FCC TEST REPORT

Product Name:	Mobile Phone
Trade Mark:	N/A
Model No.:	CRUSH X565
FCC ID:	2AIMEX565
Report Number:	180709006EMC-1
Test Standards:	FCC 47 CFR Part 15 Subpart B
Test Result:	PASS
Date of Issue:	July 26, 2018

Prepared for:

SMT TELECOMM HK LIMITED
Unit C 8/F CHARMHILL CTR 50 HILLWOOD RD TST KL, Kowloon, Hong Kong

Prepared by:

Shenzhen UnionTrust Quality and Technology Co., Ltd.
16/F, Block A, Building 6, Baoneng Science and Technology Park, Qingxiang Road No.1, Longhua New District, Shenzhen, China
TEL: +86-755-2823 0888
FAX: +86-755-2823 0886

Tested by: Henry Lu
Project Engineer

Reviewed by: Kevin Liang
Assistant Manager

Approved by: Billy Li
Technical Director

Date: July 26, 2018

UnionTrust Laboratories UnionTrust * Certified *

Version

Version No.	Date	Description
V1.0	July 26, 2018	Original

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1. GENERAL INFORMATION

1.1 CLIENT INFORMATION

Applicant:	SMT TELECOMM HK LIMITED
Address of Applicant:	Unit C 8/F CHARMHILL CTR 50 HILLWOOD RD TST KL, Kowloon, Hong Kong
Manufacturer:	SMT TELECOMM HK LIMITED
Address of Manufacturer:	Unit C 8/F CHARMHILL CTR 50 HILLWOOD RD TST KL, Kowloon, Hong Kong

1.2 EUT INFORMATION

1.2.1 General Description of EUT

Product Name:	Mobile Phone
Model No.:	CRUSH X565
Add. Model No.:	N/A
Trade Mark:	N/A
DUT Stage:	Identical Prototype
Power Supply:	100-240V~50/60 Hz or/and 3.8 V Battery
Classification of digital devices:	Class B
Highest Internal Frequency:	2.48 GHz
Software Version:	SMT_SN_X565_V2984_FINAL
Hardware Version:	W56A_V3
Sample Received Date:	July 10, 2018
Sample Tested Date:	July 10, 2018 to July 26, 2018

1.2.2 Description of Accessories

Adapter	
Model No.:	PCX565
Input:	100-240 V~50/60 Hz 0.15 A
Output:	5.0 V ⎓ 1000 mA
AC Cable:	N/A
DC Cable:	N/A

Battery	
Model No.:	BPX565
Battery Type:	Lithium-ion Rechargeable Battery
Rated Voltage:	3.8 Vdc
Rated Capacity:	2000 mAh

Cable	
Description:	USB Micro-B Plug Cable
Cable Type:	Shielded without ferrite
Length:	1.1 Meter

1.3 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested with associated equipment below.

1) Support Equipment

Description	Manufacturer	Model No.	Serial Number	Supplied by
Notebook	Lenovo	E450	SL10G10780	UnionTrust
mouse	DELL	MS111	CN-011D3V-738	UnionTrust
USB Disk	Kingston	DTSE9	N/A	UnionTrust
Earphone	BLU	N/A	N/A	UnionTrust

2) Support Cable

Cable No.	Description	Connector	Length	Supplied by
--	--	--	--	--

1.4 TEST LOCATION

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6, Baoneng Science and Technology Park, Qingxiang Road No.1, Longhua New District, Shenzhen, China 518109
Telephone: +86 (0) 755 2823 0888
Fax: +86 (0) 755 2823 0886

1.5 TEST FACILITY

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

CNAS-Lab Code: L9069
The measuring equipment utilized to perform the tests documented in this report has been calibrated once a year or in accordance with the manufacturer's recommendations, and is traceable under the ISO/IEC/EN 17025 to international or national standards. Equipment has been calibrated by accredited calibration laboratories.

IC-Registration No.: 21600-1
The 3m Semi-anechoic chamber of Shenzhen UnionTrust Quality and Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 21600-1.

A2LA-Lab Certificate No.: 4312.01
Shenzhen UnionTrust Quality and Technology Co., Ltd. has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

FCC Accredited Lab.
Designation Number: CN1194
Test Firm Registration Number: 259480

1.6 DEVIATION FROM STANDARDS

None.

1.7 ABNORMALITIES FROM STANDARD CONDITIONS

None.

1.8 OTHER INFORMATION REQUESTED BY THE CUSTOMER

None.

1.9 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

No.	Item	Measurement Uncertainty
1	Conducted emission 9KHz-150KHz	±3.8 dB
2	Conducted emission 150KHz-30MHz	±3.4 dB
3	Radiated emission 9KHz-30MHz	±4.9 dB
4	Radiated emission 30MHz-1GHz	±4.7 dB
5	Radiated emission 1GHz-18GHz	±5.1 dB
6	Radiated emission 18GHz-26GHz	±5.2 dB
7	Radiated emission 26GHz-40GHz	±5.2 dB

2. TEST SUMMARY

FCC 47 CFR Part 15 Subpart B Test Cases			
Test Item	**Test Requirement**	**Test Method**	**Result**
Conducted Emission	FCC 47 CFR Part 15.107	ANSI C63.4-2014	PASS
Radiated Emission	FCC 47 CFR Part 15.109	ANSI C63.4-2014	PASS

3. EQUIPMENT LIST

Radiated Emission Test Equipment List						
Used	**Equipment**	**Manufacturer**	**Model No.**	**Serial Number**	**Cal. date (mm dd, yyyy)**	**Cal. Due date (mm dd, yyyy)**
☑	3M Chamber & Accessory Equipment	ETS-LINDGREN	3M	N/A	Dec. 20, 2015	Dec. 19, 2018
☑	Receiver	R&S	ESIB26	100114	Dec. 10, 2017	Dec. 10, 2018
☑	Broadband Antenna	ETS-LINDGREN	3142E	00201566	Dec. 17, 2017	Dec. 17, 2018
☑	Preamplifier	HP	8447F	2805A02960	Dec. 10, 2017	Dec. 10, 2018
☑	Horn Antenna (Pre-amplifier)	ETS-LINDGREN	3117-PA	00201874	May 22, 2018	May 22, 2019
☑	Horn Antenna (Pre-amplifier)	ETS-LINDGREN	3116C-PA	00202652	Dec. 17, 2017	Dec. 17, 2018
☑	Multi device Controller	ETS-LINDGREN	7006-001	00160105	N/A	N/A
☑	Test Software	Audix	e3	Software Version: 9.160323		

Conducted Emission Test Equipment List						
Used	**Equipment**	**Manufacturer**	**Model No.**	**Serial Number**	**Cal. date (mm dd, yyyy)**	**Cal. Due date (mm dd, yyyy)**
☑	Receiver	R&S	ESR7	1316.3003K07 -101181-K3	Dec. 10, 2017	Dec. 10, 2018
☑	Pulse Limiter	R&S	ESH3-Z2	0357.8810.54	Dec. 10, 2017	Dec. 10, 2018
☑	LISN	R&S	ESH2-Z5	860014/024	Dec. 10, 2017	Dec. 10, 2018
☑	Test Software	Audix	e3	Software Version: 9.160323		

4. TEST CONFIGURATION

4.1 ENVIRONMENTAL CONDITIONS FOR TESTING

4.1.1 Normal or Extreme Test Conditions

Environment Parameter	Selected Values During Tests		
Test Condition	Ambient		
	Temperature (°C)	Voltage (V)	Relative Humidity (%)
NT/NV	+15 to +35	120V~60 Hz/240V~50 Hz or/and 3.8 V Battery	20 to 75
Remark: 1) NV: Normal Voltage; NT: Normal Temperature			

4.1.2 Record of Normal Environment

Test Item	Temperature (°C)	Relative Humidity (%)	Pressure (Kpa)	Tested by
Conducted Emission	24.9	52	98.97	Andy Lin
Radiated Emission	24.8	52	99.13	Terence Chen

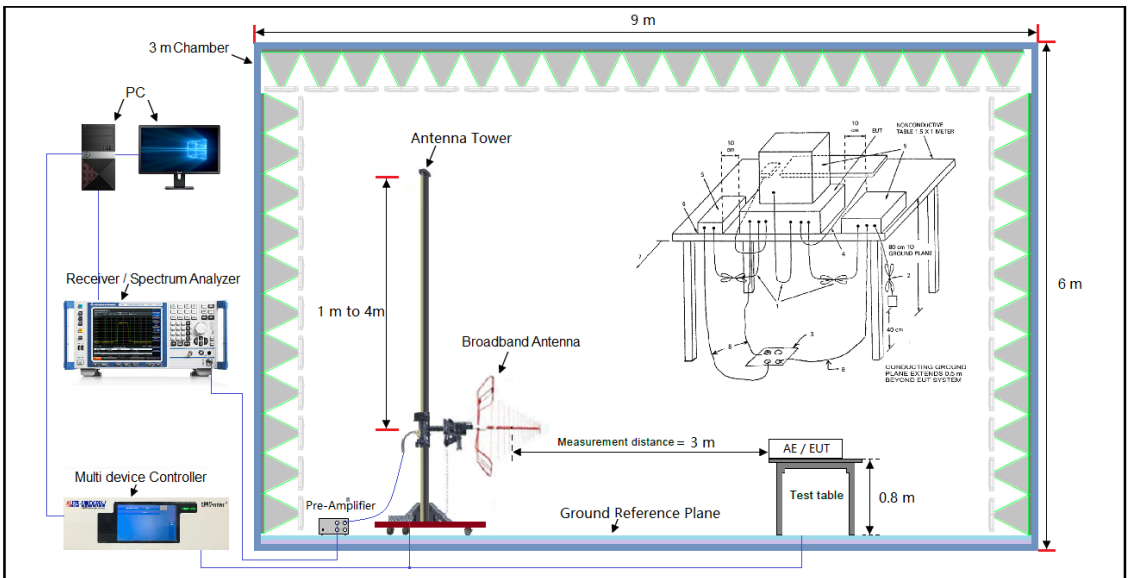
4.2 TEST MODES

Test Item	EMI Test Modes
Radiated Emission	Mode 1: Charging from 120 Vac + MP4 playing (With TF Card) + Earphone Mode 2: Charging from 120 Vac + Camera (Front) + With TF Card Mode 3: Charging from 120 Vac + Camera (Rear) + With TF Card **Mode 4: Charging from 120 Vac + FM (With Earphone)** Mode 5: Charging from 240 Vac + Worse from mode 1~4 **Mode 6: USB Cable (data transfer with notebook) + With TF Card**
Conducted Emission	Mode 1: Charging from 120 Vac + MP4 playing (With TF Card) + Earphone Mode 2: Charging from 120 Vac + Camera (Front) + With TF Card Mode 3: Charging from 120 Vac + Camera (Rear) + With TF Card Mode 4: Charging from 120 Vac + FM (With Earphone) **Mode 5: Charging from 240 Vac + Worse from mode 1~4** Mode 6: USB Cable (data transfer with notebook) + With TF Card

4.3 TEST SETUP

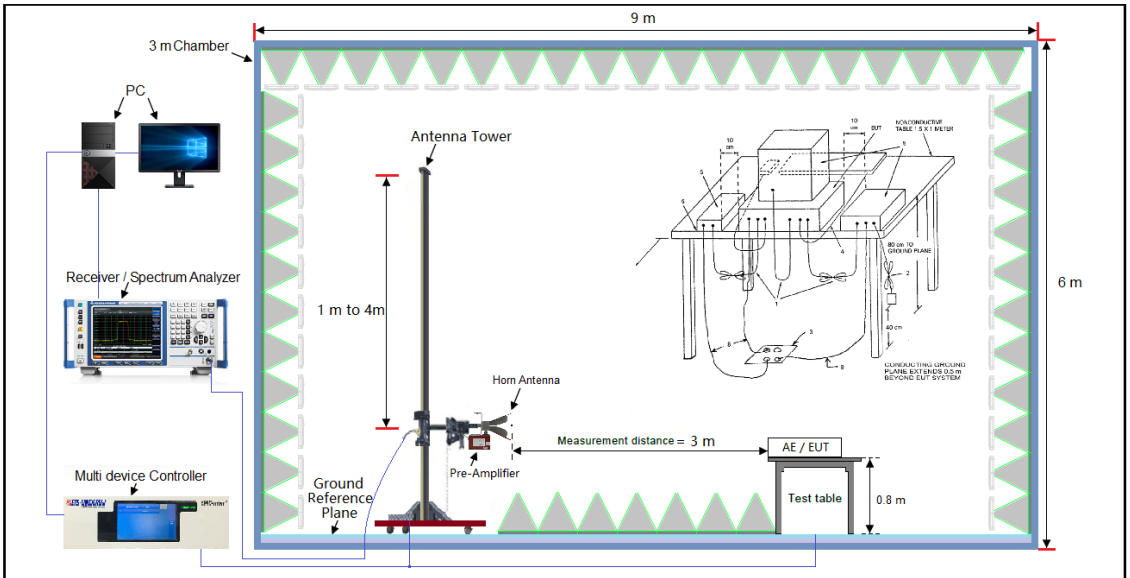
4.3.1 For Radiated Emissions test setup

Figure 1. 30MHz to 1GHz



Test setup for radiated emissions of tabletop equipment (30 MHz to 1 GHz)

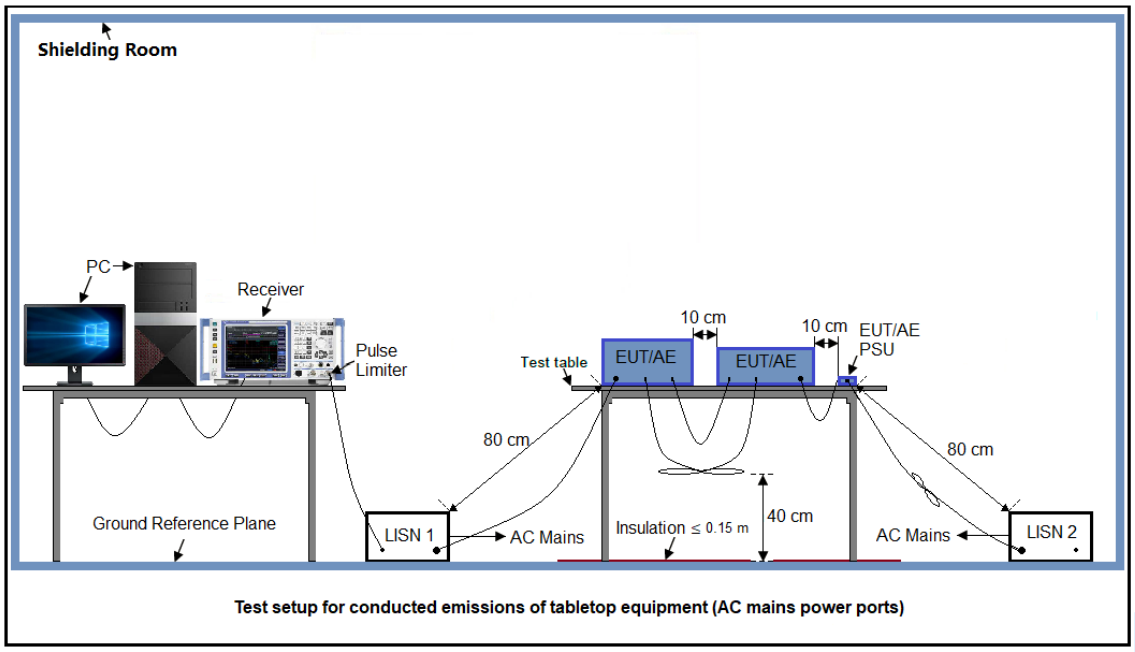
Figure 2. Above 1GHz



Test setup for radiated emissions of tabletop equipment (Above 1 GHz)

4.3.2 For Conducted Emissions test setup

Figure 3. Conducted Emissions setup



4.4 SYSTEM TEST CONFIGURATION

All readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance. Analyzer resolution is 100 kHz or greater for frequencies below 1000MHz. The resolution is 1 MHz or greater for frequencies above 1000MHz. The spurious emissions more than 20 dB below the permissible value are not reported.

Radiated emission measurement were performed from the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic (according to KDB 896810 D02 SDoC FAQ v01r01) of the highest fundamental frequency or to 40 GHz, whichever is lower.

5. REFERENCE DOCUMENTS FOR TESTING

No.	Identity	Document Title
1	FCC 47 CFR Part15 Subpart B	Unintentional Radiators
2	ANSI C63.4-2014	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

6. EMC REQUIREMENTS SPECIFICATION

6.1 RADIATED EMISSION

Test Requirement: FCC 47 CFR Part 15.109

Test Method: ANSI C63.4-2014

Receiver Setup:

Frequency: (f) (MHz)	Detector type	Measurement receiver bandwidth	
		RBW	VBW
30 ≤ f ≤ 1 000	Quasi Peak	120 kHz	300 kHz
f ≥1000	Peak	1 MHz	3 MHz
	Average	1 MHz	3 MHz

Measured frequency range

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.

Limits:

Limits for Class B devices

Frequency (MHz)	limits at 3m (dBμV/m)		
	QP Detector	PK Detector	AV Detector
30-88	40.0	--	--
88-216	43.5	--	--
216-960	46.0	--	--
960 to 1000	54.0	--	--
Above 1000	--	74.0	54.0

Remark:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBμV/m) = 20 log Emission level (μV/m).
3. For frequencies above 1000 MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20 dB under any condition of modulation.

Test Setup: Refer to section 4.3.1 for details.

Test Procedures:

1. From 30 MHz to 1GHz test procedure as below:

1) The Product was placed on the non-conductive turntable 0.8 m above the ground at a chamber.
2) Set the spectrum analyzer/receiver in Peak detector, Max Hold mode, and 120 kHz RBW. Record the maximum field strength of all the pre-scan process in the full band when the antenna is varied between 1~4 m in both horizontal and vertical, and the turntable is rotated from 0 to 360 degrees.

3) For each frequency whose maximum record was higher or close to limit, measure its QP value: vary the antenna's height and rotate the turntable from 0 to 360 degrees to find the height and degree where Product radiated the maximum emission, then set the test frequency analyzer/receiver to QP Detector and specified bandwidth with Maximum Hold Mode, and record the maximum value.

2. Above 1GHz test procedure as below:

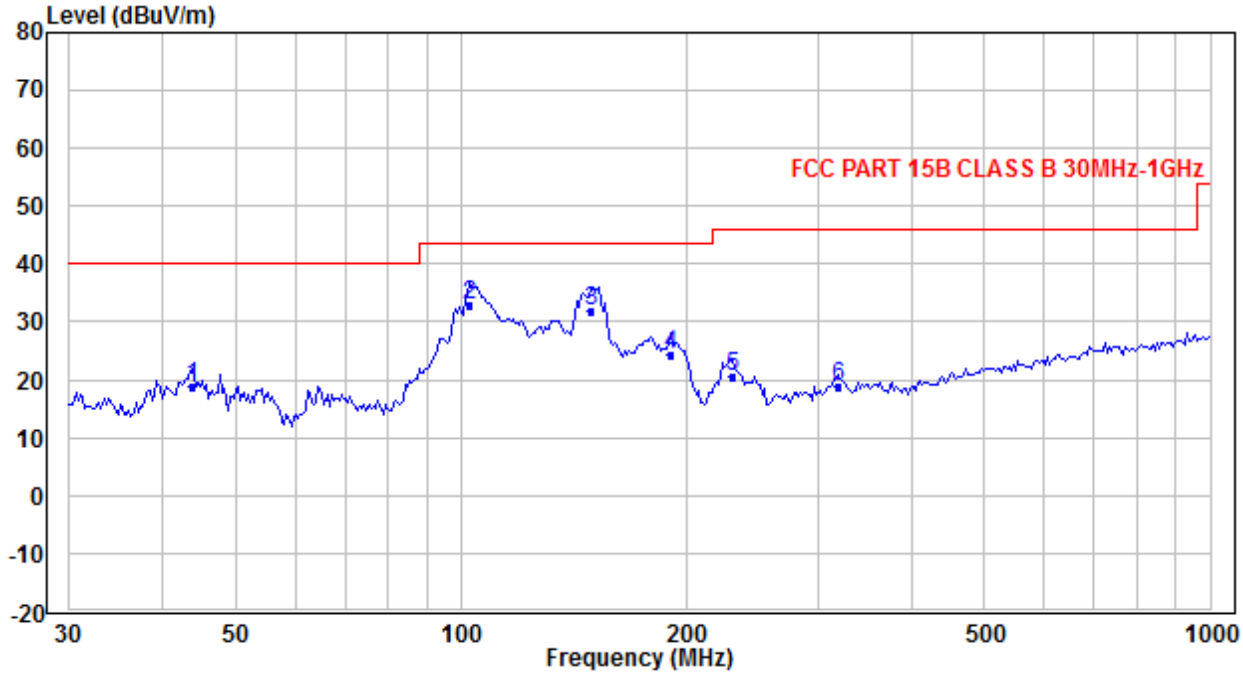
1) The Product was placed on the non-conductive turntable 0.8 m above the ground at a chamber.
2) Set the spectrum analyzer/receiver in Peak detector, Max Hold mode, and 1MHz RBW. Record the maximum field strength of all the pre-scan process in the full band when the antenna is varied in both horizontal and vertical, and the turntable is rotated from 0 to 360 degrees.
3) For each frequency whose maximum record was higher or close to limit, measure its AV value: rotate the turntable from 0 to 360 degrees to find the degree where Product radiated the maximum emission, then set the test frequency analyzer/receiver to AV value and specified bandwidth with Maximum Hold Mode, and record the maximum value.

Equipment Used: Refer to section 3 for details.

Test Result: Pass

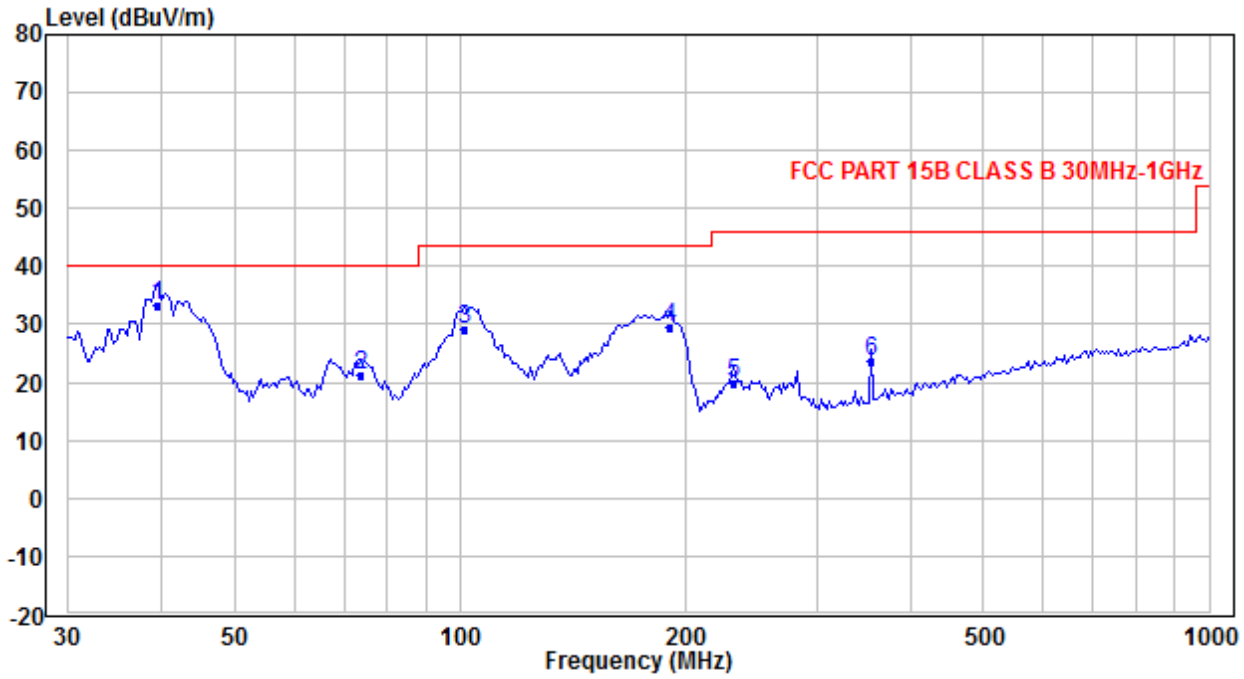
The measurement data as follows:

Below 1GHz(Quasi Peak):
Mode 4
Horizontal



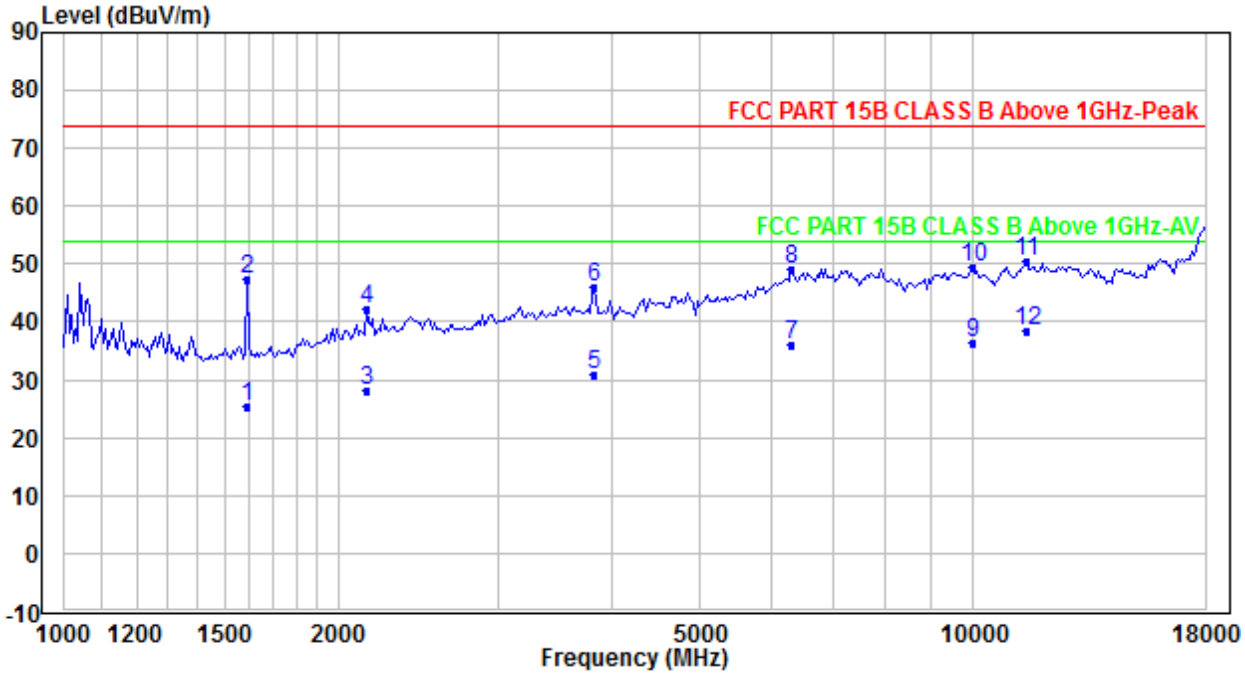
No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Rem ark
1	43.845	36.73	-17.95	18.78	40.00	-21.22	QP
2	102.612	50.36	-17.41	32.95	43.50	-10.55	QP
3	148.917	49.11	-17.12	31.99	43.50	-11.51	QP
4	190.441	39.72	-15.49	24.23	43.50	-19.27	QP
5	230.230	34.14	-13.47	20.67	46.00	-25.33	QP
6	318.088	29.37	-10.53	18.84	46.00	-27.16	QP

Vertical



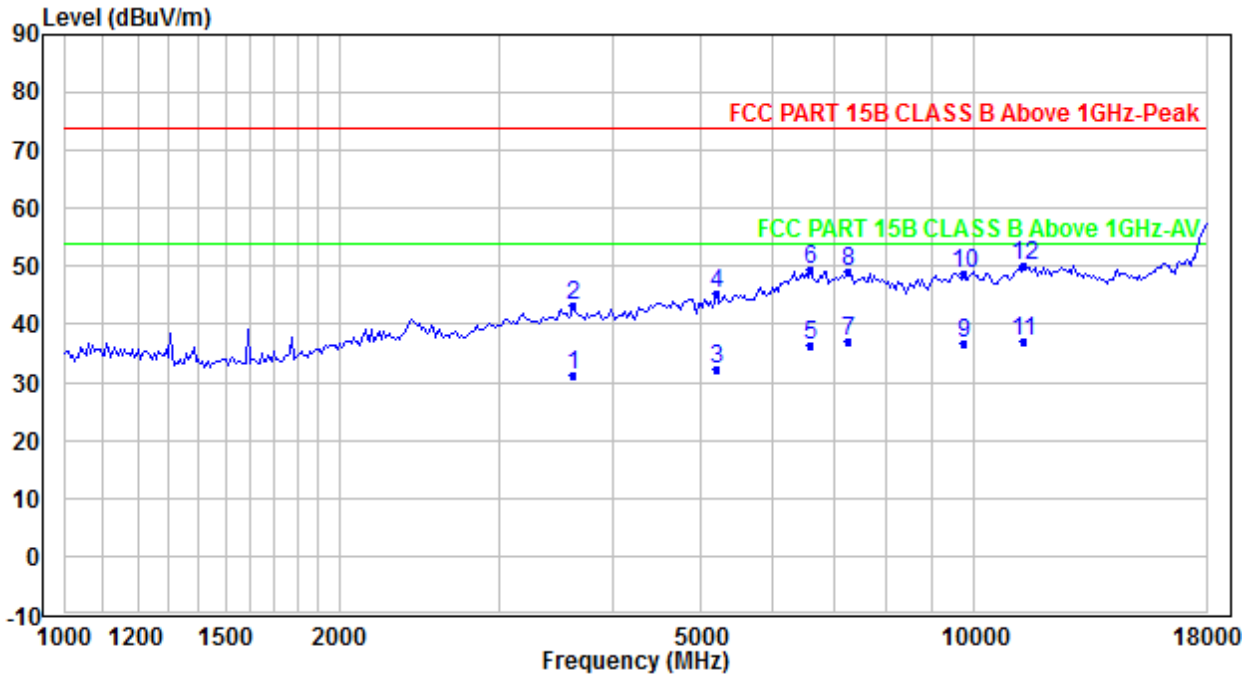
No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Rem ark
1	39.459	49.41	-16.27	33.14	40.00	-6.86	QP
2	73.750	40.58	-19.46	21.12	40.00	-18.88	QP
3	101.180	46.55	-17.41	29.14	43.50	-14.36	QP
4	190.441	44.83	-15.49	29.34	43.50	-14.16	QP
5	231.853	33.26	-13.39	19.87	46.00	-26.13	QP
6	353.447	33.29	-9.52	23.77	46.00	-22.23	QP

Above 1GHz(Peak & Average)
Mode 6
Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Rem ark
1	1589.447	34.27	-8.88	25.39	54.00	-28.61	Average
2	1589.447	56.27	-8.88	47.39	74.00	-26.61	Peak
3	2148.108	31.46	-3.39	28.07	54.00	-25.93	Average
4	2148.108	45.46	-3.39	42.07	74.00	-31.93	Peak
5	3833.661	29.43	1.63	31.06	54.00	-22.94	Average
6	3833.661	44.43	1.63	46.06	74.00	-27.94	Peak
7	6308.894	28.85	7.30	36.15	54.00	-17.85	Average
8	6308.894	41.85	7.30	49.15	74.00	-24.85	Peak
9	9969.738	28.32	8.23	36.55	54.00	-17.45	Average
10	9969.738	41.32	8.23	49.55	74.00	-24.45	Peak
11	11456.650	41.41	9.15	50.56	74.00	-23.44	Average
12	11456.650	29.41	9.15	38.56	54.00	-15.44	Peak

Vertical



No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Rem ark
1	3617.911	28.95	2.17	31.12	54.00	-22.88	Average
2	3617.911	40.95	2.17	43.12	74.00	-30.88	Peak
3	5211.218	28.59	3.57	32.16	54.00	-21.84	Average
4	5211.218	41.59	3.57	45.16	74.00	-28.84	Peak
5	6608.119	29.08	7.31	36.39	54.00	-17.61	Average
6	6608.119	42.08	7.31	49.39	74.00	-24.61	Peak
7	7249.817	30.46	6.60	37.06	54.00	-16.94	Average
8	7249.817	42.46	6.60	49.06	74.00	-24.94	Peak
9	9741.401	28.87	7.90	36.77	54.00	-17.23	Average
10	9741.401	40.87	7.90	48.77	74.00	-25.23	Peak
11	11324.690	28.44	8.80	37.24	54.00	-16.76	Average
12	11324.690	41.44	8.80	50.24	74.00	-23.76	Peak

Remark:
1. All possible modes of operation were investigated. Only the worst case emissions reported.
2. Margin = Result – Limit
3. For above 10 GHz radiated emission, the amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

6.2 CONDUCTED EMISSION

Test Requirement: FCC 47 CFR Part 15.107

Test Method: ANSI C63.4-2014

Limits:

Limits for Class B devices

Frequency range (MHz)	Limits (dB(μV)	
	Quasi-peak	Average
0,15 to 0,50	66 to 56	56 to 46
0,50 to 5	56	46
5 to 30	60	50

Remark:

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.

Test Setup: Refer to section 4.3.2 for details.

Test Procedures:

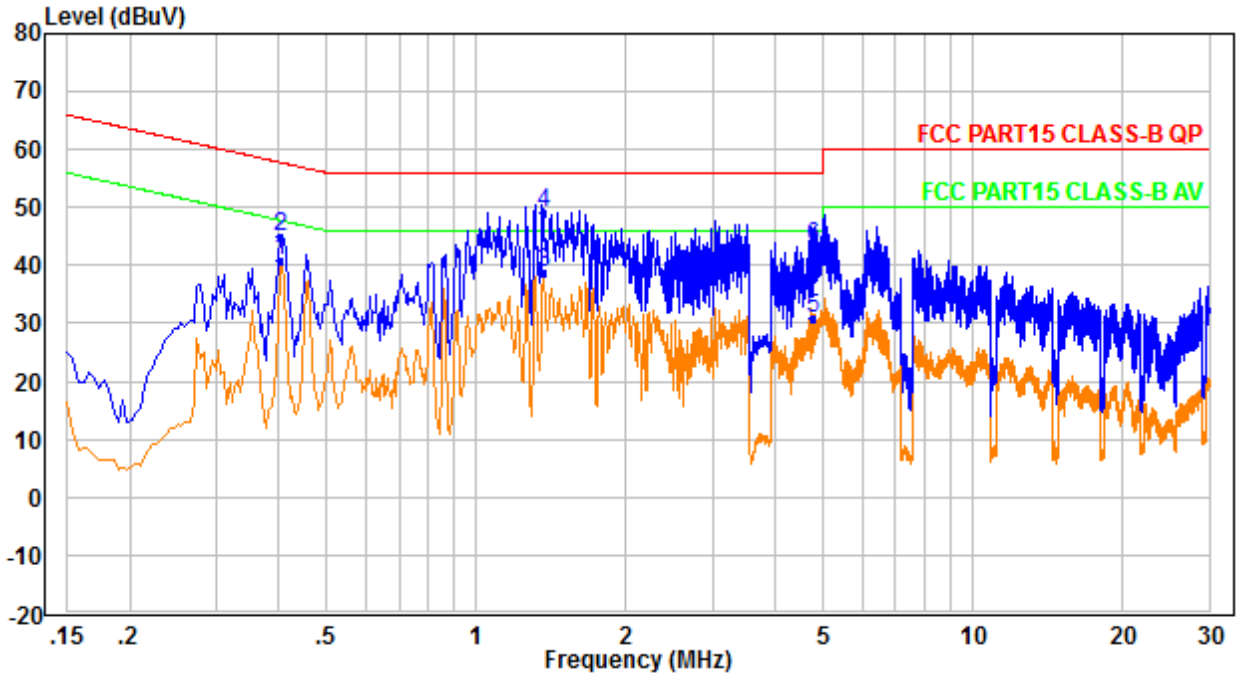
1) The Product was placed on a nonconductive table 0.8 m above the horizontal ground reference plane, and 0.4 m from the vertical ground reference plane, and connected to the main through Line Impedance Stability Network (L.I.S.N).
2) The RBW of the receiver was set at 9 kHz in 150 kHz ~ 30MHz with Peak and AVG detector in Max Hold mode. Run the receiver's pre-scan to record the maximum disturbance generated from Product in all power lines in the full band.
3) For each frequency whose maximum record was higher or close to limit, measure its QP and AVG values and record.

Equipment Used: Refer to section 3 for details.

Test Result: Pass

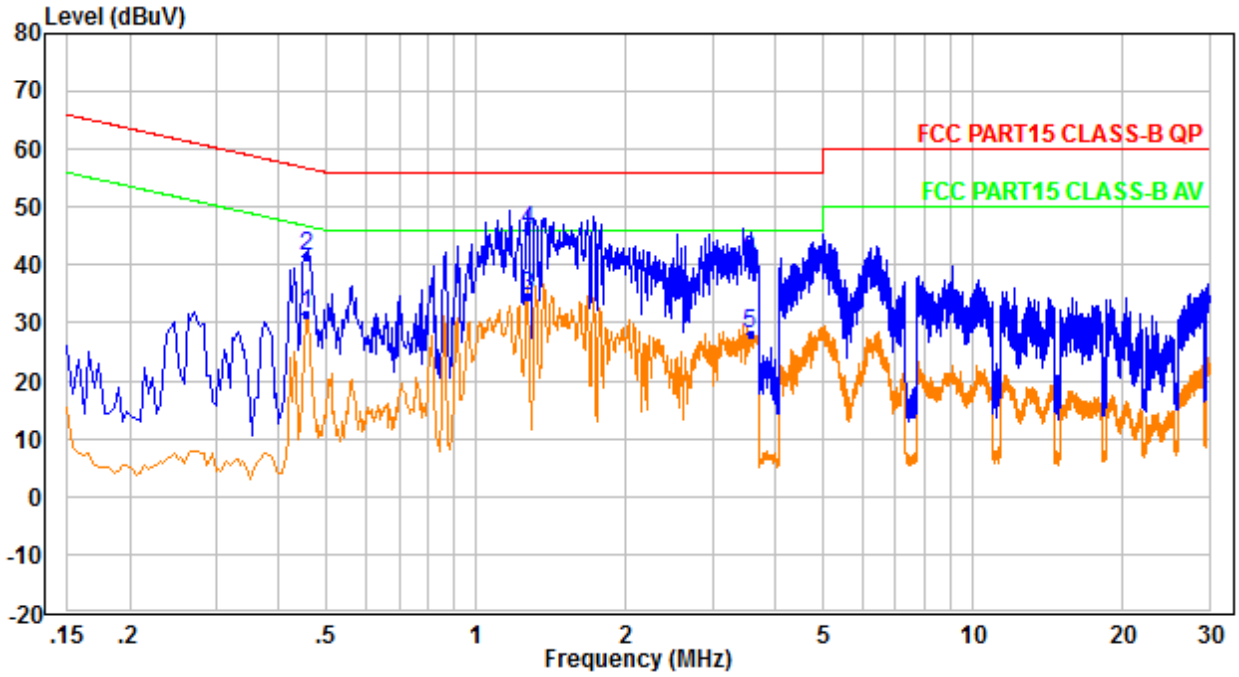
The measurement data as follows:
Quasi Peak and Average:
Mode 5

Live Line



No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.403	30.01	10.67	40.68	47.78	-7.10	Average
2	0.403	34.31	10.67	44.98	57.78	-12.80	QP
3	1.362	28.59	10.28	38.87	46.00	-7.13	Average
4	1.362	38.69	10.28	48.97	56.00	-7.03	QP
5	4.789	20.29	10.44	30.73	46.00	-15.27	Average
6	4.789	32.89	10.44	43.33	56.00	-12.67	QP

Neutral Line



No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.455	21.21	10.40	31.61	46.78	-15.17	Average
2	0.455	31.01	10.40	41.41	56.78	-15.37	QP
3	1.273	24.19	10.43	34.62	46.00	-11.38	Average
4	1.273	35.59	10.43	46.02	56.00	-9.98	QP
5	3.564	17.40	10.58	27.98	46.00	-18.02	Average
6	3.564	30.20	10.58	40.78	56.00	-15.22	QP

Remark:
1. An initial pre-scan was performed on the Phase and neutral lines with peak detector. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

APPENDIX 1 PHOTOS OF TEST SETUP

See test photos attached in Appendix 1 for the actual connections between Product and support equipment.

APPENDIX 2 PHOTOS OF EUT CONSTRUCTIONAL DETAILS

Refer to Appendix 2 for EUT external and internal photos.

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

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