

# EMC TEST REPORT – 337515-4TRFWL

Applicant:

**BOT Home Automation Inc.**

Product name:

**Ring**

Model:

**WL18MODGI**

FCC ID:

**2AEUPWL18DBMOD**

IC Registration number:

**20271-WL18DBMOD**

Specifications:

◆ **FCC 47 CFR Part 15 Subpart E, §15.407**

Unlicensed National Information Infrastructure Devices

- §15.407(b)(3) Undesirable emission limits (Operating in the band 5.47-5.725 GHz)
- §15.407(a)(2) Power limits (Operating in the band 5.25-5.35 and 5.47-5.725 GHz)

◆ **RSS-247, Issue 2, Feb 2017, Section 6**

Digital Transmission Systems (DTSS), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices, Section 6 Technical requirements for licence-exempt local area network devices and digital transmission systems operating in the 5 GHz band

Section 6.2.3.2 Unwanted emission limits (Operating in the band 5.47-5.6 and 5.650-5.725 GHz)

Section 6.2.3.1 Power limits (Operating in the band 5.47-5.6 and 5.650-5.725 GHz)

Date of issue: **September 21, 2017**

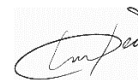
Test engineer(s): **David Duchesne, Senior EMC/Wireless Specialist**

Signature:



Reviewed by: **Andrey Adelberg, Senior Wireless/EMC Specialist**

Signature:



#### Lab and test locations

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Company name	Nemko Canada Inc.		
Facilities	Ottawa site: 303 River Road, Ottawa, ON, Canada, K1V 1H2	Montreal site: 292 Labrosse Avenue, Pointe-Claire, QC, Canada, H9R 5L8	Almonte site: 1500 Peter Robinson Road, West Carleton, ON, Canada, K0A 1L0
	Tel: +1 613 737 9680	Tel: +1 514 694 2684	Tel: +1 613 256-9117
	Fax: +1 613 737 9691	Fax: +1 514 694 3528	Fax: +1 613 256-8848
Test site registration	<b>Organization</b>	<b>Recognition numbers and location</b>	
	FCC	CA2040 (Ottawa); CA2041 (Montreal)	
	ISED	CA2040A-4 (Ottawa); CA2040G-5 (Montreal); CA2040A-3 (Almonte)	
Website	<a href="http://www.nemko.com">www.nemko.com</a>		

#### Limits of responsibility

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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 Canada's ISO/IEC 17025 accreditation.

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## Section 1. Report summary

### 1.1 Applicant and manufacturer

Company name	BOT Home Automation Inc.
Address	1523 26 <sup>th</sup> Street, Santa Monica, California United States 90404

### 1.2 Test specifications

FCC 47 CFR Part 15, Subpart E, Clause 15.407	Unlicensed National Information Infrastructure Devices
RSS-247, Issue 2, Feb 2017	Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices

### 1.3 Test methods

789033 D02 General UNII Test Procedures New Rules v01r04 (May2, 2017)	Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices Part 15, Subpart E
662911 D01 Multiple Transmitter Output v02r01 (October 31, 2013)	Emissions Testing of Transmitters with Multiple Outputs in the Same Band
662911 D02 MIMO with Cross Polarized Antenna v01 (October 25, 2011)	Emissions testing of transmitters with multiple outputs in the same band (MIMO) with Cross Polarized Antenna
ANSI C63.10 v2013	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices

### 1.4 Exclusions

As per Nemko quote Q102124338R1, the EUT was only assessed for FCC 47 CFR Part 15 Subpart E, §15.407 (b)(3), §15.407 (a)(2) and RSS-247, Issue 2, Feb 2017, Section 6.2.3.2, Section 6.2.3.1.

### 1.5 Statement of compliance

In the configuration tested, the EUT was found compliant.

Testing was completed against all relevant requirements of the test standard or as per detailed in the section 1.4 Exclusions 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.

### 1.6 Test report revision history

**Table 1.6-1: Test report revision history**

Revision #	Date of issue	Details of changes made to test report
TRF	September 21, 2017	Original report issued

## Section 2. Summary of test results

### 2.1 Testing period

Test start date	September 14, 2017
Test end date	September 14, 2017

### 2.2 FCC Part 15 Subpart E, test results

**Table 2.2-1:** Result summary for §15.407

Part	Test description	Verdict
§15.407(a)(2)	Power limits (Operating in the band 5.25-5.35 and 5.47-5.725 GHz)	Pass
§15.407(b)(3)	Undesirable emission limits (Operating in the band 5.47-5.725 GHz)	Pass
Notes:	None	

### 2.3 RSS-247, Issue 2, test results

**Table 2.3-1:** Result summary for RSS-247

Section	Test description	Verdict
6.2.3.1	Power limits (Operating in the band 5.47-5.6 and 5.650-5.725 GHz)	Pass
6.2.3.2	Undesirable emission limits (Operating in the band 5.47-5.6 and 5.650-5.725 GHz)	Pass
Notes:	None	

## Section 3. Equipment under test (EUT) details

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### 3.1 Sample information

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Receipt date	August 21, 2017
Nemko sample ID number	Item # 3

### 3.2 EUT information

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Product name	Ring
Model	WL18MODGI
Serial number	BHHB11731PG000029

### 3.3 Technical information

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Applicant IC company number	20271
IC UPN number	WL18DBMOD
All used IC test site(s) Reg. number	2040A-4
RSS number and Issue number	RSS-247 Issue 2, Section 6, February 2017
Frequency band	RSS band: 5470–5725 MHz. FCC bands: 5470–5600 MHz and 5650–5725 MHz
Type of modulation	802.11a/n
Emission classification (F1D, G1D, D1D)	W7D
Transmitter spurious, Units @ distance	52.4 dBµV/m Peak at 16.161 GHz @ 3m
Power requirements	5 V <sub>DC</sub> (via external 100-240 VAC, 50/60 Hz power adapter)
Antenna information	Antenna gain: is 4.6 dBi (Wi-Fi Right side) and 4.6 dBi (Wi-Fi left side) Inverted F The EUT uses a unique antenna coupling/ non-detachable antenna to the intentional radiator.

### 3.4 Product description and theory of operation

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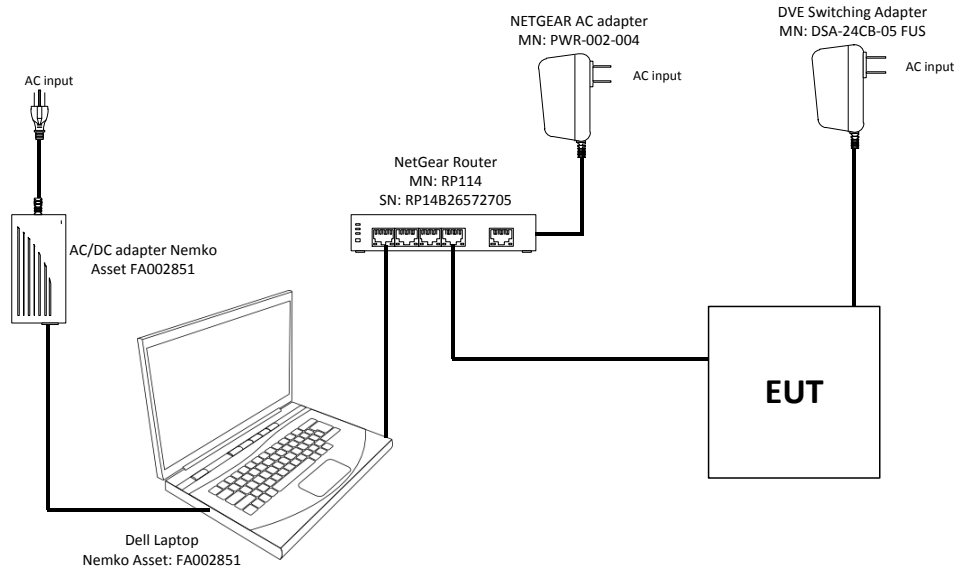
Communications Hub for Home Security Products

### 3.5 EUT exercise details

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The EUT was setup in continuous transmit state.

### 3.6 EUT setup diagram



**Figure 3.6-1: Setup diagram**

## Section 4. Engineering considerations

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### 4.1 Modifications incorporated in the EUT for compliance

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

### 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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UKAS Lab 34 and TIA-603-B have been used as guidance for measurement uncertainty reasonable estimations with regards to previous experience and validation of data. Nemko Canada, Inc. follows these test methods in order to satisfy ISO/IEC 17025 requirements for estimation of uncertainty of measurement for wireless products.

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

## Section 7. Test equipment

### 7.1 Test equipment list

**Table 7.1-1: Equipment list**

Equipment	Manufacturer	Model no.	Asset no.	Cal cycle	Next cal.
Receiver/spectrum analyzer	Rohde & Schwarz	ESU 26	FA002043	1 year	Jan. 31/18
Spectrum analyzer	Rohde & Schwarz	FSU	FA001877	1 year	Jul. 18/18
3 m EMI test chamber	TDK	SAC-3	FA002047	1 year	Dec. 1/17
Horn with Preamp	ETS-Lindgren	3117-PA	FA002840	1 year	Nov. 11/17
Bilog antenna (20–3000 MHz)	Sunol	JB3	FA002108	1 year	June 27/18
Horn antenna (18–40 GHz)	EMCO	3116	FA001847	1 year	June 27/18
Pre-amplifier (18–26 GHz)	Narda	BBS-1826N612	FA001550	—	VOU
Pre-amplifier (26–40 GHz)	Narda	DBL-2640N610	FA001556	—	VOU
50 $\Omega$ coax cable	Huber + Suhner	None	FA002830	1 year	May 12/18
50 $\Omega$ coax cable	C.C.A.	None	FA002555	1 year	May 2/18
Notch filter 5470–5725 MHz	Microwave Circuits	N0555982	FA002012	—	VOU

Notes: VOU - verify on use

## Section 8. Testing data

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### 8.1 FCC 15.407(b) and RSS-247 6.2.3.2 Undesirable (unwanted) emissions

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#### 8.1.1 Definitions and limits

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##### **FCC §15.407 (b):**

- (3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (5) The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.
- (6) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in § 15.209.
- (7) The provisions of § 15.205 apply to intentional radiators operating under this section.
- (8) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the upper and lower frequency block edges as the design of the equipment permits.

##### **RSS-247 Part 6.2.3.2:**

Emissions outside the band 5470-5725 MHz shall not exceed -27 dBm/MHz e.i.r.p. However, devices with bandwidth overlapping the band edge of 5725 MHz can meet the emission limit of -27 dBm/MHz e.i.r.p. at 5850 MHz instead of 5725 MHz.

##### **RSS-Gen Part 8.10:**

Restricted bands, identified in table 6 of RSS-Gen Section 8.10, are designated primarily for safety-of-life services (distress calling and certain aeronautical bands), certain satellite downlinks, radio astronomy and some government uses. Except where otherwise indicated, the following restrictions apply:

- a. fundamental components of modulation of licence-exempt radio apparatus shall not fall within the restricted bands of below;
- b. unwanted emissions falling into restricted bands of below shall comply with the limits specified in RSS-Gen;
- c. unwanted emissions not falling within restricted frequency bands shall either comply with the limits specified in the applicable RSS, or with those specified in RSS-Gen.

## 8.1.2 Definitions and limits, continued

**Table 8.1-1: FCC §15.209 and RSS-Gen – 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: ISED restricted frequency bands**

MHz	MHz	MHz	GHz
0.090–0.110	12.51975–12.52025	399.9–410	5.35–5.46
2.1735–2.1905	12.57675–12.57725	608–614	7.25–7.75
3.020–3.026	13.36–13.41	960–1427	8.025–8.5
4.125–4.128	16.42–16.423	1435–1626.5	9.0–9.2
4.17725–4.17775	16.69475–16.69525	1645.5–1646.5	9.3–9.5
4.20725–4.20775	16.80425–16.80475	1660–1710	10.6–12.7
5.677–5.683	25.5–25.67	1718.8–1722.2	13.25–13.4
6.215–6.218	37.5–38.25	2200–2300	14.47–14.5
6.26775–6.26825	73–74.6	2310–2390	15.35–16.2
6.31175–6.31225	74.8–75.2	2655–2900	17.7–21.4
8.291–8.294	108–138	3260–3267	22.01–23.12
8.362–8.366	156.52475–156.52525	3332–3339	23.6–24.0
8.37625–8.38675	156.7–156.9	3345.8–3358	31.2–31.8
8.41425–8.41475	240–285	3500–4400	36.43–36.5
12.29–12.293	322–335.4	4500–5150	Above 38.6

Notes: None

**Table 8.1-3: 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			

Notes: None

### 8.1.3 Test summary

Verdict	Pass		
Test date	September 14, 2017	Temperature	23.5 °C
Test engineer	David Duchesne	Air pressure	995 mbar
Test location	Ottawa	Relative humidity	53.7 %

### 8.1.4 Observations, settings and special notes

- The spectrum was searched from 30 MHz to 40 GHz.
- The spectral plots have been corrected with the associated transducer factors (i.e. antenna factors, cable loss, amplifier gains, and attenuators).
- Radiated measurements were performed at a distance of 3 m.
- The EUT was tested configured with 802.11a, Data rate 6 Mbps as it was deemed worst case.

Spectrum analyser settings for radiated measurements within restricted bands below 1 GHz:

Resolution bandwidth:	100 kHz
Video bandwidth:	300 kHz
Detector mode:	Peak
Trace mode:	Max Hold

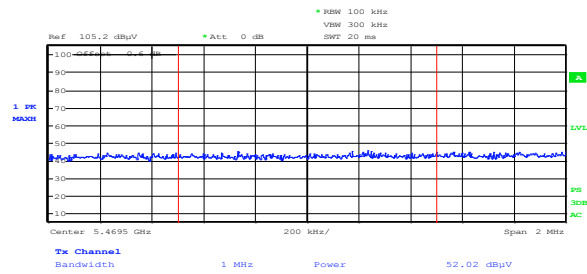
Spectrum analyser settings for radiated measurements above 1 GHz:

Resolution bandwidth:	1 MHz
Video bandwidth:	3 MHz
Detector mode:	Peak
Trace mode:	Max Hold

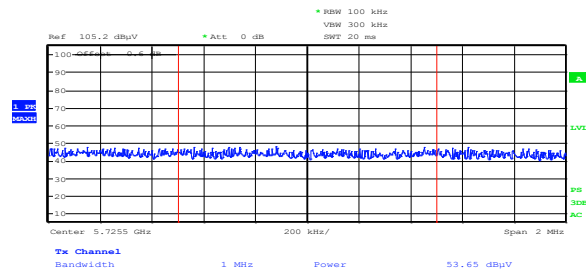
Spectrum analyser for average radiated measurements within restricted bands above 1 GHz for frequencies where peak results were above the average limit:

Resolution bandwidth:	1 MHz
Video bandwidth:	10 MHz
Detector mode:	RMS
Trace mode:	Power average
Number of averaging traces:	100

## 8.1.4 Test data



**Figure 8.1-1:** Radiated – Undesirable (unwanted) emissions at lower band edge peak, (Channel 100 – 5500 MHz)



**Figure 8.1-2:** Radiated – Undesirable (unwanted) emissions at upper band edge peak, (Channel 140 – 5700 MHz)

**Table 8.1-4:** Radiated – Undesirable (unwanted) emissions that fall within restricted band

Channel	Frequency, GHz	Measured peak field strength, dBμV/m	Average Field strength limit <sup>1</sup> , dBμV/m	Margin, dB
100	16.041	51.8	54.0	2.2
116	16.161	52.4	54.0	1.6
140	16.350	51.5	54.0	2.5

Notes: Field strength includes correction factor of antenna, cable loss, amplifier, and attenuators where applicable.

<sup>1</sup> The peak limit satisfied the average limit, hence average measurement was not required.

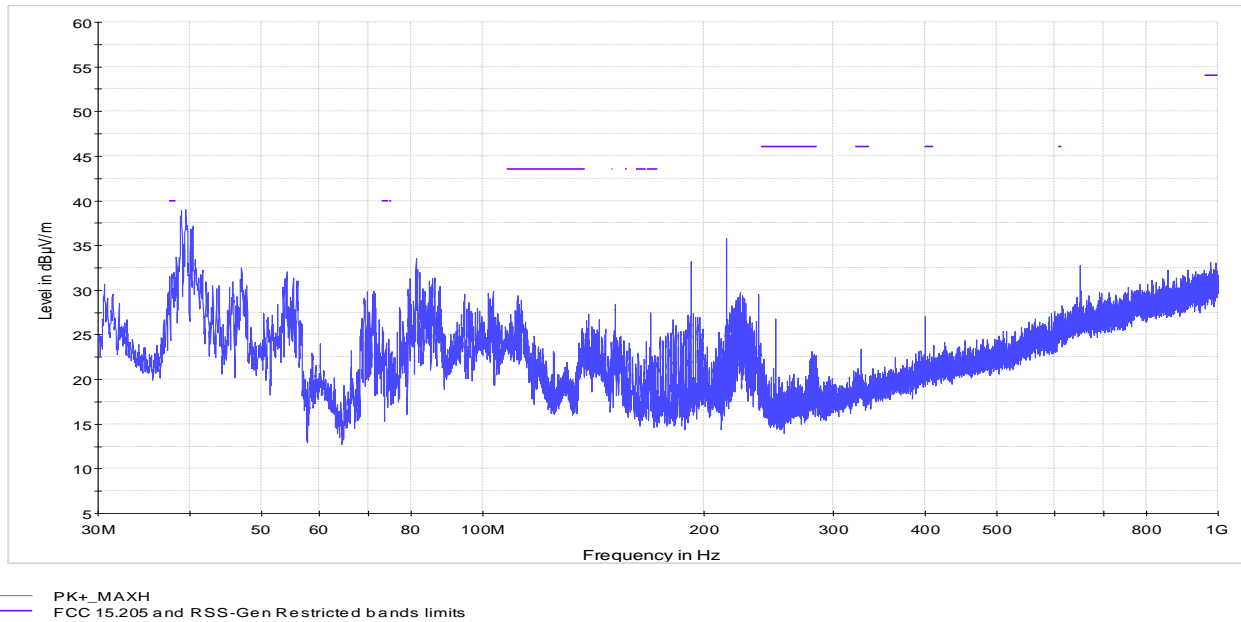
**Table 8.1-5:** Radiated – Undesirable (unwanted) emissions that fall outside the band not within restricted bands

Channel	Frequency, GHz	Peak field strength, dBμV/m	Peak field strength Limit <sup>1</sup> , dBμV/m	Margin, dB
100	5.470	52.0	68.2	16.2
140	5.725	53.7	68.2	14.5

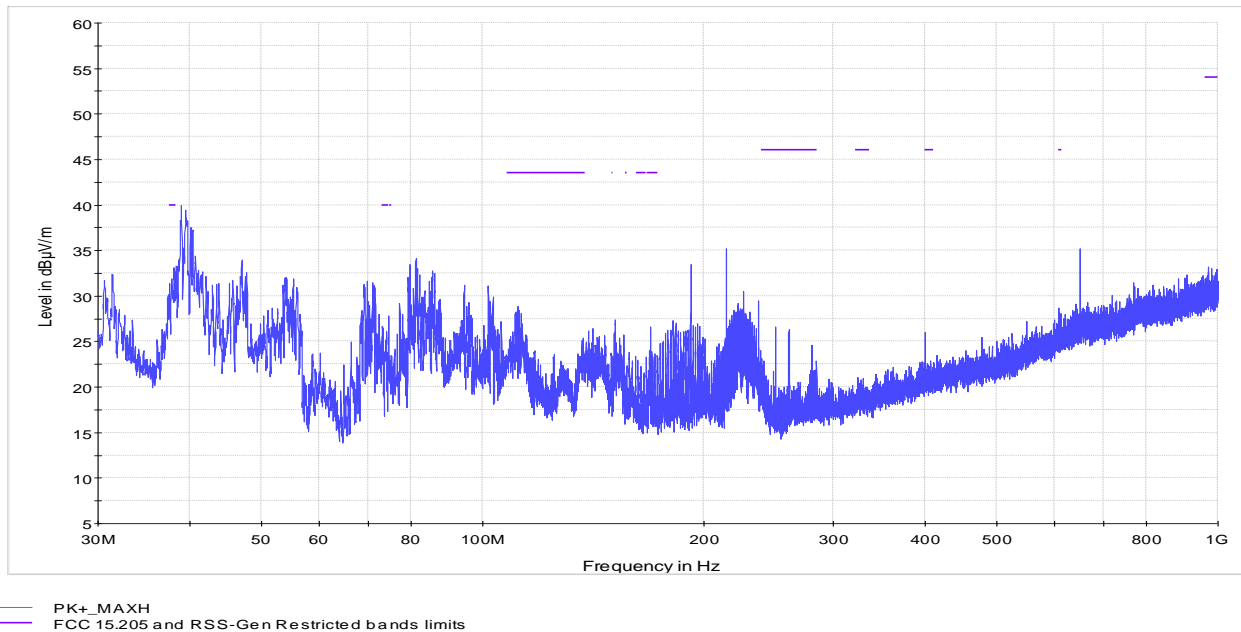
Notes: Field strength includes correction factor of antenna, cable loss, amplifier, and attenuators where applicable.

<sup>1</sup> e.i.r.p. of -27 dBm/MHz. = 68.2 dBμV/m = -27 dBm/MHz. +95.23 dB

#### 8.1.4 Test data, continued



**Figure 8.1-3:** Radiated – Undesirable (unwanted) emissions below 1 GHz, Channel 100 – 5500 MHz



**Figure 8.1-4:** Radiated – Undesirable (unwanted) emissions below 1 GHz, Channel 116 – 5580 MHz



#### 8.1.4 Test data, continued

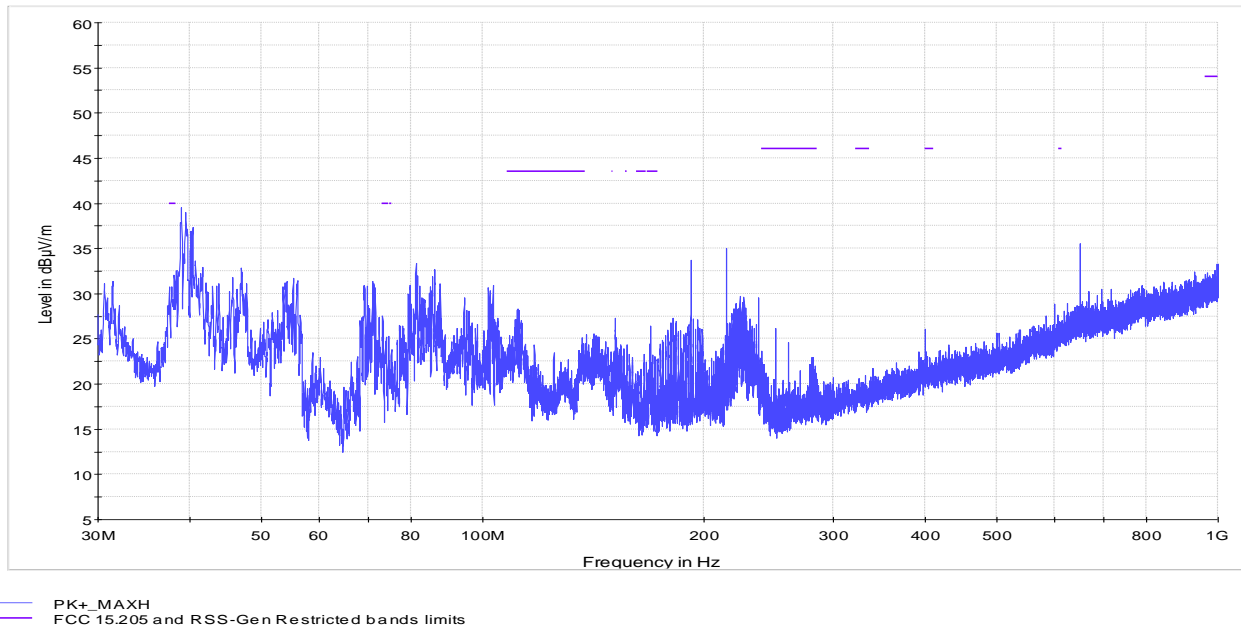


Figure 8.1-5: Radiated – Undesirable (unwanted) emissions below 1 GHz, Channel 140 – 5700 MHz

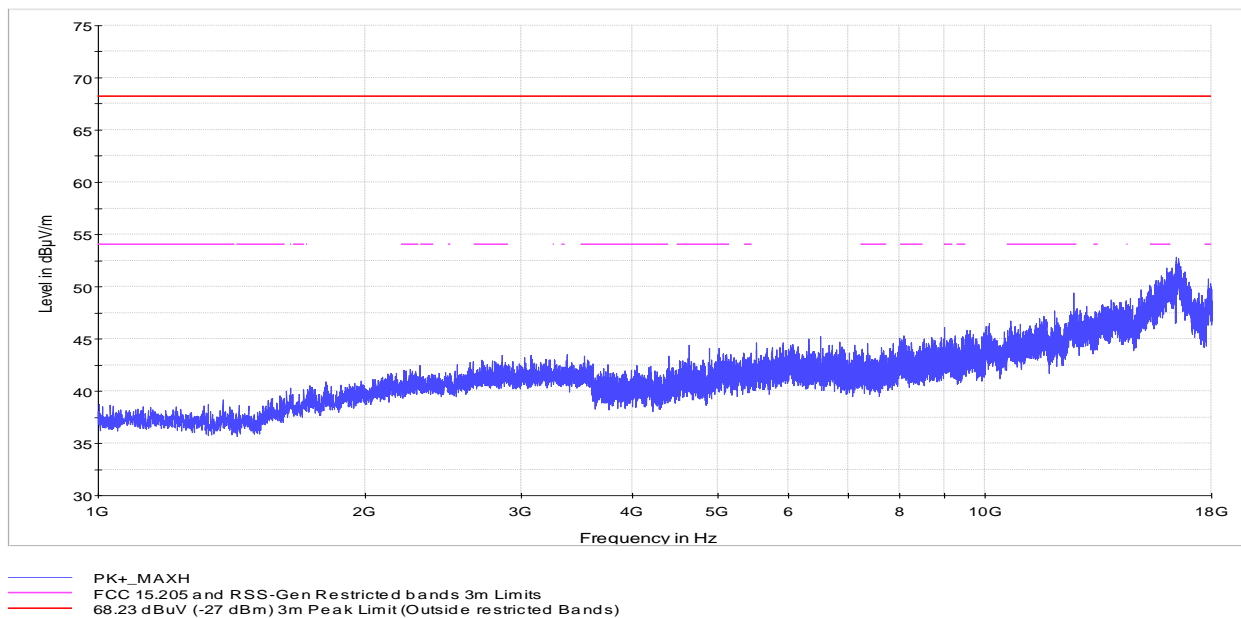


Figure 8.1-6: Radiated – Undesirable (unwanted) emissions 1 to 18 GHz, Channel 100 – 5500 MHz

#### 8.1.4 Test data, continued

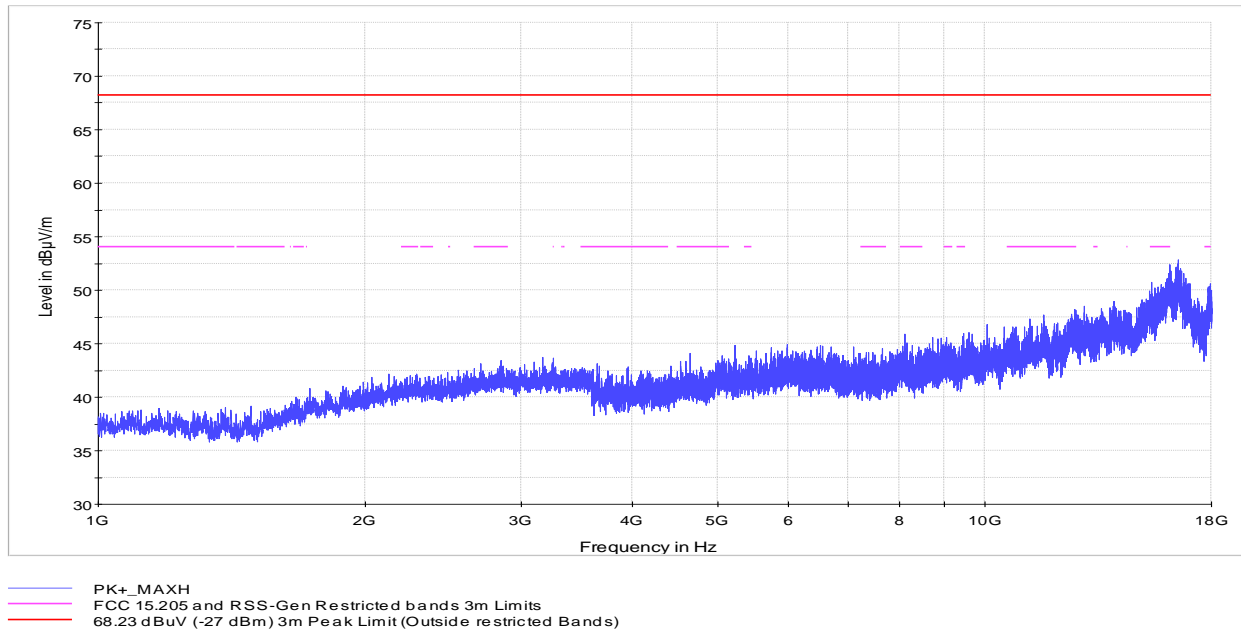


Figure 8.1-7: Radiated – Undesirable (unwanted) emissions 1 to 18 GHz, Channel 116 – 5580 MHz

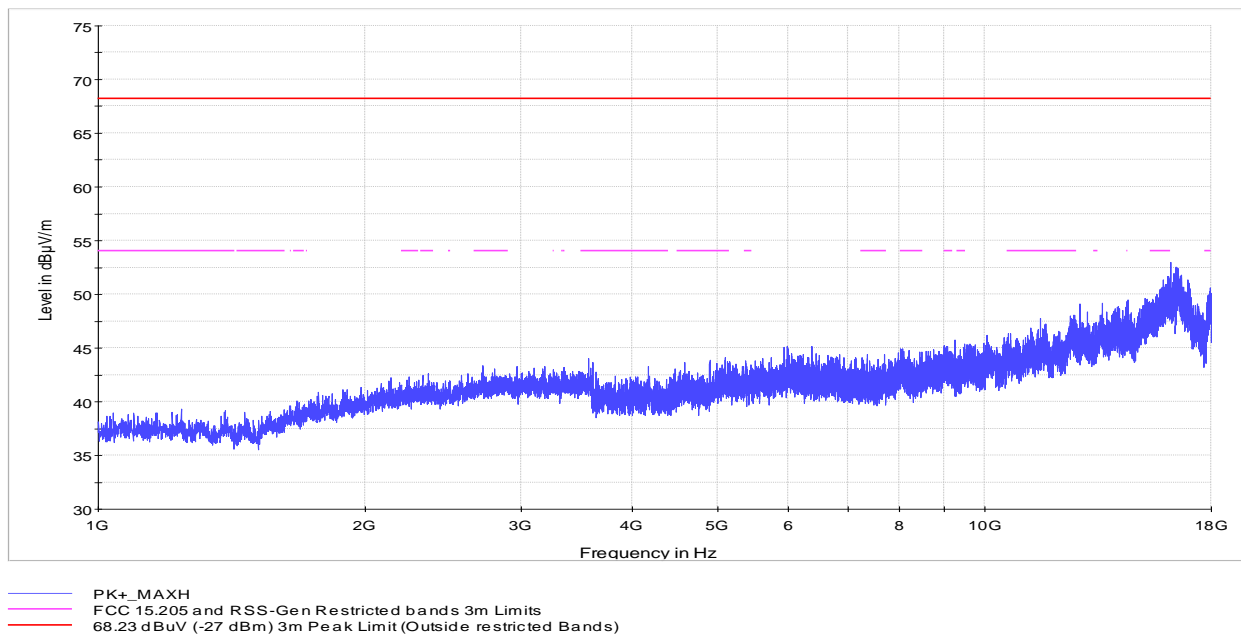


Figure 8.1-8: Radiated – Undesirable (unwanted) emissions 1 to 18 GHz, Channel 140 – 5700 MHz

#### 8.1.4 Test data, continued

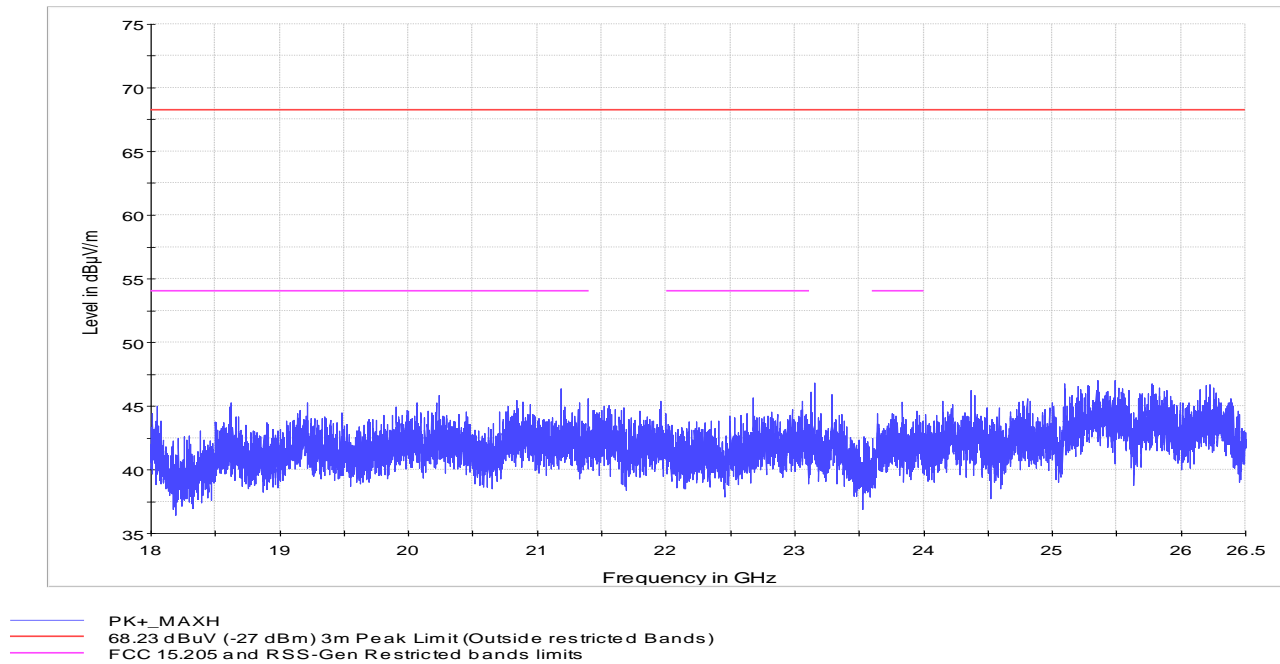


Figure 8.1-9: Radiated – Undesirable (unwanted) emissions 18 to 26 GHz, Channel 100 – 5500 MHz

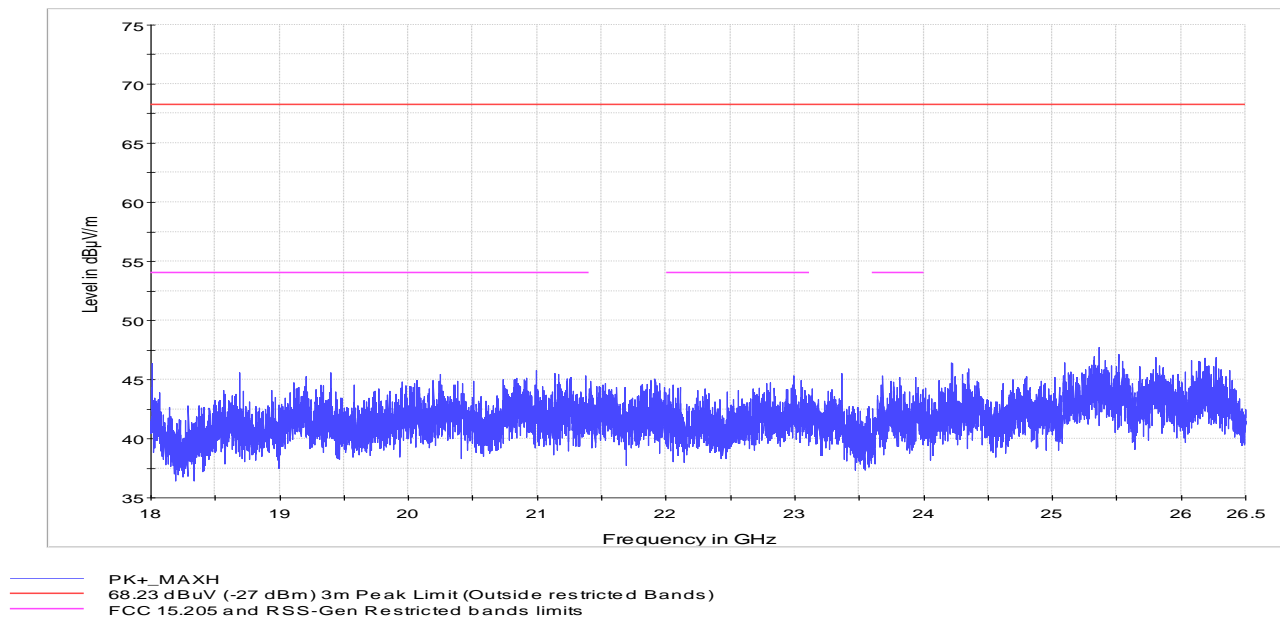
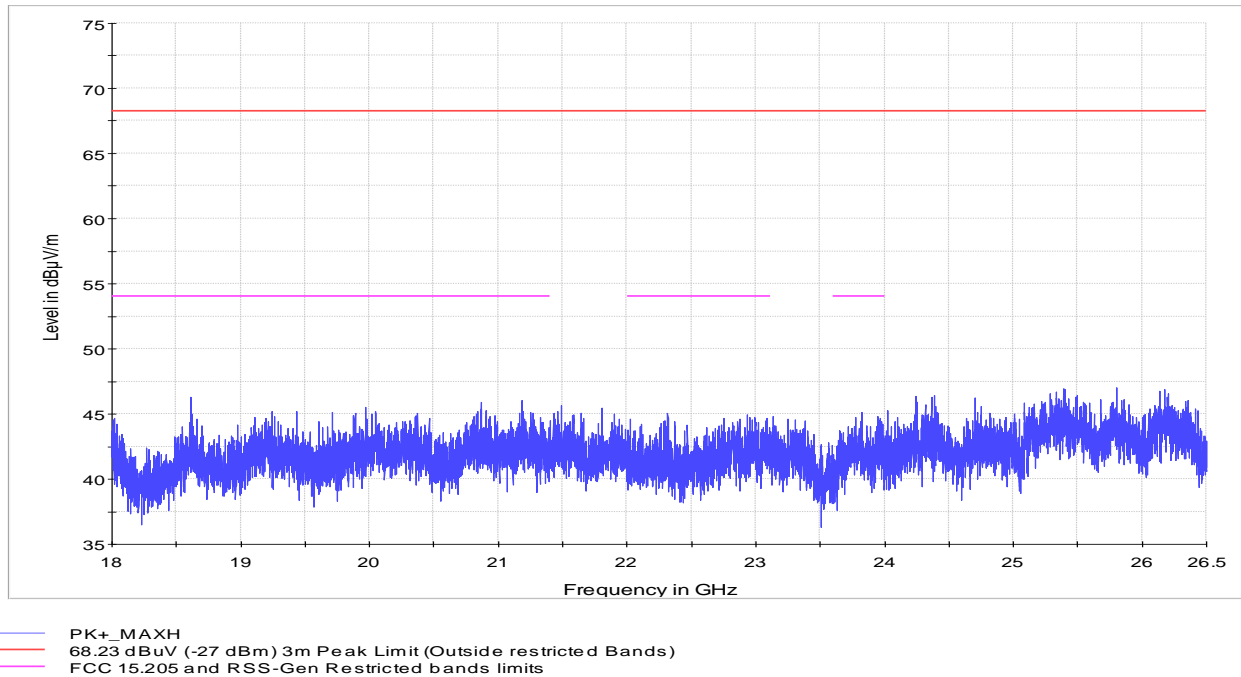
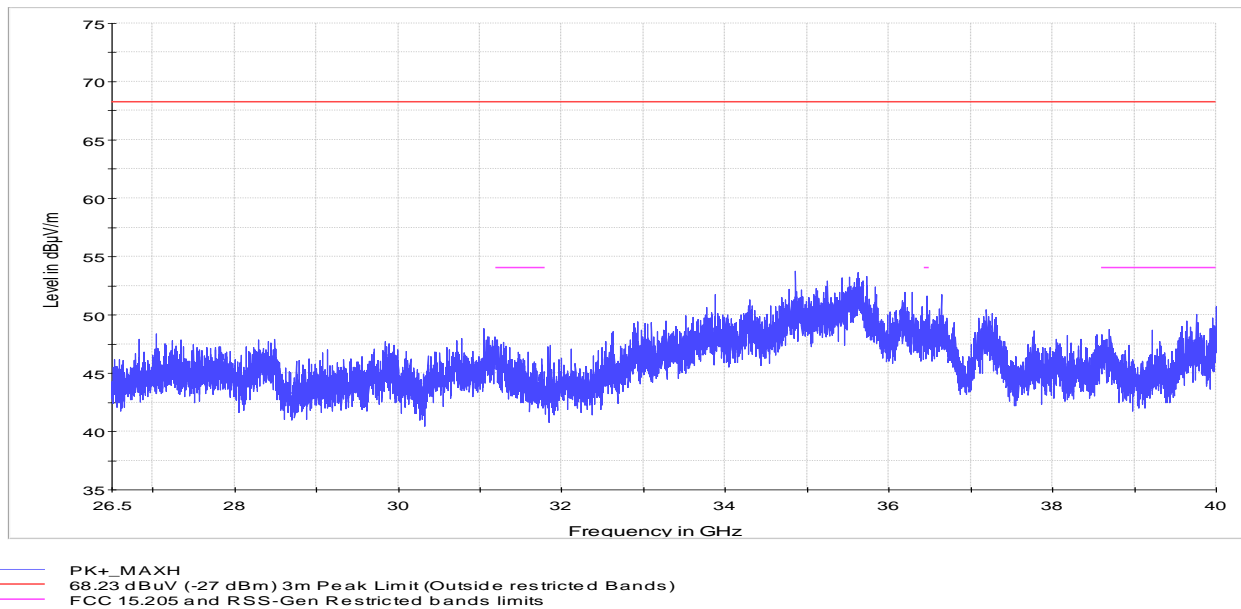


Figure 8.1-10: Radiated – Undesirable (unwanted) emissions 18 to 26 GHz, Channel 116 – 5580 MHz

#### 8.1.4 Test data, continued

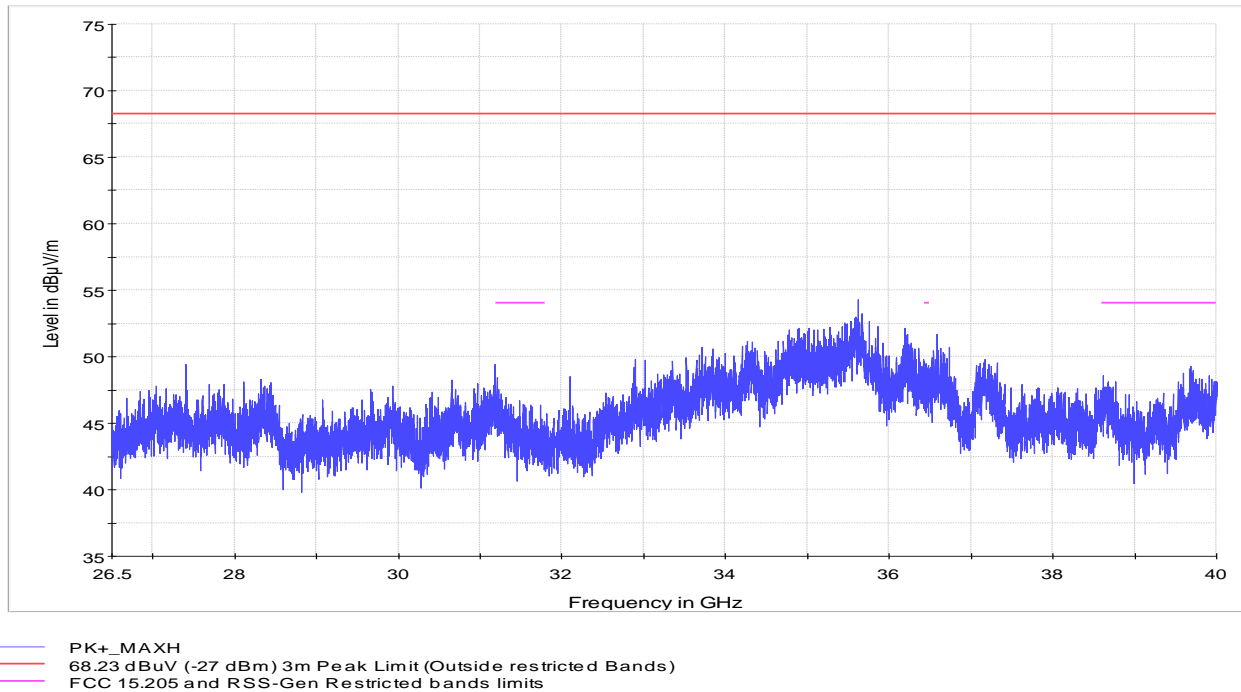


**Figure 8.1-11:** Radiated – Undesirable (unwanted) emissions 18 to 26 GHz, Channel 140 – 5700 MHz

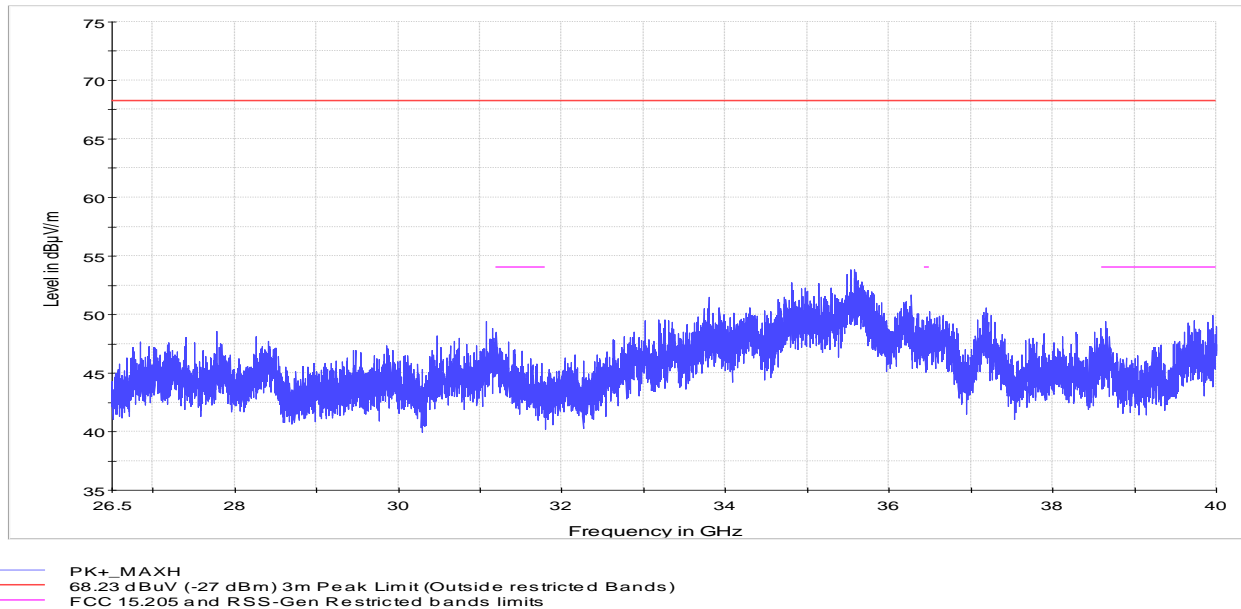


**Figure 8.1-12:** Radiated – Undesirable (unwanted) emissions 26 to 40 GHz, Channel 100 – 5500 MHz

#### 8.1.4 Test data, continued

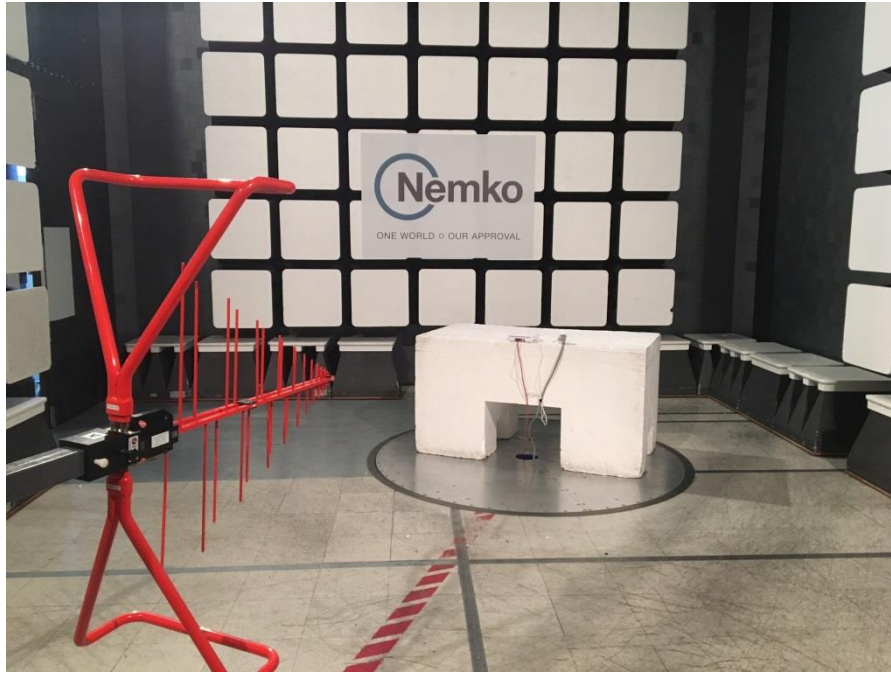


**Figure 8.1-13:** Radiated – Undesirable (unwanted) emissions 26 to 40 GHz, Channel 116 – 5580 MHz



**Figure 8.1-14:** Radiated – Undesirable (unwanted) emissions 26 to 40 GHz, Channel 140 – 5700 MHz

### 8.1.5 Setup photos



**Figure 8.1-15:** Radiated – Undesirable (unwanted) emissions setup photo – below 1 GHz



**Figure 8.1-16:** Radiated – Undesirable (unwanted) emissions setup photo – below 1 GHz



8.1.5 Setup photos, continued



Figure 8.1-17: Radiated – Undesirable (unwanted) emissions setup photo – above 1 GHz



Figure 8.1-18: Radiated – Undesirable (unwanted) emissions setup photo – above 1 GHz

## 8.2 FCC 15.407(a)(2) and RSS-247 6.2.3.1 Power limits

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### 8.2.1 Definitions and limits

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**FCC §15.407:**

(a) *Power limits:*

- (2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

**RSS-247 Section 6.2.3.1:**

The maximum conducted output power shall not exceed 250 mW or 11 + 10 log<sub>10</sub>B, dBm, whichever is less. The power spectral density shall not exceed 11 dBm in any 1.0 MHz band.

- a. The maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log<sub>10</sub>B, dBm, whichever is less. B is the 99% emission bandwidth in megahertz. Note that devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.

### 8.2.2 Test summary

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Verdict

Pass

### 8.2.3 Observations, settings and special notes

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Measurement data was taken from Sporton Report No.: FR4O0971D, Form FCC ID: Z64-WL18DBMOD. Client has changed the antenna; new calculations have been performed to demonstrate continued compliance.



## 8.2.4 Test data

**Table 8.2-1: Power and EIRP results for FCC**

Mod	Data rate	Chn.	Freq., MHz	Average conducted Power, dBm		Conducted power limit <sup>1</sup> , dBm		Margin, dB		Antenna gain, dBi		e.i.r.p., dBm		e.i.r.p. limit, dBm		e.i.r.p. margin, dBm	
				Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2
11a	6 Mbps	100	5500	14.30	14.52	24.00	24.00	9.70	9.48	4.60	4.60	18.90	19.12	30.00	30.00	11.10	10.88
11a	6 Mbps	116	5580	17.50	18.44	24.00	24.00	6.50	5.56	4.60	4.60	22.10	23.04	30.00	30.00	7.90	6.96
11a	6 Mbps	140	5700	11.82	11.94	24.00	24.00	12.18	12.06	4.60	4.60	16.42	16.54	30.00	30.00	13.58	13.46
HT20	MCS0	100	5500	14.06	14.93	24.00	24.00	9.94	9.07	4.60	4.60	18.66	19.53	30.00	30.00	11.34	10.47
HT20	MCS0	116	5580	17.24	17.52	24.00	24.00	6.76	6.48	4.60	4.60	21.84	22.12	30.00	30.00	8.16	7.88
HT20	MCS0	140	5700	11.76	12.19	24.00	24.00	12.24	11.81	4.60	4.60	16.36	16.79	30.00	30.00	13.64	13.21
HT40	MCS0	102	5510	11.52	11.28	24.00	24.00	12.48	12.72	4.60	4.60	16.12	15.88	30.00	30.00	13.88	14.12
HT40	MCS0	110	5550	15.78	16.74	24.00	24.00	8.22	7.26	4.60	4.60	20.38	21.34	30.00	30.00	9.62	8.66
HT40	MCS0	134	5670	12.56	12.83	24.00	24.00	11.44	11.17	4.60	4.60	17.16	17.43	30.00	30.00	12.84	12.57

Notes: <sup>1</sup> The maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz.

**Table 8.2-2: Power and EIRP results for RSS**

Mod	Data rate	Chn.	Freq., MHz	Average conducted Power, dBm		Conducted power limit <sup>1</sup> , dBm		Margin, dB		Antenna gain, dBi		e.i.r.p., dBm		e.i.r.p. limit <sup>2</sup> , dBm		e.i.r.p. margin, dBm	
				Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2
11a	6 Mbps	100	5500	14.30	14.52	23.43	23.43	9.13	8.91	4.60	4.60	18.90	19.12	29.43	29.43	10.53	10.31
11a	6 Mbps	116	5580	17.50	18.44	23.90	23.90	6.40	5.46	4.60	4.60	22.10	23.04	29.90	29.90	7.80	6.86
11a	6 Mbps	140	5700	11.82	11.94	23.37	23.37	11.55	11.43	4.60	4.60	16.42	16.54	29.37	29.37	12.95	12.83
HT20	MCS0	100	5500	14.06	14.93	23.75	23.75	9.69	8.82	4.60	4.60	18.66	19.53	29.75	29.75	11.09	10.22
HT20	MCS0	116	5580	17.24	17.52	23.73	23.73	6.49	6.21	4.60	4.60	21.84	22.12	29.73	29.73	7.89	7.61
HT20	MCS0	140	5700	11.76	12.19	23.67	23.67	11.91	11.48	4.60	4.60	16.36	16.79	29.67	29.67	13.31	12.88
HT40	MCS0	102	5510	11.52	11.28	24.00	24.00	12.48	12.72	4.60	4.60	16.12	15.88	30.00	30.00	13.88	14.12
HT40	MCS0	110	5550	15.78	16.74	24.00	24.00	8.22	7.26	4.60	4.60	20.38	21.34	30.00	30.00	9.62	8.66
HT40	MCS0	134	5670	12.56	12.83	24.00	24.00	11.44	11.17	4.60	4.60	17.16	17.43	30.00	30.00	12.84	12.57

Notes: <sup>1</sup> The maximum conducted output power shall not exceed 250 mW or 11 + 10 log<sub>10</sub>B, dBm, whichever is less, B is the 99% emission bandwidth in megahertz.

<sup>2</sup> The maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log<sub>10</sub>B, dBm, whichever is less. B is the 99% emission bandwidth in megahertz.

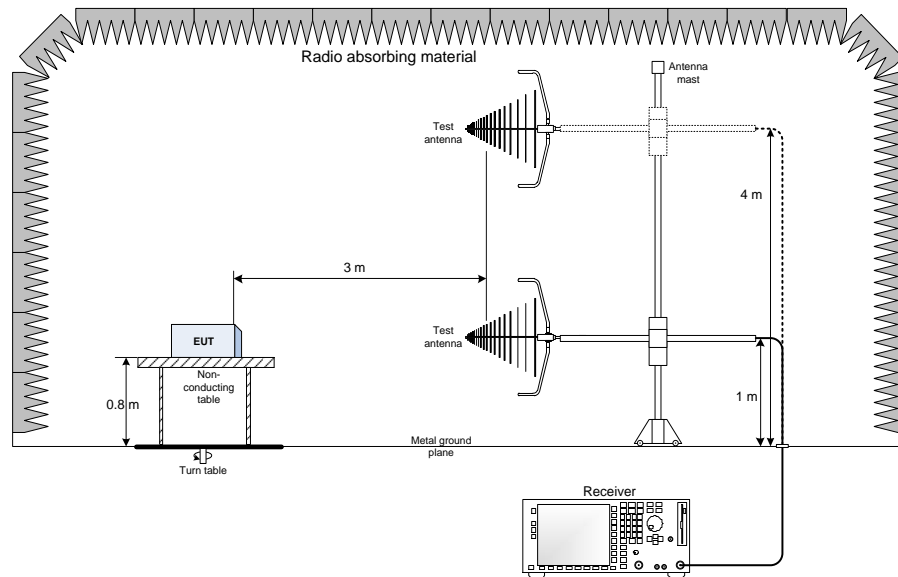
**Table 8.2-3: Emission bandwidth results**

Modulation	Data rate	Chn.	99 Percent bandwidth, MHz	26 dB bandwidth, MHz
11a	6 Mbps	100	17.5	27.05
11a	6 Mbps	116	19.5	33.35
11a	6 Mbps	140	17.25	25.3
HT20	MCS0	100	18.85	29.3
HT20	MCS0	116	18.75	28.6
HT20	MCS0	140	18.5	27.8
HT40	MCS0	102	36	44.64
HT40	MCS0	110	36.5	57.69
HT40	MCS0	134	36.1	48.15

Notes: None

## Section 9. Block diagrams of test set-ups

### 9.1 Radiated emissions set-up for frequencies below 1 GHz



### 9.2 Radiated emissions set-up for frequencies above 1 GHz

