

FCC PART 15B

MEASUREMENT AND TEST REPORT

For

Beijing Infomedia Electronic Technology Co., Ltd.

Floor 4, B Building, Printing Academy, No.2 Cuiwei Road, Haidian District, Beijing, China

FCC ID: 2AFA5PAW5000

Jul. 05, 2015

This Report Concerns: ☒ Original Report	Equipment Type: Digital Audio Player
Report Number:	MTI150603006RF-2
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Test Date:	Jun. 17, 2015 - Jul. 06, 2015
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Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior written consent of Shenzhen Microtest Technology Co.,Ltd.

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1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant: Beijing Infomedia Electronic Technology Co., Ltd.

Address of applicant: Floor 4, B Building, Printing Academy, No.2 Cuiwei Road, Haidian District, Beijing, China

Manufacturer: Beijing Infomedia Electronic Technology Co., Ltd.

Address of manufacturer: Floor 4, B Building, Printing Academy, No.2 Cuiwei Road, Haidian District, Beijing, China

General Description of E.U.T

EUT Description: Digital Audio Player

Trade Name: lotoo

EUT Model No.: PAW5000

Rated Voltage: DC 5.0V Via PC

Remark: * The test data gathered are from the production sample provided by the manufacturer.

1.2 Test Standards

The following Declaration of Conformity report of EUT is prepared in accordance with

FCC Rules and Regulations Part 15 Subpart B Class B

The objective of the manufacturer is to demonstrate compliance with the described standards above.

1.3 Test Summary

For the EUT described above. The standards used were FCC PART 15B for Emissions & for Immunity.

Table 1: Tests Carried Out Under FCC PART 15B

Standard	Test Items	Status
FCC PART 15B	Disturbance Voltage at The Mains Terminals (150KHz To 30MHz)	√
	Radiated Disturbances (30MHz To 1000MHz)	√

√ Indicates that the test is applicable
× Indicates that the test is not applicable

1.4 Test Facility

Shenzhen Toby Technology Co., Ltd.

Add.: 10/F.,A Block, Jiada R&D Bldg., No.5 Songpingshan, Road, Science&Technology Park, Shenzhen, 518057

FCC Registration No.:811562

1.5 Test Equipment List and Details

Table 1: Test Equipment for Emission Test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal	Calibration Period
Spectrum Analyzer	ANRITSU	MS2651B	6200238856	2014/11	1 year
EMI Test Receiver	ROHDE&SCHWARZ	ESCS30	100307	2014/11	1 year
LISN	ROHDE&SCHWARZ	ESH3-Z5	100305	2014/11	1 year
Pulse Limiter	ROHDE&SCHWARZ	ESH3-Z2	100305	2014/11	1 year
Bilog Antenna	SCHWARZBECK	VULB 9163	9163-194	2014/11	1 year
50 Ω Coaxial Switch	ANRITSU CORP	MP59B	6200283933	2014/11	1 year
Power Clamp	ROHDE&SCHWARZ	MDS21	100142	2014/11	1 year
Loop Antenna	Laplace Instrument Ltd	RF300	8006	2014/11	1 year
Cable	Resenberger	N/A	NO.1	N/A	N/A
Cable	SCHWARZBECK	N/A	NO.2	N/A	N/A
Cable	SCHWARZBECK	N/A	NO.3	N/A	N/A
DC Power Filter	DuoJi	DL2 $\times$ 30B	N/A	N/A	N/A
Single Phase Power Line Filter	DuoJi	FNF 202B30	N/A	N/A	N/A
3 Phase Power Line Filter	DuoJi	FNF 402B30	N/A	N/A	N/A
AC Power Source	California Instruments	5001iX-400	55689	2014/11	1 year
Test analyzer	California Instruments	PACS-1	72254	2014/11	1 year

Table 2: Test Equipment for Immunity Test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal	Calibration Period
ESD Tester	HAEFELY	PESD 1610	H4001552	2014/11	1 year
EMC PRO System	Thermo	PRO-BASE	0403271	2014/11	1 year
Capacitive Clamp	Thermo	PRO-CCL	0403272	2014/11	1 year
Coupler decoupler for telecom lines	Thermo	CM-TEL-CD	0403273	2014/11	1 year
Magnetic field Tester	HAEFELY	MAG 100	150577	2014/11	1 year
AC Transformer	CHOKUN	TDGC2J-5	N/A	2014/11	1 year
Signal Generator	IFR	2032	203002/100	2014/11	1 year
Amplifier	AR	150W1000	301584	2014/11	1 year
Dual Directional Coupler	AR	DC6080	301508	2014/11	1 year
Power Head	AR	PH2000	301193	2014/11	1 year
Power Meter	AR	PM2002	302799	2014/11	1 year
Transmitting Antenna	AR	AT1080	28570	2014/11	1 year
Simulator	EMTEST	CWS 500C	0900-12	2014/11	1 year
CDN	EMTEST	CDN-M2	510010010010	2014/11	1 year
CDN	EMTEST	CDN-M3	0900-11	2014/11	1 year
Injection Clamp	EMTEST	F-2031-23MM	368	2014/11	1 year
Attenuator	EMTEST	ATT 6	0010222A	2014/11	1 year

2. SYSTEM TEST CONFIGURATION

2.1 Justification

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

2.2 EUT Exercise Software

The EUT exercising program used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use. The software offered by manufacture, can let the EUT being normal operation.

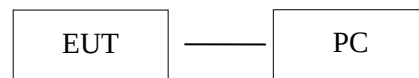
2.3 Special Accessories

As shown in section 2.5, interface cable used for compliance testing is shielded as normally supplied by Beijing Infomedia Electronic Technology Co., Ltd, its respective support equipment manufacturers.

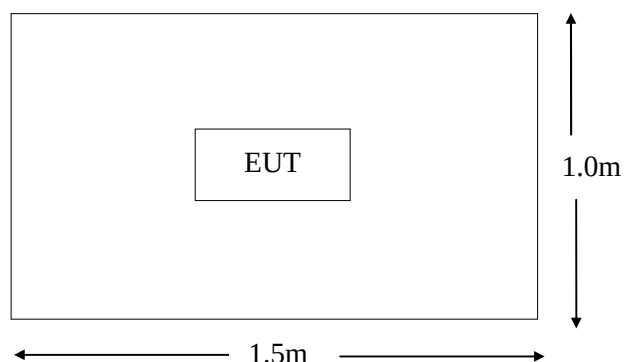
2.4 Equipment Modifications

The EUT tested was not modified by MTI.

2.5 Configuration of Test System



2.6 Test Setup Diagram



3. RADIATED DISTURBANCES

3.1 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.

The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement is ± 4.0 dB.

3.2 Limit of Radiated Disturbances (Class B)

Frequency (MHz)	Distance (Meters)	Field Strengths Limits (dB μ V/m)
30-88	3	40
88~216	3	43.5
216 ~ 960	3	46
960 ~ 1000	3	54

Note: (1) The tighter limit shall apply at the edge between two frequency bands.

(2) Distance refers to the distance in meters between the test instrument antenna and the closest point of any part of the E.U.T.

3.3 EUT Setup

The radiated emission tests were performed in the open area 3-meter test site, using the setup accordance with the CISPR 16-1, CISPR16-2. The specification used was FCC PART 15B Class B limits.

The EUT was placed on the center of the test table.

Maximum emission emitted from EUT was determined by manipulating the EUT, support equipment, interconnecting cables and varying the mode of operation and the levels in the final result of the test were recorded with the EUT running in the operating mode that maximum emission was emitted.

3.4 Test Receiver Setup

According to FCC PART 15B rules, the frequency was investigated from 30 to 1000 MHz. During the radiated emission test, the test receiver was set with the following configurations:

Test Receiver Setting:

Detector.....Peak & Quasi-Peak
IF Band Width.....120 KHz
Frequency Range.....30MHz to 1000MHz
Turntable Rotated.....0 to 360 degrees

Antenna Position:

Height.....1m to 4m
Polarity.....Horizontal and Vertical

3.5 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 peak detection mode. Quasi-peak readings performed only when an emission was found to be marginal (within -10 dB μ V of specification limits), and are distinguished with a "QP" in the data table.

3.6 Corrected Amplitude & Margin Calculation

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

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

The "Margin" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB μ V means the emission is 7dB μ V below the maximum limit for Class B. The equation for margin calculation is as follows:

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

3.7 Radiated Emissions Test Result

Temperature (°C)	22~23
Humidity (%RH)	50~54
Barometric Pressure (mbar)	950~1000
EUT	Digital Audio Player
M/N	PAW5000
Operating Mode	Loading data

Test data see following pages

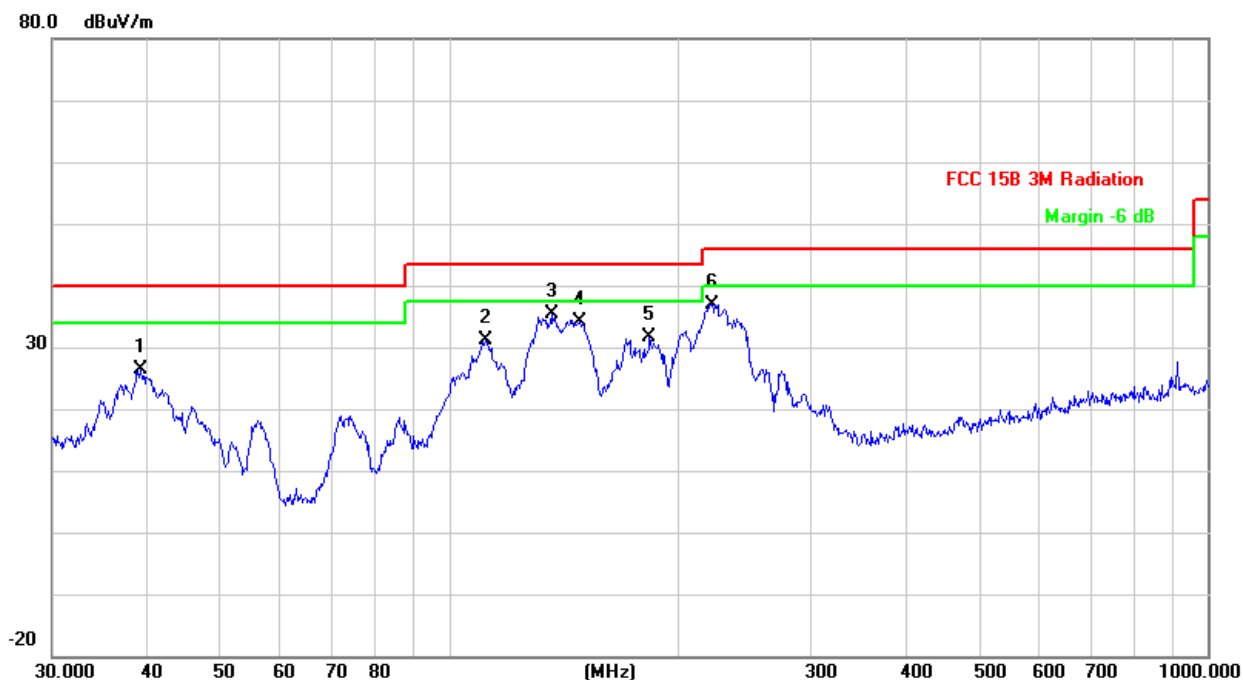
Remark: (1) When PK reading is less than relevant limit 20dB, the QP reading and AV reading will not be recorded.
(2) Where QP reading is less than relevant AV limit, the AV reading will not be measured

3.8 Test Result

Pass

Radiated Emission Test Data

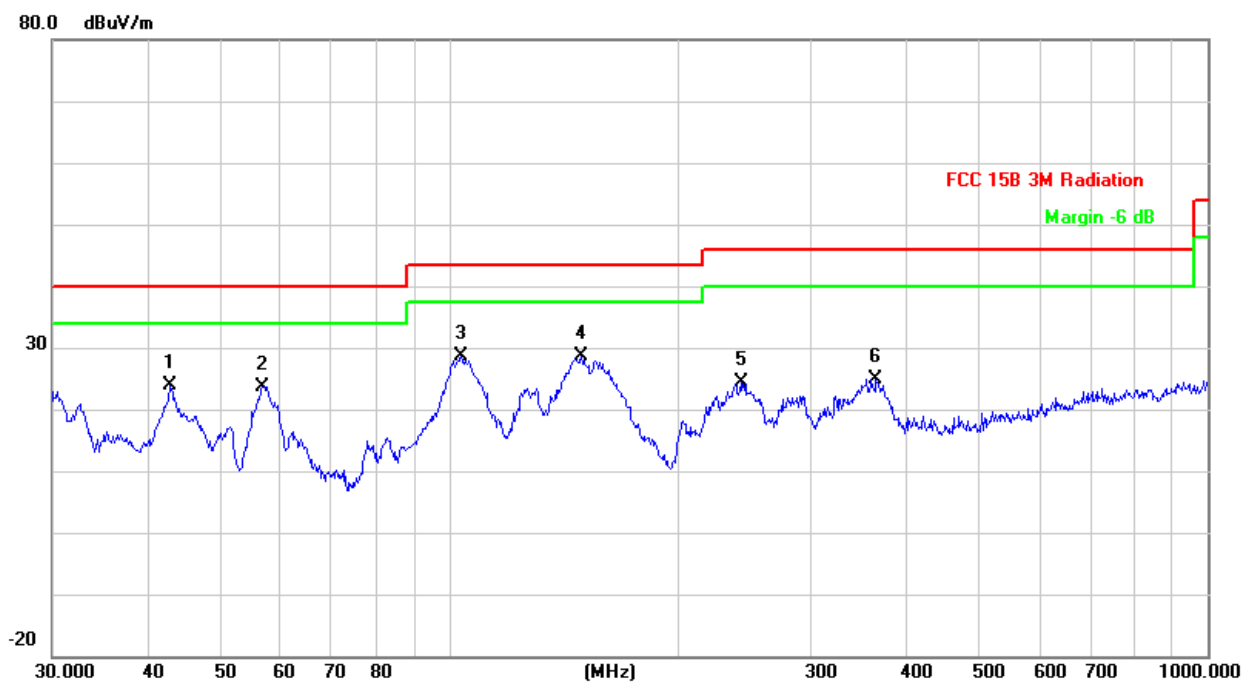
EUT: Digital Audio Player
M/N: PAW5000
Operating Condition: Loading data
Test Site: 3m CHAMBER
Operator: Shine
Comment: Polarization: Vertical



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	Antenna	Table	
		MHz	Level	Factor	ment			Height	Degree	Comment
			dBuV	dB/m	dBuV/m	dBuV/m	dB	cm	degree	
1		39.1616	45.95	-19.63	26.32	40.00	-13.68	peak		
2		111.7380	53.01	-21.98	31.03	43.50	-12.47	peak		
3	*	136.4598	57.39	-22.06	35.33	43.50	-8.17	peak		
4		148.9625	55.41	-21.26	34.15	43.50	-9.35	peak		
5		183.8440	52.23	-20.70	31.53	43.50	-11.97	peak		
6		222.1698	56.41	-19.43	36.98	46.00	-9.02	peak		

Radiated Emission Test Data

EUT: Digital Audio Player
M/N: PAW5000
Operating Condition: Loading data
Test Site: 3m CHAMBER
Operator: Shine
Comment: Polarization: Horizontal



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	Antenna	Table	
		MHz	Level	Factor	ment			Height	Degree	
			dBuV	dB/m	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		42.8998	45.26	-21.39	23.87	40.00	-16.13	peak		
2		56.7917	48.06	-24.48	23.58	40.00	-16.42	peak		
3	*	103.8055	50.38	-21.84	28.54	43.50	-14.96	peak		
4		149.4857	49.74	-21.22	28.52	43.50	-14.98	peak		
5		242.5253	42.82	-18.47	24.35	46.00	-21.65	peak		
6		365.5391	39.39	-14.52	24.87	46.00	-21.13	peak		

4. CONDUCTED DISTURBANCES

4.1. 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.

The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement is +2.4 dB.

4.2. Limit of Conducted Disturbances (Class B)

Frequency Range (MHz)	Limits (dBuV)	
	Quasi-Peak	Average
0.150~0.500	66~56	56~46
0.500~5.000	56	46
5.000~30.00	60	50

Note: (1) The tighter limit shall apply at the edge between two frequency bands.

4.3. EUT Setup

The setup of EUT is according with CISPR 16-1: 2002, CISPR16-2: 2002 measurement procedure.

The EUT was placed center and the back edge of the test table.

The cables were draped along the test table and bundled to 30-40cm in the middle.

The spacing between the peripherals was 10 cm.

Maximum emission emitted from EUT was determined by manipulating the EUT, support equipment, interconnecting cables and varying the mode of operation and the levels in the final result of the test were recorded with the EUT running in the operating mode that maximum emission was emitted.

4.4. Instrument Setup

The test receiver was set with the following configurations:

Test Receiver Setting:

Frequency Range.....150 KHz to 30 MHz

Detector.....Peak & Quasi-Peak & Average

Sweep Speed.....Auto

IF Band Width.....9 KHz

4.5. Test Procedure

During the conducted emission test, the EUT power cord was connected to the auxiliary outlet of the first Artificial Mains.

Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance using all installation combination.

All data was recorded in the peak detection mode. Quasi-peak and Average readings were only performed when an emission was found to be marginal (within -10 dB μ V of specification limits). Quasi-peak readings are distinguished with a "QP". Average readings are distinguished with an "AV".

4.6. Summary of Test Results

According to the data in section 3.6, the worst margin reading of:

EUT Configuration on Test

Digital Audio Player

Model Number : PAW5000

Serial Number : N/A

Applicant : Beijing Infomedia Electronic Technology Co., Ltd.

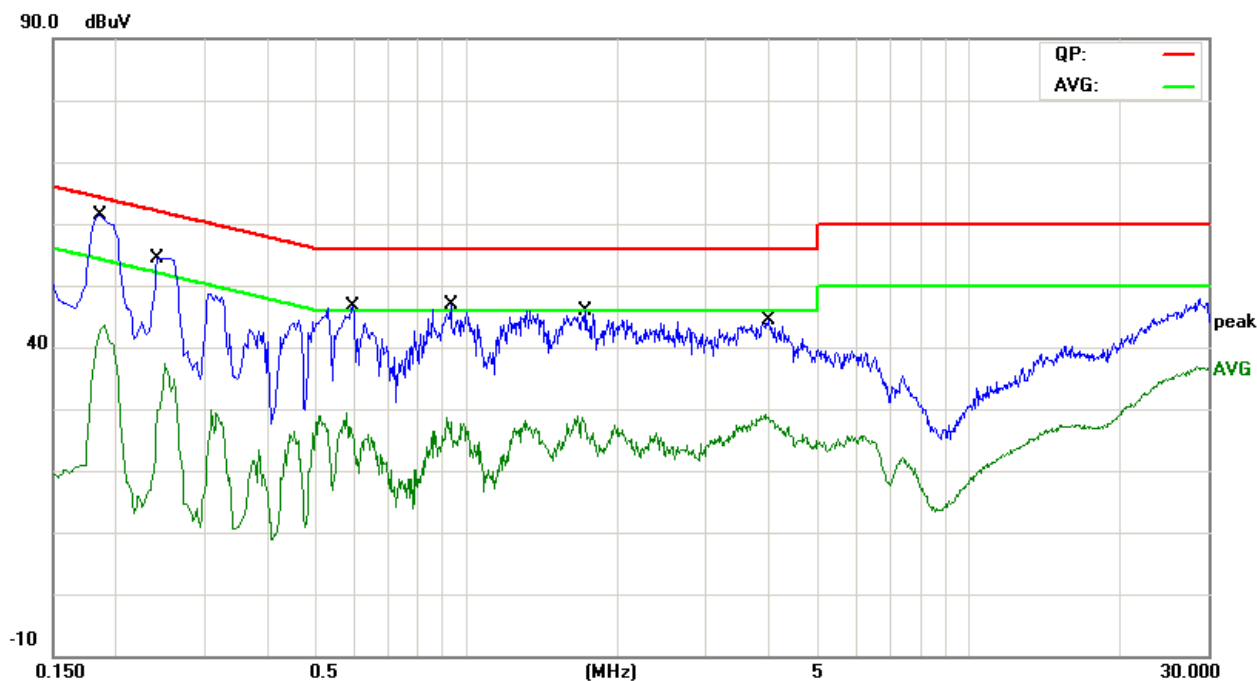
4.7. Test Result

PASS

Please refer to the following pages.

CONDUCTED EMISSION TEST DATA

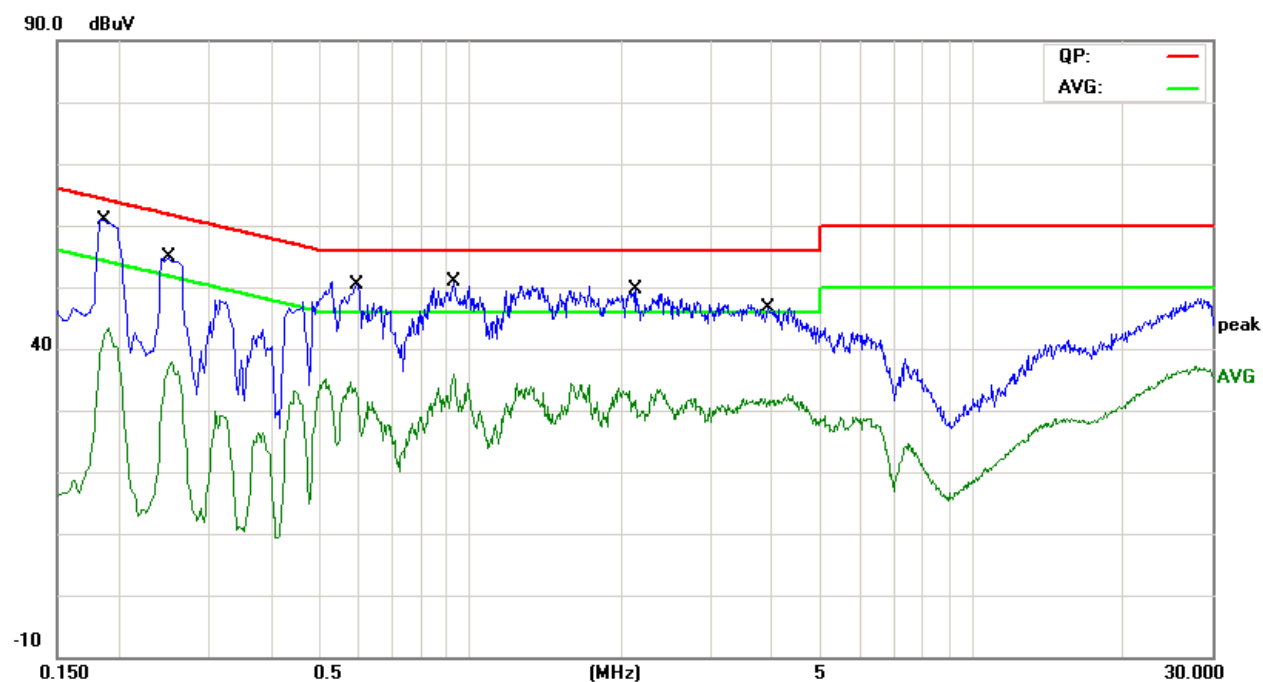
EUT: Digital Audio Player
M/N: PAW5000
Operating Condition: Loading data
Operator: Shine
Test Specification: DC 5.0V Via PC
Comment: Line



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1	*	0.1860	47.35	9.99	57.34	64.21	-6.87	QP	
2		0.1860	30.33	9.99	40.32	54.21	-13.89	AVG	
3		0.2420	39.43	10.02	49.45	62.02	-12.57	QP	
4		0.2420	17.68	10.02	27.70	52.02	-24.32	AVG	
5		0.5940	33.18	10.07	43.25	56.00	-12.75	QP	
6		0.5940	18.30	10.07	28.37	46.00	-17.63	AVG	
7		0.9300	33.00	10.07	43.07	56.00	-12.93	QP	
8		0.9300	20.12	10.07	30.19	46.00	-15.81	AVG	
9		1.7260	31.32	10.06	41.38	56.00	-14.62	QP	
10		1.7260	18.95	10.06	29.01	46.00	-16.99	AVG	
11		3.9460	28.40	10.00	38.40	56.00	-17.60	QP	
12		3.9460	17.93	10.00	27.93	46.00	-18.07	AVG	

CONDUCTED EMISSION TEST DATA

EUT: Digital Audio Player
M/N: PAW5000
Operating Condition: Loading data
Operator: Shine
Test Specification: DC 5.0V Via PC
Comment: Neutral



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1	*	0.1860	47.69	9.99	57.68	64.21	-6.53	QP	
2		0.1860	31.01	9.99	41.00	54.21	-13.21	AVG	
3		0.2500	41.11	10.02	51.13	61.75	-10.62	QP	
4		0.2500	26.30	10.02	36.32	51.75	-15.43	AVG	
5		0.5940	36.01	10.07	46.08	56.00	-9.92	QP	
6		0.5940	21.96	10.07	32.03	46.00	-13.97	AVG	
7		0.9260	36.54	10.07	46.61	56.00	-9.39	QP	
8		0.9260	24.76	10.07	34.83	46.00	-11.17	AVG	
9		2.1340	33.37	10.06	43.43	56.00	-12.57	QP	
10		2.1340	19.54	10.06	29.60	46.00	-16.40	AVG	
11		3.9180	31.18	10.00	41.18	56.00	-14.82	QP	
12		3.9180	21.29	10.00	31.29	46.00	-14.71	AVG	