SGS-CSTC Standards Technical Services Co., Ltd.

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SAR Evaluation Report

Application No.:	SZEM1309005054RF
Applicant:	Creative Labs Inc.
Manufacturer:	Creative Technology Ltd.
Product Name:	Creative Aurvana Platinum(EF0590)
	Creative Aurvana Gold(EF0570)
Model No.(EUT):	EF0590, EF0570
FCC ID:	IBAEF0590
Standards:	47 CFR Part 1.1307(2012)
	47 CFR Part 2.1093 (2012)
	KDB447498D01 General RF Exposure Guidance v05
Date of Receipt:	2013-09-09
Date of Test:	2013-09-12 to 2013-10-29
Date of Issue:	2013-11-04
Test Result :	**PASS***

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

Authorized Signature:

Jack Zhang
EMC Laboratory Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.
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. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.
The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. All test results in this report can be traceable to National or International Standards.

2 Contents

3 General Information

3.1 Client Information

Applicant:	Creative Labs Inc.
Address of Applicant:	1901 McCarthy Blvd Milpitas, CA 95035, United States
Manufacturer:	Creative Technology Ltd.
Address of Manufacturer:	31, International Business Park, #03-01 Creative Resource, Singapore 609921

3.2 General Description of EUT

Name:	Creative Aurvana Platinum(EF0590) Creative Aurvana Gold(EF0570)
Model No.:	EF0590, EF0570
Trade Mark:	CREATIVE
Operation Frequency:	2402MHz~2480MHz
Bluetooth Version:	3.0(with EDR mode)
Modulation Technique:	Frequency Hopping Spread Spectrum(FHSS)
Modulation Type:	GFSK, π/4DQPSK, 8DPSK
Number of Channel:	79
Hopping Channel Type:	Adaptive Frequency Hopping systems
Sample Type:	Portable production
Test Power Grade:	255,46(manufacturer declare)
Test Software of EUT:	CSR (manufacturer declare)
Antenna Type	SMD Antenna
Antenna Gain	0.8dBi
Power Supply:	EF0590: Rechargeable Lithium Ion battery 3.7V 620mAh EF0570: Rechargeable Lithium Ion battery 3.7V 620mAh
Test Voltage:	AC 120V~ 60Hz with internal Lithium Ion battery 3.7V 620mAh
AUX in cable:	130cm
USB cable:	109cm

Model No.: EF0590, EF0570

The EUT Creative Aurvana Platinum and Creative Aurvana Gold, Model No. EF0590 and EF0570 are identical in electrical circuit design, layout, components used and internal wiring, and their differences as listed. For detailed differences on PCB, please refer to Appendix A.

All tests were performed on main model EF0590, series model EF0570 was tested to AC Power Line Conducted Emission, Conducted Peak Output Power and Radiated Spurious emissions.

Differences list for EF0590 & EF0570

Model	EF0590	EF0570
Product Name	Creative Aurvana Platinum	Creative Aurvana Gold
Product type	Headset with 50mm Neodymium magnet	Headset with 40mm Neodymium magnet
Interface	Call/Power/Pair, Play/Pause, Volume+/-, Forward/Rewind, ANC* On/Off. For EF0590 additional ANC* mode button. Note: * Active Noise Cancellation (ANC) - to reduce hearing unwanted external noises.	
Mechanical	Same	
PCB	Same	
Schematic	Reference	Feedback type ANC only. Forward type ANC circuit not mounted.
Firmware version	UI firmware is different Bluetooth firmware is same.	
Bluetooth Profile	A2DP, AVRCP, HFP, HSP	
Bluetooth module	Sunitec Bluetooth v2.1 Module, Model: BM153 Bluetooth Listing QDID: B014839	
Rechargeable Lithium Ion battery	3.7VDC, 620mAh Manufacturer: TCL, Model: PR-583436	
Ports	Micro-B USB port for charging only 2.5mm jack for audio in	
NFC	NFC Forum Type 2 Tag for Bluetooth pairing/connection. Manufacturer: NXP, Model: NTAG203F	

3.3 Test Location

All tests were performed at:
SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch E&E Lab
No. 1 Workshop, M-10, Middle section, Science & Technology Park, Shenzhen, Guangdong, China 518057
Telephone: +86 (0) 755 2601 2053 Fax: +86 (0) 755 2671 0594
No tests were sub-contracted.

3.4 Test Facility

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

- **CNAS (No. CNAS L2929)**

  CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

- **VCCI**

  The 3m Semi-anechoic chamber, Full-anechoic Chamber and Shielded Room (7.5m x 4.0m x 3.0m) of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-2197, G-416, T-1153 and C-2383 respectively.

- **FCC – Registration No.: 556682**

  SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No.: 556682.

- **Industry Canada (IC)**

  Two 3m Semi-anechoic chambers of SGS-CSTC Standards Technical Services Co., Ltd. have been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1 & 4620C-2.

3.5 Deviation from Standards

None.

3.6 Abnormalities from Standard Conditions

None.

3.7 Other Information Requested by the Customer

None.

4 SAR Evaluation

4.1 RF Exposure Compliance Requirement

4.1.1 Standard Requirement

According to KDB447498D01 General RF Exposure Guidance v05

4.3.1. Standalone SAR test exclusion considerations

Unless specifically required by the published RF exposure KDB procedures, standalone 1-g head or body and 10-g extremity SAR evaluation for general population exposure conditions, by measurement or numerical simulation, is not required when the corresponding SAR Exclusion Threshold condition, listed below, is satisfied.

4.1.2 Limits

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] · [√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

f(GHz) is the RF channel transmit frequency in GHz
Power and distance are rounded to the nearest mW and mm before calculation[17]
The result is rounded to one decimal place for comparison

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion

4.1.3 EUT RF Exposure

EF0590:

The Max Conducted Peak Output Power is 4.37dBm in highest channel(2.402GHz);

The best case gain of the antenna is 0.8dBi.

EIRP= 4.37dBm + 0.8dBi = 5.17dBm

5.17dBm logarithmic terms convert to numeric result is nearly 3.2885mW

According to the formula. calculate the EIRP test result:

[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] · [√f(GHz)]

General RF Exposure = (3.2885mW / 5 mm) x √2.402GHz = 1.0193 ①

SAR requirement:

S= 3.0 ② ;

① < ②.

So the SAR report is not required.

EF0570:

The Max Conducted Peak Output Power is 4.28dBm in highest channel(2.402GHz);

The best case gain of the antenna is 0.8dBi.

EIRP= 4.28dBm + 0.8dBi = 5.08dBm

5.08dBm logarithmic terms convert to numeric result is nearly 3.2211mW

According to the formula. calculate the EIRP test result:

[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] · [√f(GHz)]

General RF Exposure = (3.2211mW / 5 mm) x √2.402GHz = 0.9984 ①

SAR requirement:

S= 3.0 ② ;

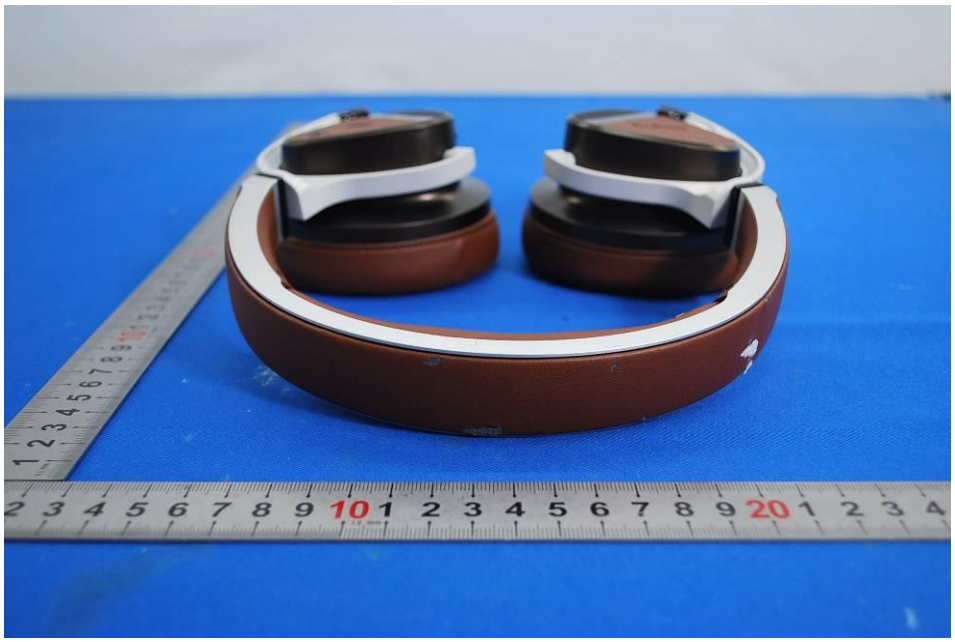
① < ②.

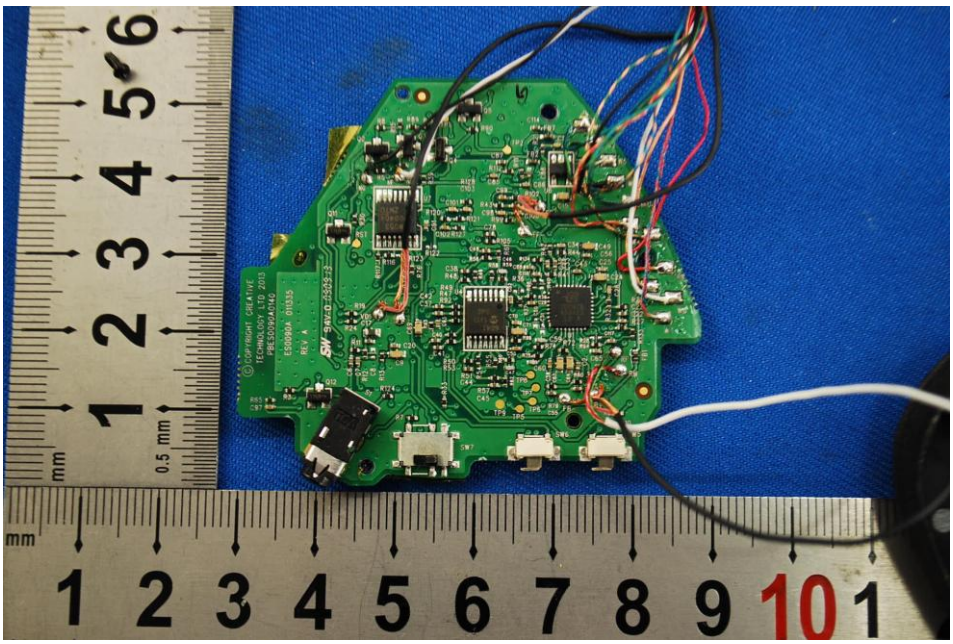
So the SAR report is not required.

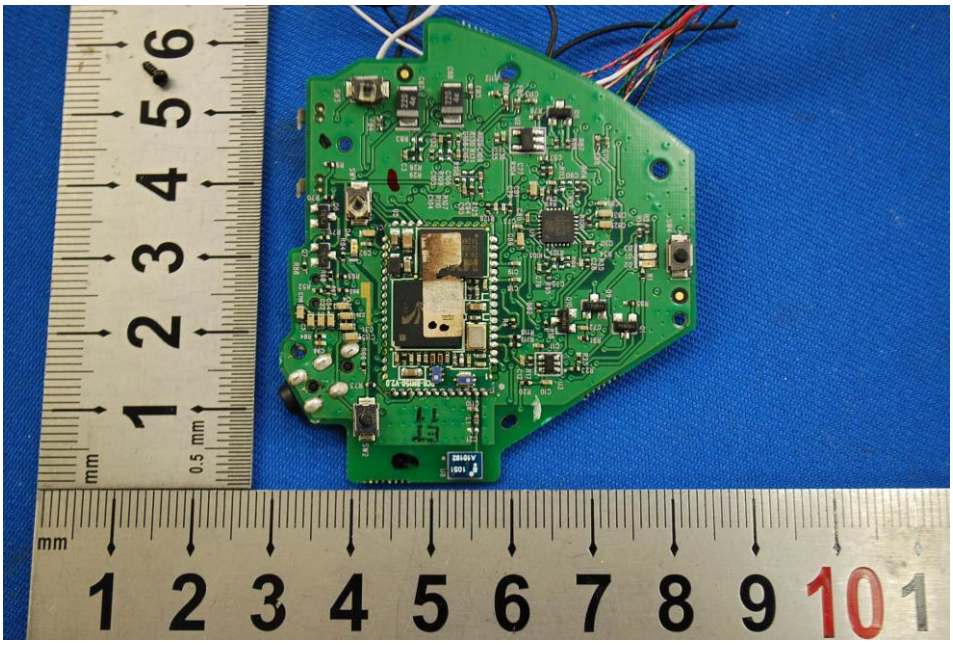
5 Photographs - EUT Constructional Details

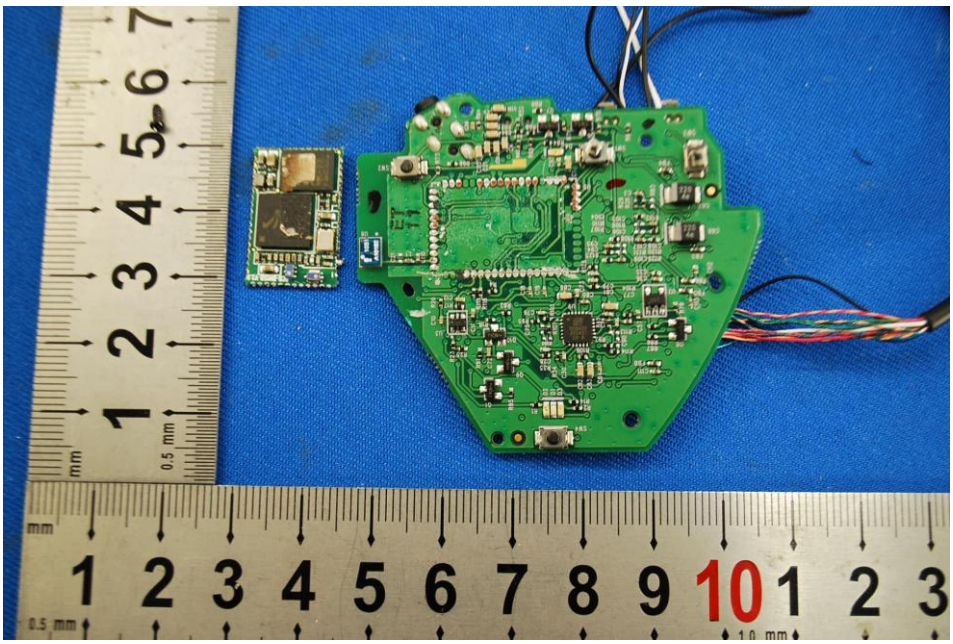
Test model No.: EF0590, EF0570

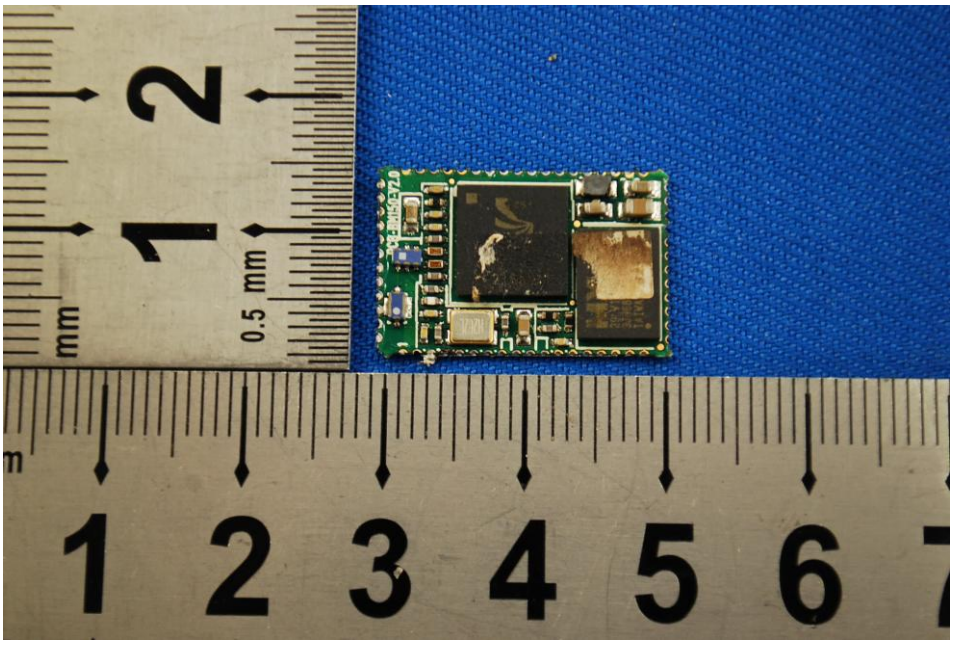
EF0590:

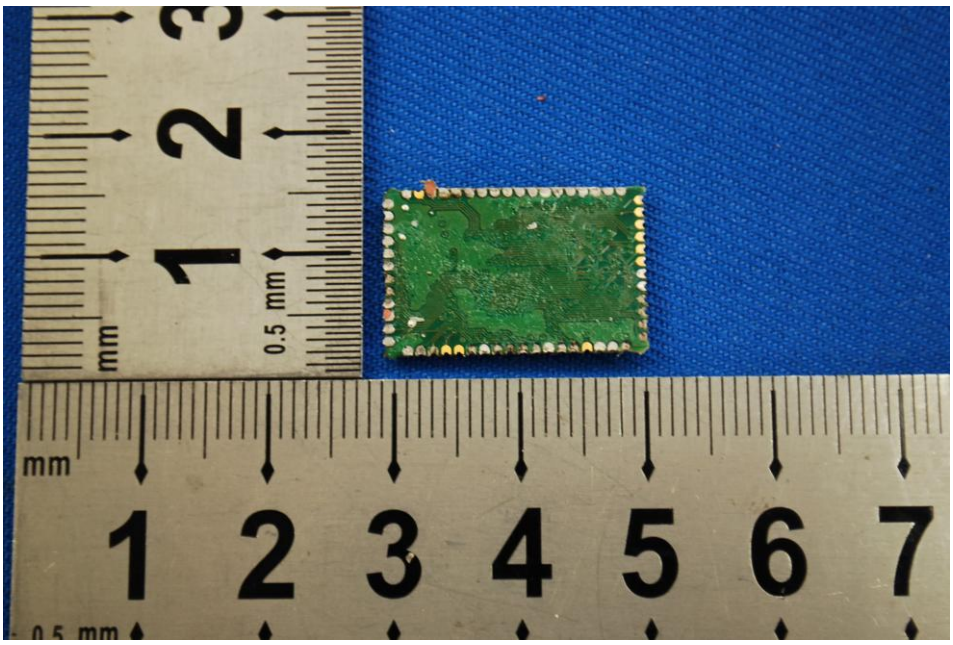


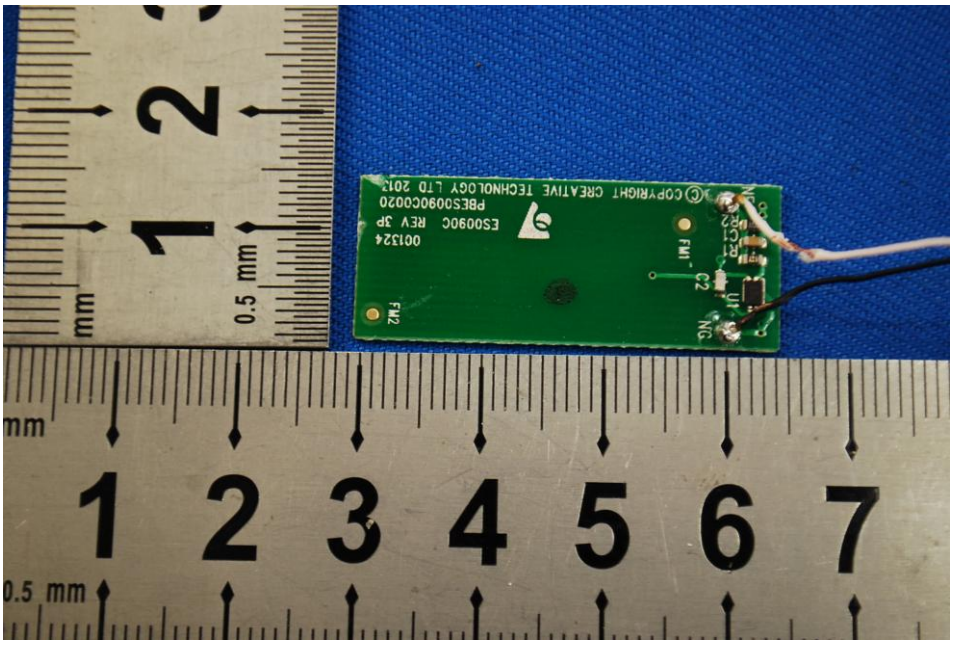


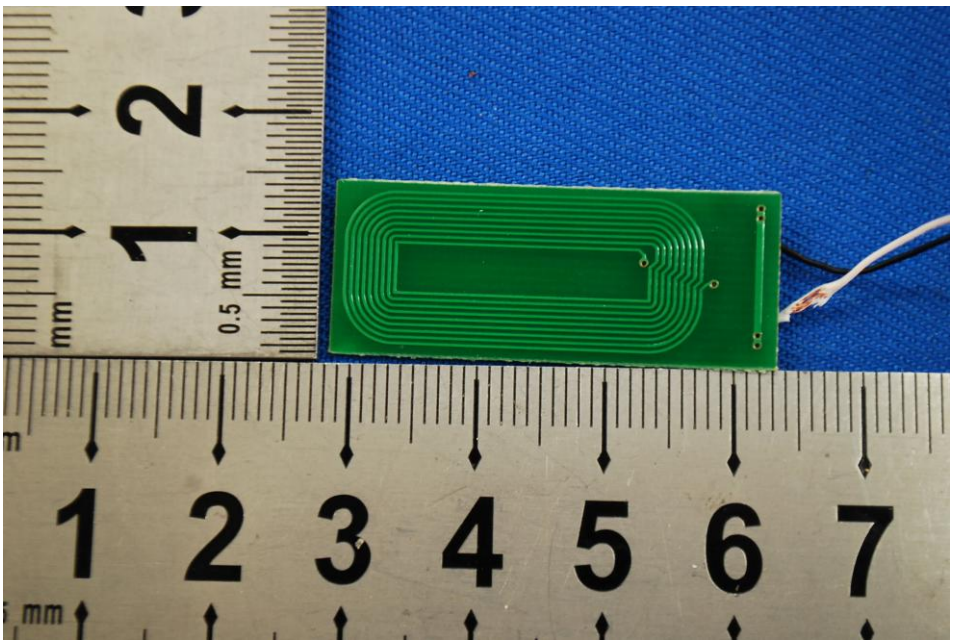


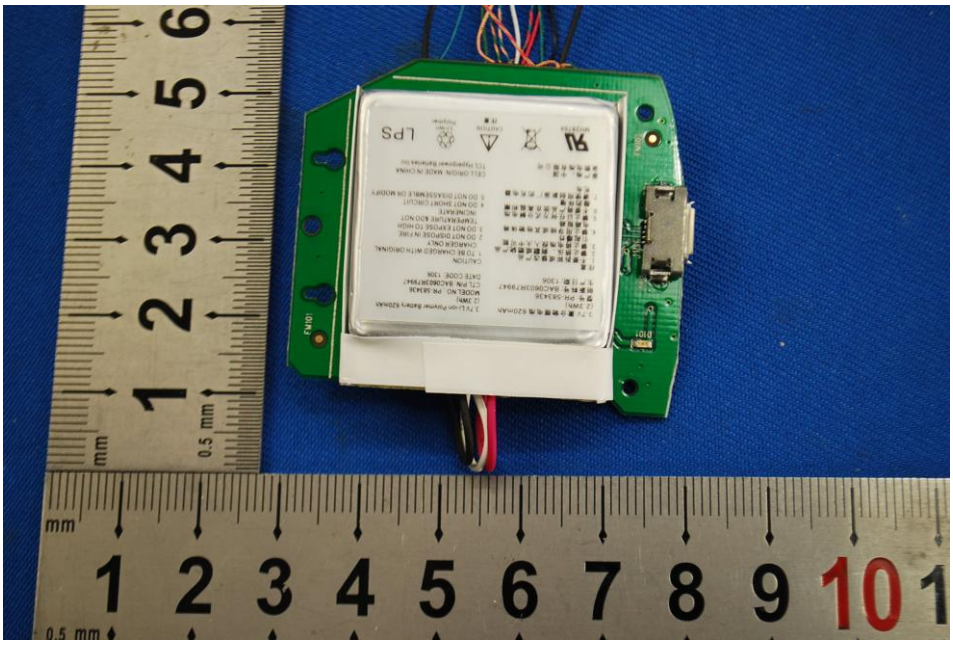


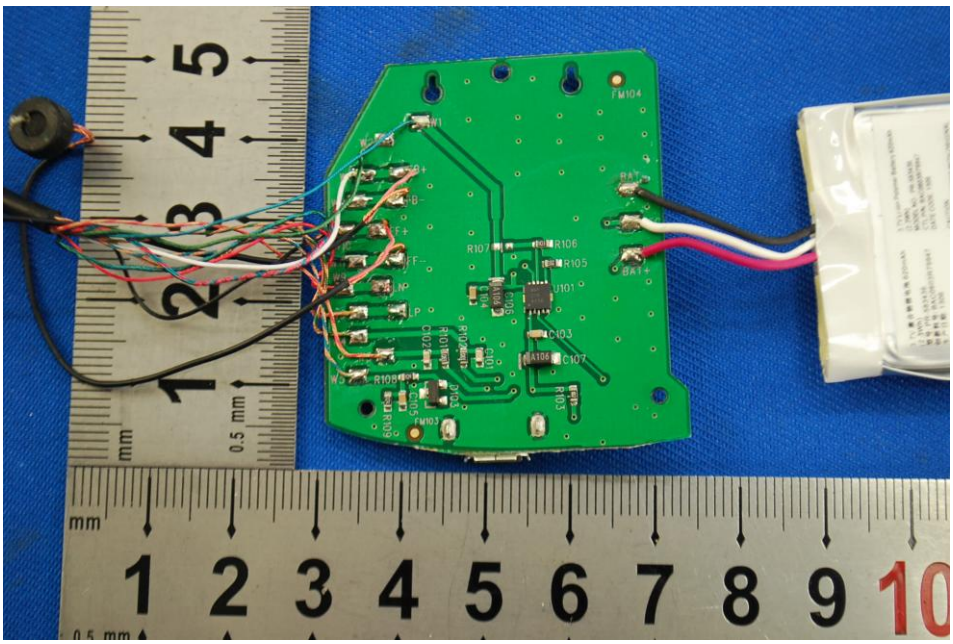


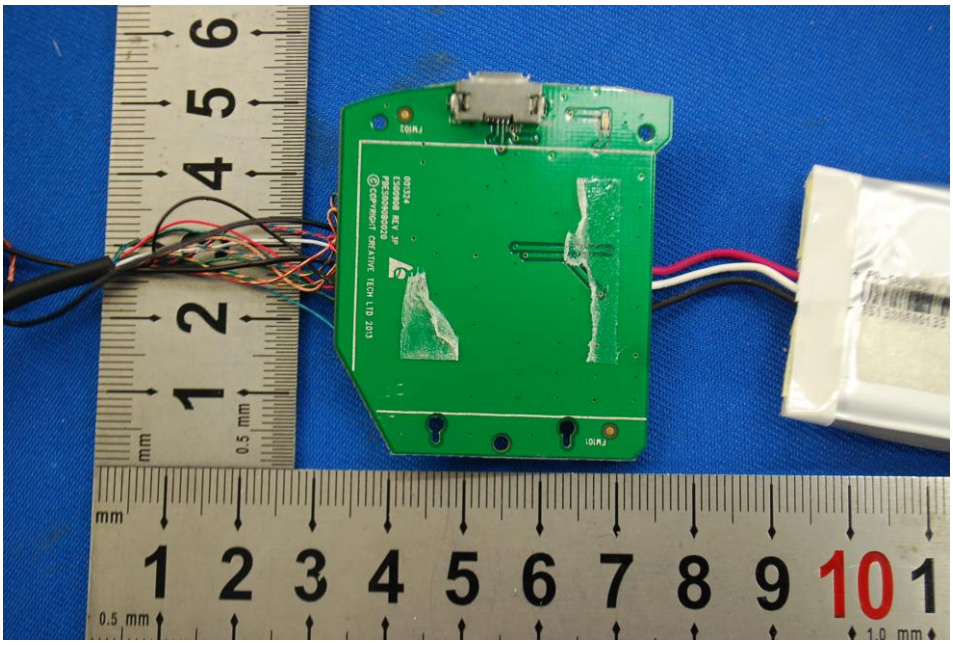


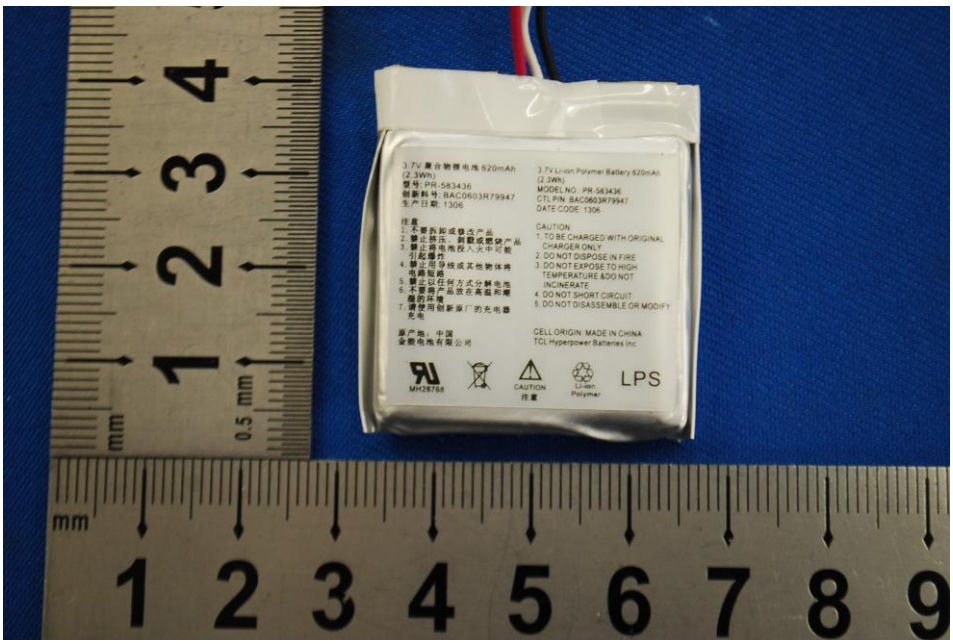


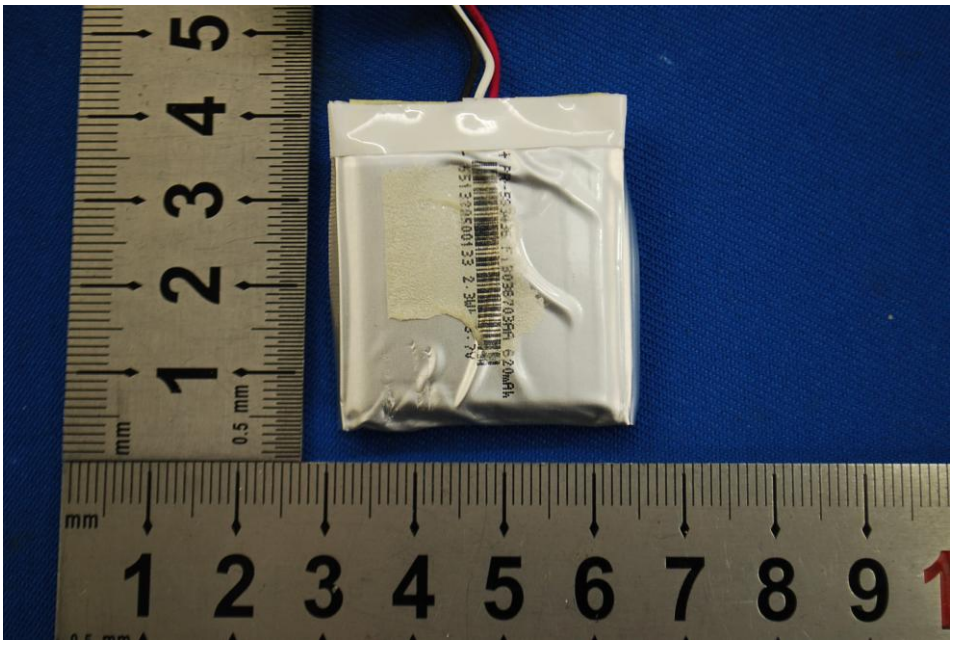












EF0570: