Radio Test Report

For

HUNAN FN-LINK TECHNOLOGY LIMITED

Test Standards:	ETSI EN 300 440 V2.1.1(2017-03)
Product Description:	WIFI+BT Module
Tested Model:	6221C-PUC
Brand Name:	FN-LINK
Report No.:	EC2009014RE03
Tested Date:	2020-09-16 to 2020-09-26
Issued Date:	2020-09-26
Prepared By:	Jerry Wang / Engineer
Approved By:	Tiny Yang / RF Manager

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Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	2020.09.26	Valid	Original Report

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SUMMARY OF TEST RESULT

CLAUSE (EN 300 440)	TEST PARAMETER	PASS/FAIL	REMARK
Transmitter Parameters			
4.2.2	Equivalent Isotropically Radiated Power	PASS	-
4.2.3	Permitted Range of Operating Frequencies	PASS	-
4.2.4	Unwanted Emissions in the spurious domain	PASS	Under limit 6.15 dB at 5760 MHz
4.2.5	Duty Cycle	Not Applicable	Transmitting devices which do not use LBT, DAA, or RFID transmitters operating in the 2 446 to 2 454 MHz band transmitting more than 500 mW e.i.r.p. power level
4.2.6	Additional requirement for FHSS equipment	Not Applicable	Equipment utilizing FHSS modulation
4.4	Spectrum access techniques	Not Applicable	Equipment which are not using duty cycle restrictions for media access
4.6.4	GBSAR antenna pattern	Not Applicable	Applies only GBSAR systems
Receiver Parameters			
4.3.3	Adjacent Channel Selectivity	PASS	Applies to equipment Category 1 receivers
4.3.4	Blocking or Desensitization	PASS	Applies to category 1 and 2 receivers
4.3.5	Spurious radiations	PASS	Under limit 7.45 dB at 617.8 MHz
Note: This product using media access technology and its receiver category is 1			

1. General Description

1.1 Applicant

HUNAN FN-LINK TECHNOLOGY LIMITED
No.8, Litong Road, Liuyang Economic & TechnicalDevelopment Zone, Changsha, Hunan, CHINA

1.2 Manufacturer

HUNAN FN-LINK TECHNOLOGY LIMITED
No.8, Litong Road, Liuyang Economic & TechnicalDevelopment Zone, Changsha, Hunan, CHINA

1.3 General Description of EUT

Product	WIFI+BT Module	
Model NO.	6221C-PUC	
Additional NO.	N/A	
Difference Description	N/A	
Nominal Voltage	3.3Vdc for EUT	
Extreme Temperature	-20℃ and 70℃	
MODULATION TYPE	**RLAN**	256QAM,64QAM, 16QAM, QPSK, BPSK for OFDM
OPERATING FREQUENCY	**RLAN**	5725-5850MHz for 11a/ n(HT20)/ n(HT40)/ ac20(VHT20)/ ac40(VHT40)/ ac80(VHT80)
HW Version	V1.0	
SW Version	V1.0	
I/O PORTS	Refer to user's manual	
ACCESSORY DEVICES	Refer to note as below	

NOTE:

1. The above EUT information is declared by manufacturer and for more detailed feature description, please refer to the manufacturer's specifications or user's manual.

2. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.

1.4 Support equipment List

Manufacturer	Description	Model	Serial Number	Certificate
Lenovo	Notebook	Xiaoxinchao5000	PF0QPQMH	DOC
NETGEAR	Dual band WiFi AP	R7800	N/A	DOC
Lenovo	PC	T4900d	SS24542038	DOC
Lenovo	LCD monitor	LS2014wA	U15FVGW7	DOC
FN-LINK	Test Fixture	12X16MM_TB_V3.1	N/A	N/A
NA	DC Power Line	N/A	N/A	N/A
Lenovo	Wired Keyboard	LXH-JME2209U	60937461	DOC
Logitech	Wired Mouse	M-U0026	1826HS0070D8	DOC
N/A	PCIE extension cable	N/A	N/A	N/A
GMTC	WiFi ANT/FPC /L=55mm x2	IP15A3	304WIFI0094	N/A

1.5 Product Specification of Equipment Under Test

Product Specification subjective to this standard	
Tx / Rx Frequency Range	5725 MHz ~ 5850 MHz;
Channel Spacing	20MHz Bandwidth : 20MHz 40MHz Bandwidth : 40MHz 80MHz Bandwidth : 80MHz
Maximum EIRP Average Power	**<5725 MHz ~ 5850MHz>** 802.11a : 13.30 dBm 802.11n HT20 : 13.95 dBm 802.11n HT40 : 13.59 dBm 802.11ac VHT20 : 13.03 dBm 802.11ac VHT40 : 13.53 dBm 802.11ac VHT80 : 13.05 dBm
Antenna Type	FPC Antenna
Antenna Gain	**<5725 MHz ~ 5850 MHz>** 2.0 dBi
Receiver Category	Category 1
Type of Modulation	802.11a/n: OFDM (BPSK / QPSK / 16QAM / 64QAM) 802.11ac: OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)

Remark:

1. For other wireless features of this EUT, test report will be issued separately.

2. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

3. Receiver Category was declared by manufacturer

1.6 Modification of EUT

No modifications are made to the EUT during all test items.

1.7 Applied Standards

According to the specifications of the manufacturer, the EUT must complies with the requirements of **ETSI EN 300 440 V2.1.1(2017-03)**

Note: All test items were verified and recorded according to the standards and without any deviation during the test.

1.8 Test Condition

Normal Condition	NTNV	Temperature	25℃	Voltage	DC3.3V
Extreme Condition	LTNV	Temperature	-20℃	Voltage	DC3.3V
	HTNV	Temperature	70℃	Voltage	DC3.3V

2. Test Configuration of Equipment under Test

2.1 Test Consideration

a. During testing, the interface cables and equipment positions were varied according to ETSI EN 300 440 V2.1.1 (2017-03)

b. The complete test system included EUT for RF test.

c. Preliminary tests were checked in different data rate and recorded worse in the following tables:

Single Antenna

Modulation	Data Rate
802.11a	54 Mbps
802.11n HT20	MCS7
802.11n HT40	MCS7
802.11ac VHT20	Nssi MCS9
802.11ac VHT40	Nssi MCS9
802.11ac VHT80	Nssi MCS9

2.2 Test Mode

Frequency range of radiation was investigated from 25 MHz to 40GHz.

For the test result of frequency above 18GHz is far below the limit, so it is not listed in the report

The following test modes were performed for Unwanted Emissions and Spurious Emissions:

Pre-scanned tests were conducted to determine the final configuration from all possible combinations. The following tables are showing the test modes as the worst cases and recorded in this report.

Test Modes	
RF	802.11a (5725 MHz ~ 5850 MHz) OFDM
Tx	802.11a CH149 (5745MHz) 802.11a CH165 (5825MHz)
Rx	802.11a CH149 (5745MHz) 802.11a CH165 (5825MHz)

Test Modes	
RF	802.11n HT20/802.11ac VHT20 (5725 MHz ~ 5850 MHz) OFDM
Tx	802.11n HT20 CH149 (5745MHz) 802.11n HT20 CH165 (5825MHz)

Rx	802.11n HT20 CH149 (5745MHz) 802.11n HT20 CH165 (5825MHz)

Test Modes	
RF	**802.11n HT40/802.11ac VHT40 (5725 MHz ~ 5850 MHz) OFDM**
Tx	**802.11n HT40 CH151 (5755MHz) 802.11n HT40 CH159 (5795MHz)**
Rx	802.11n HT40 CH151 (5755MHz) 802.11n HT40 CH159 (5795MHz)

Test Modes	
RF	**802.11ac VHT80 (5725 MHz ~ 5850 MHz) OFDM**
Tx	**802.11ac VHT80 CH155 (5775MHz)**
Rx	**802.11ac VHT80 CH155 (5775MHz)**

Remark:

1. All test modes of the Transmitter and Receiver Radiated Spurious Emission (RSE) were tested; only the test worse data in bold of these modes were reported.
2. The bandwidth of n20 and ac20 is consistent with the modulation mode, so only the worst mode data is listed in the report, and n40 is the same as ac40

3. Transmitter Parameters

3.1 Equivalent isotropically radiated power (e.i.r.p.)

3.1.1 Limit of e.i.r.p

The transmitter maximum e.i.r.p. under normal and extreme test conditions shall not exceed 25mW.

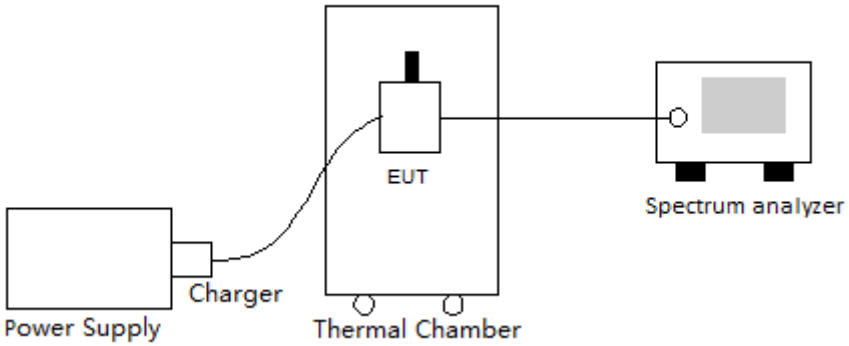
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedure

1. EUT was placed in the thermal chamber.
2. The transmitter output port was connected to the power meter.
3. Connecting the charger to power supply.
4. Setting thermal chamber temperature and power supply voltage at suitable value..
5. The conducted power is equal to the reading on power meter plus cable loss..
6. The EIRP is equal to the conducted power plus the antenna gain.
7. Repeating step 4 to 6 at different condition and different channel..

3.1.4 Test Setup



3.1.5 Test Results

Test Condition	TestMode	TPC	Antenna	Channel	EIRP[dBm]	Limit[dBm]	Verdict
NTNV	11A	NA	Ant1	5745	13.22	13.98	PASS
		NA		5785	12.92	13.98	PASS
		NA		5825	13.19	13.98	PASS
	11N20SISO	NA	Ant1	5745	13.19	13.98	PASS
		NA		5785	13.90	13.98	PASS

		NA		5825	12.41	13.98	PASS
	11N40SISO	NA	Ant1	5755	13.05	13.98	PASS
		NA		5795	13.42	13.98	PASS
	11AC20SISO	NA	Ant1	5745	12.66	13.98	PASS
		NA		5785	13.00	13.98	PASS
		NA		5825	12.60	13.98	PASS
	11AC40SISO	NA	Ant1	5755	12.99	13.98	PASS
		NA		5795	13.52	13.98	PASS
	11AC80SISO	NA	Ant1	5775	13.01	13.98	PASS
LTNV	11A	NA	Ant1	5745	13.18	13.98	PASS
		NA		5785	12.85	13.98	PASS
		NA		5825	13.04	13.98	PASS
	11N20SISO	NA	Ant1	5745	13.07	13.98	PASS
		NA		5785	13.95	13.98	PASS
		NA		5825	12.16	13.98	PASS
	11N40SISO	NA	Ant1	5755	12.97	13.98	PASS
		NA		5795	13.47	13.98	PASS
	11AC20SISO	NA	Ant1	5745	12.86	13.98	PASS
		NA		5785	13.03	13.98	PASS
		NA		5825	12.41	13.98	PASS
	11AC40SISO	NA	Ant1	5755	13.13	13.98	PASS
		NA		5795	13.53	13.98	PASS
	11AC80SISO	NA	Ant1	5775	12.85	13.98	PASS
HTNV	11A	NA	Ant1	5745	13.30	13.98	PASS
		NA		5785	12.95	13.98	PASS
		NA		5825	13.15	13.98	PASS
	11N20SISO	NA	Ant1	5745	13.00	13.98	PASS
		NA		5785	13.95	13.98	PASS
		NA		5825	12.16	13.98	PASS
	11N40SISO	NA	Ant1	5755	12.96	13.98	PASS
		NA		5795	13.59	13.98	PASS
	11AC20SISO	NA	Ant1	5745	12.71	13.98	PASS
		NA		5785	13.01	13.98	PASS
		NA		5825	12.36	13.98	PASS
	11AC40SISO	NA	Ant1	5755	12.99	13.98	PASS
		NA		5795	13.51	13.98	PASS
	11AC80SISO	NA	Ant1	5775	13.05	13.98	PASS

3.2 Permitted Range of Operating Frequencies

3.2.1 Limit of Permitted Range of Operating Frequencies

The width of the power spectrum envelope is fH -fL for a given operating frequency. In equipment that allows adjustment or selection of different operating frequencies, the power envelope takes up different positions in the allowed band. The frequency range is determined by the lowest value of fL and the highest value of fH resulting from the adjustment of the equipment to the lowest and highest operating frequencies. The occupied bandwidth (i.e. the bandwidth in which 99 % of the wanted emission is contained) and the necessary bandwidth of the transmitter shall fall within the assigned frequency band.

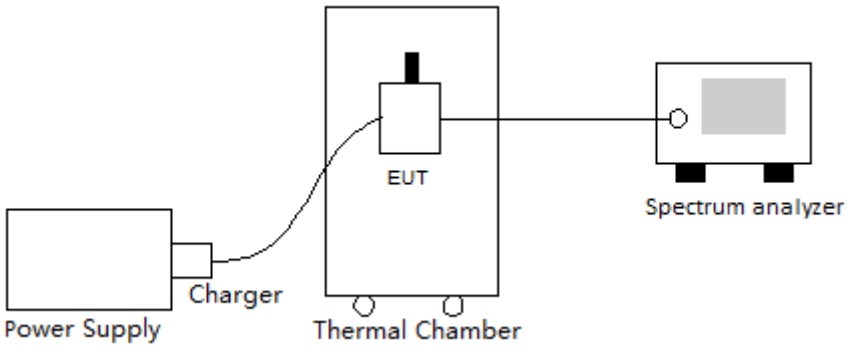
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedure

1. EUT was placed in the thermal chamber.
2. The transmitter output port was connected to the spectrum analyzer.
3. Connecting the charger to power supply.
4. The settings on spectrum analyzer are 30 kHz RBW and 100 kHz VBW.
5. Setting thermal chamber temperature and power supply voltage at suitable value.
6. Recording fL or fH for 99% OBW at -30dBm e.i.r.p.
7. Repeating step 5 and 6 at different conditions and different channels..

3.2.4 Test Setup



3.2.5 Test Results

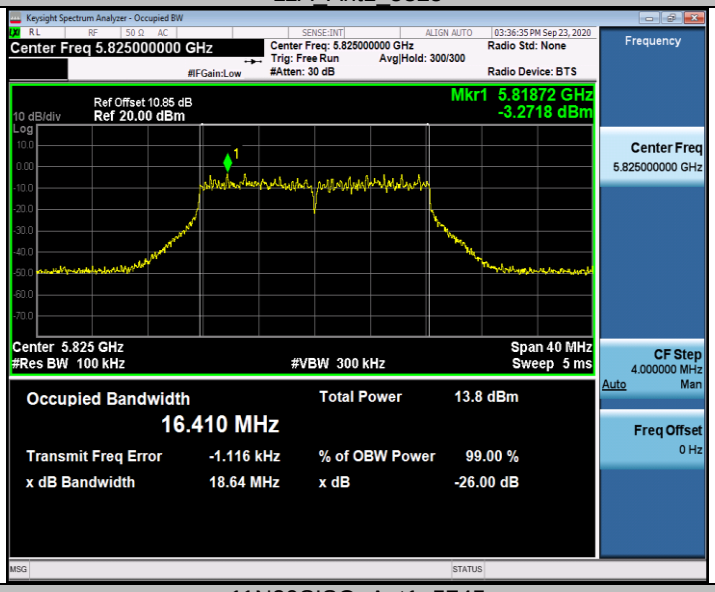
99% Occupied Channel Bandwidth					
TestMode	Antenna	Channel	OCB[MHz]	Limit[MHz]	Verdict
11A	Ant1	5745	16.401	16 to 20	PASS
		5785	16.399	16 to 20	PASS
		5825	16.410	16 to 20	PASS
11N20SISO	Ant1	5745	17.557	16 to 20	PASS
		5825	17.608	16 to 20	PASS
11N40SISO	Ant1	5755	35.891	32 to 40	PASS
		5795	35.913	32 to 40	PASS
11AC20SISO	Ant1	5745	17.595	16 to 20	PASS
		5785	17.598	16 to 20	PASS
		5825	17.605	16 to 20	PASS
11AC40SISO	Ant1	5755	36.091	32 to 40	PASS
		5795	36.096	32 to 40	PASS
11AC80SISO	Ant1	5775	75.410	64 to 80	PASS

Please refer to below test plot:

11A_Ant1_5745

11A_Ant1_5785

11A_Ant1_5825



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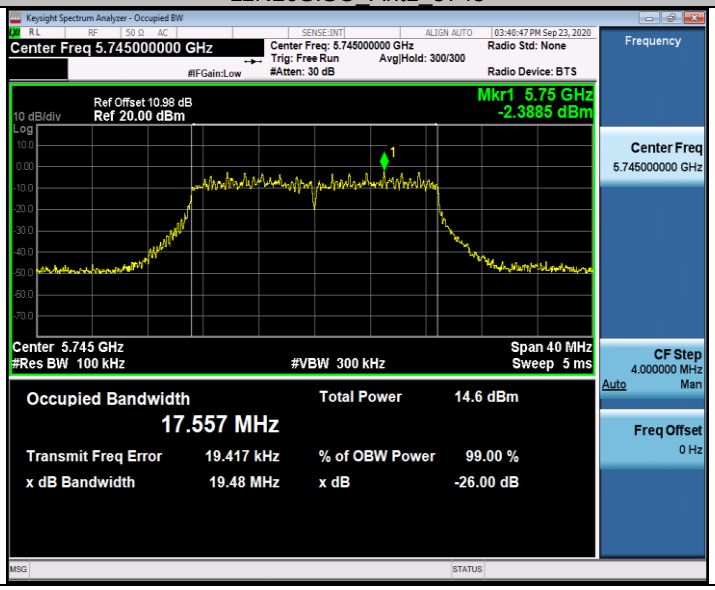

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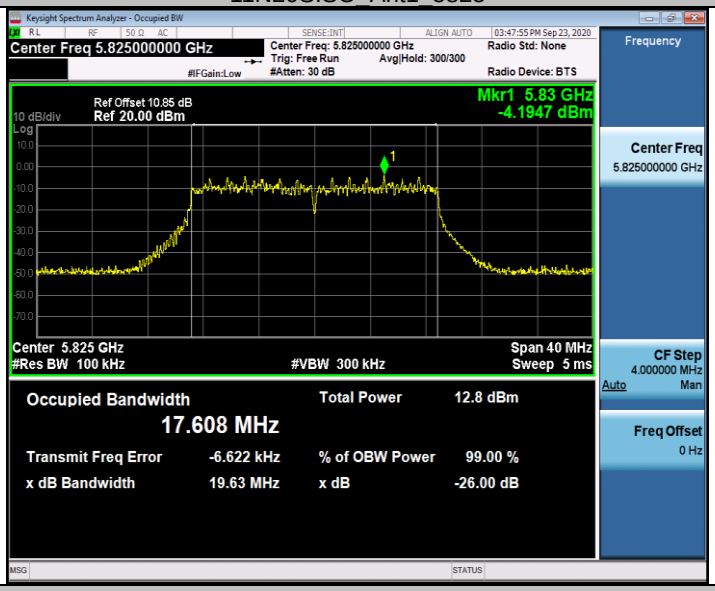
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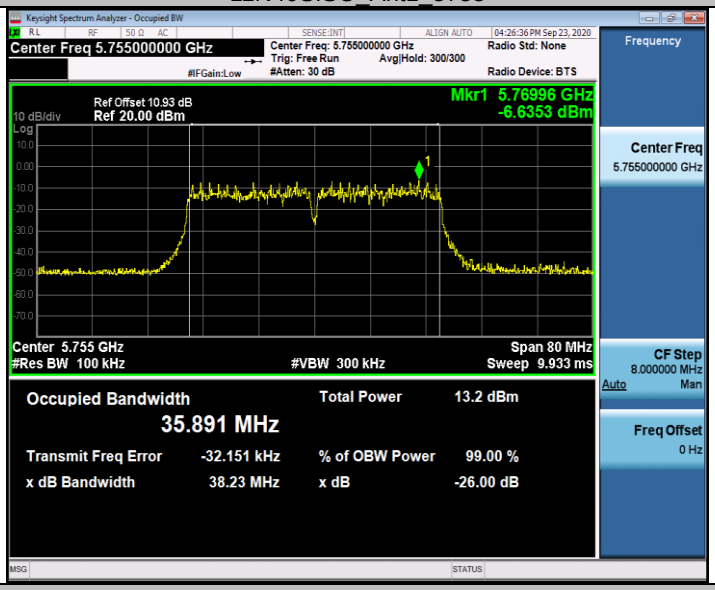
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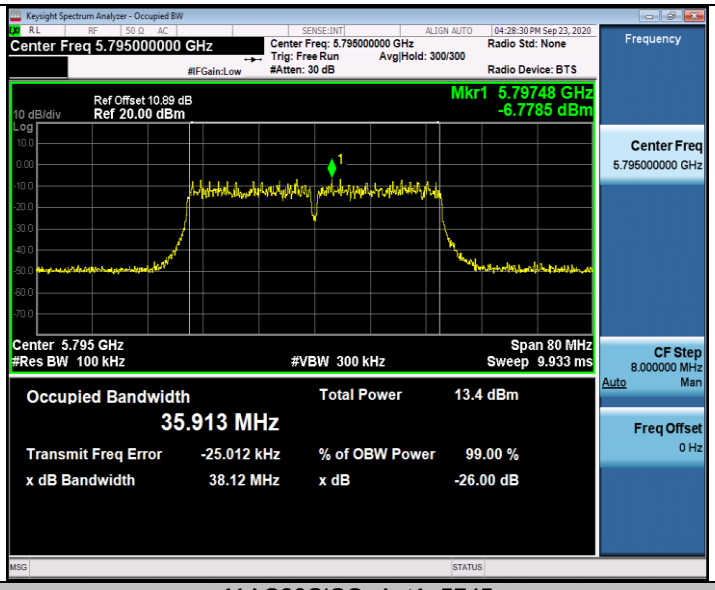

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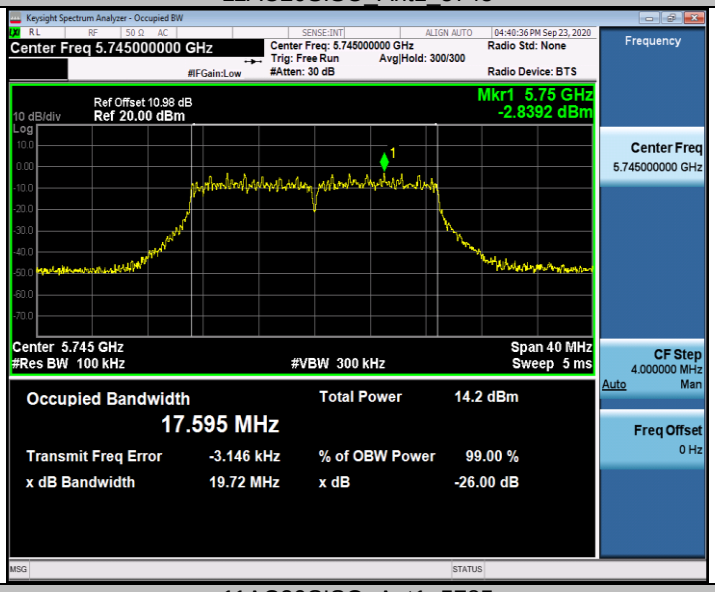

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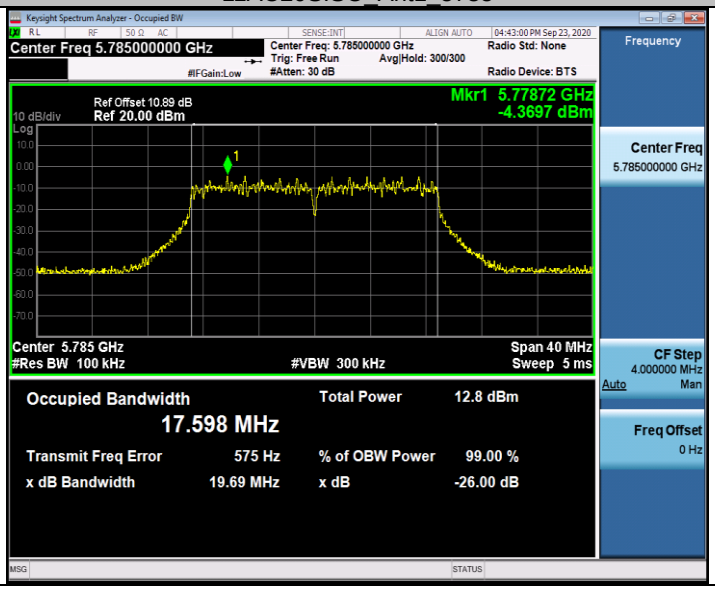

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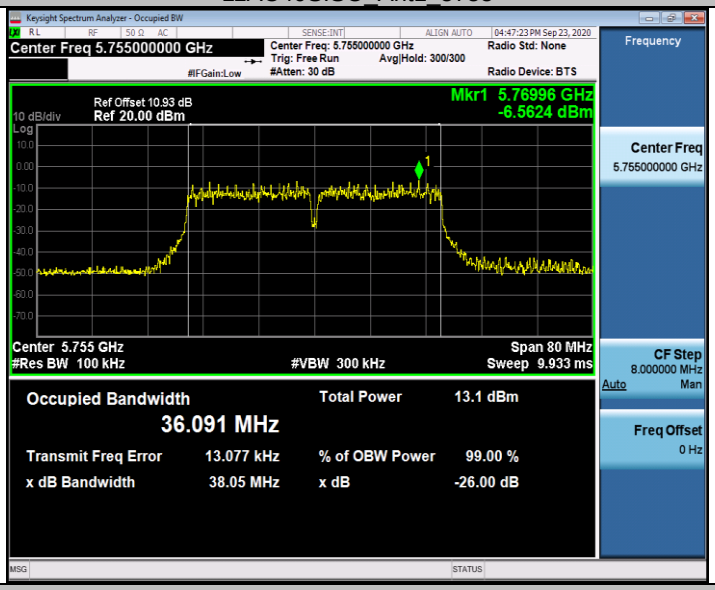
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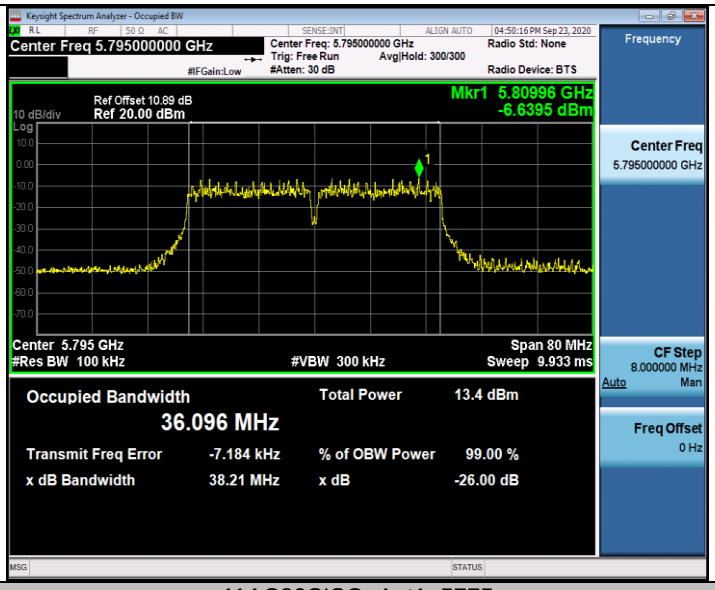

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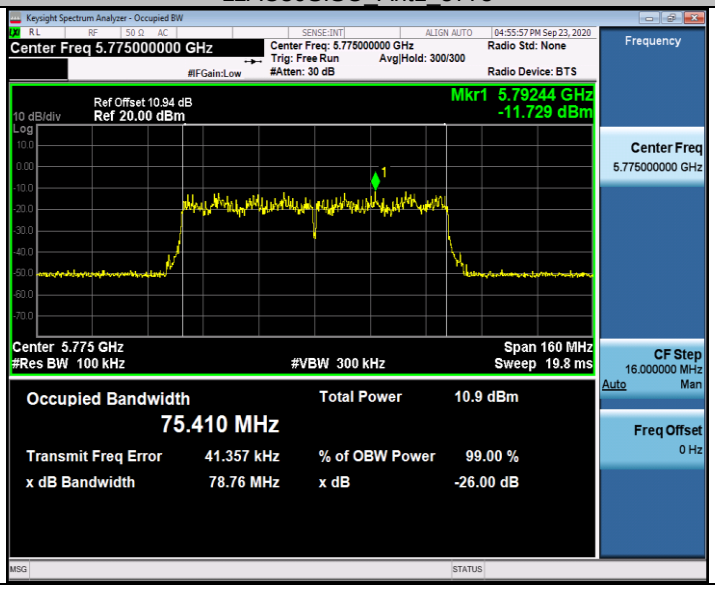
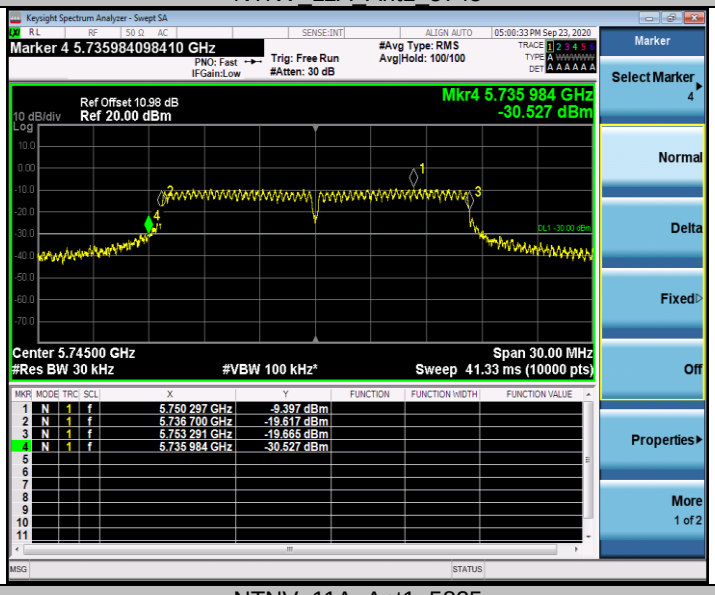


Mod.	CH	Freq. (MHz)	-30dB Operating Frequency Range						Pass /Fail
			NT		LT		HT		
			25 °C		-20°C		70 °C		
			NV		NV		NV		
			FL	FH	FL	FH	FL	FH	
11a	149	5745	5735.984	-	5736.009	-	5736.012	-	Pass
11a	165	5825	-	5833.801	-	5833.810	-	5833.801	Pass
HT20	149	5745	5735.538	-	5735.529	-	5735.529	-	Pass
HT20	165	5825	-	5834.389	-	5834.533	-	5834.410	Pass
HT40	151	5755	5736.470	-	5736.460	-	5736.470	-	Pass
HT40	159	5795	-	5813.505	-	5813.485	-	5813.395	Pass
ac20	149	5745	5735.547	-	5735.544	-	5735.535	-	Pass
ac20	165	5825	-	5834.359	-	5834.380	-	5834.365	Pass
ac40	151	5755	5736.460	-	5736.465	-	5736.470	-	Pass
ac40	159	5795	-	5813.490	-	5813.415	-	5813.520	Pass
ac80	155	5775	5736.657	5813.297	5736.672	5813.306	5736.666	5813.288	Pass
Frequency Range Limit			Within band 5725-5875MHz						

Please refer to below test plot:

NTNV_11A_Ant1_5745



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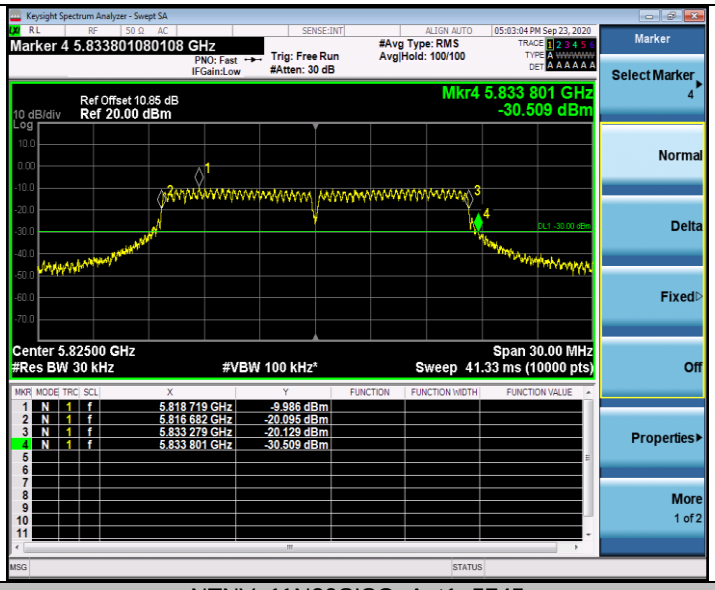

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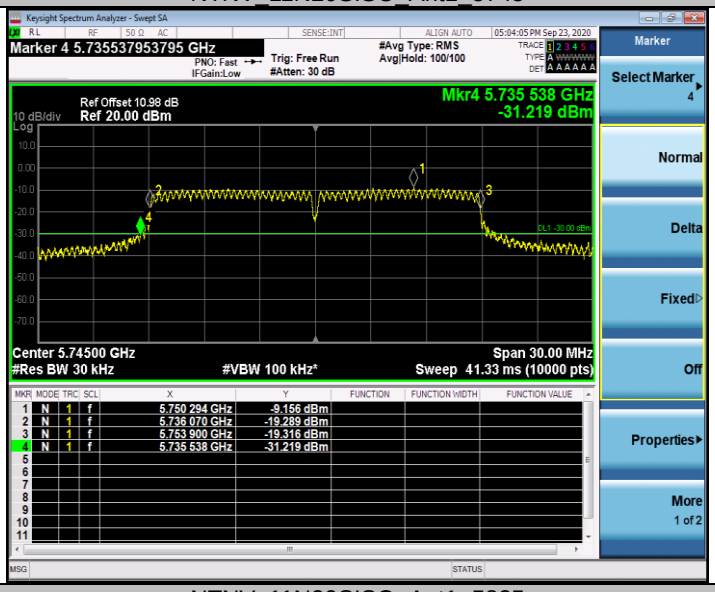

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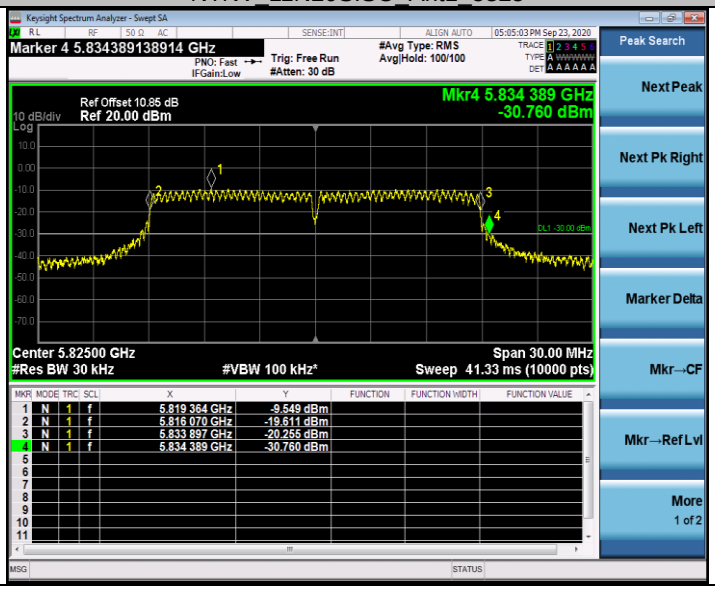

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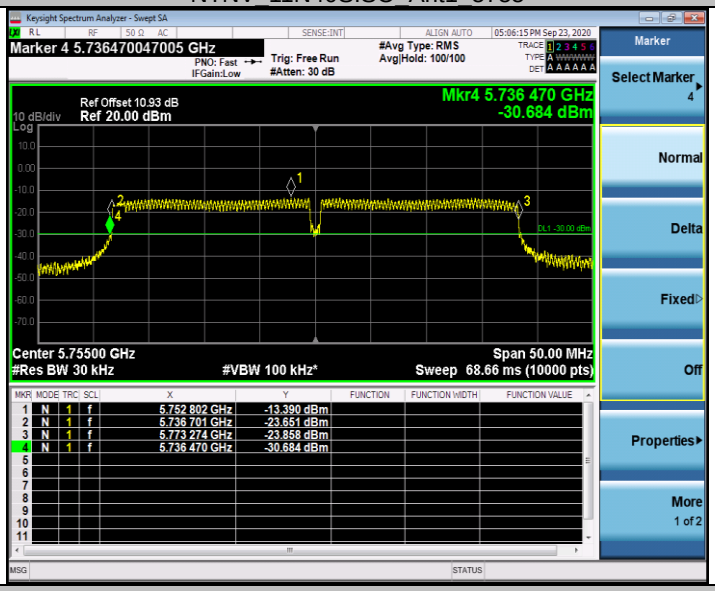
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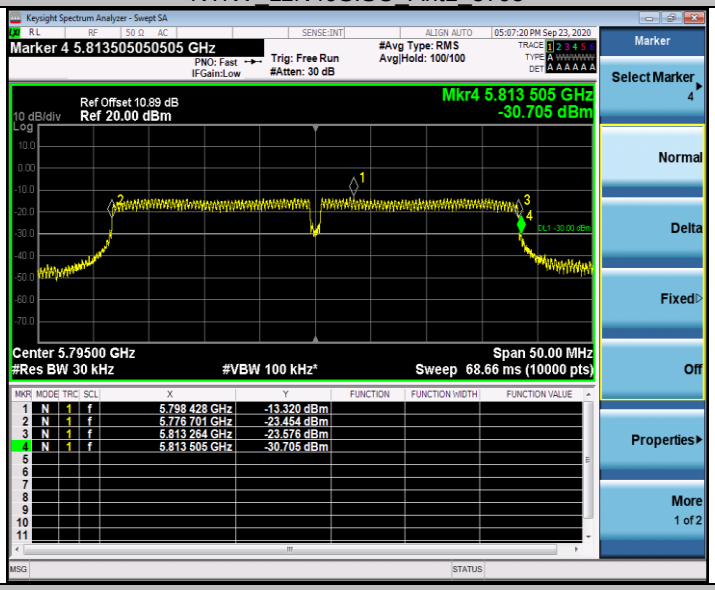
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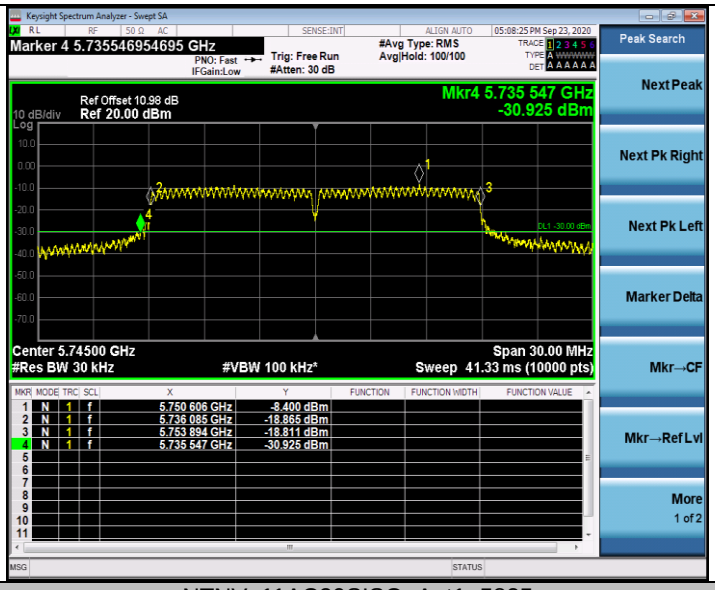

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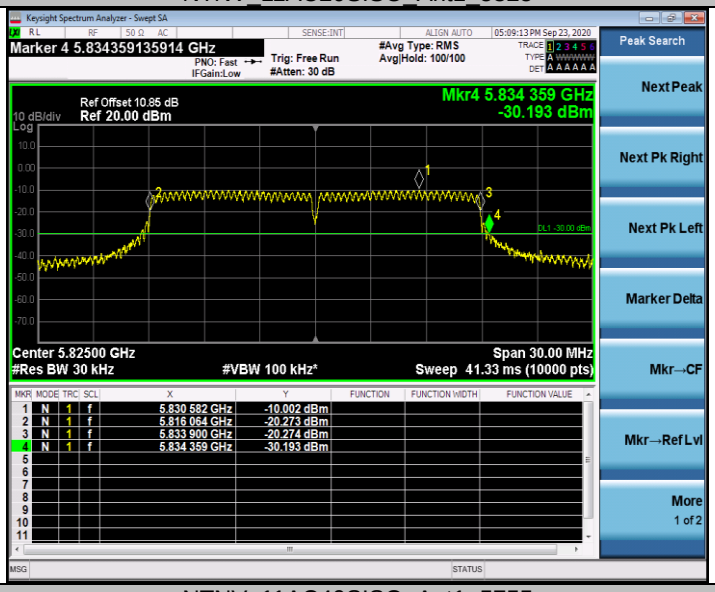

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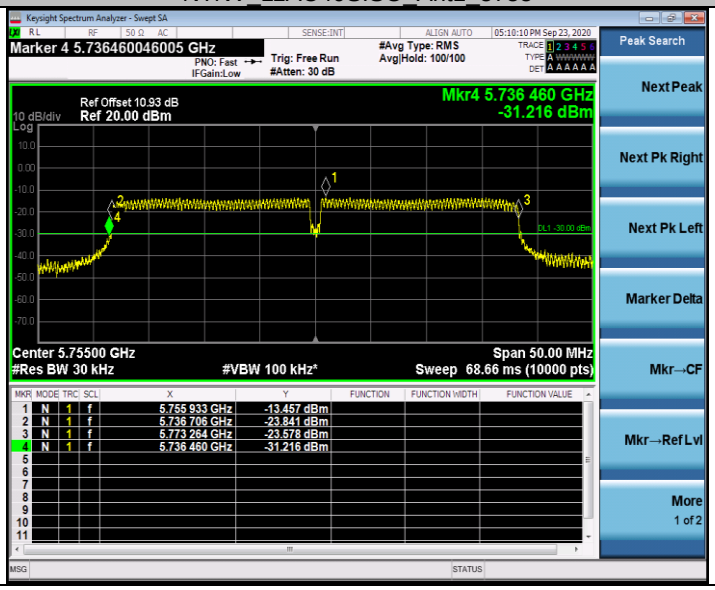

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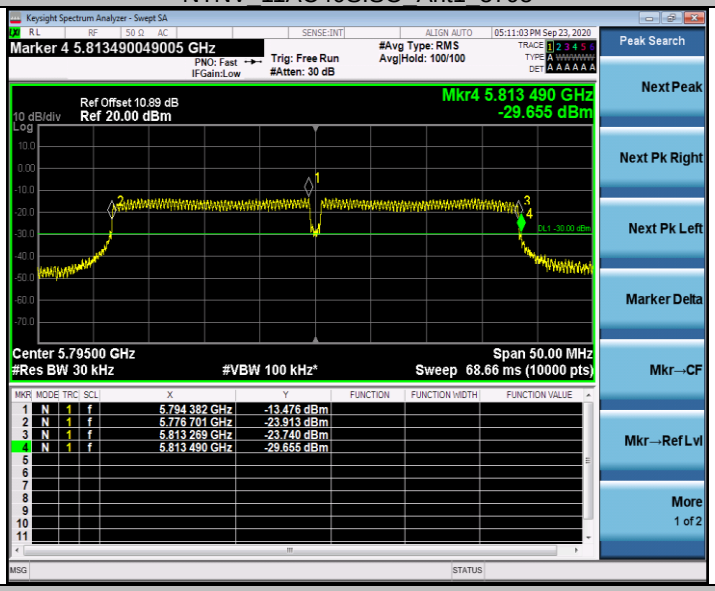
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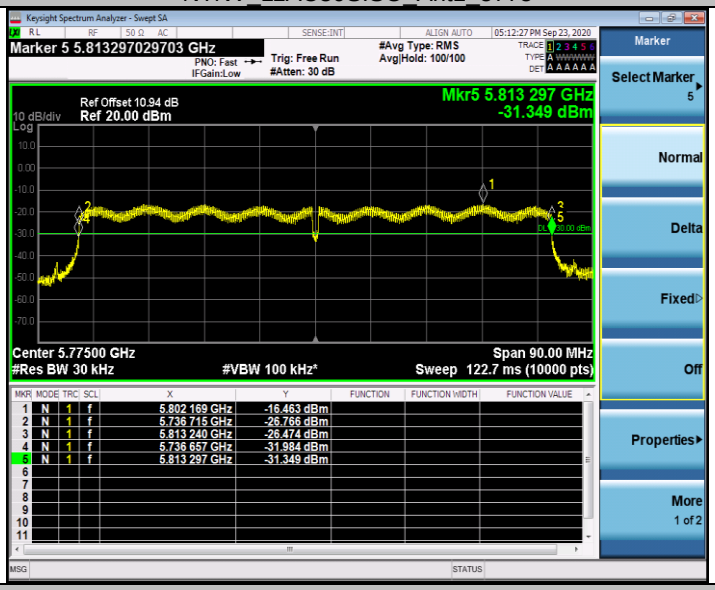
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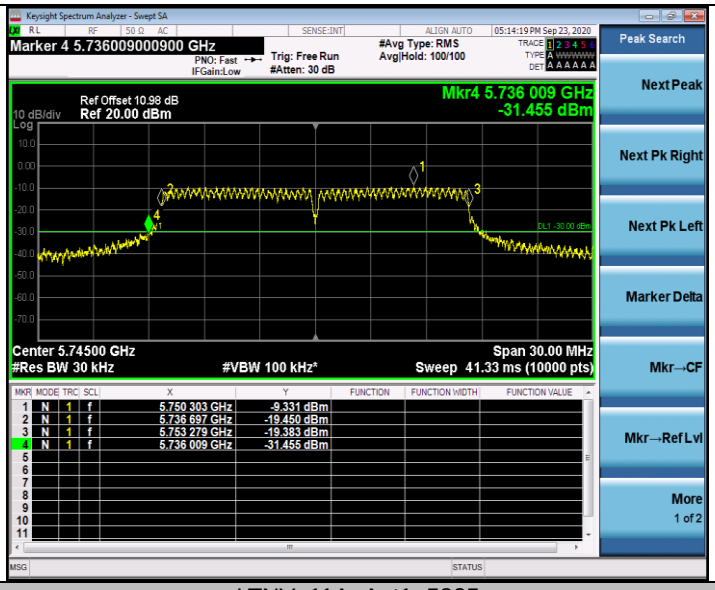

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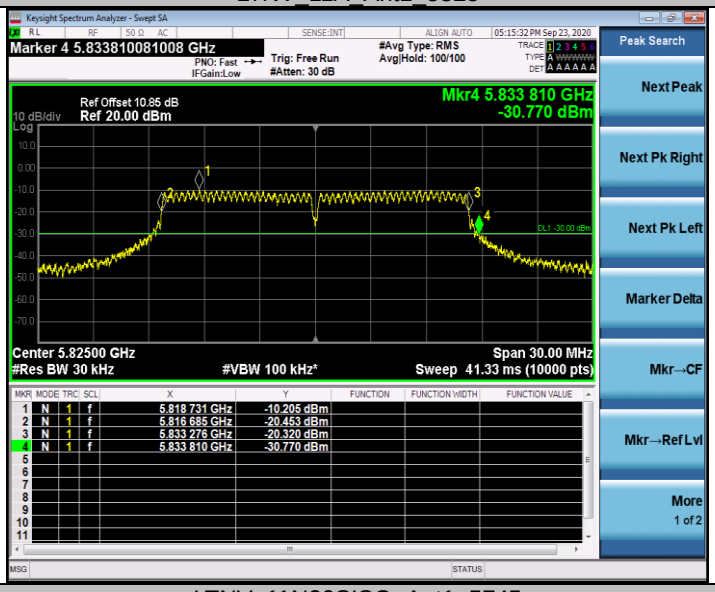

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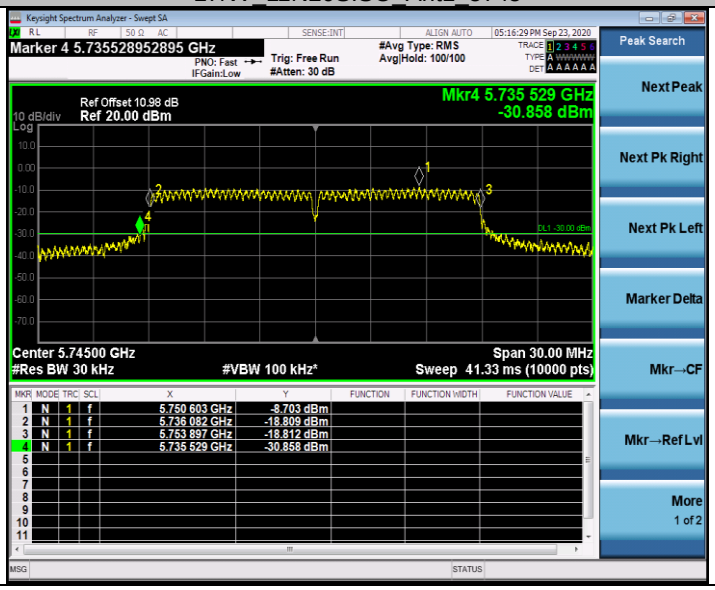

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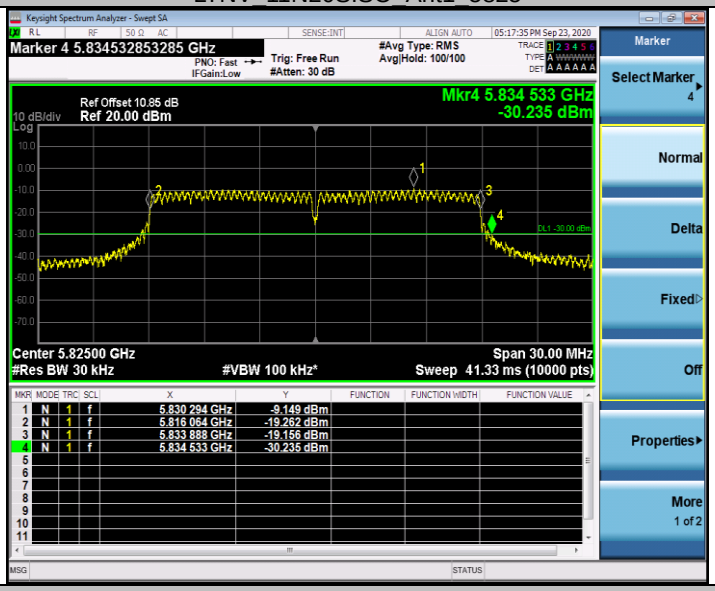
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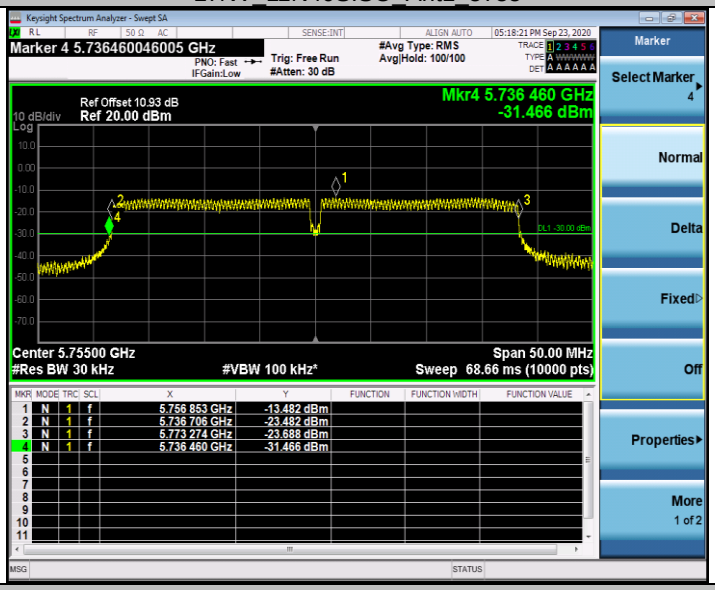
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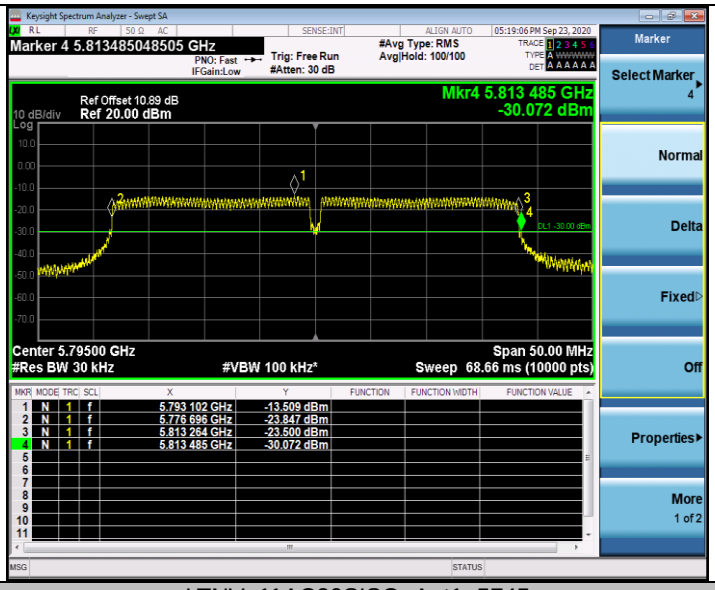

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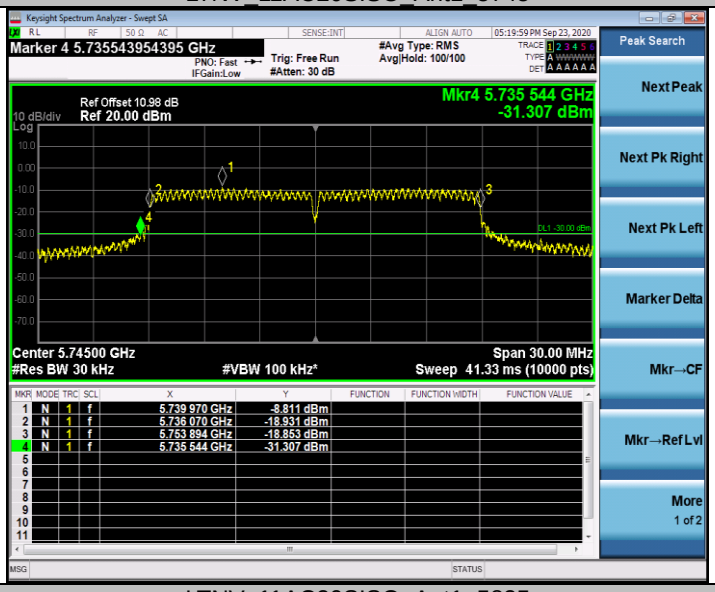

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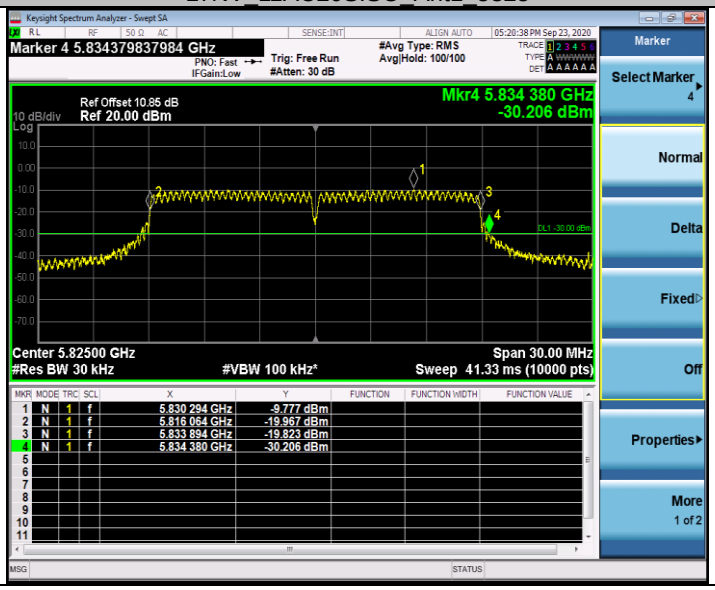

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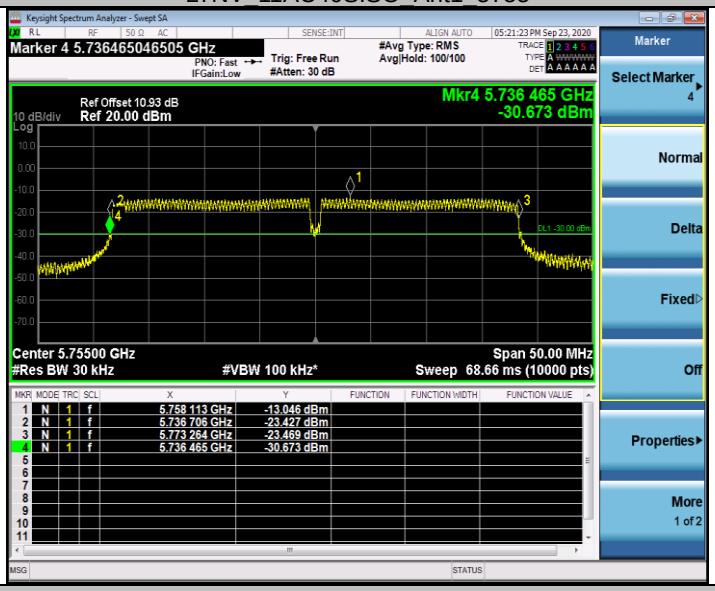
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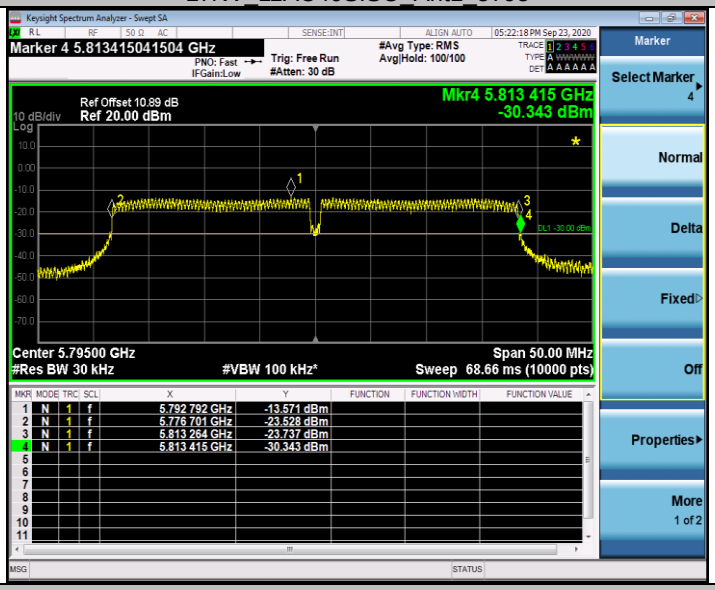
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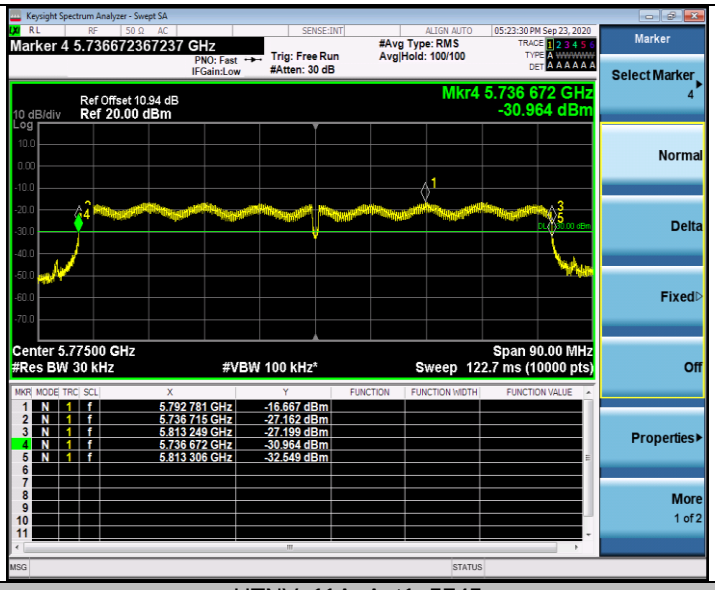

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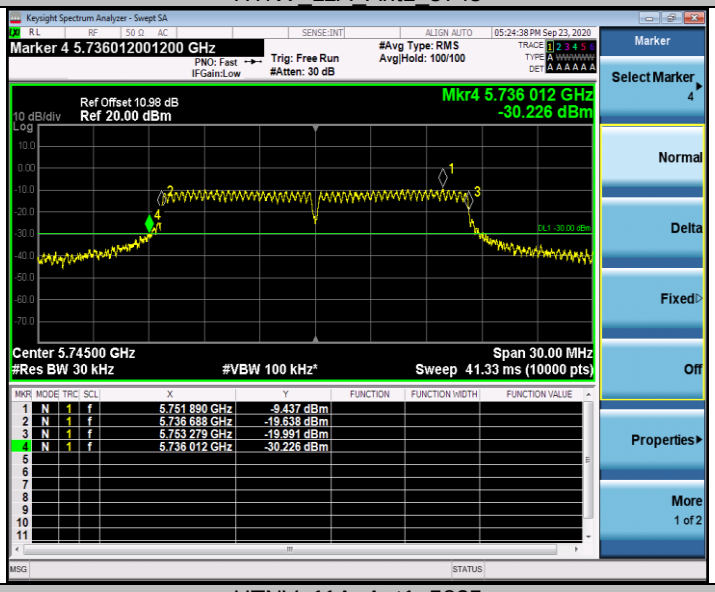

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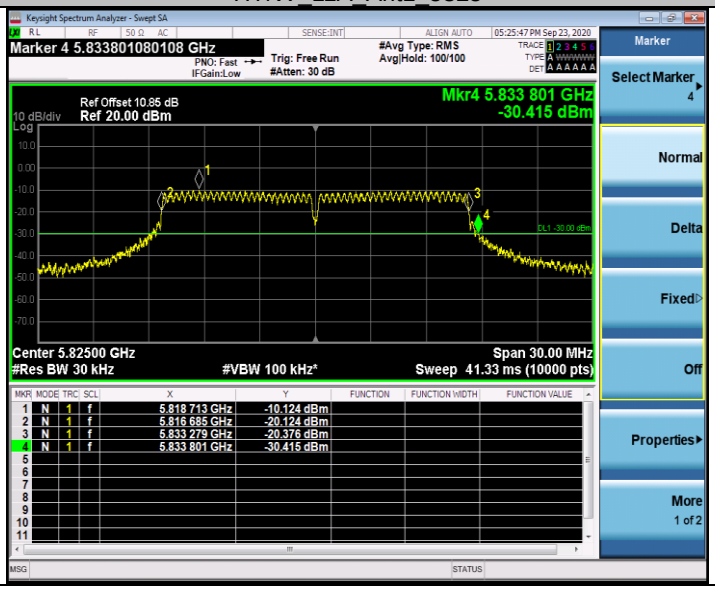

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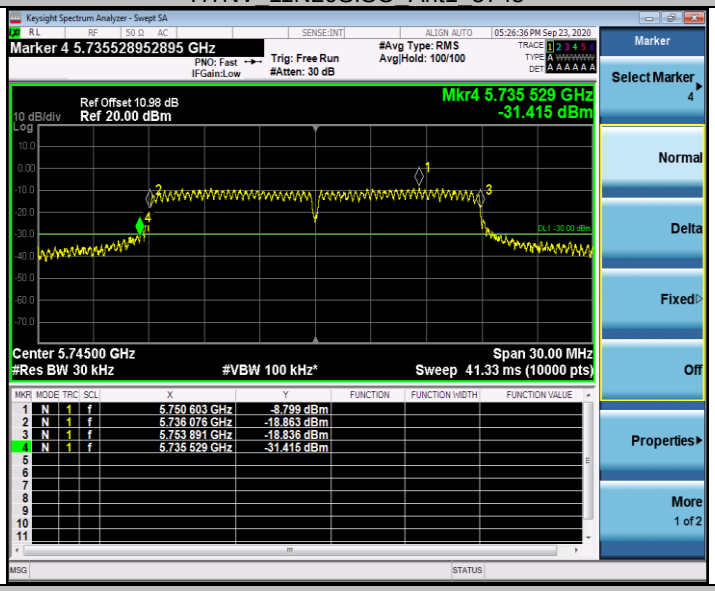
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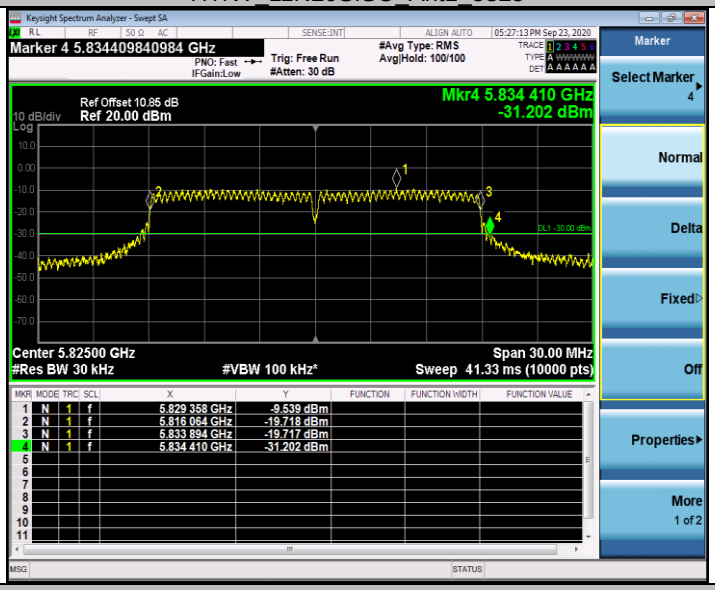
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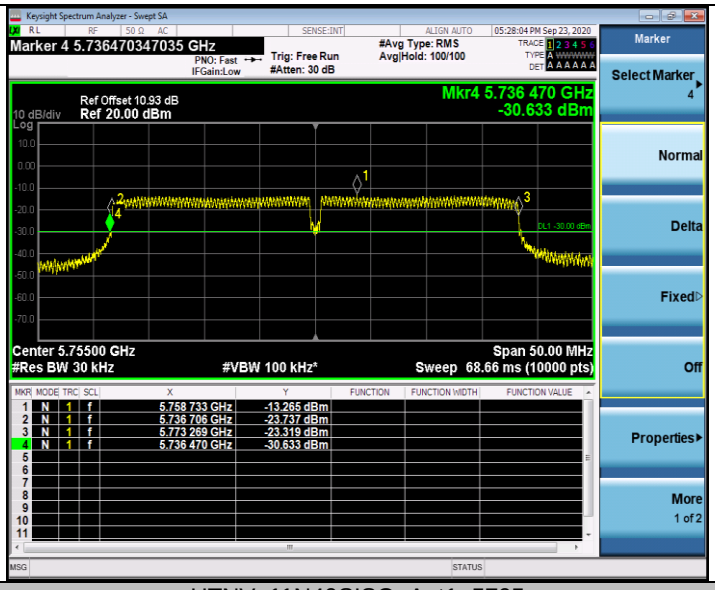

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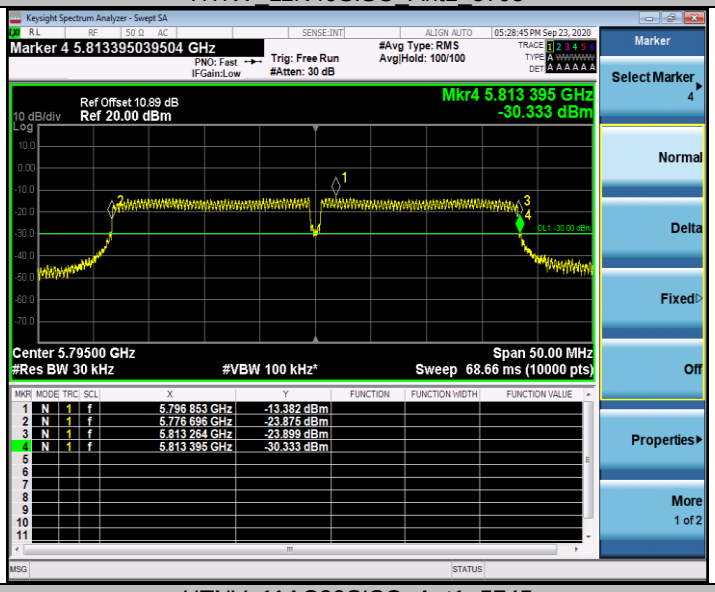

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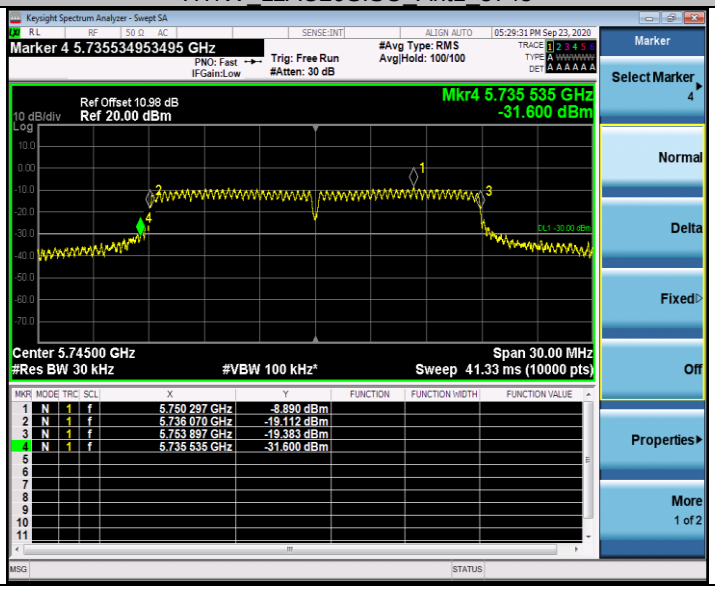

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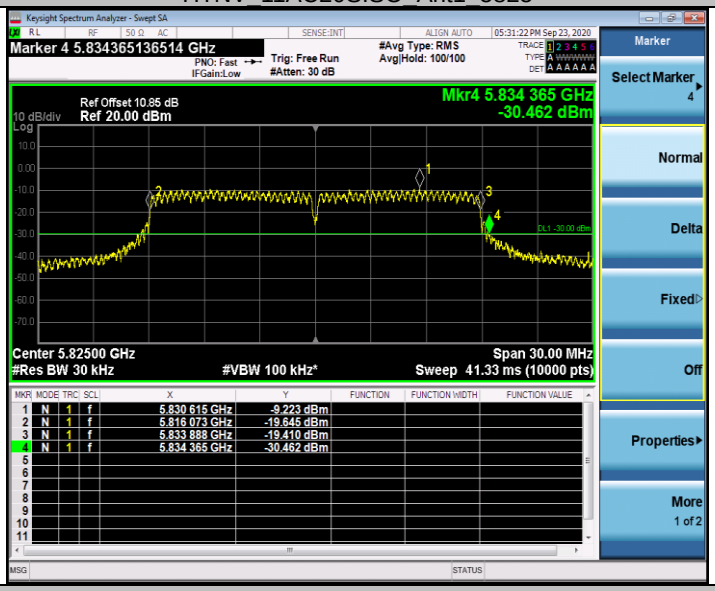
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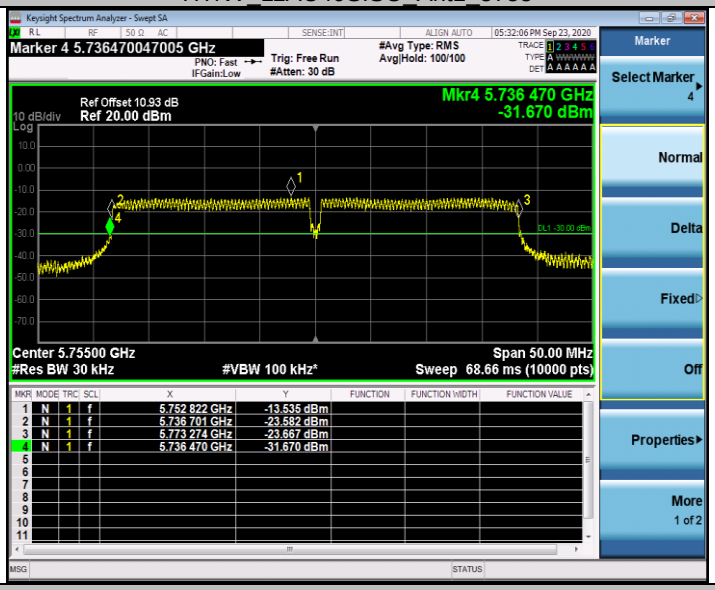
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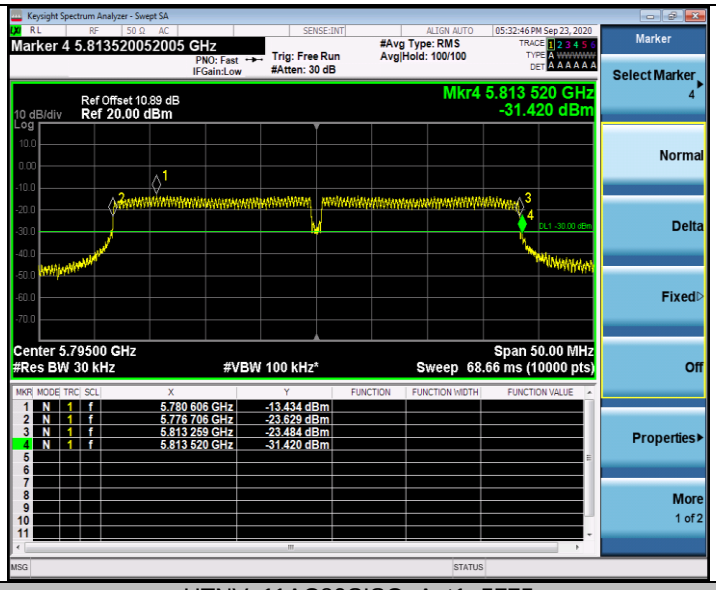

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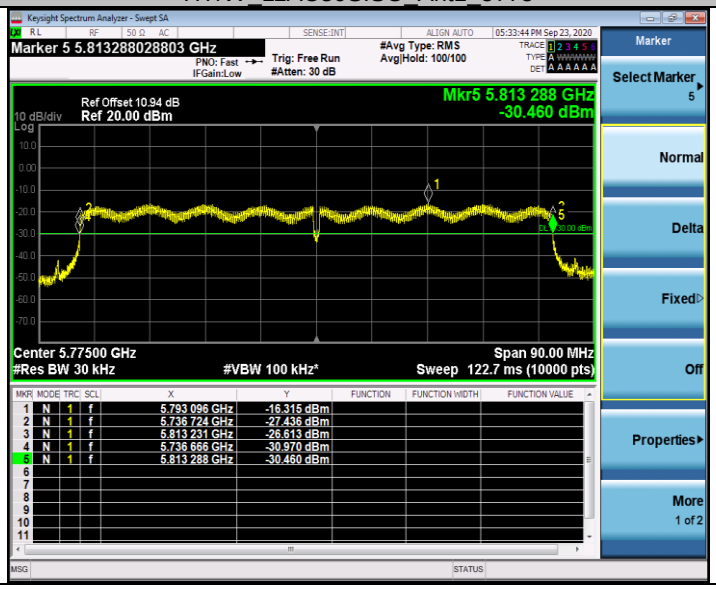


3.3 Transmitter Spurious Emissions

3.3.1 Limit of Transmitter Spurious Emissions

SUBCLAUSE 4.2.4.4 of EN 300 440 V2.1.1	
FREQUENCY RANGE	**LIMITS WHEN OPERATING**
25 MHz to 1 GHz	250 nW / -36 dBm
Above 1 GHz	1 μW / -30 dBm
47MHz to 74MHz 87.5MHz to 108MHz 174MHz to 230MHz 470MHz to 862MHz	4 nW / -54 dBm

3.3.2 Measuring Instruments

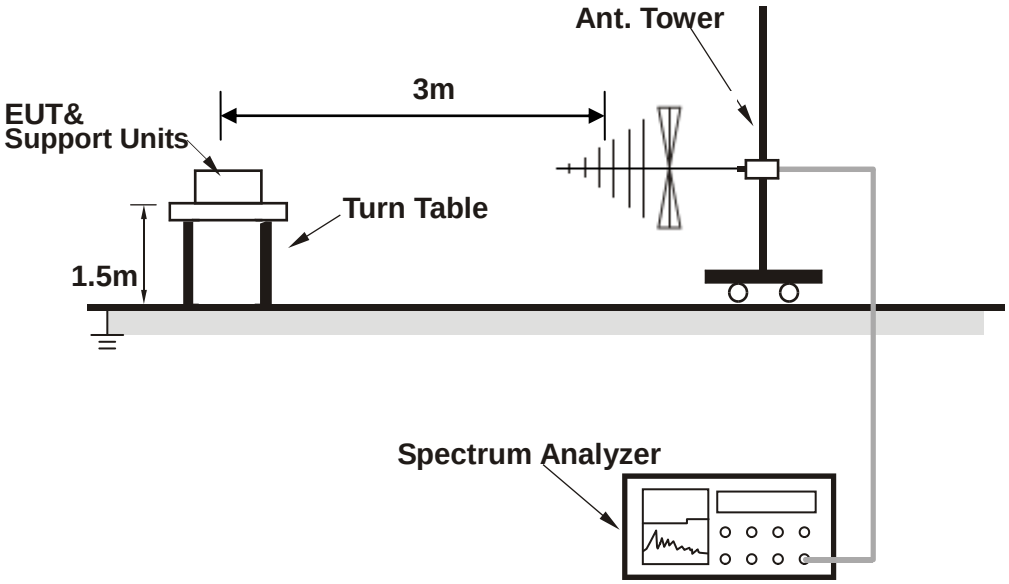
See list of measuring instruments of this test report.

3.3.3 Test Procedures

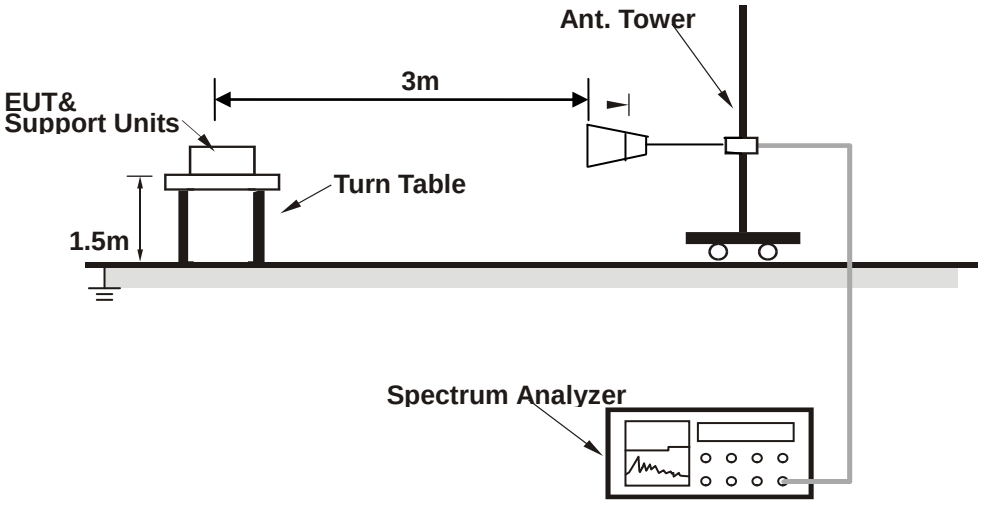
1. The EUT was placed on a turntable with 1.5m height.
2. The test distance between the receiving antenna and the EUT is 3 meter below 1GHz frequency range, and 1.5 meter which is in far field test condition for measured frequency above 1GHz, while the receiving (test) antenna is kept at 1.5 meter height.
3. Set EUT in continuous transmitting with maximum output power.
4. The table was rotated from 0 to 360 degree to search the highest radiated emission.
5. Repeating step 3 and 4 for each polarization and channel to find the worst emission level.
6. The results obtained are compared to the limits in order to prove compliance with the requirement.

3.3.4 Test Setup

<Below 1GHz>



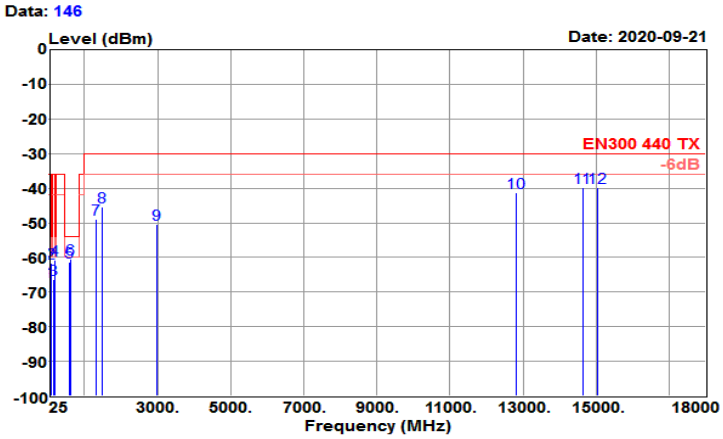
<Above 1GHz>



3.3.5 Test Result

Test Mode :	802.11a CH149 (5745MHz)	Temperature :	22~24℃
Test Engineer :	Jack Liu	Relative Humidity :	43~45%
Frequency Range :	25MHz ~18GHz	Polarization :	Horizontal

```
Temp/Humi    : 21℃/60%                Pol/Phase    : HORIZONTAL
               ------------------------               ----------------
Model  No.   : 6221C-PUC               Tested   by : Jack
               ------------------------               ----------------
Power rating: DC3.3V
               ------------------------
EUT          : WIFI+BT Module
               ------------------------
Test Mode    : 802.11a CH149(5745MHz)
               ------------------------
```



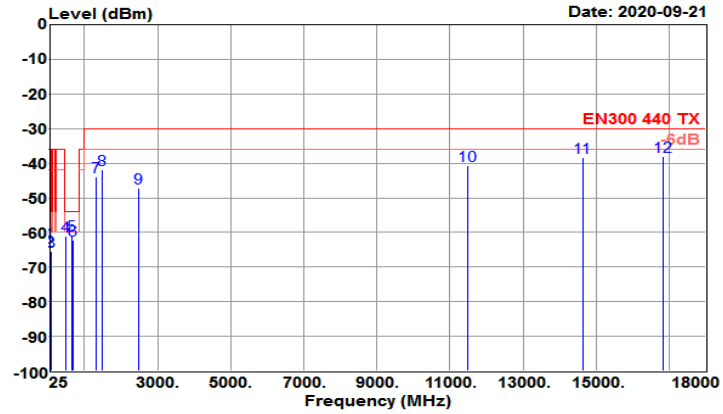
Freq MHz	Reading level dBm	Aux factor dB	level dBm	Limit level dBm	Over limit dB	Remark
66.925	-61.17	-5.86	-67.03	-54.00	-13.03	Peak
99.100	-54.79	-6.97	-61.76	-54.00	-7.76	Peak
171.250	-62.38	-4.06	-66.44	-36.00	-30.44	Peak
181.975	-55.81	-4.95	-60.76	-54.00	-6.76	Peak
589.525	-65.56	4.21	-61.35	-54.00	-7.35	Peak
617.800	-65.26	4.83	-60.43	-54.00	-6.43	Peak
1306.000	-52.36	3.53	-48.83	-30.00	-18.83	Peak
1493.000	-50.17	4.75	-45.42	-30.00	-15.42	Peak
2989.000	-57.35	6.78	-50.57	-30.00	-20.57	Peak
12815.000	-67.57	26.27	-41.30	-30.00	-11.30	Peak
14634.000	-66.13	26.40	-39.73	-30.00	-9.73	Peak
15042.000	-66.61	26.94	-39.67	-30.00	-9.67	Peak

```
Note:
Corrected Reading: Reading level + Aux factor = Level
```

Test Mode :	802.11a CH149 (5745MHz)	Temperature :	22~24℃
Test Engineer :	Jack Liu	Relative Humidity :	43~45%
Frequency Range :	25MHz ~18GHz	Polarization :	Vertical

```
Temp/Humi    : 21℃/60%              Pol/Phase    : VERTICAL
             ------------------------             ----------------
Model  No.   : 6221C-PUC            Tested   by : Jack
             ------------------------             ----------------
Power rating: DC3.3V
             ------------------------
EUT          : WIFI+BT Module
             ------------------------
Test Mode    : 802.11a CH149(5745MHz)
             ------------------------
```

Data: 145

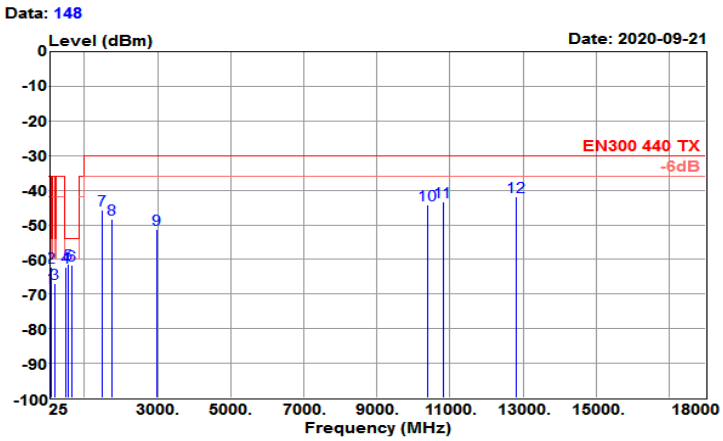


Freq MHz	Reading level dBm	Aux factor dB	level dBm	Limit level dBm	Over limit dB	Remark
47.425	-58.40	-4.45	-62.85	-54.00	-8.85	Peak
67.900	-58.95	-6.30	-65.25	-54.00	-11.25	Peak
100.075	-58.37	-7.00	-65.37	-54.00	-11.37	Peak
473.500	-62.45	1.30	-61.15	-54.00	-7.15	Peak
659.725	-66.19	5.37	-60.82	-54.00	-6.82	Peak
676.300	-67.75	5.67	-62.08	-54.00	-8.08	Peak
1306.000	-47.57	3.75	-43.82	-30.00	-13.82	Peak
1493.000	-46.90	5.09	-41.81	-30.00	-11.81	Peak
2496.000	-55.31	8.12	-47.19	-30.00	-17.19	Peak
11489.000	-65.68	25.00	-40.68	-30.00	-10.68	Peak
14634.000	-65.78	27.51	-38.27	-30.00	-8.27	Peak
16827.000	-67.84	29.75	-38.09	-30.00	-8.09	Peak

Note:
Corrected Reading: Reading level + Aux factor = Level

Test Mode :	802.11a CH165 (5825MHz)	Temperature :	22~24℃
Test Engineer :	Jack Liu	Relative Humidity :	43~45%
Frequency Range :	25MHz ~18GHz	Polarization :	Horizontal

```
Temp/Humi    : 21℃/60%                Pol/Phase    : HORIZONTAL
               ------------------------               ----------------
Model  No.   : 6221C-PUC               Tested   by : Jack
               ------------------------               ----------------
Power rating: DC3.3V
               ------------------------
EUT          : WIFI+BT Module
               ------------------------
Test Mode    : 802.11a CH165(5825MHz)
               ------------------------
```

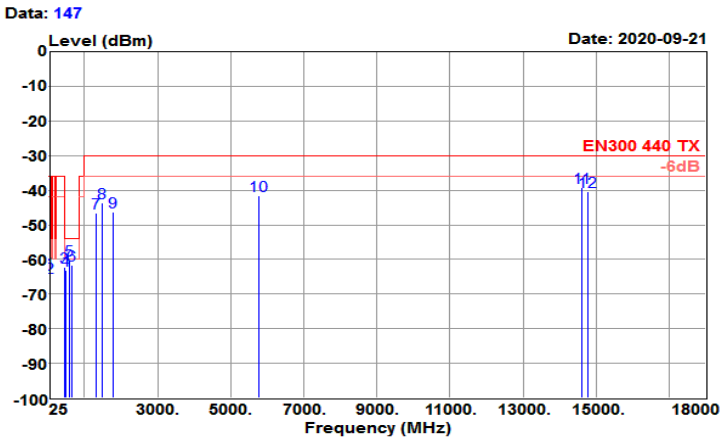


Freq MHz	Reading level dBm	Aux factor dB	level dBm	Limit level dBm	Over limit dB	Remark
67.900	-62.04	-5.95	-67.99	-54.00	-13.99	Peak
100.075	-55.14	-6.99	-62.13	-54.00	-8.13	Peak
199.525	-60.47	-6.40	-66.87	-54.00	-12.87	Peak
473.500	-63.57	1.34	-62.23	-54.00	-8.23	Peak
557.350	-64.89	3.51	-61.38	-54.00	-7.38	Peak
643.150	-67.10	5.39	-61.71	-54.00	-7.71	Peak
1493.000	-50.45	4.75	-45.70	-30.00	-15.70	Peak
1765.000	-53.75	5.36	-48.39	-30.00	-18.39	Peak
2989.000	-57.99	6.78	-51.21	-30.00	-21.21	Peak
10384.000	-66.41	22.22	-44.19	-30.00	-14.19	Peak
10809.000	-67.18	23.73	-43.45	-30.00	-13.45	Peak
12832.000	-68.26	26.39	-41.87	-30.00	-11.87	Peak

Note:
Corrected Reading: Reading level + Aux factor = Level

Test Mode :	802.11a CH165 (5825MHz)	Temperature :	22~24℃
Test Engineer :	Jack Liu	Relative Humidity :	43~45%
Frequency Range :	25MHz ~18GHz	Polarization :	Vertical

```
Temp/Humi    : 21℃/60%              Pol/Phase    : VERTICAL
             ------------------------             ----------------
Model  No.   : 6221C-PUC            Tested   by : Jack
             ------------------------             ----------------
Power rating: DC3.3V
             ------------------------
EUT          : WIFI+BT Module
             ------------------------
Test Mode    : 802.11a CH165(5825MHz)
             ------------------------
```

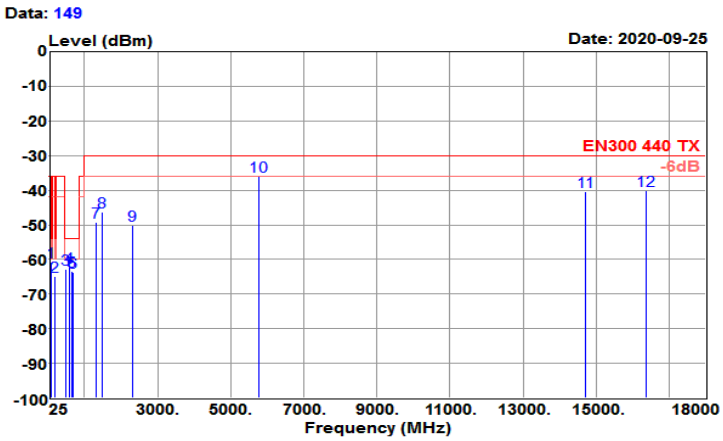


Freq MHz	Reading level dBm	Aux factor dB	level dBm	Limit level dBm	Over limit dB	Remark
47.425	-59.22	-4.45	-63.67	-54.00	-9.67	Peak
68.875	-58.71	-6.41	-65.12	-54.00	-11.12	Peak
469.600	-63.52	1.22	-62.30	-36.00	-26.30	Peak
489.100	-64.60	1.62	-62.98	-54.00	-8.98	Peak
581.725	-64.00	3.76	-60.24	-54.00	-6.24	Peak
651.925	-66.97	5.23	-61.74	-54.00	-7.74	Peak
1306.000	-50.40	3.75	-46.65	-30.00	-16.65	Peak
1493.000	-48.77	5.09	-43.68	-30.00	-13.68	Peak
1782.000	-52.27	5.88	-46.39	-30.00	-16.39	Peak
5760.000	-55.00	13.28	-41.72	-30.00	-11.72	Peak
14617.000	-66.65	27.48	-39.17	-30.00	-9.17	Peak
14787.000	-68.05	27.77	-40.28	-30.00	-10.28	Peak

Note:
Corrected Reading: Reading level + Aux factor = Level

Test Mode :	802.11n HT20 CH149 (5745MHz)	Temperature :	22~24℃
Test Engineer :	Jack Liu	Relative Humidity :	43~45%
Frequency Range :	25MHz ~18GHz	Polarization :	Horizontal

```
Temp/Humi    : 21℃/60%              Pol/Phase    : HORIZONTAL
               ----------------------               ----------------
Model  No.   : 6221C-PUC            Tested   by : Jack
               ----------------------               ----------------
Power rating: DC3.3V
               ----------------------
EUT          : WIFI+BT Module
               ----------------------
Test Mode    : 802.11n HT20 CH149(5745MHz)
               ----------------------
```

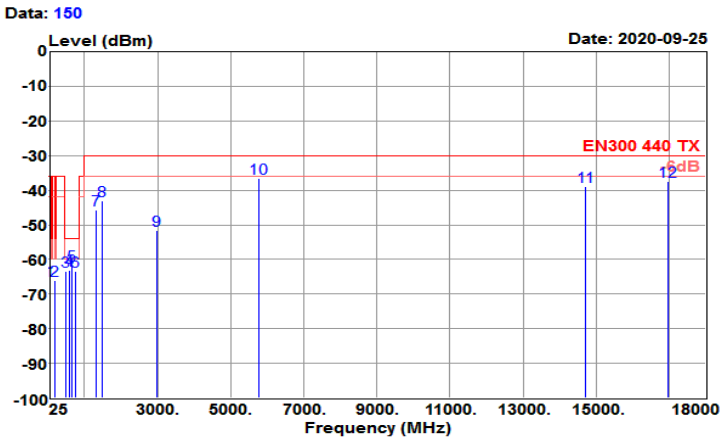


Freq MHz	Reading level dBm	Aux factor dB	level dBm	Limit level dBm	Over limit dB	Remark
100.075	-53.86	-6.99	-60.85	-54.00	-6.85	Peak
201.475	-58.55	-6.37	-64.92	-54.00	-10.92	Peak
493.000	-64.63	1.74	-62.89	-54.00	-8.89	Peak
577.825	-66.18	3.96	-62.22	-54.00	-8.22	Peak
656.800	-69.07	5.63	-63.44	-54.00	-9.44	Peak
697.750	-70.02	6.18	-63.84	-54.00	-9.84	Peak
1306.000	-52.82	3.53	-49.29	-30.00	-19.29	Peak
1493.000	-50.95	4.75	-46.20	-30.00	-16.20	Peak
2309.000	-57.76	7.53	-50.23	-30.00	-20.23	Peak
5760.000	-49.59	13.54	-36.05	-30.00	-6.05	Peak
14719.000	-66.86	26.54	-40.32	-30.00	-10.32	Peak
16385.000	-66.82	26.72	-40.10	-30.00	-10.10	Peak

Note:
Corrected Reading: Reading level + Aux factor = Level

Test Mode :	802.11n HT20 CH149 (5745MHz)	Temperature :	22~24℃
Test Engineer :	Jack Liu	Relative Humidity :	43~45%
Frequency Range :	25MHz ~18GHz	Polarization :	Vertical

```
Temp/Humi    : 21℃/60%              Pol/Phase    : VERTICAL
Model  No.   : 6221C-PUC            Tested   by : Jack
Power rating: DC3.3V
EUT          : WIFI+BT Module
Test Mode    : 802.11n HT20 CH149(5745MHz)
```

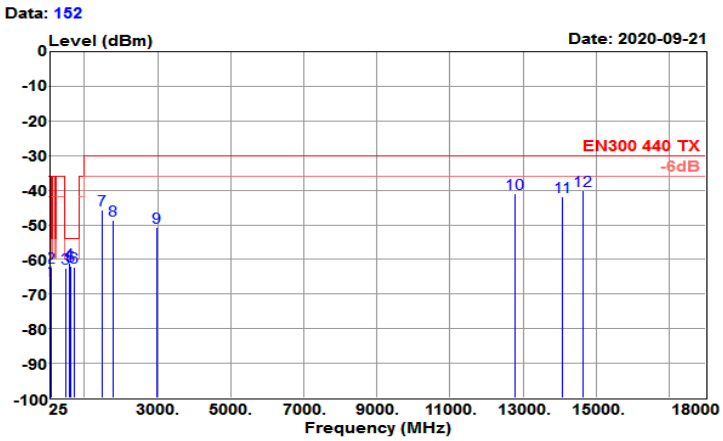


Freq MHz	Reading level dBm	Aux factor dB	level dBm	Limit level dBm	Over limit dB	Remark
51.325	-61.47	-4.50	-65.97	-54.00	-11.97	Peak
198.550	-59.70	-6.33	-66.03	-54.00	-12.03	Peak
491.050	-65.11	1.66	-63.45	-54.00	-9.45	Peak
599.275	-67.26	4.13	-63.13	-54.00	-9.13	Peak
645.100	-66.85	5.10	-61.75	-54.00	-7.75	Peak
747.475	-70.10	6.80	-63.30	-54.00	-9.30	Peak
1306.000	-49.53	3.75	-45.78	-30.00	-15.78	Peak
1493.000	-48.22	5.09	-43.13	-30.00	-13.13	Peak
2989.000	-57.92	6.42	-51.50	-30.00	-21.50	Peak
5760.000	-49.96	13.28	-36.68	-30.00	-6.68	Peak
14719.000	-66.45	27.66	-38.79	-30.00	-8.79	Peak
16980.000	-68.45	30.86	-37.59	-30.00	-7.59	Peak

Note:
Corrected Reading: Reading level + Aux factor = Level

Test Mode :	802.11n HT20 CH165 (5825MHz)	Temperature :	22~24℃
Test Engineer :	Jack Liu	Relative Humidity :	43~45%
Frequency Range :	25MHz ~18GHz	Polarization :	Horizontal

```
Temp/Humi    : 21℃/60%              Pol/Phase    : HORIZONTAL
             ------------------------             ----------------
Model  No.   : 6221C-PUC            Tested   by : Jack
             ------------------------             ----------------
Power rating: DC3.3V
             ------------------------
EUT          : WIFI+BT Module
             ------------------------
Test Mode    : 802.11n HT20 CH165(5825MHz)
             ------------------------
```

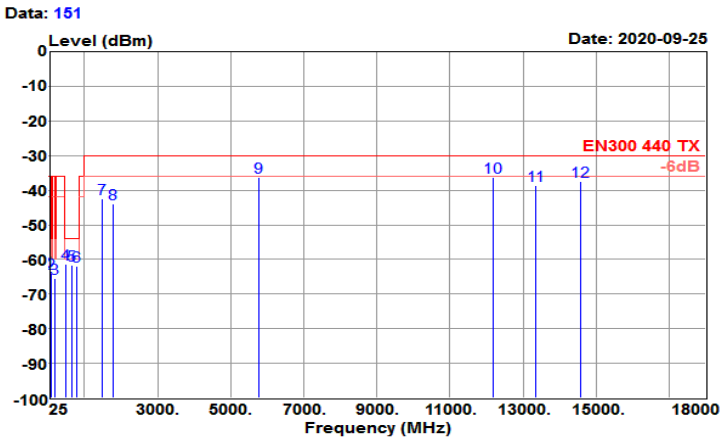


Freq MHz	Reading level dBm	Aux factor dB	level dBm	Limit level dBm	Over limit dB	Remark
65.950	-60.38	-5.78	-66.16	-54.00	-12.16	Peak
100.075	-55.32	-6.99	-62.31	-54.00	-8.31	Peak
473.500	-63.87	1.34	-62.53	-54.00	-8.53	Peak
571.975	-64.92	3.83	-61.09	-54.00	-7.09	Peak
637.300	-67.11	5.26	-61.85	-54.00	-7.85	Peak
723.100	-68.88	6.71	-62.17	-54.00	-8.17	Peak
1493.000	-50.55	4.75	-45.80	-30.00	-15.80	Peak
1782.000	-54.11	5.39	-48.72	-30.00	-18.72	Peak
2989.000	-57.45	6.78	-50.67	-30.00	-20.67	Peak
12781.000	-67.13	26.04	-41.09	-30.00	-11.09	Peak
14090.000	-68.02	26.29	-41.73	-30.00	-11.73	Peak
14634.000	-66.52	26.40	-40.12	-30.00	-10.12	Peak

Note:
Corrected Reading: Reading level + Aux factor = Level

Test Mode :	802.11n HT20 CH165 (5825MHz)	Temperature :	22~24℃
Test Engineer :	Jack Liu	Relative Humidity :	43~45%
Frequency Range :	25MHz ~18GHz	Polarization :	Vertical

```
Temp/Humi    : 21℃/60%              Pol/Phase    : VERTICAL
             ------------------------             ----------------
Model  No.   : 6221C-PUC            Tested   by : Jack
             ------------------------             ----------------
Power rating: DC3.3V
             ------------------------
EUT          : WIFI+BT Module
             ------------------------
Test Mode    : 802.11n HT20 CH165(5825MHz)
             ------------------------
```

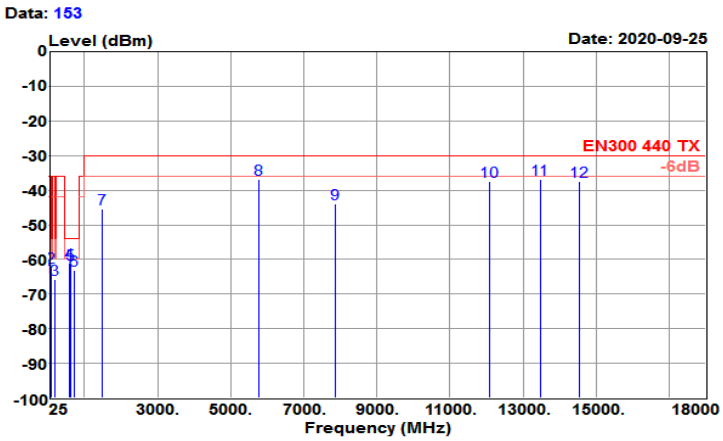


Freq MHz	Reading level dBm	Aux factor dB	level dBm	Limit level dBm	Over limit dB	Remark
67.900	-57.03	-6.30	-63.33	-54.00	-9.33	Peak
100.075	-56.92	-7.00	-63.92	-54.00	-9.92	Peak
199.525	-59.05	-6.40	-65.45	-54.00	-11.45	Peak
473.500	-62.68	1.30	-61.38	-54.00	-7.38	Peak
659.725	-67.06	5.37	-61.69	-54.00	-7.69	Peak
789.400	-69.62	7.60	-62.02	-54.00	-8.02	Peak
1493.000	-47.65	5.09	-42.56	-30.00	-12.56	Peak
1782.000	-49.86	5.88	-43.98	-30.00	-13.98	Peak
5760.000	-49.43	13.28	-36.15	-30.00	-6.15	Peak
12169.000	-60.24	23.97	-36.27	-30.00	-6.27	Peak
13359.000	-65.62	26.95	-38.67	-30.00	-8.67	Peak
14566.000	-64.92	27.39	-37.53	-30.00	-7.53	Peak

Note:
Corrected Reading: Reading level + Aux factor = Level

Test Mode :	802.11n HT40 CH151 (5755MHz)	Temperature :	22~24℃
Test Engineer :	Jack Liu	Relative Humidity :	43~45%
Frequency Range :	25MHz ~18GHz	Polarization :	Horizontal

```
Temp/Humi    : 21℃/60%              Pol/Phase    : HORIZONTAL
               ----------------------               ----------------
Model  No.   : 6221C-PUC            Tested   by : Jack
               ----------------------               ----------------
Power rating: DC3.3V
               ----------------------
EUT          : WIFI+BT Module
               ----------------------
Test Mode    : 802.11n HT40 CH151(5755MHz)
               ----------------------
```

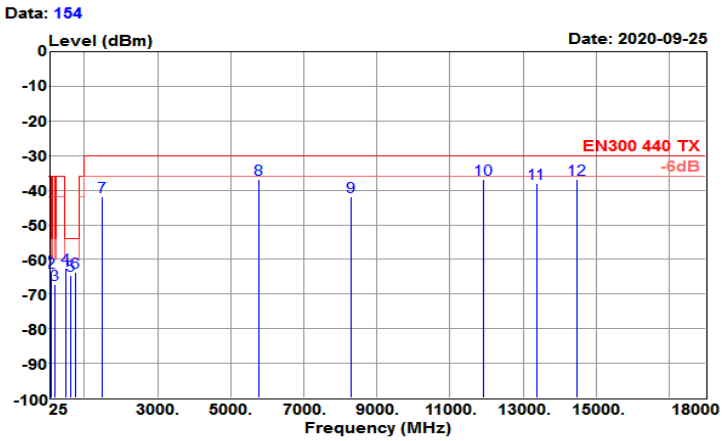


Freq MHz	Reading level dBm	Aux factor dB	level dBm	Limit level dBm	Over limit dB	Remark
65.950	-59.38	-5.78	-65.16	-54.00	-11.16	Peak
95.200	-55.46	-6.86	-62.32	-54.00	-8.32	Peak
204.400	-59.65	-6.24	-65.89	-54.00	-11.89	Peak
574.900	-65.08	3.89	-61.19	-54.00	-7.19	Peak
615.850	-66.17	4.79	-61.38	-54.00	-7.38	Peak
727.000	-69.85	6.79	-63.06	-54.00	-9.06	Peak
1493.000	-50.26	4.75	-45.51	-30.00	-15.51	Peak
5777.000	-50.31	13.56	-36.75	-30.00	-6.75	Peak
7851.000	-62.86	18.96	-43.90	-30.00	-13.90	Peak
12084.000	-61.69	24.38	-37.31	-30.00	-7.31	Peak
13478.000	-64.25	27.35	-36.90	-30.00	-6.90	Peak
14532.000	-63.80	26.23	-37.57	-30.00	-7.57	Peak

Note:
Corrected Reading: Reading level + Aux factor = Level

Test Mode :	802.11n HT40 CH151 (5755MHz)	Temperature :	22~24℃
Test Engineer :	Jack Liu	Relative Humidity :	43~45%
Frequency Range :	25MHz ~18GHz	Polarization :	Vertical

```
Temp/Humi    : 21℃/60%              Pol/Phase    : VERTICAL
             ------------------------             ----------------
Model  No.   : 6221C-PUC            Tested   by : Jack
             ------------------------             ----------------
Power rating: DC3.3V
             ------------------------
EUT          : WIFI+BT Module
             ------------------------
Test Mode    : 802.11n HT40 CH151(5755MHz)
             ------------------------
```

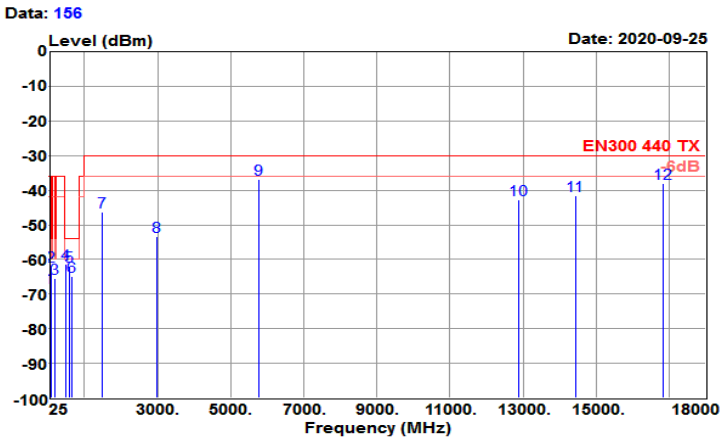


Freq MHz	Reading level dBm	Aux factor dB	level dBm	Limit level dBm	Over limit dB	Remark
66.925	-56.55	-6.20	-62.75	-54.00	-8.75	Peak
100.075	-56.81	-7.00	-63.81	-54.00	-9.81	Peak
198.550	-60.82	-6.33	-67.15	-54.00	-13.15	Peak
477.400	-63.97	1.38	-62.59	-54.00	-8.59	Peak
630.475	-69.27	4.79	-64.48	-54.00	-10.48	Peak
742.600	-70.35	6.73	-63.62	-54.00	-9.62	Peak
1493.000	-47.04	5.09	-41.95	-30.00	-11.95	Peak
5760.000	-50.18	13.28	-36.90	-30.00	-6.90	Peak
8293.000	-60.61	18.63	-41.98	-30.00	-11.98	Peak
11914.000	-61.28	24.31	-36.97	-30.00	-6.97	Peak
13376.000	-65.12	26.95	-38.17	-30.00	-8.17	Peak
14464.000	-64.15	27.22	-36.93	-30.00	-6.93	Peak

Note:
Corrected Reading: Reading level + Aux factor = Level

Test Mode :	802.11n HT40 CH159 (5795MHz)	Temperature :	22~24℃
Test Engineer :	Jack Liu	Relative Humidity :	43~45%
Frequency Range :	25MHz ~18GHz	Polarization :	Horizontal

```
Temp/Humi    : 21℃/60%              Pol/Phase    : HORIZONTAL
Model  No.   : 6221C-PUC            Tested   by : Jack
Power rating: DC3.3V
EUT          : WIFI+BT Module
Test Mode    : 802.11n HT40 CH159(5795MHz)
```

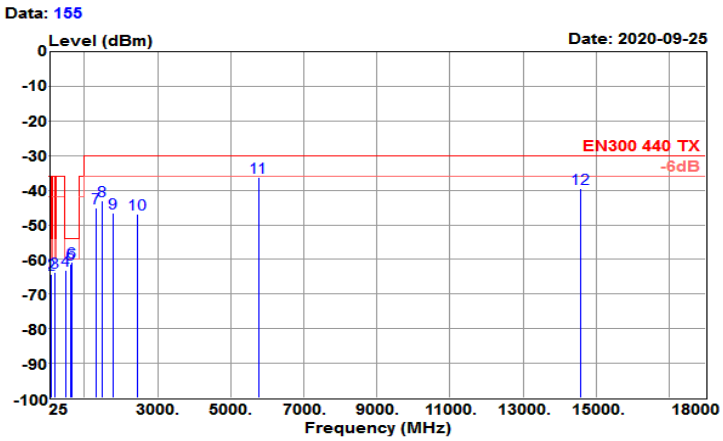


Freq MHz	Reading level dBm	Aux factor dB	level dBm	Limit level dBm	Over limit dB	Remark
64.975	-62.30	-5.69	-67.99	-54.00	-13.99	Peak
100.075	-55.08	-6.99	-62.07	-54.00	-8.07	Peak
206.350	-59.21	-6.16	-65.37	-54.00	-11.37	Peak
472.525	-62.65	1.33	-61.32	-54.00	-7.32	Peak
576.850	-65.91	3.94	-61.97	-54.00	-7.97	Peak
640.225	-70.21	5.32	-64.89	-54.00	-10.89	Peak
1493.000	-50.97	4.75	-46.22	-30.00	-16.22	Peak
2972.000	-60.18	6.86	-53.32	-30.00	-23.32	Peak
5760.000	-50.34	13.54	-36.80	-30.00	-6.80	Peak
12866.000	-69.37	26.62	-42.75	-30.00	-12.75	Peak
14430.000	-67.79	26.20	-41.59	-30.00	-11.59	Peak
16844.000	-68.06	29.97	-38.09	-30.00	-8.09	Peak

Note:
Corrected Reading: Reading level + Aux factor = Level

Test Mode :	802.11n HT40 CH159 (5795MHz)	Temperature :	22~24℃
Test Engineer :	Jack Liu	Relative Humidity :	43~45%
Frequency Range :	25MHz ~18GHz	Polarization :	Vertical

```
Temp/Humi    : 21℃/60%              Pol/Phase    : VERTICAL
               ----------------------               ----------------
Model  No.   : 6221C-PUC            Tested   by : Jack
               ----------------------               ----------------
Power rating: DC3.3V
               ----------------------
EUT          : WIFI+BT Module
               ----------------------
Test Mode    : 802.11n HT40 CH159(5795MHz)
               ----------------------
```

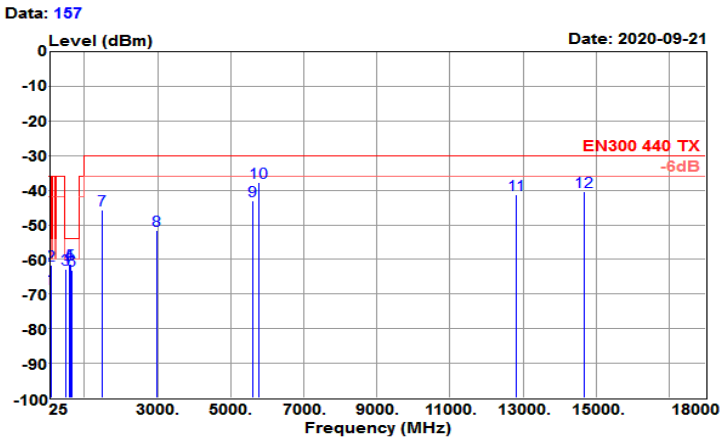


Freq MHz	Reading level dBm	Aux factor dB	level dBm	Limit level dBm	Over limit dB	Remark
64.000	-58.00	-5.88	-63.88	-54.00	-9.88	Peak
100.075	-57.35	-7.00	-64.35	-54.00	-10.35	Peak
180.025	-58.88	-4.88	-63.76	-54.00	-9.76	Peak
480.325	-64.54	1.44	-63.10	-54.00	-9.10	Peak
638.275	-66.32	4.95	-61.37	-54.00	-7.37	Peak
666.550	-66.32	5.49	-60.83	-54.00	-6.83	Peak
1306.000	-48.74	3.75	-44.99	-30.00	-14.99	Peak
1493.000	-48.20	5.09	-43.11	-30.00	-13.11	Peak
1782.000	-52.53	5.88	-46.65	-30.00	-16.65	Peak
2462.000	-54.96	8.00	-46.96	-30.00	-16.96	Peak
5760.000	-49.62	13.28	-36.34	-30.00	-6.34	Peak
14566.000	-66.87	27.39	-39.48	-30.00	-9.48	Peak

Note:
Corrected Reading: Reading level + Aux factor = Level

Test Mode :	802.11ac VHT80 CH155 (5775MHz)	Temperature :	22~24℃
Test Engineer :	Jack Liu	Relative Humidity :	43~45%
Frequency Range :	25MHz ~18GHz	Polarization :	Horizontal

```
Temp/Humi    : 21℃/60%              Pol/Phase    : HORIZONTAL
Model  No.   : 6221C-PUC            Tested   by : Jack
Power rating: DC3.3V
EUT          : WIFI+BT Module
Test Mode    : 802.11n HT80 CH155(5775MHz)
```

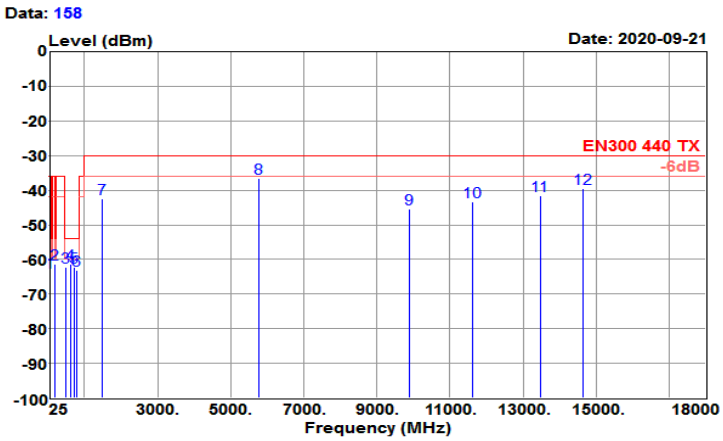


Freq MHz	Reading level dBm	Aux factor dB	level dBm	Limit level dBm	Over limit dB	Remark
65.950	-62.77	-5.78	-68.55	-54.00	-14.55	Peak
100.075	-54.73	-6.99	-61.72	-54.00	-7.72	Peak
475.450	-64.09	1.38	-62.71	-54.00	-8.71	Peak
586.600	-65.51	4.15	-61.36	-54.00	-7.36	Peak
619.750	-66.35	4.87	-61.48	-54.00	-7.48	Peak
666.550	-68.95	5.76	-63.19	-54.00	-9.19	Peak
1493.000	-50.53	4.75	-45.78	-30.00	-15.78	Peak
2989.000	-58.24	6.78	-51.46	-30.00	-21.46	Peak
5607.000	-56.43	13.30	-43.13	-30.00	-13.13	Peak
5760.000	-51.19	13.54	-37.65	-30.00	-7.65	Peak
12832.000	-67.78	26.39	-41.39	-30.00	-11.39	Peak
14685.000	-66.75	26.48	-40.27	-30.00	-10.27	Peak

Note:
Corrected Reading: Reading level + Aux factor = Level

Test Mode :	802.11ac VHT80 CH155 (5775MHz)	Temperature :	22~24℃
Test Engineer :	Jack Liu	Relative Humidity :	43~45%
Frequency Range :	25MHz ~18GHz	Polarization :	Vertical

```
Temp/Humi    : 21℃/60%                Pol/Phase    : VERTICAL
               ------------------------               ----------------
Model  No.   : 6221C-PUC               Tested   by : Jack
               ------------------------               ----------------
Power rating: DC3.3V
               ------------------------
EUT          : WIFI+BT Module
               ------------------------
Test Mode    : 802.11n HT80 CH155(5775MHz)
               ------------------------
```



Freq MHz	Reading level dBm	Aux factor dB	level dBm	Limit level dBm	Over limit dB	Remark
67.900	-57.38	-6.30	-63.68	-54.00	-9.68	Peak
199.525	-55.09	-6.40	-61.49	-54.00	-7.49	Peak
498.850	-64.04	1.82	-62.22	-54.00	-8.22	Peak
623.650	-66.08	4.65	-61.43	-54.00	-7.43	Peak
718.225	-68.63	6.36	-62.27	-54.00	-8.27	Peak
779.650	-70.59	7.42	-63.17	-54.00	-9.17	Peak
1493.000	-47.56	5.09	-42.47	-30.00	-12.47	Peak
5760.000	-49.99	13.28	-36.71	-30.00	-6.71	Peak
9908.000	-66.11	20.61	-45.50	-30.00	-15.50	Peak
11608.000	-68.23	24.83	-43.40	-30.00	-13.40	Peak
13478.000	-68.40	26.94	-41.46	-30.00	-11.46	Peak
14634.000	-66.92	27.51	-39.41	-30.00	-9.41	Peak

Note:
Corrected Reading: Reading level + Aux factor = Level

4. Receiver Parameters

4.1 Receiver Spurious Emissions

4.1.1 Limit of Receiver Spurious Emissions

SUBCLAUSE 4.3.5.4 of EN 300 440 V2.1.1	
FREQUENCY RANGE	**LIMITS**
25 MHz to 1 GHz	2 nW / -57 dBm
Above 1 GHz	20 nW / -47 dBm

4.1.2 Measuring Instruments

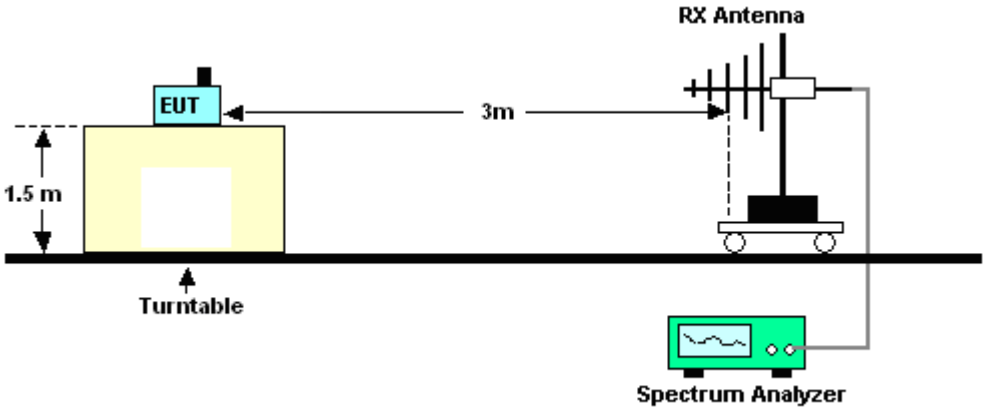
See list of measuring instruments of this test report.

4.1.3 Test Procedures

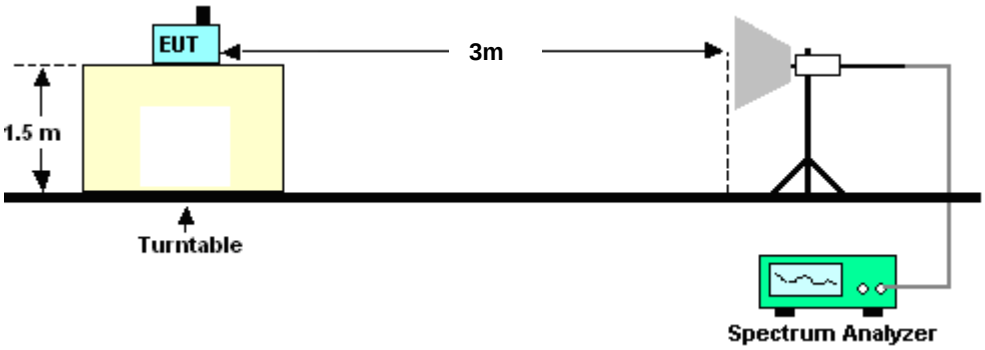
1. The EUT was placed on a turntable with 1.5m height.
2. The test distance between the receiving antenna and the EUT is 3 meter below 1GHz frequency range, and 1.5 meter which is in far field test condition for measured frequency above 1GHz, while the receiving (test) antenna is kept at 1.5 meter height.
3. Set EUT in continuous receiving with maximum output power.
4. The table was rotated from 0 to 360 degree to search the highest radiated emission.
5. Repeating step 3 and 4 for each polarization and channel to find the worst emission level.
6. The results obtained are compared to the limits in order to prove compliance with the requirement.
7. The data was tested by peak detector, if it cannot meet limit under 6dB, we will verify it by quasi peak detector.

4.1.4 Test Setup

<Below 1GHz>



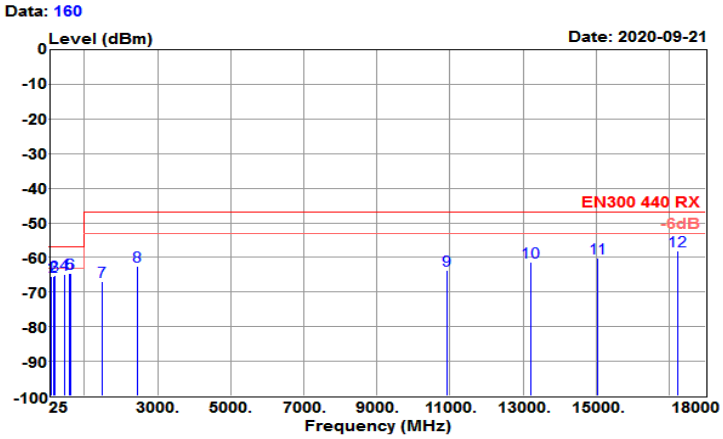
<Above 1GHz>



4.1.5 Test Result

Test Mode :	802.11ac VHT80 CH155 (5775MHz)	Temperature :	22~24℃
Test Engineer :	Jack Liu	Relative Humidity :	43~45%
Frequency Range :	25MHz ~18GHz	Polarization :	Horizontal

```
Temp/Humi    : 21℃/60%                Pol/Phase    : HORIZONTAL
             ------------------------              ----------------
Model  No.   : 6221C-PUC              Tested   by : Jack
             ------------------------              ----------------
Power rating: DC3.3V
             ------------------------
EUT          : WIFI+BT Module
             ------------------------
Test Mode    : RX Mode
             ------------------------
```

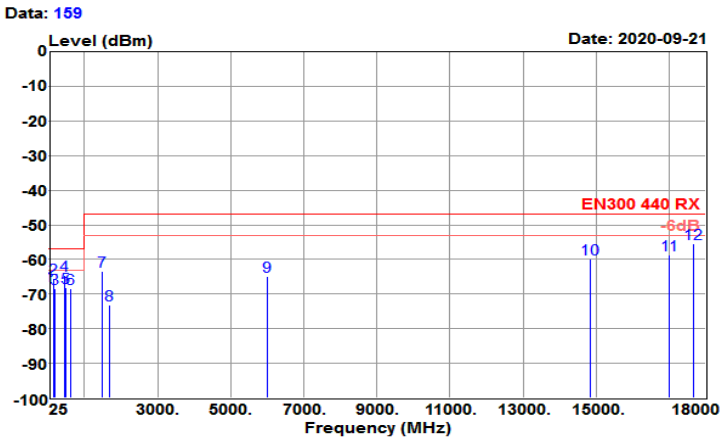


Freq MHz	Reading level dBm	Aux factor dB	level dBm	Limit level dBm	Over limit dB	Remark
100.075	-58.39	-6.99	-65.38	-57.00	-8.38	Peak
142.975	-62.47	-2.96	-65.43	-57.00	-8.43	Peak
180.025	-60.45	-4.79	-65.24	-57.00	-8.24	Peak
467.650	-66.00	1.23	-64.77	-57.00	-7.77	Peak
592.450	-68.91	4.28	-64.63	-57.00	-7.63	Peak
617.800	-69.28	4.83	-64.45	-57.00	-7.45	Peak
1493.000	-71.81	4.75	-67.06	-47.00	-20.06	Peak
2462.000	-70.61	8.03	-62.58	-47.00	-15.58	Peak
10928.000	-87.84	24.20	-63.64	-47.00	-16.64	Peak
13223.000	-88.78	27.45	-61.33	-47.00	-14.33	Peak
15042.000	-86.99	26.94	-60.05	-47.00	-13.05	Peak
17235.000	-89.87	31.70	-58.17	-47.00	-11.17	Peak

Note:
Corrected Reading: Reading level + Aux factor = Level

Test Mode :	802.11ac VHT80 CH155 (5775MHz)	Temperature :	22~24℃
Test Engineer :	Jack Liu	Relative Humidity :	43~45%
Frequency Range :	25MHz ~18GHz	Polarization :	Vertical

```
Temp/Humi    : 21℃/60%              Pol/Phase    : VERTICAL
Model  No.   : 6221C-PUC            Tested   by : Jack
Power rating: DC3.3V
EUT          : WIFI+BT Module
Test Mode    : RX Mode
```



Freq MHz	Reading level dBm	Aux factor dB	level dBm	Limit level dBm	Over limit dB	Remark
47.425	-63.16	-4.45	-67.61	-57.00	-10.61	Peak
143.950	-62.34	-3.08	-65.42	-57.00	-8.42	Peak
199.525	-62.13	-6.40	-68.53	-57.00	-11.53	Peak
470.575	-65.81	1.24	-64.57	-57.00	-7.57	Peak
493.000	-69.69	1.70	-67.99	-57.00	-10.99	Peak
637.300	-73.24	4.93	-68.31	-57.00	-11.31	Peak
1493.000	-68.64	5.09	-63.55	-47.00	-16.55	Peak
1680.000	-78.83	5.61	-73.22	-47.00	-26.22	Peak
5998.000	-78.63	13.72	-64.91	-47.00	-17.91	Peak
14838.000	-87.70	27.86	-59.84	-47.00	-12.84	Peak
17014.000	-89.66	31.05	-58.61	-47.00	-11.61	Peak
17677.000	-90.08	34.61	-55.47	-47.00	-8.47	Peak

Note:
Corrected Reading: Reading level + Aux factor = Level

4.2 Receiver Blocking Test

4.2.1 Limit of Receiver Blocking Test

Definition of without exceeding a given degradation: PER shall be less than 10% declared by the manufacturer

Receiver category	Limit
1	-30 dbm + k
2	-45 dbm + k
3	No limit

The correction factor, k, is as follows:

$$K=-20\log f-10\log BW$$

Where:

- *f* is the frequency in GHz;
- *BW* is the channel bandwidth in MHz.

The factor k is limited within the following:

- *0 < k < 40dB.*

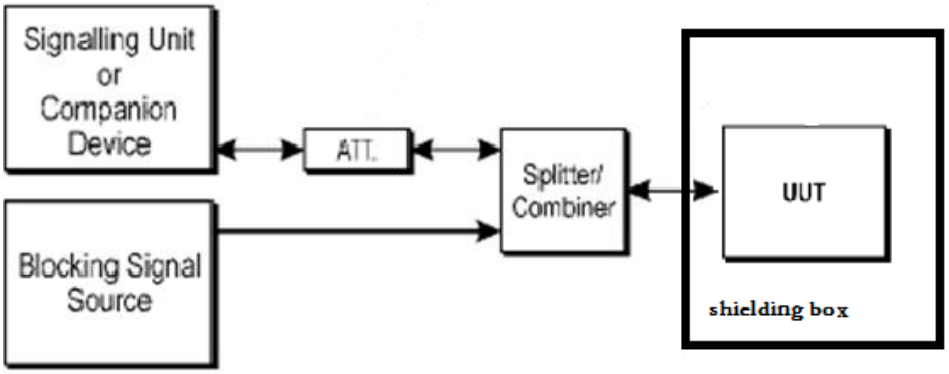
4.2.2 Measuring Instruments

See list of measuring instruments of this test report.

4.2.3 Test Procedures

1. Refer to Section 4.3 of ETSI EN 300 440 V2.1.1(2017-03).
2. Two signal generators A and B shall be connected to the receiver via a combining network to the receiver, directly to the receiver temporary antenna connector.
3. Initially unwanted signal generator B shall be switched off and using wanted signal generator A, the wanted signal level (Pmin) which still gives sufficient response shall be established.
   The output level of generator A shall then be increased by 3 dB (Pmin + 3dB).
4. The measurement shall be repeated with the test frequency for signal generator B at approximately 10 times, 20 times and 50 times of the receive channel bandwidth below the lower band edge of the receive channel.

4.2.4 Test Setup



4.2.5 Test Results of Receiver Blocking

WiFi 802.11ac80 MCS0 Channel 155, BW = 80MHz Channel lower band edge frequency Fl= 5735MHz, Channel upper band edge frequency Fh= 5815MHz,				
Wanted signal From companion	Blocking signal Frequency(MHz)	Minimum Blocking signal Power(dBm)	PER (%)	Test Result (Pass/Fail)
Pmin + 3dB	1735 (Fl – BWx50)	-30 (k=0)	0.0	Pass
Pmin + 3dB	4135 (Fl – BWx20)	-30 (k=0)	0.0	Pass
Pmin + 3dB	4935 (Fl – BWx10)	-30 (k=0)	1.5	Pass
Pmin + 3dB	6615 (Fh+10xBW)	-30 (k=0)	1.2	Pass
Pmin + 3dB	7415 (Fh+20xBW)	-30 (k=0)	0.5	Pass
Pmin + 3dB	9815 (Fh+50xBW)	-30 (k=0)	0.0	Pass
Pmin= -79.86 dBm before blocker is injected.				

Note: PER shall be less than 10% declared by the manufacturer.

4.3 Adjacent channel selectivity

4.3.1 Limit of Adjacent channel selectivity

The adjacent channel selectivity of the equipment under specified conditions shall not be less than the levels of the unwanted signal as stated in table.

Receiver category	Limit
1	-30 dBm + k
2	No Limit
3	No Limit

The correction factor, k, is as follows:

$$K = -20\log f - 10\log BW$$

Where:

- f is the frequency in GHz;
- BW is the channel bandwidth in MHz.

The factor k is limited within the following:

- 0 < k < 40 dB

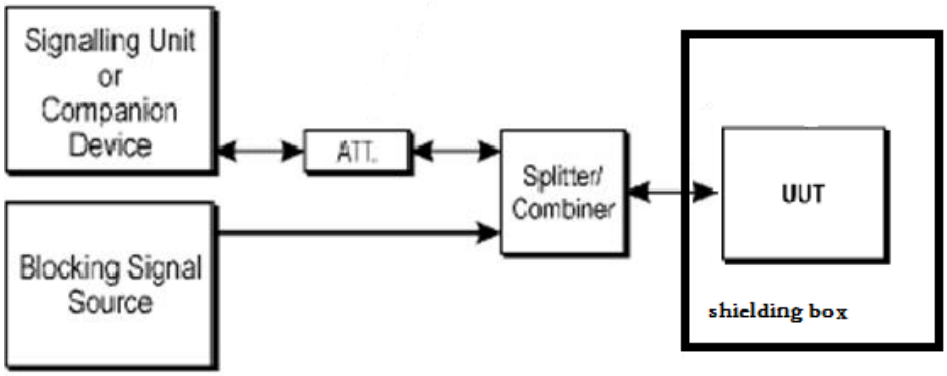
4.3.2 Measuring Instruments

See list of measuring instruments of this test report.

4.3.3 Test Procedures

1. Refer to Section 4.3.3.3 of ETSI EN 300 440 V2.1.1(2017-03).
2. This measurement shall be conducted under normal conditions.
3. Two signal generators A and B shall be connected to the receiver via directly to the receiver temporary antenna connector.
4. Signal generator A shall be at the nominal frequency of the receiver, with normal modulation of the wanted signal.
5. Signal generator B shall be unmodulated and shall be adjusted to the adjacent channel centre frequency immediately above that of the wanted signal.
6. Initially signal generator B shall be switched off and using signal generator A the level that still gives sufficient response shall be established. The output level of generator A shall then be increased by 3 dB.
7. Signal generator B is then switched on and adjusted until the wanted criteria are met. This level shall be recorded.
8. The measurements shall be repeated with signal generator B unmodulated and adjusted to the adjacent channel centre immediately below the wanted signal.
9. The adjacent channel selectivity shall be recorded for the upper and lower adjacent channels as the level in dBm of the unwanted signal.

4.3.4 Test Setup



4.3.5 Test Results of Adjacent channel selectivity

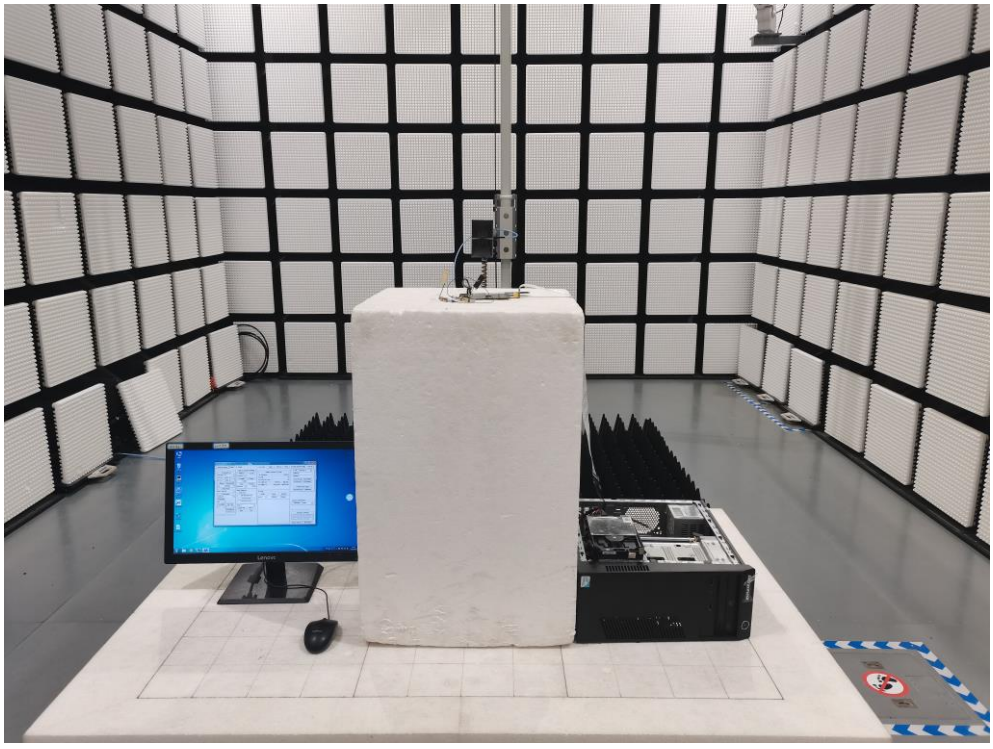
Note: PER shall be less than 10% declared by the manufacturer.

WiFi 802.11ac80 MCS0 Channel 155, BW = 80MHz lower Adjacent channel frequency FC= 5695MHz, upper Adjacent channel frequency FC= 5855MHz,				
Wanted signal From companion	Blocking signal Frequency(MHz)	Minimum Blocking signal Power(dBm)	Measured Blocking signal Power(dBm)	Test Result (Pass/Fail)
Pmin + 3dB	5695	-41.28 (-30+k)	-38.97	Pass
Pmin + 3dB	5855	-40.95 (-30+k)	-39.52	Pass
Pmin= -78.35 dBm				
Note: $k = -20\log f - 10\log BW$, -40 dB < k < 0 dB.				

5. Photographs of Radiated Emission Test Configuration

LF

HF



6. Uncertainty Evaluation

Test Item	Measurement Uncertainty	Notes
Occupied Channel Bandwidth	±196.4Hz	(1)
RF output power, conducted	±2.31 dB	(1)
Power density, conducted	±2.31 dB	(1)
Radiated emissions 30MHz-1000MHz	2.50 dB	(1)
Radiated emissions 1GHz-18GHz	3.51 dB	(1)
Radiated emissions 18GHz-40GHz	3.96 dB	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

7. List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Due Date	Remark
Spectrum Analyzer	Keysight	N9010A	MY56070788	2020-01-15	2021-01-14	Conducted
Power Sensor	Keysight	U2021XA	MY56510025	2020-01-16	2021-01-15	Conducted
Power Sensor	Keysight	U2021XA	MY57030005	2020-01-16	2021-01-15	Conducted
Power Sensor	Keysight	U2021XA	MY56510018	2020-01-16	2021-01-15	Conducted
Power Sensor	Keysight	U2021XA	MY56480002	2020-01-16	2021-01-15	Conducted
Thermal Chamber	Howkin	UHL-34	19111801	2020-04-30	2021-04-29	Conducted
Base Station	R&S	CMW 270	101231	2020-01-16	2021-01-15	Conducted
Signal Generator (Interferer)	Keysight	N5182B	MY56200384	2020-02-21	2021-02-20	Conducted
Signal Generator (Blocker)	Keysight	N5171B	MY56200661	2020-01-15	2021-01-14	Conducted

Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV 30	103728	2020-01-19	2021-01-18	Radiation
Amplifier	Sonoma	310	363917	2020-01-15	2021-01-14	Radiation
Amplifier	Schwarzbeck	BBV 9718	327	2020-01-15	2021-01-14	Radiation
Bilog Antenna	Schwarzbeck	VULB 9168	9168-757	2018-08-31	2021-08-30	Radiation
Horn Antenna	Schwarzbeck	BBHA 9120 D	1677	2020-02-14	2023-02-13	Radiation
Test Software	Audix	E3	6.111221a	N/A	N/A	Radiation
Filter	Micro-Tronics	BRM 50702	G266	N/A	N/A	Radiation

Note:

1. Test equipment calibration is traceable to the procedure of ISO17025.

2. N/A：No Calibration Required.

----------End of the report----------