RADIO TEST REPORT

FCC ID	:	MSQ-AXHZ00
Equipment	:	AX6600 Tri Band WiFi Router
Brand Name	:	ASUS
Model Name	:	RT-AX95Q, ZenWiFi XT8, ASUS ZenWiFi XT8, XT8, ASUS ZenWiFi
Applicant	:	ASUSTeK COMPUTER INC. 1F., No. 15, Lide Rd., Beitou, Taipei 112, Taiwan
Manufacturer (1)	:	Compal Networking (KunShan) Co., LTD. No. 520, Nanbang Rd., Economic & Technical Development Zone Kunshan, Jiangsu Province China
Manufacturer (2)	:	ARCADYAN TECHNOLOGY (VIETNAM) CO., LTD. Ba Thien Industrial Park, Ba Hien commune, Binh Xuyen district, Vinh Phuc Province
Standard	:	47 CFR FCC Part 15.407

The product was received on Sep. 19, 2019, and testing was started from Sep. 19, 2019 and completed on Nov. 10, 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 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
FR951008-06AB	01	Initial issue of report	Nov. 18, 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	15.407(b)	Unwanted Emissions	PASS	-
Note: Reference to Sporton Project No.: 951008-01, 951008-02, 951008-03.				

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: Wendy Pan

1 General Description

1.1 Information

1.1.1 RF General Information

Frequency Range (MHz)	IEEE Std. 802.11	Ch. Frequency (MHz)	Channel Number
5150-5250	a, n (HT20), ac (VHT20), ax (HEW20)	5180-5240	36-48 [4]
5470-5725		5500-5720	100-144 [12]
5725-5850		5745-5825	149-165 [5]
5150-5250	n (HT40), ac (VHT40), ax (HEW40)	5190-5230	38-46 [2]
5470-5725		5510-5710	102-142 [6]
5725-5850		5755-5795	151-159 [2]
5150-5250	ac (VHT80), ax (HEW80)	5210	42 [1]
5470-5725		5530-5690	106-138 [3]
5725-5850		5775	155 [1]
5470-5725	ac (VHT160), ax (HEW160)	5570	114 [1]

Band	Mode	BWch (MHz)	Nant
5.15-5.25GHz	802.11a	20	2TX
5.15-5.25GHz	802.11n HT20	20	2TX
5.15-5.25GHz	802.11n HT20-BF	20	2TX
5.15-5.25GHz	802.11ac VHT20	20	2TX
5.15-5.25GHz	802.11ac VHT20-BF	20	2TX
5.15-5.25GHz	802.11ax HEW20	20	2TX
5.15-5.25GHz	802.11ax HEW20-BF	20	2TX
5.15-5.25GHz	802.11n HT40	40	2TX
5.15-5.25GHz	802.11n HT40-BF	40	2TX
5.15-5.25GHz	802.11ac VHT40	40	2TX
5.15-5.25GHz	802.11ac VHT40-BF	40	2TX
5.15-5.25GHz	802.11ax HEW40	40	2TX
5.15-5.25GHz	802.11ax HEW40-BF	40	2TX
5.15-5.25GHz	802.11ax HEW80	80	2TX
5.15-5.25GHz	802.11ax HEW80-BF	80	2TX
5.47-5.725GHz	802.11a	20	4TX
5.47-5.725GHz	802.11n HT20	20	4TX
5.47-5.725GHz	802.11n HT20-BF	20	4TX
5.47-5.725GHz	802.11ac VHT20	20	4TX
5.47-5.725GHz	802.11ac VHT20-BF	20	4TX

Band	Mode	BWch (MHz)	Nant
5.47-5.725GHz	802.11ax HEW20	20	4TX
5.47-5.725GHz	802.11ax HEW20-BF	20	4TX
5.47-5.725GHz	802.11n HT40	40	4TX
5.47-5.725GHz	802.11n HT40-BF	40	4TX
5.47-5.725GHz	802.11ac VHT40	40	4TX
5.47-5.725GHz	802.11ac VHT40-BF	40	4TX
5.47-5.725GHz	802.11ax HEW40	40	4TX
5.47-5.725GHz	802.11ax HEW40-BF	40	4TX
5.47-5.725GHz	802.11ax HEW80	80	4TX
5.47-5.725GHz	802.11ax HEW80-BF	80	4TX
5.47-5.725GHz	802.11ac VHT160	160	4TX
5.47-5.725GHz	802.11ac VHT160-BF	160	4TX
5.47-5.725GHz	802.11ax HEW160	160	4TX
5.47-5.725GHz	802.11ax HEW160-BF	160	4TX
5.725-5.85GHz	802.11a	20	4TX
5.725-5.85GHz	802.11n HT20	20	4TX
5.725-5.85GHz	802.11n HT20-BF	20	4TX
5.725-5.85GHz	802.11ac VHT20	20	4TX
5.725-5.85GHz	802.11ac VHT20-BF	20	4TX
5.725-5.85GHz	802.11ax HEW20	20	4TX
5.725-5.85GHz	802.11ax HEW20-BF	20	4TX
5.725-5.85GHz	802.11n HT40	40	4TX
5.725-5.85GHz	802.11n HT40-BF	40	4TX
5.725-5.85GHz	802.11ac VHT40	40	4TX
5.725-5.85GHz	802.11ac VHT40-BF	40	4TX
5.725-5.85GHz	802.11ax HEW40	40	4TX
5.725-5.85GHz	802.11ax HEW40-BF	40	4TX
5.725-5.85GHz	802.11ax HEW80	80	4TX
5.725-5.85GHz	802.11ax HEW80-BF	80	4TX

Note:
- 11a, HT20 and HT40 use a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM modulation.
- VHT20, VHT40, VHT80 and VHT160 use a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM modulation.
- HEW20, HEW40, HEW80 and HEW160 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	Antenna Type	Connector	Gain (dBi)
1	1	1	PSA	RFDPA230508IMLB902	Dipole	I-PEX	Note1
	2	2	PSA	RFDPA230508IMLB902	Dipole	I-PEX	
	3	-	PSA	RFDPA230508IMLB902	Dipole	I-PEX	
	4	-	PSA	RFDPA230508IMLB902	Dipole	I-PEX	
	5	-	PSA	RFDPA230508IMLB902	Dipole	I-PEX	
	6	-	PSA	RFDPA230508IMLB902	Dipole	I-PEX	
2	1	1	M.gear	C660-510484-A	Dipole	I-PEX	
	2	2	M.gear	C660-510484-A	Dipole	I-PEX	
	3	-	M.gear	C660-510484-A	Dipole	I-PEX	
	4	-	M.gear	C660-510484-A	Dipole	I-PEX	
	5	-	M.gear	C660-510484-A	Dipole	I-PEX	
	6	-	M.gear	C660-510484-A	Dipole	I-PEX	

Note 1:

Set	Ant.	Port	Antenna Gain (dBi)			Direction Gain (dBi)				
			Radio 1 WLAN 5GHz UNII 1	Radio 2 WLAN 5GHz UNII 2C	Radio 2 WLAN 5GHz UNII 3	Radio 1 WLAN 5GHz UNII 1	Radio 2 WLAN 5GHz UNII 2C		Radio 2 WLAN 5GHz UNII 3	
							4T1S	4T2S	4T1S	4T2S
1	1	1	3.08	-	-	5.99	-	-	-	-
	2	2	3.08	-	-	5.99	-	-	-	-
	3	-	-	2.22	2.23	-	8.07	5.22	8.21	5.23
	4	-	-	2.22	2.23	-	8.07	5.22	8.21	5.23
	5	-	-	2.22	2.23	-	8.07	5.22	8.21	5.23
	6	-	-	2.22	2.23	-	8.07	5.22	8.21	5.23
2	1	1	3.08	-	-	5.99	-	-	-	-
	2	2	3.08	-	-	5.99	-	-	-	-
	3	-	-	2.22	2.23	-	8.07	5.22	8.21	5.23
	4	-	-	2.22	2.23	-	8.07	5.22	8.21	5.23
	5	-	-	2.22	2.23	-	8.07	5.22	8.21	5.23
	6	-	-	2.22	2.23	-	8.07	5.22	8.21	5.23

Note 2: The above information was declared by manufacturer.

Note 3: The EUT has two sets of antennas and there are six antennas for set 1 and set 2.
Set 1~2 are the same antenna type. Only Set 1 antenna was selected to test and record in this report.
For 5GHz UNII 1 WLAN function (Radio 1)
IEEE 802.11a/n/ac/ax mode (2TX/2RX):
Port 1 and port 2 can be used as transmitting/receiving antenna.

Port 1 and port 2 could transmit/receive simultaneously.
For 5GHz UNII 2C and UNII 3 WLAN function (Radio 2)
IEEE 802.11a/n/ac/ax mode (4TX/4RX):
Port 1, port 2, port 3 and port 4 can be used as transmitting/receiving antenna.
Port 1, port 2, port 3 and port 4 could transmit/receive simultaneously.

1.1.3 EUT Operational Condition

EUT Power Type	From Power Adapter			
Beamforming Function	☒	With beamforming	☐	Without beamforming
	For IEEE 802.11n/ac/VHT in 2.4GHz and IEEE 802.11n/ac/ax in 5GHz.			
Weather Band	☒	With 5600~5650MHz	☒	Without 5600~5650MHz
Function	☐	Outdoor P2M	☐	Indoor P2M
	☐	Fixed P2P	☐	Client
TPC Function	☒	With TPC	☐	Without TPC
Test Software Version	Mtool V3.1.0.3			

Note: The above information was declared by manufacturer.

1.1.4 Table for Multiple Listing

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

Brand Name	Model Name	Description
ASUS	RT-AX95Q	All the models are identical, the different model names served as marketing strategy.
	ZenWiFi XT8	
	ASUS ZenWiFi XT8	
	XT8	
	ASUS ZenWiFi	

Note 1: From the above models, model: RT-AX95Q 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.

1.1.5 Table for SKU information

EUT	SKU	LAN Transformer		2.5G PHY		Front PCB Board	Back PCB Board
		Brand Name	P/N	Brand Name	P/N		
1	SKU 1	NETSWAP	NS773602 / NS771802	BROADCOM	BCM54991ELB0K FEBG	1 LED	Without Debug LED
2	SKU 2	Mingtek	HN36201CG / HN18101CG	BROADCOM	BCM54991ELB0K FEBG		
3	SKU 3	NETSWAP	NS773602 / NS771802	Realtek	RTL8221B-VB-CG		
4	SKU 4	Mingtek	HN36201CG / HN18101CG	Realtek	RTL8221B-VB-CG		

Note: The above information was declared by manufacturer.

1.1.6 Table for EUT supports functions

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

Note: The above information was declared by manufacturer.

1.1.7 Table for radio information

Radio	2.4GHz	5GHz	Bluetooth
1	V	V (UNII 1)	X
2	X	V (Band UNII 2C~UNII 4)	X
3	X	X	V

Note: The above information was declared by manufacturer.

1.1.8 Table for Permissive Change

This product is an extension of original one reported under Sporton project number: FR951008AB

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

Modifications	Performance Checking
1. Adding four adapters.((Please refer to section 2.4 for detailed information). 2. Adding the second source for 2.5G PHY (Brand: Realtek, Model: RTL8221B-VB-CG)	1. AC Conducted Emissions 2. Unwanted Emissions Bands below 1GHz
3. Changing the quantity of front PCB board LED to 1 LED from 3 LED. 4. Removing the debug LED of the back PCB board. 5. Changing Applicant address to “1F., No. 15, Lide Rd., Beitou, Taipei 112, Taiwan” from “4F, No. 150, Li-Te Rd., Peitou, Taipei 112, Taiwan”. 6. Add UNII 4 for this device.	3. After evaluating, it doesn't affect the test results of this test report.

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
- FCC KDB 789033 D02 v02r01

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

- FCC KDB 412172 D01 v01r01
- FCC KDB 414788 D01 v01r01

1.3 Testing Location Information

Testing Location Information	
Test Lab.：Sporton International Inc. Hsinchu Laboratory	
Hsinchu (TAF: 3787)	ADD: No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan (R.O.C.) 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	Ken Yeh	24.2-26.1 / 55-58	Nov. 10, 2021
AC Conduction (Test Mode: Mode 1~2)	CO01-CB	Max Lin	23~24 / 58~59	Sep. 19, 2019
AC Conduction (Test Mode: Mode 3~5)	CO01-CB	Wei Li	24~25 / 51~56	Apr. 30, 2020

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 Test Voltage: 120Vac / 60Hz
Operating Mode	Normal Link
	1. The device supports AP Router mode, Mesh mode - Radio 2_5GHz, Mesh mode - Radio 1_5GHz, Mesh mode - Radio 1_2.4GHz. After evaluating, AP Router mode is the worst case, thus measurement will follow this same test mode. 2. The EUT has four SKU: SKU 1 ~ SKU 4. After evaluating, SKU 1 is the worst case, thus measurement will follow this same test mode.
1	AP Router mode - EUT 1 + Adapter 1
2	AP Router mode - EUT 1 + Adapter 2
3	AP Router mode - EUT 1 + Adapter 3
4	AP Router mode - EUT 1 + Adapter 4
5	AP Router mode - EUT 1 + Adapter 5
For operating mode 1 is the worst case and it was record in this test report.	

The Worst Case Mode for Following Conformance Tests	
Tests Item	Unwanted Emissions
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
	1. The EUT was performed at X axis, Y axis and Z axis position for Radiated emission above 1GHz test, and the worst case was found at Y axis. So the measurement will follow this same test configuration. 2. The EUT has four wireless functions are: Radio 1 + WLAN 2.4GHz, Radio 1 + WLAN 5GHz Low Band (UNII 1), Radio 2 + WLAN 5GHz High Band (UNII 2C~UNII 4) and Radio 3 + Bluetooth, After evaluating, Radio 1 + WLAN 5GHz UNII 1 mode is the worst case, thus measurement will follow this same test mode. 3. “adapter 4” has been evaluated to be the worst case for adapter 1 ~ 5, thus measurement for this item will follow this same test mode. 4. The EUT has four SKU: SKU 1 ~ SKU 4. After evaluating, SKU 1 is the worst case, thus measurement will follow this same test mode.
1	EUT 2 in Y axis + Radio 1 + WLAN 5GHz UNII 1 + adapter 4

2.2 EUT Operation during Test

For CTX Mode:

The EUT was programmed to be in continuously transmitting mode.

For Normal Link Mode:

During the test, the EUT operation to normal function.

2.3 Accessories

Accessories					
Equipment Name	**Brand Name**	**Model Name**	**Type**	**Country Code**	**Rating**
Adapter 1	PI	AD2088320	010LF	-	Input: 100-240V~50/60Hz, 0.8A Output: 19V, 1.75A
Adapter 2	Delta	ADP-33AW B	-	G	Input: 100-240V~1A, 50-60Hz Output: 19V, 1.75A
Adapter 3	Delta	ADP-33AW Y	-	2G	Input: 100-240V~1A, 50-60Hz Output: 19V, 1.75A, 33.0W
Adapter 4	PI	AD2131M20	-	00	Input: 100-240V~50/60Hz, 0.8A Output: 19V, 1.75A, 33.0W
Adapter 5	PI	AD2131320	-	00	Input: 100-240V~50/60Hz, 0.8A Output: 19V, 1.75A, 33.0W
Other					
RJ-45 cable*1: Non-shielded, 1.5m					

Note: Adapter 4 with EU plug performed the testing by manufacturer request.

2.4 Support Equipment

For AC Conduction:

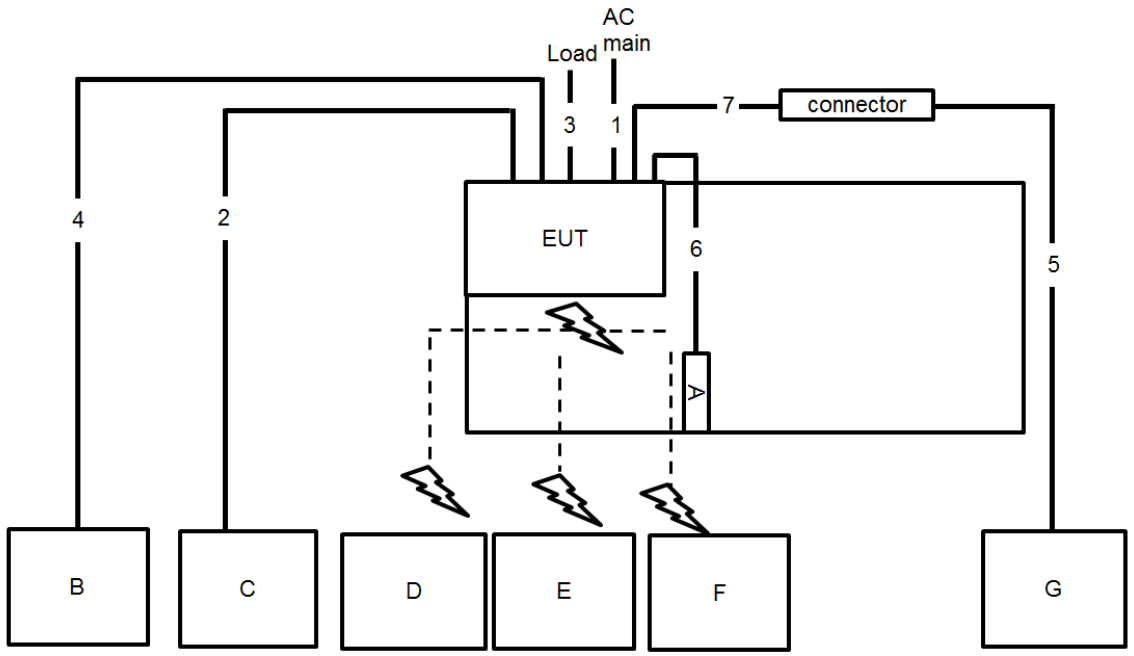
Support Equipment				
No.	**Equipment**	**Brand Name**	**Model Name**	**FCC ID**
A	HDD3.0	WD	WDBACY5000AWT	N/A
B	LAN1 NB	DELL	E6430	N/A
C	LAN3 NB	DELL	E6430	N/A
D	2.4G NB	DELL	E6430	N/A
E	5G-H NB	DELL	E6430	N/A
F	5G-L NB	DELL	E6430	N/A
G	2.5G WAN PC	DELL	T3400	N/A

For Radiated (below 1GHz):

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

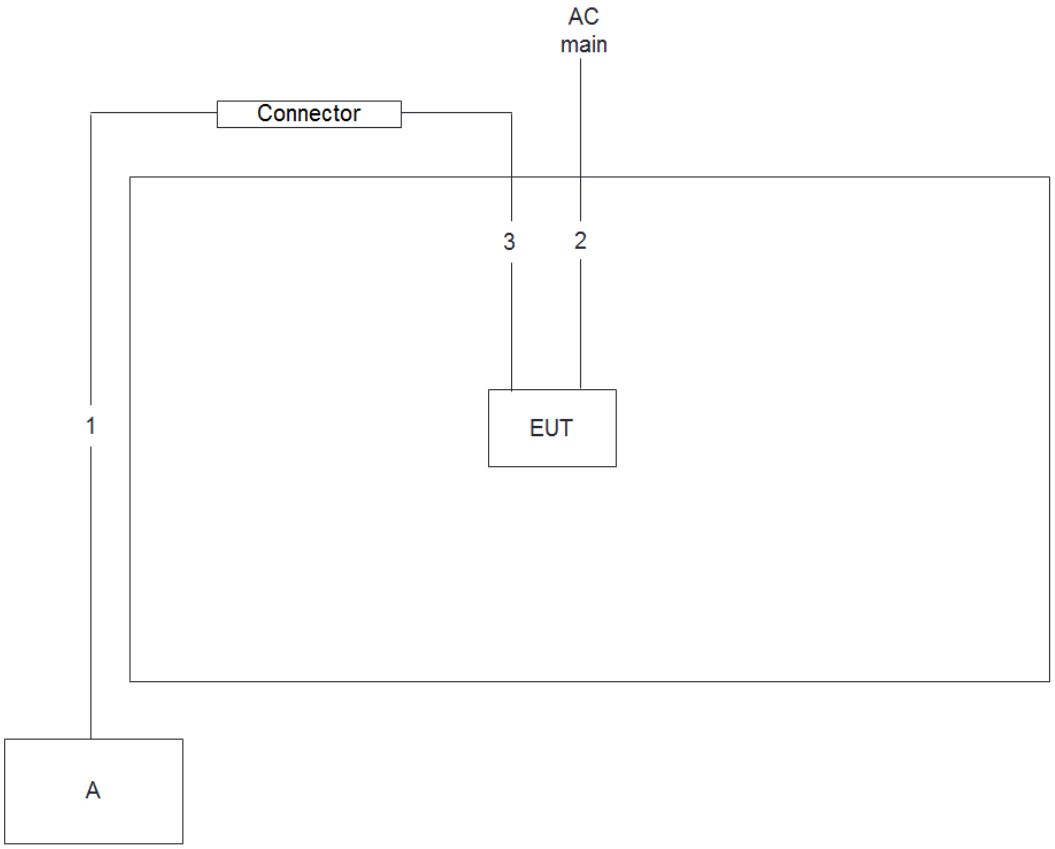
2.5 Test Setup Diagram

Test Setup Diagram – AC Line Conducted Emission Test



Item	Connection	Shielded	Length
1	Power cable	No	2.2m
2	RJ-45 cable	No	10m
3	RJ-45 cable	No	1.5m
4	RJ-45 cable	No	10m
5	RJ-45 cable	No	10m
6	USB cable	Yes	1.8m
7	RJ-45 cable	No	1.5m

Test Setup Diagram - Radiated Test < 1GHz



Item	Connection	Shielded	Length
1	RJ-45 cable	No	10m
2	Power cable	No	1.9m
3	RJ-45 cable	No	1.5m

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

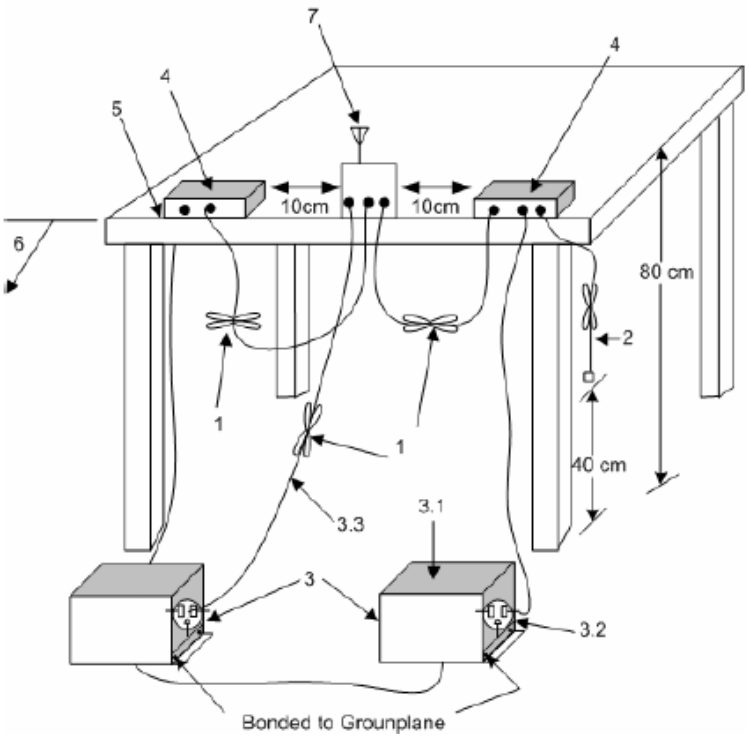
Refer a test equipment and calibration data table in this test report.

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 Unwanted Emissions

3.2.1 Transmitter Unwanted Emissions Limit

Unwanted emissions below 1 GHz and restricted band emissions above 1GHz 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.

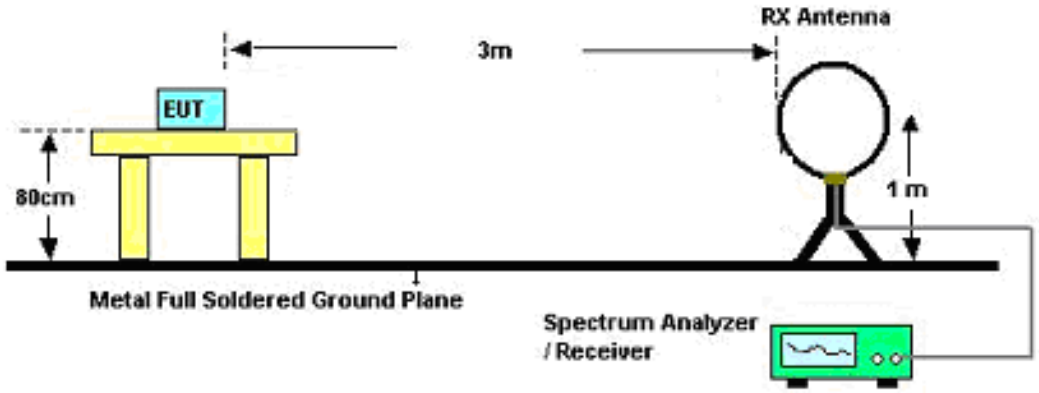
3.2.3 Test Procedures

Test Method			
▪ 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. Measurements shall not be performed at a distance greater than 30 m for frequencies above 30 MHz, unless it can be further demonstrated that measurements at a distance of 30 m or less are impractical. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).			
▪ The average emission levels shall be measured in [duty cycle ≥ 98 or duty factor].			
▪ For the transmitter unwanted emissions shall be measured using following options below:			
	▪ Refer as FCC KDB 789033, clause G)2) for unwanted emissions into non-restricted bands.		
	▪ Refer as FCC KDB 789033, clause G)1) for unwanted emissions into restricted bands.		
		☐ Refer as FCC KDB 789033, G)6) Method AD (Trace Averaging).	
		☒ Refer as FCC KDB 789033, G)6) Method VB (Reduced VBW).	
		☐ 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 789033, clause G)5) measurement procedure peak limit.	
		☐ Refer as ANSI C63.10, clause 4.1.4.2.2 measurement procedure peak limit.	
▪ For radiated measurement.			
	▪ Refer as ANSI C63.10, clause 6.4 for radiated emissions below 30 MHz and test distance is 3m.		
	▪ Refer as ANSI C63.10, clause 6.5 for radiated emissions 30 MHz to 1 GHz and test distance is 3m.		
	▪ Refer as ANSI C63.10, clause 6.6 for radiated emissions above 1GHz.		
▪ The any unwanted emissions level shall not exceed the fundamental emission level.			
▪ All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.			

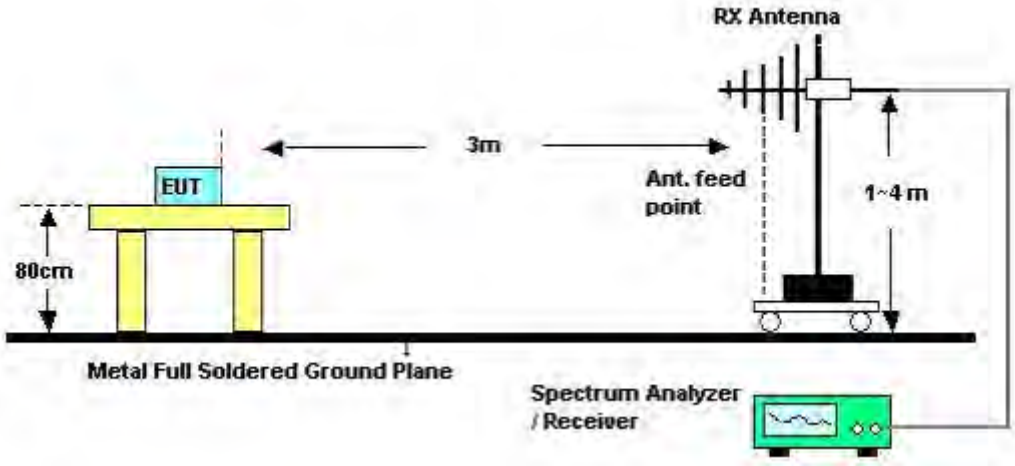
3.2.4 Test Setup

Transmitter Radiated Unwanted Emissions

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 Transmitter Unwanted Emissions (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 10th harmonic or 40 GHz, whichever is appropriate.

3.2.7 Test Result of Transmitter Unwanted Emissions

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 ~ 8.45GHz	Jan. 28, 2019	Jan. 27, 2020	Conduction (CO01-CB)
EMI Receiver	Agilent	N9038A	My52260123	9kHz ~ 8.45GHz	Feb. 26, 2020	Feb. 25, 2021	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-16-2	04083	150kHz ~ 100MHz	Dec. 24, 2018	Dec. 23, 2019	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-16-2	04083	150kHz ~ 100MHz	Dec. 25, 2019	Dec. 24, 2020	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	Jan. 11, 2019	Jan. 10, 2020	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	Feb. 25, 2020	Feb. 24, 2021	Conduction (CO01-CB)
Pulse Limiter	Rohde&Schwarz	ESH3-Z2	100430	9kHz ~ 30MHz	Feb. 01, 2019	Jan. 31, 2020	Conduction (CO01-CB)
Pulse Limiter	Rohde&Schwarz	ESH3-Z2	100430	9kHz ~ 30MHz	Jan. 31, 2020	Jan. 30, 2021	Conduction (CO01-CB)
COND Cable	Woken	Cable	Low cable-CO01	9kHz ~ 30MHz	May 21, 2019	May 20, 2020	Conduction (CO01-CB)
Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Conduction (CO01-CB)
Loop Antenna	Teseq	HLA 6120	24155	9kHz - 30 MHz	Apr. 14, 2021	Apr. 13, 2022	Radiation (03CH05-CB)
3m Semi Anechoic Chamber NSA	TDK	SAC-3M	03CH05-CB	30 MHz ~ 1 GHz	Aug. 09, 2021	Aug. 08, 2022	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)
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	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. 04, 2021	Oct. 03, 2022	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.

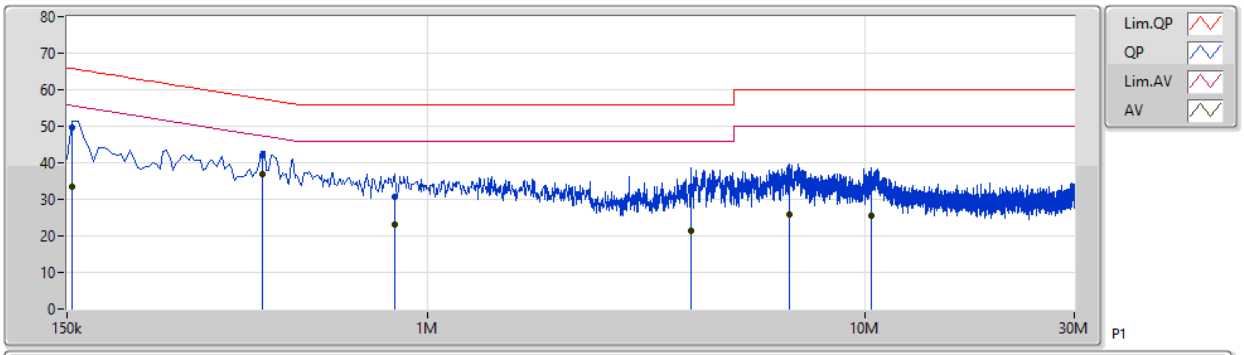
N.C.R. means Non-Calibration required.

Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition
Mode 1	Pass	AV	420k	37.06	47.45	-10.39	9.91	Neutral

Mode 1

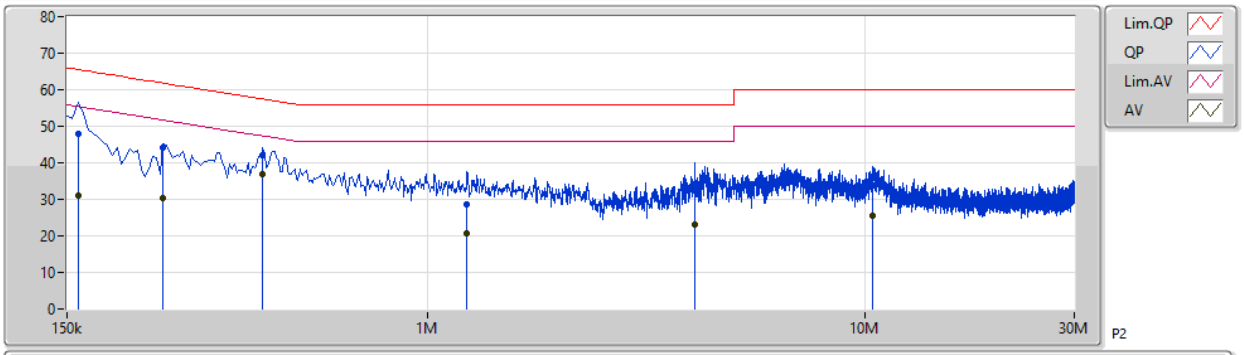
19/09/2019



Type	Freq	Level	Limit	Margin	Factor	Condition	Comment	Raw	AF	CL	AT			
	(Hz)	(dBuV)	(dBuV)	(dB)	(dB)			(dBuV)	(dB)	(dB)	(dB)			
QP	154.5k	49.52	65.75	-16.23	9.90	Line	-	39.62	0.05	0.06	9.79			
AV	154.5k	33.31	55.75	-22.44	9.90	Line	-	23.41	0.05	0.06	9.79			
QP	420k	41.95	57.45	-15.50	9.93	Line	-	32.02	0.06	0.06	9.81			
AV	420k	36.74	47.45	-10.71	9.93	Line	"Worst"	26.81	0.06	0.06	9.81			
QP	843k	30.52	56.00	-25.48	9.97	Line	-	20.55	0.07	0.08	9.82			
AV	843k	23.11	46.00	-22.89	9.97	Line	-	13.14	0.07	0.08	9.82			
QP	3.998M	33.47	56.00	-22.53	10.10	Line	-	23.37	0.12	0.17	9.81			
AV	3.998M	21.54	46.00	-24.46	10.10	Line	-	11.44	0.12	0.17	9.81			
QP	6.684M	35.93	60.00	-24.07	10.24	Line	-	25.69	0.17	0.20	9.87			
AV	6.684M	25.95	50.00	-24.05	10.24	Line	-	15.71	0.17	0.20	9.87			
QP	10.338M	33.72	60.00	-26.28	10.36	Line	-	23.36	0.21	0.23	9.92			
AV	10.338M	25.53	50.00	-24.47	10.36	Line	-	15.17	0.21	0.23	9.92			

Mode 1

19/09/2019

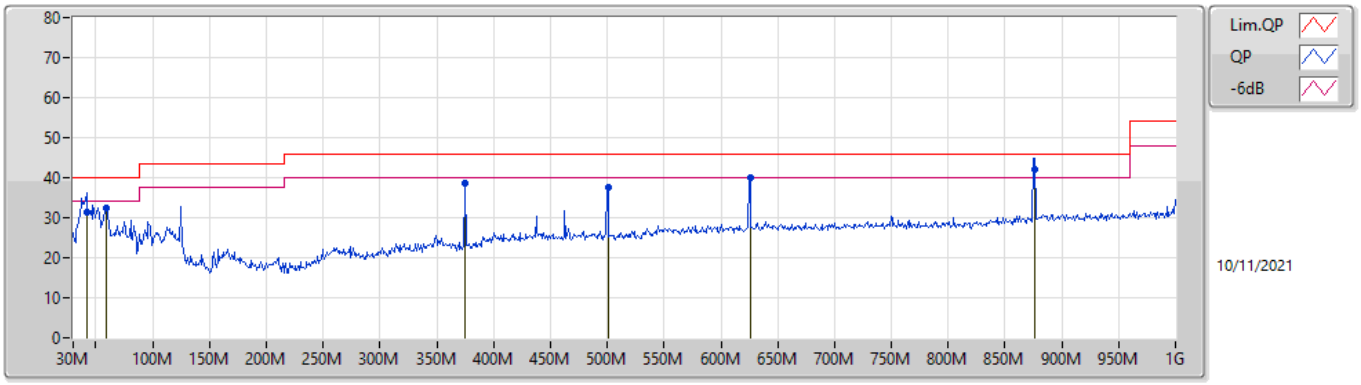


Type	Freq	Level	Limit	Margin	Factor	Condition	Comment	Raw	AF	CL	AT			
	(Hz)	(dBuV)	(dBuV)	(dB)	(dB)			(dBuV)	(dB)	(dB)	(dB)			
QP	159k	48.06	65.52	-17.46	9.89	Neutral	-	38.17	0.04	0.06	9.79			
AV	159k	31.06	55.52	-24.46	9.89	Neutral	-	21.17	0.04	0.06	9.79			
QP	249k	44.23	61.79	-17.56	9.90	Neutral	-	34.33	0.04	0.06	9.80			
AV	249k	30.30	51.79	-21.49	9.90	Neutral	-	20.40	0.04	0.06	9.80			
QP	420k	42.03	57.45	-15.42	9.91	Neutral	-	32.12	0.04	0.06	9.81			
AV	420k	37.06	47.45	-10.39	9.91	Neutral	"Worst"	27.15	0.04	0.06	9.81			
QP	1.23M	28.63	56.00	-27.37	9.98	Neutral	-	18.65	0.06	0.10	9.82			
AV	1.23M	20.76	46.00	-25.24	9.98	Neutral	-	10.78	0.06	0.10	9.82			
QP	4.079M	34.05	56.00	-21.95	10.08	Neutral	-	23.97	0.10	0.17	9.81			
AV	4.079M	23.15	46.00	-22.85	10.08	Neutral	-	13.07	0.10	0.17	9.81			
QP	10.383M	33.77	60.00	-26.23	10.34	Neutral	-	23.43	0.19	0.23	9.92			
AV	10.383M	25.61	50.00	-24.39	10.34	Neutral	-	15.27	0.19	0.23	9.92			

Summary

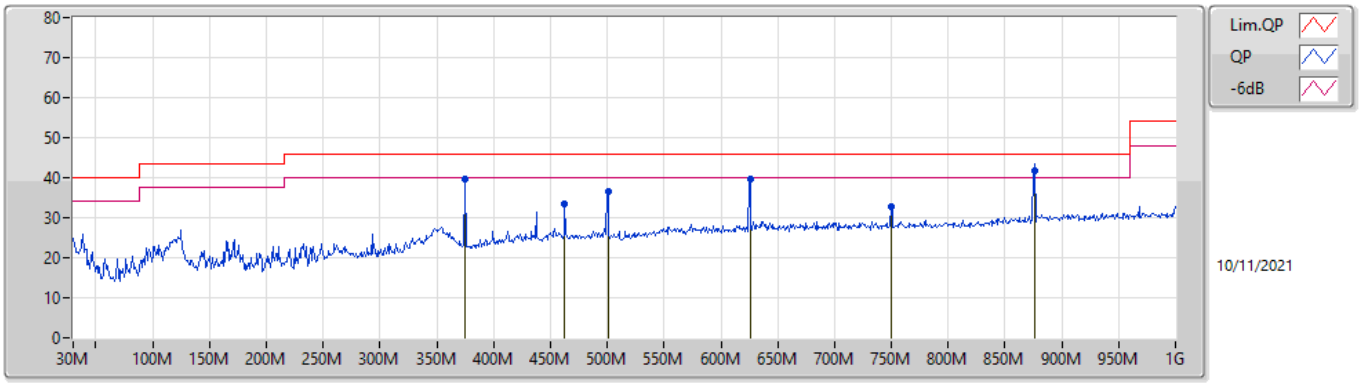
Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Condition
Mode 1	Pass	QP	875.84M	41.96	46.00	-4.04	Vertical

Mode 1



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB/m)	(m)		(°)	(m)		(dBuV/m)	(dB/m)	(dB)	(dB)
QP	41.64M	31.42	40.00	-8.58	-12.93	3	Vertical	28	1.00	-	44.35	17.82	0.93	31.68
PK	59.1M	32.56	40.00	-7.44	-18.34	3	Vertical	21	1.50	-	50.90	12.31	1.18	31.83
PK	375.32M	38.47	46.00	-7.53	-8.38	3	Vertical	206	1.00	-	46.85	20.77	3.00	32.15
PK	500.45M	37.64	46.00	-8.36	-5.65	3	Vertical	3	1.00	-	43.29	23.18	3.50	32.33
PK	625.58M	39.89	46.00	-6.11	-4.11	3	Vertical	252	1.00	-	44.00	24.51	3.90	32.52
QP	875.84M	41.96	46.00	-4.04	-1.68	3	Vertical	201	1.00	"Worst"	43.64	26.10	4.86	32.64

Mode 1



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB/m)	(m)		(°)	(m)		(dBuV/m)	(dB/m)	(dB)	(dB)
PK	375.32M	39.51	46.00	-6.49	-8.38	3	Horizontal	250	1.00	-	47.89	20.77	3.00	32.15
PK	462.62M	33.33	46.00	-12.67	-6.08	3	Horizontal	360	2.00	-	39.41	22.86	3.35	32.29
PK	500.45M	36.72	46.00	-9.28	-5.65	3	Horizontal	166	2.00	-	42.37	23.18	3.50	32.33
PK	625.58M	39.78	46.00	-6.22	-4.11	3	Horizontal	137	1.25	-	43.89	24.51	3.90	32.52
PK	749.74M	32.87	46.00	-13.13	-3.23	3	Horizontal	174	1.25	-	36.10	25.18	4.30	32.71
QP	875.84M	41.57	46.00	-4.43	-1.68	3	Horizontal	208	1.00	"Worst"	43.25	26.10	4.86	32.64