
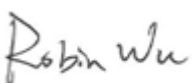


MEASUREMENT REPORT

FCC PART 15.225 NFC 13.56MHz

FCC ID: 2AEDR-FGUARD-EL1
APPLICANT: Accuride International Inc.
Application Type: Certification
Product: FridgiGuard
Model No.: FGUARD-EL1
Brand Name: Senseon
FCC Classification: Part 15 Low Power Communication Device Transmitter (DXX)
FCC Rule Part(s): Part 15 Subpart C (Section 15.225)
Test Procedure(s): ANSI C63.10-2013
Test Date: January 21 ~ February 02, 2021

Reviewed By: 
Oscar Shi

Approved By: 
Robin Wu



The test results relate only to the samples tested.

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.10. Test results reported herein relate only to the item(s) tested.

The test report shall not be reproduced except in full without the written approval of MRT Technology (Suzhou) Co., Ltd.

Revision History

Report No.	Version	Description	Issue Date	Note
2101RSU011-U2	Rev. 01	Initial Report	03-04-2021	Valid

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2. PRODUCT INFORMATION

2.1. Equipment Description

Product Name	FridgiGuard
Model No.	FGUARD-EL1
Serial No.	L23Q0004S0000
Brand Name	Senseon
Power Supply	AC Input: 100 ~ 240V ~ 50/60Hz, 0.3A DC Output: 5V= 1A
NFC working frequency	13.56MHz
Modulation	100% ASK
Wi-Fi Specification	802.11 b/g/n (Contain FCC ID: 2AHMR-ESP12F (single module))
Operating Temp.	-20 ~ 70°C

2.2. Test Mode

Test Mode
Mode 1: Transmit by NFC
Mode 2: Transmit by NFC + Wi-Fi (Co-location)

2.3. Test Environment Condition

Ambient Temperature	15°C ~ 35°C
Relative Humidity	20%RH ~75%RH

2.4. Test Configuration

The EUT was set to continuous transmission. This device was tested per the guidance of ANSI C63.10-2013, which is used as the reference of appropriate EUT setup for radiated spurious emissions testing and AC line conducted testing.

2.5. EMI Suppression Device(s)/Modifications

No EMI suppression device(s) were added and/or no modifications were made during testing.

3. ANTENNA REQUIREMENTS

Excerpt from §15.203 of the FCC Rules/Regulations:

“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 of the FridgiGuard is **permanently attached**.
- There are no provisions for connection to an external antenna.

Conclusion:

The unit complies with the requirement of §15.203.

4. TEST EQUIPMENT CALIBRATION DATE

Conducted Emission (WZ-SR2)

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EMI Test Receiver	R&S	ESR3	MRTSUE06185	1 year	2022/01/12
Two-Line V-Network	R&S	ENV216	MRTSUE06002	1 year	2021/09/09
Thermal Hygrometer	testo	608-H1	MRTSUE06404	1 year	2021/07/26
Shielding Room	MIX-BEP	Chamber-SR2	MRTSUE06215	N/A	N/A

Conducted Emission (SIP-SR2)

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EMI Test Receiver	R&S	ESR3	MRTSUE06613	1 year	2021/07/02
Two-Line V-Network	R&S	ENV216	MRTSUE06003	1 year	2021/09/09
Thermal Hygrometer	testo	608-H1	MRTSUE06621	1 year	2021/12/03

Radiated Emission (WZ-AC1)

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EMI Test Receiver	R&S	ESR7	MRTSUE06001	1 year	2022/01/04
PXA Signal Analyzer	Keysight	N9030B	MRTSUE06395	1 year	2021/08/30
Loop Antenna	Schwarzbeck	FMZB 1519	MRTSUE06025	1 year	2021/10/22
Bilog Period Antenna	Schwarzbeck	VULB 9168	MRTSUE06172	1 year	2021/08/08
Horn Antenna	Schwarzbeck	BBHA 9120D	MRTSUE06023	1 year	2021/09/27
Horn Antenna	Schwarzbeck	BBHA9170	MRTSUE06597	1 year	2021/12/14
Microwave System Amplifier	Agilent	83017A	MRTSUE06076	1 year	2021/10/22
Preamplifier	Schwarzbeck	BBV 9721	MRTSUE06121	1 year	2021/06/11
Thermal Hygrometer	testo	608-H1	MRTSUE06403	1 year	2021/07/26
Anechoic Chamber	TDK	Chamber-AC1	MRTSUE06212	1 year	2021/04/30

Radiated Emission (WZ-AC2)

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
MXE EMI Receiver	Keysight	N9038A	MRTSUE06125	1 year	2021/07/02
Loop Antenna	Schwarzbeck	FMZB 1519	MRTSUE06025	1 year	2021/10/22
Bilog Period Antenna	Schwarzbeck	VULB 9162	MRTSUE06022	1 year	2021/05/26
Broad-Band Horn Antenna	Schwarzbeck	BBHA 9120D	MRTSUE06171	1 year	2021/10/22
Horn Antenna	Schwarzbeck	BBHA9170	MRTSUE06597	1 year	2021/12/14
Broadband Coaxial Preamplifier	Schwarzbeck	BBV 9718	MRTSUE06176	1 year	2021/11/14
Preamplifier	Schwarzbeck	BBV 9721	MRTSUE06121	1 year	2021/06/11
Thermal Hygrometer	Minggao	ETH529	MRTSUE06170	1 year	2021/12/08
Anechoic Chamber	RIKEN	Chamber-AC2	MRTSUE06213	1 year	2021/04/30

Radiated Emission (SIP-AC1)

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EMI Test Receiver	R&S	ESR3	MRTSUE06612	1 year	2021/07/02
EXA Signal Analyzer	Keysight	N9010B	MRTSUE06559	1 year	2021/07/23
Loop Antenna	Schwarzbeck	FMZB 1519	MRTSUE06025	1 year	2021/10/22
Bilog Period Antenna	Schwarzbeck	VULB9168	MRTSUE06645	1 year	2021/08/30
Double Ridged Horn Antenna	R&S	HF907	MRTSUE06610	1 year	2021/08/30
Preamplifier	EMCI	EMC051845SE	MRTSUE06600	1 year	2021/11/12
Thermal Hygrometer	testo	608-H1	MRTSUE06620	1 year	2021/12/03
Anechoic Chamber	RIKEN	SIP-AC1	MRTSUE06554	1 year	2021/12/24

Radiated Emission (SIP-AC2)

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EMI Test Receiver	R&S	ESR3	MRTSUE06613	1 year	2021/07/02
MXA Signal Analyzer	Keysight	N9020B	MRTSUE06604	1 year	2021/09/26
Loop Antenna	Schwarzbeck	FMZB 1519	MRTSUE06025	1 year	2021/10/22
Bilog Period Antenna	Schwarzbeck	VULB9168	MRTSUE06646	1 year	2021/08/30
Horn Antenna	Schwarzbeck	BBHA9120D	MRTSUE06648	1 year	2021/11/26
Horn Antenna	Schwarzbeck	BBHA9170	MRTSUE06599	1 year	2021/11/26
Preamplifier	EMCI	EMC051845SE	MRTSUE06644	1 year	2021/11/12
Preamplifier	EMCI	EMC184045SE	MRTSUE06602	1 year	2021/10/12
Thermal Hygrometer	testo	608-H1	MRTSUE06624	1 year	2021/12/03
Anechoic Chamber	RIKEN	SIP-AC2	MRTSUE06781	1 year	2021/12/24

Radiated Emission (SIP-AC3)

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EMI Test Receiver	R&S	ESR3	MRTSUE06612	1 year	2021/07/02
EXA Signal Analyzer	Keysight	N9010B	MRTSUE06559	1 year	2021/07/23
Loop Antenna	Schwarzbeck	FMZB 1519	MRTSUE06025	1 year	2021/10/22
Bilog Period Antenna	Schwarzbeck	VULB9168	MRTSUE06647	1 year	2021/08/08
Double Ridged Horn Antenna	R&S	HF907	MRTSUE06611	1 year	2021/09/13
Horn Antenna	Schwarzbeck	BBHA9170	MRTSUE06598	1 year	2021/11/26
Preamplifier	EMCI	EMC012645SE	MRTSUE06642	1 year	2022/01/15
Preamplifier	EMCI	EMC184045SE	MRTSUE06641	1 year	2022/01/15
Thermal Hygrometer	testo	608-H1	MRTSUE06622	1 year	2021/12/03
Anechoic Chamber	RIKEN	SIP-SIP-AC3	MRTSUE06782	1 year	2021/12/24

Conducted Test Equipment (WZ-TR3)

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EXA Signal Analyzer	Agilent	N9020A	MRTSUE06106	1 year	2021/04/14
EXA Signal Analyzer	Keysight	N9010B	MRTSUE06607	1 year	2022/01/07
Signal Analyzer	R&S	FSV40	MRTSUE06218	1 year	2021/04/14
Power Meter	Agilent	U2021XA	MRTSUE06030	1 year	2021/10/22
USB wideband power sensor	Keysight	U2021XA	MRTSUE06446	1 year	2021/08/30
USB wideband power sensor	Keysight	U2021XA	MRTSUE06447	1 year	2021/08/08
Bluetooth Test Set	Anritsu	MT8852B-042	MRTSUE06389	1 year	2021/06/11
Audio Analyzer	Agilent	U8903B	MRTSUE06143	1 year	2021/06/11
Modulation Analyzer	HP	HP8901A	MRTSUE06098	1 year	2021/09/26
Wideband Radio Communication Tester	R&S	CMW 500	MRTSUE06243	1 year	2021/10/20
DC Power Supply	GWINSTEK	DPS-3303C	MRTSUE06064	N/A	N/A
Temperature & Humidity Chamber	BAOYT	BYH-150CL	MRTSUE06051	1 year	2021/10/22
Thermal Hygrometer	testo	608-H1	MRTSUE06401	1 year	2021/07/26
Attenuator	MVE	6dB	MRTSUE06534	N/A	N/A
Attenuator	MVE	10dB	MRTSUE06543	N/A	N/A

Conducted Test Equipment (SIP-SR5)

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Signal Analyzer	R&S	FSV40	MRTSUE06218	1 year	2021/04/14
PXA Signal Analyzer	Keysight	N9030B	MRTSUE06395	1 year	2021/08/30
USB wideband power sensor	Agilent	U2021XA	MRTSUE06595	1 year	2021/09/26
USB wideband power sensor	Agilent	U2021XA	MRTSUE06596	1 year	2021/09/26
Wideband Radio Communication Tester	R&S	CMW 500	MRTSUE06243	1 year	2021/10/20
Bluetooth Test Set	Anritsu	MT8852B-042	MRTSUE06389	1 year	2021/06/11
Temperature Chamber	BAOYT	BYG-408CS	MRTSUE06847	1 year	2021/03/31
Thermal Hygrometer	testo	622	MRTSUE06629	1 year	2021/11/25

Software	Version	Function
EMI Software	V3	EMI Test Software

5. MEASUREMENT UNCERTAINTY

Where relevant, the following test uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k = 2$.

AC Conducted Emission Measurement
Measurement Uncertainty for a Level of Confidence of 95% ($U=2Uc(y)$): 9kHz~150kHz: 3.74dB 150kHz~30MHz: 3.44dB
Radiated Disturbance
Measurement Uncertainty for a Level of Confidence of 95% ($U=2Uc(y)$): Horizontal: 30MHz~300MHz: 5.04dB 300MHz~1GHz: 4.95dB 1GHz~40GHz: 6.40dB Vertical: 30MHz~300MHz: 5.24dB 300MHz~1GHz: 6.03dB 1GHz~40GHz: 6.40dB

6. TEST RESULT

6.1. Summary

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
15.225 (a), (b), (c)	In-Band Emission	15,848uV/m @ 30m 13.553 ~ 13.567 MHz 334uV/m @ 30m 13.410 ~ 13.553 MHz 13.567 ~ 13.710 MHz 106uV/m @ 30m 13.110 ~ 13.410 MHz 13.710 ~ 14.010 MHz	Radiated	Pass	Section 6.2
15.225(d)	Out-Band Emission	Emissions outside of the specified band (13.110~14.010 MHz) must meet the radiated limits detailed in 15.209		Pass	Section 6.3
15.225(e)	Frequency Stability Tolerance	±0.01% of operating frequency		Pass	Section 6.4
15.207	AC Conducted Emissions 150kHz - 30MHz	< FCC 15.207 limits	Line Conducted	Pass	Section 6.5

Notes:

- 1) All modes of operation and data rates were investigated. For radiated emission test, every axis (X, Y, Z) was also verified. The test results shown in the following sections represent the worst-case emissions.
- 2) The analyzer plots shown in this section were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables and attenuators used as part of the system to connect the EUT to the analyzer at all frequencies of interest.

6.2. In-band Emission

6.2.1. Test Limit

FCC Part 15 Subpart C Paragraph 15.225		
Frequency (MHz)	Distance (m)	Level (uV/m)
13.553 ~13.567	30	15,848
13.410 ~13.553 13.567 ~13.710	30	334
13.110 ~13.410 13.710 ~14.010	30	106

Note 1: The lower limit shall apply at the transition frequency.

Note 2: Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

Note 3: E field strength (dBuV/m) = 20 log E field strength (uV/m)

6.2.2. Test Procedure Used

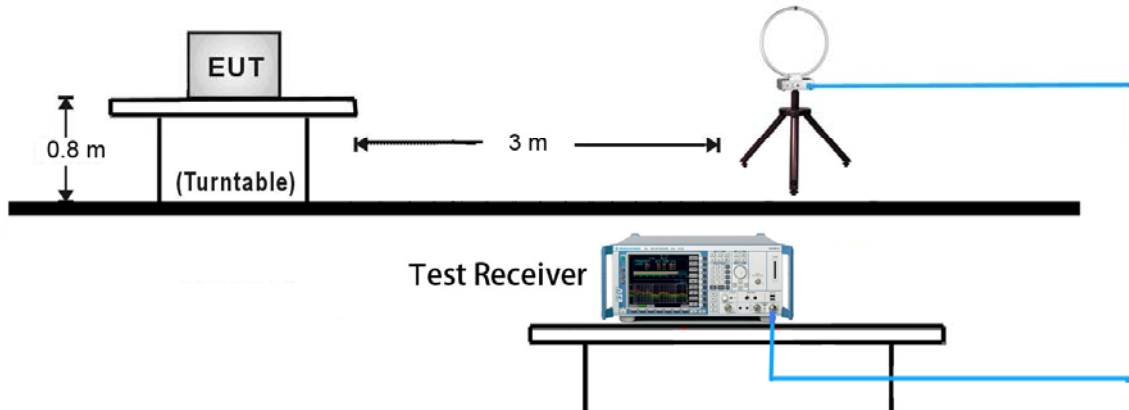
ANSI C63.10-2013 - Section 6.4.7

6.2.3. Test Setting

1. RBW = 9kHz
2. VBW = 3 * RBW
3. Detector = Peak
4. Trace mode = Max hold
5. Sweep = Auto couple
6. Allow the trace to stabilize

6.2.4. Test Setup

9kHz ~ 30MHz Test Setup:



6.2.5. Test Result

Test Site	SIP-AC1	Test Engineer	Stephen Dong
Test Time	2021/01/21	Test Mode	Mode1

Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (3m) [dBuV/m]	Margin [dB]
Face On					
13.350	5.687	19.397	25.084	80.506	-55.422
13.460	6.509	19.406	25.915	90.475	-64.56
13.562	26.718	19.427	46.145	123.999	-77.854
13.620	5.786	19.379	25.165	90.475	-65.310
13.830	6.266	19.410	25.676	80.506	-54.830
Face Off					
13.370	4.507	19.411	23.918	80.506	-56.588
13.440	6.590	19.399	25.989	90.475	-64.486
13.560	25.157	19.426	44.583	123.999	-79.416
13.680	6.447	19.421	25.868	90.475	-64.607
13.770	5.851	19.382	25.233	80.506	-55.273

Note1: All measurements were performed using a loop antenna. The antenna was positioned in two orthogonal (face on and face off) and the position with the highest emission level was recorded.

Note2: Measurements were tested at 3m and the data was extrapolated to the specified measurement distance of 30m using the square of an inverse linear extrapolation factor (40 dB/decade) as specified in 15.31(f)(2).

Extrapolation Factor = $40 \cdot \log(30/3) = 40 \text{ dB}$

Note3: All measurements were recorded using an EMI test receiver employing a peak detector.

6.3. Out-band Emission

6.3.1. Test Limit

FCC Part 15 Subpart C Paragraph 15.209		
Frequency (MHz)	Distance (m)	Level (uV/m)
0.009 - 0.490	300	2400/F (kHz)
0.490 - 1.705	30	2400/F (kHz)
1.705 - 30	30	30
30 - 88	3	100
88 - 216	3	150
216 - 960	3	200
Above 960	3	500

Note 1: The lower limit shall apply at the transition frequency.

Note 2: Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

Note 3: E field strength (dBuV/m) = 20 log E field strength (uV/m)

6.3.2. Test Procedure Used

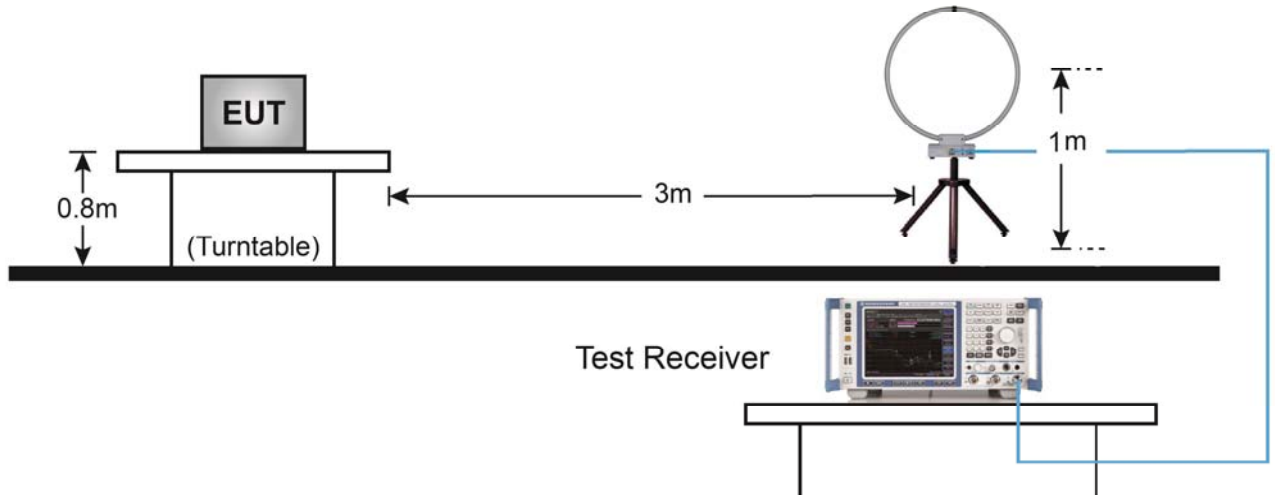
ANSI C63.10-2013 - Section 6.5.4

6.3.3. Test Setting

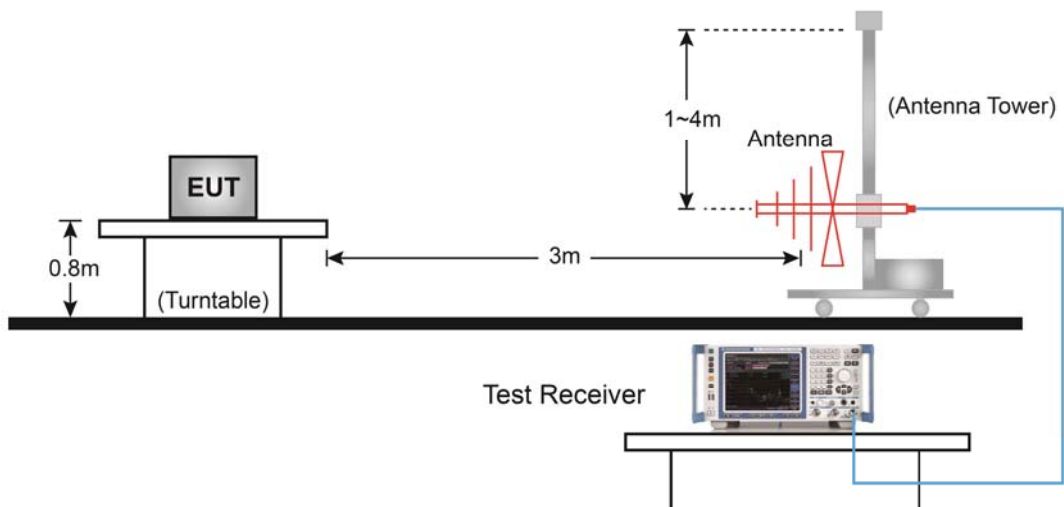
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 9kHz for emission below 30MHz and 100kHz for emission between 30MHz and 1GHz
3. VBW = 3 * RBW
4. Detector = Peak
5. Trace mode = Max hold
6. Sweep = Auto couple
7. Allow the trace to stabilize

6.3.4. Test Setup

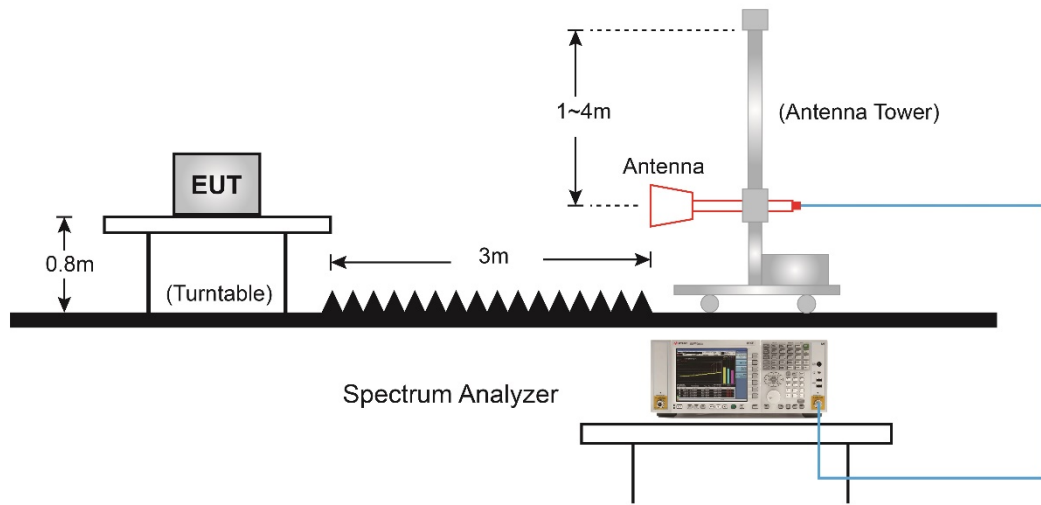
9kHz ~ 30MHz Test Setup:



30MHz ~ 1GHz Test Setup:



Above 1GHz Test Setup:



6.3.5. Test Result

Test Site	SIP-AC1	Test Engineer	Stephen Dong
Test Time	2021/01/21	Test Mode	Mode1

Out-Band Emission Below 30MHz						
Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
Face On						
27.120	1.742	19.301	21.043	69.542	-48.499	QP
Face Off						
27.120	3.536	19.301	22.837	69.542	-46.705	QP

Out-Band Emission Above 30MHz							
Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
H	40.640	25.140	0.287	25.427	40.000	-14.573	QP
H	129.425	30.340	0.513	30.853	43.500	-12.647	QP
H	151.250	27.364	0.552	27.916	43.500	-15.584	QP
H	221.090	34.616	0.670	35.286	46.000	-10.714	QP
H	249.705	34.640	0.710	35.350	46.000	-10.650	QP
H	306.450	22.313	0.789	23.102	46.000	-22.898	QP
V	40.670	17.644	0.287	17.931	40.000	-22.069	QP
V	54.735	25.944	0.334	26.278	40.000	-13.722	QP
V	103.720	31.400	0.459	31.859	43.500	-11.641	QP
V	143.975	27.945	0.541	28.486	43.500	-15.014	QP
V	244.370	30.410	0.702	31.112	46.000	-14.888	QP
V	316.150	32.610	0.802	33.412	46.000	-12.588	QP

Note1: All measurements were performed using a loop antenna. The antenna was positioned in two orthogonal (face on and face off) and the position with the highest emission level was recorded.

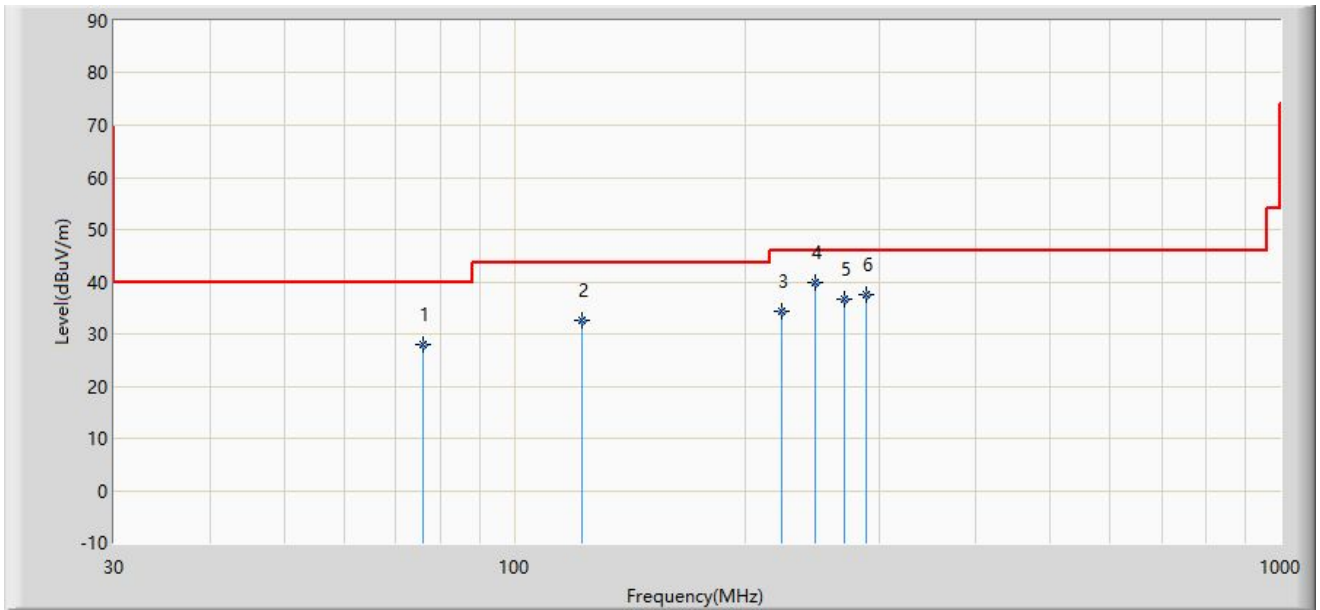
Note2: Measurements were tested at 3m and the data was extrapolated to the specified measurement distance of 30m using the square of an inverse linear extrapolation factor (40 dB/decade) as specified in &15.31(f)(2).

Extrapolation Factor = $40 \cdot \log(30/3) = 40$ dB

Note3: All measurements were recorded using an EMI test receiver employing a peak detector.

Test Result of Radiated Emissions for Co-Location:

Site: SIP-AC3	Test Date: 2021/02/03
Limit: FCC_Part15.209_RSE(3m)	Engineer: White Wang
Probe: SIP-AC3_VULB 9168 _20-2000MHz_4dB	Polarity: Horizontal
EUT: FridgiGuard	Power: AC 120V/60Hz
Test Mode: Mode 2	

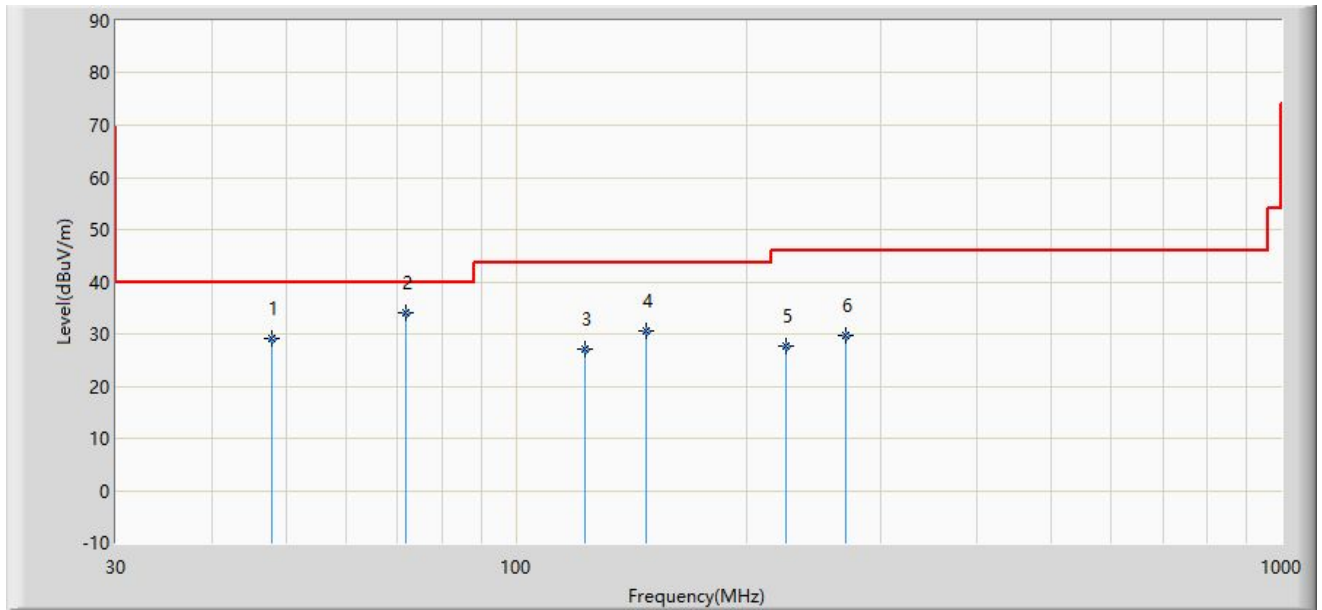


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			76.075	27.954	13.500	-12.046	40.000	14.454	QP
2			122.635	32.667	17.200	-10.833	43.500	15.467	QP
3			223.030	34.260	19.800	-11.740	46.000	14.460	QP
4		*	246.795	39.999	23.400	-6.001	46.000	16.599	QP
5			269.590	36.619	19.300	-9.381	46.000	17.319	QP
6			288.020	37.594	19.500	-8.406	46.000	18.094	QP

Note 1: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB).

Site: SIP-AC3	Test Date: 2021/02/03
Limit: FCC_Part15.209_RSE(3m)	Engineer: White Wang
Probe: SIP-AC3_VULB 9168 _20-2000MHz_4dB	Polarity: Vertical
EUT: FridgiGuard	Power: AC 120V/60Hz
Test Mode: Mode 2	

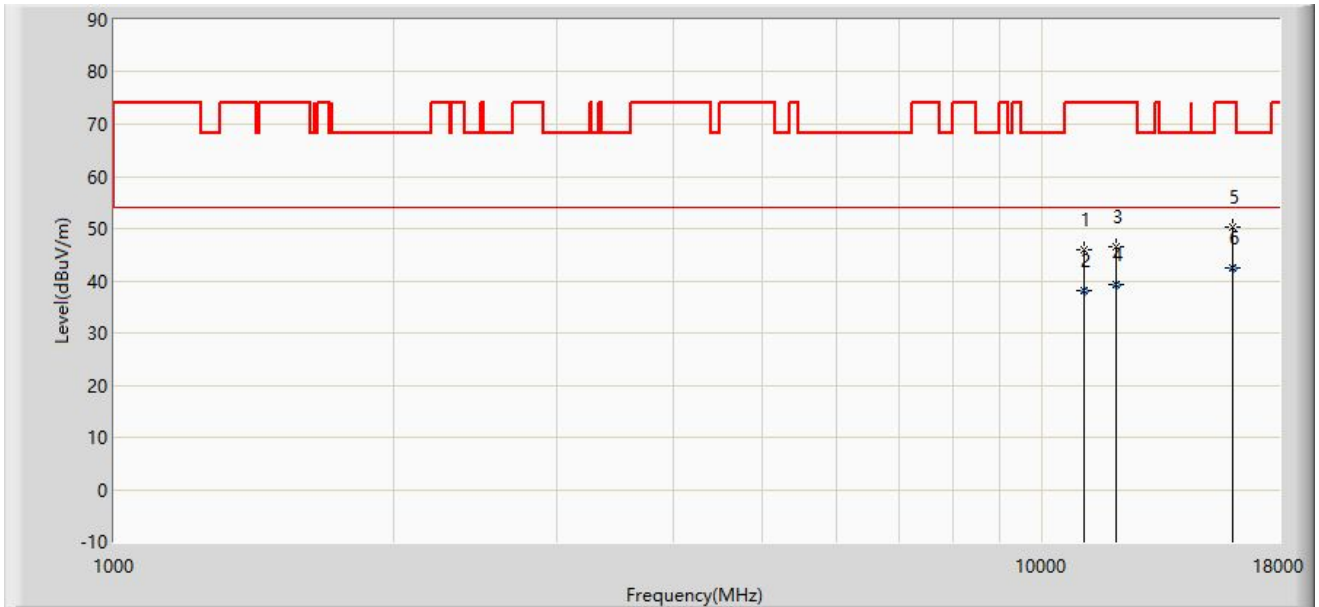


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			47.945	29.167	11.200	-10.833	40.000	17.967	QP
2		*	71.710	33.969	18.500	-6.031	40.000	15.469	QP
3			123.120	27.090	11.600	-16.410	43.500	15.490	QP
4			147.855	30.716	12.700	-12.784	43.500	18.016	QP
5			225.455	27.601	13.200	-18.399	46.000	14.401	QP
6			270.015	29.743	12.400	-16.257	46.000	17.342	QP

Note: Measure Level (dB μ V/m) = Reading Level (dB μ V) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB).

Site: SIP-AC3	Test Date: 2021/02/03
Limit: FCC_Part15.209_RSE(3m)	Engineer: White Wang
Probe: SIP-AC3_HF907_102861_1-18GHz	Polarity: Horizontal
EUT: FridgiGuard	Power: AC 120V/60Hz
Test Mode: Mode 2	



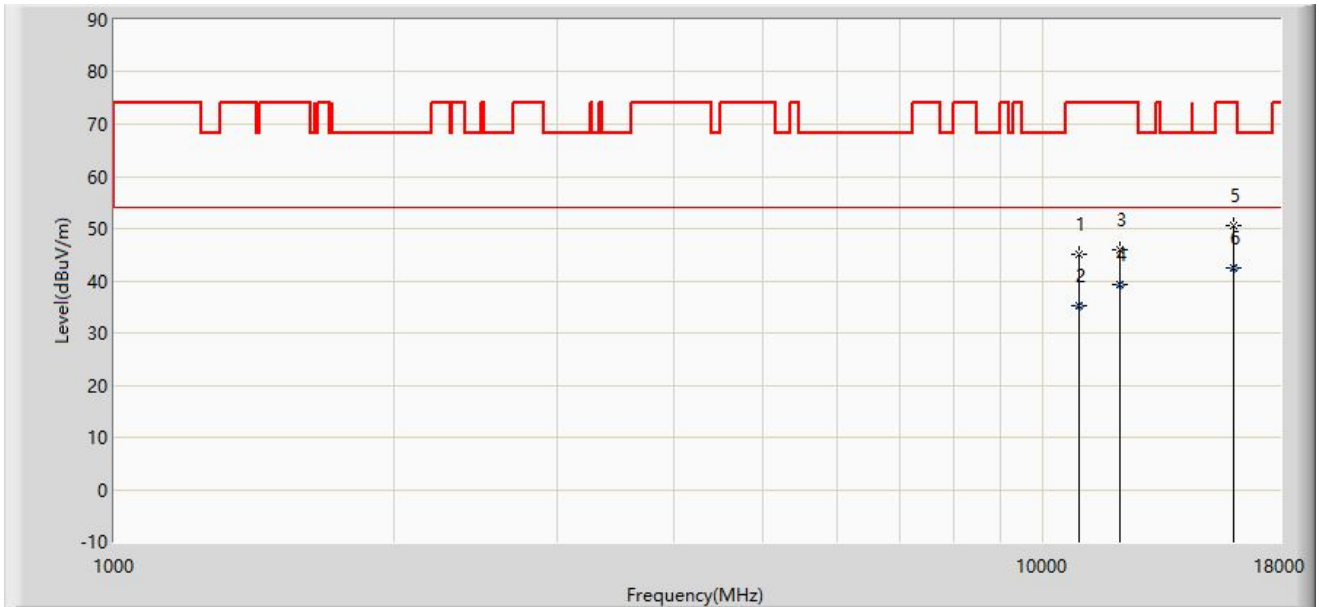
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			11106.500	45.828	49.404	-28.172	74.000	-3.576	PK
2			11106.500	38.123	41.700	-15.877	54.000	-3.576	AV
3			12024.500	46.512	49.830	-27.488	74.000	-3.318	PK
4			12024.500	39.292	42.610	-14.708	54.000	-3.318	AV
5			16062.000	50.176	45.482	-23.824	74.000	4.694	PK
6		*	16062.000	42.594	37.900	-11.406	54.000	4.694	AV

Note 1: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB).

Note 2: The amplitude of radiated emissions (frequency range from 9kHz ~ 30MHz, 18GHz to 25GHz) is that proximity to ambient noise, which also are attenuated more than 20 dB below the permissible value. Therefore, the data is not presented in the report.

Site: SIP-AC3	Test Date: 2021/02/03
Limit: FCC_Part15.209_RSE(3m)	Engineer: White Wang
Probe: SIP-AC3_HF907_102861_1-18GHz	Polarity: Vertical
EUT: FridgiGuard	Power: AC 120V/60Hz
Test Mode: Mode 2	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			10936.500	45.062	48.582	-28.938	74.000	-3.521	PK
2			10936.500	35.180	38.700	-18.820	54.000	-3.521	AV
3			12118.000	45.936	48.735	-28.064	74.000	-2.799	PK
4			12118.000	39.301	42.100	-14.699	54.000	-2.799	AV
5			16062.000	50.467	45.773	-23.533	74.000	4.694	PK
6		*	16062.000	42.494	37.800	-11.506	54.000	4.694	AV

Note 1: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB).

Note 2: The amplitude of radiated emissions (frequency range from 9kHz ~ 30MHz, 18GHz to 25GHz) is that proximity to ambient noise, which also are attenuated more than 20 dB below the permissible value. Therefore, the data is not presented in the report.

6.4. Frequency Tolerance

6.4.1. Test Limit

The frequency tolerance of the carrier signal shall be maintained within +/- 0.01% of the operating frequency.

6.4.2. Test Procedure Used

ANSI C63.10-2013 - Section 6.8

6.4.3. Test Setting

Frequency Stability Under Temperature Variations:

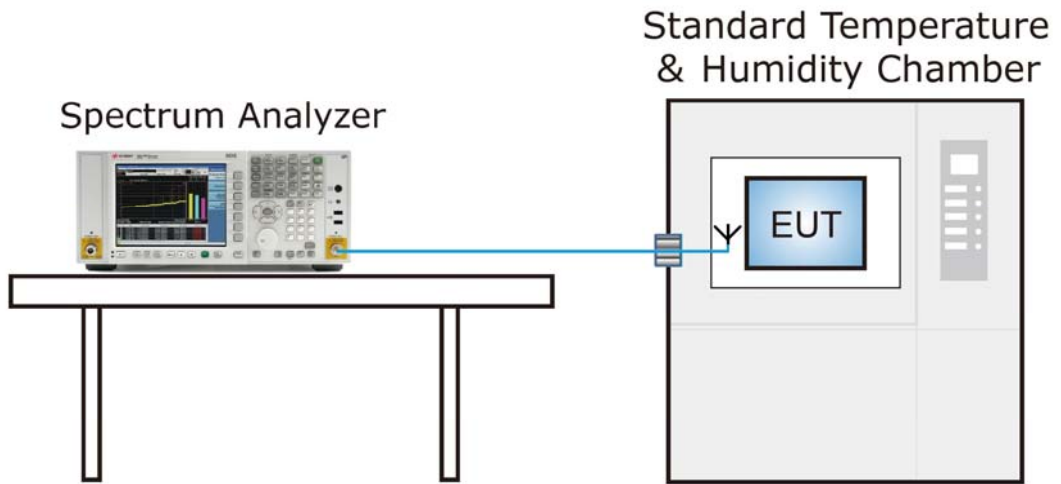
The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 20°C operating frequency as reference frequency. Turn EUT off and set the chamber temperature to highest. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10°C decreased per stage until the lowest temperature reached.

Frequency Stability Under Voltage Variations:

Set chamber temperature to 20°C. Use a variable AC power supply / DC power source to power the EUT and set the voltage to rated voltage. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.

Reduce the input voltage to specify extreme voltage variation ($\pm 15\%$) and endpoint, record the maximum frequency change. For hand-carried battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

6.4.4. Test Setup



6.4.5. Test Result

Test Site	SIP-AC1	Test Engineer	Chase Zhu
Test Time	2021/01/21	Test Mode	Mode1

Operating Frequency: 13.56MHz					
Reference Voltage: 120Vac					
Deviation Limit: +/- 0.01% = 1356Hz					
Voltage (%)	Power Supply	TEMP (°C)	FREQ. (Hz)	FREQ. Dev. (Hz)	Deviation (%)
100%	120	-20	13,561,272	1,272	0.009381
		-10	13,561,272	1,272	0.009381
		0	13,561,272	1,272	0.009381
		+10	13,561,272	1,272	0.009381
		+20 (Ref)	13,561,272	1,272	0.009381
		+30	13,561,272	1,272	0.009381
		+40	13,561,272	1,272	0.009381
		+50	13,561,272	1,272	0.009381
115%	138	+ 20	13,561,272	1,272	0.009381
85%	102	+ 20	13,561,272	1,272	0.009381

6.5.AC Conducted Emissions Measurement

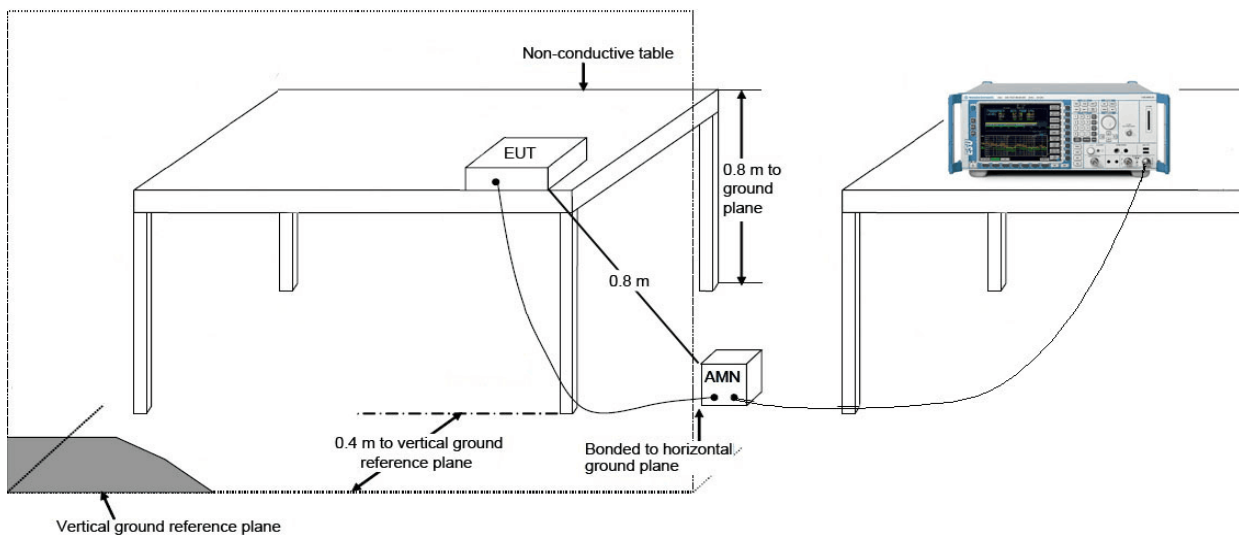
6.5.1.Test Limit

FCC Part 15 Subpart C Paragraph 15.207		
Frequency (MHz)	QP (dBuV)	AV (dBuV)
0.15 - 0.50	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30	60	50

Note 1: The lower limit shall apply at the transition frequencies.

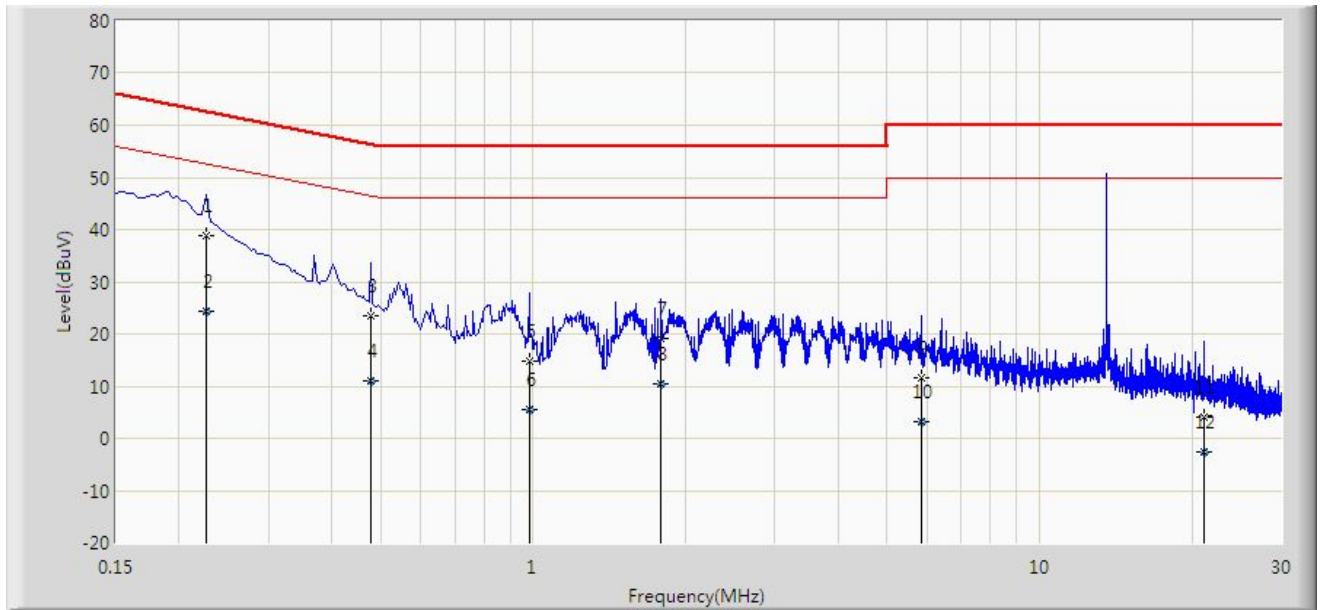
Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.5MHz.

6.5.2.Test Setup



6.5.3. Test Result

Site: SIP-SR2	Test Date: 2021/02/02
Limit: FCC_Part15.207_CE_AC Power	Engineer: Kyrie Xie
Probe: SIP-SR2-ENV216_101684_Filter On	Polarity: Line
EUT: FridgiGuard	Power: AC 120V/60Hz
Note: Mode 1	



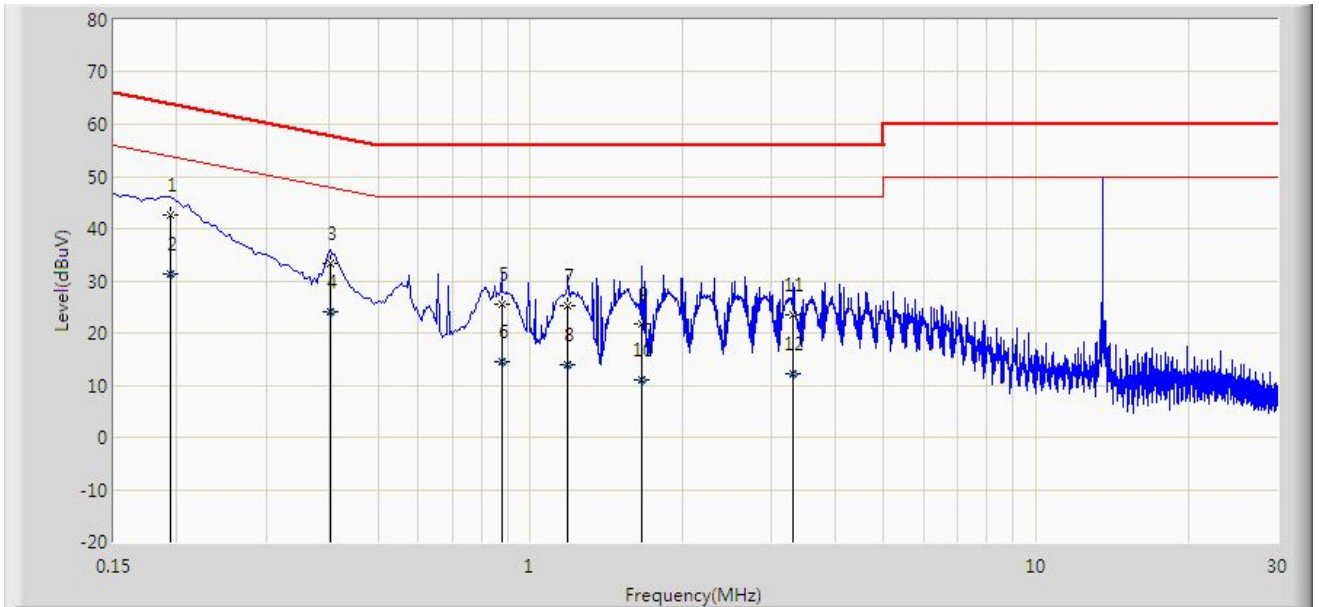
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1		*	0.226	38.827	29.372	-23.768	62.595	9.454	QP
2			0.226	24.457	15.002	-28.138	52.595	9.454	AV
3			0.478	23.411	13.918	-32.963	56.374	9.493	QP
4			0.478	11.013	1.520	-35.361	46.374	9.493	AV
5			0.982	14.788	5.269	-41.212	56.000	9.520	QP
6			0.982	5.566	-3.954	-40.434	46.000	9.520	AV
7			1.790	19.008	9.463	-36.992	56.000	9.545	QP
8			1.790	10.327	0.782	-35.673	46.000	9.545	AV
9			5.858	11.735	1.994	-48.265	60.000	9.741	QP
10			5.858	3.186	-6.555	-46.814	50.000	9.741	AV
11			21.102	4.010	-6.234	-55.990	60.000	10.244	QP
12			21.102	-2.623	-12.867	-52.623	50.000	10.244	AV

Note 1: Measure Level (dBμV) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + LISN Factor (dB).

Note 2: 13.56MHz is NFC working frequency.

Site: SIP-SR2	Test Date: 2021/02/02
Limit: FCC_Part15.207_CE_AC Power	Engineer: Kyrie Xie
Probe: SIP-SR2-ENV216_101684_Filter On	Polarity: Neutral
EUT: FridgiGuard	Power: AC 120V/60Hz
Note: Mode 1	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1		*	0.194	42.570	33.138	-21.294	63.864	9.432	QP
2			0.194	31.420	21.988	-22.444	53.864	9.432	AV
3			0.402	33.401	23.932	-24.411	57.812	9.469	QP
4			0.402	24.065	14.596	-23.747	47.812	9.469	AV
5			0.878	25.506	16.007	-30.494	56.000	9.499	QP
6			0.878	14.413	4.914	-31.587	46.000	9.499	AV
7			1.186	25.111	15.606	-30.889	56.000	9.506	QP
8			1.186	14.027	4.521	-31.973	46.000	9.506	AV
9			1.658	21.695	12.170	-34.305	56.000	9.524	QP
10			1.658	10.985	1.461	-35.015	46.000	9.524	AV
11			3.310	23.411	13.816	-32.589	56.000	9.596	QP
12			3.310	12.125	2.530	-33.875	46.000	9.596	AV

Note 1: Measure Level (dBμV) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + LISN Factor (dB).

Note 2: 13.56MHz is NFC working frequency.

7. CONCLUSION

The data collected relate only the item(s) tested and show that the FridgiGuard is in compliance with Part 15C of the FCC Rules.

————— The End —————

Appendix A - Test Setup Photograph

Refer to "2101RSU011-UT" file.

Appendix B - EUT Photograph

Refer to "2101RSU011-UE" file.