

Test report

435594-2R1TRFWL

Date of issue: May 26, 2021

Applicant:

Edge Networks Inc.

Product:

Communication Module

Model:

EvocaScoutV2

FCC ID:

2AWBYENI-1VA

Specifications:

- ◆ **FCC 47 CFR Part 15, Subpart C – §15.247**
Operation within the bands 902 – 928 MHz, 2400 – 2483.5 MHz, 5727 – 5850 MHz
- ◆ **Industry Canada RSS-247, Issue 2**
Digital Transmission Systems (DTSS), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices

Lab and test locations

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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	David Hewitt, EMC Specialist
Reviewed by	James Cunningham
Review date	May 26, 2021
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 contained 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	Edge Networks Inc.
Address	PO Box 5860
City	Ketchum
State	ID
Postal/Zip code	83340
Country	USA

1.2 Manufacturer

Company name	Edge Networks Inc.
Address	PO Box 5860
City	Ketchum
State	ID
Postal/Zip code	83340
Country	USA

1.3 Test specifications

FCC 47 CFR Part 15, Subpart C – §15.247	Operation within the bands 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz
IC RSS-247 Issue 2	Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices

1.4 Test methods

ANSI C63.10-2013	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
558074 D01 DTS Measurement Guidance v03r02 (June 5, 2014)	Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247

1.5 Exclusions

Testing includes Radiated Spurious measurements and Restricted Band Edge measurements only.

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 except as noted in section 1.5 above. 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
435594-2TRFWL	Original report issued
435594-2R1TRFWL	Corrected product name and model number
Notes:	None

Section 2 Summary of test results

2.1 FCC Part 15 Subpart C, general requirements

Part	Test description	Verdict
§15.207(a)	Conducted limits	Not tested
§15.31(e)	Variation of power source	Not tested
§15.203	Antenna requirement	Not tested

Notes: EUT is AC powered
The antenna is located within the protective cover of EUT on PCB

2.2 FCC Part 15.247

Part	Test description	Verdict
§15.247(a)(1)(i)	Frequency hopping systems operating in the 902–928 MHz band	Not applicable
§15.247(a)(1)(ii)	Frequency hopping systems operating in the 5725–5850 MHz band	Not applicable
§15.247(a)(1)(iii)	Frequency hopping systems operating in the 2400–2483.5 MHz band	Not applicable
§15.247(a)(2)	Minimum 6 dB bandwidth for systems using digital modulation techniques	Not tested
§15.247(b)(1)	Maximum peak output power of frequency hopping systems operating in the 2400–2483.5 MHz band and 5725–5850 MHz band	Not tested
§15.247(b)(2)	Maximum peak output power of Frequency hopping systems operating in the 902–928 MHz band	Not applicable
§15.247(b)(3)	Maximum peak output power of systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands	Not applicable
§15.247(b)(4)	Transmitting antennas of directional gain greater than 6 dBi	Not applicable
§15.247(c)(1)	Fixed point-to-point operation with directional antenna gains greater than 6 dBi	Not applicable
§15.247(c)(2)	Transmitters operating in the 2400–2483.5 MHz band that emit multiple directional beams	Not applicable
§15.247(d)	Spurious emissions	Pass
§15.247(e)	Power spectral density for digitally modulated devices	Not tested
§15.247(f)	Time of occupancy for hybrid systems	Not tested

2.3 IC RSS-247, Issue 2

Part	Test description	Verdict
5.1 (a)	Bandwidth of a frequency hopping channel	Not tested
5.1 (b)	Minimum channel spacing for frequency hopping systems	Not tested
5.1 (c)	Frequency hopping systems operating in the 902–928 MHz band	Not applicable
5.1 (d)	Frequency hopping systems operating in the 2400–2483.5 MHz band	Not tested
5.1 (e)	Frequency hopping systems operating in the 5725–5850 MHz band	Not applicable
5.2 (a)	Minimum 6 dB bandwidth	Not tested
5.2 (b)	Maximum power spectral density	Not tested
5.3 (a)	Digital modulation turned off	Not tested
5.3 (b)	Frequency hopping turned off	Not tested
5.4 (a)	Frequency hopping systems operating in the 902–928 MHz band	Not applicable
5.4 (b)	Frequency hopping systems operating in the 2400–2483.5 MHz band	Not tested
5.4 (c)	Frequency hopping systems operating in the 5725–5850 MHz	Not applicable
5.4 (d)	Systems employing digital modulation techniques	Not tested
5.4 (e)	Point-to-point systems in 2400–2483.5 MHz and 5725–5850 MHz band	Not tested
5.4 (f)	Transmitters which operate in the 2400–2483.5 MHz band with multiple directional beams	Not tested
5.5	Out-of-band emissions	Pass

2.4 IC RSS-GEN, Issue 5

Part	Test description	Verdict
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	Not tested

Section 3 Equipment under test (EUT) details

3.1 Sample information

Receipt date	April 26, 2021
Nemko sample ID number	NEx: 435594

3.2 EUT information

Product name	Communications Module
Model	EvocaScoutV2
Serial number	SS9011003
Part number	3061344CB449
FCC ID	2AWBYENI-1VA

3.3 Technical information

Used IC test site(s) reg. number	2040A
RSS number and issue	RSS-247 issue 2 (February 2017)
Frequency band	2400 – 2483.5 MHz
Minimum frequency (MHz)	2400
Maximum frequency (MHz)	2483.5
Type of modulation	GFSK
Emission classification	F1D
Power requirements	3.3 V _{DC} ; 800 mA
Antenna information	3.6 dBi gain, PCB SMT Antenna

3.4 EUT exercise and monitoring details

EUT was tested while modulated on the low, mid, and high channels.

Table 3.4-1: EUT sub assemblies

Description	Brand name	Model/Part number	Serial number	Rev.
ENI-1VA	Murata Manufacturing Co., Ltd.	M/N: LBEE5XV1VA P/N: 3061344CB449	SS9011003	A

Table 3.4-2: EUT interface ports

Description	Qty.
USB-C	1
Ethernet	1
HDMI	1
F-type Coax	1

Table 3.4-3: Support equipment

Description	Brand name	Model/Part number	Serial number	Rev.
Support Laptop	Dell	Inspiron 15-5548	20814012794	--

Table 3.4-4: Inter-connection cables

Cable description	From	To	Length (m)
Ethernet	Support Laptop	EUT	10

3.5 EUT setup diagram

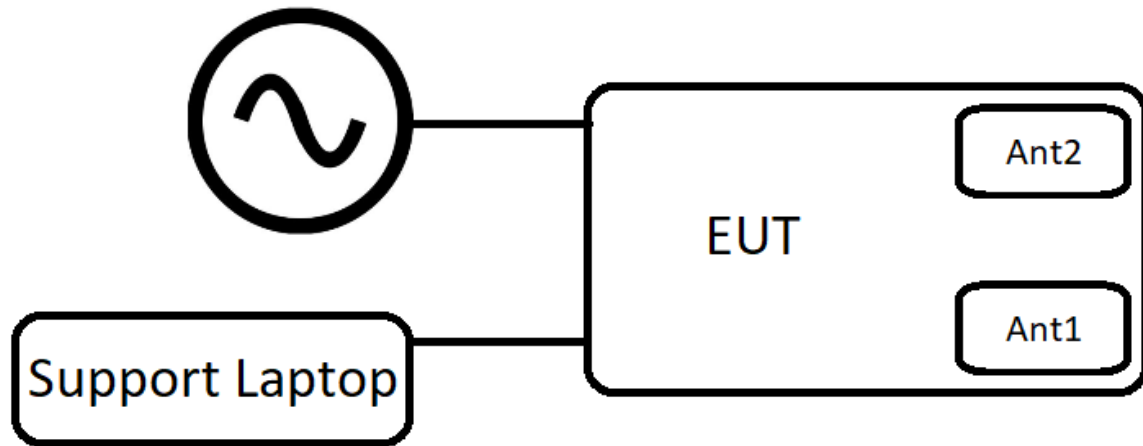


Figure 3.5-1: Setup diagram

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 $\pm 5\%$, 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	Rental equipment	1 yr	17 Jun 2021
System Controller	Sunol Sciences	SC104V	E1191	NCR	NCR
Bilog Antenna (30-1000 MHz)	Schaffner	CBL 6111D	1763	2 yr	18 Feb 2022
DRG Horn (1-18 GHz)	ETS-Lindgren	3117-PA	E1160	1 yr	2 Dec 2021
Horn antenna (18-26 GHz)	Sage Millimeter, Inc.	SAR-2309-42-S2	E1143	2 yr	13 Nov 2022
Low Noise Pre Amp	Sage Millimeter, Inc.	SBL-1834034030-KFKF	E1228	NCR	NCR
Notch Filter (2.4 GHz)	Micro-Tonics	HPM50110-01	E1142	NCR	NCR

Notes: NCR - no calibration required

Table 6.1-2: Test Software

Manufacturer of Software	Details
Rohde & Schwarz	EMC 32 V10.60.15 (radiated emissions)

Notes: None

Section 8 Testing data

8.1 FCC 15.247(d) and RSS-247 5.5 Radiated restricted band-edges and spurious emission

8.1.1 Definition and limits

Title 47 → Chapter I → Subchapter A → Part 15 → Subpart C → §15.247(d)

- (d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

RSS-247 → §5.5

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under section 5.4(d), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.

Table 8.1-1: FCC §15.209– Radiated emission limits

Frequency, MHz	Field strength of emissions		Measurement distance, m
	μV/m	dBμV/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 8.1-2: 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			

8.1.2 Test summary

Verdict	Pass		
Test date	April 26, 2021	Temperature	22 °C
Test engineer	David Hewitt, EMC Specialist	Air pressure	1004 mbar
Test location	3m semi-anechoic chamber (Radiated)	Relative humidity	47 %
Test date	April 28, 2021	Temperature	19 °C
Test engineer	David Hewitt, EMC Specialist	Air pressure	1010 mbar
Test location	3m semi-anechoic chamber (Radiated)	Relative humidity	49 %
Test date	May 3, 2021	Temperature	22 °C
Test engineer	David Hewitt, EMC Specialist	Air pressure	1002 mbar
Test location	3m semi-anechoic chamber (Radiated)	Relative humidity	56 %

8.1.3 Notes

The EUT was configured to transmit continuously on the lowest, middle and highest channels.

The spectrum was search from 30 MHz to 26 GHz (above the 10th harmonic of the highest transmit frequency of 2480 MHz). Measurements from 30 – 1000 MHz were performed on all 3 channels with only the middle channel data reported as representative worst case.

Radiated measurements were performed at a 3 m measurement distance.

For conducted measurements, the loss of the connected cable and attenuator was input into the spectrum analyzer as a transducer factor.

8.1.4 Setup details

EUT setup configuration	Tabletop
Test facility	Nemko San Diego
Measurement details	Radiated spurious emissions measurement performed as per C63.10 §11.12

Receiver settings for radiated measurements within restricted bands 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 within restricted bands above 1 GHz:

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

8.1.5 Test data

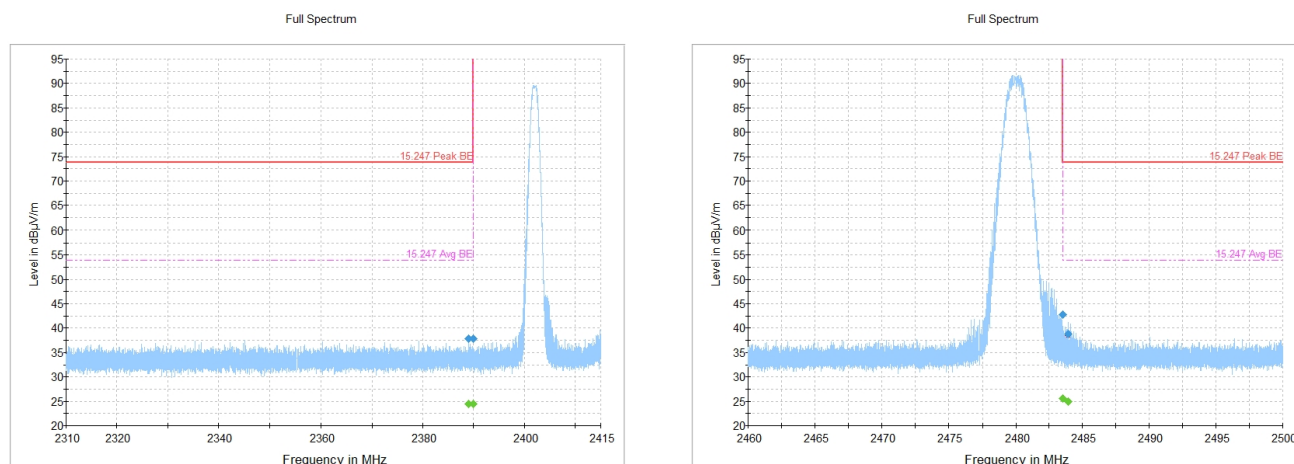


Figure 8.1-1: Radiated emissions, restricted band edge, BLE

Table 8.1-2: Radiated emissions, restricted band edge, BLE low channel

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)
2389.089500	---	24.42	53.90	29.48	5000.0	1000.000	367.0	V	306.0	-10.1
2389.089500	37.78	---	73.90	36.12	5000.0	1000.000	367.0	V	306.0	-10.1
2390.000000	---	24.42	53.90	29.48	5000.0	1000.000	326.0	V	299.0	-10.1
2390.000000	37.88	---	73.90	36.02	5000.0	1000.000	326.0	V	299.0	-10.1

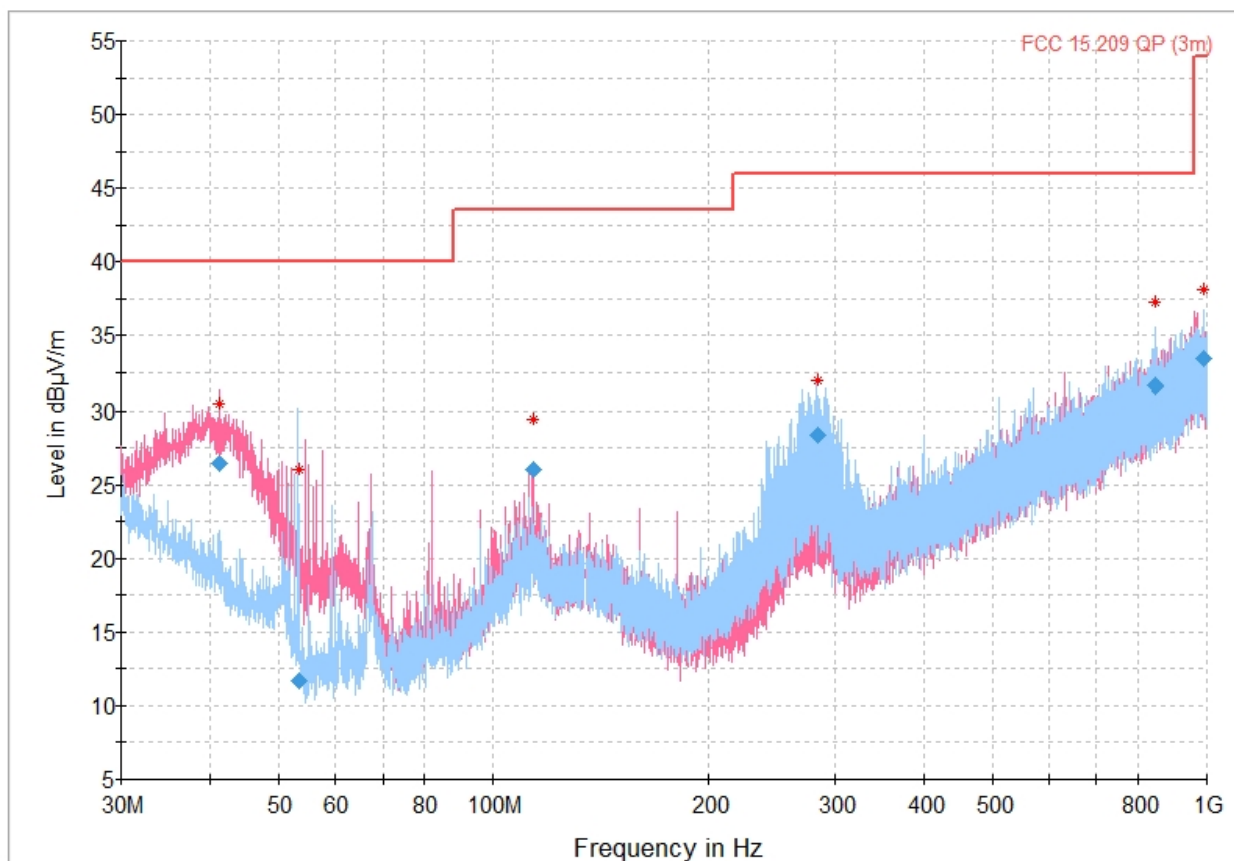
Notes: ¹ Field strength (dBμV/m) = receiver/spectrum analyzer value (dBμV) + correction factor (dB)² Correction factors = antenna factor ACF (dB) + cable loss (dB) – pre-amp (dB)

Table 8.1-3: Radiated emissions, restricted band edge, BLE high channel

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)
2483.500000	42.77	---	73.90	31.13	5000.0	1000.000	102.0	V	128.0	-9.5
2483.500000	---	25.58	53.90	28.32	5000.0	1000.000	102.0	V	128.0	-9.5
2483.928000	38.82	---	73.90	35.08	5000.0	1000.000	244.0	H	207.0	-9.5
2483.928000	---	24.95	53.90	28.95	5000.0	1000.000	244.0	H	207.0	-9.5

Notes: ¹ Field strength (dBμV/m) = receiver/spectrum analyzer value (dBμV) + correction factor (dB)² Correction factors = antenna factor ACF (dB) + cable loss (dB) – pre-amp (dB)

Full Spectrum



The spectral scan has been corrected with the associated transducer factors (i.e. antenna factors, cable loss, amplifier gains, and attenuators).

Figure 8.1-2: Radiated emissions, low channel, 30 – 1000 MHz spectral plot, BLE mid channel

Table 8.1-4: Radiated emissions, low channel, 30 – 1000 MHz (Quasi-Peak) results, BLE mid channel

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
41.312000	26.48	40.00	13.52	5000.0	120.000	109.0	V	0.0	20.3
53.435333	11.68	40.00	28.32	5000.0	120.000	410.0	H	41.0	14.4
113.674000	26.06	43.50	17.44	5000.0	120.000	400.0	V	89.0	19.1
284.016333	28.36	46.00	17.64	5000.0	120.000	118.0	H	248.0	21.5
847.765000	31.61	46.00	14.39	5000.0	120.000	186.0	H	0.0	32.8
989.437667	33.46	53.90	20.44	5000.0	120.000	365.0	H	0.0	34.3

Notes:

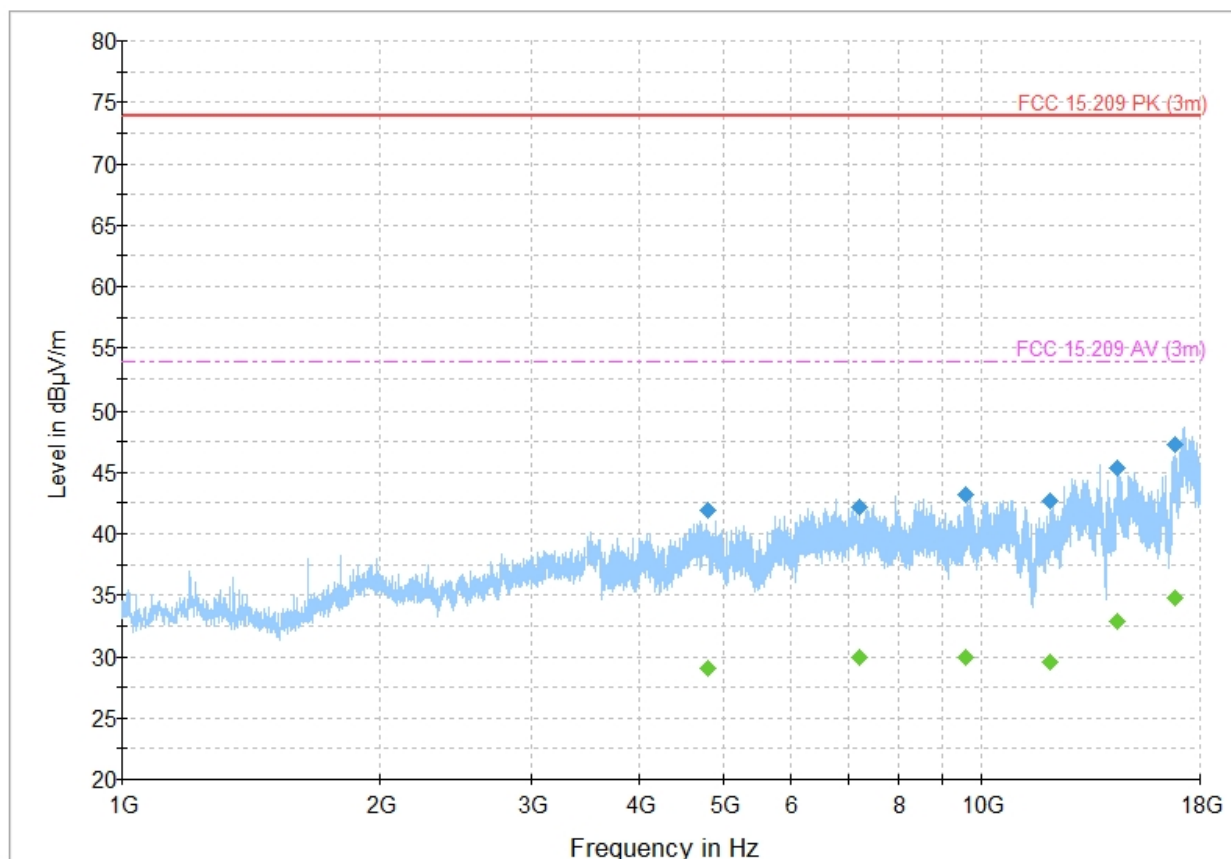
¹ Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)

² Correction factor = antenna factor ACF (dB) + cable loss (dB)

³ The maximum measured value observed over a period of 5 seconds was recorded.

⁴ 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



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).

Figure 8.1-3: Radiated emissions, low channel, 1 – 18 GHz spectral plot

Table 8.1-5: Radiated emissions, low channel, 1 – 18 GHz results

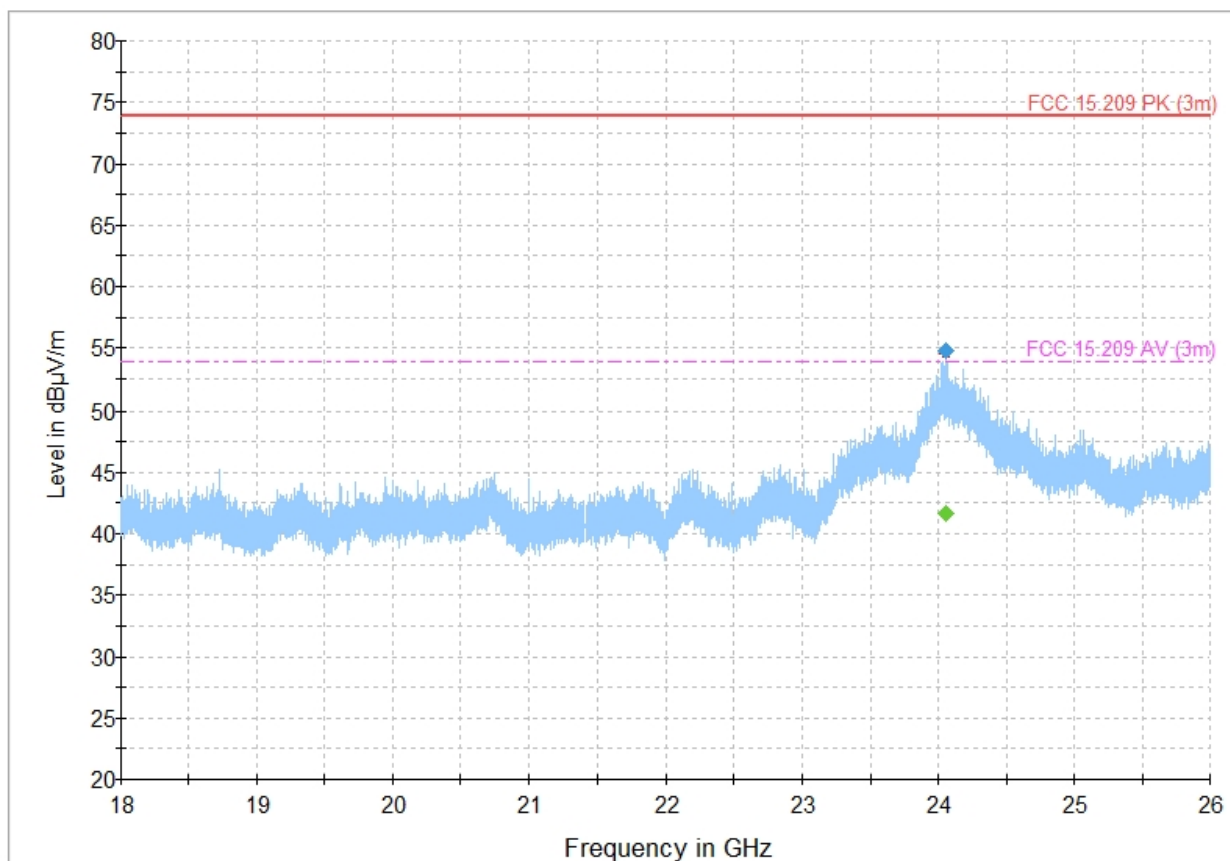
Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4799.200000	---	29.09	53.90	24.81	1000.0	1000.000	387.0	H	142.0	-1.7
4799.200000	41.91	---	73.90	31.99	1000.0	1000.000	387.0	H	142.0	-1.7
7206.400000	---	29.93	53.90	23.97	1000.0	1000.000	410.0	H	260.0	0.7
7206.400000	42.18	---	73.90	31.72	1000.0	1000.000	410.0	H	260.0	0.7
9602.400000	---	29.94	53.90	23.96	1000.0	1000.000	370.0	H	20.0	3.9
9602.400000	43.17	---	73.90	30.73	1000.0	1000.000	370.0	H	20.0	3.9
12010.400000	---	29.52	53.90	24.38	1000.0	1000.000	252.0	H	299.0	6.2
12010.400000	42.69	---	73.90	31.21	1000.0	1000.000	252.0	H	299.0	6.2
14409.200000	---	32.90	53.90	21.00	1000.0	1000.000	187.0	H	106.0	9.7
14409.200000	45.29	---	73.90	28.61	1000.0	1000.000	187.0	H	106.0	9.7
16820.000000	---	34.72	53.90	19.18	1000.0	1000.000	310.0	V	302.0	13.7
16820.000000	47.24	---	73.90	26.66	1000.0	1000.000	310.0	V	302.0	13.7

Notes: ¹ Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)

² Correction factor = antenna factor ACF (dB) + cable loss (dB) - pre amp (dB)

³ The maximum measured value observed over a period of 5 seconds was recorded.

Full Spectrum



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).

Figure 8.1-4: Radiated emissions, low channel, 18 – 26 GHz spectral plot

Table 8.1-6: Radiated emissions, low channel, 18 – 26 GHz results

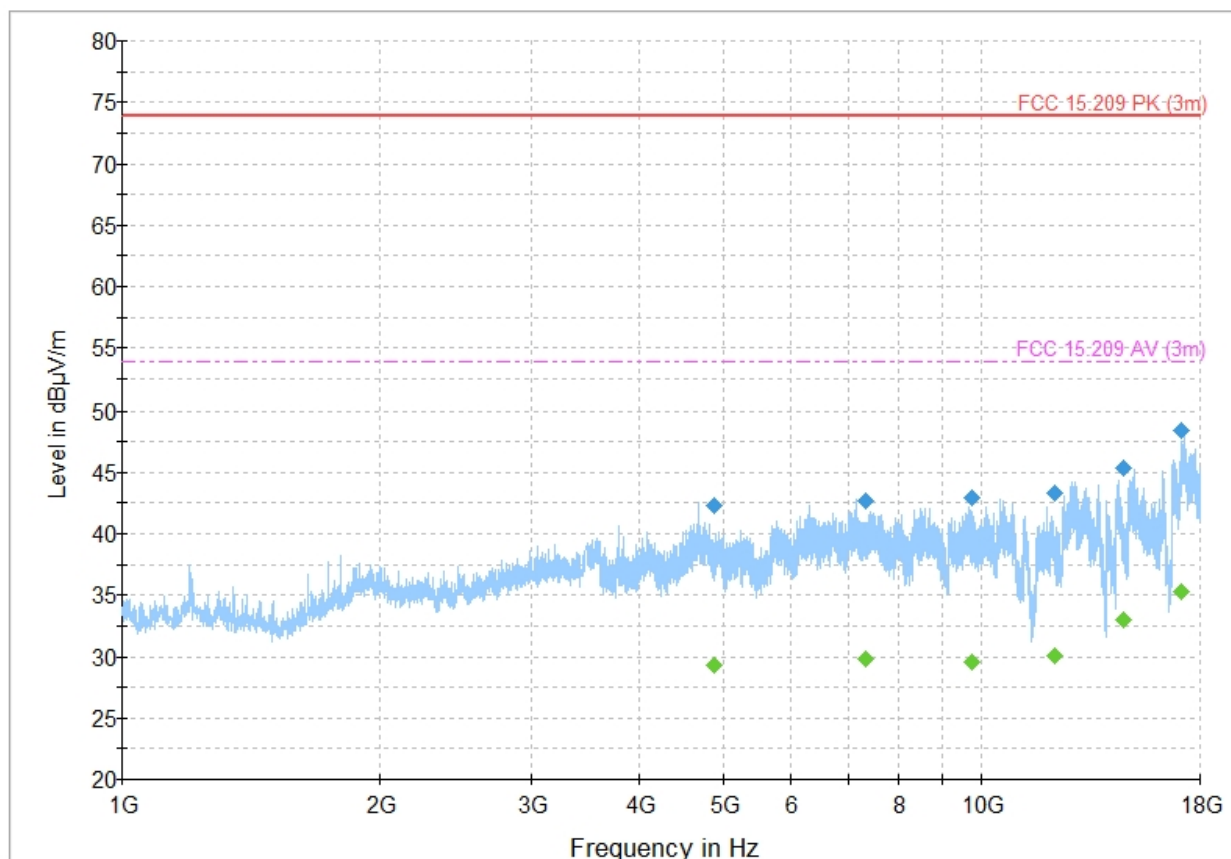
Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
24061.900000	---	41.63	53.90	12.27	5000.0	1000.000	125.0	H	322.0	29.7
24061.900000	54.84	---	73.90	19.06	5000.0	1000.000	125.0	H	322.0	29.7

Notes: ¹ Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)

² Correction factor = antenna factor ACF (dB) + cable loss (dB) - pre amp (dB)

³ The maximum measured value observed over a period of 5 seconds was recorded.

Full Spectrum



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).

Figure 8.1-5: Radiated emissions, middle channel, 1 – 18 GHz spectral plot

Table 8.1-7: Radiated emissions, middle channel, 1 – 18 GHz results

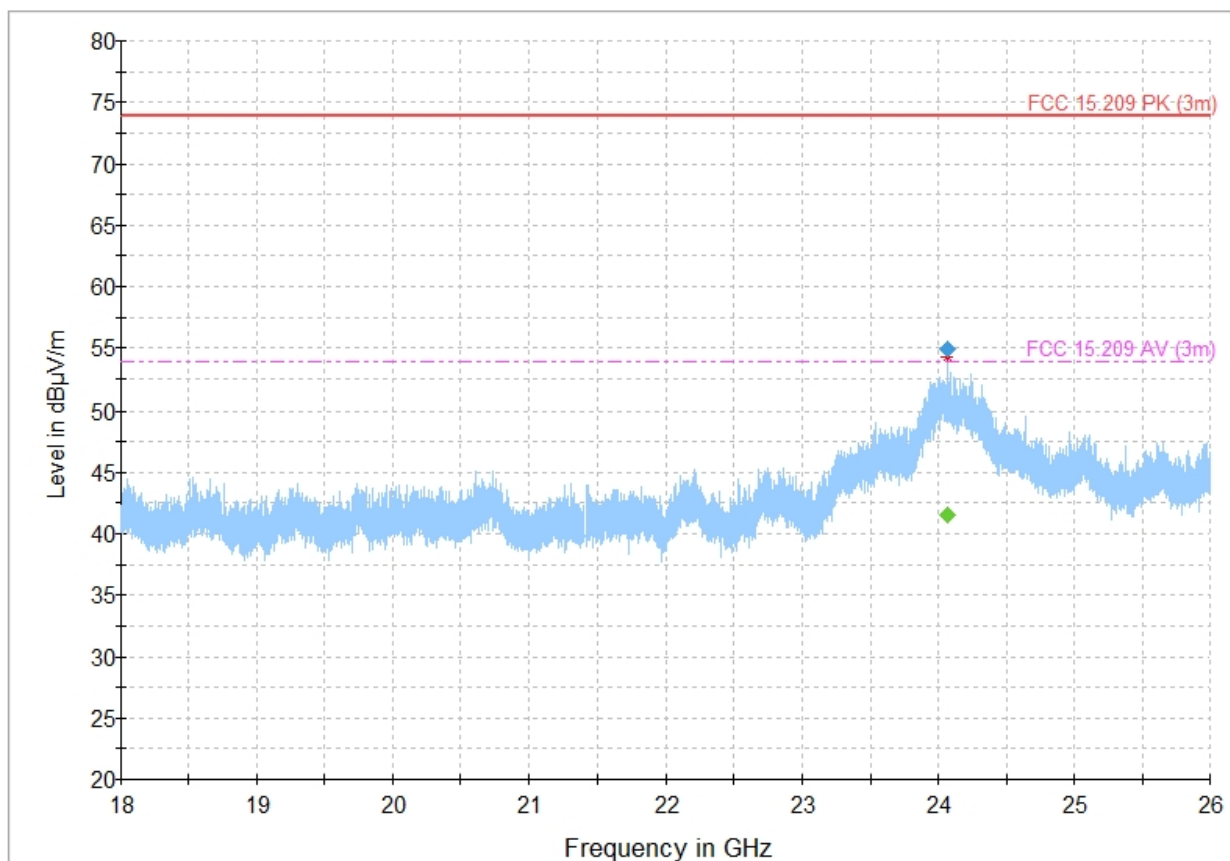
Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4883.600000	---	29.31	53.90	24.59	1000.0	1000.000	138.0	H	128.0	-2.0
4883.600000	42.24	---	73.90	31.66	1000.0	1000.000	138.0	H	128.0	-2.0
7325.600000	---	29.86	53.90	24.04	1000.0	1000.000	171.0	H	274.0	0.8
7325.600000	42.65	---	73.90	31.25	1000.0	1000.000	171.0	H	274.0	0.8
9768.800000	---	29.51	53.90	24.39	1000.0	1000.000	211.0	H	178.0	3.7
9768.800000	42.89	---	73.90	31.01	1000.0	1000.000	211.0	H	178.0	3.7
12210.400000	---	30.03	53.90	23.87	1000.0	1000.000	306.0	H	336.0	6.8
12210.400000	43.26	---	73.90	30.64	1000.0	1000.000	306.0	H	336.0	6.8
14648.800000	---	33.00	53.90	20.90	1000.0	1000.000	229.0	V	167.0	9.6
14648.800000	45.32	---	73.90	28.58	1000.0	1000.000	229.0	V	167.0	9.6
17091.600000	---	35.23	53.90	18.67	1000.0	1000.000	183.0	V	0.0	13.7
17091.600000	48.45	---	73.90	25.45	1000.0	1000.000	183.0	V	0.0	13.7

Notes: ¹ Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)

² Correction factor = antenna factor ACF (dB) + cable loss (dB) - pre amp (dB)

³ The maximum measured value observed over a period of 5 seconds was recorded.

Full Spectrum



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).

Figure 8.1-6: Radiated emissions, middle channel, 18 – 26 GHz spectral plot

Table 8.1-8: Radiated emissions, middle channel, 18 – 26 GHz results

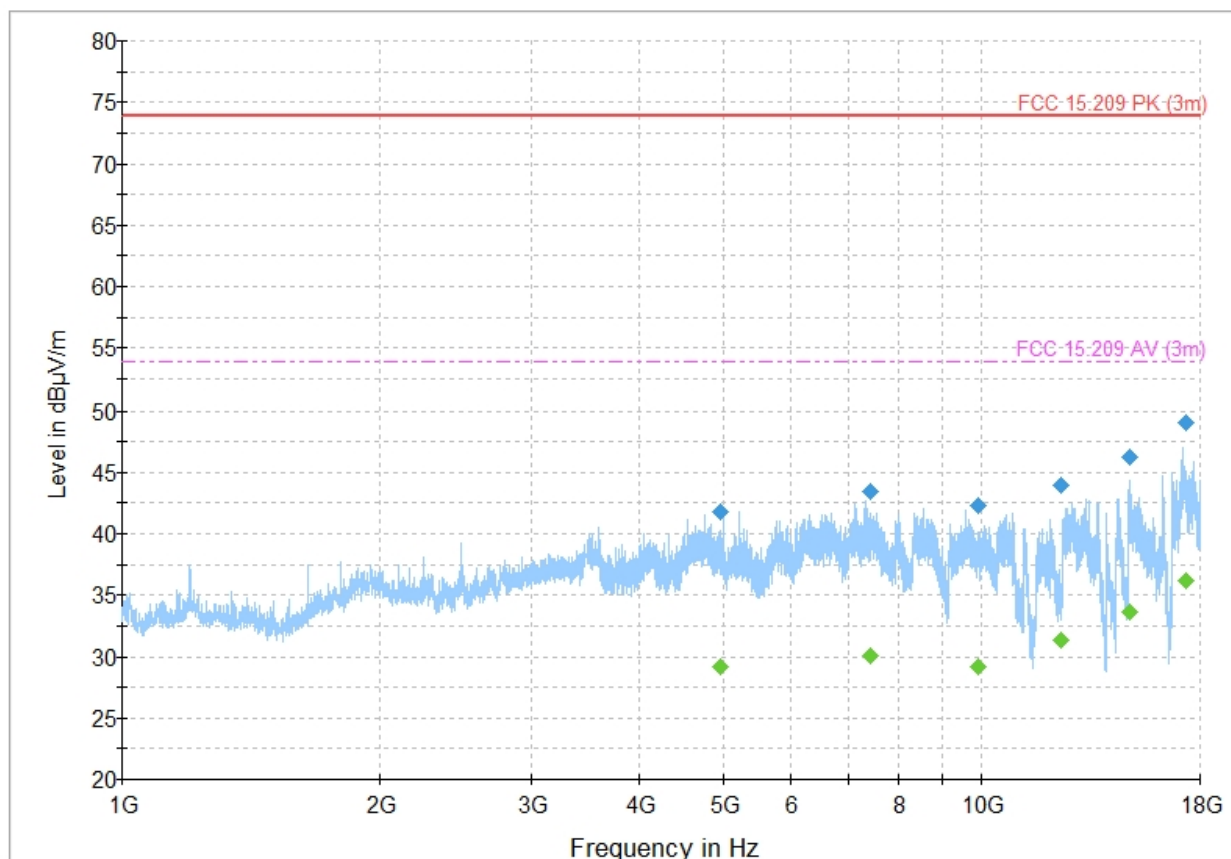
Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
24064.633333	---	41.49	53.90	12.41	5000.0	1000.000	165.0	V	0.0	29.7
24064.633333	54.85	---	73.90	19.05	5000.0	1000.000	165.0	V	0.0	29.7

Notes: ¹ Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)

² Correction factor = antenna factor ACF (dB) + cable loss (dB) - pre amp (dB)

³ The maximum measured value observed over a period of 5 seconds was recorded.

Full Spectrum



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).

Figure 8.1-7: Radiated emissions, high channel, 1 – 18 GHz spectral plot

Table 8.1-9: Radiated emissions, high channel, 1 – 18 GHz results

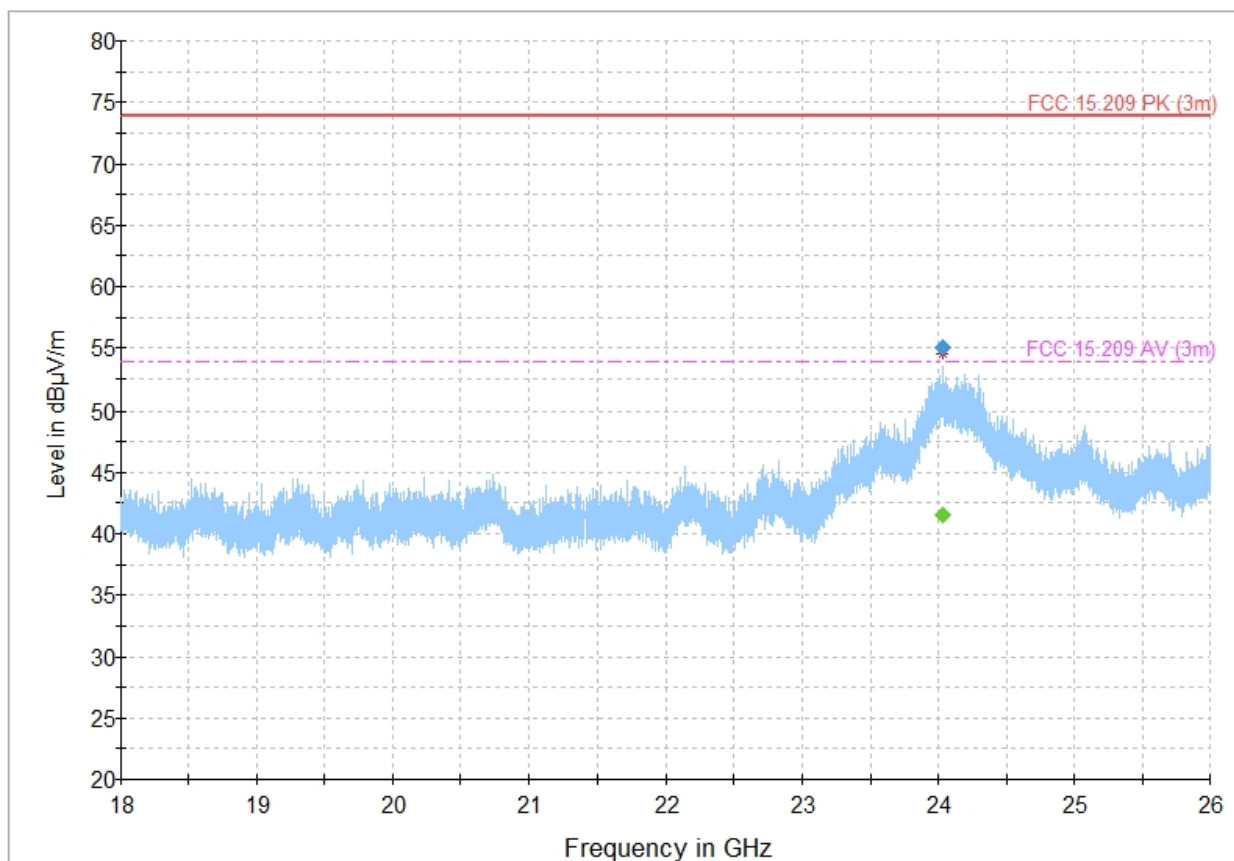
Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4957.600000	---	29.12	53.90	24.78	1000.0	1000.000	311.0	H	338.0	-2.1
4957.600000	41.72	---	73.90	32.18	1000.0	1000.000	311.0	H	338.0	-2.1
7438.400000	---	30.10	53.90	23.80	1000.0	1000.000	112.0	H	290.0	1.3
7438.400000	43.46	---	73.90	30.44	1000.0	1000.000	112.0	H	290.0	1.3
9920.800000	---	29.18	53.90	24.72	1000.0	1000.000	295.0	H	342.0	3.5
9920.800000	42.32	---	73.90	31.58	1000.0	1000.000	295.0	H	342.0	3.5
12395.200000	---	31.30	53.90	22.60	1000.0	1000.000	180.0	V	0.0	7.4
12395.200000	43.91	---	73.90	29.99	1000.0	1000.000	180.0	V	0.0	7.4
14876.000000	---	33.57	53.90	20.33	1000.0	1000.000	280.0	V	153.0	10.0
14876.000000	46.25	---	73.90	27.65	1000.0	1000.000	280.0	V	153.0	10.0
17360.000000	---	36.17	53.90	17.73	1000.0	1000.000	365.0	V	239.0	13.5
17360.000000	49.02	---	73.90	24.88	1000.0	1000.000	365.0	V	239.0	13.5

Notes: ¹ Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)

² Correction factor = antenna factor ACF (dB) + cable loss (dB) - pre amp (dB)

³ The maximum measured value observed over a period of 5 seconds was recorded.

Full Spectrum



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).

Figure 8.1-8: Radiated emissions, high channel, 18 – 26 GHz spectral plot

Table 8.1-10: Radiated emissions, high channel, 18 – 26 GHz results

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)
24032.766667	---	41.59	53.90	12.31	5000.0	1000.000	176.0	V	92.0	29.7
24032.766667	55.04	---	73.90	18.86	5000.0	1000.000	176.0	V	92.0	29.7

Notes: ¹ Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)

² Correction factor = antenna factor ACF (dB) + cable loss (dB) - pre amp (dB)

³ 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

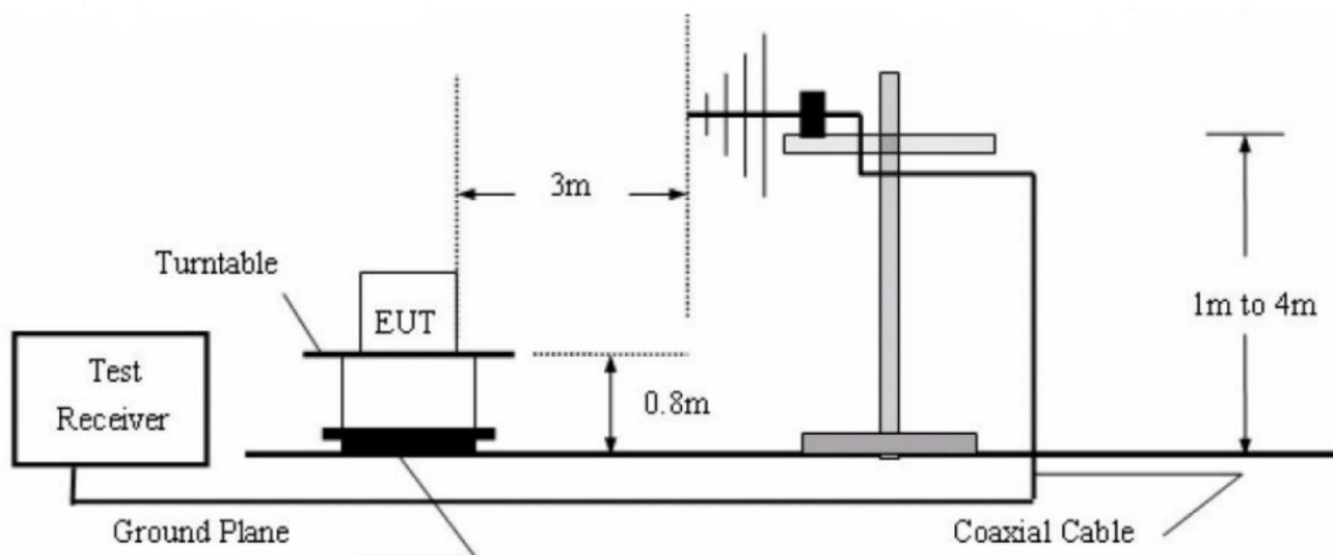


Figure 9.1-1: 30 MHz - 1000 MHz Setup

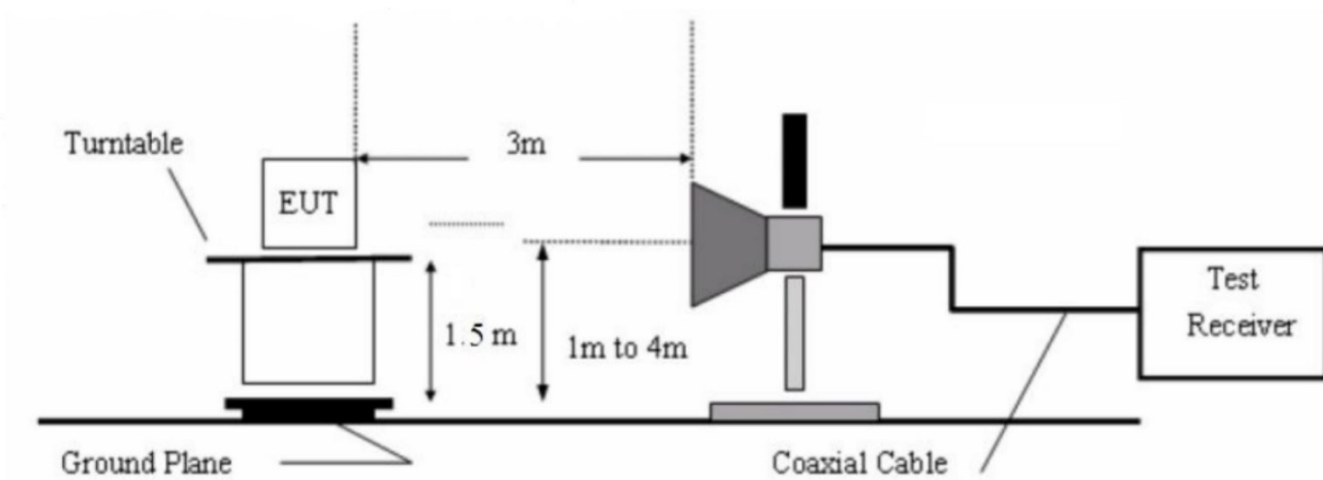


Figure 9.1-2: 1 GHz - 26 GHz Setup