RADIO TEST REPORT

Test Report No. : 12589049H-A-R1

Applicant	:	**Mitsubishi Electric Corporation Himeji works**
Type of Equipment	:	**Keyless System Hand Unit**
Model No.	:	**SKE13D-03**
FCC ID	:	**WAZSKE13D03**
Test regulation	:	**FCC Part 15 Subpart C: 2018**
Test Result	:	**Complied (Refer to Section 3.2)**

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2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with the above regulation.
4. The test results in this report are traceable to the national or international standards.
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6. This test report covers Radio technical requirements. It does not cover administrative issues such as Manual or non-Radio test related Requirements. (if applicable)
7. The all test items in this test report are conducted by UL Japan, Inc. Ise EMC Lab.
8. The information provided from the customer for this report is identified in SECTION 1.
9. This report is a revised version of 12589049H-A. 12589049H-A is replaced with this report.

Date of test: December 2 and 11, 2018

Representative test engineer:

Junki Nagatomi
Engineer
Consumer Technology Division

Approved by:

Motoya Imura
Leader
Consumer Technology Division

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

UL Japan, Inc.
Ise EMC Lab.
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN
Telephone : +81 596 24 8999
Facsimile : +81 596 24 8124

REVISION HISTORY

Original Test Report No.: 12589049H-A

Revision	Test report No.	Date	Page revised	Contents
- (Original)	12589049H-A	January 30, 2019	-	-
1	12589049H-A-R1	February 5, 2019	P.13	Correction of note sentences under “Radiated Emission (Electric Field Strength of Fundamental and Spurious Emission)” test data

CONTENTS **PAGE**

SECTION 1: Customer information

Company Name	:	Mitsubishi Electric Corporation Himeji works
Address	:	840, Chiyoda-machi, Himeji, Hyogo 670-8677, Japan
Telephone Number	:	+81-79-298-8994
Facsimile Number	:	+81-79-298-9929
Contact Person	:	Masashi Nojima

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

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

SECTION 2: Equipment under test (E.U.T.)

2.1 Identification of E.U.T.

Type of Equipment	:	Keyless System Hand Unit
Model No.	:	SKE13D-03
Serial No.	:	Refer to Section 4, Clause 4.2
Rating	:	DC 3.0 V
Receipt Date of Sample (Information from test lab.)	:	November 29, 2018
Country of Mass-production	:	Thailand
Condition of EUT	:	Production prototype (Not for Sale: This sample is equivalent to mass-produced items.)
Modification of EUT	:	No Modification by the test lab

2.2 Product Description

Model: SKE13D-03 (referred to as the EUT in this report) is a Keyless System Hand Unit.

Radio Specification

RF Part

Equipment Type	:	Transceiver
Type of modulation	:	FSK
Frequency of operation	:	315 MHz
Antenna Type	:	Pattern antenna
Clock Frequency (maximum)	:	27.6 MHz

LF Part *

Type of Receiver	:	Receiver
Frequency of operation	:	125 kHz
Intermediate frequency	:	-
Antenna Type	:	Inductive

* The test of LF part was performed separately from this test report, and the conformability is confirmed.
LF Part test report No. 12589049H-B (FCC15B).

SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification	:	FCC Part 15 Subpart C FCC Part 15 final revised on March 12, 2018 and effective April 11, 2018
Title	:	FCC 47CFR Part15 Radio Frequency Device Subpart C Intentional Radiators Section 15.231 Periodic operation in the band 40.66-40.70 MHz and above 70 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 **IC:** RSS-Gen 8.8	**FCC:** Section 15.207 **IC:** RSS-Gen 8.8	N/A *1)	N/A	-
Automatically Deactivate	**FCC:** ANSI C63.10:2013 6 Standard test methods **IC:** -	**FCC:** Section 15.231(a)(1) **IC:** RSS-210 A1.1	N/A	Complied a)	Radiated
Electric Field Strength of Fundamental Emission	**FCC:** ANSI C63.10:2013 6 Standard test methods **IC:** RSS-Gen 6.12	**FCC:** Section 15.231(b) **IC:** RSS-210 A1.2	1.2 dB 314.930 MHz Horizontal PK with Duty factor	Complied# b)	Radiated
Electric Field Strength of Spurious Emission	**FCC:** ANSI C63.10:2013 6 Standard test methods **IC:** RSS-Gen 6.13	**FCC:** Section 15.205 Section 15.209 Section 15.231(b) **IC:** RSS-210 A1.2, 4.4 RSS-Gen 8.9	10.7 dB 3150.000 MHz Horizontal PK with Duty factor	Complied c)	Radiated
-20dB Bandwidth	**FCC:** ANSI C63.10:2013 6 Standard test methods **IC:** -	**FCC:** Section 15.231(c) **IC:** Reference data	N/A	Complied d)	Radiated

Note: UL Japan, Inc.'s EMI Work Procedures No. 13-EM-W0420 and 13-EM-W0422.
*1) The test is not applicable since the EUT does not have AC Mains.

a) Refer to APPENDIX 1 (data of Automatically Deactivate)
b) Refer to APPENDIX 1 (data of Radiated Emission (Electric Field Strength of Fundamental and Spurious Emission))
c) Refer to APPENDIX 1 (data of Radiated Emission (Electric Field Strength of Fundamental and Spurious Emission))
d) Refer to APPENDIX 1 (data of -20dB and 99% Occupied Bandwidth)

Symbols:

Complied	The data of this test item has enough margin, more than the measurement uncertainty.
Complied#	The data of this test item meets the limits unless the measurement uncertainty is taken into consideration.

FCC 15.31 (e)
This test was performed with the New Battery (DC 3.0 V) during the tests. Therefore, the EUT complies with the requirement.

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 % Occupied Bandwidth	**IC:** RSS-Gen 6.7	**IC:** RSS-210 A1.3	N/A	Complied a)	Radiated
Note: UL Japan, Inc.'s EMI Work Procedures No. 13-EM-W0420 and 13-EM-W0422. a) Refer to Appendix 1 (data of -20dB and 99% Occupied Bandwidth)					
Symbols: Complied — The data of this test item has enough margin, more than the measurement uncertainty. Complied# — The data of this test item meets the limits unless the measurement uncertainty is taken into consideration.					

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

3.4 Uncertainty

There is no applicable rule of uncertainty in this applied standard. Therefore, the following results are derived depending on whether or not laboratory uncertainty is applied.

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

Test distance	Radiated emission (+/-)
	9 kHz to 30 MHz
3 m	3.8 dB
10 m	3.6 dB

*Measurement distance

Polarity	Radiated emission (Below 1 GHz)			
	(3 m*)(+/-)		(10 m*)(+/-)	
	30 MHz to 200 MHz	200 MHz to 1000 MHz	30 MHz to 200 MHz	200 MHz to 1000 MHz
Horizontal	4.8 dB	5.2 dB	4.8 dB	5.0 dB
Vertical	5.0 dB	6.3 dB	4.9 dB	5.0 dB

Radiated emission (Above 1 GHz)				
(3 m*)(+/-)		(1 m*)(+/-)		(10 m*)(+/-)
1 GHz to 6 GHz	6 GHz to 18 GHz	10 GHz to 26.5 GHz	26.5 GHz to 40 GHz	1 GHz to 18 GHz
5.2 dB	5.5 dB	5.9 dB	5.9 dB	5.5 dB

* Measurement distance

Automatically Deactivate
0.10 %

Bandwidth
0.96 %

3.5 Test Location

UL Japan, Inc. Ise EMC Lab.
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN
Telephone: +81 596 24 8999, Facsimile: +81 596 24 8124
NVLAP Lab. code: 200572-0 / FCC Test Firm Registration Number: 199967

Test site	IC Registration Number	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Other rooms	Maximum measurement distance
No.1 semi-anechoic chamber	2973C-1	19.2 x 11.2 x 7.7	7.0 x 6.0	No.1 Power source room	10 m
No.2 semi-anechoic chamber	2973C-2	7.5 x 5.8 x 5.2	4.0 x 4.0	-	3 m
No.3 semi-anechoic chamber	2973C-3	12.0 x 8.5 x 5.9	6.8 x 5.75	No.3 Preparation room	3 m
No.3 shielded room	-	4.0 x 6.0 x 2.7	N/A	-	-
No.4 semi-anechoic chamber	2973C-4	12.0 x 8.5 x 5.9	6.8 x 5.75	No.4 Preparation room	3 m
No.4 shielded room	-	4.0 x 6.0 x 2.7	N/A	-	-
No.5 semi-anechoic chamber	-	6.0 x 6.0 x 3.9	6.0 x 6.0	-	-
No.6 shielded room	-	4.0 x 4.5 x 2.7	4.0 x 4.5	-	-
No.6 measurement room	-	4.75 x 5.4 x 3.0	4.75 x 4.15	-	-
No.7 shielded room	-	4.7 x 7.5 x 2.7	4.7 x 7.5	-	-
No.8 measurement room	-	3.1 x 5.0 x 2.7	3.1 x 5.0	-	-
No.9 measurement room	-	8.8 x 4.6 x 2.8	2.4 x 2.4	-	-
No.11 measurement room	-	6.2 x 4.7 x 3.0	4.8 x 4.6	-	-

* Size of vertical conducting plane (for Conducted Emission test) : 2.0 m x 2.0 m for No.1, No.2, No.3, and No.4 semi-anechoic chambers and No.3 and No.4 shielded rooms.

3.6 Test data, Test instruments, and Test set up

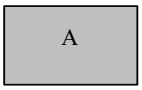
Refer to APPENDIX.

SECTION 4: Operation of E.U.T. during testing

4.1 Operating Mode(s)

Test Item*	Mode
Automatically Deactivate -20 dB & 99 % Occupied Bandwidth Duty Cycle	Normal use mode
Electric Field Strength of Fundamental Emission Electric Field Strength of Spurious Emission	Transmitting mode (Tx) 315 MHz *1)
* The system was configured in typical fashion (as a user would normally use it) for testing. *1) End users cannot change the settings of the output power of the product.	

4.2 Configuration and peripherals



* Test data was taken under worse case conditions.

Description of EUT

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	Keyless System Hand Unit	SKE13D-03	20181129-T1 (No.1) *1) 20181129-T3 (No.3) *2)	Mitsubishi Electric Corporation Himeji works	EUT

*1) Used for Transmitting mode.
*2) Used for Normal use mode.

SECTION 5: Radiated emission (Electric Field Strength of Fundamental and Spurious Emission)

Test Procedure and conditions

[For below 30 MHz]
The noise level was checked by moving a search-coil (Loop Antenna) close to the EUT.

[For 30 MHz to 1 GHz]
EUT was placed on a urethane platform of nominal size, 0.5 m by 1.0 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.

[For above 1 GHz]
EUT was placed on a urethane platform of nominal size, 0.5 m by 0.5 m, raised 1.5 m above the conducting ground plane.
The Radiated Electric Field Strength has been measured in a Semi Anechoic Chamber with absorbent materials lined on a ground plane.

The measuring antenna height was varied between 1 and 4 m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field strength.
The measurements were performed for both vertical and horizontal antenna polarization.
The radiated emission measurements were made with the following detector function of the test receiver / spectrum analyzer.

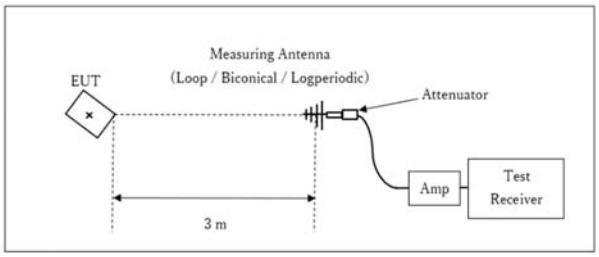
Test Antennas are used as below;

Frequency	Below 30 MHz	30 MHz to 200 MHz	200 MHz to 1 GHz	Above 1 GHz
Antenna Type	Loop	Biconical	Logperiodic	Horn

	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	Above 1 GHz
Detector Type	Peak	Peak	Peak	Peak	Peak and Peak with Duty factor	Peak and Peak with Duty factor
IF Bandwidth	200 Hz	200 Hz	9.0 kHz	9.0 kHz	120 kHz	PK: S/A: RBW 1 MHz, VBW: 3 MHz

[Test Setup]

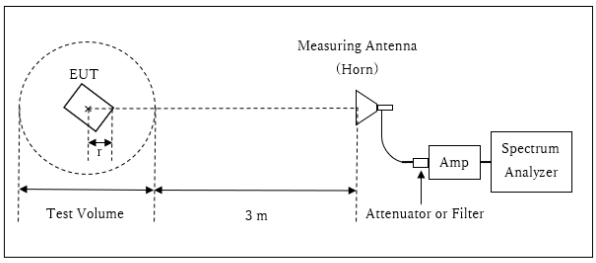
Below 1 GHz



× : Center of turn table

Test Distance: 3 m

1 GHz - 10 GHz



r : Radius of an outer periphery of EUT
× : Center of turn table

Distance Factor: 20 x log (3.75 m / 3.0 m) = 1.94 dB
* Test Distance: (3 + Test Volume /2) - r = 3.75 m

Test Volume : 1.5 m
(Test Volume has been calibrated based on CISPR 16-1-4.)
r = 0.0 m

* The test was performed with r = 0.0 m since EUT is small and it was the rather conservative condition.

- The carrier level (or, noise levels) was (or were) measured at each position of all three axes X, Y and Z, and the position that has the maximum noise was determined.
Noise levels of all the frequencies were measured at the position.

This EUT has two modes which mechanical key is inserted or not. The worst case was confirmed with and without mechanical key, as a result, the test without mechanical key was the worst case. Therefore the test without mechanical key was performed only.

*The result is rounded off to the second decimal place, so some differences might be observed.

Measurement range : 9 kHz - 3.2 GHz
Test data : APPENDIX
Test result : Pass

SECTION 6: Automatically deactivate

Test Procedure

The measurement was performed with Electric field strength using a spectrum analyzer.

Test data : APPENDIX
Test result : Pass

SECTION 7: -20 dB and 99 % Occupied Bandwidth

Test Procedure

The test was measured with a spectrum analyzer using a test fixture.

Test	Span	RBW	VBW	Sweep	Detector	Trace	Instrument used
20 dB Bandwidth	2 MHz	9.1 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
*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.							

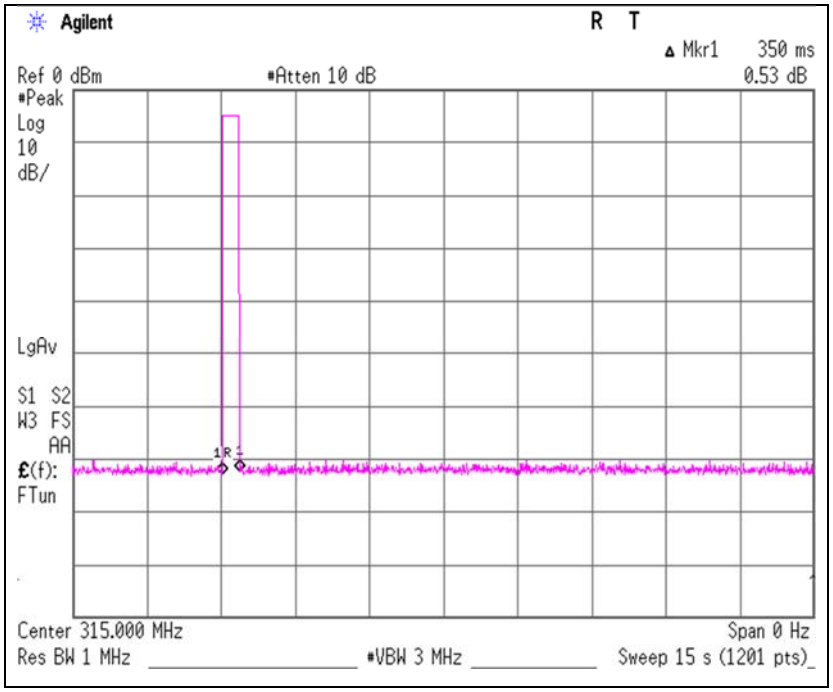
Test data : APPENDIX
Test result : Pass

APPENDIX 1: Test data

Automatically deactivate

Report No.	12589049H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.3
Date	December 11, 2018
Temperature / Humidity	24 deg. C / 38 % RH
Engineer	Junki Nagatomi
Mode	Normal use mode

Time of Transmitting [sec]	Limit [sec]	Result
0.35	5.00	Pass



* The EUT transmits UHF when LF signal is received from a car or a button on the EUT is pressed. In both cases, the UHF transmission is stopped within 5 seconds. So the test was performed by a button-pressed operation as the worst case.
Please refer to the “Theory of Operation” for details.

Radiated Emission (Electric Field Strength of Fundamental and Spurious Emission)

Report No.	12589049H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.2
Date	December 2, 2018
Temperature / Humidity	23 deg. C / 41 % RH
Engineer	Akihiko Maeda
Mode	Transmitting mode (Tx) 315 MHz

PK

Frequency	Detector	Reading [dBuV]		Ant Factor	Loss	Gain	Duty Factor	Result [dBuV/m]		Limit	Margin [dB]		Remark Inside or Outside
[MHz]		Hor	Ver	[dB/m]	[dB]	[dB]	[dB]	Hor	Ver	[dBuV/m]	Hor	Ver	of Restricted Bands
314.930	PK	85.8	82.2	13.9	9.0	29.3	-	79.4	75.8	95.6	16.2	19.8	Carrier
315.070	PK	85.7	82.1	13.9	9.0	29.3	-	79.3	75.7	95.6	16.3	19.9	Carrier
629.860	PK	44.5	47.1	19.3	10.3	29.5	-	44.6	47.2	75.6	31.0	28.4	Outside
944.790	PK	34.6	36.7	21.9	11.5	27.8	-	40.2	42.3	75.6	35.4	33.3	Outside
1260.000	PK	46.1	46.4	25.3	3.8	35.3	-	39.9	40.2	75.6	35.7	35.4	Outside
1575.000	PK	45.0	45.2	25.4	4.0	35.0	-	39.4	39.6	73.9	34.5	34.3	Inside
1890.000	PK	45.8	45.8	25.8	4.2	34.7	-	41.1	41.1	75.6	34.5	34.5	Outside
2205.000	PK	44.5	44.0	27.9	4.4	34.5	-	42.3	41.8	73.9	31.6	32.1	Inside
2520.000	PK	45.1	44.5	27.8	4.6	34.4	-	43.1	42.5	75.6	32.5	33.1	Outside
2835.000	PK	44.1	43.8	28.4	4.7	34.4	-	42.8	42.5	73.9	31.1	31.4	Inside
3150.000	PK	45.6	44.7	28.6	4.9	34.2	-	44.9	44.0	75.6	30.7	31.6	Outside

AV (PK with Duty factor)

Frequency	Detector	Reading [dBuV]		Ant Factor	Loss	Gain	Duty Factor	Result [dBuV/m]		Limit	Margin [dB]		Remark
[MHz]		Hor	Ver	[dB/m]	[dB]	[dB]	[dB]	Hor	Ver	[dBuV/m]	Hor	Ver	
314.930	PK	85.8	82.2	13.9	9.0	29.3	-5.0	74.4	70.8	75.6	1.2	4.8	Carrier
315.070	PK	85.7	82.1	13.9	9.0	29.3	-5.0	74.3	70.7	75.6	1.3	4.9	Carrier
629.860	PK	44.5	47.1	19.3	10.3	29.5	-5.0	39.6	42.2	55.6	16.0	13.4	Outside
944.790	PK	34.6	36.7	21.9	11.5	27.8	-5.0	35.2	37.3	55.6	20.4	18.3	Outside
1260.000	PK	46.1	46.4	25.3	3.8	35.3	0.0	39.9	40.2	55.6	15.7	15.4	Outside
1575.000	PK	45.0	45.2	25.4	4.0	35.0	0.0	39.4	39.6	53.9	14.5	14.3	Inside
1890.000	PK	45.8	45.8	25.8	4.2	34.7	0.0	41.1	41.1	55.6	14.5	14.5	Outside
2205.000	PK	44.5	44.0	27.9	4.4	34.5	0.0	42.3	41.8	53.9	11.6	12.1	Inside
2520.000	PK	45.1	44.5	27.8	4.6	34.4	0.0	43.1	42.5	55.6	12.5	13.1	Outside
2835.000	PK	44.1	43.8	28.4	4.7	34.4	0.0	42.8	42.5	53.9	11.1	11.4	Inside
3150.000	PK	45.6	44.7	28.6	4.9	34.2	0.0	44.9	44.0	55.6	10.7	11.6	Outside

Sample calculation:
Result of PK = Reading + Ant Factor + Loss {Cable + Attenuator + Distance factor (above 1 GHz)} - Gain (Amplifier)
Result of PK with Duty factor = Reading + Ant Factor + Loss {Cable + Attenuator + Distance factor (above 1 GHz)} - Gain (Amplifier) + Duty factor

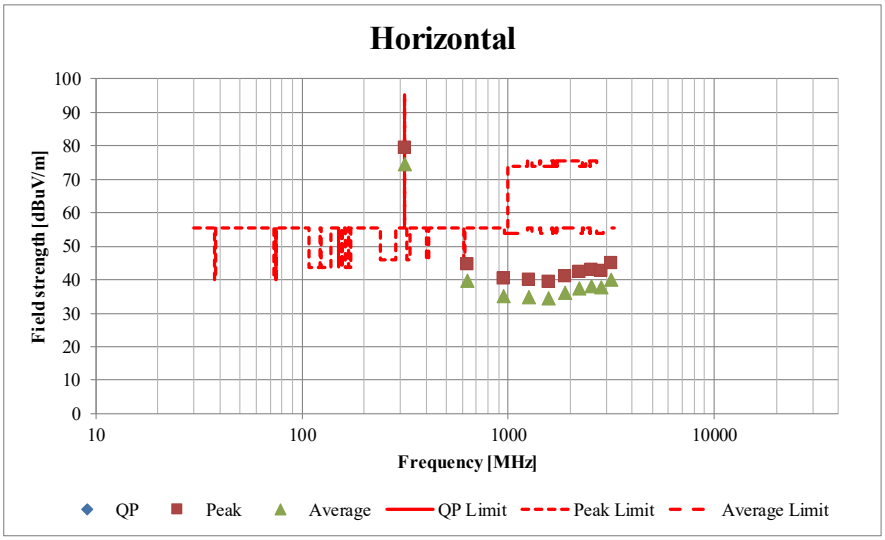
For above 1GHz : Distance Factor: 20 x log (3.75 m/3.0 m) = 1.94 dB
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).

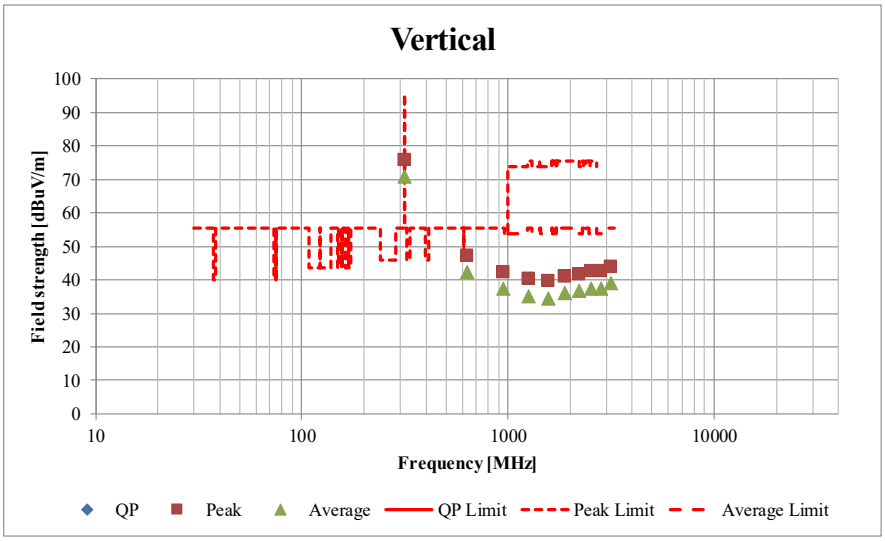
* As for the Average value, the measured duty factor was obtained by tuning to the peak level was applied since the FSK modulation peak to peak bandwidth of the fundamental and harmonic (below 1GHz) are greater than 120 kHz (RBW bandwidth).

Harmonic test (Above 1GHz) was applied to worst 100% (Duty factor = 0) although Duty Factor was applied in harmonic test which peak to peak frequency bandwidth of FSK modulation is equal to or more than measurement bandwidth (1MHz).

Radiated Spurious Emission
(Plot data, Worst case)

Report No.	12589049H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.2
Date	December 2, 2018
Temperature / Humidity	23 deg. C / 41 % RH
Engineer	Akihiko Maeda
Mode	Transmitting mode (Tx) 315 MHz





*These plots data contains sufficient number to show the trend of characteristic features for EUT.

-20dB and 99% Occupied Bandwidth

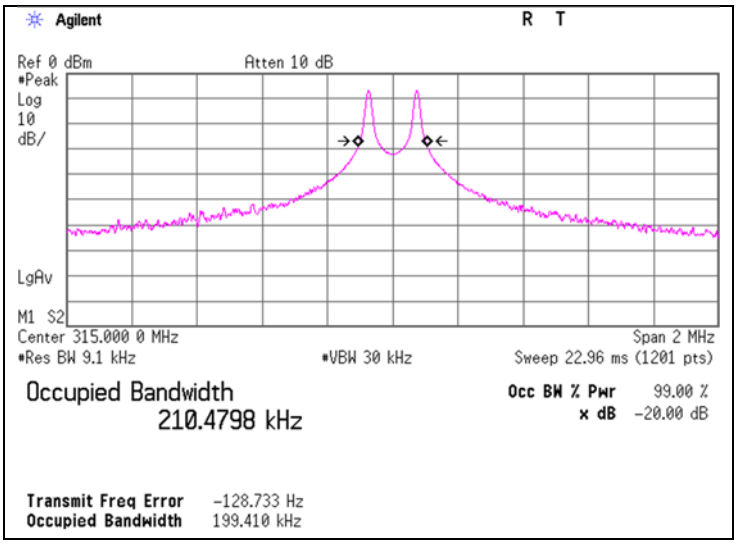
Report No.	12589049H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.3
Date	December 11, 2018
Temperature / Humidity	24 deg. C / 38 % RH
Engineer	Junki Nagatomi
Mode	Normal use mode

Bandwidth Limit : Fundamental Frequency **315.00** MHz x 0.25% = 787.50 kHz

* The above limit was calculated from more stringent nominal frequency.

-20dB Bandwidth [kHz]	Bandwidth Limit [kHz]	Result
199.410	787.50	Pass

99% Occupied Bandwidth [kHz]	Bandwidth Limit [kHz]	Result
210.4798	787.50	Pass



Duty Cycle

Report No.	12589049H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.3
Date	December 11, 2018
Temperature / Humidity	24 deg. C / 38 % RH
Engineer	Junki Nagatomi
Mode	Normal use mode

Pulse type	ON time(One pulse) [ms]	Pulse count (Sweep time : 4mS) 1	2	3	4	5	Pulse count sum (in 20ms)	ON time(in 20ms) [ms]
A	0.276	4	0	2	0	3	9	2.484
B	0.152	8	4	4	0	10	26	3.952
C	0.400	0	4	3	5	0	12	4.8
						Total on time in 20mS		11.236

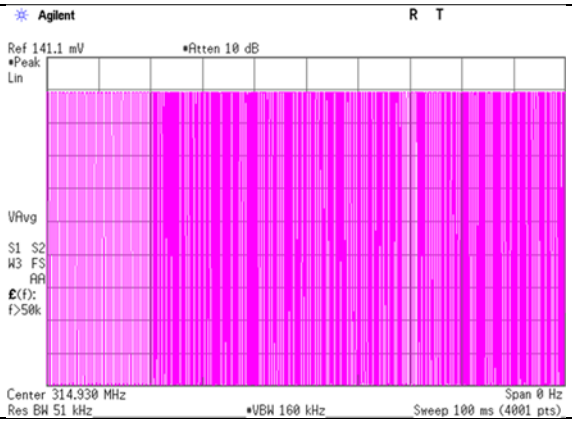
The train of pulses was exceeding 100msec, and that sampled 100msec was the worst case against the pulse train.

(Total)

ON time in 100mS *1) [ms]	Cycle [ms]	Duty (On time/Cycle)	Duty [dB]
56.18	100.00	0.56	-5.01

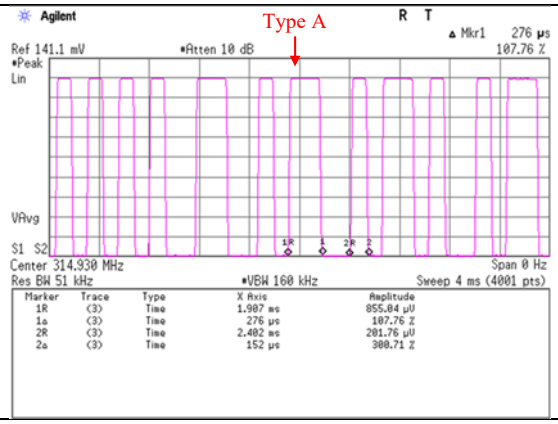
*1)ON time in 100mS = Total on time in 20mS * 5

Pulse Train in 100ms

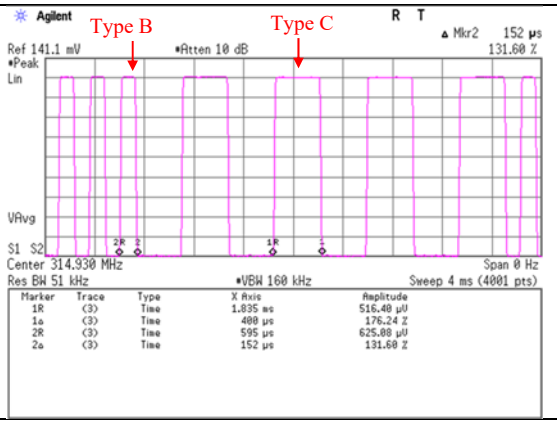


Duty Cycle

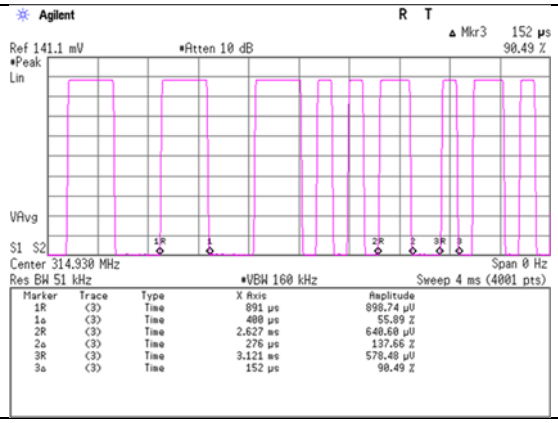
Pulse count 1



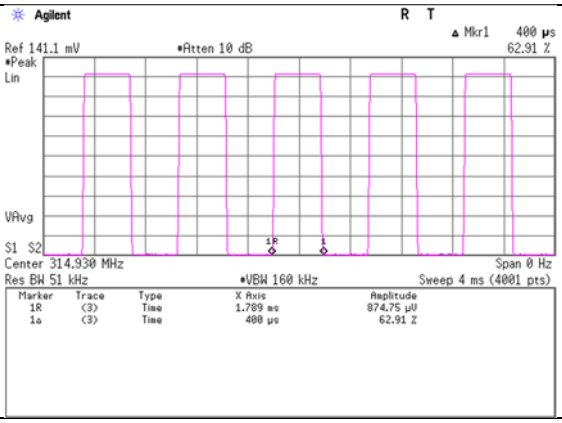
Pulse count 2



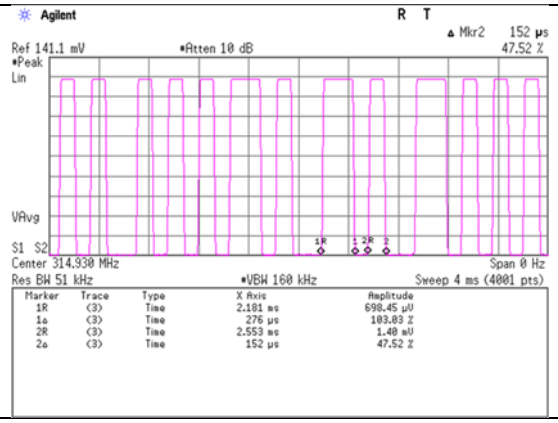
Pulse count 3



Pulse count 4



Pulse count 5



APPENDIX 2: Test instruments

Test Instruments

Test item	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Calibration Due Date	Cal Int
RE	142004	AC2_Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-06902	6/29/2018	6/30/2020	24
RE	141942	Test Receiver	Rohde & Schwarz	ESCI	100300	8/8/2018	8/31/2019	12
RE	141392	Microwave Cable	Junkosha	MWX221	1604S253(1 m) / 1608S087(5 m)	8/8/2018	8/31/2019	12
RE	142228	Measure	KOMELON	KMC-36	-	-	-	-
RE	141503	Horn Antenna 18-26.5GHz	EMCO	22160	1265	6/6/2018	6/30/2019	12
RE	141512	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	254	6/6/2018	6/30/2019	12
RE	141152	EMI measurement program	TSJ	TEPTO-DV	-	-	-	-
RE	141542	Digital Tester	Fluke Corporation	FLUKE 26-3	78030611	8/21/2018	8/31/2019	12
RE	142006	AC2_Semi Anechoic Chamber(SVSWR)	TDK	Semi Anechoic Chamber 3m	DA-06902	4/1/2018	4/30/2019	12
RE	141556	Thermo-Hygrometer	CUSTOM	CTH-201	0003	12/5/2018	12/31/2019	12
RE	141317	Coaxial Cable	Fujikura/Agilent	-	-	2/23/2018	2/28/2019	12
RE	141542	Digital Tester	Fluke Corporation	FLUKE 26-3	78030611	8/21/2018	8/31/2019	12
RE	141265	Logperiodic Antenna(200-1000 MHz)	Schwarzbeck	VUSLP9111B	911B-190	5/31/2018	5/31/2019	12
RE	141578	Pre Amplifier	AGILENT	8447D	2944A10845	9/19/2018	9/30/2019	12
RE	141885	Spectrum Analyzer	AGILENT	E4448A	US44300523	11/7/2018	11/30/2019	12
RE	141203	Attenuator(6dB)	Weinschel Corp	2	BK7970	11/5/2018	11/30/2019	12
RE	141427	Biconical Antenna	Schwarzbeck	VHA9103B	8031	5/31/2018	5/31/2019	12
RE	141579	Pre Amplifier	AGILENT	8449B	3008A02142	1/23/2018	1/31/2019	12
RE	142645	Loop Antenna	UL Japan	-	-	-	-	-

***Hyphens for Last Calibration Date, Calibration Due 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.
All equipment is calibrated with valid calibrations. Each measurement data is traceable to the national or international standards.

As for some calibrations performed after the tested dates, those test equipment have been controlled by means of an unbroken chains of calibrations.

Test item:
RE: Radiated emission, 99 % Occupied Bandwidth, -20 dB bandwidth, Automatically deactivate and Duty cycle tests