

FCC PART 15E TEST REPORT FOR CERTIFICATION

On Behalf of

Anhui Grizzly Vision Technology Co.,Ltd

50" ULTRA HD SMART TV(ATSC TUNER)

Model Number: RWOSU5049

Additional Model: RWOSU5047, RWOSBU5048, RWOSQU5050,

RHOWS507SM, RTU5015, RNSMU5036-B, RQSM5022,

RNSMU5021, RLDED5098-UHD

FCC ID: 2AXAQ-RCA-HX-50

Prepared for:	Anhui Grizzly Vision Technology Co.,Ltd
	High-tech Industrial Park,High-tech Zone,Huainan,Anhui,China
Prepared By:	EST Technology Co., Ltd.
	Chilingxiang, Qishantou, Santun, Houjie, Dongguan, Guangdong, China
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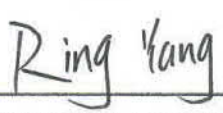
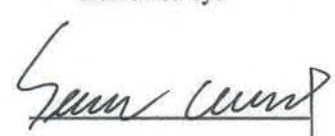
Report Number:	ESTE-R2109118
Date of Test:	Jul. 29~Sep. 07, 2021
Date of Report:	Sep. 09, 2021

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EST Technology Co., Ltd.

Applicant:	Anhui Grizzly Vision Technology Co.,Ltd		
Address:	High-tech Industrial Park,High-tech Zone,Huainan,Anhui,China		
Manufacturer:	Anhui Grizzly Vision Technology Co.,Ltd		
Address:	High-tech Industrial Park,High-tech Zone,Huainan,Anhui,China		
Factory:	Dongguan Konka Electronic Co.,Ltd		
Address:	Konka Road,Fenggang Town Dongguan City Guangdong China		
E.U.T:	50" ULTRA HD SMART TV(ATSC TUNER)		
Model Number:	RWOSU5049		
Additional Model:	RWOSU5047, RWOSBU5048, RWOSQU5050, RHOWS507SM, RTU5015, RNSMU5036-B, RQSM5022, RNSMU5021, RLDED5098-UHD Note: They are identical except model name.		
Power Supply:	AC 100-240V, 50/60Hz, 108W		
Trade Name:	RCA	Serial No.:	-----
Date of Receipt:	Jul. 29, 2021	Date of Test:	Jul. 29~Sep. 07, 2021
Test Specification:	FCC Part 15 Subpart E 15.407 ANSI C63.10:2013 FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01 FCC KDB 662911 D01 Multiple Transmitter Output v02r01		
Test Result:	The device described above is tested by EST Technology Co., Ltd. The measurement results were contained in this test report and EST Technology Co., Ltd. was assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT to be technically compliance with the FCC Rules and Regulations Part 15 Subpart E requirements. This report applies to above tested sample only and shall not be reproduced in part without written approval of EST Technology Co., Ltd.		
Prepared by:	Reviewed by:	Approved by:	
 Ring Yang / Assistant	 Seven Wang / Engineer	 Iceman Hu / Manager	
Other Aspects:	None.		
Abbreviations: OK/P=passed fail/F=failed n.a/N=not applicable E.U.T=equipment under tested			
This test report is based on a single evaluation of one sample of above mentioned products ,It is not permitted to be duplicated in extracts without written approval of EST Technology Co., Ltd.			

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

FCC ID	:	2AXAQ-RCA-HX-50	
Product Name	:	50" ULTRA HD SMART TV(ATSC TUNER)	
Model Number	:	RWOSU5049	
Software Version	:	V1.0	
Hardware Version	:	V1.0	
Operation frequency	:	U-NII-1: 5150 MHz~5250 MHz U-NII-3: 5725 MHz~5850 MHz	
Number of channel	:	U-NII-1: IEEE 802.11a / n HT20 / ac VHT20: 4 Channels; IEEE 802.11n HT40 / ac VHT40: 2 Channels; IEEE 802.11ac VHT80: 1 Channel. U-NII-3: IEEE 802.11a / n HT20 / ac VHT20: 5 Channels; IEEE 802.11n HT40 / ac VHT40: 2 Channels; IEEE 802.11ac VHT80: 1 Channel.	
Modulation	:	OFDM(QPSK, BPSK, 16-QAM, 64-QAM,256-QAM)	
Transmit Data Rate	:	IEEE 802.11a: 54, 48, 36, 24, 18, 12, 9, 6Mbps; IEEE 802.11n: up 300Mbps; IEEE 802.11ac: up to 866.6Mbps;	
Channels Spacing	:	IEEE 802.11a: 20MHz; IEEE 802.11n HT20: 20MHz; IEEE 802.11n HT40: 40MHz; IEEE 802.11ac VHT20: 20MHz; IEEE 802.11ac VHT40: 40MHz; IEEE 802.11ac VHT80: 80MHz;	
Transmit Power	:	U-NII-1	IEEE 802.11a: 12.91dBm IEEE 802.11n HT20: 12.88dBm IEEE 802.11n HT40: 13.02dBm IEEE 802.11ac VHT20: 12.73dBm IEEE 802.11ac VHT40: 12.60dBm IEEE 802.11ac VHT80: 12.78dBm
		U-NII-3	IEEE 802.11a: 12.46dBm IEEE 802.11n HT20:14.28dBm IEEE 802.11n HT40: 13.92dBm IEEE 802.11ac VHT20:13.61dBm IEEE 802.11ac VHT40:13.39dBm IEEE 802.11ac VHT80: 12.77dBm
Sample Type	:	Prototype production	

Note:

For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.

1.2. The antenna information for EUT

Ant No.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	-	-	Internal	-	2
2	-	-	Internal	-	2

Remark:

- (1) The EUT can work as CDD mode in IEEE 802.11n and IEEE 802.11ac, and can operate with one spatial stream.

According to KDB 662911 F 2) f) (i):

$$\text{Directional gain} = 2\text{dBi} + 10 \times \log(2/1)\text{dB} = 5.01\text{dBi} < 6\text{dBi}$$

So, the output power limit and power spectral density do not need to be reduced.

- (2) After pre-test all antenna configurations, the worst case configuration is listed below.

TX Mode \ ANT No.	SISO Configuration	MIMO Configuration
IEEE 802.11a	ANT 1 and ANT 2	/
IEEE 802.11n HT20	/	ANT1+ANT2
IEEE 802.11n HT40	/	ANT1+ANT2
IEEE 802.11ac VHT20	/	ANT1+ANT2
IEEE 802.11ac VHT40	/	ANT1+ANT2
IEEE 802.11ac VHT80	/	ANT1+ANT2

2. SUMMARY OF TEST

2.1. Summary of test result

Report Section	Description of Test Item	FCC Standard Section	Results
3	6dB Bandwidth & 26dB Bandwidth & 99% Occupied Bandwidth	15.407(a) 15.407(e)	PASS
4	Maximum Conducted Output Power	15.407(a)	PASS
5	Peak Power Spectral Density	15.407(a)	PASS
6	Unwanted Emissions and Band Edge	15.205 15.209 15.407(b)	PASS
7	Frequency Stability	15.407(g)	PASS
8	AC Power Line Conducted Emissions	15.207 15.407(b)(9)	PASS
9	Antenna Requirement	15.203	PASS

Note:

(1) "N/A" denotes test is not applicable in this test report

2.2. Test Facilities

EMC Lab

: Certificated by CNAS, CHINA
Registration No.: L5288
This Certificate is valid until: November 12, 2023

Certificated by FCC, USA
Designation Number: CN1215
This Certificate is valid until: January 31, 2022

Certificated by A2LA, USA
Registration No.: 4366.01
This Certificate is valid until: January 31, 2022

Certificated by Industry Canada
CAB identifier No.: CN0035
This Certificate is valid until: January 31, 2022

Certificated by VCCI, Japan
Registration No.: C-14103; T-20073; R-13663;
R-20103; G-20097
Date of registration: Apr. 20, 2020
This Certificate is valid until: Apr. 19, 2023

Certificated by TUV Rheinland, Germany
Registration No.: UA 50413872 0001
Date of registration: July 31, 2018

Certificated by Intertek
Registration No.: 2011-RTL-L2-64
Date of registration: November 08, 2018

Name of Firm : EST Technology Co., Ltd.

Site Location : Chilingxiang, Qishantou, Santun, Houjie, Dongguan, Guangdong, China

2.3. Measurement uncertainty for EST Technology Co., Ltd.

Test Item	Uncertainty
Uncertainty for Conduction emission test	2.54dB
Uncertainty for Radiation Emission test (30MHz-1GHz)	3.62
Uncertainty for Radiation Emission test (1GHz to 18GHz)	4.86
Uncertainty for spurious emissions test (18GHz to 40GHz)	4.67
Uncertainty for radio frequency	7×10^{-8}
Uncertainty for conducted RF Power	1.08dB
Uncertainty for Power density test	0.26dB
Temperature	$\pm 0.6^{\circ}\text{C}$
Humidity	$\pm 4.0\%$
Volatage DC	$\pm 1.0\%$
Volatage (AC, <10KHz)	$\pm 1.5\%$

Note:

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

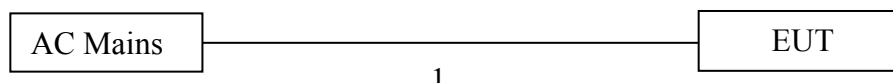
2.4. Assistant equipment used for test

Item	Equipment	Brand	Model Name/Type No.	FCC ID	Series No.
-	-	-	-	-	-

Item	Shielded Type	Ferrite Core	Length	Note
1	NO	NO	1.5m	AC Cable

2.5. Block Diagram

For radiated emissions test: EUT was placed on a turn table, which is 0.8 (or 1.5) meter high above ground.



AC 120V/60Hz

(EUT: 50" ULTRA HD SMART TV(ATSC TUNER))

2.6. Test Mode

Pre-scan has been combined all possible modulations and data rates to determine the worst case test mode, the worst case test mode was selected for the final test as listed below.

Test Item	Test Mode	Channel	Modulation	Data rate
6dB Bandwidth	IEEE 802.11a	149/157/165	OFDM	6Mbps
	IEEE 802.11n HT20	149/157/165	OFDM	MCS0
	IEEE 802.11n HT40	151/159	OFDM	MCS0
	IEEE 802.11ac VHT20	149/157/165	OFDM	MCS0
	IEEE 802.11ac VHT40	151/159	OFDM	MCS0
	IEEE 802.11ac VHT80	155	OFDM	MCS0
26dB Bandwidth	IEEE 802.11a	36/40/48	OFDM	6Mbps
	IEEE 802.11n HT20	36/40/48	OFDM	MCS0
	IEEE 802.11n HT40	38/46/54/62	OFDM	MCS0
	IEEE 802.11ac VHT20	36/40/48	OFDM	MCS0
	IEEE 802.11ac VHT40	38/46	OFDM	MCS0
	IEEE 802.11ac VHT80	42	OFDM	MCS0
99% Occupied Bandwidth	IEEE 802.11a	36/40/48/149/157/165	OFDM	6Mbps
	IEEE 802.11n HT20	36/40/48/149/157/165	OFDM	MCS0
	IEEE 802.11n HT40	38/46/151/159	OFDM	MCS0
	IEEE 802.11ac VHT20	36/40/48/149/157/165	OFDM	MCS0
	IEEE 802.11ac VHT40	38/46/151/159	OFDM	MCS0
	IEEE 802.11ac VHT80	42/155	OFDM	MCS0
Maximum Conducted Output Power	IEEE 802.11a	36/40/48/149/157/165	OFDM	6Mbps
	IEEE 802.11n HT20	36/40/48/149/157/165	OFDM	MCS0
	IEEE 802.11n HT40	38/46/151/159	OFDM	MCS0
	IEEE 802.11ac VHT20	36/40/48/149/157/165	OFDM	MCS0
	IEEE 802.11ac VHT40	38/46/151/159	OFDM	MCS0
	IEEE 802.11ac VHT80	42/155	OFDM	MCS0

Peak Power Spectral Density	IEEE 802.11a	36/40/48/149/157/165	OFDM	6Mbps
	IEEE 802.11n HT20	36/40/48/149/157/165	OFDM	MCS0
	IEEE 802.11n HT40	38/46/151/159	OFDM	MCS0
	IEEE 802.11ac VHT20	36/40/48/149/157/165	OFDM	MCS0
	IEEE 802.11ac VHT40	38/46/151/159	OFDM	MCS0
	IEEE 802.11ac VHT80	42/155	OFDM	MCS0
Unwanted Emissions and Band Edge(Above 1GHz)	IEEE 802.11a	36/40/48/149/157/165	OFDM	6Mbps
	IEEE 802.11n HT20	36/40/48/149/157/165	OFDM	MCS0
	IEEE 802.11n HT40	38/46/151/159	OFDM	MCS0
	IEEE 802.11ac VHT20	36/40/48/149/157/165	OFDM	MCS0
	IEEE 802.11ac VHT40	38/46/151/159	OFDM	MCS0
	IEEE 802.11ac VHT80	42/155	OFDM	MCS0
Unwanted Emissions Below 1GHz	IEEE 802.11a	36	OFDM	6Mbps
Frequency Stability	Unmodulation	36/149	N/A	N/A
AC Power Line Conducted Emissions	IEEE 802.11a	36	OFDM	6Mbps

Note:

1. In radiated measurement, the EUT had been pre-scan on the positioned of each 3 axis(X,Y,Z), the worst case was found when positioned on **X-plane**.

2.7. Channel List

Band	Mode	Channel	Frequency (MHz)
U-NII-1	IEEE 802.11a & n HT20 & ac VHT20	36	5180
		40	5200
		44	5220
		48	5240
	IEEE 802.11n HT40 & ac VHT40	38	5190
		46	5230
	IEEE 802.11ac VHT80	42	5210
U-NII-2A	IEEE 802.11a & n HT20 & ac VHT20	52	5260
		56	5280
		60	5300
		64	5320
	IEEE 802.11n HT40 & ac VHT40	54	5270
		62	5310
	IEEE 802.11ac VHT80	58	5290
U-NII-2C	IEEE 802.11a & n HT20 & ac VHT20	100	5500
		104	5520
		108	5540
		112	5560
		116	5580
		120	5600
		124	5620
		128	5640
		132	5660
		136	5680
		140	5700
	IEEE 802.11n HT40 & ac VHT40	102	5510
		110	5550
		118	5590
		126	5630
		134	5670
	IEEE 802.11ac VHT80	106	5530
		122	5610
U-NII-3	IEEE 802.11a & n HT20 & ac VHT20	149	5745
		153	5765
		157	5785
		161	5805
		165	5825
	IEEE 802.11n HT40 & ac VHT40	151	5755
		159	5795
	IEEE 802.11ac VHT80	155	5775

2.8. Power Setting of Test Software

Software Name	QA_Tool_Dbg		
U-NII-1			
Frequency(MHz)	5180	5200	5240
IEEE 802.11a Setting	Default	Default	Default
IEEE 802.11n HT20 Setting	Default	Default	Default
IEEE 802.11ac VHT20 Setting	Default	Default	Default
Frequency(MHz)	5190	5230	
IEEE 802.11n HT40 Setting	Default	Default	
IEEE 802.11ac VHT40 Setting	Default	Default	
Frequency(MHz)	5210		
IEEE 802.11ac VHT80 Setting	Default		
U-NII-3			
Frequency(MHz)	5745	5785	5825
IEEE 802.11a Setting	Default	Default	Default
IEEE 802.11n HT20 Setting	Default	Default	Default
IEEE 802.11ac VHT20 Setting	Default	Default	Default
Frequency(MHz)	5755	5795	
IEEE 802.11n HT40 Setting	Default	Default	
IEEE 802.11ac VHT40 Setting	Default	Default	
Frequency(MHz)	5775		
IEEE 802.11ac VHT80 Setting	Default		

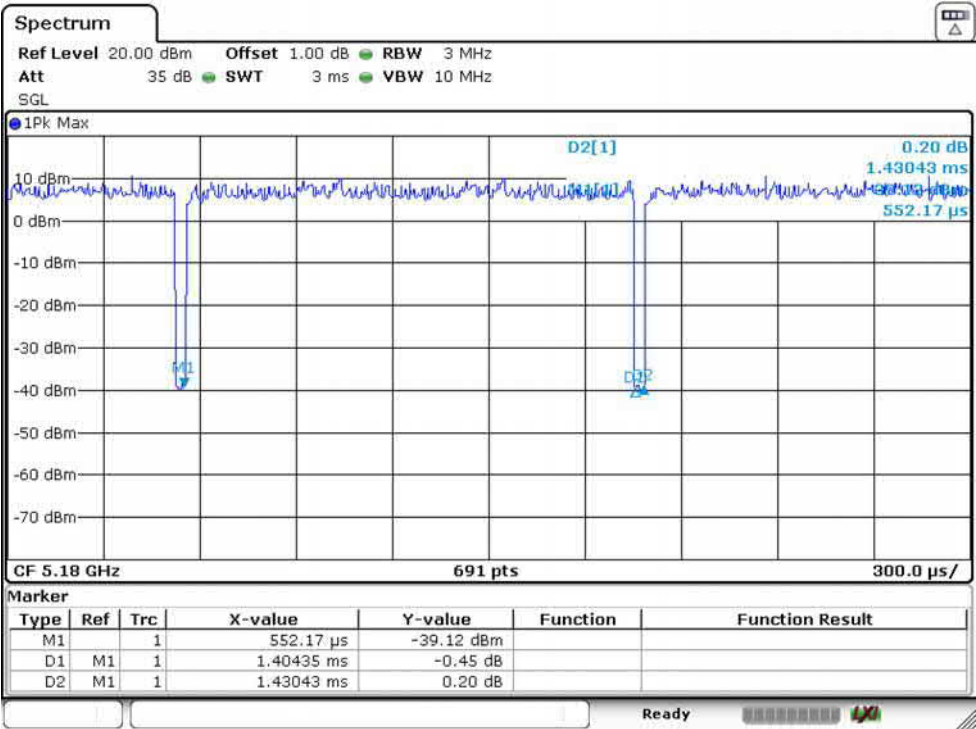
2.9. Duty Cycle of Test Signal

Temperature	26.4℃	Relative Humidity		55%	Test Voltage		AC 120V/60Hz
Mode	Frequency (MHz)	On time (ms)	Total Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T (Hz)	VBW Setting (dB)
IEEE 802.11a	5180	1.40435	1.43043	98.18	0.00	10	10
IEEE 802.11n HT20	5180	1.31304	1.33913	98.05	0.00	10	10
IEEE 802.11ac VHT20	5190	0.69130	0.71739	96.36	0.16	1447	1447
IEEE 802.11n HT40	5180	0.66957	0.68696	97.47	0.11	1493	1493
IEEE 802.11ac VHT40	5190	0.36522	0.39130	93.34	0.30	2738	2738
IEEE 802.11ac VHT80	5210	1.01450	1.55797	65.12	1.86	986	986

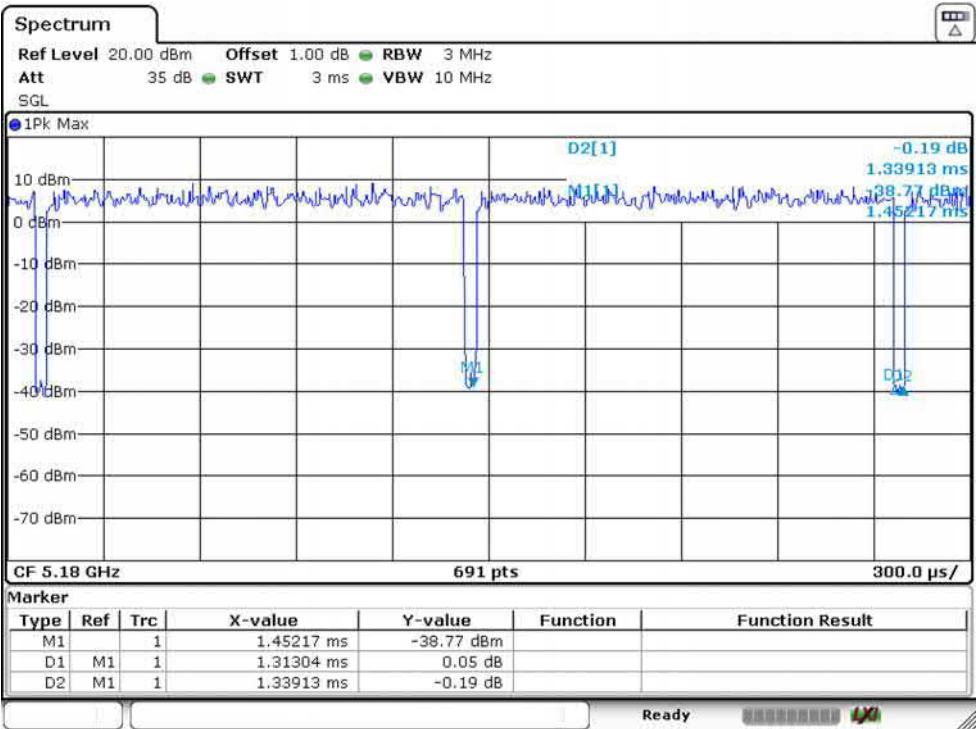
Note:

1. Duty Cycle=On Time/Total Time×100%.
2. Duty Factor=10×Log(1/Duty Cycle).
3. If duty cycle <98 %, the conducted average output power and average power spectral density should be add duty factor.
4. If duty cycle ≥98 %,the EUT is consider to be transmitting continuously,the conducted average output power and average power spectral density no need to add duty factor.
5. The on-time time is transmission duration(T).
6. The VBW Setting is use for RMS measurement in unwanted emissions and band edge(Above 1GHz) test.

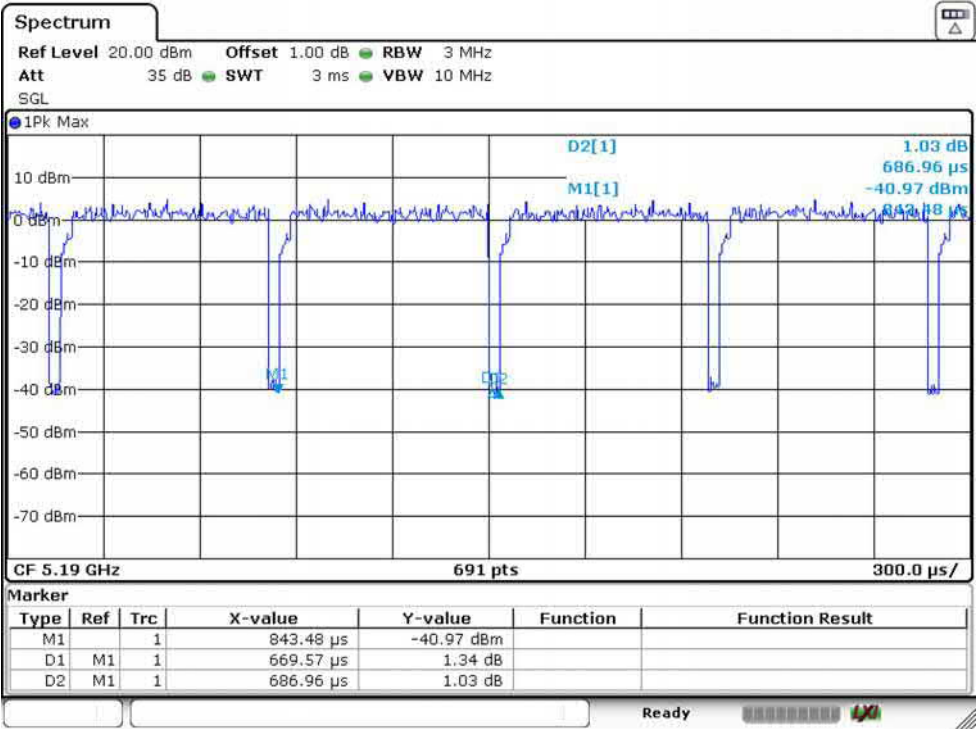
IEEE 802.11a 5180MHz



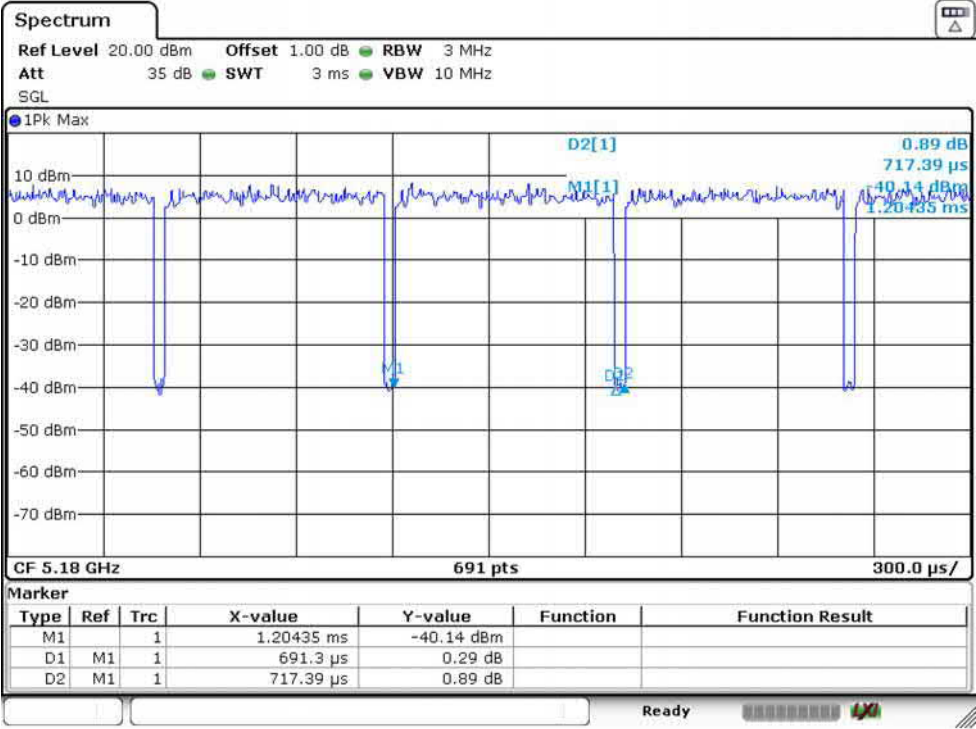
IEEE 802.11n HT20 5180MHz



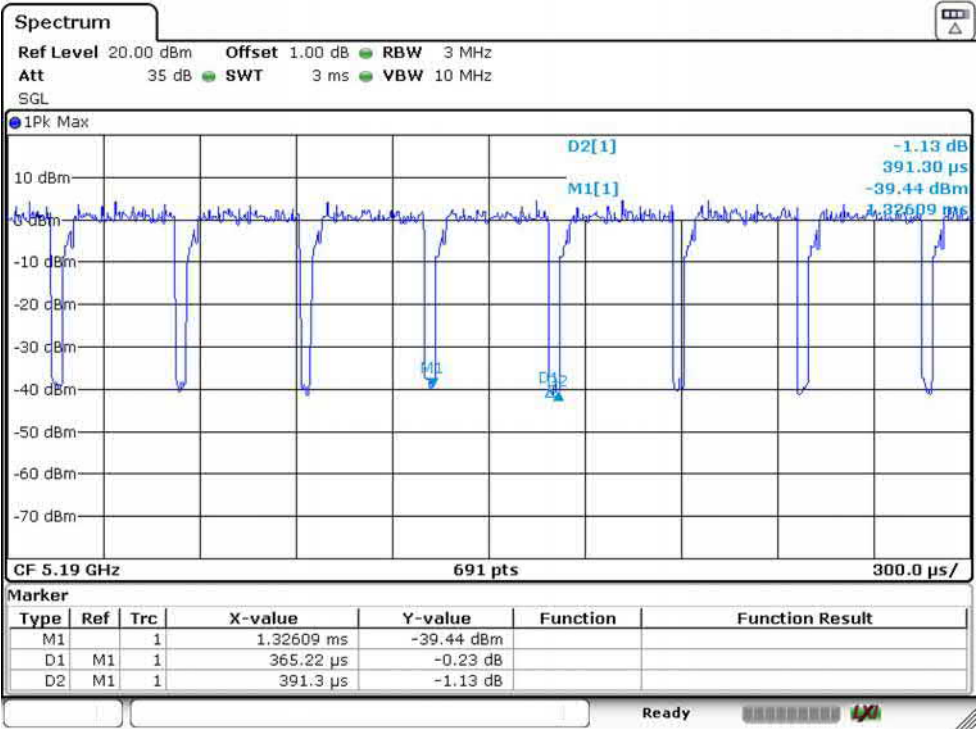
IEEE 802.11n HT40 5190MHz



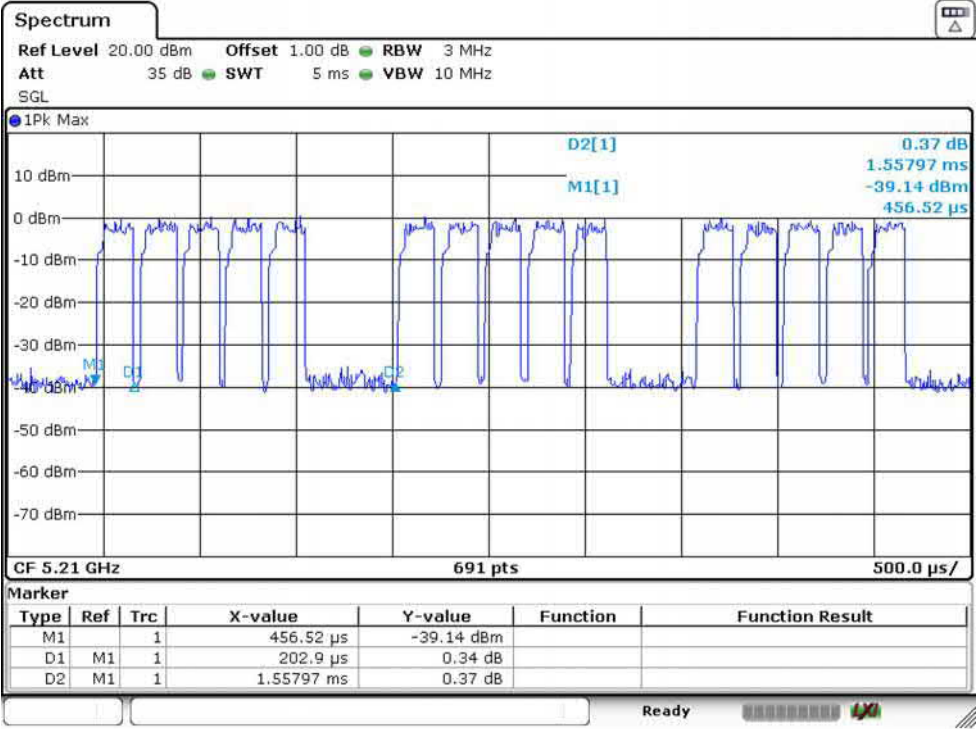
IEEE 802.11ac VHT20 5180MHz



IEEE 802.11ac VHT40 5190MHz



IEEE 802.11ac VHT80 5210MHz



2.10. Test Equipment List

For AC power conducted emissions test						
Equipment	Manufacturer	Model No.	Serial No.	Calibration Body	Last Cal.	Next Cal.
EMI Test Receiver	Rohde & Schwarz	ESHS30	EST-E001	LISAI	June 13,21	1 Year
Artificial Mains Network	Rohde & Schwarz	ENV216	EST-E002	LISAI	June 13,21	1 Year
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	EST-E078	LISAI	June 13,21	1 Year
Test Software	Audix	e3-6.111221a	N/A	N/A	N/A	N/A

For radiated emissions test(9KHz-30MHz)						
Equipment	Manufacturer	Model No.	Serial No.	Calibration Body	Last Cal.	Next Cal.
EMI Test Receiver	Rohde & Schwarz	ESR7	EST-E047	LISAI	June 13,21	1 Year
Active Loop Antenna	SCHWARZB ECK	FMZB 1519B	EST-E054	LISAI	June 13,21	1 Year
Test Software	Audix	e3-6.111221a	N/A	N/A	N/A	N/A
9kHz-30MHz Cable	N/A	EST-001	N/A	N/A	N/A	N/A

For radiated emissions test(30MHz-1000MHz)						
Equipment	Manufacturer	Model No.	Serial No.	Calibration Body	Last Cal.	Next Cal.
EMI Test Receiver	Rohde & Schwarz	ESR7	EST-E047	LISAI	June 13,21	1 Year
Bilog Antenna	Teseq	CBL 6111D	EST-E034	LISAI	June 13,21	1 Year
Test Software	Audix	e3-6.111221a	N/A	N/A	N/A	N/A
30-1000MHz Cable	N/A	EST-002	N/A	N/A	N/A	N/A

For radiated emissions test(Above 1000MHz)						
Equipment	Manufacturer	Model No.	Serial No.	Calibration Body	Last Cal.	Next Cal.
Horn Antenna	SCHWARZB ECK	BBHA 9120 D	EST-E031	LISAI	June 13,21	1 Year
Signal Amplifier	SCHWARZB ECK	BBV9718	EST-E032	LISAI	June 13,21	1 Year
Spectrum Analyzer	Rohde & Schwarz	FSV40	EST-E069	LISAI	July 19,21	1 Year
Test Software	Audix	e3-6.111221a	N/A	N/A	N/A	N/A
Above 1GHz Cable	N/A	EST-003	N/A	N/A	N/A	N/A

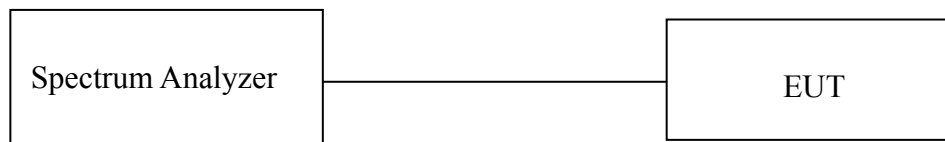
For connect EUT antenna terminal test						
Equipment	Manufacturer	Model No.	Serial No.	Calibration Body	Last Cal.	Next Cal.
TS 8997	Rohde & Schwarz	/	/	/	/	/
Open Switch and Control Unit	Rohde & Schwarz	OSP-B157WB	EST-E036	LISAI	June 13,21	1 Year
Signal and Spectrum Analyzer	Rohde & Schwarz	FSV	EST-E037	LISAI	June 13,21	1 Year
Signal Generator	Rohde & Schwarz	SMB100A	EST-E038	LISAI	June 13,21	1 Year
Vector Signal Generator	Rohde & Schwarz	SMBV100A	EST-E039	LISAI	June 13,21	1 Year
Test Software	Rohde & Schwarz	WMS32	V10.50.00	N/A	N/A	N/A
Temperature controller	Terchy	MHQ	EST-E101	LISAI	June 13,21	1 Year

3. 6dB BANDWIDTH & 26dB BANDWIDTH & 99% OCCUPIED BANDWIDTH

3.1. Limit

Band	Frequency (MHz)	Test Item	Limit
U-NII-1	5150-5250	26dB Bandwidth&99% Occupied Bandwidth	N/A
U-NII-2A	5250-5350	26dB Bandwidth&99% Occupied Bandwidth	N/A
U-NII-2C	5470-5725	26dB Bandwidth&99% Occupied Bandwidth	N/A
U-NII-3	5725-5850	6dB Bandwidth&99% Occupied Bandwidth	6dB Bandwidth $\geq$ 500KHz

3.2. Test Setup



3.3. Spectrum Analyzer Setting

6dB Bandwidth	
Spectrum Parameters	Setting
RBW	100KHz
VBW	300KHz
Span	40MHz(20MHz Bandwidth mode) 60MHz(40MHz Bandwidth mode) 120MHz(80MHz Bandwidth mode)
Sweep Time	Auto
Detector	Peak
Trace Mode	Max Hold

26dB Bandwidth	
Spectrum Parameters	Setting
RBW	approximately 1% of the emission bandwidth
VBW	>RBW
Span	40MHz(20MHz Bandwidth mode) 60MHz(40MHz Bandwidth mode) 120MHz(80MHz Bandwidth mode)
Sweep Time	Auto
Detector	Peak
Trace Mode	Max Hold

99% Occupied Bandwidth	
Spectrum Parameters	Setting
RBW	1% to 5% of the OBW
VBW	approximately three times the RBW
Span	between 1.5 times and 5.0 times the OBW
Sweep Time	Auto
Detector	Peak
Trace Mode	Max Hold

3.4. Test Procedure

For 26dB Bandwidth Measurement :

- Connect EUT antenna terminal to the spectrum analyzer with RF cable.
- Spectrum analyzer setting parameters in accordance with section 3.3.
- Set the EUT transmit continuously with maximum output power.
- Allow trace to stabilize, measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the instrument. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.
- Repeat above procedures until all modes and channels were measured.
- Record the results in the test report.

For 6dB Bandwidth Measurement :

- Connect EUT antenna terminal to the spectrum analyzer with RF cable.
- Spectrum analyzer setting parameters in accordance with section 3.3.
- Set the EUT transmit continuously with maximum output power.
- Allow trace to stabilize, measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.
- Repeat above procedures until all modes and channels were measured.
- Record the results in the test report.

For 99% Occupied Bandwidth Measurement :

- Connect EUT antenna terminal to the spectrum analyzer with RF cable.
- Spectrum analyzer setting parameters in accordance with section 3.3.
- Set the EUT transmit continuously with maximum output power.
- Allow trace to stabilize, use the 99% power bandwidth function to measure bandwidth.
- Repeat above procedures until all modes and channels were measured.
- Record the results in the test report.

3.5. Test Result

Temperature	26.4℃	Relative Humidity		55%	Test Voltage	AC 120V/60Hz
26dB Bandwidth&99% Occupied Bandwidth						
AND	Test Mode	Fre (MHz)	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Calcul ate Power Limit (W)	Calculate Power Limit (dBm)
U-NII-1	IEEE 802.11a	5180	19.971	16.498		
		5200	20.029	16.556		
		5240	19.797	16.498		
	IEEE 802.11n HT20	5180	20.087	17.540		
		5200	20.087	17.598		
		5240	20.087	17.540		
	IEEE 802.11ac VHT20	5180	20.134	17.656		
		5200	20.203	17.656		
		5240	20.203	17.655		
	IEEE 802.11n HT40	5190	40.290	36.353		
		5230	40.290	36.816		
	IEEE 802.11ac VHT40	5190	40.520	36.237		
		5230	40.520	36.353		
	IEEE 802.11ac VHT80	5210	80.410	75.948		

Temperature	26.4℃	Relative Humidity		55%	Test Voltage	AC 120V/60Hz
6dB Bandwidth&99% Occupied Bandwidth						
BAND	Test Mode	Fre (MHz)	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	6dB BW Min Limit (MHz)	Result
U-NII-3	IEEE 802.11a	5745	15.155	16.498	0.5	PASS
		5785	15.279	16.440	0.5	PASS
		5825	15.163	16.440	0.5	PASS
	IEEE 802.11n HT20	5745	16.314	17.598	0.5	PASS
		5785	16.302	17.598	0.5	PASS
		5825	16.290	17.540	0.5	PASS
	IEEE 802.11ac VHT20	5745	16.238	17.656	0.5	PASS
		5785	16.306	17.655	0.5	PASS
		5825	16.298	17.598	0.5	PASS
	IEEE 802.11n HT40	5755	35.357	36.816	0.5	PASS
		5795	35.157	36.700	0.5	PASS
	IEEE 802.11ac VHT40	5755	35.125	36.585	0.5	PASS
		5795	35.149	36.700	0.5	PASS
	IEEE 802.11ac VHT80	5775	76.296	75.948	0.5	PASS

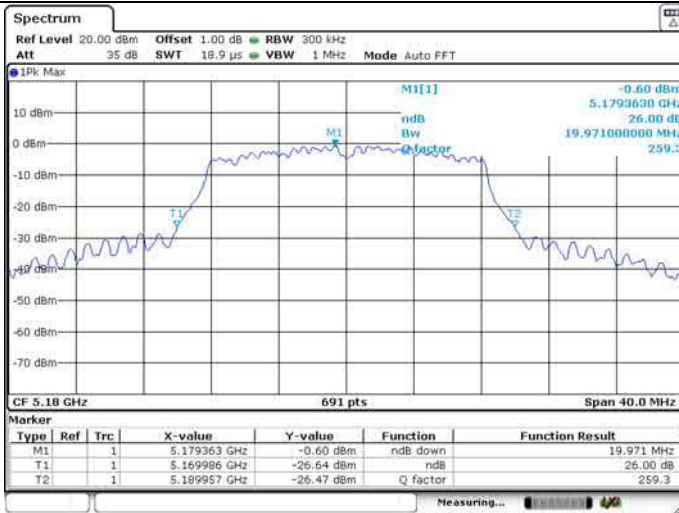
Note :

For Band U-NII-2A and U-NII-2C,the maximum conducted output power limit is 250mw or $11+10 \times \log B$, which is lesser,where B is the 26dB Bandwidth in MHz.So in this section,the maximum conducted output power limit can calculate with 26dB Bandwidth.

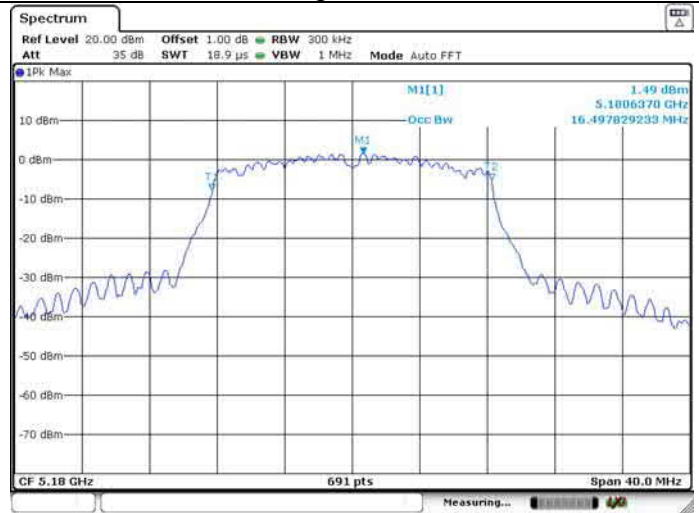
3.6. Test Result

U-NII-1 IEEE 802.11a 5180MHz

26dB Bandwidth

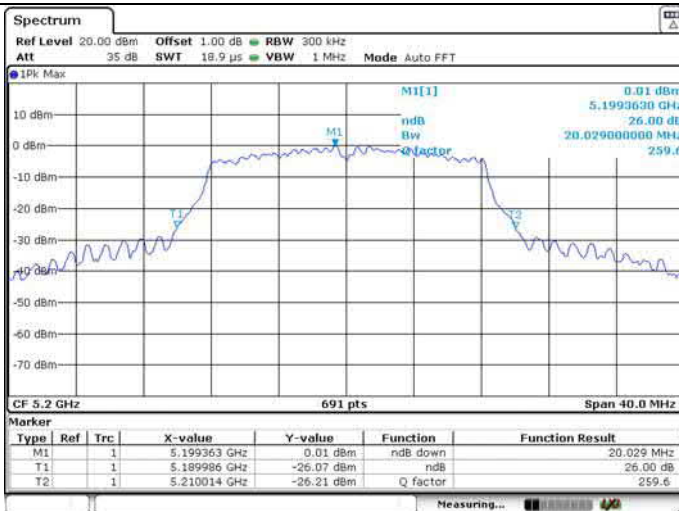


99% Occupied Bandwidth



U-NII-1 IEEE 802.11a 5200MHz

26dB Bandwidth

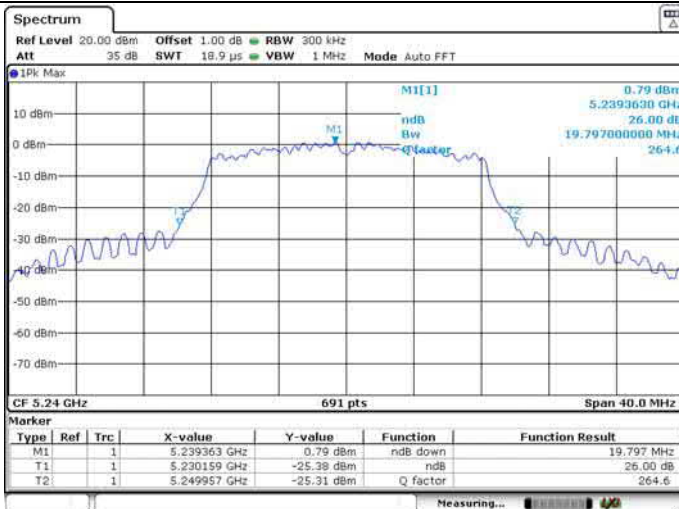


99% Occupied Bandwidth

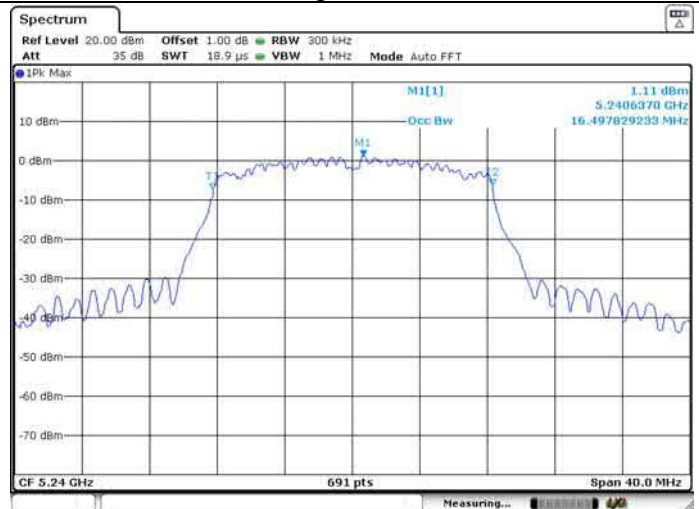


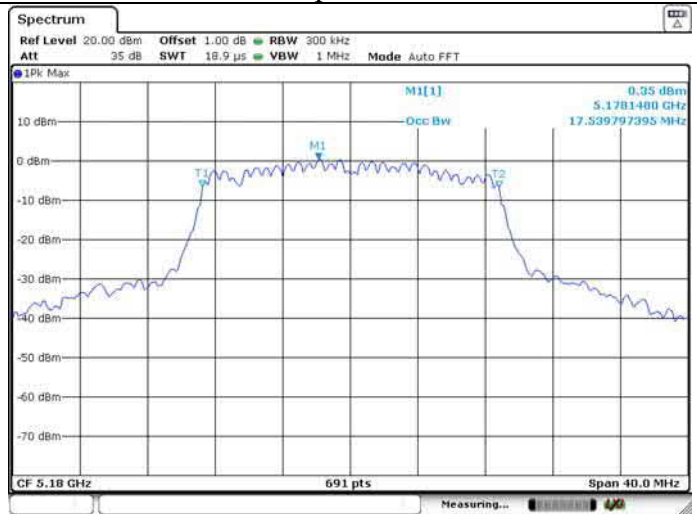
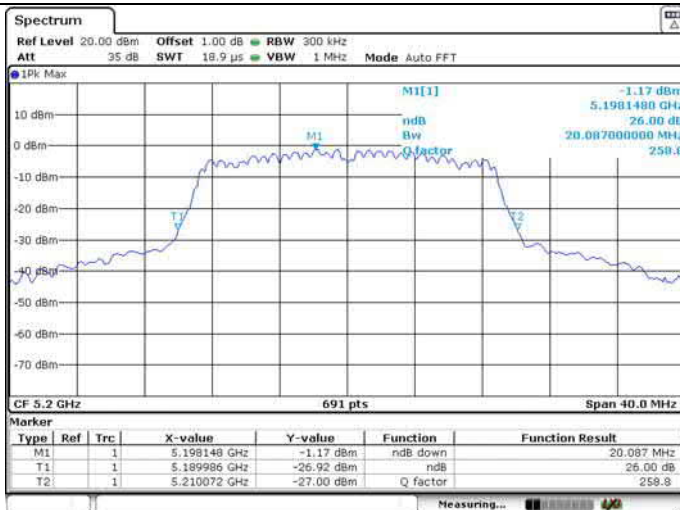
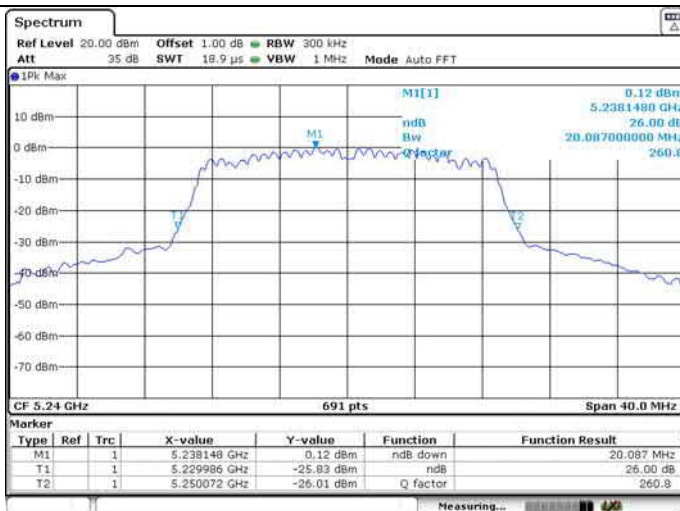
U-NII-1 IEEE 802.11a 5240MHz

26dB Bandwidth



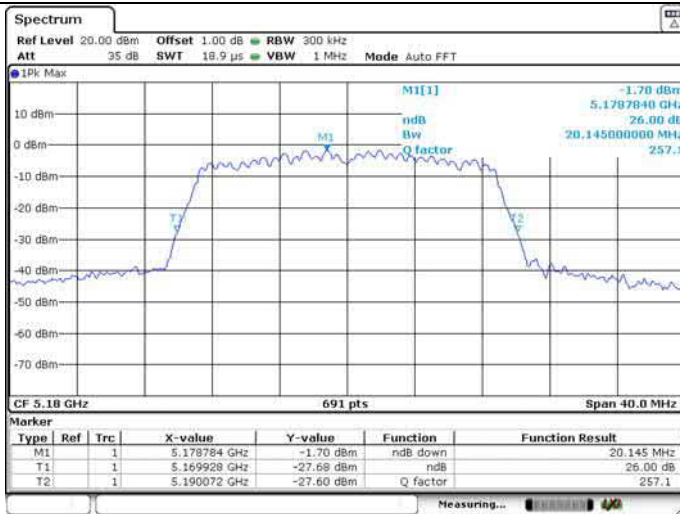
99% Occupied Bandwidth



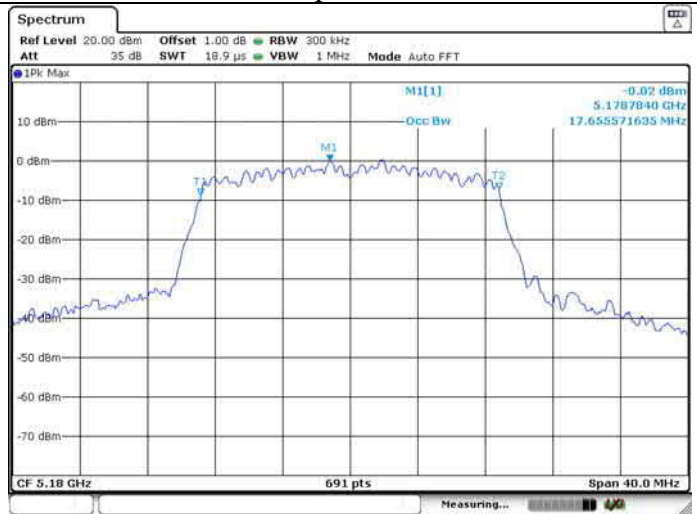
U-NII-1 IEEE 802.11n HT20 5180MHz**26dB Bandwidth****99% Occupied Bandwidth****U-NII-1 IEEE 802.11n HT20 5200MHz****26dB Bandwidth****99% Occupied Bandwidth****U-NII-1 IEEE 802.11n HT20 5240MHz****26dB Bandwidth****99% Occupied Bandwidth**

U-NII-1 IEEE 802.11ac VHT20 5180MHz

26dB Bandwidth

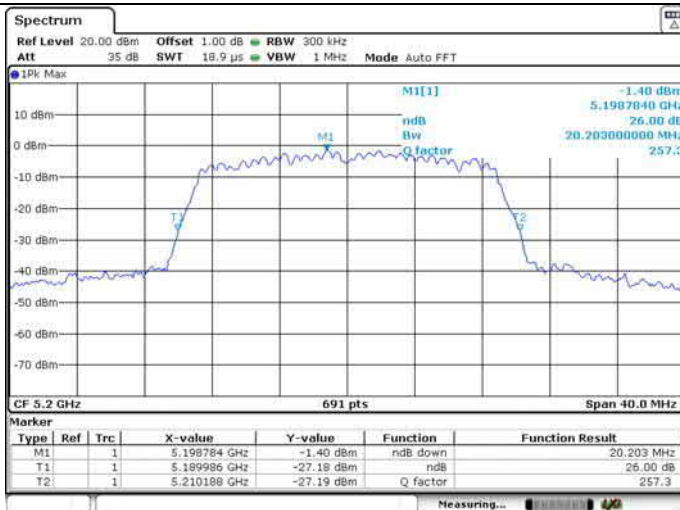


99% Occupied Bandwidth

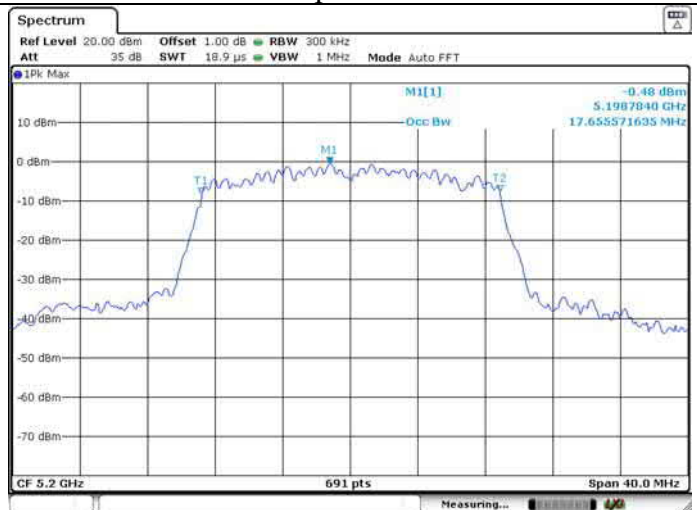


U-NII-1 IEEE 802.11ac VHT20 5200MHz

26dB Bandwidth

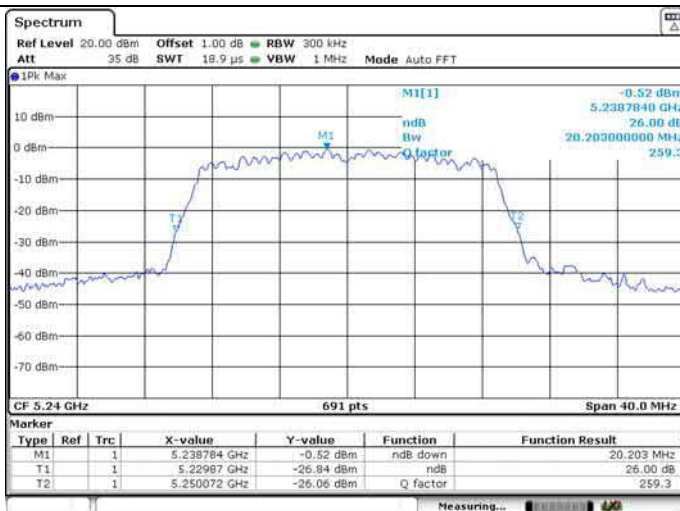


99% Occupied Bandwidth



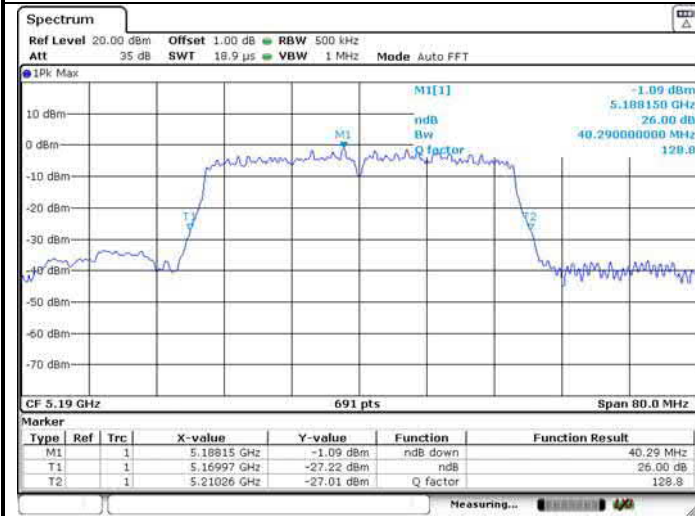
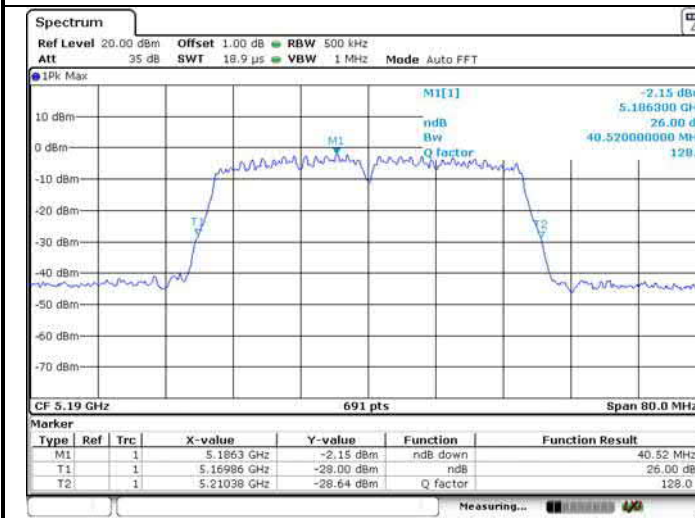
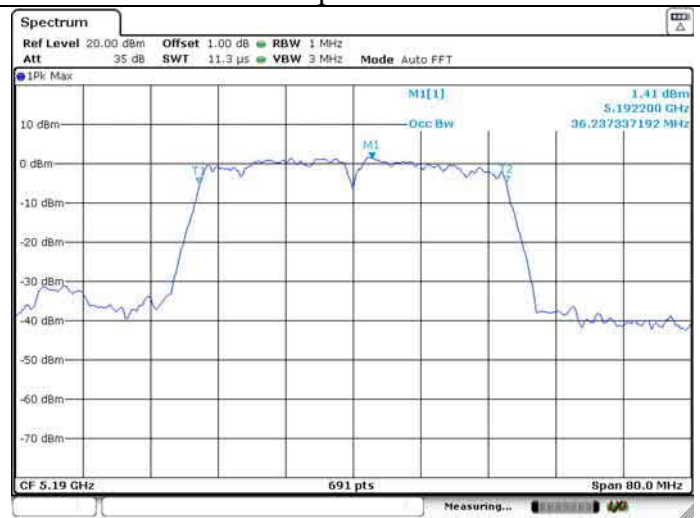
U-NII-1 IEEE 802.11ac VHT20 5240MHz

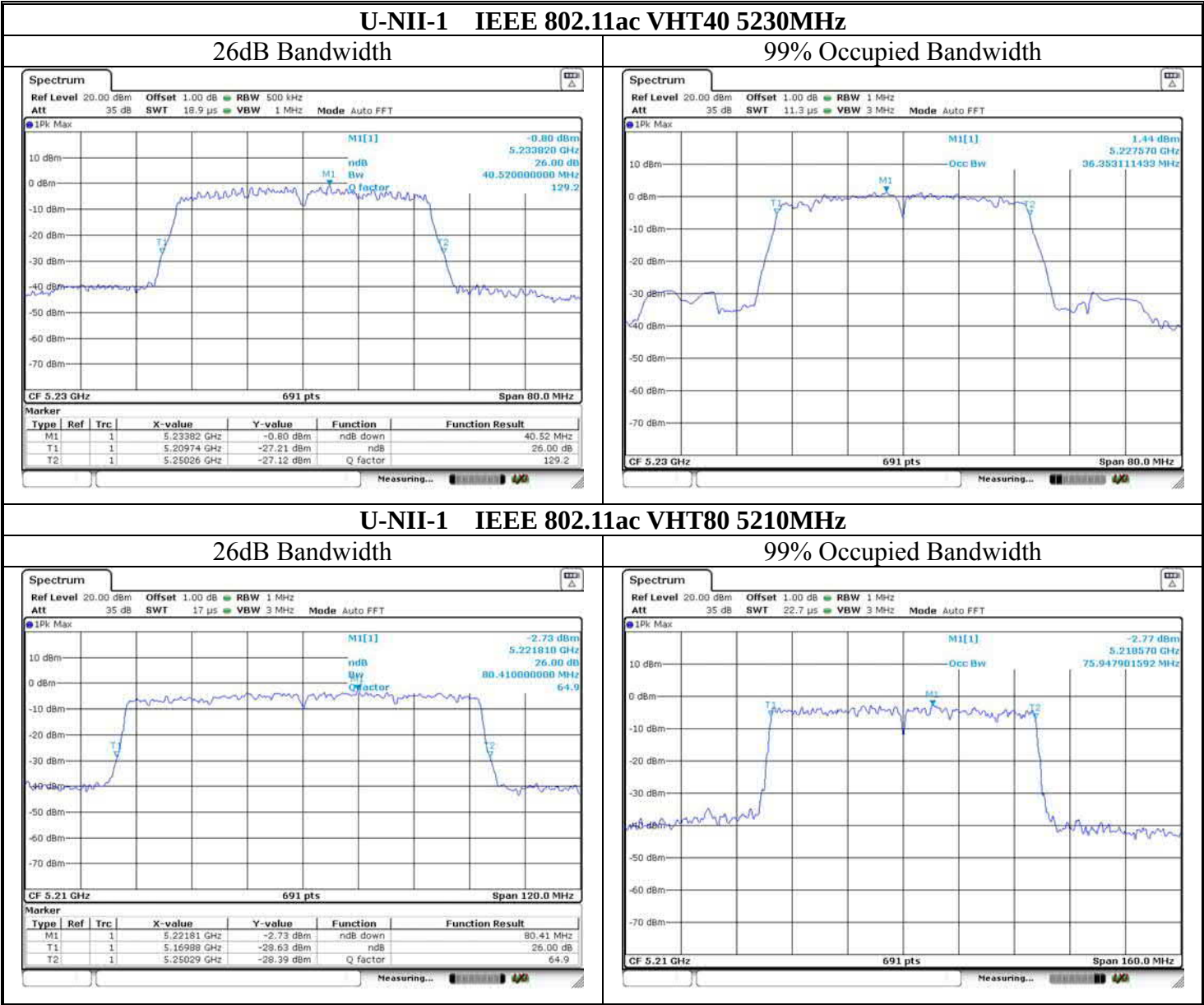
26dB Bandwidth



99% Occupied Bandwidth



U-NII-1 IEEE 802.11n HT40 5190MHz**26dB Bandwidth****99% Occupied Bandwidth****U-NII-1 IEEE 802.11n HT40 5230MHz****26dB Bandwidth****99% Occupied Bandwidth****U-NII-1 IEEE 802.11ac VHT40 5190MHz****26dB Bandwidth****99% Occupied Bandwidth**



U-NII-1 IEEE 802.11ac VHT80 5210MHz

26dB Bandwidth

Spectrum

Ref Level 20.00 dBm Offset 1.00 dB RBW 1 MHz Att 35 dB SWT 17 μs VBW 3 MHz Mode Auto FFT

1Pk Max

M1[1]

-2.73 dBm

5.221810 GHz

26.00 dB

80.41000000 MHz

64.9

CF 5.21 GHz

691 pts

Span 120.0 MHz

Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1	1		5.22181 GHz	-2.73 dBm	ndB down	80.41 MHz
T1	1		5.16998 GHz	-28.63 dBm	ndB	26.00 dB
T2	1		5.25029 GHz	-28.39 dBm	Q factor	64.9

Spectrum

Ref Level 20.00 dBm Offset 1.00 dB RBW 1 MHz Att 35 dB SWT 22.7 μs VBW 3 MHz Mode Auto FFT

1Pk Max

M1[1]

-2.77 dBm

5.218570 GHz

75.947901592 MHz

CF 5.21 GHz

691 pts

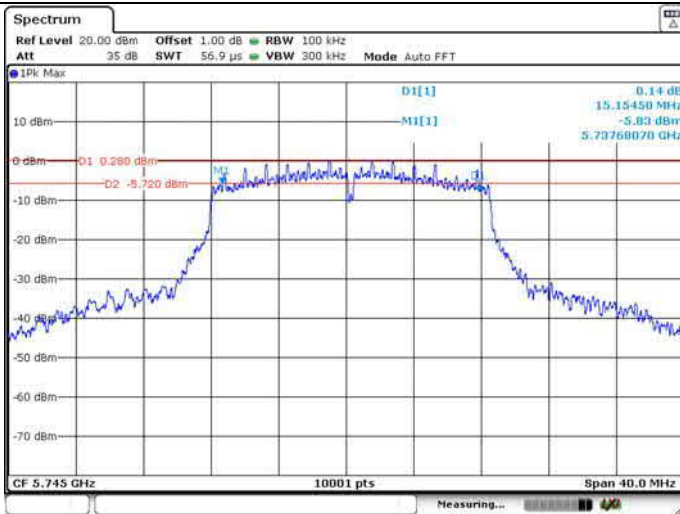
Span 160.0 MHz

Marker

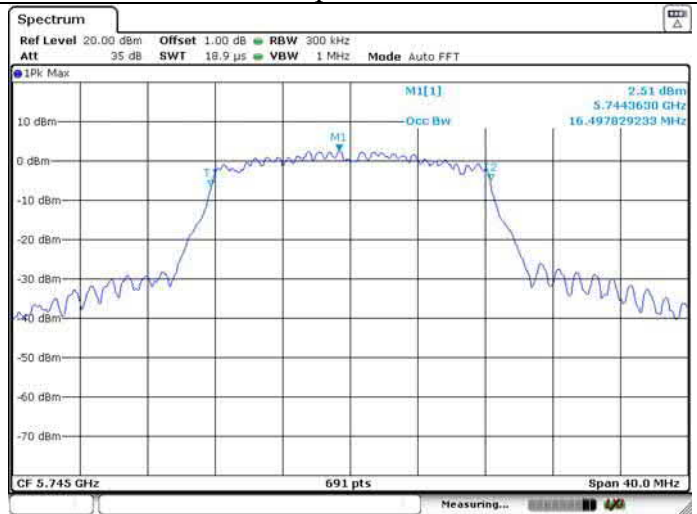
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1	1		5.21857 GHz	-2.77 dBm	Occ Bw	75.947901592 MHz

U-NII-3 IEEE 802.11a 5745MHz

6dB Bandwidth

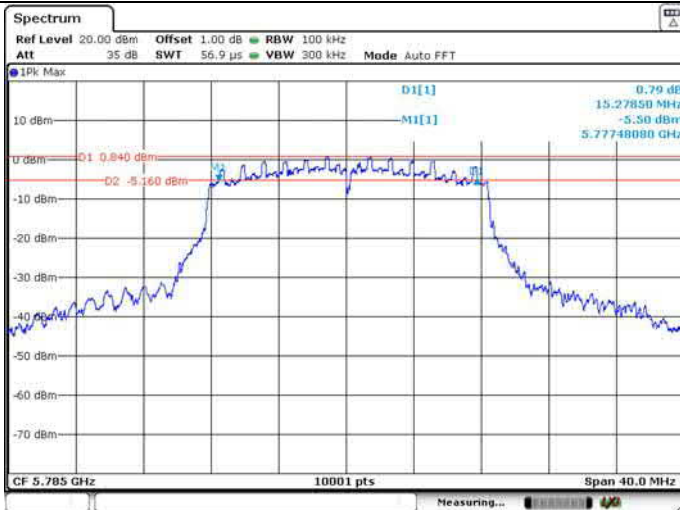


99% Occupied Bandwidth

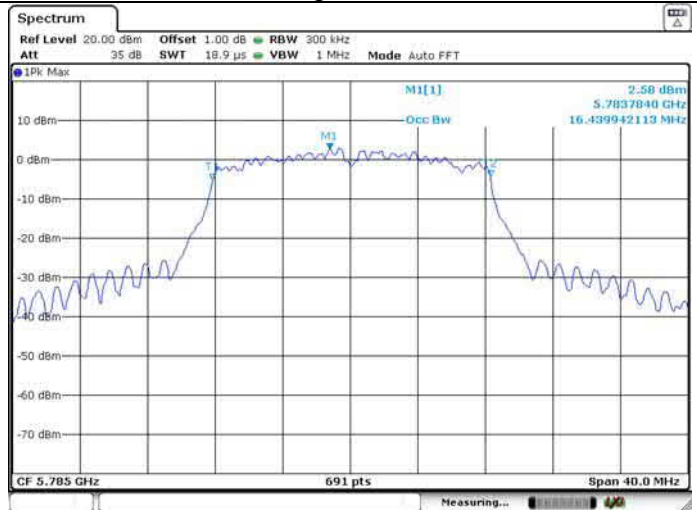


U-NII-3 IEEE 802.11a 5785MHz

6dB Bandwidth

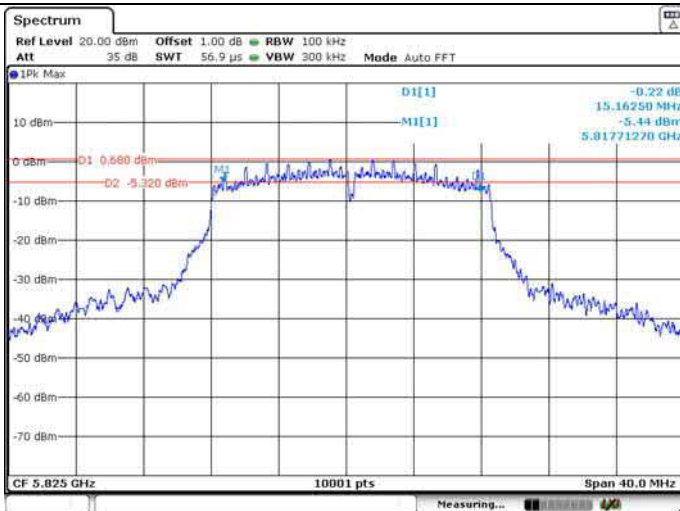


99% Occupied Bandwidth

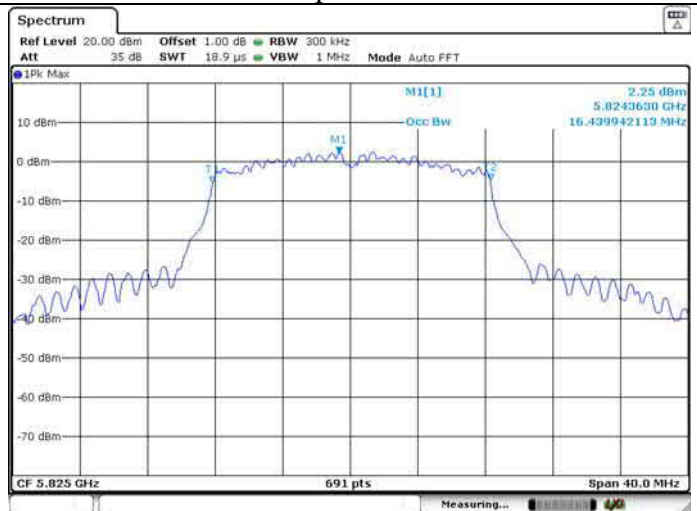


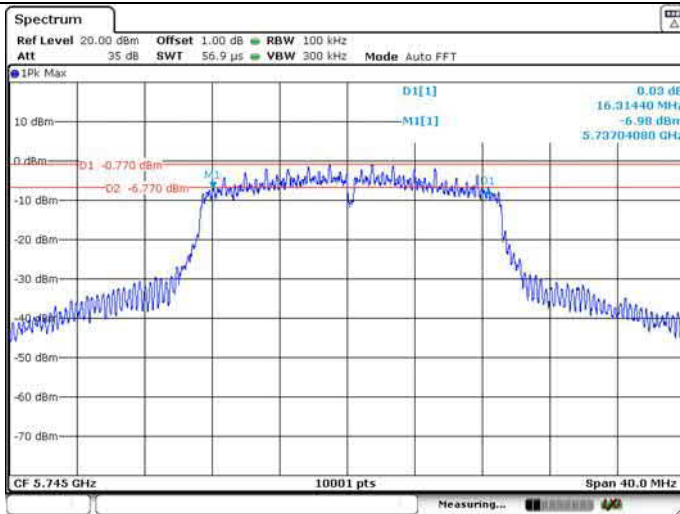
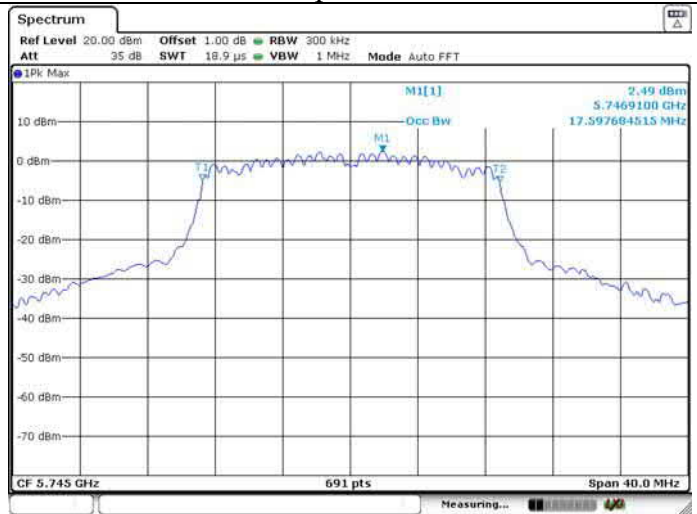
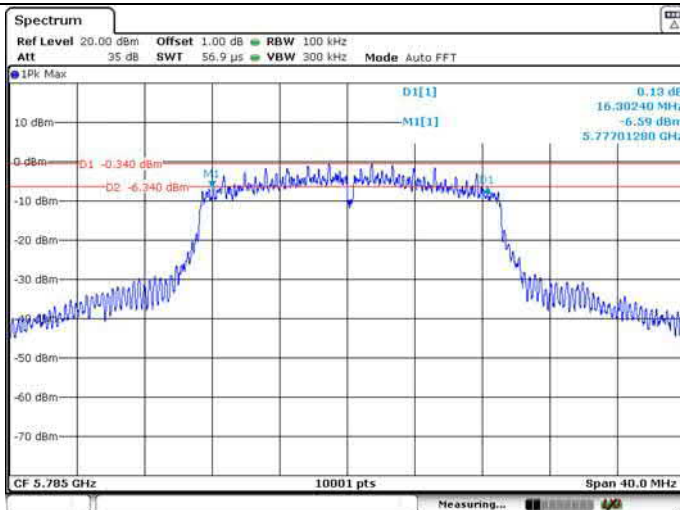
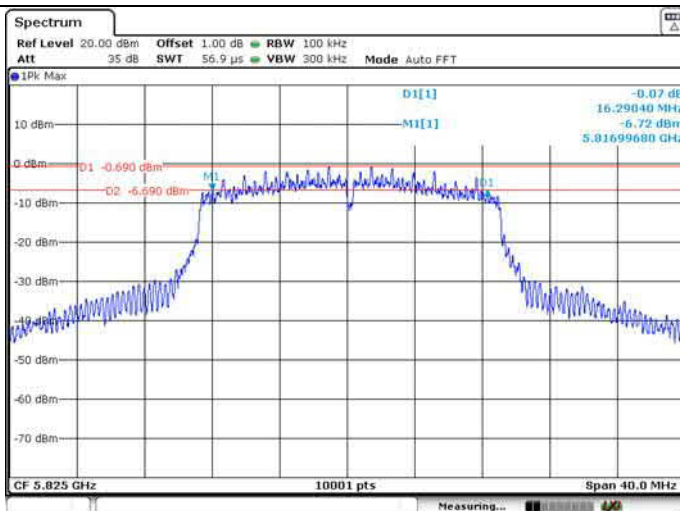
U-NII-3 IEEE 802.11a 5825MHz

6dB Bandwidth



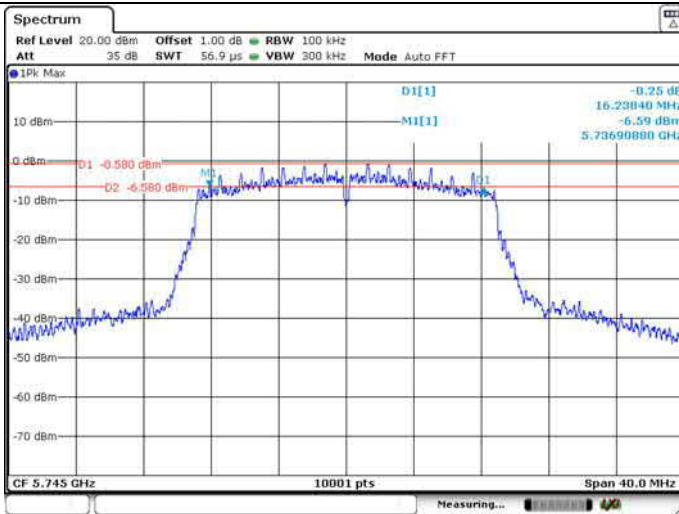
99% Occupied Bandwidth



U-NII-3 IEEE 802.11n HT20 5745MHz**6dB Bandwidth****99% Occupied Bandwidth****U-NII-3 IEEE 802.11n HT20 5785MHz****6dB Bandwidth****99% Occupied Bandwidth****U-NII-3 IEEE 802.11n HT20 5825MHz****6dB Bandwidth****99% Occupied Bandwidth**

U-NII-3 IEEE 802.11ac VHT20 5745MHz

6dB Bandwidth

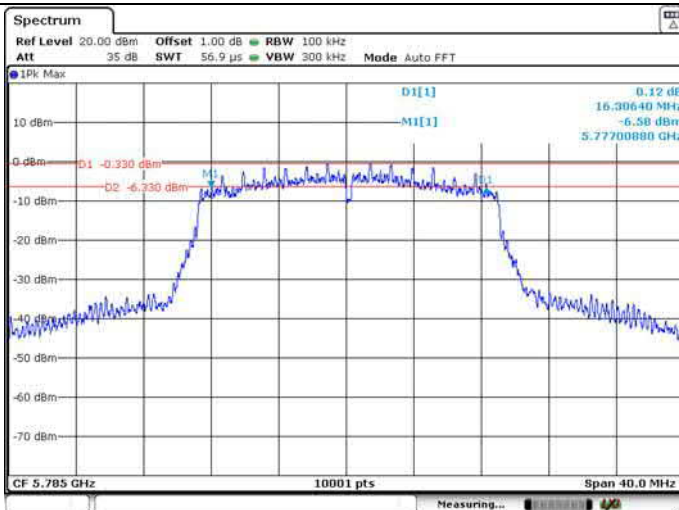


99% Occupied Bandwidth



U-NII-3 IEEE 802.11ac VHT20 5785MHz

6dB Bandwidth

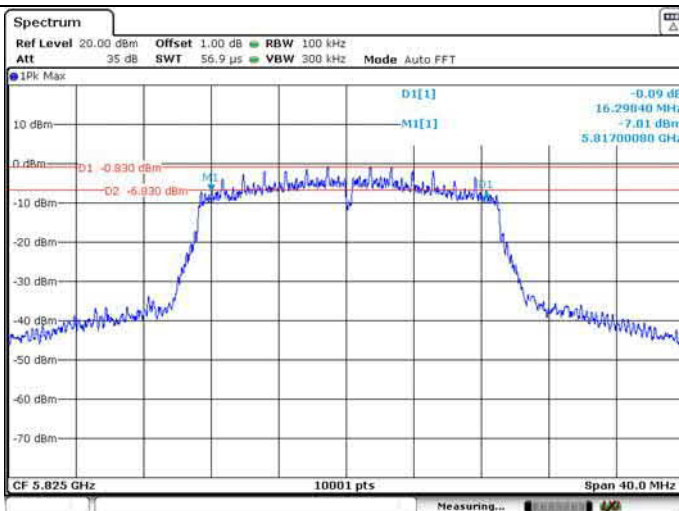


99% Occupied Bandwidth



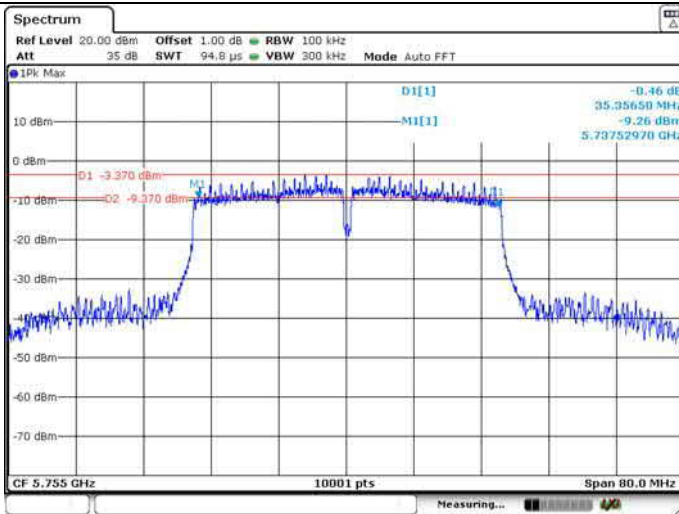
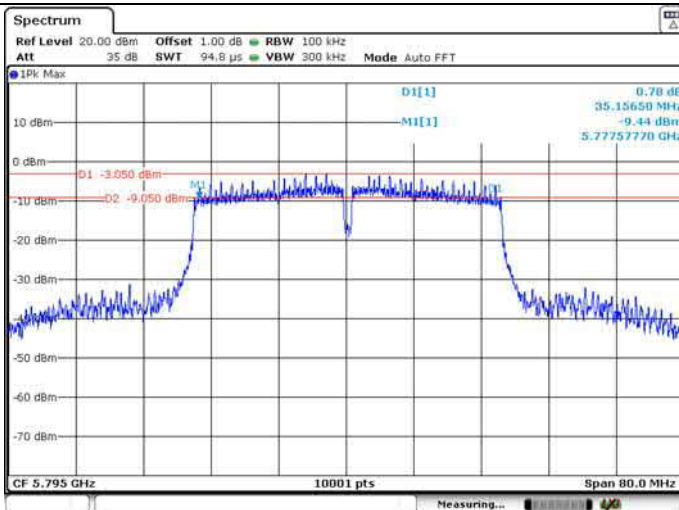
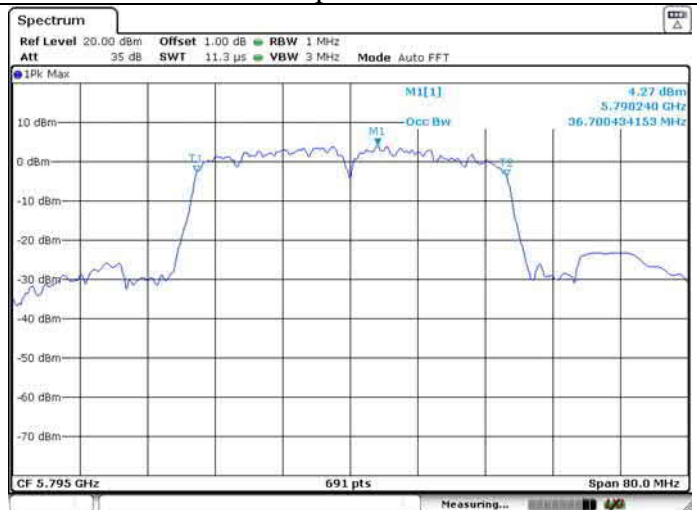
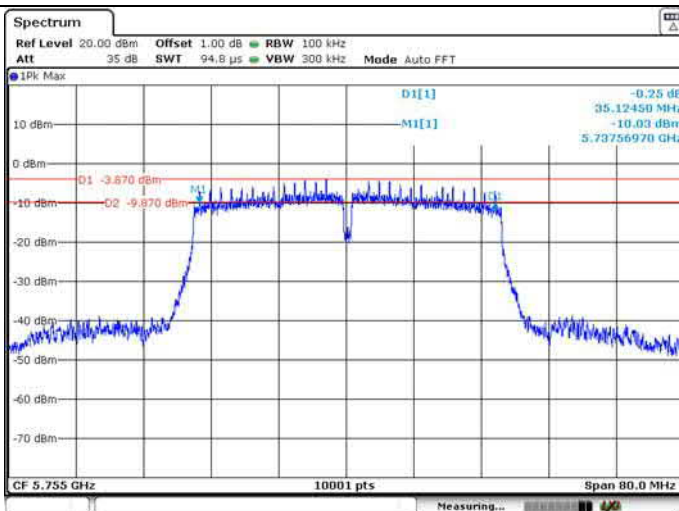
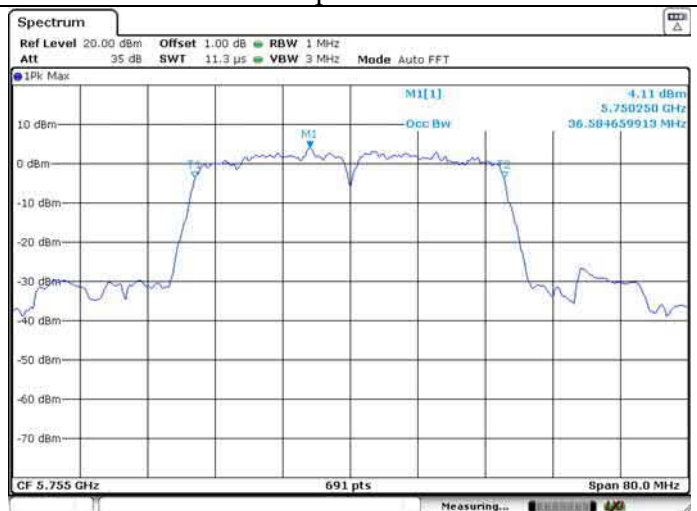
U-NII-3 IEEE 802.11ac VHT20 5825MHz

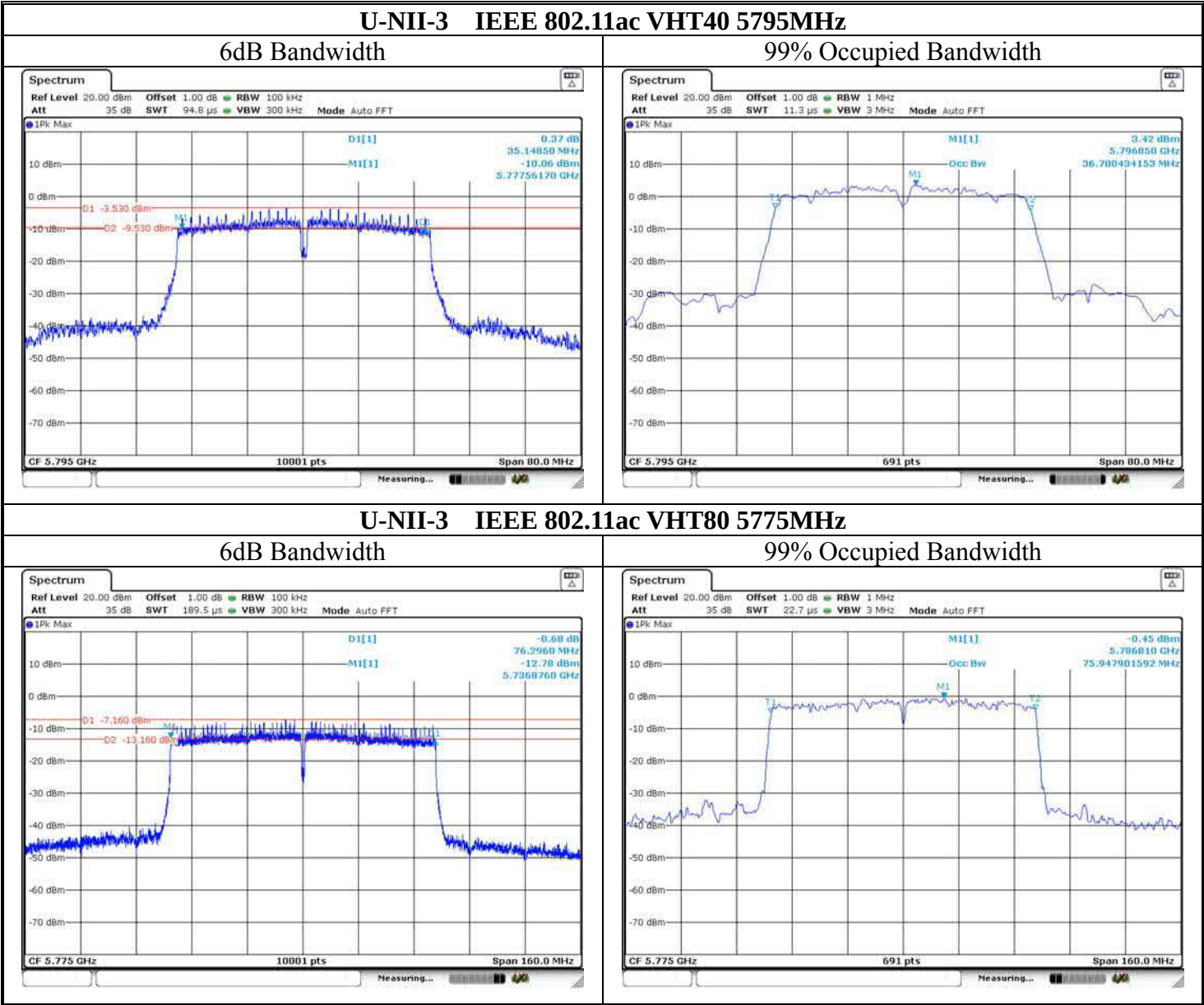
6dB Bandwidth



99% Occupied Bandwidth



U-NII-3 IEEE 802.11n HT40 5755MHz**6dB Bandwidth****99% Occupied Bandwidth****U-NII-3 IEEE 802.11n HT40 5795MHz****6dB Bandwidth****99% Occupied Bandwidth****U-NII-3 IEEE 802.11ac VHT40 5755MHz****6dB Bandwidth****99% Occupied Bandwidth**



4. MAXIMUM CONDUCTED OUTPUT POWER

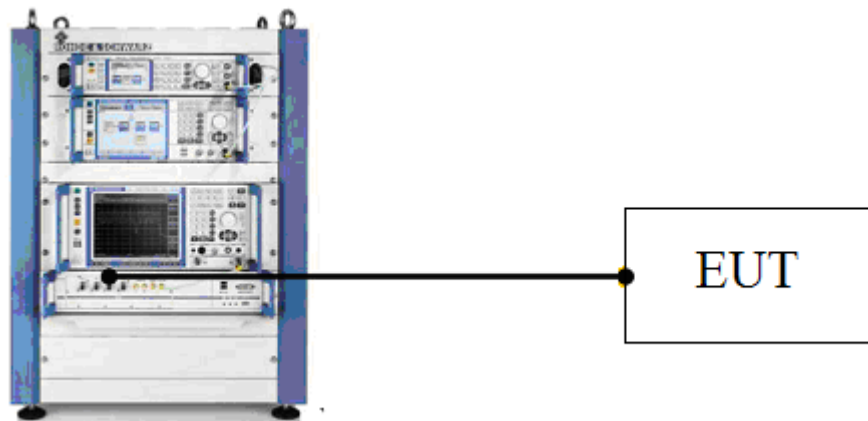
4.1. Limit

Band	EUT Type	Limit
U-NII-1	Outdoor Access Point	1W(30dBm) (Max. e.i.r.p $\leq 125\text{mW}$ at any elevation angle above 30 degrees as measured from the horizon)
	Indoor Access Point	1W(30dBm)
	Fixed point-to-point Access Point	1W(30dBm)
	Mobile and Portable Client Device	250mW(23.98dBm)
U-NII-2A	All Device	250mW(23.98dBm) or $11\text{dBm} + 10 \log B$, Which is lesser. (B is 26dB Bandwidth in MHz)
U-NII-2C	All Device	250mW(23.98dBm) or $11\text{dBm} + 10 \log B$, Which is lesser. (B is 26dB Bandwidth in MHz)
U-NII-3	All Device	1W(30dBm)

Note:

For the Band U-NII-2A and U-NII-2C, the maximum conducted output power limit calculate result refer to section 3.5.

4.2. Test Setup



4.3. Test Procedure

- Connect EUT antenna terminal to the OSP-B157WB with RF cable.
- Set the EUT transmit continuously with maximum output power.
- Through the test software in TS8897 to control a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Because the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.
- Repeat above procedures until all modes and channels were measured.
- Record the results in the test report.

4.4. Test Result

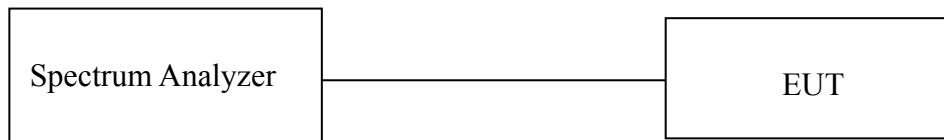
Temperature	26.4℃	Relative Humidity			55%	Test Voltage	AC 120V/60Hz	
BAND	Test Mode	Fre (MHz)	Conducted AVG Output Power (dBm)		Total Conducted Output Power (W)	Total Conducted Output Power (dBm)	Limit (dBm)	Result
			Ant 1	Ant 2				
U-NII-1	IEEE 802.11a	5180	11.87	10.74	0.0154	11.87	23.98	PASS
		5200	12.50	10.09	0.0178	12.50	23.98	PASS
		5240	12.91	9.46	0.0195	12.91	23.98	PASS
	IEEE 802.11n HT20	5180	10.82	8.64	0.01940	12.88	23.98	PASS
		5200	11.10	8.11	0.01935	12.87	23.98	PASS
		5240	11.43	7.29	0.01925	12.84	23.98	PASS
	IEEE 802.11ac VHT20	5180	10.52	8.40	0.01818	12.60	23.98	PASS
		5200	10.85	7.92	0.01837	12.64	23.98	PASS
		5240	11.31	7.19	0.01875	12.73	23.98	PASS
	IEEE 802.11n HT40	5190	11.15	8.46	0.02005	13.02	23.98	PASS
		5230	11.64	7.35	0.02003	13.02	23.98	PASS
	IEEE 802.11ac VHT40	5190	10.63	7.77	0.01755	12.44	23.98	PASS
		5230	11.26	6.83	0.01818	12.60	23.98	PASS
	IEEE 802.11ac VHT80	5210	10.16	9.33	0.01895	12.78	23.98	PASS
U-NII-3	IEEE 802.11a	5745	12.46	11.42	0.01762	12.46	30.00	PASS
		5785	12.23	11.76	0.01671	12.23	30.00	PASS
		5825	11.61	10.69	0.01447	11.61	30.00	PASS
	IEEE 802.11n HT20	5745	11.17	10.12	0.02339	13.69	30.00	PASS
		5785	11.90	10.53	0.02360	13.73	30.00	PASS
		5825	10.24	9.41	0.01930	12.86	30.00	PASS
	IEEE 802.11ac VHT20	5745	11.13	10.00	0.02297	13.61	30.00	PASS
		5785	10.83	10.35	0.02293	13.60	30.00	PASS
		5825	10.19	9.18	0.01872	12.72	30.00	PASS
	IEEE 802.11n HT40	5755	11.48	10.27	0.02468	13.92	30.00	PASS
		5795	10.86	10.46	0.02329	13.67	30.00	PASS
	IEEE 802.11ac VHT40	5755	10.97	9.70	0.02182	13.39	30.00	PASS
		5795	10.39	9.94	0.02080	13.18	30.00	PASS
	IEEE 802.11ac VHT80	5775	10.15	9.33	0.01892	12.77	30.00	PASS

5. PEAK POWER SPECTRAL DENSITY

5.1. Limit

Band	EUT Type	Limit
U-NII-1	Outdoor Access Point	17dBm/MHz
	Indoor Access Point	17dBm/MHz
	Fixed point-to-point Access Point	17dBm/MHz
	Mobile and Portable Client Device	11dBm/MHz
U-NII-2A	All Device	11dBm/MHz
U-NII-2C	All Device	11dBm/MHz
U-NII-3	All Device	30dBm/500KHz

5.2. Test Setup



5.3. Spectrum Analyzer Setting

Spectrum Parameters	Setting
RBW	1MHz(For U-NII-1&U-NII-2A&U-NII-2C) 500KHz(For U-NII-3)
VBW	3MHz(For U-NII-1&U-NII-2A&U-NII-2C) 2MHz(For U-NII-3)
Span	encompass the entire 26 dB EBW or 99% OBW of the signal
Sweep Time	Auto
Number of Sweep Point	$\geq 2 \times \text{SPAN/RBW}$
Detector	RMS(power averaging)
Trace Average	≥ 100 traces

5.4. Test Procedure

- Connect EUT antenna terminal to the spectrum analyzer with RF cable.
- Spectrum analyzer setting parameters in accordance with section 5.3.
- Set the EUT transmit continuously with maximum output power.
- Allow trace to stabilize, use the marker-to-peak function to set the marker to the average of the emission.
- If the duty cycle of test signal $< 98\%$, the result = max measured value + $10 \times \log(1/\text{duty cycle})$;
If the duty cycle of test signal $\geq 98\%$, the result = max measured value.
- Repeat above procedures until all modes and channels were measured.
- Record the results in the test report.

5.5. Test Result

Temperature		26.4℃	Relative Humidity		55%	Test Voltage	AC 120V/60Hz	
BAND	Test Mode	Fre (MHz)	Power Density (dBm/MHz)		Duty Factor (dB)	Total Power Density (dBm/MHz)	Limit (dBm/MHz)	Result
			Ant 1	Ant 2				
U-NII-1	IEEE 802.11a	5180	2.94	-0.54	0.00	2.94	11.00	PASS
		5200	2.63	-0.96	0.00	2.63	11.00	PASS
		5240	2.31	-0.36	0.00	2.31	11.00	PASS
	IEEE 802.11n HT20	5180	1.41	-1.61	0.00	3.17	11.00	PASS
		5200	1.14	-2.34	0.00	2.75	11.00	PASS
		5240	1.04	-1.95	0.00	2.81	11.00	PASS
	IEEE 802.11ac VHT20	5180	1.15	-2.11	0.16	2.99	11.00	PASS
		5200	0.80	-2.65	0.16	2.58	11.00	PASS
		5240	0.85	-2.48	0.16	2.67	11.00	PASS
	IEEE 802.11n HT40	5190	-2.53	-5.28	0.11	-0.57	11.00	PASS
		5230	-2.65	-5.65	0.11	-0.77	11.00	PASS
	IEEE 802.11ac VHT40	5190	-2.67	-5.62	0.30	-0.59	11.00	PASS
		5230	-2.95	-5.81	0.30	-0.84	11.00	PASS
	IEEE 802.11ac VHT80	5210	-6.29	-9.74	1.86	-2.81	11.00	PASS

BAND	Test Mode	Fre (MHz)	Power Density (dBm/500KHz)		Duty Factor (dB)	Total Power Density (dBm/500KHz)	Limit (dBm/500KHz)	Result
			Ant 1	Ant 2				
U-NII-3	IEEE 802.11a	5745	-0.54	-1.44	0.00	-0.54	30.00	PASS
		5785	-0.22	-1.52	0.00	-0.22	30.00	PASS
		5825	-0.93	-2.08	0.00	-0.93	30.00	PASS
	IEEE 802.11n HT20	5745	-1.25	-2.23	0.00	1.30	30.00	PASS
		5785	-0.98	-2.15	0.00	1.48	30.00	PASS
		5825	-1.46	-2.55	0.00	1.04	30.00	PASS
	IEEE 802.11ac VHT20	5745	-1.33	-1.96	0.16	1.54	30.00	PASS
		5785	-0.97	-2.23	0.16	1.62	30.00	PASS
		5825	-1.47	-2.70	0.16	1.13	30.00	PASS
	IEEE 802.11n HT40	5755	-4.61	-5.38	0.11	-1.86	30.00	PASS
		5795	-4.34	-5.68	0.11	-1.84	30.00	PASS
	IEEE 802.11ac VHT40	5755	-5.27	-5.98	0.30	-2.30	30.00	PASS
		5795	-4.82	-5.46	0.30	-1.82	30.00	PASS
	IEEE 802.11ac VHT80	5775	-8.04	-8.87	1.86	-3.56	30.00	PASS

U-NII-1 IEEE 802.11a 5180MHz

ANT 1



ANT 2



U-NII-1 IEEE 802.11a 5200MHz

ANT 1



ANT 2

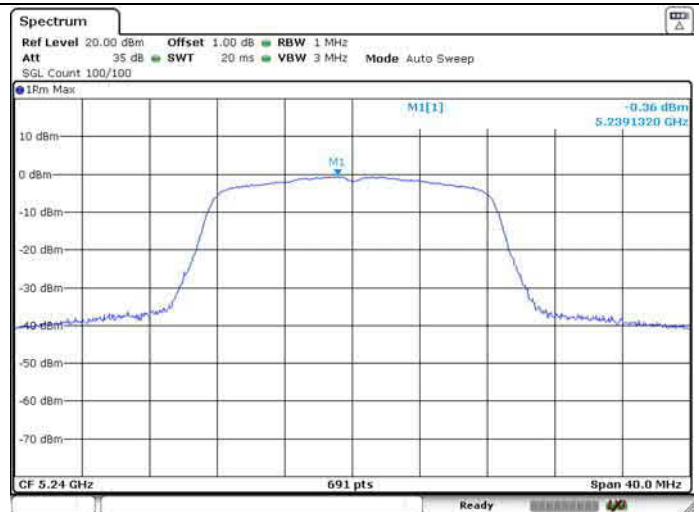


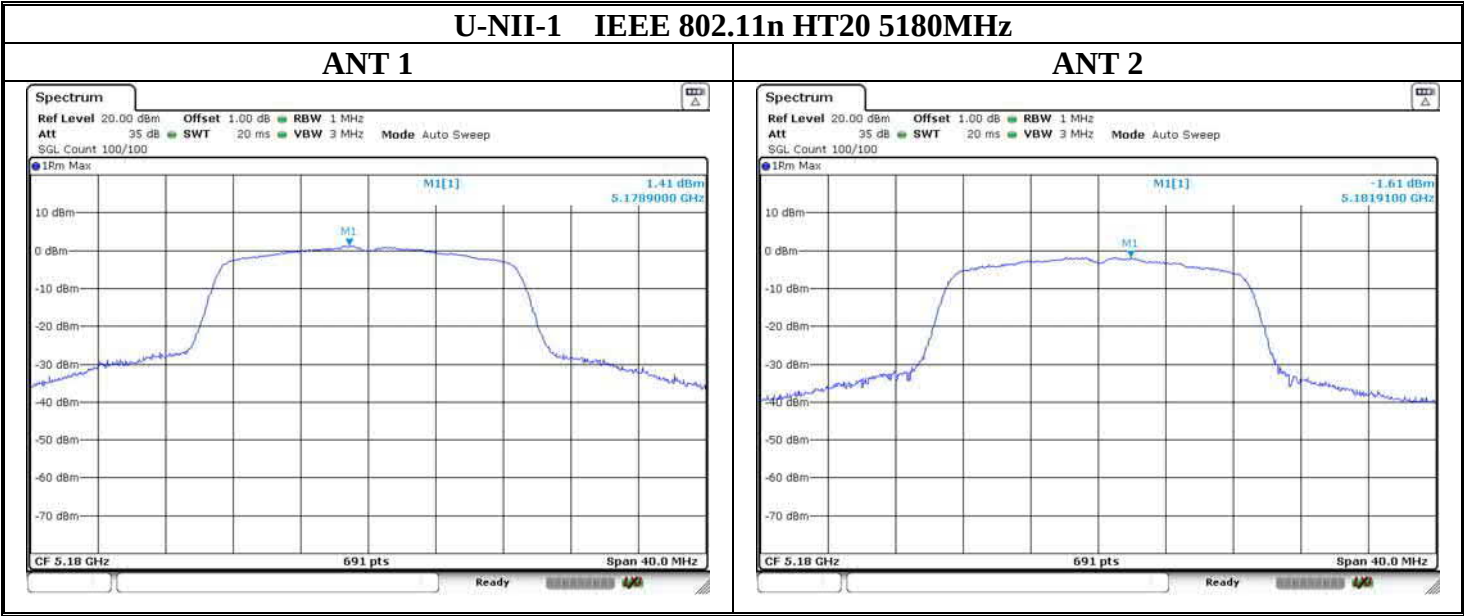
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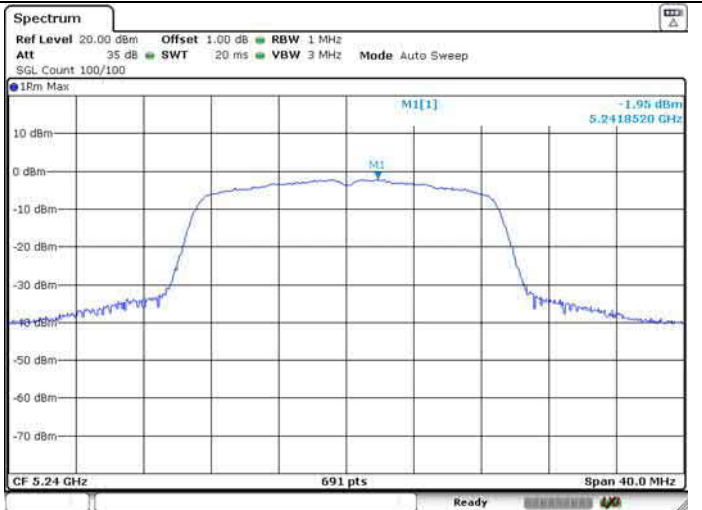
ANT 1



ANT 2



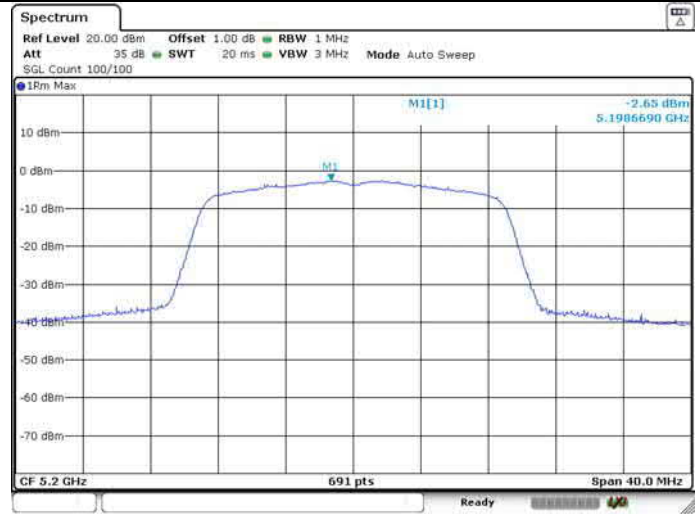


U-NII-1 IEEE 802.11n HT20 5200MHz**ANT 1****ANT 2****U-NII-1 IEEE 802.11n HT20 5240MHz****ANT 1****ANT 2****U-NII-1 IEEE 802.11ac VHT20 5180MHz****ANT 1****ANT 2**

U-NII-1 IEEE 802.11ac VHT20 5200MHz

ANT 1

ANT 2



U-NII-1 IEEE 802.11ac VHT20 5240MHz

ANT 1

ANT 2



U-NII-1 IEEE 802.11n HT40 5190MHz

ANT 1

ANT 2

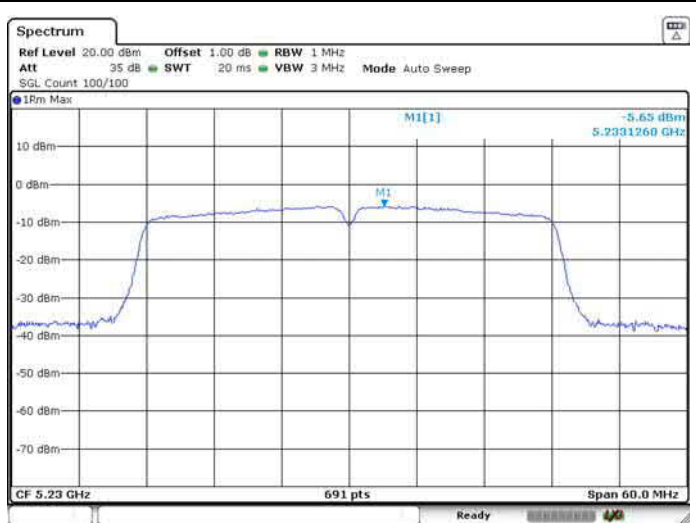


U-NII-1 IEEE 802.11n HT40 5230MHz

ANT 1



ANT 2



U-NII-1 IEEE 802.11ac VHT40 5190MHz

ANT 1



ANT 2



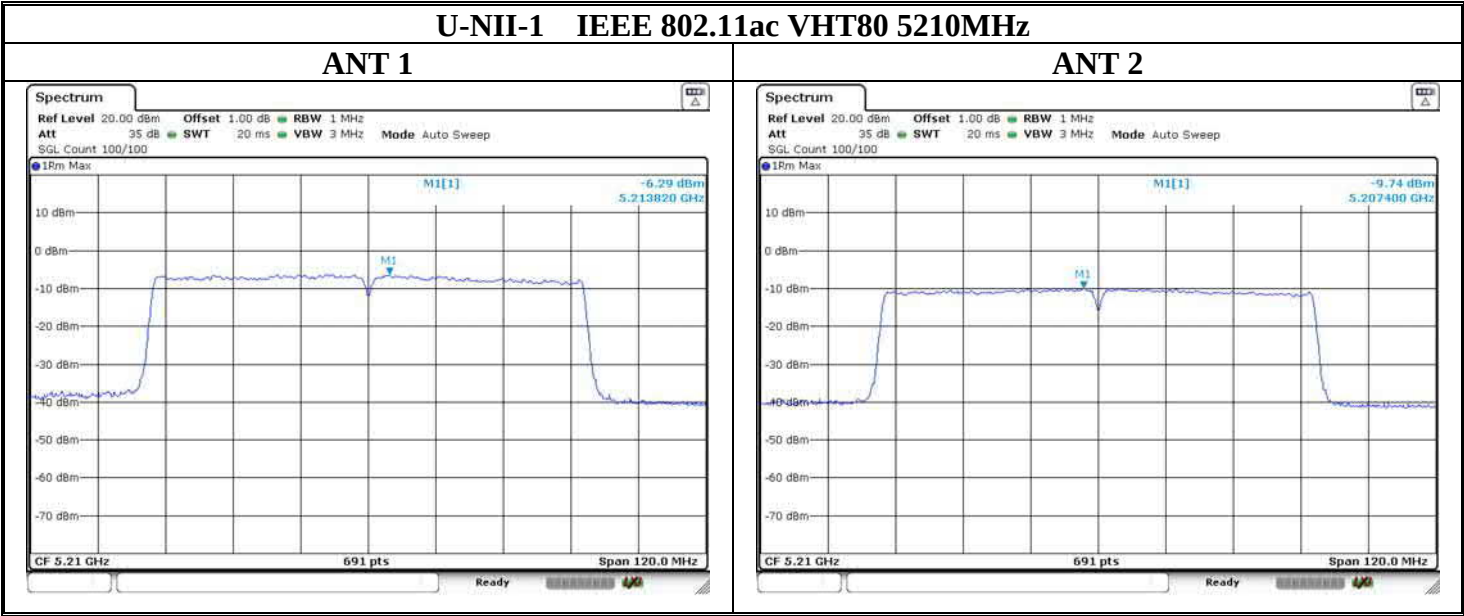
U-NII-1 IEEE 802.11ac VHT40 5230MHz

ANT 1



ANT 2





U-NII-3 IEEE 802.11a 5745MHz

ANT 1



ANT 2



U-NII-3 IEEE 802.11a 5785MHz

ANT 1

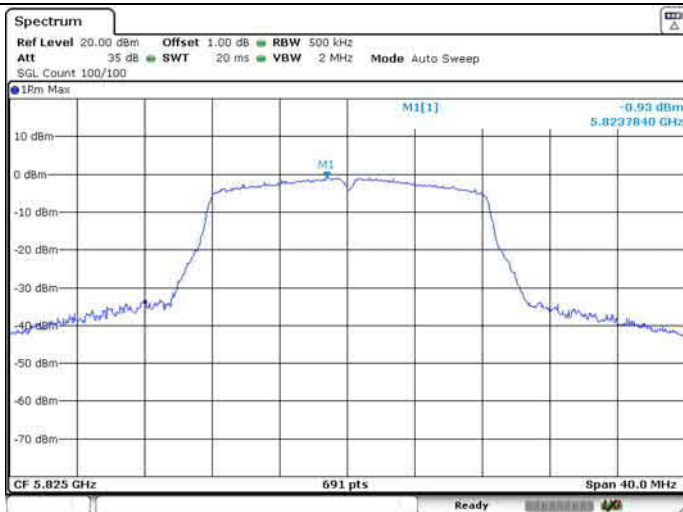


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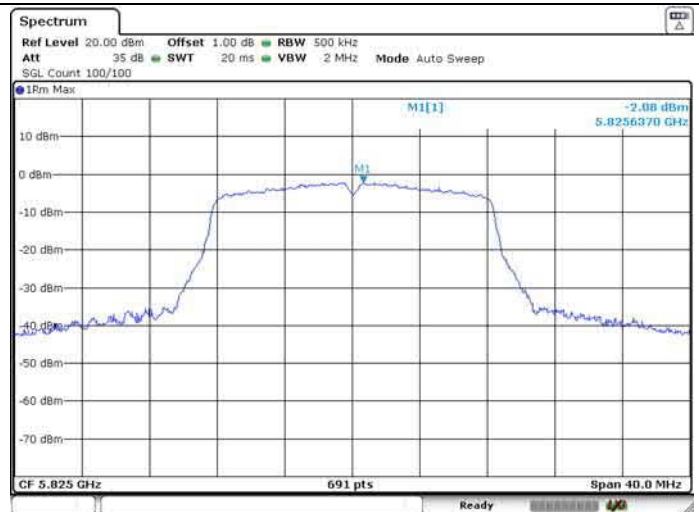


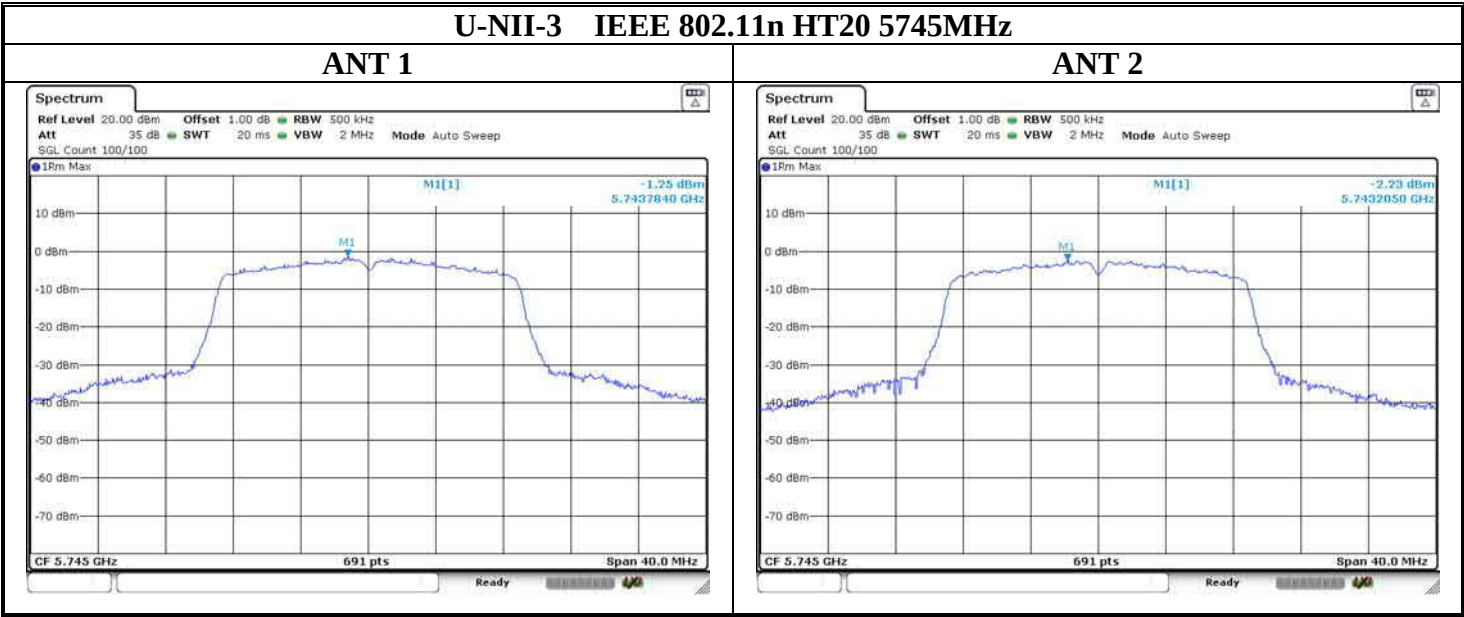
U-NII-3 IEEE 802.11a 5825MHz

ANT 1



ANT 2





U-NII-3 IEEE 802.11n HT20 5785MHz

ANT 1



ANT 2



U-NII-3 IEEE 802.11n HT20 5825MHz

ANT 1

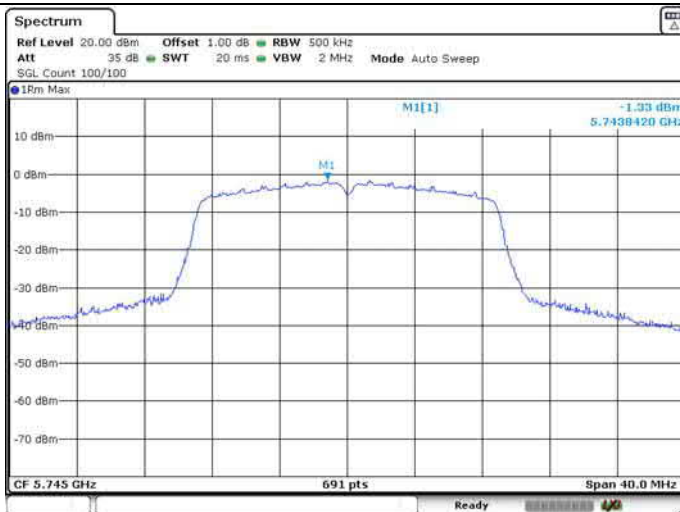


ANT 2



U-NII-3 IEEE 802.11ac VHT20 5745MHz

ANT 1



ANT 2



U-NII-3 IEEE 802.11ac VHT20 5785MHz

ANT 1



ANT 2



U-NII-3 IEEE 802.11ac VHT20 5825MHz

ANT 1



ANT 2



U-NII-3 IEEE 802.11n HT40 5755MHz

ANT 1



ANT 2



U-NII-3 IEEE 802.11n HT40 5795MHz

ANT 1



ANT 2

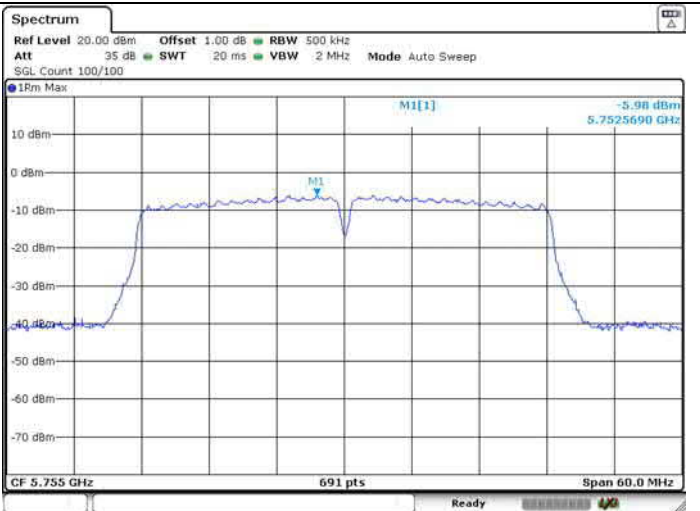


U-NII-3 IEEE 802.11ac VHT40 5755MHz

ANT 1



ANT 2

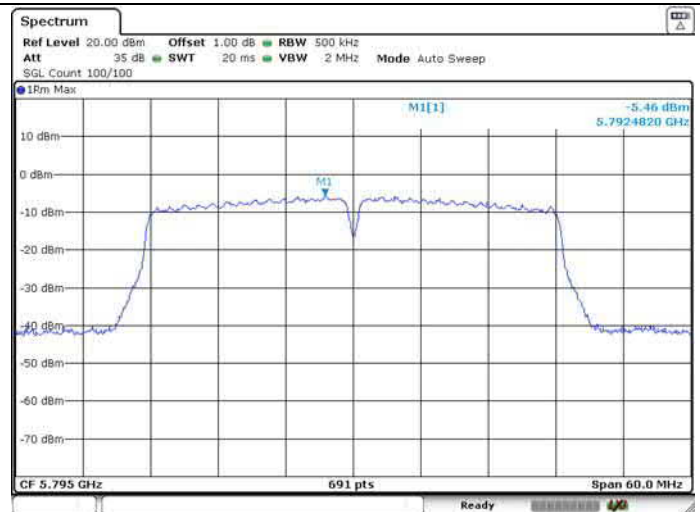


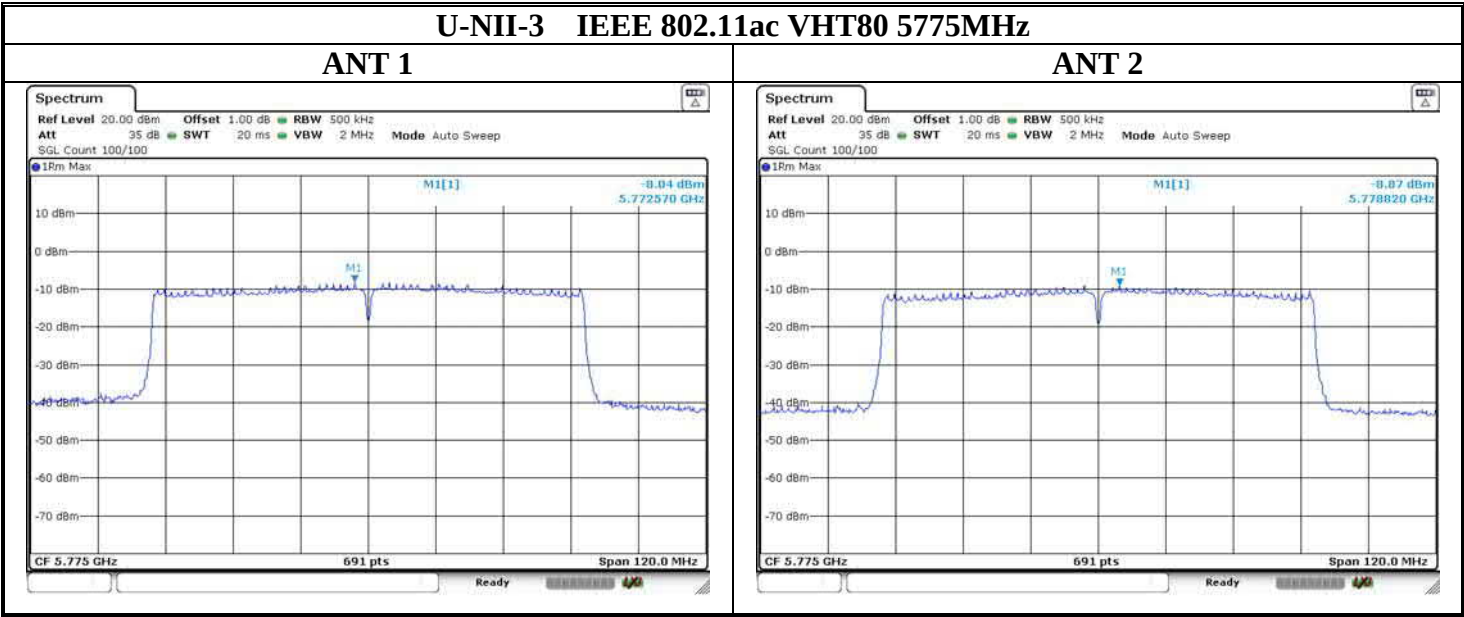
U-NII-3 IEEE 802.11ac VHT40 5795MHz

ANT 1



ANT 2





6. UNWANTED EMISSIONS AND BAND EDGE

6.1. Limit

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

- (1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (4) For transmitters operating in the 5.725-5.85 GHz band: All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

The unwanted emissions which fall in Restricted bands shall not exceed the field strength levels specified in the following table:

15.209 Radiated emission limits

Frequency (MHz)	Field Strength(μ V/m)	Distance(m)
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

15.205 Restricted frequency band

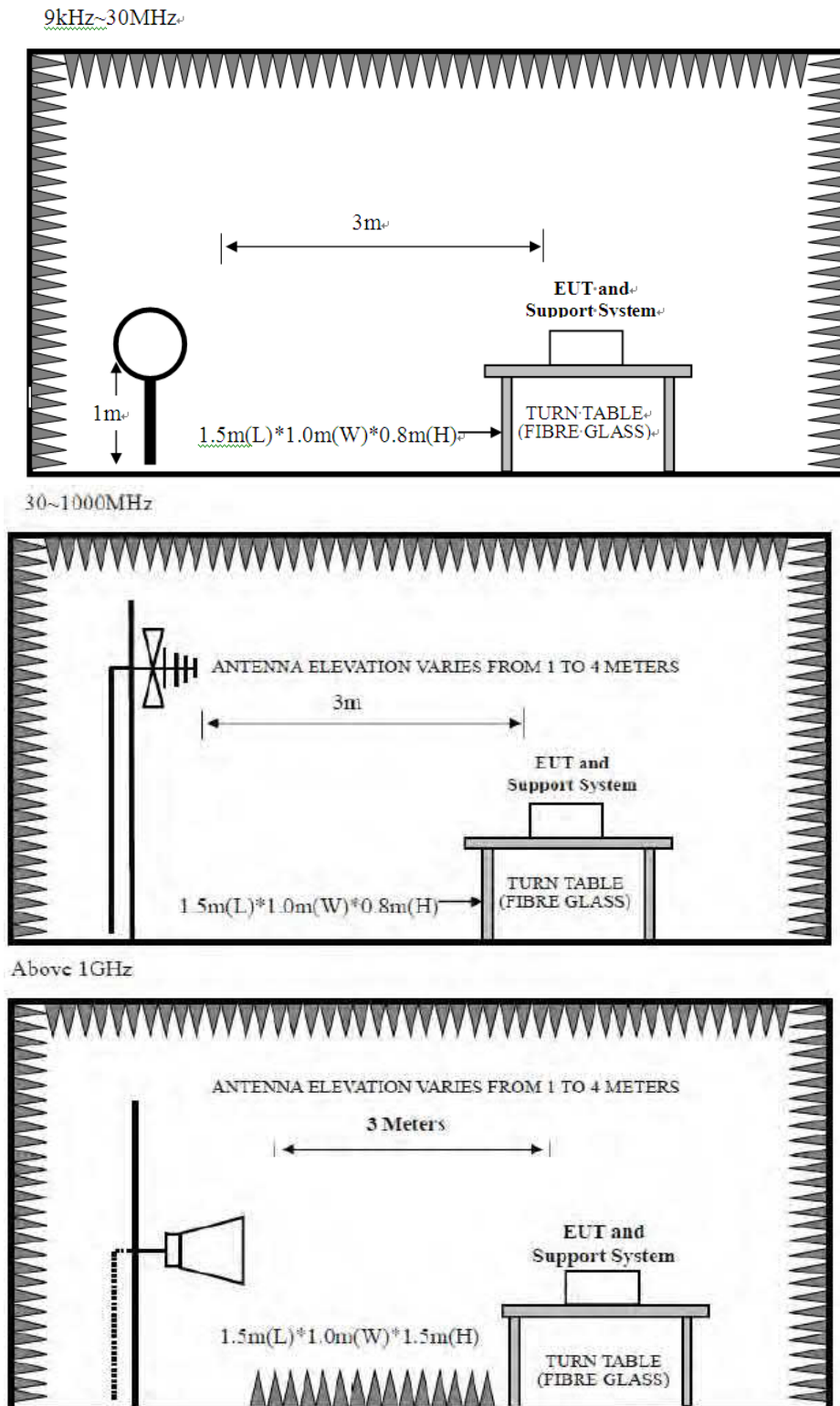
MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(²)

Note:

1. $\text{dB}\mu\text{V/m} = 20 \log(\mu\text{V/m})$
2. Above 1GHz the formula is used to convert the EIRP to field strength

$$E[\text{dB}\mu\text{V/m}] = \text{EIRP}[\text{dBm}] - 20 \log(d[\text{m}]) + 104.77,$$
 where E is field strength and d is distance at which the field strength limit is specified in the applicable requirements.
 for example, 3m field strength($\text{dB}\mu\text{V/m}$)= $\text{EIRP} - 20 \log(3) + 104.77 = \text{EIRP} + 95.2$

6.2. Test Setup



6.3. Spectrum Analyzer Setting

For 9KHz-150KHz

Spectrum Parameters	Setting
RBW	300Hz(for Peak&AVG)/CISPR 200Hz(for QP)
VBW	300Hz(for Peak&AVG)/CISPR 200Hz(for QP)
Start frequency	9KHz
Stop frequency	150KHz
Sweep Time	Auto
Detector	PEAK/QP/AVG
Trace Mode	Max Hold

Note : For 9KHz-90KHz&110KHz-150KHz,the detector is average,other frequency is CISPR QP detector.

For 150KHz-30MHz

Spectrum Parameters	Setting
RBW	9KHz
VBW	9KHz
Start frequency	150KHz
Stop frequency	30MHz
Sweep Time	Auto
Detector	QP
Trace Mode	Max Hold

Note : For 150KHz-490KHz,the detector is average,other frequency is CISPR QP detector.

For 30MHz-1GHz

Spectrum Parameters	Setting
RBW	120KHz
VBW	300KHz
Start frequency	30MHz
Stop frequency	1GHz
Sweep Time	Auto
Detector	QP
Trace Mode	Max Hold

For Above 1GHz

Spectrum Parameters	Setting	
RBW	1MHz	
VBW	PEAK Measurement	AVG Measurement
	3MHz	Duty cycle $\geq 98\%$, VBW=10Hz Duty cycle $< 98\%$, VBW $\geq 1/T$ Video bandwidth mode=RMS (power averaging)
Start frequency	1GHz	
Stop frequency	25GHz	
Sweep Time	Auto	
Detector	PEAK	
Trace Mode	Max Hold	

Note : T is the on-time time of the duty cycle,when EUT transmit continuously with maximum output power,unit is seconds. reference section 2.7 for the on-time time.

6.4. Test Procedure

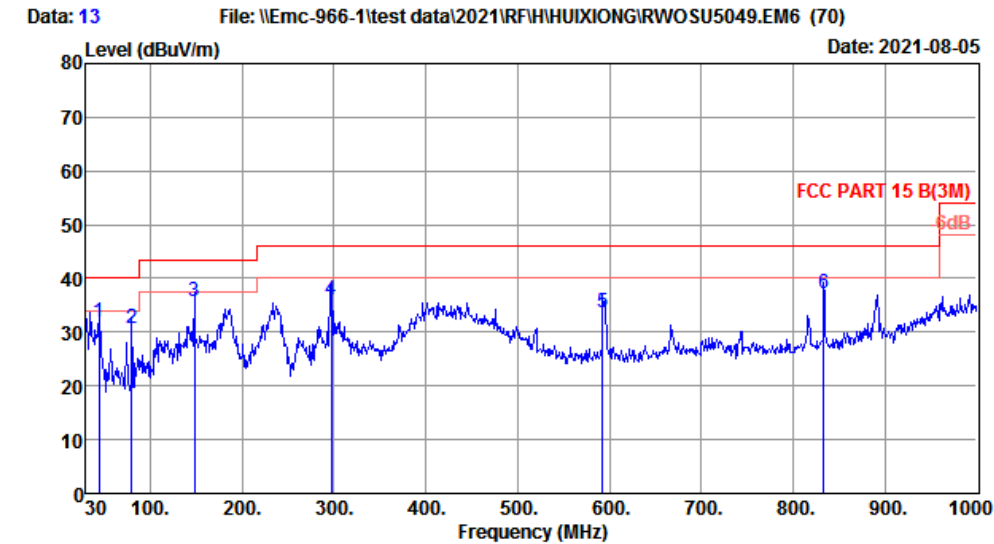
- a. EUT was placed on a turn table, which is 0.8 meter high above ground for below 1GHz test, and which is 1.5 meter high above ground for above 1GHz test.
- b. EUT is set 3 meters away from the receiving antenna, which is mounted on a antenna tower.
- c. Set the EUT transmit continuously with maximum output power.
- d. The turn table can rotate 360 degrees to determine the position of the maximum emission level.
- e. The antenna can be moved up and down between 1 meter and 4 meters to find out the maximum emission level. Both horizontal and vertical polarization of the antenna are set on test.
- f. Spectrum analyzer setting parameters in accordance with section 6.3.
- g. Repeat above procedures until all channels were measured.
- h. Record the results in the test report.

6.5. Test Result

Radiated Emissions Below 1GHz

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Site no. : 1# 966 Chamber Data no. : 13
Dis. / Ant. : 3m 37062 Ant. pol. : VERTICAL
Limit : FCC PART 15 B(3M)
Env. / Ins. : Temp:26.5';Humi:48%;Press:101.43kPa
Engineer : Pluto
EUT : 50" ULTRA HD SMART TV(ATSC TUNER)
Power : AC 120V/60Hz
M/N : RWOSU5049
Test Mode : TX Mode

	Freq. (MHz)	ANT Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	44.55	10.70	0.97	20.28	31.95	40.00	8.05	QP
2	79.47	7.65	1.42	21.73	30.80	40.00	9.20	QP
3	148.34	11.84	1.91	21.83	35.58	43.50	7.92	QP
4	296.75	13.84	2.75	19.45	36.04	46.00	9.96	QP
5	592.60	20.58	3.91	9.31	33.80	46.00	12.20	QP
6	833.16	23.70	4.63	8.81	37.14	46.00	8.86	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. Margin= Limit - Emission Level.
3. The emission levels that are 20dB below the official limit are not reported.

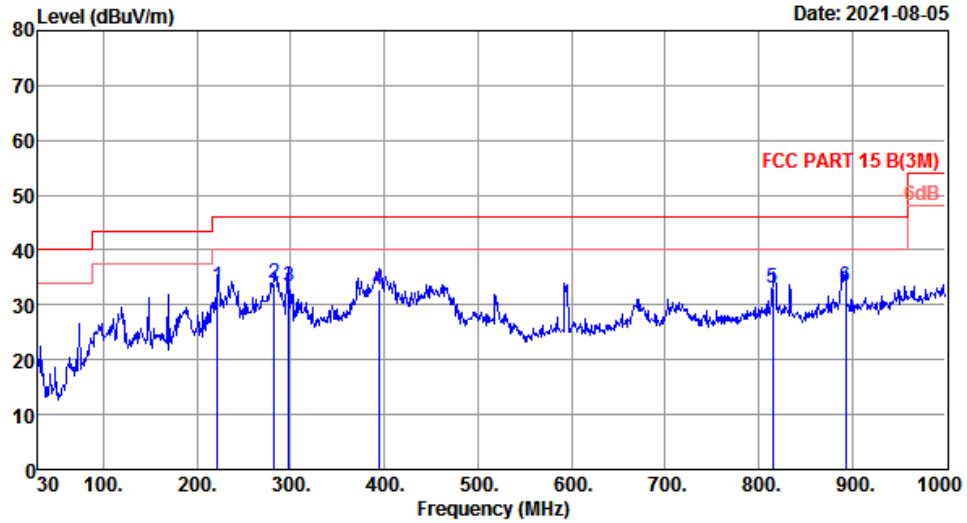
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Fax: +86-769-83081878

Data: 14

File: \\Emc-966-1\test data\2021\RF\HUIXIONG\RWOSU5049.EM6 (70)

Date: 2021-08-05



Site no. : 1# 966 Chamber Data no. : 14
 Dis. / Ant. : 3m 37062 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15 B(3M)
 Env. / Ins. : Temp:26.5'; Humi:48%; Press:101.43kPa
 Engineer : Pluto
 EUT : 50" ULTRA HD SMART TV(ATSC TUNER)
 Power : AC 120V/60Hz
 M/N : RWOSU5049
 Test Mode : TX Mode

	Freq. (MHz)	ANT Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	222.06	10.12	2.33	20.93	33.38	46.00	12.62	QP
2	282.20	12.96	2.69	18.40	34.05	46.00	11.95	QP
3	297.72	13.86	2.80	16.84	33.50	46.00	12.50	QP
4	393.75	16.54	3.14	13.07	32.75	46.00	13.25	QP
5	814.73	23.45	4.62	4.89	32.96	46.00	13.04	QP
6	893.30	24.10	4.86	4.47	33.43	46.00	12.57	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. Margin= Limit - Emission Level.
 3. The emission levels that are 20dB below the official limit are not reported.

Note:

1. The amplitude of 9KHz to 30MHz spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported.
2. All channels had been pre-test, only the worst case was reported.

Radiated Emissions Above 1G

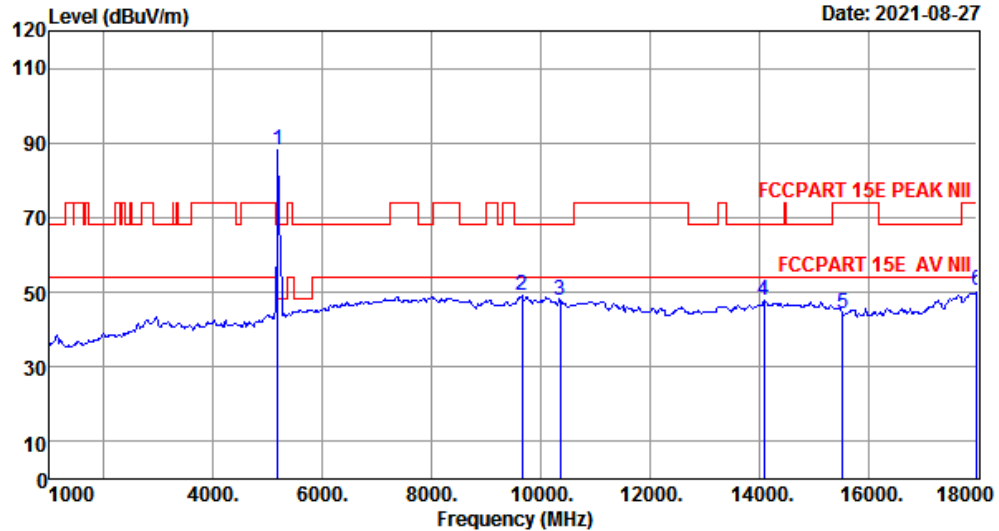
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Data: 29

File: \\Emc-966-1\test data\2021\RF\HUIXIONG\RWOSU5049.EM6 (70)

Date: 2021-08-27



Site no. : 1# 966 Chamber Data no. : 29
 Dis. / Ant. : 3m ANT9120D 1-18G Ant. pol. : HORIZONTAL
 Limit : FCCPART 15E PEAK NII
 Env. / Ins. : Temp:26.6';Humi:57%;Press:101.52kPa
 Engineer : Duo
 EUT : 50" ULTRA HD SMART TV(ATISC TUNER)
 Power : AC 120V/60Hz
 M/N : RWOSU5049
 Test Mode : IEEE 802.11n HT20 TX 5180MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	5180.00	32.20	3.52	34.63	87.12	88.21	68.20	-20.01	Peak
2	9653.00	38.21	5.62	34.27	39.40	48.96	68.20	19.24	Peak
3	10360.00	39.27	5.99	34.31	36.70	47.65	68.20	20.55	Peak
4	14090.00	41.08	6.59	34.33	34.30	47.64	68.20	20.56	Peak
5	15540.00	40.31	6.46	34.39	32.00	44.38	74.00	29.62	Peak
6	18000.00	48.90	8.24	34.30	27.51	50.35	74.00	23.65	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
 2. Margin= Limit - Emission Level.
 3. The emission levels that are 20dB below the official limit are not reported.

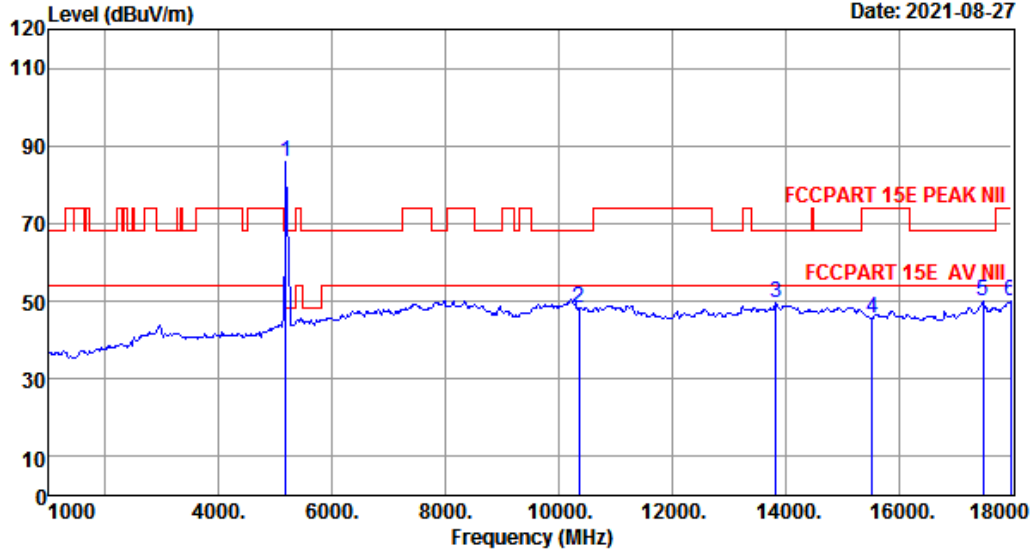
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Data: 30

File: \\Emc-966-1\\test data\\2021\\RF\\H\\HUIXIONG\\RWOSU5049.EM6 (70)

Date: 2021-08-27



Site no. : 1# 966 Chamber Data no. : 30
 Dis. / Ant. : 3m ANT9120D 1-18G Ant. pol. : VERTICAL
 Limit : FCCPART 15E PEAK NII
 Env. / Ins. : Temp:26.6';Humi:57%;Press:101.52kPa
 Engineer : Duo
 EUT : 50" ULTRA HD SMART TV(ATSC TUNER)
 Power : AC 120V/60Hz
 M/N : RWOSU5049
 Test Mode : IEEE 802.11n HT20 TX 5180MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	5180.00	32.20	3.52	34.63	84.79	85.88	68.20	-17.68	Peak
2	10360.00	39.27	5.99	34.31	37.12	48.07	68.20	20.13	Peak
3	13835.00	40.81	6.46	34.32	36.79	49.74	68.20	18.46	Peak
4	15540.00	40.31	6.46	34.39	33.12	45.50	74.00	28.50	Peak
5	17490.00	44.83	7.90	34.35	31.58	49.96	68.20	18.24	Peak
6	17983.00	48.76	8.23	34.30	27.31	50.00	74.00	24.00	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
 2. Margin= Limit - Emission Level.
 3. The emission levels that are 20dB below the official limit are not reported.

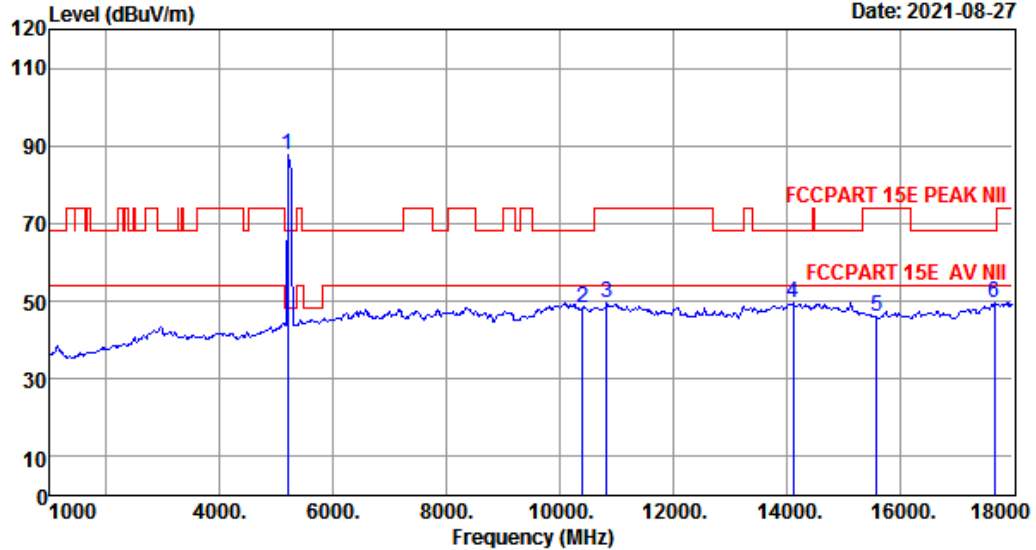
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Data: 31

File: \\Emc-966-1\\test data\\2021\\RF\\H\\HUIXIONG\\RWOSU5049.EM6 (70)

Date: 2021-08-27



Site no. : 1# 966 Chamber Data no. : 31
 Dis. / Ant. : 3m ANT9120D 1-18G Ant. pol. : HORIZONTAL
 Limit : FCCPART 15E PEAK NII
 Env. / Ins. : Temp:26.6';Humi:57%;Press:101.52kPa
 Engineer : Duo
 EUT : 50" ULTRA HD SMART TV(ATSC TUNER)
 Power : AC 120V/60Hz
 M/N : RWOSU5049
 Test Mode : IEEE 802.11n HT20 TX 5200MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	5200.00	32.24	3.53	34.62	86.51	87.66	68.20	-19.46	Peak
2	10400.00	39.31	5.99	34.32	37.14	48.12	68.20	20.08	Peak
3	10826.00	39.73	6.08	34.45	38.13	49.49	74.00	24.51	Peak
4	14124.00	41.08	6.62	34.34	36.04	49.40	68.20	18.80	Peak
5	15600.00	40.24	6.53	34.36	33.46	45.87	74.00	28.13	Peak
6	17677.00	46.32	8.03	34.33	29.49	49.51	68.20	18.69	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
 2. Margin= Limit - Emission Level.
 3. The emission levels that are 20dB below the official limit are not reported.

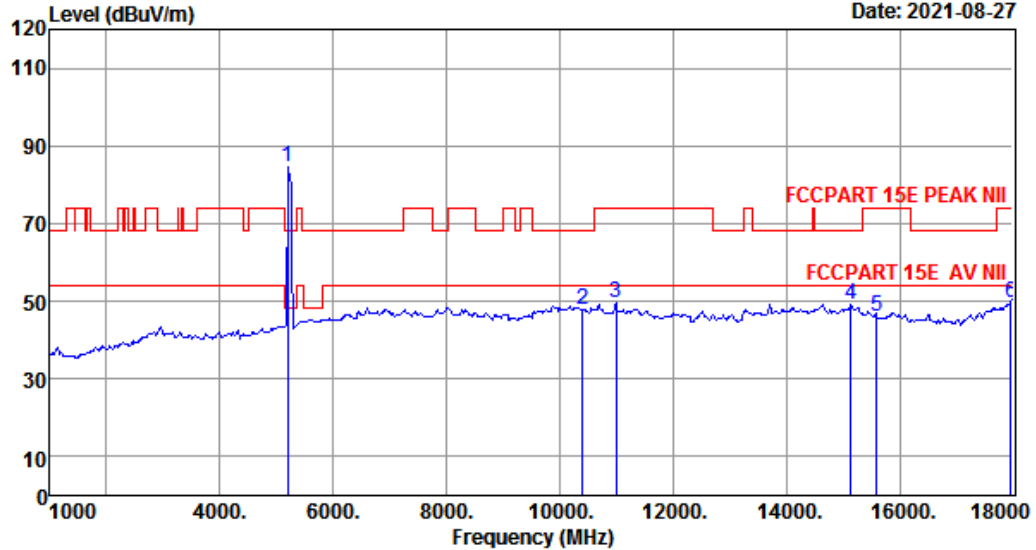
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Data: 32

File: \\Emc-966-1\\test data\\2021\\RF\\H\\HUIXIONG\\RWOSU5049.EM6 (70)

Date: 2021-08-27



Site no. : 1# 966 Chamber Data no. : 32
 Dis. / Ant. : 3m ANT9120D 1-18G Ant. pol. : VERTICAL
 Limit : FCCPART 15E PEAK NII
 Env. / Ins. : Temp:26.6';Humi:57%;Press:101.52kPa
 Engineer : Duo
 EUT : 50" ULTRA HD SMART TV(ATSC TUNER)
 Power : AC 120V/60Hz
 M/N : RWOSU5049
 Test Mode : IEEE 802.11n HT20 TX 5200MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	5200.00	32.24	3.53	34.62	83.21	84.36	68.20	-16.16	Peak
2	10400.00	39.31	5.99	34.32	36.84	47.82	68.20	20.38	Peak
3	10996.00	39.90	6.11	34.50	38.08	49.59	74.00	24.41	Peak
4	15144.00	40.75	6.71	34.54	36.24	49.16	68.20	19.04	Peak
5	15600.00	40.24	6.53	34.36	33.83	46.24	74.00	27.76	Peak
6	17966.00	48.63	8.22	34.30	27.02	49.57	74.00	24.43	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
 2. Margin= Limit - Emission Level.
 3. The emission levels that are 20dB below the official limit are not reported.

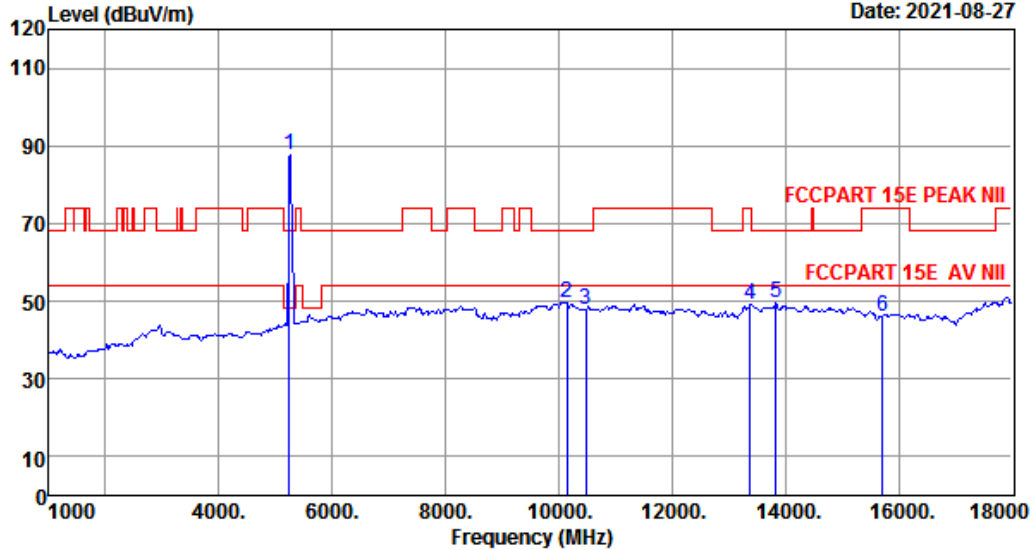
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Data: 33

File: \\Emc-966-1\\test data\\2021\\RF\\H\\HUIXIONG\\RWOSU5049.EM6 (70)

Date: 2021-08-27



Site no. : 1# 966 Chamber Data no. : 33
 Dis. / Ant. : 3m ANT9120D 1-18G Ant. pol. : HORIZONTAL
 Limit : FCCPART 15E PEAK NII
 Env. / Ins. : Temp:26.6';Humi:57%;Press:101.52kPa
 Engineer : Duo
 EUT : 50" ULTRA HD SMART TV(ATSC TUNER)
 Power : AC 120V/60Hz
 M/N : RWOSU5049
 Test Mode : IEEE 802.11n HT20 TX 5240MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	5240.00	32.31	3.55	34.61	86.45	87.70	68.20	-19.50	Peak
2	10146.00	39.05	5.93	34.25	39.07	49.80	68.20	18.40	Peak
3	10480.00	39.39	6.02	34.35	36.97	48.03	68.20	20.17	Peak
4	13376.00	40.03	6.32	34.36	37.26	49.25	74.00	24.75	Peak
5	13835.00	40.81	6.46	34.32	36.61	49.56	68.20	18.64	Peak
6	15720.00	40.10	6.65	34.31	33.75	46.19	74.00	27.81	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
 2. Margin= Limit - Emission Level.
 3. The emission levels that are 20dB below the official limit are not reported.

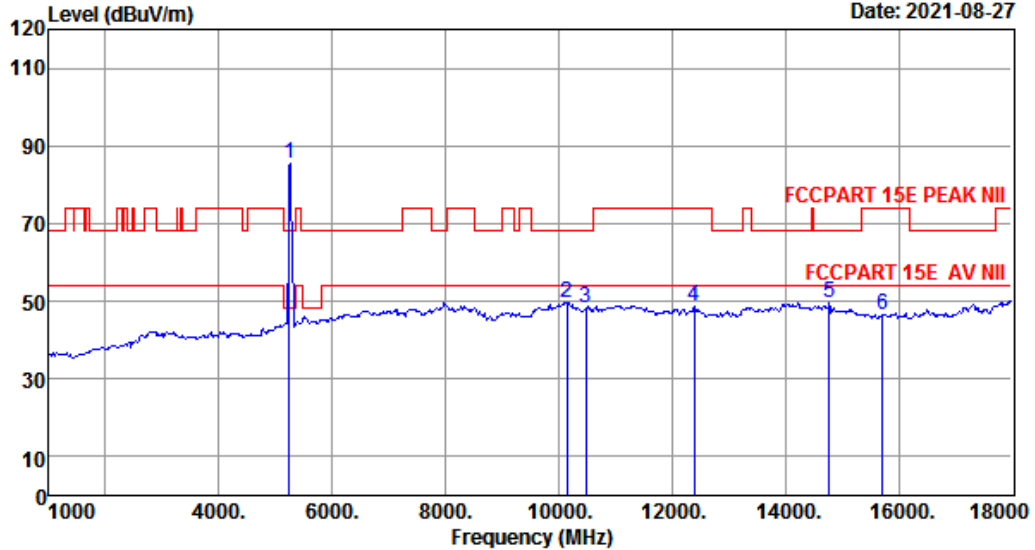
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Data: 34

File: \\Emc-966-1\\test data\\2021\\RF\\H\\HUIXIONG\\RWOSU5049.EM6 (70)

Date: 2021-08-27



Site no. : 1# 966 Chamber Data no. : 34
 Dis. / Ant. : 3m ANT9120D 1-18G Ant. pol. : VERTICAL
 Limit : FCCPART 15E PEAK NII
 Env. / Ins. : Temp:26.6';Humi:57%;Press:101.52kPa
 Engineer : Duo
 EUT : 50" ULTRA HD SMART TV(ATSC TUNER)
 Power : AC 120V/60Hz
 M/N : RWOSU5049
 Test Mode : IEEE 802.11n HT20 TX 5240MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	5240.00	32.31	3.55	34.61	84.07	85.32	68.20	-17.12	Peak
2	10146.00	39.05	5.93	34.25	38.98	49.71	68.20	18.49	Peak
3	10480.00	39.39	6.02	34.35	37.19	48.25	68.20	19.95	Peak
4	12390.00	39.71	6.15	34.64	37.70	48.92	74.00	25.08	Peak
5	14770.00	40.95	6.85	34.53	36.32	49.59	68.20	18.61	Peak
6	15720.00	40.10	6.65	34.31	33.88	46.32	74.00	27.68	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
 2. Margin= Limit - Emission Level.
 3. The emission levels that are 20dB below the official limit are not reported.

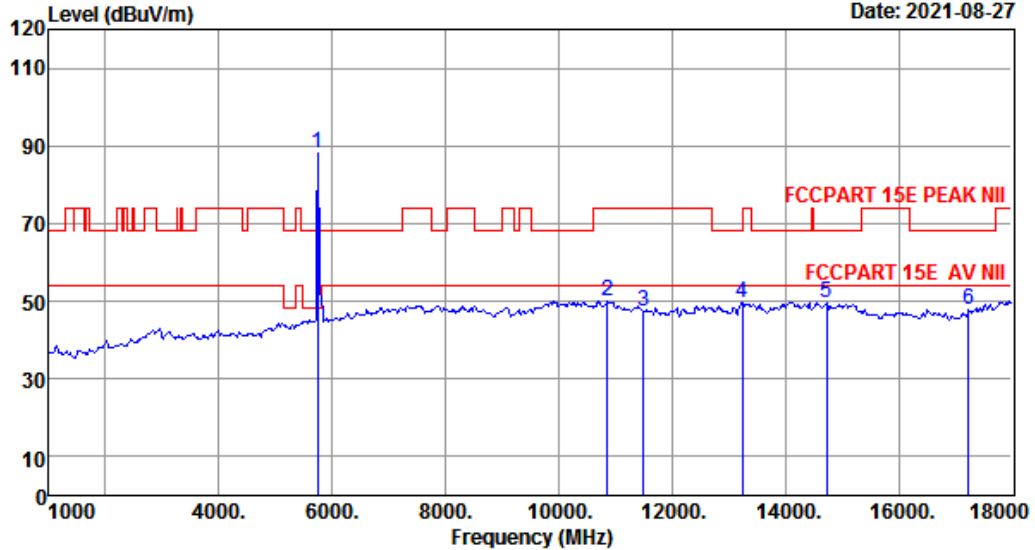
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Data: 35

File: \\Emc-966-1\\test data\\2021\\RF\\H\\HUIXIONG\\RWOSU5049.EM6 (70)

Date: 2021-08-27



Site no. : 1# 966 Chamber Data no. : 35
 Dis. / Ant. : 3m ANT9120D 1-18G Ant. pol. : VERTICAL
 Limit : FCCPART 15E PEAK NII
 Env. / Ins. : Temp:26.6';Humi:57%;Press:101.52kPa
 Engineer : Duo
 EUT : 50" ULTRA HD SMART TV(ATSC TUNER)
 Power : AC 120V/60Hz
 M/N : RWOSU5049
 Test Mode : IEEE 802.11n HT20 TX 5745MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	5745.00	32.85	4.00	34.40	85.63	88.08	68.20	-19.88	Peak
2	10860.00	39.76	6.09	34.46	38.70	50.09	74.00	23.91	Peak
3	11490.00	39.90	6.15	34.65	36.04	47.44	74.00	26.56	Peak
4	13240.00	39.80	6.30	34.38	38.04	49.76	68.20	18.44	Peak
5	14736.00	40.95	6.86	34.52	36.27	49.56	68.20	18.64	Peak
6	17235.00	42.80	7.65	34.38	31.58	47.65	68.20	20.55	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
 2. Margin= Limit - Emission Level.
 3. The emission levels that are 20dB below the official limit are not reported.

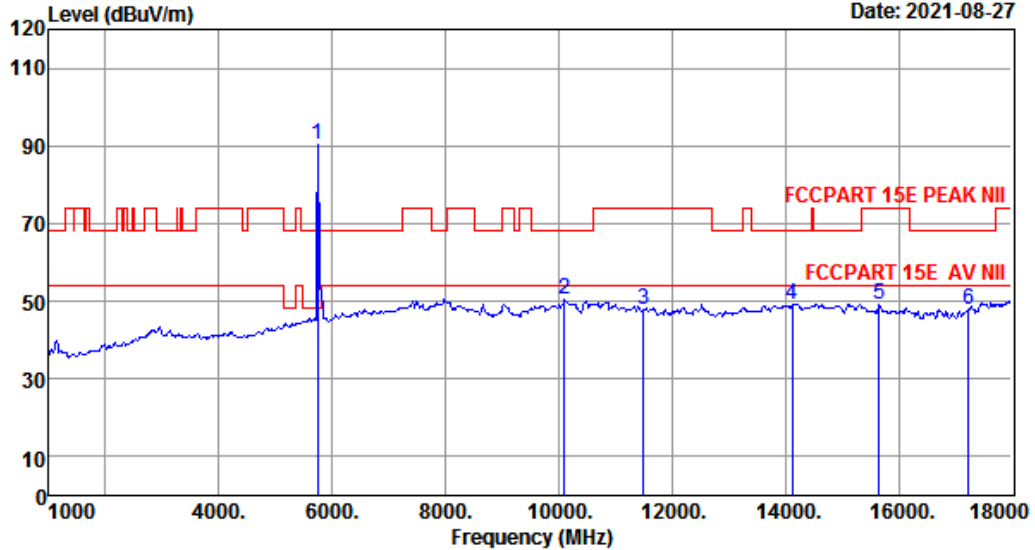
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Data: 36

File: \\Emc-966-1\\test data\\2021\\RF\\H\\HUIXIONG\\RWOSU5049.EM6 (70)

Date: 2021-08-27



Site no. : 1# 966 Chamber Data no. : 36
 Dis. / Ant. : 3m ANT9120D 1-18G Ant. pol. : HORIZONTAL
 Limit : FCCPART 15E PEAK NII
 Env. / Ins. : Temp:26.6';Humi:57%;Press:101.52kPa
 Engineer : Duo
 EUT : 50" ULTRA HD SMART TV(ATSC TUNER)
 Power : AC 120V/60Hz
 M/N : RWOSU5049
 Test Mode : IEEE 802.11n HT20 TX 5745MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	5745.00	32.85	4.00	34.40	87.79	90.24	68.20	-22.04	Peak
2	10095.00	39.00	5.92	34.23	39.67	50.36	68.20	17.84	Peak
3	11490.00	39.90	6.15	34.65	36.21	47.61	74.00	26.39	Peak
4	14124.00	41.08	6.62	34.34	35.86	49.22	68.20	18.98	Peak
5	15654.00	40.18	6.58	34.34	36.86	49.28	74.00	24.72	Peak
6	17235.00	42.80	7.65	34.38	31.60	47.67	68.20	20.53	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
 2. Margin= Limit - Emission Level.
 3. The emission levels that are 20dB below the official limit are not reported.

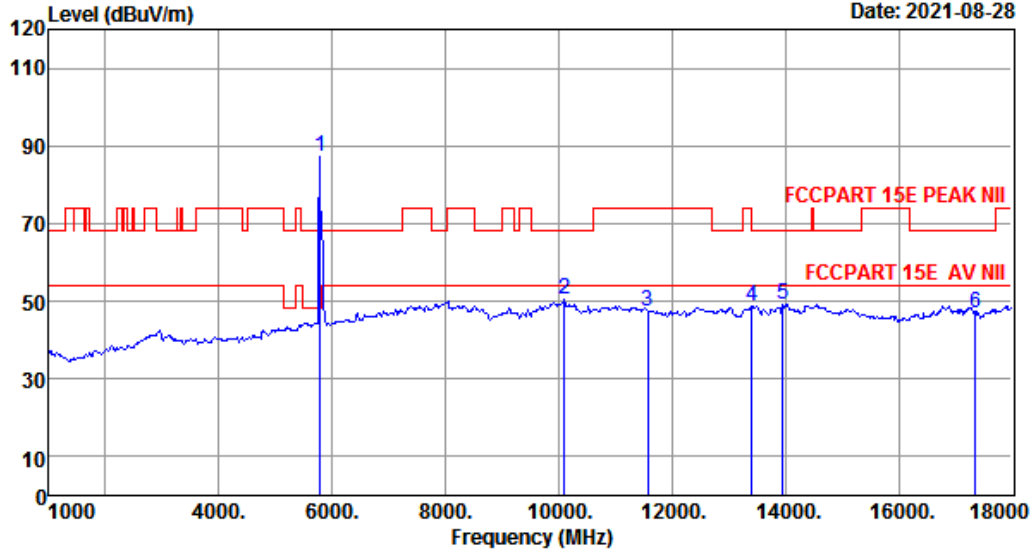
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Data: 37

File: \\Emc-966-1\\test data\\2021\\RF\\H\\HUIXIONG\\RWOSU5049.EM6 (70)

Date: 2021-08-28



Site no. : 1# 966 Chamber Data no. : 37
 Dis. / Ant. : 3m ANT9120D 1-18G Ant. pol. : HORIZONTAL
 Limit : FCCPART 15E PEAK NII
 Env. / Ins. : Temp:26.6';Humi:57%;Press:101.52kPa
 Engineer : Duo
 EUT : 50" ULTRA HD SMART TV(ATSC TUNER)
 Power : AC 120V/60Hz
 M/N : RWOSU5049
 Test Mode : IEEE 802.11n HT20 TX 5785MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	5785.00	32.84	4.05	34.39	84.79	87.29	68.20	-19.09	Peak
2	10095.00	39.00	5.92	34.23	39.60	50.29	68.20	17.91	Peak
3	11570.00	39.90	6.12	34.67	35.99	47.34	74.00	26.66	Peak
4	13410.00	40.09	6.32	34.36	36.84	48.89	68.20	19.31	Peak
5	13954.00	41.01	6.51	34.31	36.09	49.30	68.20	18.90	Peak
6	17355.00	43.75	7.77	34.36	29.92	47.08	68.20	21.12	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
 2. Margin= Limit - Emission Level.
 3. The emission levels that are 20dB below the official limit are not reported.

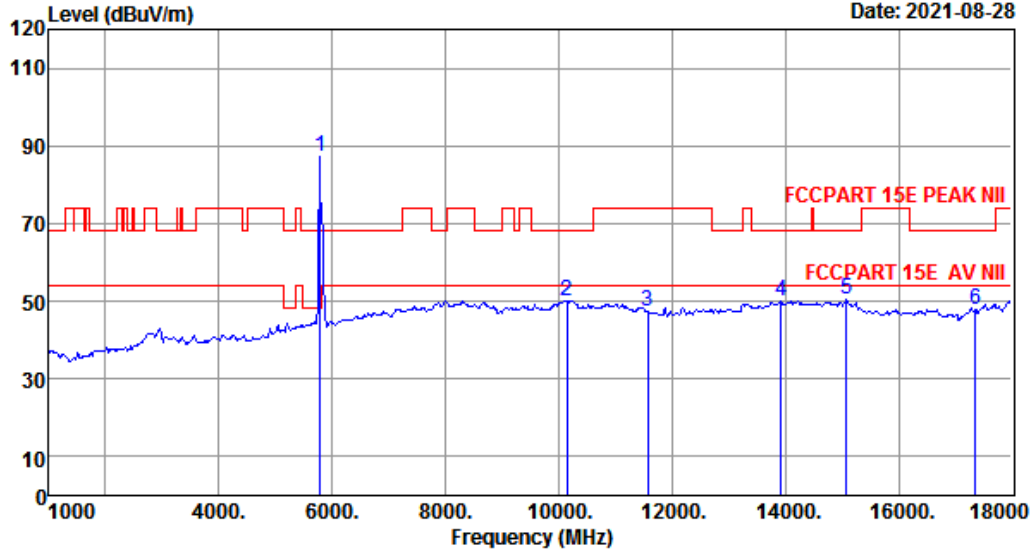
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Data: 38

File: \\Emc-966-1\\test data\\2021\\RF\\H\\HUIXIONG\\RWOSU5049.EM6 (70)

Date: 2021-08-28



Site no. : 1# 966 Chamber Data no. : 38
 Dis. / Ant. : 3m ANT9120D 1-18G Ant. pol. : VERTICAL
 Limit : FCCPART 15E PEAK NII
 Env. / Ins. : Temp:26.6';Humi:57%;Press:101.52kPa
 Engineer : Duo
 EUT : 50" ULTRA HD SMART TV(ATSC TUNER)
 Power : AC 120V/60Hz
 M/N : RWOSU5049
 Test Mode : IEEE 802.11n HT20 TX 5785MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	5785.00	32.84	4.05	34.39	84.54	87.04	68.20	-18.84	Peak
2	10146.00	39.05	5.93	34.25	39.39	50.12	68.20	18.08	Peak
3	11570.00	39.90	6.12	34.67	36.05	47.40	74.00	26.60	Peak
4	13920.00	40.96	6.50	34.31	37.10	50.25	68.20	17.95	Peak
5	15076.00	40.82	6.76	34.57	37.60	50.61	68.20	17.59	Peak
6	17355.00	43.75	7.77	34.36	30.78	47.94	68.20	20.26	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
 2. Margin= Limit - Emission Level.
 3. The emission levels that are 20dB below the official limit are not reported.

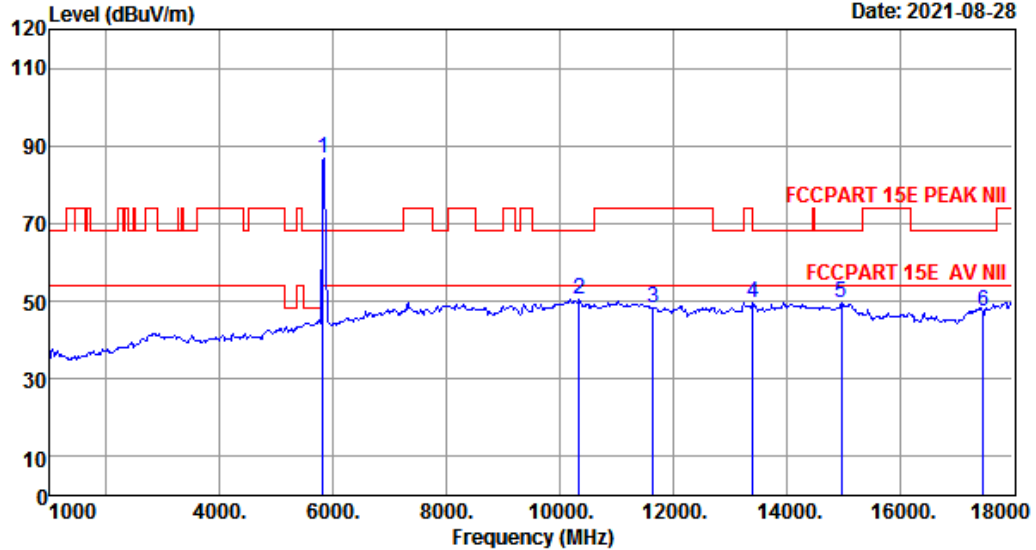
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Data: 39

File: \\Emc-966-1\\test data\\2021\\RF\\H\\HUIXIONG\\RWOSU5049.EM6 (70)

Date: 2021-08-28



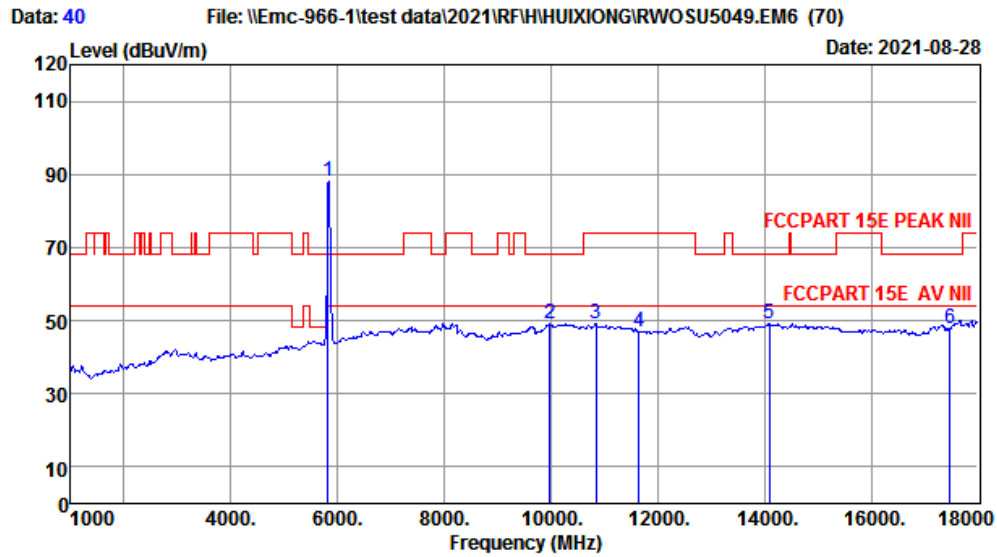
Site no. : 1# 966 Chamber Data no. : 39
 Dis. / Ant. : 3m ANT9120D 1-18G Ant. pol. : VERTICAL
 Limit : FCCPART 15E PEAK NII
 Env. / Ins. : Temp:26.6';Humi:57%;Press:101.52kPa
 Engineer : Duo
 EUT : 50" ULTRA HD SMART TV(ATSC TUNER)
 Power : AC 120V/60Hz
 M/N : RWOSU5049
 Test Mode : IEEE 802.11n HT20 TX 5825MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	5825.00	32.83	4.11	34.37	84.33	86.90	68.20	-18.70	Peak
2	10350.00	39.26	5.98	34.31	39.71	50.64	68.20	17.56	Peak
3	11650.00	39.90	6.08	34.69	36.89	48.18	74.00	25.82	Peak
4	13410.00	40.09	6.32	34.36	37.55	49.60	68.20	18.60	Peak
5	14974.00	40.91	6.82	34.59	36.40	49.54	68.20	18.66	Peak
6	17475.00	44.70	7.89	34.35	29.36	47.60	68.20	20.60	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
 2. Margin= Limit - Emission Level.
 3. The emission levels that are 20dB below the official limit are not reported.

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Site no. : 1# 966 Chamber Data no. : 40
 Dis. / Ant. : 3m ANT9120D 1-18G Ant. pol. : HORIZONTAL
 Limit : FCCPART 15E PEAK NII
 Env. / Ins. : Temp:26.6'; Humi:57%; Press:101.52kPa
 Engineer : Duo
 EUT : 50" ULTRA HD SMART TV(ATSC TUNER)
 Power : AC 120V/60Hz
 M/N : RWOSU5049
 Test Mode : IEEE 802.11n HT20 TX 5825MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	5825.00	32.83	4.11	34.37	85.67	88.24	68.20	-20.04	Peak
2	9976.00	38.87	5.88	34.20	38.64	49.19	68.20	19.01	Peak
3	10843.00	39.75	6.08	34.45	37.91	49.29	74.00	24.71	Peak
4	11650.00	39.90	6.08	34.69	35.81	47.10	74.00	26.90	Peak
5	14090.00	41.08	6.59	34.33	36.03	49.37	68.20	18.83	Peak
6	17475.00	44.70	7.89	34.35	29.72	47.96	68.20	20.24	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
 2. Margin= Limit - Emission Level.
 3. The emission levels that are 20dB below the official limit are not reported.

Note:

1. The amplitude of 18GHz to 25GHz spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported.
2. All modulations have been tested, only worse case 11n20 is reported

Radiated Band Edge

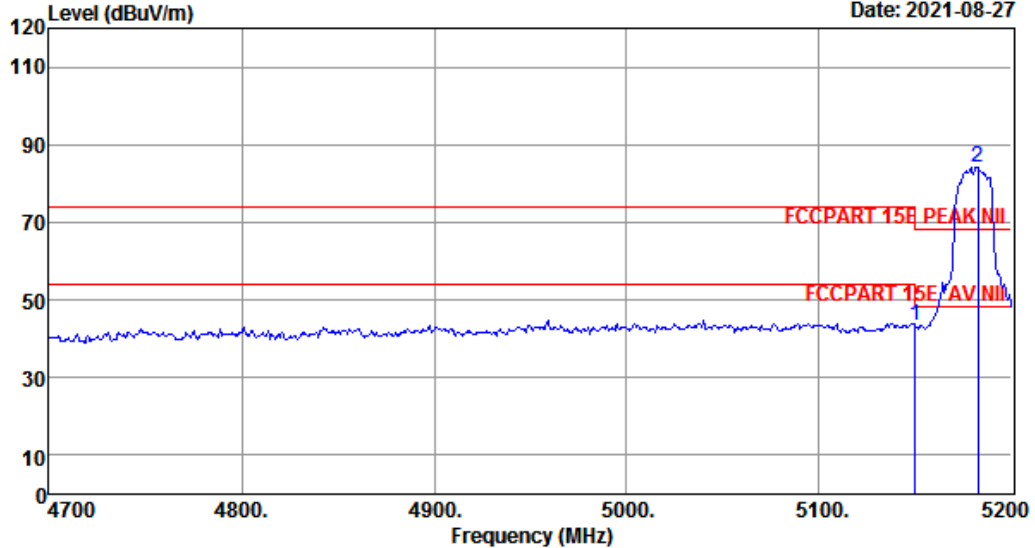
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Data: 43

File: \\Emc-966-1\test data\2021\RF\H\HUIXIONG\RWOSU5049.EM6 (70)

Date: 2021-08-27



Site no. : 1# 966 Chamber Data no. : 43
 Dis. / Ant. : 3m ANT9120D 1-18G Ant. pol. : VERTICAL
 Limit : FCCPART 15B PEAK NII
 Env. / Ins. : Temp:26.6';Humi:57%;Press:101.52kPa
 Engineer : Duo
 EUT : 50" ULTRA HD SMART TV(ATSC TUNER)
 Power : AC 120V/60Hz
 M/N : RWOSU5049
 Test Mode : IEEE 802.11n HT20 TX 5180MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	5150.00	32.13	3.50	34.64	42.28	43.27	68.20	24.93	Peak
2	5182.50	32.20	3.52	34.63	82.98	84.07	68.20	-15.87	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
 2. Margin= Limit - Emission Level.
 3. The emission levels that are 20dB below the official limit are not reported.

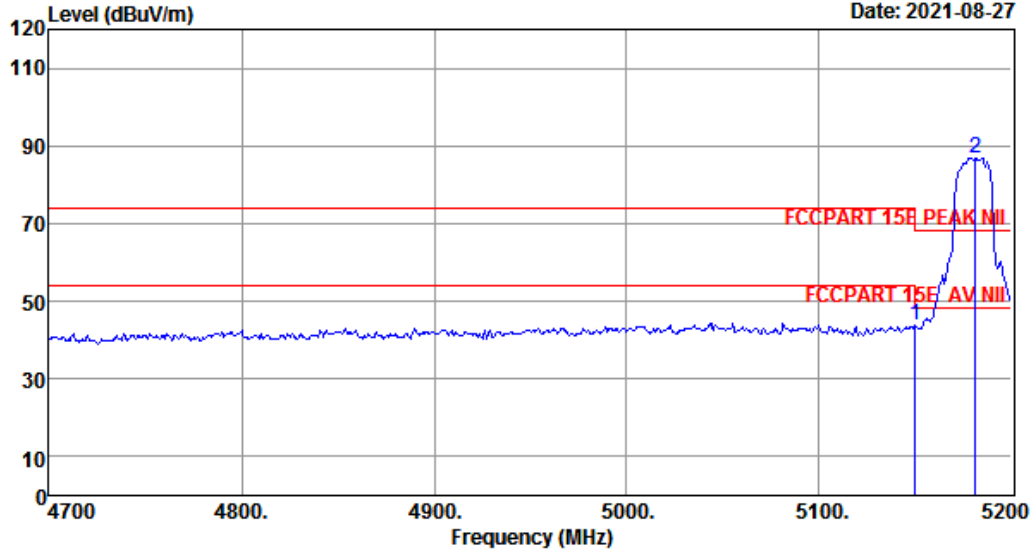
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Data: 44

File: \\Emc-966-1\\test data\\2021\\RF\\H\\HUIXIONG\\RWOSU5049.EM6 (70)

Date: 2021-08-27



Site no. : 1# 966 Chamber Data no. : 44
 Dis. / Ant. : 3m ANT9120D 1-18G Ant. pol. : HORIZONTAL
 Limit : FCCPART 15E PEAK NII
 Env. / Ins. : Temp:26.6';Humi:57%;Press:101.52kPa
 Engineer : Duo
 EUT : 50" ULTRA HD SMART TV(ATSC TUNER)
 Power : AC 120V/60Hz
 M/N : RWOSU5049
 Test Mode : IEEE 802.11n HT20 TX 5180MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	5150.00	32.13	3.50	34.64	43.07	44.06	68.20	24.14	Peak
2	5181.00	32.20	3.52	34.63	85.83	86.92	68.20	-18.72	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
 2. Margin= Limit - Emission Level.
 3. The emission levels that are 20dB below the official limit are not reported.

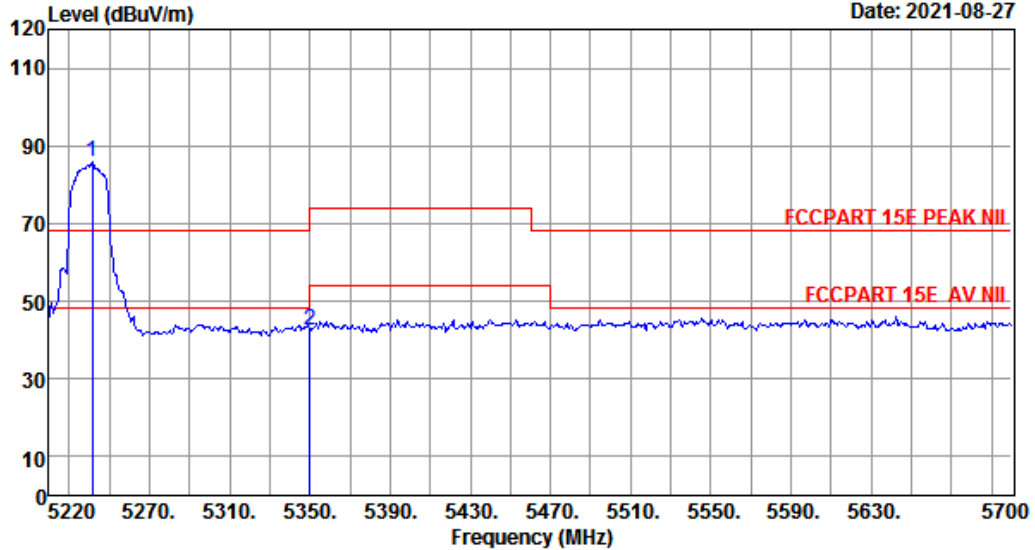
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Data: 45

File: \\Emc-966-1\\test data\\2021\\RF\\H\\HUIXIONG\\RWOSU5049.EM6 (70)

Date: 2021-08-27



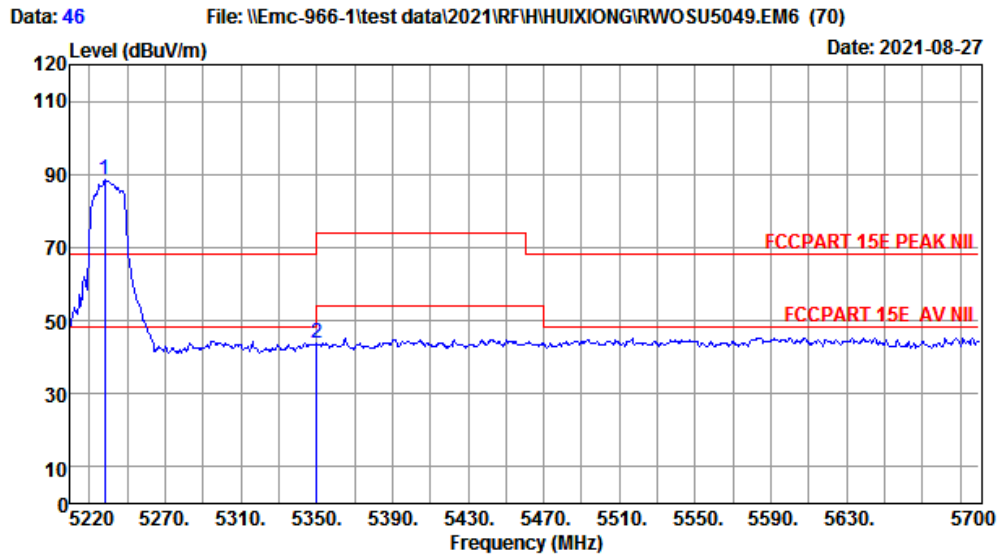
Site no. : 1# 966 Chamber Data no. : 45
 Dis. / Ant. : 3m ANT9120D 1-18G Ant. pol. : VERTICAL
 Limit : FCCPART 15E PEAK NII
 Env. / Ins. : Temp:26.6';Humi:57%;Press:101.52kPa
 Engineer : Duo
 EUT : 50" ULTRA HD SMART TV(ATSC TUNER)
 Power : AC 120V/60Hz
 M/N : RWOSU5049
 Test Mode : IEEE 802.11n HT20 TX 5240MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	5241.60	32.35	3.56	34.60	84.71	86.02	68.20	-17.82	Peak
2	5350.00	32.57	3.62	34.56	41.03	42.66	68.20	25.54	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
 2. Margin= Limit - Emission Level.
 3. The emission levels that are 20dB below the official limit are not reported.

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Site no. : 1# 966 Chamber Data no. : 46
 Dis. / Ant. : 3m ANT9120D 1-18G Ant. pol. : HORIZONTAL
 Limit : FCCPART 15E PEAK NII
 Env. / Ins. : Temp:26.6';Humi:57%;Press:101.52kPa
 Engineer : Duo
 EUT : 50" ULTRA HD SMART TV(ATSC TUNER)
 Power : AC 120V/60Hz
 M/N : RWOSU5049
 Test Mode : IEEE 802.11n HT20 TX 5240MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	5238.24	32.31	3.55	34.61	87.41	88.66	68.20	-20.46	Peak
2	5350.00	32.57	3.62	34.56	42.09	43.72	68.20	24.48	Peak

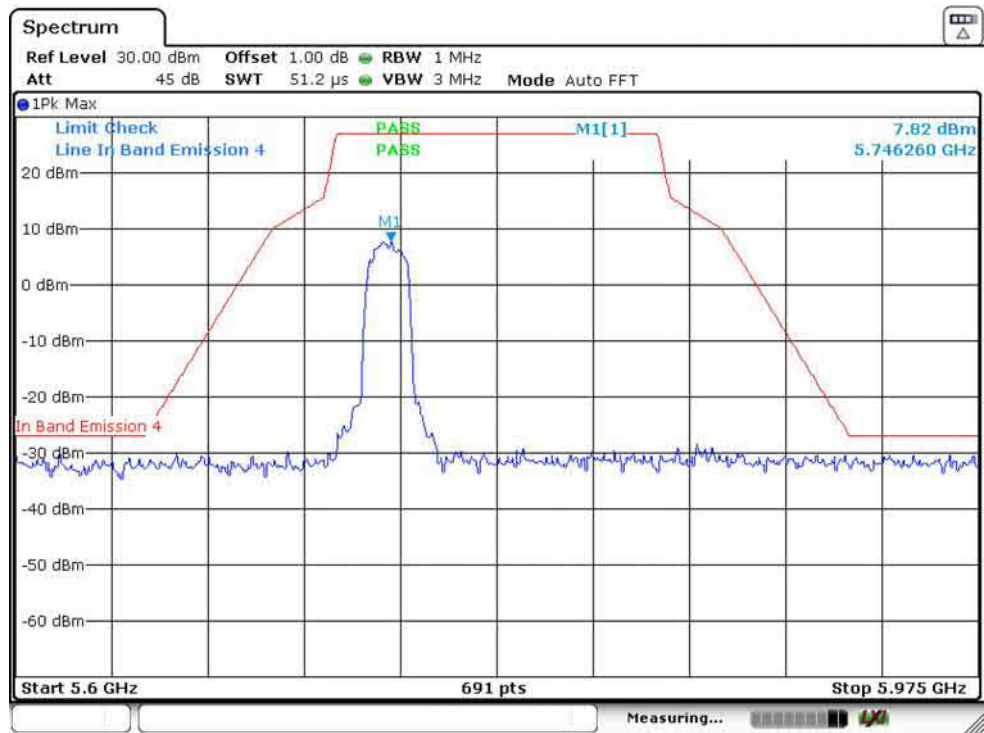
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
 2. Margin= Limit - Emission Level.
 3. The emission levels that are 20dB below the official limit are not reported.

Note:

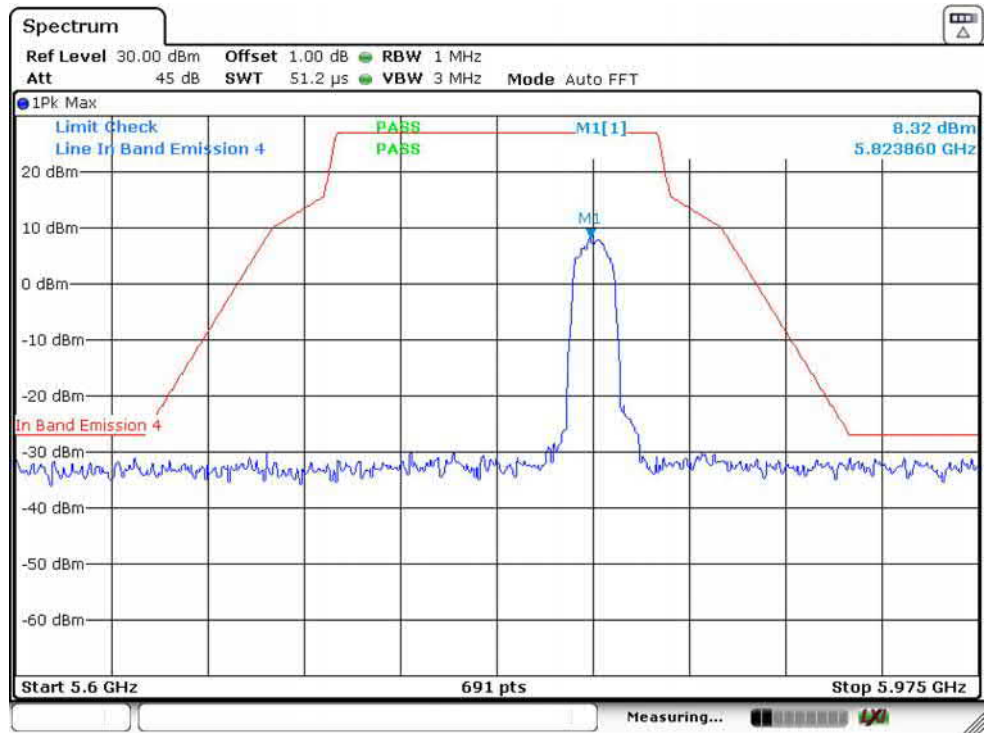
1. The amplitude of 18GHz to 40GHz spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported.
2. All modulations have been tested, only worse case 11n20 is reported

Band Edge

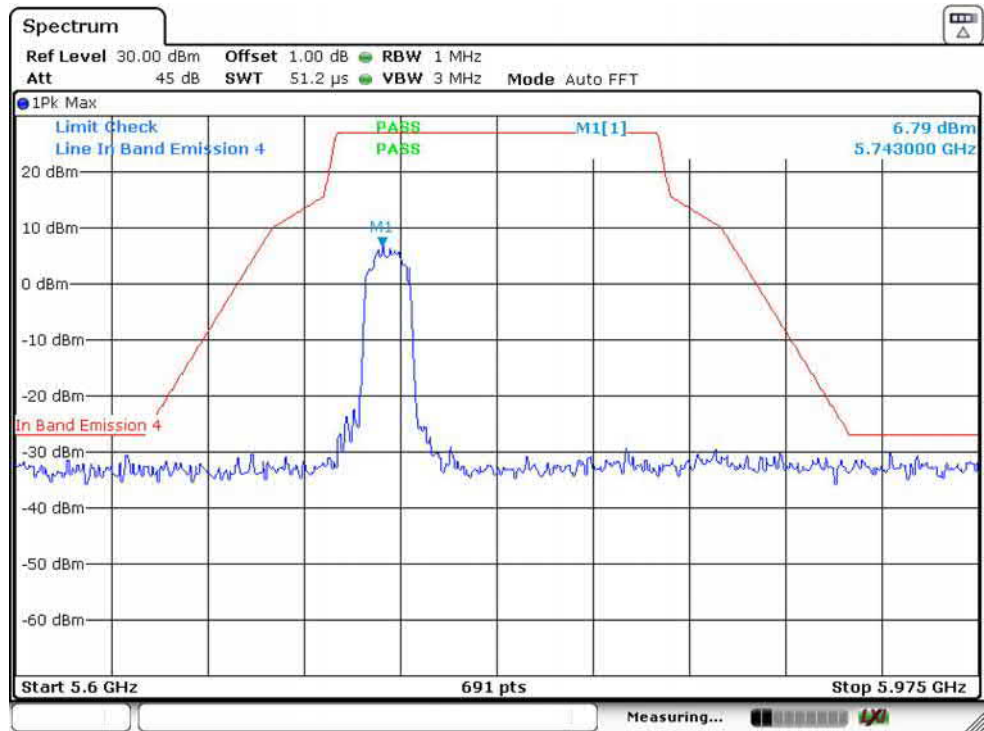
IEEE 802.11a 5745MHz



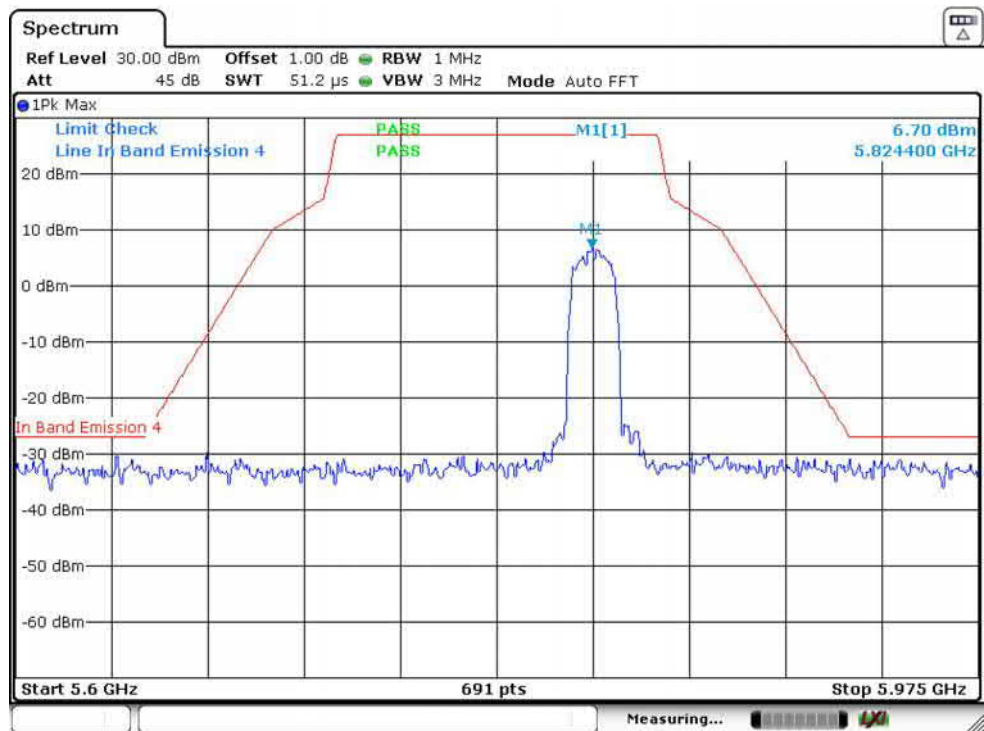
IEEE 802.11a 5825MHz



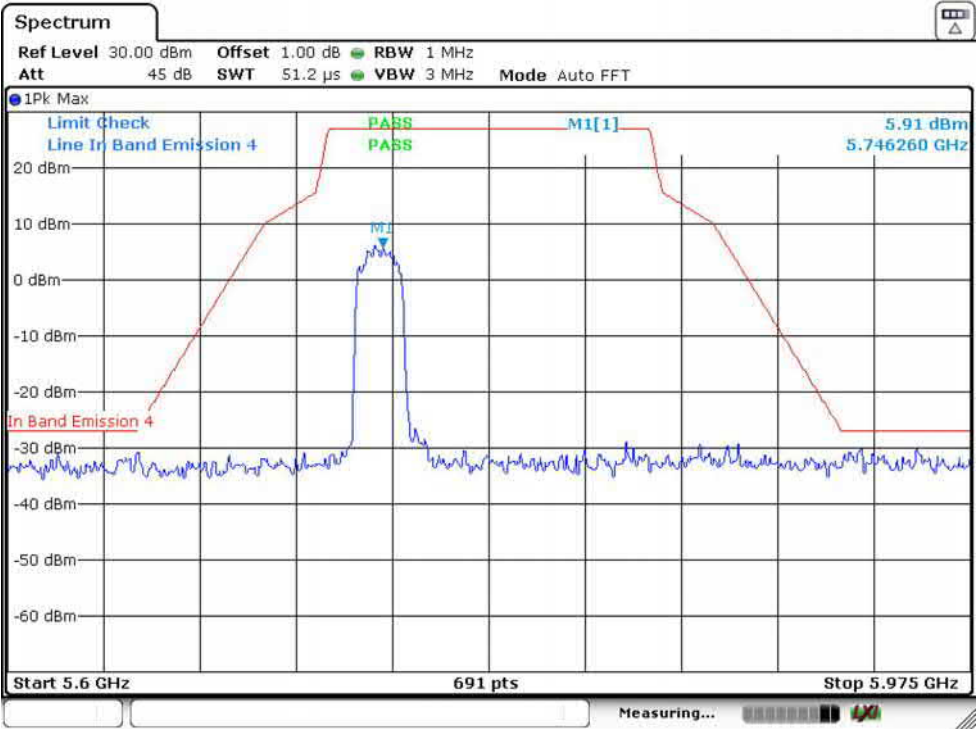
IEEE 802.11n HT20 5745MHz



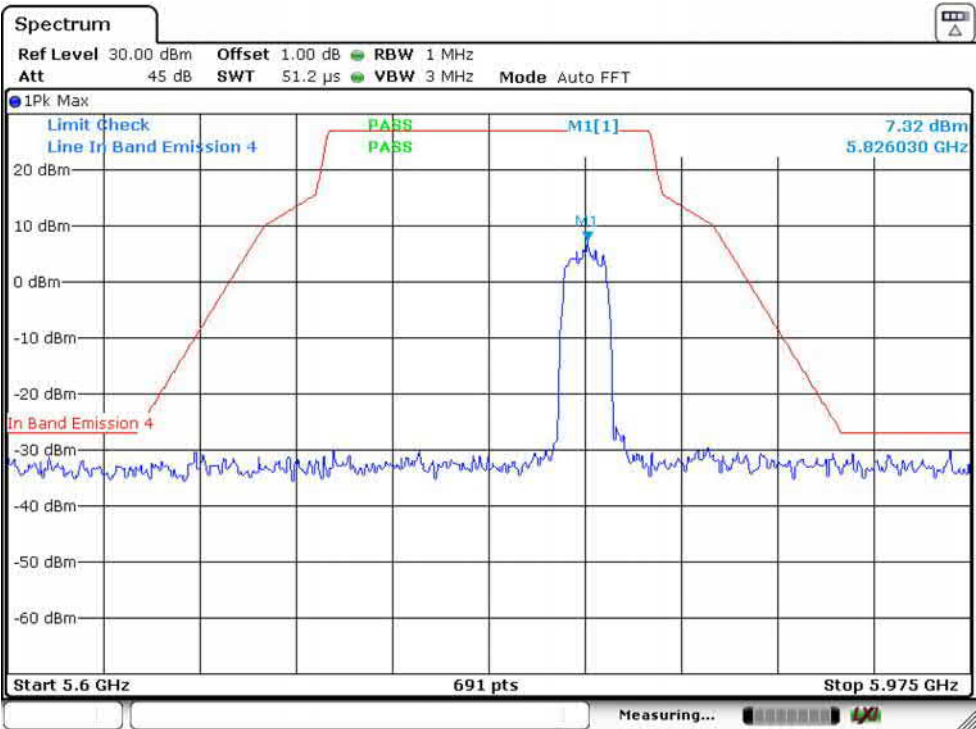
IEEE 802.11n HT20 5825MHz



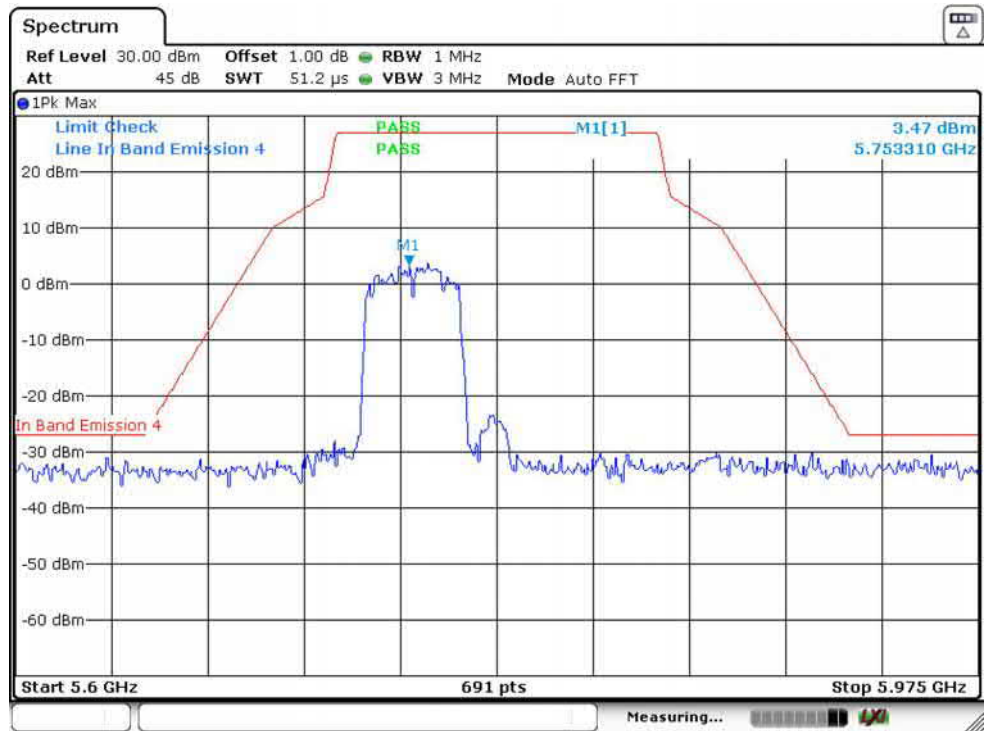
IEEE 802.11ac VHT20 5745MHz



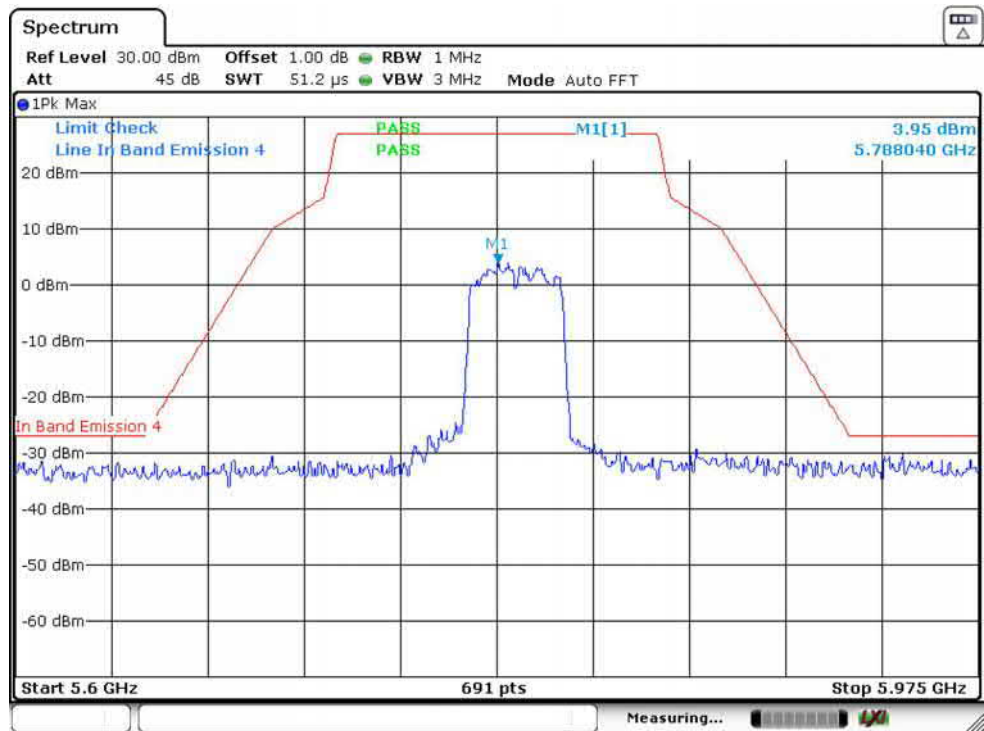
IEEE 802.11ac VHT20 5825MHz



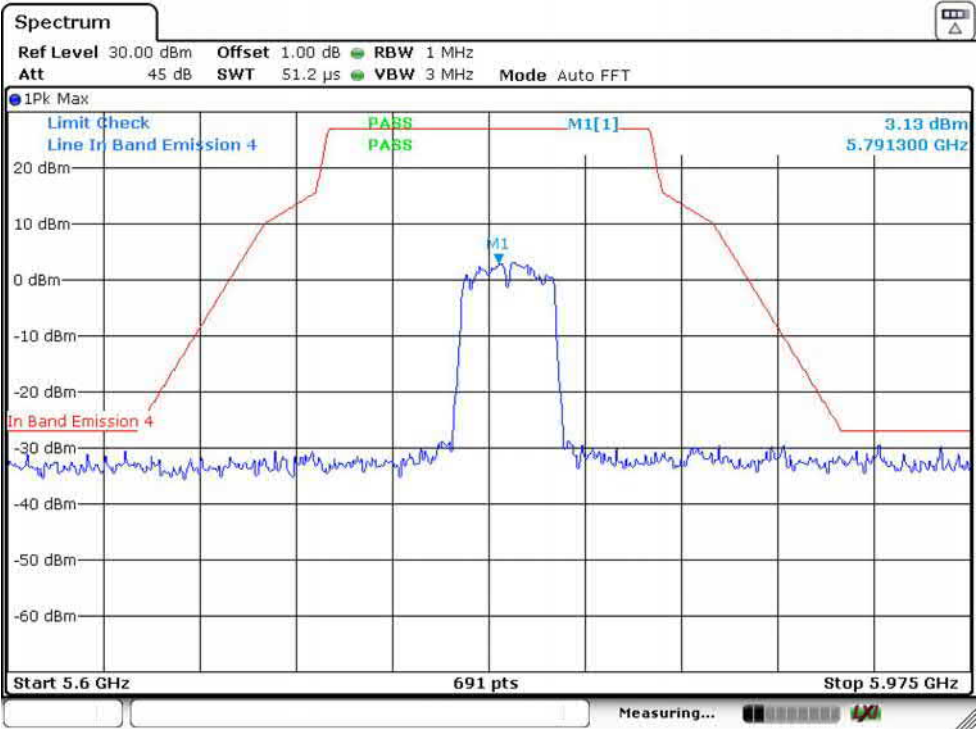
IEEE 802.11n HT40 5755MHz



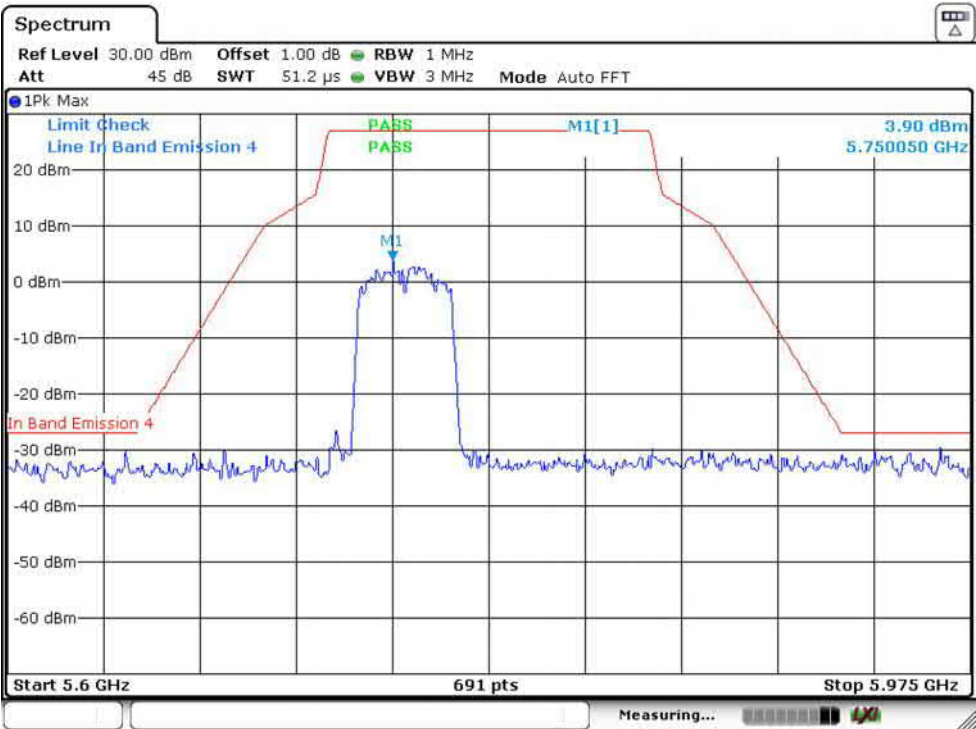
IEEE 802.11n HT40 5795MHz



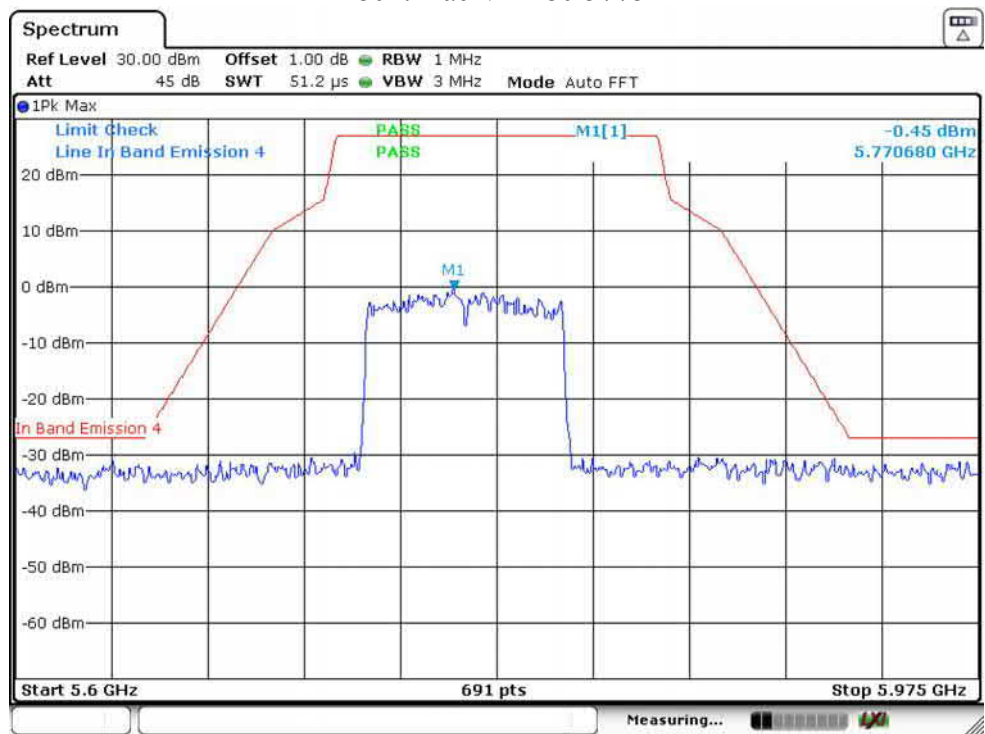
IEEE 802.11ac VHT40 5755MHz



IEEE 802.11ac VHT40 5795MHz



IEEE 802.11ac VHT80 5775MHz



All modulations are all tested ,only worse case 11n20 is reported.

18000MHz-40000MHz

Pass

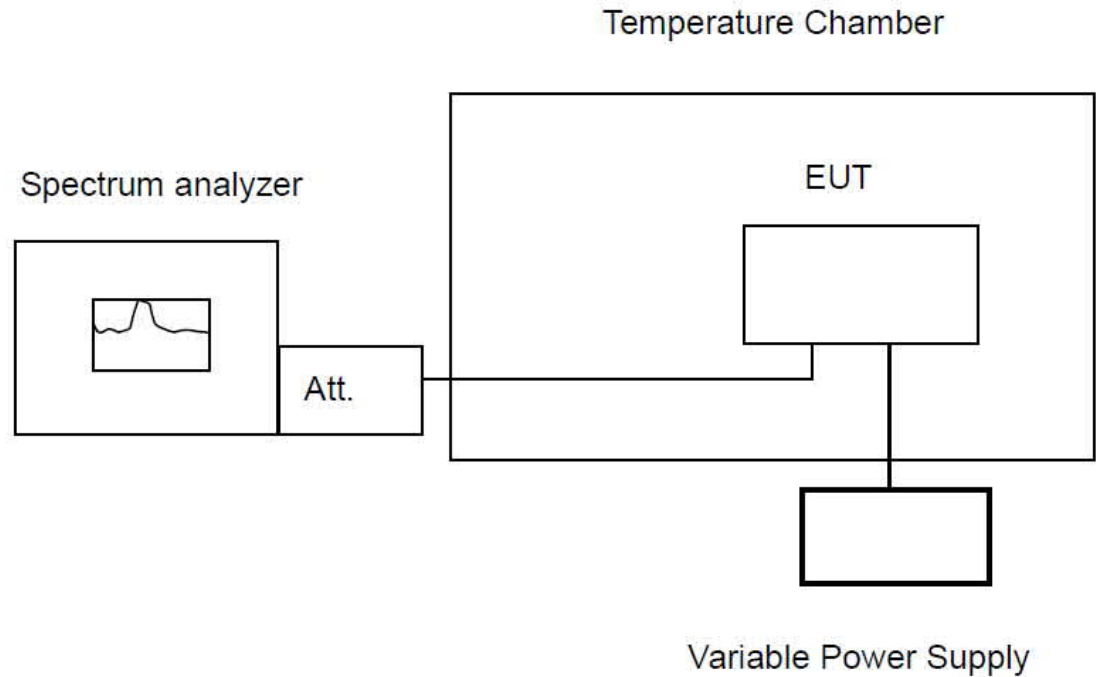
Note: The amplitude of spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported.

7. FREQUENCY STABILITY

7.1. Limit

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the operational description.

7.2. Test Setup



7.3. Spectrum Analyzer Setting

Spectrum Parameters	Setting
RBW	10KHz
VBW	10KHz
Span	200KHz
Sweep Time	Auto
Detector	PEAK
Trace Mode	Max Hold

7.4. Test Procedure

For measurement frequency stability under temperature variation :

- a. Supply the EUT with a nominal ac voltage or install a new or fully charged battery in the EUT.
- b. Turn the EUT OFF and place it inside the environmental temperature chamber.
- c. Connect EUT antenna terminal to the spectrum analyzer with RF cable.
- d. Spectrum analyzer setting parameters in accordance with section 7.3.
- e. Set the temperature control on the chamber to the Specified temperature and allow the oscillator heater and the chamber temperature to stabilize.
- f. Turn the EUT ON with the rated voltage, and the EUT transmit continuously with maximum output power.
- g. Record the operating frequency at startup, and at 2 minutes, 5 minutes, and 10 minutes after the EUT is energized.
- h. Repeat step d through step f to measured the temperature form -20°C to $+50^{\circ}\text{C}$ in 10°C steps.

For frequency stability under voltage variation:

- a. Supply the EUT with a nominal ac voltage or install a new or fully charged battery in the EUT.
- b. Turn the EUT OFF and place it inside the environmental temperature chamber.
- c. Connect EUT antenna terminal to the spectrum analyzer with RF cable.
- d. Spectrum analyzer setting parameters in accordance with section 7.3.
- e. Unless otherwise specified, set the temperature control on the chamber to the ambient room temperature ($+15^{\circ}\text{C}$ to $+25^{\circ}\text{C}$) and allow the oscillator heater and the chamber temperature to stabilize.
- f. Turn the EUT ON with the rated voltage, and the EUT transmit continuously with maximum output power.
- g. Record the operating frequency.
- h. Repeat step d through step f to measured the varied from 85% to 115% of the rated voltage.

7.5. Test Result

Frequency (MHz)	Voltage (V)	Temperature (°C)	Time (minutes)	Measurement Value (MHz)	Frequency Error (ppm)
5180	120	50	0	5180.162514	31.37
			2	5180.166043	32.05
			5	5180.184041	35.53
			10	5180.192040	37.07
	120	40	0	5180.178423	34.44
			2	5180.164544	31.77
			5	5180.180529	34.85
			10	5180.166060	32.06
	120	30	0	5180.170998	33.01
			2	5180.164957	31.84
			5	5180.168075	32.45
			10	5180.173206	33.44
	120	20	0	5180.169936	32.81
			2	5180.163076	31.48
			5	5180.183263	35.38
			10	5180.171408	33.09
	120	10	0	5180.164733	31.80
			2	5180.172774	33.35
			5	5180.182046	35.14
			10	5180.188551	36.40
	120	0	0	5180.162668	31.40
			2	5180.182126	35.16
			5	5180.182344	35.20
			10	5180.182877	35.30
	120	-10	0	5180.176494	34.07
			2	5180.188715	36.43
			5	5180.166636	32.17
			10	5180.187099	36.12
	120	-20	0	5180.178026	34.37
			2	5180.176991	34.17
			5	5180.174299	33.65
			10	5180.177318	34.23
	120	20	/	5180.165997	32.05
	102	20	/	5180.163684	31.60
	138	20	/	5180.175944	33.97
	MAX Frquency Error(ppm)				37.07

Frequency (MHz)	Voltage (V)	Temperature (°C)	Time (minutes)	Measurement Value (MHz)	Frequency Error (ppm)
5745	120	50	0	5745.199040	34.65
			2	5745.225037	39.17
			5	5745.233036	40.56
			10	5745.242035	42.13
	120	40	0	5745.228162	39.71
			2	5745.234661	40.85
			5	5745.219448	38.20
			10	5745.230715	40.16
	120	30	0	5745.207024	36.04
			2	5745.216191	37.63
			5	5745.231460	40.29
			10	5745.208560	36.30
	120	20	0	5745.233964	40.72
			2	5745.209498	36.47
			5	5745.223601	38.92
			10	5745.199473	34.72
	120	10	0	5745.228485	39.77
			2	5745.219746	38.25
			5	5745.233720	40.68
			10	5745.216759	37.73
	120	0	0	5745.228147	39.71
			2	5745.204847	35.66
			5	5745.206259	35.90
			10	5745.241111	41.97
	120	-10	0	5745.202390	35.23
			2	5745.206733	35.98
			5	5745.227489	39.60
			10	5745.224749	39.12
	120	-20	0	5745.216549	37.69
			2	5745.240244	41.82
			5	5745.199787	34.78
			10	5745.216905	37.76
	120	20	/	5745.211586	36.83
	102	20	/	5745.241066	41.96
	138	20	/	5745.224365	39.05
MAX Frquency Error(ppm)					42.13

8. AC POWER LINE CONDUCTED EMISSIONS

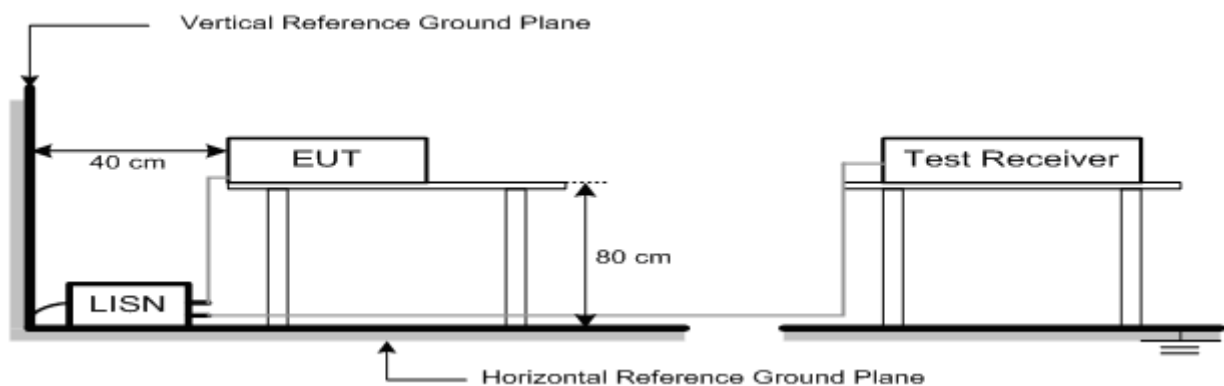
8.1. Limit

Frequency			Maximum RF Line Voltage	
			Quasi-Peak Level dB(μ V)	Average Level dB(μ V)
150kHz	~	500kHz	66 ~ 56*	56 ~ 46*
500kHz	~	5MHz	56	46
5MHz	~	30MHz	60	50

Notes:

1. * Decreasing linearly with logarithm of frequency.
2. The lower limit shall apply at the transition frequencies.

8.2. Test Setup



8.3. Spectrum Analyzer Setting

Spectrum Parameters	Setting
RBW	9KHz
VBW	9KHz
Start frequency	150KHz
Stop frequency	30MHz
Sweep Time	Auto
Detector	QP/AVG
Trace Mode	Max Hold

8.4. Test Procedure

- a. The EUT was placed on a non-metallic table, 80cm above the ground plane.
- b. The EUT Power connected to the power mains through a line impedance stabilization network.
- c. Provides a 50 ohm coupling impedance for the EUT (Please refer the block diagram of the test setup and photographs).
- d. Set the EUT transmit continuously with maximum output power.
- e. Spectrum analyzer setting parameters in accordance with section 8.3.
- f. The AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.10: 2013 on Conducted Emission Test.
- g. Record the results in the test report.

8.5. Test Result

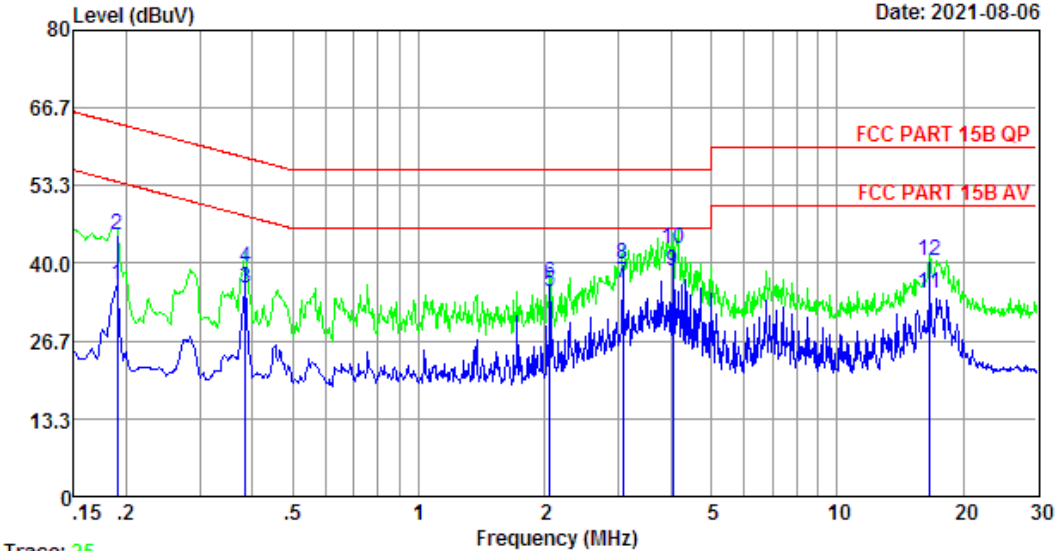
EST Technology

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Houjie, Dongguan, Guangdong, China
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Fax: +86-769-83081878

Data: 26

File: \\Emc-ce-2\test data\2021\RF\HUIXIONG\RWOSU5049.EM6 (32)

Date: 2021-08-06



Site no : 2#CE Shield Room Data no. : 26
 Env. / Ins. : Temp:25.0°C Humi:42% Press:101.40kPa LINE Phase : NEUTRAL
 Limit : FCC PART 15B QP
 Engineer : MRS
 EUT : 50" ULTRA HD SMART TV(ATSC TUNER)
 Power : AC 120V/60Hz
 M/N : RWOSU5049
 Test Mode : TX Mode

	Freq. (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.19	9.65	9.77	16.97	36.39	54.02	17.63	Average
2	0.19	9.65	9.77	25.37	44.79	64.02	19.23	QP
3	0.39	9.68	9.92	16.21	35.81	48.17	12.36	Average
4	0.39	9.68	9.92	19.53	39.13	58.17	19.04	QP
5	2.05	9.80	9.97	15.38	35.15	46.00	10.85	Average
6	2.05	9.80	9.97	16.91	36.68	56.00	19.32	QP
7	3.07	9.91	9.98	16.78	36.67	46.00	9.33	Average
8	3.07	9.91	9.98	19.91	39.80	56.00	16.20	QP
9	4.05	9.92	9.98	18.66	38.56	46.00	7.44	Average
10	4.05	9.92	9.98	22.55	42.45	56.00	13.55	QP
11	16.66	10.07	10.13	14.69	34.89	50.00	15.11	Average
12	16.66	10.07	10.13	20.34	40.54	60.00	19.46	QP

Remarks: 1. Emission Level= LISN Factor + Cable Loss + Reading.
 2. Margin= Limit - Emission Level.
 3. If the average limit is met when using a quasi-peak detector,
 the EUT shall be deemed to meet both limits and measurement
 with average detector is unnecessary.

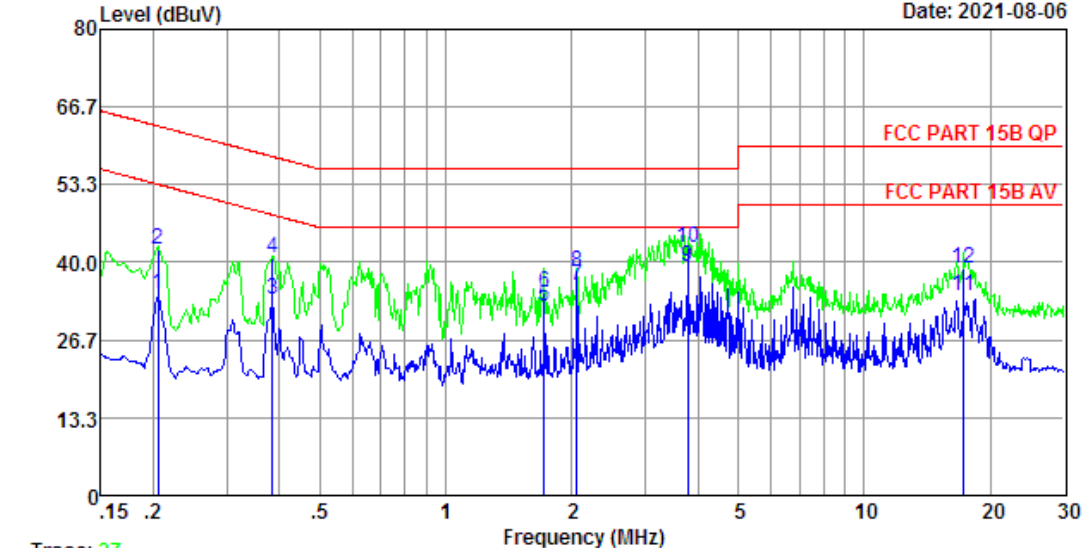
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Data: 28

File: \\Emc-ce-2\\test data\\2021\\RF\\H\\HUIXIONG\\RWOSU5049.EM6 (32)

Date: 2021-08-06



Trace: 27

Site no : 2#CE Shield Room Data no. : 28
Env. / Ins. : Temp:25.0°C Humi:42% Press:101.40kPa LINE Phase : LINE
Limit : FCC PART 15B QP
Engineer : MRS
EUT : 50" ULTRA HD SMART TV(ATSC TUNER)
Power : AC 120V/60Hz
M/N : RWOSU5049
Test Mode : TX Mode

	Freq. (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.21	9.70	9.84	15.08	34.62	53.40	18.78	Average
2	0.21	9.70	9.84	22.72	42.26	63.40	21.14	QP
3	0.39	9.76	9.92	14.02	33.70	48.17	14.47	Average
4	0.39	9.76	9.92	21.20	40.88	58.17	17.29	QP
5	1.72	9.85	9.95	12.81	32.61	46.00	13.39	Average
6	1.72	9.85	9.95	15.06	34.86	56.00	21.14	QP
7	2.05	9.84	9.97	16.13	35.94	46.00	10.06	Average
8	2.05	9.84	9.97	18.63	38.44	56.00	17.56	QP
9	3.78	9.95	9.99	19.21	39.15	46.00	6.85	Average
10	3.78	9.95	9.99	22.63	42.57	56.00	13.43	QP
11	17.29	10.00	10.13	14.04	34.17	50.00	15.83	Average
12	17.29	10.00	10.13	18.97	39.10	60.00	20.90	QP

Remarks: 1. Emission Level= LISN Factor + Cable Loss + Reading.
2. Margin= Limit - Emission Level.
3. If the average limit is met when using a quasi-peak detector,
the EUT shall be deemed to meet both limits and measurement
with average detector is unnecessary.

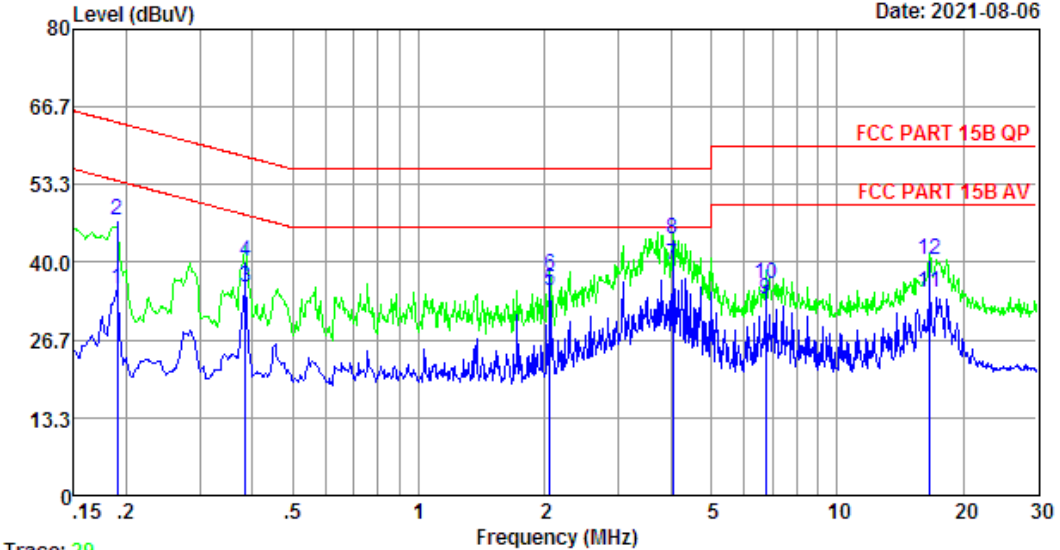
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Data: 30

File: \\Emc-ce-2\\test data\\2021\\RF\\H\\HUIXIONG\\RWOSU5049.EM6 (32)

Date: 2021-08-06



Site no : 2#CE Shield Room Data no. : 30
 Env. / Ins. : Temp:25.0°C Humi:42% Press:101.40kPa LINE Phase : NEUTRAL
 Limit : FCC PART 15B QP
 Engineer : MRS
 EUT : 50" ULTRA HD SMART TV(ATSC TUNER)
 Power : AC 240V/60Hz
 M/N : RWOSU5049
 Test Mode : TX Mode

	Freq. (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.19	9.65	9.77	15.97	35.39	54.02	18.63	Average
2	0.19	9.65	9.77	27.73	47.15	64.02	16.87	QP
3	0.39	9.68	9.92	16.21	35.81	48.17	12.36	Average
4	0.39	9.68	9.92	20.53	40.13	58.17	18.04	QP
5	2.05	9.80	9.97	15.38	35.15	46.00	10.85	Average
6	2.05	9.80	9.97	17.91	37.68	56.00	18.32	QP
7	4.05	9.92	9.98	19.66	39.56	46.00	6.44	Average
8	4.05	9.92	9.98	24.01	43.91	56.00	12.09	QP
9	6.73	9.60	10.03	14.04	33.67	50.00	16.33	Average
10	6.73	9.60	10.03	16.58	36.21	60.00	23.79	QP
11	16.66	10.07	10.13	14.69	34.89	50.00	15.11	Average
12	16.66	10.07	10.13	20.34	40.54	60.00	19.46	QP

Remarks: 1. Emission Level= LISN Factor + Cable Loss + Reading.
 2. Margin= Limit - Emission Level.
 3. If the average limit is met when using a quasi-peak detector,
 the EUT shall be deemed to meet both limits and measurement
 with average detector is unnecessary.

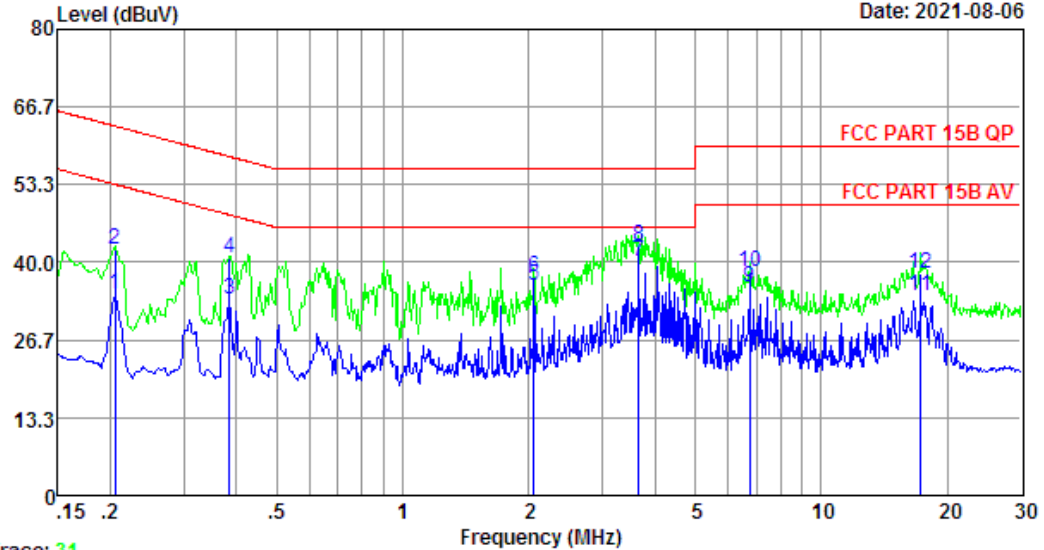
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Data: 32

File: \\Emc-ce-2\test data\2021\RF\H\HUIXIONG\RWOSU5049.EM6 (32)

Date: 2021-08-06



Trace: 31

Site no : 2#CE Shield Room Data no. : 32
 Env. / Ins. : Temp:25.0°C Humi:42% Press:101.40kPa LINE Phase : LINE
 Limit : FCC PART 15B QP
 Engineer : MRS
 EUT : 50" ULTRA HD SMART TV(ATSC TUNER)
 Power : AC 240V/60Hz
 M/N : RWOSU5049
 Test Mode : TX Mode

	Freq. (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.21	9.70	9.84	15.08	34.62	53.40	18.78	Average
2	0.21	9.70	9.84	22.72	42.26	63.40	21.14	QP
3	0.39	9.76	9.92	14.02	33.70	48.17	14.47	Average
4	0.39	9.76	9.92	21.20	40.88	58.17	17.29	QP
5	2.05	9.84	9.97	16.13	35.94	46.00	10.06	Average
6	2.05	9.84	9.97	17.63	37.44	56.00	18.56	QP
7	3.66	9.94	9.99	20.12	40.05	46.00	5.95	Average
8	3.66	9.94	9.99	22.98	42.91	56.00	13.09	QP
9	6.73	10.41	10.03	15.30	35.74	50.00	14.26	Average
10	6.73	10.41	10.03	17.94	38.38	60.00	21.62	QP
11	17.29	10.00	10.13	14.04	34.17	50.00	15.83	Average
12	17.29	10.00	10.13	17.97	38.10	60.00	21.90	QP

Remarks: 1. Emission Level= LISN Factor + Cable Loss + Reading.
 2. Margin= Limit - Emission Level.
 3. If the average limit is met when using a quasi-peak detector,
 the EUT shall be deemed to meet both limits and measurement
 with average detector is unnecessary.

9. ANTENNA REQUIREMENTS

9.1. Limit

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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §§15.211, 15.213, 15.217, 15.219, 15.221, or §15.236. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

9.2. Test Result

The antennas used for this product is internal antenna ,so compliance with antenna requirements.
(Please refer to the EUT photo for details)

10. TEST SETUP PHOTO

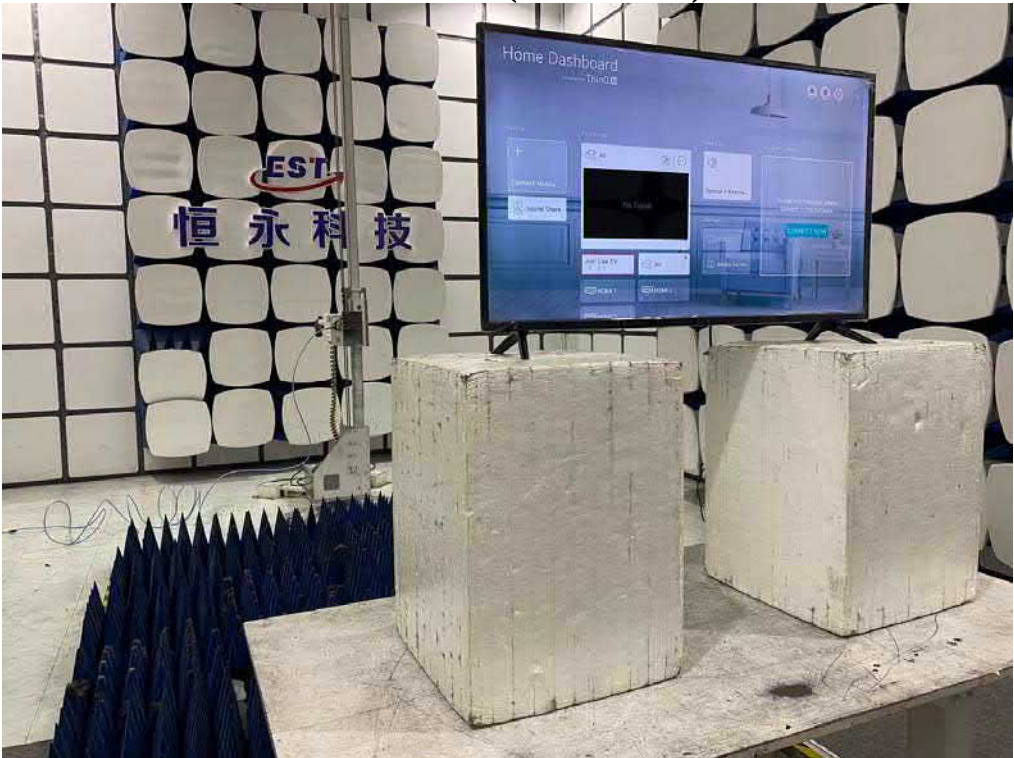
Conducted Test



Radiated Test (Below 1GHz)



Radiated Test (Above 1GHz)



11. EUT PHOTO

External Photos
M/N: RWOSU5049



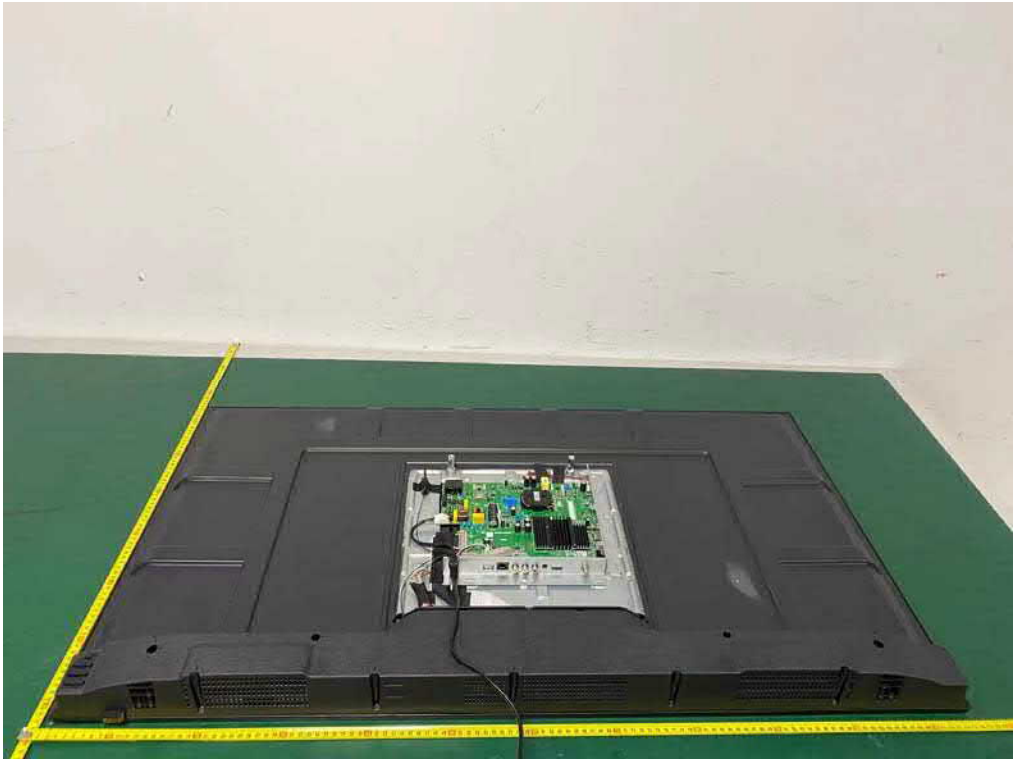
External Photos
M/N: RWOSU5049



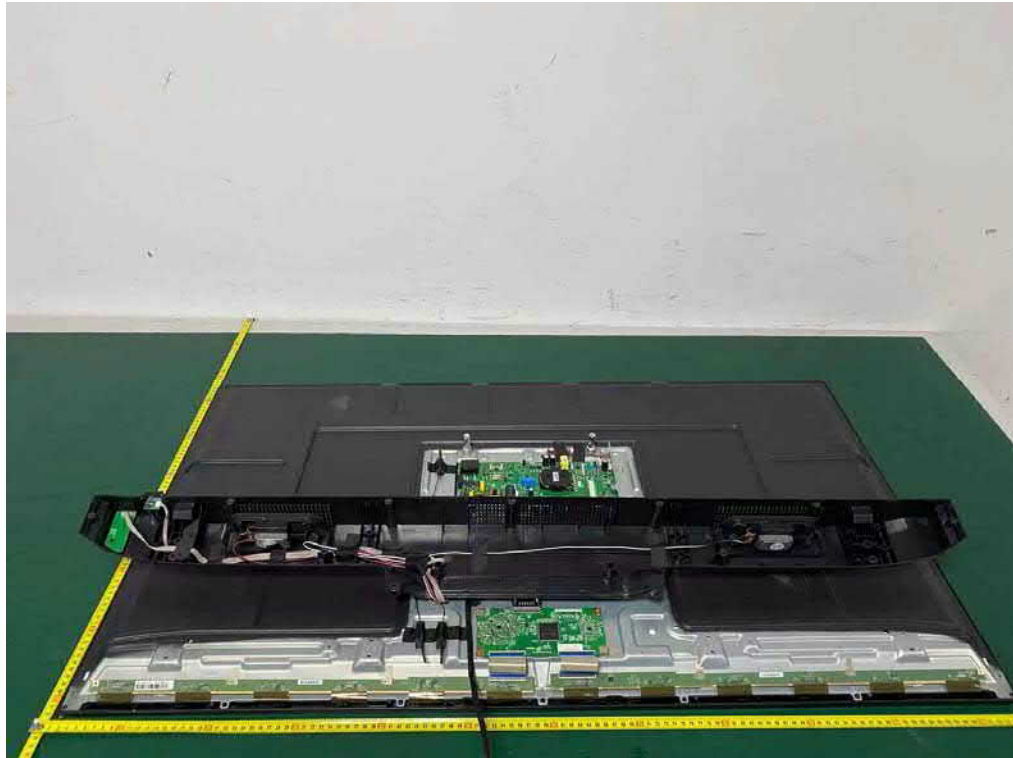
External Photos
M/N: RWOSU5049



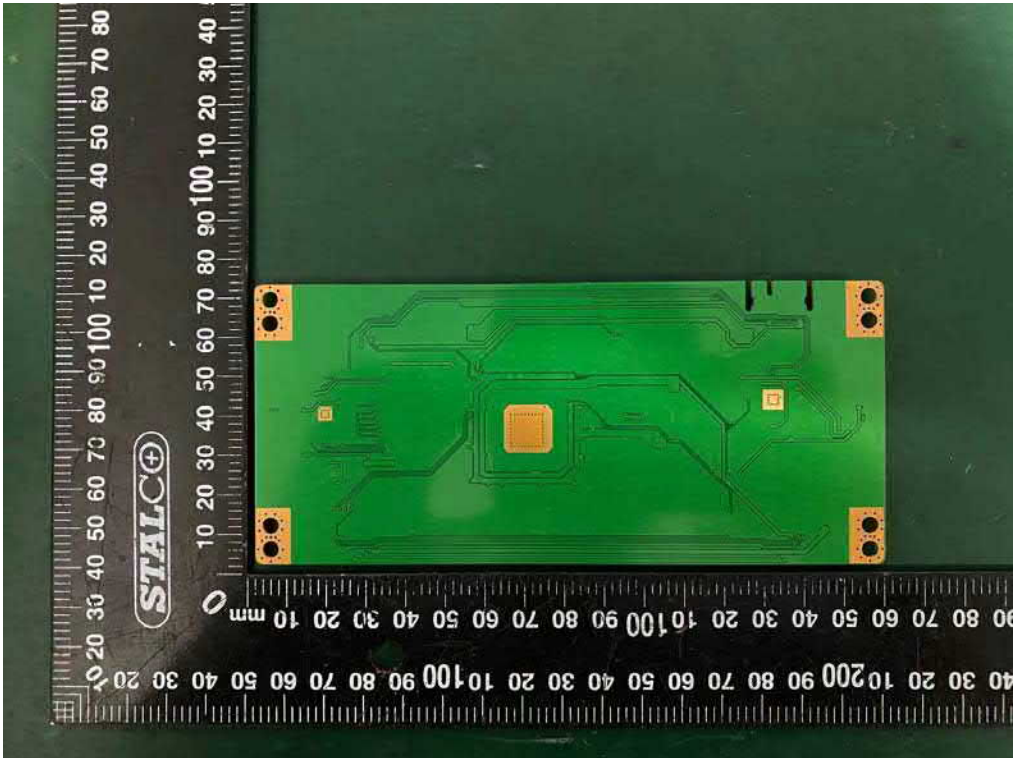
Internal Photos
M/N: RWOSU5049



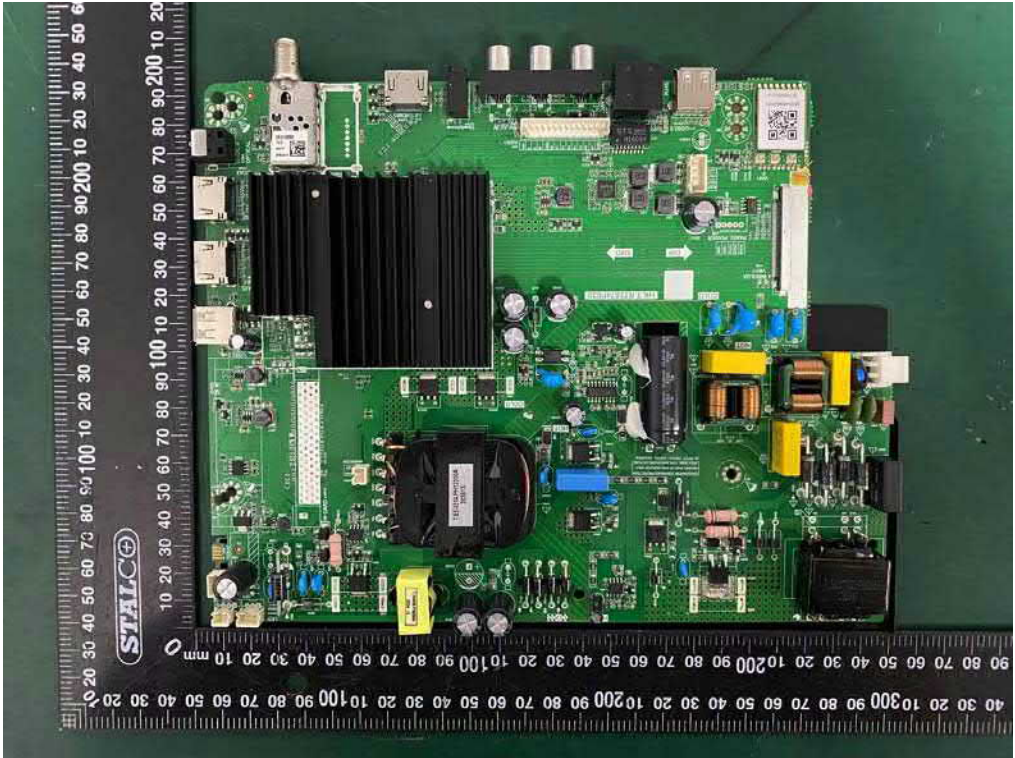
Internal Photos
M/N: RWOSU5049



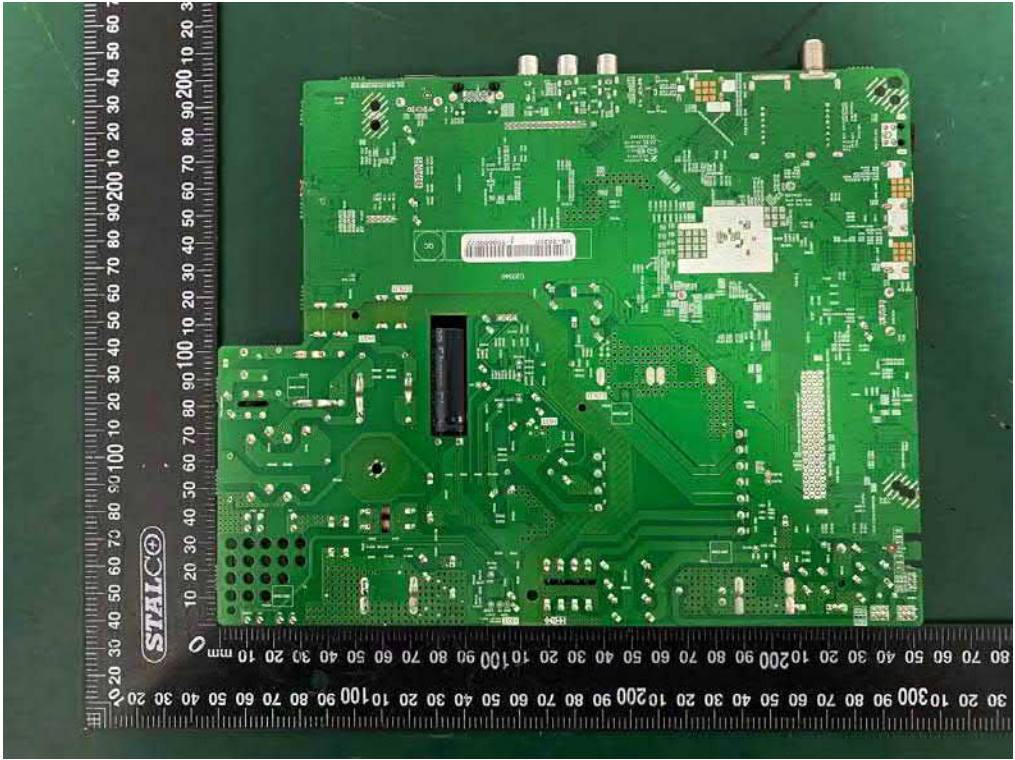
Internal Photos
M/N: RWOSU5049



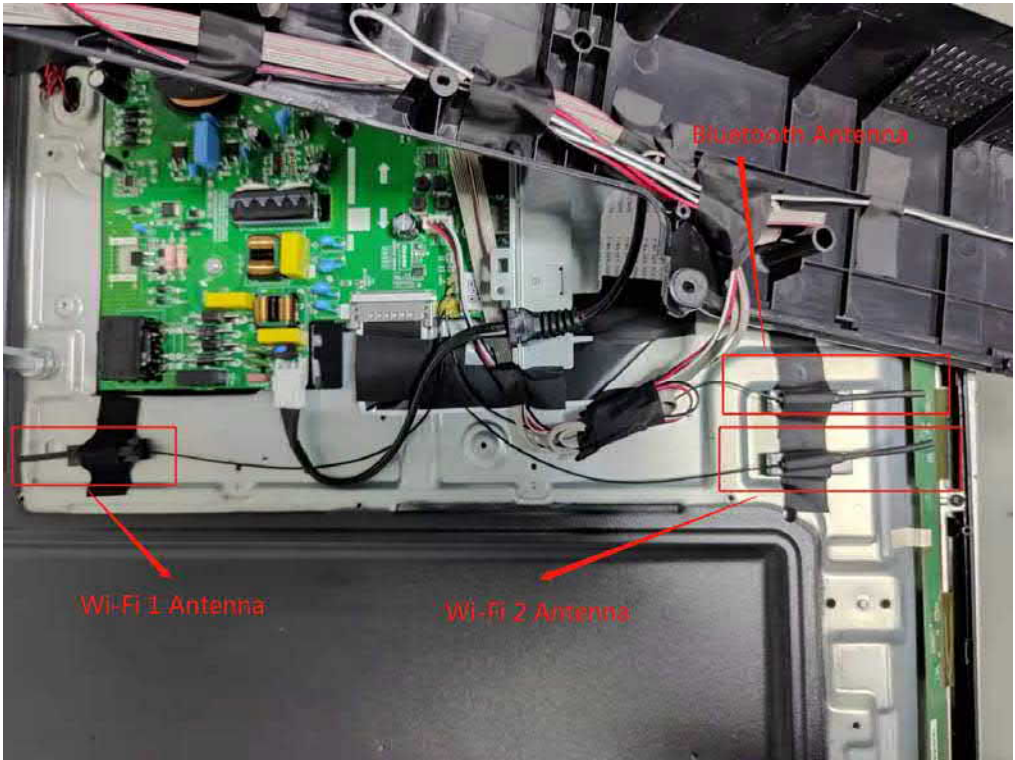
Internal Photos
M/N: RWOSU5049



Internal Photos
M/N: RWOSU5049



Internal Photos
M/N: RWOSU5049



End of Test Report