

Produkte
Products

Prüfbericht - Nr.: 14037319 001

Test Report No.:

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Auftraggeber: Wincotime Electronic Ltd.
Client: Rm2, 8th Floor, Fonda Industrial Building
37-30 Au Pui Wan Street, Fo Tan
Shatin, N.T. Hong Kong

Gegenstand der Prüfung: Short Range Device - Radio Control Toy Transmitter (2.4GHz)
Test Item:

Bezeichnung: YOO-C **Serien-Nr.:** Engineering sample
Identification: *Serial No.:*

Wareneingangs-Nr.: A000139075-001 **Eingangsdatum:** 03.12.2014
Receipt No.: *Date of Receipt:*

Zustand des Prüfgegenstandes bei Anlieferung: Test sample(s) is/are not damaged and
Condition of test item at delivery: suitable for testing.

Prüfört: Hong Kong Productivity Council
Testing Location: HKPC Building, 78 Tat Chee Avenue, Kowloon, Hong Kong

Prüfgrundlage: FCC Part 15 Subpart C
Test Specification: ANSI C63.4-2003

Prüfergebnis: Das vorstehend beschriebene Gerät wurde geprüft und entspricht oben
Test Results: genannter Prüfgrundlage.
The above mentioned product was tested and **passed**.

Prüflaboratorium: TÜV Rheinland Hong Kong Ltd.
Testing Laboratory: 8 - 10/F., Goldin Financial Global Square, 7 Wang Tai Road, Kowloon Bay, Kowloon, Hong Kong

geprüft/ tested by:

kontrolliert/ reviewed by:

07.01.2015 Benny Lau
Datum Name/Stellung
Date Name/Position


Unterschrift
Signature

07.01.2015 Sharon Li
Datum Name/Stellung
Date Name/Position


Unterschrift
Signature

Sonstiges: FCC ID: 2ABPTYX3800
Other Aspects

Abkürzungen: P(ass) = entspricht Prüfgrundlage
F(ail) = entspricht nicht Prüfgrundlage
N/A = nicht anwendbar
N/T = nicht getestet

Abbreviations: P(ass) = passed
F(ail) = failed
N/A = not applicable
N/T = not tested

Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.
This test report relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any safety mark on this or similar products.

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Test Summary

Conducted Emissions

Result: N/A

20dB bandwidth

Result: Pass

Radiated Emission of Carrier Frequency

Result: Pass

Spurious Radiated Emissions

Result: Pass

Product information

Manufacturers declarations

	Transceiver
Operating frequency range	2402-2480 MHz
Type of modulation	GFSK
Number of channels	40
Type of antenna	Integral PCB Antenna
Power level	fix
Connection to public utility power line	No
Nominal voltage	V _{nom} : 3.0Vdc (1 x 3V CR2032 battery)

Product function and intended use

The equipment under test (EUT) is a Bluetooth Low Energy Transceiver operating at 2.4GHz. It is a pedometer. And it is powered by 3.0Vdc (1 x 3V CR2032 battery).

FCC ID: **2ABPTYX3800**

Models	Product description
YOO-C	Bluetooth-LE Pedometer

Submitted documents

Circuit Diagram
Block Diagram
Bill of material
User manual
Rating Label

Independent Operation Modes

The basic operation modes are:

- Transmitting Bluetooth signal .

For further information refer to User Manual

Related Submittal(s) Grants

This is a single application for certification of the transmitter.

Remark

- None.

Test Set-up and Operation Mode

Principle of Configuration Selection

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the instructions for use.

Test Operation and Test Software

Test operation should refer to test methodology.

- Test software provided by the applicant is used to fix the transmitting channel.

Special Accessories and Auxiliary Equipment

The product has been tested together with the following additional accessories:

- none

Countermeasures to achieve EMC Compliance

- none

Test Methodology

Radiated Emission

The radiated emission measurements were performed according to the procedures in ANSI C63.4-2003.

The equipment under test (EUT) was placed at the middle of the 80 cm height turntable, and the turntable is 3 meters far from the measuring antenna. During the testing, the EUT was operated standalone and arranged for maximum emissions. The EUT was tested in three orthogonal planes.

The investigation is performed with the EUT rotated 360 °, the antenna height scanned between 1m and 4m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations. Repeat the measurement steps until the maximum emissions were obtained.

All radiated tests were performed at an antenna to EUT with 3 meters distance, unless stated otherwise in particular parts of this test report.

Field Strength Calculation

The field strength at 3 m was established by adding the meter reading of the spectrum analyzer to the factors associated with antenna correction factor, cable loss, preamplifiers and filter attenuation.

The equation is expressed as follow:

$$FS = R + AF + CF + FA - PA$$

Where FS = Field Strength in dBuV/m at 3 meters.
R = Reading of Spectrum Analyzer in dBuV.
AF = Antenna Factor in dB.
CF = Cable Attenuation Factor in dB.
FA = Filter Attenuation Factor in dB.
PA = Preamplifier Factor in dB.

FA and PA are only be used for the measuring frequency above 1 GHz.

List of Test and Measurement Instruments

Hong Kong Productivity Council (Registration number: 90656)

Radiated Emission

Equipment	Manufacturer	Type	S/N	Cal. Due date
Semi-anechoic Chamber	Frankonia	Nil	Nil	14-Apr-15
Cable	Hubersuhner	SUCOFLEX 104	N/A	31-Mar-16
Test Receiver	R & S	ESU40	72799 /6	20-Jun-15
Bi-conical Antenna	R & S	HK116	100190	11-Jun-15
Log Periodic Antenna	R & S	HL223	100241	10-Jun-15
Coaxial cable	Harbour	LL335	841516/017	10-Jun-16
Microwave amplifier 0.5-26.5GHz, 25dB gain	HP	83017A	N/A	30-Dec-15
High Pass Filter (cutoff freq. =1000MHz)	Trilithic	23042	3123A00437	28-Oct-15
Horn Antenna	EMCO	3115	9829213	11-Jun-15
Active Loop Antenna	EMCO	6502	9002-3347	17-May-15

Results FCC Part 15 – Subpart C

Subclause 15.203 – Antenna Information		Pass
Requirement:	No antenna other than that furnished by the responsible party shall be used with the device	
Results:	Permanent attached antenna	
Verdict:	Pass	

Subclause 15.207 – Conducted Emission on AC Mains	N/A
There is no AC power input or output ports on the EUT.	

Subclause 15.215 (c) – 20 dB Bandwidth		Pass		
Requirement:	The intentional radiators must be designed to ensure that the 20dB bandwidth of the emission, is contained within the frequency band designated in the rule section under which the equipment is operated.			
Test Specification : ANSI C63.4 – 2003 Mode of operation : Tx mode Port of testing : Enclosure RBW/VBW : 10 kHz/ 30 kHz Supply voltage : 3.0VDC Temperature : 23°C Humidity : 50%				
Results:		Pass		
Frequency (MHz)	20 dB left (MHz)	Limit (MHz)	20 dB right (MHz)	Limit (MHz)
2402	2401.564	> 2400	2402.604	< 2483.5
2440	2439.564	> 2400	2440.604	< 2483.5
2480	2479.564	> 2400	2480.620	< 2483.5

Subclause 15.249 (a) – Radiated Emission (Fundamental and Harmonics)			Pass
Test Specification : ANSI C63.4 – 2003 Mode of operation : Tx mode Port of testing : Enclosure RBW/VBW : 120 kHz for f < 1 GHz 1 MHz / 3 MHz for f > 1 GHz Supply voltage : 3.0VDC Temperature : 23°C Humidity : 50%			
Requirement:		The field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following limit.	
Results:		Pass	
Fundamental Frequency 2402 MHz		Vertical Polarization	
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	
2402.000	85.33	114.0 / P	
2402.000	69.38	94.0 / A	
Fundamental Frequency 2402 MHz		Horizontal Polarization	
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	
2402.000	91.28	114.0 / P	
2402.000	74.07	94.0 / A	
Harmonics 2402MHz		Vertical Polarization	
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	
4804.000	53.72	74.0 / P	
4804.000	39.72	54.0 / A	
7206.000	58.78	74.0 / P	
7206.000	45.35	54.0 / A	
Harmonics 2402 MHz		Horizontal Polarization	
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	
4804.000	52.57	74.0 / P	
4804.000	39.48	54.0 / A	
7206.000	58.31	74.0 / P	
7206.000	44.67	54.0 / A	
Fundamental Frequency 2440 MHz		Vertical Polarization	
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	
2440.000	83.87	114.0 / P	
2440.000	68.71	94.0 / A	
Fundamental Frequency 2440 MHz		Horizontal Polarization	
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	

2440.000	88.88	114.0 / P
2440.000	72.50	94.0 / A
Harmonics 2440 MHz Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
No peak found	---	74.0 / P
No peak found	---	54.0 / A
No peak found	---	74.0 / P
No peak found	---	54.0 / A
Harmonics 2440 MHz Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
No peak found	---	74.0 / P
No peak found	---	54.0 / A
No peak found	---	74.0 / P
No peak found	---	54.0 / A
Fundamental Frequency 2480 MHz Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2480.000	81.04	114.0 / P
2480.000	66.45	94.0 / A
Fundamental Frequency 2480 MHz Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2480.000	84.05	114.0 / P
2480.000	68.82	94.0 / A
Harmonics 2480 MHz Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
No peak found	---	74.0 / P
No peak found	---	54.0 / A
No peak found	---	74.0 / P
No peak found	---	54.0 / A
Harmonics 2480 MHz Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
No peak found	---	74.0 / P
No peak found	---	54.0 / A
No peak found	---	74.0 / P
No peak found	---	54.0 / A

Subclause 15.205, 15.249 (d) – Spurious Radiated Emissions

Pass

Test Specification : ANSI C63.4 - 2003 Mode of operation : Tx mode Port of testing : Enclosure Detector : Peak RBW/VBW : 120 kHz for f < 1 GHz 1 MHz / 3 MHz for f > 1 GHz Supply voltage : 3.0VDC Frequency range : 9kHz to tenth harmonic Temperature : 23°C Humidity : 50%		
Requirement: Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.		
Results: Pass All three transmit frequency modes comply with the field strength within the restricted bands. There is no spurious found below 30MHz.		
Tx frequency 2402 MHz Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2400.000	61.11	74.0 / P
2400.000	48.80	54.0 / A
Tx frequency 2402 MHz Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2400.000	67.11	74.0 / P
2400.000	53.13	54.0 / A
Tx frequency 2440 MHz Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
No peak found	---	74.0 / P
No peak found	---	54.0 / A
Tx frequency 2440 MHz Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
No peak found	---	74.0 / P
No peak found	---	54.0 / A
Tx frequency 2480 MHz Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2483.500	51.05	74.0 / P
2483.500	35.66	54.0 / A
Tx frequency 2480 MHz Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2483.500	54.35	74.0 / P
2483.500	37.22	54.0 / A