



FCC TEST REPORT (15.209)

REPORT NO. : RF150630C22-4
MODEL NO. : P01MA
FCC ID : MSQP01MA
RECEIVED : Jun. 29, 2015
TESTED : Jul. 08,2015
ISSUED : Jul. 20, 2015

APPLICANT : ASUSTek COMPUTER INC.

ADDRESS : 4F, No. 150, LI-TE Rd., PEITOU, TAIPEI 112, TAIWAN

ISSUED BY : Bureau Veritas Consumer Products Services (H.K.)
Ltd., Taoyuan Branch

LAB ADDRESS : No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New
Taipei City, Taiwan (R.O.C)

TEST LOCATION : No. 19, Hwa Ya 2nd Rd, Wen Hwa Vil., Kwei Shan
Dist., Taoyuan City 333, Taiwan, R.O.C.

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF150630C22-4	Original release	Jul. 20, 2015



1. CERTIFICATION

PRODUCT: ASUS Tablet
MODEL NO.: P01MA
BRAND: ASUS
APPLICANT: ASUSTek COMPUTER INC.
TESTED: Jul. 08,2015
TEST SAMPLE: Production Unit
STANDARDS: **FCC Part 15, Subpart C (Section 15.209)**
ANSI C63.10-2013

The above equipment (model: P01MA) have been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

PREPARED BY : Gina Liu , **DATE** : Jul. 20, 2015
Gina Liu / Specialist
APPROVED BY : Kay Wu , **DATE** : Jul. 20, 2015
Kay Wu / Supervisor

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 15, Subpart C			
STANDARD PARAGRAPH	TEST TYPE	RESULT	REMARK
15.209	Radiated Emission Test	PASS	Meet the requirement of limit. Minimum passing margin is -11.38dB at 55.92MHz.

2.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

MEASUREMENT	FREQUENCY	UNCERTAINTY
Radiated emissions	30MHz ~ 200MHz	2.93 dB
	200MHz ~1000MHz	2.95 dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

EUT	ASUS Tablet
MODEL NO.	P01MA
POWER SUPPLY	5.2Vdc (adapter) 5.0Vdc (host equipment) 3.8Vdc (Li-ion battery)
OPERATING FREQUENCY	214 kHz
DATA CABLE	Refer to note as below
I/O PORT	Refer to user's manual
ACCESSORY DEVICES	Refer to note as below



NOTE:

1. The EUT contains following accessory devices.

ITEM	BRAND	MODEL	SPECIFICATION
Adapter 1	ASUS	PA-1070-07	I/P: 100-240Vac, 50/60Hz, 0.25A O/P: 5.2Vdc, 1.35A
Adapter 2	ASUS	AD2005320	I/P: 100-240Vac, 50/60Hz, 0.25A O/P: 5.2Vdc, 1.35A
Battery	ASUS	C11P1426	3.8Vdc, 15.2Wh
USB Cable 1	ASUS	CUDB01B-AJ001-DF	0.9m
USB Cable 2	ASUS	L67U2016-CS-R	0.9m
CPU 1	INTEL	Moorefield Z3560 935218	1.83GHz, 64bit 1064pin
CPU 2	INTEL	Moorefield Z3580 935210	2.3GHz, 64bit 1064pin
DDR 1	SAMSUNG	K3QF2F20EM-FGCE	2G LPDDR3 1600 256M*32*2 CS
DDR 2	ELPIDA	EDFA164A2PF-GD-F	2G LPDDR3 1600 128*32*4 FBGA-256
DDR 3	HYNIX	H9CKNNNBKTMRPR-N UH	2GB LPDDR3 256M*32*2 1.8V FBGA-256
DDR 4	HYNIX	H9CKNNNCPTMRPR-N UH	4GB LPDDR3 256M*32*4 1.8V FBGA-256
EMMC 1	HYNIX	H26M78103CCR	64 GB
EMMC 2	SAMSUNG	KLMBG4WEBD-B031	32 GB
EMMC 3	Kingston	32G-S100-WB	32 GB
EMMC 4	Kingston	16G-S100-A08	16 GB
EMMC 5	SAMSUNG	KLMAG2GEND-B031	16 GB
LCD Panel	Tianma	TL079QDXP01-00	7.85"
Camera 1	Chicony	CBAE82320003872LH	--
Camera 2	Chicony	CBFE55720003870LH	--
WLAN / BT Module	BROADCOM	BCM4339	
GPS Module	BROADCOM	BCM47531	
Main Board	ASUS	Z580CA_MB_JP	
Touch pen	ASUS AC Touch pen	PAD-22 Z STYLUS	
ZEN CLUTCH	ASUS	NA	

2. The above EUT information is declared by the manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

3.2 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart C (Section 15.209)

ANSI C63.10-2013

All test items have been performed and recorded as per the above standards.

3.3 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

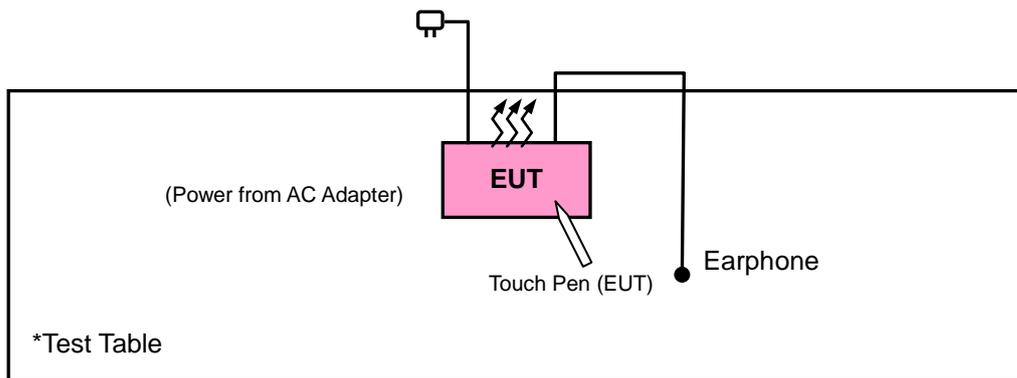
NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	Earphone	N/A	N/A	N/A	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	N/A

NOTE:

1. All power cords of the above support units are non shielded (1.8m).

3.3.1 CONFIGURATION OF SYSTEM UNDER TEST



4. TEST TYPES AND RESULTS

4.1 RADIATED EMISSION MEASUREMENT

4.1.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a). Other emissions shall be at least 20dB below the highest level of the desired power.

Frequencies (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

As shown in 15.35(b), for frequencies above 1000MHz, 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 20dB under any condition of modulation.



4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver Agilent	N9038A	MY51210203	Jan.21, 2015	Jan.21, 2016
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Dec. 10, 2014	Dec. 09, 2015
BILOG Antenna SCHWARZBECK	VULB9168	9168-472	Feb. 04, 2015	Feb. 04, 2016
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-969	Feb. 09, 2015	Feb. 09, 2016
HORN Antenna SCHWARZBECK	BBHA 9170	9170-480	Feb. 04, 2015	Feb. 04, 2016
Loop Antenna	EM-6879	269	Aug.13, 2014	Aug.12, 2015
Preamplifier EMCI	EMC 012645	980115	Dec. 12, 2014	Dec. 11, 2015
Preamplifier EMCI	EMC 184045	980116	Jan. 09, 2015	Jan. 08, 2016
Preamplifier EMCI	EMC 330H	980112	Dec. 27, 2014	Dec. 26, 2015
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	309219/4 2950114	Oct. 18, 2014	Oct. 17, 2015
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	250130/4	Oct. 18, 2014	Oct. 17, 2015
RF signal cable Worken	RG-213	NA	Nov. 07, 2014	Nov. 06, 2015
Software BV ADT	E3 6.120103	NA	NA	NA
Antenna Tower MF	MFA-440H	NA	NA	NA
Turn Table MF	MFT-201SS	NA	NA	NA
Antenna Tower & Turn Table Controller MF	MF-7802	NA	NA	NA

- NOTE:**
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 2. The calibration interval of the loop antenna is 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
 3. The test was performed in HwaYa Chamber 10.
 4. The FCC Site Registration No. is 690701.
 5. The IC Site Registration No. is IC 7450F-10.

4.1.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

NOTE:

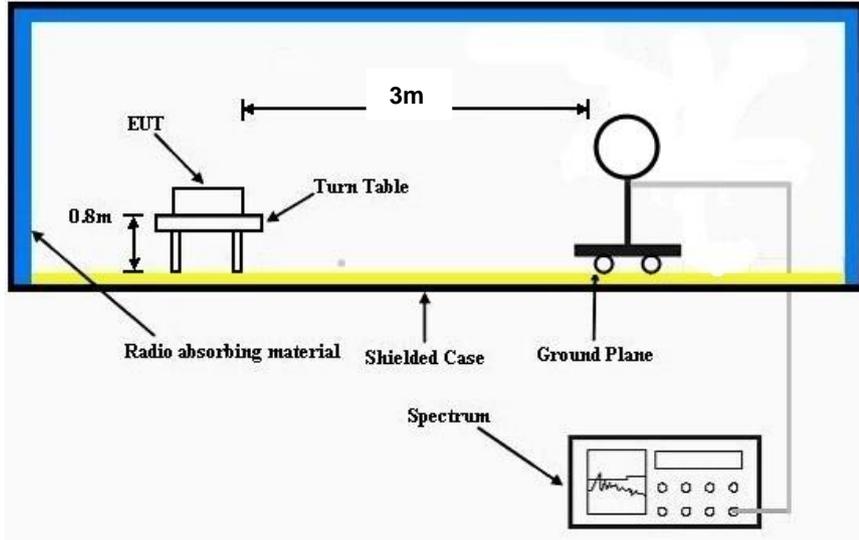
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 10 Hz for Average detection (AV) at frequency above 1GHz.

4.1.4 DEVIATION FROM TEST STANDARD

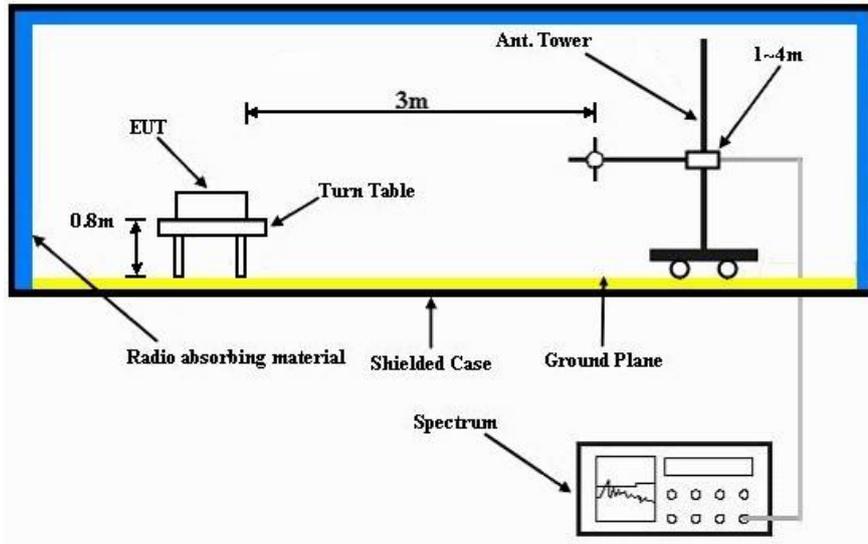
No deviation.

4.1.5 TEST SETUP

Frequency range 9k~30MHz:



Frequency range 30~1000MHz:



For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.1.6 EUT OPERATING CONDITIONS

Set the EUT under charging condition.

4.1.7 TEST RESULTS

RADIATED WORST-CASE DATA:

EUT TEST CONDITION		MEASUREMENT DETAIL	
INPUT POWER	120Vac, 60 Hz	FREQUENCY RANGE	0.009~30MHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	DETECTOR FUNCTION	Quasi-Peak Average (AV)
TESTED BY	Toby Tian		

ANTENNA POLARITY & TEST DISTANCE: LOOP ANTENNA OPEN AT 3M								
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
0.21887	64.31	53.81	100.8	-36.49	51.35	100	360	Average
0.42875	50.03	44.58	94.96	-44.93	46.09	100	360	Average
0.63862	45.83	42.96	71.5	-25.67	43.47	100	360	QP
0.86349	37.7	36.6	68.88	-31.18	41.7	100	360	QP
1.073	30.34	29.98	66.99	-36.65	40.98	100	360	QP
1.283	26.06	26.29	65.44	-39.38	40.39	100	360	QP

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
 2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. Above limits have been translated by the formula



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EUT TEST CONDITION		MEASUREMENT DETAIL	
INPUT POWER	120Vac, 60 Hz	FREQUENCY RANGE	0.009~30MHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	DETECTOR FUNCTION	Quasi-Peak Average (AV)
TESTED BY	Toby Tian		

ANTENNA POLARITY & TEST DISTANCE: LOOP ANTENNA CLOSE AT 3M								
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
0.21887	53.1	42.6	100.8	-47.7	51.35	100	360	Average
0.42875	42.99	37.54	94.96	-51.97	46.09	100	360	Average
0.63862	43.2	40.33	71.5	-28.3	43.47	100	360	QP
0.86349	33.78	32.68	68.88	-35.1	41.7	100	360	QP
1.073	30.18	29.82	66.99	-36.81	40.98	100	360	QP
1.283	29.63	29.86	65.44	-35.81	40.39	100	360	QP

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
 2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. Above limits have been translated by the formula

BELOW 1GHz WORST-CASE DATA :

EUT TEST CONDITION		MEASUREMENT DETAIL	
FREQUENCY RANGE	Below 1000MHz	INPUT POWER	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	DETECTOR FUNCTION	Peak (PK) Quasi-Peak (QP)
TESTED BY	Toby Tian		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
105.87	24.36	45.54	43.5	-19.14	9.62	1.09	31.89	122	300	Peak
177.69	24.15	43.76	43.5	-19.35	11.01	1.19	31.81	106	193	Peak
189.03	24.29	44.61	43.5	-19.21	10.12	1.25	31.69	102	208	Peak
563.2	20.82	31.92	46	-25.18	18.77	2.2	32.07	116	82	Peak
627.6	22.32	32.22	46	-23.68	19.94	2.31	32.15	119	137	Peak
741	23.9	31.45	46	-22.1	21.39	2.52	31.46	122	290	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
32.97	27.73	45.75	40	-12.27	12.47	0.6	31.09	111	92	Peak
39.72	28.46	45.27	40	-11.54	13.54	0.64	30.99	112	47	Peak
55.92	28.62	46.85	40	-11.38	12.35	0.76	31.34	127	82	Peak
631.1	21.91	31.73	46	-24.09	19.99	2.32	32.13	111	166	Peak
689.2	22.35	31.06	46	-23.65	20.69	2.44	31.84	126	266	Peak
749.4	24.07	31.32	46	-21.93	21.52	2.53	31.3	113	114	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level - Limit Value

5. PHOTOGRAPHS OF THE TEST CONFIGURATION

Please refer to the attached file (Test Setup Photo).



6. INFORMATION ON THE TESTING LABORATORIES

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

Linko EMC/RF Lab:

Tel: 886-2-26052180

Fax: 886-2-26051924

Hsin Chu EMC/RF/Telecom Lab:

Tel: 886-3-5935343

Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety Lab:

Tel: 886-3-3183232

Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com

Web Site: www.bureauveritas-adt.com

The address and road map of all our labs can be found in our web site also.

7. APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications are made to the EUT by the lab during the test.

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