

ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

	Cisco Systems
Applicant:	125 West Tasman Drive San Jose California United States
	95134-1700 Cisco Systems
Manufacturer:	125 West Tasman Drive San Jose California United States 95134-1706
Product Name:	FM3200
Brand Name:	Fluidmesh FM3200
Model No.:	FM3200, FM4200
Model Difference:	 Some passive components of the DCIN circuit are mounted on PCB in FM4200 model. Antenna connectors are different: RP-SMA on FM3200, QMA on FM4200. Bottom part of FM4200 enclosure has M12 connectors in- stead of RJ45 ports: M12 DCIN port is added on FM4200.
Report Number:	ER/2020/30132
FCC ID:	R5SX200
FCC Rule Part:	§15.407, Cat: NII
Issue Date:	March 15, 2021
Date of Test:	April 1, 2020 - November 11, 2020
Date of EUT Received:	March 24, 2020

We hereby certify that:

The above equipment was tested by SGS Taiwan Ltd. Central RF Lab The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10: 2013 and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits.

The test results of this report relate only to the tested sample identified in this report.

Approved By:

Jim Chang / Manager



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Revision History							
Report NumberRevisionDescriptionIssue DateRemark							
ER/2020/30132	Rev.00	Original.	March 15, 2021	Revised By: Violetta Tang			

Note:

1 · Multiple Model numbers or Trademarks

The variant model numbers are assessed as identical in hardware and software to each other, hence all variants are fully covered by the test results in this test report without further verification test.

2 · Disclaimer

Variant information between model numbers is provided by the applicant, test results of this report are applicable to the sample EUT received.

3 · Disclaimer

Antenna information is provided by the applicant, test results of this report are applicable to the sample EUT received.

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GENERAL INFORMATION 1

1.1 **Product Description**

Product Name:	FM3200
Brand Name:	Fluidmesh FM3200
Model No.:	FM3200, FM4200
Model Difference:	 Some passive components of the DCIN circuit are mounted on PCB in FM4200 model. Antenna connectors are different: RP-SMA on FM3200, QMA on FM4200. Bottom part of FM4200 enclosure has M12 connectors instead of RJ45 ports: M12 DCIN port is added on FM4200.
Hardware Version:	N/A
Software Version:	N/A
Power Supply:	48V from AC/DC Adapter
Modulation type	64QAM, 16QAM, QPSK, BPSK for OFDM
Transition Rate:	802.11 n_20MHz: 6.5 – 144.4Mbps 802.11 n_40MHz: 13.5 – 300.0Mbps

1.2 **Antenna Designation**

Antenna Type	Supplier	Antenna Part No.	Freq. (MHz)	Peak Antenna Gain (dBi)	Worst Antenna Gain		
Sector	NI/A		5470~5725	16	V		
Sector	IN/A	JH3-3139-10D90A	5725~5850	16	V		
Didiractional	Fluidmoch		5470~5725	13			
Didirectional	Fluidmesh	FINI-SHARK-DUAL	5725~5850	13			
Note: Pre-scanned was done on the above 2 antennas, the JHS-5159-16D90A re-							
sults higher emission at 5GHz. Therefore, the completed set of measurement was done on the antenna to be presented on this test report.							

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1.3 FCC worst power

Wi-Fi 802.11	Frequency Range	Channels	Rated Power (Avg.) (dBm) (Worst case)	Modulation Technology
n_HT	5470~5725	12	10.95	
20M	5725~5850	5	16.53	
n_HT	5470~5725	6	10.56	
40M	5725~5850	2	16.94	

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1.4 Test Methodology of Applied Standards

FCC Part 15, Subpart E §15.407 FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01 FCC KDB 662911 D01 Multiple Transmitter Output v02r01 ANSI C63.10:2013

1.5 Test Facility

SGS Taiwan Ltd. Central RF Lab (TAF code 3702) No.134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803 FCC Designation number: TW0027

1.6 Special Accessories

There are no special accessories used while test was conducted.

1.7 Equipment Modifications

There was no modification incorporated into the EUT.

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2 SYSTEM TEST CONFIGURATION

2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

2.2 EUT Exercise

An engineering test mode (software/firmware) that applicant provided was utilized to manipulate the EUT into transmit, selection of the test channel, and modulation scheme.

2.3 Test Procedure

2.3.1 Conducted Emissions

The EUT is a placed on a table which is 0.8 m above ground plane. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz. The CISPR Quasi-Peak and Average detector mode is employed. The two LISNs provide 50uH/50 ohm of coupling impedance for the measuring instrument. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

2.3.2 Conducted Test (RF)

The active antenna port of the unlicensed wireless device is connected to the spectrum analyzer with attenuator to protect the instrumentation. If a second antenna port is available, it is tested at one operating frequency, with other port(s) appropriately terminated, to verify it has similar output characteristics as the fully tested port.

2.3.3 Radiated Emissions

The EUT is a placed on a turn table. For emissions testing at or below 1 GHz, the table height shall be 0.8 m above the reference ground plane. For emission measurements above 1 GHz, the table height shall be 1.5 m. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this transmitter (EUT) was rotated through three orthogonal axes and measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made "while keeping the antenna in the 'cone of radiation' from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response." is still within the 3dB illumination BW of the measurement antenna.

2.4 Measurement Results Explanation Example

2.4.1 Radiated Emission Test Sites For Measurements From 9 kHz To 30 MHz Radiated emission below 30MHz is measured in a 9m*9m*6m semi-anechoic chamber, the measurements correspond to those obtained at an open-field test site. There is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.

2.4.2 For all conducted test items: The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuation factor between EUT conducted port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly EUT RF output level.

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2.5 Configuration of Tested System Fig. 2-1 Radiated Emission Configuration Image: Windows 7 Image: Windows 7



Table 2-1 Equipment Used in Tested System

ltem	Equipment	Mfr/Brand	Model/Type No.	Series No.	Data Cable	Power Cord
1.	WLAN Test Software	N/A	N/A	N/A	N/A	N/A
2.	Test Tool Kit	N/A	N/A	N/A	N/A	N/A
3.	Notebook	Lenovo	L480	PF-1S9Q32	N/A	N/A

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SUMMARY OF TEST RESULT 3

FCC Rules	Description Of Test	Result
§15.207	AC Power Line Conducted Emission	Compliant
§15.403(i) §15.407(e)	26 dB & 6dB Emission Bandwidth	Compliant
§15.407(a)	Maximum Conducted Output Power	Compliant
§15.407(a)	Power Spectral Density	Compliant
§15.205 §15.209 §15.407(b)	Undesirable Radiated Emissions	Compliant
§15.407(c)	Transmission in case of Absence of Information	Compliant
§15.407(g)	Frequency Stability	Compliant
§15.203 §15.407(a)	Antenna Requirement	Compliant

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DESCRIPTION OF TEST MODES

4.1 802.11n operated in U-NII Bands Operated band in 5470 MHz ~5725 MHz:

2	0 M	4	0 M
СН	Freq (MHz)	СН	Freq (MHz)
100	5500	102	5510
104	5520	110	5550
108	5540	118	5590
112	5560	126	5630
116	5580	134	5670
120	5600	142	5710
124	5620		
128	5640		
132	5660		
136	5680		
140	5700		
144	5720		

Operated band in 5745 MHz ~5850 MHz:

20 M		4	0 M
СН	Freq (MHz)	СН	Freq (MHz)
149	5745	151	5755
153	5765	159	5795
157	5785		
161	5805		
165	5825		

1

4.2 The Worst Test Modes and Channel Details

- The EUT has been tested under operating condition. 1.
- 2. Test program used to control the EUT for staying in continuous transmitting mode is programmed.
- 3. Investigation has been done on all the possible configurations for searching the worst case. The given UE is pre-scanned among below modes.

Modulation	Tı	ransmiss	sion Chair	n	Single Transmission Spatial	Multiple Transmission Spatial
🛛 802.11 n	\boxtimes Ch0	🛛 Ch1	□ Ch2	🗆 Ch3		⊠ MIMO

4. Therefore, below summary is the modes of test configuration that yield the highest reading and generate the highest emission chosen to carry out the relevantly mandatory test items.

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4.2.1 RADIATED EMISSION TEST:

RADIATED EMISSION TEST (BELOW 1 GHz)									
MODE	FREQUENCY BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	AN- TENNA PORT			
002 11n UT20	5500~5720	100 to 144	100,116,140		MCSO				
802.11n_H120	5745~5825	149 to 165	149,157,165	OFDIVI	IVIC So				

RADIATED EMISSION TEST (ABOVE 1 GHz)									
MODE	FREQUENCY BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	AN- TENNA PORT			
802.11n_HT20	5500~5720 5745~5825	100 to 144 149 to 165	100,116,140,144		MCS8	MIMO			
802.11n_HT40	5510~5710 5755~5795	102 to 142 151 to 159	102,110,134,142 151,159	OFDM	MCS8	МІМО			

Note:

The field strength of radiation emission was measured as EUT stand-up position (H mode) and lie down position (E1, E2 mode) for 802.11n WLAN Transmitter for channel Low, Mid and High, the worst case H position was reported.

4.2.2 ANTENNA PORT CONDUCTED MEASUREMENT:

CONDUCTED TEST									
MODE	FREQUENCY BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	AN- TENNA PORT			
802.11n HT20	5500~5720	100 to 144	100,116,140,144	-	MCS8	мімо			
002	5745~5825	149 to 165	149,157,165		mooo				
802.11n_HT40	5510~5710	102 to 142	102,110,134,142		MCS8				
	5755~5795	151 to 159	151,159		10000				

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5 MEASUREMENT UNCERTAINTY

Test Items	Uncertainty	
AC Power Line Conducted Emission	+/- 2.586 dB	
26dB & 6dB Emission Bandwidth	+/- 123.36 Hz	
The Maximum Output Power Meas- urement	+/- 0.96 dB	
Peak Power Spectral Density Meas- urement	+/- 1.67 dB	
Frequency Stability	+/- 123.36 Hz	
Temperature	+/- 0.65 °C	
Humidity	+/- 4.6 %	
DC / AC Power Source	DC= +/- 0.13%, AC=+/- 0.2%	

Radiated Spurious Emission Measurement Uncertainty					
	9kHz~30MHz: +-2.3dB				
	30MHz - 180MHz: +/- 3.37dB				
Polarization: Vortical	180MHz -417MHz: +/- 3.19dB				
	0.417GHz-1GHz: +/- 3.19dB				
	1GHz - 18GHz: +/- 4.04dB				
	18GHz - 40GHz: +/- 4.04dB				
	9kHz~30MHz: +-2.3dB				
	30MHz - 167MHz: +/- 4.22dB				
Polarization: Harizantal	167MHz -500MHz: +/- 3.44dB				
Polarization. Horizontai	0.5GHz-1GHz: +/- 3.39dB				
	1GHz - 18GHz: +/- 4.08dB				
	18GHz - 40GHz: +/- 4.08dB				

Note:

- 1. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.
- 2. The conformity assessment statement in this report is based solely on the test results, measurement uncertainty is excluded.

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6 CONDUCTED EMISSION TEST

6.1 Standard Applicable

Frequency range within 150 kHz to 30 MHz shall not exceed the Limit table as below.

Frequency range	Lin dB(nits /uV)
MHz	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

Note

1. The lower limit shall apply at the transition frequencies

2.The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

6.2 Measurement Equipment Used

Conducted Emission Test Site								
EQUIPMENT TYPF	MFR		SERIAL NUMBER	LAST CAL	CAL DUE.			
EMI Test Receiver	R&S	ESCI 7	1166.5950.07	07/04/2019	07/03/2020			
LISN	SCHWARZ- BECK	NSLK 8127	8127-649	06/02/2019	06/01/2020			
Test Software	Farad	EZ-EMC	Ver. SGS- 03A2	N.C.R	N.C.R			
Coaxial Cables	N/A	WK CE Cable	N/A	01/02/2020	01/01/2021			

NOTE: N.C.R refers to Not Calibrated Required.

6.3 EUT Setup

- 1. The conducted emission tests were performed in the test site, using the setup in accordance with the ANSI C63.10:2013.
- 2. The AC/DC Power adaptor of EUT was plug-in LISN. The rear of the EUT and peripherals were placed flushed with the rear of the tabletop.
- 3. The LISN was connected with 120Vac/60Hz power source.

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6.4 Test SET-UP



6.5 Measurement Procedure

- 1. The EUT was placed on a table which is 0.8m above ground plane.
- 2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 3. Repeat above procedures until all phases of power being supplied by given UE are completed.

6.6 Measurement Result

Note: Refer to next page for measurement data and plots. Note2: The * reveals the worst-case results that closet to the limit.

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AC POWER LINE CONDUCTED EMISSION TEST DATA

Description:	Operation	Date:	2020/04/14
Line:	L1	Temp.(°C)/Hum.(%):	22(°C)/46%
Test Voltage: Note:	AC 120V/60Hz ER/2020/30132	Test By:	Nick



		Freq.	Reading	Factor	Measure-	Limit	Over		
No.	Mk.				ment			Detector	Comment
		(MHz)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dB)		
1	*	0.1540	52.22	0.00	52.22	65.78	-13.56	QP	
2		0.1540	26.65	0.00	26.65	55.78	-29.13	AVG	
3		0.1660	49.26	0.00	49.26	65.16	-15.90	QP	
4		0.1660	23.90	0.00	23.90	55.16	-31.26	AVG	
5		0.1860	45.59	0.01	45.60	64.21	-18.61	QP	
6		0.1860	21.03	0.01	21.04	54.21	-33.17	AVG	
7		0.2220	44.56	0.01	44.57	62.74	-18.17	peak	
8		0.2340	44.35	0.01	44.36	62.31	-17.95	peak	
9		21.3060	41.08	0.42	41.50	60.00	-18.50	peak	

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Description:	Operation	Date:	2020/04/14
Line:	Ν	Temp.(°C)/Hum.(%):	22(°C)/46%
Test Voltage: Note:	AC 120V/60Hz ER/2020/30132	Test By:	Nick

80.0 dBu¥



		Freq.	Reading	Factor	Measure-	Limit	Over		
No.	Mk.				ment			Detector	Comment
		(MHz)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dB)		
1	*	0.1540	52.50	0.03	52.53	65.78	-13.25	QP	
2		0.1540	26.77	0.03	26.80	55.78	-28.98	AVG	
3		0.1700	48.84	0.03	48.87	64.96	-16.09	QP	
4		0.1700	23.82	0.03	23.85	54.96	-31.11	AVG	
5		0.1820	46.77	0.03	46.80	64.39	-17.59	QP	
6		0.1820	21.99	0.03	22.02	54.39	-32.37	AVG	
7		0.2020	43.59	0.03	43.62	63.53	-19.91	QP	
8		0.2020	19.19	0.03	19.22	53.53	-34.31	AVG	
9		0.2500	44.78	0.03	44.81	61.76	-16.95	peak	
10		20.2940	42.04	0.42	42.46	60.00	-17.54	peak	

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7 DUTY CYCLE TEST SIGNAL

Pre-analysis Check: While conducting average power measurement, duty cycle of each mode shall be checked to ensure its duty cycle in order to compensate for the loss due to insufficient ratio of duty cycle. All duty cycle is pre-scanned, and result as obtained below shows only the most representative ones where duty cycle is conducted as the given transmission with given virtual operation that expresses the percentage.

7.1 Measurement Procedure:

- 1. Set span = Zero
- 2. RBW = 8MHz
- 3. VBW = 8MHz,
- 4. Detector = Peak

Duty Cycle:

Mode	Duty Cycle (%) =Ton / (Ton+Toff)	Duty Factor (dB) =10*log(1/Duty Cycle)	1/T (kHz)	VBW setting (kHz)
802.11n_20	96.76	0.14	0.63	1.00
802.11n_40	94.12	0.26	0.63	1.00

Duty Cycle Factor: 10 * log(1/0.9676) = 0.14 Duty Cycle Factor: 10 * log(1/0.9412) = 0.26

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7.2 DUTY CYCLE TEST SIGNAL MEASUREMENT RESULT



802.11n_20MHz\5500 MHz-5500

802.11n_40MHz\5550 MHz-5550



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8 26DB&6DB EMISSION BANDWIDTH MEASUREMENT

8.1 Standard Applicable

There is no limit bandwidth for U-NII-1, U-NII-2-A and U-NII-2-C.

The minimum of 6dB Bandwidth measurement is 0.5 MHz for U-NII-3

8.2 Measurement Procedure

- 1. Place the EUT on the table and set it in transmitting mode.
- 2. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules.
- 3. Remove the antenna from the EUT and then connect a low loss RF cable from the Antenna port to the spectrum analyzer.
 - 3.a. 26dB Band width Measurement: Set the spectrum analyzer as 1% of emission BW Sweep=auto,
 Detector = Peak,
 Trace Mode = Max Hold,
 Manually readjust RBW until the RBW/EBW ratio is 1% based on EBW as observed on the result of pre-sequence measurement.
 - 3.b. Mark the peak frequency and –26dB (upper and lower) frequency.
- 4. Repeat the procedures as list above until all test default channels (low, middle, and high) are completed.
- 5. Minimum Emission Bandwidth for the band 5.725-5.850GHz.

a. Set the spectrum analyzer as RBW = 100 kHz, VBW = 3*RBW, Span = 30M/50MHz, Detector=Peak, Sweep=auto b. Mark the peak frequency and –6dB (upper and lower) frequency.

6. Repeat above procedures until all frequency of interest measured was complete.

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8.3 Measurement Equipment Used

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY57120290	02/20/2020	02/19/2021
Attenuator	Mini-Circuit	BW- S10W2+	2	01/02/2020	01/01/2021
DC Block	Mini-Circuits	BLK-18-S+	1	01/02/2020	01/01/2021

8.4 **Test Set-up**

EUT	Attenuator	SPA

8.5 **Measurement Result**

8.5.1 FCC 26dB Bandwidth

802.11r	_HT20_0	Ch0	802.11	802.11n_HT20_Ch1						
Freq. (MHz)	26dB BW (MHz)	10 Log (B) (dB)	Freq. (MHz)	26dB BW (MHz)	10 Log (B) (dB)					
5500	22.54	13.530	5500	22.47	13.516					
5580	22.63	13.547	5580	22.15	13.454					
5700	22.69	13.558	5700	22.57	13.535					
5720	22.23	13.469	5720	22.66	13.553					

802.11r	<u>_</u> HT40_	Ch0	802.11n _HT40_Ch1						
Freq. (MHz)	Freq. (MHz) 26dB BW (MHz) 10 Log (B) (B) (dB) Freq. (MHz) 5510 43.49 16.384 5510		Freq. (MHz)	26dB BW (MHz)	10 Log (B) (dB)				
5510			43.48	16.383					
5550	46.17	16.644		5550	45.19	16.550			
5670	47.57	16.773		5670	47.37	16.755			
5710	47.5	16.767		5710	43.75	16.410			

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8.5.2 6dB Bandwidth (5725 MHz~ 5850 MHz) measure with Peak detector for FCC 902 11n UT20 Ch0 902 11n UT20 Ch1

002.111	_п120_(JUU	002.1111_F120_CIT						
Freq. (MHz)	Freq. 6dB 10 Log (MHz) (MHz) (B) (MHz) (dB)		Freq. (MHz)	6dB BW (MHz)	10 Log (B) (dB)				
5745	16.39	12.146	5745	16.06	12.057				
5785	16.96	12.294	5785	16.59	12.198				
5825	16.45	12.162	5825	16.96	12.294				

802.11n_HT40_Ch0

802.11n_HT40_Ch1

Freq. (MHz)	6dB 10 Log BW (B) (MHz) (dB)		Freq. (MHz)	6dE BW (MH:
5755	35.77	15.535	5755	35.7
5795	35.21	15.467	5795	35.2

I	Erog	6dB	10 Log
	(MHz)	BW (MHz)	(B) (dB)
	5755	35.74	15.532
	5795	35 22	15 468

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FCC 802.11n 20MHz Chain0 5500MHz

FCC 802.11n 20MHz Chain0 5720MHz

Center Freq 5.500	0000000 GHz #FGain:Low	Center Freq: 6.50000 Trig: Free Run #Atten: 30 dB	ALIGNAUTO 00000 GHz Avg[Held: 10/10	11:21:14 AM Apr 06, 2020 Radio Std: None Radio Device: BTS	Frequency	Center Fr	eq 5.72000	AC 0000 GHz #IFGain:Lo	Cente Trig:F #Atten	SENSE INT r Freq: 5.72000000 ree Run / : 30 dB	ALIGNAUTO 00 GHz Avg Held: 30/30	01:53:02 PM Apr 06, Radio Std: None Radio Device: BT	8020 Frequency
10 dB/div Ref Off Log	et 12.4 dB .00 dBm			1		10 dB/div	Ref Offset 1 Ref 20.00	12.4 dB dBm			Mk	-3.8377 dE	Hz Bm
-10.0		•••••	,		Center Freq 5.50000000 GHz	10.00		milin	*****	a port worked	man		5.72000000 GHz
-20.0 -30.0 -40.0				Mar and a start of the start of		-20.0 -30.0 -40.0 -40.0	weeken					Contraction of the second seco	
-60.0 -70.0 Center 5.5 GHz				Span 30 MHz	CESton	-60 0 -70.0 Center 5.7	2 GHz					Span 30 M	IHz CE Stan
#Res BW 240 kHz		#VBW 6801	kHz	Sweep 1 ms	3.000000 MHz	#Res BW	220 kHz		#	VBW 680 kHz	2	Sweep 1	3.000000 MHz
Occupied Bar	dwidth	Total P	ower 12.	9 dBm	Auto Man	Occup	ied Bandy	width		Total Pow	ver 12.	6 dBm	Auto Man
	17.734 MI	Hz			Freq Offset	1000011-0011-001		17.687	MHz				Freq Offset
Transmit Freq E	rror 13.960 I	KHZ OBW P	ower 9	9.00 %	0 Hz	Transm	it Freq Erro	or -3.5	00 kHz	OBW Pov	ver 9	9.00 %	0 Hz
x dB Bandwidth	22.54 M	MHz xdB	-26	.00 dB		x dB Ba	andwidth	22.3	23 MHz	x dB	-26	.00 dB	
MSG			STAT	15		MSG					STATE	HS .	

FCC 802.11n 20MHz Chain0 5580MHz



FCC 802.11n 20MHz Chain0 5700MHz

FCC_802.11n_20MHz_Chain0_5745MHz



FCC 802.11n 20MHz Chain0 5785MHz

Agilent Spectrum Analyzer - Occupied BW		Agilent Spectrum Analyzer - Occupied BW
Center Freq 5.7000000000 GHz Center Freq 5.7000000000 GHz Set None Alignet 5 de None Argente 1 de None Arg	Frequency	Center Freq 5,785000000 GHz Center Freq 5,785000000 GHz Ratio Stat. None rif Galactow Freq 5,785000000 GHz Ratio Stat. None rif Galactow Freq 5,785000000 GHz Ratio Stat. None
Ref Offset 12.4 dB 10 dB/dlv Ref 20.00 dBm		10 dB/div Ref 0ffset 12.4 dB 10 dB/div Ref 20.00 dBm
	Center Freq 6.70000000 GHz	Center F 1472 000 Center F 1472 000 Center F 5.78500000
1000 2018 3000 400 4400	~	
46.0		
Center 5.7 GHz Span 30 Mi #Res BW 240 kHz #VBW 680 kHz Sweep 1 m	IZ CF Step 3.000000 MHz	Center 5.785 GHz Span 30 MHz Span 30 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 2.933 ms 3.000000
Occupied Bandwidth Total Power 12.4 dBm	Auto Man	Aan Occupied Bandwidth Total Power 19.6 dBm
17.816 MHz Transmit Freq Error 30.585 kHz OBW Power 99.00 % x dB Bandwidth 22.69 MHz x dB -26.00 dB	Freq Offset 0 Hz	set 17.582 MHz Freq Of Hz Transmit Freq Error -8.579 kHz OBW Power 99.00 % x dB Bandwidth 16.96 MHz x dB -6.00 dB
MSG STATUS	-	M9G STATUS

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FCC_802.11n_20MHz_Chain0_5825MHz

FCC_802.11n_20MHz_Chain1_5700MHz

FCC_802.11n_20MHz_Chain1_5720MHz



FCC_802.11n_20MHz_Chain1_5500MHz

enter Freq 5.50000000 GHz 11:24:12 AM Apr Of Radio Std: None Center Freq 5.720000000 GHz 01:53:26 PM Apr 06 Radio Std: None Frequency 00 GHz AvaiHold: 30/30 Center Freq: 6. Trig: Free Run Center Freq: 5.72 Trig: Free Run Radio Device: BTS Radio Device: BTS Mkr1 5.71499 GH -1.7290 dBr Ref Offset 12.4 dB Ref 20.00 dBm Ref Offset 12.4 dB Ref 20.00 dBm Center Fre Center Free ٥ 5 720000000 0 Center 5.5 GHz #Res BW 240 kHz Span 30 MHz Sweep 1 ms enter 5.72 GHz Res BW 220 kHz Span 30 MHz Sweep 1 ms CF Step 3.000000 MHz #VBW 680 kHz CF Ste #VBW 680 kHz 3.0 Occupied Bandwidth Total Power 12.6 dBm 14.6 dBm Total Power Occupied Bandwidth 17.753 MHz 17.669 MHz Freq Offse Freq Offse 13.367 kHz OBW Power 99.00 % 0 H Transmit Freq Error Transmit Freg Error -41.378 kHz **OBW Power** 99.00 % 0 1 x dB Bandwidth 22.47 MHz x dB -26.00 dB 22.66 MHz x dB Bandwidth x dB -26.00 dB

FCC_802.11n_20MHz_Chain1_5580MHz

FCC 802.11n 20MHz Chain1 5745MHz

Agilent Spect	trum Ar	ulyzer - Oc	cupied BV	/										Agile	ent Spectrum	Analyzer - Oc	cupied BW								
Center F	Frea	5.5800	20000	GHz		Center F	req: 6.5800	00000 GHz	ALIGNAUTO	Radio Std	M Apr 06, 2020 None		Frequency	Ce	R Inter Fre	n 5 7450	00000 (3Hz	Center	Freg: 6.7450	00000 GHz	ALIGNAUTO	11:45:32 A Radio Std	M Apr 06, 2020	Frequency
]			MIF Gain:Lo	w ***	Trig: Fre #Atten: 3	e Run 30 dB	Avg Hol	ld: 10/10	Radio Dev	rice: BTS					q 5.7450	,	offic IFGain:Low	#Atten:	ee Run 30 dB	Avg Hole	£: 10/10	Radio Dev	rice: BTS	
10 dB/div		Ref Offse Ref 20.0	12.4 dB 0 dBm											10	dB/div	Ref Offse Ref 20.0	t 12.4 dB 00 dBm					M	(r1 5.73 -6.07	62 GHz 40 dBm	
10.0 0.00 -10.0					~	·····						6.	Center Freq 580000000 GHz	10/	0		in	e Name Name Name Name Name Name Name Nam	m	Juna	- And	m			Center Freq 5.745000000 GHz
-20.0 -30.0 -40.0					-					weat				-20. -30. -40.	0 0 0								Server and the server of the server and the server	w.m.	
-50.0 -60.0 -70.0														-50.1 -60.1 -70.1	0										
Center 5 #Res BW	5.58 (V 220	SHz) kHz				#V	BW 680	kHz		Spa Swe	n 30 MHz ep 1 ms	Γ	CF Step 3.000000 MHz	Ce #R	nter 5.74 es BW 1	5 GHz 00 kHz			#V	BW 300	kHz		Spa Sweep	n 30 MHz 2.933 ms	CF Step 3.000000 MHz
Occu	pied	d Band	width	1			Total I	ower	12.4	dBm		Aut	o Man		Occupi	ed Band	dwidth			Total P	ower	17.9	ə dBm		Auto Man
			17	.713	мн	z						F	Freq Offset		oooupi	bu bun	17.	592 M	Hz						Freq Offset
Trans	mit F	req Er	or	-22.6	50 kl	Hz	OBW	Power	99	9.00 %		L	0 Hz	1	Transmi	Freq Er	тог	-44.833	kHz	OBW P	ower	99	9.00 %		0 Hz
x dB i	Band	width		22.1	15 MI	Hz	x dB		-26.	00 dB				,	x dB Bar	ndwidth		16.06	MHz	x dB		-6.	00 dB		
MSG									STATU	5				M9G								STATU	5		

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FCC_802.11n_20MHz_Chain1_5785MHz

FCC_802.11n_40MHz_Chain0_5550MHz

FCC_802.11n_40MHz_Chain0_5670MHz



FCC_802.11n_20MHz_Chain1_5825MHz



FCC_802.11n_40MHz_Chain0_5510MHz

FCC_802.11n_40MHz_Chain0_5710MHz

Agilent Spectrum Analyzer - Occupied BW		Agilent Spectrum Analyzer - Occupied BW	
Center Freq 5.510000000 GHz Generation 5.510000000 GHz Generation 5.510000000 GHz Generation 5.51000000 GHz Generation 5.510000000 GHz Generation 5.51000000 GHz Generation 5.510000000 GHz Generation 5.51000000 GHz Generation 5.510000000 GHz Generation 5.51000000 GHz Generation 5.51000000 GHz Generation 5.510000000 GHz Generation 5.51000000 GHz Generation 5.510000000 GHz Generation 5.5100000000 GHz Generation 5.51000000000000 GHz Generation 5.5100000000000000000000000000000000000	Frequency	Image: State	requency
Ref Offset 12.4 dB 10 dB/div Ref 20.00 dBm		Ref Offset 12.4 dB Mkr1 5.7188 GHz 10 dB/div Ref 20.00 dBm -4.4406 dBm	
	Center Freq 5.51000000 GHz		Center Freq 10000000 GHz
		300 300 mm//////////////////////////////////	
600		400 600 700	
Center 5.51 GHz Span 50 MHz Span 50 MHz #VBW 1.3 MHz Sweep 1 ms	CF Step 5.000000 MHz	Center 5.71 GHz Span 50 MHz #Res BW 430 kHz #VBW 1.3 MHz Sweep 1 ms	CF Step 5.000000 MHz
Occupied Bandwidth Total Power 11.8 dBm 36.312 MHz	Auto Man Freq Offset	Total Power 12.5 dBm	Man Freq Offset
Transmit Freq Error 14.305 kHz OBW Power 99.00 % x dB Bandwidth 43.49 MHz x dB -26.00 dB	0 Hz	z Transmit Freq Error -61.519 kHz OBW Power 99.00 % x dB Bandwidth 47.50 MHz x dB -26.00 dB	0 Hz
		NSO STATUS	

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FCC_802.11n_40MHz_Chain0_5755MHz

FCC_802.11n_40MHz_Chain1_5550MHz



FCC 802.11n 40MHz Chain0 5795MHz



FCC 802.11n 40MHz Chain1 5510MHz

FCC 802.11n 40MHz Chain1 5670MHz



FCC 802.11n 40MHz Chain1 5710MHz

Agilent Spectrum Analyzer - Occupied BW		Agilent Spectrum Analyzer - Occupied BW			
Image: Processing of the second se	Frequency	00 n 65 500 AC Center Freq 5.710000000 GHz #FGain:	SPSCINT Center Freg. 5.710000000 GHz Trig: Free Run Avg Held: Low #Atten: 30 dB	ALIGNAUTO 01:57:12 PMApr 06, 2020 Radio Std: None 30/30 Radio Device: BTS	Frequency
Ref Offset 12.4 dB 10 dB/div Ref 20.00 dBm		10 dB/div Ref 20.00 dBm		Mkr1 5.71125 GHz -0.80722 dBm	
	Center Freq 5.51000000 GHz	10.0 0.00	mann Lanna	mandericality	Center Freq 5.710000000 GHz
	•	300 -400			
50 0	-	40.0 40.0 70.0			
Center 5.51 GHz Span 50 MH #Res BW 470 kHz #VBW 1.3 MHz Sweep 1 m	CF Step	Center 5.71 GHz #Res BW 430 kHz	#VBW 1.3 MHz	Span 50 MHz Sweep 1 ms	CF Step 5.000000 MH
Occupied Bandwidth Total Power 11.9 dBm	Auto Man	Occupied Bandwidth	Total Power	15.4 dBm	Auto Man
36.284 MHz Transmit Freq Error 13.931 kHz OBW Power 99.00 %	Freq Offset 0 Hz	36.212 Transmit Freq Error -57	2 MHZ .734 kHz OBW Power	99.00 %	Freq Offset 0 Hz
x dB Bandwidth 43.48 MHz x dB -26.00 dB		x dB Bandwidth 43	3.75 MHz x dB	-26.00 dB	
		MBG		STATUS	

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FCC_802.11n_40MHz_Chain1_5755MHz

sgilent Spectrue	m Analyzer - Occupied B	W									
Senter Fre	eq 5.755000000	GHz ATFGain:Low	Center F Trig: Fre #Atten: 2	req: 6.76600 re Run 30 dB	Avg[Hold	ALION AUTO	Radio Radio	Std:	None None	F	requency
10 dB/div	Ref Offset 12.4 dl Ref 20.00 dBn	8 n				Mkr	1 5.7 -9	736 .99	95 GHz 47 dBm		
10.0	1 and and and		h h h m	-	here	man	-			5.75	Center Fre
0.0								L.	and and a second		
0.0											
enter 5.7	755 GHz				<u> </u>			Spa	n 50 MHz	L	CF St
Occup	ied Bandwidt	h	#VE	Total P	Hz ower	18.0	dBr	weep n	3 4.8 ms	Auto	5.000000 N
_	36	3.104 MI	Hz								Freq Off
Transmi x dB Ba	it Freq Error andwidth	-79.710 i 35.74 i	кHz ИHz	X dB	ower	-6.(.00 % 30 dE	à		\vdash	
50						STATUS					

FCC_802.11n_40MHz_Chain1_5795MHz



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99% BW Verification for DFS Function 8.5.3

802.11r	1_HT20_Ch0)	_	802.11n_HT20_Ch1				
Freq. (MHz)	Measured Freq. (MHz)	Limit (MHz)		Freq. (MHz)	Measured Freq. (MHz)	Limit (MHz)		
5745	5736.20	> 5725		5745	5736.20	> 5725		

802.11n HT40 Ch0

802.11n HT40 Ch1

Freq (MHz	Measured Freq. (MHz)	Limit (MHz)	Freq. (MHz)	Measured Freq. (MHz)	Limit (MHz)
5755	5736.94	> 5725	5755	5736.95	> 5725

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



9 MAXIMUM CONDUCTED OUTPUT POWER MEASUREMENT

9.1 Standard Applicable

FCC

OPERZTION Band		EUT CATEGORY	LIMIT			
		Access Point (Master device)	1 Watt(30dBm)			
U-NII-1		Fixed point-to-point Access Ponit	1 Watt(30dBm)			
		Mobile and portable client device	250mW(23.98dBm)			
U-NII-2A			250mW(23.98dBm) or 11dBm+10 log B			
U-NII-2C			250mW(23.98dBm) or 11dBm+10 log B			
U-NII-3			1 Watt(30dBm)			
If transmitting antennas of directional gain greater than 6 dBi are used, the Maximum transmit						

If transmitting antennas of directional gain greater than 6 dBi are used, the Maximum transmit power shall be reduced by the amount in dB that the direction-al gain of the antenna exceeds 6 dBi.

Note:

As per section F. 2). e). (ii) of FCC KDB 662911 D01

If antenna gains are not equal and each transmit antenna is driven by only one spatial stream, directional gain may be calculated by either of the following formulas.

• DirectionalGain =
$$10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$$

where

Each antenna is driven by no more than one spatial stream;

NSS = the number of independent spatial streams of data;

NANT = the total number of antennas

g_{j,k} = / 20 10Gk if the kth antenna is being fed by spatial stream j, or zero if it is not;

 G_k is the gain in dBi of the kth antenna.

The antenna gain is grater than 6 dBi, therefore the power limit autenuation has been applied in the test results.

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9.2 Measurement Procedure

- 1. Place the EUT on the table and set it in transmitting mode.
- 2. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules .
- 3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the power meter
- 4. Power Meter is used as the auxiliary test equipment to conduct the output power measurement.
- 5. Record the max. reading and add 10 log(1/duty cycle).
- 6. Repeat above procedures until all frequency (low, middle, and high channel) measured were complete.

MODEL SERIAL EQUIPMENT TYPE LAST CAL. CAL DUE. MFR NUMBER NUMBER **Power Meter** ML2496A 1804001 02/20/2020 02/19/2021 Anritsu 1726104 02/20/2020 02/19/2021 Power Sensor Anritsu MA2411B **Power Sensor** Anritsu MA2411B 1726107 02/20/2020 02/19/2021 BW-Attenuator Mini-Circuit 2 01/02/2020 01/01/2021 S10W2+

9.3 Measurement Equipment Used

9.4 Test Set-up

fullest extent of the law.



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Measurement Result 9.5

9.5.1 **Conducted output power (FCC)**

802.11n_HT20_MIMO

СН	Frequency	Data	Avg. POV	VER (dBm)				REQUIRED		реени т
СП	(MHz)	Rate	CH 0	CH 1	(dBm)	(mW)		(dBm)		RESULT
100	5500	MCS8	7.52	7.48	10.65	11.624	10.97	or 11+10log(B) =	24.52	PASS
116	5580	MCS8	7.98	6.77	10.57	11.403	10.97	or 11+10log(B) =	24.45	PASS
140	5700	MCS8	8.56	6.86	10.95	12.434	10.97	or 11+10log(B) =	24.54	PASS
144	5720(U-NII 2C)	MCS8	7.13	5.25	9.46	8.821	10.97	or 11+10log(B) =	24.47	PASS
144	5720 (U-NII 3)	MCS8	2.92	1.13	5.25	3.347		16.99		PASS
149	5745	MCS8	14.03	12.53	16.50	44.646		16.99		PASS
157	5785	MCS8	13.73	12.95	16.51	44.780		16.99		PASS
165	5825	MCS8	13.53	13.21	16.53	44.940		16.99		PASS

802.11n_HT40_MIMO

CH	Frequency	Data	Avg. POV	VER (dBm)	TOTAL			REQUIRED		DECULT
СП	(MHz)	Rate	CH 0	CH 1	(dBm)	(mW)		(dBm)		RESULT
102	5510	MCS8	7.63	6.92	10.56	11.384	10.97	or 11+10log(B) =	27.38	PASS
110	5550	MCS8	7.58	6.89	10.52	11.278	10.97	or 11+10log(B) =	27.55	PASS
134	5670	MCS8	7.93	6.41	10.51	11.245	10.97	or 11+10log(B) =	27.76	PASS
142	5710(U-NII 2C)	MCS8	7.39	6.17	10.03	10.075	10.97	or 11+10log(B) =	27.41	PASS
142	5720 (U-NII 3)	MCS8	0.92	-1.13	3.57	2.275		16.99		PASS
151	5755	MCS8	13.96	12.48	16.56	45.250		16.99		PASS
159	5795	MCS8	14.07	13.22	16.94	49.422		16.99		PASS

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10 MAXIMUM POWER SPECTRAL DENSITY

10.1 Standard Applicable

FCC

OPERZTION Band		EUT CATEGORY	LIMIT			
		Access Point (Master device)	17dBm/ MHz			
U-NII-1		Fixed point-to-point Access Ponit				
		Mobile and portable client device	11dBm/ MHz			
U-NII-2A			11dBm/ MHz			
U-NII-2C			11dBm/ MHz			
U-NII-3 √ 30dBm/ 500kHz						
If transmitting antennas of directional gain greater than 6 dBi are used, the Maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.						

Note:

As per section F. 2). e). (ii) of FCC KDB 662911 D01

If antenna gains are not equal and each transmit antenna is driven by only one spatial stream, directional gain may be calculated by either of the following formulas.

• DirectionalGain =
$$10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$$

where

Each antenna is driven by no more than one spatial stream; NSS = the number of independent spatial streams of data; NANT = the total number of antennas $g_{j,k} = / 20 \ 10$ Gk if the kth antenna is being fed by spatial stream j, or zero if it is not; G_k is the gain in dBi of the kth antenna.

The antenna gain is grater than 6 dBi in MIMO mode, therefore the the power density limit autenuation has been applied in the test results.

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10.2 Measurement Procedure

- 1. Place the EUT on the table and set it in transmitting mode.
- 2. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules .
- 3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to Spectrum.
- 4. For U-NII1, U-NII-2A, U-NII-2C Band:

Set RBW=1MHz, VBW=3MHz, where span is enough to capture the entire bandwidth, Sweep time = Auto (601 pts), detector = sample, traces 100 sweeps of video averaging. (SA-2 with the omission of procedure x, the integration with 26dB EBW bandwidth) **For U-NII-3 Band**:

Set RBW=500 kHz, VBW≥ 3RBW, where span is enough to capture the entire bandwidth, Sweep time = Auto (601 pts), detector = sample, traces 100 sweeps of video averaging. (SA-2 with the omission of procedure x, the integration with 26dB EBW bandwidth)

- 5. User the cursor on spectrum to peak search the highest level of trace
- 6. Record the max. reading and add 10 log(1/duty cycle).
- 7. Repeat above procedures until all default test channel (low, middle, and high) was complete.
- 8. MIMO mode: offset is set following "measure and add 10 Log (N)" on spectrum to measure the PSD for MIMO mode. Offset = cable loss + 10 log (N), where N is number of transmitting antenna.

Note: For the test of PSD at MIMO mode, the highest emission of worst case employing Measure and add 10 log (N) technical is reported on this report after the comparison between Main Antenna at single transmitting mode and Aux that yields the higher value. The MIMO transmitting mode produces higher value of outcome

10.3 Measurement Equipment Used

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.				
EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY57120290	02/20/2020	02/19/2021				
Attenuator	Mini-Circuit	BW- S10W2+	2	01/02/2020	01/01/2021				
DC Block	Mini-Circuits	BLK-18-S+	1	01/02/2020	01/01/2021				

10.4 Test Set-up



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10.5 **Measurement Result**

10.5.1 **Power spectral density**

POWER DENSITY 802.11n HT20 MODE									
Frequency (MHz)	PSD W/O Duty Factor (dBm)	Duty Factor	PSD With Duty Factor (dBm)	Limit (dBm)	Margin (dB)				
5500	-2.24	0.14	-2.10	-2.01	-0.09				
5580	-2.60	0.14	-2.46	-2.01	-0.45				
5700	-2.91	0.14	-2.77	-2.01	-0.76				
5720 (U-NII 2C)	-2.40	0.14	-2.26	-2.01	-0.25				
5720 (U-NII 3)	-5.80	0.14	-5.66	16.99	-22.65				
5745	-0.57	0.14	-0.43	16.99	-17.42				
5785	0.95	0.14	1.09	16.99	-15.90				
5825	0.55	0.14	0.69	16.99	-16.30				

POWER DENSITY 802.11n HT40 MODE									
Frequency (MHz)	PSD W/O Duty Factor (dBm)	Duty Factor	PSD With Duty Factor (dBm)	Limit (dBm)	Margin (dB)				
5510	-6.97	0.26	-6.71	-2.01	-4.70				
5550	-5.23	0.26	-4.97	-2.01	-2.96				
5670	-6.63	0.26	-6.37	-2.01	-4.36				
5710 (U-NII 2C)	-5.65	0.26	-5.39	-2.01	-3.38				
5710 (U-NII 3)	-9.34	0.26	-9.08	16.99	-26.07				
5755	-3.87	0.26	-3.61	16.99	-20.60				
5795	-2.08	0.26	-1.82	16.99	-18.81				

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802.11n_20MHz_5500MHz



802.11n_20MHz_5580MHz



802.11n_20MHz_5700MHz



802.11n_20MHz_5720MHz_UNII 2C



802.11n_20MHz_5720MHz_UNII 3



802.11n_20MHz_5745MHz



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 No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan/新北市五股區新北產業園區五工路 134 號

 台灣檢驗科技股份有限公司
 t (886-2) 2299-3279
 f (886-2) 2298-0488
 www.sgs.com.tw



802.11n_20MHz_5785MHz



802.11n_20MHz_5825MHz



802.11n_40MHz_5510MHz



802.11n 40MHz 5550MHz



802.11n_40MHz_5670MHz



802.11n_40MHz_5710MHz_UNII 2C



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802.11n_40MHz_5710MHz_UNII 3



802.11n_40MHz_5755MHz



802.11n_40MHz_5795MHz



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11 UNDESIRABLE RADIATED EMISSION MEASUREMENT

11.1 Standard Applicable

11.1.1 Band Edge

The maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

- 1. For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.
- 2. For transmitters operating in the 5.725-5.85 GHz band: All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at 5 MHz above or below the band edge.

APPLICABLE TO	EIRP LIMIT	FIELD STRENGTH AT 3m
15.407(b)(1)		
15.407(b)(2)	PK: -27 (dBm/MHz)	PK: 68.3 (dBµV/m)
15.407(b)(3)		
	PK:-27 (dBm/MHz) *1	PK: 68.2(dBµV/m) *1
15.407(h)(4)(i)	PK:10 (dBm/MHz) *2	PK:105.2 (dBµV/m) *2
15.407 (b)(4)(1)	PK:15.6 (dBm/MHz) *3	PK: 110.8(dBµV/m) *3
	PK:27 (dBm/MHz) *4	PK:122.2 (dBµV/m) *4

*1 beyond 75 MHz or more above of the bandedge.

*2 below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above.

*3 below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above.

*4 from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

 $EIRP = ((E^*d)^2) / 30$, where E is the field in V/m, d is the measurement distance (3m), EIRP is the equivalent isotropically radiated power in Watts.

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11.1.2 Spurious Emission

Unwanted spurious emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table:

Frequency (MHz)	Field strength (microvolts/meter)	Distance (meters)
0.009-0.490	2400/F(KHz)	300
0.490-1.705	24000/F(KHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Note:

1. The lower limit shall apply at the transition frequencies.

2. Emission level ($dB\mu V/m$) = 20 log Emission level ($\mu V/m$)

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11.2 **Measurement Equipment Used**

EQUIPMENT TYPE	MFR	MODEL NUM- BER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Bi-log Antenna	SCHWAZBECK	VULB9168	378	01/03/2020	01/02/2021
Horn Antenna	Schwarzbeck	BBHA9120D	1441	08/20/2019	08/19/2020
Horn Antenna	Schwarzbeck	BBHA9170	184	12/25/2019	12/24/2020
3m Site NSA	SGS	966 chamber	N/A	01/02/2019	01/01/2021
Loop Antenna	ETS.LIND- GREN	6502	148045	10/15/2019	10/14/2020
PXA Spectrum Analyzer	Agilent	N9030A	MY53120760	04/22/2019	04/21/2020
EMI Test Receiver	R&S	ESCI 7	1166.5950.07	07/04/2019	07/03/2020
Pre-Amplifier	HP	8449B	3008A00578	01/02/2020	01/01/2021
Pre-Amplifier	HP	8447D	2944A07676	01/02/2020	01/01/2021
Pre-Amplifier	EMC Instru- ments	EMC184045B	980135	01/02/2020	01/01/2021
Filter 5470-5725 MHz	Micro-Tronics	BRM50704	1	01/02/2020	01/01/2021
Filter 5725-5875 MHz	Micro-Tronics	BRM50705	1	01/02/2020	01/01/2021
High Pass Filter	WI	WHKX7.0/18G- 8SS	45	01/02/2020	01/01/2021
Low Loss Cable	Huber Suhner	966_RX	9	01/02/2020	01/01/2021

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11.3 Test SET-UP

(A) Radiated Emission Test Set-UP Frequency Below 30MHz.



(B) Radiated Emission Test Set-Up, Frequency form 30MHz to 1000MHz



(C) Radiated Emission Test Set-UP Frequency Over 1 GHz



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11.4 Measurement Procedure

- 1. The EUT was placed on a turn table which is 0.8m above ground plane.
- 2. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules .
- 3. The EUT was placed on a turn table with 0.8m for frequency< 1GHz and 1.5m for frequency> 1GHz above ground plane.
- 4. The turn table shall rotate 360 degrees to determine the position of maximum emission level.
- 5. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emissions.
- 6. Set the spectrum analyzer as RBW=120 kHz and VBW=300 kHz for Peak Detector (PK) and Quasi-peak (QP) at frequency below 1 GHz.
- 7. At frequency above 1 GHz, Set the spectrum analyzer:
 - A. RBW=1 MHz, VBW=3 MHz for **Peak** Detector.
 - B. Set the spectrum analyzer as RBW=1 MHz, VBW=10 Hz (Duty cycle > 98%) or VBW ≥ 1/T (Duty cycle < 98%) for Average Detector.</p>
- 8. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 9. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
- 10. Repeat above procedures until all frequency measured were complete.

11.5 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CL - AG

Where FS = Field StrengthRA = Reading AmplitudeAF = Antenna Factor CL = Cable Attenuation Factor (Cable Loss) AG = Amplifier Gain

The limit of the emission level is expressed in dBuV/m, which converts 20*log(uV/m)

Actual FS($dB\mu V/m$) = SPA. Reading level($dB\mu V$) + Factor(dB)

$Factor(dB) = Antenna Factor(dB\mu V/m) + Cable Loss(dB) - Pre_Amplifier Gain(dB)$

11.6 Test Results of Radiated Spurious Emissions form 9 KHz to 30 MHz

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit per 15.31(o) was not reported.

Pre-scanned was done at frequency 5.47 GHz and 5.85 GHz for bandedge measurement of straddle channels 142 and 144 which was 20dB lower than the limit per 15.31(o) was not reported.

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146.40

211.39

11.7 Radiated Spurious Emission Measurement Result

11.7.1 Below 1GHz Worst-Case Data:

Report Number	:ER-2020-30132	Test Date	:2020-04-14
Operation Mode	:802.11n20	Temp./Humi.	:20.4/51
Test Frequency	:5580 MHz	Antenna Pol.	:VERTICAL
Test Mode	:Tx CH Mid	Engineer	:Nick
EUT Pol	:H Plane		



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40.97

44.16

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Peak

Peak

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-7.44

-9.59

33.53

34.57

Margin

dB

-2.97

-4.64

-4.73

-7.58

-9.97

-8.93

43.50

43.50



Report Number	:ER-2020-3	30132		Test Date	:2020-04-14	
Operation Mode	:802.11n20			Temp./Humi.	:20.4/51	
Test Frequency	:5580 MHz			Antenna Pol.	:HORIZONTA	L
Test Mode	:Tx CH Mid			Engineer	:Nick	
EUT Pol	:H Plane			·		
l evel (dBuV/m)						
97						
90						
80						
70			· · · · · · · · · · · · · · · · · · ·			
60						
50						
40			· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·		
30 2		6		· · · · · · · · · · · · · · · · · · ·		
30						
20						
10			· · · · · · · · · · · · · · · · · · ·			
0 <mark></mark> 30	224.	418. Frequency (N	612. IHz)	806.	1000	
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
30.00	Peak	34.04	-8.72	25.32	40.00	-14.68
/1./1	Реак	39.31	-10.62	28.69	40.00	-11.31
125.06	Реак	35.01	-9.19	25.82	43.50	-17.68
207.51	QP	51.30	-9.75	41.55	43.50	-1.95
250.19	Реак	42.67	-7.90	34.77	46.00	-11.23
374.35	Peak	34.14	-4.66	29.48	46.00	-16.52



L
L
Margin
dB
0.07
-3.97
-3.97 -4.77 -5.07
-3.97 -4.77 -5.07 -7 84
-3.97 -4.77 -5.07 -7.84 -8.49



Report Number	:ER-2020-3	30132		Test Date	:2020-04-14	
Operation Mode	:802.11n20			Temp./Humi.	:20.4/51	
Test Frequency	:5785 MHz			Antenna Pol.	:HORIZONTA	L
Test Mode	:Tx CH Mid			Engineer	:Nick	
EUT Pol	:H Plane			J. J		
, Level (dBuV/m)						
97						
00						
80						
70						
60						
50				· · · · · · · · · · · · · · · · · · ·		
40						
30 12		6				
20						
20						
10						
0 <mark></mark> 30	224.	418. Frequency (N	612. IHz)	806.	1000	
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	Ū
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
59.10	Peak	37.94	-8.70	29.24	40.00	-10.76
71.71	Peak	39.56	-10.62	28.94	40.00	-11.06
125.06	Реак	34.19	-9.19	25.00	43.50	-18.50
209.40	QP	01.20 40.25	-9.13	41.00	43.00	-1.90 11 EE
200.19	Peak	42.30	-7.90	34.43	40.00	-11.00
314.33	reak	34.10	-4.00	29.44	40.00	-10.30



11.7.2 Above 1GHz Worst-Case Data:

Report Number	:ER-2020-30132	Test Date	:2020-04-14
Operation Mode	:802.11n20	Temp./Humi.	:20.4/51
Test Frequency	:5500 MHz	Antenna Pol.	:VERTICAL
Test Mode	:Tx CH Low	Engineer	:Nick
EUT Pol	:H Plane		



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⊢req.	Detector	Spectrum Reading Level	Factor	Actual	Limit Ma	argin
_		Frequenc	cy (MHz)			
0 ^L 1000	8800.	16600.	24400.	32200.	40000	
10						
20						
20						
30						
40	· · · · · · · · · · · · · · · · · · ·					
50	· · · · · · · · · · · · · · · · · · ·					
60	2					
70-11-11-1-1-1-1-1						
80						
90						
oz Level (dBuV/m)						
EUT Pol	:H Plane			Engineer		
Test Mode		N		Engineer	·Nick	
Test Frequency	·5500 MHz			Antenna Pol	HORIZONTAL	
Operation Mode	:802.11n20)		Temp./Humi.	:20.4/51	
Report Number	:ER-2020-3	30132		Test Date	:2020-04-14	

MHz	Mode PK/QP/AV	Reading Level dBµV	dB	FS dBµV/m	@3m dBµV/m	dB
11000.00	Average	22.86	23.37	46.23	54.00	-7.77
11000.00	Peak	35.98	23.37	59.35	74.00	-14.65

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



Report Number	:ER-2020-30132	Test Date	:2020-04-14
Operation Mode	:802.11n20	Temp./Humi.	:20.4/51
Test Frequency	:5580 MHz	Antenna Pol.	:VERTICAL
Test Mode	:Tx CH Mid	Engineer	:Nick
EUT Pol	:H Plane		

97 Level (dBuV/m))					
90						
80						
70		<u> </u>		<u></u>		
60	22		·			
50						
40						
30						
20						
10						
0 <mark></mark>	8800.	16600. Frequency (I	24400. MHz)	32200.	40000	
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
11160.00	Average	22.90	22.20	45.10	54.00	-8.90
11160.00	Peak	34.59	22.20	56.79	74.00	-17.21



Report Number	:ER-2020-3	30132		Test Date	:2020-04-14	
Operation Mode	:802.11n20)		Temp./Humi.	:20.4/51	
Test Frequency	:5580 MHz			Antenna Pol.	:HORIZONTAL	
Test Mode	:Tx CH Mid	ł		Engineer	:Nick	
EUT Pol	:H Plane			-		
oz Level (dBuV/m)						
90						
80		· · · · · · · · · · · · · · · · · · ·				
70			l-Fl-PL			
60	22					
50	· · · · · · · · · · · · · · · · · · ·					
40	· · · · · · · · · · · · · · · · · · ·					
30						
20						
10						
0 <mark></mark>	8800.	16600. Frequency	24400. 7 (MHz)	32200.	40000	
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBuV	dB	dBuV/m	dBuV/m	dB

	FN/QF/AV	ubµv	uВ	ubμv/m	ubhauii	uВ
11160.00 11160.00	Average Peak	22.96 34.49	22.20 22.20	45.16 56.69	54.00 74.00	-8.84 -17.31

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



Report Number	:ER-2020-30132	Test Date	:2020-04-14
Operation Mode	:802.11n20	Temp./Humi.	:20.4/51
Test Frequency	:5700 MHz	Antenna Pol.	:VERTICAL
Test Mode	:Tx CH High	Engineer	:Nick
EUT Pol	:H Plane		

oz Level (dBuV/m))					
90						
80						
70		<u> </u>				
60	2					
50						
40						
30						
20						
10			·			
0 <mark></mark>	8800.	16600. Frequency	24400. / (MHz)	32200.	40000	
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
11400.00	Average	22.46	22.22	44.68	54.00	-9.32
11400.00	Peak	34.07	22.22	56.29	74.00	-17.71



Report Number	:ER-2020-30132	Test Date	:2020-04-14
Operation Mode	:802.11n20	Temp./Humi.	:20.4/51
Test Frequency	:5700 MHz	Antenna Pol.	:HORIZONTAL
Test Mode	:Tx CH High	Engineer	:Nick
EUT Pol	:H Plane		
97 			
90			
80			
70	╶╢╴┥┊║┨╾╼┚╾╍╌╌┥╧╢╾╼┟╧┓┛╌╍╌╸	 	

01000	8800.	16600. Erequency (M	24400.	32200.	40000	
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode PK/QP/AV	Reading Level dBµV	dB	FS dBµV/m	@3m dBµV/m	dB
1400 00	Average	22 64	22.22	44 86	54 00	-9 14
1400.00	Peak	34.03	22.22	56.25	74.00	-17.75

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



Report Number	:ER-2020-30132	Test Date	:2020-04-14
Operation Mode	:802.11n20	Temp./Humi.	:20.4/51
Test Frequency	:5720 MHz	Antenna Pol.	:VERTICAL
Test Mode	:Tx CH High	Engineer	:Nick
EUT Pol	:H Plane		

97 Level (dBuV/m)						
90						
80						
70			U/Lii-	<u>_</u>	<u>.</u>	
60	2					
50						
40						
30						
20						
10		· · · · · · · · · · · · · · · · · · ·	i i i i 			
0 <mark>1000</mark>	8800.	16600. Frequency (MHz	24400. :)	32200.	40000	
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
11490.00	Average	22.29	23.24	45.53	54.00	-8.47
11490.00	Peak	33.70	23.24	56.94	74.00	-17.06



:ER-2020-30132	Test Date	:2020-04-14
:802.11n20	Temp./Humi.	:20.4/51
:5720 MHz	Antenna Pol.	:HORIZONTAL
:Tx CH High	Engineer	:Nick
:H Plane		
	:ER-2020-30132 :802.11n20 :5720 MHz :Tx CH High :H Plane	:ER-2020-30132Test Date:802.11n20Temp./Humi.:5720 MHzAntenna Pol.:Tx CH HighEngineer:H Plane

oz Level (dBuV/m)						
90			·			
80						
70 - - - - - - -		<u>k-I</u> L	1.1.		·	
60	2					
50			·			
40						
30		· · · · · · · · · · · · · · · · · · ·				
20						
10						
0 <mark></mark>	8800.	16600. Frequency (MH	24400. z)	32200.	40000	
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
44.400.00	A	00.00	00.04	45 50	54.00	0.40
11490.00	Average	22.28	23.24	45.52	54.00	-8.48
11490.00	Реак	34.19	23.24	57.43	74.00	-10.57



Report Number	:ER-2020-30132	Test Date	:2020-04-14
Operation Mode	:802.11n20	Temp./Humi.	:20.4/51
Test Frequency	:5745 MHz	Antenna Pol.	:VERTICAL
Test Mode	:Tx CH Low	Engineer	:Nick
EUT Pol	:H Plane		





·FR-2020-30132

Report Number

·2020-04-14

Test Date

		10102			.2020 01 11			
Operation Mode	:802.11n20			Temp./Humi.	:20.4/51	:20.4/51		
Test Frequency	:5745 MHz			Antenna Pol.	:HORIZONTA	L		
Test Mode	:Tx CH Lov	V		Engineer	:Nick			
EUT Pol	:H Plane							
97 Level (dBuV/m)								
90	· · · · · · · · · · · · · · · · · · ·							
80								
70		┠╌┟╴┨╌┠╺╌╴┨						
60	2							
50								
40								
30	· · · · · · · · · · · · · · · · · · ·							
20								
10								
0	9900	16600	24400	32200	40000			
1000	0000.	Frequency (24400. MHz)	52200.	40000			
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin		
MHz	Mode PK/QP/AV	Reading Level dBµV	dB	rS dBµV/m	@3m dBµV/m	dB		

11490.00 11490.00	Average Peak	22.30 34.12	23.24 23.24	45.54 57.36	54.00 74.00	-8.46 -16.64

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



Report Number	:ER-2020-30132	Test Date	:2020-04-14
Operation Mode	:802.11n20	Temp./Humi.	:20.4/51
Test Frequency	:5785 MHz	Antenna Pol.	:VERTICAL
Test Mode	:Tx CH Mid	Engineer	:Nick
EUT Pol	:H Plane		





11570.00

Peak

74.00

-18.01

55.99

Report Number Operation Mode Test Frequency	:ER-2020-3 :802.11n20 :5785 MHz	30132		Test Date Temp./Humi. Antenna Pol. Engineer	:2020-04-14 :20.4/51 :HORIZONTA	L
EUT Pol	:H Plane			Engineer		
97 Level (dBuV/m)						
90						
80						
70 <mark> </mark>]				
60	2					
50						
40						
30						
20						
10						
0 <mark></mark> 1000	8800.	16600. Frequenc	24400. y (MHz)	32200.	40000	
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode PK/QP/AV	Reading Level dBuV	dB	FS dBuV/m	@3m dBuV/m	dB
		F		r		
11570.00	Average	22.73	22.01	44.74	54.00	-9.26

22.01

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

33.98



:ER-2020-30132	Test Date	:2020-04-14
:802.11n20	Temp./Humi.	:20.4/51
:5825 MHz	Antenna Pol.	:VERTICAL
:Tx CH high	Engineer	:Nick
:H Plane		
	:ER-2020-30132 :802.11n20 :5825 MHz :Tx CH high :H Plane	:ER-2020-30132Test Date:802.11n20Temp./Humi.:5825 MHzAntenna Pol.:Tx CH highEngineer:H Plane

97 Level (dBuV/m)						
90						
80						
70		L	-111			
60	2		 			
50						
40						
30		· · · · · · · · · · · · · · · · · · ·				
20						
10						
0 <mark></mark>	8800.	16600. Frequenc	24400. y (MHz)	32200.	40000	
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
11650.00	Average	22.30	22.45	44.75	54.00	-9.25
11650.00	Peak	34.27	22.45	56.72	74.00	-17.28



11650.00

Peak

Report Number Operation Mode Test Frequency Test Mode	:ER-2020- :802.11n20 :5825 MHz :Tx CH hig :H Plane	30132) <u>:</u> h		Test Date Temp./Humi. Antenna Pol. Engineer	:2020-04-14 :20.4/51 :HORIZONTA :Nick	L
	.ITT dife					
97 Level (dBuV/m)						
90						
80						
70			-1_F1_F			
60	2					
50						
40						
30				1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
20						
10						
01000	8800.	16600. Frequenc	24400. :y (MHz)	32200.	40000	
Freq.	Detector Mode	Spectrum Reading Lovel	Factor	Actual	Limit	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
11650.00	Average	22.36	22.45	44.81	54.00	-9.19

22.45

56.30

74.00

-17.70

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33.85



Report Number	:ER-2020-30132	Test Date	:2020-04-14
Operation Mode	:802.11n40	Temp./Humi.	:20.4/51
Test Frequency	:5510 MHz	Antenna Pol.	:VERTICAL
Test Mode	:Tx CH Low	Engineer	:Nick
EUT Pol	:H Plane		

oz Level (dBuV/m)						
90						
80						
70		<u></u>	-1-[1-[1	F		
60	2					
50						
40						
30						
20						
10						
0 <mark></mark>	8800.	16600. Frequenc	24400. y (MHz)	32200.	40000	
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode PK/QP/AV	Reading Level dBµV	dB	FS dBµV/m	@3m dBµV/m	dB
11020.00	Average	22.75	22.85	45.60	54.00	-8.40
11020.00	Peak	33.48	22.85	56.33	74.00	-17.67



·FR-2020-30132

Report Number

·2020-04-14

Test Date

(op of the function		0 00102	•	Date	.2020 01 11
Operation Mode	:802.11n	40	Т	emp./Humi.	:20.4/51
Test Frequency	:5510 MI	Hz	A	ntenna Pol.	:HORIZONTAL
Test Mode	:Tx CH L	_ow	E	ngineer	:Nick
EUT Pol	:H Plane	•			
oz Level (dBuV/m)					
90					
80			 		
70			 		
60	2		 		
50			 · · · · · · · · · · · · · · · · · · ·		
40			 		
30			 		
20			 		
10				-	
10					

0						
1000	8800.	16600.	24400.	32200.	40000	
		Frequency (M	/Hz)			
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
•	Mode	Reading Level		FS	@3m	Ū
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
		I		I	•	
11020.00	Average	22.65	22.85	45 50	54.00	8 50
11020.00	Average	22.05	22.00	45.50	54.00	-0.00
11020.00	Peak	33.69	22.85	56.54	74.00	-17.46

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



Report Number	:ER-2020-30132	Test Date	:2020-04-14
Operation Mode	:802.11n40	Temp./Humi.	:20.4/51
Test Frequency	:5550 MHz	Antenna Pol.	:VERTICAL
Test Mode	:Tx CH Mid	Engineer	:Nick
EUT Pol	:H Plane		

97 Level (dBuV/m))					
90						
80						
70		┠╴-┟-┨╌┠╘╌╴┨╌╌╌╌╴┤-				
60	2					
50						
40						
30						
20						
10						
0 <mark></mark> 1000	8800.	16600. Frequency (N	24400. /Hz)	32200.	40000	
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
11100.00	Average	22.75	21.82	44.57	54.00	-9.43
11100.00	Peak	33.76	21.82	55.58	74.00	-18.42



·FR-2020-30132

Report Number

·2020-04-14

Test Date

Freg	Detector	Spectrum	Factor	Actual	Limit
1000	8800.	16600. Frequer	24400. icy (MHz)	32200.	40000
10					
20					
30					
40					
50	1	L			
60	2				
70		·		<u></u>	
во					
90					
Level (dBuV/m)					
201	.n Plane				
Mode	:Tx CH Mid			Engineer	:Nick
Frequency	:5550 MHz			Antenna Pol	. :HORIZONTAL
ration Mode	:802.11n40			Temp./Humi.	:20.4/51
		0102			

Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBuV	dB	FS dBuV/m	©3m dBuV/m	dB
11100.00 11100.00	Average Peak	22.65 34.32	21.82 21.82	44.47 56.14	54.00 74.00	-9.53 -17.86

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



Report Number	:ER-2020-30132	Test Date	:2020-04-14
Operation Mode	:802.11n40	Temp./Humi.	:20.4/51
Test Frequency	:5670 MHz	Antenna Pol.	:VERTICAL
Test Mode	:Tx CH High	Engineer	:Nick
EUT Pol	:H Plane		

oz Level (dBuV/m)						
90						
80						
70		<u> </u>		F		
60	22					
50						
40			 			
30						
20						
10			 			
0 <mark></mark>	8800.	16600. Frequency	24400. (MHz)	32200.	40000	
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
11240 00	Avorage	22.06	22.24	45 30	54.00	9 70
11340.00	Peak	22.90 34.44	22.34 22.34	40.00 56.78	74.00	-0.70

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70

60 50 40

Report Number	:ER-2020-3013	2	Test Date	:2020-04-14
Operation Mode	:802.11n40		Temp./Humi.	:20.4/51
Test Frequency	:5670 MHz		Antenna Pol.	:HORIZONTAL
Test Mode	:Tx CH High		Engineer	:Nick
EUT Pol	:H Plane			
97 Level (dBuV/m)		: :	 	
90			 	
80			 	

30 20 10						
0 <mark></mark>	8800.	16600. Frequency (N	24400. 1Hz)	32200.	40000	
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
11340.00 11340.00	Average Peak	22.79 34.24	22.34 22.34	45.13 56.58	54.00 74.00	-8.87 -17.42

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



Report Number	:ER-2020-30132	Test Date	:2020-04-14
Operation Mode	:802.11n40	Temp./Humi.	:20.4/51
Test Frequency	:5710 MHz	Antenna Pol.	:VERTICAL
Test Mode	:Tx CH High	Engineer	:Nick
EUT Pol	:H Plane		

oz Level (dBuV/m)						
90			· · · · · · · · · · · · · · · · · · ·			
80			·			
70						
60	2	· · · · · · · · · · · · · · · · · · ·				
50						
40						
30						
20						
10						
0 <mark></mark>	8800.	16600. Frequency (MHz	24400.	32200.	40000	
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual	Limit	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
11340.00	Average	22.98	22.34	45.32	54.00	-8.68
11340.00	Peak	34.48	22.34	56.82	74.00	-17.18



Report Number	:ER-2020-30132	Test Date	:2020-04-14
Operation Mode	:802.11n40	Temp./Humi.	:20.4/51
Test Frequency	:5710 MHz	Antenna Pol.	:HORIZONTAL
Test Mode	:Tx CH High	Engineer	:Nick
EUT Pol	:H Plane		

97 Level (dBuV/m)						
90			· · · · · · · · · · · · · · · · · · ·			
80						
70		<u>h-</u> lLl		/	<u></u>	
60	2		·			
50						
40						
30						
20						
10						
0 <mark></mark> 1000	8800.	16600. Frequency (MHz	24400.)	32200.	40000	
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
11340.00	Average	22.81	22.34	45.15	54.00	-8.85
11340.00	Peak	34.27	22.34	56.61	74.00	-17.39



0^L 1000

Freq.

MHz

11510.00

11510.00

8800.

Detector

Mode

PK/QP/AV

Average

Peak

40000

Limit

@3m

dBµV/m

54.00

74.00

Margin

dB

-8.46

-17.34

32200.

Actual

FS

dBµV/m

45.54

56.66

Report Number	:ER-2020-30132	Test Date	:2020-04-14
Operation Mode	:802.11n40	Temp./Humi.	:20.4/51
Test Frequency	:5755 MHz	Antenna Pol.	:VERTICAL
Test Mode	:Tx CH Low	Engineer	:Nick
EUT Pol	:H Plane		
97 Level (dBuV/m)			



16600.

Spectrum

Reading Level

dBµV

22.41

33.53

Frequency (MHz)

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24400.

Factor

dB

23.13

23.13



·FR-2020-30132

Report Number

11510.00

11510.00

Average

Peak

:2020-04-14

54.00

74.00

-8.48

-16.96

Test Date

45.52

57.04

Operation Mode Test Frequency Test Mode EUT Pol	:802.11n40 :5755 MHz :Tx CH Low :H Plane			Temp./Humi. Antenna Pol. Engineer	:20.4/51 :HORIZONTA :Nick	L
97 Level (dBuV/m) 90 80 70 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	2					
10 0	8800.	16600. Frequenc	24400. y (MHz)	32200.	40000	Marain
⊢req. MHzF	Mode F PK/QP/AV	Spectrum Reading Level dBµV	⊦actor dB	Actual FS dBµV/m	Limit @3m dBµV/m	dB

23.13

23.13

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

22.39

33.91



Report Number	:ER-2020-30132	Test Date	:2020-04-14
Operation Mode	:802.11n40	Temp./Humi.	:20.4/51
Test Frequency	:5795 MHz	Antenna Pol.	:VERTICAL
Test Mode	:Tx CH High	Engineer	:Nick
EUT Pol	:H Plane		

97 Level (dBuV/m)						
90						
80						
70		<u> </u>				
60	2		 			
50						
40						
30						
20						
10						
0 <mark>1000</mark>	8800.	16600. Frequency	24400. (MHz)	32200.	40000	
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
11590.00	Average	22.87	21.84	44.71	54.00	-9.29
11590.00	Peak	34.73	21.84	56.57	74.00	-17.43



Report Number	:ER-2020-30132				Т	est Date	:20	20-04-14
Operation Mode	:802.11n40				Т	emp./Hum	ni. :20	.4/51
Test Frequency	:5795 MHz	:5795 MHz			A	ntenna Po	ol. :HC	ORIZONTAL
Test Mode	:Tx CH High	:Tx CH High			E	Ingineer	:Ni	ck
EUT Pol	:H Plane							
97 Level (dBuV/m)	:			-				1
90				 			 	
80				; ; ; ; ;				





11.7.3 Band edge falling to restricted band

Report Number	:
Operation Mode	:
Test Frequency	:
Test Mode	:
EUT Pol	:

ER-2020-30132 802.11n20 5500 MHz Bandedge CH Low H Plane

Test Date	:2020-04-14			
Temp./Humi.	:20.4/51			
Antenna Pol.	:VERTICAL			
Engineer	:Nick			



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Report Number	:ER-2020-30132	Test Date	:2020-04-14
Operation Mode	:802.11n20	Temp./Humi.	:20.4/51
Test Frequency	:5500 MHz	Antenna Pol.	:HORIZONTAL
Test Mode	:Bandedge CH Low	Engineer	:Nick
EUT Pol	:H Plane		

127 Level (dBuV/m)					
120						
100				\sim		
80						
60	2	^{by} ccentral Manyanechysen	4 5	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		
40			3			
20						
0 5390	5414.	5438. Frequency (M	5462. Hz)	5486.	5510	
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5416 40	Average	43 12	8 11	51 23	54 00	-2 77
5416 40	Peak	55 88	8 11	63 99	74 00	-10.01
5460.00	Average	38 69	8.06	46 75	54 00	-7 25
5460.00	Peak	51.10	8.06	59.16	74.00	-14.84
5470.00	Peak	51.43	8.07	59.50	68.20	-8.70

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:ER-2020-30132	Test Date	:2020-04-14
:802.11n20	Temp./Humi.	:20.4/51
:5700 MHz	Antenna Pol.	:VERTICAL
:Bandedge CH High	Engineer	:Nick
:H Plane		
	:ER-2020-30132 :802.11n20 :5700 MHz :Bandedge CH High :H Plane	:ER-2020-30132Test Date:802.11n20Temp./Humi.:5700 MHzAntenna Pol.:Bandedge CH HighEngineer:H Plane





Report Number	:ER-2020-30132	Test Date	:2020-04-14
Operation Mode	:802.11n20	Temp./Humi.	:20.4/51
Test Frequency	:5700 MHz	Antenna Pol.	:HORIZONTA
Test Mode	:Bandedge CH High	Engineer	:Nick
EUT Pol	:H Plane		
l evel (dBuV/m)			





5700.00

5720.00

5725.00

Peak

Peak

Peak

Peak

Report Number	:ER-2020-30132	Test Date	:2020-04-14
Operation Mode	:802.11n20	Temp./Humi.	:20.4/51
Test Frequency	:5745 MHz	Antenna Pol.	:VERTICAL
Test Mode	:Bandedge CH Low	Engineer	:Nick
EUT Pol	:H Plane		

160 Level (dBuV/m)				
150					
130					
110					
90					
70	2	4	5	6 mm	
50	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~				
30	·				
10	·				
05600	5631.	5662. Frequency (M	5693. Hz)	5724.	5755
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/n
5600.31	Peak	55.54	8.15	63.69	68.20
5639.99	Peak	54.36	8.28	62.64	68.20
5650.00	Peak	52.39	8.32	60.71	68.20

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58.21

52.24

64.34

70.23

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8.39

8.69

8.78

8.81

66.60

60.93

73.12

79.04

Margin

dB

-4.51 -5.56

-7.49

-8.76

-44.27

-37.68

-43.16

75.36

105.20

110.80



5725.00

Report Number	:ER-2020-30132	Test Date	:2020-04-14
Operation Mode	:802.11n20	Temp./Humi.	:20.4/51
Test Frequency	:5745 MHz	Antenna Pol.	:HORIZONTAL
Test Mode	:Bandedge CH Low	Engineer	:Nick
EUT Pol	:H Plane		



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65.34

74.63

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Peak

Peak

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8.78

8.81

74.12

83.44

Margin

dB

-4.16

-6.68

-8.39

-42.87

-36.68

-38.76

110.80



:ER-2020-30132	Test Date	:2020-04-14
:802.11n20	Temp./Humi.	:20.4/51
:5825 MHz	Antenna Pol.	:VERTICAL
:Bandedge CH High	Engineer	:Nick
:H Plane		
	:ER-2020-30132 :802.11n20 :5825 MHz :Bandedge CH High :H Plane	:ER-2020-30132Test Date:802.11n20Temp./Humi.:5825 MHzAntenna Pol.:Bandedge CH HighEngineer:H Plane



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dB



5960.04

Report Number	:ER-2020-30132	Test Date	:2020-04-14
Operation Mode	:802.11n20	Temp./Humi.	:20.4/51
Test Frequency	:5825 MHz	Antenna Pol.	:HORIZONTAL
Test Mode	:Bandedge CH High	Engineer	:Nick
EUT Pol	:H Plane		

160 Level (dBuV/m)					
150		·····		· · · · · · · · · · · · · · · · · · ·	
30		· · · · · · · · · · · · · · · · · · ·		i	
	\sim				
10					
00	<u>X</u>				
50 n					
70		3	4 6	6	
		and and a second and a second	and a superior and		han marken we
50	iiiiiii	·····		iiiiii	
20					
30					
10					
0 5805	5930	5973	5007	50/1	5075
3003	5055.	Frequency (M	IHz)	5541.	3913
Frea.	Detector	Spectrum	Factor	Actual	Limit
	Mode	Reading Level		FS	@3m
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m
		•		·	•
5850.00	Peak	62.70	9.42	72.12	122.20
5855.00	Peak	58.34	9.44	67.78	110.80
5875.00	Peak	52.93	9.50	62.43	105.20
5913.80	Peak	53.74	9.63	63.37	76.49

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50.54

54.64

Peak

Peak

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9.65

9.70

60.19

64.34

Margin

dB

-50.08 -43.02 -42.77 -13.12

-8.01

-3.86

68.20



Level (dBuV/m)

Report Number	:ER-2020-30132	Test Date	:2020-04-14
Operation Mode	:802.11n40	Temp./Humi.	:20.4/51
Test Frequency	:5510 MHz	Antenna Pol.	:VERTICAL
Test Mode	:Bandedge CH Low	Engineer	:Nick
EUT Pol	:H Plane		

127	,					
120						
100						
80						
60	2 	-athen marine and				
40						
20						
0 <mark></mark>	5424.	5448. Frequency (N	5472. /Hz)	5496.	5520	
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5431 20	Average	39.36	8 09	47 45	54 00	-6 55
5431.20	Peak	53.96	8.09	62.05	74.00	-11.95
5460.00	Average	38.04	8.06	46.10	54.00	-7.90
5460.00	Peak	50.43	8.06	58.49	74.00	-15.51
5466.00	Peak	56.88	8.07	64.95	68.20	-3.25
5470.00	Peak	55.47	8.07	63.54	68.20	-4.66

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



Report Number	:ER-2020-30132	Test Date	:2020-04-14
Operation Mode	:802.11n40	Temp./Humi.	:20.4/51
Test Frequency	:5510 MHz	Antenna Pol.	:HORIZONTAL
Test Mode	:Bandedge CH Low	Engineer	:Nick
EUT Pol	:H Plane		



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Report Number	:ER-2020-30132	Test Date	:2020-04-14
Operation Mode	:802.11n40	Temp./Humi.	:20.4/51
Test Frequency	:5670 MHz	Antenna Pol.	:VERTICAL
Test Mode	:Bandedge CH High	Engineer	:Nick
EUT Pol	:H Plane		





	Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit Mai @3m	gin
·	5660	5684.	5708. Frequency (5732. MHz)	5756.	5780	
C							
20							
40							
60				com-cocinao-the-chicaic	namenceninet Pela-nerrai		
			many many marker	1	2		
80		···· ``	<u></u>				
100							
127 120							
	Lovel (dBu\//m)						
EUT	-01						
	/lode		e CH High		Engineer	:NICK	
Test F	requency	:5670 MH2			Antenna Pol.	HORIZONTAL	
Opera	ation Mode	:802.11n40	0		Iemp./Humi.	:20.4/51	
Repo	rt Number	:ER-2020-	30132		Test Date	:2020-04-14	
Dana	wt Niuwala au		00400		Teat Data	.0000 04 44	

MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5725.00	Peak	50.90	8.81	59.71	68.20	-8.49
5759.60	Peak	52.32	8.99	61.31	68.20	-6.89



Report Number	:ER-2020-30132	Test Date	:2020-04-14
Operation Mode	:802.11n40	Temp./Humi.	:20.4/51
Test Frequency	:5755 MHz	Antenna Pol.	:VERTICAL
Test Mode	:Bandedge CH Low	Engineer	:Nick
EUT Pol	:H Plane		



5600.00	Peak	55.36	8.15	63.51	68.20	-4.69
5640.76	Peak	54.62	8.29	62.91	68.20	-5.29
5650.00	Peak	51.98	8.32	60.30	68.20	-7.90
5661.38	Peak	57.26	8.41	65.67	76.62	-10.95
5700.00	Peak	58.26	8.69	66.95	105.20	-38.25
5714.35	Peak	71.75	8.76	80.51	109.22	-28.71
5720.00	Peak	71.24	8.78	80.02	110.80	-30.78
5725.00	Peak	71.10	8.81	79.91	122.20	-42.29

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Margin

dB



Report Number	:ER-2020-30132	Test Date	:2020-04-14
Operation Mode	:802.11n40	Temp./Humi.	:20.4/51
Test Frequency	:5755 MHz	Antenna Pol.	:HORIZONTAL
Test Mode	:Bandedge CH Low	Engineer	:Nick
EUT Pol	:H Plane		



	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5650.00	Peak	53.38	8.32	61.70	68.20	-6.50
5661.38	Peak	58.09	8.41	66.50	76.62	-10.12
5698.67	Peak	62.81	8.67	71.48	104.22	-32.74
5700.00	Peak	59.70	8.69	68.39	105.20	-36.81
5711.38	Peak	75.02	8.74	83.76	108.39	-24.63
5717.98	Peak	77.84	8.78	86.62	110.23	-23.61
5720.00	Peak	76.14	8.78	84.92	110.80	-25.88
5725.00	Peak	75.96	8.81	84.77	122.20	-37.43

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Margin



Report Number	:ER-2020-30132	Test Date	:2020-04-14
Operation Mode	:802.11n40	Temp./Humi.	:20.4/51
Test Frequency	:5795 MHz	Antenna Pol.	:VERTICAL
Test Mode	:Bandedge CH High	Engineer	:Nick
EUT Pol	:H Plane		

Level (dBuV/m)				
50					
30					
10				· · · · · · · · · · · · · · · · · · ·	
90					
	man				
70	- Martin	-1-2			5
				- for a second sec	<u>}~</u>
50				· · · · · · · · · · · · · · · · · · ·	
30		· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·		
10	· · · · · · · · · · · · · · · · · · ·				
0 5785	5823.	5861.	5899.	5937.	5975
		Frequency (M	Hz)		
Freq.	Detector	Spectrum	Factor	Actual	Lin
	Mode	Reading Level		FS	@3
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµ
5850.00	Peak	56.65	9.42	66.07	122
5855.00	Peak	56.29	9.44	65.73	110
5875.00	Peak	51.83	9.50	61.33	105
5925.00	Peak	50.01	9.65	59.66	68.

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53.10

Peak

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9.70

62.80

Margin

dB

-56.13 -45.07 -43.87 -8.54

-5.40



Report Number	:ER-2020-30132	Test Date	:2020-04-14
Operation Mode	:802.11n40	Temp./Humi.	:20.4/51
Test Frequency	:5795 MHz	Antenna Pol.	:HORIZONTAL
Test Mode	:Bandedge CH High	Engineer	:Nick
EUT Pol	:H Plane		



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54.53

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9.70

64.23

Margin

dB

-56.81

-45.79

-43.05

-37.30

-9.20

-7.25

-3.97



12 TRANSMISSION IN THE ABSENCE OF DATA

12.1 Standard Applicable

According to §15.407(c)

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signaling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization a description of how this requirement is met.

12.2 Result

While the EUT is not transmitting any information, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling signal of ASK message transmitting from remote device and verify whether it shall resend or discontinue transmission.

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13 FREQUENCY STABILITY

13.1 Standard Applicable

Manufacturers 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 in the user's manual.

13.2 Measurement Procedure

- 1. The EUT was placed inside temperature chamber and powered and powered by nominal DC voltage.
- 2. Set EUT as normal operation.
- 3. Turn the EUT on and couple its output to spectrum.
- 4. Turn the EUT off and set the chamber to the highest temperature specified.
- 5. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT and measure the operating frequency.
- 6. Repeat step with the temperature chamber set to the lowest temperature.

13.3 Test SET-UP

Temperature Chamber



Variable AC Power Supply

13.4 Measurement Equipment Used:

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Temperature Chamber	TERCHY	MHG-120LF	911009	05/17/2019	05/16/2020
EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY57120290	02/20/2020	02/19/2021
Attenuator	Mini-Circuit	BW-S10W2+	2	01/02/2020	01/01/2021
DC Block	Mini-Circuits	BLK-18-S+	1	01/02/2020	01/01/2021

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13.5 **Measurement Result**

Start up

Operation Mode	802.11 n20	Test Date	2020.04.06
Temperature	: 25°C	Test By	Tom
Humidity	: 50%		

Test Temp.(℃)	Test Voltage(V)	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
0	60	100	5500	5,500.08800	-0.00001600
	24	100	5500	5,499.91500	0.00001545
25	48	100	5500	5,499.95000	0.00000909
50	60	100	5500	5,500.00100	-0.00000018
	24	100	5500	5,499.93700	0.00001145

2 minutes

Operation Mode	802.11 n20	Test Date	2020.04.06
Temperature	: 25°C	Test By	Tom
Humidity	: 50%		

Test Temp.(℃)	Test Voltage(V)	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
0	60	100	5500	5,499.90400	0.00001745
	24	100	5500	5,499.95200	0.00000873
25	48	100	5500	5,500.00700	-0.00000127
FO	60	100	5500	5,499.95400	0.0000836
50	24	100	5500	5,499.93300	0.00001218

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5 minutes

Operation Mode	802.11 n20	Test Date	2020.04.06
Temperature	: 25°C	Test By	Tom
Humidity	: 50%		

Test Temp.(℃)	Test Voltage(V)	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
0	60	100	5500	5,499.95700	0.00000782
	24	100	5500	5,499.95800	0.00000764
25	48	100	5500	5,499.97000	0.00000545
50	60	100	5500	5,499.96900	0.00000564
50	24	100	5500	5,500.10000	-0.00001818

10 minutes

Operation Mode	802.11 n20	Test Date	2020.04.06
Temperature	: 25°C	Test By	Tom
Humidity	: 50%	•	-

Test Temp.(℃)	Test Voltage(V)	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
0	60	100	5500	5,500.06100	-0.00001109
	24	100	5500	5,500.08400	-0.00001527
25	48	100	5500	5,499.99900	0.0000018
50	60	100	5500	5,500.05400	-0.00000982
	24	100	5500	5,499.95900	0.00000745

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14 ANTENNA REQUIREMENT

14.1 Standard Applicable

According to §15.203, an intentional radiator shall be designed to ensure that no antenna other than furnished by the responsible party shall be used with the device. According to §15.407, If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced

by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

14.2 Antenna Connected Construction

The antenna is designed with unique RF connector and no consideration of replacement. Please see EUT photo for details.

~ End of Report ~

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