EMS TEST REPORT

Test Report No.	**:**	**12688573M**
Applicant	**:**	**JVC KENWOOD Corporation**
Type of Equipment	**:**	**GPS NAVIGATION SYSTEM**
Model No.	**:**	**DNX5190DABS**
Test standard	**:**	**EN 55035: 2017**
Test result	**:**	**Complied (Refer to Section 3.2)**

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2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with the limits of the above standard.
4. The test results in this test report are traceable to the national or international standards.
5. This test report covers EMC technical requirements. It does not cover administrative issues such as Manual or non-EMC test related Requirements. (if applicable)
6. The all test items in this test report are conducted by UL Japan, Inc. Kashima EMC Lab.
7. The opinions and the interpretations to the result of the description in this report are outside scopes where UL Japan has been accredited.
8. The information provided from the customer for this report is identified in Section 1.

Date of test: February 4 – 7, 2019

Representative test operator:

Kento Enomoto
Engineer
Consumer Technology Division

Approved by :

Tomoyuki Yamashita
Leader
Consumer Technology Division

ilac-MRA

JAB Testing
RTL02610

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

REVISION HISTORY

Original Test Report No.: 12688573M

Revision	Test report No.	Date	Page revised	Contents
Original	12688573M	February 18, 2019	-	-

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Section 1: Customer information

Company Name	:	JVC KENWOOD Corporation
Address	:	2967-3, Ishikawa-machi, Hachioji, Tokyo 192-8525 Japan
Telephone Number	:	+81-42-646-5525
Facsimile Number	:	+81-42-646-1440
Contact Person	:	Seigo Tsutsumi

The information provided from the customer is as follows:
- Applicant, Type of Equipment, Model No. on the cover page and other relevant pages
- Section 1: Customer information
- Section 2: Equipment under test (E.U.T.)
- Section 4: Operation of E.U.T. during testing

* The laboratory is exempted from liability of any test results affected from the information in Section 2 and 4.

Section 2: Equipment Under Test (E.U.T.)

2.1 Identification of E.U.T.

Type of Equipment	:	GPS NAVIGATION SYSTEM
Model No.	:	DNX5190DABS
Serial No.	:	Refer to Section 4, Clause 4.2
Rating	:	DC 12 V
Receipt Date of Sample (Information from test lab.)	:	January 31, 2019
Country of Mass-production	:	Indonesia
Condition of EUT	:	Production prototype (Not for Sale: This sample is equivalent to mass-produced items.)
Size	:	178 x 155 x 100 (Width x Length x Height (mm))
Modification of EUT	:	No Modification by the test lab.

2.2 Product description

Model number: DNX5190DABS (referred to as the EUT in this report) is a GPS NAVIGATION SYSTEM.

Clock frequency in the system (Maximum) : 6.2208 GHz

Radio Specification

[Bluetooth]

Radio Type	:	Transceiver
Frequency of Operation	:	2402 MHz - 2480 MHz
Modulation	:	FHSS
Antenna type	:	Chip Antenna
Antenna Gain	:	-2.3 dBi
Clock frequency (Maximum)	:	37.4 MHz
Power Supply (radio art input)	:	DC 3.6 V / 3.3 V / 1.8 V

Section 3: Test specification, procedures and results

3.1 Test specification

EMS

Title : EN 55035: 2017
Electromagnetic compatibility of multimedia equipment
- Immunity requirements

Purpose of test : Compliance with the harmonized RE directive 2014/53/EU.

3.2 Procedures & results

EMS
Enclosure ports

Item	Test Procedure	Specification	Criterion	Actual Performance	Result
Power frequency magnetic field	EN 61000-4-8: 2010	50 Hz or 60 Hz, 1.0 A/m(r.m.s.)	A	N/A *1)	N/A
Continuous RF electromagnetic field disturbances	EN 61000-4-3: 2006 +A1:2008+A2: 2010	80 MHz - 1000 MHz 3.0 V/m (unmodulated, r.m.s.) AM, 1 kHz, 80 %	A	80 MHz - 1000 MHz 3.0 V/m (unmodulated, r.m.s.) AM, 1 kHz, 80 % *2)	Complied a)
		Spot Frequency 1800 MHz, 2600 MHz, 3500 MHz, 5000 MHz, (± 1 %) 3.0 V/m (unmodulated, r.m.s.) AM, 1 kHz, 80 %	A	Spot Frequency 1800 MHz, 2600 MHz, 3500 MHz, 5000 MHz, (± 1 %) 3.0 V/m (unmodulated, r.m.s.) AM, 1 kHz, 80 % *2)	Complied a)
Electrostatic discharges	EN 61000-4-2: 2009	± 4kV contact discharge ± 8kV air discharge	B	± 4 kV contact discharge ± 2 kV, ± 4 kV, ± 8 kV air discharge	Complied b)

Note: UL Japan, Inc.'s EMS Work Procedure 13-EM-W0417.
*1) The test was not applicable because of the customer's request.
*2) The test on a broadcast reception function was not applicable because it includes Annex A, Group 2.

a) Refer to Appendix 2 (data of Continuous RF electromagnetic field disturbances)
b) Refer to Appendix 2 (data of Electrostatic discharges)

EMS
DC network power ports

Item	Test Procedure	Specification	Criterion	Actual Performance	Result
Continuous induced RF disturbances	EN 61000-4-6: 2014	0.15 MHz - 10 MHz: 3.0 V	A	0.15 MHz - 10 MHz: 3.0 V *1)	Complied c)
		10 MHz - 30 MHz: 3.0 V - 1.0 V		10 MHz - 30 MHz 3.0 V - 1.0 V *1)	
		30 MHz - 80 MHz: 1.0 V (unmodulated, r.m.s.) AM, 1 kHz, 80 %		30 MHz - 80 MHz: 1.0 V (unmodulated, r.m.s.) AM2 1 kHz, 80 % *1)	
Surges	EN 61000-4-5: 2014 +A1: 2017	± 0.5 kV (Line to Earth) ± 0.5 kV (Line to Line) 1.2/50 μs (8/20 μs)	B	N/A *2)	N/A
Electrical fast transients/burst	EN 61000-4-4: 2012	± 0.5 kV 5/50 ns, 5 kHz	B	± 0.5 kV 5/50 ns, 5 kHz *3)	Complied d)

Note: UL Japan, Inc.'s EMS Work Procedure 13-EM-W0417.
*1) The test on a broadcast reception function was not applicable because it includes Annex A, Group 2.
*2) The test was not applicable since the EUT is mounted in the vehicle and essentially it is not affected by Surge.
*3) The test on a broadcast reception function was not applicable because of the customer's request.

c) Refer to Appendix 2 (data of Continuous induced RF disturbances)
d) Refer to Appendix 2 (data of Electrical fast transients/burst)

EMS
Analogue / Digital data ports

Item	Test Procedure	Specification	Criterion	Actual Performance	Result
Continuous induced RF disturbances	EN 61000-4-6: 2014	0.15 MHz - 10 MHz 3.0 V	A	0.15 MHz - 10 MHz 3.0 V *1)	Complied e)
		10 MHz - 30 MHz 3.0 V - 1.0 V		10 MHz - 30 MHz 3.0 V - 1.0 V *1)	
		30 MHz - 80 MHz 1.0 V (unmodulated, r.m.s.) AM, 1 kHz, 80 %		30 MHz - 80 MHz 1.0 V (unmodulated, r.m.s.) AM, 1 kHz, 80 % *1)	
Broadband impulse noise disturbances, Repetitive	EN 61000-4-6: 2014	0.15 MHz - 0.5 MHz 107 dBμV	A	N/A *2)	N/A
		0.5 MHz - 10 MHz 107 dBμV - 36 dBμV			
		10 MHz - 30 MHz 36 dBμV - 30 dBμV			
		Brust duration 0.7 ms Burst Period 10 (50 Hz)			
Broadband impulse noise disturbances, Isolated	EN 61000-4-6: 2014	0.15 MHz – 30 MHz 110 dBμV	B	N/A *2)	N/A
		Brust duration 0.24 ms, 10 ms, 300 ms			
Surges	EN 61000-4-5: 2014 +A1: 2017	Unshieldedsymmetrical port Not primary protected: ± 1.0 kV (Line to Ground) Primary protected: ± 1.0 kV, 4.0 kV (Line to Grond) 10/700 μs (5/320 μs) Coaxial or shielded port ± 0.5 kV (Shield to Ground) 1.2/50 μs (8/20 μs)	B	N/A *3)	N/A
Electrical fast transients/burst	EN 61000-4-4: 2012	± 0.5 kV 5/50 ns, 5 kHz	B	± 0.5 kV 5/50 ns, 5 kHz *4)	Complied *f)

Note: UL Japan, Inc.'s EMS Work Procedure 13-EM-W0417.
*1) The test on a broadcast reception function was not applicable because it includes Annex A, Group 2.
*2) The test was not applicable since the EUT does not have CPE xDSL ports.
*3) The test was not applicable since the EUT is mounted in the vehicle and essentially it is not affected by Surge.
*4) The test on a broadcast reception function was not applicable because of the customer's request.

e) Refer to Appendix 2 (data of Continuous induced RF disturbances)
f) Refer to Appendix 2 (data of Electrical fast transients/burst)

3.3 Addition to standard

Test Item	Listed of Standard *1)	Applied Test Procedure
Continuous induced RF disturbances	EN 61000-4-6: 2009	EN 61000-4-6: 2014

*1. Annex ZA of EN 55035
Other than above, no addition, exclusion nor deviation has been made from the standard.

3.4 Performance criteria

UL Japan, Inc. hereby confirm that EUT, in the configuration tested, complies with the specifications EN 55035: 2017.

3.5 Performance criteria

EN 55035: 2017

A	The equipment shall continue to operate as intended without operator intervention. No degradation of performance, loss of function or change of operating state is allowed below a performance level specified by the manufacturer when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended. For Continuous RF electromagnetic field disturbances and Continuous induced RF disturbances The equipment shall continue to operate as intended during the test. Measured electrical interference ratio Unless otherwise specified in this standard, the criterion of compliance with the requirement is a wanted to unwanted audio signal ratio of > -20dB.
B	During the application of the disturbance, degradation of performance is allowed. However, no unintended change of actual operating state or stored data is allowed to persist after the test. After the test, the equipment shall continue to operate as intended without operator intervention; no degradation of performance or loss of function is allowed, below a performance level specified by the manufacturer, when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level (or the permissible performance loss), or recovery time, is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.
C	Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacturer's instructions. A reboot or re-start operation is allowed. Information stored in non-volatile memory, or protected by a battery backup, shall not be lost.

For the EUT, the client has decided that the performance criteria defined in EN 55035 should be applied as follows:

A	The equipment shall continue to operate as intended during and after the test without operator intervention. The measured acoustic interference ratio and/or the measured electrical interference ratio during the test shall be -20dB or better.
B	The equipment shall continue to operate as intended after the test with operator intervention. During the application of the disturbance, degradation of performance is allowed. However, no unintended change of actual operating state or stored data is allowed to persist after the test.
C	Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls, or by any operation specified in the instructions for use.

3.6 Uncertainty

EMS
These tests are qualitative tests and uncertainties do not apply directly to the results. Consideration of the uncertainty calculated by the laboratory is as follows;

The uncertainty of the applied EMS testing is within the tolerance specified by the each standard.

3.7 Test Location

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JAB Accreditation No. RTL02610

Test site	ISED Assigned Code	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Maximum measurement distance
No.1 Open site	4659A-1	6.0 x 5.5 x 2.5	20 x 40	10 m
No.5 Open site	4659A-5	8.6 x 7.1 x 2.4	18 x 23	10 m
No.1 Shielded room	4659A-1	5.4 x 4.5 x 2.3	-	-
No.3 Shielded room	-	5.4 x 3.6 x 2.3	-	-
No.4 Shielded Room	-	6.1 x 6.1 x 3.1	-	-
No.5 Shielded Room	4659A-5	4.2 x 3.1 x 2.5	-	-
No.3 Fully Anechoic Chamber	-	7.0 x 3.5 x 3.5	-	-
No.6 Semi-anechoic Chamber	4659A-6	8.5 x 5.5 x 5.2	-	3 m
No.10 Semi-anechoic Chamber	4659A-10	18.4 x 9.9 x 7.7	-	10 m
No.11 Semi-anechoic Chamber	4659A-7	9.0 x 6.5 x 5.2	-	3 m
No.1 Measurement room	-	5.0 x 3.7 x 2.6	-	-
No.2 Measurement room	-	4.3 x 4.4 x 2.7	-	-
No.3 Measurement room	-	4.5 x 5.3 x 2.7	-	-

3.8 Test setup, Test Data & Test instruments

Refer to Appendix.

Section 4: Operation of E.U.T. 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.

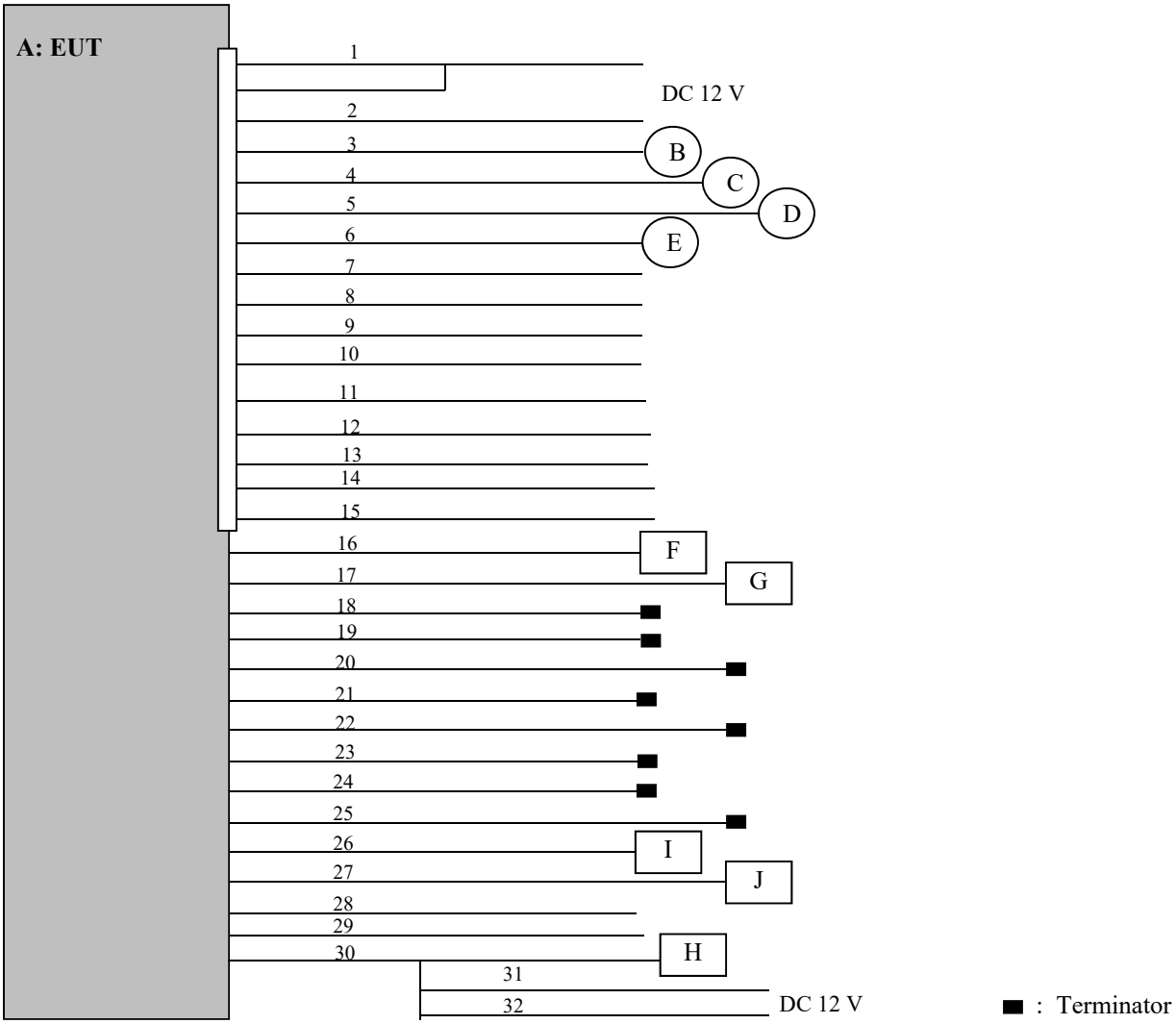
The mode(s) :
1. DVD Play
2. HDMI in
3. AV in
4. USB Play
5. Front Camera in

Software(s) :

SoC	:	0.0.3209.4000
Syscom	:	1.0.0209.3100
Panel	:	1.0.0159.3700

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 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	Remark
A	GPS Navigation System	DNX5190DABS	PE-X0002	JVC KENWOOD Corporation	EUT
B	Speaker	KFC-RS101	-	KENWOOD	-
C	Speaker	KFC-RS101	-	KENWOOD	-
D	Speaker	KFC-RS101	-	KENWOOD	-
E	Speaker	KFC-RS101	-	KENWOOD	-
F	USB Memory	RUF3-PN8G-SV	I70401	BUFFALO	-
G	USB Memory	RUF3-PN8G-SV	I70401	BUFFALO	-
H	Drive Recorder	DRV-N520	082T1205	JVC KENWOOD Corporation	-
I	GPS Antenna	-	-	JVC KENWOOD Corporation	-
J	Microphone	-	-	JVC KENWOOD Corporation	-

List of cables used

No.	Name	Length (m)	Cable Shield	Connector Shield	Remark
1	ACC, B+	1.7(0.2+1.5)	Unshielded	Unshielded	-
		0.5(0.2+0.3)	Unshielded	Unshielded	for EFTB and CS
2	GND	1.9(0.4+1.5)	Unshielded	Unshielded	-
		0.5(0.4+0.1)	Unshielded	Unshielded	for EFTB and CS
3	Speaker Front Left	0.15+1.0	Unshielded	Unshielded	-
		0.15+1.5	Unshielded	Unshielded	for EFTB and CS
4	Speaker Front Right	0.15+1.0	Unshielded	Unshielded	-
		0.15+1.5	Unshielded	Unshielded	for EFTB and CS
5	Speaker Rear Left	0.15+1.0	Unshielded	Unshielded	-
		0.15+1.5	Unshielded	Unshielded	for EFTB and CS
6	Speaker Rear Right	0.15+1.0	Unshielded	Unshielded	-
		0.15+1.5	Unshielded	Unshielded	for EFTB and CS
7	ILLUMI	0.15+1.5	Unshielded	Unshielded	-
8	ANT CONT	0.15+1.5	Unshielded	Unshielded	-
9	P.CONT	0.15+1.5	Unshielded	Unshielded	-
10	REMOTE CONT	0.15+1.5	Unshielded	Unshielded	-
11	PRK SW	2.0	Unshielded	Unshielded	-
12	REVERSE	2.0	Unshielded	Unshielded	-
13	S.SENS	2.0	Unshielded	Unshielded	-
14	CAM +	0.15+1.5	Unshielded	Unshielded	-
15	CAM -	0.15+1.5	Unshielded	Unshielded	-
16	USB 1	0.2+1.0	Shielded	Shielded	-
17	USB 2	0.2+1.0	Shielded	Shielded	-
18	REAR VIEW CAMERA	0.2+1.5	Shielded	Shielded	-
19	VIDEO OUT	0.2+1.5	Shielded	Shielded	-
20	FM/AM Antenna	0.1+0.9	Shielded	Shielded	-
21	AV-IN	1.5	Shielded	Shielded	-
22	AV-OUT AUDIO	0.2+1.5	Shielded	Shielded	-
23	AV OUT FRONT	1.5	Shielded	Shielded	-
24	AV OUT REAR	1.5	Shielded	Shielded	-
25	AV OUT SW	1.5	Shielded	Shielded	-
26	GPS	3.5	Shielded	Shielded	-
27	Microphone	3.0	Shielded	Shielded	-
28	DAB	3.0	Shielded	Shielded	-
29	EXT IF	1.0	Shielded	Shielded	-
30	FRONT VIEW CAMERA	0.2+3.3	Shielded	Shielded	-
31	ACC, B+ (Drive Recorder)	0.15+1.0	Unshielded	Unshielded	-
32	GND (Drive Recorder)	0.15+1.0	Unshielded	Unshielded	-

EFTB : Electrical fast transients/Burst test , CS : Continuous induced RF disturbances test

Section 5: Electrostatic discharge

5.1 Operating environment

Test room	:	Refer to data
Temperature	:	Refer to data
Humidity	:	Refer to data
Atmosphere	:	Refer to data

5.2 Test configuration

The EUT was placed on the 0.5 mm thick insulating support above the horizontal coupling plane (HCP) in size of 1.6 x 0.8 m that was set on a wooden table height of 0.8 m on the reference ground plane.
Photographs of the set up are shown in Appendix 1.

5.3 Test conditions

Test levels	:	±4 kV for indirect discharge ±4 kV for direct discharge ±2 kV, ±4 kV and ±8 kV for air discharge
Performance criterion	:	B
Number of discharges	:	Total 20 times (10 times for each polarity and on each test point for indirect and direct) Total 20 times (10 times for each polarity and on each test point for air discharge.)
Test points	:	Refer to Appendix 1.
EUT position	:	Table top
EUT operation mode	:	See Clause 4.1

5.4 Test procedure

Discharges were fired beginning with Contact 4 kV/Air 2 kV at each selected test points.
Each 10 discharges were applied to both of negative and positive polarity about contact discharge testing.
Also each 10 discharges were applied to both of negative and positive polarity about air discharge testing.
The performance of the EUT was monitored continuously.

5.5 Results

Summary of the test results	:	Pass

Section 6: Continuous RF electromagnetic field disturbances

6.1 Operating environment

Test room	:	Refer to data
Temperature	:	Refer to data
Humidity	:	Refer to data
Atmosphere	:	Refer to data

6.2 Test configuration

The EUT was placed on a non-metallic table height of 0.8 m above the reference ground plane.
The test was carried out with the front, rear, right, and left of the EUT facing the antenna.

Photographs of the set up are shown in Appendix 1.

6.3 Test condition

Frequency range	:	80 MHz -1000 MHz
Frequency Spot	:	1800 MHz, 2600 MHz, 3500 MHz, 5000 MHz
Test level	:	3.0 V/m
Modulation	:	80 % AM, 1 kHz frequency
Performance criterion	:	A
Frequency step size	:	1 %
Dwell time	:	1 sec.
Field orientation	:	Horizontal and Vertical
Antenna distance	:	2.0 m (80 MHz - 1000 MHz, 3500 MHz, 5000 MHz) 3.0 m (1800 MHz, 2600 MHz)
Antenna height	:	1.55 m
Antenna	:	Bilog antenna (below 1 GHz) Horn antenna (above 1 GHz)
EUT position	:	Table top
EUT operation mode	:	See Clause 4.1

6.4 Generation of the electromagnetic field

The electromagnetic field is generated from a signal generator controlled by a computer.
The output power is amplified and then radiated from Bilog and Horn antenna.
At every test frequency the field strength is checked prior to the actual test by placing the field sensor at the same distance from and in the same relative location to, the field generating antenna, as will be used by the EUT.

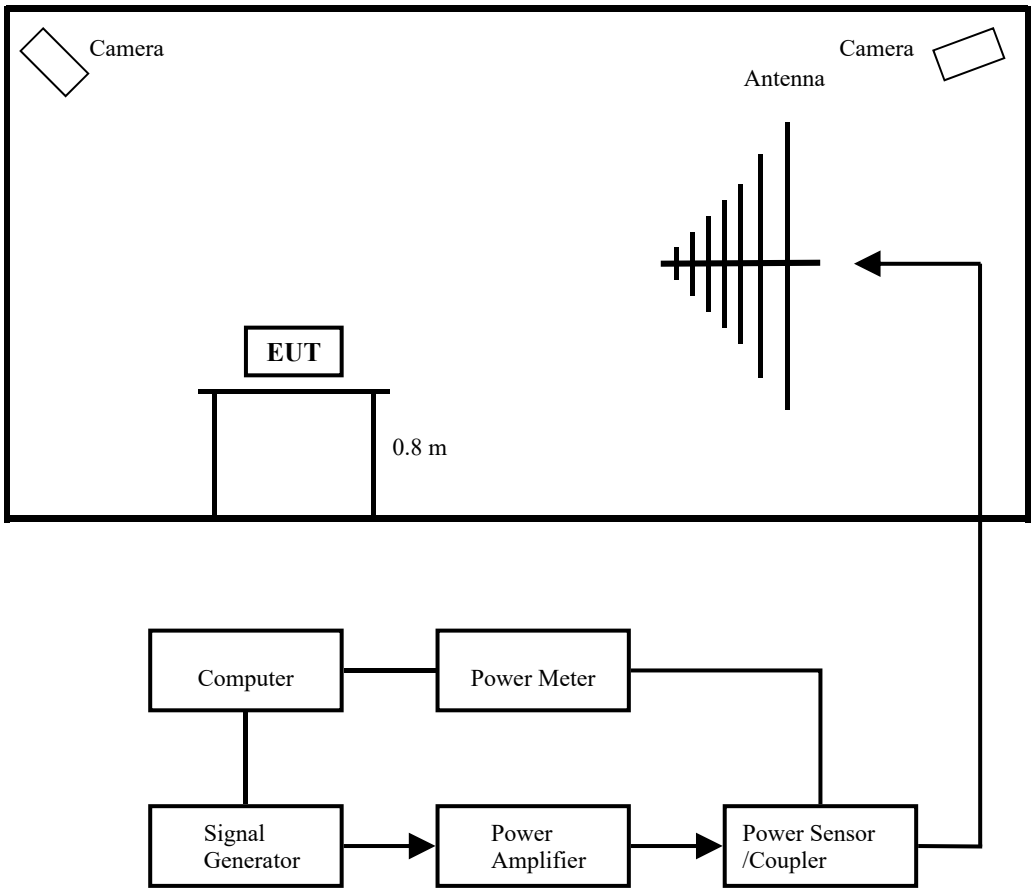
6.5 Test procedure

During test, the verification of performance was established by monitoring the EUT with a video camera.
Also the audio of the EUT was monitored by an audio analyzer.
The test was covered the complete frequency span; two polarization and specified sides of the EUT facing the antenna.

6.6 Results

Summary of the test results : Pass

RS test system:



Tested frequency list: 80 MHz - 1000 MHz

80.000	101.578	128.977	163.769	207.940	264.026	335.243	425.670	540.490	686.280	871.396
80.800	102.594	130.267	165.407	210.019	266.666	338.595	429.927	545.895	693.143	880.110
81.608	103.620	131.570	167.061	212.119	269.333	341.981	434.226	551.354	700.074	888.911
82.424	104.656	132.886	168.732	214.240	272.026	345.401	438.568	556.868	707.075	897.800
83.248	105.703	134.215	170.419	216.382	274.746	348.855	442.954	562.437	714.146	906.778
84.080	106.760	135.557	172.123	218.546	277.493	352.344	447.384	568.061	721.287	915.846
84.921	107.828	136.913	173.844	220.731	280.268	355.867	451.858	573.742	728.500	925.004
85.770	108.906	138.282	175.582	222.938	283.071	359.426	456.377	579.479	735.785	934.254
86.628	109.995	139.665	177.338	225.167	285.902	363.020	460.941	585.274	743.143	943.597
87.494	111.095	141.062	179.111	227.419	288.761	366.650	465.550	591.127	750.574	953.033
88.369	112.206	142.473	180.902	229.693	291.649	370.316	470.206	597.038	758.080	962.563
89.253	113.328	143.898	182.711	231.990	294.565	374.019	474.908	603.008	765.661	972.189
90.146	114.461	145.337	184.538	234.310	297.511	377.759	479.657	609.038	773.318	981.911
91.047	115.606	146.790	186.383	236.653	300.486	381.537	484.454	615.128	781.051	991.730
91.957	116.762	148.258	188.247	239.020	303.491	385.352	489.299	621.279	788.862	1000.000
92.877	117.930	149.741	190.129	241.410	306.526	389.206	494.192	627.492	796.751	
93.806	119.109	151.238	192.030	243.824	309.591	393.098	499.134	633.767	804.719	
94.744	120.300	152.750	193.950	246.262	312.687	397.029	504.125	640.105	812.766	
95.691	121.503	154.278	195.890	248.725	315.814	400.999	509.166	646.506	820.894	
96.648	122.718	155.821	197.849	251.212	318.972	405.009	514.258	652.971	829.103	
97.614	123.945	157.379	199.827	253.724	322.162	409.059	519.401	659.501	837.394	
98.590	125.184	158.953	201.825	256.261	325.384	413.150	524.595	666.096	845.768	
99.576	126.436	160.543	203.843	258.824	328.638	417.282	529.841	672.757	854.226	
100.572	127.700	162.148	205.881	261.412	331.924	421.455	535.139	679.485	862.768	

Spot Frequency

1800.000
2600.000
3500.000
5000.000

Section 7: Electrical fast transient/Burst

7.1 Operating environment

Test room	:	Refer to data
Temperature	:	Refer to data
Humidity	:	Refer to data
Atmosphere	:	Refer to data

7.2 Test configuration

The EUT was placed on a non-metallic pallet height of 0.1 m above the reference ground plane.
Photographs of the set up are shown in Appendix 1.

7.3 Test conditions

Test level	:	±0.5 kV/DC network ±0.5 kV/Signal line
Performance criterion	:	B
Repetition rate	:	5 kHz
Application method	:	Direct injection Clamp injection
Duration of each test	:	1 min.
EUT position	:	Floor standing
EUT operation mode	:	See Clause 4.1

7.4 Test procedure

The test voltage was applied to the each line for 1.0 minute.
The performance of the EUT was monitored continuously.

7.5 Results

Summary of the test results : Pass

Section 8: Continuous induced RF disturbances

8.1 Operating environment

Test room	:	Refer to data
Temperature	:	Refer to data
Humidity	:	Refer to data
Atmosphere	:	Refer to data

8.2 Test configuration

The EUT was placed on a non-metallic pallet height of 0.1 m above the reference ground plane.
Photographs of the set up are shown in Appendix 1.

8.3 Test condition

Frequency range	:	0.15 MHz - 10 MHz 10 MHz - 30 MHz 30 MHz - 80 MHz
Test level	:	3.0 V (0.15 MHz - 10 MHz) 3.0 V to 1.0 V (10 MHz - 30 MHz) 1.0 V (30 MHz - 80 MHz)
Modulation	:	80 % AM, 1 kHz frequency
Performance criterion	:	A
Frequency step size	:	1 %
Dwell time	:	1 sec.
EUT position	:	Floor standing
EUT operation mode	:	See Clause 4.1

8.4 Test procedure

The performance of the EUT was monitored continuously.

8.5 Results

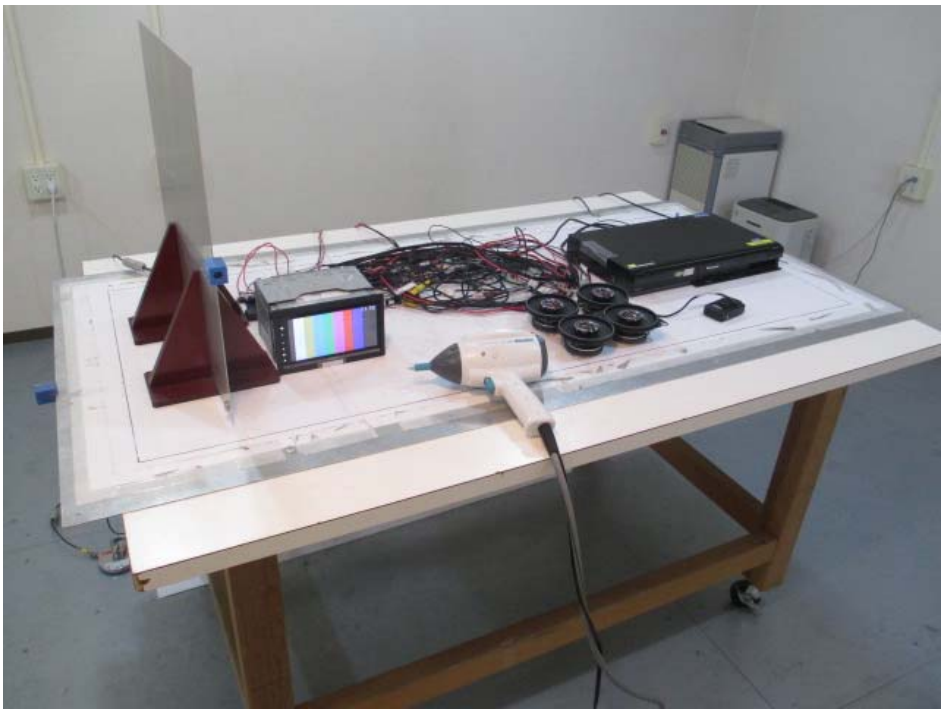
Summary of the test results	:	Pass

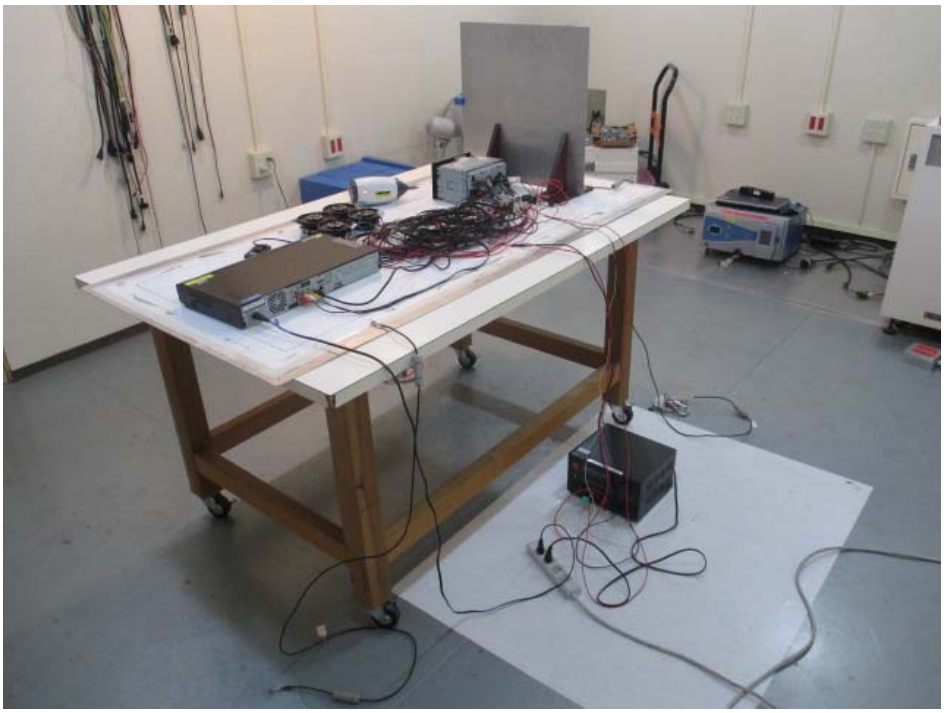
Tested frequency list: 0.15 MHz - 80 MHz

0.15000	0.24644	0.40497	0.66571	1.09454	1.79980	2.95967	4.86724	8.00450	13.16409	21.64979	35.60561	58.55778
0.15150	0.24890	0.40901	0.67236	1.10548	1.81779	2.98926	4.91591	8.08454	13.29573	21.86628	35.96166	59.14335
0.15301	0.25138	0.41310	0.67908	1.11653	1.83596	3.01915	4.96506	8.16538	13.42868	22.08494	36.32127	59.73478
0.15454	0.25389	0.41723	0.68587	1.12769	1.85431	3.04934	5.01471	8.24703	13.56296	22.30578	36.68448	60.33212
0.15608	0.25642	0.42140	0.69272	1.13896	1.87285	3.07983	5.06485	8.32950	13.69858	22.52883	37.05132	60.93544
0.15764	0.25898	0.42561	0.69964	1.15034	1.89157	3.11062	5.11549	8.41279	13.83556	22.75411	37.42183	61.54479
0.15921	0.26156	0.42986	0.70663	1.16184	1.91048	3.14172	5.16664	8.49691	13.97391	22.98165	37.79604	62.16023
0.16080	0.26417	0.43415	0.71369	1.17345	1.92958	3.17313	5.21830	8.58187	14.11364	23.21146	38.17400	62.78183
0.16240	0.26681	0.43849	0.72082	1.18518	1.94887	3.20486	5.27048	8.66768	14.25477	23.44357	38.55574	63.40964
0.16402	0.26947	0.44287	0.72802	1.19703	1.96835	3.23690	5.32318	8.75435	14.39731	23.67800	38.94129	64.04373
0.16566	0.27216	0.44729	0.73530	1.20900	1.98803	3.26926	5.37641	8.84189	14.54128	23.91478	39.33070	64.68416
0.16731	0.27488	0.45176	0.74265	1.22109	2.00791	3.30195	5.43017	8.93030	14.68669	24.15392	39.72400	65.33100
0.16898	0.27762	0.45627	0.75007	1.23330	2.02798	3.33496	5.48447	9.01960	14.83355	24.39545	40.12124	65.98431
0.17066	0.28039	0.46083	0.75757	1.24563	2.04825	3.36830	5.53931	9.10979	14.98188	24.63940	40.52245	66.64415
0.17236	0.28319	0.46543	0.76514	1.25808	2.06873	3.40198	5.59470	9.20088	15.13169	24.88579	40.92767	67.31059
0.17408	0.28602	0.47008	0.77279	1.27066	2.08941	3.43599	5.65064	9.29288	15.28300	25.13464	41.33694	67.98369
0.17582	0.28888	0.47478	0.78051	1.28336	2.11030	3.47034	5.70714	9.38580	15.43583	25.38598	41.75030	68.66352
0.17757	0.29176	0.47952	0.78831	1.29619	2.13140	3.50504	5.76421	9.47965	15.59018	25.63983	42.16780	69.35015
0.17934	0.29467	0.48431	0.79619	1.30915	2.15271	3.54009	5.82185	9.57444	15.74608	25.89622	42.58947	70.04365
0.18113	0.29761	0.48915	0.80415	1.32224	2.17423	3.57549	5.88006	9.67018	15.90354	26.15518	43.01536	70.74408
0.18294	0.30058	0.49404	0.81219	1.33546	2.19597	3.61124	5.93886	9.76688	16.06257	26.41673	43.44551	71.45152
0.18476	0.30358	0.49898	0.82031	1.34881	2.21792	3.64735	5.99824	9.86454	16.22319	26.68089	43.87996	72.16603
0.18660	0.30661	0.50396	0.82851	1.36229	2.24009	3.68382	6.05822	9.96318	16.38542	26.94769	44.31875	72.88769
0.18846	0.30967	0.50899	0.83679	1.37591	2.26249	3.72065	6.11880	10.06281	16.54927	27.21716	44.76193	73.61656
0.19034	0.31276	0.51407	0.84515	1.38966	2.28511	3.75785	6.17998	10.16343	16.71476	27.48933	45.20954	74.35272
0.19224	0.31588	0.51921	0.85360	1.40355	2.30796	3.79542	6.24177	10.26506	16.88190	27.76422	45.66163	75.09624
0.19416	0.31903	0.52440	0.86213	1.41758	2.33103	3.83337	6.30418	10.36771	17.05071	28.04186	46.11824	75.84720
0.19610	0.32222	0.52964	0.87075	1.43175	2.35434	3.87170	6.36722	10.47138	17.22121	28.32227	46.57942	76.60567
0.19806	0.32544	0.53493	0.87945	1.44606	2.37788	3.91041	6.43089	10.57609	17.39342	28.60549	47.04521	77.37172
0.20004	0.32869	0.54027	0.88824	1.46052	2.40165	3.94951	6.49519	10.68185	17.56735	28.89154	47.51566	78.14543
0.20204	0.33197	0.54567	0.89712	1.47512	2.42566	3.98900	6.56014	10.78866	17.74302	29.18045	47.99081	78.92688
0.20406	0.33528	0.55112	0.90609	1.48987	2.44991	4.02889	6.62574	10.89654	17.92045	29.47225	48.47071	79.71614
0.20610	0.33863	0.55663	0.91515	1.50476	2.47440	4.06917	6.69199	11.00550	18.09965	29.76697	48.95541	80.00000
0.20816	0.34201	0.56219	0.92430	1.51980	2.49914	4.10986	6.75890	11.11555	18.28064	30.06463	49.44496	
0.21024	0.34543	0.56781	0.93354	1.53499	2.52413	4.15095	6.82648	11.22670	18.46344	30.36527	49.93940	
0.21234	0.34888	0.57348	0.94287	1.55033	2.54937	4.19245	6.89474	11.33896	18.64807	30.66892	50.43879	
0.21446	0.35236	0.57921	0.95229	1.56583	2.57486	4.23437	6.96368	11.45234	18.83455	30.97560	50.94317	
0.21660	0.35588	0.58500	0.96181	1.58148	2.60060	4.27671	7.03331	11.56686	19.02289	31.28535	51.45260	
0.21876	0.35943	0.59085	0.97142	1.59729	2.62660	4.31947	7.10364	11.68252	19.21311	31.59820	51.96712	
0.22094	0.36302	0.59675	0.98113	1.61326	2.65286	4.36266	7.17467	11.79934	19.40524	31.91418	52.48679	
0.22314	0.36665	0.60271	0.99094	1.62939	2.67938	4.40628	7.24641	11.91733	19.59929	32.23332	53.01165	
0.22537	0.37031	0.60873	1.00084	1.64568	2.70617	4.45034	7.31887	12.03650	19.79528	32.55565	53.54176	
0.22762	0.37401	0.61481	1.01084	1.66213	2.73323	4.49484	7.39205	12.15686	19.99323	32.88120	54.07717	
0.22989	0.37775	0.62095	1.02094	1.67875	2.76056	4.53978	7.46597	12.27842	20.19316	33.21001	54.61794	
0.23218	0.38152	0.62715	1.03114	1.69553	2.78816	4.58517	7.54062	12.40120	20.39509	33.54211	55.16411	
0.23450	0.38533	0.63342	1.04145	1.71248	2.81604	4.63102	7.61602	12.52521	20.59904	33.87753	55.71575	
0.23684	0.38918	0.63975	1.05186	1.72960	2.84420	4.67733	7.69218	12.65046	20.80503	34.21630	56.27290	
0.23920	0.39307	0.64614	1.06237	1.74689	2.87264	4.72410	7.76910	12.77696	21.01308	34.55846	56.83562	
0.24159	0.39700	0.65260	1.07299	1.76435	2.90136	4.77134	7.84679	12.90472	21.22321	34.90404	57.40397	
0.24400	0.40097	0.65912	1.08371	1.78199	2.93037	4.81905	7.92525	13.03376	21.43544	35.25308	57.97800	

Appendix 1: Photographs of test setup

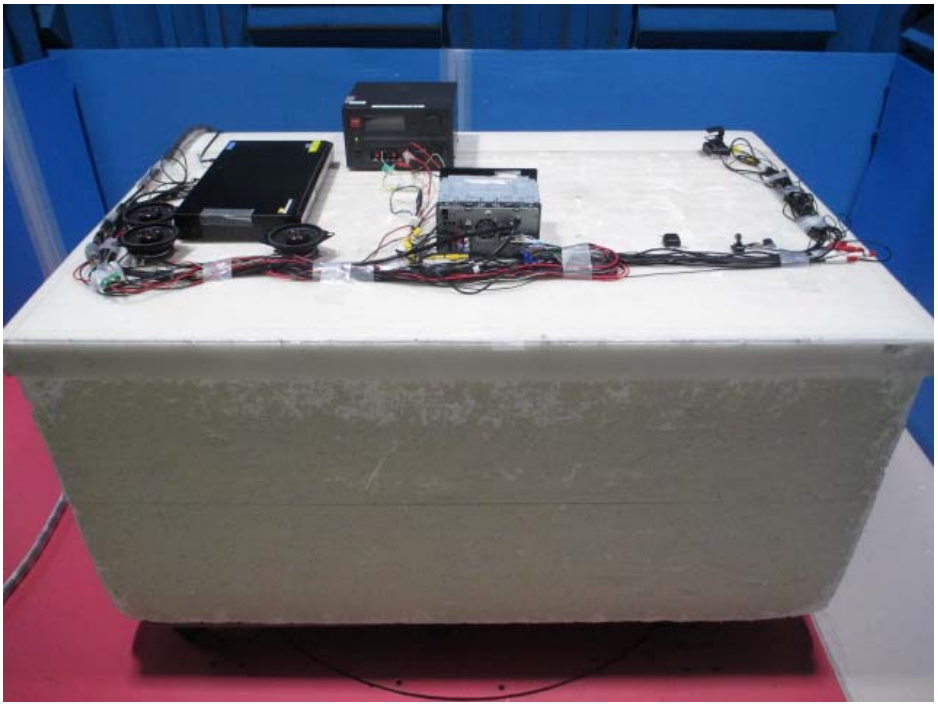
Electrostatic discharges





Continuous RF electromagnetic field disturbances

DVD Play, HDMI in, AV in, USB Play (Audio output function tests)

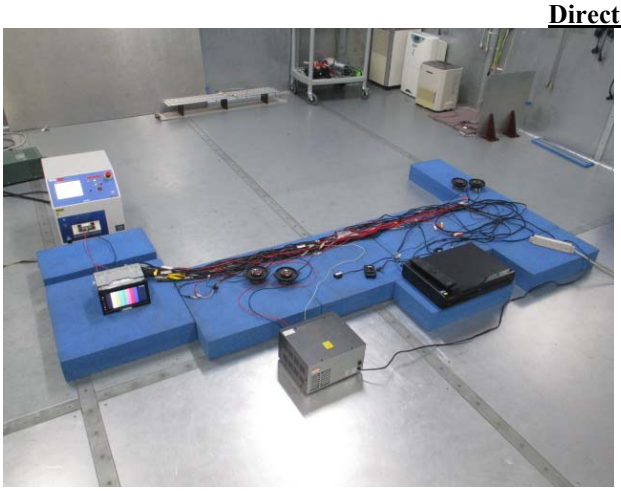


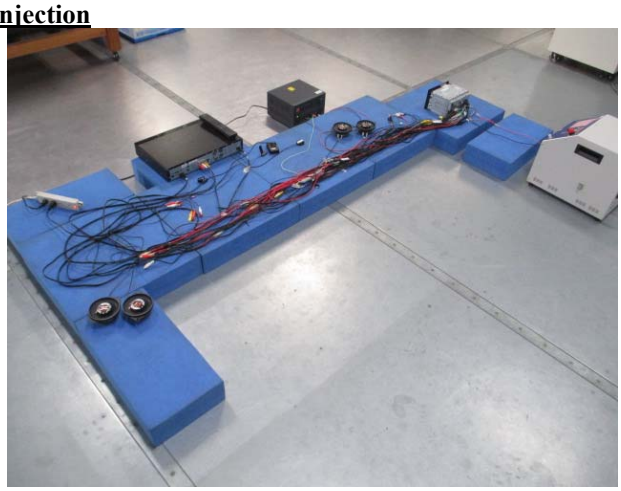
Continuous RF electromagnetic field disturbances

Front Camera in

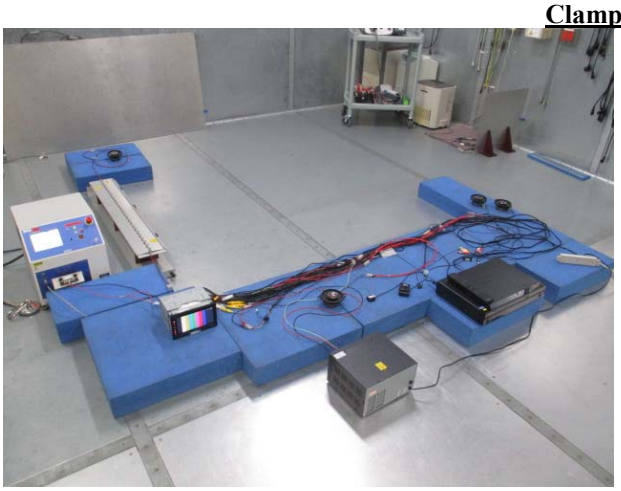
Electrical fast transients/Burst

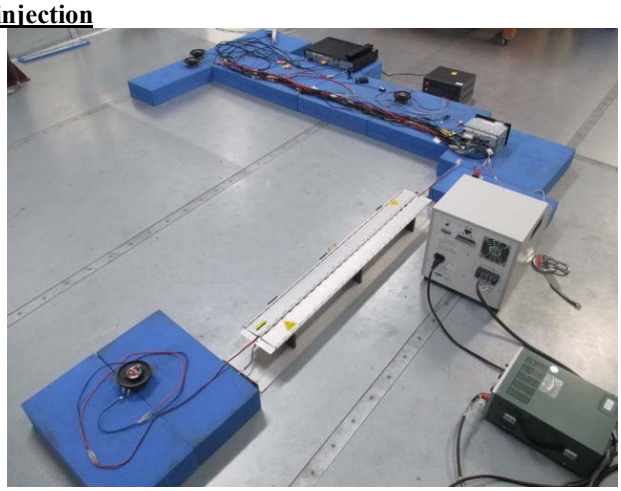
Direct injection





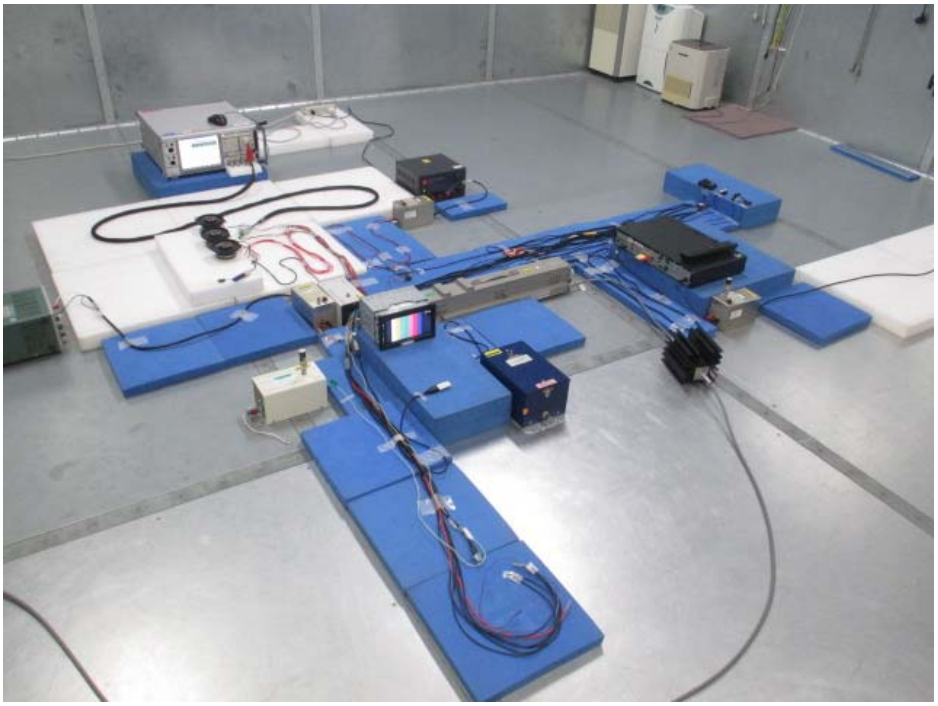
Clamp injection

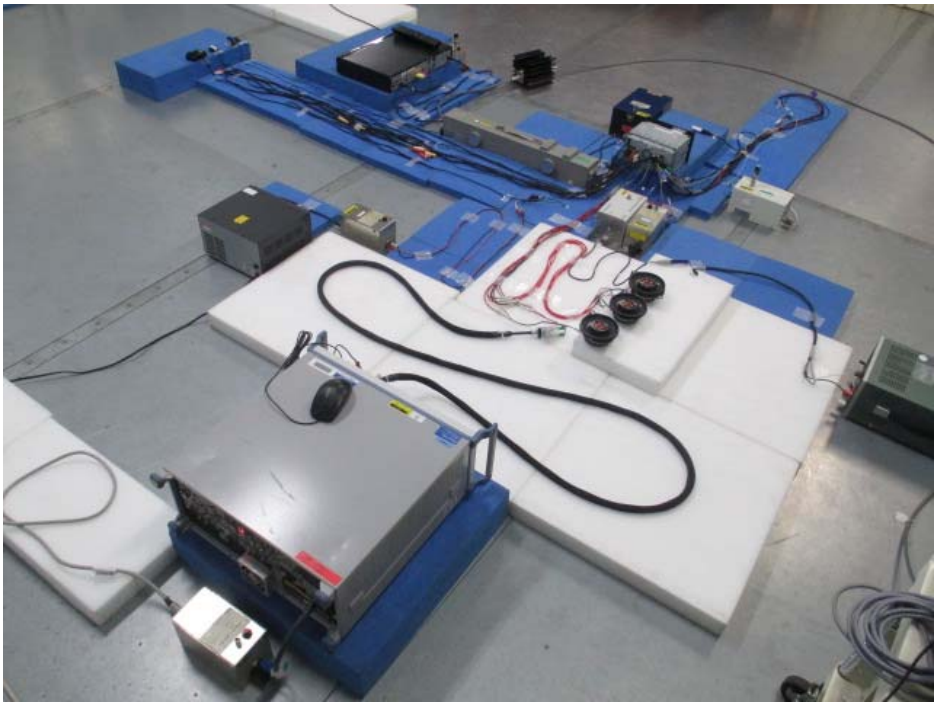




Continuous induced RF disturbances

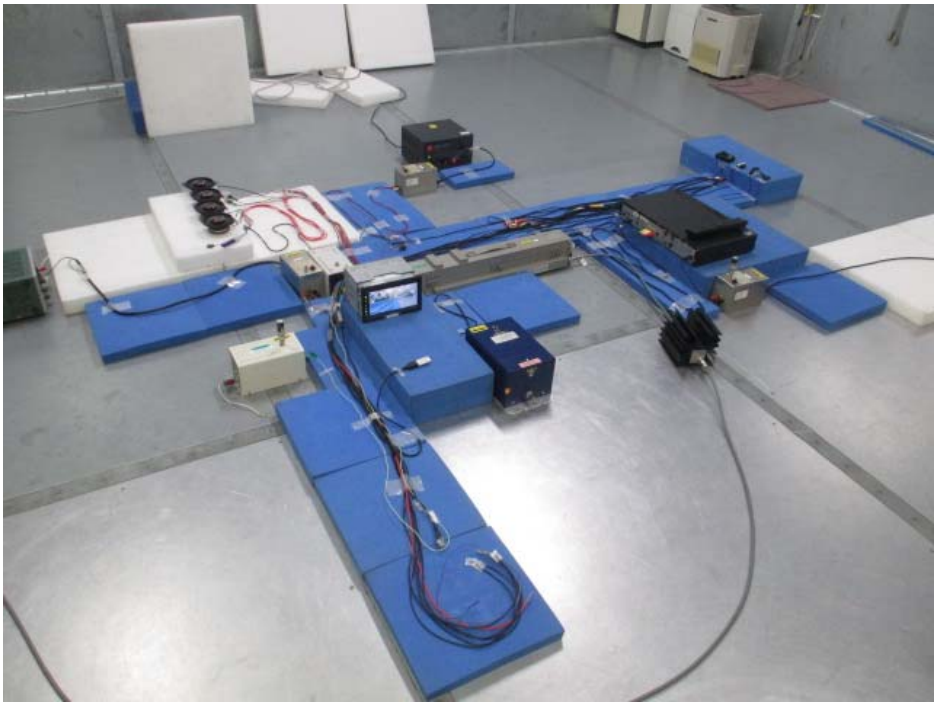
DVD Play, HDMI in, AV in, USB Play (Audio output function tests)

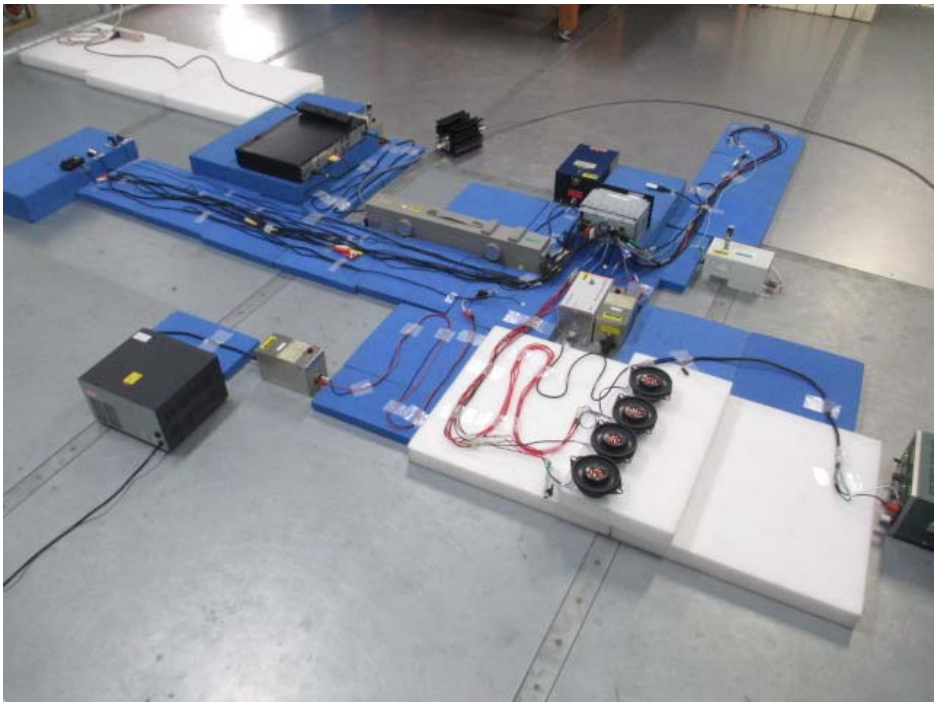




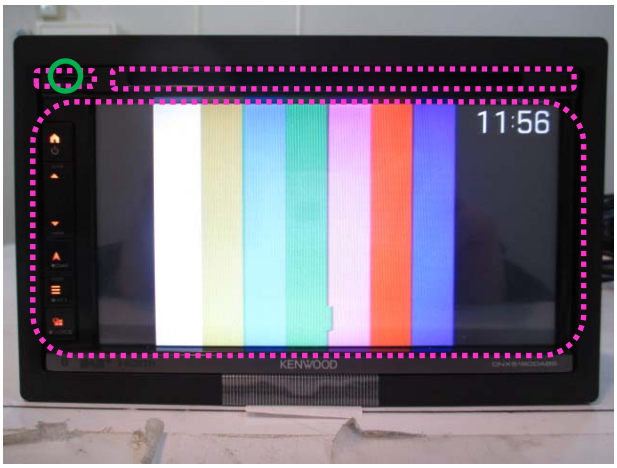
Continuous induced RF disturbances

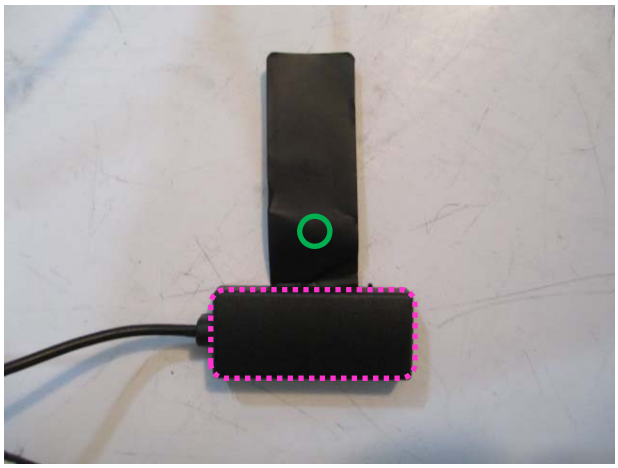
Front Camera in

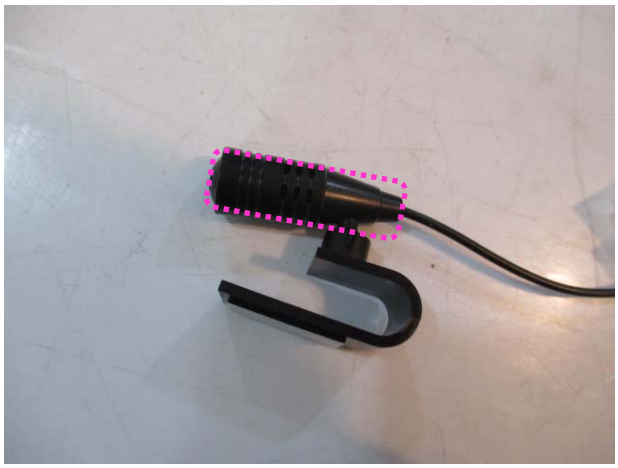




Selected test points for Electrostatic discharge







○ : Contact discharge
▢ : Air discharge

Electrostatic discharge

UL Japan, Inc. Kashima EMC Lab.
Test Room : No.3 Shielded room
Order No. : 12688573M

Company : JVC KENWOOD Corporation
Equipment : GPS NAVIGATION SYSTEM
Model No. : DNX5190DABS
Serial No. : PE-X0002
Test Mode : DVD Play/HDMI in/AV in/USB Play/Front Camera in
Power : DC 12 V
Standard : EN 55035
: EN 61000-4-2
Criterion : B

Date of test. : February 06, 2019
Temp. / Humid. : 22 deg.C / 45 %RH
Atmosphere : 1008 hPa

Engineer : Tadashi Kuroda

EUT Setup : ☑ Table Top (Non-metallic table height of 0.8 m)
☐ Floor Standing (Non-metallic pallet height of 0.1 m)
EUT Type : ☑ Grounded ☐ Ungrounded (*1)
*1 ☐ Remained the cable with bleeder resistors (2x470 kΩ) on the EUT during the ESD test.
☐ The enough time interval b/w discharge.
☐ Touching of the EUT with a grounded brush with bleeder resistors (2x470 kΩ) in the grounding cable.
☐ An air-ionizer.

Contact discharge method (HCP, VCP) : Number of discharges for each polarity at each test point. ☑ 10 ☐ 25

Test Level Polarity			Front		Rear		Right		Left						Remarks
			HCP	VCP	HCP	VCP	HCP	VCP	HCP	VCP					
4.0	kV	+	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass					
		-	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass					
	kV	+													
		-													
	kV	+													
		-													
	kV	+													
		-													

Contact discharge method (Direct) : Number of discharges for each polarity at each test point. ☑ 10 ☐ 25

Test Level Polarity			Test Points						Remarks
4.0	kV	+	Pass						Refer to "Selected test points"
		-	Pass						
	kV	+							
		-							
	kV	+							
		-							
	kV	+							
		-							

Air Discharge method : Number of discharges for each polarity at each test point. ☑ 10

Test Level Polarity			Test Points						Remarks
2.0	kV	+	Pass						Refer to "Selected test points"
		-	Pass						
4.0	kV	+	Pass						
		-	Pass						
8.0	kV	+	Pass						
		-	Pass						
	kV	+							
		-							

Summary of the test results :
It was returned to normal operation after the test.

Test Result: ☑ **Pass** ☐ **Fail**

Continuous RF electromagnetic field disturbances

UL Japan, Inc. Kashima EMC Lab.
Test Room : No.3 Fully-anechoic chamber
Order No. : 12688573M

Company : JVC KENWOOD Corporation
Equipment : GPS NAVIGATION SYSTEM
Model No. : DNX5190DABS
Serial No. : PE-X0002
Test Mode : Front Camera in
Power : DC 12 V
Standard : EN 55035
: EN 61000-4-3
Criterion : A

Date of test. : February 04, 2019
Temp. / Humid. : 23 deg.C / 40 %RH
Atmosphere : 1009 hPa

Engineer : Tadashi Kuroda
Hiromitsu Tanabe

EUT Setup : ☑ Table Top (Non-metallic table height of 0.8 m)
☐ Floor Standing (Non-metallic pallet height of 0.1 m)
Freqency step size : 1 %
Dwell time : 1 sec

Freq. Range		80 - 1000 MHz	1800, 2600 MHz	3500, 5000 MHz	Remarks
Test level		3 V/m	3 V/m	3 V/m	
Modulation		☑ AM 80% 1 kHz ☐ Pulse Hz % ☐ Unmodulated	☑ AM 80% 1 kHz ☐ Pulse Hz % ☐ Unmodulated	☑ AM 80% 1 kHz ☐ Pulse Hz % ☐ Unmodulated	
Antenna	Height	1.55 m	1.55 m	1.55 m	
	Distance	2 m	3 m	2 m	
Note					
☑ Front	Hor.	Pass	Pass	Pass	
	Ver.	Pass	Pass	Pass	
☑ Rear	Hor.	Pass	Pass	Pass	
	Ver.	Pass	Pass	Pass	
☑ Right	Hor.	Pass	Pass	Pass	
	Ver.	Pass	Pass	Pass	
☑ Left	Hor.	Pass	Pass	Pass	
	Ver.	Pass	Pass	Pass	
☐ Top	Hor.				
	Ver.				
☐ Bottom	Hor.				
	Ver.				

Test Result: ☑ **Pass** ☐ **Fail**

Continuous RF electromagnetic field disturbances

UL Japan, Inc.		Kashima EMC Lab.
Test Room	:	No.3 Fully-anechoic chamber
Order No.	:	12688573M

Company	:	JVC KENWOOD Corporation
Equipment	:	GPS NAVIGATION SYSTEM
Model No.	:	DNX5190DABS
Serial No.	:	PE-X0002
Test Mode	:	DVD Play/HDMI in/AV in/USB Play
Power	:	DC 12 V
Standard	:	EN 55035
	:	EN 61000-4-3
Criterion	:	A

Date of test.	:	February 04, 2019
Temp. / Humid.	:	23 deg.C / 40 %RH
Atmosphere	:	1009 hPa
Engineer	:	Tadashi Kuroda Hiromitsu Tanabe

EUT Setup : ☑ Table Top (Non-metallic table height of 0.8 m)
☐ Floor Standing (Non-metallic pallet height of 0.1 m)

Freqency step size : 1 %

Dwell time : 1 sec

Freq. Range		80 - 1000 MHz	1800, 2600 MHz	3500, 5000 MHz	Remarks
Test level		3 V/m	3 V/m	3 V/m	
Modulation		☑ AM 80% 1 kHz ☐ Pulse Hz % ☐ Unmodulated	☑ AM 80% 1 kHz ☐ Pulse Hz % ☐ Unmodulated	☑ AM 80% 1 kHz ☐ Pulse Hz % ☐ Unmodulated	
Antenna	Height	1.55 m	1.55 m	1.55 m	
	Distance	2 m	3 m	2 m	
Note		[Initial S/N] : Front Left Audio Out DVD Play : 91.1 dB/HDMI in : 90.93 dB AV in : 91.03 dB/USB Play : 90.8 dB (Output : 1.4 V, 4 Ω)			

☑ Front	Hor.	Pass	Pass	Pass	[Worst S/N] DVD Play : 28.054 dB (90.146 MHz,Rear, Horizontal) HDMI in : 27.911 dB (90.146 MHz,Rear, Horizontal) AV in : 27.994 dB (90.146 MHz,Rear, Horizontal) USB Play : 28.174 dB (90.146 MHz,Rear, Horizontal)
	Ver.	Pass	Pass	Pass	
☑ Rear	Hor.	Pass	Pass	Pass	
	Ver.	Pass	Pass	Pass	
☑ Right	Hor.	Pass	Pass	Pass	
	Ver.	Pass	Pass	Pass	
☑ Left	Hor.	Pass	Pass	Pass	
	Ver.	Pass	Pass	Pass	
☐ Top	Hor.				
	Ver.				
☐ Bottom	Hor.				
	Ver.				

Test Result: ☑ **Pass** ☐ **Fail**

Electrical fast transients/Burst

UL Japan, Inc.		Kashima EMC Lab.
Test Room	:	No.4 Shielded room
Order No.	:	12688573M

Company	:	JVC KENWOOD Corporation
Equipment	:	GPS NAVIGATION SYSTEM
Model No.	:	DNX5190DABS
Serial No.	:	PE-X0002
Test Mode	:	DVD Play/HDMI in/AV in/USB Play/Front Camera in
Power	:	DC 12 V
Standard	:	EN 55035
	:	EN 61000-4-4
Criterion	:	B

Date of test.	:	February 05, 2018
Temp. / Humid.	:	24 deg.C / 40 %RH
Atmosphere	:	1022 hPa
Engineer	:	Kento Enomoto

EUT Setup : ☐ Table Top (Non-metallic table height of 0.8 m)
☑ Floor Standing (Non-metallic pallet height of 0.1 m)

Elevated Ground Plane : ☑ Not used ☐ Used (*1 Refer to line name)

Duration : 1 min

Line / Injection	☐ AC		☑ DC /		☑ CDN		☐ Clamp		Remarks
Test level	0.5	kV		kV		kV		kV	
Repetation rate	5	kHz		kHz		kHz		kHz	
Polarity	+	-	+	-	+	-	+	-	
+ -	Pass	Pass							

Line / Injection	☑ Signal Line /				☑ Clamp				Remarks
Test level	0.5	kV		kV		kV		kV	
Repetation rate	5	kHz		kHz		kHz		kHz	
Polarity	+	-	+	-	+	-	+	-	
Harness(Other) ☐ *1	Pass	Pass							
Speaker Front ☐ *1	Pass	Pass							
Speaker Rear ☐ *1	Pass	Pass							
HDMI ☐ *1	Pass	Pass							
AV-In ☐ *1	Pass	Pass							
GPS ☐ *1	Pass	Pass							
MIC ☐ *1	Pass	Pass							
LR ☐ *1	Pass	Pass							
AV-Out ☐ *1	Pass	Pass							
Front Camera ☐ *1	Pass	Pass							
Video ☐ *1	Pass	Pass							
EXT I/F ☐ *1	Pass	Pass							
☐ *1									
☐ *1									
☐ *1									
☐ *1									
☐ *1									

Summary of the test results :
The EUT operated without any recorded disturbance during the test.

Test Result: ☑ **Pass** ☐ **Fail**

Continuous induced RF disturbances

UL Japan, Inc. Kashima EMC Lab.
Test Room : No.4 Shielded room
Order No. : 12688573M

Company : JVC KENWOOD Corporation
Equipment : GPS NAVIGATION SYSTEM
Model No. : DNX5190DABS
Serial No. : PE-X0002
Test Mode : Front Camera in
Power : DC 12 V
Standard : EN 55035
: EN 61000-4-6
Criterion : A

Date of test. : February 06, 2019
Temp. / Humid. : 23 deg.C / 42 %RH
Atmosphere : 1007 hPa

Engineer : Kento Enomoto

EUT Setup : ☑ Floor Standing (Non-metallic pallet height of 0.1 m)
Elevated Ground Plane : ☑ Not used ☐ Used (*1 Refer to line name)
Frequency step size : 1 %
Dwell time : 1 sec

Freq. Range	0.15 - 10 MHz	10 - 30 MHz	30 - 80 MHz	Remarks
Test level	3 V	3 -1 V	1 V	
Modulation	☑ AM 80% 1 kHz ☐ Pulse Hz % ☐ Unmodulated	☑ AM 80% 1 kHz ☐ Pulse Hz % ☐ Unmodulated	☑ AM 80% 1 kHz ☐ Pulse Hz % ☐ Unmodulated	
Note				
DC Line ☐ *1	Pass	Pass	Pass	☑ CDN M2 ☐ EM Clamp
Harness(Other) ☐ *1	Pass	Pass	Pass	☐ CDN ☑ EM Clamp
Speaker Front ☐ *1	Pass	Pass	Pass	☐ CDN ☑ EM Clamp
Speaker Rear ☐ *1	Pass	Pass	Pass	☐ CDN ☑ EM Clamp
HDMI ☐ *1	Pass	Pass	Pass	☐ CDN ☑ EM Clamp
AV-In ☐ *1	Pass	Pass	Pass	☐ CDN ☑ EM Clamp
GPS ☐ *1	Pass	Pass	Pass	☐ CDN ☑ EM Clamp
MIC ☐ *1	Pass	Pass	Pass	☐ CDN ☑ EM Clamp
LR ☐ *1	Pass	Pass	Pass	☐ CDN ☑ EM Clamp
AV-Out ☐ *1	Pass	Pass	Pass	☐ CDN ☑ EM Clamp
Front Camera ☐ *1	Pass	Pass	Pass	☐ CDN ☑ EM Clamp
Video ☐ *1	Pass	Pass	Pass	☐ CDN ☑ EM Clamp
EXT I/F ☐ *1	Pass	Pass	Pass	☐ CDN ☑ EM Clamp
☐ *1				☐ CDN ☐ EM Clamp
☐ *1				☐ CDN ☐ EM Clamp
☐ *1				☐ CDN ☐ EM Clamp
☐ *1				☐ CDN ☐ EM Clamp

Test Result: ☑ **Pass** ☐ **Fail**

Continuous induced RF disturbances

UL Japan, Inc. Kashima EMC Lab.
Test Room : No.4 Shielded room
Order No. : 12688573M

Company : JVC KENWOOD Corporation
Equipment : GPS NAVIGATION SYSTEM
Model No. : DNX5190DABS
Serial No. : PE-X0002
Test Mode : DVD Play/HDMI in/AV in/USB Play
Power : DC 12 V
Standard : EN 55035
: EN 61000-4-6
Criterion : A

Date of test. : February 07, 2019
Temp. / Humid. : 24 deg.C / 40 %RH
Atmosphere : 1010, hPa
Engineer : Kento Enomoto

EUT Setup : ☑ Floor Standing (Non-metallic pallet height of 0.1 m)
Elevated Ground Plane : ☑ Not used ☐ Used (*1 Refer to line name)
Frequency step size : 1 %
Dwell time : 1 sec

Freq. Range	0.15 - 10 MHz	10 - 30 MHz	30 - 80 MHz	Remarks
Test level	3 V	3 -1 V	1 V	
Modulation	☑ AM 80% 1 kHz ☐ Pulse Hz % ☐ Unmodulated	☑ AM 80% 1 kHz ☐ Pulse Hz % ☐ Unmodulated	☑ AM 80% 1 kHz ☐ Pulse Hz % ☐ Unmodulated	
Note	[Initial S/N] : Front Left Audio Out DVD Play : 91.1 dB/HDMI in : 90.93 dB AV in : 91.03 dB/USB Play : 90.8 dB (Output : 1.4 V, 4 Ω)			

DC Line ☐ *1	Pass	Pass	Pass	☑ CDN M2 ☐ EM Clamp	[Worst S/N] DVD Play : 42.622 dB (18.835 MHz) HDMI in : 43.576 dB (18.463 MHz) AV in : 46.703 dB (17.593 MHz) USB Play : 43.677 dB (19.023 MHz,)
Harness(Other) ☐ *1	Pass	Pass	Pass	☐ CDN ☑ EM Clamp	
Speaker Front ☐ *1	Pass	Pass	Pass	☐ CDN ☑ EM Clamp	
Speaker Rear ☐ *1	Pass	Pass	Pass	☐ CDN ☑ EM Clamp	
HDMI ☐ *1	Pass	Pass	Pass	☐ CDN ☑ EM Clamp	
AV-In ☐ *1	Pass	Pass	Pass	☐ CDN ☑ EM Clamp	
GPS ☐ *1	Pass	Pass	Pass	☐ CDN ☑ EM Clamp	
MIC ☐ *1	Pass	Pass	Pass	☐ CDN ☑ EM Clamp	
LR ☐ *1	Pass	Pass	Pass	☐ CDN ☑ EM Clamp	
AV-Out ☐ *1	Pass	Pass	Pass	☐ CDN ☑ EM Clamp	
Front Camera ☐ *1	Pass	Pass	Pass	☐ CDN ☑ EM Clamp	
Video ☐ *1	Pass	Pass	Pass	☐ CDN ☑ EM Clamp	
EXT I/F ☐ *1	Pass	Pass	Pass	☐ CDN ☑ EM Clamp	
☐ *1				☐ CDN ☐ EM Clamp	
☐ *1				☐ CDN ☐ EM Clamp	
☐ *1				☐ CDN ☐ EM Clamp	
☐ *1				☐ CDN ☐ EM Clamp	

Test Result: ☑ **Pass** ☐ **Fail**

Order Number:12688573M

Test Name	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Calibration Due Date	Calibration Interval (Month)
ESD	143419	ESD Simulator	NOISEKEN	ESS-S3011	ESS1273 919	2018/11/27	2019/11/30	12
ESD	143421	ESD GUN	NOISEKEN	GT-30R	ESS1213 097	2018/11/27	2019/11/30	12
ESD	144798	Horizontal Coupling Plane	UL Kashima	-	-	-	-	-
ESD	144801	Vertical Coupling Plane	UL Kashima	-	-	-	-	-
RS	143680	Signal Generator	Rohde & Schwarz	SMB100A	100991	2018/04/25	2019/04/30	12
RS	143595	Power Head	Rohde & Schwarz	NAP-Z5	841835/ 012	2018/05/31	2019/05/31	12
RS	144325	BiLog Antenna	Teseq	CBL6141B	32458	-	-	-
RS	144689	Power Amplifier	PRANA	AP32MT225	1103-10 68	2018/11/28	2019/11/30	12
RS	143573	Power Meter	Rohde & Schwarz	NAP	842377/ 018	2018/05/31	2019/05/31	12
RS(GHz)	144670	Power Amplifier	OPHIR	5172(F)	1037	2018/03/25	2019/03/31	12
RS(GHz)	143569	Power Meter	Rohde & Schwarz	NRT	834787/ 029	2018/08/31	2019/08/31	12
RS(GHz)	143592	Power Sensor	Rohde & Schwarz	NRT-Z43	834023/ 017	2018/08/31	2019/08/31	12
RS(GHz)	143587	Power Meter	ANRITSU	ML2488B	1213008	2018/10/12	2019/10/31	12
RS(GHz)	143584	Power Sensor	ANRITSU	SC7816	1204066	2018/10/12	2019/10/31	12
RS(GHz)	143603	Power Sensor	ANRITSU	SC7816	1204067	2018/10/12	2019/10/31	12
RS(GHz)	144809	Double Ridged Horn	ETS LINDGREN	3115	001431 57	-	-	-
RS(GHz)	158635	Power Amplifier	R&K	GA252M602-4444R	B50343	2018/04/14	2019/04/30	12
EFT/B	143559	BURST Generator	NOISEKEN	FNS-AX3 A16A	FNS0890 757	2018/02/28	2019/02/28	12
EFT/B	143011	Coupling Clamp	NOISEKEN	15-00001A	none	2018/10/23	2019/10/31	12
CS	145444	Coupling Decoupling Network	FCC	TSCDN-C1-BNC75	9217	2018/11/12	2019/11/30	12
CS	143676	Signal Generator	Rohde & Schwarz	SMB100A	100770	2018/06/25	2019/06/30	12
CS	144658	Power Amplifier	KALMUS	R250LC	1/1/7475	2018/03/25	2019/03/31	12
CS	143574	Power Meter	Rohde & Schwarz	NRVD	101441	2018/12/17	2019/12/30	12
CS	143469	10V Insertion Unit	Rohde & Schwarz	URV5-Z2	100155	2018/12/17	2019/12/30	12
CS	143474	100V Insertion Unit	Rohde & Schwarz	URV5-Z4	100001	2018/12/17	2019/12/30	12
CS	142976	CDN	Luthi Electronik	M2/M3	645	2018/04/03	2019/04/30	12

CS	143183	CDN	MEB	M1	11121	2018/04/03	2019/04/30	12
CS	143014	CDN	Luthi Electronik	M2/M3	642	2018/04/03	2019/04/30	12
CS	142977	CDN	Luthi Electronik	M2/M3	647	2018/04/03	2019/04/30	12
CS	143414	EM clamp	Luthi Electronik	EM101	35292	2018/04/11	2019/04/30	12
CS	143735	Terminator	Pasternack	PE6187	none	2018/06/19	2019/06/30	12
CS	143738	Terminator	Pasternack	PE6187	none	2018/06/19	2019/06/30	12
CS	143193	Coupling decoupling network	TESEQ GmbH	CDN USB3.0	43271	2018/08/02	2019/08/31	12
CS	142975	CDN	Luthi Electronik	M2/M3	644	2018/04/03	2019/04/30	12
EMS	143665	Ruler	TAJIMA	L19-55	-	-	-	-
EMS	143536	Temperature & Humidity Indicator	A&D	AD-5681	6878024	2018/07/18	2019/07/31	12
EMS	144210	Digital Multimeter	Fluke Corporation	112	89790193	2018/10/01	2019/10/31	12
EMS	143126	Barometer	OTA	No.11	15409	2018/11/26	2021/11/30	36

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:
ESD: Electrostatic discharge
RS: Continuous RF electromagnetic field disturbnaces
EFT/B: Electrical fast transient burst
CS: Continuous induced RF disturbances

End of Report