

Test Report	No.: 12100401	l.fcc02	Page 1 of 36
Client:	Wistron NeWeb Corp. 20 park Aveneu II, Hsinchu	Science park, Hsinchu 308, Ta	aiwan, R.O.C.
Test Item:	PCle 802.11n WiFi module	9	
Identification:	DNXA-H1	Serial No.:	Engineering Sample
Project No.:	12100401	Date of Receipt:	2012-10-18
Testing Location:	<b>TÜV Rheinland EPS B.V.</b> Eiberkamp 10 9351VT Leek		
Test Specification:	FCC 47 CFR Part 15, Subp ANSI C63.4-2009	art E, Section 15.407 (October	1, 2010)
Test Result:		The test item <b>passed</b> the te	est specification(s).
Testing Laboratory:		<b>TÜV Rheinland EPS B.V.</b> Eiberkamp 10 9351 VT Leek	
Tested by:	Aler	Reviewed by:	(Y) blockshi
2012-11-05 R. van de	er Meer / Inspector	2012-11-05 O. Hoekstra / Rev	iewer
Date       Name/Position       Signature       Date       Name/Position       Signature         Other Aspects: the testitem is placed in host model L-452 and L-451 and test are performed to allow for a Permissive Change Class II.       Permissive Change Class II.			
		Abbreviations: P(ass) = pa F(ail) = fai N/A = no N/T = no	ssed led t applicable t tested
This report sha	ll not be reproduced, except in full, The test results rela	without the written permission of T te only to the item(s) tested.	ÜV Rheinland EPS B.V.



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5.1.2 ANTENNA REQU RESULT: PASS	IREMENTS	
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5.2.1 CONDUCTED OL RESULT: Pass	ITPUT <b>P</b> OWER	
5.2.2 6dB Bandwidt RESULT: N/A	н	
5.2.3 CONDUCTED SP RESULT: N/A	URIOUS EMISSION	
5.2.4 PEAK POWER S RESULT: N/A	PECTRAL DENSITY	
5.2.5 BAND EDGE CO RESULT: Pass	NDUCTED EMISSIONS	
5.2.6 RADIATED SPUR RESULT: PASS	NOUS EMISSIONS OF TRANSMITTER	
5.3.1 AC Power Line RESULT: N/A	E CONDUCTED EMISSION OF TRANSMITTER	



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# 1. General Remarks

### **1.1** Complementary Materials

The EUT is a PCIe 802.11n WiFi module. The testdata are provided in two separate testreport.

	Test standard	Testreport reference
WLAN 802.11b/g, 802.11n WLAN 802.11a, 802.11n (5745-5825 MHz)	FCC Part 15, Subpart C, Section 15.247	12100401.fcc01
WLAN 802.11a, 802.11n	FCC Part 15, Subpart E,	12100401.fcc02
(5180-5240 MHz)	Section 15.407	This report

There is no attachment to this test report.

The EUT is intended to be used inside two hosts. These hosts are mentioned in section 4.5. Pre-tests are performed on both hosts and model L-452 turned out to be the worst case and was therefor selected for full compliance testing.



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### 2. Test Sites

### 2.1 Test Facilities

The Federal Communications Commission and Industry Canada has reviewed the technical characteristics of the test facilities at TÜV Rheinland EPS B.V., located in Leek, 9351VT Eiberkamp 10, The Netherlands, and has found these test facilities to be in compliance with the requirements of 47 CFR Part 15, section 2.948, (10-1-09 edition).

The description of the test facilities has been filed at the Office of the Federal Communications Commission under registration number 90828. The facility has been added to the list of laboratories performing these test services for the public on a fee basis.

The description of the test facilities has been filed to Industry Canada under registration number 2932G-2. The facility has been added to the list of laboratories performing these test services for the public on a fee basis.

Normal test conditions:

Temperature (*)	: +15°C to +35°C
Relative humidity(*)	: 20 % to 75 %
Supply voltage	: 120VAC/60Hz
Air pressure	: 950 – 1050 hPa

When it was impracticable to carry out the tests under these conditions, a note to this effect stating the ambient temperature and relative humidity during the tests are stated separately.



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### 2.2 List of Test and Measurement Instruments

**Table 1: List of Test and Measurement Equipment** 

Kind of Equipment	Manufacturer	Model Name	Inventory number	Calibration date (mm/yyyy)	Calibration due date (mm/yyyy)
For Conducted Emission	on				
LISN	Rohde & Schwarz	3625/2	12512	01/2012	01/2014
Measuring receiver	Rohde & Schwarz	ESCI	99699	03/2012	03/2013
For Radiated Emission					
RF cable	Huber + Suhner	Sucoflex102	99741	04/2012	04/2013
RF Cable S-AR	Gigalink	APG0500	99858	02/2012	02/2013
Controller	Heinrich Deisel	4630-100	99107	N/A	N/A
Test fascility	Comtest	FCC listed: 90828	99580	02/2012	02/2015
Spectrum Analyzer	Rohde & Schwarz	FSP40	99538	11/2011	11/2012
Controller	EMCS	DOC202	99608	N/A	N/A
Antenna mast	EMCS	AP-4702C	99609	N/A	N/A
Temperature- Humiditymeter	Extech	SD500	99855	02/2012	02/2013
Guidehorn 1-18 GHz	EMCO	3115	12484	04/2012	04/2013
Guidehorn 18-26.5 GHz	EMCO	RA42-K-F-4B-C	12488	04/2012	04/2013
Guidehorn 26.5-40 GHz	EMCO	3116	12486	04/2012	04/2013
Biconilog Testantenna	Chase	CBL 6111B	15633	01/2012	01/2013
2.4 GHz bandreject filter	BSC	XN-1783	14450	N/A	N/A
Bandpass filter 4-10 GHz	Reactel	7AS-7G-6G- 511	99076	N/A	N/A
Bandpass filter 10-26 GHz	Reactel	9HS- 10G/26.5G- S11	99136	N/A	N/A
Preamplifier 0.5 - 18 GHz	Miteq	AMF-5D- 005180-28- 13p	99596	N/A	N/A

Conformance of the used measurement and test equipment with the requirements of ISO/IEC 17025:2005 has been confirmed before testing.



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# 2.3 Measurement Uncertainty

#### **Table 2: Emission Measurement Uncertainty**

Measurement Type	Frequency	Uncertainty
Antenna Port Conducted Emission	< 1GHz	±0.5dB
	> 1GHz	±0.7dB
Radiated Emission	150kHz - 30MHz	±5.0dB
	30MHz - 1GHz	±5.0dB
	> 1GHz	±5.5dB



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# **3.** General Product Information

### 3.1 **Product Function and Intended Use**

The brand WNC model DNXA-H1, hereafter refered to as EUT, is a digitally modulated transmitter intended to be used in WiFi applications.

The content of this report and measurement results have not been changed other than the way of presenting the data.

### 3.2 System Details

Details and an overview of the system and all of its components, as it has been tested, may be found below.

EUT	:	PCIe 802.11n WiFi module
Manufacturer	:	Wistron NeWeb Corp.
Brand	:	WNC
Model	:	DNXA-H1
Serial number	:	Engineering Sample
Voltage input rating	:	3.3Vdc
Voltage output rating	:	
Current input rating	:	
Antenna	:	External (See Antenna types below)
Operating frequency	:	2412 – 2462 MHz and 5745-5825
Modulation Type	:	QPSK, 64QAM, 16QAM,QPSK, BPSK for OFDM.
Modulation Technology	:	OFDM
	:	
Remarks	:	n.a.
FCC ID	:	NKR-DNXA-H1
<u>Antenna types:</u>		
SWIVEL (3dBi@2.4GHz; 5dE	3I@5G	Hz)

PCB (2.5dBi@2.4GHz;4.8dBi@5GHz)





Photos : left=host containing EUT inside (host1 shown), right= AUX2 power supply used with hosts

### 3.3 Countermeasures to achieve Compliance

No additional measures were employed to achieve compliance.



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## 4. Test Set-up and Operation Modes

### 4.1 Test Methodology

The test methodology used is based on the requirements of 47 CFR Part 15, Sections 15.31, 15.33, 15.35, 15.205, 15.207, 15.209, 15.407.

The test methods, which have been used, are based on ANSI C63.4-2009.

For details, see under each test item.

### 4.2 Operation Modes

The frequency bands used in this EUT are listed below.

Frequencyband (MHz)	2412-2462	5180-5240	5745-5825
802.11b		-	-
802.11g		-	-
802.11a	-		√
802.11n 20MHz			√
802.11n 40MHz			√

The basic operation modes used for testing are:

Mode	Tested Channel	Modulation Technology
802.11a	36 & 48	OFDM
802.11n-20MHz	36 & 48	OFDM
802.11n-40MHz	38 & 46	OFDM

#### Output Power (at U.FL connector of WLAN PCIe card):

Mode	Frequency (MHz)	Max. Power (dBm)
802.11a	5180-5240	10.7
802.11n(20)	5180-5240	15.6
802.11n(40)	5190-5230	15.4



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### 4.3 Physical Configuration for Testing

The EUT was tested in hosts model L-451 and model L-452 and the test system was configured in a typical fashion (as a customer would normally use it).

The justification and manipulation of cables and equipment in order to simulate a worst-case behavior of the test setup has been carried out as prescribed in ANSI C63.4:2009.

### Figure 1: Test Setup Diagram



Notes:

For more details, refer to the document: Test Set-Up Photographs document.

### 4.4 Test Software

The EUT was provided by the manufacturer with suitable software to allow operation in all the required modes.

Software used for testing: DiagGUI.

This software was running on a laptop computer (AUX1). It was used to enable the test operation modes listed in section 4.2 as appropriate.



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4.5 Special Acces	sories and Auxiliary Equipm	nent
<ol> <li>Host 1         <ul> <li>Product:</li> <li>Brand:</li> <li>Model:</li> <li>Rated Voltage:</li> <li>Antenna:</li> <li>Serial Number:</li> <li>Remarks:</li> </ul> </li> </ol>	Access point LANCOM L-452agn Wireless 12 Vdc external, 5 pieces SMA-female con 4002333718100063 host for EUT	tra connector
2. Host 2 Product: Brand: Model: Rated Voltage: Antenna: Serial Number: Remarks:	Access point LANCOM L-451agn Wireless 12 Vdc external, 3 pieces SMA-female con 4002333718100029 host for EUT	tra connector
<ol> <li>AUX1 Product: Brand: Model: Serial Number: Remark:</li> </ol>	Laptop Computer Lenovo 9456-HTG L3-DHKM6 property customer, host for testsoft LAN connection	ware connects to EUT through
5. AUX2 Product: Brand: Model: Rated Input Voltage: Rated Output Voltage: Remarks:	Power supply adapter Sunny Computer Technology Europ SYS1381-1212-W2E 100-240Vac, 0.5A 12Vdc, 1.0A connects to Host1 or Host2	pe S.R.O.



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### 5. Test Results

### 5.1 Technical Requirements

### 5.1.1 Voltage Requirements

#### RESULT: N/A

Requirements:

FCC 15.31(e)

For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. For battery operated equipment, the equipment tests shall be performed using a new battery.

Verdict:

N/A.

#### 5.1.2 Antenna Requirements

#### **RESULT: PASS**

**Requirements:** 

FCC 15.203

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

Verdict:

The EUT is placed in a host with external antennas. Non standard SMA connectors are used of the reversed type. Hence it complies with the requirements.



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#### 5.1.3 Restricted Bands of Operation

#### **RESULT: PASS**

Requirements:

FCC 15.205

Only spurious emissions are permitted in any of the restricted frequency bands, unless otherwise specified.

Verdict:

Only spurious emissions may be found in the restricted bands of operation and the EUT complies with the restricted frequency band requirement. Any emissions directly related to the transmitter function located in these bands meet the General radiated emissions limits of 15.209.



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5.2 Conducted M	easurements at Antenna Port	
5.2.1 Conducted Out	out Power	
RESULT: N/A		
Date of testing:	N/A	
5.2.2 6dB Bandwidth		
RESULT: N/A		
Date of testing:	N/A	
5.2.3 Conducted S	ourious Emission	
RESULT: N/A		
Date of testing:	N/A	
5.2.4 Peak Power S	Spectral Density	
RESULT: N/A		
Date of testing:	N/A	



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5.2.5 Band Edge E	missions in the 2G4 band	
<b>RESULT:</b> Pass		
Date of testing:	2012-10-30 and 31	
Requirements: FCC 15.205, FCC 15.209	) and FCC 15.407	
In any 100 kHz bandwidth spectrum or digitally mod frequency power that is p least 20 dB below that in the highest level of the de measurement, provided t power limits.	n outside the frequency band in which the ulated intentional radiator is operating, th roduced by the intentional radiator shall b the 100 kHz bandwidth within the band th esired power, based on either an RF cond he transmitter demonstrates compliance	e spread e radio be at nat contains ducted or a radiated with the peak conducted
Test procedure:		
Measurements were perf the peak of the fundamer RBW = 1MHz, VBW = 3N	ormed using a spectrum analyzer with a s Ital and using the following settings: 1Hz.	suitable span to encompass
For signals in the restricted emissions with respect to the average and peak fie of the unintentional emiss The highest emission am in this report. Plots are provided on the the 20dB offset below D1	ed bands a measurement was made of th the intentional signals. The relative ampled strength of the fundamental emission, t sions. plitudes relative to the appropriate limit w next pages. Line D1 indicates the highes	te amplitude of the spurious litude (in dBc) was applied to to calculate the field strength ere measured and recorded st level and line D2 indicates
Results: All out of band s See Plots 1 through 12 o	purious emissions are more than 20 dB b n the following pages.	elow the fundamental.



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802.11a

#### Restricted band (4500 – 5150 MHz)

Frequency (MHz)	Fundamental emission [dBµV]	Delta (dB)	Max field strength in restricted band [dBµV/m]	Limit [dBµV/m]	Plot number
5180.00 (PK)	103.2	41.0	62.2	74.00	1
5180.00 (AV)	92.4	43.7	48.7	54.00	2

#### Restricted band (5350 - 5460 MHz)

Frequency (MHz)	Fundamental emission [dBµV]	Delta (dB)	Max field strength in restricted band [dBµV/m]	Limit [dBµV/m]	Plot number
5240.00 (PK)	103.1	43.1	60.0	74.00	3
5240.00 (AV)	92.5	40.0	52.5	54.00	4

Note:

- Delta is the difference in amplitude of the peak of the fundamental and the peak of the band edge emission, as marked in the plots.
- Maximum field strength in restricted band = Fundamental emission Delta.



802.11a 5180	MHz Peak			
Spectrum				Ē
RefLevel 100.00 dBμV Ο Att 0 dB S	ffset 3.00 dB ● RBW 1 WT 13.2 µs ● VBW 3	. MHz 1 MHz <b>Mode</b> Auto FFT		( •
1Pk View		M9[1]		20 07 dp.uv
		mz[1]		5.114940 GHz
90 dBµV		M1[1]		74.98 dBµV 5.175140 GHz
30 dBµV			M1	
—————————————————————————————————————				
70 dBµV				with 1
50 dBµV			/	
D2 55.057 dB	μν			
іо dBµV				
40 dBuV				
			$\sim$	
ið dBµV	- manufacture			
10 db 4/				
l0 dBµV				
			1	

Date: 30.0CT.2012 10:13:05

Lower authorized band edge attenuation is more than the required 20dB.





Date: 30.0CT.2012 10:56:26

Lower authorized band edge attenuation is more than the required 20dB.











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802.11n-20MHz

#### Restricted band (4500 - 5150 MHz)

Frequency (MHz)	Fundamental emission [dBµV]	Delta (dB)	Max field strength in restricted band [dBµV/m]	Limit [dBµV/m]	Plot number
5180.00 (PK)	108.8	40.1	68.7	74.00	5
5180.00 (AV)	94.8	41.6	53.2	54.00	6

#### Restricted band (5350 - 5460 MHz)

Frequency (MHz)	Fundamental emission [dBµV]	Delta (dB)	Max field strength in restricted band [dBµV/m]	Limit [dBµV/m]	Plot number
5240.00 (PK)	108.9	39.9	69.0	74.00	7
5240.00 (AV)	95.0	41.1	53.9	54.00	8

Note:

- Delta is the difference in amplitude of the peak of the fundamental and the peak of the band edge emission, as marked in the plots.
- Maximum field strength in restricted band = Fundamental emission Delta.



802.11n-20	MHz 5180 MHz I	Peak	am,			
Spectrum						
Ref Level 100.00 dBµ∀ Att 0 dB	Offset 3.00 dB ● 1 ● SWT 20 ms ● 1	RBW 1 MHz VBW 3 MHz N	<b>1ode</b> Auto Sv	veep		( ' '
)1Pk View						
			M1[1]		7	4.50 dBµV
90 dBµV					5.1 3 5.1	75720 GHZ 4.36 dBµV 50000 GHz
80 dBµV-					M1	
70 dBµV				4 4		
60 dBµV						4 
D2 54.500	) dBµV			J.Contradia		
40 dBµV			M2	ull and a second se		
онания 30 dBµV	mannaktion	Mondeward	math mar mar	~		
20 dBµV						
10 dBµV						
			F1			
CF 5.142 GHz	I I	691 pts			Span 1	00.0 MHz





Date: 30.0CT.2012 13:59:52

Note: display lines D1 and D2 were set incorrect, but marker values M1 and M2 are correct and used for calculations Lower authorized band edge attenuation is more than the required 20dB.





Higher authorized band edge attenuation is more than the required 20dB.





Date: 30.0CT.2012 14:54:32

Higher authorized band edge attenuation is more than the required 20dB.



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#### 802.11n – 40 MHz

#### Restricted band (4500 – 5150 MHz)

Frequency (MHz)	Fundamental emission [dBµV]	Delta (dB)	Max field strength in restricted band [dBµV/m]	Limit [dBµV/m]	Plot number
5190.00 (PK)	103.6	41.6	62.0	74.00	9
5190.00 (AV)	88.1	34.3	53.8	54.00	10

#### Restricted band (5350 - 5460 MHz)

Frequency (MHz)	Fundamental emission [dBµV]	Delta (dB)	Max field strength in restricted band [dBµV/m]	Limit [dBµV/m]	Plot number
5230.00 (PK)	103.5	36.3	67.2	74.00	11
5230.00 (AV)	88.9	37.7	51.2	54.00	12

Note:

- Delta is the difference in amplitude of the peak of the fundamental and the peak of the band edge emission, as marked in the plots.
- Maximum field strength in restricted band = Fundamental emission Delta.





Date: 31.0CT.2012 09:35:06

Lower authorized band edge attenuation is more than the required 20dB.



				-
lot 10: Band Edge En 802,11n-40MH	nissions, Spectral [ z 5190 MHz Averag	Diagram, e		
		•		
Spectrum Ref Level 100.00 dBµ∀ Off	f <b>set</b> 3.00 dB <b>⊜ RBW</b> 1 MHz	2		(▽)
Att OdB 🕳 SW. TDF	/T 50 s 👄 VBW 10 Hz	Mode Auto Swe	ер	
1Av View		M1[1]		50.91 dBuV
00 dBut/		MO[1]		5.191570 GHz
		MZ[1]	1 1	5.150000 GHz
80 dBµV				
70 dBµV				
				M1
50 dBµV				
<del>10 dBµV</del> D2 39,810 dBµV				
30 dBµV				
20 dBuV	мз	Ma	2	
10 dBµV		F1		
CF 5.114 GHz	691 p	ts	5	pan 200.0 MHz
Т	•	Measuring		31.10.2012

Lower authorized band edge attenuation is more than the required 20dB.





Date: 31.0CT.2012 10:15:35

Higher authorized band edge attenuation is more than the required 20dB.



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lot 12: Band Edge 802.11n-40	Emissions, Spec MHz 5230 MHz Av	tral Diagram, ⁄erage			
Spectrum					
RefLevel 100.00 dBµV Att 0 dB ∈	Offset 3.00 dB ● RBW SWT 50 s ● VBW	1 MHz 10 Hz <b>Mode</b> Auto Sy	weep		( •
1Av View		M1[1]		5	8.03 dBuV
ю dвµV		M2[1]		5.22 2 5.35	2640 GHz 0.34 dBµV
30 dBµV				+	
0 dBµV					
D1 58.030 dBµV-					
C dBµV	dBμV−−−−−				
Ф dвµV					
0 dBµV	M4		M2	M3	
о авил					
			F1		
F 5.306 GHz		691 pts		Span 2	00.0 MHz

Higher authorized band edge attenuation is more than the required 20dB.



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5.2.6 Radiated Spur	ious Emissions of Transmi	tter	
RESULT: PASS			
Date of testing:	2012-10-13 to 30		
Frequency range:	30MHz - 50GHz		
Requirements:			
FCC 15.205, FCC 15.209 a	and FCC 15.247(d)		
Radiated emissions which with the radiated emission	fall in the restricted bands, as defined limits specified in FCC 15.209(a).	I in FCC 15.205(a), must comply	
Radiated emissions which fall outside the operation frequency band and outside restricted bands shall either meet the limit specified in FCC 15.209(a) or be attenuated at least 20dB below the power level in the 100kHz bandwidth within the band that contains the highest level of the desired power (the less severe limit applies).			
Test procedure:			
The EUT was placed on a measurements of radiated emission spectrum profile. and the EUT orientation (X amplitudes were attained.	nonconductive turntable 0.8m above emissions were performed, the EUT The physical arrangement of the test (, Y, Z) were varied in order to ensure	the ground plane. Before final was scanned to determine its system, the associated cabling that maximum emission	
The spectrum was examine transmitter frequency (50G and 40 GHz, the band 40 C measurements were made	ed from 30MHz to the 10th harmonic Hz). Since no spurious emissions we GHz up to 50 GHz was not investigate at 3m distance.	of the highest fundamental re observed between 20 GHz ed. Final radiated emission	
At each frequency where a antenna was raised and low level. Measurements were	e spurious emission was found, the EU wered from 1 to 4m in order to determ taken using both horizontal and vertion	JT was rotated 360° and the nine the emission's maximum cal antenna polarizations.	
The highest emission ampl Field strength values of rac 20 dB below the applicable	litudes relative to the appropriate limit diated emissions at frequencies not lis e limit.	were recorded in this report. Sted in the tables are more than	



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#### Table 3: Radiated Emission, Quasi Peak Data, 30MHz - 1GHz

Frequency	Measurement results	Measurement results	Limits @3m	Pass/Fail
	@3m Vertical	@3m Horizontal		
(MHz)	(dBµV/m)	(dBµV/m)	(dBµV/m)	
30.0-88.0	< 20.0	< 7.0	40.0	PASS
Except for:				
50.52	30.9	22.6	40.0	PASS
82.64	20.0	7.6	40.0	PASS
88.0 – 216.0	< 19.0	< 15.0	43.0	PASS
Except for:				
95.28	21.9	17.0	43.0	PASS
125.0	31.7	29.2	43.0	PASS
172.32	22.7	26.8	43.0	PASS
209.40	19.5	15.2	43.0	PASS
216.0 – 950.0	< 19.0	< 24.0	46.0	PASS
Except for:				
260.80	19.9	24.3	46.0	PASS
302.96	37.2	34.3	46.0	PASS
356.10	33.9	28.3	46.0	PASS
543.20	30.5	31.6	46.0	PASS
875.0	32.4	35.0	46.0	PASS
928.64	36.6	27.3	46.0	PASS
950.0-1000.0	< 40.0	< 30.0	54.0	PASS
Except for:				
956.56	41.4	32.0	54.0	PASS

The results of the radiated emission tests, carried out in accordance with 47 CFR Part 15: 2009 section 15.209 with the EUT operating in mode switched to generate maximum levels. Maximum level recorded of the total system.

#### Notes:

- 1. Field strength values of radiated emissions at frequencies not listed in the table above are more than 20 dB below the applicable limit.
- 2. The reported field strength values are the worst case values at the indicated frequency. The receiving antenna was varied in horizontal and vertical orientations and also in height (between 1 m and 4 m).
- 3. A Quasi-Peak detector was used with a resolution bandwidth of 120 kHz.

Test engineer

Signature

Name: L. Koopmans Date: September 13, 2012



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#### Table 4: Radiated Emission, 1 - 40GHz, 802.11a

Freq. [MHz]	Antenna Orientation	Level PK [dBµV/m]	Limit AV [dBµV/m]
4841	Vertical	35.4	54
9487	Vertical	41.5	54
13798	Vertical	37.2	54
25744	Vertical	45.8	54
29176	Vertical	43.5	54
38768	Vertical	50.6	54

Note: Peak detector used with a bandwidth of 1 MHz. peak values already within Av limits therefor Av values not measured.

#### Table 5: Radiated Emission, 1 - 40GHz, 802.11n-20MHz

Freq. [MHz]	Antenna Orientation	Level PK [dBµV/m]	Limit AV [dBµV/m]
4763.9	Vertical	34.1	54
13785	Vertical	37.0	54
18113	Vertical	39.6	54
20376	Vertical	44.3	54
31684	Vertical	47.4	54
33048	Vertical	50.6	54

Note: Peak detector used with a bandwidth of 1 MHz. peak values already within Av limits therefor Av values not measured.

#### Table 6: Radiated Emission, 1 - 40GHz, 802.11n-40MHz

Freq. [MHz]	Antenna Orientation	Level PK [dBµV/m]	Limit AV [dBµV/m]
4831.6	Vertical	34.3	54
6679	Vertical	36.8	54
18113	Vertical	39.9	54
18686	Vertical	38.5	54
25700	Vertical	33.3	54
29805	Vertical	41.6	54

Note: Peak detector used with a bandwidth of 1 MHz. peak values already within Av limits therefor Av values not measured.



#### Test Report No.: 124100401.fcc02 Page 35 of 36 5.3 AC Power Line Conducted Measurements 5.3.1 AC Power Line Conducted Emission of Transmitter **RESULT: Pass** Date of testing: September 13, 2012 Measurement results **Measurement results** Frequency Limits dB(µV) dB(µV) Result dB(µV) Neutral Line QP AV QP AV QP AV Pass/Fail MHz PASS < 25.0 < 15.0 0.15 – 0.5 < 24.0 < 10.0 66.0-56.0 56.0-46.0 Except for: 36.0 66.0 PASS 0.15 12.0 << << 56.0 0.175 31.2 20.0 64.7 54.7 PASS << << 0.196 32.0 16.8 63.7 53.7 PASS << << 0.212 26.1 16.6 PASS << << 63.0 53.0 0.261 24.5 11.0 61.3 51.3 PASS << << 0.311 28.2 16.3 60.0 50.0 PASS << << 0.5 - 5.0 <10.0 < 24.0 < 10.0 < 10.0 56.0 46.0 PASS Except for: 0.616 PASS 25.1 10.3 56.0 46.0 << << 0.820 25.7 11.2 << << 56.0 46.0 PASS 2.026 25.2 11.6 56.0 46.0 PASS << << 24.4 11.6 46.0 PASS 2.74 56.0 << << 27.8 30.1 16.3 4.21 13.2 56.0 46.0 PASS 5.0 - 30.0 < 20.0 < 15.0 PASS

The results of the conducted emission tests, carried out in accordance with 47 CFR Part 15: 2009 section 15.109, at the AC mains connection terminals which were connected to the EUT, are above in table. The system is tested as in whole, so with all equipment in place and functioning. Being the worst case situation. Maximum results are reported.

18.1

<<

25.2

<<

#### Notes:

1. Measurement uncertainty is ±3.5 dB

< 24.0

<<

24.1

Except for: 13.186

13.83

< 15.0

<<

17.8

The resolution bandwidth used was 9 kHz. 2.

Test engineer

Hudmoler

60.0

60.0

60.0

50.0

50.0

50.0

A -

PASS

PASS

Signature Name

: K.F v.d. Molen, Checked by T.E.T. Koning



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