

Report number: FCC/2508002

Dated: 14/08/2025

EMC TEST REPORT

Report No.: FCC/2508002

Applicant:

MEDHA SERVO DRIVES PVT.LTD

Product name:

DATA RADIO

Model:

Lead Model: MDR4047

Series Model: MDR4243

Sample ID:

FCC/2508002

Specifications:

- ◆ FCC 47 CFR Part 15, Subpart B

Date of Receipt of

Test Item:

August 13, 2025

Date of Testing

August 13, 2025 to August 14, 2025

Date of issue:

August 14, 2025

Name and address
of the Test House

Nemko India (Test Lab) Pvt. Ltd.
Plot No.193, Sector 68, IMT, Faridabad, Haryana-121004

Test engineer(s):

Rajesh Prajapat /
Testing Engineer

Signature:

Reviewed by:

Harshit Pal /
EMC Lead Engineer

Signature:

Issued by:

Shubham Gupta/
Project Engineer

Signature:

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1. Client Information

1.1 Applicant

Company Name: MEDHA SERVO DRIVES PVT.LTD
Company Address: P-4/5B, IDA NACHARAM, HYDERABAD, TELANGANA, 500076, INDIA

1.2 Manufacturer

Company Name: MEDHA SERVO DRIVES PVT.LTD
UNIT - III:
PLOT NO 8/A, RAVIRYALA VILLAGE, MAHESWARAM MANDAL, RANGA
REDDY DISTRICT –501359, TELANGANA, INDIA.
Company Address: UNIT - I:
JODIMETLA CROSS ROADS, KORREMULA, GHATKESAR, HYDERABAD -
500088, TELANGANA, INDIA.

1.3 Other Information

- No Comment

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

2.1 Identification of EUT

Product Name: DATA RADIO

Model Name: **Lead Model: MDR4047**
Series Model: MDR4243

Trademark/
Identification: 

Serial Number: 2067

Software Number: 6.02.2

Hardware Number: 6.02.2

Max Clock Frequency: 470MHz

Rating: 24 VDC, 2.5A

Tested Voltage: 24VDC

Remark: N/A

2.2 Variants Covered By This Report

Model Name	Technical Deviations from Lead Model
Lead Model: MDR4047 Series Model: MDR4243	No technical Deviations from Lead Model, only Model Name

2.3 Modifications

- No modifications were made during Testing.

2.4 Additional Information Related to Testing

- N/A

2.5 Picture Documentation

- Pictures can be found in Appendix A.

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

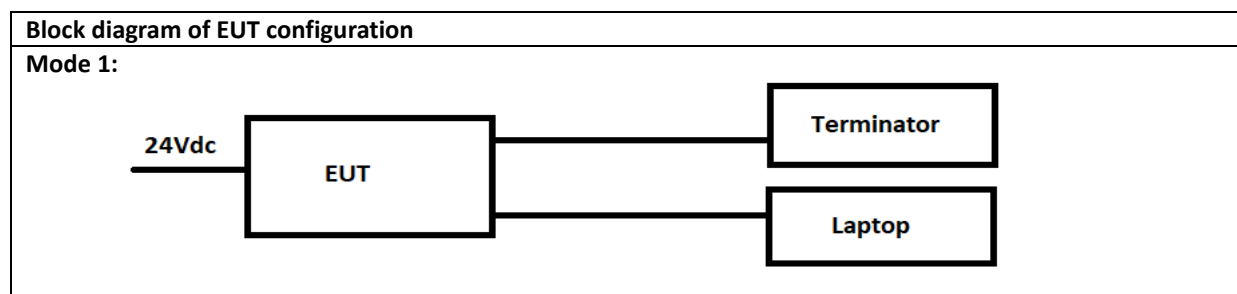
All tests and measurements were performed in a shielded enclosure or a controlled environment suitable for the tests conducted. The climatic conditions in the test area are automatically controlled and recorded continuously.

3.3 Operating During Test (As per manufacturer's declaration)

3.3.1 EUT Test Mode

Mode 1	The EUT in normal operation mode with DC Power (24Vdc). Transmission and receiving frequency is set at 406.025MHz at 1W power through laptop and Tx and Rx port are terminated.
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3.3.2 Description of Test setup



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.

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3.5 EUT & Support Equipment

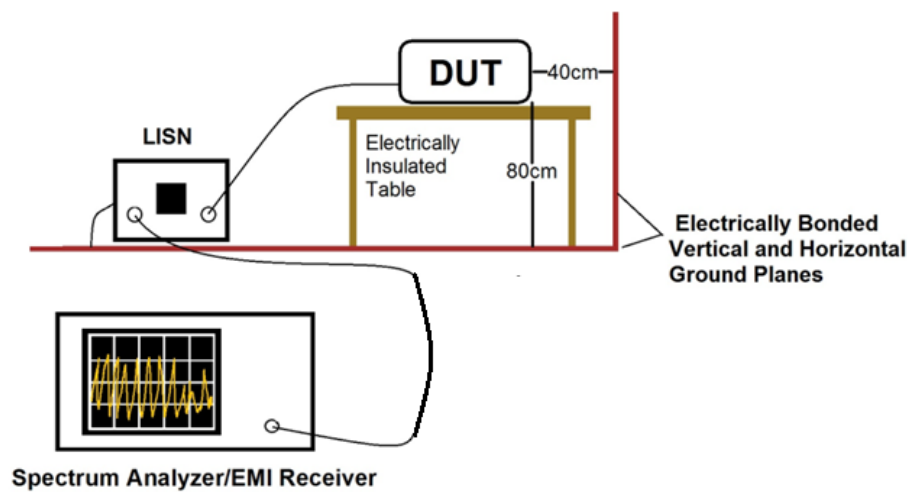
Product Name	Manufacturer	Model Name	Serial Number
DATA RADIO	MEDHA SERVO DRIVES PVT.LTD	MDR4047	2067
Termination load (50Ω)	Weinschel Associates	WA145i-3	--
Laptop	Dell	--	--

3.6 Connection Cable

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

3.7 Test Set-up Drawing

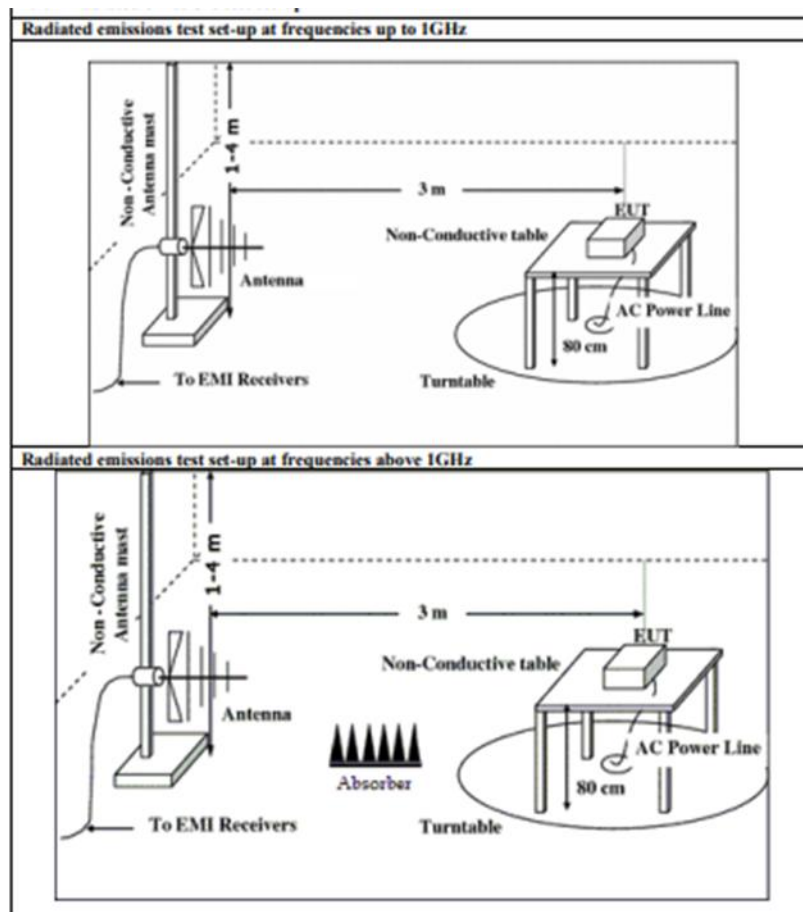
3.7.1 Conducted Emissions



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3.7.2 Radiated Emissions



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4. Evaluation of Performance

4.1 Performance Criteria

[Conducted Emission]

As per the limits mentioned in § 15.107 Conducted limits for a Class A digital device of standard FCC 47 CFR Part 15, Subpart B.

[Radiated Emission]

As per the limits mentioned in § 15.109 Conducted limits for a Class A digital device of standard FCC 47 CFR Part 15, Subpart B.

4.2 Measurement uncertainty and decision rule

Use of measurement uncertainty for decisions on conformity (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	4.745
Radiated disturbance (1 GHz to 6 GHz)	5.2	4.3
Conducted disturbance at AC mains and other port power using a V-AMN (150kHz to 30MHz)	3.4	2.8

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.

4.3 Final Decision

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

5. Standards, Deviations and Results

5.1 Applied Test Standards

The following standards have been applied:

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.

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Electronics Testing:

EMC Testing Facility

6. Conducted emissions

6.1 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	25/04/2025	1 Year
Four Line V Network	ROHDE & SCHWARZ	ENV432	101519	06/03/2025	1 Year
DC Power Supply	Delta Elektronika	SM500- CP-90	10331502	16/10/2024	1 Year
Software	ROHDE & SCHWARZ	R&S EMC32	Version: V10.60.20	--	--

6.2 Test Parameters

Port:	DC MAINS	Class:	A
Basic Standard:	ANSI C63.4-2014	IF Bandwidth:	9 kHz
Frequency Range:	150 kHz to 30 MHz		
Frequency Step:	4 kHz		

EMI Test Receiver setting for Frequencies:

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)

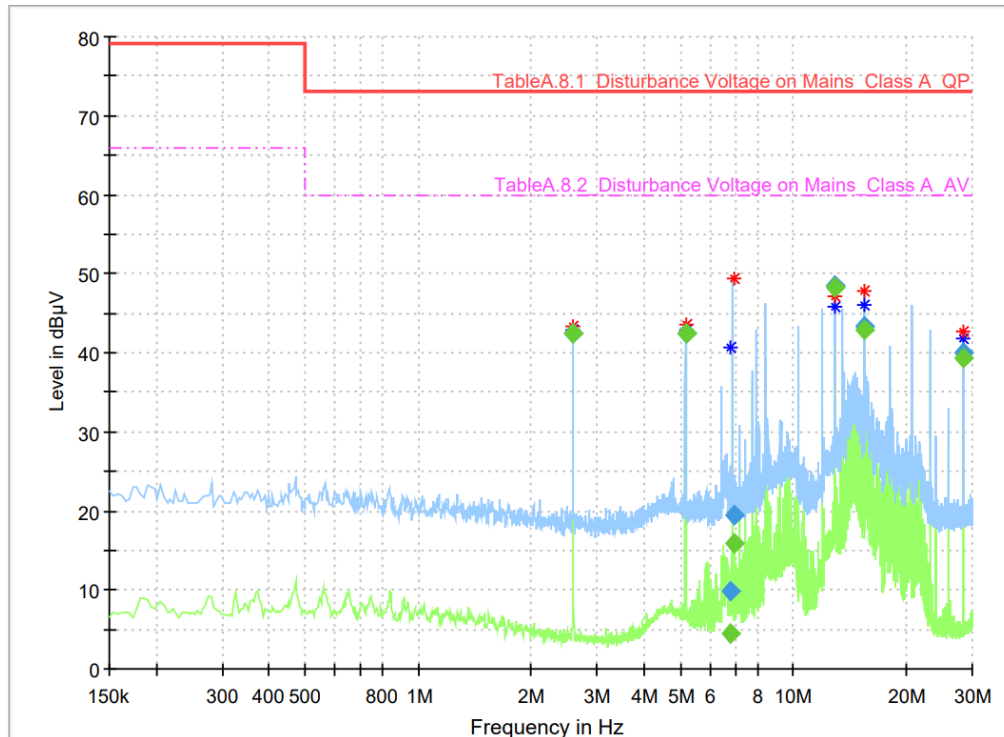
Limit of conducted emission (disturbance) at the A.C. and D.C. main ports of Class A Equipment		
Frequency Range (MHz)	Limits dB(μV)	
	Quasi Peak	Average
0.15 to 0.5	79	66
0.5 to 30	73	60

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6.3 Test Data

Conducted emission on DC Mains :



The spectral Plot is a summation of a Line and Neutral 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)
2.584000	42.44	---	73.00	30.56	1000.0	9.000	N	10.4
2.584000	---	42.49	60.00	17.51	1000.0	9.000	N	10.4
5.172000	42.44	---	73.00	30.56	1000.0	9.000	L1	10.5
5.172000	---	42.42	60.00	17.58	1000.0	9.000	L1	10.5
6.760000	---	4.41	60.00	55.59	1000.0	9.000	L1	10.5
6.760000	9.80	---	73.00	63.20	1000.0	9.000	L1	10.5
6.920000	19.52	---	73.00	53.48	1000.0	9.000	L1	10.6
6.920000	---	15.80	60.00	44.20	1000.0	9.000	L1	10.6
12.924000	---	48.30	60.00	11.70	1000.0	9.000	L1	10.5
12.924000	48.39	---	73.00	24.61	1000.0	9.000	L1	10.5
15.508000	43.29	---	73.00	29.71	1000.0	9.000	L1	10.9
15.508000	---	42.89	60.00	17.11	1000.0	9.000	L1	10.9
28.432000	---	39.37	60.00	20.63	1000.0	9.000	N	11.5
28.432000	39.96	---	73.00	33.04	1000.0	9.000	N	11.5

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

Compliant

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7. Radiated emissions

7.1 Test Procedure

The EUT is placed on a non-conductive setup table with height of 0.8m. as shown in figure of EUT arrangement. The EUT and all support equipment received power from the outlet socket under the turntable. The EUT and local AE shall be arranged in the most compact practical arrangement within the test volume. The central point of the arrangement shall be positioned at the centre of the turntable. The measurement distance is the shortest horizontal distance between an imaginary circular periphery just encompassing this arrangement and calibration point of the antenna. The table was rotated 360 degrees to determine the position of the highest radiation. The antenna height is varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna is set to make the measurement.

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	25/04/2025	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
Pre-Amplifier	ROHDE & SCHWARZ	SCU18F	10824	--	--
DC Power Supply	Delta Elektronika	SM500- CP-90	10331502	16/10/2024	1 Year
Software	ROHDE & SCHWARZ	R&S EMC32	Version: V10.60.20	--	--

7.2 Test Parameters

Port: Enclosure
Basic Standard: ANSI C63.4-2014
Frequency Range: 30 MHz – 6 GHz
Polarization: Horizontal & Vertical
Class: A

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)

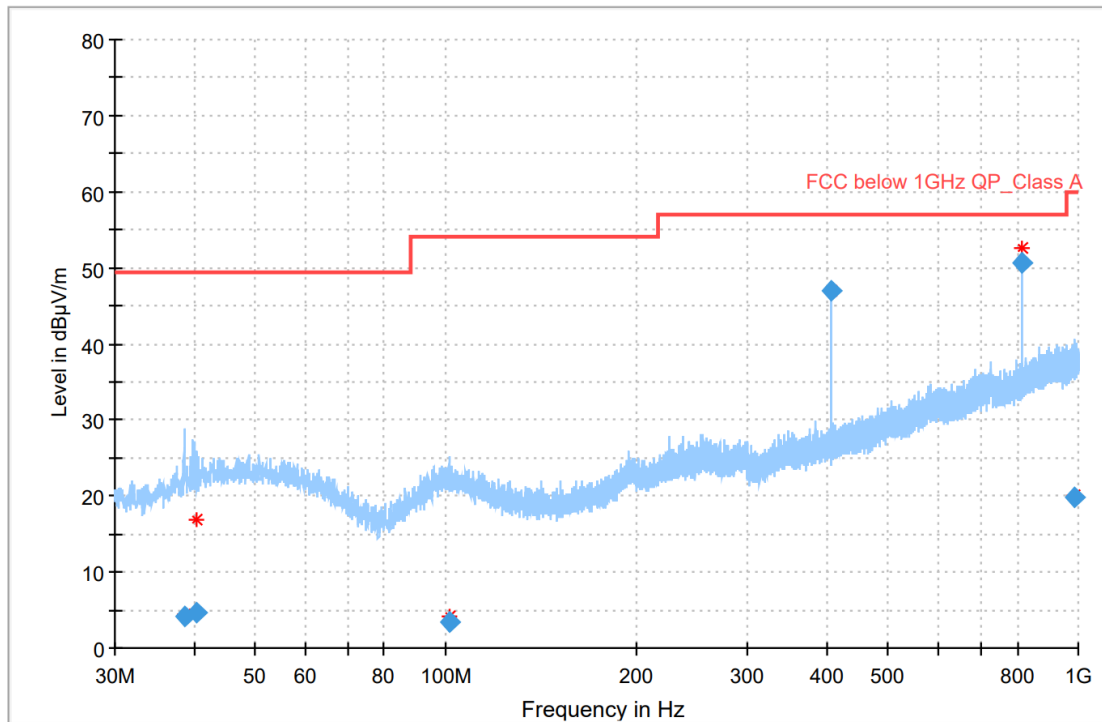
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Radiated emission limit frequencies up to 1GHz, measurement distance 3m for Class A equipment		
Frequency Range (MHz)	Limits dB(μV/m)	
	Quasi Peak	
30 to 88	49.5	
88 to 216	54.0	
216 to 960	56.9	
960 to 1000	60.0	
Radiated emission limit frequencies above 1GHz, measurement distance 3m for Class A equipment		
Frequency Range (GHz)	Limits dB(μV/m)	
	Average	Peak
1 to 18	60	80

7.3 Test Data

Radiated Emissions at frequency 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)
38.744425	4.20	49.53	45.33	1000.0	120.000	177.0	H	152.0	13.5
40.268675	4.73	49.53	44.79	1000.0	120.000	316.0	H	296.0	13.9
101.310088	3.35	53.98	50.63	1000.0	120.000	113.0	V	190.0	12.9
406.018462	46.94	56.90	9.96	1000.0	120.000	284.0	H	357.0	17.8
812.052225	50.55	56.90	6.35	1000.0	120.000	100.0	V	310.0	24.6
983.686925	19.76	60.00	40.24	1000.0	120.000	152.0	V	92.0	26.5

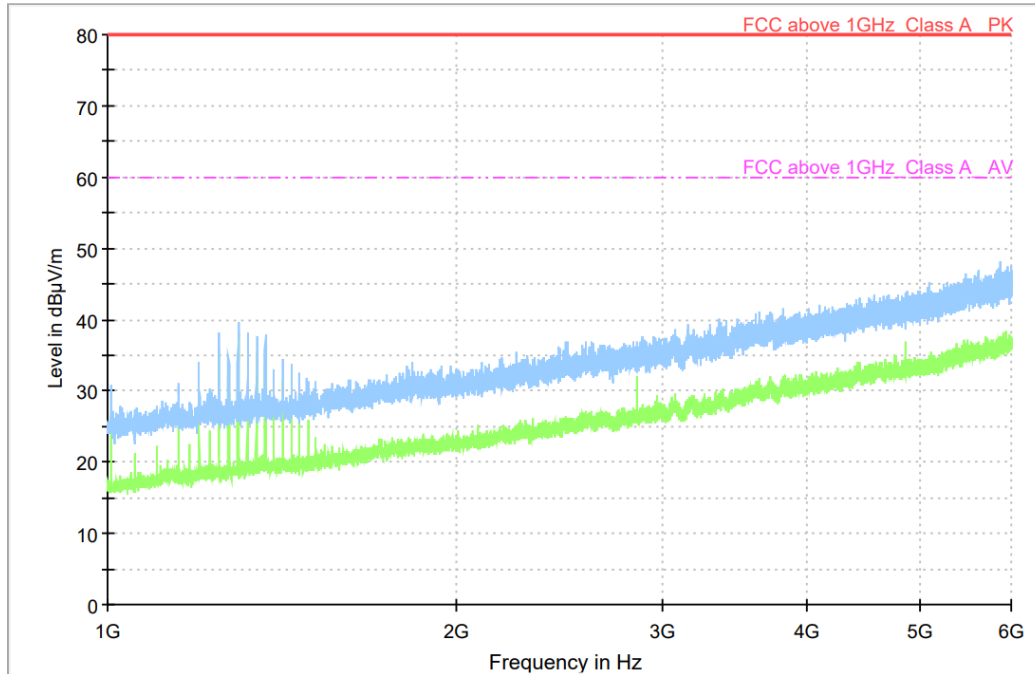
Note: 1. Field Strength (dBμV/m) = Receiver/spectrum analyzer value(dBμV) + correction factor (dB)

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

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Radiated Emissions at frequency 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)

Remark: Emissions are 20 dB or more below the limit line so final measurements haven't been taken.

Result

Compliant

****End of Test Report****