RADIO TEST REPORT

Test Report No. : 13614736H-A-R1

Applicant	:	**silex technology, Inc.**
Type of EUT	:	**Embedded Wireless Module**
Model Number of EUT	:	**SX-NEWAH**
FCC ID	:	**N6C-SXNEWAH**
Test regulation	:	**FCC Part 15 Subpart C: 2020** ***For Permissive Change** **(Radiated Spurious Emission test only)**
Test Result	:	**Complied (Refer to SECTION 3.2)**

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2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with the limits of the above regulation.
4. The test results in this test report are traceable to the national or international standards.
5. This test report must not be used by the customer to claim product certification, approval, or endorsement by the A2LA accreditation body.
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 opinions and the interpretations to the result of the description in this report are outside scopes where UL Japan has been accredited.
9. The information provided from the customer for this report is identified in Section 1.

Date of test: December 2 to 5, 2020

Representative test engineer:
Junki Nagatomi
Engineer
Consumer Technology Division

Approved by:
Satofumi Matsuyama
Engineer
Consumer Technology Division

CERTIFICATE 5107.02

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

REVISION HISTORY

Original Test Report No.: 13614736H-A

Revision	Test report No.	Date	Page revised	Contents
- (Original)	13614736H-A	December 11, 2020	-	-
1	13614736H-A-R1	December 17, 2020	P15, 18	Correction of Detector of APPENDIX 1: Test data (Radiated Spurious Emission). QP→PK

Reference: Abbreviations (Including words undescribed in this report)

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

CONTENTS **PAGE**

SECTION 1: Customer information

Company Name	:	silex technology, Inc.
Address	:	2-3-1 Hikaridai, Seika-cho, Soraku-gun, Kyoto 619-0237, Japan
Telephone Number	:	+81-774-98-3878
Facsimile Number	:	+81-774-98-3758
Contact Person	:	Katsutoshi Daikoku

The information provided from the customer is as follows;
- Applicant, Type 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
- 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

Type	:	Embedded Wireless Module
Model Number	:	SX-NEWAH
Serial Number	:	Refer to SECTION 4.2
Rating	:	DC 4 V, DC 3.3 V
Receipt Date	:	November 30, 2020
Country of Mass-production	:	Japan
Condition	:	Production prototype (Not for Sale: This sample is equivalent to mass-produced items.)
Modification	:	No Modification by the test lab.

2.2 Product Description

Model: SX-NEWAH (referred to as the EUT in this report) is an Embedded Wireless Module.

Radio Specification

Radio Type	:	Transceiver
Frequency of Operation	:	1 MHz: 903.5 MHz to 926.5 MHz 2 MHz: 905.0 MHz to 925.0 MHz 4 MHz: 910.0 MHz to 922.0 MHz
Modulation	:	OFDM with BPSK, QPSK, 16QAM, 64QAM
Antenna type	:	Thread-mount antenna
Antenna Gain	:	2.4 dBi
Clock frequency (Maximum)	:	32 MHz

SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification : FCC Part 15 Subpart C
FCC Part 15 final revised on October 13, 2020

Title : FCC 47 CFR Part 15 Radio Frequency Device Subpart C Intentional Radiators
Section 15.207 Conducted limits
Section 15.247 Operation within the bands 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz

* The revision does not affect the test result conducted before its effective date.

3.2 Procedures and results

Item	Test Procedure	Specification	Worst margin	Results	Remarks
Spurious Emission Restricted Band Edges	**FCC:** KDB 558074 D01 15.247 Meas Guidance v05r02	**FCC:** Section15.247(d)	0.4 dB 960.000 MHz, QP, Vert.	Complied# a)	Radiated (above 30 MHz) *1)
	ISED: RSS-Gen 6.13	**ISED:** RSS-247 5.5 RSS-Gen 8.9 RSS-Gen 8.10			
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 15.247(d) and KDB 558074 D01 15.247 Meas Guidance v05r02 8.5 and 8.6. a) Refer to APPENDIX 1 (data of Radiated Spurious Emission)					
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.					

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

FCC Part 15.31 (e)
The EUT has the power supply regulator.
However one of the input voltages to RF part doesn't go through the regulator.
The stable voltage was supplied to the EUT from the host jig during the tests.
Therefore, the EUT complies with the requirement.

FCC Part 15.203 Antenna requirement
The EUT has an external antenna connector, but it is installed by the professionals.
Therefore, the equipment complies with the antenna requirement of Section 15.203.

3.3 Addition to standard

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 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.

Radiated emission

Measurement distance	Frequency range	Uncertainty (+/-)
3 m	9 kHz to 30 MHz	3.3 dB
10 m		3.2 dB
3 m	30 MHz to 200 MHz (Horizontal)	4.8 dB
	(Vertical)	5.0 dB
	200 MHz to 1000 MHz (Horizontal)	5.2 dB
	(Vertical)	6.3 dB
10 m	30 MHz to 200 MHz (Horizontal)	4.8 dB
	(Vertical)	4.8 dB
	200 MHz to 1000 MHz (Horizontal)	5.0 dB
	(Vertical)	5.0 dB
3 m	1 GHz to 6 GHz	4.9 dB
	6 GHz to 18 GHz	5.2 dB
1 m	10 GHz to 26.5 GHz	5.5 dB
	26.5 GHz to 40 GHz	5.5 dB
10 m	1 GHz to 18 GHz	5.2 dB

3.5 Test Location

UL Japan, Inc. Ise EMC Lab.
*A2LA Certificate Number: 5107.02 / FCC Test Firm Registration Number: 199967 / ISED Lab Company Number: 2973C
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN
Telephone: +81 596 24 8999, Facsimile: +81 596 24 8124

Test site	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	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	7.5 x 5.8 x 5.2	4.0 x 4.0	-	3 m
No.3 semi-anechoic chamber	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	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.5 measurement room	6.4 x 6.4 x 3.0	6.4 x 6.4	-	-
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 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 EUT 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 802.11ah (1 MHz)	MCS 10, PN9
IEEE 802.11ah (2 MHz)	MCS 0, PN9
IEEE 802.11ah (4 MHz)	MCS 0, PN9
*The worst condition was determined based on the test result of Maximum Peak Output Power (Mid Channel)	
*Power of the EUT was set by the software as follows; Power settings: Refer to below table Software: Qualcomm Radio Control Toolkit Version 4 (Date: 2019.3.15, Storage location: Driven by connected PC) *This setting of software is the worst case. Any conditions under the normal use do not exceed the condition of setting. In addition, end users cannot change the settings of the output power of the product.	

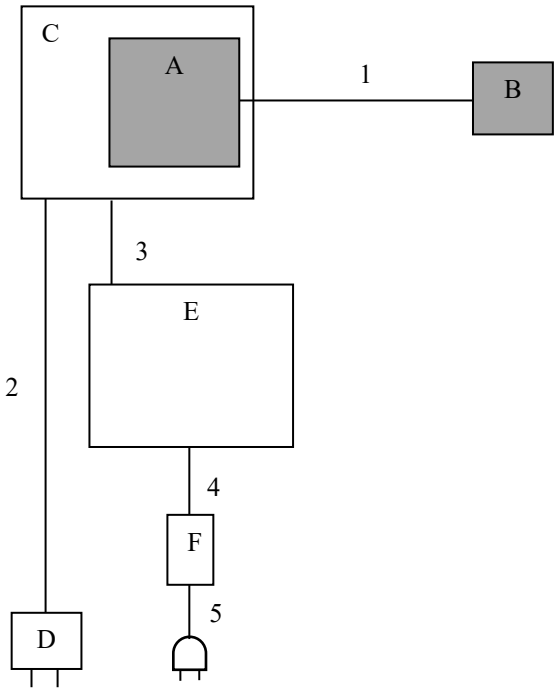
<Power settings>

1MHz	903.5MHz	915.5MHz	926.5MHz
0.1.2.3.4.5.10	26	26	25
6	22	22	22
7	19	19	19
2MHz	905.0MHz	917.0MHz	925.0MHz
0.1.2.3.4.	26	26	25
5	25	25	25
6	20	20	20
7	19	19	19
4MHz	910.0MHz	918.0MHz	922.0MHz
0.1.2.3.4.5	25	25	25
6	20	20	20
7	19	19	19

*The details of Operating mode(s)

Test Item	Operating Mode	Tested frequency
Radiated Spurious Emission	Tx (1MHz)	903.5 MHz 915.5 MHz 926.5 MHz
	Tx (2MHz)	905.0 MHz 917.0 MHz 925.0 MHz
	Tx (4 MHz)	910.0 MHz 918.0 MHz 922.0 MHz

4.2 Configuration and peripherals



AC 120 V, 60 Hz

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

Description of EUT and Support equipment

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	Embedded Wireless Module	SX-NEWAH	84253F014A47	Silex technology, Inc.	EUT
B	Antenna	IS.05.B.301111	001	Taoglas Ltd	EUT
C	Jig	SX-NWEAH-EVK	YS1XXXXX(US)	Silex technology, Inc.	-
D	AC Adapter	WB-10E05R	Y19350060763	Asian Power Devices Inc.	-
E	Laptop PC	Latitude 5590	50JXHR2	Dell	-
F	AC Adapter	LA90PM130	CN-0VMN1T-FPD00-83J-1664-A03	Dell	-

List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	Antenna Cable	3.0	Shielded	Shielded	-
2	DC Cable	1.5	Unshielded	Unshielded	-
3	USB Cable	3.9	Shielded	Shielded	-
4	DC Cable	1.8	Unshielded	Unshielded	-
5	AC Cable	1.0	Unshielded	Unshielded	-

SECTION 5: Radiated Spurious Emission

Test Procedure

It was measured based on "8.5 and 8.6 of KDB 558074 D01 15.247 Meas Guidance v05r02".

[For below 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 height of the measuring antenna varied between 1 m and 4 m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field strength.
Test antenna was aimed at the EUT for receiving the maximum signal and always kept within the illumination area of the 3 dB beamwidth of the antenna.
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.

Test Antennas are used as below;

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

In any 100 kHz bandwidth outside the restricted band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator confirmed 30 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on a radiated measurement.

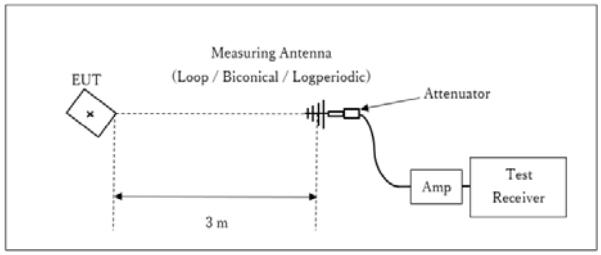
30 dBc was applied to the frequency over the limit of FCC 15.209 / Table 4 of RSS-Gen 8.9(ISED) and outside the restricted band of FCC15.205 / Table 6 of RSS-Gen 8.10 (ISED).

Frequency	Below 1 GHz	Above 1 GHz		30 dBc
Instrument used	Test Receiver	Spectrum Analyzer		Spectrum Analyzer
Detector	QP	PK	AV *1)	PK
IF Bandwidth	BW 120 kHz	RBW: 1 MHz VBW: 3 MHz	11.12.2.5.1 RBW: 1 MHz VBW: 3 MHz Detector: Power Averaging (RMS) Trace: 100 traces 11.12.2.5.2 The duty cycle was less than 98% for detected noise, a duty factor was added to the 11.12.2.5.1 results.	RBW: 100 kHz VBW: 300 kHz

*1) Average Power Measurement was performed based on ANSI C63.10-2013.

Figure 2: Test Setup

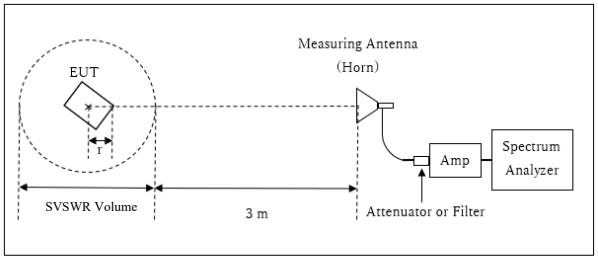
Below 1 GHz



× : 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 (3.6 m / 3.0 m) = 1.58 dB
* Test Distance: (3 + SVSWR Volume /2) - r = 3.6 m

SVSWR Volume : 1.5 m
(SVSWR Volume has been calibrated based on CISPR 16-1-4.)
r = 0.15 m

- 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.

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

Measurement range : 30 MHz - 10 GHz
Test data : APPENDIX
Test result : Pass

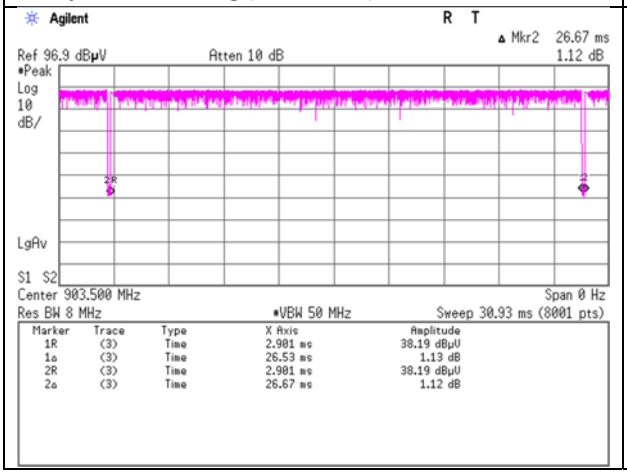
APPENDIX 1: Test data

Burst rate confirmation

Report No.	13614736H	
Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber	
Date	December 2, 2020	December 5, 2020
Temperature / Humidity	21 deg. C / 47 % RH	22 deg. C / 42 % RH
Engineer	Junki Nagatomi	Kiyoshiro Okazaki
Mode	Tx	

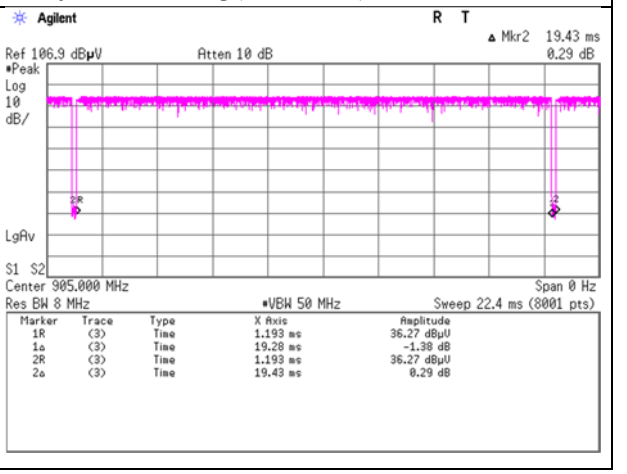
1M BW

Tx on / (Tx on + Tx off) = 0.995
Tx on / (Tx on + Tx off) * 100 = 99.5 %
Duty factor = 10 * log (26.67 / 26.53) = 0.02 dB



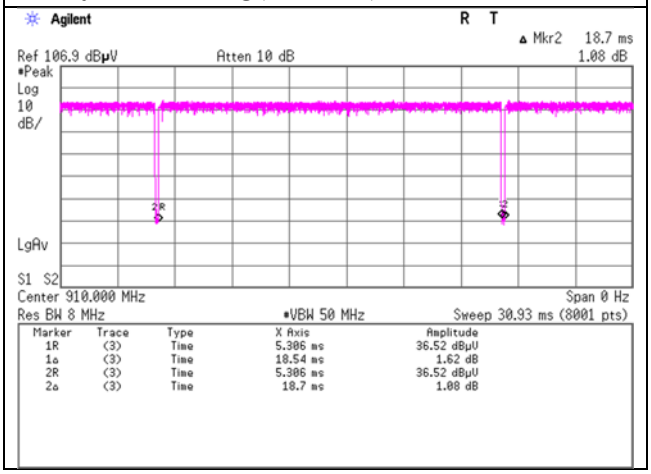
2M BW

Tx on / (Tx on + Tx off) = 0.992
Tx on / (Tx on + Tx off) * 100 = 99.2 %
Duty factor = 10 * log (19.43 / 19.28) = 0.03 dB



4M BW

Tx on / (Tx on + Tx off) = 0.991
Tx on / (Tx on + Tx off) * 100 = 99.1 %
Duty factor = 10 * log (18.7 / 18.54) = 0.04 dB



* Since the burst rate is not different between the channels, the data has been obtained on the representative channel.

Radiated Spurious Emission

Report No.	13614736H	
Test place	Ise EMC Lab.	
Semi Anechoic Chamber	No.3	No.2
Date	December 2, 2020	December 3, 2020
Temperature / Humidity	21 deg. C / 47 % RH	22 deg. C / 45 % RH
Engineer	Junki Nagatomi	Junya Okuno
	(Below 1 GHz)	(Above 1 GHz)
Mode	Tx 903.5 MHz (1 MHz)	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	246.440	QP	36.5	11.7	10.0	32.0	-	26.2	46.0	19.8	
Hori.	960.000	QP	35.3	22.0	14.9	30.6	-	41.7	46.0	4.3	
Hori.	2710.500	PK	53.6	28.1	4.8	35.1	-	51.4	73.9	22.5	
Hori.	3614.000	PK	53.0	29.2	5.2	34.5	-	52.9	73.9	21.0	
Hori.	4517.500	PK	44.2	30.7	5.6	34.3	-	46.2	73.9	27.7	
Hori.	5421.000	PK	42.7	31.7	6.1	34.2	-	46.3	73.9	27.6	
Hori.	7228.000	PK	43.2	35.9	6.6	34.3	-	51.4	73.9	22.5	
Hori.	8131.500	PK	41.5	36.6	6.9	34.7	-	50.3	73.9	23.6	Floor noise
Hori.	9035.000	PK	42.6	37.4	7.3	34.7	-	52.6	73.9	21.3	Floor noise
Hori.	2710.500	AV	45.9	28.1	4.8	35.1	-	43.7	53.9	10.2	
Hori.	3614.000	AV	46.1	29.2	5.2	34.5	-	46.0	53.9	7.9	
Hori.	4517.500	AV	36.0	30.7	5.6	34.3	-	38.0	53.9	15.9	
Hori.	5421.000	AV	34.3	31.7	6.1	34.2	-	37.9	53.9	16.0	
Hori.	7228.000	AV	35.2	35.9	6.6	34.3	-	43.3	53.9	10.6	
Hori.	8131.500	AV	34.5	36.6	6.9	34.7	-	43.3	53.9	10.7	Floor noise
Hori.	9035.000	AV	35.0	37.4	7.3	34.7	-	45.0	53.9	8.9	Floor noise
Vert.	49.269	QP	40.8	11.5	7.6	32.2	-	27.7	40.0	12.3	
Vert.	160.061	QP	35.0	15.6	9.1	32.1	-	27.7	43.5	15.8	
Vert.	250.019	QP	47.7	11.8	10.1	32.0	-	37.6	46.0	8.4	
Vert.	960.000	QP	33.3	22.0	14.9	30.6	-	39.7	46.0	6.3	
Vert.	2710.500	PK	60.4	28.1	4.8	35.1	-	58.2	73.9	15.7	
Vert.	3614.000	PK	52.3	29.2	5.2	34.5	-	52.2	73.9	21.7	
Vert.	4517.500	PK	45.7	30.7	5.6	34.3	-	47.7	73.9	26.2	
Vert.	5421.000	PK	44.2	31.7	6.1	34.2	-	47.8	73.9	26.1	
Vert.	7228.000	PK	43.2	35.9	6.6	34.3	-	51.4	73.9	22.5	
Vert.	8131.500	PK	41.7	36.6	6.9	34.7	-	50.5	73.9	23.4	Floor noise
Vert.	9035.000	PK	43.0	37.4	7.3	34.7	-	53.1	73.9	20.8	Floor noise
Vert.	2710.500	AV	50.7	28.1	4.8	35.1	-	48.5	53.9	5.4	
Vert.	3614.000	AV	45.7	29.2	5.2	34.5	-	45.6	53.9	8.3	
Vert.	4517.500	AV	37.7	30.7	5.6	34.3	-	39.7	53.9	14.2	
Vert.	5421.000	AV	35.5	31.7	6.1	34.2	-	39.0	53.9	14.9	
Vert.	7228.000	AV	35.3	35.9	6.6	34.3	-	43.5	53.9	10.4	
Vert.	8131.500	AV	34.4	36.6	6.9	34.7	-	43.2	53.9	10.7	Floor noise
Vert.	9035.000	AV	35.1	37.4	7.3	34.7	-	45.1	53.9	8.8	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)

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

Distance factor: 1 GHz - 10 GHz 20log (3.6 m / 3.0 m) = 1.59 dB

Radiated Spurious Emission

Report No.	13614736H	
Test place	Ise EMC Lab.	
Semi Anechoic Chamber	No.3	No.2
Date	December 2, 2020	December 3, 2020
Temperature / Humidity	21 deg. C / 47 % RH	22 deg. C / 45 % RH
Engineer	Junki Nagatomi (Below 1 GHz)	Junya Okuno (Above 1 GHz)
Mode	Tx 903.5 MHz (1 MHz)	

30dBc Data Sheet

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	903.500	PK	84.9	22.0	13.6	0.0	120.5	-	-	Carrier
Hori.	704.000	PK	36.4	19.7	13.5	32.0	37.6	90.5	52.9	
Hori.	711.500	PK	35.9	19.8	13.5	31.9	37.3	90.5	53.3	
Hori.	736.000	PK	38.5	20.2	13.6	31.8	40.5	90.5	50.1	
Hori.	768.000	PK	50.4	20.3	13.8	31.6	52.8	90.5	37.7	
Hori.	800.000	PK	44.6	20.7	14.0	31.4	47.9	90.5	42.7	
Hori.	832.000	PK	46.3	21.0	14.1	31.3	50.1	90.5	40.4	
Hori.	864.000	PK	50.9	21.8	14.4	31.1	55.9	90.5	34.6	
Hori.	902.000	PK	46.6	22.0	13.6	0.0	82.1	90.5	8.4	
Hori.	935.500	PK	42.8	21.9	15.2	30.7	49.2	90.5	41.3	
Hori.	1807.000	PK	68.7	25.3	4.6	35.6	63.0	90.5	27.5	
Hori.	6324.500	PK	38.1	33.2	6.5	34.2	43.5	90.5	47.0	
Vert.	903.500	PK	84.3	22.0	13.6	0.0	119.9	-	-	Carrier
Vert.	704.000	PK	34.3	19.7	13.5	32.0	35.5	89.9	54.5	
Vert.	711.500	PK	33.9	19.8	13.5	31.9	35.3	89.9	54.7	
Vert.	736.000	PK	36.5	20.2	13.6	31.8	38.5	89.9	51.4	
Vert.	768.000	PK	46.4	20.3	13.8	31.6	48.8	89.9	41.1	
Vert.	800.000	PK	42.0	20.7	14.0	31.4	45.2	89.9	44.7	
Vert.	832.000	PK	40.8	21.0	14.1	31.3	44.6	89.9	45.4	
Vert.	864.000	PK	43.3	21.8	14.4	31.1	48.4	89.9	41.6	
Vert.	902.000	PK	45.8	22.0	13.6	0.0	81.3	89.9	8.6	
Vert.	935.500	PK	42.1	21.9	15.2	30.7	48.5	89.9	41.4	
Vert.	1807.000	PK	71.3	25.3	4.6	35.6	65.7	89.9	24.2	
Vert.	6324.500	PK	41.0	33.2	6.5	34.2	46.4	89.9	43.5	

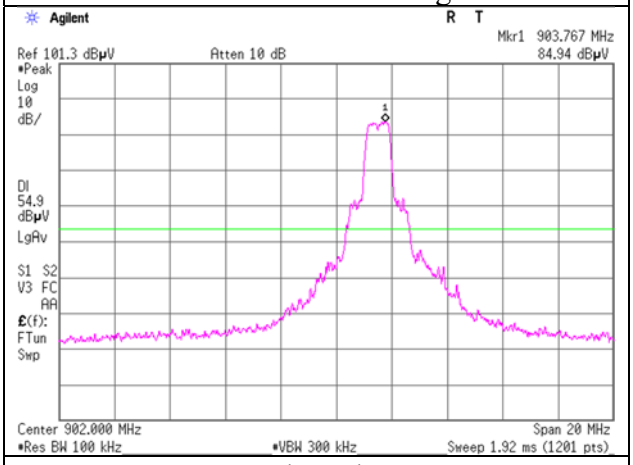
Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amprifier)

Radiated Spurious Emission
(Reference Plot for band-edge)

Report No.	13614736H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.3
Date	December 2, 2020
Temperature / Humidity	21 deg. C / 47 % RH
Engineer	Junki Nagatomi
Mode	Tx 903.5 MHz (1 MHz)

Horizontal

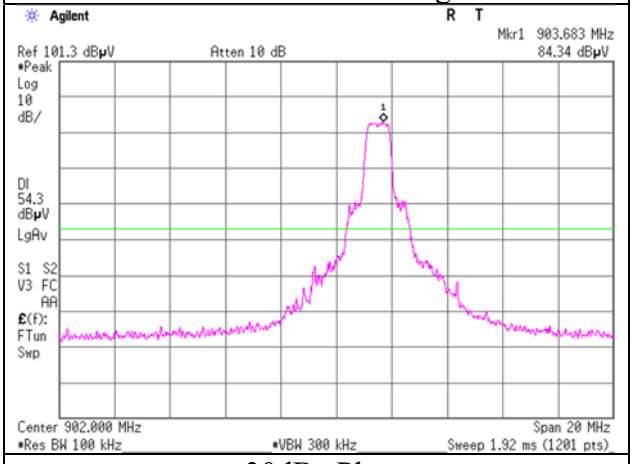
Authorized-band band-edge Plot



30dBc Plot

Vertical

Authorized-band band-edge Plot



30dBc Plot

* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission

Report No.	13614736H	
Test place	Ise EMC Lab.	
Semi Anechoic Chamber	No.3	No.2
Date	December 2, 2020	December 3, 2020
Temperature / Humidity	21 deg. C / 47 % RH	22 deg. C / 45 % RH
Engineer	Junki Nagatomi	Junya Okuno
	(Below 1 GHz)	(Above 1 GHz)
Mode	Tx 915.5 MHz (1 MHz)	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	247.589	QP	36.8	11.7	10.0	32.0	-	26.6	46.0	19.4	
Hori.	960.000	QP	33.9	22.0	14.9	30.6	-	40.3	46.0	5.7	
Hori.	2746.500	PK	58.0	28.4	4.8	35.1	-	56.1	73.9	17.8	
Hori.	3662.000	PK	50.2	29.2	5.2	34.5	-	50.2	73.9	23.8	
Hori.	4577.500	PK	41.7	30.9	5.7	34.4	-	43.9	73.9	30.1	
Hori.	7324.000	PK	41.9	36.2	6.6	34.4	-	50.3	73.9	23.6	Floor noise
Hori.	8239.500	PK	43.0	36.2	6.9	34.7	-	51.4	73.9	22.5	Floor noise
Hori.	9155.000	PK	42.4	38.1	7.4	34.8	-	53.1	73.9	20.8	Floor noise
Hori.	2746.500	AV	46.9	28.4	4.8	35.1	-	45.0	53.9	8.9	
Hori.	3662.000	AV	44.7	29.2	5.2	34.5	-	44.6	53.9	9.3	
Hori.	4577.500	AV	34.7	30.9	5.7	34.4	-	36.8	53.9	17.1	
Hori.	7324.000	AV	33.8	36.2	6.6	34.4	-	42.2	53.9	11.7	Floor noise
Hori.	8239.500	AV	34.9	36.2	6.9	34.7	-	43.3	53.9	10.6	Floor noise
Hori.	9155.000	AV	34.7	38.1	7.4	34.8	-	45.4	53.9	8.5	Floor noise
Vert.	49.250	QP	40.1	11.5	7.6	32.2	-	27.0	40.0	13.0	
Vert.	158.800	QP	35.3	15.5	9.1	32.1	-	27.9	43.5	15.6	
Vert.	247.589	QP	46.0	11.7	10.0	32.0	-	35.8	46.0	10.2	
Vert.	960.000	QP	33.5	22.0	14.9	30.6	-	39.9	46.0	6.1	
Vert.	2746.500	PK	60.7	28.4	4.8	35.1	-	58.9	73.9	15.0	
Vert.	3662.000	PK	51.6	29.2	5.2	34.5	-	51.5	73.9	22.4	
Vert.	4577.500	PK	44.6	30.9	5.7	34.4	-	46.8	73.9	27.1	
Vert.	7324.000	PK	41.9	36.2	6.6	34.4	-	50.3	73.9	23.6	Floor noise
Vert.	8239.500	PK	41.8	36.2	6.9	34.7	-	50.2	73.9	23.7	Floor noise
Vert.	9155.000	PK	42.4	38.1	7.4	34.8	-	53.1	73.9	20.8	Floor noise
Vert.	2746.500	AV	49.7	28.4	4.8	35.1	-	47.8	53.9	6.1	
Vert.	3662.000	AV	44.8	29.2	5.2	34.5	-	44.7	53.9	9.2	
Vert.	4577.500	AV	36.0	30.9	5.7	34.4	-	38.1	53.9	15.8	
Vert.	7324.000	AV	34.5	36.2	6.6	34.4	-	42.9	53.9	11.0	Floor noise
Vert.	8239.500	AV	34.5	36.2	6.9	34.7	-	42.9	53.9	11.0	Floor noise
Vert.	9155.000	AV	34.9	38.1	7.4	34.8	-	45.6	53.9	8.3	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)

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

Distance factor: 1 GHz - 10 GHz 20log (3.6 m / 3.0 m) = 1.59 dB

Radiated Spurious Emission

Report No.	13614736H	
Test place	Ise EMC Lab.	
Semi Anechoic Chamber	No.3	No.2
Date	December 2, 2020	December 3, 2020
Temperature / Humidity	21 deg. C / 47 % RH	22 deg. C / 45 % RH
Engineer	Junki Nagatomi	Junya Okuno
	(Below 1 GHz)	(Above 1 GHz)
Mode	Tx 915.5 MHz (1 MHz)	

30dBc Data Sheet

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	915.500	PK	81.9	22.0	13.7	0.0	117.6	-	-	Carrier
Hori.	704.000	PK	35.4	19.7	13.5	32.0	36.6	87.6	51.0	
Hori.	723.500	PK	40.1	20.0	13.6	31.9	41.8	87.6	45.8	
Hori.	736.000	PK	37.4	20.2	13.6	31.8	39.4	87.6	48.2	
Hori.	768.000	PK	49.9	20.3	13.8	31.6	52.3	87.6	35.2	
Hori.	800.000	PK	46.5	20.7	14.0	31.4	49.7	87.6	37.9	
Hori.	832.000	PK	48.3	21.0	14.1	31.3	52.1	87.6	35.5	
Hori.	864.000	PK	52.0	21.8	14.4	31.1	57.1	87.6	30.5	
Hori.	883.500	PK	48.1	21.9	14.7	31.0	53.8	87.6	33.8	
Hori.	896.000	PK	48.6	21.9	15.0	30.9	54.5	87.6	33.1	
Hori.	947.500	PK	42.2	21.9	14.9	30.6	48.4	87.6	39.2	
Hori.	1831.000	PK	65.8	25.4	4.6	35.5	60.3	87.6	13.6	
Hori.	5493.000	PK	35.2	31.7	6.1	34.2	38.9	87.6	35.0	
Hori.	6408.500	PK	34.4	33.6	6.5	34.2	40.2	87.6	33.7	
Vert.	915.500	PK	83.8	22.0	13.7	0.0	119.4	-	-	Carrier
Vert.	704.000	PK	33.4	19.7	13.5	32.0	34.6	89.4	54.8	
Vert.	723.500	PK	38.8	20.0	13.6	31.9	40.5	89.4	48.9	
Vert.	736.000	PK	36.2	20.2	13.6	31.8	38.2	89.4	51.3	
Vert.	768.000	PK	48.0	20.3	13.8	31.6	50.5	89.4	39.0	
Vert.	800.000	PK	44.6	20.7	14.0	31.4	47.8	89.4	41.6	
Vert.	832.000	PK	46.4	21.0	14.1	31.3	50.2	89.4	39.3	
Vert.	864.000	PK	51.2	21.8	14.4	31.1	56.3	89.4	33.2	
Vert.	883.500	PK	45.4	21.9	14.7	31.0	51.1	89.4	38.4	
Vert.	896.000	PK	46.1	21.9	15.0	30.9	52.0	89.4	37.4	
Vert.	947.500	PK	40.0	21.9	14.9	30.6	46.2	89.4	43.3	
Vert.	1831.000	PK	66.0	25.4	4.6	35.5	60.5	89.4	28.9	
Vert.	5493.000	PK	35.4	31.7	6.1	34.2	39.1	89.4	50.4	
Vert.	6408.500	PK	37.6	33.6	6.5	34.2	43.5	89.4	46.0	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amprifier)

Radiated Spurious Emission

Report No.	13614736H	
Test place	Ise EMC Lab.	
Semi Anechoic Chamber	No.2	No.2
Date	December 4, 2020	December 3, 2020
Temperature / Humidity	22 deg. C / 43 % RH	22 deg. C / 45 % RH
Engineer	Junki Nagatomi	Junya Okuno
	(Below 1 GHz)	(Above 1 GHz)
Mode	Tx 926.5 MHz (1MHz)	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	46.577	QP	23.9	12.4	7.1	28.6	-	14.8	40.0	25.2	
Hori.	118.971	QP	28.7	12.6	7.9	28.4	-	20.8	43.5	22.7	
Hori.	251.348	QP	36.0	11.9	8.9	27.8	-	29.0	46.0	17.0	
Hori.	960.000	QP	37.4	22.2	12.6	28.8	-	43.3	46.0	2.7	
Hori.	2779.500	PK	54.8	28.5	4.9	35.1	-	53.1	73.9	20.8	
Hori.	3706.000	PK	52.3	29.3	5.2	34.4	-	52.3	73.9	21.6	
Hori.	4632.500	PK	42.9	31.1	5.7	34.4	-	45.3	73.9	28.6	
Hori.	7412.000	PK	41.8	36.0	6.6	34.4	-	50.1	73.9	23.8	Floor noise
Hori.	8338.500	PK	42.2	36.1	7.0	34.7	-	50.6	73.9	23.3	Floor noise
Hori.	9265.000	PK	41.4	38.8	7.4	34.8	-	52.8	73.9	21.1	Floor noise
Hori.	2779.500	AV	47.3	28.5	4.9	35.1	-	45.6	53.9	8.3	
Hori.	3706.000	AV	44.8	29.3	5.2	34.4	-	44.9	53.9	9.0	
Hori.	4632.500	AV	34.8	31.1	5.7	34.4	-	37.2	53.9	16.7	
Hori.	7412.000	AV	34.0	36.0	6.6	34.4	-	42.3	53.9	11.6	Floor noise
Hori.	8338.500	AV	35.4	36.1	7.0	34.7	-	43.8	53.9	10.2	Floor noise
Hori.	9265.000	AV	34.3	38.8	7.4	34.8	-	45.7	53.9	8.2	Floor noise
Vert.	46.577	QP	40.4	12.4	7.1	28.6	-	31.3	40.0	8.7	
Vert.	118.971	QP	42.3	12.6	7.9	28.4	-	34.4	43.5	9.1	
Vert.	251.348	QP	41.6	11.9	8.9	27.8	-	34.6	46.0	11.4	
Vert.	960.000	QP	39.5	22.2	12.6	28.8	-	45.4	46.0	0.6	
Vert.	2779.500	PK	58.9	28.5	4.9	35.1	-	57.2	73.9	16.7	
Vert.	3706.000	PK	52.8	29.3	5.2	34.4	-	52.9	73.9	21.0	
Vert.	4632.500	PK	43.8	31.1	5.7	34.4	-	46.2	73.9	27.7	
Vert.	7412.000	PK	42.6	36.0	6.6	34.4	-	50.9	73.9	23.1	Floor noise
Vert.	8338.500	PK	42.7	36.1	7.0	34.7	-	51.0	73.9	22.9	Floor noise
Vert.	9265.000	PK	41.4	38.8	7.4	34.8	-	52.8	73.9	21.1	Floor noise
Vert.	2779.500	AV	50.8	28.5	4.9	35.1	-	49.1	53.9	4.8	
Vert.	3706.000	AV	44.9	29.3	5.2	34.4	-	45.0	53.9	8.9	
Vert.	4632.500	AV	35.8	31.1	5.7	34.4	-	38.2	53.9	15.7	
Vert.	7412.000	AV	34.6	36.0	6.6	34.4	-	42.8	53.9	11.1	Floor noise
Vert.	8338.500	AV	35.3	36.1	7.0	34.7	-	43.7	53.9	10.2	Floor noise
Vert.	9265.000	AV	34.3	38.8	7.4	34.8	-	45.7	53.9	8.2	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)

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

Distance factor: 1 GHz - 10 GHz 20log (3.6 m / 3.0 m) = 1.59 dB

Radiated Spurious Emission

Report No.	13614736H	
Test place	Ise EMC Lab.	
Semi Anechoic Chamber	No.2	No.2
Date	December 4, 2020	December 3, 2020
Temperature / Humidity	22 deg. C / 43 % RH	22 deg. C / 45 % RH
Engineer	Junki Nagatomi	Junya Okuno
	(Below 1 GHz)	(Above 1 GHz)
Mode	Tx 926.5 MHz (1 MHz)	

30dBc Data Sheet

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	926.500	PK	81.4	22.1	11.4	0.0	114.9	-	-	Carrier
Hori.	215.547	PK	30.2	11.2	8.7	28.0	22.1	84.9	62.8	
Hori.	433.236	PK	31.5	16.3	10.3	28.8	29.3	84.9	55.6	
Hori.	896.021	PK	42.1	21.9	12.7	29.0	47.8	84.9	37.1	
Hori.	928.000	PK	43.1	22.1	11.4	0.0	76.5	84.9	8.3	
Hori.	1853.000	PK	64.2	25.5	4.6	35.5	58.8	84.9	26.1	
Hori.	5559.000	PK	33.0	31.7	6.2	34.2	36.7	84.9	48.2	
Hori.	6485.500	PK	38.9	33.9	6.5	34.2	45.1	84.9	39.8	
Vert.	926.500	PK	83.9	22.1	11.4	0.0	117.3	-	-	Carrier
Vert.	215.547	PK	47.3	11.2	8.7	28.0	39.2	87.3	48.1	
Vert.	433.236	PK	30.0	16.3	10.3	28.8	27.7	87.3	59.6	
Vert.	894.169	PK	46.4	21.9	12.7	29.0	52.0	87.3	35.3	
Vert.	928.000	PK	45.1	22.1	11.4	0.0	78.6	87.3	8.8	
Vert.	1853.000	PK	65.5	25.5	4.6	35.5	60.1	87.3	27.3	
Vert.	5559.000	PK	34.9	31.7	6.2	34.2	38.5	87.3	48.8	
Vert.	6485.500	PK	42.0	33.9	6.5	34.2	48.1	87.3	39.2	

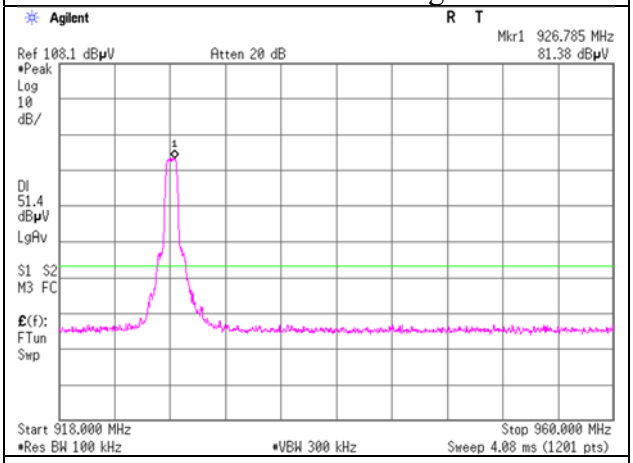
Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amprifier)

Radiated Spurious Emission
(Reference Plot for band-edge)

Report No.	13614736H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.2
Date	December 4, 2020
Temperature / Humidity	22 deg. C / 43 % RH
Engineer	Junki Nagatomi
Mode	Tx 926.5 MHz (1 MHz)

Horizontal

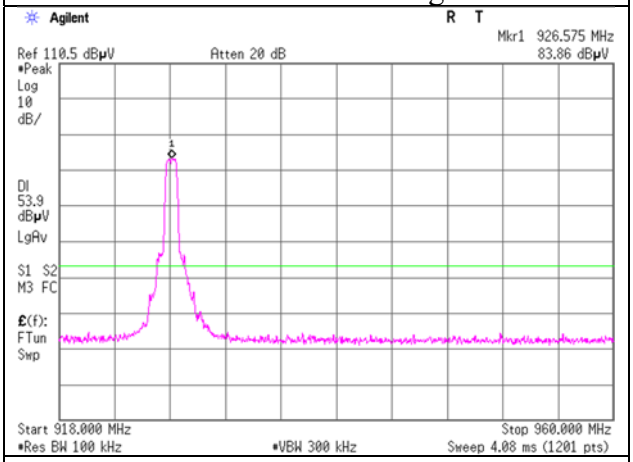
Restricted-band band-edge Plot



30dBc Plot

Vertical

Restricted-band band-edge Plot



30dBc Plot

* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission

Report No.	13614736H	
Test place	Ise EMC Lab.	
Semi Anechoic Chamber	No.2	No.2
Date	December 4, 2020	December 3, 2020
Temperature / Humidity	22 deg. C / 43 % RH	22 deg. C / 45 % RH
Engineer	Junki Nagatomi	Junya Okuno
	(Below 1 GHz)	(Above 1 GHz)
Mode	Tx 905.0 MHz (2MHz)	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	47.144	QP	23.6	12.2	7.1	28.6	-	14.3	40.0	25.7	
Hori.	108.485	QP	29.4	11.5	7.8	28.5	-	20.2	43.5	23.4	
Hori.	249.727	QP	34.5	11.8	8.9	27.8	-	27.4	46.0	18.6	
Hori.	960.000	QP	36.2	22.2	12.6	28.8	-	42.1	46.0	3.9	
Hori.	2715.000	PK	54.9	28.1	4.8	35.1	-	52.8	73.9	21.2	
Hori.	3620.000	PK	51.9	29.2	5.2	34.5	-	51.8	73.9	22.1	
Hori.	4525.000	PK	43.6	30.7	5.6	34.4	-	45.6	73.9	28.3	
Hori.	5430.000	PK	43.0	31.7	6.1	34.2	-	46.6	73.9	27.3	
Hori.	7240.000	PK	42.5	36.0	6.6	34.3	-	50.8	73.9	23.2	Floor noise
Hori.	8145.000	PK	43.2	36.6	6.9	34.7	-	52.0	73.9	21.9	Floor noise
Hori.	9050.000	PK	43.1	37.5	7.3	34.7	-	53.2	73.9	20.7	Floor noise
Hori.	2715.000	AV	44.0	28.1	4.8	35.1	-	41.9	53.9	12.0	
Hori.	3620.000	AV	43.7	29.2	5.2	34.5	-	43.6	53.9	10.3	
Hori.	4525.000	AV	35.0	30.7	5.6	34.4	-	37.0	53.9	16.9	
Hori.	5430.000	AV	34.9	31.7	6.1	34.2	-	38.5	53.9	15.4	
Hori.	7240.000	AV	34.6	36.0	6.6	34.3	-	42.8	53.9	11.1	Floor noise
Hori.	8145.000	AV	34.8	36.6	6.9	34.7	-	43.5	53.9	10.4	Floor noise
Hori.	9050.000	AV	34.8	37.5	7.3	34.7	-	44.9	53.9	9.0	Floor noise
Vert.	47.144	QP	41.5	12.2	7.1	28.6	-	32.2	40.0	7.8	
Vert.	108.485	QP	40.7	11.5	7.8	28.5	-	31.5	43.5	12.1	
Vert.	249.727	QP	42.6	11.8	8.9	27.8	-	35.5	46.0	10.5	
Vert.	960.000	QP	38.5	22.2	12.6	28.8	-	44.4	46.0	1.6	
Vert.	2715.000	PK	58.9	28.1	4.8	35.1	-	56.7	73.9	17.2	
Vert.	3620.000	PK	52.2	29.2	5.2	34.5	-	52.1	73.9	21.8	
Vert.	4525.000	PK	44.6	30.7	5.6	34.4	-	46.7	73.9	27.3	
Vert.	5430.000	PK	41.8	31.7	6.1	34.2	-	45.4	73.9	28.5	
Vert.	7240.000	PK	41.3	36.0	6.6	34.3	-	49.6	73.9	24.4	Floor noise
Vert.	8145.000	PK	41.0	36.6	6.9	34.7	-	49.8	73.9	24.2	Floor noise
Vert.	9050.000	PK	42.6	37.5	7.3	34.7	-	52.7	73.9	21.2	Floor noise
Vert.	2715.000	AV	48.2	28.1	4.8	35.1	-	46.0	53.9	7.9	
Vert.	3620.000	AV	44.2	29.2	5.2	34.5	-	44.1	53.9	9.8	
Vert.	4525.000	AV	36.4	30.7	5.6	34.4	-	38.4	53.9	15.5	
Vert.	5430.000	AV	34.3	31.7	6.1	34.2	-	37.9	53.9	16.0	
Vert.	7240.000	AV	34.4	36.0	6.6	34.3	-	42.6	53.9	11.3	Floor noise
Vert.	8145.000	AV	34.6	36.6	6.9	34.7	-	43.3	53.9	10.6	Floor noise
Vert.	9050.000	AV	34.9	37.5	7.3	34.7	-	45.0	53.9	8.9	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)

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

Distance factor: 1 GHz - 10 GHz 20log (3.6 m / 3.0 m) = 1.59 dB

Radiated Spurious Emission

Report No.	13614736H	
Test place	Ise EMC Lab.	
Semi Anechoic Chamber	No.2	No.2
Date	December 4, 2020	December 3, 2020
Temperature / Humidity	22 deg. C / 43 % RH	22 deg. C / 45 % RH
Engineer	Junki Nagatomi	Junya Okuno
	(Below 1 GHz)	(Above 1 GHz)
Mode	Tx 905.0 MHz (2 MHz)	

30dBc Data Sheet

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	905.000	PK	78.9	22.0	11.3	0.0	112.3	-	-	Carrier
Hori.	215.591	PK	30.1	11.2	8.7	28.0	22.0	82.3	60.2	
Hori.	433.626	PK	30.6	16.3	10.3	28.8	28.3	82.3	54.0	
Hori.	767.766	PK	49.2	20.4	11.7	29.2	52.1	82.3	30.2	
Hori.	902.000	PK	46.7	21.9	11.3	0.0	80.0	82.3	2.3	
Hori.	1810.000	PK	66.7	25.4	4.6	35.6	61.0	82.3	21.2	
Hori.	6335.000	PK	36.8	33.2	6.5	34.2	42.2	82.3	40.0	
Vert.	905.000	PK	83.3	22.0	11.3	0.0	116.6	-	-	Carrier
Vert.	215.591	PK	47.4	11.2	8.7	28.0	39.3	86.6	47.4	
Vert.	433.626	PK	29.6	16.3	10.3	28.8	27.3	86.6	59.3	
Vert.	864.137	PK	49.3	21.5	12.2	29.0	54.0	86.6	32.7	
Vert.	902.000	PK	51.6	21.9	11.3	0.0	84.8	86.6	1.8	
Vert.	1853.000	PK	65.5	25.5	4.6	35.5	60.1	86.6	26.6	
Vert.	1810.000	PK	68.0	25.4	4.6	35.6	62.4	86.6	24.3	
Vert.	6335.000	PK	40.1	33.2	6.5	34.2	45.5	86.6	41.1	

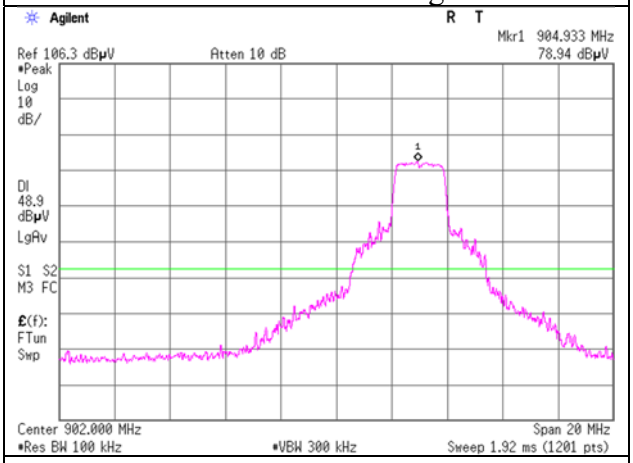
Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amprifier)

Radiated Spurious Emission
(Reference Plot for band-edge)

Report No.	13614736H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.2
Date	December 4, 2020
Temperature / Humidity	22 deg. C / 43 % RH
Engineer	Junki Nagatomi
Mode	Tx 905.0 MHz (2 MHz)

Horizontal

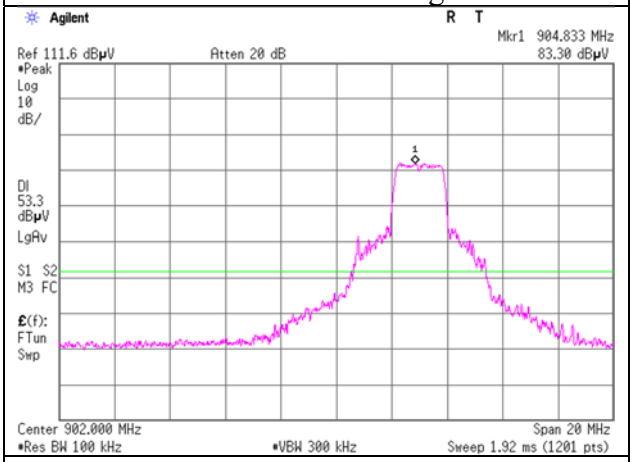
Restricted-band band-edge Plot



30dBc Plot

Vertical

Restricted-band band-edge Plot



30dBc Plot

* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission

Report No.	13614736H	
Test place	Ise EMC Lab.	
Semi Anechoic Chamber	No.2	No.2
Date	December 5, 2020	December 3, 2020
Temperature / Humidity	22 deg. C / 42 % RH	22 deg. C / 45 % RH
Engineer	Kiyoshiro Okazaki	Junya Okuno
	(Below 1 GHz)	(Above 1 GHz)
Mode	Tx 917.0 MHz (2 MHz)	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	46.475	QP	23.4	12.4	7.1	28.6	-	14.3	40.0	25.7	
Hori.	111.457	QP	29.4	11.8	7.8	28.5	-	20.6	43.5	22.9	
Hori.	253.342	QP	35.5	12.0	9.0	27.8	-	28.6	46.0	17.4	
Hori.	960.000	QP	37.1	22.2	12.6	28.8	-	43.0	46.0	3.0	
Hori.	2751.000	PK	54.5	28.4	4.9	35.1	-	52.7	73.9	21.2	
Hori.	3668.000	PK	50.2	29.2	5.2	34.5	-	50.2	73.9	23.7	
Hori.	4585.000	PK	42.2	30.9	5.7	34.4	-	44.4	73.9	29.6	
Hori.	7336.000	PK	41.9	36.2	6.6	34.4	-	50.3	73.9	23.6	Floor noise
Hori.	8253.000	PK	42.8	36.1	7.0	34.7	-	51.2	73.9	22.7	Floor noise
Hori.	9170.000	PK	42.5	38.2	7.4	34.8	-	53.3	73.9	20.6	Floor noise
Hori.	2751.000	AV	41.4	28.4	4.9	35.1	-	39.6	53.9	14.3	
Hori.	3668.000	AV	41.7	29.2	5.2	34.5	-	41.7	53.9	12.2	
Hori.	4585.000	AV	33.5	30.9	5.7	34.4	-	35.7	53.9	18.2	
Hori.	7336.000	AV	34.2	36.2	6.6	34.4	-	42.6	53.9	11.3	Floor noise
Hori.	8253.000	AV	34.4	36.1	7.0	34.7	-	42.8	53.9	11.1	Floor noise
Hori.	9170.000	AV	34.7	38.2	7.4	34.8	-	45.5	53.9	8.4	Floor noise
Vert.	46.475	QP	43.2	12.4	7.1	28.6	-	34.1	40.0	5.9	
Vert.	111.457	QP	41.1	11.8	7.8	28.5	-	32.3	43.5	11.2	
Vert.	253.342	QP	42.3	12.0	9.0	27.8	-	35.4	46.0	10.6	
Vert.	960.000	QP	39.5	22.2	12.6	28.8	-	45.4	46.0	0.6	
Vert.	2751.000	PK	57.7	28.4	4.9	35.1	-	55.8	73.9	18.1	
Vert.	3668.000	PK	49.1	29.2	5.2	34.5	-	49.0	73.9	24.9	
Vert.	4585.000	PK	43.8	30.9	5.7	34.4	-	46.0	73.9	27.9	
Vert.	7336.000	PK	41.8	36.2	6.6	34.4	-	50.2	73.9	23.7	Floor noise
Vert.	8253.000	PK	43.2	36.1	7.0	34.7	-	51.6	73.9	22.3	Floor noise
Vert.	9170.000	PK	43.3	38.2	7.4	34.8	-	54.1	73.9	19.8	Floor noise
Vert.	2751.000	AV	47.7	28.4	4.9	35.1	-	45.9	53.9	8.0	
Vert.	3668.000	AV	42.1	29.2	5.2	34.5	-	42.0	53.9	11.9	
Vert.	4585.000	AV	36.4	30.9	5.7	34.4	-	38.6	53.9	15.3	
Vert.	7336.000	AV	34.2	36.2	6.6	34.4	-	42.6	53.9	11.3	Floor noise
Vert.	8253.000	AV	34.8	36.1	7.0	34.7	-	43.2	53.9	10.7	Floor noise
Vert.	9170.000	AV	34.8	38.2	7.4	34.8	-	45.6	53.9	8.3	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)

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

Distance factor: 1 GHz - 10 GHz 20log (3.6 m / 3.0 m) = 1.59 dB

Radiated Spurious Emission

Report No.	13614736H	
Test place	Ise EMC Lab.	
Semi Anechoic Chamber	No.2	No.2
Date	December 5, 2020	December 3, 2020
Temperature / Humidity	22 deg. C / 42 % RH	22 deg. C / 45 % RH
Engineer	Kiyoshiro Okazaki (Below 1 GHz)	Junya Okuno (Above 1 GHz)
Mode	Tx 917.0 MHz (2 MHz)	

30dBc Data Sheet

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	917.000	PK	78.4	22.1	11.4	0.0	111.9	-	-	Carrier
Hori.	214.596	PK	33.1	11.2	8.7	28.0	24.9	81.9	56.9	
Hori.	433.433	PK	29.9	16.3	10.3	28.8	27.7	81.9	54.2	
Hori.	768.024	PK	48.6	20.4	11.7	29.2	51.5	81.9	30.4	
Hori.	1834.000	PK	64.4	25.4	4.6	35.5	58.9	81.9	23.0	
Hori.	5502.000	PK	32.2	31.7	6.2	34.2	35.9	81.9	46.0	
Hori.	6419.000	PK	34.7	33.7	6.5	34.2	40.6	81.9	41.2	
Vert.	917.000	PK	83.5	22.1	11.4	0.0	116.9	-	-	Carrier
Vert.	214.596	PK	46.5	11.2	8.7	28.0	38.4	86.9	48.6	
Vert.	433.433	PK	34.0	16.3	10.3	28.8	31.8	86.9	55.2	
Vert.	768.024	PK	41.7	20.4	11.7	29.2	44.6	86.9	42.3	
Vert.	1834.000	PK	66.0	25.4	4.6	35.5	60.4	86.9	26.5	
Vert.	5502.000	PK	32.6	31.7	6.2	34.2	36.2	86.9	50.7	
Vert.	6419.000	PK	37.1	33.7	6.5	34.2	43.0	86.9	44.0	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amprifier)

Radiated Spurious Emission

Report No.	13614736H	
Test place	Ise EMC Lab.	
Semi Anechoic Chamber	No.2	No.2
Date	December 4, 2020	December 3, 2020
Temperature / Humidity	22 deg. C / 43 % RH	22 deg. C / 45 % RH
Engineer	Junki Nagatomi	Junya Okuno
	(Below 1 GHz)	(Above 1 GHz)
Mode	Tx 925.0 MHz (2 MHz)	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	46.858	QP	23.6	12.3	7.1	28.6	-	14.4	40.0	25.6	
Hori.	110.015	QP	29.6	11.6	7.8	28.5	-	20.6	43.5	22.9	
Hori.	252.952	QP	35.4	11.9	9.0	27.8	-	28.5	46.0	17.5	
Hori.	960.000	QP	37.3	22.2	12.6	28.8	-	43.2	46.0	2.8	
Hori.	2775.000	PK	51.2	28.5	4.9	35.1	-	49.5	73.9	24.4	
Hori.	3700.000	PK	51.3	29.3	5.2	34.4	-	51.4	73.9	22.5	
Hori.	4625.000	PK	42.2	31.1	5.7	34.4	-	44.6	73.9	29.3	
Hori.	7400.000	PK	42.0	36.0	6.6	34.4	-	50.2	73.9	23.7	Floor noise
Hori.	8325.000	PK	42.7	36.1	7.0	34.7	-	51.0	73.9	22.9	Floor noise
Hori.	9250.000	PK	41.3	38.8	7.4	34.8	-	52.7	73.9	21.2	Floor noise
Hori.	2775.000	AV	43.8	28.5	4.9	35.1	-	42.1	53.9	11.8	
Hori.	3700.000	AV	43.2	29.3	5.2	34.4	-	43.3	53.9	10.7	
Hori.	4625.000	AV	33.8	31.1	5.7	34.4	-	36.2	53.9	17.7	
Hori.	7400.000	AV	34.2	36.0	6.6	34.4	-	42.5	53.9	11.4	Floor noise
Hori.	8325.000	AV	35.0	36.1	7.0	34.7	-	43.3	53.9	10.6	Floor noise
Hori.	9250.000	AV	33.9	38.8	7.4	34.8	-	45.3	53.9	8.6	Floor noise
Vert.	46.858	QP	40.9	12.3	7.1	28.6	-	31.7	40.0	8.3	
Vert.	110.015	QP	40.9	11.6	7.8	28.5	-	31.9	43.5	11.6	
Vert.	252.952	QP	42.9	11.9	9.0	27.8	-	36.0	46.0	10.0	
Vert.	960.000	QP	39.3	22.2	12.6	28.8	-	45.2	46.0	0.8	
Vert.	2775.000	PK	56.0	28.5	4.9	35.1	-	54.3	73.9	19.6	
Vert.	3700.000	PK	50.5	29.3	5.2	34.4	-	50.5	73.9	23.4	
Vert.	4625.000	PK	42.9	31.1	5.7	34.4	-	45.3	73.9	28.6	
Vert.	7400.000	PK	41.9	36.0	6.6	34.4	-	50.1	73.9	23.8	Floor noise
Vert.	8325.000	PK	41.8	36.1	7.0	34.7	-	50.1	73.9	23.8	Floor noise
Vert.	9250.000	PK	42.3	38.8	7.4	34.8	-	53.7	73.9	20.2	Floor noise
Vert.	2775.000	AV	48.6	28.5	4.9	35.1	-	46.9	53.9	7.0	
Vert.	3700.000	AV	42.6	29.3	5.2	34.4	-	42.6	53.9	11.3	
Vert.	4625.000	AV	35.3	31.1	5.7	34.4	-	37.7	53.9	16.2	
Vert.	7400.000	AV	34.1	36.0	6.6	34.4	-	42.4	53.9	11.5	Floor noise
Vert.	8325.000	AV	34.0	36.1	7.0	34.7	-	42.3	53.9	11.6	Floor noise
Vert.	9250.000	AV	33.3	38.8	7.4	34.8	-	44.7	53.9	9.2	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)

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

Distance factor: 1 GHz - 10 GHz 20log (3.6 m / 3.0 m) = 1.59 dB

Radiated Spurious Emission

Report No.	13614736H	
Test place	Ise EMC Lab.	
Semi Anechoic Chamber	No.2	No.2
Date	December 4, 2020	December 3, 2020
Temperature / Humidity	22 deg. C / 43 % RH	22 deg. C / 45 % RH
Engineer	Junki Nagatomi	Junya Okuno
	(Below 1 GHz)	(Above 1 GHz)
Mode	Tx 925.0 MHz (2 MHz)	

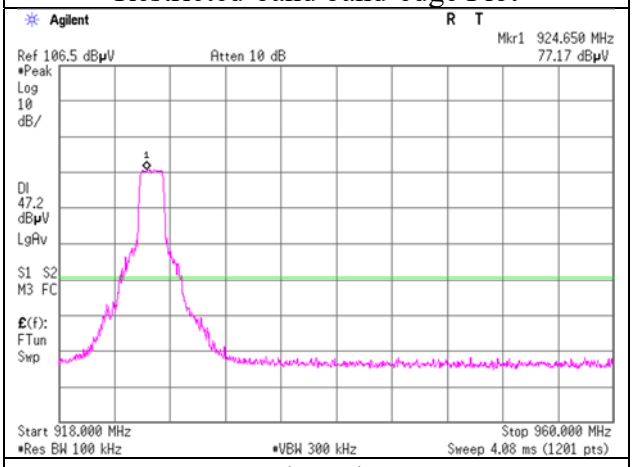
30dBc Data Sheet

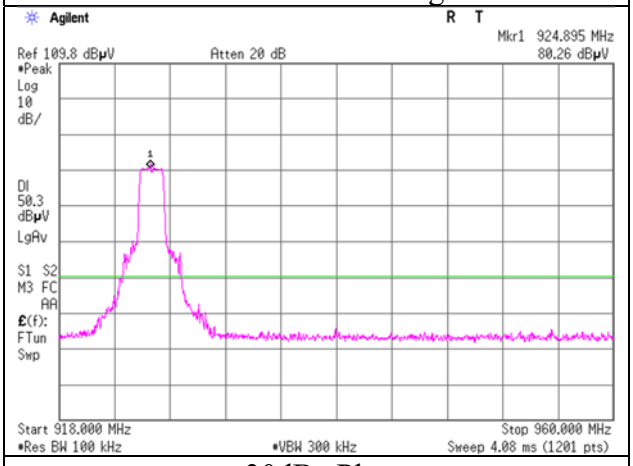
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	925.000	PK	77.2	22.1	11.4	0.0	110.7	-	-	Carrier
Hori.	214.997	PK	33.3	11.2	8.7	28.0	25.2	80.7	55.5	
Hori.	433.549	PK	30.6	16.3	10.3	28.8	28.4	80.7	52.3	
Hori.	869.232	PK	44.0	21.8	12.3	29.0	49.1	80.7	31.6	
Hori.	928.000	PK	39.3	22.1	11.4	0.0	72.7	80.7	7.9	
Hori.	1850.000	PK	61.2	25.5	4.6	35.5	55.8	80.7	24.9	
Hori.	5550.000	PK	33.1	31.7	6.2	34.2	36.7	80.7	43.9	
Hori.	6475.000	PK	37.4	33.9	6.5	34.2	43.5	80.7	37.2	
Vert.	925.000	PK	80.3	22.1	11.4	0.0	113.8	-	-	Carrier
Vert.	214.997	PK	49.2	11.2	8.7	28.0	41.0	83.8	42.8	
Vert.	433.549	PK	30.0	16.3	10.3	28.8	27.8	83.8	56.0	
Vert.	869.232	PK	48.8	21.8	12.3	29.0	53.8	83.8	29.9	
Vert.	928.000	PK	44.5	22.1	11.4	0.0	78.0	83.8	5.8	
Vert.	1850.000	PK	62.8	25.5	4.6	35.5	57.4	83.8	26.4	
Vert.	5550.000	PK	33.4	31.7	6.2	34.2	37.1	83.8	46.7	
Vert.	6475.000	PK	40.1	33.9	6.5	34.2	46.2	83.8	37.6	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amprifier)

Radiated Spurious Emission
(Reference Plot for band-edge)

Report No.	13614736H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.2
Date	December 4, 2020
Temperature / Humidity	22 deg. C / 43 % RH
Engineer	Junki Nagatomi
Mode	Tx 925.0 MHz (2 MHz)

Horizontal
Restricted-band band-edge Plot

30dBc Plot

Vertical
Restricted-band band-edge Plot

30dBc Plot

* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission

Report No.	13614736H	
Test place	Ise EMC Lab.	
Semi Anechoic Chamber	No.2	No.2
Date	December 5, 2020	December 4, 2020
Temperature / Humidity	22 deg. C / 42 % RH	22 deg. C / 43 % RH
Engineer	Kiyoshiro Okazaki (Below 1 GHz)	Junki Nagatomi (Above 1 GHz)
Mode	Tx 910.0 MHz (4 MHz)	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	46.580	QP	23.7	12.4	7.1	28.6	-	14.6	40.0	25.4	
Hori.	108.683	QP	29.2	11.5	7.8	28.5	-	20.0	43.5	23.5	
Hori.	254.417	QP	35.4	12.0	9.0	27.8	-	28.6	46.0	17.5	
Hori.	960.000	QP	37.8	22.2	12.6	28.8	-	43.7	46.0	2.3	
Hori.	2730.000	PK	50.9	28.2	4.8	35.1	-	48.9	73.9	25.0	
Hori.	3640.000	PK	48.8	29.2	5.2	34.5	-	48.7	73.9	25.2	
Hori.	4550.000	PK	41.3	30.8	5.6	34.4	-	43.4	73.9	30.5	Floor noise
Hori.	5460.000	PK	41.4	31.7	6.1	34.2	-	45.1	73.9	28.8	Floor noise
Hori.	7280.000	PK	41.7	36.2	6.6	34.3	-	50.0	73.9	23.9	Floor noise
Hori.	8190.000	PK	42.3	36.3	6.9	34.7	-	50.8	73.9	23.1	Floor noise
Hori.	9100.000	PK	41.7	37.8	7.4	34.8	-	52.1	73.9	21.9	Floor noise
Hori.	2730.000	AV	41.7	28.2	4.8	35.1	-	39.7	53.9	14.2	
Hori.	3640.000	AV	40.3	29.2	5.2	34.5	-	40.2	53.9	13.7	
Hori.	4550.000	AV	34.6	30.8	5.6	34.4	-	36.6	53.9	17.3	Floor noise
Hori.	5460.000	AV	33.3	31.7	6.1	34.2	-	37.0	53.9	16.9	Floor noise
Hori.	7280.000	AV	34.6	36.2	6.6	34.3	-	42.9	53.9	11.0	Floor noise
Hori.	8190.000	AV	34.5	36.3	6.9	34.7	-	43.0	53.9	10.9	Floor noise
Hori.	9100.000	AV	34.5	37.8	7.4	34.8	-	44.9	53.9	9.0	Floor noise
Vert.	46.580	QP	43.4	12.4	7.1	28.6	-	34.3	40.0	5.7	
Vert.	108.683	QP	40.9	11.5	7.8	28.5	-	31.7	43.5	11.8	
Vert.	254.417	QP	42.0	12.0	9.0	27.8	-	35.2	46.0	10.9	
Vert.	960.000	QP	39.4	22.2	12.6	28.8	-	45.3	46.0	0.7	
Vert.	2730.000	PK	56.4	28.2	4.8	35.1	-	54.4	73.9	19.5	
Vert.	3640.000	PK	49.4	29.2	5.2	34.5	-	49.3	73.9	24.6	
Vert.	4550.000	PK	41.5	30.8	5.6	34.4	-	43.6	73.9	30.3	Floor noise
Vert.	5460.000	PK	41.3	31.7	6.1	34.2	-	44.9	73.9	29.0	Floor noise
Vert.	7280.000	PK	41.7	36.2	6.6	34.3	-	50.1	73.9	23.8	Floor noise
Vert.	8190.000	PK	42.7	36.3	6.9	34.7	-	51.3	73.9	22.6	Floor noise
Vert.	9100.000	PK	41.8	37.8	7.4	34.8	-	52.2	73.9	21.7	Floor noise
Vert.	2730.000	AV	45.6	28.2	4.8	35.1	-	43.6	53.9	10.3	
Vert.	3640.000	AV	41.0	29.2	5.2	34.5	-	40.9	53.9	13.0	
Vert.	4550.000	AV	34.8	30.8	5.6	34.4	-	36.9	53.9	17.0	Floor noise
Vert.	5460.000	AV	33.6	31.7	6.1	34.2	-	37.3	53.9	16.6	Floor noise
Vert.	7280.000	AV	34.6	36.2	6.6	34.3	-	43.0	53.9	10.9	Floor noise
Vert.	8190.000	AV	34.8	36.3	6.9	34.7	-	43.3	53.9	10.6	Floor noise
Vert.	9100.000	AV	34.7	37.8	7.4	34.8	-	45.1	53.9	8.8	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)

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

Distance factor: 1 GHz - 10 GHz 20log (3.6 m / 3.0 m) = 1.59 dB

Radiated Spurious Emission

Report No.	13614736H	
Test place	Ise EMC Lab.	
Semi Anechoic Chamber	No.2	No.2
Date	December 5, 2020	December 4, 2020
Temperature / Humidity	22 deg. C / 42 % RH	22 deg. C / 43 % RH
Engineer	Kiyoshiro Okazaki (Below 1 GHz)	Junki Nagatomi (Above 1 GHz)
Mode	Tx 910.0 MHz (4 MHz)	

30dBc Data Sheet

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	910.000	PK	75.7	22.0	11.3	0.0	109.1	-	-	Carrier
Hori.	215.324	PK	35.6	11.2	8.7	28.0	27.5	79.1	51.6	
Hori.	433.770	PK	31.0	16.3	10.3	28.8	28.7	79.1	50.4	
Hori.	768.137	PK	47.7	20.4	11.7	29.2	50.6	79.1	28.5	
Hori.	902.000	PK	32.3	21.9	11.3	0.0	65.5	79.1	13.6	
Hori.	1820.000	PK	59.0	25.4	4.6	35.5	58.8	79.1	20.3	
Hori.	6370.000	PK	33.0	33.4	6.5	34.2	36.7	79.1	42.5	
Vert.	910.000	PK	79.9	22.0	11.3	0.0	113.3	-	-	Carrier
Vert.	215.324	PK	50.0	11.2	8.7	28.0	41.9	83.3	41.4	
Vert.	433.770	PK	30.4	16.3	10.3	28.8	28.1	83.3	55.1	
Vert.	768.137	PK	40.2	20.4	11.7	29.2	43.1	83.3	40.2	
Vert.	902.000	PK	33.0	21.9	11.3	0.0	66.3	83.3	17.0	
Vert.	1820.000	PK	62.4	25.4	4.6	35.5	60.1	83.3	23.2	
Vert.	6370.000	PK	35.9	33.4	6.5	34.2	38.5	83.3	44.7	

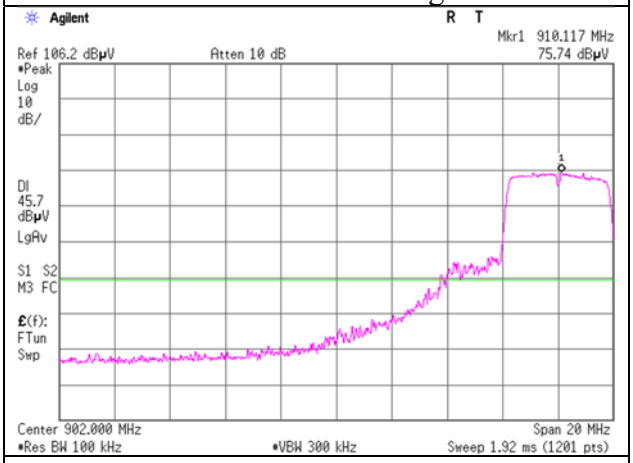
Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amprifier)

Radiated Spurious Emission
(Reference Plot for band-edge)

Report No.	13614736H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.2
Date	December 5, 2020
Temperature / Humidity	22 deg. C / 42 % RH
Engineer	Kiyoshiro Okazaki
Mode	Tx 910.0 MHz (4 MHz)

Horizontal

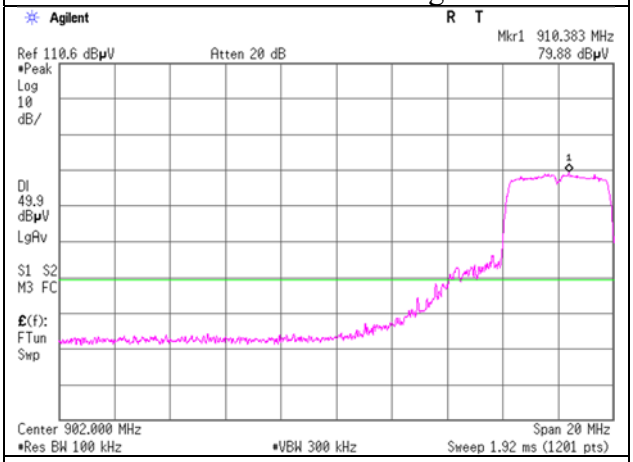
Restricted-band band-edge Plot



30dBc Plot

Vertical

Restricted-band band-edge Plot



30dBc Plot

* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission

Report No.	13614736H	
Test place	Ise EMC Lab.	
Semi Anechoic Chamber	No.2	No.2
Date	December 5, 2020	December 4, 2020
Temperature / Humidity	22 deg. C / 42 % RH	22 deg. C / 43 % RH
Engineer	Kiyoshiro Okazaki	Junki Nagatomi
	(Below 1 GHz)	(Above 1 GHz)
Mode	Tx 918.0 MHz (4 MHz)	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	46.576	QP	23.5	12.4	7.1	28.6	-	14.4	40.0	25.6	
Hori.	108.909	QP	29.4	11.5	7.8	28.5	-	20.2	43.5	23.3	
Hori.	250.707	QP	36.4	11.8	8.9	27.8	-	29.3	46.0	16.7	
Hori.	960.000	QP	37.2	22.2	12.6	28.8	-	43.1	46.0	2.9	
Hori.	2754.000	PK	52.6	28.4	4.9	35.1	-	50.8	73.9	23.1	
Hori.	3672.000	PK	44.4	29.2	5.2	34.5	-	44.4	73.9	29.6	
Hori.	4590.000	PK	42.0	30.9	5.7	34.4	-	44.2	73.9	29.7	Floor noise
Hori.	7344.000	PK	41.1	36.2	6.6	34.4	-	49.4	73.9	24.5	Floor noise
Hori.	8262.000	PK	42.7	36.1	7.0	34.7	-	51.0	73.9	22.9	Floor noise
Hori.	9180.000	PK	42.0	38.2	7.4	34.8	-	52.9	73.9	21.0	Floor noise
Hori.	2754.000	AV	41.3	28.4	4.9	35.1	-	39.5	53.9	14.4	
Hori.	3672.000	AV	37.2	29.2	5.2	34.5	-	37.2	53.9	16.7	
Hori.	4590.000	AV	33.5	30.9	5.7	34.4	-	35.8	53.9	18.1	Floor noise
Hori.	7344.000	AV	34.5	36.2	6.6	34.4	-	42.8	53.9	11.1	Floor noise
Hori.	8262.000	AV	34.7	36.1	7.0	34.7	-	43.0	53.9	10.9	Floor noise
Hori.	9180.000	AV	34.6	38.2	7.4	34.8	-	45.4	53.9	8.5	Floor noise
Vert.	46.576	QP	43.4	12.4	7.1	28.6	-	34.3	40.0	5.7	
Vert.	108.909	QP	40.9	11.5	7.8	28.5	-	31.7	43.5	11.8	
Vert.	250.707	QP	42.8	11.8	8.9	27.8	-	35.7	46.0	10.3	
Vert.	960.000	QP	39.7	22.2	12.6	28.8	-	45.6	46.0	0.4	
Vert.	2754.000	PK	55.1	28.4	4.9	35.1	-	53.2	73.9	20.7	
Vert.	3672.000	PK	46.8	29.2	5.2	34.5	-	46.8	73.9	27.1	
Vert.	4590.000	PK	41.6	30.9	5.7	34.4	-	43.8	73.9	30.1	Floor noise
Vert.	7344.000	PK	43.3	36.2	6.6	34.4	-	51.7	73.9	22.2	Floor noise
Vert.	8262.000	PK	42.7	36.1	7.0	34.7	-	51.1	73.9	22.8	Floor noise
Vert.	9180.000	PK	42.1	38.2	7.4	34.8	-	52.9	73.9	21.0	Floor noise
Vert.	2754.000	AV	44.4	28.4	4.9	35.1	-	42.6	53.9	11.3	
Vert.	3672.000	AV	39.7	29.2	5.2	34.5	-	39.7	53.9	14.3	
Vert.	4590.000	AV	33.9	30.9	5.7	34.4	-	36.1	53.9	17.8	Floor noise
Vert.	7344.000	AV	34.4	36.2	6.6	34.4	-	42.8	53.9	11.1	Floor noise
Vert.	8262.000	AV	34.8	36.1	7.0	34.7	-	43.2	53.9	10.8	Floor noise
Vert.	9180.000	AV	34.8	38.2	7.4	34.8	-	45.6	53.9	8.3	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)

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

Distance factor: 1 GHz - 10 GHz 20log (3.6 m / 3.0 m) = 1.59 dB

Radiated Spurious Emission

Report No.	13614736H	
Test place	Ise EMC Lab.	
Semi Anechoic Chamber	No.2	No.2
Date	December 5, 2020	December 4, 2020
Temperature / Humidity	22 deg. C / 42 % RH	22 deg. C / 43 % RH
Engineer	Kiyoshiro Okazaki (Below 1 GHz)	Junki Nagatomi (Above 1 GHz)
Mode	Tx 918.0 MHz (4 MHz)	

30dBc Data Sheet

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	918.000	PK	73.6	22.1	11.4	0.0	107.1	-	-	Carrier
Hori.	213.209	PK	30.2	11.1	8.7	28.0	22.0	77.1	55.1	
Hori.	433.472	PK	30.8	16.3	10.3	28.8	28.5	77.1	48.6	
Hori.	767.980	PK	48.7	20.4	11.7	29.2	51.6	77.1	25.5	
Hori.	1836.000	PK	60.4	25.4	4.6	35.5	58.8	77.1	18.3	
Hori.	5508.000	PK	31.2	31.7	6.2	34.2	36.7	77.1	40.5	
Hori.	6426.000	PK	31.8	33.7	6.5	34.2	45.1	77.1	32.0	
Vert.	918.000	PK	78.2	22.1	11.4	0.0	111.7	-	-	Carrier
Vert.	213.209	PK	47.9	11.1	8.7	28.0	39.7	81.7	42.0	
Vert.	433.472	PK	29.8	16.3	10.3	28.8	27.6	81.7	54.1	
Vert.	767.980	PK	46.5	20.4	11.7	29.2	49.4	81.7	32.3	
Vert.	1836.000	PK	60.9	25.4	4.6	35.5	60.1	81.7	21.6	
Vert.	5508.000	PK	31.6	31.7	6.2	34.2	38.5	81.7	43.1	
Vert.	6426.000	PK	35.1	33.7	6.5	34.2	48.1	81.7	33.5	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amprifier)

Radiated Spurious Emission

Report No.	13614736H	
Test place	Ise EMC Lab.	
Semi Anechoic Chamber	No.2	No.2
Date	December 4, 2020	December 4, 2020
Temperature / Humidity	22 deg. C / 43 % RH	22 deg. C / 43 % RH
Engineer	Junki Nagatomi	Junki Nagatomi
	(Below 1 GHz)	(Above 1 GHz)
Mode	Tx 922.0 MHz (4 MHz)	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	46.999	QP	23.5	12.3	7.1	28.6	-	14.3	40.0	25.7	
Hori.	109.191	QP	29.3	11.6	7.8	28.5	-	20.2	43.5	23.3	
Hori.	251.533	QP	36.2	11.9	8.9	27.8	-	29.2	46.0	16.8	
Hori.	960.000	QP	37.9	22.2	12.6	28.8	-	43.8	46.0	2.2	
Hori.	2766.000	PK	49.9	28.5	4.9	35.1	-	48.2	73.9	25.7	
Hori.	3688.000	PK	48.6	29.3	5.2	34.5	-	48.6	73.9	25.3	
Hori.	4610.000	PK	41.0	31.0	5.7	34.4	-	43.3	73.9	30.6	Floor noise
Hori.	7376.000	PK	41.5	36.1	6.6	34.4	-	49.9	73.9	24.0	Floor noise
Hori.	8298.000	PK	43.0	36.0	7.0	34.7	-	51.3	73.9	22.6	Floor noise
Hori.	2766.000	AV	41.3	28.5	4.9	35.1	-	39.6	53.9	14.3	
Hori.	3688.000	AV	40.7	29.3	5.2	34.5	-	40.7	53.9	13.2	
Hori.	4610.000	AV	33.8	31.0	5.7	34.4	-	36.1	53.9	17.8	Floor noise
Hori.	7376.000	AV	34.3	36.1	6.6	34.4	-	42.7	53.9	11.2	Floor noise
Hori.	8298.000	AV	34.8	36.0	7.0	34.7	-	43.1	53.9	10.8	Floor noise
Vert.	46.999	QP	40.4	12.3	7.1	28.6	-	31.2	40.0	8.8	
Vert.	109.191	QP	40.8	11.6	7.8	28.5	-	31.7	43.5	11.8	
Vert.	251.533	QP	42.6	11.9	8.9	27.8	-	35.6	46.0	10.4	
Vert.	960.000	QP	39.1	22.2	12.6	28.8	-	45.0	46.0	1.0	
Vert.	2766.000	PK	54.6	28.5	4.9	35.1	-	52.8	73.9	21.1	
Vert.	3688.000	PK	46.5	29.3	5.2	34.5	-	46.5	73.9	27.4	
Vert.	4610.000	PK	42.5	31.0	5.7	34.4	-	44.8	73.9	29.1	Floor noise
Vert.	7376.000	PK	41.9	36.1	6.6	34.4	-	50.3	73.9	23.6	Floor noise
Vert.	8298.000	PK	42.9	36.0	7.0	34.7	-	51.2	73.9	22.7	Floor noise
Vert.	2766.000	AV	44.2	28.5	4.9	35.1	-	42.5	53.9	11.4	
Vert.	3688.000	AV	38.8	29.3	5.2	34.5	-	38.8	53.9	15.1	
Vert.	4610.000	AV	34.3	31.0	5.7	34.4	-	36.6	53.9	17.3	Floor noise
Vert.	7376.000	AV	34.4	36.1	6.6	34.4	-	42.7	53.9	11.2	Floor noise
Vert.	8298.000	AV	34.9	36.0	7.0	34.7	-	43.2	53.9	10.7	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)

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

Distance factor: 1 GHz - 10 GHz 20log (3.6 m / 3.0 m) = 1.59 dB

Radiated Spurious Emission

Report No.	13614736H	
Test place	Ise EMC Lab.	
Semi Anechoic Chamber	No.2	No.2
Date	December 4, 2020	December 4, 2020
Temperature / Humidity	22 deg. C / 43 % RH	22 deg. C / 43 % RH
Engineer	Junki Nagatomi (Below 1 GHz)	Junki Nagatomi (Above 1 GHz)
Mode	Tx 922.0 MHz (4 MHz)	

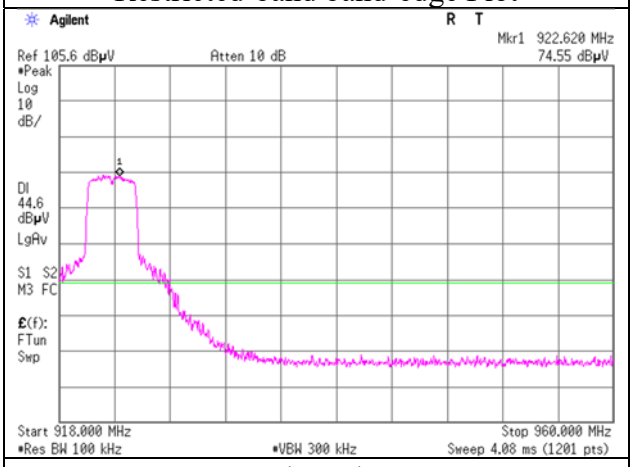
30dBc Data Sheet

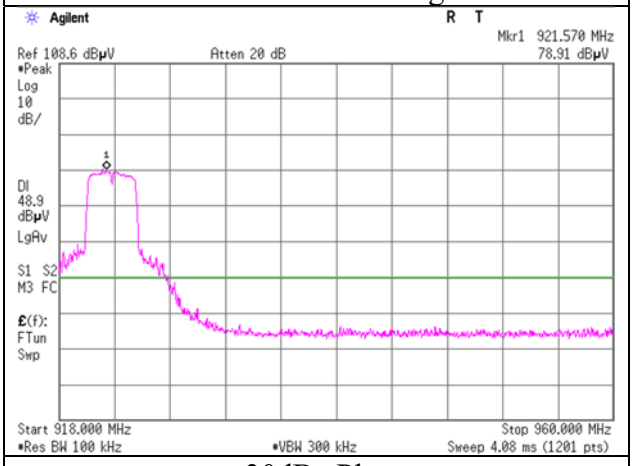
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	922.000	PK	74.6	22.1	11.4	0.0	108.1	-	-	Carrier
Hori.	215.199	PK	30.1	11.2	8.7	28.0	22.0	78.1	56.1	
Hori.	433.501	PK	30.6	16.3	10.3	28.8	28.3	78.1	49.8	
Hori.	864.187	PK	46.1	21.6	12.2	29.0	50.8	78.1	27.3	
Hori.	928.000	PK	35.4	22.1	11.4	0.0	68.9	78.1	9.2	
Hori.	1844.000	PK	58.1	25.5	4.6	35.5	52.6	78.1	25.4	
Hori.	5532.000	PK	32.8	31.7	6.2	34.2	58.8	78.1	19.3	
Hori.	6454.000	PK	33.9	33.8	6.5	34.2	36.7	78.1	41.4	
Hori.	9220.000	PK	34.0	38.5	7.4	34.8	45.1	78.1	33.0	
Vert.	922.000	PK	78.9	22.1	11.4	0.0	112.4	-	-	Carrier
Vert.	215.199	PK	47.9	11.2	8.7	28.0	39.8	82.4	42.6	
Vert.	433.501	PK	29.8	16.3	10.3	28.8	27.5	82.4	54.9	
Vert.	864.187	PK	48.9	21.6	12.2	29.0	53.7	82.4	28.8	
Vert.	928.000	PK	38.5	22.1	11.4	0.0	72.0	82.4	10.4	
Vert.	1844.000	PK	59.1	25.5	4.6	35.5	53.6	82.4	28.8	
Vert.	5532.000	PK	33.3	31.7	6.2	34.2	60.1	82.4	22.4	
Vert.	6454.000	PK	34.8	33.8	6.5	34.2	38.5	82.4	43.9	
Vert.	9220.000	PK	35.6	38.5	7.4	34.8	48.1	82.4	34.3	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amprifier)

Radiated Spurious Emission
(Reference Plot for band-edge)

Report No.	13614736H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.2
Date	December 4, 2020
Temperature / Humidity	22 deg. C / 43 % RH
Engineer	Junki Nagatomi
Mode	Tx 922.0 MHz (4 MHz)

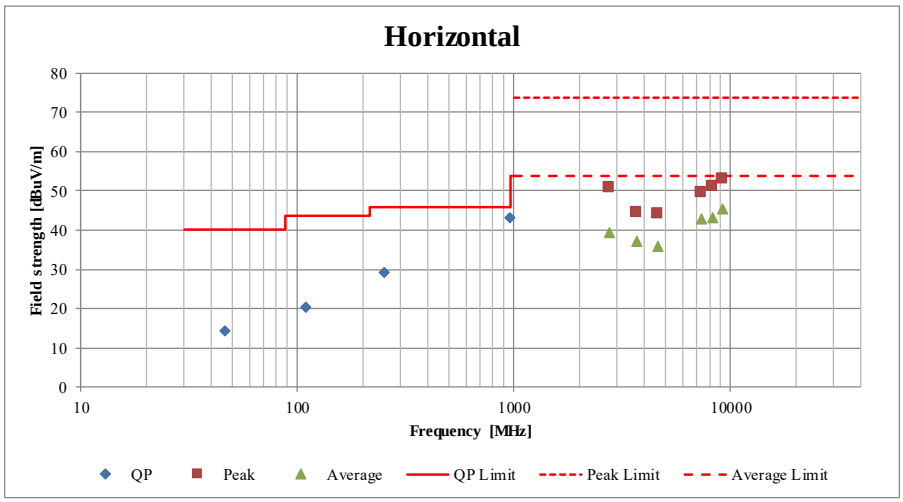
Horizontal
Restricted-band band-edge Plot

30dBc Plot

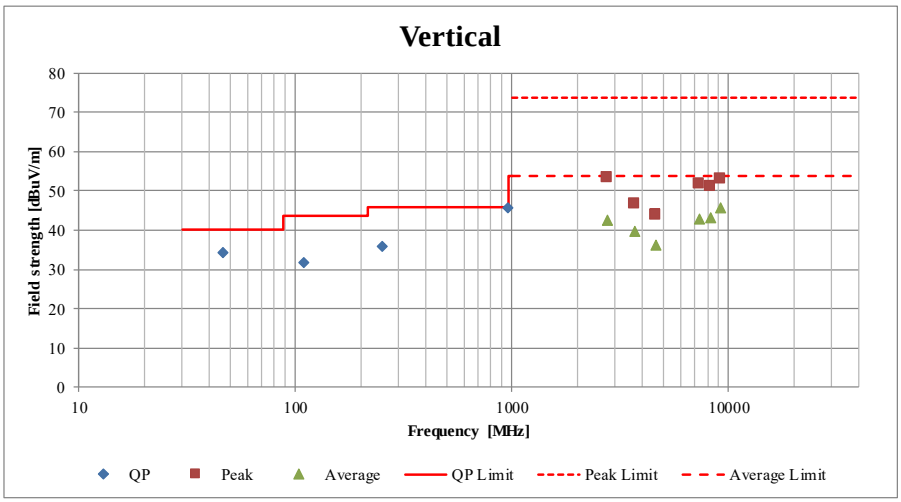
Vertical
Restricted-band band-edge Plot

30dBc Plot

* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission
(Plot data, Worst case)

Report No.	13614736H	
Test place	Ise EMC Lab.	
Semi Anechoic Chamber	No.2	No.2
Date	December 5, 2020	December 4, 2020
Temperature / Humidity	22 deg. C / 42 % RH	22 deg. C / 43 % RH
Engineer	Kiyoshiro Okazaki (Below 1 GHz)	Junki Nagatomi (Above 1 GHz)
Mode	Tx 918.0 MHz (4 MHz)	





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

APPENDIX 2: Test instruments

Test equipment

Test Item	Local ID	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Cal Int
RE	MAEC-03	142008	AC3_Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	2020/05/22	24
RE	MOS-13	141554	Thermo-Hygrometer	CUSTOM. Inc	CTH-201	1301	2020/01/07	12
RE	MMM-08	141532	DIGITAL HiTESTER	Hioki	3805	51201197	2020/01/06	12
RE	MJM-16	142183	Measure	KOMELON	KMC-36	-	-	-
RE	COTS-MEMI-02	178648	EMI measurement program	TSJ (Techno Science Japan)	TEPTO-DV	-	-	-
RE	MAT-95	142314	Attenuator	Pasternack	PE7390-6	D/C 1504	2020/06/17	12
RE	MBA-03	141424	Biconical Antenna	Schwarzbeck Mess - Elektronik	VHA9103+BBA9106	1915	2020/08/13	12
RE	MCC-51	141323	Coaxial cable	UL Japan	-	-	2020/07/06	12
RE	MLA-22	141266	Logperiodic Antenna(200-1000MHz)	Schwarzbeck Mess - Elektronik	VUSLP9111B	9111B-191	2020/08/13	12
RE	MPA-13	141582	Pre Amplifier	SONOMA INSTRUMENT	310	260834	2020/02/10	12
RE	MRF-12	192072	Band Rejection Filter(902-928MHz)	Wakoh Communication Industrial Co., Ltd.	WFR-481	19122541	2020/03/16	12
RE	MCC-64	141327	Coaxial Cable	UL Japan	-	-	2020/02/04	12
RE	MSA-04	141885	Spectrum Analyzer	Keysight Technologies Inc	E4448A	US44300523	2020/11/09	12
RE	MTR-08	141949	Test Receiver	Rohde & Schwarz	ESCI	100767	2020/08/18	12
RE	MOS-41	192300	Thermo-Hygrometer	CUSTOM. Inc	CTH-201	0013	2019/12/19	12
RE	MMM-01	141542	Digital Tester	Fluke Corporation	FLUKE 26-3	78030611	2020/08/18	12
RE	MJM-27	142228	Measure	KOMELON	KMC-36	-	-	-
RE	MAEC-02-SVSWR	142006	AC2_Semi Anechoic Chamber(SVSWR)	TDK	Semi Anechoic Chamber 3m	DA-06902	2019/04/01	24
RE	MHA-06	141512	Horn Antenna 1-18GHz	Schwarzbeck Mess - Elektronik	BBHA9120D	254	2020/09/14	12
RE	MCC-216	141392	Microwave Cable	Junkosha	MWX221	1604S253(1 m) / 537073/126E(5 m)	2020/02/18	12
RE	MPA-10	141579	Pre Amplifier	Keysight Technologies Inc	8449B	3008A02142	2020/01/07	12
RE	MHF-27	141297	High Pass Filter(1.1-10GHz)	TOKYO KEIKI	TF219CD1	1001	2020/01/09	12
RE	MRENT-130	141855	Spectrum Analyzer	Keysight Technologies Inc	E4440A	MY46187750	2020/11/18	12
RE	MAEC-02	142004	AC2_Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-06902	2020/05/26	24
RE	MAT-07	141203	Attenuator(6dB)	Weinschel Corp	2	BK7970	2020/11/13	12
RE	MCC-12	141317	Coaxial Cable	UL Japan Inc.	-	-	2020/09/25	12
RE	MLA-21	141265	Logperiodic Antenna(200-1000MHz)	Schwarzbeck Mess - Elektronik	VUSLP9111B	9111B-190	2020/07/29	12
RE	MPA-24	141594	Pre Amplifier	Keysight Technologies Inc	8447D	2944A10150	2020/02/10	12

***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: RE: Radiated Emission test