



FCC TEST REPORT

**Test report
On Behalf of
Shenzhen Yingdakang Technology CO., LTD
For
Wireless Repeater**

**Model No.: DA213WUS, DA213BUS, AC12RP, DWR-C5400R,
DWR-C4510R, W120RP, W121RP**

FCC ID: 2ACSI-DA213WX

Prepared for : Shenzhen Yingdakang Technology CO., LTD
Room 8004, B/51, 2nd Dist ,Shangtang Songzi Park, MinZhi , Longhua ,
Shenzhen, China

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Date of Test: Apr. 15, 2020
Date of Report: Apr. 15, 2020 -- Apr. 29, 2020
Report Number: HK2004170655-3E



TEST RESULT CERTIFICATION

Applicant's name: Shenzhen Yingdakang Technology CO., LTD
Address: Room 8004, B/51, 2nd Dist ,Shangtang Songzi Park, MinZhi ,
 Longhua , Shenzhen, China
Manufacture's Name: Shenzhen Yingdakang Technology CO., LTD
Address: Room 8004, B/51, 2nd Dist ,Shangtang Songzi Park, MinZhi ,
 Longhua , Shenzhen, China

Product description

Trade Mark: N/A
Product name.....: Wireless Repeater
Model and/or type reference .: DA213WUS, DA213BUS, AC12RP, DWR-C5400R, DWR-C4510R,
 W120RP, W121RP
Standards.....: FCC Rules and Regulations Part 15 Subpart C Section 15.407

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Date of Test:
Date (s) of performance of tests: Apr. 15, 2020
Date of Issue.....: Apr. 15, 2020 -- Apr. 29, 2020
Test Result.....: Pass

Testing Engineer : Gary Qian
 (Gary Qian)
 Technical Manager : Eden Hu
 (Eden Hu)
 Authorized Signatory : Jason Zhou
 (Jason Zhou)



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1. Test Result Summary

1.1. TEST PROCEDURES AND RESULTS

Requirement	CFR 47 Section	Result
Antenna requirement	§15.203	PASS
AC Power Line Conducted Emission	§15.207	PASS
Maximum Conducted Output Power	§15.407(a)	PASS
6dB Emission Bandwidth	§15.407(e)	PASS
Power Spectral Density	§15.407(a)	PASS
Band edge	§15.407(b)	PASS
Radiated Emission	§15.407(a)	PASS
Frequency Stability	§15.407(g)	PASS

Note:

1. *PASS: Test item meets the requirement.*
2. *Fail: Test item does not meet the requirement.*
3. *N/A: Test case does not apply to the test object.*
4. *The test result judgment is decided by the limit of test standard.*

1.2. TEST FACILITY

Test Firm : Shenzhen HUAKE Testing Technology Co., Ltd.

Address : 1F, B2 Building, Junfeng Zhongcheng Zhizao Innovation Park, Fuhai Street, Bao'an District, Shenzhen City, China



1.3. Measurement Uncertainty

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

No.	Item	MU
1	Conducted Emission	$\pm 2.56\text{dB}$
2	RF power, conducted	$\pm 0.12\text{dB}$
3	Spurious emissions, conducted	$\pm 0.11\text{dB}$
4	All emissions, radiated(<1G)	$\pm 3.92\text{dB}$
5	All emissions, radiated(>1G)	$\pm 4.28\text{dB}$
6	Temperature	$\pm 0.1^\circ\text{C}$
7	Humidity	$\pm 1.0\%$



2. EUT Description

2.1. GENERAL DESCRIPTION OF EUT

Equipment	Wireless Repeater			
Model Name	DA213WUS			
Serial No.	DA213WUS, DA213BUS, AC12RP, DWR-C5400R, DWR-C4510R, W120RP, W121RP			
Model Difference	All model's the function, software and electric circuit are the same, only model named different. Test sample model: DA213WUS			
Trade Mark	N/A			
FCC ID	2ACSI-DA213WX			
Hardware Version:	V1.6.2			
Software Version:	V1.0			
Frequency Range :	Band	Mode	Operation frequency	Channels
	Band I UNII-I	IEEE802.11 n HT20	5180-5240MHz	4
		IEEE802.11 n HT40	5190-5230MHz	2
		IEEE802.11 ac HT20	5180-5240MHz	4
		IEEE802.11 ac HT40	5190-5230MHz	2
		IEEE802.11 ac HT80	5210MHz	1
	Band II UNII-2A	IEEE802.11 n HT20	5260-5320 MHz	4
		IEEE802.11 n HT40	5270-5310 MHz	2
		IEEE802.11 ac HT20	5260-5320 MHz	4
		IEEE802.11 ac HT40	52770-5310 MHz	2
		IEEE802.11 ac HT80	5290 MHz	1
	Band II UNII-2C	IEEE802.11 n HT20	5500-5720 MHz	12
		IEEE802.11 n HT40	5510-5710 MHz	6
		IEEE802.11 ac HT20	5500-5720 MHz	12
		IEEE802.11 ac HT40	5510-5710 MHz	6
		IEEE802.11 ac HT80	5530-5690 MHz	3
	BAND III	IEEE802.11 n HT20	5745-5825 MHz	5
IEEE802.11 n HT40		5755-5795 MHz	2	
IEEE802.11 ac HT20		5745-5825 MHz	5	
IEEE802.11 ac HT40		5755-5795 MHz	2	
IEEE802.11 ac HT80		5775 MHz	1	
Antenna Type	Internal antenna			
Antenna Gain	Antenna 1: 3dBi Antenna 2: 3dBi MIMO: 6.01dBi			
Power Source	AC 110V 60Hz			

Note: This report only shows 5.8G (band3) test data
Through software technology, the product can not transmit 802.11a mode

Data Rate(s) Tested:

6.5/7.2, 13/14.4, 19.5/21.7, 26/28.9, 39/43.3, 52/57.8, 58.5/65, 65/72.2 (n – 20MHz)
13.5/15, 27/30, 40.5/45, 54/60, 81/90, 108/120, 121.5/135, 135/150 (n – 40MHz BW)
29.3/32.5, 58.5/65, 87.8/97.5, 117/130, 175.5/195, 234/260, 263.3/292.5, 292.5/325, 351/390,
390/433.3 (ac – 80MHz BW)
13/14.4, 26.28.9, 39/43.3, 52/57.8, 78/86.7, 104/115.6, 117/130, 130/144.4Mbps (MIMO n/ac – 20MHz)
156/173Mbps (MIMO ac – 20MHz)



27/30, 54/60, 81/90, 108/120, 162/180, 216/240, 243,270, 270/300Mbps (MIMO n/ac – 40MHz)
 324/360, 360/400Mbps (MIMO ac – 40MHz)
 58.5/65, 117/130, 175.5/195, 234/260, 351/390, 468/520, 526.5/585, 585/650, 702/780,
 780/866.7Mbps (MIMO ac – 80MHz)

2.2. Operation Frequency each of channel

Band 1		Band 2A		Band 2C		Band 3	
CH.	Frequency (MHz)	CH.	Frequency (MHz)	CH.	Frequency (MHz)	CH.	Frequency (MHz)
36	5180	52	5260	100	5500	149	5745
40	5200	56	5280	...	...	...	...
44	5220	60	5300	120	5600	157	5785
48	5240	64	5320	...	...	...	...
				144	5720	165	5825

802.11n / 802.11ac (20MHz) Frequency / Channel Operations

Band 1		Band 2A		Band 2C		Band 3	
CH.	Frequency (MHz)	CH.	Frequency (MHz)	CH.	Frequency (MHz)	CH.	Frequency (MHz)
38	5190	54	5270	102	5510	151	5755
46	5230	62	5310	...	...	159	5795
				118	5590		
					
				142	5710		

802.11n / 802.11ac (40MHz BW) Frequency / Channel Operations

Band 1		Band 2A		Band 2C		Band 3	
CH.	Frequency (MHz)	CH.	Frequency (MHz)	CH.	Frequency (MHz)	CH.	Frequency (MHz)
42	5210	58	5290	106	5530	155	5775
				122	5610		
				138	5690		

802.11ac (80MHz BW) Frequency / Channel Operations

Worst Case Configuration: CORE 0 transmitting both 2.4GHz mode and 5GHz mode

Description	2.4 GHz Emission	5 GHz Emission
Antenna	ANT1	ANT1
Channel	1	36
Operating Frequency (MHz)	2412	5180
Data Rate (Mbps)	GFSK/1Mbps	MCS0
Mode	2G4 wifi	UNII

Antenna Description

Frequency [GHz]	Antenna Gain (dBi)	
	ANT1	ANT2



5.150 - 5.250	3	3
5.260 - 5.350	3	3
5.470 - 5.725	3	3
5.745 - 5.850	3	3

Worst Case Configuration: ANT1 transmitting both 2.4GHz mode and 5GHz mode

Description	2.4 GHz Emission	5 GHz Emission
Antenna	ANT1	ANT1
Channel	1	36
Operating Frequency (MHz)	2412	5180
Data Rate (Mbps)	GFSK/1Mbps	MCS0
Mode	2G4 wifi	UNII

Antenna Description

Frequency [GHz]	Antenna Gain (dBi)	
	ANT1	ANT2
5.150 - 5.250	3	3
5.260 - 5.350	3	3
5.470 - 5.725	3	3
5.745 - 5.850	3	3

2.3. Duty Cycles

5GHz NII operation is possible in 20MHz, and 40MHz, and 80MHz channel bandwidths. The maximum achievable duty cycles for all modes were determined based on measurements performed on a spectrum analyzer in zero-span mode with RBW = 8MHz, VBW = 50MHz, and detector = peak per the guidance of Section B)2)b) of ANSI C63.10-2013 and KDB 789033 D02 v02r01. The RBW and VBW were both greater than 50/T, where T is the minimum transmission duration, and the number of sweep points across T was greater than 100. The duty cycles are as follows:

Mode/Band	Duty Cycles(%)		
	ANT1	ANT2	MIMO
N(HT20)	98.32	98.36	98.39
N(HT40)	98.24	99.34	98.20
AC(HT20)	99.28	98.56	99.64
AC(HT40)	99.31	98.77	99.37
AC(HT80)	98.22	99.38	98.62

2.4. EUT CONFIGURATION

The EUT configuration for testing is installed for RF field strength measurement to meet the Commissions requirement, and is operated in a manner intended to generate the maximum emission in a continuous normal application.

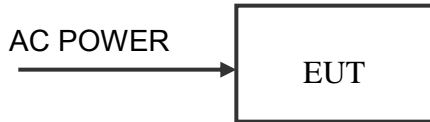
The EUT is operated in the engineering mode to fix the Tx frequency for the purposes of measurement. According to its specifications, the EUT must comply with the requirements



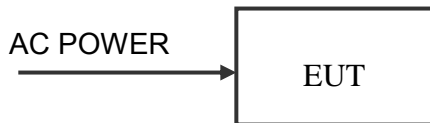
of Section 15.407 under the
FCC Rules Part 15 Subpart E.

2.5. 2.4 DESCRIPTION OF TEST SETUP

Operation of EUT during conducted testing:



Operation of EUT during Radiation and Above1GHz Radiation testing:



2.6. Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Equipment	Model No.	Serial No.	FCC ID	Trade Name
/	/	/	/	/
/	/	/	/	/

Note:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.
3. For conducted measurements (Output Power, Emission Bandwidth, Power Spectral Density, Spurious Emissions), the antenna of EUT is connected to the test equipment via temporary antenna connector, the antenna connector is soldered on the antenna port of EUT, and the temporary antenna connector is listed in the Test Instruments.



3. Test Results and Measurement Data

3.1. Conducted Emission

3.1.1. Test Specification

Test Requirement:	FCC Part15 C Section 15.207														
Test Method:	ANSI C63.10:2013														
Frequency Range:	150 kHz to 30 MHz														
Receiver setup:	RBW=9 kHz, VBW=30 kHz, Sweep time=auto														
Limits:	<table border="1"> <thead> <tr> <th rowspan="2">Frequency range (MHz)</th> <th colspan="2">Limit (dBuV)</th> </tr> <tr> <th>Quasi-peak</th> <th>Average</th> </tr> </thead> <tbody> <tr> <td>0.15-0.5</td> <td>66 to 56*</td> <td>56 to 46*</td> </tr> <tr> <td>0.5-5</td> <td>56</td> <td>46</td> </tr> <tr> <td>5-30</td> <td>60</td> <td>50</td> </tr> </tbody> </table>	Frequency range (MHz)	Limit (dBuV)		Quasi-peak	Average	0.15-0.5	66 to 56*	56 to 46*	0.5-5	56	46	5-30	60	50
Frequency range (MHz)	Limit (dBuV)														
	Quasi-peak	Average													
0.15-0.5	66 to 56*	56 to 46*													
0.5-5	56	46													
5-30	60	50													
Test Setup:	<p style="text-align: center;">Reference Plane</p> <p style="text-align: center;">40cm 80cm</p> <p style="text-align: center;">E.U.T AC power LISN Filter AC power</p> <p style="text-align: center;">EMI Receiver</p> <p style="text-align: center;">Test table/Insulation plane</p> <p><i>Remark</i> <i>E.U.T: Equipment Under Test</i> <i>LISN: Line Impedance Stabilization Network</i> <i>Test table height=0.8m</i></p>														
Test Mode:	Tx Mode														
Test Procedure:	<ol style="list-style-type: none"> 1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10: 2013 on conducted measurement. 														
Test Result:	PASS														



3.1.2. Test Instruments

Conducted Emission Shielding Room Test Site (843)					
Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Receiver	R&S	ESCI 7	HKE-010	Dec. 26, 2019	Dec. 25, 2020
LISN	R&S	ENV216	HKE-002	Dec. 26, 2019	Dec. 25, 2020
Coax cable (9KHz-30MHz)	Times	381806-00 2	N/A	Dec. 26, 2019	Dec. 25, 2020
Conducted test software	Tonscend	TS+ Rev 2.5.0.0	HKE-081	N/A	N/A

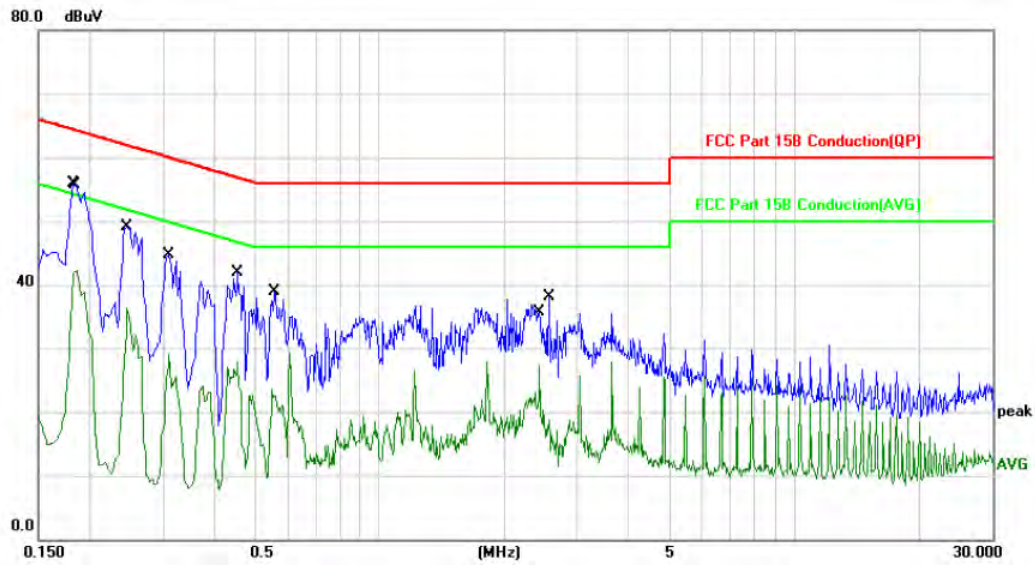
Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).



3.1.3. Test data

All the test modes completed for test. only the worst result of AC120V/60Hz(802.11a at 5745MHz) was reported as below:

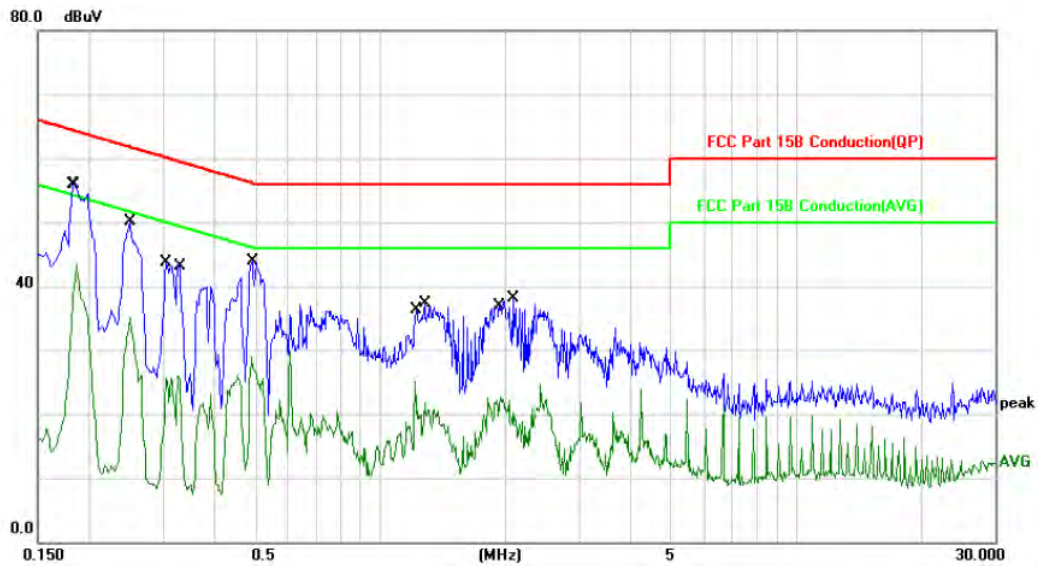
Conducted Emission on Line Terminal of the power line (150 kHz to 30MHz)



No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measurement dBuV	Limit dBuV	Over dB	Detector	Comment
1 *	0.1819	56.05	-0.13	55.92	64.39	-8.47	QP	
2	0.1860	42.52	-0.13	42.39	54.21	-11.82	AVG	
3	0.2460	49.17	-0.11	49.06	61.89	-12.83	QP	
4	0.2460	36.48	-0.11	36.37	51.89	-15.52	AVG	
5	0.3100	44.80	-0.01	44.79	59.97	-15.18	QP	
6	0.3100	29.14	-0.01	29.13	49.97	-20.84	AVG	
7	0.4540	41.90	-0.02	41.88	56.80	-14.92	QP	
8	0.4540	27.91	-0.02	27.89	46.80	-18.91	AVG	
9	0.5500	23.62	-0.04	23.58	46.00	-22.42	AVG	
10	0.5580	39.00	-0.04	38.96	56.00	-17.04	QP	
11	2.4219	27.58	-0.23	27.35	46.00	-18.65	AVG	
12	2.5620	38.17	-0.16	38.01	56.00	-17.99	QP	



Conducted Emission on Neutral Terminal of the power line (150 kHz to 30MHz)



No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measurement dBuV	Limit dBuV	Over dB	Detector	Comment
1 *	0.1819	55.99	-0.13	55.86	64.39	-8.53	QP	
2	0.1860	43.62	-0.13	43.49	54.21	-10.72	AVG	
3	0.2500	50.21	-0.11	50.10	61.75	-11.65	QP	
4	0.2500	35.21	-0.11	35.10	51.75	-16.65	AVG	
5	0.3060	43.70	-0.01	43.69	60.08	-16.39	QP	
6	0.3260	26.01	-0.02	25.99	49.55	-23.56	AVG	
7	0.4900	28.99	-0.03	28.96	46.17	-17.21	AVG	
8	0.4940	43.88	-0.03	43.85	56.10	-12.25	QP	
9	1.2140	25.24	-0.15	25.09	46.00	-20.91	AVG	
10	1.2820	37.51	-0.16	37.35	56.00	-18.65	QP	
11	1.9460	22.90	-0.23	22.67	46.00	-23.33	AVG	
12	2.0780	38.26	-0.23	38.03	56.00	-17.97	QP	



3.2. Maximum Conducted Output Power

3.2.1. Test Specification

Test Requirement:	FCC Part15 E Section 15.407(a)& Part 2 J Section 2.1046	
Test Method:	KDB789033 D02 General UNII Test Procedures New Rules v02.r01 Section E	
Limit:	Frequency Band (MHz)	Limit
	5725-5850	1 W
Test Setup:	<p style="text-align: center;"> Power meter EUT </p>	
Test Mode:	Transmitting mode with modulation	
Test Procedure:	<ol style="list-style-type: none"> 1. The testing follows the Measurement Procedure of KDB789033 D02 General UNII Test Procedures New Rules v02r01 Section E, 3, a 2. The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement. 3. Set to the maximum power setting and enable the EUT transmit continuously. 5. Measure the conducted output power and record the results in the test report. 	
Test Result:	PASS	
Remark:	Conducted output power= measurement power +10log(1/x) X is duty cycle=1, so 10log(1/1)=0 Conducted output power= measurement power	



3.2.2. Test Instruments

RF Test Room					
Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Spectrum analyzer	Agilent	N9020A	HKE-048	Dec. 26, 2019	Dec. 25, 2020
Power meter	Agilent	E4419B	HKE-085	Dec. 26, 2019	Dec. 25, 2020
Power Sensor	Agilent	E9300A	HKE-086	Dec. 26, 2019	Dec. 25, 2020
RF cable	Times	1-40G	HKE-034	Dec. 26, 2019	Dec. 25, 2020
RF automatic control unit	Tonscend	JS0806-2	HKE-060	Dec. 26, 2019	Dec. 25, 2020

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

Test Data

BAND	802.11 Mode	Channel No.	Frequency [MHz]	Conducted Power [dBm]		Limit [dBm]
				ANT1	ANT2	
BAND 3	n (20MHz)	149	5745	10.66	12.79	30.00
		157	5785	12.36	12.43	30.00
		165	5825	9.10	11.13	30.00
	n (40MHz)	151	5755	10.90	10.89	30.00
		159	5795	9.03	10.64	30.00
	ac (20MHz)	149	5745	11.90	11.61	30.00
		157	5785	10.99	11.21	30.00
		165	5825	10.27	10.95	30.00
	ac(40MHz)	151	5755	8.80	10.89	30.00
		159	5795	10.36	10.38	30.00
ac(80MHz)	155	5775	7.11	9.68	30.00	



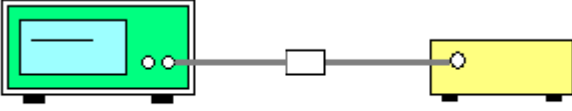
MIMO/CDD Maximum Conducted Output Power Measurements

BAND	802.11 Mode	Channel No.	Freq. [MHz]	Conducted Power [dBm]		MIMO	Limit [dBm]	Results
				ANT1	ANT2			
BAND 3	n(20MHz)	149	5745	10.37	12.50	14.57	29.99	PASS
		157	5785	12.09	12.16	15.14	29.99	
		165	5825	10.92	10.95	13.95	29.99	
	n(40MHz)	151	5755	10.87	10.86	13.88	29.99	
		159	5795	9.83	10.44	13.16	29.99	
	ac(20MHz)	149	5745	11.77	11.48	14.64	29.99	
		157	5785	10.85	11.07	13.97	29.99	
		165	5825	10.24	10.92	13.60	29.99	
	ac(40MHz)	151	5755	10.66	10.75	13.72	29.99	
		159	5795	10.23	10.25	13.25	29.99	
	ac(80MHz)	155	5775	8.85	9.42	12.15	29.99	



3.3. -6dB Bandwidth

3.3.1. Test Specification

Test Requirement:	47 CFR Part 15C Section 15.407 (a)& Part 2 J Section 2.1049
Test Method:	KDB789033 D02 General UNII Test Procedures New Rules v02r01 Section C
Limit:	In the 5.725 - 5.850GHz band, the 6dB bandwidth must be ≥ 500 kHz.
Test Setup:	 <p style="text-align: center;">Spectrum Analyzer EUT</p>
Test Mode:	Transmitting mode with modulation
Test Procedure:	<ol style="list-style-type: none"> 1. KDB789033 D02 General UNII Test Procedures New Rules v02r01 Section C 2. Set to the maximum power setting and enable the EUT transmit continuously. 3. Make the measurement with the spectrum analyzer's resolution bandwidth RBW = 1% EBW, VBW\geq3RBW, In order to make an accurate measurement. 4. Measure and record the results in the test report.
Test Result:	N/A

3.3.2. Test Instruments

RF Test Room					
Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Spectrum analyzer	Agilent	N9020A	HKE-048	Dec. 26, 2019	Dec. 25, 2020
RF cable	Times	1-40G	HKE-034	Dec. 26, 2019	Dec. 25, 2020
RF automatic control unit	Tonscend	JS0806-2	HKE-060	Dec. 26, 2019	Dec. 25, 2020

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).



Test Result

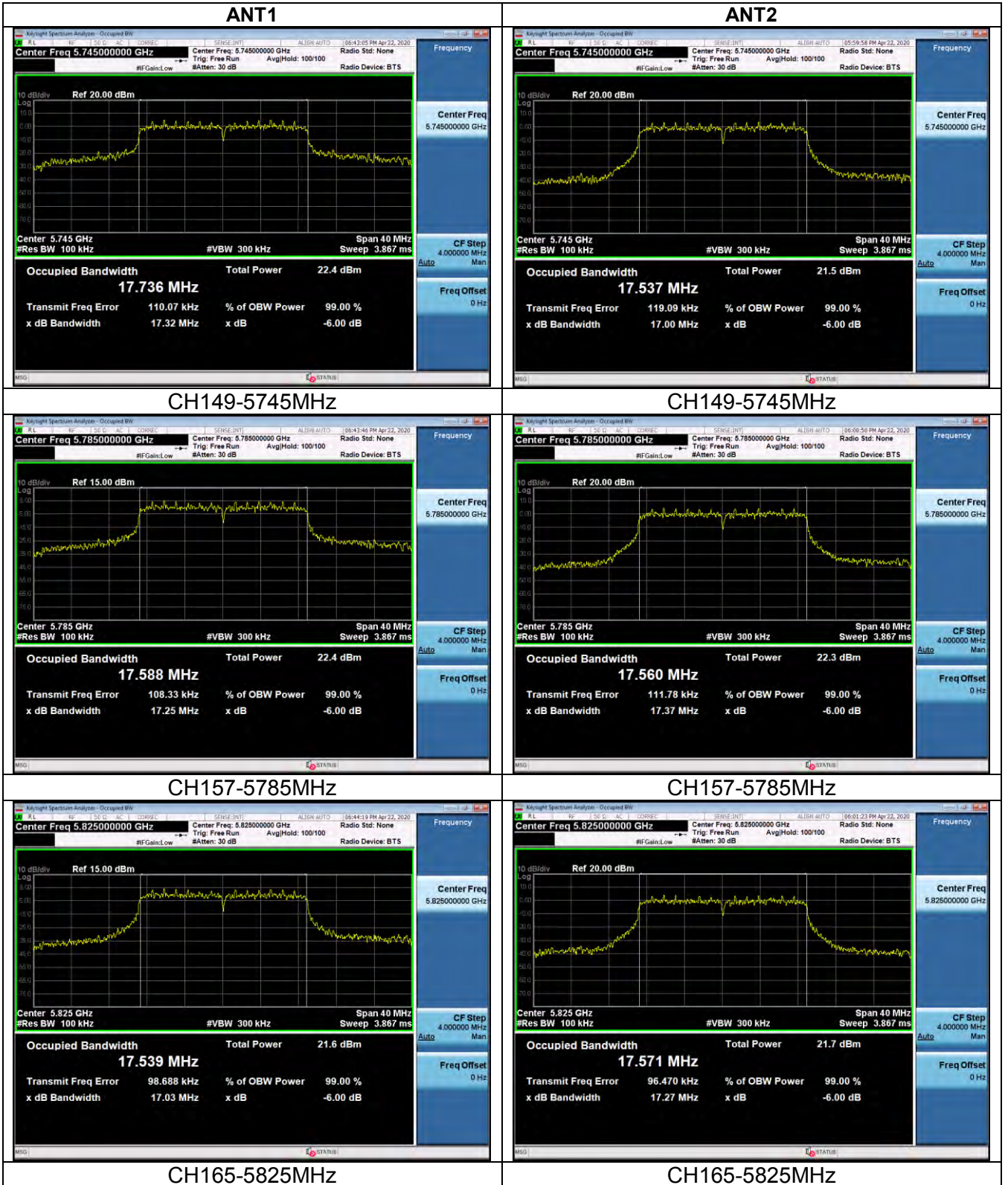
Report No.: HK2004170655-3E

BAND	802.11 Mode	Channel No.	Frequency [MHz]	-6db Bandwidth [MHz]	
				ANT1	ANT2
BAND 3	n (20MHz)	149	5745	17.32	17.00
		157	5785	17.25	17.37
		165	5825	17.03	17.27
	n (40MHz)	151	5755	36.04	35.78
		159	5795	36.04	36.06
	ac (20MHz)	149	5745	17.22	17.23
		157	5785	17.17	17.28
		165	5825	16.79	17.24
	ac(40MHz)	151	5755	36.04	35.27
		159	5795	35.53	35.50
	ac(80MHz)	155	5775	75.23	75.25
Limit	≥ 500 kHz				
Result	PASS				



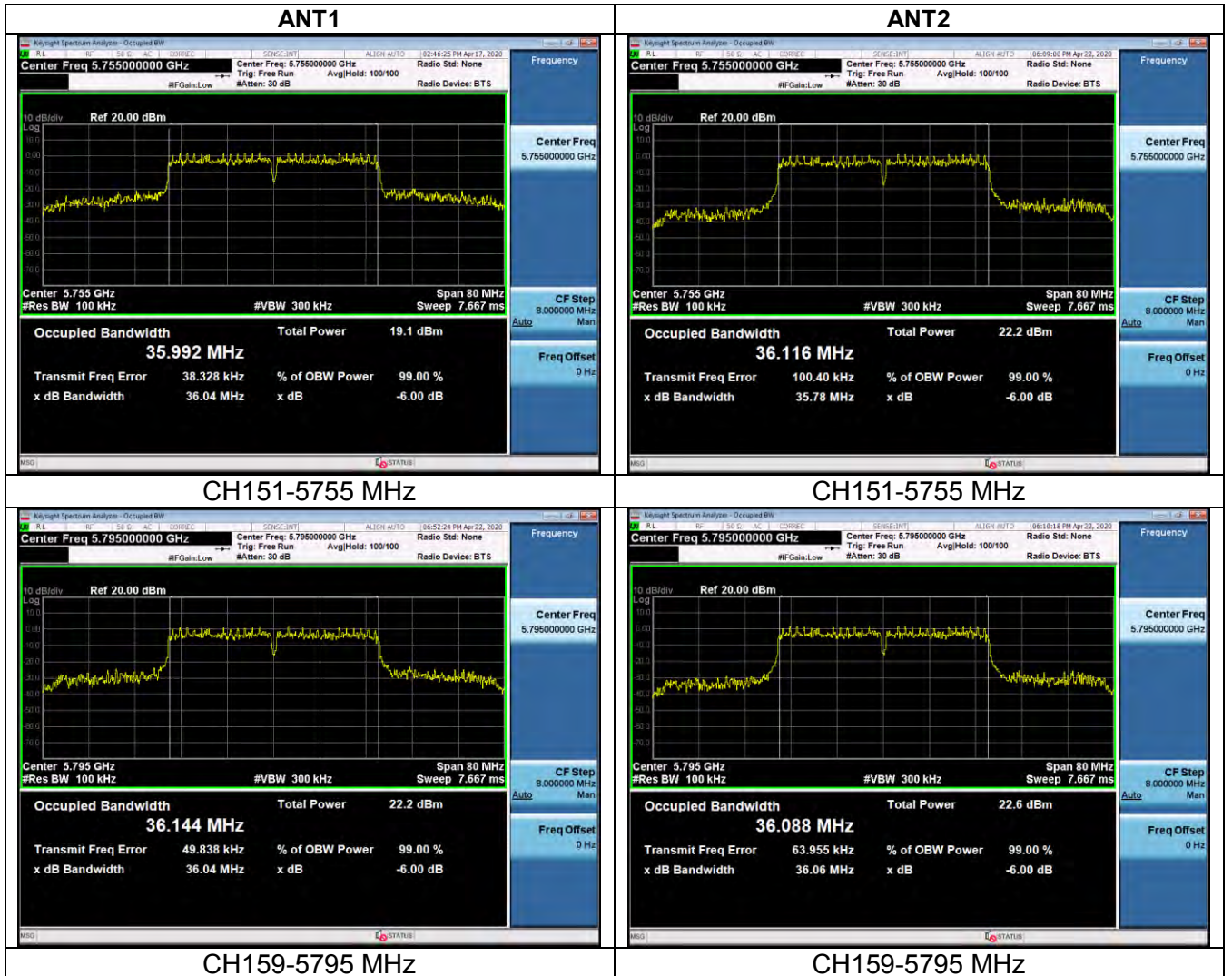
Test plots as follows:

band 3 -- n (20MHz)



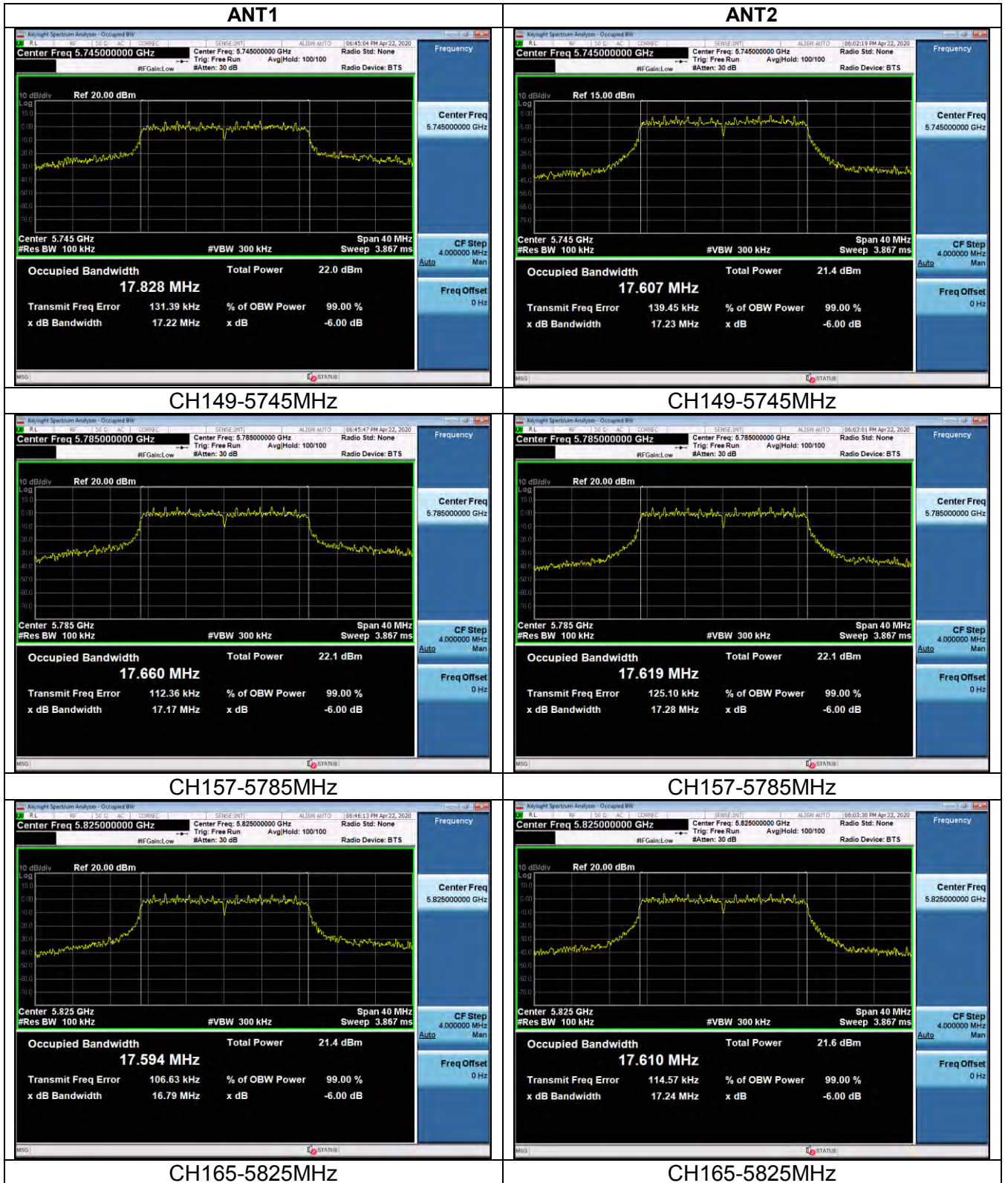


band 3 --n (40MHz)



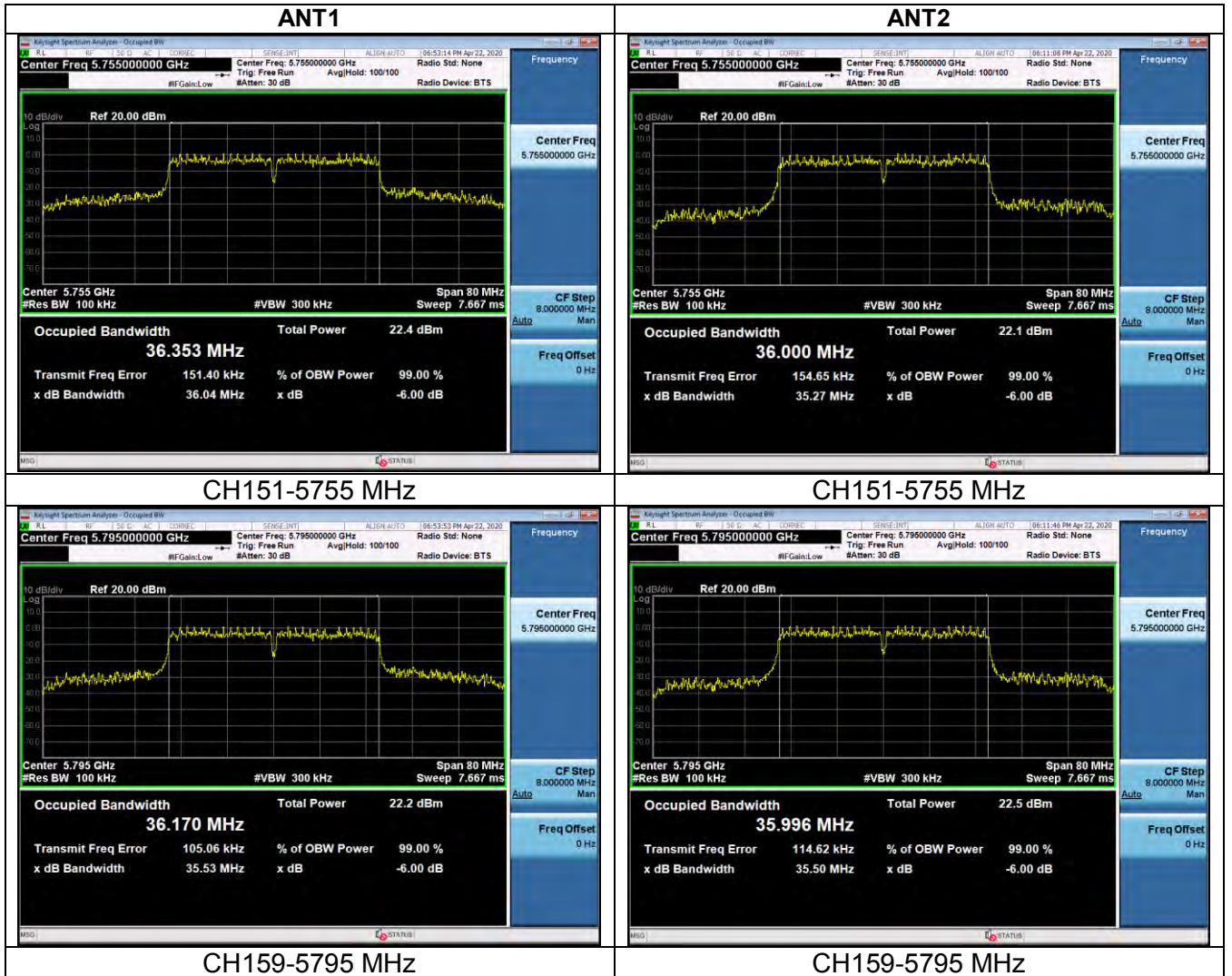


band 3 --ac (20MHz)



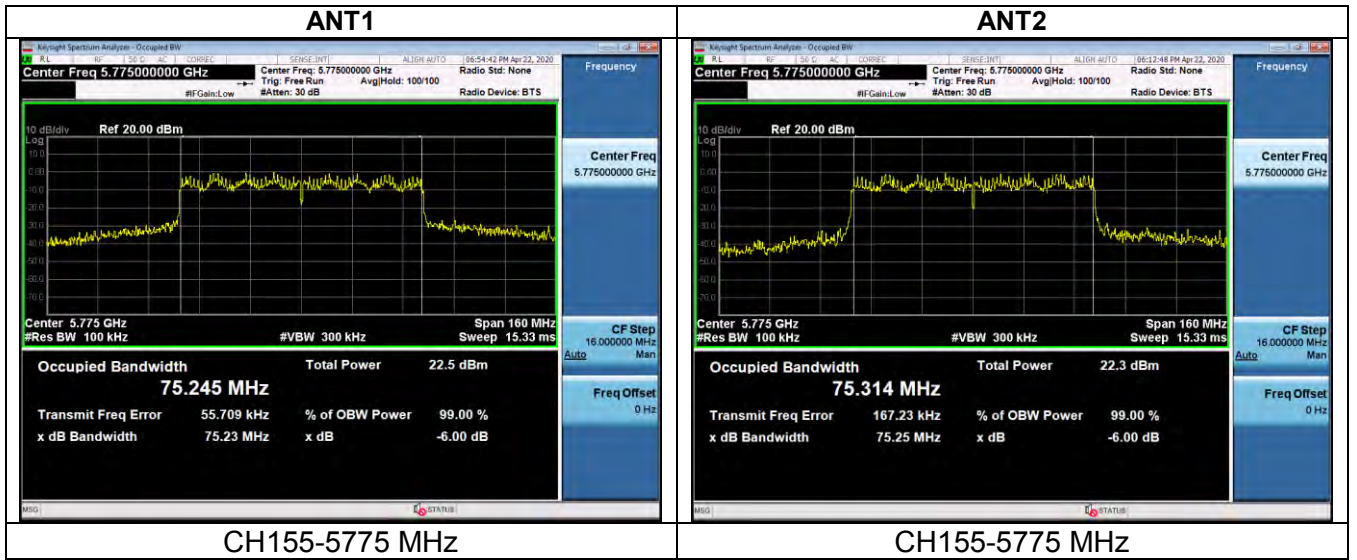


Band 3 -ac (40MHz)





band 3 --ac(80MHz)





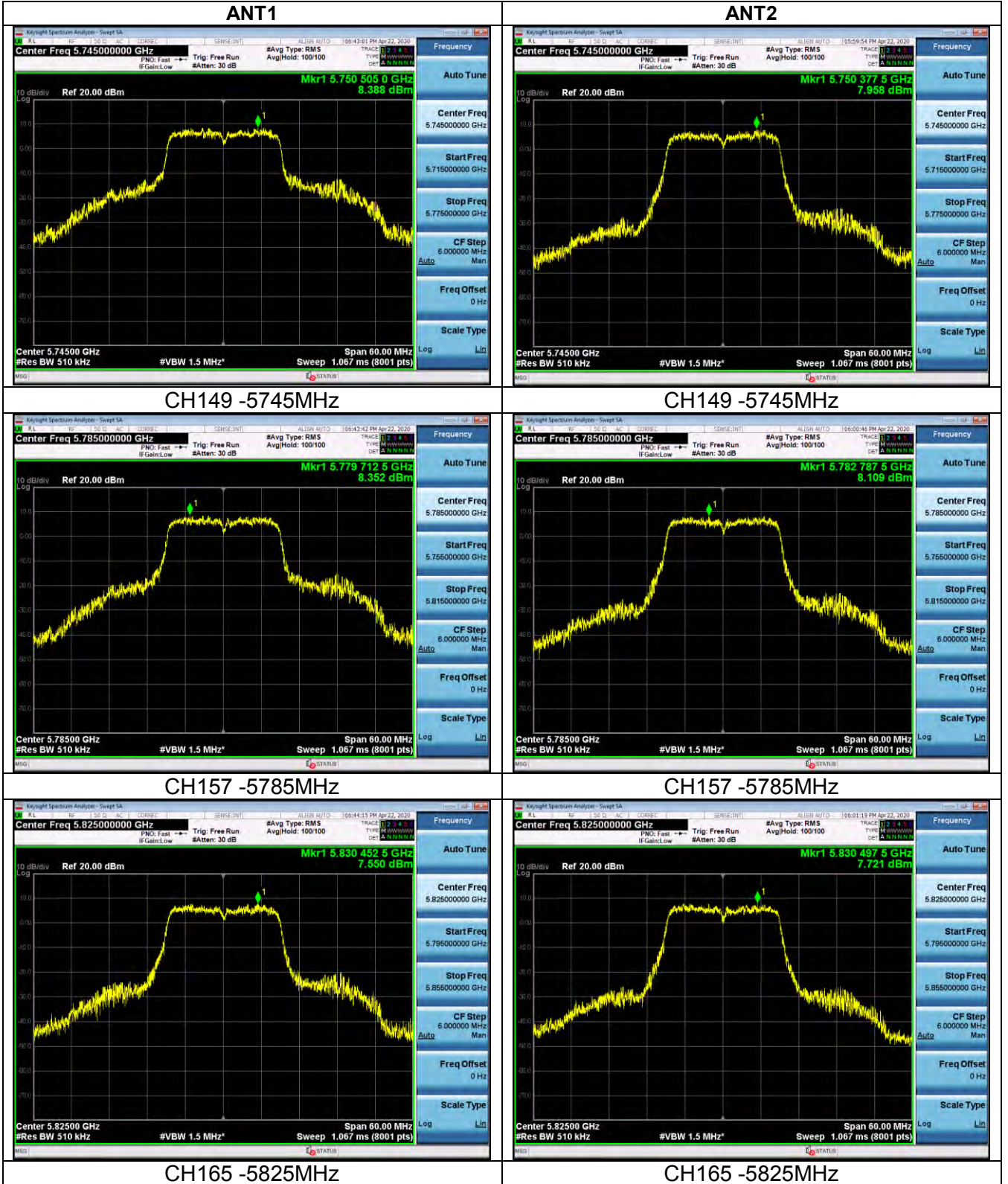
3.4.3. Test results

BAND	802.11 Mode	Channel No.	Frequency [MHz]	Measured PSD[dBm/510KHz]		Covert PSD [dBm/500KHz]		Limit [dBm/500KHz]
				ANT1	ANT2	ANT1	ANT2	
BAND 3	n (20MHz)	149	5745	8.388	7.958	8.302	7.872	30
		157	5785	8.352	8.109	8.266	8.023	30
		165	5825	7.55	7.721	7.464	7.635	30
	n (40MHz)	151	5755	5.947	6.312	5.861	6.226	30
		159	5795	4.56	5.732	4.474	5.646	30
	ac (20MHz)	149	5745	8.377	7.507	8.291	7.421	30
		157	5785	8.007	7.837	7.921	7.751	30
		165	5825	7.336	7.486	7.250	7.400	30
	ac (40MHz)	151	5755	5.447	5.612	5.361	5.526	30
		159	5795	5.561	5.625	5.475	5.539	30
	ac (80MHz)	155	5775	3.342	2.497	3.256	2.411	30

Note: Covert PSD [dBm/510KHz]= PSD[dBm/510KHz]+10*log(500/510)
 $10 \cdot \log(500/510) = -0.086$



Band 3 -- n (20MHz)



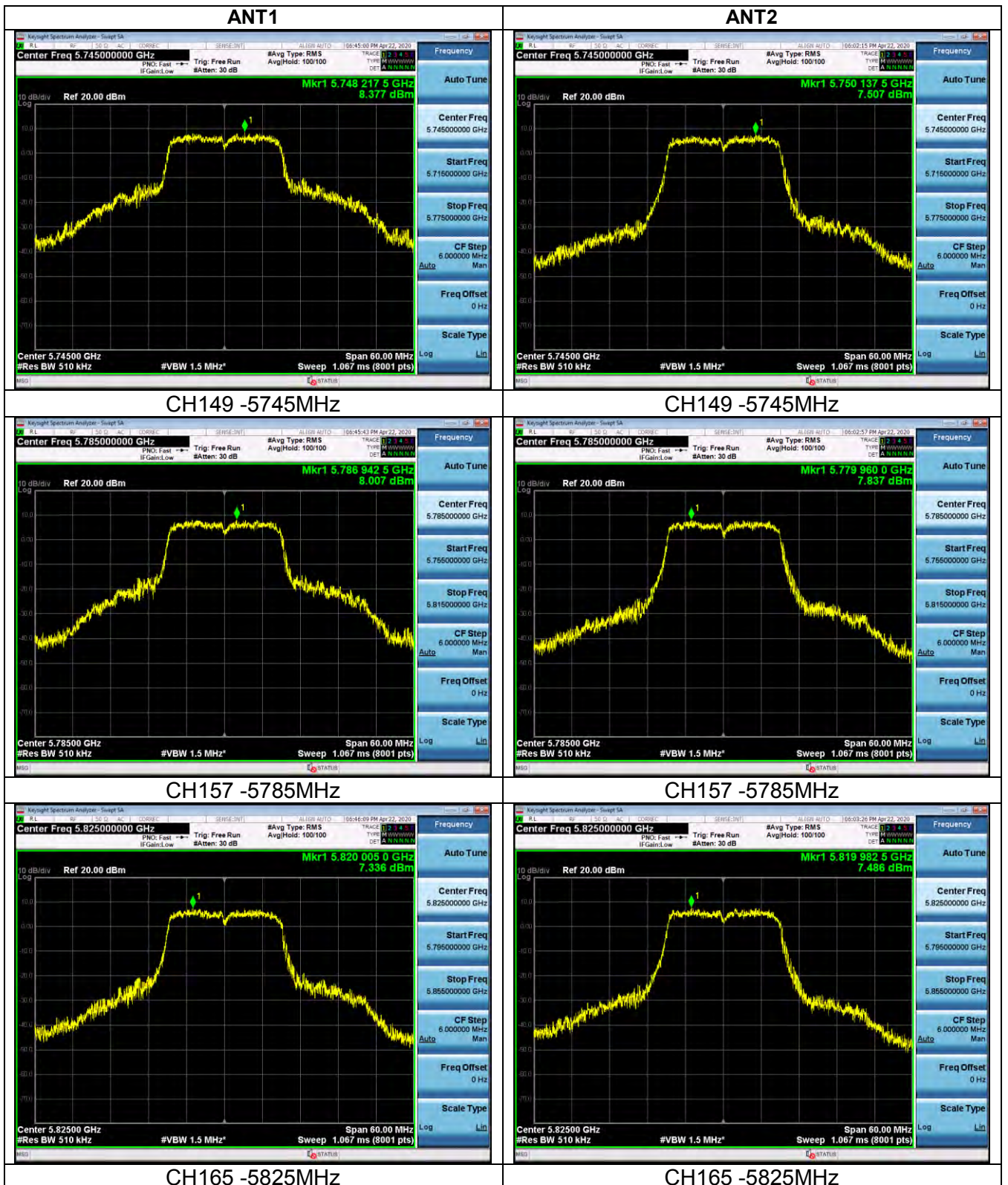


Band 3 – n (40MHz)



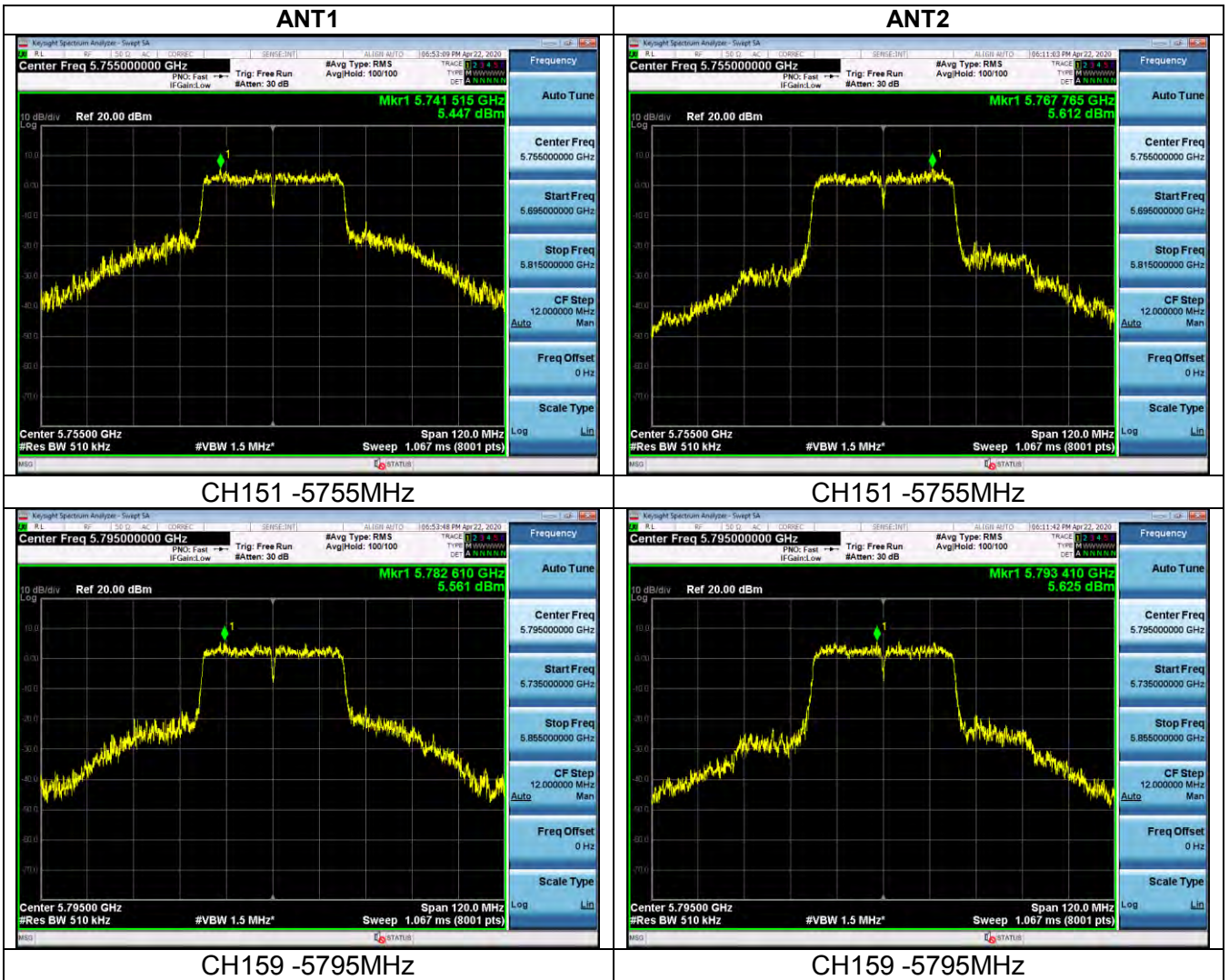


Band 3 -- ac(20MHz)

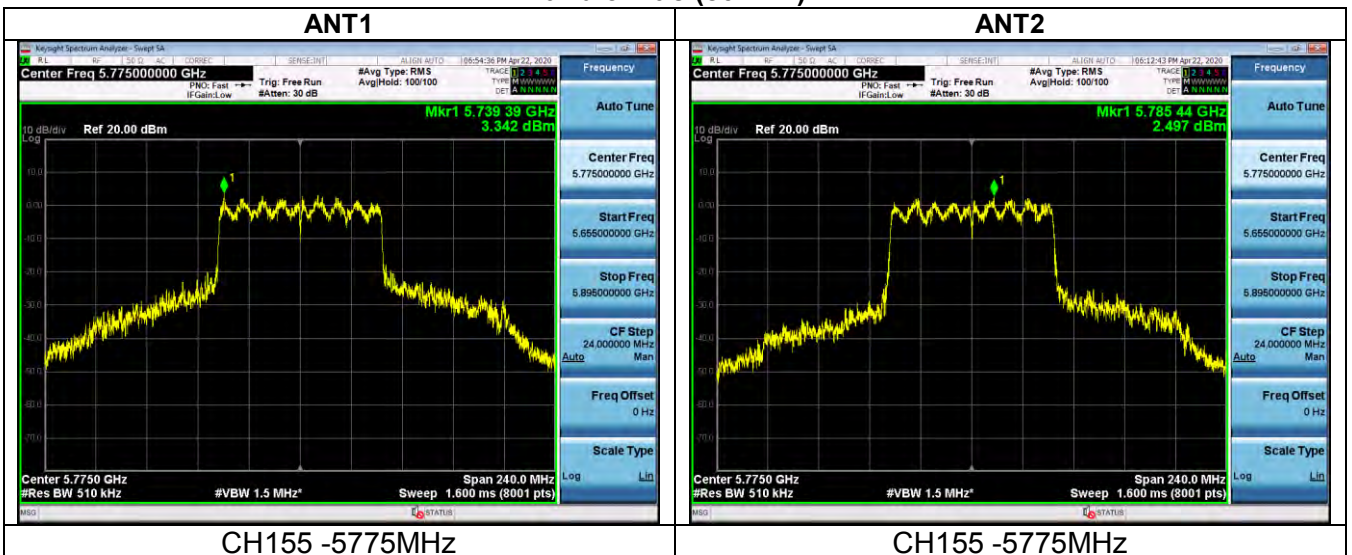




Band 3 – ac (40MHz)



Band 3 – ac (80MHz)





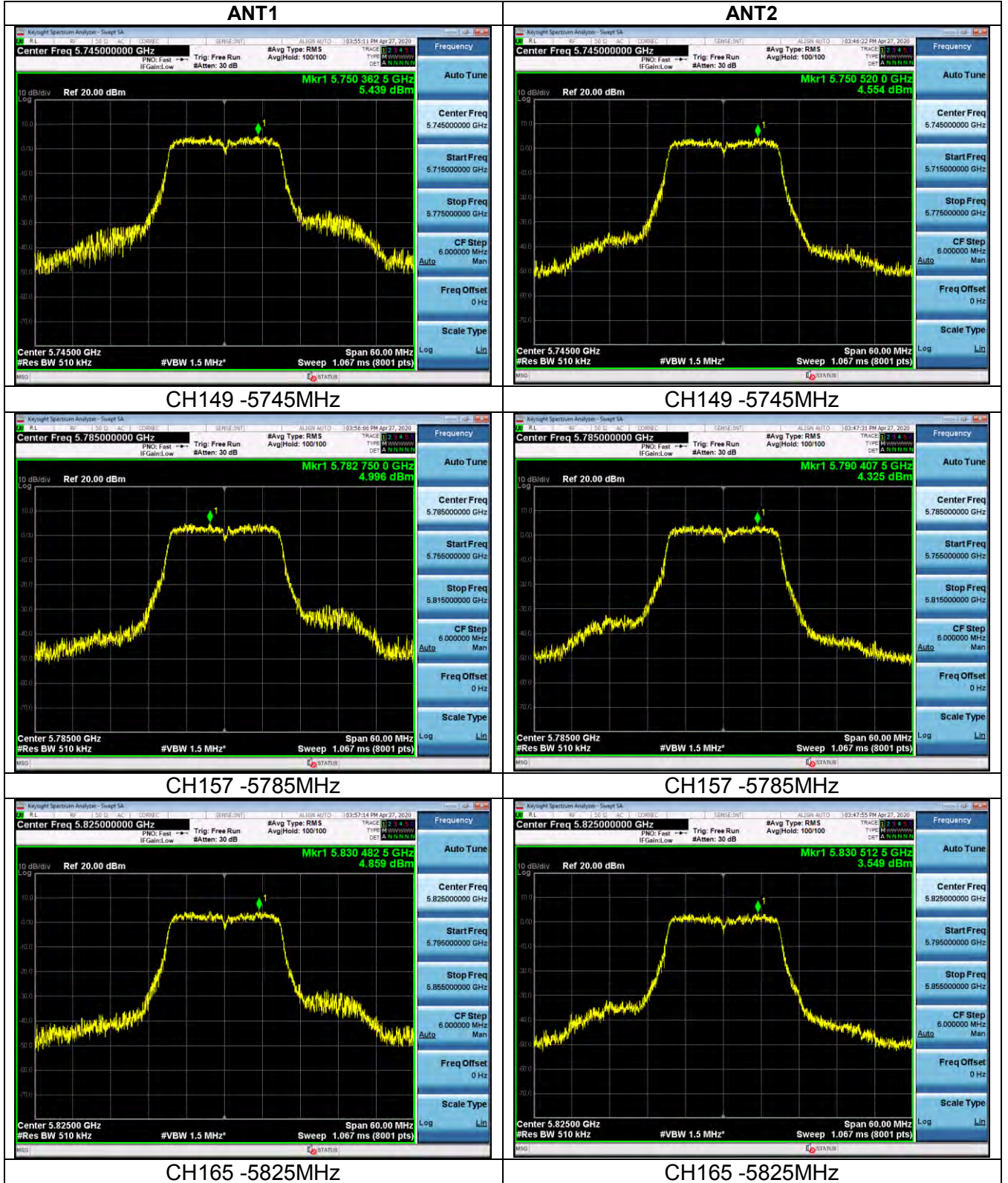
Summed MIMO/CDD Power Spectral Density Measurements

BAND	802.11 Mode	Channel No.	Frequency [MHz]	Measured PSD [dBm/510KHz]		MIMO/CDD PSD [dBm/510KHz]	MIMO/CDD covert PSD [dBm/500KHz]	Limit [dBm/500KHz]
				ANT1	ANT2			
BAND 3	n (20MHz)	149	5745	5.439	4.554	8.029	7.943	29.99
		157	5785	4.996	4.325	7.684	7.598	29.99
		165	5825	4.859	3.549	7.264	7.178	29.99
	n (40MHz)	151	5755	3.282	1.162	5.360	5.274	29.99
		159	5795	2.809	1.654	5.280	5.194	29.99
	ac (20MHz)	149	5745	5.006	4.151	7.610	7.524	29.99
		157	5785	4.563	3.919	7.263	7.177	29.99
		165	5825	4.174	3.145	6.700	6.614	29.99
	ac(40MHz)	151	5755	2.892	1.87	5.421	5.335	29.99
		159	5795	2.432	1.751	5.115	5.029	29.99
	ac(80MHz)	155	5775	0.804	-0.647	3.149	3.063	29.99

Note: Covert PSD [dBm/510KHz]= PSD[dBm/510KHz]+10*log(500/510)
 $10*\log(500/510)=-0.086$

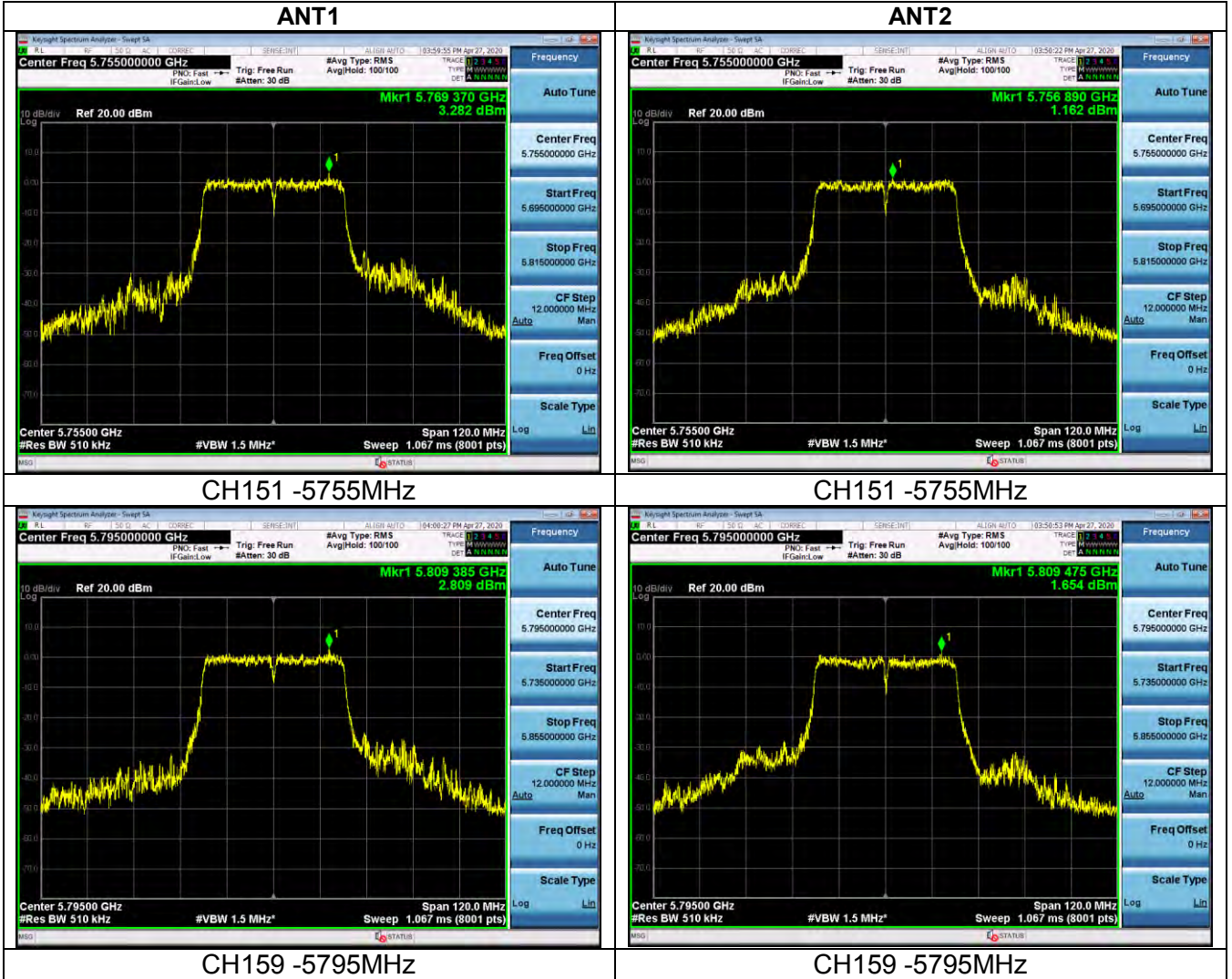


Band 3 -- n (20MHz)



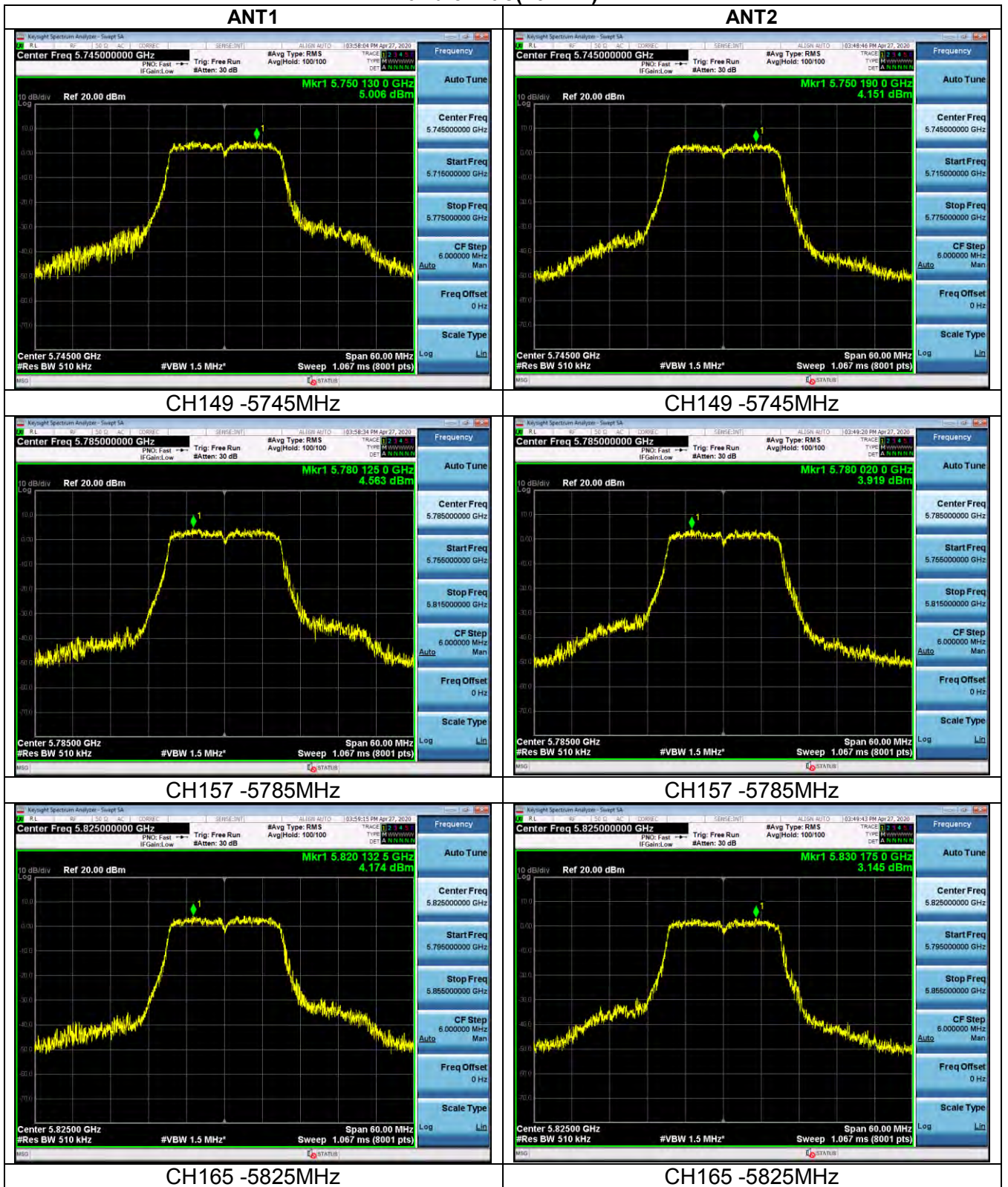


Band 3 – n (40MHz)



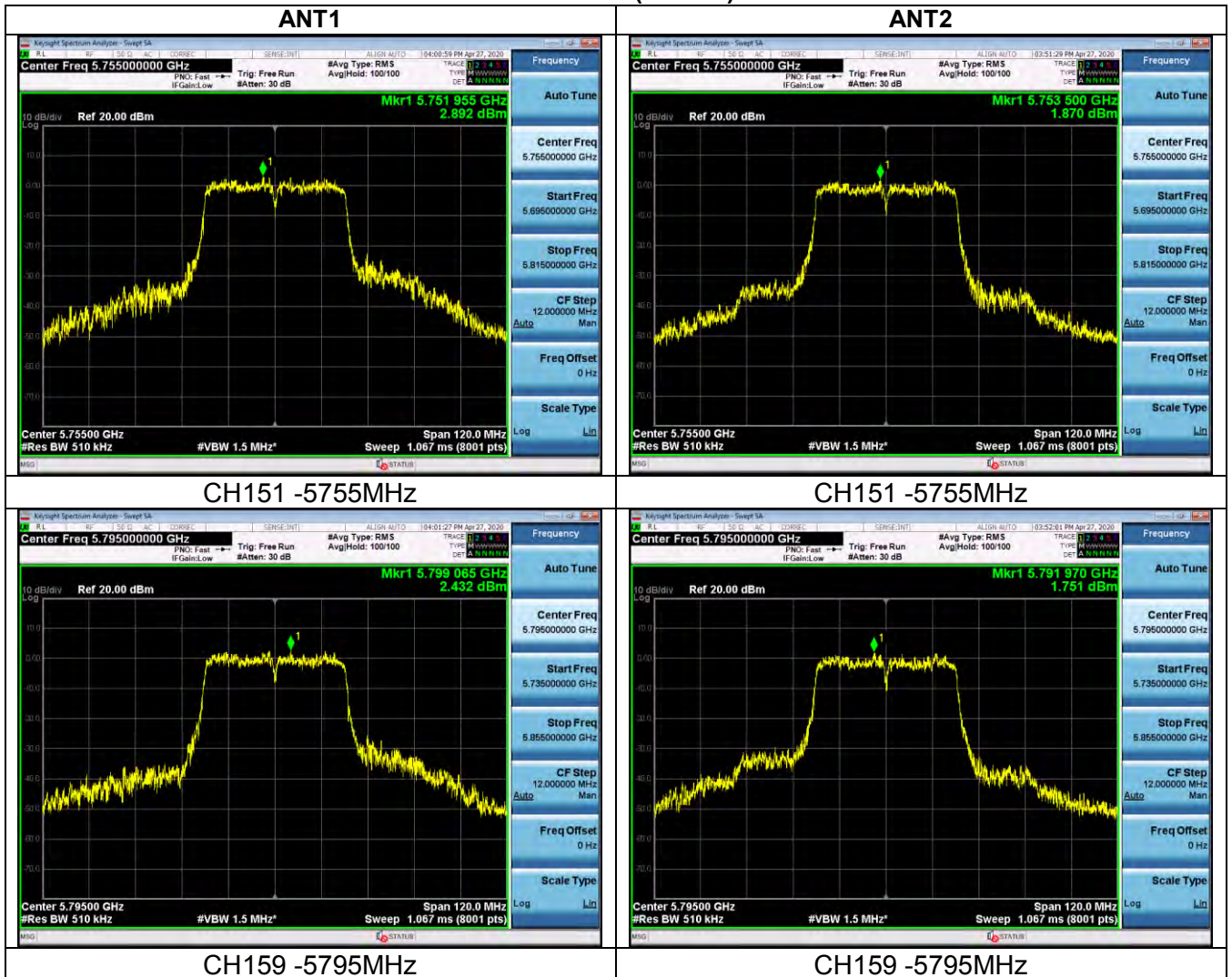


Band 3 -- ac(20MHz)

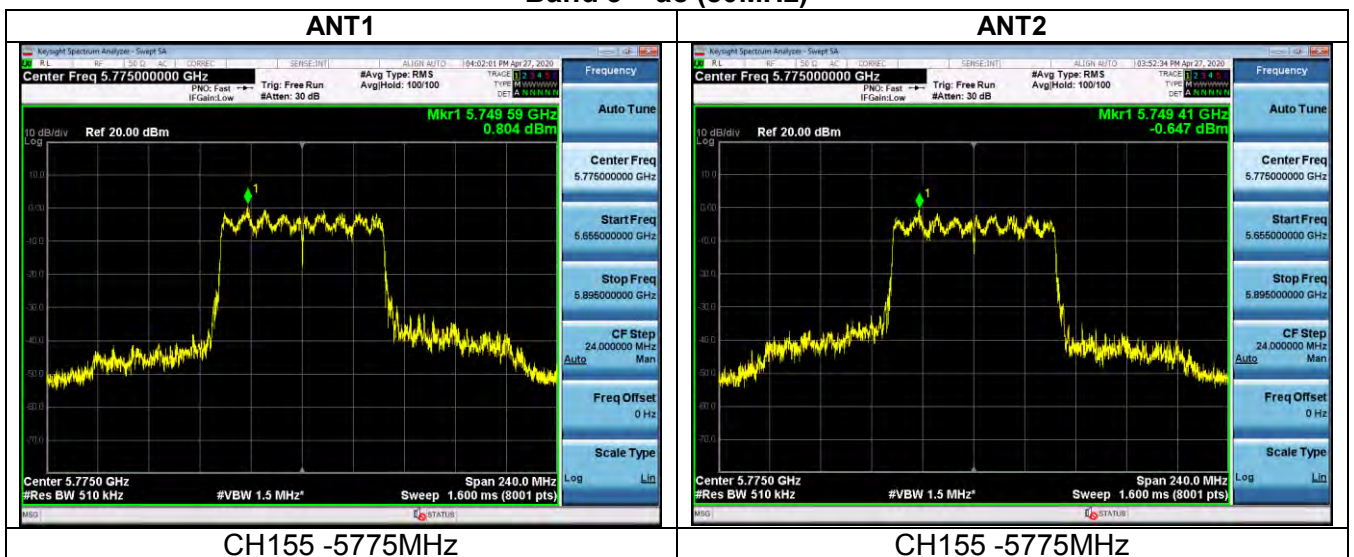




Band 3 – ac (40MHz)



Band 3 – ac (80MHz)





3.5. Band edge

3.5.1. Test Specification

Test Requirement:	FCC CFR47 Part 15E Section 15.407
Test Method:	ANSI C63.10 2013
Limit:	<p>For band I&II&III: $E[dB\mu V/m] = EIRP[dBm] + 95.2 = 68.2$ dB$\mu V/m$, for $EIRP(dBm) = -27dBm$</p> <p>For transmitters operating in the 5.725-5.85 GHz band:</p> <p>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 the band edge.</p> <p>For band IV(5715-5725MHz&5850-5860MHz): $E[dB\mu V/m] = EIRP[dBm] + 95.2 = 78.2$ dB$\mu V/m$, for $EIRP(dBm) = -27dBm$;</p> <p>For band IV(other un-restricted band): $E[dB\mu V/m] = EIRP[dBm] + 95.2 = 68.2$ dB$\mu V/m$, for $EIRP(dBm) = -27dBm$</p>
Test Setup:	<p>The diagram illustrates the test setup. An Equipment Under Test (EUT) is placed on a turn table at a height of 1.5 meters. The turn table is positioned 3 meters away from an antenna feed point. The antenna is mounted on a tower that can be adjusted to a height of 1 to 4 meters. The entire setup is on a ground plane. A receiver and amplifier are connected to the antenna feed point.</p>
Test Mode:	Transmitting mode with modulation
Test Procedure:	<ol style="list-style-type: none"> 1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation. 2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 3. 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. 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 rota table was turned from 0 degrees to 360 degrees to find the



	<p>maximum reading.</p> <p>5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</p> <p>6. 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, quasipeak or average method as specified and then reported in a data sheet.</p>
Test Result:	PASS



3.5.2. Test Instruments

Radiated Emission Test Site (966)					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Receiver	R&S	ESRP3	HKE-005	Dec. 26, 2019	Dec. 25, 2020
Spectrum analyzer	Agilent	N9020A	HKE-048	Dec. 26, 2019	Dec. 25, 2020
Preamplifier	EMCI	EMC051845S E	HKE-015	Dec. 26, 2019	Dec. 25, 2020
Preamplifier	Agilent	83051A	HKE-016	Dec. 26, 2019	Dec. 25, 2020
Loop antenna	Schwarzbeck	FMZB 1519 B	HKE-014	Dec. 26, 2019	Dec. 25, 2020
Broadband antenna	Schwarzbeck	VULB 9163	HKE-012	Dec. 26, 2019	Dec. 25, 2020
Horn antenna	Schwarzbeck	9120D	HKE-013	Dec. 26, 2019	Dec. 25, 2020
Antenna Mast	Keleto	CC-A-4M	N/A	N/A	N/A
Position controller	Taiwan MF	MF7802	HKE-011	Dec. 26, 2019	Dec. 25, 2020
Radiated test software	Tonscend	TS+ Rev 2.5.0.0	HKE-082	N/A	N/A
RF cable (9KHz-1GHz)	Times	381806-001	N/A	N/A	N/A
Hf antenna	Schwarzbeck	LB-180400-K F	HKE-031	Dec. 26, 2019	Dec. 25, 2020
RF cable	Tonscend	1-18G	HKE-099	Dec. 26, 2019	Dec. 25, 2020
RF cable	Times	1-40G	HKE-034	Dec. 26, 2019	Dec. 25, 2020

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).



3.5.3. Test Data

ANT 1

Operation Mode: 802.11n20 Mode with 5.8G TX CH Low

Horizontal

Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
5650	58.36	-2.06	56.30	68.20	-11.90	PK
5650	35.74	-2.06	33.68	48.20	-14.52	AV
5700	86.68	-1.96	84.72	105.20	-20.48	PK
5700	60.14	-1.96	58.18	85.20	-27.02	AV
5720	87.65	-2.87	84.78	110.80	-26.02	PK
5720	68.80	-2.87	65.93	90.80	-24.87	AV
5725	105.88	-2.14	103.74	122.20	-18.46	PK
5725	89.19	-2.14	87.05	102.20	-15.15	AV

Vertical:

Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
5650	57.48	-2.06	55.42	68.20	-12.78	PK
5650	35.05	-2.06	32.99	48.20	-15.21	AV
5700	82.27	-1.96	80.31	105.20	-24.89	PK
5700	60.66	-1.96	58.70	85.20	-26.50	AV
5720	88.88	-2.87	86.01	110.80	-24.79	PK
5720	69.17	-2.87	66.30	90.80	-24.50	AV
5725	108.86	-2.14	106.72	122.20	-15.48	PK
5725	84.70	-2.14	82.56	102.20	-19.64	AV



Operation Mode: TX CH High with 5.8G

Horizontal

Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
5850	103.88	-1.97	101.91	122.20	-20.29	PK
5850	87.35	-1.97	85.38	102.20	-16.82	AV
5855	90.31	-2.13	88.18	110.80	-22.62	PK
5855	69.18	-2.13	67.05	90.80	-23.75	AV
5785	83.86	-2.65	81.21	105.20	-23.99	PK
5785	61.06	-2.65	58.41	85.20	-26.79	AV
5925	55.39	-2.28	53.11	68.20	-15.09	PK
5925	37.51	-2.28	35.23	48.20	-12.97	AV

Vertical:

Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
5850	108.27	-1.97	106.30	122.20	-15.90	PK
5850	87.13	-1.97	85.16	102.20	-17.04	AV
5855	90.64	-2.13	88.51	110.80	-22.29	PK
5855	66.73	-2.13	64.60	90.80	-26.20	AV
5785	86.58	-2.65	83.93	105.20	-21.27	PK
5785	62.43	-2.65	59.78	85.20	-25.42	AV
5925	55.93	-2.28	53.65	68.20	-14.55	PK
5925	36.87	-2.28	34.59	48.20	-13.61	AV



Operation Mode: 802.11ac20 Mode with 5.8G TX CH Low

Horizontal

Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
5650	53.71	-1.97	51.74	68.2	-16.46	PK
5650	37.84	-1.97	35.87	48.2	-12.33	AV
5700	83.87	-2.13	81.74	105.2	-23.46	PK
5700	60.68	-2.13	58.55	85.2	-26.65	AV
5720	88.93	-2.65	86.28	110.8	-24.52	PK
5720	69.33	-2.65	66.68	90.8	-24.12	AV
5725	108.62	-2.28	106.34	122.2	-15.86	PK
5725	89.76	-2.28	87.48	102.2	-14.72	AV

Vertical:

Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
5650	54.20	-1.97	52.23	68.2	-15.97	PK
5650	35.36	-1.97	33.39	48.2	-14.81	AV
5700	82.44	-2.13	80.31	105.2	-24.89	PK
5700	62.44	-2.13	60.31	85.2	-24.89	AV
5720	89.03	-2.65	86.38	110.8	-24.42	PK
5720	65.07	-2.65	62.42	90.8	-28.38	AV
5725	104.56	-2.28	102.28	122.2	-19.92	PK
5725	88.56	-2.28	86.28	102.2	-15.92	AV



Operation Mode: 802.11ac20 Mode with 5.8G TX CH high
Horizontal

Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
5850	104.08	-1.97	102.11	122.20	-20.09	PK
5850	84.18	-1.97	82.21	102.20	-19.99	AV
5855	85.13	-2.13	83.00	110.80	-27.80	PK
5855	65.01	-2.13	62.88	90.80	-27.92	AV
5785	86.11	-2.65	83.46	105.20	-21.74	PK
5785	62.73	-2.65	60.08	85.20	-25.12	AV
5925	53.14	-2.28	50.86	68.20	-17.34	PK
5925	36.09	-2.28	33.81	48.20	-14.39	AV

Vertical:

Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
5850	104.73	-1.97	102.76	122.20	-19.44	PK
5850	86.37	-1.97	84.40	102.20	-17.80	AV
5855	87.21	-2.13	85.08	110.80	-25.72	PK
5855	65.96	-2.13	63.83	90.80	-26.97	AV
5785	86.98	-2.65	84.33	105.20	-20.87	PK
5785	59.62	-2.65	56.97	85.20	-28.23	AV
5925	57.92	-2.28	55.64	68.20	-12.56	PK
5925	37.72	-2.28	35.44	48.20	-12.76	AV



Operation Mode: 802.11n40 Mode with 5.8G TX CH Low

Horizontal

Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
5650	54.37	-1.97	52.40	68.2	-15.80	PK
5650	37.89	-1.97	35.92	48.2	-12.28	AV
5700	87.92	-2.13	85.79	105.2	-19.41	PK
5700	64.78	-2.13	62.65	85.2	-22.55	AV
5720	90.47	-2.65	87.82	110.8	-22.98	PK
5720	67.71	-2.65	65.06	90.8	-25.74	AV
5725	103.14	-2.28	100.86	122.2	-21.34	PK
5725	86.97	-2.28	84.69	102.2	-17.51	AV

Vertical:

Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
5650	53.59	-1.97	51.62	68.2	-16.58	PK
5650	38.56	-1.97	36.59	48.2	-11.61	AV
5700	84.15	-2.13	82.02	105.2	-23.18	PK
5700	62.07	-2.13	59.94	85.2	-25.26	AV
5720	90.48	-2.65	87.83	110.8	-22.97	PK
5720	67.97	-2.65	65.32	90.8	-25.48	AV
5725	103.32	-2.28	101.04	122.2	-21.16	PK
5725	87.44	-2.28	85.16	102.2	-17.04	AV



Operation Mode: 802.11n40 Mode with 5.8G TX CH high
Horizontal

Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
5850	106.00	-1.97	104.03	122.20	-18.17	PK
5850	87.18	-1.97	85.21	102.20	-16.99	AV
5855	85.10	-2.13	82.97	110.80	-27.83	PK
5855	69.55	-2.13	67.42	90.80	-23.38	AV
5785	85.18	-2.65	82.53	105.20	-22.67	PK
5785	64.84	-2.65	62.19	85.20	-23.01	AV
5925	53.93	-2.28	51.65	68.20	-16.55	PK
5925	35.50	-2.28	33.22	48.20	-14.98	AV

Vertical:

Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
5850	106.43	-1.97	104.46	122.20	-17.74	PK
5850	88.69	-1.97	86.72	102.20	-15.48	AV
5855	86.16	-2.13	84.03	110.80	-26.77	PK
5855	64.78	-2.13	62.65	90.80	-28.15	AV
5785	83.96	-2.65	81.31	105.20	-23.89	PK
5785	64.13	-2.65	61.48	85.20	-23.72	AV
5925	54.40	-2.28	52.12	68.20	-16.08	PK
5925	38.76	-2.28	36.48	48.20	-11.72	AV



Operation Mode: 802.11ac40 Mode with 5.8G TX CH Low

Horizontal

Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
5650	53.59	-1.97	51.62	68.2	-16.58	PK
5650	37.69	-1.97	35.72	48.2	-12.48	AV
5700	86.56	-2.13	84.43	105.2	-20.77	PK
5700	62.64	-2.13	60.51	85.2	-24.69	AV
5720	88.48	-2.65	85.83	110.8	-24.97	PK
5720	65.89	-2.65	63.24	90.8	-27.56	AV
5725	105.71	-2.28	103.43	122.2	-18.77	PK
5725	88.98	-2.28	86.70	102.2	-15.50	AV

Vertical:

Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
5650	57.20	-1.97	55.23	68.2	-12.97	PK
5650	34.03	-1.97	32.06	48.2	-16.14	AV
5700	82.35	-2.13	80.22	105.2	-24.98	PK
5700	62.12	-2.13	59.99	85.2	-25.21	AV
5720	86.50	-2.65	83.85	110.8	-26.95	PK
5720	64.61	-2.65	61.96	90.8	-28.84	AV
5725	104.98	-2.28	102.70	122.2	-19.50	PK
5725	85.46	-2.28	83.18	102.2	-19.02	AV



Operation Mode: 802.11ac40 Mode with 5.8G TX CH high

Horizontal

Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
5850	108.59	-1.97	106.62	122.20	-15.58	PK
5850	84.65	-1.97	82.68	102.20	-19.52	AV
5855	89.83	-2.13	87.70	110.80	-23.10	PK
5855	67.67	-2.13	65.54	90.80	-25.26	AV
5785	87.33	-2.65	84.68	105.20	-20.52	PK
5785	62.11	-2.65	59.46	85.20	-25.74	AV
5925	57.66	-2.28	55.38	68.20	-12.82	PK
5925	38.37	-2.28	36.09	48.20	-12.11	AV

Vertical:

Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
5850	108.05	-1.97	106.08	122.20	-16.12	PK
5850	86.44	-1.97	84.47	102.20	-17.73	AV
5855	86.24	-2.13	84.11	110.80	-26.69	PK
5855	65.76	-2.13	63.63	90.80	-27.17	AV
5785	84.71	-2.65	82.06	105.20	-23.14	PK
5785	64.50	-2.65	61.85	85.20	-23.35	AV
5925	58.74	-2.28	56.46	68.20	-11.74	PK
5925	36.11	-2.28	33.83	48.20	-14.37	AV



Operation Mode: 802.11ac80 Mode with 5.8G TX CH Low

Horizontal

Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
5650	56.49	-1.97	54.52	68.2	-13.68	PK
5650	37.23	-1.97	35.26	48.2	-12.94	AV
5700	84.70	-2.13	82.57	105.2	-22.63	PK
5700	64.12	-2.13	61.99	85.2	-23.21	AV
5720	87.19	-2.65	84.54	110.8	-26.26	PK
5720	64.28	-2.65	61.63	90.8	-29.17	AV
5725	106.60	-2.28	104.32	122.2	-17.88	PK
5725	87.42	-2.28	85.14	102.2	-17.06	AV

Vertical:

Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
5650	57.42	-1.97	55.45	68.2	-12.75	PK
5650	35.42	-1.97	33.45	48.2	-14.75	AV
5700	85.19	-2.13	83.06	105.2	-22.14	PK
5700	63.69	-2.13	61.56	85.2	-23.64	AV
5720	90.90	-2.65	88.25	110.8	-22.55	PK
5720	64.68	-2.65	62.03	90.8	-28.77	AV
5725	106.03	-2.28	103.75	122.2	-18.45	PK
5725	89.63	-2.28	87.35	102.2	-14.85	AV



Operation Mode: 802.11ac80 Mode with 5.8G TX CH high

Horizontal

Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
5850	105.14	-1.97	103.17	122.20	-19.03	PK
5850	84.58	-1.97	82.61	102.20	-19.59	AV
5855	90.06	-2.13	87.93	110.80	-22.87	PK
5855	65.29	-2.13	63.16	90.80	-27.64	AV
5785	85.02	-2.65	82.37	105.20	-22.83	PK
5785	61.76	-2.65	59.11	85.20	-26.09	AV
5925	56.50	-2.28	54.22	68.20	-13.98	PK
5925	37.12	-2.28	34.84	48.20	-13.36	AV

Vertical:

Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
5850	107.56	-1.97	105.59	122.20	-16.61	PK
5850	89.74	-1.97	87.77	102.20	-14.43	AV
5855	87.25	-2.13	85.12	110.80	-25.68	PK
5855	68.62	-2.13	66.49	90.80	-24.31	AV
5785	83.44	-2.65	80.79	105.20	-24.41	PK
5785	64.14	-2.65	61.49	85.20	-23.71	AV
5925	56.07	-2.28	53.79	68.20	-14.41	PK
5925	35.44	-2.28	33.16	48.20	-15.04	AV

**ANT 2**

Operation Mode: 802.11n20 Mode with 5.8G TX CH Low

Horizontal

Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
5650	56.83	-1.97	54.86	68.2	-13.34	PK
5650	37.42	-1.97	35.45	48.2	-12.75	AV
5700	85.23	-2.13	83.10	105.2	-22.10	PK
5700	63.31	-2.13	61.18	85.2	-24.02	AV
5720	90.91	-2.65	88.26	110.8	-22.54	PK
5720	64.42	-2.65	61.77	90.8	-29.03	AV
5725	103.09	-2.28	100.81	122.2	-21.39	PK
5725	85.64	-2.28	83.36	102.2	-18.84	AV

Vertical:

Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
5650	55.80	-1.97	53.83	68.2	-14.37	PK
5650	37.83	-1.97	35.86	48.2	-12.34	AV
5700	83.73	-2.13	81.60	105.2	-23.60	PK
5700	64.26	-2.13	62.13	85.2	-23.07	AV
5720	89.81	-2.65	87.16	110.8	-23.64	PK
5720	69.82	-2.65	67.17	90.8	-23.63	AV
5725	105.85	-2.28	103.57	122.2	-18.63	PK
5725	84.29	-2.28	82.01	102.2	-20.19	AV



Operation Mode: 802.11n20 Mode with 5.8G TX CH high

Horizontal

Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
5850	103.66	-1.97	101.69	122.20	-20.51	PK
5850	85.35	-1.97	83.38	102.20	-18.82	AV
5855	90.52	-2.13	88.39	110.80	-22.41	PK
5855	68.89	-2.13	66.76	90.80	-24.04	AV
5785	82.71	-2.65	80.06	105.20	-25.14	PK
5785	61.64	-2.65	58.99	85.20	-26.21	AV
5925	55.15	-2.28	52.87	68.20	-15.33	PK
5925	38.86	-2.28	36.58	48.20	-11.62	AV

Vertical:

Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
5850	106.35	-1.97	104.38	122.20	-17.82	PK
5850	87.65	-1.97	85.68	102.20	-16.52	AV
5855	88.14	-2.13	86.01	110.80	-24.79	PK
5855	65.71	-2.13	63.58	90.80	-27.22	AV
5785	86.55	-2.65	83.90	105.20	-21.30	PK
5785	59.98	-2.65	57.33	85.20	-27.87	AV
5925	57.60	-2.28	55.32	68.20	-12.88	PK
5925	34.28	-2.28	32.00	48.20	-16.20	AV



Operation Mode: 802.11ac20 Mode with 5.8G TX CH Low

Horizontal

Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
5650	55.47	-1.97	53.50	68.2	-14.70	PK
5650	38.33	-1.97	36.36	48.2	-11.84	AV
5700	85.68	-2.13	83.55	105.2	-21.65	PK
5700	60.07	-2.13	57.94	85.2	-27.26	AV
5720	89.33	-2.65	86.68	110.8	-24.12	PK
5720	66.23	-2.65	63.58	90.8	-27.22	AV
5725	107.39	-2.28	105.11	122.2	-17.09	PK
5725	86.38	-2.28	84.10	102.2	-18.10	AV

Vertical:

Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
5650	57.75	-1.97	55.78	68.2	-12.42	PK
5650	35.82	-1.97	33.85	48.2	-14.35	AV
5700	87.47	-2.13	85.34	105.2	-19.86	PK
5700	60.50	-2.13	58.37	85.2	-26.83	AV
5720	87.88	-2.65	85.23	110.8	-25.57	PK
5720	66.53	-2.65	63.88	90.8	-26.92	AV
5725	107.58	-2.28	105.30	122.2	-16.90	PK
5725	87.75	-2.28	85.47	102.2	-16.73	AV



Operation Mode: 802.11ac20 Mode with 5.8G TX CH high
Horizontal

Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
5850	105.88	-1.97	103.91	122.20	-18.29	PK
5850	85.81	-1.97	83.84	102.20	-18.36	AV
5855	89.87	-2.13	87.74	110.80	-23.06	PK
5855	68.00	-2.13	65.87	90.80	-24.93	AV
5785	83.48	-2.65	80.83	105.20	-24.37	PK
5785	64.29	-2.65	61.64	85.20	-23.56	AV
5925	55.52	-2.28	53.24	68.20	-14.96	PK
5925	35.27	-2.28	32.99	48.20	-15.21	AV

Vertical:

Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
5850	105.02	-1.97	103.05	122.20	-19.15	PK
5850	87.15	-1.97	85.18	102.20	-17.02	AV
5855	88.17	-2.13	86.04	110.80	-24.76	PK
5855	68.31	-2.13	66.18	90.80	-24.62	AV
5785	82.62	-2.65	79.97	105.20	-25.23	PK
5785	60.40	-2.65	57.75	85.20	-27.45	AV
5925	58.83	-2.28	56.55	68.20	-11.65	PK
5925	38.40	-2.28	36.12	48.20	-12.08	AV



Operation Mode: 802.11n40 Mode with 5.8G TX CH Low

Horizontal

Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
5650	56.02	-1.97	54.05	68.2	-14.15	PK
5650	33.15	-1.97	31.18	48.2	-17.02	AV
5700	83.85	-2.13	81.72	105.2	-23.48	PK
5700	59.08	-2.13	56.95	85.2	-28.25	AV
5720	88.40	-2.65	85.75	110.8	-25.05	PK
5720	69.63	-2.65	66.98	90.8	-23.82	AV
5725	103.69	-2.28	101.41	122.2	-20.79	PK
5725	89.29	-2.28	87.01	102.2	-15.19	AV

Vertical:

Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
5650	57.30	-1.97	55.33	68.2	-12.87	PK
5650	36.02	-1.97	34.05	48.2	-14.15	AV
5700	84.86	-2.13	82.73	105.2	-22.47	PK
5700	59.67	-2.13	57.54	85.2	-27.66	AV
5720	86.03	-2.65	83.38	110.8	-27.42	PK
5720	66.93	-2.65	64.28	90.8	-26.52	AV
5725	106.87	-2.28	104.59	122.2	-17.61	PK
5725	84.61	-2.28	82.33	102.2	-19.87	AV



Operation Mode: 802.11n40 Mode with 5.8G TX CH high
Horizontal

Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
5850	104.46	-1.97	102.49	122.20	-19.71	PK
5850	88.76	-1.97	86.79	102.20	-15.41	AV
5855	89.94	-2.13	87.81	110.80	-22.99	PK
5855	65.49	-2.13	63.36	90.80	-27.44	AV
5785	84.83	-2.65	82.18	105.20	-23.02	PK
5785	60.56	-2.65	57.91	85.20	-27.29	AV
5925	57.41	-2.28	55.13	68.20	-13.07	PK
5925	34.25	-2.28	31.97	48.20	-16.23	AV

Vertical:

Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
5850	106.24	-1.97	104.27	122.20	-17.93	PK
5850	85.62	-1.97	83.65	102.20	-18.55	AV
5855	85.31	-2.13	83.18	110.80	-27.62	PK
5855	69.80	-2.13	67.67	90.80	-23.13	AV
5785	85.28	-2.65	82.63	105.20	-22.57	PK
5785	60.93	-2.65	58.28	85.20	-26.92	AV
5925	57.60	-2.28	55.32	68.20	-12.88	PK
5925	38.53	-2.28	36.25	48.20	-11.95	AV



Operation Mode: 802.11ac40 Mode with 5.8G TX CH Low

Horizontal

Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
5650	56.34	-1.97	54.37	68.2	-13.83	PK
5650	33.08	-1.97	31.11	48.2	-17.09	AV
5700	87.06	-2.13	84.93	105.2	-20.27	PK
5700	62.60	-2.13	60.47	85.2	-24.73	AV
5720	90.90	-2.65	88.25	110.8	-22.55	PK
5720	66.58	-2.65	63.93	90.8	-26.87	AV
5725	103.55	-2.28	101.27	122.2	-20.93	PK
5725	89.83	-2.28	87.55	102.2	-14.65	AV

Vertical:

Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
5650	56.81	-1.97	54.84	68.2	-13.36	PK
5650	34.74	-1.97	32.77	48.2	-15.43	AV
5700	87.89	-2.13	85.76	105.2	-19.44	PK
5700	62.42	-2.13	60.29	85.2	-24.91	AV
5720	85.28	-2.65	82.63	110.8	-28.17	PK
5720	69.05	-2.65	66.40	90.8	-24.40	AV
5725	107.66	-2.28	105.38	122.2	-16.82	PK
5725	88.32	-2.28	86.04	102.2	-16.16	AV



Operation Mode: 802.11ac40 Mode with 5.8G TX CH high

Horizontal

Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
5850	105.36	-1.97	103.39	122.20	-18.81	PK
5850	89.92	-1.97	87.95	102.20	-14.25	AV
5855	86.08	-2.13	83.95	110.80	-26.85	PK
5855	66.62	-2.13	64.49	90.80	-26.31	AV
5785	82.26	-2.65	79.61	105.20	-25.59	PK
5785	60.98	-2.65	58.33	85.20	-26.87	AV
5925	57.71	-2.28	55.43	68.20	-12.77	PK
5925	35.77	-2.28	33.49	48.20	-14.71	AV

Vertical:

Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
5850	108.02	-1.97	106.05	122.20	-16.15	PK
5850	84.84	-1.97	82.87	102.20	-19.33	AV
5855	86.11	-2.13	83.98	110.80	-26.82	PK
5855	66.47	-2.13	64.34	90.80	-26.46	AV
5785	82.29	-2.65	79.64	105.20	-25.56	PK
5785	64.26	-2.65	61.61	85.20	-23.59	AV
5925	53.51	-2.28	51.23	68.20	-16.97	PK
5925	38.49	-2.28	36.21	48.20	-11.99	AV



Operation Mode: 802.11ac80 Mode with 5.8G TX CH Low

Horizontal

Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
5650	53.69	-1.97	51.72	68.2	-16.48	PK
5650	34.41	-1.97	32.44	48.2	-15.76	AV
5700	85.08	-2.13	82.95	105.2	-22.25	PK
5700	59.77	-2.13	57.64	85.2	-27.56	AV
5720	89.05	-2.65	86.40	110.8	-24.40	PK
5720	68.99	-2.65	66.34	90.8	-24.46	AV
5725	107.92	-2.28	105.64	122.2	-16.56	PK
5725	88.99	-2.28	86.71	102.2	-15.49	AV

Vertical:

Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
5650	56.21	-1.97	54.24	68.2	-13.96	PK
5650	37.99	-1.97	36.02	48.2	-12.18	AV
5700	85.13	-2.13	83.00	105.2	-22.20	PK
5700	64.20	-2.13	62.07	85.2	-23.13	AV
5720	87.37	-2.65	84.72	110.8	-26.08	PK
5720	67.29	-2.65	64.64	90.8	-26.16	AV
5725	106.83	-2.28	104.55	122.2	-17.65	PK
5725	87.69	-2.28	85.41	102.2	-16.79	AV



Operation Mode: 802.11ac80 Mode with 5.8G TX CH high

Horizontal

Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
5850	103.78	-1.97	101.81	122.20	-20.39	PK
5850	86.80	-1.97	84.83	102.20	-17.37	AV
5855	86.14	-2.13	84.01	110.80	-26.79	PK
5855	68.70	-2.13	66.57	90.80	-24.23	AV
5785	86.38	-2.65	83.73	105.20	-21.47	PK
5785	61.57	-2.65	58.92	85.20	-26.28	AV
5925	53.54	-2.28	51.26	68.20	-16.94	PK
5925	35.72	-2.28	33.44	48.20	-14.76	AV

Vertical:

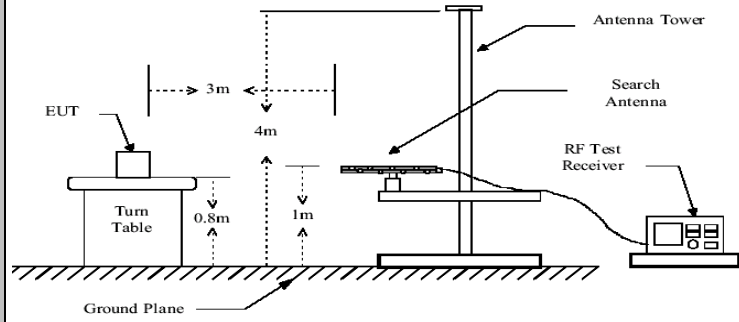
Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
5850	108.52	-1.97	106.55	122.20	-15.65	PK
5850	87.11	-1.97	85.14	102.20	-17.06	AV
5855	89.48	-2.13	87.35	110.80	-23.45	PK
5855	64.78	-2.13	62.65	90.80	-28.15	AV
5785	86.25	-2.65	83.60	105.20	-21.60	PK
5785	63.56	-2.65	60.91	85.20	-24.29	AV
5925	53.67	-2.28	51.39	68.20	-16.81	PK
5925	35.17	-2.28	32.89	48.20	-15.31	AV



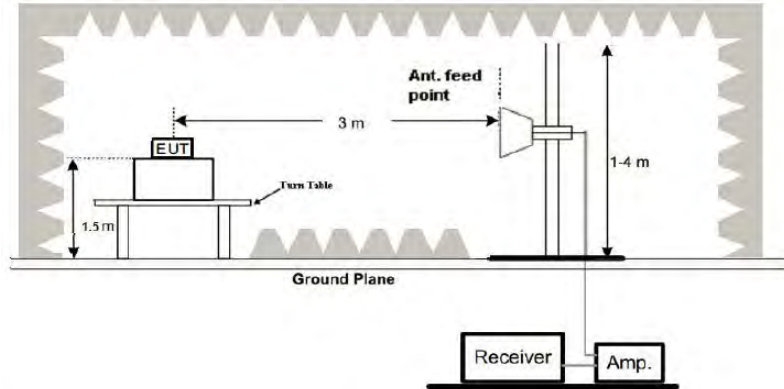
3.6. Spurious Emission

3.6.1. Test Specification

Requirement:	FCC CFR47 Part 15 Section 15.407 & 15.209 & 15.205																													
Test Method:	KDB 789033 D02 v02r01																													
Frequency Range:	9kHz to 40GHz																													
Measurement Distance:	3 m																													
Antenna Polarization:	Horizontal & Vertical																													
Operation mode:	Transmitting mode with modulation																													
Receiver Setup:	<table border="1"> <thead> <tr> <th>Frequency</th> <th>Detector</th> <th>RBW</th> <th>VBW</th> <th>Remark</th> </tr> </thead> <tbody> <tr> <td>9kHz- 150kHz</td> <td>Quasi-peak</td> <td>200Hz</td> <td>1kHz</td> <td>Quasi-peak Value</td> </tr> <tr> <td>150kHz- 30MHz</td> <td>Quasi-peak</td> <td>9kHz</td> <td>30kHz</td> <td>Quasi-peak Value</td> </tr> <tr> <td>30MHz-1GHz</td> <td>Quasi-peak</td> <td>120kHz</td> <td>300kHz</td> <td>Quasi-peak Value</td> </tr> <tr> <td rowspan="2">Above 1GHz</td> <td>Peak</td> <td>1MHz</td> <td>3MHz</td> <td>Peak Value</td> </tr> <tr> <td>Peak</td> <td>1MHz</td> <td>10Hz</td> <td>Average Value</td> </tr> </tbody> </table>	Frequency	Detector	RBW	VBW	Remark	9kHz- 150kHz	Quasi-peak	200Hz	1kHz	Quasi-peak Value	150kHz- 30MHz	Quasi-peak	9kHz	30kHz	Quasi-peak Value	30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak Value	Above 1GHz	Peak	1MHz	3MHz	Peak Value	Peak	1MHz	10Hz	Average Value
	Frequency	Detector	RBW	VBW	Remark																									
	9kHz- 150kHz	Quasi-peak	200Hz	1kHz	Quasi-peak Value																									
	150kHz- 30MHz	Quasi-peak	9kHz	30kHz	Quasi-peak Value																									
	30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak Value																									
Above 1GHz	Peak	1MHz	3MHz	Peak Value																										
	Peak	1MHz	10Hz	Average Value																										
Limit:	Unwanted spurious emissions fallen in restricted bands per FCC Part15.205 shall comply with the general field strength limits set forth in § 15.209 as below table,																													
	<table border="1"> <thead> <tr> <th>Frequency</th> <th>Field Strength (microvolts/meter)</th> <th>Measurement Distance (meters)</th> </tr> </thead> <tbody> <tr> <td>0.009-0.490</td> <td>2400/F(KHz)</td> <td>300</td> </tr> <tr> <td>0.490-1.705</td> <td>24000/F(KHz)</td> <td>30</td> </tr> <tr> <td>1.705-30</td> <td>30</td> <td>30</td> </tr> <tr> <td>30-88</td> <td>100</td> <td>3</td> </tr> <tr> <td>88-216</td> <td>150</td> <td>3</td> </tr> <tr> <td>216-960</td> <td>200</td> <td>3</td> </tr> <tr> <td>Above 960</td> <td>500</td> <td>3</td> </tr> </tbody> </table>	Frequency	Field Strength (microvolts/meter)	Measurement 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					
	Frequency	Field Strength (microvolts/meter)	Measurement 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																											
<table border="1"> <thead> <tr> <th>Frequency</th> <th>Limit (dBuV/m @3m)</th> <th>Detector</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Above 1G</td> <td>74.0</td> <td>Peak</td> </tr> <tr> <td>54.0</td> <td>Average</td> </tr> </tbody> </table>	Frequency	Limit (dBuV/m @3m)	Detector	Above 1G	74.0	Peak	54.0	Average																						
Frequency	Limit (dBuV/m @3m)	Detector																												
Above 1G	74.0	Peak																												
	54.0	Average																												
Test setup:	For radiated emissions below 30MHz																													
	<p>30MHz to 1GHz</p>																													



Above 1GHz



Test Procedure:

1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.
2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
3. 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.
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 rotating table was turned from 0 degrees to 360 degrees to find the maximum reading.
5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. 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 results:

PASS



3.6.2 Test Data

radiated emission 30MHz – 1Ghz:

Note: The test data for the worst mode of radiation emission has been recorded in the report:
HK2004170655-1E

Above 1GHz

Note: only show the worst test results –band3-802.11 n20 mode: low/mid/high channel

LOW CH 149 (802.11 n20 Mode with 5.8G)/5745

Horizontal:

Frequency	Meter Reading	Factor	Emission level	Limits	Margin	Detector Type
(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
3370	65.43	-4.59	60.84	74	-13.16	PK
3370	45.67	-4.59	41.08	54	-12.92	AV
11075	50.46	4.21	54.67	74	-19.33	PK
11075	35.04	4.21	39.25	54	-14.75	AV

Vertical:

Frequency	Meter Reading	Factor	Emission level	Limits	Margin	Detector Type
(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
3370	63.62	-4.59	59.03	74	-14.97	PK
3370	49.70	-4.59	45.11	54	-8.89	AV
11075	55.76	4.21	59.97	74	-14.03	PK
11075	34.78	4.21	38.99	54	-15.01	AV



MID CH157 (802.11 n20 Mode with 5.8G)/5785

Horizontal:

Frequency	Meter Reading	Factor	Emission level	Limits	Margin	Detector Type
(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
3280	63.62	-4.59	59.03	74	-14.97	PK
3280	49.70	-4.59	45.11	54	-8.89	AV
11044	55.76	4.21	59.97	74	-14.03	PK
11044	34.78	4.21	38.99	54	-15.01	AV

Vertical:

Frequency	Meter Reading	Factor	Emission level	Limits	Margin	Detector Type
(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
3280	67.93	-4.59	63.34	74.00	-10.66	PK
3280	47.92	-4.59	43.33	54.00	-10.67	AV
11044	53.65	4.21	57.86	74.00	-16.14	PK
11044	35.72	4.21	39.93	54.00	-14.07	AV

HIGH CH 165 (802.11 n20 Mode with 5.8G)/5825

Horizontal:

Frequency	Meter Reading	Factor	Emission level	Limits	Margin	Detector Type
(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
3327	64.11	-4.59	59.52	74.00	-14.48	PK
3327	49.06	-4.59	44.47	54.00	-9.53	AV
11070	52.54	4.21	56.75	74.00	-17.25	PK
11070	32.75	4.21	36.96	54.00	-17.04	AV

Vertical:

Frequency	Meter Reading	Factor	Emission level	Limits	Margin	Detector Type
(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
3327	66.94	-4.59	62.35	74.00	-11.65	PK
3327	46.42	-4.59	41.83	54.00	-12.17	AV
11070	51.50	4.21	55.71	74.00	-18.29	PK
11070	33.83	4.21	38.04	54.00	-15.96	AV

**MIMO/CDD 802.11 n20 Mode -- Low CH 149**

Horizontal:

Frequency	Meter Reading	Factor	Emission level	Limits	Margin	Detector Type
(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
3373.48	66.85	-4.59	62.26	74.00	-11.74	PK
3373.48	44.90	-4.59	40.31	54.00	-13.69	AV
11087.79	51.22	4.21	55.43	74.00	-18.57	PK
3373.48	34.00	4.21	38.21	54.00	-15.79	AV

Vertical:

Frequency	Meter Reading	Factor	Emission level	Limits	Margin	Detector Type
(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
3372.74	63.12	-4.59	58.53	74.00	-15.47	PK
3372.74	44.10	-4.59	39.51	54.00	-14.49	AV
11092.10	54.96	4.21	59.17	74.00	-14.83	PK
11092.10	36.38	4.21	40.59	54.00	-13.41	AV

MIMO/CDD 802.11 n20 Mode -- mid CH 157

Horizontal:

Frequency	Meter Reading	Factor	Emission level	Limits	Margin	Detector Type
(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
3369.63	63.04	-4.59	58.45	74.00	-15.55	PK
3369.63	47.67	-4.59	43.08	54.00	-10.92	AV
11083.46	54.62	4.21	58.83	74.00	-15.17	PK
11083.46	34.78	4.21	38.99	54.00	-15.01	AV

Vertical:

Frequency	Meter Reading	Factor	Emission level	Limits	Margin	Detector Type
(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
3375.83	67.23	-4.59	62.64	74.00	-11.36	PK
3375.83	46.62	-4.59	42.03	54.00	-11.97	AV
11081.33	50.07	4.21	54.28	74.00	-19.72	PK
11081.33	34.69	4.21	38.90	54.00	-15.10	AV

**MIMO/CDD 802.11 n20 Mode -- high CH 165**

Horizontal:

Frequency	Meter Reading	Factor	Emission level	Limits	Margin	Detector Type
(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
3377.98	63.43	-4.59	58.84	74.00	-15.16	PK
3377.98	45.45	-4.59	40.86	54.00	-13.14	AV
11089.94	53.36	4.21	57.57	74.00	-16.43	PK
11089.94	33.32	4.21	37.53	54.00	-16.47	AV

Vertical:

Frequency	Meter Reading	Factor	Emission level	Limits	Margin	Detector Type
(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
3369.78	64.03	-4.59	59.44	74.00	-14.56	PK
3369.78	49.81	-4.59	45.22	54.00	-8.78	AV
11093.96	50.46	4.21	54.67	74.00	-19.33	PK
11093.96	34.38	4.21	38.59	54.00	-15.41	AV

MIMO/CDD 802.11 n40 Mode -- low CH151

Horizontal:

Frequency	Meter Reading	Factor	Emission level	Limits	Margin	Detector Type
(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
3374.83	65.33	-4.59	60.74	74.00	-13.26	PK
3374.83	45.24	-4.59	40.65	54.00	-13.35	AV
11081.36	52.88	4.21	57.09	74.00	-16.91	PK
11081.36	34.55	4.21	38.76	54.00	-15.24	AV

Vertical:

Frequency	Meter Reading	Factor	Emission level	Limits	Margin	Detector Type
(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
3369.74	65.05	-4.59	60.46	74.00	-13.54	PK
3369.74	45.42	-4.59	40.83	54.00	-13.17	AV
11093.63	55.73	4.21	59.94	74.00	-14.06	PK
11093.63	36.60	4.21	40.81	54.00	-13.19	AV

**MIMO/CDD 802.11 n40 Mode -- high CH159**

Horizontal:

Frequency	Meter Reading	Factor	Emission level	Limits	Margin	Detector Type
(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
3378.31	64.28	-4.59	59.69	74.00	-14.31	PK
3378.31	45.68	-4.59	41.09	54.00	-12.91	AV
11086.44	53.18	4.21	57.39	74.00	-16.61	PK
11086.44	32.24	4.21	36.45	54.00	-17.55	AV

Vertical:

Frequency	Meter Reading	Factor	Emission level	Limits	Margin	Detector Type
(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
3371.38	67.46	-4.59	62.87	74.00	-11.13	PK
3371.38	47.28	-4.59	42.69	54.00	-11.31	AV
11089.99	54.23	4.21	58.44	74.00	-15.56	PK
11089.99	33.57	4.21	37.78	54.00	-16.22	AV

MIMO/CDD 802.11 ac20 Mode -- Low CH 149

Horizontal:

Frequency	Meter Reading	Factor	Emission level	Limits	Margin	Detector Type
(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
3372.71	66.47	-4.59	61.88	74.00	-12.12	PK
3372.71	49.41	-4.59	44.82	54.00	-9.18	AV
11079.33	53.41	4.21	57.62	74.00	-16.38	PK
11079.33	32.68	4.21	36.89	54.00	-17.11	AV

Vertical:

Frequency	Meter Reading	Factor	Emission level	Limits	Margin	Detector Type
(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
3369.77	67.53	-4.59	62.94	74.00	-11.06	PK
3369.77	47.08	-4.59	42.49	54.00	-11.51	AV
11096.00	51.79	4.21	56.00	74.00	-18.00	PK
11096.00	36.97	4.21	41.18	54.00	-12.82	AV

**MIMO/CDD 802.11 ac20 Mode -- mid CH 157**

Horizontal:

Frequency	Meter Reading	Factor	Emission level	Limits	Margin	Detector Type
(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
3369.90	63.46	-4.59	58.87	74.00	-15.13	PK
3369.90	46.59	-4.59	42.00	54.00	-12.00	AV
11090.46	54.25	4.21	58.46	74.00	-15.54	PK
11090.46	34.69	4.21	38.90	54.00	-15.10	AV

Vertical:

Frequency	Meter Reading	Factor	Emission level	Limits	Margin	Detector Type
(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
3376.30	63.98	-4.59	59.39	74.00	-14.61	PK
3376.30	47.33	-4.59	42.74	54.00	-11.26	AV
11082.44	50.14	4.21	54.35	74.00	-19.65	PK
11082.44	37.02	4.21	41.23	54.00	-12.77	AV

MIMO/CDD 802.11 ac20 Mode -- high CH 165

Horizontal:

Frequency	Meter Reading	Factor	Emission level	Limits	Margin	Detector Type
(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
3372.72	66.67	-4.59	62.08	74.00	-11.92	PK
3372.72	48.01	-4.59	43.42	54.00	-10.58	AV
11082.45	50.21	4.21	54.42	74.00	-19.58	PK
11082.45	32.67	4.21	36.88	54.00	-17.12	AV

Vertical:

Frequency	Meter Reading	Factor	Emission level	Limits	Margin	Detector Type
(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
3373.19	68.93	-4.59	64.34	74.00	-9.66	PK
3373.19	46.30	-4.59	41.71	54.00	-12.29	AV
11089.32	53.62	4.21	57.83	74.00	-16.17	PK
11089.32	33.79	4.21	38.00	54.00	-16.00	AV

**MIMO/CDD 802.11 ac40 Mode -- low CH151**

Horizontal:

Frequency	Meter Reading	Factor	Emission level	Limits	Margin	Detector Type
(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
3368.14	66.45	-4.59	61.86	74.00	-12.14	PK
3368.14	48.35	-4.59	43.76	54.00	-10.24	AV
11081.16	55.47	4.21	59.68	74.00	-14.32	PK
11081.16	33.86	4.21	38.07	54.00	-15.93	AV

Vertical:

Frequency	Meter Reading	Factor	Emission level	Limits	Margin	Detector Type
(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
3369.54	67.79	-4.59	63.20	74.00	-10.80	PK
3369.54	48.98	-4.59	44.39	54.00	-9.61	AV
11079.06	52.03	4.21	56.24	74.00	-17.76	PK
11079.06	33.67	4.21	37.88	54.00	-16.12	AV

MIMO/CDD 802.11 ac40 Mode -- high CH159

Horizontal:

Frequency	Meter Reading	Factor	Emission level	Limits	Margin	Detector Type
(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
3370.08	64.49	-4.59	59.90	74.00	-14.10	PK
3370.08	49.94	-4.59	45.35	54.00	-8.65	AV
11079.70	55.42	4.21	59.63	74.00	-14.37	PK
11079.70	36.44	4.21	40.65	54.00	-13.35	AV

Vertical:

Frequency	Meter Reading	Factor	Emission level	Limits	Margin	Detector Type
(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
3369.20	66.06	-4.59	61.47	74.00	-12.53	PK
3369.20	45.49	-4.59	40.90	54.00	-13.10	AV
11080.07	54.16	4.21	58.37	74.00	-15.63	PK
11080.07	35.83	4.21	40.04	54.00	-13.96	AV

**MIMO/CDD 802.11 ac80 Mode -- high CH155**

Horizontal:

Frequency	Meter Reading	Factor	Emission level	Limits	Margin	Detector Type
(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
3378.08	68.61	-4.59	64.02	74.00	-9.98	PK
3378.08	47.15	-4.59	42.56	54.00	-11.44	AV
11088.58	55.95	4.21	60.16	74.00	-13.84	PK
11088.58	32.11	4.21	36.32	54.00	-17.68	AV

Vertical:

Frequency	Meter Reading	Factor	Emission level	Limits	Margin	Detector Type
(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
3368.07	64.76	-4.59	60.17	74.00	-13.83	PK
3368.07	44.85	-4.59	40.26	54.00	-13.74	AV
11081.47	50.85	4.21	55.06	74.00	-18.94	PK
11081.47	32.78	4.21	36.99	54.00	-17.01	AV

Remark:

- (1) Measuring frequencies from 1 GHz to the 40 GHz.
- (2) "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency.
- (3) * denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.
- (4) Data of measurement within this frequency range shown "---" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz.
- (6) When the test results of Peak Detected below the limits of Average Detected, the Average Detected is not need completed. For example: Top Channel at Fundamental 73.16dBuV/m(PK Value) <93.98(AV Limit), at harmonic 53.20 dBuV/m(PK Value) <54 dBuV/m(AV Limit), the Average Detected not need to completed.



3.7. Frequency Stability Measurement

3.7.1. Test Specification

Test Requirement:	FCC Part15 Section 15.407(g) &Part2 J Section 2.1055
Test Method:	ANSI C63.10: 2013
Limit:	The frequency tolerance shall be maintained within the band of operation frequency over a temperature variation of 0 degrees to 35 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C.
Test Setup:	<pre> graph LR SA[Spectrum Analyzer] --- EUT[EUT] subgraph TC [Temperature Chamber] EUT end P[AC/DC Power supply] --- EUT </pre>
Test Procedure:	The EUT was placed inside the environmental test chamber and powered by nominal AC/DC voltage. b. Turn the EUT on and couple its output to a spectrum analyzer. c. Turn the EUT off and set the chamber to the highest temperature specified. d. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize. e. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature. f. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.
Test Result:	PASS
Remark:	N/A

**3.7.2. Test Result as follows:**

Mode	Voltage (V)	FHL (5745MHz)	Deviation (KHz)	FHH (5825MHz)	Deviation (KHz)
U-NII 3 5.8G	12V	5744.979	-21	5824.974	-26
	13.2 V	5744.978	-22	5824.974	-26
	10.8 V	5744.972	-28	5824.976	-24

Mode	Temperature (°C)	FHL (5745MHz)	Deviation (KHz)	FHH (5825MHz)	Deviation (KHz)
U-NII 3 5.8G	-30	5744.980	-20	5824.975	-25
	-20	5744.973	-27	5824.978	-22
	-10	5744.975	-25	5824.972	-28
	0	5744.974	-26	5824.972	-28
	10	5744.975	-25	5824.976	-24
	20	5744.978	-22	5824.977	-23
	30	5744.974	-26	5824.971	-29
	40	5744.979	-21	5824.974	-26
	50	5744.973	-27	5824.979	-21



3.8. ANTENNA REQUIREMENT

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 15.249, 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.

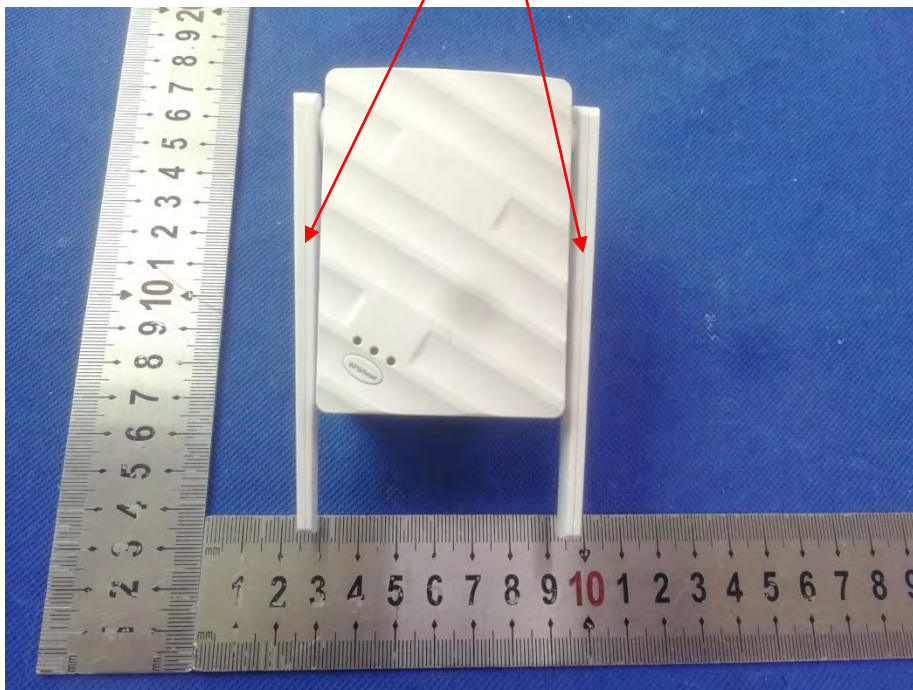
Refer to statement below for compliance.

The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed.

Antenna Connected Construction

The antenna used in this product is a external Antenna , and the best case gain of the antenna is Antenna port 1:3dBi and Antenna port 2:3dBi.

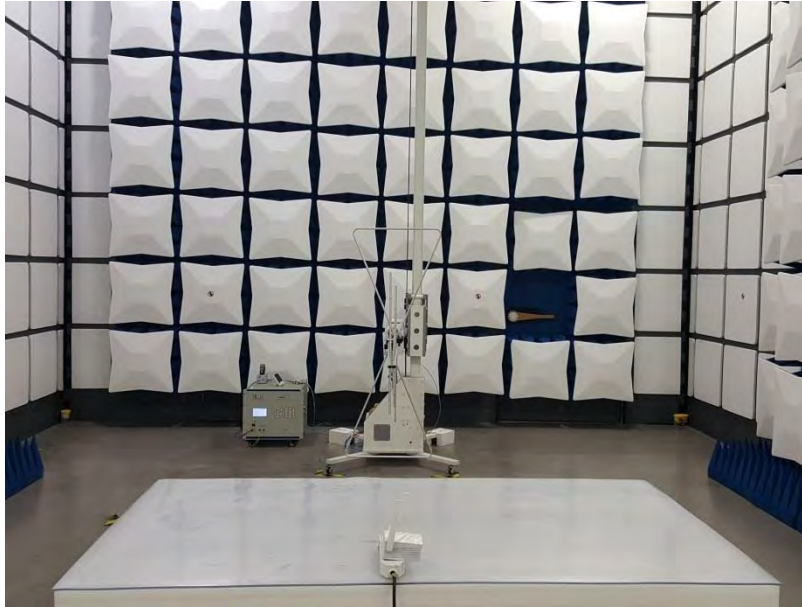
WIFI ANTENNA





4. Photographs of Test Setup

Radiation Emission below 1000MHz

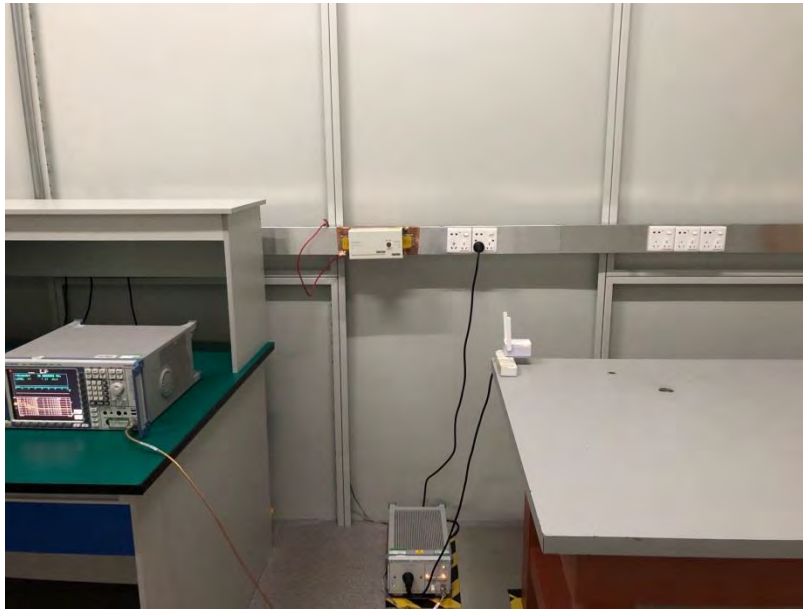


Above 1000MHz





Conducted emission





5. PHOTOS OF THE EUT

Please refer to the report No.: HK2004170655-2E

*******END OF REPORT*******