

ETSI EN 300 328
OUTPUT POWER & SPURIOUS EMISSIONS TEST REPORT

For

Intel Corporation

Intel® NUC

Model Name: NUC7i3BNK

Family Product Code: xNUC7xBNKx

(Where x may be a combination of alphanumeric characters or blank)

Brand: Intel®

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File Number	:	C1M1611096
Report Number	:	EM-RF160276
Date of Test	:	2016. 11. 25
Date of Report	:	2016. 11. 29

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APPENDIX I (Lab Certificates)

APPENDIX II (Photos of EUT)

TEST REPORT VERIFICATION

Applicant : Intel Corporation
EUT Description : Intel® NUC
(A) Model Name : NUC7i3BNK
(B) Family Product Code : xNUC7xBNKx
(Where x may be a combination of alphanumeric characters or blank)
(C) Serial Number : G6BN6470001E
(D) Brand Name : Intel®
(E) Power Supply : DC 19V
(F) Test Voltage : AC 230V, 50Hz (Via AC Adapter)

Measurement Standards Used:

ETSI EN 300 328 V.1.9.1:2015-02

The device described above is tested by AUDIX Technology Corporation. The measurement results were contained in this test report and AUDIX Technology Corporation was assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT to be technically compliance with the ETSI EN 300 328 requirements.

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

Date of Test: 2016. 11. 25

Date of Report: 2016. 11. 29

Producer: 
(Eva Chen/Assistant Administrator)

Signatory: 
(Ben Cheng/Manager)

1. DESCRIPTION OF REVISION HISTORY

Edition No.	Date of Rev.	Revision Summary	Report No.
0	2016. 11. 29	Original Report	EM-RF160276

2. SUMMARY OF MEASUREMENTS AND RESULTS

2.1. Compliance with ETSI EN 300 328

CLAUSE (ETSI 300 328)	TEST ITEM	RESULTS
Technical Requirements for Frequency Hopping Equipment		
4.3.1.2	RF Output Power	PASS
4.3.1.10	Transmitter Unwanted Emissions in the Spurious Domain	PASS
4.3.1.11	Receiver Spurious Emissions	PASS
Technical Requirements for other types of Wide Band Modulation		
4.3.2.2	RF Output Power	PASS
4.3.2.9	Transmitter Unwanted Emission in the Spurious Domain	PASS
4.3.2.10	Receiver Spurious Emissions	PASS
Note: This device is embedded with WLAN Combo Card and it has been assessed according to article 3.2 of the R&TTE Directive 1999/5/EC, pursuant to ETSI TR 102 070-2 that we make assessment there is no change on hardware, thus spurious emission is sufficient for demonstrating this device is in compliance with article 3.2 of the R&TTE Directive 1999/5/EC.		

3. GENERAL INFORMATION

3.1. Description of Device (EUT)

Product	Intel® NUC
Model Name	NUC7i3BNK
Family Product Code	xNUC7xBNKx (Where x may be a combination of alphanumeric characters or blank)
Serial Number	G6BN6470001E
Firmware Version	BN0025
Brand Name	Intel®
Applicant	Intel Corporation 2200 Mission College Blvd, Santa Clara, CA 95054, USA
The Equipment type	802.11a/b/g/n/ac +BT2.1(BDR/EDR) + BT4.2(BLE)
Fundamental Range	2.4GHz: 802.11b/g/n-HT20: 2412MHz ~ 2472MHz 802.11n-HT40: 2422MHz ~ 2462MHz 5GHz: UNII Band I: 802.11a/n-HT20/ac-VHT20: 5180MHz ~ 5240MHz 802.11n-HT40/ac-VHT40: 5190MHz ~ 5230MHz 802.11ac-VHT80: 5210MHz UNII Band II: 802.11a/n-HT20/ac-VHT20: 5260Hz ~ 5320MHz 802.11n-HT40/ac-VHT40: 5270MHz ~ 5310MHz 802.11ac-VHT80: 5290MHz UNII Band III: 802.11a/n-HT20/ac-VHT20: 5500MHz ~ 5700MHz 802.11n-HT40/ac-VHT40: 5510MHz ~ 5670MHz 802.11ac-VHT80: 5530MHz ~ 5610MHz UNII Band IV: 802.11a/n-HT20/ac-VHT20: 5745MHz ~ 5825MHz 802.11n-HT40/ac-VHT40: 5755MHz ~ 5795MHz 802.11ac-VHT80: 5775MHz Bluetooth and BLE: 2402MHz ~ 2480MHz

Frequency Channel	2.4GHz: 802.11b/g/n-HT20: 13 channels 802.11n-HT40: 9 channels 5GHz: UNII Band I: 802.11a/n-HT20/ac-VHT20: 4 channels 802.11n-HT40/ac-VHT40: 2 channels 802.11ac-VHT80: 1 channel UNII Band II: 802.11a/n-HT20/ac-VHT20: 4 channels 802.11n-HT40/ac-VHT40: 2 channels 802.11ac-VHT80: 1 channel UNII Band III: 802.11a/n-HT20/ac-VHT20: 11 channels 802.11n-HT40/ac-VHT40: 5 channels 802.11ac-VHT80: 2 channel UNII Band IV: 802.11a/n-HT20/ac-VHT20: 5 channels 802.11n-HT40/ac-VHT40: 2 channels 802.11ac-VHT80: 1 channel Bluetooth: 79 channels BLE: 40 channels
Radio Technology	802.11b: DSSS Modulation (DBPSK/DQPSK/CCK) 802.11g: OFDM Modulation (BPSK/QPSK/16QAM/64QAM) 802.11a: OFDM Modulation (BPSK/QPSK/16QAM/64QAM) 802.11n: OFDM Modulation (BPSK/QPSK/16QAM/64QAM) 802.11ac: OFDM Modulation (BPSK/QPSK/16QAM/64QAM) Bluetooth: FHSS (GFSK, $\pi/4$ DQPSK, 8-DPSK) BLE: GFSK
Data Transfer Rate	802.11b: 1/2/5.5/11Mbps 802.11g: 6/9/12/18/24/36/48/54Mbps 802.11a: up to 54Mbps 802.11n: up to 150Mbps 802.11ac: up to 433Mbps BT: 1/2/3Mbps BLE: 1Mbps
Antenna Type	PIFA Antenna
Antenna Gain	Main: 2.4G WLAN: -2.67dBi 5G WLAN: UNII Band I:0.69dBi UNII Band II :0.69dBi UNII Band III: 1.70dBi UNII Band IV: 1.51dBi AUX: BT: -2.67dBi
Power Supply Rating	Refer to AC adapter rating.
Date of Receipt of Sample	2016. 11. 08
Sample Status	Mass-production
Interface Ports of EUT	Type C Port (Including Thunderbolt) x1 HDMI Port x1 USB 3.0 Ports x3 (Front x1, Back x2) USB Port x1 (Front x1) SPK/MIC/Audio Port x1 RJ45 Ethernet Port x1 (10/100/1000Mbps) SD Slot x1 DC In x1

3.2. Modification Record

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

3.3. Descriptions of Key Components and Operating Modes

3.3.1. For the All Component Lists

Item	Supplier	Model / Type	Character
Mother Board	Intel	NUC7i3BNB	AA#: J22859-300 S/N: GEBN64000BJ9
CPU (BGA1356)	Intel	I3-7100U	2.4GHz
M.2 SSD	Micron	CT250MX200SSD4	250GB, M.2(2280)-SATA
	ADATA	ASP900NS38-256GM-C	256GB, M.2(2280)-SATA
	Intel	SSDSCKKR180H6XN	180GB, M.2(2280)-SATA
	Intel	SSDSCKKF010X6	1TB, M.2(2280)-SATA
	Liteon	L8T-256L9G	256GB, M.2(2280)-SATA
	Liteon	LGT-256B1P	256GB, M.2(2280)-SATA
	Kingston	SHPM2280P2	240GB, M.2(2280)-SATA
	SAMSUNG	MZVPV512HDGL-00000	512GB, M.2(2280)-SATA
	Toshiba	THNSN5256GPU7	256GB, M.2(2280)-SATA
	Transcend	TS256GMTS800	256GB, M.2(2280)-SATA
Memory	Transcend	TS2GSH64V1B	16GB, DDR4-2133MHz
	Samsung	M471A2K43BB0-CPB	16GB, DDR4-2133MHz
	ADATA	AD4S2400316G17-B	16GB, DDR4-2400MHz
	Samsung	M471A2K43BB1-CRC	16GB, DDR4-2400MHz
	Transcend	TS2GSH64V4B	16GB, DDR4-2400MHz
WLAN Combo Card	Intel	8265D2W	802.11 a/b/g/n/ac + BT 4.2 + BLE FCC ID: PD98265D2
Antenna	Linking	T-543-9291126-1	Main, PIFA Antenna
		T-543-9291126-2	AUX, PIFA Antenna
AC Adapter (Wall-mount, 2C)	FSP	FSP065-10AABA	I/P: 100-240Vac, 50-60Hz, 1.5A. O/P: 19Vdc, 3.43A, 65W max

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

3.3.2. The EUT collocates with following worst components, which are used to establish a basic configuration of system during test:

Worst Configuration			
Component Item	Supplier	Model/Type	Specification
Mother Board	Intel	NUC7i3BNB	AA#: J22859-300 S/N: GEBN64000BJ9
CPU (BGA1356)	Intel	I3-7100U	2.4GHz
M.2 SSD	Intel	SSDSCKKF010X6	1TB, M.2(2280)-SATA
Memory	Transcend	TS2GSH64V4B	16GB, DDR4-2400MHz
WLAN Combo Card	Intel	8265D2W	802.11 a/b/g/n/ac + BT 4.2 + BLE FCC ID: PD98265D2
Antenna	Linking	T-543-9291126-1	Main, PIFA Antenna
		T-543-9291126-2	AUX, PIFA Antenna
AC Adapter	FSP	FSP065-10AABA	I/P: 100-240Vac, 50-60Hz, 1.5A. O/P: 19Vdc, 3.43A, 65W max

3.4. Tested Supporting System List

3.4.1. Support Peripheral Unit

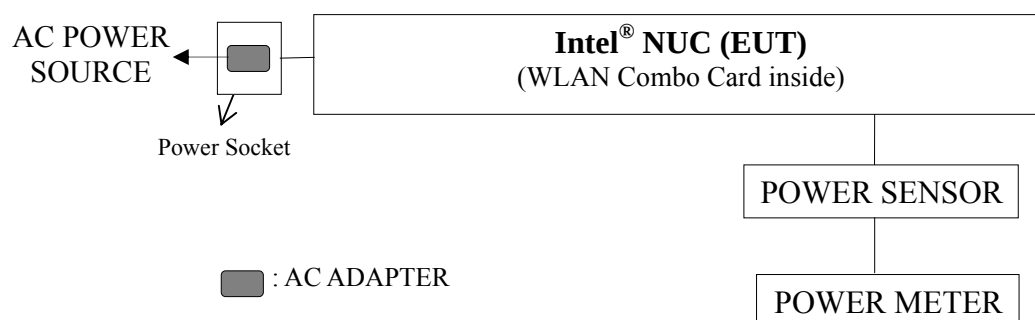
No.	Product	Brand	Model No.	Serial No.	Approval	Remarks
A	Power Socket	N/A	N/A	N/A	N/A	Provided by LAB

3.4.2. Cable Lists

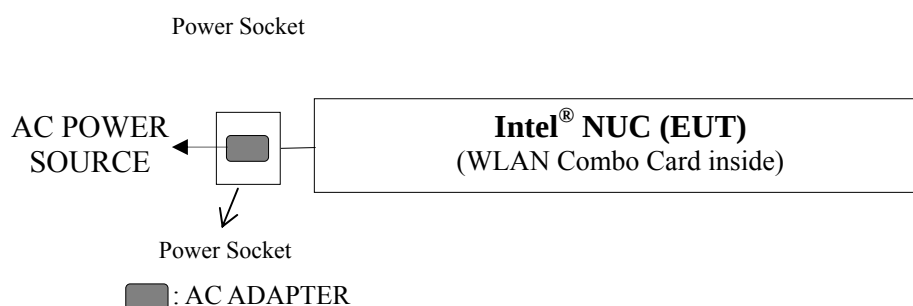
No.	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1	DC Power Cord	1	1.8	No	1	Supplied by Client
2	AC Power Cord	2	1.8	No	0	Provided by LAB

3.5. Block Diagram of Test Setup

3.5.1. Equivalent Isotropic Radiated Power (Conducted)

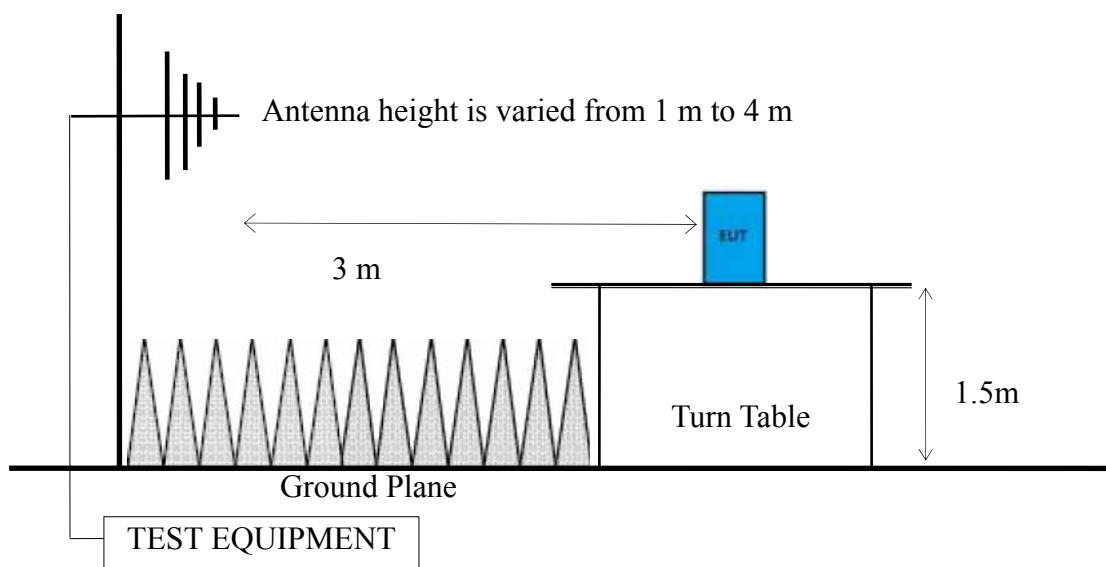


3.5.2. Spurious Emission (Radiated)

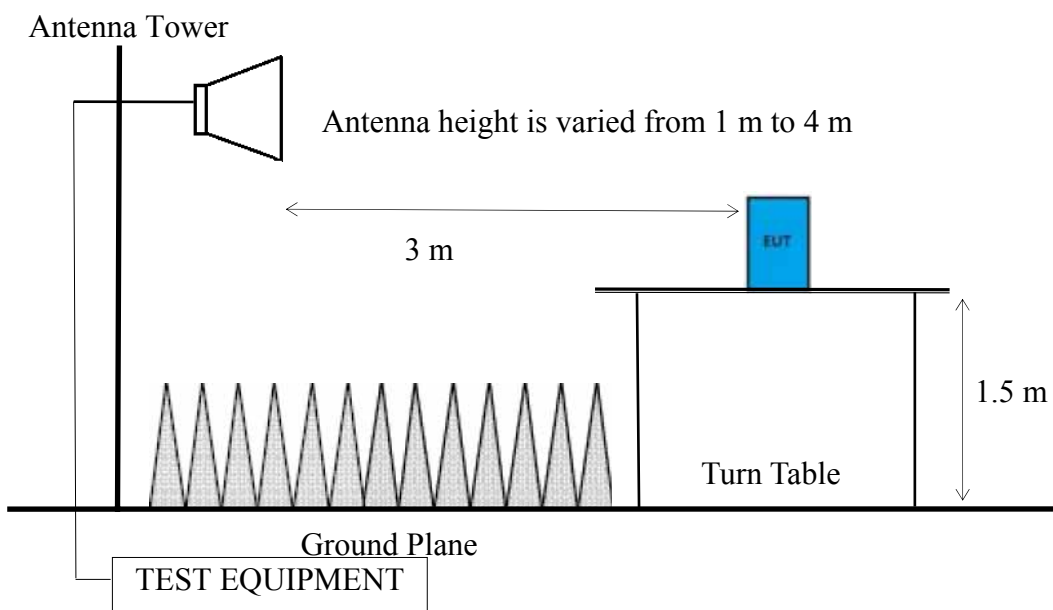


3.5.3. Fully Anechoic Chamber (3m) Setup Diagram

For 30-1000 MHz



For above 1GHz



3.6. 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: +886-2-26099301 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 TW1004 & TW1090 (4) VCCI (Japan) Member No. 0237
Test Facilities	(1) Fully Anechoic Chamber (2) RF Test Room

3.7. Measurement Uncertainty

Test Item		Uncertainty
RF Output Power		$\pm 0.34\text{dB}$
Spurious Emission (RE)	30MHz ~ 1000MHz	$\pm 0.20\text{dB}$
	Above 1GHz	$\pm 1.60\text{dB}$

Remark : Uncertainty = $k_{uc}(y)$

4. RF OUTPUT POWER MEASUREMENT

4.1. Test Equipment

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
1.	Power Meter	Anritsu	ML2487A	6K00005406	2016. 02. 18	2017. 02. 17
2.	Power Sensor	Anritsu	MA2491A	030873	2016. 02. 18	2017. 02. 17

4.2. Limit

ETSI EN 300 328, Clause 4.3.1.2.3

The maximum RF output power shall be equal to or less than 20dBm (-10dBW or 100mW) e.i.r.p. This limit shall apply for any combination of power level and intended antenna assembly.

4.3. Test Information

EUT	Intel® NUC
Test Model Number	NUC7i3BNK
Test Date:	2016. 11. 25
Ambient Temperature	23°C
Relative Humidity	58%
Test Method	ETSI EN 300 328 V.1.9.1 (See clause 5.3.2.2)
Antenna Assembly Gain	802.11b/g/n-HT20/n-HT40: -2.67dBi Bluetooth & BLE: -2.67dBi
Test Program	DRTU

4.4. Test Results

4.4.1. WLAN Function

Test Mode: 802.11b

Channel	Frequency (MHz)	Result		
		Pburst (dBm)	Antenna Gain (dBi)	EIRP (dBm)
CH 1	2412	17.41	-2.67	14.74
CH 7	2442	17.46	-2.67	14.79
CH 13	2472	17.57	-2.67	14.90

Note 1. E.I.R.P. = Pburst + Ant. Gain

2. Pburst: The highest burst power value measured in observant duration.

Test Mode: 802.11g

Channel	Frequency (MHz)	Result		
		Pburst (dBm)	Antenna Gain (dBi)	EIRP (dBm)
CH 1	2412	17.43	-2.67	14.76
CH 7	2442	17.63	-2.67	14.96
CH 13	2472	17.28	-2.67	14.61

Note 1. E.I.R.P. = Pburst + Ant. Gain

2. Pburst: The highest burst power value measured in observant duration.

Test Mode: 802.11n-HT20

Channel	Frequency (MHz)	Result		
		Pburst (dBm)	Antenna Gain (dBi)	EIRP (dBm)
CH 1	2412	17.36	-2.67	14.69
CH 7	2442	17.72	-2.67	15.05
CH 13	2472	17.48	-2.67	14.81

Note 1. E.I.R.P. = Pburst + Ant. Gain

2. Pburst: The highest burst power value measured in observant duration.

Test Mode: 802.11n-HT40

Channel	Frequency (MHz)	Result		
		Pburst (dBm)	Antenna Gain (dBi)	EIRP (dBm)
CH 3	2422	17.59	-2.67	14.92
CH 7	2442	17.38	-2.67	14.71
CH 11	2462	17.06	-2.67	14.39

Note 1. E.I.R.P. = Pburst + Ant. Gain

2. Pburst: The highest burst power value measured in observant duration.

4.4.2. Bluetooth Function

Test Mode: GFSK Modulation

Channel	Frequency (MHz)	Result		
		Pburst (dBm)	Antenna Gain (dBi)	EIRP (dBm)
CH 0	2402	8.34	-2.67	5.67
CH 39	2441	10.25	-2.67	7.58
CH 78	2480	7.84	-2.67	5.17

Note 1. E.I.R.P. = Pburst + Ant. Gain

2. Pburst: The highest burst power value measured in observant duration.

Test Mode: 8-DPSK Modulation

Channel	Frequency (MHz)	Result		
		Pburst (dBm)	Antenna Gain (dBi)	EIRP (dBm)
CH 0	2402	6.41	-2.67	3.74
CH 39	2441	7.49	-2.67	4.82
CH 78	2480	5.43	-2.67	2.76

Note 1. E.I.R.P. = Pburst + Ant. Gain

2. Pburst: The highest burst power value measured in observant duration.

4.4.3. BLE Function

Channel	Frequency (MHz)	Result		
		Pburst (dBm)	Antenna Gain (dBi)	EIRP (dBm)
CH 37	2402	4.37	-2.67	1.70
CH 17	2440	4.75	-2.67	2.08
CH 39	2480	2.42	-2.67	-0.25

Note 1. E.I.R.P. = Pburst + Ant. Gain

2. Pburst: The highest burst power value measured in observant duration.

5. TRANSMITTER SPURIOUS EMISSIONS

5.1. Test Equipments

5.1.1. For Radiated Spurious Emissions (for 30MHz-1GHz)

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
1.	Spectrum Analyzer	Agilent	E4446A	US44300366	2016. 08. 19	2017. 08. 18
2.	Amplifier	Sonoma	310N	187161	2016. 06. 14	2017. 06. 13
3.	Bilog Antenna	Schaffner	CBL6112B	2736	2016. 01. 30	2017. 01. 29
4.	Test Software	Audix	e3	V.6.110601	N.C.R.	N.C.R.

5.1.2. For Radiated Spurious Emissions (above 1GHz)

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
1.	Spectrum Analyzer	Agilent	E4446A	US44300366	2016. 08. 19	2017. 08. 18
2.	Pre-Amplifier	HP	8449B	3008A02678	2016. 03. 04	2017. 03. 03
3.	Horn Antenna	EMCO	3116	2653	2016. 10. 24	2017. 10. 23
4.	Horn Antenna	ETS-Lindgren	3117	00135902	2016. 03. 09	2017. 03. 08
5.	2.4GHz Notch Filter	K&L	7NSL10-24 41.5E130.5 -00	1	2016. 07. 27	2017. 07. 26
6.	Test Software	Audix	e3	V.6.110601	N.C.R.	N.C.R.

5.2. Limit

ETSI EN 300 328, Clause 4.3.1.10.3 and 4.3.2.9.3

Frequency Range	Maximum Power, e.r.p.(≤1GHz) e.i.r.p.(>1GHz)	Bandwidth
30MHz to 47MHz	-36 dBm	100 kHz
47MHz to 74MHz	-54 dBm	100 kHz
74MHz to 87.5MHz	-36 dBm	100 kHz
87.5MHz to 118MHz	-54 dBm	100 kHz
118MHz to 174MHz	-36 dBm	100 kHz
174MHz to 230MHz	-54 dBm	100 kHz
230MHz to 470MHz	-36 dBm	100 kHz
470MHz to 862MHz	-54 dBm	100 kHz
862MHz to 1GHz	-36 dBm	100 kHz
1GHz to 12.75GHz	-30dBm	1 MHz

5.3. Test Information

EUT	Intel® NUC
Test Model Number	NUC7i3BNK
Test Date:	2016. 11. 25
Ambient Temperature	23°C
Relative Humidity	58%
Test Method	ETSI EN 300 328 V.1.9.1 (See clause 5.3.10.2)
Antenna Assembly Gain	802.11b/g/n-HT20/n-HT40: -2.67dBi Bluetooth & BLE: -2.67dBi
Test Program	DRTU

5.4. Test Results

5.4.1. WLAN Function:

Test Mode: 802.11b, CH 1: 2412MHz

Frequency (MHz)	Spurious emission level (dBm)	Limit (dBm)	Antenna Polarization
30-1000	<-70	-36/-54	Horizontal
1000 – 12750 others	<-45	-30	
30-1000	<-70	-36/-54	Vertical
1000 – 12750 others	<-45	-30	

Note: All emissions are lower than the ambient level cannot be measured.

Test Mode: 802.11b, CH 13: 2472MHz

Frequency (MHz)	Spurious emission level (dBm)	Limit (dBm)	Antenna Polarization
30-1000	<-70	-36/-54	Horizontal
1000 – 12750 others	<-45	-30	
30-1000	<-70	-36/-54	Vertical
1000 – 12750 others	<-45	-30	

Note: All emissions are lower than the ambient level cannot be measured.

Test Mode: 802.11g, CH 1: 2412MHz

Frequency (MHz)	Spurious emission level (dBm)	Limit (dBm)	Antenna Polarization
30-1000	<-70	-36/-54	Horizontal
1000 – 12750 others	<-45	-30	
30-1000	<-70	-36/-54	Vertical
1000 – 12750 others	<-45	-30	

Note: All emissions are lower than the ambient level cannot be measured.

Test Mode: 802.11g, CH 13: 2472MHz

Frequency (MHz)	Spurious emission level (dBm)	Limit (dBm)	Antenna Polarization
30-1000	<-70	-36/-54	Horizontal
1000 – 12750 others	<-45	-30	
30-1000	<-70	-36/-54	Vertical
1000 – 12750 others	<-45	-30	

Note: All emissions are lower than the ambient level cannot be measured.

Test Mode: 802.11n-HT20, CH 1: 2412MHz

Frequency (MHz)	Spurious emission level (dBm)	Limit (dBm)	Antenna Polarization
30-1000	<-70	-36/-54	Horizontal
1000 – 12750 others	<-45	-30	
30-1000	<-70	-36/-54	Vertical
1000 – 12750 others	<-45	-30	

Note: All emissions are lower than the ambient level cannot be measured.

Test Mode: 802.11n-HT20, CH 13: 2472MHz

Frequency (MHz)	Spurious emission level (dBm)	Limit (dBm)	Antenna Polarization
30-1000	<-70	-36/-54	Horizontal
1000 – 12750 others	<-45	-30	
30-1000	<-70	-36/-54	Vertical
1000 – 12750 others	<-45	-30	

Note: All emissions are lower than the ambient level cannot be measured.

Test Mode: 802.11n-HT40, CH 3: 2422MHz

Frequency (MHz)	Spurious emission level (dBm)	Limit (dBm)	Antenna Polarization
30-1000	<-70	-36/-54	Horizontal
1000 – 12750 others	<-45	-30	
30-1000	<-70	-36/-54	Vertical
1000 – 12750 others	<-45	-30	

Note: All emissions are lower than the ambient level cannot be measured.

Test Mode: 802.11n-HT40, CH 11: 2462MHz

Frequency (MHz)	Spurious emission level (dBm)	Limit (dBm)	Antenna Polarization
30-1000	<-70	-36/-54	Horizontal
1000 – 12750 others	<-45	-30	
30-1000	<-70	-36/-54	Vertical
1000 – 12750 others	<-45	-30	

Note: All emissions are lower than the ambient level cannot be measured.

5.4.2. Bluetooth Function:

Test Mode: 8-DPSK Modulation, CH 0: 2402MHz

Frequency (MHz)	Spurious emission level (dBm)	Limit (dBm)	Antenna Polarization
30-1000	<-70	-36/-54	Horizontal
1000 – 12750 others	<-45	-30	
30-1000	<-70	-36/-54	Vertical
1000 – 12750 others	<-45	-30	

Note: All emissions are lower than the ambient level cannot be measured.

Test Mode: 8-DPSK Modulation, CH 78:2480MHz

Frequency (MHz)	Spurious emission level (dBm)	Limit (dBm)	Antenna Polarization
30-1000	<-70	-36/-54	Horizontal
1000 – 12750 others	<-45	-30	
30-1000	<-70	-36/-54	Vertical
1000 – 12750 others	<-45	-30	

Note: All emissions are lower than the ambient level cannot be measured.

Test Mode: GFSK Modulation, CH 0: 2402MHz

Frequency (MHz)	Spurious emission level (dBm)	Limit (dBm)	Antenna Polarization
30-1000	<-70	-36/-54	Horizontal
1000 – 12750 others	<-45	-30	
30-1000	<-70	-36/-54	Vertical
1000 – 12750 others	<-45	-30	

Note: All emissions are lower than the ambient level cannot be measured.

Test Mode: GFSK Modulation, CH 78:2480MHz

Frequency (MHz)	Spurious emission level (dBm)	Limit (dBm)	Antenna Polarization
30-1000	<-70	-36/-54	Horizontal
1000 – 12750 others	<-45	-30	
30-1000	<-70	-36/-54	Vertical
1000 – 12750 others	<-45	-30	

Note: All emissions are lower than the ambient level cannot be measured.

5.4.3. BLE Function:

Test Mode: CH 37: 2402MHz

Frequency (MHz)	Spurious emission level (dBm)	Limit (dBm)	Antenna Polarization
30-1000	<-70	-36/-54	Horizontal
1000 – 12750 others	<-45	-30	
30-1000	<-70	-36/-54	Vertical
1000 – 12750 others	<-45	-30	

Note: All emissions are lower than the ambient level cannot be measured.

Test Mode: CH 39:2480MHz

Frequency (MHz)	Spurious emission level (dBm)	Limit (dBm)	Antenna Polarization
30-1000	<-70	-36/-54	Horizontal
1000 – 12750 others	<-45	-30	
30-1000	<-70	-36/-54	Vertical
1000 – 12750 others	<-45	-30	

Note: All emissions are lower than the ambient level cannot be measured.

6. RECEIVER SPURIOUS EMISSIONS

6.1. Test Equipments

6.1.1. For Radiated Spurious Emissions (for 30MHz-1GHz)

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
1.	Spectrum Analyzer	Agilent	E4446A	US44300366	2016. 08. 19	2017. 08. 18
2.	Amplifier	Sonoma	310N	187161	2016. 06. 14	2017. 06. 13
3.	Bilog Antenna	Schaffner	CBL6112B	2736	2016. 01. 30	2017. 01. 29
4.	Test Software	Audix	e3	V.6.110601	N.C.R.	N.C.R.

6.1.2. For Radiated Spurious Emissions (above 1GHz)

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
1.	Spectrum Analyzer	Agilent	E4446A	US44300366	2016. 08. 19	2017. 08. 18
2.	Pre-Amplifier	HP	8449B	3008A02678	2016. 03. 04	2017. 03. 03
3.	Horn Antenna	ETS-Lindgren	3117	00135902	2016. 03. 09	2017. 03. 08
4.	2.4GHz Notch Filter	K&L	7NSL10-24 41.5E130.5 -00	1	2016. 07. 27	2017. 07. 26
5.	Test Software	Audix	e3	V.6.110601	N.C.R.	N.C.R.

6.2. Limit

ETSI EN 300 328, Clause 4.3.2.10.3

Frequency Range	Maximum Power, e.r.p.(≤1GHz) e.i.r.p.(>1GHz)	Bandwidth
30MHz to 1GHz	-57 dBm	100 kHz
1GHz to 12.75GHz	-47 dBm	1 MHz

6.3. Test Information

EUT	Intel® NUC
Test Model Number	NUC7i3BNK
Test Date:	2016. 11. 25
Ambient Temperature	23°C
Relative Humidity	58%
Test Method	ETSI EN 300 328 V.1.9.1 (See clause 5.3.11.2)
Antenna Assembly Gain	802.11b/g/n-HT20/n-HT40: -2.67dBi Bluetooth & BLE: -2.67dBi
Test Program	DRTU

6.4. Test Results

6.4.1. WLAN Function:

Test Mode: CH 1: 2412MHz

Frequency (MHz)	Spurious emission level (dBm)	Limit (dBm)	Antenna Polarization
30-1000	<-70	-57	Horizontal
1000 - 12750 others	<-55	-47	
30-1000	<-70	-57	Vertical
1000 - 12750 others	<-55	-47	

Note: All emissions are lower than the ambient level cannot be measured.

Test Mode: CH 13: 2472MHz

Frequency (MHz)	Spurious emission level (dBm)	Limit (dBm)	Antenna Polarization
30-1000	<-70	-57	Horizontal
1000 - 12750 others	<-55	-47	
30-1000	<-70	-57	Vertical
1000 - 12750 others	<-55	-47	

Note: All emissions are lower than the ambient level cannot be measured.

6.4.2. Bluetooth Function:

Test Mode: CH 0: 2402MHz

Frequency (MHz)	Spurious emission level (dBm)	Limit (dBm)	Antenna Polarization
30-1000	<-70	-57	Horizontal
1000 - 12750 others	<-55	-47	
30-1000	<-70	-57	Vertical
1000 - 12750 others	<-55	-47	

Note: All emissions are lower than the ambient level cannot be measured.

Test Mode: CH 78: 2480MHz

Frequency (MHz)	Spurious emission level (dBm)	Limit (dBm)	Antenna Polarization
30-1000	<-70	-57	Horizontal
1000 - 12750 others	<-55	-47	
30-1000	<-70	-57	Vertical
1000 - 12750 others	<-55	-47	

Note: All emissions are lower than the ambient level cannot be measured.

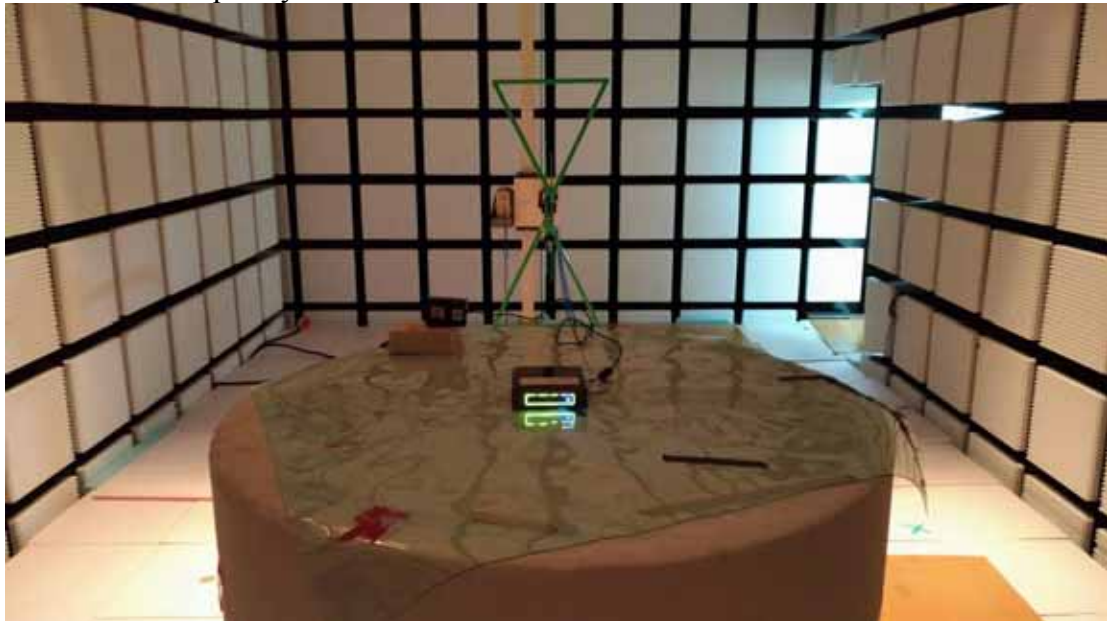
7. PHOTOGRAPHS

7.1. Photo of RF Output Power Measurement

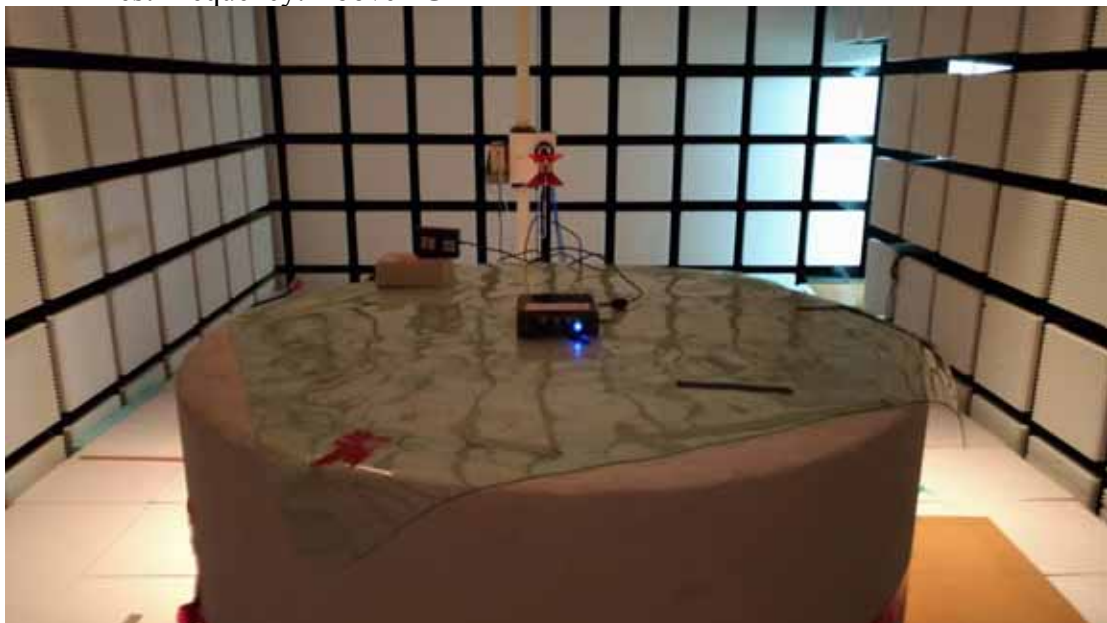


7.2. Photo of Radiated Spurious Emissions Measurement

Test Frequency: Below 1GHz



Test Frequency: Above 1GHz



APPENDIX I

(Lab. Certificate)

(Total Pages: 2 Pages)



Certificate No. : L1724-151202

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
Originally Accredited	: November 27, 2006
Effective Period	: November 27, 2015 to November 26, 2018
Accredited Scope	: Testing Field, see described in the Appendix
Specific Accreditation Program	: Accreditation Program for Designated Testing Laboratory for Commodities Inspection Accreditation Program for Telecommunication Equipment Testing Laboratory Accreditation Program for BSMI Mutual Recognition Arrangement with Foreign Authorities

Jay-San Chen
President, Taiwan Accreditation Foundation
Date : December 02, 2015

P1, total 22 pages

The Appendix forms an integral part of this Certificate, which shall be invalid when use without the Appendix

United States Department of Commerce
National Institute of Standards and Technology



Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 200077-0

Audix Technology Corporation EMC Department

New Taipei City
Taiwan

*is accredited by the National Voluntary Laboratory Accreditation Program for specific services,
listed on the Scope of Accreditation, for:*

Electromagnetic Compatibility & Telecommunications

*This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005.
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality
management system (refer to joint ISO-ILAC-IAF Communiqué dated January 2009).*

2015-12-15 through 2016-12-31

Effective Dates



[Signature]

For the National Voluntary Laboratory Accreditation Program