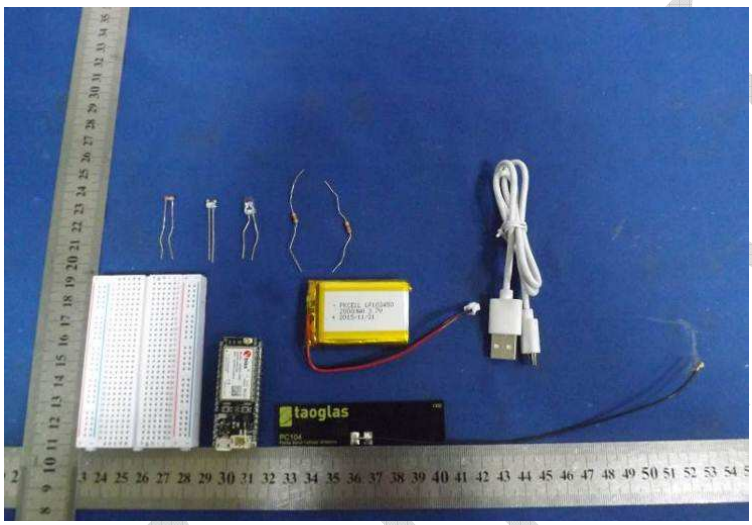
TEST REPORT No.: (5215)335-1038

FCC DoC TEST REPORT

To:	**PARTICLE INDUSTRIES, INC**	To:	-
Attn:	Eric Yuan	Attn:	-
Address:	1475 Folsom St, Suite 200, San Francisco CA 94103	Address:	-
Fax:	--	Fax:	-
E-mail:	--	E-mail:	-
Folder No.:	BVCZ15DE002ETHS-B		

Factory Name:	**Particle Industries,Inc**
Location:	1475 Folsom St, Suite 200, San Francisco CA 94103
Product:	ELECTRON Model No.: U260 Trade Name: Particle



Sample No:	HK151130/025
Date of Receipt:	Mar 22, 2017
Test Date(s):	Mar 16, 2017 to Mar 19, 2017
Test Requested:	FCC Part 15 - 2012
Test Method:	ANSI C63.4 - 2009
DoC No.:	15-095

The results given in this report are related to the tested specimen of the described electrical apparatus.

CONCLUSION: The submitted sample was found to COMPLY with requirement of FCC Part 15 Subpart B.

Assistant Manager,
EMC Department

Name: Law Man Kit
Date: Mar 22, 2017

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Equipment Under Test:

Product	:	ELECTRON
Model No.	:	U260
Power Supply	:	USB Input: 5Vd.c. / 3.7Vd.c. ("Rechargeable battery" x 1)
Data Cable	:	0.5m shielded USB cable
Power Line Cable	:	--
Accessory Device	:	--
The highest operating frequency		1900MHz

Additional Product Name:

--

Additional Model No.:

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Additional Model Information:

IMEI No.:35316208192532

Description of Test modes:

Charging mode
GPRS 850MHz link mode
GRPS 1900MHz link mode
Band V 850MHz link mode
Band II 1900MHz link mode

Report Revision & Sample Re-submit History:

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Remark: -

This report was basic on the report No.151201N010 to changing version number of the PCB, and add one capacitance in the PCB. So we retest the radiation emission item only.

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Test Result Summary

EMISSION TEST			
Test requirement: FCC Part 15 – 2012			
Test Condition	Test Method	Test Result	
		Pass	Failed
Conducted Emission Test, 0.15MHz to 30MHz	ANSI C63.4	☒	☐
Radiated Emission Test, 30MHz to 18GHz	ANSI C63.4	☒	☐

DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	PC	DELL	DCSM	SC94JBX	CE & FCC DoC Approved
2	LCD MONITOR	DELL	E178WFPC	CN-0G349J64180-88T-5PYL-A00	CE & FCC DoC Approved
3	KEYBOARD	DELL	L100	CN0RH659658084B02NV	CE & FCC DoC Approved
4	MOUSE	DELL	MOA8BO	H0T00H92	CE & FCC DoC Approved
5	PRINTER	EPSON	B163A	ELPK004488	CE & FCC DoC Approved

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	VGA Cable, Shielded, with core, 0.8m
2	USB Cable, Shielded, with core, 1.5m
3	USB Cable, Shielded, without core, 1.5m
4	Parallel Cable, Shielded, without core, 1.5m

NOTE: **All power cords of the above support units are non-shielded (1.8m).**

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Test Laboratory & Test Instruments List

Radiated and Conducted emissions measurements are investigated and taken pursuant to the procedures of ANSI C63.4 – 2009. An Open Area Test Site and Full Anechoic Chamber (FCC Listed Site, Registration No. 642151) are set up for investigation and located at:

BUREAU VERITAS HONG KONG LIMITED, EMC CENTRE

No. 2106-2107, 21/F., Westin Centre,
26 Hung To Road,
Kwun Tong, Kowloon,
Hong Kong

Conformity Assessment Body

Designation Number: HK0009

Test Firm Registration #: 945348

Test Instrument List

Radiated Emission

EQUIPMENT	MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATION DUE
EMI TEST RECEIVER	R&S	ESCI	100379	03-FEB-2016
SIGNAL ANALYZER 40GHZ	ROHDE & SCHWARZ	FSV 40	100977	29-JUN-2016
SPECTRUM ANALYZER	R&S	R3127	111000909	26-APR-2016
LOOP ANTENNA	ETS LINDGREN	6502	00102266	05-NOV-2016
BILOG ANTENNA	SCHAFFNER	CBL6112D	25229	02-FEB-2016
HORN ANTENNA	SCHWARZBECK	BBHA9120D	9120D-692	26-DEC-2015
WIDEBAND HORN ANTENNA 18 TO 40GHZ	STEATITE	QWH-SL-18-40-K-SG	12688	02-SEP-2016
OPEN AREA TEST SITE	BVCPS	N/A	N/A	18-JUN-2016
ANECHOIC CHAMBER	ALBATROSS	M-CDC	80374004499B	12-FEB-2016
COAXIAL CABLE	SUHNER	N/A	N/A	07-JAN-2016
HIGH FREQUENCY RF CABLE	ROHDE & SCHWARZ	N/A	N/A	03-NOV-2016

Conducted Emission

EQUIPMENT	MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATION DUE
EMI TEST RECEIVER	R&S	ESCS30	830986/030	20-MAR-2016
LISN	R&S	ENV216	100024	15-SEP-2016

Measurement Uncertainty

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	9kHz to 30MHz	2.9dB
Radiated emissions	9kHz to 30MHz	4.2dB
	30MHz to 1GHz	5.0dB
	1GHz to 18GHz	4.9dB

Remarks: -
N/A: Not Applicable or Not Available

Test Results

Conducted Emissions (150kHz to 30MHz)

Test Requirement:	FCC Part 15 Section 15.107
Test Method:	ANSI C63.4
Test Limits:	Class B
Test Date(s):	2016-01-04
Temperature:	25.0 °C
Humidity:	67.0 %
Mode of Operation:	Charging mode
Tested Voltage:	USB Input: 5Vd.c. Computer: 117Va.c., 60Hz

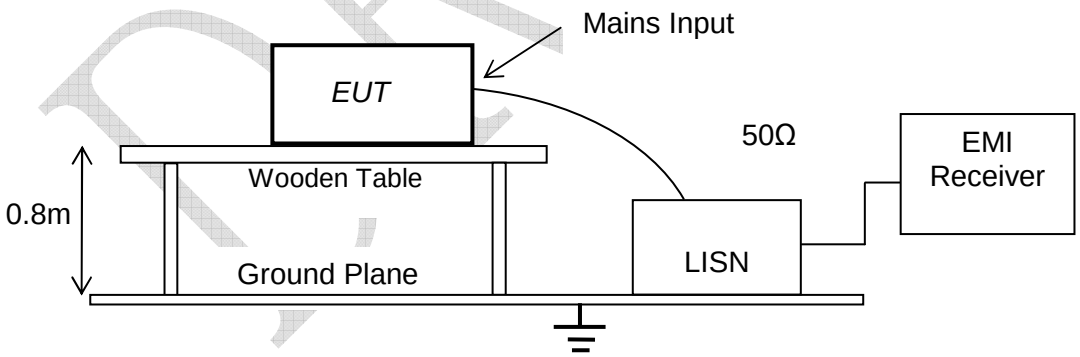
Test Method:

Conducted emissions measurements are investigated and also taken pursuant to the procedures of ANSI C63.4 – 2009. The EUT was setup as described in the procedures, and both lines were measured.

Initial measurements were performed in peak and average detection modes on the live and neutral line, any emissions recorded within 30dB of the relevant limit lines were re-measured using quasi-peak and average detection on the live and neutral lines with the worst case recorded in the table of results.

Location: No. 603, 6/F., Westin Centre, 26 Hung To Road, Kwun Tong, Kowloon, Hong Kong

Test Setup: Shielding Room



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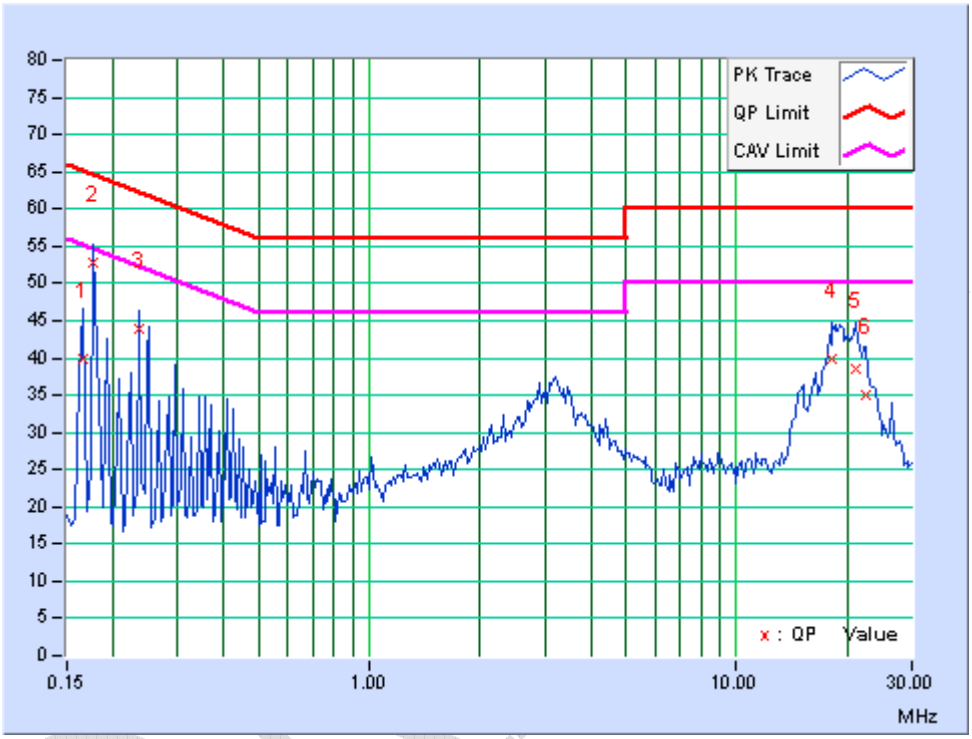
Measurement Data: Live

Test Result of (Charging mode): PASS

Results and limit lines for Conducted Emission:

Limits for Conducted Emission Test, please refer to limit lines (Quasi-Peak and Average) in the following diagram.



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Results and limit lines for Conducted Emission:

Limits for Conducted Emission Test, please refer to limit lines (Quasi-Peak and Average) in the following tables.

Frequency (MHz)	Quasi Peak (dBµV)	Bandwidth (kHz)	Line	Margin (dB)	Limit (dBµV)
0.16562	39.94	9.000	L1	-25.24	65.18
0.17734	52.78	9.000	L1	-11.83	64.61
0.23594	44.01	9.000	L1	-18.23	62.24
18.26953	39.91	9.000	L1	-20.09	60
21.03125	38.48	9.000	L1	-21.52	60
22.52344	34.95	9.000	L1	-25.05	60

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Margin (dB)	Limit (dBµV)
0.16562	15.91	9.000	L1	-39.27	55.18
0.17734	37.42	9.000	L1	-17.19	54.61
0.23594	27.46	9.000	L1	-24.78	52.24
18.26953	33.32	9.000	L1	-16.68	50
21.03125	33.24	9.000	L1	-16.76	50
22.52344	29.77	9.000	L1	-20.23	50

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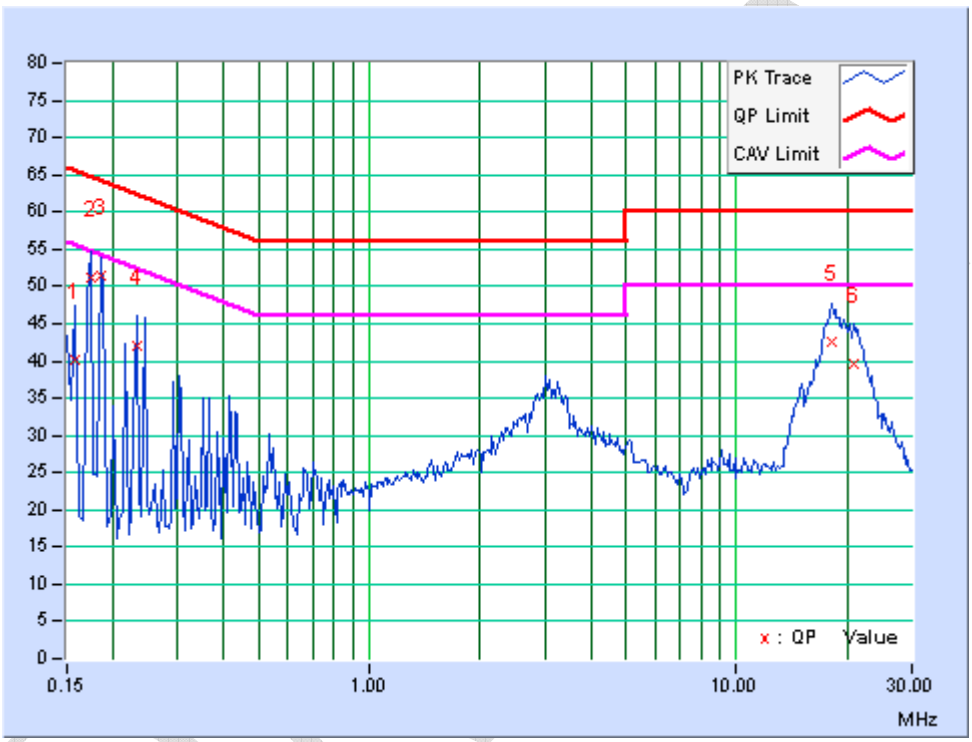
Measurement Data: Neutral

Test Result of (Charging mode): PASS

Results and limit lines for Conducted Emission:

Limits for Conducted Emission Test, please refer to limit lines (Quasi-Peak and Average) in the following diagram.



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Results and limit lines for Conducted Emission:

Limits for Conducted Emission Test, please refer to limit lines (Quasi-Peak and Average) in the following tables.

Frequency (MHz)	Quasi Peak (dBµV)	Bandwidth (kHz)	Line	Margin (dB)	Limit (dBµV)
0.15781	40.26	9.000	N	-25.32	65.58
0.17344	51.08	9.000	N	-13.71	64.79
0.18516	51.53	9.000	N	-12.72	64.25
0.23203	42.00	9.000	N	-20.38	62.38
18.09375	42.57	9.000	N	-17.43	60
20.85938	39.52	9.000	N	-20.48	60

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Margin (dB)	Limit (dBµV)
0.15781	13.34	9.000	N	-42.24	55.58
0.17344	32.45	9.000	N	-22.34	54.79
0.18516	34.48	9.000	N	-19.77	54.25
0.23203	22.24	9.000	N	-30.14	52.38
18.09375	34.04	9.000	N	-15.96	50
20.85938	34.74	9.000	N	-15.26	50

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Radiated Emissions (30MHz to 18GHz)

Test Requirement:	FCC Part 15 Section 15.109
Test Method:	ANSI C63.4
Test Date(s):	2016-01-13
Temperature:	25.0 °C
Humidity:	51.0 %
Mode of Operation:	Band II 1900MHz link mode
Tested Voltage:	3.7Vd.c. ("Rechargeable battery" x 1)

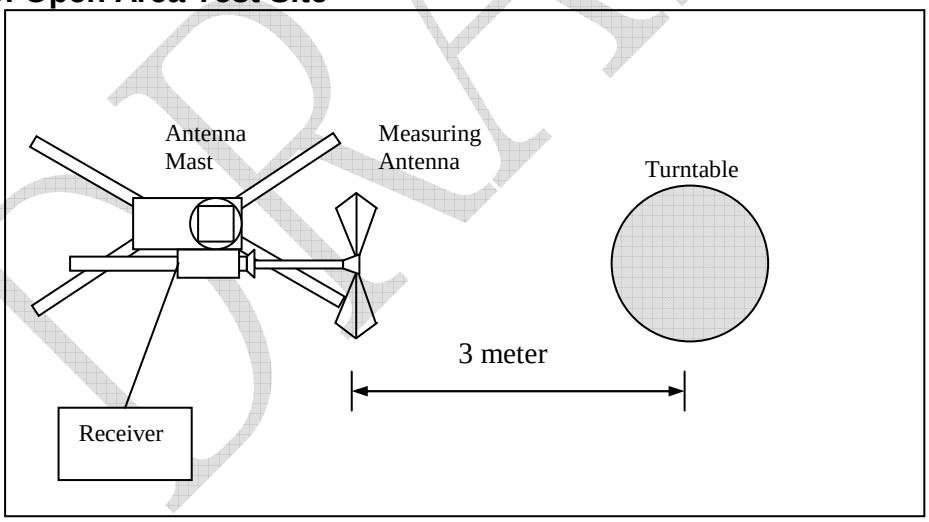
Test Method:

Radiated emissions measurements are investigated and taken pursuant to the procedures of ANSI C63.4 – 2009.

The equipment under test (EUT) was placed on a non-conductive turntable with dimensions of 1.5m x 1m and 0.8m high above the ground. 3m from the EUT, a broadband antenna mounting on the mast received the signal strength. During the test, each emission was maximized by: having the EUT 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, For battery operated equipment, the equipment tests shall be perform using new battery. The turntable was rotated to maximize the emission level. The antenna was then moving along the mast from 1m up to 4m until no more higher value was found. Both horizontal and vertical polarization of the antenna were placed and investigated.

Location: The Roof, Westin Centre, 26 Hung To Road, Kwun Tong, Kowloon, Hong Kong

Test Setup: Open Area Test Site



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Limits for Radiated Emission: FCC Part 15.109

Frequency Range [MHz]	Limits [dBµV/m @ 3m]
30-88	40.0
88-216	43.5
216-960	46.0
Above 960	54.0

Measurement Data (30-1000MHz)

Test Result of (Band II 1900MHz link mode): PASS

Detection mode: Quasi-Peak

Frequency (MHz)	Polarity (H/V)	Field Strength at 3m (dBµV/m)	Limit at 3m (dBµV/m)	Margin (dB)
30.00	H	18.35	40.00	-21.65
134.15	H	17.45	43.50	-26.05
162.13	H	23.16	43.50	-20.34
255.40	H	35.78	46.00	-10.22
263.17	H	27.75	46.00	-18.25
424.84	H	27.54	46.00	-18.46

Frequency (MHz)	Polarity (H/V)	Field Strength at 3m (dBµV/m)	Limit at 3m (dBµV/m)	Margin (dB)
31.55	V	19.39	40.00	-20.61
99.95	V	22.42	43.50	-21.08
134.15	V	22.59	43.50	-20.91
162.13	V	26.54	43.50	-16.96
188.56	V	23.30	43.50	-20.20
255.40	V	26.74	46.00	-19.26

Note: Field Strength includes Ant-nna Factor and Cable Loss.

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Measurement Data (1-18GHz)

Test Result of (Band II 1900MHz link mode): PASS

Detection mode: Peak

Frequency (MHz)	Polarity (H/V)	Field Strength at 3m (dBµV/m)	Limit at 3m (dBµV/m)	Margin (dB)
1511.00	H	56.22	74.00	-17.78
1844.70	H	53.53	74.00	-20.47
3850.00	H	61.03	74.00	-12.97
1395.00	V	57.45	74.00	-16.55
1599.00	V	58.01	74.00	-15.99
3328.80	V	60.14	74.00	-13.86

Detection mode: Average

Frequency (MHz)	Polarity (H/V)	Field Strength at 3m (dBµV/m)	Limit at 3m (dBµV/m)	Margin (dB)
1511.00	H	35.01	54.00	-18.99
1844.70	H	35.24	54.00	-18.76
3850.00	H	36.89	54.00	-17.11
1395.00	V	33.12	54.00	-20.88
1599.00	V	33.86	54.00	-20.14
3328.80	V	36.45	54.00	-17.55

Note: Field Strength includes Antenna Factor and Cable Loss.

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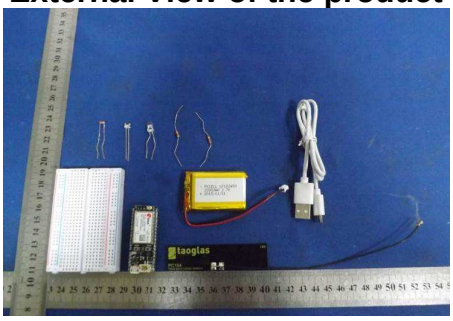
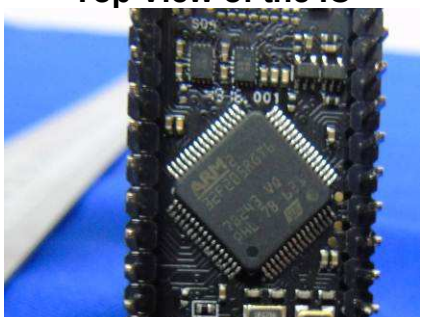
Photographs of EUT

External View of the product

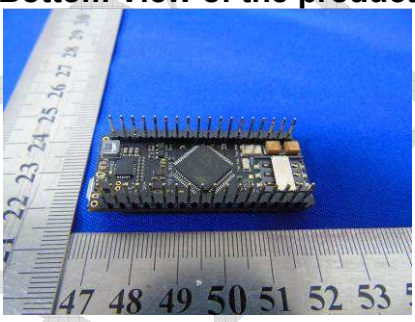


Top View of the product

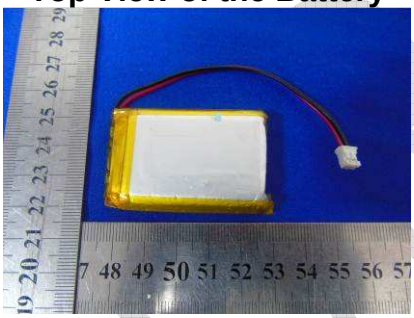
Top View of the IC



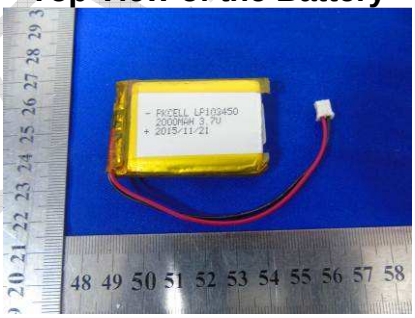
Bottom View of the product



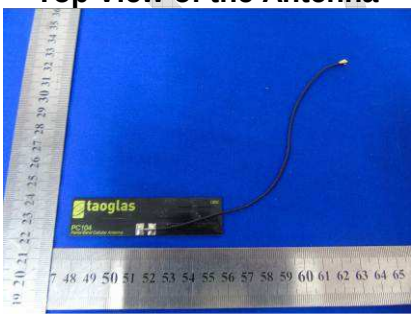
Top View of the Battery



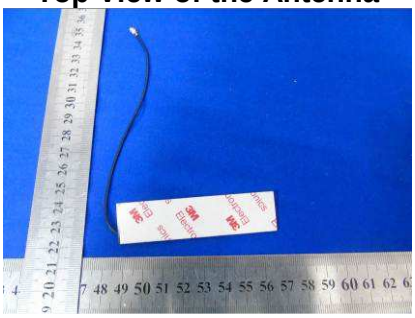
Top View of the Battery



Top View of the Antenna



Top View of the Antenna



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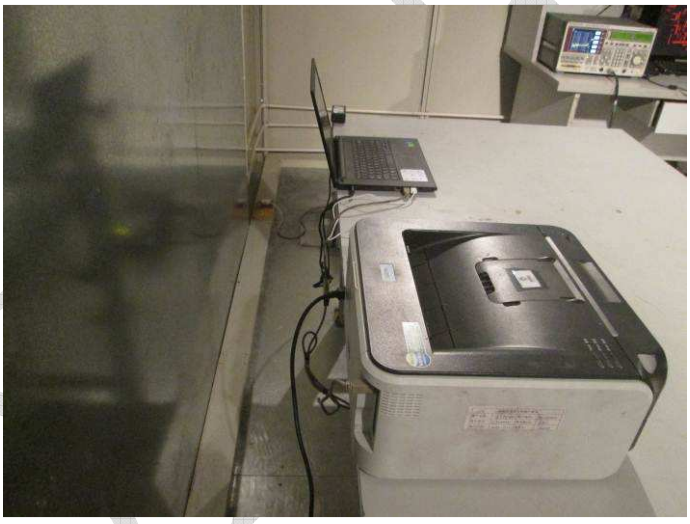
Measurement of Conducted Emission Test Set Up



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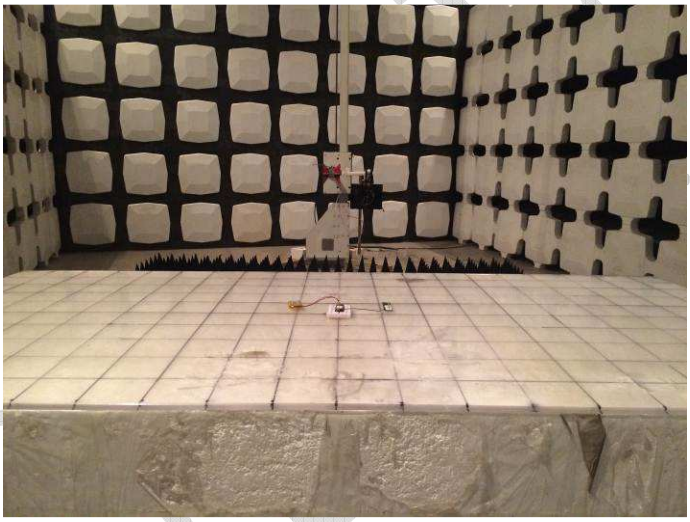
Measurement of Radiated Emission Test Set Up



******* End of Report *******

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