

EMC TEST REPORT

Report No.: FCC/2404004-1-A2

Applicant:

Gouldin Technologies, LLC

3220 Keller Springs Dr., Suite 106, Carrollton, Texas, 75006

Product name:

OmniPoint EPM

Model name:

OP-EPM-V2-500-DG

Sample ID:

FCC/2404004

Specifications:

- ◆ FCC 47 CFR Part 15, Subpart B

Date of Receipt of

April 26, 2024

Test Item:

Date of Testing

April 29, 2024 to May 1, 2024

Date of issue:

April 9, 2025

Name and address
of the Test HouseNemko India (Test Lab) Pvt. Ltd.
Plot No.193, Sector 68, IMT, Faridabad, Haryana-121004

Test engineer(s):

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Project Manager

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by LALIT SHARMA

Remark: This report has been reissued to remove test setup photographs and Photographs of EUT as per TCB request. No changes have been made to the test data, methodology, or conclusions. This report replaces original test report no. FCC/2404004-1 dated 09/12/2024 and amendment report no. FCC/2404004-1-A1 dated 04/04/2025.

The results of this report relate only to the item(s) tested. The testing laboratory is responsible for all the information provided in the report, except the information provided by the customer/manufacturer, wherever applicable. The report may be reproduced in full. Partial reproduction may only be made with the written consent of Nemko India. The report is released by Nemko India in pdf format only. Printed copies of this report are uncontrolled including scans of coloured prints. This report is digitally signed on first page, doesn't required signature on each page.

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1. Client Information

1.1 Applicant

Company Name: Gouldin Technologies, LLC
Company Address: 3220 Keller Springs Dr., Suite 106, Carrollton, Texas, 75006

1.2 Manufacturer

Company Name: Gouldin Technologies, LLC
Company Address: 3220 Keller Springs Dr., Suite 106, Carrollton, Texas, 75006

1.3 Other Information

- No Comment

2. Equipment Under Test (EUT) (As per manufacturer's Declaration)

2.1 Identification of EUT

Product Name:	OmniPoint EPM
Model Name:	OP-EPM-V2-500-DG
Trademark:	
Serial Number:	AC1F09FFFE0D8926
Maximum Internal Frequency	2.4 GHz
Software Number:	3.7.0
Hardware Number:	2.0
Rating:	Input: 12 VDC Output: 500mA
Tested Voltage & Power Frequency:	12V DC
Remark:	NA

2.2 General Product Information

OmniPoint EPM is a main operated system which is used to open or close the gate automatically When RFID card is presented or when command is received from LoRa gateway. SD card is interfaced to the MCU to store the RFID card number and gate open/close logs. RTC is used to maintain the timestamp of the gate operation in the operation logs. BLE is used for basic commands and OTA. This product is intended for operating main gate of the house or office automatically through remote or local access.

2.3 Variants Covered by This Report

- NA

2.4 Equipment classification as per standard

Equipment classification	Class B digital device.
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2.5 Modifications

- No modifications.

2.6 Additional Information Related to Testing

- No Comment

2.7 Picture Documentation

- No Comment

3. General Test Conditions

3.1 Location

Test Site: Laboratory / ~~In-situ~~

Nemko India (Test Lab) Pvt. Ltd.

Plot No. 193, Sector-68, IMT Faridabad, Haryana-121004

3.2 Operating Environment

Parameters	Environmental Condition
Ambient temperature	(25.0 ± 10.0) °C
Relative humidity	(75.0 or less) % R.H.
Atmospheric pressure	(96.0 ± 10.0) kPa

All tests and measurements were performed in a shielded enclosure or a controlled environment suitable for the tests conducted. The climatic conditions in the test area are automatically controlled and recorded continuously.

3.3 EUT Operation During Test (As per manufacturer's Declaration)

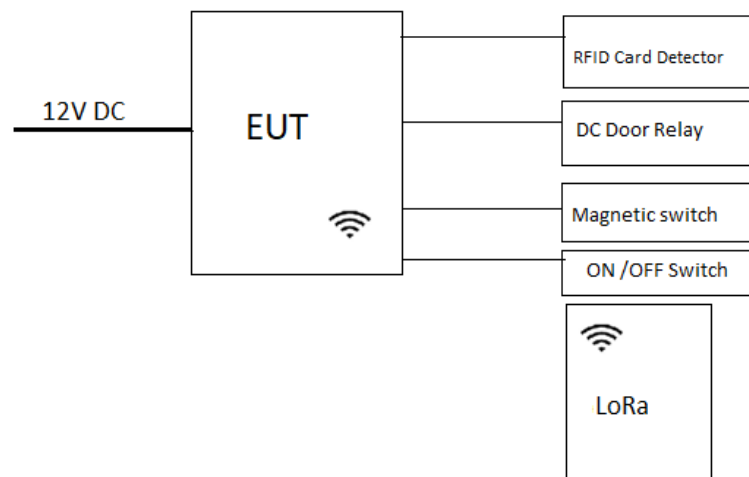
3.3.1 EUT Test Mode

Mode 1	The EUT is in normal Operating Mode with DC power supply at 12V DC
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3.3.2 Description of EUT Test setup details

Block diagram of EUT configuration

Mode1



3.3.3 Configuration details:

- The EUT was set up in a configuration that was expected to produce the highest amplitude emissions relative to the limit and that satisfy normal operation/installation practice by the end-user.
- The EUT was set up in a manner that consists with its typical arrangement and cables used in the measurement setups were consistent with normal or typical use.

3.4 Test Equipment

• The test equipment used in testing are calibrated on a regular basis. For most of the testing equipment accredited calibration is conducted once a year. For certain equipment the calibration interval is longer. Between the calibrations all test equipment are controlled and verified on a regular basis. The test equipment used are defined in each test section of this report.

3.5 EUT & Support Equipment

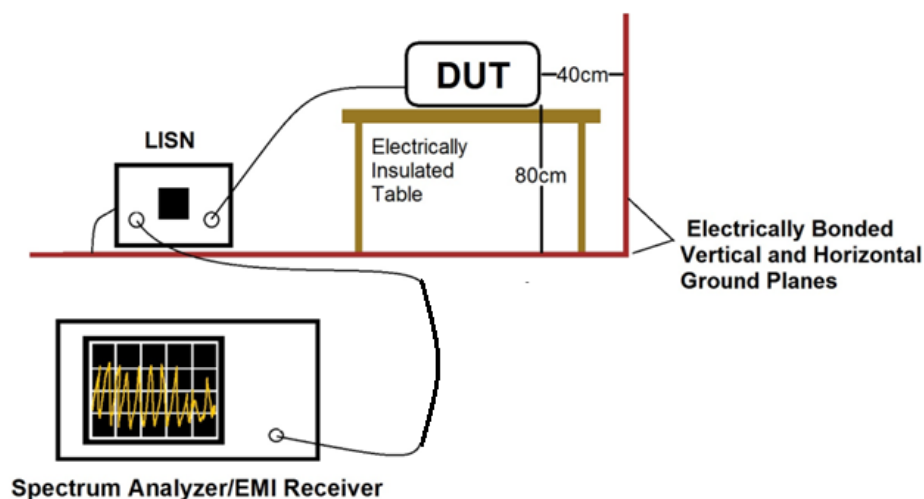
Product Name	Manufacturer	Model Name	Serial Number
OmniPoint EPM	Gouldin Technologies, LLC	OP-EPM-V2-500-DG	AC1F09FFFE0D8926
RFID Card Detector	HID GLOBAL CORPORATION	MDP-04185	E48206005BGB00
DC Door Relay	ELETRIC STRIKES	--	--
Magnetic Switch	Seco-Larm Enforce	SM-226Q	--
Outdoor LoRa Gateway	RAK	RAK7249	918100JE6010826803
ON / OFF Switch	--	--	--

3.6 Connection Cable

Connection of EUT	Connection Terminal	Cable Data	No. of Cores
Power supply	DC MAINS	Power cable	2

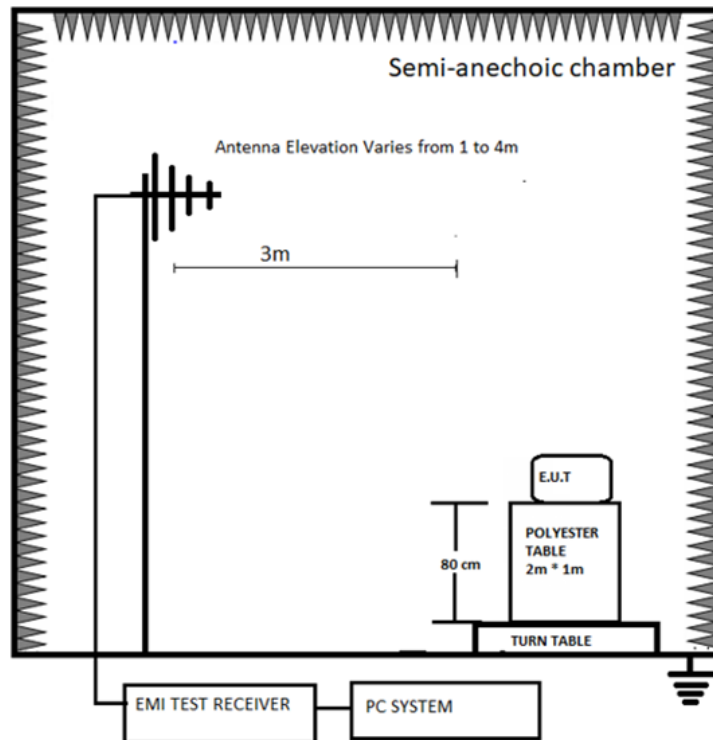
3.6 Test Set-up Drawing

3.6.1 Conducted Emission

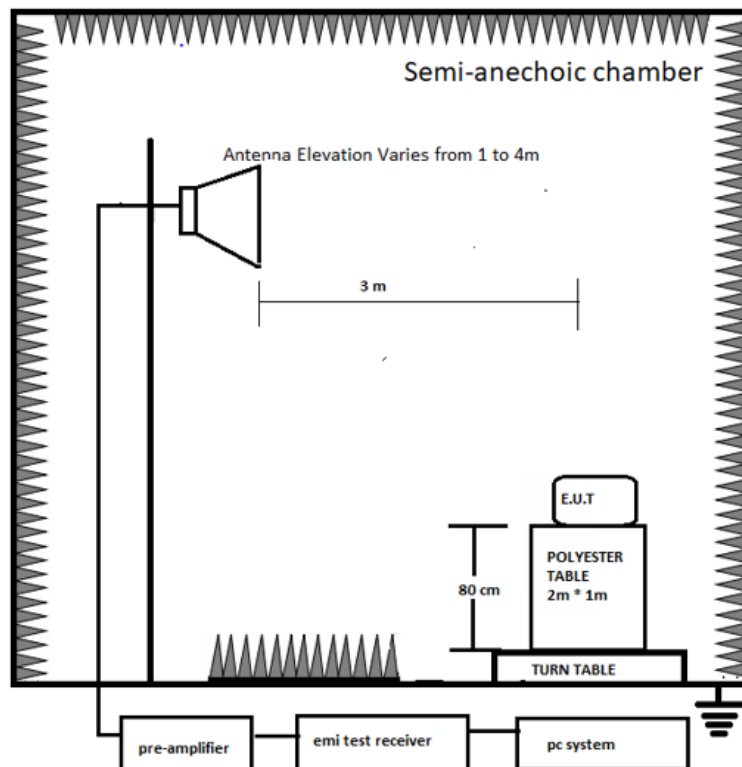


3.6.2 Radiated Emission

Radiated Emission Test Setup Below 1GHz.



Radiated Emission Test Setup Above 1GHz.



4. Evaluation of Performance

4.1 Performance Criteria

[FCC 47 CFR Part 15, Subpart B]

Radiated Emission

As per the limits of class B mentioned in clause 15.109 of standard.

Conducted Emission

As per the limits of class B mentioned in clause 15.107 of standard.

4.2 Measurement uncertainty and decision rule:

☐ The testing standard(s) does not define a decision rule for comparing measurement results with the applicable limit specified in the standard. Decisions regarding conformity are made without considering measurement uncertainty ("simple acceptance" decision rule, previously known as "accuracy method").

☒ Other (please specify): The result of measurements of emissions from EUT shall reference the measurement instrumentation uncertainty considerations contained in CISPR 16-4-2 and UKAS Lab 34.

Measurement	$U_{\text{CISPR}} (\pm \text{dB})$	$U_{\text{lab}} (\pm \text{dB})$
Radiated disturbance (30 MHz to 1 GHz)	6.3	3.859
Radiated disturbance (1 GHz to 6 GHz)	5.2	5.1
Conducted disturbance at AC mains and other port power using a V-AMN (150kHz to 30MHz)	3.4	2.6

Note: The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor $k = 2$ which has been derived from the assumed normal probability distribution with infinite degrees of freedom and for a coverage probability of 95 %.

Compliance or non-compliance with a disturbance limit shall be determined in the following manner.

If U_{lab} is less than or equal to U_{CISPR} , then:

- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit.
- non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

If U_{lab} is greater than U_{CISPR} , then:

- compliance is deemed to occur if no measured disturbance level, increased by $(U_{\text{lab}} - U_{\text{CISPR}})$, exceeds the disturbance limit.
- non-compliance is deemed to occur if any measured disturbance level, increased by $(U_{\text{lab}} - U_{\text{CISPR}})$, exceeds the disturbance limit.

5. Summary of Results, Applicable Standards, Deviations and Results

5.1 Summary of results and Applied Tests Standards

The following tests standards have been applied:

- **FCC 47 CFR Part 15, Subpart B**

Phenomena	Basic Standards	Result
Conducted emission	ANSI C63.4-2014	PASS
Radiated Emission	ANSI C63.4-2014	PASS

5.2 Deviations and Evaluations

- No recorded deviations to the applied standards.
- No general evaluations made.

5.3 Final Decision

The equipment under test complies to all requirements of the applied test standards.

6. Testing Data

6.1 Radiated emissions

6.1.1 Test Procedure

EUT was placed upon a Polyester fiber top test table which was placed on the turn table 0.8m above the horizontal metal ground plane and operating in the mode as mentioned above. A receiving antenna was placed 3m away from the EUT. During testing, turn around the turn table and move the antenna from 1m to 4m to find the maximum field-strength reading. All peripherals were placed at a distance of 10cm between each other. Both horizontal and vertical antenna polarities were tested.

An initial pre-scan was performed in the 3m chamber using the spectrum analysers in peak detection mode. The EUT was measured by Bi-log antenna with 2 orthogonal polarities and peak emissions from the EUT were detected within 6dB of the limit line.

Instrumentation used during this session:

Test Equipment	Manufacturer	Model No.	Serial number	Date of last calibration	Calibration interval
EMI Test Receiver	ROHDE & SCHWARZ	ESR26	101720	02/05/2023	1 Year
Trilog Broadband Antenna	Schwarz beck	VULB9162	363	24/01/2023	3 Year
Wave Guide Antenna (Horn Antenna)	ETS-LINDGREN	3117	227702	18/12/2023	3 Year
Bi-Directional Power Supply	Delta Elektronika	SM500-CP-90	10331502	10/11/2023	1 Year
Pre-Amplifier	ROHDE & SCHWARZ	SCU18F	10824	--	--
Programmable AC Power	EEC	6650	1590937	--	--
Software	ROHDE & SCHWARZ	R&S EMC32	Version: V10.60.20	--	--

6.1.2 Test Parameters

Port:	Enclosure	
Applied Standard:	FCC part 15 Subpart B	
Test Method:	ANSI C63.4-2014	
Frequency Range:	30MHz to 1GHz, 1GHz to 18GHz	Class: B
EUT setup configuration	Table Top	

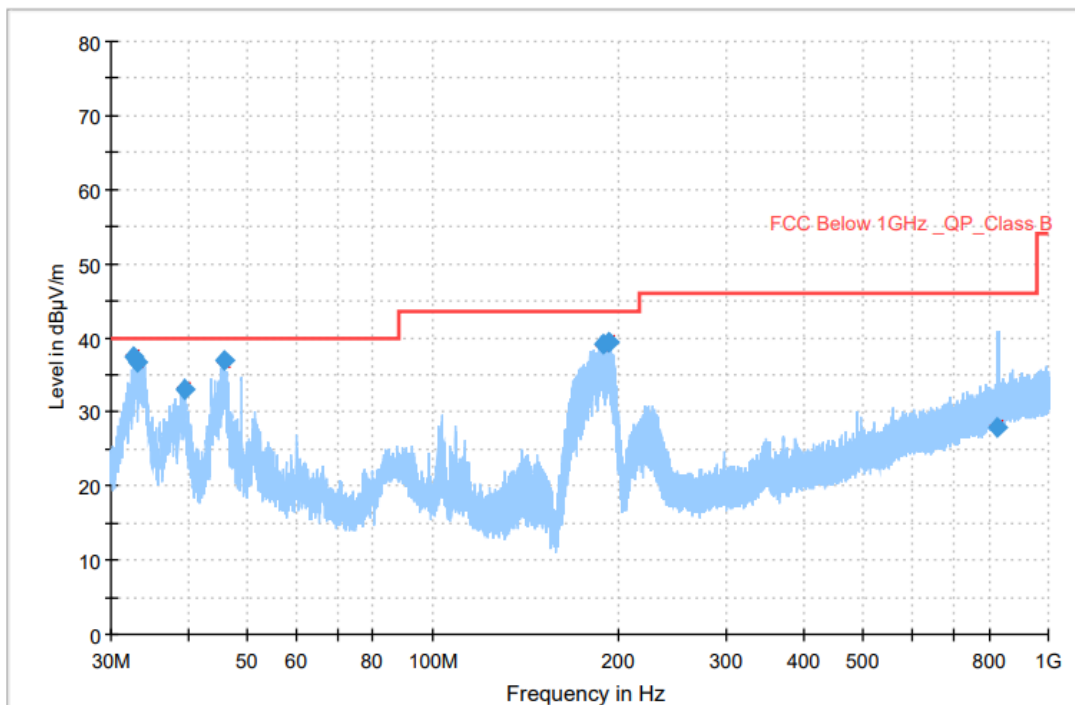
EMI Test Receiver setting for Frequencies below 1GHz:

Resolution Bandwidth	120kHz
Detector mode	- Peak (preview measurement) - Quasi-peak (final measurement)
Trace mode	Max Hold
Measurement time	-500ms (Peak Preview Measurement) -1000ms (Quasi-peak Final Measurement)

EMI Test Receiver setting for Frequencies above 1GHz:

Resolution Bandwidth	1MHz
Detector mode	- Peak and Average (Preview Measurement) - Peak and Average (Final Measurement)
Trace mode	Max Hold
Measurement time	-500ms (Peak Preview Measurement) -1000ms (Peak and Average Measurement)

Radiated emission limit frequencies up to 1GHz, measurement distance 3m for Class B equipment		
Frequency Range (MHz)	Limits dB(μV/m)	
	Quasi Peak	
30 to 88	40.0	
88 to 216	43.5	
216 to 960	46.0	
960 to 1000	54.0	
Radiated emission limit frequencies above 1GHz, measurement distance 3m for Class B equipment		
Frequency Range (GHz)	Limits dB(μV/m)	
	Average	Peak
1 to 18	54	74

6.1.3 Test Data
Radiated Emission up to 1GHz:


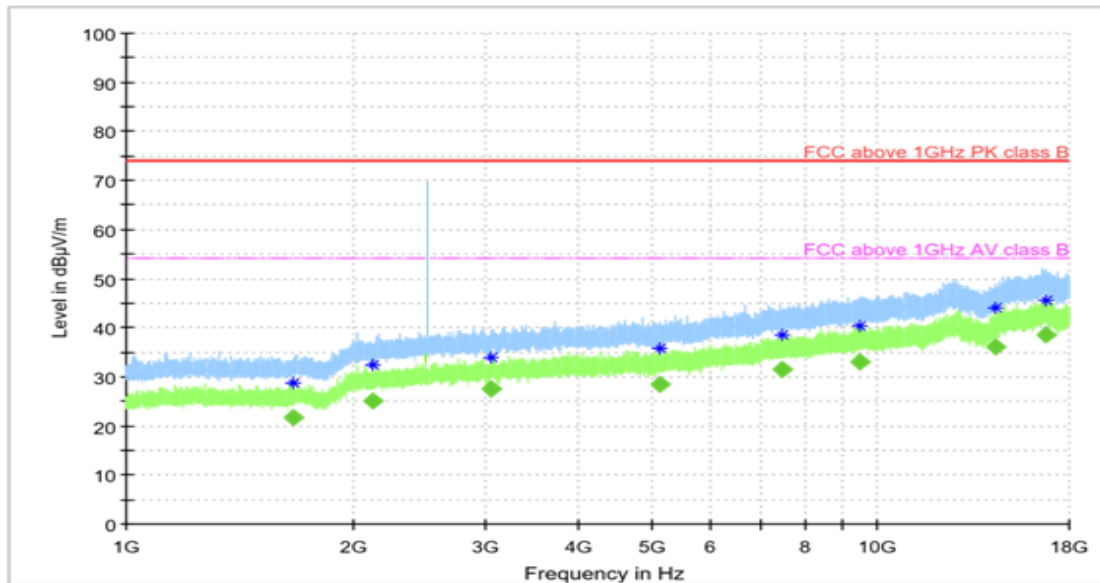
The spectral Plot is a summation of a vertical and horizontal scan. The spectral scan has been corrected with the associated transducer factors (i.e., antenna factors, Cable loss, amplifier gains and attenuators)

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
32.612340	37.35	40.00	2.65	1000.0	120.000	100.0	V	303.0	11.1
33.210168	36.82	40.00	3.18	1000.0	120.000	100.0	V	279.0	11.3
39.515356	32.99	40.00	7.01	1000.0	120.000	100.0	V	288.0	13.7
45.806660	36.84	40.00	3.16	1000.0	120.000	100.0	V	294.0	15.0
188.805180	39.09	43.52	4.43	1000.0	120.000	100.0	V	78.0	11.8
193.092372	39.47	43.52	4.05	1000.0	120.000	100.0	V	69.0	12.5
827.744400	27.95	46.02	18.07	1000.0	120.000	100.0	V	8.0	24.8

Note: 1. Field Strength (dBμV/m) = Receiver/spectrum analyzer value(dBμV) + correction factor (dB)

2. Correction factor(dB) = antenna factor (dB/m) + cable loss (dB)

Radiated Emission above 1GHz:



The spectral Plot is a summation of a vertical and horizontal scan. The spectral scan has been corrected with the associated transducer factors (i.e. antenna factors, Cable loss, amplifier gains and attenuators)

Frequency (MHz)	MaxPeak (dBμV/m)	CAverage (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1664.800500	---	21.64	54.00	32.36	1000.0	1000.000	300.0	V	181.0	-8.9
2133.426300	---	25.10	54.00	28.90	1000.0	1000.000	200.0	V	314.0	-5.7
3065.009700	---	27.41	54.00	26.59	1000.0	1000.000	100.0	V	224.0	-3.2
5143.753700	---	28.50	54.00	25.50	1000.0	1000.000	200.0	V	224.0	1.5
7443.084900	---	31.53	54.00	22.47	1000.0	1000.000	300.0	V	269.0	4.8
9492.279100	---	33.11	54.00	20.89	1000.0	1000.000	200.0	V	269.0	7.8
14348.926800	---	36.07	54.00	17.93	1000.0	1000.000	100.0	V	269.0	11.6
16737.515100	---	38.49	54.00	15.51	1000.0	1000.000	100.0	H	224.0	15.6

Note: 1. Field Strength (dBμV/m) = Receiver/spectrum analyzer value(dBμV) + correction factor (dB)

2. Correction factor(dB) = antenna factor (dB/m) + cable loss (dB) - pre-amplifier gain

Remark: 1. Emissions are 20 dB or more below from the Peak limit line therefore in final measurements Peak Detector hadn't been taken.
2. As per Manufacture declaration 2.4GHz is intentional signals emitted by EUT and its peripherals, hence, not considered for final measurements.

Result

Pass

6.2 Conducted Emissions

6.2.1 Test Procedure

The measurements were performed in a shielded enclosure. EUT was connected to an Artificial Mains Network (AMN) & Impedance Stabilization Network (ISN). EUT was placed on a wooden table 0.8 m above the grounded floor and at least 0.4 m from the reference ground plane(wall), EUT was placed at least 0.8 m from and connected via a 1 m mains cable/Signal cable, to the AMN/ISN.

The measurements on the terminals for mains connection were conducted between neutral and ground, and between phase and ground, in the frequency range 150 kHz to 30 MHz.

A peak detector scan was conducted over the defined frequency range on all phases. A comparison of the results obtained from the different phases was then conducted to find the most emitting phase for each frequency. This "Worst Case" scan with quasi-peak detector & CISPR average detector was presented.

Instrumentation used during this session:

Instruments	Manufacturer	Model	Serial number	Date of last calibration	Calibration interval
EMI TEST RECEIVER	ROHDE & SCHWARZ	ESR26	101720	02/05/2023	1 Year
Four Line V Network	ROHDE & SCHWARZ	ENV432	101519	15/03/2025	1 Year
Programmable AC Power	EEC	6650	1590937	--	--
Bi-Directional Power Supply	Delta Elektronika	SM500-CP-90	10331502	10/11/2023	1 Year
Software	ROHDE & SCHWARZ	R&S EMC32	Version: V10.60.20	--	--

6.2.2 Test Parameters

Port:	DC MAINS	Class:	B
Applied Standard:	FCC part 15 Subpart B	EUT setup configuration	Tabletop
Test Method:	ANSI C63.4-2014		
Frequency Range:	150 kHz to 30 MHz		
Frequency Step:	4 kHz		

EMI Test Receiver setting for Frequencies below 1GHz:

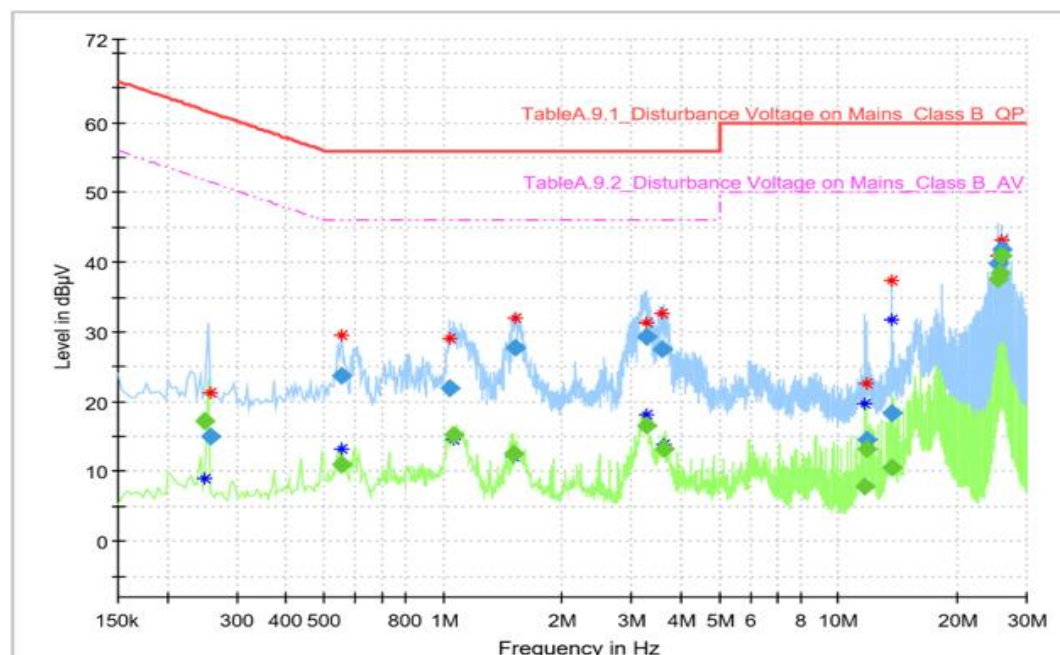
Resolution Bandwidth	9 kHz
Detector mode	- Peak and Average (preview measurement) - Quasi-peak and Average (final measurement)
Trace mode	Max Hold
Measurement time	-100ms (Peak Preview Measurement) -1000ms (Quasi-peak Final Measurement)

Limit of conducted emission (disturbance) at the A.C. main ports of Class B Equipment		
Frequency Range (MHz)	Limits dB(μV)	
	Quasi Peak	Average
0.15 to 0.5	66 to 56*	56 to 46*
0.5 to 30	56	46
5 to 30	60	50

*Decreases with the logarithm of the frequency.

6.2.3 Test Data

Conducted emission on DC Mains



The spectral Plot is a summation of a positive Line and negative line scan. The spectral scan has been corrected with the associated transducer factors (i.e. LISN factors, Cable loss and attenuators)

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.249500	---	17.16	51.77	34.61	1000.0	9.000	L1	10.1
0.257500	15.12	---	61.51	46.39	1000.0	9.000	N	10.1
0.553500	23.80	---	56.00	32.20	1000.0	9.000	L1	10.1
0.554500	---	11.09	46.00	34.91	1000.0	9.000	L1	10.1
1.036810	21.95	---	56.00	34.05	1000.0	9.000	L1	10.1
1.056730	---	15.15	46.00	30.85	1000.0	9.000	L1	10.1
1.513530	---	12.64	46.00	33.36	1000.0	9.000	L1	10.2
1.518390	27.68	---	56.00	28.32	1000.0	9.000	L1	10.2
3.253670	---	16.54	46.00	29.46	1000.0	9.000	N	10.2
3.257670	29.30	---	56.00	26.70	1000.0	9.000	L1	10.2
3.564210	27.43	---	56.00	28.57	1000.0	9.000	L1	10.1
3.627810	---	13.23	46.00	32.77	1000.0	9.000	L1	10.2
11.675630	---	7.97	50.00	42.03	1000.0	9.000	N	10.9
11.763170	14.67	---	60.00	45.33	1000.0	9.000	N	10.9
11.783170	---	13.33	50.00	36.67	1000.0	9.000	N	10.9
13.598010	---	10.56	50.00	39.44	1000.0	9.000	L1	10.6
13.602010	18.44	---	60.00	41.56	1000.0	9.000	L1	10.6
25.442810	39.76	---	60.00	20.24	1000.0	9.000	L1	11.3
25.446810	---	37.70	50.00	12.30	1000.0	9.000	N	11.7
25.653790	---	38.54	50.00	11.46	1000.0	9.000	N	11.7
26.055750	---	40.88	50.00	9.12	1000.0	9.000	N	11.7
26.055750	41.85	---	60.00	18.15	1000.0	9.000	N	11.7

Note: 1. Result (dBµV) = Receiver/spectrum analyzer value(dBµV) + correction factor (dB)

2. Correction factor(dB) = LISN factor IL (dB) + cable loss (dB) + attenuator(dB)

Result

Pass

End of Test Report