



ION AUDIO LLC

Application
For
Certification
FCC ID: Y40-ISP17

BLUETOOTH iPhone/iPad SPEAKER

Model: ISP17
Additional Model: ROOM ROCKER

Report No.: SZ12050506-2

Computer Peripheral

We hereby certify that the sample of the above item is considered to comply with the requirements of FCC Part 15, Subpart C for Intentional Radiator, mention 47 CFR [10-1-11]

Prepared and Checked by:

Approved by:

Sign on file

Chris chen
Engineer

Billy Li
Supervisor
Date: 14 August, 2012

- The test results reported in this test report shall refer only to the sample actually tested and shall not refer or be deemed to refer to bulk from which such a sample may be said to have been obtained.
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TRF No.: FCC 15C_PC_b

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MEASUREMENT / TECHNICAL REPORT

ION AUDIO LLC

Model: ISP17

Additional Model: ROOM ROCKER

FCC ID: Y4O-ISP17

14 August, 2012

This report concerns (check one:) Original Grant ☒ Class II Change ☐

Equipment Type: JBP-Class B Computing Device Peripheral

Deferred grant requested per 47 CFR 0.457(d)(1)(ii)? Yes ☐ No ☒

If yes, defer until: _____
date

Company Name agrees to notify the Commission by: _____
date

of the intended date of announcement of the product so that the grant can be issued on that date.

Transition Rules Request per 15.37? Yes ☐ No ☒

If no, assumed Part 15, Subpart C for intentional radiator – the new 47 CFR [10-01-11 Edition] provision.

Report prepared by:

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List of attached file

Exhibit Type	File Description	Filename
Test Report	Test Report	report.pdf
Test Setup Photo	Radiated photos	radiated photos.pdf
Test Setup Photo	Conducted photos	conducted photos.pdf
External Photo	External Photos	external photos.pdf
Internal Photo	Internal Photos	internal photos.pdf
Block Diagram	Block Diagram	block.pdf
ID Label / Location	Label Artwork and Location	label.pdf
User Manual	User Manual	manual.pdf
Cover Letter	Letter of Agency	agency.pdf

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EXHIBIT 1

GENERAL DESCRIPTION

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1.0 **General Description**

1.1 Product Description

The equipment under test (EUT) is a speaker for iPod, iPad, iPhone through Apple Dock Base playing. The EUT was powered by an AC/DC adapter(Model: YJS05-1803000D, Input: AC 100-240V, 47-63Hz, 1.5A, Output: DC 18V, 3000mA).

1.2 Related Submittal(s) Grants

This is an application for certification of a computer peripheral.

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1.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.4 (2009). Radiated emission measurement was performed in Semi-anechoic chamber and conducted emission measurement was performed in shield room. For radiated emission measurement, preliminary scans were performed in the semi-anechoic chamber only to determine the worst case modes. All radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the "**Justification Section**" of this Application.

1.4 Test Facility

The Semi-Anechoic chamber and shield room used to collect the radiated data and conducted data are **Shenzhen EMTEK Co., Ltd.** And Bldg.69, Majialong Industry Zone, Nanshan District, Shenzhen, Guangdong, 518052 China. This test facility and site measurement data have been fully placed on file with the FCC (Registration Number: 709623).

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EXHIBIT 2

SYSTEM TEST CONFIGURATION

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2.0 **System Test Configuration**

2.1 Justification

The system was configured for testing in a typical fashion (as a customer would normally use it), and in the confines as outlined in ANSI C63.4 (2009).

The EUT was powered by an adapter with AC 120V, 60Hz.

For maximizing emissions, the EUT was rotated through 360°, the antenna height was varied from 1 meter to 4 meters above the ground plane, and the antenna polarization was changed. The step by step procedure for maximizing emissions led to the data reported in Exhibit 3.0.

The rear of unit shall be flushed with the rear of the table.

The equipment under test (EUT) was configured for testing in a typical fashion (as a customer would normally use it). The EUT was placed on turntable, which enabled the engineer to maximize emissions through its placement in the three orthogonal axes.

The frequency range from 30MHz to 1GHz was searched for spurious emissions from the device. Only those emissions reported were detected. All other emissions were at least 20 dB below the applicable limits.

2.2 EUT Exercising Software

N/A

2.3 Special Accessories

No Special Accessory attached.

2.4 Equipment Modification

Any modifications installed previous to testing by ION AUDIO LLC will be incorporated in each production model sold / leased in the United States.

No modifications were installed by Intertek Testing Services Shenzhen Ltd. Kejiyuan Branch.

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2.5 Measurement Uncertainty

When determining the test conclusion, the Measurement Uncertainty of test has been considered.

2.6 Support Equipment List and Description

This product was tested in the following configuration:

Refer List:

Description	Manufacturer	Model No.
iPad	Apple	A2053
iPod	Apple	A1667
Audio IN Line	ION	Unshielded, Length 150cm

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EXHIBIT 3

EMISSION RESULTS

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3.0 **Emission Results**

Data is included worst case configuration (the configuration which resulted in the highest emission levels). A sample calculation, configuration photographs and data tables of the emissions are included.

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3.1 Field Strength Calculation

The field strength is calculated by adding the reading on the Spectrum Analyzer to the factors associated with preamplifiers (if any), antennas, cables, pulse desensitization and average factors (when specified limit is in average and measurements are made with peak detectors). A sample calculation is included below.

$$FS = RA + AF + CF - AG + PD + AV$$

where FS = Field Strength in dB μ V/m

RA = Receiver Amplitude (including preamplifier) in dB μ V

CF = Cable Attenuation Factor in dB

AF = Antenna Factor in dB

AG = Amplifier Gain in dB

PD = Pulse Desensitization in dB

AV = Average Factor in -dB

In the radiated emission table which follows, the reading shown on the data table may reflect the preamplifier gain. An example of the calculations, where the reading does not reflect the preamplifier gain, follows:

$$FS = RA + AF + CF - AG + PD + AV$$

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3.1 Field Strength Calculation (cont'd)

Example

Assume a receiver reading of 62.0dB μ V is obtained. The antenna factor of 7.4dB and cable factor of 1.6dB is added. The amplifier gain of 29dB is subtracted. The pulse desensitization factor of the spectrum analyzer was 0dB, and the resultant average factor was -10dB. The net field strength for comparison to the appropriate emission limit is 32dB μ V/m. This value in dB μ V/m was converted to its corresponding level in μ V/m.

$$RA = 62.0\text{dB}\mu\text{V}$$

$$AF = 7.4\text{dB}$$

$$CF = 1.6\text{dB}$$

$$AG = 29.0\text{dB}$$

$$PD = 0\text{dB}$$

$$AV = -10\text{dB}$$

$$FS = 62 + 7.4 + 1.6 - 29 + 0 + (-10) = 32\text{dB}\mu\text{V/m}$$

$$\text{Level in } \mu\text{V/m} = \text{Common Antilogarithm } [(32\text{dB}\mu\text{V/m})/20] = 39.8\mu\text{V/m}$$

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3.2 Radiated Emission Configuration Photograph

Worst Case Radiated Emission
At
126.378MHz (Data Transfer Mode)

For electronic filing, the worst case radiated emission configuration photograph is saved with filename: radiated photos.pdf.

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3.3 Radiated Emission Data

The data on the following page lists the significant emission frequencies, the limit and the margin of compliance. Numbers with a minus sign are below the limit.

Judgement: Passed by 3.4dB margin (Data Transfer Mode)

TEST PERSONNEL:

Sign on file

Chris Chen, Engineer
Typed/Printed Name

14 August, 2012
Date

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Company: ION AUDIO LLC
Date of Test: 14 August, 2012
Model: ISP17
Operating Mode: Data Transfer

Table 1

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	126.378	55.7	26.0	10.4	40.1	43.5	-3.4
Horizontal	258.509	53.0	26.0	14.0	41.0	46.0	-5.0
Horizontal	294.262	54.6	26.0	13.9	42.5	46.0	-3.5
Vertical	53.317	49.0	26.0	13.5	36.5	40.0	-3.5
Vertical	73.526	52.6	26.0	9.2	35.8	40.0	-4.2
Vertical	293.526	53.6	26.0	13.8	41.4	46.0	-4.6

NOTES:

1. Quasi-Peak detector is used for frequency up to 1GHz.
2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3 meter distances were measured at 0.3- meter and an inverse proportional extrapolation was performed to compare the signal level to the 3 meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.
3. Negative value in the margin column shows emission below limit.
4. All emissions up to 1GHz are below the QP limit.

Test Engineer: Chris chen

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3.4 Conducted Emission Configuration Photograph

Worst Case Live-Conducted Configuration
at
0.470000 MHz (Data Transfer Mode)

For electronic filing, the worst case conducted emission configuration photograph is saved with filename: conducted photos.pdf.

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3.5 Conducted Emission Data

Judgement: Passed by 11.50 dB margin (Data Transfer Mode)

TEST PERSONNEL:

Sign on file

Chris chen, Engineer
Typed/Printed Name

14 August, 2012
Date

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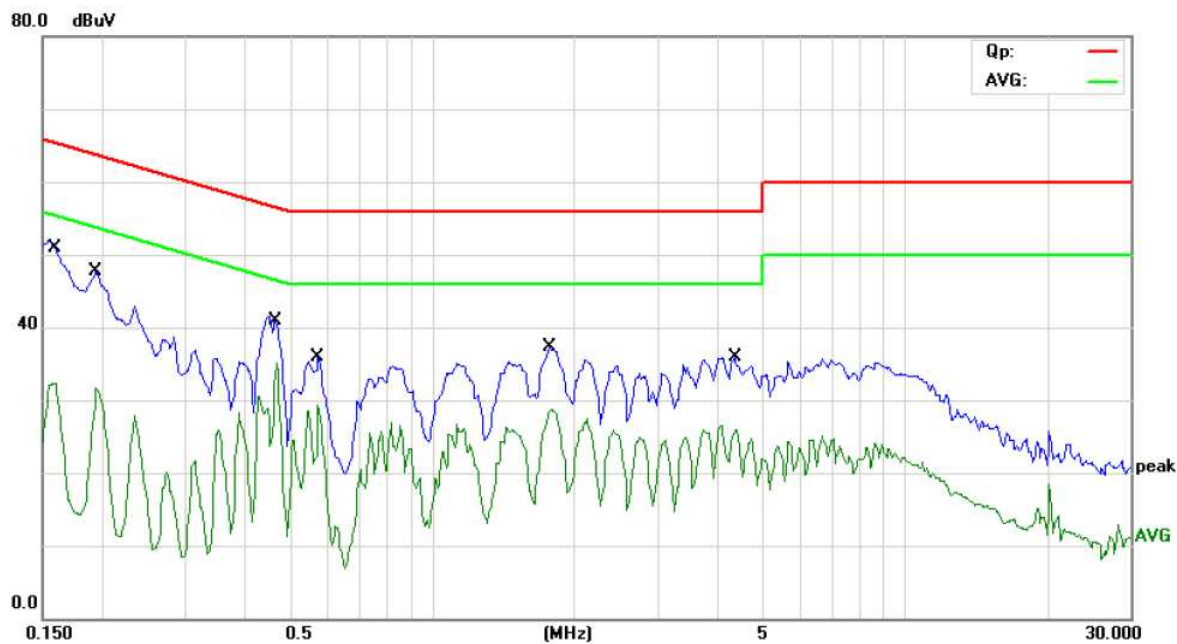
Company: ION AUDIO LLC

Date of Test: 14 August, 2012

Model: ISP17

Operating Mode: Data Transfer

Conducted Emission Test - FCC



Result Table QP

Frequency (MHz)	QuasiPeak (dB μ V)	Line	Margin (dB)	Limit (dB μ V)
0.160000	51.97	L1	13.49	65.46
0.195000	47.69	L1	16.13	63.82
0.470000	41.58	L1	14.93	56.51
0.575000	35.88	L1	20.12	56.00
1.790000	37.24	L1	18.76	56.00
4.370000	35.94	L1	20.06	56.00

Result Table AV

Frequency (MHz)	Average (dB μ V)	Line	Margin (dB)	Limit (dB μ V)
0.160000	32.34	L1	23.12	55.46
0.195000	31.72	L1	22.10	53.82
0.470000	35.01	L1	11.50	46.51
0.575000	29.38	L1	16.62	46.00
1.790000	28.66	L1	17.34	46.00
4.370000	25.98	L1	20.02	46.00

Test Engineer: Chris chen

TRF No.: FCC 15C_PC_b

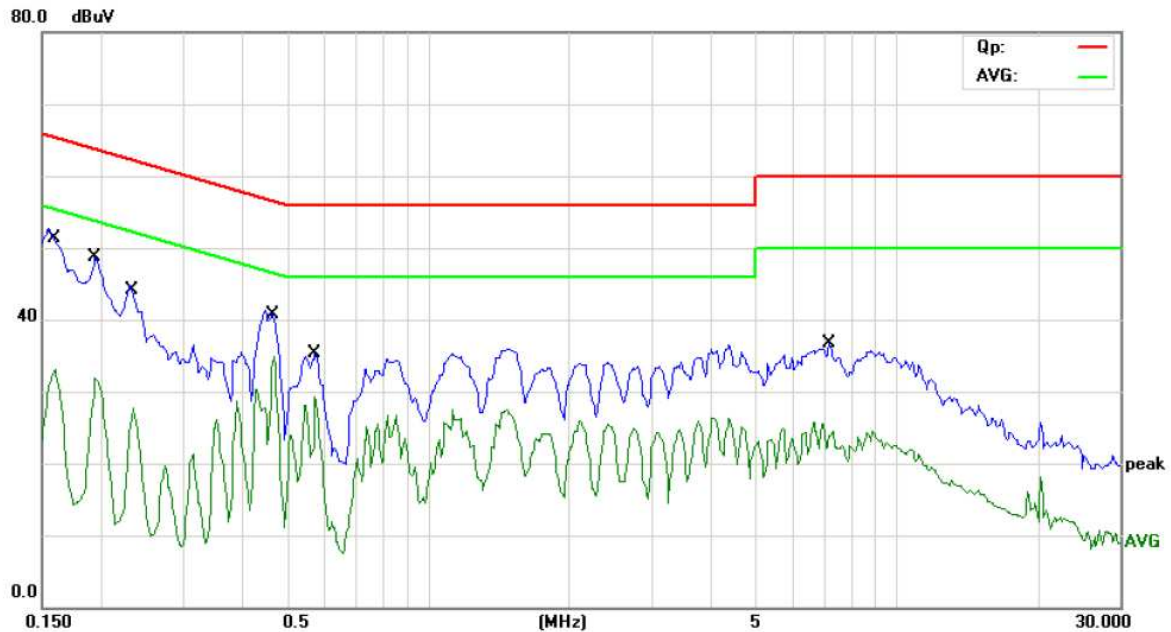
FCC ID: Y4O-ISP17

Report No.: SZ12050506-2

INTERTEK TESTING SERVICES

Company: ION AUDIO LLC
Date of Test: 14 August, 2012
Model: ISP17
Operating Mode: Data Transfer

Conducted Emission Test - FCC



Result Table QP

Frequency (MHz)	QuasiPeak (dB μ V)	Line	Margin (dB)	Limit (dB μ V)
0.160000	52.65	N	12.81	65.46
0.195000	48.65	N	15.17	63.82
0.235000	44.90	N	17.37	62.27
0.470000	41.26	N	15.25	56.51
0.575000	35.25	N	20.75	56.00
7.190000	36.63	N	23.37	60.00

Result Table AV

Frequency (MHz)	Average (dB μ V)	Line	Margin (dB)	Limit (dB μ V)
0.160000	33.14	N	22.32	55.46
0.195000	31.88	N	21.94	53.82
0.235000	27.78	N	24.49	52.27
0.470000	34.92	N	11.59	46.51
0.575000	29.33	N	16.67	46.00
7.190000	25.75	N	24.25	50.00

Test Engineer: Chris chen

TRF No.: FCC 15C_PC_b
FCC ID: Y4O-ISP17
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EXHIBIT 4

EQUIPMENT PHOTOGRAPHS

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4.0 **Equipment Photographs**

For electronic filing, photographs of the tested EUT are saved with filename: external photos.pdf and internal photos.pdf.

EXHIBIT 5
PRODUCT LABELLING

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5.0 **Product Labelling**

For electronics filing, the FCC ID label artwork and the label location are saved with filename: label.pdf.

EXHIBIT 6
TECHNICAL SPECIFICATIONS

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6.0 **Technical Specifications**

For electronic filing, the block diagram of the tested EUT is saved with filename: block.pdf.

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EXHIBIT 7

INSTRUCTION MANUAL

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7.0 **Instruction Manual**

For electronic filing, a preliminary copy of the Instruction Manual is saved with filename: manual.pdf.

This manual will be provided to the end-user with each unit sold / leased in the United States.

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EXHIBIT 8

MISCELLANEOUS INFORMATION

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8.0 **Miscellaneous Information**

This miscellaneous information includes emission measuring procedure.

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8.1 Emissions Test Procedures

The following is a description of the test procedure used by Intertek Testing Services in the measurements of computer peripheral operating under Part 15, Subpart B rules.

The test set-up and procedures described below are designed to meet the requirements of ANSI C63.4 – 2009.

The computer peripheral equipment under test (EUT) is placed on a wooden turntable which is four feet in diameter and approximately one meter in height above the ground plane. During the radiated emissions test, the turntable is rotated and any cables leaving the EUT are manipulated to find the configuration resulting in maximum emissions. The antenna height and polarization are varied during the testing to search for maximum signal levels. The height of the antenna is varied from one to four meters.

Detector function for radiated emissions are in QP mode from the frequency band 30MHz to 1GHz with RBW setting 120kHz. Detector function for conducted emissions are in QP & AV mode and IFBW setting is 9kHz from the frequency band 150kHz to 30MHz.

For radiated emission, the frequency range scanned is 30MHz to 1GHz. For line-conducted emissions, the range scanned is 150kHz to 30MHz.

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8.1 Emissions Test Procedures (cont'd)

The EUT is warmed up for 15 minutes prior to the test.

Conducted measurements are made as described in ANSI C63.4 – 2009.

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EXHIBIT 9

TEST EQUIPMENT LIST

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9.0 Test Equipment List

Equipment	Manufacturer	Model No.	Last Cal.	Due.Date
EMI Test Receiver	Rohde & Schwarz	ESU	May 29, 2012	May 29, 2013
Pre-Amplifier	HP	8447D	May 29, 2012	May 29, 2013
Bilog Antenna	Schwarzbeck	VULB9163	May 29, 2012	May 29, 2013
Active Loop Antenna	Schwarzbeck	FMZB 1519	May 29, 2012	May 29, 2013
Anechoic Chamber	ETS	RFD-F/A-102	May 13, 2012	May 13, 2013
Test Receiver	Rohde & Schwarz	ESCS30	May 29, 2012	May 29, 2013
L.I.S.N.	Rohde & Schwarz	ENV216	May 29, 2012	May 29, 2013
Shielding room	ETS	RFD-102	May 29, 2012	May 29, 2013