

Shenzhen Chuangwei-RGB Electronics Co., Ltd.

TEST REPORT

SCOPE OF WORK FCC TESTING-NTUD-U8

REPORT NUMBER 190510033SZN-003

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101, 201, Building B, No. 308 Wuhe Avenue, Zhangkengjing Community, GuanHu Subdistrict, LongHua District, ShenZhen. Tel: (86 755) 8601 6288 Fax: (86 755) 8601 6751 www.intertek.com

Intertek Report No.: 190510033SZN-003

Shenzhen Chuangwei-RGB Electronics Co., Ltd.

Application For Certification

FCC ID: 2ANM3NTUDU8

WIFI Module

Model: NTUD-U8

Brand Name: Skyworth

2.4GHz Transceiver

Report No.: 190510033SZN-003

We hereby certify that the sample of the above item is considered to comply with the requirements of FCC Part 15, Subpart C for Intentional Radiator, mention 47 CFR [10-1-17]

Prepared and Checked by:

Approved by:

Ryan Chen Engineer Kidd Yang Technical Supervisor Date: 29 May 2019

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Intertek Testing Services Shenzhen Ltd. Longhua Branch

101, 201, Building B, No. 308 Wuhe Avenue, Zhangkengjing Community, GuanHu Subdistrict, LongHua District, ShenZhen. Tel: (86 755) 8601 6288 Fax: (86 755) 8601 6751



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MEASUREMENT/TECHNICAL REPORT

Shenzhen Chuangwei-RGB Electronics Co., Ltd.

Model: NTUD-U8

FCC ID: 2ANM3NTUDU8

This report concerns (check one)	Original Grant <u>X</u> Class II Change		
Equipment Type: <u>DTS - Part 15</u> portion)	Digital Transmission Systems (Wi-Fi transmitter		
Deferred grant requested per 47 C	FR 0.457(d)(1)(ii)? Yes <u>No X</u>		
	If yes, defer until : date		
Company Name agrees to notify th	ne Commission by:		
	date		
of the intended date of announce issued on that date.	ement of the product so that the grant can be		
Transition Rules Request per 15.37? Yes NoX			
Transition Rules Request per 15.3	7? Yes NoX_		
	7? Yes <u>No X</u> t C for intentional radiator - the new 47 CFR		
If no, assumed Part 15, Subpart			



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List of attached file

Exhibit type	File Description	Filename
Test Report	Test Report	report.pdf
Test Setup Photo	Radiated Emission	radiated photos.pdf
Test Setup Photo	Conducted Emission	conducted photos.pdf
External Photo	External Photo	external photos.pdf
Internal Photo	Internal Photo	internal photos.pdf
Block Diagram	Block Diagram	block.pdf
Schematics	Circuit Diagram	circuit.pdf
Operation Description	Technical Description	descri.pdf
ID Label/Location	Label Artwork and Location	label.pdf
User Manual	User Manual	manual.pdf
Cover Letter	Confidentiality Letter	request.pdf
Cover Letter	Letter of Agency	agency.pdf



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EXHIBIT 1 SUMMARY OF TEST RESULTS

Version: 01-November-2017



1.0 Summary of Test results

WIFI Module

Model: NTUD-U8

FCC ID: 2ANM3NTUDU8

TEST ITEM	REFERENCE	RESULTS
Max. Output power	15.247(b)(3)	Pass
6 dB Bandwidth	15.247(a)(2)	Pass
Max. Power Density	15.247(e)	Pass
Out of Band Antenna Conducted Emission	15.247(d)	Pass
Radiated Emission in Restricted Bands	15.247(d)	Pass
AC Conducted Emission	15.207	Pass
Antenna Requirement	15.203	Pass (See Notes)

Notes: The EUT uses an Integral Antenna which in accordance to Section 15.203 is considered sufficient to comply with the provisions of this section.



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EXHIBIT 2

GENERAL DESCRIPTION



2.0 General Description

2.1 Product Description

The Equipment Under Test (EUT) is a WIFI Module with 2 Antennas operating at 2412-2462MHz for 802.11b/g/n-HT20, 11 channels with 5MHz channel spacing and 2422-2452MHz for 802.11n-HT40, 7 channels with 5MHz channel spacing. The EUT can be powered by DC 3.3V. For more detailed features description, please refer to the user's manual.

Antenna Type: Integral antenna Type of Modulation: BPSK, QPSK, 16QAM, 64QAM, CCK, DQPSK, DBPSK, DSSS, OFDM.

Antenna Gain: 3.1 dBi Max for 2.4G WIFI

For electronic filing, the brief circuit description is saved with filename: descri.pdf.

2.2 Related Submittal(s) Grants

This is an application for certification of DTS- Part 15 Digital Transmission Systems (2.4GHz Wi-Fi transmitter portion).

For the Bluetooth EDR mode was tested and demonstrated in report 190510033SZN-001.

For the Bluetooth BLE mode was tested and demonstrated in report 190510033SZN-002.

For other digital function was tested and demonstrated in report 190416023SZN-004.



2.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.10: 2013 and KDB 558074 D01 v05r02. Radiated emission measurement was performed in semi-anechoic chamber and conducted emission measurement was performed in shield room. For radiated emission measurement, preliminary scans were performed in the semi-anechoic chamber only to determine the worst case modes. All radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the "Justification Section" of this Application. All other measurements were made in accordance with the procedures in part 2 of CFR 47.

2.4 Test Facility

The Semi-Anechoic chamber and shield room used to collect the radiated data and conducted data are **Intertek Testing Services Shenzhen Ltd. Longhua Branch** and located at 101, 201, Building B, No. 308 Wuhe Avenue, Zhangkengjing Community, GuanHu Subdistrict, LongHua District, ShenZhen. This test facility and site measurement data have been fully placed on file with the FCC (Registration Number: CN1188).

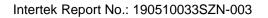




EXHIBIT 3

SYSTEM TEST CONFIGURATION



3.0 System Test Configuration

3.1 Justification

For emissions testing, the equipment under test (EUT) setup to transmit continuously to simplify the measurement methodology. Care was taken to ensure proper power supply voltages during testing. During testing, all cables were manipulated to produce worst case emissions. The EUT was powered by USB port through laptop with 120V/60Hz input during the test, only the worst data was reported in this report.

For maximizing emissions, the EUT was rotated through 360°, the EUT was placed on the styrene turntable with 0.8m up to 1GHz and 1.5 m above 1GHz. The antenna height and polarization are varied during the search for maximum signal level. The antenna height is varied from 1 to 4 meters. Radiated emissions are taken at three meters unless the signal level is too low for measurement at that distance. If necessary, a pre-amplifier is used and/or the test is conducted at a closer distance.

All readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance. Analyzer resolution is 100 kHz or greater for frequencies below 1000 MHz. The resolution is 1 MHz or greater for frequencies above 1000 MHz. The spurious emissions more than 20 dB below the permissible value are not reported.

The rear of unit was flushed with the rear of the table.

Radiated emission measurement were performed the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.

3.2 EUT Exercising Software

The EUT exercise program (provided by client) used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use. The worst case configuration is used in all specified testing.

The parameters of test software setting:

During the test, Channel and power controlling software provided by the applicant was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the application and is going to be fixed on the firmware of the end product.



3.3 Special Accessories

N/A.

3.4 Measurement Uncertainty

When determining of the test conclusion, the Measurement Uncertainty of test has been considered.

Uncertainty and Compliance – Unless the standard specifically states that measured values are to be extended by the measurement uncertainty in determining compliance, all compliance determinations are based on the actual measured value.

3.5 Equipment Modification

Any modifications installed previous to testing by Shenzhen Chuangwei-RGB Electronics Co., Ltd. will be incorporated in each production model sold / leased in the United States.

No modifications were installed by Intertek Testing Services Shenzhen Ltd. Longhua Branch.

3.6 Support Equipment List and Description

This product was tested in the following configuration:

Description	Manufacturer	Model No.
Laptop (Provided by Intertek)	DELL	Latitude 3480
Serial Cable (Provided by Chuangwei)	N/A	Unshielded, Length 15cm
USB Cable (Provided by Intertek)	N/A	Unshielded, Length 1.3m
RJ45 Cable (Provided by Intertek)	N/A	Unshielded, Length 4.5m
Hard Disk (Provided by Intertek)	Smart.drive	HD-003
USB Serial Driver (Provided by Chuangwei)	N/A	N/A

Refer List:



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EXHIBIT 4

MEASUREMENT RESULTS



Applicant: Shenzhen Chuangwei-RGB Electronics Co., Ltd. Date of Test: 18 May 2019

Model: NTUD-U8

4.0 Measurement Results

4.1 Maximum Conducted Output Power at Antenna Terminals, FCC Rules 15.247(b)(3):

The antenna power of the EUT was connected to the input of a broadband peak RF power meter. The power meter has a video bandwidth that is greater than DTS bandwidth and utilize a fast-responding diode detector. Power was read directly at the EUT antenna terminals with cable loss added.

For antennas with gains of 6dBi or less, So maximum allowed Transmitter output is 30dBm (1000mW). The 2.4G band Ant gain is: 3.1 dBi. In MIMO (2Tx), Ant1 + Ant2 Directional gain = GANT + $10\log(N)$ dBi = $3.1 + 10\log(2) = 6.1dBi > 6dBi$, so the Power limit is 30.0dBm (1W) for SISO mode, and 29.9dBm for MIMO mode.

	SISO	Mode	Ant 1	
--	------	------	-------	--

IEEE 802.11b (Antenna Gain = 3.1dBi) (CCK, 1Mbps)		
Frequency (MHz)	Output in dBm (Peak reading)	Output in mWatt
Low Channel: 2412	14.60	28.8
Middle Channel: 2437	14.65	29.2
High Channel: 2462	14.56	28.6

IEEE 802.11g (Antenna Gain = 3.1dBi) (16QAM, 6Mbps)		
Frequency (MHz)	Output in dBm (Peak reading)	Output in mWatt
Low Channel: 2412	17.58	57.3
Middle Channel: 2437	17.71	59.0
High Channel: 2462	17.72	59.2

IEEE 802.11HT20 (Antenna Gain = 3.1dBi) (16QAM, 6.5Mbps)		
Frequency (MHz)	Output in dBm (Peak reading)	Output in mWatt
Low Channel: 2412	17.45	55.6
Middle Channel: 2437	17.50	56.2
High Channel: 2462	17.49	56.1

IEEE 802.11HT40 (Antenna Gain = 3.1dBi) (64QAM, 13.5Mbps)		
Frequency (MHz)	Output in dBm (Peak reading)	Output in mWatt
Low Channel: 2422	17.26	53.2
Middle Channel: 2437	17.35	54.3
High Channel: 2452	17.39	54.8



SISO Mode Ant 2:

IEEE 802.11b (Antenna Gain = 3.1dBi) (CCK, 1Mbps)		
Frequency (MHz)	Output in dBm (Peak reading)	Output in mWatt
Low Channel: 2412	16.38	43.5
Middle Channel: 2437	16.35	43.2
High Channel: 2462	16.38	43.5

IEEE 802.11g (Antenna Gain = 3.1dBi) (16QAM, 6Mbps)			
Frequency (MHz)Output in dBm (Peak reading)Output in mWatt			
Low Channel: 2412	18.95	78.5	
Middle Channel: 2437	19.19	83.0	
High Channel: 2462	19.29	84.9	

IEEE 802.11HT20 (Antenna Gain = 3.1dBi) (16QAM, 6.5Mbps)				
Frequency (MHz)	Frequency (MHz) Output in dBm (Peak reading) Output in mWatt			
Low Channel: 2412	18.73	74.6		
Middle Channel: 2437	18.95	78.5		
High Channel: 2462	19.16	82.4		

IEEE 802.11HT40 (Antenna Gain = 3.1dBi) (64QAM, 13.5Mbps)			
Frequency (MHz)Output in dBm (Peak reading)Output in mWatt			
Low Channel: 2422	18.68	73.8	
Middle Channel: 2437	18.86 76.9		
High Channel: 2452	18.95	78.5	

MIMO Mode

IEEE 802.11n-HT20 (MIMO, Antenna Gain = 6.1dBi) (16QAM, 6.5Mbps)				
Frequency (MHz)		Output in dBm		Worst Total
	(Peak reading)		Output in mWatt	
	Ant 1 Ant 2 Total			
Low Channel: 2412	17.29	18.69	21.05	127.5
Middle Channel: 2437	17.30	18.85	21.15	130.4
High Channel: 2462	17.38	19.02	21.29	134.5



IEEE 802.11n-HT40 (MIMO, Antenna Gain = 6.1dBi) (64QAM, 13.5Mbps)				
Frequency (MHz)		out in dBm		Worst Total
	(Peak reading)		Output in mWatt	
	Ant 1			
Low Channel: 2422	17.18	18.68	21.00	126.0
Middle Channel: 2437	17.24	18.79	21.09	128.5
High Channel: 2452	17.20	18.81	21.09	128.5

Cable loss: 0.5 dB External Attenuation: 0 dB Cable loss, external attenuation has been included in OFFSET function

EUT max. output level = 21.29dBm EUT max. radiated output level = 21.29dBm + 6.1dBi = 27.39dBm

For RF Exposure, the information is saved with filename: RF exposure.pdf.



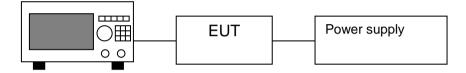
Applicant: Shenzhen Chuangwei-RGB Electronics Co., Ltd. Date of Test: 18 May 2019

Model: NTUD-U8

4.2 Minimum 6 dB RF Bandwidth, FCC Rule 15.247(a) (2):

The antenna port of the EUT was connected to the input of a spectrum analyzer. Analyzer RES BW was set to 100 KHz according to FCC KDB 558074 D01 v05r02. For each RF output channel investigated, the spectrum analyzer center frequency was set to the channel carrier. A PEAK output reading was taken, a DISPLAY line was drawn 6 dB lower than PEAK level. The 6dB bandwidth was determined from where the channel output spectrum intersected the display line.

Block Diagram:



Spectrum Analyzer

Limit: The 6 dB Bandwidth is at least 500 kHz.

SISO Mode, Ant1:

IEEE 802.11b (CCK, 1Mbps)		
Frequency (MHz) 6 dB Bandwidth (MHz)		
2412	9.12	
2437	9.12	
2462	9.55	

IEEE 802.11g (16QAM, 6Mbps)		
Frequency (MHz)6 dB Bandwidth (MHz)		
2412	15.11	
2437	15.11	
2462	15.11	

IEEE 802.11n-HT20 (16QAM, 6.5Mbps)		
Frequency (MHz) 6 dB Bandwidth (MHz)		
2412	15.46	
2437	15.46	
2462	15.46	



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IEEE 802.11n-HT40 (64QAM, 13.5Mbps)		
Frequency (MHz)6 dB Bandwidth (MHz)		
2422	35.17	
2437	35.17	
2452	35.25	

SISO Mode, Ant2:

IEEE 802.11b (CCK, 1Mbps)		
Frequency (MHz)	6 dB Bandwidth (MHz)	
2412	9.03	
2437	9.07	
2462	9.07	

IEEE 802.11g (16QAM, 6Mbps)		
Frequency (MHz)	6 dB Bandwidth (MHz)	
2412	15.33	
2437	15.11	
2462	15.11	

IEEE 802.11n-HT20 (16QAM, 6.5Mbps)		
Frequency (MHz) 6 dB Bandwidth (MHz)		
2412	15.11	
2437	15.11	
2462	15.11	

IEEE 802.11n-HT40 (64QAM, 13.5Mbps)							
Frequency (MHz)	6 dB Bandwidth (MHz)						
2422	35.17						
2437	35.25						
2452	35.17						

MIMO Mode:

IEEE 802.11n-HT20 (16QAM, 6.5Mbps)							
Frequency (MHz) 6 dB Bandwidth (MHz)							
2412	15.11						
2437	15.11						
2462	15.11						



Total Quality. Assured. TEST REPORT

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IEEE 802.11n-HT40 (64QAM, 13.5Mbps)							
Frequency (MHz)	6 dB Bandwidth (MHz)						
2422	35.25						
2437	35.25						
2452	35.25						

The test plots are attached as below.



SISO Mode, Ant1:

Spect	um	1						(m)
Ref Le	vel 2	1.50 dt	m Offset	0.50 dB 🖷	RBW 100 kHz			100
Att		40	dB SWT	75.9 µs 🖷	VBW 300 kHz /	Mode Auto FF	r	
1Pk M	BK2	1112				e coordination and	2	
-	-		-			D1[1]		-0.59 df
								9.1170 MH
10 dBm	-			-	1 1 00	-M1[1]		-5.28 dBn
					M2	141	6	2.4074410 GH
0 dBm-	-			MI	wining the	What what a feel of	-	
		1 -5.19		pet the		alan 1	NA .	
10 dBm	+		Julashal	AL			14	
			whe	N			Varia	
-20 dBm			when	-	-		- why	
			P				1	4
-30 dBm	-	76	M	-			-	M
		N						N.
49.den	1.10	1	-					Internet
	h	N						Pinto anto
-50 dBm		<u>u</u>	_					101
022022	-							
-60 dBm								
22.323			-				-	
-70 dBm								
CF 2.4	12 GH	2			691 pts			Span 30.0 MHz
larker								
Type	Ref	Trc	X-valu	10 91	Y-value	Function	Fun	ction Result
MI		1		441 GH2	-5.28 dBm			
D1	M1	1		117 MHz	-0.59 dB			
M2		1	2.4124	776 GHz	0.81 dBm			





Spect							
Ref Le	vel 2	1.50 dBm 40 dB			Mode Auto FFT		
1Pk M	bit 2	1.1.200.2					
10 dBm-	_				D1[1] M1[1]		-0.14 d 9.5510 MH -4.99 dBr 2.4574410 GH
0 dBm—	-	1 -4.710	m	marriage p	hat	1	
-10 dBm		1 -4//10	int	Y	- COL	tru.	
-20 dBrr	-		whent			Marian	
-30 dBm		.)	X			-	Y
49. dB/	m.	P		_		_	1 miles
-50 dBm	-	S.					W. W.
-60 dBm	-					-	
-70 dBm						-	· · · · · · · · · · · · · · · · · · ·
CF 2.46	52 GH	z		691 pts			Span 30.0 MHz
Aarker	-	- 1			Transland I		1 h
Type M1	Ref	Trc 1	2,457441 GHz	Y-value -4.99 dBm	Function	Func	tion Result
D1	M1	1	9.551 MHz	-0.14 dB			
M2	1714	1	2.462999 GHz	1.29 dBm			

802.11g

Spect Ref Le		1.50 dBr 40 d			Mode Auto FFT		(m)
1Pk M	BK :	1.1.					
10 dBm					D1[1] 	с т.	-0.32 dE 15.1090 MH -8.37 dBm 2.4294460 GH
D dBm-			Nº I when		Indralher	A	
-10 dBm		1 -8.690	met and	V		- Andrew -	
-20 dBm						the state	
-30 dBm -40 dBm	inner	purtur					mound
-50 dBm							
-60 dBm	+			4			
-70 dBm	-						
CF 2.4	37 GH	z		691 pts			Span 30.0 MHz
Marker	Ref	Trc	X-value	Y-value	Function	Function	Bocult
Type	1001	1	2.429446 GHz	-8.37 dBm	runcion	Function	INUSUIL
D1	M1	1	15.109 MHz	-0.32 dB			
M2		1	2.438259 GHz	-2.69 dBm			



		1.50 dB					
Att	in a	40 d	8 SWT 75.9 µs 🖷	VBW 300 kHz 1	Mode Auto FFT		
10 dBm-	20.				D1[1] 	6	-0.32 dE 15.1090 MH; -8.37 dBn 2.4294460 GH;
D dBm-			man man	Multurburber po	here and a second se	i ini	
-10 dBm	D;	1 -8.690	dam and and and and and	d D d d d d d d d d d d d d d d d d d d	and a station of a station	undersiding .	
-20 dBm	+					h	-
-30 dBm	_	and the					1.
-30 dBm ////// -40 dBm	aur Wi	m				-	Thanknow
-50 dBm	+						
-60 dBm	-					-	
-70 dBm	-						
CF 2.43	7 GH	2	-	691 pts			Span 30.0 MHz
Marker					/		c===
Туре	Ref		X-value	Y-value	Function	Fund	tion Result
M1 D1	M1	1	2.429446 GHz 15.109 MHz	-8.37 dBm -0.32 dB			
M2	WIT	1	2.438259 GHz	-2.69 dBm			

Spects Ref Le		L.50 dBr 40 d			Node Auto FFT		[₩
1Pk M	âκ.:	11.200					
10 dBm					D1[1] 	e ï	-0.24 dB 15.1090 MH -8.29 dBm 2.4544460 GH
-10 dBm	01	-8.360	dam Minestructured		Twelfordhand	and and a	
-20 dBrr			1		_		
-30 dBm	inn	part					Markondy
-40 dBm -50 dBm							
-60 dBm	+						
-70 dBm	Ŧ						
CF 2.46	52 GH	z	4 1	691 pts			Span 30.0 MHz
Marker							
Түре	Ref	Trc	X-value	Y-value	Function	Functio	on Result
M1 D1	M1	1	2.454446 GH2 15.109 MHz	-8.29 dBm -0.24 dB			
M2	1112	1	2.463259 GHz	-2.36 dBm			



802.11n20

Spect	rum						l m ⇒
Ref Le Att	vel 2	1.50 dB 40 d	입니다. 그 전 것이는 것 같은 것이 같은 것이 없다.	 RBW 100 kHz VBW 300 kHz 	Mode Auto FFT		buin
1Pk M	âκ.	h to the					
10 dBm					D1[1] 		0.57 dB 15.4560 MHz -11.23 dBm 2.4040980 GHz
0 dBm-		1 -10.7	so dentront	an Andread pe	Juntant	hardentery	
-20 dBm		ice control	S S	V1		any	
-30 dBm	2	antrol					The second
-50 dBm				_		_	when when
60 dBm	+					-	
-70 dBm	÷						
CF 2.4	12 GH	2		691 pts			Span 30.0 MHz
Aarker	Ref	Trc	x-value	Y-value	Function	Ermet	ion Result
Type M1	K61	1	2.404098 GHz		Function	Funct	IUN ROSUIT
D1	M1	1	15.456 MHz	the second se			
M2		1	2.413259 GHz				

Spect Ref Le		1.50 dB/ 40 d			Mode Auto FFT		[
1Pk M	ак:	11.2					
10 dBm	-				D1[1] 		8.87 (15.4560 M -10.53 dB 2.4290980 G
0 dBm-	+			-	MZ		
-10 dBm	-0	1 -10,67	10 dem Joan Laulan	Angeline drag pe	Anotheralling	har handformen	
-20 dBm	-		1	V V			
-30 dBm	6 H -		<i>y</i>	_			Ye -
AD HBA	And	Arns				_	Marina
-50 dBm						_	
-60 dBm	+					_	
-70 dBm	+						
CF 2.4	37 GH	2		691 pts	-		Span 30.0 MH
Marker	1-1-1-1				NA - NY		x
Түре	Ref		X-value	Y-value	Function	Func	tion Result
M1		1	2.429098 GHz	-10.53 dBm			
D1	M1	1	15.456 MHz	0.07 dB			
M2		1	2.438259 GHz	-4.67 dBm			



Spects Ref Let		1.50 dBr	m Offset 0.50 dB	RBW 100 kHz			
Att		40 d	B SWT 75.9 µs	BW 300 kHz 1	Mode Auto FFT		
91Pk M	BK.						
10 dBm-	-				D1[1] 		8.64 di 15.4560 MH -11.10 dBn 2.4540980 GH
D dBm-					(iii)	1	
-10 dBm	-0	1 -10,67	10 dente Aranda	and marken pe	Two ballands	- Handfrey	-
-20 dBm			-	Y			
-30 dBm	+	1					
AC HER	ممد	a M					formeren
-50 dBm	÷						
-60 dBm	÷						
-70 dBm	+						
CF 2.46	52 GH	z		691 pts			Span 30.0 MHz
Marker	1-000	1000-02		9 — va — v	w		2011 - M
Туре	Ref	Trc	X-value	Y-value	Function	Fund	ction Result
M1		1	2.454098 GHz	-11.10 dBm			
D1	M1	1	15.456 MHz	0.64 dB			
M2		1	2.463259 GHz	-4.67 dBm			

802.11 n40

		1.50 dB		RBW 100 kHz		(m
Att	in.	40 d	B SWT 132.7 µs 🖷	VBW 300 kHz	Mode Auto FFT	
10 dBm	50.				D1[1] 	5.57 dE 35.1660 MH - 16.53 dBn 2.4193730 GH
0 dBm-	D	1 -13.76	50 Henry barry barry	tigetetalang m	du Lakalada	wholy he had to
-20 dBm -30 dBm	-					
-50 dBm		tur				Yaunsayah
-60 dBm	-					
-70 dBm	-					
CF 2.4	37 GH	2	1 1	691 pts		Span 60.0 MHz
Marker		- 1				
Type M1	Ref	Trc 1	2.419373 GHz	-16.53 dBm	Function	Function Result
D1	M1	1	35.166 MHz	-10.53 dBm 5.57 dB		
M2		1	2.440734 GHz	-7.76 dBm		



Spectr Ref Lev		1.50 d8	m Offset 0.50 dB 🖷	RBW 100 kHz		(The second seco
Att		40 (Mode Auto FFT	
●1Pk Ma	kK 2	1112		Marchaela esta de la face	www.eerico.com/www.	
10 dBm-					-D1[1] M1[1]	5.57 dl 35.1660 MH -16.53 dBr 2.4193730 GH
D dBm—	+				1000	
-10 dBm					Jul tabalation	
-20 dBm	_	1 -13.7	60 this hat the work		C. S. C. S. C. S. C. L. S. C.	- Andrewet
-30 dBm	+		/			
1999-28m	hory	tur				Younunt
-50 dBm	+					
-60 dBm	+				-	
-70 dBm	+					
CF 2.43	17 GH	z		691 pts		Span 60.0 MHz
Marker		10-0-07				1
	Ref		X-value	Y-value	Function	Function Result
M1		1	2.419373 GHz	-16.53 dBm		
D1	M1	1	35.166 MHz	5.57 dB		
M2		1	2.440734 GHz	-7.76 dBm		

Spects Ref Le Att		1.50 dBi 40 d		RBW 100 kHz VBW 300 kHz	Mode Auto FF1	r -
1Pk M	êK.	11.2				
10 dBm					D1[1] 	0.89 di 35.2530 MH -16.71 dBn 2.4343730 GH
0 dBm-	1	1 - 12 (12)	od Main Laborated	athertichang and	M2	while the state of
-20 dBm		1 -13.70	00 demitter contraction	V		and a start and a start and a start
-30 dBm		1				
-50 dBm	22 12	-uni				Umphanta
-60 dBm	+					
-70 dBm	+					
CF 2.4	52 GH	2		691 pts	1.1.1	Span 60.0 MHz
larker		-				
Type M1	Ref	Trc 1	2.434373 GH2	-16.71 dBm	Function	Function Result
D1	M1	1	35.253 MHz	0.89 dB		
M2		1	2.455734 GHz	-7.70 dBm		



SISO Mode, Ant2:

302.1	1b							
Spectr	um							(m)
Ref Let	vel 2	1.50 dB 40 (12 C 2 C 2 C 2 C 2 C 2 C 2 C 2 C 2 C 2 C	RBW 100 kHz VBW 300 kHz f	Mode Auto FFT		t ^a test.
●1Pk Ma	kK.	111						
						D1[1]		0.90 dt 9.8300 MH
10 dBm-	+				M2			-2.56 dBn 2.4074850 GH
D dBm-	-0	1 -2,12	0 dam	MI	manily m	Mand and a		
-10 dBm	-		. And	1 miles	V		Vann	
-20 dBm	+		Under	114			w wy	
-3D dBm	-	P	۶ –					Mu -
-40 dBif	J.	-{					-) Jonens
-50 dBm	-	U.					_	- V
-60 dBm	-				2			
-70 dBm	-							
CF 2.41	2 GH	2	-		691 pts			Span 30.0 MHz
Marker								64
Түре	Ref	Trc	X-valu	e H85 GHz	-2.56 dBm	Function	Fun	ction Result
M1 D1	M1	1		BS GH2 D3 MHz	-2.56 dBm			
M2	1417	1		03 MH2	3.88 dBm			





Spect Ref Le		1.50 dB	m Offset 0.5	0 dB 🖷 I	RBW 100 kHz				
Att	_	40 d	B SWT 75	9 µs 🖷 '	VBW 300 kHz 1	Mode Auto FF1			
01Pk M	bK /								
10 dBm					a ha hy p	D1[1]	6	and the second se	1.02 df 0740 MH 2.94 dBn 9190 GH
D dBm-	0	1 -1.57) dBm	with	Contrast V	White white	4		
-10 dBm	+		weekster	1	W.		Varue.		
-20 dBrr	-		Julie	M			* Un	0	
-30 dBm			1				-	No.	
-40 dBh	M	f			_		_	1	Ment
-50 dBm	-	1	-		-		_	V	
-60 dBm			-						
-70 dBm	-		-						
CF 2.4	52 GH	2	-1		691 pts			Span 3	30.0 MHz
Marker		- 1	- 15				-		
Type	Ref	1	2.45791	2 (51)	-2.94 dBm	Function	Func	tion Result	
D1	M1	1	2.45791		1.02 dB				
M2	1714	1	2.46299		4.43 dBm				

80.11g

Spect Ref Le		1.50 dBr 40 d	입니다. 이야지 않는 것 같은 것은 것이야지 않는 것이 없다.		Mode Auto FFT		(m) V
1Pk M	BK :	11.200					
10 dBm					D1[1] 	б. Т	0.28 dB 15.3260 MHz -7.13 dBm 2.4042290 GHz
D dBm-			341 A A	Sundhustres an	Incolorally	4 01	
-10 dBm		1 -6.950	am Minorhandura	V		annuty	
-20 dBm	-						/
-30 dBm	ww	Nov North			_		Mundahan
-40 dBm	(+					-	
-50 dBrr	-						
-60 dBm	+						
-70 dBm	+						
CF 2.4	12 GH	2		691 pts	-		Span 30.0 MHz
Marker		- 1					
Type M1	Ref	Trc 1	2.404229 GHz	-7.13 dBm	Function	Functi	on Result
D1	M1	1	15.326 MHz	0.28 dB			
M2		1	2.413259 GHz	-0.95 dBm			



Spect								(œ ♥
Ref Le	vel 2	1.50 dB 40 (Mode Auto FFT			
9 1Pk M	bit 2	1.1.5						
10 dBm-	_				D1[1] 			-8.33 di 5.1090 MH -6.40 dBn 294460 GH
0 dBm-	-	1 .6.92	0 cam and manual		Incologiallowello	4. 41		
-10 dBm	10	A -Mide	U South allow the	V				-
-20 dBm	-		A			-		
-30 dBm	-	No. N.	M			-	M	
-3D dBm	with	July.					sourch	man
-40 dBm	+					-	-	
-50 dBm	-							-
-60 dBm						-		-
-70 dBm								
CF 2.4	37 GH	z	4	691 pts			Spar	30.0 MHz
Marker	1-1-1-1	1000						
Туре	Ref		X-value	Y-value	Function	Fun	ction Resul	t
M1		1	2.429446 GHz	-6.40 dBm				
D1	M1	1	15.109 MHz	-0.33 dB				
M2		1	2.438259 GHz	-0.82 dBm				

Spect Ref Le		1.50 dB	m Offset 0.50 dB 🖷	RBW 100 kHz			
Att		40 d	18 SWT 75.9 µs 🖷	VBW 300 kHz M	Ande Auto FFT		
1Pk M	âK.						
10 dBm				-	D1[1] 	с т	-0.15 d 15.1090 MH -6.35 dBr 2.4544460 GH
0 dBm-		- see -	o cam to allow have		*	I DI	
-10 dBm	01	1 -6.51	dam al contraction	V		- something	
-20 dBr	+	-	A			-	
-30 dBm ////// -40 dBm	www	rand					Murphan
-50 dBr	+		-			-	
-60 dBm	+		-			-	
-70 dBm	+					-	
CF 2.4	52 GH	2		691 pts			Span 30.0 MHz
Marker	1-1-1-1	V				A	(==
Түре	Ref		X-value	Y-value	Function	Funct	ion Result
M1		1	2.454446 GHz	-6.35 dBm			
D1 M2	M1	1	15.109 MHz 2.463259 GHz	-0.15 dB			
M2	<u> </u>	- A1.	2.403259 GHz	-0.51 dBm			



802.11 n20

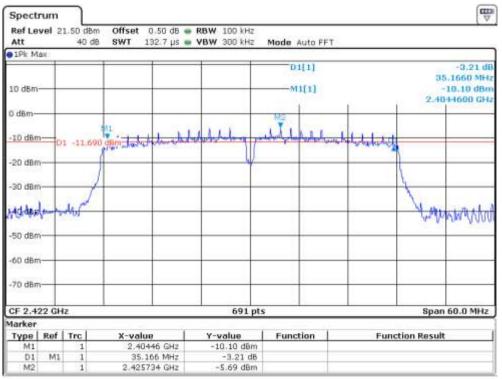
Spectr	um						(m)
Ref Les	vel 2	1.50 dBr 40 d			Mode Auto FFT		
1Pk Ma	SK2	1.1.5			<		
10 dBm-					D1[1] 		8.30 dB 15.1090 MHz -9.50 dBm 4044460 GHz
0 d8m-	-0	1 -9.200	Brathan Last	Ambality	Throw Janiloud	auflandbury	
-20 dBm	+		h	-			
-30 dBm		and the				Two	allaguere
-50 dBm							
-60 dBm	+						
-70 dBm	+						
CF 2.41	12 GH	2		691 pts		Sp	an 30.0 MHz
larker	-	- 1			Transfer 1		2
Type M1	Ref	Trc 1	X-value 2.404446 GHz	-9.50 dBm	Function	Function Res	un
D1	M1	1	15.109 MHz	0.30 dB			
M2		1	2.413259 GHz	-3.20 dBm			

Spect Ref Le		1.50 dBr 40 d			Mode Auto FFT			
1Pk M	ŝκ.							
10 dBm					D1[1] 			-8.21 dB .1090 MHz -9.07 dBm 94460 GHz
0 dBm-	-01	-8.900	Burghand and and	un have for	Junpalmal	and allow	-11.	
-20 dBrr								
-30 dBr		North Contract					tway	Aurour
-50 dBm						_		
-60 dBm	÷					-		
-70 dBm	÷			- (j				
CF 2.4	37 GH	2		691 pts			Span	30.0 MHz
Marker Type	Ref	Trc	X-value	Y-value	Function	E·····	tion Result	
MI	A.61	1	2.429446 GHz	-9.07 dBm	runction	Fun	AION RESUL	-
D1	M1	1	15.109 MHz	-0.21 dB				
M2		1	2.438259 GHz	-2.90 dBm				



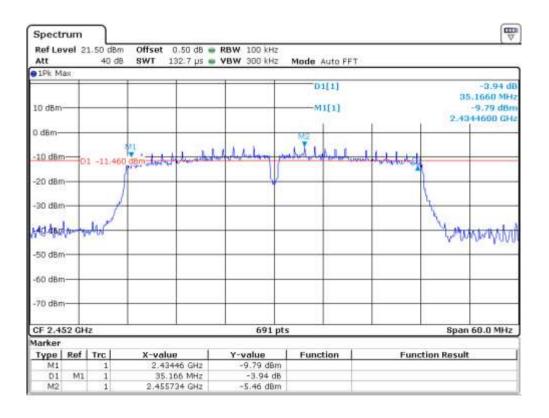
Spects Ref Les		1.50 dBr 40 d			Mode Auto FFT		
ALL 1Pk M	ks: >	40 U	9 9M1 1214 hz 🖷	YBW 300 KH2 1	MODE AUTO FFT		
10 dBm	1				D1[1] 	6	-0.53 dE 15.1090 MH -8.26 dBn 2.4544460 GH
0 dBm-			MI A Ann	morting por			
-10 dBm	-0	1 -8.630	dem June land	V		ward and	
-20 dBm	-				_	_	1
-30 dBm		1	/				1
-30 dan	m	Ver					home
-50 dBm	+			_			·
-60 dBm	÷					-	
-70 dBm	÷						
CF 2.46	52 GH	2		691 pts			Span 30.0 MHz
Marker	1						S === - 10
Туре	Ref		X-value	Y-value	Function	Func	tion Result
M1		1	2.454446 GHz	-8.26 dBm			
D1	M1	1	15.109 MHz	-0.53 dB			
M2		1	2.463259 GHz	-2.63 dBm			

802.11 n40





Spectr Ref Let			m Offset 0.50 dB 🖷	RBW 100 kHz		
Att	461 2	40 0			Mode Auto FFT	
1Pk M	SH2	111.5				
10 dBm-					D1[1] 	0.92 di 35.2530 MH -14.62 dBn 2.4193730 GH
D dBm—	+				M2	- In the dester
-10 dBm	-0	1 -11.5	ad Jam to to the house	Mahahay por	J. J. J. H. H. L.	total total
-20 dBm				V		
-3D dBm	_		/			1
hadden	-	alger				Haunwashn
-50 dBm	-		-			(F. 1) 07 (100)
-60 dBm	-					
-70 dBm	-			- (j		
CF 2.43	37 GH	2		691 pts		Span 60.0 MHz
Marker	- 1997	1-1-07				1
Туре	Ref		X-value	Y-value	Function	Function Result
M1	-	1	2.419373 GHz	-14.62 dBm		
D1	M1	1	35.253 MHz	0.92 dB		
M2		1	2.440734 GHz	-5.58 dBm		





MIMO Mode: 802 11p20

Spects Ref Les		1.50 dł 40		State -	RBW 100 kHz VBW 300 kHz M	Mode Auto FFT		q
1Pk M	KR2					and sure it i		
10 dBm-						D1[1] 	Ĕ.	-0.36 d 15.1090 MF -10.56 dB 2.4044460 GF
0 dBm—	-0	1 -10.8	M1 180 dem (Anna	marken per	Theat walked	hartenting	
-20 dBm			1		V	_		N. Contraction of the second s
-30 dBm		and a				_	-	3
Адави	ray	Nov.					-	Monora
-50 dBm	+							
-60 dBm	-							
-70 dBm	+							
CF 2.4	2 GH	2	1 1		691 pts			Span 30.0 MH
Marker		- 1	15	1	Marking I			1
Type M1	Ref	Trc 1	2.404446	CH 2	-10.56 dBm	Function	Func	ction Result
D1	M1	1	15.109	Including the second	-0.36 dB			
M2		1	2.413259		-4.88 dBm			

Spects Ref Le		1.50 dBr 40 d			Mode Auto FF1		
1Pk M	áx:	10 0		1011 000 1012	NUME ACTO FF		
10 dBm					D1[1] 		-0.54 dE 15.1090 MH -10.78 dBn 2.4294460 GH
0 dBm-	-	1 -10.75	20 dem Town Land	inducation per	Therebe	dande there	
-20 dBrr		n =enta 1	J	<u> </u>			
-30 dBm		water					1.
49.088	201						mann
-60 dBm	+				_		
-70 dBm	+	-					n
CF 2.4	37 GH	z		691 pts	1121		Span 30.0 MHz
larker		- 1					
Type M1	Ref		2,429446 GHz	-10.79 dBm	Function	Func	tion Result
D1	M1	1	2.429446 GHZ 15.109 MHz	-10.78 dBm -0.54 dB			
M2	wit	1	2.438259 GHz	-4.79 dBm			



Spects Ref Let		1.50 dB 40 d	입니다. 그 야 아이는 것 같은 것이 같은 것이 같아.	 RBW 100 kHz VBW 300 kHz 	Mode Auto FFT		(H)
1Pk M	BK2				Here and the second		
10 dBm	-				D1[1] 		-0.71 d 15.1090 MH -10.17 dBr 2.4544460 GH
0 dBm-	-				MZ .	-	
-10 dBm	-0	1 -10.65	50 dem Jood	an per hand and pre	-hundralingh	-	
-20 dBm				V		and a	<u> </u>
-30 dBm	-	J	1				1
-19.dem	Anter	work		_			Lunanna
-50 dBm	+			_			
-60 dBm	+						
-70 dBm	+						
CF 2.46	52 GH	2		691 pt			Span 30.0 MHz
Marker	-		16				2 12
Туре	Ref		2.454446 GHz	-10.17 dBm	Function	Func	tion Result
M1 D1	M1	1	2.454446 GH2 15.109 MHz				
M2	WIT	1	2.463259 GHz				

802.11n40

Spects Ref Le		1.50 dB 40 d		RBW 100 kHz VBW 300 kHz	Mode Auto FF	(
DIPk M	BK2				House Hate II	11
10 dBm	-				D1[1] 	0.92 de 35.2530 MH; -16.35 dBn 2.4043730 GH;
0 d8m-		1 -13.5	od Hemsterlander	Whiteherry pe	M2 Wely takedeelee	unhalada kitt
-20 dBm -30 dBm		. 1		¥.		
-50 dBm		ytty				Annahar M
-60 dBm	÷					
-70 dBm	Ŧ					
CF 2.4	22 GH	2		691 pts		Span 60.0 MHz
Marker	1-121	12 W				
Түре	Ref	Trc	X-value	Y-value	Function	Function Result
M1 D1	M1	1	2.404373 GHz 35.253 MHz	-16.35 dBm 0.92 dB		
M2	mit	1	2,425734 GHz	-7.50 dBm		



Spectr Ref Let		1.50 dB	m Offset 0.50 dB 🖷	RBW 100 kHz		(m
Att		40 c			Mode Auto FFT	1. 1.
●1Pk Ma	kK 2	111.7~~		AND SHOULD BE CONTRACT	2004-2411-2-0220 Willi	
10 dBm-						0.35 df 35.2530 MH -16.27 dBn 2.4193730 GH
D dBm—	+			-	-	
-10 dBm			ALCO ALCON	that baken wet	M2 Autotalatestus	
-20 dBm		1 -13.5	00 Henricharty falmalad	V	· · · · · · · · · · · · · · · · · · ·	" have been been been been been been been be
-30 dBm	+	_	<u> </u>			
149.480	turt	Auf	<u>.</u>			Houman
-50 dBm	+					
-60 dBm	+					
-70 dBm	+					
CF 2.43	17 GH	2		691 pts		Span 60.0 MHz
Marker						Lange of the second
Туре	Ref		X-value	Y-value	Function	Function Result
M1		1	2.419373 GHz	-16.27 dBm		
D1 M2	M1	1	35.253 MHz	0.35 dB		
M2		1	2.440734 GHz	-7.50 dBm		

Spectr Ref Lev Att		1.50 dBr 40 d		RBW 100 kHz VBW 300 kHz	Mode Auto FF1	т т
1Pk Ma	N.:	11.1.1.1.1				11
10 dBm-					D1[1] 	8.70 di 35.2530 MH -16.28 dBn 2.4343730 GH
0 dBm	-	13.45	10	allatitation in	Jul Jakashin	
-20 dBm		-100.70	a additioner de	V		
-30 dBm	+	1	/			
199.48d	100m	Mont				Journards
-50 dBm	+				_	
-60 dBm	+					
-70 dBm	+					
CF 2.45	2 GH	2		691 pts		Span 60.0 MHz
Marker Type	Ref	Trc	X-value	Y-value	Function	Function Result
MI	N61	1	2.434373 GHz	-16.28 dBm	runction	runction Result
D1	M1	1	35.253 MHz	0.70 dB		
M2		1	2.455734 GHz	-7.43 dBm		



Applicant: Shenzhen Chuangwei-RGB Electronics Co., Ltd. Date of Test: 18 May 2019

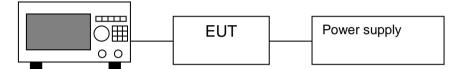
Model: NTUD-U8

4.3 Maximum Power Density Reading, FCC Rule 15.247(e):

The Measurement Procedure PK PSD was set according to the FCC KDB 558074 D01 v05r02.

Antenna output of the EUT was coupled directly to spectrum analyzer; if an external attenuator and/or cable was used, these losses are compensated for with the analyzer OFFSET function.

Block Diagram:



Spectrum Analyzer

The limit of Power Density is 8dBm/3 kHz. SISO Mode, Ant1:

IEEE 802.11b (CCK, 1Mbps)				
Frequency (MHz) Power Density with RBW 3KHz				
2412	-0.20			
2437	-0.07			
2462	0.17			

IEEE 802.11g (16QAM, 6Mbps)				
Frequency (MHz) Power Density with RBW 3KHz				
2412	-16.47			
2437	-16.44			
2462	-16.66			

IEEE 802.11n-HT20 (16QAM, 6.5Mbps)				
Frequency (MHz) Power Density with RBW 3KHz				
2412	-18.64			
2437	-18.15			
2462	-17.76			



TEST REPORT

IEEE 802.11n-HT40 (64QAM, 13.5Mbps)				
Frequency (MHz) Power Density with RBW 3KHz				
2422 -22.50				
2437 -22.69				
2452	-22.76			

SISO Mode, Ant2:

IEEE 802.11b (CCK, 1Mbps)				
Frequency (MHz) Power Density with RBW 3KHz				
2412	1.98			
2437	2.01			
2462	2.30			

IEEE 802.11g (16QAM, 6Mbps)				
Frequency (MHz) Power Density with RBW 3KHz				
2412	-15.84			
2437	-14.84			
2462	-14.72			

IEEE 802.11n-HT20 (16QAM, 6.5Mbps)				
Frequency (MHz) Power Density with RBW 3KHz				
2412	-17.24			
2437	-17.77			
2462	-16.23			

IEEE 802.11n-HT40 (64QAM, 13.5Mbps)				
Frequency (MHz) Power Density with RBW 3KHz				
2422	-20.92			
2437 -20.77				
2452	-21.26			

MIMO Mode:

IEEE 802.11n-HT20 (16QAM, 6.5Mbps)							
Frequency	Power Density v	vith RBW 3KHz	Power Density with				
(MHz)			RBW 3KHz				
	Ant1	Ant1 Ant2					
2412	-18.36	-16.32	-14.21				
2437	-19.70	-16.52	-14.81				
2462	-18.55	-15.32	-13.63				



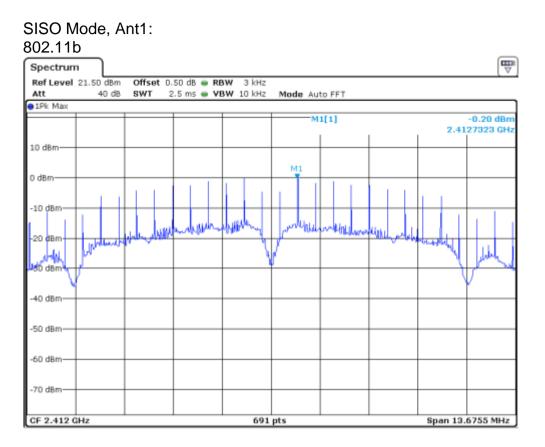
Total Quality. Assured. TEST REPORT

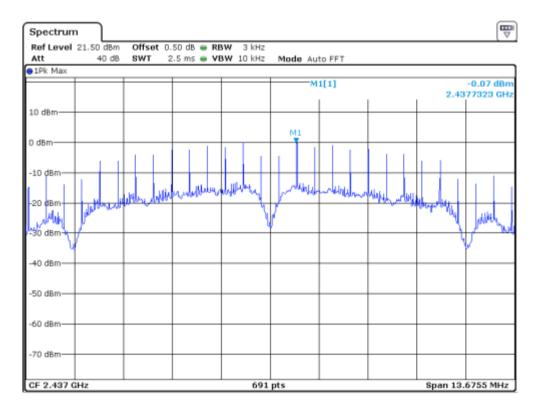
Intertek Report No.: 190510033SZN-003

	IEEE 802.11n-HT40 (64QAM, 13.5Mbps)						
Frequency (MHz)	Power Density v	Power Density with RBW 3KHz					
	Ant1	Ant1 Ant2					
2422	-22.62	-20.51	-18.43				
2437	-22.91	-20.72	-18.67				
2452	-22.24	-20.43	-18.23				

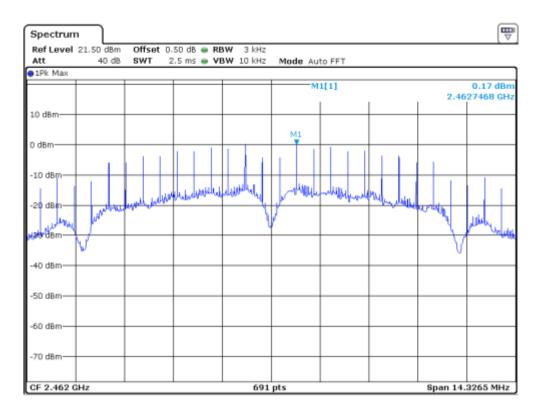


The test plots are attached as below.

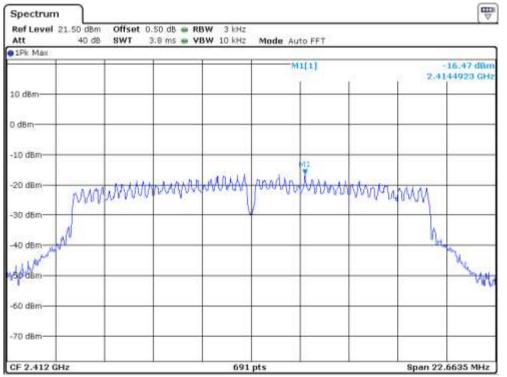




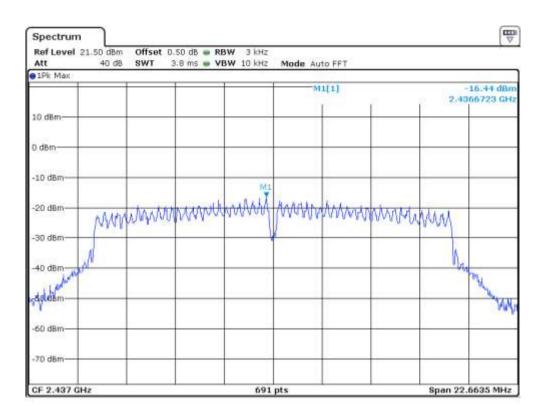


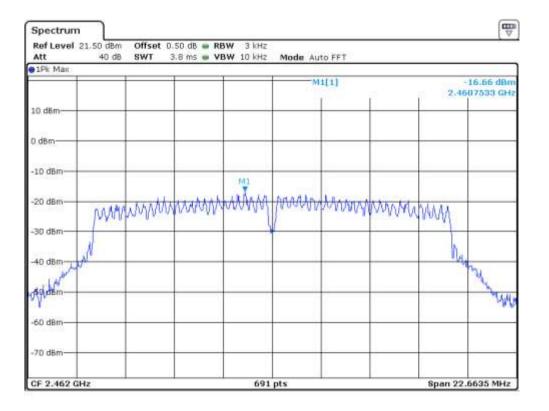


802.11g

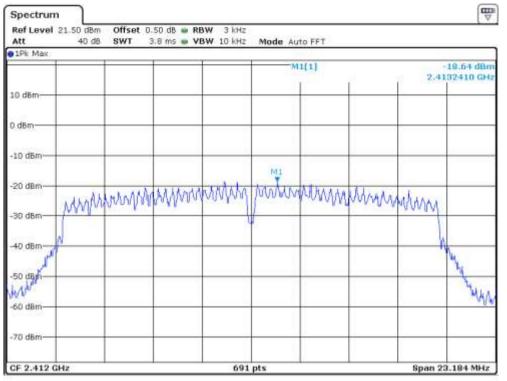


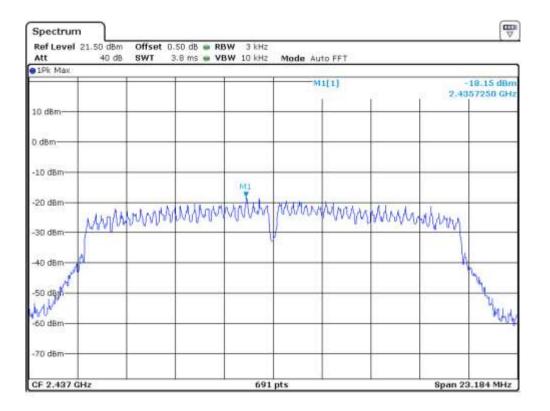




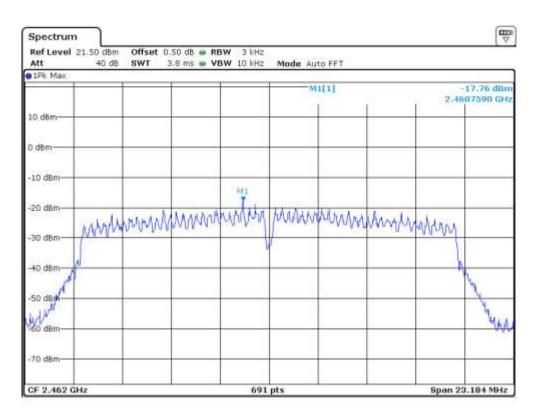


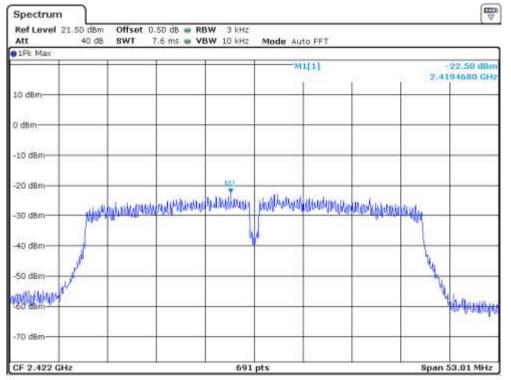






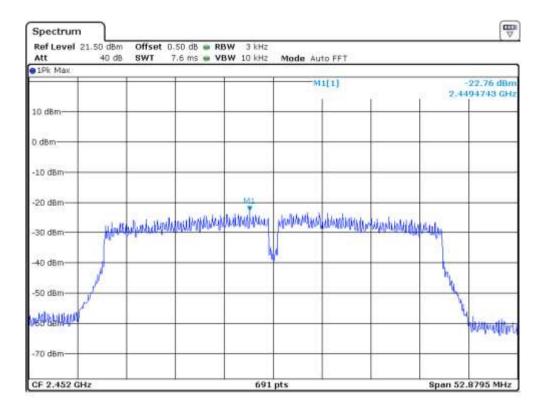




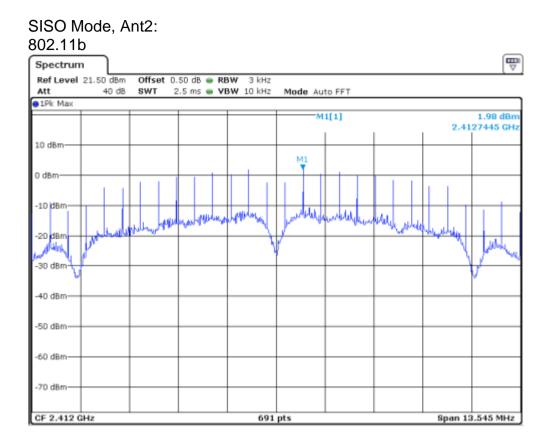


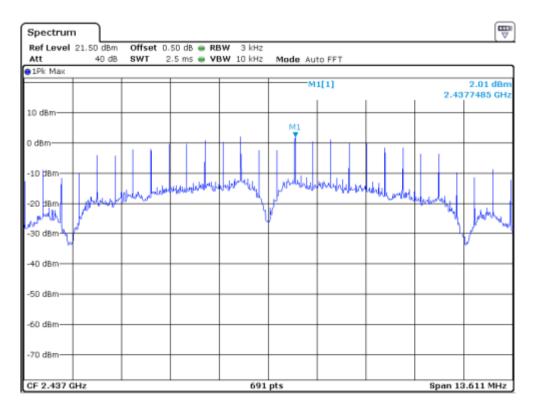


Spectrum Ref Level 21.	.50 dBm	Offset 0	50 dB 🖷 RE	W 3 kHz					(Ţ
Att	40 d8	SWT 7	16 ms 🖷 VE	SW 10 kHz	Mode A	ito FFT			
1Рк Мак									
					2.0	11[1]			22.69 dBm 44885 GHz
10.dBm						-			
D dBm									-
-10 dBm	_					-			
-20 dBm				MI	14		-		
-3D dBm	Mille	painstal	inghetine)	manning	physical	Milanfaatta	Alualization	Aligin	
-40 dBm			_						
-50 dBm	,F							Y	
1991 - Martin Carl								1	Uniboratia
-70 dBm									L. a.d. Mar
CF 2.437 GHz	_			691	nts			Span 5	2.749 MHz

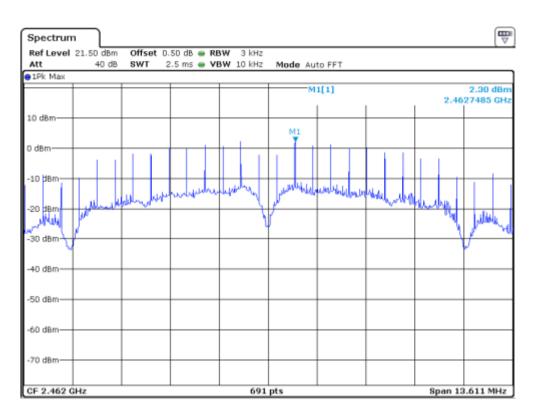




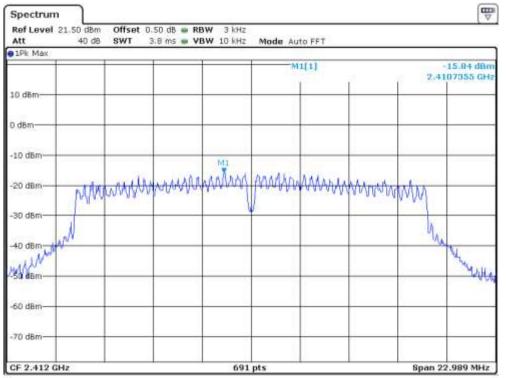




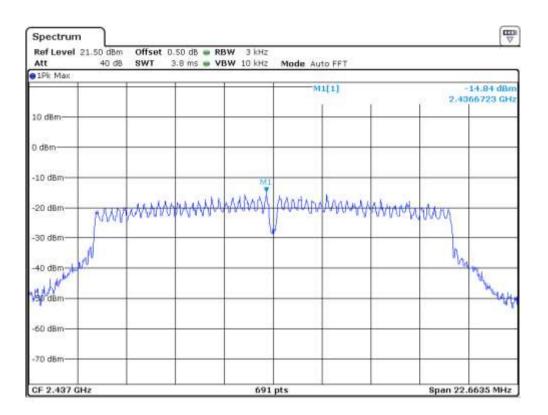


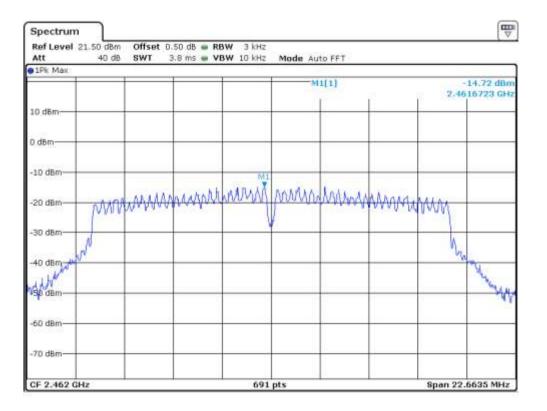


802.11g

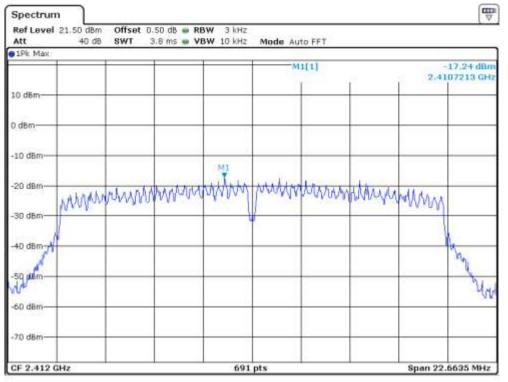


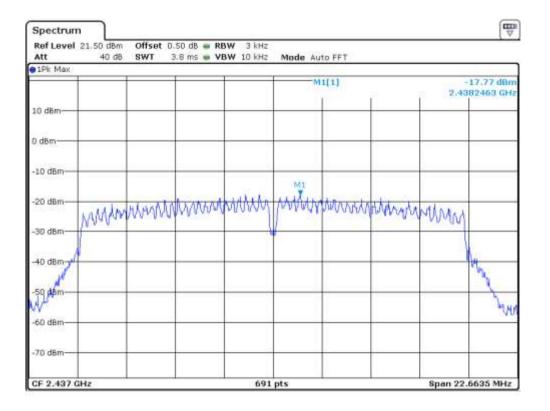




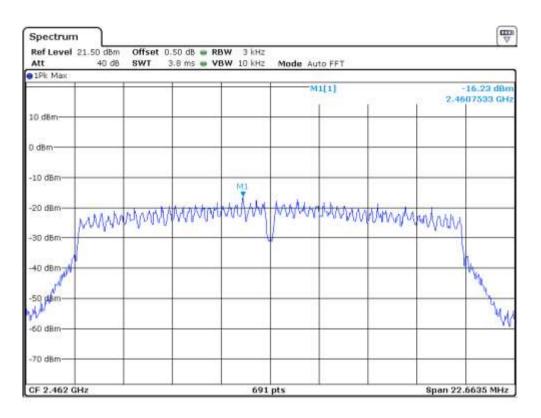








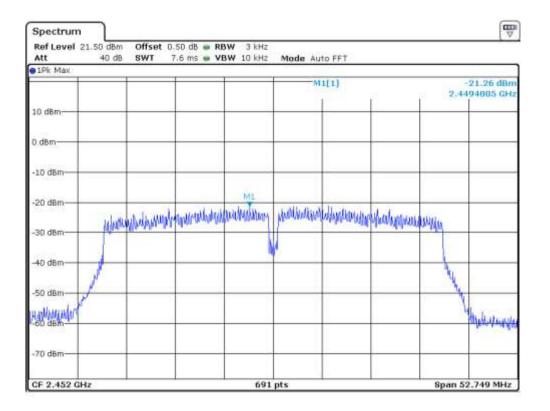




Spectrum Ref Level 21.50		0.50 dB 🖷 RBW	2 141-				[Ţ
	lode SWT	7.6 ms WBW 1		Auto FFT			
1Pk Max		1 1					
				-M1[1]			20.92 dBm 45195 GH;
10 dBm-	_				<u> </u>	1.000.00	
D dBm							
-10 dBm				_			-
-20 dBm		and an life of	the states	hubat duan.		at 200	
-3D dBm	alogundushing	pppontatilitati	aten heran	nasholloshhi	rinhahapitanna	1/m	
0000			W.				
40 dBm						N.	
-50 dBm		-			-	1	
-60 dBm				_		1	hybringh
70 dBm-							
CF 2.422 GHz			691 pts			Span 52	.749 MHz

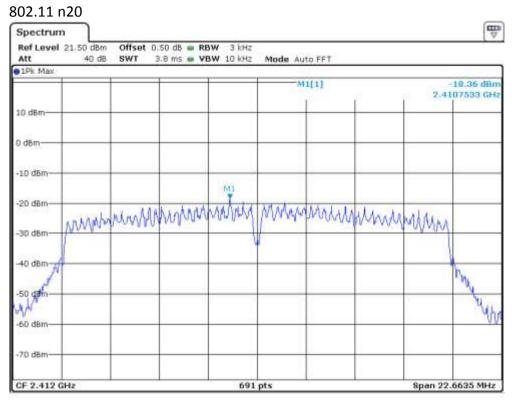


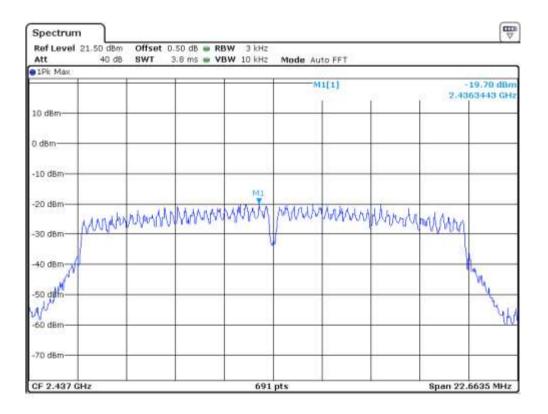
	40 dB S	WT 7.6 ms 🖷	VBW 10 kHz Mode Aut	to FFT	
●1Pk Max				1(1)	-20.77 dBm
					2.4392193 GHz
10.d8m					
D dBm					
-10 dBm					
-20 dBm			M1	at an an	
	abellicht	liquind partition	Manusalanan hanarakan	uning managementation of the second	A R. W. Lay
-30 dBm	Nor art				
-30 dBm			V		
1000-000			V		
-3D dBm					
-40 dBm					ha h



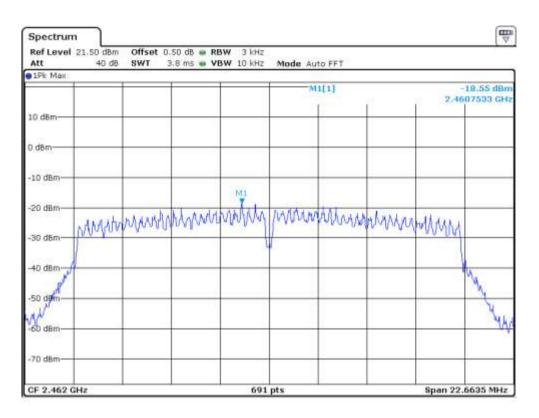


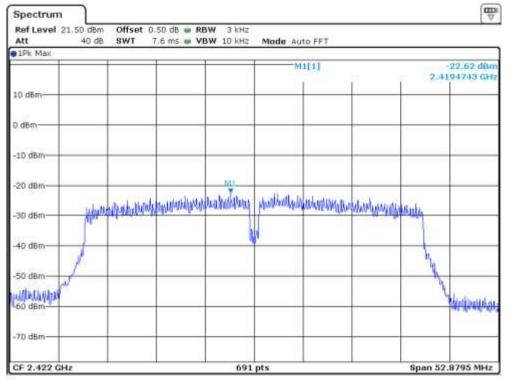
MIMO Mode ANT 1:





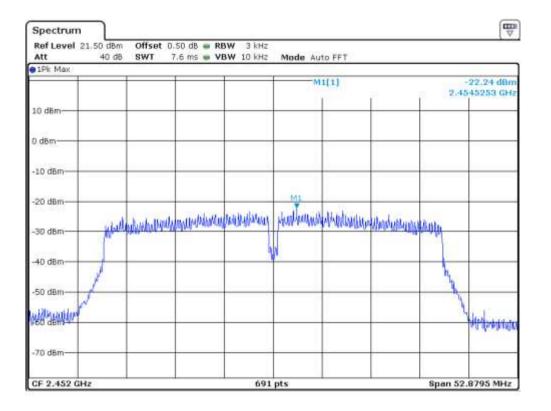






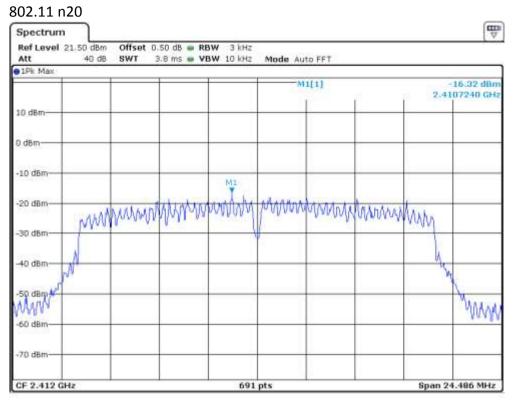


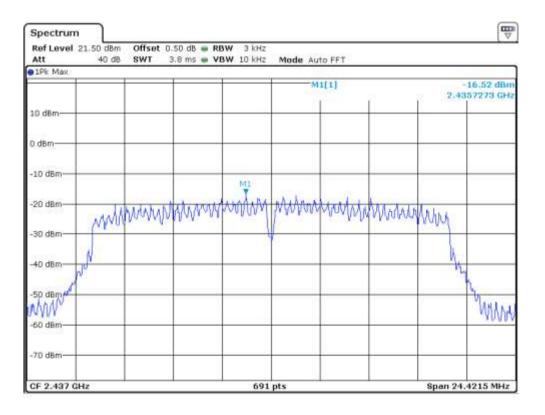
Ref Level 2: Att	1.50 dBm 40 dB		.50 dB 🗰 R 7.6 ms 🗰 V		Mode Au	to FFT			
●1Pk Max	112-5.2			1					
						11[1]			22.91 dBm 95253 GHz
10.d8m			-						
D dBm				-			-		-
-10 dBm							-		
-20 dBm					ML	8			
-30 dBm	New York	hunder	pulliphilite	luomidum	thesphallph	Will plining	winduming	Mada	
-4D dBm	ſ								
	Jul .							hy	
-50 dBm	(N.	i An an an suite
60 dBm									hlinger advisioned a
-70 dBm				-					
CF 2.437 GH	z			691	pts			Span 52.	8795 MHz





MIMO Mode ANT 2:





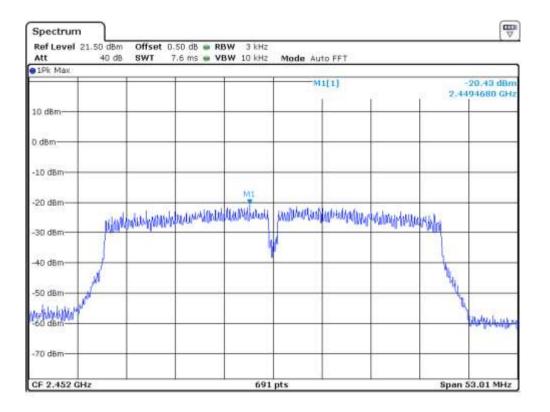


Spectrum			(III)
	Offset 0.50 dB		
1Рік Мах	1 1		
		M1[1]	-15.32 dBn 2.4607240 GH
10 dBm			
D dBm			
-10 dBm-	M1		
-20 dBm	mappymatroatin	hummund	mmmm
30 dBm		¥	
40 dBm			24
SD dBm			WWW
60 dBm			
-70 dBm			
CF 2.462 GHz	69	1 pts	Span 24.486 MHz

Spectrum						(m) V
Ref Level 21. Att	50 dBm Offset 40 dB SWT	0.50 dB • RBW 7.6 ms • VBW		e Auto FFT		
1Pk Max	hite-col - adda.					
				M1[1]	a w	-20.51 dBm 2.4194680 GHz
10 dBm		+ +				
D dBm				_		
-10 dBm		-	-			_
-20 dBm	antistatulu	hladowightelfee	Marianany Marian	an a	allocharteringrady	3
-30 dBm			V			
40 dBm	X					Nu.
-50 dBm	<i>C</i> .	-				1
-60 dBm		-		_		MINHAHAUNE
-70 dBm						
CF 2.422 GHz	3		691 pts			Span 53.01 MHz



Att	40 dB	SWT	0.50 dB 🗰 R 7.6 ms 🗰 V		Mode Au	uto FFT			
1Pk Max			1	1		11[1]			20.72 dBm
					2.9	11[1]	5		94855 GHz
10 dBm-			-			-	-		
D dBm				-					
-10 dBm	_								
-20 dBm			-	and I a	MI		-		
	LUMP.	ad which pushes	humpedin	CHOMMANN AND	Water	una manageria	hind participal	Hully	
-30 dBm		11111417.			1				
-4D dBm	1							6	
-50 dBm	-		-					4	-
-60 dBm			_				_	<u>h</u>	Willeliguns
-70 dBm			-			-			
-70 dBm CF 2.437 GHz				691	nts			Snan 5	3.661 MH





Applicant: Shenzhen Chuangwei-RGB Electronics Co., Ltd. Date of Test: 18 May 2019

Model: NTUD-U8

4.4 Out of Band Conducted Emissions, FCC Rule 15.247(d)

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. The Measurement Procedure was set according to the FCC KDB 558074 D01 v05r02.

All other types of emissions from the EUT shall meet the general limits for radiated frequencies outside the passband.

Refer to the attached test plots for out of band conducted emissions data with rate of 1Mbps for 802.11b, 6Mbps for 802.11g, 6.5Mbps for 802.11n-HT20 and 13.5Mbps for 802.11n-HT40.

The test plots showed all spurious emission up to the tenth harmonic were measured and they were found to be at least 20 dB below the highest level of the desired power in the passband.

Block Diagram:



Spectrum Analyzer

The test plots are attached as below.



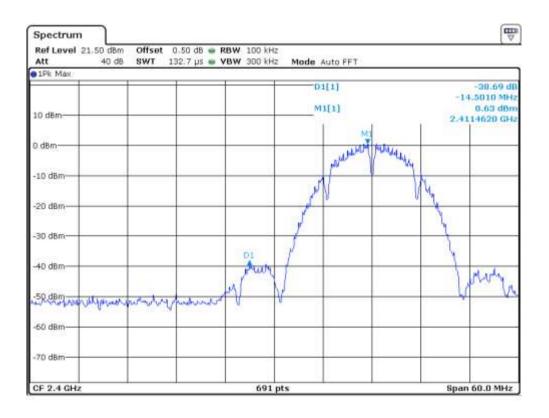
SISO Mode, Ant 1: 802.11b Channel 01 (2412MHz) Reference Level: 1.74dBm

Spectrun	n) i		,						
Ref Level Att	21.50 dBm 40 dB		.50 dB 🖷 RE 7.9 μs 🖷 VE			uto FFT			
1Pk Max									
					м	1[1]		2.41	1.74 dBm 29893 GHz
10 dBm									
0 dBm					M1				
	ne	piner	nn	man (/ mu	mhr	my	m	
-10 dBm	/				/				M
-20 dBm—	, 								v
-30 dBm									
-40 dBm									
-50 dBm									
-60 dBm									
-70 dBm									
CF 2.412 (Hz			691	pts			Span 13.	6755 MHz

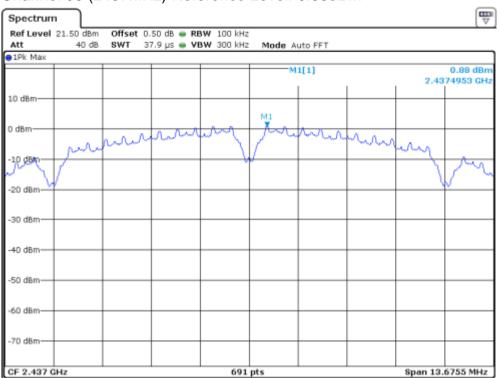
Spectrun	n l								
	21.50 dBm).50 dB 😑 RI						
Att	40 dB	SWT	24 ms 🖷 VI	BW 300 kHz	Mode A	uto Sweep			
●1Pk Max									
					м	1[1]			39.15 dBm 39830 GHz
10 dBm									
0 dBm									
-10 dBm									
-20 dBm	D1 -18.260	dBm							
-30 dBm									
-40 dBm									M
I SR dBpourto	-	1. monoroda		-	والمراجع والمراجع والمراجع	hangener	-	http://www.way	And the state of the
-60 dBm									
-70 dBm									
Start 1.0 M	1Hz			691	pts			Sto	p 2.4 GHz



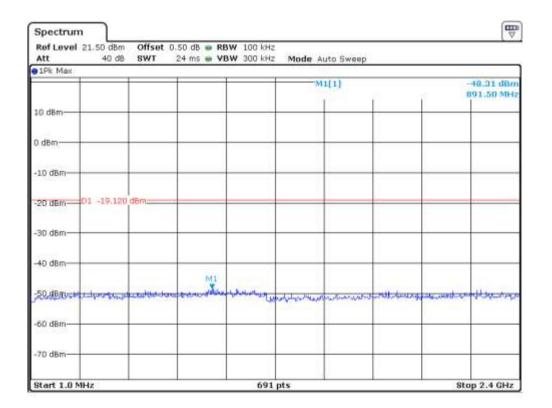
Spectrum					
RefLevel 21.50 dBn Att 40 dt		RBW 100 kHz VBW 300 kHz			
1Pk Max	5 3W1 220 ms	YDW 300 KH2	Mode Auto Swe	ep	
			M1[1]	1	-41.34 dBm 19.8025 GHz
10 dBm					
0 dBm					
-10 dBm					
-20 dBm D1 -18.26	0 dBm				
-30 dBm					
-40 dBm	the second		and the marine	A LUMAN	agter for the service and the
ABO HEM - MUNANN	- Wallow White have and	hours de la		C. Marchae	There are a Markageright
-60 dBm					
-70 dBm					
Start 2.4835 GHz		691	pts		Stop 25.0 GHz



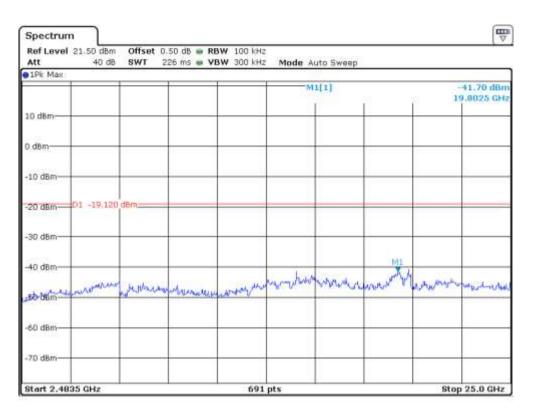




Channel 06 (2437MHz) Reference Level: 0.88dBm





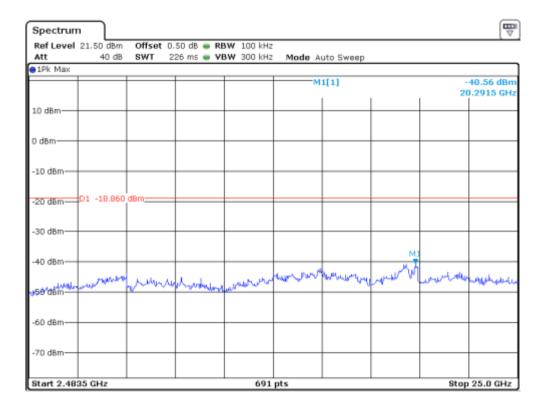


Channel 11 (2462MHz) Reference Level: 1.14dBm

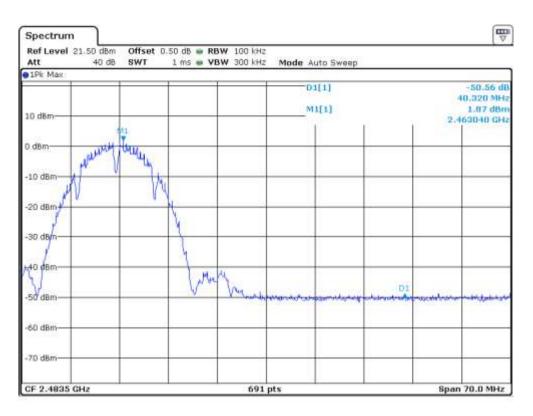
Spectrum	,)								
Ref Level			0.50 dB 😑 R						
Att	40 dB	SWT	37.9 µs 🖷 V	/BW 300 kHz	Mode A	uto FFT			
●1Pk Max									
					M	1[1]		2.46	1.14 dBm 24978 GHz
10 dBm									
10 0000					M1				
0 dBm									
o dom		nn	furm	may	Jun	min	rurus	0	
-10 dBm	pur	× -						had	
and the second	1								Mr
-20 dBm-	W							W	
20 00									
-30 dBm									
-40 dBm									
-50 dBm			_						
-60 dBm			_						
-70 dBm									
CF 2.462 0	Hz			691	pts			Span 14.	3265 MHz



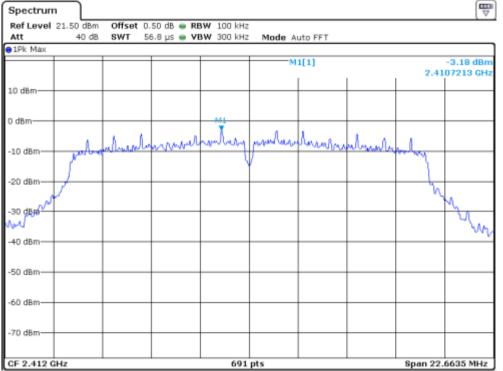
■ 1Pik Max	Mode Auto Sweep
D dBm -10 dBm -20 dBm -30 dBm	
-10 dBm-01 -18.860 dBm	
-20 dBm01 -18,860 dBm	
-30 dBm	
40 dBm	
1444	
50. dBarrow to the charge of t	And the second state of the second
6D dBm	
70 dBm	





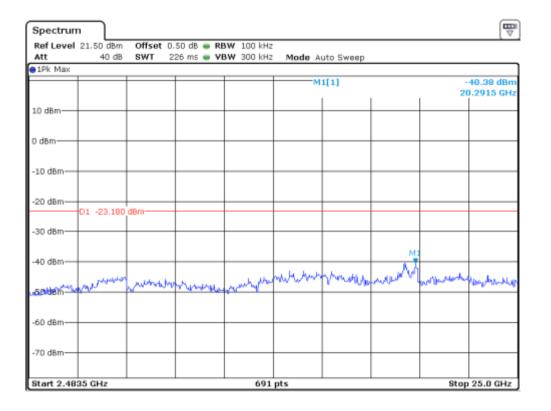


802.11g Channel 01 (2412MHz) Reference Level: -3.18dBm

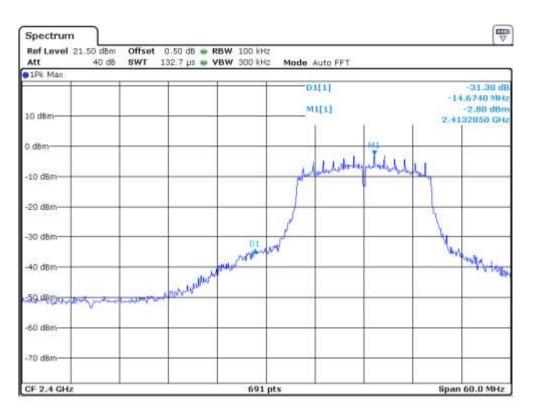




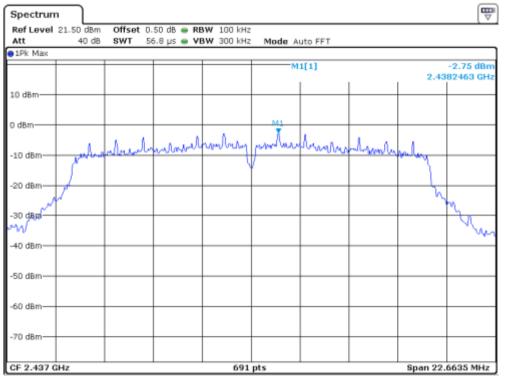
Spectrun	n								
Ref Level Att	21.50 dBm 40 dB	Offset SWT	0.50 dB 🖷 R 24 ms 🖷 V	BW 100 kHz BW 300 kHz		uto Sweep			
●1Pk Max					м	1[1]			34.94 dBm 39830 GHz
10 dBm									
0 dBm									
-10 dBm									
-20 dBm	-D1 -23.180	d8m							
-30 dBm									M
-40 dBm									
75R dBMc-a	-	-		anne anno	and the plant	terstutes	a-droghadaan	an and the second second	und all all and
~ -60 dBm									
-70 dBm									
Start 1.0 M	4Hz			691	pts			Sto	p 2.4 GHz





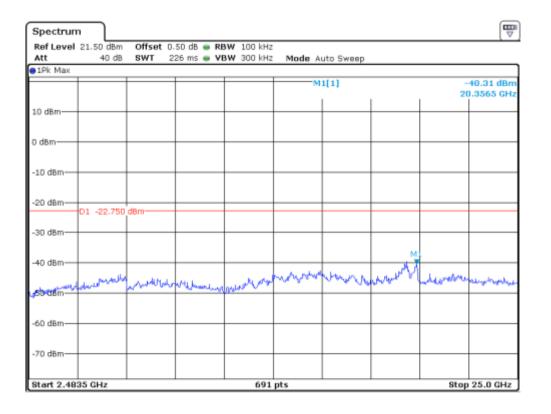


Channel 06 (2437MHz) Reference Level: -2.75dBm

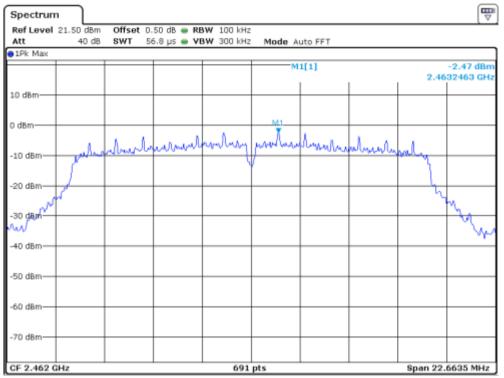




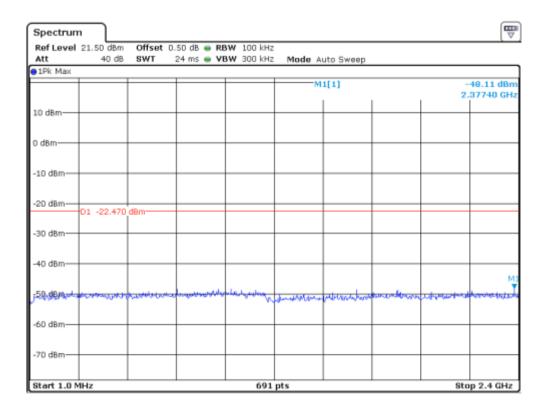
Spectrun	'n								
	21.50 dBm		.50 dB 👄 RE						
Att	40 dB	SWT	24 ms 🖷 Vi	SW BUU KM2	Mode A	uto Sweep			
					M	1[1]	1		47.12 dBm 88.70 MHz
10 dBm									
0 dBm									
-10 dBm									
-20 dBm-	·D1 -22.750	dBm							
-40 dBm									
-58-dB/m-44	سسيمطلعم	و المواد الروم	and the hase	MI Lungulator		الدحاسا ويطوحه موسوا وي	والمتعاد والمتعاد	فالأفاناه لحجلو متحومو	سيرأم سخطولات
-60 dBm									
-70 dBm									
Start 1.0 M	1Hz			691	pts			Sto	p 2.4 GHz



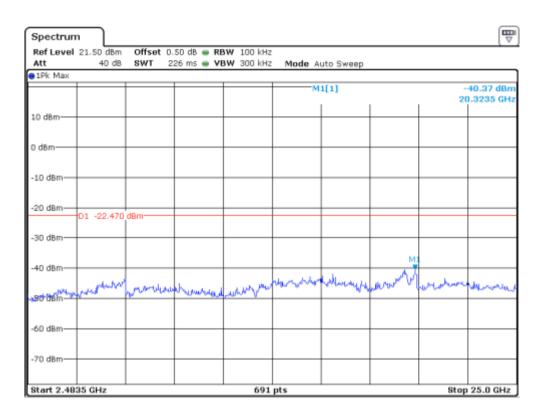




Channel 11 (2462MHz) Reference Level: -2.47dBm









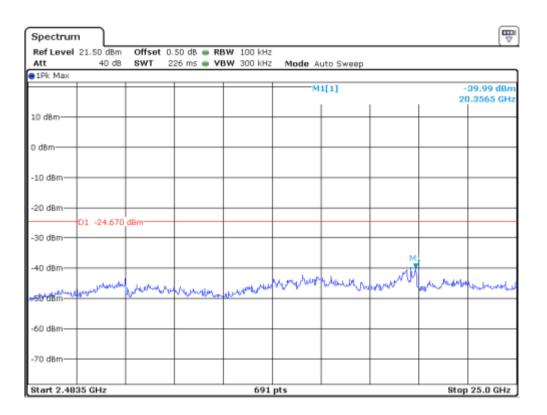


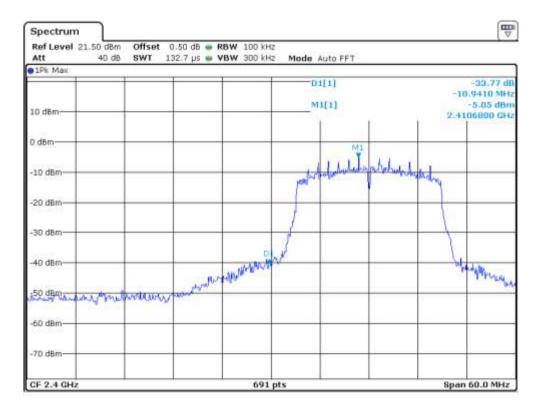
802.11n-HT20 Channel 01 (2412MHz) Reference Level: -4.67dBm

Spectrum Ref Level 21.50 dBm Offset 0.50 dB . RBW 100 kHz Att 40 dB SWT 56.8 µs 🖷 VBW 300 kHz Mode Auto FFT ●1Pk Max M1[1] 4.67 dBn 2.4132410 GHz 10 dBm D dBm ponte mentional Ananturation AL. AN -10 dBm -20 dBm -3D dBm 40 dBm -50 dBm -60 dBm-70 dBm Span 23.184 MHz CF 2.412 GHz 691 pts

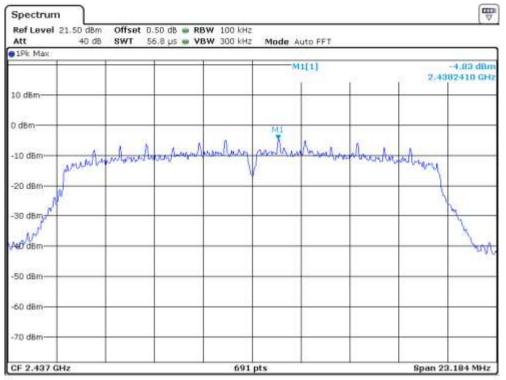
Spectrum										
Ref Level Att	21.50 dBm 40 dB		.50 dB 👄 RE 24 ms 👄 VB			uto Sweep				
⊖1Pk Max										
					M1[1]			-39.30 dBm 2.39830 GHz		
10 dBm										
0 dBm										
-10 dBm										
-20 dBm										
-30 dBm	D1 -24.670	dBm								
-40 dBm									M	
750,dBm	and protocological		Low marked	the set was	والطور ومكار يعتان	ennoriona	nar Niloglasia a	c	auborrow	
-60 dBm										
-70 dBm										
Start 1.0 N	1Hz			691	pts			Sto	p 2.4 GHz	



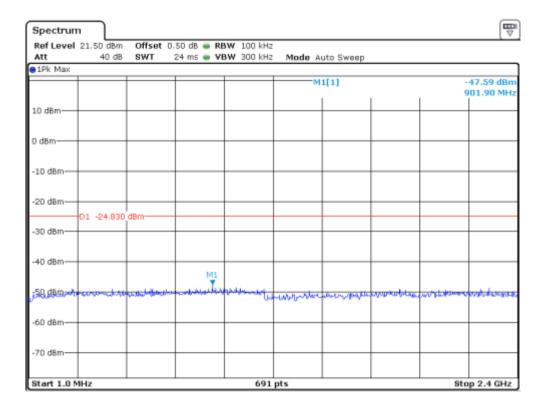




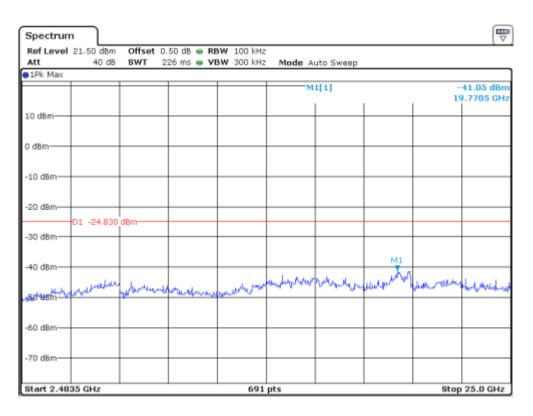




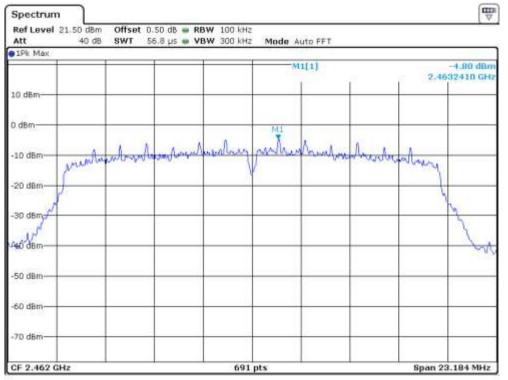
Channel 06 (2437MHz) Reference Level: -4.83dBm





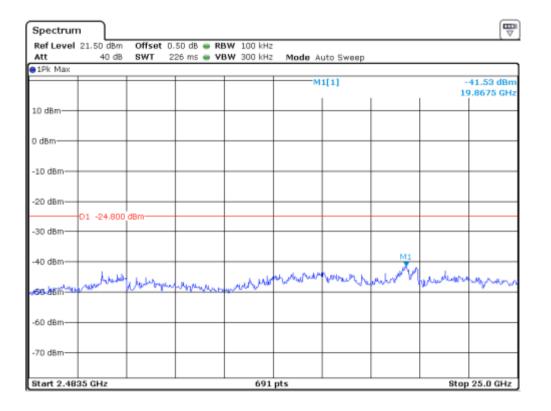


Channel 11 (2462MHz) Reference Level: -4.80dBm

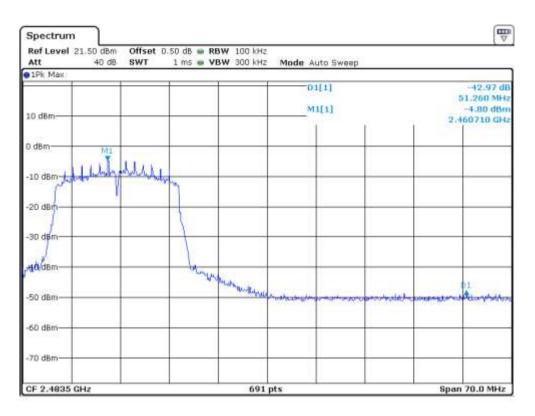




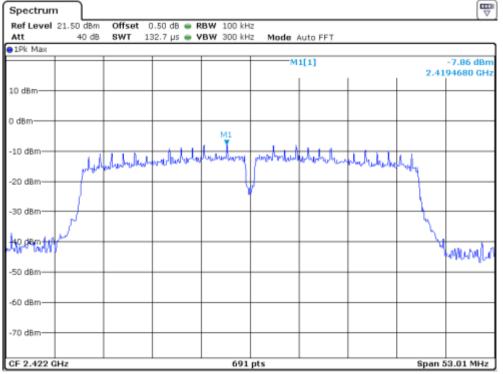
Spectrun	n								
	21.50 dBm		0.50 dB 😑 RI						
Att	40 dB	SWT	24 ms 🖷 🛛	BW 300 kHz	Mode A	uto Sweep			
●1Pk Max					м	1[1]			48.54 dBm 08590 GHz
10 dBm									
0 dBm									
-10 dBm									
-20 dBm	-D1 -24.800	dBm							
-30 dBm									
-40 dBm				M1					
r\$0,d8m	- Montantan	and the second	and the state of the	www.iet.sula	and Marcalla	umm	monto	andrown	-
-60 dBm									
-70 dBm									
Start 1.0 N	IHz			691	pts			Sto	p 2.4 GHz





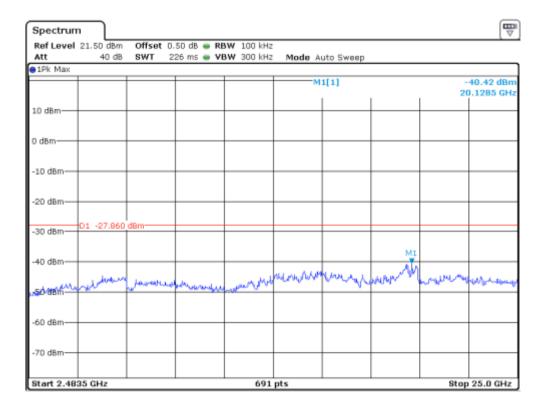


802.11n-HT40 Channel 03 (2422MHz) Reference Level: -7.86dBm

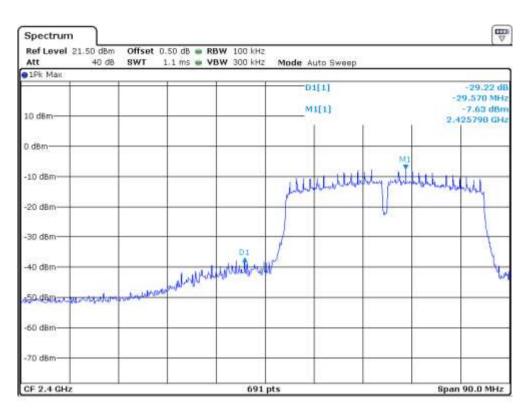




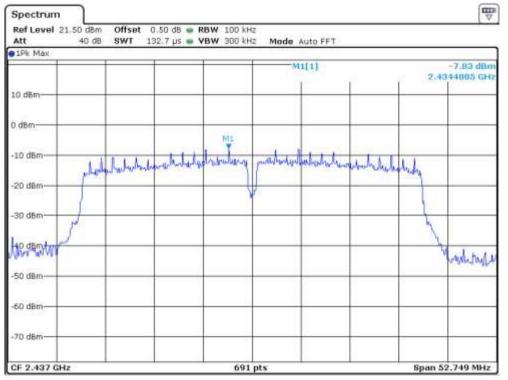
Spectrun	n								
Ref Level Att	21.50 dBm 40 dB	Offset C SWT	.50 dB 🖷 RB 24 ms 🖷 VI			uto Sweep			
●1Pk Max					М	1[1]			38.23 dBm 39480 GHz
10 dBm									
0 dBm									
-10 dBm									
-20 dBm—									
-30 dBm	D1 -27.860	dBm							м
-40 dBm									
150 dBm	to market	de rodere en	البالحيمه ويليانهم	and the second second	uderstansen taks	Mar mar hos	an a	alady <u>a</u> cinte	www.
-60 dBm									
-70 dBm									
Start 1.0 M	1Hz			691	pts			Sto	p 2.4 GHz





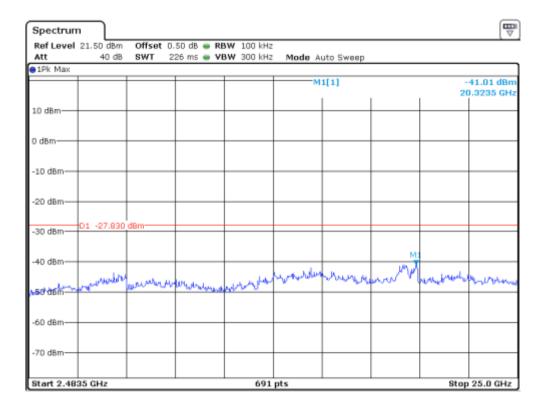


Channel 06 (2437MHz) Reference Level: -7.83dBm

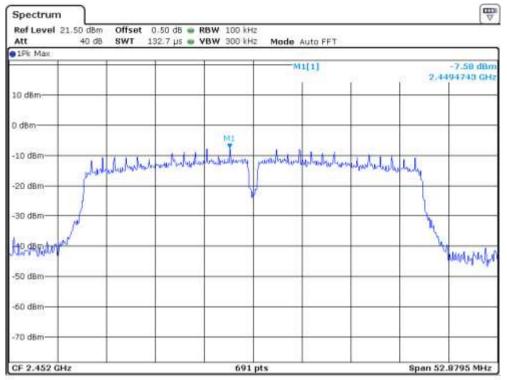




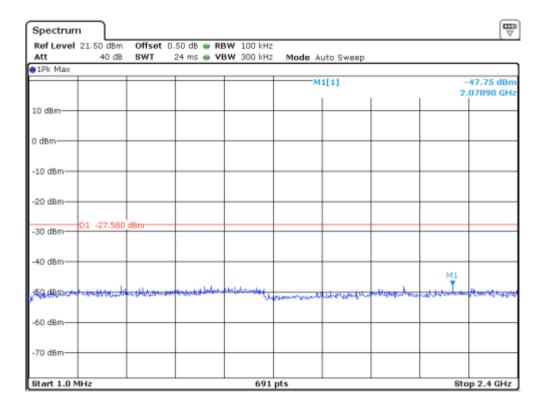
Spectrun	n								
Ref Level Att	21.50 dBm 40 dB	Offset (SWT	0.50 dB 🖷 RB 24 ms 🖷 VB			uto Sweep			
91Pk Max					м	1[1]			44.29 dBm 39830 GHz
10 dBm									
0 dBm									
-10 dBm									
-20 dBm									
-30 dBm	-D1 -27.930	dBm							
-40 dBm									M
159,080,077	and so when			-	pakertennen	-	theman	whenther	
-60 dBm									
-70 dBm									
Start 1.0 M	IHZ			691	pts			Sto	p 2.4 GHz



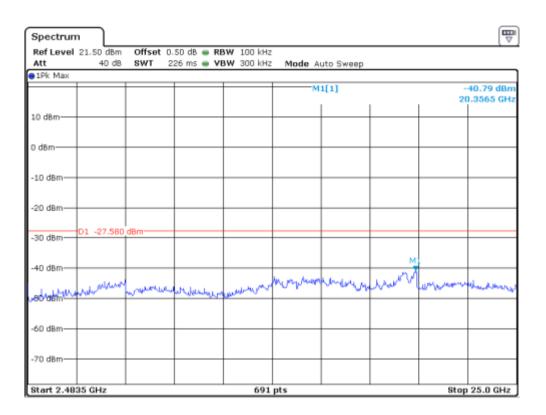


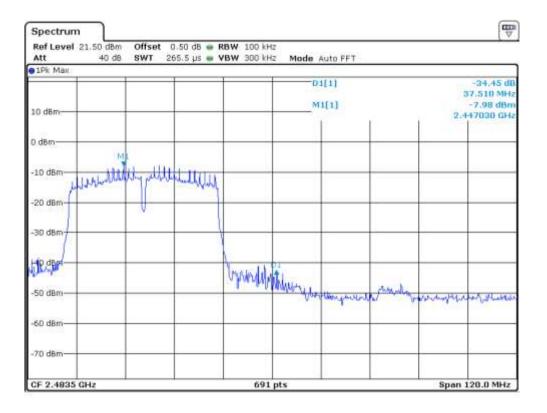


Channel 9 (2452MHz) Reference Level: -7.58dBm









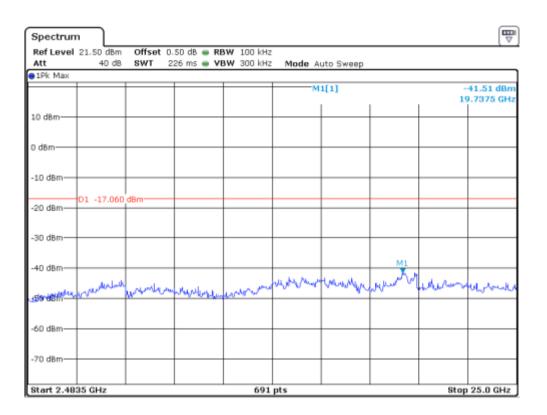


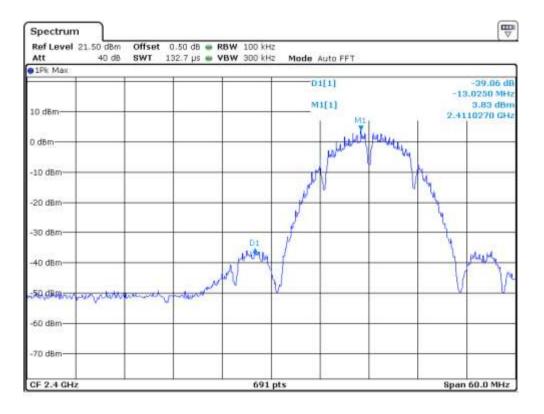
SISO Mode, Ant 2: 802.11b Channel 01 (2412MHz) Reference Level: 2.94dBm

Spectrum	<u> </u>		_,,							
Ref Level Att	21.50 dBm 40 dB		50 dB 👄 RB 7.9 µs 👄 VB			uto FFT				
●1Pk Max										
					м	1[1]	1	2.94 dBm 2.4124905 GHz		
10 dBm					M1					
0 dBm	0 .	m	مىمىم	m	Jur.	And And	un			
-20/48kg	proce			<u>\</u>	/			mul	m	
-20 dBm-								1	N	
-30 dBm										
-40 dBm										
-50 dBm										
-60 dBm										
-70 dBm										
CF 2.412 0	Hz			691	pts			Span 13	3.545 MHz	

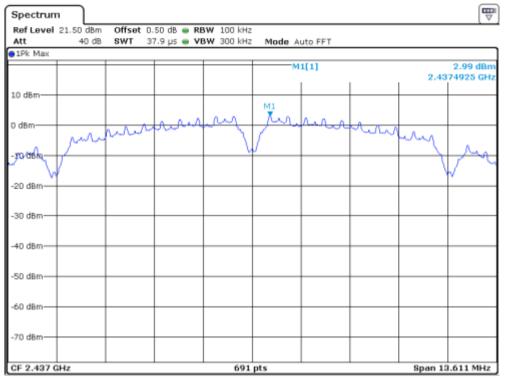
Spectrum									
Ref Level 3	21.50 dBm	Offset ().50 dB 😑 RB	BW 100 kHz					
Att	40 dB	SWT	24 ms 🖷 VI	BW 300 kHz	Mode A	uto Sweep			
●1Pk Max									
					м	1[1]			37.22 dBm 39830 GHz
10 dBm									
0 dBm									
-10 dBm		10-							
-20 dBm	01 -17.060	dBm-							
-30 dBm									
-40 dBm									M
Fo do-									
-Saldamard	Constrant	-Milliona filo	- Wester Part		Hunder	brownsbrind	guldvaran	And Carl Street of the	and the second of the second o
-60 dBm									
-70 dBm									
Start 1.0 M	Hz			691	pts			Sto	p 2.4 GHz







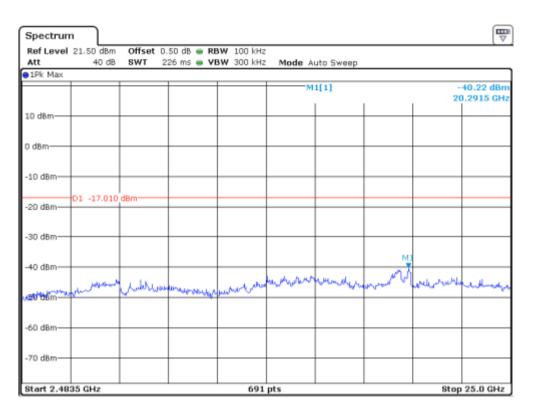




Channel 06 (2437MHz) Reference Level: 2.99dBm

Spectrun	'n								
	21.50 dBm			3W 100 kHz					
Att	40 dB	SWT	24 ms 🖷 VE	3W 300 kHz	Mode A	uto Sweep			
отык шах						1[1]			48.34 dBm
					M.	1(1)			48.34 dBm 79.10 MHz
10 dBm									
0 dBm									
-10 dBm									
-20 dBm	01 -17.010	dBm							
-20 0011									
-30 dBm									
-40 dBm									
		M1							
-50 dBm	mouthing	mound	A WHO WHO WHO WHO	مليهاساليدمس	ah ita infail an a	ALALA ALALA	chothy Hungar	dana wa	onderhater,
				-					
-60 dBm									
-70 dBm									
-70 ubiii									
Start 1.0 N	1Hz			691	pts			Sto	p 2.4 GHz



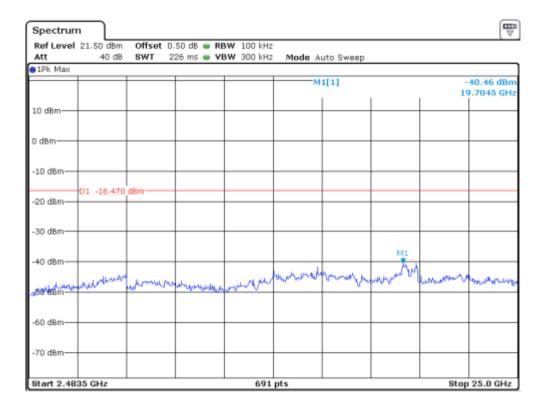


Channel 11 (2462MHz) Reference Level: 3.53dBm

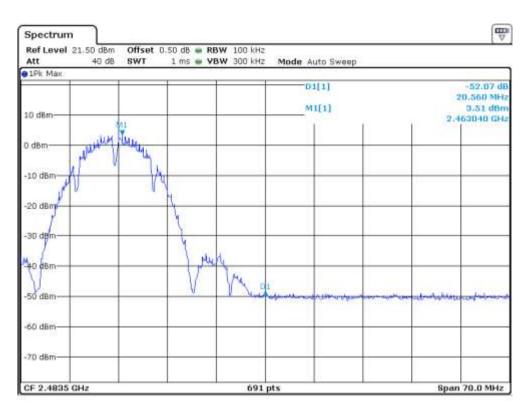
Spectrum	r)								
Ref Level	21.50 dBm	Offset	0.50 dB 👄 RE	3W 100 kHz					
Att	40 dB	SWT	37.9 µs 🖷 Vi	3W 300 kHz	Mode A	uto FFT			
1Pk Max	-	_]
					м	1[1]		2.46	3.53 dBm 29845 GHz
10 dBm			_						
				00	M1	0.0.0			
0 dBm	juri	nn	Jana Maria	The second se	/	m	m	wy	0
-10'08m	/				-			7	/m
-20 dBm									
-30 dBm									
-40 dBm									
-50 dBm									
-60 dBm									
-70 dBm									
CF 2.462 0	Hz			691	pts			Span 13	3.611 MHz



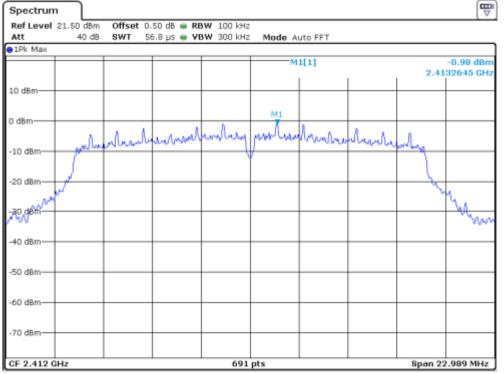
Spectrun	n								
	21.50 dBm		.50 dB 👄 RE						
Att	40 dB	SWT	24 ms 🖷 VI	SW BUU KHZ	Mode A	uto Sweep			
IPK Max					м	1[1]			47.41 dBm 78.30 MHz
10 dBm									
0 dBm									
-10 dBm	01 -16.470	dBm							
-20 dBm—	01 -10.470								
-30 dBm									
-40 dBm				11					
150(dBen-m	Marina a	ومارية للحور وبطائروهم		delerander der hangen	and a start of the second		ang ng n	terrate and the second s	andating with stranged of
-60 dBm									
-70 dBm									
Start 1.0 M	IHz			691	pts			Sto	p 2.4 GHz





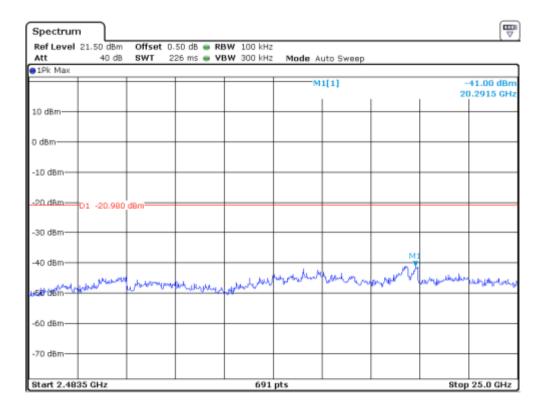


802.11g Channel 01 (2412MHz) Reference Level: -0.98dBm

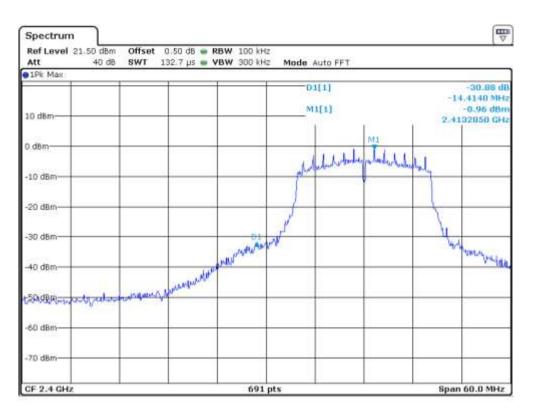




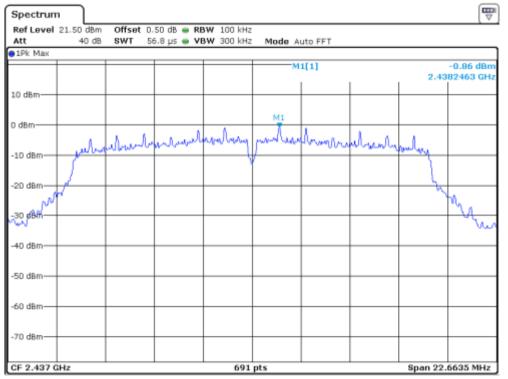
Spectrun	n								
	21.50 dBm		0.50 dB 👄 RI						
Att	40 dB	SWT	24 ms 🖷 VI	BW 300 kHz	Mode A	uto Sweep			
●1Pk Max					м	1[1]			31.55 dBm 39830 GHz
10 dBm									
0 dBm									
-10 dBm									
-20. dBm	D1 -20.980	dBm							
-30 dBm									4
-40 dBm									
j5R.¶Bea,≁t	ahthar	pradoloción	water and the second	would we w	long filedan	hundred	antana pran	herpertet	Condormated
-60 dBm									
-70 dBm									
Start 1.0 N	IHZ			691	pts			Sto	p 2.4 GHz





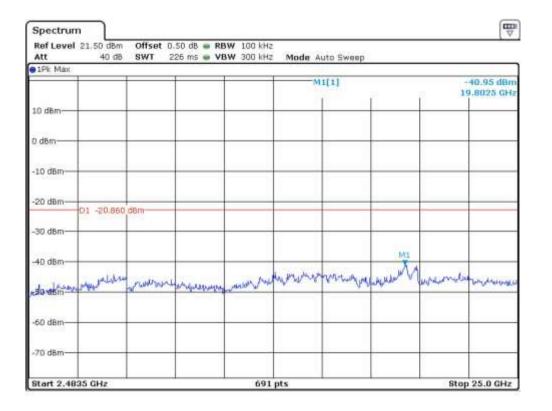


Channel 06 (2437MHz) Reference Level: -0.86dBm

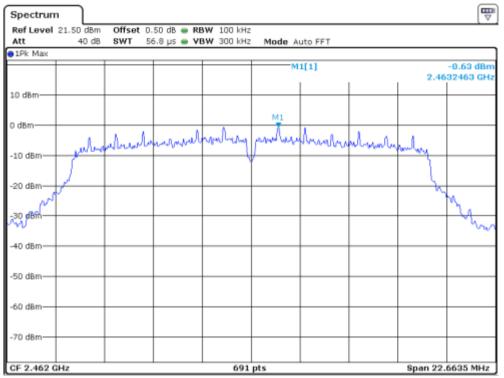




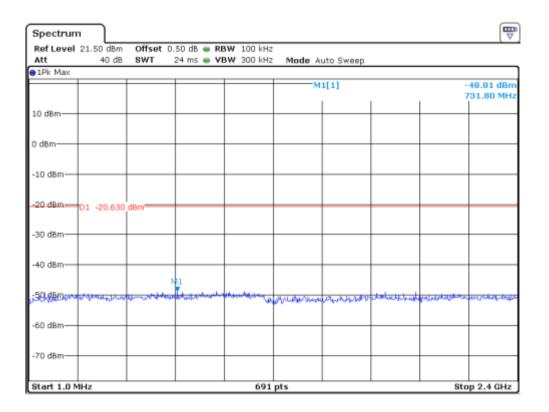
Ref Level 21.5 Att	0 dBm Offset 40 dB SWT	0.50 dB • R 24 ms • V			uto Sweep				
1Pk Max		_	1						
				M	1[1]		-48.47 dBm 1.01380 GHz		
0 dBm			-			-			
) dBm	_								
10 dBm	_								
20 dBm 01 -	20.860 d8m								
30 dBm		-						-	
4D dBm		-	200			-			
50.dBmararetalor	Hantogenergianet	- ended and the second	M2	www.docate	-	courselfer	THE MONTH	unetoketaa	
60 dBm		-							
70 dBm							-	-	



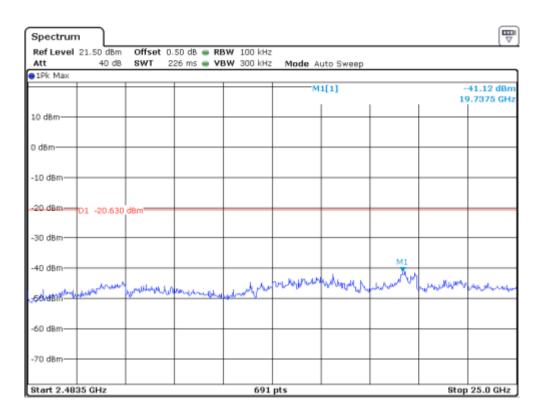


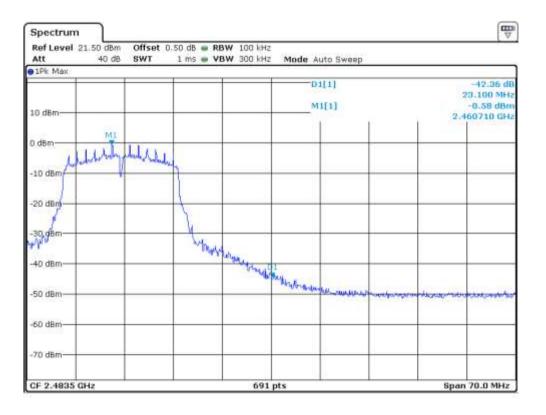


Channel 11 (2462MHz) Reference Level: -0.63dBm









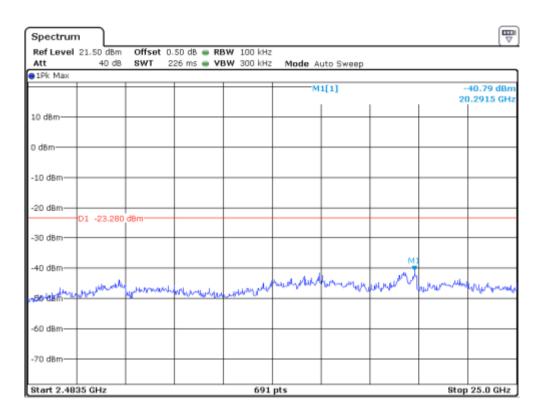


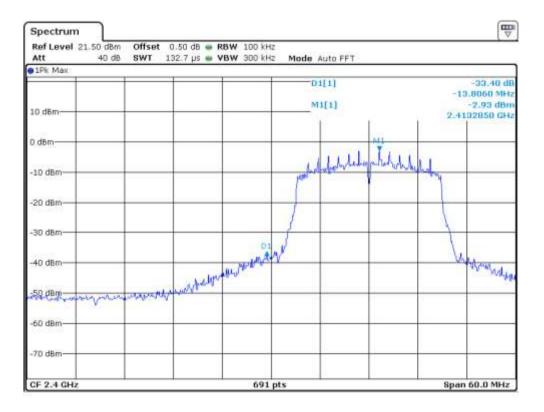
802.11n-HT20 Channel 01 (2412MHz) Reference Level: -3.28dBm

Spectrum Ref Level 21.50 dBm Offset 0.50 dB . RBW 100 kHz Att 40 d8 SWT 56.8 µs . VBW 300 kHz Mode Auto FFT ●1Pk Max M1[1] 3.28 dBn 2.4107213 GHz 10 dBm D dBm Jun malunturen Jos N A -10 dBm MUM G. -20 dBm -3D dBp 11 4D dBm -50 dBm -60 dBm-70 dBm Span 22.6635 MHz CF 2.412 GHz 691 pts

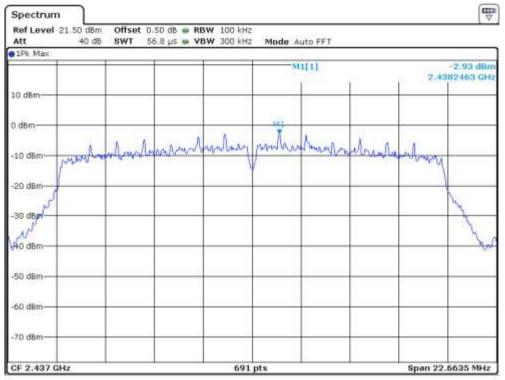
Spectrum	'n								
	21.50 dBm		.50 dB 👄 RE						
Att	40 dB	SWT	24 ms 🖷 VI	3W 300 kHz	Mode A	uto Sweep			
Dirk Max					M	1[1]			39.61 dBm 39830 GHz
10 dBm									
0 dBm									
-10 dBm									
	01 -23.280	d8m							
-30 dBm									M
	-	and the production	octor and an and a last	- utility .	and the set the	marine di se pluce	a leantitute	CALINA NAA	Hampley
-60 dBm					- Walker				
-70 dBm									
Start 1.0 N	1Hz			691	pts			Sto	p 2.4 GHz



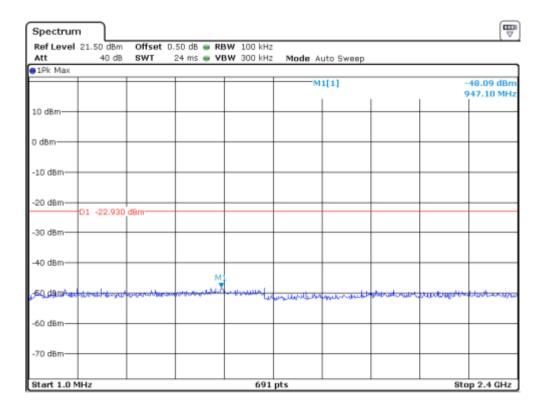




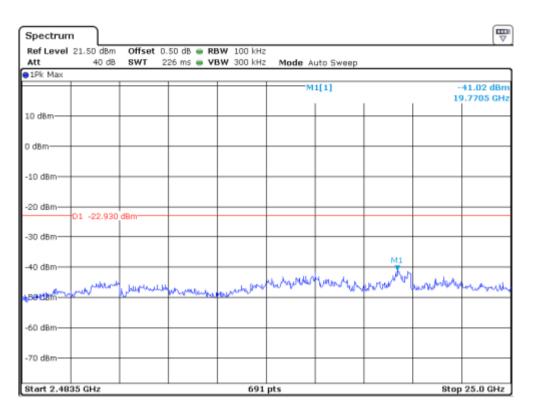




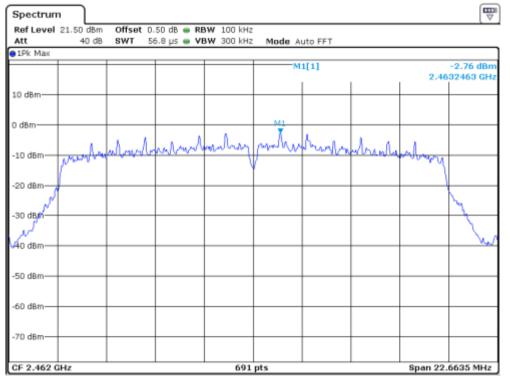
Channel 06 (2437MHz) Reference Level: -2.93dBm





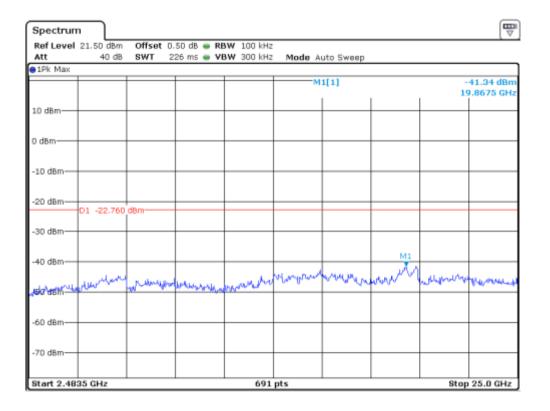


Channel 11 (2462MHz) Reference Level: -2.76dBm

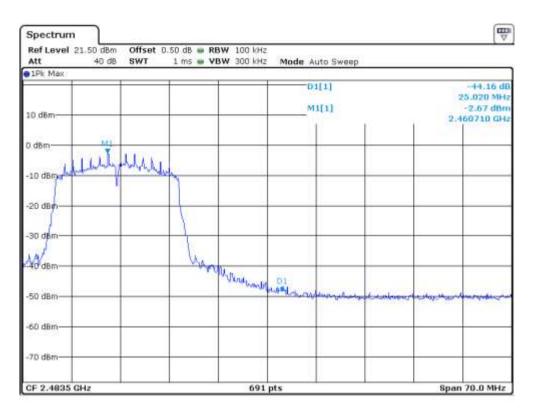




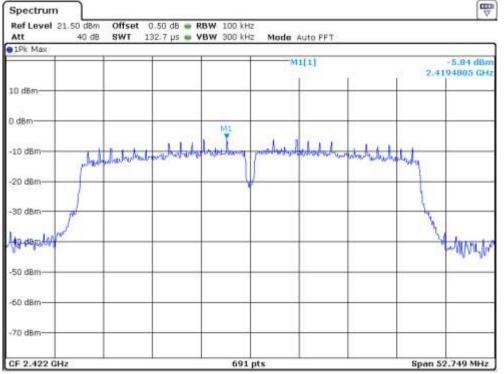
Spectrun	n								
Ref Level	21.50 dBm	Offset	0.50 dB 👄 R	BW 100 kHz					
Att	40 dB	SWT	24 ms 🖷 V	BW 300 kHz	Mode A	uto Sweep			
●1Pk Max]
					м	1[1]			48.28 dBm 05120 GHz
10 dBm									
0 dBm									
-10 dBm									
-20 dBm	01 -22.760	dBm							
-30 dBm									
-40 dBm									
-50 dBmmm	namatana	mether	in the second second	M1	hr. h.	and south and the	ungrage of the start of the sta	manstelle	19-accorded
-60 dBm									
-70 dBm									
Start 1.0 M	1Hz			691	pts			Sto	p 2.4 GHz





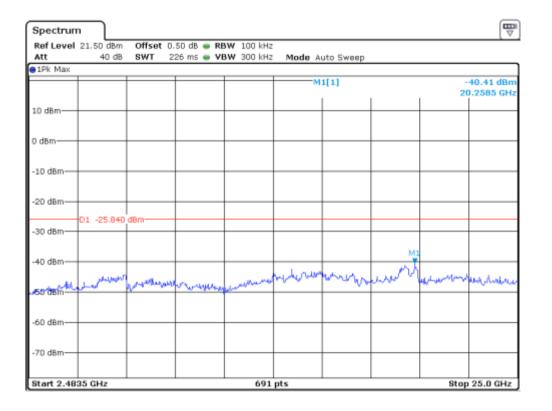


802.11n-HT40 Channel 03 (2422MHz) Reference Level: -5.84dBm

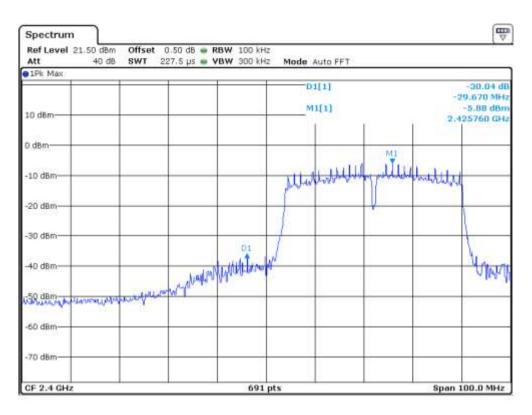




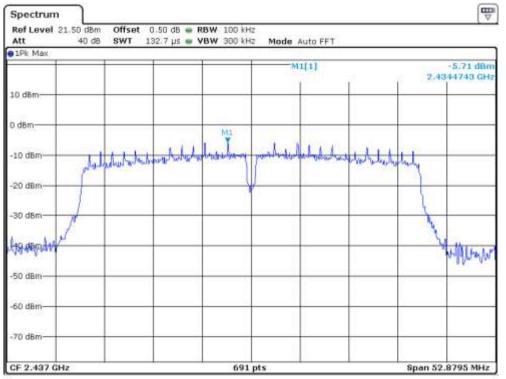
Spectrum	V
Ref Level 21.50 dBm Offset 0.50 dB RBW 100 kHz Att 40 dB SWT 24 ms • VBW 300 kHz Mode Auto Sweep	_
e1Pk Max	
2.39480 G	
10 dBm	
0 dBm-	_
-10 dBm	
-20 dBm	_
-30 dBm	N
-40 dBm	-
59 ABO war and a second and a strand and a second as a	
5.8 ABO was also was a familie the cash of the rest of the section where the many and the particular was a section of the sect	
-60 dBm	
-70 dBm	
Start 1.0 MHz 691 pts Stop 2.4 GH	





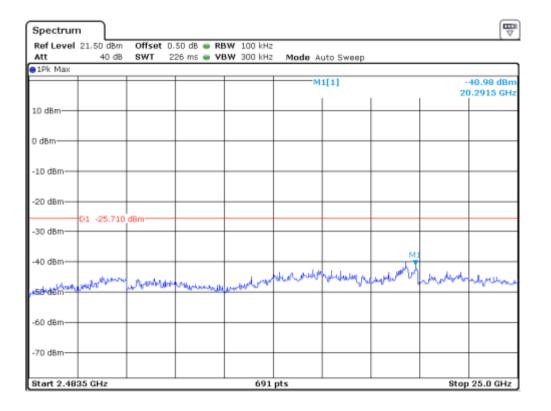


Channel 06 (2437MHz) Reference Level: -5.71dBm

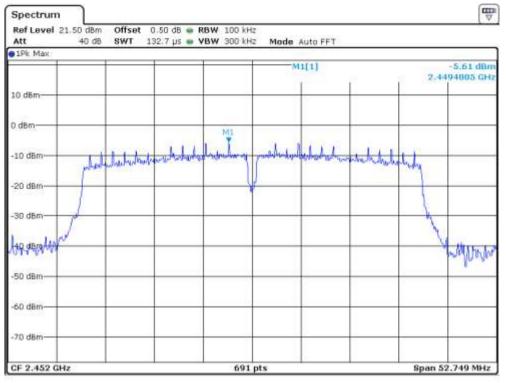




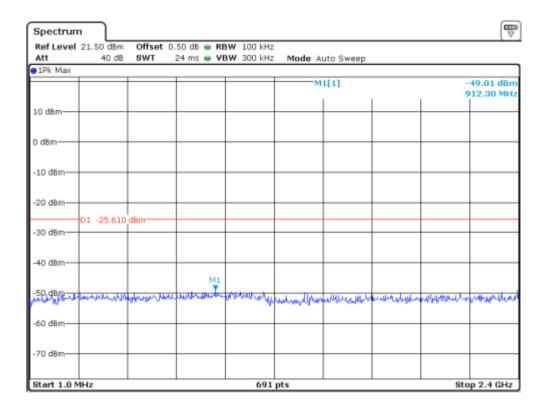
Spectrum				
Ref Level 21.50 d				,
Att 40	dB SWT 24 m s 🖷 V	BW 300 kHz Mode	Auto Sweep	
IPA INAA			M1[1]	-43.50 dBm 2.39830 GHz
10 dBm				
0 dBm				
-10 dBm				
-20 dBm				
-30 dBm	710 dBm			
-40 dBm				h
50. dBrown w. tolar	he was all and the second states of the second stat	mon market when show	March Mar	and the source of the second second
-60 dBm				
-70 dBm				
Start 1.0 MHz		691 pts		Stop 2.4 GHz





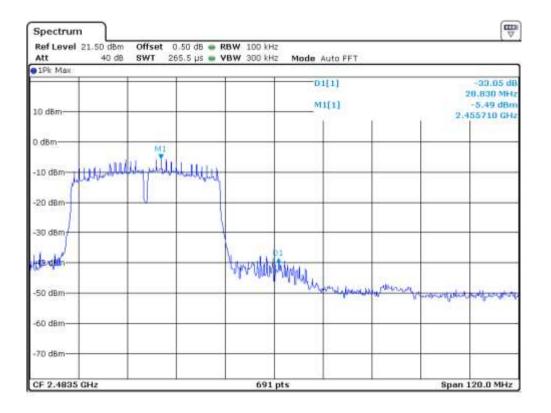


Channel 09 (2452MHz) Reference Level: -5.61dBm





Spectrun	'n								
	21.50 dBm		.50 dB 😑 RE						
Att	40 dB	SWT 2	26 ms 🖷 ۷	300 kHz	Mode A	uto Sweep			
• IPK Max					М	1[1]			40.84 dBm 1.3235 GHz
10 dBm									
0 dBm									
-10 dBm									
-20 dBm									
-30 dBm	D1 -25.610	dBm							
-40 dBm						the second	M.		
ulso dem	Markey Markey	American	Mannershare	weeklyn	- where we have a second	vereen	and have a l	all and a second and a second	ulphisekenen
-60 dBm									
-70 dBm									
Start 2.48	35 GHz			691	pts			Stop	25.0 GHz



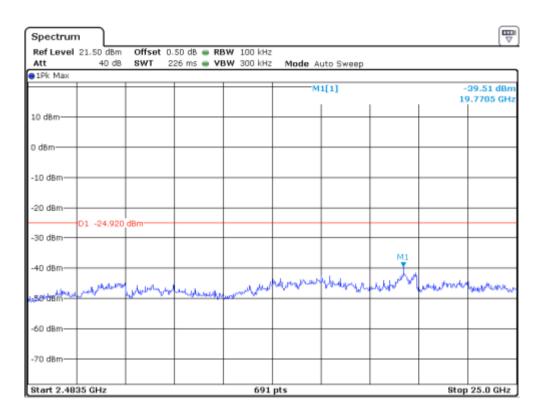


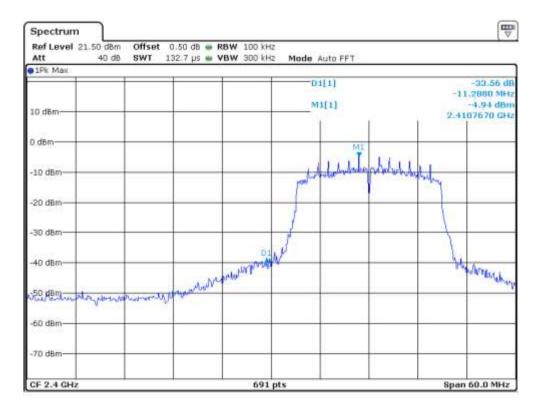
MIMO Mode, Ant1: 802.11n-HT20 Channel 01 (2412MHz) Reference Level: -4.92dBm

Spectrum Ref Level 21.50 dBm Offset 0.50 dB 🖷 RBW 100 kHz Att 40 dB SWT 56.8 µs 🖷 VBW 300 kHz Mode Auto FFT 91Pk Max -4.92 dBn M1[1] 2.4132463 GH 10 dBm D dBm M1 mentratration 1 mali tranland 1.6 -10 dBm mon -20 dBm -3D dBm 40 dBm -50 dBm -60 dBm -70 dBm CF 2.412 GHz 691 pts Span 22.6635 MHz

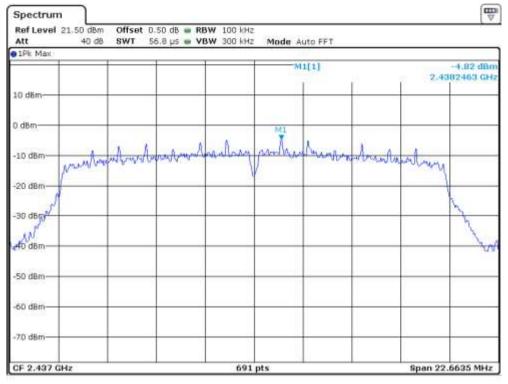
Ref Level 21.50 dBm Offset 0.50 dB RBW 100 kHz Att 40 dB SWT 24 ms VBW 300 kHz Mode Auto Sweep Image: Pick Max M1[1] -38.60 dBm 2.39830 GHz 2.39830 GHz M1[1] -38.60 dBm M1[1]
● 1Pk Max M1[1] -38.60 dBm 2.39830 GHz
M1[1] -38.60 dBm 2.39830 GHz
2.39830 GHz
10 dBm-
0 dBm-
-10 dBm-
-20 dBm
-30 dBm
-40 dBm
358 ABMath gene war
-60 dBm
-70 dBm
Start 1.0 MHz 691 pts Stop 2.4 GHz



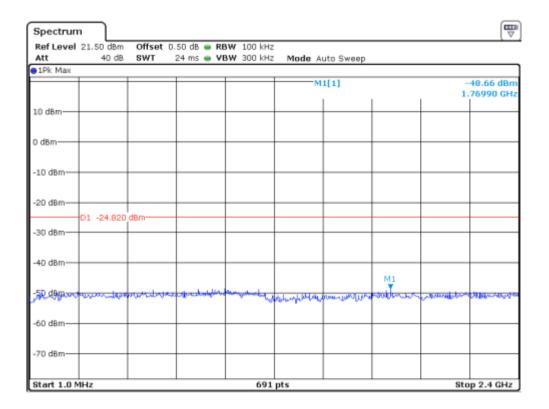




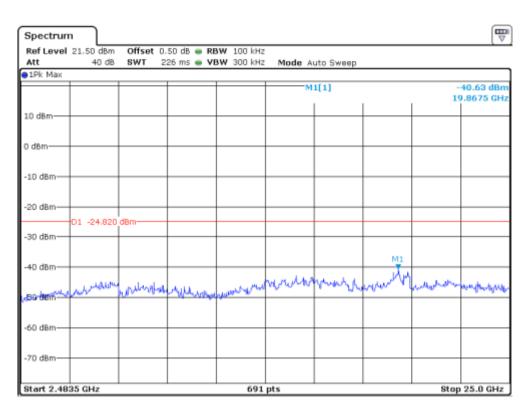




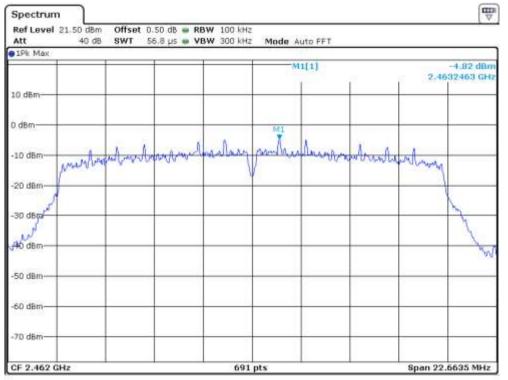
Channel 06 (2437MHz) Reference Level: -4.82dBm





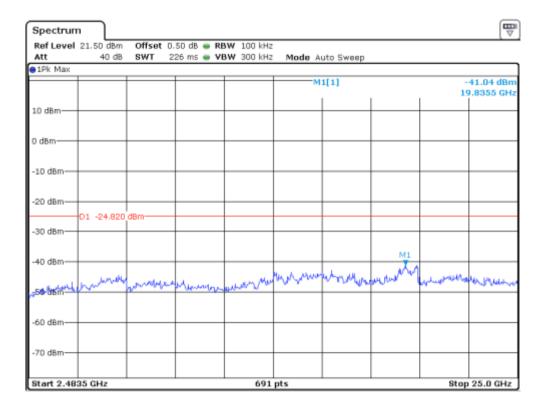


Channel 11 (2462MHz) Reference Level: -4.82dBm

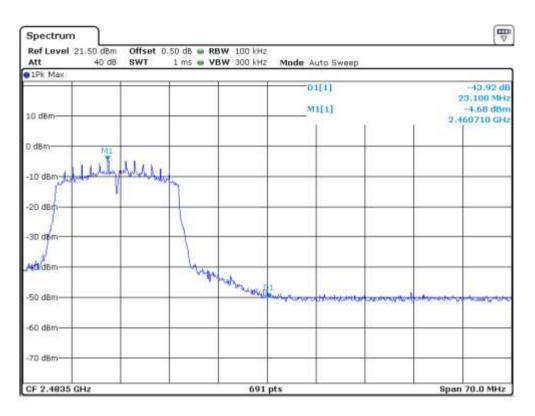




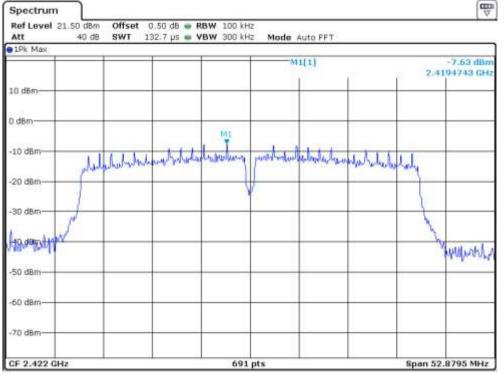
Spectrum				
Ref Level 21.50 dBm	Offset 0.50 dB 👄 RE			
Att 40 dB	SWT 24 ms 🖷 VI	3W 300 kHz Mode	Auto Sweep	
			M1[1]	-48.23 dBm 1.15190 GHz
10 dBm				
0 dBm				
-10 dBm				
-20 dBm D1 -24,820	dBm			
-30 dBm				
-50.dBm	e al la guile ha sea	M1		
-60 dBm	attention and a second	Jul los - del	all and a line of the second	an far frankrigt far stranger for the standing of the stranger of the standing of the stranger of the strangeroom of the stranger of the stranger of the stran
-70 dBm				
Start 1.0 MHz		691 pts		Stop 2.4 GHz





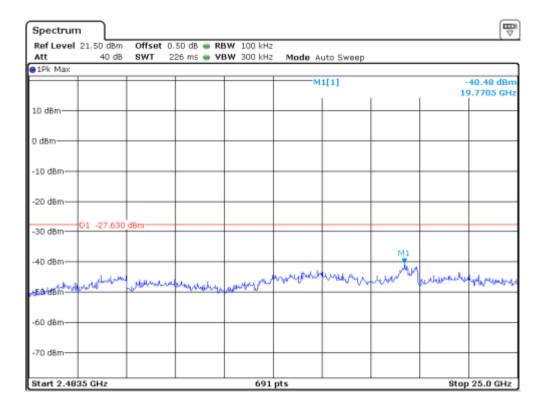


802.11n-HT40 Channel 03 (2422MHz) Reference Level: -7.63dBm

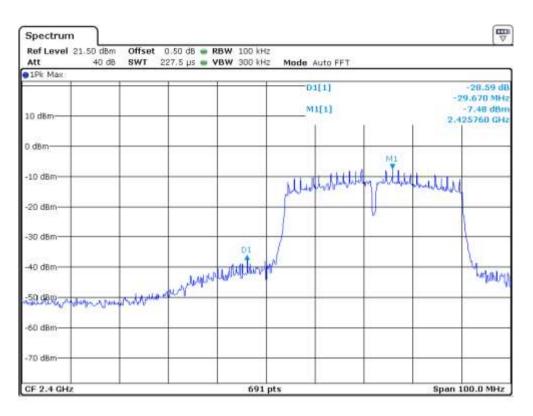




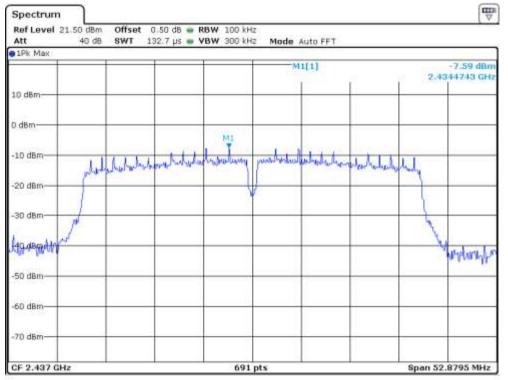
Spectrum	'n								
Ref Level Att	21.50 dBm 40 dB	Offset SWT	0.50 dB 👄 RI 24 ms 👄 V	BW 100 kHz BW 300 kHz		uto Sweep			
●1Pk Max						1[1]			38.58 dBm 39480 GHz
10 dBm									
0 dBm									
-10 dBm									
-20 dBm									
-30 dBm	D1 -27.630	d8m							M
-40 dBm									
-50,d8m t	all and a second second	ilitrarrati		hand a dealers	ing hours define	unter polytocal	houtoutur	an a	and and a start of the
-60 dBm									
-70 dBm									
Start 1.0 N	1Hz			691	pts	-		Sto	p 2.4 GHz





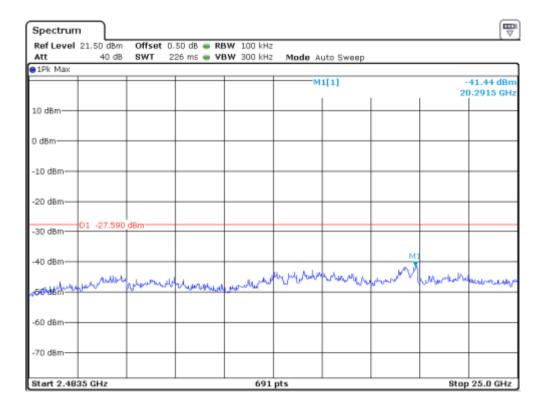


Channel 06 (2437MHz) Reference Level: -7.59dBm

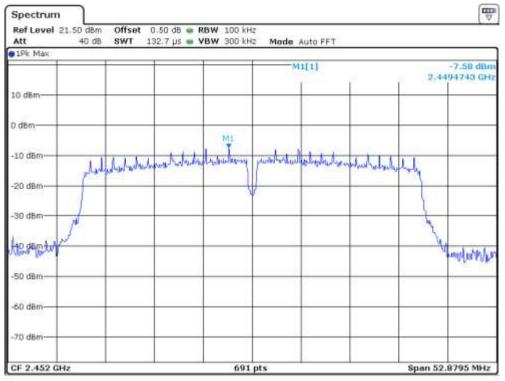




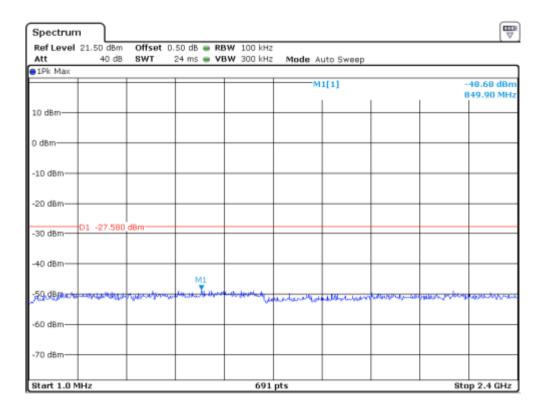
Spectrun	n								
	21.50 dBm		0.50 dB 🖷 RI						
Att	40 dB	SWT	24 ms 🖷 🛛	BW 300 kHz	Mode A	uto Sweep			
●1Pk Max					м	1[1]			43.96 dBm 39830 GHz
10 dBm									
0 dBm									
-10 dBm									
-20 dBm									
-30 dBm	01 -27.590	dBm							
-40 dBm									h
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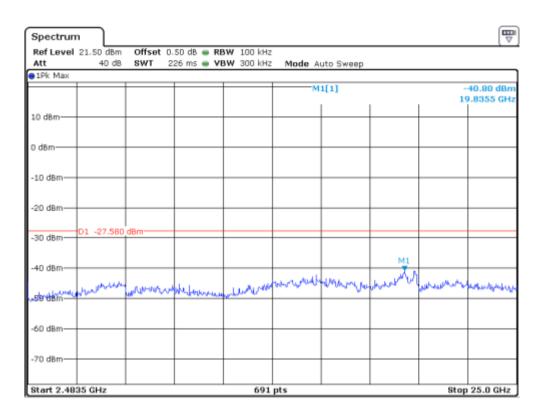


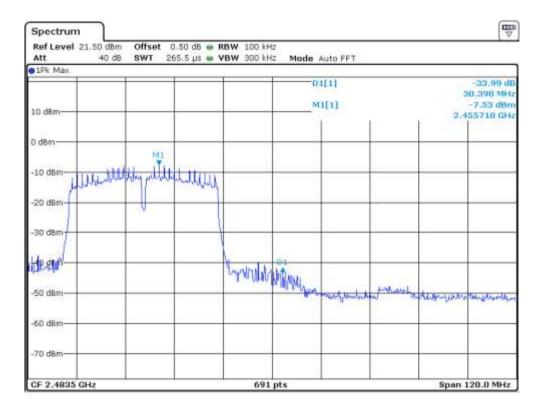


Channel 09 (2452MHz) Reference Level: -7.58dBm









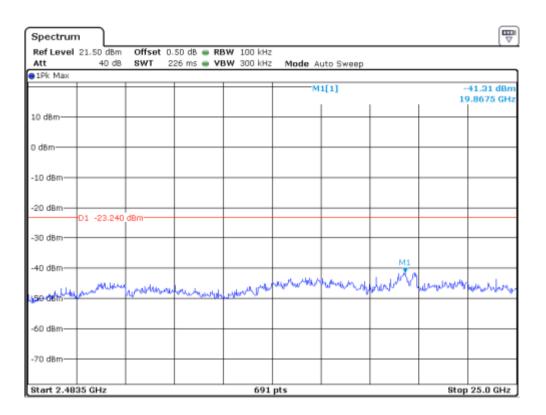


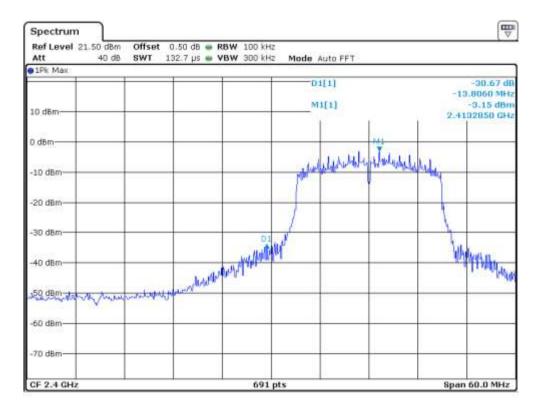
MIMO Mode, Ant2: 802.11n-HT20 Channel 01 (2412MHz) Reference Level: -3.24dBm

Spectrum									[Ţ
Ref Level 21 Att				W 100 kHz W 300 kHz		uto FFT			
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					M	1[1]			-3.24 dBm 32400 GHz
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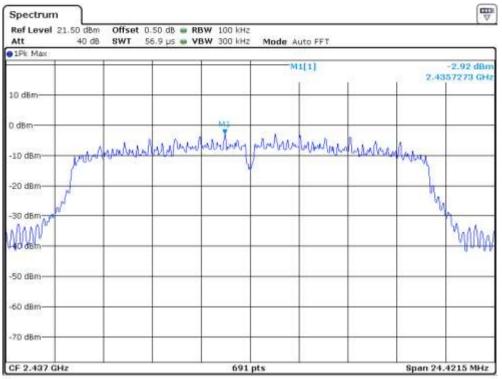
Spectrum				
Ref Level 21.50 dBm	Offset 0.50 dB 👄 RE			
Att 40 dB	SWT 24 ms 🖷 VI	BW 300 kHz Mode	Auto Sweep	
		,	M1[1]	-35.27 dBm 2.39830 GHz
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0 dBm				
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-30 dBm				M
-40 dBm				
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Start 1.0 MHz		691 pts		Stop 2.4 GHz



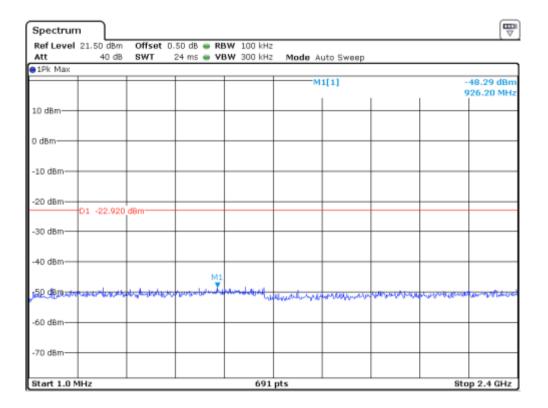




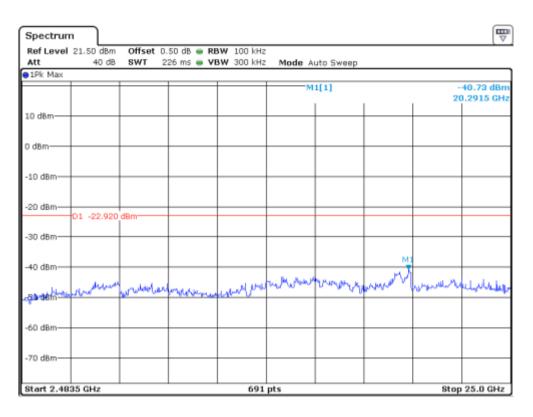




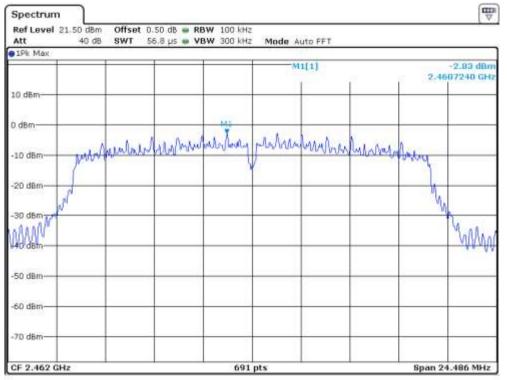
Channel 06 (2437MHz) Reference Level: -2.92dBm





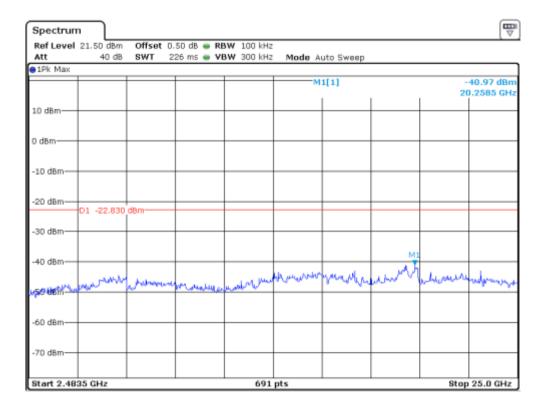


Channel 11 (2462MHz) Reference Level: -2.83dBm

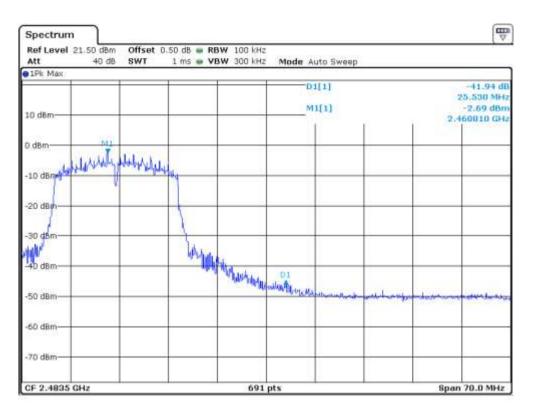




Spectrun	n								
Ref Level Att	21.50 dBm		0.50 dB 🖷 RI						
Att	40 dB	SWT	24 ms 🖷 Vi	BW 300 kHz	Mode A	uto Sweep			
					м	1[1]			48.62 dBm 50.50 MHz
10 dBm									
0 dBm									
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-70 dBm-									
atant 1.0 M	tart 1.0 MHz 691 pts Stop 2.4 GHz								





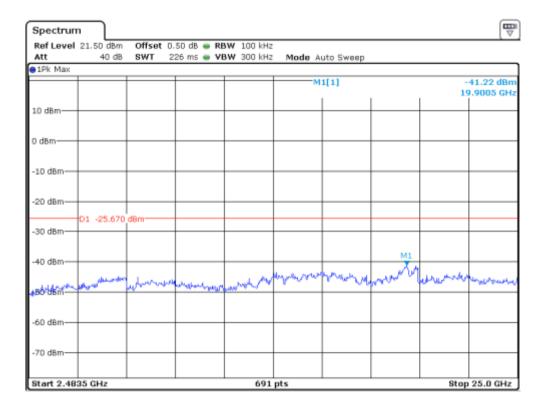


802.11n-HT40 Channel 03 (2422MHz) Reference Level: -5.67dBm

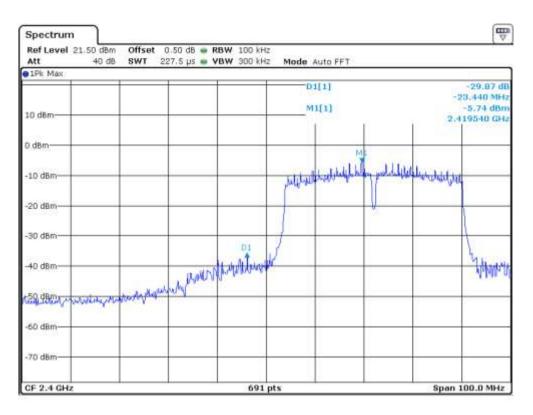




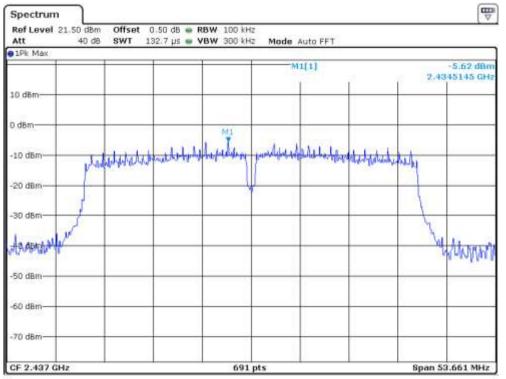
Spectrum	'n								
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10 dBm									
0 dBm									
-10 dBm									
-20 dBm									
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-60 dBm									
-70 dBm									
Start 1.0 N	1117			691	nts			Sto	p 2.4 GHz





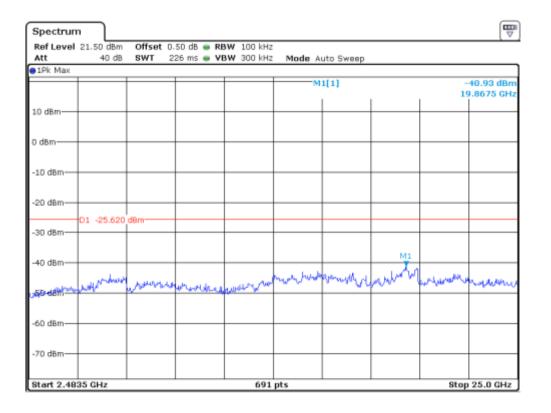


Channel 06 (2437MHz) Reference Level: -5.62dBm

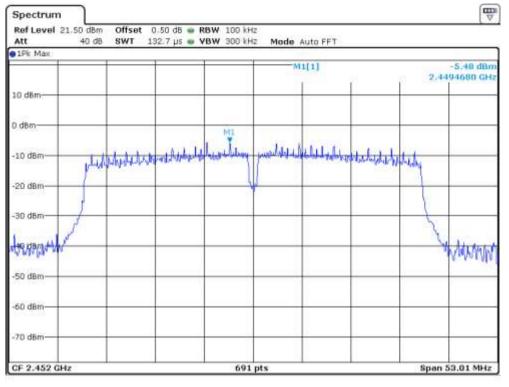




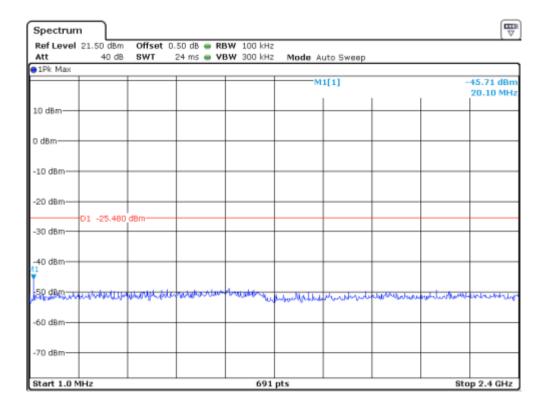
Spectrun	n								
	21.50 dBm		0.50 dB 😐 RI						
Att	40 dB	SWT	24 ms 🖷 VI	BW 300 kHz	Mode A	uto Sweep			
IPK Max					м	1[1]			43.20 dBm 39830 GHz
10 dBm									
0 dBm									
-10 dBm									
-20 dBm									
-30 dBm	D1 -25.620	dBm							
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50,dpmp	attore and the	phylowicht	ad a contraction of the second se	were were	nterme	annally	and the second	the Up & Lat Mart	ala di walan
-60 dBm									
-70 dBm									
Start 1.0 N	IHz			691	pts			Sto	p 2.4 GHz



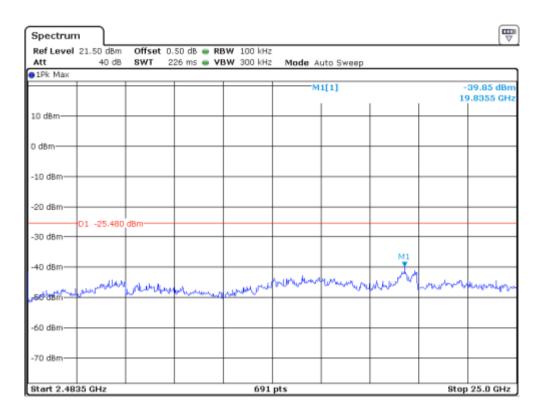


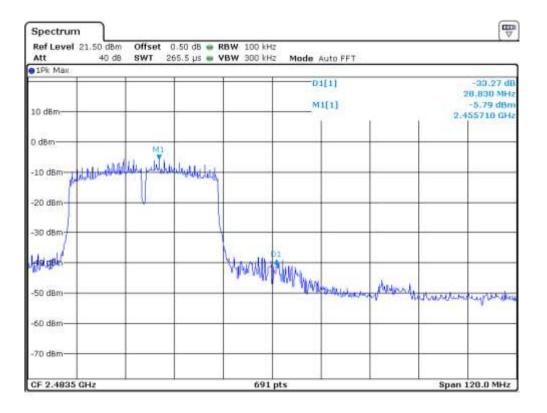


Channel 09 (2452MHz) Reference Level: -5.48dBm











Applicant: Shenzhen Chuangwei-RGB Electronics Co., Ltd. Date of Test: 18 May 2019

Model: NTUD-U8

4.5 Out of Band Radiated Emissions (for emissions in 4.4 above that are less than 20dB below carrier), FCC Rule 15.247(d):

For out of band emissions that are close to or that exceed the 20dB attenuation requirement described in the specification, radiated measurements were performed at a 3m separation distance to determine whether these emissions complied with the general radiated emission requirement.

[×] Not required, since all emissions are more than 20dB below fundamental

[] See attached data sheet



Applicant: Shenzhen Chuangwei-RGB Electronics Co., Ltd. Date of Test: 24 May 2019

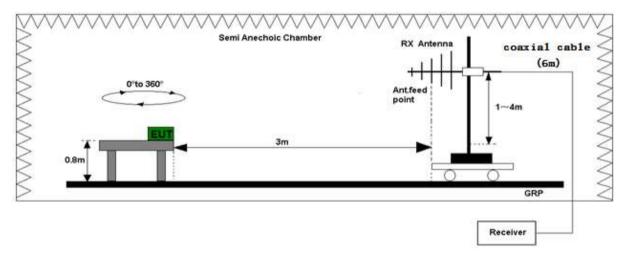
Model: NTUD-U8

4.6 Transmitter Radiated Emissions in Restricted Bands, FCC Rule 15.35(b) (c):

Data is included of the worst case configuration (the configuration which resulted in the highest emission levels). A sample calculation, configuration photographs and data tables of the emissions are included. All measurements were performed with peak detection unless otherwise specified. Simultaneous transmission was considered during the test.

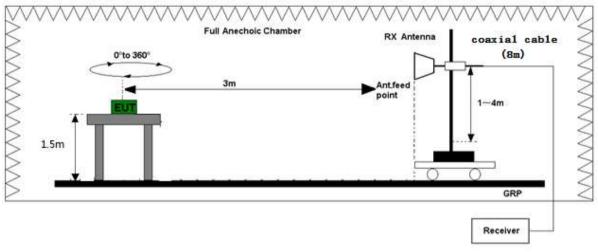
The data on the following pages list the significant emission frequencies, the limit and the margin of compliance.

The Diagram below shows the test setup, which is utilized to make these measurements.



Test set-up of radiated disturbance (Up to 1GHz)





Test set-up of radiated disturbance (Above 1GHz)

Radiated emission measurements were performed from 9KHz to tenth harmonic or 40GHz. The EUT for testing is arranged on a styrene turntable. If some peripherals apply to the EUT, the peripherals will be connected to EUT and the whole system. During the test, all cables were arranged to produce worst-case emissions. The signal is maximized through rotation. The height of antenna and polarization is changing constantly for exploring for maximum signal level. The height of antenna can be up to 4 meters and down to 1 meter.



Applicant: Shenzhen Chuangwei-RGB Electronics Co., Ltd. Date of Test: 24 May 2019 Model: NTUD-U8

4.7 Field Strength Calculation

The field strength is calculated by adding the reading on the Spectrum Analyzer to the factors associated with preamplifiers (if any), antennas, cables, pulse desensitization and average factors (when specified limit is in average and measurements are made with peak detectors). A sample calculation is included below.

FS = RA + AF + CF - AG + PD

Where FS = Field Strength in $dB\mu V/m$ RA = Receiver Amplitude (including preamplifier) in $dB\mu V$ CF = Cable Attenuation Factor in dB AF = Antenna Factor in dB AG = Amplifier Gain in dBPD = Pulse Desensitization in dB

In the radiated emission table which follows, the reading shown on the data table may reflect the preamplifier gain. An example of the calculations, where the reading does not reflect the preamplifier gain, follows:

FS = RA + AF + CF - AG + PD

Example

Assume a receiver reading of 62.0 dB μ V is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted. The pulse desensitization factor of the spectrum analyzer was 0 dB. The net field strength for comparison to the appropriate emission limit is 42 dB μ V/m. This value in dB μ V/m was converted to its corresponding level in μ V/m.

RA = 62.0 dB μ V AF = 7.4 dB CF = 1.6 dB AG = 29.0 dB PD = 0 dB FS = 62 + 7.4 + 1.6 - 29 + 0 = 42 dB μ V/m

Level in mV/m = Common Antilogarithm [(42 dB μ V/m)/20] = 125.9 μ V/m



Intertek Report No.: 190510033SZN-003

Applicant: Shenzhen Chuangwei-RGB Electronics Co., Ltd. Date of Test: 24 May 2019

Model: NTUD-U8

4.8 Radiated Spurious Emission

Worst Case Radiated Spurious Emission (802.11N40 MIMO-2422MHz) at 2316.160 MHz is passed by 9.2 dB margin.

For the electronic filing, the worst case radiated emission configuration photographs are saved with filename: radiated photos.pdf.



Applicant: Shenzhen Chuangwei-RGB Electronics Co., Ltd.Date of Test: 24 May 2019Model: NTUD-U8Worst Case Operating Mode:WIFI Link

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBµV)	Pre- Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	238.065	36.0	20.0	11.4	27.4	46.0	-18.6
Horizontal	257.465	34.7	20.0	12.8	27.5	46.0	-18.5
Horizontal	638.190	31.5	20.0	22.0	33.5	46.0	-12.5
Vertical	30.970	27.2	20.0	17.4	24.6	40.0	-15.4
Vertical	52.795	27.5	20.0	8.2	15.7	40.0	-24.3
Vertical	400.055	29.9	20.0	17.3	27.2	46.0	-18.8

NOTES: 1. Quasi-Peak detector is used for frequency below 1GHz.

- 2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.
- 3. Negative value in the margin column shows emission below limit.
- 4. All emissions are below the QP limit.



Applicant: Shenzhen Chuangwei-RGB Electronics Co., Ltd.Date of Test: 24 May 2019Model: NTUD-U8Worst Case Operating Mode:Transmitting (11b ANT2-2412MHz)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBµV)	Pre- Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4824.000	53.3	36.3	33.5	50.5	74.0	-23.5
Horizontal	*2318.480	66.1	36.4	27.3	57.0	74.0	-17.0

Polarization	Frequency (MHz)	Reading (dBµV)	Pre- Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4824.000	40.1	36.3	33.5	37.3	54.0	-16.7
Horizontal	*2318.480	53.6	36.4	27.3	44.5	54.0	-9.5

- 2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
- 3. Negative value in the margin column shows emission below limit.
- 4. Horn antenna used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.



Applicant: Shenzhen Chuangwei-RGB Electronics Co., Ltd.Date of Test: 24 May 2019Model: NTUD-U8Worst Case Operating Mode:Transmitting (11b ANT2-2437MHz)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBµV)	Pre- Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4874.000	53.1	36.3	33.6	50.4	74.0	-23.6
Horizontal	*7311.000	55.3	36.3	37.8	56.8	74.0	-17.2

Polarization	Frequency (MHz)	Reading (dBµV)	Pre- Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4874.000	39.9	36.3	33.6	37.2	54.0	-16.8
Horizontal	*7311.000	41.1	36.3	37.8	42.6	54.0	-11.4

- 2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
- 3. Negative value in the margin column shows emission below limit.
- 4. Horn antenna used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.



Applicant: Shenzhen Chuangwei-RGB Electronics Co., Ltd.Date of Test: 24 May 2019Model: NTUD-U8Worst Case Operating Mode:Transmitting (11b ANT2-2462MHz)

Polarization	Frequency (MHz)	Reading (dBµV)	Pre- Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4924.000	53.3	36.3	33.6	50.6	74.0	-23.4
Horizontal	*7386.000	55.2	36.3	37.8	56.7	74.0	-17.3
Horizontal	*2487.064	65.5	36.4	27.5	56.6	74.0	-17.4

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBµV)	Pre- Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4924.000	39.9	36.3	33.6	37.2	54.0	-16.8
Horizontal	*7386.000	41.0	36.3	37.8	42.5	54.0	-11.5
Horizontal	*2487.064	52.7	36.4	27.5	43.8	54.0	-10.2

- 2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
- 3. Negative value in the margin column shows emission below limit.
- 4. Horn antenna used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.



Applicant: Shenzhen Chuangwei-RGB Electronics Co., Ltd.Date of Test: 24 May 2019Model: NTUD-U8Worst Case Operating Mode:Transmitting (11g ANT2-2412MHz)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBµV)	Pre- Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4824.000	53.0	36.3	33.5	50.2	74.0	-23.8
Horizontal	*2319.120	65.9	36.4	27.3	56.8	74.0	-17.2

Polarization	Frequency (MHz)	Reading (dBµV)	Pre- Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4824.000	39.9	36.3	33.5	37.1	54.0	-16.9
Horizontal	*2319.120	53.8	36.4	27.3	44.7	54.0	-9.3

- 2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
- 3. Negative value in the margin column shows emission below limit.
- 4. Horn antenna used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.



Applicant: Shenzhen Chuangwei-RGB Electronics Co., Ltd.Date of Test: 24 May 2019Model: NTUD-U8Worst Case Operating Mode:Transmitting (11g ANT2-2437MHz)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBµV)	Pre- Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4874.000	53.0	36.3	33.6	50.3	74.0	-23.7
Horizontal	*7311.000	52.7	36.3	37.8	54.2	74.0	-19.8

Polarization	Frequency (MHz)	Reading (dBµV)	Pre- Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4874.000	39.7	36.3	33.6	37.0	54.0	-17.0
Horizontal	*7311.000	38.9	36.3	37.8	40.4	54.0	-13.6

- 2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
- 3. Negative value in the margin column shows emission below limit.
- 4. Horn antenna used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.



Applicant: Shenzhen Chuangwei-RGB Electronics Co., Ltd.Date of Test: 24 May 2019Model: NTUD-U8Worst Case Operating Mode:Transmitting (11g ANT2-2462MHz)

Polarization	Frequency (MHz)	Reading (dBµV)	Pre- Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4924.000	53.1	36.3	33.6	50.4	74.0	-23.6
Horizontal	*7386.000	52.9	36.3	37.8	54.4	74.0	-19.6
Horizontal	*2484.639	65.0	36.4	27.5	56.1	74.0	-17.9

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBµV)	Pre- Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4924.000	39.9	36.3	33.6	37.2	54.0	-16.8
Horizontal	*7386.000	38.8	36.3	37.8	40.3	54.0	-13.7
Horizontal	*2484.639	52.8	36.4	27.5	43.9	54.0	-10.1

- NOTES: 1. Peak detector is used, RBW=1MHz/VBW=3MHz for peak value and RBW=1MHz / VBW=10Hz for average value.
 - 2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
 - 3. Negative value in the margin column shows emission below limit.
 - 4. Horn antenna used for the emission over 1000MHz.
 - * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.



Applicant: Shenzhen Chuangwei-RGB Electronics Co., Ltd.Date of Test: 24 May 2019Model: NTUD-U8Worst Case Operating Mode:Transmitting (11n20 MIMO-2412MHz)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBµV)	Pre- Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4824.000	53.8	36.3	33.5	51.0	74.0	-23.0
Horizontal	2343.200	66.7	36.4	27.3	57.6	74.0	-16.4

Polarization	Frequency (MHz)	Reading (dBµV)	Pre- Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4824.000	39.9	36.3	33.5	37.1	54.0	-16.9
Horizontal	*2343.200	53.7	36.4	27.3	44.6	54.0	-9.4

- 2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
- 3. Negative value in the margin column shows emission below limit.
- 4. Horn antenna used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.



Applicant: Shenzhen Chuangwei-RGB Electronics Co., Ltd.Date of Test: 24 May 2019Model: NTUD-U8Worst Case Operating Mode:Transmitting (11n20 MIMO-2437MHz)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBµV)	Pre- Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4874.000	53.5	36.3	33.6	50.8	74.0	-23.2
Horizontal	*7311.000	53.1	36.3	37.8	54.6	74.0	-19.4

Polarization	Frequency (MHz)	Reading (dBµV)	Pre- Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4874.000	39.7	36.3	33.6	37.0	54.0	-17.0
Horizontal	*7311.000	39.5	36.3	37.8	41.0	54.0	-13.0

- 2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
- 3. Negative value in the margin column shows emission below limit.
- 4. Horn antenna used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.



Applicant: Shenzhen Chuangwei-RGB Electronics Co., Ltd.Date of Test: 24 May 2019Model: NTUD-U8Worst Case Operating Mode:Transmitting (11n20 MIMO-2462MHz)

Polarization	Frequency (MHz)	Reading (dBµV)	Pre- Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4924.000	53.3	36.3	33.6	50.6	74.0	-23.4
Horizontal	*7386.000	52.9	36.3	37.8	54.4	74.0	-19.6
Horizontal	*2488.434	64.8	36.4	27.5	55.9	74.0	-18.1

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBµV)	Pre- Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4924.000	39.8	36.3	33.6	37.1	54.0	-16.9
Horizontal	*7386.000	39.7	36.3	37.8	41.2	54.0	-12.8
Horizontal	*2488.434	52.7	36.4	27.5	43.8	54.0	-10.2

- 2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
- 3. Negative value in the margin column shows emission below limit.
- 4. Horn antenna used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.



Applicant: Shenzhen Chuangwei-RGB Electronics Co., Ltd.Date of Test: 24 May 2019Model: NTUD-U8Worst Case Operating Mode:Transmitting (11n40 MIMO-2422MHz)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBµV)	Pre- Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4844.000	53.3	36.3	33.5	50.5	74.0	-23.5
Horizontal	*2316.160	66.4	36.4	27.3	57.3	74.0	-16.7

Polarization	Frequency (MHz)	Reading (dBµV)	Pre- Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4844.000	40.0	36.3	33.5	37.2	54.0	-16.8
Horizontal	*2316.160	53.9	36.4	27.3	44.8	54.0	-9.2

- 2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
- 3. Negative value in the margin column shows emission below limit.
- 4. Horn antenna used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.



Applicant: Shenzhen Chuangwei-RGB Electronics Co., Ltd.Date of Test: 24 May 2019Model: NTUD-U8Worst Case Operating Mode:Transmitting (11n40 MIMO-2437MHz)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBµV)	Pre- Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4874.000	52.8	36.3	33.6	50.1	74.0	-23.9
Horizontal	*7311.000	52.8	36.3	37.8	54.3	74.0	-19.7

Polarization	Frequency (MHz)	Reading (dBµV)	Pre- Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4874.000	39.7	36.3	33.6	37.0	54.0	-17.0
Horizontal	*7311.000	39.0	36.3	37.8	40.5	54.0	-13.5

- 2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
- 3. Negative value in the margin column shows emission below limit.
- 4. Horn antenna used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.



Applicant: Shenzhen Chuangwei-RGB Electronics Co., Ltd.Date of Test: 24 May 2019Model: NTUD-U8Worst Case Operating Mode:Transmitting (11n40 MIMO-2452MHz)

Polarization	Frequency (MHz)	Reading (dBµV)	Pre- Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4904.000	53.0	36.3	33.6	50.3	74.0	-23.7
Horizontal	*7356.000	53.1	36.3	37.8	54.6	74.0	-19.4
Horizontal	*2485.546	66.0	36.4	27.5	57.1	74.0	-16.9

Radiated Emissions

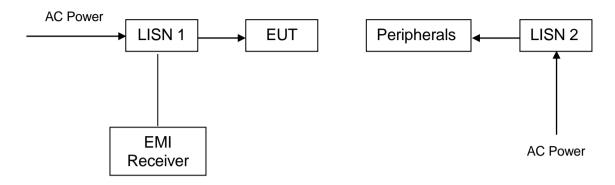
Polarization	Frequency (MHz)	Reading (dBµV)	Pre- Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4904.000	39.8	36.3	33.6	37.1	54.0	-16.9
Horizontal	*7356.000	38.7	36.3	37.8	40.2	54.0	-13.8
Horizontal	*2485.546	53.2	36.4	27.5	44.3	54.0	-9.7

- NOTES: 1. Peak detector is used, RBW=1MHz/VBW=3MHz for peak value and RBW=1MHz / VBW=10Hz for average value.
 - 2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
 - 3. Negative value in the margin column shows emission below limit.
 - 4. Horn antenna used for the emission over 1000MHz.
 - * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.



4.9 Conducted Emission at Mains Terminal

Block Diagram:



4.9.1 Conducted Emissions Configuration Photograph

For electronic filing, the worst case conducted emission configuration photograph is saved with filename: conducted photos.pdf.

4.9.2 Conducted Emissions

Worst Case Live-Conducted Configuration At

0.190 MHz

Judgement: Passed by 16.0 dB margin

TEST PERSONNEL:

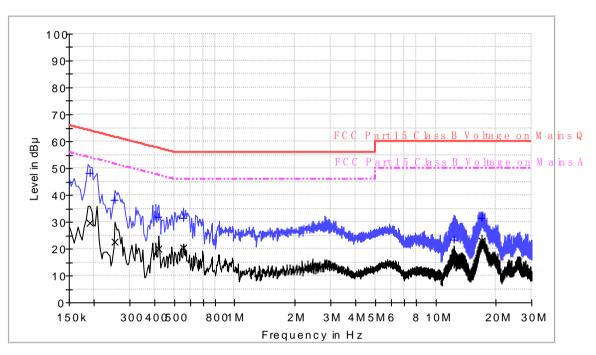
Sign on file

Ryan Chen, Engineer Typed/Printed Name

<u>17 May 2019</u> Date



Applicant: Shenzhen Chuangwei-RGB Electronics Co., Ltd.Date of Test: 17 May 2019Model: NTUD-U8Worst Case Operating Mode:WIFI Link



Conducted Emission Test - FCC

Result Table QP

Frequency (MHz)	QuasiPeak (dB µ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB µ V)
0.190000	48.0	L	9.6	16.0	64.0
0.254000	38.3	L	9.5	23.3	61.6
0.418000	32.0	L	9.4	25.5	57.5
0.558000	31.5	L	9.4	24.5	56.0
12.386000	23.2	L	9.7	36.8	60.0
17.030000	31.6	L	10.0	28.4	60.0

Result Table AV

Frequency (MHz)	Average (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB µ V)
0.190000	29.6	L	9.6	26.8	56.4
0.254000	22.6	L	9.5	30.7	53.3
0.418000	19.9	L	9.4	28.0	47.9
0.558000	20.3	L	9.4	25.7	46.0
12.386000	15.2	L	9.7	34.8	50.0
17.030000	23.1	L	10.0	26.9	50.0

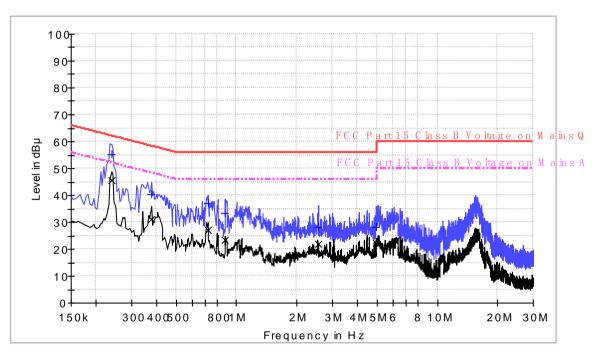
Remark:

1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)

2. Margin (dB) = Limit (dBuV) – Level (dBuV)



Applicant: Shenzhen Chuangwei-RGB Electronics Co., Ltd.Date of Test: 17 May 2019Model: NTUD-U8Worst Case Operating Mode:WIFI Link



Conducted Emission Test - FCC

Result Table QP

Frequency (MHz)	QuasiPeak (dB µ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB µ V)
0.202000	45.5	N	9.5	18.0	63.5
0.258000	37.1	Ν	9.5	24.4	61.5
0.482000	32.7	N	9.4	23.6	56.3
0.550000	32.2	N	9.4	23.8	56.0
12.178000	25.9	Ν	9.6	34.1	60.0
16.546000	25.3	Ν	9.9	34.7	60.0

Result Table AV

Frequency (MHz)	Average (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB µ V)
0.202000	30.2	Ν	9.5	23.3	53.5
0.258000	21.5	Ν	9.5	30.0	51.5
0.482000	20.6	Ν	9.4	25.7	46.3
0.550000	20.0	Ν	9.4	26.0	46.0
12.178000	20.1	Ν	9.6	29.9	50.0
16.546000	17.0	Ν	9.9	33.0	50.0

Remark:

1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)

2. Margin (dB) = Limit (dBuV) – Level (dBuV)



Applicant: Shenzhen Chuangwei-RGB Electronics Co., Ltd. Model: NTUD-U8

- 4.10 Radiated Emissions from Digital Section of Transceiver, FCC Ref: 15.109
- [] Not required No digital part
- [] Test results are attached
- [x] Included in the separated report.



Applicant: Shenzhen Chuangwei-RGB Electronics Co., Ltd. Date of Test: 25 April 2019 Model: NTUD-U8

4.11 Transmitter Duty Cycle Calculation and Measurements, FCC Rule 15.35(b), (c)

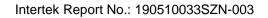
The EUT antenna output port was connected to the input of the spectrum analyzer. The analyzer center frequency was set to EUT RF channel carrier. The SWEP function on the analyzer was set to ZERO SPAN. The Transmitter ON time was determined from the resultant time-amplitude display:

		See attached spectrum analyzer chart (s) for Transmitter timing
		See Transmitter timing diagram provided by manufacturer
Х	(Not applicable, duty cycle was not used.



EXHIBIT 5

EQUIPMENT PHOTOGRAPHS





5.0 Equipment Photographs

For electronic filing, the photographs are saved with filename: external photos.pdf & internal photos.pdf.



EXHIBIT 6

PRODUCT LABELLING



6.0 Product Labeling

For electronic filing, the FCC ID label artwork and location is saved with filename: label.pdf.



EXHIBIT 7

TECHNICAL SPECIFICATIONS



7.0 <u>Technical Specifications</u>

For electronic filing, the block diagram and circuit diagram are saved with filename: block.pdf and circuit.pdf respectively.



EXHIBIT 8

INSTRUCTION MANUAL



8.0 Instruction Manual

For electronic filing, a preliminary copy of the Instruction Manual is saved with filename: manual.pdf.

This manual will be provided to the end-user with each unit sold/leased in the United States.



EXHIBIT 9

CONFIDENTIALITY REQUEST





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9.0 <u>Confidentiality Request</u>

For electronic filing, the confidentiality request of the tested EUT is saved with filename: request.pdf.



EXHIBIT 10

MISCELLANEOUS INFORMATION



10.0 Discussion of Pulse Desensitization

The determination of pulse desensitivity was made in accordance with Hewlett Packard Application Note 150-2, *Spectrum Analysis ... Pulsed RF.*

Pulse desensitivity is not applicable for this device since the transmitter transmits the RF signal continuously.



EXHIBIT 11

TEST EQUIPMENT LIST



11.0 Test Equipment List

Equipment No.	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
SZ182-02	RF Power Meter	Anritsu	ML2496A	1302005	05-Jun-2018	05-Jun-2019
SZ182-02-01	Power Sensor	Anritsu	MA2411B	1207429	05-Jun-2018	05-Jun-2019
SZ067-04	Notch Filter	Micro-Tronics	BRM5070 2-02		05-Jun-2018	05-Jun-2019
SZ061-03	Biconilog Antenna	ETS	3142C	00078828	16-Oct-2018	16-Oct-2019
SZ061-08	Horn Antenna	ETS	3115	00092346	14-Sep-2018	14-Sep-2019
SZ061-06	Active Loop Antenna	Electro- Metrics	EM-6876	217	24-May-2019	24-May-2019
SZ061-07	Pyramidal Horn Antenna	ETS	3160-09	00083067	25-Oct-2018	25-Oct-2019
SZ056-03	Spectrum Analyzer	R&S	FSP30	101148	05-Jun-2018	05-Jun-2019
SZ185-01	EMI Receiver	R&S	ESCI	100547	04-Jan-2019	04-Jan-2020
SZ181-04	Preamplifier	Agilent	8449B	3008A02474	15-Jan-2019	15-Jan-2020
SZ188-01	Anechoic Chamber	ETS	RFD-F/A- 100	4102	15-Dec-2018	15-Dec-2020
SZ062-02	RF Cable	RADIALL	RG 213U		25-Dec-2018	25-Jun-2019
SZ062-05	RF Cable	RADIALL	0.04- 26.5GHz		23-Feb-2019	23-Aug-2019
SZ062-12	RF Cable	RADIALL	0.04- 26.5GHz		23-Feb-2019	23-Aug-2019
SZ185-02	EMI Test Receiver	R&S	ESCI	100692	26-Oct-2018	26-Oct-2019
SZ187-01	Two-Line V- Network	R&S	ENV216	100072	26-Oct-2018	26-Oct-2019
SZ188-03	Shielding Room	ETS	RFD-100	4100	16-Jan-2017	16-Jan-2020
SZ062-16	RF Cable	HUBER+SUH NER	CBL2-BN- 1m	110127- 2231000	29-Oct-2018	29-Oct-2019