

Date of Issue: Sep. 12, 2018 Report No.: WH-FCC-R18091011-3

FCC 47 CFR PART 15 SUBPART E 15.407 TEST REPORT

FOR

Trekstor Primebook C13B

Model : CFPN5SW02464, CFCN4SW02464

Issued to TREKSTOR GmbH Berliner Ring 7, 64625 Bensheim, Germany

> Issued by WH Technology Corp.



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APPENDIX 1 PHOTOS OF TEST CONFIGURATION PHOTOS OF EUT



1. General Information

Applicant	:	TREKSTOR GmbH
Address	:	Berliner Ring 7, 64625 Bensheim, Germany
Manufacturer	:	Heyuan Vastking Electronic Co.,Ltd
Address	:	No.13, Hepu Avenue, Yuancheng District, Heyuan City, Guangdong Province, China.
EUT	:	TREKSTOR PRIMEBOOK C13B
Model Name	:	CFPN5SW02464, CFCN4SW02464
Model Differences :		Only model name different.

Is here with confirmed to comply with the requirements set out in the FCC Rules and Regulations Part 15 Subpart C and the measurement procedures were according to ANSI C63.4-2014. The said equipment in the configuration described in this report shows the maximum emission levels emanating

FCC part 15 subpart E

Receipt Date : 08/30/2018

Final Test Date : 09/11/2018

Tested By:

Bing Chang/ Engineer

Sept. 12, 2018 Date Sept. 12, 2018

Date

Bell Wei / Manager Designation Number: TW2954

Reviewed by:



2. Report of Measurements and Examinations

2.1 List of Measurements and Examinations

FCC Rule	Description of Test	Result
15.203	Antenna requirement	Pass
15.207	AC Power Line Conducted Emission	Pass
15.407(a)(1)	Peak Transmit Power	Pass
15.407(a)(1)	Power Spectral Density	Pass
15.407(e)	Channel Bandwidth	Pass
15.407(b)(6), 15.205/15.209	Undesirable Emission	Pass
15.205/15.209	Radiated Emission	Pass
15.205	Band Edge	Pass
15.407(f)	Frequency Stability	Pass



3. Test Configuration of Equipment under Test

3.1 Description of the tested samples

EUT Name	:	Trekstor Primebook C13B
Model Number	:	CFPN5SW02464
FCCID	:	2ALTX-CFPN5SW02464
Receipt Date	:	08/30/2018
Power From	:	⊠Inside ⊠Outside ⊠Adaptor ⊠Battery □AC Power Source □DC Power Source □Support Unit PC or NB
Adapter	:	JHD-AP024U-120200BA-A INPUT: AC100-240V~ 50/60Hz 0.45A, Output: DC12V 2000mA
Battery	:	7.4V
Operate Frequency	:	WiFi: 802.11a/802.11n(HT20) /ac(VHT20): 5180MHz ~ 5240MHz;
Modulation Technique	:	802.11a/n/ac: OFDM, BPSK, QPSK, 16QAM, 64QAM, 256QAM
Number of Channels	:	Refer to the channel list as described below
Antenna Type	:	FPCB Antenna
Antenna gain		2.4GWIFI 1.0dBi; 5G WIFI 1.0dBi



3.2 Carrier Frequency of Channels

1. Channel List for 802.11a/n-HT20/ac-VHT20

Channel	hannel Frequency Channel (MHz)		Frequency (MHz)
36	5180		
40	5200		
44	5220		
48	5240		
149			

2. Channel List for 802.11n-HT40/ac-VHT40

Channel	Frequency (MHz)	Channel	Frequency (MHz)	
38	5190			
46	5230			

3. Channel List for 802.11ac-VHT80

Channel	Frequency (MHz)	Channel	Frequency (MHz)
42 5210			



3.3 Test Mode and Test Software

- a. During testing, the interface cables and equipment positions were varied according to ANSI C63.4.
- b. The complete test system included Notebook and EUT for RF test.
- c. Test Software: Radio Test.exe
- d. Full charge Battery was used for all testing and the worst radiated emission case from X,Y and Z axis evaluation was selected for testing.

Note:

Have verified all construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as Test Mode as below: Transmit (802.11a) Transmit (802.11n MCS0 20MBW) Transmit (802.11n MCS0 40MBW) Transmit (802.11ac MCS0 80MBW)



3.4 TEST Methodology & General Test Procedures

All testing as described bellowed were performed in accordance with ANSI C63.4:2014 and ANSI C63.10:2013.

Conducted Emissions

The EUT is placed on a wood table, which is at 0.8 m above ground plane acceding to clause 15.207 and requirements of ANSI C63.4:2014. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz are using CISPR Quasi-Peak / Average detectors.

Radiated Emissions

The EUT is a placed on a turn table, which is 0.8 m above ground plane. The turntable was rotated through 360 degrees to determine the position of maximum emission level. The EUT is placed at 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.

- 1) Putting the EUT on the platform and turning on the EUT (on/off button on the bottom of the EUT).
- 2) Setting test channel described as "Channel setting and operating condition", and testing channel by channel.
- For the maximum output power measurement, we followed the method of measurement KDB 789033 v02r01.
- 4) For the spurious emission test based on ANSI(2014), at the frequency where below 1GHz used quasi-peak detector mode; where above 1GHz used the peak and average detector mode. IF the peak value may be under average limit, the average mode will not be performed.



3.5 Measurement Uncertainty

Measurement Item	Uncertainty
Peak Output Power(conducted)	±1.345dB
Power Spectral Density	±1.347dB
Radiated emission(1G-40GHz)	±5.00dB
Radiated emission(30M-1GHz)	±3.89dB
Conducted emission	±1.81dB

3.6 Description of the Support Equipments

Setup Diagram

See test photographs attached in appendix 1 for the actual connections between EUT and support equipment.

Support Equipment

Peripherals Devices:

	OUTSIDE SUPPORT EQUIPMENT							
No.	Equipment	Model	Serial No.	FCC ID/	Trade	Data Cable	Power Cord	
INU.	Equipment	Woder	Senai NO.	BSMI ID	name		FOWEI COIU	
1.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
			INSIDE SUP	PORT EQUIPN	MENT			
No.	Equipment	Model	Serial No.	FCC ID/	Trade	Data Cable	Power Cord	
INU.	Equipment	WOUEI		BSMI ID	name			
1.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

Note: All the above equipment /cable were placed in worse case position to maximize emission signals during emission test

Grounding: Grounding was in accordance with the manufacturer's requirement and conditions for the intended use.



4. Test and measurement equipment

4.1 calibration

The measuring equipment utilized to perform the tests documented in the report has been calibrated once a year or in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2 equipment

The following list contains measurement equipment used for testing. The equipment conforms to the requirement of CISPR 16-1, ANSI C63.2 and. Other required standards. Calibration of all test and measurement, including any accessories that may effect such calibration, is checked frequently to ensure the accuracy. Adjustments are made and correction factors are applied in accordance with the instructions contained in the respective.



Next Cal. Test Site Model No. S/N Instrument Manufacturer Date Spectrum R&S FSP3 833387/010 2018/09/20 (9K--3GHz) **EMI Receiver** R&S ESHS10 830223/008 2019/05/22 **Rolf Heine** Hochfrequenztechni Conduction LISN NNB-2/16z 98062 2019/05/25 k 8-Wire ISN ISN Schwarzbeck CAT5-8158-0094 2018/09/21 CAT5 **RF** Cable 2018/10/19 N/A N/A EMI-3 Bilog BLB16M04004/J antenna(30M ETC MCTD2786B 2019/05/03 B-5-004 -1G) Double Ridged DRH15N0 Guide Horn ETC MCTD 1209 2018/11/23 2009 antenna(1G-18G) Horn antenna AH-826 81000 2019/08/14 com-power (18G-26G) LOOP Radiation AL-130 2018/10/04 Antenna com-power 17117 (Below 30M) Pre amplifier EMC EMC9135 980334 2019/05/04 (30M-1G) INSTRUMENT Microwave EMC 980108&AT 2018/10/23 Preamplifier EMC051845 INSTRUMENT -18001 (1G-18G) Pre amplifier JS4-18002600-3 MITEQ 808329 2019/08/09 (18G~26G) 0-5A ESVS30 EMI Test R&S 2018/11/28 826006/002 Receiver (20M-1000MHz)

TABLELIST OF TEST AND MEASUREMENT EQUIPMENT



WH Technology Corp. Date of Issue: Sep. 12, 2018

		N mala an and		
		N male on end		
RF Cable	EMCI	of	30m	2018/10/19
(open site)		both sides		
		(EMI4)		
RF CABLE	HARBOUT	LL142MI(4M+4M)	NA	2019/03/08
(1~26.5G)	INDUSTRIES	LE 1421011(4101+4101)	NA	2019/03/00
RF CABLE	HARBOUR	LL142MI(7M)	NA	2019/08/10
(1~26.5G)	INDUSTRIES		ΝA	2019/00/10
Spectrum	R&S	FSP7	830180/006	2019/03/25
(9K7GHz)	Nd3	1317	830180/000	2019/03/23
Spectrum		8564EC	4046A0032	2019/03/01
(9K40GHz)		0004EC	404070032	2019/03/01
 Power Meter	R&S	NRVS	100696	2019/08/09
Power	R&S	URV5-Z4	0395.1619.05	2019/08/09
 Sensor	1.00	01105-24	0393.1019.05	2019/00/09

*CALIBRATION INTERVAL OF INSTRUMENTS LISTED ABOVE IS ONE YEAR



5. Antenna Requirements

5.1 Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

5.2 Antenna Construction and Directional Gain

Antenna Type: FPCB Antenna Antenna Gain: Gain: 2.4GWIFI 1.0dBi; 5G WIFI 1.0 dBi



6. Test of Conducted Emission

6.1 Test Limit

Conducted Emissions were measured from 150 kHz to 30 MHz with a bandwidth of 9 KHz on the 110 VAC power and return leads of the EUT according to the methods defined in ANSI C63.4-2014 Section 3.1. The EUT was placed on a nonmetallic stand in a shielded room 0.8 meters above the ground plane as shown in section 2.2. The interface cables and equipment positioning were varied within limits of reasonable applications to determine the position produced maximum conducted emissions.

Frequency (MHz)	Quasi Peak (dB µ V)	Average (dB μ V)
0.15 – 0.5	66-56*	56-46*
0.5 - 5.0	56	46
5.0 - 30.0	60	50

*Decreases with the logarithm of the frequency.

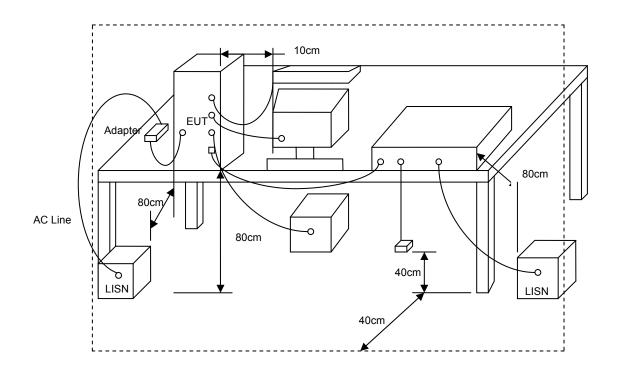
6.2 Test Procedures

- a. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
- b. Connect EUT to the power mains through a line impedance stabilization network (LISN).
- c. All the support units are connecting to the other LISN.
- d. The LISN provides 50 ohm coupling impedance for the measuring instrument.
- e. The FCC states that a 50 ohm, 50 micro-Henry LISN should be used.
- f. Both sides of AC line were checked for maximum conducted interference.
- g. The frequency range from 150 kHz to 30 MHz was searched.
- h. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.



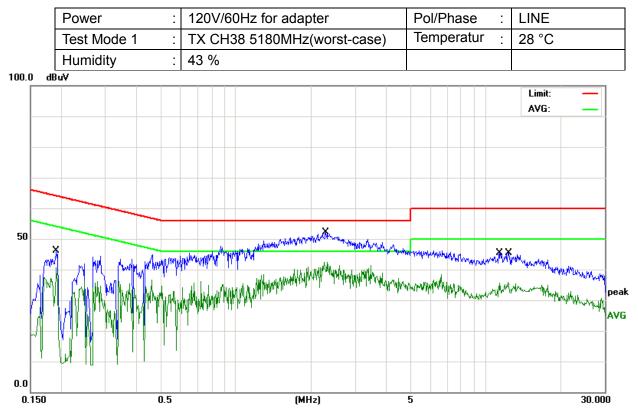
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6.3 Typical Test Setup



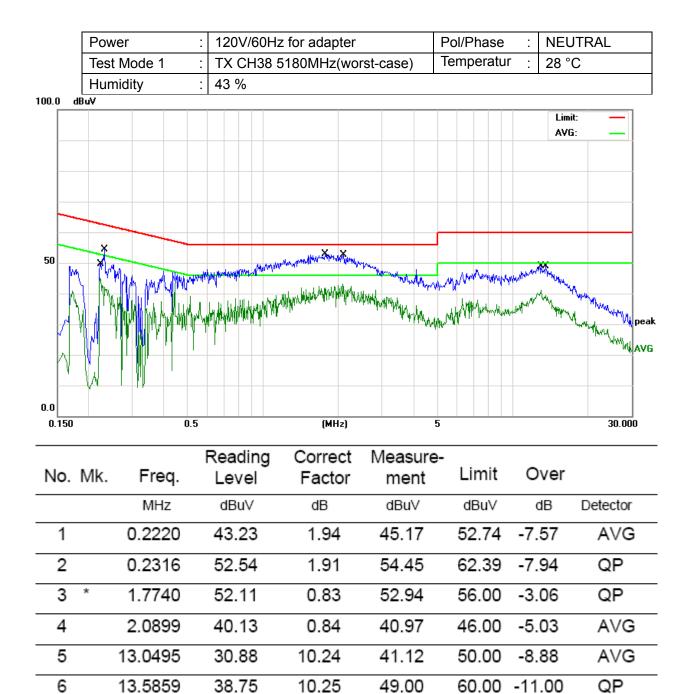


6.4 Test Result and Data



No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
	MHz	dBuV	dB	dBuV	dBu∨	dB	Detector
1	0.1901	43.98	2.22	46.20	64.03	-17.83	QP
2	0.1901	38.38	2.22	40.60	54.03	-13.43	AVG
3	2.2900	51.30	0.85	52.15	56.00	-3.85	QP
4 *	2.3179	41.55	0.85	42.40	46.00	-3.60	AVG
5	11.3817	35.16	10.24	45.40	60.00	-14.60	QP
6	12.2896	25.56	10.24	35.80	50.00	-14.20	AVG







7. Test of Radiated Emission

7.1 Test Limit

In any 100kHz 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 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. If the transmitter measurement is based on the maximum conducted output power, the attenuation required under this paragraph shall be 30dB instead of 20dB. In addition, radiated emissions which fall in section 15.205(a) the restricted bands must also comply with the radiated emission limit specified in section 15.209(a).

Frequency (MHz)	Field Strength (microvolt/meter)	Measurement Distance (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

7.2 Test Procedures

- a. The EUT was placed on a rotatable table top 0.8 meter above ground.
- b. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
- c. The table was rotated 360 degrees to determine the position of the highest radiation.
- d. The antenna is a broadband antenna and its height is varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna are set to make the measurement.
- e. For each suspected emission the EUT was arranged to its worst case and then tune the antenna tower (from 1 M to 4 M) and turn table (from 0 degree to 360 degrees) to find the maximum reading.
- f. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function and specified bandwidth with Maximum Hold Mode.
- g. If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method and reported.
- h. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise,

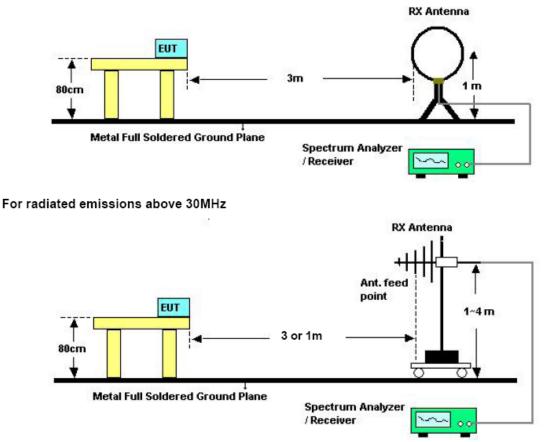


the emissions will be measured in average mode again and reported.

i. "Cone of radiation" has been considered to be 3dB bandwidth of the measurement antenna.

7.3 Typical Test Setup

For radiated emissions below 30MHz



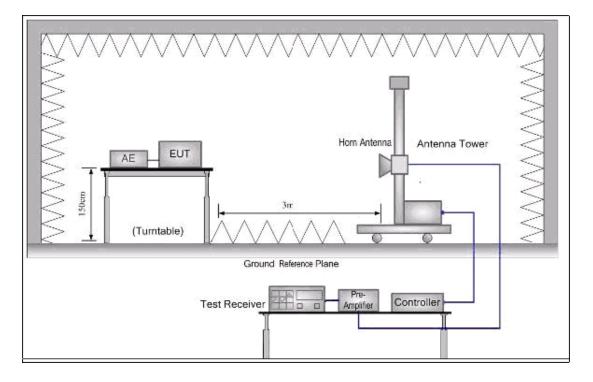
Above 10 GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade from 3m to 1m.

Distance extrapolation factor = 20 log (specific distance [3m] / test distance [1m]) (dB); Limit line = specific limits (dBuV) + distance extrapolation factor [9.54 dB].



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For radiated emissions frequency above 1GHz



Note: For harmonic emissions test a appropriate high pass filter was inserted in the input port of AMP.

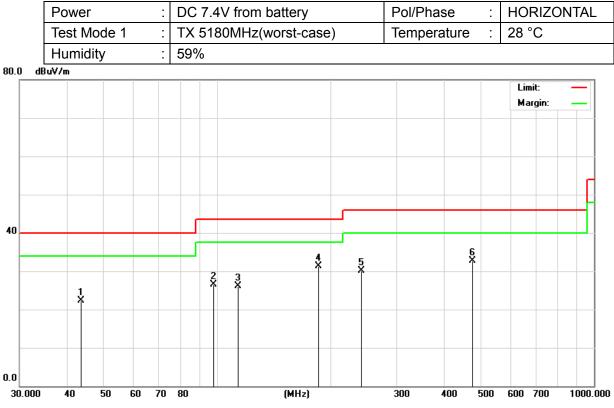


7.4 Test Result and Data (9kHz ~ 30MHz)

The 9kHz - 30MHz spurious emission is under limit 20dB more.

7.5 Test Result and Data (30MHz ~ 1GHz, worst emissions found)

Antenna A:



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		43.6584	33.11	-10.89	22.22	40.00	-17.78	QP
2		98.1419	40.33	-13.85	26.48	43.50	-17.02	QP
3		114.1136	38.49	-12.47	26.02	43.50	-17.48	QP
4	*	185.7880	43.28	-11.99	31.29	43.50	-12.21	QP
5		240.8302	42.32	-12.15	30.17	46.00	-15.83	QP
6		475.4990	38.52	-5.89	32.63	46.00	-13.37	QP



		Po	ver			: D	C 7.4	↓V fro	om bat	tery		F	Pol/l	Phas	е	:	VEF	RTIC	AL	
		Tes	t M	ode	1	: T.	X 51	BOMI	Hz(wor	st-cas	e)		Гет	perat	ture	:	28 °	С		
		Hu	nid	ity		: 59	9%													
80.0	dł	3u∀/m															Limi			-
40 -		1				2								4 *		5%			6 X	
0.0	.000	41)	50	60	70 80			Cor	MHz)		easur	300	41	00	500	600	700	100	0.000
Ν	0.	Mk		Fr	eq.		eadi .eve	-		ctor		ment	e-	Lir	mit	C	Dver			
				Μ	Hz		dBu\	/	d	В	d	BuV/m		dBu	uV/m	ı	dB		Dete	ctor
	1	×	3	8.2	120	4	16.5	2	-12.	10	3	34.42		40.	00	-	5.58	}	QF)
	2		7	6.2	442	4	17.7	9	-16.	10	3	31.69		40.	00	-	8.31		QF)
	3			8.5			37.4			84		27.61		43.			5.8		QF	
	4				500		37.5		-6.			31.50		46.			4.5		QF	
	5				318	3	37.4		-5.			32.25		46.			3.7		QF	
	6		80	4.6	028		3.5	8	30.	48	3	34.06		46.	00	-1	1.94	4	QF	>



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7.6 Test Result and Data (Between 1~40 GHz)

Above 1GHz:

	Н	10360	33.65	12.56	46.21	74	-27.79	PEAK
000 11c 5100MU	Н	15540	36.03	16.45	52.48	68.2	-15.72	PEAK
802.11a-5180MHz	V	10360	34.96	12.56	47.52	74	-26.48	PEAK
	V	15540	36.57	16.45	53.02	68.2	-15.18	PEAK
	Н	10400	35.69	12.64	48.33	74	-25.67	PEAK
802.11a-5200	Н	15600	35.47	16.53	52	68.2	-16.2	PEAK
MHz	V	10400	37.52	12.64	50.16	74	-23.84	PEAK
	V	15600	35.33	16.53	51.86	68.2	-16.34	PEAK
							-	
	Н	10480	33.25	12.68	45.93	74	-28.07	PEAK
802.11a-5240	Н	15720	35.02	16.54	51.56	68.2	-16.64	PEAK
MHz	V	10480	36.24	12.68	48.92	74	-25.08	PEAK
	V	15720	34.71	16.54	51.25	68.2	-16.95	PEAK
	Н	10360	33.25	12.56	45.81	74	-28.19	PEAK
802.11n	Н	15540	35.97	16.45	52.42	68.2	-15.78	PEAK
HT20-5180MHz	V	10360	34.82	12.56	47.38	74	-26.62	PEAK
	V	15540	36.59	16.45	53.04	68.2	-15.16	PEAK
	Н	10400	36.31	12.64	48.95	74	-25.05	PEAK
802.11n	Н	15600	35.68	16.53	52.21	68.2	-15.99	PEAK
HT20-5200MHz	V	10400	37.44	12.64	50.08	74	-23.92	PEAK
	V	15600	35.49	16.53	52.02	68.2	-16.18	PEAK



	Н	10480	33.35	12.68	46.03	74	-27.97	PEAK
802.11n	Н	15720	35.62	16.54	52.16	68.2	-16.04	PEAK
HT20-5240MHz	V	10480	36.16	12.68	48.84	74	-25.16	PEAK
	V	15720	34.89	16.54	51.43	68.2	-16.77	PEAK
							•	
	Н	10380	36.13	12.58	48.71	74	-25.29	PEAK
802.11n	Н	15570	34.50	16.48	50.98	68.2	-17.22	PEAK
HT40-5190MHz	V	10380	38.30	12.58	50.88	74	-23.12	PEAK
	V	15570	33.43	16.48	49.91	68.2	-18.29	PEAK
	Н	10460	35.59	12.66	48.25	74	-25.75	PEAK
802.11n	Н	15690	33.03	16.53	49.56	68.2	-18.64	PEAK
HT40-5230MHz	V	10460	35.26	12.66	47.92	74	-26.08	PEAK
	V	15690	33.49	16.53	50.02	68.2	-18.18	PEAK
	Н	10360	33.36	12.56	45.92	74	-28.08	PEAK
802.11ac	Н	15540	35.97	16.45	52.42	68.2	-15.78	PEAK
HT20-5180MHz	V	10360	34.91	12.56	47.47	74	-26.53	PEAK
	V	15540	36.64	16.45	53.09	68.2	-15.11	PEAK
	Н	10400	36.61	12.64	49.25	74	-24.75	PEAK
802.11ac	Н	15600	35.81	16.53	52.34	68.2	-15.86	PEAK
HT20-5200MHz	V	10400	37.36	12.64	50.00	74	-24.00	PEAK
	V	15600	35.59	16.53	52.12	68.2	-16.08	PEAK
	-	-	-	-			•	
	Н	10480	33.69	12.68	46.37	74	-27.63	PEAK
802.11ac	Н	15720	35.71	16.54	52.25	68.2	-15.95	PEAK
HT20-5240MHz	V	10480	36.26	12.68	48.94	74	-25.06	PEAK
	V	15720	34.78	16.54	51.32	68.2	-16.88	PEAK



	Н	10380	36.03	12.58	48.61	74	-25.39	PEAK
802.11ac	Н	15570	34.29	16.48	50.77	68.2	-17.43	PEAK
HT40-5190MHz	V	10380	38.11	12.58	50.69	74	-23.31	PEAK
	V	15570	33.41	16.48	49.89	68.2	-18.31	PEAK

	Н	10460	37.51	12.66	50.17	74	-23.83	PEAK
802.11ac	Н	15690	35.15	16.53	51.68	68.2	-16.52	PEAK
HT40-5230MHz	V	10460	36.26	12.66	48.92	74	-25.08	PEAK
	V	15690	32.41	16.53	48.94	68.2	-19.26	PEAK

	Н	10420	34.33	12.62	46.95	74	-27.05	PEAK
802.11ac	Н	15630	33.65	16.52	50.17	68.2	-18.03	PEAK
HT80-5210MHz	V	10420	34.48	12.62	47.10	74	-26.9	PEAK
	V	15630	32.82	16.52	49.34	68.2	-18.86	PEAK

The field strength is calculated by adding the Antenna Factor. Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level =Receiver Reading + Antenna Factor + Cable Factor –Preamplifier Factor.

Average measurement was not performed if peak level lower than average limit.

No any other emissions level very low which are attenuated less than 20dB below the limit.

Hence there no other emissions have been reported.



o. Danuwiutii weasu	
Test Requirement:	FCC Part15 E Section 15.407
Test Method	ANSI C63.10:2013 and KDB 789033 D02 General U-NII Test Procedures New Rules v02r01
Limit:	N/A (Band I)
	>500KHz(Band IV)
Test setup:	Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane
Test procedure:	According to KDB 789033 D02 General U-NII Test Procedures New Rules v02r01
Test Instruments:	Refer to section 5.10 f & section 6.0 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

8. Bandwidth Measurement Data



8.1 Test Result and Data

	Freewoner	26dB Occ	upied Bandwi	idth (MHz)	99% Occupied Bandwidth (MHz)			
CH. No.	Frequency (MHz)	802.11a	802.11a 802.11n 802.1 (HT20) (VHT		802.11a	802.11n (HT20)	802.11ac (VHT20)	
36	5180.00	24.20	24.69	24.25	17.57	18.44	18.54	
40	5200.00	23.81	23.96	24.42	17.32	18.23	18.45	
48	5240.00	24.43	24.39	25.29	17.38	18.23	18.42	

CH.	Frequency	26dB Occupied I	Bandwidth (MHz)	99% Occupied Bandwidth (MHz)		
No.	(MHz)	802.11n(HT40)	802.11ac(VHT40)	802.11n(HT40)	802.11ac(VHT40)	
38	5190.00	44.92	44.43	36.43	36.51	
46	5230.00	44.79	43.15	36.45	36.67	

CH.	Frequency	26dB Occupied Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
No.	(MHz)	802.11ac(VHT80)	802.11ac(VHT80)
42	5210	82.99	75.26



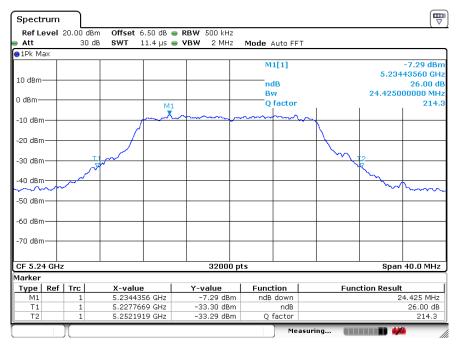
				Cha	nne	1:36				
Spectrum										
Ref Level 20	0.00 dBm	Offset 6	.50 dB 👄 I	RBW 500	kHz					(•
Att	30 dB	SWT 1	.1.4 µs 😐 '	VBW 2	MHz	Mode A	uto FF	т		
●1Pk Max										
						M1	[1]			-8.17 dBn
10 dBm									5.18	418560 GH
						nd Bw			24 2021	26.00 di 500000 MH
0 dBm							actor		24.2023	214.3
						1	I			
-10 dBm			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	+	~~~~	<u>~~~</u>	$\sim \sim $	~		
		1								
-20 dBm		1								
-30 dBm	т1	\sim							то	
-56 dbiii	7								V.	
-40 dBm	N								- <u>_</u>	
\sim	\sim									\sim
-50 dBm										
-60 dBm										
-70 dBm										
-70 ubiii										
CF 5.18 GHz Marker				32	000 p	ts			Spar	n 40.0 MHz
	Trc	X-value	. 1	Y-value		Funct	ion I	г	nction Resul	+
M1	1	5.18418		-8.17			down	Fu	24.202	
T1	1	5.167563		-34.16				26.00 dB		
T2	1	5.19176	56 GHz	-34.17	dBm	Qf	actor			214.2
							Mea	asuring 🔳		<u>(4</u>

26dB BW 802.11a Channel: 36

Spectrum									
Ref Level	20.00 dB	m Offset	6.50 dB 🧉	RBW 500 kH	Ηz				
Att	30 0	db SWT	11.4 µs 🧉	VBW 2 MH	Ηz	Mode Auto FF	Т		
1Pk Max									
						M1[1]			-8.37 dBm
10 dBm								5.2	0219060 GH:
10 0.0						ndB			26.00 dE
0 dBm		_			—	Bw Q factor		23.81	0000000 MH; 218.
						M1 Q lactor	1	1	210.0
-10 dBm		-		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	<u>_</u>		~~	-	
			A						
-20 dBm		+ /	/		+		\rightarrow		
							5		
-30 dBm		1-1			+		- ~~		
	/	-1						\mathbf{N}	
-40 dBm	\sim	-			+			- m	
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~									v mm
-50 dBm									
-60 dBm									
-oo ubiii									
-70 dBm									
								-	
CF 5.2 GHz				3200	u pt	5		sp	an 40.0 MHz
1arker	1 Tun 1	¥		¥		Function	<b>F</b>	nction Res	
Type Ref M1	Trc 1	X-val	ue 1906 GHz	<u>Y-value</u> -8.37 d	8m			nction Res	23.81 MHz
T1	1		2031 GHz	-34.37 di		ndB			26.00 dB
T2	1		0131 GHz	-34.37 di		Q factor			218.5
	1				_		asuring		



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				Chann	el: 36				
Spectrum									
Ref Level 3	20.00 dBi	m Offset 6	.50 dB 🧉	RBW 500 kHz					
Att	30 d	B <b>SWT</b> 1	1.4 µs 🧉	VBW 2 MHz	Mode	Auto FF	т		
∋1Pk Max									
					1	M1[1]			-8.16 dB
10 dBm								5.17	775810 GF
10 aBm					ndB			26.00 d	
0 dBm						Зw		24.691	200000 MH
o ubili				M1		Q factor			209.
-10 dBm									
-10 dbiii							$\sim$		
-20 dBm									
20 0011									
-30 dBm							<u>\</u>	×+2	
	j	7						K.	
-40 dBm	~~~~~					_		$\rightarrow$	
m									$\gamma$
-50 dBm						_		_	
-60 dBm									
-70 dBm									
CF 5.18 GHz				32000	nts			Sna	in 40.0 MHz
darker				02000	- · · ·			500	
Type   Ref	Trc	X-value	1	Y-value	Eun	ction	Eu	nction Resu	lt
M1			1 GHz	-8.16 dBn		B down	14		24.6912 MHz
T1				-34.16 dBn					26.00 dB
T2	1	5.192275		-34.16 dBn		) factor			209.7
						Ma	asuring		-

#### 26dB BW 802.11n20 Channel: 36

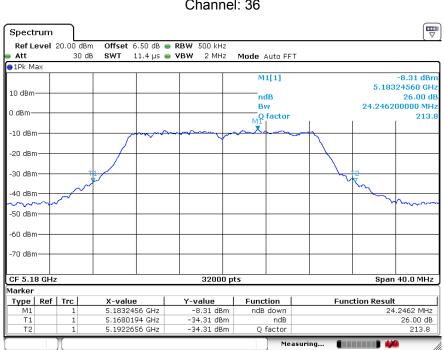
Spectrum								
Ref Level	20.00 dB	m Offset	6.50 dB 🧉	RBW 500 kHz				
Att	30 d	B SWT	11.4 µs 🧉	VBW 2 MHz	Mode Auto FF	т		
∎1Pk Max								
					M1[1]			-8.14 dBm
10 dBm							5.19	273440 GH:
TO UBIII					ndB			26.00 dE
0 dBm					Bw		23.961	200000 MH;
o ubili			M1		Q factor	1	1	216.3
-10 dBm					, man man			
10 0.0		1						
-20 dBm		- /						
-30 dBm							те	
	~	7~				×	m.	
-40 dBm							- <u></u>	
~~~~~	$\sim$						1	-
-50 dBm								
-60 dBm								
-70 dBm —		-						
CF 5.2 GHz		1		32000	pts	1	Spa	n 40.0 MHz
/larker					•			
Type Ref	Trc	X-val	ue l	Y-value	Function	Fun	nction Resu	lt
M1	1		7344 GHz	-8.14 dBr				3.9612 MHz
T1	1	5.1880	0506 GHz	-34.13 dBr	n ndB			26.00 dB
T2	1	5.2120	0119 GHz	-34.14 dBr	n Q factor			216.7
)(Me	asuring 🚺		



		•			
Spectrum					
Ref Level 20.00 d	Bm Offset 6.50 dB (RBW 500 kHz			(•
Att 30			Mode Auto FFT		
1Pk Max			induo indio in i		
			M1[1]		-8.06 dBm
					5.23220060 GHz
10 dBm			ndB		26.00 dB
			Bw	24	.388700000 MHz
0 dBm	NI1		Q factor		214.5
1.0.10					
-10 dBm				and the second sec	
-20 dBm					
-20 ubiii					
-30 dBm	T1			×π2	
-SO UBIII	7				
-40 dBm	~			~	~
~~~~~~					man
-50 dBm					
-60 dBm					
-70 dBm					
CF 5.24 GHz		22000 m	-		Span 40.0 MHz
darker		32000 pt			apan 40.0 MHz
	M undun I	V	Function	Function	De sult
Type Ref Trc M1 1	X-value 5.2322006 GHz	Y-value -8.06 dBm	ndB down	Function	24.3887 MHz
T1 1	5.2276706 GHz	-34.06 dBm	ndB		24.3887 MH2 26.00 dB
T2 1	5.2520594 GHz	-34.06 dBm	Q factor		
1 1					214.5
			Mea	suring 🚺	



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# Channel: 36

802.11ac20

Spectrum Ref Level		···· Offcot	e ro do je	RBW 500 kH				□
Att	20.00 06		11.4 μs e					
1Pk Max	30 1	10 3111	11.4 µз 🦷		2 Moue Auto Fr	- 1		
IFK Man					M1[1]			-8.27 dBn
							5.193	394940 GH
10 dBm				-	ndB			26.00 di
					Bw		24.4175	00000 MH:
D dBm			M1		Q factor	•		212.
10 10-			X					
-10 dBm								
-20 dBm								
-20 UBIII								
-30 dBm							10	
SO GDIII	~	X				~	The second	
-40 dBm		<b>`</b>					- No	
m	and a second							m
-50 dBm		_		_				
-60 dBm		-						
-70 dBm								
CF 5.2 GHz				3200	Dots		Spar	1 40.0 MHz
1arker					•		· · ·	
Type   Ref	Trc	X-val	ue	Y-value	Function	Fur	Function Result	
M1	1	5.1939	9494 GHz	-8.27 dB	m ndB down		24	1.4175 MHz
T1	1		7806 GHz	-34.27 dB				26.00 dB
T2	1	5.212	1981 GHz	-34.26 dB	m Q factor			212.7



			ename			
Spectrum	٦					
Ref Level 20.0		Offset 6 50 d	3 🖷 RBW 500 kHz			(*,
Att	30 dB		s e VBW 2 MHz	Mode Auto FF	т	
1Pk Max				Mode Adto IT		
				M1[1]		-7.99 dBm
						5.24328310 GHz
10 dBm				ndB		26.00 dB
				Bw		25.285000000 MHz
0 dBm				O factor		207.4
10.40-						
-10 dBm		1000			~ ``	
-20 dBm						
-20 uBill		$\sim$				
-30 dBm	Τ1	$\sim$				τo
-30 ubiii	Ţ~				~	ν
-40 dBm	~					$\sim$
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~						m
-50 dBm						
-60 dBm						
-70 dBm						
CF 5.24 GHz			32000 p	+c		Span 40.0 MHz
darker			32000 μ			apan 40.0 MHz
		X-value	Y-value	Function	F	ction Result
Type Ref Tr M1	<u>с</u> 1	5.2432831 GH		ndB down	Fun	25.285 MHz
T1	1	5.2271056 GH		ndB		25.265 MH2 26.00 dB
T2	1	5.2523906 GH		Q factor		207.4
				Mea	asuring 🔳	



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		_									Ē	
Spectro	um											
Ref Le	vel 2	0.00 dBi	m Offset	6.50 dB 🛛	■ RBW	500 kHz						
Att		30 d	B SWT	18.9 µs (■ VBW	2 MHz	Mode 4	uto FF	т			
∋1Pk Ma:	×											
							M:	1[1]			-11.25 dBr	
10 dBm—										5.2	0192630 GH	
20 00							nd				26.00 d	
0 dBm—							By			44.92	2500000 MH	
							Q I	factor	1	1	115.	
-10 dBm-								M1				
			1 m	man	mm	mm	m	som	my			
-20 dBm-			+ /			<u> </u>						
-30 dBm-									<u> </u>			
			T1						~	72		
-40 dBm-			¥		_					M.		
mm	mo	man								- North	man	
-50 dBm-					-							
-60 dBm-												
-70 dBm-												
CF 5.19	GHz					32000 p	ots		1	Sp	an 80.0 MHz	
larker												
Type	Ref	Trc	X-valu	e	Y-۱	alue	Funct	tion	Fu	Function Result		
M1		1	5.20192	63 GHz	-1	1.25 dBm				44.9225 MHz		
Τ1		1	5.16735			7.26 dBm		ndB			26.00 dB	
T2		1	5.21227	'63 GHz	-3	7.25 dBm	Q f	factor			115.8	
								Me	asuring 🔳			

26dB BW 802.11n40 Channel: 38

Spectrum											⊞ ⊽
Ref Level	20.00 dE	m Offset	6.50 dB 🧉	RBW	500 kHz						(•
Att	30 (dB SWT	18.9 µs 🧉	VBW	2 MHz	Mode /	uto FF	т			
1Pk Max											
						M	1[1]				-10.68 dBn
10 dBm										5.21	587630 GH
10 aBm						nc					26.00 di
0 dBm						B				44.7875	500000 MH
U UBIII						Q	factor				116.
-10 dBm			M1								
10 dbm		- r	- marine	mon	my	m	m	man			
-20 dBm					Y						
20 42											
-30 dBm				_							
		T1						1	T2		
-40 dBm		A CONTRACTOR		_					m.		
mann	mound	~I							1	- Sun and a superior	m
-50 dBm		_		_						-	
-60 dBm				-							
-70 dBm		-		-					_		
CF 5.23 GHz	:		1		32000 p	ts				Spar	1 80.0 MHz
/larker										· · ·	
Type Ref	Trc	X-valu	e	Y-v	alue	Funct	tion	Functio		tion Resul	t
M1	1	5.21687	63 GHz).68 dBm					4	4.7875 MHz
T1	1	5.20736			5.69 dBm		ndB				26.00 dB
T2	1	5.25215	538 GHz	-36	5.66 dBm	Q 1	factor				116.5
							Mei	asuring			6



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				0	nanne	. 00					
Spectrum											
Ref Level 20	1.00 dBm	Offset	5.50 dB (RBW	500 kHz						(.
Att	30 dB		18.9 µs (2 MHz	Mode /	Auto FF	т			
∋1Pk Max											
						M	1[1]			-	11.10 dBn
10 dBm										5.178	37630 GH
IU dBm						no					26.00 di
0 dBm						Bi				44.4375	00000 MH
0 ubiii						Q	factor	1			116.
-10 dBm			M1								
10 0.011		pro	many	mm	m	m	mo	mond			
-20 dBm					Y						
20 00.00											
-30 dBm				_							
		T1						7	T2 VY		
-40 dBm		<u>~</u>		_					m.		
mmm	m								- m	Manna	mm
-50 dBm									_		-
-60 dBm				_					_		
-70 dBm											
CF 5.19 GHz			1		32000 p	ots				Span	80.0 MHz
Marker											
Type Ref ⁻	Frc	X-value	e	Y-1	alue	Func	tion	Function Result			
M1	1	5.17837	63 GHz	-1	1.10 dBm					44	.4375 MHz
T1	1	5.16788			7.10 dBm		ndB				26.00 dB
T2	1	5.21232	13 GHz	-3	7.10 dBm	Q .	factor				116.5
							Me	asuring			

26dB BW 802.11ac40 Channel: 38

											Ē
Ref Level	20.00 dB	m Offset	6.50 dB (RBW	500 kHz						(•
Att	30 c	B SWT	18.9 µs	VBW	2 MHz	Mode /	Auto FF	т			
1Pk Max											
						M	1[1]				-10.23 dBn
10 dBm										5.24	178130 GH
						no					26.00 di
) dBm						Bi				43.147	500000 MH
JUBIII						Q	factor				121.
-10 dBm							M1				
10 dbm		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	man	mon	~ ~	mann	mon	mm			
-20 dBm					<u> </u>						
20 0011									\		
-30 dBm									\		
oo abiii		1							M ²		
-40 dBm		and the second s	_						~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		
m	m	1								www	harm
50 dBm			_	_							
-60 dBm				_							
-70 dBm —				_							
CF 5.23 GH:	7				32000 p	its				Sna	n 80.0 MHz
larker										opu	
Type Ref	Trc	X-valu	e	Y-1	value	Fund	tion		Eunr	ction Resu	t
M1	1		313 GHz	-	.0.23 dBm						3.1475 MHz
T1	1	1 5.2084163 GH:		-3	6.24 dBm		ndB				26.00 dB
T2	1	5.2515	538 GHz	-3	6.24 dBm	Q	factor				121.5
	1						Me	asuring			



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				C	hanne	91:42					
Spectrum											
Ref Level	20.00 dB	m Offset	6.50 dB (RBW	500 kHz						
Att	30 d	B SWT	37.8 µs (• VBW	2 MHz	Mode /	Auto FF	т			
😑 1Pk Max											
						М	1[1]				13.58 dBm 00750 GHz
10 dBm		-				n	1B				26.00 dB
0.10						B	N .			82.9850	00000 MHz
0 dBm						Q	factor				62.6
-10 dBm				MI							
		and the second sec	Maynow	mannt	manney poor	m.Alanshula	and a stronger start	man			
-20 dBm		1									
-30 dBm									\bot		
-40 dBm		11							12		
man mar way	www.allow	and the second s							A Startest	mann	handerhouse
-50 dBm				_							
-60 dBm				_							
-70 dBm											
CF 5.21 GH	z				32000 p	ts				span .	160.0 MHz
Marker	Trc	X-valu	- 1	ν.	alue	Func	•!	1	F	ction Result	. 1
Type Ref	1	5.19900			3.58 dBm		down		Fund		2.985 MHz
T1	1	5.16779			9.57 dBm	Hab	ndB				26.00 dB
T2	1	5.25078		-3	9.55 dBm	Q	factor				62.6
)[Me	asuring.			1
)		-		//

26dB BW 802.11ac80 Channel:42



		Channe	1. 30		
Spectrum					
Ref Level 20.00 dBm	Offset 6.50 dB	RBW 500 kHz			('
Att 30 dB	SWT 11.4 µs 🧉	VBW 2 MHz	Mode Auto FF	т	
●1Pk Max	· · · ·				
			M1[1]		-7.76 dBm
10 dBm					5.17835440 GHz
10 dbiii			Occ Bw	i	17.566250000 MHz
0 dBm					
		M1			
-10 dBm		mm		~~~~	
	1.1			V ²	
-20 dBm				- <u> </u>	
-30 dBm				~	5
-40 dBm					\sim
					www.
-50 dBm					
00 40.00					
-60 dBm					
-70 dBm					
CF 5.18 GHz		32000 p	ts	1	Span 40.0 MHz
Marker					
Type Ref Trc	X-value	Y-value	Function	Fun	ction Result
M1 1	5.1783544 GHz	-7.76 dBm			
T1 1	5.17126937 GHz	-18.37 dBm	Occ Bw		17.56625 MHz
T2 1	5.18883562 GHz	-18.67 dBm			
Л			Mea	asuring 🚺	

99% OBW 802.11a Channel: 36

Spectrum										
Ref Level 20	1.00 dBm	Offset	6.50 dB 🧉	RBW 9	500 kHz					
Att	30 dB	SWT	11.4 µs 🧉	VBW	2 MHz	Mode /	\uto FF	Г		
1Pk Max										
						M	1[1]			-8.42 dBn
10 dBm										380560 GH:
10 dbiii						00	cc Bw	1	17.321	250000 MH:
D dBm				_						
						M	L			
-10 dBm			~~~~	\sim		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Somo,	~~		
								1 2		
-20 dBm		Y						X		
-30 dBm								m		
	~	~							\mathbf{x}	
-40 dBm									m	
m m										\sim
-50 dBm									-	
-60 dBm									-	
-70 dBm										
CF 5.2 GHz					32000 p	ts			Spa	n 40.0 MHz
1arker										
Type Ref ⁻	Frc	X-valu	ie	Y-va	alue	Funct	tion	Fur	nction Resu	lt
M1	1		D56 GHz		.42 dBm					
T1	1	5.19128			.48 dBm	0	CC BW		17	.32125 MHz
T2	1	5.20860	188 GHz	-18	.44 dBm					
							Mea	suring 🚺		



			•					
Spectrum								
Ref Level		Bm Offset 6 50	dB 👄 RBW 51	00 kHz				(*
Att	30		-	2 MHz	Mode Auto F	FT		
1Pk Max								
					M1[1]			-7.96 dBm
10.10							5.24	411440 GHz
10 dBm					Occ Bw		17.3762	50000 MHz
0 dBm								
o abiii					M1			
-10 dBm		~	m	~~~~~~	<u> </u>	~~~		
		Ţ1/		T		12		
-20 dBm						X		
-30 dBm						~	^	
10.15	~	\sim					M	
-40 dBm	~~~							~ ~ ~
-50 dBm								
-30 ubiii								
-60 dBm								
-70 dBm								
CF 5.24 GH	17			32000 pt	ts		Snar	n 40.0 MHz
Marker				.2000 pt			opa	
Type Ref	Trc	X-value	Y-va	lue	Function	l Fu	nction Resul	t
M1	1	5.2441144 G		96 dBm				-
T1	1	5.23115063 G		16 dBm	Occ Bw		17.	37625 MHz
T2	1	5.24852688 G	Hz -18.	56 dBm				
) M	easuring		4
								//



			Channe	30			
Spectrum							Ē
Ref Level 20.00	dBm Offse	t 6.50 dB 👄	RBW 500 kHz				(-
	30 dB SWT	11.4 µs 👄		Mode Auto FF	т		
●1Pk Max							
-				M1[1]		-8	.59 dBm
10.0						5.18503	690 GH:
10 dBm				Occ Bw		18.441250	000 MH;
0 dBm							
U UBIII				M1			
-10 dBm							
-10 0011	т	1 Town			72		
-20 dBm)	7			7		
20 0011							
-30 dBm					\rightarrow	-	
	~~~				ľ ľ	$\sim$ $\sim$	
-40 dBm	~					+	
m						1 m	$\sim\sim$
-50 dBm							
-60 dBm							
-70 dBm							
CF 5.18 GHz		1	32000	pts	I	Span 40	.0 MHz
Marker							
Type   Ref   Trc	X-va	lue	Y-value	Function	Fun	ction Result	
M1 1		0369 GHz	-8.59 dBm				
T1 1		81563 GHz	-17.54 dBm			18.441	25 MHz
T2 1	L 5.1892	25687 GHz	-17.86 dBm				
				Me	asuring	••••	
							/

#### 99% OBW 802.11n20 Channel: 36

Spectrum									<b>H</b> ▼
Ref Level 2	0.00 dBr	n Offset	6.50 dB 🧉	RBW 500 k	Hz				
Att	30 d	B SWT	11.4 µs 🧉	<b>VBW</b> 2 M	1Hz	Mode Auto FF	Т		
)1Pk Max									
						M1[1]		5.0	-8.61 dBn 0466310 GH;
10 dBm				_	-	Occ Bw			5250000 MH:
D dBm									
, april						M1			
-10 dBm		TI		~~~~~	$\Rightarrow$		w-to	_	
-20 dBm		7					Ť		
20 00.00									
-30 dBm									
-40 dBm	~							Z	
$\sim\sim\sim\sim$	$\sim$								
-50 dBm									
-60 dBm									
-70 dBm		1		-	-				
CF 5.2 GHz				220	00 pt	-			an 40.0 MHz
larker				320	00 pt	.5		ар	an <del>1</del> 0.0 MHz
Type   Ref	Trc	X-valı	ie	Y-value		Function	Fu	nction Res	ult
M1	1		631 GHz	-8.61	dBm				
T1	1	5.19085		-17.63 (		Occ Bw		1	8.22625 MHz
T2	1	5.20907	937 GHz	-17.79 (	:IBm				



			onann				
Spectrum							
Ref Level		3m Offset 6.50	dB 👄 RBW 500 kHz				(*
Att	30		µs 🖷 VBW 2 MHz		т		
∋1Pk Max							
				M1[1]			-7.73 dBm
10 dBm							93190 GHz
TO UBIII				Occ Bw		18.2300	00000 MHz
0 dBm							
			M1				
-10 dBm			$\sim\sim\sim\sim\sim\sim\sim\sim$	<u>^</u>	$\sim$		
					V ²		
-20 dBm					$\rightarrow$	-	
-30 dBm		N			~	N	
-40 dBm	5	~				m	
	$\sim$						1~~~~~
-50 dBm						_	
-60 dBm							
-70 dBm							
CF 5.24 GH	z		32000	pts		Span	40.0 MHz
Marker							
Type Ref	Trc	X-value	Y-value	Function	Fui	nction Result	
M1	1	5.2379319 G					
T1 T2	1	5.23083063 G 5.24906063 G					18.23 MHz
12	1	5.24906063 G	HZ   -17.81 GBN	1			
	Л			Me	asuring 📗		



		Channe	1. 30		
Spectrum					
Ref Level 20.00 dBm	Offset 6.50 dB	RBW 500 kHz			( '
■ Att 30 d8	3 <b>SWT</b> 11.4 µs	VBW 2 MHz	Mode Auto FF	т	
●1Pk Max	· · ·				
			M1[1]		-8.35 dBm
10 dBm					5.18231940 GHz
TO OBIII			Occ Bw		18.542500000 MHz
0 dBm					
			M1		
-10 dBm	T1/	<u>~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~</u>	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	man	
	4			<b>₹</b> 2	
-20 dBm					
-30 dBm				````	
-40 dBm					m l
-40 UBIII					mm
-50 dBm					
50 dbin					
-60 dBm					
-70 dBm					
CF 5.18 GHz		32000 p	ots	1	Span 40.0 MHz
Marker					
Type   Ref   Trc	X-value	Y-value	Function	Fun	ction Result
M1 1	5.1823194 GHz	-8.35 dBm			
T1 1	5.17078563 GHz	-16.90 dBm	Occ Bw		18.5425 MHz
T2 1	5.18932813 GHz	-18.42 dBm			
			Me	asuring 🔳	
					/

#### **99% OBW 802.11ac20** Channel: 36

Spectrum											
Ref Level 20	).00 dBn	n Offset	6.50 dB (	■ <b>RBW</b> 500 k	Hz						
Att	30 dE	SWT	11.4 µs (	● <b>VBW</b> 2 M	Hz	Mode A	uto FF	Т			
1Pk Max											
						M1	[1]				-8.29 dBn
10 dBm										5.19	648560 GH:
						Oc.	c Bw			18.4500	000000 MH;
D dBm											
5 abiii				M1							
-10 dBm				<u> </u>							
10 0.011		11			Ψ.			12			
-20 dBm		γ						X			
-30 dBm									$\mathbf{\lambda}$		
	1	r -							n	~	
-40 dBm	$\sim$				_					June	
$\sim$										~	$\sim$
-50 dBm					_						
-60 dBm											
-70 dBm					_						
CF 5.2 GHz				320	00 pt	ts				Spai	n 40.0 MHz
1arker										· · ·	
Type   Ref	Trc	X-valu	ie	Y-value	1	Functi	ion		Func	tion Resul	t
M1	1	5.1964	856 GHz	-8.29 c	Bm						
T1	1		938 GHz	-17.44 c		Oc	сBw				18.45 MHz
T2	1	5.20926	937 GHz	-17.37 c	Bm						



			onanno			
Spectrum	<u> </u>					
Ref Level		am Offset 6 50 dB	RBW 500 kHz			(*
Att	30		VBW 2 MHz	Mode Auto FF	г	
1Pk Max				Mode Adtorn		
				M1[1]		-8.25 dBm
						5.23566440 GHz
10 dBm				Occ Bw		18.418750000 MHz
0.10						
0 dBm			M1			
-10 dBm						
-10 UBIII		TI	Y		12	
-20 dBm-		7			Y	
-20 UBIII						
-30 dBm						
-50 dbiii	~~	N'				
-40 dBm						~
m						· mon
-50 dBm						
-60 dBm						
-70 dBm						
CF 5.24 GH	17		32000 p	ts		Span 40.0 MHz
Marker			02000 p			opan 40.0 Miliz
	Trc	X-value	Y-value	Function	Eun	ction Result
M1	1	5.2356644 GHz	-8.25 dBm	, anotion	1 diff	belon Robale
T1	1	5.23077938 GHz	-16.99 dBm	Occ Bw		18.41875 MHz
T2	1	5.24919813 GHz	-16.90 dBm			
	1			Mea	suring	
					Saringin 📕	



			Ch	annel	: 38				
Spectrum									
Ref Level 20	0.00 dBm	n Offset 6.50 d	B 👄 RBW 5	00 kHz					
Att	30 dE		-		Mode Aut	o FFT			
●1Pk Max		· · · ·							
					M1[1	]			-11.32 dBm
10 dBm									309880 GHz
TO UBIII					Occ	Bw		36.4275	500000 MHz
0 dBm									
o abiii									
-10 dBm		<b>T</b> 1	M1						
		-	m	my m	mm	hond	ward 2		
-20 dBm				<u> </u>			X		
-30 dBm							<u> </u>		
		www					h		
-40 dBm	<u></u>							0.00	
man	man Marine							mm	mm
-50 dBm									
-60 dBm									
-70 dBm									
-/o ubiii									
CF 5.19 GHz				32000 pt	s			Spar	n 80.0 MHz
Marker	- 1		1						
Type Ref	Trc	X-value	Y-va	Jue 32 dBm	Functio	n	Fun	ction Resul	t
T1	1	5.1830988 GH 5.17182125 GH		32 dBm 64 dBm	Occ	Bw		24	5.4275 MHz
T2	1	5.20824875 GH		95 dBm	000			31	5. 12 FU 19112
	(					M-			<b>**</b>
	L					meas	suring 🔳		. //

#### **99% OBW 802.11n40** Channel: 38

Spectrum									
Ref Level 🔅	20.00 dB	m Offset 6.	50 dB 😑	RBW 500 kHz					
Att	30 0	ів <b>SWT</b> 18	.9 µs 😑	VBW 2 MHz	M	lode Auto FFT			
)1Pk Max									
						M1[1]			-11.17 dBn
10 dBm									954630 GH:
10 abiii						Occ Bw	1	36.4450	00000 MH:
D dBm									
-10 dBm						M1			
		An	<u></u>	monny	-m	man	mm f		
-20 dBm		+ + +		¥			- L		
-30 dBm —							- <u>h</u>		
							h		
-40 dBm	~	J~~						N	
mm	Amop C							(	vmm
-50 dBm									
-60 dBm									
-70 dBm									
CF 5.23 GHz				32000	pts			Spar	80.0 MHz
1arker									
Type   Ref	Trc	X-value		Y-value		Function	Fund	tion Result	t
M1	1	5.2395463		-11.17 dBr					
T1	1	5.21172125		-16.34 dBr		Occ Bw		3	86.445 MHz
T2	1	5.24816625	GHz	-16.12 dBr	<u>n  </u>				



				0	nanne	1. 50				
Spectrum										
Ref Level 3	20.00 dBm	Offset	6.50 dB 🧉	RBW	500 kHz					( '
Att	30 dB		18.9 µs 🧉		2 MHz	Mode /	uto FF	т		
●1Pk Max										
						M	1[1]			-10.63 dBm
10 dBm										733630 GHz
TO UBIII						0	cc Bw		36.510	000000 MHz
0 dBm										
						MI				
-10 dBm			mmm						_	
		. Tr	A CALOR ON	mm	m	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		m 2		
-20 dBm					<u> </u>				-	
-30 dBm		~								
-40 dBm		, M						<u> </u>	5	
www.www	10mm								mm	
-50 dBm	· · · ·									Martin An A. M.
-60 dBm										
-70 dBm									_	
CF 5.19 GHz			1		32000 p	ots		1	Spa	n 80.0 MHz
Marker										
Type   Ref	Trc	X-valu			/alue	Funct	tion	Fu	nction Resu	lt
M1	1		863 GHz		0.63 dBm					
T1 T2	1	5.17172:			7.69 dBm	0	cc Bw			36.51 MHz
12	1	5.20823:	LZS GHZ	-1	7.08 dBm	1				
	Л						Mea	asuring 🔳		<b>X4</b>

#### **99% OBW 802.11ac40** Channel: 38

Spectrum								[₩
Ref Level 3	20.00 dBr	n Offset	6.50 dB 🥃	• RBW 500 kHz				
Att	30 d	B SWT	18.9 µs 🧉	VBW 2 MHz	Mode Auto Fi	FT		
)1Pk Max								
					M1[1]		-10.86	
10 dBm							5.22662130	
10 ubiii					Occ Bw	1	36.667500000	MH:
0 dBm								
5 GDIII								
-10 dBm				M1				
			- mark	mound	montheres	mmmm 2		
-20 dBm				, v				
-30 dBm		- <u> </u>				- Y		
		~				h.		
-40 dBm		<u>↓~</u>				~~~	0.0	
mm	m	ז					Manna	~~~
-50 dBm							+	
-60 dBm			-					
-70 dBm			-					
CF 5.23 GHz			-1	32000	pts	1	Span 80.0 M	/Hz
1arker					-		-	
Type   Ref	Trc	X-valu	e	Y-value	Function	Fun	ction Result	
M1	1	5.22662	13 GHz	-10.86 dBm	1			
Τ1	1	5.211738		-16.30 dBm			36.6675 N	∕IHz
T2	1	5.248406	i25 GHz	-17.69 dBm	1			



				Channe	1.72		
Spectrum	<u> </u>						Ę
Ref Level	20.00 d	Bm Offset 6	.50 dB 👄	RBW 500 kHz			(
Att			87.8 µs 👄		Mode Auto FF	т	
●1Pk Max							
					M1[1]		-13.39 dB
10 dBm							5.19961250 GH
TO UBIII					Occ Bw	1	75.255000000 MH
0 dBm							
-10 dBm				M1			
		T1 Video	And when they are	man hand and prese	monour marked		
-20 dBm-				1			
-30 dBm							
-30 ubiii							
-40 dBm		-				h.	
-40 dBm <b>չիչ_հիչչչչչչչ</b> -50 dBm	mon	man				ALM.	mmunanaha
-50 dBm-							
-60 dBm							
-70 dBm							
CF 5.21 GH	z			32000 p	ts		Span 160.0 MH
Marker							
Type Ref		X-value		Y-value	Function	Fund	ction Result
M1 T1	1	5.199612		-13.39 dBm -19.46 dBm	Occ Bw		75.255 MH;
T2	1	5.247607		-19.64 dBm	000.0%		10/200 14/14
	1		I		) Ma	asuring	
					me	asurniy	

### **99% OBW 802.11ac80** Channel:42



9. Output Power	
Test Requirement:	FCC Part15 E Section 15.407
Test Method	KDB 789033 D02 General U-NII Test Procedures New Rules v02r01
Limit:	<ul> <li>For the band 5.15-5.25 GHz, the maximum conducted output power over the frequency bands of operation shall not exceed 250mW.</li> <li>For the band 5.745-5.850 GHz, the maximum conducted output power over the frequency bands of operation shall not exceed 30dBm</li> </ul>
Test setup:	Power Meter E.U.T Non-Conducted Table Ground Reference Plane
Test procedure:	<ul> <li>Measurement using an RF average power meter <ul> <li>(i) Measurements may be performed using a wideband RF power meter with a thermocouple detector or equivalent if all of the conditions listed below are satisfied <ul> <li>a) The EUT is configured to transmit continuously or to transmit with a constant duty cycle.</li> <li>b) At all times when the EUT is transmitting, it must be transmitting at its maximum power control level.</li> <li>c) The integration period of the power meter exceeds the repetition period of the transmitted signal by at least a factor of five.</li> </ul> </li> <li>(ii) If the transmitter does not transmit continuously, measure the duty cycle, x, of the transmitter output signal as described in section B).</li> <li>(iii) Measure the average power of the transmitter. This measurement is an average over both the on and off periods of the transmitter.</li> <li>(iv) Adjust the measurement in dBm by adding 10 log(1/x) where x is the duty cycle (e.g., 10log(1/0.25) if the duty cycle is 25 percent).</li> </ul> </li> </ul>
Test Instruments:	Refer to section 5.10 for details
Test mode:	Refer to section 5.3 for details



# 9.1 Test Result and Data

011	<b>F</b>	Οι	utput Power (c	IBm)		
CH. No.	Frequency (MHz)	802.11a	802.11n (HT20)	802.11ac (VHT20)	Limit(dBm)	Result
36	5180.00	5.69	5.72	5.58	24	Pass
40	5200.00	5.65	5.85	5.54	24	Pass
48	5240.00	5.71	5.82	5.48	24	Pass

CH.	Frequency	Output Po	Power (dBm) Limit(dBm)		Result
No.	(MHz)	802.11n(HT40)	802.11ac(VHT40)	Linit(dBiri)	Result
38	5190.00	4.34	4.30	24	Pass
46	5230.00	4.25	4.23	24	Pass

CH.	Frequency	Output Power (dBm)	Limit(dBm)	Result
	802.11ac(VHT80)	Linit(dBiri)	Result	
42	5210	5.34	24	Pass



Test Requirement:	FCC Part15 E Section 15.407
Test Method:	KDB 789033 D02 General U-NII Test Procedures New Rules v02r01
Limit:	11dBm/MHz(Band I), 30 dBm(Band IV)
Test setup:	Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane
Test procedure:	<ol> <li>Create an average power spectrum for the EUT operating mode being tested by following the instructions in section E)2) for measuring maximum conducted output power using a spectrum analyzer or EMI receiver: select the appropriate test method (SA-1, SA-2, SA-3, or alternatives to each) and apply it up to, but not including, the step labeled, "Compute power".</li> <li>Use the peak search function on the instrument to find the peak of the spectrum.</li> <li>Make the following adjustments to the peak value of the spectrum, if applicable:         <ul> <li>a) If Method SA-2 or SA-2 Alternative was used, add 10 log(1/x), where x is the duty cycle, to the peak of the spectrum.</li> <li>b) If Method SA-3 Alternative was used and the linear mode was used in step E)2)g)(viii), add 1 dB to the final result to compensate for the difference between linear averaging and power averaging.</li> </ul> </li> </ol>
Test Instruments:	Refer to section 5.10 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

# **10. Power Spectral Density**



# 10.1 Test Result and Data

CH. No.	Frequency	Power Density ANT A (dBm/MHz)	Power Density ANT B (dBm/MHz)	total power density (dBm/MHz)	Limit (dBm/MHz)	Result
		т	X 802.11a Mo	de		
CH36	5180	-4.87			11	Pass
CH40	5200	-3.97			11	Pass
CH48	5240	-4.47			11	Pass
		ТХ	802.11n20 M	ode		
CH36	5180	-8.41			11	Pass
CH40	5200	-8.15			11	Pass
CH48	5240	-5.37			11	Pass
		ТХ	802.11n40 M	ode		
CH38	5190	-7.03			11	Pass
CH46	5230	-7.66			11	Pass

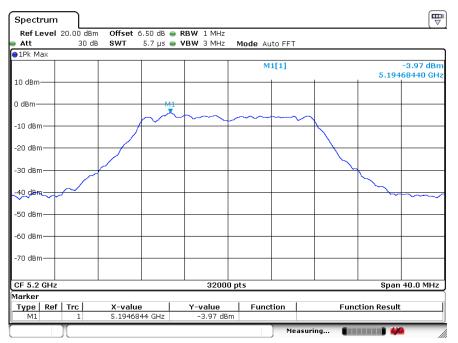


CH. No.	Frequency	Power Density ANT A (dBm/MHz)	Power Density ANT B (dBm/MHz)	total power density (dBm/MHz)	Limit (dBm/MHz)	Result
		TX 80	2.11 ac(VHT20	) Mode		
CH36	5180	-8.62			11	Pass
CH40	5200	-7.93			11	Pass
CH48	5240	-7.54			11	Pass
		TX 80	2.11 ac(VHT40	) Mode		
CH38	5190	-7.87			11	Pass
CH46	5230	-7.48			11	Pass
		TX 80	2.11 ac(VHT80	) Mode		
CH42	5210	-8.28			11	Pass



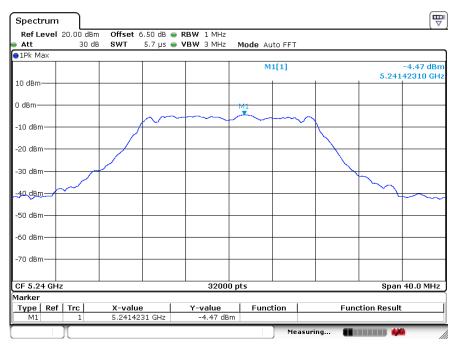
Spectrum	ן							
Ref Level 20.0	OdBm Offset	6.50 dB 👄 RE	W 1 MHz					
	30 dB <b>SWT</b>	5.7 µs 👄 VE	SW 3 MHz	Mode Au	to FFT			
●1Pk Max								
				M	1[1]			-4.87 dBm 35060 GHz
10 dBm								
0 dBm				MI				
		h	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			
-10 dBm								
-20 dBm						-		
-30 dBm								
-40 dBm								~~~
-50 dBm								
-60 dBm								
-70 dBm								
CF 5.18 GHz			32000 p	its			Span	40.0 MHz
Marker								
Type Ref Tro			Y-value	Funct	tion	Fund	tion Result	
M1	1 5.18135	UD GHZ	-4.87 dBm	<u> </u>				
					Measuri	ng 🚺		

#### 802.11a Channel: 36



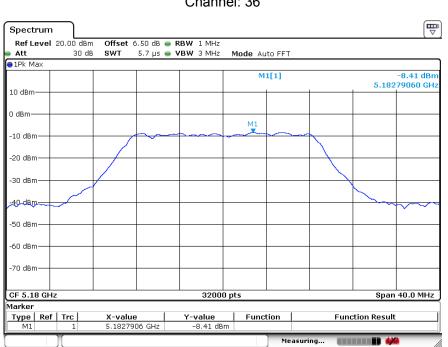


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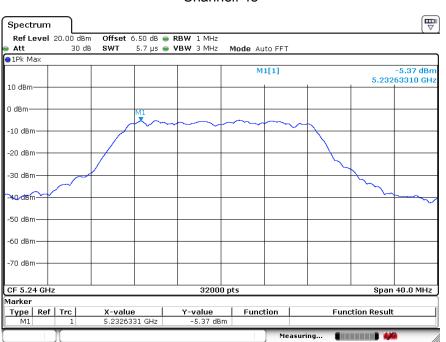
Date of Issue: Sep. 12, 2018 Report No.: WH-FCC-R18091011-3



802.11n20 Channel: 36

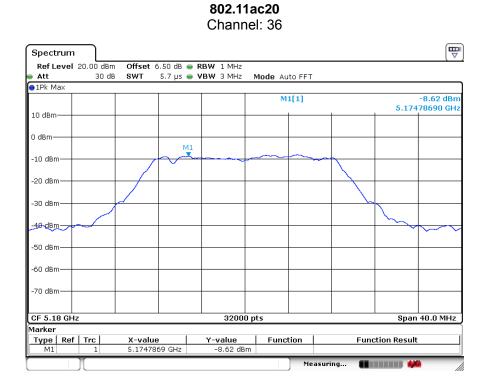
Spectrum					ſ	V
Ref Level 20.00 dBm	Offset 6.50 dB (	RBW 1 MHz			(	-
Att 30 dB	SWT 5.7 μs	BW 3 MHz M	Ande Auto FFT			
∋1Pk Max						
			M1[1]		-8.15 dE 5.20773940 G	
10 dBm				+		
0 dBm						
-10 dBm				M1 <b>X</b>		
-20 dBm						
-30 dBm						
					کر ا	
-40 dBm						~
-50 dBm						
-60 dBm						
-70 dBm						
CF 5.2 GHz		32000 pt	ts		Span 40.0 MF	Iz
Marker						
Type         Ref         Trc           M1         1	X-value 5.2077394 GHz	Y-value -8.15 dBm	Function	Fund	tion Result	_
			Measu	ıring 🚺		





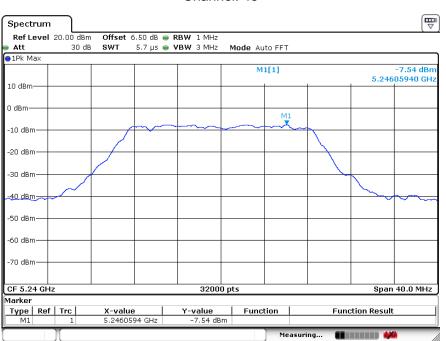


Date of Issue: Sep. 12, 2018 Report No.: WH-FCC-R18091011-3



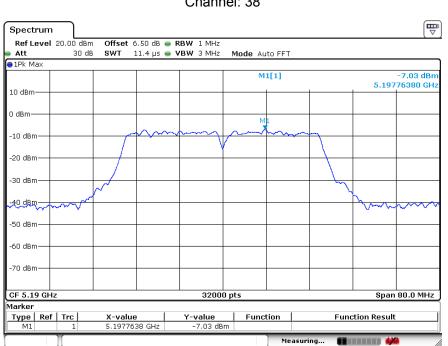
Spectrum					
Ref Level 20.00 dB					
Att 30 c	dB <b>SWT</b> 5.7 μs	NHZ NHZ N	<b>1ode</b> Auto FFT		
1Pk Max	1				
			M1[1]		-7.93 dBi 5.19497060 GF
10 dBm			-		3.19497000 Gi
D dBm					
	P	41			
-10 dBm			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	-	
-20 dBm					
-30 dBm				-	
10 10 -	1				
-40 dBm					m
-50 dBm					
-60 dBm					
-60 UBIII					
-70 dBm					
CF 5.2 GHz	· · ·	32000 pt	ts		Span 40.0 MHz
1arker					
Type Ref Trc	X-value	Y-value	Function	Func	tion Result
M1 1	5.1949706 GHz	-7.93 dBm			
			Mea	isuring	



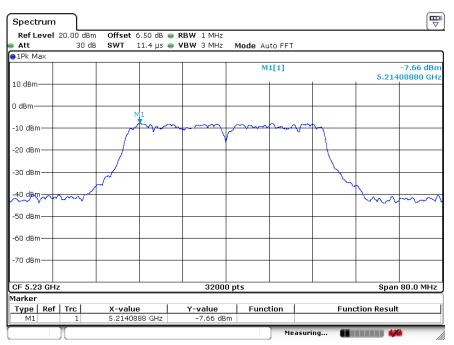




Date of Issue: Sep. 12, 2018 Report No.: WH-FCC-R18091011-3

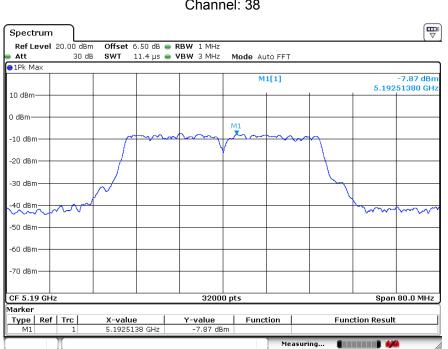


802.11n40 Channel: 38





Date of Issue: Sep. 12, 2018 Report No.: WH-FCC-R18091011-3



# Channel: 38

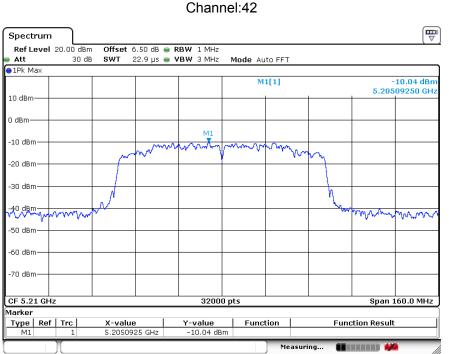
802.11ac40

Channel: 46

Spectrum						
Ref Level 20.00 dB						
Att 30 (	dB <b>SWT</b> 11.4 μs (	● VBW 3 MHz 🛛 M	Mode Auto FFT			
1Pk Max						
			M1[1]			7.48 dBn
LO dBm					5.2202	27630 GH:
) dBm						
	1	11				
10 dBm		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	·····	<del>4~</del>		
		V				
20 dBm	+ /			+ $+$ $+$		
				$  \rangle  $		
30 dBm						
40 dBm	~				ma ant	Ma a
					V~~ • 0	
50 dBm				+ +		
60 dBm				+ +		-
70 dBm						
CF 5.23 GHz		32000 p	ts	1 1	Span (	BO.0 MHz
larker						
Type   Ref   Trc	X-value	Y-value	Function	Fund	tion Result	
M1 1	5.2202763 GHz	-7.48 dBm				
1 T			Measu	din a		



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802.11ac80 Channel:42



11. Band Edges Meas	Test Requirement: FCC Part15 E Section 15.407 and 5.205										
· ·			and 5.205								
Test Method:	ANSI C63.10:207	13									
Test site:	Measurement Dis	stance: 3m									
Receiver setup:		ſ	T	ſ							
	Frequency	Detector	RBW	VBW	Remark						
	30MHz-1GHz	Quasi-peak	100KHz	300KHz	Quasi-peak Value						
	Above 1GHz	Peak	1MHz	3MHz	Peak Value						
		AV	1MHz	3MHz	Average Value						
Limit:											
	Frequer	ю	_imit (dBuV	/m @3m)	Remark						
	30MHz-88	MHz	40.0	ט	Quasi-peak Value						
	88MHz-216	6MHz	43.	5	Quasi-peak Value						
	216MHz-96	0MHz	46.0	)	Quasi-peak Value						
	960MHz-1	GHz	54.0	)	Quasi-peak Value						
	Above 10	SH7	54.0	)	Average Value						
		5112	74.0	)	Peak Value						
	<ul> <li>Undesirable emission limits:</li> <li>(1) For transmitters operating in the 5.15-5.25 GHz band: all emission outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -2 dBm/MHz.</li> <li>(2) For transmitters operating in the 5.25-5.35 GHz band: all emission outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -2 dBm/MHz. Devices operating in the 5.25-5.35 GHz band that generate emissions in the 5.15-5.25 GHz band must meet a applicable technical requirements for operation in the 5.15-5.25 GHz band.</li> <li>(3) For transmitters operating in the 5.47-5.725 GHz band: all emission outside of the 5.47-5.725 GHz band shall not exceed an EIRP of -2</li> </ul>										
Test Procedure:	a. The EUT was	s placed on th	e top of a ro	tating table	1.5 m above the						

# 11. Band Edges Measurement



determine the position of the highest radiation.         b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.         c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.         d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotable table was turned from 0 degrees to 360 degrees to find the maximum reading.         e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.         f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.         Test setup:       Above 1GHz         Test neture       Refer to section 5.10 for details         Test mode:       Refer to section 5.3 for details									
antenna, which was mounted on the top of a variable-height antenna tower.         antenna, height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.         and then the antenna was tuned to heights from 1 meter to 4 meters and the rotable table was turned from 0 degrees to 360 degrees to find the maximum reading.         and the rotable table was turned from 0 degrees to 360 degrees to find the maximum reading.         bit The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.         comparison of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.         Test setup:       Above 1GHz         Test Instruments:       Refer to section 5.10 for details         Test mode:       Refer to section 5.3 for details		determine the position of the highest radiation.							
tower.         c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.         d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotable table was turned from 0 degrees to 360 degrees to find the maximum reading.         e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.         f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.         Test setup:       Above 1GHz         Test Instruments:       Refer to section 5.10 for details         Test mode:       Refer to section 5.3 for details		b. The EUT was set 3 meters away from the interference-receiving							
ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.         d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotable table was turned from 0 degrees to 360 degrees to find the maximum reading.         e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.         f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.         Test setup:       Above 1GHz         Test Instruments:       Refer to section 5.10 for details         Test mode:       Refer to section 5.3 for details									
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measurement.       4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotable table was turned from 0 degrees to 360 degrees to find the maximum reading.         e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.         f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.         Test setup:       Above 1GHz         Test nstruments:       Refer to section 5.10 for details         Test mode:       Refer to section 5.3 for details		ground to determine the maximum value of the field strength. Both							
and then the antenna was tuned to heights from 1 meter to 4 meters and the rotable table was turned from 0 degrees to 360 degrees to find the maximum reading.         e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.         f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.         Test setup:       Above 1GHz         Test nstruments:       Refer to section 5.10 for details         Test mode:       Refer to section 5.3 for details									
and the rotable table was turned from 0 degrees to 360 degrees to find the maximum reading.         e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.         f.       If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.         Test setup:       Above 1GHz         Test setup:       Above 1GHz         Test nstruments:       Refer to section 5.10 for details         Refer to section 5.3 for details       Refer to section 5.3 for details		d. For each suspected emission, the EUT was arranged to its worst case							
find the maximum reading.         e.       The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.         f.       If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.         Test setup:       Above 1GHz         Image: the instruments:       Refer to section 5.10 for details         Test mode:       Refer to section 5.3 for details		and then the antenna was tuned to heights from 1 meter to 4 meters							
e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.         f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.         Test setup:       Above 1GHz         Test Instruments:       Refer to section 5.10 for details         Test mode:       Refer to section 5.3 for details		and the rotable table was turned from 0 degrees to 360 degrees to							
Specified Bandwidth with Maximum Hold Mode.         1       If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.         Test setup:       Above 1GHz         Image: the function of the functio		find the maximum reading.							
f.       If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.         Test setup:       Above 1GHz         Image: the function of the Eut in the time term of the time term of the term of		-							
the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.Test setup:Above 1GHzTest note:Refer to section 5.10 for detailsTest mode:Refer to section 5.3 for details		Specified Bandwidth with Maximum Hold Mode.							
of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.         Test setup:       Above 1GHz <u>using the Eutron to a set of the Eutro to a set of the Eutron to a set of the Eutron to a set</u>		f. If the emission level of the EUT in peak mode was 10dB lower than							
have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.         Test setup:       Above 1GHz         Image: Im									
quasi-peak or average method as specified and then reported in a data sheet.         Test setup:       Above 1GHz         Image: peak or average method as specified and then reported in a data sheet.         Test setup:       Above 1GHz         Image: peak or average method as specified and then reported in a data sheet.         Test setup:       Above 1GHz         Image: peak or average method as specified and then reported in a data sheet.         Test Instruments:       Refer to section 5.10 for details         Test mode:       Refer to section 5.3 for details									
data sheet.         Test setup:       Above 1GHz         Image: Comparison of the transmission									
Test setup:       Above 1GHz         Image: Constant of the setup of									
Notice Fight         Image: Section 12		data sheet.							
Test Instruments:       Refer to section 5.10 for details         Test mode:       Refer to section 5.3 for details	Test setup:	Above 1GHz							
Test mode:     Refer to section 5.3 for details		AE EUT aggint (Turntable) Ground Reference Plane							
	Test Instruments:	Refer to section 5.10 for details							
Tost regulta:	Test mode:	Refer to section 5.3 for details							
	Test results:	Pass							



Remark:

According to KDB 789033 D02 v02r01 section G) 1) (d), for For measurements above 1000 MHz @ 3m distance, the limit of field strength is computed as follows:

E[dBuV/m] = EIRP[dBm] + 95.2;

For example, if EIRP = -27dBm

E[dBuV/m] = -27 + 95.2 = 68.2dBuV/m.



# 11.1 Test Result and Data

#### Peak value:

Test m	ode:	802.2	11a	Test o	channel:	Lowe	est
	Reading		Measure	Limit			
Frequency	Level	Factor	Level	(dBuV/m)	Over		Antenna
(MHz)	(dBuV)	(dB/m)	(dBuV/m)		limit(dB)	Detector	Pol.
5150	44.32	7.18	51.50	68.2	-16.70	PK	н
5150	44.41	7.18	51.59	68.2	-16.61	PK	V
Test m	ode:	802.11a		Test channel:		Highest	
	Reading		Measure	Limit			
Frequency	Level	Factor	Level	(dBuV/m)	Over		Antenna
(MHz)	(dBuV)	(dB/m)	(dBuV/m)		limit(dB)	Detector	Pol.
5350	43.63	7.2	50.83	68.2	-17.37	PK	Н
5350	49.12	7.2	56.32	68.2	-11.88	PK	V

Test m	ode:	802.1	11a	Test c	hannel:	Lowe	est
	Reading		Measure	Limit			
Frequency	Level	Factor	Level	(dBuV/m)	Over		Antenna
(MHz)	(dBuV)	(dB/m)	(dBuV/m)		limit(dB)	Detector	Pol.
5150	31.62	7.18	38.80	48.2	-9.4	AV	Н
5150	30.18	7.18	37.36	48.2	-10.84	AV	V
Test m	ode:	802.11a		Test channel:		Highest	
	Reading		Measure	Limit			
Frequency	Level	Factor	Level	(dBuV/m)	Over		Antenna
(MHz)	(dBuV)	(dB/m)	(dBuV/m)		limit(dB)	Detector	Pol.
5350	30.26	7.2	37.46	48.2	-10.74	AV	Н
5350	35.78	7.2	42.98	48.2	-5.22	AV	V



#### Peak value:

Test m	ode:	802.11n	(HT20)	Test o	channel:	Lowe	st
	Reading		Measure	Limit			
Frequency	Level	Factor	Level	(dBuV/m)	Over		Antenna
(MHz)	(dBuV)	(dB/m)	(dBuV/m)		limit(dB)	Detector	Pol.
5150	47.47	7.18	54.65	68.2	-13.55	PK	Н
5150	54.19	7.18	61.37	68.2	-6.83	PK	V
Test m	ode:	802.11n(HT20)		Test channel:		Highest	
	Reading		Measure	Limit			
Frequency	Level	Factor	Level	(dBuV/m)	Over		Antenna
(MHz)	(dBuV)	(dB/m)	(dBuV/m)		limit(dB)	Detector	Pol.
5350	43.06	7.2	50.26	68.2	-17.94	PK	Н
5350	50.36	7.2	57.56	68.2	-10.64	PK	V

Test m	ode:	802.11n	(HT20)	Test c	hannel:	Lowe	est
	Reading		Measure	Limit			
Frequency	Level	Factor	Level	(dBuV/m)	Over		Antenna
(MHz)	(dBuV)	(dB/m)	(dBuV/m)		limit(dB)	Detector	Pol.
5150	32.99	7.18	40.17	48.2	-8.03	AV	Н
5150	38.11	7.18	45.29	48.2	-2.91	AV	V
Test m	ode:	802.11n(HT20)		Test channel:		Highe	est
	Reading		Measure	Limit			
Frequency	Level	Factor	Level	(dBuV/m)	Over		Antenna
(MHz)	(dBuV)	(dB/m)	(dBuV/m)		limit(dB)	Detector	Pol.
5350	30.09	7.2	37.29	48.2	-10.91	AV	Н
5350	35.78	7.2	42.98	48.2	-5.22	AV	V



#### Peak value:

Test m	ode:	802.11n	(HT40)	Test o	hannel:	Lowe	st
Frequency	Reading		Measure	Limit	Margin		Antenna
(MHz)	Level	Factor	Level	(dBuV/m)	(dB)	Detector	Pol.
5150	43.11	7.18	50.29	68.2	-17.91	PK	Н
5150	43.34	7.18	50.52	68.2	-17.68	PK	V
Test m	iode:	802.11n(HT40)		Test channel:		Highest	
Frequency	Reading		Measure	Limit	Margin		Antenna
(MHz)	Level	Factor	Level	(dBuV/m)	(dB)	Detector	Pol.
5350	43.85	7.2	51.05	68.2	-17.15	PK	Н
5350	47.06	7.2	54.26	68.2	-13.94	PK	V

Test m	ode:	802.11n	(HT40)	Test c	hannel:	Lowe	est	
Frequency	Reading		Measure	Limit	Margin		Antenna	
(MHz)	Level	Factor	Level	(dBuV/m)	(dB)	Detector	Pol.	
5150	30.18	7.18	37.36	48.2	-10.84	AV	Н	
5150	29.23	7.18	36.41	48.2	-11.79	AV	V	
Test m	ode:	802.11n(HT40)		Test channel:		Highest		
Frequency	Reading		Measure	Limit	Margin		Antenna	
(MHz)	Level	Factor	Level	(dBuV/m)	(dB)	Detector	Pol.	
5350	29.99	7.2	37.19	48.2	-11.01	AV	Н	
5350	32.14	7.2	39.34	48.2	-8.86	AV	V	



#### Peak value:

Test m	ode:	802.11ac(	VHT80)	Test c	hannel:	Lowe	st
Frequency	Reading		Measure	Limit	Margin		Antenna
(MHz)	Level	Factor	Level	(dBuV/m)	(dB)	Detector	Pol.
5150	44.58	7.18	51.76	68.2	-16.44	PK	н
5150	48.74	7.18	55.92	68.2	-12.28	PK	V
Test m	iode:	802.11ac(VHT80)		Test channel:		Highest	
Frequency	Reading		Measure	Limit	Margin		Antenna
(MHz)	Level	Factor	Level	(dBuV/m)	(dB)	Detector	Pol.
5350	46.03	7.2	53.23	68.2	-14.97	PK	Н
5350	48.19	7.2	55.39	68.2	-12.81	PK	V

Test m	iode:	802.11ac	(VHT80)	Test o	hannel:	Lowe	est
Frequency	Reading		Measure	Limit	Margin		Antenna
(MHz)	Level	Factor	Level	(dBuV/m)	(dB)	Detector	Pol.
5150	31.05	7.18	38.23	48.2	-9.97	AV	Н
5150	34.63	7.18	41.81	48.2	-6.39	AV	V
Test m	iode:	802.11ac(VHT80)		Test channel:		Highest	
Frequency	Reading		Measure	Limit	Margin		Antenna
(MHz)	Level	Factor	Level	(dBuV/m)	(dB)	Detector	Pol.
5350	34.36	7.2	41.56	48.2	-6.64	AV	Н
5350	35.77	7.2	42.97	48.2	-5.23	AV	V



# 12. Frequency stability

Test Requirement:	FCC Part15 C Section 15.407(g)		
Test Method:	ANSI C63.10:2013, FCC Part 2.1055		
Limit:	Manufactures of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified		
Test Procedure:	The EUT was setup to ANSI C63.4, 2014; tested to 2.1055 for compliance to FCC Part 15.407(g) requirements.		
Test setup:	Spectrum analyzer       EUT         Att.       U         Variable Power Supply         Note : Measurement setup for testing on Antenna connector		
Test Instruments:	Refer to section 5.10 for details		
Test mode:	Refer to section 5.3 for details		
Test results:	Pass		



Frequency stability versus Temp.					
Power Supply: DC 7.4V					
Tama	Operating	0 minute	2 minute	5 minute	10 minute
Temp. (°C)	Frequency	Measured	Measured	Measured	Measured
	(MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (MHz)
	5180	5176.2728	5182.8912	5181.2240	5177.7182
20	5200	5198.4203	5202.8435	5202.1179	5199.4012
-30	5220	5219.7713	5220.2624	5221.2079	5219.7240
	5240	5240.1158	5240.5584	5240.0586	5239.5461
	5180	5179.5771	5180.3409	5180.7147	5179.9661
20	5200	5199.5663	5200.2679	5199.9207	5199.9056
-20	5220	5219.2733	5220.6502	5220.0555	5219.6254
	5240	5239.2747	5240.0617	5240.4168	5239.1076
	5180	5178.9660	5180.2109	5180.1763	5179.2307
40	5200	5199.8044	5200.7175	5201.0481	5199.0277
-10	5220	5219.8937	5220.5075	5220.3098	5219.5489
	5240	5239.3391	5240.5365	5241.0358	5239.3098
	5180	5179.8663	5180.5927	5180.3076	5179.2023
0	5200	5199.1284	5200.6014	5200.7791	5199.9417
0	5220	5218.8086	5219.9237	5219.9087	5219.9063
	5240	5239.5894	5240.6486	5240.3029	5239.5077
	5180	5179.3475	5179.9495	5180.8823	5179.4860
10	5200	5199.3171	5200.1930	5200.6294	5199.6487
10	5220	5219.0421	5220.2782	5220.2145	5219.9391
	5240	5239.0123	5240.5670	5240.6003	5239.5708
	5180	5179.8370	5180.3476	5180.3571	5179.3201
~~	5200	5199.7821	5200.5777	5200.7657	5199.3550
20	5220	5219.3398	5220.5568	5220.3808	5219.6812
	5240	5239.1909	5240.8887	5240.2034	5239.2591
	5180	5179.8004	5180.8260	5180.1214	5179.5741
30	5200	5199.2070	5200.1721	5200.2410	5199.5659
30	5220	5219.2527	5220.3856	5220.9826	5219.6441
	5240	5239.5266	5240.3083	5240.7128	5239.9334



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40	5180	5179.8353	5180.7697	5180.3318	5180.0329
	5200	5199.4650	5200.7822	5200.7834	5199.8698
	5220	5219.4806	5220.5675	5220.5181	5219.6132
	5240	5239.2141	5240.7206	5240.7170	5240.1313
50	5180	5179.4350	5180.6169	5180.4523	5179.2025
	5200	5199.2342	5200.7004	5200.3452	5199.4265
	5220	5219.8728	5220.8460	5220.4926	5219.3545
	5240	5239.6106	5240.2109	5240.0733	5239.3843



Frequency stability versus Voltage						
	Temperature: 25°C					
Power	Operating	0 minute	2 minute	5 minute	10 minute	
Supply	Frequency	Measured	Measured	Measured	Measured	
(VDC)	(MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	
	5180	5183.8597	5181.9778	5176.3524	5178.6094	
6.0	5200	5203.7869	5200.2181	5196.7875	5197.9654	
6.9	5220	5220.8358	5220.2096	5217.3800	5219.9330	
	5240	5240.6924	5240.7011	5238.3927	5239.3223	
7.4	5180	5180.9053	5180.3823	5179.3460	5179.3735	
	5200	5200.2116	5200.5174	5199.8248	5199.3633	
	5220	5220.9554	5220.2434	5219.4994	5219.6139	
	5240	5240.0979	5240.7326	5239.2979	5239.7450	
8.4	5180	5180.1677	5180.5696	5179.2367	5179.3561	
	5200	5200.5691	5200.5726	5199.2054	5199.3282	
	5220	5219.9014	5220.8274	5219.0973	5219.3590	
	5240	5240.7509	5240.3575	5239.6777	5239.2099	



# 13. Restricted Bands of Operation

Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.09000 – 0.11000	16.42000 – 16.42300	399.9 – 410.0	4.500 – 5.150
0.49500 - 0.505**	16.69475 – 16.69525	608.0 - 614.0	5.350 - 5.460
2.17350 – 2.19050	16.80425 – 16.80475	960.0 – 1240.0	7.250 – 7.750
4.12500 - 4.12800	25.50000 - 25.67000	1300.0 – 1427.0	8.025 - 8.500
4.17725 – 4.17775	37.50000 - 38.25000	1435.0 – 1626.5	9.000 - 9.200
4.20725 – 4.20775	73.00000 - 74.60000	1645.5 – 1646.5	9.300 - 9.500
6.21500 - 6.21800	74.80000 – 75.20000	1660.0 – 1710.0	10.600 – 12.700
6.26775 – 6.26825	108.00000 - 121.94000	1718.8 – 1722.2	13.250 – 13.400
6.31175 – 6.31225	123.00000 - 138.00000	2200.0 - 2300.0	14.470 – 14.500
8.29100 - 8.29400	149.90000 - 150.05000	2310.0 – 2390.0	15.350 – 16.200
8.36200 - 8.36600	156.52475 – 156.52525	2483.5 – 2500.0	17.700 – 21.400
8.37625 - 8.38675	156.70000 - 156.90000	2655.0 – 2900.0	22.010 – 23.120
8.41425 – 8.41475	162.01250 - 167.17000	3260.0 - 3267.0	23.600 - 24.000
12.29000 - 12.29300	167.72000 - 173.20000	3332.0 – 3339.0	31.200 – 31.800
12.51975 – 12.52025	240.00000 - 285.00000	3345.8 – 3358.0	36.430 - 36.500
12.57675 – 12.57725	322.00000 - 335.40000	3600.0 - 4400.0	Above 38.6
13.36000 – 13.41000			

**: Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz

## **13.1 Labeling Requirement**

The device shall bear the following statement in a conspicuous location on the device: This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.