



FCC RF Test Report

APPLICANT : ASUSTeK COMPUTER INC.
EQUIPMENT : ASUS Phone (Mobile Phone)
BRAND NAME : ASUS
MODEL NAME : ASUS_X00PD, ASUS_X00PS
FCC ID : MSQX00PS
STANDARD : 47 CFR Part 2, 22(H), 24(E), 27(M)
CLASSIFICATION : PCS Licensed Transmitter Held to Ear (PCE)

The product was received on Apr. 18, 2018 and completely tested on May 03, 2018. We, Sporton International (Kunshan) Inc., would like to declare that the tested sample has been evaluated in accordance with the test procedures given in ANSI/TIA-603-E and the testing has shown the tested sample to be in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International (Kunshan) Inc., the test report shall not be reproduced except in full.

Approved by: James Huang / Manager



Sporton International (Kunshan) Inc.

***No.3-2 Ping-Xiang Rd, Kunshan Development Zone Kunshan City Jiangsu Province 215335
China***



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG811101-01B	Rev. 01	Initial issue of report	May 10, 2018

**SUMMARY OF TEST RESULT**

Report Section	FCC Rule	Description	Limit	Result	Remark
3.4	§2.1046	Conducted Output Power	Reporting Only	PASS	-
	§22.913(a)(2)	Effective Radiated Power (Band 5)	ERP < 7 Watt	PASS	-
	§24.232(c) §27.50(h)(2)	Equivalent Isotropic Radiated Power (Band 2) (Band 7)	EIRP < 2Watt	PASS	-
4.4	§2.1053 §22.917(a) §24.238(a)	Radiated Spurious Emission (Band 2) (Band 5)	$< 43 + 10\log_{10}(P[\text{Watts}])$	PASS	Under limit 4.94 dB at 7600.00 MHz
	§2.1053 §27.53(m)(4)	Radiated Spurious Emission (Band 7)	$< 55 + 10\log_{10}(P[\text{Watts}])$		



1 General Description

1.1 Applicant

ASUSTeK COMPUTER INC.

4F, No. 150, LI-TE RD., PEITOU, TAIPEI, TAIWAN

1.2 Manufacturer

ASUSTeK COMPUTER INC.

4F, No. 150, LI-TE RD., PEITOU, TAIPEI, TAIWAN

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	ASUS Phone (Mobile Phone)
Brand Name	ASUS
Model Name	ASUS_X00PD, ASUS_X00PS
FCC ID	MSQX00PS
EUT supports Radios application	GSM/GPRS/EGPRS/WCDMA/HSPA/ HSPA+(16QAM uplink is not supported)/DC-HSDPA/LTE WLAN 2.4GHz 802.11b/g/n HT20/HT40 Bluetooth v3.0+EDR/ Bluetooth v4.0 LE
HW Version	W14MA1B1-2
SW Version	WW_Phone-15.00.1801.38-20180327
EUT Stage	Identical Prototype

Remark:

1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.
2. This is a variant report for ASUS_X00PD, ASUS_X00PS. The product equality declaration could be referred to Appendix D. Based on the similarity between current and previous project, only the Conducted Power, ERP/EIRP, and the worst case of Radiated Emission from original test report (Sporton Report Number FG811101B) were verified for the differences.

1.4 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx Frequency	LTE Band 2 : 1850.7 MHz ~ 1909.3 MHz LTE Band 5 : 824.7 MHz ~ 848.3 MHz LTE Band 7 : 2502.5 MHz ~ 2567.5 MHz
Rx Frequency	LTE Band 2 : 1930.7 MHz ~ 1989.3 MHz LTE Band 5 : 869.7 MHz ~ 893.3 MHz LTE Band 7 : 2622.5MHz ~ 2687.5 MHz
Bandwidth	LTE Band 2 : 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz LTE Band 5 : 1.4MHz / 3MHz / 5MHz / 10MHz LTE Band 7 : 5MHz/ 10MHz / 15MHz / 20MHz
Maximum Output Power to Antenna	LTE Band 2 : 22.41 dBm LTE Band 5 : 23.21 dBm LTE Band 7 : 21.61 dBm
Antenna Gain	LTE Band 2 : 1.3 dBi LTE Band 5 : -2.4 dBi LTE Band 7 : 0.3 dBi
Type of Modulation	QPSK / 16QAM

1.5 Modification of EUT

No modifications are made to the EUT during all test items.



1.6 Maximum ERP/EIRP Power

LTE Band 2		QPSK	16QAM
BW (MHz)	Frequency Range (MHz)	Maximum EIRP(W)	Maximum EIRP(W)
1.4	1850.7 ~ 1909.3	0.2286	0.1832
3	1851.5 ~ 1908.5	0.2193	0.1811
5	1852.5 ~ 1907.5	0.2286	0.1766
10	1855.0 ~ 1905.0	0.2307	0.1795
15	1857.5 ~ 1902.5	0.2291	0.1959
20	1860.0 ~ 1900.0	0.2350	0.1866
LTE Band 5		QPSK	16QAM
BW (MHz)	Frequency Range (MHz)	Maximum ERP(W)	Maximum ERP(W)
1.4	824.7 ~ 848.3	0.0711	0.0598
3	825.5 ~ 847.5	0.0735	0.0579
5	826.5 ~ 846.5	0.0733	0.0548
10	829.0 ~ 844.0	0.0711	0.0543
LTE Band 7		QPSK	16QAM
BW (MHz)	Frequency Range (MHz)	Maximum EIRP(W)	Maximum EIRP(W)
5	2502.5 ~ 2567.5	0.1524	0.1274
10	2505.0 ~ 2565.0	0.1531	0.1213
15	2507.5 ~ 2562.5	0.1552	0.1274
20	2510.0 ~ 2560.0	0.1531	0.1211



1.7 Testing Location

Sporton International (Kunshan) Inc. is accredited to ISO 17025 by National Voluntary Laboratory Accreditation Program (NVLAP code: 600155-0) and the FCC designation No is CN5013.

Test Site	Sporton International (Kunshan) Inc.		
Test Site Location	No.3-2 Ping-Xiang Rd, Kunshan Development Zone Kunshan City Jiangsu Province 215335 China TEL : +86-512-57900158 FAX : +86-512-57900958		
Test Site No.	Sporton Site No.		FCC Test Firm Registration No.
	TH01-KS	03CH03-KS	630927

Sporton International (Shenzhen) Inc. is accredited to ISO 17025 by National Voluntary Laboratory Accreditation Program (NVLAP code: 600156-0) and the FCC designation No is CN5019.

Test Site	Sporton International (Shenzhen) Inc.		
Test Site Location	No. 3 Bldg the third floor of south, Shahe River west, Fengzeyuan Warehouse, Nanshan District Shenzhen City Guangdong Province 518055 China TEL: +86-755-3320-2398		
Test Site No.	Sporton Site No.		FCC Test Firm Registration No.
	03CH03-SZ		577730

Note: The test site complies with ANSI C63.4 2014 requirement.



1.8 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- 47 CFR Part 2, 22(H), 24(E), 27(M)
- ANSI/TIA-603-E
- FCC KDB 971168 D01 Power Meas License Digital Systems v03
- FCC KDB 412172 D01 Determining ERP and EIRP v01r01

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.



2 Test Configuration of Equipment Under Test

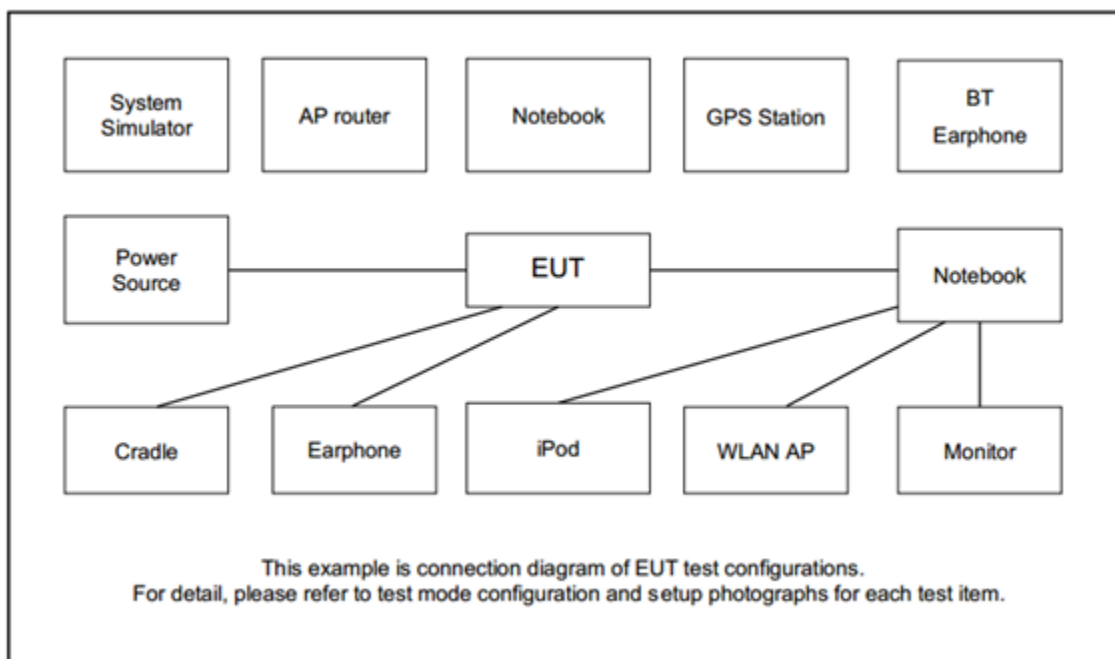
2.1 Test Mode

Antenna port conducted and radiated test items listed below are performed according to KDB 971168 D01 Power Meas License Digital Systems v03 with maximum output power.

Radiated measurements are performed by rotating the EUT in three different orthogonal test planes to find the maximum emission.

Test Items	Band	Bandwidth (MHz)						Modulation		RB #			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	1	Half	Full	L	M	H
Max. Output Power	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	5	✓	✓	✓	✓	-	-	✓	✓	✓	✓	✓	✓	✓	✓
	7	-	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
E.R.P./ E.I.R.P.	2	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓
	5	✓	✓	✓	✓	-	-	✓	✓	✓			✓	✓	✓
	7	-	-	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓
Radiated Spurious Emission	2	✓						✓		✓			✓		
	5				✓	-	-	✓		✓					✓
	7	-	-	✓				✓		✓				✓	
Note	- The mark "✓" means that this configuration is chosen for testing - The mark "-" means that this bandwidth is not supported. - The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are reported.														

2.2 Connection Diagram of Test System



2.3 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord
1.	LTE Base Station	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m
2.	DC Power Supply	GW INSTEK	GPS-3030D	N/A	N/A	Unshielded, 1.8 m

2.4 Frequency List of Low/Middle/High Channels

LTE Band 2 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
20	Channel	18700	18900	19100
	Frequency	1860	1880	1900
15	Channel	18675	18900	19125
	Frequency	1857.5	1880	1902.5
10	Channel	18650	18900	19150
	Frequency	1855	1880	1905
5	Channel	18625	18900	19175
	Frequency	1852.5	1880	1907.5
3	Channel	18615	18900	19185
	Frequency	1851.5	1880	1908.5
1.4	Channel	18607	18900	19193
	Frequency	1850.7	1880	1909.3

LTE Band 5 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
10	Channel	20450	20525	20600
	Frequency	829	836.5	844
5	Channel	20425	20525	20625
	Frequency	826.5	836.5	846.5
3	Channel	20415	20525	20635
	Frequency	825.5	836.5	847.5
1.4	Channel	20407	20525	20643
	Frequency	824.7	836.5	848.3



LTE Band 7 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
20	Channel	20850	21100	21350
	Frequency	2510	2535	2560
15	Channel	20825	21100	21375
	Frequency	2507.5	2535	2562.5
10	Channel	20800	21100	21400
	Frequency	2505	2535	2565
5	Channel	20775	21100	21425
	Frequency	2502.5	2535	2567.5

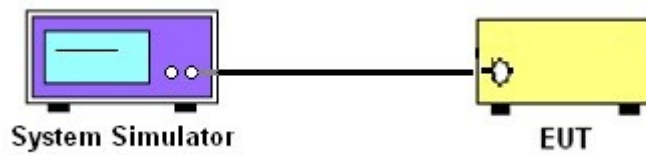
3 Conducted Test Items

3.1 Measuring Instruments

See list of measuring instruments of this test report.

3.2 Test Setup

3.2.1 Conducted Output Power



3.3 Test Result of Conducted Test

Please refer to Appendix A.

3.4 Conducted Output Power and ERP/EIRP

3.4.1 Description of the Conducted Output Power Measurement and ERP/EIRP Measurement

A system simulator was used to establish communication with the EUT. Its parameters were set to force the EUT transmitting at maximum output power. The measured power in the radio frequency on the transmitter output terminals shall be reported.

The ERP of mobile transmitters must not exceed 7 Watts for LTE Band 5.

The EIRP of mobile transmitters must not exceed 2 Watts for LTE Band 2 and Band 7.

According to KDB 412172 D01 Power Approach,

$EIRP = P_T + G_T - L_C$, $ERP = EIRP - 2.15$, where

P_T = transmitter output power in dBm

G_T = gain of the transmitting antenna in dBi

L_C = signal attenuation in the connecting cable between the transmitter and antenna in dB

3.4.2 Test Procedures

1. The transmitter output port was connected to the system simulator.
2. Set EUT at maximum power through the system simulator.
3. Select lowest, middle, and highest channels for each band and different modulation.
4. Measure and record the power level from the system simulator.

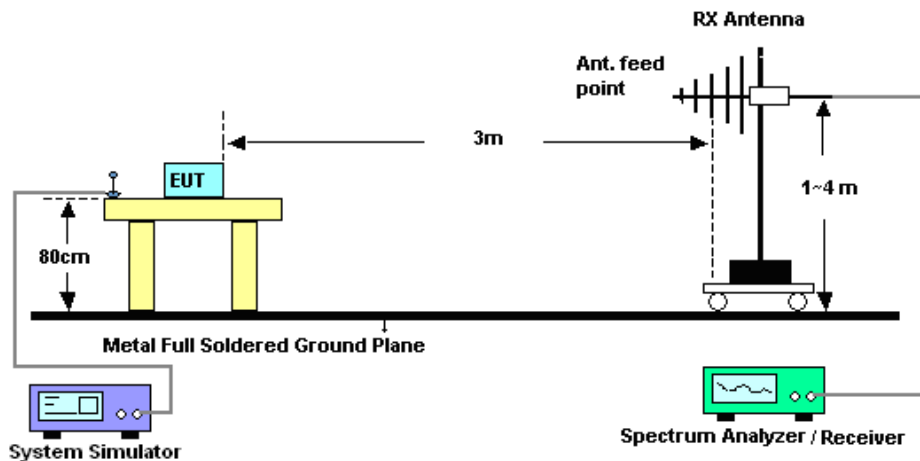
4 Radiated Test Items

4.1 Measuring Instruments

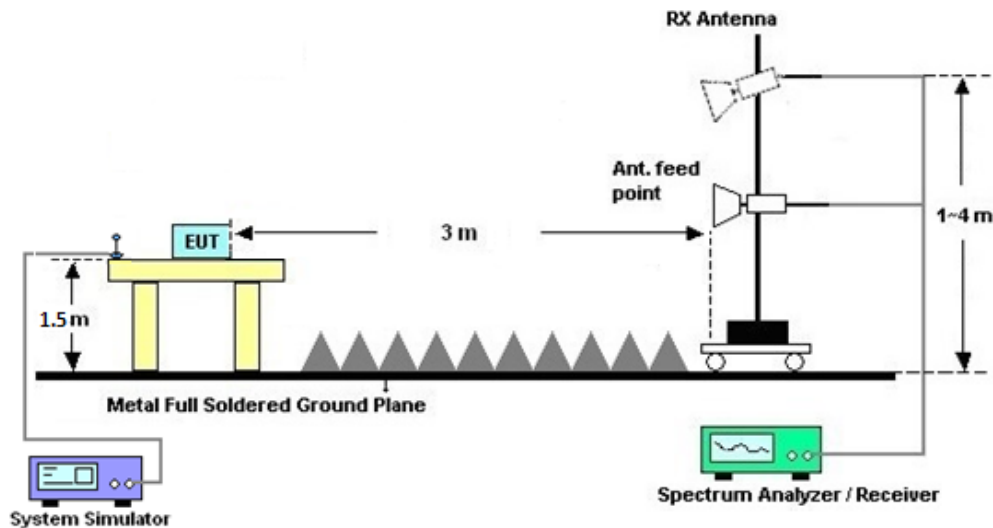
See list of measuring instruments of this test report.

4.2 Test Setup

4.2.1 For radiated test from 30MHz to 1GHz



4.2.2 For radiated test above 1GHz



4.3 Test Result of Radiated Test

Please refer to Appendix B.

4.4 Radiated Spurious Emission

4.4.1 Description of Radiated Spurious Emission

The radiated spurious emission was measured by substitution method according to ANSI/TIA-603-E. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least $43 + 10 \log (P)$ dB.

For Band 7

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least $55 + 10 \log (P)$ dB.

The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

4.4.2 Test Procedures

1. The testing follows FCC KDB 971168 v03 Section 5.8 and ANSI/TIA-603-E Section 2.2.12.
2. The EUT was placed on a turntable with 0.8 meter height for frequency below 1GHz and 1.5 meter height for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the receiving antenna mounted on the antenna tower.
4. The table was rotated 360 degrees to determine the position of the highest spurious emission.
5. The height of the receiving antenna is varied between 1m to 4m to search the maximum spurious emission for both horizontal and vertical polarizations.
6. During the measurement, the system simulator parameters were set to force the EUT transmitting at maximum output power.
7. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
8. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
9. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
10. $EIRP \text{ (dBm)} = S.G. \text{ Power} - Tx \text{ Cable Loss} + Tx \text{ Antenna Gain}$
11. $ERP \text{ (dBm)} = EIRP - 2.15$
12. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

The limit line is derived from $43 + 10\log(P)$ dB below the transmitter power P(Watts)
 $= P(W) - [43 + 10\log(P)] \text{ (dB)}$
 $= [30 + 10\log(P)] \text{ (dBm)} - [43 + 10\log(P)] \text{ (dB)}$
 $= -13\text{dBm}.$

13. For Band 7:

The limit line is derived from $55 + 10\log(P)$ dB below the transmitter power P(Watts)
 $EIRP \text{ (dBm)} = S.G. \text{ Power} - Tx \text{ Cable Loss} + Tx \text{ Antenna Gain}$
 $ERP \text{ (dBm)} = EIRP - 2.15$



5 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101040	10Hz~40GHz	Aug. 08, 2017	May 03, 2018	Aug. 07, 2018	Conducted (TH01-KS)
Radio communication analyzer	Anritsu	MT8820C	6201300652	2G/3G/LTE_ full band	Aug. 08, 2017	May 03, 2018	Aug. 07, 2018	Conducted (TH01-KS)
EXA Spectrum Analyzer	Keysight	N9010A	MY55150244	10Hz~44GHz	Apr. 17, 2018	May 03, 2018	Apr. 16, 2019	Radiation (03CH03-KS)
Bilog Antenna	TeseQ	CBL6112D	47610	30MHz~1GHz	Sep. 12, 2017	May 03, 2018	Sep. 11, 2018	Radiation (03CH03-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	75959	1GHz~18GHz	Jan. 21, 2018	May 03, 2018	Jan. 20, 2019	Radiation (03CH03-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	BBHA170249	15GHz~40GHz	Feb. 07, 2018	May 03, 2018	Feb. 06, 2019	Radiation (03CH03-KS)
Amplifier	com-power	PA-103A	161069	1MHz ~1000MHz / 32 dB	Apr. 17, 2018	May 03, 2018	Apr. 16, 2019	Radiation (03CH03-KS)
Amplifier	MITEQ	TTA1840-35-H G	1887435	18~40GHz	Oct. 12, 2017	May 03, 2018	Oct. 11, 2018	Radiation (03CH03-KS)
high gain Amplifier	MITEQ	AMF-7D-0010 1800-30-10P	2025788	1Ghz-18Ghz	Apr. 17, 2018	May 03, 2018	Apr. 16, 2019	Radiation (03CH03-KS)
Amplifier	Agilent	8449B	3008A02370	1GHz~26.5GHz	Oct. 12, 2017	May 03, 2018	Oct. 11, 2018	Radiation (03CH03-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	May 03, 2018	NCR	Radiation (03CH03-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	May 03, 2018	NCR	Radiation (03CH03-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	May 03, 2018	NCR	Radiation (03CH03-KS)
EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY55150246	10Hz~44GHz;	Apr. 19, 2018	Apr. 24, 2018	Apr. 18, 2019	Radiation (03CH03-SZ)
Bilog Antenna	TeseQ	CBL6112D	35408	30MHz~2GHz	May 14, 2017	Apr. 24, 2018	May 13, 2018	Radiation (03CH03-SZ)
Double Ridge Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-1355	1GHz~18GHz	Jul. 09, 2017	Apr. 24, 2018	Jul. 08, 2018	Radiation (03CH03-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18Ghz~40GHz	Jun. 16, 2017	Apr. 24, 2018	Jun. 15, 2018	Radiation (03CH03-SZ)
Amplifier	Burgeon	BPA-530	102210	0.01Hz ~3000MHz	Oct. 19, 2017	Apr. 24, 2018	Oct. 18, 2018	Radiation (03CH03-SZ)
HF Amplifier	MITEQ	TTA1840-35-H G	1871923	18GHz~40GHz	Jul. 18, 2017	Apr. 24, 2018	Jul. 17, 2018	Radiation (03CH03-SZ)
Amplifier	Agilent Technologies	83017A	MY39501302	500MHz~26.5GHz	Dec. 27, 2017	Apr. 24, 2018	Dec. 26, 2018	Radiation (03CH03-SZ)
AC Power Source	Chroma	61601	616010001985	N/A	NCR	Apr. 24, 2018	NCR	Radiation (03CH03-SZ)
Turn Table	EM	EM1000	N/A	0~360 degree	NCR	Apr. 24, 2018	NCR	Radiation (03CH03-SZ)
Antenna Mast	EM	EM1000	N/A	1 m~4 m	NCR	Apr. 24, 2018	NCR	Radiation (03CH03-SZ)

NCR: No Calibration Required

6 Uncertainty of Evaluation

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz) for 03CH03-KS

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	3.3 dB
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Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz) for 03CH03-KS

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	2.8 dB
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Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz) for 03CH03-KS

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	3.0 dB
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz) for 03CH03-SZ

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	3.0 dB
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Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz) for 03CH03-SZ

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	3.6 dB
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Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz) for 03CH03-SZ

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	3.8 dB
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Appendix A. Test Results of Conducted Test

Conducted Output Power(Average power)

LTE Band 2 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
20	1	0	QPSK	21.94	22.07	21.98
20	1	49		22.06	22.41	22.34
20	1	99		21.93	21.98	22.12
20	50	0		21.17	21.29	21.27
20	50	24		21.14	21.19	21.24
20	50	50		20.97	21.19	21.13
20	100	0		21.12	21.24	21.22
20	1	0	16-QAM	20.57	20.83	21.05
20	1	49		20.80	20.74	21.41
20	1	99		20.90	20.71	20.87
20	50	0		20.05	20.16	20.09
20	50	24		20.13	20.03	20.34
20	50	50		19.96	20.06	20.24
20	100	0		20.00	20.20	20.10
15	1	0	QPSK	22.04	22.26	22.20
15	1	37		22.15	22.30	22.23
15	1	74		22.03	21.92	22.01
15	36	0		21.04	21.21	21.26
15	36	20		21.07	21.14	21.23
15	36	39		21.08	21.19	21.20
15	75	0		21.11	21.13	21.23
15	1	0	16-QAM	20.64	20.81	20.86
15	1	37		21.05	21.00	21.62
15	1	74		20.67	20.44	20.65
15	36	0		19.91	20.08	20.14
15	36	20		20.04	20.11	20.21
15	36	39		19.96	20.17	20.10
15	75	0		20.09	20.10	20.11



LTE Band 2 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
10	1	0	QPSK	22.09	22.33	22.00
10	1	25		21.91	22.10	22.23
10	1	49		22.02	21.90	22.04
10	25	0		21.05	21.27	21.15
10	25	12		21.11	21.28	21.24
10	25	25		21.03	21.06	21.18
10	50	0		21.08	21.17	21.23
10	1	0	16-QAM	20.77	20.91	20.77
10	1	25		21.18	21.24	20.65
10	1	49		20.63	20.68	20.64
10	25	0		19.95	20.12	20.13
10	25	12		19.83	20.26	20.26
10	25	25		20.02	19.91	20.15
10	50	0		19.98	20.00	20.13
5	1	0	QPSK	22.01	21.87	22.04
5	1	12		22.29	22.02	22.29
5	1	24		22.03	21.74	22.18
5	12	0		20.90	21.12	21.00
5	12	7		21.00	21.20	21.13
5	12	13		20.92	21.17	21.04
5	25	0		20.89	21.12	20.96
5	1	0	16-QAM	20.54	20.98	20.76
5	1	12		21.17	21.07	20.89
5	1	24		20.85	20.61	20.66
5	12	0		19.77	19.98	19.85
5	12	7		19.83	20.06	19.88
5	12	13		19.92	19.97	19.92
5	25	0		19.76	20.11	19.96



LTE Band 2 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
3	1	0	QPSK	21.89	22.11	21.87
3	1	8		22.08	22.11	22.02
3	1	14		21.94	21.90	21.99
3	8	0		20.96	21.05	20.93
3	8	4		20.93	21.11	21.02
3	8	7		20.91	21.08	21.02
3	15	0		20.90	21.05	20.96
3	1	0	16-QAM	20.50	21.28	20.60
3	1	8		20.60	21.10	20.87
3	1	14		20.44	20.57	20.69
3	8	0		19.88	20.03	19.90
3	8	4		19.91	20.10	20.17
3	8	7		20.02	20.06	20.10
3	15	0		19.82	19.91	20.01
1.4	1	0	QPSK	21.97	22.05	21.94
1.4	1	3		21.97	22.12	22.00
1.4	1	5		21.78	22.06	21.95
1.4	3	0		22.07	22.20	22.03
1.4	3	1		22.14	22.27	21.96
1.4	3	3		21.94	22.29	22.09
1.4	6	0		20.85	21.09	21.03
1.4	1	0	16-QAM	21.10	21.01	21.20
1.4	1	3		21.16	21.06	20.94
1.4	1	5		20.46	20.88	20.78
1.4	3	0		20.82	21.13	20.99
1.4	3	1		20.97	21.06	20.87
1.4	3	3		20.89	21.33	20.90
1.4	6	0		19.95	19.97	19.87



LTE Band 5 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
10	1	0	QPSK	22.86	22.85	23.02
10	1	25		23.07	22.86	23.05
10	1	49		22.96	22.84	22.83
10	25	0		22.06	22.12	22.13
10	25	12		22.19	22.17	22.18
10	25	25		22.07	22.15	22.11
10	50	0		22.16	22.13	22.12
10	1	0	16-QAM	21.67	21.78	21.65
10	1	25		21.75	21.90	21.86
10	1	49		21.65	21.53	21.49
10	25	0		21.08	21.02	21.11
10	25	12		21.15	21.18	21.21
10	25	25		20.97	21.10	21.14
10	50	0		20.99	20.97	21.07
5	1	0	QPSK	22.87	22.97	22.97
5	1	12		23.06	23.20	23.19
5	1	24		22.99	22.77	22.93
5	12	0		22.03	22.02	22.10
5	12	7		22.18	22.03	22.14
5	12	13		22.17	22.17	22.07
5	25	0		22.08	22.14	22.06
5	1	0	16-QAM	21.94	21.55	21.71
5	1	12		21.93	21.89	21.83
5	1	24		21.39	21.80	21.51
5	12	0		20.90	20.88	20.87
5	12	7		21.06	20.96	20.91
5	12	13		21.14	20.93	21.11
5	25	0		21.14	21.07	21.10



LTE Band 5 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
3	1	0	QPSK	22.94	23.08	23.13
3	1	8		23.21	23.03	23.08
3	1	14		23.16	23.06	23.02
3	8	0		22.17	22.18	22.18
3	8	4		22.09	21.96	22.16
3	8	7		22.18	22.07	21.94
3	15	0		22.05	22.14	22.12
3	1	0	16-QAM	21.42	22.18	22.01
3	1	8		21.83	21.79	21.85
3	1	14		21.58	21.67	21.52
3	8	0		21.09	21.16	20.99
3	8	4		21.19	21.05	21.10
3	8	7		21.28	21.24	21.12
3	15	0		21.09	21.00	20.90
1.4	1	0	QPSK	22.73	22.91	23.02
1.4	1	3		22.68	23.07	22.99
1.4	1	5		22.97	22.92	22.92
1.4	3	0		22.91	23.00	22.94
1.4	3	1		22.95	23.05	23.04
1.4	3	3		22.94	23.05	23.02
1.4	6	0		21.84	21.95	21.94
1.4	1	0	16-QAM	21.60	21.59	22.32
1.4	1	3		21.66	21.81	21.70
1.4	1	5		21.70	21.74	21.53
1.4	3	0		21.59	21.80	21.98
1.4	3	1		22.08	21.88	22.19
1.4	3	3		21.79	21.86	21.96
1.4	6	0		20.75	20.83	20.74



LTE Band 7 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
20	1	0	QPSK	21.32	21.11	21.01
20	1	49		21.55	21.48	21.34
20	1	99		21.11	21.13	21.10
20	50	0		20.41	20.40	20.22
20	50	24		20.38	20.36	20.14
20	50	50		20.35	20.33	20.20
20	100	0		20.46	20.38	20.24
20	1	0	16-QAM	20.45	20.18	20.05
20	1	49		20.53	20.32	20.18
20	1	99		20.17	20.23	20.05
20	50	0		19.52	19.44	19.24
20	50	24		19.27	19.53	19.38
20	50	50		19.43	19.51	19.37
20	100	0		19.44	19.41	19.28
15	1	0	QPSK	21.61	21.20	21.20
15	1	37		21.58	21.60	21.32
15	1	74		21.44	21.35	21.07
15	36	0		20.51	20.37	20.16
15	36	20		20.45	20.42	20.29
15	36	39		20.38	20.38	20.22
15	75	0		20.42	20.33	20.10
15	1	0	16-QAM	20.41	20.03	20.04
15	1	37		20.75	20.75	20.42
15	1	74		20.23	20.11	20.10
15	36	0		19.41	19.31	19.23
15	36	20		19.50	19.49	19.29
15	36	39		19.45	19.53	19.30
15	75	0		19.47	19.40	19.26



LTE Band 7 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
10	1	0	QPSK	21.55	21.18	21.01
10	1	25		21.46	21.23	21.25
10	1	49		21.12	21.07	21.22
10	25	0		20.45	20.37	20.22
10	25	12		20.52	20.41	20.30
10	25	25		20.40	20.48	20.20
10	50	0		20.47	20.36	20.24
10	1	0	16-QAM	20.34	20.19	20.13
10	1	25		20.18	20.54	20.00
10	1	49		20.04	20.10	20.01
10	25	0		19.51	19.32	19.39
10	25	12		19.42	19.57	19.37
10	25	25		19.47	19.46	19.25
10	50	0		19.46	19.43	19.33
5	1	0	QPSK	21.15	21.01	21.15
5	1	12		21.53	21.24	21.19
5	1	24		21.00	21.18	21.16
5	12	0		20.52	20.26	20.14
5	12	7		20.49	20.29	20.18
5	12	13		20.49	20.31	20.09
5	25	0		20.46	20.42	20.08
5	1	0	16-QAM	20.59	20.16	20.24
5	1	12		20.47	20.17	20.09
5	1	24		20.50	20.10	20.75
5	12	0		19.19	19.33	19.04
5	12	7		19.23	19.35	19.19
5	12	13		19.36	19.37	19.14
5	25	0		19.32	19.27	19.23

ERP/EIRP

LTE Band 2 ($G_T - L_C = 1.3$ dB) QPSK									
Bandwidth	1.4M			3M			5M		
Channel	18607	18900	19193	18615	18900	19185	18625	18900	19175
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency	1850.7	1880	1909.3	1851.5	1880	1908.5	1852.5	1880	1907.5
(MHz)									
Conducted Power (dBm)	21.94	22.29	22.09	21.89	22.11	21.87	22.29	22.02	22.29
Conducted Power (Watts)	0.1563	0.1694	0.1618	0.1545	0.1626	0.1538	0.1694	0.1592	0.1694
EIRP(dBm)	23.24	23.59	23.39	23.19	23.41	23.17	23.59	23.32	23.59
EIRP(Watts)	0.2109	0.2286	0.2183	0.2084	0.2193	0.2075	0.2286	0.2148	0.2286

LTE Band 2 ($G_T - L_C = 1.3$ dB) QPSK									
Bandwidth	10M			15M			20M		
Channel	18650	18900	19150	18675	18900	19125	18650	18900	19100
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency	1855	1880	1905	1857.5	1880	1902.5	1860	1880	1900
(MHz)									
Conducted Power (dBm)	22.09	22.33	22.00	22.15	22.30	22.23	22.06	22.41	22.34
Conducted Power (Watts)	0.1618	0.1710	0.1585	0.1641	0.1698	0.1671	0.1607	0.1742	0.1714
EIRP(dBm)	23.39	23.63	23.30	23.45	23.60	23.53	23.36	23.71	23.64
EIRP(Watts)	0.2183	0.2307	0.2138	0.2213	0.2291	0.2254	0.2168	0.2350	0.2312



LTE Band 2 ($G_T - L_C = 1.3$ dB) 16QAM									
Bandwidth	1.4M			3M			5M		
Channel	18607	18900	19193	18615	18900	19185	18625	18900	19175
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency	1850.7	1880	1909.3	1851.5	1880	1908.5	1852.5	1880	1907.5
(MHz)									
Conducted Power (dBm)	20.89	21.33	20.90	20.50	21.28	20.60	21.17	21.07	20.89
Conducted Power (Watts)	0.1227	0.1358	0.1230	0.1122	0.1343	0.1148	0.1309	0.1279	0.1227
EIRP(dBm)	22.19	22.63	22.20	21.80	22.58	21.90	22.47	22.37	22.19
EIRP(Watts)	0.1656	0.1832	0.1660	0.1514	0.1811	0.1549	0.1766	0.1726	0.1656

LTE Band 2 ($G_T - L_C = 1.3$ dB) 16QAM									
Bandwidth	10M			15M			20M		
Channel	18650	18900	19150	18675	18900	19125	18650	18900	19100
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency	1855	1880	1905	1857.5	1880	1902.5	1860	1880	1900
(MHz)									
Conducted Power (dBm)	21.18	21.24	20.65	21.05	21.00	21.62	20.80	20.74	21.41
Conducted Power (Watts)	0.1312	0.1330	0.1161	0.1274	0.1259	0.1452	0.1202	0.1186	0.1384
EIRP(dBm)	22.48	22.54	21.95	22.35	22.30	22.92	22.10	22.04	22.71
EIRP(Watts)	0.1770	0.1795	0.1567	0.1718	0.1698	0.1959	0.1622	0.1600	0.1866



LTE Band 5 ($G_T - L_C = -2.4$ dB) QPSK									
Bandwidth	1.4M			3M			5M		
Channel	20407	20525	20643	20415	20525	20635	20425	20525	20625
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency	824.7	836.5	848.3	825.5	836.5	847.5	826.5	836.5	846.5
(MHz)									
Conducted Power (dBm)	22.68	23.07	22.99	23.21	23.03	23.08	23.06	23.20	23.19
Conducted Power (Watts)	0.1854	0.2028	0.1991	0.2094	0.2009	0.2032	0.2023	0.2089	0.2084
ERP(dBm)	18.13	18.52	18.44	18.66	18.48	18.53	18.51	18.65	18.64
ERP(Watts)	0.0650	0.0711	0.0698	0.0735	0.0705	0.0713	0.0710	0.0733	0.0731

LTE Band 5 ($G_T - L_C = -2.4$ dB) QPSK			
Bandwidth	10M		
Channel	20450	20525	20600
	(Low)	(Mid)	(High)
Frequency	829	836.5	844
(MHz)			
Conducted Power (dBm)	23.07	22.86	23.05
Conducted Power (Watts)	0.2028	0.1932	0.2018
ERP(dBm)	18.52	18.31	18.50
ERP(Watts)	0.0711	0.0678	0.0708



LTE Band 5 ($G_T - L_C = -2.4$ dB) 16QAM									
Bandwidth	1.4M			3M			5M		
Channel	20407	20525	20643	20415	20525	20635	20425	20525	20625
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency	824.7	836.5	848.3	825.5	836.5	847.5	826.5	836.5	846.5
(MHz)									
Conducted Power (dBm)	21.60	21.59	22.32	21.42	22.18	22.01	21.94	21.55	21.71
Conducted Power (Watts)	0.1445	0.1442	0.1706	0.1387	0.1652	0.1589	0.1563	0.1429	0.1483
ERP(dBm)	17.05	17.04	17.77	16.87	17.63	17.46	17.39	17.00	17.16
ERP(Watts)	0.0507	0.0506	0.0598	0.0486	0.0579	0.0557	0.0548	0.0501	0.0520

LTE Band 5 ($G_T - L_C = -2.4$ dB) 16QAM			
Bandwidth	10M		
Channel	20450	20525	20600
	(Low)	(Mid)	(High)
Frequency	829	836.5	844
(MHz)			
Conducted Power (dBm)	21.75	21.90	21.86
Conducted Power (Watts)	0.1496	0.1549	0.1535
ERP(dBm)	17.20	17.35	17.31
ERP(Watts)	0.0525	0.0543	0.0538



LTE Band 7 ($G_T - L_C = 0.3$ dB) QPSK			
Bandwidth	5M		
Channel	20775	21100	21425
	(Low)	(Mid)	(High)
Frequency	2502.5	2535	2567.5
(MHz)			
Conducted Power (dBm)	21.53	21.24	21.19
Conducted Power (Watts)	0.1422	0.1330	0.1315
EIRP(dBm)	21.83	21.54	21.49
EIRP(Watts)	0.1524	0.1426	0.1409

LTE Band 7 ($G_T - L_C = 0.3$ dB) QPSK									
Bandwidth	10M			15M			20M		
Channel	20800	21100	21400	20825	21100	21375	20850	21100	21350
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)	(Low)	(Mid)	(Mid)
Frequency	2505	2535	2565	2507.5	2535	2562.5	2510	2535	2560
(MHz)									
Conducted Power (dBm)	21.55	21.18	21.01	21.61	21.20	21.20	21.55	21.48	21.34
Conducted Power (Watts)	0.1429	0.1312	0.1262	0.1449	0.1318	0.1318	0.1429	0.1406	0.1361
EIRP(dBm)	21.85	21.48	21.31	21.91	21.50	21.50	21.85	21.78	21.64
EIRP(Watts)	0.1531	0.1406	0.1352	0.1552	0.1413	0.1413	0.1531	0.1507	0.1459



LTE Band 7 ($G_T - L_C = 0.3$ dB) 16QAM			
Bandwidth	5M		
Channel	20775	21100	21425
	(Low)	(Mid)	(High)
Frequency	2502.5	2535	2567.5
(MHz)			
Conducted Power (dBm)	20.50	20.10	20.75
Conducted Power (Watts)	0.1122	0.1023	0.1189
EIRP(dBm)	20.80	20.40	21.05
EIRP(Watts)	0.1202	0.1096	0.1274

LTE Band 7 ($G_T - L_C = 0.3$ dB) 16QAM									
Bandwidth	10M			15M			20M		
Channel	20800	21100	21400	20825	21100	21375	20850	21100	21350
	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)	(Low)	(Mid)	(Mid)
Frequency	2505	2535	2565	2507.5	2535	2562.5	2510	2535	2560
(MHz)									
Conducted Power (dBm)	20.18	20.54	20.00	20.75	20.75	20.42	20.53	20.32	20.18
Conducted Power (Watts)	0.1042	0.1132	0.1000	0.1189	0.1189	0.1102	0.1130	0.1076	0.1042
EIRP(dBm)	20.48	20.84	20.30	21.05	21.05	20.72	20.83	20.62	20.48
EIRP(Watts)	0.1117	0.1213	0.1072	0.1274	0.1274	0.1180	0.1211	0.1153	0.1117



Appendix B. Test Results of Radiated Test

Radiated Spurious Emission

LTE Band 2 / 1.4MHz / QPSK / RB Size 1 Offset 0								
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	3700.14	-44.42	-13	-31.42	-52.11	4.87	12.56	H
	5550.21	-38.72	-13	-25.72	-44.62	7.12	13.02	H
	7400.28	-28.72	-13	-15.72	-32.45	7.59	11.32	H
	9250.35	-41.86	-13	-35.68	-52.52	8.01	11.85	H
	11100.42	-48.68	-13	-27.44	-44.37	8.02	11.95	H
	3700.14	-40.44	-13	-27.44	-48.13	4.87	12.56	V
	5550.21	-28.47	-13	-15.47	-34.37	7.12	13.02	V
	7400.28	-24.16	-13	-11.16	-27.89	7.59	11.32	V
	9250.35	-38.37	-13	-25.37	-42.21	8.01	11.85	V
	11100.42	-42.77	-13	-25.37	-46.70	8.02	11.95	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

LTE Band 5 / 10MHz / QPSK / RB Size 1 Offset 0								
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Highest	1680	-48.76	-13	-35.76	-50.67	1.14	5.20	H
	2518	-54.00	-13	-41.00	-56.63	1.12	5.90	H
	3357	-59.71	-13	-46.71	-62.92	1.34	6.70	H
	4197	-62.81	-13	-49.81	-66.27	1.59	7.20	H
	1680	-51.62	-13	-38.62	-53.53	1.14	5.20	V
	2518	-58.08	-13	-45.08	-60.71	1.12	5.90	V
	3357	-59.05	-13	-46.05	-62.26	1.34	6.70	V
	4197	-61.08	-13	-48.08	-64.54	1.59	7.20	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



LTE Band 7 / 5MHz / QPSK / RB Size 1 Offset 0								
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	5064	-39.46	-25	-14.46	-46.18	2.40	9.12	H
	7600	-29.94	-25	-4.94	-39.57	2.87	12.50	H
	10134	-55.43	-25	-30.43	-64.35	3.18	12.10	H
	5064	-44.19	-25	-19.19	-50.91	2.40	9.12	V
	7600	-39.98	-25	-14.98	-49.61	2.87	12.50	V
	10134	-57.88	-25	-32.88	-66.80	3.18	12.10	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



Appendix D. Product Equality Declaration

ASUSTeK COMPUTER INC.

4F, No. 150, LI-TE RD., PEITOU, TAIPEI, TAIWAN

Date: May 7, 2018

Product Equality Declaration

We, ASUSTeK COMPUTER INC., declare on our sole responsibility for the product of ASUS_X00PD, ASUS_X00PS (FCC ID: MSQX00PS) as below:

The software configuration of SP4T switch has been changed to improve the antenna performance for user experience.

Enable Hotspot reduce power mechanism via SW for FCC.

Except listings above, the others are all the same.

Should you have any questions or comments regarding this matter, please have my best attention.

Sincerely yours,



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