

# TEST REPORT



**DT&C Co., Ltd.**

42, Yurim-ro, 154Beon-gil, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea, 17042  
Tel : 031-321-2664, Fax : 031-321-1664

1. Report No : DRTFCC2101-0005(1)

2. Customer

- Name : THINKWARE Corporation
- Address (FCC) : A, 9FL, Samwhan Hipex, 240, Pangyoyeok-ro, Bundang-gu, Seongnam-si, Gyeonggi-do, Republic of Korea
- Address (IC) : A, 9FL, Samwhan Hipex, 240, Pangyoyeok-ro, Bundang-gu, Seongnam-si, Gyeonggi-do, Seongnam Korea (Republic Of)

3. Use of Report : FCC & IC Certification

4. Product Name / Model Name : RADAR MODULE / TWA-RAD S

FCC ID : 2ADTG-TWARAD2

IC: 12594A-TWARAD2

5. FCC Regulation(s): Part 15.249

IC Standard(s): RSS-210 Issue 10

Test Method used: ANSI C63.10-2013



6. Date of Test : 2020.12.11 ~ 2020.12.16

7. Location of Test :  Permanent Testing Lab  On Site Testing

8. Testing Environment : See appended test report.

9. Test Result : Refer to the attached Test Result

The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

Affirmation	Tested by	Reviewed by
	Name : JaeHyeok Bang 	Name : JaeJin Lee  (Signature)

2021 . 01 . 13 .

**DT&C Co., Ltd.**

This test report is a general report that does not use the KOLAS accreditation mark and is not related to KS Q ISO/IEC 17025 and KOLAS accreditation.

If this report is required to confirmation of authenticity, please contact to [report@dtnc.net](mailto:report@dtnc.net)

## Test Report Version

Test Report No.	Date	Description	Revised by	Reviewed by
DRTFCC2101-0005	Jan. 12, 2021	Initial issue	JaeHyeok Bang	JaeJin Lee
DRTFCC2101-0005(1)	Jan. 13, 2021	Changed RSS Standard	JaeHyeok Bang	JaeJin Lee

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## 1. General Information

### 1.1 Testing Laboratory

<b>DT&amp;C Co., Ltd.</b>	
The 3 m test site and conducted measurement facility used to collect the radiated data are located at the 42, Yurim-ro, 154beon-gil, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea 17042. The test site complies with the requirements of § 2.948 according to ANSI C63.4-2014.	
- FCC & IC MRA Designation No. : KR0034 - ISED #: 5740A	
<a href="http://www.dtnet.net">www.dtnet.net</a>	
Telephone	: + 82-31-321-2664
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### 1.2 Test Environment

Ambient Condition	
▪ Temperature	+22 °C ~ +25 °C
▪ Relative Humidity	41 % ~ 45%

### 1.3 Measurement Uncertainty

Test items	Measurement uncertainty
Radiated emission (1 GHz Below)	5.1 dB (The confidence level is about 95 %, k = 2)
Radiated emission (1 GHz ~ 18 GHz)	5.4 dB (The confidence level is about 95 %, k = 2)
Radiated emission (18 GHz Above)	5.3 dB (The confidence level is about 95 %, k = 2)

## 1.4 Details of Applicant

Applicant : THINKWARE Corporation  
 Address (FCC) : A, 9FL., Samwhan Hipex, 240, Pangyoyeok-ro, Bundang-gu, Seongnam-si,  
 Gyeonggi-do, Republic of Korea  
 Address (IC) : 9FL, Samwhan Hipex, 240, Pangyoyeok-ro, Bundang-gu, Seongnam-si,  
 Gyeonggi-do, Seongnam Korea (Republic Of)

## 1.5 Description of EUT

<b>FCC Equipment Class</b>	Part 15 Low Power Communication Device Transmitter
<b>EUT</b>	RADAR MODULE
<b>Model Name(HVIN)</b>	TWA-RAD S
<b>FVIN</b>	1.01
<b>Add Model Name</b>	NA
<b>Serial Number</b>	Not defined
<b>Power Supply</b>	DC 5 V
<b>Frequency Range</b>	24.05 GHz ~ 24.25 GHz
<b>Max. field strength (average)</b>	100.80 dBuV/m
<b>Modulation Type</b>	CW
<b>Antenna Specification</b>	Internal Antenna ▪ Max. peak gain : 12.6 dBi

## 1.6. EUT CAPABILITIES

This module contains the following capabilities:  
 24 GHz RADAR

## 2. Information about test items

### 2.1 Test Mode

Test Mode	Power Supply	Description
TM 1	5 V	Continuous transmitting mode
-	-	-

### 2.2 Tested Frequency

	TX Frequency (GHz)
Lowest	24.09
Middle	24.15
Highest	24.23

### 2.3 EMI Suppression Device(s)/Modifications

EMI suppression device(s) added and/or modifications made during testing  
 → None

## 3. Antenna requirements

“An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.”

**The antenna is permanently attached on the PCB.  
 Therefore this E.U.T Complies with the requirement of §15.203**

## 4. Test report

### 4.1 Summary of tests

FCC Part	RSS Std.	Parameter	Limit	Test Condition	Status Note 1
15.249 (a)	RSS-210 [B.10(a)]	Field Strength Limits	FCC 15.249(a) (See section 4.2.2)	Radiated	<b>C</b>
15.205 15.209 15.249	RSS-GEN[8.9] RSS-GEN [8.10] RSS-210[B.10]	General Field Strength Limits (Restricted Bands and Radiated Emission Limits)	FCC 15.209 (See section 4.2.2)		<b>C</b>
15.215(c)	-	20 dB Bandwidth	NA		<b>C</b>
-	RSS-Gen [6.7]	Occupied Bandwidth (99 %)	RSS-Gen(6.7) (See section 4.2.1)		<b>C</b>
15.207	RSS-Gen[8.8]	AC Line Conducted Emissions	FCC 15.207 limits (See section 4.2.3)	AC Line Conducted	<b>NA</b> Note3
15.203	-	Antenna Requirements	FCC 15.203 (See section 3)	-	<b>C</b>

Note 1: **C**=Comply **NC**=Not Comply **NT**=Not Tested **NA**=Not Applicable

Note 2: This device is installed in a car. Therefore the power source is a battery of car.

## 4.2 Transmitter requirements

### 4.2.1 20dB bandwidth & Occupied BW

#### Test Requirements

##### - 20dB Bandwidth

#### Part 15.215

§15.215(c) Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§15.217 through 15.257 and in subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

##### - Occupied Bandwidth

#### RSS-Gen [6.7]

When an occupied bandwidth value is not specified in the applicable RSS, the transmitted signal bandwidth to be reported is to be its 99 % emission bandwidth, as calculated or measured.

#### ■ TEST CONFIGURATION

Refer to the APPENDIX I.

#### ■ TEST PROCEDURE

- The transmitter shall be operated at its maximum carrier power measured under normal test conditions.
- The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts.
- The resolution bandwidth (RBW) shall be in the range of 1% to 5% of the occupied bandwidth (OBW) and video bandwidth (VBW) shall be approximately 3x RBW.

**Note:** Actually, the RBW setting was used 100 kHz. (The RBW setting cannot satisfy the 1.5 % to 5 % of the OBW due to signal characteristics.)

#### ■ TEST RESULTS: **Comply**

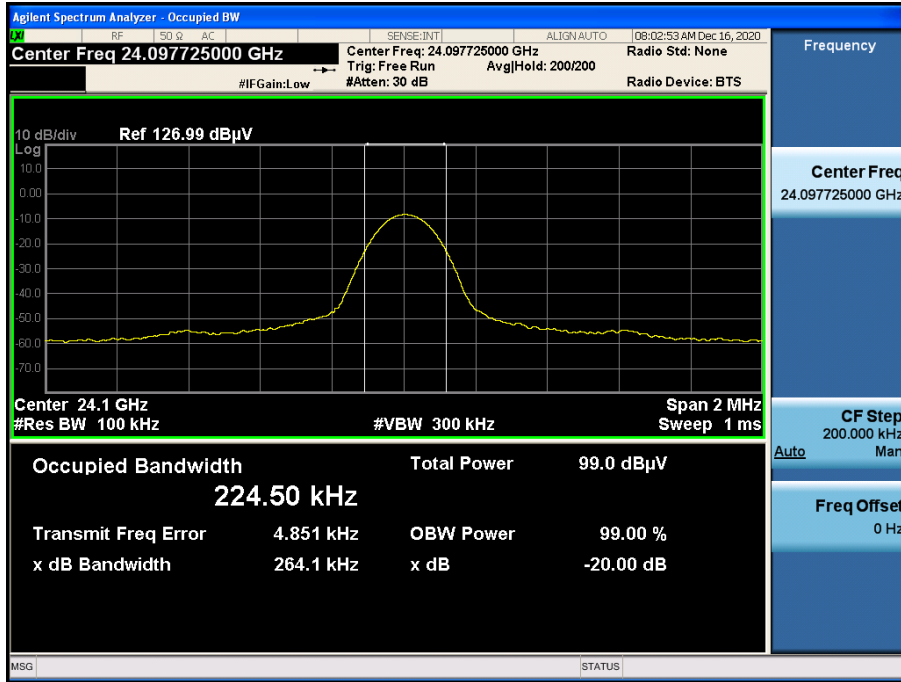
Test Mode	Frequency	20 dB BW (MHz)	Occupied BW (MHz)
TM 1	Lowest	0.264	0.225
	Middle	0.272	0.231
	Highest	0.271	0.231



RESULT PLOTS

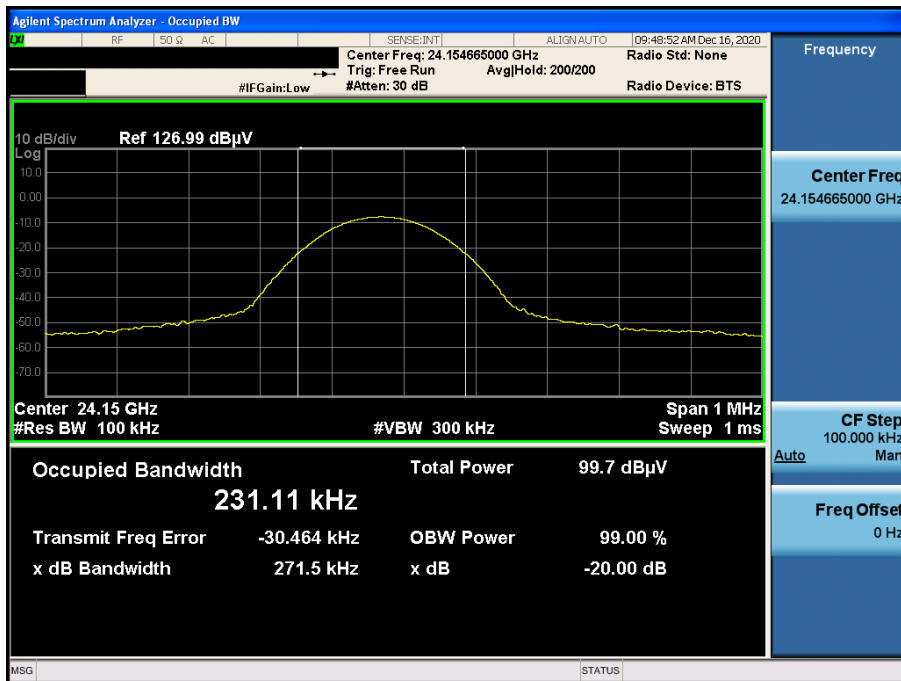
20dB Bandwidth & Occupied Bandwidth

TM 1 & Lowest



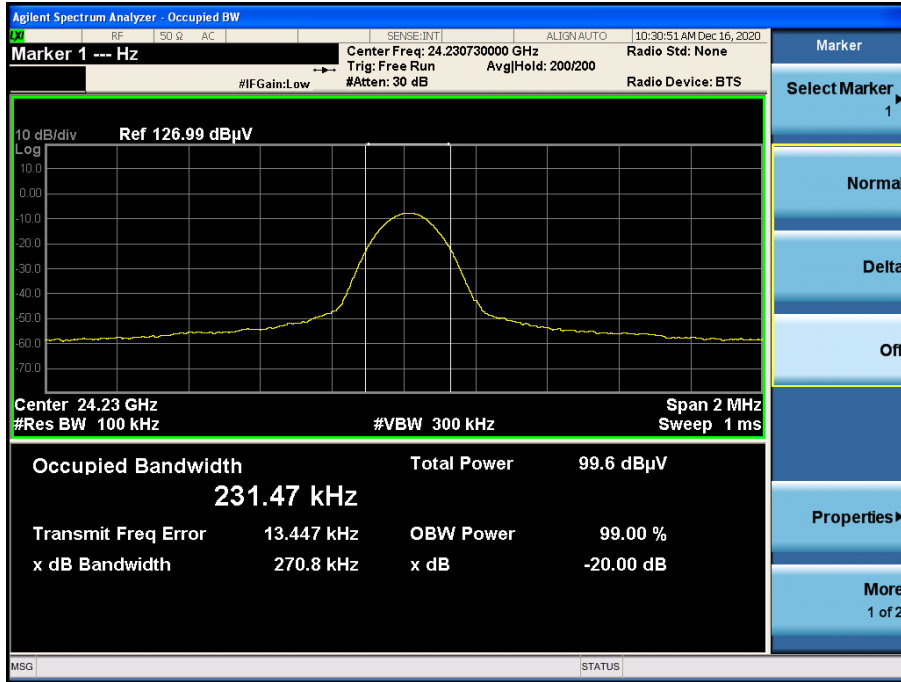
20dB Bandwidth & Occupied Bandwidth

TM 1 & Middle



20dB Bandwidth & Occupied Bandwidth

TM 1 & Highest



## 4.2.2 Radiated Emission

### Requirements and limit,

#### - Part 15.249 & RSS-210[B.10]

(a) Except as provided in paragraph (b) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Frequency (MHz)	Limit @ 3m	
	Field strength of fundamental (mV/m)	Field strength of harmonics (uV/m)
902 ~ 908	50	500
2 400 ~ 2 483.5	50	500
5 725 ~ 5 825	50	500
24 000 ~ 24 250	250	2 500

(d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

(e) As shown in §15.35(b), for frequencies above 1000 MHz, the field strength limits in paragraphs (a) and (b) of this section are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For point-to-point operation under paragraph (b) of this section, the peak field strength shall not exceed 2500 millivolts/meter at 3 meters along the antenna azimuth.

#### - Part 15.209 & RSS-247[8.9]

Frequency (MHz)	FCC Limit (uV/m)	IC Limit (µA/m)	Measurement Distance (m)
0.009 – 0.490	2 400 / F (kHz)	6.37/F (F in kHz)	300
0.490 – 1.705	2 4000 / F (kHz)	63.7/F (F in kHz)	30
1.705 – 30.0	30	0.08	30

Frequency (MHz)	FCC Limit (uV/m)	IC Limit (uV/m)	Measurement Distance (m)
30 ~ 88	100 **	100	3
88 ~ 216	150 **	150	3
216 ~ 960	200 **	200	3
Above 960	500	500	3

\*\*Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§15.231 and 15.241.

**- Part 15.205(a): Restricted band of operation**

MHz	MHz	MHz	MHz	GHz	GHz
0.009 ~ 0.110	8.41425 ~ 8.41475	108 ~ 121.94	1300 ~ 1427	4.5 ~ 5.15	14.47 ~ 14.5
0.495 ~ 0.505	12.29 ~ 12.293	123 ~ 138	1435 ~ 1626.5	5.35 ~ 5.46	15.35 ~ 16.2
2.1735 ~ 2.1905	12.51975 ~ 12.52025	149.9 ~ 150.05	1645.5 ~ 1646.5	7.25 ~ 7.75	17.7 ~ 21.4
4.125 ~ 4.128	12.57675 ~ 12.57725	156.52475 ~	1660 ~ 1710	8.025 ~ 8.5	22.01 ~ 23.12
4.17725 ~ 4.17775	13.36 ~ 13.41	156.52525	1718.8 ~ 1722.2	9.0 ~ 9.2	23.6 ~ 24.0
4.20725 ~ 4.20775	16.42 ~ 16.423	156.7 ~ 156.9	2200 ~ 2300	9.3 ~ 9.5	31.2 ~ 31.8
6.215 ~ 6.218	16.69475 ~ 16.69525	162.0125 ~ 167.17	2310 ~ 2390	10.6 ~ 12.7	36.43 ~ 36.5
6.26775 ~ 6.26825	16.80425 ~ 16.80475	167.72 ~ 173.2	2483.5 ~ 2500	13.25 ~ 13.4	Above 38.6
6.31175 ~ 6.31225	25.5 ~ 25.67	240 ~ 285	2655 ~ 2900		
8.291 ~ 8.294	37.5 ~ 38.25	322 ~ 335.4	3260 ~ 3267		
8.362 ~ 8.366	73 ~ 74.6	399.90 ~ 410	3332 ~ 3339		
8.37625 ~ 8.38675	74.8 ~ 75.2	608 ~ 614	3345.8 ~ 3358		
		960 ~ 1240	3600 ~ 4400		

**- RSS-Gen[8.10]: Restricted frequency bands**

MHz	MHz	MHz	MHz	MHz	GHz
0.090 ~ 0.110	8.362 ~ 8.366	73 ~ 74.6	608 ~ 614	3345.8 ~ 3358	9.0 ~ 9.2
0.495 ~ 0.505	8.37625 ~ 8.38675	74.8 ~ 75.2	960 ~ 1427	3500 ~ 4400	9.3 ~ 9.5
2.1735 ~ 2.1905	8.41425 ~ 8.41475	108 ~ 138	1435 ~ 1626.5	4500 ~ 5150	10.6 ~ 12.7
3.020 ~ 3.026	12.29 ~ 12.293	149.9 ~ 150.05	1645.5 ~ 1646.5	5350 ~ 5460	13.25 ~ 13.4
4.125 ~ 4.128	12.51975 ~ 12.52025	156.52475 ~	1660 ~ 1710	7250 ~ 7750	14.47 ~ 14.5
4.17725 ~ 4.17775	12.57675 ~ 12.57725	156.52525	1718.8 ~ 1722.2	8025 ~ 8500	15.35 ~ 16.2
4.20725 ~ 4.20775	13.36 ~ 13.41	156.7 ~ 156.9	2200 ~ 2300		17.7 ~ 21.4
5.677 ~ 5.683	16.42 ~ 16.423	162.0125 ~ 167.17	2310 ~ 2390		22.01 ~ 23.12
6.215 ~ 6.218	16.69475 ~ 16.69525	167.72 ~ 173.2	2483.5 ~ 2500		23.6 ~ 24.0
6.26775 ~ 6.26825	16.80425 ~ 16.80475	240 ~ 285	2655 ~ 2900		31.2 ~ 31.8
6.31175 ~ 6.31225	25.5 ~ 25.67	322 ~ 335.4	3260 ~ 3267		36.43 ~ 36.5
8.291 ~ 8.294	37.5 ~ 38.25	399.90 ~ 410	3332 ~ 3339		Above 38.6

## Test Configuration

Refer to the APENDIX I

## Test Procedures

1. The EUT is placed on a non-conductive table. For emission measurements at or below 1 GHz, the table height is 80 cm. For emission measurements above 1 GHz, the table height is 1.5 m. The table was rotated 360 degrees to determine the position of the highest radiation.
2. During performing radiated emission below 1 GHz, the EUT was set 3 meters away from the interference receiving antenna, which was mounted on the top of a variable-height antenna tower. During performing radiated emission above 1 GHz, the EUT was set 1 or 3 meter away from the interference-receiving antenna.
3. For measurements above 1 GHz absorbers are placed on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections. For measurements below 1 GHz, the absorbers are removed.
4. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
5. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the table was turned from 0 degrees to 360 degrees to find the maximum reading.
6. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
7. If the emission level of the EUT in peak mode was 10 dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10 dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

## Measurement Instrument Setting

- Frequency Range Below 1GHz

RBW = 100 or 120 kHz, VBW = 3 x RBW, Detector = Peak or Quasi Peak

- Frequency Range Range > 1 GHz

Peak Measurement

RBW = 1 MHz, VBW = 3 MHz, Detector = Peak, Sweep time = Auto, Trace mode = Max Hold until the trace stabilizes

Average Measurement > 1GHz

RBW = 1MHz, VBW ≥ 1/T, Detector = Peak, Sweep Time = Auto, Trace Mode = Max Hold until the trace stabilizes

**Test Results: TM 1**
**▪ Test Notes.**

1. \* is fundamental frequency.
2. The radiated emissions were investigated 9 kHz to 5<sup>th</sup> harmonic of highest fundamental frequency. And no other spurious and harmonic emissions were found above listed frequencies.
3. Information of Distance Factor  
 For finding emissions, measurements may be performed at a distance closer than that specified in the regulations. In this case, the distance correction factor is applied to the result.  
 - Calculation of distance correction factor  
 At frequencies below 30 MHz =  $40 \log(\text{tested distance} / \text{specified distance})$   
 At frequencies at or above 30 MHz =  $20 \log(\text{tested distance} / \text{specified distance})$
4. Sample Calculation.  
 $\text{Margin} = \text{Limit} - \text{Result} / \text{Result} = \text{Reading} + \text{T.F} + \text{DCCF} + \text{DCF} / \text{T.F} = \text{AF} + \text{CL} - \text{AG}$   
 Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,  
 The mixer loss was applied to the measured level by SA correction factor.  
 DCCF = Duty Cycle Correction Factor, DCF = Distance Correction Factor

**▪ Lowest Frequency**

Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCCF (dB)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
*24 092.42	V	Y	PK	98.76	1.09	N/A	N/A	99.85	127.95	28.10
*24 092.25	V	Y	AV	98.70	1.09	N/A	N/A	99.79	107.95	8.16
23 982.29	V	Y	PK	56.04	1.12	N/A	N/A	57.16	74.00	16.84
23 985.83	V	Y	AV	43.73	1.11	N/A	N/A	44.84	54.00	9.16
48 184.24	H	X	PK	64.42	-2.43	N/A	-6.02	55.97	87.96	31.99
48 184.69	H	X	AV	64.18	-2.43	N/A	-6.02	55.73	67.96	12.23
72 277.32	H	Z	PK	29.21	43.94	N/A	-6.02	67.13	87.96	20.83
72 277.49	H	Z	AV	27.47	43.94	N/A	-6.02	65.39	67.96	2.57
96 386.06	V	X	PK	34.06	47.11	N/A	-15.56	65.61	87.96	22.35
96 386.16	V	X	AV	32.73	47.11	N/A	-15.56	64.28	67.96	3.68

**▪ Middle Frequency**

Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCCF (dB)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
*24 153.25	V	Y	PK	99.32	1.09	N/A	N/A	100.41	127.95	27.54
*24 152.09	V	Y	AV	99.20	1.09	N/A	N/A	100.29	107.95	7.66
48 307.70	H	X	PK	63.76	-2.30	N/A	-6.02	55.44	87.96	32.52
48 307.27	H	X	AV	63.43	-2.30	N/A	-6.02	55.11	67.96	12.85
72 469.19	H	Z	PK	28.29	43.95	N/A	-6.02	66.22	87.96	21.74
72 469.78	H	Z	AV	26.74	43.95	N/A	-6.02	64.67	67.96	3.29
96 604.02	V	X	PK	33.26	47.12	N/A	-15.56	64.82	87.96	23.14
96 604.74	V	X	AV	31.85	47.12	N/A	-15.56	63.41	67.96	4.55

**▪ Highest Frequency**

Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCCF (dB)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
*24 230.01	V	Y	PK	99.76	1.09	N/A	N/A	100.85	127.95	27.10
*24 230.37	V	Y	AV	99.71	1.09	N/A	N/A	100.80	107.95	7.15
24 250.60	V	Y	PK	47.11	1.10	N/A	N/A	48.21	74.00	25.79
24 250.43	V	Y	AV	38.79	1.10	N/A	N/A	39.89	54.00	14.11
48 459.77	H	X	PK	64.82	-2.13	N/A	-6.02	56.67	87.96	31.29
48 458.99	H	X	AV	64.02	-2.13	N/A	-6.02	55.87	67.96	12.09
72 693.41	H	Z	PK	28.56	43.97	N/A	-6.02	66.51	87.96	21.45
72 692.62	H	Z	AV	27.39	43.95	N/A	-6.02	65.32	67.96	2.64
96 920.36	V	X	PK	33.32	47.12	N/A	-15.56	64.88	87.96	23.08
96 919.57	V	X	AV	31.76	47.12	N/A	-15.56	63.32	67.96	4.64

### 4.2.3 AC Conducted Emissions

#### Requirements and limit, §15.207 & RSS-Gen[8.8]

For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50  $\mu$ H/50 ohms line impedance stabilization network (LISN). Compliance with the provision of this paragraph shall on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower applies at the boundary between the frequency ranges.

Frequency Range (MHz)	Conducted Limit (dBuV)	
	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

#### Test Configuration

See test photographs for the actual connections between EUT and support equipment.

#### Test Procedure

1. The EUT is placed on a wooden table 80 cm above the reference ground plane.
2. The EUT is connected via LISN to a test power supply.
3. The measurement results are obtained as described below:
4. Detectors – Quasi Peak and Average Detector.

**Test Results: NA**



### 4.3 List of Test Equipment

Type	Manufacturer	Model	Cal.Date (yy/mm/dd)	Next.Cal.Date (yy/mm/dd)	S/N
Spectrum Analyzer	Agilent Technologies	N9020A	20/06/24	21/06/24	US47360812
Spectrum Analyzer	Rohde Schwarz	FSW85	20/02/02	21/02/02	101530
DC Power Supply	SM techno	SDP30-5D	19/12/16	20/12/16	305DKA013
Multimeter	FLUKE	17B+	19/12/16	20/12/16	36390701WS
Signal Generator	Rohde Schwarz	SMBV100A	19/12/16	20/12/16	255571
Signal Generator	ANRITSU	MG3695C	19/12/16	20/12/16	173501
Thermohyrometer	BODYCOM	BJ5478	19/12/18	20/12/18	120612-2
Loop Antenna	ETS-Lindgren	6502	19/09/18	21/09/18	00226186
BILOG ANTENNA	Schwarzbeck	VULB 9160	19/04/23	21/04/23	3362
HORN ANT	ETS	3117	20/04/24	21/04/24	00140394
PreAmplifier	H.P	8447D	19/12/16	20/12/16	2944A07774
PreAmplifier	Agilent	8449B	20/06/24	21/06/24	3008A02108
Horn Antenna	A.H. Systems Inc.	SAS-574	20/06/24	21/06/24	155
PreAmplifier	tsj	MLA-1840-J02-45	20/06/24	21/06/24	16966-10728
Horn Antenna	MI Wave	RX ANT-5 261U+410U	20/08/05	21/08/05	108
PreAmplifier	Norden Millimeter Inc.	NA4060G50N8P12	18/12/21	20/12/21	1003
Horn Antenna	MI Wave	RX ANT-7 261E	20/06/16	21/06/16	112
Harmonic Mixers	Rohde Schwarz	FS-Z90	19/08/27	21/08/27	101714
Horn Antenna	RX ANT-7 261E	RX ANT-8 261F	20/06/16	21/06/16	115
Harmonic Mixers	Rohde Schwarz	FS-Z140	19/10/14	21/10/14	101009
High-pass filter	Wainwright	WHKX12-935-1000- 15000-40SS	20/06/24	21/06/24	7
High-pass filter	Wainwright	WHKX12-2580-3000- 18000-80SS	20/06/24	21/06/24	3
High-pass filter	Wainwright	WHNX8.5/26.5G-6SS	20/06/24	21/06/24	1
Cable	Radiall	TESTPRO3	20/01/16	21/01/16	M-01
Cable	Junkosha	MWX315	20/01/16	21/01/16	M-03
Cable	Junkosha	MWX221	20/01/16	21/01/16	M-06
Cable	DT&C	Cable	20/01/13	21/01/13	RF-20
Cable	Junkosha	MWX241	20/01/13	21/01/13	G-05
Cable	Junkosha	MWX241	20/01/13	21/01/13	G-07
Cable	DT&C	Cable	20/01/13	21/01/13	G-08
Cable	DT&C	Cable	20/01/13	21/01/13	G-09
Cable	DT&C	Cable	20/01/13	21/01/13	G-11
Cable	DT&C	Cable	20/01/13	21/01/13	G-12

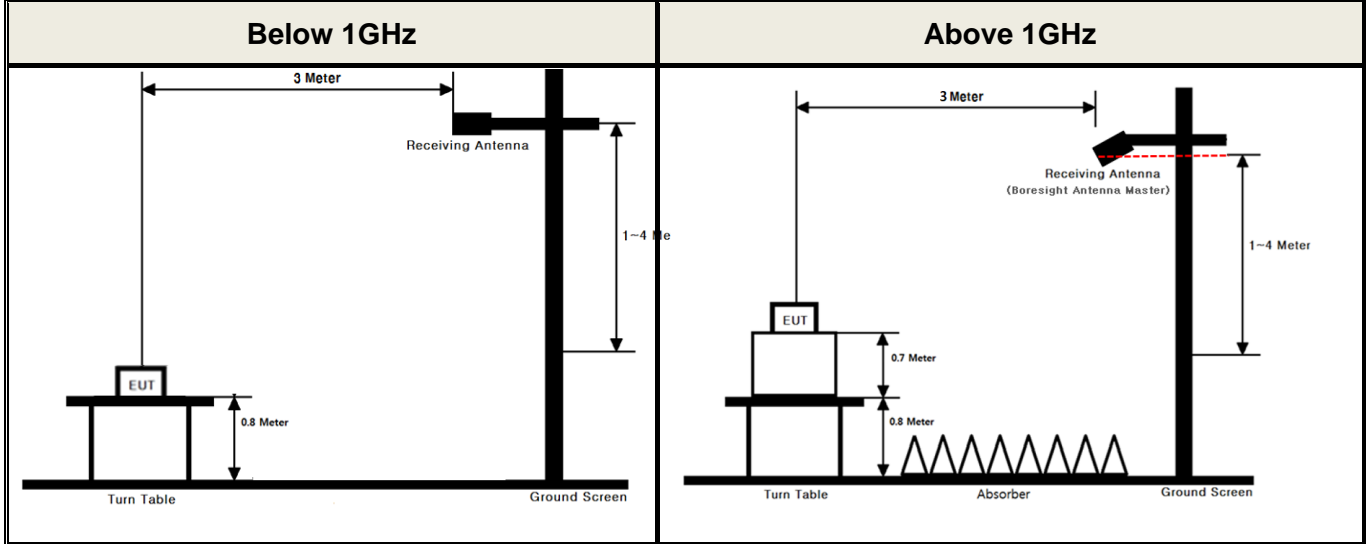
Note1: The measurement antennas were calibrated in accordance to the requirements of ANSI C63.5-2017.

Note2: The cable is not a regular calibration item, so it has been calibrated by DT & C itself.

# APPENDIX I

## Test set up diagrams

### ▪ Radiated Measurement



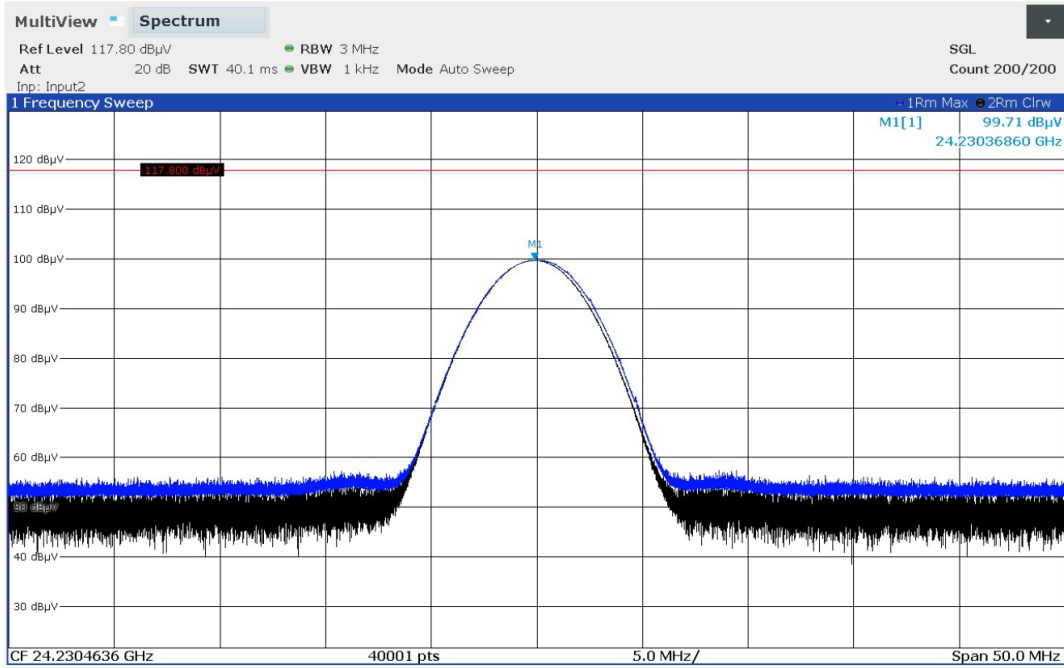
## APPENDIX II

### Worst data plot of radiated test

### Field strength of fundamental

Highest & Y & Ver

Detector Mode : AV

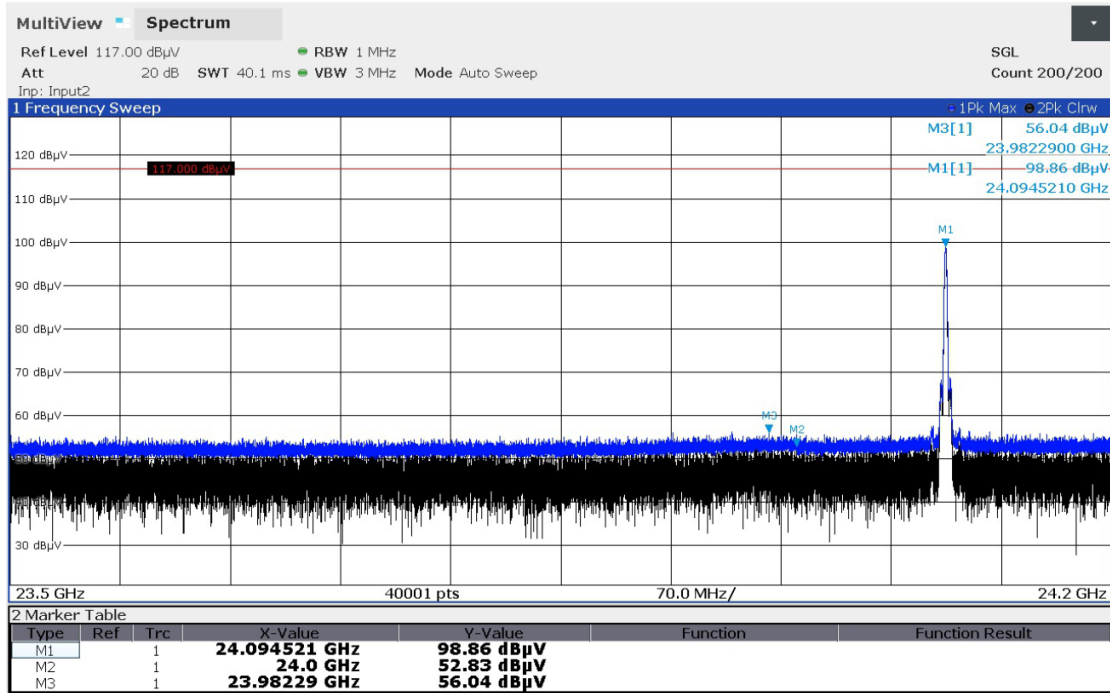


Note: The resolution bandwidth was set greater than occupied bandwidth of fundamental.

Restricted band edge

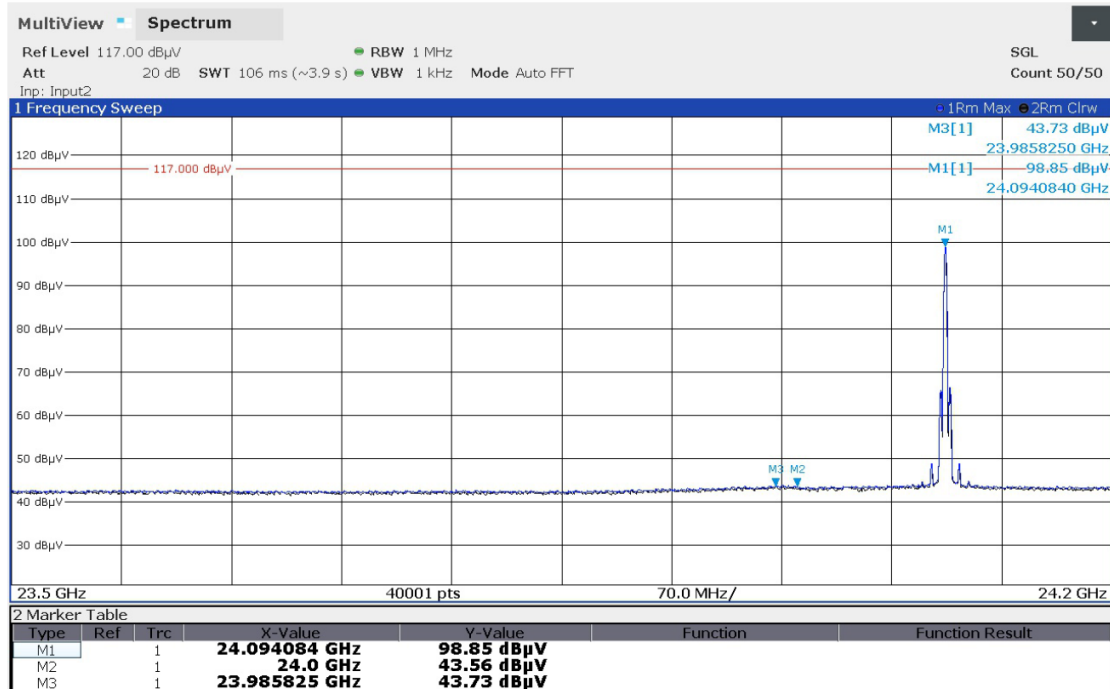
Lowest & Y & Ver

Detector Mode : PK



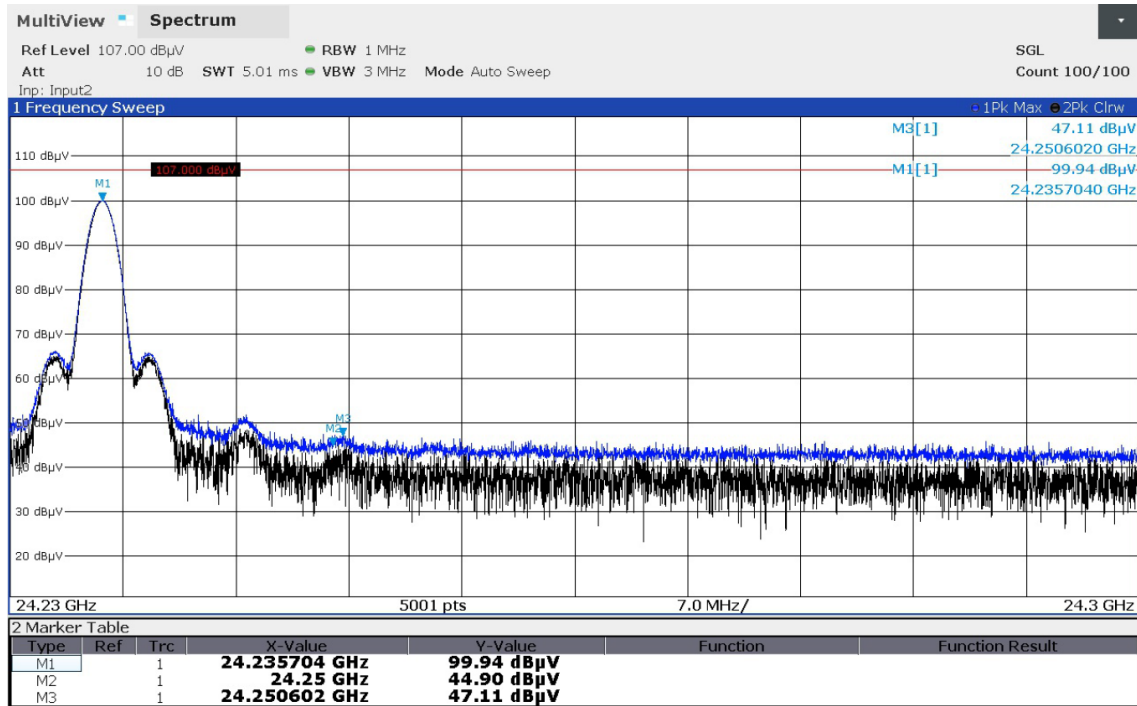
Lowest & Y & Ver

Detector Mode : AV



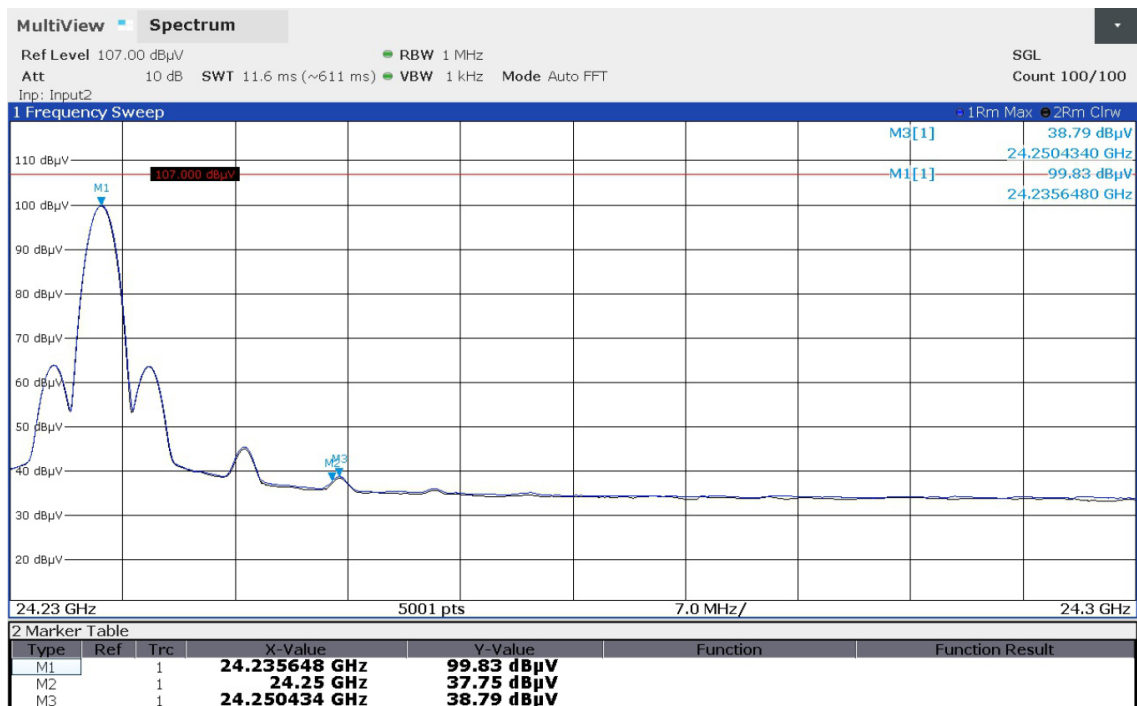
Highest & Y & Ver

Detector Mode : PK



Highest & Y & Ver

Detector Mode : AV



### Spurious emission

Lowest & Z & Hor

Detector Mode : AV

