RADIO TEST REPORT

FCC ID	:	MSQ-RTAXI600
Equipment	:	Wireless-AX5700 Dual-band Gigabit Router
Brand Name	:	ASUS
Model Name	:	RT-AX86U/RT-AX5700/RT-AX86S
Applicant	:	ASUSTeK COMPUTER INC. 1F., No. 15, Lide Rd., Beitou, Taipei 112, Taiwan
Manufacturer (1)	:	Compal Networking(KunShan) CO., LTD. No.520,Nan Bang RD., Economic & Technical Development Zone, KunShan,JiangSu,China
Manufacturer (2)	:	ARCADYAN TECHNOLOGY (VIETNAM) CO., LTD. Ba Thien Industrial Park, Ba Hien commune, Binh Xuyen district, Vinh Phuc Province
Manufacturer (3)	:	ARCADYAN TECHNOLOGY (VIETNAM) CO., LTD. No. D4-5-6, Thang Long Industrial Park (Vinh Phuc), Thien Ke commune, Binh Xuyen district, Vinh Phuc province, Vietnam
Standard	:	47 CFR FCC Part 15.247

The product was received on May 25, 2021, and testing was started from Jun. 02, 2021 and completed on Jul. 08, 2021. We, Sporton International Inc. Hsinchu Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013 and shown compliance with the applicable technical standards.

The test results in this variant report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. Hsinchu Laboratory, the test report shall not be reproduced except in full.

Approved by: Sam Chen

Sporton International Inc. Hsinchu Laboratory
No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan (R.O.C.)

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History of this test report

Report No.	Version	Description	Issued Date
FR9D0510-06AA	01	Initial issue of report	Jul. 16, 2021

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
1.1.2	15.203	Antenna Requirement	PASS	-
3.1	15.207	AC Power-line Conducted Emissions	PASS	-
3.2	15.247(d)	Emissions in Restricted Frequency Bands	PASS	-

Declaration of Conformity:
The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.
Comments and Explanations:
The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

Reviewed by: Sam Chen
Report Producer: Vicky Huang

1 General Description

1.1 Information

1.1.1 RF General Information

Frequency Range (MHz)	IEEE Std. 802.11	Ch. Frequency (MHz)	Channel Number
2400-2483.5	b, g, n (HT20), VHT20, ax (HEW20)	2412-2462	1-11 [11]
2400-2483.5	n (HT40), VHT40, ax (HEW40)	2422-2452	3-9 [7]

Band	Mode	BWch (MHz)	Nant
2.4-2.4835GHz	802.11b	20	3TX
2.4-2.4835GHz	802.11g	20	3TX
2.4-2.4835GHz	802.11n HT20	20	3TX
2.4-2.4835GHz	802.11n HT20-BF	20	3TX
2.4-2.4835GHz	VHT20	20	3TX
2.4-2.4835GHz	VHT20-BF	20	3TX
2.4-2.4835GHz	802.11ax HEW20	20	3TX
2.4-2.4835GHz	802.11ax HEW20-BF	20	3TX
2.4-2.4835GHz	802.11n HT40	40	3TX
2.4-2.4835GHz	802.11n HT40-BF	40	3TX
2.4-2.4835GHz	VHT40	40	3TX
2.4-2.4835GHz	VHT40-BF	40	3TX
2.4-2.4835GHz	802.11ax HEW40	40	3TX
2.4-2.4835GHz	802.11ax HEW40-BF	40	3TX

Note:
- 11b mode uses a combination of DSSS-DBPSK, DQPSK, CCK modulation.
- 11g, HT20 and HT40 use a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM modulation.
- VHT20, VHT40 use a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM modulation.
- HEW20, HEW40 use a combination of OFDMA-BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM modulation.
- BWch is the nominal channel bandwidth.

1.1.2 Antenna Information

Set	Ant.	Port		Brand	P/N	Type	Connector	Antenna Gain (dBi)				
		2.4 GHz	5 GHz					2.4GHz	5GHz Band 1	5GHz Band 2	5GHz Band 3	5GHz Band 4
1	1	1	1	WHA YU	C660-510490-A	Dipole	Reversed-SMA	1.66	1.86	1.86	1.90	1.84
	2	2	3									
	3	3	4									
	4	-	2	WHA YU	C660-510390-A	PCB	I-PEX	-	2.90	2.90	3.00	2.52
2	1	-	-	WHA YU	C660-510492-A	Dipole	Reversed-SMA	1.52	1.41	1.45	1.72	1.74
	2	-	-									
	3	-	-									
	4	-	-	WHA YU	C660-510390-A	PCB	I-PEX	-	2.90	2.90	3.00	2.52
3	1	-	-	WHLSIN	RFDPA141500 SBLB802	Dipole	Reversed-SMA	1.52	1.66	1.76	1.82	1.65
	2	-	-									
	3	-	-									
	4	-	-	WHLSIN	RFPCA302603I M5B301	PCB	I-PEX	-	2.17	2.30	2.20	2.49

Set	Directional Gain (dBi)					
	2.4GHz	5GHz Band 1	5GHz Band 2	5GHz Band 3	5GHz Band 4	
	Nss1	Nss1	Nss1	Nss1	Nss1	Nss2
1	6.43	6.63	6.63	6.67	6.61	4.85

Note1: The above information was declared by manufacturer.
Note2: The EUT has three sets of antenna, and each set contains four antennas.
For 2.4GHz function (3TX/3RX):
Only the higher gain antenna “Set 1” was tested.
Port 1, Port 2 and Port 3 could transmit/receive simultaneously.
For 5GHz function (4TX/4RX):
Only the higher gain antenna “Set 1” was tested.
Port 1, Port 2, Port 3 and Port 4 could transmit/receive simultaneously.
Note3: 5GHz Band with four antennas and device designed the three dipole antennas are used in the vertical position, the other one PCB antenna is used in the horizontal position.
So array gain only calculation 10log(3).

1.1.3 Mode Test Duty Cycle

Mode	DC	DCF(dB)	T(s)	VBW(Hz) ≥ 1/T
802.11b	0.949	0.23	12.419m	100
802.11g	0.947	0.24	2.065m	1k
802.11ax HEW20-BF	0.941	0.26	2.926m	1k
802.11ax HEW40-BF	0.915	0.39	4.358m	300

Note:
- DC is Duty Cycle.
- DCF is Duty Cycle Factor.

1.1.4 EUT Operational Condition

EUT Power Type	From power adapter			
Beamforming Function	☒	With beamforming	☐	Without beamforming
	The product has beamforming function for n/VHT/ax in 2.4GHz and n/ac/ax in 5GHz.			
Function	☒	Point-to-multipoint	☐	Point-to-point
Test Software Version	Mtool V3.2.0.0			

Note: The above information was declared by manufacturer.

1.1.5 Table for EUT Supports Functions

Function	Support Type
AP Router	Master
Bridge	Client without radar detection
Repeater	Master
Mesh	Master

Note: After evaluating, “AP Router” was performed test and recorded in this report.

1.1.6 Table for Multiple Listing

The model names in the following table are all refer to the identical product.

Model Name	Description
RT-AX86U	There is nothing different of three model names, just for different marketing use
RT-AX5700	
RT-AX86S	

Note 1: From the above models, model: RT-AX86U was selected as representative model for the test and its data was recorded in this report.
Note 2: The above information was declared by manufacturer.

1.1.7 Table for SKU Listing

The SKUs which are identical to each other in all aspects except for the following table:

EUT	LED Light PCB Board	Heat sink	2.4G FEM	2.5G PHY	RJ-45 cable	PU	USB port	2.5G RJ-45 port	Quantity of DDR memory	Adapter
SKU 1	V	V	Qorvo/ QPF4216B	BROADCOM/ BCM54991ELB0KFEBG	non-shielding	BCM4908	USB 3.0*2	V	2	1~3
SKU 2	V	V	SKYWORKS/ SKY85331-11	BROADCOM/ BCM54991ELB0KFEBG	non-shielding	BCM4908	USB 3.0*2	V	2	1~3
SKU 3	V	V	Qorvo/ QPF4216B	Realtek/ RTL8221B-VB-CG	non-shielding	BCM4908	USB 3.0*2	V	2	1~3
SKU 4	V	V	SKYWORKS/ SKY85331-11	Realtek/ RTL8221B-VB-CG	non-shielding	BCM4908	USB 3.0*2	V	2	1~3
SKU 5	X	V	Qorvo/ QPF4216B	X	non-shielding /Shielding	BCM4906	USB 3.0*1 USB 2.0*1	X	1	3~5

Note: The above information was declared by manufacturer.

1.1.8 Table for Class II Change

This product is an extension of original one reported under Sporton project number: FR9D0510-02AA

Below is the table for the change of the product with respect to the original one.

Modifications	Performance Checking
1. Adding a new model name: RT-AX86S. 2. Changing Applicant address to “1F., No. 15, Lide Rd., Beitou, Taipei 112, Taiwan” from “1F., No. 15, Lide Rd., Beitou Dist., Taipei City 112, Taiwan” 3. Adding the Manufacturer (3) information.	It does not affect the test results.
4. Adding SKU 3, SKU 4, SKU5 (Please refer to section 1.1.7 for detailed information). 5. Adding RJ-45 cable (Shielding).	Radiated Emission below 1GHz
6. Adding adapter 4 and adapter 5.	1. AC Power-line Conducted Emissions 2. Radiated Emission below 1GHz

1.2 Applicable Standards

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

- 47 CFR FCC Part 15
- ANSI C63.10-2013

The following reference test guidance is not within the scope of accreditation of TAF.

- FCC KDB 558074 D01 v05r02
- FCC KDB 414788 D01 v01r01

1.3 Testing Location Information

Testing Location Information	
Test Lab.：Sporton International Inc. Hsinchu Laboratory	
Hsinchu	ADD: No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan (R.O.C.)
(TAF: 3787)	TEL: 886-3-656-9065 FAX: 886-3-656-9085
	Test site Designation No. TW3787 with FCC.
	Conformity Assessment Body Identifier (CABID) TW3787 with ISED.

Test Condition	Test Site No.	Test Engineer	Test Environment (°C / %)	Test Date
Radiated	03CH05-CB	RJ Huang	24.1-24.7 / 62-66	Jun. 03, 2021~ Jul. 08, 2021
AC Conduction	CO01-CB	Peter Wu	23~24 / 60~62	Jun. 02, 2021

1.4 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)

Test Items	Uncertainty	Remark
Conducted Emission (150kHz ~ 30MHz)	2.0 dB	Confidence levels of 95%
Radiated Emission (9kHz ~ 30MHz)	4.2 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	5.5 dB	Confidence levels of 95%

2 Test Configuration of EUT

2.1 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests	
Tests Item	AC power-line conducted emissions
Condition	AC power-line conducted measurement for line and neutral
Operating Mode	Normal Link
The EUT performed at "AP Router", "Mesh + WLAN 2.4GHz", "Mesh + WLAN 5GHz", the "AP Router" has been evaluated to be the worst case, thus measurement will follow this same test mode.	
1	Normal Link: AP Router - SKU 5 + RJ-45 cable, shielded + Adapter 3 + Antenna Set 1
2	Normal Link: AP Router - SKU 5 + RJ-45 cable, shielded + Adapter 4 + Antenna Set 1
3	Normal Link: AP Router - SKU 5 + RJ-45 cable, shielded + Adapter 5 + Antenna Set 1
For operating mode 3 is the worst case and it was record in this test report.	

The Worst Case Mode for Following Conformance Tests	
Tests Item	Emissions in Restricted Frequency Bands
Test Condition	Radiated measurement If EUT consist of multiple antenna assembly (multiple antenna are used in EUT regardless of spatial multiplexing MIMO configuration), the radiated test should be performed with highest antenna gain of each antenna type.
Operating Mode < 1GHz	CTX
The EUT was performed at Adapter 1 ~ Adapter 3, the worst case was found at Adapter 3. So the measurement will follow this same test configuration for SKU 3~4 The EUT has two operate mode as below: 1. WLAN 2.4GHz 2. WLAN 5GHz And, from above the worst case was found at WLAN 2.4GHz. So the measurement will follow this same test configuration.	
1	SKU 3 - WLAN 2.4GHz + RJ-45 cable, non-shielded + Adapter 3 + Antenna Set 1
2	SKU 4 - WLAN 2.4GHz + RJ-45 cable, non-shielded + Adapter 3 + Antenna Set 1
3	SKU 5 - WLAN 2.4GHz + RJ-45 cable, shielded + Adapter 3 + Antenna Set 1
4	SKU 5 - WLAN 2.4GHz + RJ-45 cable, shielded + Adapter 4 + Antenna Set 1
5	SKU 5 - WLAN 2.4GHz + RJ-45 cable, shielded + Adapter 5 + Antenna Set 1
Mode 4 has been evaluated to be the worst case among Mode 3~5, thus measurement for Mode 6 will follow this same test mode.	
6	SKU 5 - WLAN 2.4GHz + RJ-45 cable, non-shielded + Adapter 4 + Antenna Set 1
For operating mode 4 is the worst case and it was record in this test report.	

Note: The EUT can only be used at Y axis position.

2.2 EUT Operation during Test

For Normal Link:

During the test, the EUT operation to normal function.

For CTX:

The EUT was programmed to be in continuously transmitting mode.

2.3 Accessories

Accessories				
Equipment Name	**Brand Name**	**Model Name**	**Rating**	**Remark**
Adapter 1	DELTA	ADP-45ZE B	INPUT: 100-240V ~ 50-60Hz, 1.2A OUTPUT: 19V, 2.37A	With the DC cable: Non-shielded, 1.8m
Adapter 2	DELTA	ADP-45FE F	INPUT: 100-240V ~1.2A, 50-60Hz OUTPUT: 19V, 2.37A	With the DC cable: Non-shielded, 1.5m
Adapter 3	AcBel	ADH011	INPUT: 100-240V ~1.4A, 50-60Hz OUTPUT: 19.5V, 2.31A, 45W MAX	With the DC cable: Non-shielded, 1.5m
Adapter 4	LEI	MU36B1120300-A1	INPUT: 100-240V~50/60Hz，1A OUTPUT: 12V, 3A	-
Adapter 5	APD	WA-36N12FU	INPUT: 100-240V~,50-60Hz, 0.9A Max. OUTPUT: 12.0V, 3.0A	-
Others				
Power cable*1: Non-shielded, 0.9m for Adapter 1~3 use				
RJ-45 cable*1: Non-shielded, 1.5m				
RJ-45 cable*1: Shielded, 1.5m				

2.4 Support Equipment

For AC Conduction:

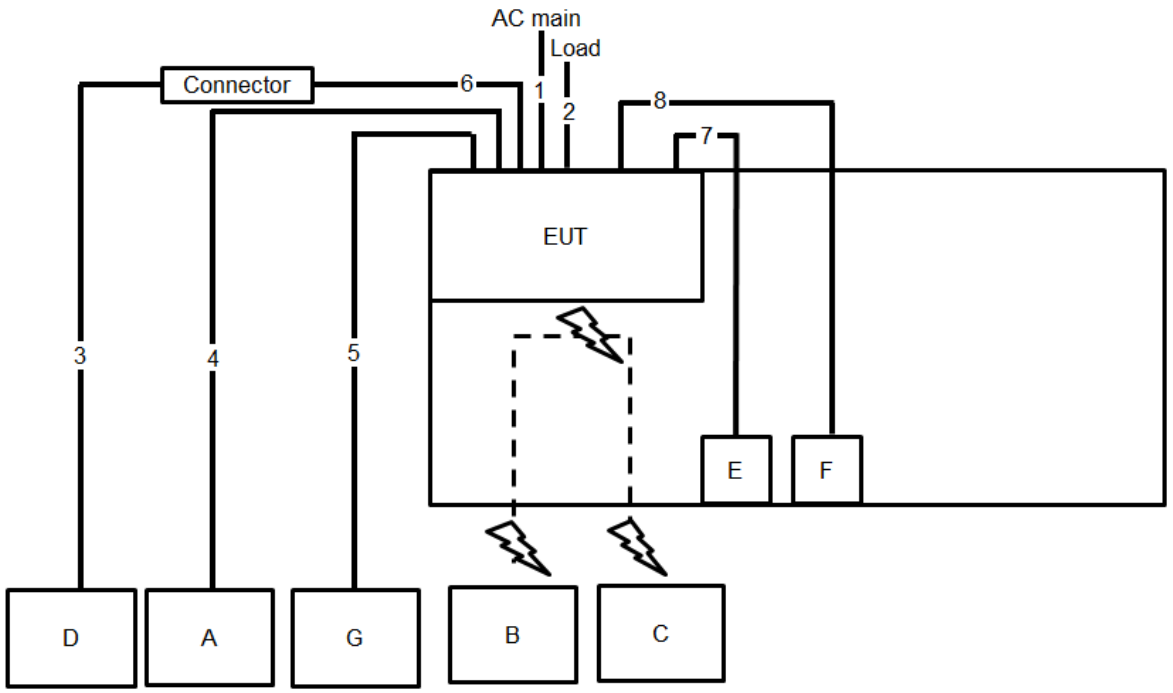
Support Equipment				
No.	**Equipment**	**Brand Name**	**Model Name**	**FCC ID**
A	LAN1 NB	DELL	E6430	N/A
B	2.4G NB	DELL	E6430	N/A
C	5G NB	DELL	E6430	N/A
D	WAN NB	DELL	E6430	N/A
E	HDD3.0	Transcend	TS1TSJ25A3K	N/A
F	HDD3.0	Transcend	TS1TSJ25A3K	N/A
G	LAN4 NB	DELL	E6430	N/A

For Radiated:

Support Equipment				
No.	**Equipment**	**Brand Name**	**Model Name**	**FCC ID**
A	NB	DELL	E4300	N/A

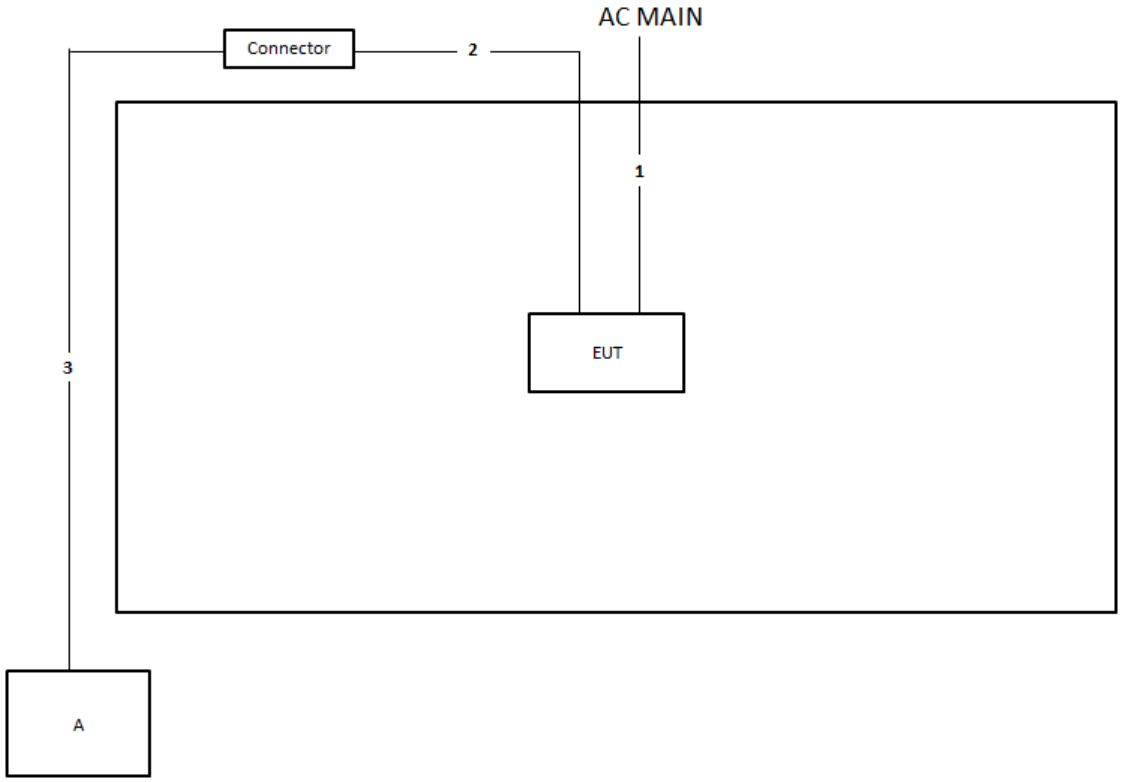
2.5 Test Setup Diagram

Test Setup Diagram – AC Line Conducted Emission Test



Item	Connection	Shielded	Length
1	Power cable	No	1.8m
2	RJ-45 cable*2	No	1.5m
3	RJ-45 cable	Yes	10m
4	RJ-45 cable	No	10m
5	RJ-45 cable	No	10m
6	RJ-45 cable	Yes	1.5m
7	USB cable	Yes	1.8m
8	USB cable	Yes	1.8m

Test Setup Diagram - Radiated Test



Item	Connection	Shielded	Length
1	Power cable	No	1.5m
2	RJ-45 cable	Yes	1.5m
3	RJ-45 cable	Yes	10m

3 Transmitter Test Result

3.1 AC Power-line Conducted Emissions

3.1.1 AC Power-line Conducted Emissions Limit

AC Power-line Conducted Emissions Limit		
Frequency Emission (MHz)	**Quasi-Peak**	**Average**
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50
Note 1: * Decreases with the logarithm of the frequency.		

3.1.2 Measuring Instruments

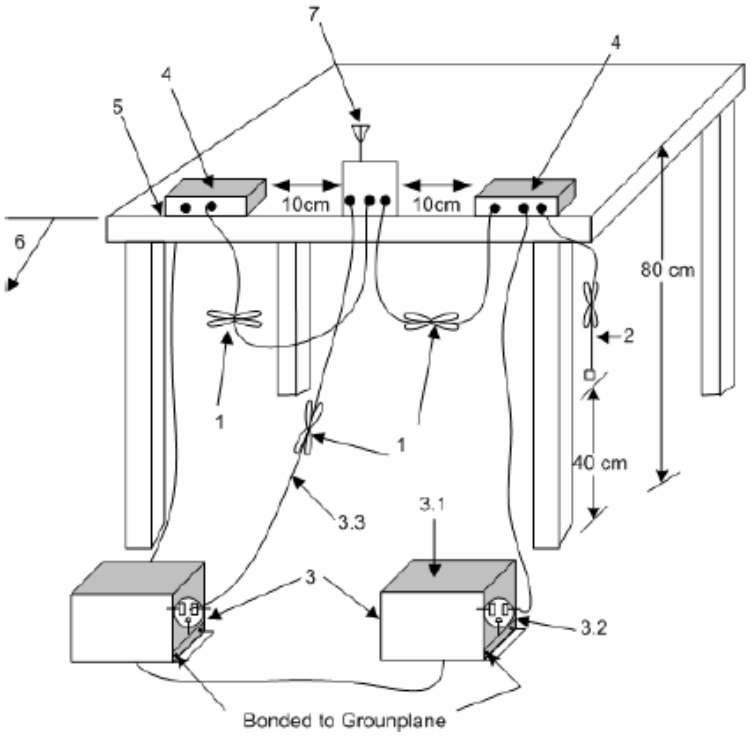
Refer a test equipment and calibration data table in this test report.

3.1.3 Test Procedures

Test Method
☒ Refer as ANSI C63.10-2013, clause 6.2 for AC power-line conducted emissions.

3.1.4 Test Setup

AC Power-line Conducted Emissions



1—Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 cm to 40 cm long.
2—The I/O cables that are not connected to an accessory shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
3—EUT connected to one LISN. Unused LISN measuring port connectors shall be terminated in 50 Ω loads. LISN may be placed on top of, or immediately beneath, reference ground plane.
3.1—All other equipment powered from additional LISN(s).
3.2—A multiple-outlet strip may be used for multiple power cords of non-EUT equipment.
3.3—LISN at least 80 cm from nearest part of EUT chassis.
4—Non-EUT components of EUT system being tested.
5—Rear of EUT, including peripherals, shall all be aligned and flush with edge of tabletop.
6—Edge of tabletop shall be 40 cm removed from a vertical conducting plane that is bonded to the ground plane.
7—Antenna can be integral or detachable. If detachable, then the antenna shall be attached for this test.

3.1.5 Measurement Results Calculation

The measured Level is calculated using:

a. Corrected Reading: LISN Factor (LISN) + Attenuator (AT/AUX) + Cable Loss (CL) + Read Level (Raw) = Level

b. Margin = -Limit + Level

3.1.6 Test Result of AC Power-line Conducted Emissions

Refer as Appendix A

3.2 Emissions in Restricted Frequency Bands

3.2.1 Emissions in Restricted Frequency Bands Limit

Restricted Band Emissions Limit			
Frequency Range (MHz)	**Field Strength (uV/m)**	**Field Strength (dBuV/m)**	**Measure Distance (m)**
0.009~0.490	2400/F(kHz)	48.5 - 13.8	300
0.490~1.705	24000/F(kHz)	33.8 - 23	30
1.705~30.0	30	29	30
30~88	100	40	3
88~216	150	43.5	3
216~960	200	46	3
Above 960	500	54	3

Note 1: Test distance for frequencies at or above 30 MHz, measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).

Note 2: Test distance for frequencies at below 30 MHz, measurements may be performed at a distance closer than the EUT limit distance; however, an attempt should be made to avoid making measurements in the near field. When performing measurements below 30 MHz at a closer distance than the limit distance, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two or more distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). The test report shall specify the extrapolation method used to determine compliance of the EUT.

Note 3: Using the distance of 1m during the test for above 18 GHz, and the test value to correct for the distance factor at 3m.

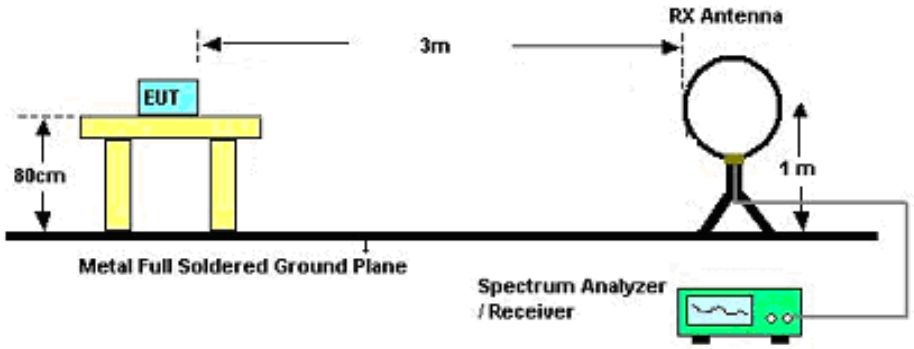
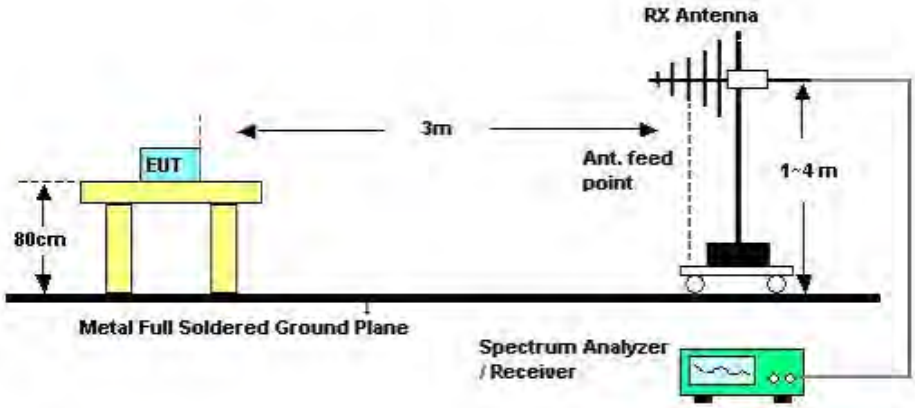
3.2.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.2.3 Test Procedures

Test Method
▪ The average emission levels shall be measured in [duty cycle ≥ 98 or duty factor].
▪ Refer as ANSI C63.10, clause 6.10.3 band-edge testing shall be performed at the lowest frequency channel and highest frequency channel within the allowed operating band.
▪ For the transmitter unwanted emissions shall be measured using following options below:
▪ Refer as FCC KDB 558074, clause 8.6 for unwanted emissions into restricted bands.
☐ Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.5.1(trace averaging for duty cycle ≥98%).
☐ Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.5.2(trace averaging + duty factor).
☒ Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.5.3(Reduced VBW≥1/T).
☐ Refer as ANSI C63.10, clause 11.12.2.5.3 (Reduced VBW). VBW ≥ 1/T, where T is pulse time.
☐ Refer as ANSI C63.10, clause 7.5 average value of pulsed emissions.
☒ Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.4 measurement procedure peak limit.
▪ For the transmitter band-edge emissions shall be measured using following options below:
▪ Refer as FCC KDB 558074 clause 8.7 & C63.10 clause 11.13.1, When the performing peak or average radiated measurements, emissions within 2 MHz of the authorized band edge may be measured using the marker-delta method described below.
▪ Refer as FCC KDB 558074, clause 8.7 (ANSI C63.10, clause 6.10.6) for marker-delta method for band-edge measurements.
▪ Refer as FCC KDB 558074, clause 8.7 for narrower resolution bandwidth (100kHz) using the band power and summing the spectral levels (i.e., 1 MHz).
▪ For conducted unwanted emissions into restricted bands (absolute emission limits). Devices with multiple transmit chains using options given below: (1) Measure and sum the spectra across the outputs or (2) Measure and add 10 log(N) dB
▪ For FCC KDB 662911 The methodology described here may overestimate array gain, thereby resulting in apparent failures to satisfy the out-of-band limits even if the device is actually compliant. In such cases, compliance may be demonstrated by performing radiated tests around the frequencies at which the apparent failures occurred.

3.2.4 Test Setup

Radiated - Emissions in Restricted Frequency Bands
9kHz ~30MHz

30MHz~1GHz


3.2.5 Measurement Results Calculation

The measured Level is calculated using:
Corrected Reading: Antenna factor (AF) + Cable loss (CL) + Read level (Raw) - Preamp factor (PA)(if applicable) = Level.

3.2.6 Emissions in Restricted Frequency Bands (Below 30MHz)

There is a comparison data of both open-field test site and alternative test site - semi-Anechoic chamber according to KDB414788 Radiated Test Site, and the result came out very similar.
All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.
The radiated emissions were investigated from 9 kHz or the lowest frequency generated within the device, up to the 10 harmonic or 40 GHz, whichever is appropriate.

3.2.7 Test Result of Emissions in Restricted Frequency Bands

Refer as Appendix B

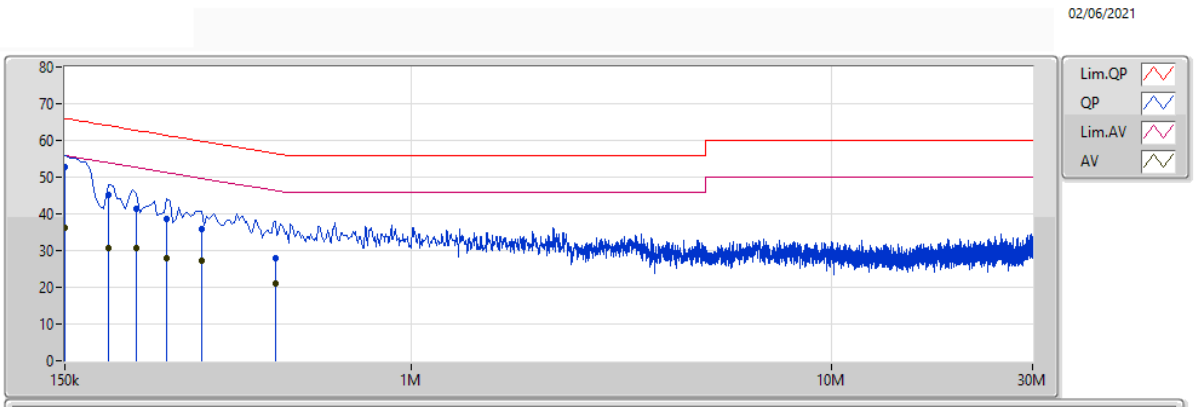
4 Test Equipment and Calibration Data

Instrument	Brand	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
EMI Receiver	Agilent	N9038A	My52260123	9kHz ~ 8.4GHz	Mar. 03, 2021	Mar. 02, 2022	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-16-2	04083	150kHz ~ 100MHz	Jan. 06, 2021	Jan. 05, 2022	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	Mar. 07, 2021	Mar. 06, 2022	Conduction (CO01-CB)
Pulse Limiter	Rohde& Schwarz	ESH3-Z2	100430	9kHz ~ 30MHz	Jan. 30, 2021	Jan. 29, 2022	Conduction (CO01-CB)
COND Cable	Woken	Cable	Low cable-CO01	9kHz ~ 30MHz	May 19, 2021	May 18, 2022	Conduction (CO01-CB)
Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Conduction (CO01-CB)
3m Semi Anechoic Chamber NSA	TDK	SAC-3M	03CH05-CB	30 MHz ~ 1 GHz	Aug. 10, 2020	Aug. 09, 2021	Radiation (03CH05-CB)
Bilog Antenna with 6dB Attenuator	TESEQ & EMCI	CBL 6112D & N-6-06	35236 & AT-N0610	30MHz ~ 2GHz	Mar. 26, 2021	Mar. 25, 2022	Radiation (03CH05-CB)
Loop Antenna	Teseq	HLA 6120	24155	9kHz - 30 MHz	Apr. 14, 2021	Apr. 13, 2022	Radiation (03CH05-CB)
Pre-Amplifier	EMCI	EMC330N	980331	20MHz ~ 3GHz	Apr. 27, 2021	Apr. 26, 2022	Radiation (03CH05-CB)
Spectrum Analyzer	R&S	FSP40	100304	9kHz ~ 40GHz	Nov. 10, 2020	Nov. 09, 2021	Radiation (03CH05-CB)
EMI Test Receiver	R&S	ESR7	102171	9kHz ~ 26GHz	Jul. 01, 2020	Jun. 30, 2021	Radiation (03CH05-CB)
EMI Test Receiver	R&S	ESCS	826547/017	9kHz ~ 2.75GHz	Jun. 21, 2021	Jun. 20, 2022	Radiation (03CH05-CB)
RF Cable-low	Woken	RG402	Low Cable-04+23	30MHz~1GHz	Oct. 05, 2020	Oct. 04, 2021	Radiation (03CH05-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Radiation (03CH05-CB)

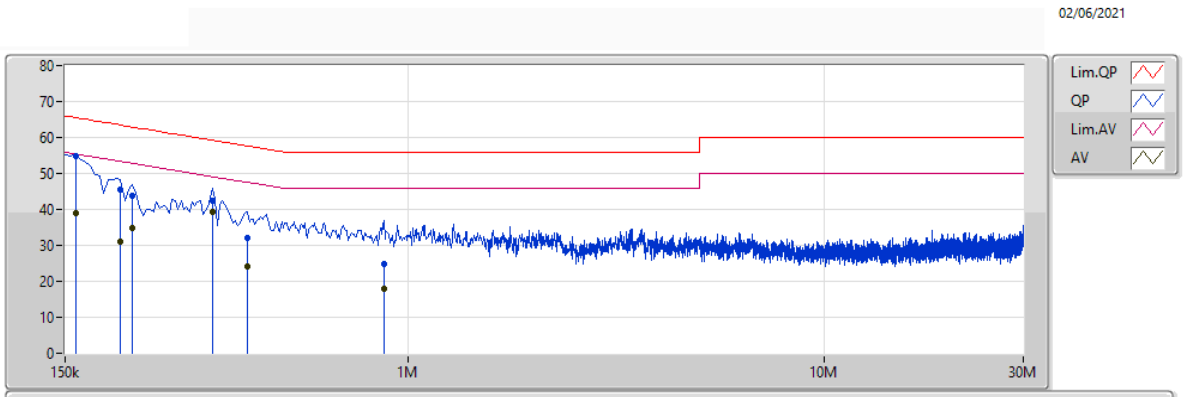
Note: Calibration Interval of instruments listed above is one year.
N.C.R. means Non-Calibration required.

Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Condition
Mode 3	Pass	AV	339k	39.38	49.23	-9.85	Neutral



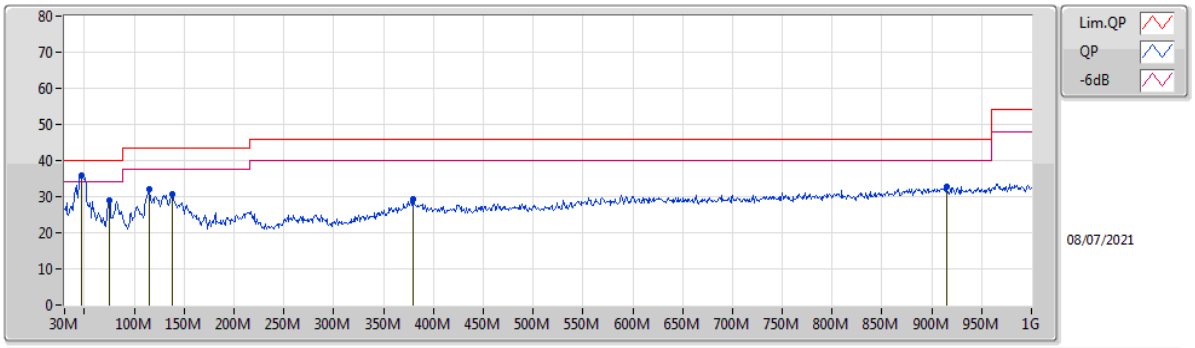
Type	Freq	Level	Limit	Margin	Factor	Condition	Comment	Raw	LISN	CL	AT
	(Hz)	(dBuV)	(dBuV)	(dB)	(dB)			(dBuV)	(dB)	(dB)	(dB)
QP	150k	52.74	66.00	-13.26	9.89	Line	"Worst"	42.85	0.04	0.04	9.81
AV	150k	36.15	56.00	-19.85	9.89	Line	-	26.26	0.04	0.04	9.81
QP	190.5k	45.04	64.01	-18.97	9.89	Line	-	35.15	0.04	0.04	9.81
AV	190.5k	30.72	54.01	-23.29	9.89	Line	-	20.83	0.04	0.04	9.81
QP	222k	41.54	62.75	-21.21	9.89	Line	-	31.65	0.04	0.04	9.81
AV	222k	30.56	52.75	-22.19	9.89	Line	-	20.67	0.04	0.04	9.81
QP	262.5k	38.75	61.35	-22.60	9.89	Line	-	28.86	0.04	0.04	9.81
AV	262.5k	27.78	51.35	-23.57	9.89	Line	-	17.89	0.04	0.04	9.81
QP	316.5k	35.74	59.80	-24.06	9.90	Line	-	25.84	0.04	0.04	9.82
AV	316.5k	27.16	49.80	-22.64	9.90	Line	-	17.26	0.04	0.04	9.82
QP	474k	27.85	56.44	-28.59	9.90	Line	-	17.95	0.04	0.04	9.82
AV	474k	20.87	46.44	-25.57	9.90	Line	-	10.97	0.04	0.04	9.82



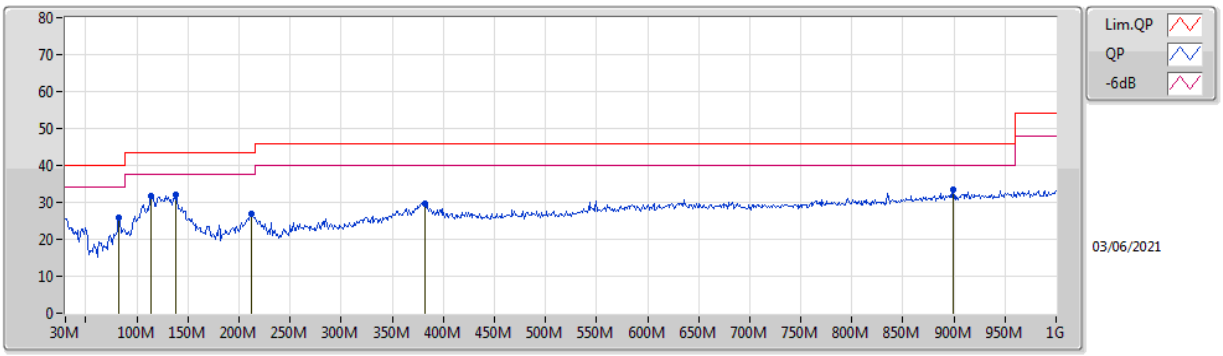
Type	Freq	Level	Limit	Margin	Factor	Condition	Comment	Raw	LISN	CL	AT
	(Hz)	(dBuV)	(dBuV)	(dB)	(dB)			(dBuV)	(dB)	(dB)	(dB)
QP	159k	54.66	65.52	-10.86	9.88	Neutral	-	44.78	0.03	0.04	9.81
AV	159k	38.80	55.52	-16.72	9.88	Neutral	-	28.92	0.03	0.04	9.81
QP	204k	45.37	63.44	-18.07	9.88	Neutral	-	35.49	0.03	0.04	9.81
AV	204k	31.01	53.44	-22.43	9.88	Neutral	-	21.13	0.03	0.04	9.81
QP	217.5k	43.94	62.92	-18.98	9.88	Neutral	-	34.06	0.03	0.04	9.81
AV	217.5k	34.75	52.92	-18.17	9.88	Neutral	-	24.87	0.03	0.04	9.81
QP	339k	42.35	59.23	-16.88	9.89	Neutral	-	32.46	0.03	0.04	9.82
AV	339k	39.38	49.23	-9.85	9.89	Neutral	"Worst"	29.49	0.03	0.04	9.82
QP	411k	32.03	57.63	-25.60	9.89	Neutral	-	22.14	0.03	0.04	9.82
AV	411k	24.29	47.63	-23.34	9.89	Neutral	-	14.40	0.03	0.04	9.82
QP	874.5k	24.88	56.00	-31.12	9.92	Neutral	-	14.96	0.05	0.04	9.83
AV	874.5k	18.07	46.00	-27.93	9.92	Neutral	-	8.15	0.05	0.04	9.83

Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Condition
Mode 4	Pass	QP	46.49M	35.92	40.00	-4.08	Vertical



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV/m)	(dB/m)	(dB)	(dB)
QP	46.49M	35.92	40.00	-4.08	-15.78	3	Vertical	0	1.00	"Worst"	51.70	15.35	0.60	31.73
PK	74.62M	28.88	40.00	-11.12	-18.79	3	Vertical	19	1.25	-	47.67	12.22	0.89	31.90
PK	114.39M	31.97	43.50	-11.53	-12.74	3	Vertical	158	1.00	-	44.71	17.94	1.24	31.92
PK	137.67M	30.59	43.50	-12.91	-13.56	3	Vertical	158	1.00	-	44.15	17.10	1.30	31.96
PK	380.17M	29.14	46.00	-16.86	-8.76	3	Vertical	110	1.50	-	37.90	20.88	2.52	32.16
PK	914.64M	32.86	46.00	-13.14	-2.16	3	Vertical	296	3.00	-	35.02	26.17	4.30	32.63



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV/m)	(dB/m)	(dB)	(dB)
PK	82.38M	25.73	40.00	-14.27	-17.83	3	Horizontal	100	2.00	-	43.56	13.14	0.95	31.92
PK	113.42M	31.84	43.50	-11.66	-12.80	3	Horizontal	79	3.00	-	44.64	17.89	1.23	31.92
PK	138.64M	32.20	43.50	-11.30	-13.68	3	Horizontal	105	2.00	"Worst"	45.88	16.98	1.30	31.96
PK	212.36M	26.82	43.50	-16.68	-15.51	3	Horizontal	227	1.50	-	42.33	14.73	1.75	31.99
PK	382.11M	29.57	46.00	-16.43	-8.68	3	Horizontal	118	1.00	-	38.25	20.95	2.53	32.16
PK	899.12M	33.33	46.00	-12.67	-2.15	3	Horizontal	41	1.00	-	35.48	26.22	4.29	32.66