

# TEST REPORT

For

## Microcomputer Board

In conformity with

### FCC CFR 47 Part15 Subpart C

**Model** : RTK7EKA4W1S00000BJ  
**FCC ID** : 2AEMXEKRA4W1Q56  
**Report No.** : WE200203BB2-11  
**Issue Date** : March 6, 2020

**Prepared for**

Renesas Electronics Corporation  
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**Prepared by**

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## History

Report No.	Date	Revisions	Issued By
WE200203BB2-11	March 6, 2020	Initial Issue	K. Onishi

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## 1 General information

### 1.1 Product information from applicant

Test item	: Microcomputer Board
Manufacturer	: meistier corporation
Address	: 2081-17 Tabaru, Mashiki-machi, Kamimashiki-gun, Kumamoto
Model (HVIN/PMN)	: RTK7EKA4W1S00000BJ
FCC ID	: 2AEMXEKRA4W1Q56
Serial number	: WS011
Hardware version	: Ver. 1.0
Software version	: Ver. 1.0
Operating frequency	: 2402 - 2480 MHz
Modulation	: GFSK (Bluetooth Ver. 5.0 LE)
Antenna Gain	: +1.2 dBi (manufacturer declaration)
Receipt date of EUT	: February 12, 2020
Nominal power source voltages	: DC 5.0 V (USB)

### 1.2 Test(s) performed/ Summary of test result

Test specification(s)	: FCC CFR 47 Part 15 Subpart C (01 Oct. 2018)
Test method(s)	: ANSI C63.10: 2013
Test(s) started	: March 2, 2020
Test(s) completed	: March 6, 2020
Summary of test result	: <u>Complied</u>

Note: The above judgment is only based on the measurement data and it does not include the measurement uncertainty. Accordingly, the statement below is applied to the test result.

The EUT complies with the limit required in the standard in case that the margin is not less than the measurement uncertainty in the Laboratory.

Compliance of the EUT is more probable than non-compliance in case that the margin is less than the measurement uncertainty in the Laboratory.

Test engineer

:   
K. Onishi  
Wireless testing laboratory

Reviewer

:   
Y. Taki  
Manager, Wireless testing laboratory

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JP 053243

## 1.3 Test facility

### [Yokohama Laboratory]

Address: 472, Nippa-cho, Kohoku-ku, Yokohama, 223-0057, Japan  
TEL: +81-45-534-0645  
FAX: +81-45-592-7506

Accredited by National Voluntary Laboratory Accreditation Program (NVLAP) for the emission tests stated in the scope of the certificate under Certificate Number 200780-0

Registered by Innovation, Science and Economic Development Canada (ISED):  
The registered CAB identifier is JP0009.

Registered by Voluntary Control Council for Interference by Information Technology Equipment (VCCI)  
Each registered facility number is as follows;  
Test site A-0045

### [Kitayamata laboratory]

Address: 3-5-23, Kitayamata, Tsuzuki-ku, Yokohama, 224-0021, Japan  
TEL: +81-45-550-3520  
FAX: +81-45-592-7506

Accredited by National Voluntary Laboratory Accreditation Program (NVLAP) for the emission tests stated in the scope of the certificate under Certificate Number 200780-0

Registered by Innovation, Science and Economic Development Canada (ISED):  
The registered CAB identifier is JP0009.

Registered by Voluntary Control Council for Interference by Information Technology Equipment (VCCI)  
Each registered facility number is as follows;  
Test site A-0212

This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.



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## 1.4 Measurement uncertainty

The treatment of uncertainty is based on the general matters on the definition of uncertainty in “Guide to the expression of uncertainty in measurement (GUM)” published by ISO. The Lab’s uncertainty is determined by referring ETSI TR 100 028-1 V1.4.1 (2001-12).

The uncertainty of the measurement result in the level of confidence of approximately 95% (k=2) is as follows;

Conducted emission (150 kHz - 30 MHz):	± 3.3 dB
Radiated emission (9 kHz - 30 MHz):	± 5.0 dB
Radiated emission (30 MHz - 1000 MHz):	± 5.2 dB
Radiated emission (1 GHz - 6 GHz):	± 4.9 dB
Radiated emission (6 GHz - 18 GHz):	± 4.9 dB
Radiated emission (18 GHz - 26 GHz):	± 5.5 dB

## 1.5 Summary of test results

Requirement	Section in FCC	Result	Section in this report
Occupied Bandwidth (99 %)	2.1049	Complied	2.1
6 dB Bandwidth	15.247 (a) (2)	Complied	2.2
Peak Output Power	15.247 (b) (3)	Complied	2.3
Conducted Spurious Emission	15.247 (d)	Complied	2.4
Power Spectral Density	15.247 (e)	Complied	2.5
Transmitter Radiated Spurious Emissions	15.247(d), 15.205 (a)	Complied	2.6
AC power line conducted emissions	15.207	Complied	2.7

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## 1.6 Setup of equipment under test (EUT)

### 1.6.1 Test configuration of EUT

#### Equipment(s) under test

No.	Item	Model No.	Manufacture	Serial No.
A	Microcomputer Board	RTK7EKA4W1S00000BJ	meistier corporation	WS011
-	-	-	-	-

#### Support Equipment(s)

No.	Item	Model No.	Manufacture	Serial No.
B	PC	PC-VK17HBBCD	NEC	26012321A
C	AC adapter	ADP-65JH E	NEC	2208800DD

#### Connected cable(s)

No.	Item	From	To	Length [m]	Shield	Ferrite Core
1	USB cable	A	B	1.2	Yes	Yes
2	DC cable	B	C	1.8	No	Yes
3	AC cable	C	AC mains	1.8	No	Yes

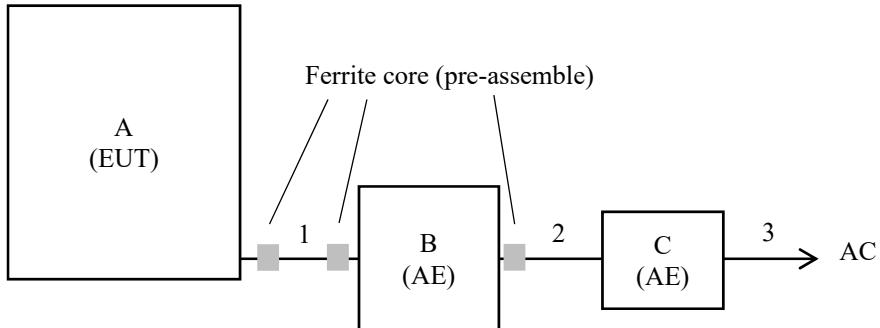
### 1.6.2 Operating condition:

- Tx (2402MHz): The EUT is in normal transmission mode at 2402MHz (2Mbps, 1Mbps)
- Tx (2442MHz): The EUT is in normal transmission mode at 2442MHz (2Mbps, 1Mbps)
- Tx (2480MHz): The EUT is in normal transmission mode at 2480MHz (2Mbps, 1Mbps)

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### 1.6.3 Setup diagram of tested system



### 1.7 Equipment modifications

No modifications have been made to the equipment in order to achieve compliance with the applicable standards described in clause 1.2.

### 1.8 Deviation from the standard

No deviations from the standards described in clause 1.2.

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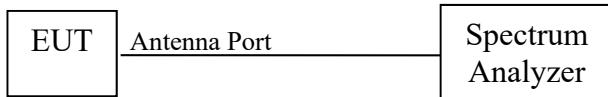
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## 2 Test procedure and test data

### 2.1 Occupied Bandwidth (99%)

#### Test setup

Test setup is the following drawing. The antenna port of EUT was connected to the spectrum analyzer.



#### Test procedure

Spectrum analyzer is set as below according to ANSI C63.10 clause 6.9

- RBW: 1 to 5 % of OBW	- VBW > 3 x RBW
- Span: OBW x 1.5 to 5	- Trace: Max hold

#### Limitation

There are no limitations.

The measurement value is used for the emission designator.

#### Test equipment used (refer to List of utilized test equipment)

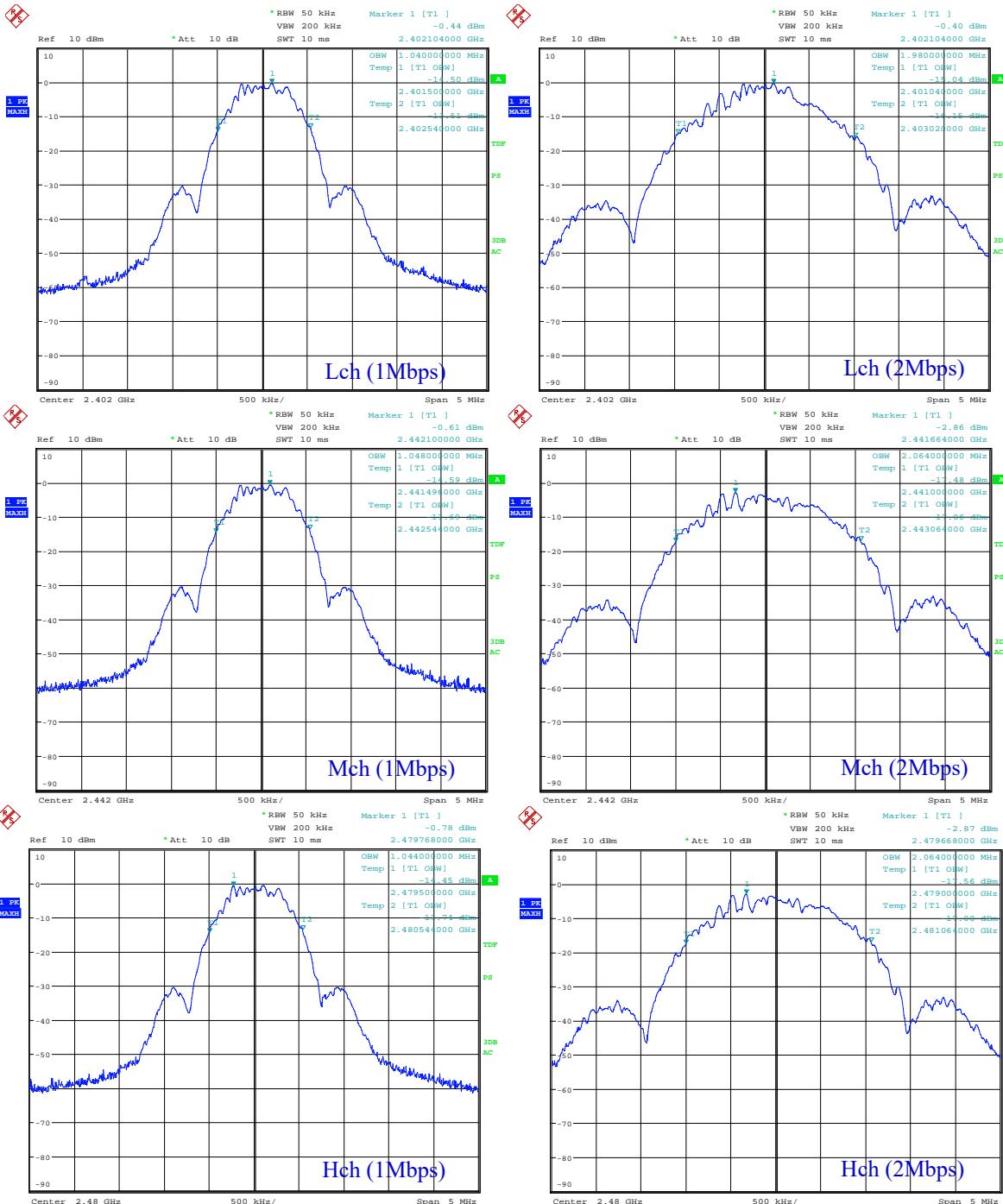
TR06	CL31	-	-	-	-
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#### Test results

Transmission Frequency [MHz]	Occupied Bandwidth [MHz]	
	1Mbps	2Mbps
2402	1.040	1.980
2442	1.048	2.064
2480	1.044	2.064

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Tested Date: March 6, 2020  
 Humidity: 28 %

Temperature: 18 degC  
 Atmos. Press: 1019 hPa

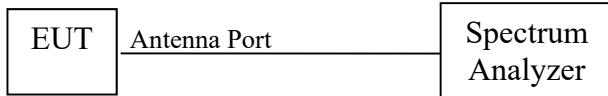
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## 2.2 6dB Bandwidth

### Test setup

Test setup is the following drawing. The antenna port of EUT was connected to the spectrum analyzer.



### Test procedure

Spectrum analyzer is set as below according to ANSI C63.10 clause 11.8

- RBW: 100 kHz
- VBW: 300 kHz
- Detector: Peak
- Trace: Max hold

### Applicable rule and limitation

15.247 (a) (2): Systems using digital modulation techniques may operate in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

### Test equipment used (refer to List of utilized test equipment)

TR06	CL31	-	-	-	-
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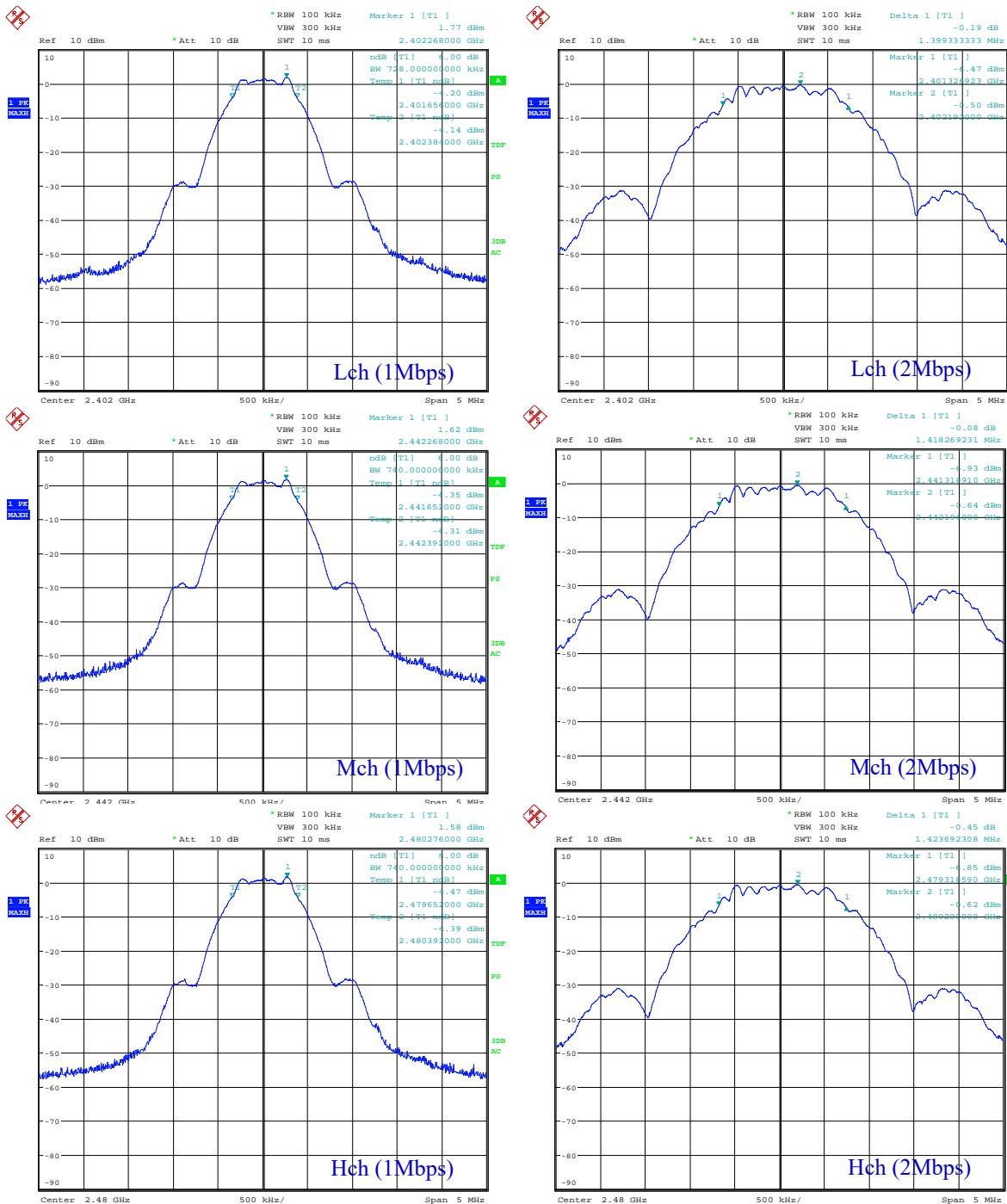
### Test results - Complied with requirement

### Test Data

Transmission Frequency [MHz]	6 dB Bandwidth [kHz]		Limit [kHz]
	1Mbps	2Mbps	
2402	728.0	1399.3	500
2442	740.0	1418.2	500
2480	740.0	1423.6	500

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Tested Date: March 6, 2020  
 Humidity: 28 %

Temperature: 18 degC  
 Atmos. Press: 1019 hPa

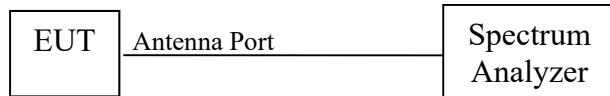
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## 2.3 Peak Output Power

### Test setup

Test setup is the following drawing. The antenna port of EUT was connected to the spectrum analyzer.



### Test procedure

Spectrum analyzer is set as below according to ANSI C63.10 clause 11.9

- RBW > 6dB BW
- VBW > 3 x RBW
- Span > 3 x RBW
- Detector: Peak
- Trace: Max hold

### Applicable rule and limitation

15.247(b) (3): For systems using digital modulation in the 902-928 MHz, 2400-2483.5MHz, and 5725-5850 MHz bands: 1 Watt (30 dBm).

### Test equipment used (refer to List of utilized test equipment)

TR06	CL31	-	-	-	-
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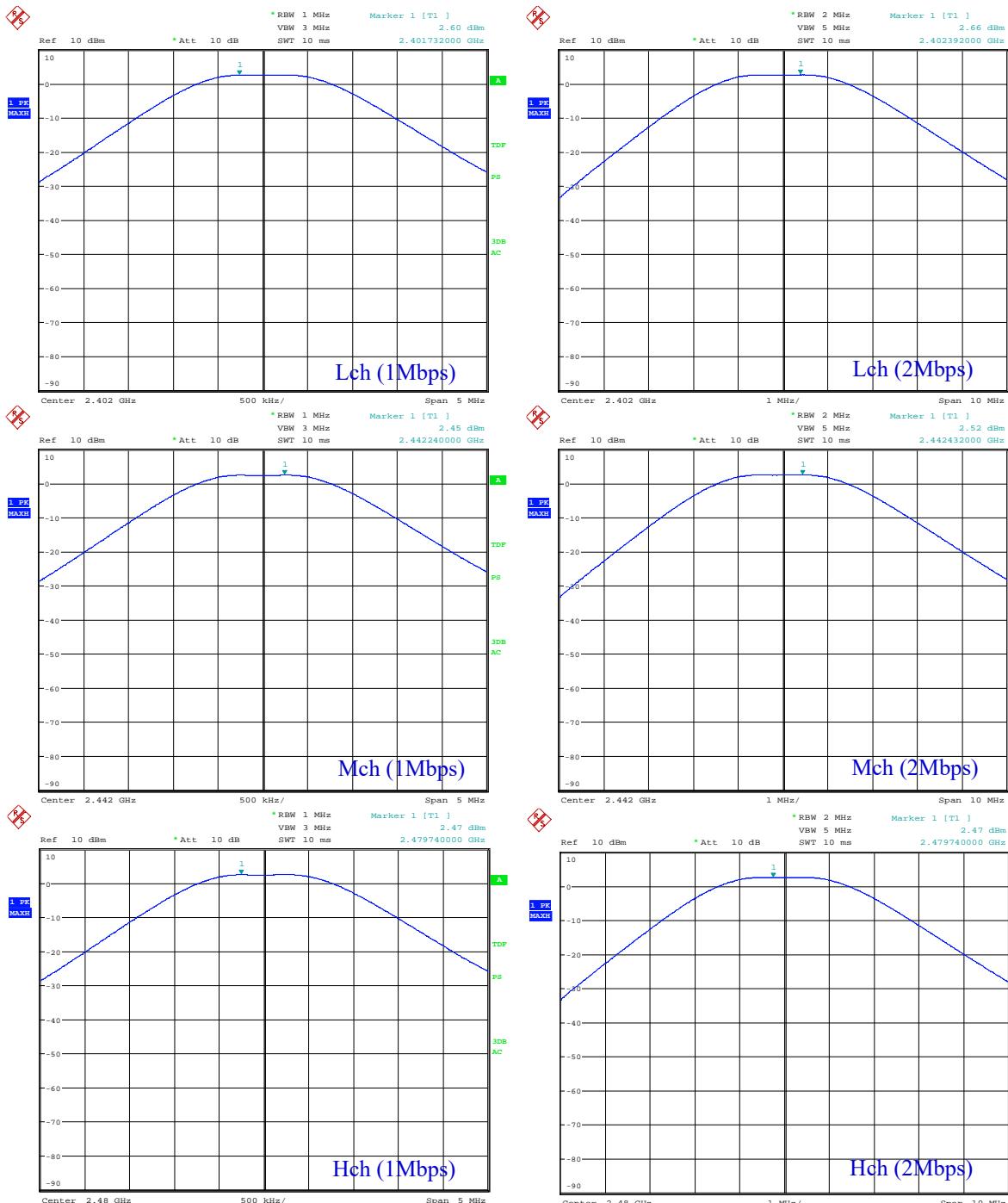
### Test results - Complied with requirement

### Test Data

Transmission Frequency [MHz]	Output Power [dBm]		Limit [dBm]
	1Mbps	2Mbps	
2402	2.60	<b>2.66</b>	30
2442	2.45	2.52	30
2480	2.47	2.47	30

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Tested Date: March 6, 2020  
 Humidity: 28 %

Temperature: 18 degC  
 Atmos. Press: 1019 hPa

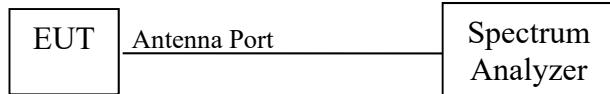
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## 2.4 Conducted Spurious Emissions

### Test setup

Test setup is the following drawing. The antenna port of EUT was connected to the spectrum analyzer.



### Test procedure

Spectrum analyzer is set as below according to ANSI C63.10 clause 7.8.8

- RBW: 100 kHz
- VBW: 300 kHz
- Detector: Peak
- Trace: Max hold

### Limitation

15.247(d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

### Test equipment used (refer to List of utilized test equipment)

TR06	CL31	-	-	-	-
------	------	---	---	---	---

### Test results - Complied with requirement

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## Test Data

Operating mode: Tx (2402MHz, 1Mbps)

Frequency [GHz]	Spurious level [dBm]	Carrier level [dBm]	Limit (-20dBc) [dBm]	Result
4.804	-50.04	1.80	-18.20	Pass
7.205	-61.85	1.80	-18.20	Pass
9.609	-34.27	1.80	-18.20	Pass
14.413	-41.01	1.80	-18.20	Pass
16.815	-45.42	1.80	-18.20	Pass
19.214	-59.61	1.80	-18.20	Pass

Operating mode: Tx (2442MHz, 1Mbps)

Frequency [GHz]	Spurious level [dBm]	Carrier level [dBm]	Limit (-20dBc) [dBm]	Result
4.884	-48.36	1.66	-18.34	Pass
7.326	-61.54	1.66	-18.34	Pass
9.767	-35.75	1.66	-18.34	Pass
14.650	-40.17	1.66	-18.34	Pass
17.092	-46.78	1.66	-18.34	Pass
19.534	-61.35	1.66	-18.34	Pass

Operating mode: Tx (2480MHz, 1Mbps)

Frequency [GHz]	Spurious level [dBm]	Carrier level [dBm]	Limit (-20dBc) [dBm]	Result
4.960	-46.83	1.64	-18.36	Pass
7.439	-56.06	1.64	-18.36	Pass
9.919	-35.36	1.64	-18.36	Pass
14.878	-40.59	1.64	-18.36	Pass
17.361	-49.00	1.64	-18.36	Pass
19.842	-64.53	1.64	-18.36	Pass

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Operating mode: Tx (2402MHz, 2Mbps)

Frequency [GHz]	Spurious level [dBm]	Carrier level [dBm]	Limit (-20dBc) [dBm]	Result
4.803	-53.06	-0.39	-20.39	Pass
7.204	-63.13	-0.39	-20.39	Pass
<b>9.606</b>	<b>-35.13</b>	<b>-0.39</b>	<b>-20.39</b>	<b>Pass</b>
14.409	-42.90	-0.39	-20.39	Pass
16.810	-49.30	-0.39	-20.39	Pass
19.212	-60.83	-0.39	-20.39	Pass

Operating mode: Tx (2442MHz, 2Mbps)

Frequency [GHz]	Spurious level [dBm]	Carrier level [dBm]	Limit (-20dBc) [dBm]	Result
4.883	-49.68	-0.55	-20.55	Pass
7.324	-62.13	-0.55	-20.55	Pass
9.766	-35.89	-0.55	-20.55	Pass
14.649	-44.04	-0.55	-20.55	Pass
17.090	-50.61	-0.55	-20.55	Pass
19.533	-65.51	-0.55	-20.55	Pass

Operating mode: Tx (2480MHz, 2Mbps)

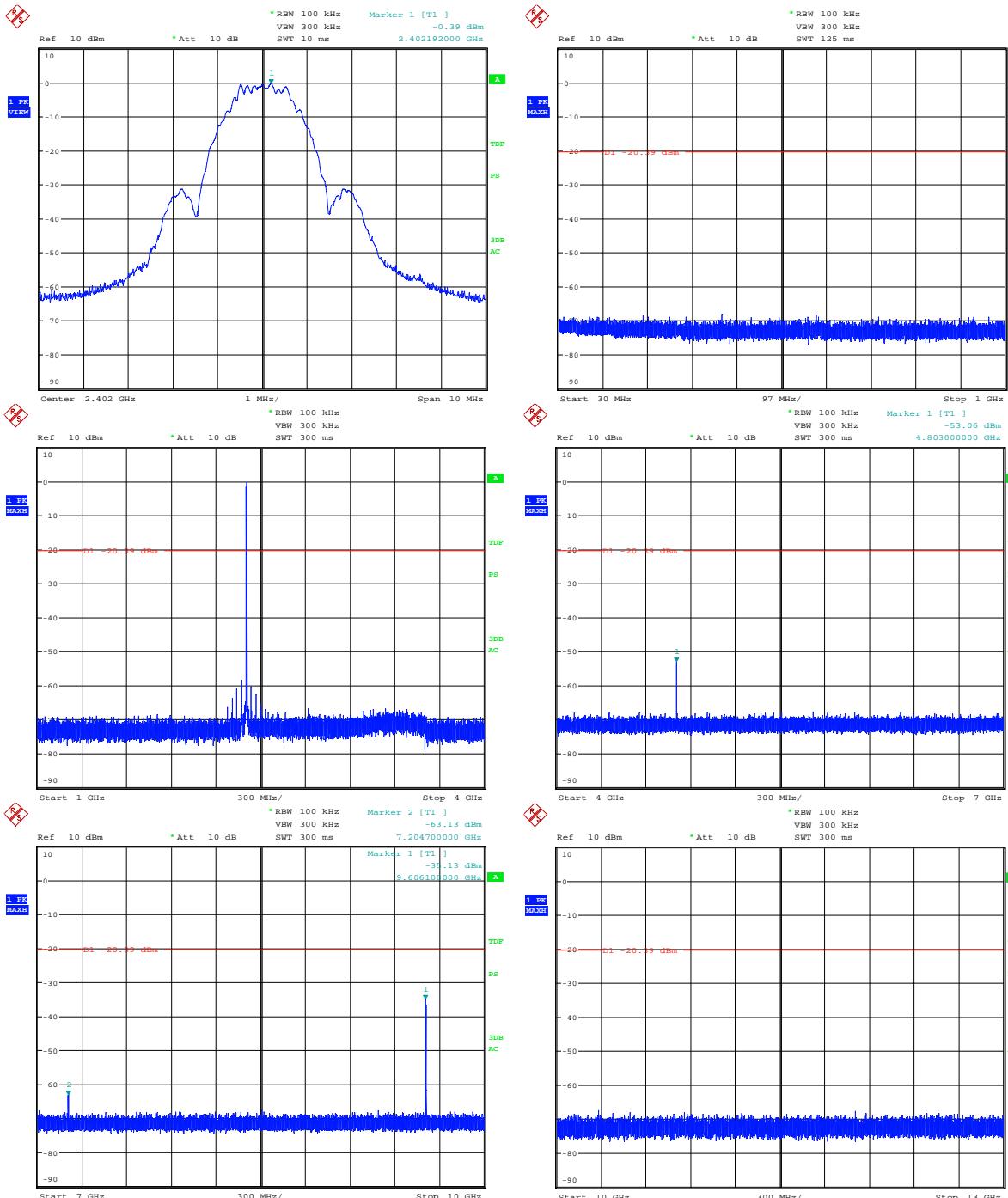
Frequency [GHz]	Spurious level [dBm]	Carrier level [dBm]	Limit (-20dBc) [dBm]	Result
4.959	-47.66	-0.61	-20.61	Pass
7.441	-58.29	-0.61	-20.61	Pass
9.918	-36.43	-0.61	-20.61	Pass
14.877	-42.40	-0.61	-20.61	Pass
17.356	-50.74	-0.61	-20.61	Pass
19.844	-64.82	-0.61	-20.61	Pass

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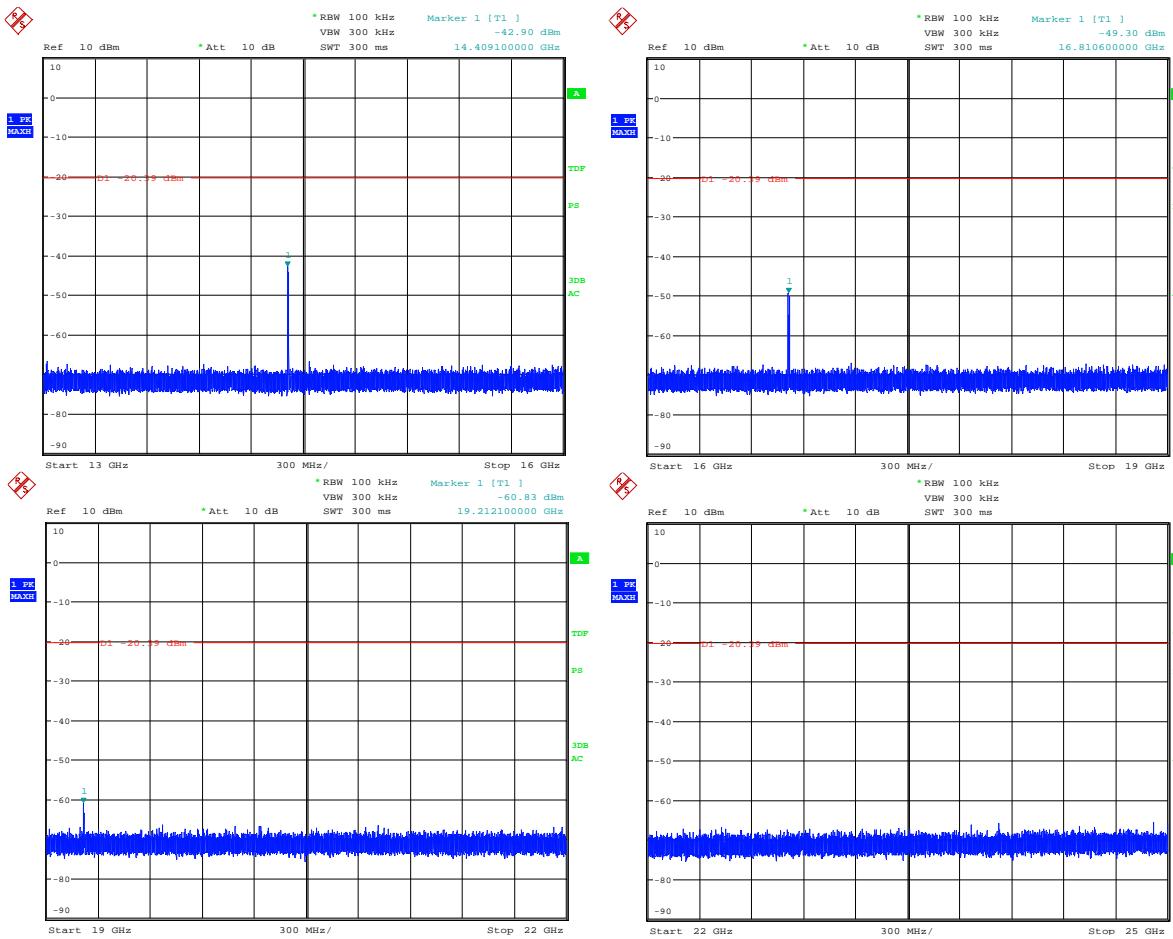
[Chart]

Tx (2402MHz, 2Mbps)



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Tested Date: March 6, 2020  
 Humidity: 28 %

Temperature: 18 degC  
 Atmos. Press: 1019 hPa

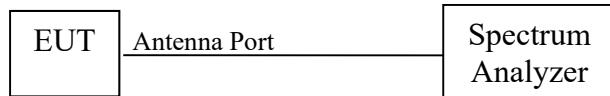
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## 2.5 Power Spectral density

### Test setup

Test setup is the following drawing. The antenna port of EUT was connected to the spectrum analyzer.



### Test procedure

Spectrum analyzer is set as below according to ANSI C63.10 clause 11.10

- RBW: 3 kHz
- VBW: 10 kHz
- Span > 1.5 x 6dB BW
- Detector: Peak
- Trace: Max hold

### Limitation

15.247(e): For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

### Test equipment used (refer to List of utilized test equipment)

TR06	CL31	-	-	-	-
------	------	---	---	---	---

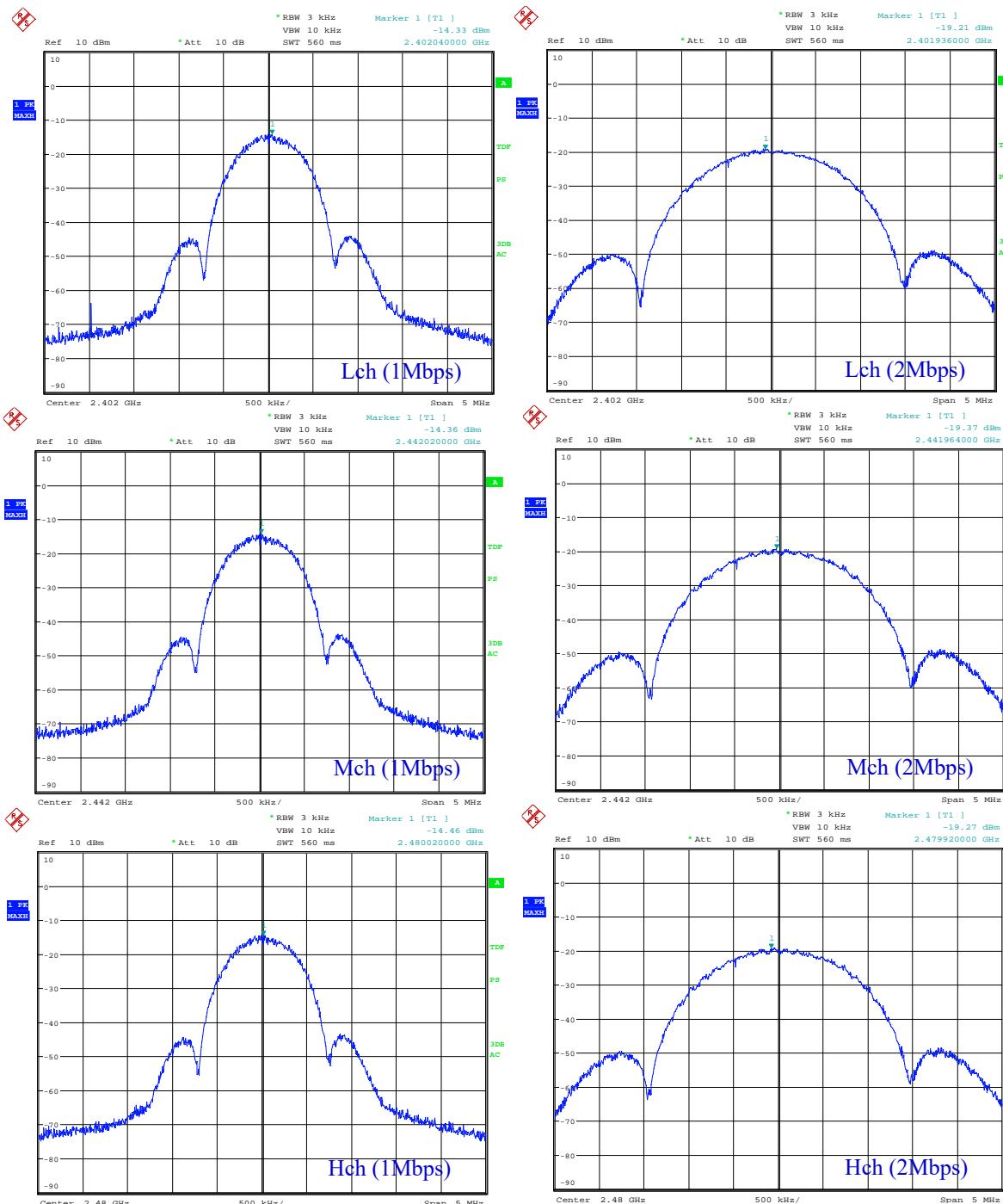
### Test results - Complied with requirement

### Test Data

Transmission Frequency [MHz]	Spectral Density [dBm]		Limit [dBm]
	1Mbps	2Mbps	
2402	-14.33	-19.21	8
2442	-14.36	-19.37	8
2480	-14.46	-19.27	8

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Tested Date: March 6, 2020  
 Humidity: 28 %

Temperature: 18 degC  
 Atmos. Press: 1019 hPa

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## 2.6 Transmitter Radiated Spurious Emissions

### Test setup

Test setup was implemented according to the method of ANSI C63.10 clause 6.

### Test procedure

Measurement procedures were implemented according to the method of ANSI C63.10 clauses 6.  
The test receiver is set as below

[9 - 150 kHz]  
RBW: 200 Hz, Detector: QP

[150 kHz - 30 MHz]  
RBW: 9 kHz, Detector: QP

[30 - 1000 MHz]  
RBW: 120 kHz, Detector: QP

[above 1000 MHz]  
RBW: 1 MHz, Detector: Ave/PK

### Applicable rule and limitation

Except as shown in paragraph 15.205 (d) of this section, only spurious emissions are permitted in any of the frequency bands listed (FCC 15.205)

The field strength of emissions appearing within these frequency bands shall not exceed the limits shown in FCC 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in FCC 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions.

#### FCC 15.209: Field strength limits below 30 MHz

Frequency [MHz]	Field Strength [ $\mu$ V/m]	Measurement Distance [m]
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30

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Extrapolation factor of 3m test distance (ANSI C63.10-2013 6.4.4)

Frequency [MHz]	D ( $\lambda/2\pi$ ) [m]	D (Limit) [m]	Extrapolation Factor
0.009	5305.16	300	80.00
0.159	300.29	300	80.00
0.160	298.42	300	79.95
0.490	97.44	300	70.23
0.490	97.44	30	40.00
1.591	30.01	30	40.00
1.592	29.99	30	40.00
10.000	4.77	30	24.04
13.560	3.52	30	21.39
15.910	3.00	30	20.00
30.000	1.59	30	20.00

FCC 15.209: Field strength limits above 30 MHz

Frequency [MHz]	Field Strength [ $\mu\text{V}/\text{m}$ ]	Measurement Distance [m]	Field Strength [ $\text{dB}\mu\text{V}/\text{m}$ ]
30 – 88	100	3	40.0
88 – 216	150	3	43.5
216 – 960	200	3	46.0
Above 960	500	3	53.9

In the emission table above, the tighter limit applies at the band edges.

The emission limits shown in the above table are based on measurements employing a quasi-peak detector.

**Test results - Complied with requirement**

**Test equipment used (refer to List of utilized test equipment)**

AC01	BA07	BRF12	CL11	CL31	CL38	CL39	DH06
HPF4	LP06	PR12	PR21	SH01	TR06	-	-

**Test software used**

EMI1 Ver. 5.9

**Calculation method**

The Correction Factor and Result are calculated as followings.

$$\text{Correction Factor [dB/m]} = \text{Ant. Factor [dB/m]} + \text{Loss [dB]} - \text{Gain [dB]}$$

$$\text{Result [dB}\mu\text{V}/\text{m}] = \text{Reading [dB}\mu\text{V}] + \text{Correction Factor [dB/m]}$$

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### Test Data (9 kHz - 30MHz)

Test site: Yokohama Laboratory  
 Measurement distance: 3 m  
 Operating frequency: 2402MHz  
 Data rate: 1Mbps

#### [X-plane]

No.	Frequency [MHz]	Reading [dB $\mu$ V]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Ant.
-	-	-	-	-	-	-	-	-	-

There are no spurious emissions greater than noise floor or 20dB below the limit.

#### [Y-plane]

No.	Frequency [MHz]	Reading [dB $\mu$ V]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Ant.
-	-	-	-	-	-	-	-	-	-

There are no spurious emissions greater than noise floor or 20dB below the limit.

#### [Z-plane]

No.	Frequency [MHz]	Reading [dB $\mu$ V]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Ant.
-	-	-	-	-	-	-	-	-	-

There are no spurious emissions greater than noise floor or 20dB below the limit.

Operating frequency: 2442MHz  
 Data rate: 1Mbps

#### [X-plane]

No.	Frequency [MHz]	Reading [dB $\mu$ V]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Ant.
-	-	-	-	-	-	-	-	-	-

There are no spurious emissions greater than noise floor or 20dB below the limit.

#### [Y-plane]

No.	Frequency [MHz]	Reading [dB $\mu$ V]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Ant.
-	-	-	-	-	-	-	-	-	-

There are no spurious emissions greater than noise floor or 20dB below the limit.

#### [Z-plane]

No.	Frequency [MHz]	Reading [dB $\mu$ V]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Ant.
-	-	-	-	-	-	-	-	-	-

There are no spurious emissions greater than noise floor or 20dB below the limit.

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Operating frequency: 2480MHz  
 Data rate: 1Mbps

[X-plane]

No.	Frequency [MHz]	Reading [dB $\mu$ V]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Ant.
-	-	-	-	-	-	-	-	-	-

There are no spurious emissions greater than noise floor or 20dB below the limit.

[Y-plane]

No.	Frequency [MHz]	Reading [dB $\mu$ V]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Ant.
-	-	-	-	-	-	-	-	-	-

There are no spurious emissions greater than noise floor or 20dB below the limit.

[Z-plane]

No.	Frequency [MHz]	Reading [dB $\mu$ V]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Ant.
-	-	-	-	-	-	-	-	-	-

There are no spurious emissions greater than noise floor or 20dB below the limit.

Operating frequency: 2402MHz  
 Data rate: 2Mbps

[X-plane]

No.	Frequency [MHz]	Reading [dB $\mu$ V]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Ant.
-	-	-	-	-	-	-	-	-	-

There are no spurious emissions greater than noise floor or 20dB below the limit.

[Y-plane]

No.	Frequency [MHz]	Reading [dB $\mu$ V]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Ant.
-	-	-	-	-	-	-	-	-	-

There are no spurious emissions greater than noise floor or 20dB below the limit.

[Z-plane]

No.	Frequency [MHz]	Reading [dB $\mu$ V]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Ant.
-	-	-	-	-	-	-	-	-	-

There are no spurious emissions greater than noise floor or 20dB below the limit.

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Operating frequency: 2442MHz  
 Data rate: 2Mbps

[X-plane]

No.	Frequency [MHz]	Reading [dB $\mu$ V]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Ant.
-	-	-	-	-	-	-	-	-	-

There are no spurious emissions greater than noise floor or 20dB below the limit.

[Y-plane]

No.	Frequency [MHz]	Reading [dB $\mu$ V]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Ant.
-	-	-	-	-	-	-	-	-	-

There are no spurious emissions greater than noise floor or 20dB below the limit.

[Z-plane]

No.	Frequency [MHz]	Reading [dB $\mu$ V]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Ant.
-	-	-	-	-	-	-	-	-	-

There are no spurious emissions greater than noise floor or 20dB below the limit.

Operating frequency: 2480MHz  
 Data rate: 2Mbps

[X-plane]

No.	Frequency [MHz]	Reading [dB $\mu$ V]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Ant.
-	-	-	-	-	-	-	-	-	-

There are no spurious emissions greater than noise floor or 20dB below the limit.

[Y-plane]

No.	Frequency [MHz]	Reading [dB $\mu$ V]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Ant.
-	-	-	-	-	-	-	-	-	-

There are no spurious emissions greater than noise floor or 20dB below the limit.

[Z-plane]

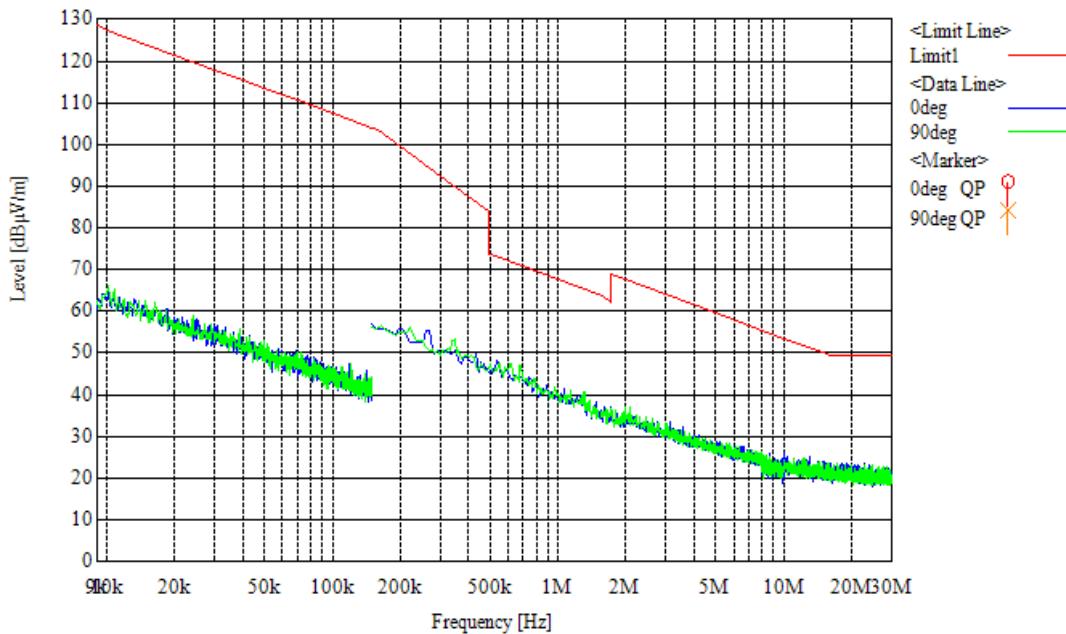
No.	Frequency [MHz]	Reading [dB $\mu$ V]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Ant.
-	-	-	-	-	-	-	-	-	-

There are no spurious emissions greater than noise floor or 20dB below the limit.

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[Chart (2480MHz, 1Mbps, X-plane)]



Tested Date: March 5, 2020  
 Humidity: 50 %

Temperature: 17 degC  
 Atmos. Press: 1005 hPa

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## Test Data (30 - 1000MHz)

Test site: Yokohama Laboratory  
 Measurement distance: 3 m

Operating frequency: 2402MHz  
 Data rate: 1Mbps

### [X-plane]

No.	Frequency [MHz]	Reading [dB $\mu$ V]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Ant.
1	39.117	28.5	18.1	7.0	30.4	23.2	40.0	16.8	Vert.
2	<b>56.821</b>	<b>36.5</b>	<b>11.3</b>	<b>7.2</b>	<b>30.3</b>	<b>24.7</b>	<b>40.0</b>	<b>15.3</b>	<b>Vert.</b>
3	196.699	36.4	11.4	8.6	30.1	26.3	43.5	17.2	Vert.
4	266.433	34.7	12.9	9.2	30.2	26.6	46.0	19.4	Vert.
5	327.948	35.1	14.3	9.6	30.2	28.8	46.0	17.2	Vert.
6	687.303	22.0	18.9	11.8	30.2	22.5	46.0	23.5	Vert.

### [Y-plane]

No.	Frequency [MHz]	Reading [dB $\mu$ V]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Ant.
1	326.463	34.0	14.2	9.6	30.2	27.6	46.0	18.4	Hori.
2	474.664	29.2	17.1	10.8	30.2	26.9	46.0	19.1	Hori.
3	56.849	34.8	11.3	7.2	30.3	23.0	40.0	17.0	Vert.
4	151.794	33.5	11.6	8.2	30.2	23.1	43.5	20.4	Vert.
5	197.582	35.0	11.5	8.6	30.1	25.0	43.5	18.5	Vert.
6	326.516	33.0	14.2	9.6	30.2	26.6	46.0	19.4	Vert.

### [Z-plane]

No.	Frequency [MHz]	Reading [dB $\mu$ V]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Ant.
1	33.201	24.6	21.0	6.9	30.4	22.1	40.0	17.9	Vert.
2	40.087	26.8	17.6	7.0	30.4	21.0	40.0	19.0	Vert.
3	55.314	32.1	11.7	7.2	30.3	20.7	40.0	19.3	Vert.
4	196.664	36.2	11.4	8.6	30.1	26.1	43.5	17.4	Vert.
5	327.955	35.3	14.3	9.6	30.2	29.0	46.0	17.0	Vert.
6	433.674	25.4	16.7	10.4	30.2	22.3	46.0	23.7	Vert.

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Operating frequency: 2442MHz  
 Data rate: 1Mbps

[X-plane]

No.	Frequency [MHz]	Reading [dB $\mu$ V]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Ant.
1	40.394	28.8	17.5	7.0	30.4	22.9	40.0	17.1	Vert.
2	57.520	35.4	11.2	7.2	30.3	23.5	40.0	16.5	Vert.
3	195.900	36.3	11.4	8.6	30.1	26.2	43.5	17.3	Vert.
4	265.176	34.6	12.9	9.2	30.2	26.5	46.0	19.5	Vert.
5	329.358	33.8	14.3	9.7	30.2	27.6	46.0	18.4	Vert.
6	416.109	27.4	16.5	10.3	30.3	23.9	46.0	22.1	Vert.

[Y-plane]

No.	Frequency [MHz]	Reading [dB $\mu$ V]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Ant.
1	326.505	32.6	14.2	9.6	30.2	26.2	46.0	19.8	Hori.
2	39.699	27.8	17.8	7.0	30.4	22.2	40.0	17.8	Vert.
3	56.769	34.6	11.4	7.2	30.3	22.9	40.0	17.1	Vert.
4	131.681	35.3	12.7	8.0	30.2	25.8	43.5	17.7	Vert.
5	196.778	35.4	11.4	8.6	30.1	25.3	43.5	18.2	Vert.
6	328.010	33.3	14.3	9.6	30.2	27.0	46.0	19.0	Vert.

[Z-plane]

No.	Frequency [MHz]	Reading [dB $\mu$ V]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Ant.
1	30.388	23.2	22.4	6.8	30.4	22.0	40.0	18.0	Vert.
2	38.689	27.2	18.3	6.9	30.4	22.0	40.0	18.0	Vert.
3	56.771	32.9	11.4	7.2	30.3	21.2	40.0	18.8	Vert.
4	197.104	36.8	11.5	8.6	30.1	26.8	43.5	16.7	Vert.
5	328.311	34.3	14.3	9.7	30.2	28.1	46.0	17.9	Vert.
6	416.118	28.8	16.5	10.3	30.3	25.3	46.0	20.7	Vert.

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Operating frequency: 2480MHz  
 Data rate: 1Mbps

[X-plane]

No.	Frequency [MHz]	Reading [dB $\mu$ V]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Ant.
1	35.625	25.6	19.9	6.9	30.4	22.0	40.0	18.0	Vert.
2	39.699	28.0	17.8	7.0	30.4	22.4	40.0	17.6	Vert.
3	57.448	35.2	11.2	7.2	30.3	23.3	40.0	16.7	Vert.
4	195.849	36.2	11.4	8.6	30.1	26.1	43.5	17.4	Vert.
5	197.464	36.7	11.5	8.6	30.1	26.7	43.5	16.8	Vert.
6	275.282	33.4	13.0	9.2	30.2	25.4	46.0	20.6	Vert.

[Y-plane]

No.	Frequency [MHz]	Reading [dB $\mu$ V]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Ant.
1	328.297	33.0	14.3	9.7	30.2	26.8	46.0	19.2	Hori.
2	39.505	28.3	17.9	7.0	30.4	22.8	40.0	17.2	Vert.
3	56.765	34.0	11.4	7.2	30.3	22.3	40.0	17.7	Vert.
4	131.328	35.5	12.7	8.0	30.2	26.0	43.5	17.5	Vert.
5	581.002	24.5	18.4	11.3	30.1	24.1	46.0	21.9	Vert.
6	807.571	21.8	20.0	12.2	29.9	24.1	46.0	21.9	Vert.

[Z-plane]

No.	Frequency [MHz]	Reading [dB $\mu$ V]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Ant.
1	30.194	23.2	22.5	6.8	30.4	22.1	40.0	17.9	Vert.
2	39.020	27.6	18.2	7.0	30.4	22.4	40.0	17.6	Vert.
3	55.217	30.3	11.8	7.2	30.3	19.0	40.0	21.0	Vert.
4	196.926	37.1	11.4	8.6	30.1	27.0	43.5	16.5	Vert.
5	328.271	35.4	14.3	9.7	30.2	29.2	46.0	16.8	Vert.
6	684.976	22.6	18.9	11.7	30.2	23.0	46.0	23.0	Vert.

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Operating frequency: 2402MHz  
 Data rate: 2Mbps

[X-plane]

No.	Frequency [MHz]	Reading [dB $\mu$ V]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Ant.
1	41.034	29.1	17.2	7.0	30.4	22.9	40.0	17.1	Vert.
2	56.953	35.8	11.3	7.2	30.3	24.0	40.0	16.0	Vert.
3	196.701	36.8	11.4	8.6	30.1	26.7	43.5	16.8	Vert.
4	265.802	34.6	12.9	9.2	30.2	26.5	46.0	19.5	Vert.
5	328.065	34.5	14.3	9.6	30.2	28.2	46.0	17.8	Vert.
6	416.312	27.8	16.5	10.3	30.3	24.3	46.0	21.7	Vert.

[Y-plane]

No.	Frequency [MHz]	Reading [dB $\mu$ V]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Ant.
1	39.505	27.7	17.9	7.0	30.4	22.2	40.0	17.8	Vert.
2	56.856	34.9	11.3	7.2	30.3	23.1	40.0	16.9	Vert.
3	197.088	34.3	11.5	8.6	30.1	24.3	43.5	19.2	Vert.
4	280.332	33.1	13.1	9.3	30.2	25.3	46.0	20.7	Vert.
5	327.969	32.3	14.3	9.6	30.2	26.0	46.0	20.0	Vert.
6	641.136	23.5	18.8	11.6	30.2	23.7	46.0	22.3	Vert.

[Z-plane]

No.	Frequency [MHz]	Reading [dB $\mu$ V]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Ant.
1	41.154	27.5	17.1	7.0	30.4	21.2	40.0	18.8	Vert.
2	56.769	32.6	11.4	7.2	30.3	20.9	40.0	19.1	Vert.
3	197.062	38.7	11.5	8.6	30.1	28.7	43.5	14.8	Vert.
4	327.905	35.1	14.3	9.6	30.2	28.8	46.0	17.2	Vert.
5	414.954	28.3	16.5	10.3	30.3	24.8	46.0	21.2	Vert.
6	581.681	25.4	18.4	11.3	30.1	25.0	46.0	21.0	Vert.

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Operating frequency: 2442MHz  
 Data rate: 2Mbps

[X-plane]

No.	Frequency [MHz]	Reading [dB $\mu$ V]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Ant.
1	40.669	29.3	17.4	7.0	30.4	23.3	40.0	16.7	Vert.
2	56.709	35.9	11.4	7.2	30.3	24.2	40.0	15.8	Vert.
3	196.770	36.8	11.4	8.6	30.1	26.7	43.5	16.8	Vert.
4	266.190	34.6	12.9	9.2	30.2	26.5	46.0	19.5	Vert.
5	328.360	35.7	14.3	9.7	30.2	29.5	46.0	16.5	Vert.
6	701.173	22.4	18.9	11.8	30.2	22.9	46.0	23.1	Vert.

[Y-plane]

No.	Frequency [MHz]	Reading [dB $\mu$ V]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Ant.
1	42.609	29.1	16.5	7.0	30.4	22.2	40.0	17.8	Vert.
2	56.882	34.4	11.3	7.2	30.3	22.6	40.0	17.4	Vert.
3	196.712	34.3	11.4	8.6	30.1	24.2	43.5	19.3	Vert.
4	452.490	25.8	16.9	10.6	30.2	23.1	46.0	22.9	Vert.
5	582.263	24.8	18.4	11.3	30.1	24.4	46.0	21.6	Vert.
6	643.658	23.4	18.8	11.6	30.2	23.6	46.0	22.4	Vert.

[Z-plane]

No.	Frequency [MHz]	Reading [dB $\mu$ V]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Ant.
1	42.124	28.0	16.7	7.0	30.4	21.3	40.0	18.7	Vert.
2	56.866	33.2	11.3	7.2	30.3	21.4	40.0	18.6	Vert.
3	196.887	38.7	11.4	8.6	30.1	28.6	43.5	14.9	Vert.
4	328.188	35.6	14.3	9.6	30.2	29.3	46.0	16.7	Vert.
5	645.016	22.7	18.8	11.6	30.2	22.9	46.0	23.1	Vert.
6	748.504	23.3	19.4	12.0	30.2	24.5	46.0	21.5	Vert.

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Operating frequency: 2480MHz  
 Data rate: 2Mbps

[X-plane]

No.	Frequency [MHz]	Reading [dB $\mu$ V]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Ant.
1	39.893	28.3	17.7	7.0	30.4	22.6	40.0	17.4	Vert.
2	56.930	35.9	11.3	7.2	30.3	24.1	40.0	15.9	Vert.
3	197.376	36.6	11.5	8.6	30.1	26.6	43.5	16.9	Vert.
4	266.803	34.5	12.9	9.2	30.2	26.4	46.0	19.6	Vert.
5	328.161	34.4	14.3	9.6	30.2	28.1	46.0	17.9	Vert.
6	415.051	27.8	16.5	10.3	30.3	24.3	46.0	21.7	Vert.

[Y-plane]

No.	Frequency [MHz]	Reading [dB $\mu$ V]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Ant.
1	328.233	31.3	14.3	9.7	30.2	25.1	46.0	20.9	Hori.
2	38.535	27.2	18.4	6.9	30.4	22.1	40.0	17.9	Vert.
3	56.803	34.9	11.3	7.2	30.3	23.1	40.0	16.9	Vert.
4	131.252	32.3	12.7	8.0	30.2	22.8	43.5	20.7	Vert.
5	580.129	24.1	18.4	11.3	30.1	23.7	46.0	22.3	Vert.
6	643.464	23.3	18.8	11.6	30.2	23.5	46.0	22.5	Vert.

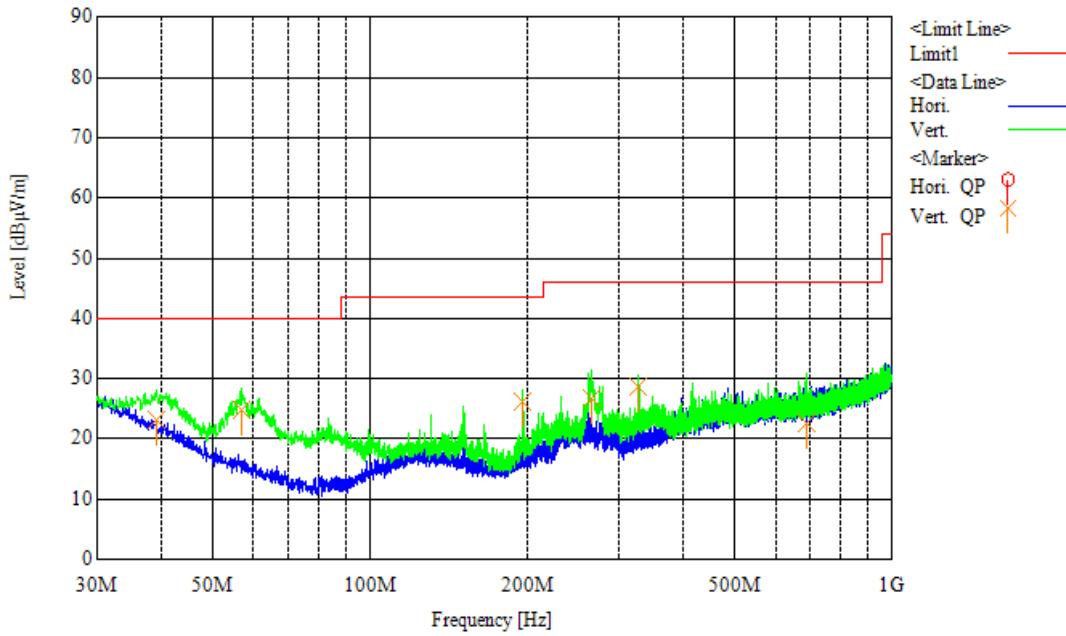
[Z-plane]

No.	Frequency [MHz]	Reading [dB $\mu$ V]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Ant.
1	42.706	28.1	16.4	7.0	30.4	21.1	40.0	18.9	Vert.
2	56.769	33.0	11.4	7.2	30.3	21.3	40.0	18.7	Vert.
3	197.113	37.8	11.5	8.6	30.1	27.8	43.5	15.7	Vert.
4	328.134	35.1	14.3	9.6	30.2	28.8	46.0	17.2	Vert.
5	416.021	25.6	16.5	10.3	30.3	22.1	46.0	23.9	Vert.
6	642.591	23.3	18.8	11.6	30.2	23.5	46.0	22.5	Vert.

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[Chart (2402MHz, 1Mbps, X-plane)]



Tested Date: March 3, 2020  
 Humidity: 47 %

Temperature: 17 degC  
 Atmos. Press: 1020 hPa

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## Test Data (1-18GHz)

Test site: Yokohama Laboratory  
 Measurement distance: 3 m

Operating frequency: 2402MHz  
 Data rate: 1Mbps

### [X-plane]

No.	Frequency [MHz]	Reading PK [dB $\mu$ V]	Reading Ave [dB $\mu$ V]	C.Factor [dB]	Result PK [dB $\mu$ V/m]	Result Ave [dB $\mu$ V/m]	Limit PK [dB $\mu$ V/m]	Limit Ave [dB $\mu$ V/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	2337.988	48.1	36.1	-4.2	43.9	31.9	73.9	53.9	30.0	22.0	Hori.
2	2369.926	49.4	38.8	-3.8	45.6	35.0	73.9	53.9	28.3	18.9	Hori.
3	4804.007	47.7	39.5	2.2	49.9	41.7	73.9	53.9	24.0	12.2	Hori.

### [Y-plane]

No.	Frequency [MHz]	Reading PK [dB $\mu$ V]	Reading Ave [dB $\mu$ V]	C.Factor [dB]	Result PK [dB $\mu$ V/m]	Result Ave [dB $\mu$ V/m]	Limit PK [dB $\mu$ V/m]	Limit Ave [dB $\mu$ V/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	4803.608	45.4	33.0	2.2	47.6	35.2	73.9	53.9	26.3	18.7	Hori.
2	4803.832	46.1	34.5	2.2	48.3	36.7	73.9	53.9	25.6	17.2	Vert.

### [Z-plane]

No.	Frequency [MHz]	Reading PK [dB $\mu$ V]	Reading Ave [dB $\mu$ V]	C.Factor [dB]	Result PK [dB $\mu$ V/m]	Result Ave [dB $\mu$ V/m]	Limit PK [dB $\mu$ V/m]	Limit Ave [dB $\mu$ V/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	4804.008	46.4	35.6	2.2	48.6	37.8	73.9	53.9	25.3	16.1	Hori.
2	4803.952	46.8	35.9	2.2	49.0	38.1	73.9	53.9	24.9	15.8	Vert.

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Operating frequency: 2442MHz  
 Data rate: 1Mbps

[X-plane]

No.	Frequency [MHz]	Reading PK [dB $\mu$ V]	Reading Ave [dB $\mu$ V]	C.Factor [dB]	Result PK [dB $\mu$ V/m]	Result Ave [dB $\mu$ V/m]	Limit PK [dB $\mu$ V/m]	Limit Ave [dB $\mu$ V/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	2378.180	48.7	36.4	-3.7	45.0	32.7	73.9	53.9	28.9	21.2	Hori.
2	4883.771	45.1	34.3	2.6	47.7	36.9	73.9	53.9	26.2	17.0	Hori.
3	7325.207	45.0	33.6	6.5	51.5	40.1	73.9	53.9	22.4	13.8	Hori.

[Y-plane]

No.	Frequency [MHz]	Reading PK [dB $\mu$ V]	Reading Ave [dB $\mu$ V]	C.Factor [dB]	Result PK [dB $\mu$ V/m]	Result Ave [dB $\mu$ V/m]	Limit PK [dB $\mu$ V/m]	Limit Ave [dB $\mu$ V/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	4883.851	45.0	32.8	2.6	47.6	35.4	73.9	53.9	26.3	18.5	Hori.
2	4884.244	46.1	35.4	2.6	48.7	38.0	73.9	53.9	25.2	15.9	Vert.
3	7325.183	46.5	34.8	6.5	53.0	41.3	73.9	53.9	20.9	12.6	Vert.

[Z-plane]

No.	Frequency [MHz]	Reading PK [dB $\mu$ V]	Reading Ave [dB $\mu$ V]	C.Factor [dB]	Result PK [dB $\mu$ V/m]	Result Ave [dB $\mu$ V/m]	Limit PK [dB $\mu$ V/m]	Limit Ave [dB $\mu$ V/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	4884.152	47.2	36.5	2.6	49.8	39.1	73.9	53.9	24.1	14.8	Hori.
2	7325.399	45.5	33.0	6.5	52.0	39.5	73.9	53.9	21.9	14.4	Hori.
3	4884.192	46.1	34.3	2.6	48.7	36.9	73.9	53.9	25.2	17.0	Vert.
4	7325.439	46.3	34.4	6.5	52.8	40.9	73.9	53.9	21.1	13.0	Vert.

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Operating frequency: 2480MHz  
 Data rate: 1Mbps

[X-plane]

No.	Frequency [MHz]	Reading PK [dB $\mu$ V]	Reading Ave [dB $\mu$ V]	C.Factor [dB]	Result PK [dB $\mu$ V/m]	Result Ave [dB $\mu$ V/m]	Limit PK [dB $\mu$ V/m]	Limit Ave [dB $\mu$ V/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	4959.564	46.4	33.3	2.8	49.2	36.1	73.9	53.9	24.7	17.8	Hori.
2	7439.564	47.0	36.0	6.6	53.6	42.6	73.9	53.9	20.3	11.3	Hori.

[Y-plane]

No.	Frequency [MHz]	Reading PK [dB $\mu$ V]	Reading Ave [dB $\mu$ V]	C.Factor [dB]	Result PK [dB $\mu$ V/m]	Result Ave [dB $\mu$ V/m]	Limit PK [dB $\mu$ V/m]	Limit Ave [dB $\mu$ V/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	4959.980	45.3	33.8	2.8	48.1	36.6	73.9	53.9	25.8	17.3	Hori.
2	4960.020	46.4	35.5	2.8	49.2	38.3	73.9	53.9	24.7	15.6	Vert.
3	7439.224	48.5	36.7	6.6	55.1	43.3	73.9	53.9	18.8	10.6	Vert.

[Z-plane]

No.	Frequency [MHz]	Reading PK [dB $\mu$ V]	Reading Ave [dB $\mu$ V]	C.Factor [dB]	Result PK [dB $\mu$ V/m]	Result Ave [dB $\mu$ V/m]	Limit PK [dB $\mu$ V/m]	Limit Ave [dB $\mu$ V/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	4959.420	47.0	35.0	2.8	49.8	37.8	73.9	53.9	24.1	16.1	Hori.
2	7439.416	47.5	36.3	6.6	54.1	42.9	73.9	53.9	19.8	11.0	Hori.
3	4959.828	45.4	33.8	2.8	48.2	36.6	73.9	53.9	25.7	17.3	Vert.
4	7439.368	46.5	34.7	6.6	53.1	41.3	73.9	53.9	20.8	12.6	Vert.

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Operating frequency: 2402MHz  
 Data rate: 2Mbps

[X-plane]

No.	Frequency [MHz]	Reading PK [dB $\mu$ V]	Reading Ave [dB $\mu$ V]	C.Factor [dB]	Result PK [dB $\mu$ V/m]	Result Ave [dB $\mu$ V/m]	Limit PK [dB $\mu$ V/m]	Limit Ave [dB $\mu$ V/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	2338.052	49.6	38.1	-4.2	45.4	33.9	73.9	53.9	28.5	20.0	Hori.
2	2369.950	50.9	40.0	-3.8	47.1	36.2	73.9	53.9	26.8	17.7	Hori.
3	4803.348	47.0	35.4	2.2	49.2	37.6	73.9	53.9	24.7	16.3	Hori.

[Y-plane]

No.	Frequency [MHz]	Reading PK [dB $\mu$ V]	Reading Ave [dB $\mu$ V]	C.Factor [dB]	Result PK [dB $\mu$ V/m]	Result Ave [dB $\mu$ V/m]	Limit PK [dB $\mu$ V/m]	Limit Ave [dB $\mu$ V/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	2338.100	48.8	37.3	-4.2	44.6	33.1	73.9	53.9	29.3	20.8	Hori.
2	2369.950	49.1	37.7	-3.8	45.3	33.9	73.9	53.9	28.6	20.0	Hori.
3	4803.092	45.6	32.4	2.2	47.8	34.6	73.9	53.9	26.1	19.3	Hori.
4	4803.092	46.6	33.4	2.2	48.8	35.6	73.9	53.9	25.1	18.3	Vert.

[Z-plane]

No.	Frequency [MHz]	Reading PK [dB $\mu$ V]	Reading Ave [dB $\mu$ V]	C.Factor [dB]	Result PK [dB $\mu$ V/m]	Result Ave [dB $\mu$ V/m]	Limit PK [dB $\mu$ V/m]	Limit Ave [dB $\mu$ V/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	4803.203	46.6	34.1	2.2	48.8	36.3	73.9	53.9	25.1	17.6	Hori.
2	4802.924	46.5	33.9	2.2	48.7	36.1	73.9	53.9	25.2	17.8	Vert.

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Operating frequency: 2442MHz  
 Data rate: 2Mbps

[X-plane]

No.	Frequency [MHz]	Reading PK [dB $\mu$ V]	Reading Ave [dB $\mu$ V]	C.Factor [dB]	Result PK [dB $\mu$ V/m]	Result Ave [dB $\mu$ V/m]	Limit PK [dB $\mu$ V/m]	Limit Ave [dB $\mu$ V/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	2378.012	48.6	37.2	-3.7	44.9	33.5	73.9	53.9	29.0	20.4	Hori.
2	4883.072	46.1	33.4	2.6	48.7	36.0	73.9	53.9	25.2	17.9	Hori.
3	7324.847	46.0	33.8	6.5	52.5	40.3	73.9	53.9	21.4	13.6	Hori.

[Y-plane]

No.	Frequency [MHz]	Reading PK [dB $\mu$ V]	Reading Ave [dB $\mu$ V]	C.Factor [dB]	Result PK [dB $\mu$ V/m]	Result Ave [dB $\mu$ V/m]	Limit PK [dB $\mu$ V/m]	Limit Ave [dB $\mu$ V/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	2377.972	48.7	36.5	-3.7	45.0	32.8	73.9	53.9	28.9	21.1	Hori.
2	4883.128	45.5	32.2	2.6	48.1	34.8	73.9	53.9	25.8	19.1	Hori.
3	4882.979	46.3	33.8	2.6	48.9	36.4	73.9	53.9	25.0	17.5	Vert.
4	7324.531	46.2	33.9	6.5	52.7	40.4	73.9	53.9	21.2	13.5	Vert.

[Z-plane]

No.	Frequency [MHz]	Reading PK [dB $\mu$ V]	Reading Ave [dB $\mu$ V]	C.Factor [dB]	Result PK [dB $\mu$ V/m]	Result Ave [dB $\mu$ V/m]	Limit PK [dB $\mu$ V/m]	Limit Ave [dB $\mu$ V/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	4883.208	47.5	34.7	2.6	50.1	37.3	73.9	53.9	23.8	16.6	Hori.
2	7324.679	45.5	33.3	6.5	52.0	39.8	73.9	53.9	21.9	14.1	Hori.
3	4882.960	46.2	32.7	2.6	48.8	35.3	73.9	53.9	25.1	18.6	Vert.
4	7324.791	45.5	33.7	6.5	52.0	40.2	73.9	53.9	21.9	13.7	Vert.

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Operating frequency: 2480MHz  
 Data rate: 2Mbps

[X-plane]

No.	Frequency [MHz]	Reading PK [dB $\mu$ V]	Reading Ave [dB $\mu$ V]	C.Factor [dB]	Result PK [dB $\mu$ V/m]	Result Ave [dB $\mu$ V/m]	Limit PK [dB $\mu$ V/m]	Limit Ave [dB $\mu$ V/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	4959.104	45.5	32.7	2.8	48.3	35.5	73.9	53.9	25.6	18.4	Hori.
2	7438.656	47.6	35.1	6.6	54.2	41.7	73.9	53.9	19.7	12.2	Hori.

[Y-plane]

No.	Frequency [MHz]	Reading PK [dB $\mu$ V]	Reading Ave [dB $\mu$ V]	C.Factor [dB]	Result PK [dB $\mu$ V/m]	Result Ave [dB $\mu$ V/m]	Limit PK [dB $\mu$ V/m]	Limit Ave [dB $\mu$ V/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	4959.140	45.8	33.1	2.8	48.6	35.9	73.9	53.9	25.3	18.0	Hori.
2	4958.968	46.4	33.8	2.8	49.2	36.6	73.9	53.9	24.7	17.3	Vert.
3	7438.720	46.5	34.4	6.6	53.1	41.0	73.9	53.9	20.8	12.9	Vert.

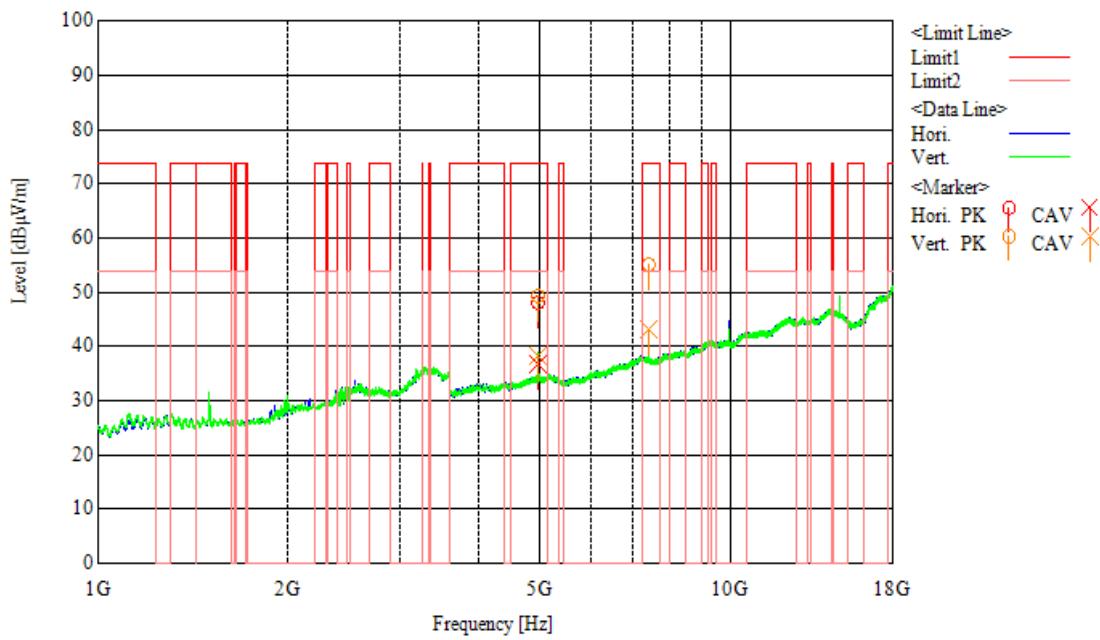
[Z-plane]

No.	Frequency [MHz]	Reading PK [dB $\mu$ V]	Reading Ave [dB $\mu$ V]	C.Factor [dB]	Result PK [dB $\mu$ V/m]	Result Ave [dB $\mu$ V/m]	Limit PK [dB $\mu$ V/m]	Limit Ave [dB $\mu$ V/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	4959.296	46.7	34.7	2.8	49.5	37.5	73.9	53.9	24.4	16.4	Hori.
2	7438.656	46.6	34.6	6.6	53.2	41.2	73.9	53.9	20.7	12.7	Hori.
3	4959.032	46.3	32.9	2.8	49.1	35.7	73.9	53.9	24.8	18.2	Vert.
4	7438.696	46.0	34.1	6.6	52.6	40.7	73.9	53.9	21.3	13.2	Vert.

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[Chart (2480MHz, 1Mbps, Y-plane)]



Tested Date: March 2, 2020  
 Humidity: 47 %

Temperature: 17 degC  
 Atmos. Press: 1018 hPa

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## Test Data (18-25GHz)

Test site: Yokohama Laboratory  
 Measurement distance: 3 m

Operating frequency: 2402MHz  
 Data rate: 1Mbps

### [X-plane]

No.	Frequency [MHz]	Reading PK [dB $\mu$ V]	Reading Ave [dB $\mu$ V]	C.Factor [dB]	Result PK [dB $\mu$ V/m]	Result Ave [dB $\mu$ V/m]	Limit PK [dB $\mu$ V/m]	Limit Ave [dB $\mu$ V/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	19214.287	43.9	30.9	10.9	54.8	41.8	73.9	53.9	19.1	12.1	Vert.

### [Y-plane]

No.	Frequency [MHz]	Reading PK [dB $\mu$ V]	Reading Ave [dB $\mu$ V]	C.Factor [dB]	Result PK [dB $\mu$ V/m]	Result Ave [dB $\mu$ V/m]	Limit PK [dB $\mu$ V/m]	Limit Ave [dB $\mu$ V/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	19214.256	42.8	30.1	10.9	53.7	41.0	73.9	53.9	20.2	12.9	Hori.

### [Z-plane]

No.	Frequency [MHz]	Reading PK [dB $\mu$ V]	Reading Ave [dB $\mu$ V]	C.Factor [dB]	Result PK [dB $\mu$ V/m]	Result Ave [dB $\mu$ V/m]	Limit PK [dB $\mu$ V/m]	Limit Ave [dB $\mu$ V/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	19214.111	42.9	30.2	10.9	53.8	41.1	73.9	53.9	20.1	12.8	Hori.

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Operating frequency: 2442MHz  
 Data rate: 1Mbps

[X-plane]

No.	Frequency [MHz]	Reading PK [dB $\mu$ V]	Reading Ave [dB $\mu$ V]	C.Factor [dB]	Result PK [dB $\mu$ V/m]	Result Ave [dB $\mu$ V/m]	Limit PK [dB $\mu$ V/m]	Limit Ave [dB $\mu$ V/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	19534.146	43.3	31.1	10.3	53.6	41.4	73.9	53.9	20.3	12.5	Vert.

[Y-plane]

No.	Frequency [MHz]	Reading PK [dB $\mu$ V]	Reading Ave [dB $\mu$ V]	C.Factor [dB]	Result PK [dB $\mu$ V/m]	Result Ave [dB $\mu$ V/m]	Limit PK [dB $\mu$ V/m]	Limit Ave [dB $\mu$ V/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	19538.135	43.5	30.7	10.3	53.8	41.0	73.9	53.9	20.1	12.9	Hori.

[Z-plane]

No.	Frequency [MHz]	Reading PK [dB $\mu$ V]	Reading Ave [dB $\mu$ V]	C.Factor [dB]	Result PK [dB $\mu$ V/m]	Result Ave [dB $\mu$ V/m]	Limit PK [dB $\mu$ V/m]	Limit Ave [dB $\mu$ V/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-

There are no spurious emissions greater than noise floor or 20dB below the limit.

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Operating frequency: 2480MHz  
 Data rate: 1Mbps

[X-plane]

No.	Frequency [MHz]	Reading PK [dB $\mu$ V]	Reading Ave [dB $\mu$ V]	C.Factor [dB]	Result PK [dB $\mu$ V/m]	Result Ave [dB $\mu$ V/m]	Limit PK [dB $\mu$ V/m]	Limit Ave [dB $\mu$ V/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
-	-	-	-	-	-	-	-	-	-	-	-

There are no spurious emissions greater than noise floor or 20dB below the limit.

[Y-plane]

No.	Frequency [MHz]	Reading PK [dB $\mu$ V]	Reading Ave [dB $\mu$ V]	C.Factor [dB]	Result PK [dB $\mu$ V/m]	Result Ave [dB $\mu$ V/m]	Limit PK [dB $\mu$ V/m]	Limit Ave [dB $\mu$ V/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	19838.100	45.2	32.4	10.0	55.2	42.4	73.9	53.9	18.7	11.5	Vert.

[Z-plane]

No.	Frequency [MHz]	Reading PK [dB $\mu$ V]	Reading Ave [dB $\mu$ V]	C.Factor [dB]	Result PK [dB $\mu$ V/m]	Result Ave [dB $\mu$ V/m]	Limit PK [dB $\mu$ V/m]	Limit Ave [dB $\mu$ V/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
-	-	-	-	-	-	-	-	-	-	-	-

There are no spurious emissions greater than noise floor or 20dB below the limit.

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Operating frequency: 2402MHz  
 Data rate: 2Mbps

[X-plane]

No.	Frequency [MHz]	Reading PK [dB $\mu$ V]	Reading Ave [dB $\mu$ V]	C.Factor [dB]	Result PK [dB $\mu$ V/m]	Result Ave [dB $\mu$ V/m]	Limit PK [dB $\mu$ V/m]	Limit Ave [dB $\mu$ V/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
-	-	-	-	-	-	-	-	-	-	-	-

There are no spurious emissions greater than noise floor or 20dB below the limit.

[Y-plane]

No.	Frequency [MHz]	Reading PK [dB $\mu$ V]	Reading Ave [dB $\mu$ V]	C.Factor [dB]	Result PK [dB $\mu$ V/m]	Result Ave [dB $\mu$ V/m]	Limit PK [dB $\mu$ V/m]	Limit Ave [dB $\mu$ V/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	19212.301	43.9	30.7	10.9	54.8	41.6	73.9	53.9	19.1	12.3	Hori.

[Z-plane]

No.	Frequency [MHz]	Reading PK [dB $\mu$ V]	Reading Ave [dB $\mu$ V]	C.Factor [dB]	Result PK [dB $\mu$ V/m]	Result Ave [dB $\mu$ V/m]	Limit PK [dB $\mu$ V/m]	Limit Ave [dB $\mu$ V/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	19212.283	44.2	30.7	10.9	55.1	41.6	73.9	53.9	18.8	12.3	Hori.

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Operating frequency: 2442MHz  
 Data rate: 2Mbps

[X-plane]

No.	Frequency [MHz]	Reading PK [dB $\mu$ V]	Reading Ave [dB $\mu$ V]	C.Factor [dB]	Result PK [dB $\mu$ V/m]	Result Ave [dB $\mu$ V/m]	Limit PK [dB $\mu$ V/m]	Limit Ave [dB $\mu$ V/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
-	-	-	-	-	-	-	-	-	-	-	-

There are no spurious emissions greater than noise floor or 20dB below the limit.

[Y-plane]

No.	Frequency [MHz]	Reading PK [dB $\mu$ V]	Reading Ave [dB $\mu$ V]	C.Factor [dB]	Result PK [dB $\mu$ V/m]	Result Ave [dB $\mu$ V/m]	Limit PK [dB $\mu$ V/m]	Limit Ave [dB $\mu$ V/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	19532.162	44.2	31.0	10.3	54.5	41.3	73.9	53.9	19.4	12.6	Hori.

[Z-plane]

No.	Frequency [MHz]	Reading PK [dB $\mu$ V]	Reading Ave [dB $\mu$ V]	C.Factor [dB]	Result PK [dB $\mu$ V/m]	Result Ave [dB $\mu$ V/m]	Limit PK [dB $\mu$ V/m]	Limit Ave [dB $\mu$ V/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	19532.318	44.1	30.7	10.3	54.4	41.0	73.9	53.9	19.5	12.9	Hori.

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Operating frequency: 2480MHz  
 Data rate: 2Mbps

[X-plane]

No.	Frequency [MHz]	Reading PK [dB $\mu$ V]	Reading Ave [dB $\mu$ V]	C.Factor [dB]	Result PK [dB $\mu$ V/m]	Result Ave [dB $\mu$ V/m]	Limit PK [dB $\mu$ V/m]	Limit Ave [dB $\mu$ V/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
-	-	-	-	-	-	-	-	-	-	-	-

There are no spurious emissions greater than noise floor or 20dB below the limit.

[Y-plane]

No.	Frequency [MHz]	Reading PK [dB $\mu$ V]	Reading Ave [dB $\mu$ V]	C.Factor [dB]	Result PK [dB $\mu$ V/m]	Result Ave [dB $\mu$ V/m]	Limit PK [dB $\mu$ V/m]	Limit Ave [dB $\mu$ V/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	19836.035	45.1	31.9	10.0	55.1	41.9	73.9	53.9	18.8	12.0	Hori.
2	19844.064	44.2	31.5	10.0	54.2	41.5	73.9	53.9	19.7	12.4	Vert.

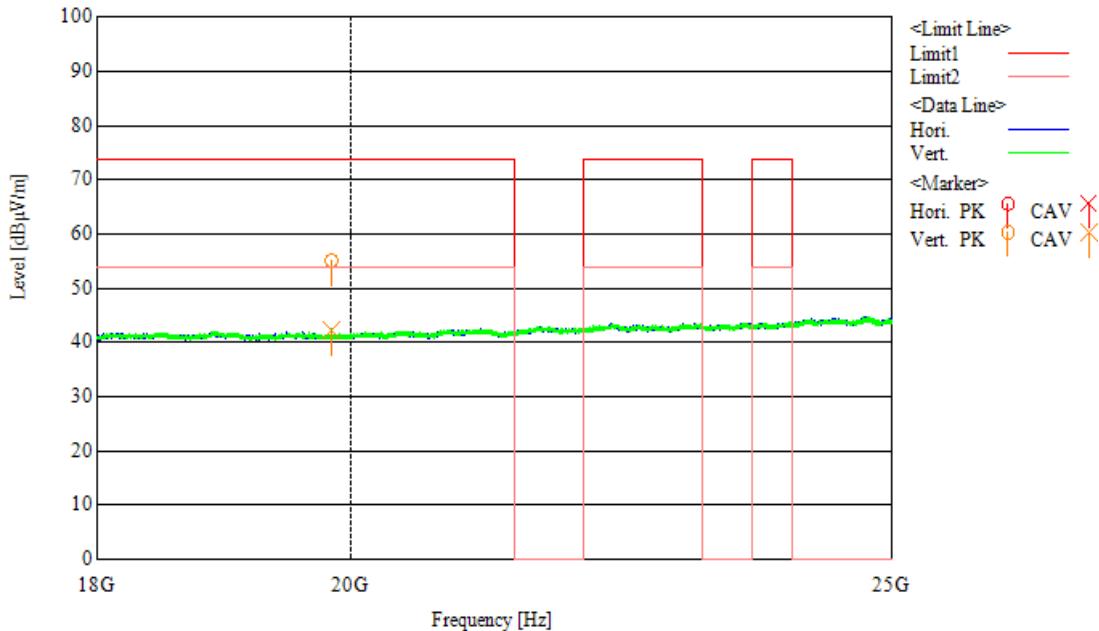
[Z-plane]

No.	Frequency [MHz]	Reading PK [dB $\mu$ V]	Reading Ave [dB $\mu$ V]	C.Factor [dB]	Result PK [dB $\mu$ V/m]	Result Ave [dB $\mu$ V/m]	Limit PK [dB $\mu$ V/m]	Limit Ave [dB $\mu$ V/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	19836.336	45.0	32.0	10.0	55.0	42.0	73.9	53.9	18.9	11.9	Hori.

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[Chart (2480MHz, 1Mbps, Y-plane)]



Tested Date: March 3, 2020  
 Humidity: 47 %

Temperature: 17 degC  
 Atmos. Press: 1020 hPa

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**Restricted bandedge measurement**

Test site: Yokohama Laboratory  
 Measurement distance: 3 m

Operating frequency: 2402MHz  
 Data rate: 1Mbps

[X-plane]

No.	Frequency [MHz]	Reading PK [dB $\mu$ V]	Reading Ave [dB $\mu$ V]	C.Factor [dB]	Result PK [dB $\mu$ V/m]	Result Ave [dB $\mu$ V/m]	Limit PK [dB $\mu$ V/m]	Limit Ave [dB $\mu$ V/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	2369.928	45.0	32.8	4.4	49.4	37.2	73.9	53.9	24.5	16.7	Hori.
2	2390.000	44.4	30.5	4.6	49.0	35.1	73.9	53.9	24.9	18.8	Vert.

[Y-plane]

No.	Frequency [MHz]	Reading PK [dB $\mu$ V]	Reading Ave [dB $\mu$ V]	C.Factor [dB]	Result PK [dB $\mu$ V/m]	Result Ave [dB $\mu$ V/m]	Limit PK [dB $\mu$ V/m]	Limit Ave [dB $\mu$ V/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	2369.956	45.1	32.4	4.4	49.5	36.8	73.9	53.9	24.4	17.1	Hori.
2	2390.000	44.4	30.4	4.6	49.0	35.0	73.9	53.9	24.9	18.9	Vert.

[Z-plane]

No.	Frequency [MHz]	Reading PK [dB $\mu$ V]	Reading Ave [dB $\mu$ V]	C.Factor [dB]	Result PK [dB $\mu$ V/m]	Result Ave [dB $\mu$ V/m]	Limit PK [dB $\mu$ V/m]	Limit Ave [dB $\mu$ V/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	2390.000	43.9	30.4	4.6	48.5	35.0	73.9	53.9	25.4	18.9	Hori.
2	2390.000	43.6	30.4	4.6	48.2	35.0	73.9	53.9	25.7	18.9	Vert.

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Operating frequency: 2402MHz  
 Data rate: 2Mbps

[X-plane]

No.	Frequency [MHz]	Reading PK [dB $\mu$ V]	Reading Ave [dB $\mu$ V]	C.Factor [dB]	Result PK [dB $\mu$ V/m]	Result Ave [dB $\mu$ V/m]	Limit PK [dB $\mu$ V/m]	Limit Ave [dB $\mu$ V/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	2370.116	45.6	33.4	4.4	50.0	37.8	73.9	53.9	23.9	16.1	Hori.
2	2390.000	43.9	30.4	4.6	48.5	35.0	73.9	53.9	25.4	18.9	Vert.

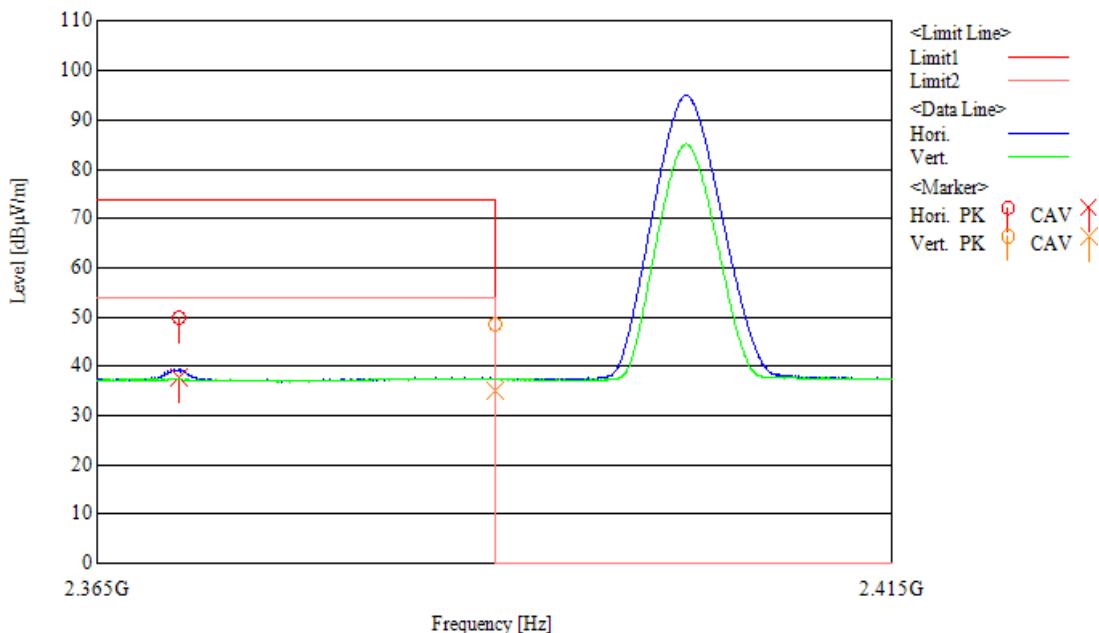
[Y-plane]

No.	Frequency [MHz]	Reading PK [dB $\mu$ V]	Reading Ave [dB $\mu$ V]	C.Factor [dB]	Result PK [dB $\mu$ V/m]	Result Ave [dB $\mu$ V/m]	Limit PK [dB $\mu$ V/m]	Limit Ave [dB $\mu$ V/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	2369.956	45.4	33.0	4.4	49.8	37.4	73.9	53.9	24.1	16.5	Hori.
2	2369.716	44.8	31.6	4.4	49.2	36.0	73.9	53.9	24.7	17.9	Vert.

[Z-plane]

No.	Frequency [MHz]	Reading PK [dB $\mu$ V]	Reading Ave [dB $\mu$ V]	C.Factor [dB]	Result PK [dB $\mu$ V/m]	Result Ave [dB $\mu$ V/m]	Limit PK [dB $\mu$ V/m]	Limit Ave [dB $\mu$ V/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	2390.000	43.6	30.5	4.6	48.2	35.1	73.9	53.9	25.7	18.8	Hori.
2	2390.000	44.2	30.4	4.6	48.8	35.0	73.9	53.9	25.1	18.9	Vert.

[Chart (2402MHz, 2Mbps, X-plane)]



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Operating frequency: 2480MHz  
 Data rate: 1Mbps

[X-plane]

No.	Frequency [MHz]	Reading PK [dB $\mu$ V]	Reading Ave [dB $\mu$ V]	C.Factor [dB]	Result PK [dB $\mu$ V/m]	Result Ave [dB $\mu$ V/m]	Limit PK [dB $\mu$ V/m]	Limit Ave [dB $\mu$ V/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	2483.500	45.1	31.8	5.3	50.4	37.1	73.9	53.9	23.5	16.8	Hori.
2	2483.500	45.1	30.6	5.3	50.4	35.9	73.9	53.9	23.5	18.0	Vert.

[Y-plane]

No.	Frequency [MHz]	Reading PK [dB $\mu$ V]	Reading Ave [dB $\mu$ V]	C.Factor [dB]	Result PK [dB $\mu$ V/m]	Result Ave [dB $\mu$ V/m]	Limit PK [dB $\mu$ V/m]	Limit Ave [dB $\mu$ V/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	2483.500	44.8	31.5	5.3	50.1	36.8	73.9	53.9	23.8	17.1	Hori.
2	2483.500	44.1	31.0	5.3	49.4	36.3	73.9	53.9	24.5	17.6	Vert.

[Z-plane]

No.	Frequency [MHz]	Reading PK [dB $\mu$ V]	Reading Ave [dB $\mu$ V]	C.Factor [dB]	Result PK [dB $\mu$ V/m]	Result Ave [dB $\mu$ V/m]	Limit PK [dB $\mu$ V/m]	Limit Ave [dB $\mu$ V/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	2483.500	44.9	30.7	5.3	50.2	36.0	73.9	53.9	23.7	17.9	Hori.
2	2483.500	44.9	31.1	5.3	50.2	36.4	73.9	53.9	23.7	17.5	Vert.

Operating frequency: 2480MHz  
 Data rate: 2Mbps

[X-plane]

No.	Frequency [MHz]	Reading PK [dB $\mu$ V]	Reading Ave [dB $\mu$ V]	C.Factor [dB]	Result PK [dB $\mu$ V/m]	Result Ave [dB $\mu$ V/m]	Limit PK [dB $\mu$ V/m]	Limit Ave [dB $\mu$ V/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	2483.500	46.0	32.8	5.3	51.3	38.1	73.9	53.9	22.6	15.8	Hori.
2	2483.500	44.6	30.8	5.3	49.9	36.1	73.9	53.9	24.0	17.8	Vert.

[Y-plane]

No.	Frequency [MHz]	Reading PK [dB $\mu$ V]	Reading Ave [dB $\mu$ V]	C.Factor [dB]	Result PK [dB $\mu$ V/m]	Result Ave [dB $\mu$ V/m]	Limit PK [dB $\mu$ V/m]	Limit Ave [dB $\mu$ V/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	2483.500	45.5	32.3	5.3	50.8	37.6	73.9	53.9	23.1	16.3	Hori.
2	2483.500	44.7	31.4	5.3	50.0	36.7	73.9	53.9	23.9	17.2	Vert.

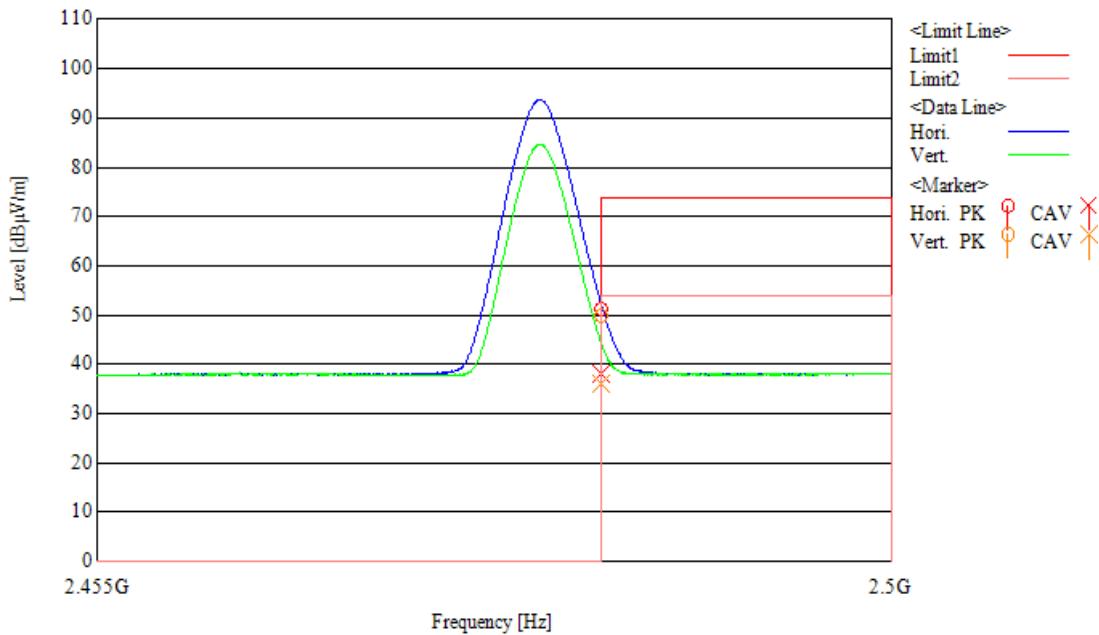
[Z-plane]

No.	Frequency [MHz]	Reading PK [dB $\mu$ V]	Reading Ave [dB $\mu$ V]	C.Factor [dB]	Result PK [dB $\mu$ V/m]	Result Ave [dB $\mu$ V/m]	Limit PK [dB $\mu$ V/m]	Limit Ave [dB $\mu$ V/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	2483.500	44.4	31.0	5.3	49.7	36.3	73.9	53.9	24.2	17.6	Hori.
2	2483.500	45.3	31.7	5.3	50.6	37.0	73.9	53.9	23.3	16.9	Vert.

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[Chart (2480MHz, 2Mbps, X-plane)]



Tested Date: March 2, 2020  
 Humidity: 47 %

Temperature: 17 degC  
 Atmos. Press: 1018 hPa

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## 2.7 AC power line conducted emissions

### Test setup

Test setup was implemented according to the method of ANSI C63.10 clause 6.2.

### Test procedure

Measurement procedures were implemented according to the method of ANSI C63.10 clause 6.2.

### Applicable rule and limitation

FCC 15.207: AC power line conducted emissions limits

Frequency of Emission [MHz]	Conducted emissions Limit [dB $\mu$ V]	
	Quasi-peak	Average
0.15 - 0.5	66 to 56 *	56 to 46 *
0.5 - 5	56	46
5 - 30	60	50

\* Decreases with the logarithm of the frequency. The lower limit applies at the band edges.

### Test equipment used (refer to List of utilized test equipment)

TR09	CL18	LN05
------	------	------

### Test software used

EMI1 Ver. 5.9

### Calculation method

The Correction Factor and Result are calculated as followings.

$$\begin{aligned} \text{Correction Factor [dB]} &= \text{ISN Factor [dB]} + \text{Loss [dB]} \\ \text{Result [dB}\mu\text{V]} &= \text{Reading [dB}\mu\text{V]} + \text{Correction Factor [dB]} \end{aligned}$$

### Test results - Complied with requirement

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## Test Data

Test site: Yokohama Laboratory

[Operating mode: 2402MHz, 1Mbps]

No.	Frequency [MHz]	Reading		C.F. [dB]	Result		Limit		Margin		PHASE
		QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dB]	AV [dB]	
1	0.15476	39.3	16.7	10.3	49.6	27.0	65.7	55.7	16.1	28.7	Va
2	0.41787	30.4	21.3	10.1	40.5	31.4	57.5	47.5	17.0	16.1	Va
3	2.88962	24.7	18.2	10.1	34.8	28.3	56.0	46.0	21.2	17.7	Va
4	0.15340	40.6	21.9	10.3	50.9	32.2	65.8	55.8	14.9	23.6	Vb
5	0.41447	29.6	21.5	10.1	39.7	31.6	57.6	47.6	17.9	16.0	Vb
6	2.63947	23.9	17.9	10.1	34.0	28.0	56.0	46.0	22.0	18.0	Vb

[Operating mode: 2442MHz, 1Mbps]

No.	Frequency [MHz]	Reading		C.F. [dB]	Result		Limit		Margin		PHASE
		QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dB]	AV [dB]	
1	0.15612	40.2	20.9	10.3	50.5	31.2	65.7	55.7	15.2	24.5	Va
2	0.42093	29.9	21.8	10.1	40.0	31.9	57.4	47.4	17.4	15.5	Va
3	2.73125	24.8	18.1	10.1	34.9	28.2	56.0	46.0	21.1	17.8	Va
4	0.15204	40.6	21.9	10.3	50.9	32.2	65.9	55.9	15.0	23.7	Vb
5	0.41583	29.2	21.1	10.1	39.3	31.2	57.5	47.5	18.2	16.3	Vb
6	2.86443	25.7	18.0	10.1	35.8	28.1	56.0	46.0	20.2	17.9	Vb

[Operating mode: 2480MHz, 1Mbps]

No.	Frequency [MHz]	Reading		C.F. [dB]	Result		Limit		Margin		PHASE
		QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dB]	AV [dB]	
1	0.15765	38.4	19.1	10.3	48.7	29.4	65.6	55.6	16.9	26.2	Va
2	0.41821	30.7	23.7	10.1	40.8	33.8	57.5	47.5	16.7	13.7	Va
3	3.20096	23.2	16.5	10.1	33.3	26.6	56.0	46.0	22.7	19.4	Va
4	0.15459	38.7	19.5	10.3	49.0	29.8	65.7	55.7	16.7	25.9	Vb
5	0.41651	29.7	22.6	10.1	39.8	32.7	57.5	47.5	17.7	14.8	Vb
6	2.50090	23.0	16.9	10.1	33.1	27.0	56.0	46.0	22.9	19.0	Vb

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[Operating mode: 2402MHz, 2Mbps]

No.	Frequency [MHz]	Reading		C.F. [dB]	Result		Limit		Margin		PHASE
		QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dB]	AV [dB]	
1	0.15119	39.5	20.5	10.3	49.8	30.8	65.9	55.9	16.1	25.1	Va
2	0.41362	29.5	24.0	10.1	39.6	34.1	57.6	47.6	18.0	13.5	Va
3	2.79424	21.9	16.5	10.1	32.0	26.6	56.0	46.0	24.0	19.4	Va
4	0.16428	36.1	17.4	10.3	46.4	27.7	65.2	55.2	18.8	27.5	Vb
5	0.42399	29.5	21.3	10.1	39.6	31.4	57.4	47.4	17.8	16.0	Vb
6	2.87163	24.2	17.0	10.1	34.3	27.1	56.0	46.0	21.7	18.9	Vb

[Operating mode: 2442MHz, 2Mbps]

No.	Frequency [MHz]	Reading		C.F. [dB]	Result		Limit		Margin		PHASE
		QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dB]	AV [dB]	
1	0.15561	38.9	19.7	10.3	49.2	30.0	65.7	55.7	16.5	25.7	Va
2	0.41787	30.5	23.3	10.1	40.6	33.4	57.5	47.5	16.9	14.1	Va
3	2.49190	23.6	17.6	10.1	33.7	27.7	56.0	46.0	22.3	18.3	Va
4	0.16003	37.7	19.4	10.3	48.0	29.7	65.5	55.5	17.5	25.8	Vb
5	0.42127	30.6	23.3	10.1	40.7	33.4	57.4	47.4	16.7	14.0	Vb
6	2.72765	23.5	17.3	10.1	33.6	27.4	56.0	46.0	22.4	18.6	Vb

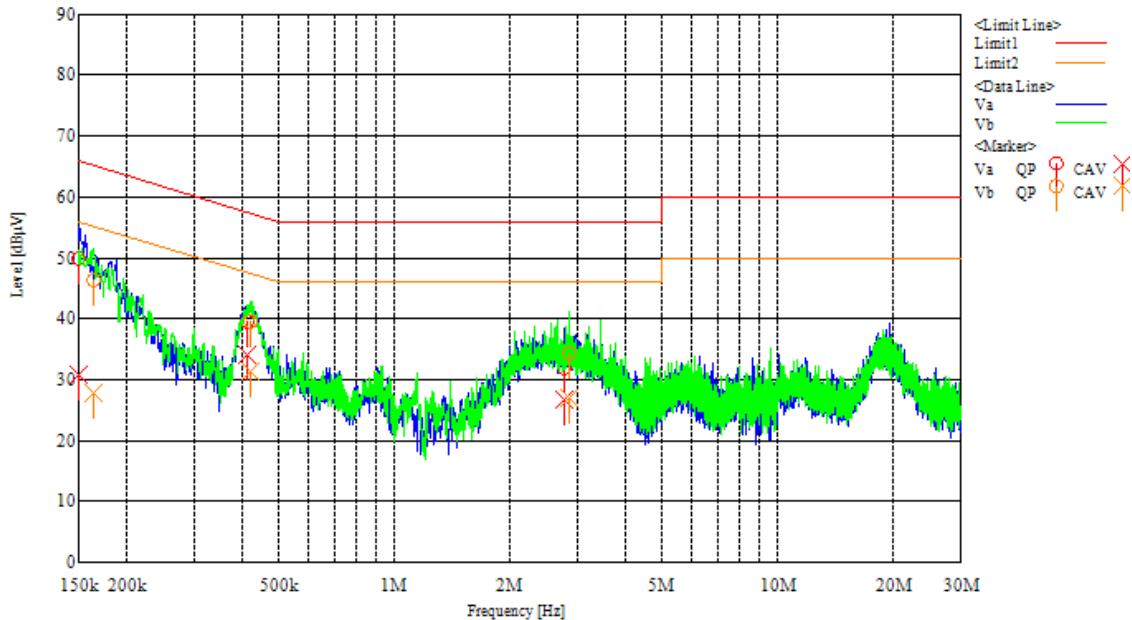
[Operating mode: 2480MHz, 2Mbps]

No.	Frequency [MHz]	Reading		C.F. [dB]	Result		Limit		Margin		PHASE
		QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dB]	AV [dB]	
1	0.15272	38.7	19.1	10.3	49.0	29.4	65.9	55.9	16.9	26.5	Va
2	0.41651	29.7	22.5	10.1	39.8	32.6	57.5	47.5	17.7	14.9	Va
3	2.37313	22.3	16.3	10.1	32.4	26.4	56.0	46.0	23.6	19.6	Va
4	0.16445	38.6	20.3	10.3	48.9	30.6	65.2	55.2	16.3	24.6	Vb
5	0.41906	30.5	23.3	10.1	40.6	33.4	57.5	47.5	16.9	14.1	Vb
6	2.84283	23.3	17.4	10.1	33.4	27.5	56.0	46.0	22.6	18.5	Vb

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[Chart (2402MHz, 2Mbps)]



Tested Date: March 5, 2020  
 Humidity: 50 %

Temperature: 17 degC  
 Atmos. Press: 1005 hPa

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## 4 List of utilized test equipment / calibration

RFT ID No.	Kind of Equipment and Precision	Manufacturer	Model No.	Serial Number	Calibration Date	Calibrated until
AC01(EM)	Anechoic Chamber (1st test room)	JSE	203397C	-	2019/04/20	2020/04/30
AC01(EG)	Anechoic Chamber (1st test room)	JSE	203397C	-	2019/03/30	2020/03/31
BA07	Biological Antenna	TESEQ	CBL6143A	26670	2019/12/09	2020/12/31
BRF12	Band Reject Filter (2400MHz)	M-City	BRF2440-01	RF0012-02	2019/03/20	2020/03/31
CL11	RF Cable for RE	RFT	-	-	2019/03/19	2020/03/31
CL18	RF Cable for CE	RFT	-	-	2019/03/20	2020/03/31
CL31	RF Cable 1 m	Junkosha	MWX221	1303S118	2020/01/30	2021/01/31
CL38	RF Cable 2 m	Junkosha	MWX221	1603S626	2020/01/30	2021/01/31
CL39	RF Cable 5 m	SUHNER	SUCOFLEX126E	523222	2020/02/03	2021/02/28
DH06	DRG Horn Antenna	A.H. Systems	SAS-571	1339	2018/06/19	2020/06/30
HPF4	High Pass Filter (3000MHz)	Tokyo KEIKI	TF23LCCZGA	9001	2019/12/03	2020/12/31
LN05	LISN	Kyoritsu	KNW-407F	8-1773-2	2019/05/13	2020/05/31
LP06	Loop Antenna	ETS-Lindgren	6502	00164299	2019/04/13	2020/04/30
PR12	Pre. Amplifier (1-26G)	Agilent Technologies	8449B	3008A02513	2020/01/29	2021/01/31
PR21	Pre. Amplifier	Anritsu	MH648A	6200467119	2019/12/03	2020/12/31
SH01	Standard Horn Antenna (18-26G)	A.H. Systems	SAS-572	208	2018/07/12	2020/07/31
TR06	Test Receiver (F/W : 4.73 SP4)	Rohde & Schwarz	ESU26	100002	2019/10/07	2020/10/31
TR09	Test Receiver (F/W : 4.43 SP3)	Rohde & Schwarz	ESU8	100386	2019/06/12	2020/06/30

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

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