

FCC PART 15E TEST REPORT FOR CERTIFICATION
On Behalf of

WOW Technologies (Singapore) Pte Ltd

Shockwafe Sound Bar with Wireless Subwoofer

Model Number: ULTRA 9.2 eARC

FCC ID: 2AGB6-SWEARC

Prepared for:	WOW Technologies (Singapore) Pte Ltd
	19 Ubi Crescent Singapore 408577
Prepared By:	EST Technology Co., Ltd.
	Chilingxiang, Qishantou, Santun, Houjie, Dongguan, Guangdong, China
	Tel: 86-769-83081888-808

Report Number:	ESTE-R2107186
Date of Test:	Jun. 24~Jul. 29, 2021
Date of Report:	Jul. 30, 2021

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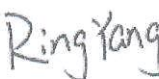
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EST Technology Co., Ltd.

Applicant:	WOW Technologies (Singapore) Pte Ltd		
Address:	19 Ubi Crescent Singapore 408577		
Manufacturer:	WOW Technologies (Singapore) Pte Ltd		
Address:	19 Ubi Crescent Singapore 408577		
Factory:	Eastech (Huizhou) Co., Ltd.		
Address:	Dong Fong District, Xin Xu, Hui Yang, Hui Zhou City, Guang Dong 516226, China		
E.U.T:	Shockwafe Sound Bar with Wireless Subwoofer		
Model Number:	ULTRA 9.2 eARC		
Power Supply:	DC 19V From Adapter Input AC 100-240V, 50/60Hz		
Trade Name:	Nakamichi	Serial No.:	-----
Date of Receipt:	Jun. 24, 2021	Date of Test:	Jun. 24~Jul. 29, 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. Date: Jul. 30, 2021		
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	:	2AGB6-SWEARC
Product Name	:	Shockwafe Sound Bar with Wireless Subwoofer
Model Number	:	ULTRA 9.2 eARC
Software Version	:	ADK QCC512X QCC302X WIN 6.4.2.26(6.4.2)
Hardware Version	:	APESB92SS
Operation frequency	:	U-NII-1: 5150 MHz~5250 MHz U-NII-3: 5725 MHz~5850 MHz
Number of channel	:	6
Modulation	:	GFSK
Transmit Data Rate	:	100Kbps
Channels Spacing	:	20MHz
Transmit Power	:	13.77dBm
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)
A	-	-	PCB	-	0
B	-	-	PCB	-	0

Remark:

(1) The EUT can work as CDD mode, and can operate with one spatial stream.

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

$$\text{Directional gain} = 0\text{dBi} + 10 \times \log(2/1)\text{dB} = 3.01\text{dBi} < 6\text{dBi}$$

So, the output power limit and power spectral density no need to be reduced.

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

TX Mode \ ANT No.	SISO Configuration	MIMO Configuration
5150 MHz~5250 MHz	/	ANT A+ANT B
5725 MHz~5850 MHz	/	ANT A+ANT B

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)(8)	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 $k=2$.

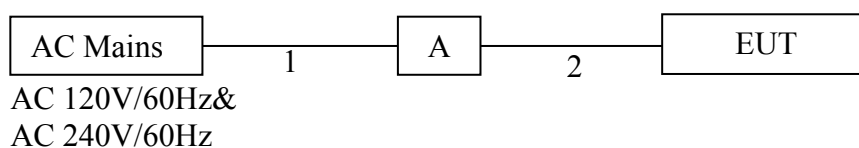
2.4. Assistant equipment used for test

Item	Equipment	Brand	Model Name/Type No.	FCC ID	Series No.
A	Adapter	Nakamichi	DYS602-190342W	-	-

Item	Shielded Type	Ferrite Core	Length	Note
1	NO	NO	1.4m	AC Cable
1	NO	NO	1.5m	DC 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.



(EUT: Shockwafe Sound Bar with Wireless Subwoofer)

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	TX	1/2/3/4/5/6	GFSK	100Kbps
26dB Bandwidth	TX	1/2/3/4/5/6	GFSK	100Kbps
99% Occupied Bandwidth	TX	1/2/3/4/5/6	GFSK	100Kbps
Maximum Conducted Output Power	TX	1/2/3/4/5/6	GFSK	100Kbps

Peak Power Spectral Density	TX	1/2/3/4/5/6	GFSK	100Kbps
Unwanted Emissions and Band Edge(Above 1GHz)	TX	1/2/3/4/5/6	GFSK	100Kbps
Unwanted Emissions Below 1GHz	TX	1	GFSK	100Kbps
Frequency Stability	Unmodulation	1/4	N/A	N/A
AC Power Line Conducted Emissions	TX	1	GFSK	100Kbps

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	TX	1	5180
		2	5210
		3	5240
U-NII-3	TX	4	5736
		5	5762
		6	5814

2.8. Power Setting of Test Software

Software Name	N/A		
Frequency(MHz)	5180	5210	5240
Setting	DEFAULT	DEFAULT	DEFAULT
Frequency(MHz)	5736	5762	5814
Setting	DEFAULT	DEFAULT	DEFAULT

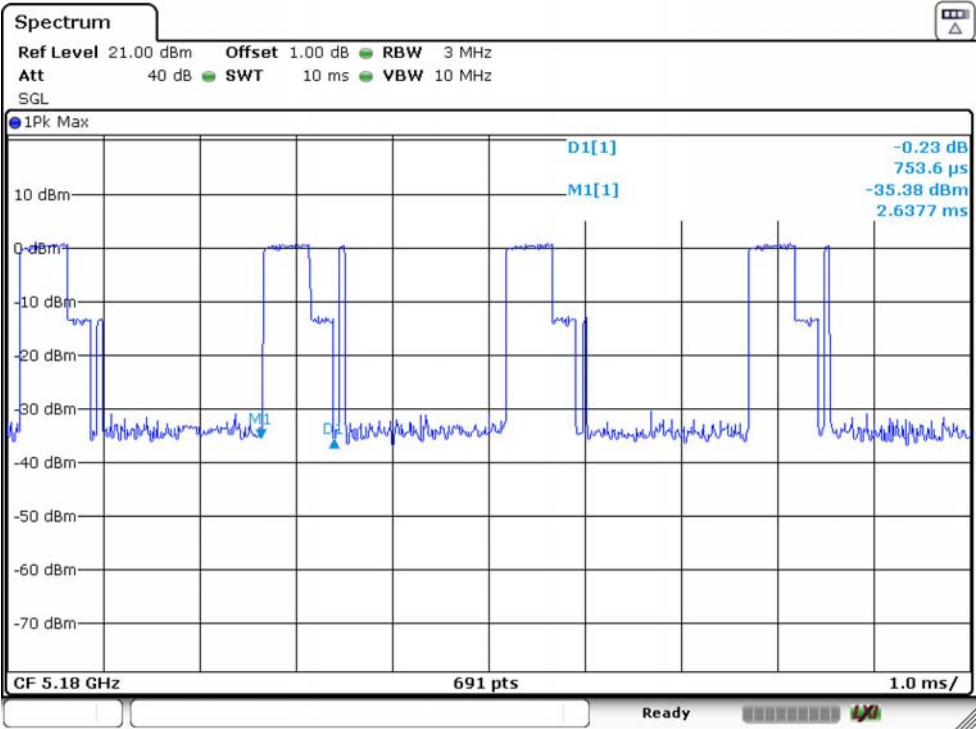
2.9. Duty Cycle of Test Signal

Temperature	24.1℃	Relative Humidity		60%	Test Voltage	AC 120V/60Hz
Mode	Frequency (MHz)	On time (ms)	Total Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T (Hz)
TX	5180	0.84060	2.52170	33.33	4.77	1190

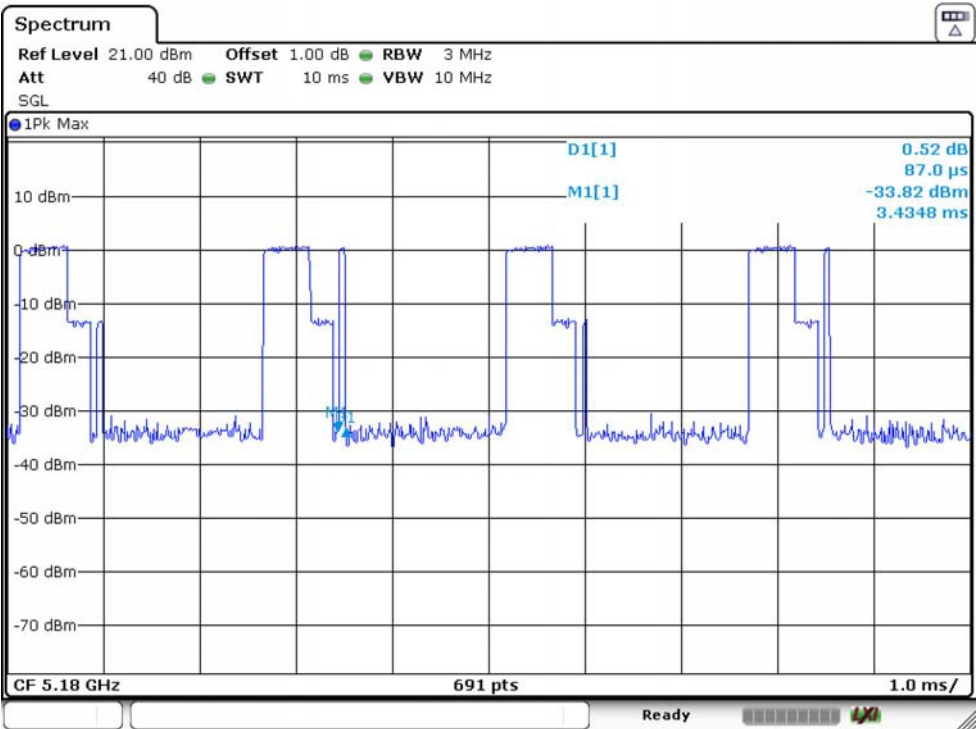
Note:

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.

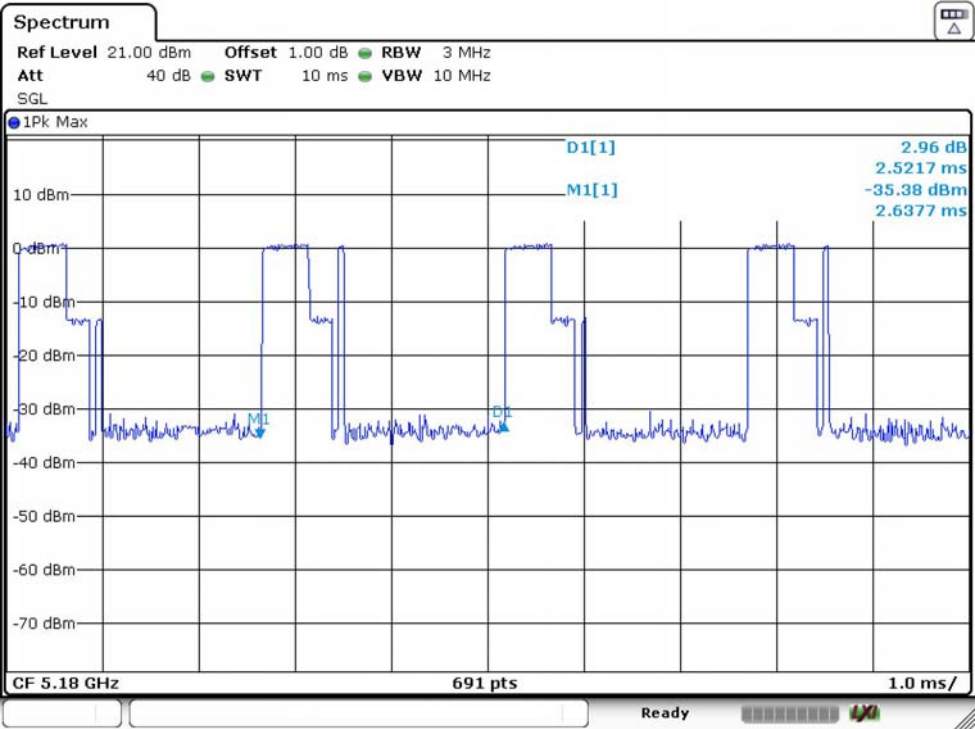
On Time 1



On Time 2



Total Time



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

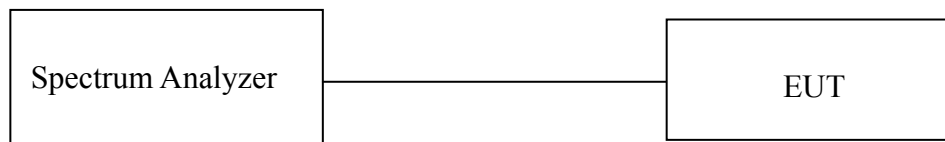
For connect EUT antenna terminal test						
Equipment	Manufacturer	Model No.	Serial No.	Calibration Body	Last Cal.	Next Cal.
TS 8997	Rohde & Schwarz	/	/	/	/	/
Open Switch and Control Unit	Rohde & Schwarz	OSP-B157WB	EST-E036	LISAI	June 13,21	1 Year
Signal and Spectrum Analyzer	Rohde & Schwarz	FSV	EST-E037	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 :

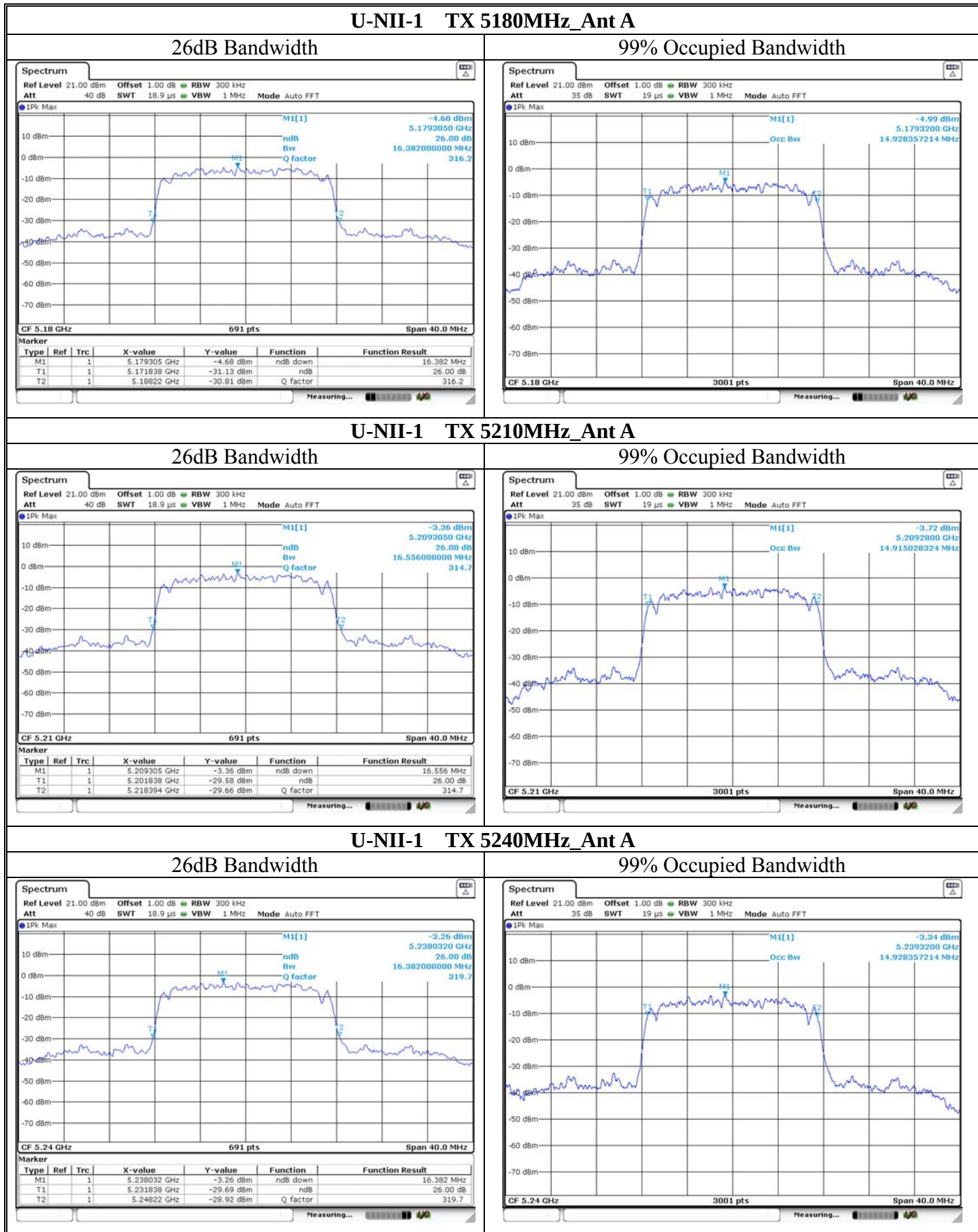
- Connect EUT antenna terminal to the spectrum analyzer with RF cable.
- Spectrum analyzer setting parameters in accordance with section 3.3.
- Set the EUT transmit continuously with maximum output power.
- Allow trace to stabilize, use the 99% power bandwidth function to measure bandwidth.
- Repeat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

3.5. Test Result

Temperature		24.1 °C	Relative Humidity				60%		Test Voltage		AC 120V/60Hz	
UNII BAND	Test Mode	Frequency (MHz)	26dB Bandwidth (MHz)		99% Occupied Bandwidth (MHz)		Output Power Limit (W)		Output Power Limit (dBm)		Output Power Limit (W)	Output Power Limit (dBm)
			Ant A	Ant B	Ant A	Ant B	Ant A	Ant B	Ant A	Ant B		
U-NII-1	TX	5180	16.382	16.382	14.928	14.915	0.2500	0.2500	23.98	23.98	0.2500	23.98
		5210	16.556	16.440	14.915	14.902	0.2500	0.2500	23.98	23.98	0.2500	23.98
		5240	16.382	16.440	14.928	14.955	0.2500	0.2500	23.98	23.98	0.2500	23.98

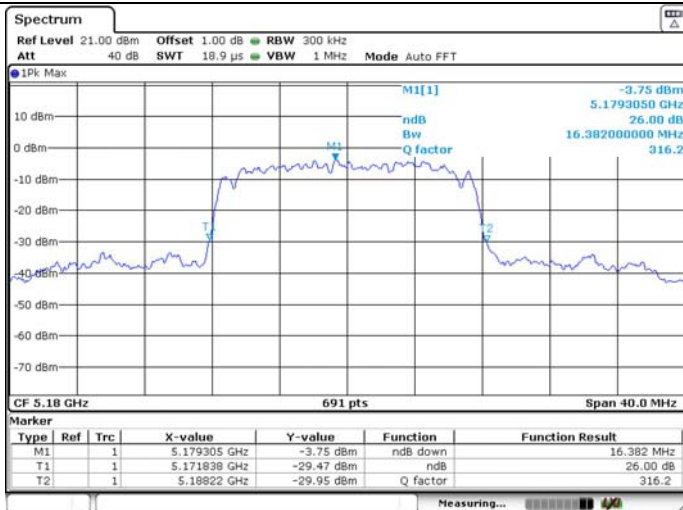
Temperature		24.1 °C	Relative Humidity		60%		Test Voltage		AC 120V/60Hz	
UNII BAND	Test Mode	Frequency (MHz)	6dB Bandwidth (MHz)		99% Occupied Bandwidth (MHz)		6dB BW Min Limit (MHz)	Result		
			Ant A	Ant B	Ant A	Ant B				
U-NII-3	TX	5736	11.036	11.010	13.489	13.436	0.5	PASS		
		5762	11.010	11.063	13.622	13.489	0.5	PASS		
		5814	11.050	11.063	13.595	13.462	0.5	PASS		

3.6. Test Result

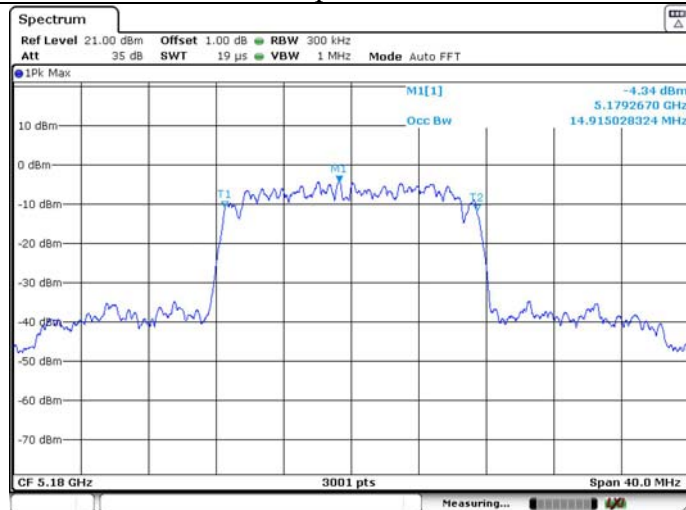


U-NII-1 TX 5180MHz_Ant B

26dB Bandwidth



99% Occupied Bandwidth

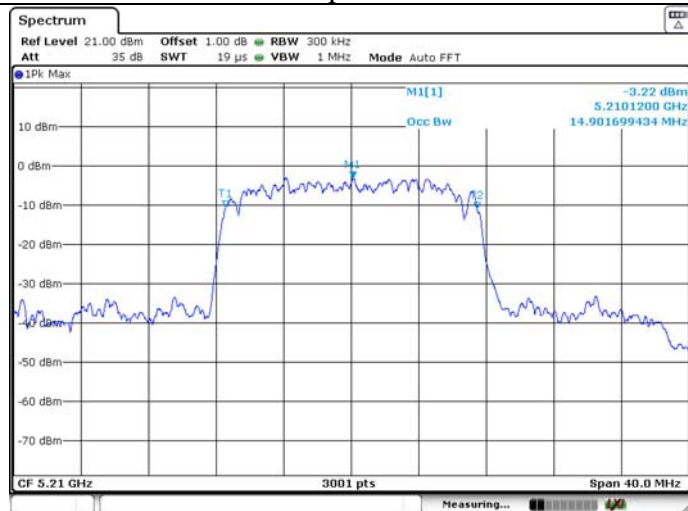


U-NII-1 TX 5210MHz_Ant B

26dB Bandwidth



99% Occupied Bandwidth

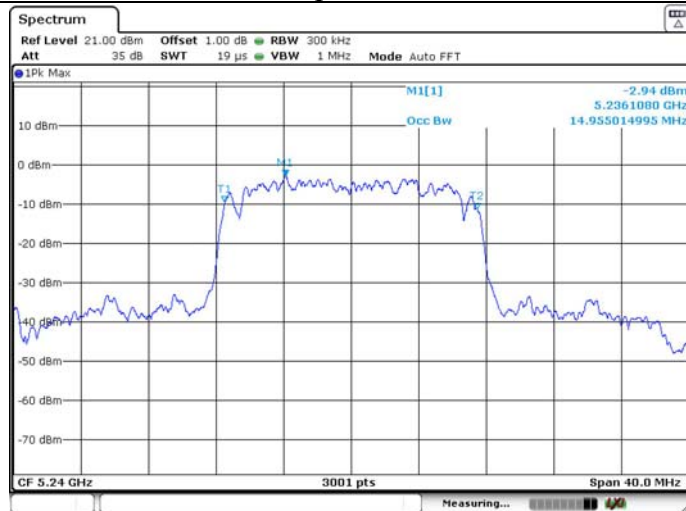


U-NII-1 TX 5240MHz_Ant B

26dB Bandwidth

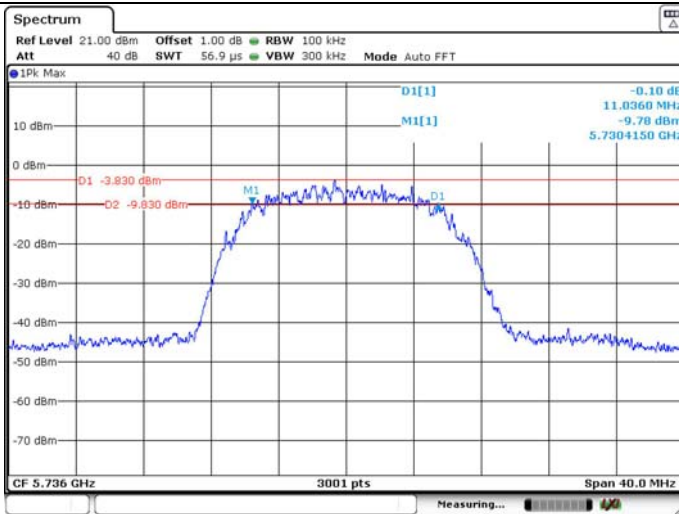


99% Occupied Bandwidth

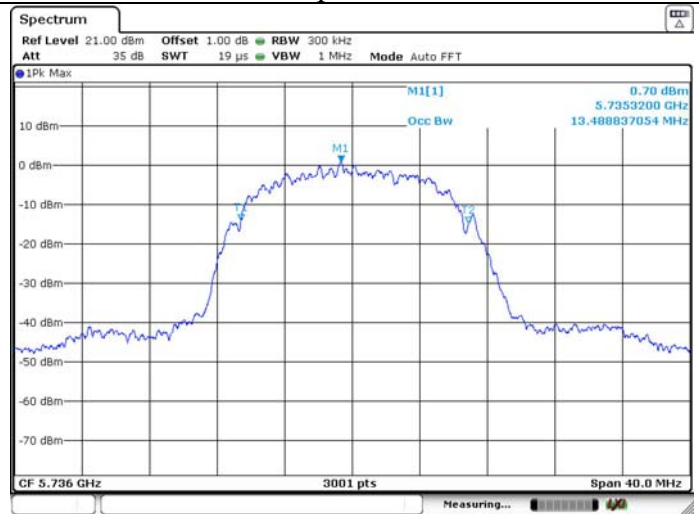


U-NII-3 TX 5736MHz_Ant A

6dB Bandwidth

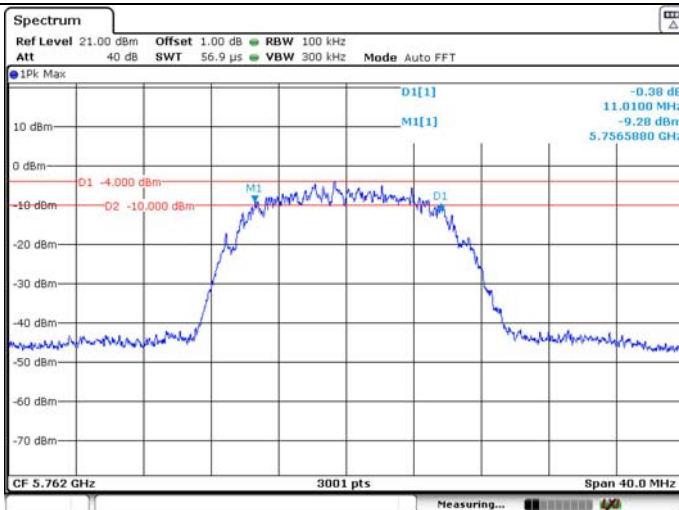


99% Occupied Bandwidth



U-NII-3 TX 5762MHz_Ant A

6dB Bandwidth

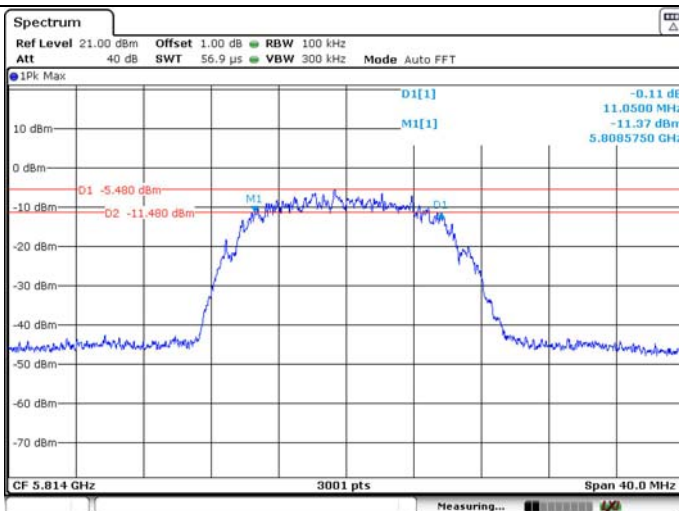


99% Occupied Bandwidth



U-NII-3 TX 5814MHz_Ant A

6dB Bandwidth

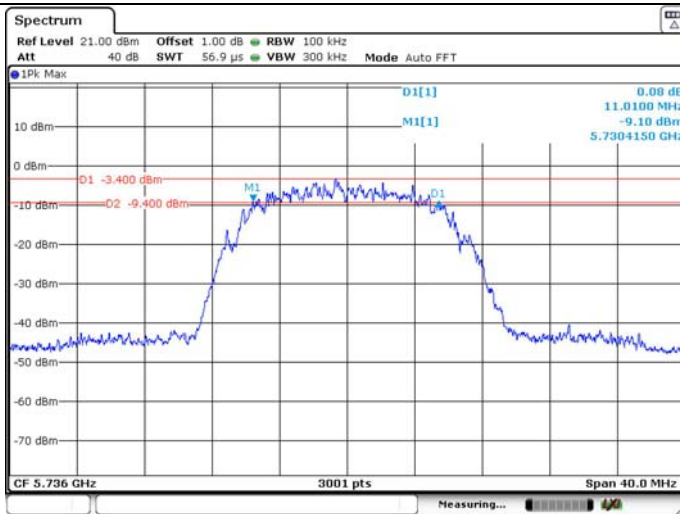


99% Occupied Bandwidth



U-NII-3 TX 5736MHz_Ant B

6dB Bandwidth

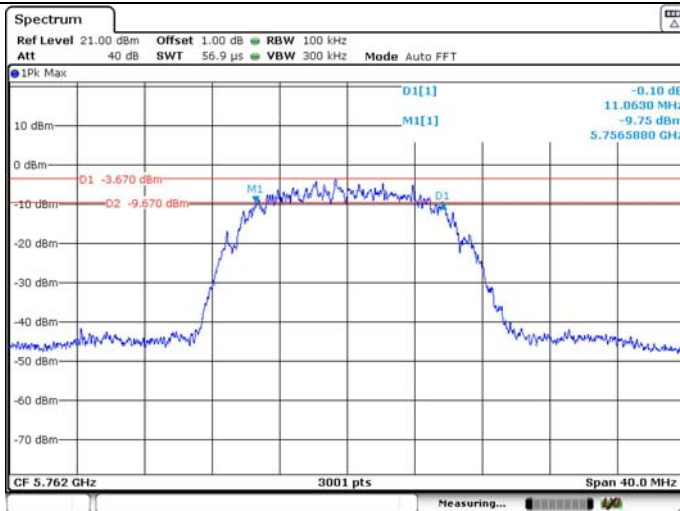


99% Occupied Bandwidth

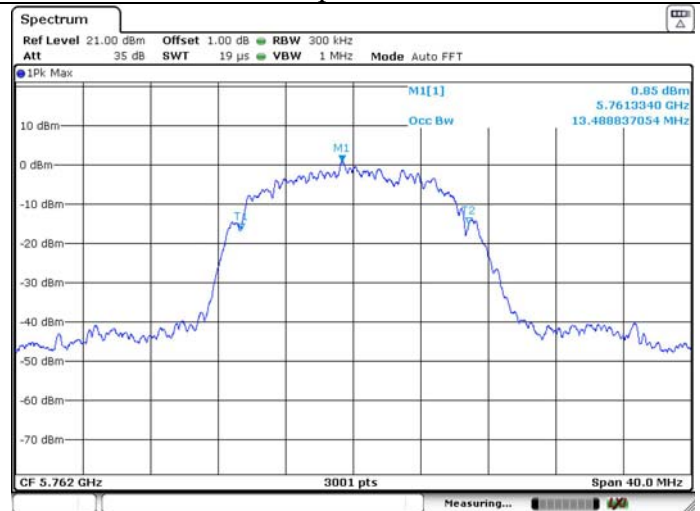


U-NII-3 TX 5762MHz_Ant B

6dB Bandwidth

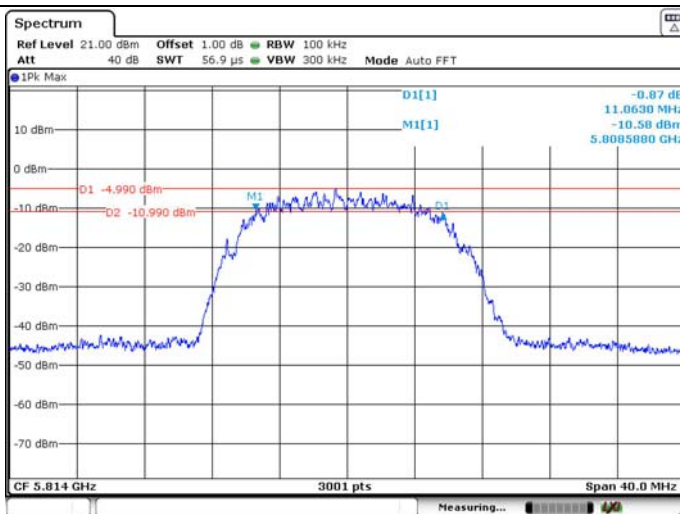


99% Occupied Bandwidth

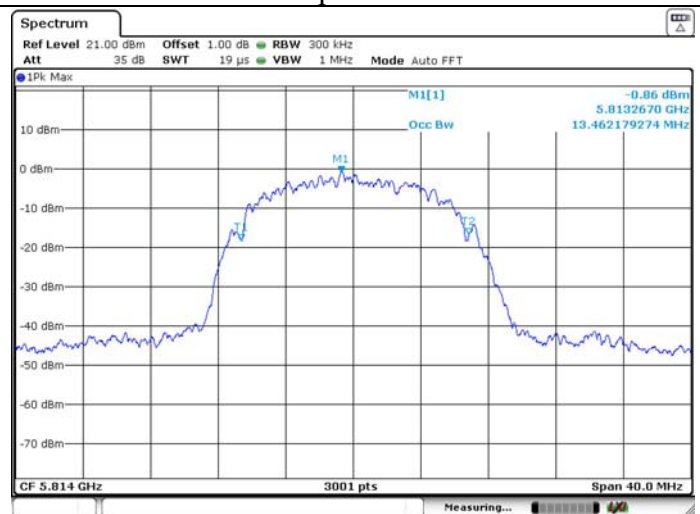


U-NII-3 TX 5814MHz_Ant B

6dB Bandwidth



99% Occupied Bandwidth



4. MAXIMUM CONDUCTED OUTPUT POWER

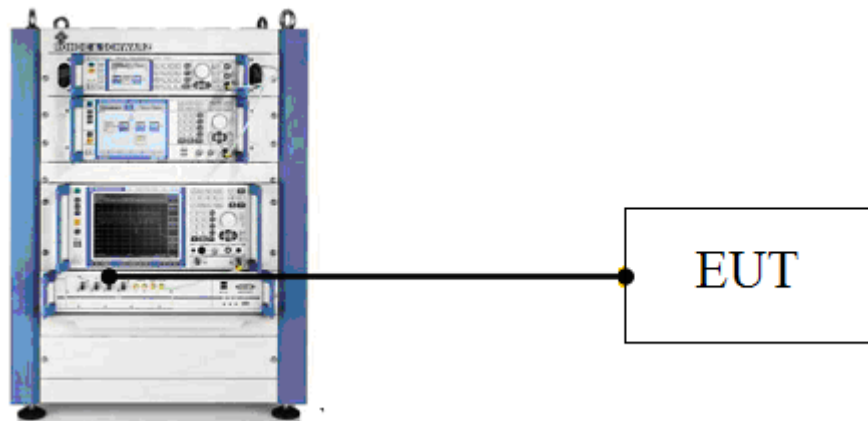
4.1. Limit

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		24.1℃	Relative Humidity		60%	Test Voltage		AC 120V/60Hz	
UNII BAND	Test Mode	Frequency (MHz)	Conducted Output Power (dBm)		Total Conducted Output Power (W)	Total Conducted Output Power (dBm)	Limit (dBm)	Limit (W)	Result
			Ant A	Ant B					
U-NII-1	TX	5180	8.03	7.10	0.01148	10.60	23.98	0.2500	PASS
		5210	9.19	8.33	0.01511	11.79	23.98	0.2500	PASS
		5240	9.34	9.27	0.01704	12.32	23.98	0.2500	PASS
U-NII-3	TX	5736	10.88	7.56	0.01795	12.54	30.00	1.0000	PASS
		5762	10.87	10.64	0.02381	13.77	30.00	1.0000	PASS
		5814	9.50	9.38	0.01758	12.45	30.00	1.0000	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	$\geq 2 \times \text{SPAN}/\text{RBW}$
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		24.1℃	Relative Humidity		60%	Test Voltage	AC 120V/60Hz	
UNII BAND	Test Mode	Frequency (MHz)	Power Spectral Density (dBm/MHz)		Duty Factor (dB)	Total Power Spectral Density (dBm/MHz)	Limit (dBm/MHz)	Result
			Ant A	Ant B				
U-NII-1	TX	5180	-0.70	0.46	4.77	7.70	11.00	PASS
		5210	0.04	0.73	4.77	8.18	11.00	PASS
		5240	0.62	1.21	4.77	8.71	11.00	PASS
UNII BAND	Test Mode	Frequency (MHz)	Power Spectral Density (dBm/500KHz)		Duty Factor (dB)	Total Power Spectral Density (dBm/500KHz)	Limit (dBm/500KHz)	Result
			Ant A	Ant B				
U-NII-3	TX	5736	1.97	2.65	4.77	10.10	30.00	PASS
		5762	1.14	2.16	4.77	9.46	30.00	PASS
		5814	0.05	1.00	4.77	8.33	30.00	PASS

U-NII-1 TX 5180MHz

ANT A

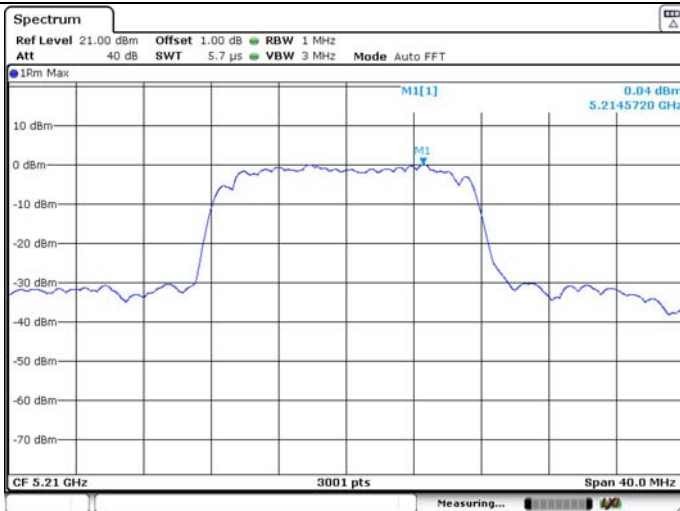


ANT B

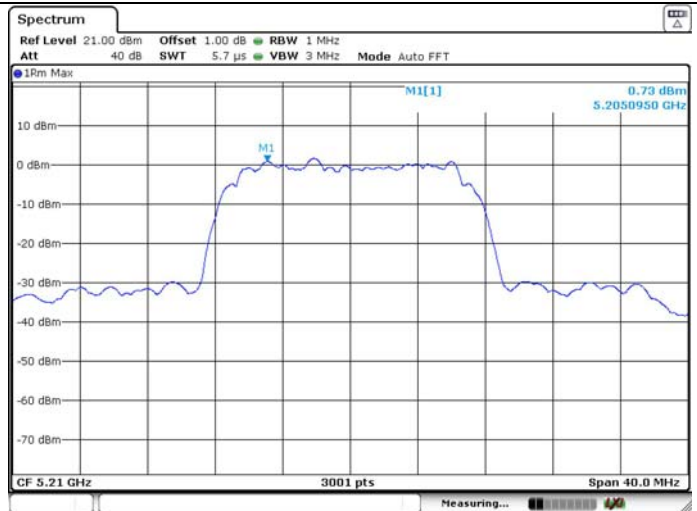


U-NII-1 TX 5210MHz

ANT A



ANT B



U-NII-1 TX 5240MHz

ANT A



ANT B



