

UBTECH ROBOTICS CORP

TEST REPORT

SCOPE OF WORK
FCC TESTING-IM050

REPORT NUMBER
181211011SZN-001

ISSUE DATE **[REVISED DATE]**
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UBTECH ROBOTICS CORP

Application
For
Certification

FCC ID: 2AHJX-IM050**IRON MAN MK50 ROBOT BY UBTECH****Model: IM050****2.4GHz Transceiver****Report No.: 181211011SZN-001**

We hereby certify that the sample of the above item is considered to comply with the requirements of FCC Part 15, Subpart C for Intentional Radiator, mention 47 CFR [10-1-17]

Prepared and Checked by:

Approved by:

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Kidd Yang
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Date: December 18, 2018

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MEASUREMENT/TECHNICAL REPORT

UBTECH ROBOTICS CORP

MODEL: IM050

FCC ID: 2AHJX-IM050

This report concerns (check one): Original Grant X Class II Change _____

Equipment Type: DXX - Part 15 Low Power Communication Device Transmitter

Deferred grant requested per 47 CFR 0.457(d)(1)(ii)? Yes _____ No X

If yes, defer until: _____
date

Company Name agrees to notify the Commission by: _____
date

of the intended date of announcement of the product so that the grant can be issued on that date.

Transition Rules Request per 15.37? Yes _____ No X

If no, assumed Part 15, Subpart C for intentional radiator – the new 47 CFR [10-1-17 Edition] provision.

Report prepared by:

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List of attached file

Exhibit type	File Description	Filename
Test Report	Test Report	report.pdf
Test Setup Photo	Radiated Emission	radiated photos.pdf
Test Setup Photo	Conducted Emission	conducted photos.pdf
Test Report	Bandedge Plot	bandedge.pdf
Test Report	20dB BW Plot	bw.pdf
External Photo	External Photo	external photos.pdf
Internal Photo	Internal Photo	internal photos.pdf
Block Diagram	Block Diagram	block.pdf
Schematics	Circuit Diagram	circuit.pdf
Operation Description	Technical Description	descri.pdf
ID Label/Location	Label Artwork and Location	label.pdf
User Manual	User Manual	manual.pdf
Cover Letter	Confidentiality Letter	request.pdf
Cover Letter	Letter of Agency	agency.pdf

EXHIBIT 1

GENERAL DESCRIPTION

1.0 General Description

1.1 Product Description

The equipment under test (EUT) is an IRON MAN MK50 ROBOT BY UBTECH with Bluetooth function operated at 2.4GHz band. The EUT is powered by DC 7.4V (2*lithium battery) which can be charged by DC 5V/2.0A. For more detail information pls. refer to the user manual.

Bluetooth Version: 4.0 BLE (single mode)

Antenna Type: Integral antenna

Antenna Gain: 3.1dBi Max

Modulation Type: GFSK

For electronic filing, the brief circuit description is saved with filename: descri.pdf.

1.2 Related Submittal(s) Grants

This is an application for certification of a transceiver for the IRON MAN MK50 ROBOT BY UBTECH BT 4.0 BLE.

For other functions were reported in the SDOC report: 181211011SZN-002.

1.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.10 (2013). Radiated emission measurement was performed in Semi-anechoic chamber and conducted emission measurement was performed in shield room. For radiated emission measurement, preliminary scans were performed in the semi-anechoic chamber only to determine the worst case modes. All radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the "**Justification Section**" of this Application. All other measurements were made in accordance with the procedures in part 2 of CFR 47.

1.4 Test Facility

The Semi-Anechoic chamber and shield room used to collect the radiated data and conducted data are **Intertek Testing Services Shenzhen Ltd. Longhua Branch** and located at 101, 201, Building B, No. 308 Wuhe Avenue, Zhangkengjing Community, GuanHu Subdistrict, LongHua District, Shenzhen, China. This test facility and site measurement data have been fully placed on file with the FCC (Registration Number: CN1188).

EXHIBIT 2

SYSTEM TEST CONFIGURATION

2.0 System Test Configuration

2.1 Justification

The system was configured for testing in a typical fashion (as a customer would normally use it), and in the confines as outlined in ANSI C63.10 (2013).

The EUT was powered by adaptor with 120V/60Hz input during the test. Only the worst case data was reported.

For maximizing emissions, the EUT was rotated through 360°, the antenna height was varied from 1 meter to 4 meters above the ground plane, and the antenna polarization was changed. This step by step procedure for maximizing emissions led to the data reported in Exhibit 3.0.

The rear of unit was flushed with the rear of the table.

The equipment under test (EUT) was configured for testing in a typical fashion (as a customer would normally use it). The EUT was placed on a turn table, which enabled the engineer to maximize emissions through its placement in the three orthogonal axes.

2.2 EUT Exercising Software

The EUT exercise program (provided by client) used during testing was designed to exercise the various system components in a manner similar to a typical use.

2.3 Special Accessories

DC cable (With Core, Shielded, 1.15m)

2.4 Equipment Modification

Any modifications installed previous to testing by UBTECH ROBOTICS CORP will be incorporated in each production model sold / leased in the United States.

No modifications were installed by Intertek Testing Services Shenzhen Ltd Longhua Branch.

2.5 Measurement Uncertainty

When determining the test conclusion, the Measurement Uncertainty of test has been considered.

2.6 Support Equipment List and Description

Description	Manufacturer	Model No.
Mobile phone	Apple	A1549
DC adaptor	provided by applicant	A1401
DC cable	provided by applicant	With Core, Shielded, 1.15m

EXHIBIT 3

EMISSION RESULTS

3.0 Emission Results

Data is included worst-case configuration (the configuration which resulted in the highest emission levels).

3.1 Radiated Test Results

A sample calculation, configuration photographs and data tables of the emissions are included.

3.1.1 Field Strength Calculation

The field strength is calculated by adding the reading on the Spectrum Analyzer to the factors associated with preamplifiers (if any), antennas, cables, pulse desensitization and average factors (when specified limit is in average and measurements are made with peak detectors). A sample calculation is included below.

$$FS = RA + AF + CF - AG$$

Where FS = Field Strength in dB μ V/m
 RA = Receiver Amplitude (including preamplifier) in dB μ V
 CF = Cable Attenuation Factor in dB
 AF = Antenna Factor in dB
 AG = Amplifier Gain in dB

In the radiated emission table which follows, the reading shown on the data table may reflect the preamplifier gain. An example of the calculations, where the reading does not reflect the preamplifier gain, follows:

$$FS = RA + AF + CF - AG$$

Assume a receiver reading of 62.0 dB μ V is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted. The net field strength for comparison to the appropriate emission limit is 42 dB μ V/m. This value in dB μ V/m was converted to its corresponding level in μ V/m.

RA = 62.0 dB μ V
AF = 7.4 dB
CF = 1.6 dB
AG = 29.0 dB

$$FS = 62 + 7.4 + 1.6 - 29 + 0 = 42 \text{ dB}\mu\text{V/m}$$

$$\text{Level in } \mu\text{V/m} = \text{Common Antilogarithm} [(42 \text{ dB}\mu\text{V/m})/20] = 125.9 \mu\text{V/m}$$

3.1.2 Radiated Emission Configuration Photograph

For electronic filing, the worst case radiated emission configuration photograph is saved with filename: radiated photos. pdf.

3.1.3 Radiated Emissions

The data on the following page lists the significant emission frequencies, the limit and the margin of compliance. Numbers with a minus sign are below the limit.

Worst Case Radiated Emission
at
192.000 MHz

Judgement: Passed by 9.3 dB

TEST PERSONNEL:

Sign on file

Leo Li, Engineer
Typed/Printed Name

December 14, 2018
Date

Applicant: UBTECH ROBOTICS CORP

Date of Test: December 14, 2018

Worst Case Operating Mode:

Model: IM050

BT Link

Table 1

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	288.020	38.1	20.0	13.6	31.7	46.0	-14.3
Horizontal	384.050	34.3	20.0	16.5	30.8	46.0	-15.2
Horizontal	672.053	32.9	20.0	22.0	34.9	46.0	-11.1
Vertical	192.000	44.1	20.0	10.1	34.2	43.5	-9.3
Vertical	384.050	36.9	20.0	16.5	33.4	46.0	-12.6
Vertical	432.065	35.0	20.0	17.1	32.1	46.0	-13.9

NOTES: 1. Quasi-Peak detector is used except for others stated.

2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative value in the margin column shows emission below limit.

4. All emissions are below the QP limit.

3.1.4 Transmitter Spurious Emissions (Radiated)

Worst Case Radiated Emission
at
4804.000 MHz

For electronic filing, the worst case radiated emission configuration photograph is saved with filename: radiated photos. pdf.

The data on the following page lists the significant emission frequencies, the limit and the margin of compliance. Numbers with a minus sign are below the limit.

Judgement: Passed by 4.0 dB

TEST PERSONNEL:

Sign on file

Leo Li, Engineer
Typed/Printed Name

December 14, 2018
Date

Applicant: UBTECH ROBOTICS CORP

Date of Test: December 14, 2018

Worst Case Operating Mode:

Model: IM050

Transmitting

Table 2

Radiated Emissions

(2402MHz)

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Peak Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	2402.000	95.1	36.7	28.1	86.5	114.0	-27.5
Horizontal	4804.000	56.5	36.7	35.5	55.3	74.0	-18.7
Horizontal	7206.000	54.0	36.1	36.5	54.4	74.0	-19.6
Horizontal	9608.000	54.2	36.2	37.0	55.0	74.0	-19.0

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	2402.000	91.6	36.7	28.1	83.0	94.0	-11.0
Horizontal	4804.000	51.2	36.7	35.5	50.0	54.0	-4.0
Horizontal	7206.000	42.8	36.1	36.5	43.2	54.0	-10.8
Horizontal	9608.000	44.2	36.2	37.0	45.0	54.0	-9.0

Notes: 1. Peak detector is used for the emission measurement (RBW=1MHz / VBW=3MHz for Peak value, and RBW=1MHz / VBW=10Hz for Average value; RBW=3MHz is used for fundamental emission measurement).

2. All measurements were made at 3 meter. Harmonic emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative value in the margin column shows emission below limit.

4. Horn antenna is used for the emission over 1000MHz.

Test Engineer: Leo Li

Applicant: UBTECH ROBOTICS CORP

Date of Test: December 14, 2018

Worst Case Operating Mode:

Model: IM050

Transmitting

Table 3

Radiated Emissions

(2442MHz)

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Peak Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	2442.000	94.9	36.7	28.1	86.3	114.0	-27.7
Horizontal	4884.000	57.4	36.7	35.5	56.2	74.0	-17.8
Horizontal	7326.000	52.3	36.1	37.2	53.4	74.0	-20.6
Horizontal	9768.000	54.7	36.2	37.0	55.5	74.0	-18.5

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	2442.000	81.2	36.7	28.1	72.6	94.0	-21.4
Horizontal	4884.000	51.1	36.7	35.5	49.9	54.0	-4.1
Horizontal	7326.000	42.4	36.1	37.2	43.5	54.0	-10.5
Horizontal	9768.000	44.6	36.2	37.0	45.4	54.0	-8.6

- Notes:
1. Peak detector is used for the emission measurement (RBW=1MHz / VBW=3MHz for Peak value, and RBW=1MHz / VBW=10Hz for Average value; RBW=3MHz is used for fundamental emission measurement).
 2. All measurements were made at 3 meter. Harmonic emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.
 3. Negative value in the margin column shows emission below limit.
 4. Horn antenna is used for the emission over 1000MHz.

Test Engineer: Leo Li

Applicant: UBTECH ROBOTICS CORP

Date of Test: December 14, 2018

Worst Case Operating Mode:

Model: IM050

Transmitting

Table 4

Radiated Emissions

(2480MHz)

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Peak Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	2480.000	96.6	36.7	28.1	88.0	114.0	-26.0
Horizontal	4960.000	56.3	36.7	35.5	55.1	74.0	-18.9
Horizontal	7440.000	53.8	36.1	37.2	54.9	74.0	-19.1
Horizontal	9920.000	52.9	36.3	38.9	55.5	74.0	-18.5

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	2480.000	83.1	36.7	28.1	74.5	94.0	-19.5
Horizontal	4960.000	48.7	36.7	35.5	47.5	54.0	-6.5
Horizontal	7440.000	44.2	36.1	37.2	45.3	54.0	-8.7
Horizontal	9920.000	42.8	36.3	38.9	45.4	54.0	-8.6

Notes: 1. Peak detector is used for the emission measurement (RBW=1MHz / VBW=3MHz for Peak value, and RBW=1MHz / VBW=10Hz for Average value; RBW=3MHz is used for fundamental emission measurement).

2. All measurements were made at 3 meter. Harmonic emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative value in the margin column shows emission below limit.

4. Horn antenna is used for the emission over 1000MHz.

Test Engineer: Leo Li

3.2 Conducted Emission at Mains Terminal

3.2.1 Conducted Emissions Configuration Photograph

For electronic filing, the worst case conducted emission configuration photograph is saved with filename: conducted photos.pdf.

3.2.2 Conducted Emissions

Worst Case Conducted Configuration
At

0.278 MHz

Judgement: Passed by 14.0 dB margin

TEST PERSONNEL:

Sign on file

Leo Li, Engineer
Typed/Printed Name

December 14, 2018
Date

Company: UBTECH ROBOTICS CORP

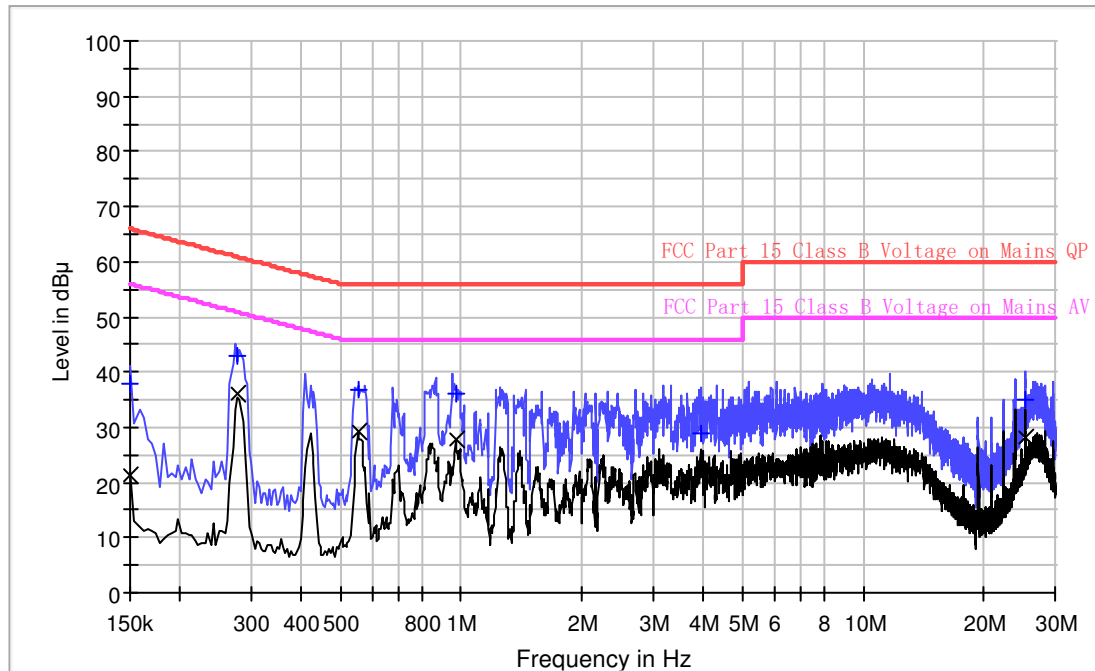
Date of Test: December 14, 2018

Model: IM050

Operating Mode: BT Link

Phase: Live

Conducted Emission Test - FCC



Result Table QP

Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	37.8	9.000	L1	9.6	28.2	66.0
0.278000	43.1	9.000	L1	9.6	17.8	60.9
0.554000	36.8	9.000	L1	9.6	19.2	56.0
0.970000	36.3	9.000	L1	9.7	19.7	56.0
3.930000	28.8	9.000	L1	9.7	27.2	56.0
25.238000	35.0	9.000	L1	10.6	25.0	60.0

Result Table AV

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	21.3	9.000	L1	9.6	34.7	56.0
0.278000	36.2	9.000	L1	9.6	14.7	50.9
0.554000	29.2	9.000	L1	9.6	16.8	46.0
0.970000	27.6	9.000	L1	9.7	18.4	46.0
3.930000	21.5	9.000	L1	9.7	24.5	46.0
25.238000	28.2	9.000	L1	10.6	21.8	50.0

Test Engineer: Leo Li

Company: UBTECH ROBOTICS CORP

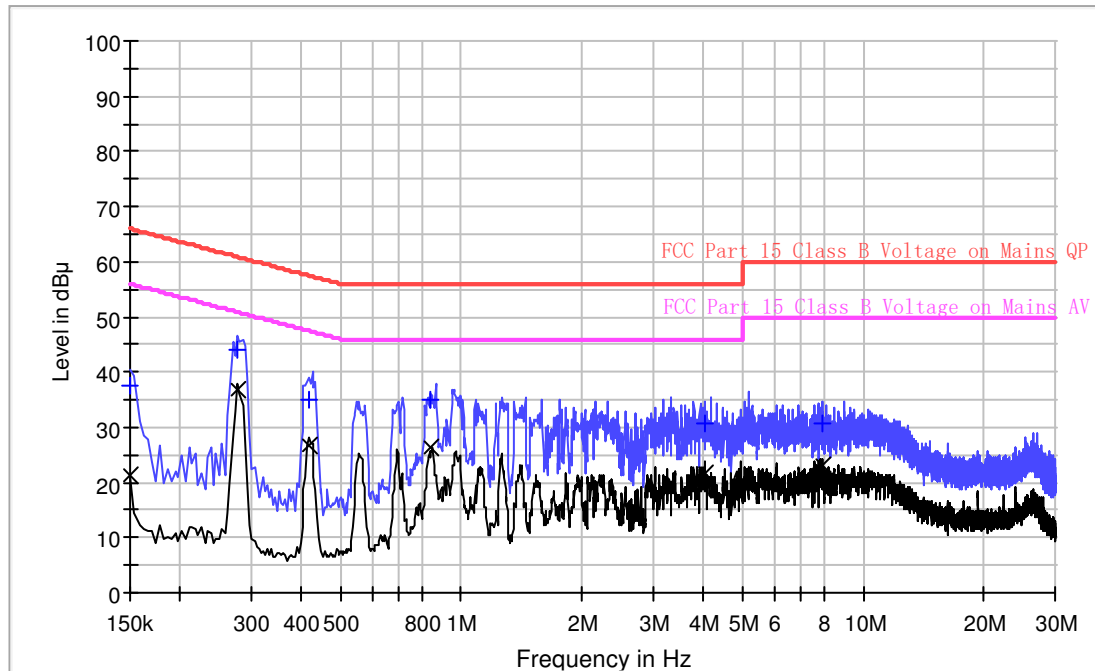
Date of Test: December 14, 2018

Model: IM050

Operating Mode: BT Link

Phase: Neutral

Conducted Emission Test - FCC



Result Table QP

Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	37.6	9.000	N	9.6	28.4	66.0
0.278000	43.9	9.000	N	9.6	17.0	60.9
0.418000	35.0	9.000	N	9.6	22.5	57.5
0.842000	35.0	9.000	N	9.7	21.0	56.0
4.042000	30.8	9.000	N	9.7	25.2	56.0
7.942000	30.8	9.000	N	9.8	29.2	60.0

Result Table AV

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	21.2	9.000	N	9.6	34.8	56.0
0.278000	36.9	9.000	N	9.6	14.0	50.9
0.418000	26.6	9.000	N	9.6	20.9	47.5
0.842000	26.5	9.000	N	9.7	19.5	46.0
4.042000	21.8	9.000	N	9.7	24.2	46.0
7.942000	23.1	9.000	N	9.8	26.9	50.0

Test Engineer: Leo Li

EXHIBIT 4

EQUIPMENT PHOTOGRAPHS

4.0 Equipment Photographs

For electronic filing, the photographs of the tested EUT are saved with filename: external photos.pdf & internal photos.pdf.

EXHIBIT 5

PRODUCT LABELLING

5.0 Product Labelling

For electronic filing, the FCC ID label artwork and the label location are saved with filename: label.pdf.

EXHIBIT 6

TECHNICAL SPECIFICATIONS

6.0 Technical Specifications

For electronic filing, the block diagram and schematics of the tested EUT are saved with filename: block.pdf and circuit.pdf respectively.

EXHIBIT 7

INSTRUCTION MANUAL

7.0 Instruction Manual

For electronic filing, a preliminary copy of the Instruction Manual is saved with filename: manual.pdf.

This manual will be provided to the end-user with each unit sold/leased in the United States.

EXHIBIT 8

MISCELLANEOUS INFORMATION

8.0 Miscellaneous Information

This miscellaneous information includes details of the measured bandedge, the test procedure and calculation of factor such as pulse desensitization.

8.1 Bandedge Plot

For electronic filing, the plot shows the fundamental emission when modulated is saved with filename: bandedge.pdf. From the plot, the field strength of any emissions outside of the specified frequency band are attenuated to the general radiated emission limits in section 15.209. It fulfils the requirement of 15.249(d).

Peak Measurement

Bandedge compliance is determined by applying marker-delta method, i.e (Bandedge Plot).

(i) Lower channel 2402MHz:

Peak Resultant field strength = Fundamental emissions (peak value) – delta from the bandedge plot

$$\begin{aligned} &= 86.5 \text{ dB}\mu\text{v/m} - 47.13 \text{ dB} \\ &= 39.37 \text{ dB}\mu\text{v/m} \end{aligned}$$

Average Resultant field strength = Fundamental emissions (Average value) – delta from the bandedge plot

$$\begin{aligned} &= 83.0 \text{ dB}\mu\text{v/m} - 47.13 \text{ dB} \\ &= 35.87 \text{ dB}\mu\text{v/m} \end{aligned}$$

(ii) Upper channel 2480MHz:

Peak Resultant field strength = Fundamental emissions (peak value) – delta from the bandedge plot

$$\begin{aligned} &= 88.0 \text{ dB}\mu\text{v/m} - 46.52 \text{ dB} \\ &= 41.48 \text{ dB}\mu\text{v/m} \end{aligned}$$

Average Resultant field strength = Fundamental emissions (Average value) – delta from the bandedge plot

$$\begin{aligned} &= 74.5 \text{ dB}\mu\text{v/m} - 46.52 \text{ dB} \\ &= 27.98 \text{ dB}\mu\text{v/m} \end{aligned}$$

The resultant field strength meets the general radiated emission limit in section 15.209, which does not exceed 74dB μ v/m (Peak Limit) and 54dB μ v/m (Average Limit).

8.1 Bandedge Plot (cont'd)

Pursuant to FCC part 15 Section 15.215(c), the 20dB bandwidth of the emission was contained within the frequency band designated (mentioned as above) which the EUT operated. The effects, if any, from frequency sweeping, frequency hopping, other modulation techniques and frequency stability over excepted variations in temperature and supply voltage were considered.

Figure 8.1 Bandwidth

8.2 Discussion of Pulse Desensitization

Pulse desensitivity is not applicable for this device since the transmitter transmits the RF signal continuously.

8.3 Emissions Test Procedures

The following is a description of the test procedure used by Intertek Testing Services in the measurements of transmitters operating under Part 15, Subpart C rules.

The test set-up and procedures described below are designed to meet the requirements of ANSI C63.10 – 2013.

The transmitting equipment under test (EUT) is placed on a styrene turntable which is four feet in diameter and approximately 0.8 meter up to 1GHz and 1.5 meter above 1GHz in height above the ground plane. During the radiated emissions test, the turntable is rotated and any cables leaving the EUT are manipulated to find the configuration resulting in maximum emissions. The EUT is adjusted through all three orthogonal axes to obtain maximum emission levels. The antenna height and polarization are varied during the testing to search for maximum signal levels.

Detector function for radiated emissions is in peak mode. Average readings, when required, are taken by measuring the duty cycle of the equipment under test and subtracting the corresponding amount in dB from the measured peak readings.

The frequency range scanned is from the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or 40 GHz, whichever is lower.

Detector function for conducted emissions is in QP & AV mode and IFBW setting is 9 kHz from the frequency band 150 kHz to 30MHz.

8.3 Emissions Test Procedures (cont'd)

The EUT is warmed up for 15 minutes prior to the test.

AC power to the unit is varied from 85% to 115% nominal and variation in the fundamental emission field strength is recorded. If battery powered, a new, fully charged battery is used.

Conducted measurements are made as described in ANSI C63.10 - 2013.

The IF bandwidth used for measurement of radiated signal strength was 10 kHz for emission below 30 MHz and 120 kHz for emission from 30 MHz to 1000 MHz. Where pulsed transmissions of short enough pulse duration warrant, a greater bandwidth is selected according to the recommendations of Hewlett Packard Application Note 150-2. Above 1000 MHz, a resolution bandwidth of 1 MHz (RBW 3MHz for fundamental emission) is used.

Transmitter measurements are normally conducted at a measurement distance of three meters. However, to assure low enough noise floor in the restricted bands and above 1 GHz, signals are acquired at a distance of one meter or less. All measurements are extrapolated to three meters using inverse scaling, but those measurements taken at a closer distance are so marked.

EXHIBIT 9

CONFIDENTIALITY REQUEST

9.0 Confidentiality Request

For electronic filing, the confidentiality request of the tested EUT is saved with filename: request.pdf.

EXHIBIT10

TEST EQUIPMENT LIST

10.0 Test Equipment List

Equipment No.	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
SZ061-12	Biconilog Antenna	ETS	3142E	00166158	14-Sep-2018	14-Sep-2019
SZ061-08	Horn Antenna	ETS	3115	00092346	14-Sep-2018	14-Sep-2019
SZ061-06	Active Loop Antenna	Electro-Metrics	EM-6876	217	11-May-2018	11-May-2019
SZ061-07	Pyramidal Horn Antenna	ETS	3160-09	00083067	17-Mar-2018	17-Mar-2019
SZ056-03	Spectrum Analyzer	R&S	FSP30	101148	5-Jun-2018	5-Jun-2019
SZ185-01	EMI Receiver	R & S	ESCI	100547	24-Jan-2018	24-Jan-2019
SZ181-04	Preamplifier	Agilent	8449B	3008A02474	24-Jan-2018	24-Jan-2019
SZ188-01	Anechoic Chamber	ETS	RFD-F/A-100	4102	16-Jan-2017	16-Jan-2019
SZ062-02	RF Cable	RADIAL	RG 213U	--	05-Jan-2018	05-Jul-2019
SZ062-05	RF Cable	RADIAL	0.04-26.5GHz	--	31-Aug-2018	28-Feb-2019
SZ062-12	RF Cable	RADIAL	0.04-26.5GHz	--	31-Aug-2018	28-Feb-2019
SZ067-04	Notch Filter	Micro-Tronics	BRM5070 2-02	--	5-Jun-2018	5-Jun-2019
SZ185-02	EMI Test Receiver	R&S	ESCI	100692	26-Oct-2018	26-Oct-2019
SZ187-02	Two-Line V-Network	R&S	ENV216	100073	04-Jul-2018	04-Jul-2019
SZ188-03	Shielding Room	ETS	RFD-100	4100	16-Jan-2017	16-Jan-2019
SZ062-16	RF Cable	HUBER+SUHNER	CBL2-BN-1m	110127-2231000	29-Oct-2018	29-Oct-2019

***** End of Report *****