

# FCC EMC Test Report

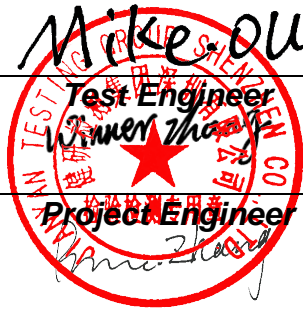
**Applicant:** Todos Industrial Limited  
**Address of Applicant:** Room 308, building A3, Fuhai information port, Fuhai street, Bao'an District

## Equipment Under Test (EUT)

**Product Name:** Tablet PC  
**Model No.:** TAB AI1, TABAI1, Tab64, Tab 64, Tab7ii, Tab8ii, Tab10ii, TabX1, TabX2, TabX3, TabX4, TabXX (X can be "0" to "9", "a" to "z"), TabAli, Tab1066, TabN1, TabN2, TabN3, TabN4  
**Trade Mark:** Todos, Aprix, Geex, Qbex, Hiup, None  
**FCC ID:** 2AZQ6-TABAI1  
**Applicable Standards:** FCC CFR Title 47 Part 15B  
**Date of Sample Receipt:** 28 Dec., 2021  
**Date of Test:** 29 Dec., 2021 to 07 Apr., 2022  
**Date of report Issued:** 08 Apr., 2022  
**Test Result:** PASS \*

**Tested by:** \_\_\_\_\_

*Mike Ou*  
Test Engineer  
*Wenwen Zhang*  
Project Engineer  
*Mike Ou*



**Date:** \_\_\_\_\_

08 Apr., 2022

**Reviewed by:** \_\_\_\_\_

**Date:** \_\_\_\_\_

08 Apr., 2022

**Approved by:** \_\_\_\_\_

**Date:** \_\_\_\_\_

08 Apr., 2022

**Manager**

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in above the application standard version. Test results reported herein relate only to the item(s) tested.

This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

## 2 Version

Version No.	Date	Description
00	08 Apr., 2022	Original

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## 4 General Information

### 4.1 Client Information

Applicant:	Todos Industrial Limited
Address:	Room 308, building A3, Fuhai information port, Fuhai street, Bao'an District
Manufacturer:	Todos Industrial Limited
Address:	Room 308, building A3, Fuhai information port, Fuhai street, Bao'an District

### 4.2 General Description of E.U.T.

Product Name:	Tablet PC
Model No.:	TAB AI1, TABAI1, Tab64, Tab 64, Tab7ii, Tab8ii, Tab10ii, TabX1, TabX2, TabX3, TabX4, TabXX (X can be "0" to "9", "a" to "z"), TabAli, Tab1066, TabN1, TabN2, TabN3, TabN4
Power Supply:	Rechargeable Li-ion Battery DC7.6V, 4500mAh
AC Adapter:	Model: YQ-0902500Z Input: AC100-240V, 50/60Hz, 700mA Output: DC 9.0V, 2500mA
Test Sample Condition:	The test samples were provided in good working order with no visible defects.
Remark:	TAB AI1, TABAI1, Tab64, Tab 64, Tab7ii, Tab8ii, Tab10ii, TabX1, TabX2, TabX3, TabX4, TabXX (X can be "0" to "9", "a" to "z"), TabAli, Tab1066, TabN1, TabN2, TabN3, TabN4 were identical inside, the electrical circuit design, layout, components used and internal wiring, with only difference being model name.

### 4.3 Test Mode

Operating Mode	Detail Description
PC mode	Keep the EUT in Downloading mode(Worst case)
Charging+Printing mode	Keep the EUT in Charging+ Printing mode
Charging+Recording mode	Keep the EUT in Charging+Recording mode
Charging+Playing mode	Keep the EUT in Charging+Playing mode
GPS mode	Keep the EUT in GPS receiver mode

The sample was placed 0.8m above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. 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, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.

### 4.4 Description of Support Units

Manufacturer	Description	Model	S/N	FCC ID/DoC
Lenovo	Laptop	ThinkPad T14 Gen 1	SL10Z47277	DoC
HP	Printer	HP LaserJet P1007	VNFP409729	DoC

### 4.5 Description of Cable Used

Cable Type	Description	Length	From	To
Detached USB Cable	Shielding	1.0m	EUT	PC/Adapter

#### 4.6 Measurement Uncertainty

Parameter	Expanded Uncertainty (Confidence of 95%(U = 2Uc(y)))
Conducted Emission for LISN (9kHz ~ 150kHz)	±3.11 dB
Conducted Emission for LISN (150kHz ~ 30MHz)	±2.62 dB
Radiated Emission (30MHz ~ 1GHz) (3m SAC)	±4.45 dB
Radiated Emission (1GHz ~ 18GHz) (3m SAC)	±5.34 dB
Radiated Emission (18GHz ~ 40GHz) (3m SAC)	±5.34 dB
Radiated Emission (30MHz ~ 1GHz) (10m SAC)	±4.32 dB

**Note:** All the measurement uncertainty value were shown with a coverage k=2 to indicate 95% level of confidence. The measurement data show herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and can be compared directly to specified limit to determine compliance.

#### 4.7 Additions to, Deviations, or Exclusions from the Method

No
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#### 4.8 Laboratory Facility

<p>The test facility is recognized, certified, or accredited by the following organizations:</p> <ul style="list-style-type: none"> <li>● <b>FCC - Designation No.: CN1211</b> JianYan Testing Group Shenzhen Co., Ltd. has been accredited as a testing laboratory by FCC(Federal Communications Commission). The test firm Registration No. is 727551.</li> <li>● <b>ISED – CAB identifier.: CN0021</b> The 3m Semi-anechoic chamber and 10m Semi-anechoic chamber of JianYan Testing Group Shenzhen Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.</li> <li>● <b>CNAS - Registration No.: CNAS L15527</b> JianYan Testing Group Shenzhen Co., Ltd. is accredited to ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L15527.</li> <li>● <b>A2LA - Registration No.: 4346.01</b> This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories. The test scope can be found as below link: <a href="https://portal.a2la.org/scopepdf/4346-01.pdf">https://portal.a2la.org/scopepdf/4346-01.pdf</a></li> </ul>
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#### 4.9 Laboratory Location

<p>JianYan Testing Group Shenzhen Co., Ltd. Address: No.101, Building 8, Innovation Wisdom Port, No.155 Hongtian Road, Huangpu Community, Xinqiao Street, Bao'an District, Shenzhen, Guangdong, People's Republic of China. Tel: +86-755-23118282, Fax: +86-755-23116366 Email: info-JYTee@lets.com, Website: <a href="http://jyt.lets.com">http://jyt.lets.com</a></p>
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## 4.10 Test Instruments List

Radiated Emission(3m SAC):					
Test Equipment	Manufacturer	Model No.	Manage No.	Cal.Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
3m SAC	ETS	9m*6m*6m	WXJ001-1	01-19-2021	01-18-2024
BiConiLog Antenna	Schwarzbeck	VULB9163	WXJ002	02-17-2022	02-16-2023
Biconical Antenna	Schwarzbeck	VUBA9117	WXJ002-1	06-20-2021	06-19-2022
Horn Antenna	Schwarzbeck	BBHA9120D	WXJ002-2	02-17-2022	02-16-2023
Horn Antenna	Schwarzbeck	BBHA9120D	WXJ002-3	06-18-2021	06-17-2022
Pre-amplifier (30MHz ~ 1GHz)	Schwarzbeck	BBV9743B	WXG001-7	02-17-2022	02-16-2023
Pre-amplifier (1GHz ~ 18GHz)	SKET	LNPA_0118G-50	WXG001-3	02-17-2022	02-16-2023
Pre-amplifier (18GHz ~ 40GHz)	RF System	TRLA-180400G45B	WXG001-9	02-17-2022	02-16-2023
EMI Test Receiver	Rohde & Schwarz	ESRP7	WXJ003-1	02-17-2022	02-16-2023
Band Reject Filter Group	Tonscend	JS0806-F	WXJ089	04-06-2021	04-05-2022
				04-01-2022	03-31-2023
Pre-amplifier (18GHz ~ 40GHz)	RF System	TRLA-180400G45B	WXG001-9	02-17-2022	02-16-2023
Coaxial Cable (30MHz ~ 1GHz)	JYTSZ	JYT3M-1G-NN-8M	WXG001-4	02-17-2022	02-16-2023
Coaxial Cable (1GHz ~ 18GHz)	JYTSZ	JYT3M-18G-NN-8M	WXG001-5	02-17-2022	02-16-2023
Coaxial Cable (9kHz ~ 30MHz)	JYTSZ	JYT3M-1G-BB-5M	WXG001-6	02-17-2022	02-16-2023
Coaxial Cable (18GHz ~ 40GHz)	JYTSZ	JYT3M-40G-SS-8M	WXG001-7	02-17-2022	02-16-2023
Test Software	Tonscend	TS+	Version: 3.0.0.1		

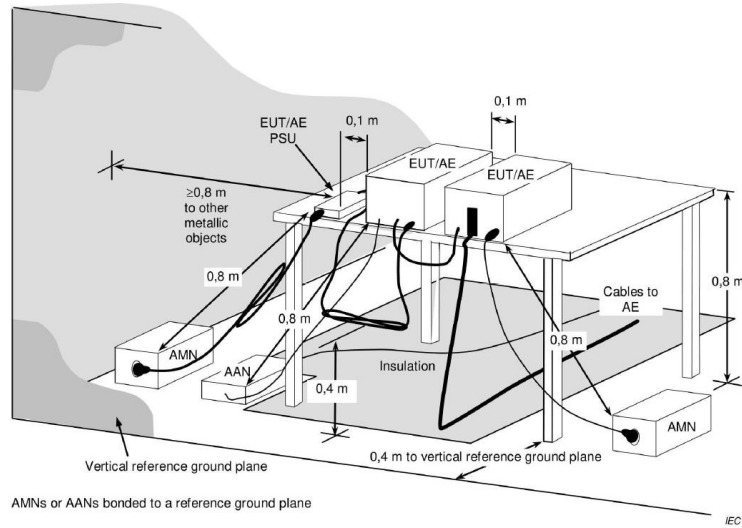
Radiated Emission(10m SAC):					
Test Equipment	Manufacturer	Model No.	Manage No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
10m SAC	ETS	RFSD-100-F/A	WXJ090	04-28-2021	04-27-2024
BiConiLog Antenna	SCHWARZBECK	VULB 9168	WXJ090-1	04-02-2021	04-01-2022
				03-30-2022	03-29-2023
BiConiLog Antenna	SCHWARZBECK	VULB 9168	WXJ090-2	04-02-2021	04-01-2022
				03-30-2022	03-29-2023
EMI Test Receiver	R&S	ESR 3	WXJ090-3	04-08-2021	04-07-2022
				03-30-2022	03-29-2023
EMI Test Receiver	R&S	ESR 3	WXJ090-4	04-08-2021	04-07-2022
				03-30-2022	03-29-2023
Low Pre-amplifier	Bost	LNA 0920N	WXG002-3	04-06-2021	04-05-2022
				03-30-2022	03-29-2023
Low Pre-amplifier	Bost	LNA 0920N	WXG002-4	04-06-2021	04-05-2022
				03-30-2022	03-29-2023
Cable	Bost	JYT10M-1G-NN-10M	XG002-7	04-02-2021	04-01-2022
				03-30-2022	03-29-2023
Cable	Bost	JYT10M-1G-NN-10M	XG002-8	04-02-2021	04-01-2022
				03-30-2022	03-29-2023
Test Software	R&S	EMC32	Version: 10.50.40		

<b>Conducted Emission:</b>					
<b>Test Equipment</b>	<b>Manufacturer</b>	<b>Model No.</b>	<b>Manage No.</b>	<b>Cal.Date (mm-dd-yy)</b>	<b>Cal. Due date (mm-dd-yy)</b>
EMI Test Receiver	Rohde & Schwarz	ESCI 3	WXJ003	02-17-2022	02-16-2023
RF Switch	TOP PRECISION	RSU0301	WXG003	02-17-2022	02-16-2023
LISN	Schwarzbeck	NSLK 8127	QCJ001-13	02-17-2022	02-16-2023
LISN	Rohde & Schwarz	ESH3-Z5	WXJ005-1	06-18-2021	06-17-2022
LISN Coaxial Cable (9kHz ~ 30MHz)	JYTSZ	JYTCE-1G-NN-2M	WXG003-1	02-17-2022	02-16-2023
Test Software	AUDIX	E3	Version: 6.110919b		

## 5 Measurement Setup and Procedure

### 5.1 Test Setup

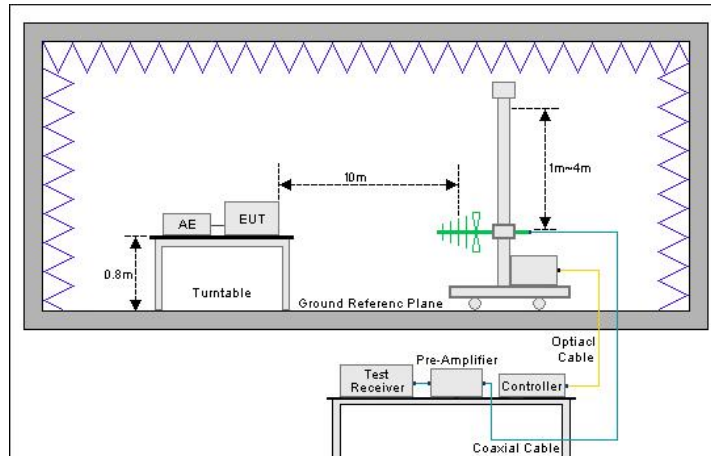
#### 1) Conducted emission measurement:



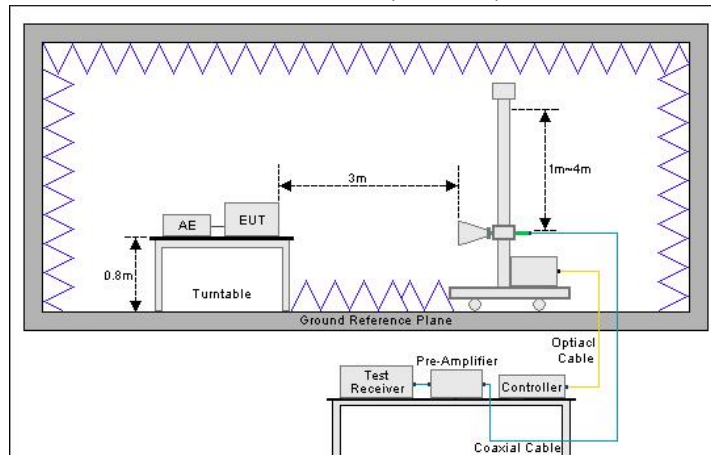
**Note:** The 0.8 m distance specified between EUT/AE/PSU and AMN/AAN, is applicable only to the EUT being measured. If the device is AE then it shall be >0.8 m.

#### 2) Radiated emission measurement:

##### Below 1GHz (10m SAC)



##### Above 1GHz (3m SAC)





## 5.2 Test Procedure

Test method	Test step
Conducted emission	<ol style="list-style-type: none"> <li>1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment.</li> <li>2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs).</li> <li>3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4 on conducted measurement.</li> </ol>
Radiated emission	<p><b>For below 1GHz:</b></p> <ol style="list-style-type: none"> <li>1. The EUT was placed on the tabletop of a rotating table 0.8 m the ground at a 10 m semi anechoic chamber. The measurement distance from the EUT to the receiving antenna is 10 m.</li> <li>2. EUT works in each mode of operation that needs to be tested, and having the EUT continuously working, respectively on 3 axis (X, Y &amp; Z) and considered typical configuration to obtain worst position. The highest signal levels relative to the limit shall be determined by rotating the EUT from 0° to 360° and with varying the measurement antenna height between 1 m and 4 m in vertical and horizontal polarizations.</li> <li>3. Open the test software to control the test antenna and test turntable. Perform the test, save the test results, and export the test data.</li> </ol> <p><b>For above 1GHz:</b></p> <ol style="list-style-type: none"> <li>1. The EUT was placed on the tabletop of a rotating table 1.5 m the ground at a 3 m fully anechoic room. The measurement distance from the EUT to the receiving antenna is 3 m.</li> <li>2. EUT works in each mode of operation that needs to be tested, and having the EUT continuously working, respectively on 3 axis (X, Y &amp; Z) and considered typical configuration to obtain worst position. The highest signal levels relative to the limit shall be determined by rotating the EUT from 0° to 360° and with varying the measurement antenna height between 1 m and 4 m in vertical and horizontal polarizations.</li> <li>3. Open the test software to control the test antenna and test turntable. Perform the test, save the test results, and export the test data.</li> </ol>

## 6 Test Results

### 6.1 Summary

#### 6.1.1 Clause and data summary

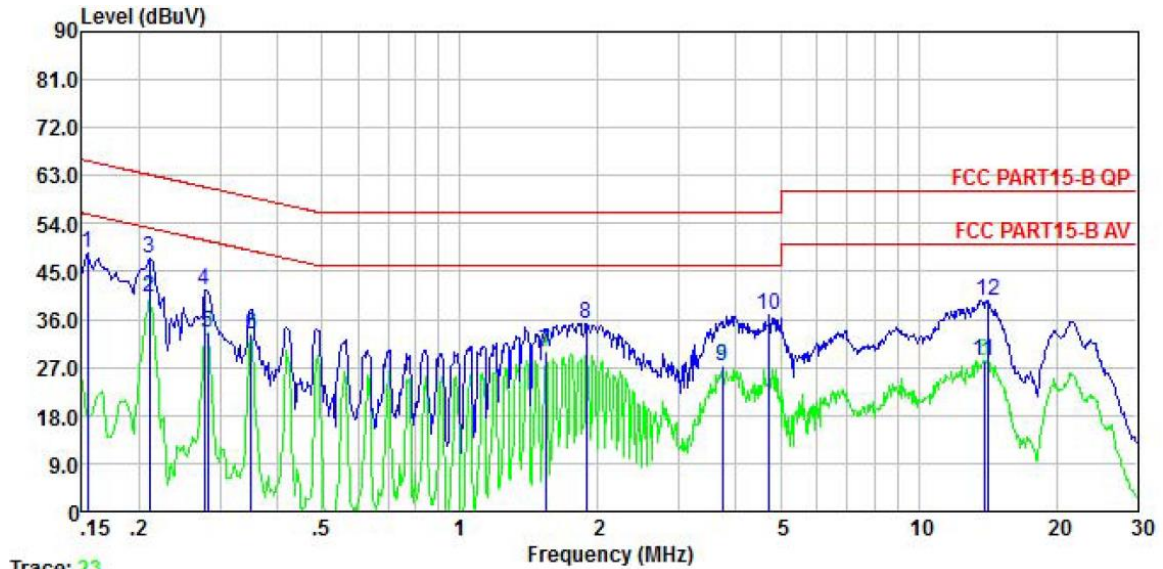
Test items	Standard clause	Test data	Result
Conducted Emission	Part 15.107	See Section 6.2	Pass
Radiated Emission	Part 15.109	See Section 6.3	Pass
<b>Remark:</b> 1. The EUT is a <b>Class B</b> digital device. 2. Pass: The EUT complies with the essential requirements in the standard. 3. N/A: Not Applicable.			
<b>Test Method:</b>		ANSI C63.4:2014	

#### 6.1.2 Test Limit

Test items	Limit				
Conducted Emission	Frequency (MHz)	Class A Limit (dB $\mu$ V)		Class B Limit (dB $\mu$ V)	
		Quasi-Peak	Average	Quasi-Peak	Average
	0.15 – 0.5	79	66	66 to 56 <small>Note 1</small>	56 to 46 <small>Note 1</small>
	0.5 – 5	73	60	56	46
	5 – 30	73	60	60	50
Note 1: The limit level in dB $\mu$ V decreases linearly with the logarithm of frequency. Note 2: The more stringent limit applies at transition frequencies.					
Radiated Emission	Frequency (MHz)	Class A Limit (dB $\mu$ V/m)		Class B Limit (dB $\mu$ V/m)	
		Quasi-Peak @ 3m	Quasi-Peak @ 10m	Quasi-Peak @ 3m	Quasi-Peak @ 10m
	30 – 88	49.0	39.0	40.0	30.0
	88 – 216	53.5	43.5	43.5	33.5
	216 – 960	56.0	46.0	46.0	36.0
	960 – 1000	60.0	50.0	54.0	44.0
	Note: The more stringent limit applies at transition frequencies.				
	Frequency	Class A Limit (dB $\mu$ V/m) @ 3m		Class B Limit (dB $\mu$ V/m) @ 3m	
		Average	Peake	Average	Peake
	Above 1 GHz	60.0	80.0	54.0	74.0
Note: The measurement bandwidth shall be 1 MHz or greater.					

## 6.2 Conducted Emission

Product name:	Tablet PC	Product model:	TAB A11
Test by:	Mike	Test mode:	PC Tx
Test frequency:	150 kHz ~ 30 MHz	Phase:	Line
Test voltage:	AC 120 V/60 Hz		



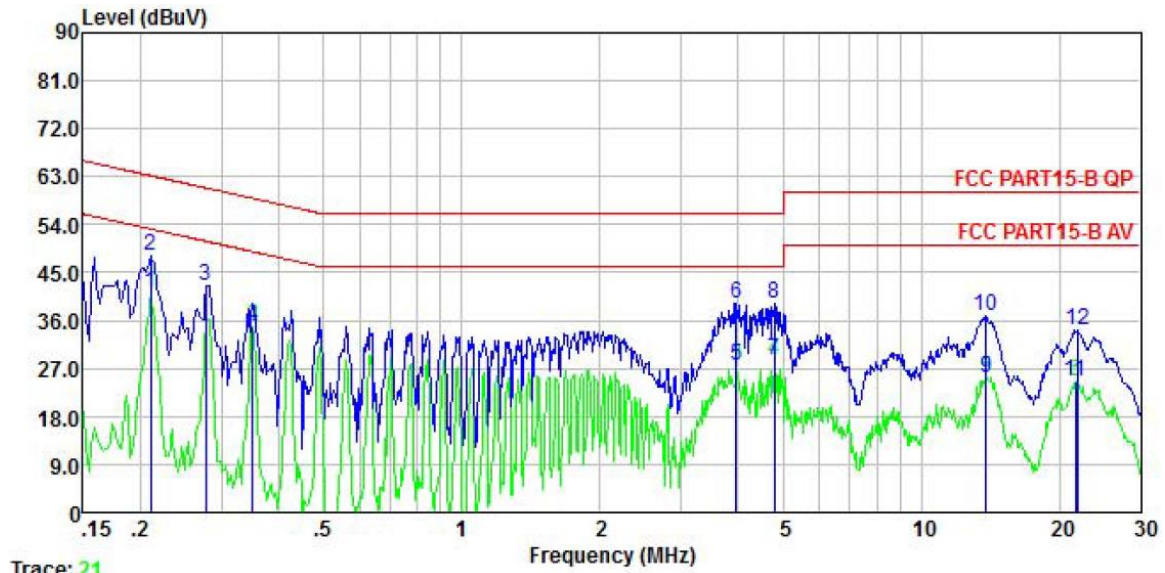
Trace: 23

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.154	48.36	0.04	0.01	48.41	65.78	-17.37	QP
2	0.211	40.06	0.04	0.03	40.13	53.18	-13.05	Average
3	0.211	47.39	0.04	0.03	47.46	63.18	-15.72	QP
4	0.277	41.51	0.04	0.02	41.57	60.90	-19.33	QP
5	0.282	33.36	0.04	0.02	33.42	50.76	-17.34	Average
6	0.350	33.01	0.04	0.02	33.07	48.96	-15.89	Average
7	1.535	29.56	0.06	0.15	29.77	46.00	-16.23	Average
8	1.888	35.02	0.07	0.20	35.29	56.00	-20.71	QP
9	3.740	26.90	0.10	0.08	27.08	46.00	-18.92	Average
10	4.721	36.55	0.12	0.09	36.76	56.00	-19.24	QP
11	13.915	28.01	0.26	0.12	28.39	50.00	-21.61	Average
12	14.213	39.22	0.26	0.12	39.60	60.00	-20.40	QP

**Remark:**

1. Level = Read level + LISN Factor + Cable Loss.

<b>Product name:</b>	Tablet PC	<b>Product model:</b>	TAB A11
<b>Test by:</b>	Mike	<b>Test mode:</b>	PC Tx
<b>Test frequency:</b>	150 kHz ~ 30 MHz	<b>Phase:</b>	Neutral
<b>Test voltage:</b>	AC 120 V/60 Hz		



Trace: 21

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.211	40.95	0.04	0.03	41.02	53.18	-12.16	Average
2	0.211	47.93	0.04	0.03	48.00	63.18	-15.18	QP
3	0.277	42.48	0.04	0.02	42.54	60.90	-18.36	QP
4	0.350	34.83	0.04	0.02	34.89	48.96	-14.07	Average
5	3.964	27.30	0.09	0.08	27.47	46.00	-18.53	Average
6	3.964	39.18	0.09	0.08	39.35	56.00	-16.65	QP
7	4.797	28.25	0.10	0.09	28.44	46.00	-17.56	Average
8	4.797	39.10	0.10	0.09	39.29	56.00	-16.71	QP
9	13.841	24.97	0.24	0.12	25.33	50.00	-24.67	Average
10	13.841	36.60	0.24	0.12	36.96	60.00	-23.04	QP
11	21.715	24.09	0.32	0.16	24.57	50.00	-25.43	Average
12	21.830	33.86	0.32	0.16	34.34	60.00	-25.66	QP

**Remark:**

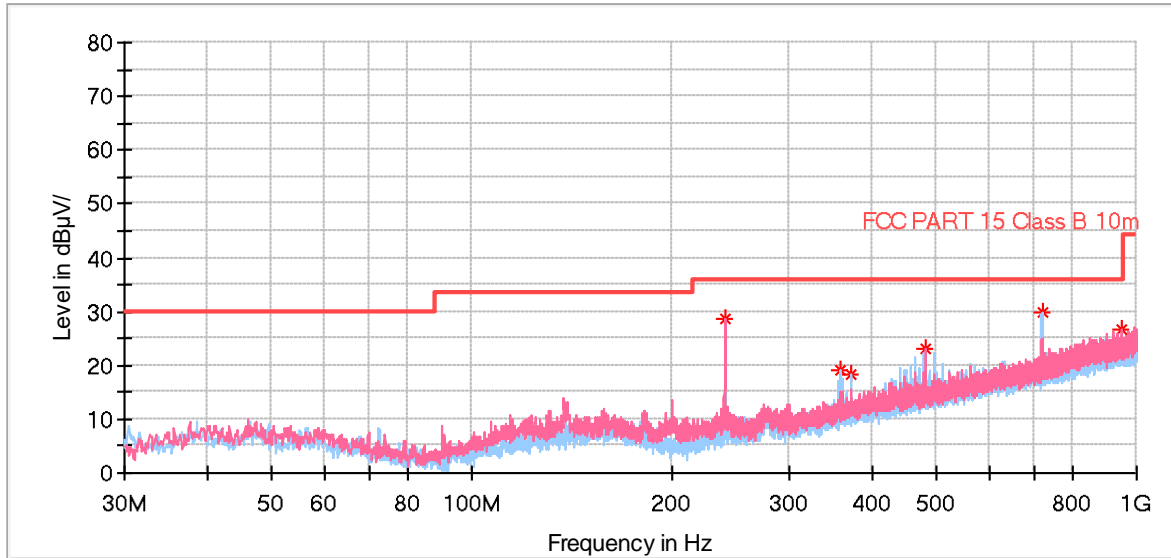
1. Level = Read level + LISN Factor + Cable Loss.

### 6.3 Radiated Emission

Below 1GHz:

<b>Product Name:</b>	Tablet PC	<b>Product Model:</b>	TAB A11
<b>Test By:</b>	Mike	<b>Test mode:</b>	PC Tx
<b>Test Frequency:</b>	30 MHz ~ 1 GHz	<b>Polarization:</b>	Vertical & Horizontal
<b>Test Voltage:</b>	AC 120/60Hz		

Full Spectrum



Frequency (MHz)	MaxPeak (dB µ V/m)	Limit (dB µ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
239.908000	28.49	36.00	7.51	100.0	V	249.0	-15.7
357.569000	19.01	36.00	16.99	100.0	H	144.0	-12.9
372.701000	18.23	36.00	17.77	100.0	H	154.0	-12.5
479.983000	23.24	36.00	12.76	100.0	V	170.0	-9.3
720.058000	29.72	36.00	6.28	100.0	H	119.0	-4.7
947.232000	26.71	36.00	9.29	100.0	V	92.0	-0.1

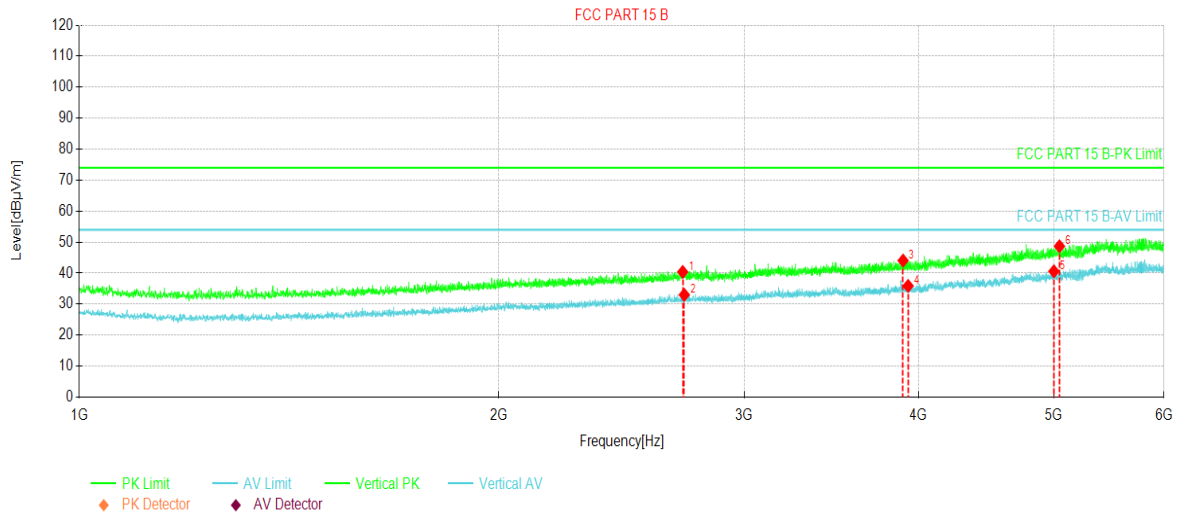
**Remark:**

1. Level = Read level + Antenna Factor + Cable Loss – Preamplifier Factor.



**Above 1GHz:**

<b>Product Name:</b>	Tablet PC	<b>Product Model:</b>	TAB A11
<b>Test By:</b>	Mike	<b>Test mode:</b>	PC Tx
<b>Test Frequency:</b>	1000 MHz ~ 6000 MHz	<b>Polarization:</b>	Vertical
<b>Test Voltage:</b>	AC 120/60Hz		

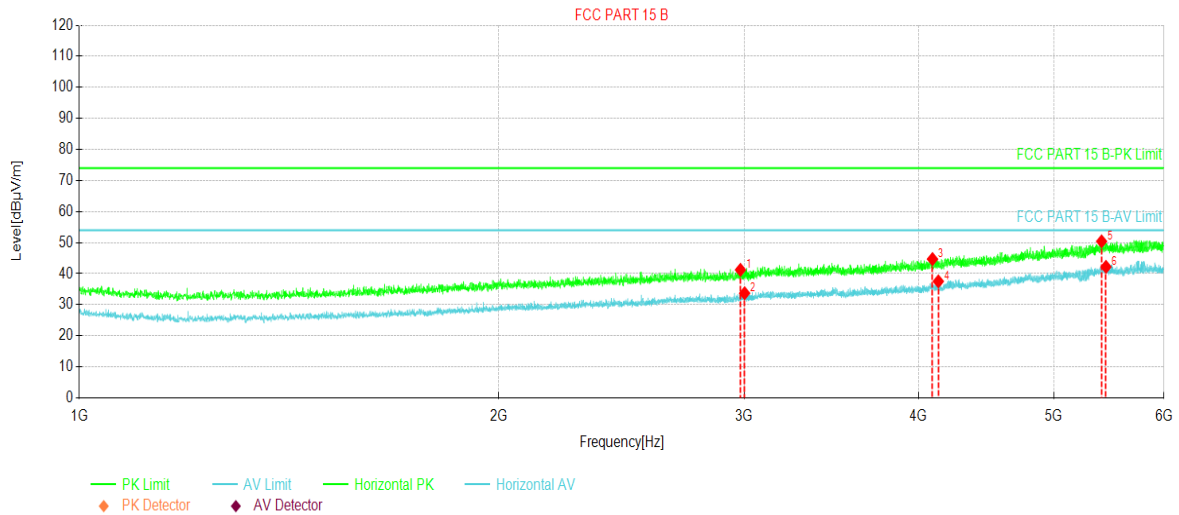


NO.	Freq. [MHz]	Reading [dBµV/m]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Trace	Polarity
1	2709.67	57.98	40.39	-17.59	74.00	33.61	PK	Vertical
2	2716.67	50.60	33.01	-17.59	54.00	20.99	AV	Vertical
3	3899.28	57.56	44.05	-13.51	74.00	29.95	PK	Vertical
4	3931.79	49.27	35.88	-13.39	54.00	18.12	AV	Vertical
5	5002.40	48.79	40.59	-8.20	54.00	13.41	AV	Vertical
6	5048.90	56.74	48.68	-8.06	74.00	25.32	PK	Vertical

**Remark:**

1. Level = Read level + Antenna Factor + Cable Loss – Pre-amplifier Factor.

<b>Product Name:</b>	Tablet PC	<b>Product Model:</b>	TAB A11
<b>Test By:</b>	Mike	<b>Test mode:</b>	PC Tx
<b>Test Frequency:</b>	1000 MHz ~ 6000 MHz	<b>Polarization:</b>	Horizontal
<b>Test Voltage:</b>	AC 120/60Hz		



NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Trace	Polarity
1	2980.69	58.21	41.23	-16.98	74.00	32.77	PK	Horizontal
2	3001.20	50.58	33.71	-16.87	54.00	20.29	AV	Horizontal
3	4093.30	57.28	44.70	-12.58	74.00	29.30	PK	Horizontal
4	4133.31	49.86	37.53	-12.33	54.00	16.47	AV	Horizontal
5	5412.44	56.35	50.40	-5.95	74.00	23.60	PK	Horizontal
6	5451.94	48.21	42.20	-6.01	54.00	11.80	AV	Horizontal

**Remark:**

1. Level = Read level + Antenna Factor + Cable Loss – Preamplifier Factor.

-----End of report-----