

FCC PART 15B CLASS B


MEASUREMENT AND TEST REPORT

For

Chengdu Vantron Technology, Ltd.

No.5 GaoPeng Road, Hi-Tech Zone, Chengdu, SiChuan, P.R. China 610045

FCC ID: 2AAGEVTTAB-5081N

Report Type: Original Report	Equipment Name: Tablet Computer
Report Number: RSC181119003-0B	
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TABLE OF CONTENTS

GENERAL INFORMATION	3
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT)	3
MECHANICAL DESCRIPTION OF EUT	3
OBJECTIVE	3
RELATED SUBMITTAL(S)/GRANT(S).....	3
MEASUREMENT UNCERTAINTY	4
TEST METHODOLOGY	4
TEST FACILITY.....	4
SYSTEM TEST CONFIGURATION.....	5
JUSTIFICATION.....	5
EUT EXERCISE SOFTWARE.....	5
SPECIAL ACCESSORIES	5
EQUIPMENT MODIFICATIONS	5
SUPPORT EQUIPMENT LIST AND DETAILS.....	5
EXTERNAL I/O CABLE	5
BLOCK DIAGRAM OF TEST SETUP.....	6
SUMMARY OF TEST RESULTS.....	7
TEST EQUIPMENTS LIST.....	8
FCC §15.107 CONDUCTED EMISSION TEST	9
APPLICABLE STANDARD	9
EUT SETUP	9
EMI TEST RECEIVER SETUP	10
TEST PROCEDURE.....	10
CORRECTED AMPLITUDE & MARGIN CALCULATION	10
SUMMARY OF TEST RESULTS	10
TEST DATA.....	11
FCC §15.109 RADIATED EMISSION TEST	14
APPLICABLE STANDARD	14
EUT SETUP	14
EMI TEST RECEIVER SETUP	15
TEST PROCEDURE.....	15
CORRECTED AMPLITUDE & MARGIN CALCULATION	15
SUMMARY OF TEST RESULTS	15
TEST DATA.....	16

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The **Chengdu Vantron Technology, Ltd.**, model number: **VT-TABLET-5081-N (FCC ID: 2AAGEVTTAB-5081N)** or the "EUT" as referred to in this report was the **Tablet Computer**. The highest operating frequency is 5850MHz.

Mechanical Description of EUT

The EUT was measured approximately: 235 mm (L) x 153 mm (W) x 21 mm (H).
Rated input voltage: DC 3.8V rechargeable Li-ion battery or DC 5V from adapter

Adapter Information

Manufacturer: Anthin

Model: APS318-0530

Input: AC 100-220V; 50/60Hz

Output: DC 5V, 3A

Note: The products, test model: VT-TABLET-5081-N, multiple model: ETAB-8-VAN-02-B, their differences only in model number. So we selected model VT-TABLET-5081-N to test.

**All measurement and test data in this report was gathered from final production sample, serial number: 181119003/01 (assigned by the BACL, Chengdu). It may have deviation from any other sample. The EUT supplied by the applicant was received on 2018-11-19, and EUT conformed to test requirement.*

Objective

The report was prepared on behalf of **Chengdu Vantron Technology, Ltd.** in accordance with Part 2, Subpart J, and Part 15, Subparts A and B of the Federal Communication Commissions rules.

The objective of the manufacturer is to demonstrate compliance with FCC Part 15 Class B limits.

Related Submittal(s)/Grant(s)

FCC Part 15C DTS submissions with FCC ID: 2AAGEVTTAB-5081N

FCC Part 15C DSS submissions with FCC ID: 2AAGEVTTAB-5081N

FCC Part 15E NII submissions with FCC ID: 2AAGEVTTAB-5081N

Measurement Uncertainty

Item			Uncertainty
AC power line conducted emission			2.93 dB
Radiated Emission(Field Strength)	30MHz-200MHz	H	4.63 dB
		V	4.88 dB
	200MHz-1GHz	H	5.02 dB
		V	6.06 dB
	1GHz-6GHz		5.49 dB
	6GHz-18GHz		4.51 dB
	18GHz-40GHz		4.49 dB

Test Methodology

All measurements contained in this report are conducted with 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. All radiated and conducted emissions measurement is performed at BACL. The radiated testing is performed at an antenna-to-EUT distance of 3 Meters.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Chengdu) to collect test data is located on the No. 5040, Huilongwan Plaza No. 1 Shawan Road Jinniu District Chengdu, Sichuan, China

The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 910975 ,the FCC Designation No. : CN1186.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0005.

SYSTEM TEST CONFIGURATION

Justification

The system is configured for testing in a typical fashion (as a normally used by a typical user).

EUT Exercise Software

Media Player and Withdraw

Special Accessories

No special accessories were supplied by BACL.

Equipment Modifications

No modification was made to the EUT.

Support Equipment List and Details

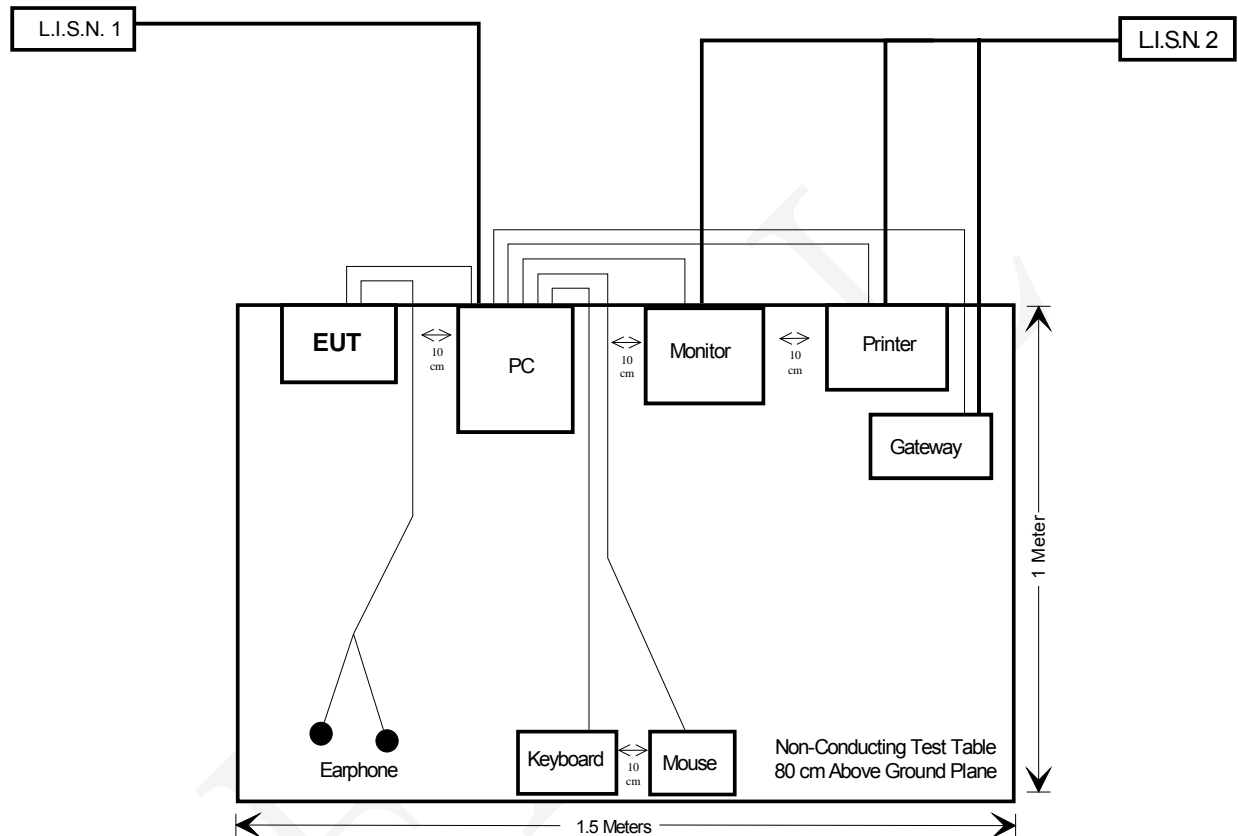
Manufacturer	Description	Model	Serial Number
IBM	PC	8176	99Y7315
DELL	Monitor	E157FPL	060229-11
ANTER	Gateway	EGW802	050835W5F-1B
Lenovo	Keyboard	KB-US19EB	IMHYX01107106460
Lenovo	Mouse	MU-513U	MJS011041409259
VIVO	Earphone	None	None
EPSON	Printer	Photo700	A2U0002196

External I/O Cable

Cable Description	Length (m)	From	To
Shielded VGA Cable	1.5	PC	Monitor
Unshielded Serial Cable	1.6	PC	Gateway
Unshielded Mouse Cable	1.5	PC	Mouse
Unshielded Keyboard Cable	1.5	PC	Keyboard
Unshielded Parallel Cable	1.8	PC	Printer
Unshielded Earphone Cable	1.2	EUT	Earphone
Unshielded USB Cable	1.0	EUT	PC

Block Diagram of Test Setup

Conducted Emissions



SUMMARY OF TEST RESULTS

Standard	Description	Result
FCC §15.107	Conducted Emission	Compliance
FCC §15.109	Radiated Emission	Compliance

TEST EQUIPMENTS LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Conducted Emission					
Rohde & Schwarz	EMI Test Receiver	ESCS 30	836858/0016	2018-04-18	2019-04-19
Rohde & Schwarz	L.I.S.N.	ENV216	100018	2018-04-18	2019-04-19
HP	RF Limiter	11947A	3107A01270	2018-08-13	2019-08-12
EMCO	L.I.S.N.	3810/2BR	9509-1102	2018-12-02	2019-12-01
Unknown	Conducted Cable	L-E003	000003	2018-11-02	2019-11-01
Rohde & Schwarz	EMC32	EMC32	V 8.52.0	N/A	N/A
Radiated Emission					
EMCT	Semi-Anechoic Chamber	966	001	2017-05-18	2020-05-17
Sonoma	Pre-Amplifier	310N	186684	2018-08-24	2019-08-23
Rohde & Schwarz	EMI Test Receiver	ESIB 40	100215	2018-04-18	2019-04-17
Rohde & Schwarz	Spectrum Analyzer	FSU26	200835	2018-05-09	2019-05-08
Rohde & Schwarz	EMI Test Receiver	ESCI	100028	2018-04-18	2019-04-17
A.H. Systems, Inc	Amplifier	PAM-0118P	467	2018-10-19	2019-10-18
EM Electronics	RF Pre-Amplifier	EM18G40	060725	2018-03-28	2019-03-27
SUNOL SCIENCES	Broadband Antenna	JB3	A121808	2017-05-19	2020-05-18
ETS	Horn Antenna	3115	003-6076	2017-05-19	2020-05-18
A.H. Systems, Inc	Horn Antenna	SAS-574	510	2017-05-19	2020-05-18
INMET	Attenuator	18N-6dB	64671	2018-10-27	2019-10-26
Unknown	RF Cable (below 1GHz)	L-E005	000005	2018-10-27	2019-10-26
Unknown	RF Cable (below 1GHz)	T-E128	000128	2018-11-10	2019-11-09
Unknown	RF Cable (below 1GHz)	T-E129	000129	2018-11-10	2019-11-09
Unknown	RF Cable (above 1GHz)	T-E069	000069	2018-11-10	2019-11-09
Micro-coax	RF Cable (above 1GHz)	T-E209	MFR 64639 2310	2018-03-14	2019-03-13
Rohde & Schwarz	EMC32	EMC32	V 8.52.0	N/A	N/A

* **Statement of Traceability:** BACL (Chengdu) attested that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

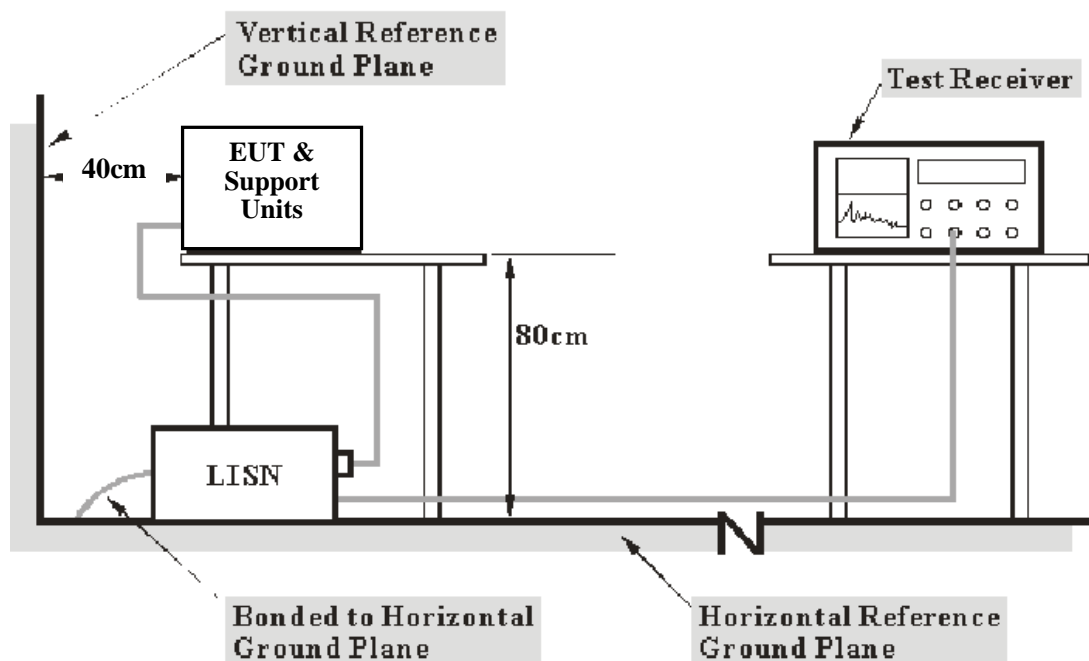
FCC §15.107 CONDUCTED EMISSION TEST

Applicable Standard

FCC §15.107

EUT Setup

The setup of EUT was in accordance with ANSI C63.4-2014 measurement procedure. The specification used was the FCC Part 15.107 CLASS B limits.



- Note:** 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The power cables and excess cables shall be folded at the cable center into a bundle no longer than 40 cm.

The spacing between the peripherals unit & EUT was 10 cm.

The host was connected to AC120V/60Hz power source.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

Test Procedure

Maximizing procedure was performed on the six (6) highest emissions to ensure EUT is compliant with all installation combination.

All data are recorded in the Quasi-peak and Average detection mode. Quasi-peak readings are distinguished with a "**QP**". Average readings are distinguished with an "**AV**".

The EUT is in the normal operating mode during the final qualification test to represent the worst cases results.

Corrected Amplitude & Margin Calculation

The basic equation is as follows:

$$V_C = V_R + A_C + VDF$$
$$C_f = A_C + VDF$$

Herein,

V_C (cord. Reading): corrected voltage amplitude

V_R : reading voltage amplitude

A_C : attenuation caused by cable loss

VDF : voltage division factor of AMN

C_f : Correction Factor

The "**Margin**" column of the following data tables indicates the degree of compliance within the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

Summary of Test Results

According to the data in the following, the EUT complied with the FCC Part 15B Class B limit.

Test Data

Test Environment Conditions

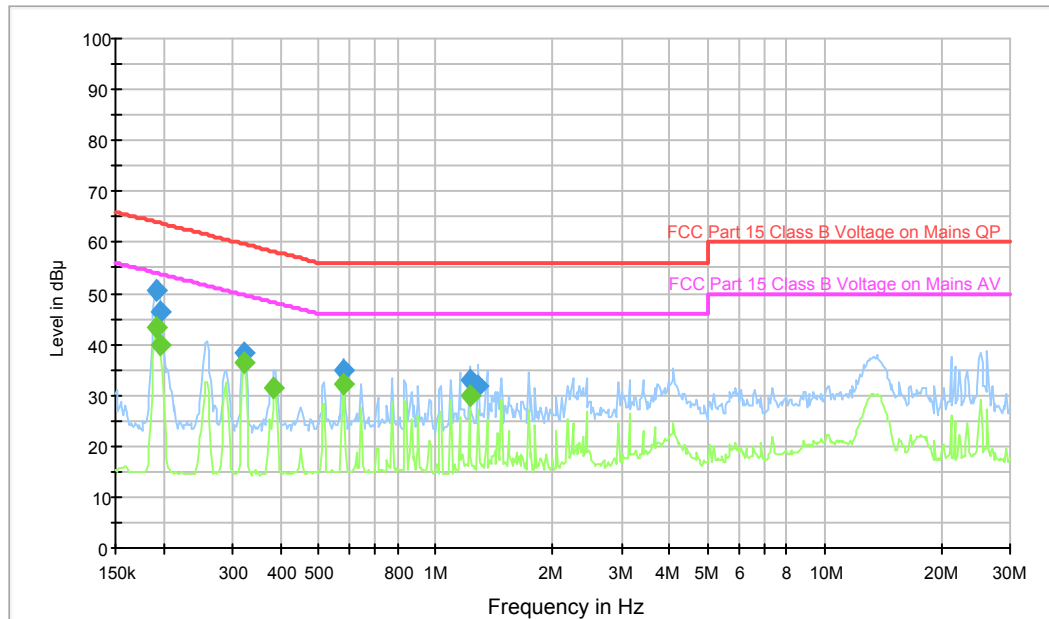
Temperature:	21 °C
Relative Humidity:	56 %
ATM Pressure:	95.7 kPa

The testing was performed by Tom Tang on 2018-12-20.

Test mode: Downloading

FINAL

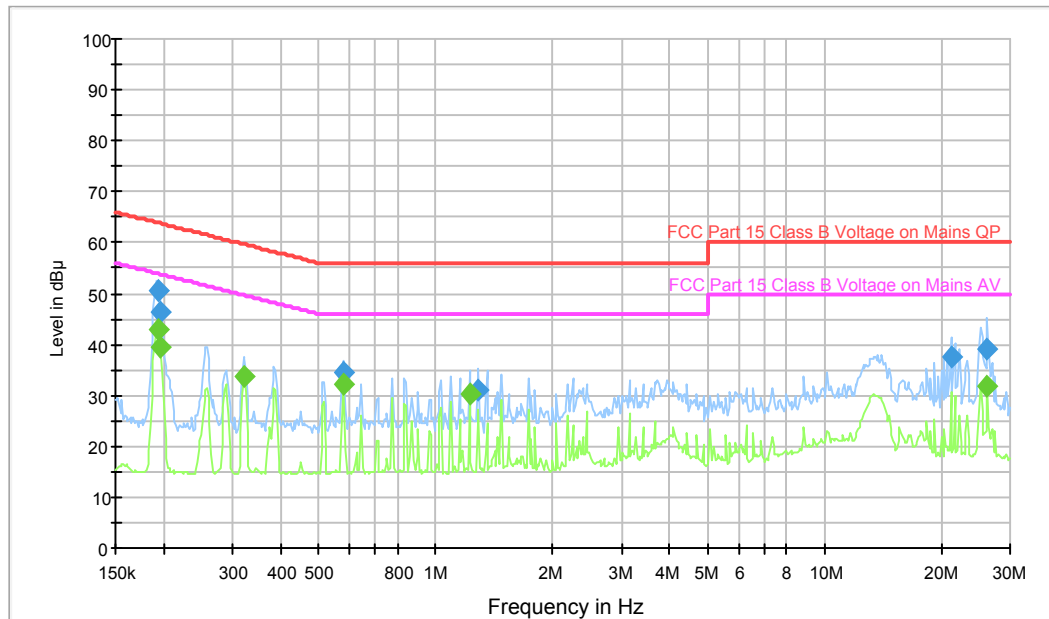
AC120 V, 60 Hz, Line:



Frequency (MHz)	QuasiPeak (dB μ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.192030	50.7	9.000	L1	19.7	13.2	63.9
0.196675	46.3	9.000	L1	19.7	17.4	63.7
0.322331	38.1	9.000	L1	19.7	21.5	59.6
0.576662	34.8	9.000	L1	19.7	21.2	56.0
1.219583	32.9	9.000	L1	19.7	23.1	56.0
1.289541	31.9	9.000	L1	19.7	24.1	56.0

Frequency (MHz)	Average (dB μ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.192030	43.2	9.000	L1	19.7	10.7	53.9
0.196675	40.0	9.000	L1	19.7	13.7	53.7
0.322331	36.3	9.000	L1	19.7	13.3	49.6
0.384091	31.4	9.000	L1	19.7	16.8	48.2
0.576662	32.2	9.000	L1	19.7	13.8	46.0
1.219583	29.8	9.000	L1	19.7	16.2	46.0

AC120 V, 60 Hz, Neutral:



Frequency (MHz)	QuasiPeak (dB μ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.193566	50.6	9.000	N	19.8	13.3	63.9
0.196675	46.4	9.000	N	19.8	17.3	63.7
0.576662	34.4	9.000	N	19.8	21.6	56.0
1.289541	31.1	9.000	N	19.9	24.9	56.0
21.138881	37.4	9.000	N	20.2	22.6	60.0
26.212978	39.1	9.000	N	20.4	20.9	60.0

Frequency (MHz)	Average (dB μ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.193566	42.9	9.000	N	19.8	11.0	53.9
0.196675	39.3	9.000	N	19.8	14.4	53.7
0.322331	33.9	9.000	N	19.8	15.7	49.6
0.576662	32.2	9.000	N	19.8	13.8	46.0
1.219583	30.2	9.000	N	19.9	15.8	46.0
26.212978	31.8	9.000	N	20.4	18.2	50.0

Note:

- 1) Corrected Amplitude = Reading + Correction Factor
- 2) Correction Factor = LISN VDF (Voltage Division Factor) + Cable Loss + Transient Limiter
- 3) Margin = Limit – Corrected Amplitude

FCC §15.109 RADIATED EMISSION TEST

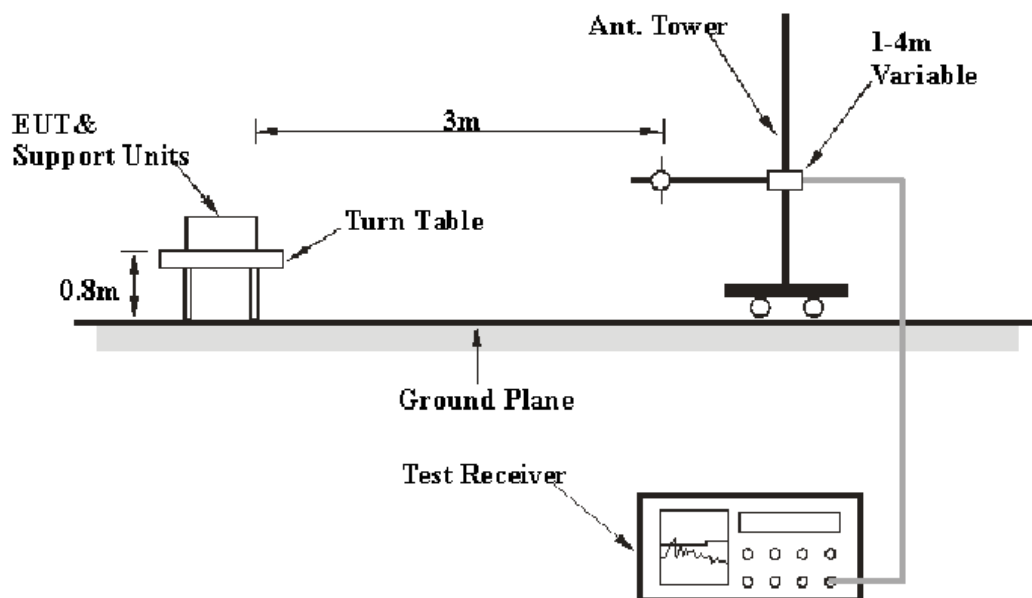
Applicable Standard

FCC §15.109

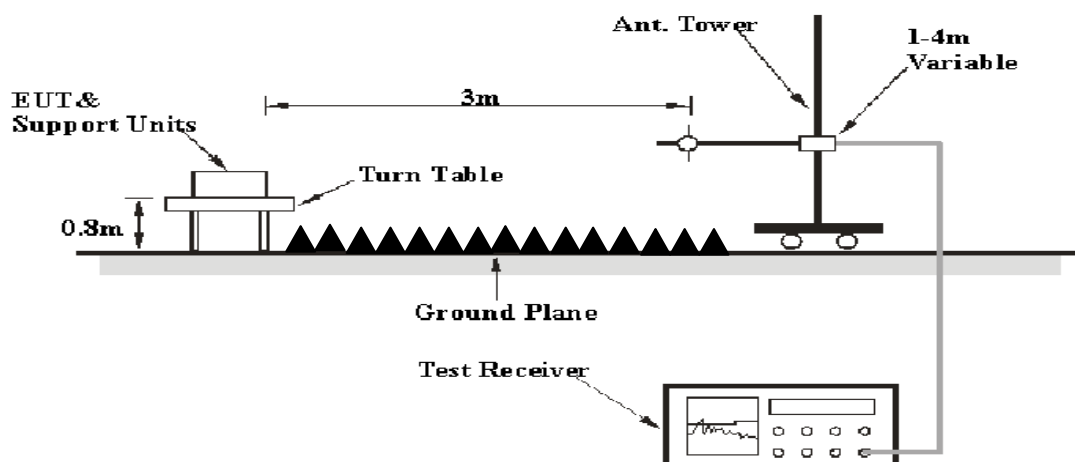
EUT Setup

The radiated emission tests were performed in the 3 meter Semi Anechoic Chamber, using the setup in accordance with the ANSI C63.4-2014. The specification used was the FCC Part 15B Class B limits.

Below 1GHz:



Above 1GHz:



The excess cables shall be folded at the cable center into a bundle no longer than 40 cm.

The spacing between the peripherals unit & EUT was 10 cm.

The host was connected to AC 120V/60Hz power source.

EMI Test Receiver Setup

Per FCC 15.33 requirement, the frequency range is investigated from 30MHz to 30GHz.

During the radiated emission test, the EMI test receiver is set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Detector
30 MHz – 1000 MHz	120 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1 MHz	3 MHz	1 MHz	PK
	1 MHz	3 MHz	1 MHz	AV

Test Procedure

Maximizing procedure was performed on the six (6) highest emissions to ensure EUT is compliant with all installation combinations.

All data were recorded in the quasi-peak detection mode from 30 MHz to 1 GHz. Peak and average detection mode above 1 GHz.

The EUT was in the normal operating mode during the final qualification test to represent the worst case results.

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

Corrected Amplitude = Indicated Reading + Antenna Factor + Cable Factor - Amplifier Gain

The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

Summary of Test Results

According to the data in the following, the EUT complied with the FCC Part 15.109 Class B limit.

Test Data

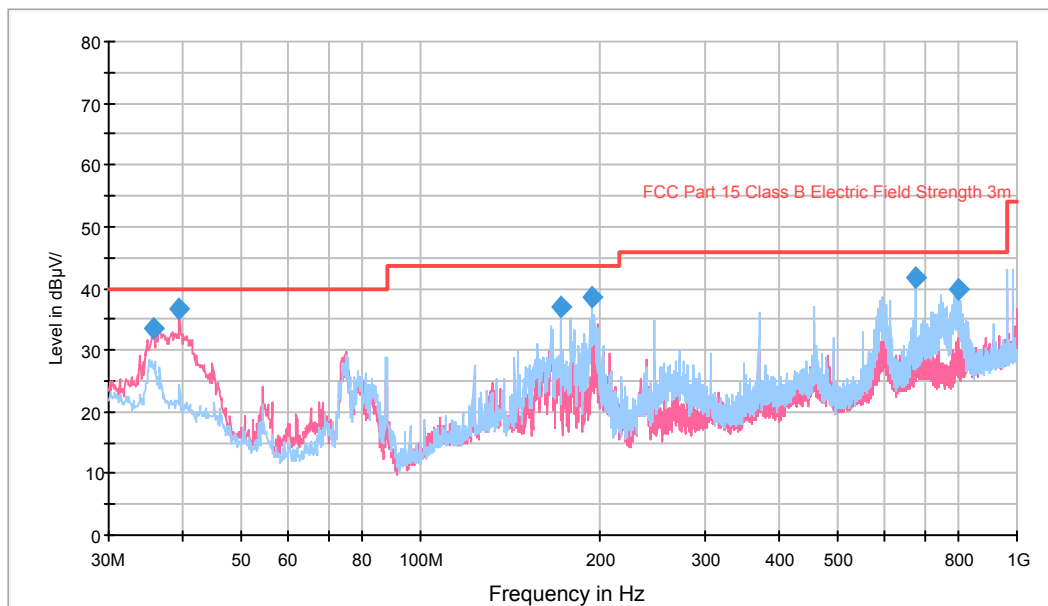
Test Environment Conditions

Temperature:	21°C
Relative Humidity:	61 %
ATM Pressure:	94.0 kPa

The testing was performed by Tom Tang on 2018-12-18

Test mode: Downloading

30MHz-1GHz:

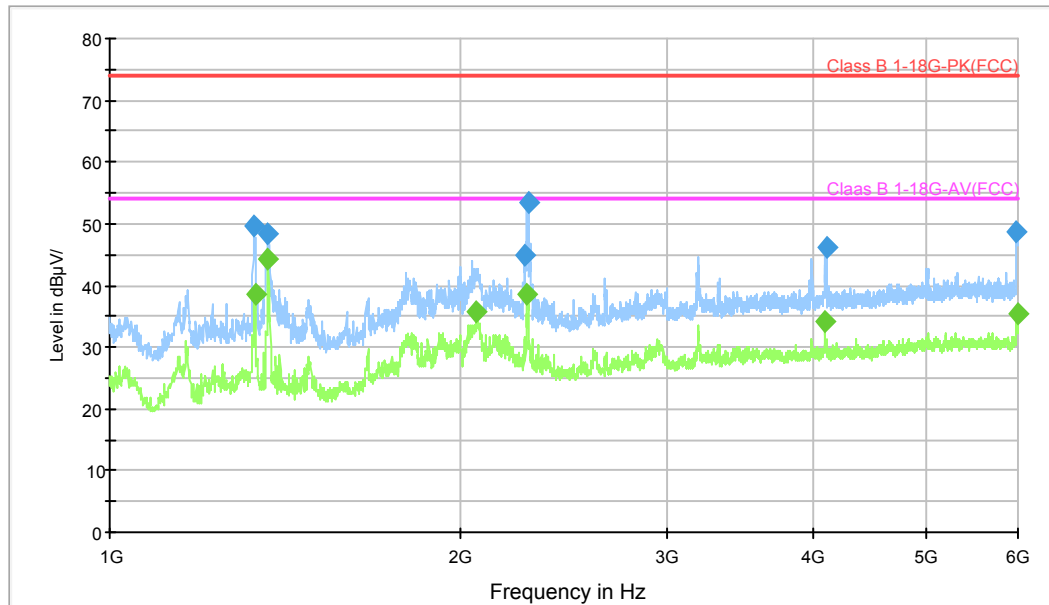


Frequency (MHz)	QuasicPeak (dB μ V/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
35.698750	33.5	100.0	V	113.0	-8.4	6.5	40.0
39.457500	36.5	150.0	V	266.0	-10.6	*3.5	40.0
171.741250	37.1	150.0	H	247.0	-12.1	6.4	43.5
193.930000	38.6	100.0	H	75.0	-12.6	*4.9	43.5
676.747500	41.7	150.0	H	218.0	-3.3	*4.3	46.0
796.906250	39.8	150.0	H	233.0	-1.5	6.2	46.0

* Within Measurement Uncertainty.

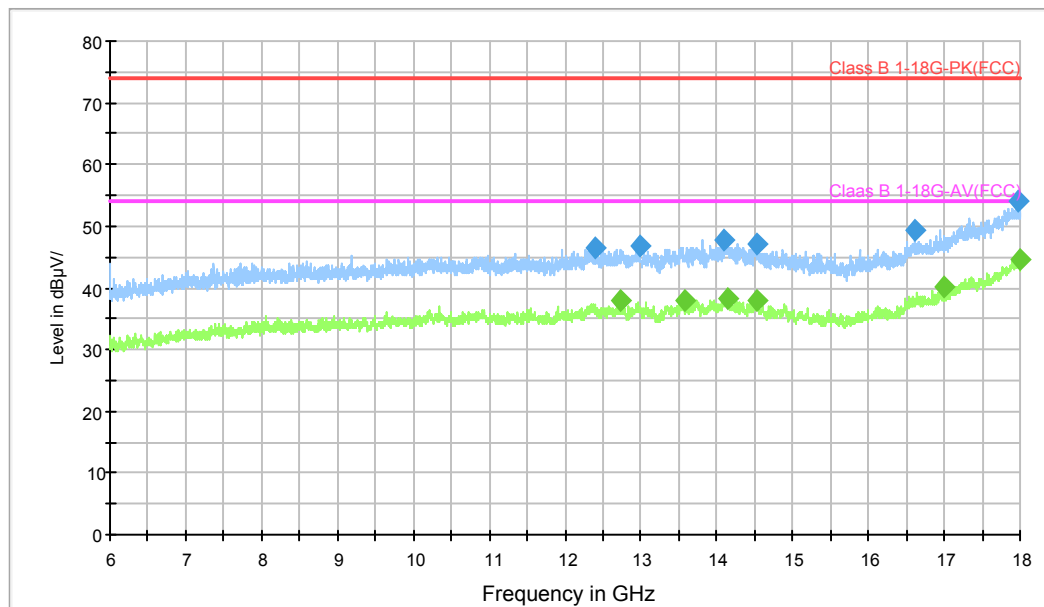
1GHz-18GHz:

Horizontal



Frequency (MHz)	MaxPeak (dB μ V/m)	Height (cm)	Polarization	Azimuth (deg)	Corrected Factor (dB/m)	Margin (dB)	Limit (dB μ V/m)
1330.000000	49.7	100.0	H	149.0	-15.9	24.3	74.0
1368.000000	48.2	100.0	H	281.0	-15.8	25.8	74.0
2266.000000	44.9	100.0	H	269.0	-11.7	29.1	74.0
2284.000000	53.6	100.0	H	65.0	-11.6	20.4	74.0
4109.000000	46.3	100.0	H	351.0	-6.8	27.7	74.0
5974.000000	48.7	100.0	H	0.0	-3.7	25.3	74.0

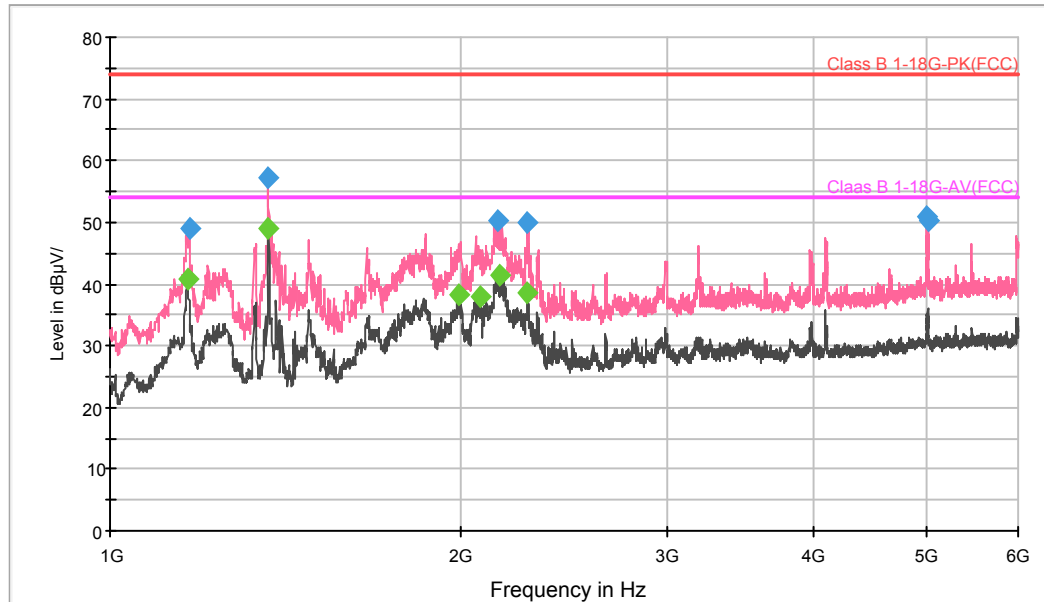
Frequency (MHz)	Average (dB μ V/m)	Height (cm)	Polarization	Azimuth (deg)	Corrected Factor (dB/m)	Margin (dB)	Limit (dB μ V/m)
1332.000000	38.6	100.0	H	172.0	-15.9	15.4	54.0
1368.000000	44.3	100.0	H	281.0	-15.8	9.7	54.0
2064.000000	35.7	100.0	H	160.0	-12.4	18.3	54.0
2280.000000	38.6	100.0	H	65.0	-11.6	15.4	54.0
4103.000000	34.2	100.0	H	357.0	-6.8	19.8	54.0
5999.000000	35.6	100.0	H	0.0	-3.7	18.4	54.0



Frequency (MHz)	MaxPeak (dB μ V/m)	Height (cm)	Polarization	Azimuth (deg)	Corrected Factor (dB/m)	Margin (dB)	Limit (dB μ V/m)
12408.00000	46.6	100.0	H	0.0	5.2	27.4	74.0
12979.20000	46.8	100.0	H	199.0	5.6	27.2	74.0
14088.00000	47.8	100.0	H	302.0	7.1	26.2	74.0
14536.80000	47.1	100.0	H	212.0	6.9	26.9	74.0
16610.40000	49.3	100.0	H	173.0	8.2	24.7	74.0
17980.80000	54.0	100.0	H	289.0	14.7	20.0	74.0

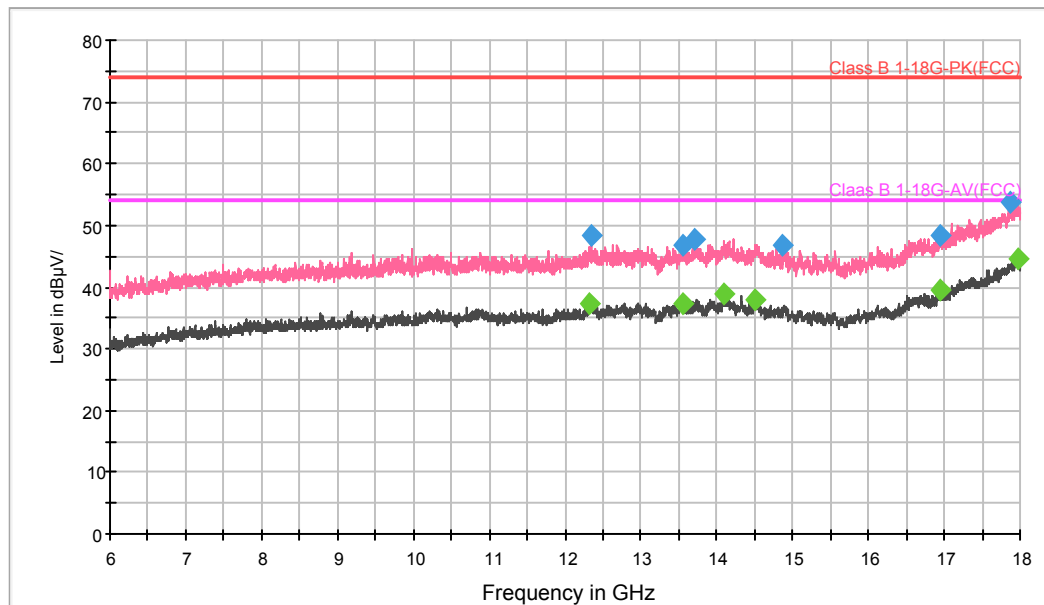
Frequency (MHz)	Average (dB μ V/m)	Height (cm)	Polarization	Azimuth (deg)	Corrected Factor (dB/m)	Margin (dB)	Limit (dB μ V/m)
12732.00000	37.8	100.0	H	0.0	5.5	16.2	54.0
13579.20000	37.9	100.0	H	340.0	6.2	16.1	54.0
14150.40000	38.4	100.0	H	0.0	7.1	15.6	54.0
14520.00000	37.9	100.0	H	340.0	6.9	16.1	54.0
17004.00000	40.1	100.0	H	276.0	9.8	13.9	54.0
17988.00000	44.7	100.0	H	199.0	14.8	9.3	54.0

Vertical



Frequency (MHz)	MaxPeak (dB μ V/m)	Height (cm)	Polarization	Azimuth (deg)	Corrected Factor (dB/m)	Margin (dB)	Limit (dB μ V/m)
1169.000000	48.9	100.0	V	5.0	-16.3	25.1	74.0
1367.000000	57.2	100.0	V	197.0	-15.8	16.8	74.0
2148.000000	50.3	100.0	V	350.0	-12.1	23.7	74.0
2279.000000	49.8	100.0	V	0.0	-11.6	24.2	74.0
5012.000000	50.8	100.0	V	137.0	-4.8	23.2	74.0
5018.000000	50.3	100.0	V	173.0	-4.8	23.7	74.0

Frequency (MHz)	Average (dB μ V/m)	Height (cm)	Polarization	Azimuth (deg)	Corrected Factor (dB/m)	Margin (dB)	Limit (dB μ V/m)
1167.000000	40.9	100.0	V	16.0	-16.3	13.1	54.0
1368.000000	48.9	100.0	V	197.0	-15.8	5.1	54.0
1990.000000	38.4	100.0	V	29.0	-12.7	15.6	54.0
2075.000000	37.8	100.0	V	357.0	-12.4	16.2	54.0
2156.000000	41.3	100.0	V	357.0	-12.1	12.7	54.0
2280.000000	38.5	100.0	V	0.0	-11.6	15.5	54.0



Frequency (MHz)	MaxPeak (dB µ V/m)	Height (cm)	Polarization	Azimuth (deg)	Corrected Factor (dB/m)	Margin (dB)	Limit (dB µ V/m)
12338.40000	48.3	100.0	V	229.0	5.0	25.7	74.0
13560.00000	46.7	100.0	V	293.0	6.2	27.3	74.0
13718.40000	47.8	100.0	V	148.0	6.5	26.2	74.0
14875.20000	46.9	100.0	V	204.0	6.5	27.1	74.0
16956.00000	48.3	100.0	V	268.0	9.6	25.7	74.0
17865.60000	53.7	100.0	V	191.0	14.1	20.3	74.0

Frequency (MHz)	Average (dB µ V/m)	Height (cm)	Polarization	Azimuth (deg)	Corrected Factor (dB/m)	Margin (dB)	Limit (dB µ V/m)
12328.80000	37.4	100.0	V	280.0	5.0	16.6	54.0
13560.00000	37.3	100.0	V	293.0	6.2	16.7	54.0
14092.80000	38.9	100.0	V	166.0	7.1	15.1	54.0
14517.60000	37.9	100.0	V	0.0	6.9	16.1	54.0
16944.00000	39.5	100.0	V	45.0	9.6	14.5	54.0
17966.40000	44.6	100.0	V	268.0	14.7	9.4	54.0

Note:

Corrected Amplitude = Corrected Factor + Reading

Corrected Factor=Antenna factor (RX) + Cable Loss – Amplifier Factor

Margin = Limit- Corr. Amplitude

No emissions were detected above 18GHz.

****END OF REPORT****