

# Limited Test report

**410508-4TRFWL**

Date of issue: April 21, 2021

Applicant:

**SYNG, Inc.**

Product:

**Cell Alpha - Main Logic Board**

Model:

**SC21001**


**FCC ID: 2AYDT-SC21001**

**IC: 26794-SC21001**

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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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	Mark Phillips, Sr. EMC Test Engineer
Reviewed by	James Cunningham, EMC/MIL/WL Supervisor
Review date	April 21, 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 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	SYNG, Inc.
Address	120 Mildred Ave.
City	Venice
State	CA
Postal/Zip code	90291
Country	USA

### 1.2 Manufacturer

Company name	SYNG, Inc.
Address	120 Mildred Ave.
City	Venice
State	CA
Postal/Zip code	90291
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 only includes Radiated Spurious and Restricted Band Edge measurements

### 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
410508-4TRFWL	Original report issued

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	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	Choose an item.
§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

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### 3.1 Sample information

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Receipt date	March 9, 2021
Nemko sample ID number	NEx: 410508

### 3.2 EUT information

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Product name	Cell Alpha - Main Logic Board
Model	SC21001
Serial number	306390016
Part number	830-00012-09

### 3.3 Technical information

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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	16-24 V <sub>DC</sub> ; 1 A
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.

**Table 3.4-2:** EUT interface ports

Description	Qty.

**Table 3.4-3:** Support equipment

Description	Brand name	Model/Part number	Serial number	Rev.
Laptop	Dell	E7470	12258194222	--

**Table 3.4-4:** Inter-connection cables

Cable description	From	To	Length (m)

### 3.5 EUT setup diagram



**Figure 3.5-1:** Setup diagram

## Section 4 Engineering considerations

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### 4.1 Modifications incorporated in the EUT

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The following modifications were performed by client:

### 4.2 Technical judgment

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None

### 4.3 Deviations from laboratory tests procedures

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No deviations were made from laboratory procedures.



## Section 5 Test conditions

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### 5.1 Atmospheric conditions

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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

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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

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### 6.1 Uncertainty of measurement

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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 yr	1 Dec 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	March 22, 2021	Temperature	20 °C
Test engineer	Mark Phillips, Sr. EMC Test Engineer	Air pressure	1011 mbar
Test location	3m semi-anechoic chamber (Radiated)	Relative humidity	36 %
Test date	March 23, 2021	Temperature	23 °C
Test engineer	Mark Phillips, Sr. EMC Test Engineer	Air pressure	1003 mbar
Test location	3m semi-anechoic chamber (Radiated)	Relative humidity	40 %

## 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 10<sup>th</sup> harmonic of the highest transmit frequency of 2480 MHz).

Radiated measurements were performed at a 3 m measurement distance.

## 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	Average and peak (final measurements)
Trace mode	Max Hold
Measurement time	5 s (final measurements)

## 8.1.5 Test data

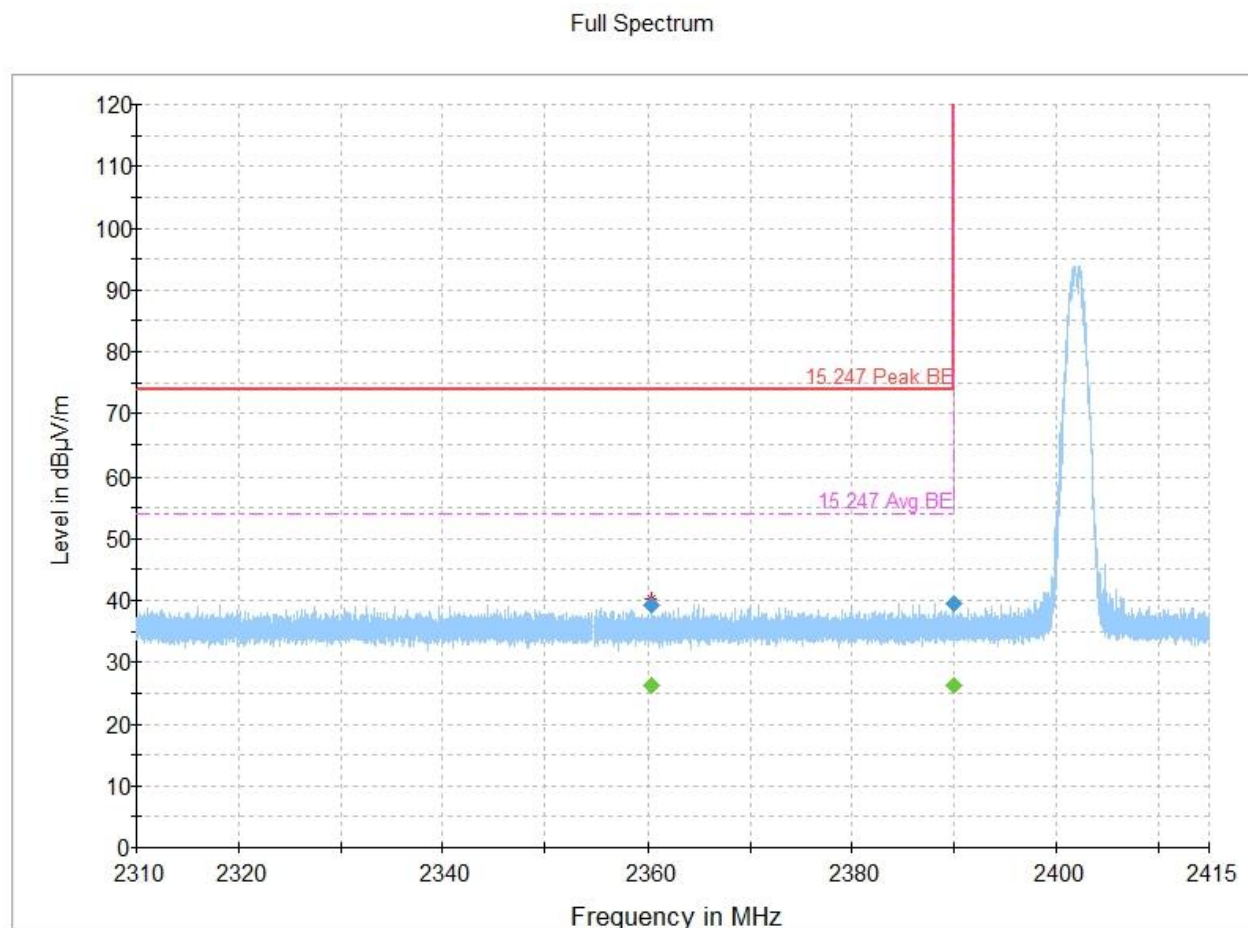


Figure 8.1-1: Radiated emissions, restricted band edge, low

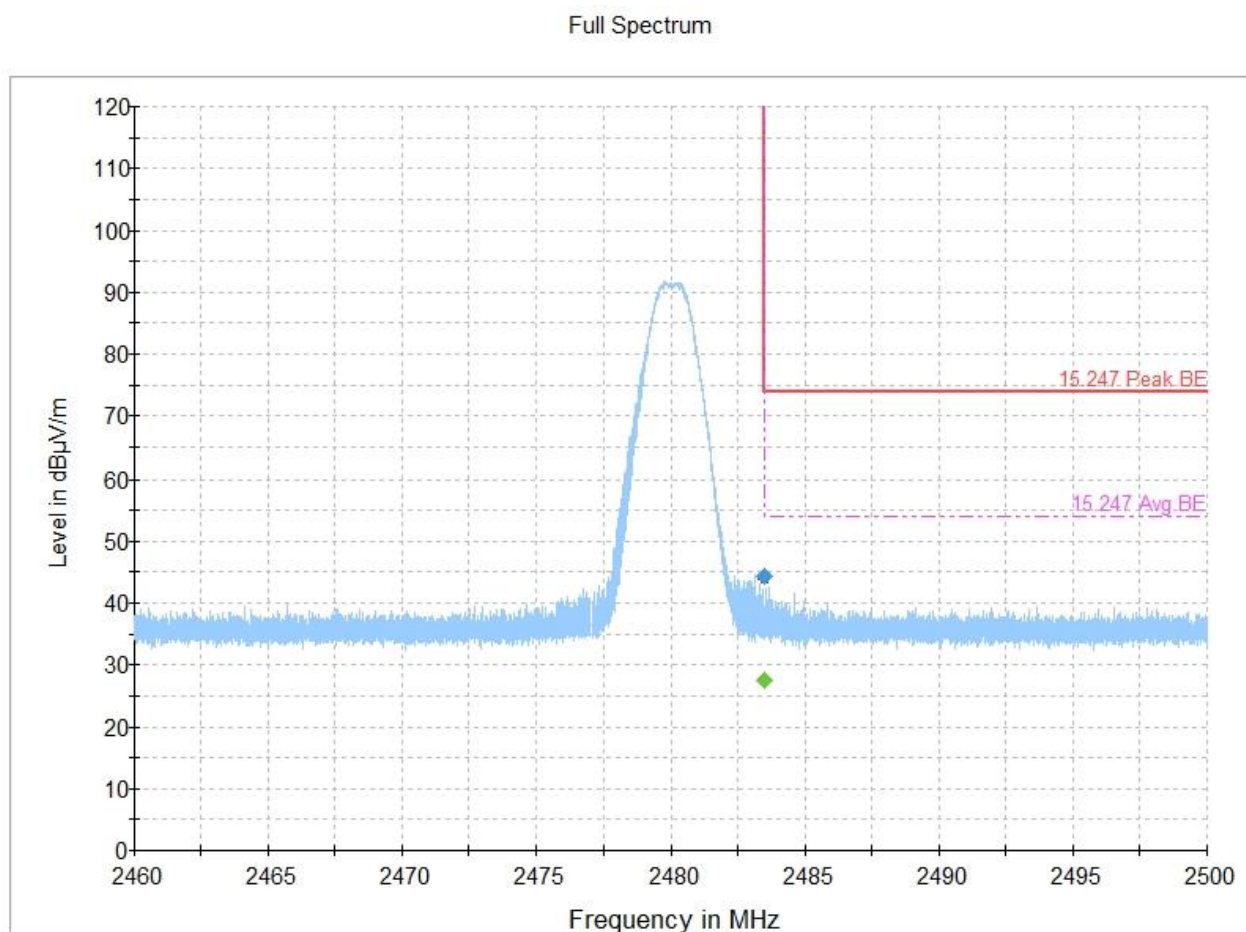
Table 8.1-2: Radiated emissions, restricted band edge, low

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)
2360.358000	---	26.17	53.90	27.73	5000.0	1000.000	240.0	V	357.0	-7.8
2360.358000	39.30	---	73.90	34.60	5000.0	1000.000	240.0	V	357.0	-7.8
2390.000000	---	26.22	53.90	27.68	5000.0	1000.000	127.0	V	325.0	-7.7
2390.000000	39.51	---	73.90	34.39	5000.0	1000.000	127.0	V	325.0	-7.7

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

<sup>2</sup> Correction factors = antenna factor ACF (dB) + cable loss (dB)

<sup>3</sup> 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.



**Figure 8.1-2:** Radiated emissions, restricted band edge, high

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

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	---	27.44	53.90	26.46	5000.0	1000.000	143.0	V	0.0	-7.3
2483.500000	44.22	---	73.90	29.68	5000.0	1000.000	143.0	V	0.0	-7.3

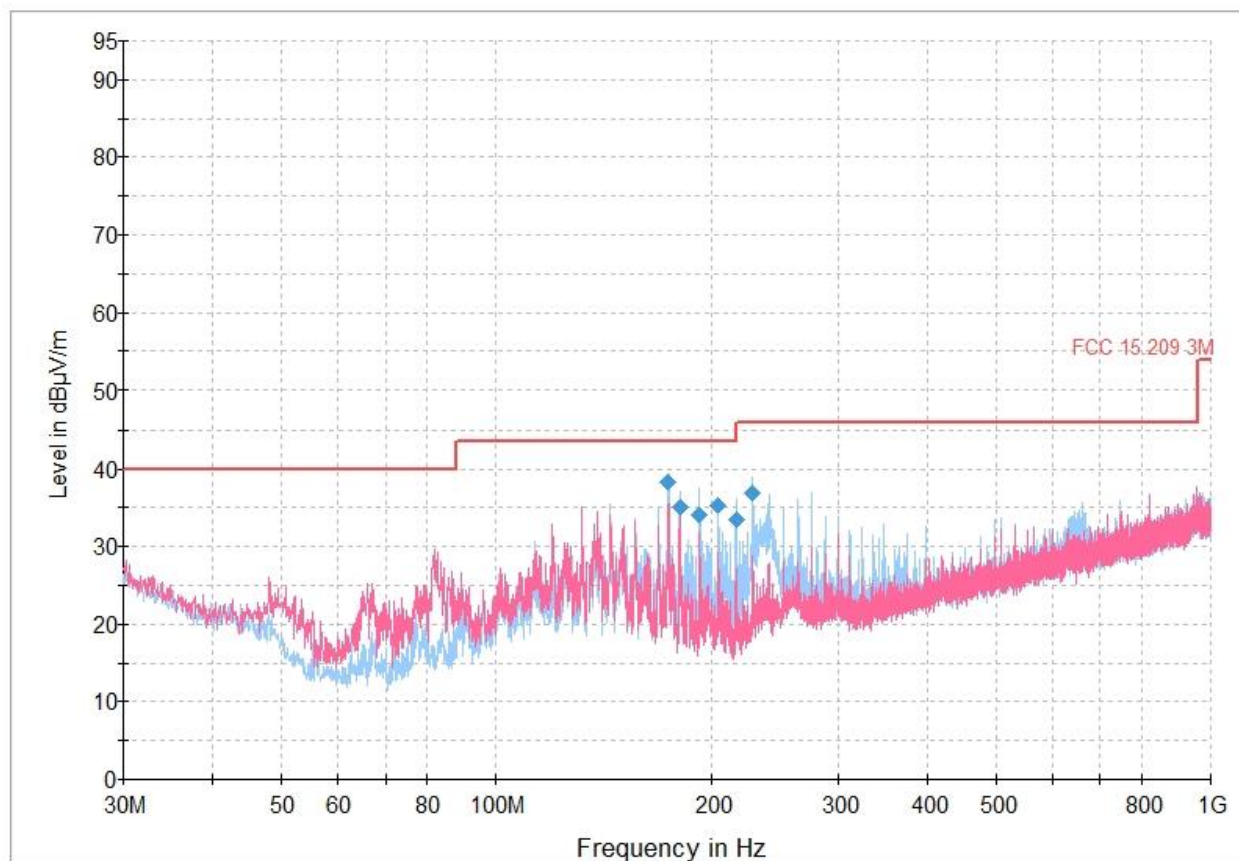
Notes:

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

<sup>2</sup> Correction factor = antenna factor ACF (dB) + cable loss (dB) - pre amp (dB)

<sup>3</sup> 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, worst case, 30 – 1000 MHz spectral plot**

**Table 8.1-4: Radiated emissions, worst case, 30 – 1000 MHz (Quasi-Peak) results**

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
173.561667	38.30	43.50	5.20	1000.0	120.000	154.0	H	297.0	17.5
179.985833	35.14	43.50	8.36	1000.0	120.000	155.0	H	294.0	17.1
191.949167	34.06	43.50	9.44	1000.0	120.000	183.0	H	266.0	17.3
203.912500	35.27	43.50	8.23	1000.0	120.000	166.0	H	288.0	18.0
215.957500	33.51	43.50	9.99	1000.0	120.000	165.0	H	96.0	17.9
228.040833	36.93	46.00	9.07	1000.0	120.000	128.0	H	113.0	18.7

Notes:

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

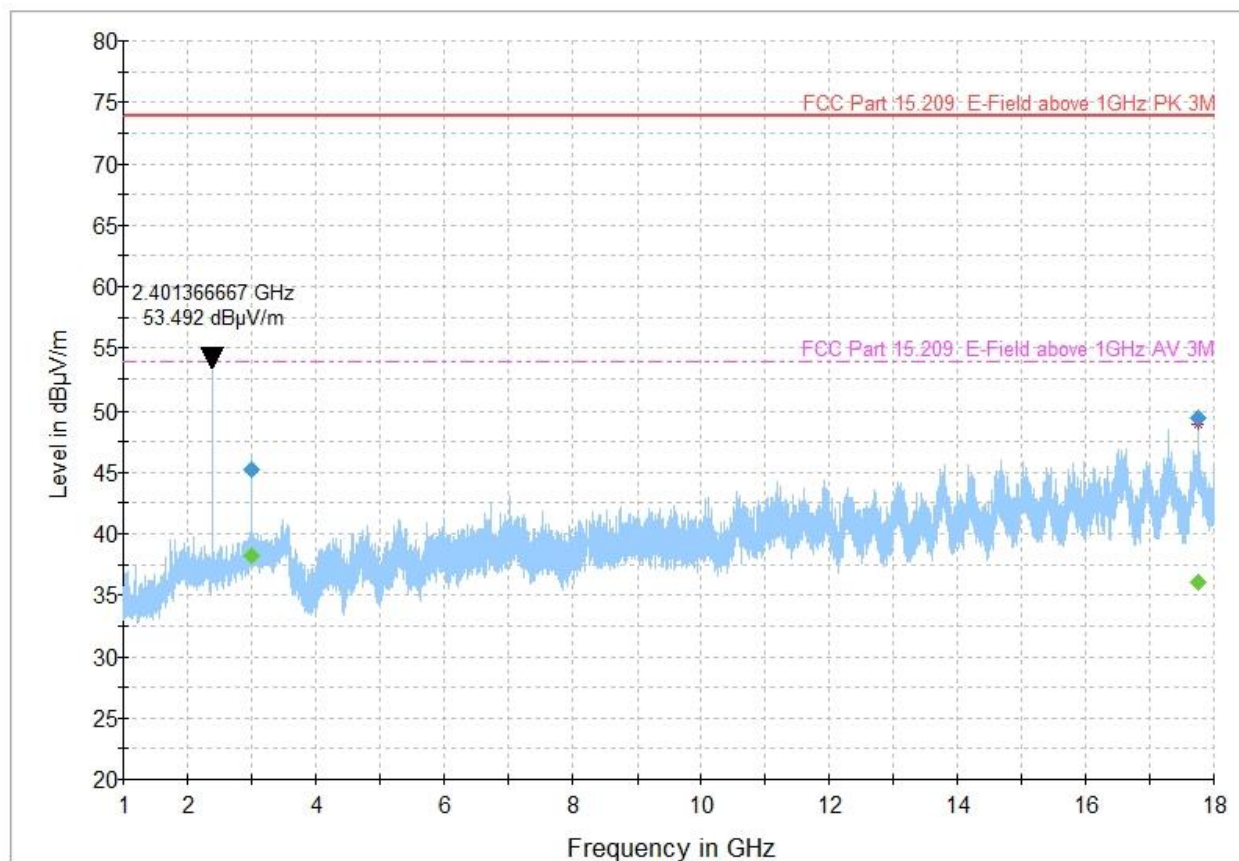
<sup>2</sup> Correction factor = antenna factor ACF (dB) + cable loss (dB)

<sup>3</sup> The maximum measured value observed over a period of 1 seconds was recorded.

<sup>4</sup> 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 8.1-4: Radiated emissions, low channel, 1 – 18 GHz spectral plot**

**Table 8.1-5: Radiated emissions, low channel, 1 – 18 GHz (peak and average) 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)
2999.766667	45.19	---	73.90	28.71	5000.0	1000.000	168.0	V	190.0	-5.8
2999.766667	---	38.20	53.90	15.70	5000.0	1000.000	168.0	V	190.0	-5.8
17749.633333	49.48	---	73.90	24.42	5000.0	1000.000	292.0	H	310.0	16.5
17749.633333	---	36.01	53.90	17.89	5000.0	1000.000	292.0	H	310.0	16.5

Notes:

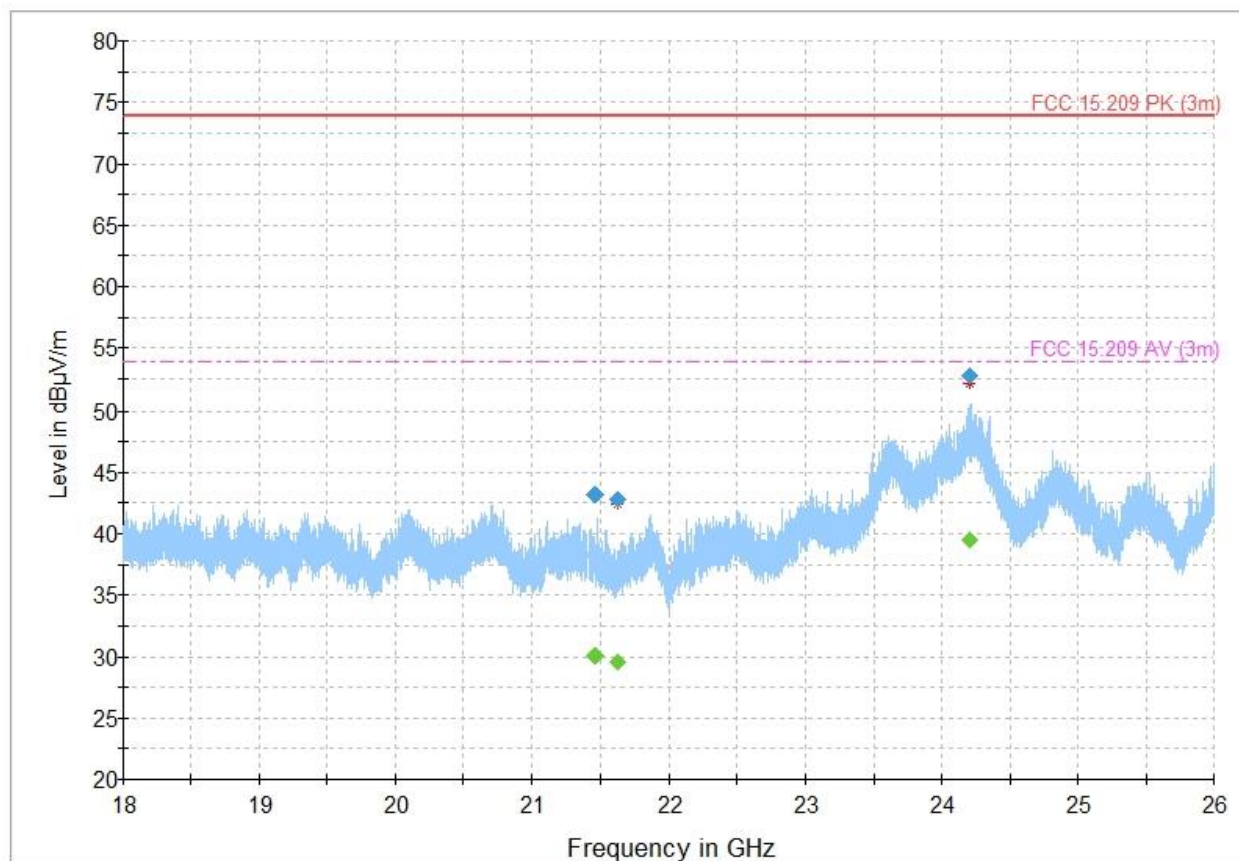
<sup>1</sup> Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)

<sup>2</sup> Correction factor = antenna factor ACF (dB) + cable loss (dB) - pre amp (dB)

<sup>3</sup> The maximum measured value observed over a period of 1 seconds was recorded.

<sup>4</sup> The emission at ~2401 MHz is the intentional transmitter and is not evaluated against the limits.

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, low channel, 18 – 26 GHz spectral plot**

**Table 8.1-6: Radiated emissions, low channel, 18 – 26 GHz (peak and average) results**

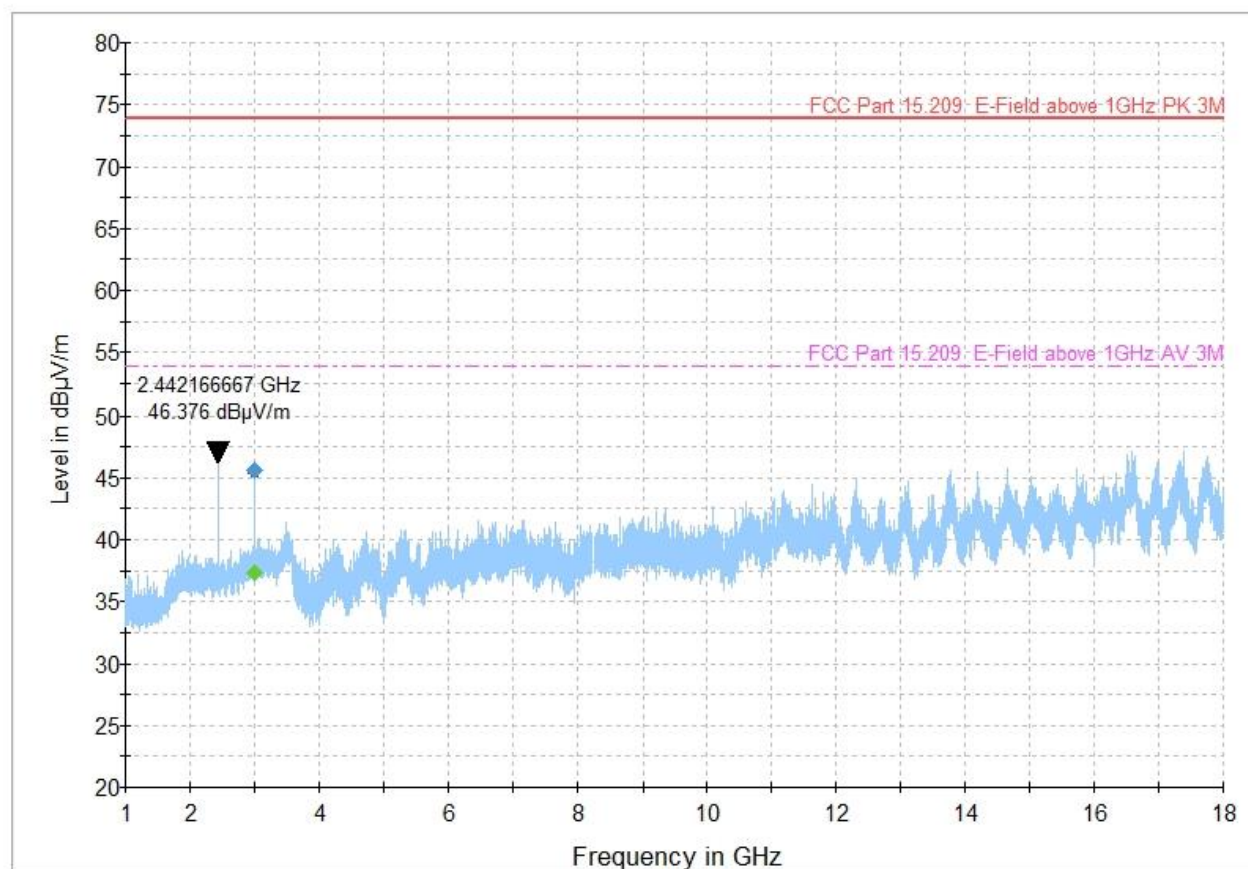
Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
21464.366667	---	30.08	53.90	23.82	5000.0	1000.000	266.0	H	229.0	18.8
21464.366667	43.23	---	73.90	30.67	5000.0	1000.000	266.0	H	229.0	18.8
21624.633333	42.74	---	73.90	31.16	5000.0	1000.000	366.0	V	0.0	18.9
21624.633333	---	29.52	53.90	24.38	5000.0	1000.000	366.0	V	0.0	18.9
24209.833333	52.71	---	73.90	21.19	5000.0	1000.000	378.0	H	329.0	29.1
24209.833333	---	39.44	53.90	14.46	5000.0	1000.000	378.0	H	329.0	29.1

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

<sup>2</sup> Correction factor = antenna factor ACF (dB) + cable loss (dB) - pre amp (dB)

<sup>3</sup> The maximum measured value observed over a period of 1 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, 1 – 18 GHz spectral plot

**Table 8.1-7:** Radiated emissions, middle channel, 1 – 18 GHz (peak and average) 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)
3000.166667	---	37.30	53.90	16.60	5000.0	1000.000	180.0	V	190.0	-5.8
3000.166667	45.58	---	73.90	28.32	5000.0	1000.000	180.0	V	190.0	-5.8

Notes:

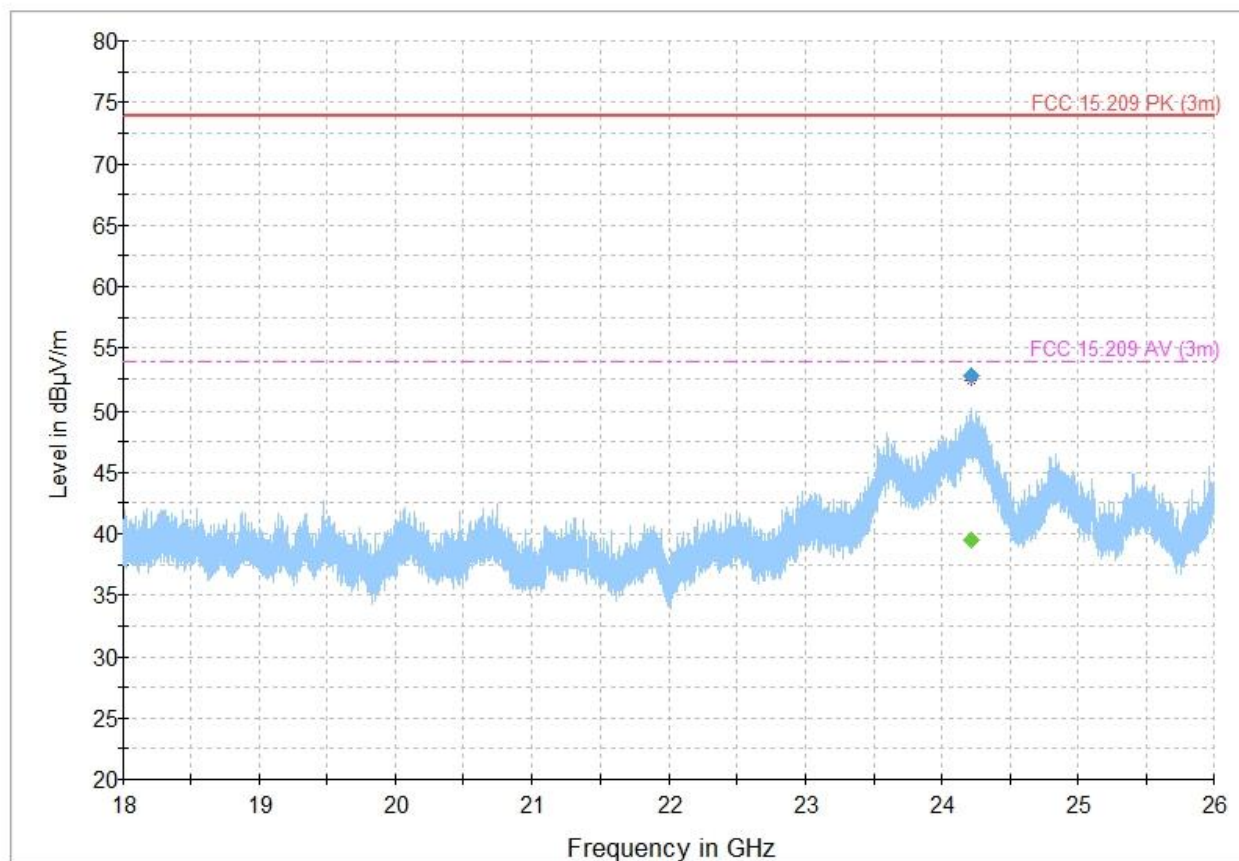
<sup>1</sup> Field strength (dBμV/m) = receiver/spectrum analyzer value (dBμV) + correction factor (dB)

<sup>2</sup> Correction factor = antenna factor ACF (dB) + cable loss (dB) - pre amp (dB)

<sup>3</sup> The maximum measured value observed over a period of 1 seconds was recorded.

<sup>4</sup> The emission ~2442 MHz is the intentional transmitter and is not evaluated against the limits.

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, middle channel, 18 – 26 GHz spectral plot**

**Table 8.1-8: Radiated emissions, middle channel, 18 – 26 GHz (peak and average) results**

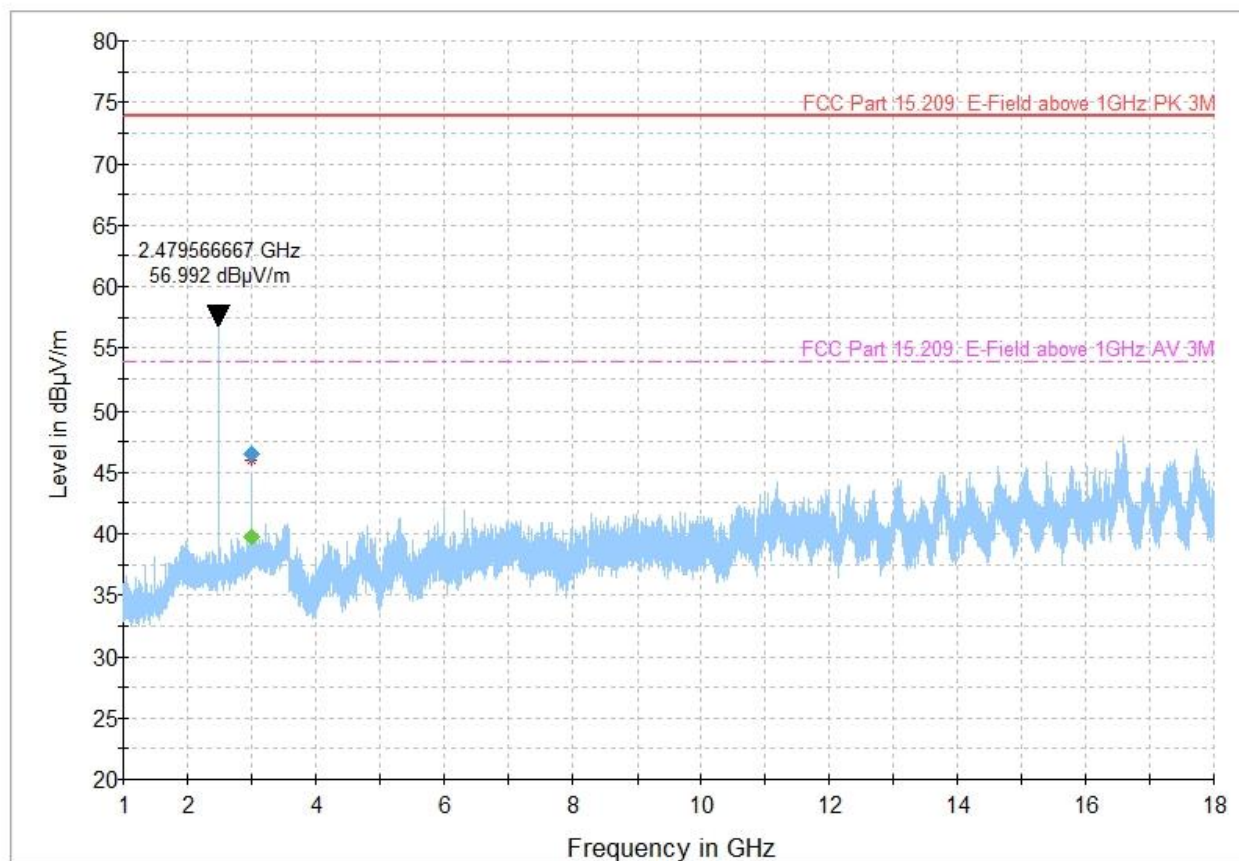
Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
24213.700000	---	39.51	53.90	14.40	5000.0	1000.000	345.0	H	44.0	29.1
24213.700000	52.73	---	73.90	21.17	5000.0	1000.000	345.0	H	44.0	29.1

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

<sup>2</sup> Correction factor = antenna factor ACF (dB) + cable loss (dB) - pre amp (dB)

<sup>3</sup> The maximum measured value observed over a period of 1 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, 1 – 18 GHz spectral plot**

**Table 8.1-9: Radiated emissions, high channel, 1 – 18 GHz (peak and average) results**

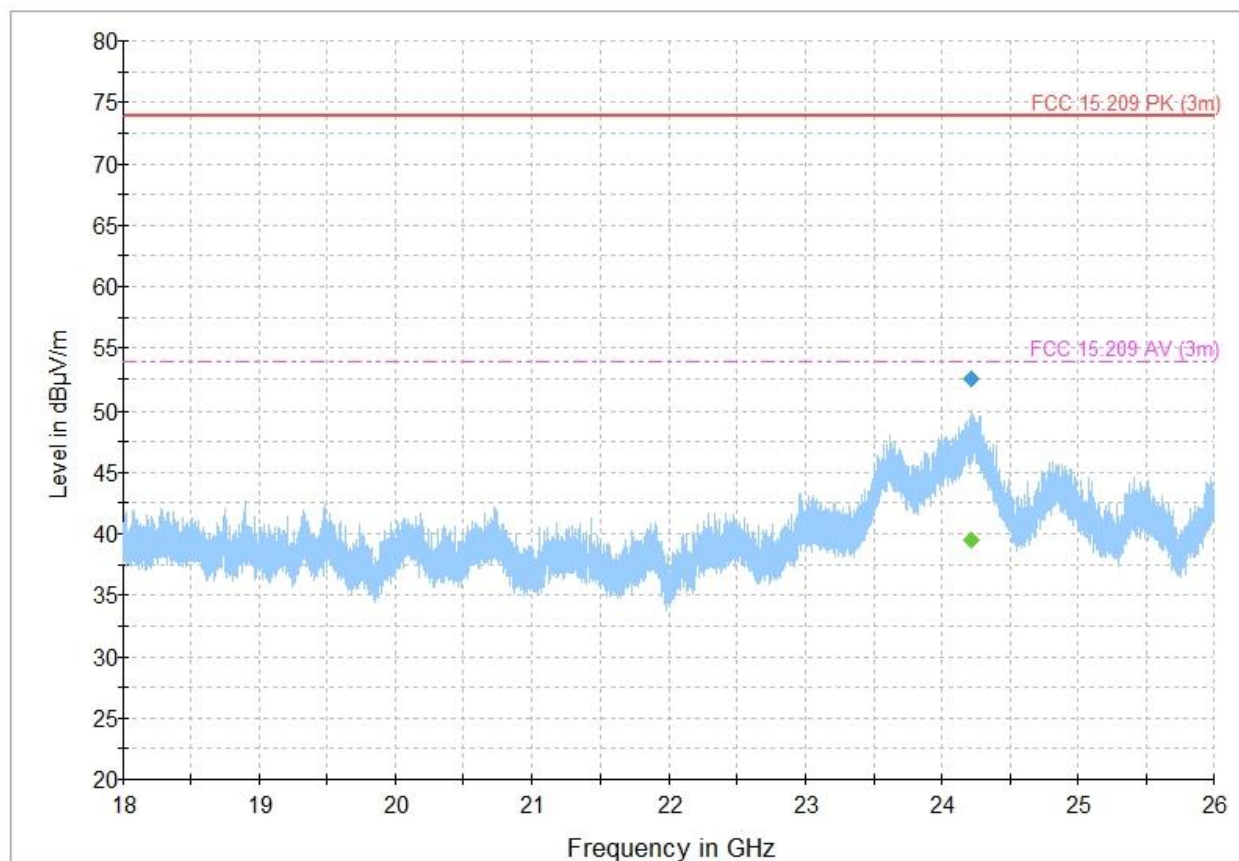
Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
3000.166667	---	39.70	53.90	14.20	5000.0	1000.000	117.0	V	195.0	-5.8
3000.166667	46.46	---	73.90	27.44	5000.0	1000.000	117.0	V	195.0	-5.8

Notes:

- <sup>1</sup> Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)
- <sup>2</sup> Correction factor = antenna factor ACF (dB) + cable loss (dB) - pre amp (dB)
- <sup>3</sup> The maximum measured value observed over a period of 1 seconds was recorded.
- <sup>4</sup> The emission at ~2480 MHz is the intentional transmitter and is not evaluated against the limits.



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 8.1-9: Radiated emissions, high channel, 18 – 26 GHz spectral plot**

**Table 8.1-10: Radiated emissions, high channel, 18 – 26 GHz (peak and average) 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)
24222.833333	---	39.46	53.90	14.44	5000.0	1000.000	119.0	V	229.0	29.1
24222.833333	52.45	---	73.90	21.45	5000.0	1000.000	119.0	V	229.0	29.1

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

<sup>2</sup> Correction factor = antenna factor ACF (dB) + cable loss (dB) - pre amp (dB)

<sup>3</sup> The maximum measured value observed over a period of 1 seconds was recorded.

## Section 9 Block diagrams of test set-ups

### 9.1 Radiated emissions set-up

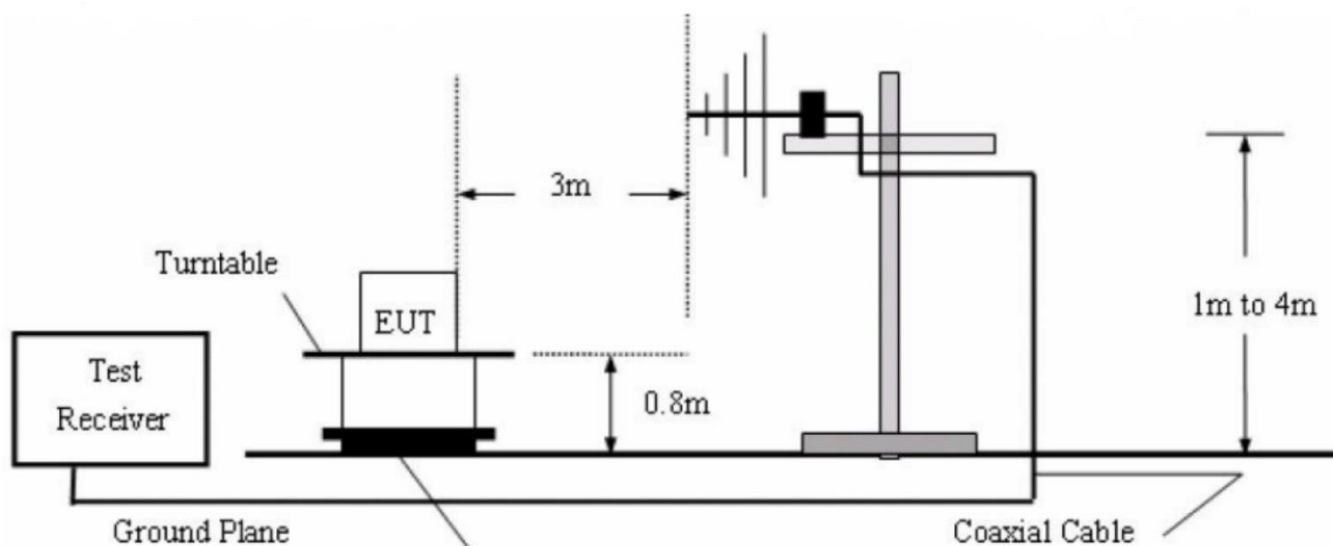


Figure 9.1-1: 30 MHz - 1000 MHz Setup

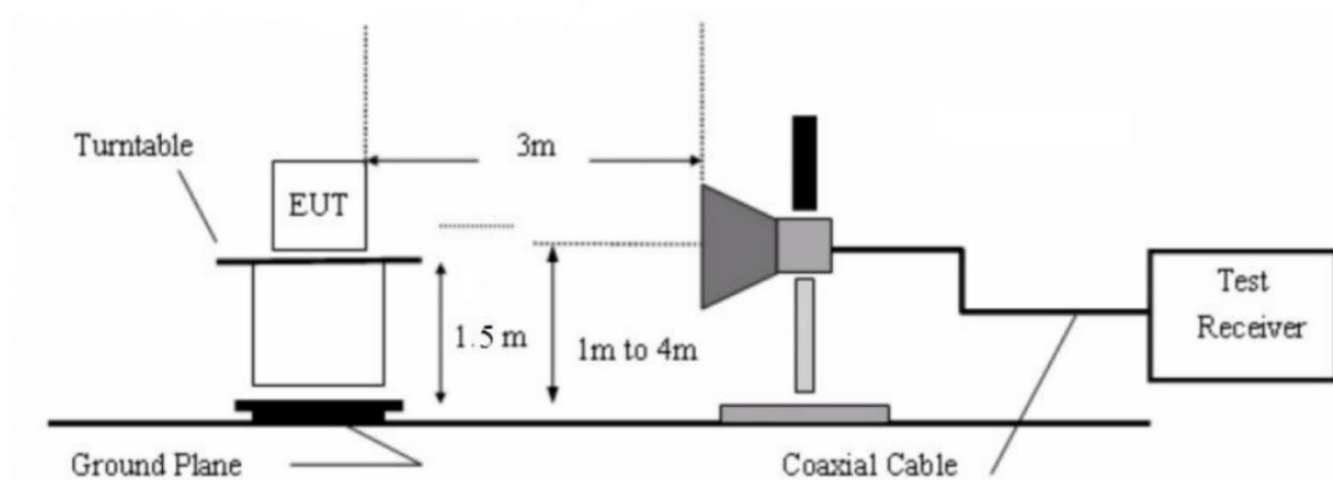


Figure 9.1-2: 1 GHz - 26 GHz Setup