



FCC COMPLIANCE TEST REPORT

Technical Statement of Conformity
in accordance with 47 CFR Part 15 Subpart C

The product

Equipment Under Test	: Portable Laser Projector
Model Number	: MP-01
Product Series	: N/A
Report Number	: HA170555-RA
Issue Date	: 22-AUG-2017
Test Result	: Compliance

is produced by

ALPITH Co.

2F, No. 139, Jian 1st Road, Zhunghe District, New Taipei City, Taiwan 23585



HongAn TECHNOLOGY CO., LTD.
HongAn TECHNOLOGY EMC Laboratory

NO.15-1, CWEISHUH KENG, CWEIPIN VILLAGE,
LINKOU, TAIPEI COUNTY,
TAIWAN, R. O. C.

TEL: +886-2-26030362
FAX: +886-2-26019259
E-mail: hatlab@ms19.hinet.net

BSMI Registration No.: SL2-IN-E-0023, SL2-A1-E-0023, SL2-IS-E-0023, SL2-R1-E-0023, SL2-R2-E-0023, SL2-L1-E-0023
FCC Designation No. : TW1071, TW1163
TAF Accreditation No. : 1163
VCCI Registration No. : R-2156,C-2329,T-219, G-696



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Test Result Certification

Applicant : ALPITH Co.
Address of Applicant : 2F, No. 139, Jian 1st Road, Zhunghe District, New Taipei City, Taiwan 23585
Manufacturer : Shinex Electronic Industries Inc.
Address of Manufacturer : 2F, No. 139, Jian 1st Road, Zhunghe District, New Taipei City, Taiwan 23585
Trade Name : MEEMO
Equipment Under Test : Portable Laser Projector
Model Number : MP-01
Product Series : N/A
FCC ID : 2AJPLMP01
Filing Type : Certification
Sample Received Date : 25-MAY-2017
Test Standard :

☒ FCC Part 15 Subpart C §15.249

Deviations from standard test methods & any other specifications : NONE

Remark:

1. This report details the results of the test carried out on one sample.
2. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in both ANSI C63.10 (2013) and the energy emitted by the sample EUT tested as described in this report is in compliance with the requirements of FCC Rules Part 15.203, 15.207, 15.209, 15.249.
3. This report applies to the above sample only and shall not be reproduced in part without written approval of HongAn Technology Co., Ltd.

Documented by:

Mei Cheng

Mei Cheng / ADM. Dept. Staff

Date: 22-AUG-2017

Tested by:

Andrew Lin

Andrew Lin / ENG. Dept. Staff

Date: 11-AUG-2017

Approved by:

Adam Yang

Adam Yang / SEC. Manager

Date: 22-AUG-2017



Summary of Test Result

	Test Item	Applicable Standard	Test Result
1	Antenna Requirement	FCC part 15 subpart C §203	Compliance
2	Conducted Emission	FCC part 15 subpart C §207	Compliance
3	Restricted Band of Operation	FCC part 15 subpart C §205	Compliance
4	Radiated Emission	FCC part 15 subpart C §209	Compliance
5	Field Strength	FCC part 15 subpart C §249(a)	Compliance
6	Out of Band Emission	FCC part 15 subpart C §249(d)	Compliance
7	20dB Bandwidth	FCC part 15 subpart C §215(c)	Compliance

1 General Description

1.1 Description of EUT

Equipment Under Test	:	Portable Laser Projector																																																																																																																																																																																			
Model Number of EUT	:	MP-01																																																																																																																																																																																			
Product Series	:	N/A																																																																																																																																																																																			
Power Supply	:	Switching Adapter Manufacturer: AQUIL STAR PRECISION INDUSTRIAL (SHENZHEN) CO., LTD. Model No.: ASSA75w2-050480 EMC Approval: CE Input: 100~240Vac, 50/60Hz, 1.2A Output: 5Vdc, 4.8A																																																																																																																																																																																			
Frequency Range	:	2402~2480 MHz																																																																																																																																																																																			
Number of Channels	:	79 Channels																																																																																																																																																																																			
Carrier Frequency of Each Channel	:	<table><tr><td>Ch.</td><td>Fre. (MHz)</td><td>Ch.</td><td>Fre. (MHz)</td><td>Ch.</td><td>Fre. (MHz)</td><td>Ch.</td><td>Fre. (MHz)</td><td>Ch.</td><td>Fre. (MHz)</td></tr><tr><td>00</td><td>2402</td><td>16</td><td>2418</td><td>32</td><td>2434</td><td>48</td><td>2450</td><td>64</td><td>2466</td></tr><tr><td>01</td><td>2403</td><td>17</td><td>2419</td><td>33</td><td>2435</td><td>49</td><td>2451</td><td>65</td><td>2467</td></tr><tr><td>02</td><td>2404</td><td>18</td><td>2420</td><td>34</td><td>2436</td><td>50</td><td>2452</td><td>66</td><td>2468</td></tr><tr><td>03</td><td>2405</td><td>19</td><td>2421</td><td>35</td><td>2437</td><td>51</td><td>2453</td><td>67</td><td>2469</td></tr><tr><td>04</td><td>2406</td><td>20</td><td>2422</td><td>36</td><td>2438</td><td>52</td><td>2454</td><td>68</td><td>2470</td></tr><tr><td>05</td><td>2407</td><td>21</td><td>2423</td><td>37</td><td>2439</td><td>53</td><td>2455</td><td>69</td><td>2471</td></tr><tr><td>06</td><td>2408</td><td>22</td><td>2424</td><td>38</td><td>2440</td><td>54</td><td>2456</td><td>70</td><td>2472</td></tr><tr><td>07</td><td>2409</td><td>23</td><td>2425</td><td>39</td><td>2441</td><td>55</td><td>2457</td><td>71</td><td>2473</td></tr><tr><td>08</td><td>2410</td><td>24</td><td>2426</td><td>40</td><td>2442</td><td>56</td><td>2458</td><td>72</td><td>2474</td></tr><tr><td>09</td><td>2411</td><td>25</td><td>2427</td><td>41</td><td>2443</td><td>57</td><td>2459</td><td>73</td><td>2475</td></tr><tr><td>10</td><td>2412</td><td>26</td><td>2428</td><td>42</td><td>2444</td><td>58</td><td>2460</td><td>74</td><td>2476</td></tr><tr><td>11</td><td>2413</td><td>27</td><td>2429</td><td>43</td><td>2445</td><td>59</td><td>2461</td><td>75</td><td>2477</td></tr><tr><td>12</td><td>2414</td><td>28</td><td>2430</td><td>44</td><td>2446</td><td>60</td><td>2462</td><td>76</td><td>2478</td></tr><tr><td>13</td><td>2415</td><td>29</td><td>2431</td><td>45</td><td>2447</td><td>61</td><td>2463</td><td>77</td><td>2479</td></tr><tr><td>14</td><td>2416</td><td>30</td><td>2432</td><td>46</td><td>2448</td><td>62</td><td>2464</td><td>78</td><td>2480</td></tr><tr><td>15</td><td>2417</td><td>31</td><td>2433</td><td>47</td><td>2449</td><td>63</td><td>2465</td><td>--</td><td>--</td></tr></table>										Ch.	Fre. (MHz)	Ch.	Fre. (MHz)	Ch.	Fre. (MHz)	Ch.	Fre. (MHz)	Ch.	Fre. (MHz)	00	2402	16	2418	32	2434	48	2450	64	2466	01	2403	17	2419	33	2435	49	2451	65	2467	02	2404	18	2420	34	2436	50	2452	66	2468	03	2405	19	2421	35	2437	51	2453	67	2469	04	2406	20	2422	36	2438	52	2454	68	2470	05	2407	21	2423	37	2439	53	2455	69	2471	06	2408	22	2424	38	2440	54	2456	70	2472	07	2409	23	2425	39	2441	55	2457	71	2473	08	2410	24	2426	40	2442	56	2458	72	2474	09	2411	25	2427	41	2443	57	2459	73	2475	10	2412	26	2428	42	2444	58	2460	74	2476	11	2413	27	2429	43	2445	59	2461	75	2477	12	2414	28	2430	44	2446	60	2462	76	2478	13	2415	29	2431	45	2447	61	2463	77	2479	14	2416	30	2432	46	2448	62	2464	78	2480	15	2417	31	2433	47	2449	63	2465	--	--
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15	2417	31	2433	47	2449	63	2465	--	--																																																																																																																																																																												
Antenna Specification	:	PIFA Antenna / Gain: -4.3 dBi																																																																																																																																																																																			
Modulation Technique	:	Bluetooth 4.0+EDR Bluetooth : GFSK Bluetooth EDR : $\pi/4$ -DQPSK, 8-DPSK																																																																																																																																																																																			



Transmit Data Rate	:	Bluetooth : 1~3Mbps
Specification	:	Dimensions : 14.5 cm (L) X 7.5 cm (W) X 1.5 cm (H) Function : The EUT is a Bluetooth Portable Laser Projector. ※For more detail specification, please refer to the User Manual.

1.2 Test Instruments

Instrument Name	Manufacture	Model Number	Serial Number	Last Cal. Date	Next Cal. Date
LISN	EMCO	3810/2NM	9702-1819	07-Jul-2017	06-Jul-2018
LISN	Rolf Heine Hochfrequenztechnik	NNB-4/32T	00001	08-Mar-2017	07-Mar-2018
Preamplifier	CHASE	CPA 9231A	0405	24-Aug-2016	23-Aug-2017
Preamplifier	HD	HD17187	004	22-May-2017	21-May-2018
Microwave Preamplifier	Com-Power	PAM-840	461269	24-May-2017	23-May-2018
Bilog Antenna	TESEQ	CBL6111D	25769	13-Feb-2017	12-Feb-2018
Bilog Antenna	TESEQ	CBL6111D	38521	18-Oct-2016	17-Oct-2017
Double-Ridged Waveguide Horn	EMCO	3115	9912-5992	22-May-2017	21-May-2018
Horn Antenna	Com-Power	AH-840	101042	25-May-2017	24-May-2018
EMI Receiver	R&S	ESR	101970	12-Oct-2016	11-Oct-2017
Spectrum Analyzer	R&S	FSV	101629	27-JAN-2017	26-JAN-2018
Temp. & Humidity Chamber	Giant Force	GTH-150-20-SP-AR	MMA0907-012	14-JUL-2017	13-JUL-2018
Wideband Power Sensor	R&S	NRP-Z11	121519	06-Oct-2016	05-Oct-2017
WIDEBAND RADIO COMMUNICATION TESTER	ROHDE&SCHWARZ	CMW-500	141958	05-NOV-2016	04-NOV-2017

※ The test equipments used are calibrated and can be traced to National ITRI and International Standards.

1.3 Auxiliary Equipments

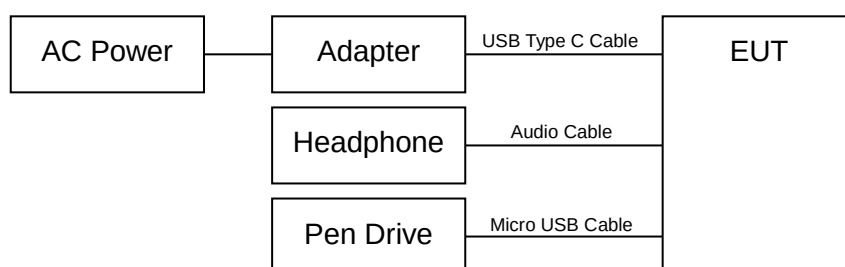
1.3.1. Provided by HongAn Technology Co., Ltd. for RF Test.

No.	Equipment	Model No.	Serial No.	EMC Approved	Brand	Description	
						Data Cable	Power Cable
01	Headphone	YE-106S	N/A	CE Mark, FCC DoC, CCC	SUNBENBO	N/A	N/A
02	Pen Drive	16G-USB3.0	N/A	CE Mark, FCC DoC, BSMI ID D33724	SanDisk	N/A	N/A

1.3.2. Provided by the Manufacturer

N/A

1.4 EUT SETUP



Note: Main Test Sample: MP-01

1.5 Identifying the Final Test Mode

1. Mode 1: TX BT Mode (1Mbps) CH 00.
2. Mode 2: TX BT Mode (1Mbps) CH 39.
3. Mode 3: TX BT Mode (1Mbps) CH 78.
4. Mode 4: TX BT EDR Mode (2Mbps) CH 00.
5. Mode 5: TX BT EDR Mode (2Mbps) CH 39.
6. Mode 6: TX BT EDR Mode (2Mbps) CH 78.
7. Mode 7: TX BT EDR Mode (3Mbps) CH 00.
8. Mode 8: TX BT EDR Mode (3Mbps) CH 39.
9. Mode 9: TX BT EDR Mode (3Mbps) CH 78.

Note:

1. After pre-test, we identified that the TX (Packet type DH5 and Vertical) was most likely to cause maximum disturbance. Therefore, the Final Assessment was performed for the worst case.
2. The EUT was operated in the engineering mode to fix the TX frequency that was for the purpose of the measurements.
3. Channel Low (2402 MHz), Mid (2441 MHz) and High (2480 MHz) were chosen for full testing.
4. According to its specifications, the EUT must comply with the requirements of the Section 15.203, 15.207, 15.209 and 15.249 under the FCC Rules Part 15 Subpart C.

1.6 Final Test Mode

Conducted Emission: Mode 7.

Field Strength: All Mode.

Radiated Emission (30~1000 MHz): Mode 7.

Radiated Emission (1~26.5GHz): All Mode.

1.7 Condition of Power Supply

AC 120V ; 60Hz

1.8 EUT Configuration

1. Setup the EUT as shown in Sec.1.4 Block Diagram.
2. Turn on the power of all equipments.
3. Activate the selected Final Test Mode.

1.9 Test Methodology

The tests documented in this report were performed in accordance with ANSI C63.10 (2013) and FCC CFR 47 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055, 2.1057, 15.203, 15.207, 15.209 and 15.249.

1.10 General Test Procedures

Conducted Emissions

The EUT is set according to the requirements in Section 6.2 of ANSI C63.10 (2013).

Radiated Emissions

The EUT is set according to the requirements in Section 6.3 of ANSI C63.10 (2013).

1.11 Modification

The EUT has the following modifications:

Item	Location	Manufacturer	Model Number / Specification
External photo on page 6	USB to HDMI cable near HDMI port add a core	EROCORE ENTERPRISE CO., LTD.	FH0650B / 32.5 (L)*17.5(W)*6.5(ID)mm
External photo on page 7	USB type C port add a core	EROCORE ENTERPRISE CO., LTD.	FH0500B-1 / 25 (L)*12.7(W)*5(ID)mm
External photo on page 7	Micro USB port add a core	EROCORE ENTERPRISE CO., LTD.	FH0650B / 32.5 (L)*17.5(W)*6.5(ID)mm
Internal photo on page 2	Upper and lower shell conductive paint	MOXIE	B Series / 14.5cm*7.5cm
Internal photo on page 8	HDMI Connector add a EMI gasket	TennRich	CAP0102 / 0.5cm*1cm

1.12 FCC Part 15.205 restricted bands of operations

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
¹ 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
8.37635-8.38675	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	(²)
13.36-13.41			

¹ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz

² Above 38.6

(b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

1.13 Qualification of Test Facility

BSMI Certificate No. : SL2-IS-E-0023, SL2-IN-E-0023, SL2-R1-E-0023, SL2-R2-E-0023, SL2-A1-E-0023, SL2-L1-E-0023.

FCC Designation No. : TW1071, TW1163

TAF Accreditation No. : 1163

VCCI Certificate No. : R-2156, C-2329, T-219, G-696

2 Power line Conducted Emission Measurement

2.1 Test Instruments

Refer to Sec. 1.2 Test Instruments.

2.2 Test Arrangement and Procedure

1. The EUT was placed on a table, which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured were complete.

2.3 Limit (§ 15.207)

For an intentional radiator which 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 250 microvolts (The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz). The limits at specific frequency range is listed as follows:

Frequency (MHz)	Limits (dBuV)	
	Q.P. (Quasi-Peak)	A.V. (Average)
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5.0	56	46
5.0 to 30	60	50

Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line (LINE and NEUTRAL) and ground at the power terminals.

2.4 Test Result

Compliance

The final test data are shown on the following page(s).

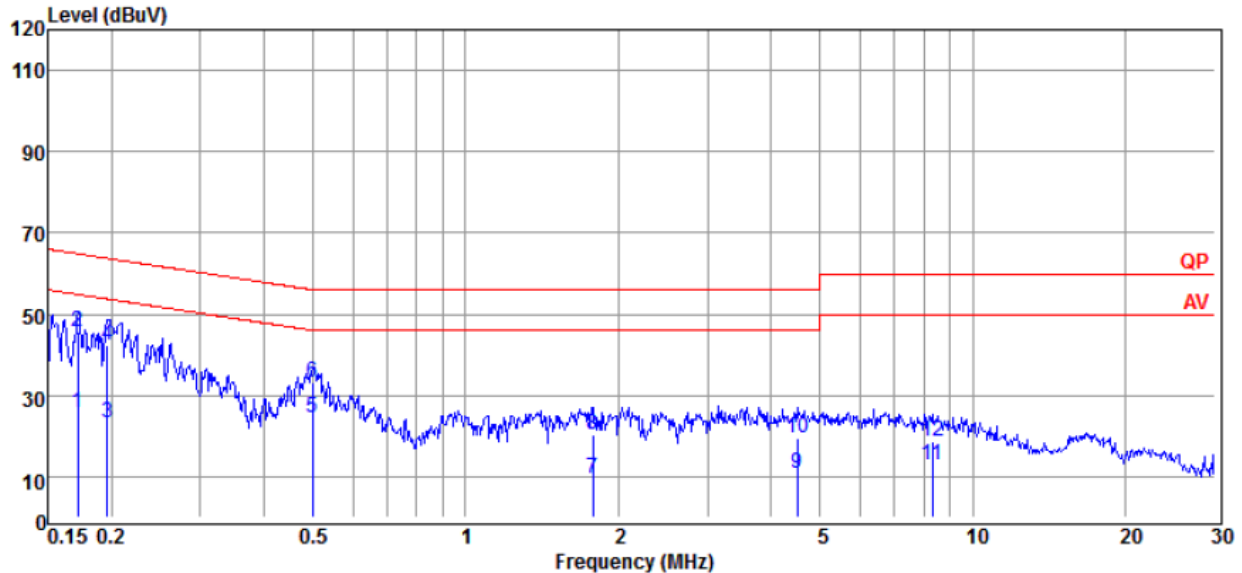
Power Line Conducted Emission Test Data

Test Date : 09-AUG-2017

Power Line : Line

Temperature : 27°C

Humidity : 50%



No.	Freq MHz	Reading dBμV	C.F dB	Result dBμV	Limit dBμV	Margin dB	Power Line	Remark
1	0.1722	25.81	0.13	25.94	54.86	-28.92	LINE	Average
2	0.1722	45.38	0.13	45.51	64.86	-19.35	LINE	QP
3	0.1965	23.27	0.14	23.41	53.76	-30.35	LINE	Average
4	0.1965	42.04	0.14	42.18	63.76	-21.58	LINE	QP
5	0.4994	24.35	0.17	24.52	46.01	-21.49	LINE	Average
6	0.4994	33.13	0.17	33.30	56.01	-22.71	LINE	QP
7	1.7810	9.10	0.26	9.36	46.00	-36.64	LINE	Average
8	1.7810	20.16	0.26	20.42	56.00	-35.58	LINE	QP
9	4.5010	10.52	0.41	10.93	46.00	-35.07	LINE	Average
10	4.5010	19.22	0.41	19.63	56.00	-36.37	LINE	QP
11	8.3230	12.08	0.62	12.70	50.00	-37.30	LINE	Average
12	8.3230	18.24	0.62	18.86	60.00	-41.14	LINE	QP

Remark :

1. Measuring frequencies from 0.15 MHz to 30 MHz.
2. The emissions measured in frequency range from 0.15 MHz to 30 MHz were made with an instrument using quasi-peak detector and average detector.
3. The IF bandwidth of SPA between 0.15 MHz to 30 MHz was 10kHz; the IF bandwidth of Test Receiver between 0.15 MHz to 30 MHz was 9kHz.

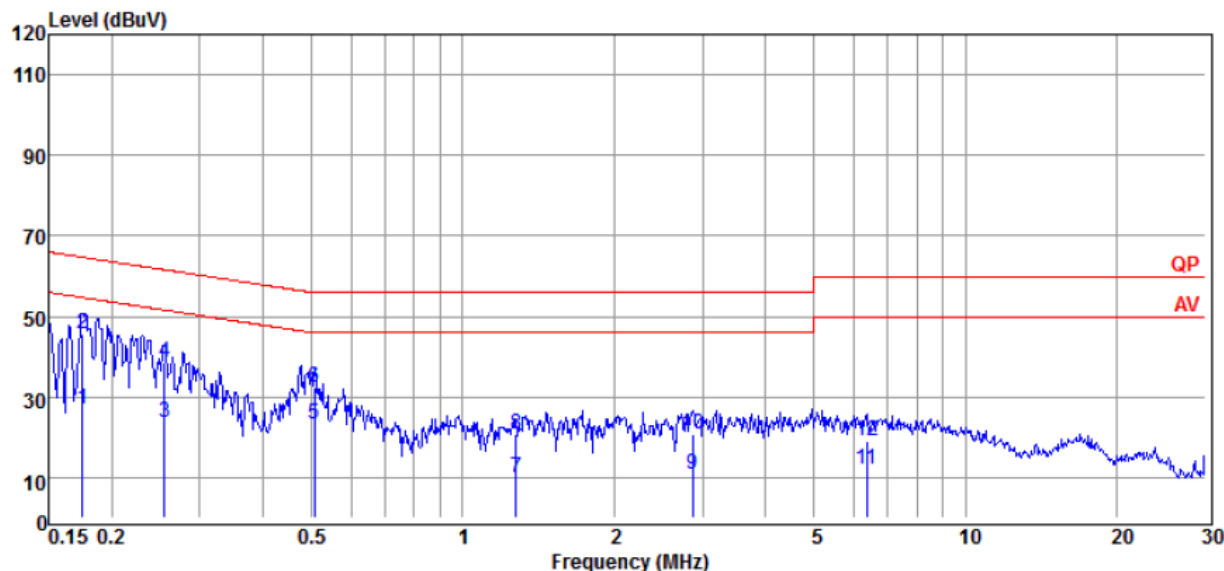
Power Line Conducted Emission Test Data

Test Date : 09-AUG-2017

Power Line : Neutral

Temperature : 27°C

Humidity : 50%



No.	Freq MHz	Reading dBuV	C.F dB	Result dBuV	Limit dBuV	Margin dB	Power Line	Remark
1	0.1749	26.85	0.12	26.97	54.72	-27.75	NEUTRAL	Average
2	0.1749	45.73	0.12	45.85	64.72	-18.87	NEUTRAL	QP
3	0.2548	23.64	0.13	23.77	51.60	-27.83	NEUTRAL	Average
4	0.2548	38.46	0.13	38.59	61.60	-23.01	NEUTRAL	QP
5	0.5074	23.06	0.16	23.22	46.00	-22.78	NEUTRAL	Average
6	0.5074	32.05	0.16	32.21	56.00	-23.79	NEUTRAL	QP
7	1.2760	9.60	0.21	9.81	46.00	-36.19	NEUTRAL	Average
8	1.2760	20.70	0.21	20.91	56.00	-35.09	NEUTRAL	QP
9	2.8690	10.47	0.30	10.77	46.00	-35.23	NEUTRAL	Average
10	2.8690	20.42	0.30	20.72	56.00	-35.28	NEUTRAL	QP
11	6.3520	11.68	0.49	12.17	50.00	-37.83	NEUTRAL	Average
12	6.3520	18.82	0.49	19.31	60.00	-40.69	NEUTRAL	QP

Remark :

1. Measuring frequencies from 0.15 MHz to 30 MHz.
2. The emissions measured in frequency range from 0.15 MHz to 30 MHz were made with an instrument using quasi-peak detector and average detector.
3. The IF bandwidth of SPA between 0.15 MHz to 30 MHz was 10kHz; the IF bandwidth of Test Receiver between 0.15 MHz to 30 MHz was 9kHz.

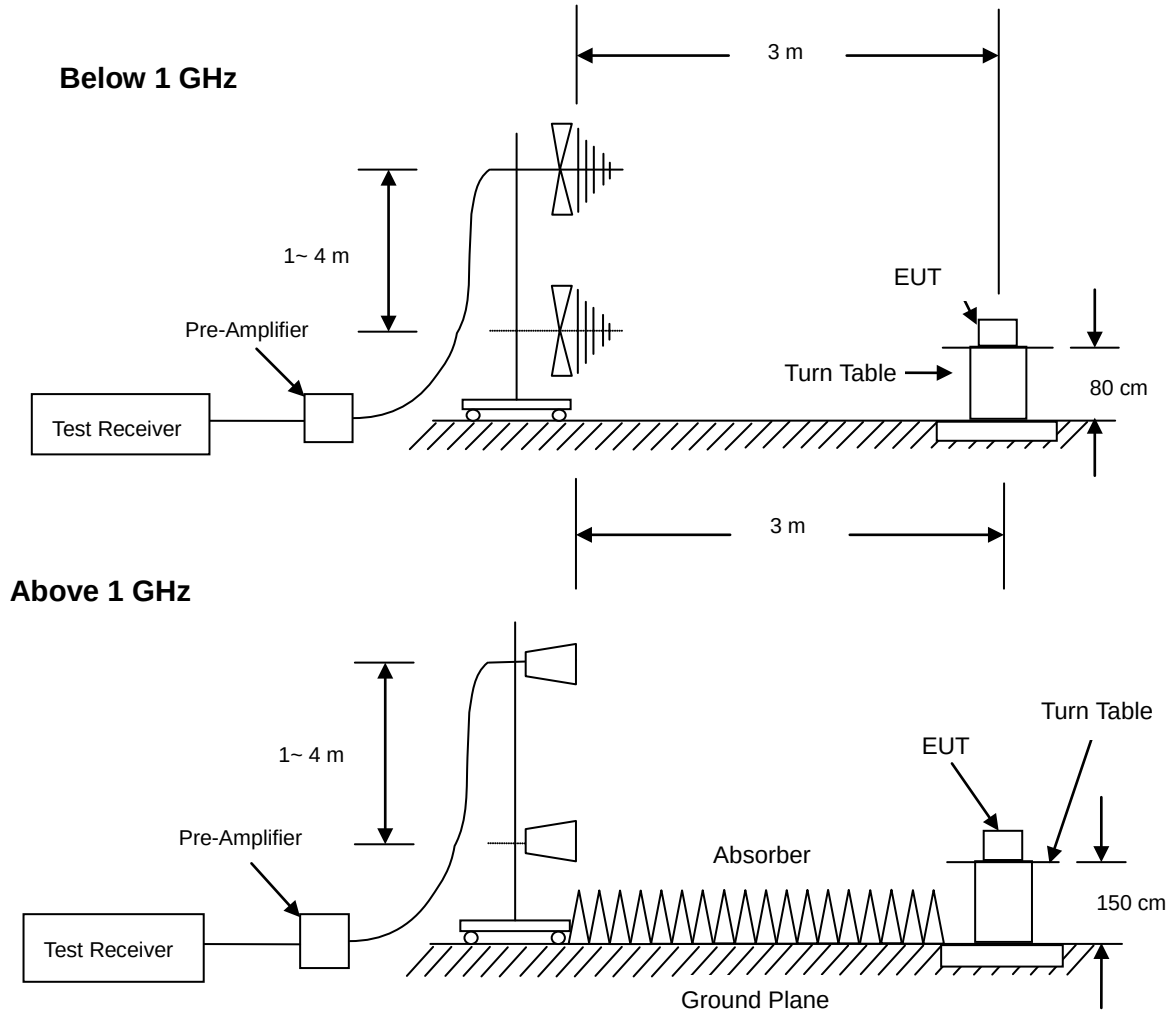


3 Radiated Emission Test

3.1 Test Instruments

Refer to Sec. 1.2 Test Instruments.

3.2 Test Arrangement and Procedure



1. The EUT is placed on a turntable, which is 0.8 m (below 1GHz) and 1.5m (above 1GHz) above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3 m away from the receiving antenna, which is varied from 1 m to 4 m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Set the spectrum analyzer in the following setting as:
 - (a) Below 1 GHz: RBW =100 kHz/ VBW = 1 MHz/ Sweep = AUTO.
 - (b) Above 1 GHz: Peak: RBW = VBW = 1MHz/ Sweep = AUTO; Average: RBW = 1MHz/ VBW = 10Hz/ Sweep = AUTO.
7. Repeat above procedures until the measurements for all frequencies are complete.

3.3 Limit (§ 15.205 & § 15.209 & § 15.249(a))

3.3.1 Limit of Restricted Band of Operation (§ 15.205)

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

Frequency Band			
MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
¹ 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	
13.36-13.41			

3.3.2 Limit of Spurious Emission (§ 15.209)

Emissions radiated outside of 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 lesser attenuation.

Frequency (MHz)	Field strength (microvolts/ meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g. §§ 15.231 and 15.241.

3.3.3 Field Strength of Fundamental (§ 15.249)

(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 (microvolts/meter)
902-928 MHz	50	500
2400-2483.5 MHz	50	500
5725-5875 MHz	50	500
24.0-24.25 GHz	250	2500

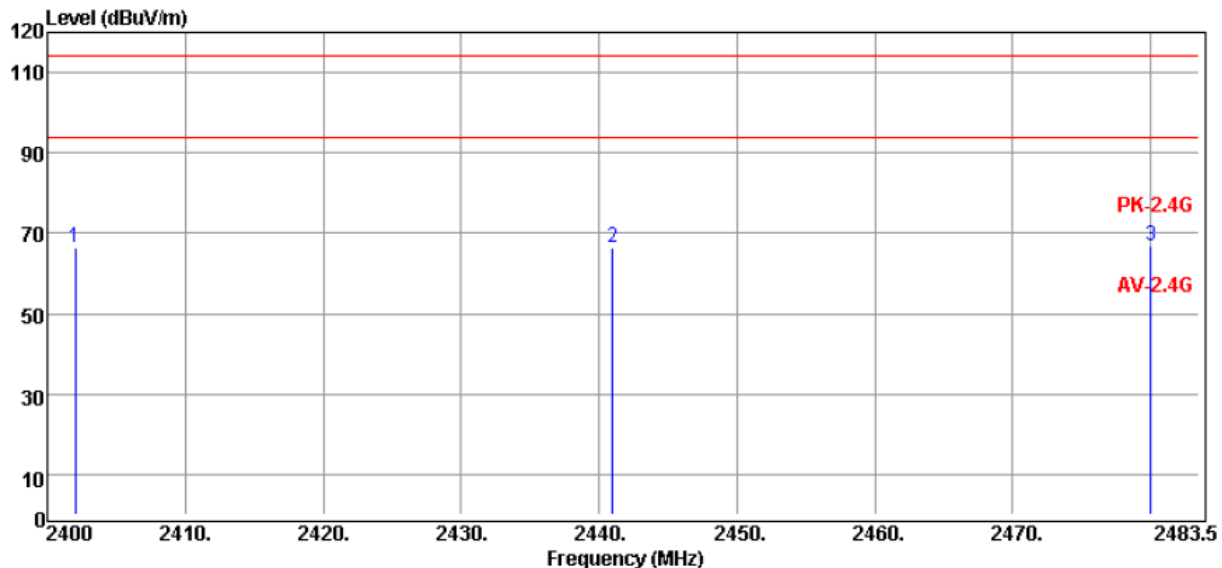
3.4 Test Result

Compliance

The final test data are shown on the following page(s).

Radiated Emission Test Data (Field Strength of Fundamental)

Temperature	: 27°C	Humidity	: 50%
Test Date	: 09-AUG-2017	Tested by	: Andrew Lin
Polarization	: Horizontal	Channel	: CH00, 39, 78
EUT Position	: Vertical	Test Mode	: Mode 1, 2, 3



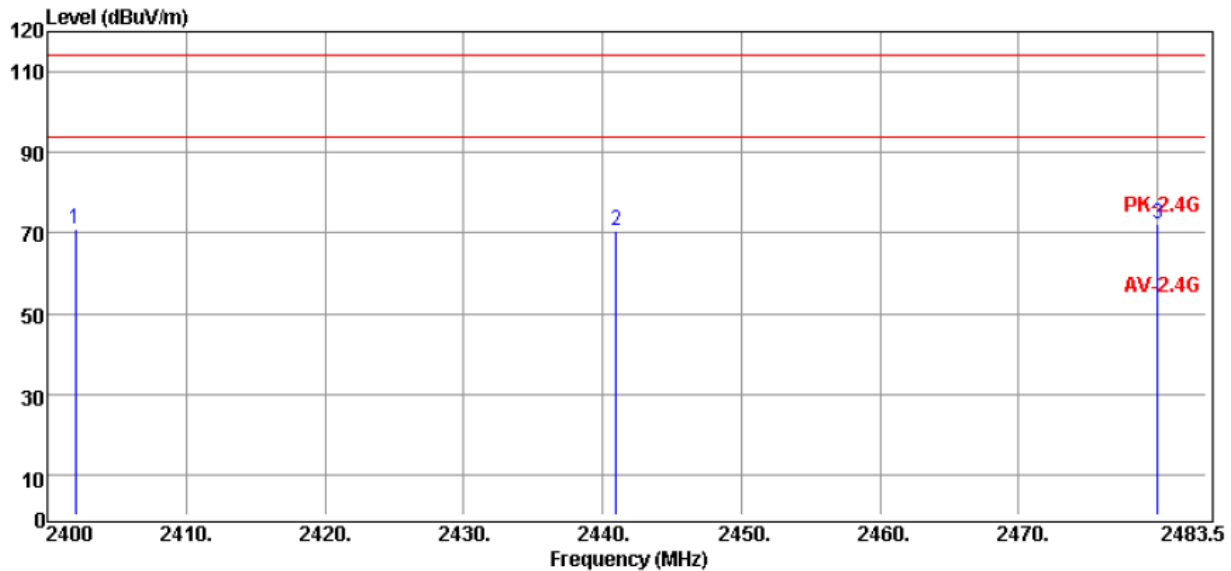
No.	Freq MHz	Reading dBuV	C.F dB	Result dBuV/m	Limit dBuV/m	Margin dB	Antenna Pol.	Remark
1	2402.00	72.47	-5.85	66.62	94.00	-27.38	HORIZONTAL	Peak
2	2441.00	72.03	-5.69	66.34	94.00	-27.66	HORIZONTAL	Peak
3	2480.00	72.52	-5.58	66.94	94.00	-27.06	HORIZONTAL	Peak

Remark :

- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
- Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
- Spectrum setting:
Peak Setting 1GHz to 10th harmonics of fundamental, RBW = 3MHz, VBW = 10MHz, Sweep = AUTO.
Note: Because the 20 dB Bandwidth is over 1MHz, the RBW setting of measuring Field strength of Fundamental should be 3MHz, and VBW should be at 10 MHz.
- Result = Reading + C.F
- Margin = Result – Limit

Radiated Emission Test Data (Field Strength of Fundamental)

Temperature	: 27°C	Humidity	: 50%
Test Date	: 09-AUG-2017	Tested by	: Andrew Lin
Polarization	: Vertical	Channel	: CH00, 39, 78
EUT Position	: Vertical	Test Mode	: Mode 1, 2, 3



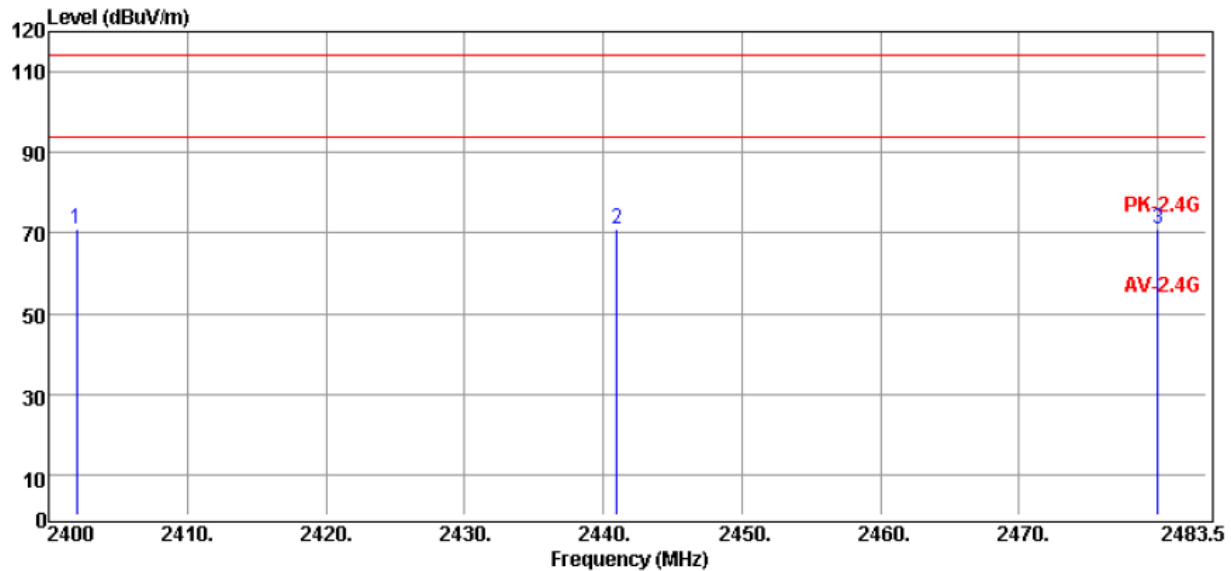
No.	Freq MHz	Reading dBuV	C.F dB	Result dBuV/m	Limit dBuV/m	Margin dB	Antenna Pol.	Remark
1	2402.00	76.74	-5.85	70.89	94.00	-23.11	VERTICAL	Peak
2	2441.00	76.43	-5.69	70.74	94.00	-23.26	VERTICAL	Peak
3	2480.00	77.93	-5.58	72.35	94.00	-21.65	VERTICAL	Peak

Remark :

- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
- Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
- Spectrum setting:
Peak Setting 1GHz to 10th harmonics of fundamental, RBW = 3MHz, VBW = 10MHz, Sweep = AUTO.
Note: Because the 20 dB Bandwidth is over 1MHz, the RBW setting of measuring Field strength of Fundamental should be 3MHz, and VBW should be at 10 MHz.
- Result = Reading + C.F
- Margin = Result – Limit

Radiated Emission Test Data (Field Strength of Fundamental)

Temperature	: 27°C	Humidity	: 50%
Test Date	: 09-AUG-2017	Tested by	: Andrew Lin
Polarization	: Horizontal	Channel	: CH00, 39, 78
EUT Position	: Vertical	Test Mode	: Mode 4, 5, 6



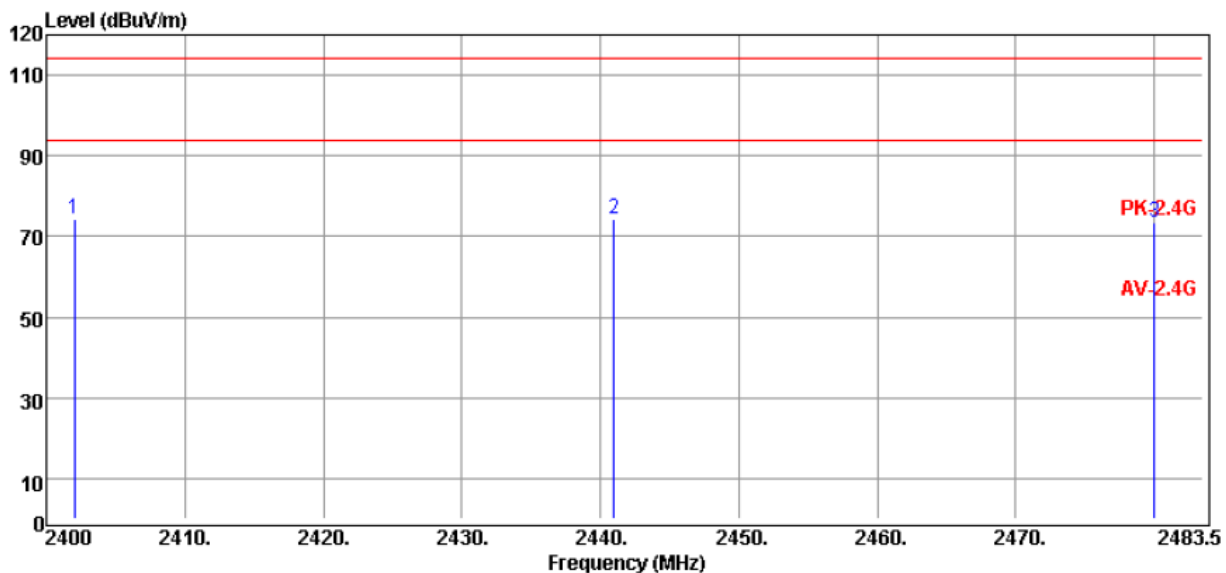
No.	Freq MHz	Reading dBuV	C.F dB	Result dBuV/m	Limit dBuV/m	Margin dB	Antenna Pol.	Remark
1	2402.00	76.87	-5.85	71.02	94.00	-22.98	HORIZONTAL	Peak
2	2441.00	76.79	-5.69	71.10	94.00	-22.90	HORIZONTAL	Peak
3	2480.00	76.70	-5.58	71.12	94.00	-22.88	HORIZONTAL	Peak

Remark :

- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
- Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
- Spectrum setting:
Peak Setting 1GHz to 10th harmonics of fundamental, RBW = 3MHz, VBW = 10MHz, Sweep = AUTO.
Note: Because the 20 dB Bandwidth is over 1MHz, the RBW setting of measuring Field strength of Fundamental should be 3MHz, and VBW should be at 10 MHz.
- Result = Reading + C.F
- Margin = Result – Limit

Radiated Emission Test Data (Field Strength of Fundamental)

Temperature	: 27°C	Humidity	: 50%
Test Date	: 09-AUG-2017	Tested by	: Andrew Lin
Polarization	: Vertical	Channel	: CH00, 39, 78
EUT Position	: Vertical	Test Mode	: Mode 4, 5, 6



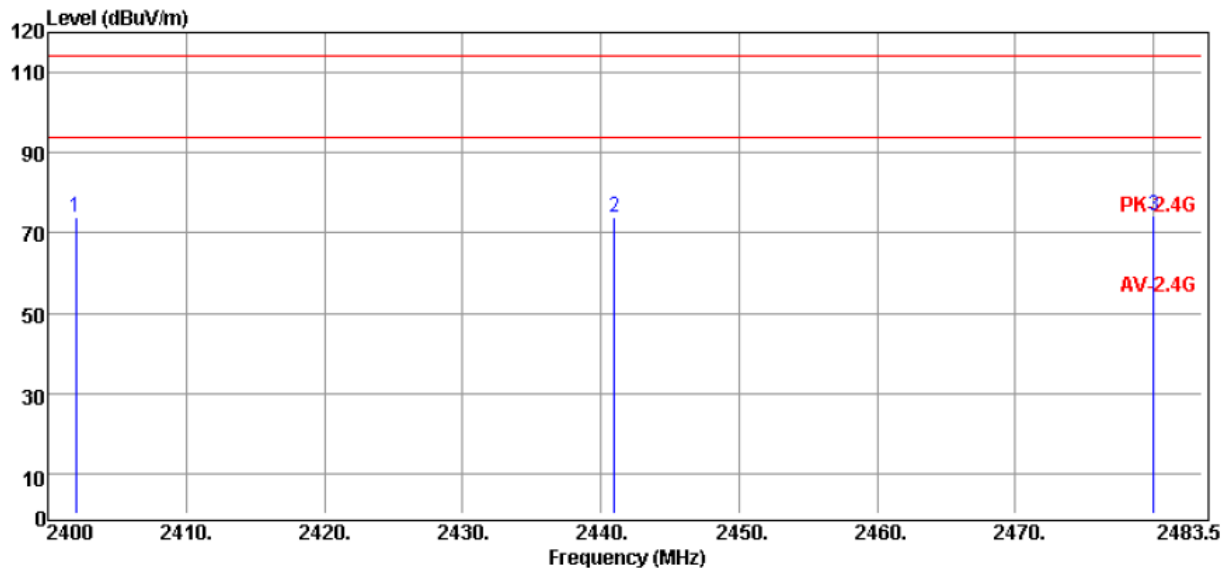
No.	Freq MHz	Reading dBuV	C.F dB	Result dBuV/m	Limit dBuV/m	Margin dB	Antenna Pol.	Remark
1	2402.00	80.37	-5.85	74.52	94.00	-19.48	VERTICAL	Peak
2	2441.00	80.13	-5.69	74.44	94.00	-19.56	VERTICAL	Peak
3	2480.00	79.20	-5.58	73.62	94.00	-20.38	VERTICAL	Peak

Remark :

- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
- Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
- Spectrum setting:
Peak Setting 1GHz to 10th harmonics of fundamental, RBW = 3MHz, VBW = 10MHz, Sweep = AUTO.
Note: Because the 20 dB Bandwidth is over 1MHz, the RBW setting of measuring Field strength of Fundamental should be 3MHz, and VBW should be at 10 MHz.
- Result = Reading + C.F
- Margin = Result – Limit

Radiated Emission Test Data (Field Strength of Fundamental)

Temperature	: 27°C	Humidity	: 50%
Test Date	: 09-AUG-2017	Tested by	: Andrew Lin
Polarization	: Horizontal	Channel	: CH00, 39, 78
EUT Position	: Vertical	Test Mode	: Mode 7, 8, 9



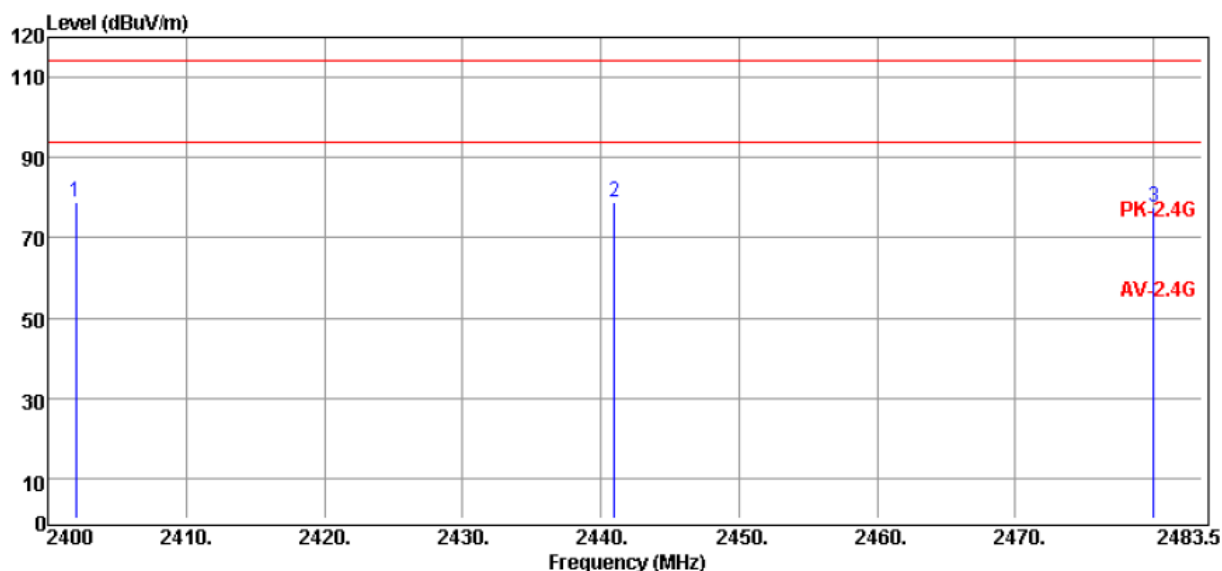
No.	Freq MHz	Reading dBuV	C.F dB	Result dBuV/m	Limit dBuV/m	Margin dB	Antenna Pol.	Remark
1	2402.00	79.76	-5.85	73.91	94.00	-20.09	HORIZONTAL	Peak
2	2441.00	79.40	-5.69	73.71	94.00	-20.29	HORIZONTAL	Peak
3	2480.00	79.75	-5.58	74.17	94.00	-19.83	HORIZONTAL	Peak

Remark :

- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
- Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
- Spectrum setting:
Peak Setting 1GHz to 10th harmonics of fundamental, RBW = 3MHz, VBW = 10MHz, Sweep = AUTO.
Note: Because the 20 dB Bandwidth is over 1MHz, the RBW setting of measuring Field strength of Fundamental should be 3MHz, and VBW should be at 10 MHz.
- Result = Reading + C.F
- Margin = Result – Limit

Radiated Emission Test Data (Field Strength of Fundamental)

Temperature	: 27°C	Humidity	: 50%
Test Date	: 09-AUG-2017	Tested by	: Andrew Lin
Polarization	: Vertical	Channel	: CH00, 39, 78
EUT Position	: Vertical	Test Mode	: Mode 7, 8, 9



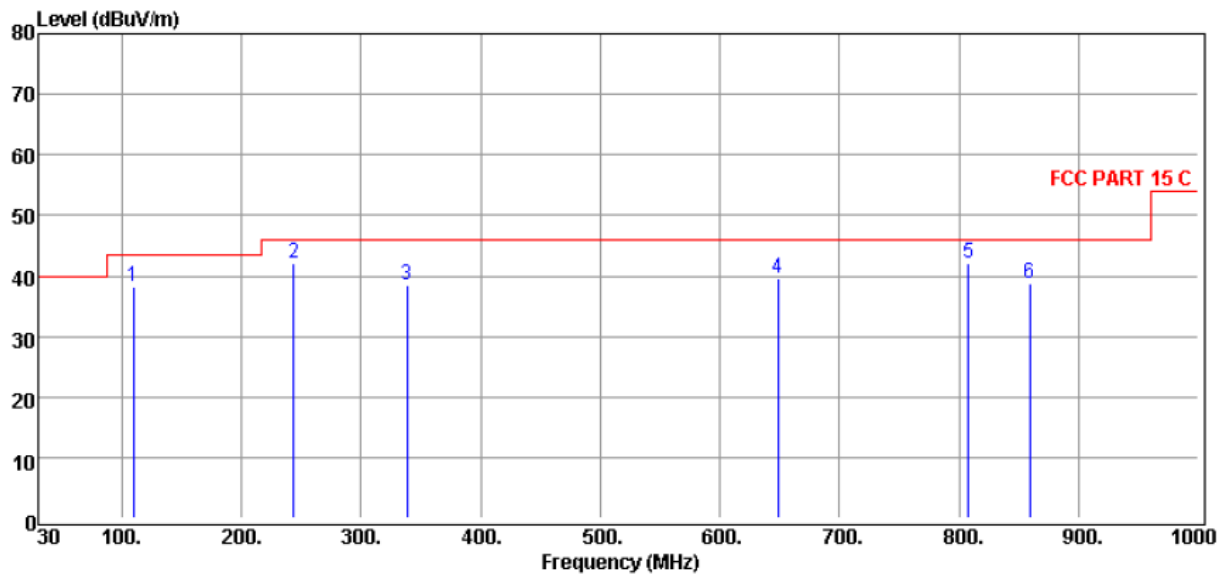
No.	Freq MHz	Reading dBuV	C.F dB	Result dBuV/m	Limit dBuV/m	Margin dB	Antenna Pol.	Remark
1	2402.00	84.92	-5.85	79.07	94.00	-14.93	VERTICAL	Peak
2	2441.00	84.53	-5.69	78.84	94.00	-15.16	VERTICAL	Peak
3	2480.00	83.05	-5.58	77.47	94.00	-16.53	VERTICAL	Peak

Remark :

- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
- Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
- Spectrum setting:
Peak Setting 1GHz to 10th harmonics of fundamental, RBW = 3MHz, VBW =10MHz, Sweep = AUTO.
Note: Because the 20 dB Bandwidth is over 1MHz, the RBW setting of measuring Field strength of Fundamental should be 3MHz, and VBW should be at 10 MHz.
- Result = Reading + C.F
- Margin = Result – Limit

Radiated Emission Test Data (Below 1 GHz)

Temperature	: 27°C	Humidity	: 50%
Test Date	: 09-AUG-2017	Tested by	: Andrew Lin
Polarization	: Horizontal	Channel	: CH00
EUT Position	: Vertical	Test Mode	: Mode 7



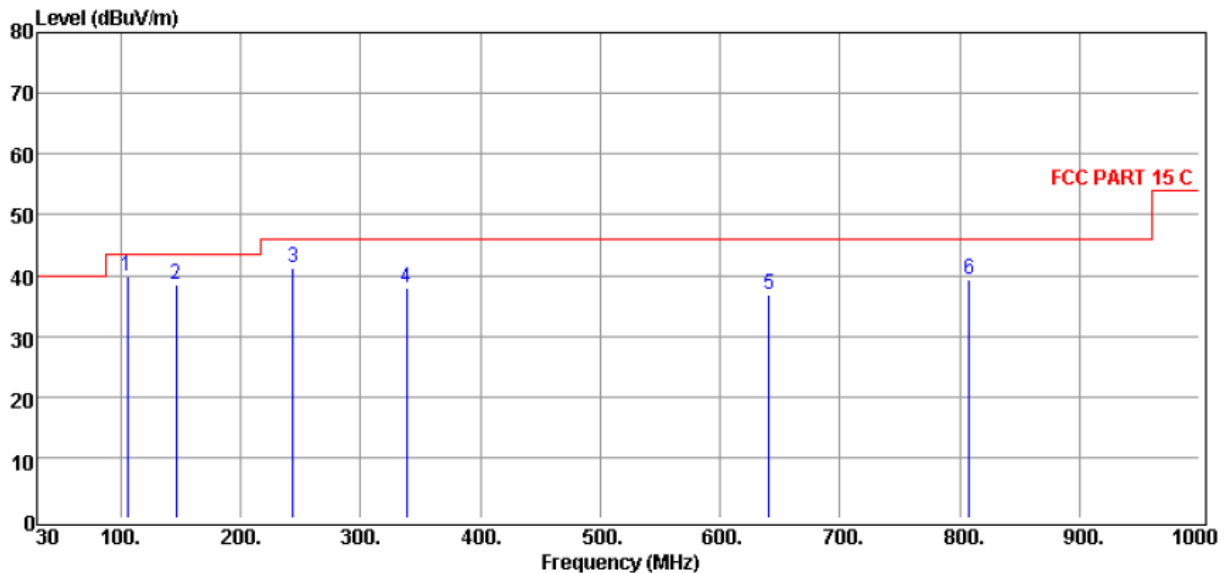
No.	Freq MHz	Reading dBuV	C.F dB	Result dBuV/m	Limit dBuV/m	Margin dB	Antenna Pol.	Remark
1	109.54	49.85	-11.53	38.32	43.50	-5.18	HORIZONTAL	Peak
2	243.40	52.35	-10.26	42.09	46.00	-3.91	HORIZONTAL	Peak
3	338.46	45.73	-7.27	38.46	46.00	-7.54	HORIZONTAL	Peak
4	648.86	40.41	-0.72	39.69	46.00	-6.31	HORIZONTAL	Peak
5	807.94	39.36	2.59	41.95	46.00	-4.05	HORIZONTAL	Peak
6	859.35	34.91	3.77	38.68	46.00	-7.32	HORIZONTAL	Peak

Remark :

1. Tests with frequencies below 30 MHz are not reported because the data is very low.
2. Measuring frequencies from 30 MHz to 1 GHz.
3. Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Peak detector mode.
4. Data of measurement within this frequency range shown "---" in the table above means the reading of emissions are attenuated more than 20 dB below the permissible limits or the field strength is too small to be measured.
5. All readings are Peak values. None of the peak value reading exceeds the Q.P. limit. Hence, Q.P. reading was not measured.
6. The IF bandwidth of SPA between 30 MHz to 1 GHz was 100 kHz.
7. Result = Reading + C.F
8. Margin = Result – Limit

Radiated Emission Test Data (Below 1 GHz)

Temperature	: 27°C	Humidity	: 50%
Test Date	: 09-AUG-2017	Tested by	: Andrew Lin
Polarization	: Vertical	Channel	: CH00
EUT Position	: Vertical	Test Mode	: Mode 7



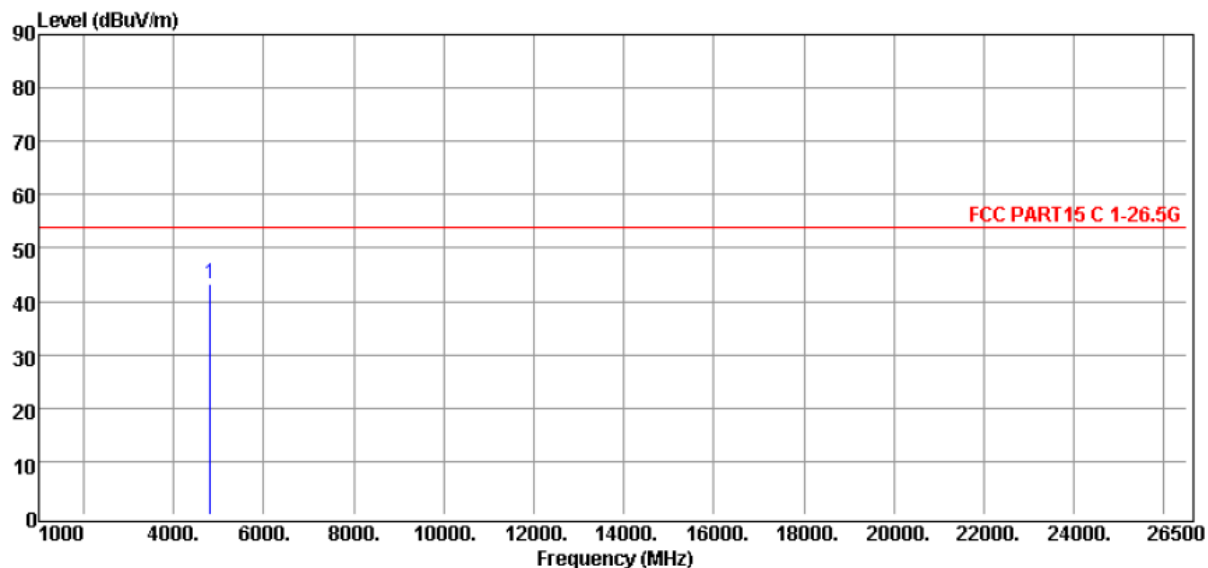
No.	Freq MHz	Reading dBuV	C.F dB	Result dBuV/m	Limit dBuV/m	Margin dB	Antenna Pol.	Remark
1	105.66	51.73	-11.94	39.79	43.50	-3.71	VERTICAL	Peak
2	146.40	49.47	-10.94	38.53	43.50	-4.97	VERTICAL	Peak
3	243.40	51.58	-10.26	41.32	46.00	-4.68	VERTICAL	Peak
4	338.46	45.24	-7.27	37.97	46.00	-8.03	VERTICAL	Peak
5	641.10	37.53	-0.83	36.70	46.00	-9.30	VERTICAL	Peak
6	807.94	36.72	2.59	39.31	46.00	-6.69	VERTICAL	Peak

Remark :

1. Tests with frequencies below 30 MHz are not reported because the data is very low.
2. Measuring frequencies from 30 MHz to 1 GHz.
3. Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Peak detector mode.
4. Data of measurement within this frequency range shown "---" in the table above means the reading of emissions are attenuated more than 20 dB below the permissible limits or the field strength is too small to be measured.
5. All readings are Peak values. None of the peak value reading exceeds the Q.P. limit. Hence, Q.P. reading was not measured.
6. The IF bandwidth of SPA between 30 MHz to 1 GHz was 100 kHz.
7. Result = Reading + C.F
8. Margin = Result – Limit

Radiated Emission Test Data (Above 1G and Field Strength to 10th Harmonic)

Temperature	: 27°C	Humidity	: 50%
Test Date	: 09-AUG-2017	Tested by	: Andrew Lin
Polarization	: Horizontal	Channel	: CH00 (2402MHz)
EUT Position	: Vertical	Test Mode	: Mode 1



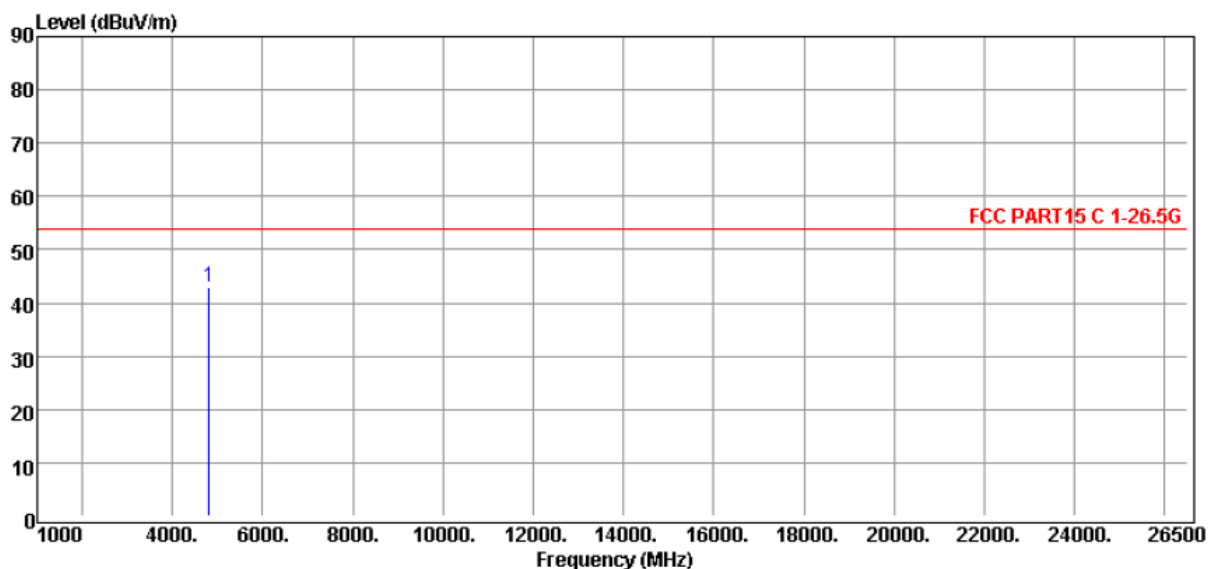
No.	Freq MHz	Reading dBμV	C.F dB	Result dBμV/m	Limit dBμV/m	Margin dB	Antenna Pol.	Remark
1	4804.00	40.64	2.77	43.41	54.00	-10.59	HORIZONTAL	Peak

Remark :

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode.
4. All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
5. Spectrum setting:
 - (a) Peak Setting 1GHz to 10th harmonics of fundamental, RBW = VBW = 1MHz, Sweep = AUTO.

Radiated Emission Test Data (Above 1G and Field Strength to 10th Harmonic)

Temperature	: 27°C	Humidity	: 50%
Test Date	: 09-AUG-2017	Tested by	: Andrew Lin
Polarization	: Vertical	Channel	: CH00 (2402MHz)
EUT Position	: Vertical	Test Mode	: Mode 1



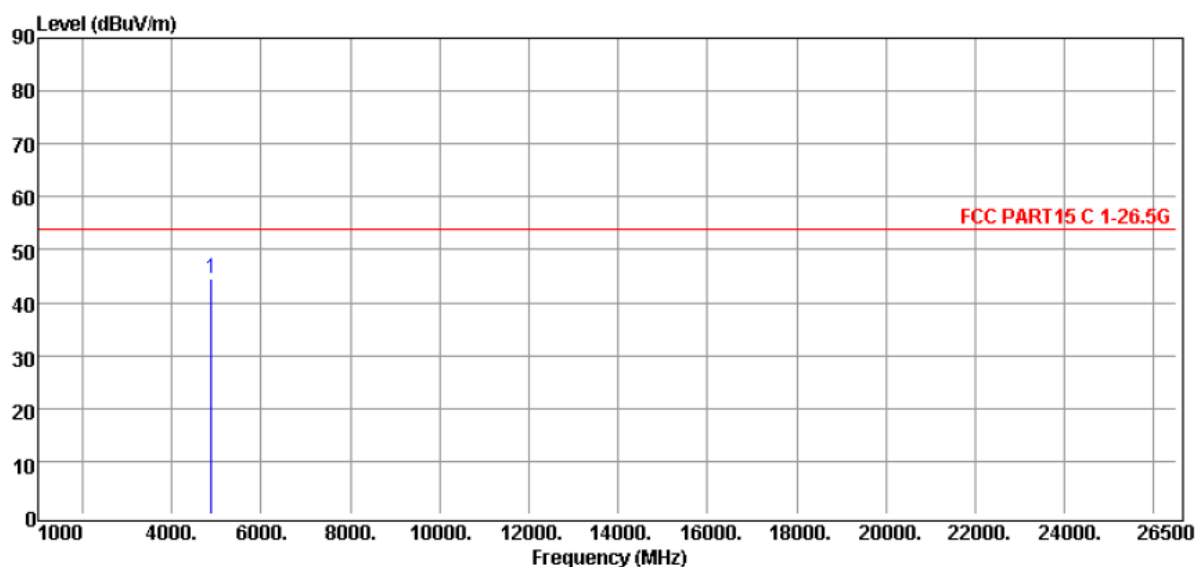
No.	Freq MHz	Reading dBμV	C.F dB	Result dBμV/m	Limit dBμV/m	Margin dB	Antenna Pol.	Remark
1	4804.00	40.14	2.77	42.91	54.00	-11.09	VERTICAL	Peak

Remark :

- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
- Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode.
- All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
- Spectrum setting:
 - Peak Setting 1GHz to 10th harmonics of fundamental, RBW = VBW = 1MHz, Sweep = AUTO.

**Radiated Emission Test Data (Above 1G and Field Strength to 10th Harmonic)**

Temperature	: 27°C	Humidity	: 50%
Test Date	: 09-AUG-2017	Tested by	: Andrew Lin
Polarization	: Horizontal	Channel	: CH39 (2441MHz)
EUT Position	: Vertical	Test Mode	: Mode 2



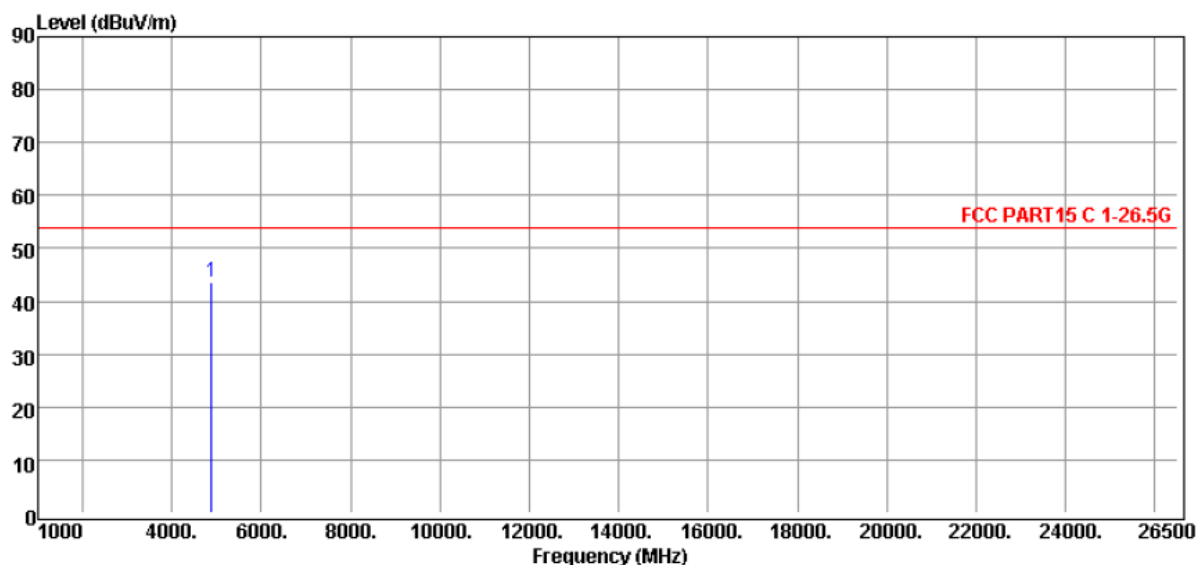
No.	Freq MHz	Reading dBμV	C.F dB	Result dBμV/m	Limit dBμV/m	Margin dB	Antenna Pol.	Remark
1	4882.00	41.52	2.94	44.46	54.00	-9.54	HORIZONTAL	Peak

Remark :

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode.
4. All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
5. Spectrum setting:
 - (a) Peak Setting 1GHz to 10th harmonics of fundamental, RBW = VBW = 1MHz, Sweep = AUTO.

**Radiated Emission Test Data (Above 1G and Field Strength to 10th Harmonic)**

Temperature	: 27°C	Humidity	: 50%
Test Date	: 09-AUG-2017	Tested by	: Andrew Lin
Polarization	: Vertical	Channel	: CH39 (2441MHz)
EUT Position	: Vertical	Test Mode	: Mode 2



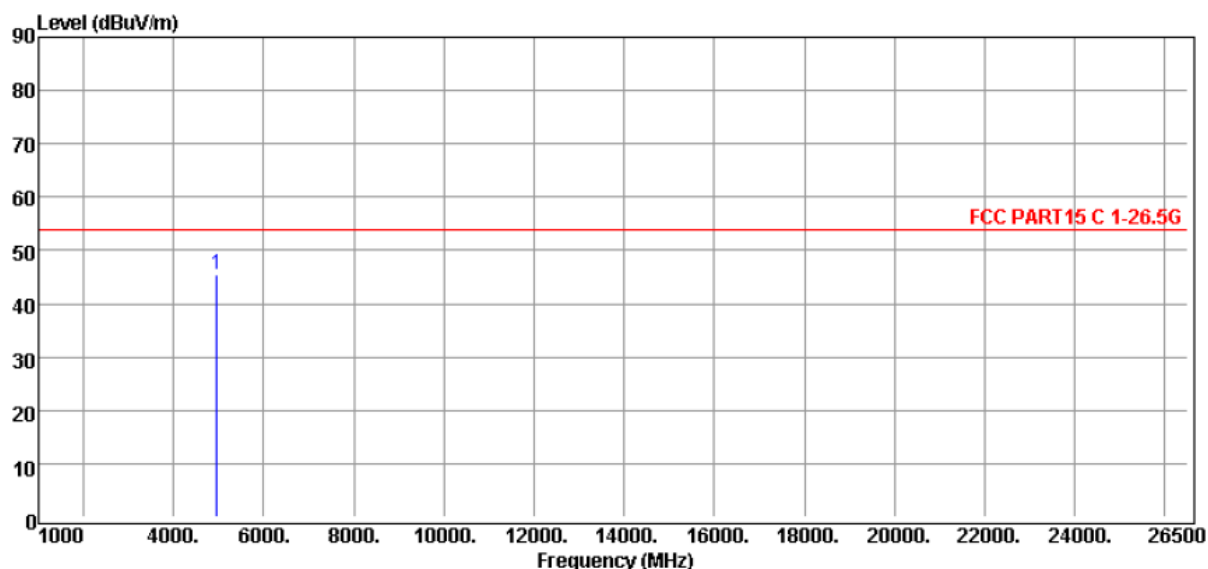
No.	Freq MHz	Reading dBuV	C.F dB	Result dBuV/m	Limit dBuV/m	Margin dB	Antenna Pol.	Remark
1	4882.00	40.66	2.94	43.60	54.00	-10.40	VERTICAL	Peak

Remark :

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode.
4. All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
5. Spectrum setting:
 - (a) Peak Setting 1GHz to 10th harmonics of fundamental, RBW = VBW = 1MHz, Sweep = AUTO.

Radiated Emission Test Data (Above 1G and Field Strength to 10th Harmonic)

Temperature	: 27°C	Humidity	: 50%
Test Date	: 09-AUG-2017	Tested by	: Andrew Lin
Polarization	: Horizontal	Channel	: CH78 (2480MHz)
EUT Position	: Vertical	Test Mode	: Mode 3



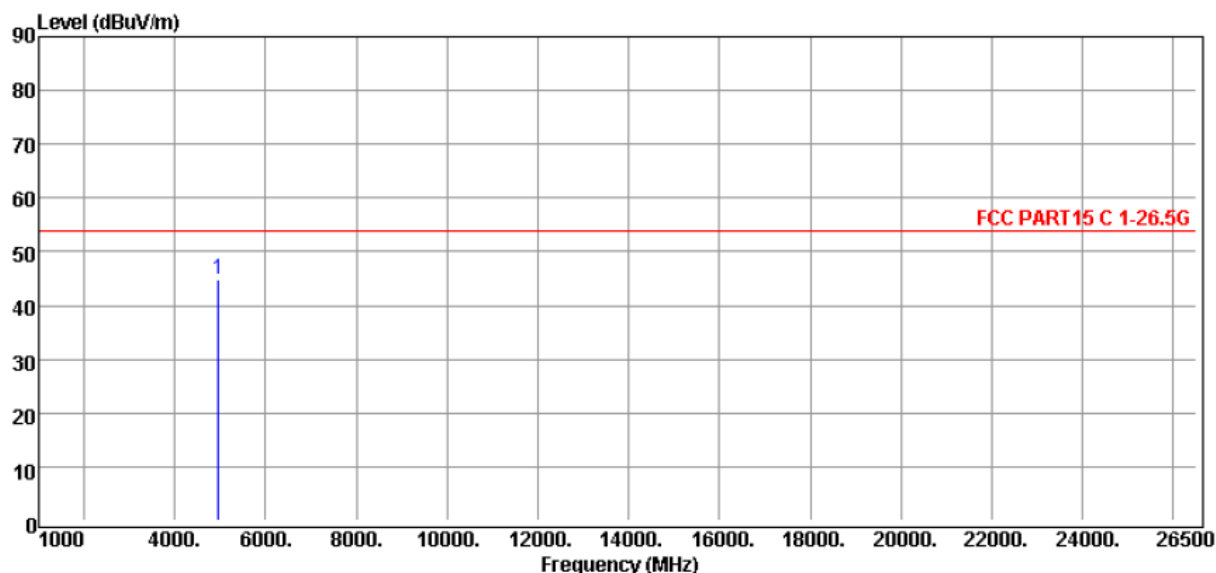
No.	Freq MHz	Reading dBuV	C.F dB	Result dBuV/m	Limit dBuV/m	Margin dB	Antenna Pol.	Remark
1	4960.00	42.22	3.15	45.37	54.00	-8.63	HORIZONTAL	Peak

Remark :

- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
- Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode.
- All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
- Spectrum setting:
 - Peak Setting 1GHz to 10th harmonics of fundamental, RBW = VBW = 1MHz, Sweep = AUTO.

Radiated Emission Test Data (Above 1G and Field Strength to 10th Harmonic)

Temperature	: 27°C	Humidity	: 50%
Test Date	: 09-AUG-2017	Tested by	: Andrew Lin
Polarization	: Vertical	Channel	: CH78 (2480MHz)
EUT Position	: Vertical	Test Mode	: Mode 3



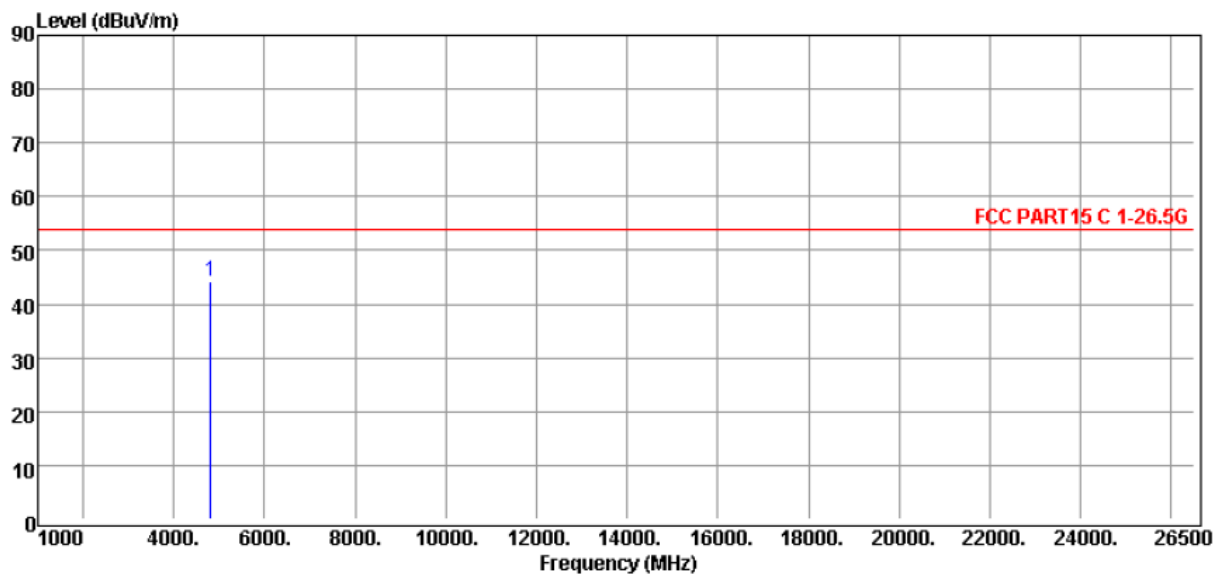
No.	Freq MHz	Reading dBuV	C.F dB	Result dBuV/m	Limit dBuV/m	Margin dB	Antenna Pol.	Remark
1	4960.00	41.62	3.15	44.77	54.00	-9.23	VERTICAL	Peak

Remark :

- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
- Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode.
- All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
- Spectrum setting:
 - Peak Setting 1GHz to 10th harmonics of fundamental, RBW = VBW = 1MHz, Sweep = AUTO.

Radiated Emission Test Data (Above 1G and Field Strength to 10th Harmonic)

Temperature	: 27°C	Humidity	: 50%
Test Date	: 09-AUG-2017	Tested by	: Andrew Lin
Polarization	: Horizontal	Channel	: CH00 (2402MHz)
EUT Position	: Vertical	Test Mode	: Mode 4



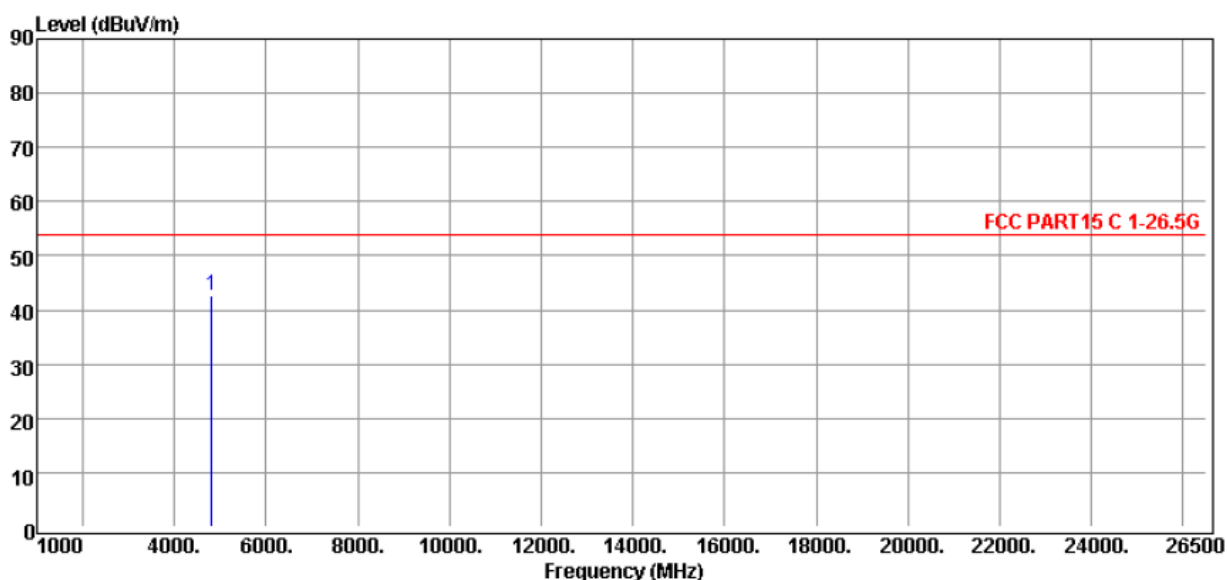
No.	Freq MHz	Reading dBμV	C.F dB	Result dBμV/m	Limit dBμV/m	Margin dB	Antenna Pol.	Remark
1	4804.00	41.43	2.77	44.20	54.00	-9.80	HORIZONTAL	Peak

Remark :

- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
- Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode.
- All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
- Spectrum setting:
 - Peak Setting 1GHz to 10th harmonics of fundamental, RBW = VBW = 1MHz, Sweep = AUTO.

Radiated Emission Test Data (Above 1G and Field Strength to 10th Harmonic)

Temperature	: 27°C	Humidity	: 50%
Test Date	: 09-AUG-2017	Tested by	: Andrew Lin
Polarization	: Vertical	Channel	: CH00 (2402MHz)
EUT Position	: Vertical	Test Mode	: Mode 4



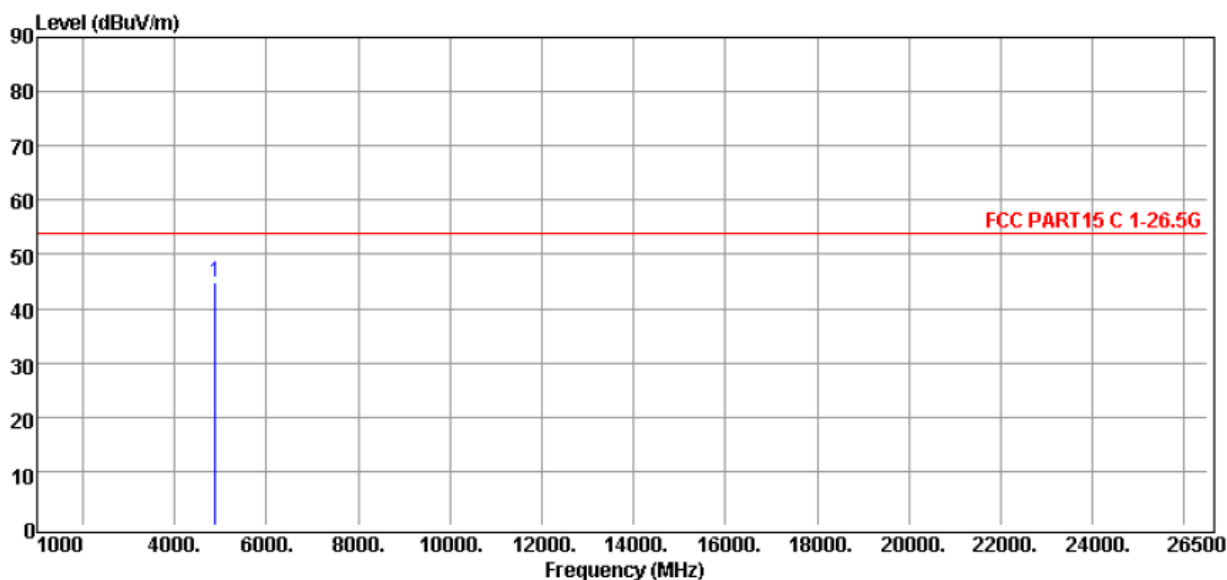
No.	Freq MHz	Reading dBuV	C.F dB	Result dBuV/m	Limit dBuV/m	Margin dB	Antenna Pol.	Remark
1	4804.00	40.01	2.77	42.78	54.00	-11.22	VERTICAL	Peak

Remark :

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode.
4. All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
5. Spectrum setting:
 - (a) Peak Setting 1GHz to 10th harmonics of fundamental, RBW = VBW = 1MHz, Sweep = AUTO.

Radiated Emission Test Data (Above 1G and Field Strength to 10th Harmonic)

Temperature	: 27°C	Humidity	: 50%
Test Date	: 09-AUG-2017	Tested by	: Andrew Lin
Polarization	: Horizontal	Channel	: CH39 (2441MHz)
EUT Position	: Vertical	Test Mode	: Mode 5



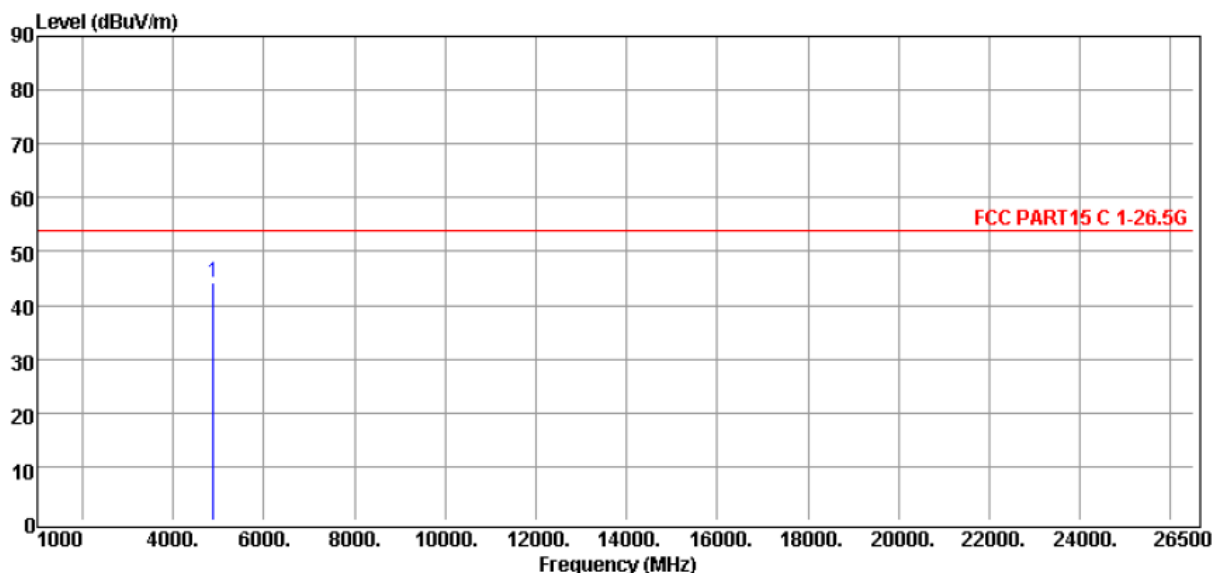
No.	Freq MHz	Reading dBμV	C.F dB	Result dBμV/m	Limit dBμV/m	Margin dB	Antenna Pol.	Remark
1	4882.00	42.04	2.94	44.98	54.00	-9.02	HORIZONTAL	Peak

Remark :

- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
- Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode.
- All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
- Spectrum setting:
 - Peak Setting 1GHz to 10th harmonics of fundamental, RBW = VBW = 1MHz, Sweep = AUTO.

Radiated Emission Test Data (Above 1G and Field Strength to 10th Harmonic)

Temperature	: 27°C	Humidity	: 50%
Test Date	: 09-AUG-2017	Tested by	: Andrew Lin
Polarization	: Vertical	Channel	: CH39 (2441MHz)
EUT Position	: Vertical	Test Mode	: Mode 5



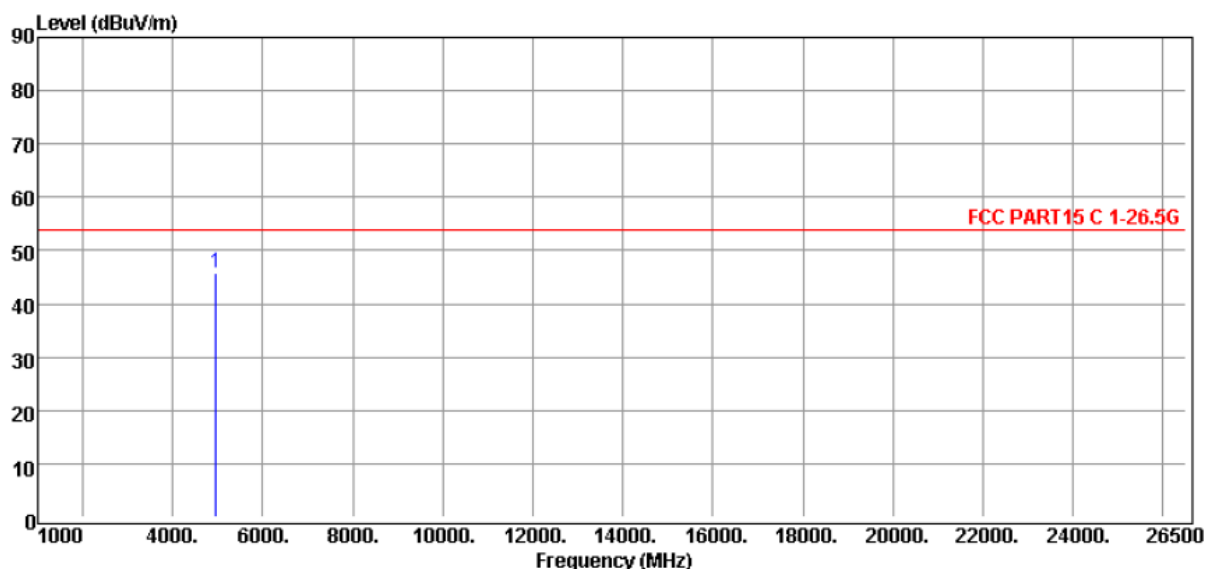
No.	Freq MHz	Reading dBμV	C.F dB	Result dBμV/m	Limit dBμV/m	Margin dB	Antenna Pol.	Remark
1	4882.00	41.36	2.94	44.30	54.00	-9.70	VERTICAL	Peak

Remark :

- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
- Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode.
- All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
- Spectrum setting:
 - Peak Setting 1GHz to 10th harmonics of fundamental, RBW = VBW = 1MHz, Sweep = AUTO.

Radiated Emission Test Data (Above 1G and Field Strength to 10th Harmonic)

Temperature	: 27°C	Humidity	: 50%
Test Date	: 09-AUG-2017	Tested by	: Andrew Lin
Polarization	: Horizontal	Channel	: CH78 (2480MHz)
EUT Position	: Vertical	Test Mode	: Mode 6



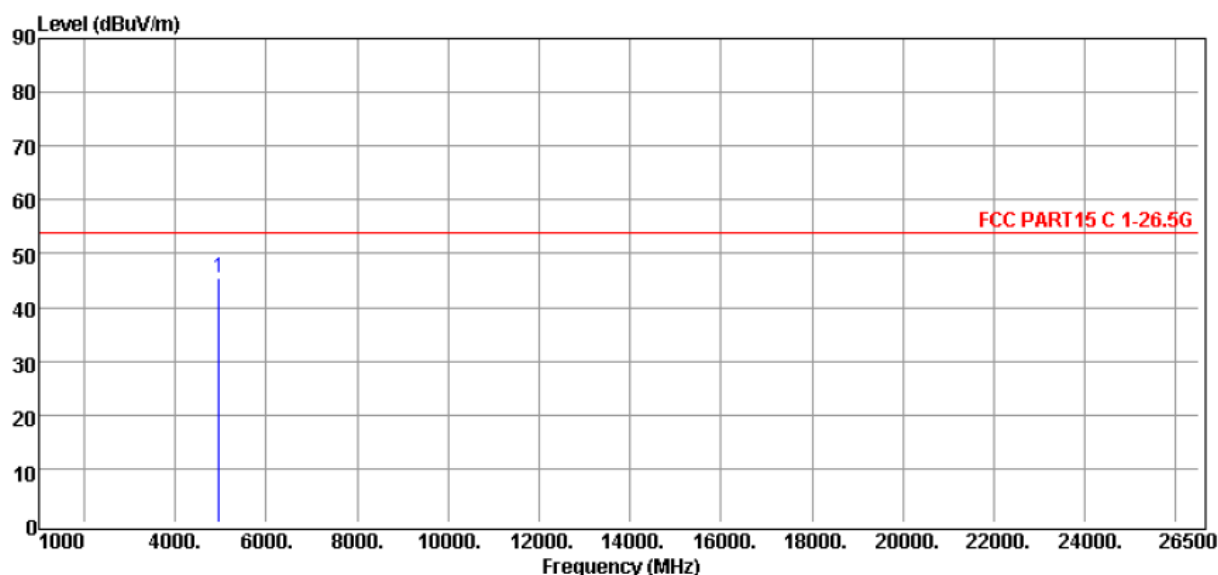
No.	Freq MHz	Reading dBμV	C.F dB	Result dBμV/m	Limit dBμV/m	Margin dB	Antenna Pol.	Remark
1	4960.00	42.58	3.15	45.73	54.00	-8.27	HORIZONTAL	Peak

Remark :

- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
- Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode.
- All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
- Spectrum setting:
 - Peak Setting 1GHz to 10th harmonics of fundamental, RBW = VBW = 1MHz, Sweep = AUTO.

Radiated Emission Test Data (Above 1G and Field Strength to 10th Harmonic)

Temperature	: 27°C	Humidity	: 50%
Test Date	: 09-AUG-2017	Tested by	: Andrew Lin
Polarization	: Vertical	Channel	: CH78 (2480MHz)
EUT Position	: Vertical	Test Mode	: Mode 6



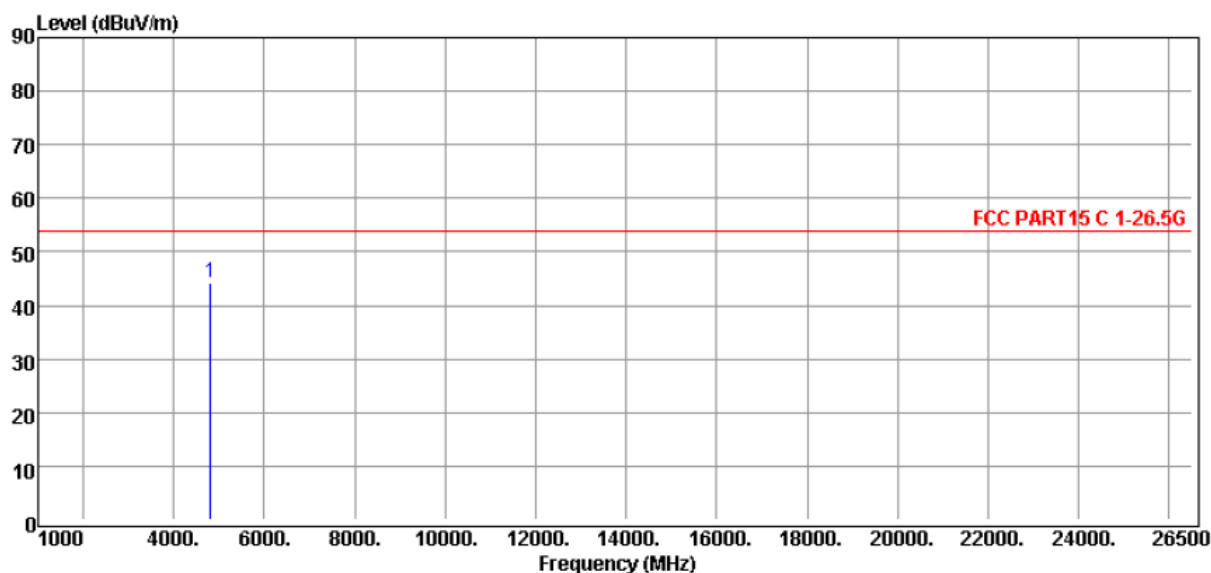
No.	Freq MHz	Reading dBμV	C.F dB	Result dBμV/m	Limit dBμV/m	Margin dB	Antenna Pol.	Remark
1	4960.00	42.33	3.15	45.48	54.00	-8.52	VERTICAL	Peak

Remark :

- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
- Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode.
- All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
- Spectrum setting:
 - Peak Setting 1GHz to 10th harmonics of fundamental, RBW = VBW = 1MHz, Sweep = AUTO.

Radiated Emission Test Data (Above 1G and Field Strength to 10th Harmonic)

Temperature	: 27°C	Humidity	: 50%
Test Date	: 09-AUG-2017	Tested by	: Andrew Lin
Polarization	: Horizontal	Channel	: CH00 (2402MHz)
EUT Position	: Vertical	Test Mode	: Mode 7



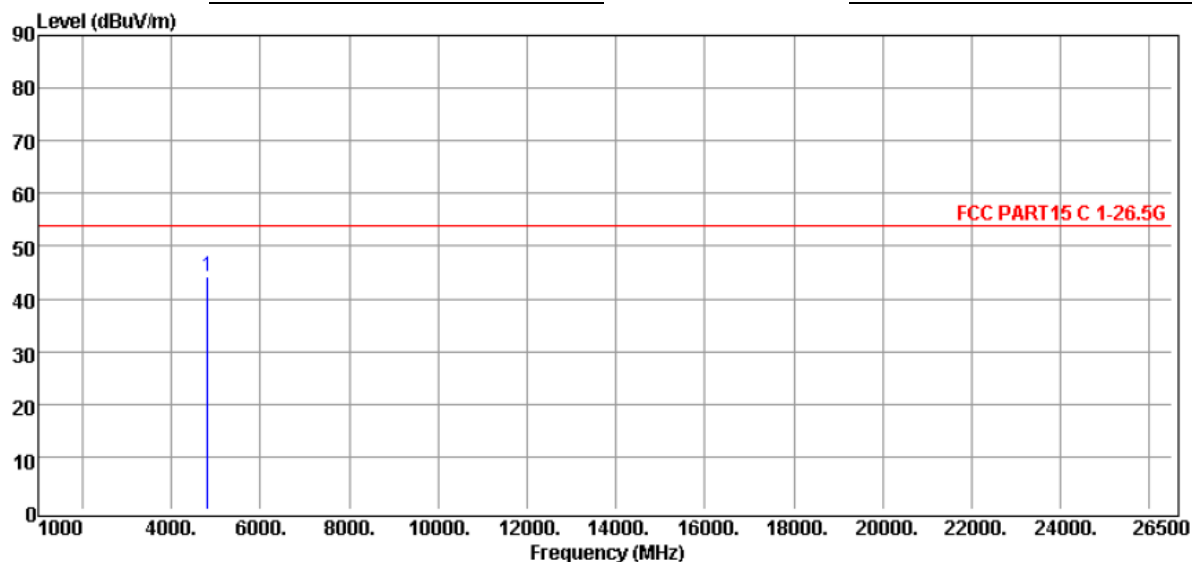
No.	Freq MHz	Reading dBuV	C.F dB	Result dBuV/m	Limit dBuV/m	Margin dB	Antenna Pol.	Remark
1	4804.00	41.43	2.77	44.20	54.00	-9.80	HORIZONTAL	Peak

Remark :

- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
- Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode.
- All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
- Spectrum setting:
 - Peak Setting 1GHz to 10th harmonics of fundamental, RBW = VBW = 1MHz, Sweep = AUTO.

Radiated Emission Test Data (Above 1G and Field Strength to 10th Harmonic)

Temperature	: 27°C	Humidity	: 50%
Test Date	: 09-AUG-2017	Tested by	: Andrew Lin
Polarization	: Vertical	Channel	: CH00 (2402MHz)
EUT Position	: Vertical	Test Mode	: Mode 7



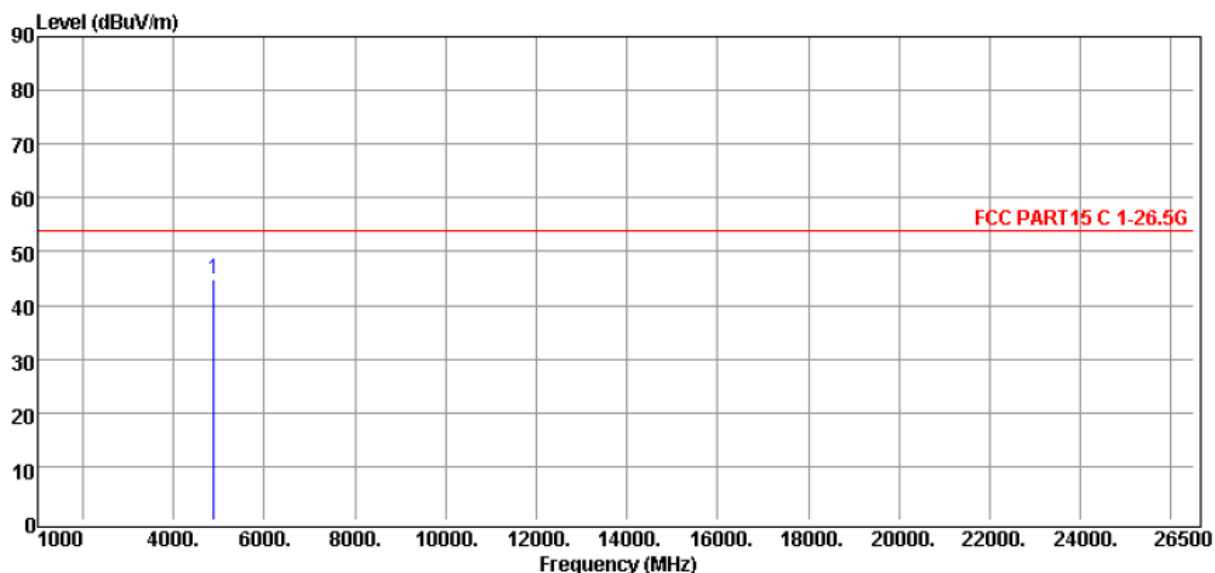
No.	Freq MHz	Reading dBuV	C.F dB	Result dBuV/m	Limit dBuV/m	Margin dB	Antenna Pol.	Remark
1	4804.00	41.49	2.77	44.26	54.00	-9.74	VERTICAL	Peak

Remark :

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode.
4. All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
5. Spectrum setting:
 - (a) Peak Setting 1GHz to 10th harmonics of fundamental, RBW = VBW = 1MHz, Sweep = AUTO.

Radiated Emission Test Data (Above 1G and Field Strength to 10th Harmonic)

Temperature	: 27°C	Humidity	: 50%
Test Date	: 09-AUG-2017	Tested by	: Andrew Lin
Polarization	: Horizontal	Channel	: CH39 (2441MHz)
EUT Position	: Vertical	Test Mode	: Mode 8



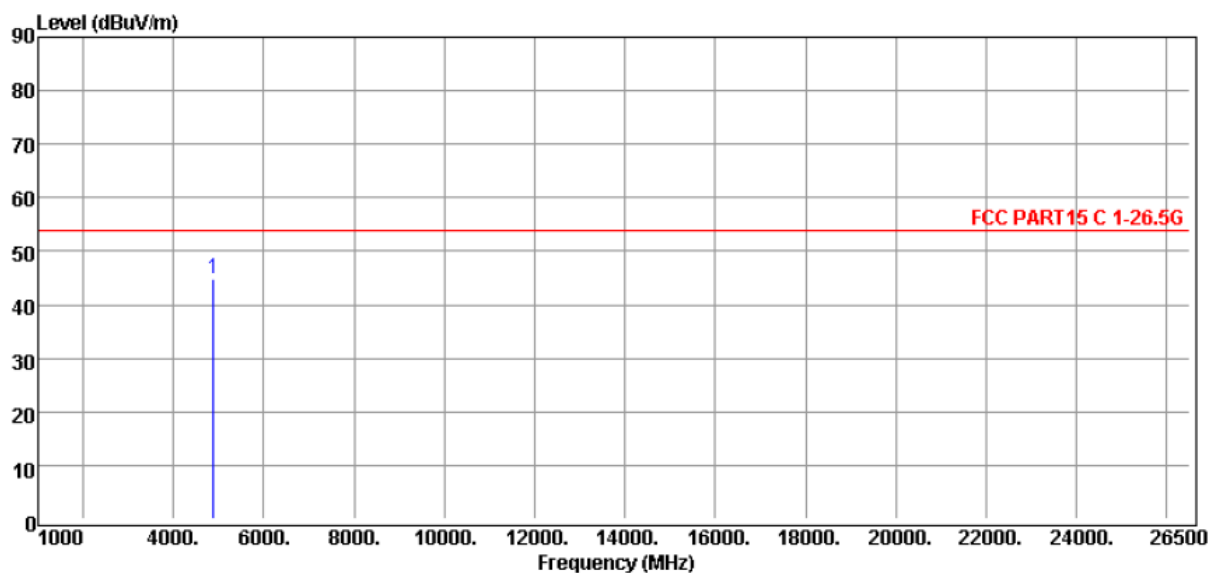
No.	Freq MHz	Reading dBμV	C.F dB	Result dBμV/m	Limit dBμV/m	Margin dB	Antenna Pol.	Remark
1	4882.00	42.04	2.94	44.98	54.00	-9.02	HORIZONTAL	Peak

Remark :

- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
- Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode.
- All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
- Spectrum setting:
 - Peak Setting 1GHz to 10th harmonics of fundamental, RBW = VBW = 1MHz, Sweep = AUTO.

Radiated Emission Test Data (Above 1G and Field Strength to 10th Harmonic)

Temperature	: 27°C	Humidity	: 50%
Test Date	: 09-AUG-2017	Tested by	: Andrew Lin
Polarization	: Vertical	Channel	: CH39 (2441MHz)
EUT Position	: Vertical	Test Mode	: Mode 8



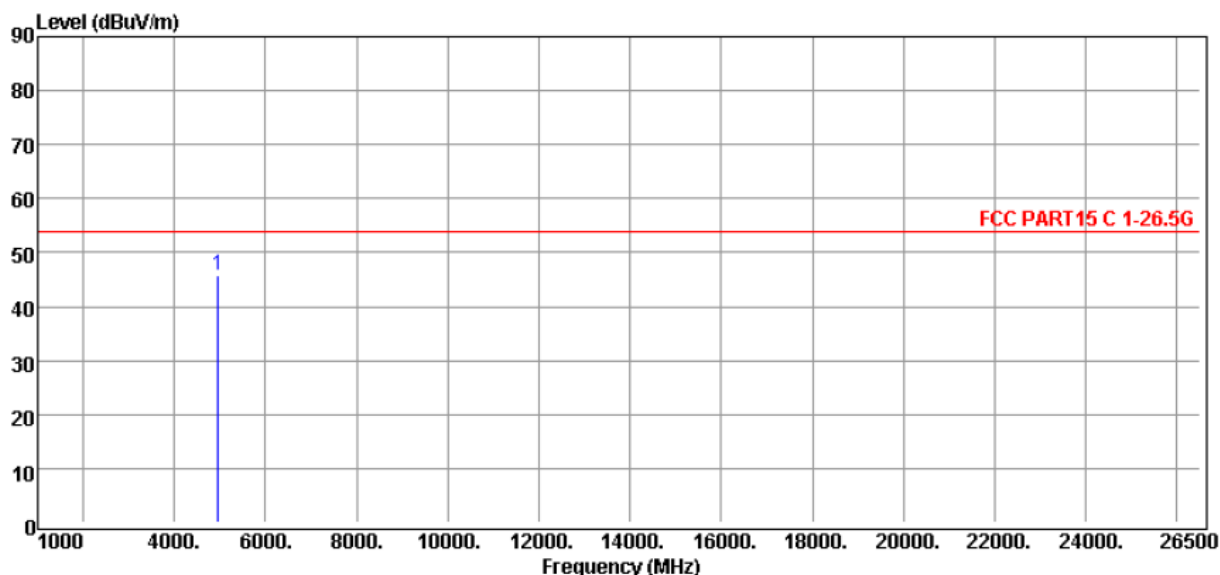
No.	Freq MHz	Reading dBμV	C.F dB	Result dBμV/m	Limit dBμV/m	Margin dB	Antenna Pol.	Remark
1	4882.00	41.92	2.94	44.86	54.00	-9.14	VERTICAL	Peak

Remark :

- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
- Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode.
- All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
- Spectrum setting:
 - Peak Setting 1GHz to 10th harmonics of fundamental, RBW = VBW = 1MHz, Sweep = AUTO.

Radiated Emission Test Data (Above 1G and Field Strength to 10th Harmonic)

Temperature	: 27°C	Humidity	: 50%
Test Date	: 09-AUG-2017	Tested by	: Andrew Lin
Polarization	: Horizontal	Channel	: CH78 (2480MHz)
EUT Position	: Vertical	Test Mode	: Mode 9



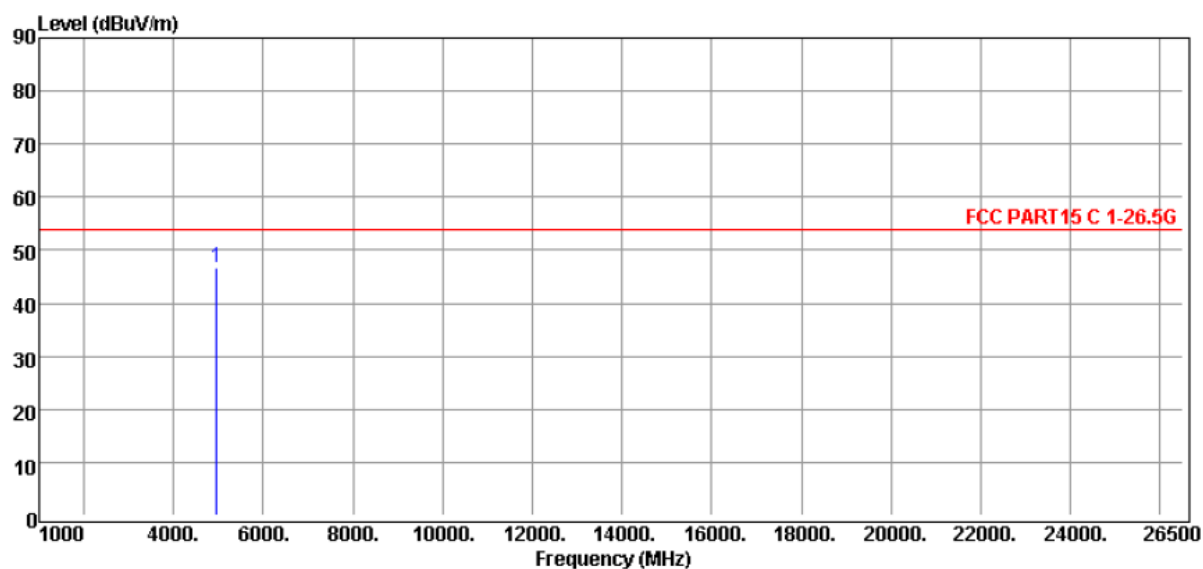
No.	Freq MHz	Reading dBuV	C.F dB	Result dBuV/m	Limit dBuV/m	Margin dB	Antenna Pol.	Remark
1	4960.00	42.58	3.15	45.73	54.00	-8.27	HORIZONTAL	Peak

Remark :

- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
- Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode.
- All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
- Spectrum setting:
 - Peak Setting 1GHz to 10th harmonics of fundamental, RBW = VBW = 1MHz, Sweep = AUTO.

Radiated Emission Test Data (Above 1G and Field Strength to 10th Harmonic)

Temperature	: 27°C	Humidity	: 50%
Test Date	: 09-AUG-2017	Tested by	: Andrew Lin
Polarization	: Vertical	Channel	: CH78 (2480MHz)
EUT Position	: Vertical	Test Mode	: Mode 9



No.	Freq MHz	Reading dBμV	C.F dB	Result dBμV/m	Limit dBμV/m	Margin dB	Antenna Pol.	Remark
1	4960.00	43.43	3.15	46.58	54.00	-7.42	VERTICAL	Peak

Remark :

- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
- Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode.
- All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
- Spectrum setting:
 - Peak Setting 1GHz to 10th harmonics of fundamental, RBW = VBW = 1MHz, Sweep = AUTO.



4 Out of Band Emission Test

4.1 Test Instruments

Refer to Sec. 1.2 Test Instruments.

4.2 Test Arrangement and Procedure

Refer to Sec. 3.2.

4.3 Limit of Field Strength of Fundamental (§ 15.249(d))

Emissions radiated outside of 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 lesser attenuation.

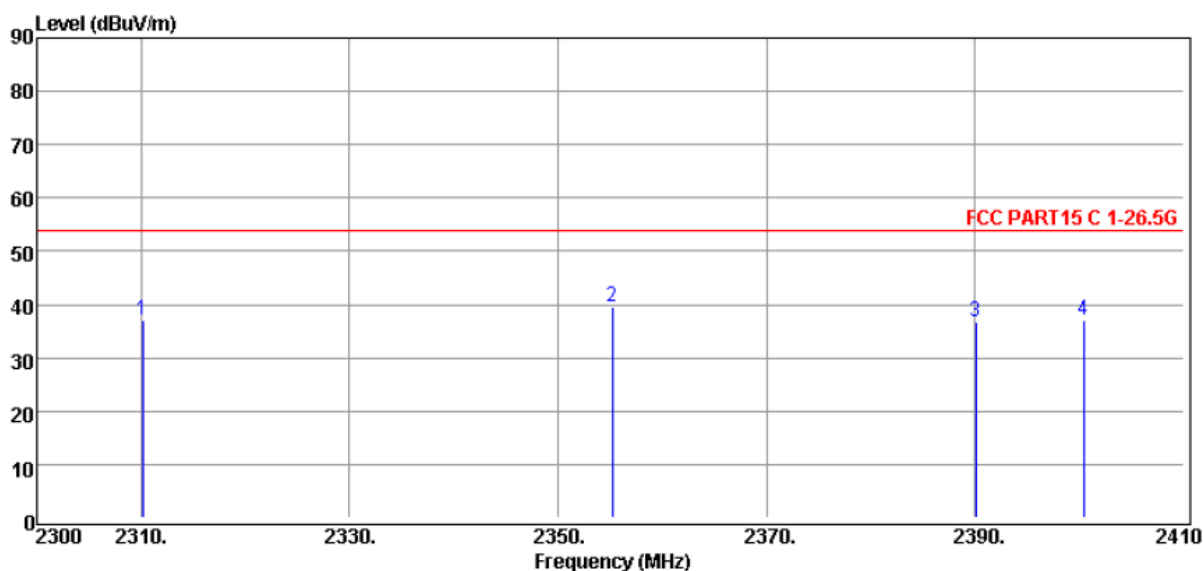
4.4 Test Result

Compliance

The final test data are shown on the following page(s).

Band-Edge Test Data (Lower Edge)

Temperature	: 27°C	Humidity	: 50%
Test Date	: 09-AUG-2017	Tested by	: Andrew Lin
Polarization	: Horizontal	Channel	: CH00
EUT Position	: Vertical	Test Mode	: Mode 1



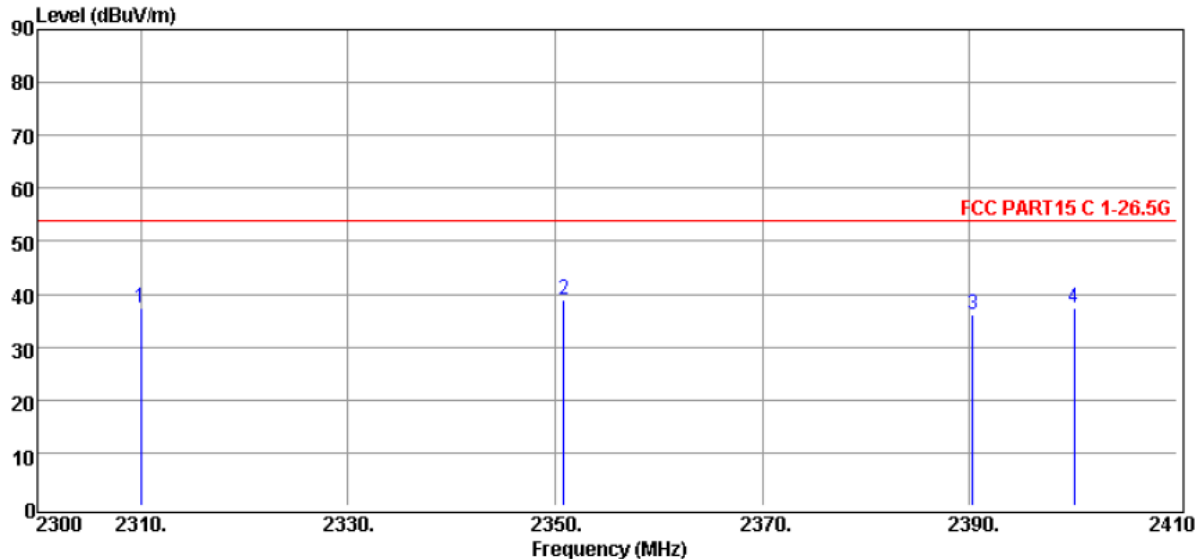
No.	Freq MHz	Reading dBuV	C.F dB	Result dBuV/m	Limit dBuV/m	Margin dB	Antenna Pol.	Remark
1	2310.12	43.21	-6.13	37.08	54.00	-16.92	HORIZONTAL	Peak
2	2355.22	45.49	-5.96	39.53	54.00	-14.47	HORIZONTAL	Peak
3	2390.09	42.63	-5.85	36.78	54.00	-17.22	HORIZONTAL	Peak
4	2400.43	42.95	-5.85	37.10	54.00	-16.90	HORIZONTAL	Peak

Remark :

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
5. Spectrum setting:
 - (a) Peak Setting 1GHz to 10th harmonics of fundamental, RBW = VBW = 1MHz, Sweep = AUTO.
 - (b) Average Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 10Hz, Sweep = AUTO.

Band-Edge Test Data (Lower Edge)

Temperature	: 27°C	Humidity	: 50%
Test Date	: 09-AUG-2017	Tested by	: Andrew Lin
Polarization	: Vertical	Channel	: CH00
EUT Position	: Vertical	Test Mode	: Mode 1



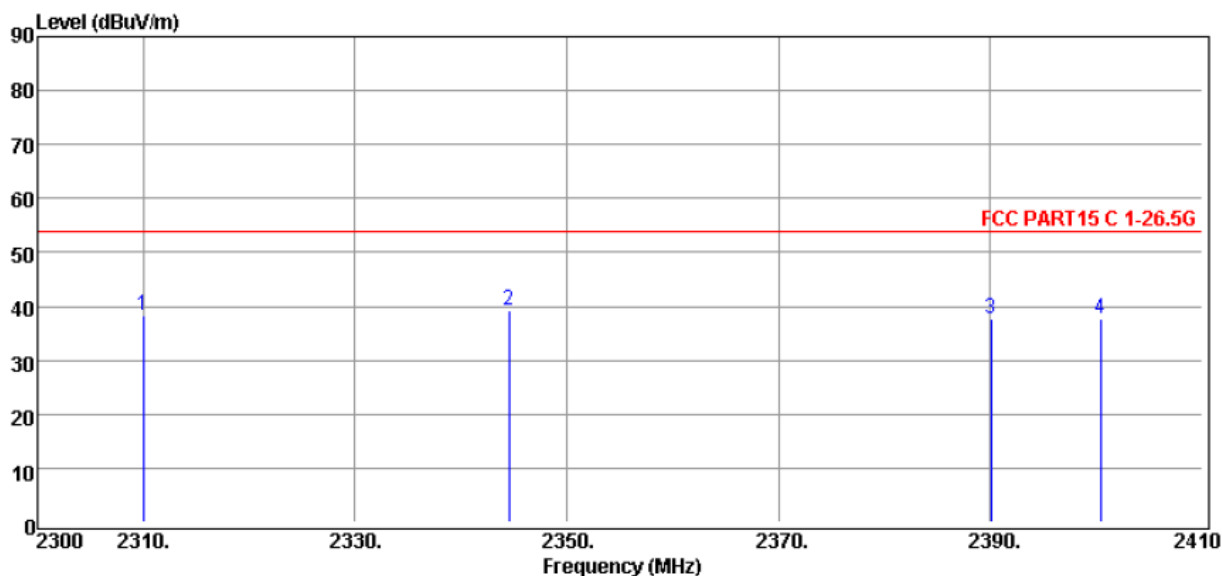
No.	Freq MHz	Reading dBuV	C.F dB	Result dBuV/m	Limit dBuV/m	Margin dB	Antenna Pol.	Remark
1	2310.01	43.58	-6.13	37.45	54.00	-16.55	VERTICAL	Peak
2	2350.82	45.04	-6.02	39.02	54.00	-14.98	VERTICAL	Peak
3	2390.31	42.07	-5.85	36.22	54.00	-17.78	VERTICAL	Peak
4	2400.10	43.28	-5.85	37.43	54.00	-16.57	VERTICAL	Peak

Remark :

- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
- Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
- Spectrum setting:
 - Peak Setting 1GHz to 10th harmonics of fundamental, RBW = VBW = 1MHz, Sweep = AUTO.
 - Average Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 10Hz, Sweep = AUTO.

Band-Edge Test Data (Lower Edge)

Temperature	: 27°C	Humidity	: 50%
Test Date	: 09-AUG-2017	Tested by	: Andrew Lin
Polarization	: Horizontal	Channel	: CH00
EUT Position	: Vertical	Test Mode	: Mode 4



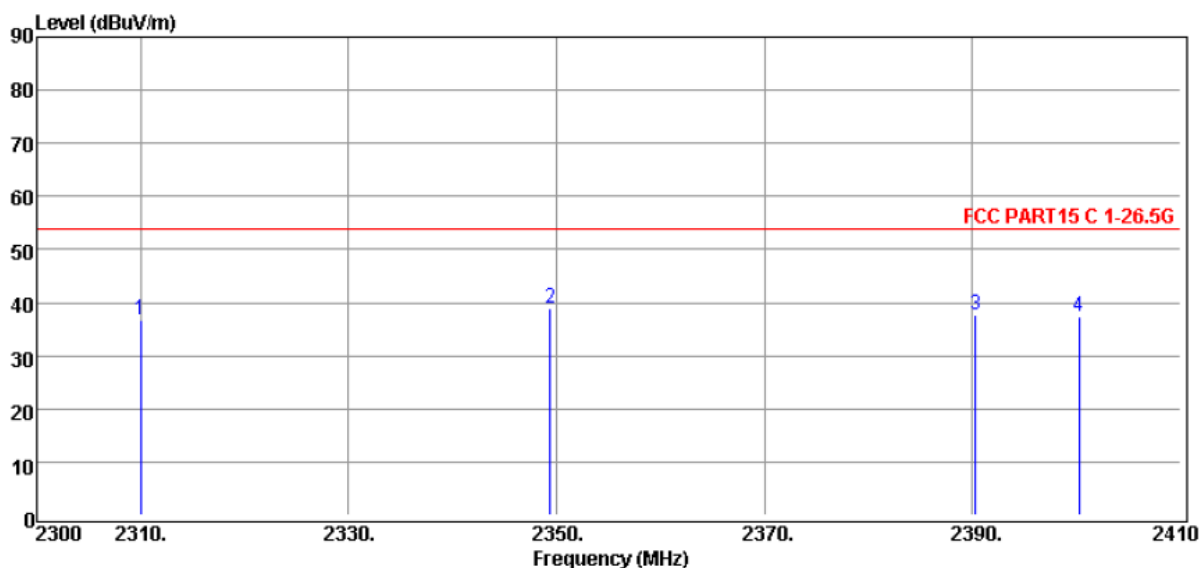
No.	Freq MHz	Reading dBuV	C.F dB	Result dBuV/m	Limit dBuV/m	Margin dB	Antenna Pol.	Remark
1	2310.01	44.42	-6.13	38.29	54.00	-15.71	HORIZONTAL	Peak
2	2344.55	45.37	-6.02	39.35	54.00	-14.65	HORIZONTAL	Peak
3	2390.09	43.55	-5.85	37.70	54.00	-16.30	HORIZONTAL	Peak
4	2400.43	43.53	-5.85	37.68	54.00	-16.32	HORIZONTAL	Peak

Remark :

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
5. Spectrum setting:
 - (a) Peak Setting 1GHz to 10th harmonics of fundamental, RBW = VBW = 1MHz, Sweep = AUTO.
 - (b) Average Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 10Hz, Sweep = AUTO.

Band-Edge Test Data (Lower Edge)

Temperature	: 27°C	Humidity	: 50%
Test Date	: 09-AUG-2017	Tested by	: Andrew Lin
Polarization	: Vertical	Channel	: CH00
EUT Position	: Vertical	Test Mode	: Mode 4



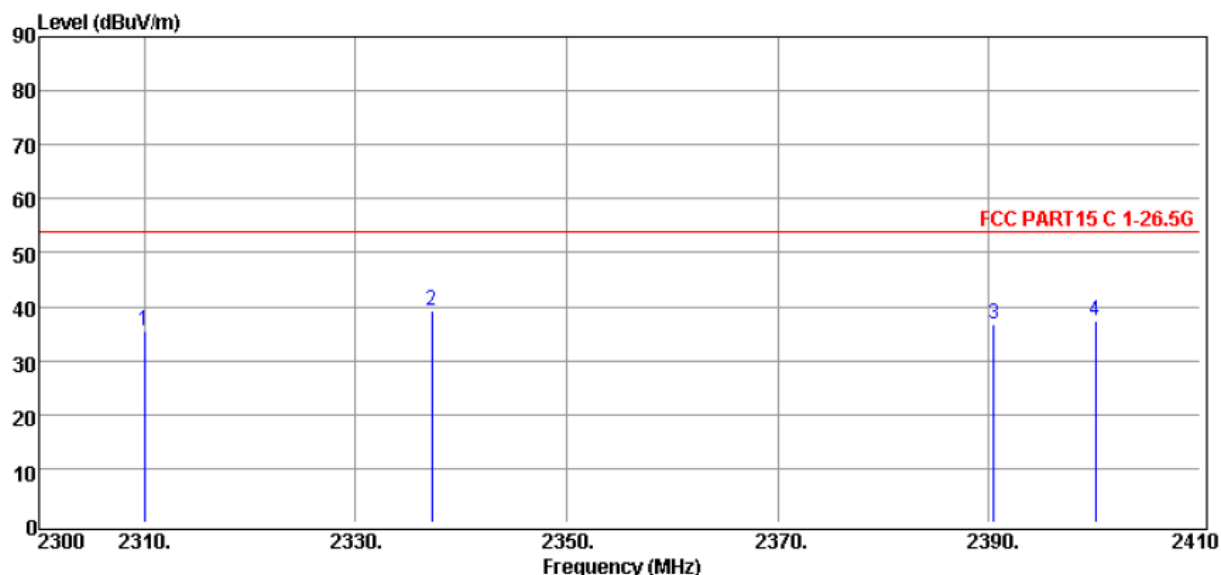
No.	Freq MHz	Reading dBμV	C.F dB	Result dBμV/m	Limit dBμV/m	Margin dB	Antenna Pol.	Remark
1	2310.01	42.98	-6.13	36.85	54.00	-17.15	VERTICAL	Peak
2	2349.39	44.97	-6.02	38.95	54.00	-15.05	VERTICAL	Peak
3	2390.31	43.64	-5.85	37.79	54.00	-16.21	VERTICAL	Peak
4	2400.21	43.37	-5.85	37.52	54.00	-16.48	VERTICAL	Peak

Remark :

- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
- Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
- Spectrum setting:
 - Peak Setting 1GHz to 10th harmonics of fundamental, RBW = VBW = 1MHz, Sweep = AUTO.
 - Average Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 10Hz, Sweep = AUTO.

Band-Edge Test Data (Lower Edge)

Temperature	: 27°C	Humidity	: 50%
Test Date	: 09-AUG-2017	Tested by	: Andrew Lin
Polarization	: Horizontal	Channel	: CH00
EUT Position	: Vertical	Test Mode	: Mode 7



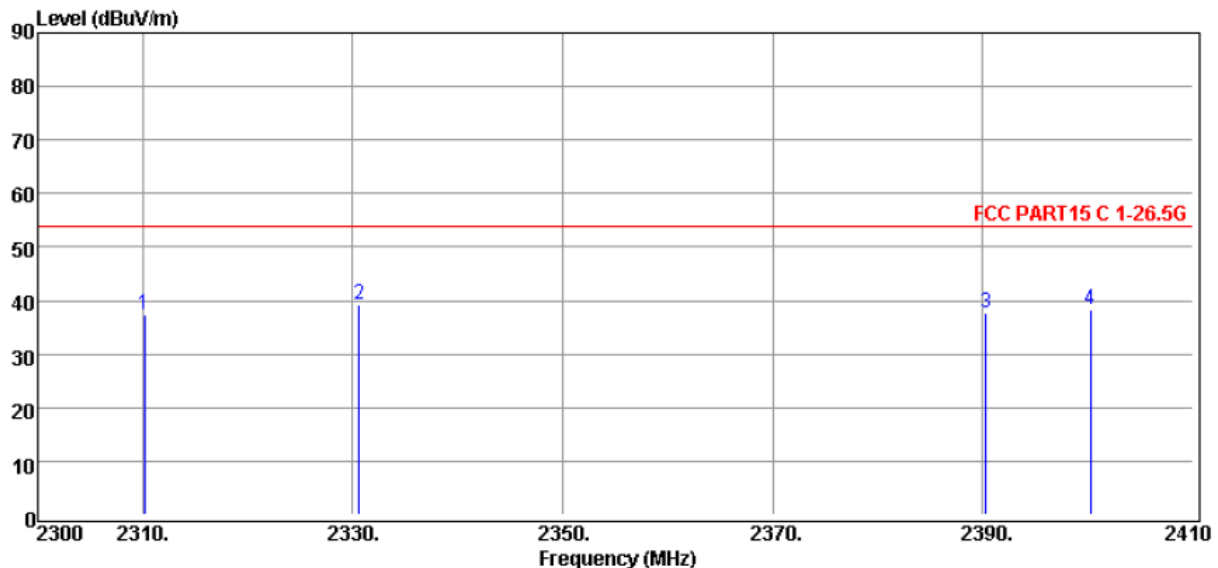
No.	Freq MHz	Reading dBμV	C.F dB	Result dBμV/m	Limit dBμV/m	Margin dB	Antenna Pol.	Remark
1	2310.01	41.73	-6.13	35.60	54.00	-18.40	HORIZONTAL	Peak
2	2337.18	45.11	-6.02	39.09	54.00	-14.91	HORIZONTAL	Peak
3	2390.42	42.44	-5.85	36.59	54.00	-17.41	HORIZONTAL	Peak
4	2400.10	43.36	-5.85	37.51	54.00	-16.49	HORIZONTAL	Peak

Remark :

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
5. Spectrum setting:
 - (a) Peak Setting 1GHz to 10th harmonics of fundamental, RBW = VBW = 1MHz, Sweep = AUTO.
 - (b) Average Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 10Hz, Sweep = AUTO.

Band-Edge Test Data (Lower Edge)

Temperature	: 27°C	Humidity	: 50%
Test Date	: 09-AUG-2017	Tested by	: Andrew Lin
Polarization	: Vertical	Channel	: CH00
EUT Position	: Vertical	Test Mode	: Mode 7



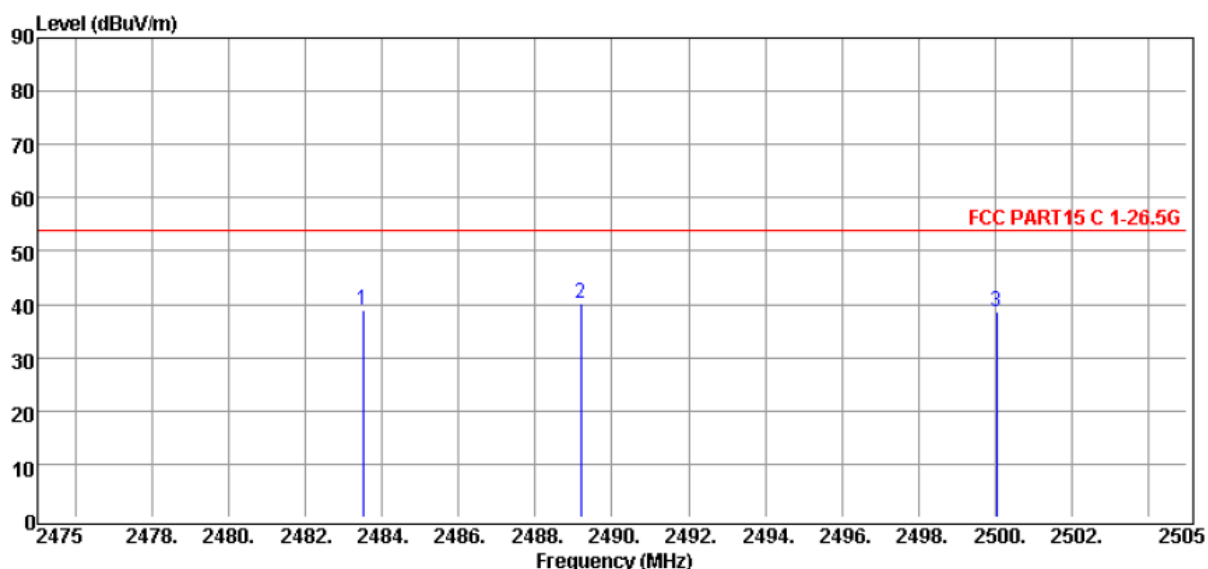
No.	Freq MHz	Reading dBμV	C.F dB	Result dBμV/m	Limit dBμV/m	Margin dB	Antenna Pol.	Remark
1	2310.12	43.43	-6.13	37.30	54.00	-16.70	VERTICAL	Peak
2	2330.58	45.35	-6.07	39.28	54.00	-14.72	VERTICAL	Peak
3	2390.31	43.64	-5.85	37.79	54.00	-16.21	VERTICAL	Peak
4	2400.21	44.23	-5.85	38.38	54.00	-15.62	VERTICAL	Peak

Remark :

- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
- Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
- Spectrum setting:
 - Peak Setting 1GHz to 10th harmonics of fundamental, RBW = VBW = 1MHz, Sweep = AUTO.
 - Average Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 10Hz, Sweep = AUTO.

Band-Edge Test Data (Upper Edge)

Temperature	: 27°C	Humidity	: 50%
Test Date	: 09-AUG-2017	Tested by	: Andrew Lin
Polarization	: Horizontal	Channel	: CH78
EUT Position	: Vertical	Test Mode	: Mode 3



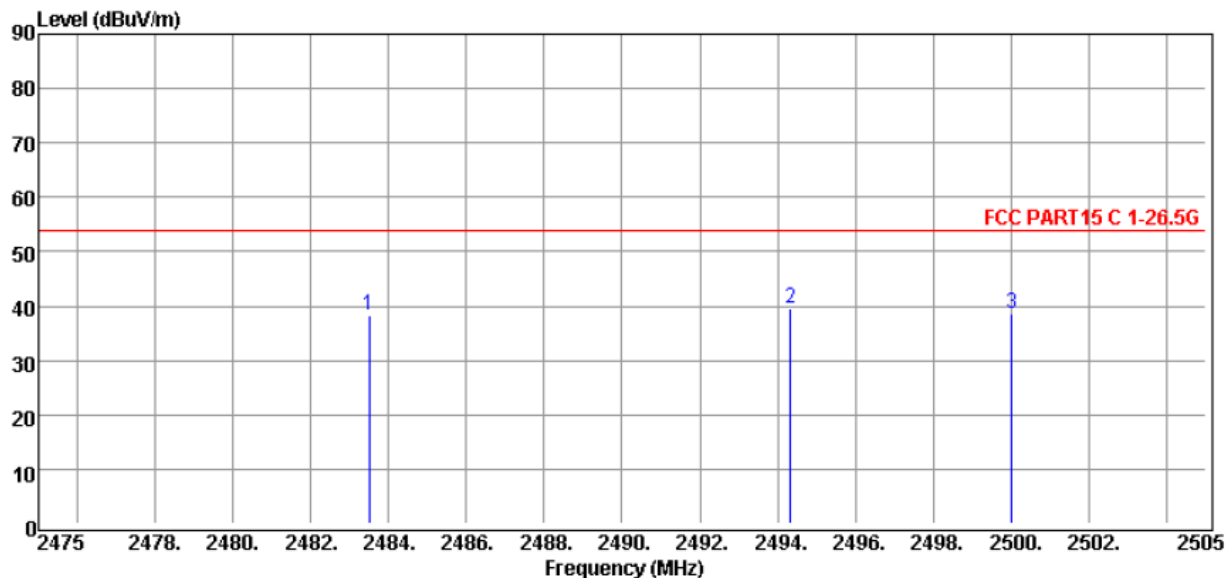
No.	Freq MHz	Reading dBμV	C.F dB	Result dBμV/m	Limit dBμV/m	Margin dB	Antenna Pol.	Remark
1	2483.49	44.43	-5.58	38.85	54.00	-15.15	HORIZONTAL	Peak
2	2489.19	45.65	-5.53	40.12	54.00	-13.88	HORIZONTAL	Peak
3	2500.05	44.16	-5.53	38.63	54.00	-15.37	HORIZONTAL	Peak

Remark :

- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
- Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
- Spectrum setting:
 - Peak Setting 1GHz to 10th harmonics of fundamental, RBW = VBW = 1MHz, Sweep = AUTO.
 - Average Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 10Hz, Sweep = AUTO.

Band-Edge Test Data (Upper Edge)

Temperature	: 27°C	Humidity	: 50%
Test Date	: 09-AUG-2017	Tested by	: Andrew Lin
Polarization	: Vertical	Channel	: CH78
EUT Position	: Vertical	Test Mode	: Mode 3



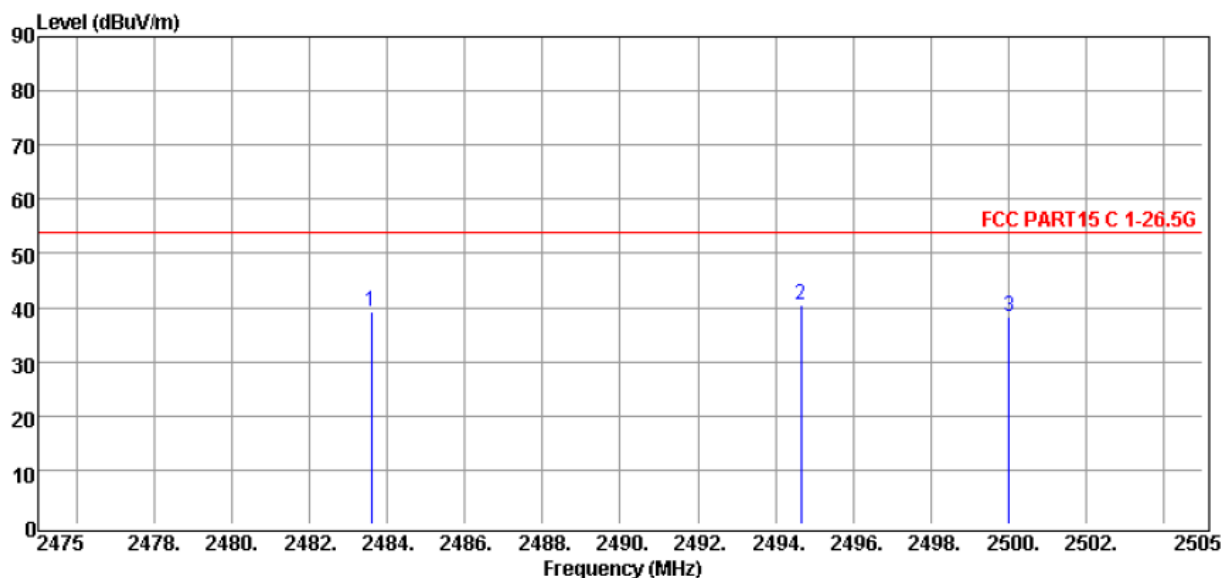
No.	Freq MHz	Reading dBμV	C.F dB	Result dBμV/m	Limit dBμV/m	Margin dB	Antenna Pol.	Remark
1	2483.49	43.75	-5.58	38.17	54.00	-15.83	VERTICAL	Peak
2	2494.32	45.10	-5.53	39.57	54.00	-14.43	VERTICAL	Peak
3	2500.02	44.08	-5.53	38.55	54.00	-15.45	VERTICAL	Peak

Remark :

- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
- Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
- Spectrum setting:
 - Peak Setting 1GHz to 10th harmonics of fundamental, RBW = VBW = 1MHz, Sweep = AUTO.
 - Average Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 10Hz, Sweep = AUTO.

Band-Edge Test Data (Upper Edge)

Temperature	: 27°C	Humidity	: 50%
Test Date	: 09-AUG-2017	Tested by	: Andrew Lin
Polarization	: Horizontal	Channel	: CH78
EUT Position	: Vertical	Test Mode	: Mode 6



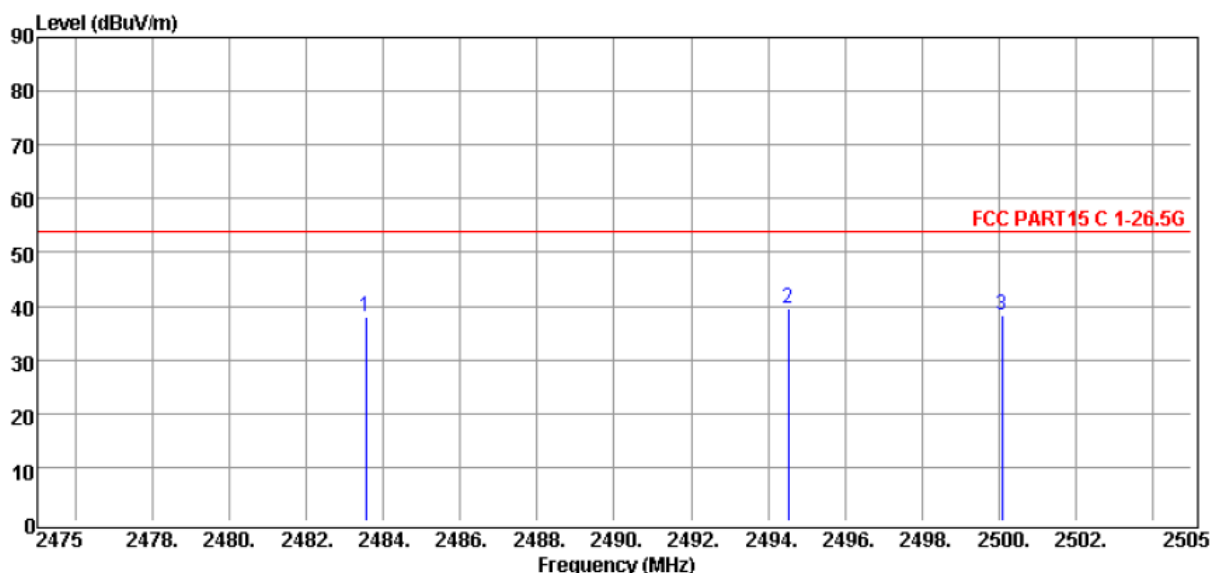
No.	Freq MHz	Reading dBμV	C.F dB	Result dBμV/m	Limit dBμV/m	Margin dB	Antenna Pol.	Remark
1	2483.58	44.87	-5.58	39.29	54.00	-14.71	HORIZONTAL	Peak
2	2494.65	46.17	-5.53	40.64	54.00	-13.36	HORIZONTAL	Peak
3	2500.02	43.93	-5.53	38.40	54.00	-15.60	HORIZONTAL	Peak

Remark :

- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
- Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
- Spectrum setting:
 - Peak Setting 1GHz to 10th harmonics of fundamental, RBW = VBW = 1MHz, Sweep = AUTO.
 - Average Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 10Hz, Sweep = AUTO.

Band-Edge Test Data (Upper Edge)

Temperature	: 27°C	Humidity	: 50%
Test Date	: 09-AUG-2017	Tested by	: Andrew Lin
Polarization	: Vertical	Channel	: CH78
EUT Position	: Vertical	Test Mode	: Mode 6



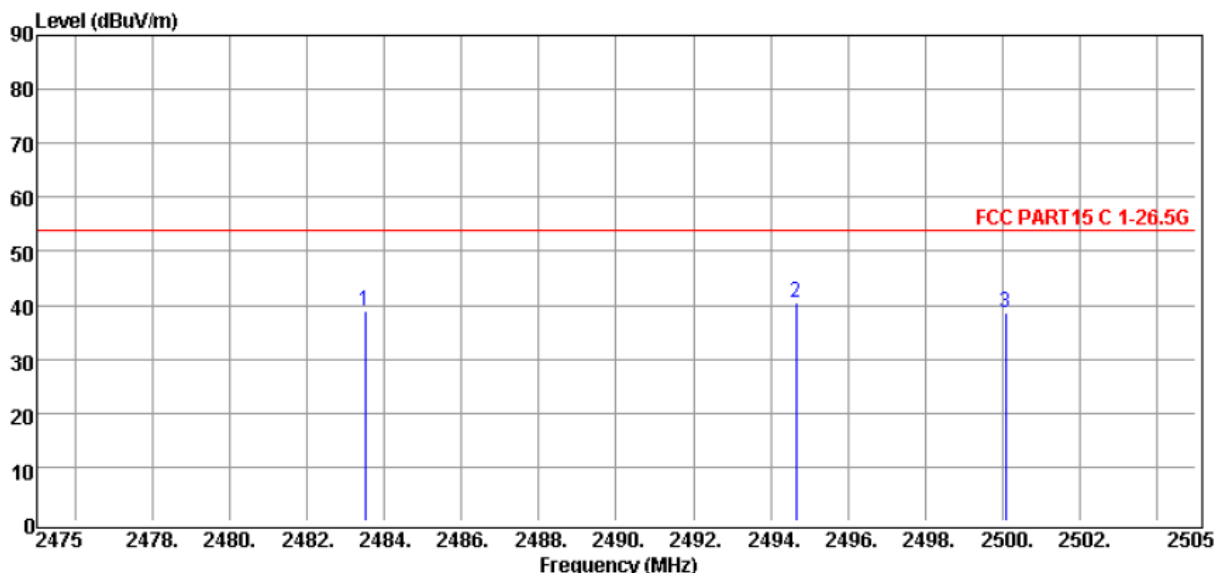
No.	Freq MHz	Reading dBuV	C.F dB	Result dBuV/m	Limit dBuV/m	Margin dB	Antenna Pol.	Remark
1	2483.55	43.42	-5.58	37.84	54.00	-16.16	VERTICAL	Peak
2	2494.53	45.17	-5.53	39.64	54.00	-14.36	VERTICAL	Peak
3	2500.08	43.75	-5.53	38.22	54.00	-15.78	VERTICAL	Peak

Remark :

- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
- Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
- Spectrum setting:
 - Peak Setting 1GHz to 10th harmonics of fundamental, RBW = VBW = 1MHz, Sweep = AUTO.
 - Average Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 10Hz, Sweep = AUTO.

Band-Edge Test Data (Upper Edge)

Temperature	: 27°C	Humidity	: 50%
Test Date	: 09-AUG-2017	Tested by	: Andrew Lin
Polarization	: Horizontal	Channel	: CH78
EUT Position	: Vertical	Test Mode	: Mode 9



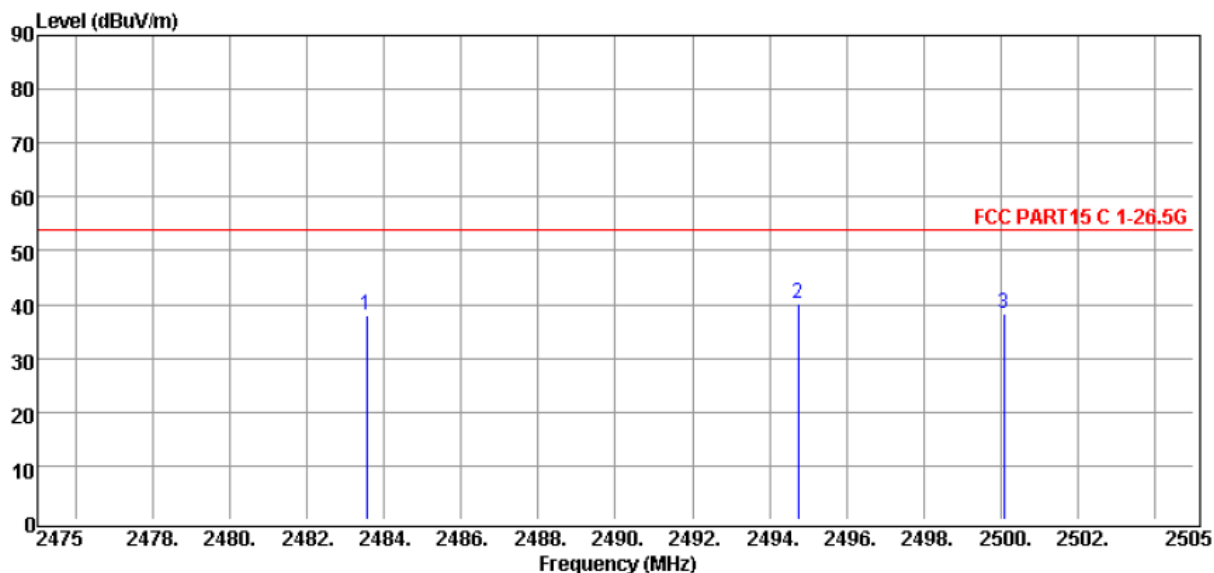
No.	Freq MHz	Reading dBμV	C.F dB	Result dBμV/m	Limit dBμV/m	Margin dB	Antenna Pol.	Remark
1	2483.49	44.43	-5.58	38.85	54.00	-15.15	HORIZONTAL	Peak
2	2494.65	46.17	-5.53	40.64	54.00	-13.36	HORIZONTAL	Peak
3	2500.08	44.25	-5.53	38.72	54.00	-15.28	HORIZONTAL	Peak

Remark :

- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
- Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
- Spectrum setting:
 - Peak Setting 1GHz to 10th harmonics of fundamental, RBW = VBW = 1MHz, Sweep = AUTO.
 - Average Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 10Hz, Sweep = AUTO.

Band-Edge Test Data (Upper Edge)

Temperature	: 27°C	Humidity	: 50%
Test Date	: 09-AUG-2017	Tested by	: Andrew Lin
Polarization	: Vertical	Channel	: CH78
EUT Position	: Vertical	Test Mode	: Mode 9



No.	Freq MHz	Reading dBuV	C.F dB	Result dBuV/m	Limit dBuV/m	Margin dB	Antenna Pol.	Remark
1	2483.55	43.42	-5.58	37.84	54.00	-16.16	VERTICAL	Peak
2	2494.74	45.76	-5.53	40.23	54.00	-13.77	VERTICAL	Peak
3	2500.08	43.75	-5.53	38.22	54.00	-15.78	VERTICAL	Peak

Remark :

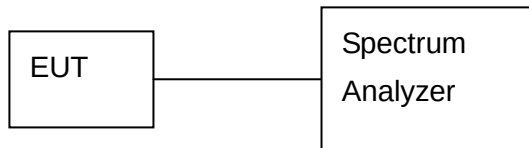
- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
- Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
- Spectrum setting:
 - Peak Setting 1GHz to 10th harmonics of fundamental, RBW = VBW = 1MHz, Sweep = AUTO.
 - Average Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 10Hz, Sweep = AUTO.

5 20 dB Bandwidth

5.1 Test Instruments

Refer to Sec. 1.2 Test Instruments.

5.2 Test Arrangement and Procedure



1. The transmitter output was connected to a spectrum analyzer (through an attenuator, if it's necessary).
2. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 30kHz RBW and 100kHz VBW. Measured the -20 dB bandwidth and plotted the graph.

5.3 Limit

None; For report purpose only.

5.4 Test Result

No non-compliance noted.

The final test data are shown on the following page(s).

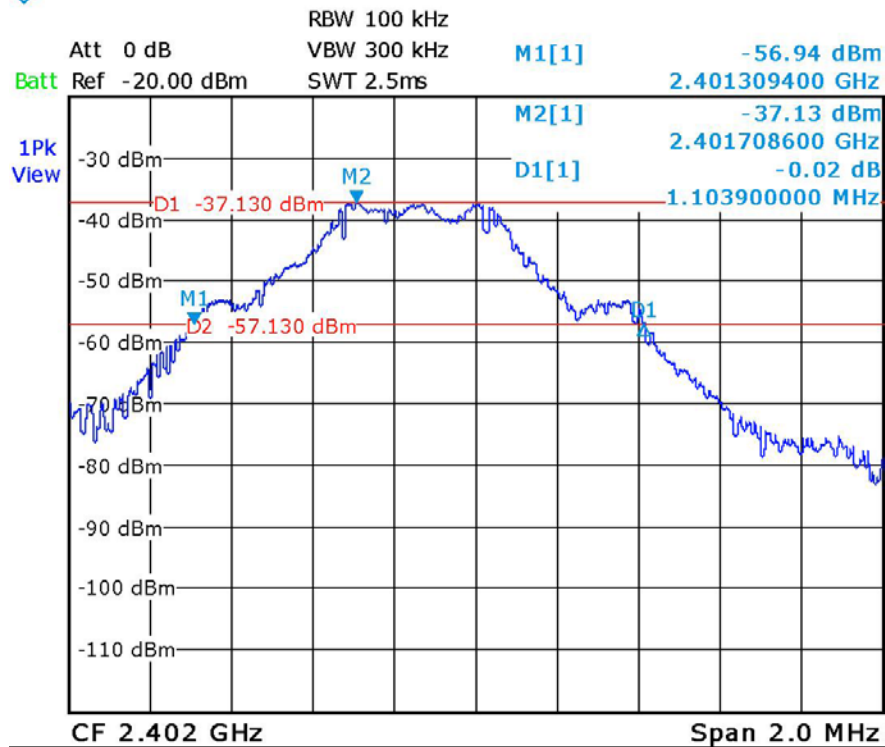
Bluetooth 1 Mbps (DH5)		
Channel	Frequency (MHz)	20dB Bandwidth (MHz)
Low	2402	1.103
Middle	2441	1.125
High	2480	1.125

Bluetooth 2 Mbps (DH5)		
Channel	Frequency (MHz)	20dB Bandwidth (MHz)
Low	2402	1.303
Middle	2441	1.297
High	2480	1.305

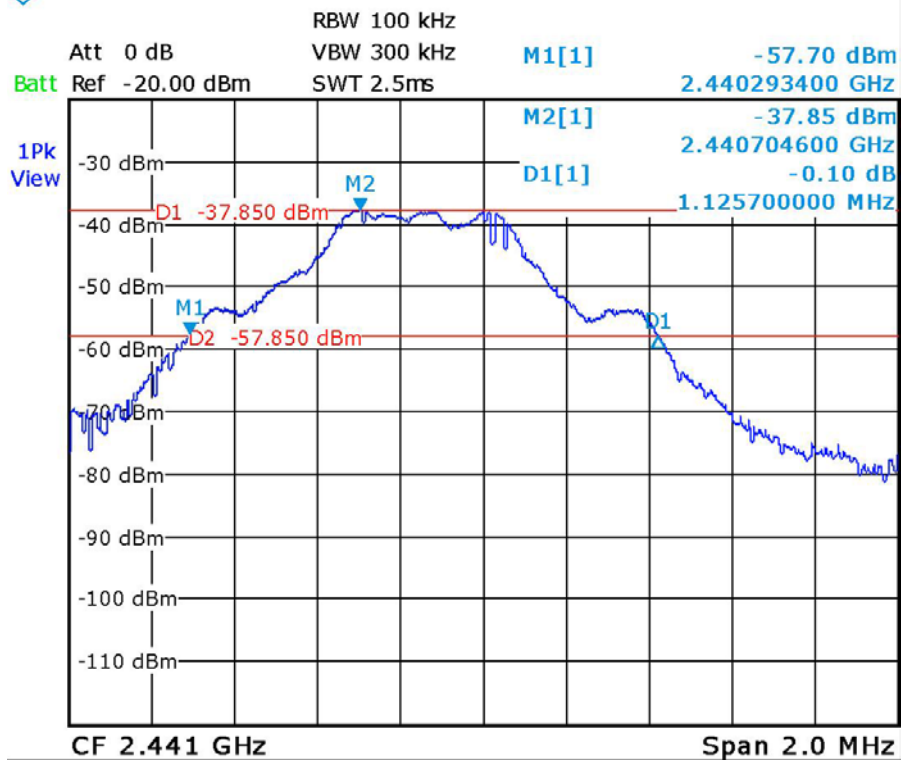
Bluetooth 3 Mbps (DH5)		
Channel	Frequency (MHz)	20dB Bandwidth (MHz)
Low	2402	1.295
Middle	2441	1.297
High	2480	1.305



Temperature	: 27°C	Humidity	: 50%
Test Date	: 09-AUG-2017	Tested by	: Andrew Lin
Test Mode	: BT (1 Mbps) DH5	Channel	: 00

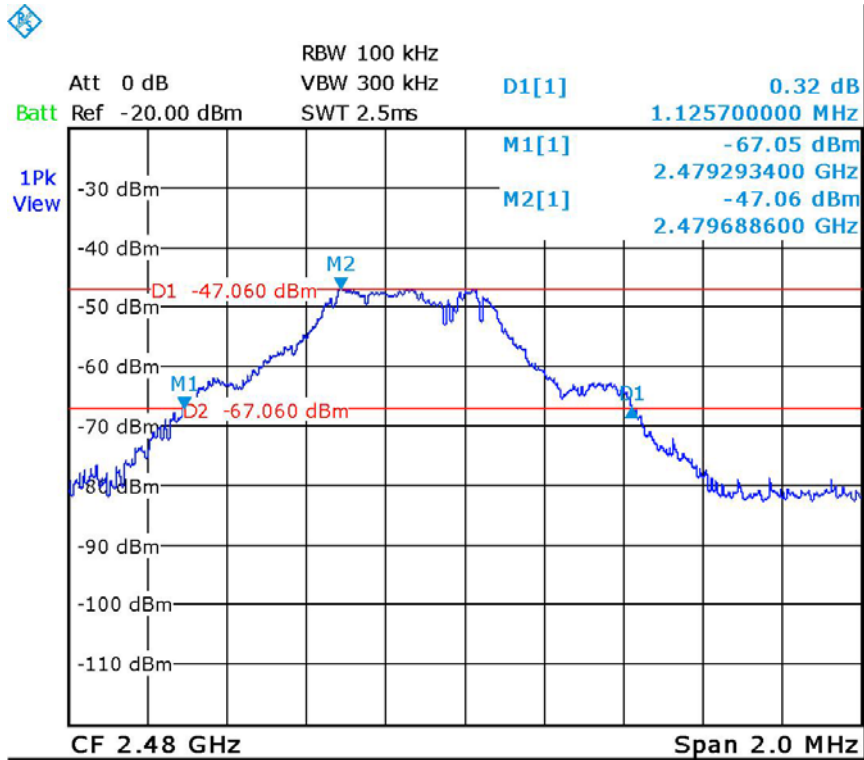


Test Mode	: BT (1 Mbps) DH5	Channel	: 39
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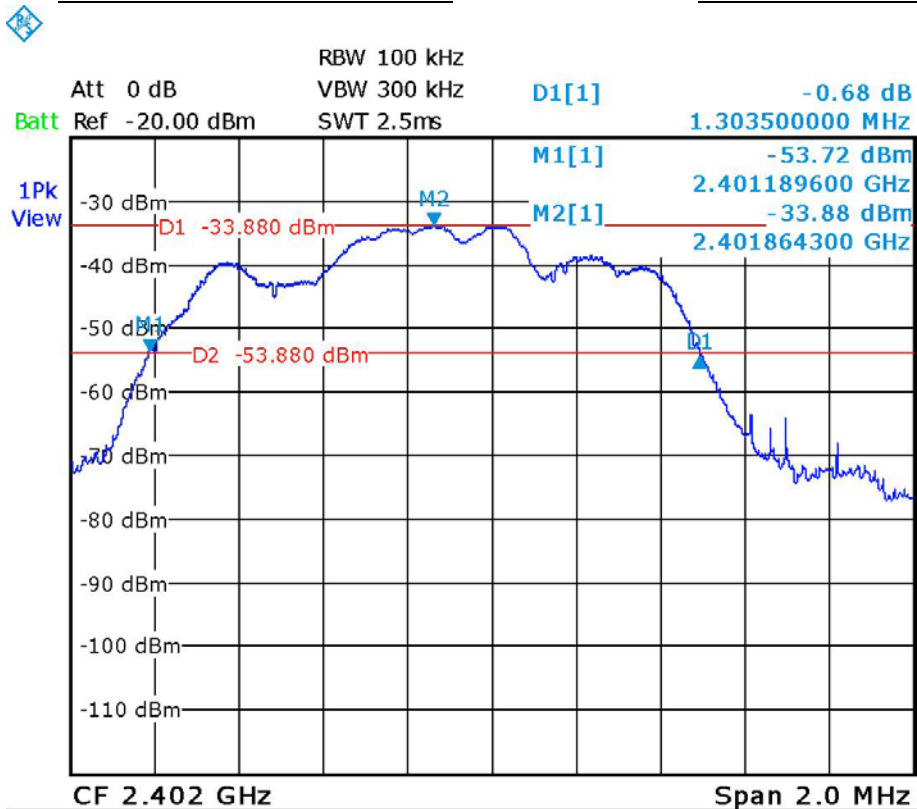
Test Mode : BT (1 Mbps) DH5 Channel : 78



Temperature : 27°C Humidity : 50%

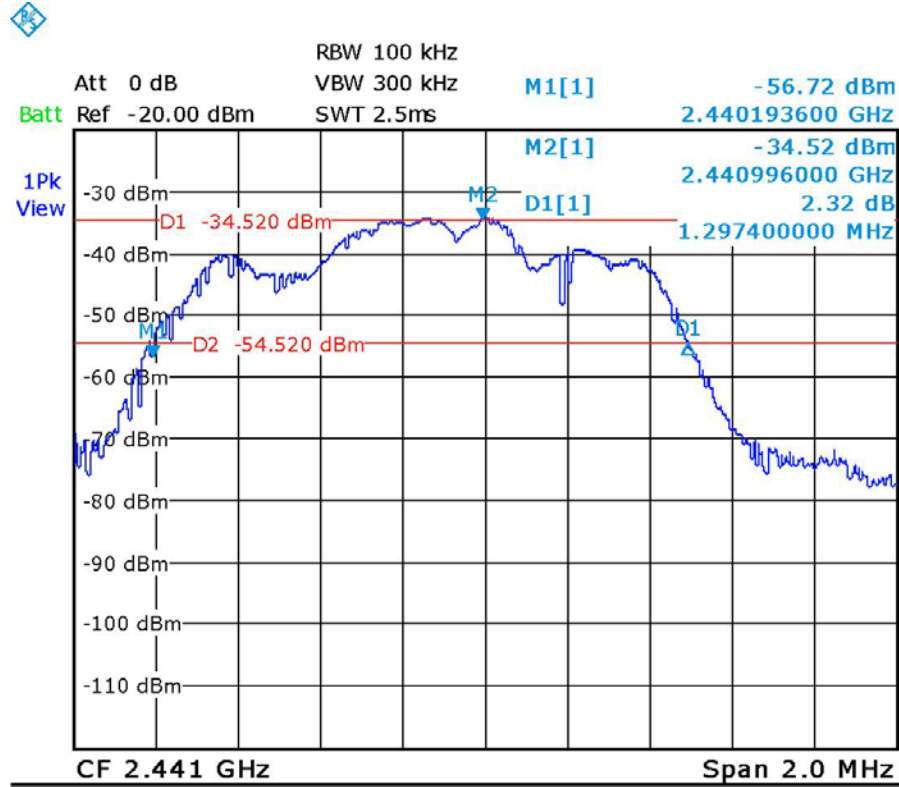
Test Date : 09-AUG-2017 Tested by : Andrew Lin

Test Mode : BT (2 Mbps) DH5 Channel : 00

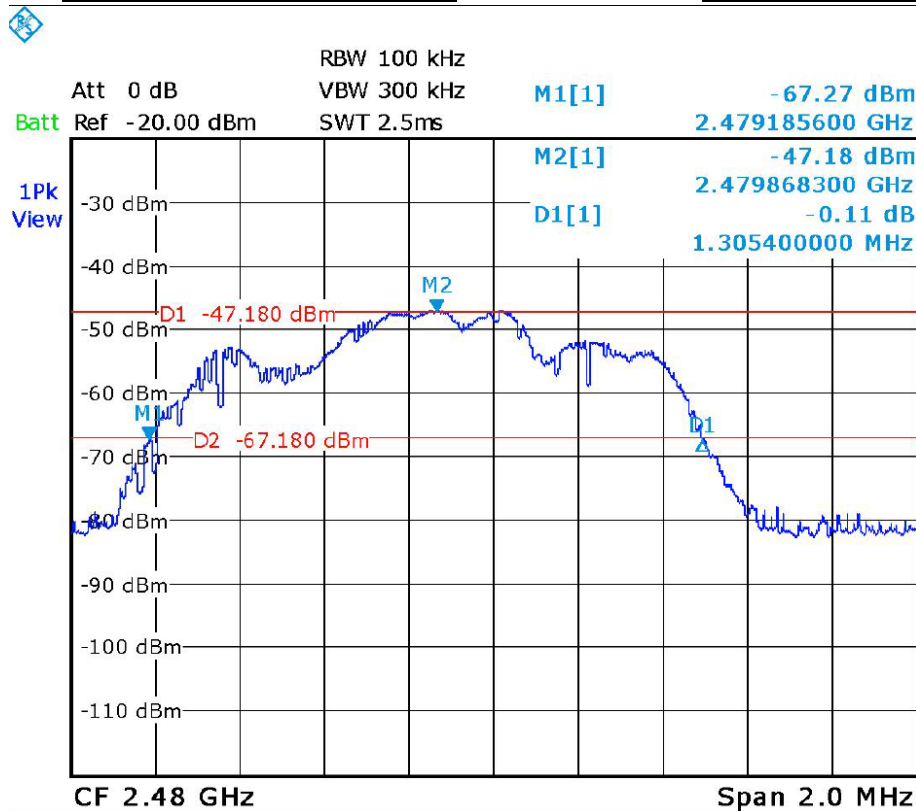




Test Mode : BT (2 Mbps) DH5 Channel : 39

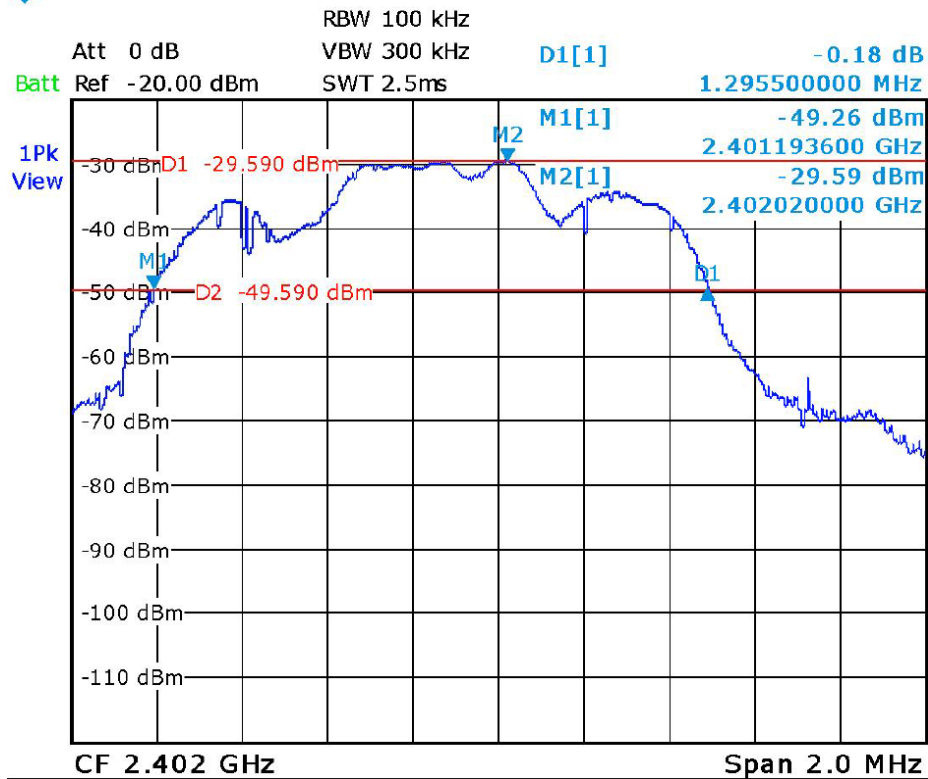


Test Mode : BT (2 Mbps) DH5 Channel : 78

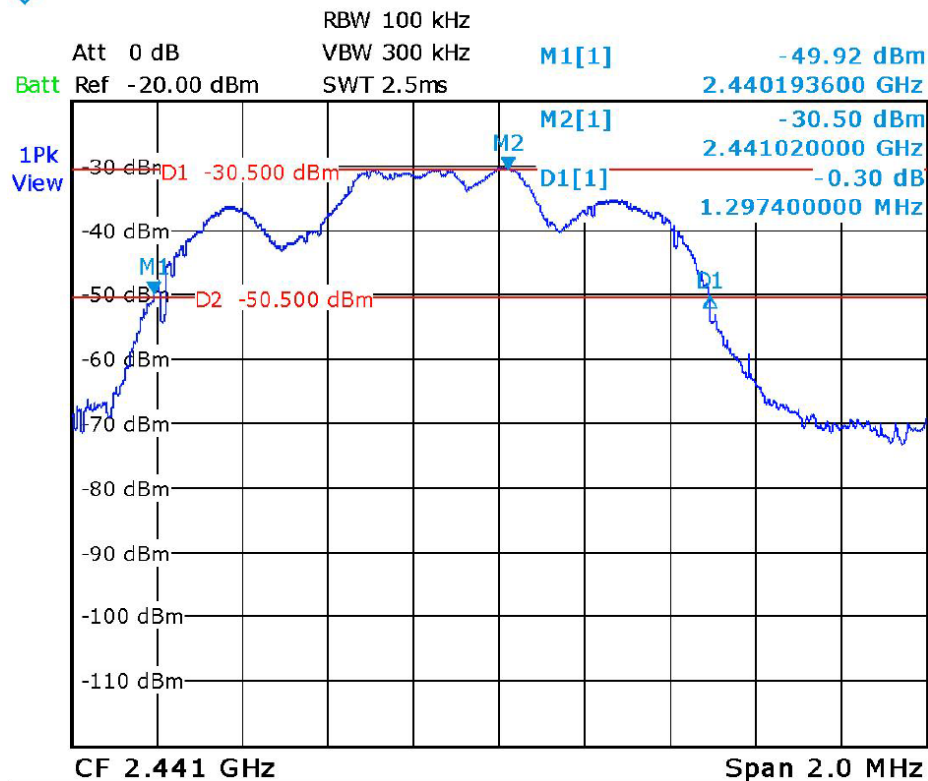




Temperature	: 27°C	Humidity	: 50%
Test Date	: 09-AUG-2017	Tested by	: Andrew Lin
Test Mode	: BT (3 Mbps) DH5	Channel	: 00



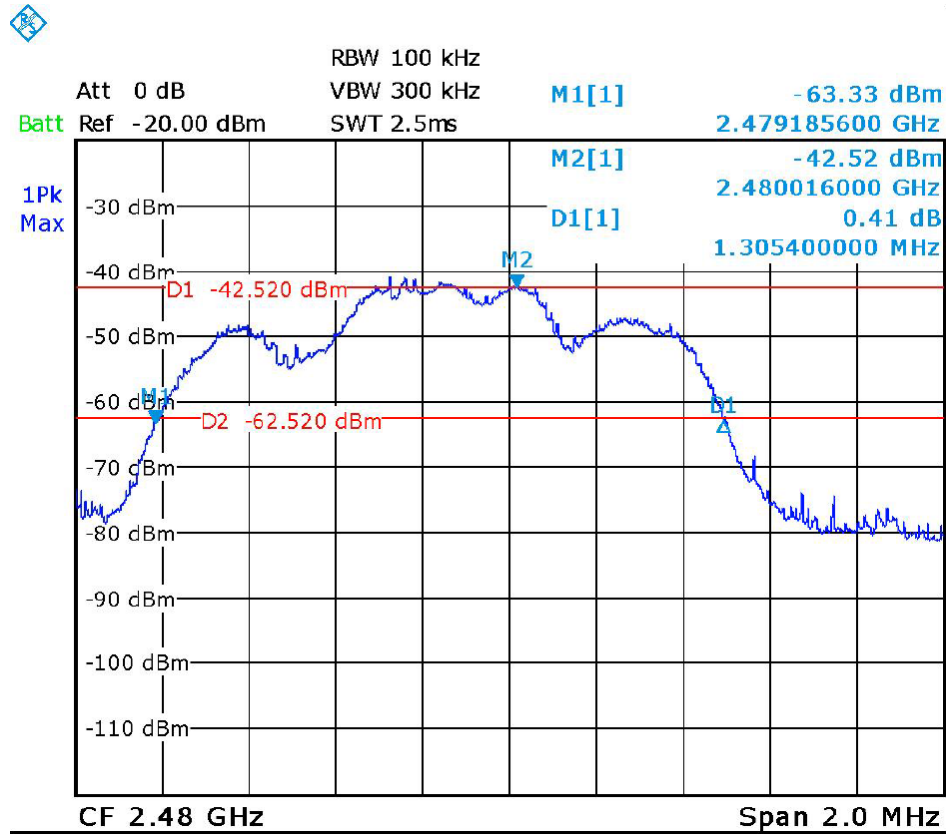
Test Mode	: BT (3 Mbps) DH5	Channel	: 39
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Test Mode : BT (3 Mbps) DH5

Channel : 78





6 Antenna requirement

6.1 Limit (§ 15.203)

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of § 15.211, § 15.213, § 15.217, § 15.219, or § 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with § 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

6.2 Test Result

Compliance.

The EUT applies a PIFA antenna.



7 Information about the FHSS characteristics

7.1 Pseudorandom Frequency Hopping Sequence

The channel is represented by a pseudo-random hopping sequence hopping through the 79 RF channels.

The hopping sequence is unique for the piconet and is determined by the Bluetooth device address of the master; the phase in the hopping sequence is determined by the Bluetooth clock of the master.

The channel is divided into time slots where each slot corresponds to an RF hop frequency. Consecutive hops correspond to different RF hop frequencies. The nominal hop rate is 1600 hops/s.

7.2 Example of a 79 hopping sequence in data mode:

02, 05, 31, 24, 20, 10, 43, 36, 30, 23, 40, 06, 21, 50, 44, 09, 71, 78, 01, 13, 73, 07, 70, 72, 35, 62, 42, 11, 41, 08, 16, 29, 60, 15, 34, 61, 58, 04, 67, 12, 22, 53, 57, 18, 27, 76, 39, 32, 17, 77, 52, 33, 56, 46, 37, 47, 64, 49, 45, 38, 69, 14, 51, 26, 79, 19, 28, 65, 75, 54, 48, 03, 25, 66, 05, 16, 68, 74, 59, 63, 55

7.3 Equal Hopping Frequency Use

Due to each the GFSK, $\pi/4$ -DQPSK and 8-DPSK modulation of hopping frequency will be transmitted in accordance to the frequency tables described above, there is no any frequency will be able to hop more times than other. Therefore each frequency will be used equally.

— End of Test Report —