



28 May, 2012

***CHUNG MEI INDUSTRIES LIMITED
11th Floor, Chung Mei Centre 15B Hing Yip Street,
Kwun Tong, Kowloon, Hong Kong***

Dear Jing Hua Liu,

***Enclosed you will find your file copy of a Part 15 Certification (FCC ID:
N67-782019-R).***

***For your reference, TCB will normally take another 5 days for reviewing the report.
Approval will then be granted when no query is sorted.***

Please contact me if you have any questions regarding the enclosed material.

Sincerely,

A handwritten signature in black ink, appearing to read "Shawn Xing", with a long horizontal stroke extending to the right.

***Shawn Xing
Manager***

Enclosure

Intertek Testing Services Shenzhen Ltd. Kejiyuan Branch
6F, D Block, Huahan Building, Langshan Road, Nanshan District, Shenzhen, P. R. China
Tel: (86 755) 8601 6288 Fax: (86 755) 8601 6751 Website: www.china.intertek-etlsemko.com



CHUNG MEI INDUSTRIES LIMITED

Application
For
Certification
(FCC ID: N67-782019-R)

Transmitter

Sample Description : Bed Fan with Wireless Remote
Model: SKU 782019, E1212

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 [10-1-11]

SZ12050523-1
Billy Li
28 May, 2012

- The test results reported in this test report shall refer only to the sample actually tested and shall not refer or be deemed to refer to bulk from which such a sample may be said to have been obtained.
- 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 copy or distribute this report. 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 referenced from 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.
- For Terms And Conditions of the services, it can be provided upon request.
- The evaluation data of the report will be kept for 3 years from the date of issuance.

TRF no.: FCC 15C_TXb
FCC ID: N67-782019-R

Intertek Testing Services Shenzhen Ltd. Kejiyuan Branch

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INTERTEK TESTING SERVICES

LIST OF EXHIBITS

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MEASUREMENT/TECHNICAL REPORT

CHUNG MEI INDUSTRIES LIMITED - MODEL: SKU 782019, E1212
FCC ID: N67-782019-R

28 May, 2012

This report concerns (check one:) Original Grant ☒ Class II Change ☐

Equipment Type: DSC - Part 15 Security Remote Control Transmitter

Deferred grant requested per 47 CFR 0.457(d)(1)(ii)? Yes ☐ No ☒

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 ☒

If no, assumed Part 15, Subpart C for intentional radiator – the new 47 CFR [10-1-11 Edition] provision.

Report prepared by:

Shawn Xing
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List of attached file

Exhibit type	File Description	filename
Test Report	Test Report	report.pdf
Operation Description	Technical Description	Technical Description.pdf
Test Setup Photo	Radiated Emission	Radiated Photos.pdf
Test Report	Bandwidth Plot	Bandwidth Plot.pdf
Test Report	Timing Plot	Timing.pdf
External Photo	External Photo	External photos.pdf
Internal Photo	Internal Photo	Internal photos.pdf
Block Diagram	Block Diagram	Block Diagram.pdf
Schematics	Circuit Diagram	Circuit Diagram.pdf
ID Label/Location	Label Artwork and Location	Label and location.pdf
User Manual	User Manual	User Manual.pdf
Test Report	Average Factor	Average factor.pdf
Cover Letter	Letter of Agency	Letter of Agency.pdf
Certification Agreement	Certification Agreement	Certification Agreement.pdf

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EXHIBIT 1

GENERAL DESCRIPTION

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1.0 **General Description**

1.1 Product Description

The equipment under test (EUT) is a transmitter for Bed Fan with Wireless Remote operating at 315 MHz which is operated by a crystal. The EUT is powered by 2 x 1.5V AA batteries. The fan is controlled by the EUT through manual operation.

The transmitter will cease transmission within 0.19 seconds after activation.

The timing plot is saved with file name: Timing.pdf

Antenna Type: Internal wire antenna.

Modulation Type: ASK

The brief circuit description is saved with file name: Technical Description.pdf

The Model: E1212 is the same as the Model: SKU 782019 except the model no. for business purpose.

1.2 Related Submittal(s) Grants

This is an application for certification of a transmitter. The receiver, associated with this transmitter, has FCC ID: N67-782019-R-F and has been filed at the same time.

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1.3 Test Methodology

Radiated emission measurement was performed according to the procedures in ANSI C63.4 (2009). Radiated emission measurement was performed in semi-anechoic chamber. 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.

1.4 Test Facility

All of the tests are performed at:
Compliance Certification Services (Shenzhen) Inc. located at No.10-1Mingkedo Logistics Park, No.18Huanguan South RD. Guanlan Town, Baoan District Shenzhen China. This test facility and site measurement data have been fully placed on file with the FCC, the test firm registration number is 441872.

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EXHIBIT 2

SYSTEM TEST CONFIGURATION

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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 C63.4 (2009).

The EUT was powered by 2 x 1.5V new AA batteries during test.

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 unit was operated standalone and placed in the center of the turntable.

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.

For simplicity of testing, the unit was wired to transmit continuously.

The frequency range from 9KHz to 3.5GHz was searched for spurious emissions from the device. Only those emissions reported were detected. All other emissions were at least 20 dB below the applicable limits.

2.2 EUT Exercising Software

There was no special software to exercise the device.

2.3 Special Accessories

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

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2.4 Equipment Modification

Any modifications installed previous to testing by CHUNG MEI INDUSTRIES LIMITED will be incorporated in each production model sold/leased in the United States.

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

2.5 Measurement Uncertainty

When determining the test conclusion, the measurement uncertainty of test has been considered.

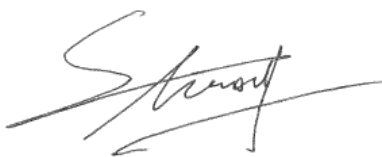
2.6 Support Equipment List and Description

This product was tested in a standalone configuration.

All the items listed under section 2.0 of this report are

Confirmed by:

Shawn Xing
Manager
Intertek Testing Services Shenzhen Ltd. Kejiyuan Branch



Signature

28 May, 2012

Date

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EXHIBIT 3

EMISSION RESULTS

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3.0 **Emission Results**

Data is included 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.

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3.1 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.

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

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
- PD = Pulse Desensitization in dB
- AV = Average Factor 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:

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

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3.1 Field Strength Calculation (cont'd)

Example

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 pulse desensitization factor of the spectrum analyzer was 0 dB, and the resultant average factor was -10 dB. The net field strength for comparison to the appropriate emission limit is 32 dB μ V/m. This value in dB μ V/m was converted to its corresponding level in μ V/m.

$$RA = 62.0 \text{ dB}\mu\text{V}$$

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

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

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

$$PD = 0 \text{ dB}$$

$$AV = -10 \text{ dB}$$

$$FS = 62 + 7.4 + 1.6 - 29 + 0 + (-10) = 32 \text{ dB}\mu\text{V/m}$$

$$\text{Level in } \mu\text{V/m} = \text{Common Antilogarithm} [(32 \text{ dB}\mu\text{V/m})/20] = 39.8 \mu\text{V/m}$$

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3.2 Radiated Emission Configuration Photograph

Worst Case Radiated Emission

314.971 MHz

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

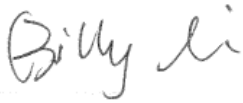
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3.3 Radiated Emission Data

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.

Judgement: Passed by 1.70 dB

TEST PERSONNEL:



Signature

Billy Li, Team Leader

Typed/Printed Name

28 May, 2012

Date

INTERTEK TESTING SERVICES

Applicant: CHUNG MEI INDUSTRIES LIMITED
Model: SKU 782019
Mode: TX Transmit
Sample: 1/1

Date of Test: 28 May, 2012

Table 1

Radiated Emissions
Pursuant to FCC 15.231(a): Emissions Requirement

Polarization	Frequency (MHz)	Peak Reading (dBμV)	Correction Factor (dB)	Peak Net at 3m (dBμV/m)	Peak Limit at 3m (dBμV/m)	Peak Margin (dB)
Horizontal	314.971	47.36	16.47	63.83	95.62	-31.79
Horizontal	629.460	22.87	23.18	46.05	75.62	-29.57
Horizontal	944.710	13.77	27.42	41.19	75.62	-34.43
Vertical	314.971	60.97	16.47	77.44	95.62	-18.18
Vertical	629.460	23.83	23.18	47.01	75.62	-28.61
Vertical	944.710	13.48	27.42	40.90	75.62	-34.72

Polarization	Frequency (MHz)	Peak Net at 3m (dBμV/m)	Average Factor (dB)	AV Net at 3m (dBμV/m)	AV Limit at 3m (dBμV/m)	AV Margin (dB)
Horizontal	314.971	63.83	-3.52	60.31	75.62	-15.31
Horizontal	629.460	46.05	-3.52	42.53	55.62	-13.09
Horizontal	944.710	41.19	-3.52	37.67	55.62	-17.95
Vertical	314.971	77.44	-3.52	73.92	75.62	-1.70
Vertical	629.460	47.01	-3.52	43.49	55.62	-12.13
Vertical	944.710	40.90	-3.52	37.38	55.62	-18.24

Notes:

1. Peak detector was used.
2. All measurements were made at 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: Billy Li

TRF no.: FCC 15C_TXb
FCC ID: N67-782019-R

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EXHIBIT 4

EQUIPMENT PHOTOGRAPHS

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4.0 **Equipment Photographs**

For electronic filing, the photographs are saved with filename: External photos.pdf and Internal photos.pdf

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EXHIBIT 5

PRODUCT LABELLING

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5.0 **Product Labelling**

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

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EXHIBIT 6

TECHNICAL SPECIFICATIONS

INTERTEK TESTING SERVICES

6.0 **Technical Specifications**

For electronic filing, the block diagram and schematics are saved with filename:
Block Diagram.pdf and Circuit Diagram.pdf

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EXHIBIT 7

INSTRUCTION MANUAL

INTERTEK TESTING SERVICES

7.0 **Instruction Manual**

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

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

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EXHIBIT 8

MISCELLANEOUS INFORMATION

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8.0 **Miscellaneous Information**

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

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8.1 **Measured Bandwidth**

For electronic filing, the plot shows the fundamental emission when modulated is saved with filename: Bandwidth Plot.pdf. From the plot, the bandwidth is observed to be 47kHz, at 20 dB where the bandwidth limit is 787.5 kHz. It fulfils the requirement of 15.231(C).

Figure 8.1 Bandwidth

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8.2 Discussion of Pulse Desensitization

The determination of pulse desensitivity was made in accordance with Hewlett Packard Application Note 150-2, *Spectrum Analysis ... Pulsed RF*.

The effective period (T_{eff}) was approximately 1.2 ms for a digital "1" bit, as shown in the plots of Exhibit 8.3. With a resolution bandwidth (3 dB) of 100 kHz, the pulse desensitivity factor was 0 dB.

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8.3 Calculation of Average Factor

Averaging factor in dB = $20 \log (\text{duty cycle})$

The specification for output field strengths in accordance with the FCC rules specifies measurements with an average detector. During testing, a spectrum analyzer incorporating a peak detector was used. Therefore, a reduction factor can be applied to the resultant peak signal level and compared to the limit for measurement instrumentation incorporating an average detector.

The time period over which the duty cycle is measured is 100 milliseconds, or the repetition cycle, whichever is a shorter time frame. The worst case (highest percentage on) duty cycle is used for the calculation. The duty cycle is measured by placing the spectrum analyzer in zero scan (receiver mode) and linear mode at maximum bandwidth (3 MHz at 3 dB down) and viewing the resulting time domain signal output from the analyzer on a Tektronix oscilloscope. The oscilloscope is used because of its superior time base and triggering facilities.

A plot of the worst-case duty cycle as detected in this manner are saved with filename: Average factor.pdf

The duty cycle is simply the on-time divided by the period:

The duration of one cycle = 67.2ms
Effective period of the cycle = $8.4 + 1.2 \times 9 + 3.2 \times 8$
= 44.8ms

DC = $44.8\text{ms} / 67.2\text{ms} = 0.6667$ or 66.67%

Therefore, the averaging factor is found by $20 \log_{10} 0.6667 = -3.52 \text{ dB}$

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8.4 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 C63.4 - 2009.

The transmitting equipment under test (EUT) is placed on a wooden turntable which is four feet in diameter and approximately one meter 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. 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.

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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 are made as described in ANSI C63.4 - 2009.

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 transmissions of short enough pulse duration warrant, a greater bandwidth pulsed 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 8.2). Above 1000 MHz, a resolution bandwidth of 1 MHz 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.

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EXHIBIT 9

TEST EQUIPMENT LIST

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9.0 Test Equipment List

Serial No.	Equipment	Manufacturer	Model No.	Cal. Date	Due Date
D286	Horn Antenna	SCHWARZBECK	BBHA9120D	19-Mar-12	19-Mar-13
US44300399	PSA Series Spectrum Analyzer	Agilent	E4446A	19-Mar-12	19-Mar-13
5082	BiConiLog Antenna	SCHAFFNER	CBL6143	03-Jun-11	03-Jun-12
1411843	Amplifier	MITEQ	AM-1604-3000	18-Mar-12	18-Mar-13
966(2)	Anechoic Chamber	SAEMC	9*6*6M	07-Mar-12	07-Mar-13
1029	Active Loop Antenna	A、R、A	PLA-1030/B	19-Mar-12	19-Mar-13