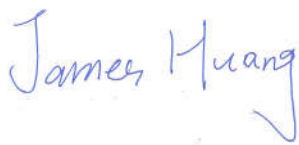


Variant FCC RF Test Report

APPLICANT : ASUSTeK COMPUTER INC.
EQUIPMENT : ASUS Phone
BRAND NAME : ASUS
MODEL NAME : ASUS_Z00VD
MARKETING NAME : ZC500TG
FCC ID : MSQZ00VD
STANDARD : FCC 47 CFR Part 2, 22(H), 24(E)
CLASSIFICATION : PCS Licensed Transmitter Held to Ear (PCE)

This is a variant report which is only valid together with the original report. The product was received on Oct. 14, 2015 and testing was completed on Oct. 22, 2015. 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 / EIA-603-C-2004 and has been 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.



Prepared by: James Huang / Manager



Approved by: Jones Tsai / Manager



SPORTON INTERNATIONAL (KUNSHAN) INC.
No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P. R. China



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG541309-05	Rev. 01	This is a variant report for ASUS_Z00VD. The product equality description could be referred to Appendix D. Based on the similarity between two models, only the conducted power, ERP/EIRP and the worst case of Radiated Spurious Emission from original test report (Sporton Report Number FG541309) was verified.	Nov. 09, 2015

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.4	§2.1046	Conducted Output Power	Reporting Only	PASS	-
4.4	§22.913(a)(2)	Effective Radiated Power	< 7 Watts	PASS	-
	§24.232(c)	Equivalent Isotropic Radiated Power	< 2 Watts	PASS	-
4.5	§2.1053 §22.917(a) §24.238(a)	Field Strength of Spurious Radiation	$< 43 + 10 \log_{10}(P[\text{Watts}])$	PASS	Under limit 14.03 dB at 11280.000 MHz

1 General Description

1.1 Applicant

ASUSTeK COMPUTER INC.

4F, No.150, Li-Te Rd., Peitou, Taipei 112, Taiwan

1.2 Manufacturer

Dongguan Xinheng Electronic and Technology Co.,Ltd

A-1 DISTRICT, 4/F, NO.9 INDUSTRIAL NORTHERN ROAD DONGGUAN SONGSHAN LAKE
NATIONAL HIGH-TECH INDUSTRIAL DEVELOPMENT ZONE DONGGUAN, GUANGDONG, CHINA

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	ASUS Phone
Brand Name	ASUS
Model Name	ASUS_Z00VD
Marketing Name	ZC500TG
FCC ID	MSQZ00VD
EUT supports Radios application	GSM/GPRS/EGPRS/WCDMA/HSPA/ HSPA+(16QAM uplink is not supported)/ WLAN 2.4GHz 802.11b/g/n HT20/HT40/ Bluetooth v3.0 + EDR/Bluetooth v4.0 LE
IMEI Code	Radiation: 359490060020641/359490060020658 ERP&EIRP: 359490060020641/359490060020658
HW Version	AW806_MB_PCB_V2.0
SW Version	AW806_ZC500TG_20150407
EUT Stage	Identical Prototype

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.4 Product Specification subjective to this standard

Product Specification subjective to this standard	
Tx Frequency	GSM/GPRS/EDGE: 850: 824.2 MHz ~ 848.8 MHz 1900: 1850.2 MHz ~ 1909.8MHz WCDMA: Band V: 826.4 MHz ~ 846.6 MHz Band II: 1852.4 MHz ~ 1907.6 MHz
Rx Frequency	GSM/GPRS/EDGE: 850: 869.2 MHz ~ 893.8 MHz 1900: 1930.2 MHz ~ 1989.8 MHz WCDMA: Band V: 871.4 MHz ~ 891.6 MHz Band II: 1932.4 MHz ~ 1987.6 MHz
Maximum Output Power to Antenna	GSM/GPRS/EDGE: 850: 32.44 dBm 1900: 29.53 dBm WCDMA: Band V: 23.30 dBm Band II: 22.75 dBm
Antenna Type	PIFA Antenna
Type of Modulation	GSM: GMSK GPRS: GMSK EDGE: GMSK / 8PSK WCDMA : QPSK (Uplink) HSDPA : QPSK (Uplink) HSUPA : QPSK (Uplink) HSPA+ : 16QAM uplink is not supported

1.5 Component List

Component	Sample
Memory	MICRON MT29TZZZ5D6YKFAH-125 W.96N
PCB	Evertex AW806_MB_PCB_V2.0
Front_camera	QUNHUI O6P2-QL1700HQ
Back_camera	GUANGZHEN F4H5CAE-S
Motor	HONGZHIFA B1027-26-1
Speaker	HAOSHEN KFSC1115G3.5-08-0.7W-D
CTP	TOPTOUCH A131866C1
LCD	TXD TD-TNHD5031-3

1.6 Modification of EUT

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

1.7 Maximum ERP/EIRP Power

FCC Rule	System	Type of Modulation	Maximum ERP/EIRP (W)	Frequency Tolerance (ppm)	Emission Designator
Part 22	GSM850 GSM	GMSK	0.5176	-	-
Part 24	GSM1900 GSM	GMSK	0.5821	-	-

1.8 Testing Location

Test Site	SPORTON INTERNATIONAL (KUNSHAN) INC.		
Test Site Location	No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C. TEL: +86-0512-5790-0158 FAX: +86-0512-5790-0958		
Test Site No.	Sporton Site No.		FCC Registration No.
	TH01-KS	03CH03-KS	306251

1.9 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)
- ANSI / TIA / EIA-603-C-2004
- FCC KDB 971168 D01 Power Meas. License Digital Systems v02r02

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 were performed according to KDB 971168 D01 Power Meas. License Digital Systems v02r02 with maximum output power.

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

Radiated emissions were investigated as following frequency range:

1. 30 MHz to 10th harmonic for GSM850.
2. 30 MHz to 10th harmonic for GSM1900.

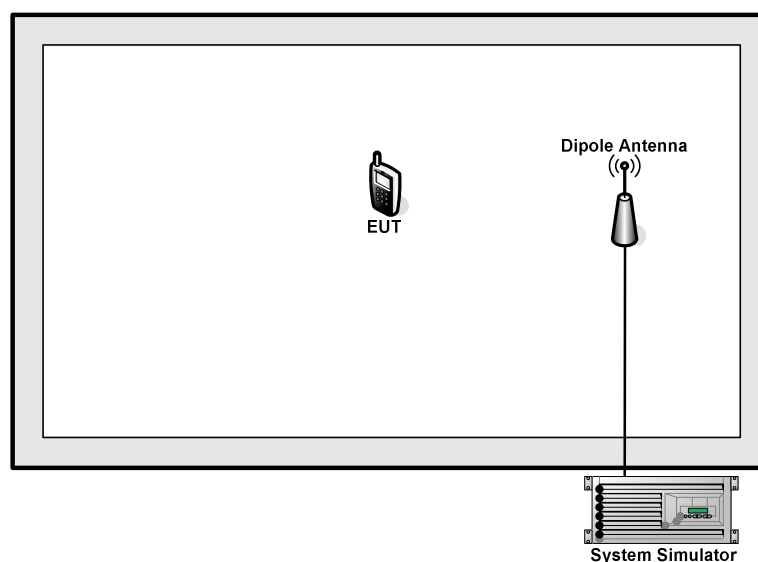
All modes and data rates and positions were investigated.

Test modes are chosen to be reported as the worst case configuration below:

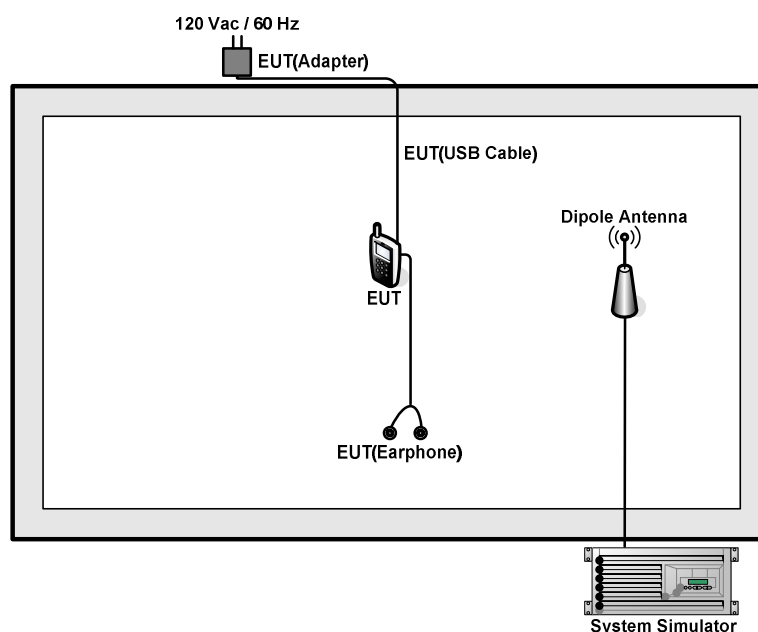
Test Modes		
Band	Radiated TCs	Conducted TCs
GSM 850	■ GSM Link	■ GSM Link
GSM 1900	■ GSM Link	■ GSM Link

2.2 Connection Diagram of Test System

For 22H



For 24E



2.3 Support Unit used in test configuration

Item	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord
1.	System Simulator	R&S	CMU 200	N/A	N/A	Unshielded, 1.8 m

3 Conducted Test Result

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

3.4.1 Description of the Conducted Output Power

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

3.4.2 Test Procedures

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

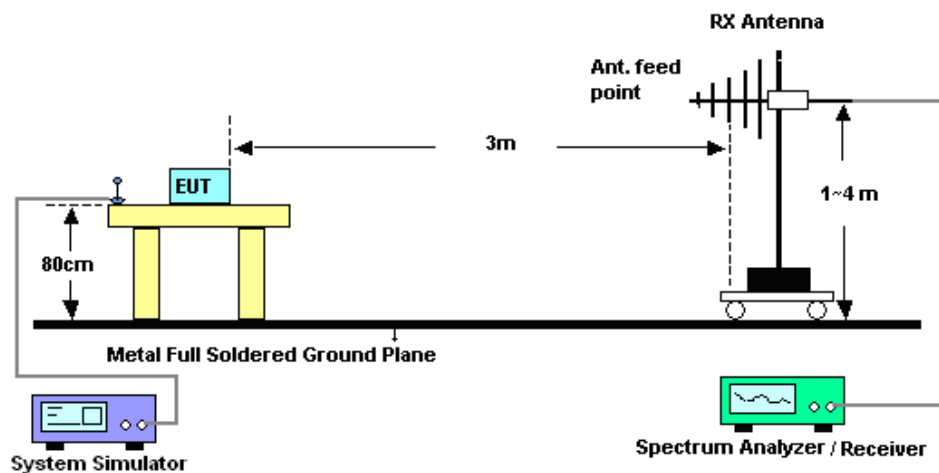
4 Radiated Test Items

4.1 Measuring Instruments

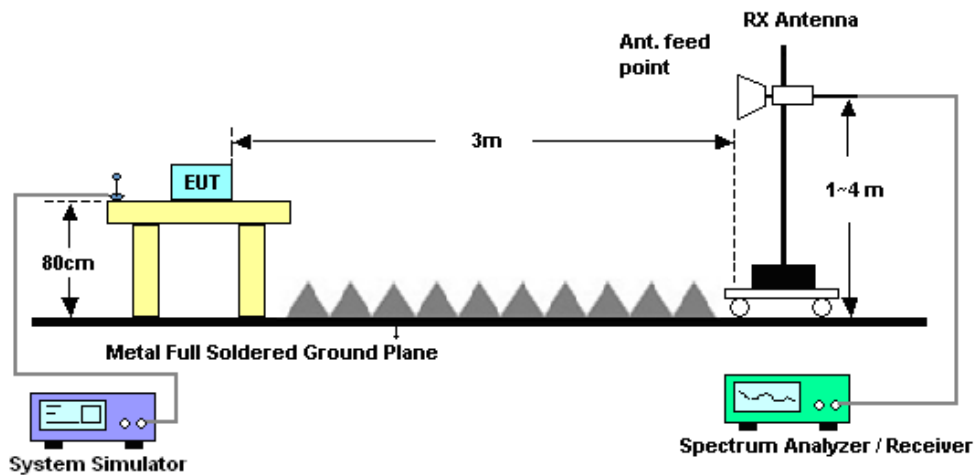
See list of measuring instruments of this test report.

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 Effective Radiated Power and Effective Isotropic Radiated Power Measurement

4.4.1 Description of the ERP/EIRP Measurement

The substitution method, in ANSI / TIA / EIA-603-C-2004, was used for ERP/EIRP measurement, and the spectrum analyzer configuration follows KDB 971168 D01 Power Meas. License Digital Systems v02r02. The ERP of mobile transmitters must not exceed 7 Watts (Cellular Band) and the EIRP of mobile transmitters are limited to 2 Watts (PCS Band).

4.4.2 Test Procedures

1. The testing follows FCC KDB 971168 D01 v02r02 Section 5.2.1. (for CDMA/WCDMA), Section 5.2.2.2 (for GSM/GPRS/EDGE) and ANSI / TIA-603-C-2004 Section 2.2.17.
2. The EUT was placed on a non-conductive rotating platform 0.8 meters high in a semi-anechoic chamber. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and a spectrum analyzer with RMS detector per section 5. of KDB 971168 D01.
3. During the measurement, the system simulator parameters were set to force the EUT transmitting at maximum output power. The maximum emission was recorded from analyzer power level (LVL) from the 360 degrees rotation of the turntable and the test antenna raised and lowered over a range from 1 to 4 meters in both horizontally and vertically polarized orientations.
4. Effective Isotropic Radiated Power (EIRP) was measured by substitution method according to TIA/EIA-603-C. The EUT was replaced by the substitution antenna at same location, and then a known power from S.G. was applied into the dipole antenna through a Tx cable, and then recorded the maximum Analyzer reading through raised and lowered the test antenna. The correction factor (in dB) = S.G. - Tx Cable loss + Substitution antenna gain - Analyzer reading. Then the EUT's EIRP was calculated with the correction factor, $EIRP = LVL + \text{Correction factor}$ and $ERP = EIRP - 2.15$. Take the record of the output power at substitution antenna.



	GSM/GPRS/EDGE	WCDMA/HSPA
SPAN	500kHz	10MHz
RBW	10kHz	100kHz
VBW	30kHz	300kHz
Detector	RMS	RMS
Trace	Average	Average
Average Type	Power	Power
Sweep Count	100	100

4.5 Field Strength of Spurious Radiation Measurement

4.5.1 Description of Field Strength of Spurious Radiated Measurement

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

4.5.2 Test Procedures

1. The testing follows FCC KDB 971168 D01 v02r02 Section 5.8 and ANSI / TIA-603-C-2004 Section 2.2.12.
2. The EUT was placed on a rotatable wooden table 0.8 meters above the ground.
3. The EUT was set 3 meters from the receiving antenna, which was 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 one meter and four meters to search for the maximum spurious emission for both horizontal and vertical polarizations.
6. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking record of maximum spurious emission.
7. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
8. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
9. Taking the record of output power at antenna port.
10. Repeat step 7 to step 8 for another polarization.
11. $EIRP \text{ (dBm)} = S.G. \text{ Power} - Tx \text{ Cable Loss} + Tx \text{ Antenna Gain}$
12. $ERP \text{ (dBm)} = EIRP - 2.15$
13. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
14. The limit line is derived from $43 + 10\log(P)$ dB below the transmitter power P(Watts)
 $= P(W) - [43 + 10\log(P)] \text{ (dB)}$
 $= [30 + 10\log(P)] \text{ (dBm)} - [43 + 10\log(P)] \text{ (dB)}$
 $= -13\text{dBm}.$



5 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSP40	100319	9kHz~40GHz	Oct. 28, 2014	Oct. 21, 2015	Oct. 27, 2015	Conducted (TH01-KS)
EXA Spectrum Analyzer	Keysight	N9010A	MY55150244	10Hz-44GHz	Jun. 05, 2015	Oct. 22, 2015	Jun 04, 2016	Radiation (03CH03-KS)
Bilog Antenna	TeseQ	CBL6112D	35406	25MHz-2GHz	Jun. 25, 2015	Oct. 22, 2015	Jun. 24, 2016	Radiation (03CH03-KS)
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-1356	1GHz~18GHz	Jun. 25, 2015	Oct. 22, 2015	Jun. 24, 2016	Radiation (03CH03-KS)
Amplifier	Burgeon	BPA-530	102212	0.01MHz-3000MHz	Aug.10,2015	Oct. 22, 2015	Aug.09,2016	Radiation (03CH03-KS)
Amplifier	MITEQ	TTA1840-35-HG	1887435	18~40GHz	Aug.27,2015	Oct. 22, 2015	Aug.26,2016	Radiation (03CH03-KS)
high gain Amplifier	MITEQ	AMF-7D-00 101800-30-1	1889560	1GHz-18GHz	Aug.10,2015	Oct. 22, 2015	Aug.09,2016	Radiation (03CH03-KS)
Amplifier	Agilent	8449B	3008A02370	1GHz~26.5GHz	Oct. 23, 2014	Oct. 22, 2015	Oct. 24, 2015	Radiation (03CH03-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	Oct. 22, 2015	NCR	Radiation (03CH03-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	Oct. 22, 2015	NCR	Radiation (03CH03-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	Oct. 22, 2015	NCR	Radiation (03CH03-KS)



6 Uncertainty of Evaluation

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.5dB
---	-------

Appendix A. Test Results of Conducted Test

Conducted Output Power(Average power)

Conducted Power (*Unit: dBm)						
Band	GSM850			GSM1900		
Channel	128	189	251	512	661	810
Frequency	824.2	836.4	848.8	1850.2	1880.0	1909.8
GSM	32.44	32.39	32.37	29.17	29.53	29.37
GPRS class 8	32.41	32.35	32.35	29.14	29.50	29.35
GPRS class 10	31.39	31.38	31.40	28.33	28.64	28.49
GPRS class 11	29.36	29.37	29.42	26.50	26.82	26.69
GPRS class 12	28.16	28.14	28.20	25.29	25.66	25.53
EGPRS class 8	27.53	27.53	27.57	25.26	25.06	25.11
EGPRS class 10	26.63	26.69	26.63	24.32	24.12	24.08
EGPRS class 11	24.81	24.86	24.82	22.30	22.16	22.08
EGPRS class 12	23.66	23.67	23.58	21.14	21.15	21.08

Conducted Power (*Unit: dBm)						
Band	WCDMA Band V			WCDMA Band II		
Channel	4132	4182	4233	9262	9400	9538
Frequency	826.4	836.4	846.6	1852.4	1880.0	1907.6
AMR 12.2Kbps	23.16	23.23	23.27	22.69	22.63	22.70
RMC 12.2Kbps	23.18	23.25	23.30	22.72	22.65	22.75
HSDPA Subtest-1	22.23	22.35	22.31	21.77	21.68	21.72
HSDPA Subtest-2	22.21	22.31	22.29	21.74	21.66	21.74
HSDPA Subtest-3	21.73	21.82	21.87	21.24	21.19	21.33
HSDPA Subtest-4	21.72	21.82	21.83	21.21	21.17	21.26
HSUPA Subtest-1	19.31	19.42	19.45	18.68	18.54	18.75
HSUPA Subtest-2	19.35	19.45	19.50	18.68	18.58	18.73
HSUPA Subtest-3	20.87	20.92	20.98	20.70	20.65	20.84
HSUPA Subtest-4	18.80	19.07	19.11	18.97	18.88	19.11
HSUPA Subtest-5	20.80	20.84	20.88	20.19	20.05	20.25



Appendix B. Test Results of Radiated Test

ERP/EIRP

Channel	Mode	Horizontal		Vertical	
		ERP(dBm)	ERP(W)	ERP(dBm)	ERP(W)
Lowest	GSM850 GSM	26.40	0.4365	12.20	0.0166
Middle		26.91	0.4910	12.97	0.0198
Highest		27.14	0.5176	13.50	0.0224
Limit	ERP < 7W	Result		PASS	

Channel	Mode	Horizontal		Vertical	
		EIRP(dBm)	EIRP(W)	EIRP(dBm)	EIRP(W)
Lowest	GSM1900 GSM	25.75	0.3758	26.58	0.4550
Middle		26.60	0.4571	27.22	0.5272
Highest		27.03	0.5047	27.65	0.5821
Limit	EIRP < 2W	Result		PASS	

**Radiated Spurious Emission**

GSM850 (GSM)									
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	1672	-62.50	-13	-49.50	-62.33	-64.52	1.73	5.90	H
	2510	-50.28	-13	-37.28	-54.59	-52.82	2.11	6.80	H
	3345	-51.01	-13	-38.01	-56.95	-53.79	2.47	7.40	H
	4182	-52.49	-13	-39.49	-60.47	-55.58	2.66	7.90	H
	5019	-47.18	-13	-34.18	-58.58	-52.64	1.59	9.20	H
	5853	-52.86	-13	-39.86	-66.19	-59.32	1.69	10.30	H
	6690	-57.51	-13	-44.51	-73.94	-69.21	1.82	13.52	H
	7527	-51.55	-13	-38.55	-71.23	-62.65	1.94	13.04	H
	8364	-46.06	-13	-33.06	-67.39	-57.55	1.79	13.28	H
	1672	-62.50	-13	-49.50	-62.33	-64.52	1.73	5.90	V
	2510	-50.28	-13	-37.28	-54.59	-52.82	2.11	6.80	V
	3345	-51.01	-13	-38.01	-56.95	-53.79	2.47	7.40	V
	4182	-52.49	-13	-39.49	-60.47	-55.58	2.66	7.90	V
	5019	-47.18	-13	-34.18	-58.58	-52.64	1.59	9.20	V
	5853	-52.86	-13	-39.86	-66.19	-59.32	1.69	10.30	V
	6690	-57.51	-13	-44.51	-73.94	-69.21	1.82	13.52	V
	7527	-51.55	-13	-38.55	-71.23	-62.65	1.94	13.04	V
	8364	-46.06	-13	-33.06	-67.39	-57.55	1.79	13.28	V

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

GSM1900 (GSM)									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	3759	-55.78	-13	-42.78	-65.34	-60.78	2.60	7.60	H
	5640	-42.55	-13	-29.55	-57.60	-49.55	3.10	10.10	H
	7521	-31.97	-13	-18.97	-51.93	-38.13	5.77	11.93	H
	9402	-41.85	-13	-28.85	-61.48	-50.16	4.27	12.58	H
	11280	-27.03	-13	-14.03	-53.59	-35.08	4.35	12.40	H
	3759	-53.24	-13	-40.24	-63.76	-58.24	2.60	7.60	V
	5640	-47.38	-13	-34.38	-62.05	-54.38	3.10	10.10	V
	7521	-32.91	-13	-19.91	-52.96	-39.07	5.77	11.93	V
	9400	-48.01	-13	-35.01	-68.82	-56.32	4.27	12.58	V
	11280	-33.48	-13	-20.48	-59.82	-41.53	4.35	12.40	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, 112, Taiwan

Tel: +886-2-28943447; Fax: +886-2-28987364

Date: October 29, 2015

Product Equality Declaration

We, **ASUSTeK Computer Inc**, declare on our sole responsibility for the product of ASUS_Z00VD as below:

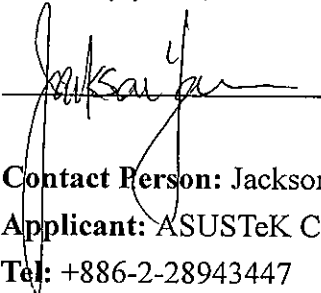
The difference between current and previous as below:

- ◆ Manufacturer for WWAN Antenna changed from **Visol** to **Murata**, the others are the same as before.

Except Listings above, the others are the same as previous version.

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

Sincerely yours,



Contact Person: Jackson Yen

Applicant: ASUSTeK Computer Inc

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E-Mail: jackson_yen@asus.com