

Advanced
Compliance Lab

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ELECTROMAGNETIC EMISSION COMPLIANCE REPORT

of

AIRPLAY FOR IPOD SHUFFLE

MODEL: IPS-APL-00

FCC ID: STQAPL00

April 21, 2005

This report concerns (check one): Original grant ☒ Class II change ☐
Equipment type: Low Power Intentional Radiator

Deferred grant requested per 47 CF 0.457(d)(1)(ii)? yes ☐ no ☒
If yes, defer until: _____ (date)
Company 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 B for unintentional radiators - the new 47 CFR
[10-1-90 Edition] provision.

Report prepared for: Xtreme Accessories LLC.
Report prepared by: Advanced Compliance Lab
Report number: 0048-050418-01



The test result in this report IS supported and covered by the NVLAP accreditation

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1. GENERAL INFORMATION

1.1 Verification of Compliance

EUT: AIRPLAY FOR IPOD SHUFFLE

Model: IPS-APL-00

Applicant: Xtreme Accessories LLC.
15751 SW 41 Street, #100 Fort Lauderdale
FL 33331

Test Type: FCC Part 15C CERTIFICATION

Result: PASS

Tested by: ADVANCED COMPLIANCE LABORATORY

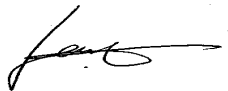
Test Date: April 21, 2005

Report Number: 0048-050418-01

The above equipment was tested by Compliance Laboratory, Advanced Technologies, Inc. for compliance with the requirement set forth in the FCC rules and regulations Part 15 subpart C. This said equipment in the configuration described in the report, shows the maximum emission levels emanating from equipment are within the compliance requirements.

The estimated uncertainty of the test result is given as following. The method of uncertainty calculation is provided in Advanced Compliance Lab. Doc. No. 0048-01-01.

| | Prob. Dist. | Uncertainty(dB) | Uncertainty(dB) | Uncertainty(dB) |
|---------------------------------|-------------|-----------------|-----------------|-----------------|
| | | 30-1000MHz | 1-6.5GHz | Conducted |
| Combined Std. Uncertainty u_c | norm. | ± 2.36 | ± 2.99 | ± 1.83 |



Wei Li
Lab Manager
Advanced Compliance Lab

Date: April 21, 2005

1.2 Equipment Modifications

N/A

1.3 Product Information

System Configuration

| ITEM | DESCRIPTION | FCC ID | CABLE |
|-----------------|--|----------|-------|
| Product | AIRPLAY FOR IPOD SHUFFLE IPS-APL-00 | STQAPL00 | |
| Housing | PLASTICS | | |
| Power Supply | 12V DC (Car Lighter) | | |
| Operation Freq. | 88.1~107.9 MHz(200kHz step) | | |
| Device Type | Low Power Intentional Radiator | | |

(1) EUT submitted for grant.

1.4 Test Methodology

Radiated tests were performed according to the procedures in ANSI C63.4-2001 at an antenna to EUT distance of 3 meters.

1.5 Test Facility

The open area test site and conducted measurement facility used to collect the radiated and conducted data are located at Hillsborough, New Jersey. This site has been accepted by FCC to perform measurements under Part 15 or 18 in a letter dated May 19, 1997 (Refer to: 31040/PRV 1300F2). The NVLAP Lab code for accreditation of FCC EMC Test Method is: 200101-0.

1.6 Test Equipment

| Manufacture | Model | Serial No. | Description | Last Cal dd/mm/y y | Cal Due dd/mm/y y |
|-----------------|---------|------------|---------------------------------------|--------------------------|-------------------------|
| Hewlett-Packard | HP8546A | 3448A00290 | EMI Receiver | 12/01/05 | 12/01/06 |
| EMCO | 3104C | 9307-4396 | 20-300MHz Biconical Antenna | 12/02/05 | 12/02/06 |
| EMCO | 3146 | 9008-2860 | 200-1000MHz Log-Periodic Antenna | 09/02/05 | 09/02/06 |
| Fischer Custom | LISN-2 | 900-4-0008 | Line Impedance Stabilization Networks | 23/08/04 | 23/08/05 |
| Fischer Custom | LISN-2 | 900-4-0009 | Line Impedance Stabilization Networks | 23/08/04 | 23/08/05 |
| EMCO | 6502 | 2665 | 10KHz-30MHz Active Loop Antenna | 27/02/05 | 27/02/06 |
| EMCO | 3115 | 4945 | Double Ridge Guide Horn Antenna | 11/08/04 | 11/08/05 |

All Test Equipment Used are Calibrated Traceable to NIST Standards.

1.7 Statement for the Document Use

This report shall not be reproduced except in full, without the written approval of the laboratory. And this report must not be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government.

2. PRODUCT LABELING

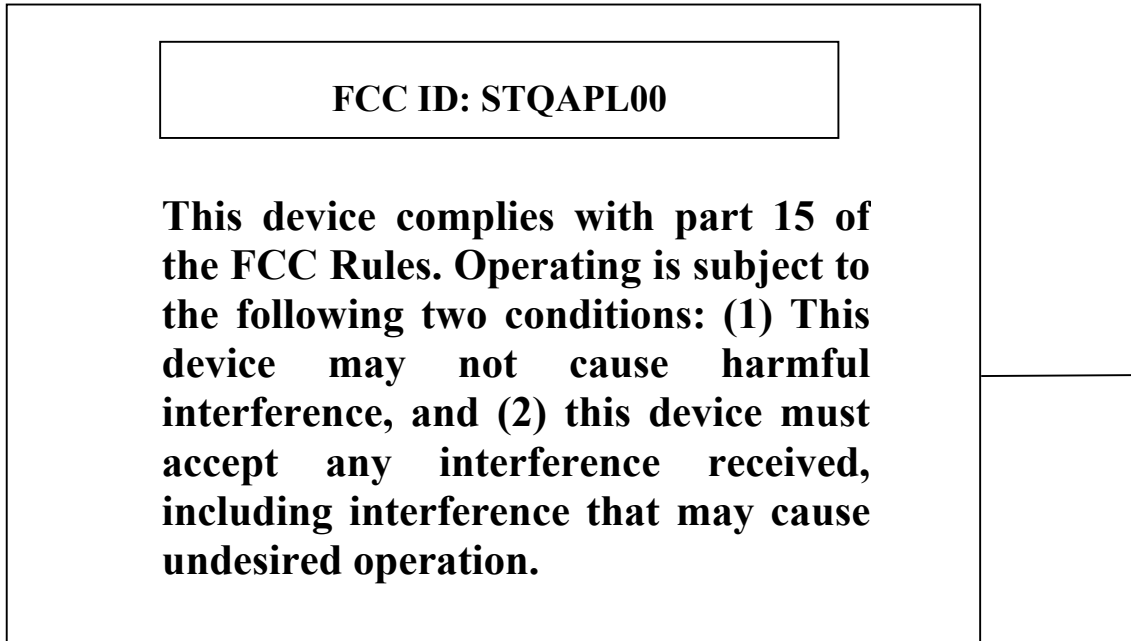


Figure 2.1 FCC ID Label



Figure 2.2 FCC ID Label Location

3. SYSTEM TEST CONFIGURATION

3.1 Justification

The system was configured for testing in a typical fashion (as a customer would normally use it). And its antenna was permanently attached to the EUT. Emissions at the lowest operation frequency (88.1MHz), middle frequency (98.1MHz) and highest frequency (107.9MHz) were investigated. The worst case at 107.9MHz operation was recorded for final data. The audio input was set to max. level during the test by adjusting the iPod shuffle's volume to its max. output level (pressing Vol. Control button "+" all the way).

3.2 Special Accessories

N/A

3.3 Configuration of Tested System

Figure 3.1 to Figure 3.3 illustrate this system, which was tested standing along.



Figure 3.1 Radiated Test Setup-Position X



Figure 3.2 Radiated Test Setup-Position Y



Figure 3.3 Radiated Test Setup-Position Z

4. SYSTEM SCHEMATICS

See attachment

Figure 4.1 System Schematics

5. RADIATED EMISSION DATA

5.1 Field Strength Calculation

The corrected field strength is automatically calculated by EMI Receiver using following:

$$FS = RA + AF + CF + AG$$

where FS: Corrected Field Strength in dB μ V/m

RA: Amplitude of EMI Receiver before correction in dB μ V

AF: Antenna Factor in dB/m

CF: Cable Attenuation Factor in dB

AG: Built-in Preamplifier Gain in dB (Stored in receiver as part of the calibration data)


5.2 Test Methods and Conditions

The initial step in collecting radiated data is a EMI Receiver scan of the measurement range below 30MHz using peak detector and 9KHz IF bandwidth / 30KHz video bandwidth. For the range 30MHz - 1GHz, 120KHz IF bandwidth / 120KHz video bandwidth are used. Both bandwidths are 1MHz for above 1GHz measurement. Up to 10th harmonics were investigated.

5.3 Test Data

The following data lists the significant emission frequencies, polarity and position, peak reading of the EMI Receiver, the FCC limit, and the difference between the peak reading and the limit. Explanation of the correction and calculation are given in section 5.1.

Emissions at the lowest operation frequency (88.1MHz), middle frequency (98.1MHz) and highest frequency (107.9MHz) were investigated. The worst case at 107.9MHz operation was recorded for final data.

Test Personnel: 

Typed/Printed Name: Edward Lee

Date: April 21, 2005

Radiated Test Data @107.9MHz Operation (High Channel)

| Frequency (MHz) | Polarity [H or V], Position [X,Y,Z] | Height (m) | Azimuth (Degree) | Peak Reading (dB μ V/m) | FCC 3m Limit ⁽¹⁾ (dB μ V/m) | Difference from limit (dB) |
|--------------------|--|---------------|---------------------|-----------------------------------|---|----------------------------------|
| 107.9 | H-X ⁽²⁾ | 1.4 | 200 | 45.8 | 48.0 | -2.2 |
| 215.8 | H-X | 1.3 | 220 | 40.6 | 43.5 | -2.9 |
| 323.7 | H-X | 1.3 | 220 | 40.0 | 46.0 | -6 |
| 431.6 | H-X | 1.3 | 220 | 41.7 | 46.0 | -4.3 |
| 107.9 | H-Y | 1.4 | 170 | 45.0 | 48.0 | -3 |
| 215.8 | H-Y | 1.3 | 170 | 41.2 | 43.5 | -2.3 |
| 323.7 | H-Y | 1.2 | 170 | 39.8 | 46.0 | -6.2 |
| 431.6 | H-Y | 1.2 | 170 | 41.3 | 46.0 | -4.7 |
| 107.9 | H-Z | 1.3 | 180 | 45.3 | 48.0 | -2.7 |
| 215.8 | H-Z | 1.2 | 180 | 41.8 | 43.5 | -1.7 |
| 323.7 | H-Z | 1.2 | 180 | 39.7 | 46.0 | -6.3 |
| 431.6 | H-Z | 1.2 | 180 | 40.4 | 46.0 | -5.6 |
| 107.9 | V-X | 1.2 | 230 | 46.5 | 48.0 | -1.5 |
| 215.8 | V-X | 1.2 | 230 | 41.3 | 43.5 | -2.2 |
| 323.7 | V-X | 1.1 | 230 | 39.7 | 46.0 | -6.3 |
| 431.6 | V-X | 1.1 | 230 | 41.0 | 46.0 | -5 |
| 107.9 | V-Y | 1.2 | 180 | 44.3 | 48.0 | -3.7 |
| 215.8 | V-Y | 1.2 | 180 | 40.2 | 43.5 | -3.3 |
| 323.7 | V-Y | 1.2 | 180 | 39.0 | 46.0 | -7 |
| 431.6 | V-Y | 1.1 | 180 | 39.4 | 46.0 | -6.6 |
| 107.9 | V-Z | 1.2 | 190 | 45.8 | 48.0 | -2.2 |
| 215.8 | V-Z | 1.2 | 200 | 40.0 | 43.5 | -3.5 |
| 323.7 | V-Z | 1.2 | 200 | 38.6 | 46.0 | -7.4 |
| 431.6 | V-Z | 1.1 | 200 | 39.9 | 46.0 | -6.1 |

- (1) The average limit of emission strength within permitted 200kHz band is 250uV/m @3m (48dBuV/m) between 88-108MHz per Section 15.239 (b). In this case, maximum peak reading of the emissions is under the limit.
- (2) See Figure 3.1, 3.2 and 3.3 for definition of position X, Y, Z.

Radiated Test Data @98.1MHz Operation (Mid Channel)
(only the worst emission at each frequency is recorded)

| Frequency (MHz) | Polarity [H or V], Position [X,Y,Z] | Height (m) | Azimuth (Degree) | Peak Reading (dB μ V/m) | FCC 3m Limit ⁽¹⁾ (dB μ V/m) | Difference from limit (dB) |
|--------------------|--|---------------|---------------------|-----------------------------------|---|----------------------------------|
| 98.1 | H-X ⁽²⁾ | 1.3 | 200 | 44.7 | 48.0 | -3.3 |
| 196.2 | H-X | 1.3 | 220 | 40.0 | 43.5 | -3.5 |
| 294.3 | H-X | 1.3 | 220 | 38.6 | 46.0 | -7.4 |
| 392.4 | H-X | 1.3 | 220 | 40.3 | 46.0 | -5.7 |
| 98.1 | V-X | 1.2 | 220 | 45.3 | 48.0 | -2.7 |
| 196.2 | V-X | 1.2 | 220 | 40.1 | 43.5 | -3.4 |
| 294.3 | V-X | 1.2 | 220 | 39.0 | 46.0 | -7 |
| 392.4 | V-X | 1.1 | 230 | 40.6 | 46.0 | -5.4 |

Radiated Test Data @88.1MHz Operation (Low Channel)
(only the worst emission at each frequency is recorded)

| Frequency (MHz) | Polarity [H or V], Position [X,Y,Z] | Height (m) | Azimuth (Degree) | Peak Reading (dB μ V/m) | FCC 3m Limit ⁽¹⁾ (dB μ V/m) | Difference from limit (dB) |
|--------------------|--|---------------|---------------------|-----------------------------------|---|----------------------------------|
| 88.1 | H-Y ⁽²⁾ | 1.4 | 180 | 43.1 | 48.0 | -4.9 |
| 176.2 | H-Y | 1.3 | 180 | 40.0 | 43.5 | -3.5 |
| 264.3 | H-Y | 1.3 | 180 | 39.5 | 46.0 | -6.5 |
| 352.4 | H-Y | 1.3 | 180 | 41.1 | 46.0 | -4.9 |
| 88.1 | V-X | 1.2 | 210 | 45.9 | 48.0 | -2.1 |
| 176.2 | V-X | 1.2 | 210 | 40.4 | 43.5 | -3.1 |
| 264.3 | V-X | 1.2 | 210 | 39.9 | 46.0 | -6.1 |
| 352.4 | V-X | 1.2 | 210 | 41.0 | 46.0 | -5 |

5.4 Occupied Bandwidth

Emissions from the EUT shall be confined within a band 200 kHz wide centered on the operating frequency. The 200kHz band shall lie wholly within the frequency range of 88-108MHz.

In this case, maximum peak reading of the emissions for outside of 88-108MHz is under the limit in Section 15.209.

The limit lines in the plots are to demonstrate the compliance for frequency range outside 88-108MHz only. Within 88-108MHz, the max. marker is used for demonstrating the compliance with the limit in 15.239(b), 48dBuV/m.

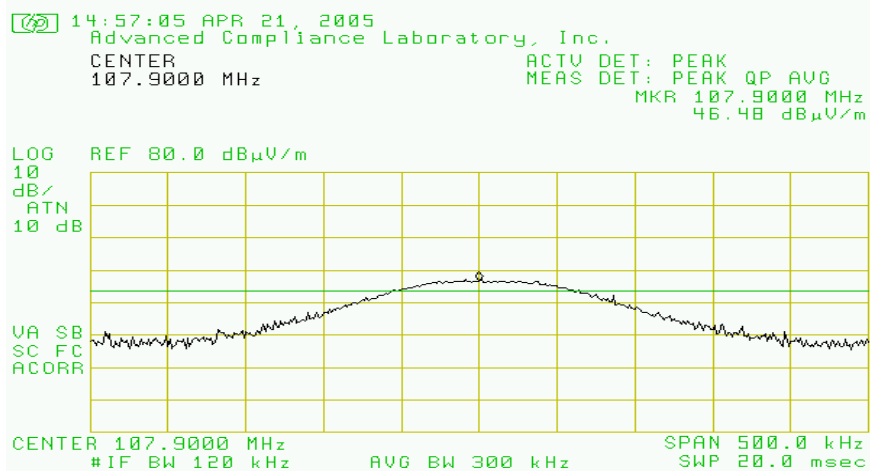
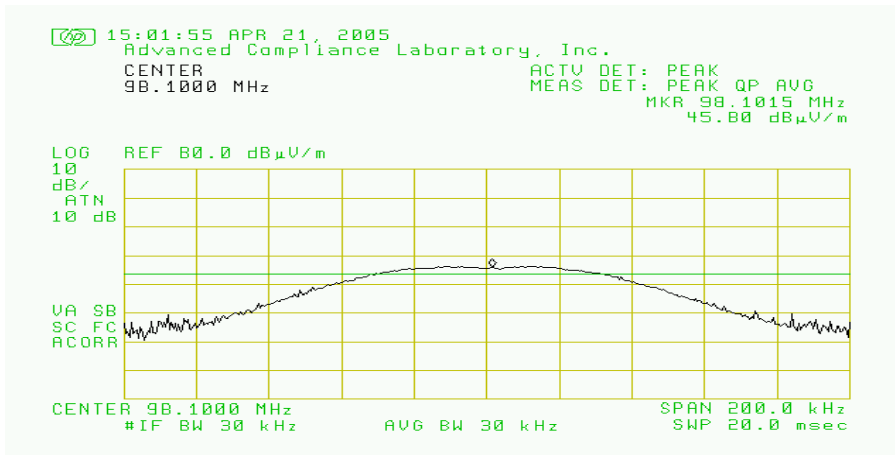
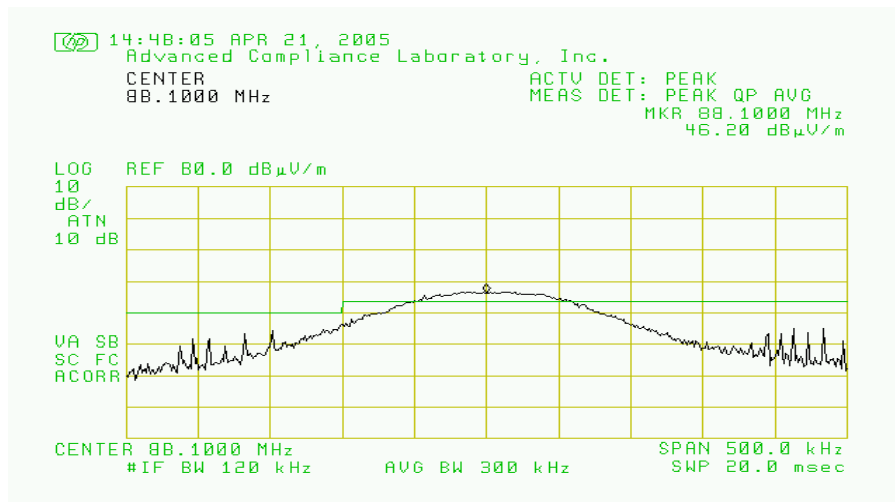


Figure 5.1 Occupied Bandwidth (Low, Mid, High channels)

6. PHOTOS OF TESTED EUT

The following photos show the inside details of the EUT.