


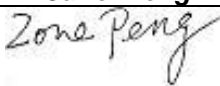


# FCC Test Report

FCC EVALUATION REPORT FOR CERTIFICATE	
Project Reference No.	274296
Product	Remote Training System
Brand Name	 <b>motorola</b>
Model	TRAVELFENCE50CU
Alternate Model	WIRELESSFENCE25CU
Tested according to	FCC Rules and Regulations Part 15 Subpart C 2013, 15.247 ANSI C63.4-2009

Tested in period	2014-12-01
Issued date	2014-12-04
Name and address of the Test House	 Nemko Shanghai Ltd. Shenzhen Branch Unit CD, Floor 10, Tower 2, Financial base, Kefa Road 8#, Hi-Technology Park, Nanshan District, Shenzhen, China Phone : +86 755 8221 0420 Fax : +86 755 8221 3363
Tested by	 2014-12-04 <hr/> <b>Juno Wong</b> <b>date</b>
Verified by	 2014-12-04 <hr/> <b>Zone Peng</b> <b>date</b>

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## Contents of This Report

1. Client Information .....	3
1.1 Applicant .....	3
1.2 Manufacturer.....	3
1.3 Scope.....	3
2. Equipment under Test (EUT).....	4
2.1 Identification of EUT .....	4
2.2 Detail spec: .....	4
2.3 Additional Information Related to Testing .....	4
3. General Test Conditions.....	5
3.1 Location .....	5
3.2 Operating Environment.....	5
3.3 Operating During Test.....	5
3.4 Test Equipment .....	5
4. Measurement Uncertainty .....	6
5. Radiated Electromagnetic Disturbances.....	7
5.1 Test Procedure.....	7
5.2 Measurement Equipment.....	7
5.3 Test Result .....	7
5.3.1 Diagram 5-1 .....	9
5.3.2 Diagram 5-2 .....	10
6. POWER LINE CONDUCTED EMISSION TEST.....	11
6.1 Test Procedure.....	11
6.2 Measurement Equipment.....	11
6.3 Test Result .....	11
6.3.1 Diagram 6-1 .....	12
6.3.2 Diagram 6-2 .....	13
7. Antenna requirement.....	14
7.1 Requirement .....	14
7.2 Result.....	14

## **1. Client Information**

### **1.1 Applicant**

Company Name: BINATONE ELECTRONICS INTERNATIONAL LTD.  
Company Address: Flat 23A, 9 Des Voeux Road West, Hong Kong

### **1.2 Manufacturer**


Company Name: Foshan Shunde Alford Electronics Co., Ltd.  
Company Address: Xinjiao Industrial Park, DaLiang, ShunDe, Foshan City, Guangdong Province, China

### **1.3 Scope**

•Measurement and determination of electromagnetic emissions (EME) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission under FCC part 15.247.

## 2. Equipment under Test (EUT)

### 2.1 Identification of EUT

Category: N/A  
Name: Remote Training System  
Model Name: TRAVELFENCE50CU  
Alternate model: WIRELESSFENCE25CU  
Brand name: 

Model difference: The two models are electrical identical, except the model name.

**Class II permissive change discriptions:** This is update report, add alternative PCB for both 2 models. Comparing to the original PCB ,The alt. PCB only change peripheral power charger circuit : Component L11 change from 10uH to 22uH, Add components R60(470K) and Q8 (9014D). Except the change of power charge circuit as above, RF circuits do not have any change. And, the change do not influence any RF parameter, function and output power. So only conducted emission and Radiated emission of 30MHz to 1GHz are tested to confirm the compliance of power charge circuit change.

### 2.2 Detail spec:

Operation Frequency: **2441MHz**

Type of Modulation : **CSS**

Antenna Type: **Integral Antenna**

Antenna Number : **1**

Antenna gain: **0dBi**

Channel number: **1**

### 2.3 Additional Information Related to Testing

**CH 2441 MHz**

**Remark: Only the worse case found by prescan is listed**

### 3. General Test Conditions

#### 3.1 Location

Global United Technology Services Co., Ltd. -- Nemko ELA 632

2nd Floor, Block No.2, Laodong Industrial Zone, Xixiang Road Baoan District, Shenzhen, China

FCC Registration No.:600491

IC Registration No.9079A-2

Note: all test are witnessed by NEMKO engineer

#### 3.2 Operating Environment

All tests and measurements were performed in a shielded enclosure or a controlled environment suitable for the tests conducted. The climatic conditions in the test area are automatically controlled and recorded continuously.

Parameters	Recording during test	Accepted deviation
Ambient temperature	24-25°C	15 – 35 °C
Relative humidity	50-55%RH	30 - 60%RH
Atmospheric pressure	101.2 kPa -101.3kPa	86-106kPa

#### 3.3 Operating During Test

Test mode

TM1 : 120VAC 60Hz Charging and continuous transmitting Mode

Remark : Input voltage have been adjusted from 85% to 115% ,no influence of Fundamental emission found .

#### 3.4 Test Equipment

The test equipments used in testing are calibrated on a regular basis. For most of the testing equipments accredited calibration is conducted once a year. For certain equipment the calibration interval is longer. Between the calibrations all test equipment are controlled and verified on a regular basis. The test equipments used are defined in each test section of this report.

#### 4. Measurement Uncertainty

The Measurement Uncertainties stated were calculated in accordance with the requirements of NIST Technical Note 1297 with the confidence level of 95 %.

Conducted Emission :	0.15~30MHz	3.45dB
Radiated Emission:	30MHz~1000MHz	4.50dB
	1GHz-18GHz	4.70dB

## 5. Radiated Electromagnetic Disturbances

### 5.1 Test Procedure

The EUT was placed on a non-metallic table, 80 cm above the ground plane inside a semi-anechoic chamber. An antenna was located 3m from the EUT on an adjustable mast.

The EUT were rotated 0 to 360 degree and the antenna height was varied between 1m and 4m in order to maximize the emission. Measurements in both horizontal and vertical polarities were made and the data was recorded. The test result are reported as below.

For below 1GHz

RBW=120 kHz; VBW=300KHz.QP detector,The frequency range from 30MHz to 1000MHz is checked.

### 5.2 Measurement Equipment

	Equipment	Calibration due	Type	Serial No.	Manufacturer
<input checked="" type="checkbox"/>	EMI Test Receiver	Jul. 04 2015	ESU26	GTS203	R&S
<input checked="" type="checkbox"/>	BiConiLog Antenna	Feb. 26 2015	VULB9163	GTS214	SCHWARZBECK
<input checked="" type="checkbox"/>	Horn Antenna	Feb. 26 2015	BBHA9120D	GTS215	SCHWARZBECK
<input checked="" type="checkbox"/>	Horn Antenna	Feb. 26 2015	BBHA9170	GTS216	SCHWARZBECK
<input checked="" type="checkbox"/>	Coaxial Cable	Apr. 01 2015	N/A	GTS213	GTS
<input checked="" type="checkbox"/>	Coaxial Cable	Apr. 01 2015	N/A	GTS211	GTS
<input checked="" type="checkbox"/>	Coaxial cable	Apr. 01 2015	N/A	GTS210	GTS
<input checked="" type="checkbox"/>	Coaxial Cable	Apr. 01 2015	N/A	GTS212	GTS
<input checked="" type="checkbox"/>	Amplifier	Jul. 04 2015	8347A	GTS204	HP

### 5.3 Test Result

Remark: If PK value is lower than AV limit , only show PK diagram as below.

From 18GHz to 25GHz, Spurious Emission can not be found .

For restriction band test :Only list the restriction band test which there found emission.

For other restriction band: no emission found.

For Radiated emission test : The EUT have been tested at X,Y,Z axial direction, Only list the worse mode.

Mode	Freq range	Test ANT polarity	Diagram	Test Result
TX MODE	30MHz-1GHz:	H	5-1	Pass
	30MHz-1GHz:	V	5-2	Pass

NOTES:

- 1.All modes were measured and only the worst case emission was reported.
2. H =Horizontal V=Vertical
3. Emission = Reading +Antenna Factor + Cable Loss –Amp Factor
4. Emission level dB  $\mu$  V = 20 log Emission level  $\mu$  V/m
5. The lower limit shall apply at the transition frequencies
6. All the emissions appearing within 15.205 Restricted bands shall not exceed the limits shown in (15.209 limit )#.
7. Unwanted emissions not falling within restricted frequency bands shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits;

Remark :

The limit of “ # ” of 3 meter distance is

Frequency MHz	Distance m	Field strength		Distance m	Field strength dB $\mu$ V/m(QP)
		$\mu$ V/m	dB $\mu$ V/m(QP)		
30-88	3	100	40.0	10	30.0
88-216	3	150	43.5	10	33.5
216-960	3	200	46.0	10	36.0
960-1000	3	500	54.0	10	44.0
Above 1000	3	74.0 dB $\mu$ V/m (PK) 54.0 dB $\mu$ V/m (AV)		/	/

15.205 Restricted bands:

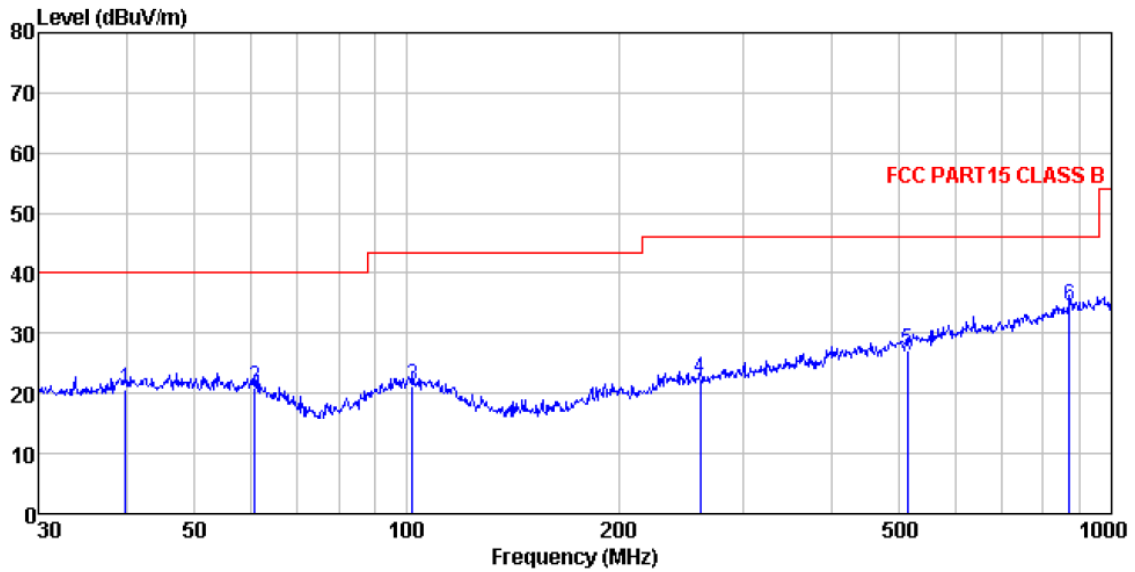
MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
10.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	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			

<sup>1</sup> Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

<sup>2</sup> Above 38.6

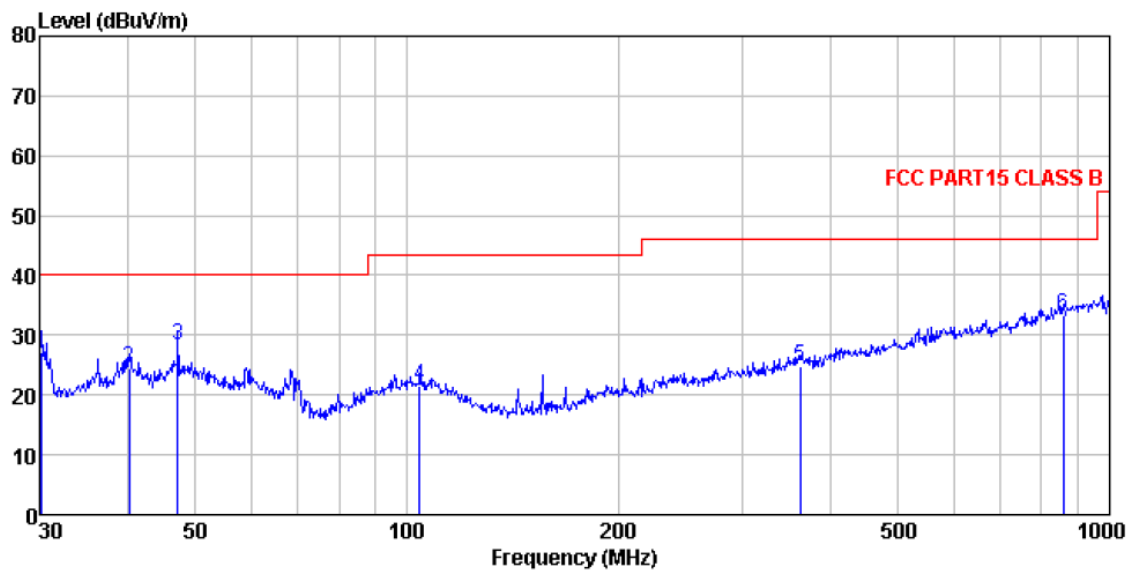


5.3.1 Diagram 5-1



	ReadAntenna	Cable	Preamp		Limit	Over	
Freq	Level	Loss	Factor	Level	Line	Limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	39.854	36.57	15.53	0.66	32.06	20.70	40.00 -19.30 QP
2	60.918	37.65	14.43	0.87	31.93	21.02	40.00 -18.98 QP
3	102.001	36.77	14.97	1.21	31.77	21.18	43.50 -22.32 QP
4	261.058	38.23	14.09	2.18	32.17	22.33	46.00 -23.67 QP
5	513.633	36.45	18.89	3.36	31.48	27.22	46.00 -18.78 QP
6	872.183	38.05	22.82	4.74	31.22	34.39	46.00 -11.61 QP

5.3.2 Diagram 5-2



	Read Antenna	Cable Preamp	Limit	Over					
Freq	Level	Factor	Loss	Factor	Level				
MHz	dBuV	dB/m	dB	dB	dBuV/m				
1	30.211	44.31	14.33	0.55	32.06	27.13	40.00	-12.87	QP
2	40.276	40.30	15.58	0.66	32.06	24.48	40.00	-15.52	QP
3	47.160	44.22	15.42	0.74	31.99	28.39	40.00	-11.61	QP
4	104.170	37.26	14.78	1.23	31.78	21.49	43.50	-22.01	QP
5	362.985	37.53	16.45	2.68	31.99	24.67	46.00	-21.33	QP
6	860.035	37.11	22.69	4.69	31.23	33.26	46.00	-12.74	QP

## 6 POWER LINE CONDUCTED EMISSION TEST

### 6.1 Test Procedure

An intentional radiator 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  $\Omega$  line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency of emission (MHz)	Conducted limit (dB $\mu$ V)	
	Quasi-peak	Average
0.15–0.5	66 to 56*	56 to 46*
0.5–5	56	46
5–30	60	50

\*-Decreases with the logarithm of the frequency.

### 6.2 Measurement Equipment

	Equipment	Calibration due	Type	Serial No.	Manufacturer
<input checked="" type="checkbox"/>	Shielding Room	Jul. 04 2015	7.0(L)x3.0(W)x3.0(H)	GTS252	ZhongYu Electron
<input checked="" type="checkbox"/>	EMI Test Receiver	Jul. 04 2015	ESCS30	1102.4500K30	Rohde & Schwarz
<input checked="" type="checkbox"/>	10dB Pulse Limita	Jul. 04 2015	N/A	GTS224	Rohde & Schwarz
<input checked="" type="checkbox"/>	LISN	Jul. 04 2015	NSLK 8127	8127549	SCHWARZBECK MESS-ELEKTRONIK
<input checked="" type="checkbox"/>	Coaxial Cable	Apr. 01 2015	N/A	N/A	GTS

### 6.3 Test Result

The EUT was placed on a non-metallic table, 80cm above the ground plane. The other peripheral devices power cord connected to the power mains through another line impedance stabilization network. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to ANSI C63.4-2009 on conducted Emission test.

#### Preview measurements:

0.15 MHz to 30 MHz

Receiver settings: PK&AV detector

RBW:9 kHz

#### Final measurement:

0.15 MHz to 30 MHz

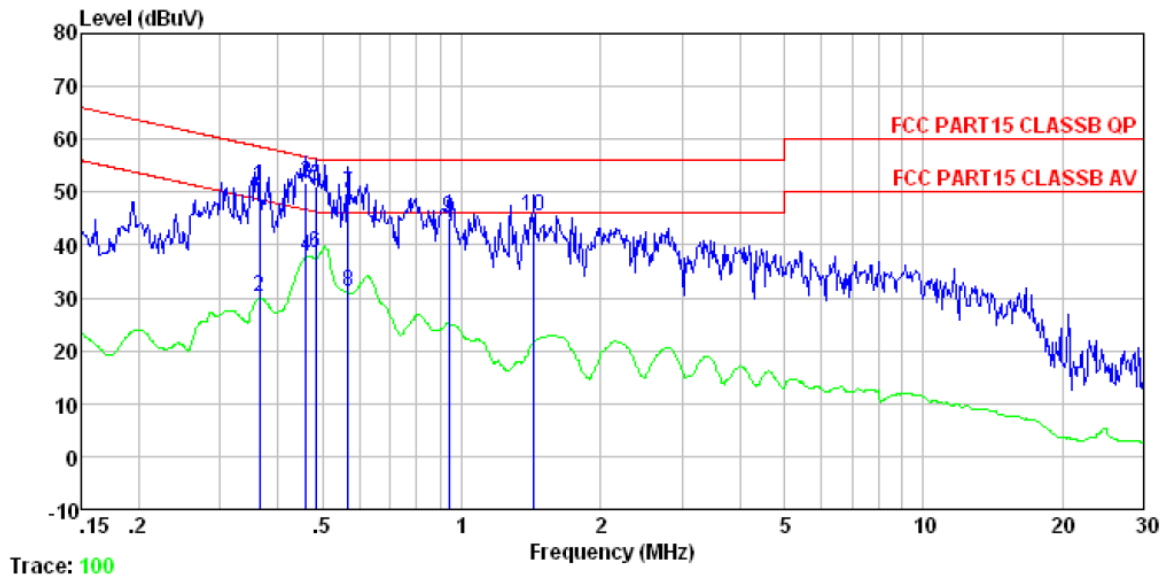
Receiver settings:QP&AV detector

Test mode	Power Line	Test Data	Test Result
TM1	Line	Diagram 6-1	Pass
	Neutral	Diagram 6-2	Pass

#### NOTES:

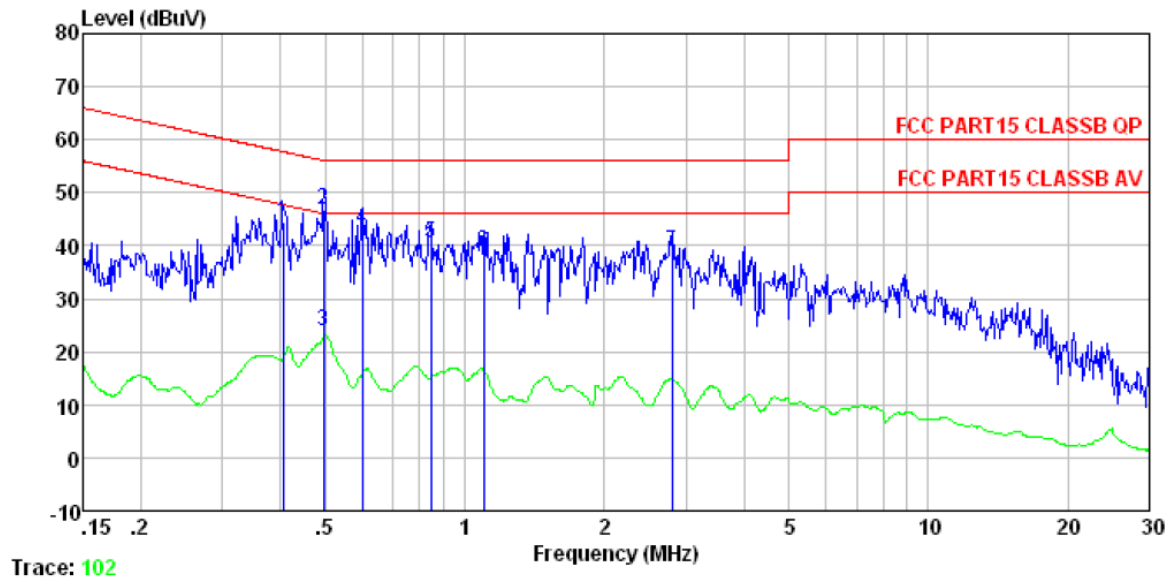
1. Measurements using CISPR quasi-peak mode & average mode.
2. All modes of operation were investigated and the worst -case emission are reported. See attached Plots.
- 3: If PK value is lower than AV limit then QP and AV value are deemed to be complied with rules and only diagram will be shown as below.

### 6.3.1 Diagram 6-1



	Read Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.365	50.89	0.11	0.10	51.10	58.61	-7.51	QP
2	0.365	30.10	0.11	0.10	30.31	48.61	-18.30	Average
3	0.461	51.53	0.12	0.11	51.76	56.67	-4.91	QP
4	0.461	37.75	0.12	0.11	37.98	46.67	-8.69	Average
5	0.484	51.01	0.12	0.11	51.24	56.27	-5.03	QP
6	0.484	38.24	0.12	0.11	38.47	46.27	-7.80	Average
7	0.567	49.58	0.13	0.12	49.83	56.00	-6.17	QP
8	0.567	30.82	0.13	0.12	31.07	46.00	-14.93	Average
9	0.938	45.02	0.14	0.13	45.29	56.00	-10.71	QP
10	1.433	45.33	0.12	0.13	45.58	56.00	-10.42	QP

### 6.3.2 Diagram 6-2



	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.406	44.16	0.06	0.11	44.33	57.73	-13.40	QP
2	0.497	46.50	0.06	0.11	46.67	56.05	-9.38	QP
3	0.497	23.68	0.06	0.11	23.85	46.05	-22.20	Average
4	0.601	43.08	0.07	0.12	43.27	56.00	-12.73	QP
5	0.844	40.17	0.07	0.13	40.37	56.00	-15.63	QP
6	1.100	38.51	0.08	0.13	38.72	56.00	-17.28	QP
7	2.794	38.58	0.11	0.15	38.84	56.00	-17.16	QP

## **7. Antenna requirement**

### **7.1 Requirement**

For intentional device, according to FCC 47 CFR Section 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. And according to FCC 47 CFR Section 15.247 (b), if 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 6dBi.

### **7.2 Result**

The antenna used for this product is Internal Patch antenna that no antenna other than that furnished by the responsible party shall be used with the device, The maximum peak gain of this antenna is 0dBi.

\*\*\*END OF REPORT\*\*\*