



RF MEASUREMENT REPORT

FCC ID: VW3FAST5689E
Applicant: SAGEMCOM BROADBAND SAS
Product: Giga Hub
Model No.: FAST 5689E
Brand Name: SAGEMCOM
FCC Classification: Part 15 Low Power Communication Device Transmitter (DXX)
FCC Rule Part(s): Part 15 Subpart C (Section 15.249)
Test Date: January 18 ~ 24, 2022

Reviewed By:

Sunny Sun

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 C63.10-2013. 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
2201RSU021-U3	Rev. 01	Initial Report	02-27-2022	Valid

CONTENTS

Description	Page
1. General Information	5
1.1. Applicant	5
1.2. Manufacturer	5
1.3. Testing Facility	5
1.4. Product Information.....	6
1.5. Radio Specification	6
1.6. Working Frequencies	7
1.7. Description of Available Antennas.....	7
2. Test Configuration	8
2.1. Test System Connection Diagram.....	8
2.2. Test Software	8
2.3. Applied Standards.....	8
2.4. Test Environment Condition	8
3. Antenna Requirements	9
4. Measuring Instrument	10
5. Measurement Uncertainty.....	11
6. Test Result.....	12
6.1. Summary.....	12
6.2. 20dB Bandwidth Measurement.....	13
6.2.1. Test Limit	13
6.2.2. Test Procedure.....	13
6.2.3. Test Setting	13
6.2.4. Test Setup	13
6.2.5. Test Result	14
6.3. Radiated Emission Measurement	15
6.3.1. Test Limit	15
6.3.2. Test Procedure.....	15
6.3.3. Test Setting	16
6.3.4. Test Setup	18
6.3.5. Test Result	18
6.4. AC Conducted Emissions Measurement	19
6.4.1. Test Limit	19
6.4.2. Test Setup	19
6.4.3. Test Result	19
Appendix A - Test Result.....	20

A.1	20dB Bandwidth Test Result	20
A.2	Radiated Emission Test Result	21
A.3	Radiated Restricted Band Edge Test Result.....	25
A.4	AC Conducted Emissions Test Result	31
Appendix B - Test Setup Photograph		33
Appendix C - EUT Photograph		34

1. General Information

1.1. Applicant

SAGEMCOM BROADBAND SAS

250 Route de l'Empereur - 92848 RUEIL MALMAISON CEDEX- FRANCE

1.2. Manufacturer

SAGEMCOM BROADBAND SAS

250 Route de l'Empereur - 92848 RUEIL MALMAISON CEDEX- FRANCE

1.3. Testing Facility

<input checked="" type="checkbox"/>	<p>Test Site – MRT Suzhou Laboratory</p> <hr/> <p>Laboratory Location (Suzhou - Wuzhong) D8 Building, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China</p> <p>Laboratory Location (Suzhou - SIP) 4b Building, Liando U Valley, No.200 Xingpu Rd., Shengpu Town, Suzhou Industrial Park, China</p> <hr/> <p>Laboratory Accreditations</p> <p>A2LA: 3628.01 CNAS: L10551</p> <p>FCC: CN1166 ISED: CN0001</p> <p>VCCI: <input type="checkbox"/>R-20025 <input type="checkbox"/>G-20034 <input type="checkbox"/>C-20020 <input type="checkbox"/>T-20020</p> <p style="padding-left: 100px;"><input type="checkbox"/>R-20141 <input type="checkbox"/>G-20134 <input type="checkbox"/>C-20103 <input type="checkbox"/>T-20104</p>
<input type="checkbox"/>	<p>Test Site – MRT Shenzhen Laboratory</p> <hr/> <p>Laboratory Location (Shenzhen) 1G, Building A, Junxiangda Building, Zhongshanyuan Road West, Nanshan District, Shenzhen, China</p> <hr/> <p>Laboratory Accreditations</p> <p>A2LA: 3628.02 CNAS: L10551</p> <p>FCC: CN1284 ISED: CN0105</p>
<input type="checkbox"/>	<p>Test Site – MRT Taiwan Laboratory</p> <hr/> <p>Laboratory Location (Taiwan) No. 38, Fuxing 2nd Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)</p> <hr/> <p>Laboratory Accreditations</p> <p>TAF: L3261-190725</p> <p>FCC: 291082, TW3261 ISED: TW3261</p>

1.4. Product Information

Product Name	Giga Hub
Model No.	FAST 5689E
EUT Identification No.	20220107Sample#17(Radiated) 20220107Sample#16(Conducted)
Wi-Fi Specification	802.11b/g/n/ac/ax
Zigbee Specification	802.15.4
Z-Wave Specification	800 ~ 900MHz radio frequency range
Antenna Information	Refer to Section 1.7
Power Type	AC Adapter
Operating Environment	Indoor Use
Accessories	
Adapter 1#	Model No.: NBS60E120500M2 Input: 100-127V, 50/60Hz, 1.5A Output: 12.0V=5.0A
Adapter 2#	Model No.: MS-Z5000R120-060C0-P Input: 100-127V, 50/60Hz, 1.5A Output: 12.0V=5.0A
Adapter 3#	Model No.: ADS-65HI-12A-2 12060E-L Input: 100-127V, 50/60Hz, 1.5A Output: 12.0V=5.0A
Remark: The information of EUT was provided by the manufacturer, and the accuracy of the information shall be the responsibility of the manufacturer.	

1.5. Radio Specification

Z-Wave Specification	800 ~ 900MHz radio frequency range
Frequency Range	902 ~ 928 MHz
Channel Number	3
Type of Modulation	FSK

Note: For other features of this EUT, test report will be issued separately.

1.6. Working Frequencies

Channel	Frequency	Channel	Frequency	Channel	Frequency
00	916 MHz	01	908.4 MHz	02	908.42 MHz

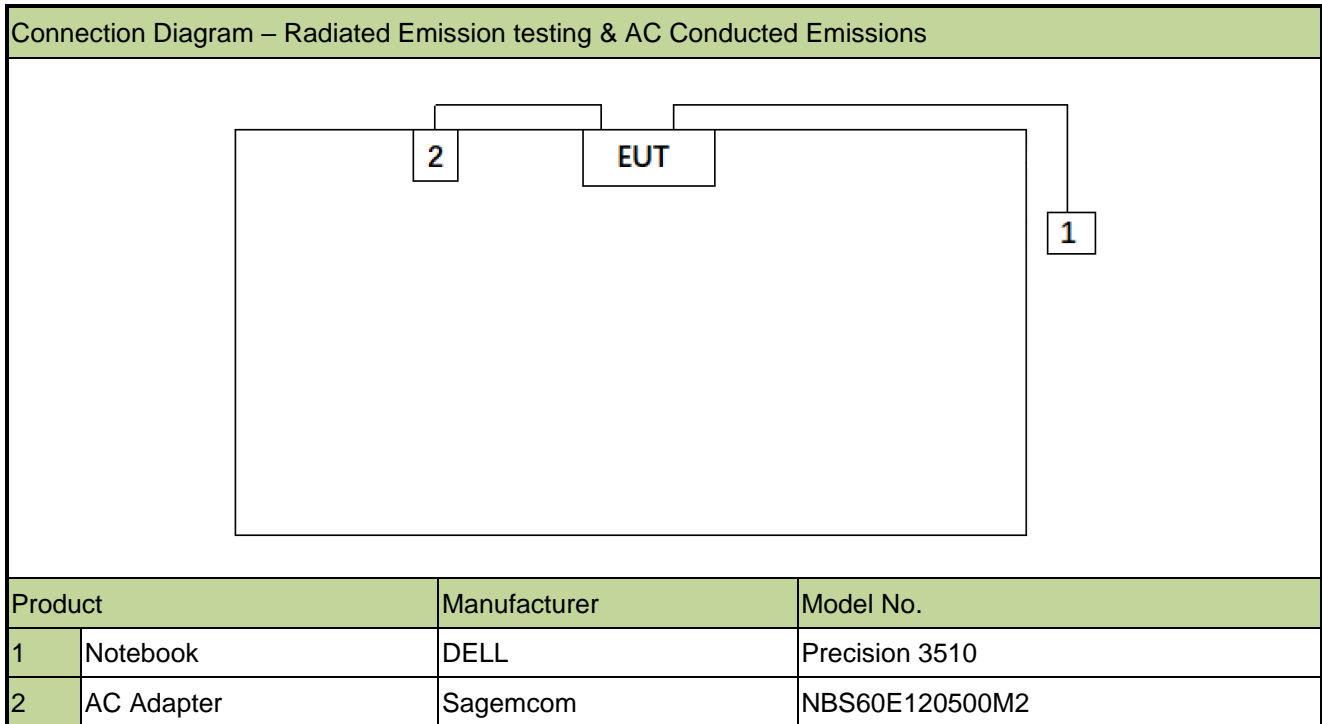
1.7. Description of Available Antennas

Antenna Type	Frequency Band (GHz)	Antenna Gain (dBi)				Directional Gain (dBi)	
		Ant 0	Ant 1	Ant 2	Ant 3	For Power	For PSD
Wi-Fi Antenna (4*4 MIMO)							
PIFA & Dipole	2.4 ~ 2.5	2.79	2.38	2.95	1.91	2.95	6.40
	5.15 ~ 5.85	4.89	4.53	3.51	3.88	4.89	6.90
ZigBee Antenna							
Dipole	2.4 ~ 2.5	2.85					
Z-Wave Antenna							
Dipole	0.9 ~ 1	-0.46					

2. Test Configuration

2.1. Test System Connection Diagram

The device was tested per the guidance ANSI C63.10: 2013 was used to reference the appropriate EUT setup for radiated emissions testing and AC line conducted testing.



2.2. Test Software

The test utility software used during testing was “telnet”, and the commands are provided by manufacture.

2.3. Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC Part 15.249
- ANSI C63.10-2013

2.4. Test Environment Condition

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

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 device is **permanently attached**.
- There are no provisions for connection to an external antenna.

Conclusion:

The unit complies with the requirement of §15.203.

4. Measuring Instrument

Instrument	Manufacturer	Model No.	Asset No.	Cali. Interval	Cali. Due Date	Test Site
EMI Test Receiver	R&S	ESR7	MRTSUE06001	1 year	2022/12/29	WZ-AC1
Horn Antenna	Schwarzbeck	BBHA 9120D	MRTSUE06023	1 year	2022/9/16	WZ-AC1
Preamplifier	Agilent	83017A	MRTSUE06076	1 year	2022/11/12	WZ-AC1
TRILOG Antenna	Schwarzbeck	VULB 9168	MRTSUE06172	1 year	2022/8/5	WZ-AC1
Anechoic Chamber	TDK	WZ-AC1	MRTSUE06212	1 year	2022/4/29	WZ-AC1
Thermohygrometer	testo	608-H1	MRTSUE06403	1 year	2022/6/28	WZ-AC1
Signal Analyzer	Keysight	N9010B	MRTSUE06607	1 year	2022/12/29	WZ-AC1
Thermohygrometer	testo	Testo 608-H1	MRTSUE11039	1 year	2022/11/11	WZ-AC1
Loop Antenna	Schwarzbeck	FMZB 1519	MRTSUE06025	1 year	2022/10/28	WZ-AC1

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
Spurious Emissions, Conducted
Measuring Uncertainty for a Level of Confidence of 95% ($U=2Uc(y)$): 0.78dB
Output Power
Measuring Uncertainty for a Level of Confidence of 95% ($U=2Uc(y)$): 1.13dB
Power Spectrum Density
Measuring Uncertainty for a Level of Confidence of 95% ($U=2Uc(y)$): 1.15dB
Occupied Bandwidth
Measuring Uncertainty for a Level of Confidence of 95% ($U=2Uc(y)$): 0.28%

6. Test Result

6.1. Summary

FCC Section(s)	Test Description	Test Condition	Verdict
15.215(c)	20dB Bandwidth	Radiated	Pass
15.249; 15.209	Radiated Emission		Pass
15.207	AC Conducted Emissions 150kHz - 30MHz	Line Conducted	Pass

Remark:

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. 20dB Bandwidth Measurement

6.2.1. Test Limit

20 dB bandwidth of the emission is contained within the 902 ~ 928MHz.

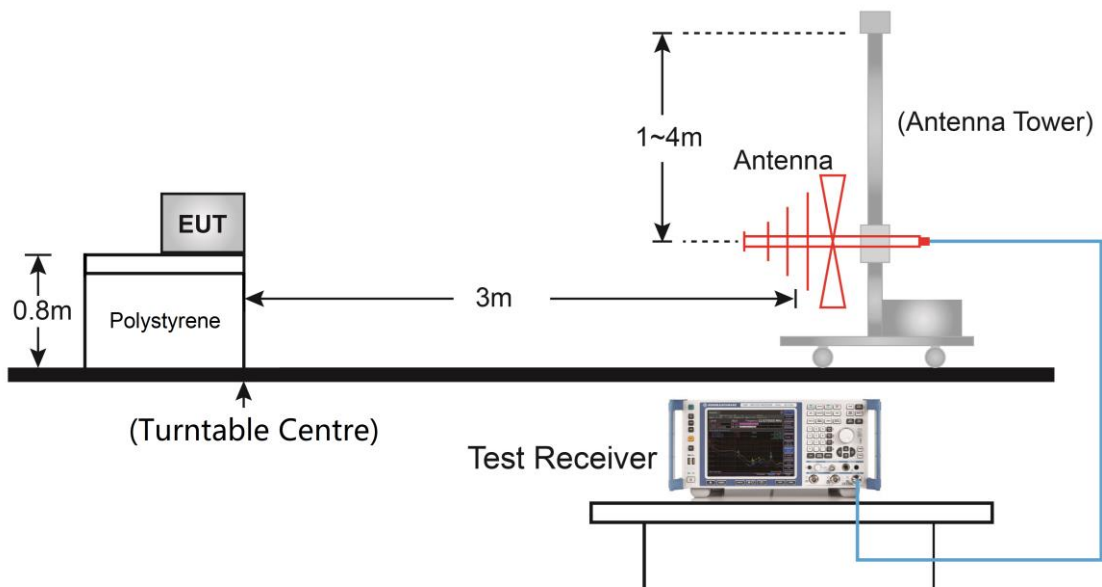
6.2.2. Test Procedure

ANSI C63.10 - 2013 - Section 6.9.2

6.2.3. Test Setting

1. The Spectrum's automatic bandwidth measurement capability was used to perform the 20dB bandwidth measurement. The "X" dB bandwidth parameter was set to $X = 20$
2. Set RBW = 1% to 5% of the OBW
3. VBW = Approximately three times RBW
4. Detector = Peak
5. Trace mode = Max hold
6. Sweep = Auto couple
7. Allow the trace to stabilize

6.2.4. Test Setup



6.2.5. Test Result

Refer to Appendix A.1.

6.3. Radiated Emission Measurement

6.3.1. Test Limit

FCC Part 15 Subpart C Paragraph 15.249		
Fundamental Frequency (MHz)	Field Strength of Fundamental (mV/m)	Field Strength of Harmonics (μ V/m)
902 ~ 908	50	500
2400 ~ 2483.5	50	500
5725 ~ 5875	50	500
24000 ~ 24250	250	2500

Note: FCC Part 15.249 (d), Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

FCC Part 15 Subpart C Paragraph 15.209		
Frequency [MHz]	Field Strength [μ V/m]	Measured Distance [Meters]
0.009 - 0.490	2400/F (kHz)	300
0.490 - 1.705	24000/F (kHz)	30
1.705 - 30	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

6.3.2. Test Procedure

ANSI C63.10 - 2013 - Section 6.3 (General Requirements)

ANSI C63.10 - 2013 - Section 6.4 (Standard test method below 30MHz)

ANSI C63.10 - 2013 - Section 6.5 (Standard test method above 30MHz to 1GHz)

ANSI C63.10 - 2013 - Section 6.6 (Standard test method above 1GHz)

6.3.3. Test Setting

Table 1 - RBW as a function of frequency

Frequency	RBW
9 ~ 150 kHz	200 ~ 300 Hz
0.15 ~ 30 MHz	9 ~ 10 kHz
30 ~ 1000 MHz	100 ~ 120 kHz
> 1000MHz	1MHz

Quasi-Peak Measurements below 1GHz

1. Analyzer center frequency was set to the frequency of the radiated emission of interest
2. Span was set greater than 1MHz
3. RBW = as specified in Table 1
4. Detector = CISPR quasi-peak
5. Sweep time = auto couple
6. Trace was allowed to stabilize

Peak Measurements above 1GHz

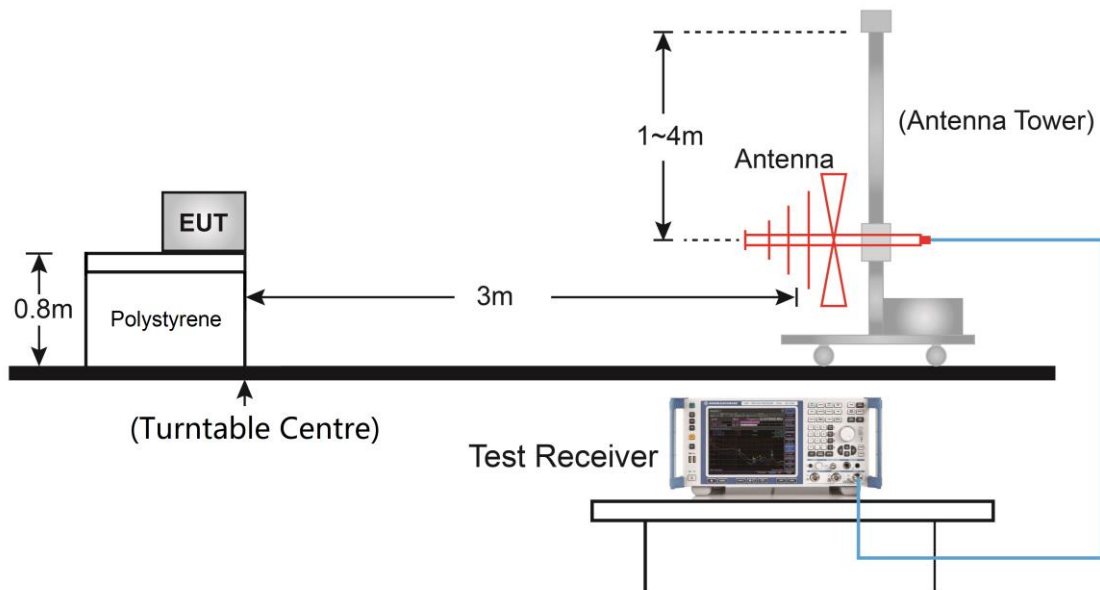
1. Analyzer center frequency was set to the frequency of the radiated emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

Average Measurements above 1GHz (Method VB)

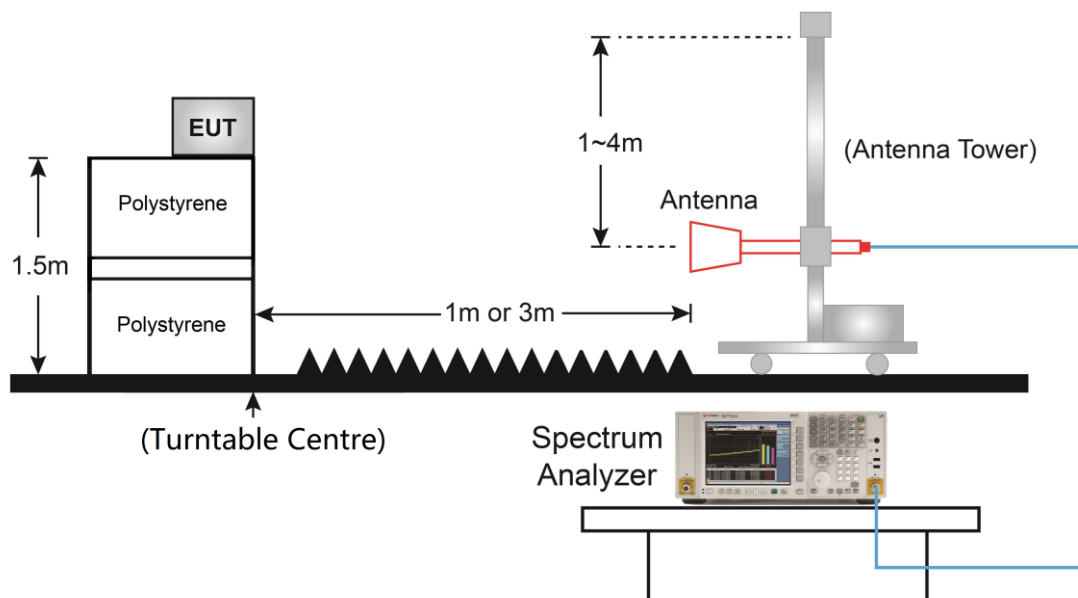
1. Analyzer center frequency was set to the frequency of the radiated emission of interest
2. RBW = 1MHz
3. VBW; If the EUT is configured to transmit with duty cycle $\geq 98\%$, set VBW = 10 Hz.
If the EUT duty cycle is $< 98\%$, set VBW $\geq 1/T$. T is the minimum transmission duration.
4. Detector = Peak
5. Sweep time = auto
6. Trace mode = max hold
7. Trace was allowed to stabilize

6.3.4. Test Setup

Below 1GHz Test Setup:



Above 1GHz Test Setup:



6.3.5. Test Result

Refer to Appendix A.2 & A.3.

6.4. AC Conducted Emissions Measurement

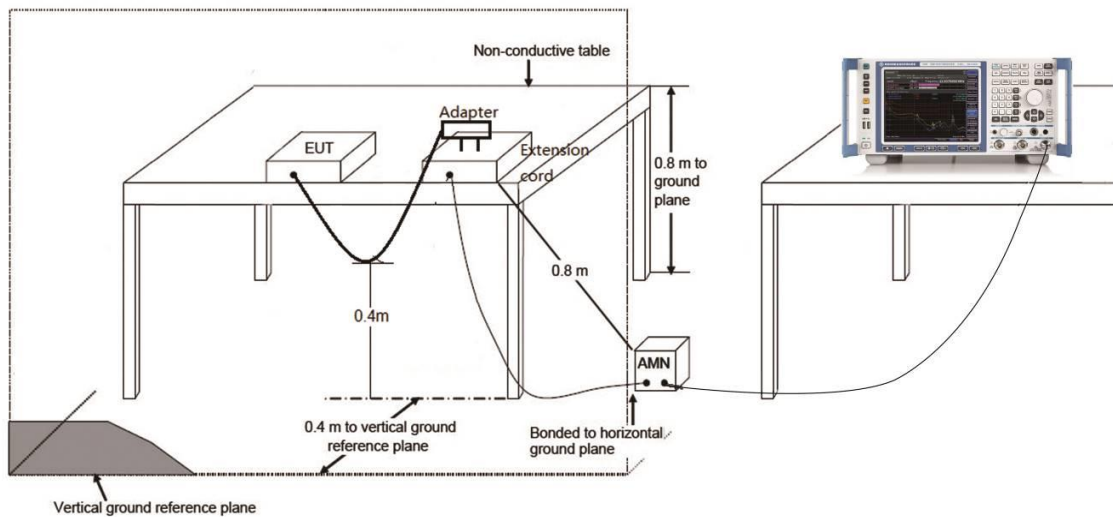
6.4.1. Test Limit

FCC Part 15 Subpart C Paragraph 15.207 Limits		
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.

6.4.2. Test Setup



6.4.3. Test Result

Refer to Appendix A.4.

Appendix A - Test Result

A.1 20dB Bandwidth Test Result

Test Site	WZ-AC1	Test Engineer	Lucas Wang
Test Date	2022/01/19		

Frequency (MHz)	20dB Bandwidth (kHz)	FL (MHz)	FH (MHz)	Result
916.00	103.40	915.948	916.052	Pass
908.40	82.93	908.359	908.441	Pass
908.42	96.95	908.372	908.468	Pass



A.2 Radiated Emission Test Result

Test Site	WZ-AC1	Test Engineer	Kin Xia
Test Date	2022/01/18		
Remark	Fundamental Radiated Emission		

Frequency (MHz)	Reading Level (dB μ V)	Factor (dB/m)	Measure Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector	Polarization
916.00	57.3	29.9	87.2	94.0	-6.8	PK	Horizontal
	61.4	29.9	91.3	94.0	-2.7	PK	Vertical
908.40	58.8	29.7	88.5	94.0	-5.5	PK	Horizontal
	61.7	29.7	91.5	94.0	-2.5	PK	Vertical
908.42	58.8	29.7	88.5	94.0	-5.5	PK	Horizontal
	61.8	29.7	91.5	94.0	-2.5	PK	Vertical

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

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

Test Engineer	Hyde Yu	Test Site	WZ-AC1
Test Date	2022/01/18		
Remark	Radiated Emission outside frequency band - 916MHz		

Frequency (MHz)	Reading Level (dB μ V)	Factor (dB/m)	Measure Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector	Polarization
72.7	8.8	15.3	24.1	40.0	-15.9	Peak	Horizontal
151.3	7.8	18.1	25.9	43.5	-17.6	Peak	Horizontal
249.7	10.0	16.3	26.3	46.0	-19.7	Peak	Horizontal
374.8	13.0	20.2	33.2	46.0	-12.8	Peak	Horizontal
452.0	9.4	22.3	31.7	46.0	-14.3	Peak	Horizontal
557.2	9.0	24.1	33.1	46.0	-12.9	Peak	Horizontal
37.3	18.9	17.4	36.3	40.0	-3.7	Peak	Vertical
60.6	15.5	17.6	33.1	40.0	-6.9	Peak	Vertical
153.2	9.3	18.1	27.4	43.5	-16.1	Peak	Vertical
371.9	10.8	20.1	30.9	46.0	-15.1	Peak	Vertical
452.0	10.3	22.3	32.6	46.0	-13.4	Peak	Vertical
557.2	17.7	24.1	41.8	46.0	-4.2	Peak	Vertical
5009.5	38.4	4.6	43.0	74.0	-31.0	Peak	Horizontal
7291.0	37.7	9.0	46.7	74.0	-27.3	Peak	Horizontal
8114.5	40.4	9.6	50.0	74.0	-24.0	Peak	Horizontal
7273.0	38.1	9.0	47.1	74.0	-26.9	Peak	Vertical
8114.5	39.8	9.6	49.4	74.0	-24.6	Peak	Vertical
9442.0	37.3	12.4	49.7	74.0	-24.3	Peak	Vertical

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

Frequency below 1GHz: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

Frequency above 1GHz: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre Amplifier Gain (dB)

Note 2: Average or QP measurement was not performed when the peak level lower than average or QP limit.

Test Engineer	Hyde Yu	Test Site	WZ-AC1
Test Date	2022/01/18		
Remark	Radiated Emission outside frequency band - 908.4MHz		

Frequency (MHz)	Reading Level (dB μ V)	Factor (dB/m)	Measure Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector	Polarization
37.8	6.2	17.4	23.6	40.0	-16.4	Peak	Horizontal
89.7	10.9	12.0	22.9	43.5	-20.6	Peak	Horizontal
152.7	8.5	18.1	26.6	43.5	-16.9	Peak	Horizontal
205.6	11.7	14.3	26.0	43.5	-17.5	Peak	Horizontal
371.9	13.2	20.1	33.3	46.0	-12.7	Peak	Horizontal
557.2	8.9	24.1	33.0	46.0	-13.0	Peak	Horizontal
37.8	18.0	17.4	35.4	40.0	-4.6	Peak	Vertical
53.8	17.6	18.3	35.9	40.0	-4.1	Peak	Vertical
72.7	17.5	15.3	32.8	40.0	-7.2	Peak	Vertical
152.7	9.4	18.1	27.5	43.5	-16.0	Peak	Vertical
374.4	11.0	20.2	31.2	46.0	-14.8	Peak	Vertical
557.2	18.0	24.1	42.1	46.0	-3.9	Peak	Vertical
5095.0	38.2	4.9	43.1	74.0	-30.9	Peak	Horizontal
7475.5	37.9	8.9	46.8	74.0	-27.2	Peak	Horizontal
8114.5	40.8	9.6	50.4	74.0	-23.6	Peak	Horizontal
4955.5	37.8	4.4	42.2	74.0	-31.8	Peak	Vertical
7327.0	36.9	9.2	46.1	74.0	-27.9	Peak	Vertical
8114.5	39.8	9.6	49.4	74.0	-24.6	Peak	Vertical

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

Frequency below 1GHz: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

Frequency above 1GHz: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre Amplifier Gain (dB)

Note 2: Average or QP measurement was not performed when the peak level lower than average or QP limit.

Test Engineer	Hyde Yu	Test Site	WZ-AC1
Test Date	2022/01/18		
Remark	Radiated Emission outside frequency band - 908.42MHz		

Frequency (MHz)	Reading Level (dB μ V)	Factor (dB/m)	Measure Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector	Polarization
59.6	5.5	17.8	23.3	40.0	-16.7	Peak	Horizontal
86.7	11.9	12.1	24.0	40.0	-16.0	Peak	Horizontal
150.3	7.2	18.1	25.3	43.5	-18.2	Peak	Horizontal
207.5	11.1	14.3	25.4	43.5	-18.1	Peak	Horizontal
369.5	14.4	20.0	34.4	46.0	-11.6	Peak	Horizontal
557.2	9.9	24.1	34.0	46.0	-12.0	Peak	Horizontal
36.3	18.6	17.2	35.8	40.0	-4.2	Peak	Vertical
59.6	17.0	17.8	34.8	40.0	-5.2	Peak	Vertical
73.7	17.6	15.1	32.7	40.0	-7.3	Peak	Vertical
374.8	10.9	20.2	31.1	46.0	-14.9	Peak	Vertical
541.2	13.5	23.9	37.4	46.0	-8.6	Peak	Vertical
557.7	16.8	24.1	40.9	46.0	-5.1	Peak	Vertical
5423.5	36.7	4.8	41.5	74.0	-32.5	Peak	Horizontal
7493.5	37.2	9.0	46.2	74.0	-27.8	Peak	Horizontal
8114.5	39.9	9.6	49.5	74.0	-24.5	Peak	Horizontal
5023.0	37.8	4.7	42.5	74.0	-31.5	Peak	Vertical
7390.0	37.4	9.0	46.4	74.0	-27.6	Peak	Vertical
8114.5	41.0	9.6	50.6	74.0	-23.4	Peak	Vertical

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

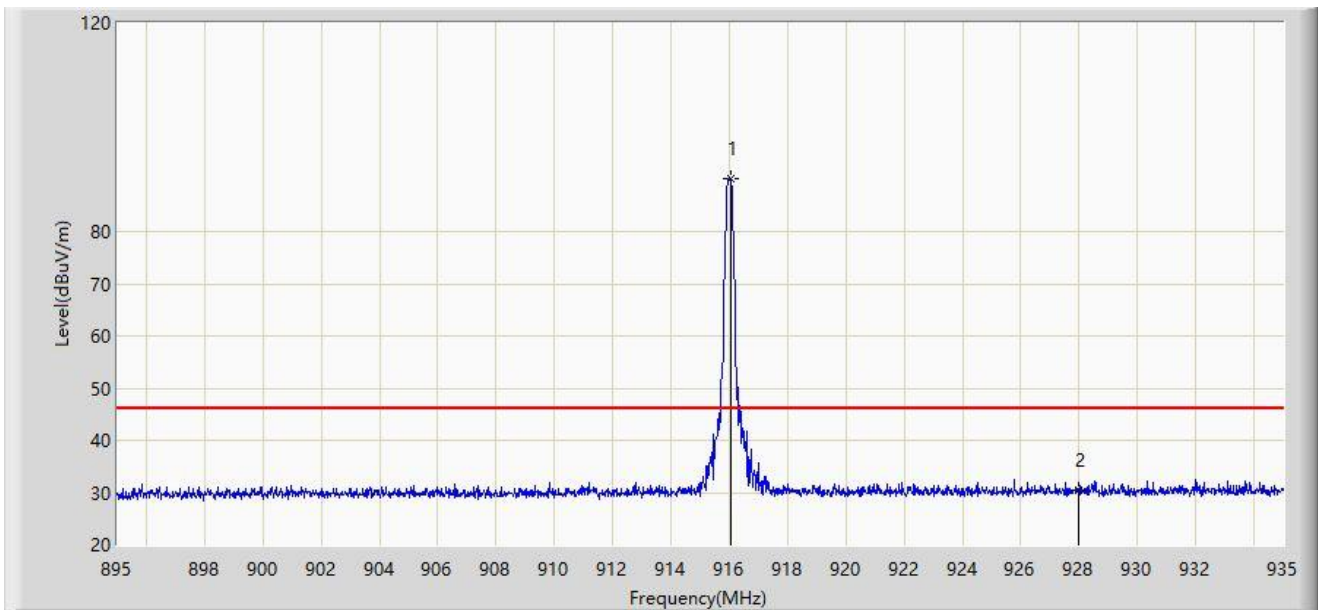
Frequency below 1GHz: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

Frequency above 1GHz: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre Amplifier Gain (dB)

Note 2: Average or QP measurement was not performed when the peak level lower than average or QP limit.

A.3 Radiated Restricted Band Edge Test Result

Site: WZ-AC1	Time: 2022/01/24 - 21:25
Limit: FCC_Part15.209_RSE(3m)	Engineer: Lucas Wang
Probe: WZ-AC1_VULB 9168 _30-1000MHz	Polarity: Horizontal
EUT: Giga Hub	Power: AC 120V/60Hz
Test Mode: Transmit at Channel 916MHz	

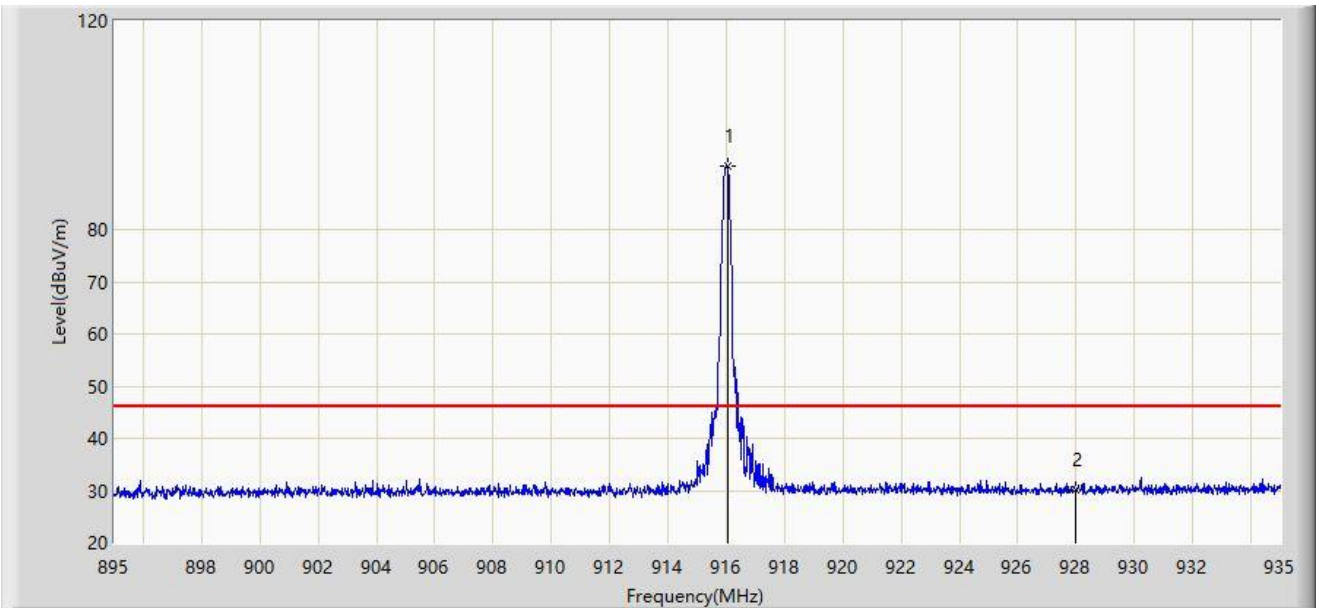


No	Flag	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB/m)	Type
1		*	916.040	90.084	60.164	N/A	N/A	29.921	PK
2			928.000	30.470	0.471	-15.530	46.000	29.999	PK

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

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

Site: WZ-AC1	Time: 2022/01/24 - 21:29
Limit: FCC_Part15.209_RSE(3m)	Engineer: Lucas Wang
Probe: WZ-AC1_VULB 9168 _30-1000MHz	Polarity: Vertical
EUT: Giga Hub	Power: AC 120V/60Hz
Test Mode: Transmit at Channel 916MHz	

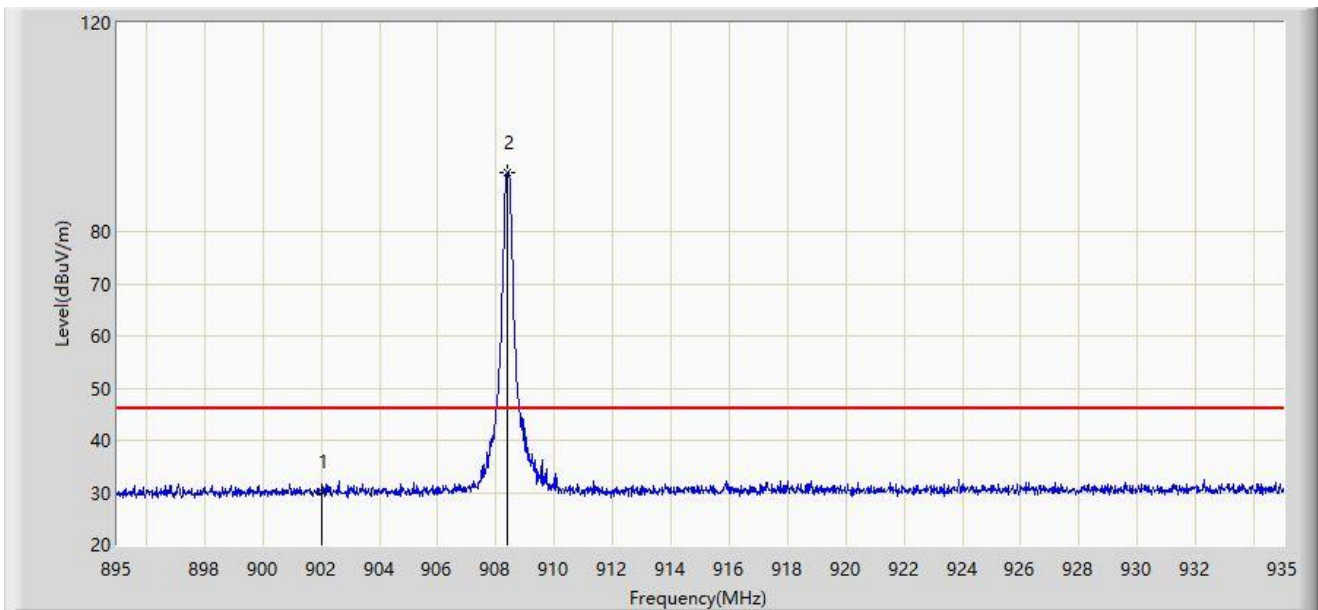


No	Flag	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB/m)	Type
1	X	*	916.040	92.113	62.193	N/A	N/A	29.921	PK
2			928.000	30.100	0.101	-15.900	46.000	29.999	PK

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

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

Site: WZ-AC1	Time: 2022/01/24 - 21:34
Limit: FCC_Part15.209_RSE(3m)	Engineer: Lucas Wang
Probe: WZ-AC1_VULB 9168 _30-1000MHz	Polarity: Horizontal
EUT: Giga Hub	Power: AC 120V/60Hz
Test Mode: Transmit at Channel 908.4MHz	

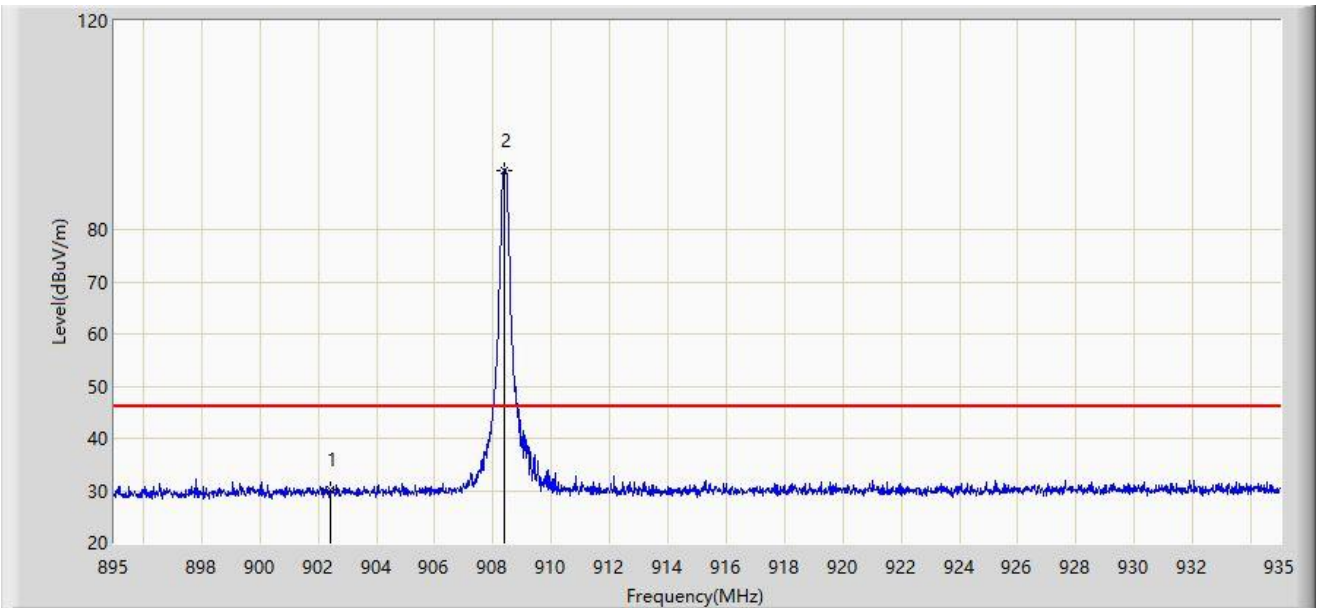


No	Flag	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB/m)	Type
1			902.000	30.239	0.620	-15.761	46.000	29.619	PK
2		*	908.400	91.178	61.475	N/A	N/A	29.702	PK

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

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

Site: WZ-AC1	Time: 2022/01/24 - 21:39
Limit: FCC_Part15.209_RSE(3m)	Engineer: Lucas Wang
Probe: WZ-AC1_VULB 9168 _30-1000MHz	Polarity: Vertical
EUT: Giga Hub	Power: AC 120V/60Hz
Test Mode: Transmit at Channel 908.4MHz	

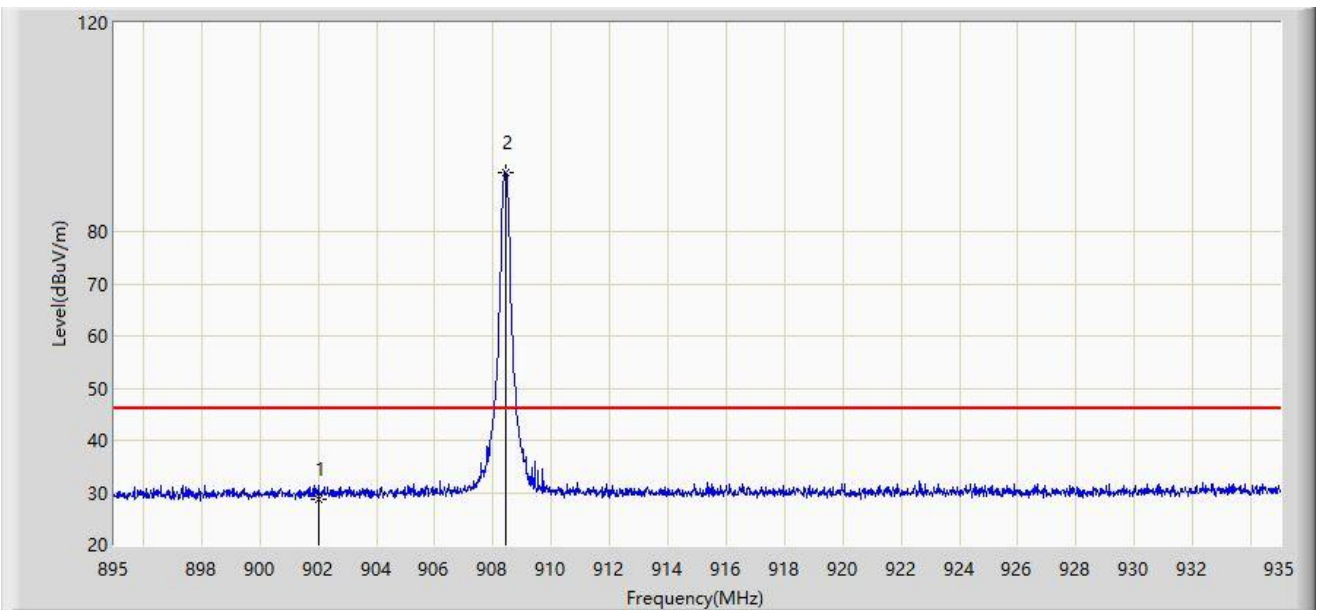


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB/m)	Type
1			902.400	30.004	0.377	-15.996	46.000	29.627	PK
2		*	908.400	91.396	61.693	N/A	N/A	29.702	PK

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

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

Site: WZ-AC1	Time: 2022/01/24 - 21:41
Limit: FCC_Part15.209_RSE(3m)	Engineer: Lucas Wang
Probe: WZ-AC1_VULB 9168 _30-1000MHz	Polarity: Horizontal
EUT: Giga Hub	Power: AC 120V/60Hz
Test Mode: Transmit at Channel 908.42MHz	

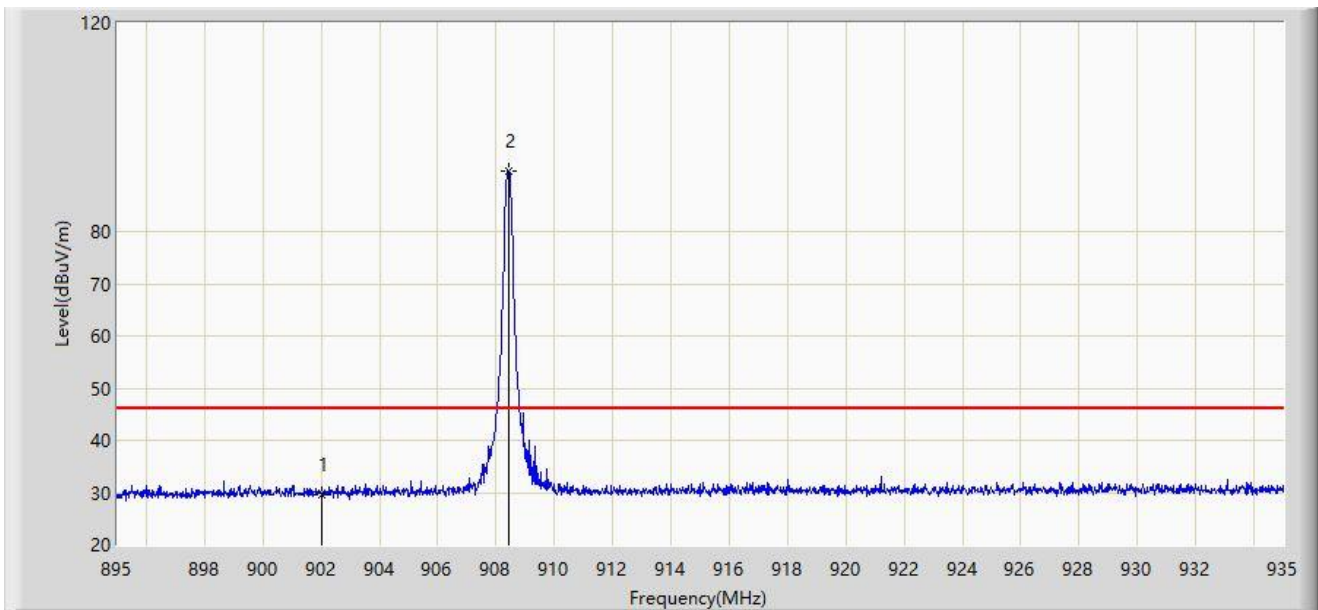


No	Flag	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB/m)	Type
1			902.000	28.760	-0.859	-17.240	46.000	29.619	PK
2		*	908.420	91.198	61.495	N/A	N/A	29.702	PK

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

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

Site: WZ-AC1	Time: 2022/01/24 - 21:44
Limit: FCC_Part15.209_RSE(3m)	Engineer: Lucas Wang
Probe: WZ-AC1_VULB 9168 _30-1000MHz	Polarity: Vertical
EUT: Giga Hub	Power: AC 120V/60Hz
Test Mode: Transmit at Channel 908.42MHz	



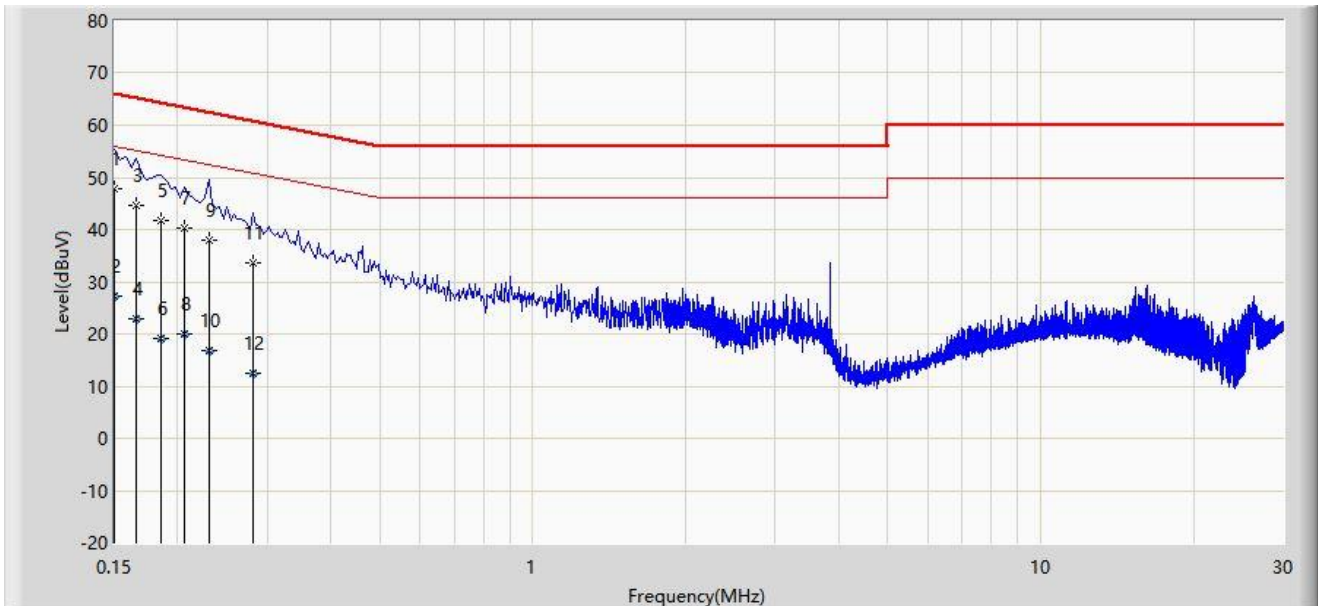
No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1			902.000	29.687	0.068	-16.313	46.000	29.619	PK
2		*	908.420	91.567	61.864	N/A	N/A	29.702	PK

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

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

A.4 AC Conducted Emissions Test Result

Site: WZ-SR2	Time: 2022/01/19 - 17:39
Temperature: 24.0°C	Humidity: 33.8%
Limit: FCC_Part15.207_CE_AC Power	Engineer: Helen Han
Probe: ENV216_101683_Filter Off_C	Polarity: Line
EUT: Giga Hub	Power: AC 120V/60Hz
Test Mode: Transmit at Channel 916MHz	

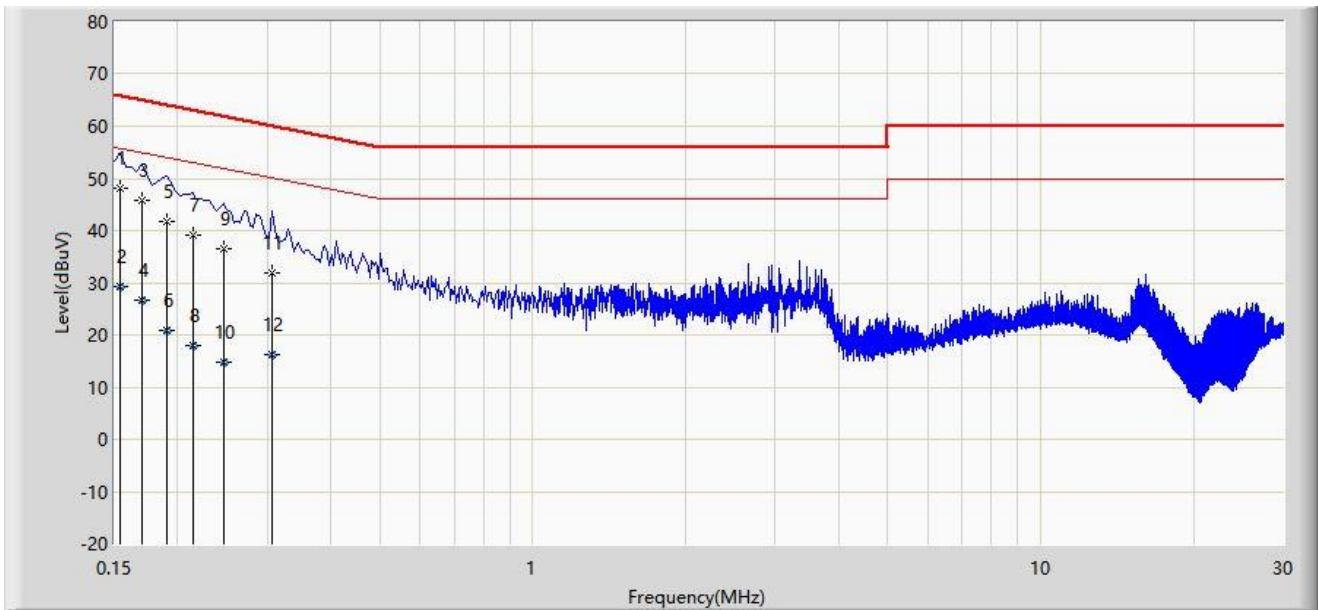


No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV)	Factor (dB)	Type
1		*	0.150	47.926	37.877	-18.074	66.000	10.050	QP
2			0.150	27.356	17.306	-28.644	56.000	10.050	AV
3			0.166	44.548	34.501	-20.610	65.158	10.047	QP
4			0.166	22.812	12.765	-32.347	55.158	10.047	AV
5			0.186	41.765	31.722	-22.449	64.213	10.043	QP
6			0.186	19.131	9.088	-35.083	54.213	10.043	AV
7			0.206	40.321	30.278	-23.044	63.365	10.044	QP
8			0.206	19.944	9.900	-33.421	53.365	10.044	AV
9			0.230	38.082	28.034	-24.367	62.450	10.048	QP
10			0.230	16.816	6.768	-35.634	52.450	10.048	AV
11			0.282	33.565	23.503	-27.192	60.757	10.062	QP
12			0.282	12.420	2.359	-38.336	50.757	10.062	AV

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

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

Site: WZ-SR2	Time: 2022/01/19 - 17:44
Temperature: 24.0°C	Humidity: 33.8%
Limit: FCC_Part15.207_CE_AC Power	Engineer: Helen Han
Probe: ENV216_101683_Filter Off_C	Polarity: Neutral
EUT: Giga Hub	Power: AC 120V/60Hz
Test Mode: Transmit at Channel 916MHz	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV)	Factor (dB)	Type
1		*	0.154	48.115	37.744	-17.667	65.781	10.370	QP
2			0.154	29.202	18.832	-26.579	55.781	10.370	AV
3			0.170	45.668	35.314	-19.292	64.960	10.354	QP
4			0.170	26.810	16.456	-28.150	54.960	10.354	AV
5			0.190	41.774	31.435	-22.263	64.037	10.339	QP
6			0.190	20.818	10.480	-33.218	54.037	10.339	AV
7			0.214	39.165	28.831	-23.884	63.049	10.334	QP
8			0.214	18.003	7.669	-35.046	53.049	10.334	AV
9			0.246	36.435	26.098	-25.456	61.891	10.338	QP
10			0.246	14.859	4.521	-37.032	51.891	10.338	AV
11			0.306	31.856	21.509	-28.222	60.078	10.348	QP
12			0.306	16.237	5.889	-33.841	50.078	10.348	AV

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

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

Appendix B - Test Setup Photograph

Refer to "2201RSU021-UT" file.

Appendix C - EUT Photograph

Refer to "2201RSU021-UE" file.

————— The End —————