

Test report

392944-6R1TRFWL

Date of issue: March 20, 2025

Applicant:

Perimetrics, Inc

Product:

Dental Diagnostic Device

Model:

INV-2000

FCC ID: 2AXNK-INV2000

IC ID: 33686-INV2000

Specifications:

- ◆ **FCC 47 CFR Part 15, Subpart C – §15.249**
Operation within the bands 902-928 MHz, 2400-2483.5 MHz, 5725-5875 MHz, and 24.0-24.25 GHz
- ◆ **RSS-210, Issue 11, June 2024**
Licence-Exempt Radio Apparatus: Category I Equipment

Lab and test locations

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State	California
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Country	USA
Telephone	+1 760 444 3500
Website	www.nemko.com
FCC Site Number	Test Firm Registration Number: 392943 Designation Number: US5058
ISED Test Site	2040B-3

Tested by	James Cunningham, Wireless Supervisor
Reviewed by	Juan M Gonzalez, EMC & Wireless Divisions Manager
Review date	March 20, 2025
Reviewer signature	

Limits of responsibility

Note that the results contained in this report relate only to the items tested and were obtained in the period between the date of initial receipt of samples and the date of issue of the report.

This test report has been completed in accordance with the requirements of ISO/IEC 17025. All results contain in this report are within Nemko USA's ISO/IEC 17025 accreditation.

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Section 1 Report summary

1.1 Applicant

Company name	Perimetrics, Inc.
Address	8441 154 th Ave NE, Bldg H-210
City	Redmond
Province/State	WA
Postal/Zip code	98052
Country	United States

1.2 Manufacturer

Company name	Perimetrics, Inc.
Address	8441 154 th Ave NE, Bldg H-210
City	Redmond
Province/State	WA
Postal/Zip code	98052
Country	United States

1.3 Test specifications

FCC 47 CFR Part 15, Subpart C – §15.249 ISED RSS-210 Issue 11, June 2024	Operation within the bands 902-928 MHz, 2400-2483.5 MHz, 5725-5875 MHz, and 24.0-24.25 GHz Licence-Exempt Radio Apparatus: Category I Equipment
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1.4 Test methods

ANSI C63.10-2013	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
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1.5 Exclusions

None

1.6 Statement of compliance

In the configuration tested, the EUT was found compliant.

Testing was performed against all relevant requirements of the test standard. Results obtained indicate that the product under test complies in full with the requirements tested. The test results relate only to the items tested.

See “Summary of test results” for full details.

1.7 Test report revision history

Table 1.7-1: Test report revision history

Revision #	Details of changes made to test report
392944-6TRFWL	Original report issued
392944-6R1TRFWL	Updated company name and address, added FCC ID and ISED certification number, updated RSS-210 version.

Notes:

Section 2 Summary of test results

2.1 FCC Part 15 Subpart C, general requirements

Part	Test description	Verdict
§15.207(a)	Conducted limits	Pass
§15.31(e)	Variation of power source	Pass
§15.203	Antenna requirement	Pass

Notes: The antenna is an integrated PCB trace antenna.

2.2 FCC Part 15.249

Part	Test description	Verdict
§15.249(a)	Field strength of emissions	Pass
§15.249(d)	Spurious emissions	Pass

2.3 ISED RSS-210, Issue 11

Part	Test description	Verdict
B.10(a)	Field strength of fundamental and harmonic emissions	Pass
B.10(b)	Emissions outside of the specified frequency bands	Pass

2.4 ISED RSS-GEN, Issue 6 +Amendment 1 + Amendment 2

Part	Test description	Verdict
6.7	Transmitter occupied bandwidth	Pass
7.3	Receiver radiated emission limits	Not applicable
7.4	Receiver conducted emission limits	Not applicable
8.8	Power Line Conducted Emissions Limits for License-Exempt Radio Apparatus	Pass

Note: Per RSS-GEN Section 7, receiver radiated and conducted emissions are not applicable as the EUT is neither a scanning receiver nor operates as a stand-alone receiver.

Section 3 Equipment under test (EUT) details

3.1 Sample information

Receipt date	July 27, 2020
Nemko sample ID number	NEx: 403481

3.2 EUT information

Product name	Dental Diagnostic Device
Model	INV-2000
Serial number	None – prototype sample

3.3 Technical information

Used IC test site(s) reg. number	2040A
RSS number and issue	RSS-211 Issue 11 (June 2024)
Frequency band	2400 – 2483.5 MHz
Operating frequency (MHz)	2473.12 MHz (single channel operation)
Maximum output (dBµV/m @3m)	83.40 dBµV/m @ 3 m
Power requirements	5 V DC (USB from host computer)
Antenna information	Integrated PCB trace antenna

3.4 EUT exercise and monitoring details

The EUT was configured to continuously transmit a modulated signal at full power.

Table 3.4-1: EUT sub assemblies

Description	Brand name	Model/Part number	Serial number	Rev.
Test sample	Perimetrics	INV-2000	None - prototype	N/A

Table 3.4-2: EUT interface ports

Description	Qty.
USB	1

Table 3.4-3: Support equipment

Description	Brand name	Model/Part number	Serial number	Rev.
USB wall charger	Travel adapter	ETA-USOJWS	None	N/A
Laptop PC	Dell	Inspiron 15-5548	9K64322	N/A

Table 3.4-4: Inter-connection cables

Cable description	From	To	Length (ft)
USB	EUT	USB Wall charger / Laptop PC	3

Note: All tests performed with the EUT connected to the USB wall charger except for AC conducted emissions where the EUT was connected to a USB port of the laptop PC as this is the normal operating condition.

Section 4 Engineering considerations

4.1 Modifications incorporated in the EUT

There were no modifications performed to the EUT during this assessment.

4.2 Technical judgment

None

4.3 Deviations from laboratory tests procedures

No deviations were made from laboratory procedures

Section 5 Test conditions

5.1 Atmospheric conditions

Temperature	15-30 °C
Relative humidity	20-75 %
Air pressure	86–106 kPa

When it is impracticable to carry out tests under these conditions, a note to this effect stating the ambient temperature and relative humidity during the tests shall be recorded and stated.

5.2 Power supply range

The normal test voltage for equipment to be connected to the mains shall be the nominal mains voltage. For the purpose of the present document, the nominal voltage shall be the declared voltage, or any of the declared voltages ± 5 %, for which the equipment was designed.

Section 6 Measurement uncertainty

6.1 Uncertainty of measurement

Measurement uncertainty budgets for the tests are detailed below. Measurement uncertainty calculations assume a coverage factor of $K = 2$ with 95% certainty.

Test name	Measurement uncertainty, dB
Radiated spurious emissions	3.78
Powerline conducted emissions	1.38
All antenna port measurements	0.55
Conducted spurious emissions	1.13

Section 7 Test Equipment

Table 6.1-1: Test Equipment List

Equipment	Manufacturer	Model no.	Asset no.	Cal cycle	Next cal.
EMI Test Receiver	Rohde & Schwarz	ESU40	E1121	1 year	25 Nov 2020
System Controller	Sunol Sciences	SC104V	E1129	NCR	NCR
Bilog Antenna	Schaffner	CBL6111C	1480	1 year	18 Oct 2020
DRG Horn	ETS-Lindgren	3117-PA	E1160	1 year	30 Oct 2020
Horn /Antenna	Sage	SAR-2309-42-S2	E1143	2 years	5 Sept 2020
EMI Test Receiver	Rohde & Schwarz	ESCI 7	E1026	2 years	29 May 2021
Two Line V-Network	Rohde & Schwarz	ENV216	E1019	1 year	04 Aug 2021
Transient Limiter (10 dB pad)	Hewlett Packard	11947A	681	1 year	20 Jan 2021

Notes: NCR – no calibration required

Table 6.1-2: Test Software

Manufacturer of Software	Details
Rohde & Schwarz	EMC 32 V10.60.15

Section 8 Testing data

8.1 §15.249(a) & RSS-210 B.10(a) Field strength of emissions

8.1.1 Definition and limits

Title 47 → Chapter I → Subchapter A → Part 15 → Subpart C → §15.247(a)(2)
RSS-210 → §B.10(a)

- (a) Except as provided in paragraph (b) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental frequency	Field strength of fundamental (millivolts / meter)	Field strength of harmonics (millivolts / meter)
902 – 928 MHz	50	500
2400 – 2483.5 MHz	50	500
5275 – 5875 MHz	50	500
24.0 – 24.25 GHz	250	2500

- (c) Field strength limits are specified at a distance of 3 meters.

- (e) As shown in §15.35(b), for frequencies above 1000 MHz, the field strength limits in paragraphs (a) and (b) of this section are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For point-to-point operation under paragraph (b) of this section, the peak field strength shall not exceed 2500 millivolts/meter at 3 meters along the antenna azimuth,

8.1.2 Test summary

Verdict	Pass		
Test date	September 2, 2020	Temperature	25 °C
Test engineer	James Cunningham	Air pressure	1005 mbar
Test location	3m semi-anechoic chamber	Relative humidity	56 %

8.1.3 Notes

Testing was performed with the EUT transmitting on a fixed channel at full power.

8.1.4 Setup details

EUT setup configuration	Tabletop
Test facility	3m semi anechoic chamber
Measurement method	ANSI C63.10 §6.6

Receiver/spectrum analyzer settings:

Resolution bandwidth	1 MHz
Video bandwidth	3 MHz
Detector mode	Peak and Average
Measurement time	5 s

8.1.5 Test data

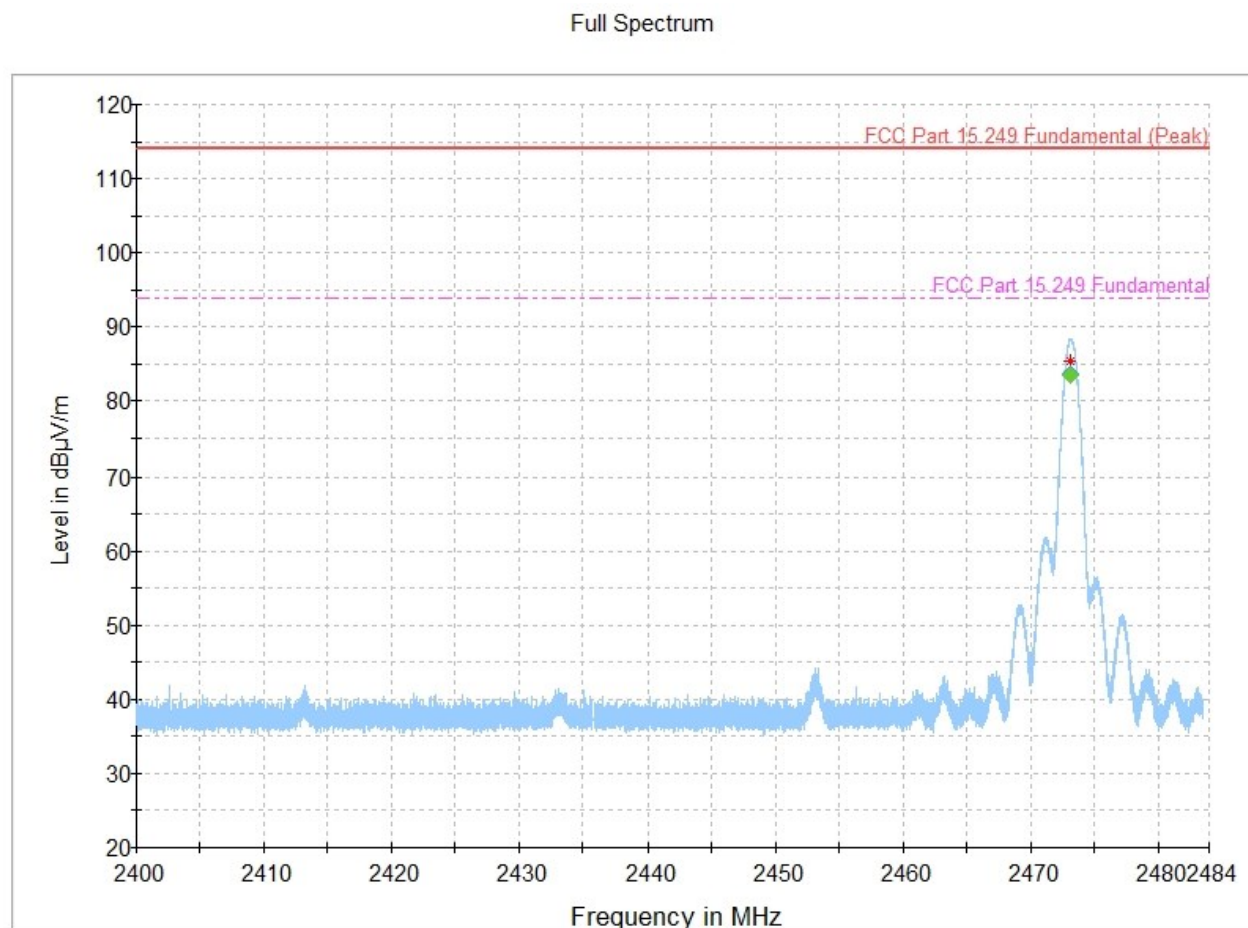


Figure 8.1-1: Field strength of fundamental emission

Table 8.1-1: Field strength of fundamental emission

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)
2473.122234	---	83.40	93.97	10.57	5000.0	1000.000	118.0	V	136.0	-8.7
2473.122234	83.61	---	113.97	30.36	5000.0	1000.000	118.0	V	136.0	-8.7

Notes:

Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)
 Correction factors = antenna factor ACF (dB) + cable loss (dB)
 Limits converted to dBµV/m.

8.2 FCC 15.249(d) and RSS-210 B.10(b) Radiated spurious emissions

8.2.1 Definition and limits

Title 47 → Chapter I → Subchapter A → Part 15 → Subpart C → §15.249(d)
RSS-210 → §B.10(b)

- (d) Emissions radiated outside the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the less attenuation.

Table 8.2-1: FCC §15.209– Radiated emission limits

Frequency, MHz	Field strength of emissions		Measurement distance, m
	$\mu\text{V/m}$	$\text{dB}\mu\text{V/m}$	
0.009–0.490	2400/F	$67.6 - 20 \times \log_{10}(F)$	300
0.490–1.705	24000/F	$87.6 - 20 \times \log_{10}(F)$	30
1.705–30.0	30	29.5	30
30–88	100	40.0	3
88–216	150	43.5	3
216–960	200	46.0	3
above 960	500	54.0	3

Notes: In the emission table above, the tighter limit applies at the band edges.
For frequencies above 1 GHz the limit on peak RF emissions is 20 dB above the maximum permitted average emission limit applicable to the equipment under test.

8.2.2 Test summary

Verdict	Pass		
Test date	September 2, 2020	Temperature	22 °C (Sept 2)
	September 10, 2020		24 °C (Sept 10)
	September 16, 2020		22 °C (Sept 16)
Test engineer	James Cunningham	Air pressure	1007 mbar (Sept 2)
			1005 mbar (Sept 10)
			1005 mbar (Sept 16)
Test location	3m semi anechoic chamber	Relative humidity	62 % (Sept 2)
			56 % (Sept 10)
			58 % (Sept 16)

8.2.3 Notes

Testing was performed with the EUT transmitting on a fixed channel at full power.

8.2.4 Setup details

EUT setup configuration	Tabletop
Test facility	3m semi anechoic chamber at 3 m measurement distance
Measurement details	Radiated spurious emissions measurement performed as per C63.10 §11.12

Receiver settings for radiated measurements below 1 GHz:

Resolution bandwidth	120 kHz
Video bandwidth	300 kHz
Detector mode	Peak (preview measurements) Quasi-Peak (final measurements)
Trace mode	Max Hold
Measurement time	5 s (final measurements)

Receiver settings for radiated measurements above 1 GHz:

Resolution bandwidth	1 MHz
Video bandwidth	3 MHz
Detector mode	Average and peak (final measurements)
Trace mode	Max Hold
Measurement time	5 s (final measurements)

8.2.5 Test data

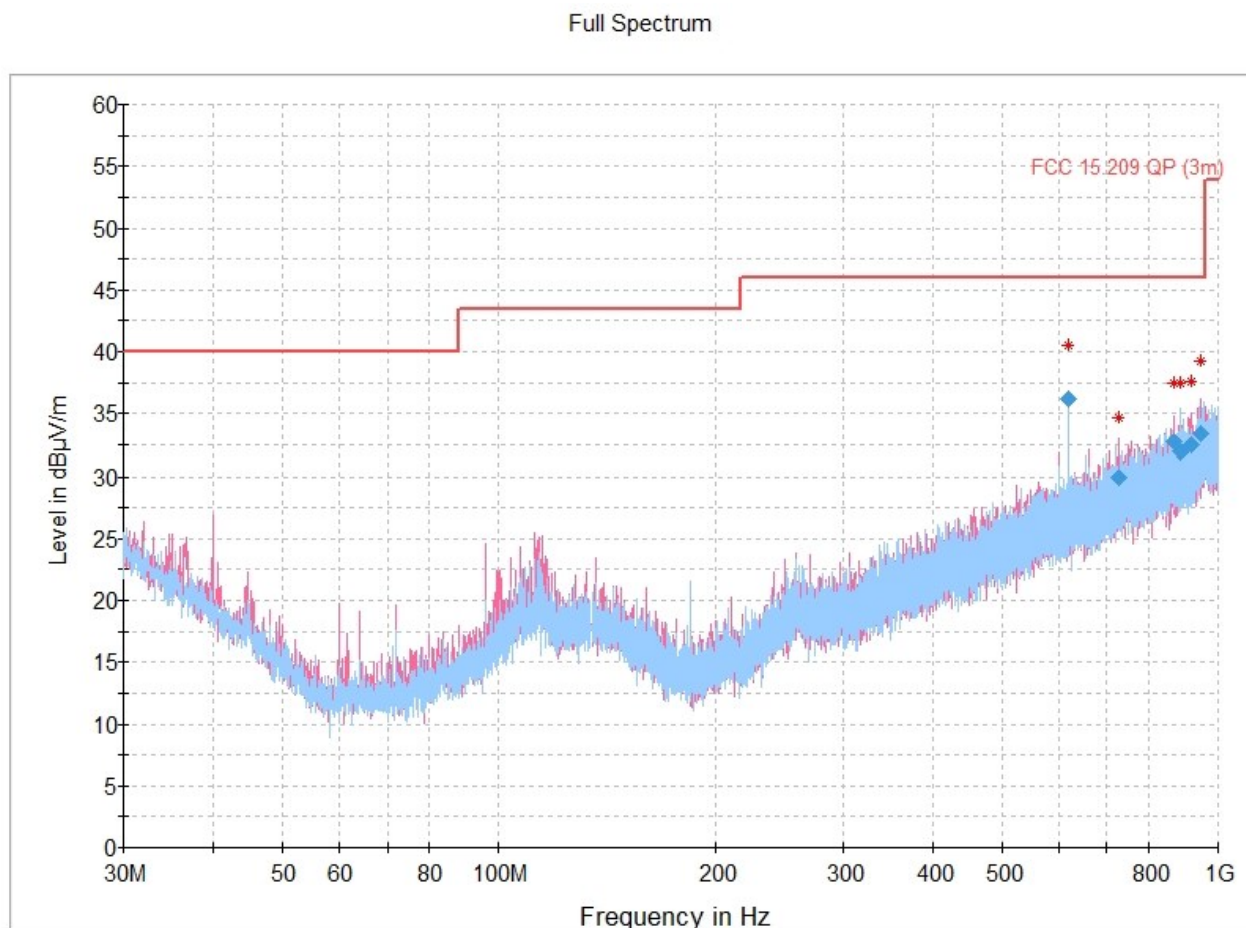


Figure 8.2-1: Radiated emissions, 30 – 1000 MHz

Table 8.2-2: Radiated emissions, 30 – 1000 MHz

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
617.541333	36.17	46.00	9.83	5000.0	120.000	139.0	H	207.0	28.7
727.387000	29.88	46.00	16.12	5000.0	120.000	187.0	V	159.0	30.4
869.992333	32.74	46.00	13.26	5000.0	120.000	198.0	V	0.0	32.4
887.527333	32.04	46.00	13.96	5000.0	120.000	244.0	H	313.0	32.4
918.486333	32.46	46.00	13.54	5000.0	120.000	130.0	V	68.0	32.7
945.712667	33.39	46.00	12.61	5000.0	120.000	304.0	V	312.0	33.7

Notes:

Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)

Correction factors = antenna factor ACF (dB) + cable loss (dB)

Limits converted to dBµV/m and an inverse proportionality factor of 20 dB per decade has been used to normalize the specification limit to a measurement distance of 3 meters to determine compliance.

Full Spectrum

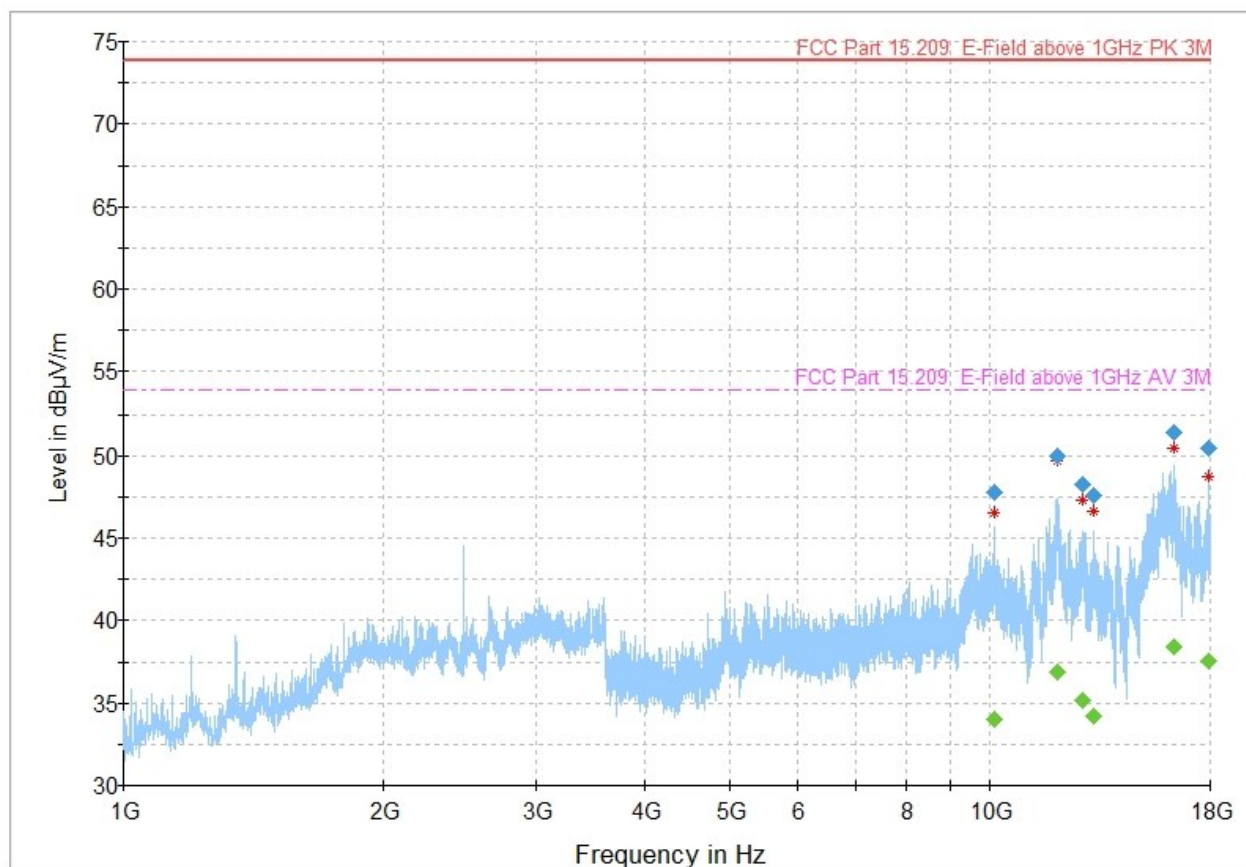


Figure 8.2-2: Radiated emissions, 1 – 18 GHz

Table 8.2-3: Radiated emissions, 1 – 18 GHz

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)
10117.969850	47.77	---	73.90	26.13	5000.0	1000.000	164.0	H	34.0	4.1
10117.969850	---	34.06	53.90	19.84	5000.0	1000.000	164.0	H	34.0	4.1
11974.987350	---	36.93	53.90	16.97	5000.0	1000.000	249.0	V	0.0	7.1
11974.987350	50.00	---	73.90	23.90	5000.0	1000.000	249.0	V	0.0	7.1
12789.655450	48.20	---	73.90	25.70	5000.0	1000.000	285.0	V	212.0	7.4
12789.655450	---	35.12	53.90	18.79	5000.0	1000.000	285.0	V	212.0	7.4
13223.420800	---	34.18	53.90	19.72	5000.0	1000.000	319.0	H	34.0	7.8
13223.420800	47.63	---	73.90	26.27	5000.0	1000.000	319.0	H	34.0	7.8
16319.295300	51.42	---	73.90	22.48	5000.0	1000.000	270.0	H	134.0	13.3
16319.295300	---	38.37	53.90	15.53	5000.0	1000.000	270.0	H	134.0	13.3
17911.028550	50.47	---	73.90	23.43	5000.0	1000.000	347.0	H	0.0	13.9
17911.028550	---	37.58	53.90	16.32	5000.0	1000.000	347.0	H	0.0	13.9

Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)

Correction factors = antenna factor ACF (dB) + cable loss (dB)

Notes:

Limits converted to dBµV/m and an inverse proportionality factor of 20 dB per decade has been used to normalize the specification limit to a measurement distance of 3 meters to determine compliance.

A notch filter was used to reduce the level of the transmitter fundamental emission.

Full Spectrum

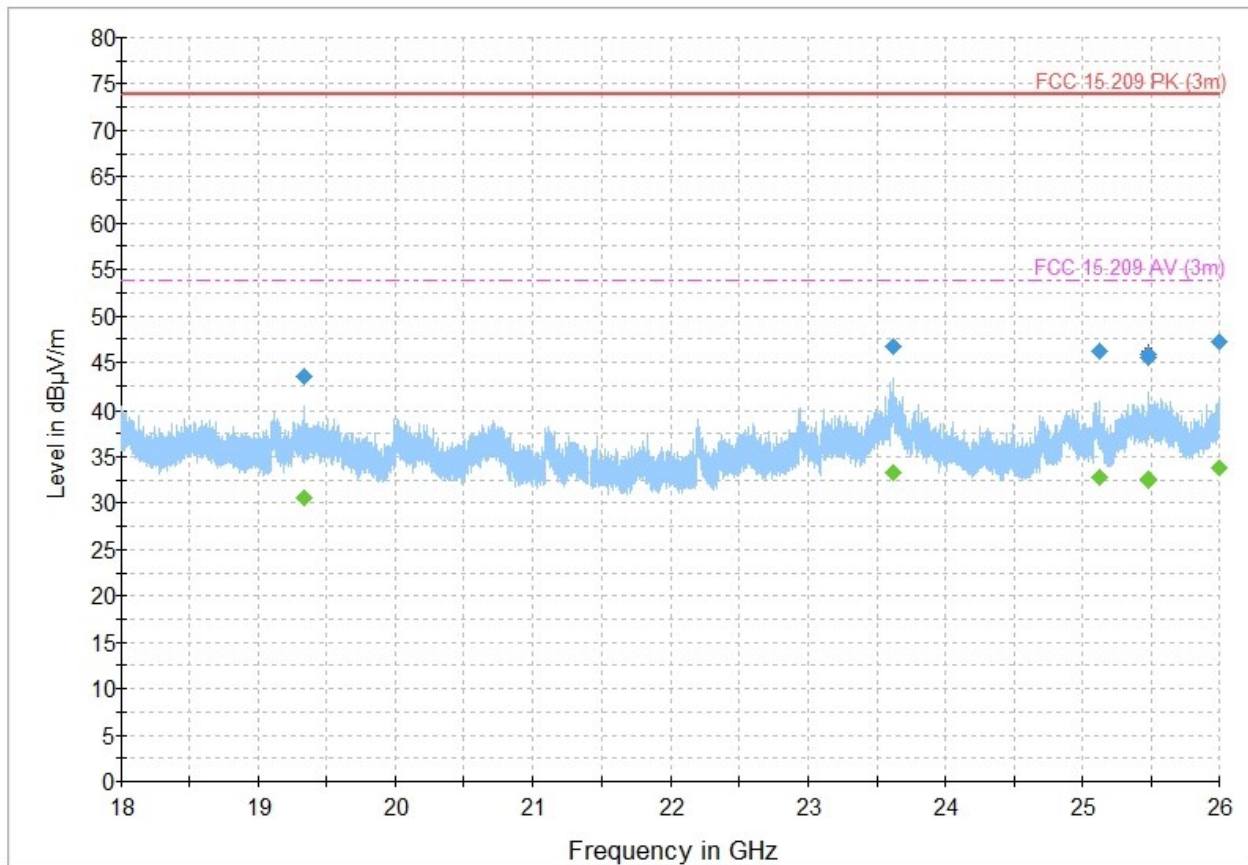


Figure 8.2-3: Radiated emissions, 18 – 26 GHz

Table 8.2-4: Radiated emissions, 18 – 26 GHz

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)
19333.833333	43.47	---	73.90	30.43	5000.0	1000.000	142.0	H	169.0	15.0
19333.833333	---	30.59	53.90	23.31	5000.0	1000.000	142.0	H	169.0	15.0
23625.300000	46.65	---	73.90	27.26	5000.0	1000.000	255.0	V	309.0	20.2
23625.300000	---	33.28	53.90	20.62	5000.0	1000.000	255.0	V	309.0	20.2
25130.233333	46.16	---	73.90	27.74	5000.0	1000.000	237.0	H	88.0	18.9
25130.233333	---	32.76	53.90	21.14	5000.0	1000.000	237.0	H	88.0	18.9
25482.766667	---	32.52	53.90	21.38	5000.0	1000.000	350.0	H	345.0	18.9
25482.766667	45.90	---	73.90	28.00	5000.0	1000.000	350.0	H	345.0	18.9
25485.566667	---	32.54	53.90	21.36	5000.0	1000.000	397.0	H	286.0	18.9
25485.566667	45.57	---	73.90	28.33	5000.0	1000.000	397.0	H	286.0	18.9
25999.433333	47.14	---	73.90	26.76	5000.0	1000.000	110.0	H	222.0	20.5
25999.433333	---	33.72	53.90	20.18	5000.0	1000.000	110.0	H	222.0	20.5

Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)

Notes: Correction factors = antenna factor ACF (dB) + cable loss (dB)

Limits converted to dBµV/m and an inverse proportionality factor of 20 dB per decade has been used to normalize the specification limit to a measurement distance of 3 meters to determine compliance.

8.3 FCC 15.249(d) and RSS-210 B.10(b) Radiated restricted band-edges

8.3.1 Definition and limits

Title 47 → Chapter I → Subchapter A → Part 15 → Subpart C → §15.249(d)
RSS-210 → §B.10(b)

- (d) Emissions radiated outside the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the less attenuation.

Table 8.3-1: FCC §15.209– Radiated emission limits

Frequency, MHz	Field strength of emissions		Measurement distance, m
	$\mu\text{V/m}$	$\text{dB}\mu\text{V/m}$	
0.009–0.490	2400/F	$67.6 - 20 \times \log_{10}(F)$	300
0.490–1.705	24000/F	$87.6 - 20 \times \log_{10}(F)$	30
1.705–30.0	30	29.5	30
30–88	100	40.0	3
88–216	150	43.5	3
216–960	200	46.0	3
above 960	500	54.0	3

Notes: In the emission table above, the tighter limit applies at the band edges.
For frequencies above 1 GHz the limit on peak RF emissions is 20 dB above the maximum permitted average emission limit applicable to the equipment under test.

Table 8.3-2: FCC restricted frequency bands

MHz	MHz	MHz	GHz
0.090–0.110	16.42–16.423	399.9–410	4.5–5.15
0.495–0.505	16.69475–16.69525	608–614	5.35–5.46
2.1735–2.1905	16.80425–16.80475	960–1240	7.25–7.75
4.125–4.128	25.5–25.67	1300–1427	8.025–8.5
4.17725–4.17775	37.5–38.25	1435–1626.5	9.0–9.2
4.20725–4.20775	73–74.6	1645.5–1646.5	9.3–9.5
6.215–6.218	74.8–75.2	1660–1710	10.6–12.7
6.26775–6.26825	108–121.94	1718.8–1722.2	13.25–13.4
6.31175–6.31225	123–138	2200–2300	14.47–14.5
8.291–8.294	149.9–150.05	2310–2390	15.35–16.2
8.362–8.366	156.52475–156.52525	2483.5–2500	17.7–21.4
8.37625–8.38675	156.7–156.9	2690–2900	22.01–23.12
8.41425–8.41475	162.0125–167.17	3260–3267	23.6–24.0
12.29–12.293	167.72–173.2	3332–3339	31.2–31.8
12.51975–12.52025	240–285	3345.8–3358	36.43–36.5
12.57675–12.57725	322–335.4	3600–4400	Above 38.6
13.36–13.41			

8.3.2 Test summary

Verdict	Pass		
Test date	September 2, 2020	Temperature	25 °C
Test engineer	James Cunningham	Air pressure	1005 mbar
Test location	3m semi-anechoic chamber	Relative humidity	56 %

8.3.3 Notes

Testing was performed with the EUT transmitting on a fixed channel at full power.

8.3.4 Setup details

EUT setup configuration	Tabletop
Test facility	3m semi anechoic chamber
Measurement method	ANSI C63.10 §6.6

Receiver/spectrum analyzer settings:

Resolution bandwidth	1 MHz
Video bandwidth	3 MHz
Detector mode	Peak and Average
Measurement time	5 s

8.3.5 Test data

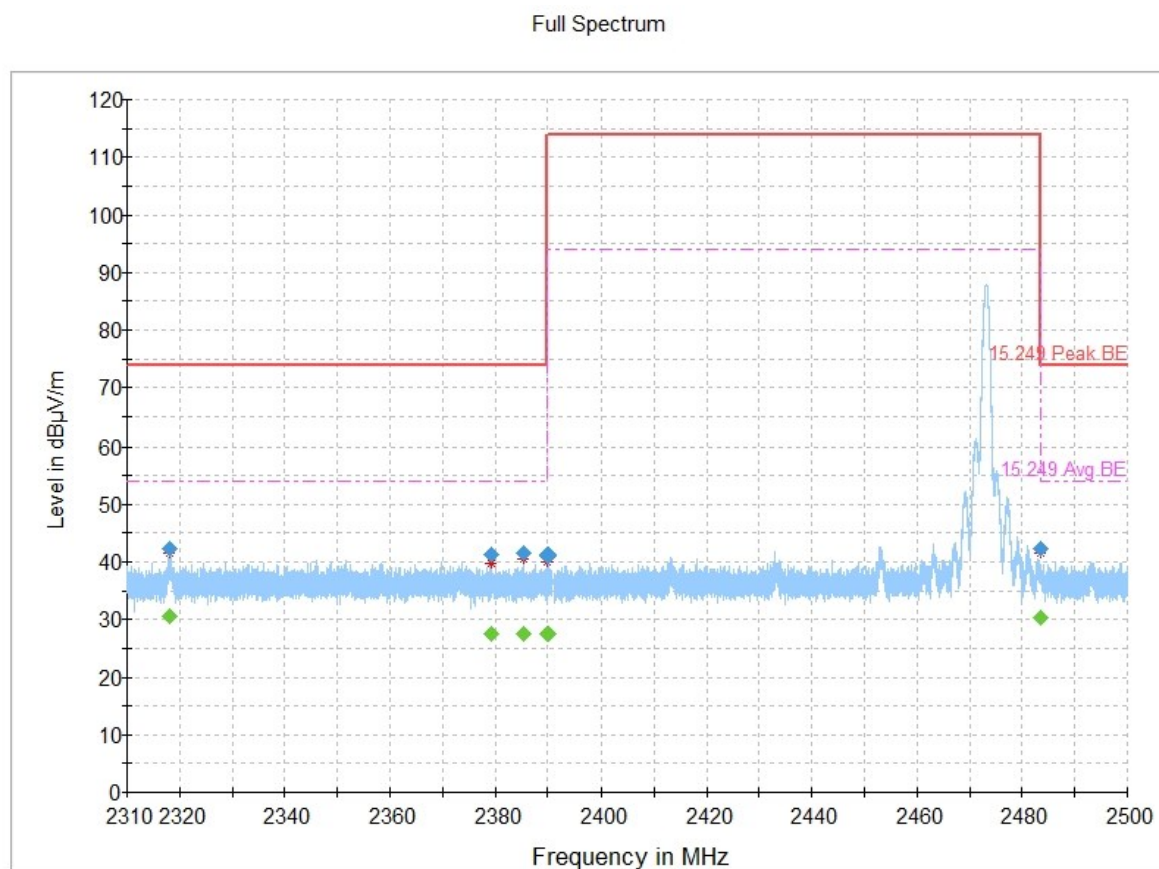


Figure 8.3-1: Radiated emissions, restricted band edges

Table 8.3-2: Radiated emissions, restricted band edges

Frequency (MHz)	QuasiPeak (dBμV/m)	CAverage (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
2318.113000	---	30.55	53.90	23.35	5000.0	1000.000	204.0	H	0.0	-9.3
2318.113000	42.18	---	73.90	31.72	5000.0	1000.000	204.0	H	0.0	-9.3
2379.312000	---	27.60	53.90	26.30	5000.0	1000.000	356.0	H	338.0	-9.0
2379.312000	41.39	---	73.90	32.51	5000.0	1000.000	128.0	V	279.0	-9.0
2385.360333	---	27.63	53.90	26.27	5000.0	1000.000	223.0	H	316.0	-9.0
2385.360333	41.59	---	73.90	32.31	5000.0	1000.000	223.0	H	316.0	-9.0
2389.781000	41.14	---	73.90	32.76	5000.0	1000.000	351.0	H	107.0	-9.0
2389.781000	---	27.62	53.90	26.28	5000.0	1000.000	351.0	H	107.0	-9.0
2390.000000	41.28	---	73.90	32.62	5000.0	1000.000	185.0	H	0.0	-9.0
2390.000000	---	27.60	53.90	26.30	5000.0	1000.000	185.0	H	0.0	-9.0
2483.500000	42.20	---	73.90	31.70	5000.0	1000.000	187.0	H	351.0	-8.6
2483.500000	---	30.32	53.90	23.58	5000.0	1000.000	187.0	H	351.0	-8.6

Notes:

Field strength (dBμV/m) = receiver/spectrum analyzer value (dBμV) + correction factor (dB)

Correction factors = antenna factor ACF (dB) + cable loss (dB)

Limits converted to dBμV/m and an inverse proportionality factor of 20 dB per decade has been used to normalize the specification limit to a measurement distance of 3 meters to determine compliance.

8.4 RSS-GEN 6.7 Occupied bandwidth (or 99% emission bandwidth)

8.4.1 References

RSS-Gen → §6.7

The occupied bandwidth or the “99% emission bandwidth” is defined as the frequency range between two points, one above and the other below the carrier frequency, within which 99% of the total transmitted power of the fundamental transmitted emission is contained. The occupied bandwidth shall be reported for all equipment in addition to the specified bandwidth required in the applicable RSSs.

8.4.2 Test summary

Verdict	Pass		
Test date	September 2, 2020	Temperature	25 °C
Test engineer	James Cunningham	Air pressure	1005 mbar
Test location	Wireless bench	Relative humidity	56 %

8.4.3 Notes

Testing was performed with the EUT transmitting on a fixed channel at full power.

8.4.4 Setup details

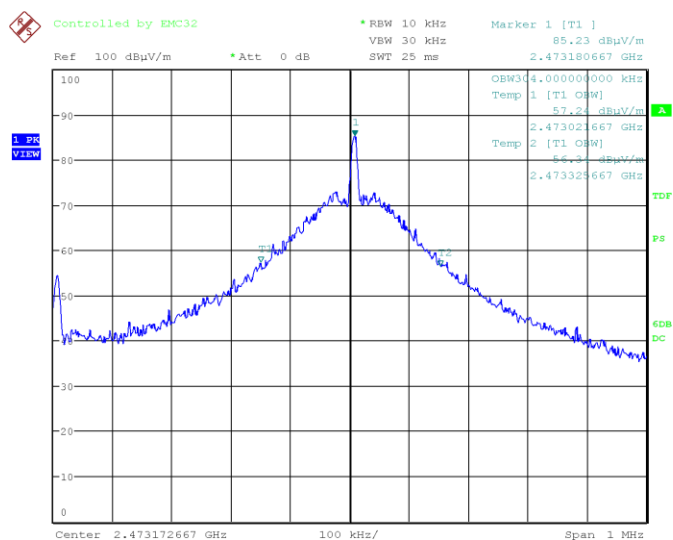
EUT setup configuration	Tabletop
Test facility	3m semi anechoic chamber
Measurement details	Measurement performed as per C63.10 §6.9.3 using the built-in function of the spectrum analyzer

Receiver/spectrum analyzer settings:

Resolution bandwidth	100 kHz
Video bandwidth	300 kHz
Detector mode	Peak
Trace mode	Max Hold
Measurement time	Long enough for trace to stabilize

RSS-GEN 6.7 Occupied bandwidth (or 99% emission bandwidth)

8.4.5 Test data



Date: 3.SEP.2020 02:13:55

Figure 8.4-1: 99 % bandwidth

Table 8.4-1: 99 % bandwidth

Test Frequency (MHz)	99%Bandwidth (MHz)
2473.18	0.304

8.5 FCC 15.207(a) and IC RSS-GEN AC power line conducted emissions

8.5.1 Definition and limits

Title 47 → Chapter I → Subchapter A → Part 15 → Subpart C → §15.207(a)
RSS-Gen → §8.8

For low-power radio-frequency devices that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μ H/50 Ω line impedance stabilization network (LISN). The lower limit applies at the boundary between the frequency ranges.

Table 8.5-1: Conducted emissions limit

Frequency of emission, MHz	Conducted limit, dB μ V	
	Quasi-peak	Average
0.15–0.5	66 to 56*	56 to 46*
0.5–5	56	46
5–30	60	50

Note: * - Decreases with the logarithm of the frequency.

8.5.2 Test summary

Verdict	Pass		
Test date	September 28, 2020	Temperature	20 °C
Test engineer	James Cunningham	Air pressure	1009 mbar
Test location	Ground plane	Relative humidity	56 %

8.5.3 Notes

Testing was performed with the EUT transmitting on a fixed channel at full power. The EUT was connected to the USB port of the support Laptop PC. the emissions measurements were performed on the AC mains port of the support Laptop PC.

Testing was performed according to ANSI C63.10 §6.2.

8.5.4 Setup details

Port under test	AC mains
EUT setup configuration	Tabletop
Measurement details	A preview measurement was generated with the receiver in continuous scan mode. Emissions detected within 6 dB or above limit were re-measured with the appropriate detector against the correlating limit and recorded as the final measurement.

Receiver settings:

Resolution bandwidth	9 kHz
Video bandwidth	30 kHz
Detector mode	– Peak and Average (Preview measurement) – Quasi-peak and CAverage (Final measurement)
Trace mode	Max Hold
Measurement time	– 100 ms (Peak and Average preview measurement) – 5000 ms (Quasi-peak final measurement) – 5000 ms (CAverage final measurement)

8.5.5 Test data

Full Spectrum

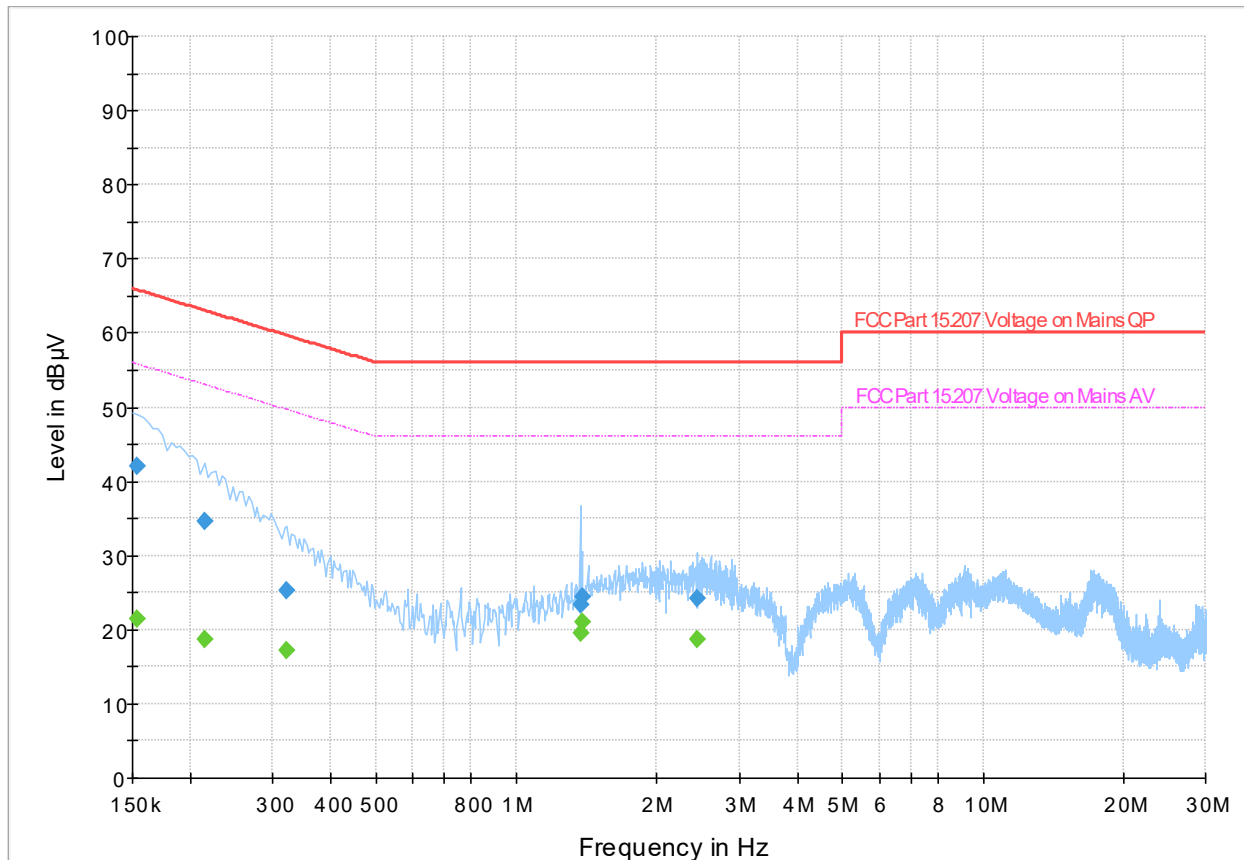


Figure 8.5-1: AC conducted emissions

Table 8.5-2: AC conducted emissions, 150 kHz – 30 MHz

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.154000	---	21.47	55.78	34.31	5000.0	9.000	N	ON	19.6
0.154000	41.93	---	65.78	23.85	5000.0	9.000	N	ON	19.6
0.214000	---	18.63	53.05	34.41	5000.0	9.000	N	ON	19.5
0.214000	34.57	---	63.05	28.48	5000.0	9.000	N	ON	19.5
0.322000	---	17.14	49.66	32.51	5000.0	9.000	N	ON	19.4
0.322000	25.24	---	59.66	34.41	5000.0	9.000	N	ON	19.4
1.370000	---	19.61	46.00	26.39	5000.0	9.000	N	ON	19.4
1.370000	23.39	---	56.00	32.61	5000.0	9.000	N	ON	19.4
1.382000	---	21.02	46.00	24.98	5000.0	9.000	N	ON	19.4
1.382000	24.48	---	56.00	31.52	5000.0	9.000	N	ON	19.4
2.438000	---	18.60	46.00	27.40	5000.0	9.000	N	ON	19.3
2.438000	24.29	---	56.00	31.71	5000.0	9.000	N	ON	19.3

Notes:

Result (dBµV) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)
 Correction factor (dB) = LISN factor IL (dB) + cable loss (dB) + transient limiter (dB)
 The maximum measured value observed over a period of 5 seconds was recorded.

Section 9 Block diagrams of test set-ups

9.1 Radiated emissions set-up

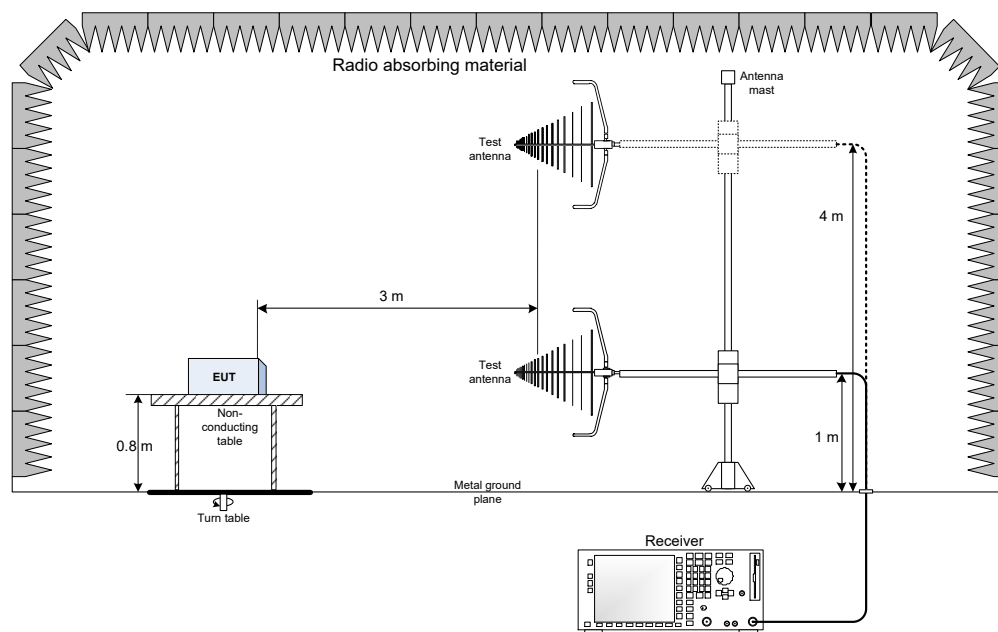


Figure 9.1-1 30 MHz - 1000 MHz Setup

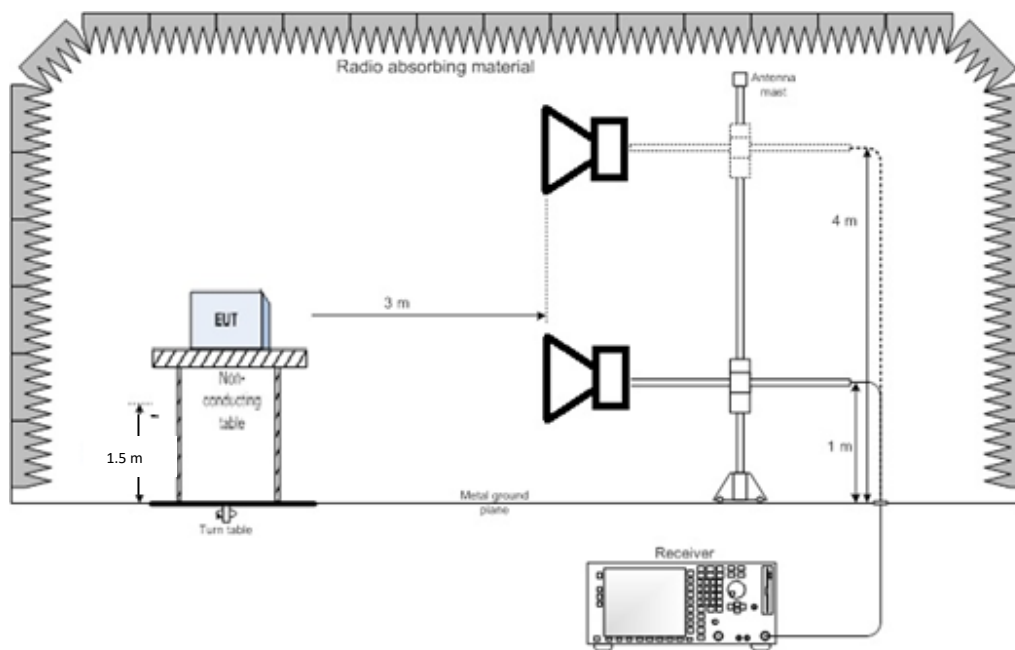


Figure 9.1-2 1 GHz - 26 GHz Setup

Thank you for choosing

