CFR 47 FCC PART 15 SUBPART C
ISED RSS-210 ISSUE 10

TEST REPORT

For

Movable Heater

MODEL NUMBER: TH202WH

SERIES MODEL NUMBER: TH202, TH205, TH202QBK, TH202QWH, TH205CO, TH202Q, TH202C

PROJECT NUMBER: 4791732510

REPORT NUMBER: 4791732510-1

FCC ID: 2ASV9TH200

IC: 24909-TH200

ISSUE DATE: MAY. 06, 2024

Prepared for

SHARKNINJA OPERATING LLC.

Prepared by

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Revision History

Rev.	Issue Date	Revisions	Revised By
V0	05/06/2025	Initial Issue	

Summary of Test Results			
Clause	Test Items	FCC/ISED Rules	Test Results
1	20 dB Bandwidth and 99 % Occupied Bandwidth	CFR 47 FCC §15.215 (c) ISED RSS-Gen Clause 6.7	Pass
2	Radiated Emission	CFR 47 FCC §15.249 (a)(d)(e) ISED RSS-210 Annex B B.10 CFR 47 FCC §15.205 and §15.209 RSS-GEN Clause 8.9 RSS-GEN Clause 8.10	Pass
3	Conducted Emission Test for AC Power Port	CFR 47 FCC §15.207 RSS-GEN Clause 8.8	Pass
4	Antenna Requirement	CFR 47 FCC §15.203 ISED RSS-Gen Clause 6.8	Pass
Note: The measurement result for the sample received is < Pass > according to < CFR 47 FCC PART 15 SUBPART C, ISED RSS-210 Issue 10 and ISED RSS-GEN Issue 5 > when < Simple Acceptance > decision rule is applied.			

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS

Applicant Information	
Company Name:	SharkNinja Operating LLC.
Address:	89 A Street Suite100 Needham MA 02494 United States
Manufacturer Information	
Company Name:	SharkNinja Operating LLC.
Address:	89 A Street Suite100 Needham MA 02494 United States
Factory Information	
Company Name:	Guangdong Cinotex Environmental Sci-Tech Co., Ltd.
Address:	No.10 Shashui Road, Shaxi Town, Zhongshan City, Guangdong Province, China
EUT Description	
Product Name:	Movable Heater
Model Number:	TH202WH
Series Model Number:	TH202, TH205, TH202QBK, TH202QWH, TH205CO, TH202Q, TH202C
Model Difference:	All the modes are identical, the only difference is market and colors.
Sample Number:	8259533
Data of Receipt Sample:	Apr. 07, 2025
Date Tested:	Apr. 07, 2025~ May. 06, 2025

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 FCC PART 15 SUBPART C	
ISED RSS-210 ISSUE 10	PASS
ISED RSS-GEN Issue 5	

Prepared By:

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Reviewed By:

Emily Wang

Emily Wang

Authorized By:

Kevin Shen

Kevin Shen

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with KDB 414788 D01 Radiated Test Site v01r01, FCC CFR 47 Part 2, FCC CFR 47 Part 15, ANSI C63.10-2013, ISED RSS-210 Issue 10 and RSS-GEN Issue 5.

3. FACILITIES AND ACCREDITATION

Accreditation Certificate	**A2LA (Certificate No.: 4829.01)** **UL-CCIC COMPANY LIMITED has been assessed and proved to be in compliance with A2LA.** **FCC (FCC Designation No.: CN1247)** **UL-CCIC COMPANY LIMITED has been recognized to perform compliance testing on equipment subject to the Commission's Declaration of Conformity (DoC) and Certification rules.** **IC (IC Designation No.: 25056; CAB No.: CN0073)** **UL-CCIC COMPANY LIMITED has been recognized to perform compliance testing on equipment subject to the Commission's Declaration of Conformity (DoC) and Certification rules.**

Note 1: All tests measurement facilities use to collect the measurement data are located at No. 2, Chengwan Road, Suzhou Industrial Park, Suzhou 215122, China.

Note 2: For below 30MHz, lab had performed measurements at test anechoic chamber and comparing to measurements obtained on an open field site. These measurements below 30MHz had been correlated to measurements performed on an OFS.

Note 3: The test anechoic chamber in UL-CCIC COMPANY LIMITED had been calibrated and compared to the open field sites and the test anechoic chamber is shown to be equivalent to or worst case from the open field site.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations and is traceable to recognized national standards.

4.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Test Item	Uncertainty
Emission Bandwidth	±9.2 PPM
Unwanted Emissions in Non-restricted Freq Bands	9kHz-30MHz: ±0.90dB 30MHz-1GHz: ±1.5 dB 1GHz-12.75GHz: ±1.9dB 12.75GHz-26.5GHz: ±2.1dB
Radiation Emission test (include Fundamental emission) (9kHz-30MHz)	3.4dB
Radiation Emission test (include Fundamental emission) (30MHz-1GHz)	3.4dB
Radiation Emission test (1GHz to 26GHz) (include Fundamental emission)	3.5dB (1GHz-18GHz)
	3.9dB (18GHz-26.5GHz)
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.	

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

Product Name:	Movable Heater
Model No.:	TH202WH
Radio Technology	2.4GHz RF
Operation frequency	2417MHz
Modulation	GFSK
Power Supply	AC 120V

5.2. MAXIMUM EMISSIONS FIELD STRENGTH

Number of Transmit Chains (NTX)	Frequency (MHz)	Channel Number	Max PK Field Strength (dBµV/m)
1	2417	1	86.60

5.3. CHANNEL LIST

Channel	Frequency (MHz)
1	2417

5.4. TEST CHANNEL CONFIGURATION

Test Mode	Test Channel	Frequency
TX	CH 1	2417MHz

5.5. THE WORSE CASE CONFIGURATIONS

The Worse Case Power Setting Parameter under 2400 ~ 2483.5MHz Band	
Test Software	/
Transmit Antenna Number	Test Channel
	NCB: 1MHz
1	2417

For the product, there is only one transmission antenna, so the test data of the transmission antenna was the worst case and recorded in the report.

Worst-case data rates as provided by the client were: 1 Mbps.

5.6. DESCRIPTION OF AVAILABLE ANTENNAS

Ant.	Frequency (MHz)	Antenna Type	Antenna Gain (dBi)
1	2420-2470	PCB Antenna	0

5.7. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Item	Equipment	Brand Name	Model Name	P/N
1	/	/	/	/

I/O CABLES

No.	Port	Connector Type	Cable Type	Cable Length(m)	Remarks
1	/	/	/	/	/

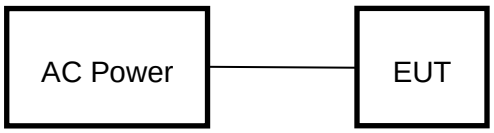
ACCESSORY

Item	Accessory	Brand Name	Model Name	Description
1	/	/	/	/

TEST SETUP

The EUT can work in an engineer mode.

SETUP DIAGRAM FOR TESTS



5.8. MEASURING INSTRUMENT AND SOFTWARE USED

Conducted Emissions Test (Instrument)							
Used	Equipment	Manufacturer	Model No.	Serial No.	Upper Last Cal.	Last Cal.	Next Cal.
☑	EMI Test Receiver	R&S	ESR3	126700	2023-11-25	2024-11-02	2025-11-01
☑	Two-Line V-Network	R&S	ENV216	126701	2023-11-25	2024-11-02	2025-11-01

Conducted Emissions Test (Software)					
Used	Description	Manufacturer	Name	Version	
☑	Software for Conducted Emissions Test	R&S	EMC32	9.25.00	

Radiated Emissions Test (Instrument)							
Used	Equipment	Manufacturer	Model No.	Serial No.	Upper Last Cal.	Last Cal.	Next Cal.
☑	EMI test receiver	R&S	ESR7	222993	2024-03-23	2025-03-22	2026-03-14
☑	EMI test receiver	R&S	ESR26	126703	2023-11-25	2024-11-02	2025-11-01
☑	Spectrum Analyzer	R&S	FSV3044	222992	2024-03-23	2025-03-22	2026-03-14
☑	Receiver Antenna (9kHz-30MHz)	Schwarzbeck	FMZB 1513	155456	2021-06-03	2024-05-27	2027-05-26
☑	Receiver Antenna (30MHz-1GHz)	Schwarzbeck	VULB 9168	171952	2021-07-05	2024-07-04	2027-07-03
☑	Receiver Antenna (1GHz-18GHz)	R&S	HF907	126705	2022-02-28	2025-02-17	2028-02-16
☑	Receiver Antenna (18GHz-26.5GHz)	Schwarzbeck	BBHA9170	126706	2022-02-28	2025-02-17	2028-02-16
☑	Pre-amplification (To 18GHz)	Tonscned	TAP01018050	224539	2023-10-10	2024-10-10	2025-10-09
☑	Pre-amplification (To 18GHz)	R&S	SCU-18D	134667	2023-11-25	2024-11-02	2025-11-01
☑	Pre-amplification (To 26.5GHz)	R&S	SCU-26D	135391	2023-11-25	2024-11-02	2025-11-01
☑	Band Reject Filter	Wainwright	WRCGV12-2375-2400-2485-2510-40SS	1	2023-12-18	2024-11-02	2025-11-01
☑	High Pass Filter	COM-MW	ZBF13-3-18G-01	2	2023-12-18	2024-11-02	2025-11-01

Radiated Emissions Test (Software)					
Used	Description	Manufacturer	Name	Version	
☑	Software for Radiated Emissions Test	Tonscend	JS32-RE	5.0.0.2	

Antenna Port Test (Instrument)							
Used	Equipment	Manufacturer	Model No.	Serial No.	Upper Last Cal.	Last Cal.	Next Cal.
☑	Spectrum Analyzer	Keysight	N9010B	155368	2024-03-23	2025-03-22	2026-03-14
☑	Power Meter	MWT	MW100-RFCB	221694	2024-03-23	2025-03-22	2026-03-14
☑	Power Meter	Anritsu	MA24406A	12896	2024-03-23	2025-03-22	2026-03-14
☑	Attenuator	PASTERNACK	PE7087-6	1624	/	2024-11-04	2025-11-03

Antenna Port Test (Software)					
Used	Description	Manufacturer	Name	Version	
☑	Software for Antenna Port Test	Tonscend	JS1120-3 Test System	V3.2.22	

6. ANTENNA PORT TEST RESULTS

6.1. ON TIME AND DUTY CYCLE

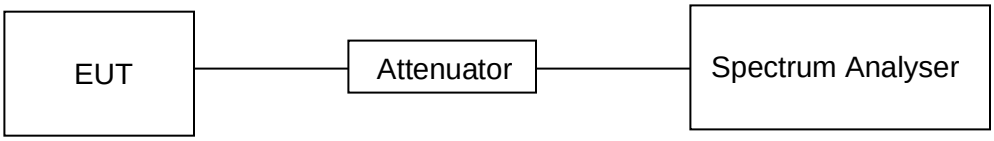
LIMITS

None; for reporting purposes only

PROCEDURE

KDB 558074 Zero-Span Spectrum Analyzer Method

TEST SETUP



TEST ENVIRONMENT

Temperature	20°C	Relative Humidity	56%
Atmosphere Pressure	101kPa	Test Voltage	AC 120V

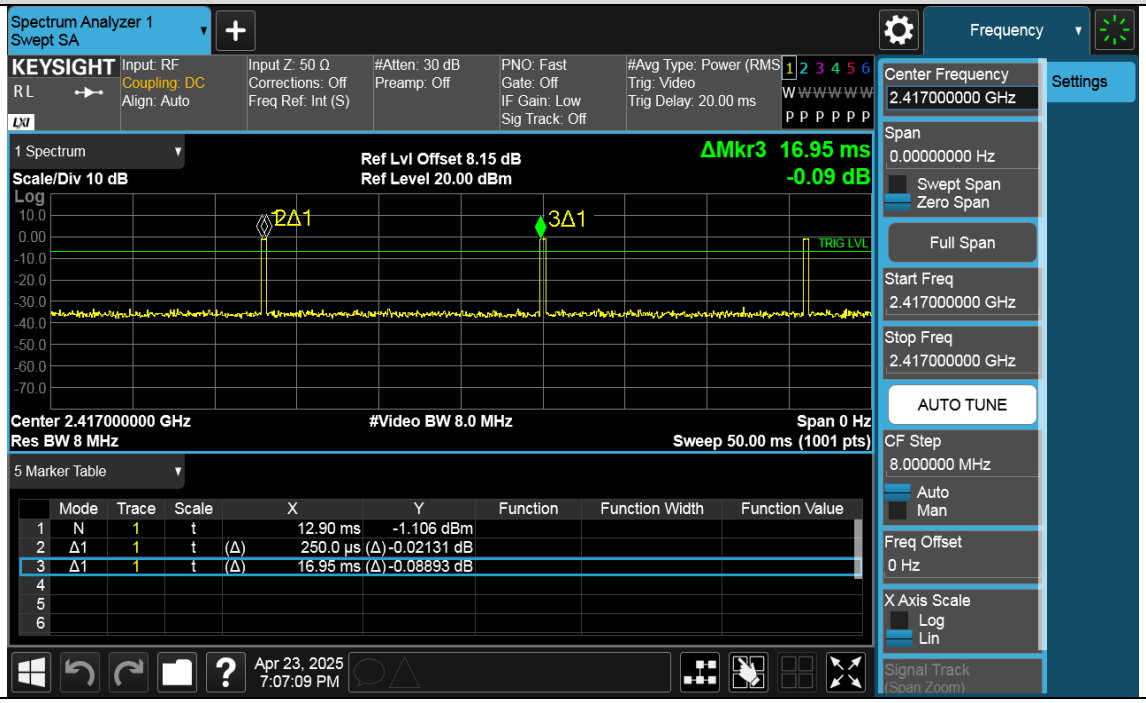
RESULTS

On Time (msec)	Period (msec)	Duty Cycle x (Linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/T Minimum VBW (kHz)	Final setting For VBW (kHz)
0.250	16.95	0.0147	1.47%	18.33	4	4

Note:
Duty Cycle Correction Factor=10log (1/x).
Where: x is Duty Cycle (Linear)
Where: T is On Time
If that calculated VBW is not available on the analyzer then the next higher value should be used.

TEST GRAPHS

ON TIME AND DUTY CYCLE 2417 MHz



6.2. 20 dB BANDWIDTH AND 99 % OCCUPIED BANDWIDTH

LIMITS

FCC Part15 (15.249), Subpart C			
Section	Test Item	Limit	Frequency Range (MHz)
CFR 47 FCC §15.215 (c)	20 dB Bandwidth	For reporting purposes only	2400-2483.5
ISED RSS-Gen Clause 6.7 Issue 5	99 % Occupied Bandwidth	For reporting purposes only.	2400-2483.5

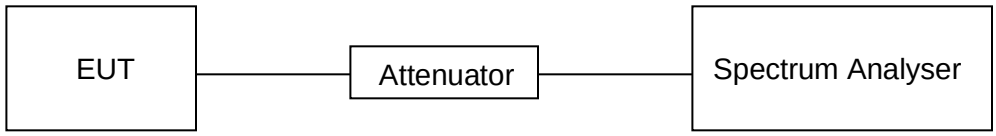
TEST PROCEDURE

Connect the UUT to the spectrum analyser and use the following settings:

Center Frequency	The centre frequency of the channel under test
Detector	Peak
RBW	For 20 dB Bandwidth: 1 % to 5 % of the 20 dB bandwidth For 99 % Occupied Bandwidth: 1 % to 5 % of the occupied bandwidth
VBW	For 20 dB Bandwidth: approximately 3×RBW For 99 % Occupied Bandwidth: ≥ 3×RBW
Span	Approximately 1.5 to 5 times the OBW
Trace	Max hold
Sweep	Auto couple

Allow the trace to stabilize and measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 20 dB / 99 % relative to the maximum level measured in the fundamental emission.

TEST SETUP



RESULTS

Channel (MHz)	20dB bandwidth (MHz)	99 % bandwidth (MHz)	Result
2417	1.199	1.1418	Pass

TEST GRAPHS

Test Channel (MHz)	Verdict
2417	PASS

7. RADIATED TEST RESULTS

7.1. LIMITS AND PROCEDURE

LIMITS

CFR 47 FCC §15.205 and §15.209
CFR 47 FCC §15.249 (a)(d)(c)(e)
ISED RSS-210 Issue 10Annex B B.10
RSS-GEN Clause 8.9

The field strength of emissions from intentional radiators operated within these frequency bands			
Frequency (MHz)	Field strength of Fundamental	Field strength of Harmonics	Distance (m)
902 - 928	50 mV/m (94dBuV/m)	500 uV/m (54dBuV/m)	3
2400 – 2483.5	50 mV/m (94dBuV/m)	500 uV/m (54dBuV/m)	3
5725 – 5875	50 mV/m (94dBuV/m)	500 uV/m (54dBuV/m)	3

Emissions radiated outside of the specified frequency bands			
Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m	
30 - 88	100	Quasi-Peak	
30 - 88	100	40	
88 - 216	150	43.5	
216 - 960	200	46	
Above 960	500	54	
Above 1000	500	Peak	Average
		74	54

FCC Emissions radiated outside of the specified frequency bands below 30 MHz		
Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30

ISED General field strength limits at frequencies below 30 MHz

Table 6 – General field strength limits at frequencies below 30 MHz		
Frequency	**Magnetic field strength (H-Field) (μA/m)**	**Measurement distance (m)**
9 - 490 kHz[Note 1]	6.37/F (F in kHz)	300
490 - 1705 kHz	63.7/F (F in kHz)	30
1.705 - 30 MHz	0.08	30

Note 1: The emission limits for the ranges 9-90 kHz and 110-490 kHz are based on measurements employing a linear average detector.

ISED Restricted bands please refer to ISED RSS-GEN Clause 8.10

Table 7 – Restricted frequency bands[Note 1]		
MHz	**MHz**	**GHz**
0.090 - 0.110	149.9 - 150.05	9.0 - 9.2
0.495 - 0.505	156.52475 - 156.52525	9.3 - 9.5
2.1735 - 2.1905	156.7 - 156.9	10.6 - 12.7
3.020 - 3.026	162.0125 - 167.17	13.25 - 13.4
4.125 - 4.128	167.72 - 173.2	14.47 - 14.5
4.17725 - 4.17775	240 – 285	15.35 - 16.2
4.20725 - 4.20775	322 - 335.4	17.7 - 21.4
5.677 - 5.683	399.9 - 410	22.01 - 23.12
6.215 - 6.218	608 - 614	23.6 - 24.0
6.26775 - 6.26825	960 - 1427	31.2 - 31.8
6.31175 - 6.31225	1435 - 1626.5	36.43 - 36.5
8.291 - 8.294	1645.5 - 1646.5	Above 38.6
8.362 - 8.366	1660 - 1710	
8.37625 - 8.38675	1718.8 - 1722.2	
8.41425 - 8.41475	2200 - 2300	
12.29 - 12.293	2310 - 2390	
12.51975 - 12.52025	2483.5 - 2500	
12.57675 - 12.57725	2655 - 2900	
13.36 - 13.41	3260 – 3267	
16.42 - 16.423	3332 - 3339	
16.69475 - 16.69525	3345.8 - 3358	
16.80425 - 16.80475	3500 - 4400	
25.5 - 25.67	4500 - 5150	
37.5 - 38.25	5350 - 5460	
73 - 74.6	7250 - 7750	
74.8 - 75.2	8025 – 8500	
108 – 138		

Note 1: Certain frequency bands listed in table 7 and in bands above 38.6 GHz are designated for licence-exempt applications. These frequency bands and the requirements that apply to related devices are set out in the 200 and 300 series of RSSs.

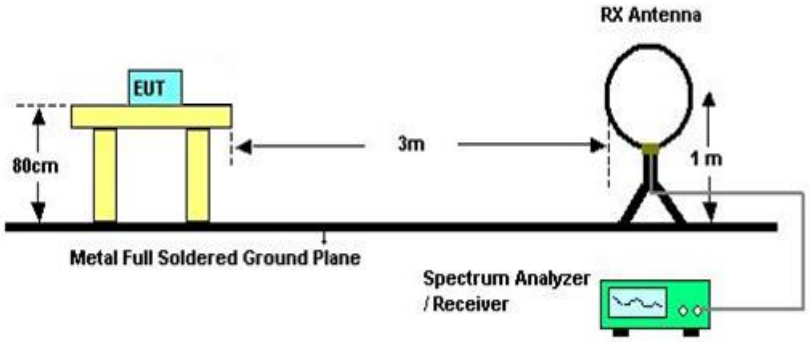
FCC Restricted bands of operation:

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
[1]0.495-0.505	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	([2])
13.36-13.41			

Note: [1]Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.
[2]Above 38.6c

TEST SETUP AND PROCEDURE

Below 30MHz



The setting of the spectrum analyser

RBW	200Hz (From 9kHz to 0.15MHz)/ 9KHz (From 0.15MHz to 30MHz)
VBW	200Hz (From 9kHz to 0.15MHz)/ 9KHz (From 0.15MHz to 30MHz)
Sweep	Auto
Detector	Peak/QP/ Average
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013

2. The EUT was arranged to its worst case and then turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both Horizontal, Face-on and Face-off polarizations of the antenna are set to make the measurement.

3. The EUT was placed on a turntable with 0.8 meter above ground.

4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a 1m height antenna tower.

5. The radiated emission limits are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector

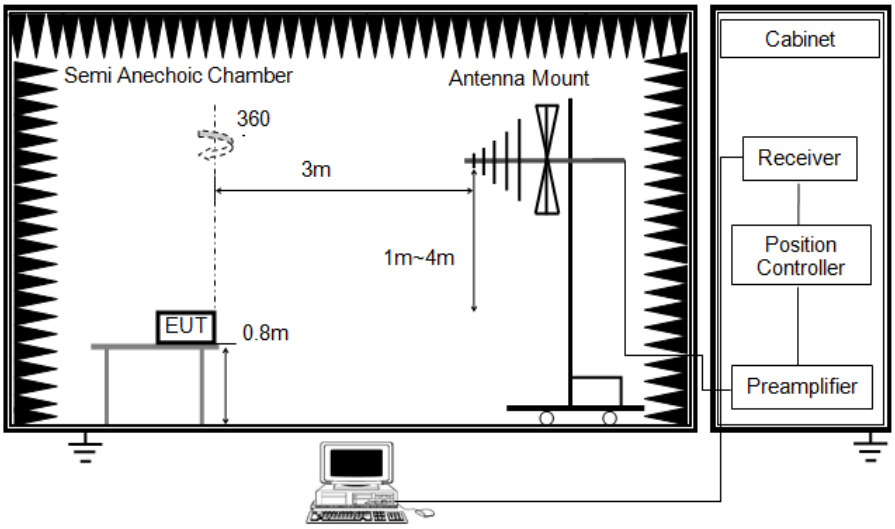
6. For measurement below 1GHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured. If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

7. For the actual test configuration, please refer to the related item in this test report

(Photographs of the Test Configuration)

8. The limits in CFR 47, Part 15, Subpart C, paragraph 15.209 (a), are identical to those in RSS-GEN Section 8.9, Table 6, since the measurements are performed in terms of magnetic field strength and converted to electric field strength levels (as reported in the table) using the free space impedance of 377 Ω. For example, the measurement frequency X kHz resulted in a level of Y dBuV/m, which is equivalent to Y-51.5 = Z dBuA/m, which has the same margin, W dB, to the corresponding RSS-GEN Table 6 limit as it has to be 15.209(a) limit.

Below 1G



The setting of the spectrum analyser

RBW	120K
VBW	300K
Sweep	Auto
Detector	Peak/QP
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013.

2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

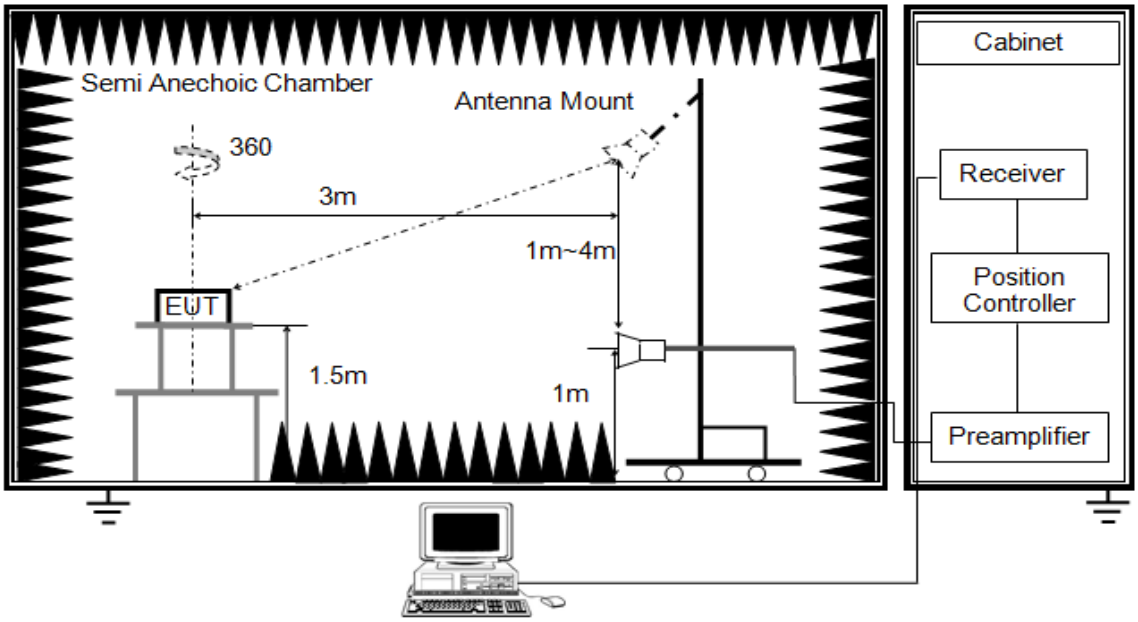
3. The EUT was placed on a turntable with 0.8 meter above ground.

4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.

5. For measurement below 1GHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured. If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

6. For the actual test configuration, please refer to the related item in this test report (Photographs of the Test Configuration)

Above 1G



The setting of the spectrum analyser

RBW	1M
VBW	PEAK:3M AVG: See note6
Sweep	Auto
Detector	Peak
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013.

2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

3. The EUT was placed on a turntable with 1.5m above ground.

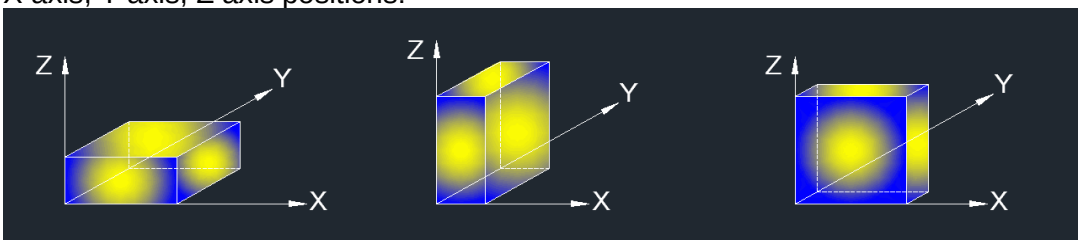
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.

5. For measurement above 1GHz, the emission measurement will be measured by the peak detector. This peak level, once corrected, must comply with the limit specified in Section 15.209.

6. For measurements above 1 GHz, the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz for peak measurements; and 1 MHz resolution bandwidth with video bandwidth ≥1/T but not less than the setting list in section 7.1 when use peak detector, max hold to be run for at least [50*(1/Duty Cycle)] traces for average measurements. For the Duty Cycle need to refer the results in section 7.1.

7. For the actual test configuration, please refer to the related item in this test report (Photographs of the Test Configuration)

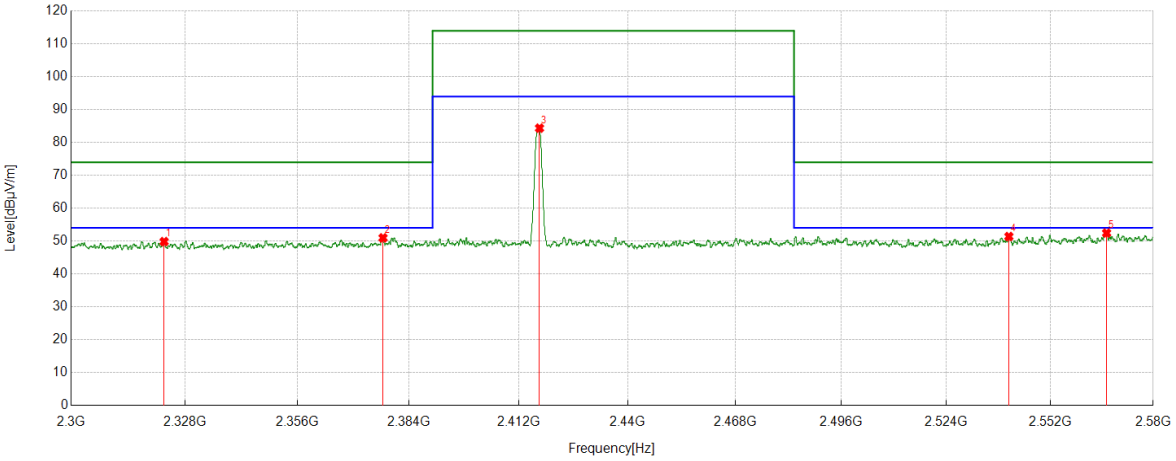
X axis, Y axis, Z axis positions:



Note: For all radiated test, EUT in one orthogonal axis (X axis) emissions had been tested and recorded in the report.

7.2. RESTRICTED BANDEDGE AND FIELD STRENGTH OF INTENTIONAL EMISSIONS

Channel	Polarization	Verdict
2417 MHz	Horizontal	PASS

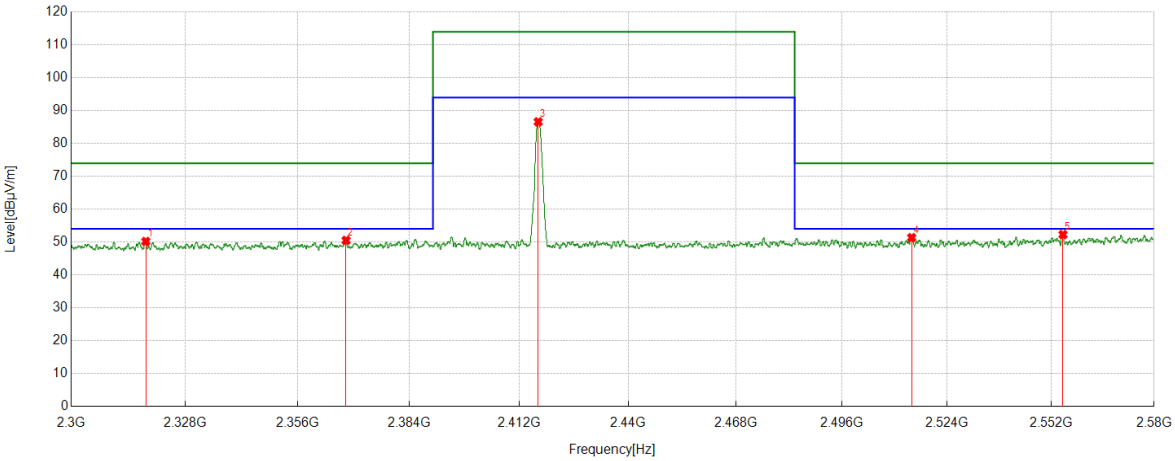


PK Result:

No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV]	[dB/m]	[dBuV/m]	[dBuV/m]	[dB]	
1	2322.8579	36.43	13.41	49.84	74.00	-24.16	Horizontal
2	2377.4647	37.21	13.75	50.96	74.00	-23.04	Horizontal
3	2417.2997 (Fundamental Carrier)	70.54	13.83	84.37	114.00	-29.63	Horizontal
4	2540.7951	36.77	14.61	51.38	74.00	-22.62	Horizontal
5	2567.2934	37.59	14.84	52.43	74.00	-21.57	Horizontal

Note: 1. Peak detector: RBW: 1 MHz, VBW: 3 MHz.
2. Average detector: RBW: 1 MHz, VBW: 1/T MHz(refer to clause 6.1.).
3. Measurement = Reading Level + Correct Factor,
Correct Factor = Antenna Factor + Loss (Cable + Attenuator) – Amplifier Gain.
4. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

Channel	Polarization	Verdict
2417 MHz	Vertical	PASS



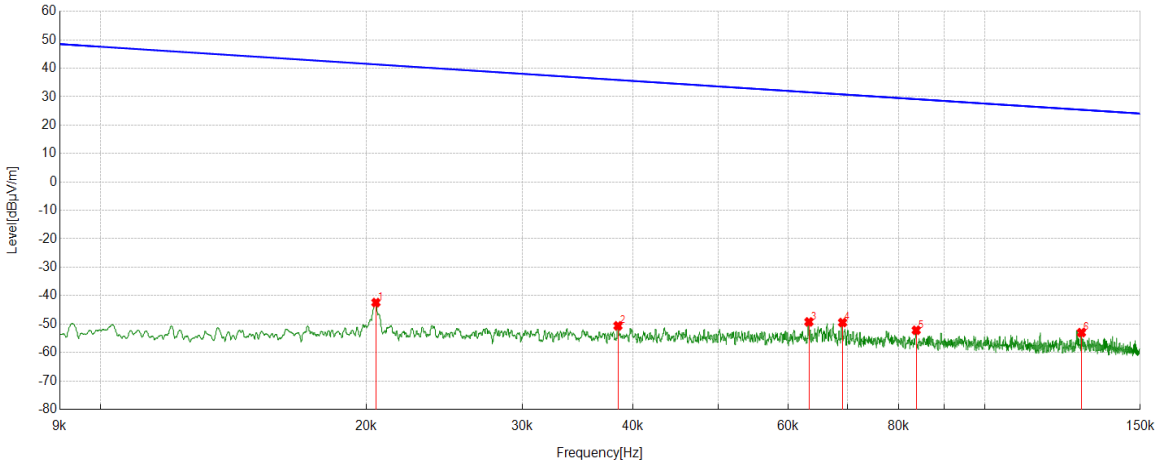
PK Result:

No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV]	[dB/m]	[dBuV/m]	[dBuV/m]	[dB]	
1	2318.3073	36.79	13.39	50.18	74.00	-23.82	Vertical
2	2368.0835	36.87	13.64	50.51	74.00	-23.49	Vertical
3	2416.8446 (Fundamental Carrier)	72.75	13.85	86.60	114.00	-27.40	Vertical
4	2514.5068	36.87	14.46	51.33	74.00	-22.67	Vertical
5	2555.1819	37.58	14.70	52.28	74.00	-21.72	Vertical

Note: 1. Peak detector: RBW: 1 MHz, VBW: 3 MHz.
2. Average detector: RBW: 1 MHz, VBW: 1/T MHz(refer to clause 6.1.).
3. Measurement = Reading Level + Correct Factor,
Correct Factor = Antenna Factor + Loss (Cable + Attenuator) – Amplifier Gain.
4. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

7.3. SPURIOUS EMISSIONS BELOW 30M

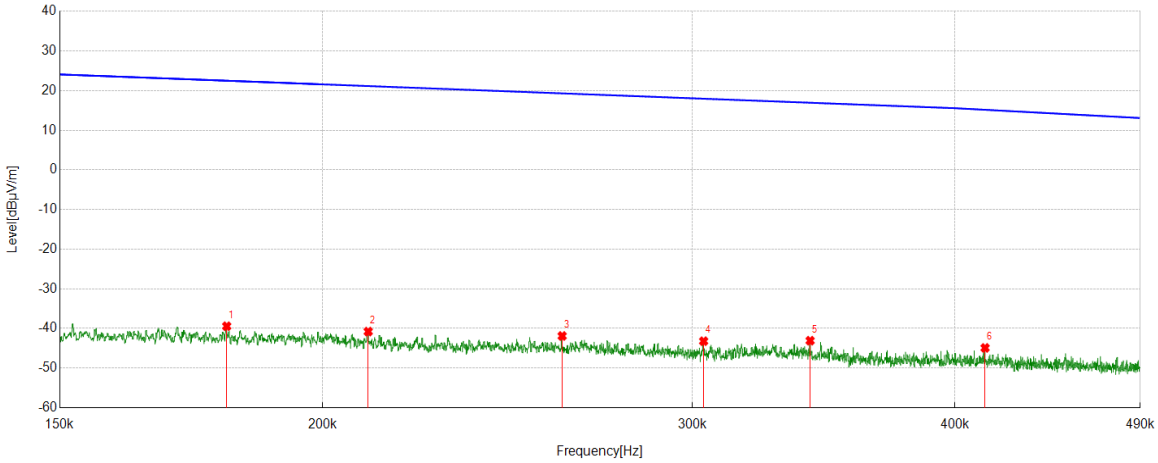
Channel	Frequency Range	Verdict
2417 MHz	9kHz~150kHz	PASS



No.	Frequency	Reading Level	Correct Factor	FCC Result	FCC Limit	ISED Result	ISED Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dBuA/m]	[dBuA/m]	[dB]	
1	0.0205	19.30	-61.74	-42.44	41.38	-93.94	-10.12	-83.82	Peak
2	0.0385	10.97	-61.6	-50.63	35.88	-102.13	-15.62	-86.51	Peak
3	0.0633	12.36	-61.61	-49.25	31.58	-100.75	-19.92	-80.83	Peak
4	0.0691	12.14	-61.61	-49.47	30.82	-100.97	-20.68	-80.29	Peak
5	0.0837	9.44	-61.63	-52.19	29.15	-103.69	-22.35	-81.34	Peak
6	0.1287	8.70	-61.72	-53.02	25.42	-104.52	-26.08	-78.44	Peak

Note: 1. Measurement = Reading Level + Correct Factor,
Correct Factor = Antenna Factor + Loss (Cable) + Distance Factor.
2. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.
3. All 3 polarizations (Horizontal, Face-on and Face-off) of the loop antenna had been tested, but only the worst data recorded in the report.

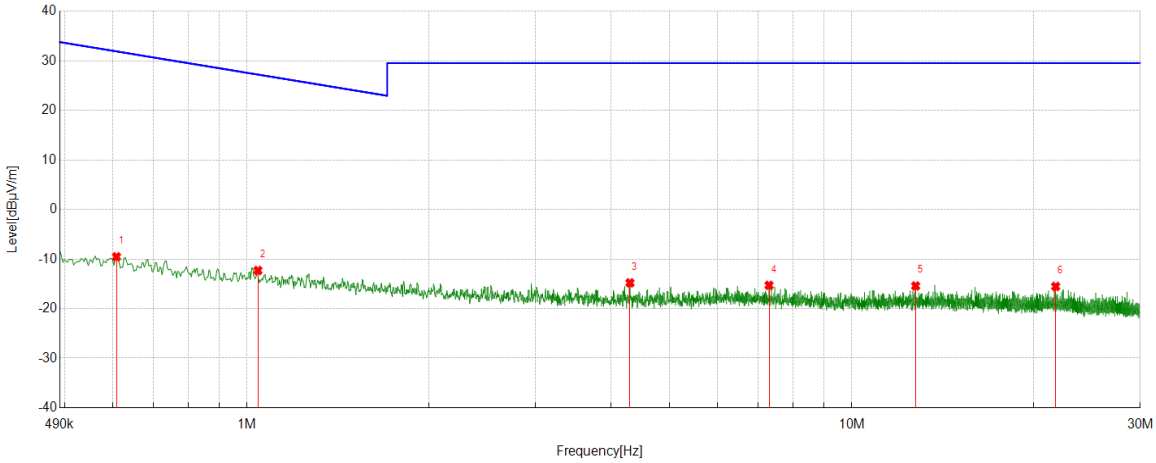
Channel	Frequency Range	Verdict
2417 MHz	150kHz ~ 490kHz	PASS



No.	Frequency	Reading Level	Correct Factor	FCC Result	FCC Limit	ISED Result	ISED Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dBuA/m]	[dBuA/m]	[dB]	
1	0.1801	22.32	-61.76	-39.44	22.5	-90.94	-29.00	-61.94	Peak
2	0.2103	20.99	-61.78	-40.79	21.15	-92.29	-30.35	-61.94	Peak
3	0.2601	19.89	-61.80	-41.91	19.30	-93.41	-32.20	-61.21	Peak
4	0.3037	18.60	-61.82	-43.22	17.95	-94.72	-33.55	-61.17	Peak
5	0.3413	18.74	-61.83	-43.09	16.94	-94.59	-34.56	-60.03	Peak
6	0.4134	16.92	-61.84	-44.92	15.16	-96.42	-36.34	-60.08	Peak

Note: 1. Measurement = Reading Level + Correct Factor,
Correct Factor = Antenna Factor + Loss (Cable) + Distance Factor.
2. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.
3. All 3 polarizations (Horizontal, Face-on and Face-off) of the loop antenna had been tested, but only the worst data recorded in the report.

Channel	Frequency Range	Verdict
2417 MHz	490kHz ~ 30MHz	PASS

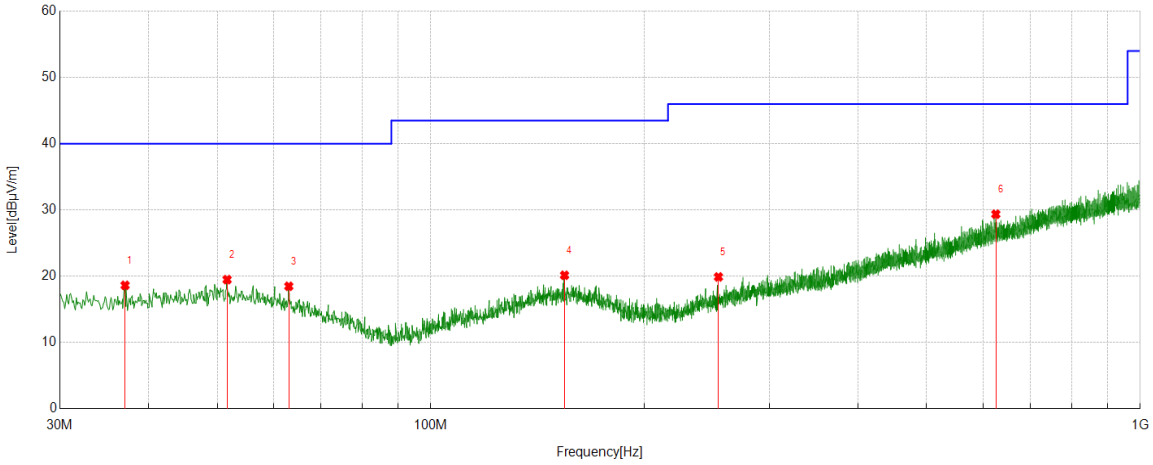


No.	Frequency	Reading Level	Correct Factor	FCC Result	FCC Limit	ISED Result	ISED Limit	Margin	Remark
	[MHz]	[dBuV/m]	[dB]	[dBuV/m]	[dBuV/m]	[dBuA/m]	[dBuA/m]	[dB]	
1	0.6081	12.34	-21.89	-9.55	31.92	-61.05	-19.58	-41.47	Peak
2	1.0419	9.56	-21.87	-12.31	27.25	-63.81	-24.25	-39.56	Peak
3	4.2972	6.95	-21.75	-14.80	29.54	-66.30	-21.96	-44.34	Peak
4	7.2986	6.45	-21.75	-15.30	29.54	-66.80	-21.96	-44.84	Peak
5	12.7556	6.18	-21.61	-15.43	29.54	-66.93	-21.96	-44.97	Peak
6	21.7393	5.92	-21.45	-15.53	29.54	-67.03	-21.96	-45.07	Peak

Note: 1. Measurement = Reading Level + Correct Factor,
Correct Factor = Antenna Factor + Loss (Cable) + Distance Factor.
2. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.
3. All 3 polarizations (Horizontal, Face-on and Face-off) of the loop antenna had been tested, but only the worst data recorded in the report.

7.4. SPURIOUS EMISSIONS 30MHz ~ 1GHz

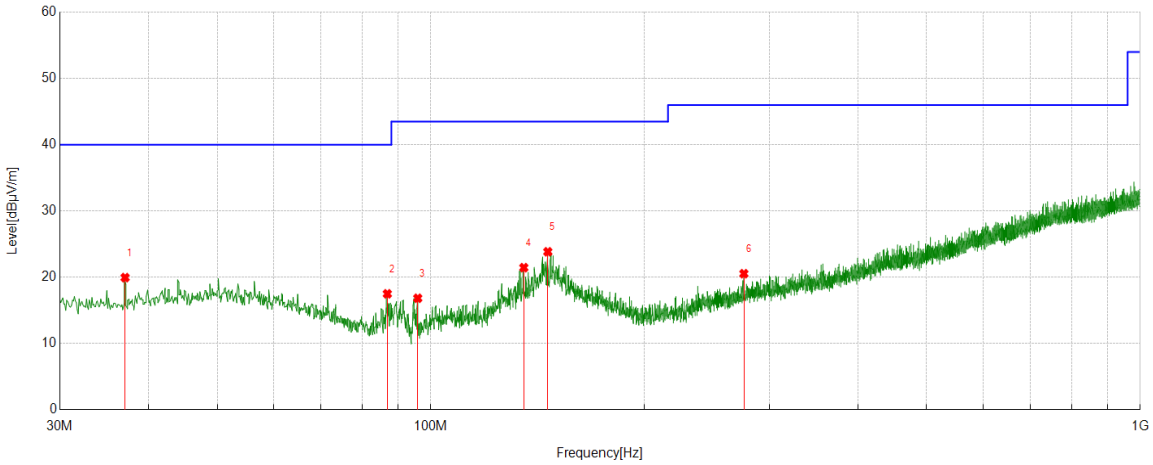
Channel	Polarization	Verdict
2417 MHz	Horizontal	PASS



No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV]	[dB/m]	[dBuV/m]	[dBuV/m]	[dB]	
1	37.0817	-0.60	19.21	18.61	40.00	-21.39	Horizontal
2	51.6332	-1.11	20.58	19.47	40.00	-20.53	Horizontal
3	63.0803	-0.82	19.29	18.47	40.00	-21.53	Horizontal
4	154.3664	-0.40	20.53	20.13	43.50	-23.37	Horizontal
5	254.3834	0.47	19.41	19.88	46.00	-26.12	Horizontal
6	625.8336	0.58	28.78	29.36	46.00	-16.64	Horizontal

Note: 1. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
2. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.
3. Measurement = Reading Level + Correct Factor,
Correct Factor = Antenna Factor + Loss (Cable).
4. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

Channel	Polarization	Verdict
2417 MHz	Vertical	PASS

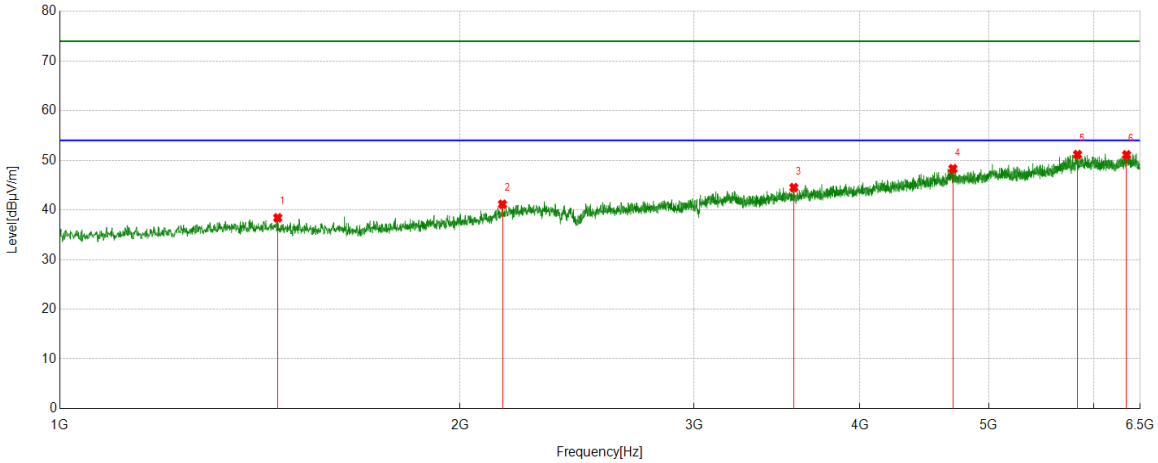


No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV]	[dB/m]	[dBuV/m]	[dBuV/m]	[dB]	
1	37.0817	0.72	19.21	19.93	40.00	-20.07	Vertical
2	86.8477	3.15	14.33	17.48	40.00	-22.52	Vertical
3	95.8696	1.74	15.07	16.81	43.50	-26.69	Vertical
4	135.2555	1.95	19.48	21.43	43.50	-22.07	Vertical
5	146.2176	3.40	20.43	23.83	43.50	-19.67	Vertical
6	276.3076	0.14	20.38	20.52	46.00	-25.48	Vertical

Note: 1. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
2. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.
3. Measurement = Reading Level + Correct Factor,
Correct Factor = Antenna Factor + Loss (Cable).
4. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

7.5. SPURIOUS EMISSIONS 1GHz ~ 6.5GHz

Channel	Polarization	Verdict
2417 MHz	Horizontal	PASS

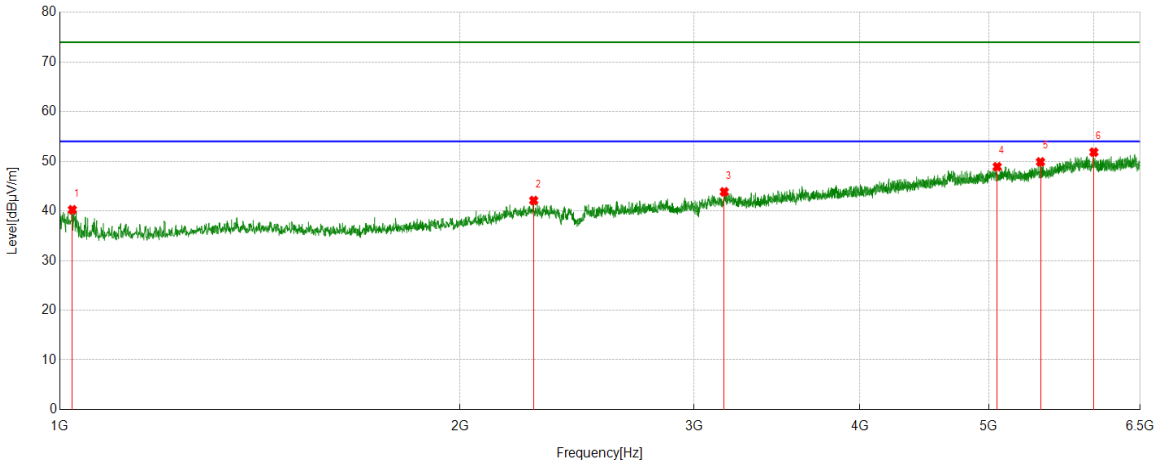


PK Result:

No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV]	[dB/m]	[dBuV/m]	[dBuV/m]	[dB]	
1	1458.6198	38.30	0.11	38.41	74.00	-35.59	Horizontal
2	2153.0816	38.08	3.07	41.15	74.00	-32.85	Horizontal
3	3566.7583	36.33	8.17	44.50	74.00	-29.50	Horizontal
4	4698.5248	36.01	12.30	48.31	74.00	-25.69	Horizontal
5	5830.9789	34.65	16.50	51.15	74.00	-22.85	Horizontal
6	6348.0435	33.57	17.53	51.10	74.00	-22.90	Horizontal

Note: 1. Measurement = Reading Level + Correct Factor,
Correct Factor = Antenna Factor + Loss (Cable + Filter) – Amplifier Gain.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
4. Peak: Peak detector.
5. For below 3GHz part, filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band Reject Filter losses.
6. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

Channel	Polarization	Verdict
2417 MHz	Vertical	PASS



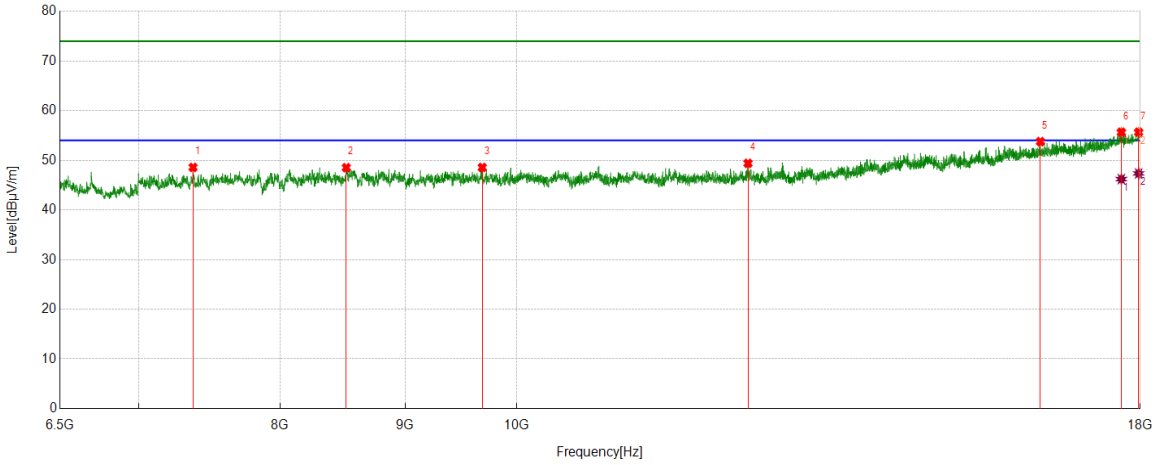
PK Result:

No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV]	[dB/m]	[dBuV/m]	[dBuV/m]	[dB]	
1	1022.0028	41.62	-1.38	40.24	74.00	-33.76	Vertical
2	2272.7216	38.44	3.66	42.10	74.00	-31.90	Vertical
3	3161.7702	37.48	6.37	43.85	74.00	-30.15	Vertical
4	5073.2592	35.37	13.54	48.91	74.00	-25.09	Vertical
5	5468.6211	35.82	14.06	49.88	74.00	-24.12	Vertical
6	5998.0623	35.78	16.06	51.84	74.00	-22.16	Vertical

Note: 1. Measurement = Reading Level + Correct Factor,
Correct Factor = Antenna Factor + Loss (Cable + Filter) – Amplifier Gain.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
4. Peak: Peak detector.
5. For below 3GHz part, filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band Reject Filter losses.
6. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

7.6. SPURIOUS EMISSIONS 6.5GHz ~ 18GHz

Channel	Polarization	Verdict
2417 MHz	Horizontal	PASS



PK Result:

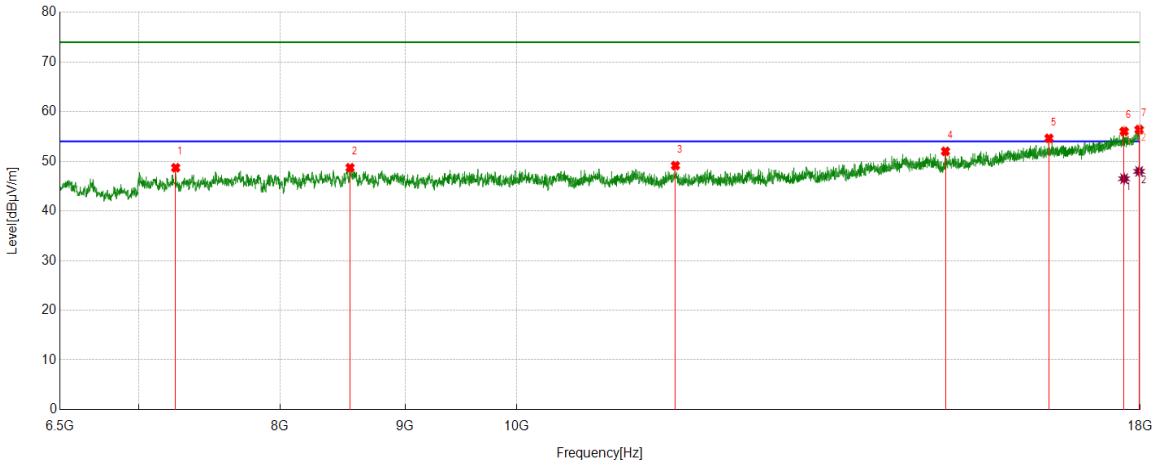
No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV]	[dB/m]	[dBuV/m]	[dBuV/m]	[dB]	
1	7369.7962	44.18	4.39	48.57	74.00	-25.43	Horizontal
2	8515.6270	42.02	6.50	48.52	74.00	-25.48	Horizontal
3	9680.1475	42.11	6.45	48.56	74.00	-25.44	Horizontal
4	12436.1795	41.07	8.32	49.39	74.00	-24.61	Horizontal
5	16382.6103	38.16	15.61	53.77	74.00	-20.23	Horizontal
6	17682.2728	36.63	19.03	55.66	74.00	-18.34	Horizontal
7	17972.6841	35.10	20.56	55.66	74.00	-18.34	Horizontal

AV Result:

No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV]	[dB/m]	[dBuV/m]	[dBuV/m]	[dB]	
1	17682.2728	27.18	19.03	46.21	54.00	-7.79	Horizontal
2	17972.6841	26.79	20.56	47.35	54.00	-6.65	Horizontal

Note: 1. Measurement = Reading Level + Correct Factor,
Correct Factor = Antenna Factor + Loss (Cable + Filter) – Amplifier Gain.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak detector: RBW: 1 MHz, VBW: 3 MHz.
4. Average detector: RBW: 1 MHz, VBW: 1/T MHz(refer to clause 6.1.).
5. For above 3GHz part, filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for HPF losses.
6. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

Channel	Polarization	Verdict
2417 MHz	Vertical	PASS



PK Result:

No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV]	[dB/m]	[dBuV/m]	[dBuV/m]	[dB]	
1	7250.4688	44.45	4.25	48.70	74.00	-25.30	Vertical
2	8545.8182	42.16	6.55	48.71	74.00	-25.29	Vertical
3	11613.8267	41.52	7.61	49.13	74.00	-24.87	Vertical
4	14980.8726	39.13	12.88	52.01	74.00	-21.99	Vertical
5	16516.3145	37.95	16.68	54.63	74.00	-19.37	Vertical
6	17728.2785	36.51	19.52	56.03	74.00	-17.97	Vertical
7	17981.3102	35.73	20.66	56.39	74.00	-17.61	Vertical

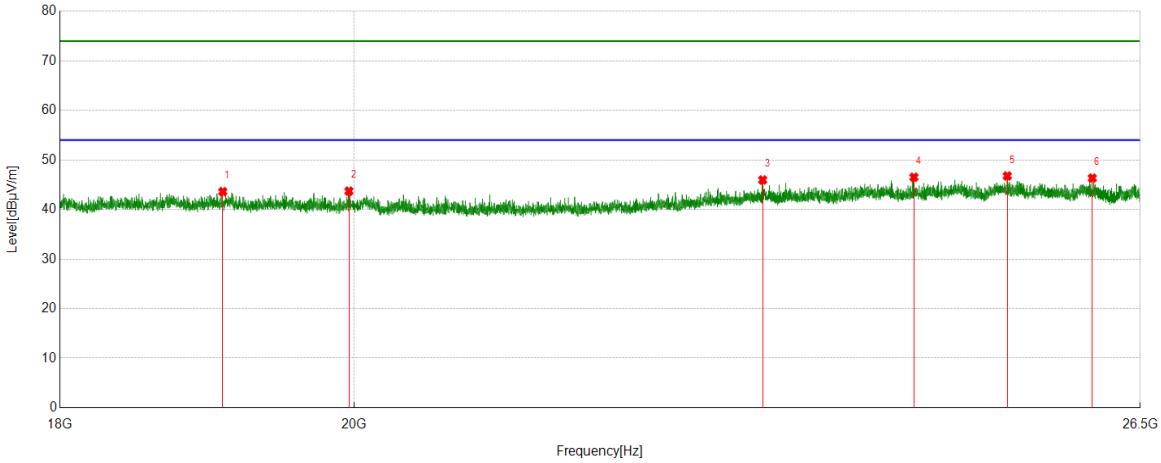
AV Result:

No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV]	[dB/m]	[dBuV/m]	[dBuV/m]	[dB]	
1	17728.2785	26.97	19.52	46.49	54.00	-7.51	Vertical
2	17981.3102	27.31	20.66	47.97	54.00	-6.03	Vertical

Note: 1. Measurement = Reading Level + Correct Factor,
Correct Factor = Antenna Factor + Loss (Cable + Filter) – Amplifier Gain.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak detector: RBW: 1 MHz, VBW: 3 MHz.
4. Average detector: RBW: 1 MHz, VBW: 1/T MHz(refer to clause 6.1.).
5. For above 3GHz part, filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for HPF losses.
6. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

7.7. SPURIOUS EMISSIONS 18GHz ~26GHz

Channel	Polarization	Verdict
2417 MHz	Horizontal	PASS

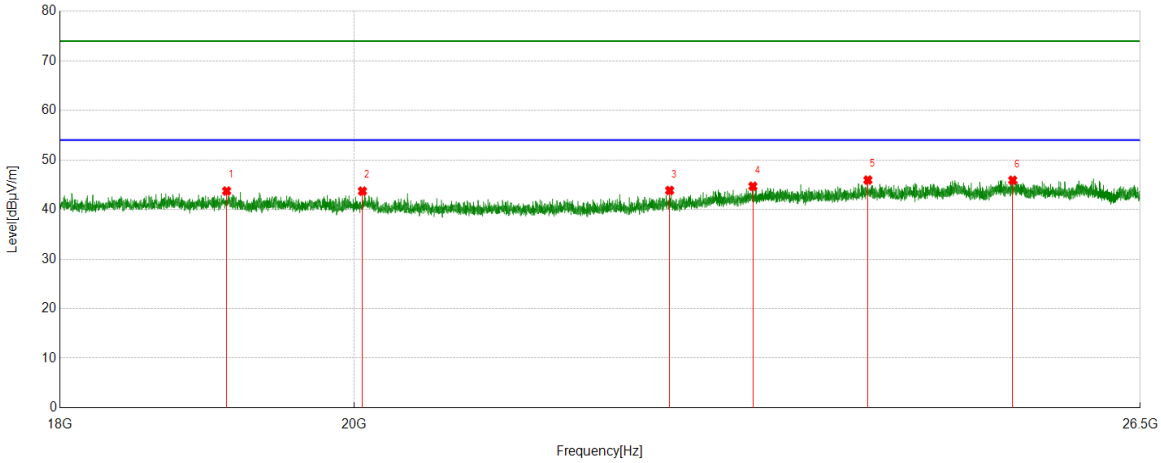


PK Result:

No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV]	[dB/m]	[dBuV/m]	[dBuV/m]	[dB]	
1	19081.3081	49.55	-5.94	43.61	74.00	-30.39	Horizontal
2	19962.8463	48.80	-5.10	43.70	74.00	-30.30	Horizontal
3	23149.8150	49.40	-3.44	45.96	74.00	-28.04	Horizontal
4	24437.6938	49.47	-2.95	46.52	74.00	-27.48	Horizontal
5	25268.2268	50.11	-3.34	46.77	74.00	-27.23	Horizontal
6	26049.4549	48.96	-2.62	46.34	74.00	-27.66	Horizontal

Note: 1. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
3. Measurement = Reading Level + Correct Factor,
Correct Factor = Antenna Factor + Loss (Cable) – Amplifier Gain.
4. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

Channel	Polarization	Verdict
2417 MHz	Vertical	PASS



PK Result:

No.	Frequency	Reading Level	Correct Factor	Result	Limit	Margin	Remark
	[MHz]	[dBuV]	[dB/m]	[dBuV/m]	[dBuV/m]	[dB]	
1	19107.6608	49.63	-5.90	43.73	74.00	-30.27	Vertical
2	20059.7560	48.80	-5.10	43.70	74.00	-30.30	Vertical
3	22391.5392	48.79	-4.95	43.84	74.00	-30.16	Vertical
4	23069.0569	48.19	-3.50	44.69	74.00	-29.31	Vertical
5	24038.1538	48.58	-2.64	45.94	74.00	-28.06	Vertical
6	25317.5318	49.21	-3.31	45.90	74.00	-28.10	Vertical

Note: 1. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
3. Measurement = Reading Level + Correct Factor,
Correct Factor = Antenna Factor + Loss (Cable) – Amplifier Gain.
4. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

8. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

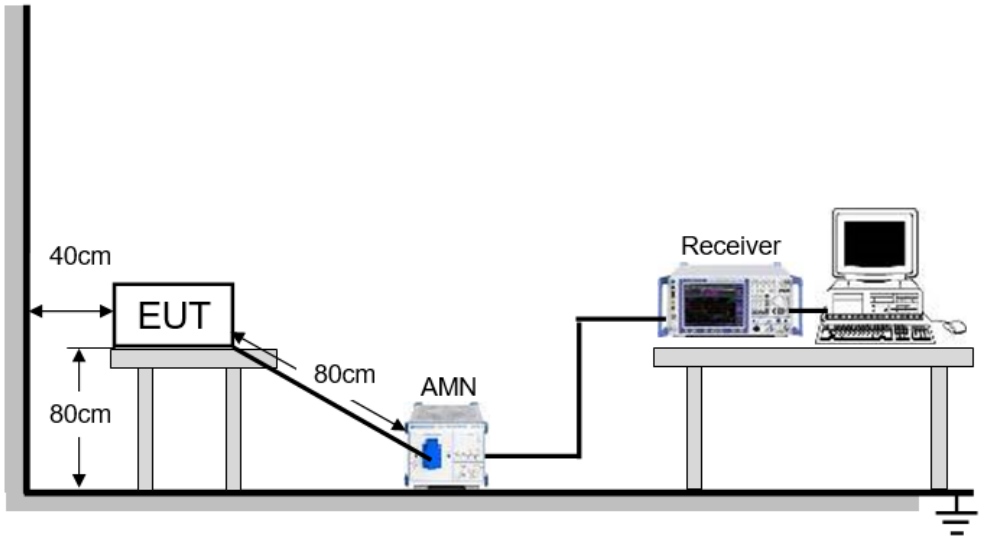
Please refer to FCC §15.207 (a)

FREQUENCY (MHz)	Limit (dBuV)	
	Quasi-peak	Average
0.15 -0.5	66 - 56 *	56 - 46 *
0.50 -5.0	56.00	46.00
5.0 -30.0	60.00	50.00

TEST ENVIRONMENT

Temperature	22°C	Relative Humidity	56%
Atmosphere Pressure	101kPa	Test Voltage	AC 120V

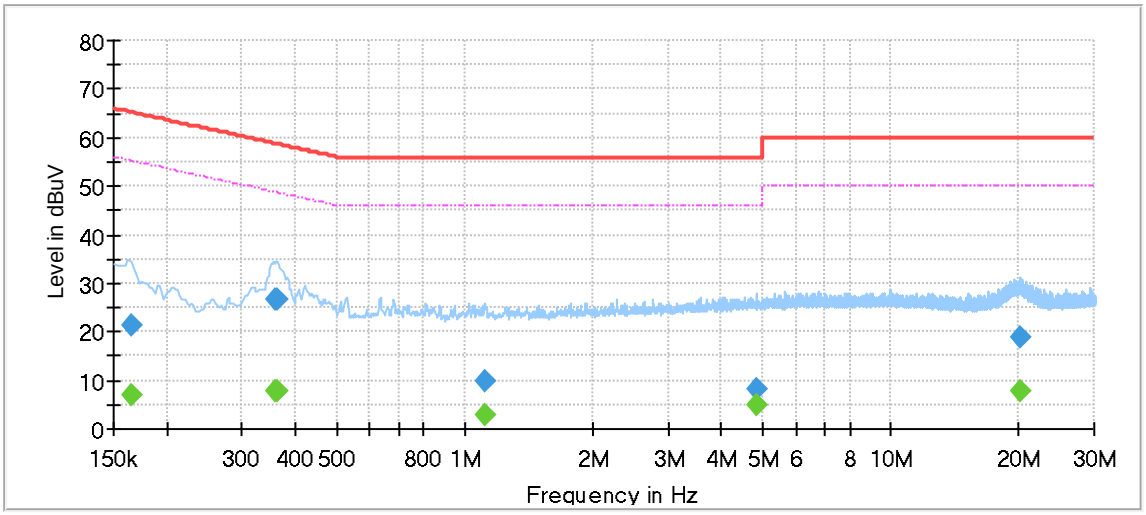
TEST SETUP AND PROCEDURE



The EUT is put on a table of non-conducting material that is 12 mm high. The vertical conducting wall of shielding is located 40cm to the rear of the EUT. The power line of the EUT is connected to the AC mains through an Artificial Mains Network (A.M.N.). A EMI Measurement Receiver (R&S Test Receiver ESR3) is used to test the emissions from both sides of AC line. According to the requirements in Section 6.2 of ANSI C63.10-2013.Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak and average detector mode. The bandwidth of EMI test receiver is set at 9kHz.

The arrangement of the equipment is installed to meet the standards and operating in a manner, which tends to maximize its emission characteristics in a normal application.

LINE L RESULTS (WORST-CASE CONFIGURATION)

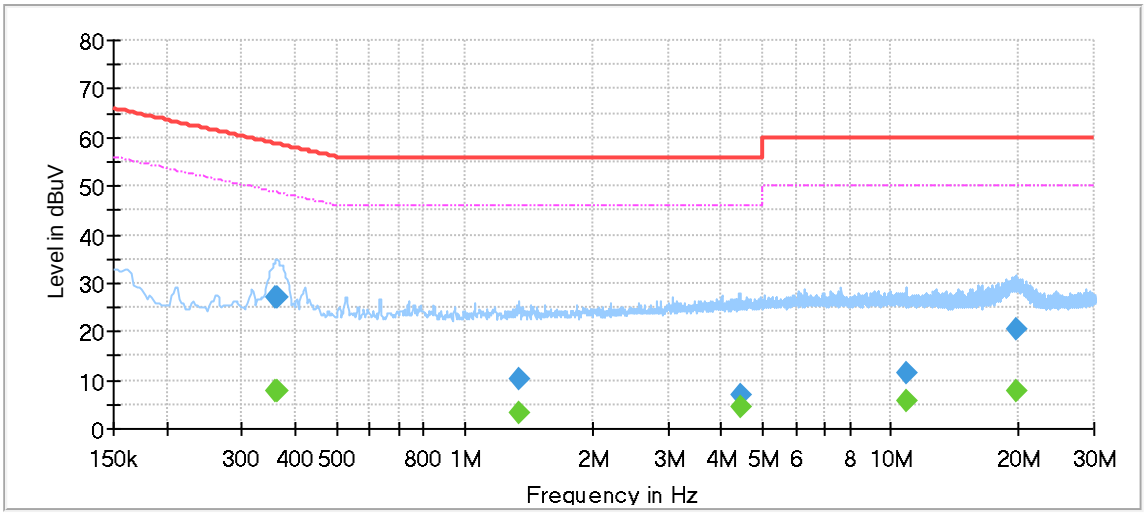


Final_Result

Frequency [MHz]	QuasiPeak [dBµV]	Average [dBµV]	Limit [dBµV]	Margin [dB]	Meas. Time [ms]	Bandwidth [kHz]	Line	Filter	Corr. [dB]
0.164925	---	7.07	55.21	48.14	7000.0	9.000	L1	OFF	9.6
0.164925	21.50	---	65.21	43.72	7000.0	9.000	L1	OFF	9.6
0.361438	---	7.84	48.70	40.86	7000.0	9.000	L1	OFF	9.6
0.361438	26.87	---	58.70	31.83	7000.0	9.000	L1	OFF	9.6
0.363925	---	7.86	48.64	40.78	7000.0	9.000	L1	OFF	9.6
0.363925	26.66	---	58.64	31.98	7000.0	9.000	L1	OFF	9.6
1.115150	---	2.90	46.00	43.10	7000.0	9.000	L1	OFF	9.6
1.115150	9.70	---	56.00	46.30	7000.0	9.000	L1	OFF	9.6
4.831475	---	5.01	46.00	40.99	7000.0	9.000	L1	OFF	9.7
4.831475	8.34	---	56.00	47.66	7000.0	9.000	L1	OFF	9.7
20.127113	---	7.64	50.00	42.36	7000.0	9.000	L1	OFF	9.8
20.127113	19.06	---	60.00	40.94	7000.0	9.000	L1	OFF	9.8

Note: 1. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.
2. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz).
3. Step size: 80Hz (0.009MHz-0.15MHz), 4 kHz (0.15MHz-30MHz), Scan time: auto.
4. The extension cord/outlet strip was calibrated with the LISN as required by ANSI C63.10:2013 Clause 6.2.2.
5. Pre-testing all test modes and channels and find the MCH of BLE 1M which is the worst case, so only the worst case is included in this test report.
6. Two models of docker will be collocated to the EUT, both of them have been test, only the worse case is recorded in this test report.

LINE N RESULTS (WORST-CASE CONFIGURATION)



Final_Result

Frequency [MHz]	QuasiPeak [dBµV]	Average [dBµV]	Limit [dBµV]	Margin [dB]	Meas. Time [ms]	Bandwidth [kHz]	Line	Filter	Corr. [dB]
0.361438	---	7.80	48.70	40.89	7000.0	9.000	N	OFF	9.6
0.361438	26.94	---	58.70	31.76	7000.0	9.000	N	OFF	9.6
0.363925	---	7.96	48.64	40.68	7000.0	9.000	N	OFF	9.6
0.363925	26.95	---	58.64	31.69	7000.0	9.000	N	OFF	9.6
1.341513	---	3.29	46.00	42.71	7000.0	9.000	N	OFF	9.6
1.341513	10.35	---	56.00	45.65	7000.0	9.000	N	OFF	9.6
4.421038	---	4.67	46.00	41.33	7000.0	9.000	N	OFF	9.6
4.421038	7.07	---	56.00	48.93	7000.0	9.000	N	OFF	9.6
10.843763	---	5.77	50.00	44.23	7000.0	9.000	N	OFF	9.8
10.843763	11.36	---	60.00	48.64	7000.0	9.000	N	OFF	9.8
19.656975	---	7.89	50.00	42.11	7000.0	9.000	N	OFF	9.9
19.656975	20.32	---	60.00	39.68	7000.0	9.000	N	OFF	9.9

Note: 1. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.
2. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz).
3. Step size: 80Hz (0.009MHz-0.15MHz), 4 kHz (0.15MHz-30MHz), Scan time: auto.
4. The extension cord/outlet strip was calibrated with the LISN as required by ANSI C63.10:2013 Clause 6.2.2.
5. Pre-testing all test modes and channels and find the MCH of BLE 1M which is the worst case, so only the worst case is included in this test report.
6. Two models of docker will be collocated to the EUT, both of them have been test, only the worse case is recorded in this test report.

9. ANTENNA REQUIREMENTS

APPLICABLE REQUIREMENTS

Please refer to FCC §15.203
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall 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 manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

ANTENNA CONNECTOR

EUT has an Internal antenna without antenna connector.

ANTENNA GAIN

The antenna gain of EUT is less than 6 dBi.

END OF REPORT