



# RADIO TEST REPORT

FCC ID : Z3WAIR4980  
Equipment : Wi-Fi 6E Smart Mesh System  
Brand Name : Airties  
Model Name : Air 4980  
Applicant : Airties Wireless Networks  
Sehit Mehmet Mikdat Uluunlu Sokagi No:23  
Esentepe, Sisli İstanbul, 34394 Turkey  
Manufacturer : Airties Wireless Networks  
Sehit Mehmet Mikdat Uluunlu Sokagi No:23  
Esentepe, Sisli İstanbul, 34394 Turkey  
Standard : 47 CFR FCC Part 15.407

The product was received on Jan. 13, 2023, and testing was started from Jan. 19, 2023 and completed on Jan. 31, 2023. 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
FR211129-02AB	01	Initial issue of report	Mar. 29, 2023



### 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	-

**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: Sophia Shiung**



# 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]
5250-5350		5260-5320	52-64 [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]
5250-5350		5270-5310	54-62 [2]
5470-5725		5510-5710	102-142 [6]
5725-5850		5755-5795	151-159 [2]
5150-5250	ac (VHT80), ax (HEW80)	5210	42 [1]
5250-5350		5290	58 [1]
5470-5725		5530-5690	106-138 [3]
5725-5850		5775	155 [1]
5150-5350	ac (VHT160), ax (HEW160)	5250	50 [1]
5470-5725		5570	114 [1]

Band	Mode	BWch (MHz)	Nant
5.15-5.25GHz	802.11a	20	2
5.15-5.25GHz	802.11n HT20	20	2
5.15-5.25GHz	802.11n HT20-BF	20	2
5.15-5.25GHz	802.11ac VHT20	20	2
5.15-5.25GHz	802.11ac VHT20-BF	20	2
5.15-5.25GHz	802.11ax HEW20	20	2
5.15-5.25GHz	802.11ax HEW20-BF	20	2
5.15-5.25GHz	802.11n HT40	40	2
5.15-5.25GHz	802.11n HT40-BF	40	2
5.15-5.25GHz	802.11ac VHT40	40	2
5.15-5.25GHz	802.11ac VHT40-BF	40	2
5.15-5.25GHz	802.11ax HEW40	40	2
5.15-5.25GHz	802.11ax HEW40-BF	40	2
5.15-5.25GHz	802.11ac VHT80	80	2
5.15-5.25GHz	802.11ac VHT80-BF	80	2
5.15-5.25GHz	802.11ax HEW80	80	2



<b>Band</b>	<b>Mode</b>	<b>BWch (MHz)</b>	<b>Nant</b>
5.15-5.25GHz	802.11ax HEW80-BF	80	2
5.15-5.35GHz	802.11ac VHT160	160	2
5.15-5.35GHz	802.11ac VHT160-BF	160	2
5.15-5.35GHz	802.11ax HEW160	160	2
5.15-5.35GHz	802.11ax HEW160-BF	160	2
5.25-5.35GHz	802.11a	20	2
5.25-5.35GHz	802.11n HT20	20	2
5.25-5.35GHz	802.11n HT20-BF	20	2
5.25-5.35GHz	802.11ac VHT20	20	2
5.25-5.35GHz	802.11ac VHT20-BF	20	2
5.25-5.35GHz	802.11ax HEW20	20	2
5.25-5.35GHz	802.11ax HEW20-BF	20	2
5.25-5.35GHz	802.11n HT40	40	2
5.25-5.35GHz	802.11n HT40-BF	40	2
5.25-5.35GHz	802.11ac VHT40	40	2
5.25-5.35GHz	802.11ac VHT40-BF	40	2
5.25-5.35GHz	802.11ax HEW40	40	2
5.25-5.35GHz	802.11ax HEW40-BF	40	2
5.25-5.35GHz	802.11ac VHT80	80	2
5.25-5.35GHz	802.11ac VHT80-BF	80	2
5.25-5.35GHz	802.11ax HEW80	80	2
5.25-5.35GHz	802.11ax HEW80-BF	80	2
5.47-5.725GHz	802.11a	20	2
5.47-5.725GHz	802.11n HT20	20	2
5.47-5.725GHz	802.11n HT20-BF	20	2
5.47-5.725GHz	802.11ac VHT20	20	2
5.47-5.725GHz	802.11ac VHT20-BF	20	2
5.47-5.725GHz	802.11ax HEW20	20	2
5.47-5.725GHz	802.11ax HEW20-BF	20	2
5.47-5.725GHz	802.11n HT40	40	2
5.47-5.725GHz	802.11n HT40-BF	40	2
5.47-5.725GHz	802.11ac VHT40	40	2
5.47-5.725GHz	802.11ac VHT40-BF	40	2
5.47-5.725GHz	802.11ax HEW40	40	2
5.47-5.725GHz	802.11ax HEW40-BF	40	2
5.47-5.725GHz	802.11ac VHT80	80	2
5.47-5.725GHz	802.11ac VHT80-BF	80	2
5.47-5.725GHz	802.11ax HEW80	80	2
5.47-5.725GHz	802.11ax HEW80-BF	80	2
5.47-5.725GHz	802.11ac VHT160	160	2



<b>Band</b>	<b>Mode</b>	<b>BWch (MHz)</b>	<b>Nant</b>
5.47-5.725GHz	802.11ac VHT160-BF	160	2
5.47-5.725GHz	802.11ax HEW160	160	2
5.47-5.725GHz	802.11ax HEW160-BF	160	2
5.725-5.85GHz	802.11a	20	2
5.725-5.85GHz	802.11n HT20	20	2
5.725-5.85GHz	802.11n HT20-BF	20	2
5.725-5.85GHz	802.11ac VHT20	20	2
5.725-5.85GHz	802.11ac VHT20-BF	20	2
5.725-5.85GHz	802.11ax HEW20	20	2
5.725-5.85GHz	802.11ax HEW20-BF	20	2
5.725-5.85GHz	802.11n HT40	40	2
5.725-5.85GHz	802.11n HT40-BF	40	2
5.725-5.85GHz	802.11ac VHT40	40	2
5.725-5.85GHz	802.11ac VHT40-BF	40	2
5.725-5.85GHz	802.11ax HEW40	40	2
5.725-5.85GHz	802.11ax HEW40-BF	40	2
5.725-5.85GHz	802.11ac VHT80	80	2
5.725-5.85GHz	802.11ac VHT80-BF	80	2
5.725-5.85GHz	802.11ax HEW80	80	2
5.725-5.85GHz	802.11ax HEW80-BF	80	2

**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 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**

Ant.	2.4GHz port	5GHz port	6E port	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	1	1	-	AirTies	A00	PCB antenna	N/A	Note 1
2	2	2	-	AirTies	A11	PCB antenna	N/A	
3	-	-	1	AirTies	A0X	PCB antenna	N/A	
4	-	-	2	AirTies	A1X	PCB antenna	N/A	
5	-	-	3	AirTies	A2X	PCB antenna	N/A	
6	-	-	4	AirTies	A3X	PCB antenna	N/A	

Note 1:

Ant.	Antenna Gain (dBi)								
	WLAN 2.4GHz	WLAN 5GHz				WLAN 6E			
		UNII 1	UNII 2A	UNII 2C	UNII 3	UNII 5	UNII 6	UNII 7	UNII 8
1	3.36	1.62	2.35	1.37	1.01	-	-	-	-
2	4.06	1.92	1.59	0.54	2.18	-	-	-	-
3	-	-	-	-	-	2.40	1.29	1.05	3.33
4	-	-	-	-	-	3.01	2.18	1.57	2.00
5	-	-	-	-	-	3.06	2.14	1.20	2.68
6	-	-	-	-	-	1.30	1.61	2.56	2.70

Ant.	Directional Gain (dBi)									
	WLAN 2.4GHz		WLAN 5GHz							
			UNII 1		UNII 2A		UNII 2C		UNII 3	
	2T1S	2T2S	2T1S	2T2S	2T1S	2T2S	2T1S	2T2S	2T1S	2T2S
1	4.66	1.65	3.10	0.11	3.34	0.33	2.66	-0.35	3.60	0.59
2										

Ant.	Directional Gain (dBi)											
	WLAN 6E											
	UNII 5			UNII 6			UNII 7			UNII 8		
	4T1S	4T2S	4T4S	4T1S	4T2S	4T4S	4T1S	4T2S	4T4S	4T1S	4T2S	4T4S
3	5.10	3.06	0.15	3.92	2.18	-1.09	3.57	2.56	-1.30	5.90	3.33	-0.03
4												
5												
6												

Note 2: The EUT has six antennas.

Note 3: The brand/model/antenna type information was declared by manufacturer.

Note 4: Maximum Directional Gain following KDB662911 D03.

The antenna report is provided in the operational description for this application.





**For 2.4GHz:**

**For IEEE 802.11b/g/n/VHT/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 1~3:**

**For 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 5~8:**

**For IEEE 802.11ax 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**

<b>EUT Power Type</b>	From Power Adapter		
<b>Beamforming Function</b>	<input checked="" type="checkbox"/> With beamforming	<input type="checkbox"/> Without beamforming	
	The product has beamforming function for n/VHT/ax in 2.4GHz, n/ac/ax in 5GHz UNII 1~UNII 3 and ax in 6GHz UNII 5~UNII 8.		
<b>Weather Band</b>	<input checked="" type="checkbox"/> With 5600~5650MHz	<input type="checkbox"/> Without 5600~5650MHz	
<b>Function</b>	<input type="checkbox"/> Outdoor P2M	<input checked="" type="checkbox"/> Indoor P2M	
	<input type="checkbox"/> Fixed P2P	<input type="checkbox"/> Client	
	<input checked="" type="checkbox"/> Point-to-multipoint	<input type="checkbox"/> Point-to-point	
<b>TPC Function</b>	<input checked="" type="checkbox"/> With TPC	<input type="checkbox"/> Without TPC	
<b>Channel Puncturing Function</b>	<input type="checkbox"/> Supported	<input checked="" type="checkbox"/> Unsupported	
<b>Support RU</b>	<input checked="" type="checkbox"/> Full RU	<input type="checkbox"/> Partial RU	
<b>HW version</b>	PCB-4980-D01-M01-R06		
<b>SW version</b>	4.127.8.0		
<b>SN</b>	AE2852139000065		

Note: The above information was declared by manufacturer.

**1.1.4 Table for EUT supports function**

Function	Supports type	Support Band
AP Router	Master	2.4GHz / 5GHz / 6E
Mesh	Master	5GHz / 6E

Note: The AP router was selected to test.



### 1.1.5 Table for Permissive Change

This product is an extension of original one reported under Sporton project number: FR211129-01AB.

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

<b>Modifications</b>	<b>Performance Checking</b>
1. Adding adapter 2 (Brand: NetBit, Model: NBS24M120200VU)	1. AC Power Port Conducted Emission 2. Radiated Emission below 1GHz
2. Adding Mesh function in WLAN 5GHz full band.	After evaluation, it does not need to re-test.



### 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 662911 D03 v01
- ♦ 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	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 < 1GHz	03CH05-CB	Gordon Hung	20.7~21.8 / 56~59	Jan. 19, 2023
AC Conduction	CO01-CB	Tim Chen	23~24 / 58~60	Jan. 31, 2023

### 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)	3.4 dB	Confidence levels of 95%
Radiated Emission (9kHz ~ 30MHz)	3.4 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	5.6 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 (AP Router) + 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	Normal Link
1	EUT in X axis (AP Router) + Adapter 2
2	EUT in Y axis (AP Router) + Adapter 2
3	EUT in Z axis (AP Router) + Adapter 2

For operating, mode 2 is the worst case and it was recorded in this test report.

### 2.2 EUT Operation during Test

During the test, the EUT operation to normal function.



## 2.3 Accessories

Accessories			
Equipment Name	Brand Name	Model Name	Rating
Adapter 1	MOSO	MS-V2000R120-024H0-US	INPUT: 100-240V, 50/60Hz, 0.7A max. OUTPUT: 12.0V, 2.0A
Adapter 2	NetBit	NBS24M120200VU	INPUT: 100-120V~, 50/60Hz, 0.6A OUTPUT: 12.0V, 2.0A
Others			
RJ-45 cable*1, non-shielded, 1.5m			

## 2.4 Support Equipment

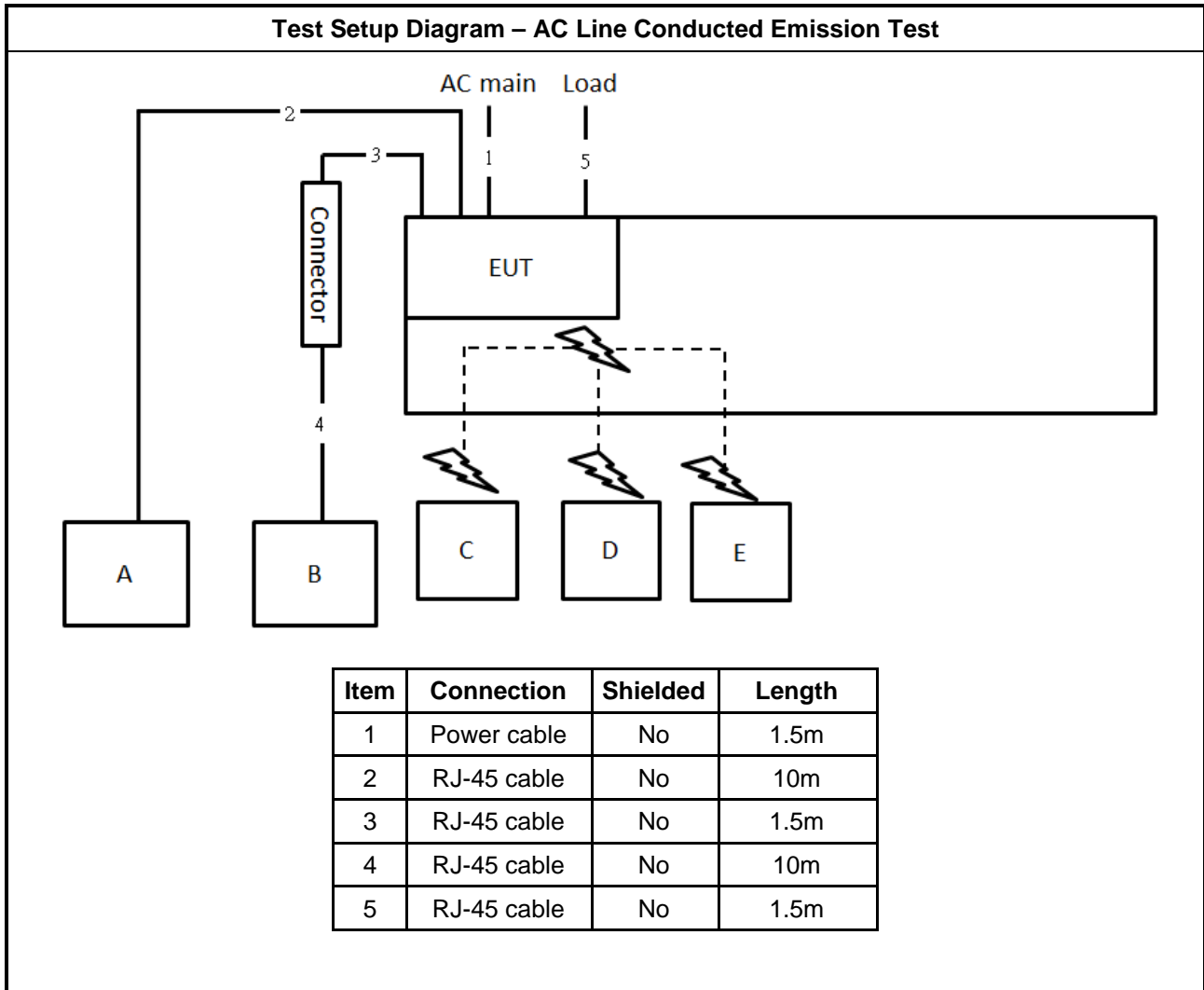
### For AC Conduction:

Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
A	LAN PC	DELL	T3400	N/A
B	2.5G WAN PC	DELL	T3400	N/A
C	2.4G NB	DELL	E6430	N/A
D	5G NB	DELL	E6430	N/A
E	6G NB	DELL	E6430	N/A

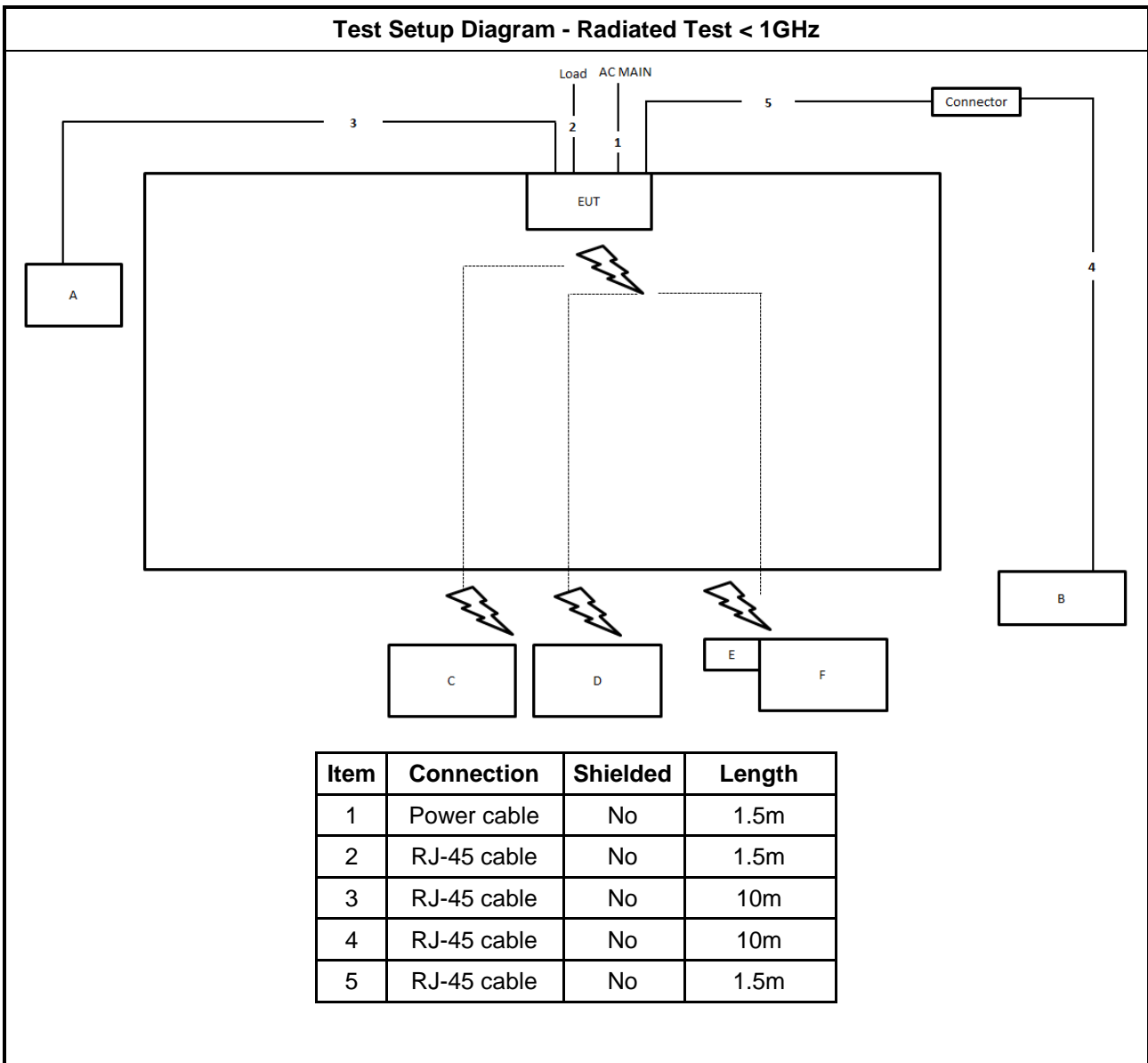
### For Radiated:

Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
A	NB (WAN Port)	DELL	E4300	N/A
B	NB (LAN Port)	DELL	E4300	N/A
C	NB (2.4G WiFi)	DELL	E4300	N/A
D	NB (5G WiFi)	DELL	E4300	N/A
E	WLAN module	Intel	AX210NGW	N/A

## 2.5 Test Setup Diagram



**Test Setup Diagram - Radiated Test < 1GHz**





### 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

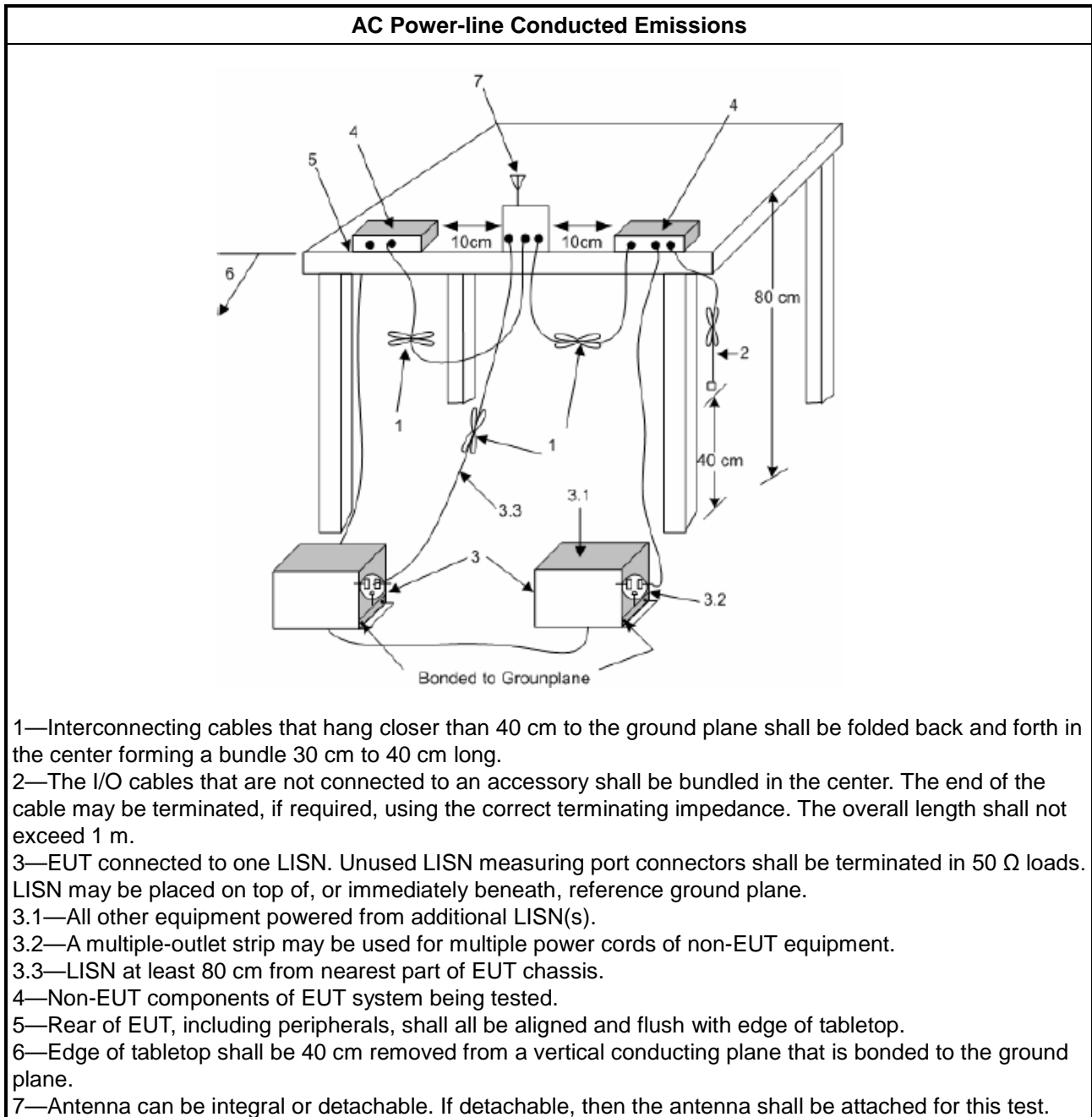
Refer a test equipment and calibration data table in this test report.

##### 3.1.3 Test Procedures

Test Method
<input checked="" type="checkbox"/> 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:

- 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.



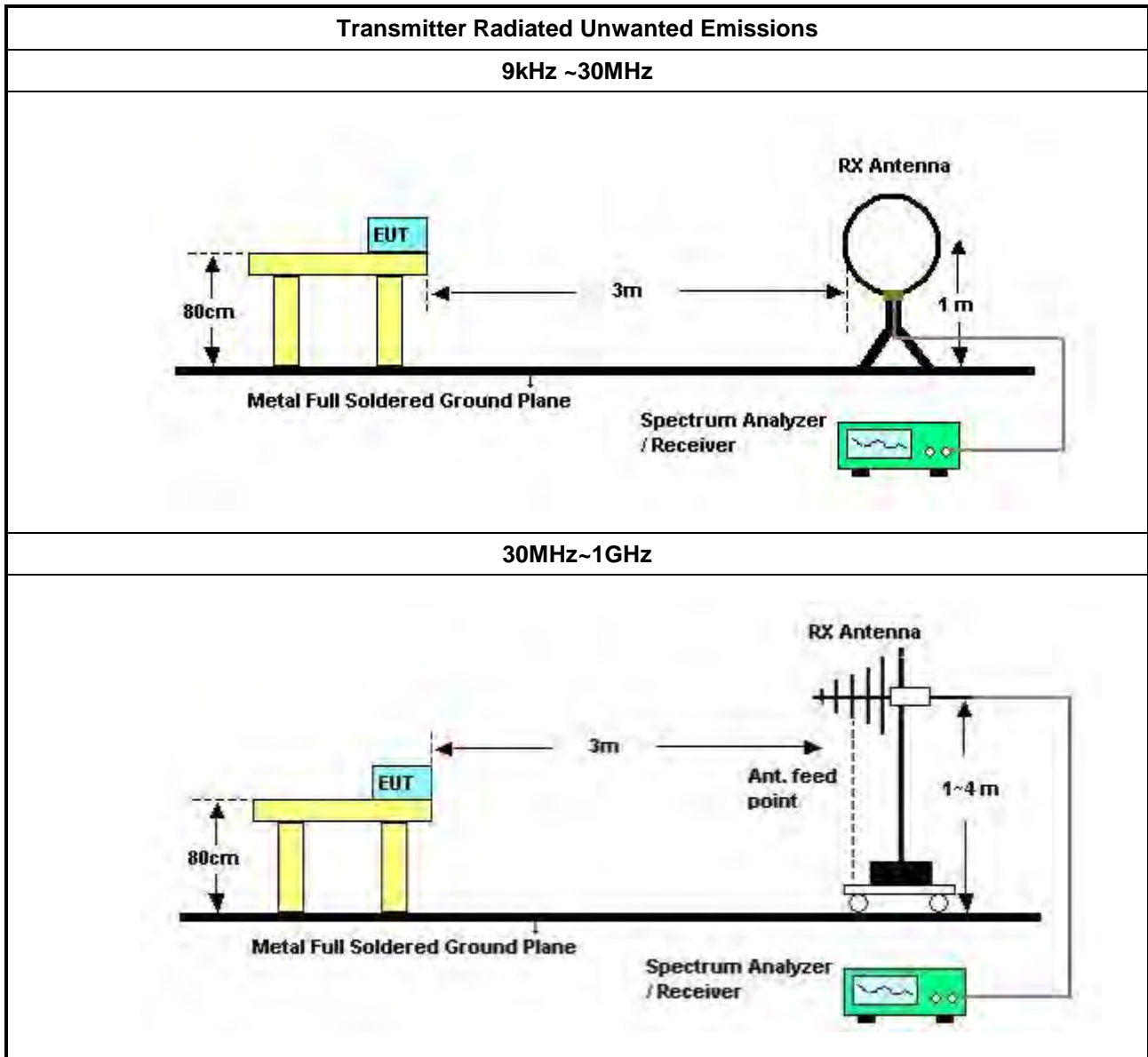
**3.2.2 Measuring Instruments**

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

**3.2.3 Test Procedures**

<b>Test Method</b>	
<ul style="list-style-type: none"> <li>▪ 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).</li> </ul>	
<ul style="list-style-type: none"> <li>▪ The average emission levels shall be measured in [duty cycle ≥ 98 or duty factor].</li> </ul>	
<ul style="list-style-type: none"> <li>▪ For the transmitter unwanted emissions shall be measured using following options below:</li> </ul>	
	<ul style="list-style-type: none"> <li>▪ Refer as FCC KDB 789033 D02, clause G)2) for unwanted emissions into non-restricted bands.</li> </ul>
	<ul style="list-style-type: none"> <li>▪ Refer as FCC KDB 789033 D02, clause G)1) for unwanted emissions into restricted bands.</li> </ul>
	<input type="checkbox"/> Refer as FCC KDB 789033 D02, G)6) Method AD (Trace Averaging).
	<input checked="" type="checkbox"/> Refer as FCC KDB 789033 D02, G)6) Method VB (Reduced VBW).
	<input type="checkbox"/> Refer as ANSI C63.10, clause 11.12.2.5.3 (Reduced VBW). VBW ≥ 1/T, where T is pulse time.
	<input type="checkbox"/> Refer as ANSI C63.10, clause 7.5 average value of pulsed emissions.
	<input checked="" type="checkbox"/> Refer as FCC KDB 789033 D02, clause G)5) measurement procedure peak limit.
	<input type="checkbox"/> Refer as ANSI C63.10, clause 4.1.4.2.2 measurement procedure peak limit.
<ul style="list-style-type: none"> <li>▪ For radiated measurement.</li> </ul>	
	<ul style="list-style-type: none"> <li>▪ Refer as ANSI C63.10, clause 6.4 for radiated emissions below 30 MHz and test distance is 3m.</li> </ul>
	<ul style="list-style-type: none"> <li>▪ Refer as ANSI C63.10, clause 6.5 for radiated emissions 30 MHz to 1 GHz and test distance is 3m.</li> </ul>
	<ul style="list-style-type: none"> <li>▪ Refer as ANSI C63.10, clause 6.6 for radiated emissions above 1GHz.</li> </ul>
<ul style="list-style-type: none"> <li>▪ The any unwanted emissions level shall not exceed the fundamental emission level.</li> </ul>	
<ul style="list-style-type: none"> <li>▪ All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.</li> </ul>	

### 3.2.4 Test Setup



### 3.2.5 Measurement Results Calculation

The measured Level is calculated using:

Corrected Reading:  $\text{Antenna factor (AF)} + \text{Cable loss (CL)} + \text{Read level (Raw)} - \text{Preamp factor (PA)} (\text{if applicable}) = \text{Level}$ .



### **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	Feb. 22, 2022	Feb. 21, 2023	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-16-2	04083	150kHz ~ 100MHz	Feb. 09, 2022	Feb. 08, 2023	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	Apr. 12, 2022	Apr. 11, 2023	Conduction (CO01-CB)
Pulse Limiter	Rohde&Schwarz	ESH3-Z2	100430	9kHz ~ 30MHz	Feb. 10, 2022	Feb. 09, 2023	Conduction (CO01-CB)
COND Cable	Woken	Cable	Low cable-CO01	9kHz ~ 30MHz	Oct. 18, 2022	Oct. 17, 2023	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	May 14, 2022	May 13, 2023	Radiation (03CH05-CB)
3m Semi Anechoic Chamber NSA	TDK	SAC-3M	03CH05-CB	30 MHz ~ 1 GHz	Aug. 03, 2022	Aug. 02, 2023	Radiation (03CH05-CB)
Bilog Antenna with 6dB Attenuator	TESEQ & EMCI	CBL 6112D & N-6-06	35236 & AT-N0610	30MHz ~ 2GHz	Mar. 25, 2022	Mar. 24, 2023	Radiation (03CH05-CB)
Pre-Amplifier	EMCI	EMC330N	980331	20MHz ~ 3GHz	Apr. 26, 2022	Apr. 25, 2023	Radiation (03CH05-CB)
Spectrum Analyzer	R&S	FSP40	100304	9kHz ~ 40GHz	Mar. 14, 2022	Mar. 13, 2023	Radiation (03CH05-CB)
EMI Test Receiver	R&S	ESCS	826547/017	9kHz ~ 2.75GHz	Jun. 17, 2022	Jun. 16, 2023	Radiation (03CH05-CB)
RF Cable-low	Woken	RG402	Low Cable-04+23	30MHz~1GHz	Oct. 03, 2022	Oct. 02, 2023	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.

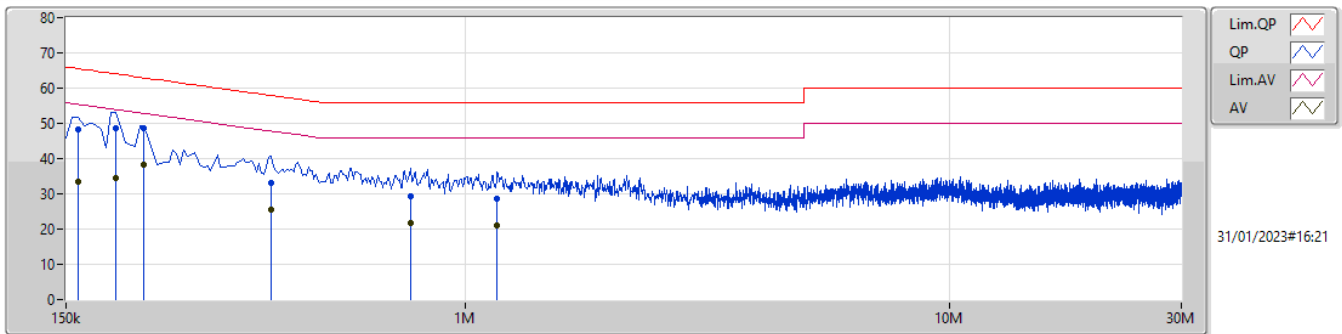
NCR means Non-Calibration required.



**Summary**

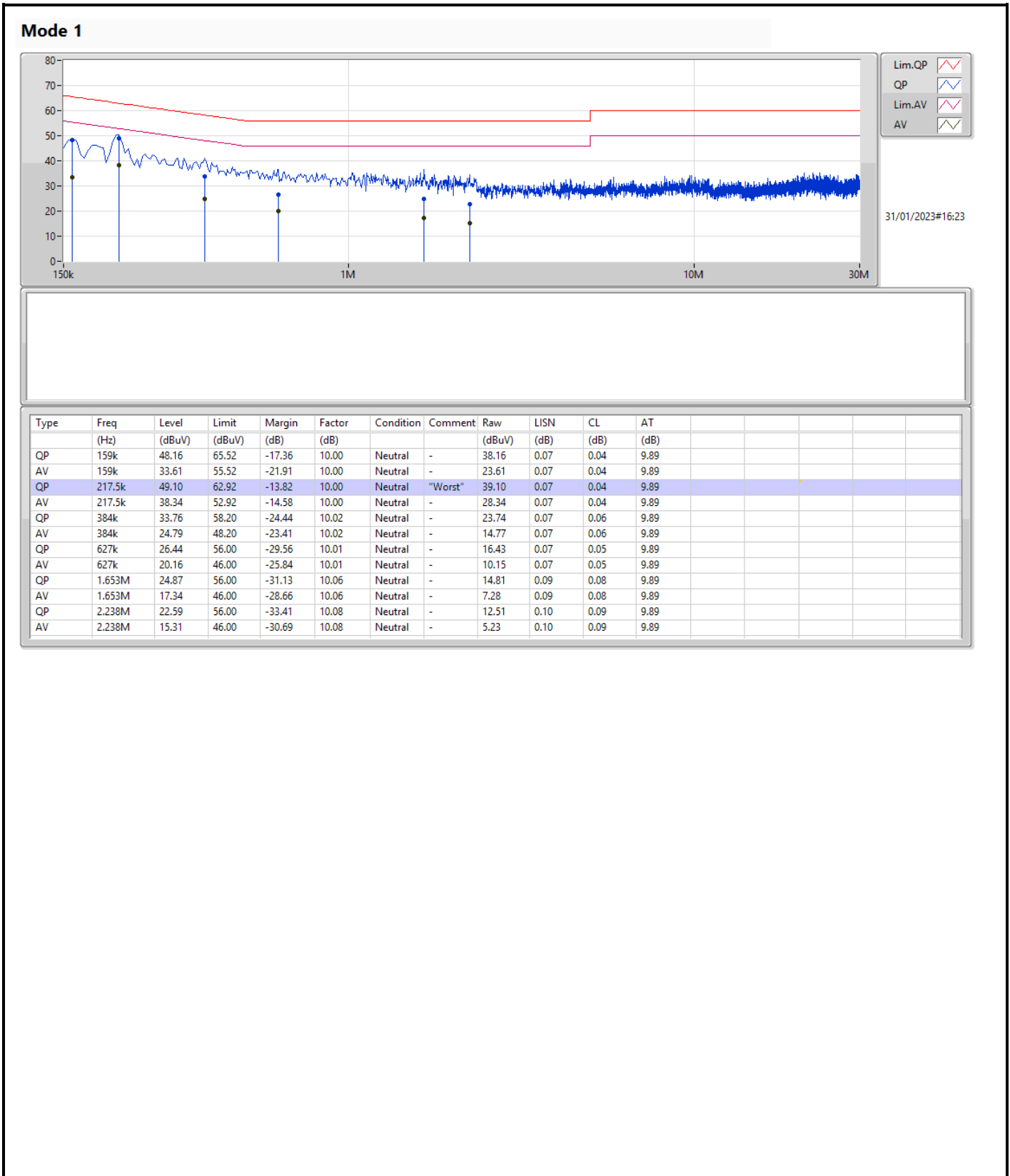
Mode	Result	Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Condition
Mode 1	Pass	QP	217.5k	49.10	62.92	-13.82	Neutral

## Mode 1



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)
QP	159k	48.12	65.52	-17.40	9.99	Line	-	38.13	0.06	0.04	9.89
AV	159k	33.38	55.52	-22.14	9.99	Line	-	23.39	0.06	0.04	9.89
QP	190.5k	48.77	64.01	-15.24	9.99	Line	-	38.78	0.06	0.04	9.89
AV	190.5k	34.34	54.01	-19.67	9.99	Line	-	24.35	0.06	0.04	9.89
QP	217.5k	48.76	62.92	-14.16	9.99	Line	"Worst"	38.77	0.06	0.04	9.89
AV	217.5k	38.35	52.92	-14.57	9.99	Line	-	28.36	0.06	0.04	9.89
QP	397.5k	33.27	57.91	-24.64	10.01	Line	-	23.26	0.06	0.06	9.89
AV	397.5k	25.37	47.91	-22.54	10.01	Line	-	15.36	0.06	0.06	9.89
QP	771k	29.36	56.00	-26.64	10.01	Line	-	19.35	0.07	0.05	9.89
AV	771k	21.76	46.00	-24.24	10.01	Line	-	11.75	0.07	0.05	9.89
QP	1.163M	28.49	56.00	-27.51	10.01	Line	-	18.48	0.07	0.05	9.89
AV	1.163M	21.19	46.00	-24.81	10.01	Line	-	11.18	0.07	0.05	9.89



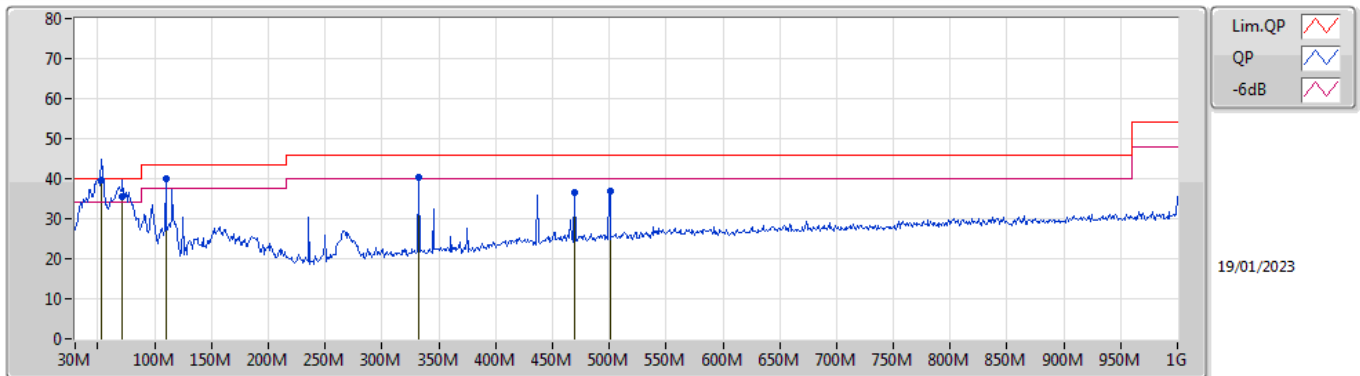




**Summary**

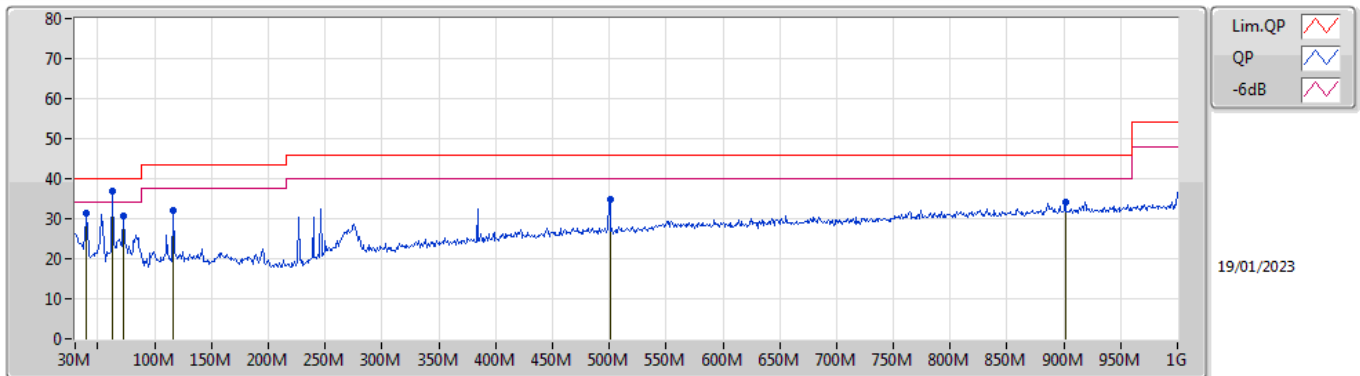
Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Condition
Mode 2	Pass	QP	53.28M	39.77	40.00	-0.23	Vertical

Mode 2



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB/m)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV/m)	AF (dB/m)	CL (dB)	PA (dB)
QP	53.28M	39.77	40.00	-0.23	-17.63	3	Vertical	146	1.00	"Worst"	57.40	12.96	1.29	31.88
QP	71.71M	35.44	40.00	-4.56	-18.36	3	Vertical	185	2.00	-	53.80	12.14	1.47	31.97
PK	109.54M	40.00	43.50	-3.50	-12.59	3	Vertical	200	2.00	-	52.59	17.60	1.78	31.97
PK	332.64M	40.25	46.00	-5.75	-9.22	3	Vertical	180	2.00	-	49.47	19.74	3.20	32.16
PK	469.41M	36.52	46.00	-9.48	-5.47	3	Vertical	181	2.00	-	41.99	22.98	3.86	32.31
PK	500.45M	36.99	46.00	-9.01	-5.21	3	Vertical	261	1.25	-	42.20	23.20	3.99	32.40

Mode 2



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB/m)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV/m)	AF (dB/m)	CL (dB)	PA (dB)
PK	39.7M	31.44	40.00	-8.56	-11.82	3	Horizontal	117	1.00	-	43.26	18.78	1.15	31.75
PK	62.98M	36.82	40.00	-3.18	-18.33	3	Horizontal	216	3.00	"Worst"	55.15	12.22	1.38	31.93
PK	72.68M	30.58	40.00	-9.42	-18.32	3	Horizontal	216	3.00	-	48.90	12.17	1.48	31.97
PK	116.33M	31.99	43.50	-11.51	-12.23	3	Horizontal	205	3.00	-	44.22	17.91	1.83	31.97
PK	500.45M	34.71	46.00	-11.29	-5.21	3	Horizontal	251	3.00	-	39.92	23.20	3.99	32.40
PK	901.06M	34.05	46.00	-11.95	-0.61	3	Horizontal	0	1.50	-	34.66	26.21	5.67	32.49