RF TEST REPORT

Report No.: Q190701S003-FCC-R

Supersede Report No.: N/A

Applicant	Medtrum Technologies Inc.
Product Name	Pump Base
Model No.	MD-JN-012
Serial No.	N/A
Test Standard	FCC Part 15.247, ANSI C63.10: 2013
Test Date	July 02 to July 03, 2019
Issue Date	July 04, 2019
Test Result	☑ Pass ☐ Fail
Equipment complied with the specification	☑
Equipment did not comply with the specification	☐

Aaron Liang	David Huang	
Aaron Liang Test Engineer	David Huang Checked By	

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Test result presented in this test report is applicable to the tested sample only

Issued by:

SIEMIC (SHENZHEN-CHINA) LABORATORIES

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Laboratories Introduction

SIEMIC, headquartered in the heart of Silicon Valley, with superior facilities in US and Asia, is one of the leading independent testing and certification facilities providing customers with one-stop shop services for Compliance Testing and Global Certifications.

In addition to testing and certification, SIEMIC provides initial design reviews and compliance management throughout a project. Our extensive experience with China, Asia Pacific, North America, European, and International compliance requirements, assures the fastest, most cost effective way to attain regulatory compliance for the global markets.

Accreditations for Conformity Assessment

Country/Region	Scope
USA	EMC, RF/Wireless, SAR, Telecom
Canada	EMC, RF/Wireless, SAR, Telecom
Taiwan	EMC, RF, Telecom, SAR, Safety
Hong Kong	RF/Wireless, SAR, Telecom
Australia	EMC, RF, Telecom, SAR, Safety
Korea	EMI, EMS, RF, SAR, Telecom, Safety
Japan	EMI, RF/Wireless, SAR, Telecom
Singapore	EMC, RF, SAR, Telecom
Europe	EMC, RF, SAR, Telecom, Safety

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1. Report Revision History

Report No.	Report Version	Description	Issue Date
Q190701S003-FCC-R	NONE	Original	July 04, 2019

2. Customer information

Applicant Name	Medtrum Technologies Inc.
Applicant Add	7F， Building 8, No.200 Niudun Road, Shanghai 201203, China
Manufacturer	Medtrum Technologies Inc.
Manufacturer Add	Building 3 and 6F~7F, Building 8, No. 200, Niudun Road, Shanghai 201203, China

3. Test site information

Lab performing tests	SIEMIC (Shenzhen-China) LABORATORIES
Lab Address	Zone A, Floor 1, Building 2 Wan Ye Long Technology Park South Side of Zhoushi Road, Bao'an District, Shenzhen, Guangdong China 518108
FCC Test Site No.	535293
IC Test Site No.	4842E-1
Test Software	EZ-EMC(ver.Icp-03A1)

4. Equipment under Test (EUT) Information

Description of EUT:	Pump Base
Main Model:	MD-JN-012
Serial Model:	N/A
Date EUT received:	July 01, 2019
Test Date(s):	July 02 to July 03, 2019
Equipment Category：	DTS
Antenna Gain:	BLE: 1.6dBi
Antenna Type:	Chip antenna
Type of Modulation:	BLE: GFSK
RF Operating Frequency (ies):	BLE: 2402-2480 MHz
Max. Output Power:	-1.18dBm
Number of Channels:	BLE: 40CH
Port:	Please refer to the user's manual
Trade Name :	Medtrum
Input Power:	DC 3V(1.5V*2*L1154F) From Battery
FCC ID:	2AARU-JN012

5. Test Summary

The product was tested in accordance with the following specifications.

All testing has been performed according to below product classification:

FCC Rules	Description of Test	Result
§15.203	Antenna Requirement	Compliance
§15.247 (a)(2)	DTS (6 dB) CHANNEL BANDWIDTH	Compliance
§15.247(b)(3)	Conducted Maximum Output Power	Compliance
§15.247(e)	Power Spectral Density	Compliance
§15.247(d)	Band-Edge & Unwanted Emissions into Restricted Frequency Bands	Compliance
§15.207 (a),	AC Power Line Conducted Emissions	N/A
§15.205, §15.209, §15.247(d)	Radiated Emissions & Unwanted Emissions into Restricted Frequency Bands	Compliance

Measurement Uncertainty

Emissions		
Test Item	**Description**	**Uncertainty**
Band-Edge & Unwanted Emissions into Restricted Frequency Bands and Radiated Emissions & Unwanted Emissions into Restricted Frequency Bands	Confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2 (for EUTs < 0.5m X 0.5m X 0.5m)	+5.6dB/-4.5dB
-	-	-

6. Measurements, Examination And Derived Results

6.1 Antenna Requirement

Applicable Standard

According to § 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 user of a standard antenna jack or electrical connector is prohibited.
The structure and application of the EUT were analyzed to determine compliance with section §15.203 of the rules. §15.203 state that the subject device must meet the following criteria:

a. Antenna must be permanently attached to the unit.

b. Antenna must use a unique type of connector to attach to the EUT.

Unit must be professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.
And according to FCC 47 CFR section 15.247 (b), if the transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Antenna Connector Construction

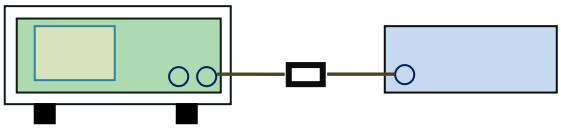
The EUT has 1 antennas:
A permanently attached Chip antenna for BLE, the gain is 1.6dBi.

The antenna meets up with the ANTENNA REQUIREMENT.

Result: Compliance.

6.2 DTS (6 dB) Channel Bandwidth

Temperature	26 °C
Relative Humidity	59%
Atmospheric Pressure	1015mbar
Test date :	July 03, 2019
Tested By :	Aaron Liang

Spec	Item	Requirement	Applicable
§ 15.247(a)(2)	a)	6dB BW≥ 500kHz;	☑
RSS Gen(4.6.1)	b)	99% BW: For FCC reference only; required by IC.	☑
Test Setup			
Test Procedure	558074 D01 DTS MEAS Guidance v05r02, 8.1 DTS bandwidth 6dB Emission bandwidth measurement procedure - Set RBW = 30 kHz. - Set the video bandwidth (VBW) ≥ 3 RBW. - Detector = Peak. - Trace mode = max hold. - Sweep = auto couple. - Allow the trace to stabilize. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.		
Remark			
Result	☑ Pass ☐ Fail		

Test Data ☑ Yes ☐ N/A

Test Plot ☑ Yes (See below) ☐ N/A

6dB Bandwidth measurement result

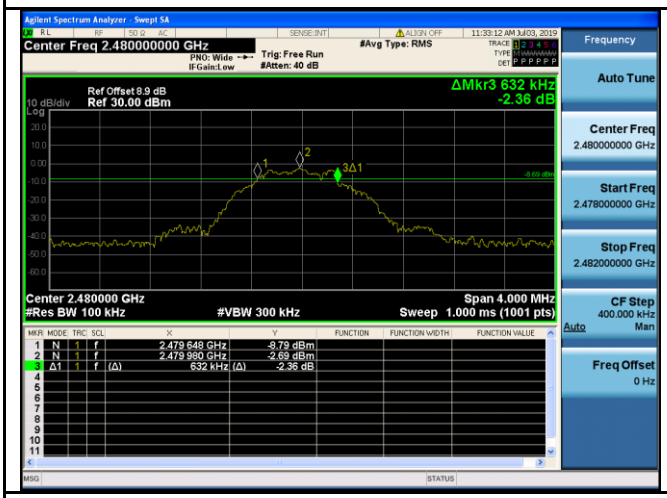
Test Data

CH	Frequency (MHz)	6dB Bandwidth (kHz)	99% Occupied Bandwidth (MHz)
Low	2402	656	0.9885
Mid	2440	648	1.0086
High	2480	632	1.0033

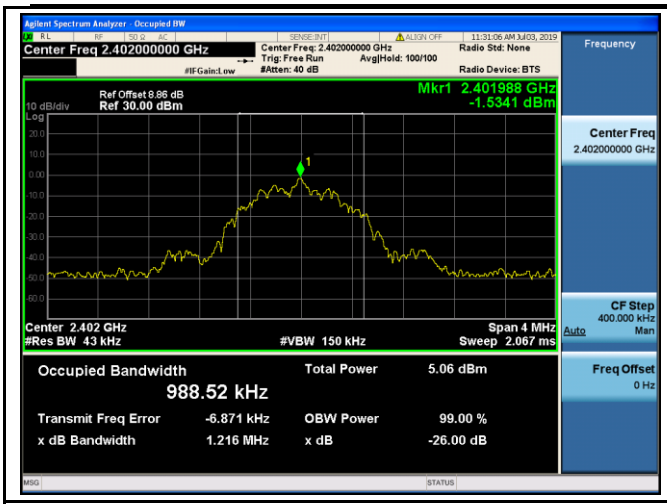
Test Plots

6dB Bandwidth - Low CH 2402

6dB Bandwidth - Mid CH 2440

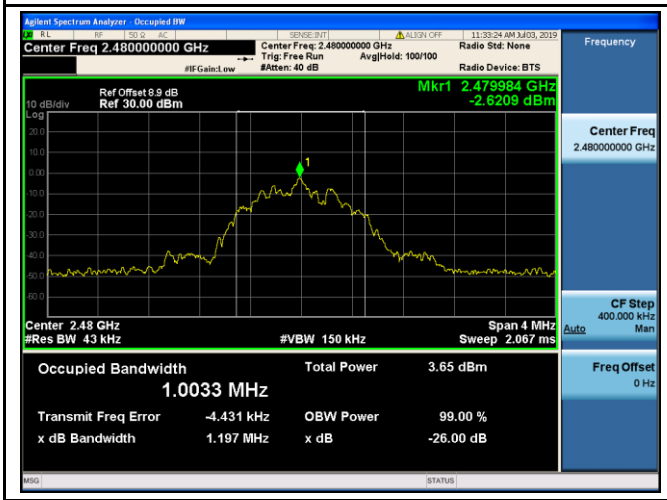


6dB Bandwidth - High CH 2480



6dB Bandwidth - Low CH 2402

6dB Bandwidth - Mid CH 2440

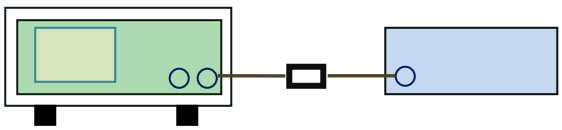


6dB Bandwidth - High CH 2480

6.3 Maximum Output Power

Temperature	26 °C
Relative Humidity	59%
Atmospheric Pressure	1015mbar
Test date :	July 03, 2019
Tested By :	Aaron Liang

Requirement(s):

Spec	Item	Requirement	Applicable
§15.247(b)(3),RSS210(A8.4)	a)	FHSS in 2400-2483.5MHz with ≥ 75 channels: ≤ 1 Watt	☐
	b)	FHSS in 5725-5850MHz: ≤ 1 Watt	☐
	c)	For all other FHSS in the 2400-2483.5MHz band: ≤ 0.125 Watt.	☐
	d)	FHSS in 902-928MHz with ≥ 50 channels: ≤ 1 Watt	☐
	e)	FHSS in 902-928MHz with ≥ 25 & <50 channels: ≤ 0.25 Watt	☐
	f)	DTS in 902-928MHz, 2400-2483.5MHz: ≤ 1 Watt	☑
Test Setup	 Spectrum Analyzer EUT		
Test Procedure	558074 D01 DTS MEAS Guidance v05r02, 9.1.2 Integrated band power method Maximum output power measurement procedure a) Set the RBW ≥ DTS bandwidth. b) Set VBW ≥ 3 × RBW. c) Set span ≥ 3 x RBW d) Sweep time = auto couple. e) Detector = peak. f) Trace mode = max hold. g) Allow trace to fully stabilize. h) Use peak marker function to determine the peak amplitude level.		
Remark			
Result	☑ Pass ☐ Fail		

Test Data ☑ Yes ☐ N/A

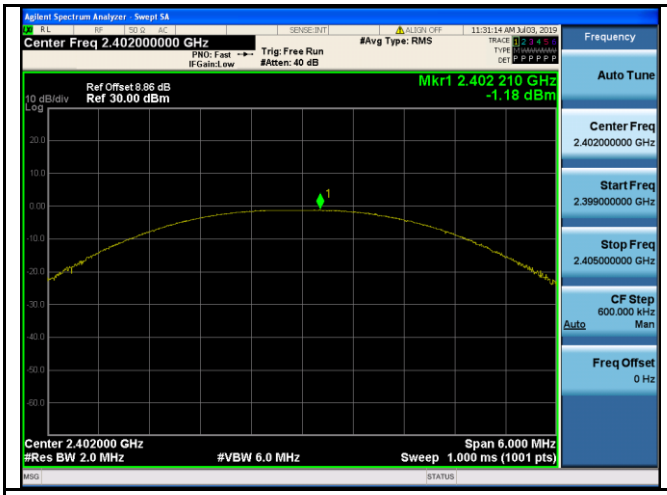
Test Plot ☑ Yes (See below) ☐ N/A

Output Power measurement result

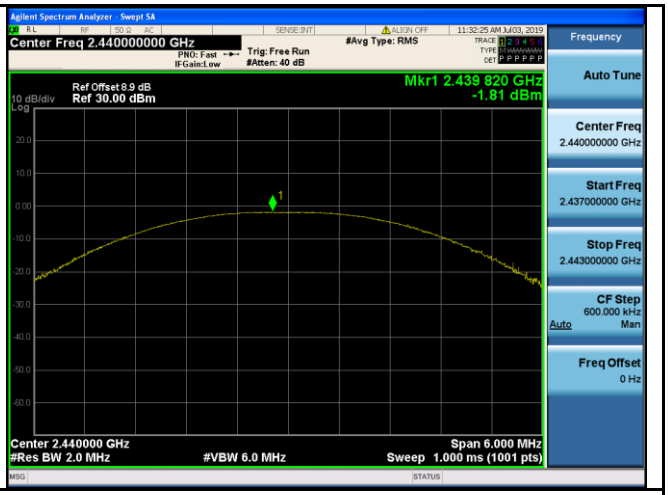
Test Data

Type	CH	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Result
Output power	Low	2402	-1.18	30	Pass
	Mid	2440	-1.81	30	Pass
	High	2480	-2.23	30	Pass

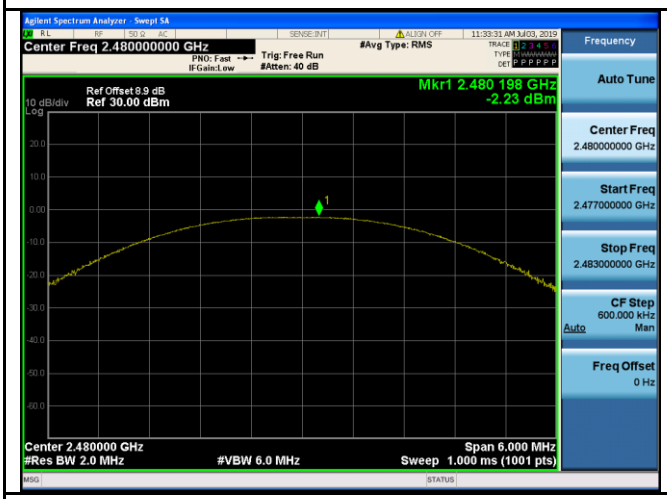
Test Plots



PK Output power - Low CH 2402



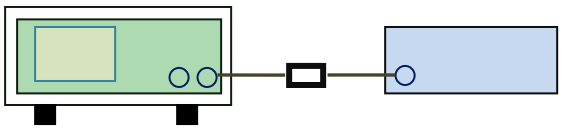
PK Output power - Mid CH 2440



PK Output power - High CH 2480

6.4 Power Spectral Density

Temperature	26 °C
Relative Humidity	59%
Atmospheric Pressure	1015mbar
Test date :	July 03, 2019
Tested By :	Aaron Liang

Spec	Item	Requirement	Applicable
§15.247(e)	a)	The power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.	☑
Test Setup			
Test Procedure	558074 D01 DTS MEAS Guidance v05r02, 10.2 power spectral density method power spectral density measurement procedure - a) Set analyzer center frequency to DTS channel center frequency. - b) Set the span to 1.5 times the DTS bandwidth. - c) Set the RBW to: 3 kHz ≤ RBW ≤ 100 kHz. - d) Set the VBW ≥ 3 × RBW. - e) Detector = peak. - f) Sweep time = auto couple. - g) Trace mode = max hold. - h) Allow trace to fully stabilize. - i) Use the peak marker function to determine the maximum amplitude level within the RBW. - j) If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.		
Remark			
Result	☑ Pass ☐ Fail		

Test Data ☑ Yes ☐ N/A

Test Plot ☑ Yes (See below) ☐ N/A

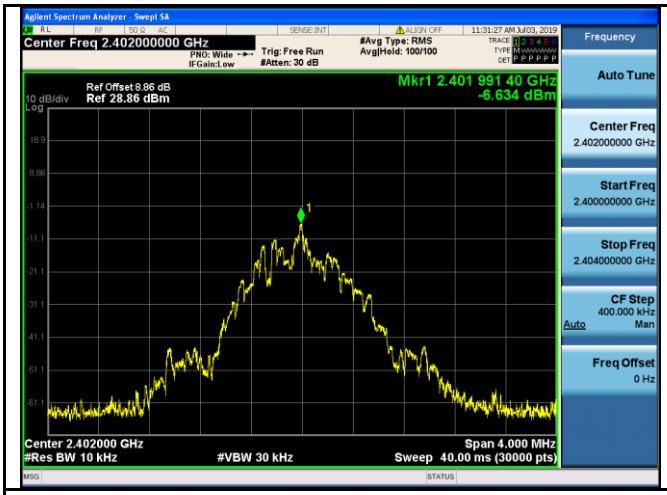
Power Spectral Density measurement result

Test Data

Type	CH	Freq (MHz)	Reading (dBm)	Factor (dB)	Result (dBm)	Limit (dBm)	Result
PSD	Low	2402	-6.634	-5.23	-11.864	8	Pass
	Mid	2440	-7.127	-5.23	-12.357	8	Pass
	High	2480	-7.416	-5.23	-12.646	8	Pass

Note: factor=10log(3/10)=-5.23

Test Plots



PSD - Low CH 2402

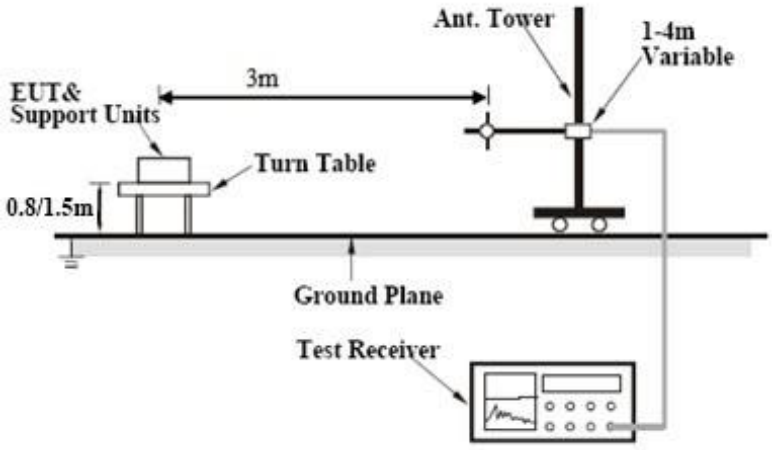
PSD - Mid CH 2440

PSD - High CH 2480

6.5 Band-Edge & Unwanted Emissions into Restricted Frequency Bands

Temperature	26 °C
Relative Humidity	59%
Atmospheric Pressure	1015mbar
Test date :	July 03, 2019
Tested By :	Aaron Liang

Requirement(s):

Spec	Item	Requirement	Applicable
§15.247(d)	a)	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.	☑
Test Setup			
Test Procedure	Radiated Method Only - 1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator. - 2. Position the EUT without connection to measurement instrument. Put it on the Rotated table and turn on the EUT and make it operate in transmitting mode. Then set it to Low Channel and High Channel within its operating range, and make sure the instrument is operated in its linear range.		

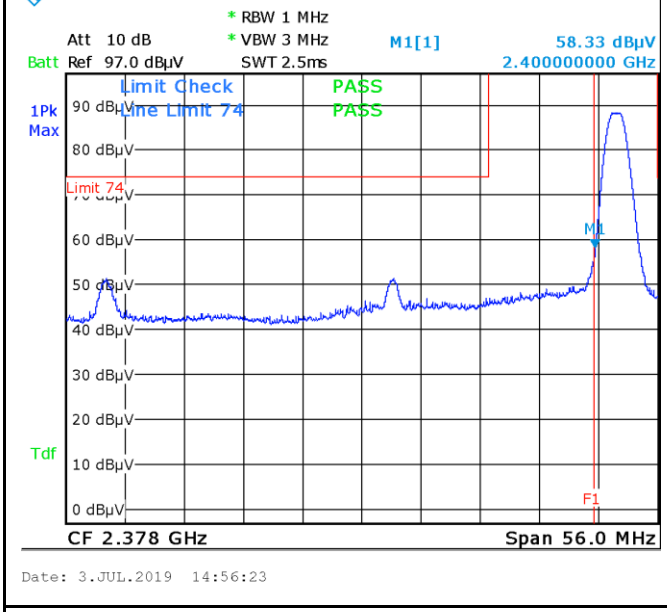
	- 3. First, set both RBW and VBW of spectrum analyzer to 100 kHz with a convenient frequency span including 100kHz bandwidth from band edge, check the emission of EUT, if pass then set Spectrum Analyzer as below: a. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasiy Peak detection at frequency below 1GHz. b. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz with Peak detection for Peak measurement at frequency above 1GHz. c. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz with Peak detection for Average Measurement as below at frequency above 1GHz. - 4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency. - 5. Repeat above procedures until all measured frequencies were complete.
Remark	
Result	☑ Pass ☐ Fail

Test Data ☐ Yes ☑ N/A

Test Plot ☑ Yes (See below) ☐ N/A

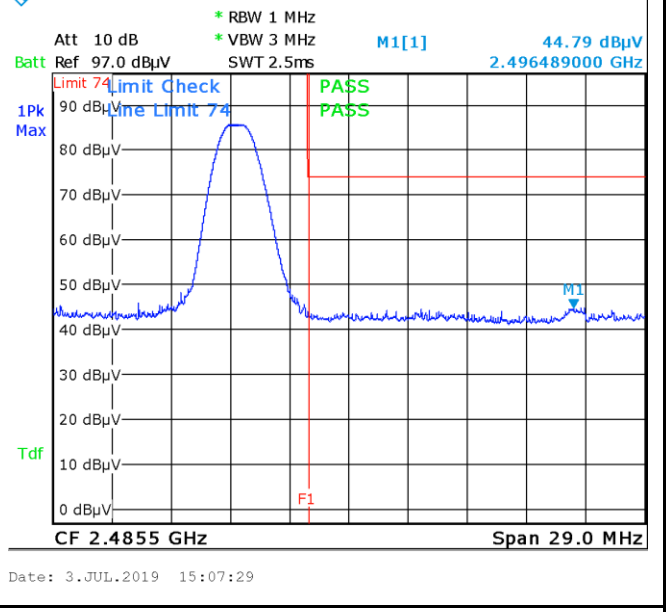
Test Plots

Band Edge measurement result



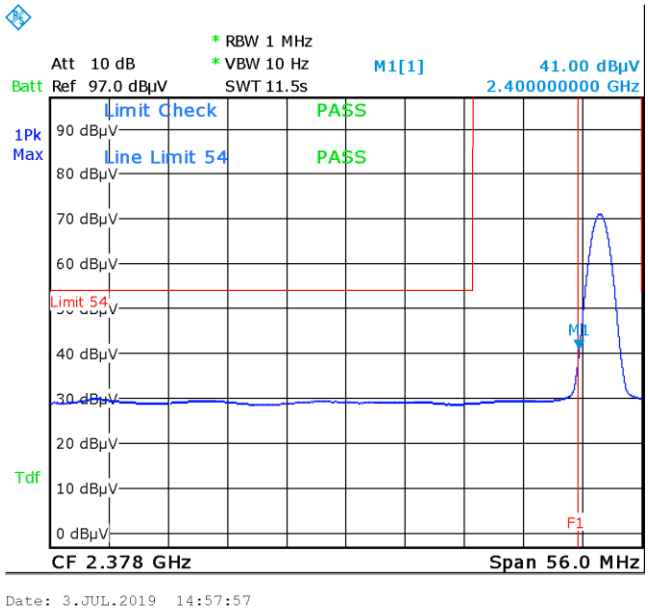
Band Edge, Left Side (Peak)

Note: F1 is frequency 2390MHz; F2 is frequency 2400MHz

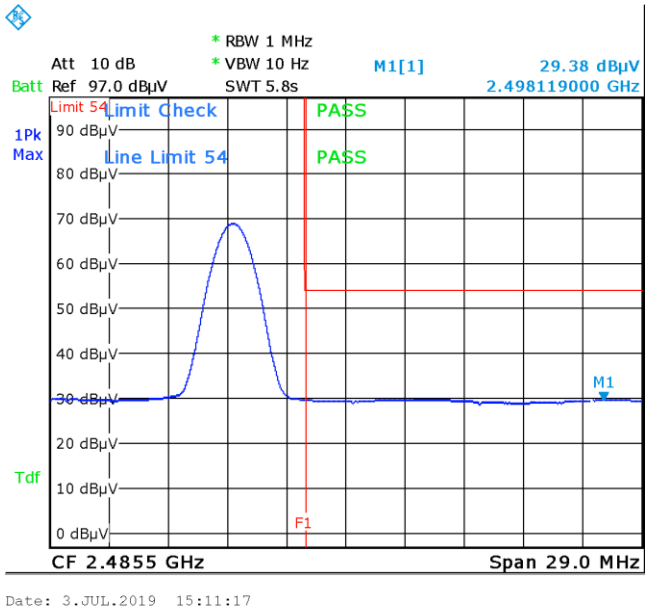


Band Edge, Right Side (Peak)

Note: F1 is frequency 2483.5MHz



Band Edge, Left Side-AV



Band Edge, Right Side-AV

Note: Both Horizontal and vertical polarities were investigated.

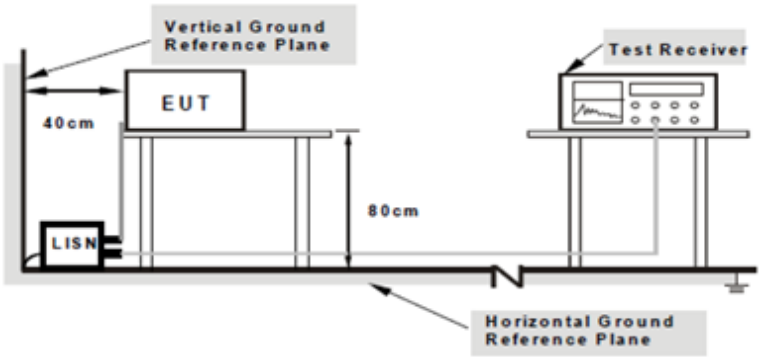
6.6 AC Power Line Conducted Emissions

Temperature	--
Relative Humidity	--
Atmospheric Pressure	--
Test date :	--
Tested By :	--

Requirement(s):

Spec	Item	Requirement	Applicable
47CFR§15.207, RSS210 (A8.1)	a)	For Low-power radio-frequency devices that 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 the limits in the following table, as measured using a 50 [mu] H/50 ohms line impedance stabilization network (LISN). The lower limit applies at the boundary between the frequencies ranges.	☐

Frequency ranges (MHz)	Limit (dBμV)	
	QP	Average
0.15 ~ 0.5	66 – 56	56 – 46
0.5 ~ 5	56	46
5 ~ 30	60	50

Test Setup	 Note: 1.Support units were connected to second LISN. 2.Both of LISNs (AMN) are 80cm from EUT and at least 80cm from other units and other metal planes support units.
Procedure	1. The EUT and supporting equipment were set up in accordance with the requirements of the standard on top of a 1.5m x 1m x 0.8m high, non-metallic table. 2. The power supply for the EUT was fed through a 50W/50mH EUT LISN, connected to filtered mains. 3. The RF OUT of the EUT LISN was connected to the EMI test receiver via a low-loss

	coaxial cable. 4. All other supporting equipment were powered separately from another main supply. 5. The EUT was switched on and allowed to warm up to its normal operating condition. 6. A scan was made on the NEUTRAL line (for AC mains) or Earth line (for DC power) over the required frequency range using an EMI test receiver. 7. High peaks, relative to the limit line, The EMI test receiver was then tuned to the selected frequencies and the necessary measurements made with a receiver bandwidth setting of 10 kHz. 8. Step 7 was then repeated for the LIVE line (for AC mains) or DC line (for DC power).
Remark	
Result	☐ Pass ☐ Fail ☑ N/A

Test Data ☐ Yes ☑ N/A

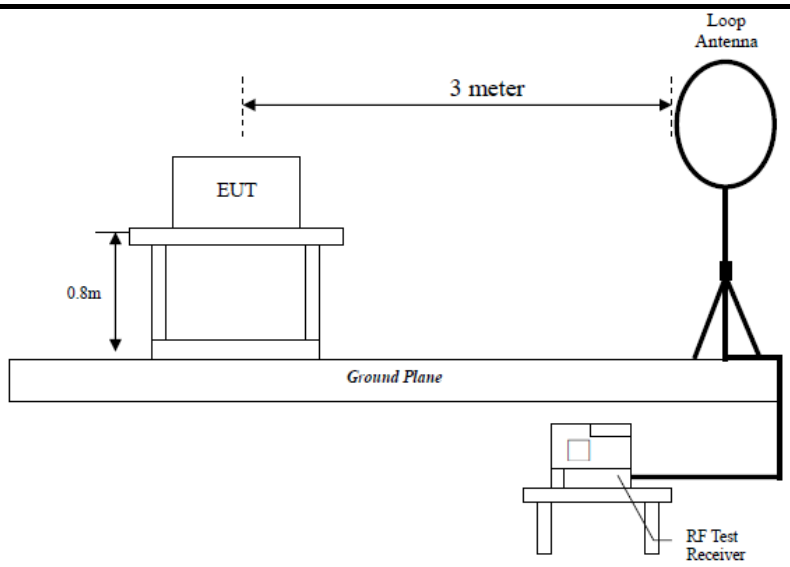
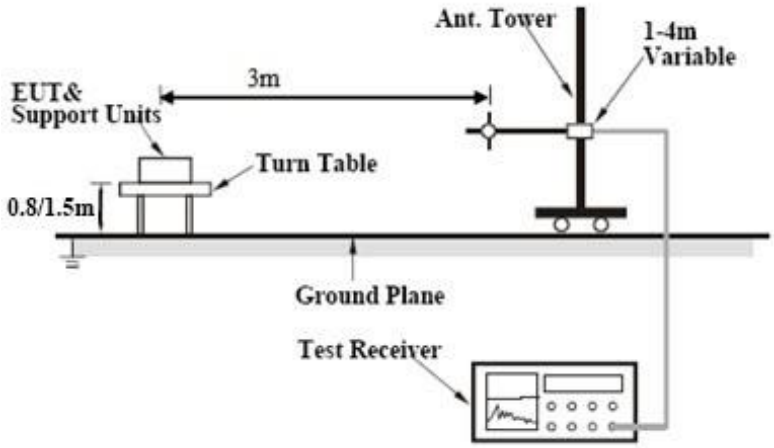
Test Plot ☐ Yes (See below) ☑ N/A

6.7 Radiated Emissions & Restricted Band

Temperature	26 °C
Relative Humidity	59%
Atmospheric Pressure	1015mbar
Test date :	July 03, 2019
Tested By :	Aaron Liang

Requirement(s):

<table>
<tr><th>Spec</th><th>Item</th><th>Requirement</th><th>Applicable</th></tr>
<tr><td rowspan="3">47CFR§15.247(d), RSS210 (A8.5)</td><td>a)</td><td>Except higher limit as specified elsewhere in other section, the emissions from the low-power radio-frequency devices shall not exceed the field strength levels specified in the following table and the level of any unwanted emissions shall not exceed the level of the fundamental emission. The tighter limit applies at the band edges
<table>
<tr><th>Frequency range (MHz)</th><th>Field Strength (μV/m)</th></tr>
<tr><td>0.009~0.490</td><td>2400/F(KHz)</td></tr>
<tr><td>0.490~1.705</td><td>24000/F(KHz)</td></tr>
<tr><td>1.705~30.0</td><td>30</td></tr>
<tr><td>30 – 88</td><td>100</td></tr>
<tr><td>88 – 216</td><td>150</td></tr>
<tr><td>216 960</td><td>200</td></tr>
<tr><td>Above 960</td><td>500</td></tr>
</table></td><td>☑</td></tr>
<tr><td>b)</td><td>For non-restricted band, In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB or 30dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, determined by the measurement method on output power to be used. Attenuation below the general limits specified in § 15.209(a) is not required
☒ 20 dB down ☐ 30 dB down</td><td>☑</td></tr>
<tr><td>c)</td><td>or restricted band, emission must also comply with the radiated emission limits specified in 15.209</td><td>☑</td></tr>
</table>

Test Setup	 
Procedure	1. The EUT was switched on and allowed to warm up to its normal operating condition. 2. The test was carried out at the selected frequency points obtained from the EUT characterization. Maximization of the emissions, was carried out by rotating the EUT, changing the antenna polarization, and adjusting the antenna height in the following manner: a. Vertical or horizontal polarization (whichever gave the higher emission level over a full rotation of the EUT) was chosen. b. The EUT was then rotated to the direction that gave the maximum emission. c. Finally, the antenna height was adjusted to the height that gave the maximum emission. 3. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasiy Peak detection at frequency below 1GHz. 4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz with Peak detection for Peak measurement at frequency above 1GHz.

	The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz with Peak detection for Average Measurement as below at frequency above 1GHz. 5. Steps 2 and 3 were repeated for the next frequency point, until all selected frequency points were measured.
Remark	
Result	☑ Pass ☐ Fail

Test Data ☑ Yes ☐ N/A

Test Plot ☑ Yes (See below) ☐ N/A

Test Result:

Test Mode:	Transmitting Mode

Frequency range: 9KHz - 30MHz

Freq. (MHz)	Detection value	Factor (dB/m)	Reading (dBuV/m)	Result (dBuV/m)	Limit@3m (dBuV/m)	Margin (dB)
--	--	--	--	--	--	>20
--	--	--	--	--	--	>20

Note:

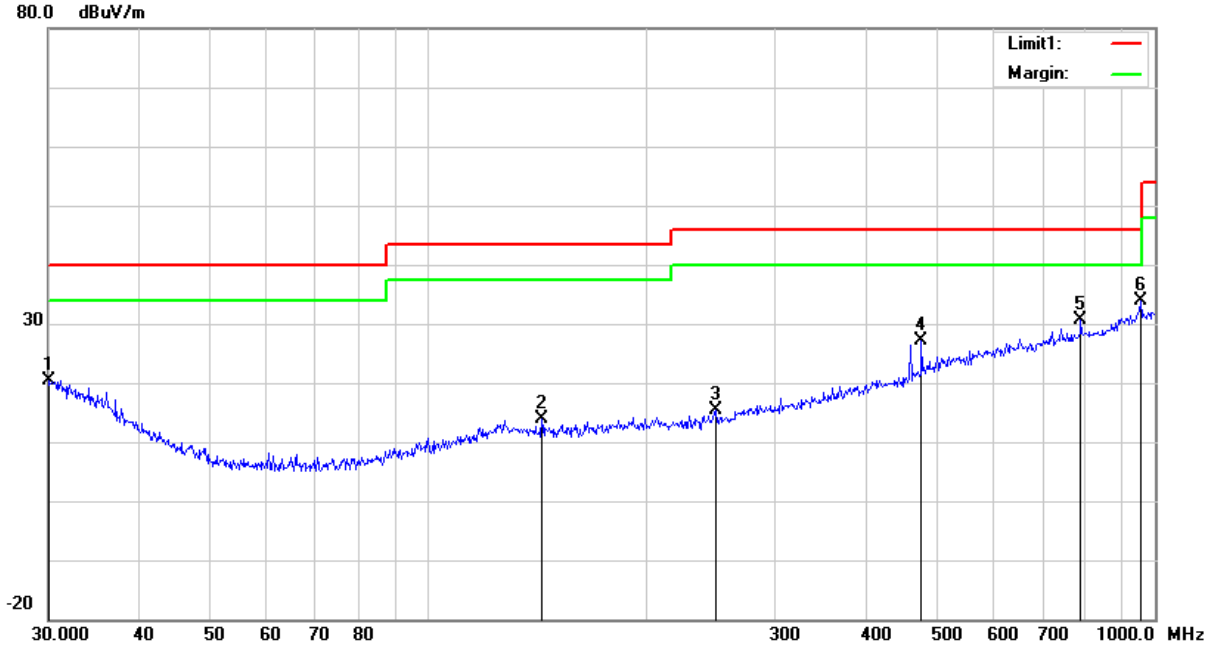
The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor =40 log (specific distance/test distance)(dB);

Limit line = specific limits(dBuv) + distance extrapolation factor.

Test Mode:	Transmitting Mode

30MHz -1GHz

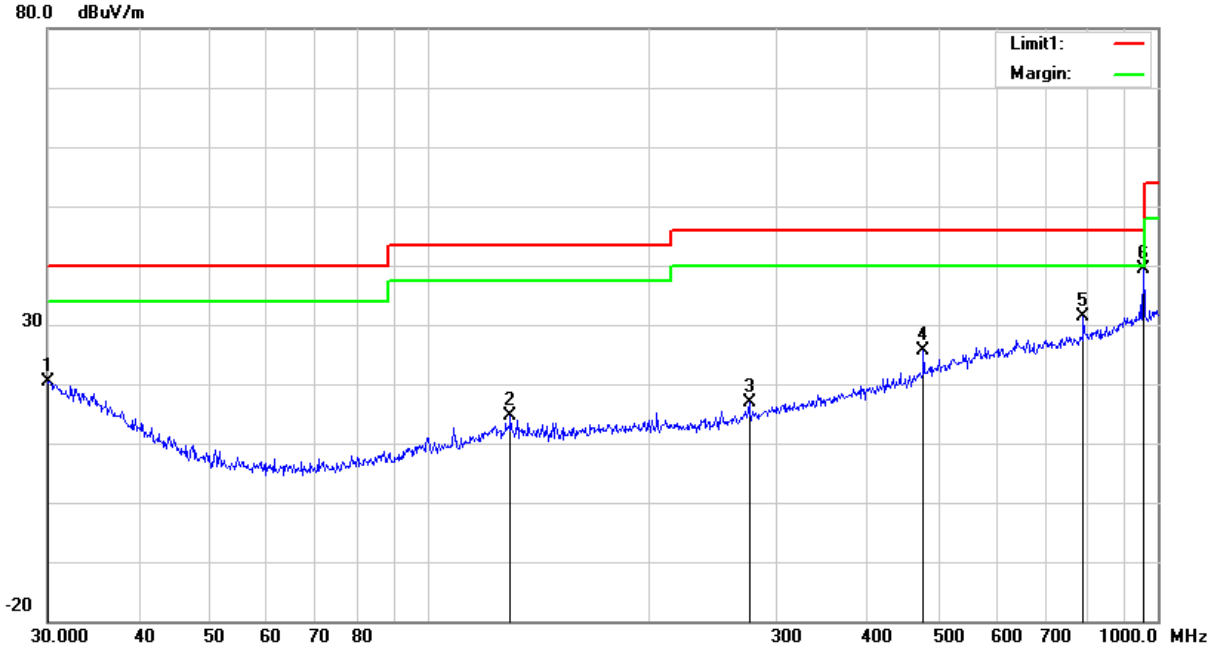


Test Data

Horizontal Polarity Plot @3m

No.	P/L	Frequency	Reading	Ant_F	PA_G	Cab_L	Result	Limit	Margin	Height	Degree
		(MHz)	(dBuV/m)	(dB/m)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)
1	H	30.0000	22.51	20.10	22.28	0.13	20.46	40.00	-19.54	200	13
2	H	143.3261	23.85	11.11	22.39	1.23	13.80	43.50	-29.70	100	133
3	H	248.5519	24.18	11.87	22.29	1.61	15.37	46.00	-30.63	100	2
4	H	477.1694	28.47	18.43	21.86	2.08	27.12	46.00	-18.88	100	79
5	H	790.6188	27.18	22.11	21.17	2.54	30.66	46.00	-15.34	100	138
6	H	955.4381	28.32	23.70	20.77	2.71	33.96	46.00	-12.04	100	158

30MHz -1GHz



Test Data

Vertical Polarity Plot @3m

No.	P/L	Frequency	Reading	Ant_F	PA_G	Cab_L	Result	Limit	Margin	Height	Degree
		(MHz)	(dBuV/m)	(dB/m)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)
1	V	30.0000	22.46	20.10	22.28	0.13	20.41	40.00	-19.59	100	21
2	V	129.4678	24.26	11.56	22.38	1.07	14.51	43.50	-28.99	100	306
3	V	275.1570	24.50	13.10	22.29	1.67	16.98	46.00	-29.02	100	58
4	V	477.1694	26.97	18.43	21.86	2.08	25.62	46.00	-20.38	100	118
5	V	790.6188	27.97	22.11	21.17	2.54	31.45	46.00	-14.55	200	252
6	V	955.4381	33.65	23.70	20.77	2.71	39.29	46.00	-6.71	100	4

Above 1GHz

Test Mode:	Transmitting Mode

Low Channel (2402 MHz)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2400	58.33PK	74	-15.67	1.5H	47	71.98	-13.65
2	2400	41AV	54	-13	1.5H	250	54.65	-13.65
3	*2402	88.1PK			1.5H	28	102.07	-13.97
4	*2402	70.97AV			1.5H	307	84.94	-13.97
5	4804	53.83PK	74	-20.17	1.5H	223	57.58	-3.75
6	4804	40.25AV	54	-13.75	1.5H	168	44	-3.75
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2400	51.69PK	74	-22.31	1.5V	333	65.34	-13.65
2	2400	38.96AV	54	-15.04	1.5V	49	52.61	-13.65
3	*2402	79.86PK			1.5V	71	93.83	-13.97
4	*2402	61.5AV			1.5V	151	75.47	-13.97
5	4804	55.15PK	74	-18.85	1.5V	297	58.9	-3.75
6	4804	41.68AV	54	-12.32	1.5V	43	45.43	-3.75

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The emission levels of other frequencies were less than 20dB margin against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

Middle Channel (2440 MHz)

ANTENNA POLARITY & test distance: HORIZONTAL at 3 m								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2440.00	87.43PK			1.5H	20	100.45	-13.02
2	*2440.00	69.95AV			1.5H	90	82.97	-13.02
3	4880.00	52.56PK	74	-21.44	1.5H	247	56.52	-3.96
4	4880.00	40.26AV	54	-13.74	1.5H	88	44.22	-3.96
ANTENNA POLARITY & test distance: Vertical at 3 m								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2440.00	79.95PK			1.5V	232	92.97	-13.02
2	*2440.00	61.52AV			1.5V	99	74.54	-13.02
3	4880.00	52.58PK	74	-21.42	1.5V	213	56.54	-3.96
4	4880.00	40.16AV	54	-13.84	1.5V	272	44.12	-3.96

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The emission levels of other frequencies were less than 20dB margin against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.

High Channel (2480 MHz)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2496.49	44.79PK	74	-29.21	1.5H	17	58.44	-13.65
2	2498.12	29.38AV	54	-24.62	1.5H	342	43.03	-13.65
3	*2480	86.49PK			1.5H	325	100.46	-13.97
4	*2480	68.74AV			1.5H	195	82.71	-13.97
5	4960	52.14PK	74	-21.86	1.5H	215	55.89	-3.75
6	4960	39.95AV	54	-14.05	1.5H	132	43.7	-3.75
ANTENNA POLARITY & test distance: Vertical at 3 m								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2483.5	43.51PK	74	-30.49	1.5V	229	57.16	-13.65
2	2483.5	28.76AV	54	-25.24	1.5V	205	42.41	-13.65
3	*2480	80.04PK			1.5V	99	94.01	-13.97
4	*2480	61.25AV			1.5V	240	75.22	-13.97
5	4960	52.05PK	74	-21.95	1.5V	187	55.8	-3.75
6	4960	39.9AV	54	-14.1	1.5V	209	43.65	-3.75

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The emission levels of other frequencies were less than 20dB margin against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.

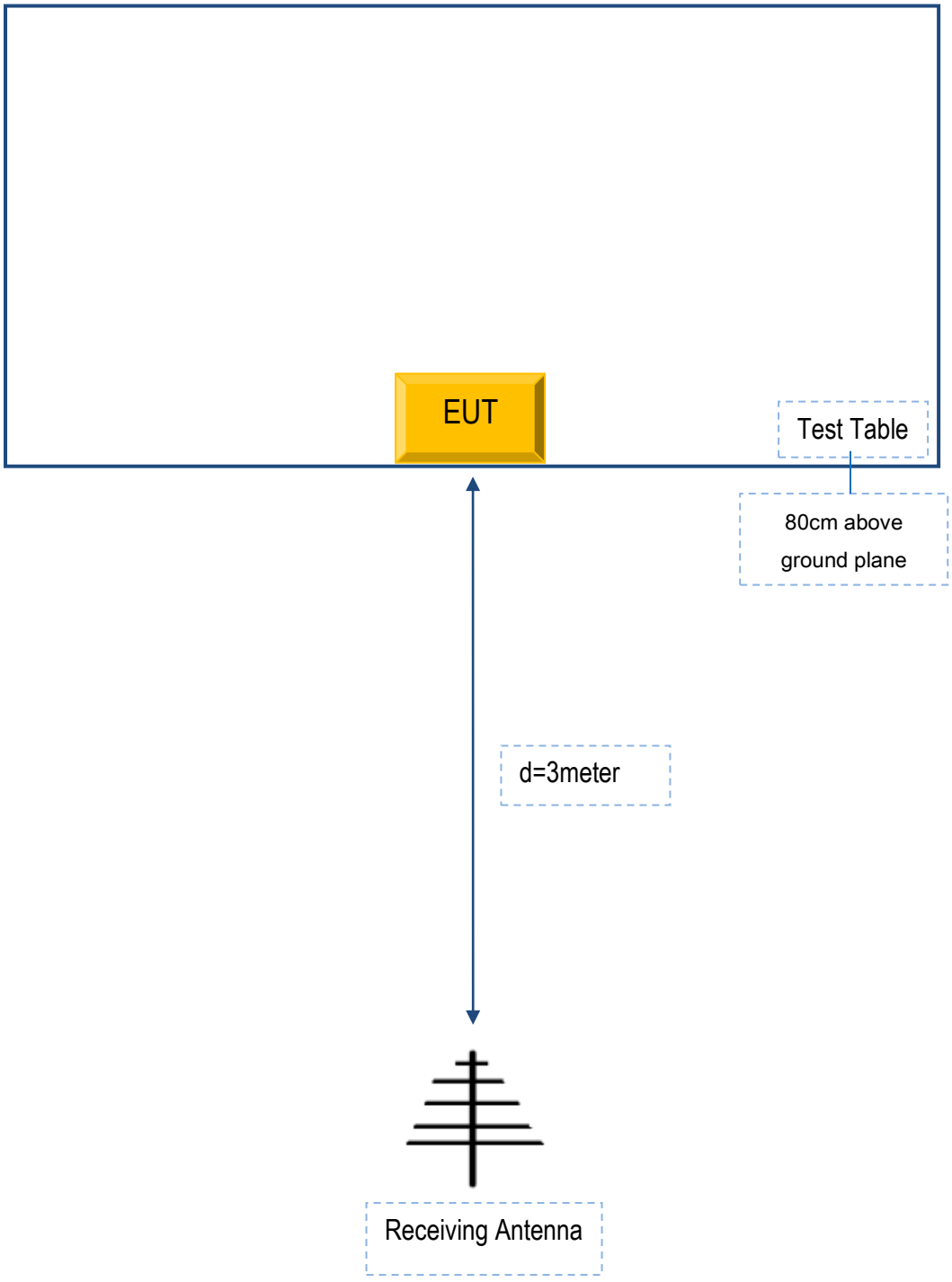
Annex A. TEST INSTRUMENT

Instrument	Model	Serial #	Cal Date	Cal Due
Radiated Emissions				
EMI test receiver	ESL6	1300.5001K06-100262-eQ	01/04/2019	01/03/2020
Active Antenna	AL-130	121031	02/07/2019	02/06/2020
3m Semi-anechoic Chamber	9m*6m*6m	N/A	10/18/2018	10/17/2019
Signal Amplifier	8447E	443008	01/24/2019	01/23/2020
MXA signal analyzer	N9020A	MY49100060	01/04/2019	01/03/2020
Horn Antenna	HAH-118	71259	01/25/2019	01/24/2020
Horn Antenna	HAH-118	71283	02/01/2019	01/31/2020
AMPLIFIER	EM01G26G	60613	01/24/2019	01/23/2020
AMPLIFIER	Emc012645	980077	01/04/2019	01/03/2020
Bilog Antenna (30MHz~6GHz)	JB6	A110712	02/07/2019	02/06/2020
RF Conducted				
DC Power Supply	E3640A	MY40004013	01/04/2019	01/03/2020
MXA Signal Analyzer	N9020A	MY49100060	01/04/2019	01/03/2020
MXG Vector Signal Generator	N5182A	MY50140530	01/04/2019	01/03/2020
Series Signal Generator	E4421B	US40051152	05/11/2019	05/10/2020
RF control unit	JS0806-0806-2	188060112	04/24/2019	04/23/2020
RF control unit	JS0806-0806-2	188060112	04/24/2019	04/23/2020
Wireless Connectivity Tester	CMW270	1201.0002K75-101601-PE	04/24/2019	04/23/2020
Wireless Connectivity Tester	CMW270	1201.0002K75-101601-PE	04/24/2019	04/23/2020
Weinschel	1580-1	TL177	01/04/2019	01/03/2020
Universal Radio Communica	CMU200	121393	02/10/2019	02/09/2020

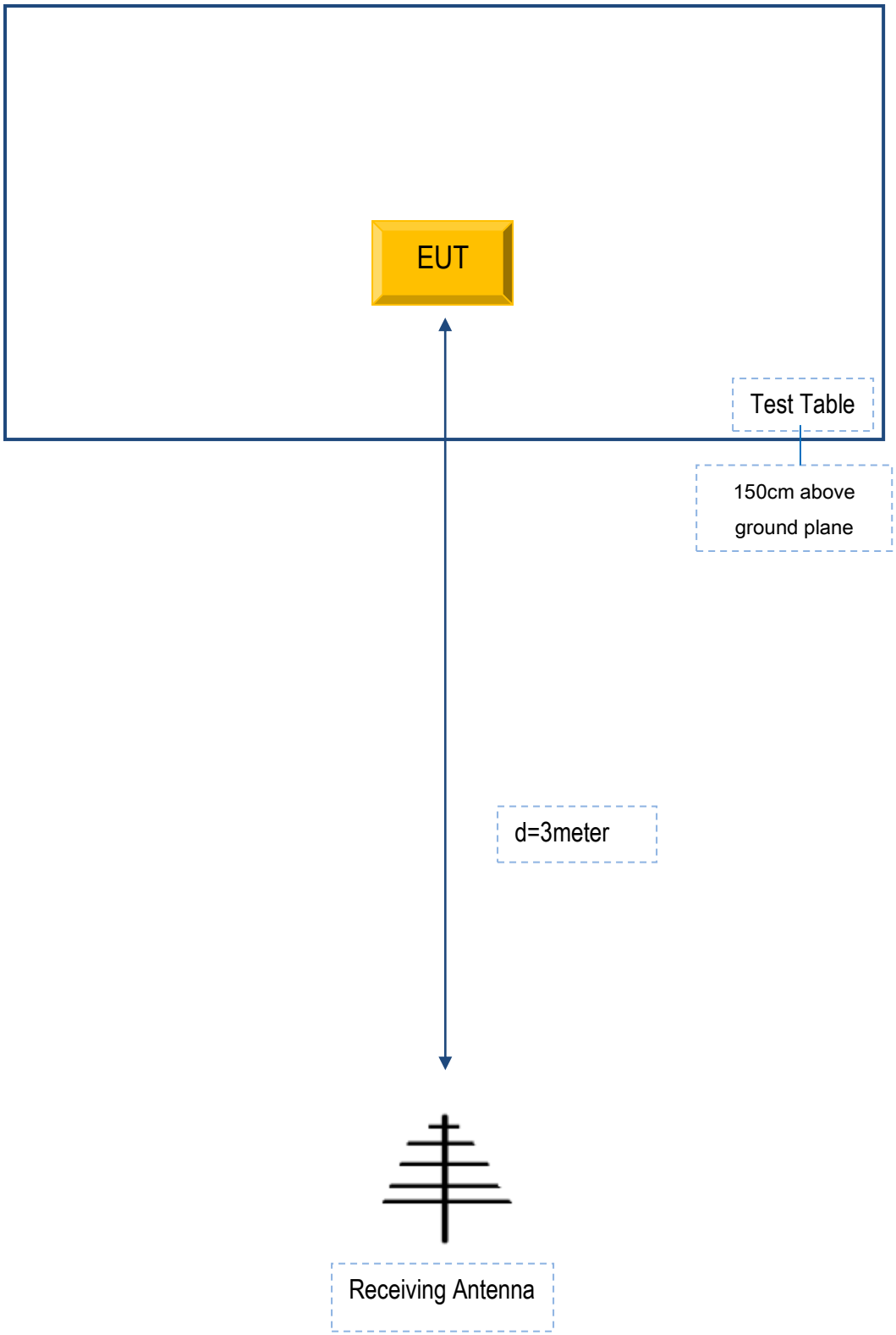
Annex B. TEST SETUP AND SUPPORTING EQUIPMENT

Annex B.i. TEST SET UP BLOCK

Block Configuration Diagram for Radiated Emissions (Below 1GHz) .



Block Configuration Diagram for Radiated Emissions （Above 1GHz）.



Annex C. il. SUPPORTING EQUIPMENT DESCRIPTION

The following is a description of supporting equipment and details of cables used with the EUT.

Supporting Equipment:

Manufacturer	Equipment Description	Model	Serial No
-	-	-	-

Supporting Cable:

Cable type	Shield Type	Ferrite Core	Length	Serial No
-	-	-	-	-

Annex C. User Manual / Block Diagram / Schematics / Partlist/ DECLARATION OF SIMILARITY

N/A