

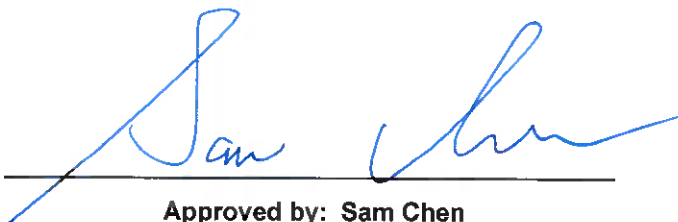


RADIO TEST REPORT

FCC ID : 2ABLK-GS5239XX
Equipment : GS7 XGS Tri Gateway, GS7 10GE Tri Gateway
Brand Name : Calix
Model Name : GS7 XGS GS5239XG, GS7 10GE GS5239E
Applicant : Calix Inc.
1 Santana West, 3155 Olsen Drive, Suite 450, San Jose,
California United States 95117
Standard : 47 CFR FCC Part 15.247

The product was received on Feb. 28, 2025, and testing was started from Mar. 10, 2025 and completed on Mar. 18, 2025. 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 C63.10-2020 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.)



Table of Contents

History of this test report.....	3
Summary of Test Result.....	4
1 General Description	5
1.1 Information.....	5
1.2 Applicable Standards	9
1.3 Testing Location Information	9
1.4 Measurement Uncertainty	9
2 Test Configuration of EUT.....	10
2.1 The Worst Case Measurement Configuration.....	10
2.2 EUT Operation during Test	10
2.3 Accessories	11
2.4 Support Equipment.....	11
2.5 Test Setup Diagram	13
3 Transmitter Test Result	15
3.1 AC Power-line Conducted Emissions	15
3.2 Emissions in Restricted Frequency Bands.....	17
4 Test Equipment and Calibration Data	20
Appendix A. Test Results of AC Power-line Conducted Emissions	
Appendix B. Test Results of Emissions in Restricted Frequency Bands	
Appendix C. Test Photos	
Photographs of EUT v01	



History of this test report

TEL : 886-3-656-9065
FAX : 886-3-656-9085
Report Template No.: CB-A10_10 Ver1.3

Page Number : 3 of 20
Issued Date : Jul. 06, 2026
Report Version : 01



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	-
Note: Reference to Sporton Project No.:432203-03.				

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: Sandy Chuang



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	2TX
2.4-2.4835GHz	802.11g	20	2TX
2.4-2.4835GHz	802.11n HT20	20	2TX
2.4-2.4835GHz	802.11n HT20-BF	20	2TX
2.4-2.4835GHz	VHT20	20	2TX
2.4-2.4835GHz	VHT20-BF	20	2TX
2.4-2.4835GHz	802.11ax HEW20	20	2TX
2.4-2.4835GHz	802.11ax HEW20-BF	20	2TX
2.4-2.4835GHz	802.11n HT40	40	2TX
2.4-2.4835GHz	802.11n HT40-BF	40	2TX
2.4-2.4835GHz	VHT40	40	2TX
2.4-2.4835GHz	VHT40-BF	40	2TX
2.4-2.4835GHz	802.11ax HEW40	40	2TX
2.4-2.4835GHz	802.11ax HEW40-BF	40	2TX

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

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	Alpha	290-20543	Dipole	I-PEX	Note 1
2	Alpha	290-20544	Dipole	I-PEX	
3	Alpha	290-20546	Dipole	I-PEX	
4	Alpha	290-20545	Dipole	I-PEX	
5	Alpha	290-20548	Dipole	I-PEX	
6	Alpha	290-20549	Omni	I-PEX	
7	Alpha	290-20547	Dipole	I-PEX	
8	Alpha	290-20550	Omni	I-PEX	

Note 1:

Ant.	Port		Antenna Gain (dBi)		
	WLAN 2.4GHz	WLAN 5GHz	WLAN 2.4GHz	WLAN 5GHz	
				UNII 1	UNII 3
1	1	3	2.61	4.07	3.30
2	2	4	3.15	3.95	3.77
3	-	1	-	3.90	3.67
4	-	2	-	4.07	4.99

Ant.	Port		Antenna Gain (dBi)			
	WLAN 6GHz		WLAN 6GHz			
			UNII 5	UNII 6	UNII 7	UNII 8
5	1		4.57	4.18	3.89	3.82
6	2		3.78	4.25	4.39	4.07
7	3		5.99	4.05	4.08	4.55
8	4		4.64	4.51	4.33	3.64

Item	Directional gain (dBi)						
	WLAN 2.4GHz	WLAN 5GHz		WLAN 6GHz			
		UNII 1	UNII 3	UNII 5	UNII 6	UNII 7	UNII 8
2T1S	4.09	-	-	-		-	-
2T2S	3.15	-	-	-		-	-
4T1S	-	6.88	7.39	7.14	7.44	6.67	5.98
4T2S	-	4.07	4.99	5.99	4.51	4.39	4.55
4T4S	-	4.07	4.99	5.99	4.51	4.39	4.55

Note 2: The above information (except antenna gain and directional 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 (2TX/2RX):

Port 1~2 can be used as transmitting/receiving antenna.

Port 1~2 could transmit/receive simultaneously.



For 5GHz function:

For IEEE 802.11 a/n/ac/ax/be (4TX/4RX):

Port 1~4 can be used as transmitting/receiving antenna.

Port 1~4 could transmit/receive simultaneously.

For 6GHz function:

For IEEE 802.11 ax/be (4TX/4RX):

Port 1~4 can be used as transmitting/receiving antenna.

Port 1~4 could transmit/receive simultaneously.

1.1.3 EUT Operational Condition

EUT Power Type	From Power Adapter or UPS			
Beamforming Function	☒	With beamforming	☐	Without beamforming
	The product has beamforming function for n/VHT/ax in 2.4GHz, n/ac/ax/be in 5GHz and ax/be in 6GHz.			
Function	☒	Point-to-multipoint	☐	Point-to-point
Support RU	☒	Full RU	☐	Partial RU
Test Software Version	QSPR V5.0-00202			

Note: The above information was declared by manufacturer.

1.1.4 Table for Multiple Listing

The EUT has two equipment/model names, the difference is listed in the following table:

EUT	Equipment Name	Model Name	BOSA	10G PHY port	SLIC IC
1, 3	GS7 XGS Tri Gateway	GS7 XGS GS5239XG	With	1 port	Brand : Intel Model : SLC220
2, 4	GS7 10GE Tri Gateway	GS7 10GE GS5239E	Without	2 port	Brand : Microsemi Model : Le9632

Note: The above information was declared by manufacturer.

1.1.5 Table for Components Source Information

Item	Main source	Second source
DDR	Brand name: Nanya Model name: NT5AD256M16E4-JR	Brand name: Nanya Model name: NT5AD512M16C4-JR

Note: The above information was declared by manufacturer.

1.1.6 Table for EUT Information

EUT	DDR	LED Rubber	Acetate Tape	Thermal pad	Bridge diode	Debug pin
1	Main source	Without	Without	Without	With	With
2						
3	Second source	With	With	With	Without	With
4						Without

Note: From the above EUTs, EUT 3~4 was selected to test Conducted Emissions; EUT 4 was selected to test Radiation Emissions below 1GHz.

**1.1.7 Table for EUT supports functions**

Function
AP Router
Bridge
Extender

Note 1: After evaluating, AP Router mode was selected to test and recorded in the report.

Note 2: 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: FR432203AA.

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

Modifications	Performance Checking
1. Add the second source of DDR for EUT 3~4.	Emissions in Restricted Frequency Bands below 1GHz.
2. Add the thermal pad for EUT 3~4.	
3. Remove bridge diode of digital board for EUT 3~4.	
4. Add UNII-2A and UNII-2C bands (including straddle channels, 160 MHz and 240 MHz) for this device through SW change by factory.	After evaluation, this test report was not affected.
5. Add the MRU/Puncturing function in 5GHz/6GHz through SW change (software number to "OpenWrt SNAPSHOT r0-7a5117104 / LuCI luci/openwrt-24.10 branch 24.212.79282~65b8002" from "OpenWrt 19.07-SNAPSHOTr0-69aef30 / LuCI branch git-24.058.46099-69aef30").	
6. Add the LED rubber and acetate tape for EUT 3~4.	After evaluation, it does not need to re-test.
7. Remove debug pin of digital board for EUT 4.	
8. Change the external photograph of EUT 2 (Model: GS7 10GE GS5239E) because the original external photograph of EUT 2 contains an error.	
9. Change the external photograph of EUT 1 (Model: GS7 XGS GS5239XG) because the original external photograph of EUT 1 contains an error.	
10. Change the applicant address to "1 Santana West, 3155 Olsen Drive, Suite 450, San Jose, California United States 95117" from "1035 N. McDowell Blvd. Petaluma, CA94954 U.S.A."	
11. Change test standard version to "ANSI C63.10-2020" from "ANSI C63.10-2013".	



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 15.247
- ♦ ANSI C63.10-2020

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

- ♦ FCC KDB 558074 D01 v05r02
- ♦ FCC KDB 662911 D03 v01
- ♦ 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 Below 1G	03CH04-CB	Mark Hsu	22.7-23.8 / 58-60	Mar. 10, 2025~ Mar. 11, 2025
AC Conduction	CO01-CB	Tim Chen	21~22 / 50~51	Mar. 18, 2025

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 Emissions	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
	The EUT was performed testing with adapter 1, adapter 2, and UPS, the worst case was found as UPS. Thus, the measurement will follow this same test configuration.
1	Normal Link with EUT 3 + UPS
2	Normal Link with EUT 4 + UPS
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	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	Normal Link
	1. The EUT was performed testing with adapter 1, adapter 2 and UPS, and the worst case was found as adapter 1. Thus, the measurement will follow this same test configuration. 2. After evaluating, EUT in Y axis was the worst case, so the measurement will follow this same test configuration.
1	EUT 4 in Y axis + Adapter 1

The Worst Case Mode for Following Conformance Tests	
Tests Item	Simultaneous Transmission Analysis - Co-location RF Exposure Evaluation
There are EUT 1~EUT 4, EUT 1 has been evaluated to be the worst case from radiated emission above 1GHz. So the measurement will follow this same test configuration.	
Operating Mode	
1	EUT 1-WLAN 2.4GHz + WLAN 5GHz + WLAN 6GHz
Refer to Sporton Test Report No.: FA432203-05 for Co-location RF Exposure Evaluation.	



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	AMIGO	AMS340-1204500FU	INPUT: 100-240V~50/60Hz, 2.0A OUTPUT: 12V, 4.5A
Adapter 2	MOSO	V30-V4500R120-060K0-US	INPUT: 100-240V~50/60Hz, 1.5A max. OUTPUT: 12.0V, 4.5A
other			
Cradle*1			

2.4 Support Equipment

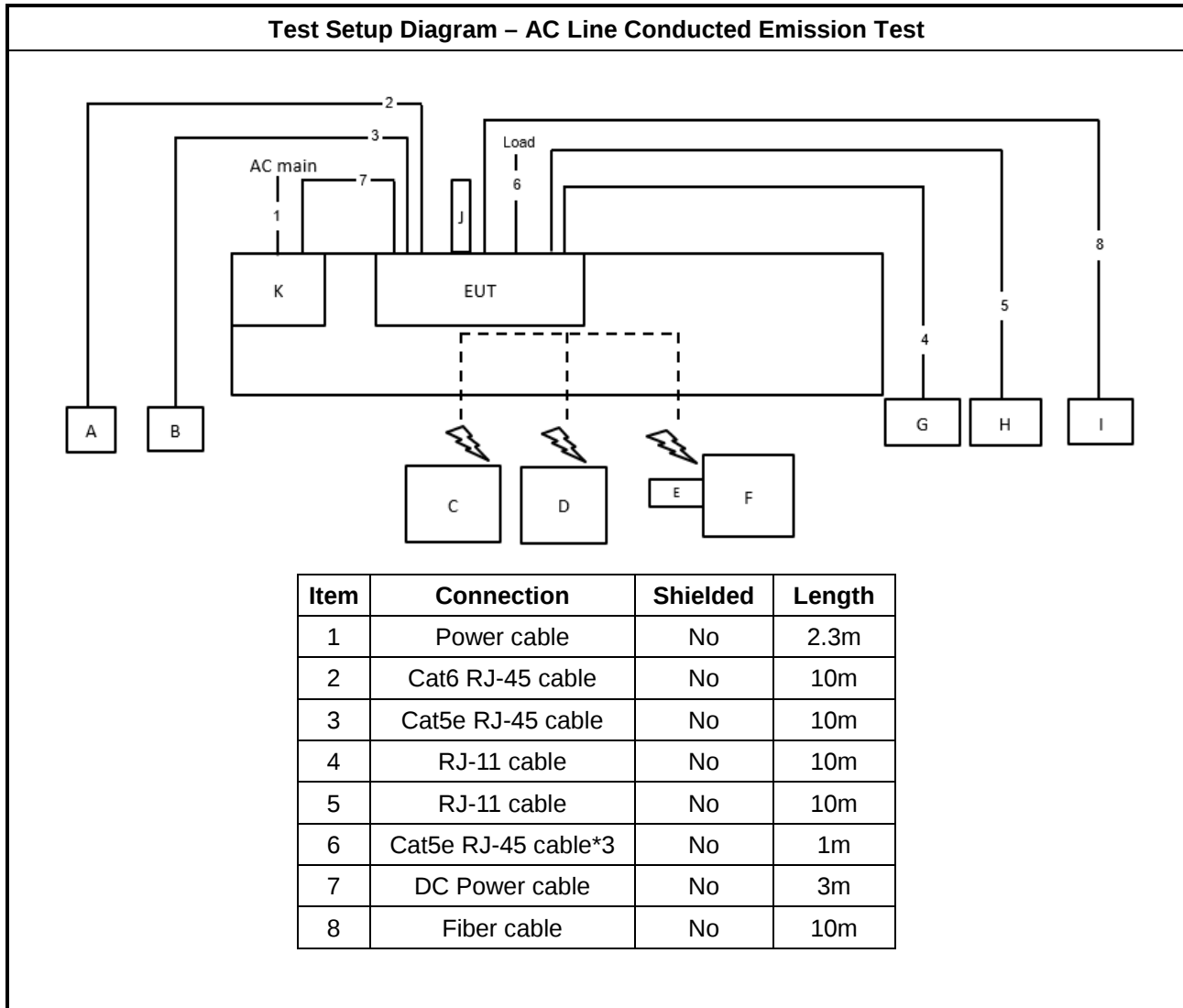
For AC Conduction:

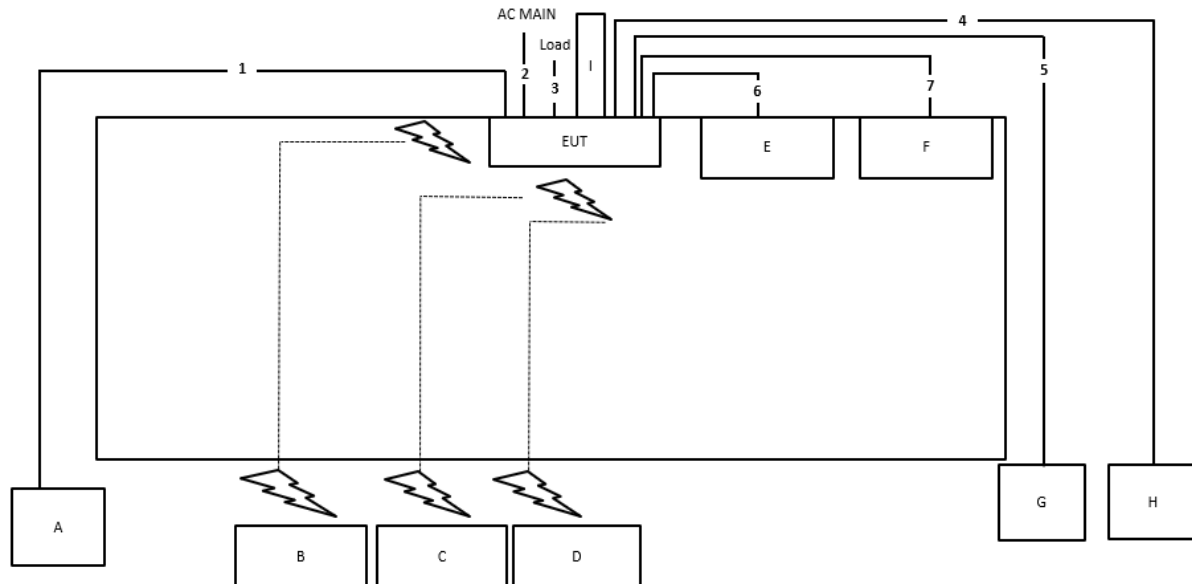
Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
A	10G LAN PC	ASUS	S300TA	TX2-RTL8821CE
B	2.5G LAN PC	ASUS	S300TA	TX2-RTL8821CE
C	2.4G NB	Lenovo	T400	N/A
D	5G NB	Lenovo	T400	N/A
E	6G Device	INTEL	BE200	PD9BE200NG
F	6G NB	DELL	E7240	N/A
G	Phone 1	PHILIPS	CORP020B/96	N/A
H	Phone 2	PHILIPS	CORP020B/96	N/A
I	Terminal System	Calix	100-01449 rev13	N/A
J	Flash disk 2.0	Transcend	604108 8255	N/A
K	UPS	CyberPower	CSN75A12V3	N/A

**For Radiated (below 1GHz):**

Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
A	NB(2.5G LAN)	DELL	E4300	N/A
B	NB(wifi 2.4G)	DELL	E4300	N/A
C	NB(wifi 5G)	DELL	E4300	N/A
D	NB(wifi 6G)	DELL	E4300	N/A
E	Phone	PHILIPS	M20	N/A
F	Phone	PHILIPS	M20	N/A
G	10G PC (LAN)	DELL	T3400	N/A
H	10G PC (WAN)	DELL	T3400	N/A
I	Flash disk3.0	Transcend	JetFlash-700	N/A

2.5 Test Setup Diagram



Test Setup Diagram - Radiated Test < 1GHz


Item	Connection	Shielded	Length
1	Cat5e RJ-45 cable	No	10m
2	Power cable	No	1.5m
3	Cat5e RJ-45 cable*3	No	1.5m
4	Cat6 RJ-45 cable	No	10m
5	Cat6 RJ-45 cable	No	10m
6	RJ-11 cable	No	1.5m
7	RJ-11 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.		

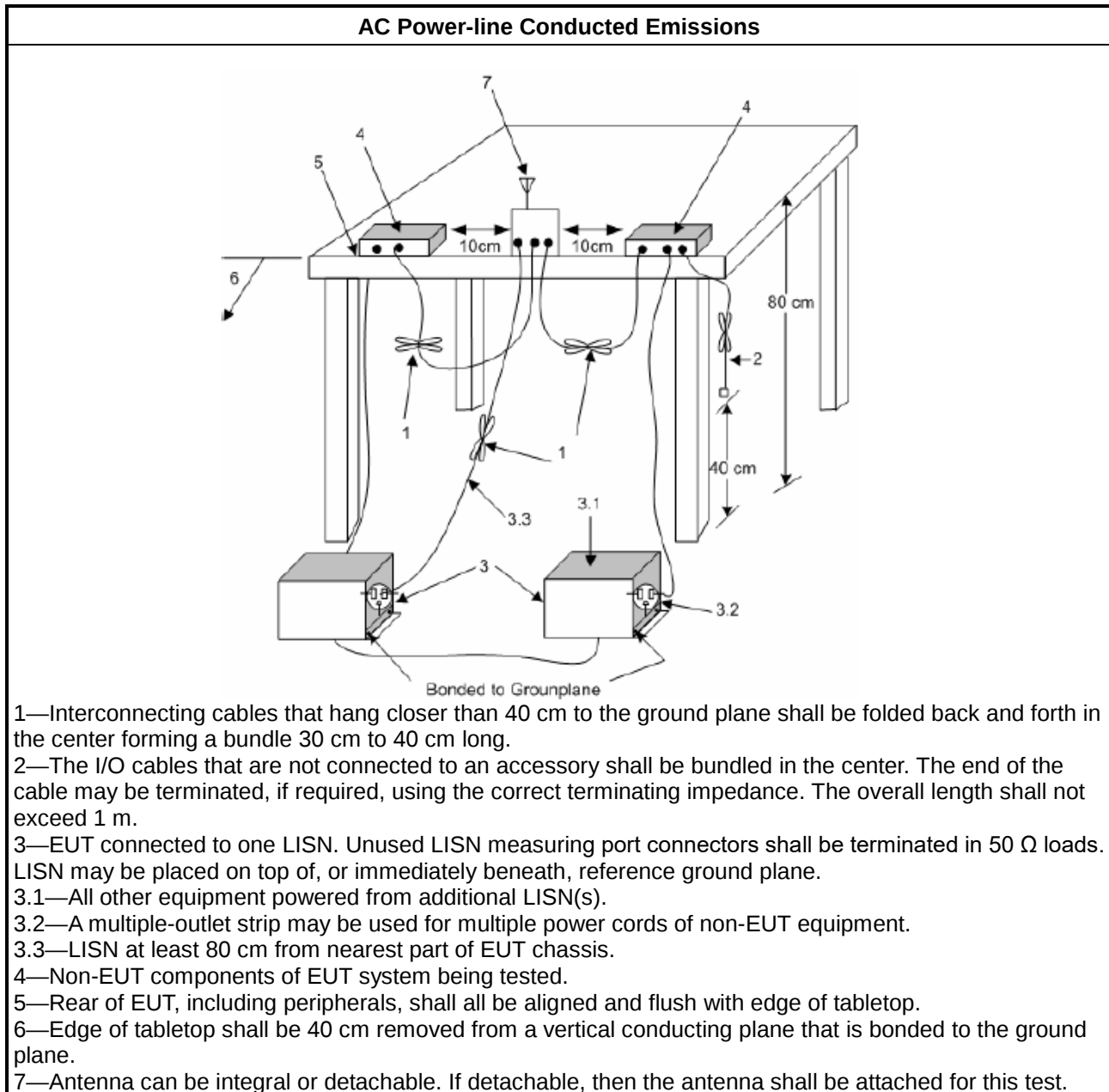
3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

Test Method
☒ Refer as ANSI C63.10-2020, 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: LISN Factor (LISN) + Attenuator (AT/AUX) + Cable Loss (CL) + Read Level (Raw) = Level
- 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

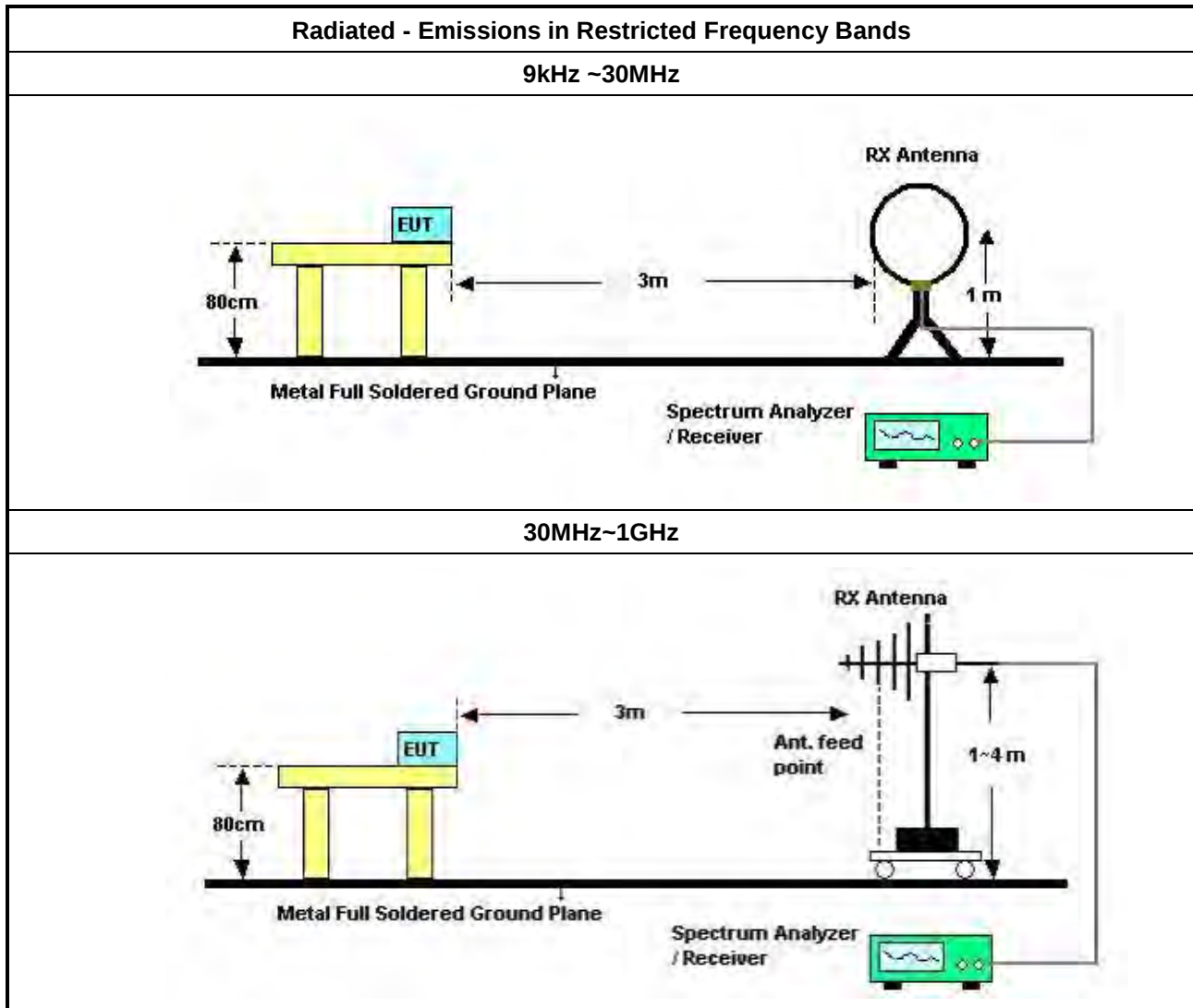
Refer a test equipment and calibration data table in this test report.



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 $\geq 98\%$).
	☐ 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 $\geq 1/T$).
	☐ Refer as ANSI C63.10, clause 11.12.2.5.3 (Reduced VBW). VBW $\geq 1/T$, 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



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 10th 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. 06, 2025	Mar. 05, 2026	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-16-2	04083	150kHz ~ 100MHz	Feb. 18, 2025	Feb. 17, 2026	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)
Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	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 - 30MHz	Oct. 16, 2024	Oct. 15, 2025	Radiation (03CH04-CB)
3m Semi Anechoic Chamber NSA	TDK	SAC-3M	03CH04-CB	30 MHz ~ 1 GHz	Jul. 31, 2024	Jul. 30, 2025	Radiation (03CH04-CB)
BILOG ANTENNA with 6 dB attenuator	Schaffner & EMCi	CBL6112B & N-6-06	22021&AT-N0607	30MHz ~ 1GHz	Oct. 05, 2024	Oct. 04, 2025	Radiation (03CH04-CB)
Pre-Amplifier	EMCI	EMC330N	980391	20MHz~3GHz	May 22, 2024	May 21, 2025	Radiation (03CH04-CB)
Spectrum Analyzer	R&S	FSP40	100142	9kHz~40GHz	Mar. 19, 2024	Mar. 18, 2025	Radiation (03CH04-CB)
EMI Test Receiver	R&S	ESR7	102172	9kHz ~ 7GHz	Oct. 21, 2024	Oct. 20, 2025	Radiation (03CH04-CB)
RF Cable-low	Woken	RG402	Low Cable-03+67	30MHz ~ 1GHz	Oct. 01, 2024	Sep. 30, 2025	Radiation (03CH04-CB)
Test Software	SPORTON	SENSE-EMI	V5.11.8	30MHz-40GHz	N.C.R.	N.C.R.	Radiation (03CH04-CB)

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

NCR means Non-Calibration required.



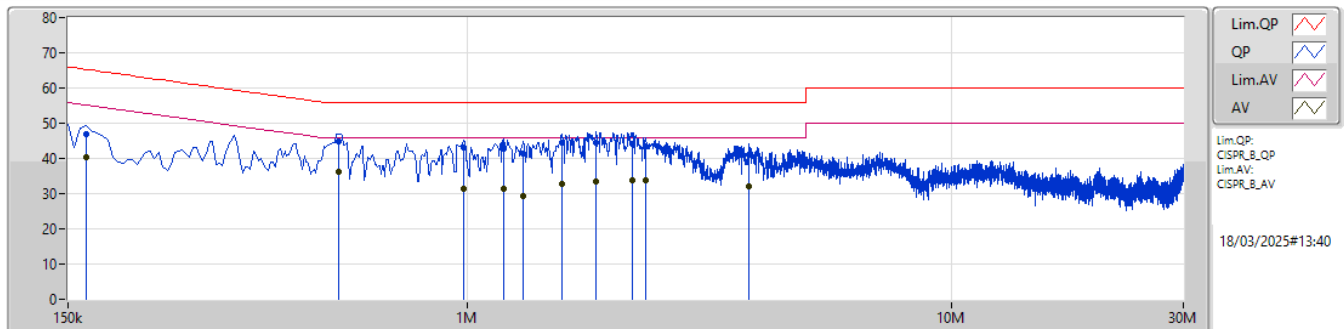
Conducted Emissions at Powerline

Appendix A

Summary

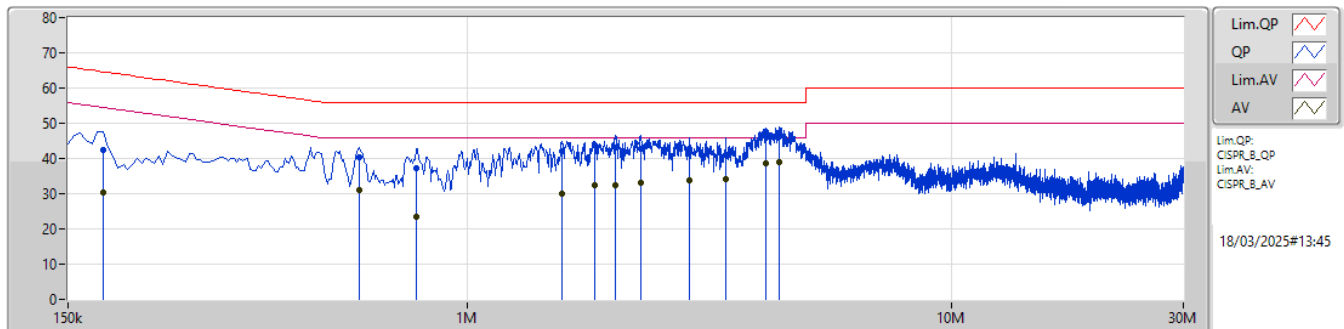
Mode	Result	Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Condition
Mode 1	Pass	AV	4.389M	38.93	46.00	-7.07	Neutral

Mode 1



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)						
QP	163.5k	46.78	65.27	-18.49	10.04	Line	-	36.74	0.04	0.08	9.92						
AV	163.5k	40.35	55.27	-14.92	10.04	Line	-	30.31	0.04	0.08	9.92						
QP	541.5k	44.69	56.00	-11.31	10.25	Line	-	34.44	0.06	0.10	10.09						
AV	541.5k	36.06	46.00	-9.94	10.25	Line	"Worst"	25.81	0.06	0.10	10.09						
QP	982.5k	43.15	56.00	-12.85	10.32	Line	-	32.83	0.07	0.09	10.16						
AV	982.5k	31.52	46.00	-14.48	10.32	Line	-	21.20	0.07	0.09	10.16						
QP	1.185M	42.89	56.00	-13.11	10.28	Line	-	32.61	0.07	0.10	10.11						
AV	1.185M	31.34	46.00	-14.66	10.28	Line	-	21.06	0.07	0.10	10.11						
QP	1.302M	41.52	56.00	-14.48	10.27	Line	-	31.25	0.08	0.11	10.08						
AV	1.302M	29.46	46.00	-16.54	10.27	Line	-	19.19	0.08	0.11	10.08						
QP	1.563M	44.47	56.00	-11.53	10.22	Line	-	34.25	0.08	0.12	10.02						
AV	1.563M	32.67	46.00	-13.33	10.22	Line	-	22.45	0.08	0.12	10.02						
QP	1.847M	44.57	56.00	-11.43	10.19	Line	-	34.38	0.09	0.13	9.97						
AV	1.847M	33.45	46.00	-12.55	10.19	Line	-	23.26	0.09	0.13	9.97						
QP	2.184M	44.04	56.00	-11.96	10.18	Line	-	33.86	0.10	0.14	9.94						
AV	2.184M	33.84	46.00	-12.16	10.18	Line	-	23.66	0.10	0.14	9.94						
QP	2.328M	43.37	56.00	-12.63	10.18	Line	-	33.19	0.10	0.14	9.94						
AV	2.328M	33.76	46.00	-12.24	10.18	Line	-	23.58	0.10	0.14	9.94						
QP	3.813M	40.96	56.00	-15.04	10.18	Line	-	30.78	0.13	0.15	9.90						
AV	3.813M	32.18	46.00	-13.82	10.18	Line	-	22.00	0.13	0.15	9.90						

Mode 1



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)						
QP	177k	42.57	64.62	-22.05	10.06	Neutral	-	32.51	0.06	0.07	9.93						
AV	177k	30.34	54.62	-24.28	10.06	Neutral	-	20.28	0.06	0.07	9.93						
QP	600k	40.40	56.00	-15.60	10.27	Neutral	-	30.13	0.07	0.10	10.10						
AV	600k	31.14	46.00	-14.86	10.27	Neutral	-	20.87	0.07	0.10	10.10						
QP	784.5k	37.15	56.00	-18.85	10.29	Neutral	-	26.86	0.07	0.09	10.13						
AV	784.5k	23.35	46.00	-22.65	10.29	Neutral	-	13.06	0.07	0.09	10.13						
QP	1.563M	42.19	56.00	-13.81	10.23	Neutral	-	31.96	0.09	0.12	10.02						
AV	1.563M	29.96	46.00	-16.04	10.23	Neutral	-	19.73	0.09	0.12	10.02						
QP	1.833M	43.77	56.00	-12.23	10.21	Neutral	-	33.56	0.10	0.13	9.98						
AV	1.833M	32.49	46.00	-13.51	10.21	Neutral	-	22.28	0.10	0.13	9.98						
QP	2.022M	43.14	56.00	-12.86	10.19	Neutral	-	32.95	0.10	0.14	9.95						
AV	2.022M	32.29	46.00	-13.71	10.19	Neutral	-	22.10	0.10	0.14	9.95						
QP	2.274M	42.84	56.00	-13.16	10.19	Neutral	-	32.65	0.11	0.14	9.94						
AV	2.274M	32.94	46.00	-13.06	10.19	Neutral	-	22.75	0.11	0.14	9.94						
QP	2.868M	42.84	56.00	-13.16	10.19	Neutral	-	32.65	0.12	0.15	9.92						
AV	2.868M	33.76	46.00	-12.24	10.19	Neutral	-	23.57	0.12	0.15	9.92						
QP	3.408M	41.19	56.00	-14.81	10.18	Neutral	-	31.01	0.12	0.15	9.91						
AV	3.408M	34.00	46.00	-12.00	10.18	Neutral	-	23.82	0.12	0.15	9.91						
QP	4.128M	46.09	56.00	-9.91	10.18	Neutral	-	35.91	0.13	0.15	9.90						
AV	4.128M	38.52	46.00	-7.48	10.18	Neutral	-	28.34	0.13	0.15	9.90						
QP	4.389M	46.30	56.00	-9.70	10.18	Neutral	-	36.12	0.14	0.15	9.89						
AV	4.389M	38.93	46.00	-7.07	10.18	Neutral	"Worst"	28.75	0.14	0.15	9.89						



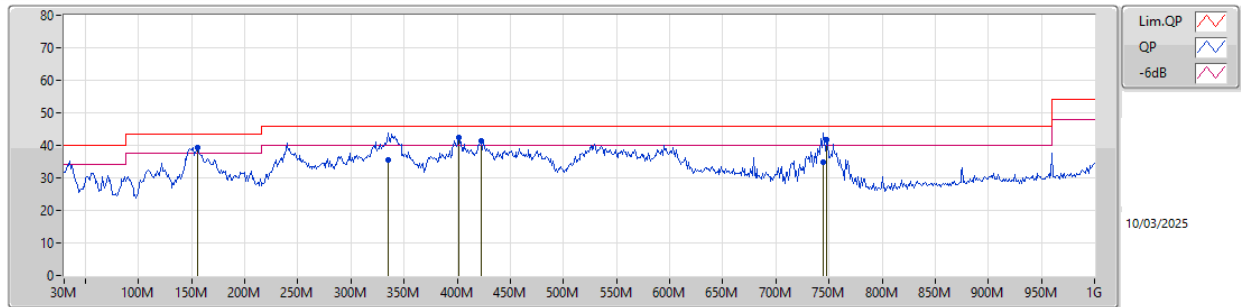
Radiated Emissions below 1GHz

Appendix B

Summary

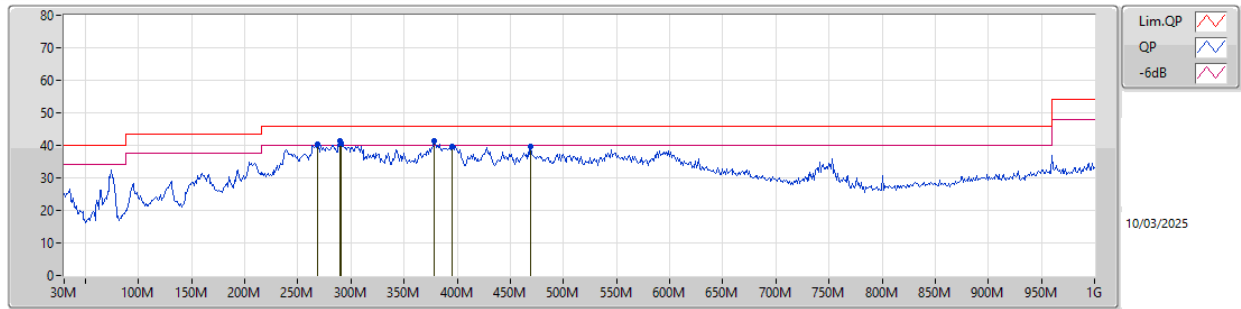
Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Condition
Mode 1	Pass	PK	401.51M	42.26	46.00	-3.74	Vertical

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	155.13M	39.36	43.50	-4.14	-13.79	3	Vertical	359	1.00	-	53.15	16.26	1.25	31.30		
QP	334.58M	35.40	46.00	-10.60	-9.91	3	Vertical	261	1.00	-	45.31	19.49	1.93	31.33		
PK	401.51M	42.26	46.00	-3.74	-7.61	3	Vertical	157	1.00	"Worst"	49.87	21.71	2.12	31.44		
PK	422.85M	41.43	46.00	-4.57	-6.91	3	Vertical	102	1.00	-	48.34	22.36	2.17	31.44		
QP	744.89M	34.80	46.00	-11.20	-3.45	3	Vertical	57	1.00	-	38.25	25.70	2.93	32.08		
PK	748M	41.67	46.00	-4.33	-3.48	3	Vertical	53	2.00	-	45.15	25.68	2.94	32.10		

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	268.62M	40.18	46.00	-5.82	-10.82	3	Horizontal	193	1.50	-	51.00	18.52	1.71	31.05		
PK	289.96M	41.25	46.00	-4.75	-10.60	3	Horizontal	218	1.00	"Worst"	51.85	18.84	1.78	31.22		
PK	290.93M	40.67	46.00	-5.33	-10.58	3	Horizontal	218	1.00	-	51.25	18.86	1.79	31.23		
PK	378.23M	41.21	46.00	-4.79	-8.55	3	Horizontal	327	1.50	-	49.76	20.79	2.06	31.40		
PK	395.69M	39.71	46.00	-6.29	-7.87	3	Horizontal	176	1.50	-	47.58	21.45	2.11	31.43		
PK	469.41M	39.73	46.00	-6.27	-6.30	3	Horizontal	114	1.00	-	46.03	22.96	2.29	31.55		