

FCC REPORT

(802.11ah)

Applicant: Zhuhai Jinhong Technology Co., LTD

Address of Applicant: room R07-06, 2nd floor, 4th building, number 2007 Mingzhunan road, Zhuhai City, Guangdong Province, China

Equipment Under Test (EUT)

Product Name: Wireless Signal Wall-through Ethernet Connector-ETHERNET AIR

Model No.: AH 9066, ZG302M, ZR08PR, TD-AH9066, HW9066, TX23-9066, COD- AH06, 87306, MT141

FCC ID: 2AZIK-AH9066

Applicable standards: FCC CFR Title 47 Part 15 Subpart C Section 15.247

Date of sample receipt: 01 Apr., 2021

Date of Test: 02 Apr., to 23 Apr., 2021

Date of report issued: 25 Apr., 2021

Test Result: PASS*

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



Bruce Zhang
Laboratory Manager

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the JYT product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

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2 Version

Version No.	Date	Description
00	25 Apr., 2021	Original

Tested by:

Mike.ou
Test Engineer

Date:

25 Apr., 2021

Reviewed by:

Winner Zhang
Project Engineer

Date:

25 Apr., 2021

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4 Test Summary

Test Items	Section in CFR 47	Test Data	Result
Antenna requirement	15.203 & 15.247 (b)	See Section 6.1	Pass
AC Power Line Conducted Emission	15.207	See Section 6.2	Pass
Duty Cycle	ANSI C63.10-2013	Appendix A – 802.11ah	Pass
Conducted Peak Output Power	15.247 (b)(3)	Appendix A – 802.11ah	Pass
6dB Emission Bandwidth 99% Occupied Bandwidth	15.247 (a)(2)	Appendix A – 802.11ah	Pass
Power Spectral Density	15.247 (e)	Appendix A – 802.11ah	Pass
Conducted Band Edge	15.247 (d)	Appendix A – 802.11ah	Pass
Radiated Band Edge		See Section 6.6.2	Pass
Conducted Spurious Emission	15.205 & 15.209	Appendix A – 802.11ah	Pass
Radiated Spurious Emission		See Section 6.7.2	Pass
Remark: 1. Pass: The EUT complies with the essential requirements in the standard. 2. N/A: Not Applicable. 3. The cable insertion loss used by “RF Output Power” and other conduction measurement items is 0.5dB (provided by the customer).			
Test Method:	ANSI C63.10-2013 KDB 558074 D01 15.247 Meas Guidance v05r02		

5 General Information

5.1 Client Information

Applicant:	Zhuhai Jinhong Technology Co., LTD
Address:	room R07-06, 2nd floor, 4th building, number 2007 Mingzhunan road, Zhuhai City, Guangdong Province, China
Manufacturer/ Factory:	Zhuhai Jinhong Technology Co., LTD
Address:	room R07-06, 2nd floor, 4th building, number 2007 Mingzhunan road, Zhuhai City, Guangdong Province, China

5.2 General Description of E.U.T.

Product Name:	Wirerless Signal Wall-through Ethernet Connector-ETHERNET AIR
Model No.:	AH9066, ZG302M, ZR08PR, TD-AH9066, HW9066, TX23-9066, COD-AH06, 87306, MT141
Operation Frequency:	903.5-926.5MHz for 802.11ah(1MHz channel bandwidth); 905-925MHz for 802.11ah(2MHz channel bandwidth); 906-926MHz for 802.11ah(4MHz channel bandwidth); 908-924MHz for 802.11ah(8MHz channel bandwidth);
Channel numbers:	24 channels for 802.11ah(1MHz channel bandwidth); 11 Channels for 802.11ah(2MHz channel bandwidth); 6 Channels for 802.11ah(4MHz channel bandwidth); 3 Channels for 802.11ah(8MHz channel bandwidth);
Channel separation:	802.11ah(1MHz channel bandwidth): 1MHz 802.11ah(2MHz channel bandwidth): 2MHz 802.11ah(4MHz channel bandwidth): 4MHz 802.11ah(8MHz channel bandwidth): 8MHz
Modulation technology:	Orthogonal Frequency Division Multiplexing(OFDM)
Modulation type:	BPSK, QPSK, 16QAM, 64QAM
Data speed:	802.11ah(1MHz channel bandwidth): 0.33Mbps to 3.30Mbps; 802.11ah(2MHz channel bandwidth): 0.72Mbps to 7.20Mbps; 802.11ah(4MHz channel bandwidth): 1.50Mbps to 15.00Mbps; 802.11ah(8MHz channel bandwidth): 6.50Mbps to 32.50Mbps;
Antenna Type:	External Antenna
Antenna gain:	5.0dBi
AC adapter:	Model: GA-0501000 Input: AC100-240V, 50/60Hz, 0.6A Output: DC 5.0V, 1000mA
Remark:	Model No.: AH9066, ZG302M, ZR08PR, TD-AH9066, HW9066, TX23-9066, COD- AH06, 87306, MT141 were identical inside, the electrical circuit design, layout, components used and internal wiring, with only difference being model.
Test Sample Condition:	The test samples were provided in good working order with no visible defects.

Operation Frequency each of channel for 802.11ah(1MHz channel bandwidth):

Channel	Frequency	Channel	Frequency	Channel	Frequency
1	903.5MHz	11	913.5MHz	22	924.5MHz
2	904.5MHz	12	914.5MHz	23	925.5MHz
3	905.5MHz	13	915.5MHz	24	926.5MHz
...

Note:

1. Channel 1, 12 & 24 selected for 802.11ah(1MHz channel bandwidth) as Lowest, Middle and Highest channel.
2. Note: $f_c=903.5\text{MHz}+(k-1)\times 1\text{MHz}$ $k=1$ to 24.

Operation Frequency each of channel for 802.11ah(2MHz channel bandwidth):

Channel	Frequency	Channel	Frequency	Channel	Frequency
1	905.0MHz	5	913.0MHz	9	921.0MHz
2	907.0MHz	6	915.0MHz	10	923.0MHz
3	909.0MHz	7	917.0MHz	11	925.0MHz
4	911.0MHz	8	919.0MHz		

Note:

1. Channel 1, 6 & 11 selected for 802.11ah(2MHz channel bandwidth) as Lowest, Middle and Highest channel.

Operation Frequency each of channel for 802.11ah(4MHz channel bandwidth):

Channel	Frequency	Channel	Frequency	Channel	Frequency
1	906.0MHz	3	914.0MHz	5	922.0MHz
2	910.0MHz	4	918.0MHz	6	926.0MHz

Note:

1. Channel 1, 3 & 6 selected for 802.11ah(4MHz channel bandwidth) as Lowest, Middle and Highest channel.

Operation Frequency each of channel for 802.11ah(8MHz channel bandwidth):

Channel	Frequency	Channel	Frequency	Channel	Frequency
1	908.0MHz	2	916.0MHz	3	924.0MHz

Note:

1. Channel 1, 2 & 3 selected for 802.11ah(8MHz channel bandwidth) as Lowest, Middle and Highest channel.

5.3 Test environment and mode

Operating Environment:	
Temperature:	24.0 °C
Humidity:	54 % RH
Atmospheric Pressure:	1010 mbar
Test mode:	
Transmitting mode	Keep the EUT in continuous transmitting with modulation
<p>Radiated Emission: The sample was placed 0.8m (below 1GHz)/1.5m (above 1GHz) above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.</p> <p>We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:</p>	
Per-scan all kind of data rate, the follow list were the worst case.	
Mode	Data rate
802.11ah(1MHz channel bandwidth)	0.33Mbps
802.11ah(2MHz channel bandwidth)	0.72Mbps
802.11ah(4MHz channel bandwidth)	1.50Mbps
802.11ah(8MHz channel bandwidth)	3.30Mbps

5.4 Description of Support Units

The EUT has been tested as an independent unit.

5.5 Measurement Uncertainty

Parameters	Expanded Uncertainty
Conducted Emission (9kHz ~ 30MHz)	±1.60 dB (k=2)
Radiated Emission (9kHz ~ 30MHz)	±3.12 dB (k=2)
Radiated Emission (30MHz ~ 1000MHz)	±4.32 dB (k=2)
Radiated Emission (1GHz ~ 18GHz)	±5.16 dB (k=2)
Radiated Emission (18GHz ~ 40GHz)	±3.20 dB (k=2)

5.6 Laboratory Facility

The test facility is recognized, certified, or accredited by the following organizations:

● **FCC - Designation No.: CN1211**

JianYan Testing Group Shenzhen Co., Ltd. has been accredited as a testing laboratory by FCC(Federal Communications Commission). The test firm Registration No. is 727551.

● **ISED – CAB identifier.: CN0021**

The 3m Semi-anechoic chamber of JianYan Testing Group Shenzhen Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.

● **A2LA - Registration No.: 4346.01**

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 General requirements for the competence of testing and calibration laboratories. The test scope can be found as below link: <https://portal.a2la.org/scopepdf/4346-01.pdf>

5.7 Laboratory Location

JianYan Testing Group Shenzhen Co., Ltd.

Address: No.101, Building 8, Innovation Wisdom Port, No.155 Hongtian Road, Huangpu Community, Xinqiao Street, Bao'an District, Shenzhen, Guangdong, People's Republic of China.

Tel: +86-755-23118282, Fax: +86-755-23116366

Email: info@ccis-cb.com, Website: <http://www.ccis-cb.com>

5.8 Test Instruments list

Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
3m SAC	ETS	9m*6m*6m	966	01-19-2021	01-18-2024
BiConiLog Antenna	SCHWARZBECK	VULB9163	497	03-03-2021	03-02-2022
Biconical Antenna	SCHWARZBECK	VUBA9117	359	06-18-2020	06-17-2021
Horn Antenna	SCHWARZBECK	BBHA9120D	916	03-03-2021	03-02-2022
Horn Antenna	SCHWARZBECK	BBHA9120D	1805	06-18-2020	06-17-2021
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170582	11-18-2020	11-17-2021
EMI Test Software	AUDIX	E3	Version: 6.110919b		
Pre-amplifier	HP	8447D	2944A09358	03-03-2021	03-02-2022
Pre-amplifier	CD	PAP-1G18	11804	03-03-2021	03-02-2022
Spectrum analyzer	Rohde & Schwarz	FSP30	101454	03-03-2021	03-02-2022
Spectrum analyzer	Rohde & Schwarz	FSP40	100363	11-18-2020	11-17-2021
EMI Test Receiver	Rohde & Schwarz	ESRP7	101070	03-03-2021	03-02-2022
Spectrum Analyzer	Agilent	N9020A	MY50510123	11-18-2020	11-17-2021
Signal Generator	Rohde & Schwarz	SMX	835454/016	03-03-2021	03-02-2022
Signal Generator	R&S	SMR20	1008100050	03-03-2021	03-02-2022
RF Switch Unit	MWRFTTEST	MW200	N/A	N/A	N/A
Test Software	MWRFTTEST	MTS8200	Version: 2.0.0.0		
Cable	ZDECL	Z108-NJ-NJ-81	1608458	03-03-2021	03-02-2022
Cable	MICRO-COAX	MFR64639	K10742-5	03-03-2021	03-02-2022
Cable	SUHNER	SUCOFLEX100	58193/4PE	03-03-2021	03-02-2022
DC Power Supply	XinNuoEr	WYK-10020K	1409050110020	09-25-2020	09-24-2021
Temperature Humidity Chamber	HengPu	HPGDS-500	20140828008	11-01-2020	10-31-2021
Simulated Station	Rohde & Schwarz	CMW500	140493	07-22-2020	07-21-2021

Conducted Emission:					
Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
EMI Test Receiver	Rohde & Schwarz	ESCI	101189	03-03-2021	03-02-2022
Pulse Limiter	SCHWARZBECK	OSRAM 2306	9731	03-03-2021	03-02-2022
LISN	CHASE	MN2050D	1447	03-03-2021	03-02-2022
LISN	Rohde & Schwarz	ESH3-Z5	8438621/010	06-18-2020	06-17-2021
Cable	HP	10503A	N/A	03-03-2021	03-02-2022
EMI Test Software	AUDIX	E3	Version: 6.110919b		

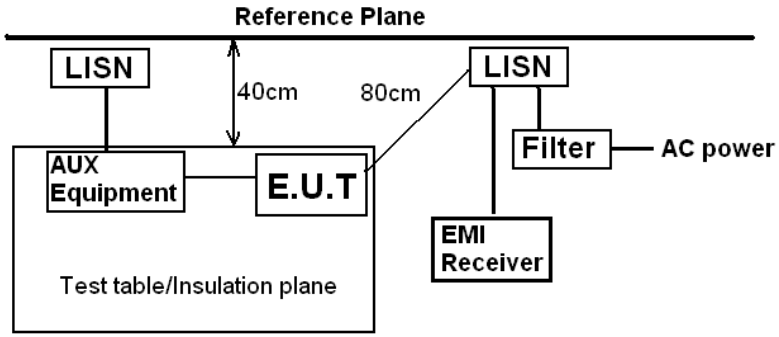
Conducted method:					
Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
Spectrum Analyzer	Keysight	N9010B	MY60240202	11-27-2020	11-26-2021
Vector Signal Generator	Keysight	N5182B	MY59101009	11-27-2020	11-26-2021
Analog Signal Generator	Keysight	N5173B	MY59100765	11-27-2020	11-26-2021
Power Detector Box	MWRF-test	MW100-PSB	MW201020JYT	11-27-2020	11-26-2021
Simulated Station	Rohde & Schwarz	CMW270	102335	11-27-2020	11-26-2021
RF Control Box	MWRF-test	MW100-RFCB	MW200927JYT	N/A	N/A
PDU	MWRF-test	XY-G10	N/A	N/A	N/A
Test Software	MWRF-tes	MTS 8310	Version: 2.0.0.0		
DC Power Supply	Keysight	E3642A	MY60296194	11-27-2020	11-26-2021

6 Test results and Measurement Data

6.1 Antenna requirement

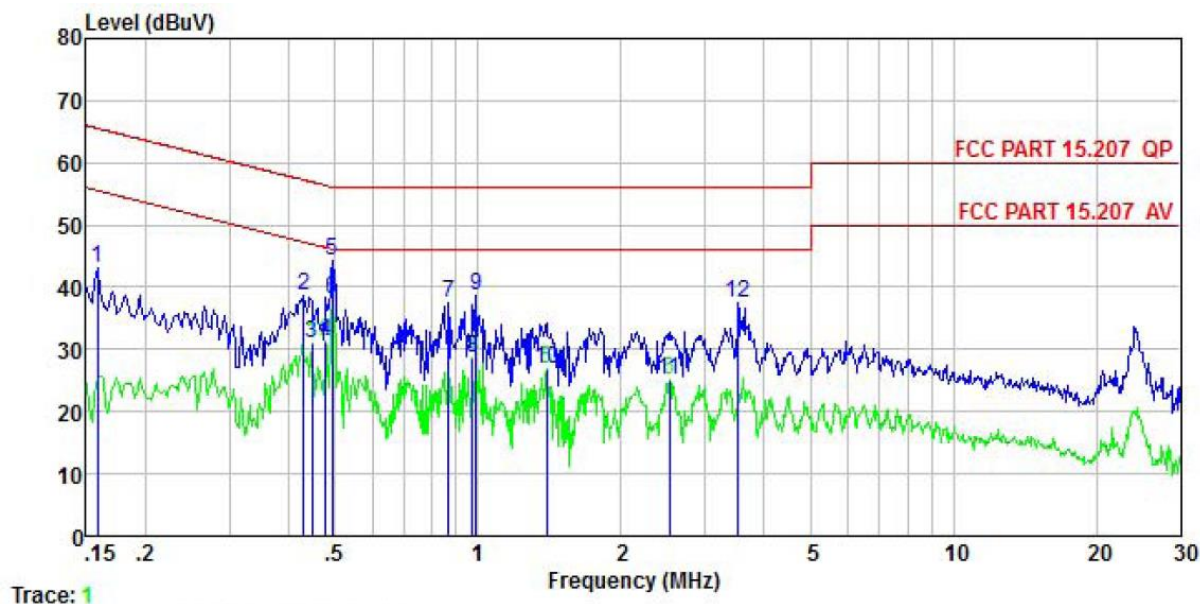
Standard requirement:	FCC Part 15 C Section 15.203 /247(b)
<p>15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, 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.</p> <p>15.247(b) (4) requirement: (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.</p>	
E.U.T Antenna:	
<p>The Wi-Fi antenna is an External antenna which cannot replace by end-user, the best case gain of the antenna is 5.0 dBi.</p>	

6.2 Conducted Emission

Test Requirement:	FCC Part 15 C Section 15.207		
Test Frequency Range:	150 kHz to 30 MHz		
Class / Severity:	Class B		
Receiver setup:	RBW=9 kHz, VBW=30 kHz		
Limit:	Frequency range (MHz)	Limit (dBuV)	
		Quasi-peak	Average
	0.15-0.5	66 to 56*	56 to 46*
	0.5-5	56	46
	5-30	60	50
* Decreases with the logarithm of the frequency.			
Test procedure	<ol style="list-style-type: none"> The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.), which provides a 50ohm/50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10(latest version) on conducted measurement. 		
Test setup:	 <p>Remark: E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m</p>		
Test Instruments:	Refer to section 5.9 for details		
Test mode:	Refer to section 5.3 for details		
Test results:	Passed		

Measurement Data:

Product name:	Wireless Signal Wall-through Ethernet Connector-ETHERNET AIR	Product model:	AH9066
Test by:	Mike	Test mode:	802.11ah TX mode
Test frequency:	150 kHz ~ 30 MHz	Phase:	Line
Test voltage:	AC 120 V/60 Hz	Environment:	Temp: 22.5℃ Humi: 55%

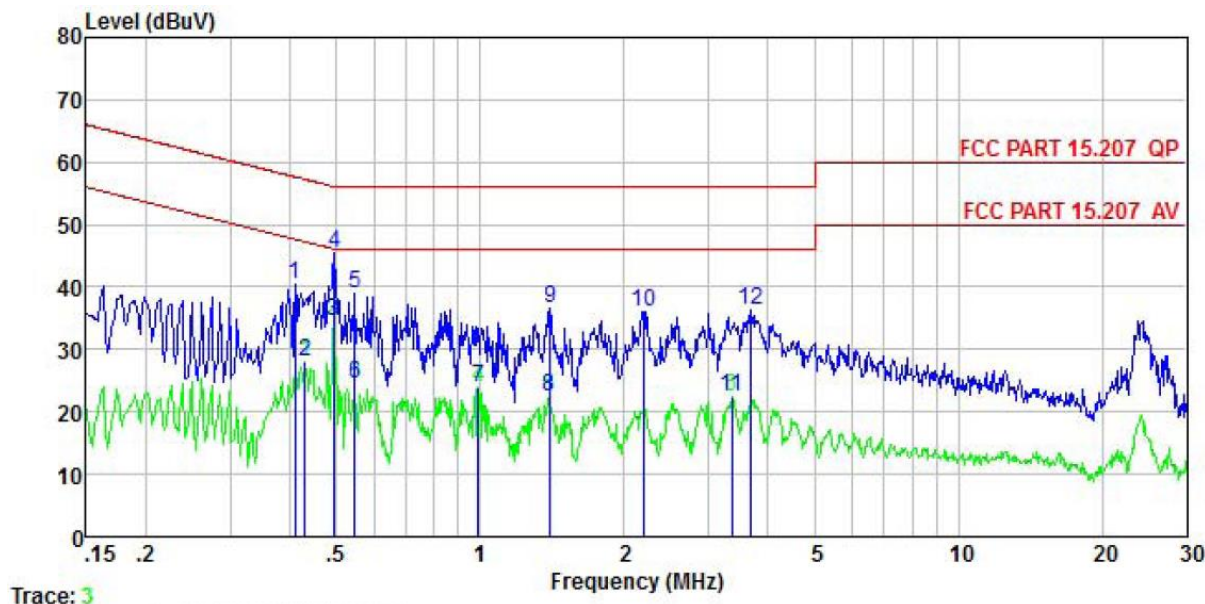


	Freq	Read Level	LISN Factor	Aux Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dB	
1	0.158	32.85	10.20	-0.07	0.01	42.99	65.56	-22.57	QP
2	0.431	28.34	10.20	0.16	0.03	38.73	57.24	-18.51	QP
3	0.447	20.75	10.20	0.05	0.03	31.03	46.93	-15.90	Average
4	0.479	21.40	10.20	-0.21	0.03	31.42	46.36	-14.94	Average
5	0.494	34.46	10.20	-0.32	0.03	44.37	56.10	-11.73	QP
6	0.494	28.28	10.20	-0.32	0.03	38.19	46.10	-7.91	Average
7	0.866	27.28	10.20	0.11	0.04	37.63	56.00	-18.37	QP
8	0.974	17.88	10.20	0.38	0.05	28.51	46.00	-17.49	Average
9	0.989	28.00	10.20	0.42	0.05	38.67	56.00	-17.33	QP
10	1.396	16.52	10.27	0.08	0.13	27.00	46.00	-19.00	Average
11	2.527	15.05	10.30	-0.26	0.13	25.22	46.00	-20.78	Average
12	3.528	27.33	10.30	-0.12	0.08	37.59	56.00	-18.41	QP

Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level = Receiver Read level + LISN Factor + Aux Factor + Cable Loss.

Product name:	Wireless Signal Wall-through Ethernet Connector-ETHERNET AIR	Product model:	AH9066
Test by:	Mike	Test mode:	802.11ah TX mode
Test frequency:	150 kHz ~ 30 MHz	Phase:	Neutral
Test voltage:	AC 120 V/60 Hz	Environment:	Temp: 22.5℃ Humi: 55%

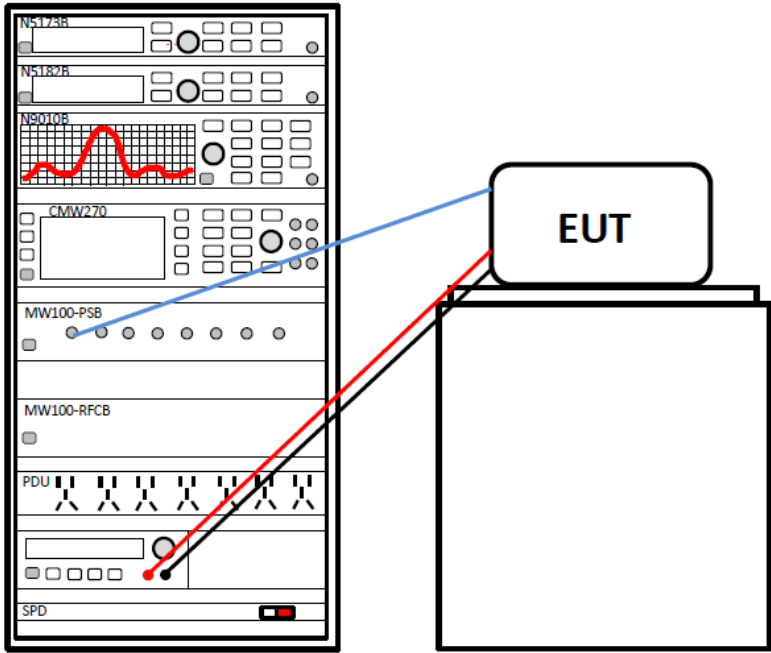


	Freq	Read Level	LISN Factor	Aux Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dB	
1	0.410	30.33	10.20	-0.05	0.04	40.52	57.64	-17.12	QP
2	0.431	17.85	10.20	-0.03	0.03	28.05	47.24	-19.19	Average
3	0.494	24.14	10.20	0.03	0.03	34.40	46.10	-11.70	Average
4	0.497	35.26	10.20	0.03	0.03	45.52	56.05	-10.53	QP
5	0.546	28.70	10.20	0.03	0.03	38.96	56.00	-17.04	QP
6	0.546	14.14	10.20	0.03	0.03	24.40	46.00	-21.60	Average
7	0.989	13.63	10.20	0.08	0.05	23.96	46.00	-22.04	Average
8	1.396	11.84	10.27	0.12	0.13	22.36	46.00	-23.64	Average
9	1.403	26.18	10.27	0.12	0.13	36.70	56.00	-19.30	QP
10	2.201	25.42	10.30	0.20	0.18	36.10	56.00	-19.90	QP
11	3.364	11.62	10.30	0.39	0.07	22.38	46.00	-23.62	Average
12	3.681	25.59	10.30	0.45	0.08	36.42	56.00	-19.58	QP

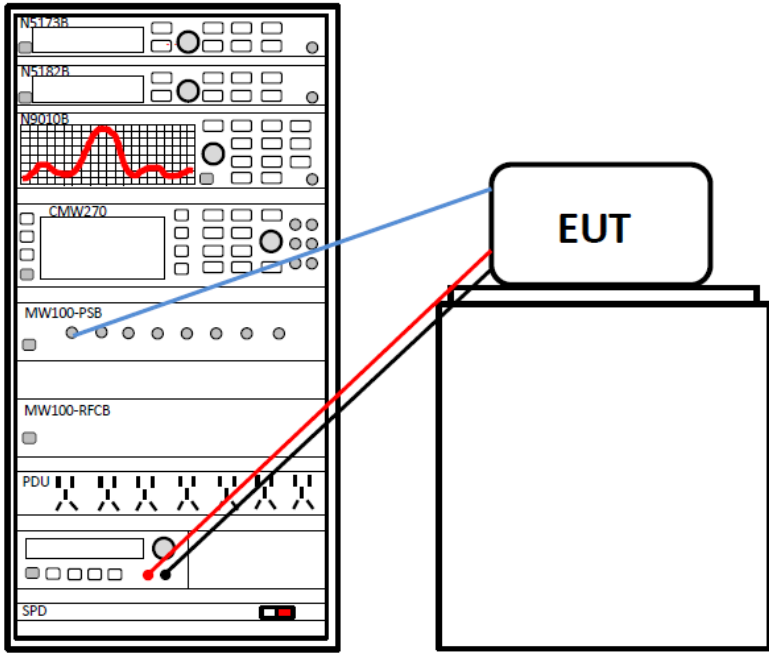
Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level = Receiver Read level + LISN Factor + Aux Factor + Cable Loss.

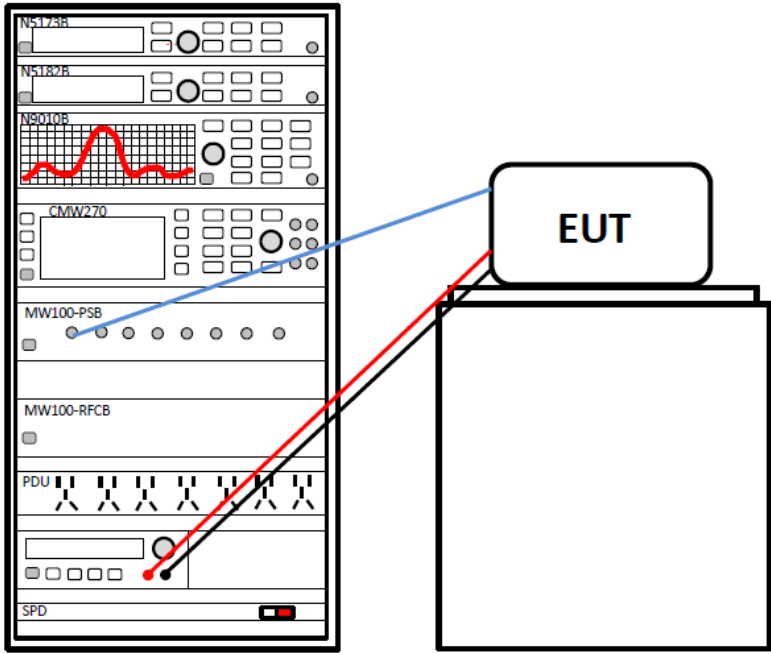
6.3 Conducted Output Power

Test Requirement:	FCC Part 15 C Section 15.247 (b)(3)
Limit:	30dBm
Test setup:	
Test Instruments:	Refer to section 5.9 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed
Measurement Data:	Refer to Appendix A – 802.11ah

6.4 Occupy Bandwidth

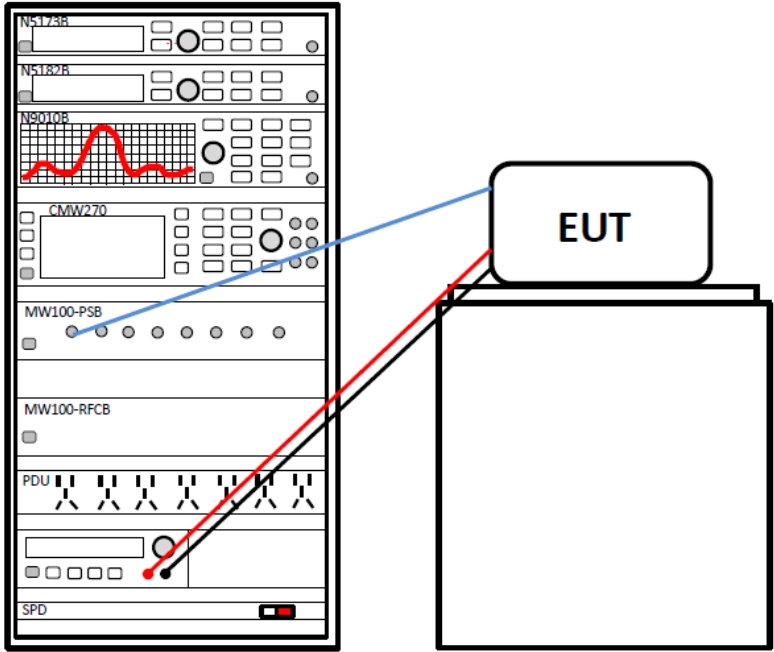
Test Requirement:	FCC Part 15 C Section 15.247 (a)(2)
Limit:	>500kHz
Test setup:	
Test Instruments:	Refer to section 5.9 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed
Measurement Data:	Refer to Appendix A – 802.11ah

6.5 Power Spectral Density

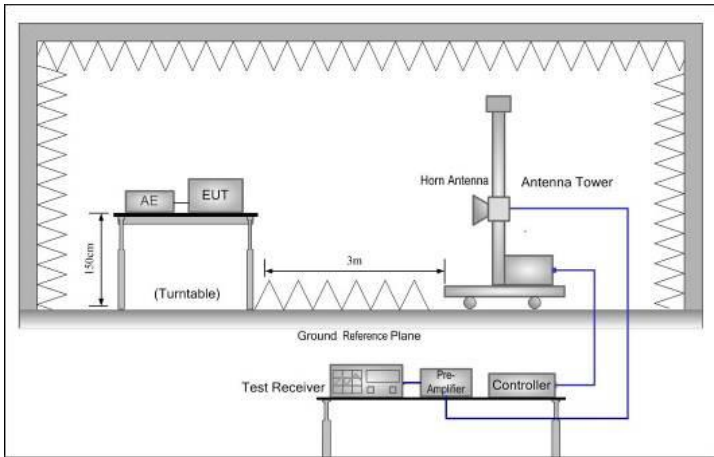
Test Requirement:	FCC Part 15 C Section 15.247 (e)
Limit:	8dBm/3kHz
Test setup:	
Test Instruments:	Refer to section 5.9 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed
Measurement Data:	Refer to Appendix A – 802.11ah

6.6 Band Edge

6.6.1 Conducted Emission Method

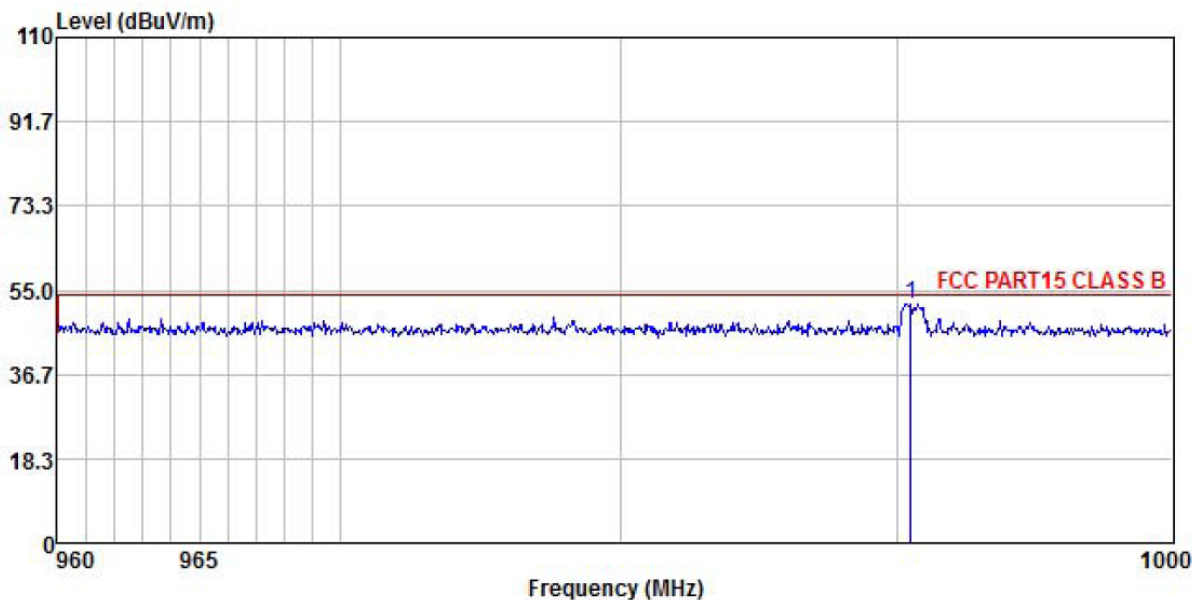
Test Requirement:	FCC Part 15 C Section 15.247 (d)
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph(b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.
Test setup:	
Test Instruments:	Refer to section 5.9 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed
Measurement Data:	Refer to Appendix A – 802.11ah

6.6.2 Radiated Emission Method

Test Requirement:	FCC Part 15 C Section 15.209 and 15.205				
Test Frequency Range:	960 MHz to 1240 MHz				
Test Distance:	3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Remark
	Above 1GHz	Peak	1MHz	3MHz	Peak Value
		RMS	1MHz	3MHz	Average Value
Limit:	Frequency	Limit (dBUV/m @3m)		Remark	
	Above 1GHz	54.00		Average Value	
		74.00		Peak Value	
Test Procedure:	<div>1. The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.</div> <div>2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.</div> <div>3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.</div> <div>4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading.</div> <div>5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</div> <div>6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.</div>				
Test setup:	<div></div>				
Test Instruments:	Refer to section 5.9 for details				
Test mode:	Refer to section 5.3 for details				
Test results:	Passed				

BE-960MHz-1000MHz mode:

Product Name:	Wireless Signal Wall-through Ethernet Connector-ETHERNET AIR	Product Model:	AH9066
Test By:	Mike	Test mode:	802.11ah(1MHz channel bandwidth)
Test Channel:	Highest channel	Polarization:	Vertical
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24℃ Humi: 57%

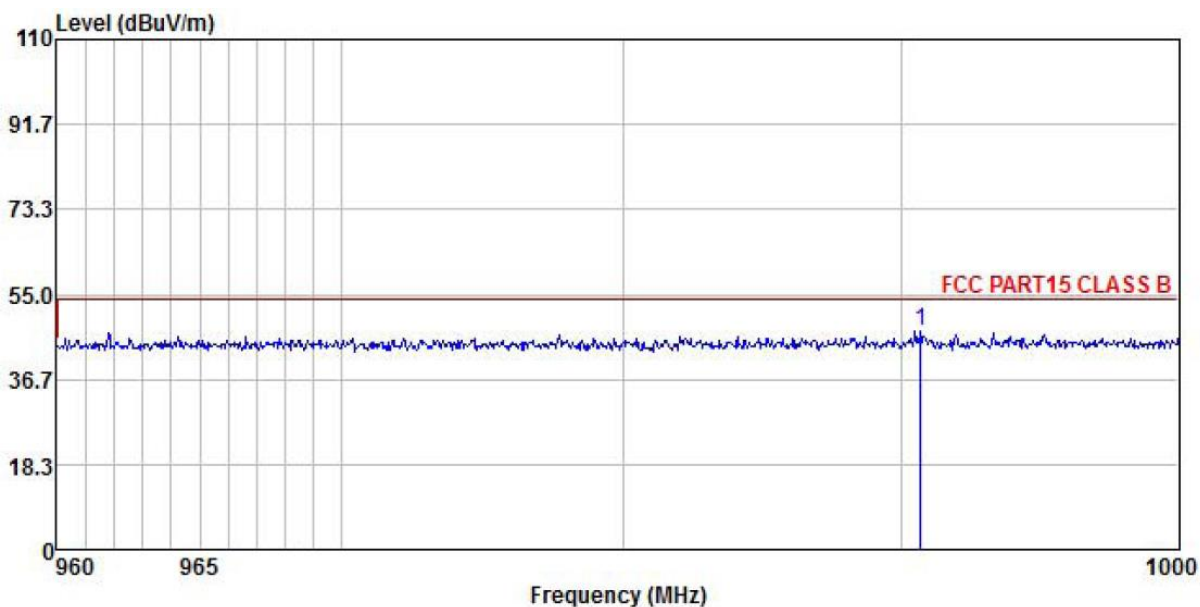


	Freq	ReadAntenna	Cable Preamp		Limit	Over	
	Level	Factor	Loss	Factor	Level	Line	Limit
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m
1	990.453	25.36	23.04	3.64	0.00	52.04	54.00
							-1.96
							QP

Remark:

- Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
- The emission levels of other frequencies are lower than the limit 20dB and not show in test report.

Product Name:	Wireless Signal Wall-through Ethernet Connector-ETHERNET AIR	Product Model:	AH9066
Test By:	Mike	Test mode:	802.11ah(1MHz channel bandwidth)
Test Channel:	Highest channel	Polarization:	Horizontal
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24°C Huni: 57%

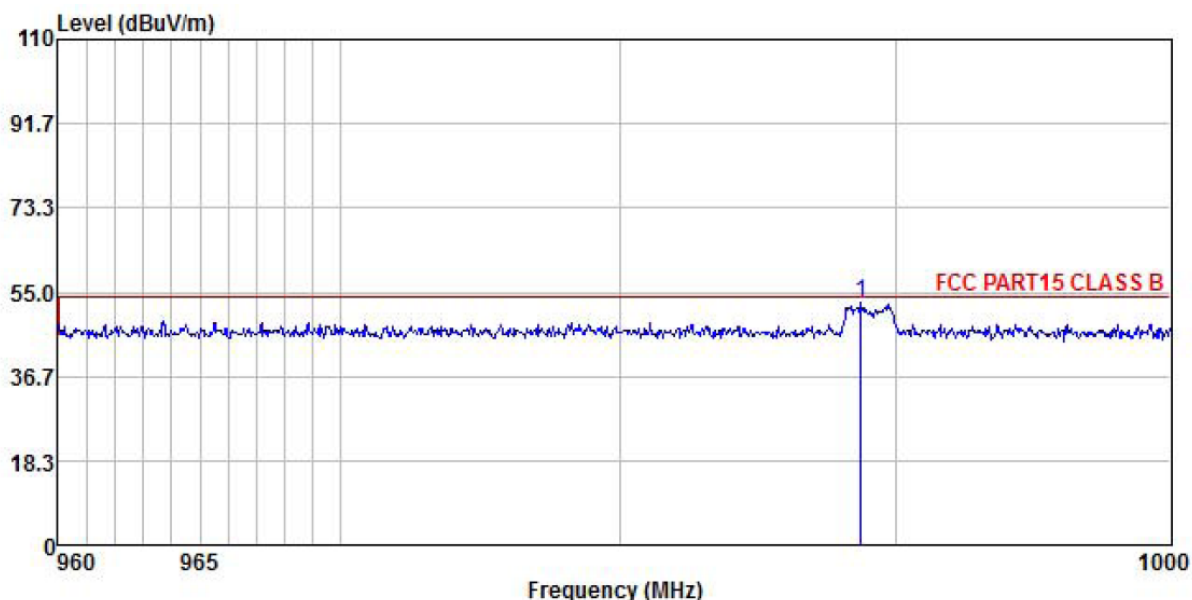


	Read	Antenna	Cable	Preamp	Limit	Over	
Freq	Level	Factor	Loss	Factor	Line	Limit	Remark
-----	-----	-----	-----	-----	-----	-----	-----
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	990.655	20.55	23.04	3.64	0.00	47.23	54.00 -6.77 QP

Remark:

- Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
- The emission levels of other frequencies are lower than the limit 20dB and not show in test report.

Product Name:	Wireless Signal Wall-through Ethernet Connector-ETHERNET AIR	Product Model:	AH9066
Test By:	Mike	Test mode:	802.11ah(2MHz channel bandwidth)
Test Channel:	Highest channel	Polarization:	Vertical
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24℃ Humi: 57%

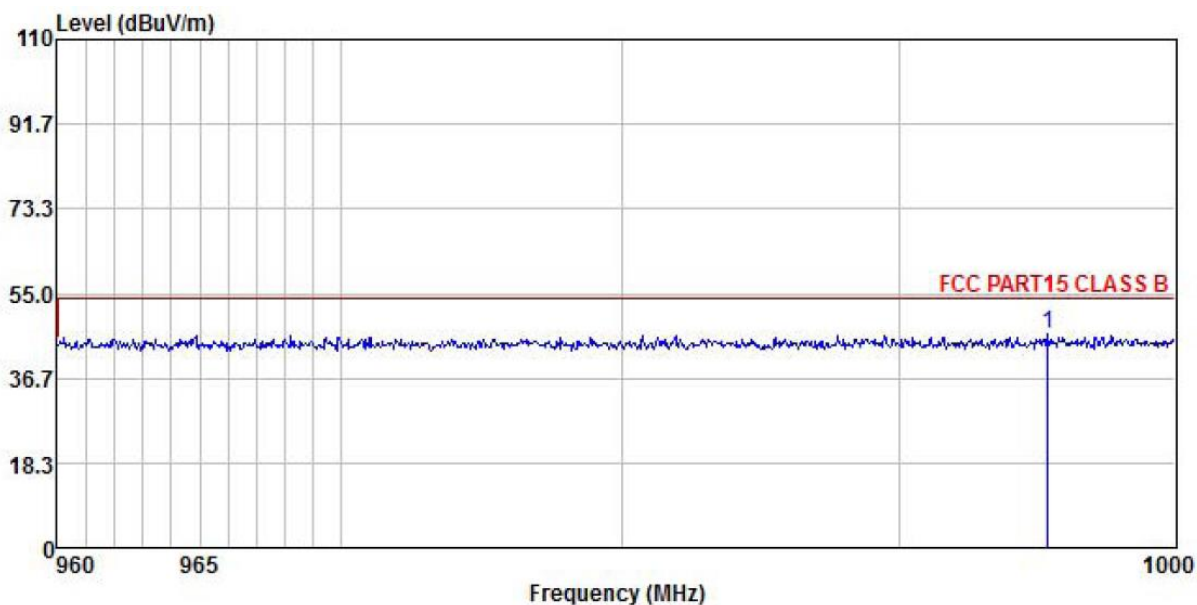


	Freq	ReadAntenna	Cable	Preamp	Limit	Over	
	MHz	Level	Factor	Loss	Factor	Level	Line
		dBuV	dB/m	dB	dB	dBuV/m	dBuV/m
1	988.716	26.26	23.04	3.64	0.00	52.94	54.00
							-1.06
							QP

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
2. The emission levels of other frequencies are lower than the limit 20dB and not show in test report.

Product Name:	Wireless Signal Wall-through Ethernet Connector-ETHERNET AIR	Product Model:	AH9066
Test By:	Mike	Test mode:	802.11ah(2MHz channel bandwidth)
Test Channel:	Highest channel	Polarization:	Horizontal
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24℃ Humi: 57%

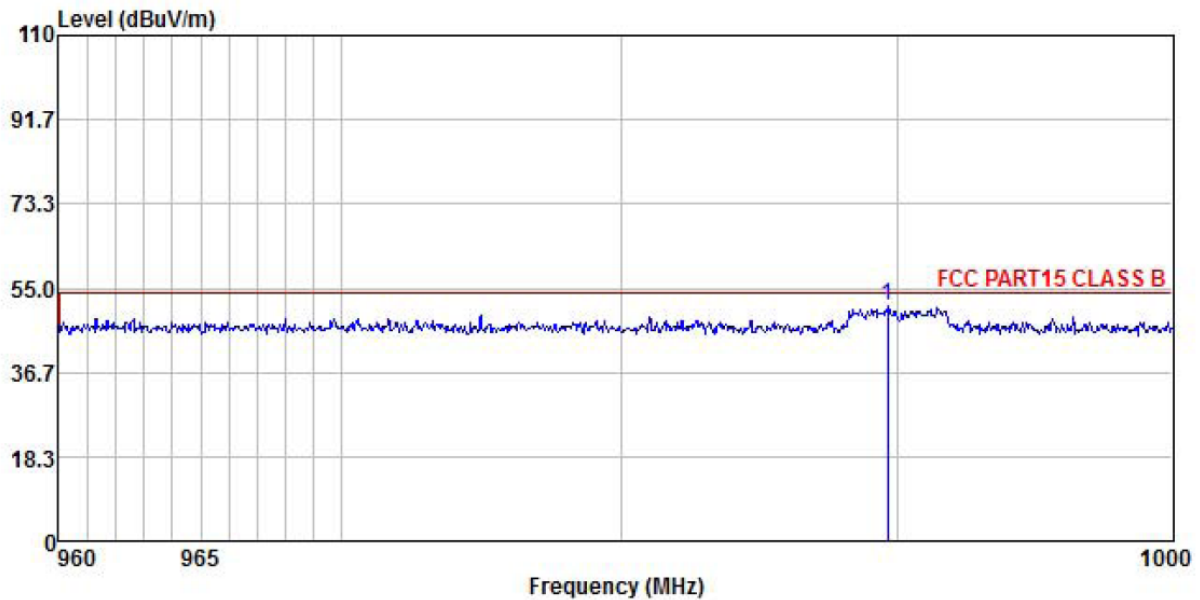


	Freq	Read Level	Antenna Factor	Cable Loss	Preamplifier Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	995.357	19.52	23.08	3.67	0.00	46.27	54.00	-7.73	QP

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
2. The emission levels of other frequencies are lower than the limit 20dB and not show in test report.

Product Name:	Wireless Signal Wall-through Ethernet Connector-ETHERNET AIR	Product Model:	AH9066
Test By:	Mike	Test mode:	802.11ah(4MHz channel bandwidth)
Test Channel:	Highest channel	Polarization:	Vertical
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24℃ Humi: 57%

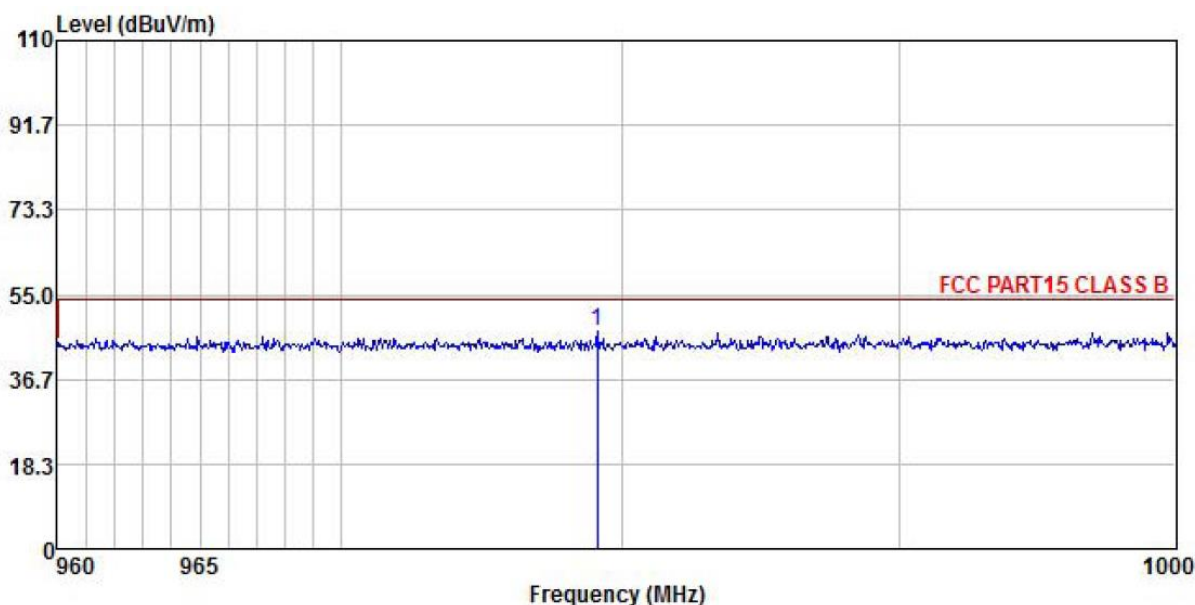


	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	989.604	24.36	23.04	3.64	0.00	51.04	54.00	-2.96	QP

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
2. The emission levels of other frequencies are lower than the limit 20dB and not show in test report.

Product Name:	Wireless Signal Wall-through Ethernet Connector-ETHERNET AIR	Product Model:	AH9066
Test By:	Mike	Test mode:	802.11ah(4MHz channel bandwidth)
Test Channel:	Highest channel	Polarization:	Horizontal
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24℃ Humi: 57%

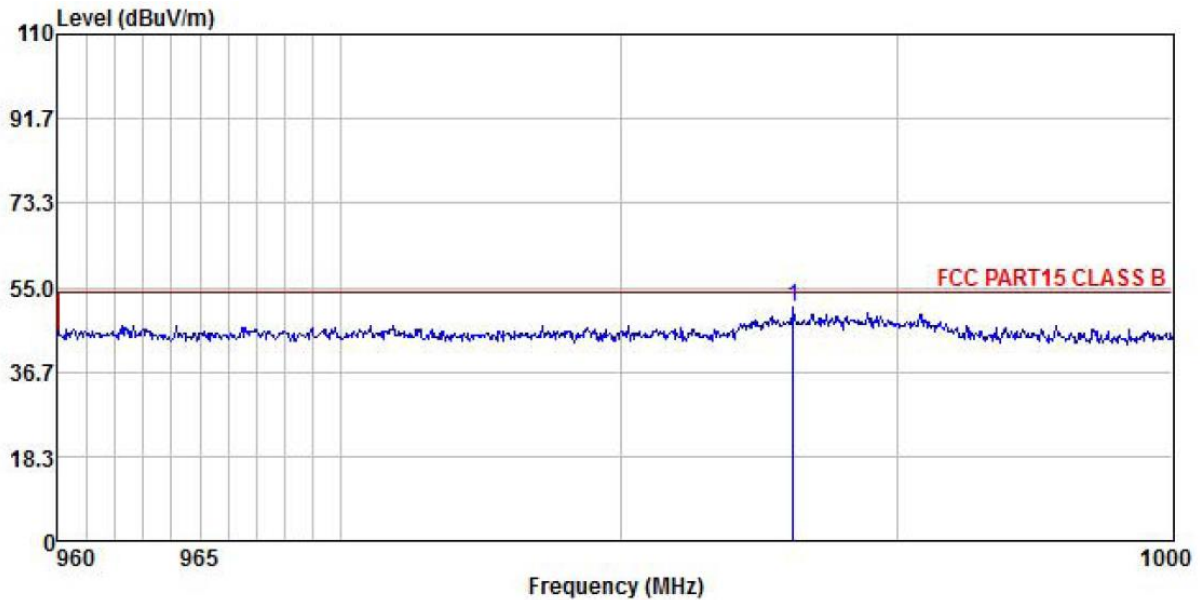


	Read	Antenna	Cable	Preamp		Limit	Over	
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
-----	-----	-----	-----	-----	-----	-----	-----	-----
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	979.116	20.41	22.98	3.60	0.00	46.99	54.00	-7.01 QP

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
2. The emission levels of other frequencies are lower than the limit 20dB and not show in test report.

Product Name:	Wireless Signal Wall-through Ethernet Connector-ETHERNET AIR	Product Model:	AH9066
Test By:	Mike	Test mode:	802.11ah(8MHz channel bandwidth)
Test Channel:	Highest channel	Polarization:	Vertical
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24℃ Humi: 57%

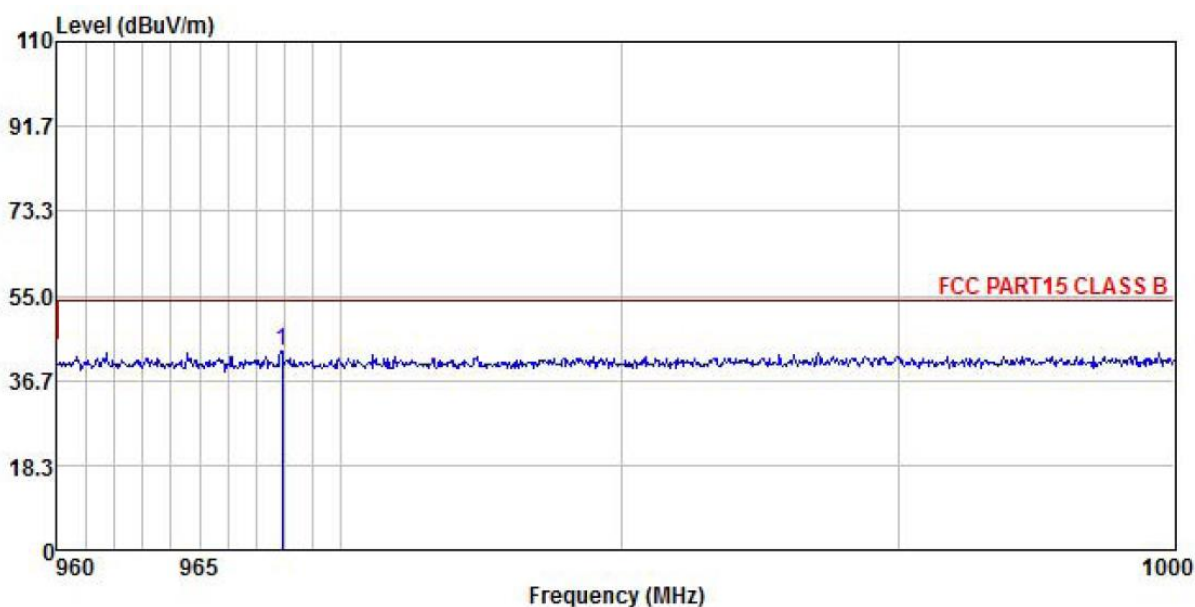


	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	986.216	23.95	23.02	3.62	0.00	50.59	54.00	-3.41	QP

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
2. The emission levels of other frequencies are lower than the limit 20dB and not show in test report.

Product Name:	Wireless Signal Wall-through Ethernet Connector-ETHERNET AIR	Product Model:	AH9066
Test By:	Mike	Test mode:	802.11ah(8MHz channel bandwidth)
Test Channel:	Highest channel	Polarization:	Horizontal
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24℃ Humi: 57%



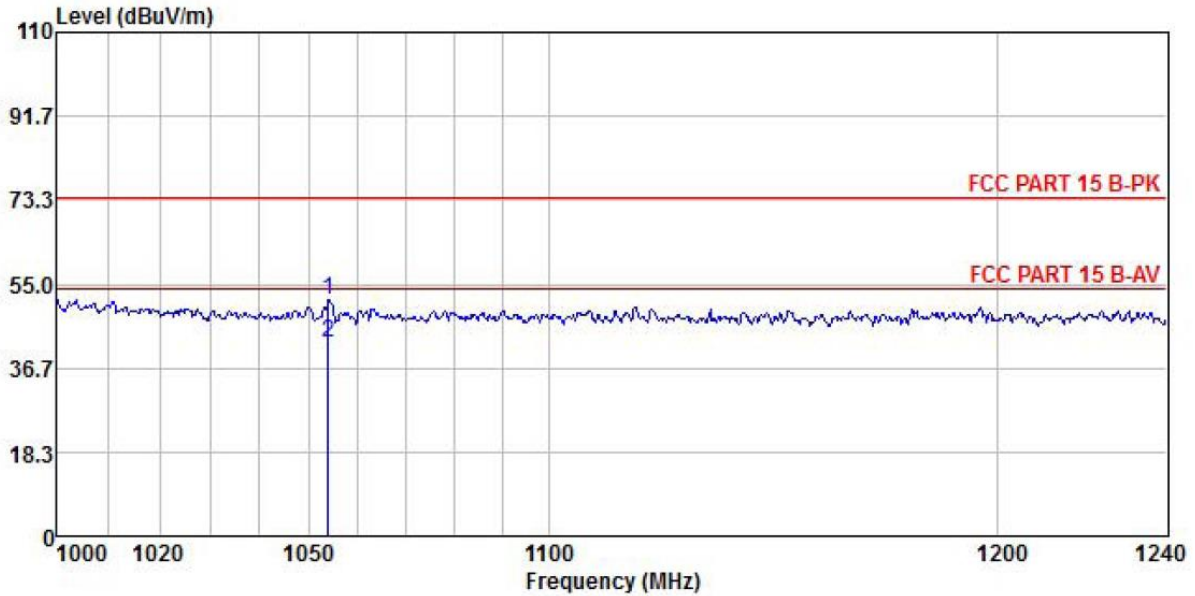
	Freq	Read	Antenna	Cable	Preamp	Limit	Over	
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit
		dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	967.909	16.42	22.92	3.55	0.00	42.89	54.00	-11.11 QP

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
2. The emission levels of other frequencies are lower than the limit 20dB and not show in test report.

BE-1000MHz-1240MHz Mode:

Product Name:	Wireless Signal Wall-through Ethernet Connector-ETHERNET AIR	Product Model:	AH9066
Test By:	Mike	Test mode:	802.11ah(1MHz channel bandwidth)
Test Channel:	Highest channel	Polarization:	Vertical
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24℃ Humi: 57%

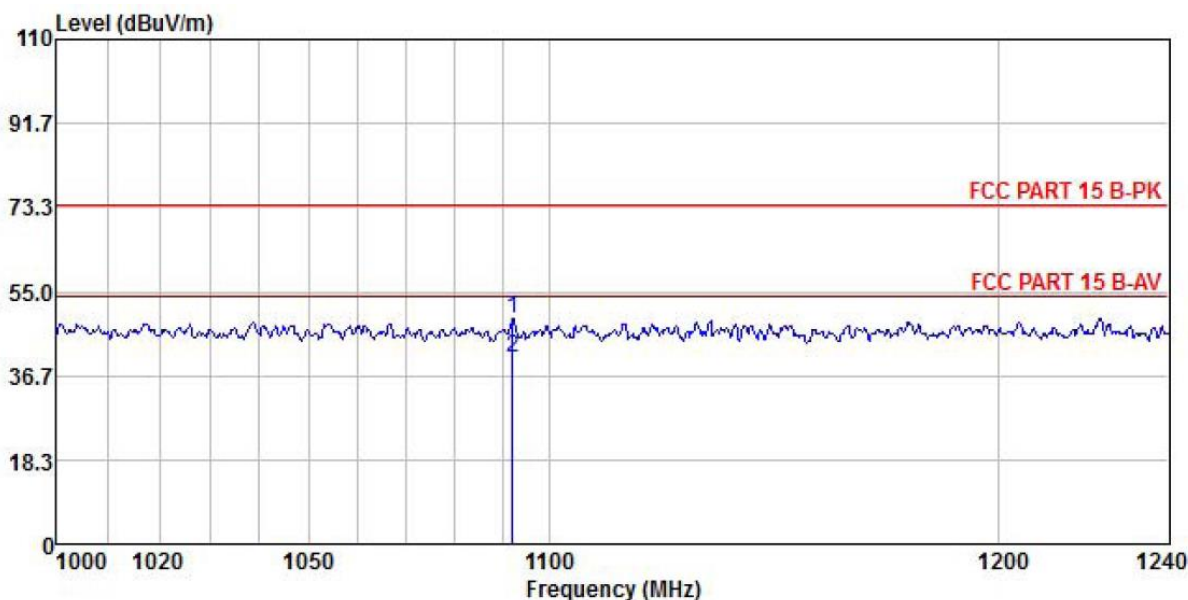


	Freq	Read Level	Antenna Factor	Cable Loss	Preamplifier Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	1053.889	21.51	24.23	5.69	0.00	51.43	74.00	-22.57	Peak
2	1053.889	12.15	24.23	5.69	0.00	42.07	54.00	-11.93	Average

Remark:

- Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
- The emission levels of other frequencies are lower than the limit 20dB and not show in test report.

Product Name:	Wireless Signal Wall-through Ethernet Connector-ETHERNET AIR	Product Model:	AH9066
Test By:	Mike	Test mode:	802.11ah(1MHz channel bandwidth)
Test Channel:	Highest channel	Polarization:	Horizontal
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24℃ Humi: 57%

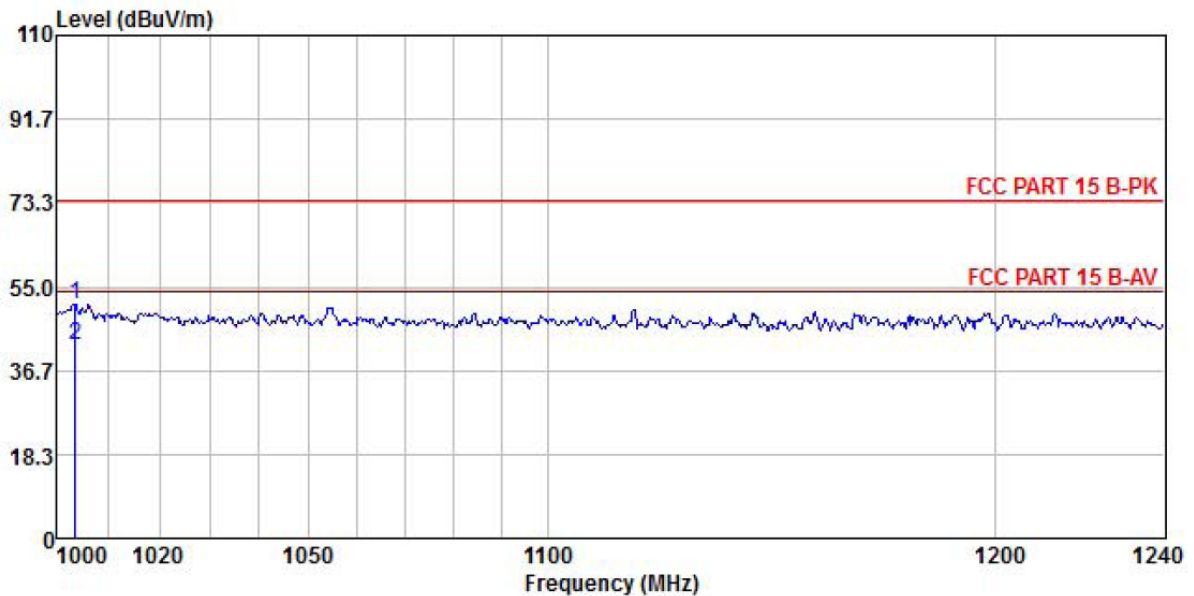


	Freq	ReadAntenna	Cable	Preamp		Limit	Over		
		Level	Factor	Loss	Factor	Level	Line	Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	1092.202	19.05	24.25	5.78	0.00	49.08	74.00	-24.92	Peak
2	1092.202	10.65	24.25	5.78	0.00	40.68	54.00	-13.32	Average

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
2. The emission levels of other frequencies are lower than the limit 20dB and not show in test report.

Product Name:	Wireless Signal Wall-through Ethernet Connector-ETHERNET AIR	Product Model:	AH9066
Test By:	Mike	Test mode:	802.11ah(2MHz channel bandwidth)
Test Channel:	Highest channel	Polarization:	Vertical
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24℃ Humi: 57%

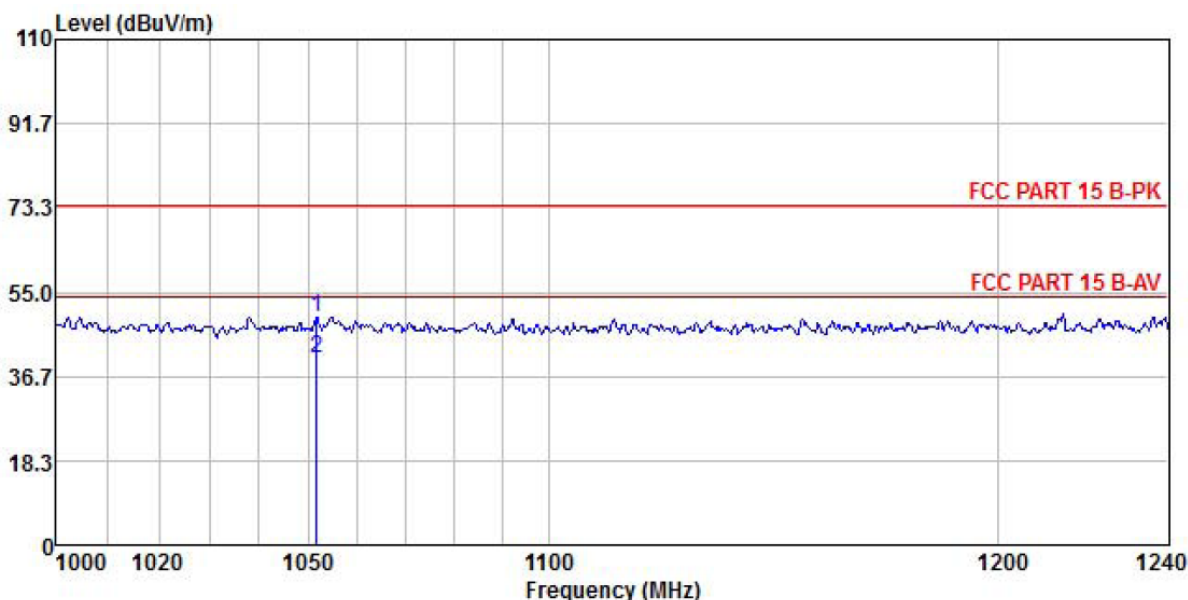


	Freq	ReadAntenna	Cable	Preamp	Limit	Over	
	MHz	Level	Factor	Loss	Factor	Level	Line
		dBuV	dB/m	dB	dB	dBuV/m	dBuV/m
1	1003.448	21.58	24.20	5.55	0.00	51.33	74.00
2	1003.448	12.50	24.20	5.55	0.00	42.25	54.00

Remark:

- Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
- The emission levels of other frequencies are lower than the limit 20dB and not show in test report.

Product Name:	Wireless Signal Wall-through Ethernet Connector-ETHERNET AIR	Product Model:	AH9066
Test By:	Mike	Test mode:	802.11ah(2MHz channel bandwidth)
Test Channel:	Highest channel	Polarization:	Horizontal
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24℃ Humi: 57%

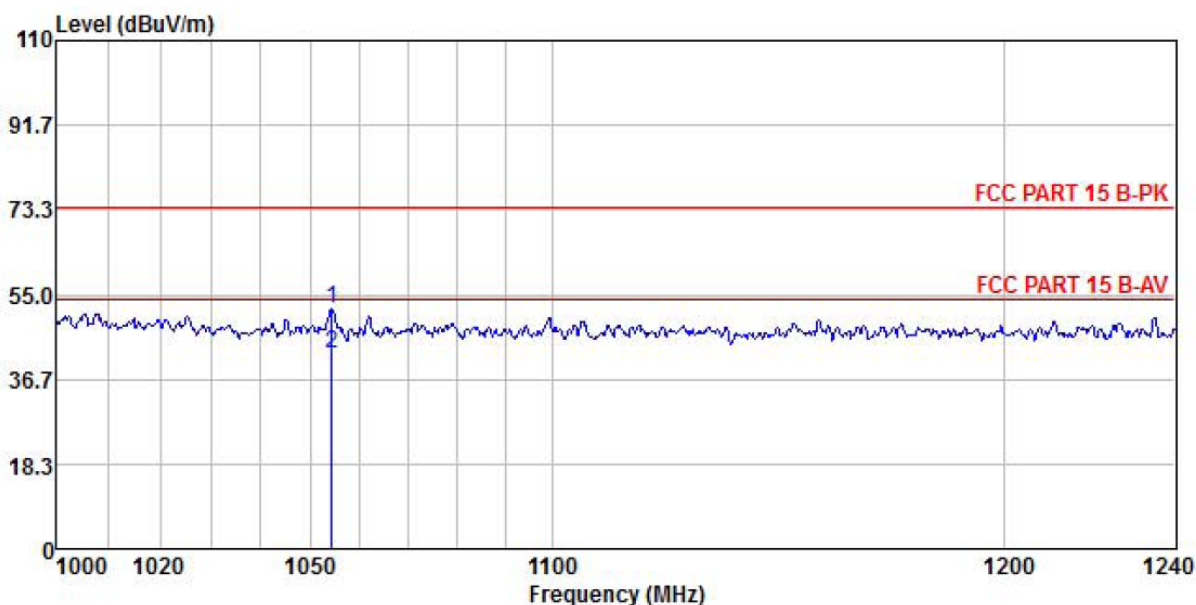


	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	1051.624	19.72	24.23	5.69	0.00	49.64	74.00	-24.36	Peak
2	1051.624	10.78	24.23	5.69	0.00	40.70	54.00	-13.30	Average

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
2. The emission levels of other frequencies are lower than the limit 20dB and not show in test report.

Product Name:	Wireless Signal Wall-through Ethernet Connector-ETHERNET AIR	Product Model:	AH9066
Test By:	Mike	Test mode:	802.11ah(4MHz channel bandwidth)
Test Channel:	Highest channel	Polarization:	Vertical
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24℃ Humi: 57%

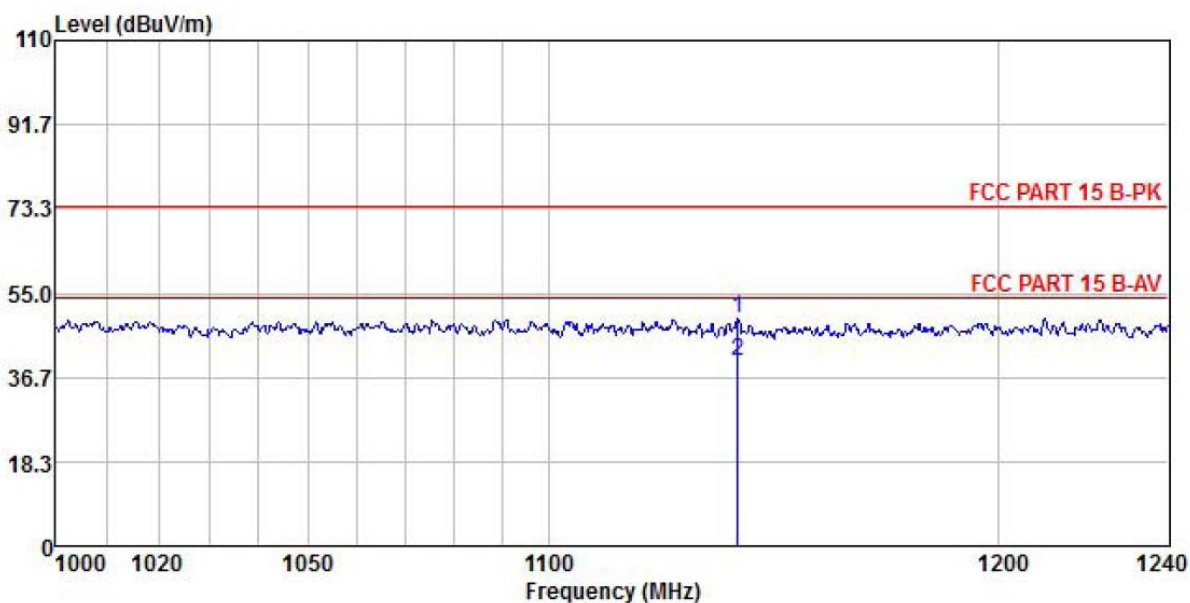


	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit	Over	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	1054.343	21.98	24.23	5.69	0.00	51.90	74.00	-22.10	Peak
2	1054.343	12.35	24.23	5.69	0.00	42.27	54.00	-11.73	Average

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
2. The emission levels of other frequencies are lower than the limit 20dB and not show in test report.

Product Name:	Wireless Signal Wall-through Ethernet Connector-ETHERNET AIR	Product Model:	AH9066
Test By:	Mike	Test mode:	802.11ah(4MHz channel bandwidth)
Test Channel:	Highest channel	Polarization:	Horizontal
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24℃ Humi: 57%

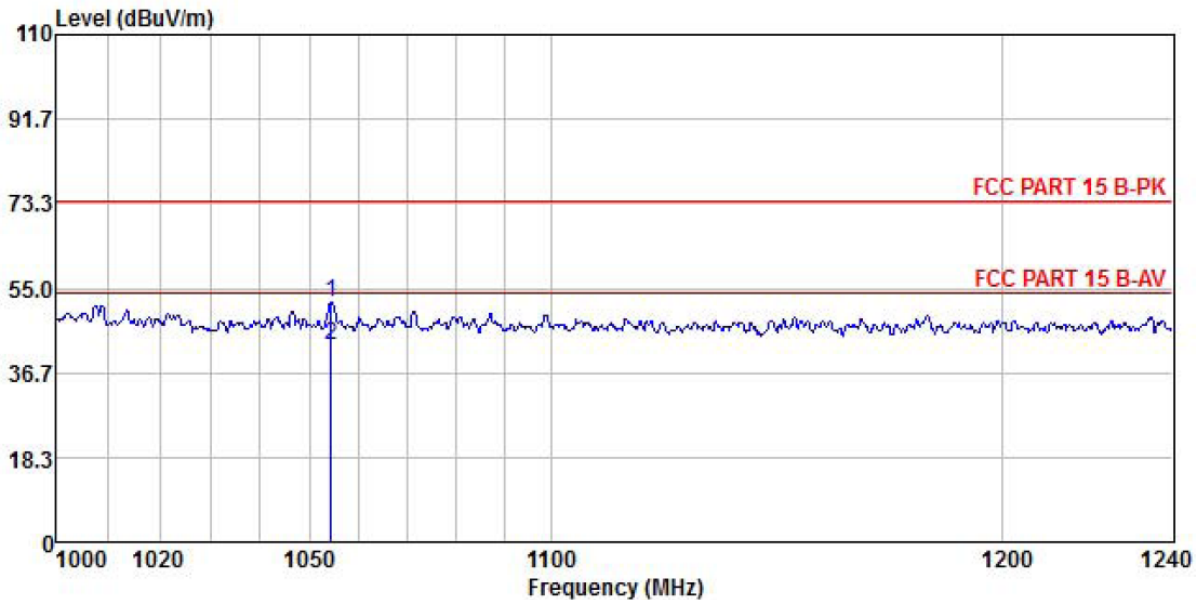


	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	1140.952	19.21	24.27	5.91	0.00	49.39	74.00	-24.61	Peak
2	1140.952	10.06	24.27	5.91	0.00	40.24	54.00	-13.76	Average

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
2. The emission levels of other frequencies are lower than the limit 20dB and not show in test report.

Product Name:	Wireless Signal Wall-through Ethernet Connector-ETHERNET AIR	Product Model:	AH9066
Test By:	Mike	Test mode:	802.11ah(8MHz channel bandwidth)
Test Channel:	Highest channel	Polarization:	Vertical
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24℃ Humi: 57%

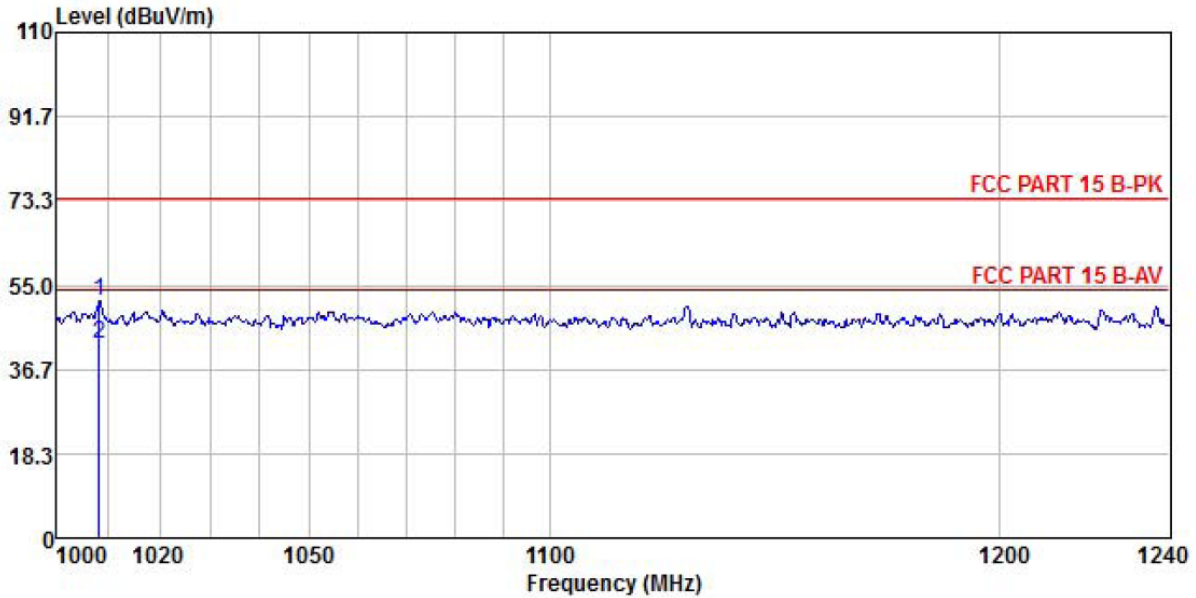


	Freq	Read Level	Antenna Factor	Cable Loss	Preamplifier Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	1054.343	21.95	24.23	5.69	0.00	51.87	74.00	-22.13	Peak
2	1054.343	12.58	24.23	5.69	0.00	42.50	54.00	-11.50	Average

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
2. The emission levels of other frequencies are lower than the limit 20dB and not show in test report.

Product Name:	Wireless Signal Wall-through Ethernet Connector-ETHERNET AIR	Product Model:	AH9066
Test By:	Mike	Test mode:	802.11ah(8MHz channel bandwidth)
Test Channel:	Highest channel	Polarization:	Horizontal
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24℃ Humi: 57%



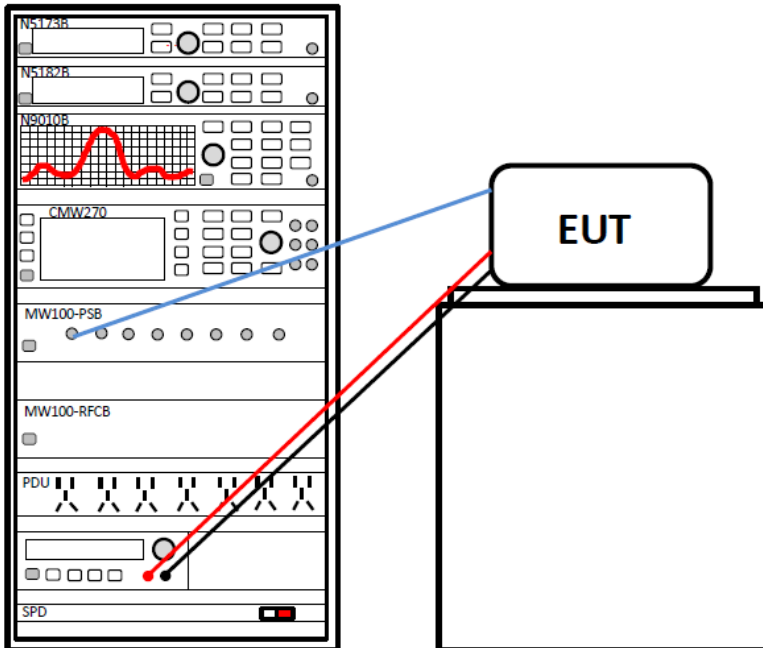
	Freq	ReadAntenna	Cable Preamp	Limit	Over			
	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	1008.208	21.82	24.20	5.55	0.00	51.57	74.00	-22.43 Peak
2	1008.208	12.50	24.20	5.55	0.00	42.25	54.00	-11.75 Average

Remark:

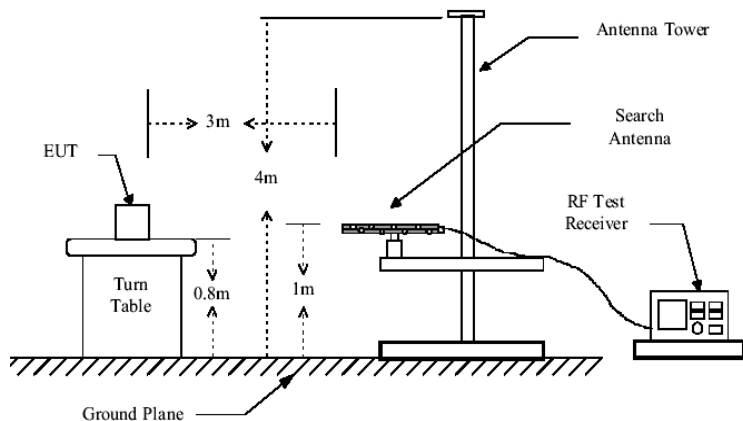
1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
2. The emission levels of other frequencies are lower than the limit 20dB and not show in test report.

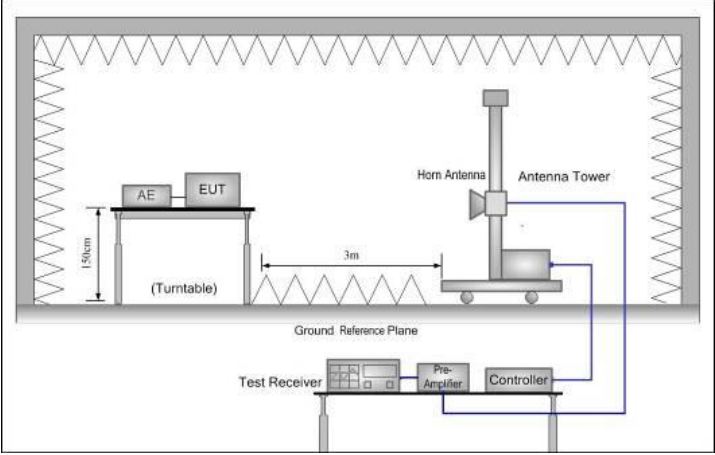
6.7 Spurious Emission

6.7.1 Conducted Emission Method

Test Requirement:	FCC Part 15 C Section 15.247 (d)
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph(b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.
Test setup:	
Test Instruments:	Refer to section 5.9 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed
Measurement Data:	Refer to Appendix A – 802.11ah

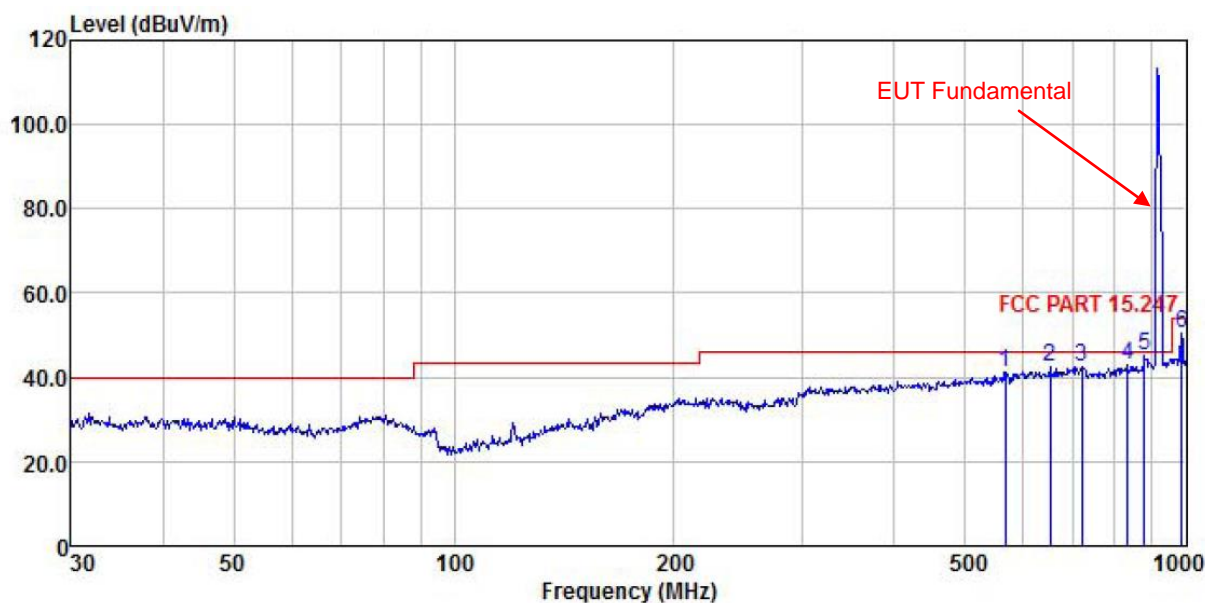
6.7.2 Radiated Emission Method

Test Requirement:	FCC Part 15 C Section 15.209 and 15.205				
Test Frequency Range:	9kHz to 25GHz				
Test Distance:	3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Remark
	30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak Value
	Above 1GHz	Peak	1MHz	3MHz	Peak Value
		RMS	1MHz	3MHz	Average Value
Limit:	Frequency	Limit (dBuV/m @3m)			Remark
	30MHz-88MHz	40.0			Quasi-peak Value
	88MHz-216MHz	43.5			Quasi-peak Value
	216MHz-960MHz	46.0			Quasi-peak Value
	960MHz-1GHz	54.0			Quasi-peak Value
	Above 1GHz	54.0			Average Value
74.0			Peak Value		
Test Procedure:	<div>1. The EUT was placed on the top of a rotating table 0.8m(below 1GHz)/1.5m(above 1GHz) above the ground at a 3 meter chamber. The table was rotated 360 degrees to determine the position of the highest radiation.</div> <div>2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.</div> <div>3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.</div> <div>4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading.</div> <div>5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</div> <div>6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.</div>				
Test setup:	<div>Below 1GHz</div> <div></div> <div>Above 1GHz</div>				

	
Test Instruments:	Refer to section 5.9 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed
Remark:	<ol style="list-style-type: none"> 1. Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the Y-axis is the worst case. 2. 9 kHz to 30MHz is lower than the limit 20dB, so only shows the data of above 30MHz in this report.

Measurement Data (worst case):
Below 1GHz:

Product Name:	Wireless Signal Wall-through Ethernet Connector-ETHERNET AIR	Product Model:	AH9066
Test By:	Mike	Test mode:	802.11ah TX mode
Test Frequency:	30 MHz ~ 1 GHz	Polarization:	Vertical
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24℃ Humi: 57%

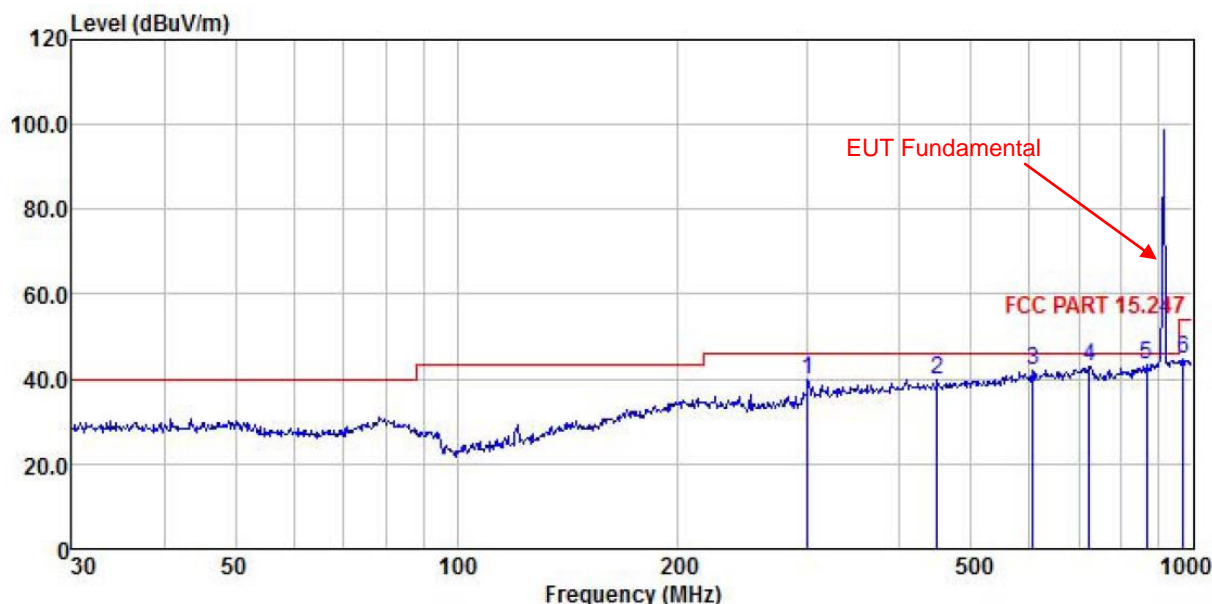


	Freq	ReadAntenna	Cable	Preamp	Level	Limit	Over	
	MHz	Level	Factor	Loss	Factor	Line	Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	566.622	18.99	19.70	2.51	0.00	41.20	46.00	-4.80 QP
2	651.942	19.80	20.12	2.70	0.00	42.62	46.00	-3.38 QP
3	721.726	19.06	20.55	2.90	0.00	42.51	46.00	-3.49 QP
4	833.317	18.69	21.23	3.18	0.00	43.10	46.00	-2.90 QP
5	878.322	19.60	22.08	3.30	0.00	44.98	46.00	-1.02 QP
6	986.072	23.66	23.02	3.62	0.00	50.30	54.00	-3.70 QP

Remark:

- Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
- The emission levels of other frequencies are lower than the limit 20dB and not show in test report.
- The Aux Factor is a notch filter switch box loss, this item is not used.

Product Name:	Wireless Signal Wall-through Ethernet Connector-ETHERNET AIR	Product Model:	AH9066
Test By:	Mike	Test mode:	802.11ah TX mode
Test Frequency:	30 MHz ~ 1 GHz	Polarization:	Horizontal
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24℃ Humi: 57%



	Freq	ReadAntenna	Cable	Preamp	Level	Limit	Over	Remark
	MHz	Level	Factor	Loss	Factor	Line	Limit	
		dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	299.316	19.35	18.70	1.76	0.00	39.81	46.00	-6.19 QP
2	449.556	18.55	19.20	2.17	0.00	39.92	46.00	-6.08 QP
3	605.659	19.61	19.93	2.63	0.00	42.17	46.00	-3.83 QP
4	724.261	19.35	20.55	2.91	0.00	42.81	46.00	-3.19 QP
5	866.088	18.19	21.77	3.26	0.00	43.22	46.00	-2.78 QP
6	968.934	18.07	22.92	3.55	0.00	44.54	54.00	-9.46 QP

Remark:

- Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
- The emission levels of other frequencies are lower than the limit 20dB and not show in test report.
- The Aux Factor is a notch filter switch box loss, this item is not used.

Above 1GHz

802.11ah-1M						
Test channel: Lowest channel						
Detector: Peak Value						
Frequency (MHz)	Read Level (dBuV)	Level [dB μ V/m]	Factor (dB)	Limit Line (dBuV/m)	Margin (dB)	Polarization
1807.00	77.97	56.46	-21.51	74	17.54	Vertical
1807.00	69.06	47.55	-21.51	54	6.45	Vertical
2710.50	57.19	38.58	-18.61	74	35.42	Vertical
2710.50	49.41	30.8	-18.61	54	23.20	Vertical
3614.00	59.9	43.49	-16.41	74	30.51	Vertical
3614.00	49.7	33.29	-16.41	54	20.71	Vertical
1807.00	65.68	44.17	-21.51	74	29.83	Horizontal
1807.00	58.54	37.03	-21.51	54	16.97	Horizontal
2710.50	60.17	41.56	-18.61	74	32.44	Horizontal
2710.50	51.22	32.61	-18.61	54	21.39	Horizontal
3614.00	59.62	43.21	-16.41	74	30.79	Horizontal
3614.00	50.56	34.15	-16.41	54	19.85	Horizontal
Test channel: Middle channel						
Detector: Peak Value						
Frequency (MHz)	Read Level (dBuV)	Level [dB μ V/m]	Factor (dB)	Limit Line (dBuV/m)	Margin (dB)	Polarization
1829.00	78.34	56.83	-21.51	74	17.17	Vertical
1829.00	69.01	47.5	-21.51	54	6.50	Vertical
2743.50	57.62	39.01	-18.61	74	34.99	Vertical
2743.50	49.37	30.76	-18.61	54	23.24	Vertical
3658.00	60.17	43.76	-16.41	74	30.24	Vertical
3658.00	49.25	32.84	-16.41	54	21.16	Vertical
1829.00	66.11	44.6	-21.51	74	29.40	Horizontal
1829.00	58.21	36.7	-21.51	54	17.30	Horizontal
2743.50	60.63	42.02	-18.61	74	31.98	Horizontal
2743.50	51.5	32.89	-18.61	54	21.11	Horizontal
3658.00	60.11	43.7	-16.41	74	30.30	Horizontal
3658.00	50.93	34.52	-16.41	54	19.48	Horizontal
Test channel: Highest channel						
Detector: Peak Value						
Frequency (MHz)	Read Level (dBuV)	Level [dB μ V/m]	Factor (dB)	Limit Line (dBuV/m)	Margin (dB)	Polarization
1853.00	78.25	56.74	-21.51	74	17.26	Vertical
1853.00	68.68	47.17	-21.51	54	6.83	Vertical
2779.50	57.27	38.66	-18.61	74	35.34	Vertical
2779.50	48.99	30.38	-18.61	54	23.62	Vertical
3706.00	59.8	43.39	-16.41	74	30.61	Vertical
3706.00	49.56	33.15	-16.41	54	20.85	Vertical
1853.00	65.63	44.12	-21.51	74	29.88	Horizontal

1853.00	58.35	36.84	-21.51	54	17.16	Horizontal
2779.50	60.81	42.2	-18.61	74	31.80	Horizontal
2779.50	51.83	33.22	-18.61	54	20.78	Horizontal
3706.00	60.2	43.79	-16.41	74	30.21	Horizontal
3706.00	50.45	34.04	-16.41	54	19.96	Horizontal

Remark:

1. *Final Level = Receiver Read level + Factor.
Factor = Antenna Factor + Cable Loss – Preamplifier Factor.*
2. *The emission levels of other frequencies are lower than the limit 20dB and not show in test report.*

802.11ah-2M						
Test channel: Lowest channel						
Detector: Peak Value						
Frequency (MHz)	Read Level (dBuV)	Level [dB μ V/m]	Factor (dB)	Limit Line (dBuV/m)	Margin (dB)	Polarization
1810.00	63.6	42.09	-21.51	74	31.91	Vertical
1810.00	55.22	33.71	-21.51	54	20.29	Vertical
2715.00	56.07	37.46	-18.61	74	36.54	Vertical
2715.00	48.91	30.30	-18.61	54	23.70	Vertical
3620.00	56.42	40.01	-16.41	74	33.99	Vertical
3620.00	48.63	32.22	-16.41	54	21.78	Vertical
1810.00	76.02	54.51	-21.51	74	19.49	Horizontal
1810.00	66.26	44.75	-21.51	54	9.25	Horizontal
2715.00	64.03	45.42	-18.61	74	28.58	Horizontal
2715.00	51.48	32.87	-18.61	54	21.13	Horizontal
3620.00	56.89	40.48	-16.41	74	33.52	Horizontal
3620.00	48.91	32.50	-16.41	54	21.50	Horizontal
Test channel: Middle channel						
Detector: Peak Value						
Frequency (MHz)	Read Level (dBuV)	Level [dB μ V/m]	Factor (dB)	Limit Line (dBuV/m)	Margin (dB)	Polarization
1830.00	63.65	42.14	-21.51	74	31.86	Vertical
1830.00	55.04	33.53	-21.51	54	20.47	Vertical
2745.00	56.5	37.89	-18.61	74	36.11	Vertical
2745.00	49.17	30.56	-18.61	54	23.44	Vertical
3660.00	56.9	40.49	-16.41	74	33.51	Vertical
3660.00	48.71	32.30	-16.41	54	21.7	Vertical
1830.00	75.62	54.11	-21.51	74	19.89	Horizontal
1830.00	66.59	45.08	-21.51	54	8.92	Horizontal
2745.00	63.83	45.22	-18.61	74	28.78	Horizontal
2745.00	51.4	32.79	-18.61	54	21.21	Horizontal
3660.00	56.65	40.24	-16.41	74	33.76	Horizontal
3660.00	48.84	32.43	-16.41	54	21.57	Horizontal
Test channel: Highest channel						
Detector: Peak Value						
Frequency (MHz)	Read Level (dBuV)	Level [dB μ V/m]	Factor (dB)	Limit Line (dBuV/m)	Margin (dB)	Polarization
1850.00	63.29	41.78	-21.51	74	32.22	Vertical
1850.00	54.6	33.09	-21.51	54	20.91	Vertical
2775.00	56.49	37.88	-18.61	74	36.12	Vertical
2775.00	49.52	30.91	-18.61	54	23.09	Vertical
3700.00	56.41	40.00	-16.41	74	34.00	Vertical
3700.00	49.2	32.79	-16.41	54	21.21	Vertical
1850.00	75.56	54.05	-21.51	74	19.95	Horizontal

1850.00	67.04	45.53	-21.51	54	8.47	Horizontal
2775.00	63.94	45.33	-18.61	74	28.67	Horizontal
2775.00	51.77	33.16	-18.61	54	20.84	Horizontal
3700.00	56.43	40.02	-16.41	74	33.98	Horizontal
3700.00	48.57	32.16	-16.41	54	21.84	Horizontal

Remark:

1. Final Level = Receiver Read level + Factor.
Factor = Antenna Factor + Cable Loss – Preamplifier Factor.
2. The emission levels of other frequencies are lower than the limit 20dB and not show in test report.

802.11ah-4M						
Test channel: Lowest channel						
Detector: Peak Value						
Frequency (MHz)	Read Level (dBuV)	Level [dB μ V/m]	Factor (dB)	Limit Line (dBuV/m)	Margin (dB)	Polarization
1812.00	79.2	57.69	-21.51	74	16.31	Vertical
1812.00	69.38	47.87	-21.51	54	6.13	Vertical
2718.00	59.36	40.75	-18.61	74	33.25	Vertical
2718.00	53.95	35.34	-18.61	54	18.66	Vertical
3624.00	56.96	40.55	-16.41	74	33.45	Vertical
3624.00	49.36	32.95	-16.41	54	21.05	Vertical
1812.00	61.18	39.67	-21.51	74	34.33	Horizontal
1812.00	53.39	31.88	-21.51	54	22.12	Horizontal
2718.00	56.13	37.52	-18.61	74	36.48	Horizontal
2718.00	49.12	30.51	-18.61	54	23.49	Horizontal
3624.00	56.46	40.05	-16.41	74	33.95	Horizontal
3624.00	48.43	32.02	-16.41	54	21.98	Horizontal
Test channel: Middle channel						
Detector: Peak Value						
Frequency (MHz)	Read Level (dBuV)	Level [dB μ V/m]	Factor (dB)	Limit Line (dBuV/m)	Margin (dB)	Polarization
1828.00	79.09	57.58	-21.51	74	16.42	Vertical
1828.00	69	47.49	-21.51	54	6.51	Vertical
2742.00	59.83	41.22	-18.61	74	32.78	Vertical
2742.00	53.85	35.24	-18.61	54	18.76	Vertical
3656.00	56.75	40.34	-16.41	74	33.66	Vertical
3656.00	48.99	32.58	-16.41	54	21.42	Vertical
1828.00	60.74	39.23	-21.51	74	34.77	Horizontal
1828.00	53.88	32.37	-21.51	54	21.63	Horizontal
2742.00	56.5	37.89	-18.61	74	36.11	Horizontal
2742.00	48.9	30.29	-18.61	54	23.71	Horizontal
3656.00	56.86	40.45	-16.41	74	33.55	Horizontal
3656.00	48.73	32.32	-16.41	54	21.68	Horizontal
Test channel: Highest channel						
Detector: Peak Value						

Frequency (MHz)	Read Level (dBuV)	Level [dB μ V/m]	Factor (dB)	Limit Line (dBuV/m)	Margin (dB)	Polarization
1852.00	79.3	57.79	-21.51	74	16.21	Vertical
1852.00	69.42	47.91	-21.51	54	6.09	Vertical
2778.00	60	41.39	-18.61	74	32.61	Vertical
2778.00	54.05	35.44	-18.61	54	18.56	Vertical
3704.00	56.52	40.11	-16.41	74	33.89	Vertical
3704.00	48.57	32.16	-16.41	54	21.84	Vertical
1852.00	61.18	39.67	-21.51	74	34.33	Horizontal
1852.00	54.21	32.7	-21.51	54	21.30	Horizontal
2778.00	56.37	37.76	-18.61	74	36.24	Horizontal
2778.00	48.62	30.01	-18.61	54	23.99	Horizontal
3704.00	56.54	40.13	-16.41	74	33.87	Horizontal
3704.00	48.37	31.96	-16.41	54	22.04	Horizontal

Remark:

- Final Level = Receiver Read level + Factor.
Factor = Antenna Factor + Cable Loss – Preamplifier Factor.
- The emission levels of other frequencies are lower than the limit 20dB and not show in test report.

802.11ah-8M						
Test channel: Lowest channel						
Detector: Peak Value						
Frequency (MHz)	Read Level (dBuV)	Level [dB μ V/m]	Factor (dB)	Limit Line (dBuV/m)	Margin (dB)	Polarization
1816.00	58.54	37.03	-21.51	74	36.97	Vertical
1816.00	53.64	32.13	-21.51	54	21.87	Vertical
2724.00	50.24	31.63	-18.61	74	42.37	Vertical
2724.00	56.96	38.35	-18.61	54	15.65	Vertical
3632.00	59.67	43.26	-16.41	74	30.74	Vertical
3632.00	49.59	33.18	-16.41	54	20.82	Vertical
1816.00	65.79	44.28	-21.51	74	29.72	Horizontal
1816.00	55.05	33.54	-21.51	54	20.46	Horizontal
2724.00	56.83	38.22	-18.61	74	35.78	Horizontal
2724.00	48.53	29.92	-18.61	54	24.08	Horizontal
3632.00	56.11	39.7	-16.41	74	34.30	Horizontal
3632.00	48.02	31.61	-16.41	54	22.39	Horizontal
Test channel: Middle channel						
Detector: Peak Value						
Frequency (MHz)	Read Level (dBuV)	Level [dB μ V/m]	Factor (dB)	Limit Line (dBuV/m)	Margin (dB)	Polarization
1832.00	58.57	37.06	-21.51	74	36.94	Vertical
1832.00	53.42	31.91	-21.51	54	22.09	Vertical
2748.00	49.81	31.2	-18.61	74	42.80	Vertical
2748.00	57	38.39	-18.61	54	15.61	Vertical
3664.00	59.54	43.13	-16.41	74	30.87	Vertical
3664.00	49.36	32.95	-16.41	54	21.05	Vertical
1832.00	66.13	44.62	-21.51	74	29.38	Horizontal
1832.00	54.66	33.15	-21.51	54	20.85	Horizontal
2748.00	57.15	38.54	-18.61	74	35.46	Horizontal
2748.00	48.91	30.3	-18.61	54	23.70	Horizontal
3664.00	56.06	39.65	-16.41	74	34.35	Horizontal
3664.00	47.72	31.31	-16.41	54	22.69	Horizontal
Test channel: Highest channel						
Detector: Peak Value						
Frequency (MHz)	Read Level (dBuV)	Level [dB μ V/m]	Factor (dB)	Limit Line (dBuV/m)	Margin (dB)	Polarization
1848.00	58.15	36.64	-21.51	74	37.36	Vertical
1848.00	53.16	31.65	-21.51	54	22.35	Vertical
2772.00	50.06	31.45	-18.61	74	42.55	Vertical
2772.00	57.1	38.49	-18.61	54	15.51	Vertical
3696.00	59.6	43.19	-16.41	74	30.81	Vertical
3696.00	49.14	32.73	-16.41	54	21.27	Vertical
1848.00	66.17	44.66	-21.51	74	29.34	Horizontal

1848.00	54.96	33.45	-21.51	54	20.55	Horizontal
2772.00	56.77	38.16	-18.61	74	35.84	Horizontal
2772.00	48.82	30.21	-18.61	54	23.79	Horizontal
3696.00	55.69	39.28	-16.41	74	34.72	Horizontal
3696.00	47.69	31.28	-16.41	54	22.72	Horizontal

Remark:

1. *Final Level = Receiver Read level + Factor.
Factor = Antenna Factor + Cable Loss – Preamplifier Factor.*
2. *The emission levels of other frequencies are lower than the limit 20dB and not show in test report.*