

TEST REPORT

Report No.: 18071523HKG-002

PMT Holdings Limited

Application For Certification
(Original Grant)

FCC ID: 2ARIJ10536

Transceiver

Prepared and Checked by:

Approved by:

Signed On File
Lee Yee Yat, Adrian
Assistant Engineer

Wong Kwok Yeung, Kenneth
Senior Lead Engineer
Date: September 14, 2018

Intertek's standard Terms and Conditions can be obtained at our website <http://www.intertek.com/terms/>.

The test report only allows to be revised within the retention period unless further standard or the requirement was noticed.

This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to permit copying or distribution of this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.

© 2017 Intertek

TEST REPORT

GENERAL INFORMATION

Grantee:	PMT Holdings Limited
Grantee Address:	Room 511, 5/F., Peninsula Centre, 67 Mody Road, Tsim Sha Tsui East, Kowloon, Hong Kong.
Contact Person:	Ernie Wong
Tel:	2328 8933
Fax:	2351 1754
e-mail:	N/A
Manufacturer:	King Da Plastic Electronic Ltd.
Manufacturer Address:	4 Floor, No.8, Qingdingbei, Pingxi Community, Pingdi Street, Longgang District, Shenzhen City, China.
Brand Name:	PMT Holdings Limited
Model:	10536
Type of EUT:	Transceiver
Description of EUT:	Worlds Tiniest Walkie Talkies
Serial Number:	N/A
FCC ID:	2ARIJ10536
Date of Sample Submitted:	July 26, 2018
Date of Test:	July 26, 2018 to September 13, 2018
Report No.:	18071523HKG-002
Report Date:	September 14, 2018
Environmental Conditions:	Temperature: +10 to 40°C Humidity: 10 to 90%
Conclusion:	Test was conducted by client submitted sample. The submitted sample as received complied with the 47 CFR Part 15 / RSS-210 Issue 9 Certification.

TEST REPORT

SUMMARY OF TEST RESULT

Test Specification	Reference	Results
Transmitter Field Strength and Bandwidth Requirement	15.235	Pass

The equipment under test is found to be complying with the following standards:
FCC Part 15, October 1, 2017 Edition

Note: 1. The EUT uses a permanently attached antenna which, in accordance to section 15.203, is considered sufficient to comply with the provisions of this section.
2. Pursuant to FCC part 15 Section 15.215(c), the 20 dB 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.

TEST REPORT

TABLE OF CONTENTS

1.0	GENERAL DESCRIPTION	5
1.1	Product Description	5
1.2	Related Submittal(s) Grants.....	5
1.3	Test Methodology	5
1.4	Test Facility	5
2.0	SYSTEM TEST CONFIGURATION	6
2.1	Justification	6
2.2	EUT Exercising Software	6
2.3	Special Accessories.....	6
2.4	Measurement Uncertainty	6
2.5	Support Equipment List and Description	6
3.0	EMISSION RESULTS.....	7
3.1	Field Strength Calculation.....	7
3.2	Radiated Emission Configuration Photograph.....	8
3.3	Radiated Emission Data.....	8
4.0	EQUIPMENT PHOTOGRAPHS	10
5.0	PRODUCT LABELLING.....	10
6.0	TECHNICAL SPECIFICATIONS	10
7.0	INSTRUCTION MANUAL.....	10
8.0	MISCELLANEOUS INFORMATION	11
8.1	Measured Bandwidth.....	11
8.2	Discussion of Pulse Desensitization	13
8.3	Calculation of Average Factor	13
8.4	Emissions Test Procedures	14
9.0	EQUIPMENT LIST	17

TEST REPORT

1.0 GENERAL DESCRIPTION

1.1 Product Description

The Equipment Under Test (EUT) is portable walkie-talkie which operates at 49.860MHz. The EUT is power by 4 x 1.5V AG13 batteries. After switching on the EUT and pressing and releasing the TALK button, the walkie-talkie can transmit and receive sound data to/ from another walkie-talkie respectively. By pressing the CODE button, it can transmit Morse code.

Antenna Type: External, Integral

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

1.2 Related Submittal(s) Grants

This is a single application for certification of a transceiver.

1.3 Test Methodology

Radiated emission measurements were performed according to the procedures in ANSI C63.10 (2013). All radiated measurements were performed in an 3m Chamber. Preliminary scans were performed in the 3m Chamber only to determine 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.

1.4 Test Facility

The 3m Chamber facility used to collect the radiated data is located at Workshop No. 3, G/F., World-Wide Industrial Centre, 43-47 Shan Mei Street, Fo Tan, Sha Tin, N.T., Hong Kong. This test facility and site measurement data have been placed on file with the FCC.

TEST REPORT

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 device was powered by new 6.0VDC (4 x 1.5V "AG13" batteries).

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 shall be 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 mounted to a plastic stand if necessary and placed on the wooden turntable, which enabled the engineer to maximize emissions through its placement in the three orthogonal axes.

2.2 EUT Exercising Software

There was no special software to exercise the device. Once the unit is powered up, it transmits the RF signal continuously.

2.3 Special Accessories

There are no special accessories necessary for compliance of this product.

2.4 Measurement Uncertainty

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

Uncertainty and Compliance - Unless the standard specifically states that measured values are to be extended by the measurement uncertainty in determining compliance, all compliance determinations are based on the actual measured value.

2.5 Support Equipment List and Description

N/A.

TEST REPORT

3.0 EMISSION RESULTS

Data is included of the worst case configuration (the configuration which resulted in the highest emission levels). A sample calculation, configuration photographs and data tables of the emissions are included.

3.1 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any), Average Factor (optional) from the measured reading. The basic equation with a sample calculation is as follows:

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

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

AV = Average Factor in dB

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows:

$$FS = RR + LF$$

where

FS = Field Strength in dB μ V/m

RR = RA - AG - AV in dB μ V

LF = CF + AF in dB

Assume a receiver reading of 52.0 dB μ V is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB are added. The amplifier gain of 29 dB and average factor of 5 dB are subtracted, giving a field strength of 27 dB μ V/m. This value in dB μ V/m was converted to its corresponding level in μ V/m.

$$RA = 52.0 \text{ dB}\mu\text{V/m}$$

$$AF = 7.4 \text{ dB}$$

$$CF = 1.6 \text{ dB}$$

$$AG = 29.0 \text{ dB}$$

$$AV = 5.0 \text{ dB}$$

$$FS = RR + LF$$

$$FS = 18 + 9 = 27 \text{ dB}\mu\text{V/m}$$

$$RR = 18.0 \text{ dB}\mu\text{V}$$

$$LF = 9.0 \text{ dB}$$

$$\text{Level in } \mu\text{V/m} = \text{Common Antilogarithm } [(27 \text{ dB}\mu\text{V/m})/20] = 22.4 \mu\text{V/m}$$

TEST REPORT

3.2 Radiated Emission Configuration Photograph

The worst case in radiated emission was found at 249.290 MHz

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

3.3 Radiated Emission Data

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.

Judgment: Passed by 0.6 dB

TEST REPORT

RADIATED EMISSIONS

Model: 10536

Date of Test: September 13, 2018

Worst-Case Operating Mode: Transmitting

Table 1
Pursuant to FCC Part 15 Section 15.235(b) Requirement

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp (dB)	Antenna Factor (dB)	Average Factor (dB)	Net at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
V	49.858	75.2	16	11.0	0.0	70.2	80.0	-9.8
V	99.716	29.9	16	12.0	-	25.9	43.5	-17.6
V	149.574	41.0	16	14.0	-	39.0	43.5	-4.5
V	199.432	38.9	16	16.0	-	38.9	43.5	-4.6
V	249.290	41.4	16	20.0	-	45.4	46.0	-0.6
V	299.148	20.9	16	22.0	-	26.9	46.0	-19.1
H	349.006	15.6	16	24.0	-	23.6	46.0	-22.4
V	398.864	15.3	16	25.0	-	24.3	46.0	-21.7
V	448.722	21.4	16	26.0	-	31.4	46.0	-14.6
V	498.580	19.0	16	26.0	-	29.0	46.0	-17.0
V	548.438	12.8	16	28.0	-	24.8	46.0	-21.2
V	598.296	19.5	16	29.0	-	32.5	46.0	-13.5
V	648.154	19.3	16	29.0	-	32.3	46.0	-13.7
V	698.012	18.3	16	30.0	-	32.3	46.0	-13.7
V	747.870	19.5	16	30.0	-	33.5	46.0	-12.5
V	797.728	22.7	16	31.0	-	37.7	46.0	-8.3
V	847.586	23.7	16	31.0	-	38.7	46.0	-7.3
V	897.444	25.2	16	32.0	-	41.2	46.0	-4.8
V	947.302	21.0	16	33.0	-	38.0	46.0	-8.0

- NOTES:
1. Peak Detector Data unless otherwise 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 sign in the column shows value below limit.
 4. Emission within the restricted band meets the requirement of FCC Part 15 Section 15.205.
 5. Measurement Uncertainty is ± 5.3 dB at a level of confidence of 95%.

TEST REPORT

4.0 EQUIPMENT PHOTOGRAPHS

For electronic filing, the photographs are saved with filename: external photos.pdf and internal photos.pdf.

5.0 PRODUCT LABELLING

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

6.0 TECHNICAL SPECIFICATIONS

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

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.

TEST REPORT

8.0 MISCELLANEOUS INFORMATION

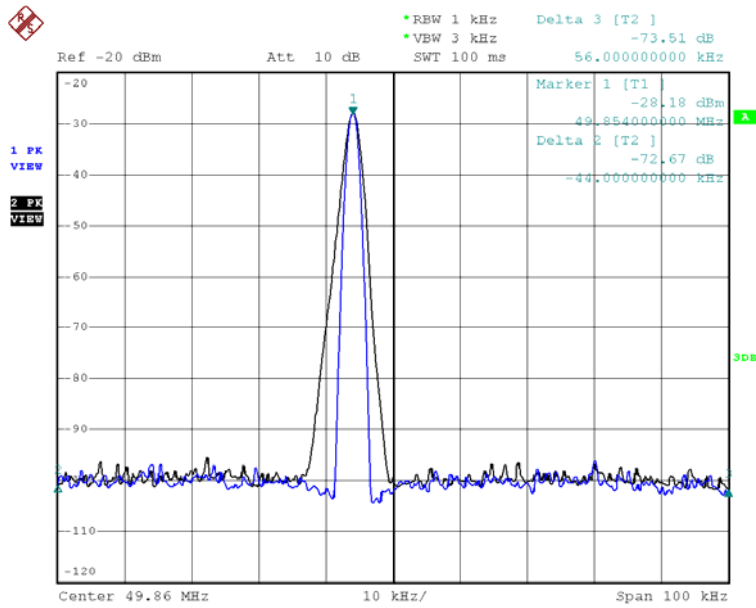
The miscellaneous information includes details of the test procedure and measured bandwidth.

8.1 Measured Bandwidth

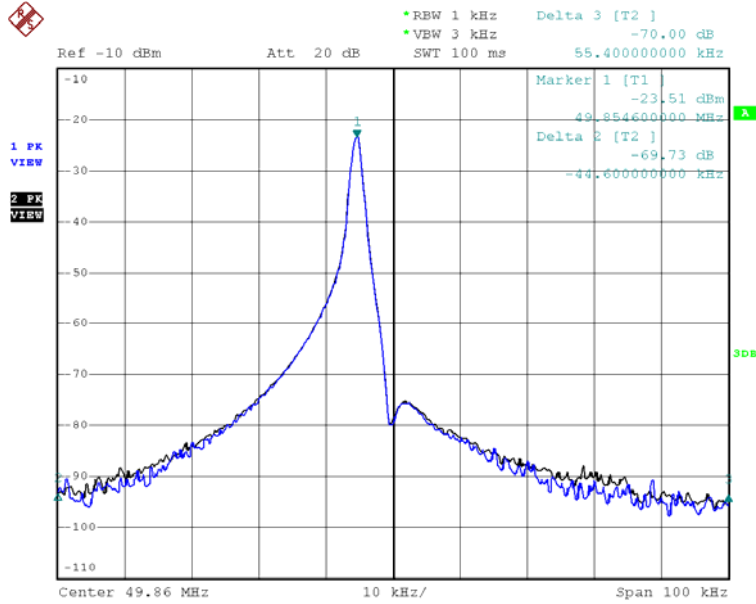
The plot shows the fundamental emission is confined in the specified band. The field strength of any emission appearing between the band edges and up to 10kHz above and below the band edges (49.81 and 49.91 MHz) is at least 74.0 dB below the carrier level. And at 49.81 & 49.91 MHz, there are at least 74.0 dB below the carrier level. It meets requirement of Section 15.235(b).

TEST REPORT

1kHz audio tone



Morse code



TEST REPORT

8.2 Discussion of Pulse Desensitization

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

8.3 Calculation of Average Factor

The average factor is not applicable for this device as the transmitted signal is a continuously signal.

TEST REPORT

8.4 Emissions Test Procedures

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

The transmitting equipment under test (EUT) is placed on a wooden turntable which is four feet in diameter and approximately 0.8m in height above the ground plane for emission measurement at or below 1GHz and 1.5m in height above the ground plane for emission measurement above 1GHz. 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 axis to obtain maximum emission levels. The antenna height and polarization are also varied during the testing to search for maximum signal levels. The height of the antenna is varied from one to four meters.

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. A detailed description for the calculation of the average factor can be found in Exhibit 8.3.

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.

TEST REPORT

8.4 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 were made as described in ANSI C63.10 (2013).

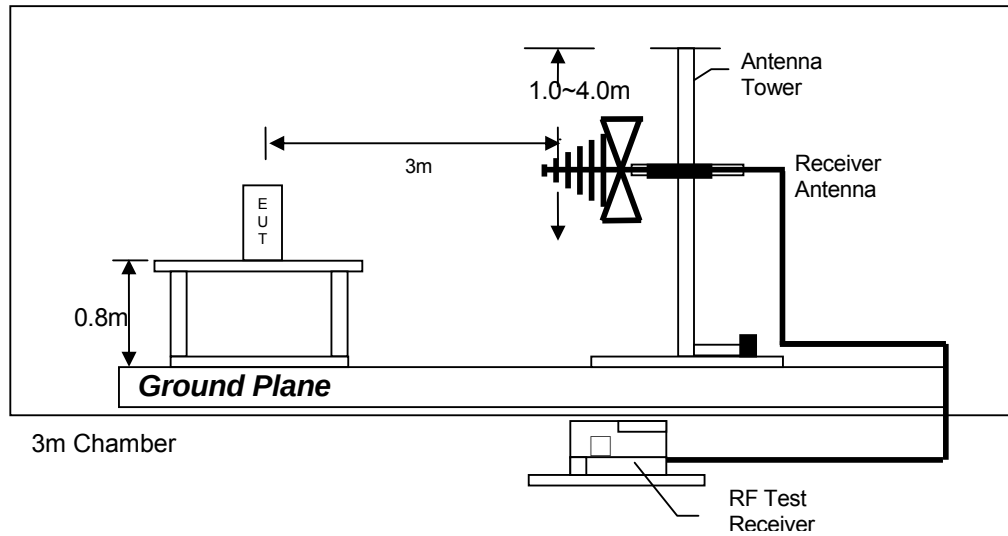
The IF bandwidth used for measurement of radiated signal strength was 100 kHz or greater when frequency is below 1000 MHz. Where pulsed transmissions of short enough pulse duration warrant, a greater bandwidth is selected according to the recommendations of Hewlett Packard Application Note 150-2. A discussion of whether pulse desensitivity is applicable to this unit is included in this report (See Exhibit 8.1). Above 1000 MHz, a resolution bandwidth of 3 MHz is used.

Transmitter measurements are normally conducted at a measurement distance of three meters. However, to assure low enough noise floor in the forbidden 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, unless otherwise reported. Measurements taken at a closer distance are so marked.

TEST REPORT

8.4.1 Radiated Emission Test Setup

The figure below shows the test setup, which is utilized to make these measurements.



Test setup of radiated emissions up to 1GHz

TEST REPORT

9.0 EQUIPMENT LIST

1) Radiated Emissions Test

Equipment	Spectrum Analyzer	EMI Test Receiver	Log Periodic Antenna
Registration No.	EW-3281	EW-3156	EW-1042
Manufacturer	ROHDESCHWARZ	R&S	EMCO
Model No.	FSV40	ESR26	3148
Calibration Date	January 02, 2018	November 10, 2017	June 19, 2017
Calibration Due Date	January 02, 2019	November 10, 2018	December 19, 2018

Equipment	Loop Antenna (1000Hz to 30MHz)	Biconical Antenna	14m Double Shield RF Cable
Registration No.	EW-2313	EW-0954	EW-2505
Manufacturer	ELECTROMETRI	EMCO	RADIAL
Model No.	EM-6876	3104C	nm / br5d / sma 14m
Calibration Date	March 08, 2018	February 27, 2018	October 30, 2017
Calibration Due Date	September 08, 2019	August 27, 2019	October 30, 2018

Equipment	RF Pre-amplifier 3 pcs (9kHz to 40GHz)
Registration No.	EW-3006
Manufacturer	SCHWARZBECK
Model No.	BBV 9718 BBV9744 BBV 9721
Calibration Date	January 30, 2018
Calibration Due Date	January 30, 2019

2) Bandedge Measurement

Equipment	Spectrum Analyzer
Registration No.	EW-2329
Manufacturer	R&S
Model No.	FSP3
Calibration Date	September 28, 2017
Calibration Due Date	September 28, 2018

END OF TEST REPORT