JQA File No.: 400-190086-2
Issue Date : October 23, 2019

TEST REPORT

Applicant	:	JVC KENWOOD Corporation
Address	:	2967-3, Ishikawa-machi, Hachioji-shi, Tokyo, 192-8525, Japan
Products	:	CD Receiver
Model No.	:	DPX-7200DAB
Serial No.	:	144X0069
Test Standard	:	ETSI EN 301 489-1 V2.1.1 (2017-02) ETSI EN 301 489-17 V3.1.1 (2017-02)
Test Results	:	**Passed**
Date of Test	:	October 6 ~ 16, 2019

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Lab Accreditation
VLAC-001-5

- The test results in this test report was made by using the measuring instruments which are traceable to national standards of measurement in accordance with ISO/IEC 17025.
- The applicable standard, testing condition and testing method which were used for the tests are based on the request of the applicant.
- The test results presented in this report relate only to the offered test sample.
- The contents of this test report cannot be used for the purposes, such as advertisement for consumers.
- This test report shall not be reproduced except in full without the written approval of JQA.
- VLAC does not approve, certify or warrant the product by this test report.

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Definitions for Abbreviation and Symbols Used In This Test Report

"EUT" means Equipment Under the Test.
"AE" means Associated Equipment.
"N/A" means that Not Applicable.
"N/T" means that Not Tested.

☑ - indicates that the listed condition, standard or equipment is applicable for this report.
☐ - indicates that the listed condition, standard or equipment is not applicable for this report.

1 Description of the Equipment Under Test

1	Manufacturer	:	JVC KENWOOD Corporation 2967-3, Ishikawa-machi, Hachioji-shi. Tokyo, 192-8525, Japan
2	Products	:	CD Receiver
3	Model No.	:	DPX-7200DAB
4	Serial No.	:	144X0069
5	Product Type	:	Pre-Production
6	Date of Manufacture	:	July, 2019
7	Power Rating	:	12.0 VDC (Nominal) 10.5-16.0 VDC (Operating voltage range)
8	Grounding	:	None
9	Modulation Type		FHSS Bluetooth 4.2 GFSK, π/4DQPSK and 8DPSK
10	Type of Equipment		The host equipment (CD Receiver) is combined With Bluetooth Vehicular Use Equipment
11	Operating Frequency Range	:	2400.0 MHz –2483.5MHz
12	Received Date of EUT	:	October 4, 2019
13	Highest Frequency Used/Generated	:	2483.5 MHz (for Transciever) 8.2 GHz (for Tuner IC)
14	EMI Category	:	Class B
15	Harmonic Current Classification	:	Not Applicable
16	Voltage Fluctuations and Flicker, Category	:	Not Applicable

2 Summary of Test Results

Applied Standard : ETSI EN 301 489-1 V2.1.1 (2017-02)
ElectroMagnetic Compatibility (EMC) standard for radio equipment and services;
Part 1: Common technical requirements;
Harmonised Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU and the essential requirements of article 6 of Directive 2014/30/EU

ETSI EN 301 489-17 V3.1.1 (2017-02)
ElectroMagnetic Compatibility (EMC) standard for radio equipment and services;
Part 17: Specific conditions for Broadband Data Transmission Systems;
Harmonised Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU

The EUT described in clause 1 was tested according to the applied standard shown above.
Details of the test configuration is shown in clause 6.
The conclusion for the test items of which are required by the applied standard is indicated under the test result.

☑ - The test result was passed for the test requirements of the applied standard.

☐ - The test result was failed for the test requirements of the applied standard.

☐ - The test result was not judged the test requirements of the applied standard.

In the approval of test results,
- Determining compliance with the limits in this report was based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
- No deviations were employed from the applied standard.
- No modifications were conducted by JQA to achieve compliance to the limitations.

Reviewed by:

K. Makimoto

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Manager
SAFETY & EMC CENTER
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EMC Testing Div.

Tested by:

N. Ueno

Naohiko Ueno
Assistant Manager
SAFETY & EMC CENTER
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3 Test Procedure

The tests documented in this report were performed in accordance with ETSI EN 301 489-1 V2.1.1(2017-02) , ETSI EN 301 489-17 V3.1.1 (2017-02) and the following basic standards.

Test Procedure : EN55032:2015
EN61000-3-2:2006 + A1:2009 + A2:2009
EN61000-3-3:2013
EN61000-4-2:2009
EN61000-4-3:2006 + A1:2008 + A2:2010
EN61000-4-4:2012
EN61000-4-5:2006
EN61000-4-6:2009
EN61000-4-11:2004
ISO 7637-2:2011

4 Test Location

Japan Quality Assurance Organization
SAFETY & EMC CENTER
Testing Dept.
EMC Testing Div.
4-4-4, Minamiosawa, Hachioji-shi, Tokyo 192-0364, Japan

5 Recognition of Test Laboratory

JQA is accredited under ISO/IEC 17025 by following accreditation bodies and the test facility of Testing Division is registered by the following bodies .

Test Facility	Accreditation or Registration		Expiry Date
	Body	Code/Number	
(1) Safety & EMC Center (2) SAITO (3) SHIKATSU (4) TSURU	VLAC	(1) VLAC-001-5 (2) VLAC-001-2 (3) VLAC-001-3 (4) VLAC-001-4	March 30, 2020
	VCCI	(1) A-0001 (2) A-0002 (3) A-0003 (4) A-0004	September 30, 2020
	BSMI	(2) SL2-IS-E-6006, SL2-IN-E-6006, SL2-R1/R2-E-6006, SL2-A1-E-6006 (4) SL2-IS-E-6004, SL2-IN-E-6004, SL2-R1/R2-E-6004, SL2-A1-E-6004	September 14, 2019
	FCC	(1) 794655 (2) 683630 (3) 876580	March 26, 2020
	Conformity assessment body for Japan electrical appliances and material by METI		February 22, 2022

6 Description of Test Setup

6.1 Test Configuration

The EUT consists of:

Sign	Item	Manufacturer	Model No.	Serial No.
A	CD Receiver	JVC KENWOOD Corporation	DPX-7200DAB	144X0069

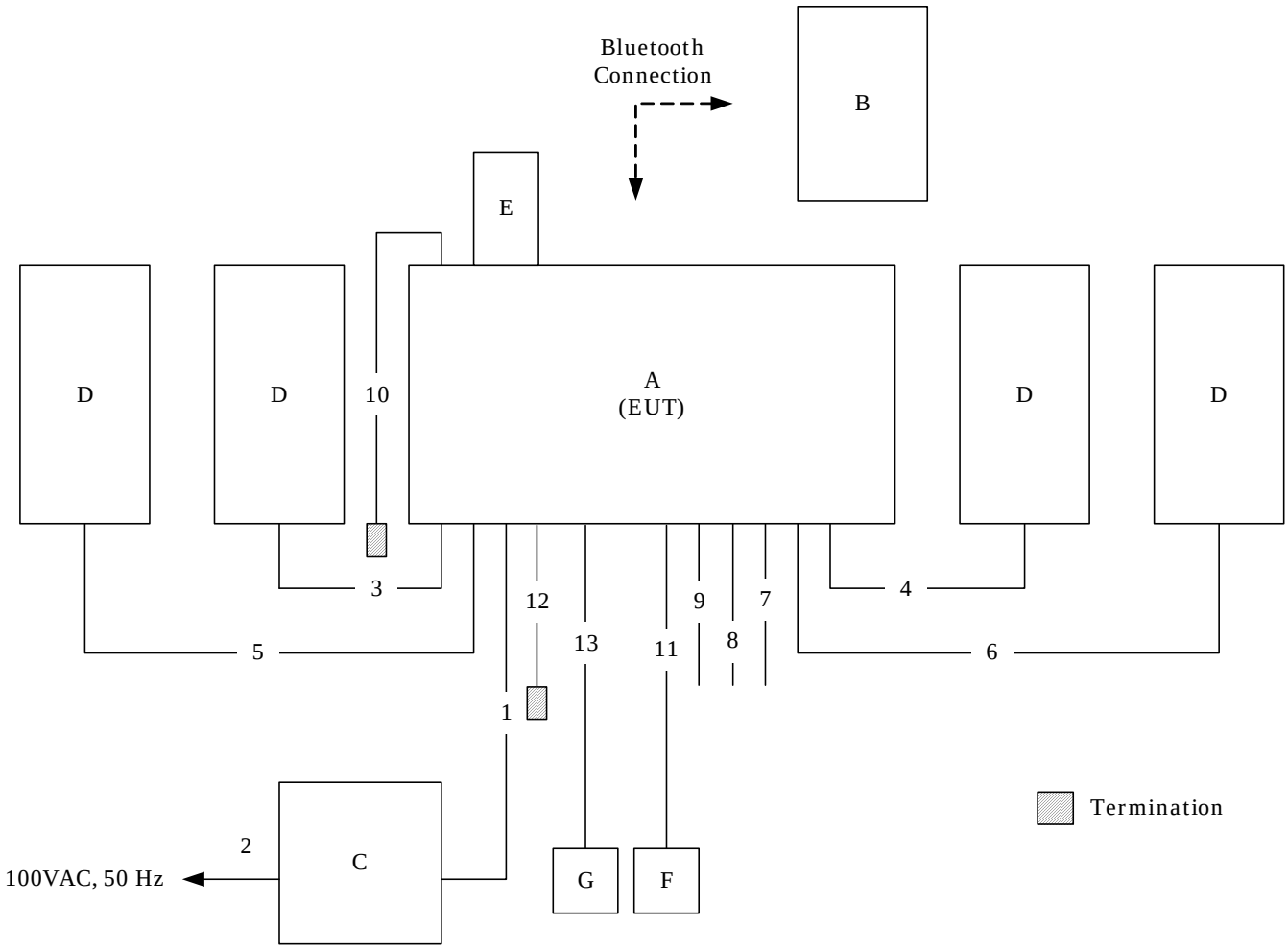
The AE used for testing :

Sign	Item	Manufacturer	Model No.	Serial No.
B	iPhone	Apple Inc.	A1332	86044FU6A4S
C	DC Power Supply	Kikusui Electronics Co., Ltd.	PAN35-20A	GJ000984
D	Dummy Load	-	-	-
E	USB Memory	-	-	-
F	BT Microphone	-	-	-
G	DAB Antenna	-	-	-

Type of Cable used for testing :

No.	Description	Identification (Manu. Etc.)	Connector Shielded	Cable Shielded	Ferrite Core	Length (m)
1	DC Power Cable	-	No	No	No	1.0
2	AC Power Cable	-	No	No	No	2.0
3	Front Speaker(Lch) Cable	-	No	No	No	1.2
4	Front Speaker(Rch) Cable	-	No	No	No	1.2
5	Rear Speaker(Lch) Cable	-	No	No	No	1.2
6	Rear Speaker(Rch) Cable	-	No	No	No	1.2
7	Preout Front(L/R) Cable	-	Yes	Yes	No	2.0
8	Preout Rear(L/R) Cable	-	Yes	Yes	No	2.0
9	Preout SW(L/R) Cable	-	Yes	Yes	No	2.0
10	AUX Cable	-	No	No	No	1.0
11	Microphone Cable	-	No	No	No	5.0
12	AM/FM Antenna Cable	-	Yes	Yes	No	1.0
13	DAB Antenna	-	Yes	Yes	No	5.0

6.2 Test Arrangement (Drawings)



6.3 Operating Condition

Test Voltage : 12VDC

Operation Mode
1. Bluetooth Communication (Playback 1kHz Tone Signal from iPhone)

Note : EUT does not have Bluetooth standby mode.

Monitoring
It was observed that the 1kHz tone or Bluetooth spectrum were in normal condition.
Operating display and data log were monitored.

6.4 Immunity Performance Criteria and Phenomena

For this EUT, the applicant or manufacturer have decided that the performance criteria should be applied as mentioned below.

6.4.1 Performance Criteria and Phenomena

Performance criteria A for immunity tests with phenomena of a continuous nature (CT/CR).
Performance criteria B for immunity tests with phenomena of a transient nature (TT/TR).
Performance criteria for immunity tests with power interruptions exceeding a certain time are specified in clause 7.11.4.

Criteria	During test	After test
A	Shall operate as intended. May show degradation of performance Shall be no loss of function. Shall be no unintentional transmissions.	Shall operate as intended. Shall be no degradation of performance. Shall be no loss of function. Shall be no loss of stored data or user programmable functions.
B	May show loss of function (one or more). May show degradation of performance No unintentional transmissions.	Functions shall be self-recoverable. Shall operate as intended after recovering. Shall be no degradation of performance. Shall be no loss of stored data or user programmable functions.
C	May be loss of function (one or more).	Functions shall be recoverable by the operator. Shall operate as intended after recovering. Shall be no degradation of performance.

6.4.2 Performance Phenomena

CT/CR : Continuous phenomena applied to Transmitters and Receivers

If no further details are given in the relevant part of EN 301 489 series dealing with the particular type of radio equipment, the following general performance criteria for continuous phenomena shall apply.

During and after the test, the apparatus shall continue to operate as intended. No degradation of performance or loss of function is allowed below a permissible performance level specified by the manufacturer when the apparatus is used as intended. In some cases this permissible performance level may be replaced by a permissible loss of performance.

During the test the EUT shall not unintentionally transmit or change its actual operating state and stored data.

If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be deduced from the product description and documentation and what the user may reasonably expect from the apparatus if used as intended.

TT/TR : Performance criteria for Transient phenomena applied to Transmitters and Receivers

If no further details are given in the relevant part of EN 301 489 series dealing with the particular type of radio equipment, the following general performance criteria for transient phenomena shall apply.

After the test, the apparatus shall continue to operate as intended. No degradation of performance or loss of function is allowed below a permissible performance level specified by the manufacturer, when the apparatus is used as intended.

In some cases this permissible performance level may be replaced by a permissible loss of performance.

During the EMC exposure to an electromagnetic phenomenon, a degradation of performance is, however, allowed.

No change of the actual mode of operation (e.g. unintended transmission) or stored data is allowed.

If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be deduced from the product description and documentation and what the user may reasonably expect from the apparatus if used as intended.

Performance criteria for equipment which does not provide a continuous communication link

For radio equipment which does not provide a continuous communication link, the performance criteria described in clauses CT/CR and TT/TR are not appropriate, then the manufacturer shall declare, for inclusion in the test report, his own specification for an acceptable level of performance or degradation of performance during and/or after the immunity tests.

The performance specification shall be included in the product description and documentation.

The related specifications set out in clause 6.4.1 have also to be taken into account.

The performance criteria specified by the manufacturer shall give the same degree of immunity protection as called for in clauses CT/CR and TT/TR.

Performance criteria for ancillary equipment tested on a stand-alone basis

If ancillary equipment is intended to be tested on a stand-alone basis, the performance criteria described in clauses CT/CR and TT/TR are not appropriate, then the manufacturer shall declare, for inclusion in the test report, his own specification for an acceptable level of performance or degradation of performance during and/or after the immunity tests.

The performance specification shall be included in the product description and documentation. The related specifications set out in clause 6.4.1 have also to be taken into account.

The performance criteria specified by the manufacturer shall give the same degree of immunity protection as called for in clauses CT/CR and TT/TR

7 Test Requirements

Summary of the Test Results

Phenomenon	EN 301 489-1 Specification	Reference of the Test Report	Results	Remarks
EMC emission				
Conducted Emission	8.3, 8.4, 8.7	7.1, 7.2	Passed	
Radiated Emission	8.2	7.3	Not Applicable	*1
Harmonic Current Emissions	8.5	7.4	Not Applicable	*2
Voltage Fluctuations and Flicker	8.6	7.5	Not Applicable	*2
Immunity				
Electrostatic Discharge	9.3	7.6	Not Applicable	*2
RF electromagnetic field	9.2	7.7	Passed	
Fast transients	9.4	7.8	Not Applicable	*2
Surges	9.8	7.9	Not Applicable	*2
RF common mode	9.5	7.10	Passed	
Voltage dips and interruptions	9.7	7.11	Not Applicable	*2
Transients and surges	9.6	7.12	Passed	

*1 : EUT don't have ancillary equipment.

*2 : EUT for vehicular use.

7.1 Conducted Emission DC mains port

For the requirements, ☑ - Applicable [☑ - Tested. ☐ - Not tested by applicant request.]
☐ - Not Applicable

7.1.1 Test Results

For the standard, ☑ **- Passed** ☐ **- Failed** ☐ **- Not judged**

Min Limit Margin (Quasi-Peak)	35.3	dB	at	0.37	MHz
Min Limit Margin (Average)	-	dB	at	-	MHz

Uncertainty of measurement results ± 2.6 dB(2σ)

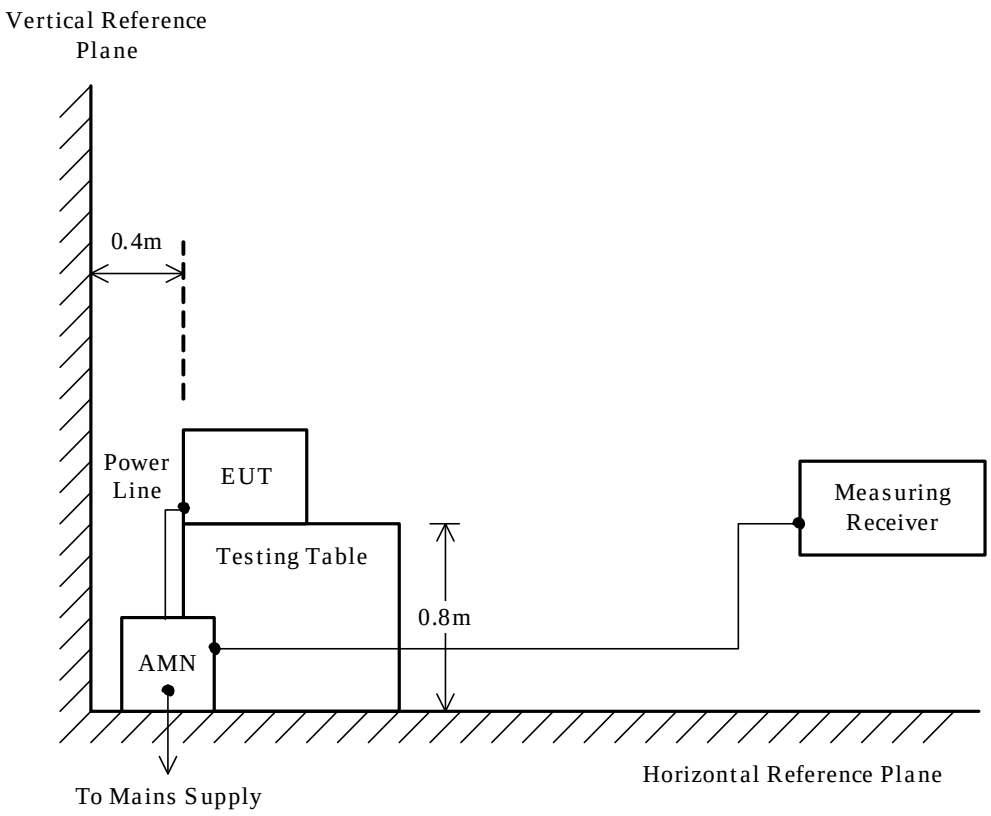
Remarks :

7.1.2 Test Instruments

Name	Number of test site & instruments (Refer to Appendix A)						
Test Site	M-1						
Test Receiver	R04						
Spectrum Analyzer	R04						
RF Cable	CB02						
LISN (main)	L09	L10					
LISN (sub)	-						
High Pass Filter	-						
Pulse Limiter	PL02						
Terminator	-						

7.1.3 Test Method and Test Setup (Diagrammatic illustration)

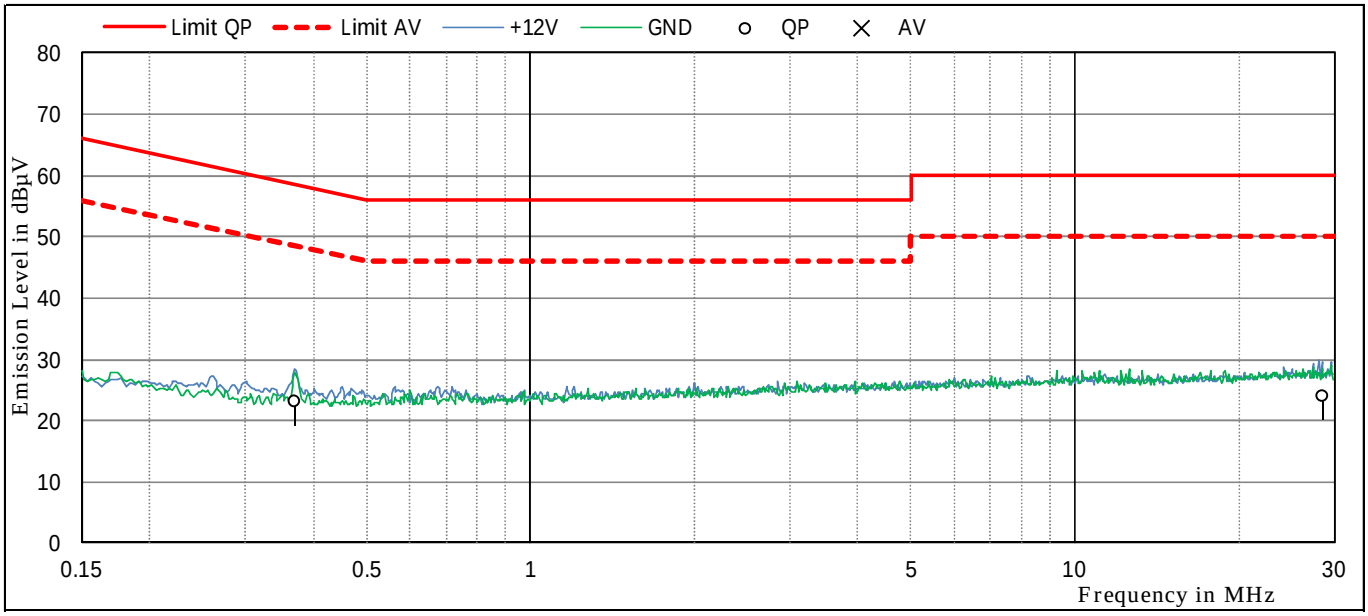
The preliminary tests are carried out according to test procedure.
The preliminary tests are performed using the scan mode of test receiver or spectrum analyzer to observe the emissions characteristics of the EUT.
The EUT configuration, cable configuration and mode of operation are determined for producing the maximum level of emissions.
This configuration is used for final tests.
(Reference divisional instruction No. G343669)



*AMN : Artificial Mains Network

7.1.4 Test Data

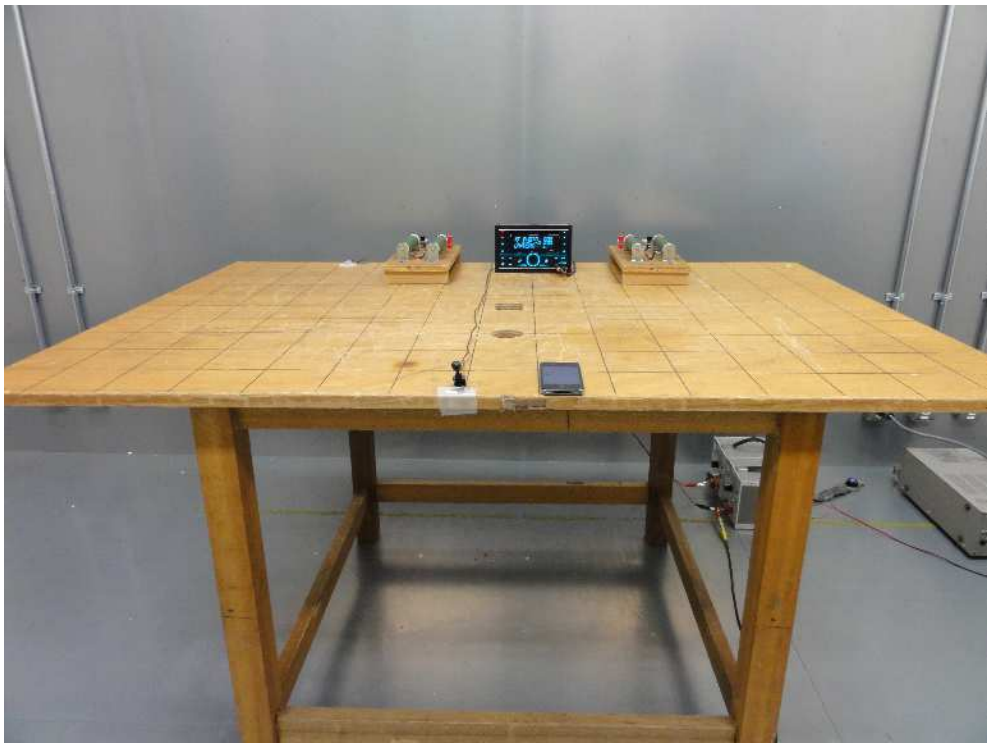
Measurement Date	Ambient Temperature	Relative Humidity	Atmospheric pressure
October 6, 2019	24 ℃	56 %	992 hPa



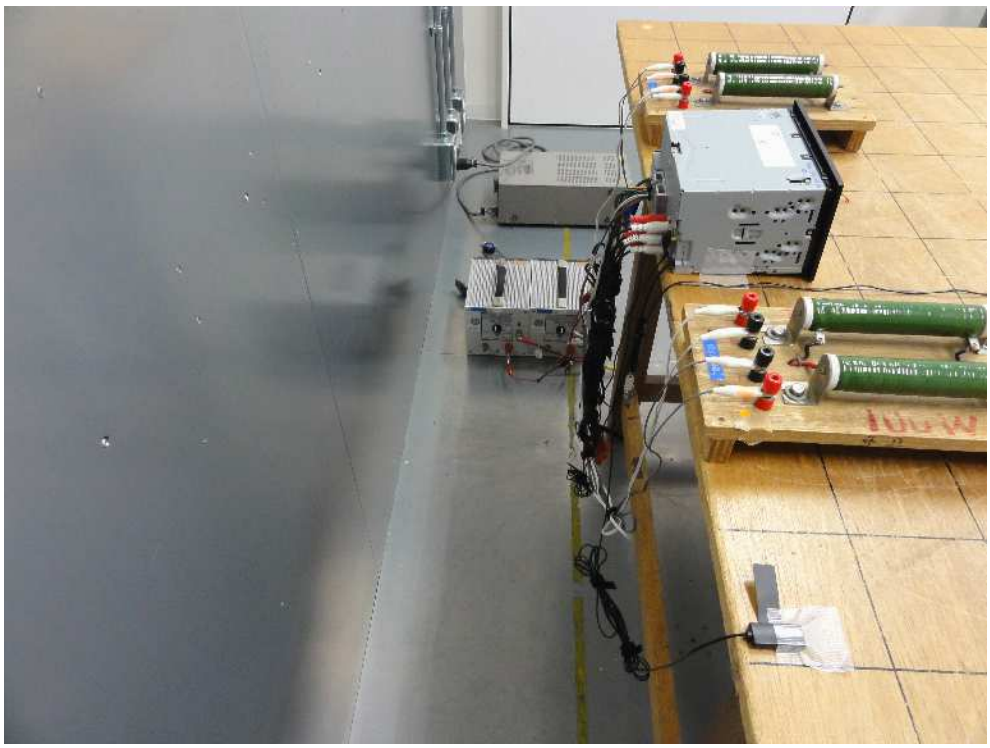
Frequency [MHz]	Terminal	Factor [dB]	Meter Reading [dBµV] QP	Meter Reading [dBµV] AV	Limit [dBµV] QP	Limit [dBµV] AV	Emission Level [dBµV] QP	Emission Level [dBµV] AV	Margin [dB] QP	Margin [dB] AV
0.37	+12V	20.2	3.0	-	58.5	48.5	23.2	-	35.3	-
0.37	GND	20.2	2.9	-	58.5	48.5	23.1	-	35.4	-
28.57	+12V	20.6	3.5	-	60.0	50.0	24.1	-	35.9	-
28.57	GND	20.6	0.4	-	60.0	50.0	21.0	-	39.0	-

Note
1) QP:Quasi-Peak, AV:Average
2) VA:One end & Ground, VB:Other end & Ground
3) The symbol of '<' means 'or less' .
4) The symbol of '>' means 'or greater' .
5) The symbol of '-' means 'Not applicable' .
6) Factor includes Artificial Mains Network factor,Pulse Limiter loss and a cable loss.
7) A sample calculation was made at 0.37MHz
Factor + Meter Reading = 20.2 + 3.0 = 23.2

7.1.5 Test Setup (photograph)



– Front View –



– Side View –

Photograph present configuration with maximum emission

7.2 Conducted Emission Telecommunication port

For the requirements, ☐ - Applicable [☐ - Tested. ☐ - Not tested by applicant request.]
☑ - Not Applicable
(Reason : EUT for vehicular use)

7.3 Radiated Emission

For the requirements, ☐ - Applicable [☐ - Tested. ☐ - Not tested by applicant request.]
☑ - Not Applicable
(Reason : EUT don't have ancillary equipment.)

7.4 Harmonic Current Emission

For the requirements, ☐ - Applicable [☐ - Tested. ☐ - Not tested by applicant request.]
☑ - Not Applicable
(Reason : EUT for vehicular use)

7.5 Voltage Fluctuations and Flicker

For the requirements, ☐ - Applicable [☐ - Tested. ☐ - Not tested by applicant request.]
☑ - Not Applicable
(Reason : EUT for vehicular use)

7.6 Electrostatic Discharge

For the requirements, ☐ - Applicable [☐ - Tested. ☐ - Not tested by applicant request.]
☑ - Not Applicable
(Reason : EUT for vehicular use)

7.7 RF electromagnetic field

For the requirements, ☑ - Applicable [☑ - Tested. ☐ - Not tested by applicant request.]
☐ - Not Applicable

7.7.1 Test Results

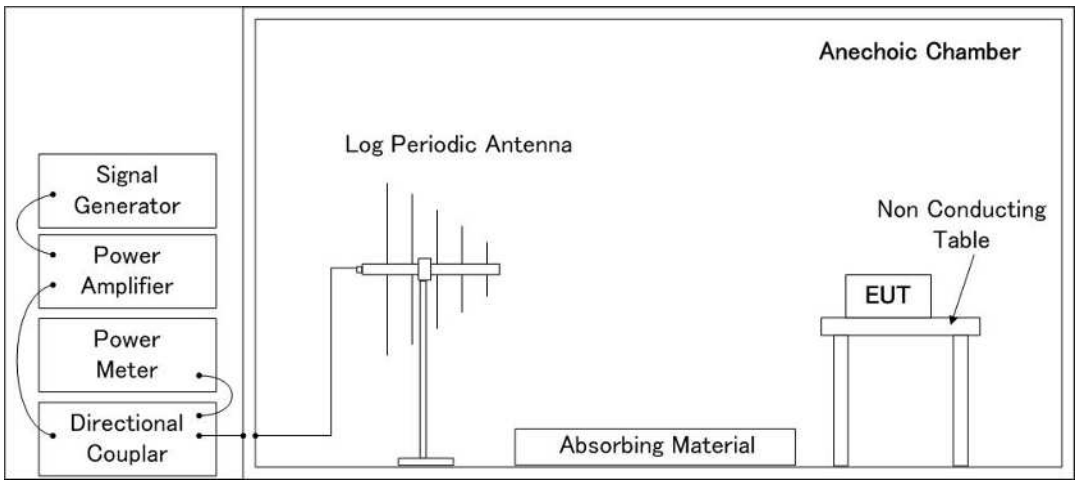
For the standard ☑ **Passed** ☐ **Failed** ☐ **Not judged**

7.7.2 Test Instruments

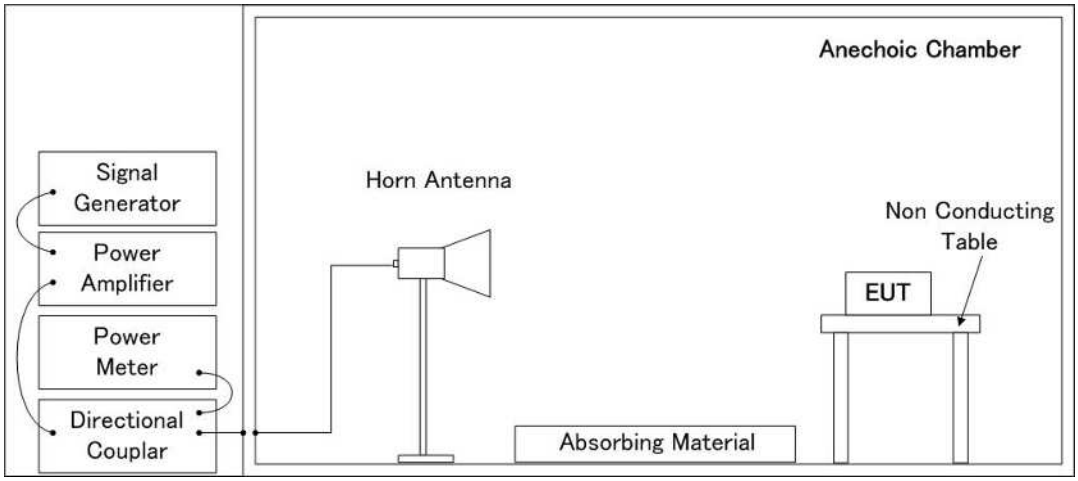
Name	Number of test site & instruments (Refer to Appendix A)						
Test Site	A-1						
Signal Generator	SG10						
RF Power Amplifier	3-Q	3-N					
Antennas	3-C	AH05					
Field Monitor Sensor	3-H						

7.7.3 Test Method and Test Setup (Diagrammatic illustration)

Test setup was according to the requirements of standard.
The Uniformed area (1.5m × 1.5m) was calibrated according to the requirements of standard.
4 positions (Front, Rear, Left and Right) of EUT was exposed to the uniformed area.
The Log-periodic Antenna was used in test frequency range 80 MHz to 1000 MHz.
The Double- ridge Guide Horn Antenna was used in 1.0 GHz to 6.0 GHz.
The operation of the EUT during the test was confirmed by operator, monitor camera or associated equipment.
(Reference divisional instruction No. G34366Q)



Test Frequency Range : 80 MHz to 1000 MHz



Test Frequency Range : 1.0 GHz to 6.0 GHz

Typical Arrangement

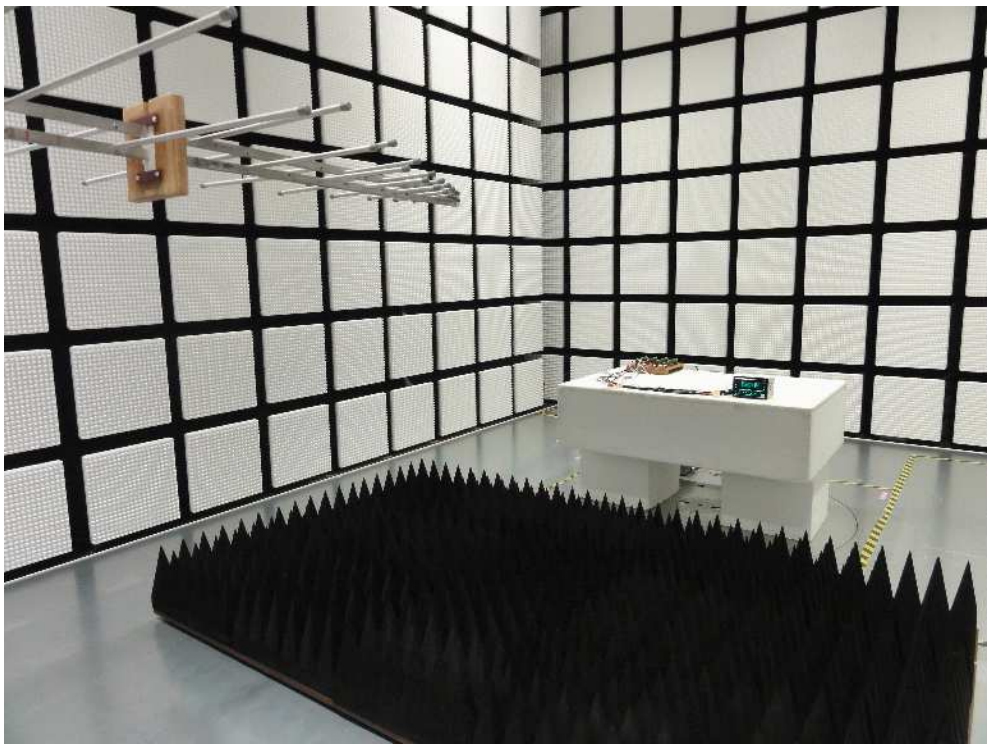
7.7.4 Test Data

Port : Enclosure
Limit : 3 V/m
Frequency Range : 80 MHz to 6000MHz with 1 % step size
Exclusion Band : 2280 MHz to 2607.675 MHz,
Modulation : AM 80 %, 1 kHz
Dwell Time : 3 second

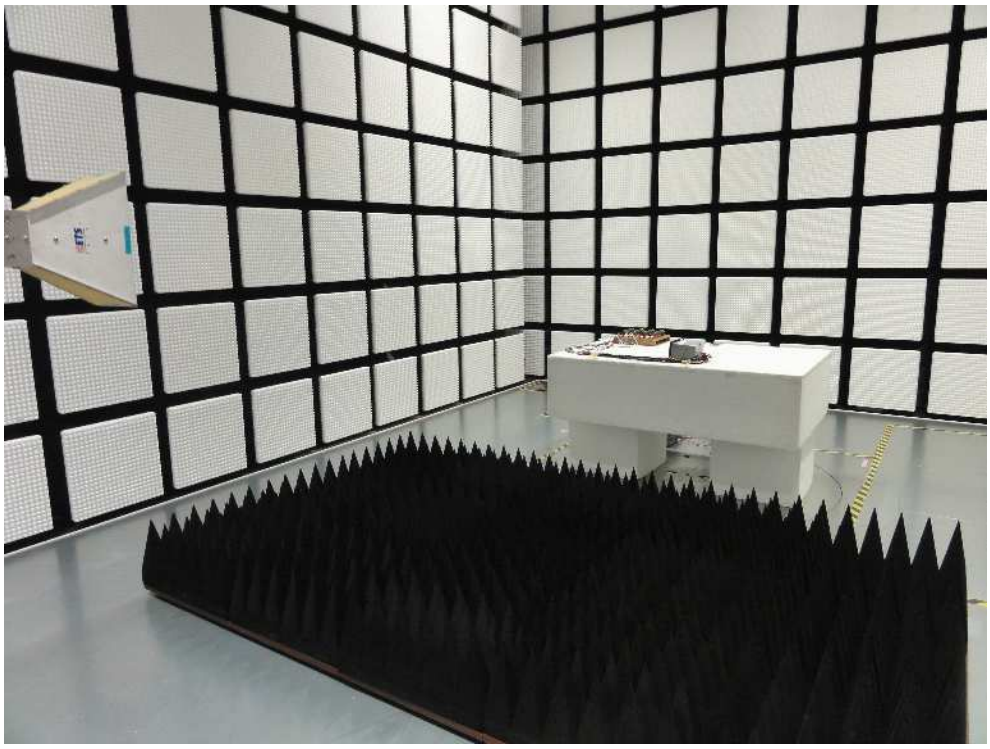
Tested Date : October 6, 2019
Climatic Conditions : Ambient Temperature : 24 ℃
Relative Humidity : 56 %
Atmospheric Pressure : 992 hPa

Test direction	Frequency (MHz)	Polarity	Test level (V/m)	Requirement		Result	
				Performance Criteria	Phenomena	Criteria	Judgment
Front	80-1000	Horizontal	3	A	CT / CR	A	Passed
		Vertical	3	A	CT / CR	A	Passed
	1000-6000	Horizontal	3	A	CT / CR	A	Passed
		Vertical	3	A	CT / CR	A	Passed
Rear	80-1000	Horizontal	3	A	CT / CR	A	Passed
		Vertical	3	A	CT / CR	A	Passed
	1000-6000	Horizontal	3	A	CT / CR	A	Passed
		Vertical	3	A	CT / CR	A	Passed
Left	80-1000	Horizontal	3	A	CT / CR	A	Passed
		Vertical	3	A	CT / CR	A	Passed
	1000-6000	Horizontal	3	A	CT / CR	A	Passed
		Vertical	3	A	CT / CR	A	Passed
Right	80-1000	Horizontal	3	A	CT / CR	A	Passed
		Vertical	3	A	CT / CR	A	Passed
	1000-6000	Horizontal	3	A	CT / CR	A	Passed
		Vertical	3	A	CT / CR	A	Passed

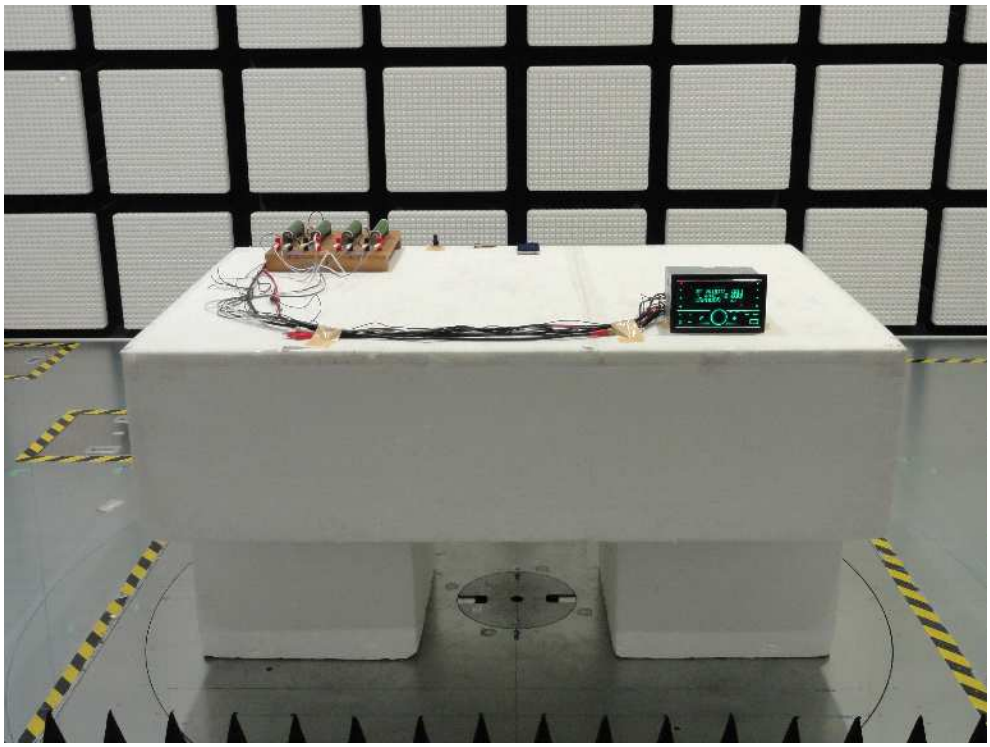
7.7.5 Test Setup (photograph)



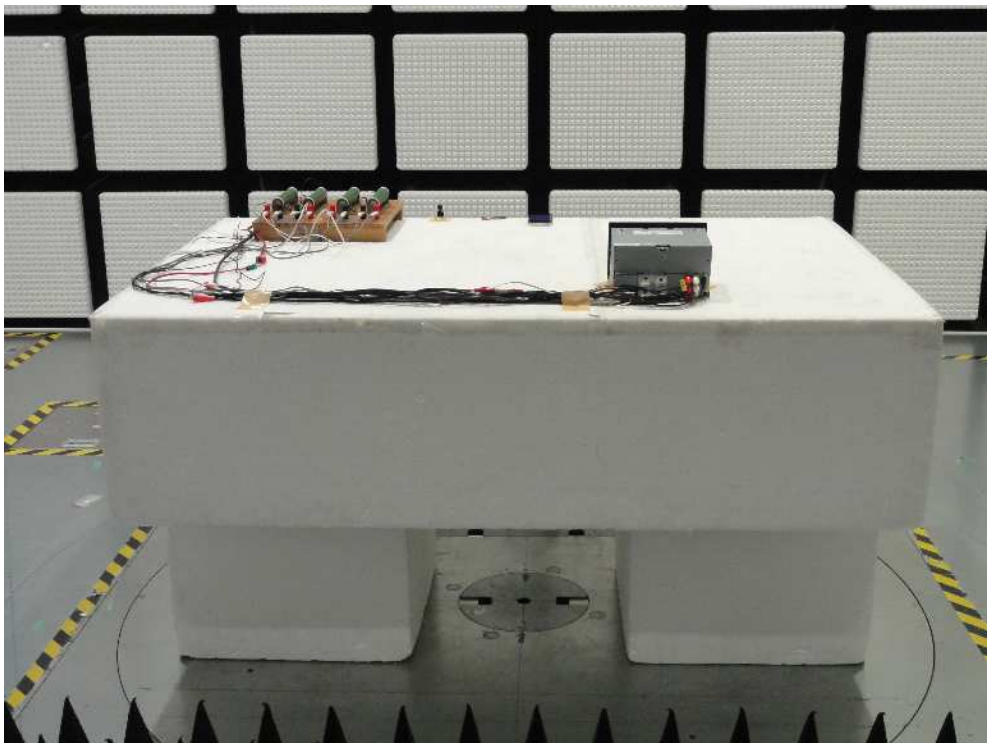
- 80 to 1000 MHz -



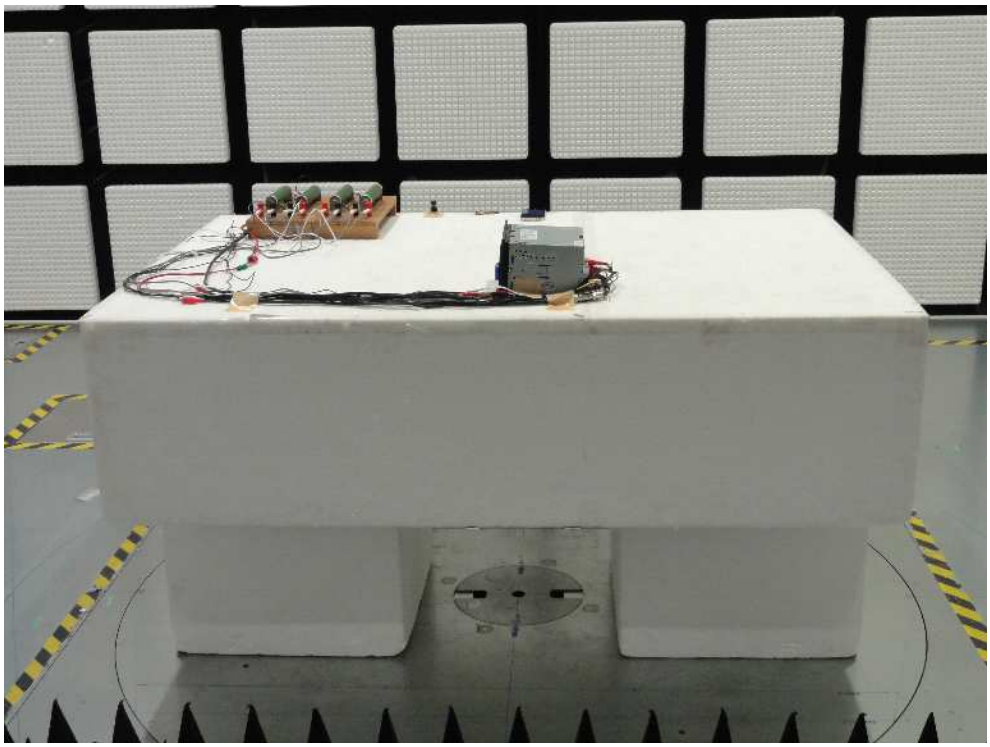
- 1 to 6 GHz -



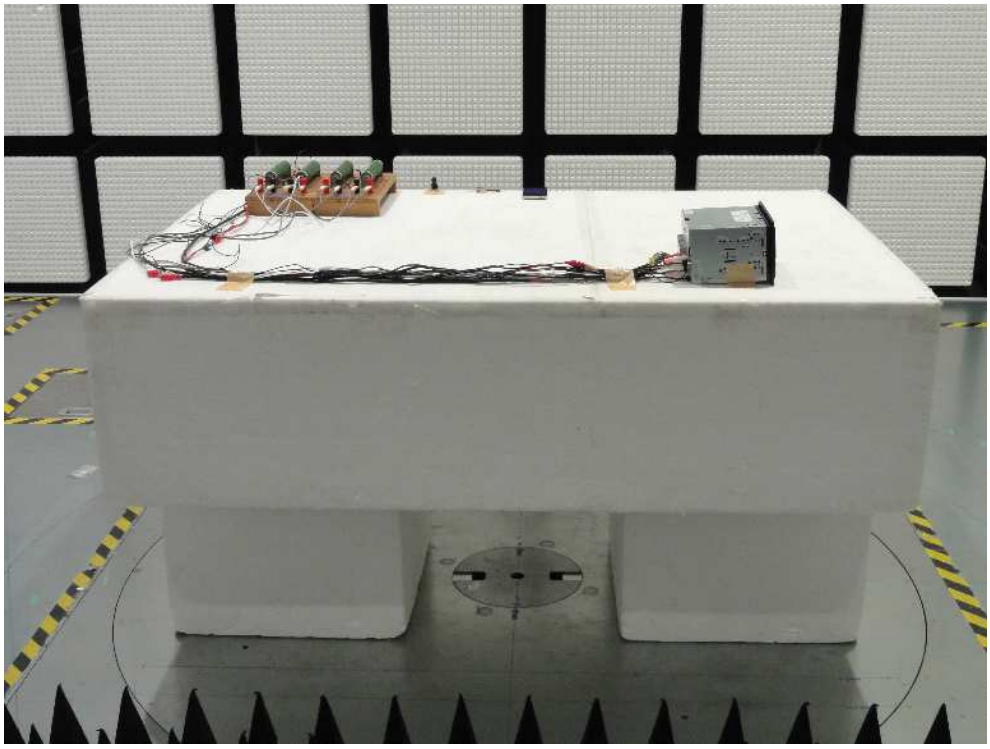
- Front View -



- Rear View -



- Left View -



- Right View -

7.8 Fast Transients Common Mode

For the requirements, ☐ - Applicable [☐ - Tested. ☐ - Not tested by applicant request.]
☑ - Not Applicable
(Reason : EUT for vehicular use)

7.9 Surges

For the requirements, ☐ - Applicable [☐ - Tested. ☐ - Not tested by applicant request.]
☑ - Not Applicable
(Reason : EUT for vehicular use)

7.10 RF Common Mode

For the requirements, ☑ - Applicable [☑ - Tested. ☐ - Not tested by applicant request.]
☐ - Not Applicable

7.10.1 Test Results

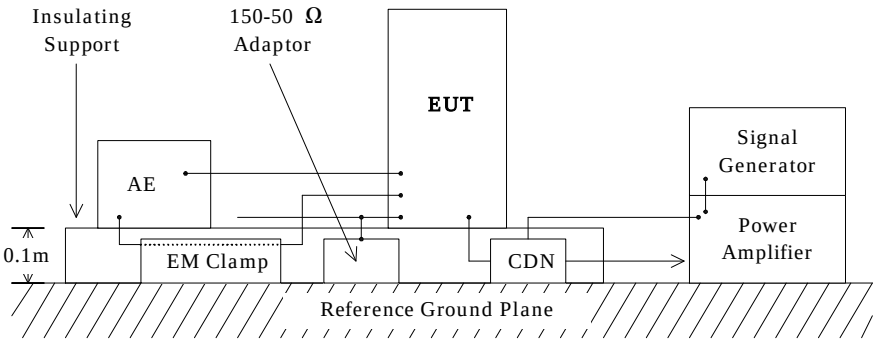
For the standard ☑ **Passed** ☐ **Failed** ☐ **Not judged**

7.10.2 Test Instruments

Name	Number of test site & instruments (Refer to Appendix A)
Test Site	M-1
Signal Generator	6-A
RF Power Amplifier	6-B
6dB Attenuator	6-C
CDN	6-G
EM Clamp	6-L
Direct Injector	6-J
Termination	TM01

7.10.3 Test Method and Test Setup (Diagrammatic illustration)

Test setup is according to the requirements of standard.
The coupling/decoupling network is applied to the Power Line.
The coupling/decoupling network, Direct copular, EM clamp or Current clamp are applied to I/O Line.
The operation of the EUT during the test is confirmed by operator, monitor camera or associated equipment.
(Reference divisional instruction No. G34366T)



Typical Arrangement

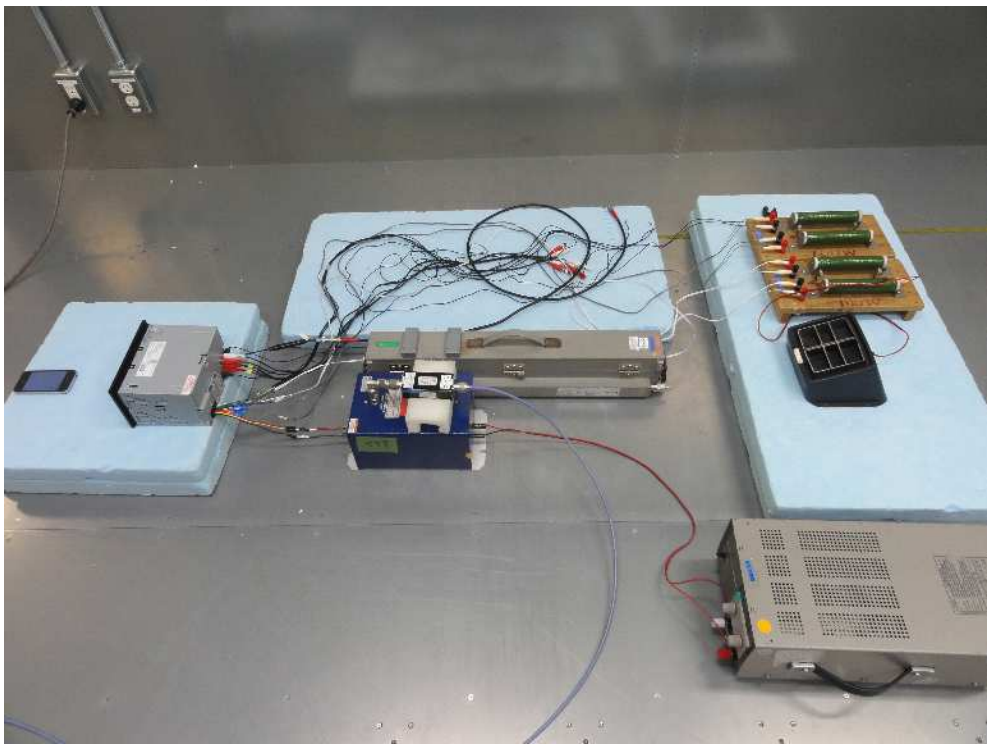
7.10.4 Test Data

Port : Signal and telecommunication, Input d.c. power, Input a.c. power
Limit : 3 Vrms
Frequency Range : 0.15-80 MHz with 1 % step size
Modulation : AM 80 %, 1 kHz
Dwell Time : 3 seconds

Tested Date : October 10, 2019
Climatic Conditions : Ambient Temperature : 23 ℃
Relative Humidity : 46 %
Atmospheric Pressure : 992 hPa

Port	Injection device	Test level (Vrms)	Requirement		Result	
			Criteria	Phenomena	Criteria	Judgment
DC Power Cable	CDN	3	A	CT / CR	A	Passed
Front Speaker (Lch) Cable	EM Clamp	3	A	CT / CR	A	Passed
Front Speaker (Rch) Cable	EM Clamp	3	A	CT / CR	A	Passed
Rear Speaker (Lch) Cable	EM Clamp	3	A	CT / CR	A	Passed
Rear Speaker (Rch) Cable	EM Clamp	3	A	CT / CR	A	Passed
Preout Front(L/R) Cable	EM Clamp	3	A	CT / CR	A	Passed
Preout Rear(L/R) Cable	EM Clamp	3	A	CT / CR	A	Passed
Preout SW(L/R) Cable	EM Clamp	3	A	CT / CR	A	Passed
Microphone Cable	EM Clamp	3	A	CT / CR	A	Passed
AM/FM Antenna Cable	EM Clamp	3	A	CT / CR	A	Passed
DAB Antenna Cable	EM Clamp	3	A	CT / CR	A	Passed

7.10.5 Test Setup (photograph)



7.11 Voltage Dips and Interruptions

For the requirements, ☐ - Applicable [☐ - Tested. ☐ - Not tested by applicant request.]
☑ - Not Applicable
(Reason : EUT for vehicular use)

7.12 Transients and Surges

For the requirements, ☑ - Applicable [☑ - Tested. ☐ - Not tested by applicant request.]
☐ - Not Applicable

7.12.1 Test Results

For the standard, ☑ **- Passed** ☐ **- Failed** ☐ **- Not judged**

Remarks : -

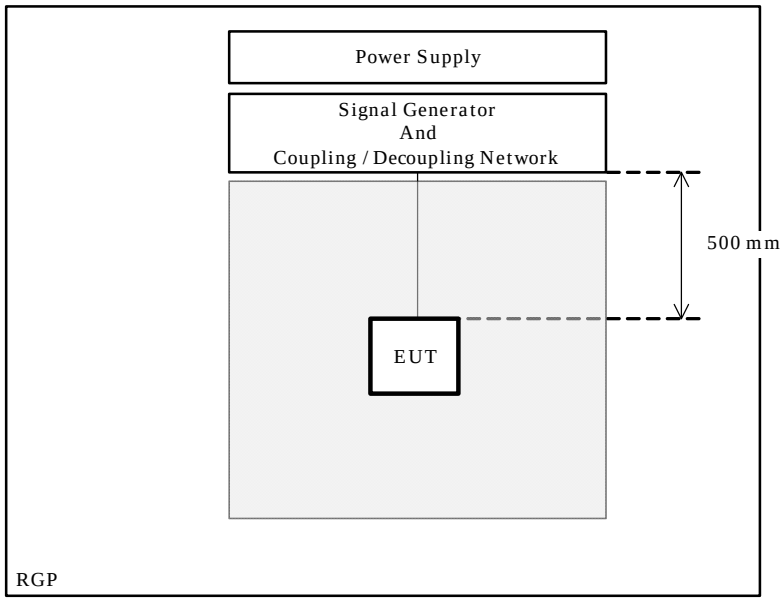
7.12.2 Test Instruments

Shielded Room S-1				
Type	**Model**	**Serial No. (ID)**	**Manufacturer**	**Cal. Due**
Transient Immunity Tester	KES7702	QF001066 (E-115)	KIKUSUI	2020/07/23
Bipolar Power Supply	PBZ40-10	QB001180 (E-117)	KIKUSUI	2020/07/23
Application Software for KES7000 System	KES7100	Ver.1.06	KIKUSUI	2020/07/23
Sequence Creation Software Wavy for PBZ	SPEC70506	Ver. 6.00	KIKUSUI	2020/07/23

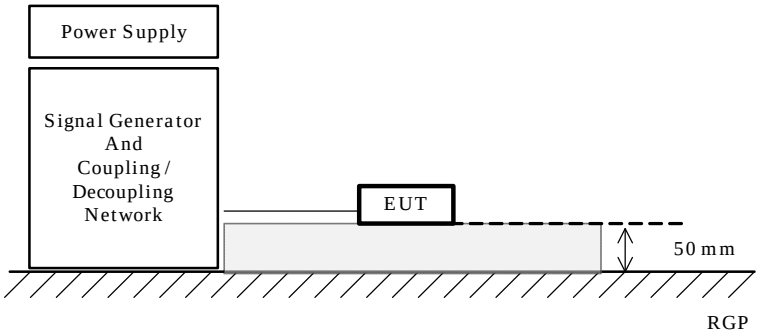
NOTE : The calibration interval of the above test instruments is 12 months.

7.12.3 Test Method and Test Setup (Diagrammatic illustration)

Test setup was according to the requirements of standard.
The operation of the EUT during the test was confirmed by operator, monitor camera or associated equipment.
(Reference divisional instruction No. G70364004)



Top View



Side View

- Typical Arrangement -

7.12.4 Test Data

Test Specification
Pulse 1 Va : 13.5 V, Vs : -75 V, t1 : 0.5 s, t2 : 200 ms Events : 10 times, Test Duration : 5s Connection: +/-, Impedance 10 Ohms
Pulse 2a Va : 13.5 V, Vs : +32 V, t1 : 0.5 s Events : 10 times, Test Duration : 5s Connection: +/-, Impedance 2 Ohms
Pulse 2b Va : 13.5 V, Vs : 10 V, t1 : 1 ms, td : 1000 ms, Int : 0.5 s, Ri : 0.05 Ohm Events : 10 times, Test Duration : 38s
Pulse 3a Va : 13.5 V, Vs : -112 V, f1 : 10 kHz, t4 : 10 ms, t5 : 90 ms Test Duration : 20 mins, Time Between Tests : 1 s Coupling +
Pulse 3b Va : 13.5 V, Vs : +100 V, f1 : 10 kHz, t4 : 10 ms, t5 : 90 ms Test Duration : 20 mins, Time Between Tests : 1 s Coupling +
Pulse 4 Vb : 12.0 V, Va1 : -6.0 V, Va2 : -2.5 V, t1 : 10 kHz, t7 : 15 ms, t8 : 50 ms, t9 : 0.5 s, t11 : 5 ms Events 10 times, Test Duration : 19 s

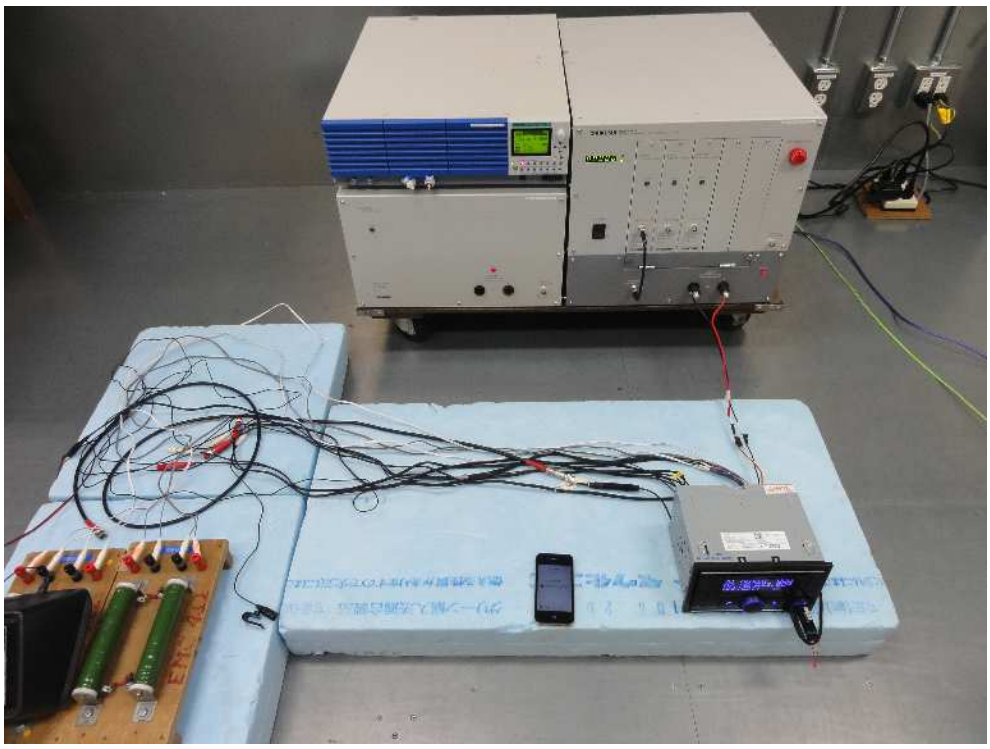
Note : The above abbreviations/symbols see the ISO 7637-2.

Tested Date : October 8, 2019
Climatic Conditions : Ambient Temperature : 24 ℃
Relative Humidity : 62 %
Atmospheric Pressure : 995 hPa

Test Level	Pulse Requirements	Pulse No / Test Time	Requirement Phenomena	Result	Judgment
-112	Pulse 1	10 / 0.5s interval	CT / CR	Passed *1	Passed
+55	Pulse 2a	10 / 0.2s, 10 / 5s interval	CT / CR	Passed(continuous)	Passed
+10	Pulse 2b	10 / 0.2s, 10 / 2s interval	CT / CR	Passed *1	Passed
-165	Pulse 3a	20 minutes	CT / CR	Passed(continuous)	Passed
+112	Pulse 3b	20 minutes	CT / CR	Passed(continuous)	Passed
5	Pulse 4	5 / 1 minute cycle	CT / CR	Passed *1	Passed

Note *1: During the test, the EUT stopped operating.
The operation mode was initialized after the test, but the communication link was automatically restored.

7.12.5 Test Setup (Photographs)



Appendix A : Test Instruments

ID No.	Type	Model No.	Manufacturer	Serial No.	Last Cal.	Interval
A-1	Anechoic Chamber	-	TDK	-	2019/06	1 Year
M-1	Shield Room	-	TDK	-	-	-
S-1	Shield Room 1	-	TDK	-	-	-
S-2	Shield Room 2	-	TDK	-	-	-
R01	Test Receiver	ESI26	Rohde & Schwarz	100043	2019/06	1 Year
R02	Test Receiver	ESCI	Rohde & Schwarz	100408	2018/12	1 Year
R03	Test Receiver	ESHS10	Rohde & Schwarz	835871/004	2019/06	1 Year
R04	Test Receiver	ESW44	Rohde & Schwarz	101602	2018/11	1 Year
SA01	Spectrum Analyzer	R3182	Advantest	120600581	2018/10	1 Year
CB01	RF Cable	RG223/U	HUBER+SUHNER	-	2019/04	1 Year
CB02	RF Cable	RG223/U	HUBER+SUHNER	-	2019/04	1 Year
CB03	RF Cable	RG223/U	Suhner	-	2018/10	1 Year
CS01	RF Cable	MWX122	Junkosha Inc.	J12J103310-00	2019/03	1 Year
CS02	RF Cable	MWX221	Junkosha Inc.	1701S347	2019/03	1 Year
CS08	RF Cable	F130-S1S1-394	MEGA PHASE	20051	2019/10	1 Year
CS09	RF Cable	MWX315	Junkosha Inc.	J12J101305-00	2019/10	1 Year
CS10	RF Cable	MWX221	Junkosha Inc.	1004S138	2019/07	1 Year
CS11	RF Cable	MWX322	Junkosha Inc.	1810G009	2018/12	1 Year
CS12	RF Cable	MWX122	Junkosha Inc.	J12J104317-00	2019/07	1 Year
CK01	RF Cable	KPS-1501-1181-KPS	INSULATED WIRE INC.	11292001	2018/10	1 Year
CK02	RF Cable	SUCOFLEX 102E	HUBER+SUHNER	6257/2E	2018/10	1 Year
CF01	RF Cable	G 04233 D-10	Suhner	-	2019/06	1 Year
PA00	AF Amplifier	P-500L	Accuphase	BOY806	-	1 Year
PA01	RF Amplifier	DBP-0102N533	DBS MICROWAVE INC.	012	2019/01	1 Year
PA02	RF Amplifier	WJ-6882-814	Watkins Johnson	0414	2019/01	1 Year
PA03	RF Amplifier	WJ-5315-556	Watkins Johnson	106	2019/01	1 Year
PA04	RF Amplifier	WJ-5320-307	Watkins Johnson	645	2019/01	1 Year
PA06	RF Amplifier	JS4-26004000-27-8A	MITEQ	742322	2018/11	1 Year
PA07	RF Amplifier	MLA-100M26-B02	Techno Science Japan	2101509	2019/07	1 Year
L02	LISN	KNW-407	Kyoritsu	8-855-2	2019/05	1 Year
L03	LISN	KNW-407	Kyoritsu	8-1130-6	2018/10	1 Year
L04	LISN	KNW-242C	Kyoritsu	8-837-13	2019/08	1 Year
L05	LISN	KNW-403D	Kyoritsu	8-1474-3	2019/02	1 Year
L06	LISN	KNW-243C	Kyoritsu	8-831-4	2018/10	1 Year
L07	ISN	ISN T8	TESEQ	42829	2019/02	1 Year
L08	ISN	ISN ST08	TESEQ	45106	2019/02	1 Year
L09	Artificial Mains Network	NNBM8125	Schwarzbeck Mess-Elektronik	81251823	2018/11	1 Year
L10	Artificial Mains Network	NNBM8125	Schwarzbeck Mess-Elektronik	81251824	2018/11	1 Year
L11	High Impedance Probe	KNW-411	Kyoritsu	8-2071-2	2019/05	1 Year
L12	Artificial Hand	AH-1	ES Factory	001	2019/07	1 Year
L13	RF Current Probe	KTC-2504	Kyoritsu	8S-2916-1	2019/05	1 Year
L14	ISN	S751	TESEQ	50945	2019/09	1 Year
PL01	Pulse Limiter	ESH3-Z2	Rohde & Schwarz	-	2019/04	1 Year

ID No.	Type	Model No.	Manufacturer	Serial No.	Last Cal.	Interval
PL02	Pulse Limiter	ESH3-Z2	Rohde & Schwarz	-	2019/04	1 Year
F01	High Pass Filter	KFL-009	Kyoritsu	8-1996-1	2019/04	1 Year
F02	High Pass Filter	KFL-009	Kyoritsu	8-2072-5	2019/04	1 Year
TM01	Termination(50)	-	Suhner	-	2019/01	1 Year
TM02	Termination(50)	-	Suhner	002	2019/01	1 Year
ALP01	Loop Antenna	HFH2-Z2	Rohde & Schwarz	881058/62	2019/08	1 Year
AB01	Biconical Antenna	BBA9106	Schwarzbeck	VHA91032399	2019/08	1 Year
AL01	Log-periodic Antenna	UHALP9108A	Schwarzbeck	0724	2019/08	1 Year
AB02	Biconical Antenna	BBA9106	Schwarzbeck	VHA91032325	2019/06	1 Year
AL02	Log-periodic Antenna	UHALP9108A	Schwarzbeck	0666	2019/06	1 Year
AL03	Log-periodic Antenna	HL050	Rohde & Schwarz	100251	2019/02	1 Year
AL04	Log-periodic Antenna	VULP9118A	Schwarzbeck	00776	2019/08	1 Year
AH02	Horn Antenna	3160-09	ETS	00023883	2019/02	1 Year
AH03	Horn Antenna	3160-10	ETS	00026026	2019/02	1 Year
AH05	Double-Ridged Horn Antenna	3115	EMC Test Systems	6442	2019/06	1 Year
CL01	Absorbing Clamp	MDS21	Luthi	3974	2018/11	1 Year
MP01	Matching Pad	ZT-130	Tamagawa Electronics	1013366	2019/06	1 Year
MP03	Matching Pad	12N50/75B	Wiltron	93008	2019/06	1 Year
ATT06	Attenuation Pad	UFA-01	Tamagawa Electronics	-	2019/06	1 Year
ATT07	Attenuation Pad	1-10	Weinschel	AU1302	2019/06	1 Year
ATT08	Attenuation Pad	49-10-43	Weinschel	KA319	2019/07	1 Year
ATT09	Attenuation Pad	49-20-43	Weinschel	KK162	2019/07	1 Year
ATT10	Attenuation Pad	49-30-43	Weinschel	KJ988	2019/07	1 Year
N01	Combining Network	1870A	Weinschel	635A	2019/06	1 Year
T01	Isolation Transformer	KIT-5601	Kyoritsu	8-1520-2	2019/07	1 Year
T02	Isolation Transformer	D-65396	Erika Fiedler	32	2019/07	1 Year
SG01	DTV Multi Channel Generator	3545A	Eiden Co., Ltd.	JC118285	2019/04	1 Year
SG02	Function Generator	3325B	Hewlett Packard	2847A03284	2019/09	1 Year
SG03	Function Generator	VP-7422A	Matsushita Communication	050351E122	2019/08	1 Year
SG04	RC Oscillator	VP-725A	Matsushita Communication	540015E122	2019/08	1 Year
SG05	Signal Generator	6061A	Gigatronics	5130593	2019/05	1 Year
SG06	Signal Generator	SMB100A	Rohde & Schwarz	105262	2018/12	1 Year
SG08	Vector Signal Generator	SMBV100A	Rohde & Schwarz	263032	2018/12	1 Year
SG09	Vector Signal Generator	SGT100A	Rohde & Schwarz	110214	2018/12	1 Year
SG10	Signal Generator	SMB100B	Rohde & Schwarz	101429	2019/06	1 Year
HA01	Harmonic/Flicker Analyzer	KHA1000	Kikusui	MH002292	2019/03	1 Year
RN01	Reference Impedance Network	LIN40MA-PCR-L	Kikusui	NC003432	2018/11	1 Year
2-A	ESD Tester	ESD-3000	EMC-PARTNER	069	2018/11	1 Year
3-A	Signal Generator	SML03	Rohde & Schwarz	102651	2019/06	1 Year
3-B	FAN Antenna	FAN-1	JQA	1	2019/06	1 Year
3-C	Log-periodic Antenna	VULP9118-E	Schwarzbeck	VULP9118-E-704	2019/06	1 Year
3-E	RF Power Amplifier	R122C	RF POWER LABS	092695-2	2019/06	1 Year
3-Q	RF Power Amplifier	BBA150-BC500	Rohde & Schwarz	103576	2019/06	1 Year
3-N	RF Power Amplifier	BBA150-D110E100	Rohde & Schwarz	103162	2019/06	1 Year
3-H	Field Probe	HI-6105USB-20	Laser Data Interface	00071885	2018/10	1 Year
3-I	Power Meter	NRVD	Rohde & Schwarz	101020	2019/06	1 Year
3-J	Insertion Unit	URV5-Z4	Rohde & Schwarz	100193	2019/06	1 Year
3-K	Dual Directional Coupler	C5086-10	Werlatone Inc.	67819	2019/06	1 Year

ID No.	Type	Model No.	Manufacturer	Serial No.	Last Cal.	Interval
4-A	FAST TRANSIENT /BURST SIMULATOR	FNS-AX3-A16B	NOISE LABORATORY	FNS12Y1194	2018/11	1 Year
4-B	Coupling Clamp	15-00009A	NOISE LABORATORY	FNS1321206	2018/11	1 Year
5-A	Surge Generator	TRA2000	EMC-PARTNER	582	2019/10	1 Year
6-A	Signal Generator	SML01	Rohde & Schwarz	130500190	2019/07	1 Year
6-B	RF Amplifier	FLL-75	Frankonia	0040	2019/10	1 Year
6-C	Attenuator	8341-060	Bird Electronic	766	2019/10	1 Year
6-E	Coupling/Decoupling Network	FCC-801-M1-16	FCC	97-07	2019/07	1 Year
6-F	Coupling/Decoupling Network	FCC-801-M2-16	FCC	97-12	2019/07	1 Year
6-G	Coupling/Decoupling Network	TSCDN-M2-25A	TSJ(FCC)	06006	2019/07	1 Year
6-H	Coupling/Decoupling Network	FCC-801-M3-16	FCC	158	2019/07	1 Year
6-I	Coupling/Decoupling Network	TSCDN-M3-25A	TSJ(FCC)	06011	2019/07	1 Year
6-J	150-50 ohms Adaptor	FCC-150-50	FCC	380	2019/07	1 Year
6-K	150-50 ohms Adaptor	FCC-150-50	FCC	381	2019/07	1 Year
6-L	EM Clamp	EM101	Luthi	35196	2019/10	1 Year
6-M	BCI Probe	F-120-9A	FCC	509	2019/10	1 Year
8-A	Loop Coil	MF1000-1	EMC-PARTNER	097	2019/02	1 Year
11-A	Dip/Interruption Tester	PLINE1610	Haefely	083732-14	2019/04	1 Year
OS01	Digital Oscilloscope	TDS3052C	Tektronix, Inc.	C010708	2019/10	1 Year
MM01	MultiMeter	VOAC7413	Iwatsu Electric	0267973	2019/03	1 Year
TH01	Thermo-hygrometer	SK-L200THⅡα	skSATO	026627	2019/05	1 Year
B01	Barometer	BAROMEX	skSATO	85099	2019/02	1 Year

Appendix B: Similar Models

The EUT has the following similar models.
The similar model details are shown as follow table;

Model	Brand	Difference
DPX-7200DAB	KENWOOD	Base
DPX794BH	KENWOOD	None LW,Non DAB, Destination