



RADIO TEST REPORT

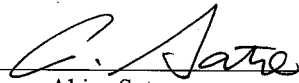
Test Report No.: 30DE0216-YK-B

Applicant : Clarion Co., Ltd.
Type of Equipment : Car audio
Model No. : PF-3302B-A
FCC ID : AX2PF3302
Test regulation : FCC Part15 Subpart C: 2010
Test result : Complied

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2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with the limits of the above regulation.
4. The test results in this test report are traceable to the national or international standards.

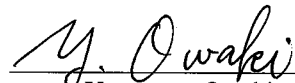
Date of test: March 4, 8 and 12, 2010

Tested by:



Akira Sato
Engineer of EMC Service

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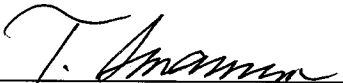


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1 Applicant information

Company Name : Clarion Co., Ltd.
Address : 7-2 Shintoshin, Chuo-ku, Saitama-shi, Saitama, 330-0081 Japan
Telephone Number : +81-48-601-4121
Facsimile Number : +81-48-601-3802
Contact Person : Masahiko Shibata

2 Equipment under test (E.U.T.)

2.1 Identification of E.U.T.

Type of Equipment : Car audio
Model No. : PF-3302B-A
Serial No. : Refer to 4.2 in this report.
Rating : DC13.2V
Country of Mass-production : China
Condition of EUT : Engineering prototype
(Not for Sale: This sample is equivalent to mass-produced items.)
Modification of EUT : No modification by the test lab.
Receipt Date of Sample : March 2, 2010

2.2 Product description

Model: PF-3302B-A (referred to as the EUT in this report) is a Car audio.

Clock frequency:

3.98MHz, 12.29MHz, 14.32MHz, 16.92MHz, 22.58MHz, 25.8048MHz, 26MHz, 41.6MHz

Equipment type : Transceiver
Frequency of operation : 2402-2480MHz
Bandwidth & channel spacing : 79MHz & 1MHz
Type of modulation : FHSS
Antenna type : Chip
Antenna gain with cable loss : +1.18dBi
Antenna connector type : None
ITU code : F1D, G1D
Operation temperature range : -20 to +60 deg.C.

FCC Part15.31 (e)

The equipment provides the Bluetooth transmitter with stable power supply (DC 1.5V and DC 3.3V), therefore, the equipment complies power supply regulation.

FCC Part15.203 Antenna requirement

The equipment and its antenna comply with this requirement since this antenna is built in the equipment and it cannot be replaced by end users.

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3 Test specification, procedures and results

3.1 Test specification

Test specification : FCC Part 15 Subpart C: 2010, final revised on January 22, 2010 and effective March 1, 2010
 Title : FCC 47CFR Part15 Radio Frequency Device Subpart C Intentional Radiators
 Section 15.207 Conducted limits
 Section 15.209 Radiated emission limits, general requirements
 Section 15.247 Operation within the bands 902-928MHz, 2400-2483.5MHz, and 5725-5850MHz

The EUT complies with FCC Part 15 Subpart B: 2010. Refer to the test report: 30DE0216-YK-A.

3.2 Procedures & Results

| Item | Test Procedure | Specification | Remarks | Deviation | Worst Margin | Results | |
|--|---|--|------------------------|------------|--------------|---|----------|
| Conducted emission | ANSI C63.4:2003 7. AC powerline conducted emission measurements | FCC Section 15.207 | - | N/A *1) | N/A | N/A | |
| Carrier frequency separation | FCC Public Notice DA 00-705 & ANSI C63.4:2003 13. Measurement of intentional radiators | FCC Section15.247 (a)(1) | Conducted | N/A | *See data. | Complied | |
| 20dB bandwidth | FCC Public Notice DA 00-705 & ANSI C63.4:2003 13. Measurement of intentional radiators | FCC Section15.247 (a)(1) | Conducted | N/A | | Complied | |
| Number of hopping frequency | FCC Public Notice DA 00-705 & ANSI C63.4:2003 13. Measurement of intentional radiators | FCC Section15.247 (a)(1)(iii) | Conducted | N/A | | Complied | |
| Dwell time | FCC Public Notice DA 00-705 & ANSI C63.4:2003 13. Measurement of intentional radiators | FCC Section15.247 (a)(1)(iii) | Conducted | N/A | | Complied | |
| Maximum peak output power | FCC Public Notice DA 00-705 & ANSI C63.4:2003 13. Measurement of intentional radiators | FCC Section15.247 (b)(1) | Conducted | N/A | | Complied | |
| Band edge compliance & Spurious emission | FCC Public Notice DA 00-705 & ANSI C63.4:2003 13. Measurement of intentional radiators | FCC Section15.247 (d) Section15.209 | Conducted/ Radiated | N/A | | 7.1dB (480.02MHz, Vertical, Tx 2480MHz, 3DH5) | Complied |

Note: UL Japan's EMI Work Procedures No.QPM05 and QPM15.

*1) The test is not applicable since the EUT has no AC mains.

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3.3 Addition to standard

| Item | Test Procedure | Specification | Remarks | Worst Margin | Results |
|--------------------------|--|---------------|-------------|--------------|----------|
| Occupied bandwidth (99%) | ANSI C63.4:2003 13. Measurement of intentional radiators RSS-Gen 4.6.1 | RSS-Gen 4.6.1 | Conducted - | | Complied |

* Other than above, no addition, exclusion nor deviation has been made from the standard.

3.4 Uncertainty

The following uncertainties have been calculated to provide a confidence level of 95% using a coverage factor k=2.

| | No.1 open site (±) | No.2 open site (±) | No.1 semi-anechoic chamber (±) |
|-------------------------------|--------------------|--------------------|--------------------------------|
| Radiated emission (3m) | | | |
| 9kHz-30MHz | 3.3 dB | 3.2 dB | 3.0 dB |
| 30-300MHz | 4.4 dB | 4.5 dB | 4.6 dB |
| 300-1000MHz | 4.6 dB | 4.7 dB | 4.7 dB |
| 1-18GHz | 3.8 dB | 4.2 dB | 4.5 dB |
| 18-26.5GHz | 4.4 dB | 4.5 dB | 4.5 dB |

The data listed in this test report has enough margin, more than site margin.

| Antenna port conducted test | (±) |
|-----------------------------|--------|
| Below 1GHz | 0.4 dB |
| 1GHz and above | 0.7 dB |

3.5 Test location

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JAB Accreditation No. : RTL02610

No. 1 test site has been fully described in a report submitted to FCC office, and accepted on July 23, 2008 (Registration No.: 95486).

IC Registration No. : 2973B-1

No. 2 test site has been fully described in a report submitted to FCC office, and accepted on February 27, 2008 (Registration No.: 466226).

IC Registration No. : 2973B-3

No. 1 anechoic chamber has been fully described in a report submitted to FCC office, and accepted on October 22, 2008 (Registration No.: 95967).

IC Registration No. : 2973B-2

| Test room | Width x Depth x Height (m) | Test room | Width x Depth x Height (m) |
|--------------------|----------------------------|-------------------------------|----------------------------|
| No.1 shielded room | 8.0 x 5.0 x 2.5 | No.1 Semi-anechoic chamber | 10.0 x 7.5 x 5.7 |
| No.2 shielded room | 5.0 x 4.0 x 2.5 | | |
| No.3 shielded room | 4.0 x 5.0 x 2.7 | | |

| Open test site | Maximum measurement distance |
|---------------------|------------------------------|
| No.1 open test site | 30m |
| No.2 open test site | 10m |

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4 System test configuration

4.1 Justification

The system was configured in typical fashion (as a customer would normally use it) for testing.

| Test item | Operating mode | Tested frequency |
|--|--|---|
| Carrier frequency separation | Transmitting Hopping ON (DH5/3DH5), Payload: PRBS9 | - |
| 20dB bandwidth | Transmitting Hopping OFF (DH5/3DH5), Payload: PRBS9 | 2402MHz, 2441MHz, 2480MHz |
| Number of hopping frequency | Transmitting Hopping ON (DH5/3DH5), Payload: PRBS9 | - |
| Dwell time | Transmitting (Hopping ON) -DH1, -DH3, -DH5 -3DH1, -3DH3, -3DH5 | - |
| Maximum peak output power | Transmitting Hopping OFF, Payload: PRBS9 -DH5, -2DH5, -3DH5 | 2402MHz, 2441MHz, 2480MHz |
| Band edge compliance & Spurious emission (Conducted) ----- (Radiated) | Transmitting (DH5/3DH5), Payload: PRBS9 -Hopping ON -Hopping OFF | Band edge compliance: 2402MHz, 2480MHz Spurious emission: |
| | Transmitting (DH5/3DH5), Payload: PRBS9 | 2402MHz, 2441MHz, 2480MHz |
| 99% occupied bandwidth | Transmitting (DH5/3DH5), Payload: PRBS9 -Hopping ON -Hopping OFF | 2402MHz, 2441MHz, 2480MHz |

*As a result of preliminary test, the formal test was performed with the above modes, which had the maximum payload (except Dwell time test)

** No function of Inquiry mode

*Remarks: Test was not performed at AFH mode, because the decrease of number of channel (min: 20ch) at AFH mode does not influence on the output power and bandwidth of the EUT.

However, the limit level 125mW of AFH mode was used for the test.

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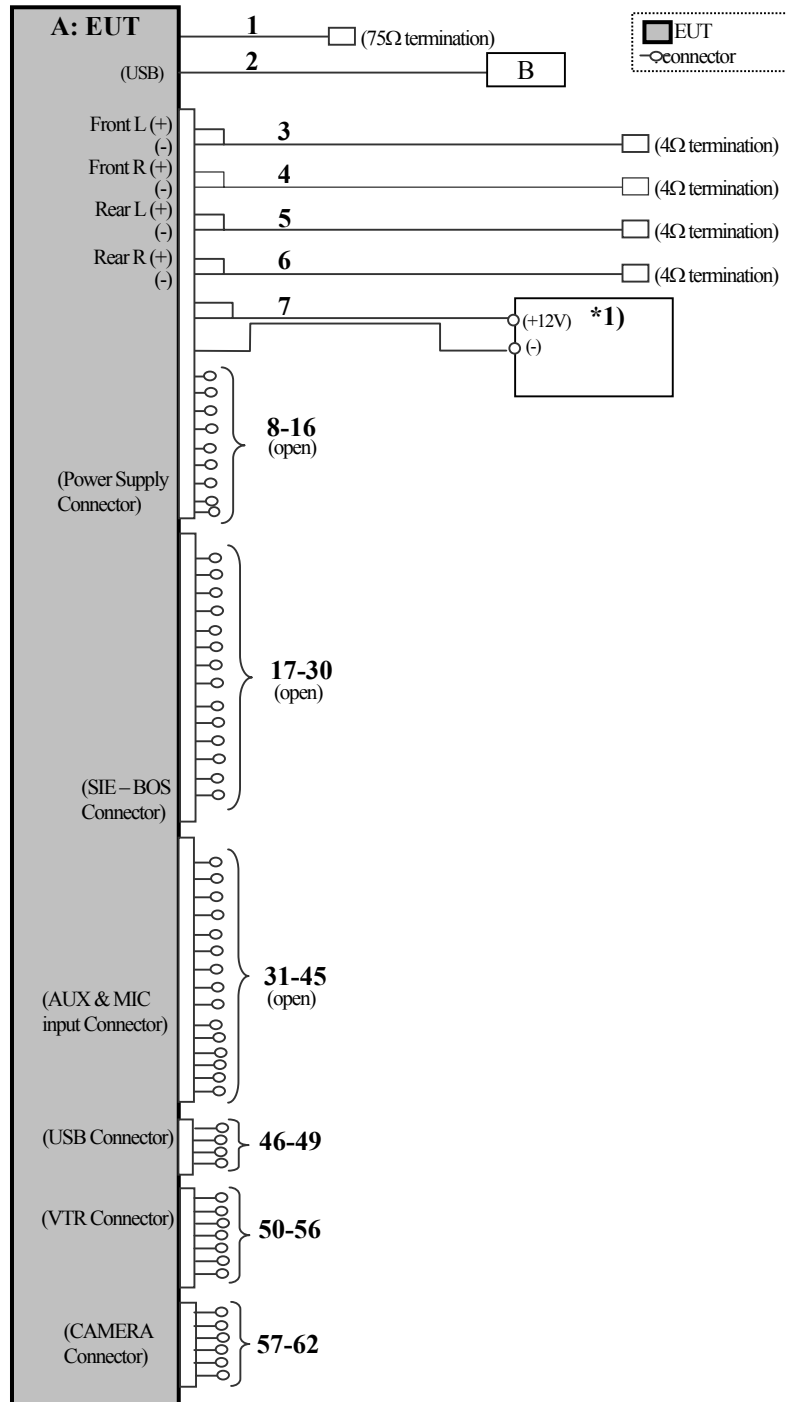
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4.2 Configuration and peripherals



* Test data was taken under worse case conditions.

Description of EUT and support equipment

| No. | Item | Model number | Serial number | Manufacturer | Remarks |
|-----|------------|--------------|---------------|-------------------|---------|
| A | Car Audio | PF-3302B-A | *2) | Clarion Co., Ltd. | EUT |
| B | USB Memory | JKN 1G | - | UD | - |

*1) DC power supply (Model No.: PAN35-10A) was used for DC 12V input.

*2) Radiated emission: PF3302BA 137, Other test: PF3302BA 136

List of cables used *3)

| No. | Cable | Length (m) | Shield-Cable | Shield-Connector | Remarks |
|-----|----------------------|------------|--------------|------------------|---------|
| 1 | FM antenna Cable | 2.0 | Shielded | Shielded | - |
| 2 | USB Cable | 2.0 | Shielded | Shielded | - |
| 3 | Front L Cable | 2.0 | Unshielded | Unshielded | - |
| 4 | Front R Cable | 2.0 | Unshielded | Unshielded | - |
| 5 | Rear L Cable | 2.0 | Unshielded | Unshielded | - |
| 6 | Rear R Cable | 2.0 | Unshielded | Unshielded | - |
| 7 | DC Power Cable | 2.2 | Unshielded | Unshielded | - |
| 8 | ILL (+) Cable | 2.0 | Unshielded | Unshielded | - |
| 9 | ILL (-) Cable | 2.0 | Unshielded | Unshielded | - |
| 10 | S.R (+1) Cable | 2.0 | Unshielded | Unshielded | - |
| 11 | ANT - ON Cable | 2.0 | Unshielded | Unshielded | - |
| 12 | CAN (-) Cable | 2.0 | Unshielded | Unshielded | - |
| 13 | CAN (+) Cable | 2.0 | Unshielded | Unshielded | - |
| 14 | S.R (+2) Cable | 2.0 | Unshielded | Unshielded | - |
| 15 | S.R (-) Cable | 2.0 | Unshielded | Unshielded | - |
| 16 | B/U Cable | 2.0 | Unshielded | Unshielded | - |
| 17 | NAVI (+) Cable | 2.0 | Unshielded | Unshielded | - |
| 18 | AUDIO - L (+) Cable | 2.0 | Unshielded | Unshielded | - |
| 19 | AUDIO - R (+) Cable | 2.0 | Unshielded | Unshielded | - |
| 20 | BUS - ON Cable | 2.0 | Unshielded | Unshielded | - |
| 21 | MUTE Cable | 2.0 | Unshielded | Unshielded | - |
| 22 | BUS (-) Cable | 2.0 | Unshielded | Unshielded | - |
| 23 | BUS (+) Cable | 2.0 | Unshielded | Unshielded | - |
| 24 | B / U Cable | 2.0 | Unshielded | Unshielded | - |
| 25 | NAVI (-) Cable | 2.0 | Unshielded | Unshielded | - |
| 26 | AUDIO - LR (-) Cable | 2.0 | Unshielded | Unshielded | - |
| 27 | RESET Cable | 2.0 | Unshielded | Unshielded | - |
| 28 | BUS - GND Cable | 2.0 | Unshielded | Unshielded | - |
| 29 | GND Cable | 2.0 | Unshielded | Unshielded | - |
| 30 | BUS - OFF Cable | 2.0 | Unshielded | Unshielded | - |
| 31 | MIC - IN Cable | 2.0 | Unshielded | Unshielded | - |
| 32 | MIC (+B) Cable | 2.0 | Unshielded | Unshielded | - |
| 33 | AUX - L (+) Cable | 2.0 | Unshielded | Unshielded | - |
| 34 | AUX - R (+) Cable | 2.0 | Unshielded | Unshielded | - |
| 35 | SUBW -CONT Cable | 2.0 | Unshielded | Unshielded | - |
| 36 | SUBW (+) Cable | 2.0 | Unshielded | Unshielded | - |
| 37 | MIC - SHIELD Cable | 2.0 | Unshielded | Unshielded | - |
| 38 | MIC - GND Cable | 2.0 | Unshielded | Unshielded | - |
| 39 | MIC - DET Cable | 2.0 | Unshielded | Unshielded | - |
| 40 | AUX- LR (-) Cable | 2.0 | Unshielded | Unshielded | - |
| 41 | AUX - ON Cable | 2.0 | Unshielded | Unshielded | - |

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| No. | Cable | Length (m) | Shield-Cable | Shield-Connector | Remarks |
|-----|-------------------|------------|--------------|------------------|---------|
| 42 | SUBW SHIELD Cable | 2.0 | Unshielded | Unshielded | - |
| 43 | SUBW (-) Cable | 2.0 | Unshielded | Unshielded | - |
| 44 | PKB Cable | 2.0 | Unshielded | Unshielded | - |
| 45 | RVS Cable | 2.0 | Unshielded | Unshielded | - |
| 46 | GND Cable | 2.0 | Unshielded | Unshielded | - |
| 47 | VBUS+5V Cable | 2.0 | Unshielded | Unshielded | - |
| 48 | DATA (+) Cable | 2.0 | Unshielded | Unshielded | - |
| 49 | DATA (-) Cable | 2.0 | Unshielded | Unshielded | - |
| 50 | VIDEO IN Cable | 2.0 | Unshielded | Unshielded | - |
| 51 | AUDIO L IN Cable | 2.0 | Unshielded | Unshielded | - |
| 52 | AUDIO R IN Cable | 2.0 | Unshielded | Unshielded | - |
| 53 | AUDIO GND R Cable | 2.0 | Unshielded | Unshielded | - |
| 54 | AUDIO GND L Cable | 2.0 | Unshielded | Unshielded | - |
| 55 | VIDEO DET Cable | 2.0 | Unshielded | Unshielded | - |
| 56 | VIDEO GND Cable | 2.0 | Unshielded | Unshielded | - |
| 57 | CV+ Cable | 2.0 | Unshielded | Unshielded | - |
| 58 | CAM SW Cable | 2.0 | Unshielded | Unshielded | - |
| 59 | CAM 6V Cable | 2.0 | Unshielded | Unshielded | - |
| 60 | CV- Cable | 2.0 | Unshielded | Unshielded | - |
| 61 | CAM DET Cable | 2.0 | Unshielded | Unshielded | - |
| 62 | GND Cable | 2.0 | Unshielded | Unshielded | - |

*3) All cables used for the measurement are exclusive use or marketed.

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5 Carrier frequency separation

Test procedure

The carrier frequency separation was measured with a spectrum analyzer connected to the antenna port.

Summary of the test results: Pass

6 20dB bandwidth & Occupied bandwidth (99%)

Test procedure

The bandwidth was measured with a spectrum analyzer connected to the antenna port.
The channel separation in Hopping mode and Inquiry mode was separated by 25kHz and 2/3 of the 20dB bandwidth.

Summary of the test results: Pass

7 Number of hopping frequency

Test procedure

The Number of Hopping Frequency was measured with a spectrum analyzer connected to the antenna port.

Summary of the test results: Pass

8 Dwell time

Test procedure

The Dwell time was measured with a spectrum analyzer connected to the antenna port.

Summary of the test results: Pass

9 Maximum peak output power

Test procedure

The Maximum Peak Output Power was measured with a power meter connected to the antenna port.

Summary of the test results: Pass

10 Out of band emissions (Antenna port conducted)

Test procedure

The Out of Band Emissions was measured with a spectrum analyzer connected to the antenna port.

In any 100kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator confirmed 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on a conducted measurement.

Summary of the test results: Pass

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11 Out of band emissions (Radiated)

11.1 Operating environment

The test was carried out in No.1 anechoic chamber.

11.2 Test configuration

EUT was placed on a urethane platform of nominal size, 0.9m by 1.8m, raised 80cm above the conducting ground plane to prevent the reflection influence. The configuration was set in accordance with ANSI C63.4: 2003. Photographs of the set up are shown in Appendix 1.

11.3 Test conditions

Frequency range : 30MHz - 26GHz
Test distance : 3m

11.4 Test procedure

The Radiated Electric Field Strength intensity has been measured with a ground plane and at a distance of 3m. The measuring antenna height was varied between 1 and 4m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity.

The measurements were performed for both vertical and horizontal antenna polarization.

Measurements were performed with QP, PK, and AV detector.

The radiated emission measurements were made with the following detector function of the test receiver.

| Frequency | Below 1GHz | Above 1GHz |
|-----------------------|--|--|
| Instrument used | Test Receiver | Spectrum Analyzer |
| Detector IF Bandwidth | QP: BW 120kHz | PK: RBW: 1MHz/VBW: 1MHz, AV*1): RBW: 1MHz/VBW: See data |
| Measuring antenna | Biconical (30-300MHz) Logperiodic (300MHz-1GHz) | Horn |

*1) When using Spectrum analyzer, the test was made with adjusting span to zero by using peak hold.

The EUT was tested in the direction normally used.

11.5 Band edge

Band edge level at 2390MHz and 2483.5MHz is below the limits of FCC 15.209 and band edge level at 2400MHz is below the 20dBc. Refer to the data.

11.6 Results

Summary of the test results : Pass *No noise was detected above the 5th order harmonics.

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APPENDIX 1: Photographs of test setup

Page 13 : Radiated emission

APPENDIX 2: Test data

Page 14 : Carrier frequency separation
Page 15 - 16 : 20dB bandwidth
Page 17 - 20 : Number of hopping frequency
Page 21 - 32 : Dwell time
Page 33 : Maximum peak output power
Page 34 - 49 : Out of band emissions (Antenna Port Conducted)
Page 50 - 67 : Out of band emissions (Radiated)
Page 68 : Duty cycle
Page 69 - 71 : Occupied bandwidth

APPENDIX 3: Test instruments

Page 72 : Test instruments

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