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Test Report for FCC

FCC ID : 2AOLQ-PTM-800K

Report Number		ESTRFC1802-002			
Applicant	Company name	CPC Co., Ltd.			
	Address	A,B,C block, 43, Songjeong-ro 264beongil, Mado-myeon, Hwasung-si, Gyeonggi-do, Korea			
	Telephone	+82-70-8765-3400			
Product	Product name	AnyGrip Mate 2			
	Model No.	PTM-800K	Manufacturer	CPC Co., Ltd.	
	Serial No.	NONE	Country of origin	KOREA	
Test date	December 6, 2017		Date of issue	February 14, 2018	
Testing location	347-69, Jungbu-daero 147beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do 467-811, R. O. Korea				
Standard	FCC PART 15 Subpart C(15.209), ANSI C 63.10(2013)				
Test item	■ Conducted Emission	□ Class A ■ Class B	Test result	OK	
	■ Radiated Emission	□ Class A ■ Class B	Test result	OK	
Measurement facility registration number		659627			
Tested by	Engineering Manager I.K. Hong	(Signature)			
Reviewed by	Engineering manager Keum-Bum	(Signature)			
Abbreviation	OK, Pass = Complied, Fail = Failed, N/A = not applicable				

* Note

- This test report is not permitted to copy partly without our permission
- This test result is dependent on only equipment to be used
- This test result based on a single evaluation of one sample of the above mentioned

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Contents

Appendix 1. Special diagram
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1. Laboratory Information

1.1 General

This EUT (Equipment Under Test) has been shown to be capable of compliance with the applicable technical standards and is tested in accordance with the measurement procedures as indicated in this report.ESTECH Lab attests to accuracy of test data. All measurement reported herein were performed by ESTECH Co., Ltd.
ESTECH Lab assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

1.2 Test Lab.

Corporation Name : ESTECH Co., Ltd.

Head Office : Suite 1015 World Meridian II, 123 Gasan Digital 2-ro, Geumcheon-gu,
Seoul 153-759, R. O. Korea

EMC/Telecom/Safety Test Lab : 347-69, Jungbu-daero 147beon-gil, Majang-myeon, Icheon-si,
Gyeonggi-do 467-811, R. O. Korea

1.3 Official Qualification(s)

KCC : Granted Accreditation from Ministry of Information & Communication for EMC, Safety and Telecommunication
KOLAS : Accredited Lab By Korea Laboratory Accreditation Schema base on CENELEC
FCC : Filed Laboratory at Federal Communications Commission
VCCI : Granted Accreditation from Voluntary Control Council for Interference from ITE

2. Description of EUT

2.1 Summary of Equipment Under Test

Product	: AnyGrip Mate 2
Model Number	: PTM-800K
Serial Number	: NONE
Manufacturer	: CPC Co., Ltd.
Country of origin	: KOREA
Operating Frequency	: 110 ~ 205 kHz
Antenna Type	: Coil Antenna
Modulation Type	: ASK
Channel Spacing	: 1
Power Rating	: DC 5V
Receipt Date	: September 28, 2017
X-tal list(s) or Frequencies generated	: -

3. Test Standards

Test Standard : FCC PART 15 (2010)

This Standard sets out the regulations under which an intentional, unintentional, or incidental radiator may be operated without an individual license. It also contains the technical specifications, administrative requirements and other conditions relating to the marketing of Part 15 devices.

Test Method : ANSI C 63.4 (2013)

This standard sets forth uniform methods of measurement of radio-frequency (RF) signals and noise emitted from both unintentional and intentional emitters of RF energy in the frequency range 9 kHz to 40 GHz. Methods for the measurement of radiated and AC power-line conducted radio noise are covered and may be applied to any such equipment unless otherwise specified by individual equipment requirements. These methods cover measurement of certain decides that deliberately radiate energy, such as intentional emitters, but does not cover licensed transmitters. This standard is not intended for certification/approval of avionic equipment or for industrial, scientific, and medical (ISM) equipment These method apply to the measurement of individual units or systems comprised of multiple units

Summary of Test Results

Applied Satandard : 47 CFR Part 15, Subpart C				
Standard	Test Type	Result	Remark	Limit
15.203	Antenna Requirement	Pass	See Appendix 2	
15.207	AC Power Conducted Emission	Pass	Meet the requirement	
15.205	Restricted bands	Pass	Meet the requirement	
15.209	Radiated Emission	Pass	Meet the requirement	

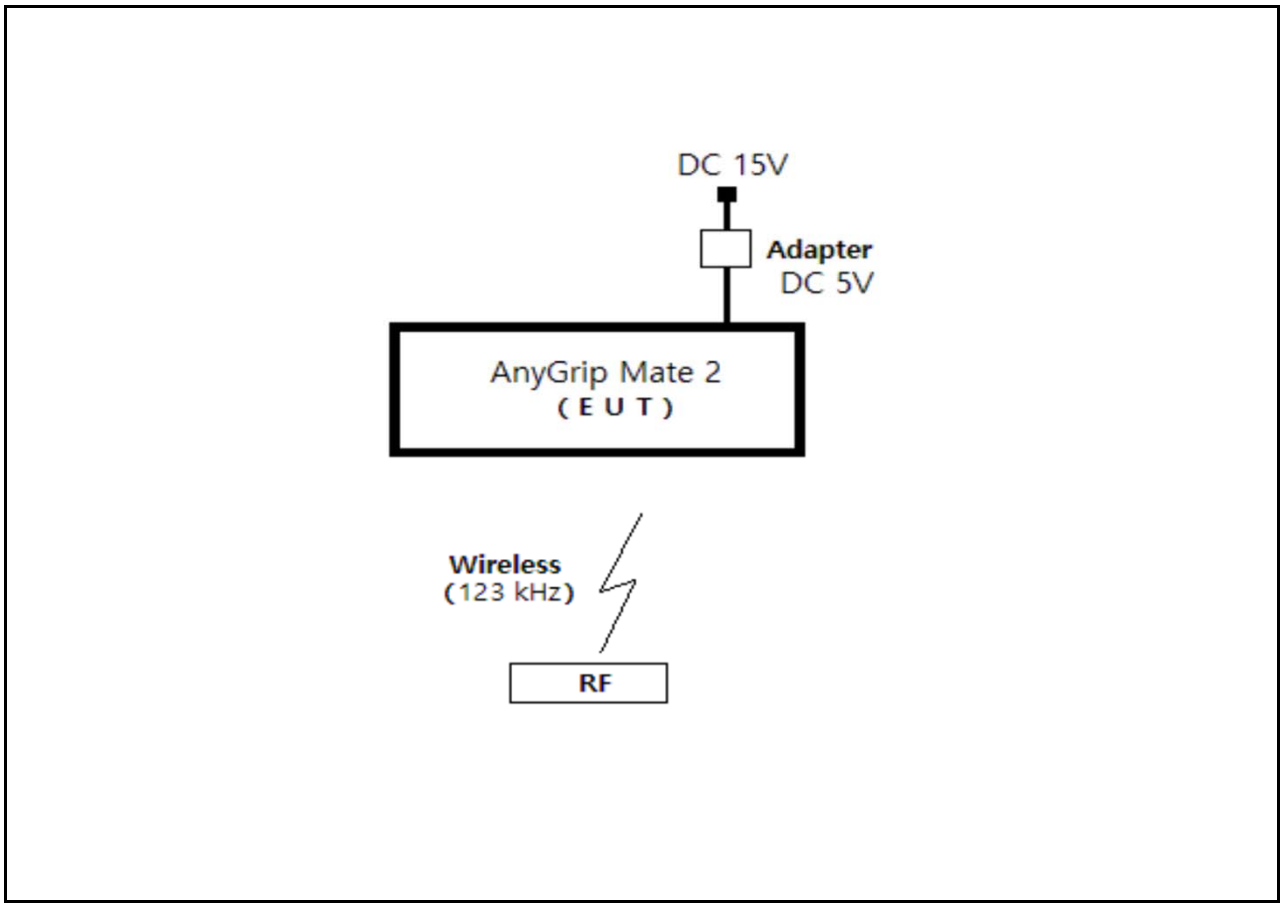
4. Measurement Condition

4.1 EUT Operation.

-The EUT was tested, under transmission / receiving

1. Normal communication with RF OUT Frequeny(123 kHz).
2. Monitoring the operation status of frequency by using RF CARD.

4.2 Configuration and Peripherals



4.3 EUT and Support equipment

Equipment Name	Model Name	S/N	Manufacturer	Remark (FCC ID)
AnyGrip Mate 2	PTM-800K	NONE	CPC Co., Ltd.	EUT

4.4 Cable Connecting

Start Equipment		End Equipment		Cable Standard		Remark
Name	I/O port	Name	I/O port	Length	Shielded	
AnyGrip Mate 2	Power	Adapter cable	-	2	Unshielded	

5. Measurement of radiated disturbance

The EUT was placed on the top of a rotating table 0.8 m above the ground at a 3 m Open test site. The table was rotated 360 ° to determine the position of the highest radiation.Then antenna is a loop antenna is fixed at one meter above the ground to determine the maximum value of the field strength. Both parallel and perpendicular of the antenna are set to make the measurement. For each suspected emission, the EUT was arranged to its worst case and then the table was turned from 0 degrees to 360 ° to find the maximum reading. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

5.1 Radiated emission limits, general requirements

Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength(microvolt/meter)	Distance(meter)
0.009-0.490	2400/F(KHz)	300
0.490-1.705	24000/F(KHz)	30
1.705-30	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

* dBuV/m=20*log(uV/m) * Distance factor=40dB / decade(15.31(f))

5.2 Measurement equipments

Equipment Name	Type	Manufacturer	Serial No.	Next Calibration date
TEST Receiver	ESCI7	ROHDE & SCHWARZ	100916	8-Oct-18
Logbicon Antenna	VULB 9168	SCHWARZBECK	193	12-Oct-18
Turn Table	DT3000-2t	Innco System GmbH	N/A	-
Antenna Mast	MA4000-EP	Innco System GmbH	N/A	-
Antenna Master & Turn table controller	CO2000-P	Innco System GmbH	CO2000/641 /28051111/L	-
Loop Antenna	HFH2-Z2	ROHDE & SCHWARZ	100188	22-Aug-18

5.3 Environmental Condition

Test Place 10 m Semi-anechoic chamber
Temperature (°C) : 21.5 ℃
Humidity (%) : 51.6 % R.H.

5.4 Test data (9 kHz ~ 30 MHz)

Test Date : December 6, 2019 Measurement Distance : 3 m

Frequency (kHz)	Reading (dBμV)	Vertical Position [Angle]	Height (m)	Correction Factor		Result Value(Qeas-Peak)		
				Ant Factor (dB)	Cable (dB)	Limit (dBμV/m)	Result (dBμV/m)	Margin (dB)
123.00	61.50	197 °	0.8	19.58	0.5	105.7	81.58	-24.09

Remark	H : Horizontal, V : Vertical There did not measure any radiated spurious emission in the range 9 kHz to 30 MHz *There is no found Restricted bands. *The 300 m limit was converted to 3m Limit using square factor(x) as it was found by measurements as follows; 3 m Limit(dBuV/m) = 20log(2400/F(KHz))+40log(300/3)= 20log(2400/125)+40log(300/3)

5.4 Test data(30 MHz ~ 1 000 MHz)

Test Date : December 6, 2019 Measurement Distance : 3 m

Frequency (MHz)	Reading (dBμV)	Position (V/H)	Height (m)	Correction Factor		Result Value(Quasi-peak)		
				Ant Factor (dB)	Cable (dB)	Limit (dBμV/m)	Result (dBμV/m)	Margin (dB)
52.60	2.19	V	1.2	13.69	1.07	40.00	16.95	23.05
63.20	5.84	V	1.5	12.81	1.19	40.00	19.83	20.17
101.90	7.31	H	1.7	8.99	1.51	43.50	17.81	25.69
114.90	13.79	V	1.8	10.32	1.61	43.50	25.72	17.78
160.90	13.39	H	1.7	13.26	1.92	43.50	28.57	14.93
173.00	19.16	H	1.3	12.28	1.99	43.50	33.43	10.07
235.40	21.88	V	1.4	11.34	2.37	46.00	35.59	10.41

Remark	H : Horizontal, V : Vertical *Result Value = Reading + Antenna + Cable loss *Correction Factor = Ant Factor + Cable *The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection

6. Photographs of test setup

6.1 Setup for Radiated Test

[Test setup for below 30 MHz]

[Test setup for above 30 MHz]

7.0 Photographs of EUT

[Front]

[Rear]

Appendix 2. Antenna Requirement

Requlation

According to §15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

Result

-Complied

The transmitter has an integral Loop coil antenna.