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# **TEST REPORT**

For

# **Bluetooth Adapter Unit**

In conformity with

FCC Part 15C / RSS-247 Issue 2

Model Name: BU-4

FCC ID: K660C354X10 ISED Cert No.: 511B-0C354X10

**Report No.:** WE201012BC3-13

Issue Date: 12 Mar. 2021

### Prepared for

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#### Prepared by

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# History

Report No.	Date	Revisions	Issued By
WE201012BC3-11	10 Feb. 2021	Initial Issue	T. Kato
WE201012BC3-12	22 Feb. 2021	Revise the limit of frequency separation test (Sec. 2.2) Revise the limit of output power test (Sec. 2.5)	T. Kato
WE201012BC3-13	12 Mar. 2021	Add the comment about output power setting (Sec. 1.1)	T. Kato

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# **General information**

# 1.1 Product description from supplier

: Bluetooth Adapter Unit Test item Manufacturer : YAESU MUSEN CO., LTD.

Address : 43 Utsuroda, Morijuku, Sukagawa-shi, Fukushima-ken 962-0001 Japan

Model

FCC ID : K660C354X10 : 511B-0C354X10 ISED No. Serial number : 001 (for radiated test)

002 (for conducted test)

Hardware version : SPP2 Software version : V02

Operating frequency : 2402 - 2480 MHz

Modulation : GFSK, π/4-DQPSK, 8DPSK (Bluetooth BDR/EDR)

Antenna Gain : +2.14 dBi (Manufacturer's declare)

Output power setting : Default and the power setting is not adjustable (Manufacturer's declare)

Receipt date of EUT : 29 Jan. 2021 Nominal power source voltages : DC 13.8 V

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

: FCC CFR 47 Part 15 Subpart C Test specification(s)

> RSS-247 Issue 2 : ANSI C63.10: 2013

Test method(s)

Test(s) started : 01 Feb. 2021 : 05 Feb. 2021 Test(s) completed

Summary of test result : Complied

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 is case that the margin is less than the measurement uncertainty in the Laboratory.

Test engineer

T. Kato (Testing engineer, RF/EMC Lab.)

Reviewer

K. Onishi (Testing leader, RF/EMC Lab.)

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#### Test facility 1.3

The Federal Communications Commission has reviewed the technical characteristics of the test facilities at SGS Japan Inc., located in 472, Nippa-cho, Kohoku-ku, Yokohama, 223-0057, Japan, and has found these test facilities to be in compliance with the requirements of 47 CFR Part 15, section 2.948. The description of the test facilities has been filed under registration number 319924 at the Office of the Federal Communications Commission. The facility has been added to the list of laboratories performing these test services for the public on a fee basis.

The list of all public test facilities is available on the Internet at http://www.fcc.gov.

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

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

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



# 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.

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

AC Conducted emission Radiated emission

 $: \pm 3.3 \text{ dB} (150 \text{ kHz} - 30 \text{ MHz})$  $= \pm 6.7 \text{ dB } (9 \text{ kHz} - 30 \text{ MHz})$  $: \pm 5.2 \text{ dB } (30 \text{ MHz} - 1000 \text{ MHz})$  $: \pm 4.3 \text{ dB} (1 \text{ GHz} - 6 \text{ GHz})$  $: \pm 4.4 \text{ dB} (6 \text{ GHz} - 18 \text{ GHz})$  $: \pm 4.5 \text{ dB} (18 \text{ GHz} - 26 \text{ GHz})$ 

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# 1.5 Summary of test results

Requirement	Section in FCC	Section in RSS-247	Result	Section in this report
Occupied Bandwidth (20 dB)	15.247 (a)(1)	6.7 (RSS-Gen)	Complied	2.1
Occupied Bandwidth (99 %)	-	6.7 (RSS-Gen)	Complied	2.1.1
Hopping Carrier Frequency Separation	15.247 (a)(1)	5.1 (b)	Complied	2.2
Number of Hopping Channel	15.247 (a)(1)(iii)	5.1 (d)	Complied	2.3
Average Time of Occupancy	15.247 (a)(1)(iii)	5.1 (d)	Complied	2.4
Peak Output Power	15.247 (b)(1)	5.4 (b)	Complied	2.5
Conducted Spurious Emissions	15.247(d)	5.5	Complied	2.6
Transmitter Radiated Spurious Emissions	15.205(b)/15.209	8.9/8.10 (RSS-Gen)	Complied	2.7
AC power line conducted emissions	15.207	8.8 (RSS-Gen)	Complied	2.8
Radiated Emissions (Receiver)	-	7.3 (RSS-Gen)	Complied	2.9
AC power line conducted emissions (Receiver)	-	7.2 (RSS-Gen)	Complied	2.10

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# **Setup of equipment under test (EUT)**

# 1.6.1 Test configuration of EUT

#### Equipment(s) under test

	(-)				
I	No.	Item	Manufacture	Model No.	Serial No.
I	A1	Bluetooth Adapter Unit (for Radiated test)	YAESU MUSEN	BU-4	001
	A2	Bluetooth Adapter Unit (for Conducted test) (*)	YAESU MUSEN	BU-4	002

<sup>(\*)</sup> The antenna cable loss information with this sample was applied from the manufacturer.

**Support Equipment(s)** 

No.	Item	Manufacture	Model No.	Serial No.
В	AC adapter	POWERNET Technologies Corp.	PS30W-14J1	-
-	-	-	-	-

#### Connected cable(s)

No.	Item	From	То	Cable Shielded	Ferrite Core	Length [m]
1	DC Cable 1	A	DC	No	No	1.5
2	DC Cable 2	A	В	No	No	1.0

#### 1.6.2 **Operating condition:**

- Tx (2402MHz): The EUT is in normal transmission mode at 2402MHz (DH5/2DH5/3DH5)
- Tx (2441MHz): The EUT is in normal transmission mode at 2441MHz (DH5/2DH5/3DH5)
- Tx (2480MHz): The EUT is in normal transmission mode at 2480MHz (DH5/2DH5/3DH5)
- Rx (2402MHz): The EUT is in normal receiving mode at 2402MHz
- Rx (2441MHz): The EUT is in normal receiving mode at 2441MHz
- Rx (2480MHz): The EUT is in normal receiving mode at 2480MHz

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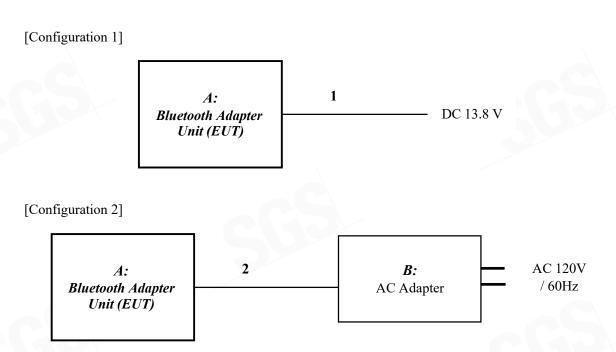
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### 1.6.3 Setup diagram of tested system



# 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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# Test procedure and test data

# Occupied Bandwidth (20 dB)

#### **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 6.9.2

- VBW > 3 x RBW - RBW: 1 to 5 % of OBW - Span : OBW x 2 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)

#### **Test results**

Tested sample: A2 Configuration: 1

Transmission Frequency [MHz]	Occupied Bandwidth [MHz] DH5	Occupied Bandwidth [MHz] 2DH5	Occupied Bandwidth [MHz] 3DH5
2402	0.899	1.245	1.269
2441	0.894	1.245	1.264
2480	0.899	1.245	1.269

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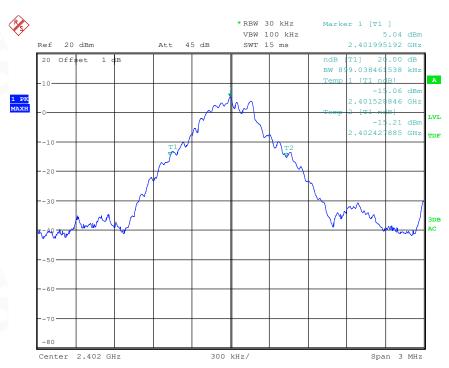
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#### [Chart]

Operating condition: Tx 2402 MHz DH5



Tested Date: 03 Feb. 2021 Temperature: 18 degC 1016 hPa Humidity: 41 % Atmos. Press:

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### 2.1.1 Occupied Bandwidth (99 %)

#### **Test setup**

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

Spectrum **EUT** Antenna Port Analyzer

#### **Test procedure**

Spectrum analyzer is set as below according to ANSI C63.10 clause 6.9.3

- RBW : 1 to 5 % of OBW -  $VBW > 3 \times RBW$ - 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	_
11100		

#### **Test results**

Tested sample: A2 Configuration: 1

Transmission Frequency [MHz]	Occupied Bandwidth [MHz] DH5	Occupied Bandwidth [MHz] 2DH5	Occupied Bandwidth [MHz] 3DH5
2402	0.870	1.168	1.159
2441	0.870	1.168	1.159
2480	0.870	1.173	1.163

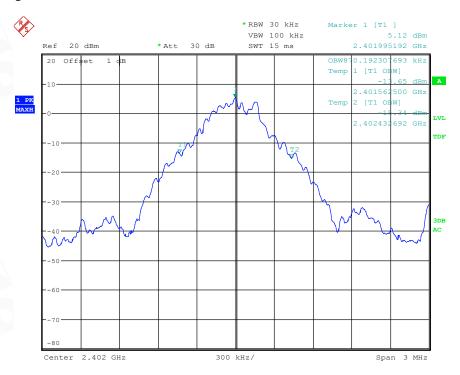
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#### [Chart]

Operating condition: Tx 2402 MHz DH5



Tested Date: 03 Feb. 2021 Temperature: 18 degC 1016 hPa Humidity: 41 % Atmos. Press:

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#### **Hopping Carrier Frequency Separation** 2.2

#### **Test setup**

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

Spectrum **EUT** Antenna Port Analyzer

#### **Test procedure**

Spectrum analyzer is set as below according to ANSI C63.10 clause 7.8.2

- RBW: about 30% of OBW

- VBW > RBW

- Trace: Max hold

### Applicable rule and limitation

FCC 15.247 (a)(1) RSS-247 Sec. 5.1 (b)

Frequency hopping systems operating in the 2400 - 2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater.

more than 846 kHz (2/3 of 20 dB OBW) Limit:

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

TRU0 CL51
-----------

Test results - Complied with requirement

**Test Data** 

Tested sample: A2 Configuration: 1

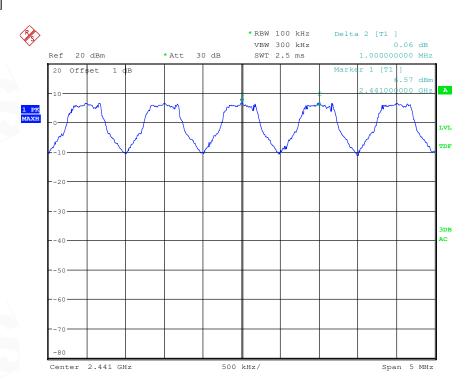
Frequency Separation [kHz]	Result
1000	Pass

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#### [Chart]



18 degC Tested Date: 03 Feb. 2021 Temperature: Humidity: 41 % Atmos. Press: 1016 hPa

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# 2.3 Number of Hopping Channel

#### **Test setup**

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

EUT Antenna Port Spectrum Analyzer

#### **Test procedure**

Spectrum analyzer is set as below according to ANSI C63.10 clause 7.8.3

- RBW: about 30% of OBW

- VBW > RBW

- Trace: Max hold

### Applicable rule and limitation

FCC 15.247 (a)(1)(iii) RSS-247 Sec. 5.1 (d)

Frequency hopping systems in the 2400 - 2483.5 MHz band shall use at least 15 channels.

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

TR06	CL31	

#### Test results - Complied with requirement

### **Test Data**

Tested sample: A2 Configuration: 1

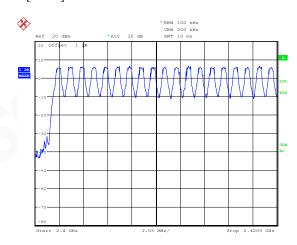
Number of channel	Result
79	Pass

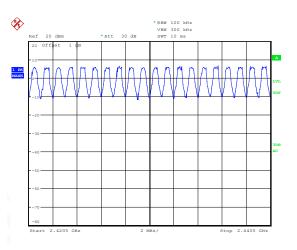
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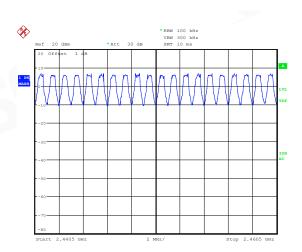


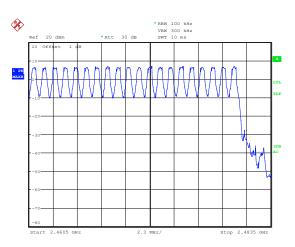
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#### [Chart]









Tested Date: 03 Feb. 2021 Humidity: 41 %

Temperature: 18 degC Atmos. Press: 1016 hPa

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# **Average Time of Occupancy**

#### **Test setup**

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

Spectrum **EUT** Antenna Port Analyzer

#### **Test procedure**

Spectrum analyzer is set as below according to ANSI C63.10 clause 7.8.4

- RBW < Channel separation

- Trace: Max hold

### Applicable rule and limitation

FCC 15.247 (a)(1)(iii) RSS-247 Sec. 5.1 (d)

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

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

|--|

### Test results - **Complied with requirement**

#### **Test Data**

Tested sample: A2 Configuration: 1

Observed	Pulse width	Observation	The number	Time of	Result
Frequency	[ms]	Time [s]	of pulse (*)	occupancy [s]	Result
2441 MHz (DH1)	0.378	31.6	66	0.249 (*)	Pass
2441 MHz (DH3)	1.628	31.6	21	0.342 (*)	Pass
2441 MHz (DH5)	2.885	31.6	12	0.346 (*)	Pass

The number of pulse was captured within a period of 10% observation time. The test result was calculated as below

Average time of occupancy

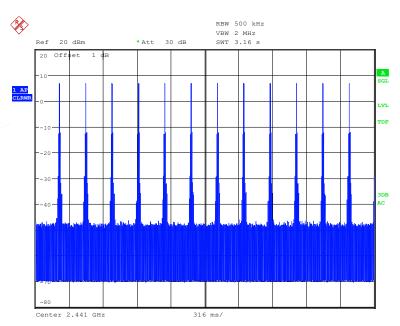
= (The number of captured pulse) x (Single Pulse width) x (100% / 10%)

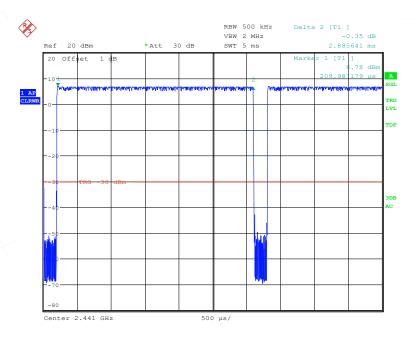
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DH5 [Chart]





Tested Date: 03 Feb. 2021 Temperature: 18 degC 1016 hPa Humidity: 41 % Atmos. Press:

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# **Peak Output Power**

#### **Test setup**

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

Spectrum **EUT** Antenna Port Analyzer

#### **Test procedure**

Spectrum analyzer is set as below according to ANSI C63.10 clause 7.8.5

-RBW > OBW- VBW > RBW

- Span: about 5 times of OBW - Trace: Max hold

## Applicable rule and limitation

FCC 15.247(b)(1) RSS-247 Sec. 5.4 (b)

For frequency hopping systems operating in the 2400 - 2483.5 MHz band employing at least 75 non-overlapping hopping channels : 1 w (+30 dBm)

For all other frequency hopping systems in the 2400 -2483.5 MHz band: 0.125 w (+21 dBm)

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

TR06	CL31	

#### Test results - Complied with requirement

#### **Test Data**

Tested sample: A2 Configuration: 1

Transmission Frequency [MHz]	Output Power DH5 [dBm]	Output Power 2DH5 [dBm]	Output Power 3DH5 [dBm]	Limit [dBm]	Result
2402	6.7	5.0	5.5	21	Pass
2441	6.9	5.8	6.2	21	Pass
2480	7.4	6.6	6.9	21	Pass

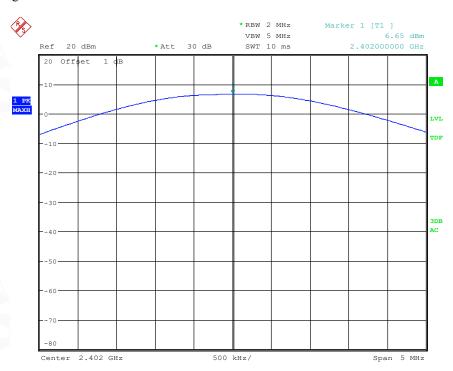
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### [Chart]

Operating condition: Tx 2402 MHz DH5



Tested Date: 03 Feb. 2021

Humidity: 41 % Temperature: 18 degC 1016 hPa Atmos. Press:

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# **Conducted Spurious Emissions**

#### **Test setup**

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

Spectrum **EUT** Antenna Port 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

FCC 15.247(d) RSS-247 Sec. 5.5

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**

Tested sample: A2 Configuration: 1

Operating mode: Tx 2402 MHz (DH5)

Frequency [MHz]	Spurious level [dBm]	Carrier level [dBm]	20dB below [dBm]
-	-	-	-
-	-	-	

Note: All emissions have more than 20 dB margin.

Operating mode: Tx 2402 MHz (2DH5)

Frequency	Spurious level	Carrier level	20dB below
[MHz]	[dBm]	[dBm]	[dBm]
2399.498	-34.46	3.88	-16.21
2399.996	-33.39	3.88	-16.21

Note: All other emissions have more than 20 dB margin.

Operating mode: Tx 2402 MHz (3DH5)

Frequency [MHz]	Spurious level [dBm]	Carrier level [dBm]	20dB below [dBm]
2399.473	-34.07	3.58	-16.42
2399.986	-33.34	3.58	-16.42

Note: All other emissions have more than 20 dB margin.

Operating mode: Tx 2441 MHz (DH5)

- 6	0	1		
	Frequency	Spurious level	Carrier level	20dB below
	[MHz]	[dBm]	[dBm]	[dBm]
	-		-	-
	-	-	-	-

Note: All emissions have more than 20 dB margin.

Operating mode: Tx 2441 MHz (2DH5)

u	unig mode. 1x 2 / /1 mil (25115)					
	Frequency	Spurious level	Carrier level	20dB below		
	[MHz]	[dBm]	[dBm]	[dBm]		
1	-	-	-			
	-	-	-	-		

Note: All emissions have more than 20 dB margin.

Operating mode: Tx 2441 MHz (3DH5)

Frequency [MHz]	Spurious level [dBm]	Carrier level [dBm]	20dB below [dBm]	
-		-	-	
-	-	-	-	

Note: All emissions have more than 20 dB margin.

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Operating mode: Tx 2480 MHz (DH5)

Frequency [MHz]	Spurious level [dBm]	Carrier level [dBm]	20dB below [dBm]	
-	-	-	-	
	-	-	-	

Note: All emissions have more than 20 dB margin.

Operating mode: Tx 2480 MHz (2DH5)

Frequency [MHz]	Spurious level [dBm]	Carrier level [dBm]	20dB below [dBm]	
-	-	-	-	
-	-	-	-	

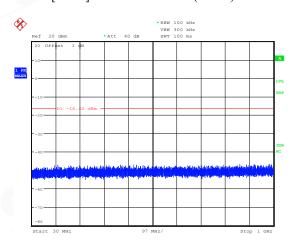
Note: All emissions have more than 20 dB margin.

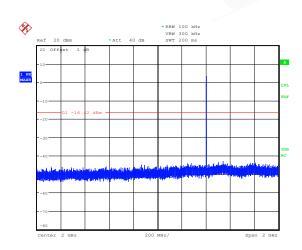
Operating mode: Tx 2480 MHz (3DH5)

Frequency	Spurious level	Carrier level	20dB below		
[MHz] -	[dBm]	[dBm] -	[dBm] -		
-	-	-	-		

Note: All emissions have more than 20 dB margin.

[Chart] Tx 2402MHz (3DH5)

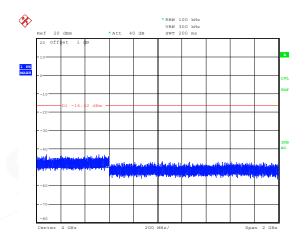


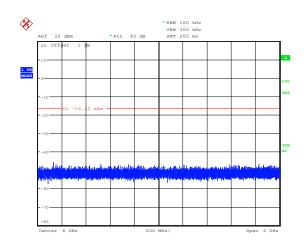


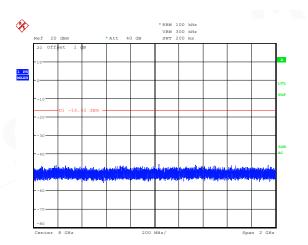
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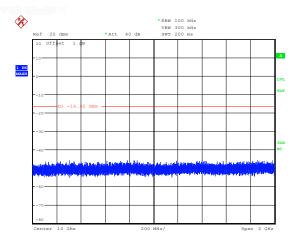


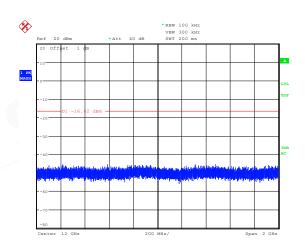
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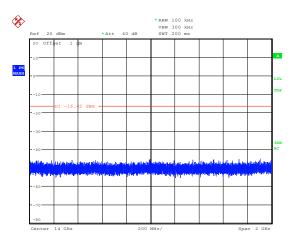








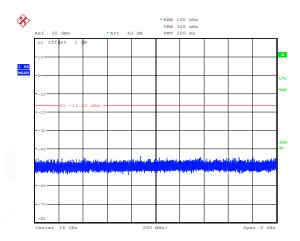


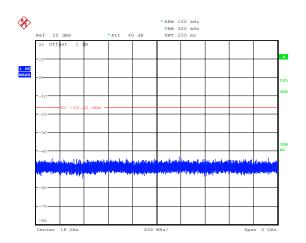


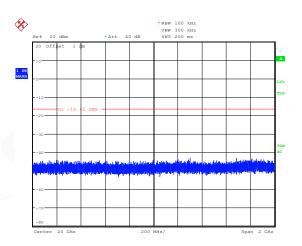
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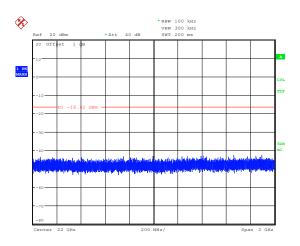


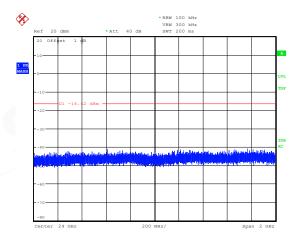
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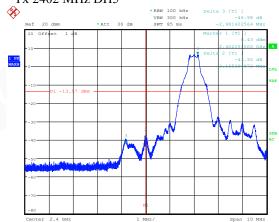
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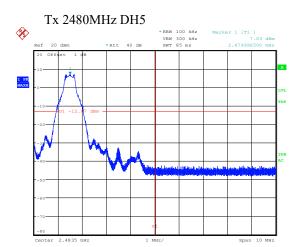


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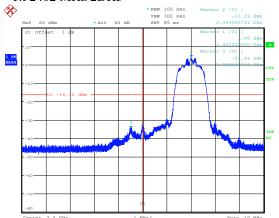
#### [Band edge]

#### Tx 2402 MHz DH5

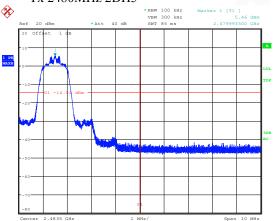




#### Tx 2402 MHz 2DH5



#### Tx 2480MHz 2DH5

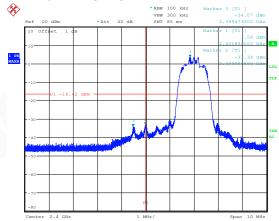


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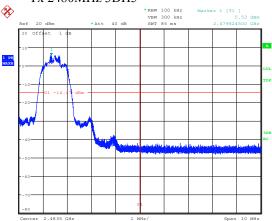


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#### Tx 2402 MHz 3DH5







Tested Date: 03 Feb. 2021 Humidity: 41 %

Temperature: 18 degC 1016 hPa Atmos. Press:

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# Radiated emissions (for restricted frequency band)

#### **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: OP

[30 - 1000 MHz]

RBW: 120 kHz, Detector: QP

[above 1000 MHz]

RBW: 1 MHz, Detector: Ave/PK

#### Applicable rule and limitation

RSS-Gen Sec. 8.10

FCC 15.205 restricted bands of operation

Except as shown in paragraph 15.205 (d) of this section, only spurious emissions are permitted in any of

the frequency bands listed below:

the frequency bands fisted below.										
MHz	MHz	MHz	GHz							
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15							
0.490 - 0.510	16.69475 - 16.69525	608 - 614	5.35 - 5.46							
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75							
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5							
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2							
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5							
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7							
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4							
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5							
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2							
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4							
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12							
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0							
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8							
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5							
12.57675 - 12.57725	322 - 335.4	3600 - 4400	38.6 -							

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.

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FCC 15.209 / RSS-Gen Sec. 8.9 Field strength limits

	Frequency	Field Strength	Measurement	Field Strength
l	[MHz]	$[\mu V/m]$	Distance [m]	$[dB\mu V/m]$
I	30 - 88	100	3	40.0
ĺ	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 require**ment

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

ſ	AC01	CL11	TR06	PR21	BA07	CL38	CL39	PR12
Γ	DH06	SH05	SH01	LP06	LPF1	HPF11	AT33	

#### Test software used

EMI1 Ver. 6.1

#### Calculation method

The Correction Factor and Result are calculated as followings.

Correction Factor [dB/m] = Ant. Factor [dB/m] + Loss [dB] - Gain [dB] Result  $[dB\mu V/m] = Reading [dB\mu V] + Correction Factor [dB/m]$ 

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#### Test Data (below 30MHz)

Tested sample: A1 Configuration: 1

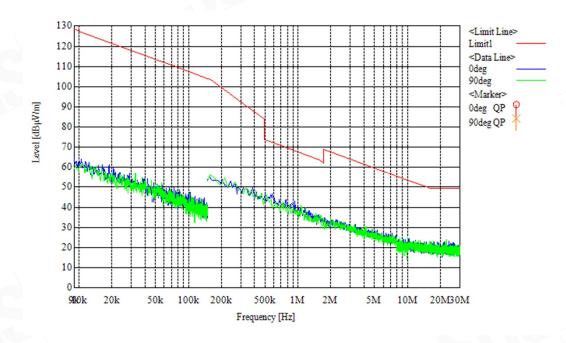
Worst operating mode: Tx 2441MHz DH5 Z-plane

[Emission level]

No.	Frequency [MHz]	Reading [dBµV]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Ant.
_	-	-	-	-	-	-	-	-	-
-	-	-	-	ı	-	-	-	1	-

Note: All emissions were under noise floor.

[Chart]



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#### Test Data (30 - 1000MHz)

Tested sample: A1 Configuration: 1

Operating mode: Tx 2402MHz DH5 X-plane

[Emission level]

No.	Frequency [MHz]	Reading [dBµV]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Ant.
1	232.000	28.0	12.3	9.1	30.2	19.2	46.0	26.8	Vert.
2	300.000	29.9	13.4	9.7	30.2	22.8	46.0	23.2	Vert.
3	524.000	27.4	17.6	11.3	30.1	26.2	46.0	19.8	Vert.
4	960.000	20.7	21.1	13.6	28.6	26.8	46.0	19.2	Vert.

Note: All other emissions are under noise floor.

Tx 2402MHz DH5 Y-plane *Operating mode:* 

[Emission level]

No.	Frequency [MHz]	Reading [dBµV]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Ant.
1	220.000	30.2	12.1	9.0	30.1	21.2	46.0	24.8	Vert.
2	244.000	29.6	12.6	9.2	30.2	21.2	46.0	24.8	Vert.
3	296.000	29.7	13.3	9.7	30.2	22.5	46.0	23.5	Vert.
4	960.000	20.8	21.1	13.6	28.6	26.9	46.0	19.1	Vert.

Note: All other emissions are under noise floor.

Operating mode: Tx 2402MHz DH5 Z-plane

[Emission level]

Limbs	non ieveij								
No.	Frequency [MHz]	Reading [dBµV]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Ant.
1	220.000	31.3	12.1	9.0	30.1	22.3	46.0	23.7	Vert.
2	304.000	28.5	13.5	9.7	30.2	21.5	46.0	24.5	Vert.
3	348.000	27.7	14.8	10.1	30.2	22.4	46.0	23.6	Vert.
4	960.000	20.7	21.1	13.6	28.6	26.8	46.0	19.2	Vert.

Note: All other emissions are under noise floor.

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Operating mode: Tx 2441MHz DH5 X-plane

[Emission level]

23111101									
No.	Frequency [MHz]	Reading [dBµV]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Ant.
1	304.000	30.4	13.5	9.7	30.2	23.4	46.0	22.6	Hori.
2	228.000	32.9	12.2	9.1	30.2	24.0	46.0	22.0	Vert.
3	252.000	32.7	12.7	9.3	30.2	24.5	46.0	21.5	Vert.
4	548.000	29.8	17.9	11.4	30.1	29.0	46.0	17.0	Vert.
5	960.000	20.7	21.1	13.6	28.6	26.8	46.0	19.2	Vert.

Note: All other emissions are under noise floor.

Tx 2441MHz DH5 Y-plane *Operating mode:* 

[Emission level]

LEIII	Emission level									
No	Frequency [MHz]	Reading [dBµV]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Ant.	
1	232.000	31.9	12.3	9.1	30.2	23.1	46.0	22.9	Vert.	
2	304.000	32.8	13.5	9.7	30.2	25.8	46.0	20.2	Vert.	
3	424.000	29.2	16.4	10.7	30.2	26.1	46.0	19.9	Vert.	
4	508.000	32.4	17.3	11.2	30.1	30.8	46.0	15.2	Vert.	
5	536.000	31.6	17.7	11.4	30.1	30.6	46.0	15.4	Vert.	
6	960.000	20.8	21.1	13.6	28.6	26.9	46.0	19.1	Vert.	

Operating mode: Tx 2441MHz DH5 Z-plane

[Emission level]

No.	Frequency [MHz]	Reading [dBµV]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Ant.	
1	140.000	26.5	12.5	8.2	30.2	17.0	43.5	26.5	Vert.	
2	252.000	35.7	12.7	9.3	30.2	27.5	46.0	18.5	Vert.	
3	388.000	29.8	15.8	10.4	30.3	25.7	46.0	20.3	Vert.	
4	508.000	31.0	17.3	11.2	30.1	29.4	46.0	16.6	Vert.	
5	536.000	30.3	17.7	11.4	30.1	29.3	46.0	16.7	Vert.	
6	960.000	20.8	21.1	13.6	28.6	26.9	46.0	19.1	Vert.	

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Operating mode: Tx 2480MHz DH5 X-plane

[Emission level]

	Simbolon level										
No.	Frequency [MHz]	Reading [dBµV]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Ant.		
1	228.000	34.2	12.2	9.1	30.2	25.3	46.0	20.7	Vert.		
2	296.000	32.2	13.3	9.7	30.2	25.0	46.0	21.0	Vert.		
3	380.000	27.6	15.6	10.4	30.3	23.3	46.0	22.7	Vert.		
4	520.000	30.3	17.5	11.3	30.1	29.0	46.0	17.0	Vert.		
5	528.000	30.3	17.6	11.3	30.1	29.1	46.0	16.9	Vert.		
6	960.000	20.7	21.1	13.6	28.6	26.8	46.0	19.2	Vert.		

Tx 2480MHz DH5 Y-plane Operating mode:

[Emission level]

Limss	Emission rever									
No.	Frequency [MHz]	Reading [dBµV]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Ant.	
1	200.000	29.9	11.6	8.8	30.1	20.2	43.5	23.3	Vert.	
2	228.000	30.7	12.2	9.1	30.2	21.8	46.0	24.2	Vert.	
3	248.000	34.6	12.6	9.3	30.2	26.3	46.0	19.7	Vert.	
4	276.000	32.4	13.1	9.5	30.2	24.8	46.0	21.2	Vert.	
5	536.000	29.4	17.7	11.4	30.1	28.4	46.0	17.6	Vert.	
6	960.000	20.7	21.1	13.6	28.6	26.8	46.0	19.2	Vert.	

Operating mode: Tx 2480MHz DH5 Z-plane

[Emission level]

No.	Frequency [MHz]	Reading [dBµV]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Ant.
1	296.000	33.7	13.3	9.7	30.2	26.5	46.0	19.5	Hori.
2	228.000	37.8	12.2	9.1	30.2	28.9	46.0	17.1	Vert.
3	252.000	39.3	12.7	9.3	30.2	31.1	46.0	14.9	Vert.
4	536.000	31.7	17.7	11.4	30.1	30.7	46.0	15.3	Vert.
5	960.000	20.8	21.1	13.6	28.6	26.9	46.0	19.1	Vert.

Note: All other emissions are under noise floor.

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Operating mode: Tx 2402MHz 2DH5 X-plane

[Emission level]

	No.	Frequency [MHz]	Reading [dBµV]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Ant.
	1	350.000	28.2	14.8	10.1	30.3	22.8	46.0	23.2	Hori.
	2	536.000	30.1	17.7	11.4	30.1	29.1	46.0	16.9	Hori.
	3	220.000	34.1	12.1	9.0	30.1	25.1	46.0	20.9	Vert.
1	4	240.000	29.6	12.5	9.2	30.2	21.1	46.0	24.9	Vert.
	5	516.000	30.9	17.4	11.3	30.1	29.5	46.0	16.5	Vert.
	6	960.000	20.7	21.1	13.6	28.6	26.8	46.0	19.2	Vert.

Tx 2402MHz 2DH5 Y-plane Operating mode:

[Emission level]

Limss	Emission rever									
No.	Frequency [MHz]	Reading [dBµV]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Ant.	
1	216.000	31.3	12.0	9.0	30.1	22.2	43.5	21.3	Vert.	
2	240.000	34.3	12.5	9.2	30.2	25.8	46.0	20.2	Vert.	
3	248.000	33.7	12.6	9.3	30.2	25.4	46.0	20.6	Vert.	
4	416.000	30.8	16.3	10.6	30.3	27.4	46.0	18.6	Vert.	
5	524.000	31.6	17.6	11.3	30.1	30.4	46.0	15.6	Vert.	
6	568.000	27.2	18.1	11.5	30.1	26.7	46.0	19.3	Vert.	

Operating mode: Tx 2402MHz 2DH5 Y-plane

[Emission level]

No.	Frequency [MHz]	Reading [dBµV]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Ant.
1	220.000	31.3	12.1	9.0	30.1	22.3	46.0	23.7	Vert.
2	248.000	41.4	12.6	9.3	30.2	33.1	46.0	12.9	Vert.
3	496.000	29.5	17.2	11.2	30.1	27.8	46.0	18.2	Vert.
4	532.000	30.9	17.7	11.3	30.1	29.8	46.0	16.2	Vert.
5	960.000	20.7	21.1	13.6	28.6	26.8	46.0	19.2	Vert.

Note: All other emissions are under noise floor.

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Operating mode: Tx 2441MHz 2DH5 X-plane

[Emission level]

_ 12	inission level									
	No.	Frequency [MHz]	Reading [dBµV]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Ant.
	1	216.000	32.3	12.0	9.0	30.1	23.2	43.5	20.3	Vert.
	2	220.000	36.4	12.1	9.0	30.1	27.4	46.0	18.6	Vert.
	3	248.000	30.4	12.6	9.3	30.2	22.1	46.0	23.9	Vert.
	4	284.000	29.5	13.2	9.6	30.2	22.1	46.0	23.9	Vert.
	5	516.000	30.9	17.4	11.3	30.1	29.5	46.0	16.5	Vert.
	6	536.000	30.3	17.7	11.4	30.1	29.3	46.0	16.7	Vert.

Tx 2441MHz 2DH5 Y-plane Operating mode:

[Emission level]

Limbs	Emission rever									
No.	Frequency [MHz]	Reading [dBµV]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Ant.	
1	144.000	30.7	12.1	8.2	30.2	20.8	43.5	22.7	Vert.	
2	216.000	31.1	12.0	9.0	30.1	22.0	43.5	21.5	Vert.	
3	220.000	35.6	12.1	9.0	30.1	26.6	46.0	19.4	Vert.	
4	248.000	32.5	12.6	9.3	30.2	24.2	46.0	21.8	Vert.	
5	276.000	32.7	13.1	9.5	30.2	25.1	46.0	20.9	Vert.	
6	516.000	31.3	17.4	11.3	30.1	29.9	46.0	16.1	Vert.	
7	688.000	26.6	18.9	12.0	30.2	27.3	46.0	18.7	Vert.	

Operating mode: Tx 2441MHz 2DH5 Z-plane

[Emission level]

No.	Frequency [MHz]	Reading [dBµV]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Ant.	
1	136.000	26.7	12.6	8.2	30.2	17.3	43.5	26.2	Vert.	
2	220.000	34.1	12.1	9.0	30.1	25.1	46.0	20.9	Vert.	
3	248.000	31.2	12.6	9.3	30.2	22.9	46.0	23.1	Vert.	
4	396.000	29.0	16.0	10.5	30.3	25.2	46.0	20.8	Vert.	
5	516.000	29.3	17.4	11.3	30.1	27.9	46.0	18.1	Vert.	
6	960.000	20.8	21.1	13.6	28.6	26.9	46.0	19.1	Vert.	

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Operating mode: Tx 2480MHz 2DH5 X-plane

[Emission level]

1.0	Annosion level										
	No.	Frequency [MHz]	Reading [dBµV]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Ant.	
	1	536.000	30.2	17.7	11.4	30.1	29.2	46.0	16.8	Hori.	
	2	220.000	33.8	12.1	9.0	30.1	24.8	46.0	21.2	Vert.	
	3	228.000	35.0	12.2	9.1	30.2	26.1	46.0	19.9	Vert.	
	4	240.000	34.8	12.5	9.2	30.2	26.3	46.0	19.7	Vert.	
	5	248.000	36.7	12.6	9.3	30.2	28.4	46.0	17.6	Vert.	
	6	960.000	20.8	21.1	13.6	28.6	26.9	46.0	19.1	Vert.	

Operating mode: Tx 2480MHz 2DH5 Y-plane

[Emission level]

Emission level									
No.	Frequency [MHz]	Reading [dBµV]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Ant.
1	144.000	29.1	12.1	8.2	30.2	19.2	43.5	24.3	Vert.
2	228.000	34.4	12.2	9.1	30.2	25.5	46.0	20.5	Vert.
3	276.000	30.4	13.1	9.5	30.2	22.8	46.0	23.2	Vert.
4	524.000	29.9	17.6	11.3	30.1	28.7	46.0	17.3	Vert.
5	960.000	20.8	21.1	13.6	28.6	26.9	46.0	19.1	Vert.

Note: All other emissions are under noise floor.

Operating mode: Tx 2480MHz 2DH5 Z-plane

[Emission level]

No.	Frequency [MHz]	Reading [dBµV]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Ant.	
1	144.000	29.0	12.1	8.2	30.2	19.1	43.5	24.4	Vert.	
2	228.000	39.0	12.2	9.1	30.2	30.1	46.0	15.9	Vert.	
3	248.000	32.3	12.6	9.3	30.2	24.0	46.0	22.0	Vert.	
4	524.000	30.1	17.6	11.3	30.1	28.9	46.0	17.1	Vert.	
5	960.000	20.8	21.1	13.6	28.6	26.9	46.0	19.1	Vert.	

Note: All other emissions are under noise floor.

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Operating mode: Tx 2402MHz 3DH5 X-plane

[Emission level]

	Sion ieverj								
No.	Frequency [MHz]	Reading [dBµV]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Ant.
1	536.000	30.0	17.7	11.4	30.1	29.0	46.0	17.0	Hori.
2	136.000	28.4	12.6	8.2	30.2	19.0	43.5	24.5	Vert.
3	216.000	29.1	12.0	9.0	30.1	20.0	43.5	23.5	Vert.
4	220.000	33.9	12.1	9.0	30.1	24.9	46.0	21.1	Vert.
5	228.000	35.4	12.2	9.1	30.2	26.5	46.0	19.5	Vert.
6	416.000	29.4	16.3	10.6	30.3	26.0	46.0	20.0	Vert.

Operating mode: Tx 2402MHz 3DH5 Y-plane

[Émission level]

Linission level									
No.	Frequency [MHz]	Reading [dBµV]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Ant.
1	220.000	33.9	12.1	9.0	30.1	24.9	46.0	21.1	Vert.
2	228.000	33.6	12.2	9.1	30.2	24.7	46.0	21.3	Vert.
3	256.000	32.2	12.8	9.3	30.2	24.1	46.0	21.9	Vert.
4	276.000	32.0	13.1	9.5	30.2	24.4	46.0	21.6	Vert.
5	508.000	30.5	17.3	11.2	30.1	28.9	46.0	17.1	Vert.
6	528.000	29.4	17.6	11.3	30.1	28.2	46.0	17.8	Vert.

Operating mode: Tx 2402MHz 3DH5 Z-plane

[Emission level]

No.	Frequency [MHz]	Reading [dBµV]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Ant.
1	136.000	28.9	12.6	8.2	30.2	19.5	43.5	24.0	Vert.
2	240.000	35.5	12.5	9.2	30.2	27.0	46.0	19.0	Vert.
3	412.000	26.6	16.2	10.6	30.3	23.1	46.0	22.9	Vert.
4	524.000	28.6	17.6	11.3	30.1	27.4	46.0	18.6	Vert.
5	528.000	25.8	17.6	11.3	30.1	24.6	46.0	21.4	Vert.
6	960.000	20.8	21.1	13.6	28.6	26.9	46.0	19.1	Vert.

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Model: BU-4 Page 37 of 79

Operating mode: Tx 2441MHz 3DH5 X-plane

[Emission level]

3111100	ion ieveij								
No.	Frequency [MHz]	Reading [dBµV]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Ant.
1	536.000	31.0	17.7	11.4	30.1	30.0	46.0	16.0	Hori.
2	220.000	33.0	12.1	9.0	30.1	24.0	46.0	22.0	Vert.
3	224.000	33.5	12.2	9.1	30.2	24.6	46.0	21.4	Vert.
4	228.000	35.4	12.2	9.1	30.2	26.5	46.0	19.5	Vert.
5	284.000	31.2	13.2	9.6	30.2	23.8	46.0	22.2	Vert.
6	516.000	30.4	17.4	11.3	30.1	29.0	46.0	17.0	Vert.

Tx 2441MHz 3DH5 Y-plane Operating mode:

[Emission level]

Limbs	Allission level											
No.	Frequency [MHz]	Reading [dBµV]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Ant.			
1	220.000	35.5	12.1	9.0	30.1	26.5	46.0	19.5	Vert.			
2	228.000	32.9	12.2	9.1	30.2	24.0	46.0	22.0	Vert.			
3	276.000	30.6	13.1	9.5	30.2	23.0	46.0	23.0	Vert.			
4	508.000	32.0	17.3	11.2	30.1	30.4	46.0	15.6	Vert.			
5	516.000	31.6	17.4	11.3	30.1	30.2	46.0	15.8	Vert.			
6	524.000	31.6	17.6	11.3	30.1	30.4	46.0	15.6	Vert.			

Operating mode: Tx 2441MHz 3DH5 Z-plane

[Emission level]

No.	Frequency [MHz]	Reading [dBµV]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Ant.
1	232.000	34.2	12.3	9.1	30.2	25.4	46.0	20.6	Vert.
2	236.000	35.4	12.4	9.2	30.2	26.8	46.0	19.2	Vert.
3	240.000	40.0	12.5	9.2	30.2	31.5	46.0	14.5	Vert.
4	244.000	37.2	12.6	9.2	30.2	28.8	46.0	17.2	Vert.
5	248.000	38.8	12.6	9.3	30.2	30.5	46.0	15.5	Vert.
6	960.000	20.8	21.1	13.6	28.6	26.9	46.0	19.1	Vert.

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URL: www.sgsgroup.jp



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Operating mode: Tx 2480MHz 3DH5 X-plane

[Emission level]

1.0	3111100	ion ieveij								
	No.	Frequency [MHz]	Reading [dBµV]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Ant.
	1	536.000	31.0	17.7	11.4	30.1	30.0	46.0	16.0	Hori.
	2	544.000	32.1	17.8	11.4	30.1	31.2	46.0	14.8	Hori.
	3	220.000	37.5	12.1	9.0	30.1	28.5	46.0	17.5	Vert.
	4	228.000	36.5	12.2	9.1	30.2	27.6	46.0	18.4	Vert.
	5	516.000	31.6	17.4	11.3	30.1	30.2	46.0	15.8	Vert.
	6	524.000	31.5	17.6	11.3	30.1	30.3	46.0	15.7	Vert.

Tx 2480MHz 3DH5 Y-plane Operating mode:

[Émission level]

Limbs	sion icverj				\				
No.	Frequency [MHz]	Reading [dBµV]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Ant.
1	536.000	29.7	17.7	11.4	30.1	28.7	46.0	17.3	Hori.
2	220.000	35.8	12.1	9.0	30.1	26.8	46.0	19.2	Vert.
3	224.000	35.9	12.2	9.1	30.2	27.0	46.0	19.0	Vert.
4	228.000	37.8	12.2	9.1	30.2	28.9	46.0	17.1	Vert.
5	516.000	29.6	17.4	11.3	30.1	28.2	46.0	17.8	Vert.
6	524.000	31.1	17.6	11.3	30.1	29.9	46.0	16.1	Vert.

Operating mode: Tx 2480MHz 3DH5 Z-plane

[Emission level]

No.	Frequency [MHz]	Reading [dBµV]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Ant.
1	144.000	27.8	12.1	8.2	30.2	17.9	43.5	25.6	Vert.
2	236.000	35.4	12.4	9.2	30.2	26.8	46.0	19.2	Vert.
3	240.000	40.1	12.5	9.2	30.2	31.6	46.0	14.4	Vert.
4	244.000	35.9	12.6	9.2	30.2	27.5	46.0	18.5	Vert.
5	248.000	36.6	12.6	9.3	30.2	28.3	46.0	17.7	Vert.
6	960.000	21.0	21.1	13.6	28.6	27.1	46.0	18.9	Vert.

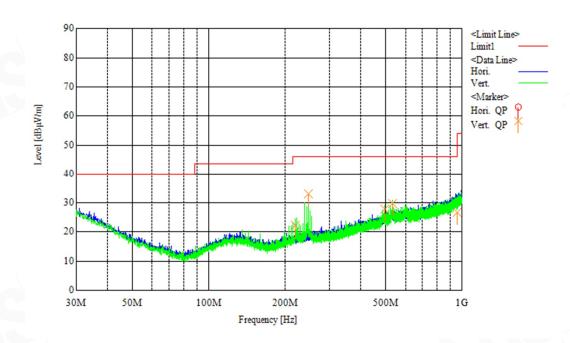
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[Chart]

Tx 2402MHz 2DH5 Z-plane



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# **Test Data (1 – 12.4GHz)**

Tested sample: A1 Configuration: 1

Tx 2402MHz DH5 X-plane Operating mode:

[Emission level]

Ŀ		ssion icver										\
	No.	Frequency	Reading PK	Reading Ave	C.Factor	Result PK	Result Ave	Limit PK	Limit Ave	Margin PK	Margin Ave	Ant.
	110.	[MHz]	[dBµV]	[dBµV]	[dB]			[dBµV/m]		[dB]	[dB]	7 titt.
	1	4804.000	49.4	44.1	2.1	51.5	46.9	73.9	53.9	22.4	7.0	Hori.
	2	4804.000	48.0	41.9	2.1	50.1	44.7	73.9	53.9	23.8	9.2	Vert.

Note: All other emissions are under noise floor.

Note: Duty cycle compensation (92.3% = 0.7 dB) is added to the average result.

Operating mode: Tx 2402MHz DH5 Y-plane

[Emission level]

_											
N	Frequency [MHz]	Reading PK [dBµV]	Reading Ave [dBµV]	C.Factor [dB]	PK	Result Ave [dBµV/m]	Limit PK [dBµV/m]	Limit Ave [dBµV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	4804.000	52.8	48.8	2.1	54.9	51.6	73.9	53.9	19.0	2.3	Hori.
2	4804.000	50.4	45.8	2.1	52.5	48.6	73.9	53.9	21.4	5.3	Vert.

Note: All other emissions are under noise floor.

Note: Duty cycle compensation (92.3% = 0.7 dB) is added to the average result.

Tx 2402MHz DH5 Z-plane Operating mode:

[Emission level]

LIIII	ssion icverj										
No.	Frequency [MHz]	Reading PK [dBµV]	Reading Ave [dBµV]	C.Factor [dB]	PK	Result Ave [dBµV/m]	Limit PK [dBµV/m]	Limit Ave [dBµV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	4804.000	49.5	44.3	2.1	51.6	47.1	73.9	53.9	22.3	6.8	Hori.
2	4804.000	52.8	48.9	2.1	54.9	51.7	73.9	53.9	19.0	2.2	Vert.

Note: All other emissions are under noise floor.

Note: Duty cycle compensation (92.3% = 0.7 dB) is added to the average result.

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Operating mode: Tx 2441MHz DH5 X-plane

[Emission level]

	bron rever										
No.	Frequency [MHz]	Reading PK [dBµV]	Reading Ave [dBµV]	C.Factor [dB]	PK	Result Ave [dBµV/m]	Limit PK [dBµV/m]	Limit Ave [dBµV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	4882.000	51.1	47.0	2.6	53.7	50.3	73.9	53.9	20.2	3.6	Hori.
2	7323.000	42.0	30.1	6.7	48.7	37.5	73.9	53.9	25.2	16.4	Hori.
3	4882.000	48.0	41.7	2.6	50.6	45.0	73.9	53.9	23.3	8.9	Vert.
4	7323.000	42.7	30.6	6.7	49.4	38.0	73.9	53.9	24.5	15.9	Vert.

Note: All other emissions are under noise floor.

Note: Duty cycle compensation (92.3% = 0.7 dB) is added to the average result.

Operating mode: Tx 2441MHz DH5 Y-plane

[Emission level]

No	Frequency [MHz]	Reading PK [dBµV]	Reading Ave [dBµV]	C.Factor [dB]	PK	Result Ave [dBµV/m]	Limit PK [dBµV/m]	Limit Ave [dBµV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	4882.000	54.0	50.3	2.6	56.6	53.6	73.9	53.9	17.3	0.3	Hori.
2	7323.000	42.6	31.4	6.7	49.3	38.8	73.9	53.9	24.6	15.1	Hori.
3	4882.000	48.1	42.8	2.6	50.7	46.1	73.9	53.9	23.2	7.8	Vert.
4	7323.000	41.9	29.4	6.7	48.6	36.8	73.9	53.9	25.3	17.1	Vert.

Note: All other emissions are under noise floor.

Note: Duty cycle compensation (92.3% = 0.7 dB) is added to the average result.

Operating mode: Tx 2441MHz DH5 Z-plane

[Emission level]

No.	Frequency [MHz]	Reading PK [dBµV]	Reading Ave [dBµV]	C.Factor [dB]	PK	Result Ave [dBµV/m]	Limit PK [dBµV/m]	Limit Ave [dBµV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	4882.000	50.6	46.2	2.6	53.2	49.5	73.9	53.9	20.7	4.4	Hori.
2	7323.000	41.9	30.3	6.7	48.6	37.7	73.9	53.9	25.3	16.2	Hori.
3	4882.000	52.3	48.9	2.6	54.9	52.2	73.9	53.9	19.0	1.7	Vert.
4	7323.000	41.7	29.6	6.7	48.4	37.0	73.9	53.9	25.5	16.9	Vert.

Note: All other emissions are under noise floor.

Note: Duty cycle compensation (92.3% = 0.7 dB) is added to the average result.

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Model: BU-4 Page 42 of 79

Operating mode: Tx 2480MHz DH5 X-plane

[Emission level]

	bron rever										
No.	Frequency [MHz]	Reading PK [dBµV]	Reading Ave [dBµV]	C.Factor [dB]	PK	Result Ave [dBµV/m]	Limit PK [dBµV/m]	Limit Ave [dBµV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	4960.000	51.1	46.9	2.8	53.9	50.4	73.9	53.9	20.0	3.5	Hori.
2	7440.000	42.3	30.3	6.5	48.8	37.5	73.9	53.9	25.1	16.4	Hori.
3	4960.000	49.7	45.1	2.8	52.5	48.6	73.9	53.9	21.4	5.3	Vert.
4	7440.000	43.5	31.7	6.5	50.0	38.9	73.9	53.9	23.9	15.0	Vert.

Note: All other emissions are under noise floor.

Note: Duty cycle compensation (92.3% = 0.7 dB) is added to the average result.

Operating mode: Tx 2480MHz DH5 Y-plane

[Emission level]

	obton tever										
No.	Frequency [MHz]	Reading PK [dBµV]	Reading Ave [dBµV]	C.Factor [dB]	PK	Result Ave [dBµV/m]	Limit PK [dBµV/m]	Limit Ave [dBµV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	4960.000	51.9	47.7	2.8	54.7	51.2	73.9	53.9	19.2	2.7	Hori.
2	7440.000	44.0	30.9	6.5	50.5	38.1	73.9	53.9	23.4	15.8	Hori.
3	4960.000	50.4	46.0	2.8	53.2	49.5	73.9	53.9	20.7	4.4	Vert.
4	7440.000	42.7	30.4	6.5	49.2	37.6	73.9	53.9	24.7	16.3	Vert.

Note: All other emissions are under noise floor.

Note: Duty cycle compensation (92.3% = 0.7 dB) is added to the average result.

Operating mode: Tx 2480MHz DH5 Z-plane

[Emission level]

121	mssion rever										
N	Frequency [MHz]	Reading PK [dBµV]	Reading Ave [dBµV]	C.Factor [dB]	PK	Result Ave [dBµV/m]	Limit PK [dBµV/m]	Limit Ave [dBµV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	4960.000	50.9	46.4	2.8	53.7	49.9	73.9	53.9	20.2	4.0	Hori.
2	7440.000	43.3	30.7	6.5	49.8	37.9	73.9	53.9	24.1	16.0	Hori.
3	4960.000	52.7	49.0	2.8	55.5	52.5	73.9	53.9	18.4	1.4	Vert.

Note: All other emissions are under noise floor.

Note: Duty cycle compensation (92.3% = 0.7 dB) is added to the average result.

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Operating mode: Tx 2402MHz 2DH5 X-plane

[Emission level]

No.	Frequency [MHz]	Reading PK [dBµV]	Reading Ave [dBµV]	C.Factor [dB]	PK	Result Ave [dBµV/m]	Limit PK [dBµV/m]	Limit Ave [dBµV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	4804.000	47.2	38.7	2.1	49.3	41.5	73.9	53.9	24.6	12.4	Hori.
2	4804.000	47.6	39.2	2.1	49.7	42.0	73.9	53.9	24.2	11.9	Vert.

Note: All other emissions are under noise floor.

Note: Duty cycle compensation (92.3% = 0.7 dB) is added to the average result.

Operating mode: Tx 2402MHz 2DH5 Y-plane

[Emission level]

1 4804.000 47.9 39.1 2.1 50.0 41.9 73.9 53.9 23.9 12.0 Hori.	No.	Frequency [MHz]	Reading PK [dBuV]	Reading Ave [dBµV]	C.Factor [dB]	PK	Result Ave	Limit PK [dBµV/m]	Limit Ave	Margin PK [dB]	Margin Ave [dB]	Ant.
2   4804.000   48.9   40.8   2.1   51.0   43.6   73.9   53.9   22.9   10.3   Vert.	1		47.9	39.1	2.1	50.0	41.9	73.9	53.9	23.9	12.0	Hori. Vert.

Note: All other emissions are under noise floor.

Note: Duty cycle compensation (92.3% = 0.7 dB) is added to the average result.

Operating mode: Tx 2402MHz 2DH5 Z-plane

[Emission level]

·												_
	No.	Frequency [MHz]	Reading PK [dBuV]	Reading Ave [dBuV]	C.Factor [dB]	PK	Result Ave [dBµV/m]	Limit PK [dBuV/m]	Limit Ave [dBuV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
	1	4804.000	45.9	36.4	2.1	48.0	39.2	73.9	53.9	25.9	14.7	Hori.
	2	4804.000	50.5	43.4	2.1	52.6	46.2	73.9	53.9	21.3	7.7	Vert.

Note: All other emissions are under noise floor.

Note: Duty cycle compensation (92.3% = 0.7 dB) is added to the average result.

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Operating mode: Tx 2441MHz 2DH5 X-plane

[Emission level]

No.	Frequency [MHz]	Reading PK [dBµV]	Reading Ave [dBµV]	C.Factor [dB]	PK	Result Ave [dBµV/m]	Limit PK [dBµV/m]	Limit Ave [dBµV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	4882.000	47.5	39.6	2.6	50.1	42.9	73.9	53.9	23.8	11.0	Hori.
2	4882.000	46.9	38.4	2.6	49.5	41.7	73.9	53.9	24.4	12.2	Vert.

Note: All other emissions are under noise floor.

Note: Duty cycle compensation (92.3% = 0.7 dB) is added to the average result.

Operating mode: Tx 2441MHz 2DH5 Y-plane

[Emission level]

No.	Frequency [MHz]	Reading PK [dBuV]	Reading Ave [dBµV]	C.Factor [dB]	PK	Result Ave	Limit PK [dBµV/m]	Limit Ave	Margin PK [dB]	Margin Ave [dB]	Ant.
1 2	4882.000 4882.000	49.0 49.1	41.4	2.6	51.6 51.7	44.7 45.1	73.9 73.9	53.9 53.9	22.3	9.2	Hori. Vert.

Note: All other emissions are under noise floor.

Note: Duty cycle compensation (92.3% = 0.7 dB) is added to the average result.

Operating mode: Tx 2441MHz 2DH5 Z-plane

[Emission level]

No.	Frequency [MHz]	Reading PK	Ave	C.Factor [dB]	PK	Result Ave	Limit PK	Limit Ave	Margin PK	Margin Ave	Ant.
		[dBµV]	[dBµV]	[աք]	$[dB\mu V/m]$	$[dB\mu V/m]$	$[dB\mu V/m]$	$[dB\mu V/m]$	[dB]	[dB]	
1	4882.000	46.0	36.9	2.6	48.6	40.2	73.9	53.9	25.3	13.7	Hori.
2	4882.000	49.7	42.3	2.6	52.3	45.6	73.9	53.9	21.6	8.3	Vert.

Note: All other emissions are under noise floor.

Note: Duty cycle compensation (92.3% = 0.7 dB) is added to the average result.

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Model: BU-4 Page 45 of 79

Operating mode: Tx 2480MHz 2DH5 X-plane

[Emission level]

No.	Frequency [MHz]	Reading PK [dBµV]	Reading Ave [dBµV]	C.Factor [dB]	PK	Result Ave [dBµV/m]	Limit PK [dBµV/m]	Limit Ave [dBµV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	4960.000	47.5	39.2	2.8	50.3	42.7	73.9	53.9	23.6	11.2	Hori.
2	4960.000	48.2	40.5	2.8	51.0	44.0	73.9	53.9	22.9	9.9	Vert.

Note: All other emissions are under noise floor.

Note: Duty cycle compensation (92.3% = 0.7 dB) is added to the average result.

Operating mode: Tx 2480MHz 2DH5 Y-plane

[Emission level]

No.	Frequency [MHz]	Reading PK [dBµV]	Reading Ave [dBµV]	C.Factor [dB]	PK	Result Ave [dBµV/m]	Limit PK [dBµV/m]	Limit Ave [dBµV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	4960.000	53.6	47.1	2.8	56.4	50.6	73.9	53.9	17.5	3.3	Hori.
2	4960.000	46.4	37.8	2.8	49.2	41.3	73.9	53.9	24.7	12.6	Vert.

Note: All other emissions are under noise floor.

Note: Duty cycle compensation (92.3% = 0.7 dB) is added to the average result.

Operating mode: Tx 2480MHz 2DH5 Z-plane

[Emission level]

 											_
No.	Frequency [MHz]	Reading PK [dBuV]	Reading Ave [dBuV]	C.Factor [dB]	PK	Result Ave [dBµV/m]	Limit PK [dBuV/m]	Limit Ave [dBuV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	4960.000	47.1	38.1	2.8	49.9	41.6	73.9	53.9	24.0	12.3	Hori.
2	4960.000	52.0	45.4	2.8	54.8	48.9	73.9	53.9	19.1	5.0	Vert.

Note: All other emissions are under noise floor.

Note: Duty cycle compensation (92.3% = 0.7 dB) is added to the average result.

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Model: BU-4 Page 46 of 79

Operating mode: Tx 2402MHz 3DH5 X-plane

[Emission level]

No.	Frequency [MHz]	Reading PK [dBµV]	Reading Ave [dBµV]	C.Factor [dB]	PK	Result Ave [dBµV/m]	Limit PK [dBµV/m]	Limit Ave [dBµV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	4804.000	48.6	40.7	2.1	50.7	43.5	73.9	53.9	23.2	10.4	Hori.
2	4804.000	48.1	39.7	2.1	50.2	42.5	73.9	53.9	23.7	11.4	Vert.

Note: All other emissions are under noise floor.

Note: Duty cycle compensation (92.3% = 0.7 dB) is added to the average result.

Operating mode: Tx 2402MHz 3DH5 Y-plane

[Emission level]

No.	Frequency [MHz]	Reading PK [dBuV]	Reading Ave [dBµV]	C.Factor [dB]	PK	Result Ave	Limit PK [dBµV/m]	Limit Ave	Margin PK [dB]	Margin Ave [dB]	Ant.
1 2	4804.000 4804.000	50.8 49.3	43.0 40.8	2.1	52.9 51.4	45.8 43.6	73.9 73.9	53.9 53.9	21.0 22.5	8.1 10.3	Hori. Vert.

Note: All other emissions are under noise floor.

Note: Duty cycle compensation (92.3% = 0.7 dB) is added to the average result.

Operating mode: Tx 2402MHz 3DH5 Z-plane

[Emission level]

·												
	No.	Frequency [MHz]	Reading PK [dBµV]	Reading Ave [dBµV]	C.Factor [dB]	PK	Result Ave [dBµV/m]	Limit PK [dBµV/m]	Limit Ave [dBµV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
	1	4804.000	48.1	39.6	2.1	50.2	42.4	73.9	53.9	23.7	11.5	Hori.
	2	4804.000	50.7	42.8	2.1	52.8	45.6	73.9	53.9	21.1	8.3	Vert.

Note: All other emissions are under noise floor.

Note: Duty cycle compensation (92.3% = 0.7 dB) is added to the average result.

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Model: BU-4 Page 47 of 79

Operating mode: Tx 2441MHz 3DH5 X-plane

[Emission level]

No.	Frequency [MHz]	Reading PK [dBµV]	Reading Ave [dBµV]	C.Factor [dB]	PK	Result Ave [dBµV/m]	Limit PK [dBµV/m]	Limit Ave [dBµV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	4882.000	49.0	41.1	2.6	51.6	44.4	73.9	53.9	22.3	9.5	Hori.
2	4882.000	48.3	40.2	2.6	50.9	43.5	73.9	53.9	23.0	10.4	Vert.

Note: All other emissions are under noise floor.

Note: Duty cycle compensation (92.3% = 0.7 dB) is added to the average result.

Operating mode: Tx 2441MHz 3DH5 Y-plane

[Emission level]

No.	Frequency [MHz]	Reading PK [dBuV]	Reading Ave [dBµV]	C.Factor [dB]	PK	Result Ave [dBuV/m]	Limit PK [dBµV/m]	Limit Ave [dBuV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	4882.000	49.9	42.2	2.6	52.5	45.5	73.9	53.9	21.4	8.4	Hori.
2	4882.000	48.6	40.5	2.6	51.2	43.8	73.9	53.9	22.7	10.1	Vert.

Note: All other emissions are under noise floor.

Note: Duty cycle compensation (92.3% = 0.7 dB) is added to the average result.

Operating mode: Tx 2441MHz 3DH5 Z-plane

[Emission level]

·		35101110.01										
	No.	Frequency [MHz]	Reading PK [dBµV]	Reading Ave [dBµV]	C.Factor [dB]	Result PK [dBµV/m]	Result Ave [dBµV/m]	Limit PK [dBµV/m]	Limit Ave [dBµV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
	1	4882.000	47.0	38.6	2.6	49.6	41.9	73.9	53.9	24.3	12.0	Hori.
	2	4882.000	51.2	43.7	2.6	53.8	47.0	73.9	53.9	20.1	6.9	Vert.

Note: All other emissions are under noise floor.

Note: Duty cycle compensation (92.3% = 0.7 dB) is added to the average result.

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Operating mode: Tx 2480MHz 3DH5 X-plane

[Emission level]

No.	Frequency [MHz]	Reading PK [dBµV]	Reading Ave [dBµV]	C.Factor [dB]	PK	Result Ave [dBµV/m]	Limit PK [dBµV/m]	Limit Ave [dBµV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	4960.000	48.9	39.4	2.8	51.7	42.9	73.9	53.9	22.2	11.0	Hori.
2	4960.000	47.8	39.1	2.8	50.6	42.6	73.9	53.9	23.3	11.3	Vert.

Note: All other emissions are under noise floor.

Note: Duty cycle compensation (92.3% = 0.7 dB) is added to the average result.

Operating mode: Tx 2480MHz 3DH5 Y-plane

[Emission level]

No.	Frequency [MHz]	Reading PK [dBµV]	Reading Ave [dBµV]	C.Factor [dB]	PK	Result Ave [dBµV/m]	Limit PK [dBµV/m]	Limit Ave [dBµV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	4960.000	51.2	43.8	2.8	54.0	47.3	73.9	53.9	19.9	6.6	Hori.
2	4960.000	46.8	36.4	2.8	49.6	39.9	73.9	53.9	24.3	14.0	Vert.

Note: All other emissions are under noise floor.

Note: Duty cycle compensation (92.3% = 0.7 dB) is added to the average result.

Operating mode: Tx 2480MHz 3DH5 Z-plane

[Emission level]

 											_
No.	Frequency [MHz]	Reading PK [dBuV]	Reading Ave [dBuV]	C.Factor [dB]	PK	Result Ave [dBµV/m]	Limit PK [dBuV/m]	Limit Ave [dBuV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	4960.000	46.8	38.1	2.8	49.6	41.6	73.9	53.9	24.3	12.3	Hori.
2	4960.000	52.1	45.0	2.8	54.9	48.5	73.9	53.9	19.0	5.4	Vert.

Note: All other emissions are under noise floor.

Note: Duty cycle compensation (92.3% = 0.7 dB) is added to the average result.

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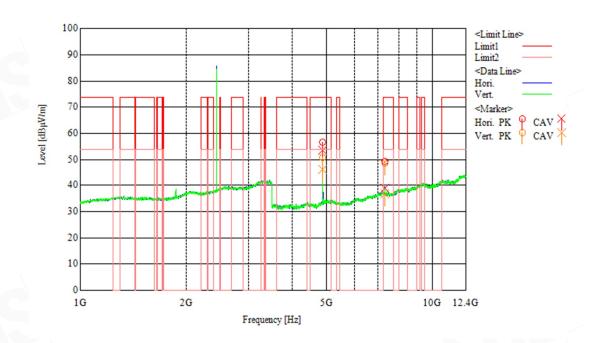
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[Chart]

#### TX 2441MHz DH5 Y-plane



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#### Test Data (above 12.4GHz)

Tested sample: A1 Configuration: 1

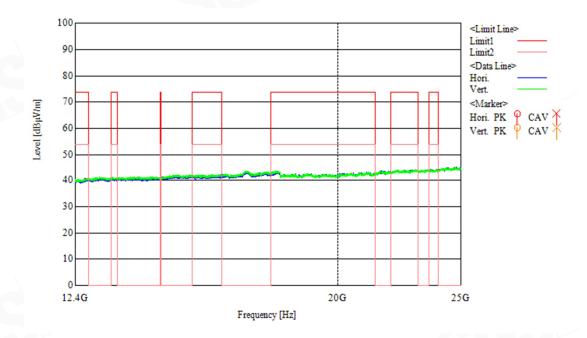
Worst operating mode: Tx 2402MHz DH5 Z-plane

[Emission level]

	obton tever										
No.	Frequency [MHz]	Reading PK [dBµV]	Reading Ave [dBµV]	C.Factor [dB]	PK	Result Ave [dBµV/m]	Limit PK [dBµV/m]	Limit Ave [dBµV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
_	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-

Note: All emissions were under noise floor.

[Chart]



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#### Restricted bandedge measurement

Tested sample: A1 Configuration: 1

Operating mode: Tx 2402MHz DH5 X-plane

[Emission level]

ı	Lilli	ssion iever										
		Engayanav	Reading	Reading	C.Factor	Result	Result	Limit	Limit	Margin	Margin	
	No.	Frequency [MHz]	PK	Ave		PK	Ave	PK	Ave	PK	Ave	Ant.
		[MIIIZ]	[dBµV]	[dBµV]	[dB]	$[dB\mu V/m]$	$[dB\mu V/m]$	$[dB\mu V/m]$	$[dB\mu V/m]$	[dB]	[dB]	
	1	2390.000	43.9	30.5	4.6	48.5	35.8	73.9	53.9	25.4	18.1	Hori.

Note: Duty cycle compensation (92.3% = 0.7 dB) is added to the average result.

Operating mode: Tx 2402MHz DH5 Y-plane

[Emission level]

No	Frequency [MHz]	Reading PK [dBµV]	Reading Ave [dBµV]	C.Factor [dB]	PK	Result Ave [dBµV/m]	Limit PK [dBµV/m]	Limit Ave [dBµV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	2390.000	43.6	30.5	4.6	48.2	35.8	73.9	53.9	25.7	18.1	Hori.
2	2390.000	44.1	30.4	4.6	48.7	35.7	73.9	53.9	25.2	18.2	Vert.

Note: Duty cycle compensation (92.3% = 0.7 dB) is added to the average result.

Tx 2402MHz DH5 Z-plane Operating mode:

[Emission level]

	bron rever										
No.	Frequency [MHz]	Reading PK	Ave	C.Factor	Result PK	Result Ave	Limit PK	Limit Ave	Margin PK	Margin Ave	Ant.
	[MIIZ]	[dBµV]	[dBµV]	[աք]	$[dB\mu V/m]$	[dBµV/m]	$[dB\mu V/m]$	$[dB\mu V/m]$	[dB]	[dB]	
1	2390.000	43.4	30.5	4.6	48.0	35.8	73.9	53.9	25.9	18.1	Vert.

Note: Duty cycle compensation (92.3% = 0.7 dB) is added to the average result.

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Model: BU-4
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Operating mode: Tx 2402MHz 2DH5 X-plane

[Emission level]

No.	Frequency [MHz]	Reading PK [dBµV]	Reading Ave [dBµV]	C.Factor [dB]	PK	Result Ave [dBµV/m]	Limit PK [dBµV/m]	Limit Ave [dBµV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	2390.000	43.3	30.4	4.6	47.9	35.7	73.9	53.9	26.0	18.2	Hori.

Note: Duty cycle compensation (92.3% = 0.7 dB) is added to the average result.

Operating mode: Tx 2402MHz 2DH5 Y-plane

[Emission level]

No.	Frequency [MHz]	Reading PK [dBµV]	Reading Ave [dBµV]	C.Factor [dB]	PK	Result Ave [dBµV/m]	Limit PK [dBµV/m]	Limit Ave [dBµV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	2390.000	43.6	30.4	4.6	48.2	35.7	73.9	53.9	25.7	18.2	Vert.

Note: Duty cycle compensation (92.3% = 0.7 dB) is added to the average result.

Operating mode: Tx 2402MHz 2DH5 Z-plane

[Emission level]

No.	Frequency [MHz]	Reading PK [dBµV]	Reading Ave [dBµV]	C.Factor [dB]	Result PK [dBµV/m]	Result Ave [dBµV/m]	Limit PK [dBµV/m]	Limit Ave [dBµV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	2390.000	43.8	30.4	4.6	48.4	35.7	73.9	53.9	25.5	18.2	Vert.

Note: Duty cycle compensation (92.3% = 0.7 dB) is added to the average result.

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Model: BU-4
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Operating mode: Tx 2402MHz 3DH5 X-plane

[Emission level]

	obton tever										
	Eraguanav	Reading	Reading	C.Factor	Result	Result	Limit	Limit	Margin	Margin	
No.	Frequency [MHz]	PK	Ave	[dB]	PK	Ave	PK	Ave	PK	Ave	Ant.
	[MHZ]	[dBµV]	[dBµV]	լսեյ	$[dB\mu V/m]$	$[dB\mu V/m]$	$[dB\mu V/m]$	$[dB\mu V/m]$	[dB]	[dB]	
1	2390.000	44.3	30.5	4.6	48.9	35.8	73.9	53.9	25.0	18.1	Hori.

Note: Duty cycle compensation (92.3% = 0.7 dB) is added to the average result.

Operating mode: Tx 2402MHz 3DH5 X-plane

[Emission level]

No.	Frequency [MHz]	Reading PK [dBµV]	Reading Ave [dBµV]	C.Factor [dB]	PK	Result Ave [dBµV/m]	Limit PK [dBµV/m]	Limit Ave [dBµV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	2390.000	44.0	30.5	4.6	48.6	35.8	73.9	53.9	25.3	18.1	Hori.

Note: Duty cycle compensation (92.3% = 0.7 dB) is added to the average result.

Operating mode: Tx 2402MHz 3DH5 X-plane

[Emission level]

No.	Frequency [MHz]	Reading PK [dBµV]	Reading Ave [dBµV]	C.Factor [dB]	PK	Result Ave [dBµV/m]	Limit PK [dBµV/m]	Limit Ave [dBµV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	2390.000	43.4	30.4	4.6	48.0	35.7	73.9	53.9	25.9	18.2	Hori.
2	2390.000	43.9	30.4	4.6	48.5	35.7	73.9	53.9	25.4	18.2	Vert.

Note: Duty cycle compensation (92.3% = 0.7 dB) is added to the average result.

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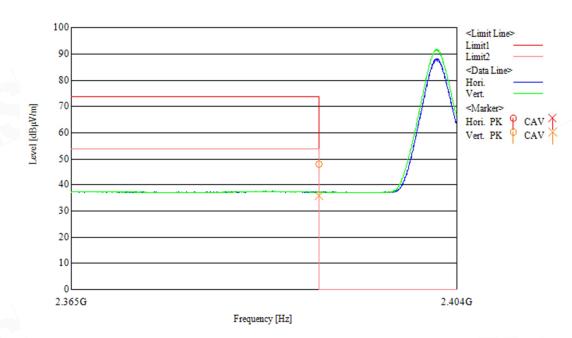
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Model: BU-4 Page 54 of 79

[Chart]

# Tx 2402MHz DH5 Z-plane



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Model: BU-4
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Tested sample: A1 Configuration: 1

Operating mode: Tx 2480MHz DH5 X-plane

[Emission level]

No.	Frequency [MHz]	Reading PK [dBµV]	Reading Ave [dBµV]	C.Factor [dB]	PK	Result Ave [dBµV/m]	Limit PK [dBµV/m]	Limit Ave [dBµV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	2483.500	44.7	31.1	5.5	50.2	37.3	73.9	53.9	23.7	16.6	Hori.

Note: Duty cycle compensation (92.3% = 0.7 dB) is added to the average result.

Operating mode: Tx 2480MHz DH5 Y-plane

[Emission level]

1711	ibbion level										_
	Frequency	Reading		C.Factor	Result	Result	Limit	Limit	Margin	Margin	
No	[MHz]	PK [dBµV]	Ave [dBμV]	[dB]	PK [dBµV/m]	Ave [dBµV/m]	PK [dBµV/m]	Ave [dBμV/m]	PK [dB]	Ave [dB]	Ant.
1	2483.500	44.4	31.2	5.5	49.9	37.4	73.9	53.9	24.0	16.5	Hori.

Note: Duty cycle compensation (92.3% = 0.7 dB) is added to the average result.

Operating mode: Tx 2480MHz DH5 Z-plane

[Emission level]

No.	Frequency [MHz]	Reading PK [dBµV]	Reading Ave [dBµV]	C.Factor [dB]	PK	Result Ave [dBµV/m]	Limit PK [dBµV/m]	Limit Ave [dBµV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	2483.500	44.9	31.1	5.5	50.4	37.3	73.9	53.9	23.5	16.6	Vert.

Note: Duty cycle compensation (92.3% = 0.7 dB) is added to the average result.

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Operating mode:

Tx 2480MHz 2DH5 X-plane

[Emission level]

No.	Frequency [MHz]	Reading PK [dBµV]	Reading Ave [dBµV]	C.Factor [dB]	PK	Result Ave [dBµV/m]	Limit PK [dBµV/m]	Limit Ave [dBµV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	2483.500	44.9	31.0	5.5	50.4	37.2	73.9	53.9	23.5	16.7	Hori.

Note: Duty cycle compensation (92.3% = 0.7 dB) is added to the average result.

Operating mode:

Tx 2480MHz 2DH5 Y-plane

[Emission level]

No.	Frequency [MHz]	Reading PK [dBµV]	Reading Ave [dBµV]	C.Factor [dB]	PK	Result Ave [dBµV/m]	Limit PK [dBµV/m]	Limit Ave [dBµV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	2483.500	44.7	31.1	5.5	50.2	37.3	73.9	53.9	23.7	16.6	Hori.
2	2483.500	44.8	31.0	5.5	50.3	37.2	73.9	53.9	23.6	16.7	Vert.

Note: Duty cycle compensation (92.3% = 0.7 dB) is added to the average result.

Operating mode:

Tx 2480MHz 2DH5 Z-plane

[Emission level]

No.	Frequency [MHz]	Reading PK [dBµV]	Reading Ave [dBµV]	C.Factor [dB]	PK	Result Ave [dBµV/m]	Limit PK [dBµV/m]	Limit Ave [dBµV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	2483.500	45.3	31.2	5.5	50.8	37.4	73.9	53.9	23.1	16.5	Vert.

Note: Duty cycle compensation (92.3% = 0.7 dB) is added to the average result.

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Operating mode: Tx 2

Tx 2480MHz 3DH5 X-plane

[Emission level]

No.	Frequency [MHz]	Reading PK [dBµV]	Reading Ave [dBµV]	C.Factor [dB]	PK	Result Ave [dBµV/m]	Limit PK [dBµV/m]	Limit Ave [dBµV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	2483.500	44.3	31.0	5.5	49.8	37.2	73.9	53.9	24.1	16.7	Hori.

Note: Duty cycle compensation (92.3% = 0.7 dB) is added to the average result.

Operating mode:
[Emission level]

Tx 2480MHz 3DH5 Y-plane

Linns	ssion icverj										
	Eroguanav	Reading	Reading	C Factor	Result	Result	Limit	Limit	Margin	Margin	
No.	Frequency [MHz]	PK	Ave	C.Factor [dB]	PK	Ave	PK	Ave	PK	Ave	Ant.
	[MIZ]	[dBµV]	[dBµV]	[uB]	[dBµV/m]	$[dB\mu V/m]$	[dBµV/m]	[dBµV/m]	[dB]	[dB]	
1	2483.500	44.6	30.8	5.5	50.1	37.0	73.9	53.9	23.8	16.9	Hori.
2	2483.500	44.5	30.9	5.5	50.0	37.1	73.9	53.9	23.9	16.8	Vert.

Note: Duty cycle compensation (92.3% = 0.7 dB) is added to the average result.

Operating mode:

Tx 2480MHz 3DH5 Z-plane

[Emission level]

No.	Frequency [MHz]	Reading PK [dBµV]	Reading Ave [dBµV]	C.Factor [dB]	PK	Result Ave [dBµV/m]	Limit PK [dBµV/m]	Limit Ave [dBµV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
1	2483.500	44.5	30.9	5.5	50.0	37.1	73.9	53.9	23.9	16.8	Vert.

Note: Duty cycle compensation (92.3% = 0.7 dB) is added to the average result.

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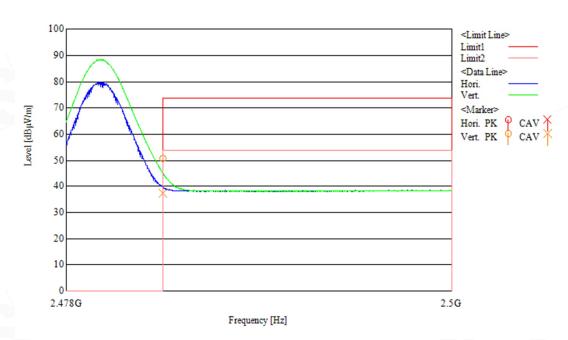
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#### [Chart]

#### Tx 2480MHz 2DH5 Z-plane



[Test Day1]

Tested Date: 01 Feb. 2021 Temperature: 15 degC Humidity: 40 % Atmos. Press: 1028 hPa

[Test Day2]

Tested Date: 02 Feb. 2021 Temperature: 15 degC Humidity: 52 % Atmos. Press: 1007 hPa

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# 2.8 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 RSS-Gen Sec. 8.8

AC power line conducted emissions limits

Frequency of Emission	Conducted emissi	ons Limit [dBµV]
[MHz]	Quasi-peak	Average
0.15 - 0.5	66 to 56 *	56 to 46 *
0.5 - 5	56	46
5 - 30	60	50

<sup>\*</sup> 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)

TR06	CL18	LN05

#### Test software used

EMI Ver. 6.1

#### Calculation method

The Correction Factor and Result are calculated as followings.

Correction Factor [dB] = ISN Factor [dB] + Loss [dB] Result [dB $\mu$ V] = Reading [dB $\mu$ V] + Correction Factor [dB]

Test results - Complied with requirement

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#### **Test Data**

Tested sample: A1 Configuration: 2

Operating mode: Tx 2402MHz DH5

[Emission level]

	Ellission ic	7101									
	Freq. [MHz]	Reading QP [dBµV]	Reading Ave [dBµV]	Factor [dB]	Result QP [dBµV]	Result Ave [dBµV]	Limit QP [dBµV]	Limit Ave [dBµV]	Margin QP [dB]	Margin Ave [dB]	Line
1	0.19130	26.6	8.0	10.2	36.8	18.2	64.0	54.0	27.2	35.8	Va
2	0.20456	28.2	9.2	10.1	38.3	19.3	63.4	53.4	25.1	34.1	Va
3	0.41277	26.0	7.7	10.0	36.0	17.7	57.6	47.6	21.6	29.9	Va
4	0.47447	27.0	8.5	10.0	37.0	18.5	56.4	46.4	19.4	27.9	Va
5	0.15153	19.4	3.3	10.2	29.6	13.5	65.9	55.9	36.3	42.4	Vb
6	0.19895	28.3	9.8	10.2	38.5	20.0	63.7	53.7	25.2	33.7	Vb
7	0.41124	27.7	9.1	10.1	37.8	19.2	57.6	47.6	19.8	28.4	Vb
8	0.45713	29.5	11.5	10.1	39.6	21.6	56.7	46.7	17.1	25.1	Vb
9	0.46971	29.0	10.0	10.1	39.1	20.1	56.5	46.5	17.4	26.4	Vb
10	0.48568	27.1	8.0	10.1	37.2	18.1	56.2	46.2	19.0	28.1	Vb

Operating mode: Tx 2441MHz DH5

[Emission level]

	Freq. [MHz]	Reading QP [dBµV]	Reading Ave [dBµV]	Factor [dB]	Result QP [dBµV]	Result Ave [dBµV]	Limit QP [dBµV]	Limit Ave [dBµV]	Margin QP [dB]	Margin Ave [dB]	Line
1	0.19504	28.6	9.6	10.1	38.7	19.7	63.8	53.8	25.1	34.1	Va
2	0.46104	29.4	11.6	10.0	39.4	21.6	56.7	46.7	17.3	25.1	Va
3	0.20439	27.4	8.4	10.2	37.6	18.6	63.4	53.4	25.8	34.8	Vb
4	0.45815	30.0	11.9	10.1	40.1	22.0	56.7	46.7	16.6	24.7	Vb
5	0.46886	28.9	10.1	10.1	39.0	20.2	56.5	46.5	17.5	26.3	Vb
6	0.49061	26.3	6.9	10.1	36.4	17.0	56.2	46.2	19.8	29.2	Vb

Operating mode: Tx 2480MHz DH5

[Emission level]

	Emission R	5 ( 61 )									
	Freq. [MHz]	Reading QP [dBµV]	Reading Ave [dBµV]	Factor [dB]	Result QP [dBµV]	Result Ave [dBµV]	Limit QP [dBµV]	Limit Ave [dBµV]	Margin QP [dB]	Margin Ave [dB]	Line
1	0.20252	28.8	10.1	10.1	38.9	20.2	63.5	53.5	24.6	33.3	Va
2	0.26558	26.4	8.1	10.1	36.5	18.2	61.3	51.3	24.8	33.1	Va
3	0.47769	27.1	8.3	10.0	37.1	18.3	56.4	46.4	19.3	28.1	Va
4	0.40461	28.4	9.4	10.1	38.5	19.5	57.8	47.8	19.3	28.3	Vb
5	0.45713	29.5	11.5	10.1	39.6	21.6	56.7	46.7	17.1	25.1	Vb
6	0.47905	27.8	8.7	10.1	37.9	18.8	56.4	46.4	18.5	27.6	Vb

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Operating mode: Tx 2402MHz 2DH5

[Emission level]

	Freq. [MHz]	Reading QP [dBµV]	Reading Ave [dBµV]	Factor [dB]	Result QP [dBµV]	Result Ave [dBµV]	Limit QP [dBµV]	Limit Ave [dBµV]	Margin QP [dB]	Margin Ave [dB]	Line
1	0.42365	25.3	7.0	10.0	35.3	17.0	57.4	47.4	22.1	30.4	Va
2	0.46087	29.9	12.0	10.0	39.9	22.0	56.7	46.7	16.8	24.7	Va
3	0.39475	28.0	8.7	10.1	38.1	18.8	58.0	48.0	19.9	29.2	Vb
4	0.46223	29.7	12.1	10.1	39.8	22.2	56.7	46.7	16.9	24.5	Vb
5	0.47548	27.8	9.0	10.1	37.9	19.1	56.4	46.4	18.5	27.3	Vb
6	0.48330	27.4	8.4	10.1	37.5	18.5	56.3	46.3	18.8	27.8	Vb

Operating mode: Tx 2441MHz 2DH5

[Emission level]

	Freq. [MHz]	Reading QP [dBµV]	Reading Ave [dBµV]	Factor [dB]	Result QP [dBµV]	Result Ave [dBµV]	Limit QP [dBµV]	Limit Ave [dBµV]	Margin QP [dB]	Margin Ave [dB]	Line
1	0.27068	27.3	8.6	10.1	37.4	18.7	61.1	51.1	23.7	32.4	Va
2	0.45781	29.5	11.5	10.0	39.5	21.5	56.7	46.7	17.2	25.2	Va
3	0.47141	28.4	9.3	10.0	38.4	19.3	56.5	46.5	18.1	27.2	Va
4	0.40529	28.3	9.3	10.1	38.4	19.4	57.7	47.7	19.3	28.3	Vb
5	0.46988	29.0	9.8	10.1	39.1	19.9	56.5	46.5	17.4	26.6	Vb
6	0.47548	27.8	9.0	10.1	37.9	19.1	56.4	46.4	18.5	27.3	Vb

Operating mode: Tx 2480MHz 2DH5

[Emission level]

	Freq. [MHz]	Reading QP [dBµV]	Reading Ave [dBµV]	Factor [dB]	Result QP [dBµV]	Result Ave [dBµV]	Limit QP [dBµV]	Limit Ave [dBµV]	Margin QP [dB]	Margin Ave [dB]	Line
1	0.45713	28.5	10.7	10.0	38.5	20.7	56.7	46.7	18.2	26.0	Va
2	0.46818	28.2	9.6	10.0	38.2	19.6	56.5	46.5	18.3	26.9	Va
3	0.49044	25.5	6.2	10.0	35.5	16.2	56.2	46.2	20.7	30.0	Va
4	0.42823	23.7	6.2	10.1	33.8	16.3	57.3	47.3	23.5	31.0	Vb
5	0.45543	28.4	10.7	10.1	38.5	20.8	56.8	46.8	18.3	26.0	Vb
6	0.46767	28.9	10.5	10.1	39.0	20.6	56.6	46.6	17.6	26.0	Vb

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Operating mode: Tx 2402MHz 3DH5

[Emission level]

	Freq.	Reading QP [dBµV]	Reading Ave [dBµV]	Factor [dB]	Result QP [dBµV]	Result Ave [dBµV]	Limit QP [dBµV]	Limit Ave [dBµV]	Margin QP [dB]	Margin Ave [dB]	Line
1	0.26422	26.1	7.9	10.1	36.2	18.0	61.3	51.3	25.1	33.3	Va
2	0.45866	29.2	11.2	10.0	39.2	21.2	56.7	46.7	17.5	25.5	Va
3	0.48568	26.4	7.3	10.0	36.4	17.3	56.2	46.2	19.8	28.9	Va
4	0.39662	28.1	9.0	10.1	38.2	19.1	57.9	47.9	19.7	28.8	Vb
5	0.41328	27.7	9.0	10.1	37.8	19.1	57.6	47.6	19.8	28.5	Vb
6	0.45645	29.1	11.3	10.1	39.2	21.4	56.8	46.8	17.6	25.4	Vb
7	0.47667	27.6	8.9	10.1	37.7	19.0	56.4	46.4	18.7	27.4	Vb
8	0.48772	27.1	7.6	10.1	37.2	17.7	56.2	46.2	19.0	28.5	Vb

Operating mode: Tx 2441MHz 3DH5

[Emission level]

_											
	Freq. [MHz]	Reading QP [dBµV]	Reading Ave [dBµV]	Factor [dB]	Result QP [dBµV]	Result Ave [dBµV]	Limit QP [dBµV]	Limit Ave [dBµV]	Margin QP [dB]	Margin Ave [dB]	Line
1	0.26184	25.7	7.5	10.1	35.8	17.6	61.4	51.4	25.6	33.8	Va
2	0.47888	27.2	8.1	10.0	37.2	18.1	56.4	46.4	19.2	28.3	Va
3	0.26558	26.2	8.0	10.1	36.3	18.1	61.3	51.3	25.0	33.2	Vb
4	0.45543	28.4	10.7	10.1	38.5	20.8	56.8	46.8	18.3	26.0	Vb
5	0.47192	28.3	9.4	10.1	38.4	19.5	56.5	46.5	18.1	27.0	Vb
6	0.49027	26.5	6.9	10.1	36.6	17.0	56.2	46.2	19.6	29.2	Vb

Operating mode: Tx 2480MHz 3DH5

[Emission level]

	Freq. [MHz]	Reading QP [dBµV]	Reading Ave [dBµV]	Factor [dB]	Result QP [dBµV]	Result Ave [dBµV]	Limit QP [dBµV]	Limit Ave [dBµV]	Margin QP [dB]	Margin Ave [dB]	Line
1	0.45645	28.2	10.5	10.0	38.2	20.5	56.8	46.8	18.6	26.3	Va
2	0.48959	26.0	6.5	10.0	36.0	16.5	56.2	46.2	20.2	29.7	Va
3	0.40886	27.8	9.1	10.1	37.9	19.2	57.7	47.7	19.8	28.5	Vb
4	0.45968	30.3	12.2	10.1	40.4	22.3	56.7	46.7	16.3	24.4	Vb
5	0.47311	28.0	9.3	10.1	38.1	19.4	56.5	46.5	18.4	27.1	Vb
6	0.48432	27.3	8.2	10.1	37.4	18.3	56.3	46.3	18.9	28.0	Vb

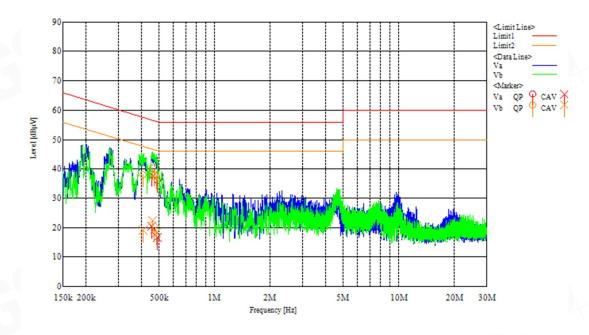
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# [Chart]

Operating mode: Tx 2480MHz 3DH5



Tested Date: 03 Feb. 2021 Temperature: 18 degC Humidity: 41 % Atmos. Press: 1016 hPa

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# 2.9 Radiated emissions (Receiver)

# **Test setup**

Test setup was implemented according to the method of ANSI C63.4 clause 6 "General requirements for EUT equipment arrangements and operation", clause 8.2 and Annex H.3 "Radiated emission measurements setup".

#### Test procedure

Measurement procedures were implemented according to the method of ANSI C63.4 clauses 8.2.

The EUT is place on a non-conducted table which is 0.8 m height from a ground plane and the measurement antenna to EUT distance is 3 meters. The turn table is rotated for 360 degrees to determine the maximum emission level.

The antenna height scanned between 1 m and 4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations.

The spectrum analyzer and receiver are set to the followings;

RBW=100 kHz (up to 1000 MHz) or 1 MHz (above 1000 MHz),

VBW= 300 kHz (up to 1000 MHz) or 3 MHz (above 1000 MHz)

Final measurement is carried out with a receiver RBW of 120 kHz (up to 1000 MHz), or 1 MHz (above 1000 MHz).

# Applicable rule and limitation

RSS-Gen Sec.7.3 Radiated emissions limits

Frequency [MHz]	Field Strength [μV/m]	Measurement Distance [m]	Field Strength [dBµV/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 QP detector (up to 1000 MHz) or AVE/PEAK detector (above 1000 MHz).

## Test results - Complied with requirement

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

AC01	TR06	CL11	PR21	BA07	CL38	CL39	PR12
DH06							

#### Test software used

EMI1 Ver. 6.1

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#### Calculation method

The Correction Factor and Result are calculated as followings.

Correction Factor [dB/m] = Ant. Factor [dB/m] + Loss [dB] - Gain [dB]Result  $[dB\mu V/m]$  = Reading  $[dB\mu V]$  + Correction Factor [dB/m]

# Test Data (below 1GHz)

Tested sample: A1 Configuration: 1

Operating mode: Rx 2402MHz X-plane

[Emission level]

No.	Frequency [MHz]	Reading [dBµV]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Ant.
1	304.000	30.3	13.5	9.7	30.2	23.3	46.0	22.7	Hori.
2	228.000	32.7	12.2	9.1	30.2	23.8	46.0	22.2	Vert.
3	252.000	32.6	12.7	9.3	30.2	24.4	46.0	21.6	Vert.
4	548.000	29.7	17.9	11.4	30.1	28.9	46.0	17.1	Vert.
5	672.000	28.3	18.8	12.0	30.2	28.9	46.0	17.1	Vert.
6	960.000	20.7	21.1	13.6	28.6	26.8	46.0	19.2	Vert.

Operating mode: Rx 2402MHz Y-plane

[Emission level]

-									
No.	Frequency [MHz]	Reading [dBµV]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Ant.
1	200.000	29.7	11.6	8.8	30.1	20.0	43.5	23.5	Vert.
2	228.000	32.1	12.2	9.1	30.2	23.2	46.0	22.8	Vert.
3	248.000	34.5	12.6	9.3	30.2	26.2	46.0	19.8	Vert.
4	276.000	32.5	13.1	9.5	30.2	24.9	46.0	21.1	Vert.
5	536.000	29.6	17.7	11.4	30.1	28.6	46.0	17.4	Vert.
6	620.000	29.6	18.6	11.7	30.2	29.7	46.0	16.3	Vert.

Operating mode: Rx 2402MHz Z-plane

[Emission level]

No.	Frequency [MHz]	Reading [dBµV]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Ant.
1	596.000	28.7	18.5	11.6	30.1	28.7	46.0	17.3	Hori.
2	220.000	32.3	12.1	9.0	30.1	23.3	46.0	22.7	Vert.
3	304.000	28.9	13.5	9.7	30.2	21.9	46.0	24.1	Vert.
4	348.000	28.8	14.8	10.1	30.2	23.5	46.0	22.5	Vert.
5	600.000	28.2	18.5	11.6	30.1	28.2	46.0	17.8	Vert.
6	960.000	20.7	21.1	13.6	28.6	26.8	46.0	19.2	Vert.

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Operating mode: Rx 2441MHz X-plane

[Émission level]

Diffico	non reverj								
No.	Frequency [MHz]	Reading [dBµV]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Ant.
1	536.000	30.0	17.7	11.4	30.1	29.0	46.0	17.0	Hori.
2	220.000	33.7	12.1	9.0	30.1	24.7	46.0	21.3	Vert.
3	228.000	34.7	12.2	9.1	30.2	25.8	46.0	20.2	Vert.
4	240.000	34.2	12.5	9.2	30.2	25.7	46.0	20.3	Vert.
5	248.000	36.3	12.6	9.3	30.2	28.0	46.0	18.0	Vert.
6	960.000	20.7	21.1	13.6	28.6	26.8	46.0	19.2	Vert.

*Operating mode:* Rx 2441MHz Y-plane

[Emission level]

No.	Frequency [MHz]	Reading [dBµV]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Ant.
1	216.000	31.2	12.0	9.0	30.1	22.1	43.5	21.4	Vert.
2	240.000	34.1	12.5	9.2	30.2	25.6	46.0	20.4	Vert.
3	248.000	33.8	12.6	9.3	30.2	25.5	46.0	20.5	Vert.
4	416.000	30.7	16.3	10.6	30.3	27.3	46.0	18.7	Vert.
5	524.000	32.3	17.6	11.3	30.1	31.1	46.0	14.9	Vert.
6	568.000	28.2	18.1	11.5	30.1	27.7	46.0	18.3	Vert.

Operating mode: Rx 2441MHz Z-plane

[Emission level]

No.	Frequency [MHz]	Reading [dBµV]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Ant.
1	524.000	30.0	17.6	11.3	30.1	28.8	46.0	17.2	Hori.
2	136.000	26.5	12.6	8.2	30.2	17.1	43.5	26.4	Vert.
3	220.000	34.3	12.1	9.0	30.1	25.3	46.0	20.7	Vert.
4	248.000	31.1	12.6	9.3	30.2	22.8	46.0	23.2	Vert.
5	396.000	29.1	16.0	10.5	30.3	25.3	46.0	20.7	Vert.
6	516.000	30.0	17.4	11.3	30.1	28.6	46.0	17.4	Vert.

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Operating mode: Rx 2480MHz X-plane

[Emission level]

 	TOTT TO VOT								
No.	Frequency [MHz]	Reading [dBµV]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Ant.
1	536.000	30.1	17.7	11.4	30.1	29.1	46.0	16.9	Hori.
2	136.000	29.1	12.6	8.2	30.2	19.7	43.5	23.8	Vert.
3	216.000	29.2	12.0	9.0	30.1	20.1	43.5	23.4	Vert.
4	220.000	33.7	12.1	9.0	30.1	24.7	46.0	21.3	Vert.
5	228.000	35.1	12.2	9.1	30.2	26.2	46.0	19.8	Vert.
6	416.000	29.7	16.3	10.6	30.3	26.3	46.0	19.7	Vert.

Operating mode: Rx 2480MHz Y-plane

[Emission level]

	non rever								
No.	Frequency [MHz]	Reading [dBµV]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Ant.
1	220.000	35.3	12.1	9.0	30.1	26.3	46.0	19.7	Vert.
2	228.000	33.1	12.2	9.1	30.2	24.2	46.0	21.8	Vert.
3	276.000	30.7	13.1	9.5	30.2	23.1	46.0	22.9	Vert.
4	508.000	32.1	17.3	11.2	30.1	30.5	46.0	15.5	Vert.
5	516.000	31.4	17.4	11.3	30.1	30.0	46.0	16.0	Vert.
6	524.000	31.3	17.6	11.3	30.1	30.1	46.0	15.9	Vert.

Rx 2480MHz Z-plane Operating mode:

[Emission level]

	non rever								
No.	Frequency [MHz]	Reading [dBµV]	Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Ant.
1	764.000	27.0	19.6	12.4	30.1	28.9	46.0	17.1	Hori.
2	144.000	29.8	12.1	8.2	30.2	19.9	43.5	23.6	Vert.
3	236.000	36.2	12.4	9.2	30.2	27.6	46.0	18.4	Vert.
4	240.000	38.8	12.5	9.2	30.2	30.3	46.0	15.7	Vert.
5	244.000	35.7	12.6	9.2	30.2	27.3	46.0	18.7	Vert.
6	248.000	36.7	12.6	9.3	30.2	28.4	46.0	17.6	Vert.

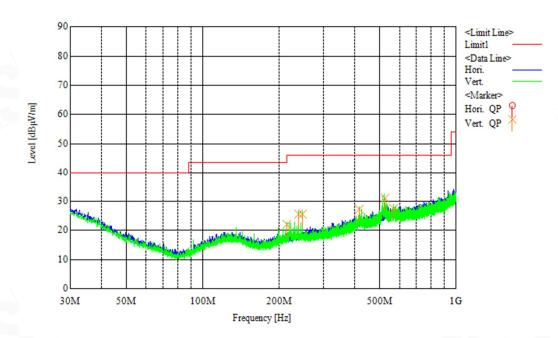
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[Chart]

#### Rx 2441MHz Y-plane



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# **Test Data (1 – 12.4 GHz)**

Tested sample: A1 Configuration: 1

Operating mode: Rx 2402MHz X-plane

[Emission level]

	obton tever										
No.	Frequency [MHz]	Reading PK [dBµV]	Reading Ave [dBµV]	C.Factor [dB]	PK	Result Ave [dBµV/m]	Limit PK [dBµV/m]	Limit Ave [dBµV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
_	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-

Note: All emissions are under noise floor.

Operating mode: Rx 2402MHz Y-plane

[Emission level]

No.	Frequency [MHz]	Reading PK [dBµV]	Reading Ave [dBµV]	C.Factor [dB]	PK	Result Ave [dBµV/m]	Limit PK [dBµV/m]	Limit Ave [dBµV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
-		-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	1	-	-

Note: All emissions are under noise floor.

Rx 2402MHz Z-plane Operating mode:

[Emission level]

No.	Frequency [MHz]	Reading PK [dBµV]	Reading Ave [dBµV]	C.Factor [dB]	PK	Result Ave [dBµV/m]	Limit PK [dBµV/m]	Limit Ave [dBµV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-		-	_	-	-	-	-	-

Note: All emissions are under noise floor.

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Operating mode:

Rx 2441MHz X-plane

[Emission level]

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

Note: All emissions are under noise floor.

Operating mode:

Rx 2441MHz Y-plane

[Emission level]

No.	Frequency [MHz]	Reading PK [dBµV]	Reading Ave [dBµV]	C.Factor [dB]	PK	Result Ave [dBµV/m]	Limit PK [dBµV/m]	Limit Ave [dBµV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	0-1	W	<u> </u>	-	-	-	-	-

Note: All emissions are under noise floor.

Operating mode: Rx 2441MHz Z-plane

[Emission level]

No.	Frequency [MHz]	Reading PK [dBµV]	Reading Ave [dBµV]	C.Factor [dB]	PK	Result Ave [dBµV/m]	Limit PK [dBµV/m]	Limit Ave [dBµV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
_	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	1

Note: All emissions are under noise floor.

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Operating mode: Rx 2480MHz X-plane

[Emission level]

No.	Frequency [MHz]	Reading PK [dBµV]	Reading Ave [dBµV]	C.Factor [dB]	PK	Result Ave [dBµV/m]	Limit PK [dBµV/m]	Limit Ave [dBµV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
-	\ -	-	-	-	1	-	-	-	ı	- \	-
-	-	-	-	-	-	-	-	-	-	-	-

Note: All emissions are under noise floor.

Rx 2480MHz Y-plane Operating mode:

[Emission level]

_											
No.	Frequency [MHz]	Reading PK [dBµV]	Reading Ave [dBµV]	C.Factor [dB]	PK	Result Ave [dBµV/m]	Limit PK [dBµV/m]	Limit Ave [dBµV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	0-/	-	-	-	-	-	-	-

Note: All emissions are under noise floor.

Operating mode: Rx 2480MHz Z-plane

[Emission level]

No.	Frequency [MHz]	Reading PK [dBµV]	Reading Ave [dBµV]	C.Factor [dB]	PK	Result Ave [dBµV/m]	Limit PK [dBµV/m]	Limit Ave [dBµV/m]	Margin PK [dB]	Margin Ave [dB]	Ant.
	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	1	-	1	-	1	-	-	-

Note: All emissions are under noise floor.

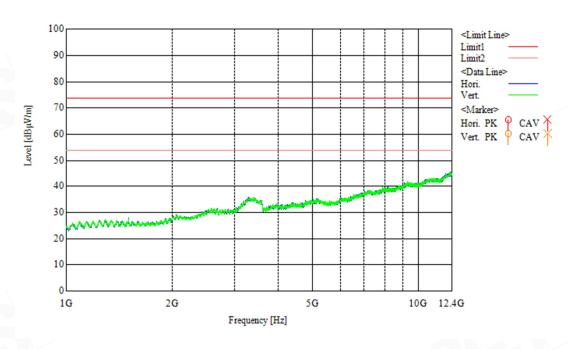
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[Chart]

Rx 2402MHz Z-plane



Tested Date: 05 Feb. 2021 Temperature: 15 degC 1020 hPa Humidity: 42 % Atmos. Press:

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# 2.10 AC power line conducted emissions (Receiver)

#### **Test setup**

Test setup was implemented according to the method of ANSI C63.4 clause 6 "General requirements for EUT equipment arrangements and operation" and Annex H.1 "AC power line conducted emission measurements setup".

#### **Test procedure**

Measurement procedures were implemented according to the method of ANSI C63.4 clauses 7, clause 13.1.3 and Annex H.2 "AC power line conducted emission measurements".

Exploratory measurements were used the spectrum analyzer to identify the frequency of the emission that has the highest amplitude relative to the limit by operating the EUT in a range of typical modes of operation, cable positions, and with a typical system equipment configuration and arrangement.

Final ac power line conducted emission measurements were performed based on the exploratory tests. The EUT cable configuration and arrangement and mode of operation that produced the emission with the highest amplitude relative to the limit are selected for the final measurement.

When the measurement value is grater than average limitation the average detection measurements were performed.

#### **Applicable rule and limitation**

RSS-Gen Sec.7.3 AC power line conducted emissions limits

Frequency of Emission	Conducted emissi	ons Limit [dBµV]
[MHz]	Quasi-peak	Average
0.15 - 0.5	66 to 56 *	56 to 46 *
0.5 - 5	56	46
5 - 30	60	50

<sup>\*</sup> 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)

TR06 CL18 LN05
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#### Test software used

EMI Ver. 6.1

# Calculation method

The Correction Factor and Result are calculated as followings.

Correction Factor [dB] = ISN Factor [dB] + Loss [dB] Result  $[dB\mu V]$  = Reading  $[dB\mu V]$  + Correction Factor [dB]

# Test results - Complied with requirement

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#### **Test Data**

Tested sample: A1 Configuration: 2

Operating mode: Rx 2402MHz

[Emission level]

	Emission rever										
	Freq. [MHz]	Reading QP [dBµV]	Reading Ave [dBµV]	Factor [dB]	Result QP [dBµV]	Result Ave [dBµV]	Limit QP [dBµV]	Limit Ave [dBµV]	Margin QP [dB]	Margin Ave [dB]	Line
1	0.19501	28.5	9.3	10.1	38.6	19.4	63.8	53.8	25.2	34.4	Va
2	0.46106	29.3	11.2	10.0	39.3	21.2	56.7	46.7	17.4	25.5	Va
3	0.20434	27.2	8.5	10.2	37.4	18.7	63.4	53.4	26.0	34.7	Vb
4	0.45813	30.1	11.7	10.1	40.2	21.8	56.7	46.7	16.5	24.9	Vb
5	0.46888	29.1	10.2	10.1	39.2	20.3	56.5	46.5	17.3	26.2	Vb
6	0.49062	26.2	6.6	10.1	36.3	16.7	56.2	46.2	19.9	29.5	Vb

Operating mode: Rx 2441MHz

[Emission level]

	Freq. [MHz]	Reading QP [dBµV]	Reading Ave [dBµV]	Factor [dB]	Result QP [dBµV]	Result Ave [dBµV]	Limit QP [dBµV]	Limit Ave [dBµV]	Margin QP [dB]	Margin Ave [dB]	Line
1	0.45711	28.6	10.6	10.0	38.6	20.6	56.7	46.7	18.1	26.1	Va
2	0.46815	28.3	9.7	10.0	38.3	19.7	56.5	46.5	18.2	26.8	Va
3	0.49048	25.6	6.3	10.0	35.6	16.3	56.2	46.2	20.6	29.9	Va
4	0.42825	23.8	6.1	10.1	33.9	16.2	57.3	47.3	23.4	31.1	Vb
5	0.45541	28.3	10.9	10.1	38.4	21.0	56.8	46.8	18.4	25.8	Vb
6	0.46764	28.7	10.6	10.1	38.8	20.7	56.6	46.6	17.8	25.9	Vb

Operating mode: Rx 2480MHz

[Emission level]

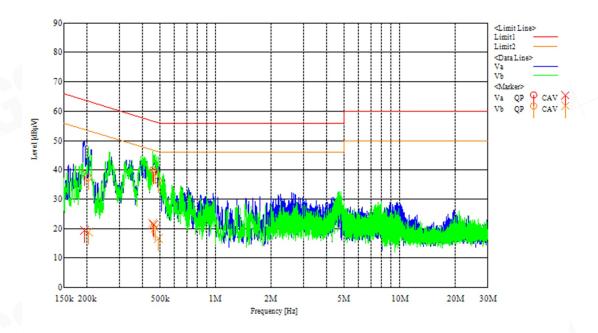
	Freq. [MHz]	Reading QP [dBµV]	Reading Ave [dBµV]	Factor [dB]	Result QP [dBµV]	Result Ave [dBµV]	Limit QP [dBµV]	Limit Ave [dBµV]	Margin QP [dB]	Margin Ave [dB]	Line
1	0.45864	29.3	11.1	10.0	39.3	21.1	56.7	46.7	17.4	25.6	Va
2	0.39664	28.2	9.2	10.1	38.3	19.3	57.9	47.9	19.6	28.6	Vb
3	0.41327	27.6	9.3	10.1	37.7	19.4	57.6	47.6	19.9	28.2	Vb
4	0.45647	29.0	11.2	10.1	39.1	21.3	56.8	46.8	17.7	25.5	Vb
5	0.47666	27.4	8.8	10.1	37.5	18.9	56.4	46.4	18.9	27.5	Vb
6	0.48773	27.0	7.8	10.1	37.1	17.9	56.2	46.2	19.1	28.3	Vb

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# [Chart]



Tested Date: Humidity:

05 Feb. 2021

41 %

Temperature: Atmos. Press:

16 degC 1022 hPa

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# List of utilized test equipment / calibration

ID No.	Kind of Equipment	Manufacturer	Model No.	Serial Number	Cal. Date	Cal. until
AC01(EM)	Anechoic Chamber (1st test room)	JSE	203397C	-	2020/4/17	2021/4/30
AC01(EG)	Anechoic Chamber (1st test room)	JSE	203397C	-	2020/3/28	2021/3/31
BA07	Bilogical Antenna	TESEQ	CBL6143A	26670	2020/12/14	2021/12/31
CL11	RF Cable for RE	RFT	-	-	2020/3/25	2021/3/31
CL18	RF Cable for CE	RFT	-	-	2020/3/25	2021/3/31
CL31	RF Cable 1 m	Junkosha	MWX221	1303S118	2021/1/27	2022/1/31
CL38	RF Cable 2 m	Junkosha	MWX221	1603S626	2021/1/27	2022/1/31
CL39	RF Cable 5 m	SUHNER	SUCOFLEX126E	523222	2021/1/27	2022/1/31
DH06	DRG Horn Antenna	A.H. Systems	SAS-571	1339	2020/6/27	2022/6/30
HPF11	High Pass Filter (3500MHz)	Wainwright	(6-2765-3500-2650	2	2020/4/28	2021/4/30
LN05	LISN	Kyoritsu	KNW-407F	8-1773-2	2020/5/19	2021/5/31
LP06	Loop Antenna	ETS-Lindgren	6502	00164299	2020/4/13	2021/4/30
LPF1	Low Pass Filter (1000MHz)	M-City	LPF1000-04	RF0012-01	2020/3/25	2021/3/31
PR12	Pre. Amplifier (1-26G)	Agilent Technologies	8449B	3008A02513	2021/1/27	2022/1/31
PR21	Pre. Amplifier	Anritsu	MH648A	6200467119	2020/12/15	2021/12/31
SH01	Standard Horn Antenna (18-26G)	A.H. Systems	SAS-572	208	2020/7/4	2022/7/31
SH05	Standard Horn Antenna (12-18G)	A.H. Systems	SAS-586	214	2020/7/23	2022/7/31
TR06	Test Receiver (F/W: 4.73 SP4)	Rohde & Schwarz	ESU26	100002	2020/10/21	2021/10/31
AT33	Attenuator 10dB 26GHz	INMET	26A-10	_	2020/7/8	2021/7/31

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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