

ETSI EN 301 893  
OUTPUT POWER & SPURIOUS EMISSIONS TEST REPORT  
For  
Intel Corporation  
Intel® NUC  
Model Name: NUC7i3BNH  
Family Product Code: xNUC7xBNHx  
(Where x may be a combination of alphanumeric characters or blank)  
Brand: Intel®

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File Number : C1M1611094  
Report Number : EM-RF160266  
Date of Test : 2016. 11. 25  
Date of Report : 2016. 11. 28

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APPENDIX I (Lab Certificates)

APPENDIX II (Photos of EUT)

## 1. DESCRIPTION OF REVISION HISTORY

Edition No.	Date of Rev.	Revision Summary	Report No.
0	2016. 11. 28	Original Report	EM-RF160266

## 2. SUMMARY OF MEASUREMENTS AND RESULTS

### 2.1. Compliance with ETSI EN 301 893

<b>CLAUSE</b> <small>(ETSI 301 893)</small>	<b>TEST PARAMETER</b>	<b>RESULTS</b>
4.4 4.4.1.1	RF output power	<b>PASS</b>
4.5 4.5.1	Transmitter unwanted emissions – Transmitter unwanted emissions outside the 5 GHz RLAN bands.	<b>PASS</b>
4.6	Receiver spurious emissions	<b>PASS</b>
<p>Note: This device is embedded with WLAN Combo Card and this module has been assessed according to article 3.2 of the R&amp;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&amp;TTE Directive 1999/5/EC.</p>		

### 3. GENERAL INFORMATION

#### 3.1. Description of Device (EUT)

Product	Intel® NUC
Model Name	NUC7i3BNH
Family Product Code	xNUC7xBNHx (Where x may be a combination of alphanumeric characters or blank)
Serial Number	G6BN6470002B
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	<p>2.4GHz: 802.11b/g/n-HT20: 2412MHz ~ 2472MHz 802.11n-HT40: 2422MHz ~ 2462MHz</p> <p>5GHz: <b>UNII Band I:</b> 802.11a/n-HT20/ac-VHT20: 5180MHz ~ 5240MHz 802.11n-HT40/ac-VHT40: 5190MHz ~ 5230MHz 802.11ac-VHT80: 5210MHz</p> <p><b>UNII Band II:</b> 802.11a/n-HT20/ac-VHT20: 5260MHz ~ 5320MHz 802.11n-HT40/ac-VHT40: 5270MHz ~ 5310MHz 802.11ac-VHT80: 5290MHz</p> <p><b>UNII Band III:</b> 802.11a/n-HT20/ac-VHT20: 5500MHz ~ 5700MHz 802.11n-HT40/ac-VHT40: 5510MHz ~ 5670MHz 802.11ac-VHT80: 5530MHz ~ 5610MHz</p> <p><b>UNII Band IV:</b> 802.11a/n-HT20/ac-VHT20: 5745MHz ~ 5825MHz 802.11n-HT40/ac-VHT40: 5755MHz ~ 5795MHz 802.11ac-VHT80: 5775MHz</p> <p>Bluetooth and BLE: 2402MHz ~ 2480MHz</p>

Frequency Channel	2.4GHz: 802.11b/g/n-HT20: 13 channels 802.11n-HT40: 9 channels 5GHz: <b>UNII Band I:</b> 802.11a/n-HT20/ac-VHT20: 4 channels 802.11n-HT40/ac-VHT40: 2 channels 802.11ac-VHT80: 1 channel <b>UNII Band II:</b> 802.11a/n-HT20/ac-VHT20: 4 channels 802.11n-HT40/ac-VHT40: 2 channels 802.11ac-VHT80: 1 channel <b>UNII Band III:</b> 802.11a/n-HT20/ac-VHT20: 11 channels 802.11n-HT40/ac-VHT40: 5 channels 802.11ac-VHT80: 2 channel <b>UNII Band IV:</b> 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 Lists

#### 3.3.1. For the All Component Lists

Item	Supplier	Model / Type	Character
Mother Board	Intel	NUC7i3BNB	AA#: J22859-300 S/N: GE6BN64000BDS
CPU (BGA1356)	Intel	I3-7100U	2.4GHz
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
M.2 SSD	Micron	CT250MX200SSD4	250GB, M.2(2280)-SATA
	ADATA	ASP900NS38-256GM-C	256GB, M.2(2280)-SATA
	Intel	SSDSCCKR180H6XN	180GB, M.2(2280)-SATA
	Intel	SSDSCCKF010X6	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
SSD / HDD	Samsung	MZ-7KE1T0	1TB, SATA III, SSD
	Intel	SSDSC2BW240A401	240GB, SATA III, SSD
	Transcend	TS512GSSD370	512GB, SATA III, SSD
	SanDisk	SDSSDHII-480G-G25	480GB, SATA III, SSD
	Crucial (Micron)	CT120M500SSD1	120GB, SATA III, SSD
	Kingston	SV300S37A/480G	480GB, SATA III, SSD
	Seagate (Samsung)	ST2000LM003	2TB, 5400rpm, HDD
	Seagate (Samsung)	ST1000LM014	1TB, 5400rpm, HDD
	WD	WD10JPVX-22JC3T0	1TB, 5400rpm, HDD
	Toshiba	MQ01ABD100	1TB, 5400rpm, HDD
	Hitachi	HTS721010A9E630	1TB, 7200rpm, HDD
	Intel	SSDSC2KW010X6X1	1TB, SATA3, SSD
	Intel	SSDSC2BB120G6XA	120GB, SATA3, SSD
	Intel	SSDSC2KR180H6XN	180GB, SATA3, SSD
	Intel	SSDSC2KF010X6X1	1TB, SATA3, SSD
Seagate	ST1000LM035	1TB, SATA3, Mobile HDD	
Seagate	ST2000LM007	2TB, SATA3, Mobile HDD	
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

Item	Supplier	Model / Type	Character
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: GE6N64000BDS
CPU (BGA1356)	Intel	I3-7100U	2.4GHz
Memory	Transcend	TS2GSH64V4B	16GB, DDR4-2400MHz
M.2 SSD	Intel	SSDSCKKF010X6	1TB, M.2(2280)-SATA
SSD	Samsung	MZ-7KE1T0	1TB, SATA III, SSD
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

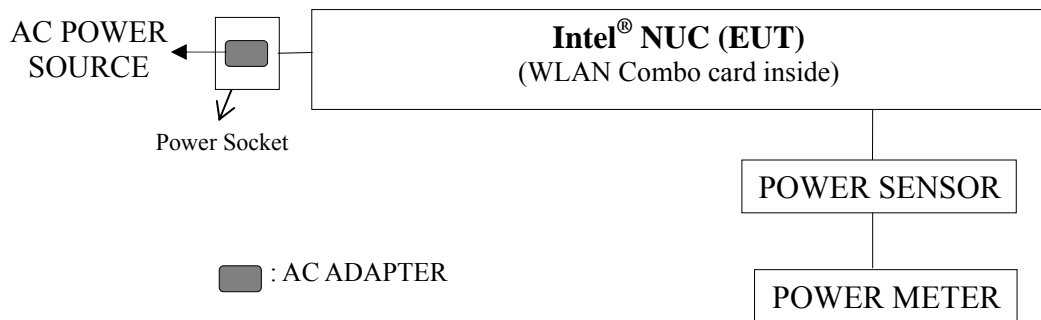
No.	Product	Brand	Model No.	Serial No.	Approval	Remarks
A	Power Socket	N/A	N/A	N/A	N/A	Provided by LAB

#### 3.4.2. Cable Lists

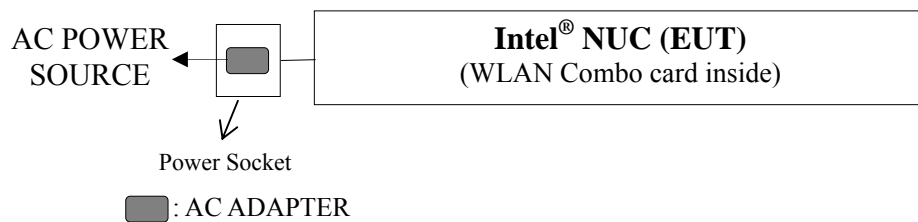
No.	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1	DC Power Cord	1	1.8	No	1	Supplied by Client
2	AC Power Cord	2	1.8	No	0	Provided by LAB

### 3.5. Block Diagram of Test Setup

#### 3.5.1. RF Output Power Measurement

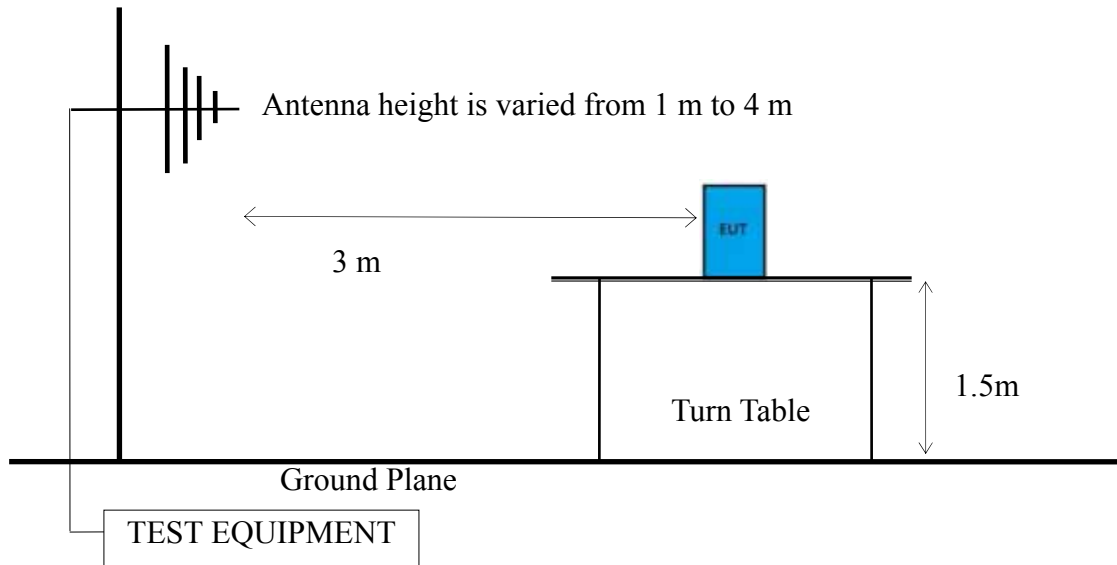


#### 3.5.2. Spurious Emission (Radiated)

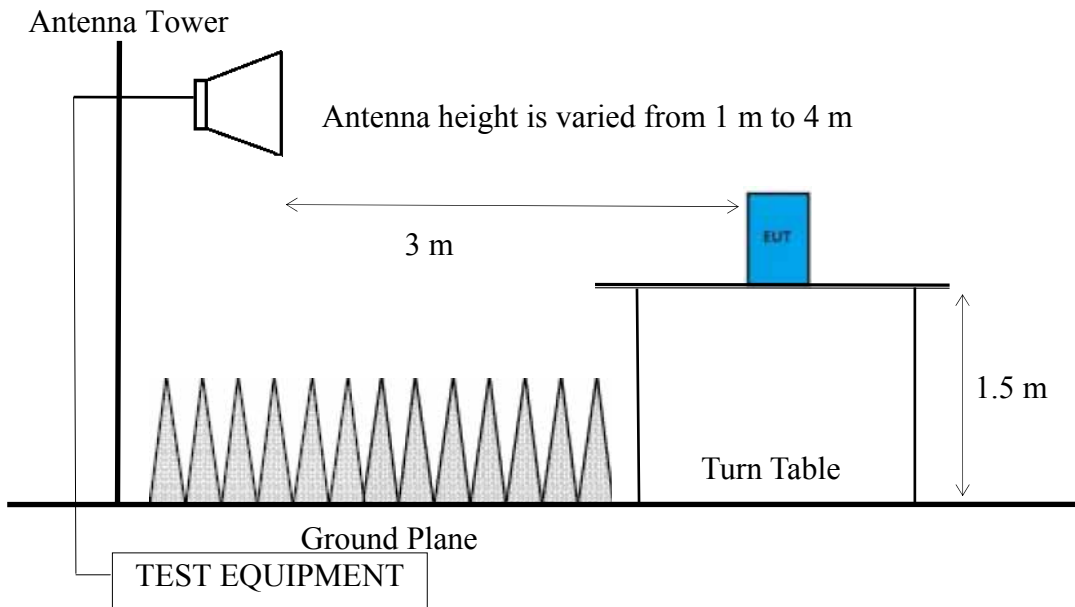


3.5.3. Fully Anechoic Chamber (3m) Setup Diagram

**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	±0.34dB	
Spurious Emission (RE)	30MHz ~ 1000MHz	± 0.20dB
	Above 1GHz	± 1.60dB

Remark : Uncertainty =  $ku_c(y)$

## 4. RF OUTPUT POWER MEASUREMENT

### 4.1. Test Equipments

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 301 893, Clause 4.4.2.1 and 4.4.2.2

Frequency range	At the highest power level		At the lowest power level
	Mean EIRP limit		Mean EIRP limit
	With TPC	Without TPC	With TPC
5150 MHz to 5250 MHz	23dBm	23dBm	N/A
5250 MHz to 5350 MHz	23dBm	20dBm	17dBm
5470 MHz to 5725 MHz	30dBm <sup>Note</sup>	27dBm <sup>Note</sup>	24dBm <sup>Note</sup>

Note: Slave devices without a Radar Interference Detection function shall comply with the limits for the band 5250 MHz to 5350 MHz.

### 4.3. Test Information

EUT	Intel® NUC
Test Model Number	NUC7i3BNH
Test Date:	2016. 11. 25
Ambient Temperature	23°C
Relative Humidity	58%
Test Method	ETSI EN 301 893 V.1.8.1 (See clause 5.3.4.2.1.1)
Antenna Assembly Gain	UNII Band I: 0.69dBi UNII Band II :0.69dBi UNII Band III: 1.70dBi
Test Program	DRTU

#### 4.4. Test Results

Test Mode: 802.11a

Channel	Frequency (MHz)	Result		
		Pburst (dBm)	Antenna Gain (dBi)	EIRP (dBm)
CH 36	5180	17.28	0.69	17.97
CH 64	5320	17.19	0.69	17.88
CH 100	5500	16.78	1.70	18.48
CH 140	5700	16.86	1.70	18.56

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 36	5180	17.16	0.69	17.85
CH 64	5320	17.29	0.69	17.98
CH 100	5500	17.45	1.70	19.15
CH 140	5700	17.30	1.70	19.00

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 38	5190	17.83	0.69	18.52
CH 62	5310	18.11	0.69	18.8
CH 102	5510	18.04	1.70	19.74
CH 134	5670	17.91	1.70	19.61

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

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

## Test Mode: 802.11ac-VHT20

Channel	Frequency (MHz)	Result		
		Pburst (dBm)	Antenna Gain (dBi)	EIRP (dBm)
CH 36	5180	16.53	0.69	17.22
CH 64	5320	17.13	0.69	17.82
CH 100	5500	17.38	1.70	19.08
CH 140	5700	17.23	1.70	18.93

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

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

## Test Mode: 802.11ac-VHT40

Channel	Frequency (MHz)	Result		
		Pburst (dBm)	Antenna Gain (dBi)	EIRP (dBm)
CH 38	5190	17.71	0.69	18.4
CH 62	5310	17.96	0.69	18.65
CH 102	5510	17.92	1.70	19.62
CH 134	5670	17.79	1.70	19.49

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

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

## Test Mode: 802.11ac-VHT80

Channel	Frequency (MHz)	Result		
		Pburst (dBm)	Antenna Gain (dBi)	EIRP (dBm)
CH 42	5210	17.55	0.69	18.24
CH 58	5290	18.14	0.69	18.83
CH 106	5530	17.85	1.70	19.55
CH 122	5610	17.71	1.70	19.41

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

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

## 5. TRANSMITTER UNWANTED EMISSIONS OUTSIDE THE 5 GHZ RLAN BANDS MEASUREMENT

### 5.1. Test Equipment

#### 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.	5G Notch Filter	Microwave Circuits	N0452502	459775	2016. 01. 28	2017. 01. 27
6.	5G Notch Filter	Microwave Circuits	N0555983	459481	2016. 01. 28	2017. 01. 27
7.	Test Software	Audix	e3	V.6.110601	N.C.R.	N.C.R.

## 5.2. Limit

ETSI EN 301 893, Clause 4.5.1.2

Frequency Range	Maximum Power, e.r.p.( $\leq$ 1GHz) e.i.r.p.( $>$ 1GHz)	Bandwidth
25 MHz to 47 MHz	-36	100 kHz
47 MHz to 74 MHz	-54	100 kHz
74 MHz to 87.5 MHz	-36	100 kHz
87.5 MHz to 118 MHz	-54	100 kHz
118 MHz to 174 MHz	-36	100 kHz
174 MHz to 230 MHz	-54	100 kHz
230 MHz to 470 MHz	-36	100 kHz
470 MHz to 862 MHz	-54	100 kHz
862 MHz to 1 GHz	-36	100 kHz
1 GHz to 5.15 GHz	-30	1 MHz
5.35 GHz to 5.47 GHz	-30	1 MHz
5.725 GHz to 26 GHz	-30	1 MHz

## 5.3. Test Information

EUT	Intel <sup>®</sup> NUC
Test Model Number	NUC7i3BNH
Test Date:	2016. 11. 25
Ambient Temperature	23°C
Relative Humidity	58%
Test Method	ETSI EN 301 893 V.1.8.1 (See clause 5.3.5.2.2)
Antenna Assembly Gain	UNII Band I: 0.69dBi UNII Band II :0.69dBi UNII Band III: 1.70dBi
Test Program	DRTU



## 5.4. Test Results

Test Mode: 802.11a, CH 36: 5180MHz

Frequency (MHz)	Spurious emission level (dBm)	Limit (dBm)	Antenna Polarization
30-1000	<-70	-36/-54	Horizontal
1000 - 26000 others	<-45	-30	
30-1000	<-70	-36/-54	Vertical
1000 - 26000 others	<-45	-30	

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

Test Mode: 802.11a, CH 64: 5320MHz

Frequency (MHz)	Spurious emission level (dBm)	Limit (dBm)	Antenna Polarization
30-1000	<-70	-36/-54	Horizontal
1000 - 26000 others	<-45	-30	
30-1000	<-70	-36/-54	Vertical
1000 - 26000 others	<-45	-30	

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

Test Mode: 802.11a, CH 100: 5500MHz

Frequency (MHz)	Spurious emission level (dBm)	Limit (dBm)	Antenna Polarization
30-1000	<-70	-36/-54	Horizontal
1000 - 26000 others	<-45	-30	
30-1000	<-70	-36/-54	Vertical
1000 - 26000 others	<-45	-30	

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

Test Mode: 802.11a, CH 140: 5700MHz

Frequency (MHz)	Spurious emission level (dBm)	Limit (dBm)	Antenna Polarization
30-1000	<-70	-36/-54	Horizontal
1000 - 26000 others	<-45	-30	
30-1000	<-70	-36/-54	Vertical
1000 - 26000 others	<-45	-30	

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

Test Mode: 802.11n-HT20, CH 36: 5180MHz

Frequency (MHz)	Spurious emission level (dBm)	Limit (dBm)	Antenna Polarization
30-1000	<-70	-36/-54	Horizontal
1000 - 26000 others	<-45	-30	
30-1000	<-70	-36/-54	Vertical
1000 - 26000 others	<-45	-30	

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

Test Mode: 802.11n-HT20, CH 64: 5320MHz

Frequency (MHz)	Spurious emission level (dBm)	Limit (dBm)	Antenna Polarization
30-1000	<-70	-36/-54	Horizontal
1000 - 26000 others	<-45	-30	
30-1000	<-70	-36/-54	Vertical
1000 - 26000 others	<-45	-30	

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

Test Mode: 802.11n-HT20, CH 100: 5500MHz

Frequency (MHz)	Spurious emission level (dBm)	Limit (dBm)	Antenna Polarization
30-1000	<-70	-36/-54	Horizontal
1000 - 26000 others	<-45	-30	
30-1000	<-70	-36/-54	Vertical
1000 - 26000 others	<-45	-30	

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

Test Mode: 802.11n-HT20, CH 140: 5700MHz

Frequency (MHz)	Spurious emission level (dBm)	Limit (dBm)	Antenna Polarization
30-1000	<-70	-36/-54	Horizontal
1000 - 26000 others	<-45	-30	
30-1000	<-70	-36/-54	Vertical
1000 - 26000 others	<-45	-30	

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

Test Mode: 802.11n-HT40, CH 38: 5190MHz

Frequency (MHz)	Spurious emission level (dBm)	Limit (dBm)	Antenna Polarization
30-1000	<-70	-36/-54	Horizontal
1000 - 26000 others	<-45	-30	
30-1000	<-70	-36/-54	Vertical
1000 - 26000 others	<-45	-30	

Test Mode: 802.11n-HT40, CH 62: 5310MHz

Frequency (MHz)	Spurious emission level (dBm)	Limit (dBm)	Antenna Polarization
30-1000	<-70	-36/-54	Horizontal
1000 - 26000 others	<-45	-30	
30-1000	<-70	-36/-54	Vertical
1000 - 26000 others	<-45	-30	

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

Test Mode: 802.11n-HT40, CH 102: 5510MHz

Frequency (MHz)	Spurious emission level (dBm)	Limit (dBm)	Antenna Polarization
30-1000	<-70	-36/-54	Horizontal
1000 - 26000 others	<-45	-30	
30-1000	<-70	-36/-54	Vertical
1000 - 26000 others	<-45	-30	

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

Test Mode: 802.11n-HT40, CH 134: 5670MHz

Frequency (MHz)	Spurious emission level (dBm)	Limit (dBm)	Antenna Polarization
30-1000	<-70	-36/-54	Horizontal
1000 - 26000 others	<-45	-30	
30-1000	<-70	-36/-54	Vertical
1000 - 26000 others	<-45	-30	

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

Test Mode: 802.11ac-VHT80, CH 42: 5210MHz

Frequency (MHz)	Spurious emission level (dBm)	Limit (dBm)	Antenna Polarization
30-1000	<-70	-36/-54	Horizontal
1000 - 26000 others	<-45	-30	
30-1000	<-70	-36/-54	Vertical
1000 - 26000 others	<-45	-30	

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

Test Mode: 802.11ac-VHT80, CH 58: 5290MHz

Frequency (MHz)	Spurious emission level (dBm)	Limit (dBm)	Antenna Polarization
30-1000	<-70	-36/-54	Horizontal
1000 - 26000 others	<-45	-30	
30-1000	<-70	-36/-54	Vertical
1000 - 26000 others	<-45	-30	

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

Test Mode: 802.11ac-VHT80, CH 106: 5530MHz

Frequency (MHz)	Spurious emission level (dBm)	Limit (dBm)	Antenna Polarization
30-1000	<-70	-36/-54	Horizontal
1000 - 26000 others	<-45	-30	
30-1000	<-70	-36/-54	Vertical
1000 - 26000 others	<-45	-30	

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

Test Mode: 802.11ac-VHT80, CH 122: 5610MHz

Frequency (MHz)	Spurious emission level (dBm)	Limit (dBm)	Antenna Polarization
30-1000	<-70	-36/-54	Horizontal
1000 - 26000 others	<-45	-30	
30-1000	<-70	-36/-54	Vertical
1000 - 26000 others	<-45	-30	

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

## 6. RECEIVER SPURIOUS EMISSIONS MEASUREMENT

### 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	EMCO	3116	2653	2016. 10. 24	2017. 10. 23
4.	Horn Antenna	ETS-Lindgren	3117	00135902	2016. 03. 09	2017. 03. 08
5.	5G Notch Filter	Microwave Circuits	N0452502	459775	2016. 01. 28	2017. 01. 27
6.	5G Notch Filter	Microwave Circuits	N0555983	459481	2016. 01. 28	2017. 01. 27
7.	Test Software	Audix	e3	V.6.110601	N.C.R.	N.C.R.

### 6.2. Limit

#### ETSI EN 301 893, Clause 4.6.2

Frequency Range	Maximum Power, e.r.p.( $\leq$ 1GHz) e.i.r.p.( $>$ 1GHz)	Bandwidth
30MHz to 1GHz	-57 dBm	100kHz
1GHz to 26GHz	-47 dBm	1MHz

## 6.3. Test Information

EUT	Intel® NUC
Test Model Number	NUC7i3BNH
Test Date:	2016. 11. 25
Ambient Temperature	23°C
Relative Humidity	58%
Test Method	ETSI EN 301 893 V.1.8.1 (See clause 5.3.7.2.2)
Antenna Assembly Gain	UNII Band I: 0.69dBi UNII Band II :0.69dBi UNII Band III: 1.70dBi
Test Program	DRTU

## 6.4. Test Results

Test Mode: CH 36: 5180MHz

Frequency (MHz)	Spurious emission level (dBm)	Limit (dBm)	Antenna Polarization
30-1000	<-70	-57	Horizontal
1000 - 26000 others	<-55	-47	
30-1000	<-70	-57	Vertical
1000 - 26000 others	<-55	-47	

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

Test Mode: CH 64: 5320MHz

Frequency (MHz)	Spurious emission level (dBm)	Limit (dBm)	Antenna Polarization
30-1000	<-70	-57	Horizontal
1000 - 26000 others	<-55	-47	
30-1000	<-70	-57	Vertical
1000 - 26000 others	<-55	-47	

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

Test Mode: CH 100: 5500MHz

Frequency (MHz)	Spurious emission level (dBm)	Limit (dBm)	Antenna Polarization
30-1000	<-70	-57	Horizontal
1000 - 26000 others	<-55	-47	
30-1000	<-70	-57	Vertical
1000 - 26000 others	<-55	-47	

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

Test Mode: CH 140: 5700MHz

Frequency (MHz)	Spurious emission level (dBm)	Limit (dBm)	Antenna Polarization
30-1000	<-70	-57	Horizontal
1000 - 26000 others	<-55	-47	
30-1000	<-70	-57	Vertical
1000 - 26000 others	<-55	-47	

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

## 7. PHOTOGRAPHS OF MEASUREMENT

### 7.1. Photo of RF Output Power Measurement



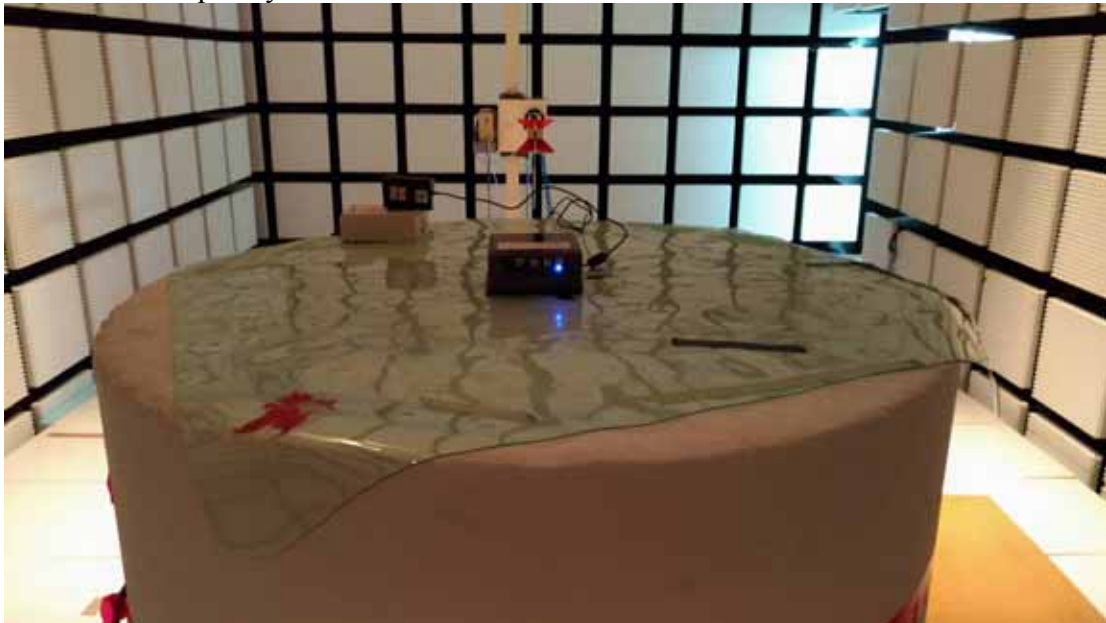


## 7.2. Photos of Radiated Spurious Emission

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 Communique dated January 2009).*

2015-12-15 through 2016-12-31

*Effective Dates*



*[Signature]*

*For the National Voluntary Laboratory Accreditation Program*

## TEST REPORT VERIFICATION

Applicant : Intel Corporation  
EUT Description : Intel® NUC  
(A) Model Name : NUC7i3BNH  
(B) Family Product Code : xNUC7xBNHx  
(Where x may be a combination of alphanumeric characters or blank)  
(C) Serial Number : G6BN6470002B  
(D) Brand Name : Intel®  
(E) Power Supply : DC 19V, 3.42A  
(F) Test Voltage : AC 230V, 50Hz (Via AC Adapter)

Measurement Standards Used:

ETSI EN 301 893 V1.8.1:2015-03

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 301 893 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. 28

Producer: Sabrina Wang  
(Sabrina Wang/Administrator)

Signatory: Ben Cheng  
(Ben Cheng/Manager)