



# FCC CERTIFICATION REPORT

**Test Report No. :** E1/2016/50135

**Applicant :** The Light Phone Inc

**Address :** 49 Bogart St #44, Brooklyn, New York, United States 11206

**Manufacturer :** The Light Phone Inc

**Address :** 49 Bogart St #44, Brooklyn, New York, United States 11206

**Equipment Under Test (EUT) :**

**Product Name :** The Light Phone

**Brand Name :** Light

**Model No. :** TLP101

**Added Model(s) :** N/A

**Standards :** FCC Part 15:2016, Subpart B, Class B

**Date of Receipt :** May 24, 2016

**Date of Test :** May 24 ~ Jun. 02, 2016

**Date of Issue :** Jun. 29, 2016

<b>Test Result :</b>	<b>PASS</b>
----------------------	-------------

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

**Remarks :**

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. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

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**Tested By:**

*Eddy Cheng*

**Date**

Jun. 29, 2016

**Eddy Cheng (Engineer)**

**Approved By**

*Wisely Huang*

**Date**

Jun. 29, 2016

**Wisely Huang  
(Assistant Supervisor)**



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## Revision History

Report Number	Revision	Description	Issue Date
E1/2016/50135	Rev.00	Initial creation of document	Jun. 29, 2016

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# 1. General Information

## 1.1 Applicant & Manufacturer Information

Applicant:	The Light Phone Inc
Address of Applicant:	49 Bogart St #44, Brooklyn, New York, United States 11206
Manufacturer:	The Light Phone Inc
Address of Manufacturer:	49 Bogart St #44, Brooklyn, New York, United States 11206

## 1.2 General Description of EUT

Product Name:	The Light Phone	
Brand Name:	Light	
Model No.:	TLP101	
Added Model(s):	N/A	
Model Difference:	N/A	
Hardware Version:	DVT	
Software Version:	N/A	
Data Cable(USB):	Model.:LA98US002-1H; Supplier: LUXSHARE	
Power Supply:	3.8Vdc form Rechargeable Li-polymer Battery or 5V for USB Port	
	Battery:	Model No. : 204436 Supplier: Doungguan Amperex Technology Limited

## 1.3 Details of EUT

Modes/Function:	Mode 1. GSM850+GPS Mode 2. GSM1900+GPS Mode 3. USB Read Mode 4. USB Write
Worst case:	CE Worst : Mode 2. GSM1900+GPS RE Worst : Mode 3. USB Read
Highest operate description:	1989.8MHz

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## 1.4 Operation Procedure

Test Mode: 1

1. EUT connected to the SIM Card & USB Cable & Adapter.
2. EUT opened GPS and connected to GSM function (GSM850).
3. Start the test.

Test Mode: 2

1. EUT connected to the SIM Card & USB Cable & Adapter.
2. EUT opened GPS and connected to GSM function (GSM1900).
3. Start the test.

Test Mode: 3

1. EUT connected to USB Cable & NB.
2. The data storage to NB.
3. Start the test.

Test Mode: 4

1. EUT connected to USB Cable & NB.
2. The data storage to EUT.
3. Start the test.

## 1.5 Description of Support Units

PRODUCT	MANUFACTURER	MODEL NO.	SERIAL NO.
Notebook	DELL	Latitude E6440	CYRVQ32
Mouse	DELL	MS111-T	CN-OKW2YH-71616-345-OL7T
Printer	HP	VCVRA-1004	CN33K19J3F
SIM Card	R&S	CMW-Z05	8.95253E+18
GPS Signal Generator	Spectracom	GSG53 GNSS4	200218
Adapter	Apple	A1385	N/A

## 1.6 Modification List

No modification was made by SGS Taiwan Electronics & Communication Laboratory.

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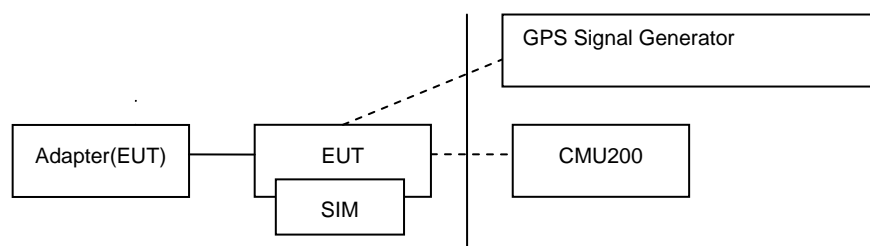


## 1.7 Cable List

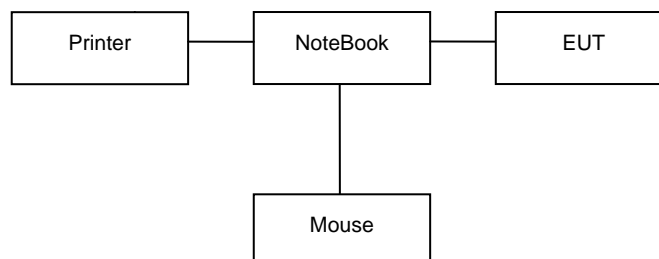
Cable Type	Core	Length	Category	Shielding/Non-shielding
Micro USB Cable	N/A	1M	N/A	Shielding

## 1.8 Test Set-Up Configuration

Mode\_1~2



Mode\_3~4



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## 1.9 Measurement Procedure

Conducted Emission Testing was performed according to ANSI C63.4:2014 in a shielded room with peripherals placed on a table, 0.8m high over a metal floor. It was located more than required distance away from the shielded room wall.

Radiated Emission Testing was performed according to ANSI C63.4:2014 at the 10m semi-anechoic chamber. The EUT was placed on a 0.8m high table along with the peripherals. The turn table was placed 10m distance from the antenna. Cables were placed in a position to produce maximum emissions as determined by experimentation, and operation mode was selected for production of maximum emission.

The frequencies and amplitudes of maximum emission were measured at varying azimuths, antenna heights and antenna polarities. Maximum emission levels are then reported.

## 1.10 Standards Applicable for Testing

Tests to be carried out under FCC Part 15, Subpart B

Test Standards	Status
FCC Part 15, Subpart B	Applicable
Deviation from Standard	No deviation

## 1.11 Summary of Results

Highest Emission					
Standard	Test Type	Result	Phase/Pol.	Frequency(MHz)	Margin(dB)
FCC Part 15 Subpart B Class B/ CISPR 22 Class B	Conducted Emission	PASS	Line	0.7280	-17.20 (AVG)
			Neutral	0.7277	-17.28 (QP)
	Radiated Emission	PASS	Ver.	73.9400	-7.55 (QP)

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## 2. EMISSION

### 2.1 Test Results

	Results
Conducted Emission	Pass
Radiated Emission	Pass

### 2.2 Frequency Range

Conducted Emission : 150 kHz - 30 MHz

Radiated Emission : See below table

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30
1.705 - 108	1000
108 - 500	2000
500 - 1000	5000
Above 1000	5th harmonic of the highest frequency or 40 GHz, whichever is lower

### 2.3 Limits of Conducted and Radiated Emission

#### 2.3.1 Limits of Conducted Emission for FCC Part 15, Subpart B/CISPR 22

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi - peak	Average	Quasi - peak	Average
0.15 - 0.5	79	66	66 - 56	56 - 46
0.50 - 5.0	73	60	56	46
5.0 - 30.0	73	60	60	50

Note : (1) The lower limit shall apply at the transition frequencies.

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

(3) All emanation from a class A/B digital device or system, including any network of conductors and apparatus connected there to, shall not exceed the level of field strengths specified above.





### 2.3.2 Limits of Radiated Emissions for FCC Part 15, Subpart B/CISPR 22

#### FCC Limit:

- Detector Function : Quasi – Peak

FREQUENCY (MHz)	Class A (at 10m)	Class B (at 3m)
	dBuV/m	dBuV/m
30~88	39	40
88~216	43.5	43.5
216~960	46.44	46
Above 960	49.54	54

- Detector Function : Peak , Average

FREQUENCY (MHz)	Class A (dBuV/m) (at 3m)		Class B (dBuV/m) (at 3m)	
	Peak	Average	Peak	Average
Above 1000~18000	79.3	59.3	73.9	53.9

#### CISPR Limit:

- Detector Function : Quasi – Peak

FREQUENCY (MHz)	Class A (at 10m)	Class B (at 10m)
	dBuV/m	dBuV/m
30-230	40	30
230-1000	47	37

Note : The lower limit applies at the transition frequency.



## 2.4. Test of Conducted Emission

### 2.4.1 Test Equipments

SGS Conducted Emission HWAYA Conducted Room No.A EMC					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
EMI Test Receiver	R&S	ESCI 3	101311	2015/6/18	2016/6/17
Coaxial Cables	N/A	N30N30-1042-150	N/A	2016/2/6	2017/2/5
LISN	SCHWARZBECK	NSLK 8127	8127-648	2015/6/9	2016/6/8
Pulse Limiter	Narda S.T.S.	PMM PL01	1110X30602	2015/8/13	2016/8/12
LISN	Schwarzbeck	NSLK 8128	NSLK8127-300	2015/6/23	2016/6/22
Universal Digital Radio Communication Tester	R&S	CMU 200	120239	2015/11/24	2016/11/23
Test S/W	Farad	EZ-EMC	Ver. SGS-03A2	N.C.R.	N.C.R.
SGS Taiwan LTD. Electronics & Communication Laboratory No.2, Keji 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.) Measurement Uncertainty of Conducted Emission Expanded uncertainty (K=2) of conducted emission is 2.20 dB					

### 2.4.2 Operating Environment

Temperature : 23 degree C

Humidity : 63 %RH

Atmospheric Pressure : 992 mBar

### 2.4.3 Measurement Level Calculation

Factor = LISN insertion loss + Cable loss

Measurement Level = Reading Level + Factor

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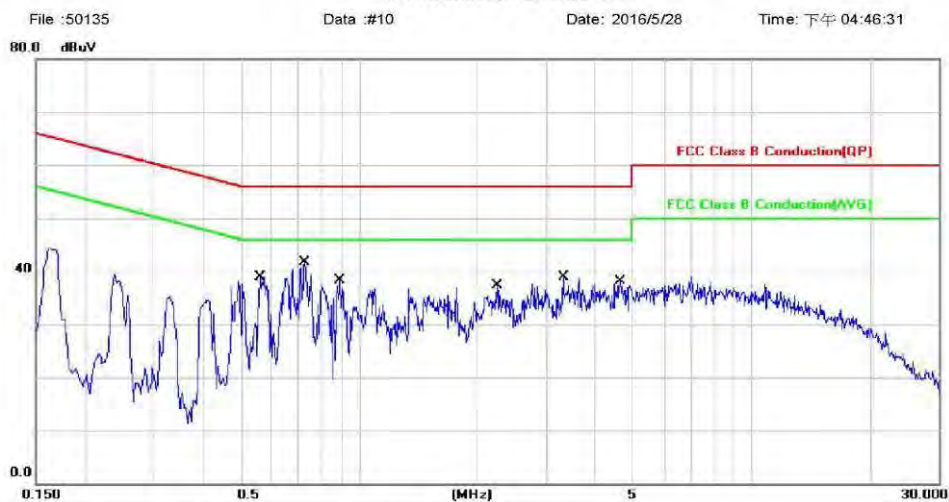


## 2.4.4 Measurement Data:

## Mode\_2\_L

Site : Conduction Room Phase: **L1** Temperature: 23 °C  
 Limit: FCC Class B Conduction(QP) Power: AC 120V/60Hz Humidity: 63 %  
 Mode: Mode 2  
 Note:

## Conducted Emission



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV	dBuV	dB		
1		0.5661	36.25	0.15	36.40	56.00	-19.60	QP	
2		0.5661	23.57	0.15	23.72	46.00	-22.28	AVG	
3		0.7280	38.34	0.16	38.50	56.00	-17.50	QP	
4 *		0.7280	28.64	0.16	28.80	46.00	-17.20	AVG	
5		0.9002	33.04	0.16	33.20	56.00	-22.80	QP	
6		0.9002	24.11	0.16	24.27	46.00	-21.73	AVG	
7		2.2480	29.68	0.20	29.88	56.00	-26.12	QP	
8		2.2480	19.89	0.20	20.09	46.00	-25.91	AVG	
9		3.3308	29.11	0.22	29.33	56.00	-26.67	QP	
10		3.3308	20.91	0.22	21.13	46.00	-24.87	AVG	
11		4.6460	28.99	0.25	29.24	56.00	-26.76	QP	
12		4.6460	21.37	0.25	21.62	46.00	-24.38	AVG	

\*:Maximum data x:Over limit l:over margin

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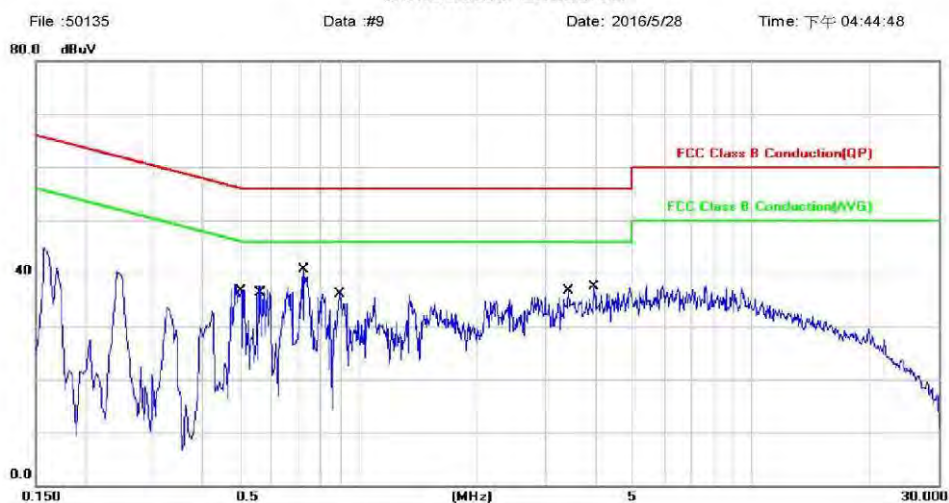
## Mode\_2\_N

Site : Conduction Room  
 Limit: FCC Class B Conduction(QP)  
 Mode: Mode 2  
 Note:

Phase: **N**  
 Power: AC 120V/60Hz

Temperature: 23 °C  
 Humidity: 63 %

## Conducted Emission



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV	dBuV	dB		
1		0.4946	35.51	0.21	35.72	56.09	-20.37	QP	
2		0.4946	19.32	0.21	19.53	46.09	-26.56	AVG	
3		0.5675	35.24	0.20	35.44	56.00	-20.56	QP	
4		0.5675	22.33	0.20	22.53	46.00	-23.47	AVG	
5 *		0.7277	38.51	0.21	38.72	56.00	-17.28	QP	
6		0.7277	26.83	0.21	27.04	46.00	-18.96	AVG	
7		0.8980	32.44	0.21	32.65	56.00	-23.35	QP	
8		0.8980	23.45	0.21	23.66	46.00	-22.34	AVG	
9		3.4303	30.36	0.27	30.63	56.00	-25.37	QP	
10		3.4303	22.13	0.27	22.40	46.00	-23.60	AVG	
11		3.9860	30.61	0.28	30.89	56.00	-25.11	QP	
12		3.9860	21.93	0.28	22.21	46.00	-23.79	AVG	

\*:Maximum data x:Over limit l:over margin

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## 2.5 Test of Radiated Emission

### 2.5.1 Test Equipments

#### Below 1GHz

SGS Radiated_Below_1GHz HWAYA 10m_EMC					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
EMI Test Receiver	R&S	ESCI 7	100950	2015/12/8	2016/12/7
EMI Test Receiver	R&S	ESCI 3	101343	2015/12/25	2016/12/24
Broadband Antenna	SCHWAZBECK	VULB9168	9168-628	2015/9/23	2016/9/22
Broadband Antenna	SCHWAZBECK	VULB9168	9168-629	2015/9/23	2016/9/22
Pre Amplifier	EMC Instruments Corp.	EMC330	980178	2016/3/31	2017/3/30
Pre Amplifier	EMC Instruments Corp.	EMC330	980179	2016/3/31	2017/3/30
Coaxial Cable	EMC Instruments	EMCCFD400-NM-NM	150917	2015/9/18	2016/9/17
Coaxial Cable	EMC Instruments	EMCCFD400-NM-NM	150919	2015/9/18	2016/9/17
Coaxial Cable	EMC Instruments	EMCCFD400-NM-NM	150820	2015/9/18	2016/9/17
Coaxial Cable	EMC Instruments	EMCCFD400-NM-NM	150918	2015/9/18	2016/9/17
Coaxial Cable	EMC Instruments	EMCCFD400-NM-NM	150821	2015/9/18	2016/9/17
Coaxial Cable	EMC Instruments	EMCCFD400-NM-NM	150822	2015/9/18	2016/9/17
Universal Digital Radio Communication Tester	R&S	CMU 200	120239	2015/11/24	2016/11/23
Controller	MF	MF-7802	N/A	N.C.R.	N.C.R.
Controller	MF	MF-7802	N/A	N.C.R.	N.C.R.
Antenna Master	MF	N/A	N/A	N.C.R.	N.C.R.
Antenna Master	MF	N/A	N/A	N.C.R.	N.C.R.
Antenna Master	MF	N/A	N/A	N.C.R.	N.C.R.
Turn Table	MF	N/A	N/A	N.C.R.	N.C.R.
Site NSA	Chance Most	10M Chamber	10M SAC	2015/12/31	2016/12/30
Test S/W	Farad	EZ-EMC	Ver. SGS-03A2	N.C.R.	N.C.R.
SGS Taiwan LTD. Electronics & Communication Laboratory No.2, Keji 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.) Measurement Uncertainty of Radiated Emission Expanded uncertainty of radiated emission is 4.16 dB. (30MHz ~ 1000MHz)					

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**Above 1GHz**

SGS Radiated_Above_1GHz HWAYA 966A_EMC					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
Spectrum Analyzer	R&S	FSV 40	101419	2016/2/25	2017/2/24
EMI Test Receiver	R&S	ESR 7	101459	2016/2/22	2017/2/21
Horn Antenna	SCHWARZBECK	BBHA9120D	BBHA9120D673	2015/10/8	2016/10/7
Horn Antenna	Schwarzbeck	BBHA9170	BBHA9170-184	2015/12/11	2016/12/10
Pre Amplifier	EMC Instruments Corp.	EMC012645B	980216	2015/9/30	2016/9/29
Pre Amplifier	EMC Instruments Corp.	EMC184045B	980135	2015/10/27	2016/10/26
Coaxial Cable	JUNFLOW	MWX221-NMSNMS	J0778929	2016/4/23	2017/4/22
Coaxial Cable	Huber+Suhner	SUCCOFLEX 104PEA	30255/4PEA	N.C.R.	N.C.R.
Coaxial Cable	EMC Instruments	EMC104-SM-SM	140927	2016/4/23	2017/4/22
Coaxial Cable	Huber+Suhner	SUCOFLEX 102	MY 2152/2	2015/6/5	2016/6/4
Coaxial Cable	Huber+Suhner	SUCOFLEX 102	MY 2153/2	2015/6/5	2016/6/4
Universal Digital Radio Communication Tester	R&S	CMU 200	120239	2015/11/24	2016/11/23
Controller	MF	MF-7802	N.C.R.	N.C.R.	N.C.R.
Antenna Master	MF	N/A	N/A	N.C.R.	N.C.R.
Turn Table	MF	N/A	N/A	N.C.R.	N.C.R.
Site VSWR	SGS	966 Chamber A	SAC-A	2016/1/12	2017/1/11
Test S/W	Farad	EZ-EMC	Ver. SGS-03A2	N.C.R.	N.C.R.
SGS Taiwan LTD. Electronics & Communication Laboratory No.2, Keji 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.) Measurement Uncertainty of Radiated Emission Expanded uncertainty (k=2) of radiated emission measurement is 4.96 dB. (1-6GHz) Expanded uncertainty (k=2) of radiated emission measurement is 5.14 dB. (6-18GHz) Expanded uncertainty (k=2) of radiated emission measurement is 4.86 dB. (18-26GHz) Expanded uncertainty (k=2) of radiated emission measurement is 4.81 dB. (26-40GHz)					

**2.5.2 Operating Environment**

Temperature : 18 degree C

Humidity : 71 %RH

Atmospheric Pressure : 996 mBar

**2.5.3 Measurement Level Calculation**

Correction Factor = Antenna Factor + Cable loss- Amplifier Gain

Measurement Level = Reading Level + Correction Factor

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## 2.5.4 Measurement Data

### Below 1GHz

### Mode\_3\_H

Site: SGS 10m Chamber  
 Limit: CISPR22 Class B 10M Radiation  
 Mode: Mode\_3  
 Note:

Polarization: **Horizontal**  
 Power: From System  
 Distance: 10m

Temperature: 18 °C  
 Humidity: 71 %

### Radiated Emission



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over		
		MHz	Level	Factor	ment			Detector	Comment
			dBuV	dB	dBuV/m	dBuV/m	dB		
1		40.6700	24.52	-11.75	12.77	30.00	-17.23	QP	
2		40.6700	24.53	-11.75	12.78	30.00	-17.22	QP	
3		174.5300	26.09	-12.57	13.52	30.00	-16.48	QP	
4		240.0105	33.47	-13.41	20.06	37.00	-16.94	QP	
5 *		261.9800	39.14	-12.47	26.67	37.00	-10.33	QP	
6		934.0400	23.66	-0.25	23.41	37.00	-13.59	QP	

\*:Maximum data x:Over limit !:over margin

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## Mode\_3\_V

Site: SGS 10m Chamber

Polarization: **Vertical**

Temperature: 18 °C

Limit: CISPR22 Class B 10M Radiation

Power: From System

Humidity: 71 %

Mode: Mode\_3

Distance: 10m

Note:

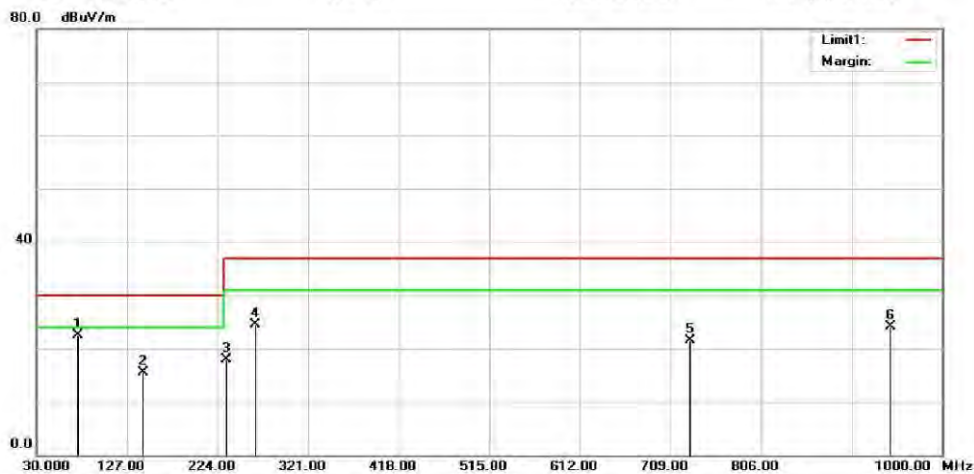
## Radiated Emission

File: E1-2016-50135

Data: #9

Date: 2016/5/27

Time: 下午 08:31:07



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	*	73.9400	36.83	-14.38	22.45	30.00	-7.55	QP	
2		144.4600	27.29	-11.77	15.52	30.00	-14.48	QP	
3		233.2100	31.63	-13.78	17.85	37.00	-19.15	QP	
4		263.9700	36.54	-12.00	24.54	37.00	-12.46	QP	
5		730.3400	23.20	-1.74	21.46	37.00	-15.54	QP	
6		944.7100	23.22	0.89	24.11	37.00	-12.89	QP	

\*:Maximum data    x:Over limit    !:over margin

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## Above 1GHz

## Mode\_3\_H

Site: SGS 966 Chamber A

Polarization: **Horizontal**

Temperature: 21 °C

Limit: FCC Class B 3M Radiation(1G-40G)(Pea

Power: AC 120V/60Hz

Humidity: 64 %

Mode: Mode\_3

Distance:

Note:

## Radiated Emission

File :50135

Data :#10

Date: 2016/5/28

Time: 下午 01:12:06

100.0 dBuV/m



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		1782.000	63.45	-20.22	43.23	74.00	-30.77	peak	
2		3312.000	58.22	-14.62	43.60	74.00	-30.40	peak	
3		4213.000	58.09	-11.86	46.23	74.00	-27.77	peak	
4		4791.000	58.62	-10.59	48.03	74.00	-25.97	peak	
5		5352.000	58.26	-8.95	49.31	74.00	-24.69	peak	
6 *		5743.000	58.89	-8.08	50.81	74.00	-23.19	peak	

\*:Maximum data x:Over limit !:over margin

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## Mode\_3\_V

Site: SGS 966 Chamber A  
 Limit: FCC Class B 3M Radiation(1G-40G)(Pea  
 Mode: Mode\_3  
 Note:

Polarization: **Vertical**  
 Power: AC 120V/60Hz  
 Distance:

Temperature: 21 °C  
 Humidity: 64 %

## Radiated Emission



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		1391.000	61.44	-21.85	39.59	74.00	-34.41	peak	
2	*	1782.000	71.68	-20.22	51.46	74.00	-22.54	peak	
3		2785.000	58.08	-14.88	43.20	74.00	-30.80	peak	
4		4757.000	58.09	-10.68	47.41	74.00	-26.59	peak	
5		5318.000	58.07	-9.05	49.02	74.00	-24.98	peak	
6		5692.000	57.83	-8.17	49.66	74.00	-24.34	peak	

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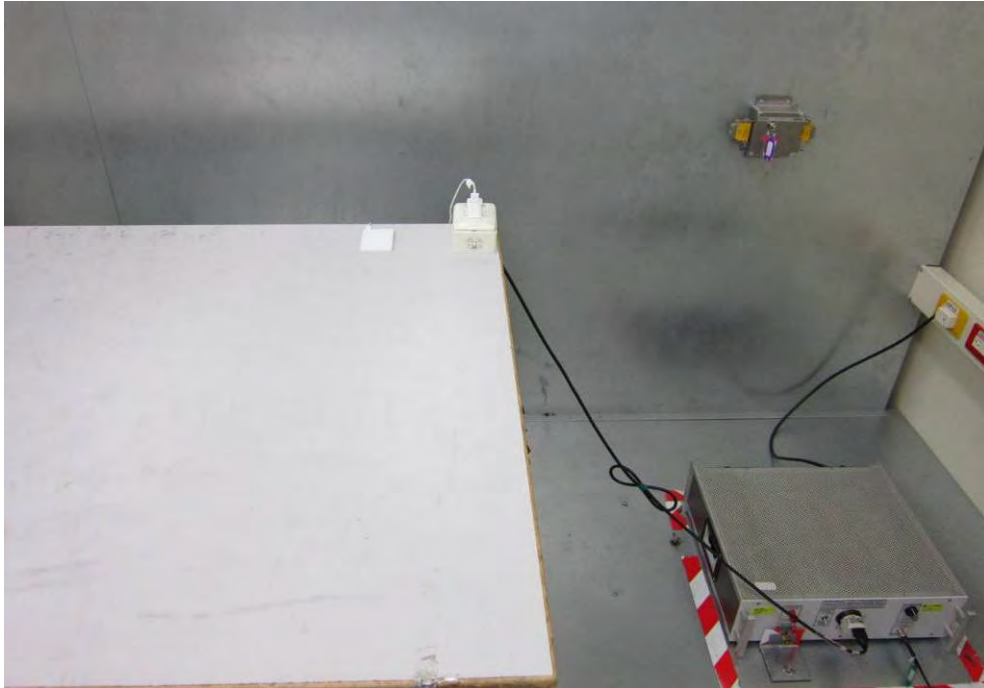
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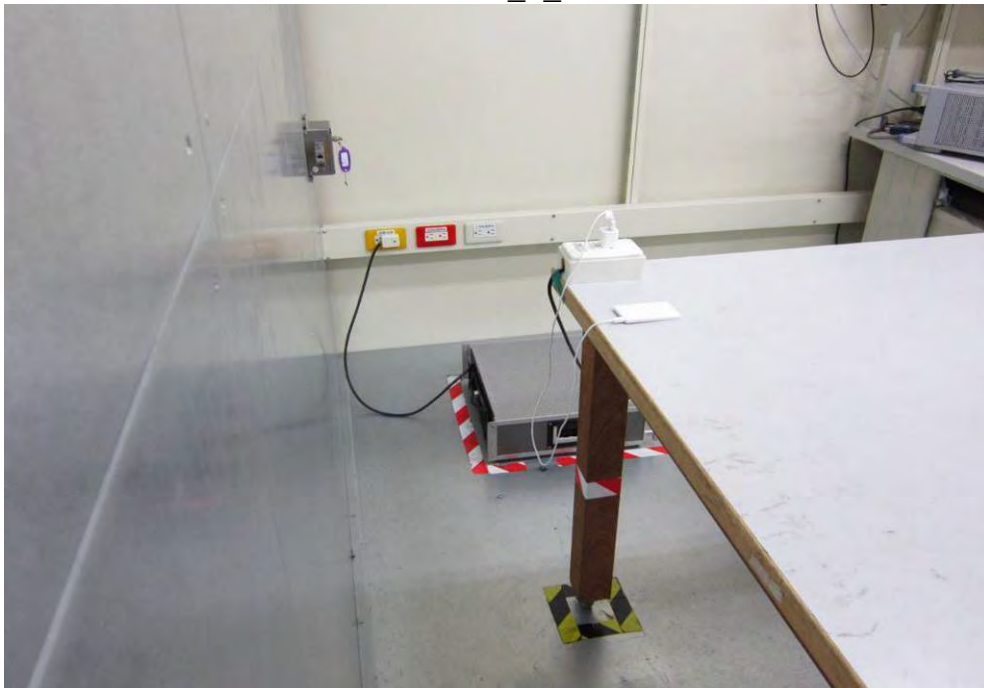
### 3. Photographs of Test

#### CE Testing Set-up

Mode\_2\_+



Mode\_2\_-



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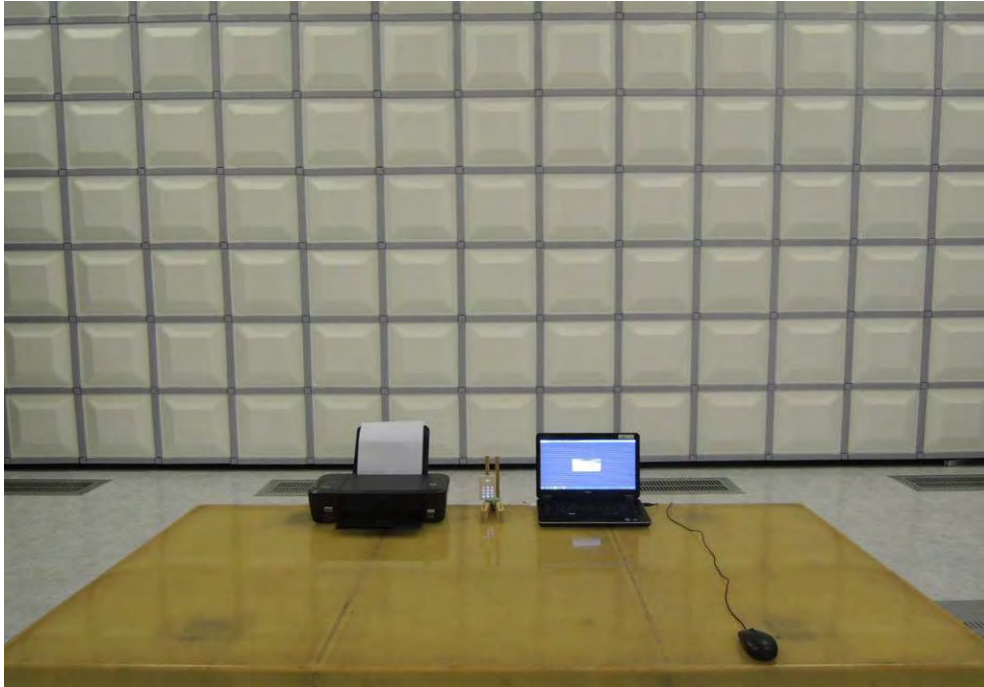
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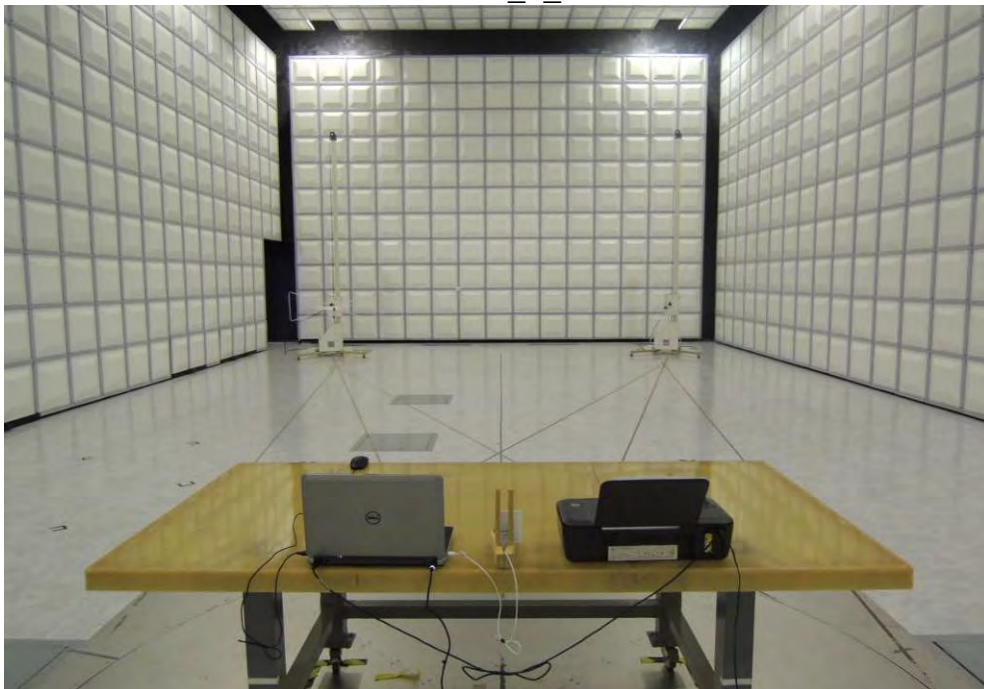


## RE Testing Set-up Below 1GHz

### Mode\_3\_+



### Mode\_3\_-



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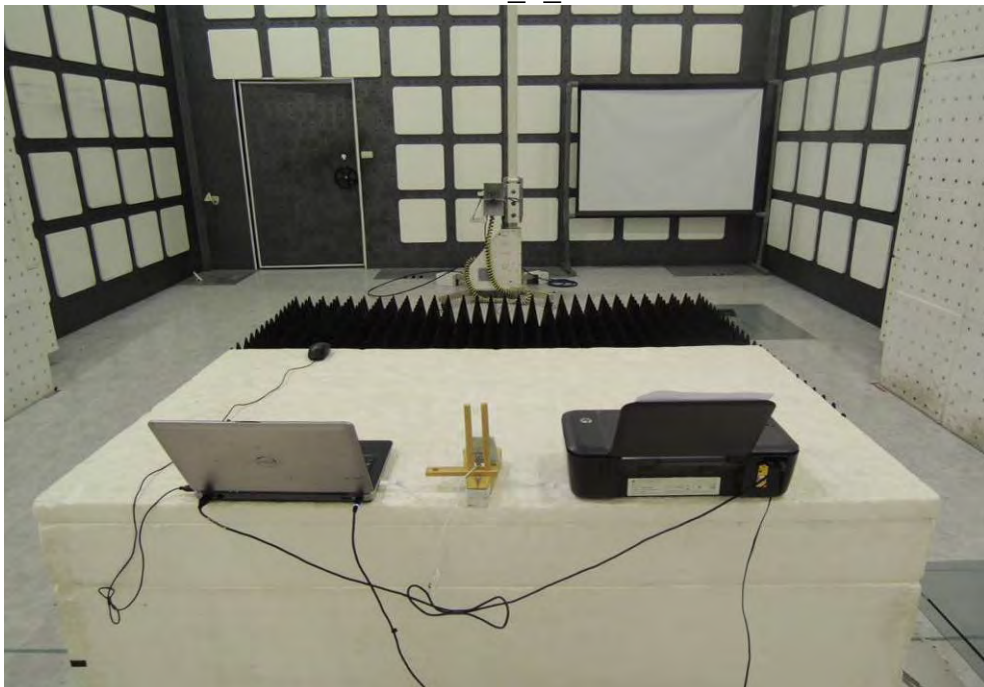
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**Above 1GHz****Mode\_3\_+****Mode\_3\_-**

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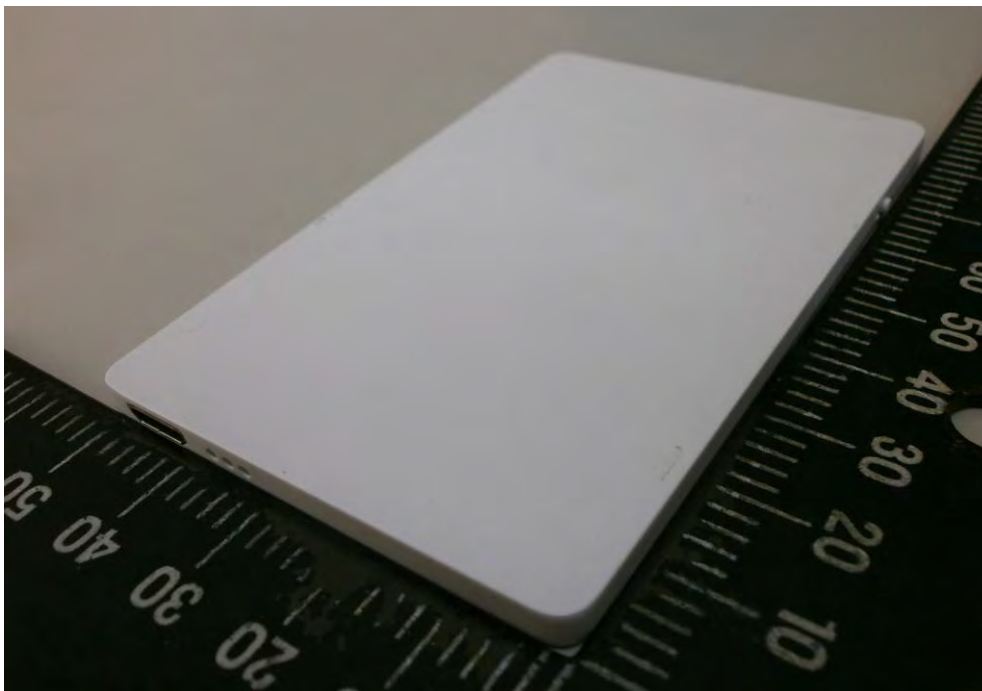
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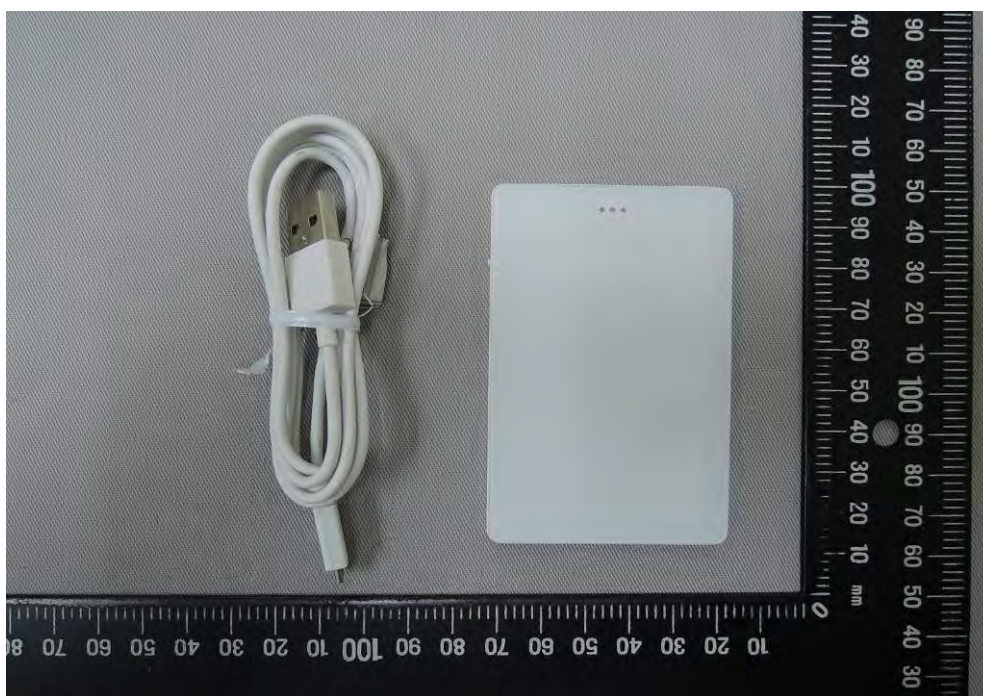
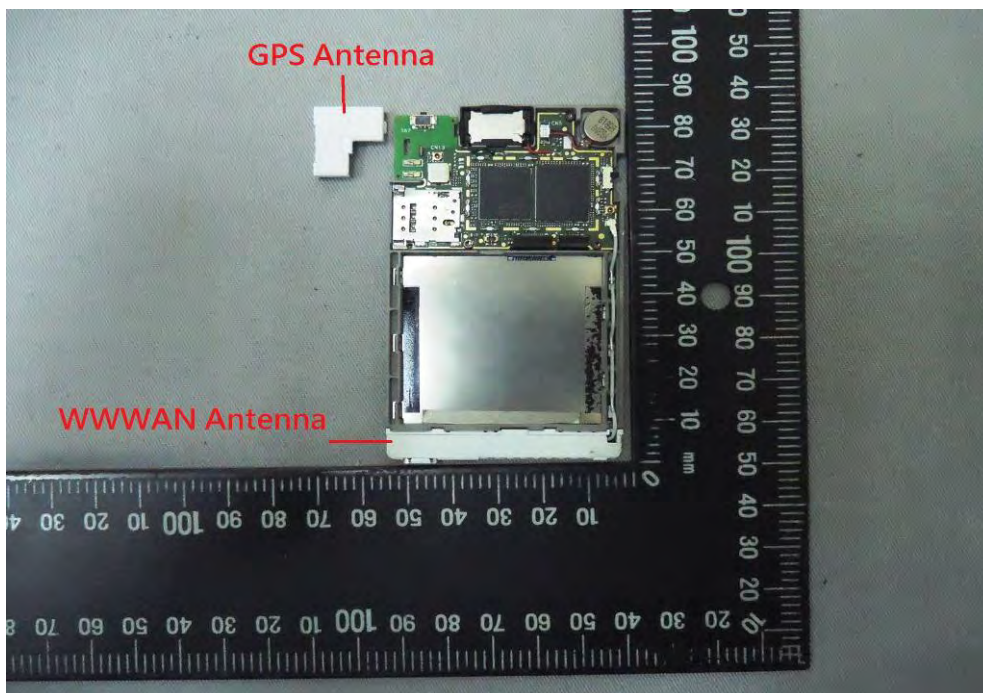
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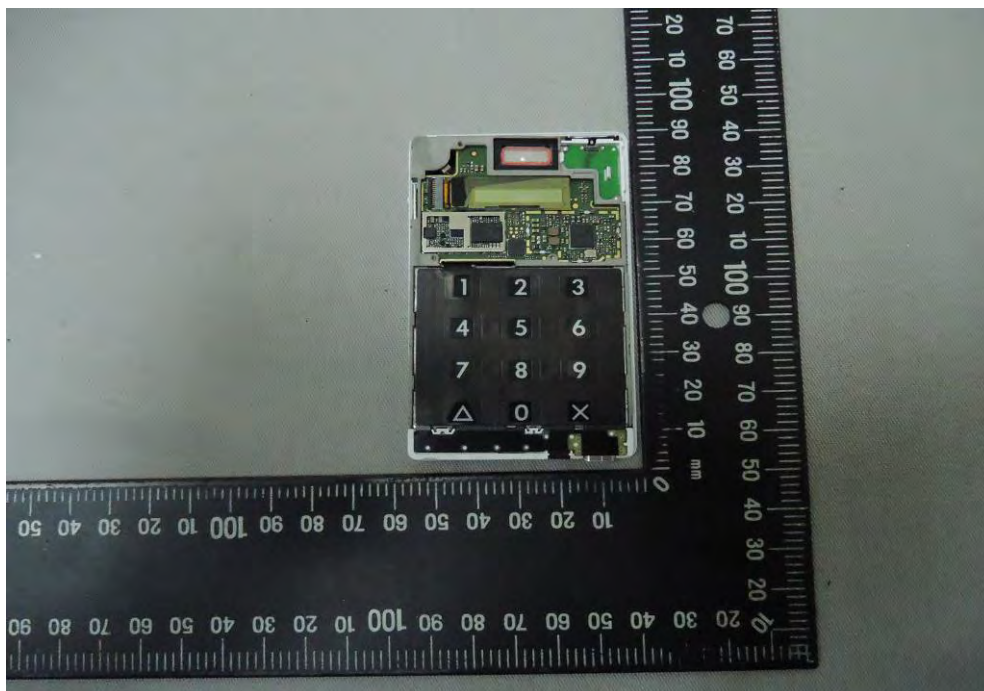
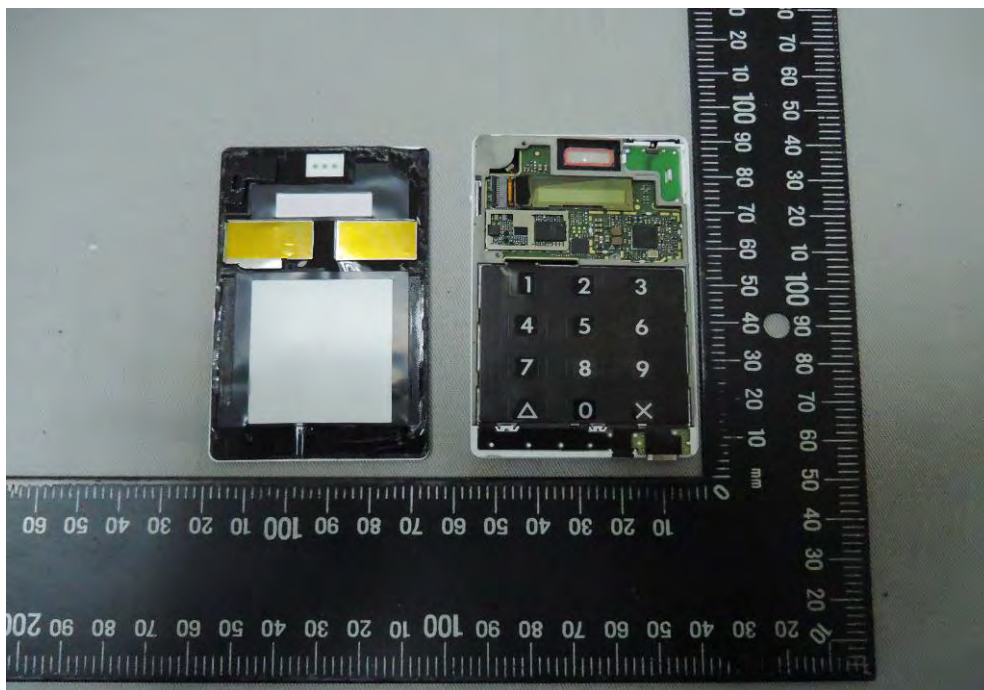
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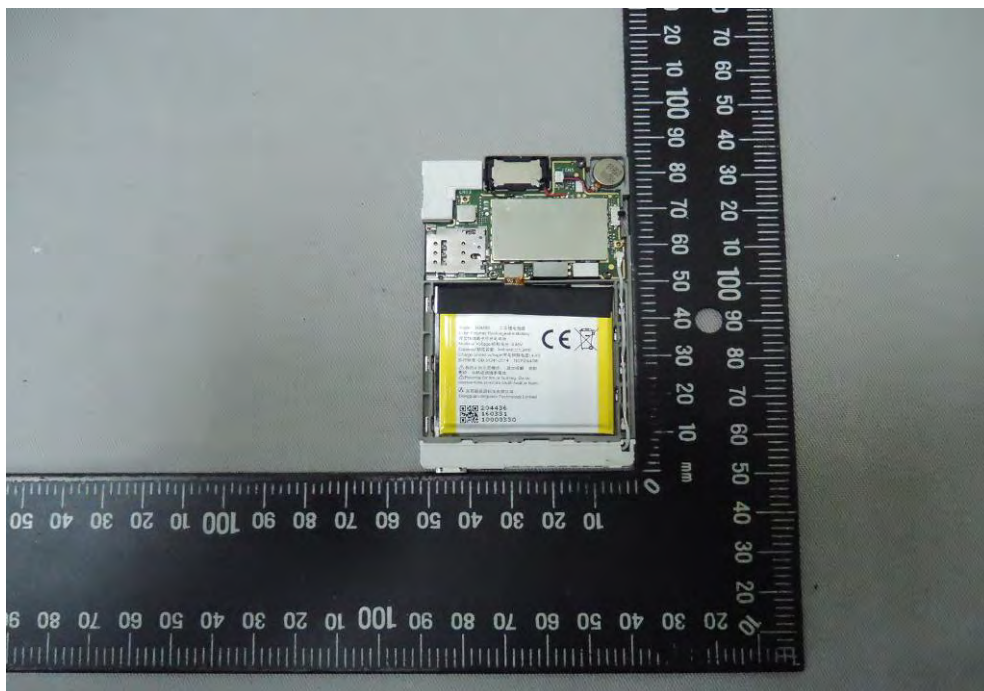
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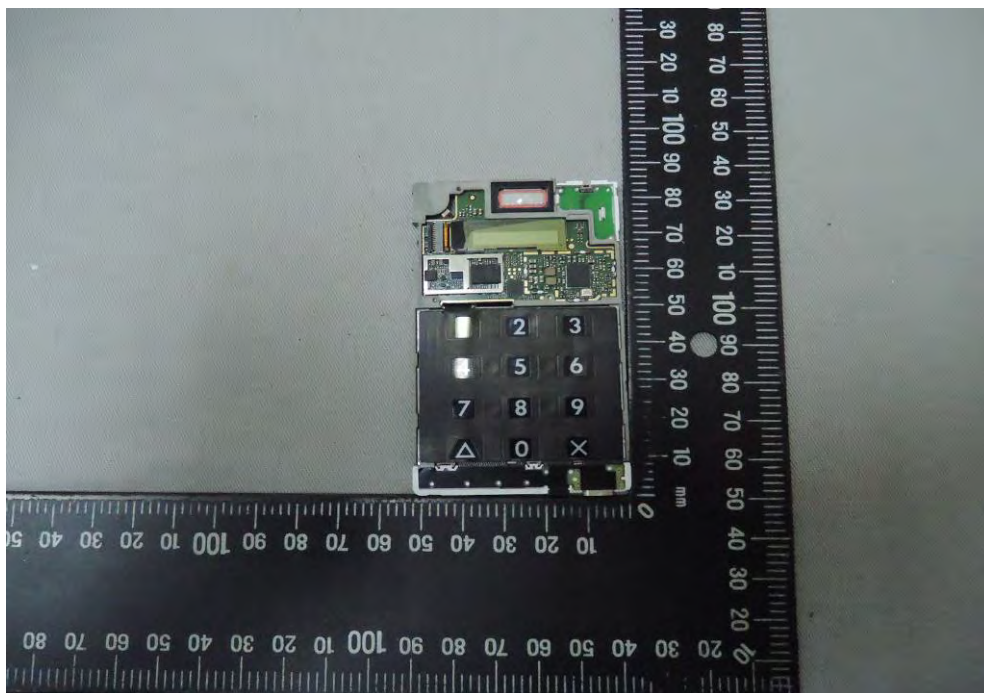
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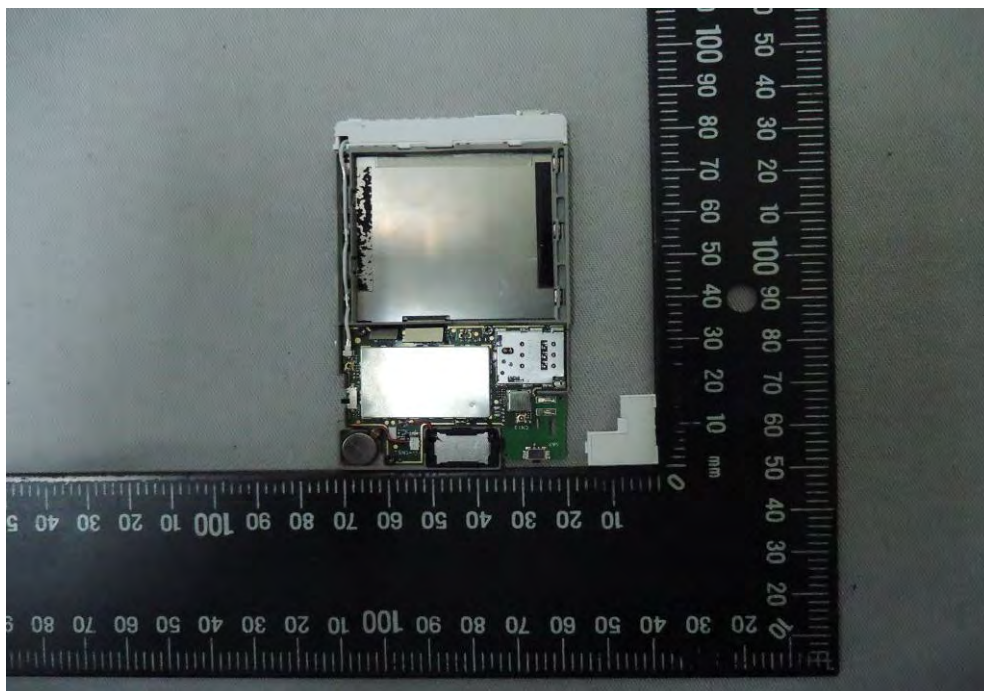
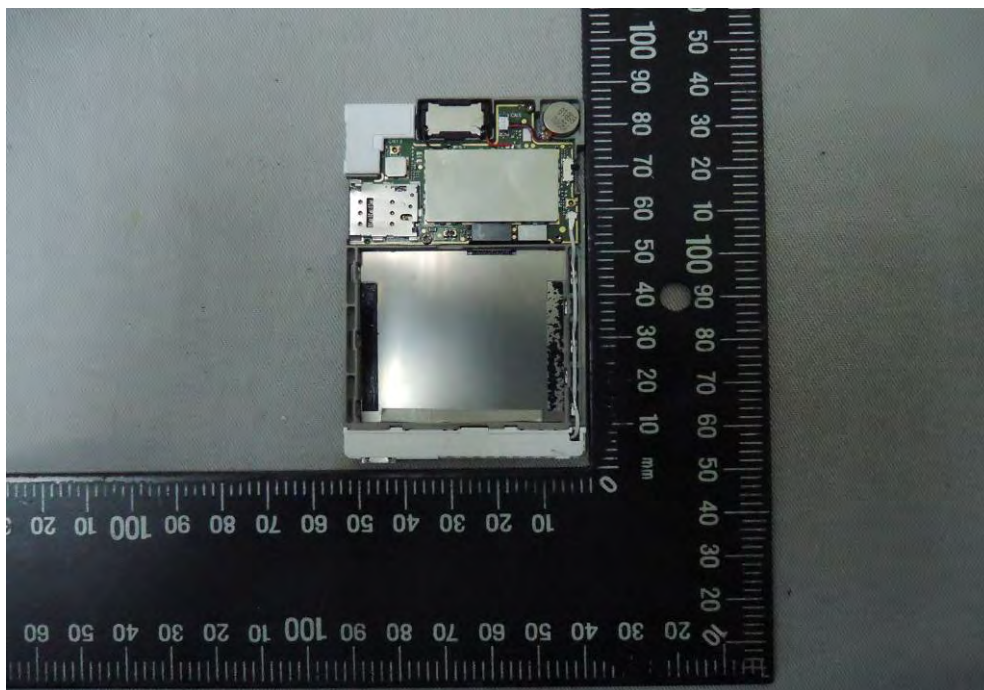
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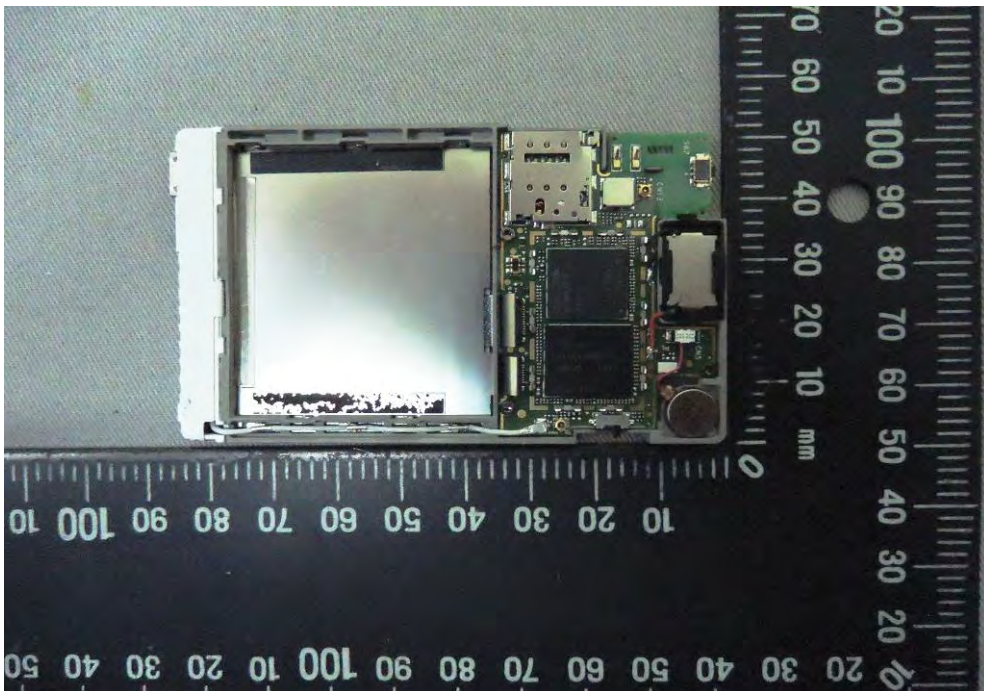
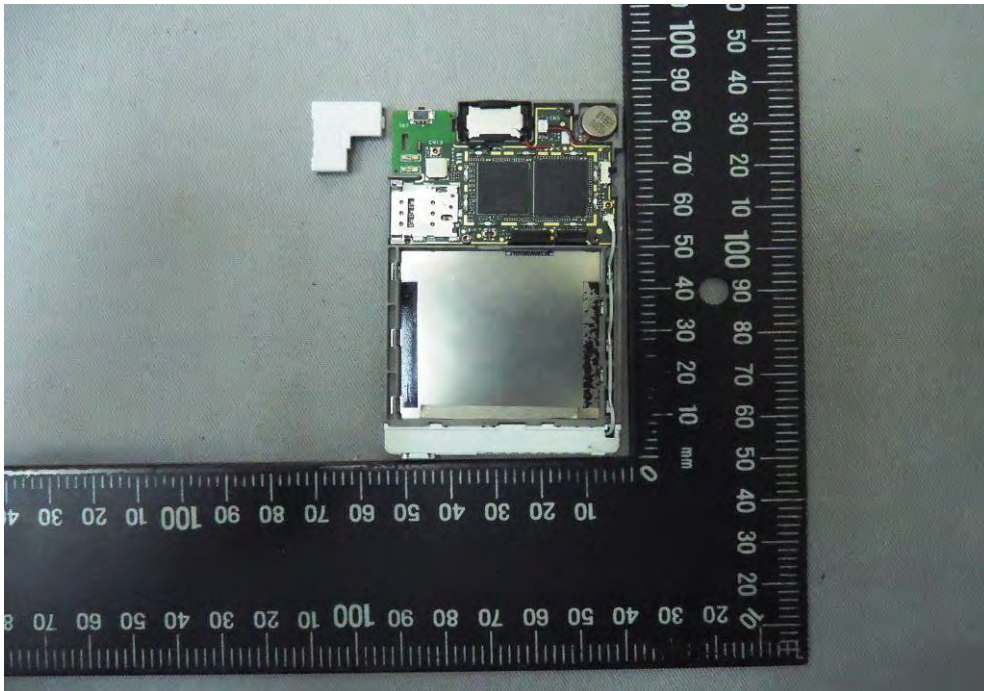
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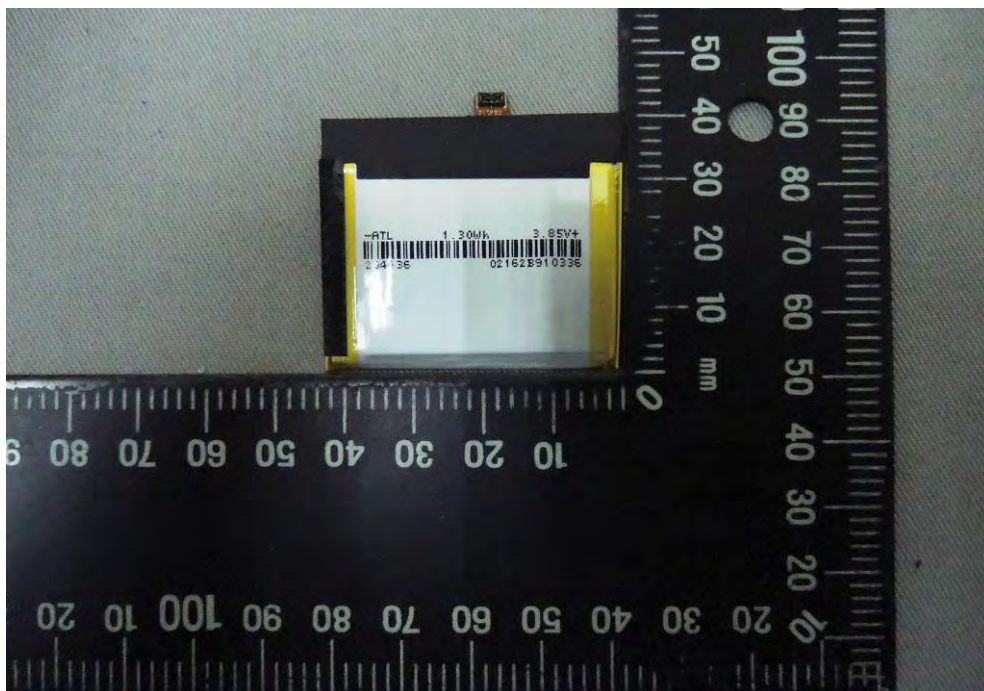
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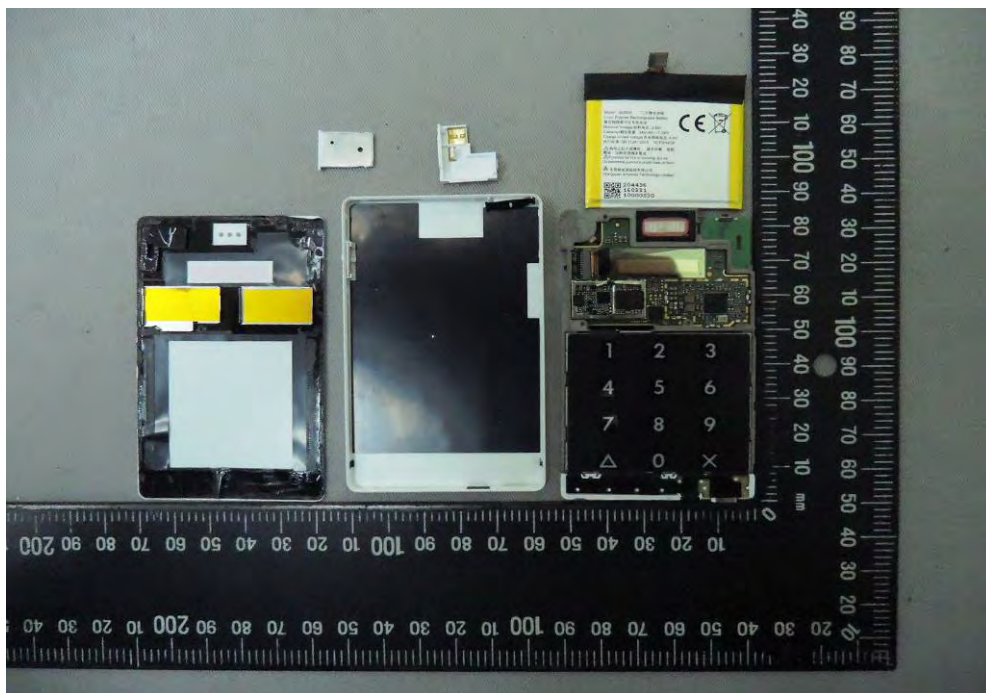
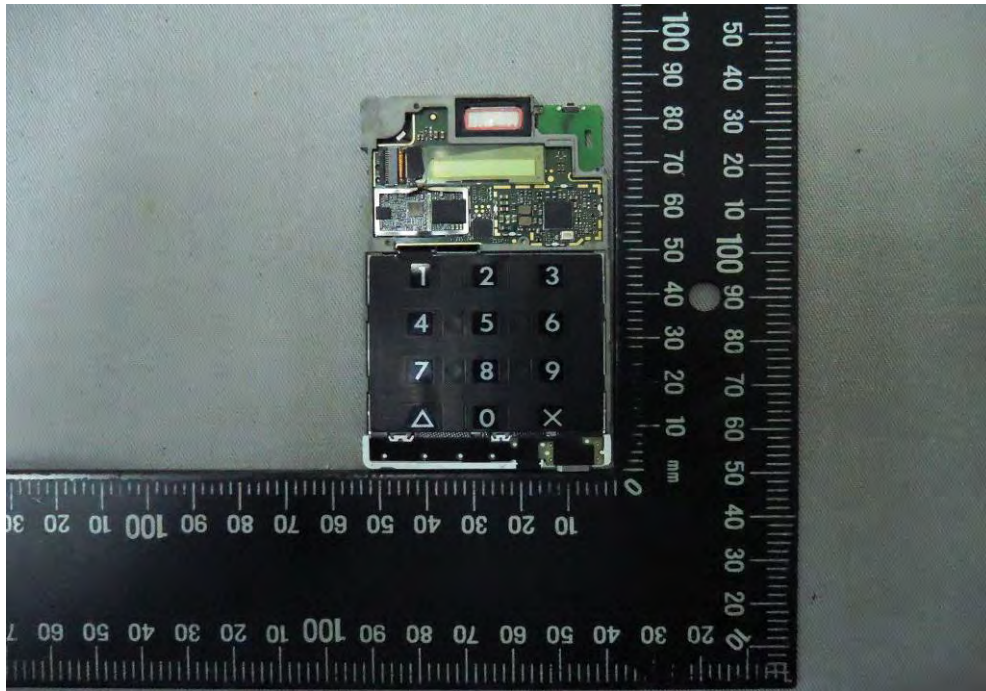
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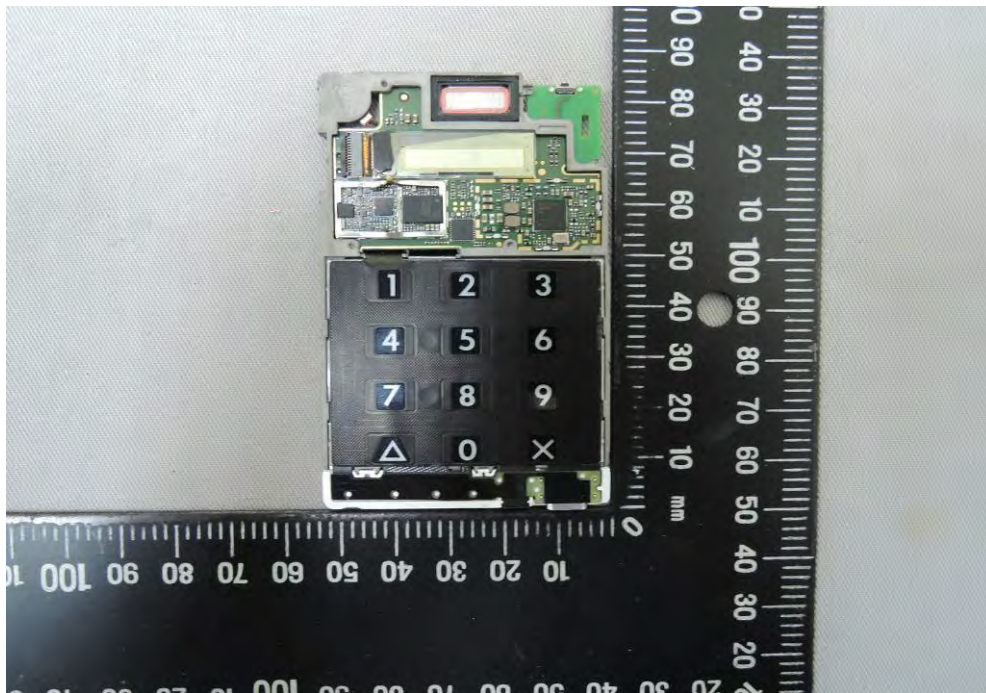




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