RADIO TEST REPORT

Test Report No. 15364137M-A

Customer	**Yoshikawakogyo RF Semicon Co., Ltd.**
Description of EUT	**12ch RW**
Model Number of EUT	**YRQLSG55**
FCC ID	**2BK24YRQLSG55**
Test Regulation	**FCC Part 15 Subpart C**
Test Result	**Complied**
Issue Date	**September 24, 2024**
Remarks	**-**

Representative Test Engineer	Approved By
Kazuhiro Ando Engineer	Kenichi Suda Manager

CERTIFICATE 1266.01

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☒ There is no testing item of "Non-accreditation".

UL Japan, Inc. Kashima EMC Lab.
1614, Mushihata, Katori-shi, Chiba-ken, 289-0341 Japan / +81-478-88-6500

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REVISION HISTORY

Original Test Report No. 15364137M-A

Revision	Test Report No.	Date	Page Revised Contents
- (Original)	15364137M-A	September 24, 2024	-

Reference: Abbreviations (Including words undescribed in this report)

A2LA	The American Association for Laboratory Accreditation	ICES	Interference-Causing Equipment Standard
AC	Alternating Current	IEC	International Electrotechnical Commission
AFH	Adaptive Frequency Hopping	IEEE	Institute of Electrical and Electronics Engineers
AM	Amplitude Modulation	IF	Intermediate Frequency
Amp, AMP	Amplifier	ILAC	International Laboratory Accreditation Conference
ANSI	American National Standards Institute	ISED	Innovation, Science and Economic Development Canada
Ant, ANT	Antenna	ISO	International Organization for Standardization
AP	Access Point	JAB	Japan Accreditation Board
ASK	Amplitude Shift Keying	LAN	Local Area Network
Atten., ATT	Attenuator	LIMS	Laboratory Information Management System
AV	Average	MCS	Modulation and Coding Scheme
BPSK	Binary Phase-Shift Keying	MRA	Mutual Recognition Arrangement
BR	Bluetooth Basic Rate	N/A	Not Applicable
BT	Bluetooth	NIST	National Institute of Standards and Technology
BT LE	Bluetooth Low Energy	NS	No signal detect.
BW	BandWidth	NSA	Normalized Site Attenuation
Cal Int	Calibration Interval	NVLAP	National Voluntary Laboratory Accreditation Program
CCK	Complementary Code Keying	OBW	Occupied Band Width
Ch., CH	Channel	OFDM	Orthogonal Frequency Division Multiplexing
CISPR	Comite International Special des Perturbations Radioelectriques	P/M	Power meter
CW	Continuous Wave	PCB	Printed Circuit Board
DBPSK	Differential BPSK	PER	Packet Error Rate
DC	Direct Current	PHY	Physical Layer
D-factor	Distance factor	PK	Peak
DFS	Dynamic Frequency Selection	PN	Pseudo random Noise
DQPSK	Differential QPSK	PRBS	Pseudo-Random Bit Sequence
DSSS	Direct Sequence Spread Spectrum	PSD	Power Spectral Density
EDR	Enhanced Data Rate	QAM	Quadrature Amplitude Modulation
EIRP, e.i.r.p.	Equivalent Isotropically Radiated Power	QP	Quasi-Peak
EMC	ElectroMagnetic Compatibility	QPSK	Quadri-Phase Shift Keying
EMI	ElectroMagnetic Interference	RBW	Resolution Band Width
EN	European Norm	RDS	Radio Data System
ERP, e.r.p.	Effective Radiated Power	RE	Radio Equipment
EU	European Union	RF	Radio Frequency
EUT	Equipment Under Test	RMS	Root Mean Square
Fac.	Factor	RSS	Radio Standards Specifications
FCC	Federal Communications Commission	Rx	Receiving
FHSS	Frequency Hopping Spread Spectrum	SA, S/A	Spectrum Analyzer
FM	Frequency Modulation	SG	Signal Generator
Freq.	Frequency	SVSWR	Site-Voltage Standing Wave Ratio
FSK	Frequency Shift Keying	TR	Test Receiver
GFSK	Gaussian Frequency-Shift Keying	Tx	Transmitting
GNSS	Global Navigation Satellite System	VBW	Video BandWidth
GPS	Global Positioning System	Vert.	Vertical
Hori.	Horizontal	WLAN	Wireless LAN

CONTENTS PAGE

SECTION 1: Customer Information

Company Name	Yoshikawakogyo RF Semicon Co., Ltd.
Address	Shinjuku Kifu Bldg.8F, 7-2-4, Nishi-Shinjuku, Shinjuku-ku, Tokyo, 160-0023 Japan
Telephone Number	+81-3-6906-8861
Contact Person	Yuji Wakamiya

The information provided by the customer is as follows;
- Customer, Description of EUT, Model Number of EUT, FCC ID on the cover 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

SECTION 2: Equipment Under Test (EUT)

2.1 Identification of EUT

Description	12ch RW
Model Number	YRQLSG55
Serial Number	Refer to SECTION 4.2
Condition	Engineering prototype (Not for Sale: This sample is equivalent to mass-produced items.)
Modification	No Modification by the test lab
Receipt Date	July 22, 2024
Test Date	August 6 to September 11, 2024

2.2 Product Description

General Specification

Rating	DC 12 V ± 10 %
Operating Temperature	0 deg. C to 30 deg. C

Radio Specification

Equipment Type	Transceiver
Frequency of Operation	13.56 MHz
Type of Modulation	ASK

SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification	FCC Part 15 Subpart C The latest version on the first day of the testing period
Title	FCC 47CFR Part15 Radio Frequency Device Subpart C Intentional Radiators Section 15.207 Conducted limits Section 15.225 Operation within the band 13.110-14.010 MHz.

* The customer has declared that the EUT has complies with FCC Part 15 Subpart B as SDoC.

3.2 Procedures and results

Item	Test Procedure	Specification	Worst margin	Results	Remarks
Conducted Emission	<FCC> ANSI C63.10:2013 6 Standard test methods	<FCC> Section 15.207	1.0 dB, 27.12000 MHz, AV, N	Complied	-
	<ISED> RSS-Gen 8.8	<ISED> RSS-Gen 8.8			
Electric Field Strength of Fundamental Emission	<FCC> ANSI C63.10:2013 6 Standard test methods	<FCC> Section 15.225(a)	28.2 dB, 13.56000 MHz, QP, 180 deg.	Complied	Radiated
	<ISED> RSS-Gen 6.4, 6.12	<ISED> RSS-210 B.6			
Spectrum Mask	<FCC> ANSI C63.10:2013 6 Standard test methods	<FCC> Section 15.225(b)(c)	9.4 dB, 13.55300 MHz, QP, 180 deg.	Complied	Radiated
	<ISED> RSS-Gen 6.4, 6.13	<ISED> RSS-210 B.6			
20 dB Bandwidth	<FCC> ANSI C63.10:2013 6 Standard test methods	<FCC> Section15.215(c)	See data	Complied	Radiated
	<ISED> -	<ISED> -			
Electric Field Strength of Spurious Emission	<FCC> ANSI C63.10:2013 6 Standard test methods	<FCC> Section 15.209, Section 15.225 (d)	2.6 dB 813.600 MHz, Vertical, QP	Complied	Radiated
	<ISED> RSS-Gen 6.4, 6.13	<ISED> RSS-210 B.6 RSS-Gen 8.9			
Frequency Tolerance	<FCC> ANSI C63.10:2013 6 Standard test methods	<FCC> Section 15.225(e)	See data	Complied	Radiated
	<ISED> RSS-Gen 6.11, 8.11	<ISED> RSS-210 B.6			
Note: UL Japan, Inc.'s EMI Work Procedures: Work Instructions-ULID-003591 and Work Instructions-ULID-003593.					

FCC Part 15.31 (e)
The test was carried out with minimum and maximum rating of the product specification according to ANSI C63.10-2013, 5.13 b) because the rating range of the EUT is -10 % to +10 %.

FCC Part 15.203 Antenna requirement
The EUT has a unique coupling/antenna connector (Reverse SMA). Therefore the equipment complies with the requirement of 15.203.

3.3 Addition to standard

Item	Test Procedure	Specification	Worst margin	Results	Remarks
99% emission bandwidth	<ISED>RSS-Gen 6.7	-	N/A	-	Radiated
Note: UL Japan, Inc.'s EMI Work Procedures: Work Instructions-ULID-003591 and Work Instructions-ULID-003593.					

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

3.4 Uncertainty

Measurement uncertainty is not taken into account when stating conformity with a specified requirement.
Note: When margins obtained from test results are less than the measurement uncertainty, the test results may exceed the limit.

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

Conducted emission

Frequency range	Calculate Uncertainty (+/-)
0.15 MHz to 30 MHz	3.3 dB

Radiated emission

Measurement distance	Frequency range	Calculate Uncertainty (+/-)
3 m	9 kHz to 30 MHz	3.2 dB
	30 MHz to 200 MHz	6.2 dB
	200 MHz to 1000 MHz	6.3 dB
	1 GHz to 6 GHz	4.7 dB
	6 GHz to 18 GHz	5.1 dB
	18 GHz to 40 GHz	5.5 dB
1 m	1 GHz to 18 GHz	5.2 dB
	18 GHz to 40 GHz	5.6 dB
0.5m	26.5 GHz to 40 GHz	5.8 dB

Antenna Terminal test

Test Item	Calculate Uncertainty (+/-)
Frequency Tolerance	4.6 x 10^-8
20 dB Bandwidth / 99 % Occupied Bandwidth	1.2 %

3.5 Test Location

UL Japan, Inc. Kashima EMC Lab.
1614 Mushihata, Katori-shi, Chiba-ken, 289-0341 Japan
Telephone: +81-478-88-6500
A2LA Certificate Number: 1266.01 / FCC Test Firm Registration Number: 910230
ISED Lab Company Number: 4659A / CAB identifier: JP0006

Test site	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Maximum measurement distance
No.1 Open site	6.0 x 5.5 x 2.5	20 x 40	10 m
No.5 Open site	8.6 x 7.1 x 2.4	18 x 23	10 m
No.1 Shielded room	5.4 x 4.5 x 2.3	-	-
No.5 Shielded Room	4.2 x 3.1 x 2.5	-	-
No.9 Shielded Room	6.1 x 3.6 x 2.8	-	-
No.6 Semi-anechoic Chamber	8.5 x 5.5 x 5.2	-	3 m
No.10 Semi-anechoic Chamber	18.4 x 9.9 x 7.7	-	10 m
No.11 Semi-anechoic Chamber	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	-	-

3.6 Test data, Test instruments, and Test set up

Refer to APPENDIX.

SECTION 4: Operation of EUT during testing

4.1 Operating Mode(s)

The mode is used:

Test mode	Remarks
1) Transmitting mode (Tx) - with Tag (ISO 15693) - with Tag (ICODE ILT-M (ISO 18000-3M3)) - without Tag (ISO 15693) - without Tag (ICODE ILT-M (ISO 18000-3M3))	The EUT Transmits and Receives at the same time and there is no receiving mode.
The EUT was operated in a manner similar to typical use during the tests.	
*Power of the EUT was set by the software as follows; Software: SEGA Casino Evaluation App Version: 3.31 (Date: 2024.08 06, Storage location: Driven by connected PC) *This setting of software is the worst case. Any conditions under the normal use do not exceed the condition of setting. In addition, end users cannot change the settings of the output power of the product.	
Justification: The system was configured in typical fashion (as a user would normally use it) for testing.	

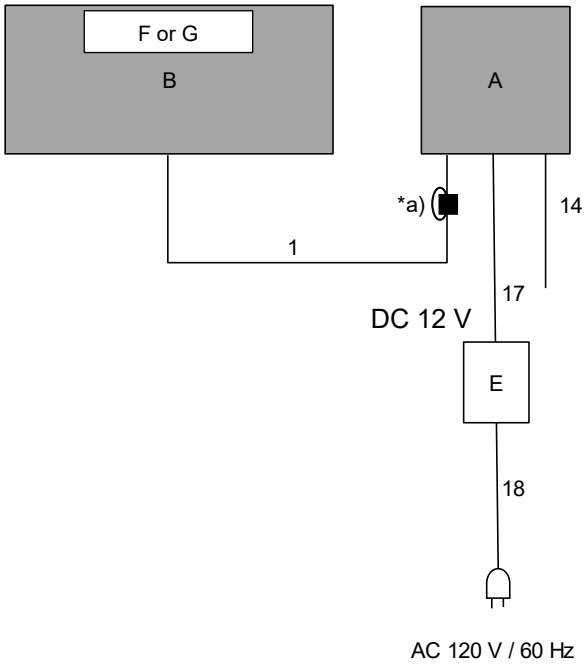
Test Item	Operating mode*
Conducted Emission	Tx Mod on, with Tag / without Tag
Electric Field Strength of Fundamental Emission	Tx Mod on, with Tag / without Tag
Spectrum Mask	Tx Mod on, with Tag / without Tag
20 dB Bandwidth and 99 % Occupied Bandwidth	Tx Mod on, with Tag / without Tag
Electric Field Strength of Spurious Emission	Tx Mod on, with Tag / without Tag
Frequency Tolerance	Tx Mod off, without Tag

* After the comparison between 1-12ch of the Player Antenna, the tests were performed with the worst case.

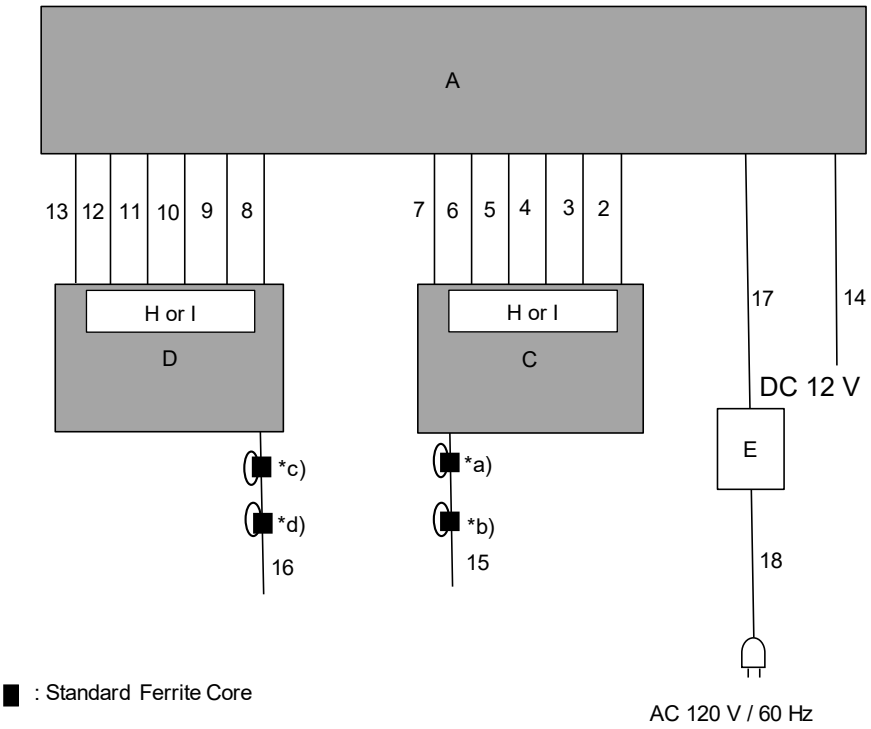
Frequency Tolerance	
Temperature	-20 deg. C to +50 deg. C Step 10 deg. C
Voltage	Normal Voltage DC 12 V Maximum Voltage DC 13.2 V (DC 12 V +10 %*1)) Minimum Voltage DC 10.8 V (DC 12 V -10 %*1))
*1) The specification of this EUT is DC 12 V -10 % to +10 %.	

4.2 Configuration and peripherals

Dealer Antenna

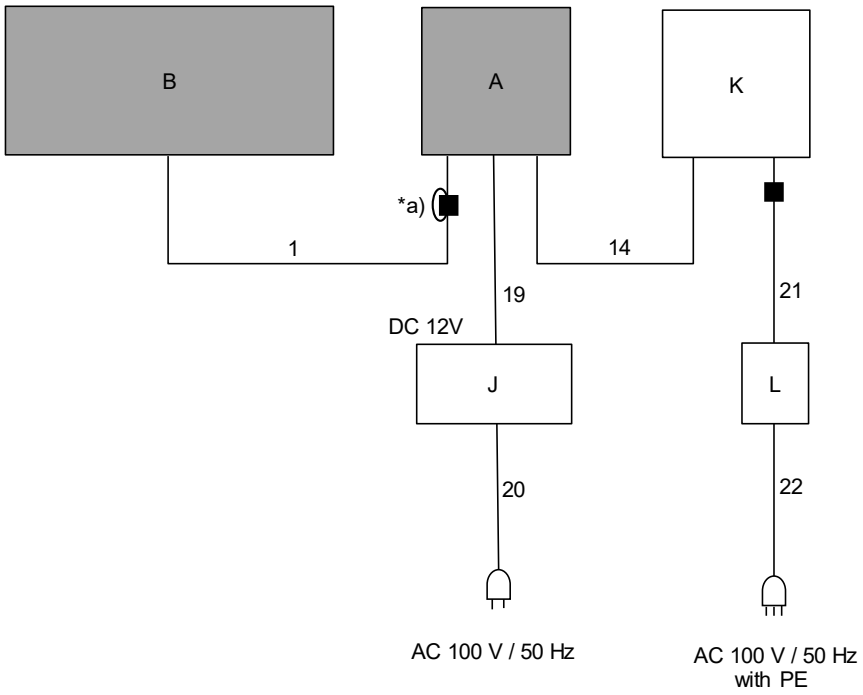


Player Antenna



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

Frequency Tolerance test only



■ : Standard Ferrite Core

Description of EUT and Support Equipment

No.	Item	Model number	Serial Number	Manufacturer	Remark
A	12ch RW	YRQLSG55	SN0331	Yoshikawakogyo RF Semicon Co., Ltd.	EUT
B	Dealer Antenna	-	-	Yoshikawakogyo RF Semicon Co., Ltd.	EUT
C	Player Antenna	-	-	Yoshikawakogyo RF Semicon Co., Ltd.	EUT
D	Player Antenna	-	-	Yoshikawakogyo RF Semicon Co., Ltd.	EUT
E	AC Adapter	AD-A120P500	2225	Xiamen UME Electronics Co.,Ltd.	-
F	Tag (ISO 15693)	YRS-ADT240001	-	Yoshikawakogyo RF Semicon Co., Ltd.	- 20 tags x 5
G	Tag (ICODE ILT-M)	NSS-01	-	NIHON CARD CREATION	- 20 tags x 5
H	Tag (ISO 15693)	YRS-ADT240001	-	Yoshikawakogyo RF Semicon Co., Ltd.	- 20 tags x 2 (Big Antenna) 15 tags x 2 (Small Antenna)
I	Tag (ICODE ILT-M)	NSS-01	-	NIHON CARD CREATION	- 20 tags x 2 (Big Antenna) 15 tags x 2 (Small Antenna)
J	DC Power Supply	GSV3000	1708192899	DIAMOND ANTENNA	-
K	Laptop PC	Vostro 3590	2474696559	Dell	-
L	AC Adapter	HA45NM140	CN-00285K-CH200-03H-0MGU-A07	Dell	-

List of Cables Used

No.	Name	Length (m)	Shield		Remark
			Cable	Connector	
1	Antenna Cable	1.7	Shielded	Shielded	-
2	1ch Antenna Cable	1.7	Shielded	Shielded	-
3	2ch Antenna Cable	1.7	Shielded	Shielded	-
4	3ch Antenna Cable	1.7	Shielded	Shielded	-
5	4ch Antenna Cable	1.7	Shielded	Shielded	-
6	5ch Antenna Cable	1.7	Shielded	Shielded	-
7	6ch Antenna Cable	1.7	Shielded	Shielded	-
8	7ch Antenna Cable	1.7	Shielded	Shielded	-
9	8ch Antenna Cable	1.7	Shielded	Shielded	-
10	9ch Antenna Cable	1.7	Shielded	Shielded	-
11	10ch Antenna Cable	1.7	Shielded	Shielded	-
12	11ch Antenna Cable	1.7	Shielded	Shielded	-
13	12ch Antenna Cable	1.7	Shielded	Shielded	-
14	LAN Cable	2.0	Shielded	Shielded	-
15	DC Cable	0.12	Unshielded	Unshielded	-
16	DC Cable	0.12	Unshielded	Unshielded	-
17	DC Cable	1.0	Unshielded	Unshielded	-
18	AC Cable	1.2	Unshielded	Unshielded	-
19	DC Cable	1.4	Unshielded	Unshielded	-
20	AC Cable	1.7	Unshielded	Unshielded	-
21	DC Cable	1.8	Unshielded	Unshielded	-
22	AC Cable	0.9	Unshielded	Unshielded	-

Notes for Ferrite core(s)

No.	Model number	Manufacturer	Turn(s)	Remarks
a	ZCAT2032-0930	TDK	3	-
b	ZCAT3035-1330	TDK	3	-
c	ZCAT3035-1330	TDK	3	-
d	ZCAT3035-1330	TDK	3	-
e	ZCAT3035-1330	TDK	3	-

SECTION 5: Conducted Emission

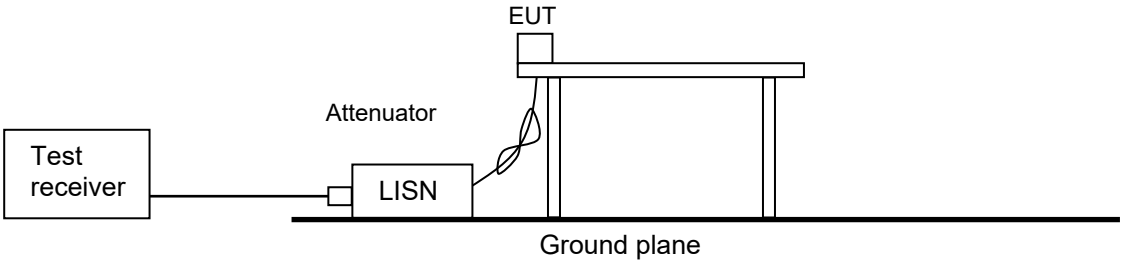
Test Procedure and conditions

EUT was placed on a wooden table of nominal size, 1.0 m by 2.0 m, raised 0.8 m above the conducting ground plane.
The rear of tabletop was located 40 cm to the vertical conducting plane. The rear of EUT, including peripherals aligned and flushed with rear of tabletop. All other surfaces of tabletop were at least 80 cm from any other grounded conducting surface. EUT was located 80 cm from a Line Impedance Stabilization Network (LISN)/ Artificial mains Network (AMN) and excess AC cable was bundled in center.

Each EUT current-carrying power lead, except the ground (safety) lead, was individually connected through a LISN / (AMN) to the input power source.

The AC Mains Terminal Continuous disturbance Voltage has been measured with the EUT in a Shielded room.
The EUT was connected to a LISN (AMN).
An overview sweep with peak detection has been performed.

Figure 1: Test Setup



The test results and limit are rounded off to one decimal place, so some differences might be observed.

Detector : QP and CISPR AV
Measurement range : 0.15 MHz to 30 MHz
Test data : APPENDIX
Test result : Pass

SECTION 6: Radiated Emission (Fundamental, Spurious Emission and Spectrum Mask)

Test Procedure

EUT was placed on a urethane platform of nominal size, 1.0 m by 1.5 m, raised 0.8 m above the conducting ground plane. The Radiated Electric Field Strength has been measured in a Semi Anechoic Chamber with a ground plane.

[Limit conversion]

The limits in CFR 47, Part 15, Subpart C, paragraph 15.209(a), are identical to those in RSS-Gen section 8.9, Table 6, since the measurements are performed in terms of magnetic field strength and converted to electric field strength levels (as reported in the table) using the free space impedance of 377 Ohmes. For example, the measurement at frequency 9 kHz resulted in a level of 45.5 dBuV/m, which is equivalent to 45.5 - 51.5 = -6.0 dBuA/m, which has the same margin, 3 dB, to the corresponding RSS-Gen Table 6 limit as it has to 15.209(a) limit.

[Frequency: From 9 kHz to 30 MHz]

The EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity.
The measurements were performed for vertical polarization (antenna angle: 0 deg., 45 deg., 90 deg., and 135 deg.) and horizontal polarization.
*Refer to Figure 3 about Direction of the Loop Antenna.

Although these tests were performed other than open field test site, adequate comparison measurements were confirmed against 30 m open field test site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 414788.

These tests were performed in semi anechoic chamber. Therefore the measured level of emissions may be higher than if measurements were made without a ground plane. However test results were confirmed to pass against standard limit.

[Frequency: From 30 MHz to 1 GHz]

The measuring antenna height varied between 1 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 instruments and test settings]

Frequency	Below 30 MHz	30 MHz to 1 GHz
Antenna Type	Loop	Hybrid

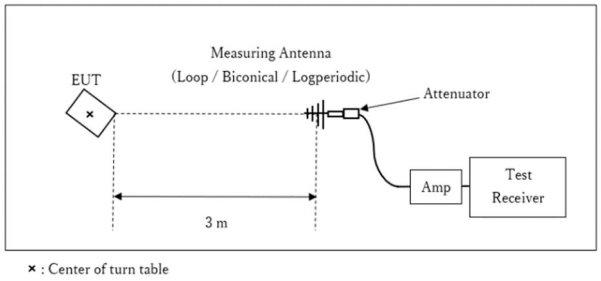
The test was made with the detector (RBW/VBW) in the following table.
When using Spectrum analyzer, the test was made with adjusting span to zero by using peak hold.

Frequency	From 9 kHz to 90 kHz and From 110 kHz to 150 kHz	From 90 kHz to 110 kHz	From 150 kHz to 490 kHz	From 490 kHz to 30 MHz	From 30 MHz to 1 GHz
Instrument used	Test Receiver				
Detector	PK / AV	QP	PK / AV	QP	QP
IF Bandwidth	200 Hz	200 Hz	9 kHz	9 kHz	120 kHz
Test Distance	3 m *1)	3 m *1)	3 m *1)	3 m *2)	3 m

*1) Distance Factor: 40 x log (3 m / 300 m) = -80 dB
*2) Distance Factor: 40 x log (3 m / 30 m) = -40 dB

Figure 2: Test Setup

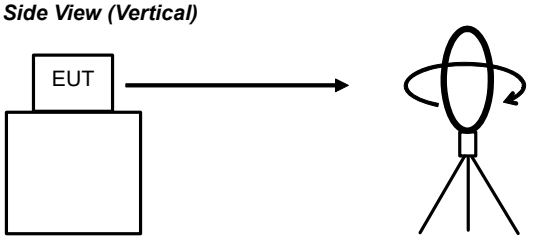
Below 1 GHz



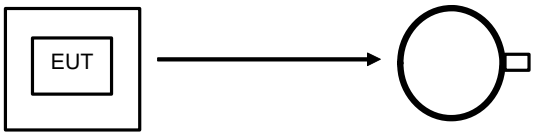
Test Distance: 3 m

Figure 3: Direction of the Loop Antenna

Side View (Vertical)

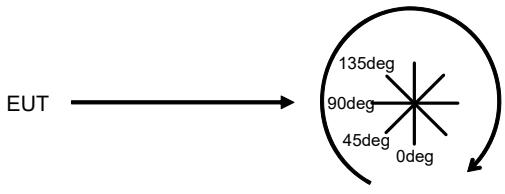


Top View (Horizontal)



Antenna was not rotated.

Top View (Vertical)



Front side: 0 deg.
Forward direction: clockwise

The test was made on EUT at the normal use position.

The test results and limit are rounded off to one decimal place, so some differences might be observed.

Measurement range : 9 kHz to 1 GHz
Test data : APPENDIX
Test result : Pass

SECTION 7: Other tests

Test	Span	RBW	VBW	Sweep	Detector	Trace	Instrument used
20 dB Bandwidth	10 kHz	1 kHz	3 kHz	Auto	Peak	Max Hold	Spectrum Analyzer
99 % Occupied Bandwidth	Enough width to display emission skirts	1 to 5 % of OBW	Three times of RBW	Auto	Peak *1)	Max Hold *1)	Spectrum Analyzer
Frequency Tolerance *2)	-	-	-	-	-	-	Frequency counter
*1) The measurement was performed with Max Hold since the duty cycle was not 100 %. Peak hold was applied as Worst-case measurement. *2) The temperature test was started after the temperature stabilization time of 30 minutes. The test was begun from 50 deg.C and the temperature was lowered each 10 deg.C.							

Test data : APPENDIX
Test result : Pass

APPENDIX 1: Test data

Conducted Emission

(Dealer Antenna, 1ch, ISO15693, without Tag)

DATA OF CONDUCTED EMISSION TEST

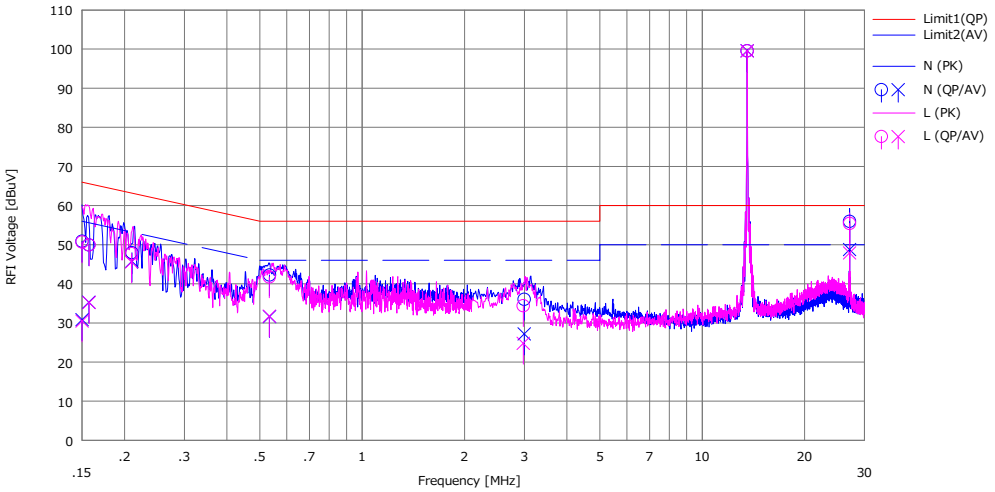
UL Japan, Inc. Kashima EMC Lab. No.5 Shielded Room
Date : 2024/08/26

Mode : 1ch ISO15693 without Tag
Order No. : 15364137
Power : DC 12 V (AC 120 V / 60 Hz)
Temp./Humi. : 22 deg.C. / 54 %RH

Remarks : -

Limit : FCC_Part 15 Subpart C(15.207)

Tested by : Hiromitsu Tanabe



No.	Freq.	Reading		C.Fac	Results		Limit		Margin		Phase	Comment
		〈QP〉	〈AV〉		〈QP〉	〈AV〉	〈QP〉	〈AV〉	〈QP〉	〈AV〉		
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	0.15000	40.69	20.67	10.18	50.87	30.85	66.00	56.00	15.1	25.1	N	
2	0.15702	39.76	25.12	10.18	49.94	35.30	65.62	55.62	15.6	20.3	N	
3	0.21027	37.77	35.58	10.19	47.96	45.77	63.19	53.19	15.2	7.4	N	
4	0.53401	32.03	21.38	10.24	42.27	31.62	56.00	46.00	13.7	14.3	N	
5	2.99575	25.55	16.69	10.48	36.03	27.17	56.00	46.00	19.9	18.8	N	
6	13.56000	88.28	88.28	11.28	99.56	99.56	60.00	50.00	-39.6	-49.6	N	Carrier
7	27.12000	43.69	36.49	12.28	55.97	48.77	60.00	50.00	4.0	1.2	N	
8	0.15000	40.48	20.28	10.19	50.67	30.47	66.00	56.00	15.3	25.5	L	
9	0.15745	39.72	25.03	10.19	49.91	35.22	65.60	55.60	15.6	20.3	L	
10	0.20985	37.52	35.39	10.20	47.72	45.59	63.21	53.21	15.4	7.6	L	
11	0.53301	31.51	21.46	10.25	41.76	31.71	56.00	46.00	14.2	14.2	L	
12	2.97750	23.89	14.28	10.50	34.39	24.78	56.00	46.00	21.6	21.2	L	
13	13.56000	88.16	88.16	11.37	99.53	99.53	60.00	50.00	-39.6	-49.6	L	Carrier
14	27.12000	43.24	35.70	12.19	55.43	47.89	60.00	50.00	4.5	2.1	L	

Calculation:Result[dBuV]=Reading[dBuV]+C.Fac(AMN+Cable+ATT)[dB]
AMN:143499

Conducted Emission

(Dealer Antenna, 1ch, ISO15693, with Tag)

DATA OF CONDUCTED EMISSION TEST

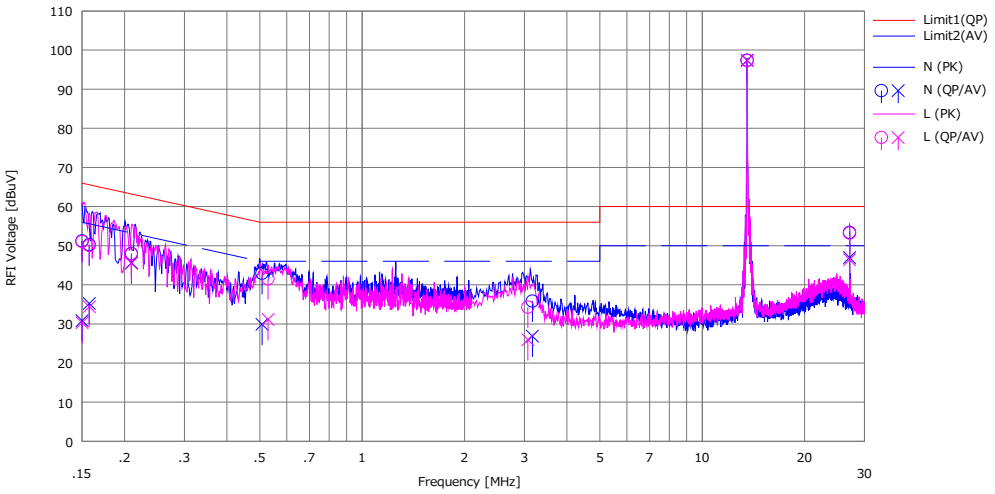
UL Japan, Inc. Kashima EMC Lab. No.5 Shielded Room
Date : 2024/08/26

Mode : 1ch ISO15693 with Tag
Order No. : 15364137
Power : DC 12 V (AC 120 V / 60 Hz)
Temp./Humi. : 22 deg.C. / 54 %RH

Remarks : -

Limit : FCC_Part 15 Subpart C(15.207)

Tested by : Hiromitsu Tanabe



No.	Freq.	Reading ⟨QP⟩	Reading ⟨AV⟩	C.Fac	Results ⟨QP⟩	Results ⟨AV⟩	Limit ⟨QP⟩	Limit ⟨AV⟩	Margin ⟨QP⟩	Margin ⟨AV⟩	Phase	Comment
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	0.15000	41.02	20.64	10.18	51.20	30.82	66.00	56.00	14.8	25.1	N	
2	0.15751	40.08	25.03	10.18	50.26	35.21	65.59	55.59	15.3	20.3	N	
3	0.20968	37.79	35.47	10.19	47.98	45.66	63.22	53.22	15.2	7.5	N	
4	0.50743	32.68	19.67	10.24	42.92	29.91	56.00	46.00	13.0	16.0	N	
5	3.16602	25.34	16.36	10.49	35.83	26.85	56.00	46.00	20.1	19.1	N	
6	13.56000	86.12	86.12	11.28	97.40	97.40	60.00	50.00	-37.4	-47.4	N	Carrier
7	27.12000	41.11	34.66	12.28	53.39	46.94	60.00	50.00	6.6	3.0	N	
8	0.15000	40.88	20.12	10.19	51.07	30.31	66.00	56.00	14.9	25.6	L	
9	0.15752	39.85	24.22	10.19	50.04	34.41	65.59	55.59	15.5	21.1	L	
10	0.20953	37.67	35.28	10.20	47.87	45.48	63.22	53.22	15.3	7.7	L	
11	0.52875	31.28	20.86	10.25	41.53	31.11	56.00	46.00	14.4	14.8	L	
12	3.07025	23.78	15.46	10.50	34.28	25.96	56.00	46.00	21.7	20.0	L	
13	13.56000	85.96	85.96	11.37	97.33	97.33	60.00	50.00	-37.4	-47.4	L	Carrier
14	27.12000	41.03	34.25	12.19	53.22	46.44	60.00	50.00	6.7	3.5	L	

Calculation:Result[dBuV]=Reading[dBuV]+C.Fac(AMN+Cable+ATT)[dB]
AMN:143499

Conducted Emission

(Dealer Antenna, 1ch, ISO15693, Antenna Terminated)

DATA OF CONDUCTED EMISSION TEST

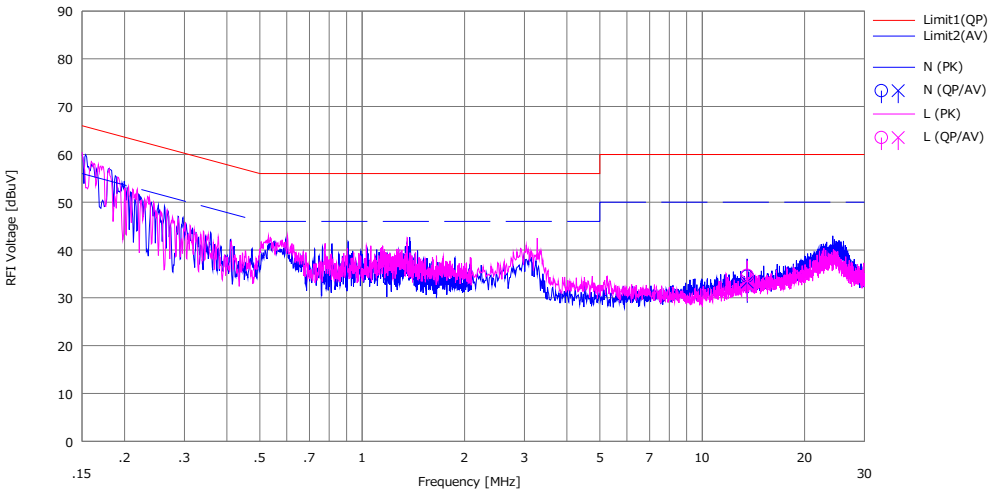
UL Japan, Inc. Kashima EMC Lab. No.5 Shielded Room
Date : 2024/09/05

Mode : 1ch ISO15693
Order No. : 15364137
Power : DC 12 V (AC 120 V / 60 Hz)
Temp./Humi. : 22 deg.C. / 53 %RH

Remarks : Antenna Terminated

Limit : FCC_Part 15 Subpart C(15.207)

Tested by : Hiromitsu Tanabe



No.	Freq.	Reading		C.Fac	Results		Limit		Margin		Phase	Comment
		〈QP〉	〈AV〉		〈QP〉	〈AV〉	〈QP〉	〈AV〉	〈QP〉	〈AV〉		
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	13.56000	23.26	22.01	11.28	34.54	33.29	60.00	50.00	25.4	16.7	N	
2	13.56000	23.34	22.34	11.37	34.71	33.71	60.00	50.00	25.2	16.2	L	

Calculation:Result[dBuV]=Reading[dBuV]+C.Fac(AMN+Cable+Att)[dB]
AMN:143499

Conducted Emission

(Dealer Antenna, 1ch, ICODE ILT-M, without Tag)

DATA OF CONDUCTED EMISSION TEST

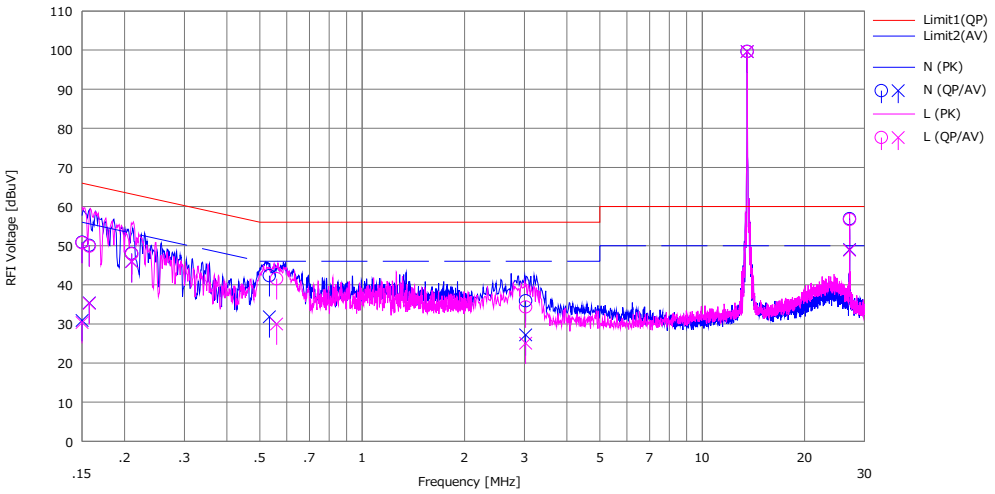
UL Japan, Inc. Kashima EMC Lab. No.5 Shielded Room
Date : 2024/08/26

Mode : 1ch ICODE ILT-M without Tag
Order No. : 15364137
Power : DC 12 V (AC 120 V / 60 Hz)
Temp./Humi. : 22 deg.C. / 54 %RH

Remarks : -

Limit : FCC_Part 15 Subpart C(15.207)

Tested by : Hiromitsu Tanabe



No.	Freq.	Reading ⟨QP⟩	Reading ⟨AV⟩	C.Fac	Results ⟨QP⟩	Results ⟨AV⟩	Limit ⟨QP⟩	Limit ⟨AV⟩	Margin ⟨QP⟩	Margin ⟨AV⟩	Phase	Comment
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	0.15000	40.69	20.68	10.18	50.87	30.86	66.00	56.00	15.1	25.1	N	
2	0.15750	39.89	25.18	10.18	50.07	35.36	65.59	55.59	15.5	20.2	N	
3	0.20981	37.83	35.75	10.19	48.02	45.94	63.21	53.21	15.1	7.2	N	
4	0.53371	32.11	21.59	10.24	42.35	31.83	56.00	46.00	13.6	14.1	N	
5	3.02410	25.42	16.72	10.48	35.90	27.20	56.00	46.00	20.1	18.8	N	
6	13.56000	88.39	88.36	11.28	99.67	99.64	60.00	50.00	-39.7	-49.7	N	Carrier
7	27.12000	44.62	36.72	12.28	56.90	49.00	60.00	50.00	3.1	1.0	N	
8	0.15000	40.58	20.15	10.19	50.77	30.34	66.00	56.00	15.2	25.6	L	
9	0.15759	39.67	25.07	10.19	49.86	35.26	65.59	55.59	15.7	20.3	L	
10	0.21005	37.71	35.67	10.20	47.91	45.87	63.20	53.20	15.2	7.3	L	
11	0.56010	31.28	19.70	10.27	41.55	29.97	56.00	46.00	14.4	16.0	L	
12	3.02452	23.82	14.58	10.50	34.32	25.08	56.00	46.00	21.6	20.9	L	
13	13.56000	88.28	88.28	11.37	99.65	99.65	60.00	50.00	-39.7	-49.7	L	Carrier
14	27.12000	44.49	36.66	12.19	56.68	48.85	60.00	50.00	3.3	1.1	L	

Calculation:Result[dBuV]=Reading[dBuV]+C.Fac(AMN+Cable+ATT)[dB]
AMN:143499

Conducted Emission

(Dealer Antenna, 1ch, ICODE ILT-M, with Tag)

DATA OF CONDUCTED EMISSION TEST

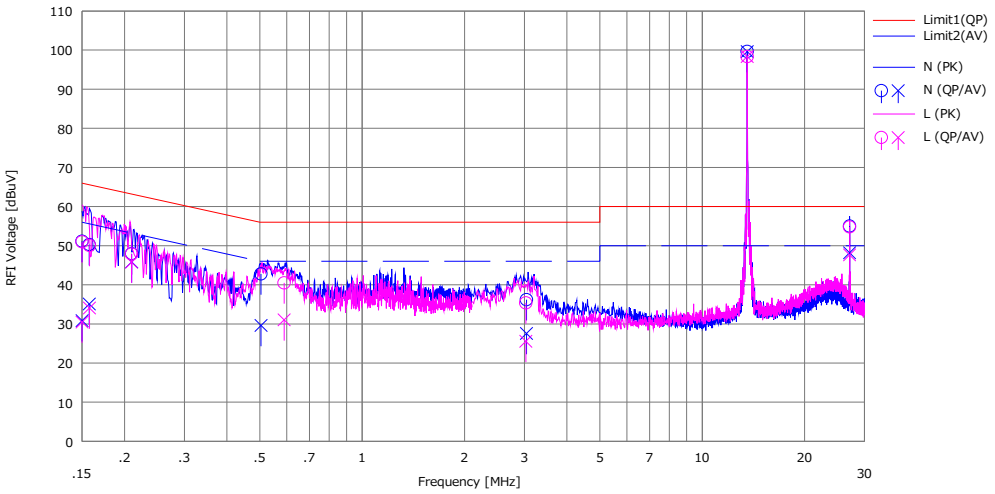
UL Japan, Inc. Kashima EMC Lab. No.5 Shielded Room
Date : 2024/08/26

Mode : 1ch ICODE ILT-M with Tag
Order No. : 15364137
Power : DC 12 V (AC 120 V / 60 Hz)
Temp./Humi. : 22 deg.C. / 54 %RH

Remarks : -

Limit : FCC_Part 15 Subpart C(15.207)

Tested by : Hiromitsu Tanabe



No.	Freq.	Reading ⟨QP⟩	Reading ⟨AV⟩	C.Fac	Results ⟨QP⟩	Results ⟨AV⟩	Limit ⟨QP⟩	Limit ⟨AV⟩	Margin ⟨QP⟩	Margin ⟨AV⟩	Phase	Comment
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	0.15000	40.97	20.66	10.18	51.15	30.84	66.00	56.00	14.8	25.1	N	
2	0.15749	40.12	24.93	10.18	50.30	35.11	65.60	55.60	15.3	20.4	N	
3	0.20989	37.76	35.66	10.19	47.95	45.85	63.21	53.21	15.2	7.3	N	
4	0.50410	32.56	19.38	10.24	42.80	29.62	56.00	46.00	13.2	16.3	N	
5	3.04125	25.70	17.08	10.48	36.18	27.56	56.00	46.00	19.8	18.4	N	
6	13.56000	88.39	88.36	11.28	99.67	99.64	60.00	50.00	-39.7	-49.7	N	Carrier
7	27.12000	42.71	35.90	12.28	54.99	48.18	60.00	50.00	5.0	1.8	N	
8	0.15000	40.79	20.29	10.19	50.98	30.48	66.00	56.00	15.0	25.5	L	
9	0.15769	39.86	23.87	10.19	50.05	34.06	65.58	55.58	15.5	21.5	L	
10	0.20985	37.68	35.56	10.20	47.88	45.76	63.21	53.21	15.3	7.4	L	
11	0.58975	30.21	20.79	10.27	40.48	31.06	56.00	46.00	15.5	14.9	L	
12	3.02940	24.87	15.05	10.50	35.37	25.55	56.00	46.00	20.6	20.4	L	
13	13.56000	86.97	86.97	11.37	98.34	98.34	60.00	50.00	-38.4	-48.4	L	Carrier
14	27.12000	42.59	35.46	12.19	54.78	47.65	60.00	50.00	5.2	2.3	L	

Calculation:Result[dBuV]=Reading[dBuV]+C.Fac(AMN+Cable+ATT)[dB]
AMN:143499

Conducted Emission

(Dealer Antenna, 1ch, ICODE ILT-M, Antenna Terminated)

DATA OF CONDUCTED EMISSION TEST

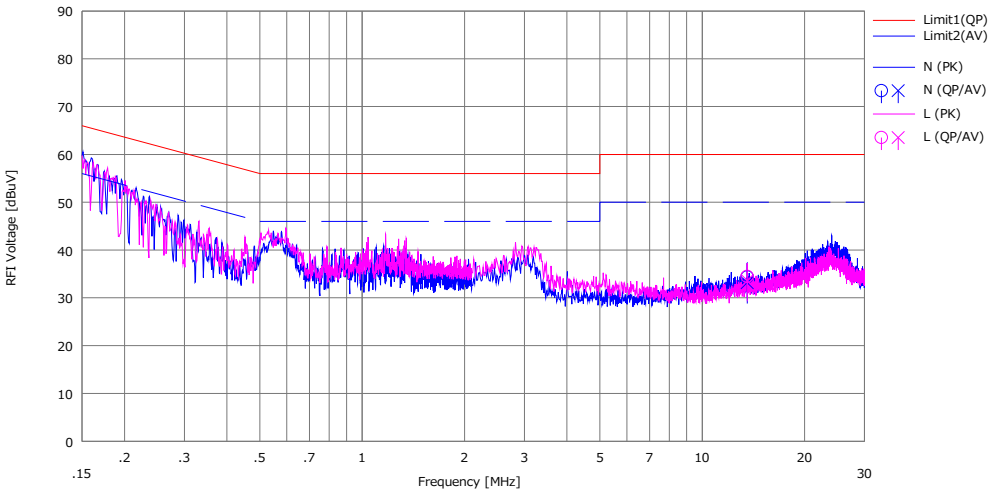
UL Japan, Inc. Kashima EMC Lab. No.5 Shielded Room
Date : 2024/09/05

Mode : 1ch ICODE ILT-M
Order No. : 15364137
Power : DC 12 V (AC 120 V / 60 Hz)
Temp./Humi. : 22 deg.C. / 53 %RH

Remarks : Antenna Terminated

Limit : FCC_Part 15 Subpart C(15.207)

Tested by : Hiromitsu Tanabe



No.	Freq.	Reading		C.Fac	Results		Limit		Margin		Phase	Comment
		〈QP〉	〈AV〉		〈QP〉	〈AV〉	〈QP〉	〈AV〉	〈QP〉	〈AV〉		
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	13.56000	23.07	21.89	11.28	34.35	33.17	60.00	50.00	25.6	16.8	N	
2	13.56000	23.09	22.27	11.37	34.46	33.64	60.00	50.00	25.5	16.3	L	

Calculation:Result[dBuV]=Reading[dBuV]+C.Fac(AMN+Cable+Att)[dB]
AMN:143499

Conducted Emission

(Player Antenna, 7ch, ISO15693, without Tag)

DATA OF CONDUCTED EMISSION TEST

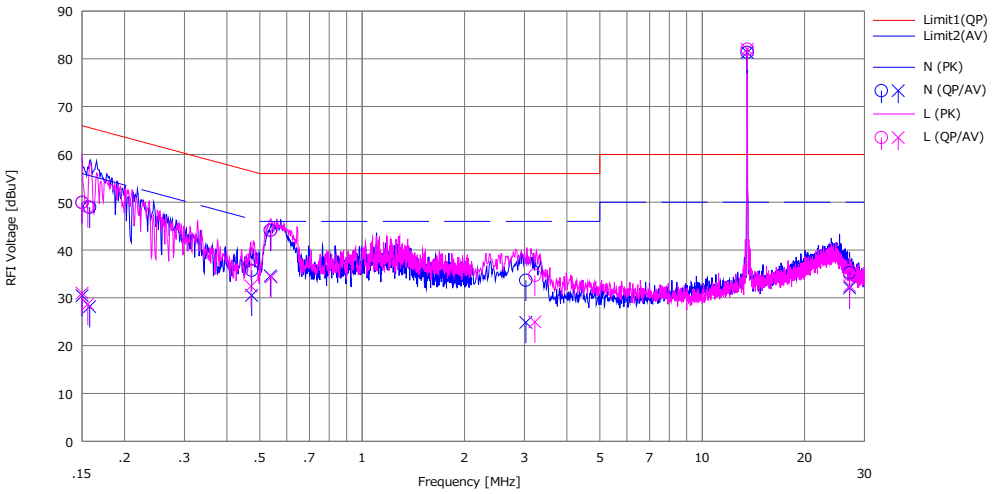
UL Japan, Inc. Kashima EMC Lab. No.5 Shielded Room
Date : 2024/09/05

Mode : 7ch ISO15693 without Tag mode
Order No. : 15364137
Power : DC 12 V (AC 120 V / 60 Hz)
Temp./Humi. : 22 deg.C. / 53 %RH

Remarks : -

Limit : FCC_Part 15 Subpart C(15.207)

Tested by : Hiromitsu Tanabe



No.	Freq.	Reading		C.Fac	Results		Limit		Margin		Phase	Comment
		〈QP〉	〈AV〉		〈QP〉	〈AV〉	〈QP〉	〈AV〉	〈QP〉	〈AV〉		
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	0.15000	39.76	20.27	10.18	49.94	30.45	66.00	56.00	16.0	25.5	N	
2	0.15798	38.77	17.99	10.18	48.95	28.17	65.57	55.57	16.6	27.4	N	
3	0.47310	25.51	20.26	10.24	35.75	30.50	56.46	46.46	20.7	15.9	N	
4	0.53682	33.89	24.38	10.24	44.13	34.62	56.00	46.00	11.8	11.3	N	
5	3.02975	23.20	14.39	10.48	33.68	24.87	56.00	46.00	22.3	21.1	N	
6	13.56000	70.06	70.05	11.28	81.34	81.33	60.00	50.00	-21.4	-31.4	N	Carrier
7	27.12000	22.98	19.82	12.28	35.26	32.10	60.00	50.00	24.7	17.9	N	
8	0.15000	39.77	20.80	10.19	49.96	30.99	66.00	56.00	16.0	25.0	L	
9	0.15595	38.88	18.48	10.19	49.07	28.67	65.68	55.68	16.6	27.0	L	
10	0.47095	27.72	22.21	10.25	37.97	32.46	56.50	46.50	18.5	14.0	L	
11	0.53955	33.96	24.09	10.25	44.21	34.34	56.00	46.00	11.7	11.6	L	
12	3.22080	24.19	14.46	10.52	34.71	24.98	56.00	46.00	21.2	21.0	L	
13	13.56000	70.63	70.61	11.37	82.00	81.98	60.00	50.00	-22.0	-32.0	L	Carrier
14	27.12000	22.70	20.30	12.19	34.89	32.49	60.00	50.00	25.1	17.5	L	

Calculation:Result[dBuV]=Reading[dBuV]+C.Fac(AMN+Cable+Att)[dB]
AMN:143499

Conducted Emission

(Player Antenna, 7ch, ISO15693, with Tag)

DATA OF CONDUCTED EMISSION TEST

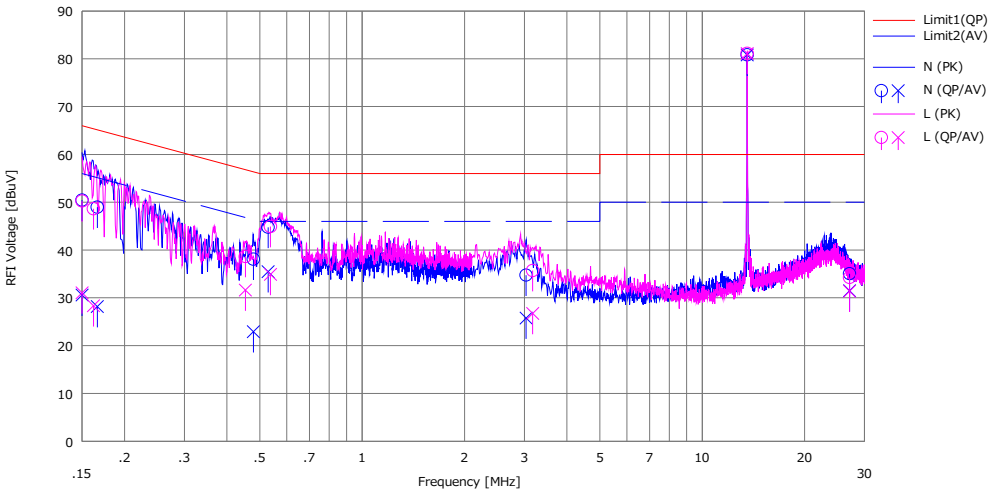
UL Japan, Inc. Kashima EMC Lab. No.5 Shielded Room
Date : 2024/09/05

Mode : 7ch ISO15693 with Tag mode
Order No. : 15364137
Power : DC 12 V (AC 120 V / 60 Hz)
Temp./Humi. : 22 deg.C. / 53 %RH

Remarks : -

Limit : FCC_Part 15 Subpart C(15.207)

Tested by : Hiromitsu Tanabe



No.	Freq.	Reading ⟨QP⟩	Reading ⟨AV⟩	C.Fac	Results ⟨QP⟩	Results ⟨AV⟩	Limit ⟨QP⟩	Limit ⟨AV⟩	Margin ⟨QP⟩	Margin ⟨AV⟩	Phase	Comment
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	0.15000	40.26	20.38	10.18	50.44	30.56	66.00	56.00	15.5	25.4	N	
2	0.16645	38.77	17.99	10.19	48.96	28.18	65.14	55.14	16.1	26.9	N	
3	0.47875	27.84	12.70	10.24	38.08	22.94	56.36	46.36	18.2	23.4	N	
4	0.52905	34.53	25.24	10.24	44.77	35.48	56.00	46.00	11.2	10.5	N	
5	3.03425	24.27	15.28	10.48	34.75	25.76	56.00	46.00	21.2	20.2	N	
6	13.56000	69.54	69.52	11.28	80.82	80.80	60.00	50.00	-20.9	-30.8	N	Carrier
7	27.12000	22.78	19.22	12.28	35.06	31.50	60.00	50.00	24.9	18.5	N	
8	0.15000	40.06	20.87	10.19	50.25	31.06	66.00	56.00	15.7	24.9	L	
9	0.16207	38.44	18.15	10.20	48.64	28.35	65.36	55.36	16.7	27.0	L	
10	0.45342	28.40	21.39	10.25	38.65	31.64	56.81	46.81	18.1	15.1	L	
11	0.53745	34.67	24.66	10.25	44.92	34.91	56.00	46.00	11.0	11.0	L	
12	3.17175	25.18	16.22	10.52	35.70	26.74	56.00	46.00	20.3	19.2	L	
13	13.56000	69.75	69.73	11.37	81.12	81.10	60.00	50.00	-21.2	-31.1	L	Carrier
14	27.12000	22.06	19.19	12.19	34.25	31.38	60.00	50.00	25.7	18.6	L	

Calculation:Result[dBuV]=Reading[dBuV]+C.Fac(AMN+Cable+Att)[dB]
AMN:143499

Conducted Emission

(Player Antenna, 7ch, ISO15693, Antenna Terminated)

DATA OF CONDUCTED EMISSION TEST

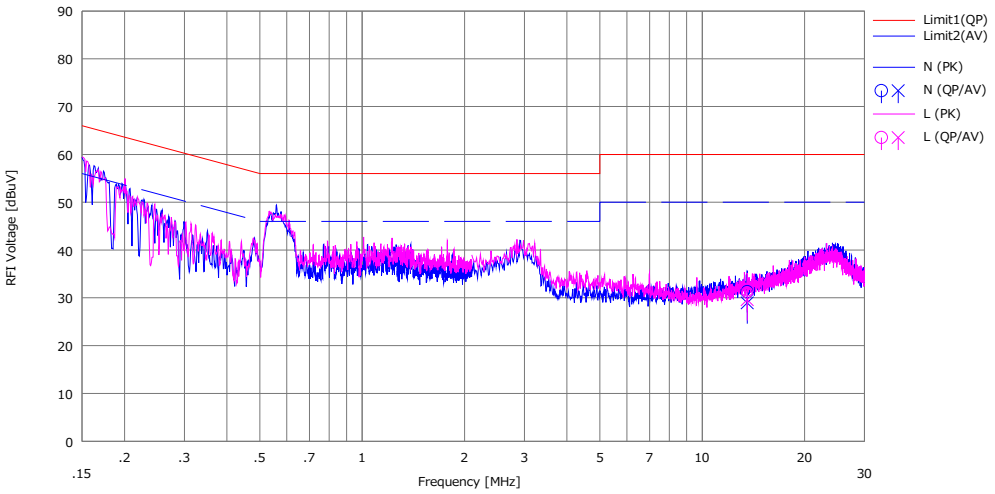
UL Japan, Inc. Kashima EMC Lab. No.5 Shielded Room
Date : 2024/09/05

Mode : 7ch ISO15693
Order No. : 15364137
Power : DC 12 V (AC 120 V / 60 Hz)
Temp./Humi. : 22 deg.C. / 53 %RH

Remarks : Antenna Terminated

Limit : FCC_Part 15 Subpart C(15.207)

Tested by : Hiromitsu Tanabe



No.	Freq.	Reading ⟨QP⟩	Reading ⟨AV⟩	C.Fac	Results ⟨QP⟩	Results ⟨AV⟩	Limit ⟨QP⟩	Limit ⟨AV⟩	Margin ⟨QP⟩	Margin ⟨AV⟩	Phase	Comment
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	13.56000	20.00	17.66	11.28	31.28	28.94	60.00	50.00	28.7	21.0	N	
2	13.56000	20.29	18.25	11.37	31.66	29.62	60.00	50.00	28.3	20.3	L	

Calculation:Result[dBuV]=Reading[dBuV]+C.Fac(AMN+Cable+Att)[dB]
AMN:143499

Conducted Emission

(Player Antenna, 7ch, ICODE ILT-M, without Tag)

DATA OF CONDUCTED EMISSION TEST

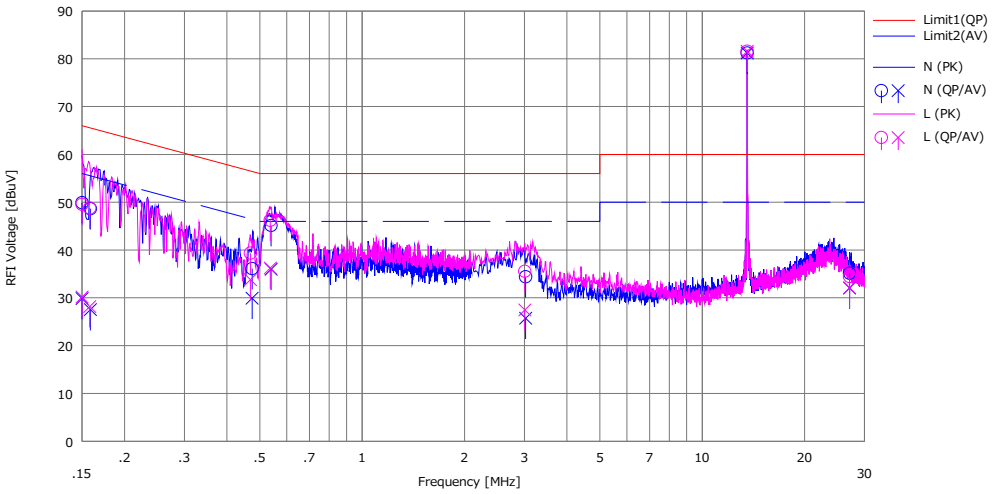
UL Japan, Inc. Kashima EMC Lab. No.5 Shielded Room
Date : 2024/09/05

Mode : 7ch ICODE ILT-M without Tag mode
Order No. : 15364137
Power : DC 12 V (AC 120 V / 60 Hz)
Temp./Humi. : 22 deg.C. / 53 %RH

Remarks : -

Limit : FCC_Part 15 Subpart C(15.207)

Tested by : Hiromitsu Tanabe



No.	Freq.	Reading ⟨QP⟩	Reading ⟨AV⟩	C.Fac	Results ⟨QP⟩	Results ⟨AV⟩	Limit ⟨QP⟩	Limit ⟨AV⟩	Margin ⟨QP⟩	Margin ⟨AV⟩	Phase	Comment
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	0.15000	39.72	19.67	10.18	49.90	29.85	66.00	56.00	16.1	26.1	N	
2	0.15875	38.46	17.36	10.18	48.64	27.54	65.53	55.53	16.8	27.9	N	
3	0.47462	25.86	19.67	10.24	36.10	29.91	56.43	46.43	20.3	16.5	N	
4	0.53982	34.90	25.72	10.24	45.14	35.96	56.00	46.00	10.8	10.0	N	
5	3.02512	23.92	15.23	10.48	34.40	25.71	56.00	46.00	21.6	20.2	N	
6	13.56000	69.94	69.93	11.28	81.22	81.21	60.00	50.00	-21.3	-31.3	N	Carrier
7	27.12000	22.87	19.76	12.28	35.15	32.04	60.00	50.00	24.8	17.9	N	
8	0.15000	39.35	20.02	10.19	49.54	30.21	66.00	56.00	16.4	25.7	L	
9	0.15805	38.57	17.98	10.19	48.76	28.17	65.57	55.57	16.8	27.4	L	
10	0.46925	29.09	23.56	10.25	39.34	33.81	56.53	46.53	17.1	12.7	L	
11	0.53665	35.96	25.98	10.25	46.21	36.23	56.00	46.00	9.7	9.7	L	
12	3.00850	25.06	16.97	10.50	35.56	27.47	56.00	46.00	20.4	18.5	L	
13	13.56000	70.22	70.22	11.37	81.59	81.59	60.00	50.00	-21.6	-31.6	L	Carrier
14	27.12000	22.27	19.86	12.19	34.46	32.05	60.00	50.00	25.5	17.9	L	

Calculation:Result[dBuV]=Reading[dBuV]+C.Fac(AMN+Cable+Att)[dB]
AMN:143499

Conducted Emission

(Player Antenna, 7ch, ICODE ILT-M, with Tag)

DATA OF CONDUCTED EMISSION TEST

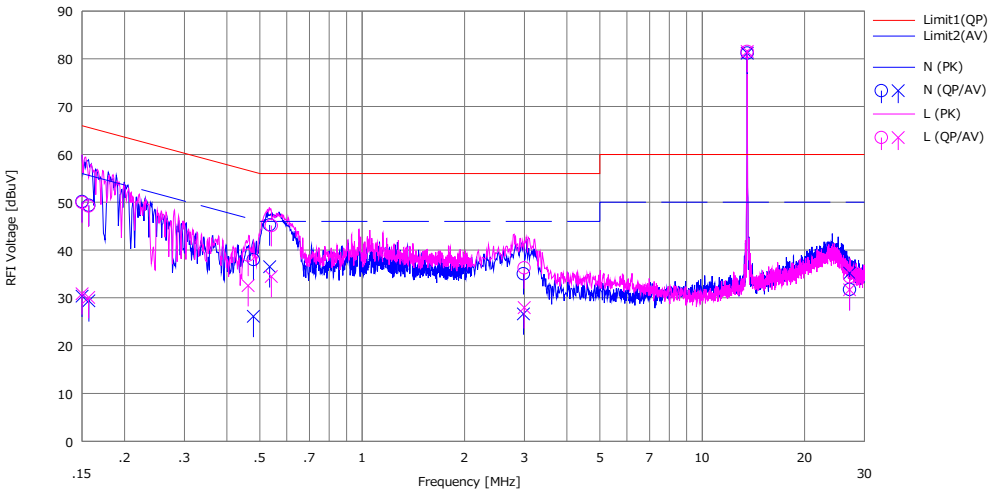
UL Japan, Inc. Kashima EMC Lab. No.5 Shielded Room
Date : 2024/09/05

Mode : 7ch ICODE ILT-M with Tag mode
Order No. : 15364137
Power : DC 12 V (AC 120 V / 60 Hz)
Temp./Humi. : 22 deg.C. / 53 %RH

Remarks : -

Limit : FCC_Part 15 Subpart C(15.207)

Tested by : Hiromitsu Tanabe



No.	Freq.	Reading ⟨QP⟩	Reading ⟨AV⟩	C.Fac	Results ⟨QP⟩	Results ⟨AV⟩	Limit ⟨QP⟩	Limit ⟨AV⟩	Margin ⟨QP⟩	Margin ⟨AV⟩	Phase	Comment
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	0.15000	39.95	20.17	10.18	50.13	30.35	66.00	56.00	15.8	25.6	N	
2	0.15702	39.18	19.22	10.18	49.36	29.40	65.62	55.62	16.2	26.2	N	
3	0.47887	27.75	15.88	10.24	37.99	26.12	56.36	46.36	18.3	20.2	N	
4	0.53452	35.02	26.27	10.24	45.26	36.51	56.00	46.00	10.7	9.4	N	
5	2.97875	24.56	16.16	10.48	35.04	26.64	56.00	46.00	20.9	19.3	N	
6	13.56000	69.91	69.90	11.28	81.19	81.18	60.00	50.00	-21.2	-31.2	N	Carrier
7	27.12000	19.46	22.88	12.28	31.74	35.16	60.00	50.00	28.2	14.8	N	
8	0.15000	39.77	20.66	10.19	49.96	30.85	66.00	56.00	16.0	25.1	L	
9	0.15682	38.98	19.89	10.19	49.17	30.08	65.63	55.63	16.4	25.5	L	
10	0.46207	28.66	22.31	10.25	38.91	32.56	56.66	46.66	17.7	14.1	L	
11	0.54065	34.85	24.22	10.25	45.10	34.47	56.00	46.00	10.9	11.5	L	
12	2.99401	25.77	17.45	10.50	36.27	27.95	56.00	46.00	19.7	18.0	L	
13	13.56000	70.18	70.17	11.37	81.55	81.54	60.00	50.00	-21.6	-31.6	L	Carrier
14	27.12000	22.18	19.50	12.19	34.37	31.69	60.00	50.00	25.6	18.3	L	

Calculation:Result[dBuV]=Reading[dBuV]+C.Fac(AMN+Cable+Att)[dB]
AMN:143499

Conducted Emission

(Player Antenna, 7ch, ICODE ILT-M, Antenna Terminated)

DATA OF CONDUCTED EMISSION TEST

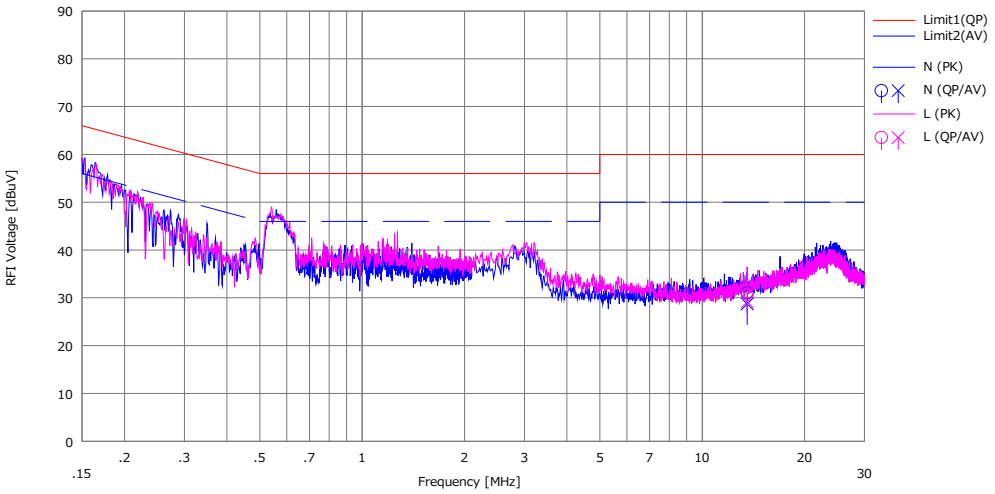
UL Japan, Inc. Kashima EMC Lab. No.5 Shielded Room
Date : 2024/09/05

Mode : 7ch ICODE ILT-M
Order No. : 15364137
Power : DC 12 V (AC 120 V / 60 Hz)
Temp./Humi. : 22 deg.C. / 53 %RH

Remarks : Antenna Terminated

Limit : FCC_Part 15 Subpart C(15.207)

Tested by : Hiromitsu Tanabe



No.	Freq.	Reading		C.Fac	Results		Limit		Margin		Phase	Comment
		〈QP〉	〈AV〉		〈QP〉	〈AV〉	〈QP〉	〈AV〉	〈QP〉	〈AV〉		
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	13.56000	19.78	17.41	11.28	31.06	28.69	60.00	50.00	28.9	21.3	N	
2	13.56000	19.85	17.78	11.37	31.22	29.15	60.00	50.00	28.7	20.8	L	

Calculation:Result[dBuV]=Reading[dBuV]+C.Fac(AMN+Cable+Att)[dB]
AMN:143499

Fundamental Emission and Spectrum Mask

(Dealer Antenna, 1ch, ISO15693, without Tag)

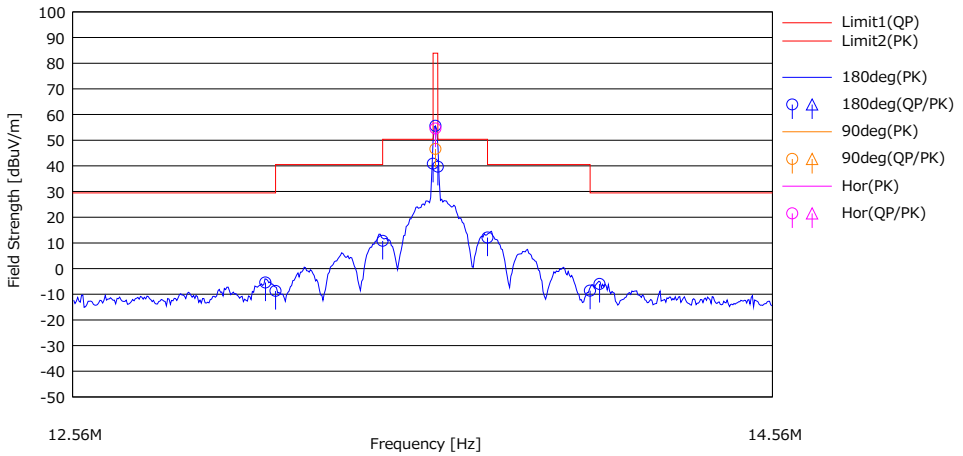
DATA OF RADIATED EMISSION(below 30MHz) TEST

UL Japan, Inc. Kashima EMC Lab. No.10 Semi-Anechoic Chamber
Date : 2024/08/06

Mode : 1ch ISO15693 without Tag
Order No. : 15364137
Power : DC 12 V
Temp./Humi. : 23 deg.C. / 57 %RH

Remarks : -

Limit : FCC15.225,PK/AV/QP,9-90 kHz:PK/AV,110-490 kHz:PK/AV,other:QP(<490 kHz:300 m,>490 kHz:30 m)
Tested by : Kazuhiro Ando



No.	Freq.	Reading		Ant.Fac	Loss	Gain	Result		Limit		Margin		Antenna	Table	Comment
		(QP)	(PK)				(QP)	(PK)	(QP)	(PK)	(QP)	(PK)			
	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]		[deg]	
1	13.08200	32.60	---	19.19	-33.02	24.21	-5.44	---	29.50	---	34.9	---	180deg	61	
2	13.11000	29.30	---	19.19	-33.02	24.21	-8.74	---	29.50	---	38.2	---	180deg	61	
3	13.41000	48.80	---	19.20	-33.01	24.22	10.77	---	40.50	---	29.7	---	180deg	61	
4	13.55300	78.90	---	19.20	-33.00	24.23	40.87	---	50.40	---	9.5	---	180deg	61	
5	13.56000	93.60	---	19.20	-33.00	24.23	55.57	---	83.90	---	28.3	---	180deg	61	
6	13.56700	77.70	---	19.20	-33.00	24.23	39.67	---	50.40	---	10.7	---	180deg	61	
7	13.71000	50.10	---	19.20	-33.00	24.23	12.07	---	40.50	---	28.4	---	180deg	61	
8	14.01000	29.40	---	19.21	-32.98	24.25	-8.62	---	29.50	---	38.1	---	180deg	61	
9	14.03800	32.00	---	19.21	-32.98	24.25	-6.02	---	29.50	---	35.5	---	180deg	61	
10	13.56000	84.60	---	19.20	-33.00	24.23	46.57	---	83.90	---	37.3	---	90deg	58	
11	13.56000	92.60	---	19.20	-33.00	24.23	54.57	---	83.90	---	29.3	---	Hor	75	

Calculation:Result[dBuV/m]=Reading[dBuV]+Ant.Fac[dB/m]+Loss(Cable+ATT+D.Fac)[dB]-Gain(AMP)[dB]
Ant.Type=LOOP:Loop antenna

Result of the fundamental Emission at 3 m without Distance factor

QP

Ant Deg [deg]	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
180	13.56000	QP	93.60	19.20	7.00	24.23	-	95.57	-	-	Fundamental

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter) - Gain(Amprifier)

Fundamental Emission and Spectrum Mask

(Dealer Antenna, 1ch, ISO15693, with Tag)

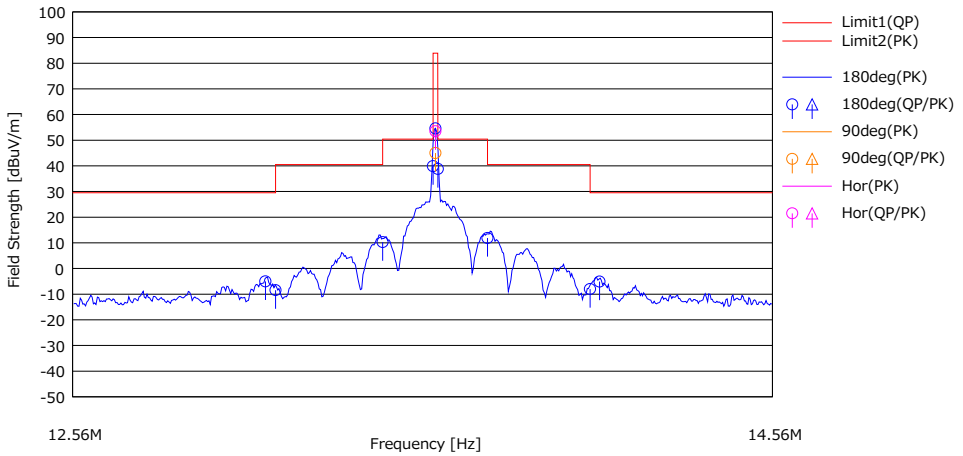
DATA OF RADIATED EMISSION(below 30MHz) TEST

UL Japan, Inc. Kashima EMC Lab. No.10 Semi-Anechoic Chamber
Date : 2024/08/06

Mode : 1ch ISO15693 with Tag
Order No. : 15364137
Power : DC 12 V
Temp./Humi. : 23 deg.C. / 57 %RH

Remarks : -

Limit : FCC15.225,PK/AV/QP,9-90 kHz:PK/AV,110-490 kHz:PK/AV,other:QP(<490 kHz:300 m,>490 kHz:30 m)
Tested by : Kazuhiro Ando



No.	Freq.	Reading 〈QP〉	Reading 〈PK〉	Ant.Fac	Loss	Gain	Result 〈QP〉	Result 〈PK〉	Limit 〈QP〉	Limit 〈PK〉	Margin 〈QP〉	Margin 〈PK〉	Antenna	Table	Comment
	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]		[deg]	
1	13.08200	33.00	---	19.19	-33.02	24.21	-5.04	---	29.50	---	34.5	---	180deg	56	
2	13.11000	29.60	---	19.19	-33.02	24.21	-8.44	---	29.50	---	37.9	---	180deg	56	
3	13.41000	48.30	---	19.20	-33.01	24.22	10.27	---	40.50	---	30.2	---	180deg	56	
4	13.55300	77.90	---	19.20	-33.00	24.23	39.87	---	50.40	---	10.5	---	180deg	56	
5	13.56000	92.60	---	19.20	-33.00	24.23	54.57	---	83.90	---	29.3	---	180deg	56	
6	13.56700	76.80	---	19.20	-33.00	24.23	38.77	---	50.40	---	11.6	---	180deg	56	
7	13.71000	49.90	---	19.20	-33.00	24.23	11.87	---	40.50	---	28.6	---	180deg	56	
8	14.01000	30.00	---	19.21	-32.98	24.25	-8.02	---	29.50	---	37.5	---	180deg	56	
9	14.03800	32.90	---	19.21	-32.98	24.25	-5.12	---	29.50	---	34.6	---	180deg	56	
10	13.56000	83.00	---	19.20	-33.00	24.23	44.97	---	83.90	---	38.9	---	90deg	60	
11	13.56000	91.50	---	19.20	-33.00	24.23	53.47	---	83.90	---	30.4	---	Hor	75	

Calculation:Result[dBuV/m]=Reading[dBuV]+Ant.Fac[dB/m]+Loss(Cable+ATT+D.Fac)[dB]-Gain(AMP)[dB]
Ant.Type=LOOP:Loop antenna

Result of the fundamental Emission at 3 m without Distance factor

QP

Ant Deg [deg]	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
180	13.56000	QP	92.60	19.20	7.00	24.23	-	94.57	-	-	Fundamental

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter) - Gain(Amprifier)

Fundamental Emission and Spectrum Mask

(Dealer Antenna, 1ch, ICODE ILT-M, without Tag)

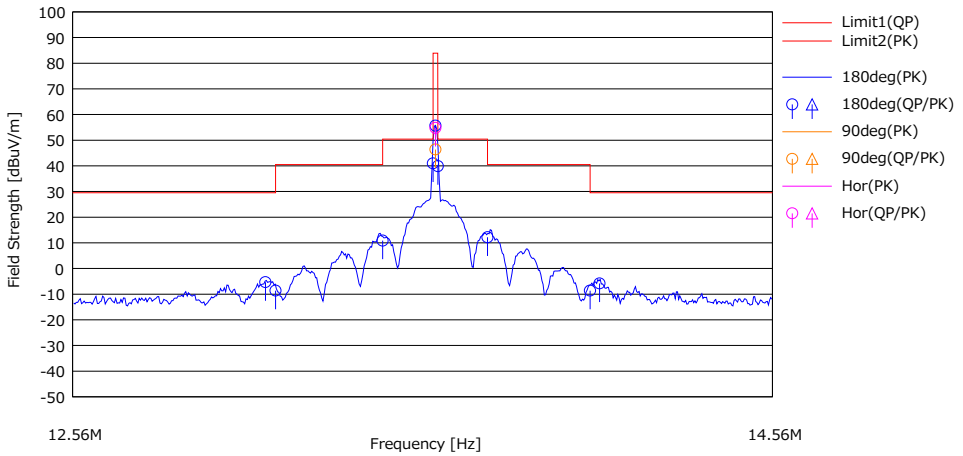
DATA OF RADIATED EMISSION(below 30MHz) TEST

UL Japan, Inc. Kashima EMC Lab. No.10 Semi-Anechoic Chamber
Date : 2024/08/06

Mode : 1ch ICODE ILT-M without Tag
Order No. : 15364137
Power : DC 12 V
Temp./Humi. : 23 deg.C. / 57 %RH

Remarks : -

Limit : FCC15.225,PK/AV/QP,9-90 kHz:PK/AV,110-490 kHz:PK/AV,other:QP(<490 kHz:300 m,>490 kHz:30 m)
Tested by : Kazuhiro Ando



No.	Freq.	Reading 〈QP〉	Reading 〈PK〉	Ant.Fac	Loss	Gain	Result 〈QP〉	Result 〈PK〉	Limit 〈QP〉	Limit 〈PK〉	Margin 〈QP〉	Margin 〈PK〉	Antenna	Table	Comment
	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]		[deg]	
1	13.08200	32.70	---	19.19	-33.02	24.21	-5.34	---	29.50	---	34.8	---	180deg	68	
2	13.11000	29.40	---	19.19	-33.02	24.21	-8.64	---	29.50	---	38.1	---	180deg	68	
3	13.41000	48.90	---	19.20	-33.01	24.22	10.87	---	40.50	---	29.6	---	180deg	68	
4	13.55300	79.00	---	19.20	-33.00	24.23	40.97	---	50.40	---	9.4	---	180deg	68	
5	13.56000	93.70	---	19.20	-33.00	24.23	55.67	---	83.90	---	28.2	---	180deg	68	
6	13.56700	77.90	---	19.20	-33.00	24.23	39.87	---	50.40	---	10.5	---	180deg	68	
7	13.71000	50.20	---	19.20	-33.00	24.23	12.17	---	40.50	---	28.3	---	180deg	68	
8	14.01000	29.40	---	19.21	-32.98	24.25	-8.62	---	29.50	---	38.1	---	180deg	68	
9	14.03800	32.20	---	19.21	-32.98	24.25	-5.82	---	29.50	---	35.3	---	180deg	68	
10	13.56000	84.40	---	19.20	-33.00	24.23	46.37	---	83.90	---	37.5	---	90deg	74	
11	13.56000	92.80	---	19.20	-33.00	24.23	54.77	---	83.90	---	29.1	---	Hor	76	

Calculation:Result[dBuV/m]=Reading[dBuV]+Ant.Fac[dB/m]+Loss(Cable+ATT+D.Fac)[dB]-Gain(AMP)[dB]
Ant.Type=LOOP:Loop antenna

Result of the fundamental Emission at 3 m without Distance factor

QP

Ant Deg [deg]	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
180	13.56000	QP	93.70	19.20	7.00	24.23	-	95.67	-	-	Fundamental

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter) - Gain(Amprifier)

Fundamental Emission and Spectrum Mask

(Dealer Antenna, 1ch, ICODE ILT-M, with Tag)

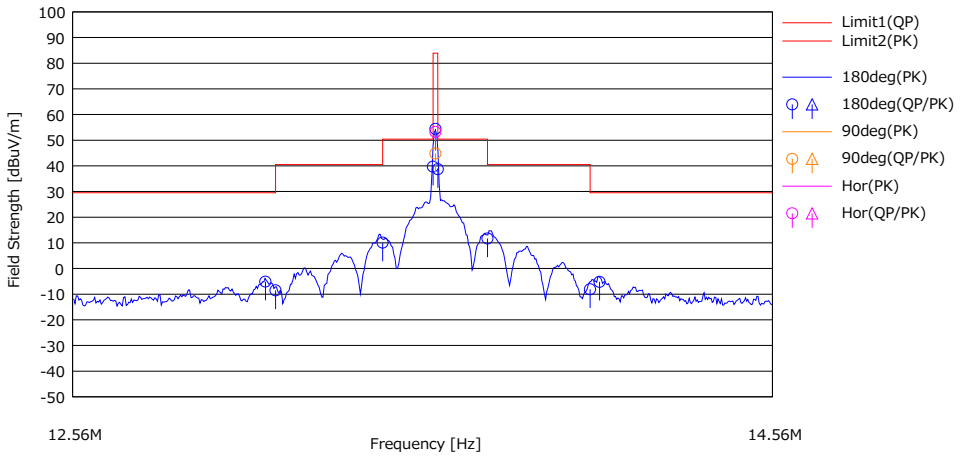
DATA OF RADIATED EMISSION(below 30MHz) TEST

UL Japan, Inc. Kashima EMC Lab. No.10 Semi-Anechoic Chamber
Date : 2024/08/06

Mode : 1ch ICODE ILT-M with Tag
Order No. : 15364137
Power : DC 12 V
Temp./Humi. : 23 deg.C. / 57 %RH

Remarks : -

Limit : FCC15.225,PK/AV/QP,9-90 kHz:PK/AV,110-490 kHz:PK/AV,other:QP(<490 kHz:300 m,>490 kHz:30 m)
Tested by : Kazuhiro Ando



No.	Freq.	Reading		Ant.Fac	Loss	Gain	Result		Limit		Margin		Antenna	Table	Comment
		(QP)	(PK)				(QP)	(PK)	(QP)	(PK)	(QP)	(PK)			
	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]		[deg]	
1	13.08200	32.90	---	19.19	-33.02	24.21	-5.14	---	29.50	---	34.6	---	180deg	69	
2	13.11000	29.50	---	19.19	-33.02	24.21	-8.54	---	29.50	---	38.0	---	180deg	69	
3	13.41000	48.10	---	19.20	-33.01	24.22	10.07	---	40.50	---	30.4	---	180deg	69	
4	13.55300	77.70	---	19.20	-33.00	24.23	39.67	---	50.40	---	10.7	---	180deg	69	
5	13.56000	92.40	---	19.20	-33.00	24.23	54.37	---	83.90	---	29.5	---	180deg	69	
6	13.56700	76.70	---	19.20	-33.00	24.23	38.67	---	50.40	---	11.7	---	180deg	69	
7	13.71000	49.70	---	19.20	-33.00	24.23	11.67	---	40.50	---	28.8	---	180deg	69	
8	14.01000	29.90	---	19.21	-32.98	24.25	-8.12	---	29.50	---	37.6	---	180deg	69	
9	14.03800	32.80	---	19.21	-32.98	24.25	-5.22	---	29.50	---	34.7	---	180deg	69	
10	13.56000	82.80	---	19.20	-33.00	24.23	44.77	---	83.90	---	39.1	---	90deg	71	
11	13.56000	91.20	---	19.20	-33.00	24.23	53.17	---	83.90	---	30.7	---	Hor	84	

Calculation:Result[dBuV/m]=Reading[dBuV]+Ant.Fac[dB/m]+Loss(Cable+ATT+D.Fac)[dB]-Gain(AMP)[dB]
Ant.Type=LOOP:Loop antenna

Result of the fundamental Emission at 3 m without Distance factor

QP

Ant Deg [deg]	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
180	13.56000	QP	92.40	19.20	7.00	24.23	-	94.37	-	-	Fundamental

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter) - Gain(Amprifier)

Fundamental Emission and Spectrum Mask

(Player Antenna, 2ch, ISO15693, without Tag)

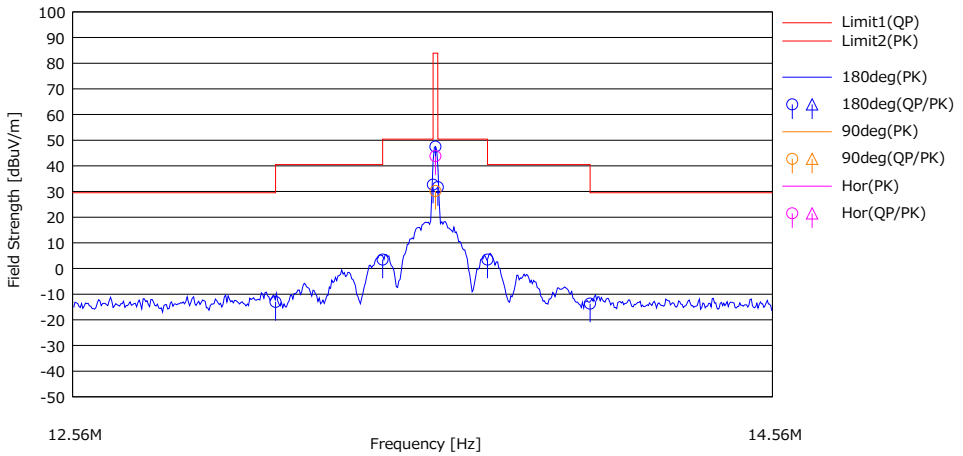
DATA OF RADIATED EMISSION(below 30MHz) TEST

UL Japan, Inc. Kashima EMC Lab. No.10 Semi-Anechoic Chamber
Date : 2024/08/07

Mode : 2ch ISO15693 without Tag
Order No. : 15364137
Power : DC 12 V
Temp./Humi. : 23 deg.C. / 57 %RH

Remarks : -

Limit : FCC15.225,PK/AV/QP,9-90 kHz:PK/AV,110-490 kHz:PK/AV,other:QP(<490 kHz:300 m,>490 kHz:30 m)
Tested by : Kazuhiro Ando



No.	Freq.	Reading 〈QP〉	Reading 〈PK〉	Ant.Fac	Loss	Gain	Result 〈QP〉	Result 〈PK〉	Limit 〈QP〉	Limit 〈PK〉	Margin 〈QP〉	Margin 〈PK〉	Antenna	Table	Comment
	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]		[deg]	
1	13.11000	25.00	---	19.19	-33.02	24.21	-13.04	---	29.50	---	42.5	---	180deg	255	
2	13.41000	41.50	---	19.20	-33.01	24.22	3.47	---	40.50	---	37.0	---	180deg	255	
3	13.55300	70.70	---	19.20	-33.00	24.23	32.67	---	50.40	---	17.7	---	180deg	255	
4	13.56000	85.50	---	19.20	-33.00	24.23	47.47	---	83.90	---	36.4	---	180deg	255	
5	13.56700	69.70	---	19.20	-33.00	24.23	31.67	---	50.40	---	18.7	---	180deg	255	
6	13.71000	41.50	---	19.20	-33.00	24.23	3.47	---	40.50	---	37.0	---	180deg	255	
7	14.01000	24.30	---	19.21	-32.98	24.25	-13.72	---	29.50	---	43.2	---	180deg	255	
8	13.56000	68.20	---	19.20	-33.00	24.23	30.17	---	83.90	---	53.7	---	90deg	170	
9	13.56000	81.80	---	19.20	-33.00	24.23	43.77	---	83.90	---	40.1	---	Hor	240	

Calculation:Result[dBuV/m]=Reading[dBuV]+Ant.Fac[dB/m]+Loss(Cable+ATT+D.Fac)[dB]-Gain(AMP)[dB]
Ant.Type=LOOP:Loop antenna

Result of the fundamental Emission at 3 m without Distance factor

QP

Ant Deg [deg]	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
180	13.56000	QP	85.50	19.20	7.00	24.23	-	87.47	-	-	Fundamental

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter) - Gain(Amprifier)

Fundamental Emission and Spectrum Mask

(Player Antenna, 2ch, ISO15693, with Tag)

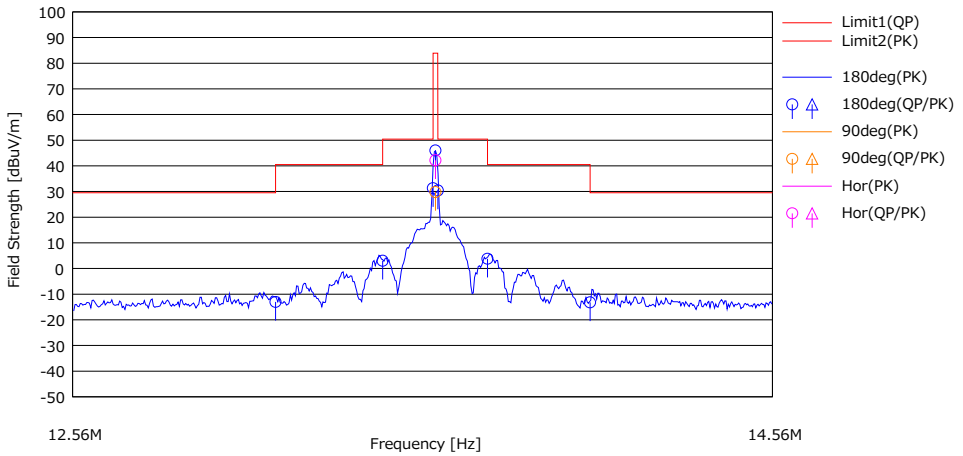
DATA OF RADIATED EMISSION(below 30MHz) TEST

UL Japan, Inc. Kashima EMC Lab. No.10 Semi-Anechoic Chamber
Date : 2024/08/07

Mode : 2ch ISO15693 with Tag
Order No. : 15364137
Power : DC 12 V
Temp./Humi. : 23 deg.C. / 57 %RH

Remarks : -

Limit : FCC15.225,PK/AV/QP,9-90 kHz:PK/AV,110-490 kHz:PK/AV,other:QP(<490 kHz:300 m,>490 kHz:30 m)
Tested by : Kazuhiro Ando



No.	Freq.	Reading 〈QP〉	Reading 〈PK〉	Ant.Fac	Loss	Gain	Result 〈QP〉	Result 〈PK〉	Limit 〈QP〉	Limit 〈PK〉	Margin 〈QP〉	Margin 〈PK〉	Antenna	Table	Comment
	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]		[deg]	
1	13.11000	25.00	---	19.19	-33.02	24.21	-13.04	---	29.50	---	42.5	---	180deg	250	
2	13.41000	41.00	---	19.20	-33.01	24.22	2.97	---	40.50	---	37.5	---	180deg	250	
3	13.55300	69.30	---	19.20	-33.00	24.23	31.27	---	50.40	---	19.1	---	180deg	250	
4	13.56000	84.00	---	19.20	-33.00	24.23	45.97	---	83.90	---	37.9	---	180deg	250	
5	13.56700	68.40	---	19.20	-33.00	24.23	30.37	---	50.40	---	20.0	---	180deg	250	
6	13.71000	41.80	---	19.20	-33.00	24.23	3.77	---	40.50	---	36.7	---	180deg	250	
7	14.01000	24.80	---	19.21	-32.98	24.25	-13.22	---	29.50	---	42.7	---	180deg	250	
8	13.56000	67.80	---	19.20	-33.00	24.23	29.77	---	83.90	---	54.1	---	90deg	170	
9	13.56000	80.20	---	19.20	-33.00	24.23	42.17	---	83.90	---	41.7	---	Hor	240	

Calculation:Result[dBuV/m]=Reading[dBuV]+Ant.Fac[dB/m]+Loss(Cable+ATT+D.Fac)[dB]-Gain(AMP)[dB]
Ant.Type=LOOP:Loop antenna

Result of the fundamental Emission at 3 m without Distance factor

QP

Ant Deg [deg]	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
180	13.56000	QP	84.00	19.20	7.00	24.23	-	85.97	-	-	Fundamental

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter) - Gain(Amprifier)

Fundamental Emission and Spectrum Mask

(Player Antenna, 2ch, ICODE ILT-M, without Tag)

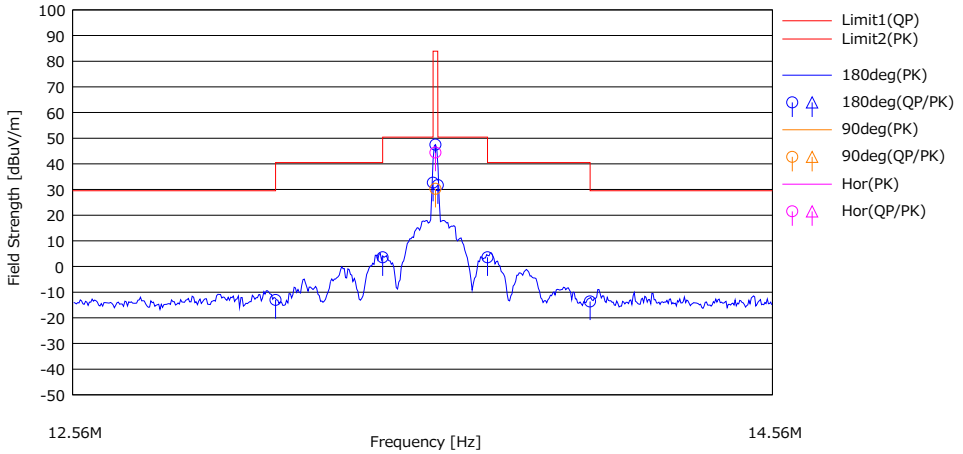
DATA OF RADIATED EMISSION(below 30MHz) TEST

UL Japan, Inc. Kashima EMC Lab. No.10 Semi-Anechoic Chamber
Date : 2024/08/07

Mode : 2ch ICODE ILT-M without Tag
Order No. : 15364137
Power : DC 12 V
Temp./Humi. : 23 deg.C. / 57 %RH

Remarks : -

Limit : FCC15.225,PK/AV/QP,9-90 kHz:PK/AV,110-490 kHz:PK/AV,other:QP(<490 kHz:300 m,>490 kHz:30 m)
Tested by : Kazuhiro Ando



No.	Freq.	Reading 〈QP〉	Reading 〈PK〉	Ant.Fac	Loss	Gain	Result 〈QP〉	Result 〈PK〉	Limit 〈QP〉	Limit 〈PK〉	Margin 〈QP〉	Margin 〈PK〉	Antenna	Table	Comment
	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]		[deg]	
1	13.11000	25.00	---	19.19	-33.02	24.21	-13.04	---	29.50	---	42.5	---	180deg	255	
2	13.41000	41.60	---	19.20	-33.01	24.22	3.57	---	40.50	---	36.9	---	180deg	255	
3	13.55300	70.70	---	19.20	-33.00	24.23	32.67	---	50.40	---	17.7	---	180deg	255	
4	13.56000	85.50	---	19.20	-33.00	24.23	47.47	---	83.90	---	36.4	---	180deg	255	
5	13.56700	69.70	---	19.20	-33.00	24.23	31.67	---	50.40	---	18.7	---	180deg	255	
6	13.71000	41.60	---	19.20	-33.00	24.23	3.57	---	40.50	---	36.9	---	180deg	255	
7	14.01000	24.40	---	19.21	-32.98	24.25	-13.62	---	29.50	---	43.1	---	180deg	255	
8	13.56000	68.30	---	19.20	-33.00	24.23	30.27	---	83.90	---	53.6	---	90deg	180	
9	13.56000	82.40	---	19.20	-33.00	24.23	44.37	---	83.90	---	39.5	---	Hor	240	

Calculation:Result[dBuV/m]=Reading[dBuV]+Ant.Fac[dB/m]+Loss(Cable+ATT+D.Fac)[dB]-Gain(AMP)[dB]
Ant.Type=LOOP:Loop antenna

Result of the fundamental Emission at 3 m without Distance factor

QP

Ant Deg [deg]	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
180	13.56000	QP	85.50	19.20	7.00	24.23	-	87.47	-	-	Fundamental

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter) - Gain(Amprifier)

Fundamental Emission and Spectrum Mask

(Player Antenna, 2ch, ICODE ILT-M, with Tag)

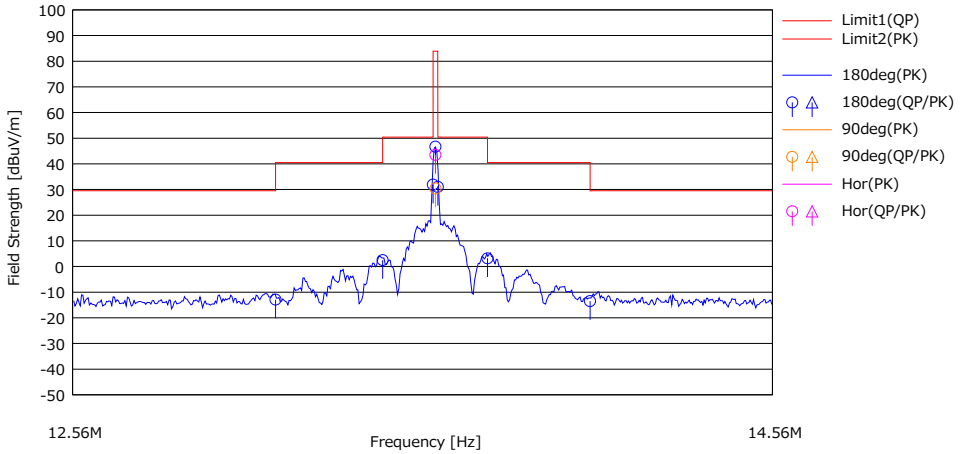
DATA OF RADIATED EMISSION(below 30MHz) TEST

UL Japan, Inc. Kashima EMC Lab. No.10 Semi-Anechoic Chamber
Date : 2024/08/07

Mode : 2ch ICODE ILT-M with Tag
Order No. : 15364137
Power : DC 12 V
Temp./Humi. : 23 deg.C. / 57 %RH

Remarks : -

Limit : FCC15.225,PK/AV/QP,9-90 kHz:PK/AV,110-490 kHz:PK/AV,other:QP(<490 kHz:300 m,>490 kHz:30 m)
Tested by : Kazuhiro Ando



No.	Freq.	Reading 〈QP〉	Reading 〈PK〉	Ant.Fac	Loss	Gain	Result 〈QP〉	Result 〈PK〉	Limit 〈QP〉	Limit 〈PK〉	Margin 〈QP〉	Margin 〈PK〉	Antenna	Table	Comment
	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]		[deg]	
1	13.11000	25.10	---	19.19	-33.02	24.21	-12.94	---	29.50	---	42.4	---	180deg	250	
2	13.41000	40.50	---	19.20	-33.01	24.22	2.47	---	40.50	---	38.0	---	180deg	250	
3	13.55300	69.90	---	19.20	-33.00	24.23	31.87	---	50.40	---	18.5	---	180deg	250	
4	13.56000	84.70	---	19.20	-33.00	24.23	46.67	---	83.90	---	37.2	---	180deg	250	
5	13.56700	69.00	---	19.20	-33.00	24.23	30.97	---	50.40	---	19.4	---	180deg	250	
6	13.71000	41.20	---	19.20	-33.00	24.23	3.17	---	40.50	---	37.3	---	180deg	250	
7	14.01000	24.50	---	19.21	-32.98	24.25	-13.52	---	29.50	---	43.0	---	180deg	250	
8	13.56000	68.40	---	19.20	-33.00	24.23	30.37	---	83.90	---	53.5	---	90deg	170	
9	13.56000	81.50	---	19.20	-33.00	24.23	43.47	---	83.90	---	40.4	---	Hor	240	

Calculation:Result[dBuV/m]=Reading[dBuV]+Ant.Fac[dB/m]+Loss(Cable+ATT+D.Fac)[dB]-Gain(AMP)[dB]
Ant.Type=LOOP:Loop antenna

Result of the fundamental Emission at 3 m without Distance factor

QP

Ant Deg [deg]	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
180	13.56000	QP	84.70	19.20	7.00	24.23	-	86.67	-	-	Fundamental

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter) - Gain(Amprifier)

Spurious Emission

(Dealer Antenna, 1ch, ISO15693, without Tag)

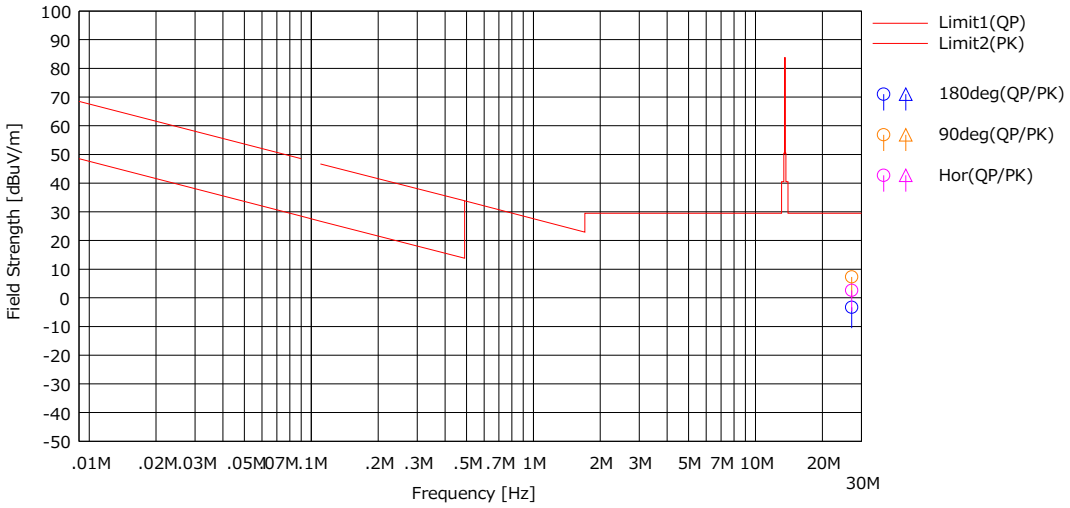
DATA OF RADIATED EMISSION(below 30MHz) TEST

UL Japan, Inc. Kashima EMC Lab. No.10 Semi-Anechoic Chamber
Date : 2024/08/06

Mode : 1ch ISO15693 without Tag
Order No. : 15364137
Power : DC 12 V
Temp./Humi. : 23 deg.C. / 57 %RH

Remarks : -

Limit : FCC15.225,PK/AV/QP,9-90 kHz:PK/AV,110-490 kHz:PK/AV,other:QP(<490 kHz:300 m,>490 kHz:30 m)
Tested by : Kazuhiro Ando



No.	Freq.	Reading 〈QP〉	Reading 〈PK〉	Ant.Fac	Loss	Gain	Result 〈QP〉	Result 〈PK〉	Limit 〈QP〉	Limit 〈PK〉	Margin 〈QP〉	Margin 〈PK〉	Antenna	Table	Comment
	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]		[deg]	
1	27.12000	33.90	---	19.74	-32.51	24.43	-3.30	---	29.50	---	32.8	---	180deg	291	
2	27.12000	44.50	---	19.74	-32.51	24.43	7.30	---	29.50	---	22.2	---	90deg	210	
3	27.12000	39.80	---	19.74	-32.51	24.43	2.60	---	29.50	---	26.9	---	Hor	40	

Calculation:Result[dBuV/m]=Reading[dBuV]+Ant.Fac[dB/m]+Loss(Cable+ATT+D.Fac)[dB]-Gain(AMP)[dB]
Ant.Type=LOOP:Loop antenna

Spurious Emission

(Dealer Antenna, 1ch, ISO15693, with Tag)

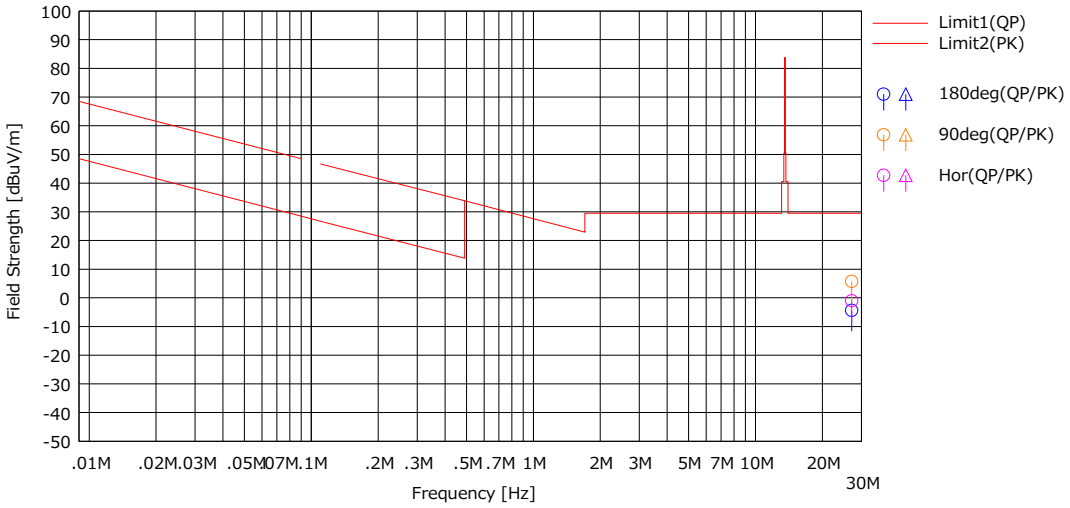
DATA OF RADIATED EMISSION(below 30MHz) TEST

UL Japan, Inc. Kashima EMC Lab. No.10 Semi-Anechoic Chamber
Date : 2024/08/06

Mode : 1ch ISO15693 with Tag
Order No. : 15364137
Power : DC 12 V
Temp./Humi. : 23 deg.C. / 57 %RH

Remarks : -

Limit : FCC15.225,PK/AV/QP,9-90 kHz:PK/AV,110-490 kHz:PK/AV,other:QP(<490 kHz:300 m,>490 kHz:30 m)
Tested by : Kazuhiro Ando



No.	Freq.	Reading 〈QP〉	Reading 〈PK〉	Ant.Fac	Loss	Gain	Result 〈QP〉	Result 〈PK〉	Limit 〈QP〉	Limit 〈PK〉	Margin 〈QP〉	Margin 〈PK〉	Antenna	Table	Comment
	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]		[deg]	
1	27.12000	32.80	---	19.74	-32.51	24.43	-4.40	---	29.50	---	33.9	---	180deg	287	
2	27.12000	42.90	---	19.74	-32.51	24.43	5.70	---	29.50	---	23.8	---	90deg	194	
3	27.12000	36.20	---	19.74	-32.51	24.43	-1.00	---	29.50	---	30.5	---	Hor	140	

Calculation:Result[dBuV/m]=Reading[dBuV]+Ant.Fac[dB/m]+Loss(Cable+ATT+D.Fac)[dB]-Gain(AMP)[dB]
Ant.Type=LOOP:Loop antenna

Spurious Emission

(Dealer Antenna, 1ch, ICODE ILT-M, without Tag)

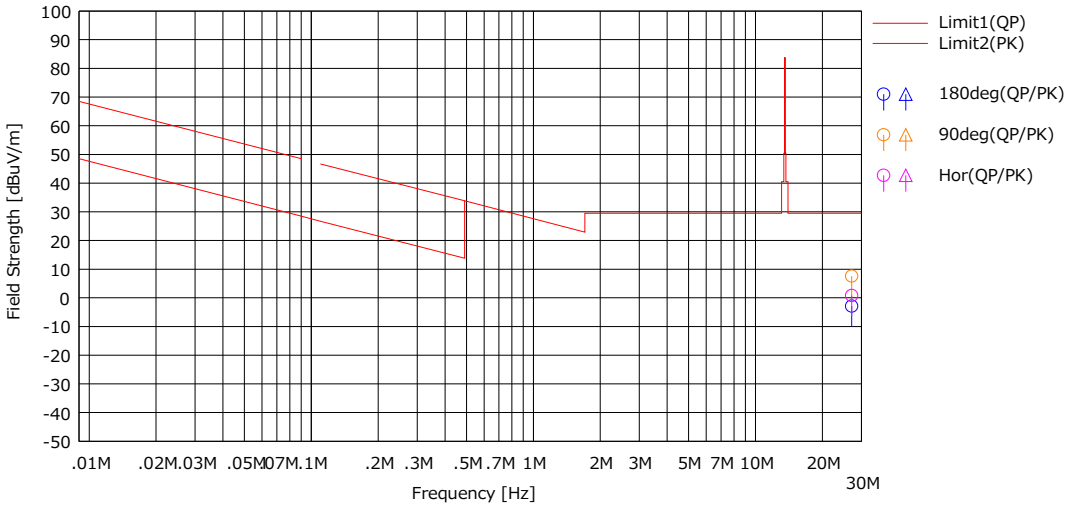
DATA OF RADIATED EMISSION(below 30MHz) TEST

UL Japan, Inc. Kashima EMC Lab. No.10 Semi-Anechoic Chamber
Date : 2024/08/06

Mode : 1ch ICODE ILT-M without Tag
Order No. : 15364137
Power : DC 12 V
Temp./Humi. : 23 deg.C. / 57 %RH

Remarks : -

Limit : FCC15.225,PK/AV/QP,9-90 kHz:PK/AV,110-490 kHz:PK/AV,other:QP(<490 kHz:300 m,>490 kHz:30 m)
Tested by : Kazuhiro Ando



No.	Freq.	Reading		Ant.Fac	Loss	Gain	Result		Limit		Margin		Antenna	Table	Comment
		〈QP〉	〈PK〉				〈QP〉	〈PK〉	〈QP〉	〈PK〉	〈QP〉	〈PK〉			
	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]		[deg]	
1	27.12000	34.30	---	19.74	-32.51	24.43	-2.90	---	29.50	---	32.4	---	180deg	293	
2	27.12000	44.80	---	19.74	-32.51	24.43	7.60	---	29.50	---	21.9	---	90deg	213	
3	27.12000	38.00	---	19.74	-32.51	24.43	0.80	---	29.50	---	28.7	---	Hor	150	

Calculation:Result[dBuV/m]=Reading[dBuV]+Ant.Fac[dB/m]+Loss(Cable+ATT+D.Fac)[dB]-Gain(AMP)[dB]
Ant.Type=LOOP:Loop antenna

Spurious Emission

(Dealer Antenna, 1ch, ICODE ILT-M, with Tag)

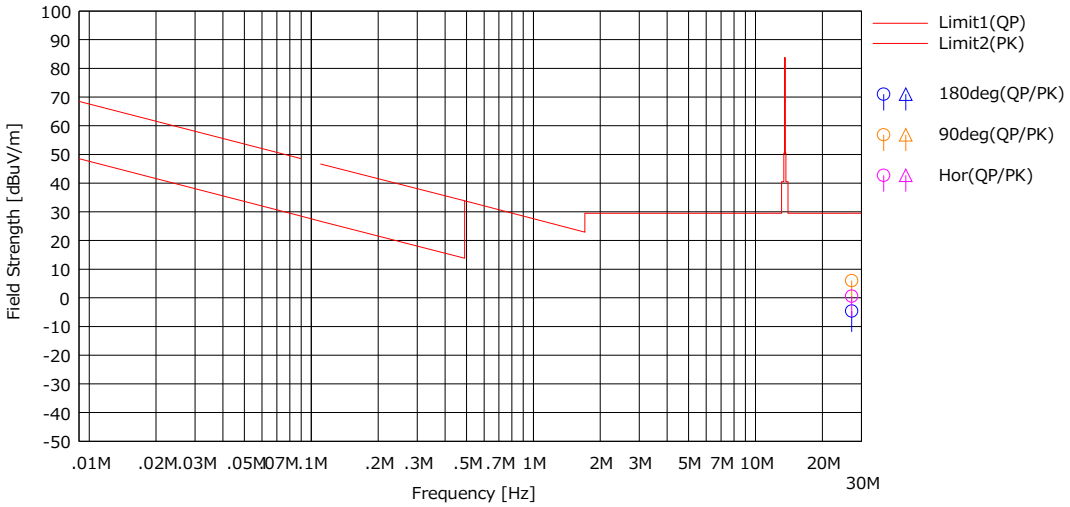
DATA OF RADIATED EMISSION(below 30MHz) TEST

UL Japan, Inc. Kashima EMC Lab. No.10 Semi-Anechoic Chamber
Date : 2024/08/06

Mode : 1ch ICODE ILT-M with Tag
Order No. : 15364137
Power : DC 12 V
Temp./Humi. : 23 deg.C. / 57 %RH

Remarks : -

Limit : FCC15.225,PK/AV/QP,9-90 kHz:PK/AV,110-490 kHz:PK/AV,other:QP(<490 kHz:300 m,>490 kHz:30 m)
Tested by : Kazuhiro Ando



No.	Freq.	Reading 〈QP〉	Reading 〈PK〉	Ant.Fac	Loss	Gain	Result 〈QP〉	Result 〈PK〉	Limit 〈QP〉	Limit 〈PK〉	Margin 〈QP〉	Margin 〈PK〉	Antenna	Table	Comment
	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]		[deg]	
1	27.12000	32.60	---	19.74	-32.51	24.43	-4.60	---	29.50	---	34.1	---	180deg	278	
2	27.12000	43.20	---	19.74	-32.51	24.43	6.00	---	29.50	---	23.5	---	90deg	219	
3	27.12000	37.80	---	19.74	-32.51	24.43	0.60	---	29.50	---	28.9	---	Hor	135	

Calculation:Result[dBuV/m]=Reading[dBuV]+Ant.Fac[dB/m]+Loss(Cable+ATT+D.Fac)[dB]-Gain(AMP)[dB]
Ant.Type=LOOP:Loop antenna

Spurious Emission

(Player Antenna, 2ch, ISO15693, without Tag)

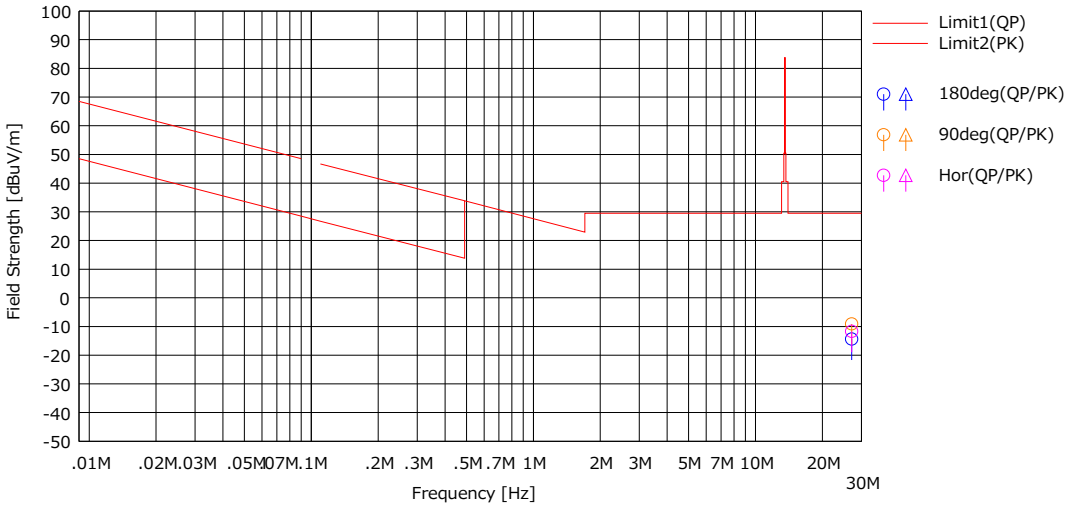
DATA OF RADIATED EMISSION(below 30MHz) TEST

UL Japan, Inc. Kashima EMC Lab. No.10 Semi-Anechoic Chamber
Date : 2024/08/06

Mode : 2ch ISO15693 without Tag
Order No. : 15364137
Power : DC 12 V
Temp./Humi. : 23 deg.C. / 57 %RH

Remarks : -

Limit : FCC15.225,PK/AV/QP,9-90 kHz:PK/AV,110-490 kHz:PK/AV,other:QP(<490 kHz:300 m,>490 kHz:30 m)
Tested by : Kazuhiro Ando



No.	Freq.	Reading 〈QP〉	Reading 〈PK〉	Ant.Fac	Loss	Gain	Result 〈QP〉	Result 〈PK〉	Limit 〈QP〉	Limit 〈PK〉	Margin 〈QP〉	Margin 〈PK〉	Antenna	Table	Comment
	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]		[deg]	
1	27.12000	22.80	---	19.74	-32.51	24.43	-14.40	---	29.50	---	43.9	---	180deg	180	
2	27.12000	28.10	---	19.74	-32.51	24.43	-9.10	---	29.50	---	38.6	---	90deg	210	
3	27.12000	25.50	---	19.74	-32.51	24.43	-11.70	---	29.50	---	41.2	---	Hor	200	

Calculation:Result[dBuV/m]=Reading[dBuV]+Ant.Fac[dB/m]+Loss(Cable+ATT+D.Fac)[dB]-Gain(AMP)[dB]
Ant.Type=LOOP:Loop antenna

Spurious Emission

(Player Antenna, 2ch, ISO15693, with Tag)

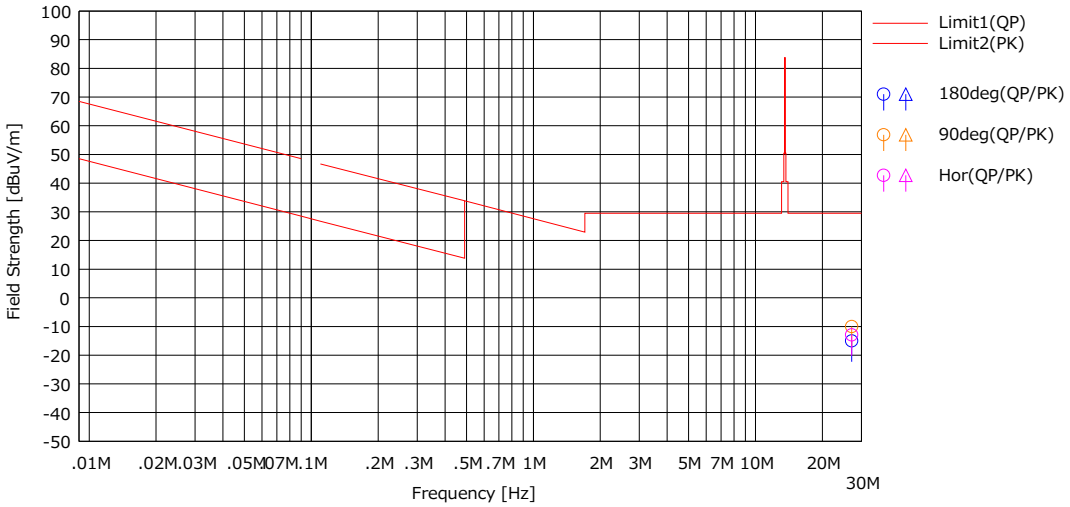
DATA OF RADIATED EMISSION(below 30MHz) TEST

UL Japan, Inc. Kashima EMC Lab. No.10 Semi-Anechoic Chamber
Date : 2024/08/06

Mode : 2ch ISO15693 with Tag
Order No. : 15364137
Power : DC 12 V
Temp./Humi. : 23 deg.C. / 57 %RH

Remarks : -

Limit : FCC15.225,PK/AV/QP,9-90 kHz:PK/AV,110-490 kHz:PK/AV,other:QP(<490 kHz:300 m,>490 kHz:30 m)
Tested by : Kazuhiro Ando



No.	Freq.	Reading 〈QP〉	Reading 〈PK〉	Ant.Fac	Loss	Gain	Result 〈QP〉	Result 〈PK〉	Limit 〈QP〉	Limit 〈PK〉	Margin 〈QP〉	Margin 〈PK〉	Antenna	Table	Comment
	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]		[deg]	
1	27.12000	22.20	---	19.74	-32.51	24.43	-15.00	---	29.50	---	44.5	---	180deg	220	
2	27.12000	27.20	---	19.74	-32.51	24.43	-10.00	---	29.50	---	39.5	---	90deg	220	
3	27.12000	24.30	---	19.74	-32.51	24.43	-12.90	---	29.50	---	42.4	---	Hor	210	

Calculation:Result[dBuV/m]=Reading[dBuV]+Ant.Fac[dB/m]+Loss(Cable+ATT+D.Fac)[dB]-Gain(AMP)[dB]
Ant.Type=LOOP:Loop antenna

Spurious Emission

(Player Antenna, 2ch, ICODE ILT-M, without Tag)

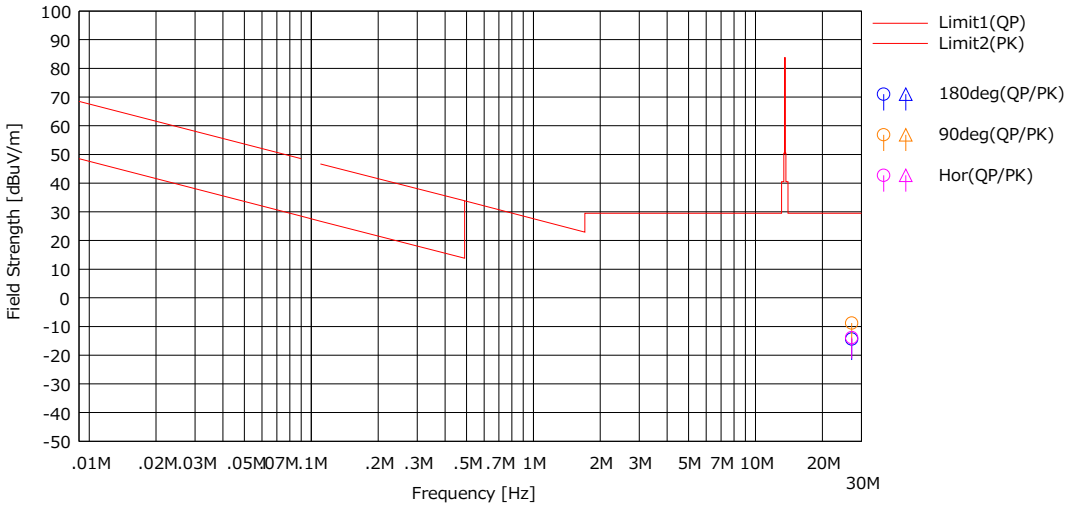
DATA OF RADIATED EMISSION(below 30MHz) TEST

UL Japan, Inc. Kashima EMC Lab. No.10 Semi-Anechoic Chamber
Date : 2024/08/06

Mode : 2ch ICODE ILT-M without Tag
Order No. : 15364137
Power : DC 12 V
Temp./Humi. : 23 deg.C. / 57 %RH

Remarks : -

Limit : FCC15.225,PK/AV/QP,9-90 kHz:PK/AV,110-490 kHz:PK/AV,other:QP(<490 kHz:300 m,>490 kHz:30 m)
Tested by : Kazuhiro Ando



No.	Freq.	Reading 〈QP〉	Reading 〈PK〉	Ant.Fac	Loss	Gain	Result 〈QP〉	Result 〈PK〉	Limit 〈QP〉	Limit 〈PK〉	Margin 〈QP〉	Margin 〈PK〉	Antenna	Table	Comment
	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]		[deg]	
1	27.12000	22.80	---	19.74	-32.51	24.43	-14.40	---	29.50	---	43.9	---	180deg	180	
2	27.12000	28.40	---	19.74	-32.51	24.43	-8.80	---	29.50	---	38.3	---	90deg	220	
3	27.12000	23.30	---	19.74	-32.51	24.43	-13.90	---	29.50	---	43.4	---	Hor	200	

Calculation:Result[dBuV/m]=Reading[dBuV]+Ant.Fac[dB/m]+Loss(Cable+ATT+D.Fac)[dB]-Gain(AMP)[dB]
Ant.Type=LOOP:Loop antenna

Spurious Emission

(Player Antenna, 2ch, ICODE ILT-M, with Tag)

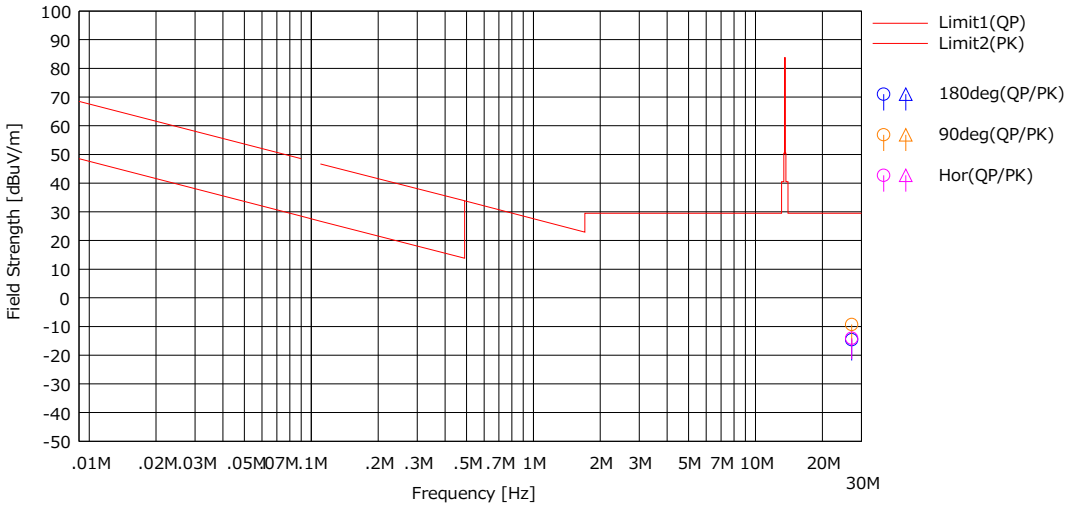
DATA OF RADIATED EMISSION(below 30MHz) TEST

UL Japan, Inc. Kashima EMC Lab. No.10 Semi-Anechoic Chamber
Date : 2024/08/06

Mode : 2ch ICODE ILT-M with Tag
Order No. : 15364137
Power : DC 12 V
Temp./Humi. : 23 deg.C. / 57 %RH

Remarks : -

Limit : FCC15.225,PK/AV/QP,9-90 kHz:PK/AV,110-490 kHz:PK/AV,other:QP(<490 kHz:300 m,>490 kHz:30 m)
Tested by : Kazuhiro Ando



No.	Freq.	Reading 〈QP〉	Reading 〈PK〉	Ant.Fac	Loss	Gain	Result 〈QP〉	Result 〈PK〉	Limit 〈QP〉	Limit 〈PK〉	Margin 〈QP〉	Margin 〈PK〉	Antenna	Table	Comment
	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]		[deg]	
1	27.12000	22.60	---	19.74	-32.51	24.43	-14.60	---	29.50	---	44.1	---	180deg	200	
2	27.12000	27.90	---	19.74	-32.51	24.43	-9.30	---	29.50	---	38.8	---	90deg	220	
3	27.12000	23.10	---	19.74	-32.51	24.43	-14.10	---	29.50	---	43.6	---	Hor	210	

Calculation:Result[dBuV/m]=Reading[dBuV]+Ant.Fac[dB/m]+Loss(Cable+ATT+D.Fac)[dB]-Gain(AMP)[dB]
Ant.Type=LOOP:Loop antenna

Spurious Emission

(Dealer Antenna, 1ch, ISO15693, without Tag)

DATA OF RADIATED EMISSION TEST

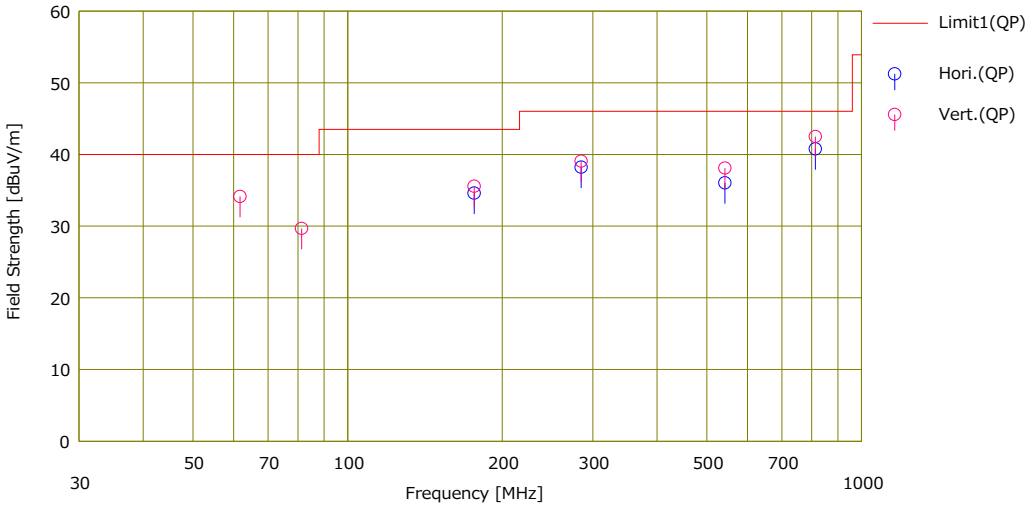
UL Japan, Inc. Kashima EMC Lab. No.10 Semi-Anechoic Chamber
Date : 2024/08/07

Mode : 1ch ISO15693 without Tag
Order No. : 15364137
Power : DC 12 V
Temp./Humi. : 23 deg.C. / 57 %RH

Remarks : -

Limit : FCC15.209 3 m, below 1 GHz:QP, above 1 GHz:AV/PK

Tested by : Kazuhiro Ando



No.	Freq. [MHz]	Reading <QP> [dBuV]	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result <QP> [dBuV/m]	Limit <QP> [dBuV/m]	Margin <QP> [dB]	Pola. [H/V]	Height [cm]	Angle [deg]	Ant. Type	Comment
1	176.280	45.88	12.44	7.30	31.02	34.60	43.50	8.9	Hori.	189	314	HB	
2	284.760	48.09	13.02	8.05	30.94	38.22	46.00	7.7	Hori.	110	227	HB	
3	542.400	38.97	18.36	9.46	30.75	36.04	46.00	9.9	Hori.	198	27	HB	
4	813.600	38.22	22.46	10.61	30.53	40.76	46.00	5.2	Hori.	100	277	HB	
5	61.722	46.34	12.79	6.21	31.21	34.13	40.00	5.8	Vert.	100	238	HB	
6	81.360	45.75	8.66	6.44	31.17	29.68	40.00	10.3	Vert.	100	267	HB	
7	176.280	46.84	12.44	7.30	31.02	35.56	43.50	7.9	Vert.	100	332	HB	
8	284.760	48.93	13.02	8.05	30.94	39.06	46.00	6.9	Vert.	190	312	HB	
9	542.400	41.02	18.36	9.46	30.75	38.09	46.00	7.9	Vert.	187	260	HB	
10	813.600	39.95	22.46	10.61	30.53	42.49	46.00	3.5	Vert.	100	261	HB	

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

Spurious Emission

(Dealer Antenna, 1ch, ISO15693, with Tag)

DATA OF RADIATED EMISSION TEST

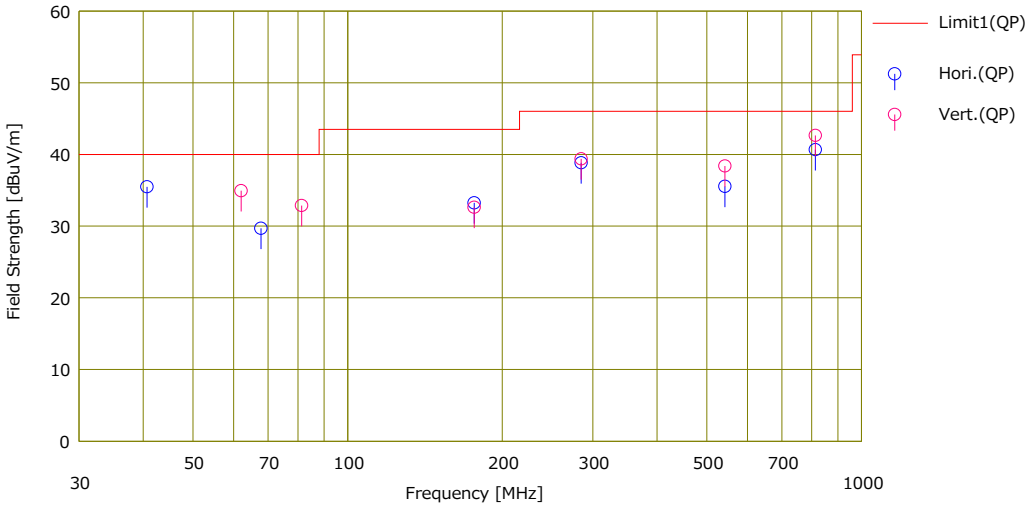
UL Japan, Inc. Kashima EMC Lab. No.10 Semi-Anechoic Chamber
Date : 2024/08/07

Mode : 1ch ISO15693 with Tag
Order No. : 15364137
Power : DC 12 V
Temp./Humi. : 23 deg.C. / 57 %RH

Remarks : -

Limit : FCC15.209 3 m, below 1 GHz:QP, above 1 GHz:AV/PK

Tested by : Kazuhiro Ando



No.	Freq. [MHz]	Reading (QP) [dBuV]	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result (QP) [dBuV/m]	Limit (QP) [dBuV/m]	Margin (QP) [dB]	Pola. [H/V]	Height [cm]	Angle [deg]	Ant. Type	Comment
1	40.680	47.47	13.31	5.93	31.23	35.48	40.00	4.5	Hori.	259	119	HB	
2	67.800	42.74	11.87	6.29	31.20	29.70	40.00	10.3	Hori.	248	116	HB	
3	176.280	44.52	12.44	7.30	31.02	33.24	43.50	10.2	Hori.	152	329	HB	
4	284.760	48.71	13.02	8.05	30.94	38.84	46.00	7.1	Hori.	107	229	HB	
5	542.400	38.48	18.36	9.46	30.75	35.55	46.00	10.4	Hori.	183	18	HB	
6	813.600	38.12	22.46	10.61	30.53	40.66	46.00	5.3	Hori.	100	273	HB	
7	62.036	47.18	12.75	6.21	31.21	34.93	40.00	5.0	Vert.	100	233	HB	
8	81.360	48.94	8.66	6.44	31.17	32.87	40.00	7.1	Vert.	100	251	HB	
9	176.280	43.91	12.44	7.30	31.02	32.63	43.50	10.8	Vert.	100	355	HB	
10	284.760	49.25	13.02	8.05	30.94	39.38	46.00	6.6	Vert.	192	328	HB	
11	542.400	41.32	18.36	9.46	30.75	38.39	46.00	7.6	Vert.	189	267	HB	
12	813.600	40.12	22.46	10.61	30.53	42.66	46.00	3.3	Vert.	100	260	HB	

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

Spurious Emission

(Dealer Antenna, 1ch, ICODE ILT-M, without Tag)

DATA OF RADIATED EMISSION TEST

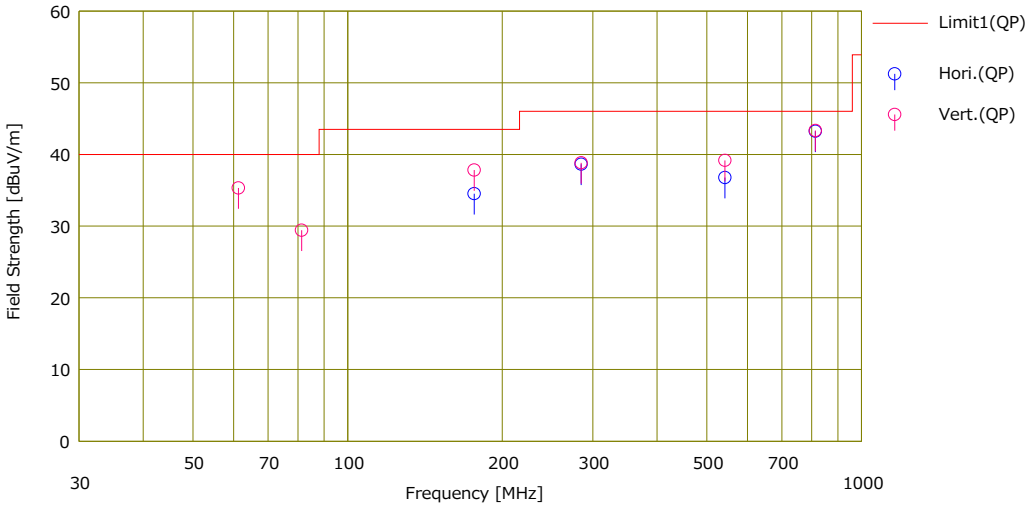
UL Japan, Inc. Kashima EMC Lab. No.10 Semi-Anechoic Chamber
Date : 2024/08/08

Mode : 1ch ICODE ILT-M without Tag
Order No. : 15364137
Power : DC 12 V
Temp./Humi. : 25 deg.C. / 57 %RH

Remarks : -

Limit : FCC15.209 3 m, below 1 GHz:QP, above 1 GHz:AV/PK

Tested by : Kazuhiro Ando



No.	Freq. [MHz]	Reading ⟨QP⟩ [dBuV]	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result ⟨QP⟩ [dBuV/m]	Limit ⟨QP⟩ [dBuV/m]	Margin ⟨QP⟩ [dB]	Pola. [H/V]	Height [cm]	Angle [deg]	Ant. Type	Comment
1	176.280	45.80	12.44	7.30	31.02	34.52	43.50	8.9	Hori.	207	316	HB	
2	284.760	48.50	13.02	8.05	30.94	38.63	46.00	7.3	Hori.	122	236	HB	
3	542.400	39.70	18.36	9.46	30.75	36.77	46.00	9.2	Hori.	192	291	HB	
4	813.600	40.70	22.46	10.61	30.53	43.24	46.00	2.7	Hori.	204	283	HB	
5	61.289	47.50	12.84	6.20	31.22	35.32	40.00	4.6	Vert.	100	250	HB	
6	81.360	45.50	8.66	6.44	31.17	29.43	40.00	10.5	Vert.	150	287	HB	
7	176.280	49.10	12.44	7.30	31.02	37.82	43.50	5.6	Vert.	100	237	HB	
8	284.760	48.70	13.02	8.05	30.94	38.83	46.00	7.1	Vert.	216	312	HB	
9	542.400	42.10	18.36	9.46	30.75	39.17	46.00	6.8	Vert.	201	261	HB	
10	813.600	40.80	22.46	10.61	30.53	43.34	46.00	2.6	Vert.	100	255	HB	

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

Spurious Emission

(Dealer Antenna, 1ch, ICODE ILT-M, with Tag)

DATA OF RADIATED EMISSION TEST

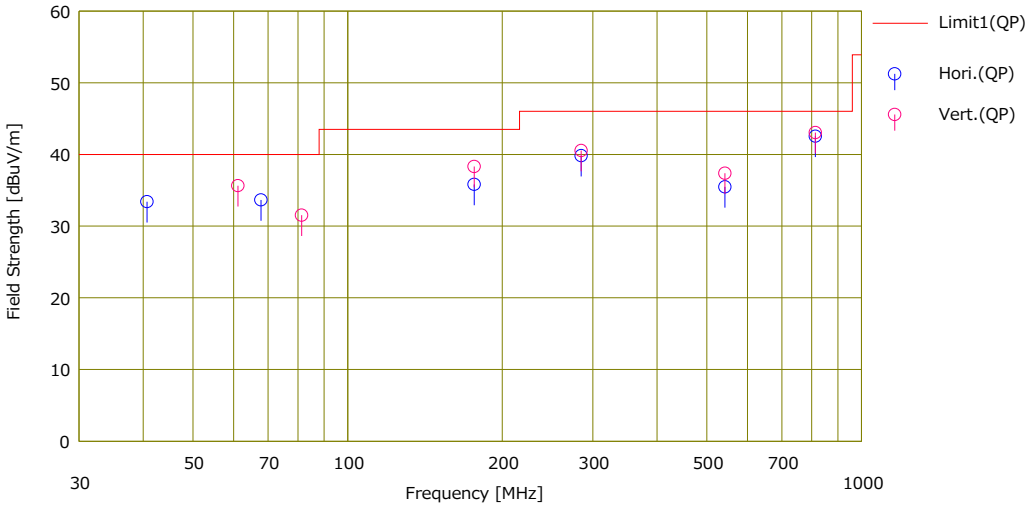
UL Japan, Inc. Kashima EMC Lab. No.10 Semi-Anechoic Chamber
Date : 2024/08/08

Mode : 1ch ICODE ILT-M with Tag
Order No. : 15364137
Power : DC 12 V
Temp./Humi. : 25 deg.C. / 57 %RH

Remarks : -

Limit : FCC15.209 3 m, below 1 GHz:QP, above 1 GHz:AV/PK

Tested by : Kazuhiro Ando



No.	Freq. [MHz]	Reading (QP) [dBuV]	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result (QP) [dBuV/m]	Limit (QP) [dBuV/m]	Margin (QP) [dB]	Pola. [H/V]	Height [cm]	Angle [deg]	Ant. Type	Comment
1	40.680	45.40	13.31	5.93	31.23	33.41	40.00	6.5	Hori.	263	171	HB	
2	67.800	46.70	11.87	6.29	31.20	33.66	40.00	6.3	Hori.	262	103	HB	
3	176.280	47.10	12.44	7.30	31.02	35.82	43.50	7.6	Hori.	165	184	HB	
4	284.760	49.70	13.02	8.05	30.94	39.83	46.00	6.1	Hori.	100	0	HB	
5	542.400	38.40	18.36	9.46	30.75	35.47	46.00	10.5	Hori.	195	301	HB	
6	813.600	40.00	22.46	10.61	30.53	42.54	46.00	3.4	Hori.	191	283	HB	
7	61.151	47.80	12.86	6.20	31.22	35.64	40.00	4.3	Vert.	100	253	HB	
8	81.360	47.60	8.66	6.44	31.17	31.53	40.00	8.4	Vert.	130	261	HB	
9	176.280	49.60	12.44	7.30	31.02	38.32	43.50	5.1	Vert.	100	235	HB	
10	284.760	50.40	13.02	8.05	30.94	40.53	46.00	5.4	Vert.	211	321	HB	
11	542.400	40.30	18.36	9.46	30.75	37.37	46.00	8.6	Vert.	199	257	HB	
12	813.600	40.50	22.46	10.61	30.53	43.04	46.00	2.9	Vert.	100	256	HB	

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

Spurious Emission

(Player Antenna, 4ch, ISO15693, without Tag)

DATA OF RADIATED EMISSION TEST

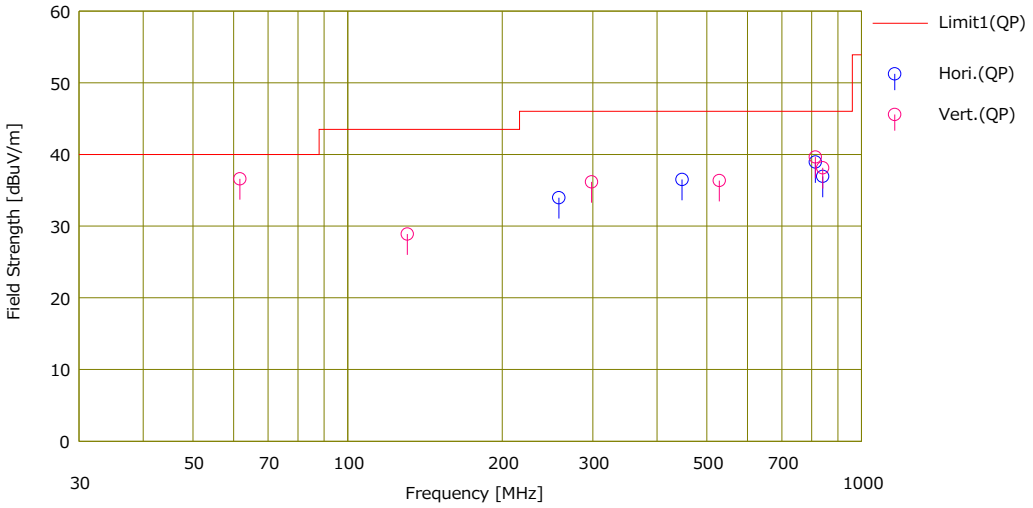
UL Japan, Inc. Kashima EMC Lab. No.10 Semi-Anechoic Chamber
Date : 2024/08/08

Mode : 4ch ISO15693 without Tag
Order No. : 15364137
Power : DC 12 V
Temp./Humi. : 25 deg.C. / 57 %RH

Remarks : -

Limit : FCC15.209 3 m, below 1 GHz:QP, above 1 GHz:AV/PK

Tested by : Kazuhiro Ando



No.	Freq. [MHz]	Reading ⟨QP⟩ [dBuV]	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result ⟨QP⟩ [dBuV/m]	Limit ⟨QP⟩ [dBuV/m]	Margin ⟨QP⟩ [dB]	Pola. [H/V]	Height [cm]	Angle [deg]	Ant. Type	Comment
1	257.640	45.10	11.94	7.87	30.95	33.96	46.00	12.0	Hori.	124	176	HB	
2	447.480	41.40	16.93	9.00	30.83	36.50	46.00	9.5	Hori.	100	199	HB	
3	813.600	36.40	22.46	10.61	30.53	38.94	46.00	7.0	Hori.	193	271	HB	
4	840.720	34.00	22.73	10.70	30.50	36.93	46.00	9.0	Hori.	100	292	HB	
5	61.684	48.80	12.79	6.21	31.21	36.59	40.00	3.4	Vert.	100	267	HB	
6	130.651	40.70	12.36	6.91	31.08	28.89	43.50	14.6	Vert.	100	45	HB	
7	298.320	45.60	13.36	8.14	30.93	36.17	46.00	9.8	Vert.	100	350	HB	
8	528.840	39.50	18.22	9.39	30.76	36.35	46.00	9.6	Vert.	195	239	HB	
9	813.600	37.10	22.46	10.61	30.53	39.64	46.00	6.3	Vert.	100	8	HB	
10	840.720	35.20	22.73	10.70	30.50	38.13	46.00	7.8	Vert.	100	24	HB	

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

Spurious Emission

(Player Antenna, 4ch, ISO15693, with Tag)

DATA OF RADIATED EMISSION TEST

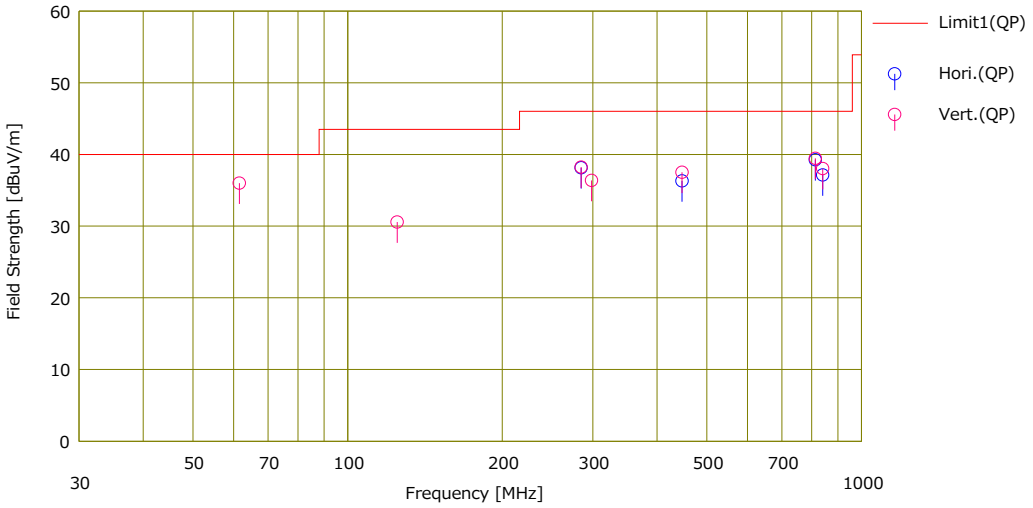
UL Japan, Inc. Kashima EMC Lab. No.10 Semi-Anechoic Chamber
Date : 2024/08/08

Mode : 4ch ISO15693 with Tag
Order No. : 15364137
Power : DC 12 V
Temp./Humi. : 25 deg.C. / 57 %RH

Remarks : -

Limit : FCC15.209 3 m, below 1 GHz:QP, above 1 GHz:AV/PK

Tested by : Kazuhiro Ando



No.	Freq. [MHz]	Reading ⟨QP⟩ [dBuV]	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result ⟨QP⟩ [dBuV/m]	Limit ⟨QP⟩ [dBuV/m]	Margin ⟨QP⟩ [dB]	Pola. [H/V]	Height [cm]	Angle [deg]	Ant. Type	Comment
1	284.760	48.00	13.02	8.05	30.94	38.13	46.00	7.8	Hori.	142	49	HB	
2	447.480	41.20	16.93	9.00	30.83	36.30	46.00	9.7	Hori.	100	200	HB	
3	813.600	36.70	22.46	10.61	30.53	39.24	46.00	6.7	Hori.	190	268	HB	
4	840.720	34.20	22.73	10.70	30.50	37.13	46.00	8.8	Hori.	100	291	HB	
5	61.538	48.20	12.81	6.21	31.22	36.00	40.00	4.0	Vert.	100	274	HB	
6	124.875	43.00	11.80	6.86	31.09	30.57	43.50	12.9	Vert.	100	53	HB	
7	284.760	48.10	13.02	8.05	30.94	38.23	46.00	7.7	Vert.	100	198	HB	
8	298.320	45.80	13.36	8.14	30.93	36.37	46.00	9.6	Vert.	100	0	HB	
9	447.480	42.40	16.93	9.00	30.83	37.50	46.00	8.5	Vert.	100	250	HB	
10	813.600	36.90	22.46	10.61	30.53	39.44	46.00	6.5	Vert.	100	10	HB	
11	840.720	35.10	22.73	10.70	30.50	38.03	46.00	7.9	Vert.	100	25	HB	

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

Spurious Emission

(Player Antenna, 4ch, ICODE ILT-M, without Tag)

DATA OF RADIATED EMISSION TEST

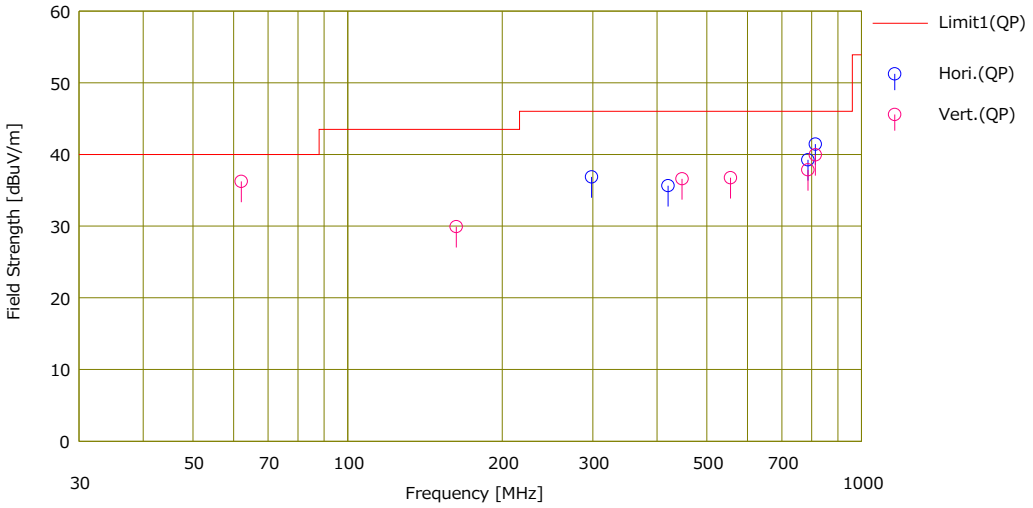
UL Japan, Inc. Kashima EMC Lab. No.10 Semi-Anechoic Chamber
Date : 2024/08/08

Mode : 4ch ICODE ILT-M without Tag
Order No. : 15364137
Power : DC 12 V
Temp./Humi. : 25 deg.C. / 57 %RH

Remarks : -

Limit : FCC15.209 3 m, below 1 GHz:QP, above 1 GHz:AV/PK

Tested by : Kazuhiro Ando



No.	Freq. [MHz]	Reading (QP) [dBuV]	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result (QP) [dBuV/m]	Limit (QP) [dBuV/m]	Margin (QP) [dB]	Pola. [H/V]	Height [cm]	Angle [deg]	Ant. Type	Comment
1	298.320	46.30	13.36	8.14	30.93	36.87	46.00	9.1	Hori.	100	321	HB	
2	420.360	41.50	16.13	8.86	30.84	35.65	46.00	10.3	Hori.	100	269	HB	
3	786.480	37.10	22.21	10.50	30.56	39.25	46.00	6.7	Hori.	207	302	HB	
4	813.600	38.90	22.46	10.61	30.53	41.44	46.00	4.5	Hori.	203	290	HB	
5	62.059	48.50	12.74	6.21	31.21	36.24	40.00	3.7	Vert.	100	268	HB	
6	162.720	40.40	13.38	7.18	31.03	29.93	43.50	13.5	Vert.	100	208	HB	
7	447.480	41.50	16.93	9.00	30.83	36.60	46.00	9.4	Vert.	100	254	HB	
8	555.960	39.50	18.47	9.52	30.74	36.75	46.00	9.2	Vert.	100	144	HB	
9	786.480	35.70	22.21	10.50	30.56	37.85	46.00	8.1	Vert.	177	241	HB	
10	813.600	37.40	22.46	10.61	30.53	39.94	46.00	6.0	Vert.	168	272	HB	

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

Spurious Emission

(Player Antenna, 4ch, ICODE ILT-M, with Tag)

DATA OF RADIATED EMISSION TEST

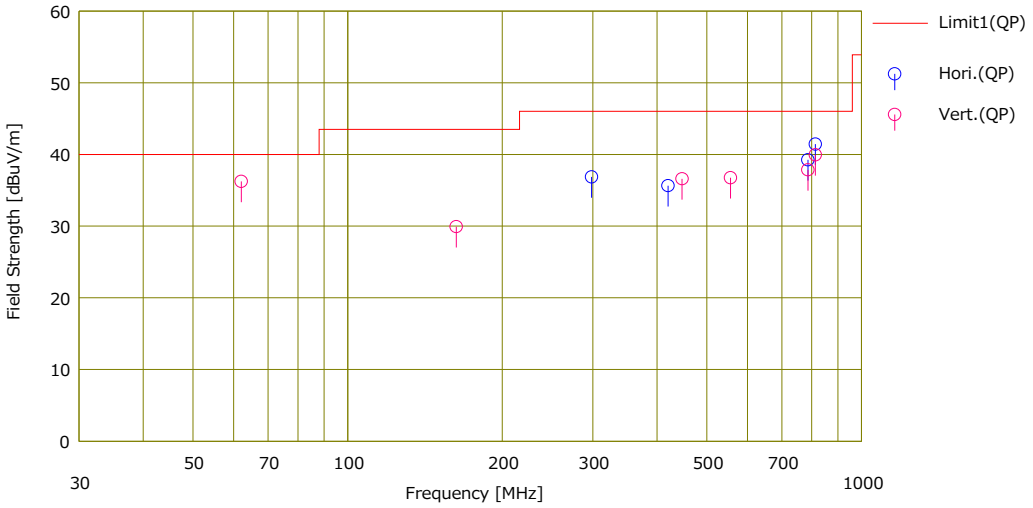
UL Japan, Inc. Kashima EMC Lab. No.10 Semi-Anechoic Chamber
Date : 2024/08/08

Mode : 4ch ICODE ILT-M without Tag
Order No. : 15364137
Power : DC 12 V
Temp./Humi. : 25 deg.C. / 57 %RH

Remarks : -

Limit : FCC15.209 3 m, below 1 GHz:QP, above 1 GHz:AV/PK

Tested by : Kazuhiro Ando



No.	Freq. [MHz]	Reading (QP) [dBuV]	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result (QP) [dBuV/m]	Limit (QP) [dBuV/m]	Margin (QP) [dB]	Pola. [H/V]	Height [cm]	Angle [deg]	Ant. Type	Comment
1	298.320	46.30	13.36	8.14	30.93	36.87	46.00	9.1	Hori.	100	321	HB	
2	420.360	41.50	16.13	8.86	30.84	35.65	46.00	10.3	Hori.	100	269	HB	
3	786.480	37.10	22.21	10.50	30.56	39.25	46.00	6.7	Hori.	207	302	HB	
4	813.600	38.90	22.46	10.61	30.53	41.44	46.00	4.5	Hori.	203	290	HB	
5	62.059	48.50	12.74	6.21	31.21	36.24	40.00	3.7	Vert.	100	268	HB	
6	162.720	40.40	13.38	7.18	31.03	29.93	43.50	13.5	Vert.	100	208	HB	
7	447.480	41.50	16.93	9.00	30.83	36.60	46.00	9.4	Vert.	100	254	HB	
8	555.960	39.50	18.47	9.52	30.74	36.75	46.00	9.2	Vert.	100	144	HB	
9	786.480	35.70	22.21	10.50	30.56	37.85	46.00	8.1	Vert.	177	241	HB	
10	813.600	37.40	22.46	10.61	30.53	39.94	46.00	6.0	Vert.	168	272	HB	

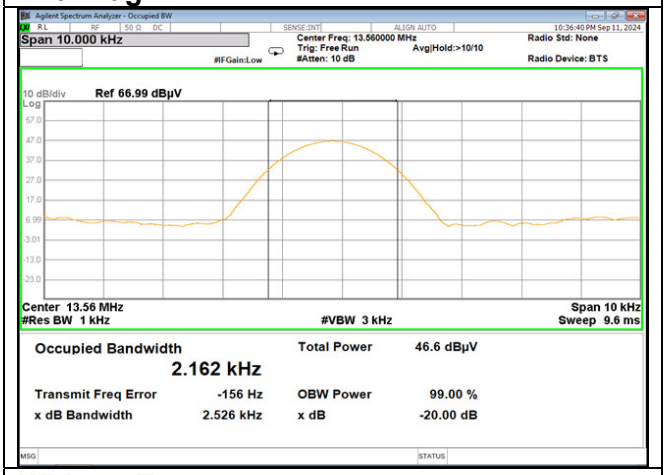
Calculation:Result[dBuV/m]=Reading[dBuV]+Ant.Fac[dB/m]+Loss(Cable+ATT)[dB]-Gain(AMP)[dB]
Ant.Type=HB:Hybrid Antenna

20 dB Bandwidth and 99% Occupied Bandwidth

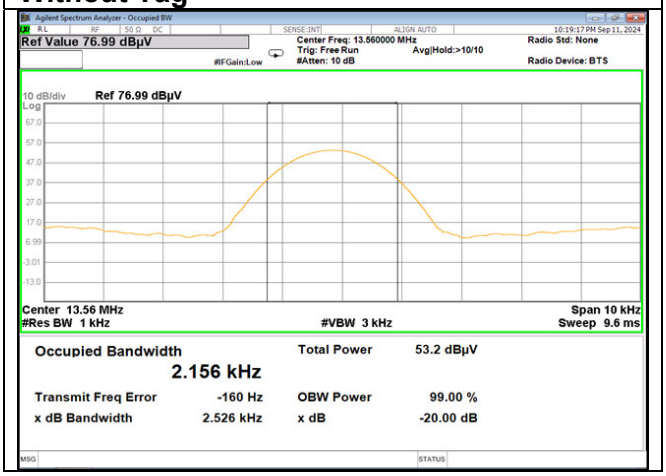
Test place	Kashima EMC Lab. No.2 Measurement Room
Date	September 11, 2024
Temperature / Humidity	23 deg. C / 52 % RH
Engineer	Hiromitsu Tanabe
Mode	Tx Mod on (ISO15693)

FREQ [MHz]	Mode	20dB Bandwidth [kHz]	99% Occupied Bandwidth [kHz]
13.56	With Tag	2.53	2.16
	Without Tag	2.53	2.16

With Tag



Without Tag



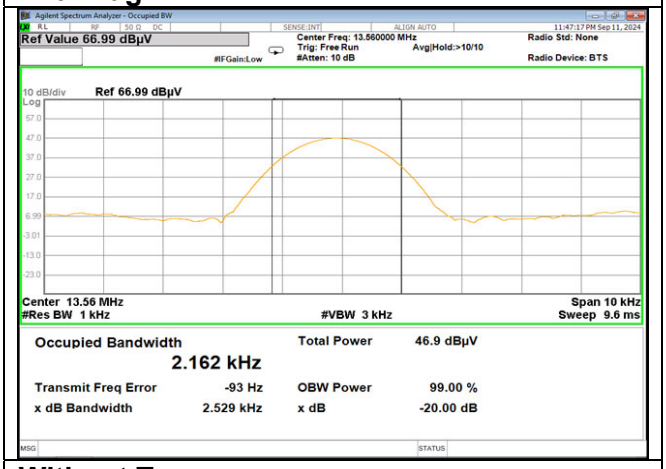
* Since the transmitter signal is CW-like it is impractical to use a RBW setting of 1 - 5% of the emission bandwidth since the emission bandwidth will be proportional to the RBW.

20 dB Bandwidth and 99% Occupied Bandwidth

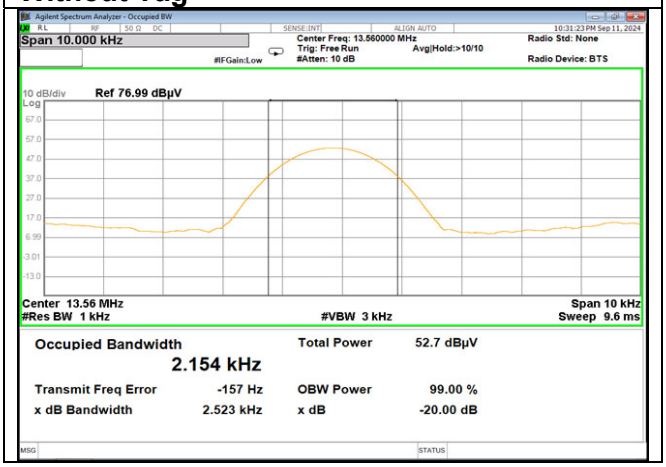
Test place	Kashima EMC Lab. No.2 Measurement Room
Date	September 11, 2024
Temperature / Humidity	23 deg. C / 52 % RH
Engineer	Hiromitsu Tanabe
Mode	Tx Mod on (ICODE ILT-M)

FREQ [MHz]	Mode	20dB Bandwidth [kHz]	99% Occupied Bandwidth [kHz]
13.56	With Tag	2.53	2.16
	Without Tag	2.52	2.15

With Tag



Without Tag



* Since the transmitter signal is CW-like it is impractical to use a RBW setting of 1 - 5% of the emission bandwidth since the emission bandwidth will be proportional to the RBW.

Frequency Tolerance

Test place	Kashima EMC Lab. No.2 Measurement Room
Date	August 9, 2024
Temperature / Humidity	24 deg. C / 53 % RH
Engineer	Hiromitsu Tanabe
Mode	Tx Mod off

Test condition		Tested	Measured	Frequency	Result		Limit
Temp.	Voltage	timing	frequency	error			
[deg. C]	[V]		[MHz]	[MHz]	[%]	[ppm]	[+/- %]
50	12	Power on	13.559856	-0.000144	-0.00106	-10.6	0.01
		+ 2 min.	13.559844	-0.000156	-0.00115	-11.5	0.01
		+ 5 min.	13.559848	-0.000152	-0.00112	-11.2	0.01
		+ 10 min.	13.559868	-0.000132	-0.00097	-9.7	0.01
40	12	Power on	13.559876	-0.000124	-0.00091	-9.1	0.01
		+ 2 min.	13.559853	-0.000147	-0.00108	-10.8	0.01
		+ 5 min.	13.559845	-0.000155	-0.00114	-11.4	0.01
		+ 10 min.	13.559848	-0.000152	-0.00112	-11.2	0.01
30	12	Power on	13.559912	-0.000088	-0.00065	-6.5	0.01
		+ 2 min.	13.559881	-0.000119	-0.00088	-8.8	0.01
		+ 5 min.	13.559863	-0.000137	-0.00101	-10.1	0.01
		+ 10 min.	13.559848	-0.000152	-0.00112	-11.2	0.01
20	12	Power on	13.559951	-0.000049	-0.00036	-3.6	0.01
		+ 2 min.	13.559915	-0.000085	-0.00063	-6.3	0.01
		+ 5 min.	13.559891	-0.000109	-0.00080	-8.0	0.01
		+ 10 min.	13.559868	-0.000132	-0.00097	-9.7	0.01
20	10.8	Power on	13.559954	-0.000046	-0.00034	-3.4	0.01
	(12V -10%)	+ 2 min.	13.559920	-0.000080	-0.00059	-5.9	0.01
		+ 5 min.	13.559896	-0.000104	-0.00077	-7.7	0.01
		+ 10 min.	13.559875	-0.000125	-0.00092	-9.2	0.01
20	13.2	Power on	13.559953	-0.000047	-0.00035	-3.5	0.01
	(12V +10%)	+ 2 min.	13.559914	-0.000086	-0.00063	-6.3	0.01
		+ 5 min.	13.559885	-0.000115	-0.00085	-8.5	0.01
		+ 10 min.	13.559860	-0.000140	-0.00103	-10.3	0.01
10	12	Power on	13.559985	-0.000015	-0.00011	-1.1	0.01
		+ 2 min.	13.559955	-0.000045	-0.00033	-3.3	0.01
		+ 5 min.	13.559927	-0.000073	-0.00054	-5.4	0.01
		+ 10 min.	13.559896	-0.000104	-0.00077	-7.7	0.01
0	12	Power on	13.560006	0.000006	0.00004	0.4	0.01
		+ 2 min.	13.559989	-0.000011	-0.00008	-0.8	0.01
		+ 5 min.	13.559968	-0.000032	-0.00024	-2.4	0.01
		+ 10 min.	13.559935	-0.000065	-0.00048	-4.8	0.01
-10	12	Power on	13.560004	0.000004	0.00003	0.3	0.01
		+ 2 min.	13.560005	0.000005	0.00004	0.4	0.01
		+ 5 min.	13.559992	-0.000008	-0.00006	-0.6	0.01
		+ 10 min.	13.559970	-0.000030	-0.00022	-2.2	0.01
-20	12	Power on	13.559975	-0.000025	-0.00018	-1.8	0.01
		+ 2 min.	13.560004	0.000004	0.00003	0.3	0.01
		+ 5 min.	13.560007	0.000007	0.00005	0.5	0.01
		+ 10 min.	13.559996	-0.000004	-0.00003	-0.3	0.01

Calculation formula: Frequency error = Measured frequency - Tested frequency
Result [%] = Frequency error / Tested frequency * 100

Tested frequency: 13.56 MHz
Limit (+/-): 0.01 % (+/- 100ppm)

* The specification of this EUT is DC 12 V -10 % to +10 %.

APPENDIX 2: Test instruments

Test Equipment

Test Item	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Cal Int
CE	143499	A.M.N.	Rohde & Schwarz	ESH3-Z5	829567/010	2024/07/01	12
CE	143167	5 Site CE (SR) System	N/A	none(No.5 CE SR)	-	2024/07/02	12
CE	144195	Test Receiver	Rohde & Schwarz	ESCI	100053	2023/09/09	12
CE	222614	Measure	SHINWA RULES CO., LTD.	80862	none	-	-
CE	222854	Temperature & Humidity Logger	HIOKI E.E. CORPORATION	LR5001/LR9504	220820033/220899853	2023/09/19	12
CE	143133	Barometer	Sanoh Co., Ltd	SBR-151	001439	2023/03/10	36
CE	144211	Digital Multimeter	Fluke Corporation	112	89790194	2023/10/24	12
CE	178804	EMI Software	TSJ (Techno Science Japan)	TEPTO-DV3 (RE,CE,ME,PE)	Ver 3.1.0546	-	-
RE	143121	LOGBICON	Schwarzbeck Mess-Elektronik OHG	VULB 9168	343	2024/04/22	12
RE	178806	5dB Fixed Atten.	Pasternack Enterprises	PE7047-5	none	2024/04/17	12
RE	143165	10 Site RE 3m System	UL Japan	none	none	2023/8/1	12
RE	183880	Pre-Amplifier	UL Japan	ZKL-2	001	2024/04/22	12
RE	144199	Test Receiver	Keysight Technologies Inc	N9038A	MY53290016	2024/07/05	12
RE	144632	Semi Anechoic Chamber	TDK	NSA (No.10)	10	2024/05/02	12
RE	143833	Loop Antenna	Rohde & Schwarz	HFH2-Z2	827779/008	2023/10/20	12
RE	143161	Coaxial Cable	Fujikura,HP,Mini-Circits,Fujikura	3D2W	none	2024/05/12	12
RE	144245	6dB Fixed Atten.	Suhner	6906.01.A	none	2024/07/02	12
RE	171927	Pre Amplifier	UL Japan	GALI-84+	001	2024/07/02	12
RE	143157	10 Site CE System	UL Japan	none	none	2023/8/1	12
RE	222745	Measure	SHINWA RULES CO., LTD.	80862	none	-	-
RE	143542	Temperature & Humidity Indicator	HIOKI E.E. CORPORATION	3641/9680-50	090999895/090905406	2024/06/25	12
RE	143133	Barometer	Sanoh Co., Ltd	SBR-151	001439	2023/03/10	36
RE	144216	Digital Multimeter	Fluke Corporation	115	994460954	2023/10/24	12
RE	178804	EMI Software	TSJ (Techno Science Japan)	TEPTO-DV3 (RE,CE,ME,PE)	Ver 3.1.0546	-	-
BW, FT	143642	Spectrum Analyzer	Keysight Technologies Inc	N9030A	MY53310670 Version A.13.12	2024/05/23	12
BW, FT	143023	10dB Fixed Atten.	Weinschel - API Technologies Corp	54A-10	56251	2024/05/12	12
BW, FT	143181	Temperature and Humidity Chamber	Espec	PL-1J	15004059	2023/10/17	12
BW, FT	143423	Frequency Counter	Keysight Technologies Inc	53151A	US40511823	2024/04/10	12
BW, FT	143942	Near Field Probe	Langer	LF-R400	02-0815	-	-
BW, FT	222747	Measure	SHINWA RULES CO., LTD.	80862	none	-	-
BW, FT	144210	Digital Multimeter	Fluke Corporation	112	89790193	2023/10/24	12
BW, FT	200034	Temperature & Humidity Logger	HIOKI E.E. CORPORATION	LR5001/LR9504	200636456/200699552	2024/07/23	12
BW, FT	143133	Barometer	Sanoh Co., Ltd	SBR-151	001439	2023/03/10	36

***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:

CE: Conducted Emission
RE: Radiated Emission
BW: 20 dB Bandwidth and 99% Occupied Bandwidth
FT: Frequency Tolerance

APPENDIX 3: Photographs of test setup

Conducted Emission

(Dealer Antenna)

Photo 1

Photo 2

Conducted Emission

(Player Antenna)

Photo 3

Photo 4

Radiated Emission

(Dealer Antenna)

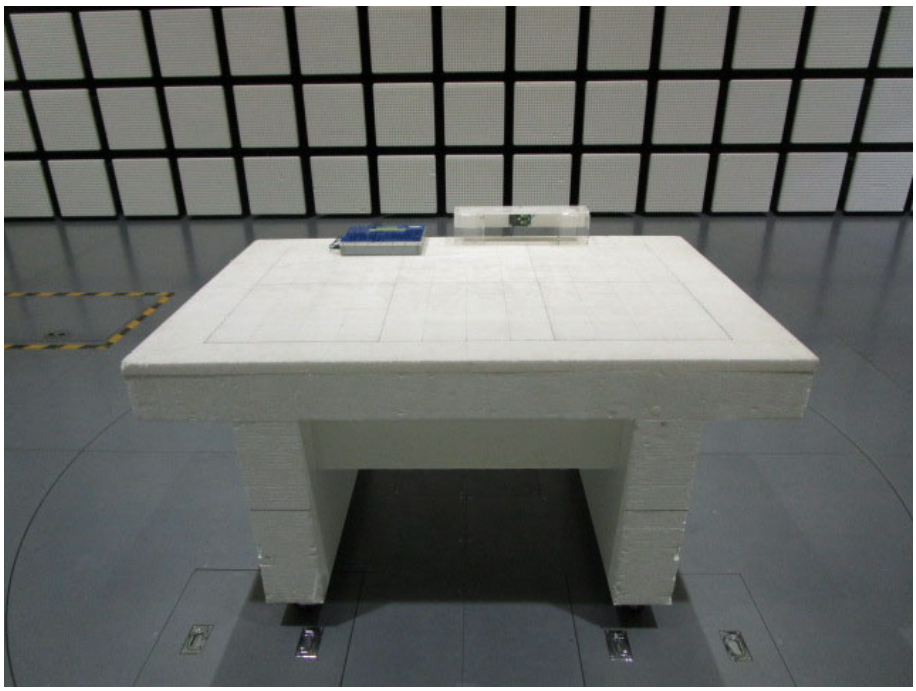


Photo 1

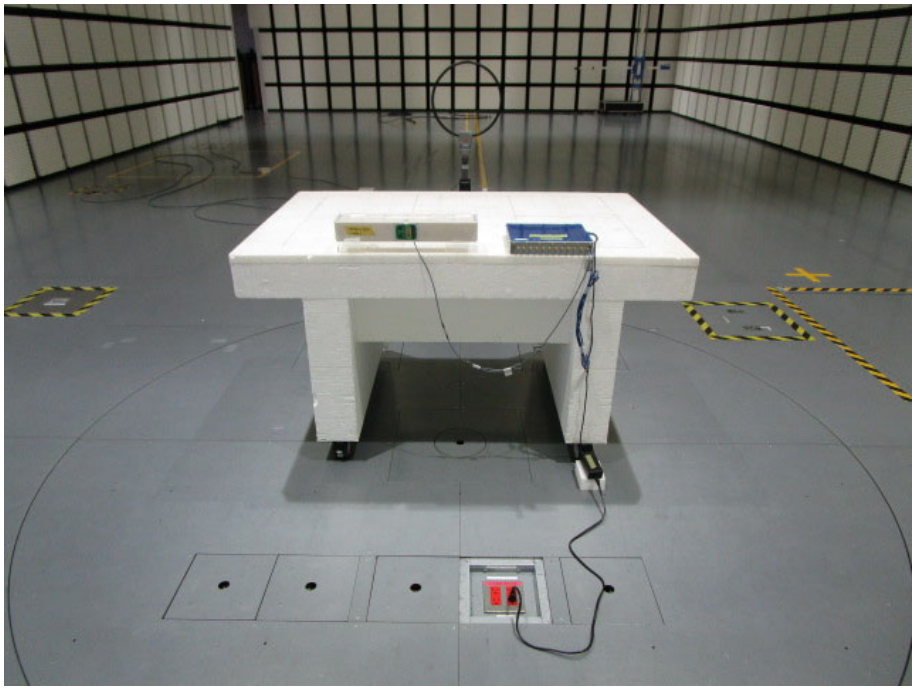


Photo 2

Radiated Emission
(Dealer Antenna)

Photo 3

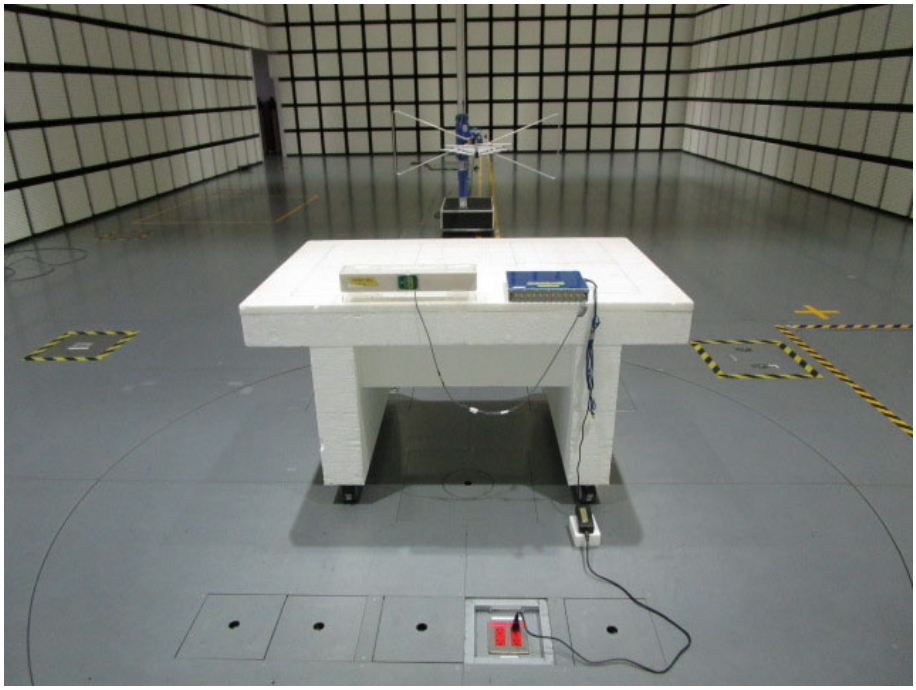


Photo 4

Radiated Emission
(Player Antenna)

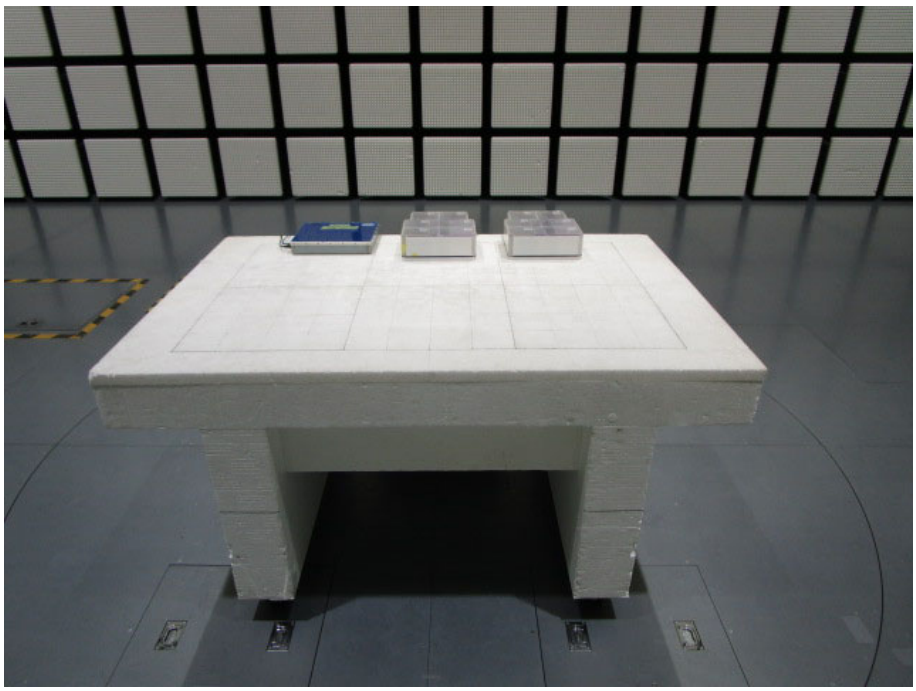


Photo 5

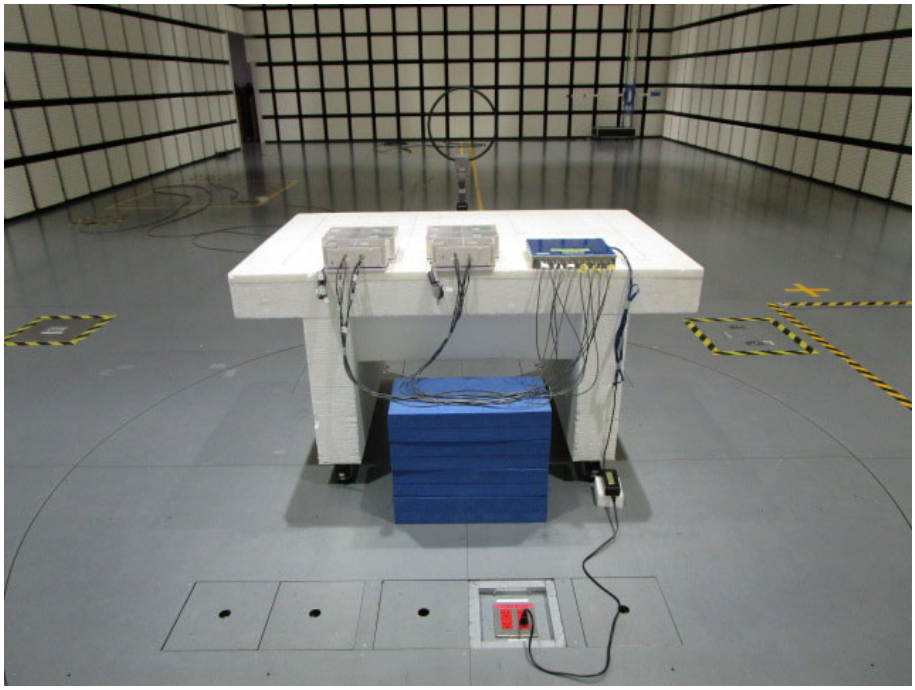


Photo 6

Radiated Emission
(Player Antenna)

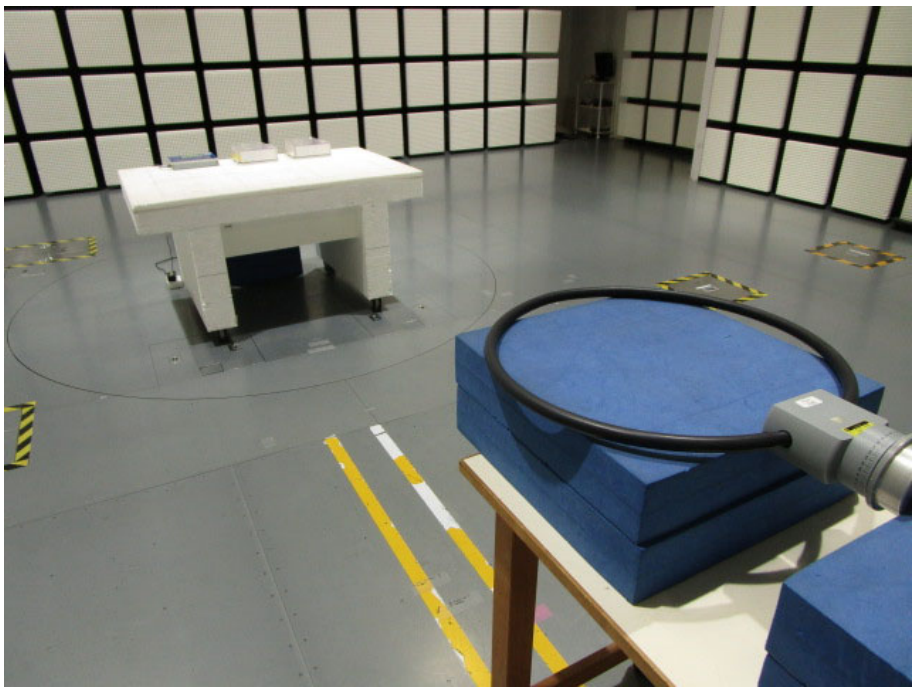


Photo 7

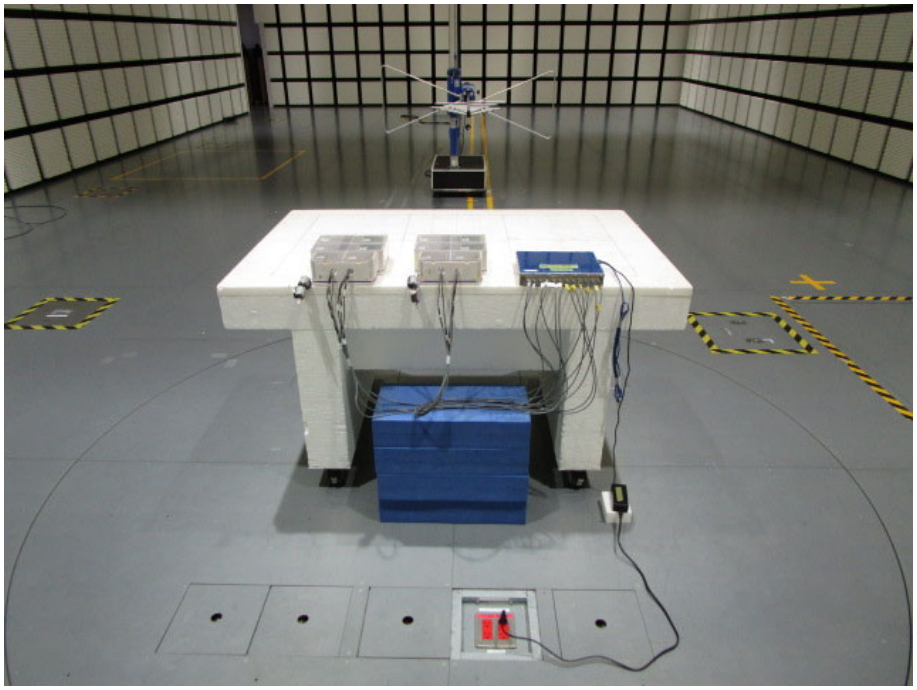
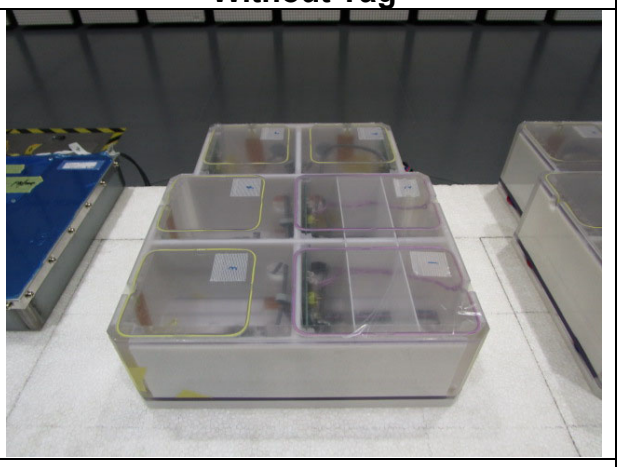
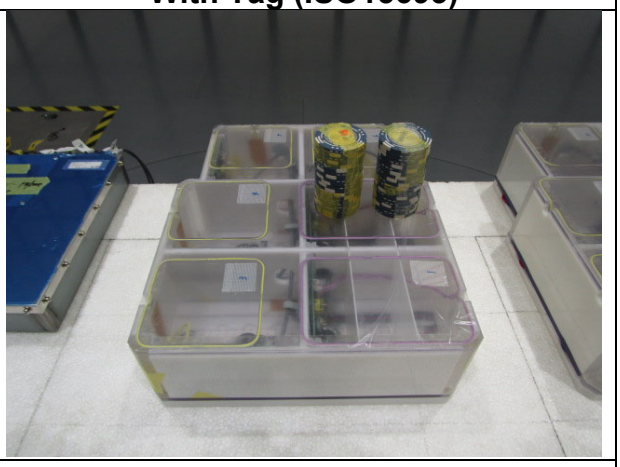
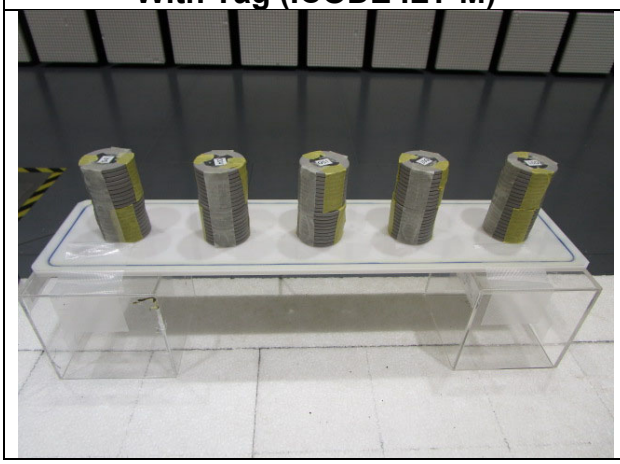
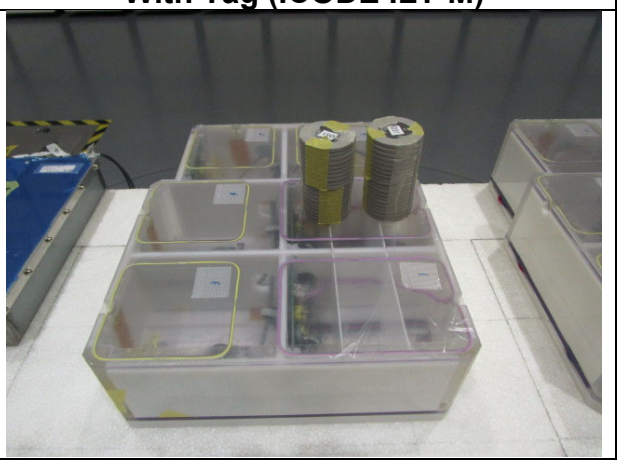


Photo 8

With/Without Tag

Dealer Antenna	Player Antenna
Without Tag	Without Tag
	
With Tag (ISO15693)	With Tag (ISO15693)
	
With Tag (ICODE ILT-M)	With Tag (ICODE ILT-M)
	

Frequency Tolerance

Photo 1

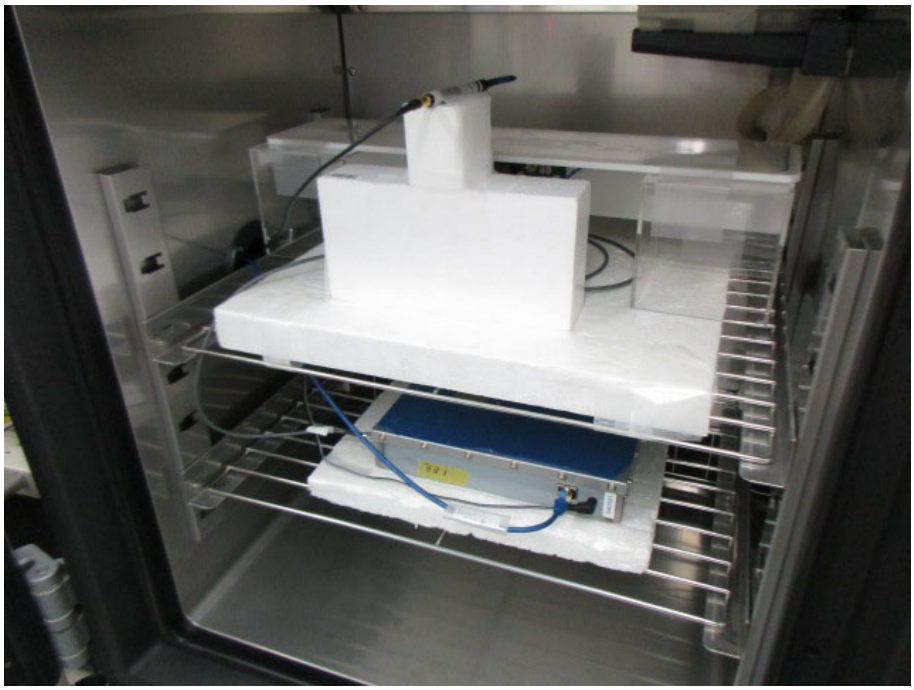


Photo 2

End of Report