



FCC 47 CFR PART 15 SUBPART C

CERTIFICATION TEST REPORT

For

DIGIMONTOY

MODEL NUMBER: Komodo(SCSA D-ARK)

FCC ID: FANKOMODOSCSADARK

REPORT NUMBER: 4790430056-1

ISSUE DATE: October 27, 2022

Prepared for

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Revision History

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
V0	6/24/2022	Initial Issue	Kebo.Zhang
V1	10/27/2022	Address TCB's question, updated section 4.2 and 5.6.	Kebo.Zhang



Summary of Test Results			
Clause	Test Items	FCC Rules	Test Results
1	Transmitter 99% Emission Bandwidth / 20dB Bandwidth	Part 15.215 (c)	PASS
2	Transmitter Frequency Stability (Temperature & Voltage Variation)	CFR 47 FCC §15.225(e)	PASS
3	Fundamental Field Strength	CFR 47 FCC §15.225(a)(b)(c)(d)	PASS
4	Radiated Emissions	CFR 47 FCC§15.209(a) CFR 47 FCC§15.225(d)	PASS
5	Band Edge Radiated Emissions	CFR 47 FCC §15.209(a) CFR 47 FCC §15.225(c)(d)	PASS
6	Antenna Requirement	CFR 47 FCC §15.203	Pass
<p>Note 1: This test report is only published to and used by the applicant, and it is not for evidence purpose in China.</p> <p>Note 2: The measurement result for the sample received is <Pass> according to < CFR 47 FCC PART 15 SUBPART C > when <Accuracy Method> decision rule is applied.</p>			



TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS	5
2. TEST METHODOLOGY	6
3. FACILITIES AND ACCREDITATION	6
4. CALIBRATION AND UNCERTAINTY	7
4.1. <i>MEASURING INSTRUMENT CALIBRATION</i>	7
4.2. <i>MEASUREMENT UNCERTAINTY</i>	7
5. EQUIPMENT UNDER TEST	8
5.1. <i>DESCRIPTION OF EUT</i>	8
5.2. <i>MAXIMUM FIELD STRENGTH</i>	8
5.3. <i>DESCRIPTION OF AVAILABLE ANTENNAS</i>	8
5.4. <i>TEST ENVIRONMENT</i>	8
5.5. <i>DESCRIPTION OF TEST SETUP</i>	9
5.6. <i>MEASURING INSTRUMENT AND SOFTWARE USED</i>	10
6. ANTENNA PORT TEST RESULTS	11
6.1. <i>99% & 20dB BANDWIDTH</i>	11
6.2. <i>TRANSMITTER FREQUENCY STABILITY</i>	13
7. RADIATED EMISSION TEST RESULTS	15
7.1. <i>FIELD STRENGTH OF INTENTIONAL EMISSIONS</i>	22
7.2. <i>SPURIOUS EMISSIONS BELOW 1GHz AND ABOVE 30MHz</i>	23
7.3. <i>SPURIOUS EMISSIONS BELOW 30MHz</i>	25
8. ANTENNA REQUIREMENTS	28



1. ATTESTATION OF TEST RESULTS

Applicant Information

Company Name: BANDAI CO.,LTD.
Address: 1-4-8, Komagata, Taito-ku, Tokyo 111-8081 Japan

Manufacturer Information

Company Name: BANDAI CO.,LTD.
Address: 1-4-8, Komagata, Taito-ku, Tokyo 111-8081 Japan

EUT Information

EUT Name: DIGIMONTOY
Model: Komodo(SCSA D-ARK)
Brand: BANDAI
Sample Received Date: June 14, 2022
Sample Status: Normal
Sample ID: 5053093
Date of Tested: June 14, 2022 ~ June 24, 2022

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 FCC PART 15 SUBPART C	PASS

Prepared By:

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Senior Project Engineer

Checked By:

Denny Huang
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Approved By:

Stephen Guo
Laboratory Manager



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 and ANSI C63.10-2013.

3. FACILITIES AND ACCREDITATION

Accreditation Certificate	<p>A2LA (Certificate No.: 4102.01) UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with A2LA.</p> <p>FCC (FCC Designation No.: CN1187) UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. Has been recognized to perform compliance testing on equipment subject to the Commission's Declaration of Conformity (DoC) and Certification rules</p> <p>ISED (Company No.: 21320) UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been registered and fully described in a report filed with ISED. The Company Number is 21320 and the test lab Conformity Assessment Body Identifier (CABID) is CN0046.</p> <p>VCCI (Registration No.: G-20019, R-20004, C-20012 and T-20011) UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with VCCI, the Membership No. is 3793. Facility Name: Chamber D, the VCCI registration No. is G-20019 and R-20004 Shielding Room B, the VCCI registration No. is C-20012 and T-20011</p>
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Note:

1. All tests measurement facilities use to collect the measurement data are located at Building 10, Innovation Technology Park, Song Shan Lake Hi tech Development Zone, Dongguan, 523808, China
2. The test anechoic chamber in UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch 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.
3. For below 30MHz, lab had performed measurements at test anechoic chamber and comparing to measurements obtained on an open field site. And these measurements below 30MHz had been correlated to measurements performed on an OFS.



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 recognize 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
Frequency stability	± 1 kHz
Conduction emission	3.62 dB
Radiation Emission test (include Fundamental emission) (9KHz-30MHz)	2.2 dB
Radiation Emission test (include Fundamental emission) (30MHz-1GHz)	4.00 dB
Radiation Emission test (1GHz to 26GHz) (include Fundamental emission)	5.78 dB (1 GHz-18 GHz)
	5.23 dB (18 GHz-26 GHz)
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

EUT Name	DIGIMONTOY
Model	Komodo(SCSA D-ARK)
Operation Frequency	13.56MHz
Modulation	ASK
Battery	DC 3 V
Model Variance	There are 3 variants which have different color, built-in sound and some display presentation specifications.

5.2. MAXIMUM FIELD STRENGTH

Frequency (MHz)	Max Peak field strength (dB μ V/m)
13.56	7.37

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

Frequency (MHz)	Antenna Type
13.56	Coil

5.4. TEST ENVIRONMENT

Environment Parameter	Selected Values During Tests	
Relative Humidity	45 ~ 65%	
Atmospheric Pressure:	1025Pa	
Temperature	TN	20 ~ 28°C
Voltage:	VL	DC 2.2 V
	VN	DC 3.0 V
	VH	DC 3.6 V

Note: VL= Lower Extreme Test Voltage
 VN= Nominal Voltage
 VH= Upper Extreme Test Voltage
 TN= Normal Temperature

5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Item	Equipment	Brand Name	Model Name	Remarks
1	TEST MODE Card	/	/	/

I/O CABLES

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

ACCESSORY

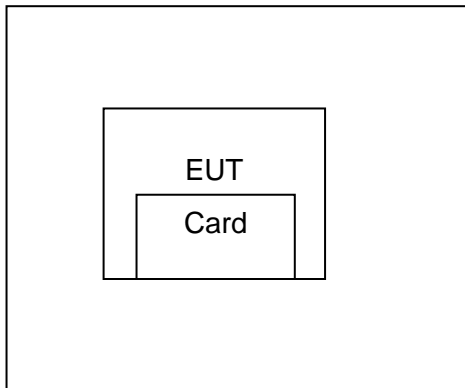
Item	Accessory	Brand Name	Model Name	Description
1	/	/	/	/

TEST SETUP

The EUT can transmit the NFC signal by Swiping card (Tap).

New battery has been used during measurement.

SETUP DIAGRAM FOR TESTS





5.6. MEASURING INSTRUMENT AND SOFTWARE USED

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Date
EMI Test Receiver	R&S	ESR3	101961	Oct.30, 2021	Oct.29, 2022
Two-Line V-Network	R&S	ENV216	101983	Oct.30, 2021	Oct.29, 2022
Artificial Mains Networks	Schwarzbeck	NSLK 8126	8126465	Oct.30, 2021	Oct.29, 2022
Software					
Description			Manufacturer	Name	Version
Test Software for Conducted Emissions			Farad	EZ-EMC	Ver. UL-3A1

Radiated Emissions						
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Date	
MXE EMI Receiver	KESIGHT	N9038A	MY56400036	Oct.30, 2021	Oct.29, 2022	
Hybrid Log Periodic Antenna	TDK	HLP-3003C	130959	Aug.02, 2021	Aug.01, 2024	
Preamplifier	HP	8447D	2944A09099	Oct.30, 2021	Oct.29, 2022	
Loop antenna	Schwarzbeck	1519B	00008	Dec.14, 2021	Dec.13, 2024	
Preamplifier	TDK	PA-02-001-3000	TRS-302-00050	Oct.31, 2021	Oct.30, 2022	
Preamplifier	Mini-Circuits	ZX60-83LN-S+	SUP01201941	Oct.31, 2021	Oct.30, 2022	
Cable	SUCOFLEX	8m+3m	/	Oct.30, 2021	Oct.29, 2022	
Software						
Description			Manufacturer	Name	Version	
Test Software for Radiated Emissions			Farad	EZ-EMC	Ver. UL-3A1	
Other instruments						
Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
<input checked="" type="checkbox"/>	Temperature & Humidity Chamber	SANMOOD	SG-80-CC-2	2088	Nov.10, 2021	Nov.09, 2022
<input checked="" type="checkbox"/>	Attenuator	Agilent	8495B	2814a12853	Oct.31, 2021	Oct.30, 2022

6. ANTENNA PORT TEST RESULTS

6.1. 99% & 20dB BANDWIDTH

LIMITS

FCC Part15 (15.247) Subpart C		
Section	Test Item	Limit
ANSI C63.10 Section 6.9.2	20dB% Bandwidth	For reporting purposes only.
ISED RSS-Gen Clause 6.7 Issue 5	99 % Occupied Bandwidth	For reporting purposes only.

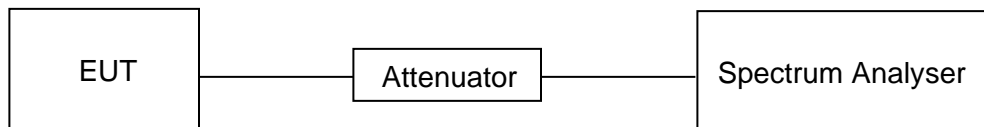
TEST PROCEDURE

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

Center Frequency	The center frequency of the channel under test
Detector	Peak
RBW	For 20dB Occupied Bandwidth: 1% to 5% of the 20 dB bandwidth For 99% Occupied Bandwidth: 1% to 5% of the occupied bandwidth
VBW	For 20dB Occupied Bandwidth: approximately 3×RBW For 99% Occupied Bandwidth: ≥ 3×RBW
Span	Between 2 times and 5 times the 20dB OBW. Between 1.5 times and 5.0 times the 99% 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 99%/20dB relative to the maximum level measured in the fundamental emission.

TEST SETUP



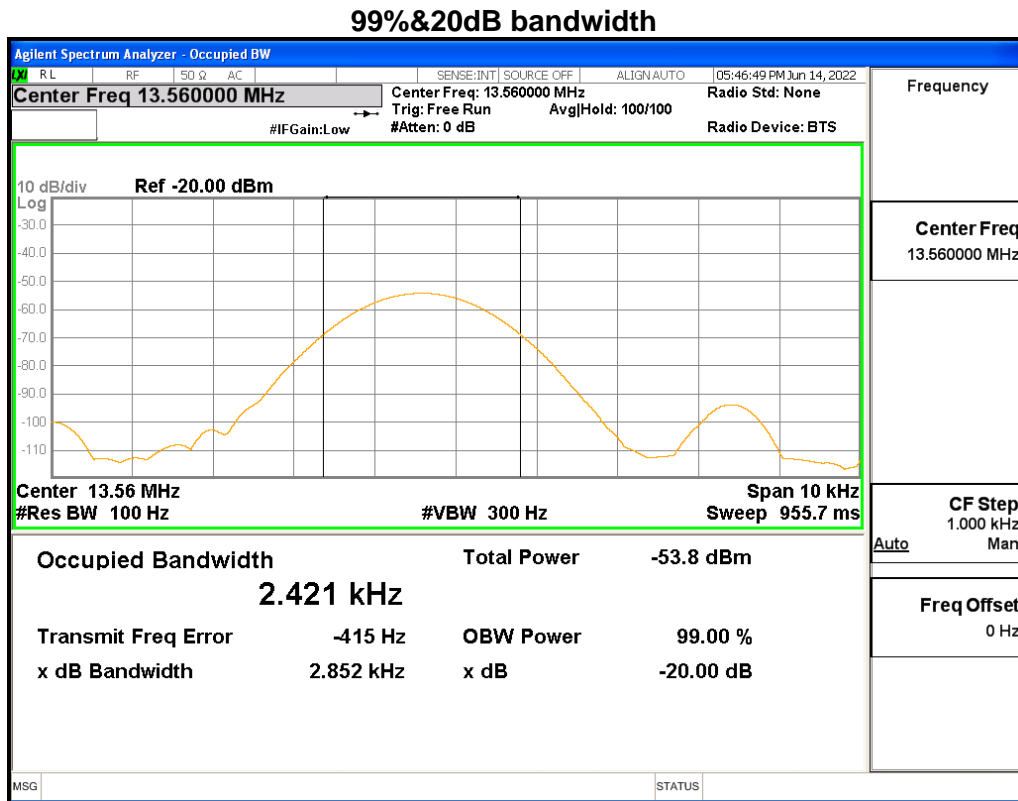


TEST ENVIRONMENT

Temperature	24.5 °C	Relative Humidity	58 %
Atmosphere Pressure	101 kPa	Test Voltage	DC 3 V

RESULTS

Frequency (MHz)	99% Occupied Bandwidth (kHz)	20dB bandwidth (kHz)
13.56	2.421	2.852



6.2. TRANSMITTER FREQUENCY STABILITY

LIMITS

CFR 47 FCC §15.225(e)

The frequency tolerance of the carrier signal shall be maintained within $\pm 0.01\%$ of the operating frequency over a temperature variation of -20 degrees to + 50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C.

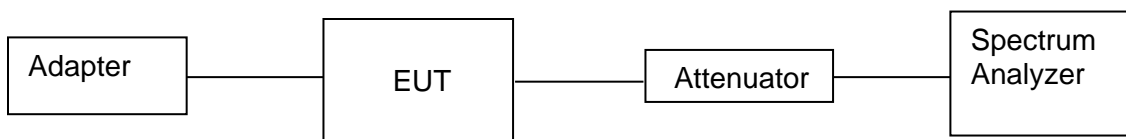
TEST SETUP AND PROCEDURE

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

Center Frequency	The center frequency of the channel under test
Detector	PEAK
RBW	10 kHz
VBW	$\geq 3 \times \text{RBW}$
Span	Encompass the entire emissions bandwidth (EBW) of the signal
Trace	Max hold
Sweep time	Auto

Allow the trace to stabilize, find the peak value of the power envelope and record the frequency, then calculated the frequency drift.

TEST SETUP





TEST RESULTS

Maximum frequency error of the EUT with variations in ambient temperature

Temperature (°C)	Time after Start-up			
	0 minutes	2 minutes	5 minutes	10 minutes
-20	13.5610	13.5591	13.5595	13.5588
-10	13.5601	13.5604	13.5599	13.5597
0	13.5605	13.5612	13.5611	13.5595
10	13.5593	13.5590	13.5588	13.5593
20	13.5592	13.5611	13.5605	13.5601
30	13.5590	13.5602	13.5611	13.5605
40	13.5611	13.5598	13.5596	13.5603
50	13.5589	13.5601	13.5597	13.5591
Maximum frequency error	0.0081%	0.0088%	0.0088%	0.0088%
Limit	0.01%			
Result	Pass	Pass	Pass	Pass

Maximum frequency error of the EUT with declared battery operation voltage at a temperature of 20 degrees C.

Supply Voltage by Battery	Time after Start-up			
	0 minutes	2 minutes	5 minutes	10 minutes
3.6 Vdc	13.5592	13.5597	13.5595	13.5611
3.0 Vdc	13.5612	13.5602	13.5606	13.5612
2.2 Vdc	13.5595	13.5611	13.5611	13.5599
Maximum frequency error	0.0088%	0.0081%	0.0081%	0.0088%
Limit	0.01%			
Result	Pass	Pass	Pass	Pass



7. RADIATED EMISSION TEST RESULTS

LIMITS

Fundamental field strength

FCC Reference:	Part 15.225(a)(b)(c)(d) & 15.209(a)
Test Method Used:	ANSI C63.10 Sections 6.3, 6.4 and 6.5

Frequency (MHz)	Field Strength (uV/m)	Field Strength (dBuV/m)	Measured Distance (Meters)
13.553-13.567	15848	84	30
13.410-13.553/13.567-13.710	334	50.47	30
13.110-13.410/13.710-14.010	106	40.51	30

Note(s):

1. The field strength of any emissions appearing outside of the 13.110-14.010 MHz band shall not exceed the general radiated emission limits in §15.209.

2. The limit is specified at a test distance of 30 meters. However, as specified by FCC Section 15.31 (f)(2), measurements may be performed at a closer distance and the measured level corrected to the specified measurement distance by using the square of an inverse linear distance extrapolation factor (40dB/decade).



Radiation Disturbance Test Limit for FCC (Class B) (9KHz-1GHz)

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
30~88	100	3
88~216	150	3
216~960	200	3
960~1000	500	3

Note: 1) At frequencies at or above 30 MHz, measurements may be performed at a distance other than what is specified provided: measurements are not made in the near field except where it can be shown that near field measurements are appropriate due to the characteristics of the device; and it can be demonstrated that the signal levels needed to be measured at the distance employed can be detected by the measurement equipment. Measurements shall not be performed at a distance greater than 30 meters unless it can be further demonstrated that measurements at a distance of 30 meters or less are impractical. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse linear-distance for field strength measurements; inverse-linear-distance-squared for power density measurements).

(2) At frequencies below 30 MHz, measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field. Pending the development of an appropriate measurement procedure for measurements performed below 30 MHz, when performing measurements at a closer distance than specified, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). This paragraph (f) shall not apply to Access BPL devices operating below 30MHz.



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: ¹Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

²Above 38.6c

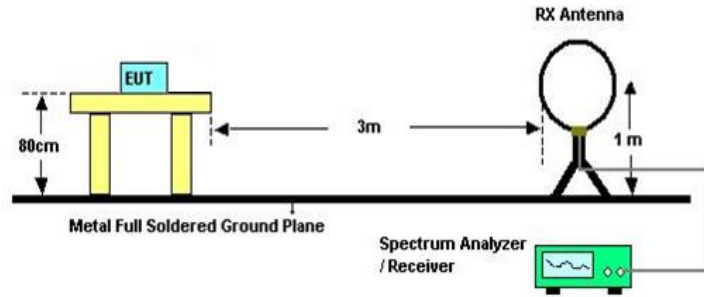


MHz	MHz	GHz
0.090 - 0.110	149.9 - 150.05	9.0 - 9.2
0.495 - 0.505	156.52475 - 156.52525	9.3 - 9.5
2.1735 - 2.1905	156.7 - 156.9	10.6 - 12.7
3.020 - 3.026	162.0125 - 167.17	13.25 - 13.4
4.125 - 4.128	167.72 - 173.2	14.47 - 14.5
4.17725 - 4.17775	240 - 285	15.35 - 16.2
4.20725 - 4.20775	322 - 335.4	17.7 - 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 - 38.5
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 - 2360	
12.51975 - 12.52025	2483.5 - 2500	
12.57675 - 12.57725	2655 - 2900	
13.36 - 13.41	3280 - 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.

TEST SETUP AND PROCEDURE

Below 30 MHz

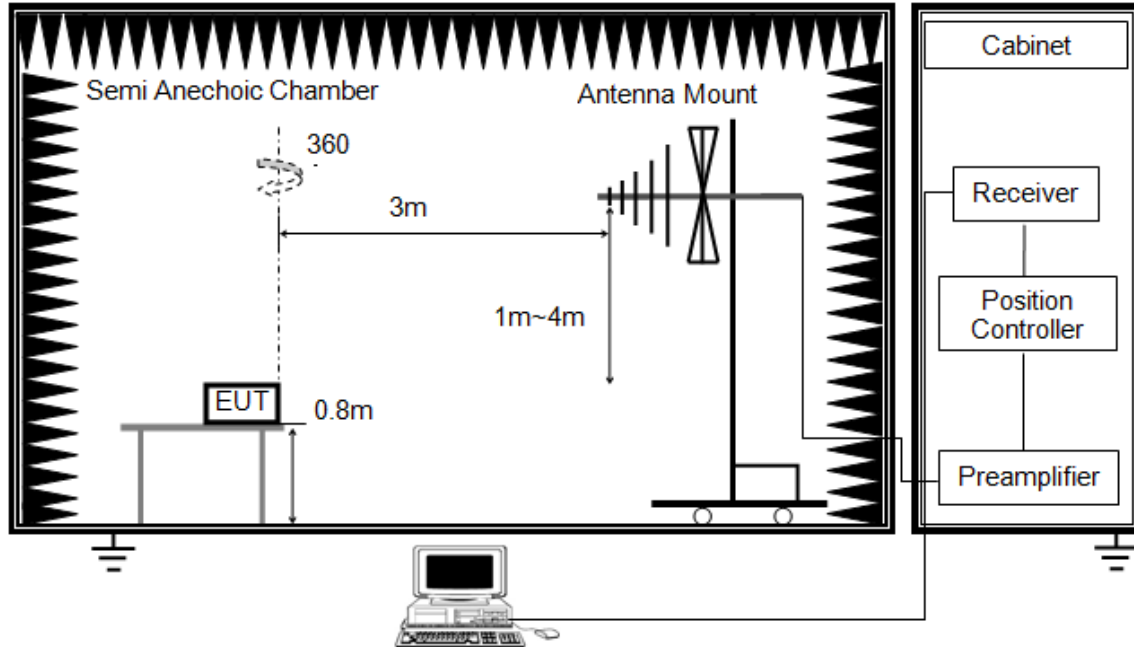


The setting of the spectrum analyser

RBW	200 Hz (From 9 kHz to 0.15 MHz)/ 9 kHz (From 0.15 MHz to 30 MHz)
VBW	200 Hz (From 9 kHz to 0.15 MHz)/ 9 kHz (From 0.15 MHz to 30 MHz)
Sweep	Auto
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013 clause 6.4.
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 80 cm above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a 1 m 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 1 GHz, 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 and average 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 and average detector and reported.
7. Although these tests were performed other than open field site, adequate comparison measurements were confirmed against 30m open field site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field site based on KDB 414788.
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 377Ω ; 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

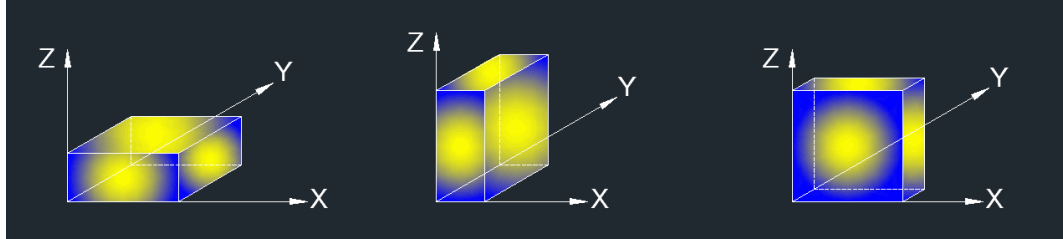


The setting of the spectrum analyser

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

1. The testing follows the guidelines in ANSI C63.10-2013 clause 6.5.
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 80cm above ground.
4. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
5. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
6. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
7. 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.

X axis, Y axis, Z axis positions:



Note 1: For all radiated test, EUT in each of three orthogonal axis emissions had been tested, but only the worst case (X axis) data recorded in the report.

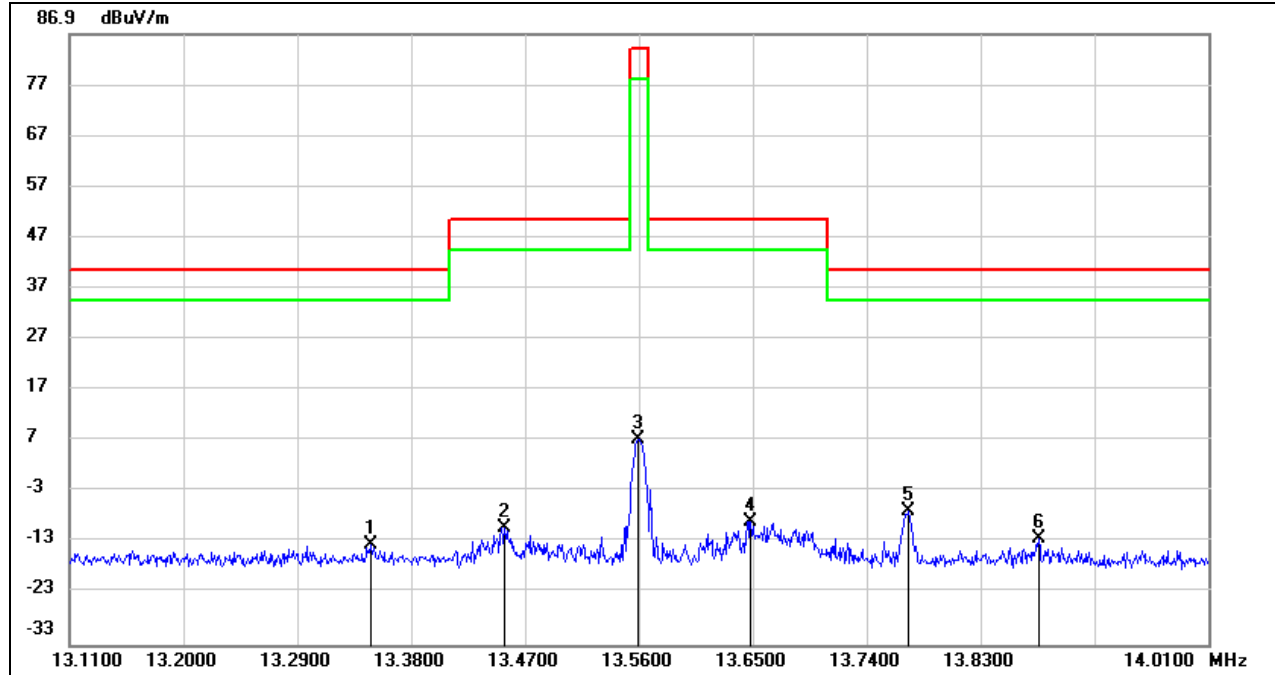
TEST ENVIRONMENT

Temperature	24.1 °C	Relative Humidity	68 %
Atmosphere Pressure	101kPa	Test Voltage	DC 3 V

RESULTS

7.1. FIELD STRENGTH OF INTENTIONAL EMISSIONS

FIELD STRENGTH OF INTENTIONAL EMISSIONS (LOOP ANTENNA FACE ON TO THE EUT)



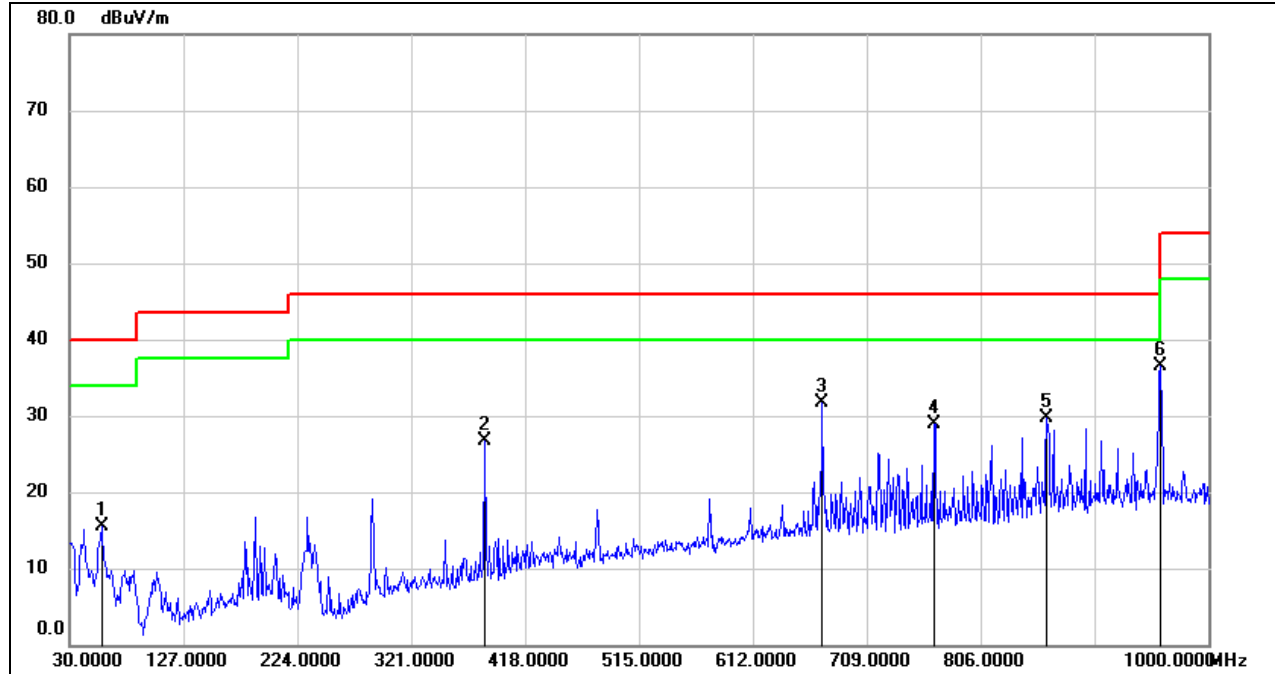
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	13.3476	47.85	-61.40	-13.55	40.51	-54.06	peak
2	13.4538	51.34	-61.40	-10.06	50.47	-60.53	peak
3	13.5591	68.78	-61.41	7.37	84.00	-76.63	peak
4	13.6473	52.42	-61.41	-8.99	50.47	-59.46	peak
5	13.7733	54.67	-61.43	-6.76	40.51	-47.27	peak
6	13.8759	49.07	-61.43	-12.36	40.51	-52.87	peak

Note: 1. Result Level = Read Level + Correct Factor.

2. 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.

7.2. SPURIOUS EMISSIONS BELOW 1GHz AND ABOVE 30MHz

SPURIOUS EMISSIONS (HORIZONTAL)

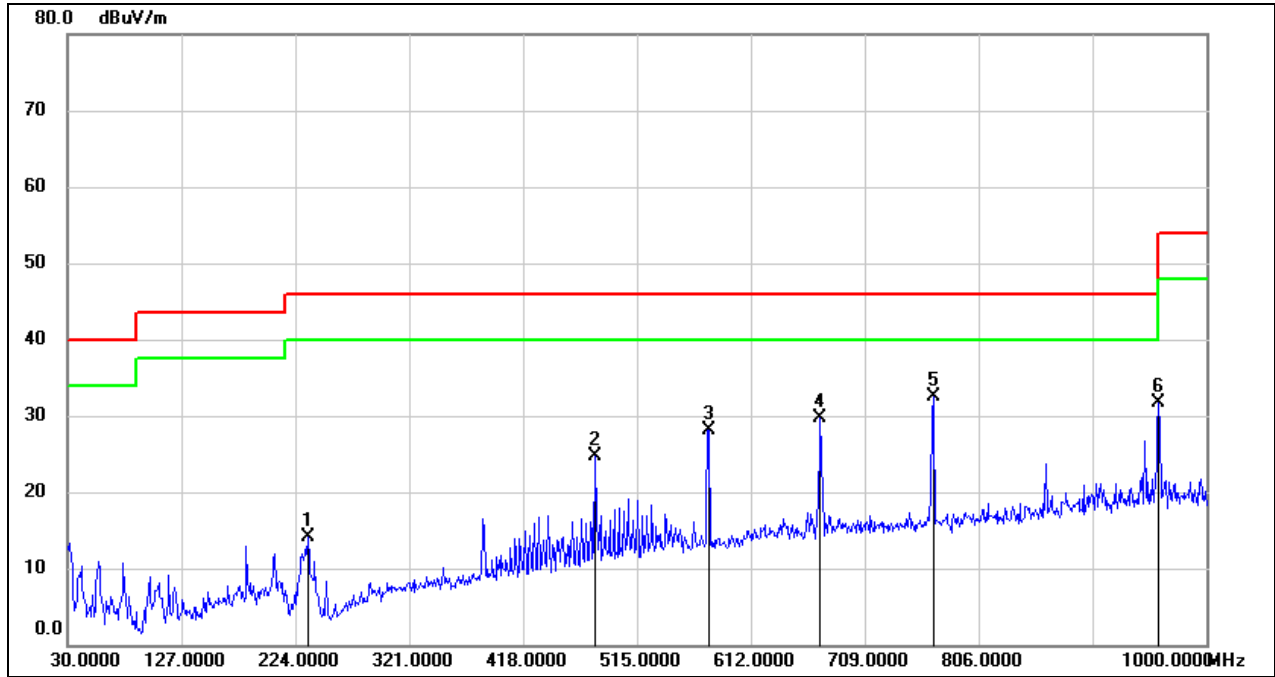


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	57.1600	36.12	-20.58	15.54	40.00	-24.46	QP
2	383.0799	40.32	-13.60	26.72	46.00	-19.28	QP
3	671.1700	40.39	-8.64	31.75	46.00	-14.25	QP
4	766.2300	36.59	-7.64	28.95	46.00	-17.05	QP
5	862.2600	35.63	-5.94	29.69	46.00	-16.31	QP
6	959.2600	41.11	-4.52	36.59	46.00	-9.41	QP

Note: 1. Result Level = Read Level + Correct Factor.



HARMONICS AND SPURIOUS EMISSIONS (VERTICAL)



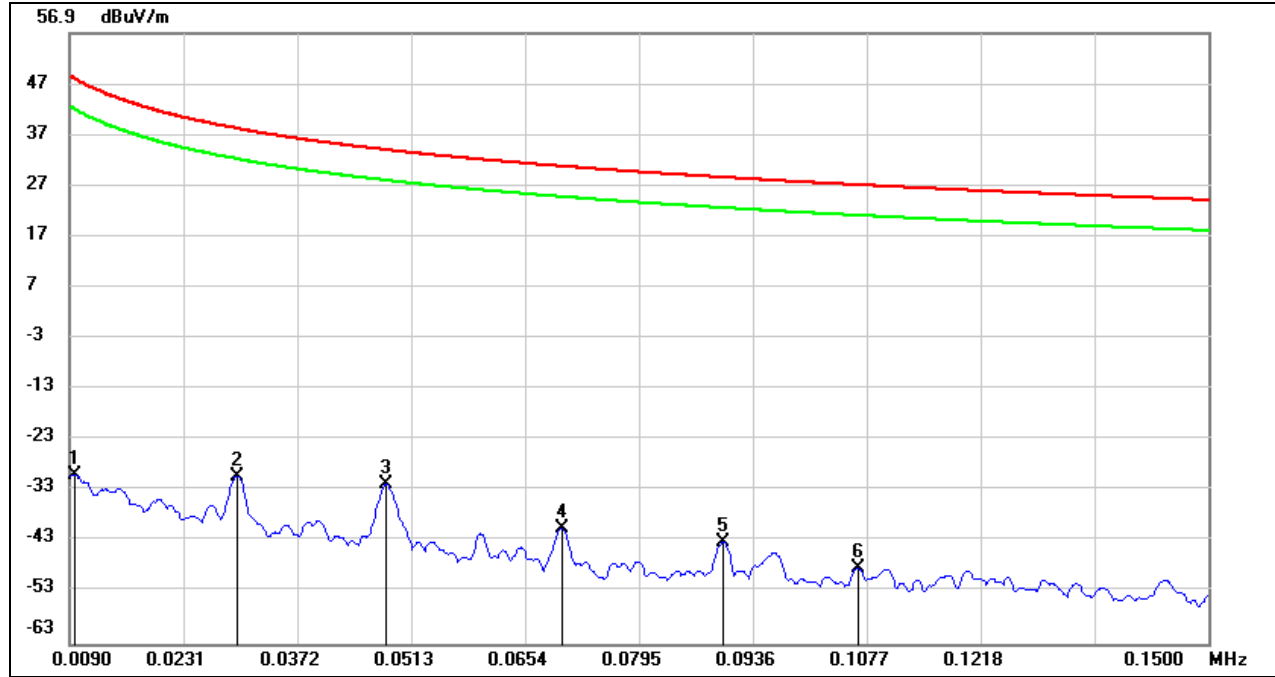
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	234.6700	32.93	-18.90	14.03	46.00	-31.97	QP
2	479.1100	36.49	-11.82	24.67	46.00	-21.33	QP
3	576.1100	38.19	-10.02	28.17	46.00	-17.83	QP
4	671.1700	38.34	-8.64	29.70	46.00	-16.30	QP
5	767.2000	40.19	-7.63	32.56	46.00	-13.44	QP
6	959.2600	36.23	-4.52	31.71	46.00	-14.29	QP

Note: 1. Result Level = Read Level + Correct Factor.

7.3. SPURIOUS EMISSIONS BELOW 30MHz

SPURIOUS EMISSIONS (LOOP ANTENNA FACE ON TO THE EUT)

9 kHz~ 150 kHz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	FCC Result (dBuV/m)	FCC Limit (dBuV/m)	Margin (dB)	Remark
1	0.0097	71.62	-101.46	-29.84	47.82	-77.66	peak
2	0.0297	70.99	-101.11	-30.12	38.15	-68.27	peak
3	0.0482	69.60	-101.36	-31.76	33.94	-65.70	peak
4	0.0699	60.49	-100.98	-40.49	30.71	-71.20	peak
5	0.0899	57.90	-101.12	-43.22	28.53	-71.75	peak
6	0.1066	53.06	-101.36	-48.30	27.05	-75.35	peak

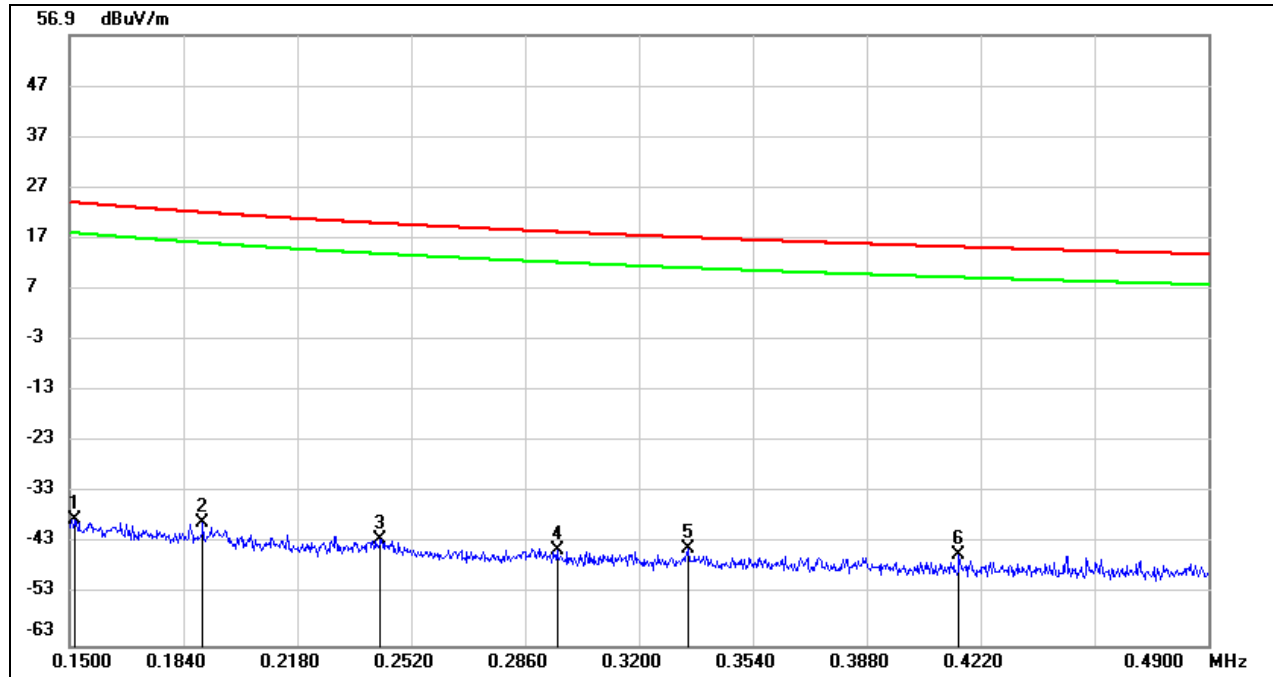
Note: 1. Measurement = Reading Level + Correct Factor.

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.



150 kHz ~ 490 kHz

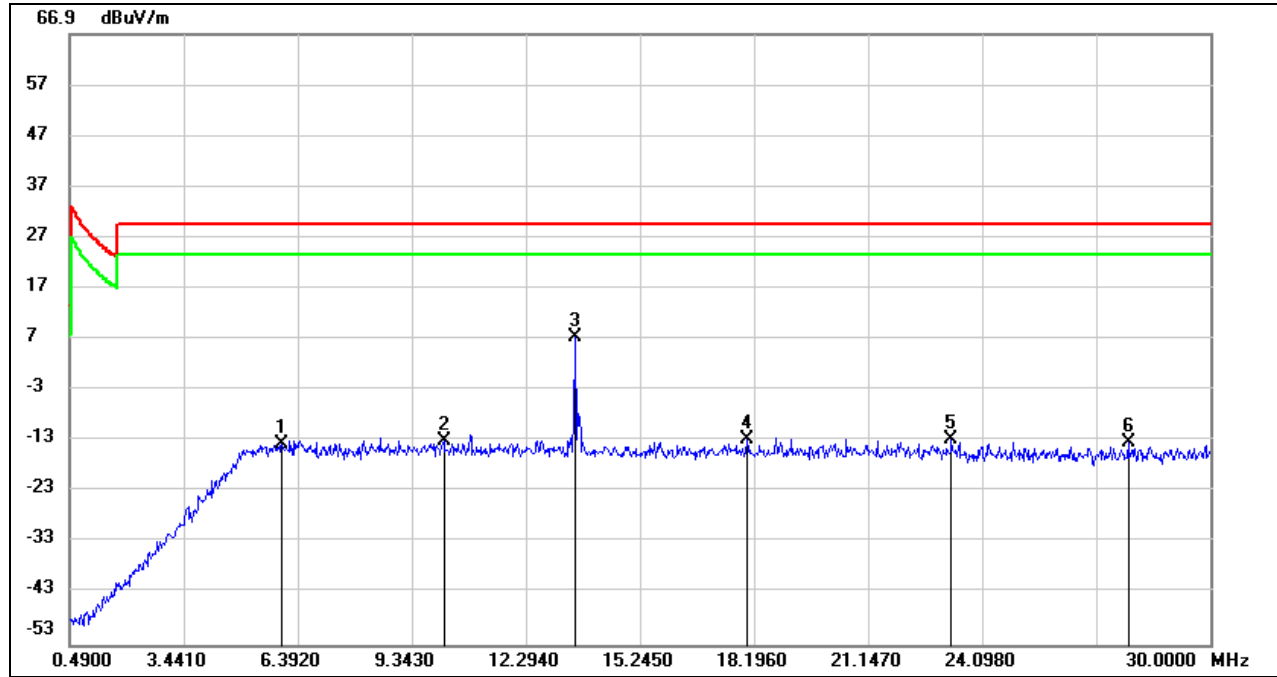


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	FCC Result (dBuV/m)	FCC Limit (dBuV/m)	Margin (dB)	Remark
1	0.1517	63.58	-101.89	-38.31	23.98	-62.29	peak
2	0.1898	62.90	-101.85	-38.95	22.04	-60.99	peak
3	0.2428	59.53	-101.80	-42.27	19.90	-62.17	peak
4	0.2955	57.57	-101.77	-44.20	18.19	-62.39	peak
5	0.3345	57.65	-101.77	-44.12	17.11	-61.23	peak
6	0.4155	56.44	-101.73	-45.29	15.23	-60.52	peak

- Note: 1. Measurement = Reading Level + Correct 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.



490kHz ~ 30MHz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	FCC Result (dBuV/m)	FCC Limit (dBuV/m)	Margin (dB)	Remark
1	5.9789	48.08	-61.78	-13.70	29.54	-43.24	peak
2	10.1693	48.21	-61.21	-13.00	29.54	-42.54	peak
3	13.5629	68.66	-61.41	7.25	29.54	-22.29	peak
4	18.0189	48.60	-61.25	-12.65	29.54	-42.19	peak
5	23.3012	48.16	-61.01	-12.85	29.54	-42.39	peak
6	27.8753	47.41	-60.79	-13.38	29.54	-42.92	peak

- Note: 1. Measurement = Reading Level + Correct 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.
 4. About the Fundamental emission test result please refer to section 7.1.



8. 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.

Please refer to FCC §15.247(b)(4)

The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

RESULTS

Complies

END OF REPORT