

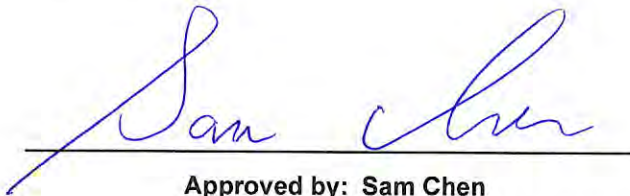


RADIO TEST REPORT

FCC ID : MSQ-RTBE6M00
Equipment : ROG Rapture GT-BE98 Pro BE30000 Quad-band Gaming Router
Brand Name : ASUS
Model Name : GT-BE98 Pro
Applicant : ASUSTeK COMPUTER INC.
1F., No. 15, Lide Rd., Beitou, Taipei City 112, Taiwan
Standard : 47 CFR FCC Part 15.407

The product was received on Nov. 19, 2024, and testing was started from Dec. 17, 2024 and completed on Dec. 24, 2024. 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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TEL : 886-3-656-9065
FAX : 886-3-656-9085
Report Template No.: CB-A12_5 Ver1.1



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.: 321615-11.				

Conformity Assessment Condition:

1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacture who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.
2. The measurement uncertainty please refer to each test result in the chapter "Measurement Uncertainty".

Disclaimer:

The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.

Reviewed by: Sam Chen**Report Producer: Wendy Pan**



1 General Description

1.1 Information

1.1.1 RF General Information

For LPI Access Point:

Frequency Range (MHz)	IEEE Std. 802.11	Ch. Frequency (MHz)	Channel Number
5925-6425	ax (HEW20), be (EHT20)	5955-6415	1-93 [24]
6525-7125		6595-7095	129-229 [26]
5925-6425	ax (HEW40), be (EHT40)	5965-6405	3-91 [12]
6525-7125		6605-7085	131-227 [13]
5925-6425	ax (HEW80), be (EHT80)	5985-6385	7-87 [6]
6525-7125		6625-7025	135-215 [6]
5925-6425	ax (HEW160), be (EHT160)	6025-6345	15-79 [3]
6525-7125		6665-6985	143-207 [3]
5925-6425	be (EHT320)	6105-6265	31-63 [2]
6525-7125		6745-6905	159-191 [2]

Band	Mode	BWch (MHz)	Nant
5.925-6.425GHz	802.11ax HEW20	20	4TX
5.925-6.425GHz	802.11ax HEW20-BF	20	4TX
5.925-6.425GHz	802.11be EHT20	20	4TX
5.925-6.425GHz	802.11be EHT20-BF	20	4TX
5.925-6.425GHz	802.11ax HEW40	40	4TX
5.925-6.425GHz	802.11ax HEW40-BF	40	4TX
5.925-6.425GHz	802.11be EHT40	40	4TX
5.925-6.425GHz	802.11be EHT40-BF	40	4TX
5.925-6.425GHz	802.11ax HEW80	80	4TX
5.925-6.425GHz	802.11ax HEW80-BF	80	4TX
5.925-6.425GHz	802.11be EHT80	80	4TX
5.925-6.425GHz	802.11be EHT80-BF	80	4TX
5.925-6.425GHz	802.11ax HEW160	160	4TX
5.925-6.425GHz	802.11ax HEW160-BF	160	4TX
5.925-6.425GHz	802.11be EHT160	160	4TX
5.925-6.425GHz	802.11be EHT160-BF	160	4TX
5.925-6.425GHz	802.11be EHT320	320	4TX
5.925-6.425GHz	802.11be EHT320-BF	320	4TX
6.525-7.125GHz	802.11ax HEW20	20	4TX



Band	Mode	BWch (MHz)	Nant
6.525-7.125GHz	802.11ax HEW20-BF	20	4TX
6.525-7.125GHz	802.11be EHT20	20	4TX
6.525-7.125GHz	802.11be EHT20-BF	20	4TX
6.525-7.125GHz	802.11ax HEW40	40	4TX
6.525-7.125GHz	802.11ax HEW40-BF	40	4TX
6.525-7.125GHz	802.11be EHT40	40	4TX
6.525-7.125GHz	802.11be EHT40-BF	40	4TX
6.525-7.125GHz	802.11ax HEW80	80	4TX
6.525-7.125GHz	802.11ax HEW80-BF	80	4TX
6.525-7.125GHz	802.11be EHT80	80	4TX
6.525-7.125GHz	802.11be EHT80-BF	80	4TX
6.525-7.125GHz	802.11ax HEW160	160	4TX
6.525-7.125GHz	802.11ax HEW160-BF	160	4TX
6.525-7.125GHz	802.11be EHT160	160	4TX
6.525-7.125GHz	802.11be EHT160-BF	160	4TX
6.525-7.125GHz	802.11be EHT320	320	4TX
6.525-7.125GHz	802.11be EHT320-BF	320	4TX

Note:

- ♦ HEW20, HEW40, HEW80 and HEW160 use a combination of OFDMA-BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM modulation.
- ♦ EHT20, EHT40, EHT80 and EHT160, EHT320 use a combination of OFDMA-BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM, 4096QAM modulation.
- ♦ BWch is the nominal channel bandwidth.

**For Standard Power Access Point:**

Frequency Range (MHz)	IEEE Std. 802.11	Ch. Frequency (MHz)	Channel Number
5925-6425	ax (HEW20), be (EHT20)	5955-6415	1-93 [24]
6525-6875		6595-6855	129-181 [14]
5925-6425	ax (HEW40), be (EHT40)	5965-6405	3-91 [12]
6525-6875		6605-6845	131-179 [7]
5925-6425	ax (HEW80), be (EHT80)	5985-6385	7-87 [6]
6525-6875		6625-6785	135-167 [3]
5925-6425	ax (HEW160), be (EHT160)	6025-6345	15-79 [3]
6525-6875		6665	143 [1]
5925-6425	be (EHT320)	6105-6265	31-63 [2]

Band	Mode	BWch (MHz)	Nant
5925-6425 / 6525-6875 MHz	802.11ax HEW20	20	4TX
5925-6425 / 6525-6875 MHz	802.11ax HEW20-BF	20	4TX
5925-6425 / 6525-6875 MHz	802.11be EHT20	20	4TX
5925-6425 / 6525-6875 MHz	802.11be EHT20-BF	20	4TX
5925-6425 / 6525-6875 MHz	802.11ax HEW40	40	4TX
5925-6425 / 6525-6875 MHz	802.11ax HEW40-BF	40	4TX
5925-6425 / 6525-6875 MHz	802.11be EHT40	40	4TX
5925-6425 / 6525-6875 MHz	802.11be EHT40-BF	40	4TX
5925-6425 / 6525-6875 MHz	802.11ax HEW80	80	4TX
5925-6425 / 6525-6875 MHz	802.11ax HEW80-BF	80	4TX
5925-6425 / 6525-6875 MHz	802.11be EHT80	80	4TX
5925-6425 / 6525-6875 MHz	802.11be EHT80-BF	80	4TX
5925-6425 / 6525-6875 MHz	802.11ax HEW160	160	4TX
5925-6425 / 6525-6875 MHz	802.11ax HEW160-BF	160	4TX
5925-6425 / 6525-6875 MHz	802.11be EHT160	160	4TX
5925-6425 / 6525-6875 MHz	802.11be EHT160-BF	160	4TX
5925-6425 MHz	802.11be EHT320	320	4TX
5925-6425 MHz	802.11be EHT320-BF	320	4TX



Note:

- ♦ HEW20, HEW40, HEW80 and HEW160 use a combination of OFDMA-BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM modulation.
- ♦ EHT20, EHT40, EHT80 and EHT160, EHT320 use a combination of OFDMA-BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM, 4096QAM modulation.
- ♦ BWch is the nominal channel bandwidth.


1.1.2 Antenna Information

Ant.	Port				Brand	Model Name			Antenna Type	Connector	Gain (dBi)
	WLAN 2.4GHz	WLAN 5GHz	WLAN 6GHz UNII 5	WLAN 6GHz UNII 7/8		WLAN 2.4GHz / WLAN5GHz	WLAN 6GHz UNII 5	WLAN 6GHz UNII 7/8			
1	-	-	1	-	Whayu	-	C660-510595-AW1	-	Dipole	I-PEX	Note 1
2	-	-	2	-	Whayu	-	C660-510596-AW1	-	Dipole	I-PEX	
3	-	-	3	-	Whayu	-	C660-510597-AW1	-	Dipole	I-PEX	
4	-	-	4	-	Whayu	-	C660-510598-AW1	-	Dipole	I-PEX	
5	-	-	-	1	Whayu	-	-	C660-510595-AW2	Dipole	I-PEX	
6	-	-	-	4	Whayu	-	-	C660-510596-AW2	Dipole	I-PEX	
7	-	-	-	2	Whayu	-	-	C660-510597-AW2	Dipole	I-PEX	
8	-	-	-	3	Whayu	-	-	C660-510598-AW2	Dipole	I-PEX	
9	4	1	-	-	Whayu	C660-510591-AW1	-	-	Dipole	I-PEX	
10	1	4	-	-	Whayu	C660-510592-AW1	-	-	Dipole	I-PEX	
11	2	3	-	-	Whayu	C660-510593-AW1	-	-	Dipole	I-PEX	
12	3	2	-	-	Whayu	C660-510594-AW1	-	-	Dipole	I-PEX	

Note 1

Ant.	Antenna Gain (dBi)							
	WLAN 2.4GHz	WLAN 5GHz UNII 1	WLAN 5GHz UNII 2A	WLAN 5GHz UNII 2C	WLAN 5GHz UNII 3	WLAN 6GHz		
						UNII 5	UNII7	UNII8
1	-	-	-	-	-	1.80	-	-
2	-	-	-	-	-	1.95	-	-
3	-	-	-	-	-	1.82	-	-
4	-	-	-	-	-	1.74	-	-
5	-	-	-	-	-	-	1.38	1.91
6	-	-	-	-	-	-	2.30	3.01
7	-	-	-	-	-	-	3.50	3.51
8	-	-	-	-	-	-	3.29	2.92
9	3.22	2.16	1.26	2.44	3.08	-	-	-
10	3.31	2.91	2.84	2.86	4.20	-	-	-
11	4.09	4.07	3.99	3.62	3.02	-	-	-
12	1.94	2.30	2.28	2.41	3.66	-	-	-



Item	Directional gain (dBi)							
	WLAN 2.4GHz	WLAN 5GHz UNII 1	WLAN 5GHz UNII 2A	WLAN 5GHz UNII 2C	WLAN 5GHz UNII 3	WLAN 6GHz		
						UNII 5	UNII7	UNII8
4T1S	6.24	5.90	5.76	5.94	5.78	5.66	5.48	5.92
4T2S	4.09	4.07	3.99	3.62	4.20	2.66	3.50	3.51

Note 2: The above information (excepting gain) was declared by manufacturer.

Note 3: The antenna gain and directional gain are measured which follow the procedure of KDB 662911 D03.

Note 4: **For 2.4GHz function:**

For IEEE 802.11 b/g/n/VHT/ax/be (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.

For 5GHz function:

For IEEE 802.11a/n/ac/ax/be (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.

For 6GHz function:

For IEEE 802.11ax/be 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
	The product has beamforming function for n/VHT/ax/be in 2.4GHz, n/ac/ax/be in 5GHz and ax/be in 6GHz.			
Device Type	☒	Indoor Access Point	☒	Subordinate
	☐	Indoor Client	☒	Standard Power Access Point
	☐	Dual Client	☐	Standard Client
	☐	Fixed Client	☐	Very Low Power
Condition of EUT	☒	Indoor	☐	Outdoor
Channel Puncturing Function	☐	Supported	☒	Unsupported
Support RU	☒	Full RU	☐	Partial RU
Test Software Version	Access Manual Tool 3.3.0.4			

Note: The above information was declared by manufacturer.

1.1.4 Table for EUT supports function

Function	Type
AP Router	Master
Bridge	Slave without radar detection
Extender	Master
Mesh	Master

Note 1: From the above, after evaluating, AP Router was selected to test and record in the report.

Note 2: The above information was declared by manufacturer.

1.1.5 Table for Radio function

Radio	2.4GHz	5GHz UNII1~UNII3	6GHz UNII7~UNII8	6GHz UNII5
1	-	-	V	-
2	-	-	-	V
3	V	-	-	-
4	-	V	-	-

Note: The above information was declared by manufacturer.

**1.1.6 Table for EUT Information**

EUT	H/W version	Integrated circuit packaging (Location: UP1)	Barometric pressure sensor (Location: U102)	Equip Adapter
1	R2.50	FCBGA Package Brand : Broadcom Model : BCM84891L	Without	1
2	R2.70	FCFBGA Package Brand : Broadcom Model : BCM84891L	With	1, 2

Note: The above information was declared by manufacturer.

1.1.7 Table for Permissive Change

This product is an extension of original one reported under Sporton project number: FR321615-08

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

Modifications	Performance Checking
1. Adding Adapter 2 used for EUT 2 only (Please refer to section 2.3 for detailed information about Adapter 2). 2. Adding WiFi+Barometric Position geolocation method via Firmware by factory for 6GHz Standard Power Access Point of EUT 2.	1. AC power-line conducted emissions 2. Unwanted Emissions 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 15.407
- ♦ 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 987594 D02 v02r01
- ♦ 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 ISCED.

Test Condition	Test Site No.	Test Engineer	Test Environment (°C / %)	Test Date
Radiated < 1GHz	03CH05-CB	Gino Hung	21.9-22.4 / 60-62	Dec. 24, 2024
AC Conduction	CO01-CB	Bob Chang	20~21 / 55~56	Dec. 17, 2024

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)	3.8 dB	Confidence levels of 95%
Radiated Emission (9kHz ~ 30MHz)	4.1 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	4.2 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	EUT 2 + Adapter 2

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. According to the original test report, "EUT in Z axis_5GHz" has been evaluated to be the worst case, so the measurement will follow this same test configuration. 2. After evaluating, the worst case was found at Z axis, thus the measurement will follow this same test configuration.
1	EUT 2 in Z axis + WLAN 5GHz + Adapter 2

The Worst Case Mode for Following Conformance Tests	
Tests Item	Simultaneous Transmission Analysis - Co-location RF Exposure Evaluation
Operating Mode	
1	EUT 1_WLAN 2.4GHz + WLAN 5GHz + WLAN 6GHz UNII 5 (LPI Access Point) + WLAN 6GHz UNII 7/8 (LPI Access Point)
2	EUT 1_WLAN 2.4GHz + WLAN 5GHz + WLAN 6GHz UNII 5 (Standard Power) + WLAN 6GHz UNII 7 (Standard Power)
Refer to Sporton Test Report No.: FA321615-13 for Co-location RF Exposure Evaluation.	



2.2 EUT Operation during Test

For CTX Mode:

The EUT was programmed to be in continuously transmitting mode.

For Normal Link:

During the test, the EUT operation to normal function.

2.3 Accessories

Accessories				
Power	Brand Name	Model Name	Rating	Remark
Adapter 1	AcBel	ADD011	Input: 100-240V~ 1.7A, 50-60Hz Output: +19.5V, 3.33A, 65.0W MAX	With the DC cable: Non-shielded, 1.5m
Adapter 2	LEI	MU60B3120500-A1	Input: 100V-240V~50/60Hz, 1.5A Output: 12.0V, 5.0A	-
Others				
RJ-45 cable*1: Shielded, 1.5m				
Power cord*1: Non-shielded, 0.9m				



2.4 Support Equipment

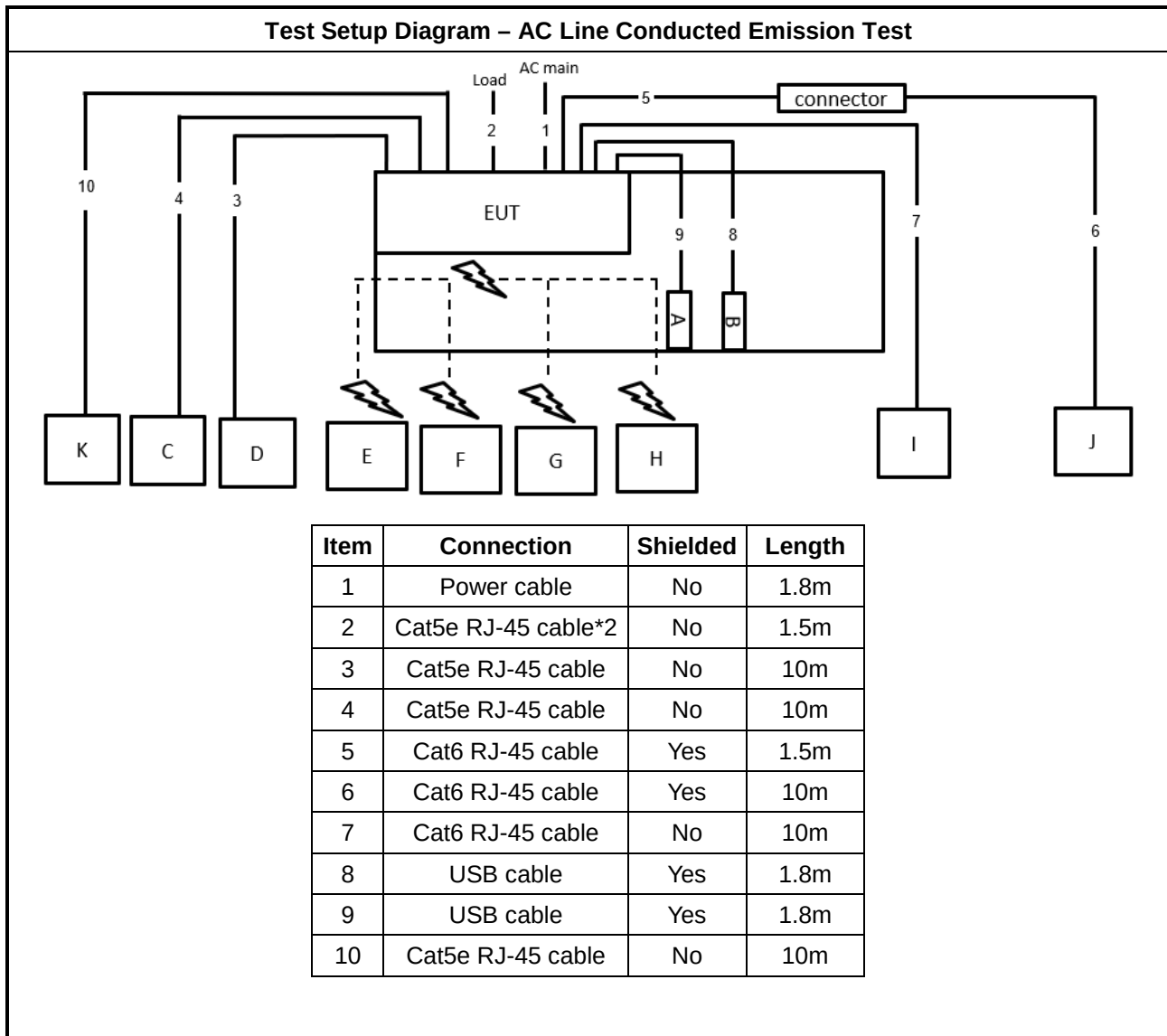
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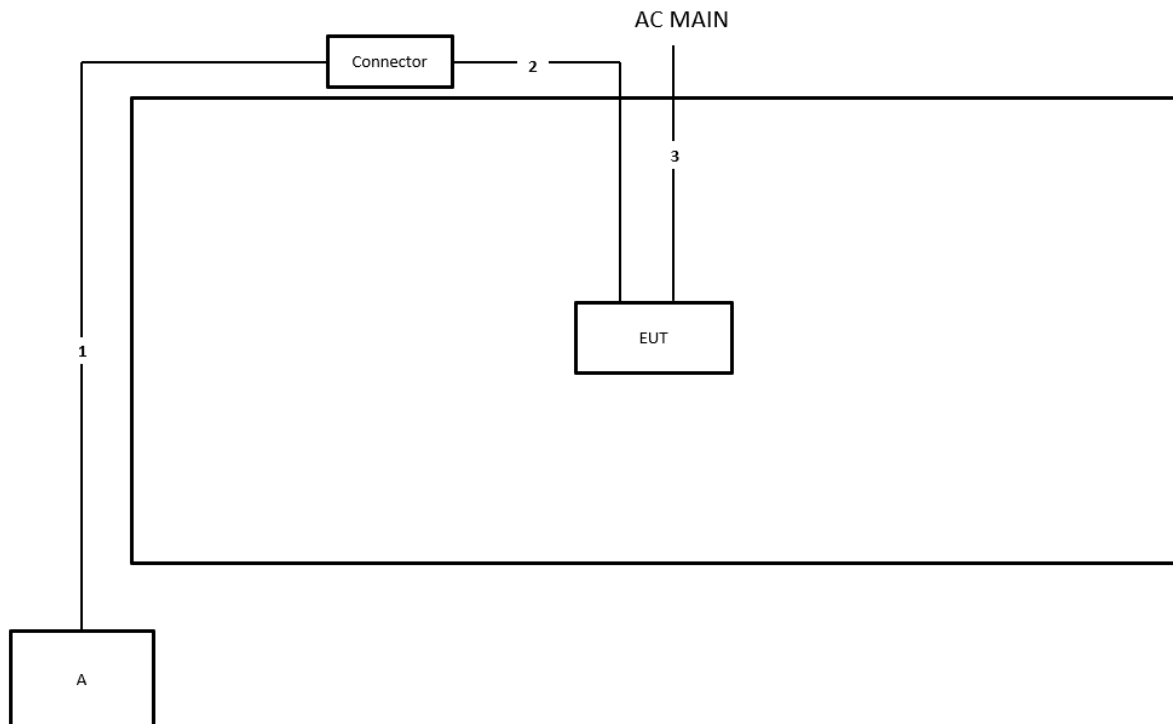
Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
A	HDD3.0	Transcend	TS1TSJ25A3K	N/A
B	HDD3.0	WD	WDBACY5000AWT	N/A
C	WAN/LAN1(2.5G) NB	DELL	E6430	N/A
D	2.5G LAN4 NB	DELL	E6430	N/A
E	2.4G NB	DELL	E6430	N/A
F	5G NB	DELL	E6430	N/A
G	6E-Low NB	DELL	E6430	N/A
H	6E-High NB	DELL	E6430	N/A
I	10G LAN PC	ASUS	S300TA	TX2-RTL8821CE
J	WAN/LAN1(10G) PC	ASUS	S300TA	TX2-RTL8821CE
K	1G LAN5 NB	DELL	E6430	N/A

For Radiated (below 1GHz):

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

2.5 Test Setup Diagram



Test Setup Diagram - Radiated Test < 1GHz


Item	Connection	Shielded	Length
1	RJ-45 cable	Yes	10m
2	RJ-45 cable	Yes	1.5m
3	Power cable	No	1.8m



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.		

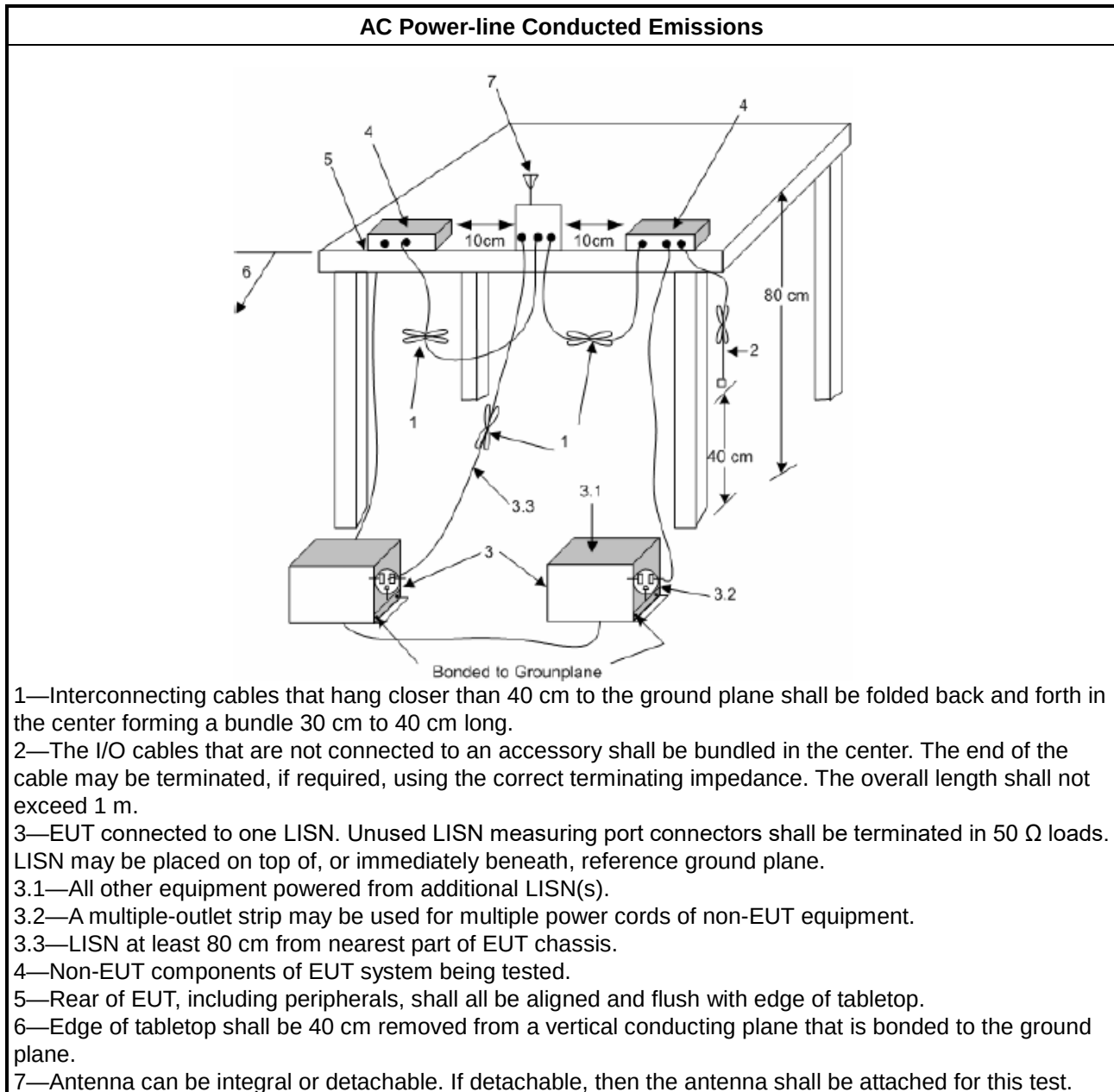
3.1.2 Measuring Instruments

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



3.1.5 Measurement Results Calculation

The measured Level is calculated using:

- Corrected Reading (dBuV) = LISN Factor + Cable Loss + Read Level = Level
- Marginal = - Limit + (Read Level + LISN Factor + Cable Loss)

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($20 \times \log(\text{standard distance}/\text{test distance}) = 20\log(3/1) = 9.54\text{dB}$).
EX. Above 18GHz emission limit calculation (3m to 1m) = 54dBuV/m at 3m + 9.54dB = 63.54 dBuV/m at 1m.



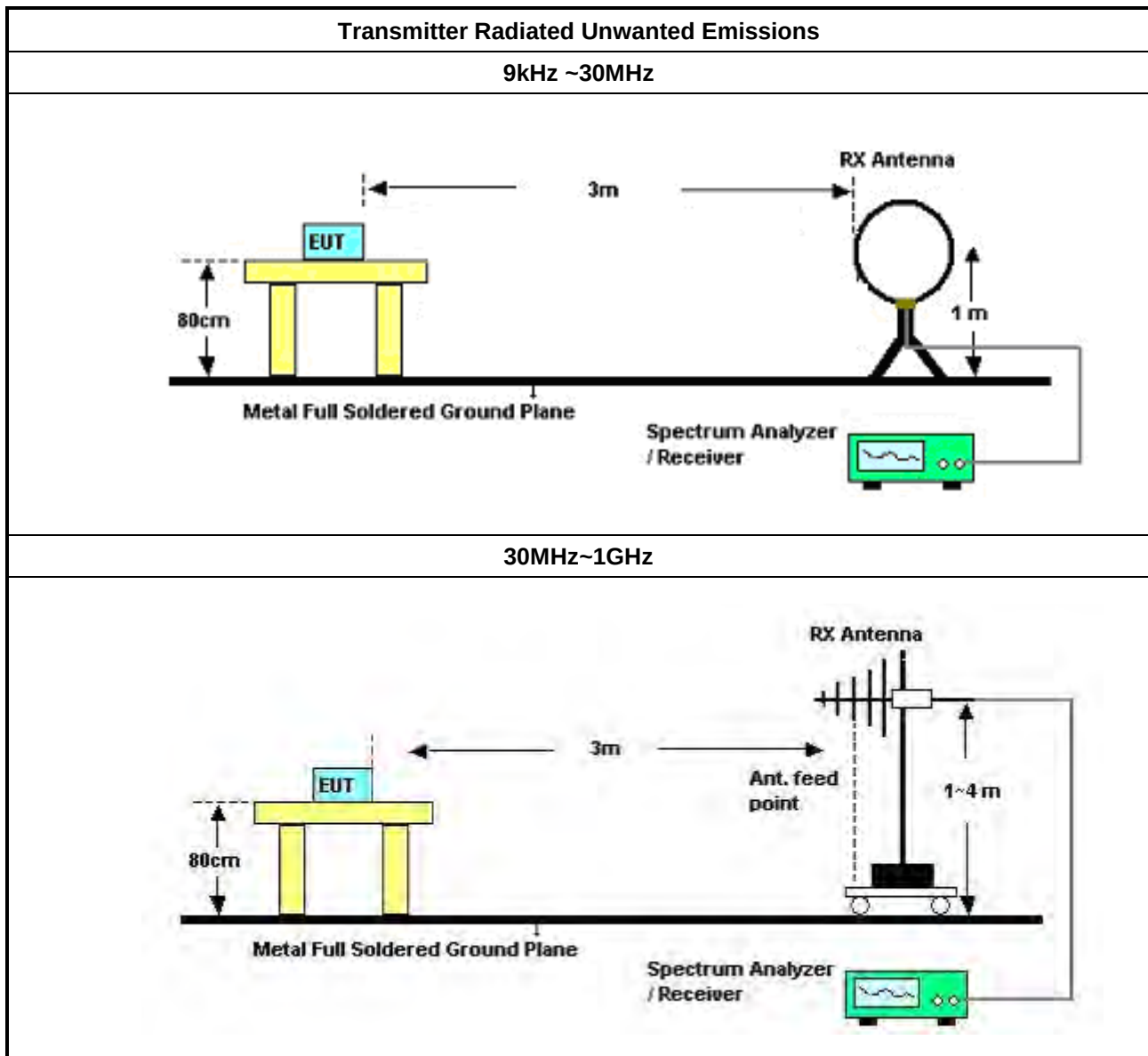
3.2.2 Measuring Instruments

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

3.2.3 Test Procedures

Test Method	
According to FCC KDB 987594 D02 II.G. the unwanted emission measurement procedure shall refer to KDB 789300(except emission MASK). 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 $\geq$ 98 or duty factor].	
For the transmitter unwanted emissions shall be measured using following options below:	
	Refer as FCC KDB 789033 D02, clause G)2) for unwanted emissions into non-restricted bands.
	Refer as FCC KDB 789033 D02, clause G)1) for unwanted emissions into restricted bands.
	☒ Refer as FCC KDB 789033 D02, G)6) Method AD (Trace Averaging). (For unrestricted band measurement)
	☐ Refer as FCC KDB 789033 D02, G)6) Method VB (Reduced VBW).
	☒ Refer as ANSI C63.10, clause 11.12.2.5.3 (Reduced VBW). $VBW \geq 1/T$, where T is pulse time.(For restricted band average measurement)
	☐ Refer as ANSI C63.10, clause 7.5 average value of pulsed emissions.
	☒ Refer as FCC KDB 789033 D02, clause G)5) measurement procedure peak limit.
	☐ Refer as ANSI C63.10, clause 4.1.4.2.2 measurement procedure peak limit.
Refer as FCC KDB 789033 D02, clause G)3)d)ii) for Band edge Integration measurements.	
For emission MASK shall be measured using following options below:	
	☒ Refer as FCC KDB 987594 D02, J) In-Band Emissions
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





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 ~ 8.4GHz	Mar. 01, 2024	Feb. 28, 2025	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-16-2	04083	150kHz ~ 100MHz	Feb. 19, 2024	Feb. 18, 2025	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	Apr. 24, 2024	Apr. 23, 2025	Conduction (CO01-CB)
Pulse Limiter	Rohde&Schwarz	ESH3-Z2	100430	9kHz ~ 30MHz	Oct. 16, 2024	Oct. 15, 2025	Conduction (CO01-CB)
COND Cable	Woken	Cable	Low cable-CO01	9kHz ~ 30MHz	Oct. 16, 2024	Oct. 15, 2025	Conduction (CO01-CB)
Test Software	SPORTON	SENSE-EMI	V5.11	150kHz-30MHz	N.C.R.	N.C.R.	Conduction (CO01-CB)
Loop Antenna	Teseq	HLA 6121	65417	9kHz - 30 MHz	Oct. 16, 2024	Oct. 15, 2025	Radiation (03CH05-CB)
3m Semi Anechoic Chamber NSA	TDK	SAC-3M	03CH05-CB	30 MHz ~ 1 GHz	Aug. 01, 2024	Jul. 31, 2025	Radiation (03CH05-CB)
Bilog Antenna with 6dB Attenuator	TESEQ & EMCI	CBL 6112D & N-6-06	35236 & AT-N0610	30MHz ~ 2GHz	Mar. 23, 2024	Mar. 22, 2025	Radiation (03CH05-CB)
Amplifier	EMCI	EMC330N	980331	20MHz ~ 3GHz	May 02, 2024	May 01, 2025	Radiation (03CH05-CB)
Spectrum Analyzer	R&S	FSP40	100304	9kHz ~ 40GHz	Apr. 17, 2024	Apr. 16, 2025	Radiation (03CH05-CB)
EMI Test Receiver	R&S	ESR7	102172	9kHz ~ 7GHz	Oct. 21, 2024	Oct. 20, 2025	Radiation (03CH05-CB)
RF Cable-low	Woken	RG402	Low Cable-04+23	30MHz~1GHz	Oct. 01, 2024	Sep. 30, 2025	Radiation (03CH05-CB)
Test Software	SPORTON	SENSE-EMI	V5.11.8	30MHz-40GHz	N.C.R.	N.C.R.	Radiation (03CH05-CB)

Note: Calibration Interval of instruments listed above is one year.

NCR means Non-Calibration required.



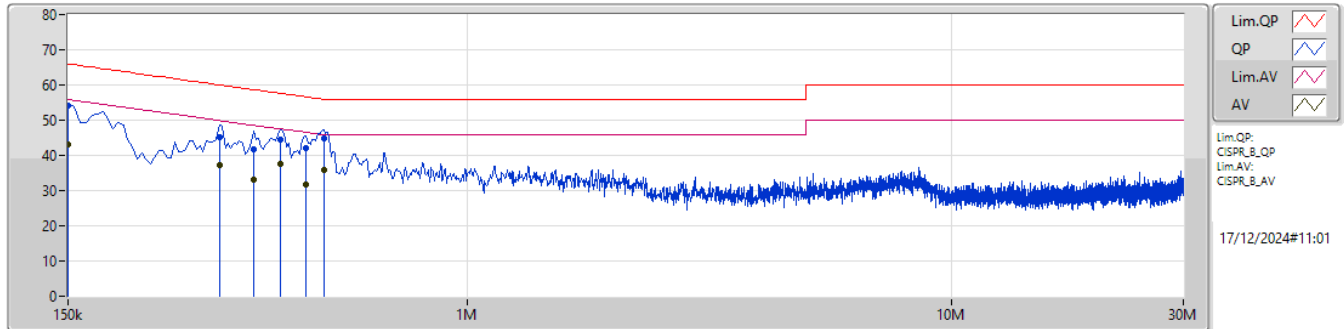
Conducted Emissions at Powerline

Appendix A

Summary

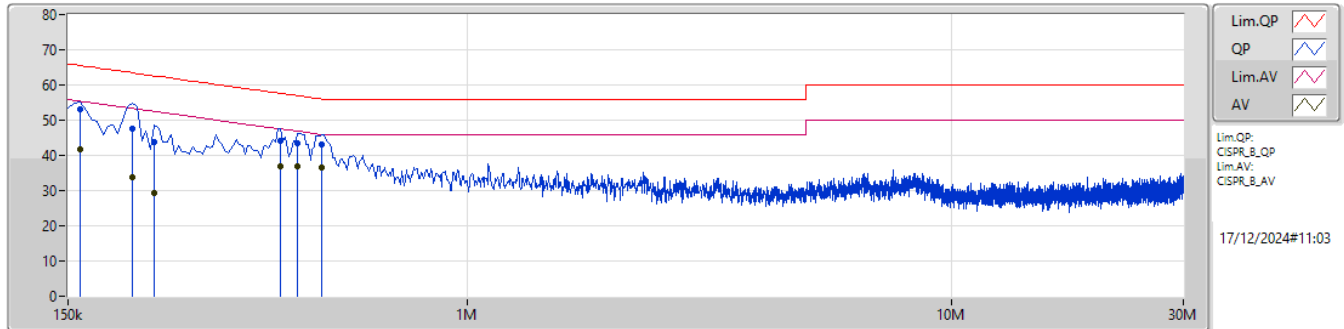
Mode	Result	Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Condition
Mode 1	Pass	AV	500k	36.39	46.00	-9.61	Neutral

Mode 1



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)						
QP	150k	54.16	66.00	-11.84	10.03	Line	-	44.13	0.04	0.08	9.91						
AV	150k	43.11	56.00	-12.89	10.03	Line	-	33.08	0.04	0.08	9.91						
QP	307.5k	45.09	60.03	-14.94	10.16	Line	-	34.93	0.05	0.09	10.02						
AV	307.5k	37.38	50.03	-12.65	10.16	Line	-	27.22	0.05	0.09	10.02						
QP	361.5k	41.83	58.70	-16.87	10.19	Line	-	31.64	0.05	0.10	10.04						
AV	361.5k	33.20	48.70	-15.50	10.19	Line	-	23.01	0.05	0.10	10.04						
QP	411k	44.49	57.63	-13.14	10.21	Line	-	34.28	0.05	0.10	10.06						
AV	411k	37.47	47.63	-10.16	10.21	Line	"Worst"	27.26	0.05	0.10	10.06						
QP	465k	42.21	56.61	-14.40	10.23	Line	-	31.98	0.05	0.10	10.08						
AV	465k	31.73	46.61	-14.88	10.23	Line	-	21.50	0.05	0.10	10.08						
QP	505.5k	44.91	56.00	-11.09	10.25	Line	-	34.66	0.06	0.10	10.09						
AV	505.5k	35.69	46.00	-10.31	10.25	Line	-	25.44	0.06	0.10	10.09						

Mode 1



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)						
QP	159k	53.24	65.52	-12.28	10.06	Neutral	-	43.18	0.06	0.08	9.92						
AV	159k	41.74	55.52	-13.78	10.06	Neutral	-	31.68	0.06	0.08	9.92						
QP	204k	47.62	63.44	-15.82	10.08	Neutral	-	37.54	0.06	0.07	9.95						
AV	204k	33.74	53.44	-19.70	10.08	Neutral	-	23.66	0.06	0.07	9.95						
QP	226.5k	43.78	62.58	-18.80	10.11	Neutral	-	33.67	0.06	0.08	9.97						
AV	226.5k	29.42	52.58	-23.16	10.11	Neutral	-	19.31	0.06	0.08	9.97						
QP	411k	44.24	57.63	-13.39	10.22	Neutral	-	34.02	0.06	0.10	10.06						
AV	411k	37.04	47.63	-10.59	10.22	Neutral	-	26.82	0.06	0.10	10.06						
QP	447k	43.45	56.94	-13.49	10.23	Neutral	-	33.22	0.06	0.10	10.07						
AV	447k	37.01	46.94	-9.93	10.23	Neutral	-	26.78	0.06	0.10	10.07						
QP	500k	43.25	56.00	-12.75	10.24	Neutral	-	33.01	0.06	0.10	10.08						
AV	500k	36.39	46.00	-9.61	10.24	Neutral	"Worst"	26.15	0.06	0.10	10.08						



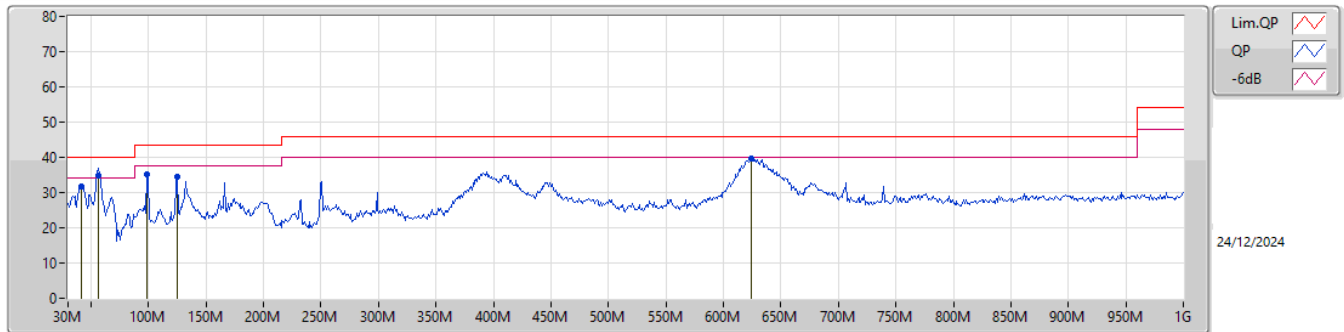
Radiated Emissions below 1GHz

Appendix B

Summary

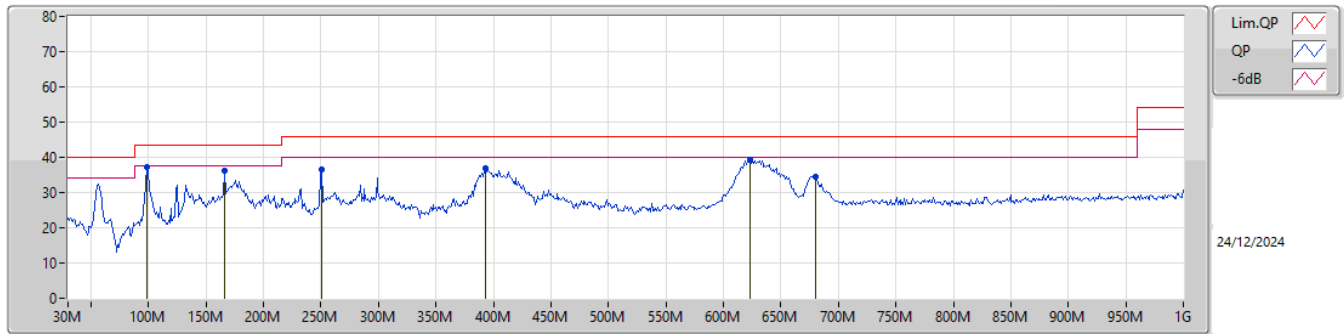
Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Condition
Mode 1	Pass	QP	56.19M	34.77	40.00	-5.23	Vertical

Mode 1



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB/m)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB/m)	CL (dB)	PA (dB)		
PK	41.64M	31.89	40.00	-8.11	-12.35	3	Vertical	281	1.00	-	44.24	18.14	1.08	31.57		
QP	56.19M	34.77	40.00	-5.23	-17.56	3	Vertical	316	1.00	"Worst"	52.33	12.89	1.21	31.66		
PK	98.87M	35.15	43.50	-8.35	-13.59	3	Vertical	304	1.00	-	48.74	16.63	1.52	31.74		
PK	125.06M	34.61	43.50	-8.89	-11.86	3	Vertical	173	1.00	-	46.47	18.19	1.70	31.75		
PK	624.61M	39.82	46.00	-6.18	-3.78	3	Vertical	195	1.00	-	43.60	24.64	3.85	32.27		
PK	624.61M	39.82	46.00	-6.18	-3.78	3	Vertical	195	1.00	-	43.60	24.64	3.85	32.27		

Mode 1



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB/m)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB/m)	CL (dB)	PA (dB)		
PK	98.87M	37.27	43.50	-6.23	-13.59	3	Horizontal	156	2.00	"Worst"	50.86	16.63	1.52	31.74		
PK	165.8M	36.15	43.50	-7.35	-13.98	3	Horizontal	79	2.00	-	50.13	15.85	1.94	31.77		
PK	250.19M	36.69	46.00	-9.31	-11.15	3	Horizontal	94	1.25	-	47.84	18.27	2.40	31.82		
PK	392.78M	36.83	46.00	-9.17	-7.75	3	Horizontal	305	1.00	-	44.58	21.19	3.04	31.98		
PK	623.64M	39.16	46.00	-6.84	-3.79	3	Horizontal	291	1.50	-	42.95	24.63	3.85	32.27		
PK	679.9M	34.52	46.00	-11.48	-3.46	3	Horizontal	283	1.50	-	37.98	24.84	4.03	32.33		