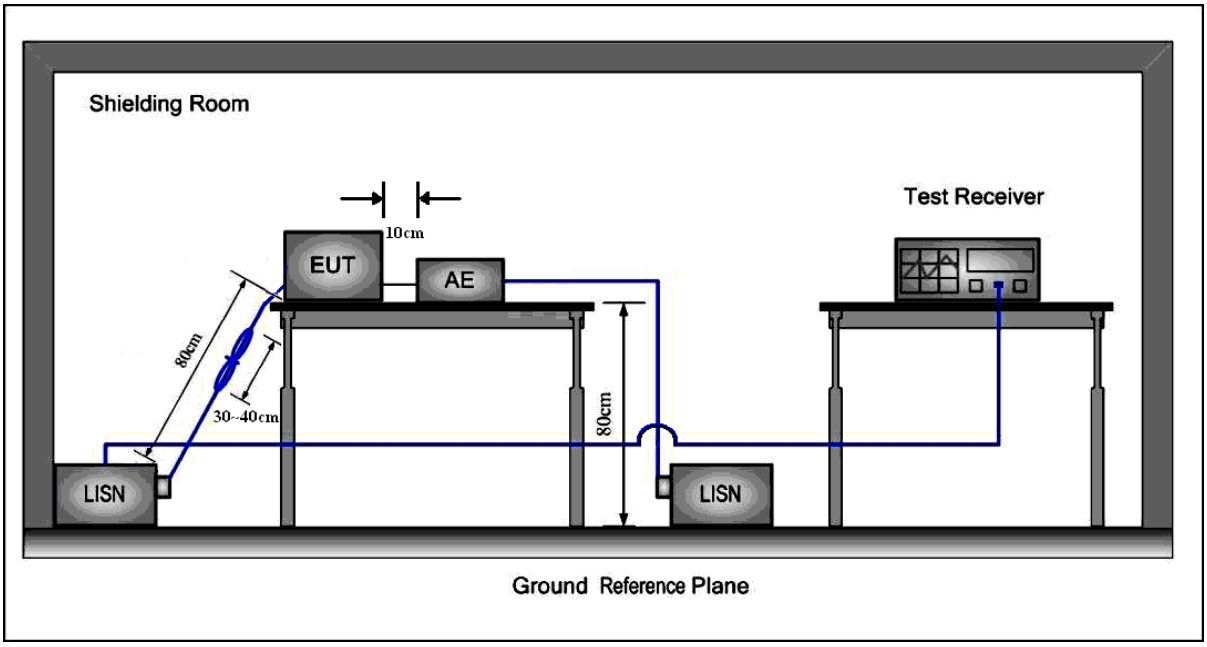
Class / Limit: Class B

Frequency range MHz	**Class B Limits** dB (μV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50
NOTE 1 :The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz. NOTE 2: The lower limit is applicable at the transition frequency.		

7.1.1 E.U.T. Operation

Test the EUT connected with PC in reading tags status.

7.1.2 Test Setup and Procedure



1. The mains terminal disturbance voltage test was conducted in a shielded room.
2. The EUT was connected to nominal power supply through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50μH + 5Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.
3. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.
4. The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.

7.1.3 Measurement Data

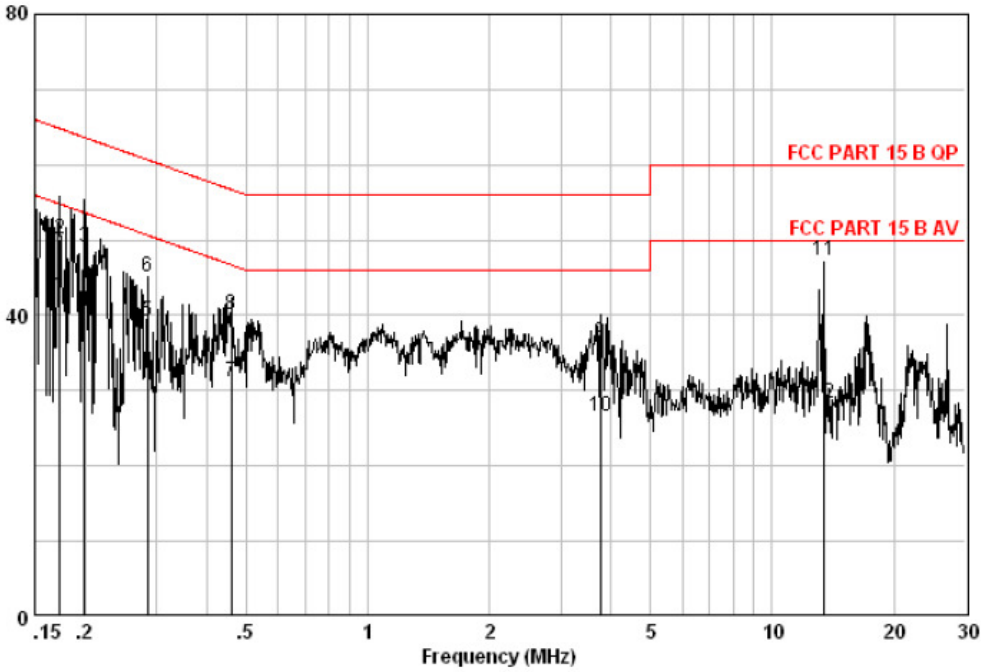
Pre-scan was performed with peak detected on both live and neutral cable. Quasi-peak & average measurements were performed at the frequencies which maximum peak emission level was detected.

Please see the attached Quasi-peak and Average test results.

Live Line:

Peak Scan:

Level (dBµV)



Quasi-peak and Average measurement

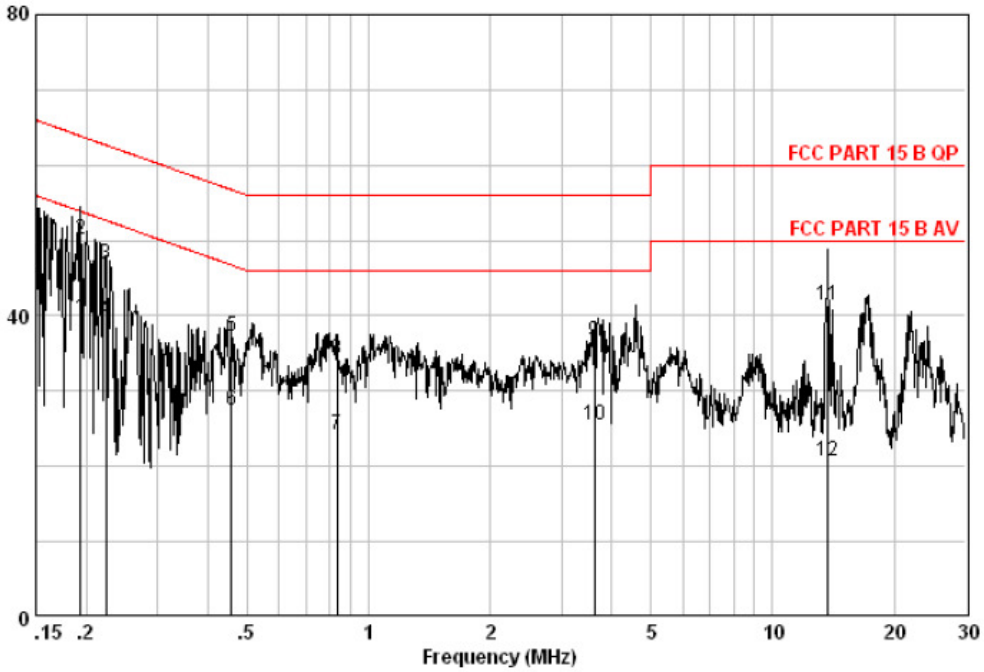
Freq	Read Level	Cable Loss	LISN Factor	Level	Limit Line	Over Limit	Remark
MHz	dBuV	dB	dB	dBuV	dBuV	dB	
0,173	33,01	0,09	9,63	42,73	54,81	-12,08	AVERAGE
0,173	40,48	0,09	9,63	50,20	64,81	-14,61	QP
0,199	39,36	0,13	9,62	49,11	63,67	-14,56	QP
0,199	30,72	0,13	9,62	40,47	53,67	-13,20	AVERAGE
0,285	29,50	0,09	9,64	39,22	50,68	-11,45	AVERAGE
0,285	35,50	0,09	9,64	45,22	60,68	-15,45	QP
0,459	21,50	0,05	9,63	31,18	46,71	-15,54	AVERAGE
0,459	30,44	0,05	9,63	40,12	56,71	-16,60	QP
3,759	26,56	0,14	9,72	36,42	56,00	-19,58	QP
3,759	16,72	0,14	9,72	26,58	46,00	-19,42	AVERAGE
13,478	36,92	0,23	10,22	47,38	60,00	-12,62	QP
13,478	17,95	0,23	10,22	28,41	50,00	-21,59	AVERAGE

Level = Read Level + LISN Factor + Cable Loss.

Neutral Line:

Peak Scan:

Level (dBµV)



Quasi-peak and Average measurement:

Freq	Read Level	Cable Loss	LISN Factor	Level	Limit Line	Over Limit	Remark
MHz	dBuV	dB	dB	dBuV	dBuV	dB	
0,193	30,01	0,12	9,64	39,77	53,89	-14,12	AVERAGE
0,193	40,28	0,12	9,64	50,04	63,89	-13,85	QP
0,223	37,12	0,12	9,64	46,88	62,70	-15,82	QP
0,223	29,80	0,12	9,64	39,56	52,70	-13,14	AVERAGE
0,456	27,64	0,05	9,66	37,34	56,76	-19,41	QP
0,456	17,72	0,05	9,66	27,42	46,76	-19,33	AVERAGE
0,835	14,50	0,05	9,68	24,23	46,00	-21,77	AVERAGE
0,835	24,52	0,05	9,68	34,25	56,00	-21,75	QP
3,623	26,78	0,13	9,74	36,66	56,00	-19,34	QP
3,623	15,65	0,13	9,74	25,53	46,00	-20,47	AVERAGE
13,690	30,86	0,24	10,27	41,37	60,00	-18,63	QP
13,690	10,28	0,24	10,27	20,79	50,00	-29,21	AVERAGE

Level = Read Level + LISN Factor + Cable Loss.

7.2 Radiated Emissions, 30MHz to 1GHz

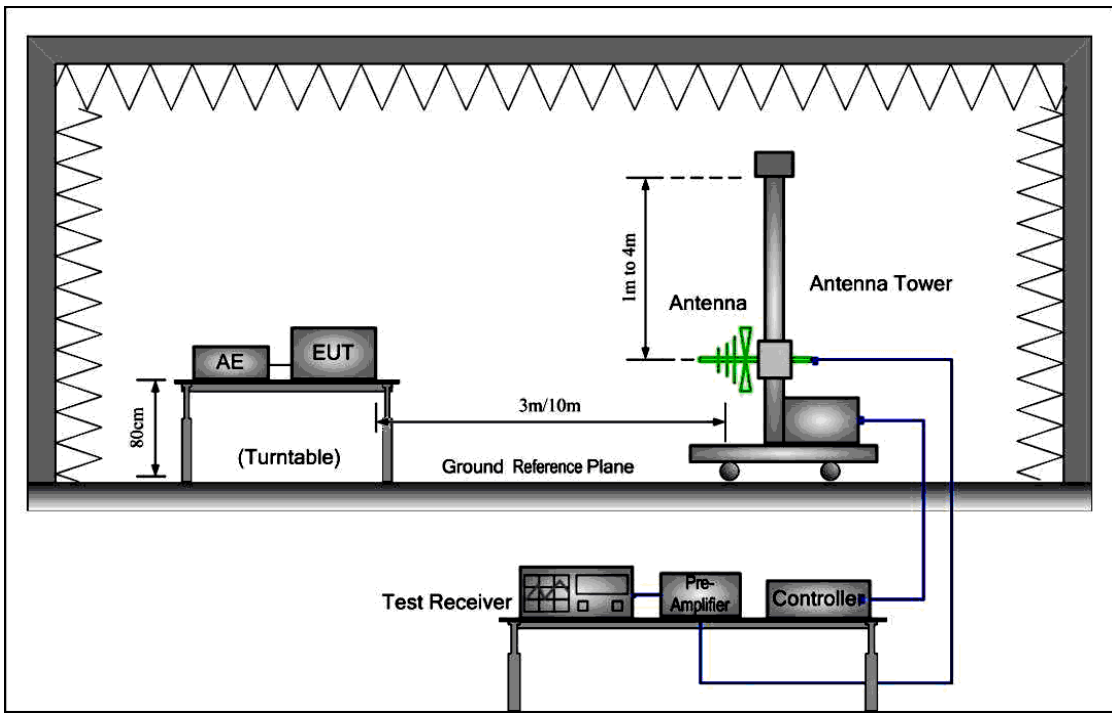
Test Requirement:	FCC Part15 B
Test Method:	ANSI C63.4
Test Voltage:	120V AC, 60Hz
Test Date:	2012-12-13
Frequency Range:	30 MHz to 1 GHz
Measurement Distance:	3 m
Detector:	Peak for pre-scan Quasi-Peak if maximised peak within 6dB of limit (120 kHz resolution bandwidth)
Class / Limit:	Class B

Frequency range MHz	**Quasi-peak limits** dB (μV/m)
30 to 88	40
88 to 216	43.5
216 to 960	46
Above 960	54
At transitional frequencies the lower limit applies.	
At transitional frequencies the lower limit applies.	

7.2.1 E.U.T. Operation

Test the EUT connected with PC in reading tags status.

7.2.2 Test Setup and Procedure



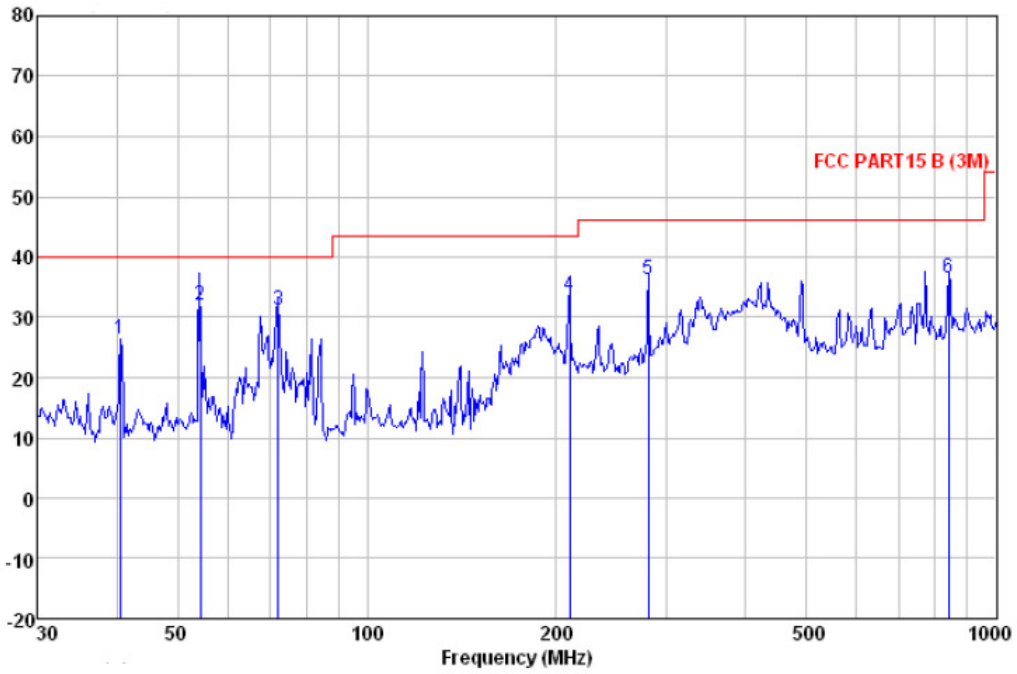
1. The radiated emissions test was conducted in a semi-anechoic chamber.
2. Biconical and log periodic antenna was used for the frequency range from 30MHz to 1GHz
3. The EUT was connected to nominal power supply through a mains power outlet which was bonded to the ground reference plane; The mains cables were draped to the ground reference plane. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.
4. Before final measurements of radiated emissions, a pre-scan was performed in the spectrum mode with the peak detector to find out the maximum emissions spectrum plots of the EUT.
5. The frequencies of maximum emission were determined in the final radiated emissions measurement. At each frequency, the EUT was rotated 360°, and the antenna was raised and lowered from 1 to 4 meters in order to determine the maximum disturbance. Measurements were performed for both horizontal and vertical antenna polarization.

7.2.3 Measurement Data

Vertical:

Peak scan

Level (dBμV/m)



Quasi-peak measurement

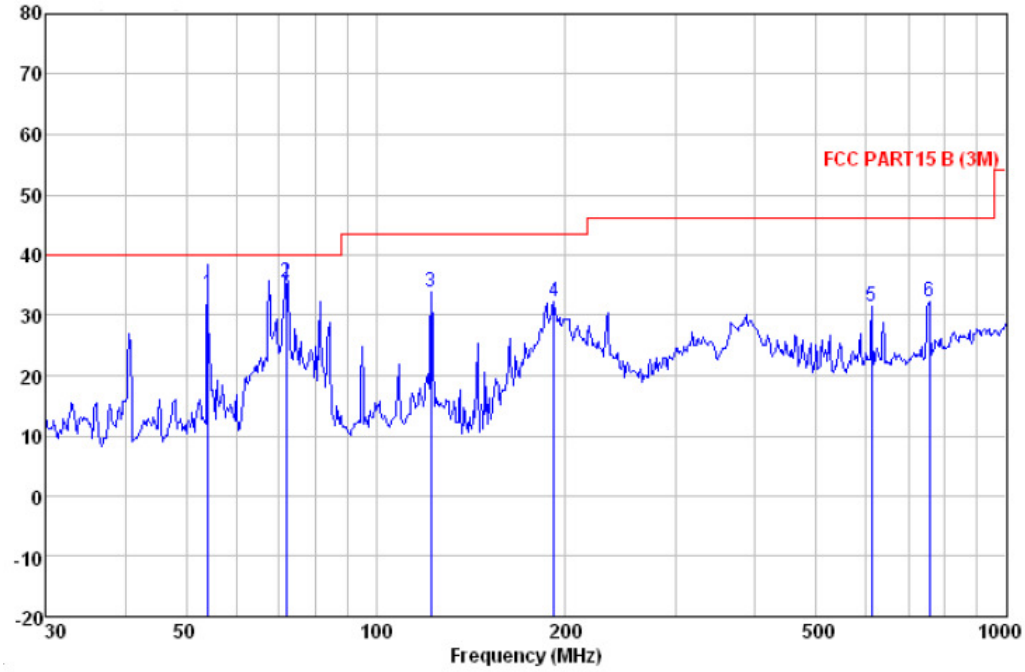
Freq	ReadLevel	Antenna Factor	Cable Loss	Preamp Factor	Level	Over Limit	Limit Line	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dB	dBuV/m	
40.559	41.34	13.58	0.93	29.50	26.35	-13.65	40.00	QP
54.290	47.36	13.05	1.05	29.52	31.94	-8.06	40.00	QP
72.338	51.38	8.26	1.24	29.61	31.27	-8.73	40.00	QP
210.048	50.26	10.87	1.94	29.51	33.56	-9.94	43.50	QP
280.024	51.02	12.67	2.27	29.58	36.38	-9.62	46.00	QP
839.182	40.96	20.46	3.96	28.83	36.55	-9.45	46.00	QP

Level = Read Level + Antenna Factor + Cable Loss – Preamp Factor.

Horizontal:

Peak scan

Level (dBμV/m)



Quasi-peak measurement

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Over Limit	Limit Line	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dB	dBuV/m	
54.270	49.00	13.05	1.05	29.52	33.58	-6.42	40.00	QP
71.960	55.39	8.32	1.24	29.61	35.34	-4.66	40.00	QP
122.404	52.01	10.09	1.57	29.70	33.97	-9.53	43.50	QP
191.745	49.46	10.56	1.86	29.53	32.35	-11.15	43.50	QP
612.064	39.05	18.50	3.32	29.39	31.48	-14.52	46.00	QP
755.387	38.15	19.53	3.73	29.24	32.17	-13.83	46.00	QP

Level = Read Level + Antenna Factor + Cable Loss – Preamp Factor.

7.3 Radiated Emissions above 1 GHz

Test Requirement:	FCC Part15 B
Frequency Range:	1 GHz to 40 GHz
Measurement Distance:	3 m
Class / Limit:	Class B
Test Date:	**N/A: See Remark Below**

Remark:

There is no need for Radiated Emissions (above 1G) test to be performed on this product in accordance with FCC Part 15: 2011 because the highest internal source is less than 108 MHz.

--End of Report--