Audix Technology Corp.
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New Taipei City244, Taiwan

Tel: +886 2 26099301
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FCC 15.209 & RSS-216
Wireless Power Transfer Report

for

Acer Incorporated

8F, 88, Sec 1, Hsin Tai Wu Rd Hsichih,
Taipei Hsien Taiwan

Product Name	**:**	**WPC Module**
Model Name	**:**	**WCPTI-S**
Brand	**:**	**acer**
FCC ID	**:**	**HLZWPC2**
IC	**:**	**1754F-WPC2**

Prepared by: **:** **AUDIX Technology Corporation,**
EMC Department

Testing Laboratory
1724

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TEST REPORT CERTIFICATION

Applicant	:	Acer Incorporated
Manufacture	:	Golden Elite Technology (SHENZHEN) CO., LTD.
EUT Description		
(1) Product	:	WPC Module
(2) Model	:	WCPTI-S
(3) Brand	:	acer

Applicable Standards:

47 CFR FCC Part 15 Subpart C
RSS-Gen (Issue 4), November 2014
RSS-216 (Issue 2), January 2016
ANSI C63.10:2013

Audix Technology Corp. tested the equipment mentioned in accordance with the requirements set forth in the above standards. Test results indicate that the equipment tested is capable of demonstrating compliance with the requirements as documented within this report.
Audix Technology Corp. does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens and samples.

Date of Report: 2017. 07. 26

Reviewed by: (Annie Yu/Administrator)

Approved by: (Ben Cheng/Manager)

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1. REVISION RECORD OF TEST REPORT

Edition No	Issued Data	Revision Summary	Report Number
0	2017. 07. 26	Original Report	EM-F170470

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2. SUMMARY OF TEST RESULTS

Rule		Description	Results
FCC	**IC**		
15.207	RSS-Gen §8.8	Conducted Emission	**PASS**
15.209	RSS-Gen §8.9	Radio Spurious Emission	**PASS**
15.215 (c)	---	20dB Bandwidth	**PASS**
---	RSS-Gen §6.6	99dB Bandwidth	**PASS**
15.203	RSS-Gen §8.3	Antenna Requirement	**Compliance**

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3. GENERAL INFORMATION

3.1. Description of Application

Applicant	Acer Incorporated No. 239, Sec. 2., TiDing Blvd., Taipei, Taiwan 11493
Manufacture	Golden Elite Technology (SHENZHEN) CO., LTD. No.1, Nan-Huan Rd., ShaJing, BaoAn, Shenzhen, China
Product	WPC Module
Model	WCPTI-S
Brand	acer

3.2. Description of EUT

Test Model	WCPTI-S
Serial Number	N/A
Power Rating	DC 19V
RF Features	Wireless Power Transfer
WPC device or system that includes	Component: Wireless module ; Type: Category I
Host	Host Name: Personal Computer, Host Brand: acer Host Model: D17E3
Accessories	N/A
Date of Receipt	2017. 07. 10
Date of Test	2017. 07. 14

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3.3. EUT Specifications Assessed in Current Report

Mode	Fundamental Range (MHz)	Modulation
WPC	110-205 kHz	FSK

3.4. Antenna Information

No.	Antenna Part Number	Manufacture	Antenna Type	Frequency (MHz)	Max Gain (dBi)
1	---	---	Loop	---	---

3.5. Description of Key Components

None.

3.6. Test Configuration

AC Conduction	
Test Case	Normal operation

Item		Mode	Test Frequency
Radiated Test Case	Radiated Spurious Emission	WPC	117.9kHz
Conducted Test Case	20dB Bandwidth	WPC	122.4kHz

Note 1:

■ Mobile Device:.

☐ Portable Device, and 3 axis were assessed.

- ☐ Lie
- ☐ Side
- ☐ Stand

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3.7. Tested Supporting System List

3.7.1. Support Peripheral Unit

No.	Product	Brand	Model No.	Serial No.	Approval
For AC Conduction Test					
1.	Personal Computer	acer	D17E3	N/A	FCC by DoC
2.	LCD Monitor	Fujitsu	P27T-7 UHD	N/A	N/A
3.	LCD Monitor	Fujitsu	P27T-7 UHD	N/A	N/A
4.	Keyboard	acer	SK-9626	N/A	N/A
5.	Mouse	acer	SM-9020B	N/A	N/A
6.	Earphone	APPLE	N/A	N/A	N/A
7.	External HDD	SONY	HD-E1	0CDL0A154182E2F	N/A
8.	External HDD	AKITIO	Neutrino U3.1	SK21D1549X0007	N/A
9.	Load	N/A	N/A	N/A	N/A
For Radiated Spurious Emission Test					
1.	Personal Computer	acer	D17E3	N/A	FCC by DoC
2.	LCD TV	LG	22LV2500-DA	N/A	N/A
3.	Keyboard	HHKB	KUH0010	N/A	N/A
4.	Mouse	acer	MINI-N5	N/A	N/A
5.	Earphone	LGITON	FS-99	N/A	N/A
6.	Load	N/A	N/A	N/A	N/A

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3.7.2. Cable Lists

No.	Cable Description Of The Above Support Units
For AC Conduction Test	
1.	AC Adapter: Chicony, A16-090P1A DC Power Cord: Unshielded, Detachable, 1.8m, Bonded a ferrite core AC Power Cord: Unshielded, Detachable, 1.8m
2.	HDMI Cable: Shielded, Detachable, 1.8m AC Adapter: Delta, ADP-90MD H DC Power Cord: Unshielded, Detachable, 1.8m, Bonded a ferrite core AC Power Cord: Unshielded, Detachable, 1.8m
3.	Mini DP Cable: Shielded, Detachable, 1.8m AC Adapter: Delta, ADP-90MD H DC Power Cord: Unshielded, Detachable, 1.8m, Bonded a ferrite core AC Power Cord: Unshielded, Detachable, 1.8m
4.	USB Cable: Unshielded, Undetachable, 1.8m
5.	USB Cable: Unshielded, Undetachable, 1.8m
6.	Earphone Cable: Unshielded, Undetachable, 0.9m
7.	USB Cable: Shielded, Detachable, 1.8m
8.	USB Cable: Shielded, Detachable, 1.8m
9.	N/A
For Radiated Spurious Emission Test	
1.	AC Adapter: Chicony, A16-090P1A DC Power Cord: Unshielded, Detachable, 1.8m, Bonded a ferrite core AC Power Cord: Unshielded, Detachable, 1.8m
2.	HDMI Cable: Shielded, Detachable, 1.8m AC Power Cord: Unshielded, Detachable, 1.8m
4.	USB Cable: Unshielded, Undetachable, 2.0m
5.	USB Cable: Unshielded, Undetachable, 1.0m
6.	Earphone Cable: Unshielded, Undetachable, 1.1m
7.	N/A

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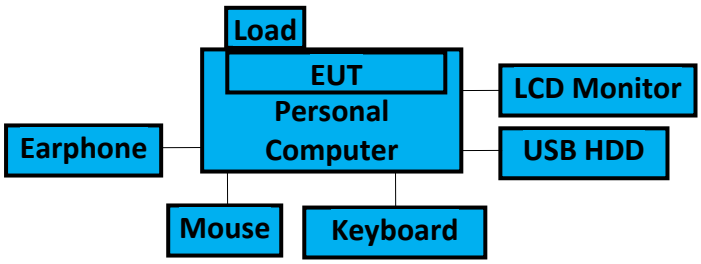
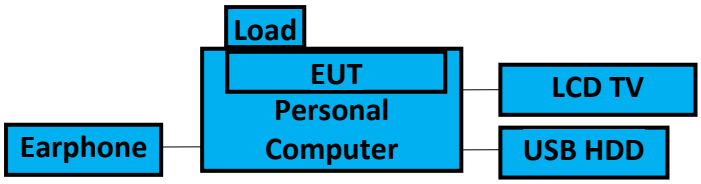
3.8. Setup Configuration

3.8.1. For AC Conduction Test



3.8.2. For Radiated Spurious Emission Test



3.9. Operating Condition of EUT

To Set EUT on RF function under continues transmitting.

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3.10.Description of Test Facility

Name of Test Firm	Audix Technology Corporation / EMC Department No. 53-11, Dingfu, Linkou Dist., New Taipei City 244, Taiwan Tel: +886-2-26092133 Fax: +886-2-26099303 Website : www.audixtech.com Contact e-mail: sales@audixtech.com
Accreditations	The laboratory is accredited by following organizations under ISO/IEC 17025:2005 (1) NVLAP(USA) NVLAP Lab Code 200077-0 (2) TAF(Taiwan) No. 1724 (3) FCC OET Designation No. TW1004 & TW1090
Test Facilities	(1) No. 7 Shielding Room (2) Semi-Anechoic Chamber (IC Test Site Registration No.: 5183B-1) (3) Fully Anechoic Chamber (IC Test Site Registration No.: 5183B-4)

3.11.Measurement Uncertainty

Test Item	Frequency Range	Uncertainty
Conduction Test	150kHz~30MHz	±3.50dB
Radiation Test (Distance: 3m)	30MHz~1000MHz	± 3.68dB
	Above 1GHz	± 5.82dB

Remark：Uncertainty = $ku_c(y)$

Test Item	Uncertainty
20dB Bandwidth	± 0.2kHz

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4. MEASUREMENT EQUIPMENT LIST

4.1. Conducted Emission Measurement

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
1.	Test Receiver	R&S	ESCI	101276	2017. 03. 23	1 Year
2.	A.M.N.	R&S	ENV4200	825358/003	2017. 05. 09	1 Year
3.	L.I.S.N.	Kyoritsu	KNW-407	8-1539-3	2017. 01. 13	1 Year
4.	Pulse Limiter	R&S	ESH3-Z2	101495	2017. 01. 16	1 Year
5.	Test Software	Audix	e3	V.6.120424	N.C.R.	N.C.R.

4.2. Radiated Emission Measurement

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
1.	Spectrum Analyzer	Agilent	N9010A-526	MY53400071	2016. 09. 19	1 Year
2.	Test Receiver	R & S	ESCS30	100338	2017. 06. 19	1 Year
3.	Amplifier	HP	8447D	2944A06305	2017. 02. 16	1 Year
4.	Bilog Antenna	TESEQ	CBL6112D	33821	2017. 01. 21	1 Year
5.	Loop Antenna	R&S	HFH2-Z2	891847/27	2016. 12. 23	1 Year
6.	Test Software	Audix	e3	V.6.110601	N.C.R.	N.C.R.

4.3. RF Radiated Measurement

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
1.	Spectrum Analyzer	Agilent	N9010A-526	MY53400071	2016. 09. 19	1 Year
3.	Amplifier	HP	8447D	2944A06305	2017. 02. 16	1 Year
4.	Bilog Antenna	TESEQ	CBL6112D	33821	2017. 01. 21	1 Year
6.	Test Software	Audix	e3	V.6.110601	N.C.R.	N.C.R.

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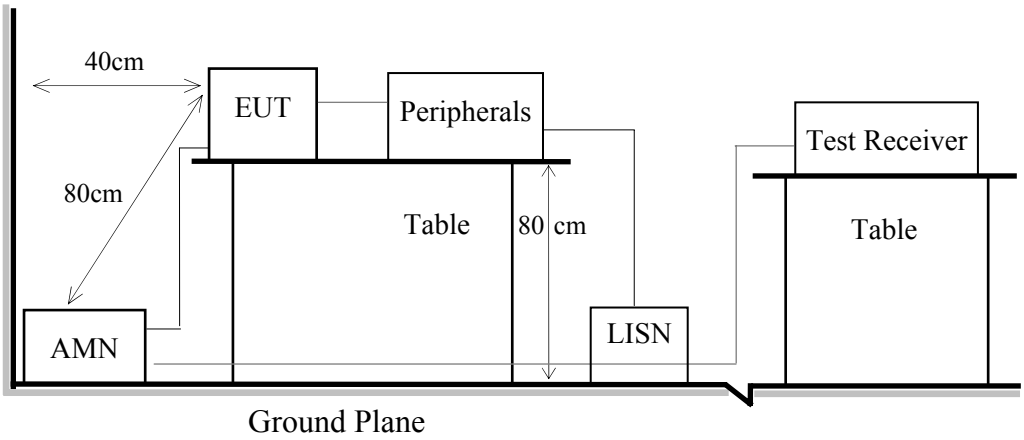
5. CONDUCTED EMISSION

5.1. Block Diagram of Test Setup

5.1.1. Block Diagram of EUT

Indicated as section 3.8

5.1.2. Shielded Room Setup Diagram



5.2. Conducted Emission Limit

Frequency	Conducted Limit	
	Quasi-Peak Level	Average Level
150kHz ~ 500kHz	66 ~ 56 dBμV	56 ~ 46 dBμV
500kHz ~ 5MHz	56 dBμV	46 dBμV
5MHz ~ 30MHz	60 dBμV	50 dBμV

Remark 1.: If the average limit is met when using a Quasi-Peak detector, the measurement using the average detector is not required.
2.: The lower limit applies to the band edges.

5.3. Test Procedure

5.3.1. To set up the EUT as indicated in ANSI C 63.10. The EUT was placed on the table which has 80 cm height to the ground and 40 cm distance to the conducting wall.

5.3.2. Power supplier of the EUT was connected to the AC mains through an Artificial Mains Network (A.M.N.).

5.3.3. The AC power supplies to all peripheral devices must be provided through line impedance stabilization network (L.I.S.N.)

5.3.4. Checking frequency range from 150 kHz to 30 MHz and record the emission which does not have 20 dB below limit.

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5.4. Test Results

Please refer to Appendix A.

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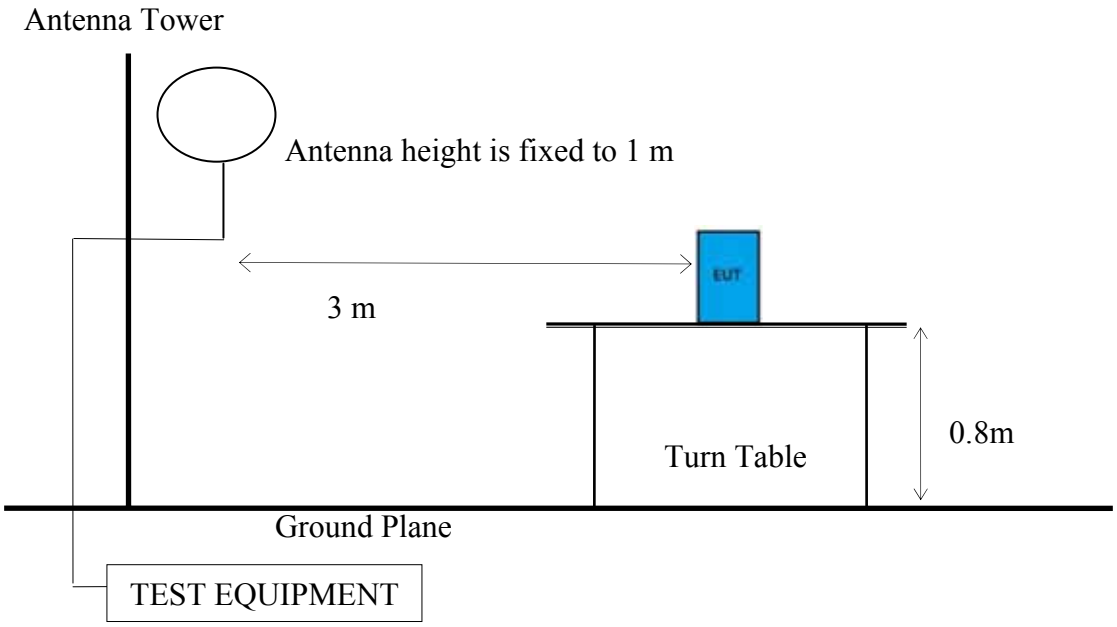
6. RADIATED SPURIOUS EMISSION

6.1. Block Diagram of Test Setup

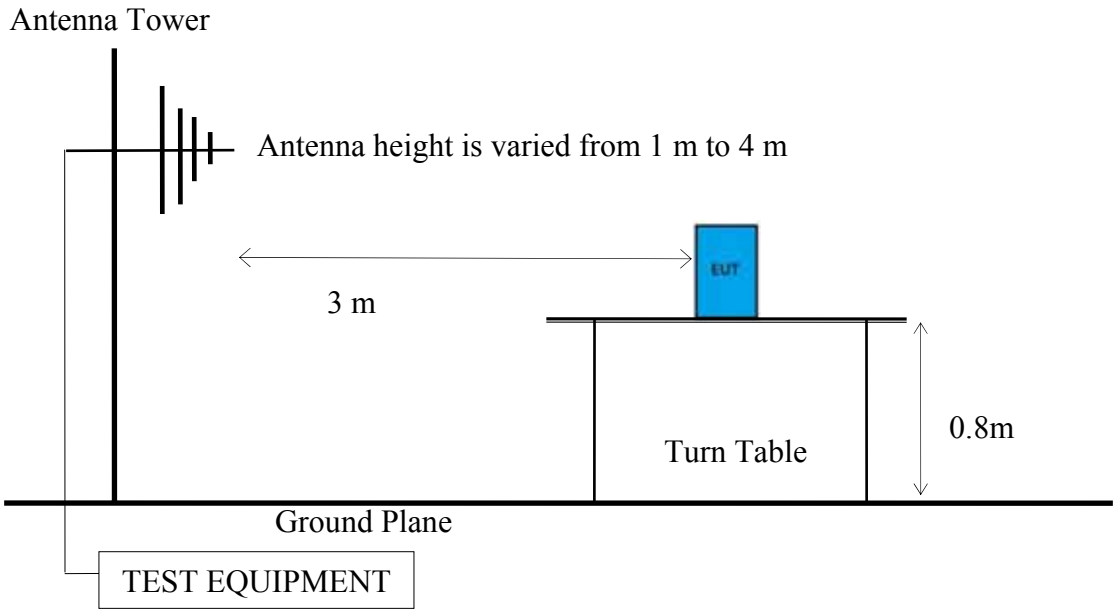
6.1.1. Block Diagram of EUT

Indicated as section 3.8

6.1.2. Setup Diagram for 9kHz-30MHz



6.1.3. Setup Diagram for 30MHz-1000MHz



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6.2. Radiated Emission Limits

In any 100kHz bandwidth outside the frequency band, the radio frequency power produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level. In addition, radiated emissions which fall in restricted bands, as defined in Section 15.205/RSS-Gen Section 8.10 table 6 must also comply with the radiated emission limits specified as below.

Frequency (MHz)	Distance (m)	Limits	
		dBμV/m	μV/m
0.009 - 0.490	300	67.6	2400/kHz
0.490 - 1.705	30	87.6	24000/kHz
1.705 - 30	30	29.5	30
30 - 88	3	40.0	100
88- 216	3	43.5	150
216- 960	3	46.0	200
Above 960	3	54.0	500
Above 1000	3	74.0 dBμV/m (Peak) 54.0 dBμV/m (Average)	

Remark：(1) dBμV/m = 20 log (μV/m)
(2) The tighter limit applies to the edge between two frequency bands.
(3) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
(4) Fundamental and emission fall within operation band are exempted from this section.
(5) Pursuant to ANSI C63.10: 6.6.4.3, if the maximized peak measured value complies with the average limit, then it is unnecessary to perform an average measurement.

6.3. Test Procedure

Frequency Range 9kHz~30MHz:

The EUT setup on the turn table which has 0.8 m height to the ground. The turn table rotated 360 degrees and antenna fixed to 1 m to find the maximum emission level.
In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10-2013 regulation.

(1) RBW = 9kHz with peak and average detector.
(2) Detector: average and peak (10kHz-490kHz)
Q.P. (490kHz-30MHz)

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Frequency Range 30MHz ~ 1000MHz:
The EUT setup on the turn table which has 0.8 m height to the ground. The turn table rotated 360 degrees and antenna varied from 1 m to 4 m to find the maximum emission level. Both horizontal and vertical polarization are required. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10: 2013 regulation.

Spectrum Analyzer is used for pre-testing with following setting:

(1) RBW = 120KHz
(2) VBW ≥ 3 x RBW.
(3) Detector = Peak.
(4) Sweep time = auto.
(5) Trace mode = max hold.
(6) Allow sweeps to continue until the trace stabilizes.
(7) When peak-detected value is lower than limit that the measurement using the Q.P. detector is not required. Otherwise using Q.P. for finally measurement.

6.4. Measurement Limit Formula

Frequency (MHz)	Formula
0.009 - 0.490MHz	3 Limit (dBμV/m) = 20log(2400/F^{Note})+ 40log(300m/3m)
0.490 - 1.705MHz	3 Limit (dBμV/m) = 20log(24000/F^{Note})+ 40log(300m/3m)
1.750- 30MHz	3 Limit (dBμV/m) = 20log(30)+ 40log(300m/3m)
Note: F is test frequency	

6.5. Test Results

Please refer to Appendix A.

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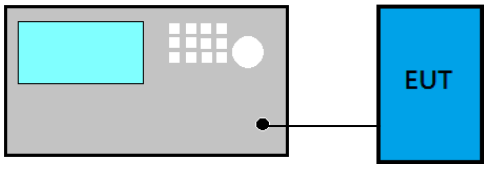
7. 20dB/99dB BANDWIDTH

7.1. Block Diagram of Test Setup



7.2. Specification Limits

The 20dB bandwidth shall be specified in operating frequency band.

7.3. Test Procedure

Following measurement procedure:

(1) Set RBW close to1% of OBW.
(2) Set the video bandwidth (VBW) ≥ 3 × RBW.
(3) Detector = Peak.
(4) Trace mode = max hold.
(5) Sweep = auto couple.
(6) Allow the trace to stabilize.
(7) Setting channel bandwidth function x dB to -20 dB to record the final bandwidth.

7.4. Test Results

Please refer to Appendix A

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8. DEVIATION TO TEST SPECIFICATIONS

【NONE】

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APPDNDIX A

TEST DATA AND PLOTS

(Model: WCPTI-S)

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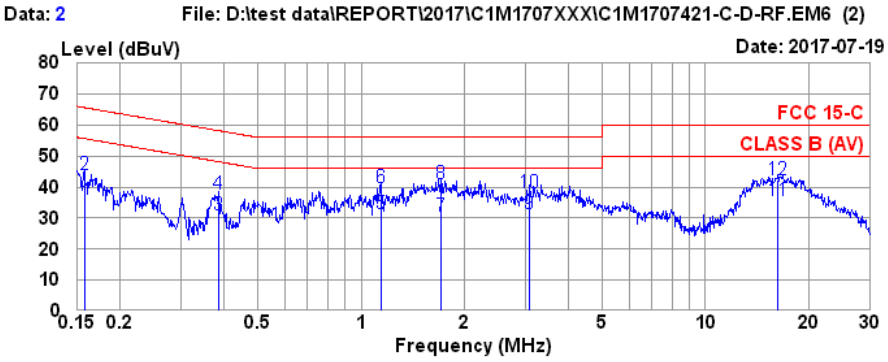
A.1 CONDUCTED EMISSION

Test Date	2017/07/19	Temp./Hum.	26℃/52%
Test Voltage	DC 19V (Via Personal Computer)		



Site no. : No.7 Shielded Room
Condition : ESH2-Z5 366(ADAPTER)
Limit : FCC 15-C
Env. / Ins. : 26*C / 52% ESCI (1276)
EUT : WCPTI-S
Power Rating : DC 19V (via PC)
Test Mode : Operating

Data no. : 2
Phase : NEUTRAL
Engineer : Nick Du

	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBµV)	Emission Level (dBµV)	Limits (dBµV)	Margin (dB)	Remark
1	0.157	0.19	0.03	9.86	24.73	34.81	55.60	20.79	Average
2	0.157	0.19	0.03	9.86	33.96	44.04	65.60	21.56	QP
3	0.387	0.19	0.04	9.86	20.76	30.85	48.12	17.27	Average
4	0.387	0.19	0.04	9.86	27.82	37.91	58.12	20.21	QP
5	1.141	0.23	0.06	9.86	21.43	31.58	46.00	14.42	Average
6	1.141	0.23	0.06	9.86	29.72	39.87	56.00	16.13	QP
7	1.707	0.24	0.09	9.86	20.37	30.56	46.00	15.44	Average
8	1.707	0.24	0.09	9.86	31.01	41.20	56.00	14.80	QP
9	3.090	0.29	0.15	9.87	21.14	31.45	46.00	14.55	Average
10	3.090	0.29	0.15	9.87	27.80	38.11	56.00	17.89	QP
11	16.226	0.85	0.28	9.93	24.73	35.79	50.00	14.21	Average
12	16.226	0.85	0.28	9.93	31.32	42.38	60.00	17.62	QP

Remarks: 1. Emission Level= AMN Factor + Cable Loss + Pulse Att. + Reading.
2. If the average limit is met when useing a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.

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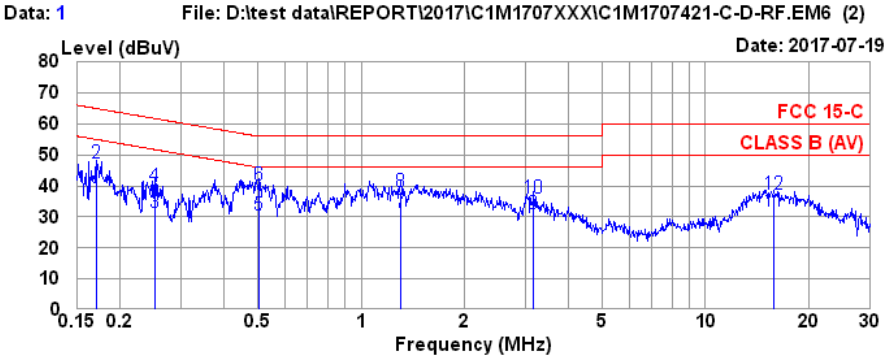
Test Date	2017/07/19	Temp./Hum.	26℃/52%
Test Voltage	DC 19V (Via Personal Computer)		



Site no. : No.7 Shielded Room
Condition : ESH2-Z5 366(ADAPTER)
Limit : FCC 15-C
Env. / Ins. : 26*C / 52% ESCI (1276)
EUT : WCPTI-S
Power Rating : DC 19V (via PC)
Test Mode : Operating

Data no. : 1
Phase : LINE
Engineer : Nick Du

	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBμV)	Emission Level (dBμV)	Limits (dBμV)	Margin (dB)	Remark
1	0.171	0.17	0.03	9.86	25.98	36.04	54.90	18.86	Average
2	0.171	0.17	0.03	9.86	37.12	47.18	64.90	17.72	QP
3	0.252	0.17	0.04	9.86	21.23	31.30	51.69	20.39	Average
4	0.252	0.17	0.04	9.86	29.56	39.63	61.69	22.06	QP
5	0.507	0.19	0.04	9.86	20.62	30.71	46.00	15.29	Average
6	0.507	0.19	0.04	9.86	29.95	40.04	56.00	15.96	QP
7	1.303	0.23	0.06	9.86	21.37	31.52	46.00	14.48	Average
8	1.303	0.23	0.06	9.86	27.94	38.09	56.00	17.91	QP
9	3.173	0.30	0.15	9.87	20.54	30.86	46.00	15.14	Average
10	3.173	0.30	0.15	9.87	25.63	35.95	56.00	20.05	QP
11	15.801	0.93	0.28	9.92	20.87	32.00	50.00	18.00	Average
12	15.801	0.93	0.28	9.92	26.04	37.17	60.00	22.83	QP

Remarks: 1. Emission Level= AMN Factor + Cable Loss + Pulse Att. + Reading.
2. If the average limit is met when useing a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.

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A.2 RADIATED SPURIOUS EMISSION

Test Date	2017/07/14	Temp./Hum.	23℃/54%
Test Voltage	DC 19V (Via Personal Computer)		
Test Frequency	TX 117.9kHz		

A.2.1. Frequency 9kHz~30MHz

Antenna at 0 Degree

Test Frequency (MHz)	Test Result (dBμV/m at 3m)	Limits (dBμV/m at 3m)	Margin (dB)	Detector
0.1179	83.20	126.174	42.974	Peak
0.1179	82.80	106.174	23.374	Average
0.3537	64.60	116.632	52.032	Peak
0.3537	64.10	96.632	32.532	Average
0.5895	54.90	72.195	17.295	QP
0.8253	49.60	69.272	19.672	QP
1.0611	43.80	67.089	23.289	QP

Antenna at 90 Degree

Test Frequency (MHz)	Test Result (dBμV/m at 3m)	Limits (dBμV/m at 3m)	Margin (dB)	Detector
0.1179	79.50	126.174	46.674	Peak
0.1179	79.30	106.174	26.874	Average
0.3537	60.10	116.632	56.532	Peak
0.3537	59.70	96.632	36.932	Average
0.5895	56.90	72.195	15.295	QP
0.8253	48.30	69.272	20.972	QP
1.0611	41.20	67.089	25.889	QP

Note: 1. All emissions are lower than the ambient level cannot be measured.
2. The Peak value has been compliance with Q.P. limit, thus measurement with Q.P. is not needed.

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A.2.2. Frequency 30MHz ~ 1000MHz

Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
136.70	17.96	2.69	15.13	35.78	43.50	7.72	Peak
247.28	19.00	3.79	19.52	42.31	46.00	3.69	Peak
423.82	22.34	5.78	15.82	43.94	46.00	2.06	Peak

Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
144.46	17.47	2.77	22.74	42.98	43.50	0.52	Peak
230.79	17.93	3.64	19.09	40.66	46.00	5.34	Peak
423.82	22.34	5.78	16.54	44.66	46.00	1.34	Peak

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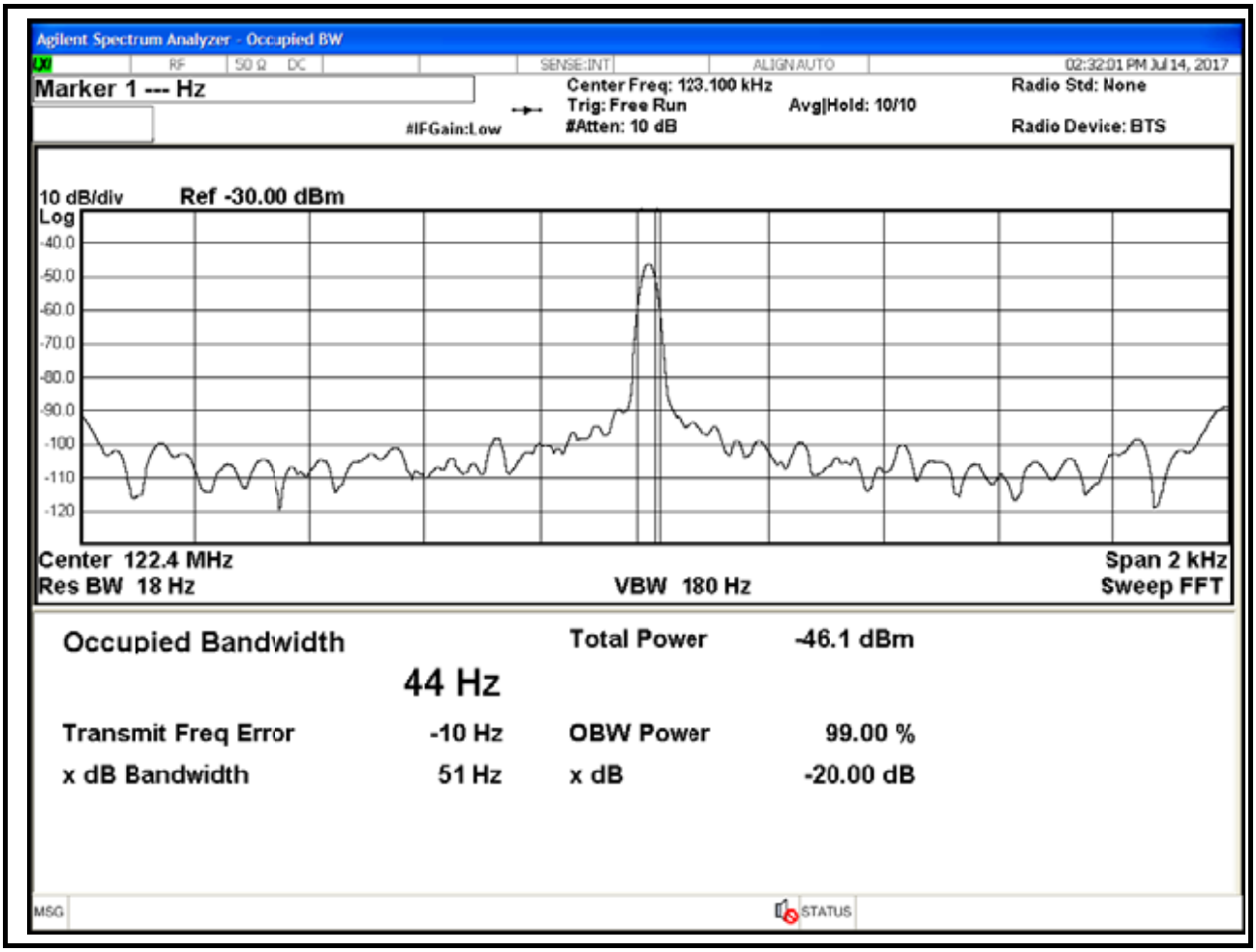
A.3 20dB/99dB BANDWIDTH

Test Date	2017/07/14	Temp./Hum.	23℃/54%
Cable Loss	N/A	Test Voltage	DC 19V (Via Personal Computer)

A.4.1.1 20dB/99dB Bandwidth Result

Centre Frequency (kHz)	20 dB Bandwidth (Hz)	99 dB Bandwidth (Hz)
122.4	51	44

A.4.1.2 Measurement Plots



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APPDNDIX B

TEST PHOTOGRAPHS

(Model: WCPTI-S)

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