



# EMI TEST REPORT

Test Report No.: 14303848S-G-R1

|                     |                                |
|---------------------|--------------------------------|
| Customer            | DENSO TEN Limited              |
| Description of EUT  | Car Audio                      |
| Model Number of EUT | TN0023A                        |
| FCC ID              | BABTN0023A                     |
| Test Regulation     | FCC Part 15 Subpart B, Class B |
| Test Result         | Complied (Refer to SECTION 3)  |
| Issue Date          | July 27, 2022                  |
| Remarks             | -                              |

Representative test engineer

Akihiro Oda  
Engineer

Approved by

Kazutaka Takeyama  
Leader



CERTIFICATE 1266.03

- ☐ The testing in which "Non-accreditation" is displayed is outside the accreditation scopes in UL Japan, Inc.  
☒ There is no testing item of "Non-accreditation".

Report Cover Page - Form-ULID-003532 (DCS:13-EM-F0429) Issue# 20.0

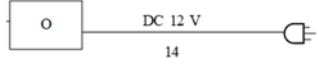
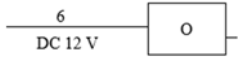
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## **REVISION HISTORY**

### **Original Test Report No.: 14303848S-G**

This report is a revised version of 14303848S-G. 14303848S-G is replaced with this report.

| Revision     | Test report No. | Date          | Revised Contents                                                                                                                                                                                                                                     |
|--------------|-----------------|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| - (Original) | 14303848S-G     | June 24, 2022 | -                                                                                                                                                                                                                                                    |
| 1            | 14303848S-G-R1  | July 27, 2022 | <p>P.10 Section 4.2 Configuration and peripherals<br/>From:</p>  <p>To:</p>  |

## Reference: Abbreviations (Including words undescribed in this report)

|                |                                                                 |                 |                                                                             |
|----------------|-----------------------------------------------------------------|-----------------|-----------------------------------------------------------------------------|
| A2LA           | The American Association for Laboratory Accreditation           | IEEE            | Institute of Electrical and Electronics Engineers                           |
| AAN            | Asymmetric Artificial Network                                   | IF              | Intermediate Frequency                                                      |
| AC             | Alternating Current                                             | ILAC            | International Laboratory Accreditation Conference                           |
| AM             | Amplitude Modulation                                            | ISED            | Innovation, Science and Economic Development Canada                         |
| AMN            | Artificial Mains Network                                        | ISN             | Impedance Stabilization Network                                             |
| Amp, AMP       | Amplifier                                                       | ISO             | International Organization for Standardization                              |
| ANSI           | American National Standards Institute                           | JAB             | Japan Accreditation Board                                                   |
| Ant, ANT       | Antenna                                                         | LAN             | Local Area Network                                                          |
| AP             | Access Point                                                    | LCL             | Longitudinal Conversion Loss                                                |
| ASK            | Amplitude Shift Keying                                          | LIMS            | Laboratory Information Management System                                    |
| Atten., ATT    | Attenuator                                                      | LISN            | Line Impedance Stabilization Network                                        |
| AV             | Average                                                         | MRA             | Mutual Recognition Arrangement                                              |
| BPSK           | Binary Phase-Shift Keying                                       | N/A             | Not Applicable                                                              |
| BR             | Bluetooth Basic Rate                                            | NIST            | National Institute of Standards and Technology                              |
| BT             | Bluetooth                                                       | NS              | No signal detect.                                                           |
| BT LE          | Bluetooth Low Energy                                            | NSA             | Normalized Site Attenuation                                                 |
| BW             | BandWidth                                                       | OBW             | Occupied BandWidth                                                          |
| C.F            | Correction Factor                                               | OFDM            | Orthogonal Frequency Division Multiplexing                                  |
| Cal Int        | Calibration Interval                                            | PER             | Packet Error Rate                                                           |
| CAV            | CISPR AV                                                        | PK              | Peak                                                                        |
| CCK            | Complementary Code Keying                                       | P <sub>LT</sub> | long-term flicker severity                                                  |
| CDN            | Coupling Decoupling Network                                     | POHC(A)         | Partial Odd Harmonic Current                                                |
| Ch., CH        | Channel                                                         | Pol., Pola.     | Polarization                                                                |
| CISPR          | Comite International Special des Perturbations Radioelectriques | PR-ASK          | Phase Reversal ASK                                                          |
| Corr.          | Correction                                                      | P <sub>ST</sub> | short-term flicker severity                                                 |
| CPE            | Customer premise equipment                                      | QAM             | Quadrature Amplitude Modulation                                             |
| CW             | Continuous Wave                                                 | QP              | Quasi-Peak                                                                  |
| DBPSK          | Differential BPSK                                               | QPSK            | Quadrature Phase Shift Keying                                               |
| DC             | Direct Current                                                  | r.m.s., RMS     | Root Mean Square                                                            |
| DET            | Detector                                                        | RBW             | Resolution BandWidth                                                        |
| D-factor       | Distance factor                                                 | RE              | Radio Equipment                                                             |
| Dmax           | maximum absolute voltage change during an observation period    | REV             | Reverse                                                                     |
| DQPSK          | Differential QPSK                                               | RF              | Radio Frequency                                                             |
| DSSS           | Direct Sequence Spread Spectrum                                 | RFID            | Radio Frequency Identifier                                                  |
| DUT            | Device Under Test                                               | RNSS            | Radio Navigation Satellite Service                                          |
| EDR            | Enhanced Data Rate                                              | RSS             | Radio Standards Specifications                                              |
| e.i.r.p., EIRP | Equivalent Isotropically Radiated Power                         | Rx              | Receiving                                                                   |
| EM clamp       | Electromagnetic clamp                                           | SINAD           | Ratio of (Signal + Noise + Distortion) to (Noise + Distortion)              |
| EMC            | ElectroMagnetic Compatibility                                   | S/N             | Signal to Noise ratio                                                       |
| EMI            | ElectroMagnetic Interference                                    | SA, S/A         | Spectrum Analyzer                                                           |
| EMS            | ElectroMagnetic Susceptibility                                  | SABS            | South African Bureau of Standards                                           |
| EN             | European Norm                                                   | SANS            | South African National Standards                                            |
| e.r.p., ERP    | Effective Radiated Power                                        | SG              | Signal Generator                                                            |
| ETSI           | European Telecommunications Standards Institute                 | SVSWR           | Site-Voltage Standing Wave Ratio                                            |
| EU             | European Union                                                  | THC(A)          | Total Harmonic Current                                                      |
| EUT            | Equipment Under Test                                            | THD(%)          | Total Harmonic Distortion                                                   |
| Fac.           | Factor                                                          | TR, T/R         | Test Receiver                                                               |
| FCC            | Federal Communications Commission                               | Tx              | Transmitting                                                                |
| FHSS           | Frequency Hopping Spread Spectrum                               | VBW             | Video BandWidth                                                             |
| FM             | Frequency Modulation                                            | Vert.           | Vertical                                                                    |
| Freq.          | Frequency                                                       | WLAN            | Wireless LAN                                                                |
| FSK            | Frequency Shift Keying                                          | xDSL            | Generic term for all types of DSL technology (DSL: Digital Subscriber Line) |
| Fund           | Fundamental                                                     |                 |                                                                             |
| FWD            | Forward                                                         |                 |                                                                             |
| GFSK           | Gaussian Frequency-Shift Keying                                 |                 |                                                                             |
| GNSS           | Global Navigation Satellite System                              |                 |                                                                             |
| GPS            | Global Positioning System                                       |                 |                                                                             |
| Hori.          | Horizontal                                                      |                 |                                                                             |
| ICES           | Interference-Causing Equipment Standard                         |                 |                                                                             |
| I/O            | Input/Output                                                    |                 |                                                                             |
| IEC            | International Electrotechnical Commission                       |                 |                                                                             |

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## **Section 1: Customer information**

|                  |                                                          |
|------------------|----------------------------------------------------------|
| Company Name     | DENSO TEN Limited                                        |
| Address          | 2-28, Goshō-dori 1-Chome, Hyogo-ku, Kobe, 652-8510 JAPAN |
| Telephone Number | +81-78-682-2169                                          |
| Contact Person   | Kaoru Abe                                                |

The information provided from the customer is as follows:

- Customer, Description of EUT, Model Number of EUT on the cover page and other relevant pages
  - Operating/Test Mode(s) (Mode(s)) on all the relevant pages
  - Section 1: Customer information
  - Section 2: Equipment under test (EUT) other than the Receipt Date and Test Date
  - Section 4: Operation of EUT during testing
- \* The laboratory is exempted from liability of any test results affected from the above information in Section 2 and 4.

## **Section 2 : Equipment under test (EUT)**

### **2.1 Identification of EUT**

|               |                                                                                           |
|---------------|-------------------------------------------------------------------------------------------|
| Description   | Car Audio                                                                                 |
| Model Number  | TN0023A                                                                                   |
| Serial Number | Refer to 4.2.                                                                             |
| Condition     | Production prototype<br>(Not for Sale: This sample is equivalent to mass-produced items.) |
| Modification  | No Modification by the test lab.                                                          |
| Receipt Date  | April 21, 2022                                                                            |
| Test Date     | May 13 and 14, 2022                                                                       |

### **2.2 Product description**

#### **General Specification**

|                                     |                     |
|-------------------------------------|---------------------|
| Rating                              | DC 12 V             |
| Clock frequency (ies) in the system | 7.3333333 GHz (max) |

## Radio Specification

Radio Type : Transceiver

|                        | IEEE802.11b                                                                                      | IEEE802.11g/n<br>(20 M band)           | IEEE802.11a/n/ac<br>(20 M band)                                | IEEE802.11n/ac<br>(40 M band)              | IEEE802.11ac<br>(80 M band) |
|------------------------|--------------------------------------------------------------------------------------------------|----------------------------------------|----------------------------------------------------------------|--------------------------------------------|-----------------------------|
| Frequency of operation | 2412 MHz - 2462 MHz                                                                              | 2412 MHz - 2462 MHz                    | 5180 MHz - 5240 MHz<br>5745 MHz - 5825 MHz                     | 5190 MHz - 5230 MHz<br>5755 MHz - 5795 MHz | 5210 MHz<br>5775 MHz        |
| Type of modulation     | DSSS<br>(CCK, DQPSK, DBPSK)                                                                      | OFDM-CCK<br>(64QAM, 16QAM, QPSK, BPSK) | OFDM<br>(64QAM, 16QAM, QPSK, BPSK, 256QAM (IEEE802.11ac only)) |                                            |                             |
| Channel spacing        | 5MHz                                                                                             |                                        | 20MHz                                                          | 40MHz                                      | 80MHz                       |
| Antenna type           | Inverted F Antenna                                                                               |                                        |                                                                |                                            |                             |
| Antenna Connector type | U.FL-R-SMT-1(80)                                                                                 |                                        |                                                                |                                            |                             |
| Antenna Gain           | -1.41 dBi (Peak): 2.4 GHz Band<br>3.28 dBi (Peak) (ANT 1) / 1.79 dBi (Peak) (ANT 2) : 5 GHz Band |                                        |                                                                |                                            |                             |

|                        | Bluetooth Ver.5.0 with EDR function                 |
|------------------------|-----------------------------------------------------|
| Frequency of operation | 2402 MHz - 2480 MHz                                 |
| Type of modulation     | BT: FHSS (GFSK, $\pi/4$ -DQPSK, 8-DPSK)<br>LE: GFSK |
| Channel spacing        | BT: 1 MHz<br>LE: 2 MHz                              |
| Antenna type           | Inverted F Antenna                                  |
| Antenna Connector type | U.FL-R-SMT-1(80)                                    |
| Antenna Gain           | 0.70 dBi (Peak)                                     |

|                        | Broadcast Receiver                                                                                   |
|------------------------|------------------------------------------------------------------------------------------------------|
| Radio Type             | Receiver                                                                                             |
| Frequency of Operation | AM, HD AM: 530 kHz - 1710 kHz<br>FM, RBDS/HD FM: 87.75 MHz - 107.9 MHz<br>SDARS: 2320 MHz - 2345 MHz |
| Channel spacing        | AM, HD AM: 10 kHz<br>FM, RBDS/HD FM: 200 kHz                                                         |
| Antenna connector type | HFC IV                                                                                               |

### Section 3 : Test specification, procedures and results

#### 3.1 Test specification

|                    |                                                                                               |
|--------------------|-----------------------------------------------------------------------------------------------|
| Test Specification | FCC Part 15 Subpart B<br>FCC Part 15 final revised on April 1, 2022 and effective May 2, 2022 |
| Title              | FCC 47CFR Part15 Radio Frequency Device<br>Subpart B Unintentional Radiators                  |

\* The revision does not affect the test result conducted before its effective date.

#### 3.2 Procedures & results

##### < FCC Part 15 Subpart B, FM receiver >

| Item                                         | Test procedure                                                                                               | Limits            | Worst margin                                                                                                            | Result         | Remarks |
|----------------------------------------------|--------------------------------------------------------------------------------------------------------------|-------------------|-------------------------------------------------------------------------------------------------------------------------|----------------|---------|
| Conducted emission                           | ANSI C 63.4:2014<br>+ C 63.4a:2017<br>7. AC powerline<br>conducted emission<br>measurements<br>IEEE 187:2003 | FCC<br>15.107 (a) | N/A                                                                                                                     | N/A            | *1)     |
| Radiated emission                            | ANSI C 63.4:2014<br>+ C 63.4a:2017<br>8. Radiated emission<br>measurements<br>IEEE 187:2003                  | FCC<br>15.109 (a) | 9.4 dB<br>Freq.: 5000.038 MHz<br>Detector: Average<br>Polarization: Vertical<br>Mode: FM Reception Analog<br>(97.7 MHz) | Complied<br>a) | *2)     |
| Antenna power<br>conduction for<br>receivers | ANSI C 63.4:2014<br>+ C 63.4a:2017<br>12.1.5 Antenna-<br>conducted power<br>measurements<br>IEEE 187:2003    | FCC<br>15.111 (a) | 25.1 dB<br>Freq.: 11893.000 MHz<br>Detection: Peak<br>Mode: FM Reception Analog<br>(97.7 MHz)                           | Complied<br>b) | N/A     |

Note: UL Japan's EMI work procedure: Work Instructions-ULID-003591

Symbols:

Complied The data of this test item has enough margin, more than the measurement uncertainty.

Complied# The data of this test item meets the limits unless the measurement uncertainty is taken into consideration.

< FCC Part 15 Subpart B, Class B digital devices >

| Item               | Test procedure                                                                                        | Limits  | Worst margin                                                                                          | Result         | Remarks |
|--------------------|-------------------------------------------------------------------------------------------------------|---------|-------------------------------------------------------------------------------------------------------|----------------|---------|
| Conducted emission | ANSI C 63.4:2014<br>+C 63.4a:2017<br>7. AC powerline conducted emission measurements<br>IEEE 187:2003 | Class B | N/A                                                                                                   | N/A            | *1)     |
| Radiated emission  | ANSI C 63.4:2014<br>+C 63.4a:2017<br>8. Radiated emission measurements<br>IEEE 187:2003               | Class B | 8.6 dB<br>Freq.: 7500.006 MHz<br>Detector: Average<br>Polarization: Vertical<br>Mode: USB Memory play | Complied<br>a) | *2)     |

Note: UL Japan's EMI work procedure: Work Instructions-ULID-003591

Symbols:

Complied The data of this test item has enough margin, more than the measurement uncertainty.

Complied# The data of this test item meets the limits unless the measurement uncertainty is taken into consideration.

\*1) The test is not applicable since the EUT does not have AC mains ports.

\*2) Measurements has been performed up to 40 GHz since the highest frequency of internal source of the EUT is 5825 MHz.

- a) Refer to Appendix 2 (data of Radiated emission)
- b) Refer to Appendix 2 (data of Antenna power conduction for receivers)

### 3.3 Deviation from standard

| Item                                    | Normative references of FCC Subpart A Section 15.31 | Actually applied              |
|-----------------------------------------|-----------------------------------------------------|-------------------------------|
| Conducted emission<br>Radiated emission | ANSI C 63.4:2014                                    | ANSI C 63.4:2014/C 63.4a:2017 |

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  $k = 2$ .

There is no applicable rule of uncertainty in this applied standard. Therefore, the following results are derived depending on whether or not laboratory uncertainty is applied.

| Item                                                    | Frequency range | No.1 SAC*1/SR*2 (±) | No.2 SAC/SR (±) | No.3 SAC/SR (±) |
|---------------------------------------------------------|-----------------|---------------------|-----------------|-----------------|
| <b>Radiated emission</b><br>(Measurement distance: 3 m) | 30 MHz-200 MHz  | 4.6 dB              | 4.6 dB          | 4.6 dB          |
|                                                         | 200 MHz-1 GHz   | 6.0 dB              | 6.1 dB          | 6.1 dB          |
|                                                         | 1 GHz-6 GHz     | 4.7 dB              | 4.7 dB          | 4.7 dB          |
|                                                         | 6 GHz-18 GHz    | 5.2 dB              | 5.3 dB          | 5.3 dB          |
|                                                         | 18 GHz-40 GHz   | 5.4 dB              | 5.5 dB          | 5.5 dB          |
| <b>Antenna Terminal Voltage</b>                         | 5 MHz-1000 MHz  | 2.9 dB              |                 |                 |
|                                                         | 1 GHz-          | 2.8 dB              |                 |                 |

\*1: SAC=Semi-Anechoic Chamber

\*2: SR= Shielded Room is applied besides radiated emission

### 3.5 Test location

UL Japan, Inc. Shonan EMC Lab.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken 259-1220 Japan

Telephone number : +81-463-50-6400

A2LA Certificate Number : 1266.03

(FCC Test firm registration number: 626366, ISED lab company number: 2973D / CAB identifier: JP0001)

| Test room                     | Width x Depth x Height (m)                               | Test room             | Width x Depth x Height (m) |
|-------------------------------|----------------------------------------------------------|-----------------------|----------------------------|
| No.1<br>Semi-anechoic chamber | 20.6 x 11.3 x 7.65<br>Maximum measurement distance: 10 m | No.1 Shielded room    | 6.8 x 4.1 x 2.7            |
| No.2<br>Semi-anechoic chamber | 20.6 x 11.3 x 7.65<br>Maximum measurement distance: 10 m | No.2 Shielded room    | 6.8 x 4.1 x 2.7            |
| No.3<br>Semi-anechoic chamber | 12.7 x 7.7 x 5.35<br>Maximum measurement distance: 5 m   | No.3 Shielded room    | 6.3 x 4.7 x 2.7            |
| No.4<br>Semi-anechoic chamber | 8.1 x 5.1 x 3.55                                         | No.4 Shielded room    | 4.4 x 4.7 x 2.7            |
|                               |                                                          | No.5 Shielded room    | 7.8 x 6.4 x 2.7            |
|                               |                                                          | No.6 Shielded room    | 7.8 x 6.4 x 2.7            |
|                               |                                                          | No.7 Shielded room    | 2.76 x 3.76 x 2.4          |
|                               |                                                          | No.8 Shielded room    | 3.45 x 5.5 x 2.4           |
|                               |                                                          | No.1 Measurement room | 2.55 x 4.1 x 2.5           |

### 3.6 Test setup, test data & test instruments

Refer to Appendix 1 to 3.

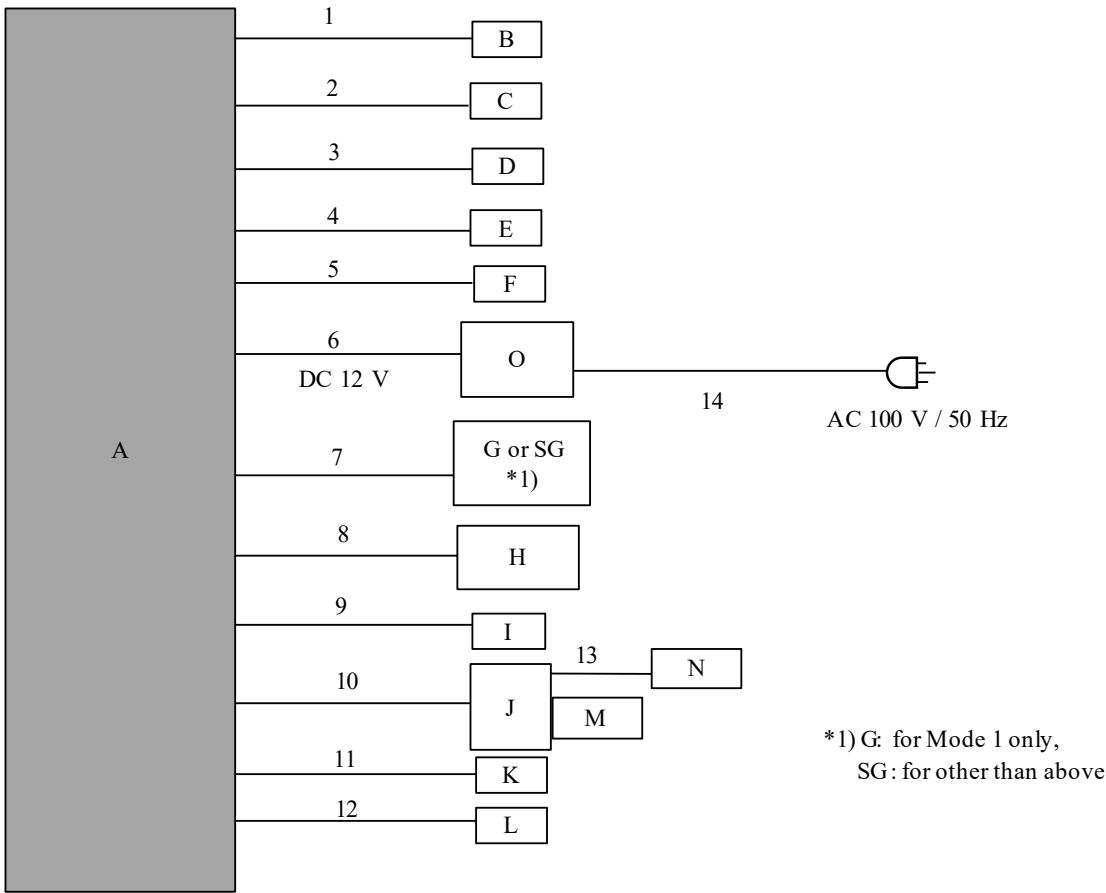
Section 4 : Operation of EUT during testing

4.1 Operating modes

The EUT exercise program used during testing was designed to exercise the various system components in a manner similar to typical use.

|                   |                                                                                                 |
|-------------------|-------------------------------------------------------------------------------------------------|
| Operation mode(s) | 1. USB Memory play                                                                              |
|                   | 2. FM Reception Analog (97.7 MHz)                                                               |
|                   | 3. FM Reception Analog (87.75 MHz)                                                              |
|                   | 4. FM Reception Analog (107.9 MHz)                                                              |
|                   | 5. FM Reception Digital (97.7 MHz)                                                              |
|                   | 6. FM Reception Digital (87.75 MHz)                                                             |
|                   | 7. FM Reception Digital (107.9 MHz)                                                             |
| Software          | NANE01.035205C                                                                                  |
| Justification     | The system was configured in typical fashion (as a customer would normally use it) for testing. |

4.2 Configuration and peripherals



\* Cabling and setup(s) were taken into consideration and 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              | TN0023A        | EU200011         | DENSO TEN Limited             | EUT     |
| B   | Switch                 | -              | -                | -                             | -       |
| C   | DCM                    | 19MC_DCM       | E-033720026/012  | DENSO Corporation             | -       |
| D   | Steering Switch        | PA6-GF30       | 57               | TOYOTA                        | -       |
| E   | Low noise Amp          | ZX60-242GLN-S+ | E-033720264/001  | Mini-Circuits                 | -       |
| F   | GPS Antenna            | 23D90063       | No.44            | yokowo co.,ltd.               | -       |
| G   | FM/AM connector (Main) | 86300-30C30    | PS600101         | DENSO TEN Limited             | -       |
| H   | Back Camera            | 867B0-78070    | E-033720063/013  | KYOCERA                       | -       |
| I   | Speaker Dummy          | -              | -                | -                             | -       |
| J   | IF Box                 | C7746-MX59A    | No.21            | Kojima Industries Corporation | -       |
| K   | Mic                    | SDA3510A       | 0AC067094        | Panasonic                     | -       |
| L   | Mic                    | SDA3510A       | 0BC000182        | Panasonic                     | -       |
| M   | USB Memory             | USM4GU         | -                | SONY                          | -       |
| N   | HUAWEI P20 lite        | ANE-LX2J       | SCV7N19312000215 | HUAWEI                        | -       |
| O   | Power Supply(DC)       | PAN35-10A      | ML002085         | KIKUSUI                       | -       |

#### List of cables used

| No. | Name               | Length (m) | Shield     |            | Remarks |
|-----|--------------------|------------|------------|------------|---------|
|     |                    |            | Cable      | Connector  |         |
| 1   | Signal Cable       | 2.4        | Unshielded | Unshielded | -       |
| 2   | Signal Cable       | 2.4        | Unshielded | Unshielded | -       |
| 3   | Signal Cable       | 2.4        | Unshielded | Unshielded | -       |
| 4   | Signal Cable       | 1.0        | Unshielded | Unshielded | -       |
| 5   | GNSS Antenna Cable | 2.6        | Shielded   | Shielded   | -       |
| 6   | DC Cable           | 3.4        | Unshielded | Unshielded | -       |
| 7   | Signal Cable       | 2.6        | Unshielded | Unshielded | -       |
| 8   | Signal Cable       | 2.6        | Unshielded | Unshielded | -       |
| 9   | Speaker Cable      | 2.4 + 1.0  | Unshielded | Unshielded | -       |
| 10  | USB Cable          | 3.2        | Shielded   | Shielded   | -       |
| 11  | Signal Cable       | 2.7        | Unshielded | Unshielded | -       |
| 12  | Signal Cable       | 2.7        | Unshielded | Unshielded | -       |
| 13  | Audio Cable        | 1.0        | Shielded   | Shielded   | -       |
| 14  | AC Cable           | 2.0        | Unshielded | Unshielded | -       |

\* Cabling and setup(s) were taken into consideration and test data was taken under worse case conditions.

## Section 5 : Radiated emission

### 5.1 Test conditions

|                 |                  |
|-----------------|------------------|
| Frequency range | 30 MHz to 40 GHz |
| EUT position    | Table top        |

### 5.2 Test configuration

The EUT was placed on a platform of nominal size, 1.0 m by 2.0 m, raised 0.8 m above the conducting ground plane. The table is made of expanded polystyrol and expanded polypropylene and the table top is covered with polycarbonate. That has very low permittivity. The rear of EUT, including its peripherals was aligned and flushed with rear of tabletop. I/O cables that were connected to the peripherals were bundled in center. They were folded back and forth forming a bundle 30 cm to 40 cm long and were hanged at a 40 cm height to the ground plane. Photographs of the set up are shown in Appendix 1.

### 5.3 Test procedure

The Radiated Electric Field Strength intensity has been measured on a Semi-Anechoic Chamber with a ground plane at a distance of 3 m.

\* Measuring distance (below 1 GHz)

The boundary of the EUT is defined by an imaginary circular periphery.

The measuring antenna height was varied between 1 m and 4 m 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.

Test antenna was aimed at the emission source for receiving the maximum signal and always kept. (Above 1 GHz)

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

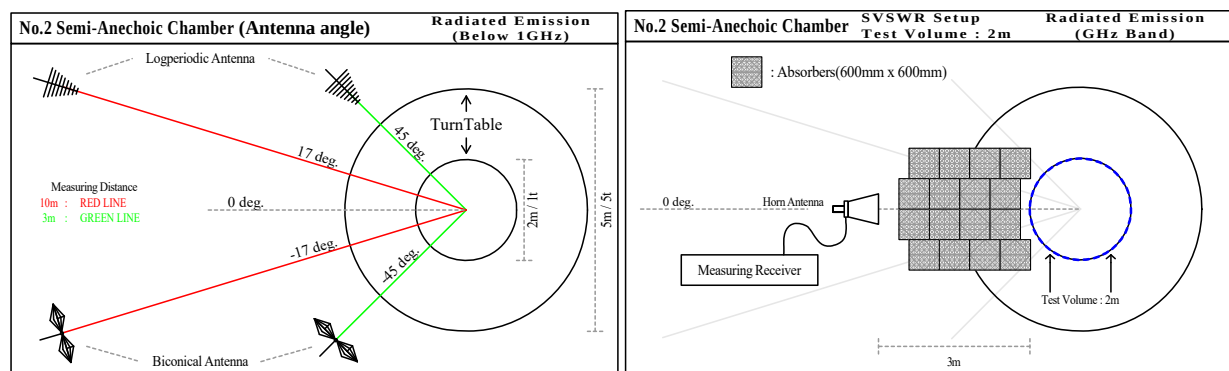
|               |                                       |                                     |                      |
|---------------|---------------------------------------|-------------------------------------|----------------------|
|               | 30 MHz to 1000 MHz<br>(Test receiver) | 1 GHz to 40 GHz (Spectrum analyzer) |                      |
| Detector Type | QP                                    | AV *1)                              | PK                   |
| IF Bandwidth  | 120 kHz                               | RBW 1 MHz/ VBW 10 Hz                | RBW 1 MHz/ VBW 3 MHz |

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

### 5.4 Results

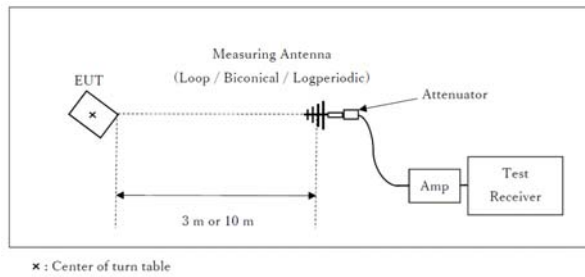
Summary of the test results : Pass

Figure 1. Antenna angle



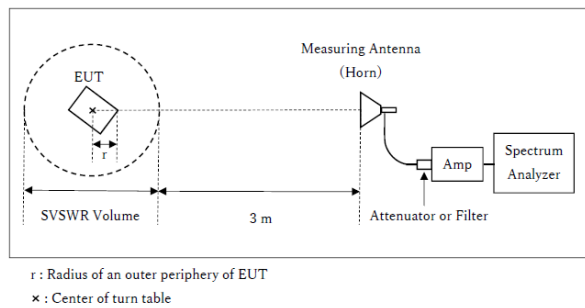
**Figure 2. Test Setup**

Below 1 GHz



Test Distance: 3 m

1 GHz to 10 GHz



Distance Factor:  $20 \times \log (3.00 \text{ m}^*/{3.0 \text{ m}}) = 0 \text{ dB}$

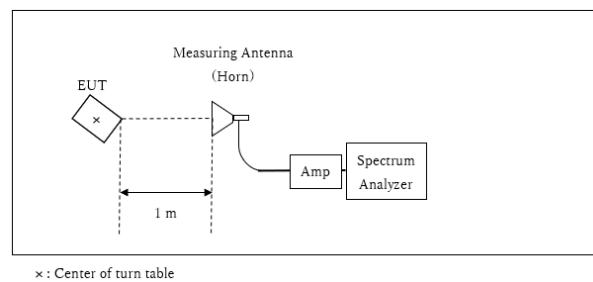
\* Test Distance:  $(3 + \text{SVSWR Volume} / 2) - r = 3.00 \text{ m}$

SVSWR Volume: 2 m

(SVSWR Volume has been calibrated based on CISPR 16-1-4.)

r = 1.00 m

10 GHz to 40 GHz



Distance Factor:  $20 \times \log (1.0 \text{ m} / 3.0 \text{ m}) = -9.54 \text{ dB}$

\*Test Distance: 1 m

Distance Factor is based on FCC subpart A Section 15.31 (f).

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## **Section 6 : Antenna power conduction for receivers**

### **6 . 1 Test conditions**

|                 |                  |
|-----------------|------------------|
| Frequency range | 30 MHz to 40 GHz |
| EUT position    | Table top        |

### **6 . 2 Test configuration**

The EUT was placed on a non-metallic table height of 0.8 m above the reference ground plane.  
Photographs of the set up are shown in Appendix 1.

### **6 . 3 Test procedure**

The antenna power conduction for receivers was made with the following detector function of the test receiver.

|               |                    |                      |
|---------------|--------------------|----------------------|
|               | 30 MHz to 1000 MHz | 1 GHz to 40 GHz      |
| Detector Type | QP                 | PK                   |
| IF Bandwidth  | 120 kHz            | RBW 1 MHz/ VBW 3 MHz |

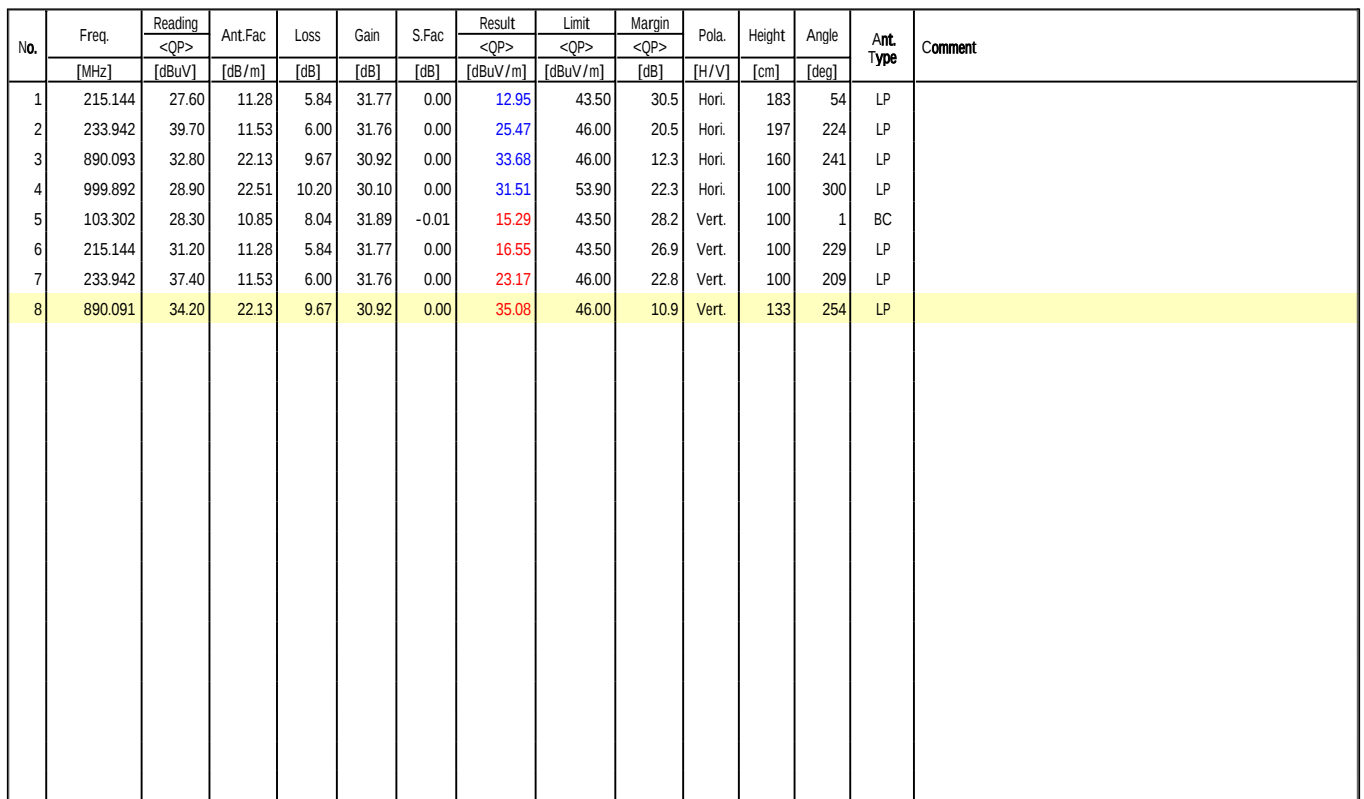
### **6 . 4 Results**

Summary of the test results : Pass

UL Japan, Inc. Shonan EMC Lab. No.2 Semi-Anechoic Chamber  
Date : 2022/05/14

Mode : USB Memory play  
Order No. : 14303848  
Power : DC 12 V  
Temp./Humi. : 23 deg.C / 47 %RH

Engineer : Akihiro Oda



DATA OF RADIATED EMISSION TEST

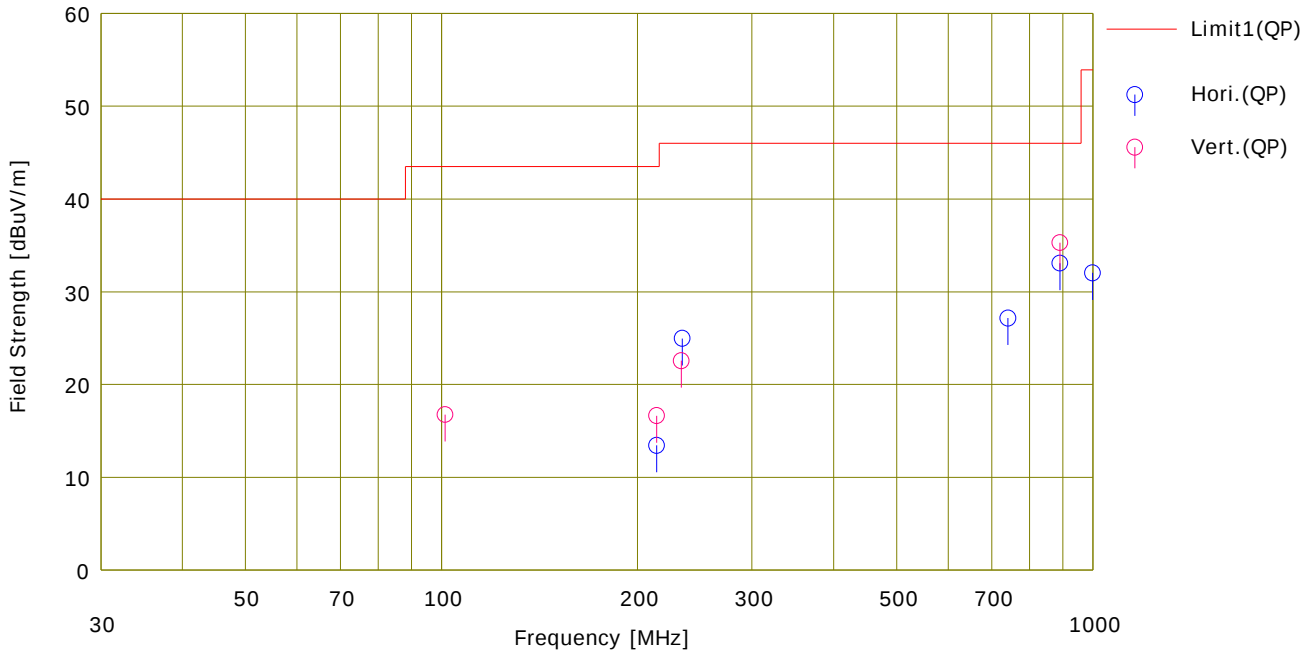
UL Japan,Inc. Shonan EMC Lab. No.2 Semi-Anechoic Chamber  
Date : 2022/05/14

Company : DENSO TEN Limited  
Kind of EUT : Car Audio  
Model No. : TN0023A  
Serial No. : EU200011  
Remarks : Other

Mode : FM Reception Analog (97.7 MHz)  
Order No. : 14303848  
Power : DC 12 V  
Temp./Humi. : 23 deg.C / 47 %RH

Limit : FCC\_Part 15 Subpart B(15.109)\_Class B

Engineer : Akihiro Oda



| No. | Freq.<br>[MHz] | Reading | Ant.Fac<br>[dB/m] | Loss<br>[dB] | Gain<br>[dB] | S.Fac<br>[dB] | Result   | Limit    | Margin | Pola.<br>[H/V] | Height<br>[cm] | Angle<br>[deg] | Ant.<br>Type | Comment |
|-----|----------------|---------|-------------------|--------------|--------------|---------------|----------|----------|--------|----------------|----------------|----------------|--------------|---------|
|     |                | <QP>    |                   |              |              |               | <QP>     | <QP>     | <QP>   |                |                |                |              |         |
|     |                | [dBuV]  |                   |              |              |               | [dBuV/m] | [dBuV/m] | [dB]   |                |                |                |              |         |
| 1   | 214.000        | 28.10   | 11.28             | 5.83         | 31.78        | 0.00          | 13.43    | 43.50    | 30.0   | Hori.          | 220            | 259            | LP           |         |
| 2   | 234.240        | 39.20   | 11.53             | 6.00         | 31.76        | 0.00          | 24.97    | 46.00    | 21.0   | Hori.          | 150            | 236            | LP           |         |
| 3   | 741.731        | 29.40   | 20.27             | 8.97         | 31.49        | 0.00          | 27.15    | 46.00    | 18.8   | Hori.          | 123            | 294            | LP           |         |
| 4   | 890.105        | 32.20   | 22.13             | 9.67         | 30.92        | 0.00          | 33.08    | 46.00    | 12.9   | Hori.          | 177            | 246            | LP           |         |
| 5   | 1000.000       | 29.40   | 22.51             | 10.20        | 30.10        | 0.00          | 32.01    | 53.90    | 21.8   | Hori.          | 100            | 250            | LP           |         |
| 6   | 101.347        | 30.10   | 10.51             | 8.02         | 31.89        | 0.03          | 16.77    | 43.50    | 26.7   | Vert.          | 100            | 247            | BC           |         |
| 7   | 214.000        | 31.30   | 11.28             | 5.83         | 31.78        | 0.00          | 16.63    | 43.50    | 26.8   | Vert.          | 100            | 211            | LP           |         |
| 8   | 233.541        | 36.80   | 11.52             | 6.00         | 31.76        | 0.00          | 22.56    | 46.00    | 23.4   | Vert.          | 191            | 237            | LP           |         |
| 9   | 890.095        | 34.40   | 22.13             | 9.67         | 30.92        | 0.00          | 35.28    | 46.00    | 10.7   | Vert.          | 100            | 329            | LP           |         |

# DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Shonan EMC Lab. No.2 Semi-Anechoic Chamber

Date : 2022/05/14

Company : DENSO TEN Limited  
 Kind of EUT : Car Audio  
 Model No. : TN0023A  
 Serial No. : EU200011  
 Remarks : Local

Mode : FM Reception Analog (87.75 MHz)  
 Order No. : 14303848  
 Power : DC 12 V  
 Temp./Humi. : 23 deg.C / 47 %RH

Limit : FCC\_Part 15 Subpart B(15.109)\_Class B

Engineer : Akihiro Oda

&lt;&lt; QP DATA &gt;&gt;

| No. | Freq.   | Reading | Ant.Fac | Loss | Gain  | S.Fac | Result   | Limit    | Margin | Pola. | Height | Angle | Ant. Type | Comment |
|-----|---------|---------|---------|------|-------|-------|----------|----------|--------|-------|--------|-------|-----------|---------|
|     |         | <QP>    |         |      |       |       | <QP>     | <QP>     | <QP>   |       |        |       |           |         |
|     |         | [dBuV]  |         |      |       |       | [dBuV/m] | [dBuV/m] | [dB]   |       |        |       |           |         |
| 1   | 88.207  | 21.30   | 7.94    | 7.84 | 31.90 | 0.38  | 5.56     | 43.50    | 37.9   | Hori. | 100    | 0     | BC        |         |
| 2   | 176.415 | 21.20   | 15.94   | 8.82 | 31.81 | -0.01 | 14.14    | 43.50    | 29.3   | Hori. | 100    | 0     | BC        |         |
| 3   | 705.659 | 21.10   | 19.99   | 8.80 | 31.59 | 0.00  | 18.30    | 46.00    | 27.7   | Hori. | 100    | 0     | LP        |         |
| 4   | 88.207  | 21.70   | 7.94    | 7.84 | 31.90 | 0.38  | 5.96     | 43.50    | 37.5   | Vert. | 100    | 0     | BC        |         |
| 5   | 176.415 | 22.20   | 15.94   | 8.82 | 31.81 | -0.01 | 15.14    | 43.50    | 28.3   | Vert. | 100    | 0     | BC        |         |
| 6   | 705.659 | 21.10   | 19.99   | 8.80 | 31.59 | 0.00  | 18.30    | 46.00    | 27.7   | Vert. | 100    | 0     | LP        |         |

Calculation: Result[dBuV/m] = Reading[dBuV] + Ant.Fac[dB/m] + Loss(Cable+ATT)[dB] - Gain(AMP)[dB] + S.Fac(ΔAF) [dB]

Ant.Type=BC:Biconical Antenna LP:Logperiodic Antenna \*\*SH\*: Horn Antenna



# DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Shonan EMC Lab. No.2 Semi-Anechoic Chamber

Date : 2022/05/14

Company : DENSO TEN Limited  
 Kind of EUT : Car Audio  
 Model No. : TN0023A  
 Serial No. : EU200011  
 Remarks : Local

Mode : FM Reception Analog (107.9 MHz)  
 Order No. : 14303848  
 Power : DC 12 V  
 Temp./Humi. : 23 deg.C / 47 %RH

Limit : FCC\_Part 15 Subpart B(15.109)\_Class B

Engineer : Akihiro Oda

&lt;&lt; QP DATA &gt;&gt;

| No. | Freq.   | Reading | Ant.Fac | Loss | Gain  | S.Fac | Result   | Limit    | Margin | Pola. | Height | Angle | Ant. Type | Comment |
|-----|---------|---------|---------|------|-------|-------|----------|----------|--------|-------|--------|-------|-----------|---------|
|     |         | <QP>    |         |      |       |       | <QP>     | <QP>     | <QP>   |       |        |       |           |         |
|     |         | [dBuV]  |         |      |       |       | [dBuV/m] | [dBuV/m] | [dB]   |       |        |       |           |         |
| 1   | 107.496 | 21.00   | 11.51   | 8.08 | 31.88 | -0.09 | 8.62     | 43.50    | 34.8   | Hori. | 100    | 0     | BC        |         |
| 2   | 214.992 | 25.10   | 11.28   | 5.84 | 31.78 | 0.00  | 10.44    | 43.50    | 33.0   | Hori. | 140    | 0     | LP        |         |
| 3   | 859.967 | 20.90   | 21.80   | 9.54 | 31.09 | 0.00  | 21.15    | 46.00    | 24.8   | Hori. | 100    | 0     | LP        |         |
| 4   | 107.496 | 23.60   | 11.51   | 8.08 | 31.88 | -0.09 | 11.22    | 43.50    | 32.2   | Vert. | 100    | 0     | BC        |         |
| 5   | 214.992 | 28.90   | 11.28   | 5.84 | 31.78 | 0.00  | 14.24    | 43.50    | 29.2   | Vert. | 100    | 148   | LP        |         |
| 6   | 859.967 | 20.80   | 21.80   | 9.54 | 31.09 | 0.00  | 21.05    | 46.00    | 24.9   | Vert. | 100    | 0     | LP        |         |

Calculation: Result[dBuV/m] = Reading[dBuV] + Ant.Fac[dB/m] + Loss(Cable+ATT)[dB] - Gain(AMP)[dB] + S.Fac(ΔAF) [dB]

Ant.Type=BC:Biconical Antenna LP:Logperiodic Antenna \*\*SH\*: Horn Antenna

# DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Shonan EMC Lab. No.2 Semi-Anechoic Chamber

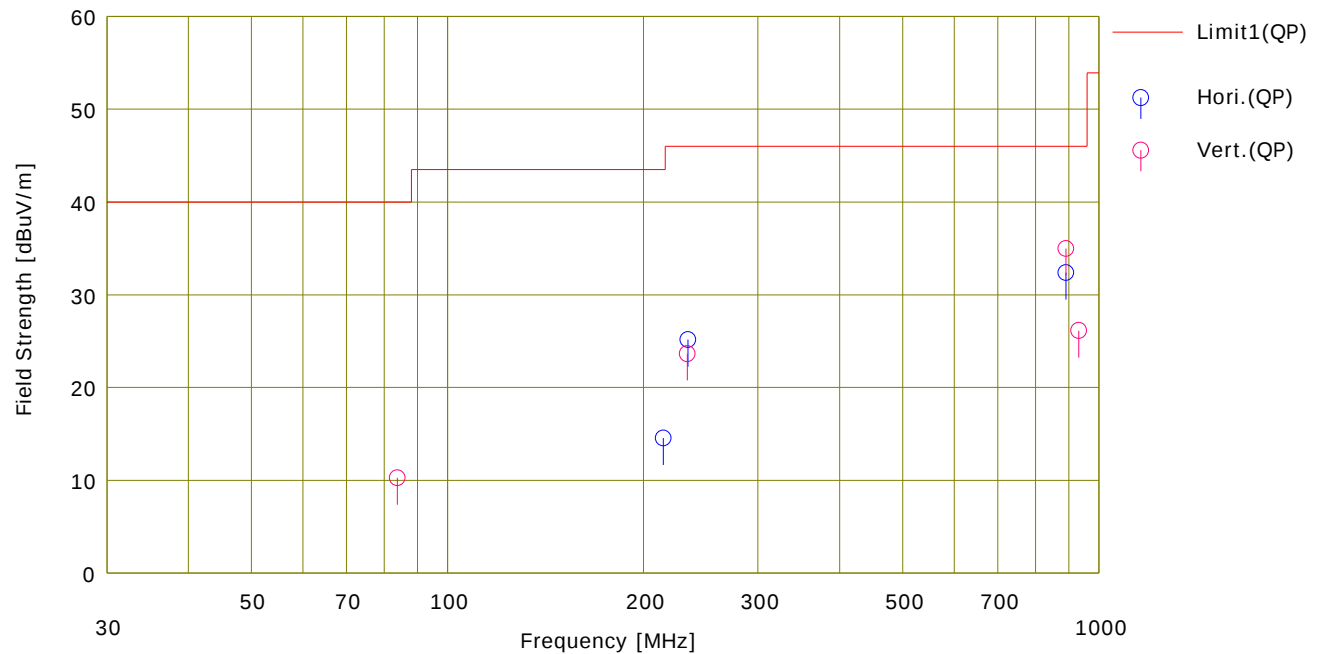
Date : 2022/05/14

Company : DENSO TEN Limited  
 Kind of EUT : Car Audio  
 Model No. : TN0023A  
 Serial No. : EU200011  
 Remarks : Other

Mode : FM Reception Digital (97.7 MHz)  
 Order No. : 14303848  
 Power : DC 12 V  
 Temp./Humi. : 23 deg.C / 47 %RH

Limit : FCC\_Part 15 Subpart B(15.109)\_Class B

Engineer : Akihiro Oda



| No. | Freq.<br>[MHz] | Reading<br><QP> | Ant.Fac<br>[dB/m] | Loss<br>[dB] | Gain<br>[dB] | S.Fac<br>[dB] | Result<br><QP> | Limit<br><QP> | Margin<br><QP> | Pola.<br>[H/V] | Height<br>[cm] | Angle<br>[deg] | Ant.<br>Type | Comment |
|-----|----------------|-----------------|-------------------|--------------|--------------|---------------|----------------|---------------|----------------|----------------|----------------|----------------|--------------|---------|
|     |                | [dBuV]          |                   |              |              |               | [dBuV/m]       | [dBuV/m]      | [dB]           |                |                |                |              |         |
| 1   | 214.480        | 29.20           | 11.28             | 5.84         | 31.78        | 0.00          | 14.54          | 43.50         | 28.9           | Hori.          | 243            | 44             | LP           |         |
| 2   | 234.060        | 39.40           | 11.53             | 6.00         | 31.76        | 0.00          | 25.17          | 46.00         | 20.8           | Hori.          | 202            | 235            | LP           |         |
| 3   | 890.115        | 31.50           | 22.13             | 9.67         | 30.92        | 0.00          | 32.38          | 46.00         | 13.6           | Hori.          | 183            | 224            | LP           |         |
| 4   | 83.759         | 26.90           | 7.05              | 7.78         | 31.90        | 0.44          | 10.27          | 40.00         | 29.7           | Vert.          | 100            | 152            | BC           |         |
| 5   | 233.588        | 37.90           | 11.52             | 6.00         | 31.76        | 0.00          | 23.66          | 46.00         | 22.3           | Vert.          | 100            | 220            | LP           |         |
| 6   | 890.101        | 34.10           | 22.13             | 9.67         | 30.92        | 0.00          | 34.98          | 46.00         | 11.0           | Vert.          | 150            | 317            | LP           |         |
| 7   | 931.600        | 24.80           | 22.17             | 9.87         | 30.70        | 0.00          | 26.14          | 46.00         | 19.8           | Vert.          | 100            | 195            | LP           |         |

Calculation: Result[dBuV/m] = Reading[dBuV] + Ant.Fac[dB/m] + Loss(Cable + ATT)[dB] - Gain(AMP)[dB] + S.Fac(ΔAF)[dB]

Ant.Type=BC: Biconical Antenna LP: Logperiodic Antenna \*\*SH\*: Horn Antenna



# DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Shonan EMC Lab. No.2 Semi-Anechoic Chamber

Date : 2022/05/14

Company : DENSO TEN Limited  
 Kind of EUT : Car Audio  
 Model No. : TN0023A  
 Serial No. : EU200011  
 Remarks : Local

Mode : FM Reception Digital (97.7 MHz)  
 Order No. : 14303848  
 Power : DC 12 V  
 Temp./Humi. : 23 deg.C / 47 %RH

Limit : FCC\_Part 15 Subpart B(15.109)\_Class B

Engineer : Akihiro Oda

&lt;&lt; QP DATA &gt;&gt;

| No. | Freq.   | Reading | Ant.Fac | Loss | Gain  | S.Fac | Result   | Limit    | Margin | Pola. | Height | Angle | Ant. Type | Comment |
|-----|---------|---------|---------|------|-------|-------|----------|----------|--------|-------|--------|-------|-----------|---------|
|     |         | <QP>    |         |      |       |       | <QP>     | <QP>     | <QP>   |       |        |       |           |         |
|     |         | [dBuV]  |         |      |       |       | [dBuV/m] | [dBuV/m] | [dB]   |       |        |       |           |         |
| 1   | 97.297  | 21.10   | 9.73    | 7.96 | 31.89 | 0.14  | 7.04     | 43.50    | 36.4   | Hori. | 100    | 0     | BC        |         |
| 2   | 194.595 | 20.90   | 16.56   | 9.00 | 31.80 | -0.14 | 14.52    | 43.50    | 28.9   | Hori. | 100    | 0     | BC        |         |
| 3   | 778.378 | 21.50   | 20.63   | 9.16 | 31.41 | 0.00  | 19.88    | 46.00    | 26.1   | Hori. | 100    | 0     | LP        |         |
| 4   | 97.297  | 23.50   | 9.73    | 7.96 | 31.89 | 0.14  | 9.44     | 43.50    | 34.0   | Vert. | 100    | 0     | BC        |         |
| 5   | 194.595 | 22.90   | 16.56   | 9.00 | 31.80 | -0.14 | 16.52    | 43.50    | 26.9   | Vert. | 100    | 0     | BC        |         |
| 6   | 778.378 | 21.40   | 20.63   | 9.16 | 31.41 | 0.00  | 19.78    | 46.00    | 26.2   | Vert. | 100    | 0     | LP        |         |

Calculation: Result[dBuV/m] = Reading[dBuV] + Ant.Fac[dB/m] + Loss(Cable+ATT)[dB] - Gain(AMP)[dB] + S.Fac(ΔAF) [dB]

Ant.Type=BC:Biconical Antenna LP:Logperiodic Antenna \*\*SH\*: Horn Antenna

# DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Shonan EMC Lab. No.2 Semi-Anechoic Chamber

Date : 2022/05/14

Company : DENSO TEN Limited  
 Kind of EUT : Car Audio  
 Model No. : TN0023A  
 Serial No. : EU200011  
 Remarks : Local

Mode : FM Reception Digital (107.9 MHz)  
 Order No. : 14303848  
 Power : DC 12 V  
 Temp./Humi. : 23 deg.C / 47 %RH

Limit : FCC\_Part 15 Subpart B(15.109)\_Class B

Engineer : Akihiro Oda

&lt;&lt; QP DATA &gt;&gt;

| No. | Freq.   | Reading | Ant.Fac | Loss | Gain  | S.Fac | Result   | Limit    | Margin | Pola. | Height | Angle | Ant. Type | Comment |
|-----|---------|---------|---------|------|-------|-------|----------|----------|--------|-------|--------|-------|-----------|---------|
|     |         | <QP>    |         |      |       |       | <QP>     | <QP>     | <QP>   |       |        |       |           |         |
|     |         | [dBuV]  |         |      |       |       | [dBuV/m] | [dBuV/m] | [dB]   |       |        |       |           |         |
| 1   | 107.496 | 20.90   | 11.51   | 8.08 | 31.88 | -0.09 | 8.52     | 43.50    | 34.9   | Hori. | 100    | 0     | BC        |         |
| 2   | 214.992 | 28.20   | 11.28   | 5.84 | 31.78 | 0.00  | 13.54    | 43.50    | 29.9   | Hori. | 181    | 0     | LP        |         |
| 3   | 859.967 | 20.80   | 21.80   | 9.54 | 31.09 | 0.00  | 21.05    | 46.00    | 24.9   | Hori. | 100    | 0     | LP        |         |
| 4   | 107.496 | 21.70   | 11.51   | 8.08 | 31.88 | -0.09 | 9.32     | 43.50    | 34.1   | Vert. | 100    | 0     | BC        |         |
| 5   | 214.992 | 32.60   | 11.28   | 5.84 | 31.78 | 0.00  | 17.94    | 43.50    | 25.5   | Vert. | 100    | 153   | LP        |         |
| 6   | 859.967 | 21.70   | 21.80   | 9.54 | 31.09 | 0.00  | 21.95    | 46.00    | 24.0   | Vert. | 100    | 0     | LP        |         |

Calculation: Result[dBuV/m] = Reading[dBuV] + Ant.Fac[dB/m] + Loss(Cable+ATT)[dB] - Gain(AMP)[dB] + S.Fac(ΔAF) [dB]

Ant.Type=BC:Biconical Antenna LP:Logperiodic Antenna \*\*SH\*: Horn Antenna

# DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Shonan EMC Lab. No.2 Semi-Anechoic Chamber  
Date : 2022/05/14

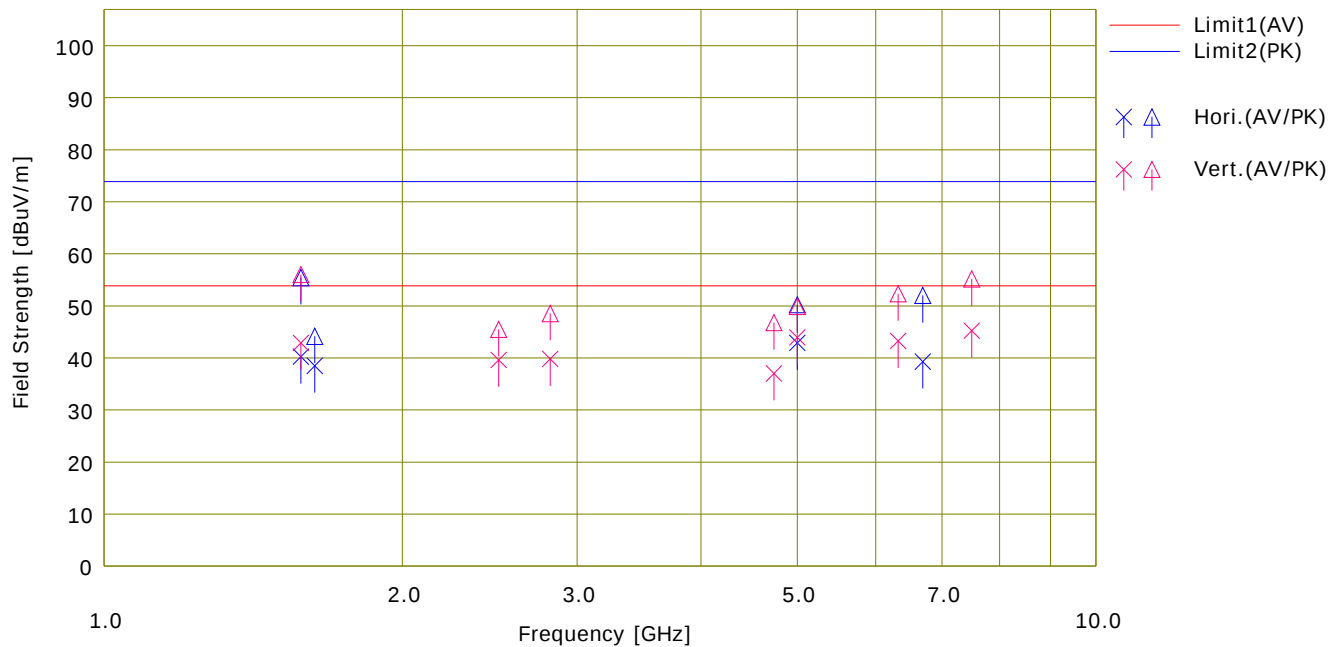
Company : DENSO TEN Limited  
Kind of EUT : Car Audio  
Model No. : TN0023A  
Serial No. : EU200011  
Remarks : Test Distance = (1-10 GHz) 300 cm, (10 - 40 GHz) 100 cm

Mode : USB Memory play  
Order No. : 14303848  
Power : DC 12 V  
Temp./Humi. : 22 deg.C / 52 %RH

Limit : FCC\_Part 15 Subpart B(15.109)\_Class B

Engineer : Yuta Shiba

※No signal was detected above 10 GHz



| No. | Freq.<br>[MHz] | Reading |        | Ant.Fac<br>[dB/m] | Loss<br>[dB] | Gain<br>[dB] | Result   |          | Limit    |          | Margin |      | Pola.<br>[H/V] | Height<br>[cm] | Angle<br>[deg] | Ant.<br>Type | Comment |
|-----|----------------|---------|--------|-------------------|--------------|--------------|----------|----------|----------|----------|--------|------|----------------|----------------|----------------|--------------|---------|
|     |                | <AV>    | <PK>   |                   |              |              | <AV>     | <PK>     | <AV>     | <PK>     | <AV>   | <PK> |                |                |                |              |         |
|     |                | [dBuV]  | [dBuV] |                   |              |              | [dBuV/m] | [dBuV/m] | [dBuV/m] | [dBuV/m] | [dB]   | [dB] |                |                |                |              |         |
| 1   | 1579.955       | 50.34   | 65.56  | 25.38             | 3.42         | 38.92        | 40.22    | 55.44    | 53.90    | 73.90    | 13.6   | 18.4 | Hori.          | 100            | 173            | 31SH2        |         |
| 2   | 1631.838       | 48.50   | 54.15  | 25.44             | 3.48         | 38.92        | 38.50    | 44.15    | 53.90    | 73.90    | 15.4   | 29.7 | Hori.          | 148            | 268            | 31SH2        |         |
| 3   | 5000.006       | 43.04   | 50.37  | 32.29             | 6.21         | 38.64        | 42.90    | 50.23    | 53.90    | 73.90    | 11.0   | 23.6 | Hori.          | 145            | 200            | 31SH2        |         |
| 4   | 6692.345       | 35.92   | 48.64  | 35.14             | 7.26         | 39.02        | 39.30    | 52.02    | 53.90    | 73.90    | 14.6   | 21.8 | Hori.          | 183            | 250            | 31SH2        |         |
| 5   | 1579.955       | 53.00   | 66.12  | 25.38             | 3.42         | 38.92        | 42.88    | 56.00    | 53.90    | 73.90    | 11.0   | 17.9 | Vert.          | 100            | 191            | 31SH2        |         |
| 6   | 2501.240       | 45.53   | 51.37  | 28.43             | 4.33         | 38.66        | 39.63    | 45.47    | 53.90    | 73.90    | 14.2   | 28.4 | Vert.          | 111            | 193            | 31SH2        |         |
| 7   | 2818.632       | 44.70   | 53.43  | 28.92             | 4.60         | 38.42        | 39.80    | 48.53    | 53.90    | 73.90    | 14.1   | 25.3 | Vert.          | 100            | 199            | 31SH2        |         |
| 8   | 4739.869       | 37.65   | 47.44  | 31.85             | 6.04         | 38.52        | 37.02    | 46.81    | 53.90    | 73.90    | 16.8   | 27.0 | Vert.          | 100            | 138            | 31SH2        |         |
| 9   | 5000.013       | 44.07   | 50.06  | 32.29             | 6.21         | 38.64        | 43.93    | 49.92    | 53.90    | 73.90    | 9.9    | 23.9 | Vert.          | 123            | 167            | 31SH2        |         |
| 10  | 6319.831       | 40.76   | 49.82  | 34.46             | 7.05         | 38.99        | 43.28    | 52.34    | 53.90    | 73.90    | 10.6   | 21.5 | Vert.          | 119            | 147            | 31SH2        |         |
| 11  | 7500.006       | 39.01   | 48.96  | 37.78             | 7.76         | 39.31        | 45.24    | 55.19    | 53.90    | 73.90    | 8.6    | 18.7 | Vert.          | 124            | 190            | 31SH2        |         |

# DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Shonan EMC Lab. No.2 Semi-Anechoic Chamber

Date : 2022/05/14

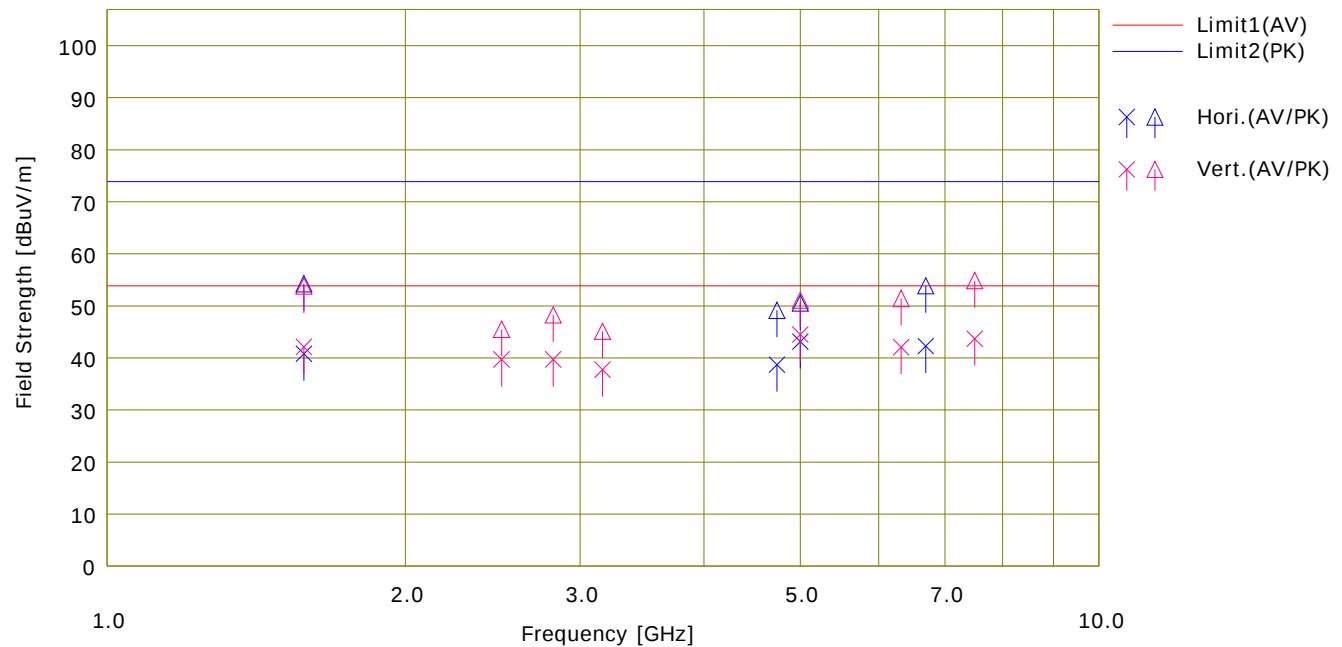
Company : DENSO TEN Limited  
 Kind of EUT : Car Audio  
 Model No. : TN0023A  
 Serial No. : EU200011  
 Remarks : Test Distance = (1-10 GHz) 300 cm, (10 - 40 GHz) 100 cm, Other

Mode : FM Reception Analog (97.7 MHz)  
 Order No. : 14303848  
 Power : DC 12 V  
 Temp./Humi. : 22 deg.C / 52 %RH

Limit : FCC\_Part 15 Subpart B(15.109)\_Class B

Engineer : Yuta Shiba

※No signal was detected above 10 GHz



| No. | Freq.<br>[MHz] | Reading |        | Ant.Fac<br>[dB/m] | Loss<br>[dB] | Gain<br>[dB] | Result   |          | Limit    |          | Margin |      | Pola.<br>[H/V] | Height<br>[cm] | Angle<br>[deg] | Ant.<br>Type | Comment |
|-----|----------------|---------|--------|-------------------|--------------|--------------|----------|----------|----------|----------|--------|------|----------------|----------------|----------------|--------------|---------|
|     |                | <AV>    | <PK>   |                   |              |              | <AV>     | <PK>     | <AV>     | <PK>     | <AV>   | <PK> |                |                |                |              |         |
|     |                | [dBuV]  | [dBuV] |                   |              |              | [dBuV/m] | [dBuV/m] | [dBuV/m] | [dBuV/m] | [dB]   | [dB] |                |                |                |              |         |
| 1   | 1579.975       | 50.91   | 64.38  | 25.38             | 3.42         | 38.92        | 40.79    | 54.26    | 53.90    | 73.90    | 13.1   | 19.6 | Hori.          | 100            | 173            | 31SH2        |         |
| 2   | 4739.919       | 39.33   | 49.77  | 31.85             | 6.04         | 38.52        | 38.70    | 49.14    | 53.90    | 73.90    | 15.2   | 24.7 | Hori.          | 136            | 213            | 31SH2        |         |
| 3   | 5000.090       | 43.30   | 50.68  | 32.29             | 6.21         | 38.64        | 43.16    | 50.54    | 53.90    | 73.90    | 10.7   | 23.3 | Hori.          | 135            | 190            | 31SH2        |         |
| 4   | 6692.776       | 38.90   | 50.48  | 35.14             | 7.26         | 39.02        | 42.28    | 53.86    | 53.90    | 73.90    | 11.6   | 20.0 | Hori.          | 181            | 218            | 31SH2        |         |
| 5   | 1579.966       | 52.23   | 63.92  | 25.38             | 3.42         | 38.92        | 42.11    | 53.80    | 53.90    | 73.90    | 11.7   | 20.1 | Vert.          | 100            | 190            | 31SH2        |         |
| 6   | 2499.975       | 45.60   | 51.41  | 28.43             | 4.33         | 38.66        | 39.70    | 45.51    | 53.90    | 73.90    | 14.2   | 28.3 | Vert.          | 109            | 194            | 31SH2        |         |
| 7   | 2818.677       | 44.60   | 53.14  | 28.92             | 4.60         | 38.42        | 39.70    | 48.24    | 53.90    | 73.90    | 14.2   | 25.6 | Vert.          | 100            | 201            | 31SH2        |         |
| 8   | 3160.006       | 41.67   | 49.04  | 29.45             | 4.89         | 38.27        | 37.74    | 45.11    | 53.90    | 73.90    | 16.1   | 28.7 | Vert.          | 116            | 199            | 31SH2        |         |
| 9   | 5000.038       | 44.63   | 51.24  | 32.29             | 6.21         | 38.64        | 44.49    | 51.10    | 53.90    | 73.90    | 9.4    | 22.8 | Vert.          | 122            | 221            | 31SH2        |         |
| 10  | 6319.751       | 39.55   | 48.92  | 34.46             | 7.05         | 38.99        | 42.07    | 51.44    | 53.90    | 73.90    | 11.8   | 22.4 | Vert.          | 132            | 147            | 31SH2        |         |
| 11  | 7499.928       | 37.46   | 48.63  | 37.78             | 7.76         | 39.31        | 43.69    | 54.86    | 53.90    | 73.90    | 10.2   | 19.0 | Vert.          | 124            | 185            | 31SH2        |         |

Calculation: Result[dBuV/m] = Reading[dBuV] + Ant.Fac[dB/m] + Loss(Cable)[dB] - Gain(AMP)[dB]

Ant.Type=BC:Biconical Antenna LP:Logperiodic Antenna \*\*SH\*: Horn Antenna

# DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Shonan EMC Lab. No.2 Semi-Anechoic Chamber

Date : 2022/05/14

Company : DENSO TEN Limited

Mode : FM Reception Analog (87.75 MHz)

Kind of EUT : Car Audio

Order No. : 14303848

Model No. : TN0023A

Power : DC 12 V

Serial No. : EU200011

Temp./Humi. : 22 deg.C / 52 %RH

Remarks : Test Distance =(1-10 GHz) 300 cm, (10 - 40 GHz) 100 cm, Local

Limit : FCC\_Part 15 Subpart B(15.109)\_Class B

Engineer : Yuta Shiba

&lt;&lt; AV/PK DATA &gt;&gt;

| No. | Freq.    | Reading |        | Ant.Fac | Loss | Gain  | Result   |          | Limit    |          | Margin |      | Pola. | Height | Angle | Ant. Type | Comment |
|-----|----------|---------|--------|---------|------|-------|----------|----------|----------|----------|--------|------|-------|--------|-------|-----------|---------|
|     |          | <AV>    | <PK>   |         |      |       | <AV>     | <PK>     | <AV>     | <PK>     | <AV>   | <PK> |       |        |       |           |         |
|     |          | [dBuV]  | [dBuV] |         |      |       | [dBuV/m] | [dBuV/m] | [dBuV/m] | [dBuV/m] | [dB]   | [dB] |       |        |       |           |         |
| 1   | 1047.511 | 32.51   | 45.99  | 24.70   | 2.80 | 38.99 | 21.02    | 34.50    | 53.90    | 73.90    | 32.8   | 39.4 | Hori. | 100    | 210   | 31SH2     |         |
| 2   | 1058.489 | 32.19   | 46.28  | 24.74   | 2.81 | 38.99 | 20.75    | 34.84    | 53.90    | 73.90    | 33.1   | 39.0 | Hori. | 100    | 0     | 31SH2     |         |
| 3   | 3055.242 | 32.80   | 47.63  | 29.34   | 4.81 | 38.28 | 28.67    | 43.50    | 53.90    | 73.90    | 25.2   | 30.4 | Hori. | 100    | 194   | 31SH2     |         |
| 4   | 3087.258 | 32.01   | 46.58  | 29.42   | 4.84 | 38.28 | 27.99    | 42.56    | 53.90    | 73.90    | 25.9   | 31.3 | Hori. | 213    | 192   | 31SH2     |         |
| 5   | 4277.338 | 31.00   | 45.48  | 30.69   | 5.73 | 38.32 | 29.10    | 43.58    | 53.90    | 73.90    | 24.8   | 30.3 | Hori. | 100    | 0     | 31SH2     |         |
| 6   | 5027.820 | 31.14   | 45.02  | 32.42   | 6.23 | 38.65 | 31.14    | 45.02    | 53.90    | 73.90    | 22.7   | 28.8 | Hori. | 100    | 0     | 31SH2     |         |
| 7   | 6023.191 | 31.25   | 45.94  | 33.77   | 6.86 | 38.96 | 32.92    | 47.61    | 53.90    | 73.90    | 20.9   | 26.2 | Hori. | 100    | 0     | 31SH2     |         |
| 8   | 1047.511 | 34.94   | 47.52  | 24.70   | 2.80 | 38.99 | 23.45    | 36.03    | 53.90    | 73.90    | 30.4   | 37.8 | Vert. | 110    | 143   | 31SH2     |         |
| 9   | 1058.489 | 32.87   | 46.84  | 24.74   | 2.81 | 38.99 | 21.43    | 35.40    | 53.90    | 73.90    | 32.4   | 38.5 | Vert. | 100    | 150   | 31SH2     |         |
| 10  | 3055.242 | 33.34   | 46.96  | 29.34   | 4.81 | 38.28 | 29.21    | 42.83    | 53.90    | 73.90    | 24.6   | 31.0 | Vert. | 100    | 209   | 31SH2     |         |
| 11  | 3087.258 | 32.26   | 46.27  | 29.42   | 4.84 | 38.28 | 28.24    | 42.25    | 53.90    | 73.90    | 25.6   | 31.6 | Vert. | 218    | 219   | 31SH2     |         |
| 12  | 4277.338 | 31.04   | 45.02  | 30.69   | 5.73 | 38.32 | 29.14    | 43.12    | 53.90    | 73.90    | 24.7   | 30.7 | Vert. | 100    | 0     | 31SH2     |         |
| 13  | 5027.820 | 31.12   | 45.75  | 32.42   | 6.23 | 38.65 | 31.12    | 45.75    | 53.90    | 73.90    | 22.7   | 28.1 | Vert. | 100    | 0     | 31SH2     |         |
| 14  | 6023.191 | 31.25   | 45.50  | 33.77   | 6.86 | 38.96 | 32.92    | 47.17    | 53.90    | 73.90    | 20.9   | 26.7 | Vert. | 100    | 0     | 31SH2     |         |

Calculation: Result[dBuV/m] = Reading[dBuV] + Ant.Fac[dB/m] + Loss(Cable)[dB] - Gain(AMP)[dB]

Ant.Type=BC:Biconical Antenna LP:Logperiodic Antenna \*\*SH\*: Horn Antenna

# DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Shonan EMC Lab. No.2 Semi-Anechoic Chamber

Date : 2022/05/14

Company : DENSO TEN Limited

Mode : FM Reception Analog (97.7 MHz)

Kind of EUT : Car Audio

Order No. : 14303848

Model No. : TN0023A

Power : DC 12 V

Serial No. : EU200011

Temp./Humi. : 22 deg.C / 52 %RH

Remarks : Test Distance =(1-10 GHz) 300 cm, (10 - 40 GHz) 100 cm, Local

Limit : FCC\_Part 15 Subpart B(15.109)\_Class B

Engineer : Yuta Shiba

&lt;&lt; AV/PK DATA &gt;&gt;

| No. | Freq.    | Reading |        | Ant.Fac | Loss | Gain  | Result   |          | Limit    |          | Margin |      | Pola. | Height | Angle | Ant. Type | Comment |
|-----|----------|---------|--------|---------|------|-------|----------|----------|----------|----------|--------|------|-------|--------|-------|-----------|---------|
|     |          | <AV>    | <PK>   |         |      |       | <AV>     | <PK>     | <AV>     | <PK>     | <AV>   | <PK> |       |        |       |           |         |
|     |          | [dBuV]  | [dBuV] |         |      |       | [dBuV/m] | [dBuV/m] | [dBuV/m] | [dBuV/m] | [dB]   | [dB] |       |        |       |           |         |
| 1   | 1070.270 | 31.98   | 46.20  | 24.79   | 2.82 | 38.99 | 20.60    | 34.82    | 53.90    | 73.90    | 33.3   | 39.0 | Hori. | 100    | 0     | 31SH2     |         |
| 2   | 1079.130 | 32.69   | 46.47  | 24.84   | 2.83 | 38.99 | 21.37    | 35.15    | 53.90    | 73.90    | 32.5   | 38.7 | Hori. | 100    | 0     | 31SH2     |         |
| 3   | 3016.215 | 33.44   | 47.30  | 29.24   | 4.77 | 38.29 | 29.16    | 43.02    | 53.90    | 73.90    | 24.7   | 30.8 | Hori. | 100    | 195   | 31SH2     |         |
| 4   | 3041.185 | 34.13   | 48.06  | 29.29   | 4.79 | 38.28 | 29.93    | 43.86    | 53.90    | 73.90    | 23.9   | 30.0 | Hori. | 100    | 193   | 31SH2     |         |
| 5   | 4022.213 | 30.58   | 44.10  | 30.27   | 5.53 | 38.21 | 28.17    | 41.69    | 53.90    | 73.90    | 25.7   | 32.2 | Hori. | 100    | 0     | 31SH2     |         |
| 6   | 5059.457 | 31.16   | 44.98  | 32.58   | 6.25 | 38.67 | 31.32    | 45.14    | 53.90    | 73.90    | 22.5   | 28.7 | Hori. | 100    | 0     | 31SH2     |         |
| 7   | 5984.268 | 31.20   | 45.64  | 33.69   | 6.84 | 38.96 | 32.77    | 47.21    | 53.90    | 73.90    | 21.1   | 26.6 | Hori. | 100    | 0     | 31SH2     |         |
| 8   | 1070.270 | 32.19   | 46.41  | 24.79   | 2.82 | 38.99 | 20.81    | 35.03    | 53.90    | 73.90    | 33.0   | 38.8 | Vert. | 100    | 0     | 31SH2     |         |
| 9   | 1079.130 | 32.16   | 46.64  | 24.84   | 2.83 | 38.99 | 20.84    | 35.32    | 53.90    | 73.90    | 33.0   | 38.5 | Vert. | 100    | 0     | 31SH2     |         |
| 10  | 3016.215 | 33.28   | 47.72  | 29.24   | 4.77 | 38.29 | 29.00    | 43.44    | 53.90    | 73.90    | 24.9   | 30.4 | Vert. | 100    | 220   | 31SH2     |         |
| 11  | 3041.185 | 34.24   | 48.28  | 29.29   | 4.79 | 38.28 | 30.04    | 44.08    | 53.90    | 73.90    | 23.8   | 29.8 | Vert. | 100    | 208   | 31SH2     |         |
| 12  | 4022.213 | 30.59   | 44.70  | 30.27   | 5.53 | 38.21 | 28.18    | 42.29    | 53.90    | 73.90    | 25.7   | 31.6 | Vert. | 100    | 0     | 31SH2     |         |
| 13  | 5059.457 | 31.13   | 45.49  | 32.58   | 6.25 | 38.67 | 31.29    | 45.65    | 53.90    | 73.90    | 22.6   | 28.2 | Vert. | 100    | 0     | 31SH2     |         |
| 14  | 5984.268 | 31.19   | 45.78  | 33.69   | 6.84 | 38.96 | 32.76    | 47.35    | 53.90    | 73.90    | 21.1   | 26.5 | Vert. | 100    | 0     | 31SH2     |         |

Calculation: Result[dBuV/m] = Reading[dBuV] + Ant.Fac[dB/m] + Loss(Cable)[dB] - Gain(AMP)[dB]

Ant.Type=BC: Biconical Antenna LP: Logperiodic Antenna \*\*SH\*: Horn Antenna

# DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Shonan EMC Lab. No.2 Semi-Anechoic Chamber

Date : 2022/05/14

Company : DENSO TEN Limited

Mode : FM Reception Analog (107.9 MHz)

Kind of EUT : Car Audio

Order No. : 14303848

Model No. : TN0023A

Power : DC 12 V

Serial No. : EU200011

Temp./Humi. : 22 deg.C / 52 %RH

Remarks : Test Distance =(1-10 GHz) 300 cm, (10 - 40 GHz) 100 cm, Local

Limit : FCC\_Part 15 Subpart B(15.109)\_Class B

Engineer : Yuta Shiba

&lt;&lt; AV/PK DATA &gt;&gt;

| No. | Freq.    | Reading |        | Ant.Fac | Loss | Gain  | Result   |          | Limit    |          | Margin |      | Pola. | Height | Angle | Ant. Type | Comment |
|-----|----------|---------|--------|---------|------|-------|----------|----------|----------|----------|--------|------|-------|--------|-------|-----------|---------|
|     |          | <AV>    | <PK>   |         |      |       | <AV>     | <PK>     | <AV>     | <PK>     | <AV>   | <PK> |       |        |       |           |         |
|     |          | [dBuV]  | [dBuV] |         |      |       | [dBuV/m] | [dBuV/m] | [dBuV/m] | [dBuV/m] | [dB]   | [dB] |       |        |       |           |         |
| 1   | 1074.959 | 32.15   | 46.60  | 24.82   | 2.82 | 38.99 | 20.80    | 35.25    | 53.90    | 73.90    | 33.1   | 38.6 | Hori. | 100    | 185   | 31SH2     |         |
| 2   | 1083.041 | 31.85   | 45.91  | 24.86   | 2.83 | 38.99 | 20.55    | 34.61    | 53.90    | 73.90    | 33.3   | 39.2 | Hori. | 100    | 280   | 31SH2     |         |
| 3   | 3009.885 | 34.13   | 48.45  | 29.23   | 4.77 | 38.29 | 29.84    | 44.16    | 53.90    | 73.90    | 24.0   | 29.7 | Hori. | 100    | 195   | 31SH2     |         |
| 4   | 3032.515 | 33.12   | 47.44  | 29.28   | 4.78 | 38.29 | 28.89    | 43.21    | 53.90    | 73.90    | 25.0   | 30.6 | Hori. | 105    | 192   | 31SH2     |         |
| 5   | 4223.861 | 31.11   | 45.44  | 30.56   | 5.68 | 38.29 | 29.06    | 43.39    | 53.90    | 73.90    | 24.8   | 30.5 | Hori. | 100    | 0     | 31SH2     |         |
| 6   | 5052.306 | 31.13   | 45.50  | 32.54   | 6.25 | 38.67 | 31.25    | 45.62    | 53.90    | 73.90    | 22.6   | 28.2 | Hori. | 100    | 0     | 31SH2     |         |
| 7   | 6065.031 | 31.24   | 46.42  | 33.84   | 6.89 | 38.97 | 33.00    | 48.18    | 53.90    | 73.90    | 20.9   | 25.7 | Hori. | 100    | 0     | 31SH2     |         |
| 8   | 1074.959 | 33.17   | 47.21  | 24.82   | 2.82 | 38.99 | 21.82    | 35.86    | 53.90    | 73.90    | 32.0   | 38.0 | Vert. | 149    | 200   | 31SH2     |         |
| 9   | 1083.041 | 32.50   | 46.94  | 24.86   | 2.83 | 38.99 | 21.20    | 35.64    | 53.90    | 73.90    | 32.7   | 38.2 | Vert. | 121    | 191   | 31SH2     |         |
| 10  | 3009.885 | 34.60   | 49.02  | 29.23   | 4.77 | 38.29 | 30.31    | 44.73    | 53.90    | 73.90    | 23.5   | 29.1 | Vert. | 119    | 220   | 31SH2     |         |
| 11  | 3032.515 | 34.63   | 48.43  | 29.28   | 4.78 | 38.29 | 30.40    | 44.20    | 53.90    | 73.90    | 23.5   | 29.7 | Vert. | 118    | 218   | 31SH2     |         |
| 12  | 4223.861 | 31.11   | 45.44  | 30.56   | 5.68 | 38.29 | 29.06    | 43.39    | 53.90    | 73.90    | 24.8   | 30.5 | Vert. | 100    | 0     | 31SH2     |         |
| 13  | 5052.306 | 31.10   | 45.18  | 32.54   | 6.25 | 38.67 | 31.22    | 45.30    | 53.90    | 73.90    | 22.6   | 28.6 | Vert. | 100    | 0     | 31SH2     |         |
| 14  | 6065.031 | 31.25   | 46.19  | 33.84   | 6.89 | 38.97 | 33.01    | 47.95    | 53.90    | 73.90    | 20.8   | 25.9 | Vert. | 100    | 0     | 31SH2     |         |

Calculation: Result[dBuV/m] = Reading[dBuV] + Ant.Fac[dB/m] + Loss(Cable)[dB] - Gain(AMP)[dB]

Ant.Type=BC:Biconical Antenna LP:Logperiodic Antenna \*\*SH\*: Horn Antenna

# DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Shonan EMC Lab. No.2 Semi-Anechoic Chamber

Date : 2022/05/14

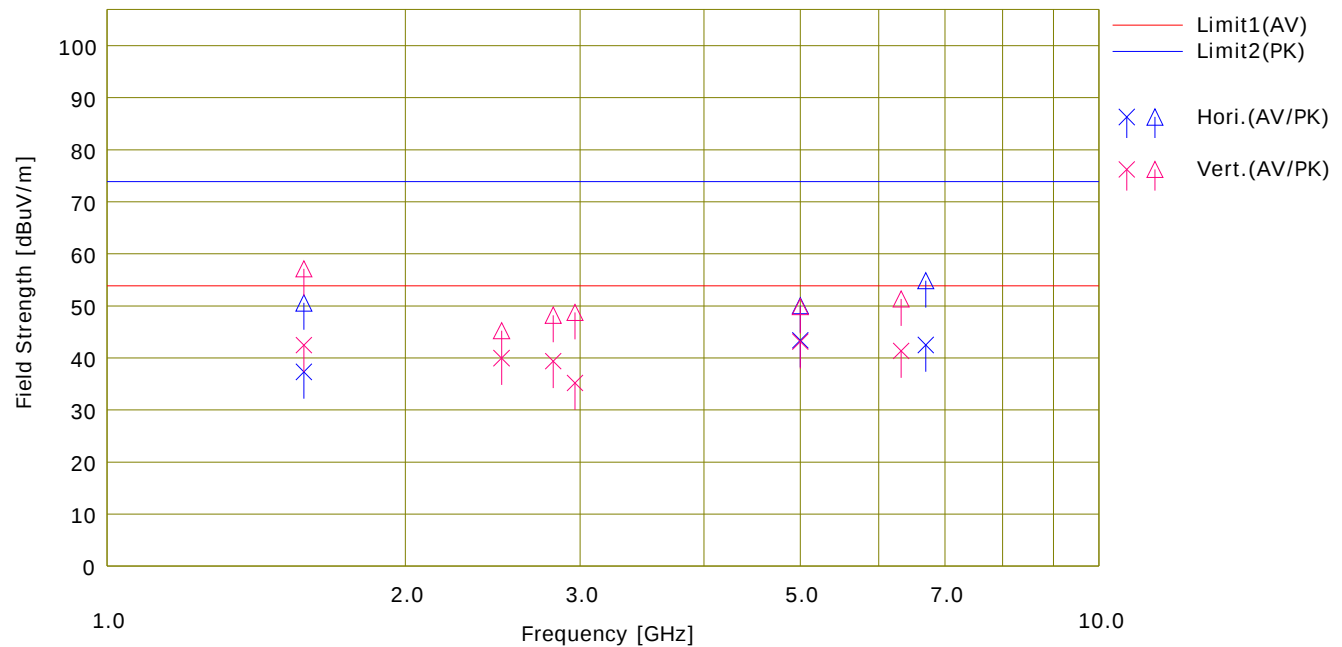
Company : DENSO TEN Limited  
 Kind of EUT : Car Audio  
 Model No. : TN0023A  
 Serial No. : EU200011  
 Remarks : Test Distance = (1-10 GHz) 300 cm, (10 - 40 GHz) 100 cm, Other

Mode : FM Reception Digital (97.7 MHz)  
 Order No. : 14303848  
 Power : DC 12 V  
 Temp./Humi. : 22 deg.C / 52 %RH

Limit : FCC\_Part 15 Subpart B(15.109)\_Class B

Engineer : Yuta Shiba

※No signal was detected above 10 GHz



| No. | Freq.<br>[MHz] | Reading |        | Ant.Fac<br>[dB/m] | Loss<br>[dB] | Gain<br>[dB] | Result   |          | Limit    |          | Margin |      | Pola.<br>[H/V] | Height<br>[cm] | Angle<br>[deg] | Ant.<br>Type | Comment |
|-----|----------------|---------|--------|-------------------|--------------|--------------|----------|----------|----------|----------|--------|------|----------------|----------------|----------------|--------------|---------|
|     |                | <AV>    | <PK>   |                   |              |              | <AV>     | <PK>     | <AV>     | <PK>     | <AV>   | <PK> |                |                |                |              |         |
|     |                | [dBuV]  | [dBuV] |                   |              |              | [dBuV/m] | [dBuV/m] | [dBuV/m] | [dBuV/m] | [dB]   | [dB] |                |                |                |              |         |
| 1   | 1579.950       | 47.46   | 60.70  | 25.38             | 3.42         | 38.92        | 37.34    | 50.58    | 53.90    | 73.90    | 16.5   | 23.3 | Hori.          | 170            | 124            | 31SH2        |         |
| 2   | 5000.011       | 43.51   | 50.20  | 32.29             | 6.21         | 38.64        | 43.37    | 50.06    | 53.90    | 73.90    | 10.5   | 23.8 | Hori.          | 131            | 198            | 31SH2        |         |
| 3   | 6691.784       | 39.13   | 51.47  | 35.14             | 7.26         | 39.02        | 42.51    | 54.85    | 53.90    | 73.90    | 11.3   | 19.0 | Hori.          | 204            | 241            | 31SH2        |         |
| 4   | 1579.952       | 52.59   | 67.23  | 25.38             | 3.42         | 38.92        | 42.47    | 57.11    | 53.90    | 73.90    | 11.4   | 16.7 | Vert.          | 100            | 191            | 31SH2        |         |
| 5   | 2500.004       | 45.86   | 51.15  | 28.43             | 4.33         | 38.66        | 39.96    | 45.25    | 53.90    | 73.90    | 13.9   | 28.6 | Vert.          | 112            | 193            | 31SH2        |         |
| 6   | 2818.617       | 44.30   | 53.11  | 28.92             | 4.60         | 38.42        | 39.40    | 48.21    | 53.90    | 73.90    | 14.5   | 25.6 | Vert.          | 100            | 200            | 31SH2        |         |
| 7   | 2965.615       | 39.60   | 53.15  | 29.17             | 4.74         | 38.32        | 35.19    | 48.74    | 53.90    | 73.90    | 18.7   | 25.1 | Vert.          | 100            | 209            | 31SH2        |         |
| 8   | 5000.008       | 43.28   | 49.99  | 32.29             | 6.21         | 38.64        | 43.14    | 49.85    | 53.90    | 73.90    | 10.7   | 24.0 | Vert.          | 107            | 168            | 31SH2        |         |
| 9   | 6320.732       | 38.82   | 48.81  | 34.46             | 7.05         | 38.99        | 41.34    | 51.33    | 53.90    | 73.90    | 12.5   | 22.5 | Vert.          | 126            | 146            | 31SH2        |         |

Calculation: Result[dBuV/m] = Reading[dBuV] + Ant.Fac[dB/m] + Loss(Cable)[dB] - Gain(AMP)[dB]

Ant.Type=BC:Biconical Antenna LP:Logperiodic Antenna \*\*SH\*: Horn Antenna

# DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Shonan EMC Lab. No.2 Semi-Anechoic Chamber

Date : 2022/05/14

Company : DENSO TEN Limited

Mode : FM Reception Digital (87.75 MHz)

Kind of EUT : Car Audio

Order No. : 14303848

Model No. : TN0023A

Power : DC 12 V

Serial No. : EU200011

Temp./Humi. : 22 deg.C / 52 %RH

Remarks : Test Distance =(1-10 GHz) 300 cm, (10 - 40 GHz) 100 cm, Local

Limit : FCC\_Part 15 Subpart B(15.109)\_Class B

Engineer : Yuta Shiba

&lt;&lt; AV/PK DATA &gt;&gt;

| No. | Freq.    | Reading |        | Ant.Fac | Loss | Gain  | Result   |          | Limit    |          | Margin |      | Pola. | Height | Angle | Ant. Type | Comment |
|-----|----------|---------|--------|---------|------|-------|----------|----------|----------|----------|--------|------|-------|--------|-------|-----------|---------|
|     |          | <AV>    | <PK>   |         |      |       | <AV>     | <PK>     | <AV>     | <PK>     | <AV>   | <PK> |       |        |       |           |         |
|     |          | [dBuV]  | [dBuV] |         |      |       | [dBuV/m] | [dBuV/m] | [dBuV/m] | [dBuV/m] | [dB]   | [dB] |       |        |       |           |         |
| 1   | 1047.511 | 36.67   | 55.44  | 24.70   | 2.80 | 38.99 | 25.18    | 43.95    | 53.90    | 73.90    | 28.7   | 29.9 | Hori. | 266    | 320   | 31SH2     |         |
| 2   | 1058.489 | 37.06   | 55.33  | 24.74   | 2.81 | 38.99 | 25.62    | 43.89    | 53.90    | 73.90    | 28.2   | 30.0 | Hori. | 240    | 334   | 31SH2     |         |
| 3   | 3055.242 | 34.01   | 48.07  | 29.34   | 4.81 | 38.28 | 29.88    | 43.94    | 53.90    | 73.90    | 24.0   | 29.9 | Hori. | 100    | 0     | 31SH2     |         |
| 4   | 3087.258 | 32.85   | 46.88  | 29.42   | 4.84 | 38.28 | 28.83    | 42.86    | 53.90    | 73.90    | 25.0   | 31.0 | Hori. | 180    | 208   | 31SH2     |         |
| 5   | 4277.338 | 30.97   | 45.11  | 30.69   | 5.73 | 38.32 | 29.07    | 43.21    | 53.90    | 73.90    | 24.8   | 30.6 | Hori. | 100    | 0     | 31SH2     |         |
| 6   | 5027.820 | 32.08   | 45.90  | 32.42   | 6.23 | 38.65 | 32.08    | 45.90    | 53.90    | 73.90    | 21.8   | 28.0 | Hori. | 100    | 0     | 31SH2     |         |
| 7   | 6023.191 | 32.15   | 46.60  | 33.77   | 6.86 | 38.96 | 33.82    | 48.27    | 53.90    | 73.90    | 20.0   | 25.6 | Hori. | 100    | 0     | 31SH2     |         |
| 8   | 1047.511 | 34.18   | 48.71  | 24.70   | 2.80 | 38.99 | 22.69    | 37.22    | 53.90    | 73.90    | 31.2   | 36.6 | Vert. | 100    | 0     | 31SH2     |         |
| 9   | 1058.489 | 34.11   | 52.54  | 24.74   | 2.81 | 38.99 | 22.67    | 41.10    | 53.90    | 73.90    | 31.2   | 32.8 | Vert. | 140    | 44    | 31SH2     |         |
| 10  | 3055.242 | 33.60   | 49.20  | 29.34   | 4.81 | 38.28 | 29.47    | 45.07    | 53.90    | 73.90    | 24.4   | 28.8 | Vert. | 235    | 215   | 31SH2     |         |
| 11  | 3087.258 | 32.25   | 47.66  | 29.42   | 4.84 | 38.28 | 28.23    | 43.64    | 53.90    | 73.90    | 25.6   | 30.2 | Vert. | 200    | 216   | 31SH2     |         |
| 12  | 4277.338 | 31.01   | 45.65  | 30.69   | 5.73 | 38.32 | 29.11    | 43.75    | 53.90    | 73.90    | 24.7   | 30.1 | Vert. | 100    | 0     | 31SH2     |         |
| 13  | 5027.820 | 31.06   | 46.52  | 32.42   | 6.23 | 38.65 | 31.06    | 46.52    | 53.90    | 73.90    | 22.8   | 27.3 | Vert. | 100    | 0     | 31SH2     |         |
| 14  | 6023.191 | 30.88   | 46.85  | 33.77   | 6.86 | 38.96 | 32.55    | 48.52    | 53.90    | 73.90    | 21.3   | 25.3 | Vert. | 100    | 0     | 31SH2     |         |

Calculation: Result[dBuV/m] = Reading[dBuV] + Ant.Fac[dB/m] + Loss(Cable)[dB] - Gain(AMP)[dB]

Ant.Type=BC: Biconical Antenna LP: Logperiodic Antenna \*\*SH\*: Horn Antenna

# DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Shonan EMC Lab. No.2 Semi-Anechoic Chamber

Date : 2022/05/14

Company : DENSO TEN Limited

Mode : FM Reception Digital (97.7 MHz)

Kind of EUT : Car Audio

Order No. : 14303848

Model No. : TN0023A

Power : DC 12 V

Serial No. : EU200011

Temp./Humi. : 22 deg.C / 52 %RH

Remarks : Test Distance =(1-10 GHz) 300 cm, (10 - 40 GHz) 100 cm, Local

Limit : FCC\_Part 15 Subpart B(15.109)\_Class B

Engineer : Yuta Shiba

&lt;&lt; AV/PK DATA &gt;&gt;

| No. | Freq.    | Reading |        | Ant.Fac | Loss | Gain  | Result   |          | Limit    |          | Margin |      | Pola. | Height | Angle | Ant. Type | Comment |
|-----|----------|---------|--------|---------|------|-------|----------|----------|----------|----------|--------|------|-------|--------|-------|-----------|---------|
|     |          | <AV>    | <PK>   |         |      |       | <AV>     | <PK>     | <AV>     | <PK>     | <AV>   | <PK> |       |        |       |           |         |
|     |          | [dBuV]  | [dBuV] |         |      |       | [dBuV/m] | [dBuV/m] | [dBuV/m] | [dBuV/m] | [dB]   | [dB] |       |        |       |           |         |
| 1   | 1070.270 | 36.56   | 55.62  | 24.79   | 2.82 | 38.99 | 25.18    | 44.24    | 53.90    | 73.90    | 28.7   | 29.6 | Hori. | 244    | 315   | 31SH2     |         |
| 2   | 1079.130 | 36.78   | 55.63  | 24.84   | 2.83 | 38.99 | 25.46    | 44.31    | 53.90    | 73.90    | 28.4   | 29.5 | Hori. | 236    | 340   | 31SH2     |         |
| 3   | 3016.215 | 33.24   | 45.69  | 29.24   | 4.77 | 38.29 | 28.96    | 41.41    | 53.90    | 73.90    | 24.9   | 32.4 | Hori. | 100    | 197   | 31SH2     |         |
| 4   | 3041.185 | 34.05   | 48.51  | 29.29   | 4.79 | 38.28 | 29.85    | 44.31    | 53.90    | 73.90    | 24.0   | 29.5 | Hori. | 100    | 194   | 31SH2     |         |
| 5   | 4022.213 | 30.58   | 44.82  | 30.27   | 5.53 | 38.21 | 28.17    | 42.41    | 53.90    | 73.90    | 25.7   | 31.4 | Hori. | 100    | 0     | 31SH2     |         |
| 6   | 5059.457 | 31.10   | 45.86  | 32.58   | 6.25 | 38.67 | 31.26    | 46.02    | 53.90    | 73.90    | 22.6   | 27.8 | Hori. | 100    | 0     | 31SH2     |         |
| 7   | 5984.268 | 31.19   | 46.16  | 33.69   | 6.84 | 38.96 | 32.76    | 47.73    | 53.90    | 73.90    | 21.1   | 26.1 | Hori. | 100    | 0     | 31SH2     |         |
| 8   | 1070.270 | 35.40   | 52.78  | 24.79   | 2.82 | 38.99 | 24.02    | 41.40    | 53.90    | 73.90    | 29.8   | 32.5 | Vert. | 128    | 56    | 31SH2     |         |
| 9   | 1079.130 | 33.39   | 50.08  | 24.84   | 2.83 | 38.99 | 22.07    | 38.76    | 53.90    | 73.90    | 31.8   | 35.1 | Vert. | 100    | 0     | 31SH2     |         |
| 10  | 3016.215 | 32.92   | 47.44  | 29.24   | 4.77 | 38.29 | 28.64    | 43.16    | 53.90    | 73.90    | 25.2   | 30.7 | Vert. | 196    | 211   | 31SH2     |         |
| 11  | 3041.185 | 34.52   | 49.85  | 29.29   | 4.79 | 38.28 | 30.32    | 45.65    | 53.90    | 73.90    | 23.5   | 28.2 | Vert. | 180    | 221   | 31SH2     |         |
| 12  | 4022.213 | 30.84   | 46.94  | 30.27   | 5.53 | 38.21 | 28.43    | 44.53    | 53.90    | 73.90    | 25.4   | 29.3 | Vert. | 100    | 0     | 31SH2     |         |
| 13  | 5059.457 | 31.14   | 45.88  | 32.58   | 6.25 | 38.67 | 31.30    | 46.04    | 53.90    | 73.90    | 22.6   | 27.8 | Vert. | 100    | 0     | 31SH2     |         |
| 14  | 5984.268 | 31.24   | 46.94  | 33.69   | 6.84 | 38.96 | 32.81    | 48.51    | 53.90    | 73.90    | 21.0   | 25.3 | Vert. | 100    | 0     | 31SH2     |         |

Calculation: Result[dBuV/m] = Reading[dBuV] + Ant.Fac[dB/m] + Loss(Cable)[dB] - Gain(AMP)[dB]

Ant.Type=BC:Biconical Antenna LP:Logperiodic Antenna \*\*SH\*: Horn Antenna

# DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Shonan EMC Lab. No.2 Semi-Anechoic Chamber

Date : 2022/05/14

Company : DENSO TEN Limited

Mode : FM Reception Digital (107.9 MHz)

Kind of EUT : Car Audio

Order No. : 14303848

Model No. : TN0023A

Power : DC 12 V

Serial No. : EU200011

Temp./Humi. : 22 deg.C / 52 %RH

Remarks : Test Distance =(1-10 GHz) 300 cm, (10 - 40 GHz) 100 cm, Local

Limit : FCC\_Part 15 Subpart B(15.109)\_Class B

Engineer : Yuta Shiba

&lt;&lt; AV/PK DATA &gt;&gt;

| No. | Freq.    | Reading |        | Ant.Fac | Loss | Gain  | Result   |          | Limit    |          | Margin |      | Pola. | Height | Angle | Ant. Type | Comment |
|-----|----------|---------|--------|---------|------|-------|----------|----------|----------|----------|--------|------|-------|--------|-------|-----------|---------|
|     |          | <AV>    | <PK>   |         |      |       | <AV>     | <PK>     | <AV>     | <PK>     | <AV>   | <PK> |       |        |       |           |         |
|     |          | [dBuV]  | [dBuV] |         |      |       | [dBuV/m] | [dBuV/m] | [dBuV/m] | [dBuV/m] | [dB]   | [dB] |       |        |       |           |         |
| 1   | 1074.959 | 35.75   | 53.14  | 24.82   | 2.82 | 38.99 | 24.40    | 41.79    | 53.90    | 73.90    | 29.5   | 32.1 | Hori. | 207    | 321   | 31SH2     |         |
| 2   | 1083.041 | 36.07   | 52.82  | 24.86   | 2.83 | 38.99 | 24.77    | 41.52    | 53.90    | 73.90    | 29.1   | 32.3 | Hori. | 266    | 324   | 31SH2     |         |
| 3   | 3009.885 | 35.67   | 47.43  | 29.23   | 4.77 | 38.29 | 31.38    | 43.14    | 53.90    | 73.90    | 22.5   | 30.7 | Hori. | 100    | 194   | 31SH2     |         |
| 4   | 3032.515 | 35.51   | 47.51  | 29.28   | 4.78 | 38.29 | 31.28    | 43.28    | 53.90    | 73.90    | 22.6   | 30.6 | Hori. | 100    | 196   | 31SH2     |         |
| 5   | 4223.861 | 32.57   | 45.65  | 30.56   | 5.68 | 38.29 | 30.52    | 43.60    | 53.90    | 73.90    | 23.3   | 30.3 | Hori. | 100    | 0     | 31SH2     |         |
| 6   | 5052.306 | 32.60   | 46.08  | 32.54   | 6.25 | 38.67 | 32.72    | 46.20    | 53.90    | 73.90    | 21.1   | 27.7 | Hori. | 100    | 0     | 31SH2     |         |
| 7   | 6065.031 | 32.73   | 46.09  | 33.84   | 6.89 | 38.97 | 34.49    | 47.85    | 53.90    | 73.90    | 19.4   | 26.0 | Hori. | 100    | 0     | 31SH2     |         |
| 8   | 1074.959 | 36.20   | 56.67  | 24.82   | 2.82 | 38.99 | 24.85    | 45.32    | 53.90    | 73.90    | 29.0   | 28.5 | Vert. | 161    | 51    | 31SH2     |         |
| 9   | 1083.041 | 35.49   | 55.31  | 24.86   | 2.83 | 38.99 | 24.19    | 44.01    | 53.90    | 73.90    | 29.7   | 29.8 | Vert. | 100    | 54    | 31SH2     |         |
| 10  | 3009.885 | 35.48   | 47.61  | 29.23   | 4.77 | 38.29 | 31.19    | 43.32    | 53.90    | 73.90    | 22.7   | 30.5 | Vert. | 100    | 0     | 31SH2     |         |
| 11  | 3032.515 | 34.04   | 48.19  | 29.28   | 4.78 | 38.29 | 29.81    | 43.96    | 53.90    | 73.90    | 24.0   | 29.9 | Vert. | 202    | 220   | 31SH2     |         |
| 12  | 4223.861 | 31.25   | 44.83  | 30.56   | 5.68 | 38.29 | 29.20    | 42.78    | 53.90    | 73.90    | 24.7   | 31.1 | Vert. | 100    | 0     | 31SH2     |         |
| 13  | 5052.306 | 31.18   | 46.07  | 32.54   | 6.25 | 38.67 | 31.30    | 46.19    | 53.90    | 73.90    | 22.6   | 27.7 | Vert. | 100    | 0     | 31SH2     |         |
| 14  | 6065.031 | 31.24   | 46.31  | 33.84   | 6.89 | 38.97 | 33.00    | 48.07    | 53.90    | 73.90    | 20.9   | 25.8 | Vert. | 100    | 0     | 31SH2     |         |

Calculation: Result[dBuV/m] = Reading[dBuV] + Ant.Fac[dB/m] + Loss(Cable)[dB] - Gain(AMP)[dB]

Ant.Type=BC:Biconical Antenna LP:Logperiodic Antenna \*\*SH\*: Horn Antenna

# DATA OF ANTENNA TERMINAL TEST

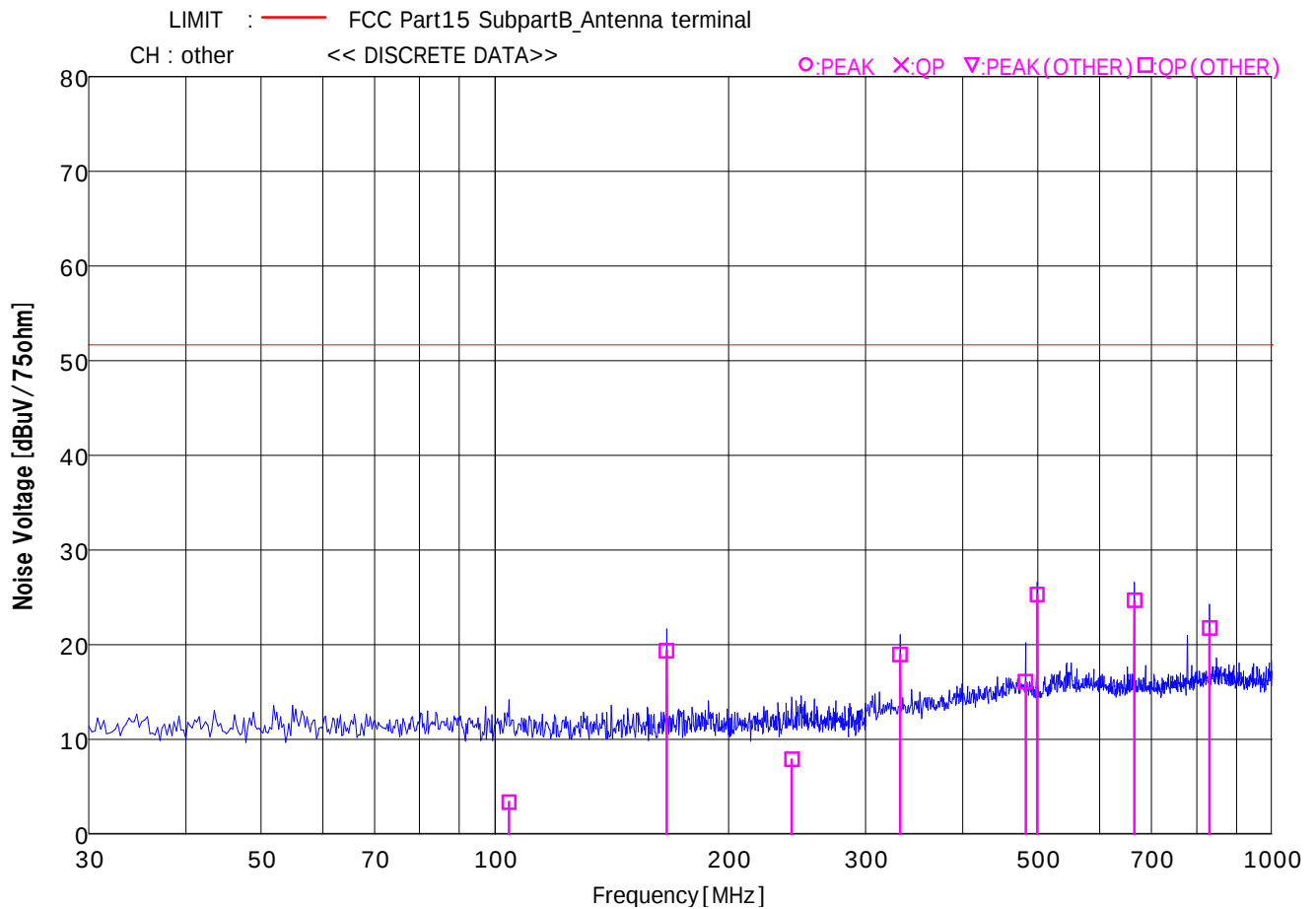
UL Japan,Inc. Shonan EMC Lab. No.1 Shielded Room  
Date : **13 / May / 2022**

Company : DENSO TEN Limited  
Kind of EUT : Car **Audio**  
Model No. : TN0023A  
Serial No. : EU200011

Mode : FM Reception Analog (97.7 MHz)  
Order No. : 14303848  
Power : DC 12 V  
Temp./Humi. : 22 deg.C / 54 %RH

Remarks : Other

Engineer : Yuta Shiba



# DATA OF ANTENNA TERMINAL TEST

UL Japan, Inc. Shonan EMC Lab. No.1 Shielded Room  
Date : **13/May/2022**

Company : DENSO TEN Limited  
Kind of EUT : Car **Audio**  
Model No. : TN0023A  
Serial No. : EU200011

Mode : FM Reception Analog (97.7 MHz)  
Order No. : 14303848  
Power : DC 12 V  
Temp./Humi. : 22 deg.C / 54 %RH

Remarks : Other

Engineer : Yuta Shiba

LIMIT : FCC Part15 SubpartB\_Antenna terminal

| CH    | Freq    | Reading |     | Factor | Result    |      | Limit     | Margin |
|-------|---------|---------|-----|--------|-----------|------|-----------|--------|
|       |         | PEAK    | QP  |        | PEAK      | QP   |           |        |
|       | [MHz]   | [dBuV]  |     | [dB]   | [dBuV/75] |      | [dBuV/75] | [dB]   |
| other | *104250 | ----    | 164 | -13.0  | ----      | 3.4  | 51.7      | 48.3   |
|       | *166350 | ----    | 322 | -12.8  | ----      | 19.4 | 51.7      | 32.3   |
|       | *241141 | ----    | 206 | -12.7  | ----      | 7.9  | 51.7      | 43.8   |
|       | *332201 | ----    | 315 | -12.5  | ----      | 19.0 | 51.7      | 32.7   |
|       | *482003 | ----    | 283 | -12.2  | ----      | 16.1 | 51.7      | 35.6   |
|       | *498804 | ----    | 375 | -12.2  | ----      | 25.3 | 51.7      | 26.4   |
|       | *665406 | ----    | 365 | -11.8  | ----      | 24.7 | 51.7      | 27.0   |
|       | *832009 | ----    | 335 | -11.7  | ----      | 21.8 | 51.7      | 29.9   |

# DATA OF ANTENNA TERMINAL TEST

UL Japan, Inc. Shonan EMC Lab. No.1 Shielded Room  
Date : **13/May/2022**

Company : DENSO TEN Limited  
Kind of EUT : Car **Audio**  
Model No. : TN0023A  
Serial No. : EU200011

Mode : FM Reception Analog (87.75 MHz)  
Order No. : 14303848  
Power : DC 12 V  
Temp./Humi. : 22 deg.C / 54 %RH

Remarks : Local

Engineer : Yuta Shiba

LIMIT(Fundamental) : FCC Part15 SubpartB\_Antenna terminal  
LIMIT(Harmonics) : FCC Part15 SubpartB\_Antenna terminal

| CH       | Freq   | Reading |      | Factor      | Result      |      | Limit | Margin |
|----------|--------|---------|------|-------------|-------------|------|-------|--------|
|          |        | PEAK    | QP   |             | PEAK        | QP   |       |        |
|          | [MHz]  | [dBuV]  | [dB] | [dBuV / 75] | [dBuV / 75] | [dB] |       |        |
| 87.75MHz | 88207  | ----    | 170  | -13.0       | ----        | 4.0  | 51.7  | 47.7   |
|          | 176415 | ----    | 162  | -12.8       | ----        | 3.4  | 51.7  | 48.3   |
|          | 264622 | ----    | 158  | -12.6       | ----        | 3.2  | 51.7  | 48.5   |
|          | 352830 | ----    | 160  | -12.5       | ----        | 3.5  | 51.7  | 48.2   |
|          | 441037 | ----    | 156  | -12.3       | ----        | 3.3  | 51.7  | 48.4   |
|          | 529244 | ----    | 161  | -12.1       | ----        | 4.0  | 51.7  | 47.7   |
|          | 617452 | ----    | 153  | -11.9       | ----        | 3.4  | 51.7  | 48.3   |
|          | 705659 | ----    | 284  | -11.8       | ----        | 16.6 | 51.7  | 35.1   |
|          | 793866 | ----    | 152  | -11.7       | ----        | 3.5  | 51.7  | 48.2   |
|          | 882074 | ----    | 163  | -11.8       | ----        | 4.5  | 51.7  | 47.2   |
|          | 970281 | ----    | 156  | -11.9       | ----        | 3.7  | 51.7  | 48.0   |
|          | 87293  | ----    | 165  | -13.0       | ----        | 3.5  | 51.7  | 48.2   |
|          | 174585 | ----    | 164  | -12.8       | ----        | 3.6  | 51.7  | 48.1   |
|          | 261878 | ----    | 158  | -12.6       | ----        | 3.2  | 51.7  | 48.5   |
|          | 349171 | ----    | 159  | -12.5       | ----        | 3.4  | 51.7  | 48.3   |
|          | 436463 | ----    | 157  | -12.3       | ----        | 3.4  | 51.7  | 48.3   |
|          | 523756 | ----    | 158  | -12.1       | ----        | 3.7  | 51.7  | 48.0   |
|          | 611048 | ----    | 152  | -11.9       | ----        | 3.3  | 51.7  | 48.4   |
|          | 698341 | ----    | 154  | -11.8       | ----        | 3.6  | 51.7  | 48.1   |
|          | 785634 | ----    | 151  | -11.7       | ----        | 3.4  | 51.7  | 48.3   |
|          | 872926 | ----    | 153  | -11.8       | ----        | 3.5  | 51.7  | 48.2   |
|          | 960219 | ----    | 161  | -11.9       | ----        | 4.2  | 51.7  | 47.5   |

# DATA OF ANTENNA TERMINAL TEST

UL Japan,Inc. Shonan EMC Lab. No.1 Shielded Room  
Date : **13/May/2022**

Company : DENSO TEN Limited  
Kind of EUT : Car **Audio**  
Model No. : TN0023A  
Serial No. : EU200011

Mode : FM Reception Analog (97.7 MHz)  
Order No. : 14303848  
Power : DC 12 V  
Temp./Humi. : 22 deg.C / 54 %RH

Remarks : Local

Engineer : Yuta Shiba

LIMIT(Fundamental) : FCC Part15 SubpartB\_Antenna terminal  
LIMIT(Harmonics) : FCC Part15 SubpartB\_Antenna terminal

| CH      | Freq   | Reading |      | Factor      | Result      |      | Limit | Margin |
|---------|--------|---------|------|-------------|-------------|------|-------|--------|
|         |        | PEAK    | QP   |             | PEAK        | QP   |       |        |
|         | [MHz]  | [dBuV]  | [dB] | [dBuV / 75] | [dBuV / 75] | [dB] |       |        |
| 97.7MHz | 97297  | ----    | 160  | -13.0       | ----        | 3.0  | 51.7  | 48.7   |
|         | 194595 | ----    | 163  | -12.8       | ----        | 3.5  | 51.7  | 48.2   |
|         | 291892 | ----    | 159  | -12.6       | ----        | 3.3  | 51.7  | 48.4   |
|         | 389189 | ----    | 162  | -12.4       | ----        | 3.8  | 51.7  | 47.9   |
|         | 486486 | ----    | 159  | -12.2       | ----        | 3.7  | 51.7  | 48.0   |
|         | 583784 | ----    | 159  | -11.9       | ----        | 4.0  | 51.7  | 47.7   |
|         | 681081 | ----    | 171  | -11.8       | ----        | 5.3  | 51.7  | 46.4   |
|         | 778378 | ----    | 298  | -11.7       | ----        | 18.1 | 51.7  | 33.6   |
|         | 875675 | ----    | 157  | -11.8       | ----        | 3.9  | 51.7  | 47.8   |
|         | 972973 | ----    | 159  | -11.9       | ----        | 4.0  | 51.7  | 47.7   |
|         | 98103  | ----    | 160  | -13.0       | ----        | 3.0  | 51.7  | 48.7   |
|         | 196206 | ----    | 162  | -12.8       | ----        | 3.4  | 51.7  | 48.3   |
|         | 294308 | ----    | 159  | -12.6       | ----        | 3.3  | 51.7  | 48.4   |
|         | 392411 | ----    | 160  | -12.4       | ----        | 3.6  | 51.7  | 48.1   |
|         | 490514 | ----    | 159  | -12.2       | ----        | 3.7  | 51.7  | 48.0   |
|         | 588617 | ----    | 157  | -11.9       | ----        | 3.8  | 51.7  | 47.9   |
|         | 686719 | ----    | 153  | -11.8       | ----        | 3.5  | 51.7  | 48.2   |
|         | 784822 | ----    | 151  | -11.7       | ----        | 3.4  | 51.7  | 48.3   |
|         | 882925 | ----    | 155  | -11.8       | ----        | 3.7  | 51.7  | 48.0   |
|         | 981028 | ----    | 156  | -11.8       | ----        | 3.8  | 51.7  | 47.9   |

# DATA OF ANTENNA TERMINAL TEST

UL Japan, Inc. Shonan EMC Lab. No.1 Shielded Room  
Date : **13/May/2022**

Company : DENSO TEN Limited  
Kind of EUT : Car **Audio**  
Model No. : TN0023A  
Serial No. : EU200011

Mode : FM Reception Analog (107.9 MHz)  
Order No. : 14303848  
Power : DC 12 V  
Temp./Humi. : 22 deg.C / 54 %RH

Remarks : Local

Engineer : Yuta Shiba

LIMIT (Fundamental) : FCC Part15 SubpartB\_Antenna terminal  
LIMIT (Harmonics) : FCC Part15 SubpartB\_Antenna terminal

| CH       | Freq   | Reading |      | Factor      | Result      |      | Limit | Margin |
|----------|--------|---------|------|-------------|-------------|------|-------|--------|
|          |        | PEAK    | QP   |             | PEAK        | QP   |       |        |
|          | [MHz]  | [dBuV]  | [dB] | [dBuV / 75] | [dBuV / 75] | [dB] |       |        |
| 107.9MHz | 107496 | ----    | 162  | -13.0       | ----        | 3.2  | 51.7  | 48.5   |
|          | 214992 | ----    | 162  | -12.8       | ----        | 3.4  | 51.7  | 48.3   |
|          | 322488 | ----    | 160  | -12.6       | ----        | 3.4  | 51.7  | 48.3   |
|          | 429984 | ----    | 162  | -12.3       | ----        | 3.9  | 51.7  | 47.8   |
|          | 537479 | ----    | 161  | -12.1       | ----        | 4.0  | 51.7  | 47.7   |
|          | 644975 | ----    | 157  | -11.8       | ----        | 3.9  | 51.7  | 47.8   |
|          | 752471 | ----    | 172  | -11.7       | ----        | 5.5  | 51.7  | 46.2   |
|          | 859967 | ----    | 301  | -11.7       | ----        | 18.4 | 51.7  | 33.3   |
|          | 967463 | ----    | 158  | -11.9       | ----        | 3.9  | 51.7  | 47.8   |
|          | 108304 | ----    | 162  | -13.0       | ----        | 3.2  | 51.7  | 48.5   |
|          | 216608 | ----    | 161  | -12.8       | ----        | 3.3  | 51.7  | 48.4   |
|          | 324912 | ----    | 160  | -12.6       | ----        | 3.4  | 51.7  | 48.3   |
|          | 433217 | ----    | 160  | -12.3       | ----        | 3.7  | 51.7  | 48.0   |
|          | 541521 | ----    | 159  | -12.1       | ----        | 3.8  | 51.7  | 47.9   |
|          | 649825 | ----    | 152  | -11.8       | ----        | 3.4  | 51.7  | 48.3   |
|          | 758129 | ----    | 155  | -11.7       | ----        | 3.8  | 51.7  | 47.9   |
|          | 866433 | ----    | 154  | -11.8       | ----        | 3.6  | 51.7  | 48.1   |
|          | 974737 | ----    | 158  | -11.9       | ----        | 3.9  | 51.7  | 47.8   |

Calculation: Result [dBuV] = Reading [dBuV] + Fac (Cable + Matching pad - Amp) [dB]

# DATA OF ANTENNA TERMINAL TEST

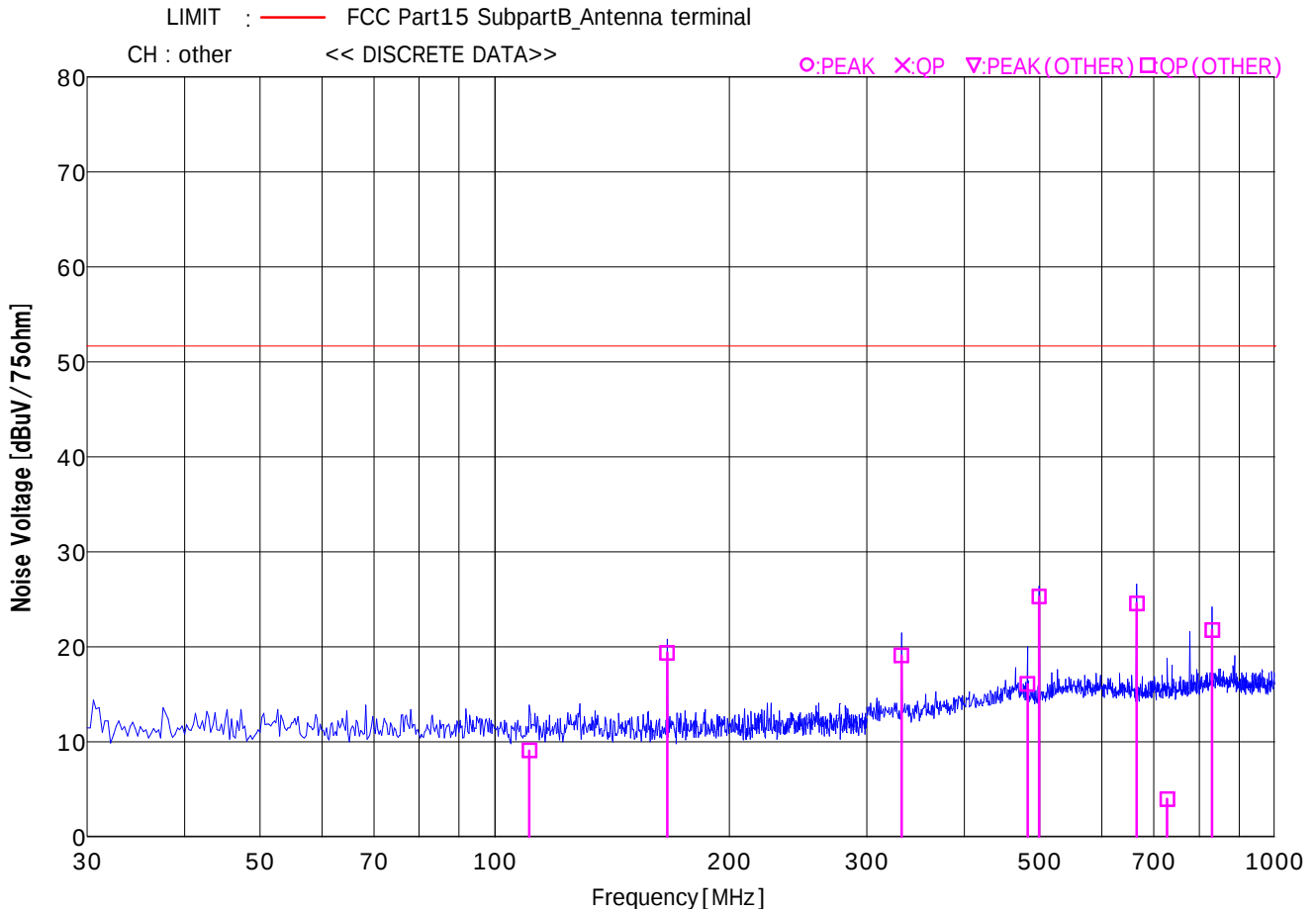
UL Japan, Inc. Shonan EMC Lab. No.1 Shielded Room  
Date : **13/May/2022**

Company : DENSO TEN Limited  
Kind of EUT : Car **Audio**  
Model No. : TN0023A  
Serial No. : EU200011

Mode : FM Reception Digital (97.7 MHz)  
Order No. : 14303848  
Power : DC 12 V  
Temp./Humi. : 22 deg.C / 54 %RH

Remarks : Other

Engineer : Yuta Shiba



# DATA OF ANTENNA TERMINAL TEST

UL Japan,Inc. Shonan EMC Lab. No.1 Shielded Room  
Date : **13/May/2022**

Company : DENSO TEN Limited  
Kind of EUT : Car **Audio**  
Model No. : TN0023A  
Serial No. : EU200011

Mode : FM Reception Digital (97.7 MHz)  
Order No. : 14303848  
Power : DC 12 V  
Temp./Humi. : 22 deg.C / 54 %RH

Remarks : Other

Engineer : Yuta Shiba

LIMIT : FCC Part15 SubpartB\_Antenna terminal

| CH    | Freq    | Reading |     | Factor | Result    |     | Limit     | Margin |
|-------|---------|---------|-----|--------|-----------|-----|-----------|--------|
|       |         | PEAK    | QP  |        | PEAK      | QP  |           |        |
|       | [MHz]   | [dBuV]  |     | [dB]   | [dBuV/75] |     | [dBuV/75] | [dB]   |
| other | *110730 | ----    | 221 | -13.0  | ----      | 91  | 51.7      | 42.6   |
|       | *166350 | ----    | 322 | -12.8  | ----      | 194 | 51.7      | 32.3   |
|       | *332201 | ----    | 316 | -12.5  | ----      | 191 | 51.7      | 32.6   |
|       | *482003 | ----    | 283 | -12.2  | ----      | 161 | 51.7      | 35.6   |
|       | *498804 | ----    | 375 | -12.2  | ----      | 253 | 51.7      | 26.4   |
|       | *665406 | ----    | 364 | -11.8  | ----      | 246 | 51.7      | 27.1   |
|       | *728408 | ----    | 158 | -11.8  | ----      | 40  | 51.7      | 47.7   |
|       | *832009 | ----    | 335 | -11.7  | ----      | 218 | 51.7      | 29.9   |

# DATA OF ANTENNA TERMINAL TEST

UL Japan, Inc. Shonan EMC Lab. No.1 Shielded Room  
Date : **13/May/2022**

Company : DENSO TEN Limited  
Kind of EUT : Car **Audio**  
Model No. : TN0023A  
Serial No. : EU200011

Mode : FM Reception Digital (87.75 MHz)  
Order No. : 14303848  
Power : DC 12 V  
Temp./Humi. : 22 deg.C / 54 %RH

Remarks : Local

Engineer : Yuta Shiba

LIMIT(Fundamental) : FCC Part15 SubpartB\_Antenna terminal  
LIMIT(Harmonics) : FCC Part15 SubpartB\_Antenna terminal

| CH       | Freq   | Reading |      | Factor      | Result      |      | Limit | Margin |
|----------|--------|---------|------|-------------|-------------|------|-------|--------|
|          |        | PEAK    | QP   |             | PEAK        | QP   |       |        |
|          | [MHz]  | [dBuV]  | [dB] | [dBuV / 75] | [dBuV / 75] | [dB] |       |        |
| 87.75MHz | 88207  | ----    | 164  | -13.0       | ----        | 3.4  | 51.7  | 48.3   |
|          | 176415 | ----    | 162  | -12.8       | ----        | 3.4  | 51.7  | 48.3   |
|          | 264622 | ----    | 158  | -12.6       | ----        | 3.2  | 51.7  | 48.5   |
|          | 352830 | ----    | 161  | -12.5       | ----        | 3.6  | 51.7  | 48.1   |
|          | 441037 | ----    | 157  | -12.3       | ----        | 3.4  | 51.7  | 48.3   |
|          | 529244 | ----    | 158  | -12.1       | ----        | 3.7  | 51.7  | 48.0   |
|          | 617452 | ----    | 155  | -11.9       | ----        | 3.6  | 51.7  | 48.1   |
|          | 705659 | ----    | 288  | -11.8       | ----        | 17.0 | 51.7  | 34.7   |
|          | 793866 | ----    | 153  | -11.7       | ----        | 3.6  | 51.7  | 48.1   |
|          | 882074 | ----    | 159  | -11.8       | ----        | 4.1  | 51.7  | 47.6   |
|          | 970281 | ----    | 157  | -11.9       | ----        | 3.8  | 51.7  | 47.9   |
|          | 87293  | ----    | 163  | -13.0       | ----        | 3.3  | 51.7  | 48.4   |
|          | 174585 | ----    | 162  | -12.8       | ----        | 3.4  | 51.7  | 48.3   |
|          | 261878 | ----    | 158  | -12.6       | ----        | 3.2  | 51.7  | 48.5   |
|          | 349171 | ----    | 160  | -12.5       | ----        | 3.5  | 51.7  | 48.2   |
|          | 436463 | ----    | 159  | -12.3       | ----        | 3.6  | 51.7  | 48.1   |
|          | 523756 | ----    | 158  | -12.1       | ----        | 3.7  | 51.7  | 48.0   |
|          | 611048 | ----    | 153  | -11.9       | ----        | 3.4  | 51.7  | 48.3   |
|          | 698341 | ----    | 156  | -11.8       | ----        | 3.8  | 51.7  | 47.9   |
|          | 785634 | ----    | 151  | -11.7       | ----        | 3.4  | 51.7  | 48.3   |
|          | 872926 | ----    | 155  | -11.8       | ----        | 3.7  | 51.7  | 48.0   |
|          | 960219 | ----    | 157  | -11.9       | ----        | 3.8  | 51.7  | 47.9   |

# DATA OF ANTENNA TERMINAL TEST

UL Japan,Inc. Shonan EMC Lab. No.1 Shielded Room  
Date : **13/May/2022**

Company : DENSO TEN Limited  
Kind of EUT : Car **Audio**  
Model No. : TN0023A  
Serial No. : EU200011

Mode : FM Reception Digital (97.7 MHz)  
Order No. : 14303848  
Power : DC 12 V  
Temp./Humi. : 22 deg.C / 54 %RH

Remarks : Local

Engineer : Yuta Shiba

LIMIT(Fundamental) : FCC Part15 SubpartB\_Antenna terminal  
LIMIT(Harmonics) : FCC Part15 SubpartB\_Antenna terminal

| CH      | Freq   | Reading |      | Factor      | Result      |      | Limit | Margin |
|---------|--------|---------|------|-------------|-------------|------|-------|--------|
|         |        | PEAK    | QP   |             | PEAK        | QP   |       |        |
|         | [MHz]  | [dBuV]  | [dB] | [dBuV / 75] | [dBuV / 75] | [dB] |       |        |
| 97.7MHz | 97297  | ----    | 160  | -13.0       | ----        | 3.0  | 51.7  | 48.7   |
|         | 194595 | ----    | 163  | -12.8       | ----        | 3.5  | 51.7  | 48.2   |
|         | 291892 | ----    | 159  | -12.6       | ----        | 3.3  | 51.7  | 48.4   |
|         | 389189 | ----    | 163  | -12.4       | ----        | 3.9  | 51.7  | 47.8   |
|         | 486486 | ----    | 160  | -12.2       | ----        | 3.8  | 51.7  | 47.9   |
|         | 583784 | ----    | 160  | -11.9       | ----        | 4.1  | 51.7  | 47.6   |
|         | 681081 | ----    | 165  | -11.8       | ----        | 4.7  | 51.7  | 47.0   |
|         | 778378 | ----    | 292  | -11.7       | ----        | 17.5 | 51.7  | 34.2   |
|         | 875675 | ----    | 156  | -11.8       | ----        | 3.8  | 51.7  | 47.9   |
|         | 972973 | ----    | 157  | -11.9       | ----        | 3.8  | 51.7  | 47.9   |
|         | 98103  | ----    | 161  | -13.0       | ----        | 3.1  | 51.7  | 48.6   |
|         | 196206 | ----    | 162  | -12.8       | ----        | 3.4  | 51.7  | 48.3   |
|         | 294308 | ----    | 160  | -12.6       | ----        | 3.4  | 51.7  | 48.3   |
|         | 392411 | ----    | 160  | -12.4       | ----        | 3.6  | 51.7  | 48.1   |
|         | 490514 | ----    | 160  | -12.2       | ----        | 3.8  | 51.7  | 47.9   |
|         | 588617 | ----    | 159  | -11.9       | ----        | 4.0  | 51.7  | 47.7   |
|         | 686719 | ----    | 154  | -11.8       | ----        | 3.6  | 51.7  | 48.1   |
|         | 784822 | ----    | 152  | -11.7       | ----        | 3.5  | 51.7  | 48.2   |
|         | 882925 | ----    | 156  | -11.8       | ----        | 3.8  | 51.7  | 47.9   |
|         | 981028 | ----    | 158  | -11.8       | ----        | 4.0  | 51.7  | 47.7   |

# DATA OF ANTENNA TERMINAL TEST

UL Japan,Inc. Shonan EMC Lab. No.1 Shielded Room  
Date : **13/May/2022**

Company : DENSO TEN Limited  
Kind of EUT : Car **Audio**  
Model No. : TN0023A  
Serial No. : EU200011

Mode : FM Reception Digital (107.9 MHz)  
Order No. : 14303848  
Power : DC 12 V  
Temp./Humi. : 22 deg.C / 54 %RH

Remarks : Local

Engineer : Yuta Shiba

LIMIT(Fundamental) : FCC Part15 SubpartB\_Antenna terminal  
LIMIT(Harmonics) : FCC Part15 SubpartB\_Antenna terminal

| CH       | Freq   | Reading |      | Factor      | Result      |      | Limit | Margin |
|----------|--------|---------|------|-------------|-------------|------|-------|--------|
|          |        | PEAK    | QP   |             | PEAK        | QP   |       |        |
|          | [MHz]  | [dBuV]  | [dB] | [dBuV / 75] | [dBuV / 75] | [dB] |       |        |
| 107.9MHz | 107496 | ----    | 161  | -13.0       | ----        | 3.1  | 51.7  | 48.6   |
|          | 214992 | ----    | 162  | -12.8       | ----        | 3.4  | 51.7  | 48.3   |
|          | 322488 | ----    | 159  | -12.6       | ----        | 3.3  | 51.7  | 48.4   |
|          | 429984 | ----    | 162  | -12.3       | ----        | 3.9  | 51.7  | 47.8   |
|          | 537479 | ----    | 161  | -12.1       | ----        | 4.0  | 51.7  | 47.7   |
|          | 644975 | ----    | 156  | -11.8       | ----        | 3.8  | 51.7  | 47.9   |
|          | 752471 | ----    | 171  | -11.7       | ----        | 5.4  | 51.7  | 46.3   |
|          | 859967 | ----    | 29.7 | -11.7       | ----        | 18.0 | 51.7  | 33.7   |
|          | 967463 | ----    | 15.7 | -11.9       | ----        | 3.8  | 51.7  | 47.9   |
|          | 108304 | ----    | 160  | -13.0       | ----        | 3.0  | 51.7  | 48.7   |
|          | 216608 | ----    | 161  | -12.8       | ----        | 3.3  | 51.7  | 48.4   |
|          | 324912 | ----    | 160  | -12.6       | ----        | 3.4  | 51.7  | 48.3   |
|          | 433217 | ----    | 159  | -12.3       | ----        | 3.6  | 51.7  | 48.1   |
|          | 541521 | ----    | 158  | -12.1       | ----        | 3.7  | 51.7  | 48.0   |
|          | 649825 | ----    | 151  | -11.8       | ----        | 3.3  | 51.7  | 48.4   |
|          | 758129 | ----    | 154  | -11.7       | ----        | 3.7  | 51.7  | 48.0   |
|          | 866433 | ----    | 154  | -11.8       | ----        | 3.6  | 51.7  | 48.1   |
|          | 974737 | ----    | 15.7 | -11.9       | ----        | 3.8  | 51.7  | 47.9   |

# DATA OF ANTENNA TERMINAL TEST

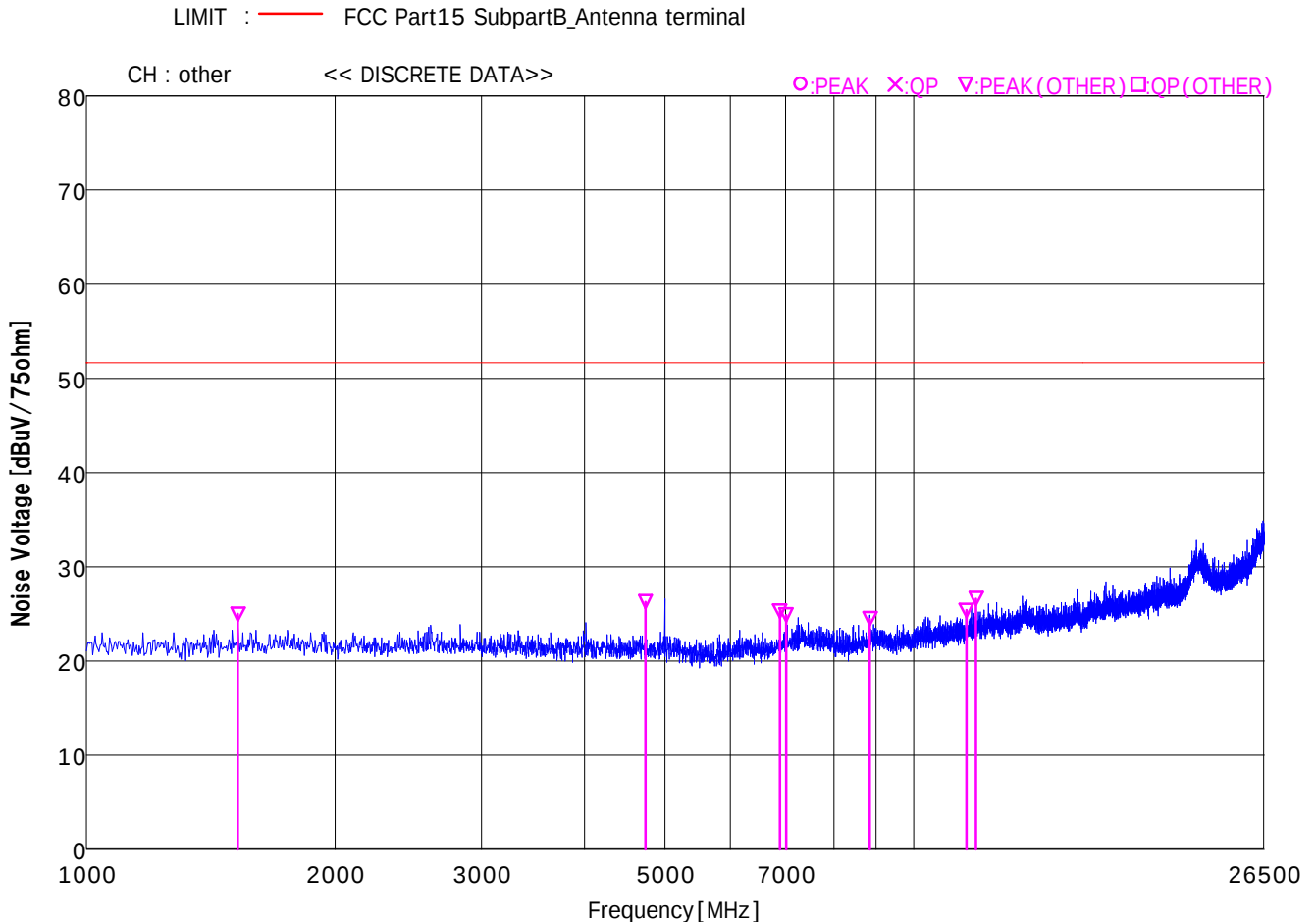
UL Japan, Inc. Shonan EMC Lab. No.1 Shielded Room  
Date : **13 / May / 2022**

Company : DENSO TEN Limited  
Kind of EUT : Car **Audio**  
Model No. : TN0023A  
Serial No. : EU200011

Mode : FM Reception Analog (97.7 MHz)  
Order No. : 14303848  
Power : DC 12 V  
Temp./Humi. : 22 deg.C / 54 %RH

Remarks : Other

Engineer : Yuta Shiba



# DATA OF ANTENNA TERMINAL TEST

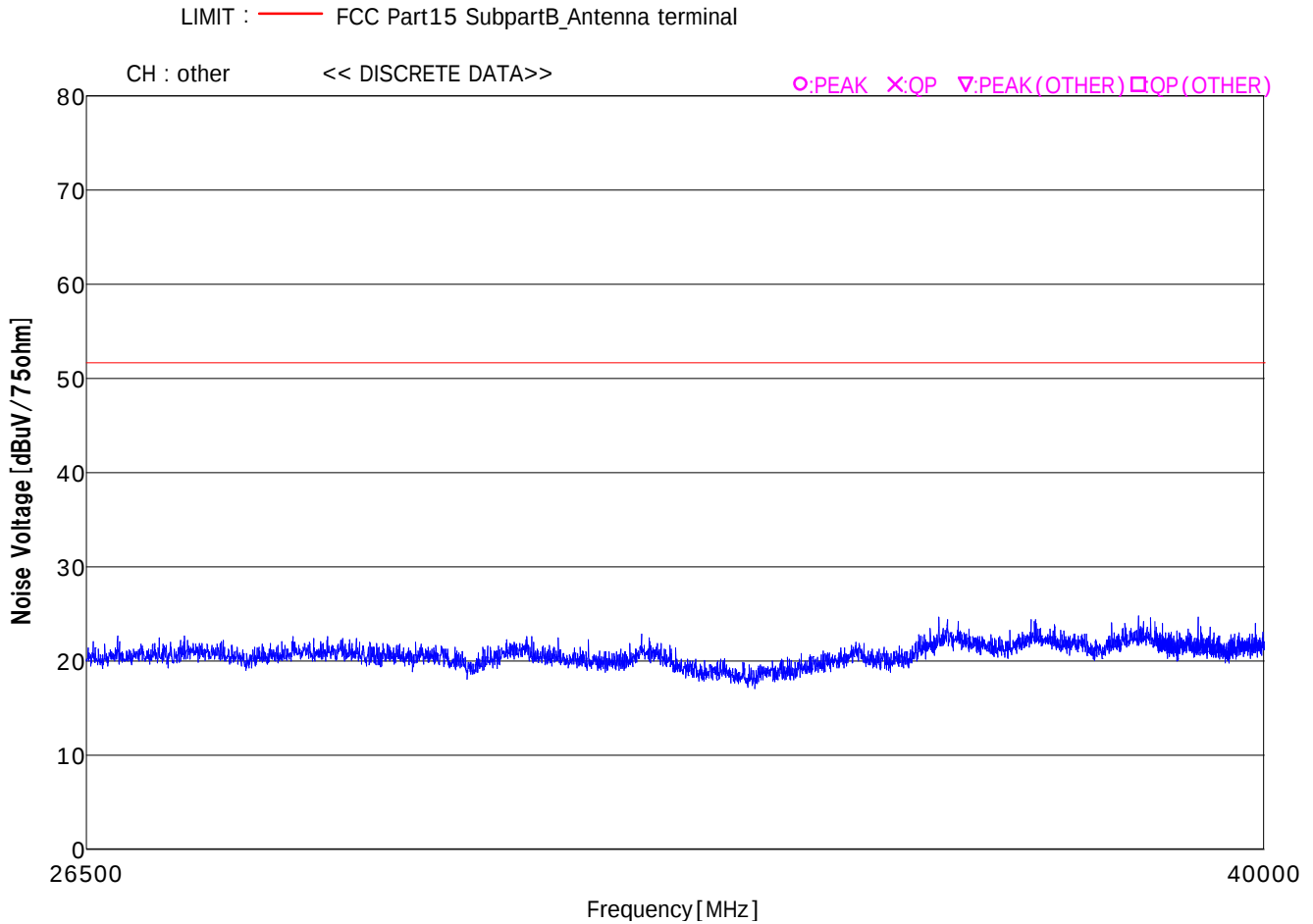
UL Japan,Inc. Shonan EMC Lab. No.1 Shielded Room  
Date : **13/May/2022**

Company : DENSO TEN Limited  
Kind of EUT : Car **Audio**  
Model No. : TN0023A  
Serial No. : EU200011

Mode : FM Reception Analog (97.7 MHz)  
Order No. : 14303848  
Power : DC 12 V  
Temp./Humi. : 22 deg.C / 54 %RH

Remarks : Other

Engineer : Yuta Shiba



# DATA OF ANTENNA TERMINAL TEST

UL Japan,Inc. Shonan EMC Lab. No.1 Shielded Room  
Date : **13 / May / 2022**

Company : DENSO TEN Limited  
Kind of EUT : Car **Audio**  
Model No. : TN0023A  
Serial No. : EU200011

Mode : FM Reception Analog (97.7 MHz)  
Order No. : 14303848  
Power : DC 12 V  
Temp./Humi. : 22 deg.C / 54 %RH

Remarks : Other

Engineer : Yuta Shiba

LIMIT : FCC Part15 SubpartB\_Antenna terminal

| CH    | Freq       | Reading |      | Factor      | Result      |      | Limit | Margin |
|-------|------------|---------|------|-------------|-------------|------|-------|--------|
|       |            | PEAK    | QP   |             | PEAK        | QP   |       |        |
|       | [MHz]      | [dBuV]  | [dB] | [dBuV / 75] | [dBuV / 75] | [dB] |       |        |
| other | *1525.000  | 48.8    | ---- | -23.8       | 25.0        | ---- | 51.7  | 26.7   |
|       | *4738.000  | 48.1    | ---- | -21.8       | 26.3        | ---- | 51.7  | 25.4   |
|       | *6886.000  | 46.6    | ---- | -21.3       | 25.3        | ---- | 51.7  | 26.4   |
|       | *7003.000  | 46.3    | ---- | -21.4       | 24.9        | ---- | 51.7  | 26.8   |
|       | *8845.000  | 45.6    | ---- | -21.1       | 24.5        | ---- | 51.7  | 27.2   |
|       | *11572.000 | 45.0    | ---- | -19.6       | 25.4        | ---- | 51.7  | 26.3   |
|       | *11893.000 | 46.0    | ---- | -19.4       | 26.6        | ---- | 51.7  | 25.1   |

# DATA OF ANTENNA TERMINAL TEST

UL Japan,Inc. Shonan EMC Lab. No.1 Shielded Room  
Date : **13/May/2022**

Company : DENSO TEN Limited  
Kind of EUT : Car **Audio**  
Model No. : TN0023A  
Serial No. : EU200011

Mode : FM Reception Analog (87.75 MHz)  
Order No. : 14303848  
Power : DC 12 V  
Temp./Humi. : 22 deg.C / 54 %RH

Remarks : Local

Engineer : Yuta Shiba

LIMIT(Fundamental) : FCC Part15 SubpartB\_Antenna terminal  
LIMIT(Harmonics) : FCC Part15 SubpartB\_Antenna terminal

| CH       | Freq     | Reading |      | Factor | Result    |      | Limit     | Margin |
|----------|----------|---------|------|--------|-----------|------|-----------|--------|
|          |          | PEAK    | QP   |        | PEAK      | QP   |           |        |
|          | [MHz]    | [dBuV]  |      | [dB]   | [dBuV/75] |      | [dBuV/75] | [dB]   |
| 87.75MHz | 1058.489 | 49.3    | ---- | -25.1  | 24.2      | ---- | 51.7      | 27.5   |
|          | 3440.088 | 47.6    | ---- | -22.6  | 25.0      | ---- | 51.7      | 26.7   |
|          | 6262.724 | 45.0    | ---- | -21.4  | 23.6      | ---- | 51.7      | 28.1   |
|          | 7321.212 | 45.7    | ---- | -21.4  | 24.3      | ---- | 51.7      | 27.4   |
|          | 10475.11 | 48.3    | ---- | -25.1  | 23.2      | ---- | 51.7      | 28.5   |
|          | 34044.12 | 45.9    | ---- | -22.6  | 23.3      | ---- | 51.7      | 28.4   |
|          | 6197.776 | 44.4    | ---- | -21.5  | 22.9      | ---- | 51.7      | 28.8   |

# DATA OF ANTENNA TERMINAL TEST

UL Japan, Inc. Shonan EMC Lab. No.1 Shielded Room  
Date : **13/May/2022**

Company : DENSO TEN Limited  
Kind of EUT : Car **Audio**  
Model No. : TN0023A  
Serial No. : EU200011

Mode : FM Reception Analog (97.7 MHz)  
Order No. : 14303848  
Power : DC 12 V  
Temp./Humi. : 22 deg.C / 54 %RH

Remarks : Local

Engineer : Yuta Shiba

LIMIT (Fundamental) : FCC Part15 SubpartB\_Antenna terminal  
LIMIT (Harmonics) : FCC Part15 SubpartB\_Antenna terminal

| CH      | Freq    | Reading |      | Factor | Result    |      | Limit     | Margin |
|---------|---------|---------|------|--------|-----------|------|-----------|--------|
|         |         | PEAK    | QP   |        | PEAK      | QP   |           |        |
|         | [MHz]   | [dBuV]  |      | [dB]   | [dBuV/75] |      | [dBuV/75] | [dB]   |
| 97.7MHz | 1070270 | 48.7    | ---- | -24.9  | 23.8      | ---- | 51.7      | 27.9   |
|         | 3405403 | 45.8    | ---- | -22.6  | 23.2      | ---- | 51.7      | 28.5   |
|         | 6032430 | 44.6    | ---- | -21.5  | 23.1      | ---- | 51.7      | 28.6   |
|         | 7881077 | 45.4    | ---- | -21.3  | 24.1      | ---- | 51.7      | 27.6   |
|         | 1079130 | 48.5    | ---- | -24.9  | 23.6      | ---- | 51.7      | 28.1   |
|         | 3433596 | 45.4    | ---- | -22.6  | 22.8      | ---- | 51.7      | 28.9   |
|         | 6082371 | 44.0    | ---- | -21.5  | 22.5      | ---- | 51.7      | 29.2   |

# DATA OF ANTENNA TERMINAL TEST

UL Japan, Inc. Shonan EMC Lab. No.1 Shielded Room  
Date : **13/May/2022**

Company : DENSO TEN Limited  
Kind of EUT : Car **Audio**  
Model No. : TN0023A  
Serial No. : EU200011

Mode : FM Reception Analog (107.9 MHz)  
Order No. : 143038**48**  
Power : DC 12 V  
Temp./Humi. : 22 deg.C / 54 %RH

Remarks : Local

Engineer : Yuta Shiba

LIMIT (Fundamental) : FCC Part15 SubpartB\_Antenna terminal  
LIMIT (Harmonics) : FCC Part15 SubpartB\_Antenna terminal

| CH       | Freq    | Reading |      | Factor      | Result      |      | Limit | Margin |
|----------|---------|---------|------|-------------|-------------|------|-------|--------|
|          |         | PEAK    | QP   |             | PEAK        | QP   |       |        |
|          | [MHz]   | [dBuV]  | [dB] | [dBuV / 75] | [dBuV / 75] | [dB] |       |        |
| 107.9MHz | 1074959 | 48.8    | ---- | -24.9       | 23.9        | ---- | 51.7  | 27.8   |
|          | 3117381 | 45.9    | ---- | -22.9       | 23.0        | ---- | 51.7  | 28.7   |
|          | 5482290 | 45.3    | ---- | -21.6       | 23.7        | ---- | 51.7  | 28.0   |
|          | 7202224 | 45.7    | ---- | -21.4       | 24.3        | ---- | 51.7  | 27.4   |
|          | 1083041 | 48.6    | ---- | -24.9       | 23.7        | ---- | 51.7  | 28.0   |
|          | 3140820 | 46.6    | ---- | -22.9       | 23.7        | ---- | 51.7  | 28.0   |
|          | 5523510 | 45.1    | ---- | -21.6       | 23.5        | ---- | 51.7  | 28.2   |

# DATA OF ANTENNA TERMINAL TEST

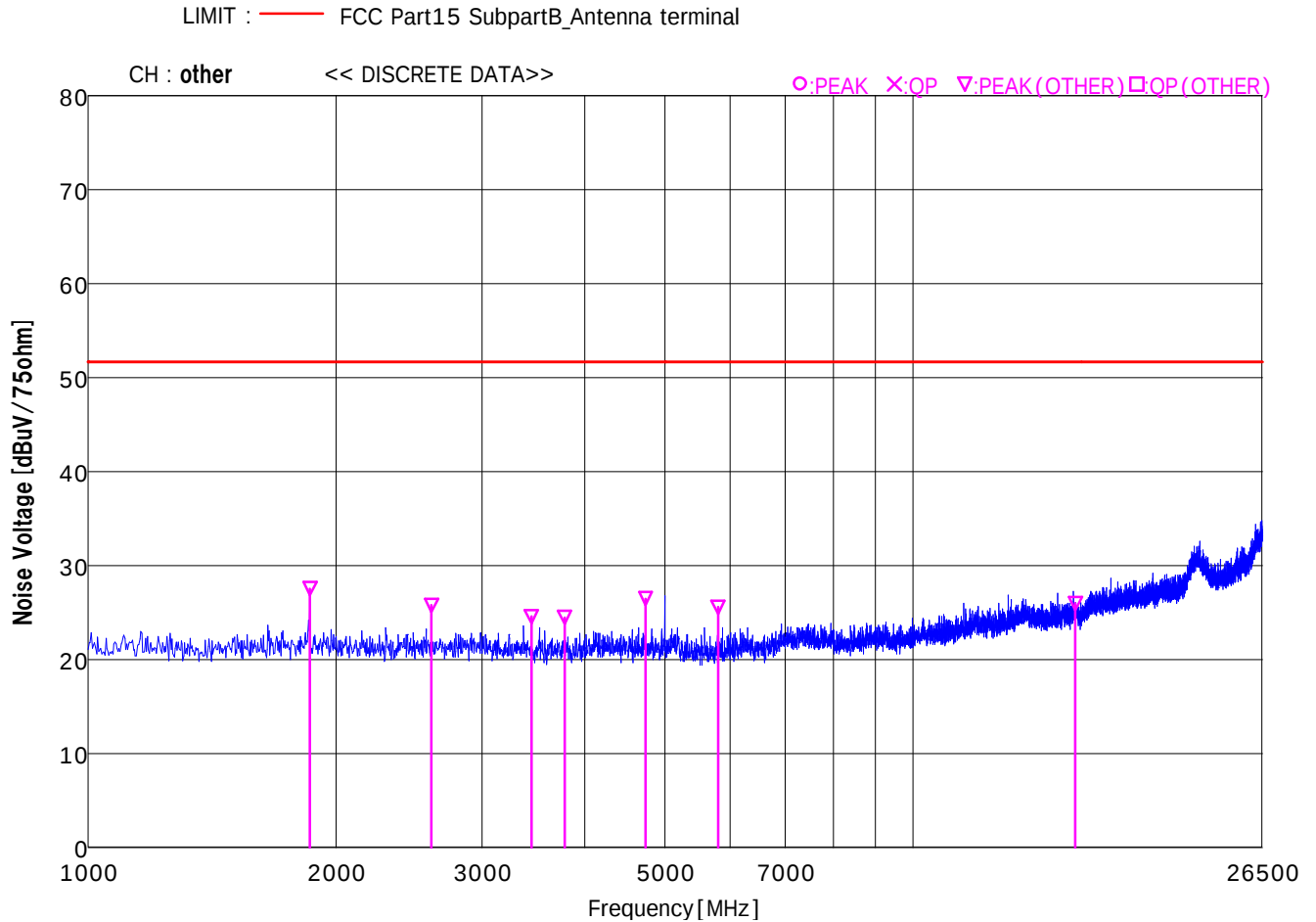
UL Japan,Inc. Shonan EMC Lab. No.1 Shielded Room  
Date : **13/May/2022**

Company : DENSO TEN Limited  
Kind of EUT : Car **Audio**  
Model No. : TN0023A  
Serial No. : EU200011

Mode : FM Reception Digital (97.7 MHz)  
Order No. : 14303848  
Power : DC 12 V  
Temp./Humi. : 22 deg.C / 54 %RH

Remarks : Other

Engineer : Yuta Shiba



# DATA OF ANTENNA TERMINAL TEST

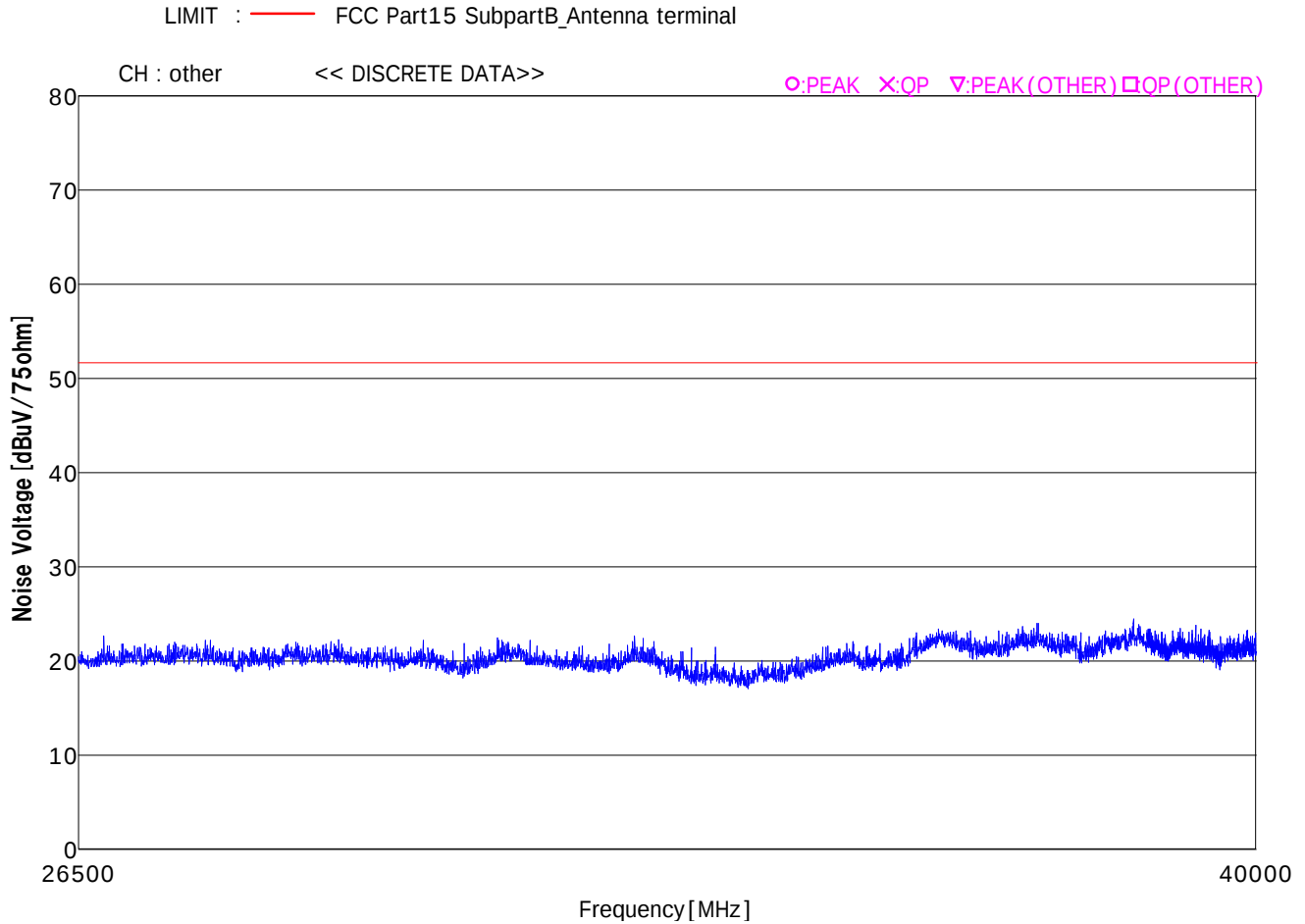
UL Japan,Inc. Shonan EMC Lab. No.1 Shielded Room  
Date : **13/May/2022**

Company : DENSO TEN Limited  
Kind of EUT : Car **Audio**  
Model No. : TN0023A  
Serial No. : EU200011

Mode : FM Reception Digital (97.7 MHz)  
Order No. : 14303848  
Power : DC 12 V  
Temp./Humi. : 22 deg.C / 54 %RH

Remarks : Other

Engineer : Yuta Shiba



# DATA OF ANTENNA TERMINAL TEST

UL Japan,Inc. Shonan EMC Lab. No.1 Shielded Room  
Date : 13 / May / 2022

Company : DENSO TEN Limited  
Kind of EUT : Car Audio  
Model No. : TN0023A  
Serial No. : EU200011

Mode : FM Reception Digital (97.7 MHz)  
Order No. : 14303848  
Power : DC 12 V  
Temp./Humi. : 22 deg.C / 54 %RH

Remarks : Other

Engineer : Yuta Shiba

LIMIT : FCC Part15 SubpartB\_Antenna terminal

| CH    | Freq       | Reading |      | Factor      | Result      |      | Limit | Margin |
|-------|------------|---------|------|-------------|-------------|------|-------|--------|
|       |            | PEAK    | QP   |             | PEAK        | QP   |       |        |
|       | [MHz]      | [dBuV]  | [dB] | [dBuV / 75] | [dBuV / 75] | [dB] |       |        |
| other | *1858.000  | 51.0    | ---- | -23.4       | 27.6        | ---- | 51.7  | 24.2   |
|       | *2608.000  | 48.8    | ---- | -23.0       | 25.8        | ---- | 51.7  | 25.9   |
|       | *3445.000  | 47.2    | ---- | -22.6       | 24.6        | ---- | 51.7  | 27.1   |
|       | *3781.000  | 46.9    | ---- | -22.4       | 24.5        | ---- | 51.7  | 27.2   |
|       | *4738.000  | 48.3    | ---- | -21.8       | 26.5        | ---- | 51.7  | 25.2   |
|       | *5800.000  | 47.1    | ---- | -21.5       | 25.6        | ---- | 51.7  | 26.1   |
|       | *15727.000 | 44.6    | ---- | -18.6       | 26.0        | ---- | 51.7  | 25.7   |

# DATA OF ANTENNA TERMINAL TEST

UL Japan.Inc. Shonan EMC Lab. No.1 Shielded Room  
Date : 13 / May / 2022

Company : DENSO TEN Limited  
Kind of EUT : Car Audio  
Model No. : TN0023A  
Serial No. : EU200011

Mode : FM Reception Digital (87.75 MHz)  
Order No. : 14303848  
Power : DC 12 V  
Temp./Humi. : 22 deg.C / 54 %RH

Remarks : Local

Engineer : Yuta Shiba

LIMIT (Fundamental) : FCC Part15 SubpartB\_Antenna terminal  
LIMIT (Harmonics) : FCC Part15 SubpartB\_Antenna terminal

| CH       | Freq      | Reading |      | Factor | Result      |      | Limit       | Margin |
|----------|-----------|---------|------|--------|-------------|------|-------------|--------|
|          |           | PEAK    | QP   |        | PEAK        | QP   |             |        |
|          | [MHz]     | [dBuV]  |      | [dB]   | [dBuV / 75] |      | [dBuV / 75] | [dB]   |
| 87.75MHz | *1058.489 | 47.3    | ---- | -25.1  | 22.2        | ---- | 51.7        | 29.5   |
|          | *3440.088 | 45.1    | ---- | -22.6  | 22.5        | ---- | 51.7        | 29.2   |
|          | *6262.724 | 46.2    | ---- | -21.4  | 24.8        | ---- | 51.7        | 26.9   |
|          | *7321.212 | 46.2    | ---- | -21.4  | 24.8        | ---- | 51.7        | 26.9   |
|          | *1047.511 | 46.3    | ---- | -25.1  | 21.2        | ---- | 51.7        | 30.5   |
|          | *3404.412 | 46.5    | ---- | -22.6  | 23.9        | ---- | 51.7        | 27.8   |
|          | *6197.776 | 45.1    | ---- | -21.5  | 23.6        | ---- | 51.7        | 28.1   |

# DATA OF ANTENNA TERMINAL TEST

UL Japan, Inc. Shonan EMC Lab. No.1 Shielded Room  
Date : **13 / May / 2022**

Company : DENSO TEN Limited  
Kind of EUT : Car **Audio**  
Model No. : TN0023A  
Serial No. : EU200011

Mode : FM Reception Digital (97.7 MHz)  
Order No. : 14303848  
Power : DC 12 V  
Temp./Humi. : 22 deg.C / 54 %RH

Remarks : Local

Engineer : Yuta Shiba

LIMIT (Fundamental) : FCC Part15 SubpartB\_Antenna terminal  
LIMIT (Harmonics) : FCC Part15 SubpartB\_Antenna terminal

| CH      | Freq    | Reading |      | Factor      | Result      |      | Limit | Margin |
|---------|---------|---------|------|-------------|-------------|------|-------|--------|
|         |         | PEAK    | QP   |             | PEAK        | QP   |       |        |
|         | [MHz]   | [dBuV]  | [dB] | [dBuV / 75] | [dBuV / 75] | [dB] |       |        |
| 97.7MHz | 1070270 | 49.8    | ---- | -24.9       | 24.9        | ---- | 51.7  | 26.8   |
|         | 3405403 | 47.1    | ---- | -22.6       | 24.5        | ---- | 51.7  | 27.2   |
|         | 6032430 | 45.7    | ---- | -21.5       | 24.2        | ---- | 51.7  | 27.5   |
|         | 7881077 | 45.6    | ---- | -21.3       | 24.3        | ---- | 51.7  | 27.4   |
|         | 1079130 | 49.1    | ---- | -24.9       | 24.2        | ---- | 51.7  | 27.5   |
|         | 3433596 | 44.6    | ---- | -22.6       | 22.0        | ---- | 51.7  | 29.7   |
|         | 6082371 | 45.9    | ---- | -21.5       | 24.4        | ---- | 51.7  | 27.3   |

# DATA OF ANTENNA TERMINAL TEST

UL Japan, Inc. Shonan EMC Lab. No.1 Shielded Room  
Date : **13/May/2022**

Company : DENSO TEN Limited  
Kind of EUT : Car **Audio**  
Model No. : TN0023A  
Serial No. : EU200011

Mode : FM Reception Digital (107.9 MHz)  
Order No. : 14303848  
Power : DC 12 V  
Temp./Humi. : 22 deg.C / 54 %RH

Remarks : Local

Engineer : Yuta Shiba

LIMIT (Fundamental) : FCC Part15 SubpartB\_Antenna terminal  
LIMIT (Harmonics) : FCC Part15 SubpartB\_Antenna terminal

| CH       | Freq    | Reading |      | Factor      | Result      |      | Limit | Margin |
|----------|---------|---------|------|-------------|-------------|------|-------|--------|
|          |         | PEAK    | QP   |             | PEAK        | QP   |       |        |
|          | [MHz]   | [dBuV]  | [dB] | [dBuV / 75] | [dBuV / 75] | [dB] |       |        |
| 107.9MHz | 1074959 | 48.3    | ---- | -24.9       | 23.4        | ---- | 51.7  | 28.3   |
|          | 3117381 | 45.9    | ---- | -22.9       | 23.0        | ---- | 51.7  | 28.7   |
|          | 5482290 | 45.0    | ---- | -21.6       | 23.4        | ---- | 51.7  | 28.3   |
|          | 7202224 | 45.5    | ---- | -21.4       | 24.1        | ---- | 51.7  | 27.6   |
|          | 1083041 | 48.3    | ---- | -24.9       | 23.4        | ---- | 51.7  | 28.3   |
|          | 3140820 | 47.4    | ---- | -22.9       | 24.5        | ---- | 51.7  | 27.2   |
|          | 5523510 | 44.5    | ---- | -21.6       | 22.9        | ---- | 51.7  | 28.8   |

**Appendix 2 : Test instruments**

## EMI test equipment

| Test Name | Local ID            | LIMS ID | Description                   | Manufacturer               | Model           | Serial     | Last Calibration Date | Calibration Interval (Month) |
|-----------|---------------------|---------|-------------------------------|----------------------------|-----------------|------------|-----------------------|------------------------------|
| AT        | COTS-SEMI-2         | 144866  | EMI Software for AV Equipment | TSJ (Techno Science Japan) | TEPTO-DV(AT,TV) | 2          | -                     | -                            |
| AT        | KAF-02              | 144878  | Pre Amplifier                 | Hewlett Packard            | 8449B           | 3008A01268 | 2022/04/08            | 12                           |
| AT        | SAF-07              | 145006  | Pre Amplifier                 | TSJ (Techno Science Japan) | MLA-8k03-D01-35 | 81212      | 2021/06/08            | 12                           |
| AT        | SAT10-12            | 151609  | Attenuator                    | Weinschel Corp.            | 54A-10          | 81601      | 2022/03/02            | 12                           |
| AT        | SCC-AT1/AT2/KM P-09 | 180424  | Coaxial cable, Matching pad   | TAMAGAWA                   | 5D2W/ZT-130     | -/1454514E | 2021/06/08            | 12                           |
| AT        | SCC-G63             | 196946  | Coaxial Cable                 | Huber+Suhner               | SUCOFLEX 102    | 803411/2   | 2022/03/01            | 12                           |
| AT        | SCC-G67             | 196949  | Coaxial Cable                 | Huber+Suhner               | SUCOFLEX 102    | 803480/2   | 2022/03/02            | 12                           |
| AT        | SOS-18              | 175822  | Humidity Indicator            | CUSTOM. Inc                | CTH-201         | -          | 2021/10/14            | 12                           |
| AT,RE     | SAF-10              | 145129  | Pre Amplifier                 | Toyo Corporation           | HAP26-40W       | 10         | 2022/03/03            | 12                           |
| AT,RE     | STR-08              | 150463  | Test Receiver                 | Rohde & Schwarz            | ESW44           | 101581     | 2022/03/02            | 12                           |

## EMI test equipment

| Test Name | Local ID                       | LIMS ID | Description                      | Manufacturer                                       | Model                                      | Serial                  | Last Calibration Date | Calibration Interval (Month) |
|-----------|--------------------------------|---------|----------------------------------|----------------------------------------------------|--------------------------------------------|-------------------------|-----------------------|------------------------------|
| RE        | COTS-SEMI-5                    | 170932  | EMI Software                     | TSJ (Techno Science Japan)                         | TEPTO-DV3(RE,CE,ME,PE)                     | -                       | -                     | -                            |
| RE        | KMP-09                         | 146513  | Matching Pad                     | TAMAGAWA                                           | ZT-130                                     | 1454514E                | 2021/06/08            | 12                           |
| RE        | SAEC-02(NSA)                   | 145563  | Semi-Anechoic Chamber            | TDK                                                | SAEC-02(NSA)                               | 2                       | 2022/03/20            | 12                           |
| RE        | SAEC-02(SVSWR)                 | 145598  | Semi-Anechoic Chamber            | TDK                                                | SAEC-02(SVSWR)                             | 2                       | 2021/05/20            | 12                           |
| RE        | SAF-02                         | 145004  | Pre Amplifier                    | SONOMA                                             | 310N                                       | 290212                  | 2022/02/24            | 12                           |
| RE        | SAF-05                         | 145128  | Pre Amplifier                    | Toyo Corporation                                   | TPA0118-36                                 | 1440490                 | 2021/05/17            | 12                           |
| RE        | SAF-08                         | 145007  | Pre Amplifier                    | Toyo Corporation                                   | HAP18-26W                                  | 19                      | 2022/03/03            | 12                           |
| RE        | SAT3-11                        | 150921  | Attenuator                       | JFW                                                | 50HF-003N                                  | -                       | 2022/02/21            | 12                           |
| RE        | SAT6-14                        | 167095  | Attenuator                       | JFW                                                | 50HF-006N                                  | -                       | 2022/02/21            | 12                           |
| RE        | SBA-02                         | 145022  | Biconical Antenna                | Schwarzbeck Mess-Elektronik OHG                    | BBA9106                                    | 91032665                | 2022/04/16            | 12                           |
| RE        | SCC-B1/B3/B5/B7/B8/B13/SRSE-02 | 144975  | Coaxial Cable&RF Selector        | Fujikura/Fujikura/Suhner/Suhner/Suhner/Suhner/TOYO | 8D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906 | -/0901-270(RF Selector) | 2022/04/20            | 12                           |
| RE        | SCC-B2/B4/B6/B7/B8/B13/SRSE-02 | 144976  | Coaxial Cable&RF Selector        | Fujikura/Fujikura/Suhner/Suhner/Suhner/Suhner/TOYO | 8D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906 | -/0901-270(RF Selector) | 2022/04/20            | 12                           |
| RE        | SCC-G40                        | 166491  | Coaxial Cable                    | Junkosha                                           | MWX221-01000NFSNMS/B                       | 1612S005                | 2022/01/06            | 12                           |
| RE        | SCC-G50                        | 178573  | Coaxial Cable                    | Huber+Suhner                                       | SUCOFLEX_104_E                             | MY13407/4E              | 2022/03/03            | 12                           |
| RE        | SCC-G51                        | 178572  | Coaxial Cable                    | Huber+Suhner                                       | SUCOFLEX 104                               | 800288 /4A              | 2022/03/03            | 12                           |
| RE        | SCC-G69                        | 200009  | Coaxial Cable                    | Huber+Suhner                                       | SUCOFLEX 104                               | 575617/4                | 2021/07/06            | 12                           |
| RE        | SHA-02                         | 145384  | Horn Antenna                     | Schwarzbeck Mess-Elektronik OHG                    | BBHA9120D                                  | 9120D-726               | 2022/03/10            | 12                           |
| RE        | SHA-04                         | 145512  | Horn Antenna                     | ETS-Lindgren                                       | 3160-09                                    | 00094868                | 2021/06/14            | 12                           |
| RE        | SHA-06                         | 145514  | Horn Antenna                     | ETS-Lindgren                                       | 3160-10                                    | 00092383                | 2021/06/14            | 12                           |
| RE        | SHA-09                         | 194684  | Horn Antenna                     | Schwarzbeck Mess-Elektronik OHG                    | BBHA 9120 C                                | 695                     | 2022/03/10            | 12                           |
| RE        | SHD-01                         | 145817  | HD Radio Vector Signal Generator | MEGURO ELECTRONICS CORPORATION                     | MSG-3100                                   | 2100109                 | -                     | -                            |
| RE        | SJM-20                         | 207277  | Measuring                        | ASKUL                                              | -                                          | -                       | -                     | -                            |
| RE        | SLA-06                         | 145528  | Logperiodic Antenna              | Schwarzbeck Mess-Elektronik OHG                    | VUSLP9111B                                 | 195                     | 2022/04/16            | 12                           |
| RE        | SOS-21                         | 191838  | Humidity Indicator               | CUSTOM. Inc                                        | CTH-201                                    | -                       | 2021/08/02            | 12                           |
| RE        | SSG-13                         | 158037  | Signal Generator                 | Rohde & Schwarz                                    | SMBV100A                                   | 262877                  | 2021/07/23            | 12                           |
| RE        | STS-02                         | 145793  | Digital Hitester                 | HIOKI E.E. CORPORATION                             | 3805-50                                    | 80997819                | 2022/04/07            | 12                           |

\*Hyphens for Last Calibration Date and Cal Int (month) are instruments that Calibration is not required (e.g. software), or instruments checked in advance before use.

The expiration date of the calibration is the end of the expired month.

As for some calibrations performed after the tested dates , those test equipment have been controlled by means of an unbroken chains of calibrations.

All equipment is calibrated with valid calibrations . Each measurement data is traceable to the national or international standards

Test Item :

RE: Radiated emission,

AT: Antenna terminal disturbance voltage