RADIO TEST REPORT

Test Report No. : 13211388S-F-R1

Applicant	:	**Nintendo Co., Ltd.**
Type of EUT	:	**Development tool**
Model Number of EUT	:	**HAT-002 (-01)**
FCC ID	:	**BKEHAT002**
Test regulation	:	**FCC Part 15 Subpart C: 2020** **For Permissive Change** **(Radiated Spurious Emission tests only)** *Bluetooth BDR/EDR part
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. Shonan 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.
10. This report is a revised version of 13211388S-F. 13211388S-F is replaced with this report.

Date of test: February 4 to 26, 2020

Representative test engineer:
Toshinori Yamada
Engineer
Consumer Technology Division

Approved by:
Akio Hayashi
Leader
Consumer Technology Division

CERTIFICATE 1266.03

☐ 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.: 13211388S-F

Revision	Test report No.	Date	Page revised	Contents
- (Original)	13211388S-F	June 22, 2020	-	-
1	13211388S-F-R1	August 21, 2020	11	Addition of *1), *1) Cable for system control during the development, not used for the product.

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

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SECTION 1: Customer information

Company Name	:	Nintendo Co., Ltd.
Address	:	11-1 Hokotate-cho, Kamitoba, Minami-ku, Kyoto 601-8501, Japan
Telephone Number	:	+81-75-662-9600
Facsimile Number	:	+81-75-662-9624
Contact Person	:	Kazuya Kuramoto

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)
- 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 of Equipment	:	Development tool
Model No.	:	HAT-002 (-01)
Serial No.	:	Refer to SECTION 4.2
Rating	:	DC 3.7 V (battery), AC Adapter input: AC 100 V – 240 V, 50 Hz / 60 Hz, 1 A, AC Adapter output: DC 5 V – DC 15 V, 2.6 A
Receipt Date of Sample (Information from test lab.)	:	February 3, 2020
Country of Mass-production	:	China
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: HAT-002 (-01) (referred to as the EUT in this report) is a Development tool.

General Specification

Clock frequency(ies) in the system	:	37.4 MHz

Radio Specification

Radio Type	:	Transceiver
Frequency of Operation	:	Wireless LAN part: 2412 MHz - 2472 MHz, U-NII-1: 5180 MHz - 5240 MHz, U-NII-2A: 5260 MHz - 5320 MHz, Bluetooth part: 2402 MHz - 2480 MHz
Modulation	:	Wireless LAN part: 2.4 GHz bands: DBPSK, DQPSK, CCK, OFDM 5 GHz bands: OFDM Bluetooth part: BDR (Baisc Data Rate): GFSK EDR (Enhanced Data Rate): π/4-DQPSK, 8DPSK LE (Low Energy mode): GFSK
Antenna type	:	PCB Antenna (Dipole)
Antenna connector	:	(Ant: 0): MHF 4L, (Ant: 1): MHF II
Antenna Gain	:	2.4 GHz band: -0.70 dBi max (ANT0: Wireless LAN & Bluetooth), -8.38 dBi max (ANT1: Wireless LAN) 5 GHz band: +3.31 dBi max (ANT0: Wireless LAN), -0.96 dBi max (ANT1: Wireless LAN)
Operation temperature	:	+5 deg.C to +35 deg.C

Remarks: This Wireless Module consists of 1 chip each of 5 GHz band and 2.4 GHz band.

SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification : FCC Part 15 Subpart C
FCC Part 15 final revised on May 26, 2020 and effective July 27, 2020 except 15.258

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.

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

3.2 Procedures and results

Item	Test Procedure	Specification	Worst Margin	Results	Remarks
Spurious Emission & Band Edge Compliance	**FCC:** KDB 558074 D01 15.247 Meas Guidance v05r02 **ISED:** RSS-Gen 6.13	**FCC:** Section15.247(d) **ISED:** RSS-247 5.5 RSS-Gen 8.9 RSS-Gen 8.10	9.5 dB 250.015 MHz, QP, Vertical Mode: Tx DH5 2402 MHz 250.013 MHz, QP, Vertical Mode: Tx 3DH5 2480 MHz	Complied a)	Radiated (above 30 MHz) *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 15.247(d). 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)
This EUT provides stable voltage constantly to RF Part regardless of input voltage. Therefore, the EUT complies with the requirement.

FCC Part 15.203 Antenna requirement
It is impossible for end users to replace the antenna, because the antenna is mounted inside of the EUT. Therefore, the EUT complies with the requirement.

3.3 Addition to standard

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.

Shonan EMC Lab.

Item	Frequency range	Uncertainty (+/-)			
		No. 1 SAC / SR	No. 2 SAC / SR	No. 3 SAC / SR	No. 4,5,6,8 SR
Conducted emission (AC Mains) LISN	150 kHz-30 MHz	2.6 dB	2.6 dB	2.5 dB	2.6 dB
Radiated emission (Measurement distance: 3 m)	9 kHz-30 MHz	3.0 dB	3.0 dB	3.0 dB	-
	30 MHz-200 MHz	4.6 dB	4.6 dB	4.6 dB	-
	200 MHz-1 GHz	6.0 dB	6.0 dB	6.0 dB	-
	1 GHz-6 GHz	4.9 dB	4.9 dB	4.9 dB	-
	6 GHz-18 GHz	5.5 dB	5.5 dB	5.5 dB	-
	18 GHz-40 GHz	5.4 dB	5.4 dB	5.4 dB	-
Radiated emission (Measurement distance: 1 m)	1 GHz-18 GHz	5.8 dB	5.8 dB	5.8 dB	-
	18 GHz-40 GHz	5.7 dB	5.7 dB	5.7 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	0.98 dB
Power Measurement above 1 GHz (Peak Detector)_SPM-06	1.75 dB
Power Measurement above 1 GHz (Average Detector)_SPM-07	0.89 dB
Power Measurement above 1 GHz (Peak Detector)_SPM-07	1.12 dB
Power Measurement above 1 GHz (Average Detector)_SPM-13	1.06 dB
Power Measurement above 1 GHz (Peak Detector)_SPM-13	1.24 dB
Spurious emission (Conducted) below 1GHz	0.9 dB
Spurious emission (Conducted) 1 GHz-3 GHz	0.9 dB
Spurious emission (Conducted) 3 GHz-18 GHz	2.9 dB
Spurious emission (Conducted) 18 GHz-26.5 GHz	2.6 dB
Spurious emission (Conducted) 26.5 GHz-40 GHz	2.0 dB
Bandwidth Measurement	0.07 %
Duty cycle and Time Measurement	0.262 %
Temperature	0.95 deg.C.
Voltage	0.83 %

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
A2LA Certificate Number: 1266.03 (FCC Test Firm Registration Number: 626366, ISED Lab Company Number: 2973D)

Test site	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Maximum measurement distance
No.1 Semi-anechoic chamber	20.6 x 11.3 x 7.65	20.6 x 11.3	10 m
No.2 Semi-anechoic chamber	20.6 x 11.3 x 7.65	20.6 x 11.3	10 m
No.3 Semi-anechoic chamber	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 EUT during testing

4.1 Operating Mode(s)

Bluetooth: Transmitting, Payload: PRBS9

Details of Operating Mode(s)

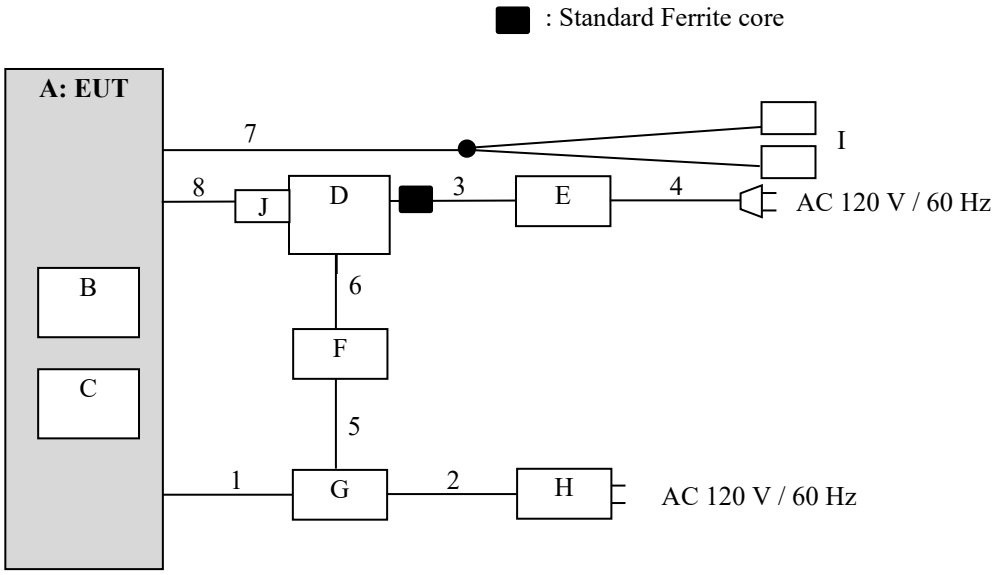
Test Item	Mode	Tested frequency
Spurious Emission (Radiated)	Tx (Hopping Off) DH5, 3DH5	2402 MHz 2441 MHz 2480 MHz

*As a result of preliminary test, the formal test was performed with the above modes, which had the maximum payload length (except Dwell time test)
*2DH mode (2Mb/s EDR: pi/4DQPSK) was excluded for other tests than power measurement by using 3DH mode (3 Mb/s EDR: 8DPSK) as a representative.
* It is considered that the non-tested packet type (e.g. inquiry) can be omitted as it is complied with above all the test items based on Bluetooth Core specification.

*EUT has the power settings by the software as follows;
Power settings: Fixed
Software: Bluetool.exe, Ver.1.9.3.0 (Date: 2020.2.4, 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.

4.2 Configuration and peripherals



* 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	Development tool	HAT-002 (-01)	XAL00710001144	Nintendo	EUT
B	Game Card	HAC-008	NX32GB-01282	Nintendo	-
C	Micro SDHC Card	8GB	-	PQI	-
D	Laptop PC	CF-S10AWNDS	1EKSA54822	Panasonic	-
E	AC Adapter	CF-AA6402A M1	-	Panasonic	-
F	GIGA Ethernet Adapter	LAN-GTJU3	67L349603587A	Logitec	-
G	SDEV Cradle	HAT-003	XZL01000079874	Nintendo	-
H	AC Adapter	HAC-002	2407171-4	Nintendo	-
I	Headphone	-	-	Nintendo	-
J	USB-UART adaptor	TTL-232RG	-	FTDI	-

List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	USB	0.4	Shielded	Shielded	-
2	USB	1.5	Shielded	Shielded	-
3	DC	1.0	Unshielded	Unshielded	-
4	AC	0.8	Unshielded	Unshielded	-
5	USB	0.1	Shielded	Shielded	-
6	LAN	1.0	Unshielded	Unshielded	-
7	Headphone	0.5 + 0.3	Shielded	Shielded	-
8	USB	1.7	Shielded	Shielded	*1)

*1) Cable for system control during the development, not used for the product

SECTION 5: Radiated Spurious Emission

Test Procedure

[For below 1 GHz]
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 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 20 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.

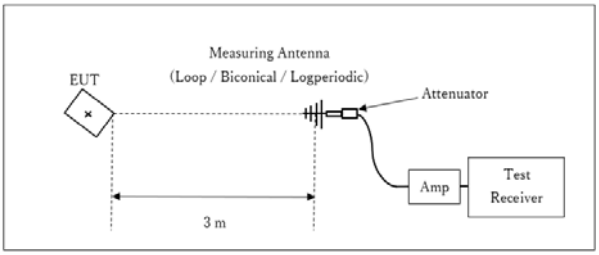
20 dBc was applied to the frequency over the limit of FCC 15.209 / Table 4 of RSS-Gen 8.9 (ISED) and outside the restricted band of FCC15.205 / Table 6 of RSS-Gen 8.10 (ISED).

Frequency	Below 1 GHz	Above 1 GHz		20 dBc
Instrument used	Test Receiver	Spectrum Analyzer		Spectrum Analyzer
Detector	QP	PK	AV	PK
IF Bandwidth	BW 120 kHz	RBW: 1 MHz VBW: 3 MHz	*1)	RBW: 100 kHz VBW: 300 kHz

*1) Measurement with Average detector was not performed. The limit for Average detector is applied to the measurement value with Peak detector used Duty cycle correction factor (DCCF).

Figure 1: Test Setup

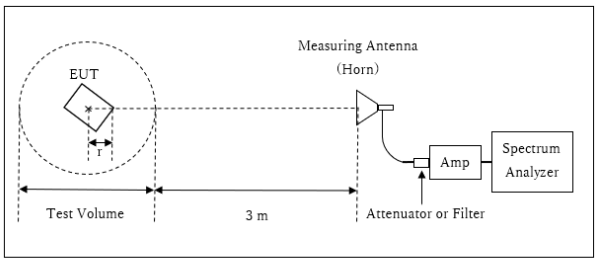
Below 1 GHz



× : Center of turn table

Test Distance: 3 m

1 GHz - 13 GHz

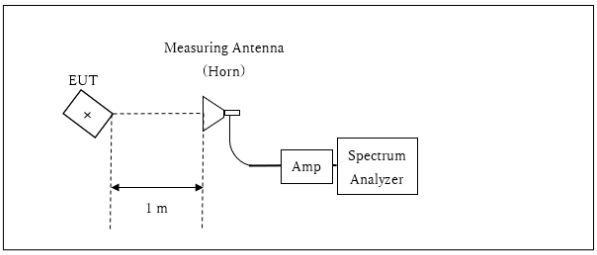


r : Radius of an outer periphery of EUT
× : Center of turn table

Distance Factor: 20 x log (3.9 m / 3.0 m) = 2.28 dB
* Test Distance: (3 + Test Volume /2) - r = 3.9 m

Test Volume : 2.0 m
(Test Volume has been calibrated based on CISPR 16-1-4.)
r = 0.1 m

13 GHz - 26.5 GHz



× : Center of turn table

Distance Factor: 20 x log (1.0 m / 3.0 m) = -9.54 dB
*Test Distance: 1 m

The 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

Frequency	Carrier	Spurious			
		Below 1 GHz	1 GHz - 2.8 GHz	2.8 GHz - 13 GHz	13-26.5 GHz
Horizontal	X	X	X	X	X
Vertical	Y	X	Y	Y	X

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

Measurement range : 30 MHz - 26.5 GHz
Test data : APPENDIX
Test result : Pass

APPENDIX 1: Test data

Radiated Spurious Emission

Report No.	13211388S-F-R1				
Test place	Shonan EMC Lab.				
Semi Anechoic Chamber	No.3	No.2	No.2	No.3	No.3
Date	February 26, 2020	February 6, 2020	February 7, 2020	February 14, 2020	February 25, 2020
Temperature / Humidity	22 deg. C / 40 % RH	23 deg. C / 33 % RH	23 deg. C / 33 % RH	22 deg. C / 40 % RH	23 deg. C / 45 % RH
Engineer	Toshinori Yamada (30 MHz - 1000 MHz)	Yusuke Tanikawara (1 GHz -2.8 GHz)	Yusuke Tanikawara (2.8 GHz -13 GHz)	Makoto Hosaka (13 GHz -18 GHz)	Toshinori Yamada (18 GHz -26.5 GHz)
Mode	Tx, Hopping Off, DH5 2402 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.	83.313	QP	44.38	6.77	7.61	32.16	0.00	26.60	40.0	13.4	215	190	
Hori.	240.179	QP	48.58	11.32	8.35	32.02	0.00	36.23	46.0	9.7	137	202	
Hori.	250.012	QP	47.74	11.60	8.42	32.01	0.00	35.75	46.0	10.2	175	163	
Hori.	259.510	QP	43.43	11.92	8.49	32.01	0.00	31.83	46.0	14.1	137	202	
Hori.	300.010	QP	40.41	13.53	8.78	32.02	0.00	30.70	46.0	15.3	129	328	
Hori.	327.627	QP	41.30	14.03	8.94	31.98	0.00	32.29	46.0	13.7	100	177	
Hori.	350.005	QP	37.68	14.80	9.07	31.94	0.00	29.61	46.0	16.3	100	220	
Hori.	375.011	QP	39.12	14.95	9.16	31.96	0.00	31.27	46.0	14.7	100	199	
Hori.	500.090	QP	32.98	17.48	9.62	31.94	0.00	28.14	46.0	17.8	100	152	
Hori.	650.020	QP	34.85	18.99	10.18	31.96	0.00	32.06	46.0	13.9	100	142	
Hori.	2390.000	PK	46.66	28.51	14.01	38.68	2.28	52.78	73.9	21.1	145	137	
Hori.	3202.669	PK	50.32	29.26	5.57	38.32	2.28	49.11	73.9	24.7	105	33	
Hori.	4804.000	PK	60.84	31.71	6.34	38.55	2.28	62.62	73.9	11.2	190	182	
Hori.	7206.000	PK	45.54	37.30	7.79	39.15	2.28	53.76	73.9	20.1	150	0	
Hori.	9608.000	PK	45.62	38.78	8.97	39.74	2.28	55.91	73.9	17.9	150	0	
Hori.	12010.000	PK	45.91	39.43	10.26	40.48	2.28	57.40	73.9	16.5	150	0	
Vert.	38.058	QP	35.70	15.40	6.63	32.19	0.00	25.54	40.0	14.4	100	225	
Vert.	48.039	QP	42.50	11.74	6.79	32.19	0.00	28.84	40.0	11.1	100	140	
Vert.	53.637	QP	42.23	9.84	6.77	32.19	0.00	26.65	40.0	13.3	100	122	
Vert.	250.015	QP	48.40	11.60	8.42	32.01	0.00	36.41	46.0	**9.5**	100	60	
Vert.	650.020	QP	35.11	18.99	10.18	31.96	0.00	32.32	46.0	13.6	100	152	
Vert.	2390.000	PK	45.87	28.51	14.01	38.68	2.28	51.99	73.9	21.9	160	172	
Vert.	3202.657	PK	49.79	29.26	5.57	38.32	2.28	48.58	73.9	25.3	157	187	
Vert.	4804.000	PK	60.95	31.71	6.34	38.55	2.28	62.73	73.9	11.1	189	124	
Vert.	7206.000	PK	44.65	37.30	7.79	39.15	2.28	52.87	73.9	21.0	150	0	
Vert.	9608.000	PK	44.61	38.78	8.97	39.74	2.28	54.90	73.9	19.0	150	0	
Vert.	12010.000	PK	45.34	39.43	10.26	40.48	2.28	56.83	73.9	17.0	150	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Duty cycle correction factor relaxation

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	DCCF [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2390.000	PK	46.66	28.51	14.01	38.68	-24.66	2.28	28.12	53.9	25.8	
Hori.	3202.669	PK	50.32	29.26	5.57	38.32	-24.66	2.28	24.45	53.9	29.5	*1)
Hori.	4804.000	PK	60.84	31.71	6.34	38.55	-24.66	2.28	37.96	53.9	15.9	
Hori.	7206.000	PK	45.54	37.30	7.79	39.15	-24.66	2.28	29.10	53.9	24.8	
Hori.	9608.000	PK	45.62	38.78	8.97	39.74	-24.66	2.28	31.25	53.9	22.7	
Hori.	12010.000	PK	45.91	39.43	10.26	40.48	-24.66	2.28	32.74	53.9	21.2	
Vert.	2390.000	PK	45.87	28.51	14.01	38.68	-24.66	2.28	27.33	53.9	26.6	
Vert.	3202.657	PK	49.79	29.26	5.57	38.32	-24.66	2.28	23.92	53.9	30.0	*1)
Vert.	4804.000	PK	60.95	31.71	6.34	38.55	-24.66	2.28	38.07	53.9	**15.8**	
Vert.	7206.000	PK	44.65	37.30	7.79	39.15	-24.66	2.28	28.21	53.9	25.7	
Vert.	9608.000	PK	44.61	38.78	8.97	39.74	-24.66	2.28	30.24	53.9	23.7	
Vert.	12010.000	PK	45.34	39.43	10.26	40.48	-24.66	2.28	32.17	53.9	21.7	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + DCCF + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB
DCCF refer to "Duty cycle correction factor" sheet.
*1) Four-thirds of Carrier frequency

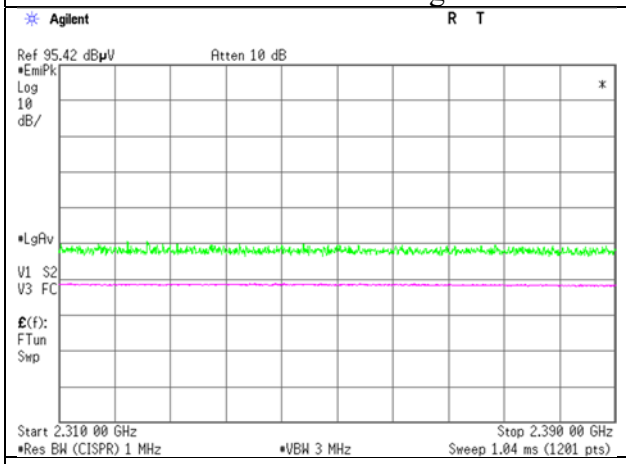
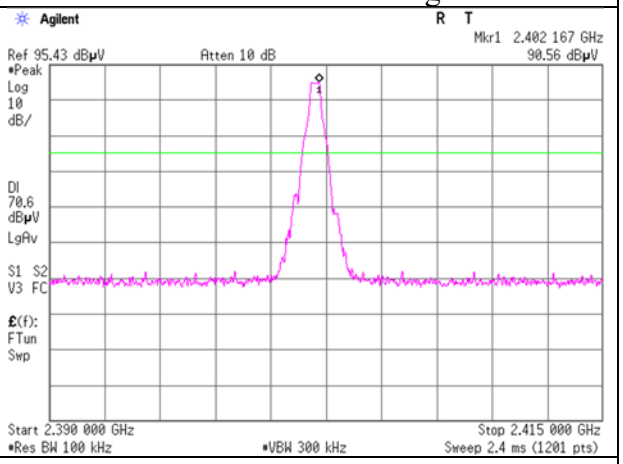
20 dBc Data Sheet (RBW 100 kHz, VBW 300 kHz)

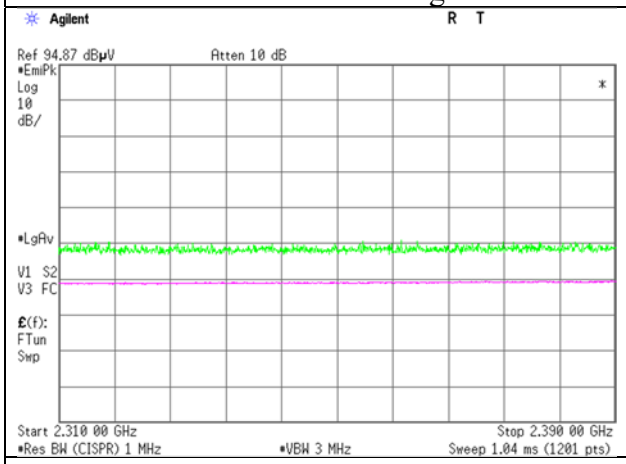
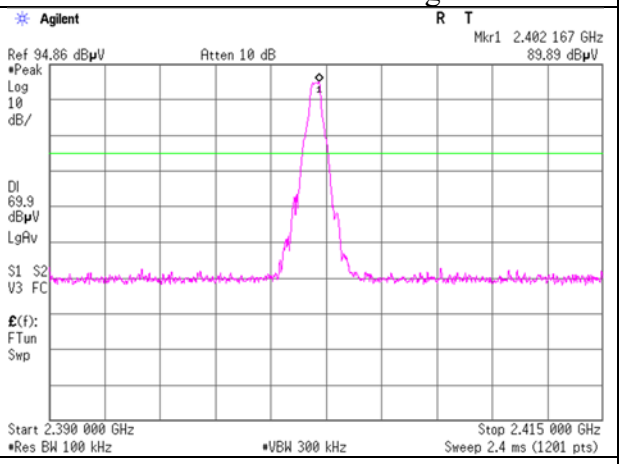
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2402.000	PK	90.91	28.48	14.02	38.67	2.28	97.02	-	-	Carrier
Hori.	2400.000	PK	36.74	28.48	14.02	38.67	2.28	42.85	77.02	34.1	
Vert.	2402.000	PK	89.21	28.48	14.02	38.67	2.28	95.32	-	-	Carrier
Vert.	2400.000	PK	37.51	28.48	14.02	38.67	2.28	43.62	75.32	31.7	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission
(Reference Plot for band-edge)

Report No.	13211388S-F-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	No.2
Date	February 6, 2020
Temperature / Humidity	23 deg. C / 33 % RH
Engineer	Yusuke Tanikawara (1 GHz -2.8 GHz)
Mode	Tx, Hopping Off, DH5 2402 MHz

Horizontal	
Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc Plot

Vertical	
Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc 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.	13211388S-F-R1				
Test place	Shonan EMC Lab.				
Semi Anechoic Chamber	No.3	No.2	No.2	No.3	No.3
Date	February 26, 2020	February 6, 2020	February 7, 2020	February 14, 2020	February 25, 2020
Temperature / Humidity	22 deg. C / 40 % RH	23 deg. C / 33 % RH	23 deg. C / 33 % RH	22 deg. C / 40 % RH	23 deg. C / 45 % RH
Engineer	Toshinori Yamada	Yusuke Tanikawara	Yusuke Tanikawara	Makoto Hosaka	Toshinori Yamada
	(30 MHz - 1000 MHz)	(1 GHz -2.8 GHz)	(2.8 GHz -13 GHz)	(13 GHz -18 GHz)	(18 GHz -26.5 GHz)
Mode	Tx, Hopping Off, DH5 2441 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.	83.855	QP	43.40	6.85	7.62	32.16	0.00	25.71	40.0	14.2	204	197	
Hori.	240.087	QP	48.44	11.31	8.35	32.02	0.00	36.08	46.0	9.9	138	202	
Hori.	250.017	QP	47.58	11.60	8.42	32.01	0.00	35.59	46.0	10.4	171	153	
Hori.	259.970	QP	44.12	11.94	8.49	32.01	0.00	32.54	46.0	13.4	142	203	
Hori.	300.013	QP	39.76	13.53	8.78	32.02	0.00	30.05	46.0	15.9	131	329	
Hori.	327.051	QP	39.82	14.02	8.94	31.98	0.00	30.80	46.0	15.2	100	173	
Hori.	350.011	QP	38.02	14.80	9.07	31.94	0.00	29.95	46.0	16.0	100	272	
Hori.	375.015	QP	38.60	14.95	9.16	31.96	0.00	30.75	46.0	15.2	100	201	
Hori.	500.008	QP	33.43	17.48	9.62	31.94	0.00	28.59	46.0	17.4	100	246	
Hori.	650.216	QP	34.37	18.99	10.18	31.96	0.00	31.58	46.0	14.4	100	144	
Hori.	3254.653	PK	49.06	29.05	5.60	38.30	2.28	47.69	73.9	26.2	143	50	
Hori.	4882.000	PK	57.64	31.74	6.39	38.55	2.28	59.50	73.9	14.4	192	172	
Hori.	7323.000	PK	45.25	37.42	7.87	39.33	2.28	53.49	73.9	20.4	150	0	
Hori.	9764.000	PK	45.52	39.37	9.06	39.62	2.28	56.61	73.9	17.2	150	0	
Hori.	12205.000	PK	45.48	39.40	10.39	40.25	2.28	57.30	73.9	16.6	150	0	
Vert.	38.226	QP	35.42	15.33	6.63	32.19	0.00	25.19	40.0	14.8	100	242	
Vert.	48.044	QP	41.87	11.74	6.79	32.19	0.00	28.21	40.0	11.7	100	105	
Vert.	53.615	QP	41.70	9.85	6.77	32.19	0.00	26.13	40.0	13.8	100	119	
Vert.	250.006	QP	48.11	11.60	8.42	32.01	0.00	36.12	46.0	**9.8**	100	68	
Vert.	650.216	QP	34.02	18.99	10.18	31.96	0.00	31.23	46.0	14.7	100	155	
Vert.	3254.643	PK	50.39	29.05	5.60	38.30	2.28	49.02	73.9	24.8	214	49	
Vert.	4882.000	PK	57.16	31.74	6.39	38.55	2.28	59.02	73.9	14.8	156	216	
Vert.	7323.000	PK	43.92	37.42	7.87	39.33	2.28	52.16	73.9	21.7	150	0	
Vert.	9764.000	PK	45.01	39.37	9.06	39.62	2.28	56.10	73.9	17.8	150	0	
Vert.	12205.000	PK	45.42	39.40	10.39	40.25	2.28	57.24	73.9	16.6	150	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Duty cycle correction factor relaxation

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	DCCF [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	3254.653	PK	49.06	29.05	5.60	38.30	-24.66	2.28	23.03	53.9	30.9	*1)
Hori.	4882.000	PK	57.64	31.74	6.39	38.55	-24.66	2.28	34.84	53.9	**19.1**	
Hori.	7323.000	PK	45.25	37.42	7.87	39.33	-24.66	2.28	28.83	53.9	25.1	
Hori.	9764.000	PK	45.52	39.37	9.06	39.62	-24.66	2.28	31.95	53.9	22.0	
Hori.	12205.000	PK	45.48	39.40	10.39	40.25	-24.66	2.28	32.64	53.9	21.3	
Vert.	3254.643	PK	50.39	29.05	5.60	38.30	-24.66	2.28	24.36	53.9	29.5	*1)
Vert.	4882.000	PK	57.16	31.74	6.39	38.55	-24.66	2.28	34.36	53.9	19.5	
Vert.	7323.000	PK	43.92	37.42	7.87	39.33	-24.66	2.28	27.50	53.9	26.4	
Vert.	9764.000	PK	45.01	39.37	9.06	39.62	-24.66	2.28	31.44	53.9	22.5	
Vert.	12205.000	PK	45.42	39.40	10.39	40.25	-24.66	2.28	32.58	53.9	21.3	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + DCCF + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB
DCCF refer to "Duty cycle correction factor" sheet.
*1) Four-thirds of Carrier frequency

Radiated Spurious Emission

Report No.	13211388S-F-R1				
Test place	Shonan EMC Lab.				
Semi Anechoic Chamber	No.3	No.2	No.2	No.3	No.3
Date	February 26, 2020	February 6, 2020	February 7, 2020	February 14, 2020	February 25, 2020
Temperature / Humidity	22 deg. C / 40 % RH	23 deg. C / 33 % RH	23 deg. C / 33 % RH	22 deg. C / 40 % RH	23 deg. C / 45 % RH
Engineer	Toshinori Yamada	Yusuke Tanikawara	Yusuke Tanikawara	Makoto Hosaka	Toshinori Yamada
	(30 MHz - 1000 MHz)	(1 GHz -2.8 GHz)	(2.8 GHz -13 GHz)	(13 GHz -18 GHz)	(18 GHz -26.5 GHz)
Mode	Tx, Hopping Off, DH5 2480 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.	83.507	QP	44.13	6.80	7.61	32.16	0.00	26.38	40.0	13.6	226	186	
Hori.	240.143	QP	48.67	11.31	8.35	32.02	0.00	36.31	46.0	**9.6**	132	206	
Hori.	250.011	QP	46.69	11.60	8.42	32.01	0.00	34.70	46.0	11.3	175	165	
Hori.	259.784	QP	44.46	11.93	8.49	32.01	0.00	32.87	46.0	13.1	135	216	
Hori.	300.014	QP	39.45	13.53	8.78	32.02	0.00	29.74	46.0	16.2	133	332	
Hori.	327.383	QP	39.74	14.02	8.94	31.98	0.00	30.72	46.0	15.2	100	168	
Hori.	350.015	QP	38.23	14.80	9.07	31.94	0.00	30.16	46.0	15.8	129	343	
Hori.	375.022	QP	38.59	14.95	9.16	31.96	0.00	30.74	46.0	15.2	100	206	
Hori.	500.012	QP	33.56	17.48	9.62	31.94	0.00	28.72	46.0	17.2	100	238	
Hori.	650.030	QP	34.30	18.99	10.18	31.96	0.00	31.51	46.0	14.4	100	138	
Hori.	2483.500	PK	45.29	28.35	14.10	38.62	2.28	51.40	73.9	22.5	161	122	
Hori.	3306.638	PK	50.29	28.84	5.60	38.27	2.28	48.74	73.9	25.1	202	118	
Hori.	4960.000	PK	54.32	31.99	6.44	38.55	2.28	56.48	73.9	17.4	143	166	
Hori.	7440.000	PK	44.98	37.58	7.94	39.51	2.28	53.27	73.9	20.6	150	0	
Hori.	9920.000	PK	45.75	39.47	9.14	39.51	2.28	57.13	73.9	16.7	150	0	
Hori.	12400.000	PK	45.31	38.78	10.52	40.02	2.28	56.87	73.9	17.0	150	0	
Vert.	38.162	QP	35.70	15.36	6.63	32.19	0.00	25.50	40.0	14.5	100	237	
Vert.	48.035	QP	41.86	11.74	6.79	32.19	0.00	28.20	40.0	11.8	100	104	
Vert.	54.075	QP	41.61	9.70	6.77	32.19	0.00	25.89	40.0	14.1	100	118	
Vert.	250.004	QP	48.14	11.60	8.42	32.01	0.00	36.15	46.0	9.8	100	69	
Vert.	650.030	QP	33.97	18.99	10.18	31.96	0.00	31.18	46.0	14.8	100	145	
Vert.	2483.500	PK	46.19	28.35	14.10	38.62	2.28	52.30	73.9	21.6	140	184	
Vert.	3306.408	PK	51.19	28.84	5.60	38.27	2.28	49.64	73.9	24.2	156	54	
Vert.	4960.000	PK	53.80	31.99	6.44	38.55	2.28	55.96	73.9	17.9	178	131	
Vert.	7440.000	PK	44.76	37.58	7.94	39.51	2.28	53.05	73.9	20.8	150	0	
Vert.	9920.000	PK	44.88	39.47	9.14	39.51	2.28	56.26	73.9	17.6	150	0	
Vert.	12400.000	PK	44.81	38.78	10.52	40.02	2.28	56.37	73.9	17.5	150	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Duty cycle correction factor relaxation

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	DCCF [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2483.500	PK	45.29	28.35	14.10	38.62	-24.66	2.28	26.74	53.9	27.2	
Hori.	3306.638	PK	50.29	28.84	5.60	38.27	-24.66	2.28	24.08	53.9	29.8	*1)
Hori.	4960.000	PK	54.32	31.99	6.44	38.55	-24.66	2.28	31.82	53.9	22.1	
Hori.	7440.000	PK	44.98	37.58	7.94	39.51	-24.66	2.28	28.61	53.9	25.3	
Hori.	9920.000	PK	45.75	39.47	9.14	39.51	-24.66	2.28	32.47	53.9	**21.4**	
Hori.	12400.000	PK	45.31	38.78	10.52	40.02	-24.66	2.28	32.21	53.9	21.7	
Vert.	2483.500	PK	46.19	28.35	14.10	38.62	-24.66	2.28	27.64	53.9	26.3	
Vert.	3306.408	PK	51.19	28.84	5.60	38.27	-24.66	2.28	24.98	53.9	28.9	*1)
Vert.	4960.000	PK	53.80	31.99	6.44	38.55	-24.66	2.28	31.30	53.9	22.6	
Vert.	7440.000	PK	44.76	37.58	7.94	39.51	-24.66	2.28	28.39	53.9	25.5	
Vert.	9920.000	PK	44.88	39.47	9.14	39.51	-24.66	2.28	31.60	53.9	22.3	
Vert.	12400.000	PK	44.81	38.78	10.52	40.02	-24.66	2.28	31.71	53.9	22.2	

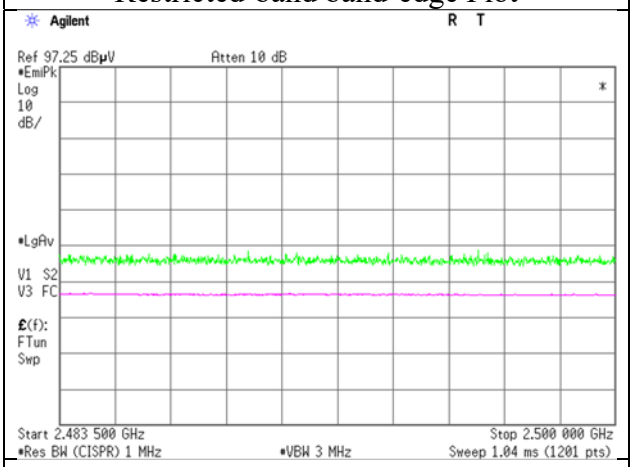
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + DCCF + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB
DCCF refer to "Duty cycle correction factor" sheet.
*1) Four-thirds of Carrier frequency

Radiated Spurious Emission
(Reference Plot for band-edge)

Report No.	13211388S-F-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	No.2
Date	February 6, 2020
Temperature / Humidity	23 deg. C / 33 % RH
Engineer	Yusuke Tanikawara (1 GHz -2.8 GHz)
Mode	Tx, Hopping Off, DH5 2480 MHz

Horizontal

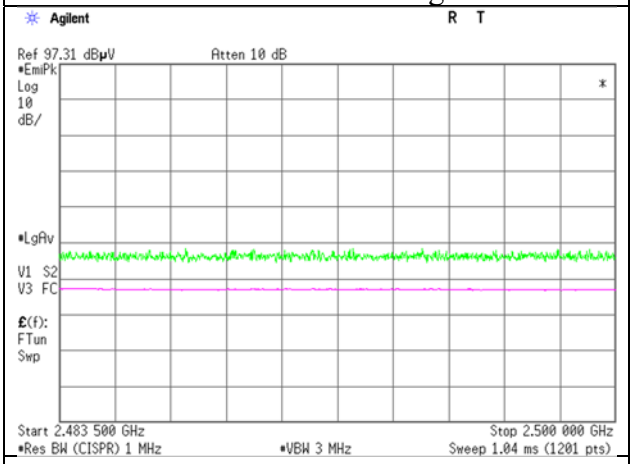
Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

* 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.	13211388S-F-R1				
Test place	Shonan EMC Lab.				
Semi Anechoic Chamber	No.3	No.2	No.2	No.3	No.3
Date	February 26, 2020	February 6, 2020	February 7, 2020	February 14, 2020	February 25, 2020
Temperature / Humidity	22 deg. C / 40 % RH	23 deg. C / 33 % RH	23 deg. C / 33 % RH	22 deg. C / 40 % RH	23 deg. C / 45 % RH
Engineer	Toshinori Yamada	Yusuke Tanikawara	Yusuke Tanikawara	Makoto Hosaka	Toshinori Yamada
	(30 MHz - 1000 MHz)	(1 GHz -2.8 GHz)	(2.8 GHz -13 GHz)	(13 GHz -18 GHz)	(18 GHz -26.5 GHz)
Mode	Tx, Hopping Off, 3DH5 2402 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.	84.199	QP	43.40	6.91	7.62	32.16	0.00	25.77	40.0	14.2	212	186	
Hori.	240.116	QP	48.62	11.31	8.35	32.02	0.00	36.26	46.0	9.7	135	204	
Hori.	250.007	QP	46.44	11.60	8.42	32.01	0.00	34.45	46.0	11.5	166	174	
Hori.	259.655	QP	44.50	11.92	8.49	32.01	0.00	32.90	46.0	13.1	129	202	
Hori.	300.019	QP	39.50	13.53	8.78	32.02	0.00	29.79	46.0	16.2	131	331	
Hori.	326.864	QP	40.02	14.01	8.94	31.98	0.00	30.99	46.0	15.0	100	175	
Hori.	350.013	QP	38.25	14.80	9.07	31.94	0.00	30.18	46.0	15.8	118	336	
Hori.	375.012	QP	38.46	14.95	9.16	31.96	0.00	30.61	46.0	15.3	100	214	
Hori.	500.024	QP	33.52	17.48	9.62	31.94	0.00	28.68	46.0	17.3	100	259	
Hori.	650.018	QP	34.10	18.99	10.18	31.96	0.00	31.31	46.0	14.6	100	146	
Hori.	2390.000	PK	45.55	28.51	14.01	38.68	2.28	51.67	73.9	22.2	209	137	
Hori.	3202.679	PK	48.54	29.26	5.57	38.32	2.28	47.33	73.9	26.5	154	26	
Hori.	4804.000	PK	61.95	31.71	6.34	38.55	2.28	63.73	73.9	10.1	155	165	
Hori.	7206.000	PK	44.56	37.30	7.79	39.15	2.28	52.78	73.9	21.1	150	0	
Hori.	9608.000	PK	44.55	38.78	8.97	39.74	2.28	54.84	73.9	19.0	150	0	
Hori.	12010.000	PK	45.42	39.43	10.26	40.48	2.28	56.91	73.9	16.9	150	0	
Vert.	38.497	QP	35.75	15.23	6.63	32.19	0.00	25.42	40.0	14.5	100	231	
Vert.	48.038	QP	41.91	11.74	6.79	32.19	0.00	28.25	40.0	11.7	100	114	
Vert.	53.699	QP	41.96	9.82	6.78	32.19	0.00	26.37	40.0	13.6	100	118	
Vert.	250.017	QP	48.13	11.60	8.42	32.01	0.00	36.14	46.0	9.8	100	70	
Vert.	650.018	QP	33.96	18.99	10.18	31.96	0.00	31.17	46.0	14.8	100	149	
Vert.	2390.000	PK	44.89	28.51	14.01	38.68	2.28	51.01	73.9	22.8	223	187	
Vert.	3202.672	PK	49.77	29.26	5.57	38.32	2.28	48.56	73.9	25.3	155	39	
Vert.	4804.000	PK	62.52	31.71	6.34	38.55	2.28	64.30	73.9	**9.6**	186	129	
Vert.	7206.000	PK	44.94	37.30	7.79	39.15	2.28	53.16	73.9	20.7	150	0	
Vert.	9608.000	PK	44.65	38.78	8.97	39.74	2.28	54.94	73.9	18.9	150	0	
Vert.	12010.000	PK	45.23	39.43	10.26	40.48	2.28	56.72	73.9	17.1	150	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Duty cycle correction factor relaxation

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	DCCF [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2390.000	PK	45.55	28.51	14.01	38.68	-24.65	2.28	27.02	53.9	26.9	
Hori.	3202.679	PK	48.54	29.26	5.57	38.32	-24.65	2.28	22.68	53.9	31.2	*1)
Hori.	4804.000	PK	61.95	31.71	6.34	38.55	-24.65	2.28	39.08	53.9	14.8	
Hori.	7206.000	PK	44.56	37.30	7.79	39.15	-24.65	2.28	28.13	53.9	25.8	
Hori.	9608.000	PK	44.55	38.78	8.97	39.74	-24.65	2.28	30.19	53.9	23.7	
Hori.	12010.000	PK	45.42	39.43	10.26	40.48	-24.65	2.28	32.26	53.9	21.6	
Vert.	2390.000	PK	44.89	28.51	14.01	38.68	-24.65	2.28	26.36	53.9	27.5	
Vert.	3202.672	PK	49.77	29.26	5.57	38.32	-24.65	2.28	23.91	53.9	30.0	*1)
Vert.	4804.000	PK	62.52	31.71	6.34	38.55	-24.65	2.28	39.65	53.9	**14.3**	
Vert.	7206.000	PK	44.94	37.30	7.79	39.15	-24.65	2.28	28.51	53.9	25.4	
Vert.	9608.000	PK	44.65	38.78	8.97	39.74	-24.65	2.28	30.29	53.9	23.6	
Vert.	12010.000	PK	45.23	39.43	10.26	40.48	-24.65	2.28	32.07	53.9	21.8	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + DCCF + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB
DCCF refer to "Duty cycle correction factor" sheet.
*1) Four-thirds of Carrier frequency

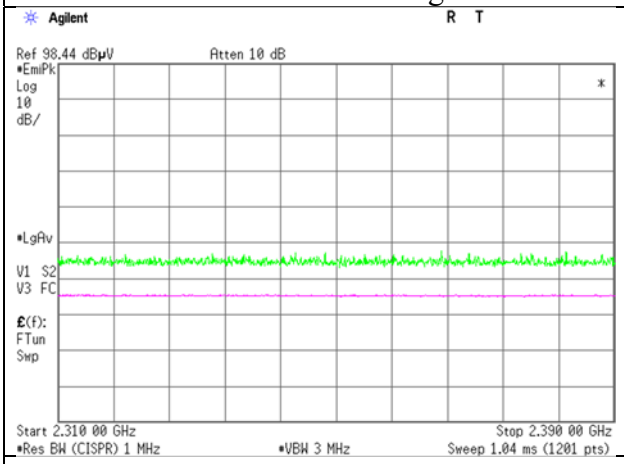
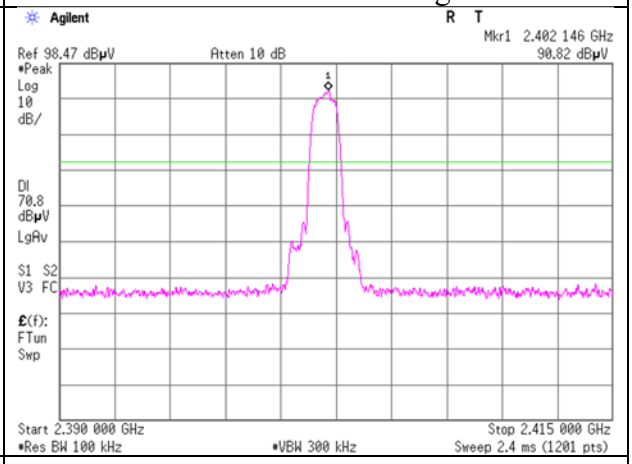
20 dBc Data Sheet (RBW 100 kHz, VBW 300 kHz)

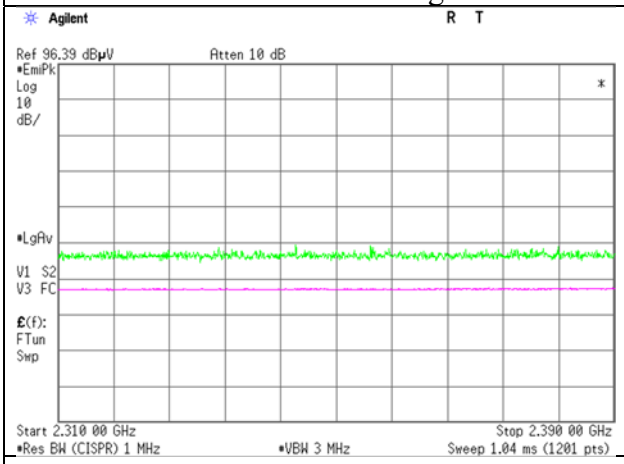
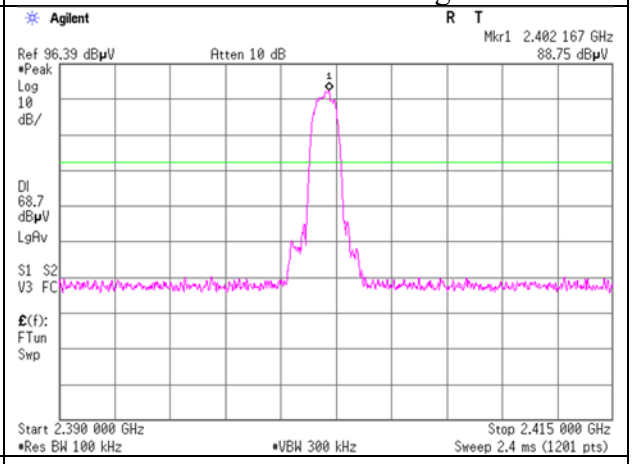
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2402.000	PK	90.76	28.48	14.02	38.67	2.28	96.87	-	-	Carrier
Hori.	2400.000	PK	36.76	28.48	14.02	38.67	2.28	42.87	76.87	34.0	
Vert.	2402.000	PK	88.49	28.48	14.02	38.67	2.28	94.60	-	-	Carrier
Vert.	2400.000	PK	36.30	28.48	14.02	38.67	2.28	42.41	74.60	32.1	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission
(Reference Plot for band-edge)

Report No.	13211388S-F-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	No.2
Date	February 6, 2020
Temperature / Humidity	23 deg. C / 33 % RH
Engineer	Yusuke Tanikawara (1 GHz -2.8 GHz)
Mode	Tx, Hopping Off, 3DH5 2402 MHz

Horizontal	
Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc Plot

Vertical	
Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc 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.	13211388S-F-R1				
Test place	Shonan EMC Lab.				
Semi Anechoic Chamber	No.3	No.2	No.2	No.3	No.3
Date	February 26, 2020	February 6, 2020	February 7, 2020	February 14, 2020	February 25, 2020
Temperature / Humidity	22 deg. C / 40 % RH	23 deg. C / 33 % RH	23 deg. C / 33 % RH	22 deg. C / 40 % RH	23 deg. C / 45 % RH
Engineer	Toshinori Yamada	Yusuke Tanikawara	Yusuke Tanikawara	Makoto Hosaka	Toshinori Yamada
	(30 MHz - 1000 MHz)	(1 GHz -2.8 GHz)	(2.8 GHz -13 GHz)	(13 GHz -18 GHz)	(18 GHz -26.5 GHz)
Mode	Tx, Hopping Off, 3DH5 2441 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.	83.488	QP	43.85	6.80	7.61	32.16	0.00	26.10	40.0	13.9	219	181	
Hori.	240.152	QP	48.57	11.31	8.35	32.02	0.00	36.21	46.0	**9.7**	140	205	
Hori.	250.007	QP	46.62	11.60	8.42	32.01	0.00	34.63	46.0	11.3	171	166	
Hori.	259.956	QP	44.52	11.94	8.49	32.01	0.00	32.94	46.0	13.0	132	209	
Hori.	300.013	QP	39.75	13.53	8.78	32.02	0.00	30.04	46.0	15.9	132	324	
Hori.	327.392	QP	40.10	14.02	8.94	31.98	0.00	31.08	46.0	14.9	100	173	
Hori.	349.868	QP	38.07	14.80	9.07	31.94	0.00	30.00	46.0	16.0	100	216	
Hori.	375.007	QP	38.54	14.95	9.16	31.96	0.00	30.69	46.0	15.3	100	213	
Hori.	500.016	QP	33.72	17.48	9.62	31.94	0.00	28.88	46.0	17.1	100	255	
Hori.	650.024	QP	34.18	18.99	10.18	31.96	0.00	31.39	46.0	14.6	100	151	
Hori.	3254.639	PK	50.03	29.05	5.60	38.30	2.28	48.66	73.9	25.2	143	50	
Hori.	4882.000	PK	59.32	31.74	6.39	38.55	2.28	61.18	73.9	12.7	156	167	
Hori.	7323.000	PK	44.91	37.42	7.87	39.33	2.28	53.15	73.9	20.7	150	0	
Hori.	9764.000	PK	44.96	39.37	9.06	39.62	2.28	56.05	73.9	17.8	150	0	
Hori.	12205.000	PK	45.03	39.40	10.39	40.25	2.28	56.85	73.9	17.0	150	0	
Vert.	38.482	QP	35.88	15.24	6.63	32.19	0.00	25.56	40.0	14.4	100	242	
Vert.	48.036	QP	41.90	11.74	6.79	32.19	0.00	28.24	40.0	11.7	100	124	
Vert.	53.626	QP	41.82	9.85	6.77	32.19	0.00	26.25	40.0	13.7	100	115	
Vert.	250.013	QP	48.17	11.60	8.42	32.01	0.00	36.18	46.0	9.8	100	67	
Vert.	650.024	QP	33.69	18.99	10.18	31.96	0.00	30.90	46.0	15.1	100	145	
Vert.	3254.653	PK	50.99	29.05	5.60	38.30	2.28	49.62	73.9	24.2	209	45	
Vert.	4882.000	PK	58.62	31.74	6.39	38.55	2.28	60.48	73.9	13.4	158	223	
Vert.	7323.000	PK	44.47	37.42	7.87	39.33	2.28	52.71	73.9	21.1	150	0	
Vert.	9764.000	PK	44.93	39.37	9.06	39.62	2.28	56.02	73.9	17.8	150	0	
Vert.	12205.000	PK	44.91	39.40	10.39	40.25	2.28	56.73	73.9	17.1	150	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Duty cycle correction factor relaxation

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	DCCF [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	3254.639	PK	50.03	29.05	5.60	38.30	-24.65	2.28	24.01	53.9	29.9	*1)
Hori.	4882.000	PK	59.32	31.74	6.39	38.55	-24.65	2.28	36.53	53.9	**17.4**	
Hori.	7323.000	PK	44.91	37.42	7.87	39.33	-24.65	2.28	28.50	53.9	25.4	
Hori.	9764.000	PK	44.96	39.37	9.06	39.62	-24.65	2.28	31.40	53.9	22.5	
Hori.	12205.000	PK	45.03	39.40	10.39	40.25	-24.65	2.28	32.20	53.9	21.7	
Vert.	3254.653	PK	50.99	29.05	5.60	38.30	-24.65	2.28	24.97	53.9	28.9	*1)
Vert.	4882.000	PK	58.62	31.74	6.39	38.55	-24.65	2.28	35.83	53.9	18.1	
Vert.	7323.000	PK	44.47	37.42	7.87	39.33	-24.65	2.28	28.06	53.9	25.8	
Vert.	9764.000	PK	44.93	39.37	9.06	39.62	-24.65	2.28	31.37	53.9	22.5	
Vert.	12205.000	PK	44.91	39.40	10.39	40.25	-24.65	2.28	32.08	53.9	21.8	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + DCCF + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB
DCCF refer to "Duty cycle correction factor" sheet.
*1) Four-thirds of Carrier frequency

Radiated Spurious Emission

Report No.	13211388S-F-R1				
Test place	Shonan EMC Lab.				
Semi Anechoic Chamber	No.3	No.2	No.2	No.3	No.3
Date	February 26, 2020	February 6, 2020	February 7, 2020	February 14, 2020	February 25, 2020
Temperature / Humidity	22 deg. C / 40 % RH	23 deg. C / 33 % RH	23 deg. C / 33 % RH	22 deg. C / 40 % RH	23 deg. C / 45 % RH
Engineer	Toshinori Yamada	Yusuke Tanikawara	Yusuke Tanikawara	Makoto Hosaka	Toshinori Yamada
	(30 MHz - 1000 MHz)	(1 GHz -2.8 GHz)	(2.8 GHz -13 GHz)	(13 GHz -18 GHz)	(18 GHz -26.5 GHz)
Mode	Tx, Hopping Off, 3DH5 2480 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.	83.965	QP	43.84	6.87	7.62	32.16	0.00	26.17	40.0	13.8	228	184	
Hori.	240.082	QP	48.57	11.31	8.35	32.02	0.00	36.21	46.0	9.7	131	210	
Hori.	250.005	QP	46.38	11.60	8.42	32.01	0.00	34.39	46.0	11.6	189	174	
Hori.	259.808	QP	44.48	11.93	8.49	32.01	0.00	32.89	46.0	13.1	128	213	
Hori.	300.008	QP	39.70	13.53	8.78	32.02	0.00	29.99	46.0	16.0	135	323	
Hori.	327.306	QP	39.94	14.02	8.94	31.98	0.00	30.92	46.0	15.0	100	177	
Hori.	350.380	QP	37.97	14.80	9.07	31.94	0.00	29.90	46.0	16.1	100	269	
Hori.	375.016	QP	38.29	14.95	9.16	31.96	0.00	30.44	46.0	15.5	100	211	
Hori.	500.019	QP	33.83	17.48	9.62	31.94	0.00	28.99	46.0	17.0	100	257	
Hori.	650.020	QP	34.40	18.99	10.18	31.96	0.00	31.61	46.0	14.3	100	152	
Hori.	2483.500	PK	45.47	28.35	14.10	38.62	2.28	51.58	73.9	22.3	132	153	
Hori.	3306.656	PK	48.06	28.84	5.60	38.27	2.28	46.51	73.9	27.3	227	150	
Hori.	4960.000	PK	55.63	31.99	6.44	38.55	2.28	57.79	73.9	16.1	149	168	
Hori.	7440.000	PK	45.47	37.58	7.94	39.51	2.28	53.76	73.9	20.1	150	0	
Hori.	9920.000	PK	45.36	39.47	9.14	39.51	2.28	56.74	73.9	17.1	150	0	
Hori.	12400.000	PK	44.86	38.78	10.52	40.02	2.28	56.42	73.9	17.4	150	0	
Vert.	38.320	QP	36.03	15.30	6.63	32.19	0.00	25.77	40.0	14.2	100	245	
Vert.	48.042	QP	41.89	11.74	6.79	32.19	0.00	28.23	40.0	11.7	100	124	
Vert.	53.936	QP	41.96	9.75	6.77	32.19	0.00	26.29	40.0	13.7	100	128	
Vert.	250.013	QP	48.46	11.60	8.42	32.01	0.00	36.47	46.0	**9.5**	100	73	
Vert.	650.020	QP	33.46	18.99	10.18	31.96	0.00	30.67	46.0	15.3	100	148	
Vert.	2483.500	PK	45.12	28.35	14.10	38.62	2.28	51.23	73.9	22.6	144	184	
Vert.	3306.397	PK	50.10	28.84	5.60	38.27	2.28	48.55	73.9	25.3	154	50	
Vert.	4960.000	PK	54.64	31.99	6.44	38.55	2.28	56.80	73.9	17.1	215	127	
Vert.	7440.000	PK	44.57	37.58	7.94	39.51	2.28	52.86	73.9	21.0	150	0	
Vert.	9920.000	PK	45.30	39.47	9.14	39.51	2.28	56.68	73.9	17.2	150	0	
Vert.	12400.000	PK	45.38	38.78	10.52	40.02	2.28	56.94	73.9	16.9	150	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Duty cycle correction factor relaxation

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	DCCF [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2483.500	PK	45.47	28.35	14.10	38.62	-24.65	2.28	26.93	53.9	27.0	
Hori.	3306.656	PK	48.06	28.84	5.60	38.27	-24.65	2.28	21.86	53.9	32.0	*1)
Hori.	4960.000	PK	55.63	31.99	6.44	38.55	-24.65	2.28	33.14	53.9	**20.8**	
Hori.	7440.000	PK	45.47	37.58	7.94	39.51	-24.65	2.28	29.11	53.9	24.8	
Hori.	9920.000	PK	45.36	39.47	9.14	39.51	-24.65	2.28	32.09	53.9	21.8	
Hori.	12400.000	PK	44.86	38.78	10.52	40.02	-24.65	2.28	31.77	53.9	22.1	
Vert.	2483.500	PK	45.12	28.35	14.10	38.62	-24.65	2.28	26.58	53.9	27.3	
Vert.	3306.397	PK	50.10	28.84	5.60	38.27	-24.65	2.28	23.90	53.9	30.0	*1)
Vert.	4960.000	PK	54.64	31.99	6.44	38.55	-24.65	2.28	32.15	53.9	21.8	
Vert.	7440.000	PK	44.57	37.58	7.94	39.51	-24.65	2.28	28.21	53.9	25.7	
Vert.	9920.000	PK	45.30	39.47	9.14	39.51	-24.65	2.28	32.03	53.9	21.9	
Vert.	12400.000	PK	45.38	38.78	10.52	40.02	-24.65	2.28	32.29	53.9	21.6	

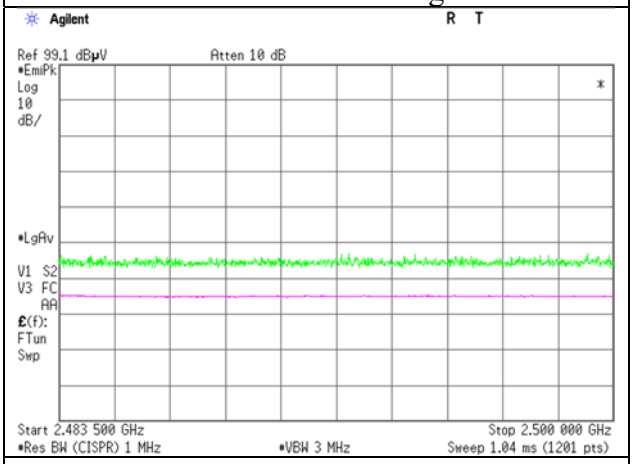
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + DCCF + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB
DCCF refer to "Duty cycle correction factor" sheet.
*1) Four-thirds of Carrier frequency

Radiated Spurious Emission
(Reference Plot for band-edge)

Report No.	13211388S-F-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	No.2
Date	February 6, 2020
Temperature / Humidity	23 deg. C / 33 % RH
Engineer	Yusuke Tanikawara (1 GHz -2.8 GHz)
Mode	Tx, Hopping Off, 3DH5 2480 MHz

Horizontal

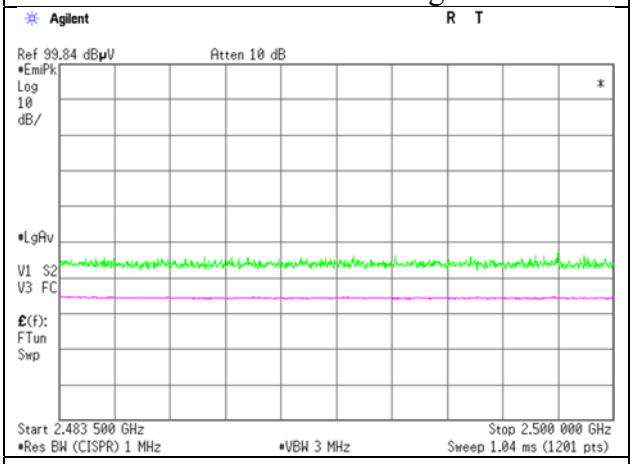
Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

Vertical

Restricted-band band-edge Plot

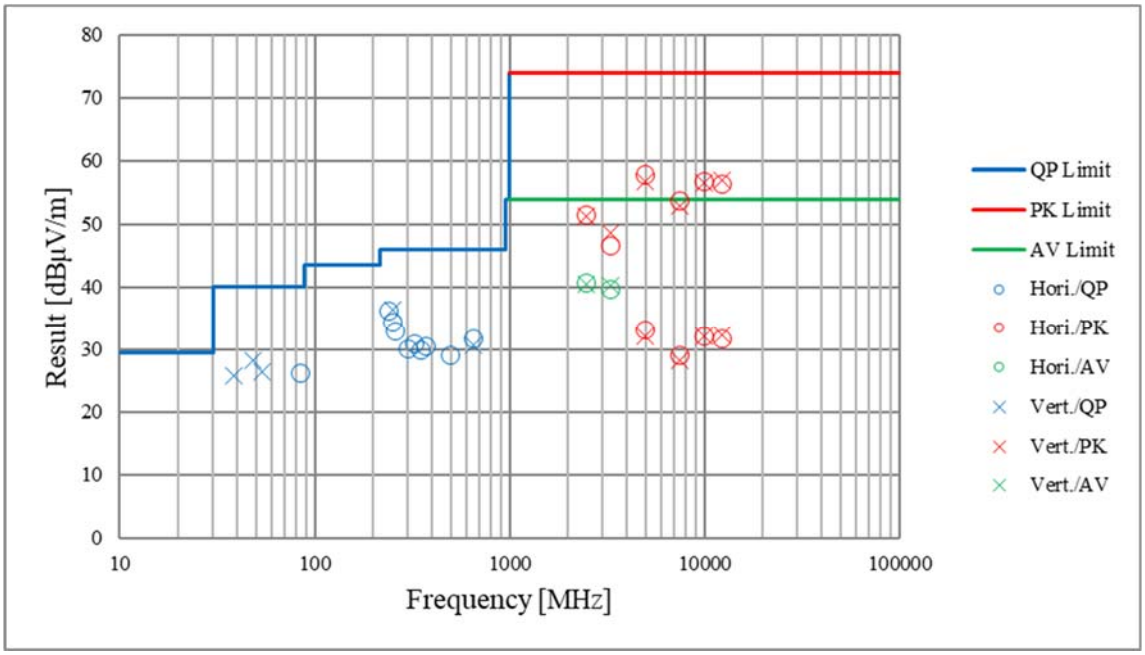


Trace Green : Peak Plot
Trace Purple : Average Plot

* 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.	13211388S-F-R1				
Test place	Shonan EMC Lab.				
Semi Anechoic Chamber	No.3	No.2	No.2	No.3	No.3
Date	February 26, 2020	February 6, 2020	February 7, 2020	February 14, 2020	February 25, 2020
Temperature / Humidity	22 deg. C / 40 % RH	23 deg. C / 33 % RH	23 deg. C / 33 % RH	22 deg. C / 40 % RH	23 deg. C / 45 % RH
Engineer	Toshinori Yamada (30 MHz - 1000 MHz)	Yusuke Tanikawara (1 GHz -2.8 GHz)	Yusuke Tanikawara (2.8 GHz -13 GHz)	Makoto Hosaka (13 GHz -18 GHz)	Toshinori Yamada (18 GHz -26.5 GHz)
Mode	Tx, Hopping Off, 3DH5 2480 MHz				



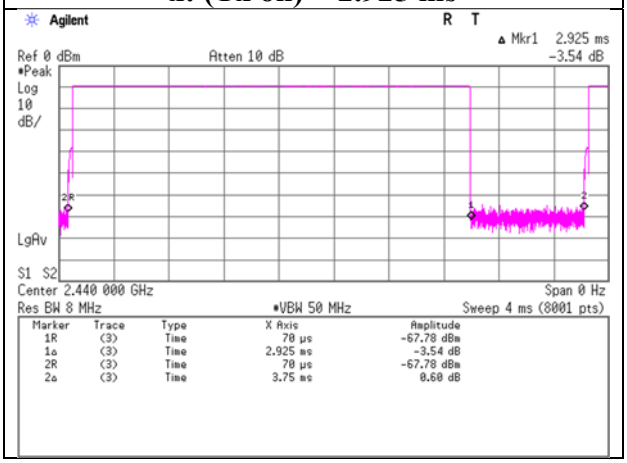
*These plots data contains sufficient number to show the trend of characteristic features for EUT.

Burst Rate Confirmation

Report No.	13211388S-F-R1
Test place	Shonan EMC Lab. No.1 Measurement Room
Date	February 4, 2020
Temperature / Humidity	25 deg. C / 50 % RH
Engineer	Makoto Hosaka
Mode	Tx, Hopping Off

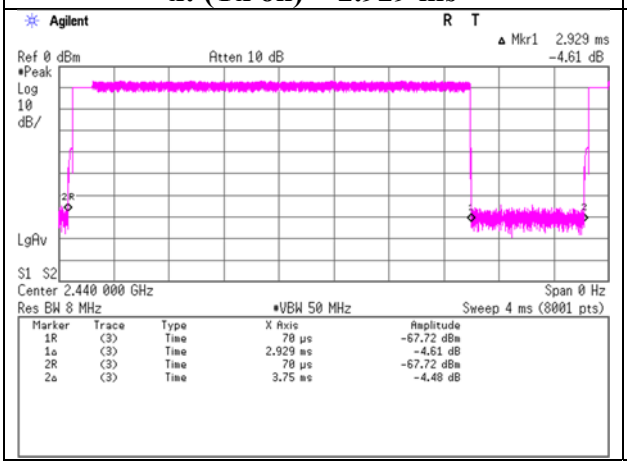
DH5

VBW: 1/x = 342 Hz<360 Hz
x: (Tx on) = 2.925 ms



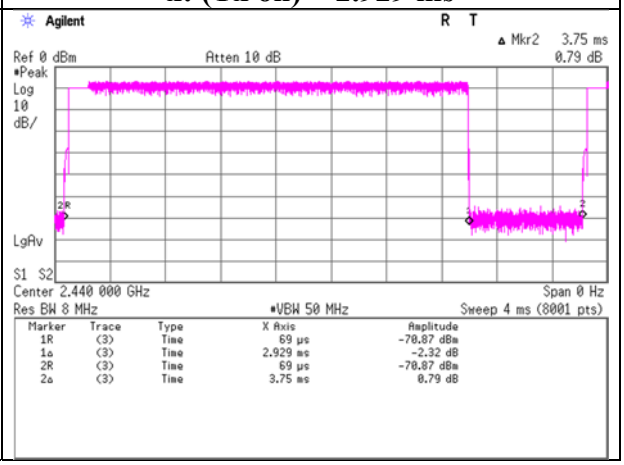
2DH5

VBW: 1/x = 342 Hz<360 Hz
x: (Tx on) = 2.929 ms



3DH5

VBW: 1/x = 342 Hz<360 Hz
x: (Tx on) = 2.929 ms



Duty cycle correction factor (DCCF)

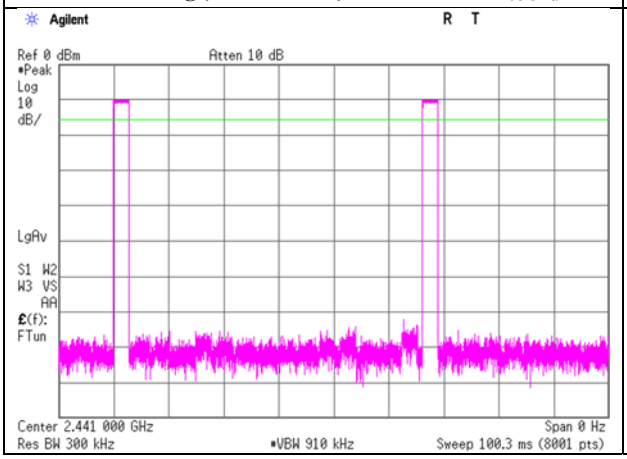
Report No.	13211388S-F-R1
Test place	Shonan EMC Lab. No.1 Measurement Room
Date	February 4, 2020
Temperature / Humidity	25 deg. C / 50 % RH
Engineer	Makoto Hosaka
Mode	Tx, Hopping On

DH5

1 cycle time: 194.6ms > 100ms

Tx On time 2.925 ms

DCCF = 20 * log (2.925 * 2 / 100) = -24.66 dB

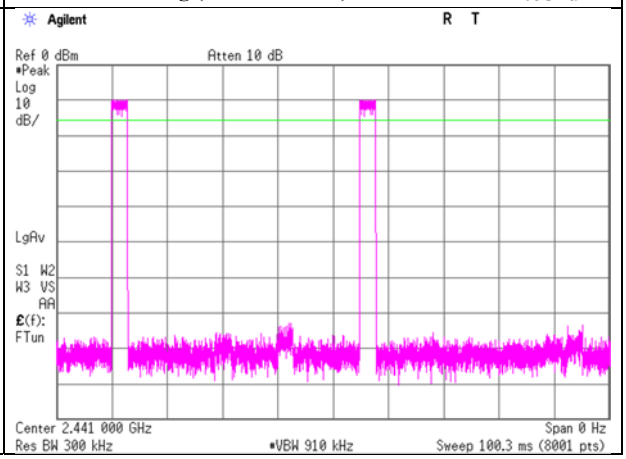


3DH5

1 cycle time: 194.6ms > 100ms

Tx On time 2.929 ms

DCCF = 20 * log (2.929 * 2 / 100) = -24.65 dB



APPENDIX 2: Test instruments

Test equipment

Test Item	Local ID	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Cal Int
RE	COTS-SEMI-5	170932	EMI Software	TSJ	TEPTO-DV3(RE,CE,ME,PE)	-	-	-
RE	KJM-02	146432	Measure	TAJIMA	GL19-55	-	-	-
RE	KSA-08	145089	Spectrum Analyzer	Keysight Technologies Inc	E4446A	MY46180525	2019/11/05	12
RE	SAEC-02(SVSWR)	145598	Semi-Anechoic Chamber	TDK	SAEC-02(SVSWR)	2	2019/05/09	12
RE	SAEC-03(NSA)	145565	Semi-Anechoic Chamber	TDK	SAEC-03(NSA)	3	2019/04/08	12
RE	SAEC-03(SVSWR)	145566	Semi-Anechoic Chamber	TDK	SAEC-03(SVSWR)	3	2019/05/03	12
RE	SAF-03	145126	Pre Amplifier	SONOMA	310N	290213	2020/02/19	12
RE	SAF-05	145128	Pre Amplifier	Toyo Corporation	TPA0118-36	1440490	2019/07/12	12
RE	SAF-06	145005	Pre Amplifier	Toyo Corporation	TPA0118-36	1440491	2020/02/20	12
RE	SAF-08	145007	Pre Amplifier	Toyo Corporation	HAP18-26W	19	2019/03/05	12
RE	SAT10-06	145137	Attenuator	Keysight Technologies Inc	8493C-010	74865	2019/11/06	12
RE	SAT6-13	167094	Attenuator	JFW	50HF-006N	-	2020/02/21	12
RE	SBA-03	145023	Biconical Antenna	Schwarzbeck	BBA9106	91032666	2019/05/07	12
RE	SCC-C1/C2/C3/C4/C5/C10/SRSE-03	145171	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906	-/0901-271(RF Selector)	2019/04/19	12
RE	SCC-G15	145176	Coaxial Cable	Suhner	SUCOFLEX 102	32703/2	2019/03/27	12
RE	SCC-G41	151617	Coaxial Cable	Junkosha	MWX221-01000NFSNMS/B	1612S006	2020/01/08	12
RE	SCC-G43	156380	Coaxial Cable	HUBER+SUNER	SUCOFLEX 104 E	SN MY 13406/4E	2019/07/03	12
RE	SCC-G50	178573	Coaxial Cable	HUBER+SUNER	SUCOFLEX 104 E	MY13407/4E	2019/03/26	12
RE	SCC-G51	178572	Coaxial Cable	HUBER+SUNER	SUCOFLEX 104	800288 /4A	2019/03/26	12
RE	SCC-G57	179540	Coaxial Cable	Huber+Suhner	SUCOFLEX 102	802815/2	2019/05/16	12
RE	SCC-G58	183047	Coaxial Cable	HUBER+SUNER	SUCOFLEX 104	800287/4A	2019/07/23	12
RE	SFL-18	145305	Highpass Filter	MICRO-TRONICS	HPM50111	119	2019/04/16	12
RE	SHA-02	145384	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-726	2019/06/26	12
RE	SHA-03	145501	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-739	2019/06/26	12
RE	SHA-04	145512	Horn Antenna	ETS LINDGREN	3160-09	00094868	2019/06/26	12
RE	SJM-09	145336	Measure	PROMART	SEN1935	-	-	-
RE	SLA-07	145529	Logperiodic Antenna	Schwarzbeck	VUSLP9111B	196	2019/05/07	12
RE	SOS-03	146317	Humidity Indicator	A&D	AD-5681	4063325	2019/10/08	12
RE	SOS-05	146293	Humidity Indicator	A&D	AD-5681	4062518	2019/10/08	12
RE	STR-07	146209	Test Receiver	Rohde & Schwarz	ESU26	100484	2019/09/13	12
RE	STR-08	150463	Test Receiver	Rohde & Schwarz	ESW44	101581	2019/11/22	12
RE	STS-02	145793	Digital Hitester	HIOKI	3805-50	80997819	2019/04/02	12
RE	STS-03	146210	Digital Hitester	HIOKI	3805-50	80997823	2019/10/01	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