



RADIO TEST REPORT

Test Report No.: 14653480M-F-R2

Customer	Fujikura Ltd.
Description of EUT	Advanced Optical Fiber Cleaver
Model Number of EUT	CT110
FCC ID	2A9PZ-CT110
Test Regulation	FCC Part 15 Subpart C
Test Result	Complied (Refer to SECTION 3)
Issue Date	December 12, 2023
Remarks	-

Representative test engineer

Hiromitsu Tanabe
Engineer

Approved by

Kazuhiro Ando
Engineer



CERTIFICATE 1266.01

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

Report Cover Page - Form-ULID-003532 (DCS:13-EM-F0429) Issue# 21.0

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- This test report covers Radio technical requirements.
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- The information provided from the customer for this report is identified in Section 1.
- For test report(s) referred in this report, the latest version (including any revisions) is always referred.

REVISION HISTORY

Original Test Report No.: 14653480M-F

This report is a revised version of 14653480M-F-R1. 14653480M-F-R1 is replaced with this report.

Revision	Test Report No.	Date	Page Revised Contents
- (Original)	14653480M-F	March 24, 2023	-
1	14653480M-F-R1	December 5, 2023	Page 9 Revised the Operating mode of Frequency Tolerance - From Transmitting and Receiving mode, Mod on to Transmitting (Mod off)
2	14653480M-F-R2	December 12, 2023	Page 9 Revised the Voltage in Frequency Tolerance - From “Maximum Voltage AC 138 V (DC 24 V +15 %)” to “Maximum Voltage AC 138 V (AC 120 V +15 %)” - From “Minimum Voltage AC 102 V (DC 24 V -15 %)” to “Minimum Voltage AC 102 V (AC 120 V -15 %)” Page 11 Revised the Model number of the AC Adapter - From “ADS-40SI-19-2” to “ADC-21”

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

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SECTION 1: Customer Information

Company Name	Fujikura Ltd.
Address	1440 Mutsuzaki, Sakura-shi, Chiba, 285-8550 Japan
Telephone Number	+81-43-484-3961
Contact Person	Masayuki Takahashi

The information provided from 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
- * The laboratory is exempted from liability of any test results affected from the above information in SECTION 2 and 4.

SECTION 2: Equipment Under Test (EUT)

2.1 Identification of EUT

Description	Advanced Optical Fiber Cleaver
Model Number	CT110
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	February 27, 2023
Test Date	February 27 to March 6, 2023

2.2 Product Description

General Specification

Rating	AC 100 V to 240 V, 1.5 A, 50 / 60 Hz
Operating Temperature	0 deg. C to 40 deg. C

Radio Specification

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

The EUT has following similar model:

Model No.	Difference from the base model
CT110 (EUT)	- (Base model)
CT111	Angle cleave

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.

* Also the EUT complies with FCC Part 15 Subpart B.

3.2 Procedures and results

Item	Test Procedure	Specification	Worst margin	Results	Remarks
Conducted Emission	<FCC> ANSI C63.10:2013 6 Standard test methods <ISED> RSS-Gen 8.8	<FCC> Section 15.207 ----- <ISED> RSS-Gen 8.8	12.3 dB 13.56000 MHz, AV, L	Complied a)	-
Electric Field Strength of Fundamental Emission	<FCC> ANSI C63.10:2013 6 Standard test methods <ISED> RSS-Gen 6.4, 6.12	<FCC> Section 15.225(a) ----- <ISED> RSS-210 B.6	75.9 dB, 13.56000 MHz, QP, 0 deg.	Complied b)	Radiated
Spectrum Mask	<FCC> ANSI C63.10:2013 6 Standard test methods <ISED> RSS-Gen 6.4, 6.13	<FCC> Section 15.225(b)(c) ----- <ISED> RSS-210 B.6	44.7 dB, 13.11000 MHz, QP, 0 deg.	Complied b)	Radiated
20 dB Bandwidth	<FCC> ANSI C63.10:2013 6 Standard test methods <ISED> -	<FCC> Section15.215(c) ----- <ISED> -	See data	Complied c)	Radiated
Electric Field Strength of Spurious Emission	<FCC> ANSI C63.10:2013 6 Standard test methods <ISED> RSS-Gen 6.4, 6.13	<FCC> Section 15.209, Section 15.225 (d) ----- <ISED> RSS-210 B.6 RSS-Gen 8.9	13.3 dB 83.581 MHz, Vertical, QP	Complied d)	Radiated
Frequency Tolerance	<FCC> ANSI C63.10:2013 6 Standard test methods <ISED> RSS-Gen 6.11, 8.11	<FCC> Section 15.225(e) ----- <ISED> RSS-210 B.6	See data	Complied e)	Radiated

Note: UL Japan, Inc.'s EMI Work Procedures: Work Instructions-ULID-003591 and Work Instructions-ULID-003593.

- a) Refer to APPENDIX 1 (data of Conducted Emission)
- b) Refer to APPENDIX 1 (data of Fundamental emission and Spectrum Mask)
- c) Refer to APPENDIX 1 (data of 20 dB Bandwidth and 99% Occupied Bandwidth)
- d) Refer to APPENDIX 1 (data of Spurious emission)
- e) Refer to APPENDIX 1 (data of Frequency Tolerance)

FCC Part 15.31 (e)

The worst case stable voltage was provided to the EUT during the all tests.
And maximum and minimum voltage were provided to the EUT during the output power measurement test.
Therefore, this EUT complies with the requirement.
However, the supply voltage was varied and tested at 85 % and 115 % of the nominal rated supply voltage during frequency tolerance test according to Section 15.225(e).

FCC Part 15.203 Antenna requirement

It is impossible for end users to replace the antenna, because the antenna is mounted inside of the EUT.
Therefore, the equipment complies with the antenna requirement of Section 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	- a)	Radiated
Note: UL Japan, Inc.'s EMI Work Procedures: Work Instructions-ULID-003591 and Work Instructions-ULID-003593. a) Refer to APPENDIX 1 (data of 20 dB Bandwidth and 99% Occupied Bandwidth)					

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	3.2 dB

Radiated emission

Measurement distance	Frequency range	Calculate Uncertainty (+/-)
3 m	9 kHz to 30 MHz	2.9 dB
	30 MHz to 200 MHz	6.2 dB
	200 MHz to 1000 MHz	6.3 dB
	1 GHz to 6 GHz	5.0 dB
	6 GHz to 18 GHz	5.4 dB
	18 GHz to 40 GHz	5.5 dB
1 m	1 GHz to 18 GHz	5.4 dB
	18 GHz to 40 GHz	5.6 dB
0.5m	26.5 GHz to 40 GHz	5.9 dB

Antenna Terminal test

Test Item	Calculate Uncertainty (+/-)
Frequency Tolerance	7.9×10^{-8}
20 dB Bandwidth / 99 % Occupied Bandwidth	1.6 %

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	-	-
No.3 Measurement room	4.5 x 5.3 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:

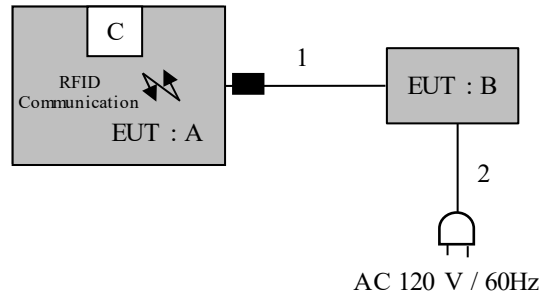
Test mode	Remarks
Transmitting and Receiving mode - With tag - Without tag	The EUT transmits and receives at the same time
The EUT was operated in a manner similar to typical use during the tests.	
*Power of the EUT was set by the software as follows; Power Setting: Fixed Software: EMC Test ver.CT110_0100RE0 (Date: February 22, 2023, Storage location: EUT memory) *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	Transmitting and Receiving mode, with tag / without tag
Electric Field Strength of Fundamental Emission	Transmitting and Receiving mode, with tag / without tag
Spectrum Mask	Transmitting and Receiving mode, with tag / without tag
20 dB Bandwidth and 99 % Occupied Bandwidth	Transmitting and Receiving mode, with tag / without tag
Electric Field Strength of Spurious Emission	Transmitting and Receiving mode, with tag / without tag
Frequency Tolerance	Transmitting (Mod off)

Frequency Tolerance:	
Temperature	-20 deg. C to +50 deg. C Step 10 deg. C
Voltage	Normal Voltage AC 120 V Maximum Voltage AC 138 V (AC 120 V +15 %) Minimum Voltage AC 102 V (AC 120 V -15 %)

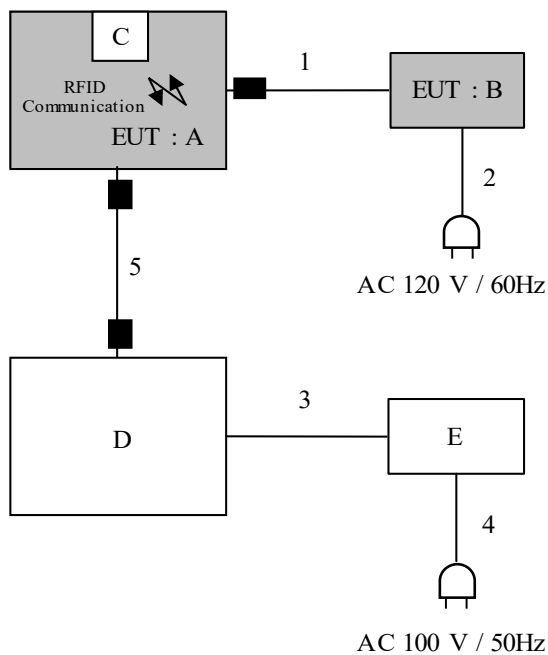
4.2 Configuration and peripherals

-Conducted Emission, Radiated Emission-



■ : Standard Ferrite Core

-Frequency Tolerance-



■ : Standard Ferrite Core

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

*As a result of comparing AC 120 V and AC 240 V at pre-check, conducted emission test was performed with AC 120 V of the worst voltage as representative.

Description of EUT and Support equipment

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	Advanced Optical Fiber Cleaver	CT110	Z0006	Fujikura Ltd.	EUT
B	AC Adapter	ADC-21	H27R1A433(A1)	SHENZHEN HONOR ELECTRONIC CO., LTD	EUT
C	Tag(ISO 15693)	RF37S114HTFJB	-	TI	-
D	Laptop PC	PR73WAJADMC QD81	9G144625H	TOSHIBA	-
E	AC Adapter	PA3714U-1ACA	Q71C000AE212 079110803010591	TOSHIBA	-

List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	DC Cable	1.5	Unshielded	Unshielded	
2	AC Cable	2.0	Unshielded	Unshielded	2wire
3	DC Cable	1.8	Unshielded	Unshielded	
4	AC Cable	0.9	Unshielded	Unshielded	2wire
5	USB Cable	1.0	Shielded	Shielded	

SECTION 5: Conducted Emission

Test Procedure and conditions

EUT was placed on a wooden platform 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.

1) For the tests on EUT with other peripherals (as a whole system)

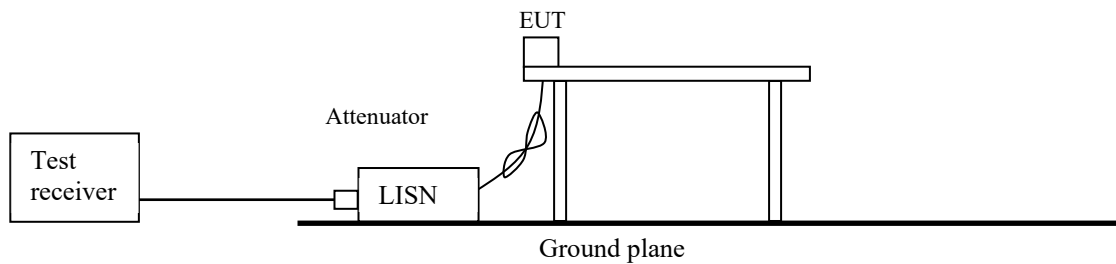
I/O cables that were connected to the peripherals were bundled in center. They were folded back and forth forming a bundle 30 cm to 40 cm long and were hanged at a 40 cm height to the ground plane. All unused 50 ohm connectors of the LISN (AMN) were resistivity terminated in 50 ohm when not connected to the measuring equipment.

The AC Mains Terminal Continuous disturbance Voltage has been measured with the EUT in a Semi Anechoic Chamber.

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 - 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 Ohms. 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 1000 MHz
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: $40 \times \log(3 \text{ m} / 300 \text{ m}) = -80 \text{ dB}$

*2) Distance Factor: $40 \times \log(3 \text{ m} / 30 \text{ m}) = -40 \text{ dB}$

Figure 2: Test Setup

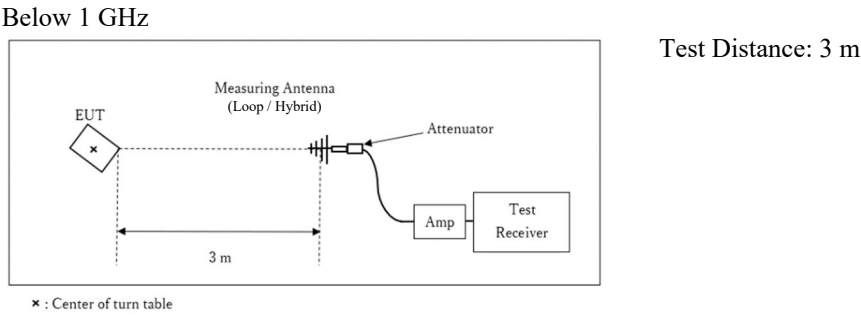
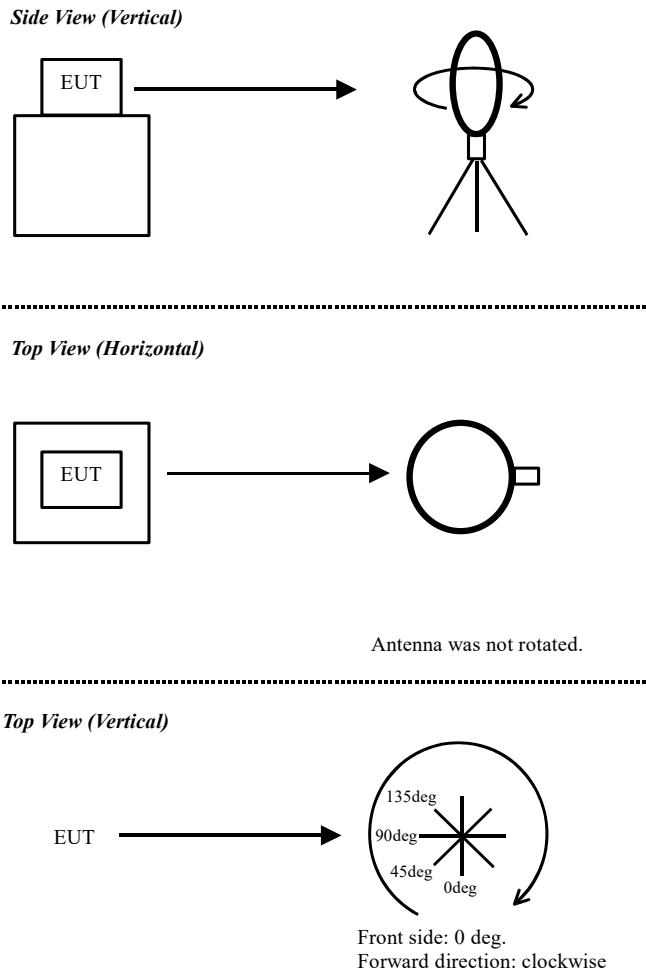


Figure 3: Direction of the Loop Antenna



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 test

Test	Span	RBW	VBW	Sweep	Detector	Trace	Instrument used
20 dB Bandwidth	1 MHz	10 kHz	30 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 Peak detector, 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.							

Test data : APPENDIX
Test result : Pass

APPENDIX 1: Test data

Conducted Emission

DATA OF CONDUCTED EMISSION TEST

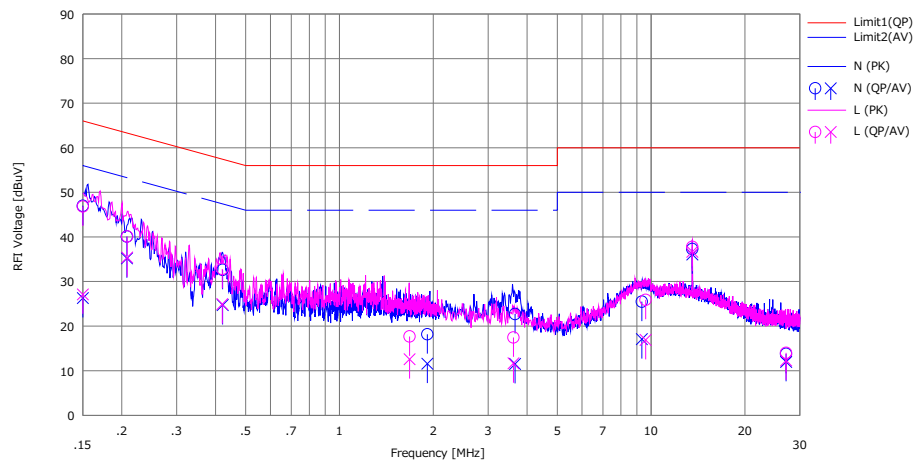
UL Japan, Inc. Kashima EMC Lab. No.5 Shielded Room
Date : 2023/03/06

Mode : Transmitting and Receiving mode
Order No. : 14653480
Power : AC 120V / 60Hz
Temp./Humi. : 20deg.C / 41%RH

Remarks : with Tag

Limit : FCC_Part 15 Subpart C(15.207)

Tested by : Hiromitsu Tanabe



No.	Freq. [MHz]	Reading		C.Fac	Results		Limit		Margin		Phase	Comment
		(QP) [dBuV]	(AV) [dBuV]		(QP) [dBuV]	(AV) [dBuV]	(QP) [dBuV]	(AV) [dBuV]	(QP) [dB]	(AV) [dB]		
1	0.15000	36.90	16.20	10.08	46.98	26.28	66.00	56.00	19.0	29.7	N	
2	0.20793	30.00	25.10	10.09	40.09	35.19	63.29	53.29	23.2	18.1	N	
3	0.42160	22.50	14.60	10.12	32.62	24.72	57.42	47.42	24.8	22.7	N	
4	1.91303	7.90	1.30	10.27	18.17	11.57	56.00	46.00	37.8	34.4	N	
5	3.66003	12.30	1.10	10.41	22.71	11.51	56.00	46.00	33.2	34.4	N	
6	9.34006	14.70	6.30	10.78	25.48	17.08	60.00	50.00	34.5	32.9	N	
7	13.56000	26.20	25.00	11.08	37.28	36.08	60.00	50.00	22.7	13.9	N	
8	27.12000	2.10	0.30	11.67	13.77	11.97	60.00	50.00	46.2	38.0	N	
9	0.15000	36.70	17.00	10.10	46.80	27.10	66.00	56.00	19.2	28.9	L	
10	0.20831	30.00	25.30	10.11	40.11	35.41	63.27	53.27	23.1	17.8	L	
11	0.42041	22.70	14.80	10.14	32.84	24.94	57.44	47.44	24.6	22.5	L	
12	1.67802	7.40	2.30	10.28	17.68	12.58	56.00	46.00	38.3	33.4	L	
13	3.61622	7.00	1.20	10.45	17.45	11.65	56.00	46.00	38.5	34.3	L	
14	9.60030	15.00	6.00	10.90	25.90	16.90	60.00	50.00	34.1	33.1	L	
15	13.56000	26.50	25.40	11.27	37.77	36.67	60.00	50.00	22.2	13.3	L	
16	27.12000	2.00	0.30	12.01	14.01	12.31	60.00	50.00	45.9	37.6	L	

Calculation: Result[dBuV]=Reading[dBuV]+C.Fac(LISN+Cable+ATT)[dB]
LISN:CLS-11

Conducted Emission

DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Kashima EMC Lab. No.5 Shielded Room

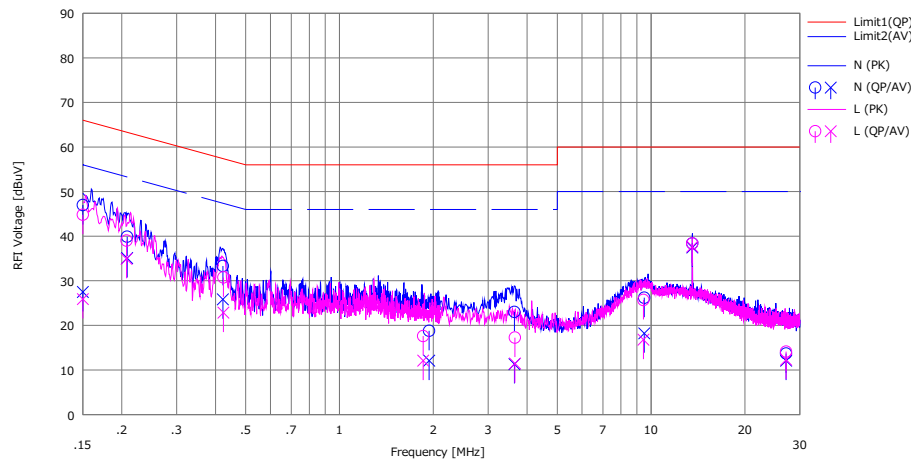
Date : 2023/03/06

Mode : Transmitting and Receiving mode
Order No. : 14653480
Power : AC 120V / 60Hz
Temp./Humi. : 20deg.C / 41%RH

Remarks : without Tag

Limit : FCC_Part 15 Subpart C(15.207)

Tested by : Hiromitsu Tanabe



No.	Freq. [MHz]	Reading		C.Fac	Results		Limit		Margin		Phase	Comment
		[dBUV]	[AV]		[dBUV]	[AV]	[dBUV]	[AV]	[dB]	[dB]		
1	0.15000	36.90	17.40	10.08	46.98	27.48	66.00	56.00	19.0	28.5	N	
2	0.20811	29.80	25.00	10.09	39.89	35.09	63.28	53.28	23.3	18.1	N	
3	0.42231	23.20	15.70	10.12	33.32	25.82	57.40	47.40	24.0	21.5	N	
4	1.94002	8.50	1.80	10.28	18.78	12.08	56.00	46.00	37.2	33.9	N	
5	3.64003	12.60	0.90	10.41	23.01	11.31	56.00	46.00	32.9	34.6	N	
6	9.50402	15.40	7.40	10.80	26.20	18.20	60.00	50.00	33.8	31.8	N	
7	13.56000	27.30	26.40	11.08	38.38	37.48	60.00	50.00	21.6	12.5	N	
8	27.12000	2.00	0.40	11.67	13.67	12.07	60.00	50.00	46.3	37.9	N	
9	0.15000	34.70	15.80	10.10	44.80	25.90	66.00	56.00	21.2	30.1	L	
10	0.20720	28.90	24.80	10.11	39.01	34.91	63.32	53.32	24.3	18.4	L	
11	0.42420	20.60	12.70	10.14	30.74	22.84	57.37	47.37	26.6	24.5	L	
12	1.85602	7.30	1.80	10.30	17.60	12.10	56.00	46.00	38.4	33.9	L	
13	3.65623	6.80	1.00	10.45	17.25	11.45	56.00	46.00	38.7	34.5	L	
14	9.44802	14.80	5.90	10.89	25.69	16.79	60.00	50.00	34.3	33.2	L	
15	13.56000	27.10	26.40	11.27	38.37	37.67	60.00	50.00	21.6	12.3	L	
16	27.12000	2.10	0.30	12.01	14.11	12.31	60.00	50.00	45.8	37.6	L	

Calculation: Result[dBuV] = Reading[dBuV] + C.Fac(LISN + Cable + ATT)[dB]
LISN: CLS-11

Fundamental emission and Spectrum Mask

DATA OF RADIATED EMISSION(below 30MHz) TEST

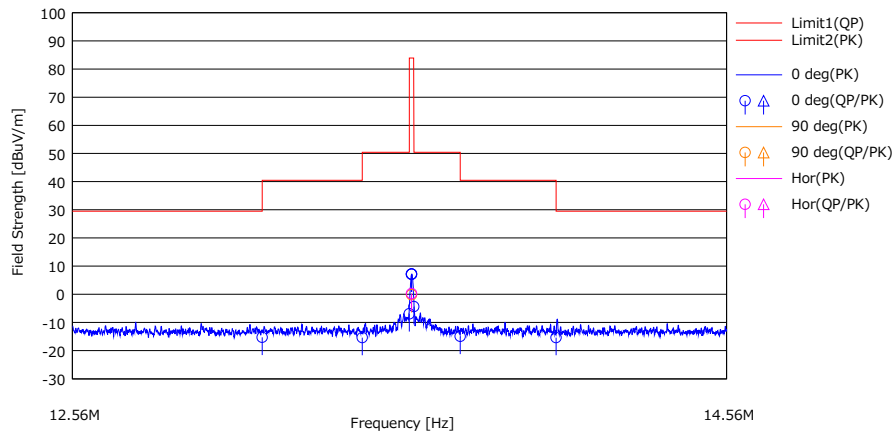
UL Japan, Inc. Kashima EMC Lab. No.10 Semi-Anechoic Chamber

Date : 2023/02/28

Mode : Transmitting and Receiving mode
Order No. : 14653480
Power : AC 120V / 60Hz
Temp./Humi. : 20deg.C / 40%RH

Remarks : with Tag

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 : Hiromitsu Tanabe



No.	Freq. [MHz]	Reading		Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result		Limit		Margin		Antenna [deg]	Table	Comment
		(QP) [dBuV]	(PK) [dBuV]				(QP) [dBuV/m]	(PK) [dBuV/m]	(QP) [dBuV/m]	(PK) [dBuV/m]	(QP) [dB]	(PK) [dB]			
		[dBuV]	[dBuV]				[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]			
1	13.11000	22.70	---	19.28	-33.04	24.21	-15.27	---	29.50	---	44.7	---	0 deg	133	
2	13.41000	22.60	---	19.29	-33.02	24.22	-15.35	---	40.50	---	55.8	---	0 deg	133	
3	13.55300	31.00	---	19.29	-33.01	24.23	-6.95	---	50.40	---	57.3	---	0 deg	133	
4	13.56000	45.10	---	19.29	-33.01	24.23	7.15	---	83.90	---	76.7	---	0 deg	133	AC 102V
5	13.56000	45.10	---	19.29	-33.01	24.23	7.15	---	83.90	---	76.7	---	0 deg	133	AC 120V
6	13.56000	45.10	---	19.29	-33.01	24.23	7.15	---	83.90	---	76.7	---	0 deg	133	AC 138V
7	13.56700	33.60	---	19.29	-33.01	24.23	-4.35	---	50.40	---	54.7	---	0 deg	133	
8	13.71000	23.00	---	19.30	-33.01	24.23	-14.94	---	40.50	---	55.4	---	0 deg	133	
9	14.01000	22.60	---	19.30	-33.00	24.25	-15.35	---	29.50	---	44.8	---	0 deg	133	
10	13.56000	37.80	---	19.29	-33.01	24.23	-0.15	---	83.90	---	84.0	---	90 deg	229	
11	13.56000	38.20	---	19.29	-33.01	24.23	0.25	---	83.90	---	83.6	---	Hor	136	

Calculation:Result[dBuV/m]=Reading[dBuV]+Ant.Fac[dB/m]+Loss(Cable+ATT)[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
0	13.56000	QP	45.10	19.29	6.99	24.23	-	47.15	-	-	Fundamental

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

Fundamental emission and Spectrum Mask

DATA OF RADIATED EMISSION(below 30MHz) TEST

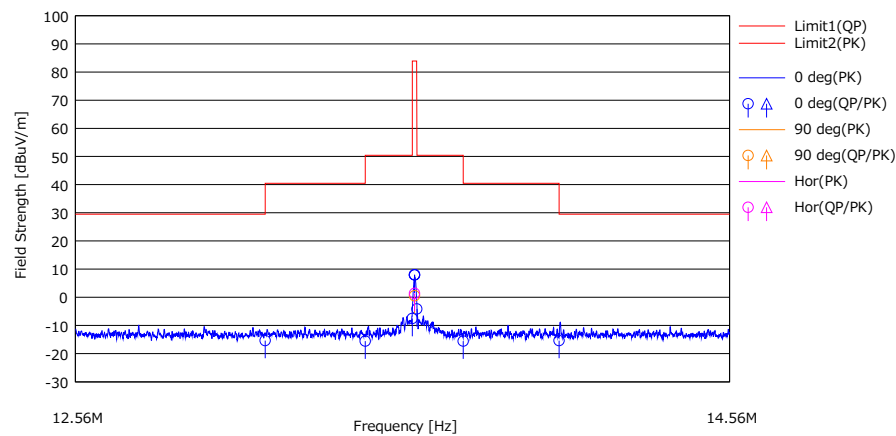
UL Japan, Inc. Kashima EMC Lab. No.10 Semi-Anechoic Chamber

Date : 2023/02/28

Mode : Transmitting and Receiving mode
Order No. : 14653480
Power : AC 120V / 60Hz
Temp./Humi. : 20deg.C / 40%RH

Remarks : without Tag

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 : Hiromitsu Tanabe



No.	Freq. [MHz]	Reading		Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result		Limit		Margin		Antenna	Table	Comment
		(QP) [dBuV]	(PK) [dBuV]				(QP) [dBuV/m]	(PK) [dBuV/m]	(QP) [dBuV/m]	(PK) [dBuV/m]	(QP) [dB]	(PK) [dB]			
1	13.11000	22.60	---	19.28	-33.04	24.21	-15.37	---	29.50	---	44.8	---	0 deg	132	
2	13.41000	22.40	---	19.29	-33.02	24.22	-15.55	---	40.50	---	56.0	---	0 deg	132	
3	13.55300	30.40	---	19.29	-33.01	24.23	-7.55	---	50.40	---	57.9	---	0 deg	132	
4	13.56000	45.90	---	19.29	-33.01	24.23	7.95	---	83.90	---	75.9	---	0 deg	132	AC 102V
5	13.56000	45.90	---	19.29	-33.01	24.23	7.95	---	83.90	---	75.9	---	0 deg	132	AC 120V
6	13.56000	45.90	---	19.29	-33.01	24.23	7.95	---	83.90	---	75.9	---	0 deg	132	AC 138V
7	13.56700	33.80	---	19.29	-33.01	24.23	-4.15	---	50.40	---	54.5	---	0 deg	132	
8	13.71000	22.40	---	19.30	-33.01	24.23	-15.54	---	40.50	---	56.0	---	0 deg	132	
9	14.01000	22.60	---	19.30	-33.00	24.25	-15.35	---	29.50	---	44.8	---	0 deg	132	
10	13.56000	38.50	---	19.29	-33.01	24.23	0.55	---	83.90	---	83.3	---	90 deg	229	
11	13.56000	39.30	---	19.29	-33.01	24.23	1.35	---	83.90	---	82.5	---	Hor	137	

Calculation: Result[dBuV/m]=Reading[dBuV]+Ant.Fac[dB/m]+Loss(Cable+ATT)[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
0	13.56000	QP	45.90	19.29	6.99	24.23	-	47.95	-	-	Fundamental

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

Spurious emission

DATA OF RADIATED EMISSION(below 30MHz) TEST

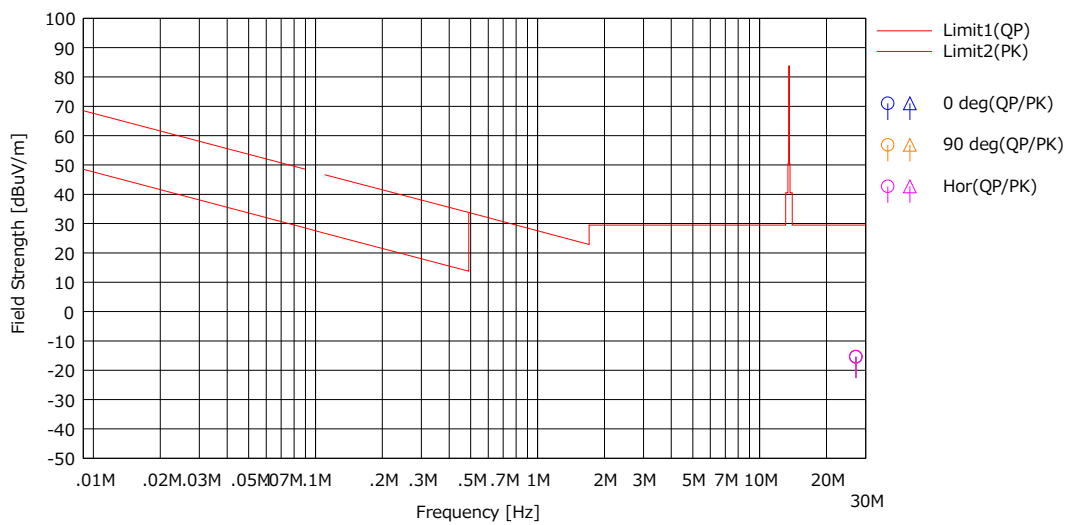
UL Japan, Inc. Kashima EMC Lab. No.10 Semi-Anechoic Chamber

Date : 2023/02/28

Mode : Transmitting and Receiving mode
Order No. : 14653480
Power : AC 120V / 60Hz
Temp./Humi. : 20deg.C / 40%RH

Remarks : with Tag

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 : Hiromitsu Tanabe



No.	Freq. [MHz]	Reading		Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result		Limit		Margin		Antenna	Table	Comment
		<QP> [dBuV]	<PK> [dBuV]				<QP> [dBuV/m]	<PK> [dBuV/m]	<QP> [dBuV/m]	<PK> [dBuV/m]	<QP> [dB]	<PK> [dB]			
1	27.12000	21.70	---	19.88	-32.52	24.42	-15.36	---	29.50	---	44.8	---	0 deg	0	
2	27.12000	21.60	---	19.88	-32.52	24.42	-15.46	---	29.50	---	44.9	---	90 deg	0	
3	27.12000	21.60	---	19.88	-32.52	24.42	-15.46	---	29.50	---	44.9	---	Hor	0	

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

Spurious emission

DATA OF RADIATED EMISSION(below 30MHz) TEST

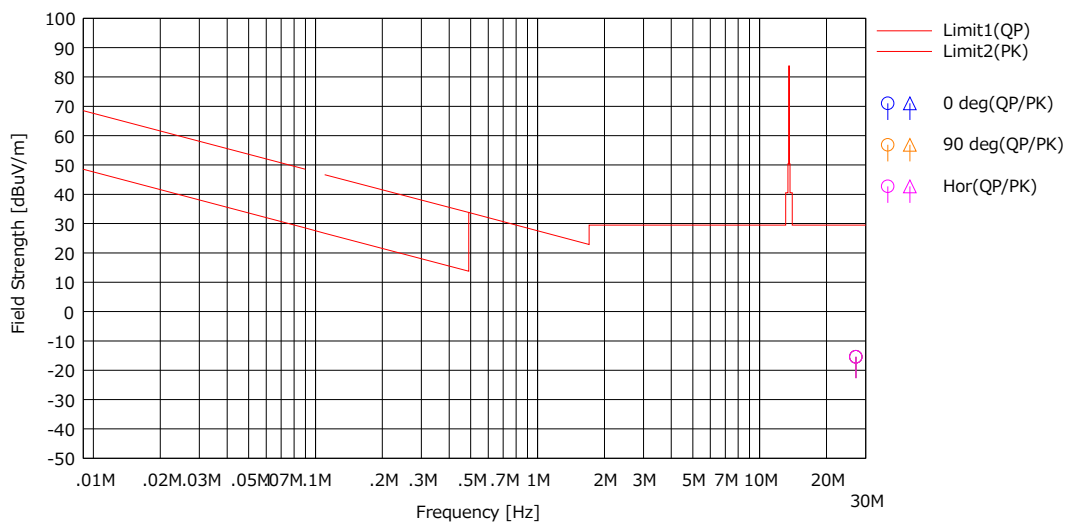
UL Japan, Inc. Kashima EMC Lab. No.10 Semi-Anechoic Chamber

Date : 2023/02/28

Mode : Transmitting and Receiving mode
Order No. : 14653480
Power : AC 120V / 60Hz
Temp./Humi. : 20deg.C / 40%RH

Remarks : without Tag

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 : Hiromitsu Tanabe



No.	Freq. [MHz]	Reading		Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result		Limit		Margin		Antenna	Table	Comment
		<QP> [dBuV]	<PK> [dBuV]				<QP> [dBuV/m]	<PK> [dBuV/m]	<QP> [dBuV/m]	<PK> [dBuV/m]	<QP> [dB]	<PK> [dB]			
1	27.12000	21.60	---	19.88	-32.52	24.42	-15.46	---	29.50	---	44.9	---	0 deg	0	
2	27.12000	21.60	---	19.88	-32.52	24.42	-15.46	---	29.50	---	44.9	---	90 deg	0	
3	27.12000	21.60	---	19.88	-32.52	24.42	-15.46	---	29.50	---	44.9	---	Hor	0	

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

Spurious emission

DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Kashima EMC Lab. No.10 Semi-Anechoic Chamber

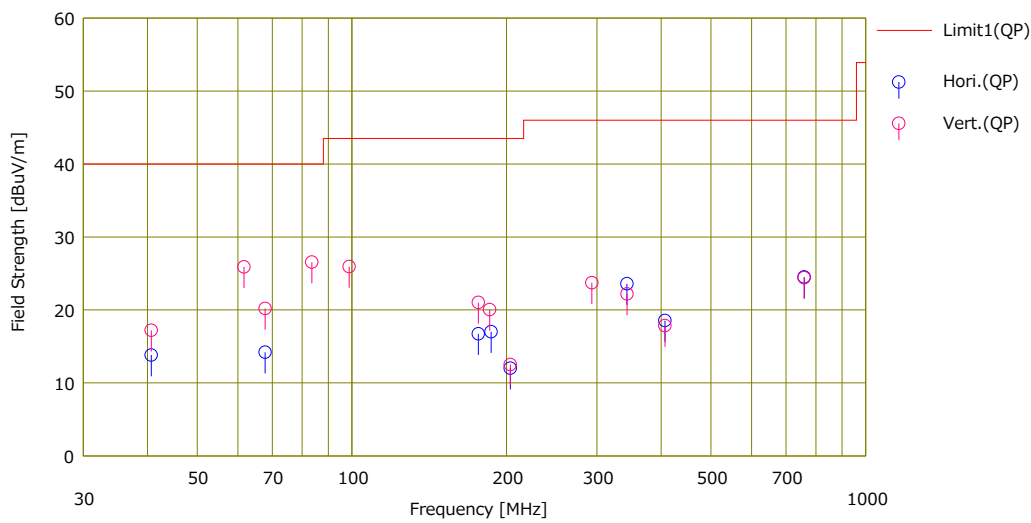
Date : 2023/02/27

Mode : Transmitting and Receiving mode
Order No. : 14653480
Power : AC 120V / 60Hz
Temp./Humi. : 21deg.C / 37%RH

Remarks : with Tag

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

Tested by : Hiromitsu Tanabe



No.	Freq. [MHz]	Reading (QP)	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result (QP)	Limit (QP)	Margn (QP)	Pola. [H/V]	Height [cm]	Angle [deg]	Ant. Type	Comment
		[dBuV]				[dBuV/m]	[dBuV/m]	[dB]					
1	40.680	26.00	13.34	6.08	31.60	13.82	40.00	26.1	Hori.	100	0	HB	
2	67.800	27.30	11.97	6.50	31.56	14.21	40.00	25.7	Hori.	235	226	HB	
3	176.280	28.00	12.41	7.71	31.39	16.73	43.50	26.7	Hori.	166	120	HB	
4	186.626	29.50	11.06	7.81	31.36	17.01	43.50	26.4	Hori.	138	110	HB	
5	203.400	25.60	9.78	7.97	31.33	12.02	43.50	31.4	Hori.	156	264	HB	
6	343.185	31.10	14.25	9.50	31.27	23.58	46.00	22.4	Hori.	100	285	HB	
7	406.800	24.00	15.65	10.12	31.22	18.55	46.00	27.4	Hori.	100	35	HB	
8	759.360	22.00	21.99	11.50	30.98	24.51	46.00	21.4	Hori.	100	0	HB	
9	40.680	29.40	13.34	6.08	31.60	17.22	40.00	22.7	Vert.	100	10	HB	
10	61.663	38.20	12.86	6.41	31.58	25.89	40.00	14.1	Vert.	100	15	HB	
11	67.800	33.30	11.97	6.50	31.56	20.21	40.00	19.7	Vert.	100	215	HB	
12	83.577	43.00	8.35	6.72	31.53	26.54	40.00	13.4	Vert.	100	188	HB	
13	98.823	41.80	8.73	6.90	31.50	25.93	43.50	17.5	Vert.	100	333	HB	
14	176.280	32.30	12.41	7.71	31.39	21.03	43.50	22.4	Vert.	100	287	HB	
15	185.397	32.40	11.22	7.80	31.37	20.05	43.50	23.4	Vert.	100	311	HB	
16	203.400	26.10	9.78	7.97	31.33	12.52	43.50	30.9	Vert.	100	173	HB	
17	293.265	33.00	13.20	8.83	31.30	23.73	46.00	22.2	Vert.	144	64	HB	
18	343.336	29.70	14.25	9.51	31.27	22.19	46.00	23.8	Vert.	100	212	HB	
19	406.800	23.30	15.65	10.12	31.22	17.85	46.00	28.1	Vert.	100	110	HB	
20	759.360	21.90	21.99	11.50	30.98	24.41	46.00	21.5	Vert.	100	0	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

DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Kashima EMC Lab. No.10 Semi-Anechoic Chamber

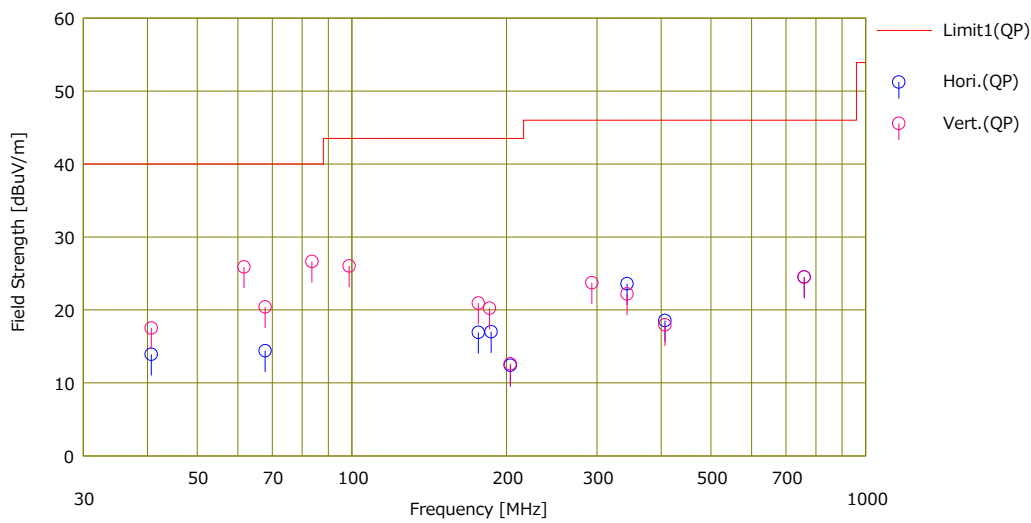
Date : 2023/02/28

Mode : Transmitting and Receiving mode
Order No. : 14653480
Power : AC 120V / 60Hz
Temp./Humi. : 21deg.C / 37%RH

Remarks : without Tag

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

Tested by : Hiromitsu Tanabe



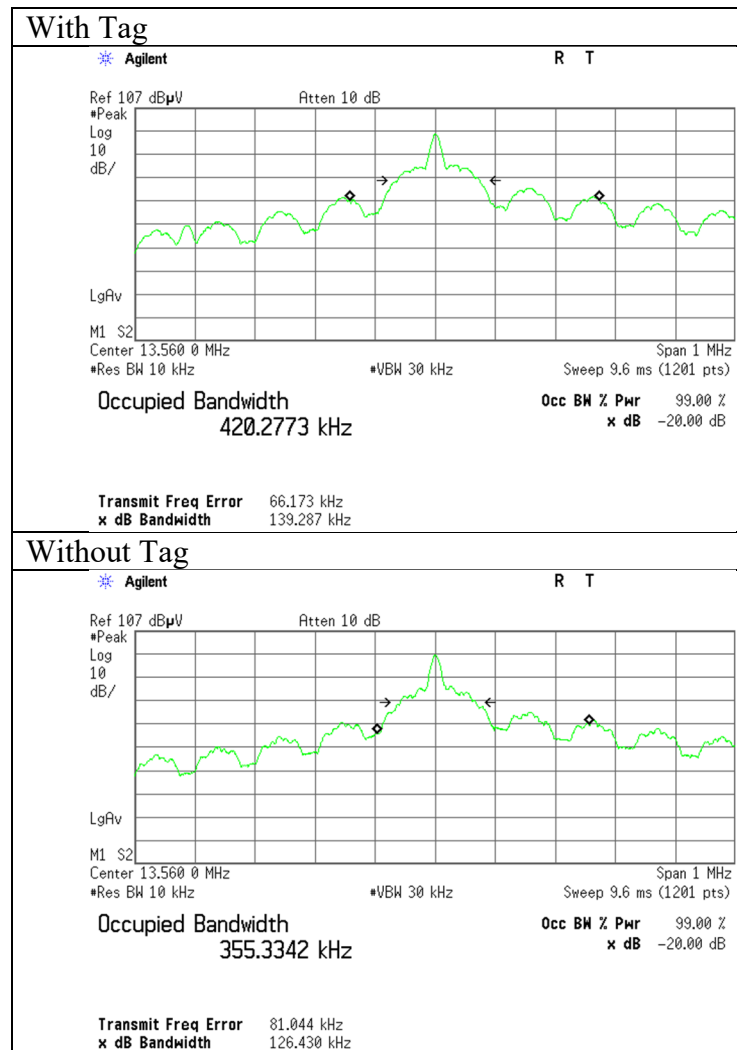
No.	Freq. [MHz]	Reading (QP)	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result (QP)	Limit (QP)	Margin (QP)	Pola. [H/V]	Height [cm]	Angle [deg]	Ant. Type	Comment
		[dBuV]				[dBuV/m]	[dBuV/m]	[dB]					
1	40.680	26.10	13.34	6.08	31.60	13.92	40.00	26.0	Hori.	100	0	HB	
2	67.800	27.50	11.97	6.50	31.56	14.41	40.00	25.5	Hori.	233	223	HB	
3	176.280	28.20	12.41	7.71	31.39	16.93	43.50	26.5	Hori.	153	108	HB	
4	186.631	29.50	11.06	7.81	31.36	17.01	43.50	26.4	Hori.	140	98	HB	
5	203.400	26.00	9.78	7.97	31.33	12.42	43.50	31.0	Hori.	154	272	HB	
6	343.224	31.10	14.25	9.50	31.27	23.58	46.00	22.4	Hori.	100	289	HB	
7	406.800	24.00	15.65	10.12	31.22	18.55	46.00	27.4	Hori.	100	35	HB	
8	759.360	22.00	21.99	11.50	30.98	24.51	46.00	21.4	Hori.	100	0	HB	
9	40.680	29.70	13.34	6.08	31.60	17.52	40.00	22.4	Vert.	100	68	HB	
10	61.672	38.20	12.86	6.41	31.58	25.89	40.00	14.1	Vert.	100	15	HB	
11	67.800	33.50	11.97	6.50	31.56	20.41	40.00	19.5	Vert.	100	315	HB	
12	83.581	43.10	8.35	6.72	31.53	26.64	40.00	13.3	Vert.	100	192	HB	
13	98.823	41.90	8.73	6.90	31.50	26.03	43.50	17.4	Vert.	100	328	HB	
14	176.280	32.20	12.41	7.71	31.39	20.93	43.50	22.5	Vert.	100	284	HB	
15	185.381	32.60	11.22	7.80	31.37	20.25	43.50	23.2	Vert.	100	300	HB	
16	203.400	26.20	9.78	7.97	31.33	12.62	43.50	30.8	Vert.	100	173	HB	
17	293.248	33.00	13.20	8.83	31.30	23.73	46.00	22.2	Vert.	145	60	HB	
18	343.339	29.70	14.25	9.51	31.27	22.19	46.00	23.8	Vert.	100	214	HB	
19	406.800	23.40	15.65	10.12	31.22	17.95	46.00	28.0	Vert.	100	110	HB	
20	759.360	22.00	21.99	11.50	30.98	24.51	46.00	21.4	Vert.	100	0	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 March 2, 2023
Temperature / Humidity 21 deg. C / 40 % RH
Engineer Hiromitsu Tanabe
Mode Tx and Rx, Mod on

FREQ [MHz]	Mode	20dB Bandwidth [kHz]	99% Occupied Bandwidth [kHz]
13.56	With Tag	139.29	420.28
	Without Tag	126.43	355.33



* 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 March 2, 2023
Temperature / Humidity 21 deg. C / 40 % RH
Engineer Hiromitsu Tanabe
Mode Tx Mod on

Test condition Temp. [deg. C]	Voltage [V]	Tested timing	Measured frequency [MHz]	Frequency error [MHz]	Result		Limit [+/- %]
					[%]	[ppm]	
50	120	Power on	13.560501	0.000501	0.00369	36.9	0.01
		+ 2 min.	13.560506	0.000506	0.00373	37.3	0.01
		+ 5 min.	13.560512	0.000512	0.00378	37.8	0.01
		+ 10 min.	13.560516	0.000516	0.00381	38.1	0.01
40	120	Power on	13.560510	0.000510	0.00376	37.6	0.01
		+ 2 min.	13.560505	0.000505	0.00372	37.2	0.01
		+ 5 min.	13.560505	0.000505	0.00372	37.2	0.01
		+ 10 min.	13.560505	0.000505	0.00372	37.2	0.01
30	120	Power on	13.560527	0.000527	0.00389	38.9	0.01
		+ 2 min.	13.560517	0.000517	0.00381	38.1	0.01
		+ 5 min.	13.560512	0.000512	0.00378	37.8	0.01
		+ 10 min.	13.560511	0.000511	0.00377	37.7	0.01
20	120	Power on	13.560546	0.000546	0.00403	40.3	0.01
		+ 2 min.	13.560536	0.000536	0.00395	39.5	0.01
		+ 5 min.	13.560531	0.000531	0.00392	39.2	0.01
		+ 10 min.	13.560528	0.000528	0.00389	38.9	0.01
20	102 (120V -15%)	Power on	13.560546	0.000546	0.00403	40.3	0.01
		+ 2 min.	13.560536	0.000536	0.00395	39.5	0.01
		+ 5 min.	13.560531	0.000531	0.00392	39.2	0.01
		+ 10 min.	13.560528	0.000528	0.00389	38.9	0.01
20	138 (120V +15%)	Power on	13.560546	0.000546	0.00403	40.3	0.01
		+ 2 min.	13.560536	0.000536	0.00395	39.5	0.01
		+ 5 min.	13.560531	0.000531	0.00392	39.2	0.01
		+ 10 min.	13.560528	0.000528	0.00389	38.9	0.01
10	120	Power on	13.560552	0.000552	0.00407	40.7	0.01
		+ 2 min.	13.560552	0.000552	0.00407	40.7	0.01
		+ 5 min.	13.560549	0.000549	0.00405	40.5	0.01
		+ 10 min.	13.560547	0.000547	0.00403	40.3	0.01
0	120	Power on	13.560535	0.000535	0.00395	39.5	0.01
		+ 2 min.	13.560550	0.000550	0.00406	40.6	0.01
		+ 5 min.	13.560552	0.000552	0.00407	40.7	0.01
		+ 10 min.	13.560553	0.000553	0.00408	40.8	0.01
-10	120	Power on	13.560489	0.000489	0.00361	36.1	0.01
		+ 2 min.	13.560523	0.000523	0.00386	38.6	0.01
		+ 5 min.	13.560532	0.000532	0.00392	39.2	0.01
		+ 10 min.	13.560537	0.000537	0.00396	39.6	0.01
-20	120	Power on	13.560406	0.000406	0.00299	29.9	0.01
		+ 2 min.	13.560465	0.000465	0.00343	34.3	0.01
		+ 5 min.	13.560482	0.000482	0.00355	35.5	0.01
		+ 10 min.	13.560490	0.000490	0.00361	36.1	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)

APPENDIX 2: Test instruments

Test equipment

Test Item	Local ID	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Cal Int
CE	CLS-11	143505	A.M.N.	Rohde & Schwarz	ESH3-Z5	835239/022	2022/07/20	12
CE	CCC-S5-C (SR)	143167	5 Site CE (SR) System	N/A	none(No.5 CE SR)	-	2022/07/01	12
CE	CTR-04	144195	Test Receiver	Rohde & Schwarz	ESCI	100053	2022/09/14	12
CE	CSCL-21	222614	Measure	SHINWA RULES CO., LTD.	80862	none	-	-
CE	COS-30	222854	Temperature & Humidity Logger	HIOKI E.E. CORPORATION	LR5001/LR9504	220820033 /220899853	2022/09/20	12
CE	CBM-05	143128	Barometer	OTA	No.11	15404	2021/11/24	36
CE	CTS-09	144211	Digital Multimeter	Fluke Corporation	112	89790194	2022/10/19	12
CE	COTS-CEMI-03	178804	EMI Software	TSJ (Techno Science Japan)	TEPTO-DV3 (RE,CE,ME,PE)	-	-	-
RE	KLP-01	143833	Loop Antenna	Rohde & Schwarz	HFH2-Z2	827779/008	2022/10/05	12
RE	CCC-M01	143161	Coaxial Cable	Fujikura,HP,Mini-Circuits,Fujikura	3D2W	none	2022/05/16	12
RE	CAT6-17	144245	6dB Fixed Atten.	Suhner	6906.01.A	none	2022/07/20	12
RE	CAF-24	171927	Pre Amplifier	Mini-Circuits	GALI-84+	001	2022/07/06	12
RE	CCC-S10-C	143157	10 Site CE System	UL Japan	none	none	2022/08/27	12
RE	CBL-08	143121	LOGBICON	Schwarzbeck Mess-Elektronik OHG	VULB 9168	343	2022/04/18	12
RE	CAT5-03	178806	5dB Fixed Atten.	Pasternack Enterprises	PE7047-5	none	2022/04/01	12
RE	CCC-S10-R3	143165	10 Site RE 3m System	UL Japan	none	none	2022/08/27	12
RE	CAF-28	183880	Pre-Amplifier	Mini-Circuits	ZKL-2	001	2022/04/06	12
RE	CTR-09	144199	Test Receiver	Keysight Technologies Inc	N9038A	MY53290016	2022/07/21	12
RE	CAEC-10(NSA)	144632	Semi Anechoic Chamber	TDK	NSA (No.10)	10	2022/05/15	12
RE	CSCL-26	222745	Measure	SHINWA RULES CO., LTD.	80862	none	-	-
RE	COS-10	143542	Temperature & Humidity Indicator	HIOKI E.E. CORPORATION	3641/9680-50	090999895/090905406	2022/06/20	12
RE	CBM-10	143133	Barometer	Sanoh Co., Ltd	SBR-151	001439	2021/11/24	36
RE	CTS-14	144216	Digital Multimeter	Fluke Corporation	115	994460954	2022/10/19	12
RE	COTS-CEMI-03	178804	EMI Software	TSJ (Techno Science Japan)	TEPTO-DV3 (RE,CE,ME,PE)	-	-	-
FT	CSA-07	143643	Spectrum Analyzer	Keysight Technologies Inc	E4448A	MY52490024	2022/06/23	12
FT	CCH-04	143181	Temperature and Humidity Chamber	Espec	PL-1J	15004059	2022/10/05	12
FT	CFC-02	143423	Frequency Counter	Keysight Technologies Inc	53151A	US40511823	2022/04/13	12
FT	CMS-07	143942	Near Field Probe	Langer	LF-R400	02-0815	-	-
FT	CTS-08	144210	Digital Multimeter	Fluke Corporation	112	89790193	2022/10/12	12
FT	COS-27	200034	Temperature & Humidity Logger	HIOKI E.E. CORPORATION	LR5001/LR9504	200636456 /200699552	2022/07/22	12
FT	CBM-05	143128	Barometer	OTA	No.11	15404	2021/11/24	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

FT: Frequency Tolerance