



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

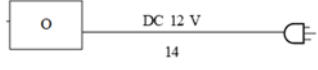
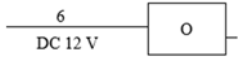
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- For test report(s) referred in this report, the latest version (including any revisions) is always referred.

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.10 Section 4.2 Configuration and peripherals From:  To: 

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 _{LT}	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 _{ST}	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 (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 (20 M band)	IEEE802.11a/n/ac (20 M band)	IEEE802.11n/ac (40 M band)	IEEE802.11ac (80 M band)
Frequency of operation	2412 MHz - 2462 MHz	2412 MHz - 2462 MHz	5180 MHz - 5240 MHz 5745 MHz - 5825 MHz	5190 MHz - 5230 MHz 5755 MHz - 5795 MHz	5210 MHz 5775 MHz
Type of modulation	DSSS (CCK, DQPSK, DBPSK)	OFDM-CCK (64QAM, 16QAM, QPSK, BPSK)	OFDM (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 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) LE: GFSK
Channel spacing	BT: 1 MHz 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 FM, RBDS/HD FM: 87.75 MHz - 107.9 MHz SDARS: 2320 MHz - 2345 MHz
Channel spacing	AM, HD AM: 10 kHz 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 FCC Part 15 final revised on April 1, 2022 and effective May 2, 2022
Title	FCC 47CFR Part15 Radio Frequency Device 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 + C 63.4a:2017 7. AC powerline conducted emission measurements IEEE 187:2003	FCC 15.107 (a)	N/A	N/A	*1)
Radiated emission	ANSI C 63.4:2014 + C 63.4a:2017 8. Radiated emission measurements IEEE 187:2003	FCC 15.109 (a)	9.4 dB Freq.: 5000.038 MHz Detector: Average Polarization: Vertical Mode: FM Reception Analog (97.7 MHz)	Complied a)	*2)
Antenna power conduction for receivers	ANSI C 63.4:2014 + C 63.4a:2017 12.1.5 Antenna- conducted power measurements IEEE 187:2003	FCC 15.111 (a)	25.1 dB Freq.: 11893.000 MHz Detection: Peak Mode: FM Reception Analog (97.7 MHz)	Complied 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 +C 63.4a:2017 7. AC powerline conducted emission measurements IEEE 187:2003	Class B	N/A	N/A	*1)
Radiated emission	ANSI C 63.4:2014 +C 63.4a:2017 8. Radiated emission measurements IEEE 187:2003	Class B	8.6 dB Freq.: 7500.006 MHz Detector: Average Polarization: Vertical Mode: USB Memory play	Complied 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 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 (±)
Radiated emission (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
Antenna Terminal Voltage	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 Semi-anechoic chamber	20.6 x 11.3 x 7.65 Maximum measurement distance: 10 m	No.1 Shielded room	6.8 x 4.1 x 2.7
No.2 Semi-anechoic chamber	20.6 x 11.3 x 7.65 Maximum measurement distance: 10 m	No.2 Shielded room	6.8 x 4.1 x 2.7
No.3 Semi-anechoic chamber	12.7 x 7.7 x 5.35 Maximum measurement distance: 5 m	No.3 Shielded room	6.3 x 4.7 x 2.7
No.4 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.

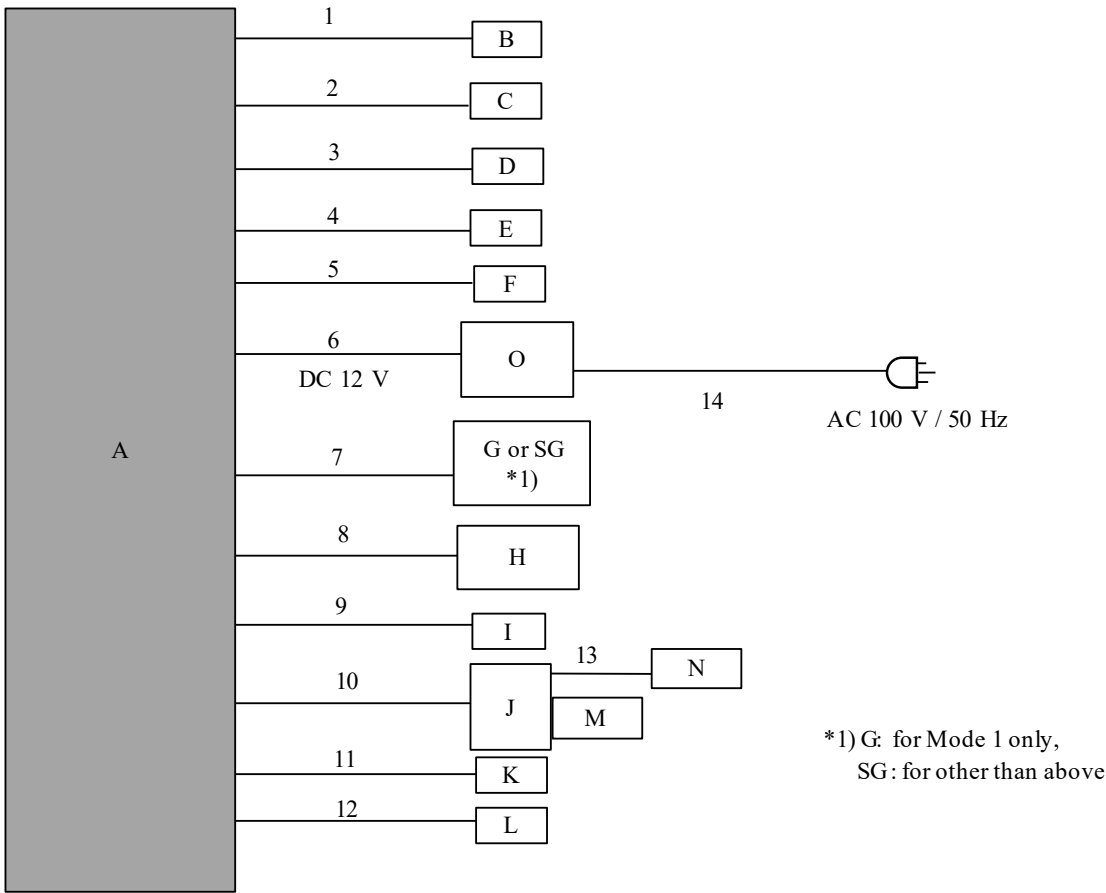
Section 4 : Operation of EUT during testing

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 (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

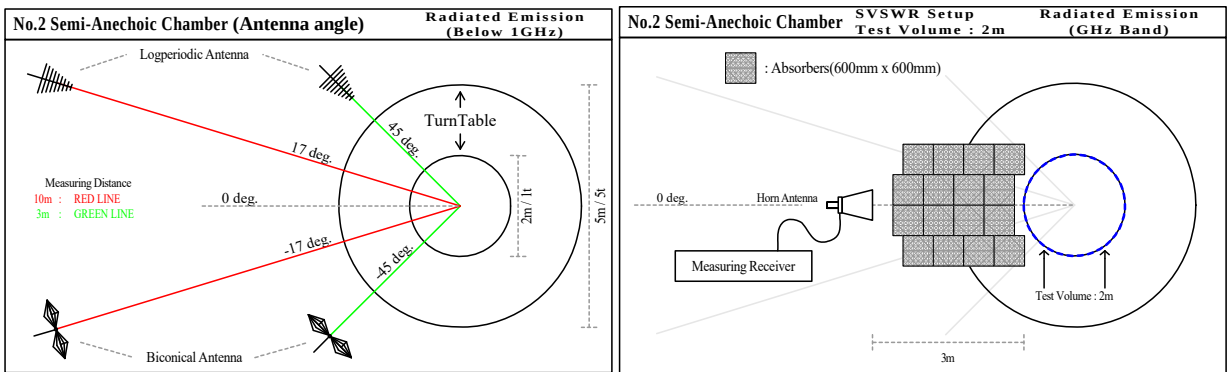
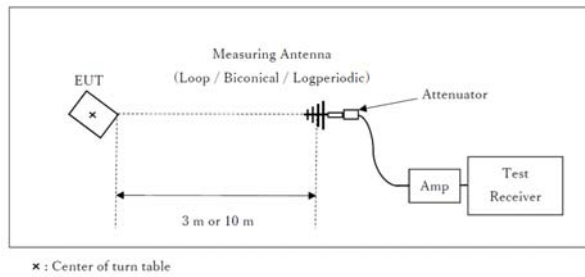


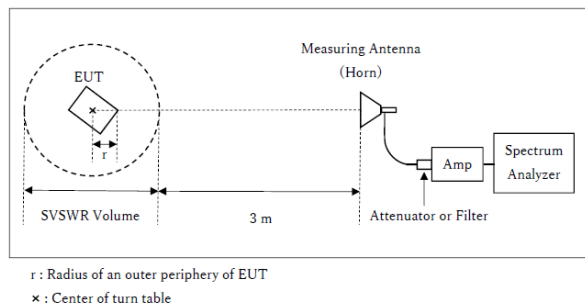
Figure 2. Test Setup

Below 1 GHz



Test Distance: 3 m

1 GHz to 10 GHz



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

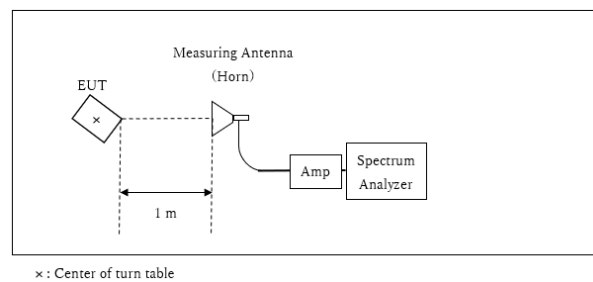
* Test Distance: $(3 + \text{SVSWR Volume} / 2) - r = 3.00 \text{ m}$

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).

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

DATA OF RADIATED EMISSION TEST

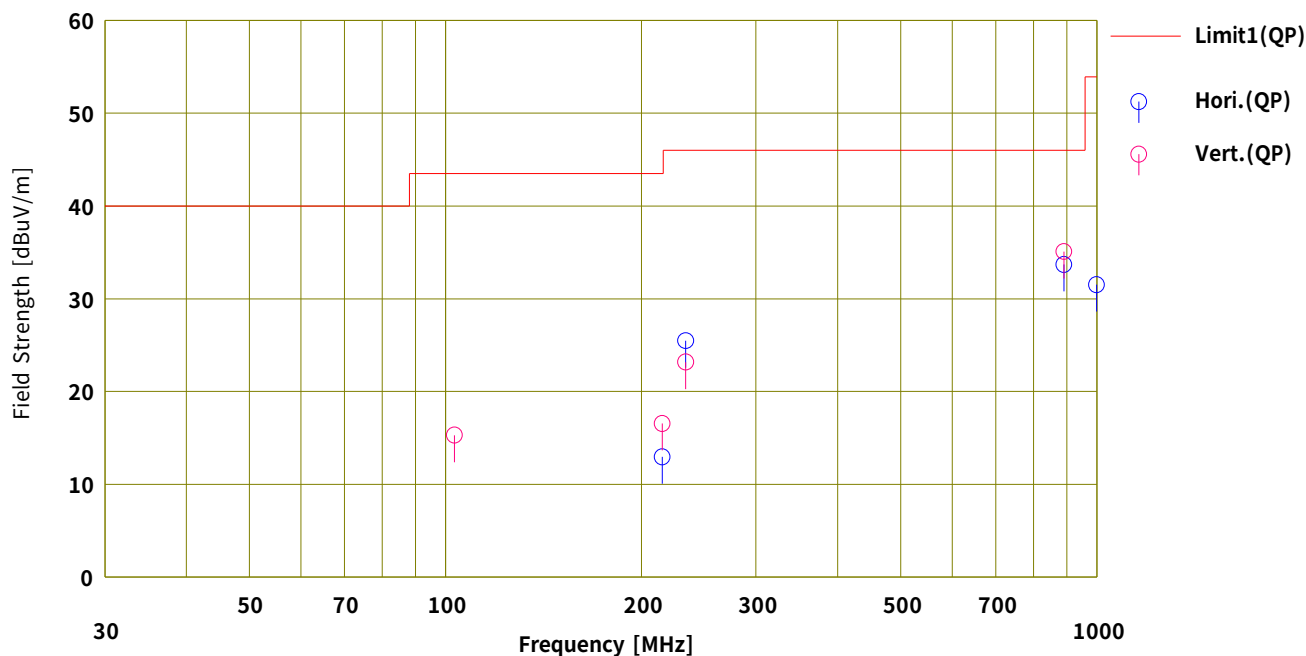
UL Japan,Inc. Shonan EMC Lab. No.2 Semi-Anechoic Chamber
Date : 2022/05/14

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

Mode : USB Memory play
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. [MHz]	Reading <QP>	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	S.Fac [dB]	Result <QP>	Limit <QP>	Margin <QP>	Pola. [H/V]	Height [cm]	Angle [deg]	Ant. Type	Comment
		[dBuV]					[dBuV/m]	[dBuV/m]	[dB]					
1	215.144	27.60	11.28	5.84	31.77	0.00	12.95	43.50	30.5	Hori.	183	54	LP	
2	233.942	39.70	11.53	6.00	31.76	0.00	25.47	46.00	20.5	Hori.	197	224	LP	
3	890.093	32.80	22.13	9.67	30.92	0.00	33.68	46.00	12.3	Hori.	160	241	LP	
4	999.892	28.90	22.51	10.20	30.10	0.00	31.51	53.90	22.3	Hori.	100	300	LP	
5	103.302	28.30	10.85	8.04	31.89	-0.01	15.29	43.50	28.2	Vert.	100	1	BC	
6	215.144	31.20	11.28	5.84	31.77	0.00	16.55	43.50	26.9	Vert.	100	229	LP	
7	233.942	37.40	11.53	6.00	31.76	0.00	23.17	46.00	22.8	Vert.	100	209	LP	
8	890.091	34.20	22.13	9.67	30.92	0.00	35.08	46.00	10.9	Vert.	133	254	LP	

DATA OF RADIATED EMISSION TEST

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

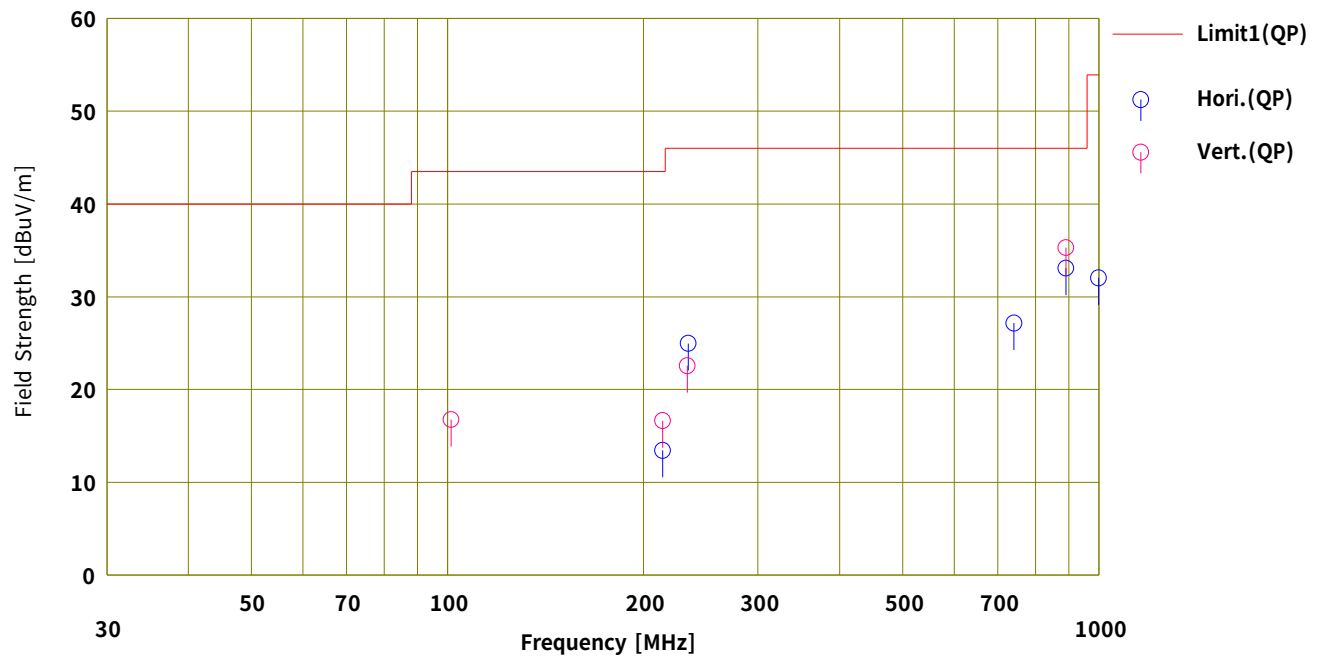
Date : 2022/05/14

Company : DENSO TEN Limited
 Kind of EUT : Car Audio
 Model No. : TN0023A
 Serial No. : EU200011
 Remarks : 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. [MHz]	Reading <QP>	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	S.Fac [dB]	Result <QP>	Limit <QP>	Margin <QP>	Pola. [H/V]	Height [cm]	Angle [deg]	Ant. Type	Comment
		[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	

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 (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

<< QP DATA >>

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 (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

<< QP DATA >>

No.	Freq.	Reading	Ant.Fac	Loss	Gain	S.Fac	Result	Limit	Margin	Pola.	Height	Angle	Ant. Type	Comment
		<QP>					<QP>	<QP>	<QP>					
	[MHz]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	[H/V]	[cm]	[deg]		
1	97.297	22.30	9.73	7.96	31.89	0.14	8.24	43.50	35.2	Hori.	100	0	BC	
2	194.595	21.90	16.56	9.00	31.80	-0.14	15.52	43.50	27.9	Hori.	100	0	BC	
3	778.378	20.90	20.63	9.16	31.41	0.00	19.28	46.00	26.7	Hori.	100	0	LP	
4	97.297	29.80	9.73	7.96	31.89	0.14	15.74	43.50	27.7	Vert.	100	6	BC	
5	194.595	21.70	16.56	9.00	31.80	-0.14	15.32	43.50	28.1	Vert.	100	0	BC	
6	778.378	21.10	20.63	9.16	31.41	0.00	19.48	46.00	26.5	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

<< QP DATA >>

No.	Freq.	Reading	Ant.Fac	Loss	Gain	S.Fac	Result	Limit	Margin	Pola.	Height	Angle	Ant. Type	Comment
		<QP>					<QP>	<QP>	<QP>					
	[MHz]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	[H/V]	[cm]	[deg]		
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

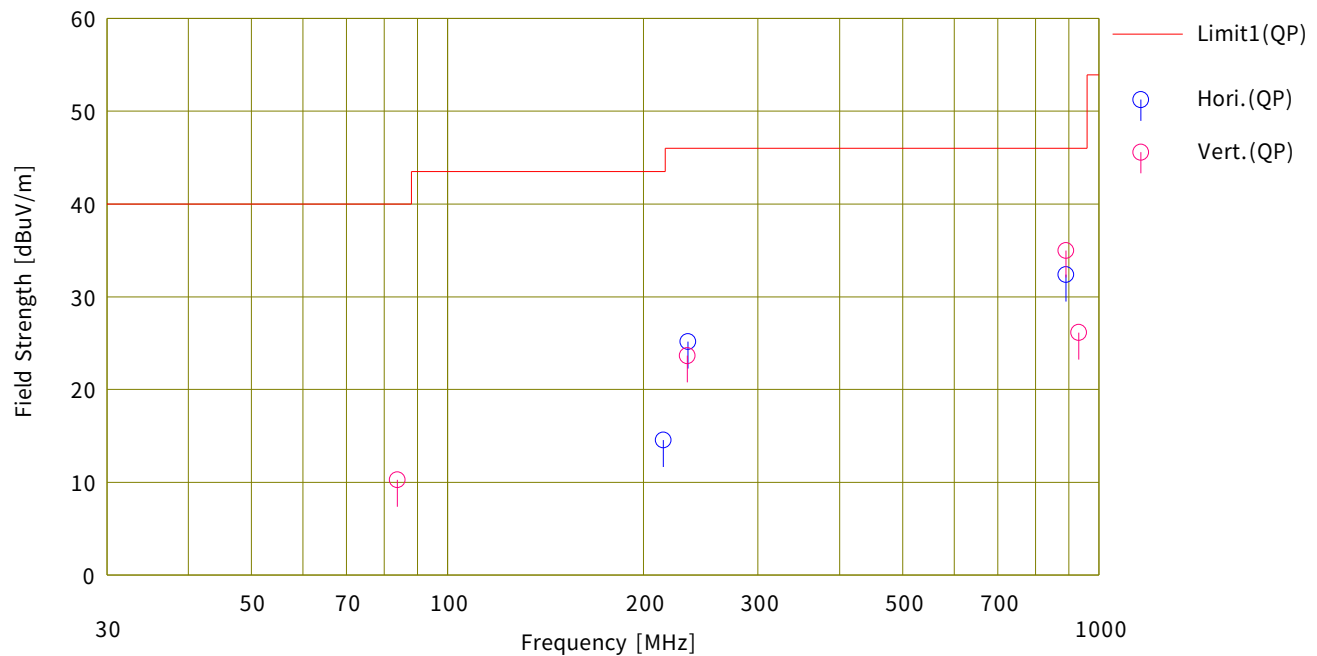
Date : 2022/05/14

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. [MHz]	Reading <QP>	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	S.Fac [dB]	Result <QP>	Limit <QP>	Margin <QP>	Pola. [H/V]	Height [cm]	Angle [deg]	Ant. 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 (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

<< QP DATA >>

No.	Freq. [MHz]	Reading <QP>	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	S.Fac [dB]	Result <QP>	Limit <QP>	Margin <QP>	Pola. [H/V]	Height [cm]	Angle [deg]	Ant. Type	Comment
		[dBuV]					[dBuV/m]	[dBuV/m]	[dB]					
1	88.207	21.60	7.94	7.84	31.90	0.38	5.86	43.50	37.6	Hori.	100	0	BC	
2	176.415	21.30	15.94	8.82	31.81	-0.01	14.24	43.50	29.2	Hori.	100	0	BC	
3	705.659	21.40	19.99	8.80	31.59	0.00	18.60	46.00	27.4	Hori.	100	0	LP	
4	88.207	25.10	7.94	7.84	31.90	0.38	9.36	43.50	34.1	Vert.	100	0	BC	
5	176.415	23.80	15.94	8.82	31.81	-0.01	16.74	43.50	26.7	Vert.	100	0	BC	
6	705.659	23.80	19.99	8.80	31.59	0.00	21.00	46.00	25.0	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 : 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

<< QP DATA >>

No.	Freq.	Reading	Ant.Fac	Loss	Gain	S.Fac	Result	Limit	Margin	Pola.	Height	Angle	Ant. Type	Comment
		<QP>					<QP>	<QP>	<QP>					
	[MHz]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	[H/V]	[cm]	[deg]		
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

<< QP DATA >>

No.	Freq. [MHz]	Reading <QP>	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	S.Fac [dB]	Result <QP>	Limit <QP>	Margin <QP>	Pola. [H/V]	Height [cm]	Angle [deg]	Ant. Type	Comment
		[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

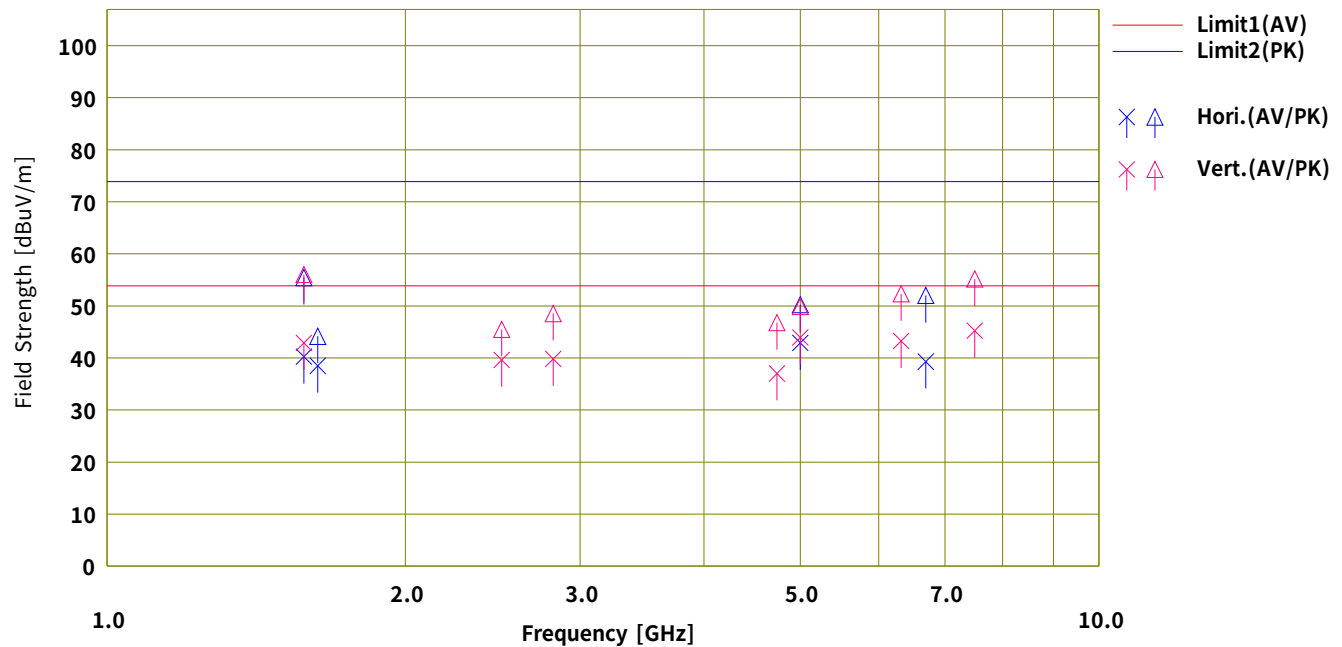
Company : DENSO TEN Limited
Kind of EUT : Car Audio
Model No. : TN0023A
Serial No. : EU200011
Remarks : Test Distance = (1-10 GHz) 300 cm, (10 - 40 GHz) 100 cm

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. [MHz]	Reading		Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result		Limit		Margin		Pola. [H/V]	Height [cm]	Angle [deg]	Ant. 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

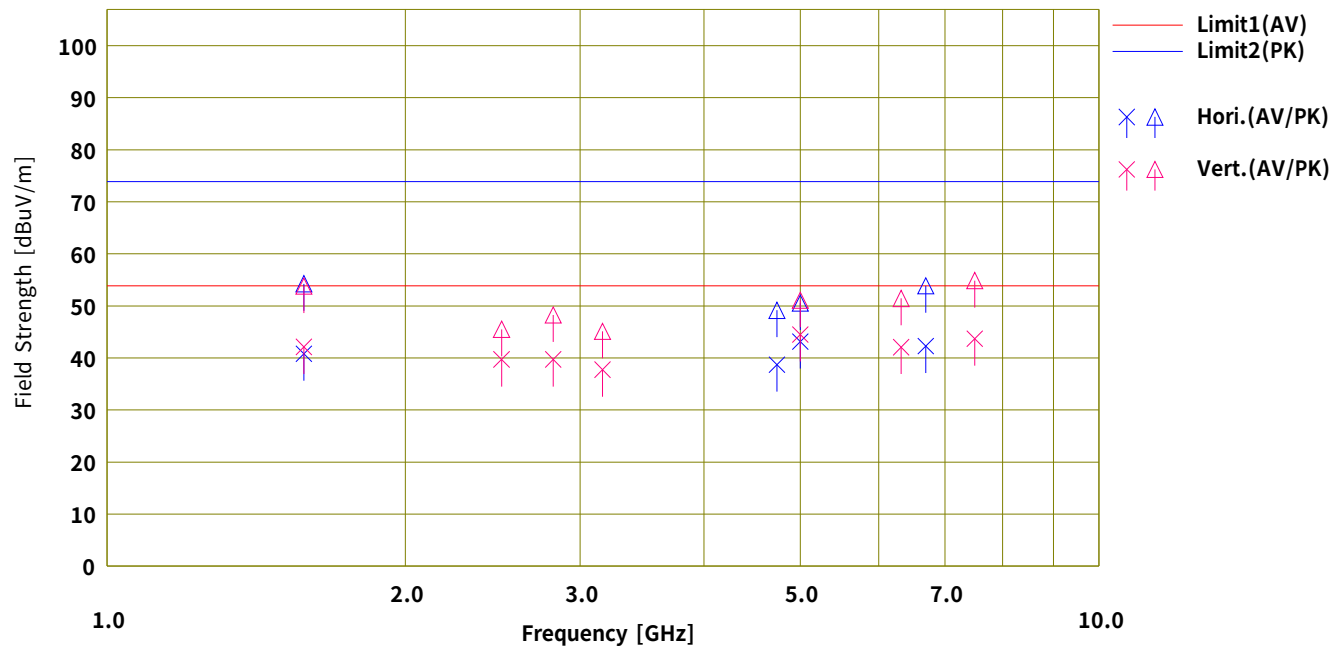
Company : DENSO TEN Limited
 Kind of EUT : Car Audio
 Model No. : TN0023A
 Serial No. : EU200011
 Remarks : Test Distance = (1-10 GHz) 300 cm, (10 - 40 GHz) 100 cm, Other

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. [MHz]	Reading		Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result		Limit		Margin		Pola. [H/V]	Height [cm]	Angle [deg]	Ant. 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

Kind of EUT : Car Audio

Model No. : TN0023A

Serial No. : EU200011

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

Mode : FM Reception Analog (87.75 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

<< AV/PK DATA >>

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

Kind of EUT : Car Audio

Model No. : TN0023A

Serial No. : EU200011

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

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

<< AV/PK DATA >>

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

<< AV/PK DATA >>

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

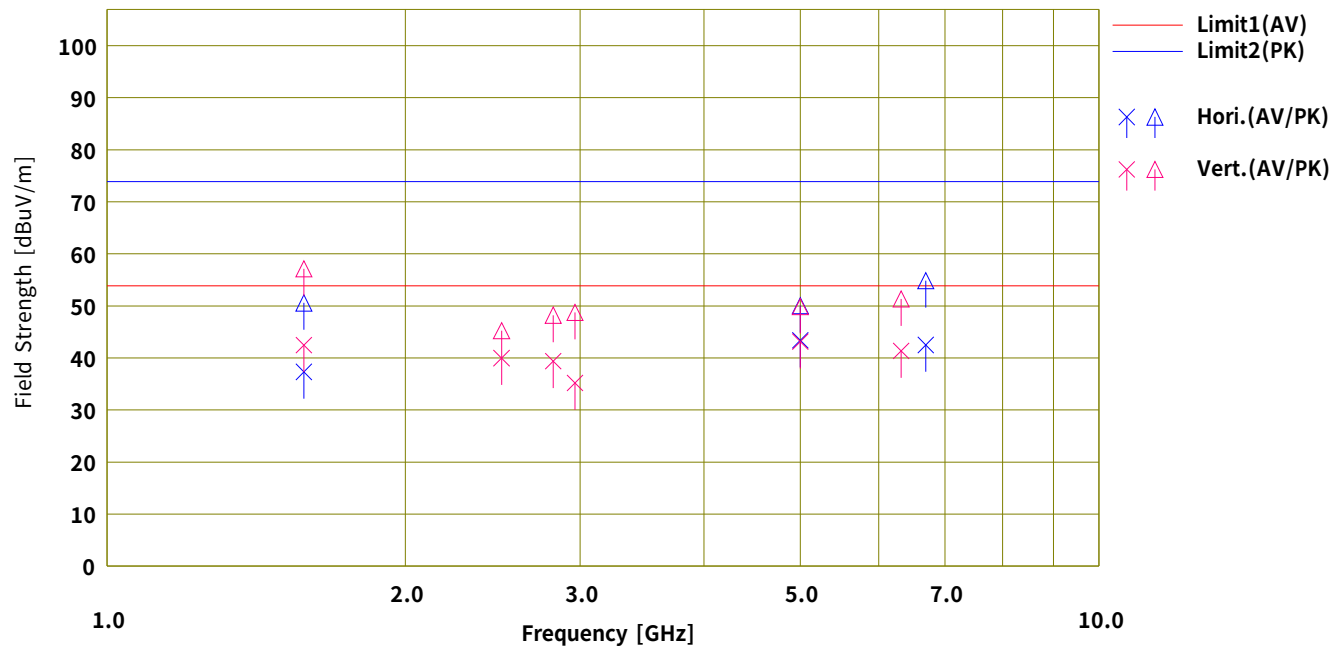
Company : DENSO TEN Limited
 Kind of EUT : Car Audio
 Model No. : TN0023A
 Serial No. : EU200011
 Remarks : Test Distance = (1-10 GHz) 300 cm, (10 - 40 GHz) 100 cm, Other

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. [MHz]	Reading		Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result		Limit		Margin		Pola. [H/V]	Height [cm]	Angle [deg]	Ant. 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

Kind of EUT : Car Audio

Model No. : TN0023A

Serial No. : EU200011

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

Mode : FM Reception Digital (87.75 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

<< AV/PK DATA >>

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

<< AV/PK DATA >>

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

<< AV/PK DATA >>

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

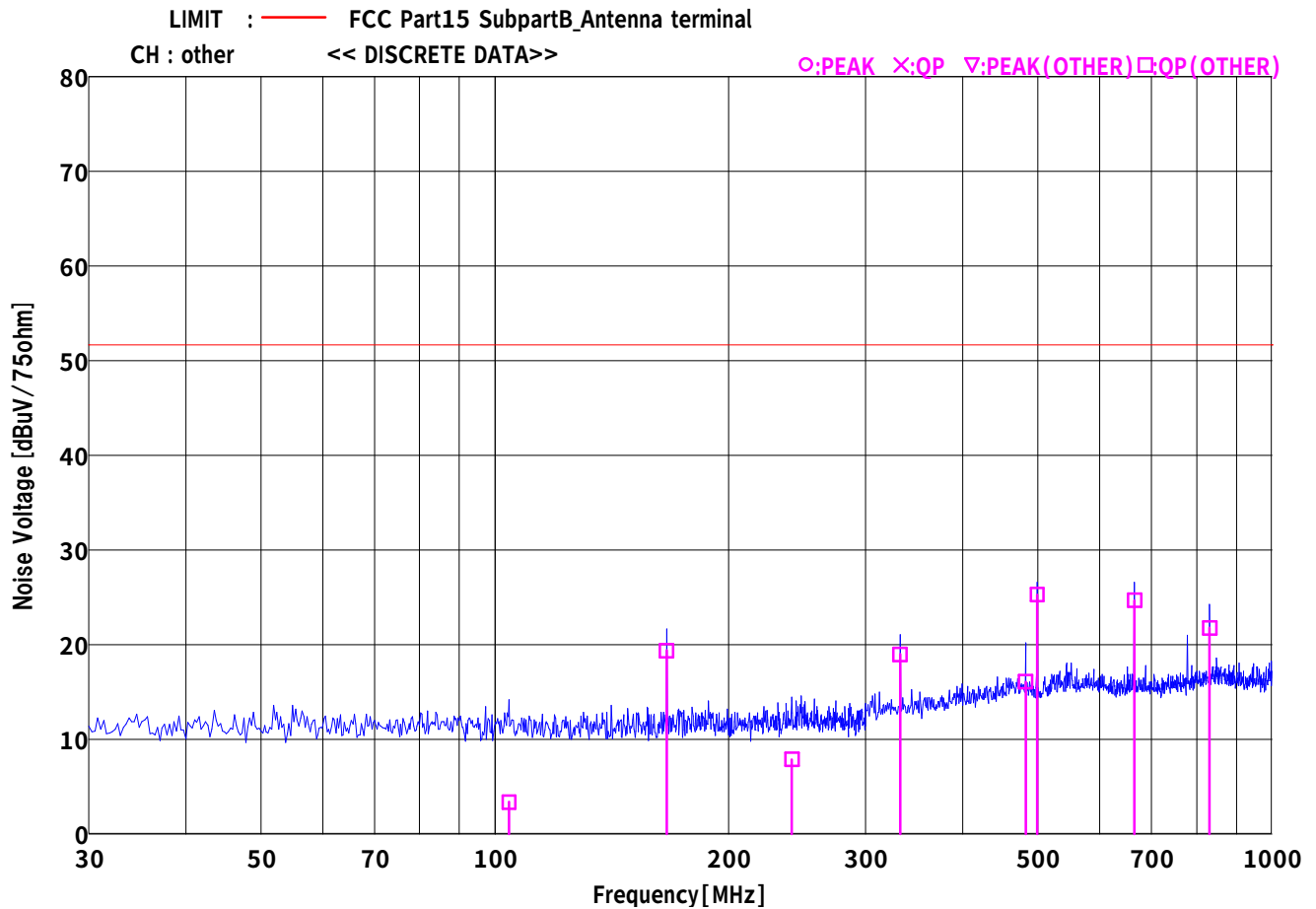
UL Japan,Inc. Shonan EMC Lab. No.1 Shielded Room
Date :13 / May / 2022

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	----	34	51.7	48.3
	*166350	----	322	-12.8	----	194	51.7	32.3
	*241141	----	206	-12.7	----	79	51.7	43.8
	*332201	----	315	-12.5	----	190	51.7	32.7
	*482003	----	283	-12.2	----	161	51.7	35.6
	*498804	----	375	-12.2	----	253	51.7	26.4
	*665406	----	365	-11.8	----	247	51.7	27.0
	*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 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

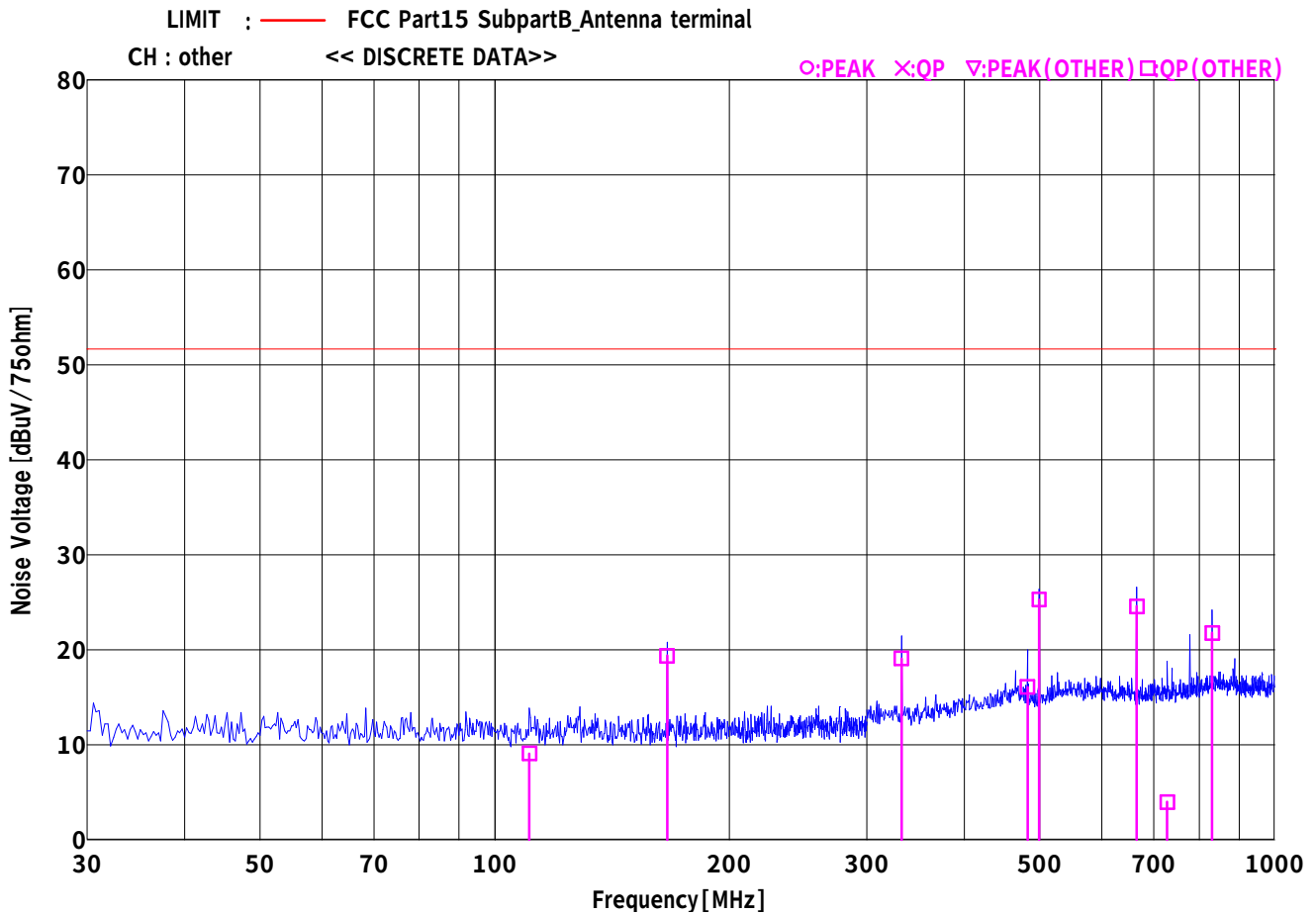
UL Japan,Inc. Shonan EMC Lab. No.1 Shielded Room
Date :13 / May / 2022

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	----	22.1	-13.0	----	9.1	51.7	42.6
	*166350	----	32.2	-12.8	----	19.4	51.7	32.3
	*332201	----	31.6	-12.5	----	19.1	51.7	32.6
	*482003	----	28.3	-12.2	----	16.1	51.7	35.6
	*498804	----	37.5	-12.2	----	25.3	51.7	26.4
	*665406	----	36.4	-11.8	----	24.6	51.7	27.1
	*728408	----	15.8	-11.8	----	4.0	51.7	47.7
	*832009	----	33.5	-11.7	----	21.8	51.7	29.9

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 (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

Calculation:Rsult[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 (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

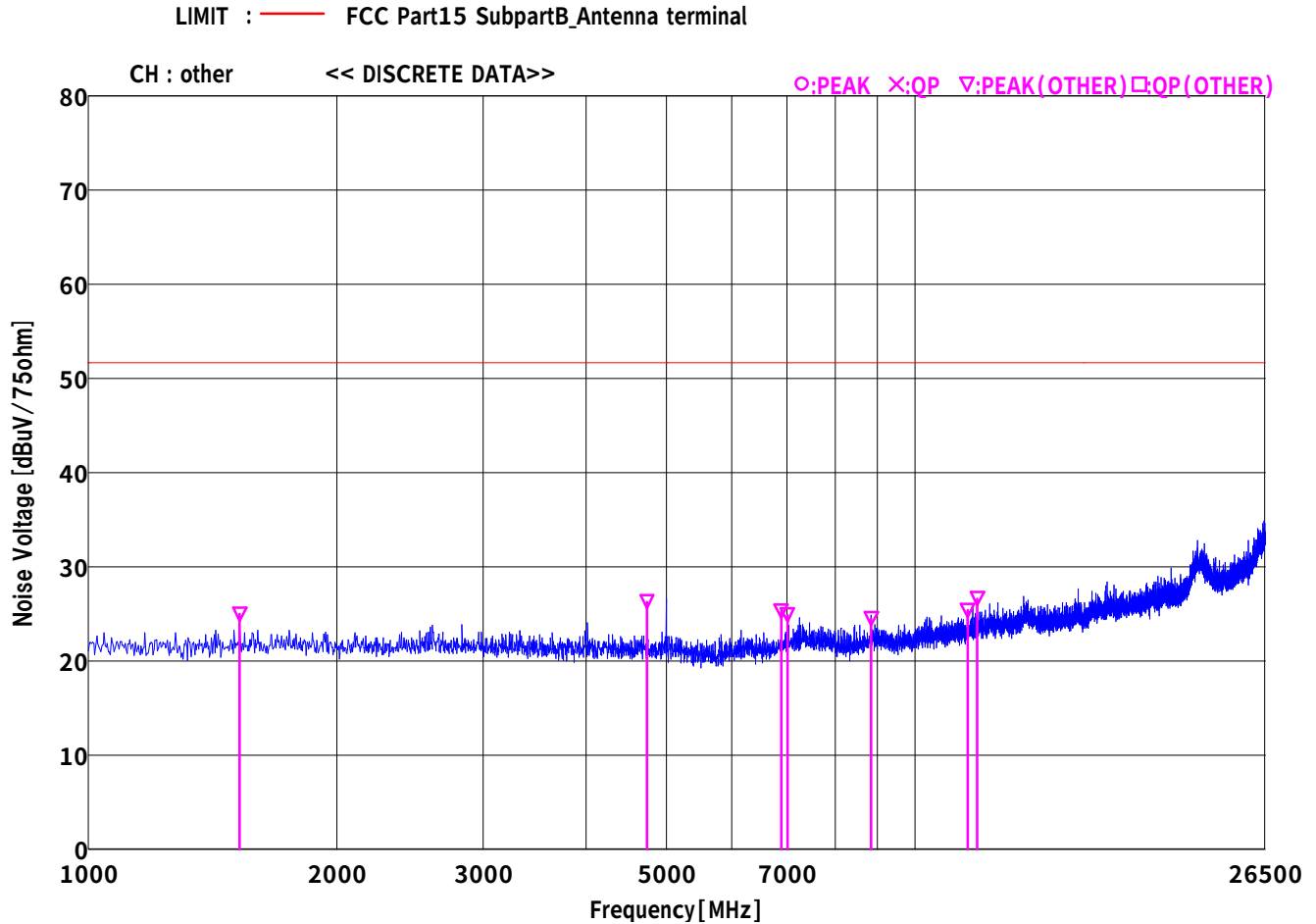
UL Japan, Inc. Shonan EMC Lab. No.1 Shielded Room
Date : 13 / May / 2022

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

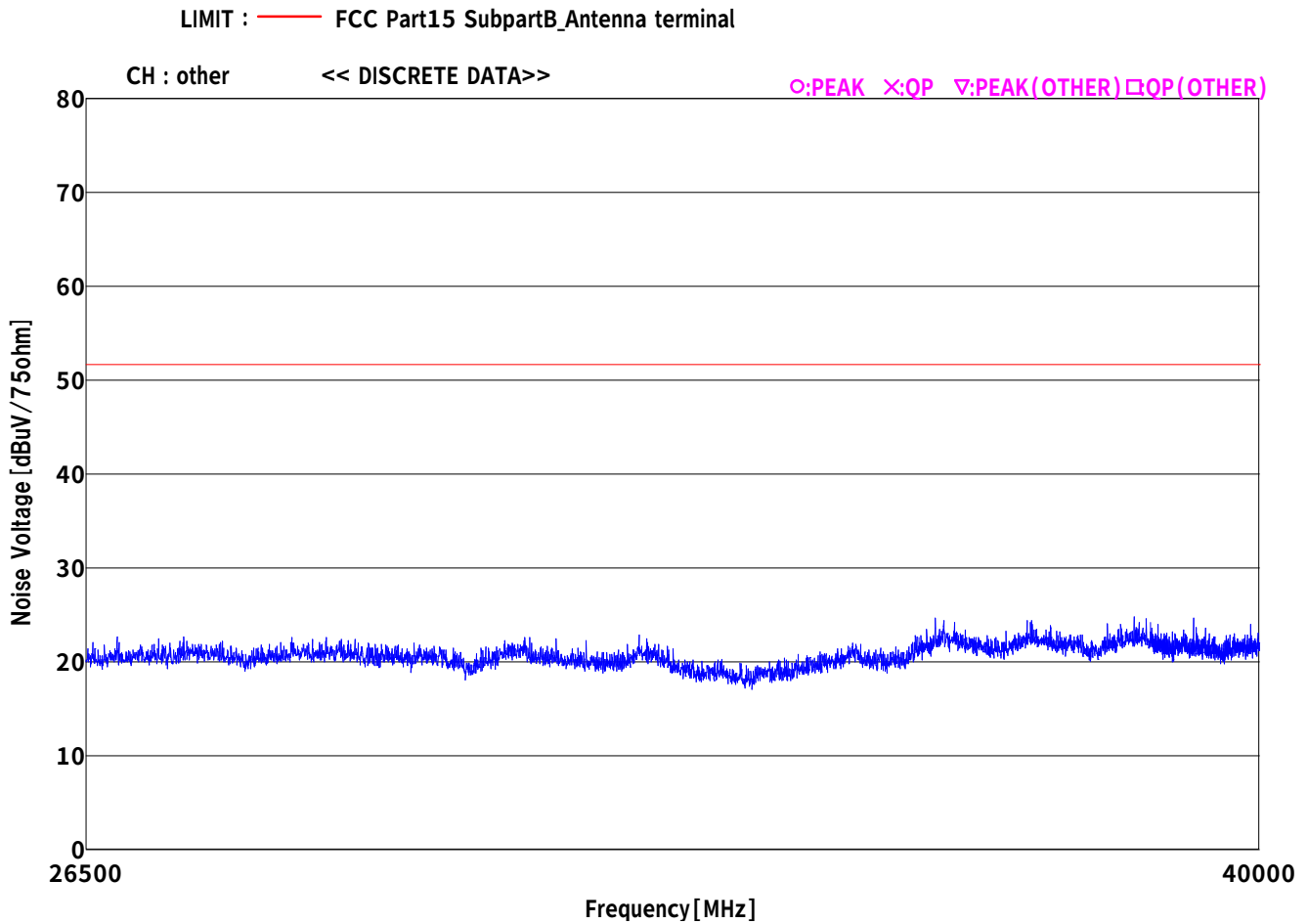
UL Japan,Inc. Shonan EMC Lab. No.1 Shielded Room
Date :13 / May / 2022

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	1058489	49.3	----	-25.1	24.2	----	51.7	27.5
	3440088	47.6	----	-22.6	25.0	----	51.7	26.7
	6262724	45.0	----	-21.4	23.6	----	51.7	28.1
	7321212	45.7	----	-21.4	24.3	----	51.7	27.4
	1047511	48.3	----	-25.1	23.2	----	51.7	28.5
	3404412	45.9	----	-22.6	23.3	----	51.7	28.4
	6197776	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. : 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	48.8	----	-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

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

DATA OF ANTENNA TERMINAL TEST

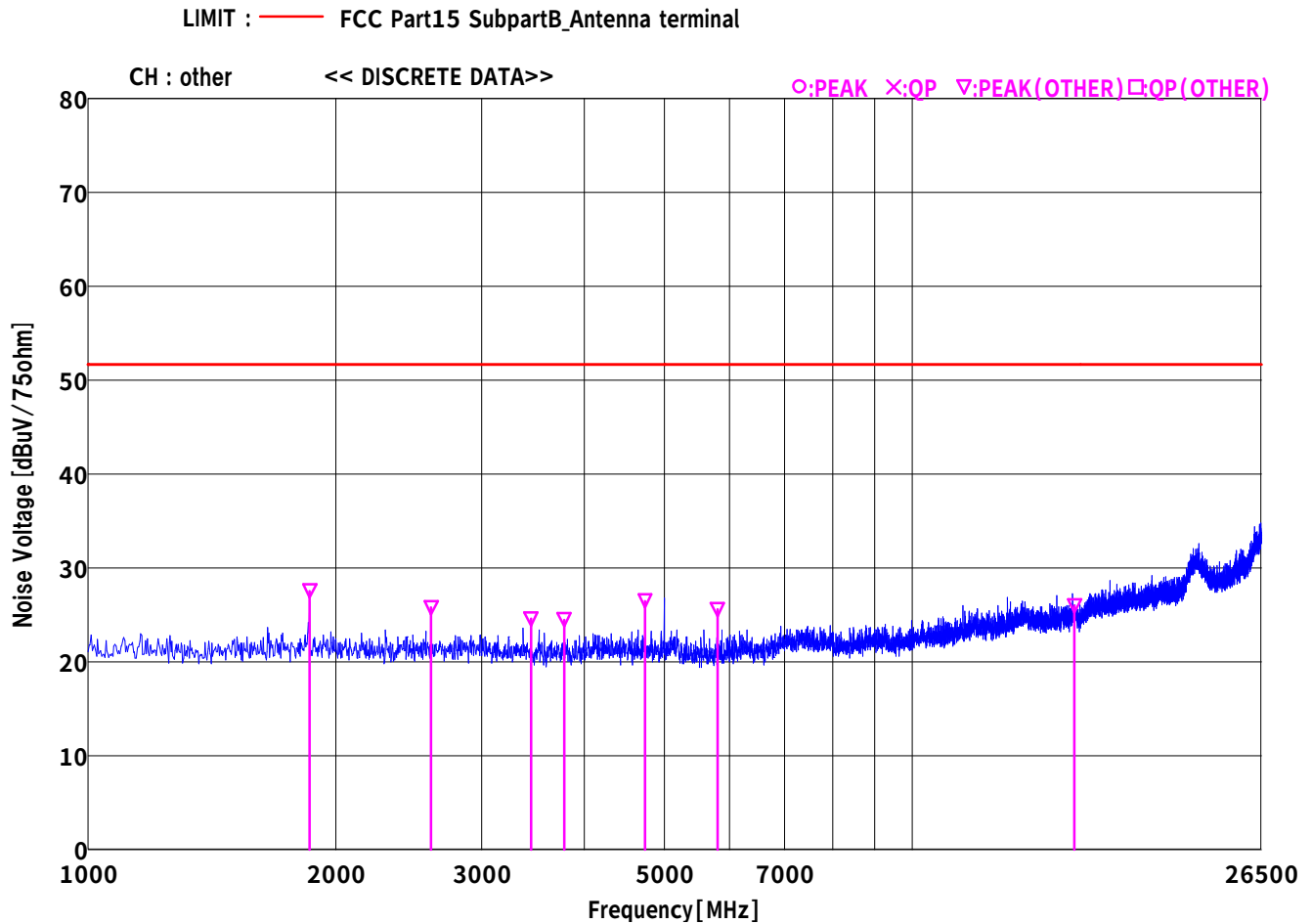
UL Japan,Inc. Shonan EMC Lab. No.1 Shielded Room
Date :13 / May / 2022

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



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

DATA OF ANTENNA TERMINAL TEST

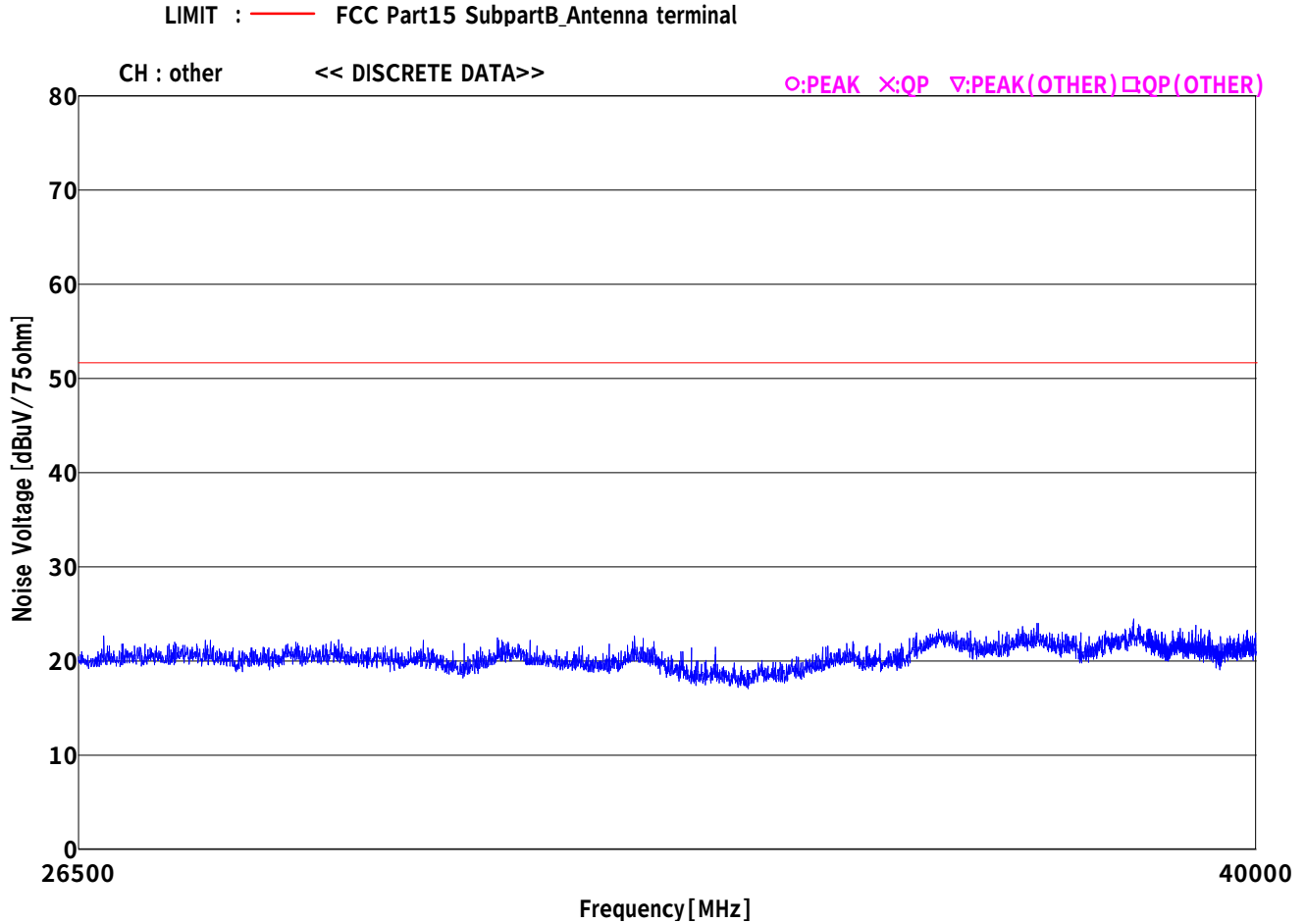
UL Japan,Inc. Shonan EMC Lab. No.1 Shielded Room
Date :13 / May / 2022

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	*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 [MHz]	Reading		Factor [dB]	Result		Limit [dBuV / 75]	Margin [dB]
		PEAK	QP		PEAK	QP		
		[dBuV]			[dBuV / 75]			
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