RADIO TEST REPORT

Test Report No. : 11159373S-A-R1

Applicant	:	**Yokogawa Electric Corporation**
Type of Equipment	:	**WLAN Redundant Module**
Model No.	:	**F9195KJ**
FCC ID	:	**SGJ-WFC008**
Test regulation	:	**FCC Part 15 Subpart E: 2015** **W58 (5745 MHz - 5825 MHz Band) only**
Test Result	:	**Complied**

1. This test report shall not be reproduced in full or partial, without the written approval of UL Japan, Inc.
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.
5. The opinions and the interpretations to the result of the description in this report are outside scopes where UL Japan has been accredited.
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. FCC ID: SGJ-WFC008 intended for WLAN Single Module (F9195KH), but test was carried out with WLAN Redundant Module (F9195KJ) as a representative model.
8. This report is a revised version of 11159373S-A. 11159373S-A is replaced with this report.

Date of test: February 23 to March 9, 2016

Representative test engineer:
S. Takano
Shinichi Takano
Engineer
Consumer Technology Division

Approved by:
T. Imamura
Toyokazu Imamura
Leader
Consumer Technology Division

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

JAB Testing RTL02610

UL Japan, Inc.
Shonan EMC Lab.
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN
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REVISION HISTORY

Original Test Report No.: 11159373S-A

Revision	Test report No.	Date	Page revised	Contents
- (Original)	11189373S-A	March 30, 2016	-	-
1	11159373S-A-R1	April 4, 2016	11	Correction of *1)

CONTENTS **PAGE**

SECTION 1: Customer information

Company Name	:	Yokogawa Electric Corporation
Address	:	2-9-32, Nakacho, Musashino, Tokyo, 180-8750, Japan
Telephone Number	:	+81-422-52-5885
Facsimile Number	:	+81-422-52-2102
Contact Person	:	Yoshio Yoshida

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

2.1 Identification of E.U.T.

Type of Equipment	:	WLAN Redundant Module
Model No.	:	F9195KJ
Serial No.	:	Refer to Section 4, Clause 4.2
Rating	:	DC 5.0 V
Receipt Date of Sample	:	February 22, 2016
Country of Mass-production	:	Japan
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: F9195KJ (referred to as the EUT in this report) is a WLAN Redundant Module.

Similar model: F9195KH (WLAN Single Module). Two Wireless LAN Modules are installed in F9195KJ and one Wireless LAN Module is installed in F9195KH.

General Specification

Clock frequency(ies) in the system	:	40 MHz

Radio Specification

Equipment type	:	Transceiver	
Frequency of operation	:	2.4GHz:	2412 MHz -2462 MHz (IEEE 802.11b, 11g)
		W52:	5180 MHz -5240 MHz (IEEE 802.11a)
		W53:	5260 MHz -5320 MHz (IEEE 802.11a)
		W56:	5500 MHz -5700 MHz (IEEE 802.11a)
		W58:	5745 MHz -5825 MHz (IEEE 802.11a)
Bandwidth	:	20 MHz	
Channel spacing	:	5 MHz (2.4 GHz), 20 MHz (5 GHz)	
Type of modulation	:	DSSS (IEEE 802.11b), OFDM (IEEE 802.11a/g)	
ITU code	:	D1D, G1D	
Operation temperature range	:	-40 deg.C to +70 deg.C	

Antenna type	Type:1 Sleeve antenna (Dual) *2)	Type:2 Sleeve antenna (Single)	Type:3 Collinear antenna	Type: 4 Collinear antenna	Type: 5 Patch compound antenna
Antenna Model Name	MTA-11DAD2-YO	ASSL-NP-00400	ASCL-NP-00200	ASCL-NP-00300	MTA-11PA15-Y0
Frequency band	2.4G/5GHz	2.4GHz	2.4GHz	2.4GHz	2.4GHz
External antenna connector type	N Connector				
External antenna cable	Coax antenna cable (less than cable loss: 3.1dB for 2.4GHz, 6.6dB for 5GHz)				
Antenna gain with internal cable loss (direct connecting)	2.14dBi	2.14dBi	6dBi (6.1dBi *1)	9dBi (8.6dBi *1)	15dBi

*1) Actual measured value
*2) The "Dual" means common use of 2.4GHz and 5GHz, and the antenna cannot perform the concurrent transmission.

SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification	:	FCC Part 15 Subpart E: 2015, final revised on November 23, 2015
Title	:	FCC 47CFR Part15 Radio Frequency Device Subpart E Unlicensed National Information Infrastructure Devices Section 15.407 General technical requirements

*Some parts are effective on and after December 17, 2015 or December 23, 2015. The revision does not affect the test specification applied to the EUT.

3.2 Procedures and results

Item	Test Procedure	Specification	Worst margin	Results	Remarks
Conducted Emission	**FCC:** ANSI C63.10-2013	**FCC:** 15.407 (b) (6) / 15.207	**19.2 dB** 0.37011 MHz, L1 Tx 11a 5745 MHz	Complied	-
	IC: RSS-Gen 8.8	**IC:** RSS-Gen 8.8			
26 dB Emission Bandwidth	**FCC:** KDB Publication Number 789033	**FCC:** 15.407 (a) (1) (2) (3)	See data	N/A	Conducted
	IC: -	**IC:** -			
Maximum Conducted Output Power	**FCC:** KDB Publication Number 789033	**FCC:** 15.407 (a) (1) (2) (3)		Complied	Conducted
	IC: -	**IC:** RSS-247 6.2.1 (1) 6.2.2 (1) 6.2.3 (1) 6.2.4 (1)			
Maximum Power Spectral Density	**FCC:** KDB Publication Number 789033	**FCC :** 15.407 (a) (1) (2) (3)		Complied	Conducted
	IC: -	**IC:** RSS-247 6.2.1 (1) 6.2.2 (1) 6.2.3 (1) 6.2.4 (1)			
Spurious Emission Restricted Band Edge	**FCC:** ANSI C63.10-2013 KDB Publication Number 789033	**FCC:** 15.407 (b), 15.205 and 15.209	**3.3 dB** 3829.991 MHz, AV, Vertical Tx 11a 5745 MHz	Complied	Conducted (< 30 MHz) / Radiated (> 30 MHz) *1)
	IC: -	**IC:** RSS-247 6.2.1 (2) 6.2.2 (2) 6.2.3 (2) 6.2.4 (2)			
6 dB Emission Bandwidth	**FCC:** ANSI C63.10-2013	**FCC:** 15.407 (e)	See data	Complied	Conducted
	IC: -	**IC:** RSS-247 6.2.4 (1)			

Note: UL Japan, Inc.'s EMI Work Procedures No. 13-EM-W0420 and 13-EM-W0422.
*1) Radiated test was selected over 30 MHz based on section FCC 15.407 (b) and KDB 789033 D02 G.3.b).

* In case any questions arise about test procedure, ANSI C63.10: 2013 is also referred.

FCC 15.31 (e) / 212

The RF Module has its own regulator. The RF Module is constantly provided voltage (DC 3.3 V) through the regulator regardless of input voltage. Therefore, the EUT complies with the requirement.

FCC 15.203 / 212

The EUT has an external antenna connector, but it is installed by the professionals. Therefore the EUT complies with the requirement.

3.3 Addition to standard

Item	Test Procedure	Specification	Worst margin	Results	Remarks
99 % Occupied Band Width	RSS-Gen 6.6	**IC:** -	N/A	N/A	Conducted

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

3.4 Uncertainty

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

Shonan EMC Lab.

Item	Frequency range	Uncertainty (+/-)			
		No. 1 SAC / SR	No. 2 SAC / SR	No. 3 SAC / SR	No. 4 SAC / SR
Conducted emission (AC Mains) LISN	150 kHz-30 MHz	2.1 dB	2.1 dB	2.6 dB	2.2 dB
Radiated emission (Measurement distance: 3 m)	9 kHz-30 MHz	2.7 dB	2.7 dB	3.1 dB	-
	30 MHz-300 MHz	4.4 dB	4.4 dB	4.6 dB	-
	300 MHz-1 GHz	5.6 dB	5.5 dB	5.3 dB	-
	1 GHz-13 GHz	5.2 dB	5.2 dB	5.2 dB	-
Radiated emission (Measurement distance: 1 m)	13 GHz-18 GHz	4.9 dB	4.9 dB	4.9 dB	-
	18 GHz-40 GHz	4.9 dB	4.9 dB	4.9 dB	-

SAC=Semi-Anechoic Chamber

SR= Shielded Room is applied besides radiated emission

Antenna terminal test	Uncertainty (+/-)
Power Measurement above 1 GHz (Average Detector)_SPM-06	0.76 dB
Power Measurement above 1 GHz (Peak Detector)_SPM-06	0.79 dB
Spurious emission (Conducted) below 1GHz	1.5 dB
Bandwidth Measurement	0.66 %

Conducted Emission test
The data listed in this test report has enough margin, more than the site margin.

Radiated emission test
The data listed in this report meets the limits unless the uncertainty is taken into consideration.

3.5 Test Location

UL Japan, Inc. Shonan EMC Lab.
1-22-3, Megumigaoka, Hiratsuka-shi, Kanagawa-ken 259-1220 JAPAN
Telephone: +81 463 50 6400, Facsimile: +81 463 50 6401
JAB Accreditation No. RTL02610

Test site	IC Registration Number	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Maximum measurement distance
No.1 Semi-anechoic chamber	2973D-1	20.6 x 11.3 x 7.65	20.6 x 11.3	10 m
No.2 Semi-anechoic chamber	2973D-2	20.6 x 11.3 x 7.65	20.6 x 11.3	10 m
No.3 Semi-anechoic chamber	2973D-3	12.7 x 7.7 x 5.35	12.7 x 7.7	5 m
No.4 Semi-anechoic chamber	-	8.1 x 5.1 x 3.55	8.1 x 5.1	-
No.1 Shielded room	-	6.8 x 4.1 x 2.7	6.8 x 4.1	-
No.2 Shielded room	-	6.8 x 4.1 x 2.7	6.8 x 4.1	-
No.3 Shielded room	-	6.3 x 4.7 x 2.7	6.3 x 4.7	-
No.4 Shielded room	-	4.4 x 4.7 x 2.7	4.4 x 4.7	-
No.5 Shielded room	-	7.8 x 6.4 x 2.7	7.8 x 6.4	-
No.6 Shielded room	-	7.8 x 6.4 x 2.7	7.8 x 6.4	-
No.8 shielded room	-	3.45 x 5.5 x 2.4	3.45 x 5.5	-
No.1 Measurement room	-	2.55 x 4.1 x 2.5	-	-

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)

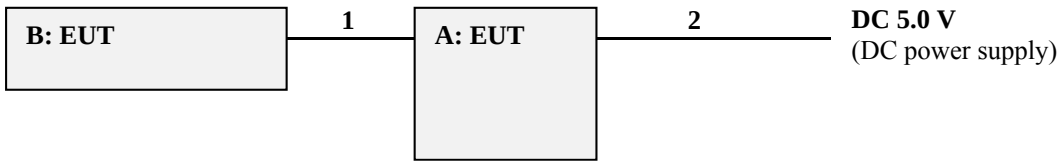
Test operating mode was determined as follows according to "Section 1 of 6 802.11 a/b/g/n testing - Managing Complex Regulatory Approvals -" of TCB Council Workshop October 2009.

Mode	Remarks*
IEEE 802.11a (11a)	24 Mbps, PN9
*Transmitting duty was 100 % on all tests.	
*Power of the EUT was set by the software as follows; Attenuator setting: 0 dB Software: YFGW510 Tool, Version 1.2.0.1 *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.	

*The details of Operation mode(s)

Test Item	Operating Mode	Tested Frequency
Conducted emission Radiated Spurious Emission (Below 1 GHz) Conducted Spurious Emission	Tx, 11a	5745 MHz *1)
99 % Occupied Bandwidth, Maximum Conducted Output Power, Maximum Power Spectral Density 6 dB Bandwidth Radiated Spurious Emission (Above 1 GHz)	Tx, 11a	5745 MHz 5785 MHz 5825 MHz
*1) The mode was tested as a representative, because it had the highest power at antenna terminal test.		

4.2 Configuration and peripherals



* Test data was taken under worse case conditions.

Description of EUT and support equipment

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	WLAN Redundant Module	F9195KJ	0023A73A72C9	YOKOGAWA	EUT
B	Sleeve antenna	MTA-11DAD2	-	Alfact	EUT (2.14dBi, Dual)

List of cables used

No.	Cable Name	Length (m)	Shield		Remark
			Cable	Connector	
1	Antenna	0.1	Shielded	Shielded	-
2	DC	1.4	Unshielded	Unshielded	-

SECTION 5: Conducted Emission

Test Procedure and conditions

EUT was placed on a platform of nominal size, 1.0 m by 1.5 m, raised 0.8 m above the conducting ground plane. The table is made of Styrofoam and covered with polyvinyl chloride. That has very low permittivity.
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.

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

Detector	**: QP and CISPR Average**
Measurement range	**: 0.15 MHz-30 MHz**
Test data	**: APPENDIX**
Test result	**: Pass**

SECTION 6: Radiated Spurious Emission and Band Edge Compliance

Test Procedure

< Below 1 GHz >
EUT was placed on a urethane platform of nominal size, 0.5 m by 0.5 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.

< 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 height of the measuring antenna 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 with the Test Receiver, or the Spectrum Analyzer.
The measurements were made with the following detector function of the test receiver and the Spectrum analyzer (in linear mode).
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.

< Below 1GHz >

The result also satisfied with the general limits specified in section 15.209 (a).

< Above 1GHz >

Inside of restricted bands (Section 15.205):

Apply to limit in the Section 15.209 (a).

Outside of the restricted bands:

Apply to limit 68.2 dBuV/m, 3 m (-27 dBm e.i.r.p.*) or
78.2 dBuV/m, 3 m (-17 dBm e.i.r.p.*) in the Section 15.407 (b).

Restricted band edge:

Apply to limit in the Section 15.209 (a).
Since this limit is severer than the limit of the inside of restricted bands.

*Electric field strength to e.i.r.p. conversion:

$$E = \frac{1000000\sqrt{30P}}{3} \quad \text{(uV/m)} \qquad :P \text{ is the e.i.r.p. (Watts)}$$

Test Antennas are used as below;

Frequency	30 MHz to 300 MHz	300 MHz to 1 GHz	Above 1 GHz
Antenna Type	Biconical	Logperiodic	Horn

Frequency	Below 1 GHz	Above 1 GHz	
Instrument used	Test Receiver	Spectrum Analyzer	
Detector	QP	Peak	Average
IF Bandwidth	BW: 120 kHz	RBW: 1 MHz VBW: 3 MHz	Method AD *1) RBW: 1 MHz VBW: 3 MHz Detector: Power Averaging (RMS) Trace: 100 traces
Test Distance	3 m	3 m (below 1 GHz), 3 m*2) (1 GHz – 13GHz), 1 m*3) (13 GHz – 26.5 GHz),	

*1) The test method was also referred to KDB 789033 D02 General UNII Test Procedures New Rules v01r01 "Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices Part 15, Subpart E (Issued on January 8, 2016)".
*2) Distance Factor: 20 x log (3.9 m/3.0 m) = 2.3 dB
*3) Distance Factor: 20 x log (1.0 m/3.0 m) = -9.5 dB

The carrier level and noise levels were confirmed at each position of X, Y and Z axes of EUT to see the position of maximum noise, and the test was made at the position that has the maximum noise.

Combinations of the worst case

Subject	Antenna polarization	Carrier (Band edge)	Spurious	
			Below 1GHz	Above 1GHz
Module	Horizontal	Z	Z	Z
Antenna		X	Y	X
Module	Vertical	Z	Z	Z
Antenna		Y	Y	Y

* The definition of the axis was listed in a 'Pre-check of the worst position' in APPENDIX.

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

Measurement range : 30 MHz-40 GHz
Test data : APPENDIX
Test result : Pass

SECTION 7: Antenna Terminal Conducted Tests

Test Procedure

The tests were made with below setting connected to the antenna port.

Test	Span	RBW	VBW	Sweep time	Detector	Trace	Instrument used and Test method
99 % Occupied Bandwidth*1)	Enough width to display emission skirts	1 % to 5 % of OBW	≥ 3 RBW	Auto	Sample	Max Hold	Spectrum Analyzer
6 dB Bandwidth	Enough to capture the emission	100 kHz	300 kHz	Auto	Peak	Max Hold	Spectrum Analyzer
Maximum Conducted Output Power	-	-	-	Auto	Average	-	Power Meter (Sensor: 50 MHz BW) (Method PM-G)
Maximum Power Spectral Density	Encompass the entire EBW	100 kHz *2)	≥ 3 RBW	Auto	RMS Power Averaging (100 times)	Clear Write	Spectrum Analyzer
Conducted Spurious Emission*3)	9 kHz – 150 kHz	200 Hz	620 Hz	Auto	Peak	Max Hold	Spectrum Analyzer
	150 kHz – 30 MHz	10 kHz	30 kHz				

* The test method was also referred to KDB 789033 D02 General UNII Test Procedures New Rules v01r01 "Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices Part 15, Subpart E (Issued on January 8, 2016)".

*1) Peak hold was applied as Worst-case measurement.
*2) FCC standard says that RBW is set to be 500 kHz for 5.725 GHz-5.850 GHz, but it is not possible with spectrum analyzer, so 10log(500 kHz/100 kHz) was added to the test result.
*3) In the frequency range below 30 MHz, RBW was narrowed to separate the noise contents.
Then, wide-band noise near the limit was checked separately, however the noise was not detected as shown in the chart. (9 kHz-150 kHz: RBW = 200 Hz, 150 kHz-30 MHz: RBW = 10 kHz)

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

Test data : APPENDIX
Test result : Pass

APPENDIX 1: Test data

Conducted Emission

DATA OF CONDUCTED EMISSION TEST

UL Japan,Inc. Shonan EMC Lab. No.2 Shielded Room
Date : 2016/03/09

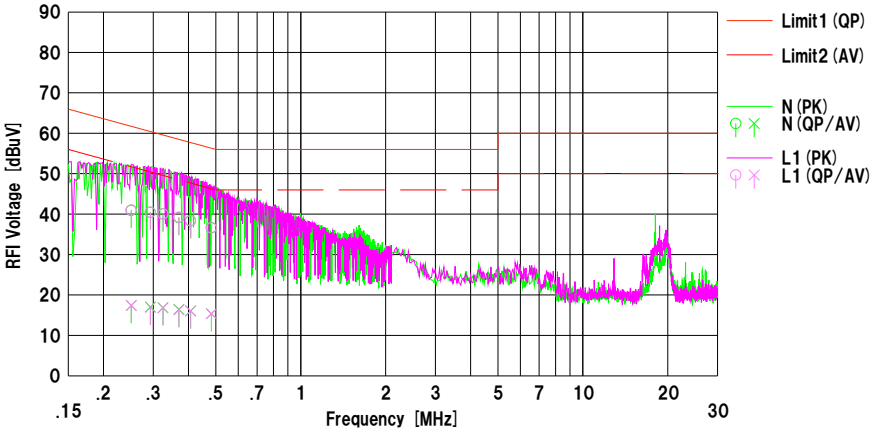
Mode : Tx, 11a_5745MHz
Order No. : 11159373S

Temp./Humi. : 24 deg.C. / 44 %RH

Remarks : -

Limit1 : FCC 15C (15.207) QP
Limit2 : FCC 15C (15.207) AV

Engineer : Akira Sato



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	0.25076	28.40	4.90	12.51	40.91	17.41	61.73	51.73	20.8	34.3	N	
2	0.29304	27.90	4.50	12.53	40.43	17.03	60.44	50.44	20.0	33.4	N	
3	0.32479	27.50	4.30	12.53	40.03	16.83	59.58	49.58	19.5	32.7	N	
4	0.36975	26.60	3.90	12.54	39.14	16.44	58.51	48.51	19.3	32.0	N	
5	0.40689	25.80	3.50	12.53	38.33	16.03	57.71	47.71	19.3	31.6	N	
6	0.48230	24.10	2.80	12.55	36.65	15.35	56.30	46.30	19.6	30.9	N	
7	0.25095	28.50	4.90	12.51	41.01	17.41	61.73	51.73	20.7	34.3	L1	
8	0.29331	27.90	4.40	12.53	40.43	16.93	60.43	50.43	20.0	33.5	L1	
9	0.32492	27.50	4.30	12.53	40.03	16.83	59.58	49.58	19.5	32.7	L1	
10	0.37011	26.70	3.80	12.54	39.24	16.34	58.50	48.50	19.2	32.1	L1	
11	0.40758	25.80	3.50	12.53	38.33	16.03	57.70	47.70	19.3	31.6	L1	
12	0.48243	24.00	2.80	12.55	36.55	15.35	56.30	46.30	19.7	30.9	L1	

Calculation:Result [dBuV] =Reading [dBuV] +C.Fac (LISN+Cable+ATT) [dB]
LISN: SLS-02

99 % Occupied Bandwidth

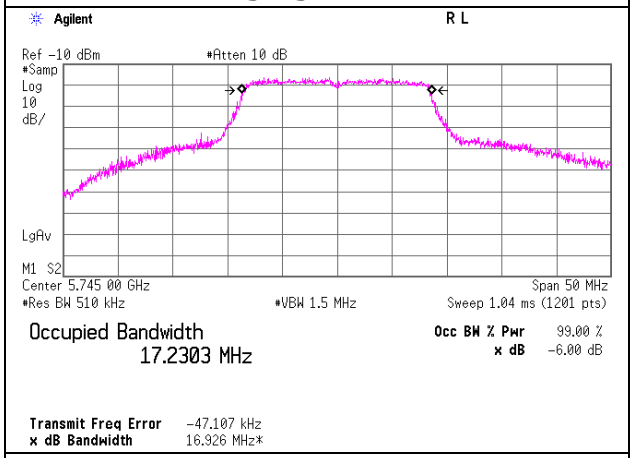
Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11159373S-A-R1
Date	February 23, 2016
Temperature / Humidity	24 deg. C / 49 % RH
Engineer	Shinichi Takano
Mode	Tx 11a

Tested Frequency [MHz]	99 % Occupied Bandwidth [MHz]	Limit [MHz]
5745	17.230	-
5785	17.279	-
5825	17.224	-

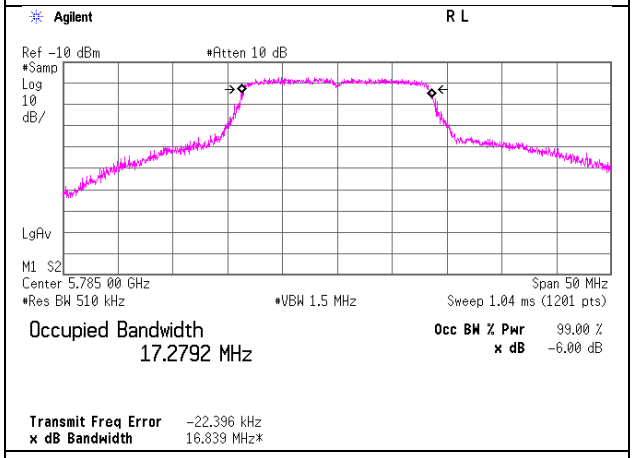
99 % Occupied Bandwidth

11a

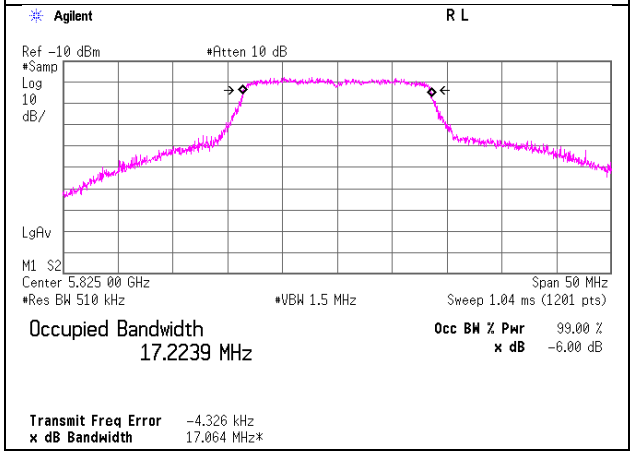
5745 MHz



5785 MHz



5825 MHz



6 dB Bandwidth

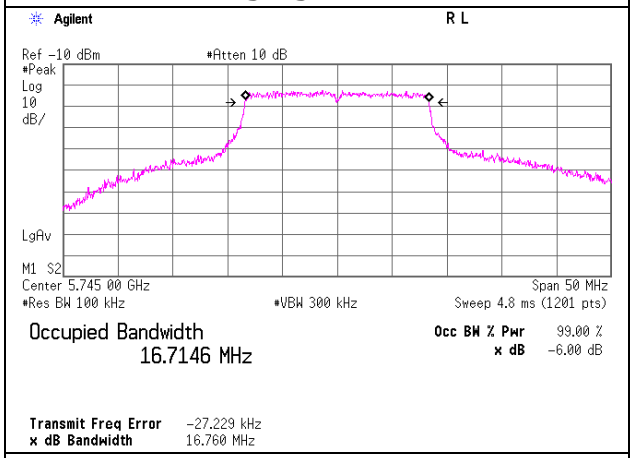
Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11159373S-A-R1
Date	February 23, 2016
Temperature / Humidity	24 deg. C / 49 % RH
Engineer	Shinichi Takano
Mode	Tx 11a

Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [kHz]
5745	16.760	> 500
5785	16.723	> 500
5825	16.762	> 500

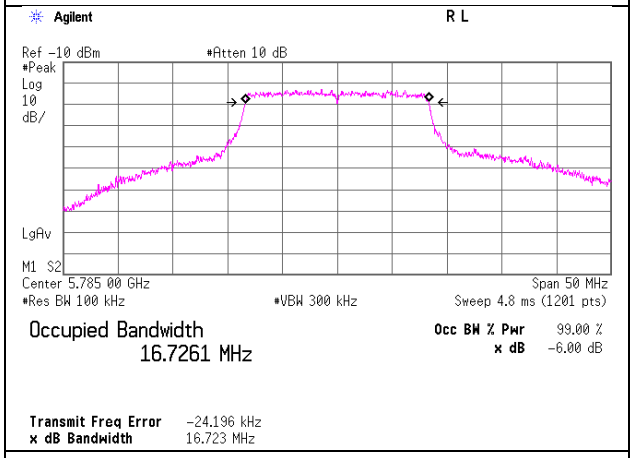
6 dB Bandwidth

11a

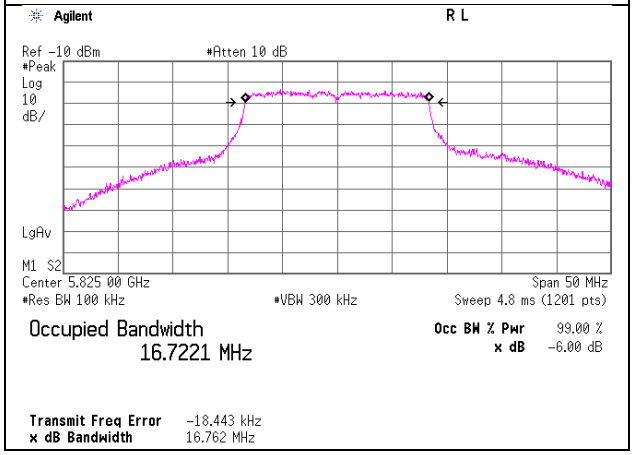
5745 MHz



5785 MHz



5825 MHz



Maximum Conducted Output Power

Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11159373S-A-R1
Date	February 23, 2016
Temperature / Humidity	24 deg. C / 49 % RH
Engineer	Shinichi Takano
Mode	Tx 11a

Applied limit: 15.407, mobile and portable client device

Tested Frequency	Power Meter Reading	Cable Loss	Atten. Loss	Duty Factor	Antenna Gain	26 dB EBW (B for FCC)	99% OBW (B for IC)	Conducted Power Result		Limit	Margin	e.i.r.p. Result		Limit	Margin
[MHz]	[dBm]	[dB]	[dB]	[dB]	[dBi]	[MHz]	[MHz]	[dBm]	[mW]	[dBm]	[dB]	[dBm]	[mW]	[dBm]	[dB]
5745	-8.97	3.59	10.16	0.00	2.1	-	-	4.78	3.01	30.00	25.22	6.92	4.92	36.00	29.08
5785	-9.82	3.61	10.16	0.00	2.1	-	-	3.95	2.48	30.00	26.05	6.09	4.06	36.00	29.91
5825	-10.40	3.62	10.16	0.00	2.1	-	-	3.38	2.18	30.00	26.62	5.52	3.56	36.00	30.48

Sample Calculation:
Conducted Power Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss + Duty Factor
e.i.r.p. Result = Conducted Power Result + Antenna Gain

Maximum Conducted Output Power

Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11159373S-A-R1
Date	February 23, 2016
Temperature / Humidity	24 deg. C / 49 % RH
Engineer	Shinichi Takano
Mode	Tx 11a

5785 MHz

Mode	Rate Mbps	Reading (timed average) [dBm]	Duty factor [dB]	Burst power [dBm]	Remarks
11a	6	-9.84	0.00	-9.84	
	9	-9.90	0.00	-9.90	
	12	-9.98	0.00	-9.98	
	18	-9.96	0.00	-9.96	
	24	-9.82	0.00	-9.82	*
	36	-9.87	0.00	-9.87	
	48	-9.89	0.00	-9.89	
	54	-9.96	0.00	-9.96	

* Worst rate

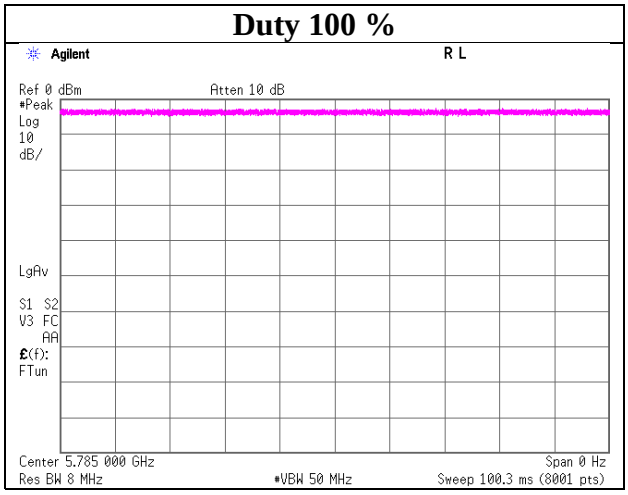
Sample Calculation:

Burst power = Reading (timed average) + Duty factor

All comparison were carried out on same frequency and measurement factors.

Burst rate confirmation

Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11159373S-A-R1
Date	February 23, 2016
Temperature / Humidity	24 deg. C / 49 % RH
Engineer	Shinichi Takano
Mode	Tx 11a



Maximum Power Spectral Density

Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11159373S-A-R1
Date	February 23, 2016
Temperature / Humidity	24 deg. C / 49 % RH
Engineer	Shinichi Takano
Mode	Tx 11a

Applied limit: 15.407, mobile and portable client device

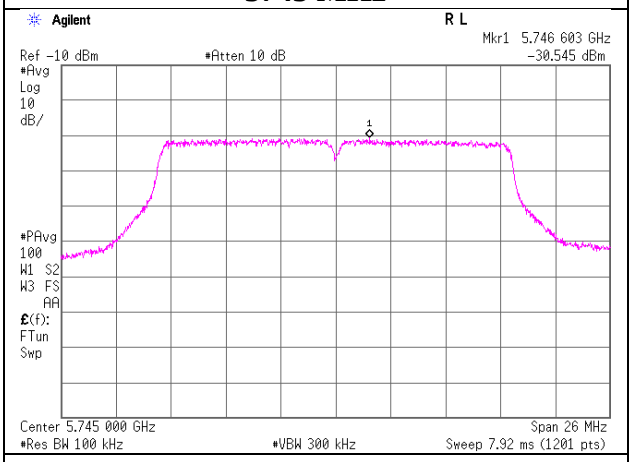
Tested Frequency [MHz]	PSD Reading [dBm /MHz]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Antenna Gain [dBi]	RBW Correction Factor [dB]	PSD (Conducted) Result [dBm /MHz]	PSD (Conducted) Limit [dBm /MHz]	PSD (Conducted) Margin [dB]	PSD (e.i.r.p.) Result [dBm /MHz]	PSD (e.i.r.p.) Limit [dBm /MHz]	PSD (e.i.r.p.) Margin [dB]
5745	-30.55	3.59	10.16	0.00	2.1	6.99	-9.81	30.00	39.81	-7.67	36.00	43.67
5785	-31.34	3.61	10.16	0.00	2.1	6.99	-10.58	30.00	40.58	-8.44	36.00	44.44
5825	-31.82	3.62	10.16	0.00	2.1	6.99	-11.05	30.00	41.05	-8.91	36.00	44.91

Sample Calculation:
PSD: Power Spectral Density
The PSD within 5725 MHz to 5825 MHz are based on any 500 kHz band.
RBW Correction Factor = 10 * log (Specified bandwidth / Measured bandwidth)
PSD Result (Conducted) = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss + Duty Factor + RBW Correction Factor
PSD Result (e.i.r.p.) = Conducted PSD Result + Antenna Gain

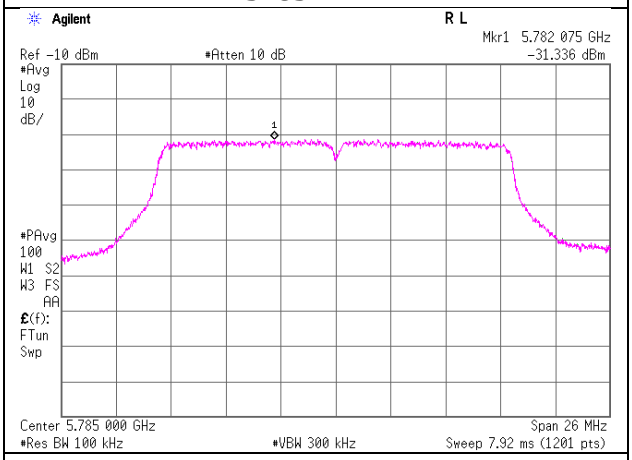
Maximum Power Spectral Density

Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11159373S-A-R1
Date	February 23, 2016
Temperature / Humidity	24 deg. C / 49 % RH
Engineer	Shinichi Takano
Mode	Tx 11a

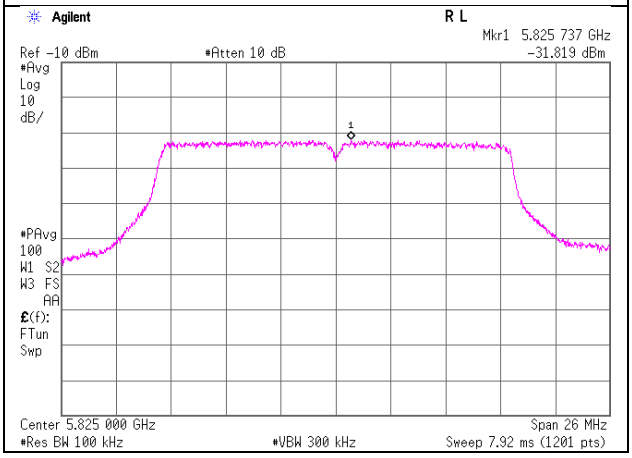
5745 MHz



5785 MHz



5825 MHz



Radiated Spurious Emission

Test place	Shonan EMC Lab. No.1 and 2 Semi Anechoic Chamber		
Report No.	11159373S-A-R1		
Date	March 1, 2016	March 2, 2016	March 9, 2016
Temperature / Humidity	20 deg. C / 40 % RH	22 deg. C / 34 % RH	21 deg. C / 41 % RH
Engineer	Yosuke Ishikawa (1 GHz-13 GHz)	Yosuke Ishikawa (13 GHz-18 GHz)	Akira Sato (30 MHz-1 GHz)
Mode	Tx 11a 5745 MHz		

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	240.000	QP	40.8	17.5	9.3	31.7	0.0	35.9	46.0	10.1	100	280	
Hori.	280.000	QP	36.6	18.7	9.6	31.7	0.0	33.2	46.0	12.8	100	160	
Hori.	320.000	QP	50.5	14.1	6.7	31.7	0.0	39.6	46.0	6.4	139	224	
Hori.	360.000	QP	43.7	15.2	7.0	31.6	0.0	34.3	46.0	11.7	100	227	
Hori.	400.000	QP	42.1	16.3	7.2	31.6	0.0	34.0	46.0	12.0	100	221	
Hori.	480.000	QP	37.6	17.3	7.7	31.6	0.0	31.0	46.0	15.0	100	171	
Hori.	600.000	QP	35.5	18.9	8.3	31.6	0.0	31.1	46.0	14.9	133	134	
Hori.	680.000	QP	35.6	20.0	8.7	31.6	0.0	32.7	46.0	13.3	100	174	
Hori.	3829.991	PK	50.8	29.0	16.5	41.6	2.3	57.0	73.9	16.9	150	83	
Hori.	11490.000	PK	44.1	40.1	10.2	39.9	2.3	56.8	73.9	17.1	100	0	
Hori.	17235.000	PK	47.6	43.0	10.9	33.4	-9.5	58.6	73.9	15.3	136	283	
Hori.	3829.991	AV	44.0	29.0	16.5	41.6	2.3	50.2	53.9	3.7	150	83	VBW:10Hz
Hori.	11490.000	AV	33.3	40.1	10.2	39.9	2.3	46.0	53.9	7.9	100	0	VBW:10Hz
Hori.	17235.000	AV	33.3	43.0	10.9	33.4	-9.5	44.3	53.9	9.6	136	283	VBW:10Hz
Vert.	80.000	QP	41.7	6.1	8.1	31.9	0.0	24.0	40.0	16.0	100	354	
Vert.	96.373	QP	37.2	9.4	8.0	31.9	0.0	22.7	43.5	20.8	100	20	
Vert.	120.000	QP	39.0	13.1	7.9	31.8	0.0	28.2	43.5	15.3	100	359	
Vert.	3829.991	PK	50.5	29.0	16.5	41.6	2.3	56.7	73.9	17.2	135	139	
Vert.	11490.000	PK	44.0	40.1	10.2	39.9	2.3	56.7	73.9	17.2	100	0	
Vert.	17235.000	PK	45.6	43.0	10.9	33.4	-9.5	56.6	73.9	17.3	162	84	
Vert.	3829.991	AV	44.4	29.0	16.5	41.6	2.3	50.6	53.9	**3.3**	135	139	VBW:10Hz
Vert.	11490.000	AV	33.0	40.1	10.2	39.9	2.3	45.7	53.9	8.2	100	0	VBW:10Hz
Vert.	17235.000	AV	32.1	43.0	10.9	33.4	-9.5	43.1	53.9	10.8	162	84	VBW:10Hz

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).
*The 4th harmonic was not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.3 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

(Calculation) (above 1GHz Outside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5715.0	PK	46.0	32.6	17.6	40.4	2.3	58.1	-37.1	-27.0	10.1	150.0	279.0	
Hori.	5725.0	PK	46.7	32.6	17.7	40.4	2.3	58.9	-36.3	-17.0	19.3	150.0	279.0	
Vert.	5715.0	PK	46.3	32.6	17.6	40.4	2.3	58.4	-36.8	-27.0	**9.8**	164.0	222.0	
Vert.	5725.0	PK	46.1	32.6	17.7	40.4	2.3	58.3	-36.9	-17.0	19.9	164.0	222.0	

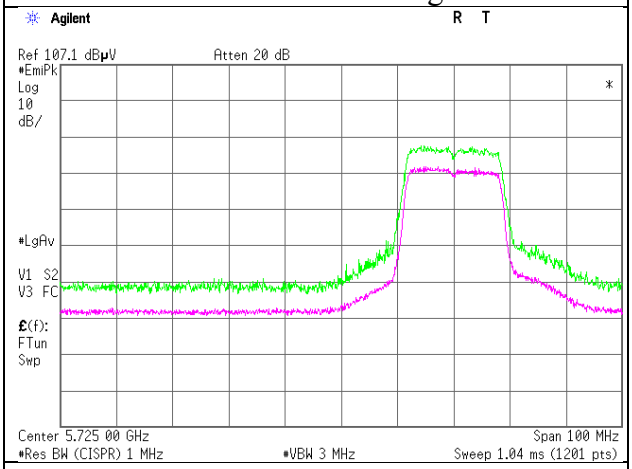
Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Resrult(EIRP[dBm])=10*LOG（({ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) *10^3)
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).
*The 4th harmonic was not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.3 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

Test place	Shonan EMC Lab. No.1 Semi Anechoic Chamber
Report No.	11159373S-A-R1
Date	March 1, 2016
Temperature / Humidity	20 deg. C / 40 % RH
Engineer	Yosuke Ishikawa
Mode	Tx 11a 5745 MHz

Horizontal

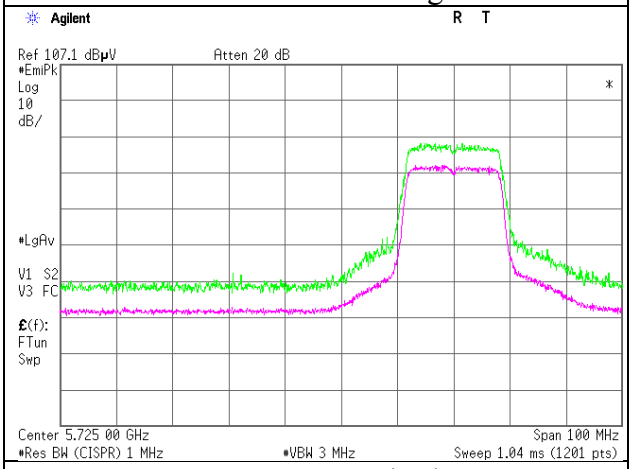
Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

* Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission

Test place	Shonan EMC Lab. No.1 and 2 Semi Anechoic Chamber	
Report No.	11159373S-A-R1	
Date	March 1, 2016	March 2, 2016
Temperature / Humidity	20 deg. C / 40 % RH	22 deg. C / 34 % RH
Engineer	Yosuke Ishikawa (1 GHz-13 GHz)	Yosuke Ishikawa (13 GHz-18 GHz)
Mode	Tx 11a 5785 MHz	

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	3856.6	PK	49.7	29.0	16.5	41.7	2.3	55.8	73.9	18.1	100.0	61.0	
Hori.	11570.0	PK	44.5	40.0	10.3	39.8	2.3	57.3	73.9	16.6	100.0	0.0	
Hori.	17355.0	PK	45.4	43.3	10.9	33.4	-9.5	56.7	73.9	17.2	154.0	77.0	
Hori.	3856.6	AV	44.0	29.0	16.5	41.7	2.3	50.1	53.9	**3.8**	100.0	61.0	VBW:10Hz
Hori.	11570.0	AV	33.0	40.0	10.3	39.8	2.3	45.8	53.9	8.1	100.0	0.0	VBW:10Hz
Hori.	17355.0	AV	32.8	43.3	10.9	33.4	-9.5	44.1	53.9	9.8	154.0	77.0	VBW:10Hz
Vert.	3856.6	PK	50.2	29.0	16.5	41.7	2.3	56.3	73.9	17.6	100.0	191.0	
Vert.	11570.0	PK	44.8	40.0	10.3	39.8	2.3	57.6	73.9	16.3	100.0	0.0	
Vert.	17355.0	PK	45.0	43.3	10.9	33.4	-9.5	56.3	73.9	17.6	134.0	31.0	
Vert.	3856.6	AV	42.6	29.0	16.5	41.7	2.3	48.7	53.9	5.2	100.0	191.0	VBW:10Hz
Vert.	11570.0	AV	33.0	40.0	10.3	39.8	2.3	45.8	53.9	8.1	100.0	0.0	VBW:10Hz
Vert.	17355.0	AV	32.5	43.3	10.9	33.4	-9.5	43.8	53.9	10.1	134.0	31.0	VBW:10Hz

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor

*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.3 dB

13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

Test place	Shonan EMC Lab. No.1 and 2 Semi Anechoic Chamber	
Report No.	11159373S-A-R1	
Date	March 1, 2016	March 2, 2016
Temperature / Humidity	20 deg. C / 40 % RH	22 deg. C / 34 % RH
Engineer	Yosuke Ishikawa	Yosuke Ishikawa
	(1 GHz-13 GHz)	(13 GHz-18 GHz)
Mode	Tx 11a 5825 MHz	

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	3883.3	PK	50.0	29.1	16.6	41.7	2.3	56.3	73.9	17.6	150.0	56.0	
Hori.	11650.0	PK	44.0	39.9	10.3	39.7	2.3	56.8	73.9	17.1	100.0	0.0	
Hori.	17475.0	PK	45.6	43.7	10.9	33.4	-9.5	57.3	73.9	16.6	155.0	294.0	
Hori.	3883.3	AV	43.4	29.1	16.6	41.7	2.3	49.7	53.9	**4.2**	150.0	56.0	VBW:10Hz
Hori.	11650.0	AV	32.0	39.9	10.3	39.7	2.3	44.8	53.9	9.1	100.0	0.0	VBW:10Hz
Hori.	17475.0	AV	32.2	43.7	10.9	33.4	-9.5	43.9	53.9	10.0	155.0	294.0	VBW:10Hz
Vert.	3883.3	PK	49.5	29.1	16.6	41.7	2.3	55.8	73.9	18.1	100.0	151.0	
Vert.	11650.0	PK	42.9	39.9	10.3	39.7	2.3	55.7	73.9	18.2	100.0	0.0	
Vert.	17475.0	PK	45.4	43.7	10.9	33.4	-9.5	57.1	73.9	16.8	145.0	11.0	
Vert.	3883.3	AV	41.7	29.1	16.6	41.7	2.3	48.0	53.9	5.9	100.0	151.0	VBW:10Hz
Vert.	11650.0	AV	32.3	39.9	10.3	39.7	2.3	45.1	53.9	8.8	100.0	0.0	VBW:10Hz
Vert.	17475.0	AV	32.1	43.7	10.9	33.4	-9.5	43.8	53.9	10.1	145.0	11.0	VBW:10Hz

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).
*The 4th harmonic was not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.3 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

(Calculation) (above 1GHz Outside of the restricted band)

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5850.0	PK	45.1	32.8	17.8	40.4	2.3	57.6	-37.6	-17.0	20.6	150.0	286.0	
Hori.	5860.0	PK	44.0	32.8	17.8	40.4	2.3	56.5	-38.7	-27.0	11.7	150.0	286.0	
Vert.	5850.0	PK	45.7	32.8	17.8	40.4	2.3	58.2	-37.0	-17.0	20.0	147.0	117.0	
Vert.	5860.0	PK	44.2	32.8	17.8	40.4	2.3	56.7	-38.5	-27.0	**11.5**	147.0	117.0	

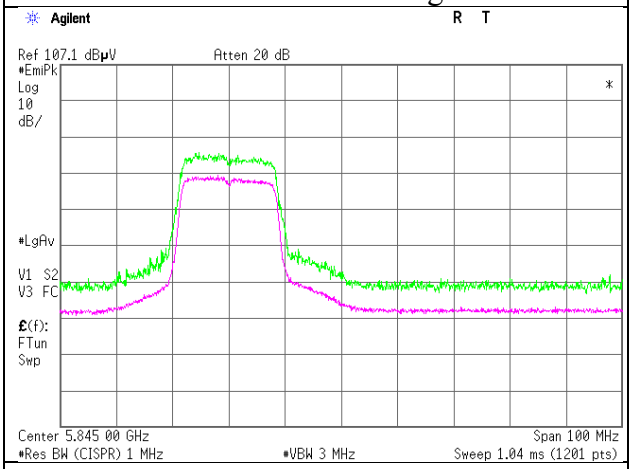
Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Resrult(EIRP[dBm])=10*LOG（({ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) *10^3)
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).
*The 4th harmonic was not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.3 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

Test place	Shonan EMC Lab. No.1 Semi Anechoic Chamber
Report No.	11159373S-A-R1
Date	March 1, 2016
Temperature / Humidity	20 deg. C / 40 % RH
Engineer	Yosuke Ishikawa
Mode	Tx 11a 5825 MHz

Horizontal

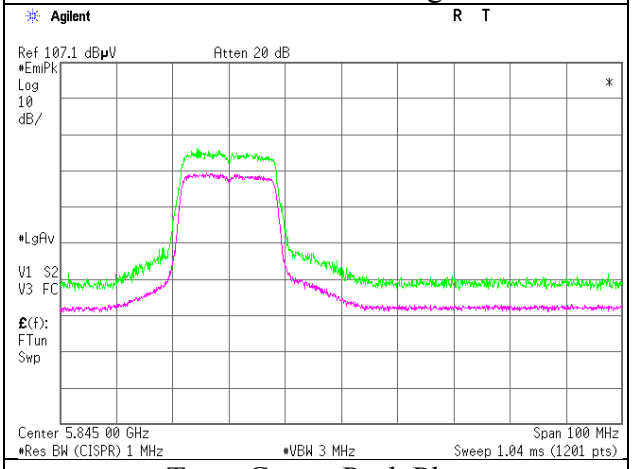
Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot

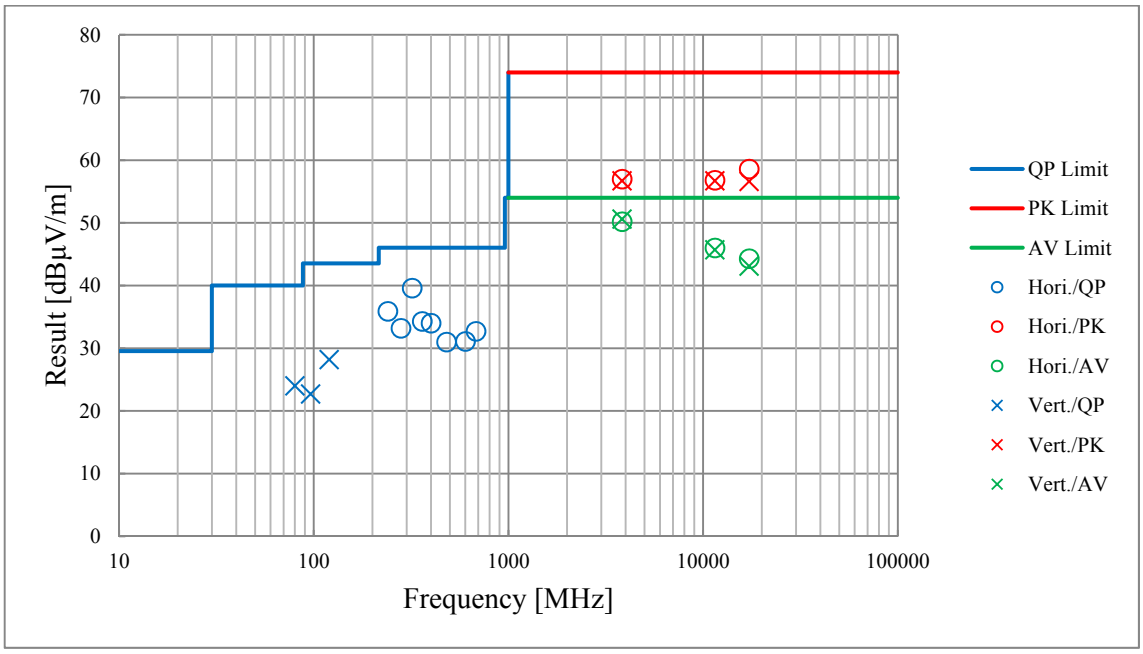


Trace Green: Peak Plot
Trace Purple: Average Plot

* Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission
(Plot data, Worst case)

Test place	Shonan EMC Lab. No.1 and 2 Semi Anechoic Chamber		
Report No.	11159373S-A-R1		
Date	March 1, 2016	March 2, 2016	March 9, 2016
Temperature / Humidity	20 deg. C / 40 % RH	22 deg. C / 34 % RH	21 deg. C / 41 % RH
Engineer	Yosuke Ishikawa (1 GHz-13 GHz)	Yosuke Ishikawa (13 GHz-18 GHz)	Akira Sato (30 MHz-1 GHz)
Mode	Tx 11a 5745 MHz		

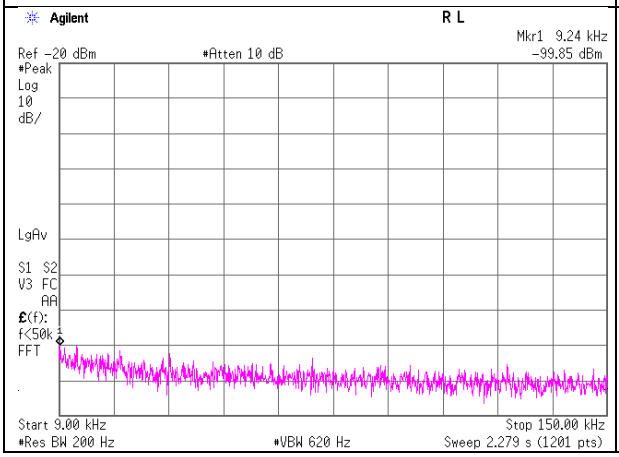


*These plots data contains sufficient number to show the trend of characteristic features for EUT.

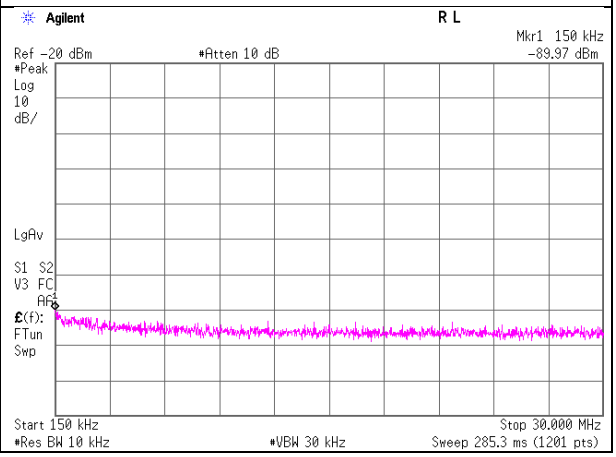
Conducted Spurious Emission

Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11159373S-A-R1
Date	February 23, 2016
Temperature / Humidity	24 deg. C / 49 % RH
Engineer	Shinichi Takano
Mode	Tx 11a 5745 MHz

9 kHz-150 kHz



150 kHz-30 MHz



Frequency [kHz]	Reading [dBm]	Cable Loss [dB]	Attenator [dB]	Antenna Gain [dBi]	N (Number of Output	EIRP [dBm]	Distance [m]	Ground bounce [dB]	E (field strength) [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
9.24	-99.9	0.01	9.9	2.1	1	-87.8	300	6.0	-26.5	48.2	74.7	
150.00	-90.0	0.02	9.9	2.1	1	-77.9	300	6.0	-16.6	24.0	40.6	

E = EIRP - 20*log(D) + Ground bounce + 104.8 [dBuV/m]

EIRP = Reading + Cable Loss + Attenator + Antenna Gain + 10*log(N)

APPENDIX 2: Test instruments

Test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
SSA-03	Spectrum Analyzer	Agilent	E4448A	MY48250152	AT	2015/09/16 * 12
SCC-G32	Coaxial Cable	Junkosha	MWX241-02000KMSKMS	OCT-09-13-005	AT	2015/10/08 * 12
SAT10-06	Attenuator	Agilent	8493C-010	74865	AT	2015/11/04 * 12
SPM-06	Power Meter	Anritsu	ML2495A	0850009	AT	2015/04/07 * 12
SPSS-03	Power sensor	Anritsu	MA2411B	0917063	AT	2015/04/07 * 12
SOS-09	Humidity Indicator	A&D	AD-5681	4061484	AT	2015/12/07 * 12
SAF-04	Pre Amplifier	TOYO Corporation	TPA0118-36	1440489	RE	2015/03/23 * 12
SCC-G01	Coaxial Cable	Suhner	SUCOFLEX 104A	46497/4A	RE	2015/04/17 * 12
SCC-G21	Coaxial Cable	Suhner	SUCOFLEX 104	296169/4	RE	2015/05/19 * 12
SHA-01	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-725	RE	2015/08/10 * 12
SOS-01	Humidity Indicator	A&D	AD-5681	4062555	RE	2015/10/22 * 12
SSA-02	Spectrum Analyzer	Agilent	E4448A	MY48250106	RE	2015/03/26 * 12
SJM-02	Measure	KOMELON	KMC-36	-	RE	-
SAEC-01(SVSWR)	Semi-Anechoic Chamber	TDK	SAEC-01(SVSWR)	1	RE	2015/07/08 * 12
COTS-SEMI-1	EMI Software	TSJ	TEPTO-DV(RE,CE,RFI,MF)	-	RE	-
STS-01	Digital Hitester	Hioki	3805-50	080997812	RE	2015/11/18 * 12
KAT10-S2	Attenuator	Agilent	8490D 010	06036	RE	2015/11/04 * 12
SFL-03	Highpass Filter	MICRO-TRONICS	HPM50112	028	RE	2015/11/16 * 12
SAF-03	Pre Amplifier	SONOMA	310N	290213	RE	2016/02/25 * 12
KAF-04	Pre Amplifier	Agilent	8449B	3008A01600	RE	2015/04/28 * 12
SCC-G05	Coaxial Cable	Junkosha	J12J102207-00	APR-30-15-037	RE	2015/05/11 * 12
SCC-G22	Coaxial Cable	Suhner	SUCOFLEX 104	296199/4	RE	2015/05/19 * 12
SHA-02	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-726	RE	2015/08/10 * 12
SOS-03	Humidity Indicator	A&D	AD-5681	4063325	RE	2015/10/22 * 12
SJM-09	Measure	PROMART	SEN1935	-	RE	-
SAEC-02(SVSWR)	Semi-Anechoic Chamber	TDK	SAEC-02(SVSWR)	2	RE	2015/07/09 * 12
STS-02	Digital Hitester	Hioki	3805-50	080997819	RE	2015/03/10 * 12
SHA-04	Horn Antenna	ETS LINDGREN	3160-09	LM3640	RE	2015/03/17 * 12
SAF-08	Pre Amplifier	TOYO Corporation	HAP18-26W	00000019	RE	2015/03/23 * 12
SCC-G15	Coaxial Cable	Suhner	SUCOFLEX 102	32703/2	RE	2015/03/11 * 12
SCC-G33	Coaxial Cable	Junkosha	MWX241-01000KMSKMS	-	RE	2015/04/09 * 12
SHA-06	Horn Antenna	ETS LINDGREN	3160-10	LM3459	RE	2015/03/17 * 12
SAF-10	Pre Amplifier	TOYO Corporation	HAP26-40W	00000010	RE	2015/03/23 * 12
SCC-G19	Coaxial Cable	Suhner	SUCOFLEX 102A	1188/2A	RE	2015/03/11 * 12
SAF-02	Pre Amplifier	SONOMA	310N	290212	RE	2016/02/19 * 12
SAT6-02	Attenuator	JFW	50HF-006N	-	RE	2016/02/25 * 12
KAT3-11	Attenuator	JFW IND. INC.	50HF-003N	-	RE	2015/08/31 * 12
SBA-02	Biconical Antenna	Schwarzbeck	BBA9106	91032665	RE	2015/11/02 * 12

SCC-B1/B3/B5/B7/B8/B13/SRSE-02	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906	-/0901-270(RF Selector)	RE	2015/04/17 * 12
SCC-B2/B4/B6/B7/B8/B13/SRSE-02	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906	-/0901-270(RF Selector)	RE	2015/04/17 * 12
SLA-02	Logperiodic Antenna	Schwarzbeck	UHALP9108A	UHALP9108-A 0893	RE	2015/11/03 * 12
SOS-03	Humidity Indicator	A&D	AD-5681	4063325	RE	2015/10/22 * 12
STR-07	Test Receiver	Rohde & Schwarz	ESU26	100484	RE	2015/09/04 * 12
SJM-09	Measure	PROMART	SEN1935	-	RE	-
SAEC-02(NSA)	Semi-Anechoic Chamber	TDK	SAEC-02(NSA)	2	RE	2015/07/15 * 12
COTS-SEMI-1	EMI Software	TSJ	TEPTO-DV(RE,CE,RFI,MF)	-	RE	-
STS-02	Digital Hitester	Hioki	3805-50	080997819	RE	2015/03/10 * 12
SCC-B12/B13/SRSE-02	Coaxial Cable&RF Selector	Suhner/Suhner/TOYO	RG223U/141PE/NS4906	-/0901-270(RF Selector)	CE	2015/04/17 * 12
SLS-02	LISN	Rohde & Schwarz	ENV216	100512	CE	2016/02/08 * 12
SAT3-10	Attenuator	JFW	50HF-003N	-	CE	2015/08/31 * 12
SOS-04	Humidity Indicator	A&D	AD-5681	4061512	CE	2015/12/07 * 12
STR-07	Test Receiver	Rohde & Schwarz	ESU26	100484	CE	2015/09/04 * 12
SJM-09	Measure	PROMART	SEN1935	-	CE	-
COTS-SEMI-1	EMI Software	TSJ	TEPTO-DV(RE,CE,RFI,MF)	-	CE	-
STS-02	Digital Hitester	Hioki	3805-50	080997819	CE	2015/03/10 * 12

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: **CE: Conducted Emission**
RE: Radiated Emission
AT: Antenna Terminal Conducted test