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Report No.: SZEM180800759601
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TEST REPORT

Application No.: SZEM1808007596IT
Applicant: Flashbay Electronics
Address of Applicant: Bldg. NO. 1 101~501, Bldg. NO. 2, Bldg. NO. 3 1~4F, Xifengcheng Industrial Park, No. 2 Fuyuan Rd, Heping, Fuhai, Bao'an District, Shenzhen City, Guangdong Province, P.R. China
Manufacturer / Factory: Flashbay Electronics
Address of Manufacturer / Factory: Bldg. NO. 1 101~501, Bldg. NO. 2, Bldg. NO. 3 1~4F, Xifengcheng Industrial Park, No. 2 Fuyuan Rd, Heping, Fuhai, Bao'an District, Shenzhen City, Guangdong Province, P.R. China
Equipment Under Test (EUT):
EUT Name: USB Cables
Model No.: CXB, CXL, CXC ♣
♣ Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.
Standard(s) : 47 CFR Part 15, Subpart B
Date of Receipt: 2018-08-20
Date of Test: 2018-08-20 to 2018-08-22
Date of Issue: 2018-08-27

Test Result:	Pass*
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* In the configuration tested, the EUT complied with the standards specified above.



Keny Xu
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.

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<i>Revision Record</i>				
<i>Version</i>	<i>Chapter</i>	<i>Date</i>	<i>Modifier</i>	<i>Remark</i>
01		2018-08-27		Original

Authorized for issue by:				
				
		<hr/>		
		Foray Chen /Project Engineer		
				
		<hr/>		
		Eric Fu /Reviewer		

2 Test Summary

Emission Part				
Item	Standard	Method	Requirement	Result
Conducted Emissions at Mains Terminals (150kHz-30MHz)	47 CFR Part 15, Subpart B	ANSI C63.4:2014	Class B	Pass
Radiated Emissions (30MHz-1GHz)	47 CFR Part 15, Subpart B	ANSI C63.4:2014	Class B	Pass

Internal Source	Upper Frequency
Below 1.705MHz	30MHz
1.705MHz to 108MHz	1GHz
108MHz to 500MHz	2GHz
500MHz to 1GHz	5GHz
Above 1GHz	5th harmonic of the highest frequency or 40GHz, whichever is lower

Declaration of EUT Family Grouping:

Model No.:CXB, CXL, CXC

Only the model CXL was tested fully, and the model CXC was performed the Radiated Emissions for discrepancy, since the electrical circuit design, PCB layout, components used and internal wiring and functions were identical for the above models, with only difference on the adapter and model No..



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4 General Information

4.1 Details of E.U.T.

Power supply:	Supply by PC
Cable:	EUT cable: 10cm unshielded

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
iPhone 6	Apple	MG472ZP/A	C34NHTMFG5MN
Laptop	Lenovo	T430u	REF. No.SEA1800
Mobile Phone	LeTV	Le X620	LP031262A6180395427
Mouse	Lenovo	M-U0025-O	REF. No.:SEA2400
Router	NETGEAR	DGN2200	REF. No.SEA2200

4.3 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Conduction Emission	$\pm 3.0\text{dB}$ (150kHz to 30MHz)
2	Radiated Emission	$\pm 4.5\text{dB}$ (30MHz-1GHz)
3	Temperature test	$\pm 1^\circ\text{C}$
4	Humidity test	$\pm 3\%$



4.4 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen Branch

No. 1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, Guangdong, China.
518057.

Tel: +86 755 2601 2053 Fax: +86 755 2671 0594

No tests were sub-contracted.

4.5 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.

- **A2LA (Certificate No. 3816.01)**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

- **VCCI**

The 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 respectively.

- **FCC –Designation Number: CN1178**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1178. Test Firm Registration Number: 406779.

- **Industry Canada (IC)**

Two 3m Semi-anechoic chambers and the 10m Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab have been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1, 4620C-2, 4620C-3.

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None



5 Equipment List

Conducted Emissions at Mains Terminals (150kHz-30MHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Shielding Room	ChangZhou ZhongYu	GB-88	SEM001-06	2017-05-10	2020-05-09
Measurement Software	AUDIX	e3 V5.4.1221d	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM024-01	2018-07-12	2019-07-11
LISN	Rohde & Schwarz	ENV216	SEM007-01	2017-09-27	2018-09-26
LISN	ETS-LINDGREN	3816/2	SEM007-02	2018-04-02	2019-04-01
EMI Test Receiver	Rohde & Schwarz	ESCI	SEM004-02	2018-04-02	2019-04-01

Radiated Emissions (30MHz-1GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEM001-01	2017-08-05	2020-08-04
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM025-01	2018-07-12	2019-07-11
EMI Test Receiver	Agilent Technologies	N9038A	SEM004-05	2017-09-27	2018-09-26
BiConiLog Antenna (26-3000MHz)	ETS-LINDGREN	3142C	SEM003-01	2017-06-27	2020-06-26
Pre-amplifier (0.1-1300MHz)	Agilent Technologies	8447D	SEM005-01	2018-04-02	2019-04-01

General used equipment					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-03	2017-09-29	2018-09-28
Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-04	2017-09-29	2018-09-28
Humidity/ Temperature Indicator	Mingle	N/A	SEM002-08	2017-09-29	2018-09-28
Barometer	Changchun Meteorological Industry Factory	DYM3	SEM002-01	2018-04-08	2019-04-07

6 Emission Test Results

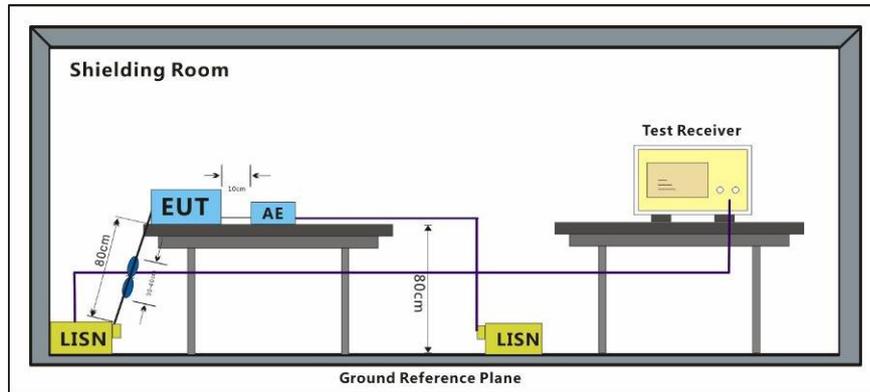
6.1 Conducted Emissions at Mains Terminals (150kHz-30MHz)

Test Requirement:	47 CFR Part 15, Subpart B
Test Method:	ANSI C63.4:2014
Frequency Range:	150kHz to 30MHz
Limit:	
0.15M-0.5MHz	66dB(μV)-56dB(μV) quasi-peak, 56dB(μV)-46dB(μV) average
0.5M-5MHz	56dB(μV) quasi-peak, 46dB(μV) average
5M-30MHz	60dB(μV) quasi-peak, 50dB(μV) average
Detector:	Peak for pre-scan (9kHz resolution bandwidth) 0.15M to 30MHz

6.1.1 E.U.T. Operation

Operating Environment:			
Temperature:	22.7 °C	Humidity:	48.3 % RH
		Atmospheric Pressure:	1000 mbar
Test mode	a: Lightning mode, build the connection between PC and iPhone through EUT(CXL), keep data exchanging.		

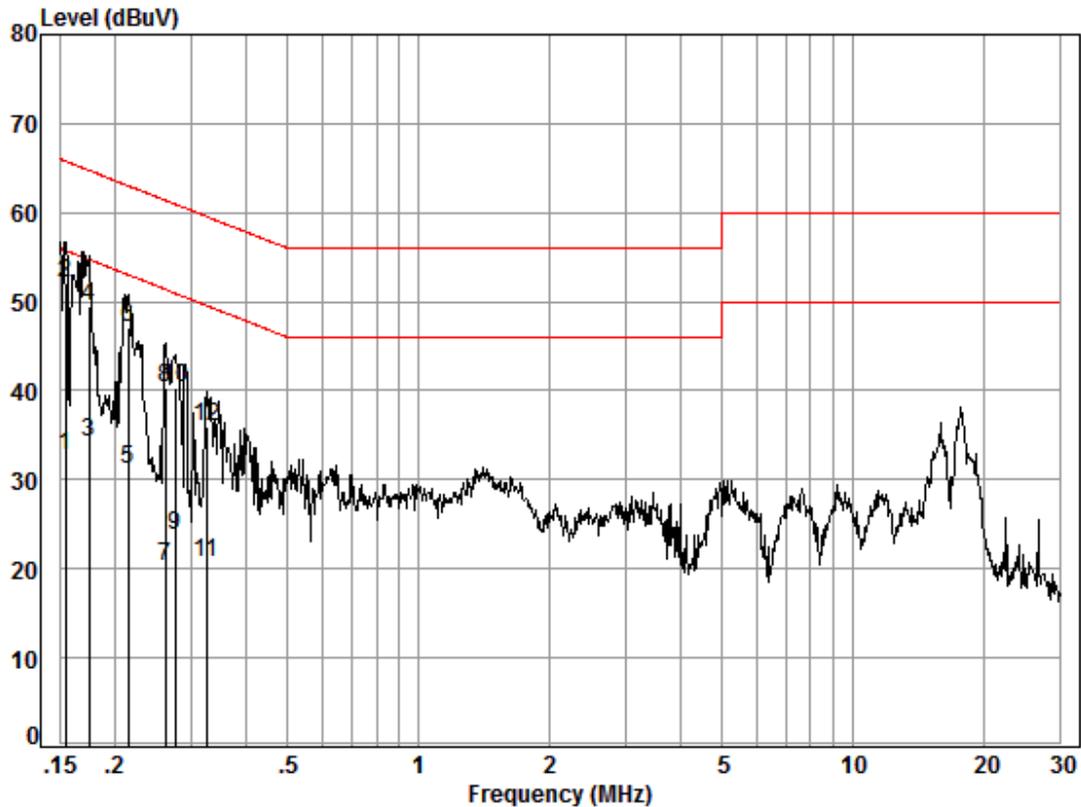
6.1.2 Test Setup Diagram



6.1.3 Measurement Data

An initial pre-scan was performed with peak detector. Quasi-Peak or Average measurement were performed at the frequencies with maximized peak emission were detected.

Model: CXL
 Mode:a; Line:Live Line

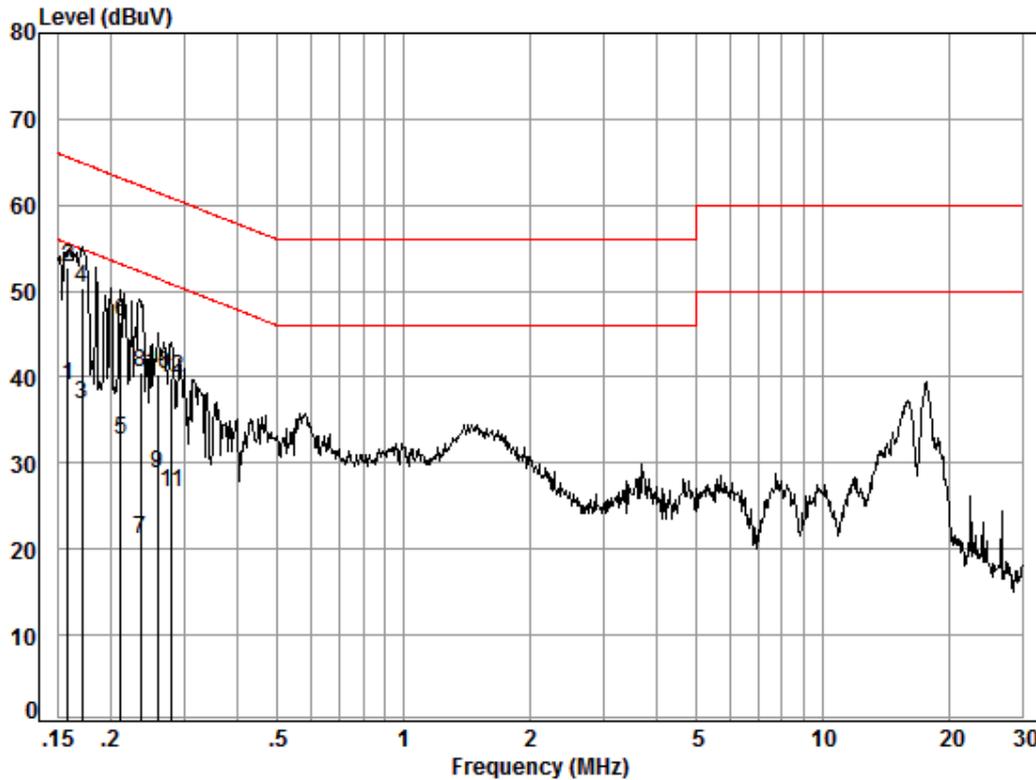


Site : Shielding Room
 Condition: Line
 Job No. : 07596IT
 Test mode: a

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.15	0.02	9.51	23.16	32.69	55.78	-23.09	Average
2	0.15	0.02	9.51	42.62	52.15	65.78	-13.63	QP
3	0.17	0.03	9.52	24.63	34.18	54.77	-20.59	Average
4	0.17	0.03	9.52	39.86	49.41	64.77	-15.36	QP
5	0.22	0.03	9.50	21.74	31.27	53.01	-21.74	Average
6	0.22	0.03	9.50	37.54	47.07	63.01	-15.94	QP
7	0.26	0.03	9.51	10.82	20.36	51.38	-31.02	Average
8	0.26	0.03	9.51	30.77	40.31	61.38	-21.07	QP
9	0.28	0.03	9.51	14.11	23.65	50.94	-27.29	Average
10	0.28	0.03	9.51	30.78	40.32	60.94	-20.62	QP
11	0.33	0.03	9.50	11.13	20.66	49.57	-28.91	Average
12	0.33	0.03	9.50	26.42	35.95	59.57	-23.62	QP



Mode:a; Line:Neutral Line



Site : Shielding Room
Condition: Neutral
Job No. : 07596IT
Test mode: a

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.16	0.02	9.58	29.50	39.10	55.56	-16.46	Average
2	0.16	0.02	9.58	43.14	52.74	65.56	-12.82	QP
3	0.17	0.02	9.59	27.15	36.76	54.90	-18.14	Average
4	0.17	0.02	9.59	40.83	50.44	64.90	-14.46	QP
5	0.21	0.03	9.57	23.06	32.66	53.14	-20.48	Average
6	0.21	0.03	9.57	36.80	46.40	63.14	-16.74	QP
7	0.24	0.03	9.58	11.52	21.13	52.26	-31.13	Average
8	0.24	0.03	9.58	30.97	40.58	62.26	-21.68	QP
9	0.26	0.03	9.58	19.20	28.81	51.47	-22.66	Average
10	0.26	0.03	9.58	30.72	40.33	61.47	-21.14	QP
11	0.28	0.03	9.58	16.95	26.56	50.81	-24.25	Average
12	0.28	0.03	9.58	30.26	39.87	60.81	-20.94	QP

6.2 Radiated Emissions (30MHz-1GHz)

Test Requirement:	47 CFR Part 15, Subpart B
Test Method:	ANSI C63.4:2014
Frequency Range:	30MHz to 1GHz
Measurement Distance:	3m
Limit:	
30MHz -88MHz	40.0(dB μ V/m) quasi-peak
88MHz-216MHz	43.5(dB μ V/m) quasi-peak
216MHz-960MHz	46.0(dB μ V/m) quasi-peak
960MHz-1000MHz	54.0(dB μ V/m) quasi-peak
Detector:	Peak for pre-scan (120kHz resolution bandwidth) 30M to1000MHz

6.2.1 E.U.T. Operation

Operating Environment:

Temperature: 24.3 °C Humidity: 55.4 % RH Atmospheric Pressure: 1000 mbar

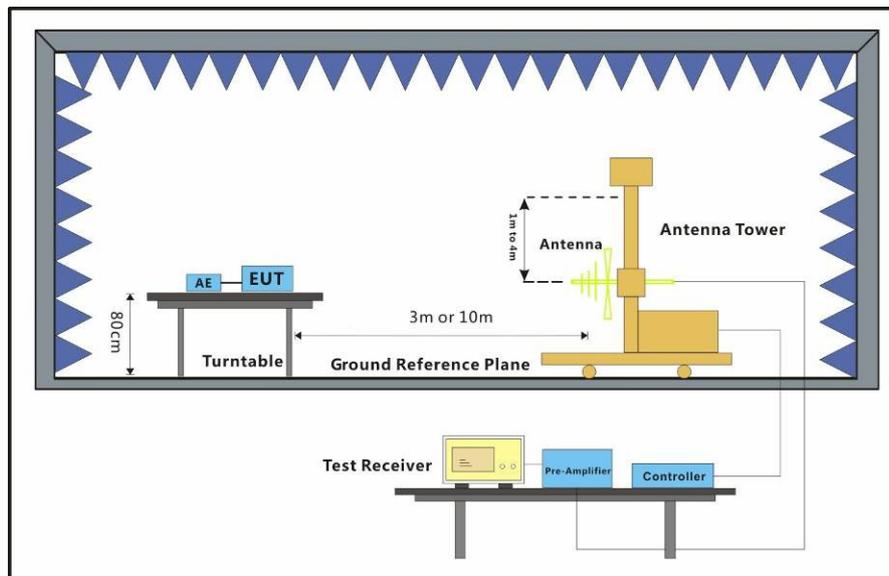
Pretest these modes to find the worst case: a: Lightning mode, build the connection between PC and iPhone through EUT(CXL), keep data exchanging.

b: Type-C mode, build the connection between PC and mobile phone through EUT(CXC), keep data exchanging.

The worst case for final test: a: Lightning mode, build the connection between PC and iPhone through EUT(CXL), keep data exchanging.

b: Type-C mode, build the connection between PC and mobile phone through EUT(CXC), keep data exchanging.

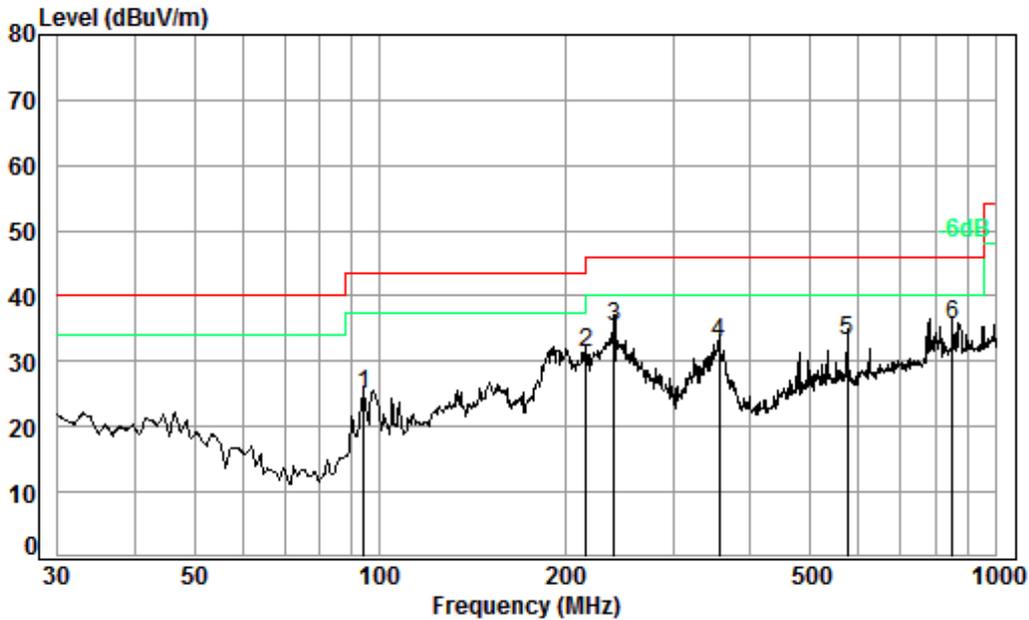
6.2.2 Test Setup Diagram



6.2.3 Measurement Data

An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by BiConiLog antenna with 2 orthogonal polarities.

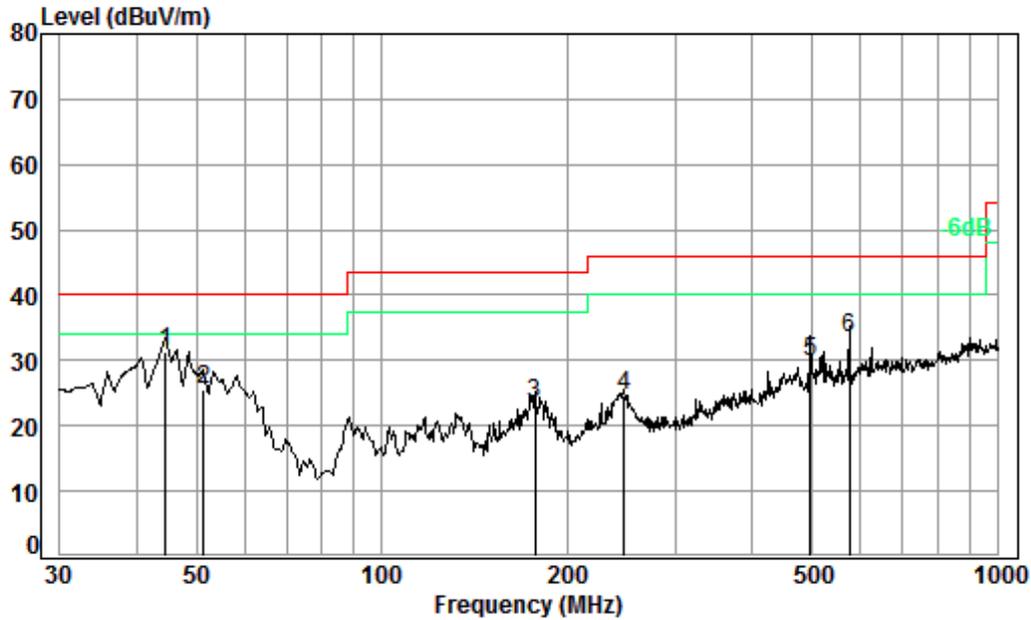
Model: CXL
 Mode:a; Polarization:Horizontal



Condition: 3m HORIZONTAL
 Job No. : 07596IT
 Test mode: a

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	94.10	1.14	13.48	27.36	37.81	25.07	43.50	-18.43
2	216.02	1.49	17.07	26.85	39.61	31.32	46.00	-14.68
3	239.99	1.62	18.80	26.78	41.58	35.22	46.00	-10.78
4	356.68	2.08	21.28	26.97	36.54	32.93	46.00	-13.07
5	574.63	2.68	26.13	27.87	32.16	33.10	46.00	-12.90
6 pp	851.04	3.41	29.18	27.33	30.32	35.58	46.00	-10.42

Mode:a; Polarization:Vertical

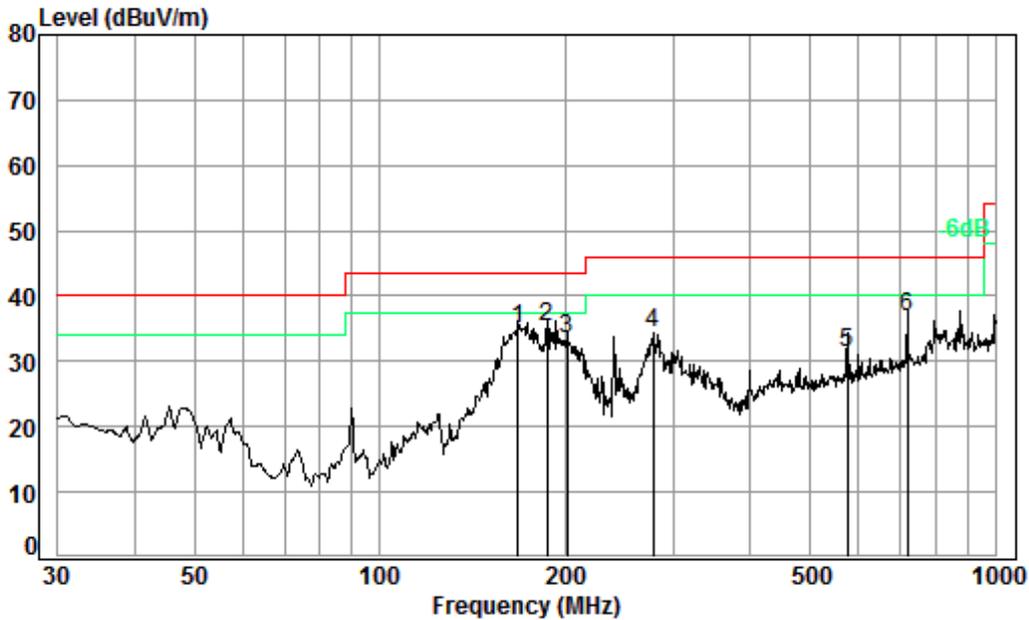


Condition: 3m VERTICAL
 Job No. : 07596IT
 Test mode: a

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Limit Level	Limit Line	Over Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1 pp	44.59	0.70	15.89	27.42	42.31	31.48	40.00	-8.52
2	51.30	0.80	14.06	27.41	38.02	25.47	40.00	-14.53
3	177.51	1.37	15.85	26.98	33.08	23.32	43.50	-20.18
4	247.68	1.66	18.92	26.76	30.83	24.65	46.00	-21.35
5	497.68	2.59	24.55	27.60	30.23	29.77	46.00	-16.23
6	574.63	2.68	26.13	27.87	32.38	33.32	46.00	-12.68



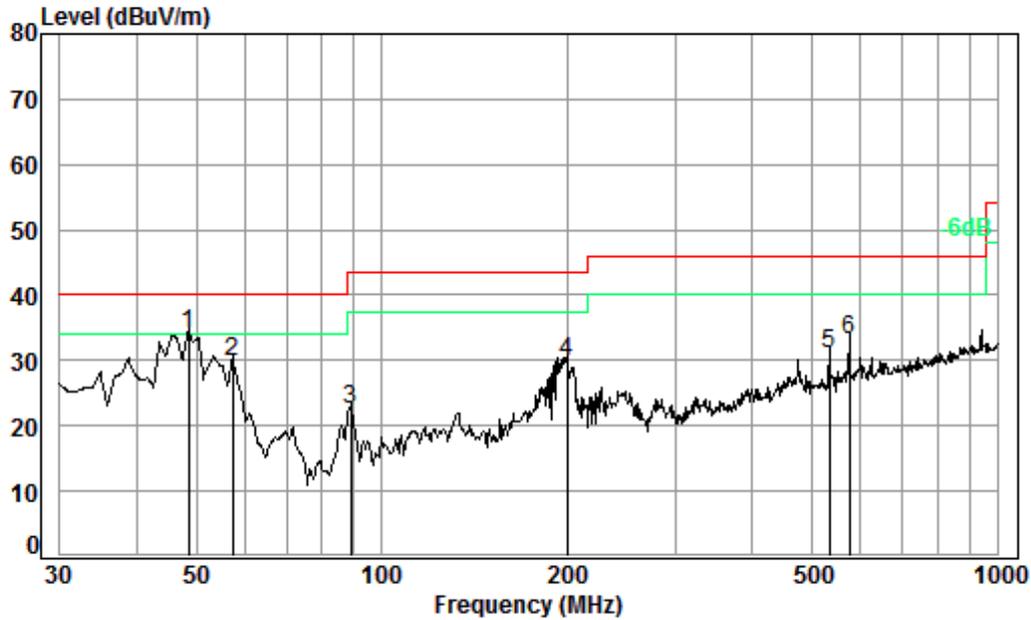
Model: CXC
Mode:b; Polarization:Horizontal



Condition: 3m HORIZONTAL
Job No. : 07596IT
Test mode: b

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	167.82	1.35	15.66	27.02	45.13	35.12	43.50	-8.38
2 pp	187.10	1.38	16.12	26.95	44.62	35.17	43.50	-8.33
3	201.39	1.41	16.55	26.90	42.25	33.31	43.50	-10.19
4	278.07	1.81	18.83	26.69	40.52	34.47	46.00	-11.53
5	574.63	2.68	26.13	27.87	30.31	31.25	46.00	-14.75
6	719.20	2.96	28.02	27.75	33.52	36.75	46.00	-9.25

Mode:b; Polarization:Vertical



Condition: 3m VERTICAL

Job No. : 07596IT

Test mode: b

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Limit Level	Limit Line	Over Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1 pp	48.50	0.77	14.65	27.41	45.98	33.99	40.00	-6.01
2	57.19	0.80	13.46	27.40	43.01	29.87	40.00	-10.13
3	89.28	1.10	13.02	27.36	35.73	22.49	43.50	-21.01
4	199.99	1.40	16.50	26.90	38.80	29.80	43.50	-13.70
5	533.83	2.64	25.32	27.73	30.81	31.04	46.00	-14.96
6	574.63	2.68	26.13	27.87	32.09	33.03	46.00	-12.97

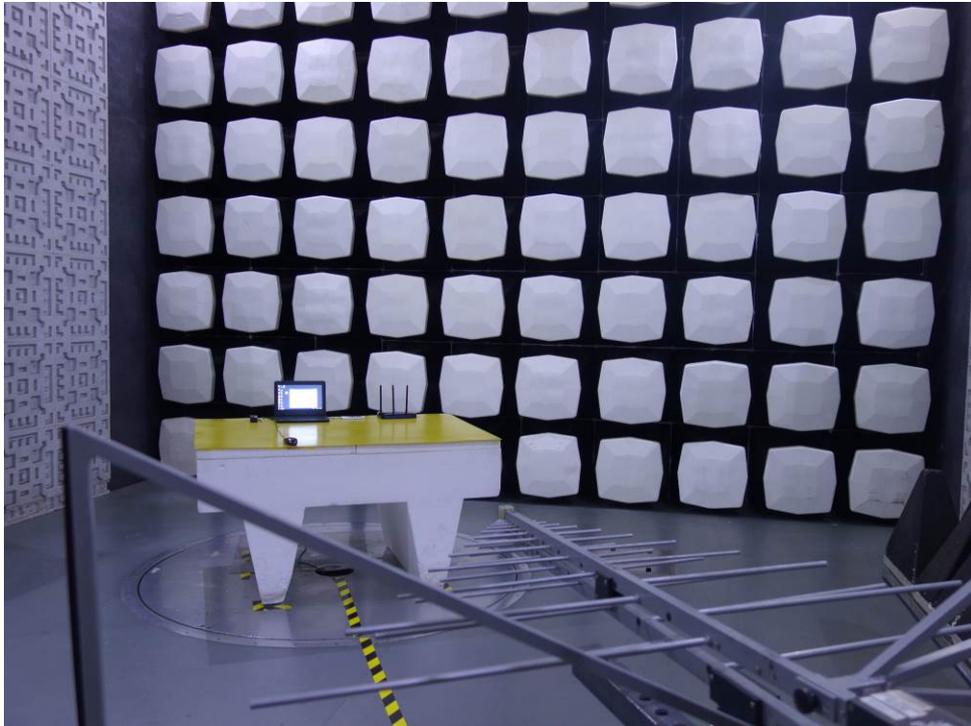
7 Photographs

7.1 Conducted Emissions at Mains Terminals (150kHz-30MHz) Test Setup

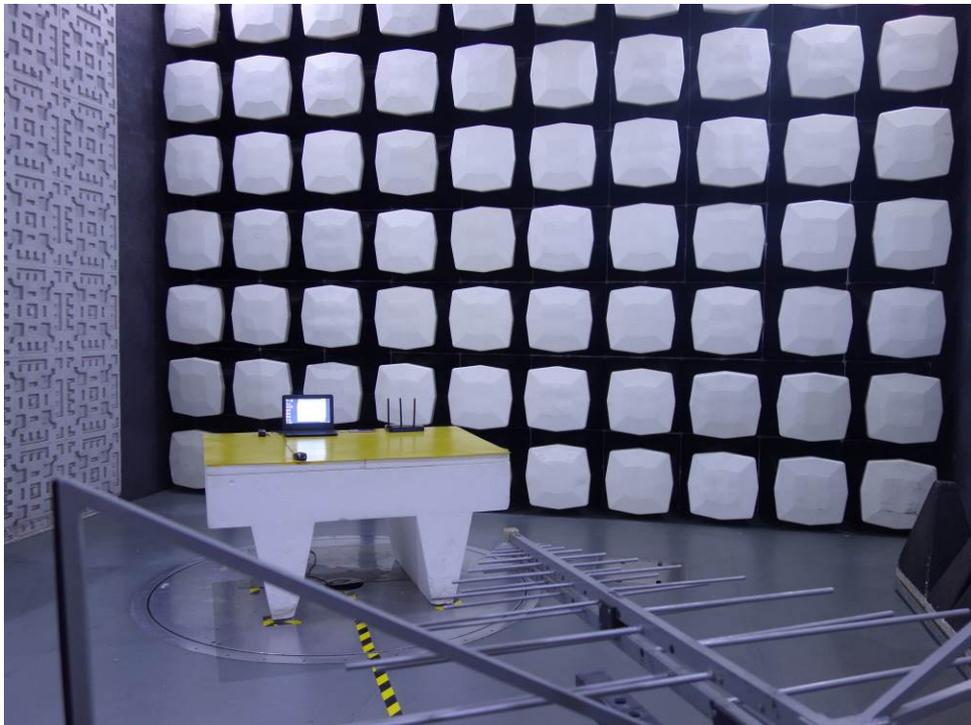


7.2 Radiated Emissions (30MHz-1GHz) Test Setup

CXL



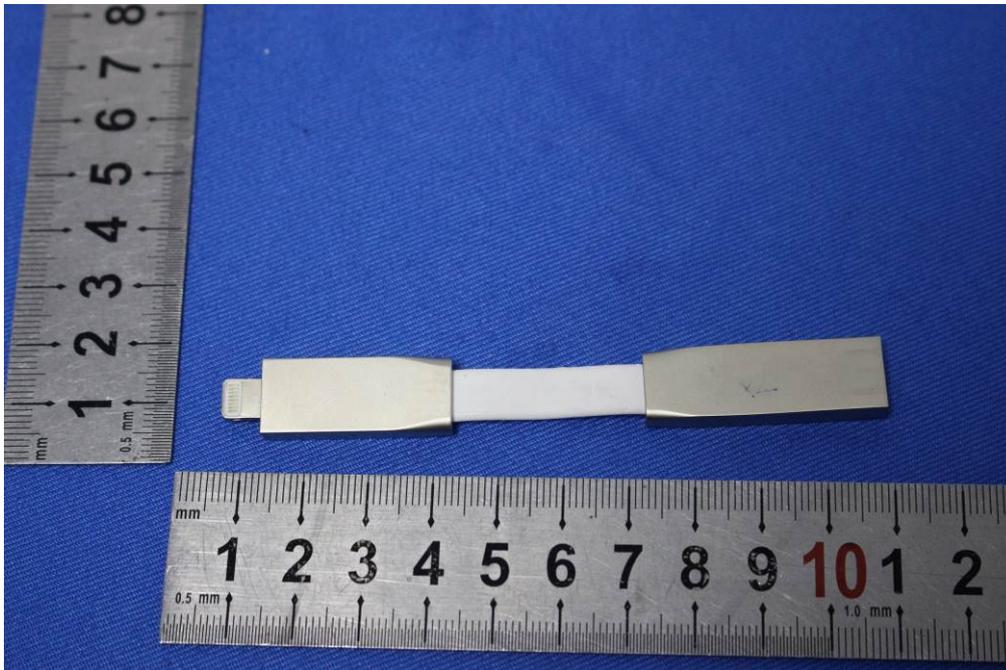
CXC

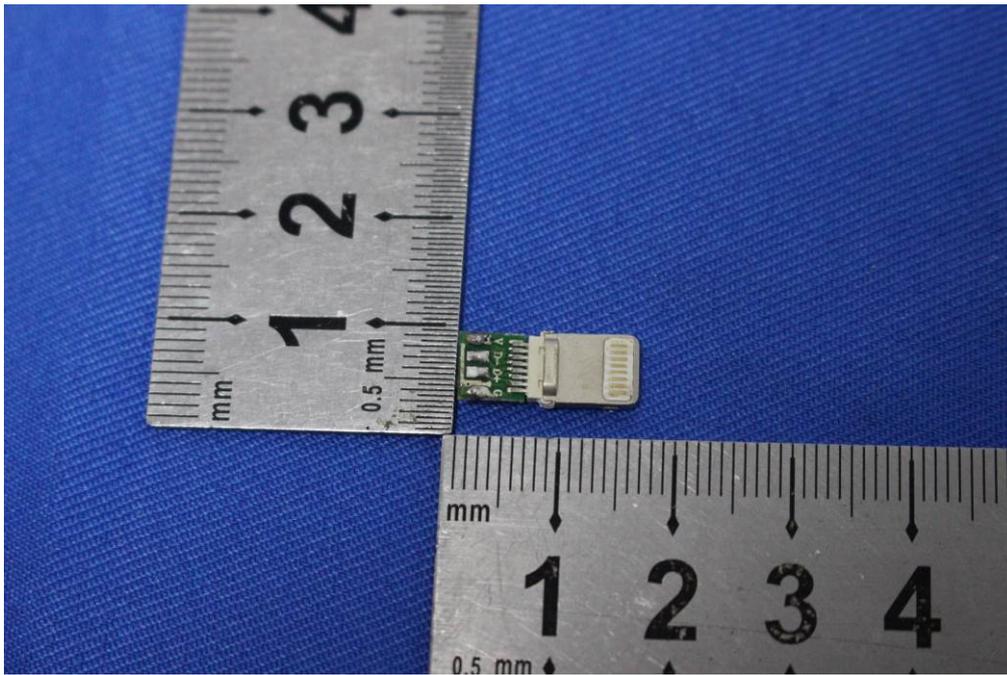
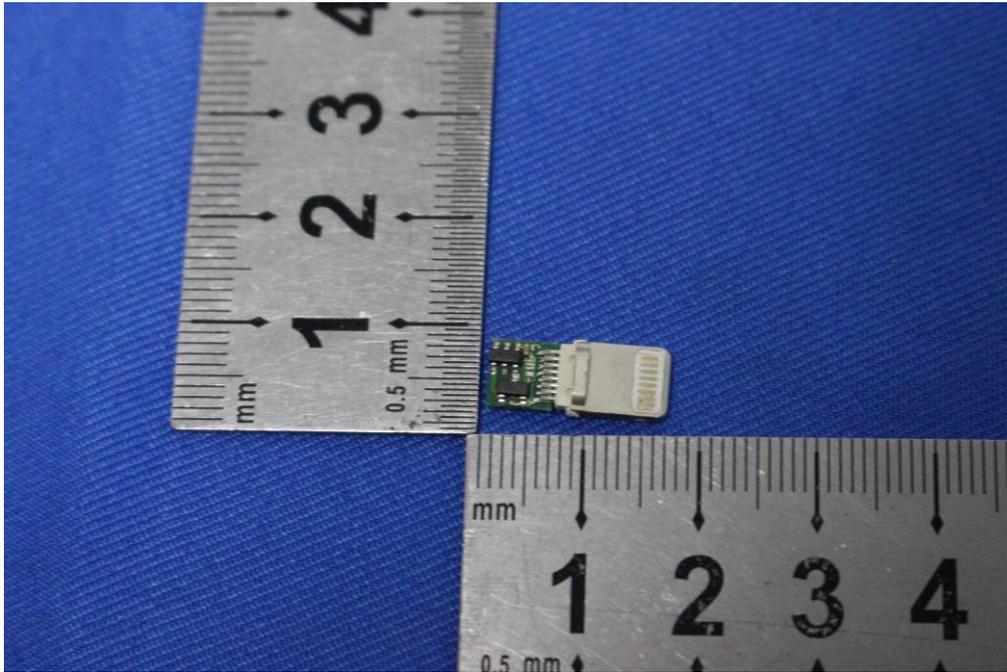


7.3 EUT Constructional Details (EUT Photos)

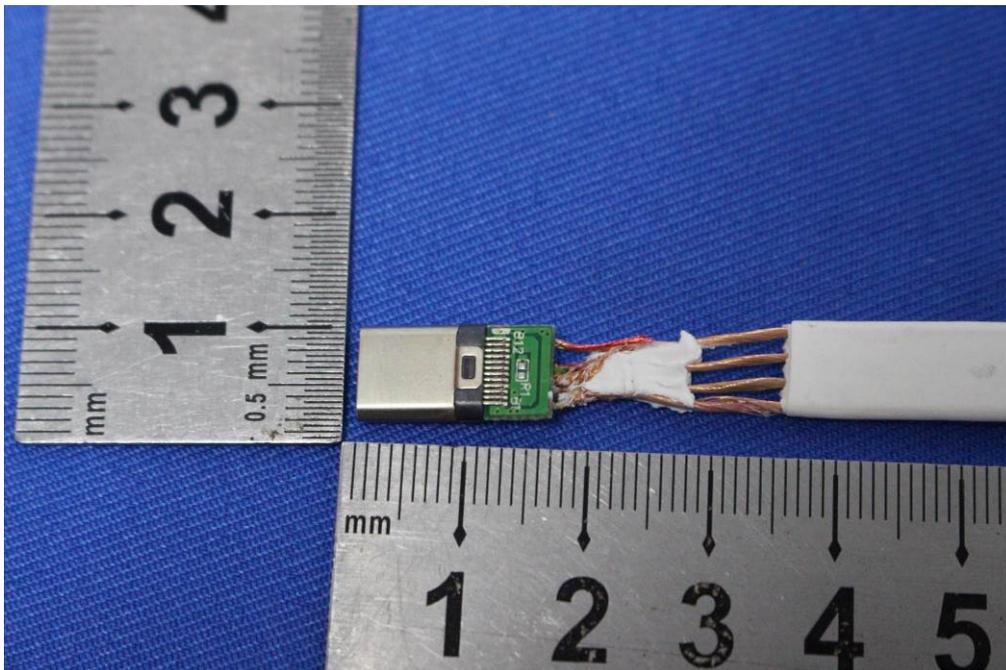
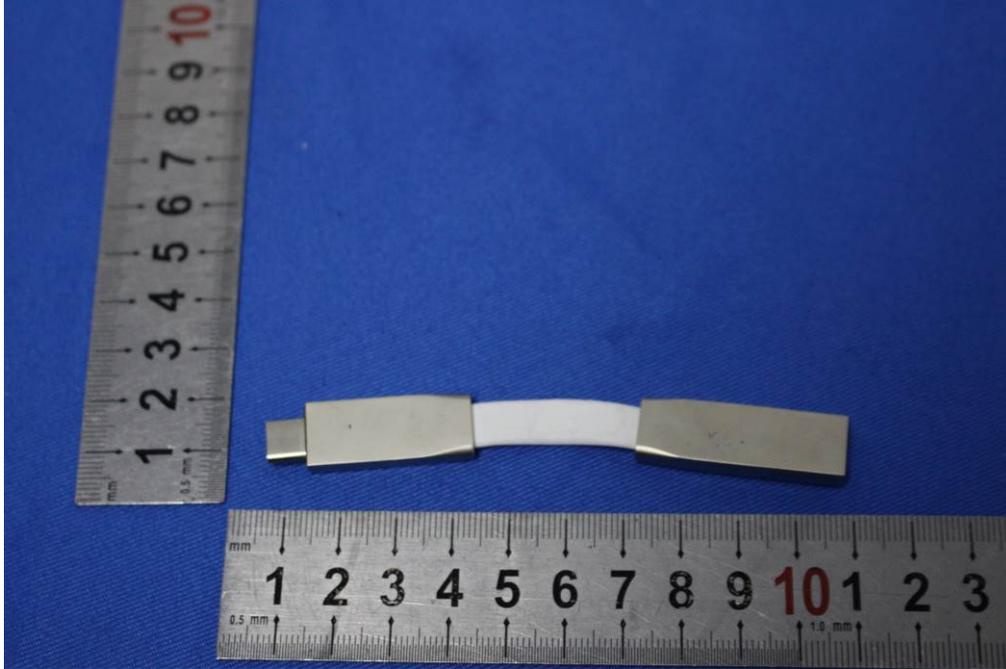


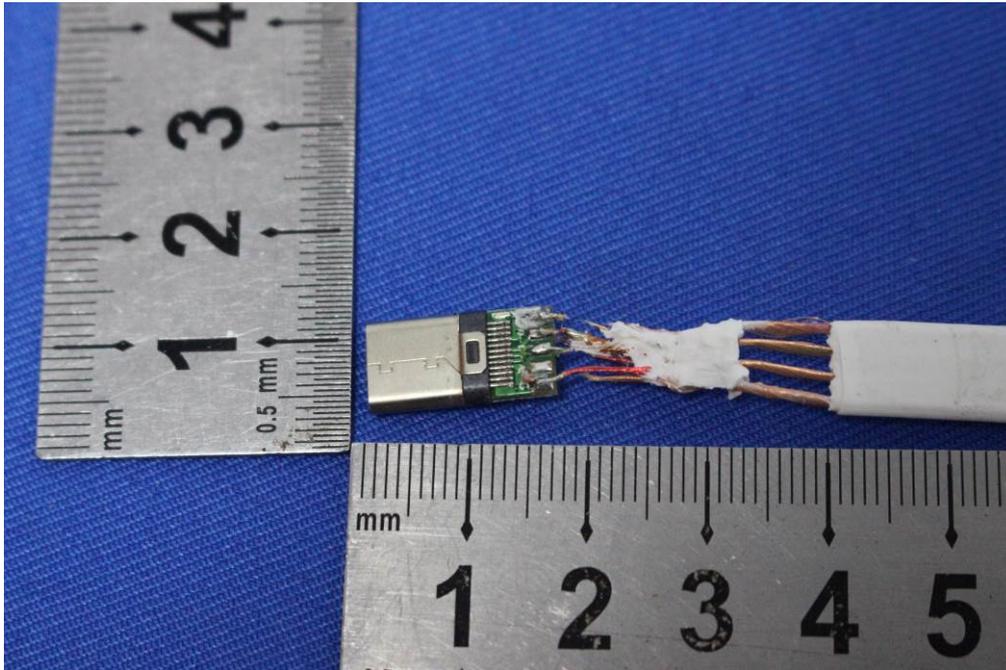
CXL





CXC





- End of the Report -