

Report No: JYTSZB-R12-2100303

FCC REPORT

Applicant:	Shenzhen Friendcom Technology Development Co., Ltd.				
Address of Applicant:	5-6 Floor, Building 17, Guangqian Industrial Park, Xili, Nanshan District, Shenzhen, Guangdong Province, China				
Equipment Under Test (E	EUT)				
Product Name:	Wireless Pulse Acquisition Module PULSE915-LRW				
Model No.:	FC-714				
Trade mark:	Friendcom				
FCC ID:	UU3FC-714				
Applicable standards:	FCC CFR Title 47 Part 15 Subpart B				
Date of sample receipt:	02 Mar., 2021				
Date of Test:	03 Mar., to 01 May, 2021				
Date of report issued:	12 May, 2021				
Test Result:	PASS *7				

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the JYT product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

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Version 2

Version No.	Date	Description
00	12 May, 2021	Original

Tested by:

Test Engineer Winner Thang Project Engineer

Date: 02 May, 2021

Reviewed by:

Date: 12 May, 2021

Project No.: JYTSZE2103003



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4 Test Summary

Test Item	Section in CFR 47	Result	
Conducted Emission	Part 15.107	N/A	
Radiated Emission	Part 15.109	Pass	
Remark: 1. Pass: The EUT complies with the essential requirements in the standard. 2. N/A: The EUT not applicable of the test item.			
Test Method: ANSI C63.4:2014			



5 General Information

5.1 Client Information

Applicant:	Shenzhen Friendcom Technology Development Co., Ltd.	
Address:	5-6 Floor, Building 17, Guangqian Industrial Park, Xili, Nanshan District, Shenzhen, Guangdong Province, China	
Manufacturer:	Shenzhen Friendcom Technology Development Co., Ltd.	
Address:	5-6 Floor, Building 17, Guangqian Industrial Park, Xili, Nanshan District, Shenzhen, Guangdong Province, China	
Factory:	Shenzhen Friendcom Technology Development Co., Ltd.	
Address:	Building 20, Zhubaocheng industry park, 568 Huanchang North Road, Changping Town, Dongguan, Guangdong Province, China	

5.2 General Description of E.U.T.

Product Name:	Wireless Pulse Acquisition Module PULSE915-LRW		
Model No.:	FC-714		
Power supply:	DC 3.6V lithium battery		
Test Sample Condition:	The test samples were provided in good working order with no visible defects.		

5.3 Test Mode

Operating mode Detail description			
Working mode	Keep the EUT in Working mode		
Working modeKeep the EUT in Working modeThe sample was placed 0.8m above the ground plane of 3m chamber. Measurements in both horizontal ar vertical polarities were performed. During the test, each emission was maximized by: having the EU continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.			

5.4 Measurement Uncertainty

Parameters	Expanded Uncertainty
Conducted Emission (9kHz ~ 30MHz)	±1.60 dB (k=2)
Radiated Emission (9kHz ~ 30MHz)	±3.12 dB (k=2)
Radiated Emission (30MHz ~ 1000MHz)	±4.32 dB (k=2)
Radiated Emission (1GHz ~ 18GHz)	±5.16 dB (k=2)
Radiated Emission (18GHz ~ 40GHz)	±3.20 dB (k=2)

5.5 Description of Support Units

N/A

5.6 Related Submittal(s) / Grant (s)

This is an original grant, no related submittals and grants.

5.7 Description of Cable Used

Cable Type Description		Length	From	То
N/A				

JianYan Testing Group Shenzhen Co., Ltd.

No.101, Building 8, Innovation Wisdom Port, No.155 Hongtian Road, Huangpu Community, Xinqiao Street, Bao'an District, Shenzhen, Guangdong, People's Republic of China. Telephone: +86 (0) 755 23118282 Fax: +86 (0) 755 23116366

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5.8 Additions to, deviations, or exclusions from the method

No

5.9 Laboratory Facility

The test facility is recognized, certified, or accredited by the following organizations:

• FCC - Designation No.: CN1211

JianYan Testing Group Shenzhen Co., Ltd. has been accredited as a testing laboratory by FCC(Federal Communications Commission). The test firm Registration No. is 727551.

• ISED – CAB identifier.: CN0021

The 3m Semi-anechoic chamber of JianYan Testing Group Shenzhen Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.

• A2LA - Registration No.: 4346.01

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 General requirements for the competence of testing and calibration laboratories. The test scope can be found as below link: <u>https://portal.a2la.org/scopepdf/4346-01.pdf</u>

5.10 Laboratory Location

JianYan Testing Group Shenzhen Co., Ltd. Address: No.101, Building 8, Innovation Wisdom Port, No.155 Hongtian Road, Huangpu Community, Xinqiao Street, Bao'an District, Shenzhen, Guangdong, People's Republic of China. Tel: +86-755-23118282, Fax: +86-755-23116366 Email: info@ccis-cb.com, Website: http://www.ccis-cb.com



5.11 Test Instruments list

Radiated Emission:					
Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
3m SAC	ETS	9m*6m*6m	966	01-19-2021	01-18-2024
Loop Antenna	SCHWARZBECK	FMZB1519B	00044	03-07-2020	03-06-2021
BiConiLog Antenna	SCHWARZBECK	VULB9163	497	03-03-2021	03-02-2022
Horn Antenna	SCHWARZBECK	BBHA9120D	916	03-03-2021	03-02-2022
Horn Antenna	SCHWARZBECK	BBHA9120D	1805	06-18-2020	06-17-2021
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170582	11-18-2020	11-17-2021
EMI Test Software	AUDIX	E3	Version: 6.110919b		b
Pre-amplifier	HP	8447D	2944A09358	03-03-2021	03-02-2022
Pre-amplifier	CD	PAP-1G18	11804	03-03-2021	03-02-2022
Spectrum analyzer	Rohde & Schwarz	FSP30	101454	03-03-2021	03-02-2022
Spectrum analyzer	Rohde & Schwarz	FSP40	100363	11-18-2020	11-17-2021
EMI Test Receiver	Rohde & Schwarz	ESRP7	101070	03-03-2021	03-02-2022
Cable	ZDECL	Z108-NJ-NJ-81	1608458	03-03-2021	03-02-2022
Cable	MICRO-COAX	MFR64639	K10742-5	03-03-2021	03-02-2022
Cable	SUHNER	SUCOFLEX100	58193/4PE	03-03-2021	03-02-2022

Conducted Emission:					
Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
EMI Test Receiver	Rohde & Schwarz	ESCI	101189	03-03-2021	03-02-2022
Pulse Limiter	SCHWARZBECK	OSRAM 2306	9731	03-03-2021	03-02-2022
LISN	CHASE	MN2050D	1447	03-03-2021	03-02-2022
LISN	Rohde & Schwarz	ESH3-Z5	8438621/010	06-18-2020	06-17-2021
Cable	HP	10503A	N/A	03-03-2021	03-02-2022
EMI Test Software	AUDIX	E3	Version: 6.110919b		





6 Test results and Measurement Data

6.1 Conducted Emission

Test Requirement:	FCC Part 15 B Section 15.107			
Test Frequency Range:	150kHz to 30MHz			
Class / Severity:	Class B			
Receiver setup:	RBW=9kHz, VBW=30kHz			
Limit:	Frequency range (MHz)		(dBµV)	
		Quasi-peak	Average	
	0.15-0.5	66 to 56*	56 to 46*	
	0.5-5 0.5-30	56 60	46 50	
	* Decreases with the logarithm		50	
Test setup:	Reference Plane	or the frequency.		
Test procedure	LISN 40cm 80cm Filter AC power AUX EQUIPMENT E.U.T Filter AC power Equipment E.U.T EMI Receiver Test table/Insulation plane EMI Receiver Remark E.U.T. Equipment Under Test LISN' Line Impedence Stabilization Network Test table height=0.8m AC AC			
Test procedure	 The E.U.T and simulators are connected to the main power through a line impedance stabilization network(L.I.S.N.). The provide a 50ohm/50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs). Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4(latest version) on conducted measurement. 			
Test Instruments:	Refer to section 5.11 for details			
Test mode:	Refer to section 5.3 for details			
Test results:	N/A			





6.2 Radiated Emission

Test Requirement:	FCC Part 15 B Section 15.109								
Test Frequency Range:	30MHz to 6000MHz								
Test site:	Measurement Distance: 3m (Semi-Anechoic Chamber)								
Receiver setup:	Frequency	Detector	r	RBW	VBW	Remark			
	30MHz-1GHz Quasi-p				300kHz	Quasi-peak Value			
	Above 1GHz Pea				3MHz	Peak Value			
	Above 10112	RMS		1MHz	3MHz	Average Value			
Limit:	Frequenc		Limit (dBuV/m @3m)			Remark			
	30MHz-88M		40.0		Quasi-peak Value				
	88MHz-216M		43.5		Quasi-peak Value				
	216MHz-960		46.0			Quasi-peak Value			
	960MHz-1G	5HZ	54.0			Quasi-peak Value			
	Above 1G	Hz –	54.0 74.0			Average Value Peak Value			
Test setup:	Below 1GHz			74.0		Feak value			
	Antenna Tower FUT Antenna Tum O.8m Antenna Ground Plane Above 1GHz								
		EUT		Horn Antenna Horn Antenna ence Plane	Antenna Tower				
Test Procedure:	ground at a 3 n degrees to dete 2. The EUT was s which was mou 3. The antenna he ground to deter	neter semi-a ermine the p set 3 meters unted on the eight is varie rmine the ma	anec oositi awa top ed fro axim	hoic camber on of the hig ay from the in of a variable om one mete num value of	The table phest radiat nterference cheight an er to four m the field st	e-receiving antenna, tenna tower. leters above the			

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	4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
	5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
	6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
Test Instruments:	Refer to section 5.11 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed
Remark:	All of the observed value above 6GHz ware the niose floor , which were no recorded



Measurement Data:

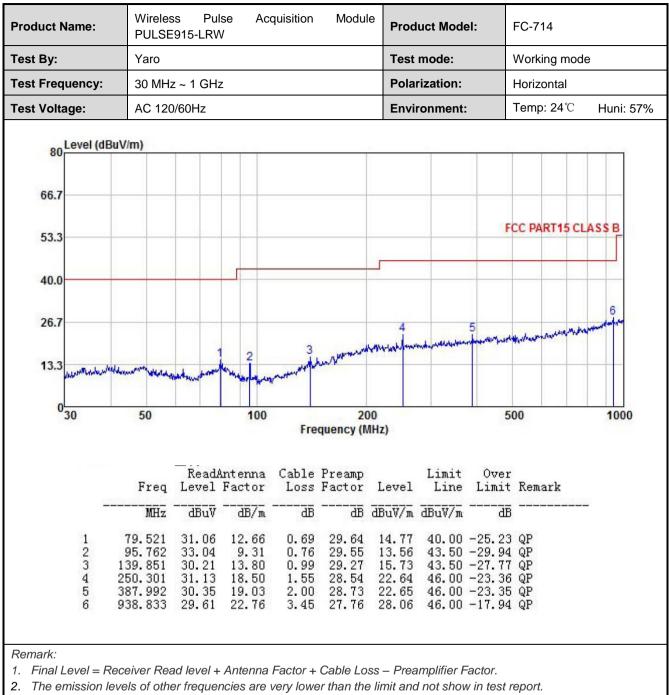
Below 1GHz:

Product Name:	Wirele PULS	ess Pu E915-LR\	ulse Ac W	le Prod	Product Model:			FC-714					
Test By:	Yaro	Yaro					Test mode:			Working mode			
Test Frequency:	30 MF	30 MHz ~ 1 GHz AC 120/60Hz					Polarization:			Vertical			
Test Voltage:	AC 12						onment:	Т	Temp: 24°C Hun			i: 57%	
Lovel (dD													
80 Level (dB	uv/m)		TIT										
66.7													
52.2								FC	C PAR	T15 CL	ASSB		
53.3													
40.0													
40.0													
26.7										6	- Marken Mark		
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13.3	50		3 100 Antenna	Fr	2	00 MHz)	Limit Line	50 Over				0	
13.3 mm	50	ReadA	3 100 Antenna	Fr	2 equency() Preamp	00 MHz)	Limit Line	50 Over Limit				0	
	50 Freq MHz 36.127	Read& Level dBuV 37.12	3 100 Intenna Factor dB/m 12.65	Cable Loss dB 0.39	2 equency (Preamp Factor dB 29.94	00 MHz) Level dBuV/m 20.22	Limit Line dBuV/m 40.00	50 Over Limit 	Rema 			0	
	50 Freq MHz 36. 127 43. 353	Read& Level 	3 100 Intenna Factor dB/m 12.65 12.87	Cable Loss dB 0.39 0.45	2 equency (Preamp Factor dB 29.94 29.87	00 MHz) Level dBuV/m 20.22 22.07	Limit Line dBuV/m 40.00 40.00	50 Over Limit -19.78 -17.93	Rema QP QP			0	
	50 Freq MHz 36. 127 43. 353 79. 521	Read# Level 	3 100 Intenna Factor dB/m 12.65 12.87 12.66	Cable Loss dB 0.39 0.45 0.69	2 equency (Preamp Factor dB 29.94 29.87 29.64	00 MHz) 20.22 22.07 17.40	Limit Line dBuV/m 40.00 40.00 40.00	50 Over Limit -19.78 -17.93 -22.60	Rema QP QP QP			0	
	50 Freq MHz 36. 127 43. 353	Read& Level 	3 100 Intenna Factor dB/m 12.65 12.87	Cable Loss dB 0.39 0.45	2 equency (Preamp Factor dB 29.94 29.87	00 MHz) Level dBuV/m 20.22 22.07	Limit Line dBuV/m 40.00 40.00 40.00 40.00 43.50	50 Over Limit -19.78 -17.93	Rema QP QP QP QP			0	

2. The emission levels of other frequencies are very lower than the limit and not show in test report.

3. The Aux Factor is a notch filter switch box loss, this item is not used.





3. The Aux Factor is a notch filter switch box loss, this item is not used.



Above 1GHz:

	z ~ 6 GHz 20/60Hz					mode: ization:		orking mode			
AC 12					Polar	ization:	Ve	ertical			
	20/60Hz							Vertical			
dBuV/m)					Envir	onment:	Те	Temp: 24℃ F			
dBuV/m)											
		_					_	FCC DADT A			
								FCC PART 1	5 B-PK		
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1200	1500		2000	oquoney (I	MU7)			5000	6000		
			rie	squency (i	wnz)						
	ReadA	ntenna	Cable	Preamp		Limit	Over				
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark			
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	ā				
3813.107	58.30	29.08	10.90	54.44	43.84	74.00	-30.16	Peak			
3813.107	48.26	29.08	10.90	54.44	33.80	54.00	-20.20	Average			
		32.00									
	1200 Freq MHz 3813.107 3813.107 4238.283 4238.283 5369.154	1200 1500 1200 1500 ReadA Level MHz dBuV 3813.107 58.30 3813.107 48.26 4238.283 57.92 4238.283 47.87 5369.154 56.82	1200 1500 1200 1500 ReadAntenna Level Factor MHz dBuV dB/m 3813.107 58.30 29.08 3813.107 48.26 29.08 4238.283 57.92 29.70 4238.283 47.87 29.70 5369.154 56.82 32.00	1200 1500 2000 Freq ReadAntenna Cable Freq Level Factor Loss MHz dBuV dB/m dB 3813.107 58.30 29.08 10.90 3813.107 58.30 29.08 10.90 3238.283 57.92 29.70 11.42 4238.283 47.87 29.70 11.42 5369.154 56.82 32.00 13.24	1200 1500 2000 Frequency (I ReadAntenna Cable Preamp Freq Level Factor Loss Factor MHz dBuV dB/m dB 3813.107 58.30 29.08 10.90 54.44 3813.107 48.26 29.08 10.90 54.44 4238.283 57.92 29.70 11.42 54.39 4238.283 47.87 29.70 11.42 54.39 5369.154 56.82 32.00 13.24 54.32	1200 1500 2000 Frequency (MHz) 1200 1500 2000 Frequency (MHz) ReadAntenna Freq Cable Preamp Loss Freq Level Factor MHz dBuV dB/m dB 3813.107 58.30 29.08 10.90 54.44 43.84 3813.107 48.26 29.08 10.90 54.44 33.80 4238.283 57.92 29.70 11.42 54.39 44.65 4238.283 47.87 29.70 13.24 54.32 47.74	1200 1500 2000 Frequency (MHz) 1200 1500 2000 Frequency (MHz) ReadAntenna Freq Cable Preamp Level Factor Limit Loss Factor Level MHz dBuV dB/m dB MHz dBuV dB/m dB dBuV/m 3813.107 58.30 29.08 10.90 54.44 43.84 74.00 3813.107 48.26 29.08 10.90 54.44 33.80 54.00 4238.283 57.92 29.70 11.42 54.39 44.65 74.00 5369.154 56.82 32.00 13.24 54.32 47.74 74.00	Image: Image in the i	Image: Non-Ambund State Image: Non-Amb		



