NOW PART OF HERMON LABORATORIES

Radio Test Report

Test Report No: QT-MAYEMC_FCC.49088_TR Rev.3
Issued on: October 15, 2023

Product Name
WAVE140 POWER SUPPLY
FCC ID: WCHWAVEBTFSK
IC: 29982-WAVEBTFSK

Tested According to
FCC 47 CFR part 15 subpart C §15.249
RSS-210 Issue 10 annex 2

Tests Performed for
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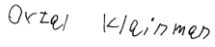
ACCREDITED
CERTIFICATE #1633.01

Test Personnel

Testing performed by	**Izak Shtier**	
	Ortal Kleinman	
Test report prepared by	**Bina Talkar**	
Test report reviewed by	**Michael Gudovsky**	
Test report approved by	**Michael Nikishin** **Group Manager**	

Test Report details:

Test commencement date: 18.01.2023

Test completion date: 25.02.2023

Applicant's representative: Eugene Plotnichenko

Issued on: 15.10.2023

Revision details:

Version	Date	Details/Reasons
Rev. 1	02.07.2023	-
Rev.2	19.07.2023	Added on the first page of the test report, updated EUT name, FCC ID and IC
Rev.3	15.10.2023	Updated operating frequency on page 7 and removed test photographs from the test report.

Assessment information:

This report contains an assessment of the EUT against Electromagnetic Compatibility based upon tests carried out on the samples submitted. The results contained in this report relate only to the items tested. Manufactured products will not necessarily give identical results due to production and measurement tolerances. QualiTech, EMC Lab does not assume responsibility for any conclusion and generalization drawn from the test results with regards to other specimens or samples of type of the equipment represented by test item.
The EUT was setup and exercised using the configuration, modes of operation and arrangements defined in this report only.

Modifications:

Modifications made to the EUT

None

Modifications made to the Test Standard

None

Summary of Compliance Status

The EUT was tested according to the following test methods.
Test results are given in full in section 3-6.

Test Case	Verdict
Field strength of emissions	Pass
Occupied bandwidth test	Pass
Band edge emission	Pass
Conducted emissions	Pass

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1. General

1.1. Referenced documents:

FCC Part 15	Code of Federal Regulations (Washington, DC: Federal Communications Commission), Title 47, Part 15, Subpart C
ANSI C63.10:2013	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
RSS-210 Issue 10:2019	Low Power License- Exempt Radiocommunication Devices

1.2. EUT description:

Following data in this clause is provided by the customer and represents his sole responsibility.

1.2.1. General Description:

TRX1 – FSK transceiver operating on single channel 2433MHz, less than 0dBm transmitted power, OCB ~ 600 kHz.

TRX2 – BLE transceiver operating overall 2.4GHz band, estimated EIRP less than 2dBm, OCB ~600 kHz.

Mode of operating: Operating

Power supply: 30VDC

Test configuration: Standalone

1.3. Transmitter characteristics

Type of equipment								
	Stand-alone (Equipment with or without its own control provisions)							
	Combined equipment (Equipment where the radio part is fully integrated within another type of equipment)							
V	Plug-in card (Equipment intended for a variety of host systems)							
Assigned frequency range	2400 -2483.5 MHz							
Operating frequencies	2433 MHz							
Maximum rated output power	Peak output power 0 dBm							
Is transmitter output power variable?	**V**	No						
		Yes		continuous variable				
				stepped variable with stepsize	dB			
			minimum RF power	dBm				
			maximum RF power	dBm				
Antenna connection								
	unique coupling		standard connector	**V**	Integral		with temporary RF connector	
						V	without temporary RF connector	
Antenna/s technical characteristics								
Type	Manufacturer	Model number	Gain					
Integral	Maytronics	Printed	Typ peak gain: 3.3dBi					
Transmitter aggregate data rate/s	1 Mbps							
Type of modulation	2FSK							
Modulating test signal (baseband)								
Transmitter power source								
	Battery	**Nominal rated voltage**		Battery type				
V	DC	**Nominal rated voltage**	30 VDC					
	AC mains	**Nominal rated voltage**		Frequency	Hz			

2. Test Facility & Uncertainty of Measurement

2.1. Accreditation/ Registration reference:

- *A2LA Certificate Number: 1633.01*
- *FCC Registration Number: 102724*

2.2. Test Facility description

The tests were performed at the EMC Laboratory, QualiTech

Address: 30, Hasivim Street, Petah Tikva, Israel.
Tel: +972-4-6268494

Semi Anechoic Configuration:

Measurement distance	3m
Chamber dimensions	9.5m x 6.5m x 5.2m
Antenna height	1 - 4m
Shielding Effectiveness	Magnetic field ≥80dB at 15 kHz ≥90dB at 100 kHz Electric field >120dB from 1 MHz to 1 GHz >110dB from 1 GHz to 10 GHz
Absorbing material	Ferrite tiles on the walls and ceiling Emerson and Cuming absorbing material in selected positions on the walls
Normalized Site Attenuation measured at 5 positions	±3.9dB, 30 MHz to 200 MHz ±3dB, 200 MHz to 1000 MHz
Transmission Loss measured at 5 positions, at 1.5m height	±3dB, 1 GHz to 18 GHz

2.3. The measurement software used:

Software Name	Software Version
Test Software “TILE”	Ver.7.1.4.10 & Ver.7.4.2.5

3. Field strength of emissions

Date of Test: 25.02.2022
Relative Humidity: 25%
Ambient Temperature: 43°C
Atmospheric Pressure: 1011.4 hPa
Test performed by: Izak Shtir

Test Method: ANSI C63.10 sections 6.5, 6.6

Compliance status: Pass

3.1. General

This test was performed to measure field strength of fundamental and spurious emissions from the EUT. Specification test limits are given in Table 3.1, Table 3.2 and Table 3.3.

Table 3.1 Radiated fundamental emission limits

Fundamental frequency, MHz	Field strength at 3 m, dB(μV/m)		
	Peak	Average	Quasi-Peak
2433	114	94	NA

Table 3.2 Harmonics limits

Fundamental frequency, MHz	Field strength at 3 m, dB(μV/m)	
	Peak	Average
2400 – 2483.5	74.0	54.0

Table 3.3 Radiated spurious emissions limits (other than harmonics)

Frequency, MHz	Field strength at 3 m, dB(μV/m)*			
	Peak	Quasi Peak	Average	Attenuation below carrier
0.009 – 0.090	148.5 – 128.5	NA	128.5 – 108.5**	50 dBc (whichever is the less stringent)
0.090 – 0.110	NA	108.5 – 106.8**	NA	
0.110 – 0.490	126.8 – 113.8	NA	106.8 – 93.8**	
0.490 – 1.705	NA	73.8 – 63.0**	NA	
1.705 – 30.0*		69.5		
30 – 88		40.0		
88 – 216		43.5		
216 – 960		46.0		
960 - 1000		54.0		
Above 1000	74.0	NA	54.0	

*- The limit for 3 m test distance was calculated using the inverse square distance extrapolation factor as follows:

$$Lim_{S2} = Lim_{S1} + 40 \log (S_1/S_2),$$

where S_1 and S_2 – standard defined and test distance respectively in meters.

**- The limit decreases linearly with the logarithm of frequency.

Note: The above field strength limits applied from the lowest radio frequency generated in the device, without going below 9 kHz up to the tenth harmonic of the highest fundamental frequency but not exceeding 40 GHz for intentional radiators operated below 10 GHz and up to the fifth harmonic of the highest fundamental frequency but not exceeding 100 GHz for intentional radiators operated above 10 GHz.

3.2. Test procedure

3.2.1. Test procedure for spurious emission field strength measurements in 9 kHz to 30 MHz band

The EUT was set up as shown in Figure 3.1, energized and the performance check was conducted.
The specified frequency range was investigated with antenna connected to spectrum analyzer/ EMI receiver. To find maximum radiation the turntable was rotated 360^0 and the measuring antenna was rotated around its vertical axis.
The worst test results (the lowest margins), recorded in the associated tables and shown in the associated plots.

3.2.2. Test procedure for spurious emission field strength measurements above 30 MHz

The EUT was set up as shown in Figure 3.2, Figure 3.3, energized and the performance check was conducted.
The specified frequency range was investigated with antenna connected to spectrum analyzer/ EMI receiver. To find maximum radiation the turntable was rotated 360^0, the measuring antenna height was changed from 1 to 4 m, its polarization was switched from vertical to horizontal.
The worst test results (the lowest margins), recorded in the associated tables and shown in the associated plots

Figure 3.1 Setup for spurious emission field strength measurements below 30 MHz

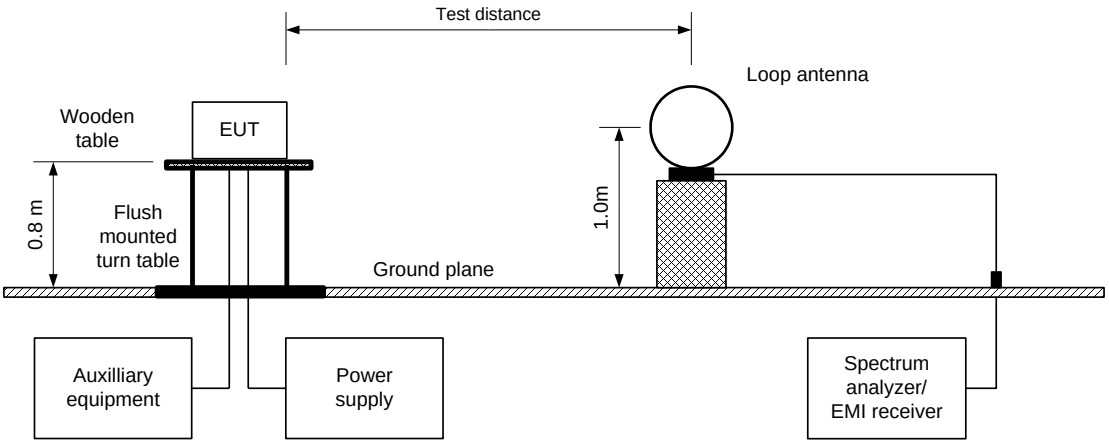


Figure 3.2 Setup for spurious emission field strength measurements in 30 -1000 MHz

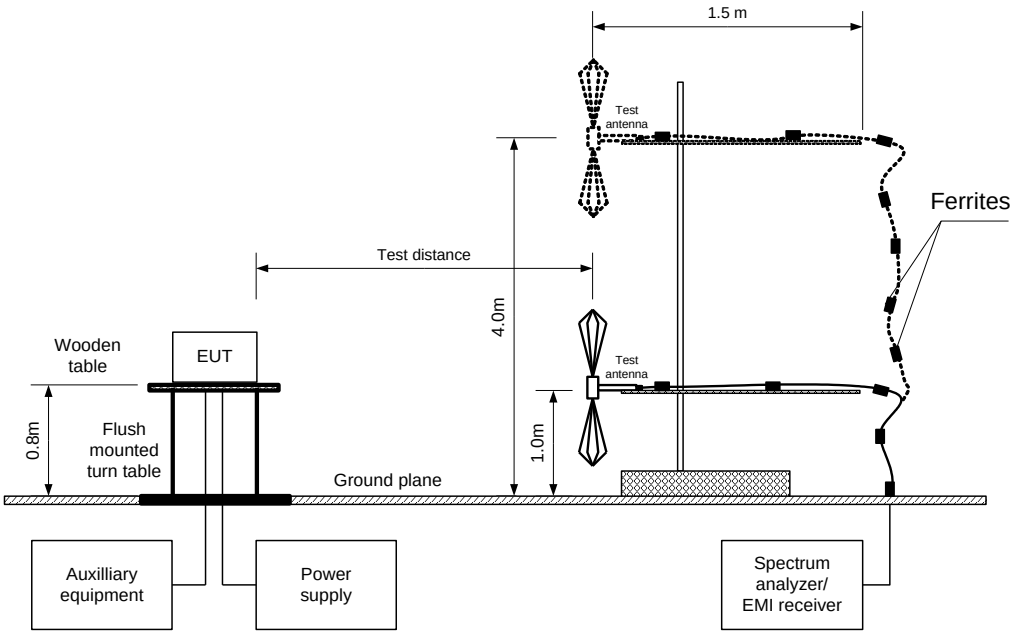
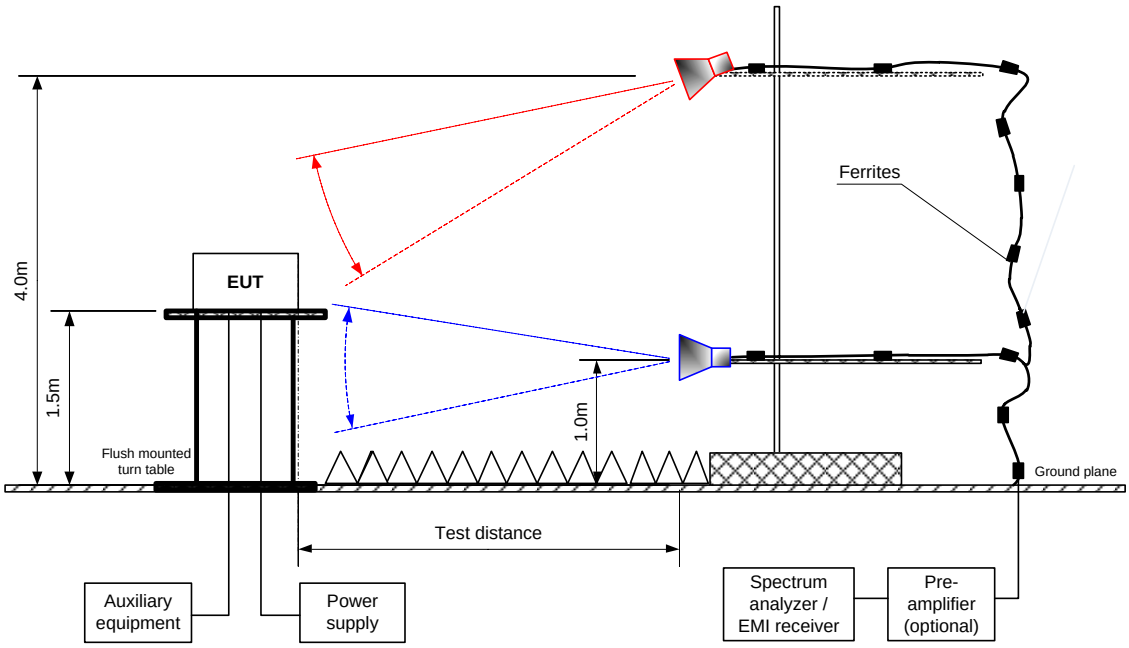


Figure 3.3 Setup for spurious emission field strength measurements above 1000 MHz



3.3. List of Test Equipment:

Refer to appendix A for complete list of equipment used and respective calibration dates.

3.4. Test results

Table 3.4 Field strength of fundamental emission and spurious emissions

Test distance:	3 m
Eut position:	Wall mounted (worst case)
Modulation:	2FSK
Transmitter output power settings:	Maximum
Investigated frequency range:	0.009 – 26000 MHz
Detector used:	Peak
Resolution bandwidth:	0.1 kHz (9 kHz – 150 kHz) 9.0 kHz (150 kHz – 30 MHz) 120 kHz (30 MHz – 1000 MHz) 1.0 MHz (above 1000 MHz)
Video bandwidth:	≥ Resolution bandwidth
Test antenna type:	Active loop (9 kHz – 30 MHz) Biconilog (30 MHz – 1000 MHz) Double ridged guide (above 1000 MHz)

Frequency, MHz	Antenna		Azimuth, degrees	Peak			Average			Verdict
	Pol.	Height, m		Measured emission, dB(µV/m)	Limit, dB(µV/m)	Margin, dB	Measured emission, dB(µV/m)	Limit, dB(µV/m)	Margin, dB	
Fundamental emission										
2433.0	H	1.83	360	88.56	114.0	-25.44	88.31	94.0	-5.69	Pass
2433.0	V	1.92	181	90.89	114.0	-23.11	90.85	94.0	-3.15	Pass

Table 3.5 Radiated emission measurements from 30 to 1000 MHz

Frequency (MHz)	Measured Peak (dBµV/m)	Measured QP (dBµV/m)	Margin QP (dB)	Polarization	Ant Height (cm)	TT Azimuth (Deg)	Verdict
32.580	35.74	30.40	-9.60	H	175	134	Pass
95.993	27.04	24.69	-18.81	H	318	324	Pass
160.133	26.47	24.45	-19.05	H	211	360	Pass
208.016	31.37	29.64	-13.86	H	187	360	Pass
942.295	42.36	36.89	-9.11	H	387	267	Pass
967.993	42.77	37.10	-16.90	H	208	174	Pass
31.043	36.362	31.331	-8.67	V	367	120	Pass
142.766	26.974	21.151	-22.35	V	107	0	Pass
149.201	38.365	29.220	-14.28	V	100	194	Pass
155.538	40.324	32.501	-11.00	V	101	352	Pass
698.823	37.554	31.782	-14.22	V	293	192	Pass
951.013	43.158	37.275	-8.72	V	143	352	Pass

Table 3.6 Radiated emission measurements from 1 GHz to 4 GHz

Frequency (MHz)	Measured Peak (dBµV/m)	Limit Peak (dBµV/m)	Margin Peak (dB)	Measured AVG (dBµV/m)	Limit AVG (dBµV/m)	Margin AVG (dB)	Polarization	Height (cm)	Azimuth (Deg)	Verdict
2277.003	48.37	74.00	-25.63	41.33	54.00	-12.67	H	175	188	Pass
2329.362	46.92	74.00	-27.08	38.43	54.00	-15.57	H	208	360	Pass
3650.939	46.61	74.00	-27.39	33.87	54.00	-20.13	H	102	360	Pass
3206.921	46.38	74.00	-27.62	33.37	54.00	-20.63	V	151	186	Pass
3266.711	47.08	74.00	-26.92	33.89	54.00	-20.11	V	391	213	Pass
3893.539	47.29	74.00	-26.71	34.20	54.00	-19.80	V	359	219	Pass

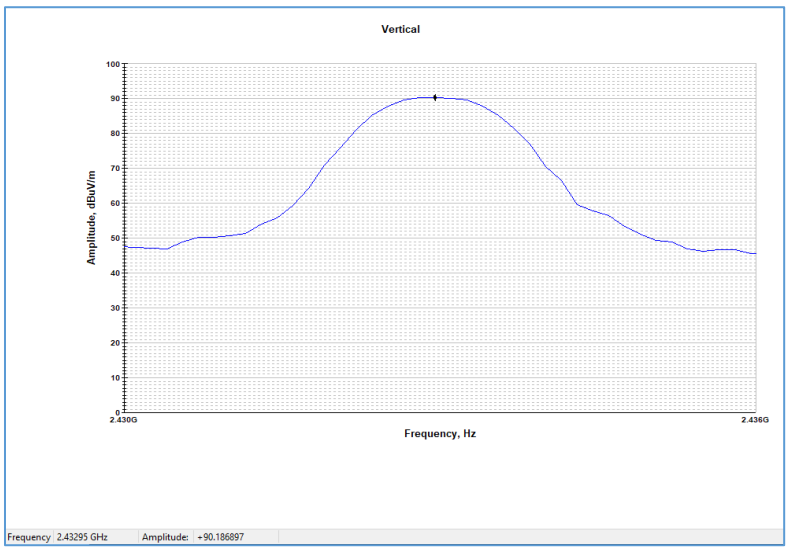
Table 3.7 Radiated emission measurements from 4 GHz to 18 GHz

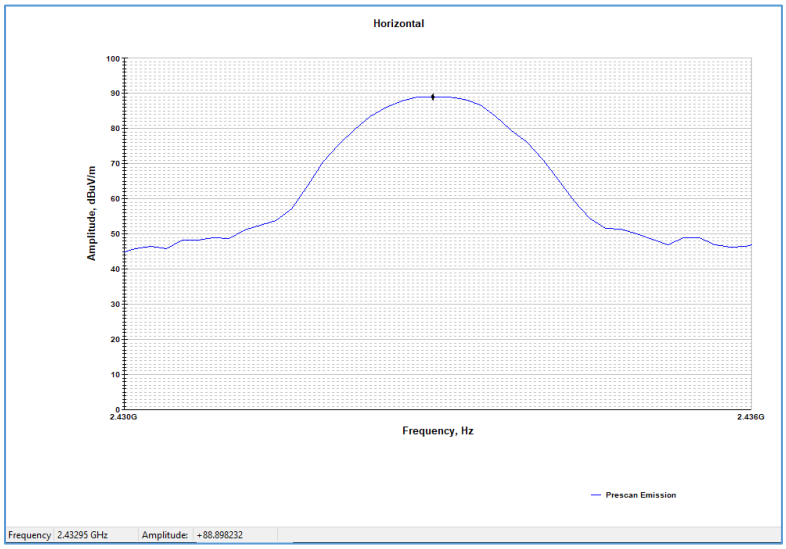
Frequency (MHz)	Measured Peak (dBµV/m)	Limit Peak (dBµV/m)	Margin Peak (dB)	Measured AVG (dBµV/m)	Limit AVG (dBµV/m)	Margin AVG (dB)	Polarization	Verdict
4865.840	46.66	74.00	-27.34	42.85	54.00	-11.15	H	Pass
7299.226	45.01	74.00	-28.99	37.34	54.00	-16.66	H	Pass
13581.624	45.55	74.00	-28.45	32.61	54.00	-21.39	H	Pass
17535.495	48.43	74.00	-25.57	33.03	54.00	-20.97	H	Pass
4865.840	46.66	74.00	-27.34	42.85	54.00	-11.15	V	Pass
7299.226	45.01	74.00	-28.99	37.34	54.00	-16.66	V	Pass
13581.624	45.55	74.00	-28.45	32.61	54.00	-21.39	V	Pass
17535.495	48.43	74.00	-25.57	33.03	54.00	-20.97	V	Pass

Table 3.8 Radiated emission measurements from 18 GHz to 26.5 GHz

Frequency (GHz)	Measured Peak (dBµV/m)	Limit Peak (dBµV/m)	Margin Peak (dB)	Measured AVG (dBµV/m)	Limit AVG (dBµV/m)	Margin AVG (dB)	Polarization	Verdict
Emissions are >20dB below the limit							H & V	Pass

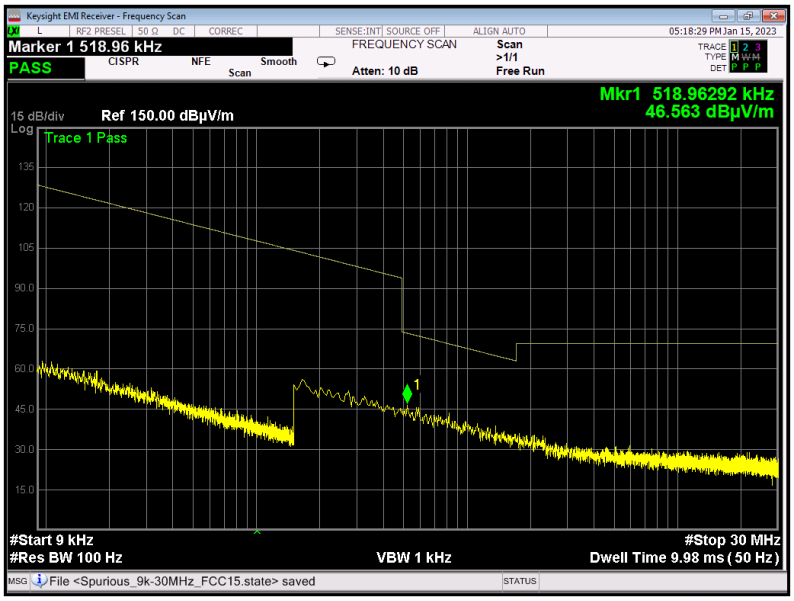
Plot 3.1 Radiated emission measurements at the fundamental frequency





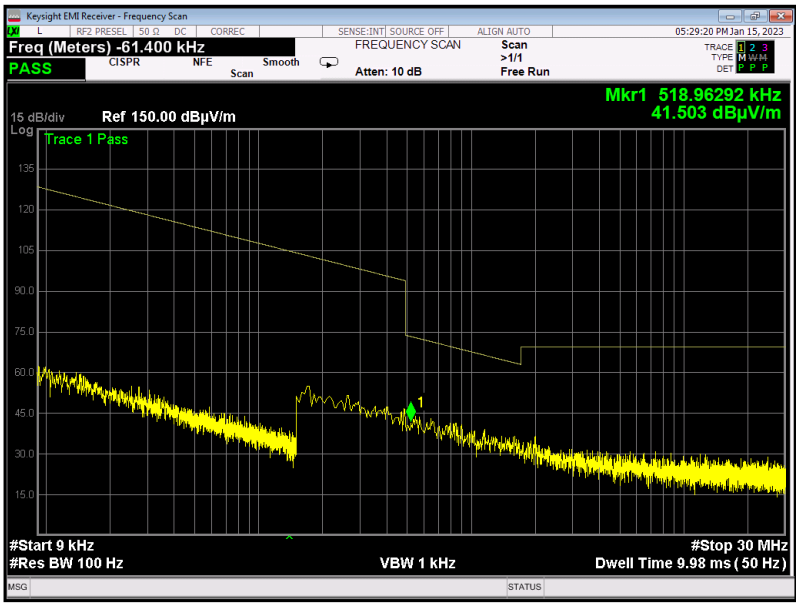
Plot 3.2 Radiated emission measurements from 9 kHz to 30 MHz

Test site:	Semi anechoic chamber
Test distance:	3 m
Antenna position:	Parallel
EUT position:	Wall mounted



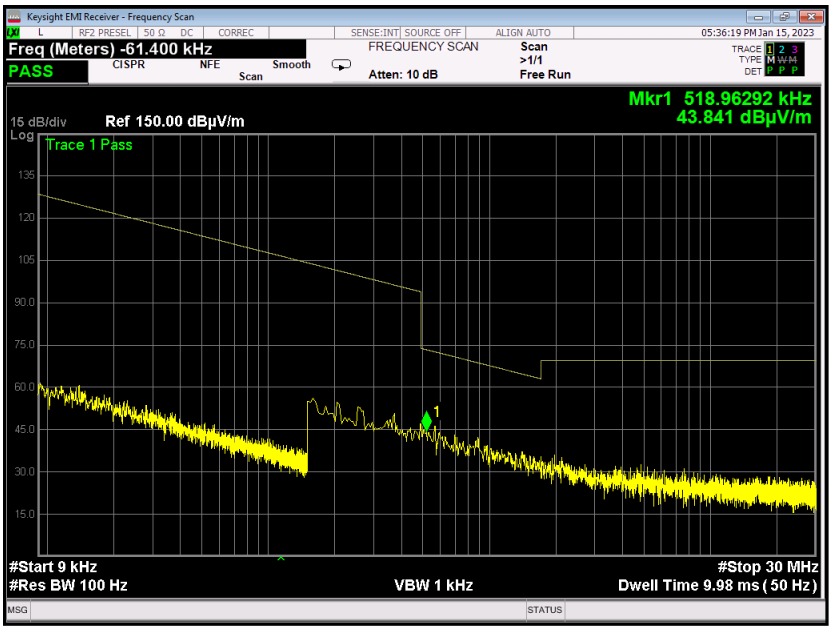
Plot 3.3 Radiated emission measurements from 9 kHz to 30 MHz

Test site:	Semi anechoic chamber
Test distance:	3 m
Antenna position:	Perpendicular
EUT position:	Wall mounted



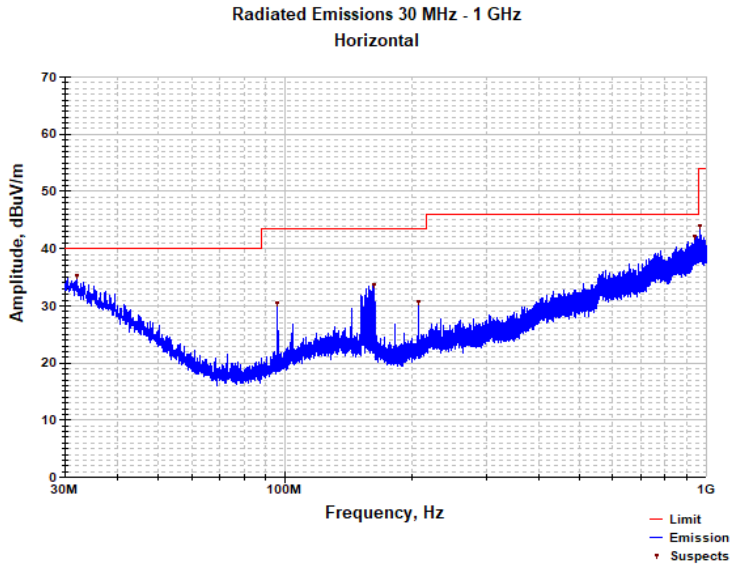
Plot 3.4 Radiated emission measurements from 9 kHz to 30 MHz

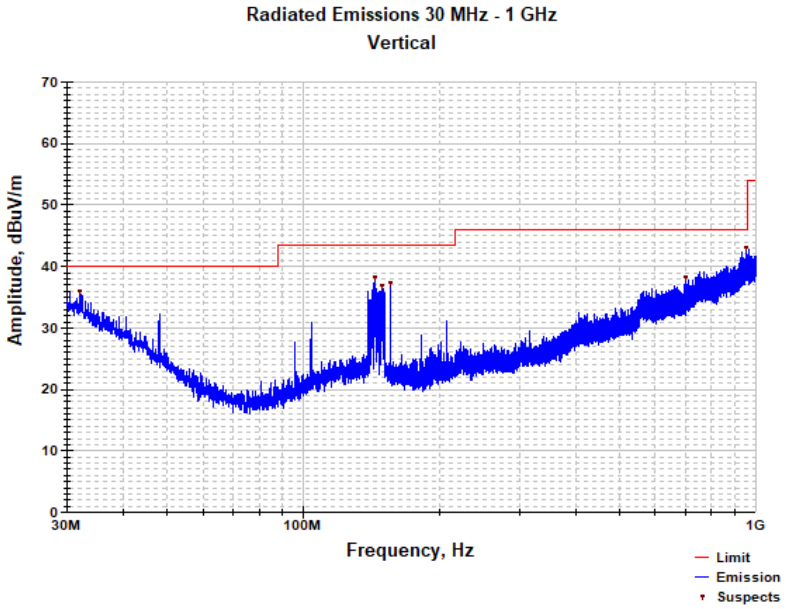
Test site:	Semi anechoic chamber
Test distance:	3 m
Antenna position:	Horizontal
EUT position:	Wall mounted



Plot 4.5 Radiated emission measurements from 30 to 1000 MHz

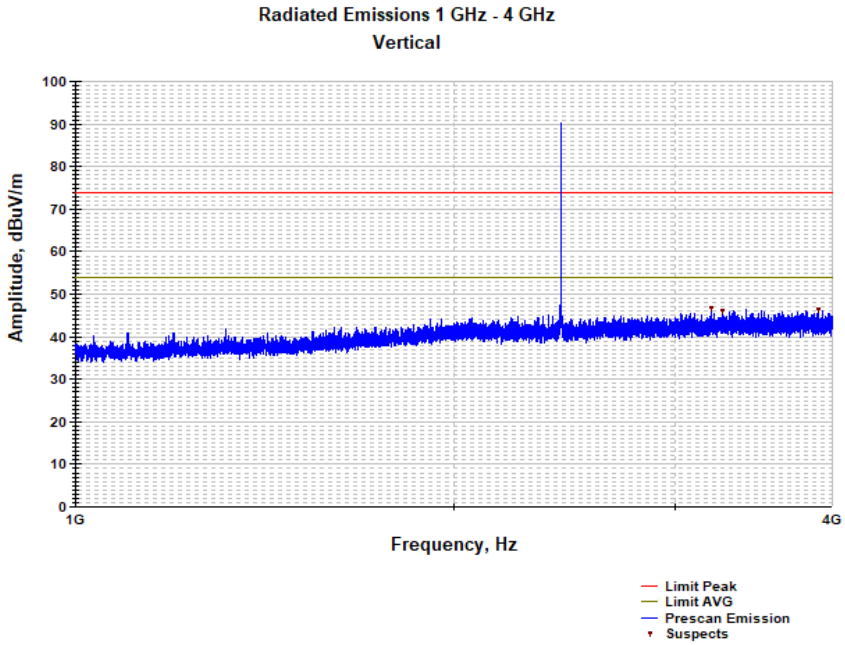
Test site:	Semi anechoic chamber
Test distance:	3 m
Antenna polarization:	Vertical and Horizontal
Eut position:	Wall mounted

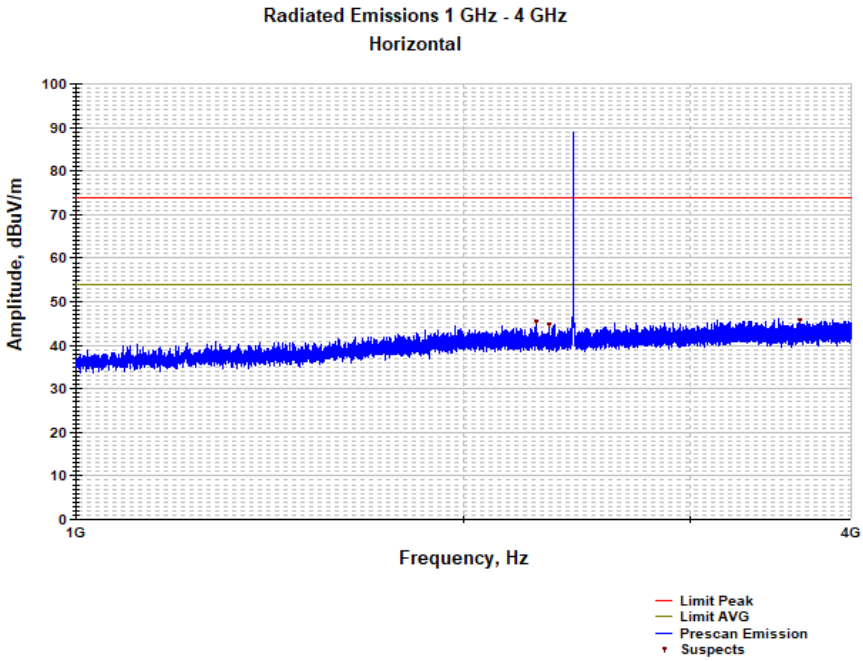




Plot 3.6 Radiated emission measurements from 1 to 4 GHz

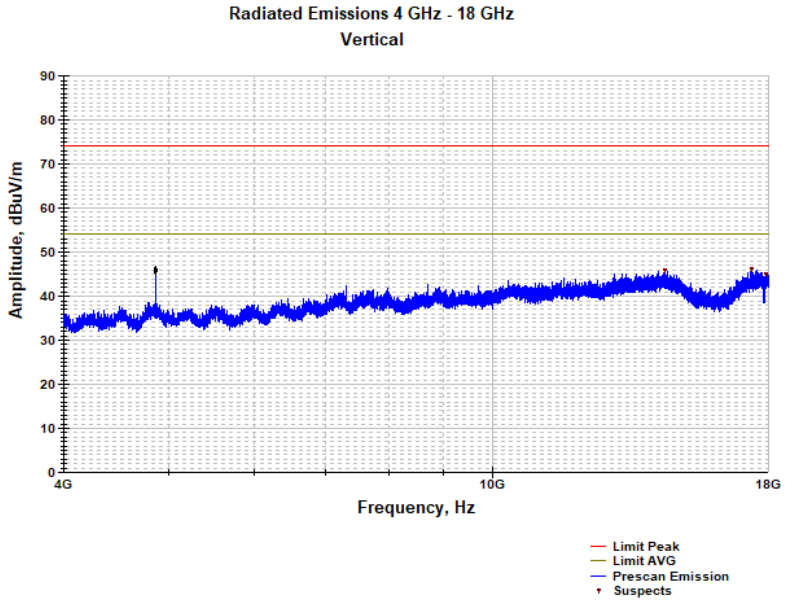
Test site:	Semi anechoic chamber
Test distance:	3 m
Antenna polarization:	Vertical and Horizontal
EUT position:	Wall mounted

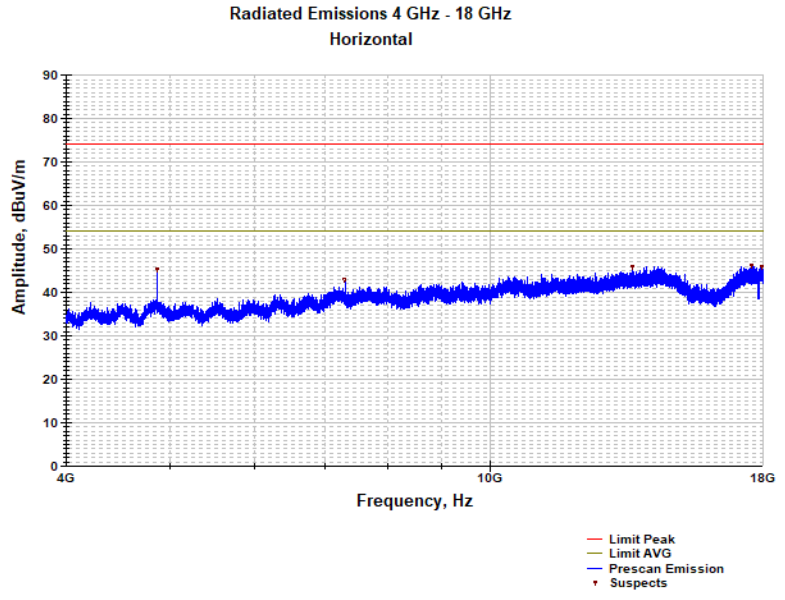




Plot 3.7 Radiated emission measurements from 4 to 18 GHz

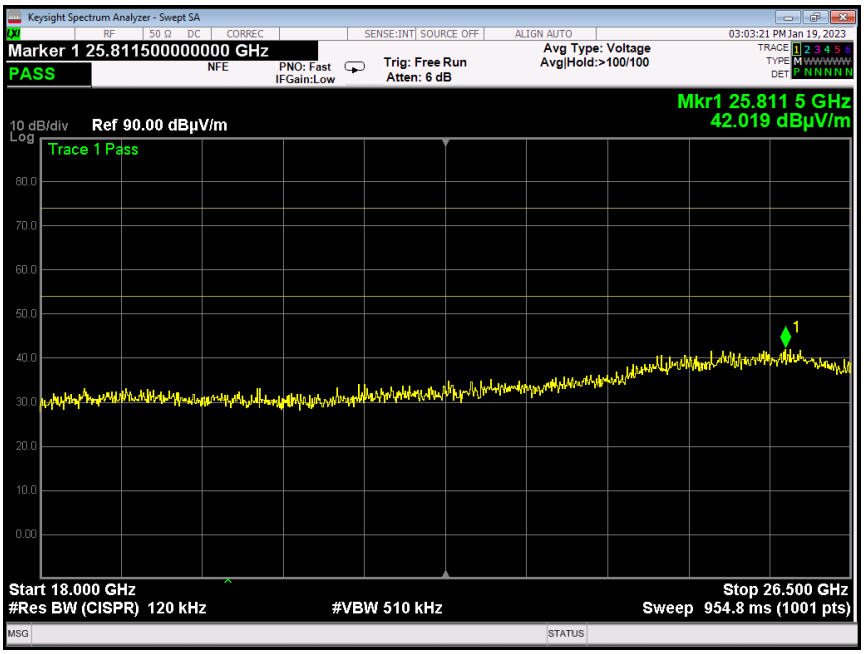
Test site:	Semi anechoic chamber
Test distance:	3 m
Antenna polarization:	Vertical and Horizontal
EUT position:	Wall mounted



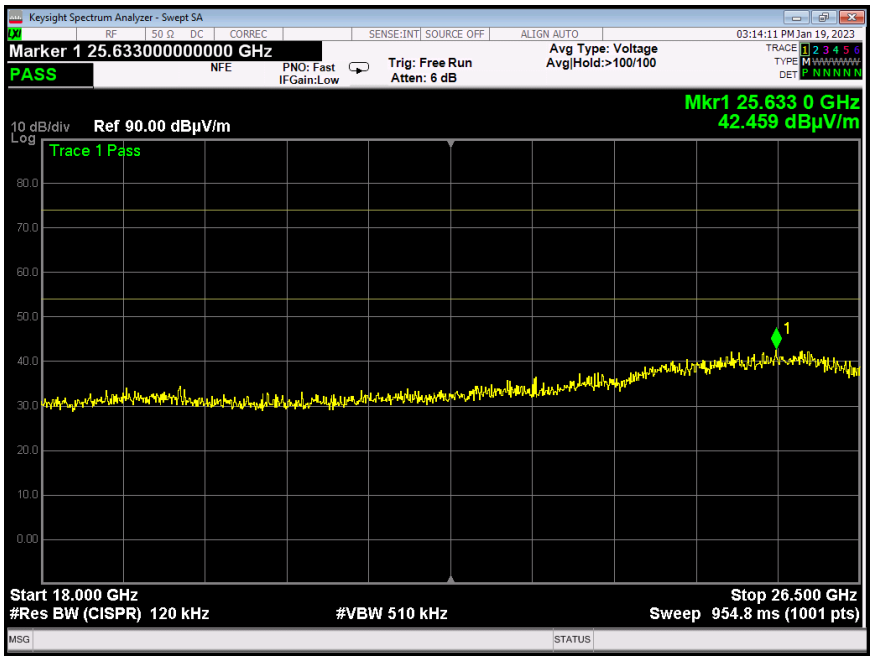


Plot 3.8 Radiated emission measurements from 18 to 26.5 GHz

Test site:	Semi anechoic chamber
Test distance:	3 m
Antenna polarization:	Horizontal
EUT position:	Wall mounted



Test site:	Semi anechoic chamber
Test distance:	3 m
Antenna polarization:	Vertical
EUT position:	Wall mounted



4. Occupied bandwidth test

Date of Test: 06.03.2022
Relative Humidity: 25%
Ambient Temperature: 43°C
Atmospheric Pressure: 1011.4 hPa
Test performed by: Izak Shtir

Test Method: ANSI C63.10 section 6.9.2

Compliance status: Pass

4.1. General

This test was performed to verify that the 20 dB bandwidth of the emissions was contained within the standard specified frequency band according to FCC §15.215 requirements. Specification test limits are given in Table 4.1.

Table 4.1 Occupied bandwidth limits

Assigned frequency, MHz	Modulation envelope reference points*, dBc
902 - 928	20.0
2400 – 2483.5	
5725 – 5875	
24000 – 24250	

*- Modulation envelope reference points provided in terms of attenuation below modulated carrier.

Table 4.2 Occupied bandwidth limits RSS-210

Assigned frequency, MHz	Modulation envelope reference points*, %
902 - 928	99
2400 – 2483.5	
5725 – 5875	
24000 – 24250	

*- Modulation envelope reference points provided in terms of attenuation below modulated carrier.

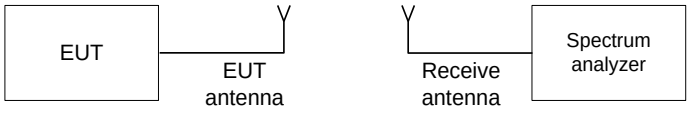
4.2. Test procedure

The EUT was set up as shown in Figure 4.1, energized and its proper operation was checked.

The spectrum analyzer sweep time and bandwidth were set to capture all major modulation sidebands of emission and sweep time was set sufficiently slow to ensure peak measurements. Spectrum analyzer was set in peak hold mode and time sufficient for trace stabilization was allowed.

The peak of emission was measured. The transmitter occupied bandwidth was measured with spectrum analyzer as frequency delta between reference points on modulation envelope and provided in Table and associated plot.

Figure 4.1 Occupied bandwidth test setup



4.3. List of Test Equipment:

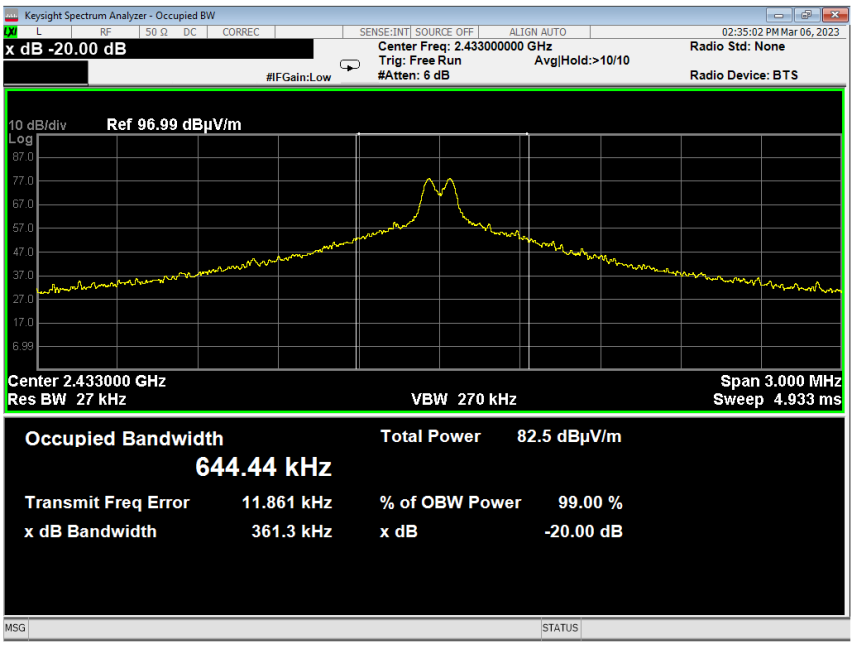
Refer to appendix A for complete list of equipment used and respective calibration dates.

4.4. Test results

Table 4.3 Occupied bandwidth test results

Assigned frequency band		2400 – 2483.5 MHz		
Detector used:		Peak hold		
Resolution bandwidth:		27 kHz		
Video bandwidth:		270 kHz		
Modulation:		2FSK		
Frequency, MHz	**OBW, kHz**		**Limit**	**Verdict**
	20 dBc	**99%**		
2433	361.3	644.44	NA	Pass

Plot 4.1 Occupied bandwidth 20 dBc and 99% at carrier frequency test result



5. Band edge emission

Date of Test: 06.03.2022
Relative Humidity: 25%
Ambient Temperature: 43°C
Atmospheric Pressure: 1011.4 hPa
Test performed by: Izak Shtir

Test Method: ANSI C63.10 section 6.10

Compliance status: Pass

5.1. General

This test was performed to verify the EUT band edge emission including all associated side bands was attenuated at least 50 dB below the unmodulated carrier level or below the general spurious emission limit. Specification test limits are given in Table 5.1.

Table 5.1 Band edge emission limits

Frequency band, MHz	Field strength limit at 3 m, dBµV/m		Attenuation below carrier, dBc
	Peak	QP	
2400.0 – 2483.5	74.0	54.0	50

5.2. Test procedure

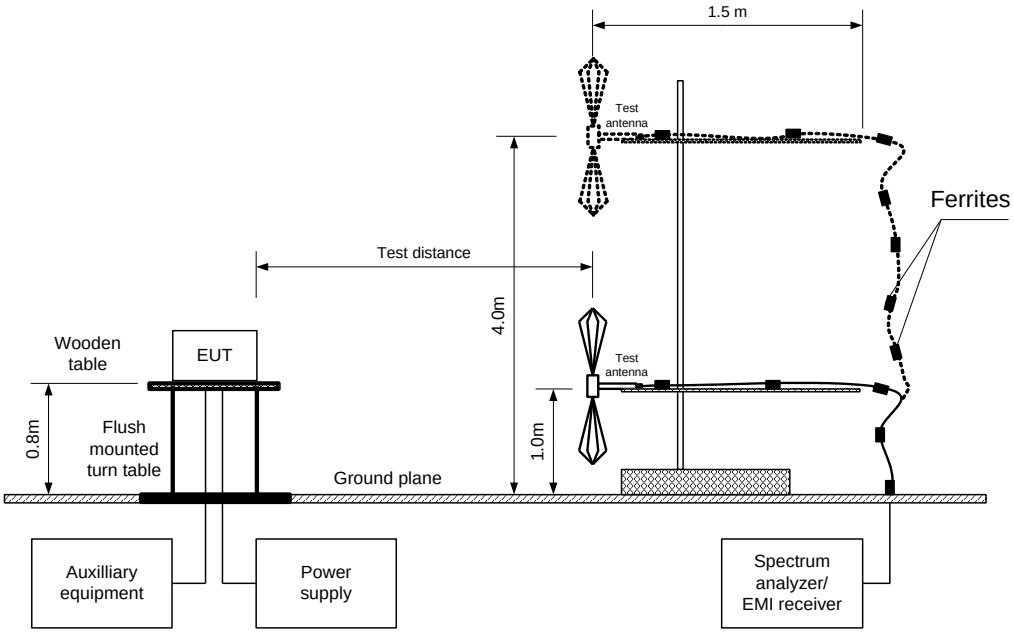
The EUT was set up as shown in Figure 5.2, energized and the performance check was conducted.

The spectrum analyzer frequency span was set to capture all major modulation sidebands of emission and sweep time was set sufficiently slow to ensure peak measurements. Spectrum analyzer was set in peak hold mode and time sufficient for trace stabilization was allowed.

The frequency of modulation envelope points beyond which power level drops below the band edge emission limit was measured.

The test results were recorded in Table 5.2 and shown in the associated plots.

Figure 5.2 Band edge emission measurement set up



5.3. List of Test Equipment:

Refer to appendix A for complete list of equipment used and respective calibration dates.

5.4. Test results

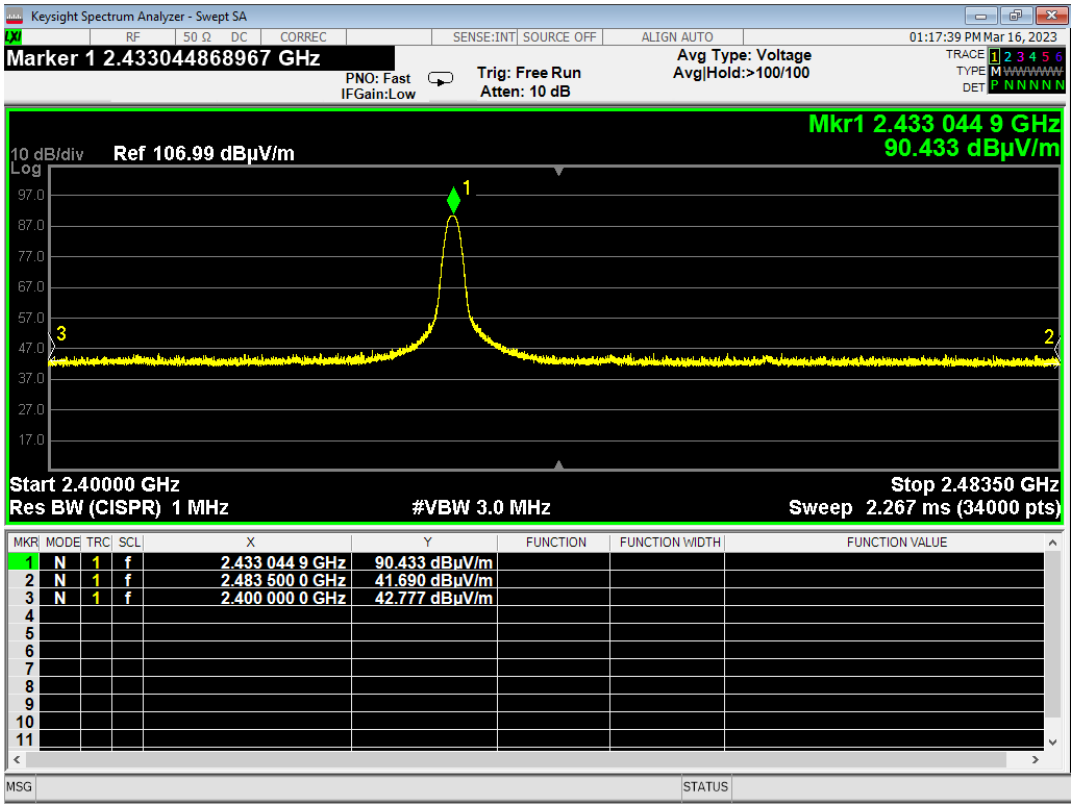
Table 5.2 Band edge emission test results

Operating frequency range:	2433 MHz
Detector used:	Peak hold
Resolution bandwidth:	1 MHz
Video bandwidth:	3 MHz
Modulation:	2FSK

Edge	Frequency, MHz	Peak field strength			Avr factor, dB	Average field strength			Verdict
		Measured, dB(µV/m)	Limit, dB(µV/m)	Margin, dB*		Calculated, dB(µV/m)	Limit, dB(µV/m)	Margin, dB*	
Low	2400.0	41.690	74.0	-32.310	NA	NA	54.0	NA	Pass
High	2483.5	42.777	74.0	-31.223	NA	NA	54.0	NA	Pass

*- Margin, dB =Measured (calculated) value, dB(µV/m)-Limit, dB(µV/m).

Plot 5.1: Band edge emission



6. Conducted Emissions

Date of Test: 27.06.2023
Relative Humidity: 50%
Ambient Temperature: 23.8°C
Atmospheric Pressure: 1011.4 hPa
Test performed by: Ortal Klainman

Test Method: **ANSI C63.4**

Compliance status: Pass

General

This test was performed to measure common mode conducted emissions at the mains power port.
Specification test limits are given **Error! Reference source not found.**.

Limits:

Power Supply Port:

Frequency, [MHz]	Limit [dBµV] [Class A]		Limit [dBµV] [Class B]	
	QP	Average	QP	Average
0.15 - 0.5	79	66	66 - 56	56 - 46
0.5 - 5	73	60	56	46
5 - 30	73	60	60	50

Test procedure

The EUT was set up as shown in Figure 6 and associated photographs, energized and the performance check was conducted.
The measurements were performed at power terminals with the LISN, connected to a spectrum analyzer in the frequency range referred to in Table 6. Unused coaxial connector of the LISN was terminated with 50 Ohm. Quasi-peak and average detectors were used throughout the testing.
The position of the device cables was varied to determine maximum emission level.
The worst test results (the lowest margins) were recorded in Table 6 and shown in the associated plots.

List of Test Equipment:

Refer to appendix A for complete list of equipment used and respective calibration dates.

Test results:

Table 6.1: Power supply port: Transmitter FSK 2.433GHz

"L1" Lead

Frequency [MHz]	Measured Peak [dBµV]	Measured QP [dBµV]	QP limit [dBµV]	QP margin [dBµV]	Measured AVG [dBµV]	AVG limit [dBµV]	AVG margin [dBµV]
0.197	51.8	49.1	64.7	-15.5	41.7	54.7	-13.0
0.199	51.2	48.1	64.6	-16.5	40.7	54.6	-14.0
0.591	42.0	39.4	56.0	-16.6	36.8	46.0	-9.2
0.686	41.5	38.3	56.0	-17.7	34.8	46.0	-11.2
0.885	41.6	39.5	56.0	-16.5	34.9	46.0	-11.1
1.474	41.7	39.3	56.0	-16.7	31.2	46.0	-14.8

"L2" Lead

Frequency [MHz]	Measured Peak [dBµV]	Measured QP [dBµV]	QP limit [dBµV]	QP margin [dBµV]	Measured AVG [dBµV]	AVG limit [dBµV]	AVG margin [dBµV]
0.198	49.8	47.5	64.6	-17.1	39.5	54.6	-15.2
0.589	41.7	40.1	56.0	-15.9	38.1	46.0	-7.9
0.638	40.8	39.2	56.0	-16.8	38.4	46.0	-7.6
0.688	41.4	39.4	56.0	-16.6	36.5	46.0	-9.5
0.885	42.2	40.4	56.0	-15.6	36.7	46.0	-9.3
1.179	42.0	39.5	56.0	-16.5	32.0	46.0	-14.0
1.279	42.7	39.4	56.0	-16.6	32.8	46.0	-13.2
1.473	42.6	40.2	56.0	-15.8	32.4	46.0	-13.6

Table 6.2: Power supply port: Receiver FSK 2.433GHz

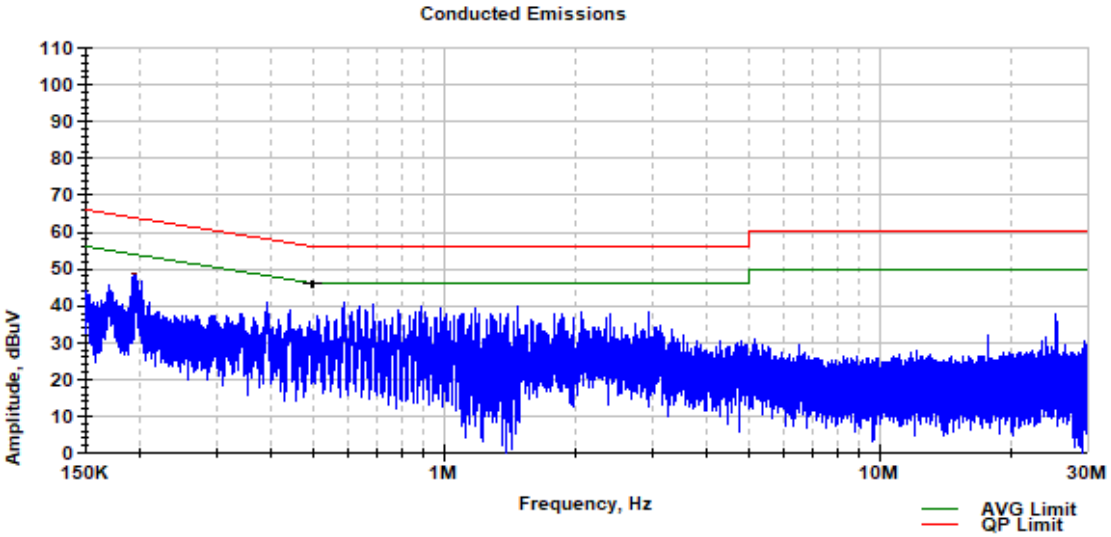
"L1" Lead

Frequency [MHz]	Measured Peak [dBµV]	Measured QP [dBµV]	QP limit [dBµV]	QP margin [dBµV]	Measured AVG [dBµV]	AVG limit [dBµV]	AVG margin [dBµV]
0.197	52.0	48.8	64.7	-15.9	41.4	54.7	-13.2
0.198	52.3	48.7	64.6	-15.9	41.3	54.6	-13.4
0.591	41.6	39.2	56.0	-16.8	36.6	46.0	-9.4
0.638	40.3	38.2	56.0	-17.8	37.3	46.0	-8.7
0.885	41.8	39.7	56.0	-16.3	35.2	46.0	-10.8
1.278	40.8	38.8	56.0	-17.2	31.4	46.0	-14.6
1.278	41.3	38.5	56.0	-17.5	31.1	46.0	-14.9
2.064	41.4	39.2	56.0	-16.8	31.1	46.0	-14.9

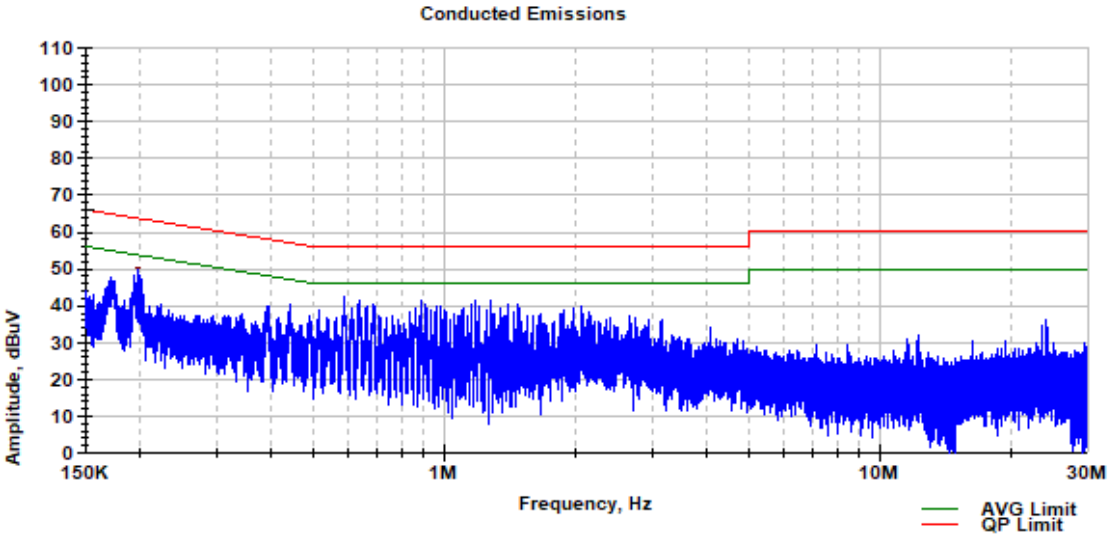
"L2" Lead

Frequency [MHz]	Measured Peak [dBµV]	Measured QP [dBµV]	QP limit [dBµV]	QP margin [dBµV]	Measured AVG [dBµV]	AVG limit [dBµV]	AVG margin [dBµV]
0.197	50.5	47.7	64.7	-17.0	39.9	54.7	-14.8
0.198	50.0	47.5	64.6	-17.1	39.5	54.6	-15.1
0.589	41.9	40.0	56.0	-16.0	38.1	46.0	-7.9
0.639	40.5	39.3	56.0	-16.7	38.6	46.0	-7.4
0.887	42.4	38.9	56.0	-17.1	35.1	46.0	-10.9
1.179	42.5	39.9	56.0	-16.1	33.0	46.0	-13.0
1.278	42.5	40.1	56.0	-15.9	33.0	46.0	-13.0
1.475	42.2	39.8	56.0	-16.2	31.9	46.0	-14.1

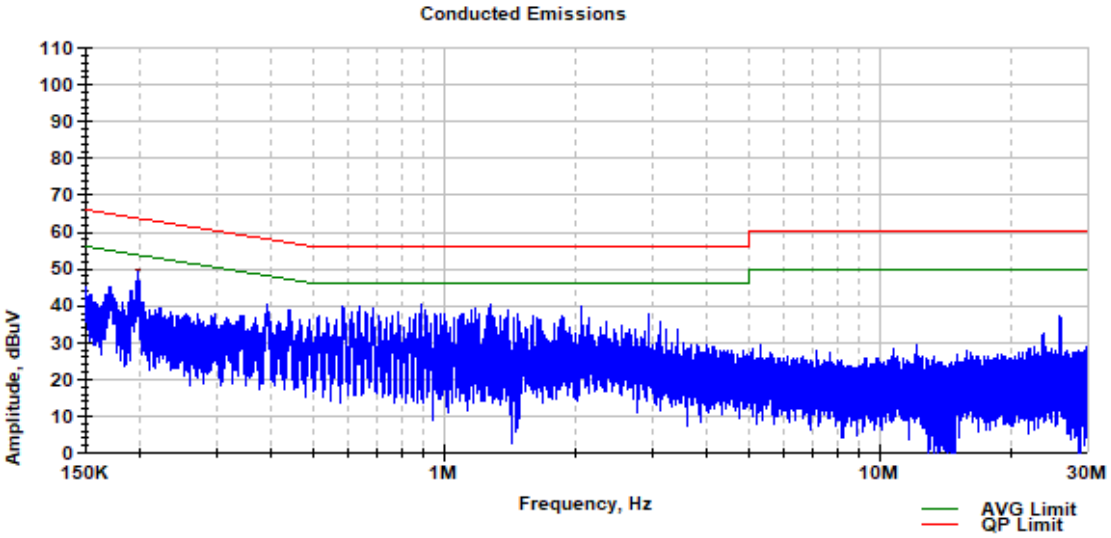
Transmitter FSK 2.433GHz
Plot 6.1: Power Supply Ports, 150 kHz – 30 MHz, Lead L1



Plot 6.2: Power Supply Ports, 150 kHz – 30 MHz, Lead L2



Receiver FSK 2.433GHz
Plot 6.3: Power Supply Ports, 150 kHz – 30 MHz, Lead L1



Plot 6.4: Power Supply Ports, 150 kHz – 30 MHz, Lead L2

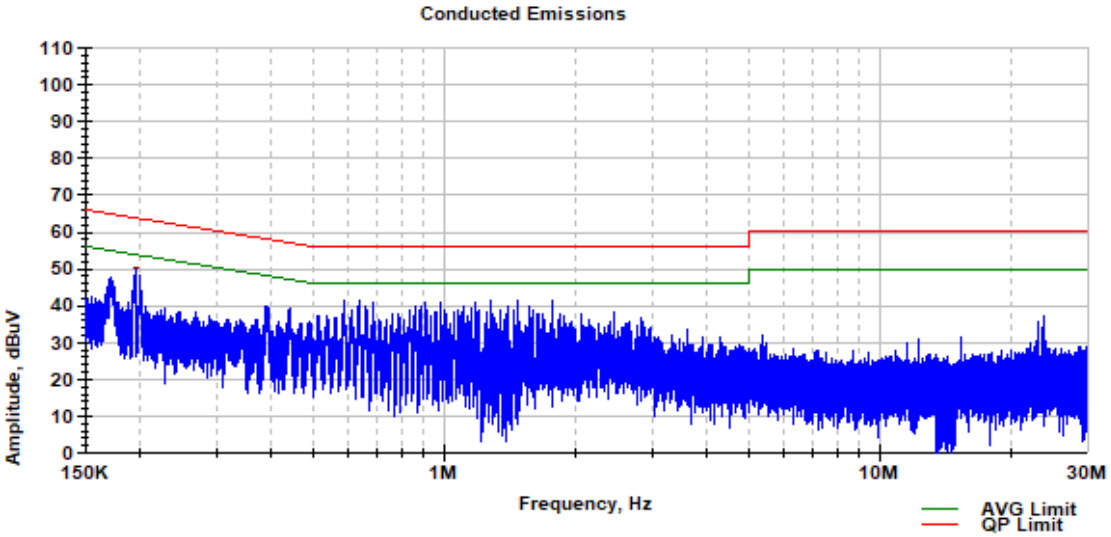
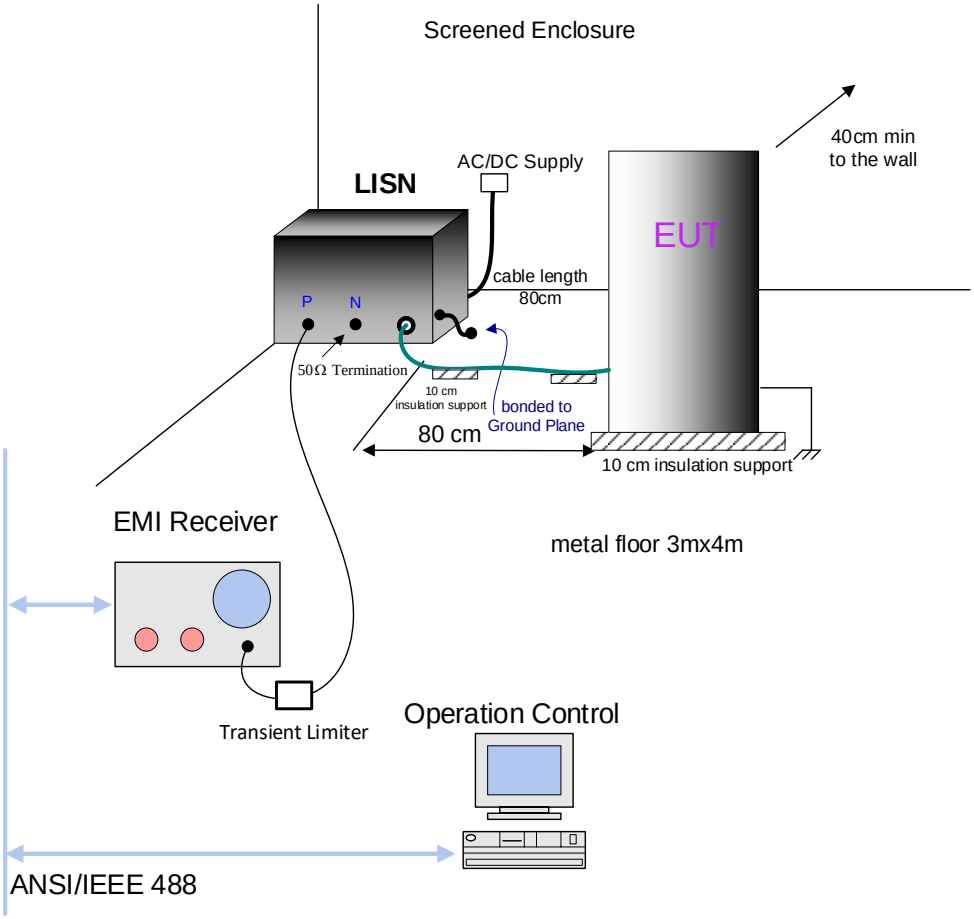


Figure 6: Setup for conducted emission measurements,



7. Appendices

7.1. Appendix A: List of Measuring Equipment used:

Equipment description	Last Cal	Cal Due
Semi Anechoic Chamber, 9.5m [L] x 6.5m [W] x 5.2m [H]	19 05 2022	19 05 2024
Teseq CBL 6141B, Bilog Antenna	01 06 2022	01 06 2025
1 GHz to 18 GHz, Double ridge horn antenna, 24.2 by 13.6 cm opening ARA DRG-118/A	03 10 2022	03 10 2023
LNA 1-18GHz (New), Spacek Labs, SL1018-56-5, 17J29	20 09 2022	20 09 2023
Keysight MXE EMI Receiver N9038A	11 05 2022	11 05 2023
Spectrum Keysight E4446A	05 09 2022	05 09 2023
Schwarzbeck BBHA 9170 SHF-EHF horn	21 03 2021	21 03 2024
Low-Noise Amplifier 26.5GHz - 40GHz, Spacek Labs, SLKa-35-4	27 02 2023	27 02 2024
Screened Enclosure 4m x 3m x 3m	CNR	
Keysight EMI Receiver N9038A-MXE, MY55420200	12.06.2023	12.06.2024
Agilent 11947A Transient Limiter	23 03 2023	23 03 2024
Schwarzbeck NNBL 8226-2 V-LISN	CNR	
Variable Transformer	CNR	

7.2. Appendix B: Abbreviations/ Glossary used in the test report

AC	Alternating Current
AVR	Average (Detector)
A/m	Ampere per meter
AE	Auxiliary equipment
AM	Amplitude modulation
cm	Centimeter
CE	Conducted Emission
CI	Conducted Immunity
CNR	Calibration not required
dB	Decibel
dBm	Decibel referred to one Mill watt
dB(µV)	Decibel referred to one micro volt
dB(µV/*m*)	Decibel referred to one micro volt per meter
DC	Direct Current
ESD	Electrostatic Discharge
EFT	Electrical Fast Transients
EMC	Electromagnetic Compatibility
EMI	Electromagnetic Immunity
EN	European Standard
EUT	Equipment under test
F/O	Fiber optic
GHz	Gigahertz
Hz	Hertz
HCP	Horizontal Coupling Plane
kHz	Kilohertz
kV	Kilovolt

ISN	Impedance stabilization network
LISN	Line Impedance Stabilization Network
m	Meter
MHz	Megahertz
NA	Not Applicable
NP	Normal performance
QP	Quasi-Peak (Detector)
Ω	Ohm
PM	Pulse modulation
PC	Personal Computer
RF	Radio Frequency
RE	Radiated Emission
RI	Radiated Immunity
rms	Root-mean-square
sec	Second
SA	Spectrum analyzer
Transceiver	Transmitter -receiver
V	Volt
VCP	Vertical coupling plane
W	Watt

7.3. Appendix C: Accreditation Certificate

Accredited Laboratory

A2LA has accredited

QUALITECH

Petah-Tikva, Israel

for technical competence in the field of

Electrical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 *General requirements for the competence of testing and calibration laboratories*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (*refer to joint ISO-ILAC-IAF Communiqué dated April 2017*).

Presented this 29th day of August 2022.

Trace McInturff, Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 1633.01
Valid to June 30, 2024

For the tests to which this accreditation applies, please refer to the laboratory's Electrical Scope of Accreditation.

End of the Test Report