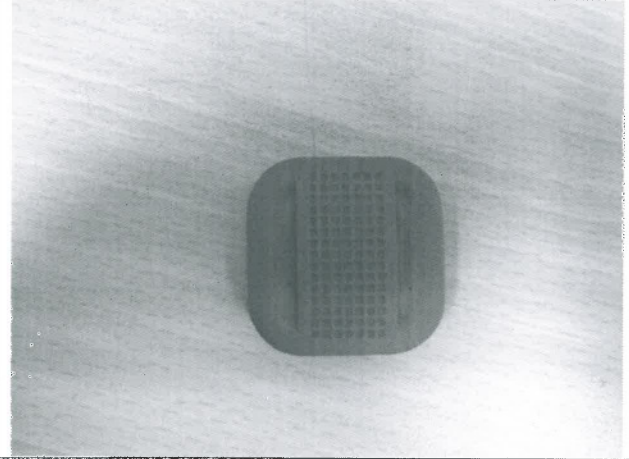


<b>Prüfbericht-Nr.:</b> <i>Test Report No.:</i>	<b>50042147 001</b>	<b>Auftrags-Nr.:</b> <i>Order No.:</i>	<b>154157284</b>	<b>Seite 1 von 31</b> <i>Page 1 of 31</i>
<b>Kunden-Referenz-Nr.:</b> <i>Client Reference No.:</i>	<b>639393</b>	<b>Auftragsdatum:</b> <i>Order date:</i>	<b>2016.04.03</b>	
<b>Auftraggeber:</b> <i>Client:</i>	<b>ID-RF SAS</b> 121 Rue des Hêtres			
<b>Prüfgegenstand:</b> <i>Test item:</i>	<b>Bluetooth Controller</b>			
<b>Bezeichnung / Typ-Nr.:</b> <i>Identification / Type No.:</i>	<b>NIU-5-1</b> <b>FCC ID: 2AIHGNIU-5-1</b> <b>IC: 21504-NIU51</b>			
<b>Auftrags-Inhalt:</b> <i>Order content:</i>	<b>Complete test</b>			
<b>Prüfgrundlage:</b> <i>Test specification:</i>	<b>FCC CFR47 Part 15, Subpart C Section 15.247</b> <b>RSS-Gen Issue 4, November 2014</b> <b>RSS-247 Issue 1, May 2015</b> <b>ANSI C63.10: 2013</b> <b>KDB 558074 D01 DTS Meas Guidance v03r05</b> <b>KDB 447498 D01 General RF Exposure Guidance V06</b>			
<b>Wareneingangsdatum:</b> <i>Date of receipt:</i>	<b>2016.04.08</b>			
<b>Prüfmuster-Nr.:</b> <i>Test sample No.:</i>	<b>A000351920-001</b>			
<b>Prüfzeitraum:</b> <i>Testing period:</i>	<b>2016.04.26 to 2016.04.26</b>			
<b>Ort der Prüfung:</b> <i>Place of testing:</i>	<b>MRT Technology(Suzhou) Co., Ltd.</b>			
<b>Prüflaboratorium:</b> <i>Testing laboratory:</i>	<b>TÜV Rheinland (Shanghai) Co., Ltd.</b>			
<b>Prüfergebnis*:</b> <i>Test result*:</i>	<b>Pass</b>			
<b>geprüft von / tested by:</b>		<b>kontrolliert von / reviewed by:</b>		
2016.07.11	Elliot Zhang / Senior Project Engineer	2016.07.11	Shi Li / Section Manager	
<b>Datum</b> <i>Date</i>	<b>Name / Stellung</b> <i>Name / Position</i>	<b>Unterschrift</b> <i>Signature</i>	<b>Datum</b> <i>Date</i>	<b>Name / Stellung</b> <i>Name / Position</i>
<b>Sonstiges / Other</b>				
<b>Zustand des Prüfgegenstandes bei Anlieferung:</b> <i>Condition of the test item at delivery:</i>		<b>Prüfmuster vollständig und unbeschädigt</b> <i>Test item complete and undamaged</i>		
* Legende: 1 = sehr gut 2 = gut 3 = befriedigend 4 = ausreichend 5 = mangelhaft P(ass) = entspricht o.g. Prüfgrundlage(n) F(ail) = entspricht nicht o.g. Prüfgrundlage(n) N/A = nicht anwendbar N/T = nicht getestet Legend: 1 = very good 2 = good 3 = satisfactory 4 = sufficient 5 = poor P(ass) = passed a.m. test specification(s) F(ail) = failed a.m. test specification(s) N/A = not applicable N/T = not tested				
<b>Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.</b> <i>This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</i>				

## TEST SUMMARY

**5.1.1 ANTENNA REQUIREMENT**

RESULT: Pass

**5.1.2 PEAK OUTPUT POWER**

RESULT: Pass

**5.1.3 6dB BANDWIDTH**

RESULT: Pass

**5.1.4 CONDUCTED SPURIOUS EMISSIONS**

RESULT: Pass

**5.1.5 POWER SPECTRAL DENSITY**

RESULT: Pass

**5.1.6 RADIATED SPURIOUS EMISSION**

RESULT: Pass

**5.1.7 RF EXPOSURE STATEMENT**

RESULT: Pass

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## 1. General Remarks

### 1.1 Complementary Materials

Null.

## 2. Test Sites

### 2.1 Test Facilities

MRT Technology (Suzhou) Co., Ltd.

D8 Building, Youxin Industrial Park, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China

The used test equipment is in accordance with CISPR 16 for measurement of radio interference.

The Federal Communications Commission has reviewed the technical characteristics of the radiated and conducted emission facility, and has found these test facilities to be in compliance with the requirements of section 2.948 of the FCC rules. The description of the test facility is listed under FCC registration number 809388.

The Industry Canada has reviewed the technical characteristics of the radiated and conducted emission facility, and has found these test facilities to be in compliance. The description of the test facility is listed under chambers filing number 11384A.

## 2.2 List of Test and Measurement Instruments

**Table 1: List of Test and Measurement Equipment**

### Conducted Emissions

Instrument	Manufacturer	Type No.	Cali. Interval	Cali. Due Date
EMI Test Receiver	R&S	ESR7	1 year	2016.11.03
Two-Line V-Network	R&S	ENV216	1 year	2016.11.03
Two-Line V-Network	R&S	ENV216	1 year	2016.11.03
Temperature/Humidity Meter	Ouleinuo	N/A	1 year	2016.11.20

### Radiated Emissions

Instrument	Manufacturer	Type No.	Cali. Interval	Cali. Due Date
Spectrum Analyzer	Agilent	E4447A	1 year	2016.12.08
EMI Test Receiver	R&S	ESR7	1 year	2016.11.03
Preamplifier	Agilent	83017A	1 year	2017.03.29
Preamplifier	Schwarzbeck	BBV9721	1 year	2017.04.16
Loop Antenna	Schwarzbeck	FMZB1519	1 year	2016.11.07
TRILOG Antenna	Schwarzbeck	VULB9162	1 year	2016.11.07
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	1 year	2016.11.07
Broadband Horn Antenna	Schwarzbeck	BBHA9170	1 year	2017.01.05
Temperature/Humidity Meter	Ouleinuo	N/A	1 year	2016.11.20

### Conducted Test Equipment

Instrument	Manufacturer	Type No.	Cali. Interval	Cali. Due Date
Spectrum Analyzer	Agilent	N9020A	1 year	2016.05.08
USB Wideband Power Sensor	Boonton	55006	1 year	2016.05.08
Temperature/Humidity Meter	Ouleinuo	N/A	1 year	2016.11.20

## 2.3 Traceability

All measurement equipment calibrations are traceable to NIST or where calibration is performed outside the United States, to equivalent nationally recognized standards organizations.

## 2.4 Calibration

Equipment requiring calibration is calibrated periodically by the manufacturer or according to manufacturer's specifications. Additionally all equipment is verified for proper performance on a regular basis using in house standards or comparisons.

## 2.5 Measurement Uncertainty

**Table 2: Measurement Uncertainty**

Measurement Type	Frequency	Uncertainty
Antenna Port Conducted Emission	< 1GHz	±0.39dB
	> 1GHz	±0.68dB
Radiated Emission	30MHz - 1GHz	±5.34dB
	> 1GHz	±5.40dB

### 3. General Product Information

#### 3.1 Product Function and Intended Use

The EUT (Equipment Under Test) is a controller which use the technic of Bluetooth 4.0 Low Engry Only. But only three channels are aviliable for this product. Please refer to the table in clause 3.2 for the information of the aviliable channels.

For details refer to the User Manual and Circuit Diagram.

#### 3.2 Ratings and System Details

Kind of Equipment	:	Bluetooth Controller
Type Designation	:	NIU-5-1
Operating Frequency band	:	2402 – 2480MHz
Modulation	:	GFSK
Operation Voltage	:	DC 3.3V (by Battery)
Antenna	:	PCB, Max gain -2.474dBi

**Table 3: Aviliable Channels**

Channel No.	Frequency [MHz]
37	2402
38	2426
39	2480

#### 3.3 Independent Operation Modes

The basic operation modes are:

- A. Transmitting
  - 1. Low Channel
  - 2. Middle Channel
  - 3. High Channel
- B. Receiving
- C. Standby
- D. Off

### **3.4 Noise Generating and Noise Suppressing Parts**

Refer to the Circuit Diagram.

### **3.5 Submitted Documents**

- |                    |                      |
|--------------------|----------------------|
| - Bill of Material | - Circuit Diagram    |
| - PCB Layout       | - Instruction Manual |
| - Photo Document   | - Rating Label       |



## 4. Test Set-up and Operation Modes

### 4.1 Principle of Configuration Selection

The equipment under test (EUT) was configured to measure its maximum power level. The test modes were adapted accordingly in reference to the instructions for use.

### 4.2 Test Operation and Test Software

Test operation refers to test setup in chapter 5. All testing were performed according to the procedures in ANSI C63.10: 2013.

### 4.3 Special Accessories and Auxiliary Equipment

Null.

### 4.4 Countermeasures to achieve EMC Compliance

The test sample which has been tested contained the noise suppression parts as described in the Constructional Data Form or the Technical Construction File. No additional measures were employed to achieve compliance.

## 5. Test Results

### 5.1 Transmitter Requirement & Test Suites

#### 5.1.1 Antenna Requirement

**RESULT:****Pass**

According to the manufacturer declared, the EUT has one PCB antenna, the directional gain of antenna is -2.474dBi and the PCB antenna is designed with permanent attachment and no consideration of replacement. Therefore the EUT is considered sufficient to comply with the provision.

**Table 4: Antenna Requirement**

FCC 15.203 – Antenna Requirement 1	
Requirement:	No antenna other than that furnished by the responsible party shall be used with the device
Results:	Antenna type: PCB Antenna
Verdict:	PASS

FCC 15.204 – Antenna Requirement 2	
Requirement:	An intentional radiator may be operated only with the antenna with which it is authorized. If an antenna is marketed with the intentional radiator, it shall be of a type which is authorized with the intentional radiator.
Results:	Only one integral antenna can be used
Verdict:	PASS

RSS-Gen 6.3 – External Control	
Requirement:	The device shall not have any external controls accessible to the user that enable it to be adjusted, selected or programmed to operate in violation of the limits prescribed in the applicable RSS.
Results:	The device does not have any transmitter external controls accessible to the user that can be adjusted and operated in violation of the limits of this standard.
Verdict:	PASS

**RSS-Gen 8.3 – Antenna Requirement**

Requirement: When a measurement at the antenna connector is used to determine RF output power, the effective gain of the device's antenna shall be stated, based on measurement or on data from the antenna manufacture.

Results:

a) Antenna type:	PCB Antenna
b) Manufacture:	N/A
c) Model No.:	N/A
d) Gain with reference to an isotropic radiator:	-2.474dBi

Verdict: PASS

## 5.1.2 Peak Output Power

**RESULT:**
**Pass**

Date of testing : 2016.04.26  
 Test standard : FCC Part 15.247(b)(3)  
 Clause 5.4(4) of RSS-247 Issue 1 May 2015  
 Test procedure : ANSI C63.10: 2013  
 Clause 9.1 of KDB 558074 D01 v03r05  
 Limit : FCC Part 15.247(b)(3)  
 Clause 5.4(4) of RSS-247 Issue 1 May 2015  
 Kind of test site : Shielded room

**Test setup**

Test Channel : Low/ Middle/ High  
 Operation Mode : A.1; A.2; A.3  
 Ambient temperature : 25°C  
 Relative humidity : 52%  
 Atmospheric pressure : 101kPa

**Table 5: Peak Output Power**

Mode	Freq. [MHz]	Maximum Peak Conducted Output Power [dBm]	Limit [dBm]
BLE	2402	-7.71	30
	<b>2426</b>	<b>-7.34</b>	<b>30</b>
	2480	-7.43	30

### 5.1.3 6dB Bandwidth

**RESULT:****Pass**

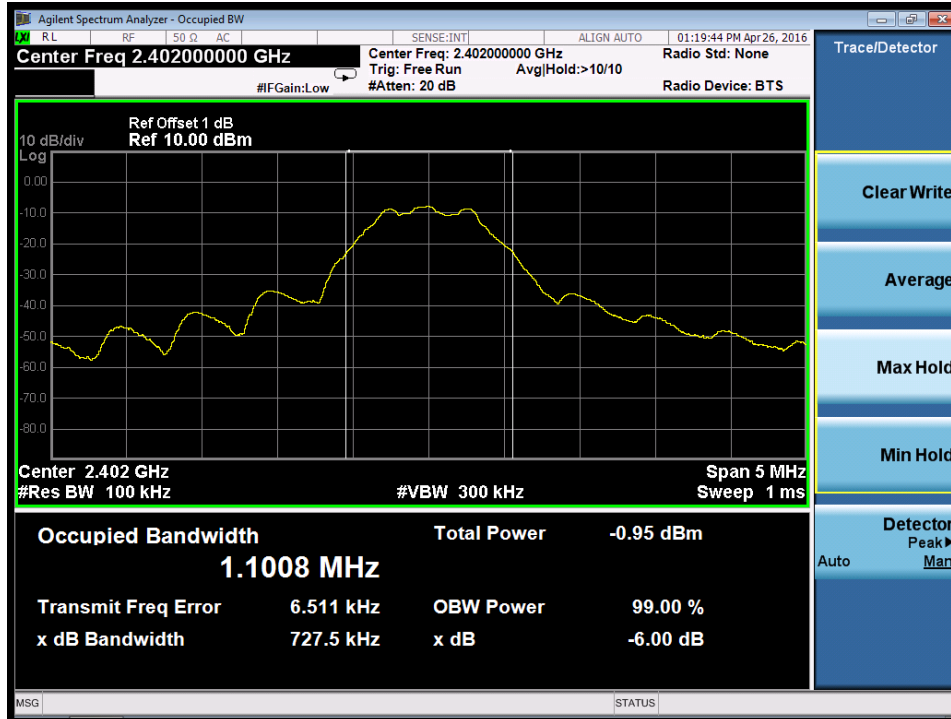
Date of testing : 2016.04.26  
Test standard : FCC Part 15.247(a)(2)  
Clause 5.2(1) of RSS-247 Issue 1 May 2015  
Test procedure : ANSI C63.10: 2013  
Clause 8 of KDB 558074 D01 v03r05  
Limit : FCC Part 15.247(a)(2)  
Clause 5.2(1) of RSS-247 Issue 1 May 2015  
Kind of test site : Shielded room

**Test setup**

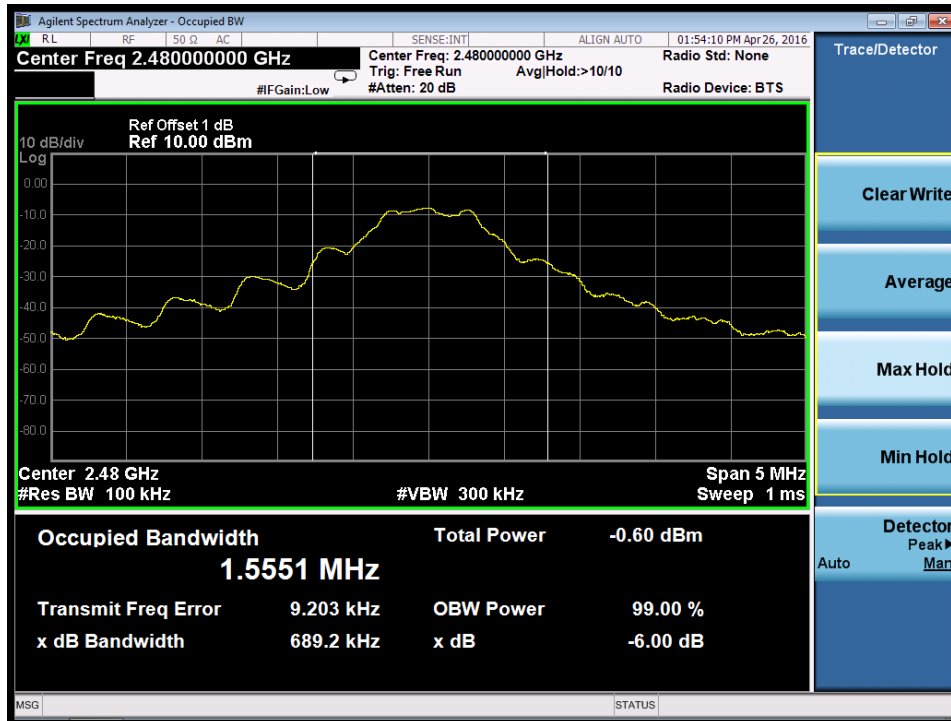
Test Channel : Low/ Middle/ High  
Operation Mode : A.1; A.2; A.3  
Ambient temperature : 25°C  
Relative humidity : 52%  
Atmospheric pressure : 101kPa

**Table 6: 6dB Bandwidth**

Mode	Frequency [MHz]	6dB Bandwidth [kHz]	Limit [kHz]
BLE	2402	727.5	500
	2426	715.8	500
	2480	689.2	500

**Figure 1: 6dB Bandwidth, 2402MHz**

**Figure 2: 6dB Bandwidth, 2426MHz**


**Figure 3: 6dB Bandwidth, 2480MHz**



## 5.1.4 Conducted Spurious Emissions

### RESULT:

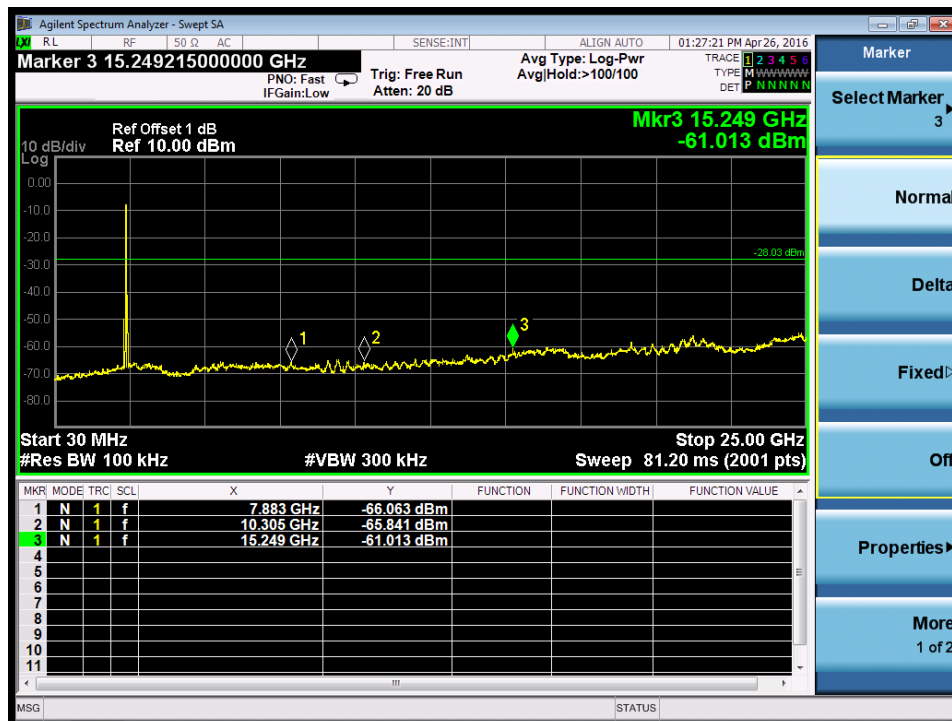
**Pass**

Date of testing : 2016.04.26  
 Test standard : FCC Part 15.247(d)  
 Clause 5.5 of RSS-247 Issue 1 May 2015  
 Test procedure : ANSI C63.10: 2013  
 Clause 11&12 of KDB 558074 D01 v03r05  
 Limit : FCC Part 15.247(d)  
 Clause 5.5 of RSS-247 Issue 1 May 2015  
 Kind of test site : Shielded room

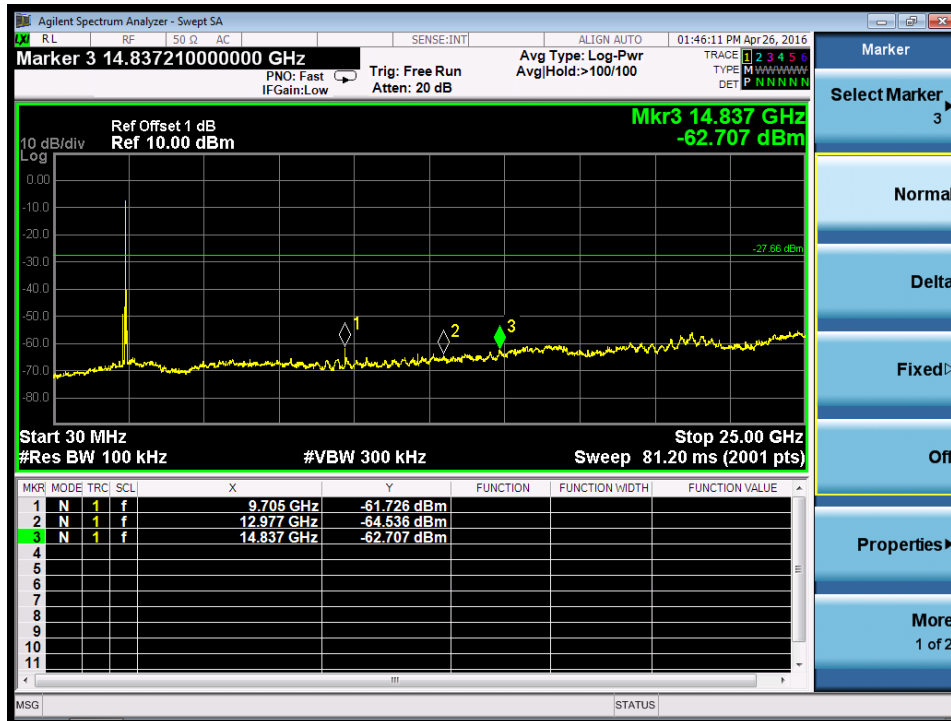
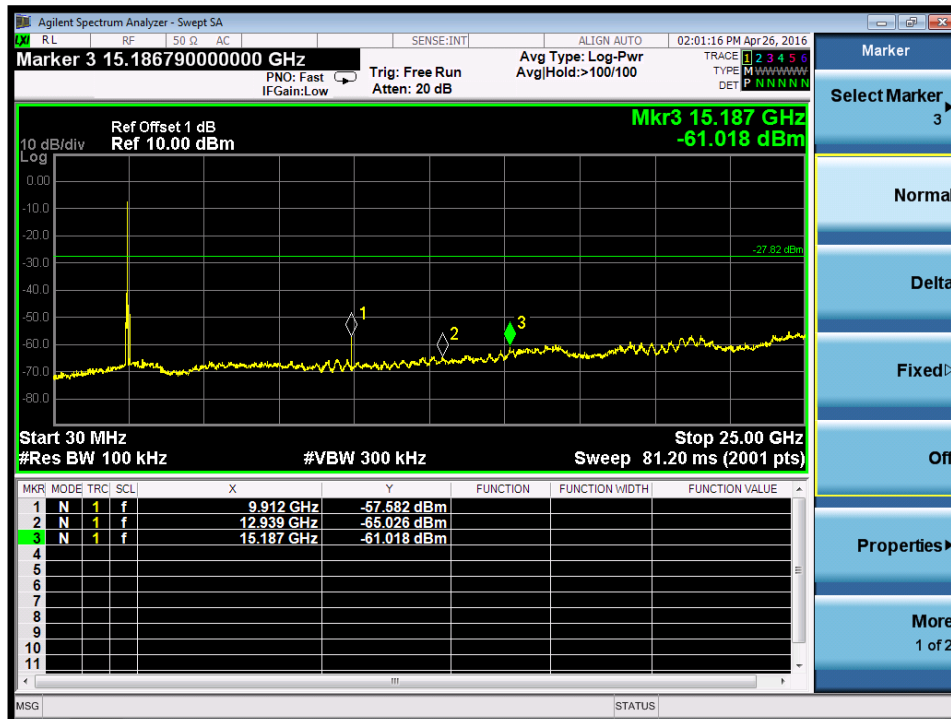
### Test setup

Test Channel : Low/ Middle/ High  
 Operation Mode : A.1; A.2; A.3  
 Ambient temperature : 25°C  
 Relative humidity : 52%  
 Atmospheric pressure : 101kPa

**Figure 4: Conducted Spurious Emission, 2402MHz**





**Figure 5: Conducted Spurious Emission, 2426MHz**

**Figure 6: Conducted Spurious Emission, 2480MHz**


**Figure 7: Conducted Bandedge, 2402MHz**



**Figure 8: Conducted Bandedge, 2480MHz**



**5.1.5 Power Spectral Density****RESULT:****Pass**

Date of testing : 2016.04.26  
Test standard : FCC Part 15.247(e)  
Clause 5.2(2) of RSS-247 Issue 1 May 2015  
Test procedure : ANSI C63.10: 2013  
Clause 10 of KDB 558074 D01 v03r05  
Limit : FCC Part 15.247(e)  
Clause 5.2(2) of RSS-247 Issue 1 May 2015  
Kind of test site : Shielded room

**Test setup**

Test Channel : Low/ Middle/ High  
Operation Mode : A.1; A.2; A.3  
Ambient temperature : 25°C  
Relative humidity : 52%  
Atmospheric pressure : 101kPa

**Table 7: Power Spectral Density**

Mode	Frequency [MHz]	Result [dBm/3kHz]	Limit [dBm/3kHz]
BLE	2402	-19.413	8
	2426	-19.277	8
	2480	-20.412	8

**Figure 9: Power Spectral Density, 2402MHz**

**Figure 10: Power Spectral Density, 2426MHz**


**Figure 11: Power Spectral Density, 2480MHz**



## 5.1.6 Radiated Spurious Emission

**RESULT:**
**Pass**

Date of testing : 2016.04.26  
 Test standard : FCC Part 15.247(d)  
 Clause 5.5 of RSS-247 Issue 1 May 2015  
 Test procedure : ANSI C63.10: 2013  
 Clause 11&12 of KDB 558074 D01 v03r05  
 Limit : FCC Part 15.247(d)  
 FCC Part 15.209(a)  
 Clause 5.5 of RSS-247 Issue 1 May 2015  
 Clause 8.9 of RSS-Gen Issue 4 November 2014  
 Kind of test site : 3m Semi-Anechoic Chamber

**Test setup**

Test Channel : Low/ Middle/ High  
 Operation Mode : A.1; A.2; A.3  
 Ambient temperature : 25°C  
 Relative humidity : 52%  
 Atmospheric pressure : 101kPa

**Table 8: Radiated Spurious Emission, below 1GHz**

Channel	Freq. [MHz]	Measure Level [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor [dB]	Type	Ant. Pol.
Low	38.245	15.807	1.507	-24.193	40.000	14.301	QP	H
	53.761	15.261	1.466	-24.739	40.000	13.795	QP	H
	157.550	16.416	1.230	-27.084	43.500	15.186	QP	H
	370.955	17.716	1.817	-28.284	46.000	15.899	QP	H
	536.340	20.501	1.304	-25.499	46.000	19.197	QP	H
	956.835	26.913	1.983	-19.087	46.000	24.930	QP	H
	38.215	16.155	1.859	-23.845	40.000	14.296	QP	V
	120.695	14.659	1.486	-28.841	43.500	13.173	QP	V
	158.525	16.577	1.391	-26.923	43.500	15.186	QP	V
	391.810	17.827	1.490	-28.173	46.000	16.337	QP	V
	507.240	19.884	1.250	-26.116	46.000	18.634	QP	V
	746.740	24.088	1.420	-21.912	46.000	22.668	QP	V

**Note:**

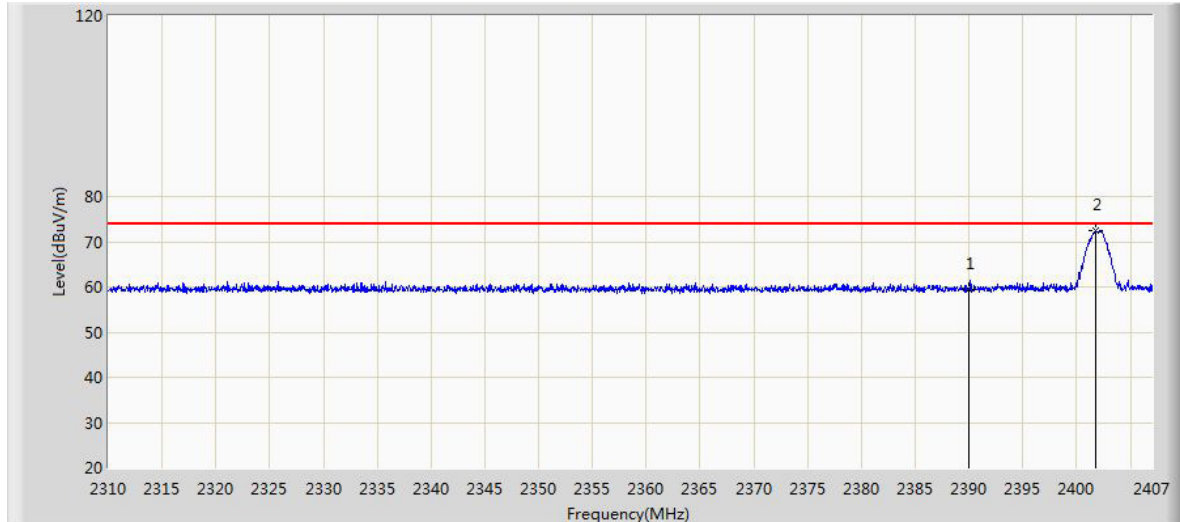
All the three channels have been evaluated, only the worst case was shown on the table above.

**Table 9: Radiated Spurious Emission, above 1GHz**

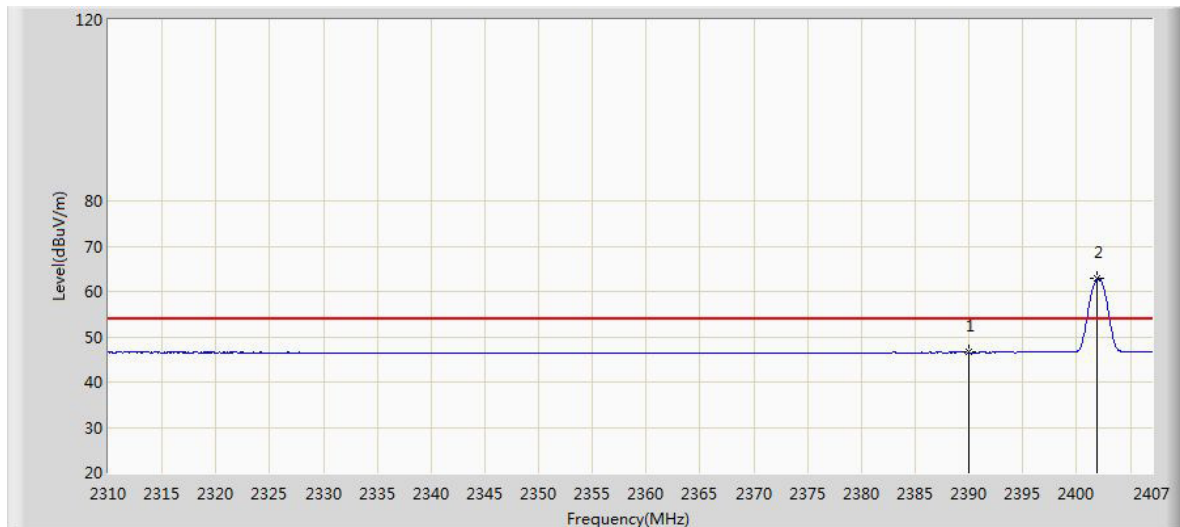
Channel	Freq. [MHz]	Measure Level [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor [dB]	Type	Ant. Pol.
Low	3898.500	37.127	36.942	-36.873	74.000	0.185	PK	H
	4808.000	40.156	37.462	-33.844	74.000	2.694	PK	H
	6652.500	41.826	35.833	-32.174	74.000	5.993	PK	H
	9814.500	45.377	33.803	-28.623	74.000	11.573	PK	H
	3873.000	37.363	37.254	-36.637	74.000	0.109	PK	V
	4799.500	39.687	36.989	-34.313	74.000	2.698	PK	V
	6822.500	42.039	35.869	-31.961	74.000	6.171	PK	V
	9746.500	45.107	33.805	-28.893	74.000	11.302	PK	V
Middle	3924.000	37.466	37.213	-36.534	74.000	0.253	PK	H
	4850.500	41.238	38.559	-32.762	74.000	2.679	PK	H
	6618.500	41.521	35.509	-32.479	74.000	6.013	PK	H
	9721.000	46.371	35.305	-27.629	74.000	11.066	PK	H
	3949.500	37.663	37.377	-36.337	74.000	0.286	PK	V
	4850.500	39.184	36.505	-34.816	74.000	2.679	PK	V
	6550.500	42.001	36.056	-31.999	74.000	5.945	PK	V
	9695.500	44.542	33.617	-29.458	74.000	10.925	PK	V
High	3805.000	38.002	38.196	-35.998	74.000	-0.194	PK	H
	4901.500	39.938	37.222	-34.062	74.000	2.716	PK	H
	6618.500	42.226	36.214	-31.774	74.000	6.013	PK	H
	9840.000	46.976	35.358	-27.024	74.000	11.618	PK	H
	3839.000	38.190	38.200	-35.810	74.000	-0.010	PK	V
	4833.500	39.017	36.319	-34.983	74.000	2.699	PK	V
	6559.000	41.780	35.817	-32.220	74.000	5.963	PK	V
	9916.500	46.668	35.135	-27.332	74.000	11.533	PK	V

**Note:**

The measurements using an average detector for the frequency above 1GHz were not performed since the results measured with a Peak detector are totally meet the average limit.

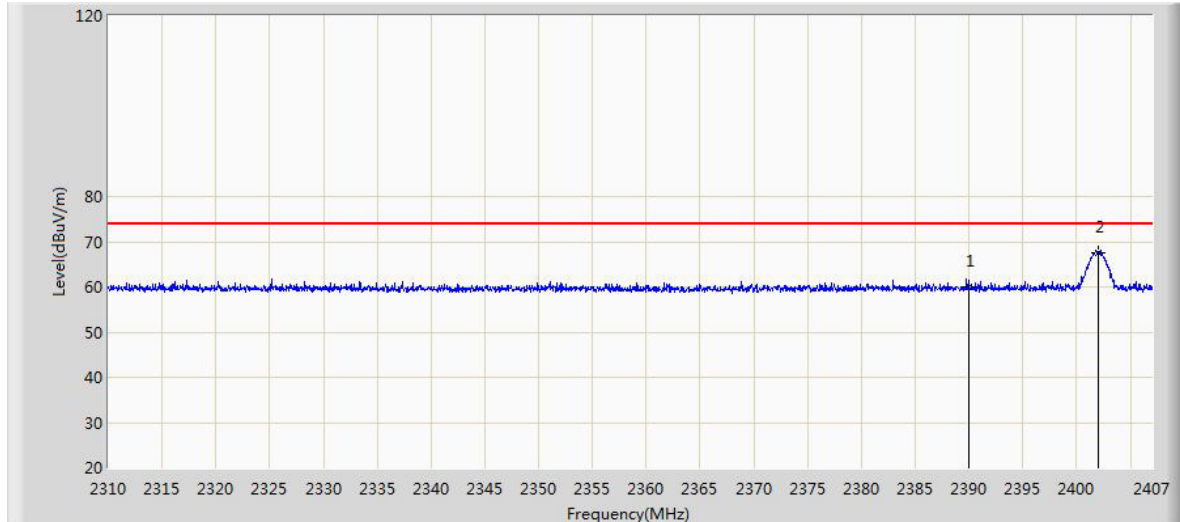
**Figure 12: Radiated Restricted Band Edge, 2402MHz, Horizontal, PK**

**Table 10: Radiated Restricted Band Edge, 2402MHz, Horizontal, PK**

Frequency [MHz]	Measure Level [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor [dB]	Type
2390.000	59.554	28.351	-14.446	74.000	31.203	PK
2401.762	72.515	41.331	N/A	N/A	31.184	PK

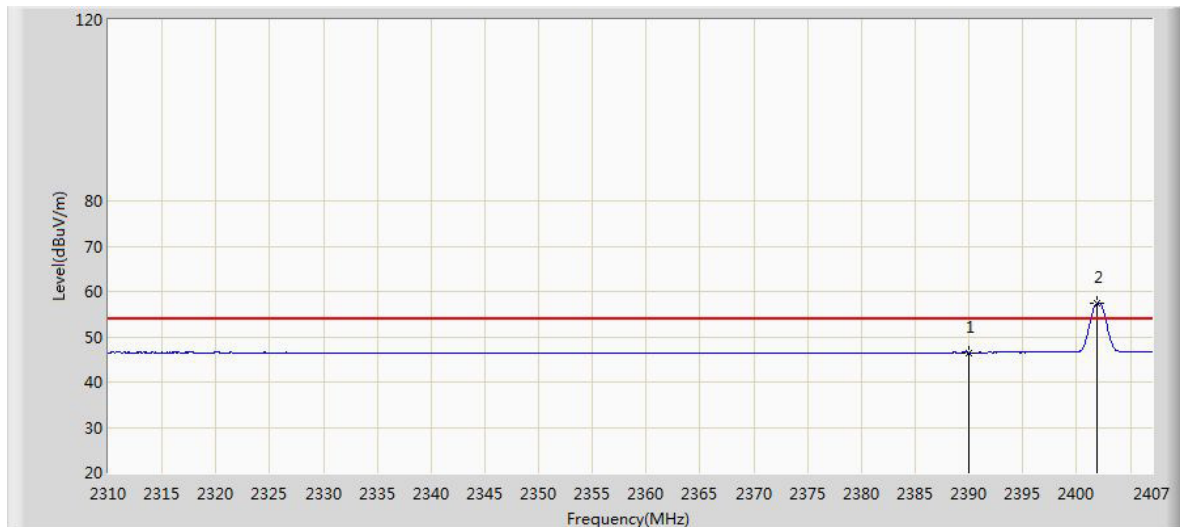
**Figure 13: Radiated Restricted Band Edge, 2402MHz, Horizontal, AV**

**Table 11: Radiated Restricted Band Edge, 2402MHz, Horizontal, AV**

Frequency [MHz]	Measure Level [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor [dB]	Type
2390.000	46.522	15.319	-7.478	54.000	31.203	AV
2401.907	62.780	31.596	N/A	N/A	31.184	AV

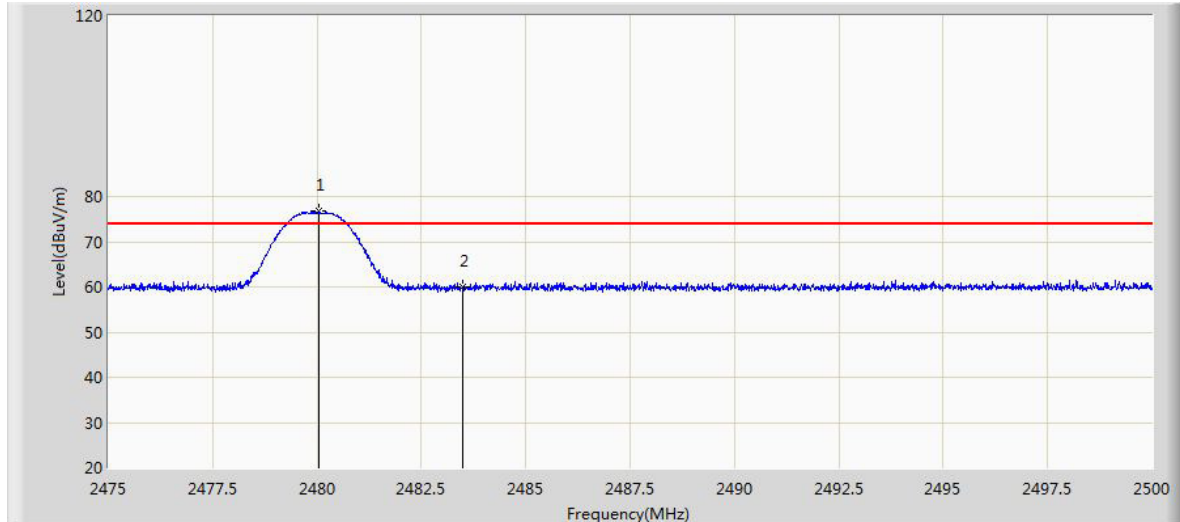


**Figure 14: Radiated Restricted Band Edge, 2402MHz, Vertical, PK**

**Table 12: Radiated Restricted Band Edge, 2402MHz, Vertical, PK**

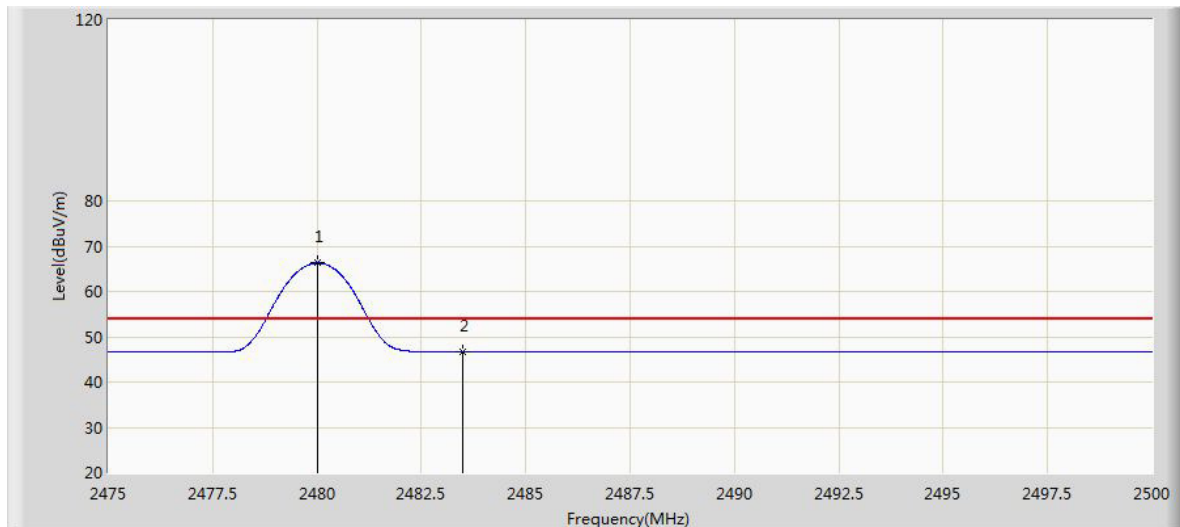
Frequency [MHz]	Measure Level [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor [dB]	Type
2390.000	60.006	28.803	-13.994	74.000	31.203	PK
2402.004	67.681	36.497	N/A	N/A	31.184	PK

**Figure 15: Radiated Restricted Band Edge, 2402MHz, Vertical, AV**

**Table 13: Radiated Restricted Band Edge, 2402MHz, Vertical, AV**

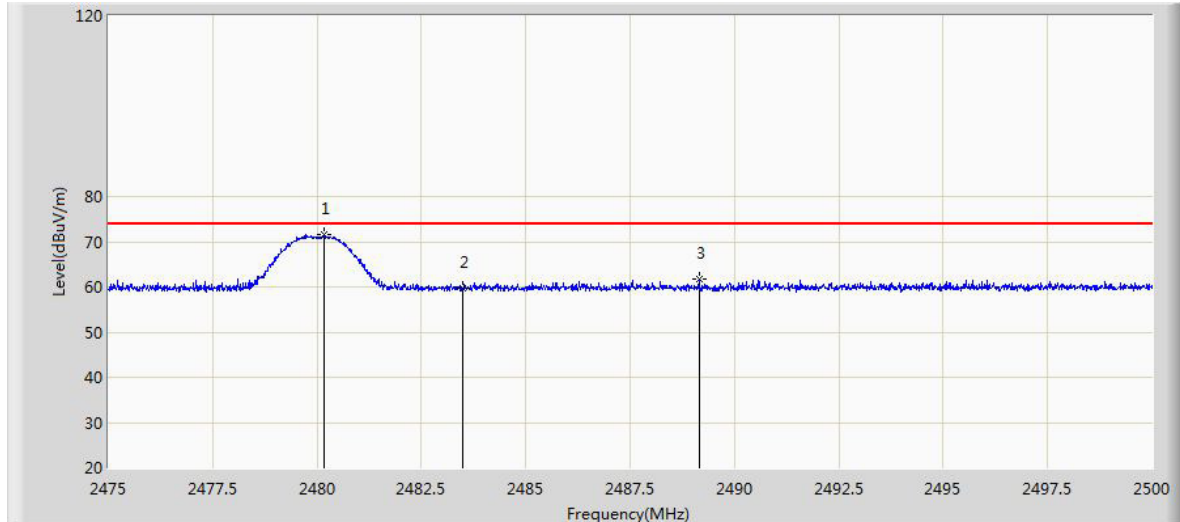
Frequency [MHz]	Measure Level [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor [dB]	Type
2390.000	46.478	15.275	-7.522	54.000	31.203	AV
2401.907	57.464	26.280	N/A	N/A	31.184	AV

**Figure 16: Radiated Restricted Band Edge, 2480MHz, Horizontal, PK**

**Table 14: Radiated Restricted Band Edge, 2480MHz, Horizontal, PK**

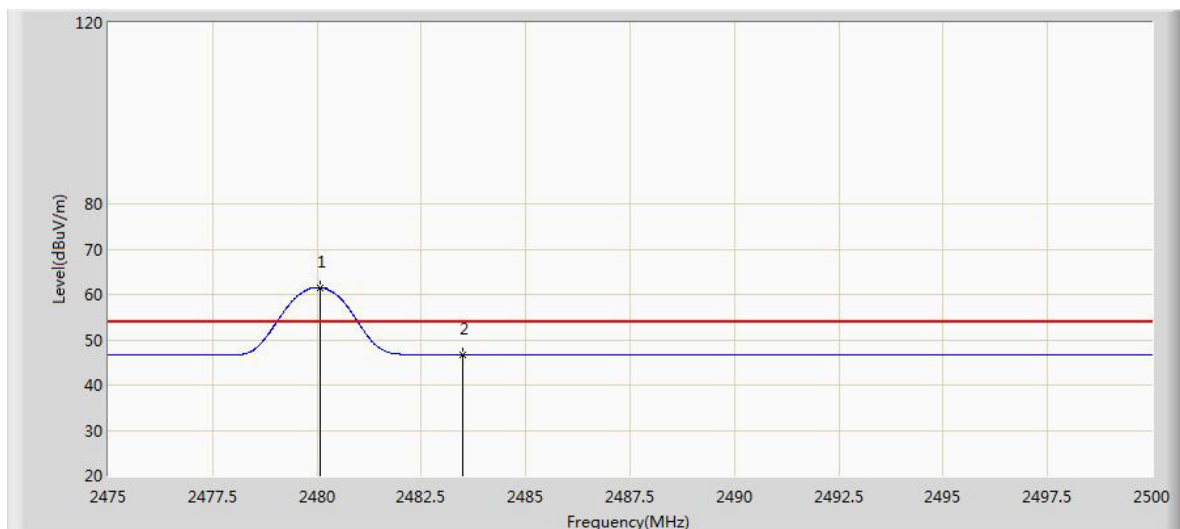
Frequency [MHz]	Measure Level [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor [dB]	Type
2480.038	76.687	45.503	N/A	N/A	31.184	PK
2483.500	60.125	28.932	-13.875	74.000	31.194	PK

**Figure 17: Radiated Restricted Band Edge, 2480MHz, Horizontal, AV**

**Table 15: Radiated Restricted Band Edge, 2480MHz, Horizontal, AV**

Frequency [MHz]	Measure Level [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor [dB]	Type
2480.000	66.284	35.100	N/A	N/A	31.184	AV
2483.500	46.651	15.458	-7.349	54.000	31.194	AV

**Figure 18: Radiated Restricted Band Edge, 2480MHz, Vertical, PK**

**Table 16: Radiated Restricted Band Edge, 2480MHz, Vertical, PK**

Frequency [MHz]	Measure Level [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor [dB]	Type
2480.163	71.538	40.353	N/A	N/A	31.185	PK
2483.500	59.752	28.559	-14.248	74.000	31.194	PK
2489.150	61.854	30.646	-12.146	74.000	31.208	PK

**Figure 19: Radiated Restricted Band Edge, 2480MHz, Vertical, AV**

**Table 17: Radiated Restricted Band Edge, 2480MHz, Vertical, AV**

Frequency [MHz]	Measure Level [dBuV/m]	Reading Level [dBuV]	Over Limit [dB]	Limit [dBuV/m]	Factor [dB]	Type
2480.075	61.514	30.330	N/A	N/A	31.184	AV
2483.500	46.663	15.470	-7.337	54.000	31.194	AV

### 5.1.7 RF Exposure Statement

**RESULT:**
**Pass**

Evaluate standard : FCC KDB # 447498 D01 V06  
 RSS-102 Issue 5

FCC KDB # 447498 D01 V06 – RF EXPOSURE PROCEDURES AND EQUIPMENT AUTHORIZATION POLICIES FOR MOBILE AND PORTABLE DEVICES, Appendix A shows that the SAR Text Exclusion Threshold for a device with a separation distance of 5 mm at 2450MHz is 10mW.

MHz	5	10	15	20	25	mm
150	39	77	116	155	194	SAR Test Exclusion Threshold (mW)
300	27	55	82	110	137	
450	22	45	67	89	112	
835	16	33	49	66	82	
900	16	32	47	63	79	
1500	12	24	37	49	61	
1900	11	22	33	44	54	
2450	10	19	29	38	48	
3600	8	16	24	32	40	
5200	7	13	20	26	33	
5400	6	13	19	26	32	
5800	6	12	19	25	31	
MHz	30	35	40	45	50	mm
150	232	271	310	349	387	SAR Test Exclusion Threshold (mW)
300	164	192	219	246	274	
450	134	157	179	201	224	
835	98	115	131	148	164	
900	95	111	126	142	158	
1500	73	86	98	110	122	
1900	65	76	87	98	109	
2450	57	67	77	86	96	
3600	47	55	63	71	79	
5200	39	46	53	59	66	
5400	39	45	52	58	65	
5800	37	44	50	56	62	

MHz	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	mm
100	474	481	487	494	501	507	514	521	527	534	541	547	554	561	567	mW
150	387	397	407	417	427	437	447	457	467	477	487	497	507	517	527	
300	274	294	314	334	354	374	394	414	434	454	474	494	514	534	554	
450	224	254	284	314	344	374	404	434	464	494	524	554	584	614	644	
835	164	220	275	331	387	442	498	554	609	665	721	776	832	888	943	
900	158	218	278	338	398	458	518	578	638	698	758	818	878	938	998	
1500	122	222	322	422	522	622	722	822	922	1022	1122	1222	1322	1422	1522	
1900	109	209	309	409	509	609	709	809	909	1009	1109	1209	1309	1409	1509	
2450	96	196	296	396	496	596	696	796	896	996	1096	1196	1296	1396	1496	
3600	79	179	279	379	479	579	679	779	879	979	1079	1179	1279	1379	1479	
5200	66	166	266	366	466	566	666	766	866	966	1066	1166	1266	1366	1466	

RSS-102 section 2.5.1 Exemption Limits for Routine Evaluation, Table 1 shows the SAR evaluation for a device with a separation distance of 5mm at 2450MHz is 4mW.

**Table 1: SAR evaluation – Exemption limits for routine evaluation based on frequency and separation distance<sup>4,5</sup>**

Frequency (MHz)	Exemption Limits (mW)				
	At separation distance of ≤5 mm	At separation distance of 10 mm	At separation distance of 15 mm	At separation distance of 20 mm	At separation distance of 25 mm
≤300	71 mW	101 mW	132 mW	162 mW	193 mW
450	52 mW	70 mW	88 mW	106 mW	123 mW
835	17 mW	30 mW	42 mW	55 mW	67 mW
1900	7 mW	10 mW	18 mW	34 mW	60 mW
2450	4 mW	7 mW	15 mW	30 mW	52 mW
3500	2 mW	6 mW	16 mW	32 mW	55 mW
5800	1 mW	6 mW	15 mW	27 mW	41 mW

Frequency (MHz)	Exemption Limits (mW)				
	At separation distance of 30 mm	At separation distance of 35 mm	At separation distance of 40 mm	At separation distance of 45 mm	At separation distance of ≥50 mm
≤300	223 mW	254 mW	284 mW	315 mW	345 mW
450	141 mW	159 mW	177 mW	195 mW	213 mW
835	80 mW	92 mW	105 mW	117 mW	130 mW
1900	99 mW	153 mW	225 mW	316 mW	431 mW
2450	83 mW	123 mW	173 mW	235 mW	309 mW
3500	86 mW	124 mW	170 mW	225 mW	290 mW
5800	56 mW	71 mW	85 mW	97 mW	106 mW

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The maximum measured transmitter power is the following:

Frequency [GHz]	Conducted Output Power P <sub>out</sub> [dBm]	Conducted Output Power P <sub>out</sub> [mW]
2.426	-7.34	0.18450154

**Evaluation for FCC**

The maximum conducted peak output power of the EUT is: 0.18450154mW

The EUT is well below the 10mW power level.

**Evaluation for IC**

The maximum conducted peak output power of the EUT is: 0.18450154mW

The EUT is well below the 4mW power level.

**Conclusion**

SAR data is not required for either FCC or IC.

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