Report No. : FC861107





FCC EMI TEST REPORT

Filing Type	: Certification
FCC ID	: 2APYSG019C
Equipment	: Wireless Charger
Brand Name	: G
Model Name	: G019C
Applicant	: Lanto Electronic Ltd No.399 baisheng Road, jinxi Town, Kunshan City, Jiangsu, 215324, China
Manufacturer	: Lanto Electronic Ltd No.399 baisheng Road, jinxi Town, Kunshan City, Jiangsu, 215324, China
Standard	: 47 CFR FCC Rules and Regulations Part 15 Subpart B, Class B Digital Device

The product was received on Jun. 11, 2018, and testing was started from Jun. 14, 2018 and completed on Jul. 27, 2018. We, SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.4-2014 and shown compliance with the applicable technical standards.

The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Approved by: William Li

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)

TEL : 886-3-327-3456 FAX : 886-3-327-0973 Report Template No.: HE3-A1_3 Ver2.0

Page Number: 1 of 34Issued Date: Jul. 30, 2018Report Version: 01



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Photographs of EUT v01



Report No.	Version	Description	Issued Date
FC861107	01	Initial issue of report	Jul. 30, 2018

History of this test report



Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
4	15.107	Conducted Emissions of Powerline	PASS	Under limit 9.23 dB at 2.798574 MHz
5.1	15.109	Radiated Emissions below 1GHz	PASS	Under limit 4.84 dB at 35.27 MHz
5.2	15.109	Radiated Emissions above 1GHz	Not Applicable	Note 1
Note 1: Th up	e highest frequency of the internal to 1GHz.	sources of the EUT is less than 108M	Hz, so the measuremer	nt shall only be made

Reviewed by: Teddy Chang

Report Producer: Kelly Yu



1. General Description of Equipment under Test

1.1. Basic Description of Equipment under Test

Equipment	:	Wireless Charger		
Model No.	:	G019C		
Power Supply Type	:	From Adapter(Switching)		
AC Power Cord	:	Wall-Mount, 2 pin		
DC Power Cable (Type-C USB)	:	AL-F-Shielded, 2.0 m, 6 pin		
The maximum operating frequency : 148.5 kHz				

1.2. Feature of Equipment under Test

Accessories					
Item	Brand	Model	Spec. Description		
Adapter	flextronics	G1000-US	Input: 100-240VAC, 50-60Hz, 0.5A Output: 5VDC, 3.0A / 9VDC, 2.0A		
Type-C USB Cable	-	-	2.0 m		
Type-C USB Cable	-	-	1.5 m		

For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

1.3. Modification of EUT

No modifications to the EUT were made.



2. Test Configuration of Equipment under Test

2.1. Test Manner

a. Both USB cable: 1.5m and 2.0m were pre-tested. The worst emission was found on USB cable: 2.0m.

b. The equipment under test were performed the following test modes:

Test Items	Description of test modes
	Mode 1. Adapter Charge+EUT (Z Axis, Horizontal)+RX Load(Y Axis)
Conducted	Mode 2. Adapter Charge+EUT (Z Axis, Horizontal)+RX Load(X Axis)
Emission	Mode 3. Adapter Charge+EUT (Z Axis, Horizontal)+iPhone(Y Axis)
	Mode 4. Adapter Charge+EUT (Z Axis, Horizontal)+iPhone(X Axis)
	Mode 1. Adapter Charge+EUT (Z Axis, Horizontal)+RX Load(Y Axis)
Radiated	Mode 2. Adapter Charge+EUT (Z Axis, Horizontal)+RX Load(X Axis)
<pre>chelow 1GHz></pre>	Mode 3. Adapter Charge+EUT (Z Axis, Horizontal)+iPhone(Y Axis)
	Mode 4. Adapter Charge+EUT (Z Axis, Horizontal)+iPhone(X Axis)

2.2. Description of Test System

Conducted emission and radiated emission below 1GHz

No.	Peripheral	Manufacturer	Model Number	FCC ID	Remarks
For I	Local				
А	Rx Load(client provided)	-	-	-	Mode 1-2
в	Load	SSR	400W	-	Mode 1-2
С	iPhone 8	Apple	MRRM2TA/A	-	Mode 3-4



2.3. Connection Diagram of Test System









2.4. Test Software

< Mode 1-2 >

During the test, the following program was executed:

- Turn on the power of all equipment.
- The Rx Load for charging by EUT via wireless, and then Rx Load keep output (9V/1.1A).

< Mode 3-4 >

During the test, the following programs under IOS 11.3.1(iPone 8) were executed:

- Turn on the power of all equipment.
- The iPhone for charging by EUT via wireless.
- The iPhone open "Note" to display continuously repeating "H" patterns



3. General Information of Test

3.1. Test Facilities

Test Site : SPOR	ON INTERNATIONAL	INC.				
HUA YA	ADD: No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)					
-	TEL: 886-3-327-3456	FAX	X: 886-3-31	8-0055		
	CC Designation Numbe	er: TW1093				
DONG HU	ADD: No. 3, Ln. 238, Kai	ngle St., Neihu	u Dist., Taipe	ei City, Taiw	an (R.O.C.)	
-	TEL: 886-2-2631-5551	FAX	X: 886-2-26	31-9740		
	CC Designation Numbe	er: TW1094				
LIN KOU	ADD: No. 30-2, Dingfu V	il., Linkou Dist	., New Taip	ei City, Taiw	an (R.O.C.)	
-	TEL: 886-2-2601-1640	FAX	X: 886-2-26	01-1695		
l	-CC Designation Number	er: TW1095				
		Teet	Test Env	ironment		
Test Items	Test Site No.	Engineer	temp °C	hum %	Test Date	Remark
Conducted Emissions of		Bear	24	56	19/Jun/2018	Mode 1-3
Powerline	CO01-HY	Bear	24	56	21/Jun/2018	Mode 4
Radiated Emissions		Nicky	25	64	14/Jun/2018	Mode 1-3
below 1GHz	TUCHUZ-HY	Nieler	25	6F	22/100/2010	Mada 4

3.2. Test Standards

Test items	Test Standards and Test Procedures
Radiated and Conducted	ANSI C63.4:2014 with FCC Method 47 CFR Part 15, Subpart B, Class B Digital
Emissions	Device, CISPR PUB. 22

Nicky

25

65

22/Jun/2018

Mode 4

3.3. Test Voltage/Frequencies

Power Supply Type	Voltage/Frequencies
AC Power Supply	120V / 60Hz

3.4. Test Distance and Frequency Range Investigated

Test Items	Frequency Range	Remark
Powerline Conducted Emissions	150 kHz to 30 MHz	-
Radiated Emissions (below 1GHz)	30 MHz to 1,000 MHz	Measurement distance is 10 m.

3.5. Operating Condition

Full system. •



3.6. Labelling requirements

The devices shall bear the following statement in a conspicuous location on the device:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

3.7. User Information

The users manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

For a Class B digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- -Reorient or relocate the receiving antenna.
- -Increase the separation between the equipment and receiver.
- -Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- -Consult the dealer or an experienced radio/TV technician for help.



4. Conducted Emissions Measurement

Conducted Emissions were measured according to the methods defined in ANSI C63.4-2014 Section 7. The EUT is which satisfies the Class B disturbance limits.

4.1. Limit

Limits for conducted disturbance at the mains ports of class B						
Frequency range MHz	Coupling device	Detector type / bandwidth	Class B limits dB(µV)			
0,15 – 0,5			66 - 56			
0,5 – 5	AMN	Quasi-peak / 9 kHz	56			
5 – 30			60			
0,15 - 0,5			56 - 46			
0,5 – 5	AMN	Average / 9 kHz	46			
5 – 30			50			
Note 1: The lower limit sha	Note 1: The lower limit shall apply at the transition frequencies.					

Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

4.2. Test Procedures

- The EUT was warmed up for 15 minutes before testing started. a).
- The EUT was placed on a desk 0.8 meter height from the metal ground plane and 0.4 meter from the b). conducting wall of the shielding room and it was kept at least 0.8 meter from any other grounded conducting surface.
- Connect EUT to the power mains through a line impedance stabilization network (LISN). c).
- All the support units are connect to the other LISN. d).
- e). The LISN provides 50 ohm, coupling impedance for the measuring instrument.
- The FCC states that a 50 ohm, 50 microhenry LISN should be used. f).
- g). Both sides of AC line were checked for maximum conducted interference.
- The frequency range from 150 kHz to 30 MHz was searched. h).
- Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. i).
- All emissions not reported here are more than 10 dB below the prescribed limit. i).

4.3. Measurement Results Calculation

The measurand Level is calculated using: Corrected Reading (dB μ V) = Raw(Read Level) + AF(LISN Factor) + CL(Cable Loss) + AT(Attenuator) For example at 0.3 MHz if the LISN Factor is 10.48 dB, the cable loss is 0.10 dB, the measured voltage is 36.39 dBµV, the signal strength would be calculated:

Corrected Reading $(dB\mu V) = 36.39 dB\mu V + 10.48 dB + 0.10 dB + 10 dB = 56.97 dB\mu V$



4.4. Typical Test Setup Layout



- b). EUT is connected to one artificial mains network (AMN).
- All other units of a system are powered from a second AMN. A multiple outlet strip can be used for multiple mains cords.
- d). Rear of EUT to be flushed with rear of table top.
- e). Peripherals shall be placed at a distance of 10 cm from each other and from the controller, except for the monitor which, if this is an acceptable installation practice, shall be placed directly on the top of the controller.
- f). If cables, which hang closer than 40 cm to the horizontal metal ground plane, cannot be shortened to appropriate length, the excess shall be folded back and forth forming a bundle 30 cm to 40 cm long.
- g). Mains cords and signal cables shall be positioned for their entire lengths, as far as possible, at 40 cm from the vertical reference plane.
- h). Cables of hand operated devices, such as keyboards, mice, etc. shall be placed as for normal usage.



4.5. Test Result

Test Mode	Mode 1			
Test Frequency	0.15 MHz ~ 30 MHz	Test Voltage	AC 120V / 60Hz	
The test was passed at the minimum margin that marked by the frame in the following data				

Line





Neutral





Test Mode	Mode 2			
Test Frequency	0.15 MHz ~ 30 MHz	Test Voltage	AC 120V / 60Hz	
The test was passed at the minimum margin that marked by the frame in the following data				

Line





Neutral





Test Mode	Mode 3			
Test Frequency	0.15 MHz ~ 30 MHz	Test Voltage	AC 120V / 60Hz	
■ The test was passed at the minimum margin that marked by the frame in the following data				

Line



Neutral





Test Mode	Mode 4			
Test Frequency	0.15 MHz ~ 30 MHz	Test Voltage	AC 120V / 60Hz	
The test was passed at the minimum margin that marked by the frame in the following data				

Line





Neutral



5. Radiated Emissions Measurement

Radiated Emissions were measured according to the methods defined in ANSI C63.4-2014 Section 8. The EUT is which satisfies the Class B disturbance limits.

5.1. Radiated Emission below 1GHz

5.1.1.Limit

radiated emissions at frequencies up to 1 GHz for Class B equipment					
Fraguanay rango	Measurement		Class B limits		
MHz	Distance (m)	Detector type / bandwidth	dB(µV/m)		
30 - 230	10	Quasi Peak /	30		
230 - 1000	10	120 kHz	37		

5.1.2. Test Procedures

- a). The EUT was placed on a rotatable table top 0.8 meter above ground.
- b). The EUT was set 10 meters from the interference-receiving antenna which was mounted on the top of a variable height antenna tower.
- c). The table was rotated 360 degrees to determine the position of the highest radiation.
- d). The antenna is a half wave dipole and its height is varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna are set to make the measurement.
- e). For each suspected emission the EUT was arranged to its worst case and then tune the antenna tower (from 1 M to 4 M) and turn table (from 0 degree to 360 degrees) to find the maximum reading.
- f). Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.
- g). If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method and reported.
- h). The FCC Part 15.109(g) permit parties seeking to authorize a digital device to choose to demonstrate that the device complies with either the Part 15 standards or the international standards found in Publication 22 of the International Special Committee on Radio Interference (CISPR).

5.1.3. Measurement Results Calculation

The measurand Level is calculated using:

Corrected Reading (dB μ V/m) = Raw(Read Level) + AF(Antenna Factor) + CL(Cable Loss) - PA(Preamp Factor) For example at 125 MHz if the Antenna Factor is 17.24 dB/m, the cable loss is 1.20 dB, the measured voltage is 35.80 dB μ V and the Preamp Factor is 27.18 dB, the signal strength would be calculated: Corrected Reading (dB μ V/m) = 35.80 dB μ V + 17.24 dB/m + 1.20 dB - 27.18 dB = 27.06 dB μ V/m

Note: If a hybrid antenna is used, the antenna factor shell be the sum of the Antenna Factor + Attenuator Factor.



5.1.4. Typical Test Setup Layout





5.1.5. Test Result

Test mode	Mode 1		
Test frequency	30 MHz ~ 1000 MHz	Test Voltage	AC 120V / 60Hz
■ The test was passed at the minimum margin that marked by the frame in the following data			

Vertical





Horizontal





Test mode	Mode 2			
Test frequency	30 MHz ~ 1000 MHz	Test Voltage	AC 120V / 60Hz	
The test was passed at the minimum margin that marked by the frame in the following data				

Vertical





Horizontal





Test mode	Mode 3			
Test frequency	30 MHz ~ 1000 MHz	Test Voltage	AC 120V / 60Hz	
The test was passed at the minimum margin that marked by the frame in the following data				

Vertical





Horizontal



-

26.47

8.14

Horizontal -



Test mode	Mode 4			
Test frequency	30 MHz ~ 1000 MHz	Test Voltage	AC 120V / 60Hz	
The test was passed at the minimum margin that marked by the frame in the following data				

Vertical





Horizontal

PK

122.14M

13.94

30.00

-16.06 -12.93 10



-

-

Horizontal -

Radiation-below 1GHz_FD CI_Mode 4

4.13

26.87

10.93

27.99



5.2. Radiated Emission above 1GHz

The highest frequency of the internal sources of the EUT is less than 108MHz, so the measurement shall only be made up to 1GHz.



6. Uncertainty of Test Site

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2).

6.1. Emission Test Measurement Uncertainty

Test Items	Test Site No.	ULAB
Conducted Emissions	CO01-HY	3.4 dB
Radiated Emissions below 1GHz	10CH02-HY	5.4 dB



7. List of Measuring Equipment Used

Conducted Emission - Test Date: 19/Jun/2018 ~ 21/Jun/2018

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMI Test Receiver	R&S	ESR3	102052	9kHz ~ 3.6GHz	10/Apr/2018	Conduction
	Ndo	LOIG	102032	5KHZ ~ 5.00HZ	10/2010	(CO01-HY)
Two-Line V			101074		24/4 pr/2019	Conduction
Network(LISN)	Raj	EINV 210	101274		24/Api/2018	(CO01-HY)
	HUBER+SUHNER	RG213/U	7611832010001	9kHz ~ 30MHz	02/Mar/2018	Conduction
RF Cable-CON						(CO01-HY)
Dulas Limitar			0405		12/Oct/2017	Conduction
Puise Limiter	SCHWARZBECK VISD 9	V15D 9501F	VISD 9561F 9495		12/00/2017	(CO01-HY)
Software	Sporton SENSE-E		V5.9	5.9 -	NCR	Radiation
		SEINSE-EIVII				(CO01-HY)

Note: Calibration Interval of instruments listed above is one year. NCR: No Calibration Request.

Radiated Emission below 1GHz - Test Date: 14/Jun/2018 ~ 22/Jun/2018

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
10m Semi Anechoic Chamber	ТДК	SAC-10M	10CH02-HY	30MHz ~ 1GHz 10m,3m	23/Sep/2017	Radiation (10CH02-HY)
Amplifier	AGILENT	8447D	2944A10827	100kHz ~ 1.3GHz	29/Jan/2018	Radiation (10CH02-HY)
Amplifier	AGILENT	8447D	2944A10828	100kHz ~ 1.3GHz	06/Feb/2018	Radiation (10CH02-HY)
Receiver	R&S	ESU	100422	20Hz ~ 26.5GHz	31/Oct/2017	Radiation (10CH02-HY)
Spectrum Analyzer	KEYSIGHT	N9010A	MY54200401	10Hz ~ 44GHz	22/Dec/2017	Radiation (10CH02-HY)
Biconical Antenna	Schwarzbeck	VHBB 9124	287	30MHz ~ 200MHz	08/Jul/2017	Radiation (10CH02-HY)
Log Antenna	Schwarzbeck	VUSLP 9111	207	200MHz ~ 1GHz	08/Jul/2017	Radiation (10CH02-HY)
Turn Table	EM Electronics	EM 1000	060546	0 ~ 360 degree	NCR	Radiation (10CH02-HY)
Antenna Mast	HD	MA240	240/664	1m ~ 4m	NCR	Radiation (10CH02-HY)
Antenna Mast	HD	MA240	240/667	1m ~ 4m	NCR	Radiation (10CH02-HY)
RF Cable-R10m	Jye Bao	RG142	CB027-INSIDE	30MHz ~ 1GHz	21/Sep/2017	Radiation (10CH02-HY)
RF Cable-R10m	MTJ	RG223/U + RG8/U	CB026-DOOR	30MHz ~ 1GHz	21/Sep/2017	Radiation (10CH02-HY)
Software	Sporton	SENSE-EMI	V5.9	-	NCR	Radiation (10CH02-HY)

Note: Calibration Interval of instruments listed above is one year. NCR: No Calibration Request.