

# CERTIFICATE OF CONFORMITY

#### FCC and ISED Test Report

For the following information

Ref. File No.:C1M2012197

Product	Personal Computer
Model	Veriton N4740G
Brand	Acer
Applicant	Acer India Pvt. Ltd.
Test Report Number	EM-F200633
Rules and Standards	Title 47 FCC CFR, Part 15, Subpart B, Class B and ICES-003 Issue 6,Class B ANSI C63.4-2014

We hereby certify that the above product has been tested by us and complied with above FCC and ICES official limits. The test was performed according to the procedures ANSI C63.4-2014. The equipment might be marketed in US or Canada in accordance with the rules of 47 CFR FCC Part 2 and ISED regulations. The test data and results are issued on the test report no. EM-F200633.

Signature

Alex Deng/Deputy Manager Date: 2020. 12. 29

Test Laboratory: AUDIX Technology Corporation, EMC Department NVLAP Lab. Code: 200077-0 TAF Accreditation No.: 1724 FCC OET Designation: TW1004 & TW1090 Web Site: www.audixtech.com

The statement is based on a single evaluation of one sample of the above-mentioned products. It does not imply an assessment of the whole production and does not permit the use of the test lab logo.



## **TEST REPORT**

**Personal Computer** Model Number: Veriton N4740G Brand: Acer FCC ID: 2AMY3VERITONN4740G

#### **Applicant for:**

Acer India Pvt. Ltd. Embassy Heights" 6th Floor, No.13, Magrath Road, (Next to Hosmat Hospital) Bangalore 560025, India

Prepared by: Audix Technology Corporation, EMC Department No. 53-11, Dingfu, Linkou Dist., New Taipei City 244, Taiwan



TESTING NVLAP LAB CODE 200077-0

File No. Report No. Date of Report

C1M2012197 EM-F200633 : : 2020. 12. 29

The test report is based on a single evaluation of one sample of the above-mentioned products. It does not imply an assessment of the whole production and does not permit the use of the test lab logo. The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. Government.

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# **Test Report**

Applicant	:	Acer India Pvt. Ltd.
EUT Description		
(1) Product	:	Personal Computer
(2) Model Number	:	Veriton N4740G
(3) Brand	:	Acer
(4) Power Rating	:	DC 19V

Rules of Compliance and Applicable Standards:

Title 47 FCC CFR, Part 15, Subpart B, Class B and ICES-003 Issue 6, Class B ANSI C63.4-2014

The device described above was tested by Audix Technology Corporation to determine the maximum emission levels emanating from the device. All of the tests were requested by the applicant and the results thereof based upon the information that the applicant provided to us. We, Audix Technology Corporation assumes full responsibility for the accuracy and completeness of these measurements. This report is made under FCC Part 2.938 and ICES-003 chapter 7, and shows that the EUT is technically compliance with the class B limit for both **FCC rule and ICES** standard described as above.

No modifications were required during testing to bring this product into compliance.

This report applies to above tested sample only and shall not be reproduced in part without written approval of Audix Technology Corporation.

Date of Report : 2020. 12. 29
Reviewed by:

Approved by:

(Annie Yu/Administrator)

(Alex Deng/Deputy Manager)

Name of the Representative of the Responsible Party:

Signature:



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APPENDIX I (Lab. Certificates) APPENDIX II (Test Photographs)



## 1. Revision Record of Test Report

Issued Date	Edition No.	Revision Summary	Report Number
2020. 12. 29	0	Original Report.	EM-F200633



## 2. Summary of Test Result

#### 2.1. Test Result

Emissions							
Test Item	Referred Standard	Limit	Result				
Power-line conducted	Title 47 FCC CFR Part 15 Subpart	Close P	Pass				
emission	B andICES-003 Issue 6		Margin 7.23dB at 0.296MHz				
Dedicted emissions	Title 47 ECC CED Doct 15 Subport		Pass				
(30 – 1000MHz)	B andICES-003 Issue 6	Class B	Margin 4.31dB at 891.451MHz (Horizontal, 4.0m/55°)				
Radiated emissions	Title 47 FCC CFR Part 15 Subpart	Class D	Pass				
(Above 1GHz)	B andICES-003 Issue 6	Class B	Margin 15.71dB at 2698.780MHz				
Note :	·						
1. The uncertainties value is not used in determining the result.							
2. N/A is an abbreviation for Not Applicable.							
3. Special measures: None							

- 4. Decision and justification not to measure: None
- 5. The FCC Part 15 Subpart B emission measurement results are deemed satisfactory evidence of compliance with ICES-003 regulations.



## 2.2. Description of Test Firm

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: attemc_report@audixtech.com
Accreditations	<ul> <li>The laboratory is accredited by following organizations under ISO/IEC 17025:2017</li> <li>(1) NVLAP(USA) NVLAP Lab Code 200077-0</li> <li>(2) TAF(Taiwan) No. 1724</li> </ul>
Test Facilities	<ul> <li>(1) No. 5 Shielding Room</li> <li>(2) No. 6 Open Area Test Site</li> <li>(3) No. 2 3m Semi Anechoic Chamber</li> </ul>



## 3. General Information

## 3.1. Description of Application

Applicant	Acer India Pvt. Ltd. Embassy Heights" 6th Floor, No.13, Magrath Road, (Next to Hosmat Hospital) Bangalore 560025, India
Product	Personal Computer
Brand	Acer
Model Number	Veriton N4740G



## 3.2. Description of the EUT

Test Model	Veriton N4740G
Serial Number	N/A
Power Rating	DC 19V (Refer to AC adapter rating)
Hardware Version	N/A
Software Version	N/A
Sample Status	Mass production
Date of Receipt	2020. 12. 17
Date of Test	2020. 12. 23 ~ 25
Interface Ports of EUT	<ul> <li>Front Side</li> <li>USB 3.2 Gen 1x1 Ports x2</li> <li>USB 3.2 Gen 1x1 Type-C Port x1</li> <li>Audio Jacks (MIC and Line-Out) x2</li> <li>Rear Side</li> <li>DC-IN Port x1</li> <li>DP Ports x2</li> <li>D-Sub Port x1</li> <li>HDMI Port x1</li> <li>10/100/1000 LAN RJ45 Port x1</li> <li>USB 2.0 Ports x4</li> </ul>
Accessories Supplied	<ul> <li>AC Adapter</li> <li>VESA Mount</li> </ul>

#### 3.3. Highest Frequency within EUT

The Highest frequency is Above 108MHz of EUT.

#### 3.4. Modification Record

This report is made under FCC Part 2.938.No modifications were required during testing to bring this product into compliance.



## 3.5. List of Key Components of EUT

Item	Supplier	Model / Type	Character		
Mother Board	Acer	H410-SF110			
Chassis	Hunkey	SF110 35W	Case A Without Exhaust Vents at Top		
Chassis	Hunkey	SF110 65W	Case B With Exhaust Vents at Top		
CPU (Secket: LCA 1200)	Intel	i7-10700T	2.0GHz, Support TDP 35W max.		
(Option)	Intel	i7-10700	2.9GHz, Support TDP 65W max.		
M.2 SSD (Option)	Kingston	RBU-SNS8180S3/128GJ	M.2 SSD 128GB		
DIMM (Max. 2pcs) (Option)	Goldkey	GKE160SO102408-2666A	16GB DDR4 2666		
SSD (Option)	BIWIN	CSE25GS1F71-512	512GB, 2.5", SATA SSD		
WLAN Combo Card	Intel	3165NGW	IEEE802.11 a/b/g/n/ac , BT4.2 FCC ID: PD93165NG IC: 1000M-3165NG		
Antonno	Linking	T-543-9291166-2	Main Black, PIFA Antenna		
Antenna	LINKING	T-543-9291166-1	AUX Gray, PIFA Antenna		
	APD	DA-90J19	I/P: 100-240Vac, 50-60Hz, 1.5A Max O/P: 19Vdc, 4.74A, 90W (3C)		
AC Adapter	FSP	FSP120-ABBN3	I/P: 100-240Vac, 50-60Hz, 1.8A O/P: 19Vdc, 6.32A, 120W (3C)		
	DC Power Cord: Non-Shielded, Undetached, 1.8m, Bonded a ferrite core AC Power Cord: Non-Shielded, Detached, 1.8m (3C)				

Remark: For more detailed features description, please refer to the manufacturer's specifications or the user manual.

#### The EUT has two configurations, please see follow list:

Configuration	A	В
Chassis	Hunkey, SF110 35W Without Exhaust Vents at Top	Hunkey, SF110 65W With Exhaust Vents at Top
CPU	i7-10700T	i7-10700
EUT DC in Rating	DC 19 V/4.74A	DC 19 V/6.32A
AC Adapter	APD, DA-90J19	FSP, FSP120-ABBN3



#### 3.6. Determination of Worse Case Operating Modes

• According to the specification and Product function, the EUT was estimated to determine the highest emissions by following configurations, the EUT was pre-tested with following configuration modes:

	SKU #1 & #2	#1 #		#2	#1						
	Mode #1 - #9	1	2	3	4	5	6	7	8	9	10
Chassis	SF110 35W (Case A)									V	
Chassis	SF110 65W (Case B)	V	V	V	V	V	V	V	V		V
Input Rating	120Vac/60Hz	V	V	V	V	V	V	V	V	V	V
ELIT Sotting	Horizontal	V	V	V	V	V	V	V	V	V	
	Vertical										V
Mother Board	Acer, H410-SF110	V	V	V	V	V	V	V	V	V	V
CPU (Seeket: LCA 1200)	Intel, i7-10700T/2.0GHz, TDP 35W max.									V	
(Option)	Intel, i7-10700/2.9GHz, TDP 65W max.	V	V	V	V	V	V	V	V		V
M.2 SSD (Option)	Kingston, RBU-SNS8180S3/128GJ / 128GB	V	V	V	V	V	V	V	V	V	V
DIMM (Max. 2pcs) (Option)	Goldkey, GKE160SO102408-2666A / 16GB DDR4 2666	V	v	V	V	V	V	V	V	V	V
SSD (Option)	BIWIN, CSE25GS1F71-512 / 512GB	V	V	V	V	V	V	V	V	V	V
WLAN+BT Combo Card	Intel, 3165NGW	V	V	V	V	V	V	V	V	V	V
	Linking, T-543-9291166-2,Main Black	V	V	V	V	V	V	V	V	V	V
Antenna	Linking, T-543-9291166-1,AUX Gray	V	V	V	V	V	V	V	V	V	V
A	APD, DA-90J19 ,19V, 4.74A									V	
Adapter	FSP,FSP120-ABBN3,19V, 6.32A	V	V	V	V	V	V	V	V		V
Resolution (Display: HDMI+DP1)		V								V	V
Resolution (Display: HDMI+DP2)	3840x2160/60Hz (WLAN 2.4G)		v								
Resolution (Display: DP1+DP2)				v							
Resolution (Display: HDMI+D-Sub)					v						
Resolution (Display: DP1+D-Sub)	1920*1080/60Hz (WLAN 5G+BT)					v					
Resolution (Display: DP2+D-Sub)							v				
Resolution (Display: HDMI+DP1)	1280*1024/75Hz (WLAN 2.4G)							v			
Resolution (Display: HDMI+DP1)	640*480/60Hz (WLAN 2.4G)								V		
	Type C (HDD)	V		V	V	V	V	V	V	V	V
	USB (5V/1.5A)		V								



### 3.7. Final Test Configuration

 According to radiated emission pre-test results, the worst configuration was found as follows:

	SKU	#1	#2
	Mode	1	9
Chassie	SF110 35W (Case A)		V
Chassis	SF110 65W (Case B)	V	
Mother Board	Acer, H410-SF110	V	V
CPU (Socket: LGA 1200)	Intel, i7-10700T/2.0GHz, TDP 35W max.		V
(Option)	Intel, i7-10700/2.9GHz, TDP 65W max.	V	
M.2 SSD (Option)	Kingston, RBU-SNS8180S3/128GJ / 128GB	V	V
SSD (Option)	BIWIN, CSE25GS1F71-512 / 512GB	V	V
DIMM(Max. 2pcs) (Option)	Goldkey, GKE160SO102408-2666A /16GB DDR4 2666	V	V
WLAN+BT Combo Card	Intel, 3165NGW	V	V
Antonno	Linking, T-543-9291166-2, Main Black	V	V
Antenna	Linking, T-543-9291166-1, AUX Gray	V	V
Adaptar	APD, DA-90J19 ,19V, 4.74A, 90W		V
Auapter	FSP, FSP120-ABBN3,19V, 6.32A, 120W	V	

• The worst configuration and therefore only it was tested and recorded in this report with test voltage of 120Vac, 60Hz

Test Item	Configuration/Operating Mode
Conducted emissions	Mode #1, Full System
at AC mains power port	Mode #9, Full System
Redicted emission (20 1000MHz)	Mode #1, Full System
Radiated emission (30 – 1000MHz)	Mode #9, Full System
Redicted emission (1 19047)	Mode #1, Full System
	Mode #9, Full System



### 4. Measurement Arrangement

- 4.1. Equipment and cables arrangement
- Connection Diagram of EUT and Peripheral Devices

For radiated, the EUT and peripherals were arranged as the requirement of ANSI C63.4 2014 clause 6.3 and 6.4.





## 4.2. Method of Exercising EUT

The methods for exercising the EUT during the measurement specified in ANSI C63.4 2014 clause 11.2, 11.3 and figure 16 were used.

Operating System	Windows 10
Test Program	Burn In Test 8.1
Video Signal (Display Image)	Display scrolling "H" pattern.
USB Ports	<ol> <li>Read/Write operation to External Hard Drive, SSD and printer.</li> <li>The keyboard and mouse were constantly scanned for input data.</li> </ol>
Audio Controller	Run the program "Windows Media Player" and send 1kHz sound to earphone.
WLAN Function	Data transmitting via 2.4GHz or 5GHz to client.
BT Function	To send 1kHz audio signal to BT Speaker.
Other	Other peripheral devices were driven and operated in turn



## 4.3. List of Supported Units under Test

No.	Product	Brand	Model No.	Serial No	Serial No.		Remarks
А	LCD Monitor #1	DELL	U2718Qb	CN-0CDX4R-QDC00-9 78-0TML		FCC By DoC	Provided by LAB
В	LCD Monitor #2	DELL	UP2414Q	CN-0W09C2-74 7-002L	445-46	FCC By DoC	Provided by LAB
С	LCD Monitor #3	Lenovo	LT2452P	VNA9XV	Х	FCC By DoC	Provided by LAB
D	USB Keyboard	Lenovo	KU-0225	0791195	5	FCC By DoC	Provided by LAB
Е	USB Mouse	Lenovo	LXB MO28UOAUSB	4400036	6	FCC By DoC	Provided by LAB
F	USB Printer	HP	SNPRC-0902-01	CN96PBK0	00D	FCC By DoC	Provided by LAB
G	External HDD #1	SONY	HD-B1	BBW3DEK78041FD1		FCC By DoC	Provided by LAB
Н	External HDD #2	SONY	HD-B1	BBW3DEK780	41FF0	FCC By DoC	Provided by LAB
I	External HDD #3	WD	WDBUZG0010BBK- WESN	WXT1A57EDYD6		FCC By DoC	Provided by LAB
J	SSD	WD	WDBKVX5120PSL	1952ES454	101	FCC By DoC	Provided by LAB
к	Earphone	Cheng Jia	CJ-323	N/A		N/A	Provided by LAB
Part	ner System			•		•	
No.	Product	Brand	Model No.	Serial No.	A	pproval	Remarks
L	Wireless Router	ASUS	RT-N53	MSQ-RT-N53		FCC ID: Q-RT-N53	Provided by LAB
М	Notebook PC	Lenovo	TP00034A	895097	FC	C By DoC	Provided by LAB
Ν	BT Speaker	info Thin	k CA2-BSP	N/A	F 2AB7	FCC ID: O-CA2-BSP	Provided by LAB

## 4.4. List of Used Cables under Test

No.	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1	HDMI Cable	1	1.8	Yes	0	Provided by LAB
2	DP Cable	2	1.8	Yes	0	Provided by LAB
3	D-Sub Cable	1	1.8	Yes	2	Provided by LAB
4	USB Cable	6	1.8	Yes	0	Provided by LAB
5	Type C Cable	1	1.8	Yes	0	Provided by LAB
6	Headset & microphone Cable	2	2.0	Yes	0	Provided by LAB
7	LAN Cable	2	10.0	No	0	Provided by LAB
8	DC Power Cord	1	1.8	No	1	Supplied by Client
9	AC Power Cord	1	1.8	No	0	Supplied by Client
10	AC Power Cord	6	1.8	No	0	Provided by LAB for Support Units A,B,C,F,L, M



## 5. Measurement of Conducted Emissions

#### 5.1. List of Test Instruments

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
1	Test Receiver	R&S	ESCS30	100265	2020. 06. 17	2021. 06. 16
2	A.M.N.	R&S	ENV4200	100003	2020. 09. 16	2021. 09. 15
3	L.I.S.N.	Kyoritsu	KNW-407	8-1539-2	2020. 12. 16	2021. 12. 15
4	Pulse Limiter	R&S	ESH3-Z2	100355	2020. 01. 05	2021. 01. 04
5	Signal Cable	MIYAZAKI	5D2W	CE-04	2020. 01. 31	2021. 01. 30
6	Digital Ther- mo-Hygro Meter	WISEWIND	5330	No.5 S/R	2020. 04. 17	2021. 04. 16
7	Test Software	Audix	e3	V6.120703a	N.C.R.	N.C.R.

#### 5.2. Test Setup

The EUT and test equipment were configured in accordance with the requirement of ANSI C63.4 2014 clause 5.2.



#### 5.3. Power-line Conducted Emission Limits

#### • For FCC §15.107 and ICES-003 §6.1

Frequency Range	Class A	A Limits	Class B Limits		
(MHz)	Quasi Peak	Average	Quasi Peak	Average	
	dB(μV)	dB(μV)	dB(μV)	dB(μV)	
0.15 – 0.50	79	66	66 – 56*	56 – 46*	
0.50 - 5.0	72	60	56	46	
5.0 – 30	13	00	60	50	

Note: \* Decreases with the logarithm of the frequency.



#### 5.4. Measurement Procedure

The power-line conducted emission measurement was performed in accordance with the procedure of ANSI C63.4 2014 clause 7.3.

- Setup the EUT and associated equipment described as section 4.1, and they were located 40cm from the vertical conducting plane.
- Connect the EUT power cord to the main A.M.N and associated equipment to the second A.M.N. All ports of the A.M.N not connecting to the measuring equipment was terminated into 50 ohm resistive load.
- Setup the resolution bandwidth of the test receiver at 9kHz (while testing within 0.15 to 30MHz).
- Operate the EUT system as described in section 4.2.
- Both sides of A.C. line were checked for maximum conducted interference. In order to find the maximum emission, all of the interconnecting cables were manipulated.
- For the exploratory measurement, determine the highest emission amplitude relative to the limit on each of the EUT power cord with the peak detector by each of the EUT operation over the specified frequency range and record it.
- For final measurement, select the EUT operation mode that produced the highest amplitude in the exploratory measurement to determine the highest emissions with each specified detector and record it. All of the current-carrying conductors of each of the EUT power cords, except the ground conductor, must be measured over the specified frequency range.
- The measurement result was calculated by following formula: Emission Level = Reading (Receiver) + Factor (A.M.N) + Cable Loss + Pulse Limiter
- If the average limit is met when using a Quasi-Peak detector receiver, the EUT is deemed to meet both limits and measurement with the average detector is unnecessary.



#### 5.5. Measurement Result

Test Phase	Neutral	Test Result	Pass
Test Mode	Mode #1, Full System		



	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBµV)	E⊯ission Level (dBµV)	Limits (dBµV)	Margin (dB)	Remark
1	0.156	10.15	0.03	9.86	7.41	27.45	55.65	28.20	Average
2	0.156	10.15	0.03	9.86	22.48	42.52	65.65	23.13	QP
3	0.200	10.12	0.03	9.85	19.99	39.99	53.62	13.63	Average
4	0.200	10.12	0.03	9.85	22.90	42.90	63.62	20.72	QP
5	0.296	10.06	0.04	9.86	23.18	43.14	50.37	7.23	Average
6	0.296	10.06	0.04	9.86	24.94	44.90	60.37	15.47	QP
7	0.505	10.01	0.04	9.86	9.08	28.99	46.00	17.01	Average
8	0.505	10.01	0.04	9.86	16.62	36.53	56.00	19.47	QP
9	4.292	10.17	0.11	9.88	5.45	25.61	46.00	20.39	Average
10	4.292	10.17	0.11	9.88	16.68	36.84	56.00	19.16	QP
11	10.397	10.84	0.18	9.92	7.59	28.53	50.00	21.47	Average
12	10.397	10.84	0.18	9.92	17.96	38.90	60.00	21.10	QP

Remarks: 1. Emission Level= AMN Factor + Cable Loss + Pulse Att. + Reading.

 If the average limit is met when using a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.



Test Phase	Line	Test Result	Pass
Test Mode	Mode #1, Full System		



	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBµV)	E⊞ission Level (dBµV)	Limits (dBµV)	Margin (dB)	Remark
1	0.152	10.15	0.03	9.86	6.34	26.38	55.87	29.49	Average
2	0.152	10.15	0.03	9.86	23.86	43.90	65.87	21.97	QP
3	0.200	10.11	0.03	9.85	17.70	37.69	53.62	15.93	Average
4	0.200	10.11	0.03	9.85	23.16	43.15	63.62	20.47	QP
5	0.291	10.06	0.04	9.86	8.55	28.51	50.50	21.99	Average
6	0.291	10.06	0.04	9.86	18.85	38.81	60.50	21.69	QP
7	0.899	9.98	0.05	9.86	5.95	25.84	46.00	20.16	Average
8	0.899	9.98	0.05	9.86	12.06	31.95	56.00	24.05	QP
9	2.285	10.03	0.08	9.87	3.93	23.91	46.00	22.09	Average
10	2.285	10.03	0.08	9.87	14.50	34.48	56.00	21.52	QP
11	9.966	10.53	0.18	9.92	6.60	27.23	50.00	22.77	Average
12	9.966	10.53	0.18	9.92	14.98	35.61	60.00	24.39	QP

Remarks: 1. Emission Level= AMN Factor + Cable Loss + Pulse Att. + Reading.

If the average limit is met when using a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement

with average detector is unnecessary.



Test Phase	Neutral	Test Result	Pass
Test Mode	Mode #9, Full System		



	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBµV)	Emission Level (dBµV)	Limits (dBµV)	Margin (dB)	Remark
1	0.156	10.15	0.03	9.86	13.20	33.24	55.65	22.41	Average
2	0.156	10.15	0.03	9.86	31.02	51.06	65.65	14.59	QP
3	0.172	10.14	0.03	9.86	17.58	37.61	54.86	17.25	Average
4	0.172	10.14	0.03	9.86	29.20	49.23	64.86	15.63	QP
5	0.476	10.01	0.04	9.86	2.04	21.95	46.41	24.46	Average
6	0.476	10.01	0.04	9.86	14.42	34.33	56.41	22.08	QP
7	0.705	10.00	0.05	9.86	2.43	22.34	46.00	23.66	Average
8	0.705	10.00	0.05	9.86	12.41	32.32	56.00	23.68	QP
9	2.178	10.02	0.08	9.87	0.51	20.48	46.00	25.52	Average
10	2.178	10.02	0.08	9.87	9.24	29.21	56.00	26.79	QP
11	15.885	11.94	0.21	9.94	3.72	25.81	50.00	24.19	Average
12	15.885	11.94	0.21	9.94	9.65	31.74	60.00	28.26	QP

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





Test Phase	Line	Test Result	Pass
Test Mode	Mode #9, Full System		



	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBµV)	Ewission Level (dBµV)	Limits (dBµV)	Margin (dB)	Remark
1	0.150	10.15	0.03	9.86	13.03	33.07	55.99	22.92	Average
2	0.150	10.15	0.03	9.86	31.02	51.06	65.99	14.93	QP
3	0.181	10.12	0.03	9.85	15.57	35.57	54.46	18.89	Average
4	0.181	10.12	0.03	9.85	26.21	46.21	64.46	18.25	QP
5	0.365	10.02	0.04	9.86	3.21	23.13	48.61	25.48	Average
6	0.365	10.02	0.04	9.86	16.52	36.44	58.61	22.17	QP
7	0.595	10.00	0.04	9.86	2.26	22.16	46.00	23.84	Average
8	0.595	10.00	0.04	9.86	11.42	31.32	56.00	24.68	QP
9	4.647	10.17	0.12	9.89	1.29	21.47	46.00	24.53	Average
10	4.647	10.17	0.12	9.89	7.50	27.68	56.00	28.32	QP
11	13.337	11.01	0.20	9.93	4.51	25.65	50.00	24.35	Average
12	13.337	11.01	0.20	9.93	10.57	31.71	60.00	28.29	QP

Remarks: 1. Emission Level= AMN Factor + Cable Loss + Pulse Att. + Reading.

If the average limit is met when using a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement

with average detector is unnecessary.



## 6. Measurement of Radiated Emissions

#### 6.1. List of Test Instruments

• For measurement of 30 to 1000MHz frequency range

Item	Equipment	Manufacture	Model No.	Serial No.	Cal. Date	Cal. Due
1	Spectrum Analyzer	Agilent	N9010A-503	MY51120074	2020. 11. 19	2021. 11. 18
2	Test Receiver	R&S	ESCS30	100337	2020. 05. 06	2021. 05. 05
3	Bilog Antenna	Schaffner	CBL6112B	2818	2020. 01. 17	2021.01.16
4	Amplifier	HP	8447D	2727A05737	2020. 01. 05	2021.01.04
5	Signal Cable	HUBER+SUHNER	RG217U	RE-07	2020. 01. 31	2021.01.30
6	Digital Ther- mo-Hygro Meter	iMax	HTC-1	No.6 O/S	2020. 04. 17	2021. 04. 16
7	Test Software	Audix	e3	V.5.04507	N.C.R.	N.C.R.

#### • For measurement of above 1GHz frequency range

Item	Equipment	Manufacture	Model No.	Serial No.	Cal. Date	Cal. Due
1	Spectrum Analyzer	Keysight	N9010B-526	MY57410128	2020.01.02	2021.01.01
2	Amplifier	Agilent	8449B	3008A02681	2020.03.20	2021.03.19
3	Horn Antenna	ETS-Lindgren	3117	00227045	2020.03.10	2021.03.09
4	Notch Filter	K&L	7NSL10-2441.5/ E130.5-O/O	3	NCR	NCR
5	Band-Pass Filter	Microwave	H3G018G1	484798	NCR	NCR
6	5GHz Notch Filter	Microware	N0555983	459481	2020.05.06	2021.05.05
7	5GHz Notch Filter	Microwave	N0452502	439485	NCR	NCR
8	Digital Thermo- Hygro Meter	WISEWIND	5330	No.2 3m A/C	2020.04.17	2021.04.16
9	Signal Cable	HUBER+ SUHNER	SUCOFLEX 104	RE-15	2020.01.31	2021.01.30
10	Test Software	Audix	e3	V6.2009-10-22	N.C.R.	N.C.R.



#### 6.2. Test Setup

The EUT and test equipment were configured in accordance with the requirement of ANSI C63.4-2014 clause 5.4. and 5.5.

• For frequency range 30 to 1000MHz (at Open Area Test Site)



• For frequency range 30 to 1000MHz (at Semi-Anechoic Chamber)



For frequency range above 1GHz (at Semi-Anechoic Chamber)





#### 6.3. Radiation Emission Limits

For Below 1GHz, FCC §15.109(a)(g)/CISPR 22 and ICES-003 §6.2

	Distance	Class A Limits	Class B Limits
(MH <sub>7</sub> )	(meter)	Quasi-Peak	Quasi-Peak
	(meter)	[dB(µV/m)]	[dB(µV/m)]
30 – 230	10	40	30
230 – 1000	10	47	37
30 – 230	2	50	40
230 – 1000	3	57	47

For Above 1GHz, FCC §15.109(a)(g)/CISPR 22 and ICES-003 §6.2

Eroquonov Pango	Distance	Class A	A Limits	Class E	3 Limits
(MH <sub>7</sub> )	(meter)	Peak	Average	Peak	Average
		$[dB(\mu V/m)]$	[dB(µV/m)]	$[dB(\mu V/m)]$	$[dB(\mu V/m)]$
Above 1000	3	79.54	59.54	73.98	53.98

The tighter limit applies at the edge between two frequency bands.

Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the E.U.T.

- The limits from 30 to 1000MHz are referred to CISPR 22 standard, which are in accordance with the requirement of FCC Part 15.38 (b)(3) 
  Part 15.109 (a)(g) and ICES-003 section 5(a)(i).
- The limits above 1GHz are referred to FCC Part 15.109(a)

#### Required highest frequency for radiated measurement

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30
1.705 – 108	1000
108 – 500	2000
500 – 1000	5000
Above 1000	5th harmonic of the highest fre- quency or 40 GHz, whichever is lower.



#### 6.4. Measurement Procedure

The radiated emission measurement was performed in accordance with the procedure of the ANSI C63.4 2014 clause 8.3.

- The EUT and peripherals were placed on the rotatable non-conduction table, which is 0.8meters above the ground reference plane at the semi-anechoic chamber or OATS as described in section 4.1 and 6.2.
- The measurement distance is set as specified in section 6.3. The specified distance is between the horizontal projection onto the ground plane of the closest periphery of the EUT and the projection onto the ground plane of the center of the axis of the elements of the receiving antenna.
- The resolution bandwidth of the test receiver was at 120kHz (testing from 30 to 1000MHz) or 1MHz (testing above 1000MHz).
- Operate the EUT system as described in section 4.2.
- For the exploratory measurement, determine the highest emission amplitude relative to the limit on each of antenna polarization with the peak detector by each of the EUT operations over the specified frequency range and record it.
- For final measurement, select the EUT operation mode that produced the highest amplitude in the exploratory measurement to determine the highest emissions with each specified detector and record it.
- In order to determine the maximum emission level, must rotate the table in 360 degree and move the receiving antenna between 1~4m height above the ground reference plane.
- In order to find the maximum emission, all of the interconnecting cables were manipulated, except for the bundled cable.
- Both polarizations of receiving antenna were determined.
- The measurement result was calculated by following formulas:

(30 – 1000MHz) Emission Level = Reading (Receiver) + Cable Loss+ Antenna Factor – Preamp Gain (Above 1GHz)

Emission Level = Reading (Spectrum) + Cable Loss+ Antenna Factor – Preamp Gain

• The 3dB bandwidth of the horn antenna is minimum 22 degree (or w=1.17m at 3m distance) for 1~18 GHz.



#### 6.5. Measurement Result

#### For frequency range 30 – 1000MHz

Ant. Polarity	Horizontal	Test Result	Pass
Test Mode	Mode #1, Full System		



	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBµV)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Remark
1	74.581	12.55	1.18	8.68	22.41	30.00	7.59	QP
2	166.644	15.42	2.01	5.88	23.31	30.00	6.69	QP
3	217.479	16.13	2.30	3.60	22.03	30.00	7.97	QP
4	297.452	18.91	2.61	8.68	30.20	37.00	6.80	QP
5	428.861	22.07	3.21	3.53	28.81	37.00	8.19	QP
6	891.451	26.38	4.98	1.34	32.69	37.00	4.31	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.



Test Mode

: Mode 1

Ant. Polarity	Vertical	Test Result	Pass
Test Mode	Mode #1, Full System		



	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBµV)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Remark
1	66.073	12.26	1.10	8.98	22.35	30.00	7.65	QP
2	142.894	16.69	1.77	3.67	22.13	30.00	7.87	QP
3	223.150	16.46	2.32	4.89	23.68	30.00	6.32	QP
4	297.581	18.91	2.61	9.68	31.20	37.00	5.80	QP
5	487.700	23.16	3.47	3.10	29.73	37.00	7.27	QP
6	890.581	26.38	4.97	0.68	32.03	37.00	4.97	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.



Ant. Polarity	Horizontal	Test Result	Pass
Test Mode	Mode #9, Full System		



Test	Mode	: Mo	de 9							
	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBµV)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Remark		
1	60.399	12.20	1.05	9.29	22.55	30.00	7.45	QP		
2	131.738	17.29	1.67	4.86	23.82	30.00	6.18	QP		

3	158.097	15.82	1.92	3.52	21.26	30.00	8.74	QP	
4	297.510	18.91	2.61	7.68	29.20	37.00	7.80	QP	
5	470.617	22.86	3.39	3.65	29.90	37.00	7.10	QP	
6	890.950	26.38	4.98	0.85	32.20	37.00	4.80	QP	

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.



Ant. Polarity	Vertical	Test Result	Pass
Test Mode	Mode #9, Full System		



	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBµV)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Remark
1	48.729	14.40	0.93	7.48	22.82	30.00	7.18	QP
2	122.835	17.78	1.60	3.32	22.69	30.00	7.31	QP
3	184.980	14.88	2.18	6.13	23.19	30.00	6.81	QP
4	296.746	18.91	2.61	9.41	30.93	37.00	6.07	QP
5	584.995	24.41	3.87	0.30	28.58	37.00	8.42	QP
6	891.581	26.38	4.98	0.46	31.81	37.00	5.19	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.



#### • For frequency range above 1GHz

Ant. Polarity	Horizontal	Test Result	Pass
Test Mode	Mode #1, Full System		



		Ant.	Cable	Preamp		Emission				
	Freq. (MHz)	Freq. (MHz)	Factor (dB/m)	Loss (dB)	Gain (dB)	Reading (dBµV)	Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Remark
1	1022.520	27.46	3.98	36.31	39.61	34.74	53.98	19.24	Average	
2	1025.000	27.54	3.98	36.31	55.31	50.52	73.98	23.46	Peak	
3	1170.000	28.38	4.24	36.11	50.66	47.17	73.98	26.81	Peak	
4	1171.140	28.39	4.24	36.11	39.35	35.87	53.98	18.11	Average	
5	1450.000	27.80	4.59	35.78	50.17	46.78	73.98	27.20	Peak	
6	1452.440	27.80	4.59	35.78	40.10	36.71	53.98	17.27	Average	



Ant. Polarity	Vertical	Test Result	Pass
Test Mode	Mode #1, Full System		



		Ant.	Cable	Preamp		Emission			
	Freq. (MHz)	Factor (dB/m)	Loss (dB)	Gain (dB)	Reading (dBµV)	Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Remark
1	1245.000	28.22	4.30	36.01	53.96	50.47	73.98	23.51	Peak
2	1246.440	28.22	4.30	36.01	38.56	35.07	53.98	18.91	Average
3	1465.000	27.77	4.59	35.76	51.90	48.50	73.98	25.48	Peak
4	1468.220	27.76	4.66	35.76	41.24	37.90	53.98	16.08	Average
5	2695.000	32.10	6.58	35.75	46.37	49.30	73.98	24.68	Peak
6	2698.780	32.10	6.58	35.75	35.34	38.27	53.98	15.71	Average



Ant. Polarity	Horizontal	Test Result	Pass
Test Mode	Mode #9, Full System		



		Ant.	Cable	Preamp		Emission	1		
	Freq. (MHz)	Factor (dB/m)	Loss (dB)	Gain (dB)	Reading (dBµV)	Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Remark
1	1024.110	27.46	3.98	36.31	38.85	33.98	53.98	20.00	Average
2	1025.000	27.54	3.98	36.31	54.83	50.04	73.98	23.94	Peak
3	1544.860	28.45	4.81	35.71	36.42	33.97	53.98	20.01	Average
4	1545.000	28.52	4.81	35.71	49.49	47.11	73.98	26.87	Peak
5	2695.000	32.10	6.58	35.75	46.18	49.11	73.98	24.87	Peak
6	2699.440	32.10	6.58	35.75	34.60	37.53	53.98	16.45	Average



Ant. Polarity	Vertical	Test Result	Pass
Test Mode	Mode #9, Full System		



		Ant.	Cable	Preamp		Emission			
	Freq. (MHz)	Factor (dB/m)	Loss (dB)	Gain (dB)	Reading (dBµV)	Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Remark
1	1248.270	28.20	4.30	36.01	37.31	33.80	53.98	20.18	Average
2	1250.000	28.20	4.30	36.01	53.75	50.24	73.98	23.74	Peak
3	1535.000	28.30	4.77	35.71	50.89	48.25	73.98	25.73	Peak
4	1537.840	28.38	4.77	35.71	38.63	36.07	53.98	17.91	Average
5	2688.630	32.10	6.56	35.74	34.36	37.28	53.98	16.70	Average
6	2690.000	32.10	6.56	35.74	46.16	49.08	73.98	24.90	Peak



## 7. Measurement Uncertainty List

The measurement uncertainty was estimated for test on the EUT according to CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage of K=2.

The uncertainties value is not used in determining the PASS/FAIL results.

Test Items/Facilities	Frequency/Equipment/Unit	Uncertainty
Conducted emissions	9kHz-150kHz	±3.7dB
at AC mains power port	150kHz-30MHz	±3.5dB
Conducted emissions at wired network port	150kHz-30MHz	±3.5dB
Conducted emissions at broadcast receiver tuner port	150kHz-30MHz	±3.5dB
Conducted emissions Power Clamp (No. 7 Shielded Room)	30MHz-300MHz	±4.4dB
Conducted emissions Power Clamp (No. 8 Shielded Room)	30MHz-300MHz	±4.4dB
Radiated, magnetic field (Triple-Loop Antenna)	9kHz-30MHz	±0.5dB
Padiated magnetic field (Leon Antonna)	9kHz-150kHz	±3.1dB
Radiated, magnetic field (Loop Antenna)	150kHz-30MHz	±3.0dB
	30MHz-200MHz, 3m, Horizontal	±4.3dB
	200MHz-1000MHz, 3m, Horizontal	±4.1dB
	30MHz-200MHz, 3m, Vertical	±4.3dB
	200MHz-1000MHz, 3m, Vertical	±4.2dB
Radiated emissions	30MHz-200MHz, 10m, Horizontal	±4.3dB
(No.1 10m Semi Anechoic Chamber)	200MHz-1000MHz, 10m, Horizontal	±3.9dB
	30MHz-200MHz, 10m, Vertical	±4.3dB
	200MHz-1000MHz, 10m, Vertical	±3.9dB
	1GHz-6GHz, 3m	±4.1dB
	6GHz-18GHz, 3m	±4.4dB
	30MHz-200MHz, 3m, Horizontal	±4.3dB
	200MHz-1000MHz, 3m, Horizontal	±4.2dB
	30MHz-200MHz, 3m, Vertical	±4.1dB
	200MHz-1000MHz, 3m, Vertical	±4.4dB
Radiated emissions	30MHz-200MHz, 10m, Horizontal	±4.3dB
(No.2 10m Semi Anechoic Chamber)	200MHz-1000MHz, 10m, Horizontal	±4.0dB
	30MHz-200MHz, 10m, Vertical	±4.1dB
	200MHz-1000MHz, 10m, Vertical	±4.1dB
	1GHz-6GHz, 3m	±4.2dB
	6GHz-18GHz, 3m	±4.4dB



Test Items/Facilities	Frequency/Equipment/Unit	Uncertainty
	30MHz-200MHz, 3m, Horizontal	±4.1dB
	200MHz-1000MHz, 3m, Horizontal	±3.9dB
Radiated emissions	30MHz-200MHz, 3m, Vertical	±4.2dB
(No.1 3m Semi Anechoic Chamber)	200MHz-1000MHz, 3m, Vertical	±4.1dB
	1GHz-6GHz, 3m	±4.2dB
	6GHz-18GHz, 3m	±4.6dB
	30MHz-200MHz, 3m, Horizontal	±3.7dB
	200MHz-1000MHz, 3m, Horizontal	±4.0dB
Radiated emissions	30MHz-200MHz, 3m, Vertical	±4.2dB
(No.2 3m Semi Anechoic Chamber)	200MHz-1000MHz, 3m, Vertical	±4.5dB
	1GHz-6GHz, 3m	±4.3dB
	6GHz-18GHz, 3m	±4.7dB
	30MHz-200MHz, 3m, Horizontal	±3.9dB
Radiated emissions	200MHz-1000MHz, 3m, Horizontal	±3.9dB
(No.3 3m Semi Anechoic Chamber)	30MHz-200MHz, 3m, Vertical	±4.4dB
	200MHz-1000MHz, 3m, Vertical	±4.1dB
	30MHz-200MHz, 3m, Horizontal	±4.3dB
	200MHz-1000MHz, 3m, Horizontal	±4.0dB
Radiated emissions	30MHz-200MHz, 3m, Vertical	±4.3dB
(No.4 3m Semi Anechoic Chamber)	200MHz-1000MHz, 3m, Vertical	±4.4dB
	1GHz-6GHz, 3m	±4.5dB
	6GHz-18GHz, 3m	±4.6dB
	30MHz-200MHz, 3m, Horizontal	±4.0dB
	200MHz-1000MHz, 3m, Horizontal	±3.9dB
Radiated emissions	30MHz-200MHz, 3m, Vertical	±4.2dB
(No.5 3m Semi Anechoic Chamber)	200MHz-1000MHz, 3m, Vertical	±4.3dB
	1GHz-6GHz, 3m	±4.3dB
	6GHz-18GHz, 3m	±4.7dB



Test Items/Facilities	Frequency/Equipment/Unit	Uncertainty
	30MHz-200MHz, 3m, Horizontal	±4.4dB
	200MHz-1000MHz, 3m, Horizontal	±4.2dB
	30MHz-200MHz, 3m, Vertical	±4.2dB
Radiated emissions	200MHz-1000MHz, 3m, Vertical	±4.4dB
(No.3 Open Area Test Site)	30MHz-200MHz, 10m, Horizontal	±4.4dB
	200MHz-1000MHz, 10m, Horizontal	±4.0dB
	30MHz-200MHz, 10m, Vertical	±4.2dB
	200MHz-1000MHz, 10m, Vertical	±4.2dB
	30MHz-200MHz, 3m, Horizontal	±4.3dB
	200MHz-1000MHz, 3m, Horizontal	±4.4dB
	30MHz-200MHz, 3m, Vertical	±4.4dB
Radiated emissions	200MHz-1000MHz, 3m, Vertical	±4.9dB
(No.5 Open Area Test Site)	30MHz-200MHz, 10m, Horizontal	±4.3dB
	200MHz-1000MHz, 10m, Horizontal	±4.2dB
	30MHz-200MHz, 10m, Vertical	±4.4dB
	200MHz-1000MHz, 10m, Vertical	±4.7dB
	30MHz-200MHz, 3m, Horizontal	±3.6dB
	200MHz-1000MHz, 3m, Horizontal	±4.4dB
	30MHz-200MHz, 3m, Vertical	±4.0dB
Radiated emissions	200MHz-1000MHz, 3m, Vertical	±4.2dB
(No.6 Open Area Test Site)	30MHz-200MHz, 10m, Horizontal	±3.6dB
	200MHz-1000MHz, 10m, Horizontal	±4.2dB
	30MHz-200MHz, 10m, Vertical	±4.0dB
	200MHz-1000MHz, 10m, Vertical	±4.0dB
	30MHz-200MHz, 3m, Horizontal	±3.6dB
	200MHz-1000MHz, 3m, Horizontal	±4.5dB
	30MHz-200MHz, 3m, Vertical	±4.3dB
Radiated emissions	200MHz-1000MHz, 3m, Vertical	±4.7dB
(No.7 Open Area Test Site)	30MHz-200MHz, 10m, Horizontal	±3.6dB
	200MHz-1000MHz, 10m, Horizontal	±4.3dB
	30MHz-200MHz, 10m, Vertical	±4.3dB
	200MHz-1000MHz, 10m, Vertical	±4.5dB
	30MHz-200MHz, 3m, Horizontal	±3.8dB
	200MHz-1000MHz, 3m, Horizontal	±4.2dB
	30MHz-200MHz, 3m, Vertical	±4.5dB
Radiated emissions	200MHz-1000MHz, 3m, Vertical	±4.3dB
(No.8 Open Area Test Site)	30MHz-200MHz, 10m, Horizontal	±3.7dB
	200MHz-1000MHz, 10m, Horizontal	±4.0dB
	30MHz-200MHz, 10m, Vertical	±4.5dB
	200MHz-1000MHz, 10m, Vertical	±4.1dB



# APPENDIX I (Lab. Certificate)





Certificate No. : L1724-181116

財團法人全國認證基金會 Taiwan Accreditation Foundation

## **Certificate of Accreditation**

This is to certify that

### Audix Technology Corporation EMC Department

No.53-11, Dingfu, Linkou Dist., New Taipei City 244, Taiwan (R.O.C.)

#### is accredited in respect of laboratory

Accreditation Criteria	:	ISO/IEC 17025:2005
Accreditation Number	:	1724
<b>Originally Accredited</b>	:	November 27, 2006
Effective Period	:	November 27, 2018 to November 26, 2021
Accredited Scope	:	Testing Field, see described in the Appendix
Specific Accreditation Program	:	Accreditation Program for Designated Testing Laboratory for Commodities Inspection Accreditation Program for Communication Equipment Laboratories Accreditation Program for BSMI Mutual Recognition Arrangment with Foreign Authorities

Chung-Lin Wang

Chung-Lin Wang President, Taiwan Accreditation Foundation Date : November 16, 2018

P1, total 26 pages





2019-12-13 through 2020-12-31

Effective Dates



For the National Voluntary Laboratory Accreditation Program



# APPENDIX II

# (Test Photographs)