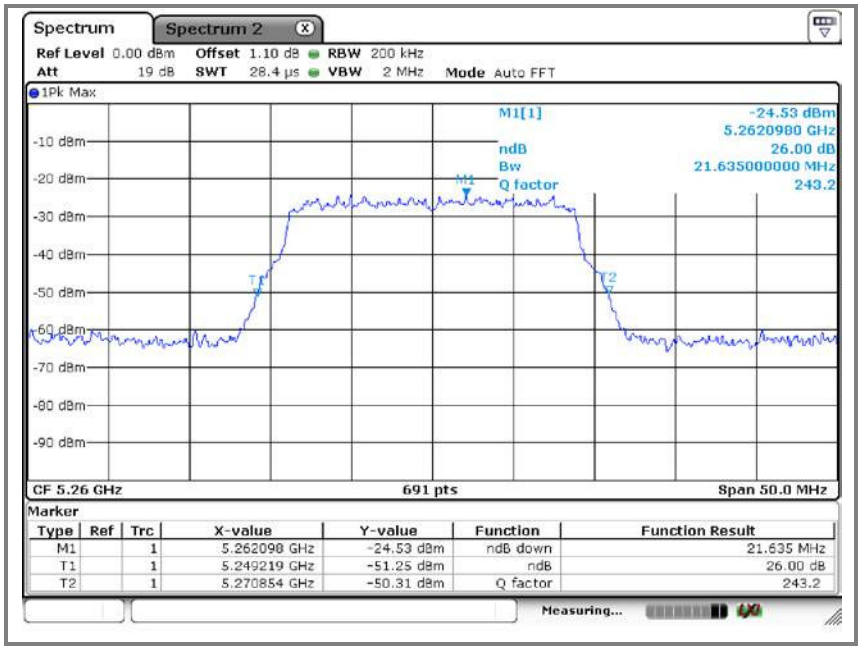
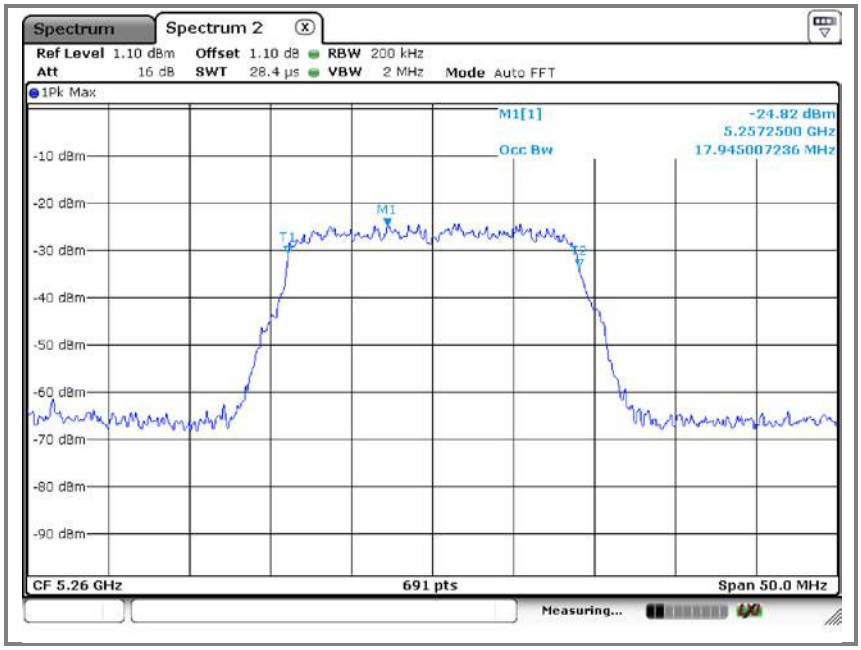
Operation mode: U-NII-2A

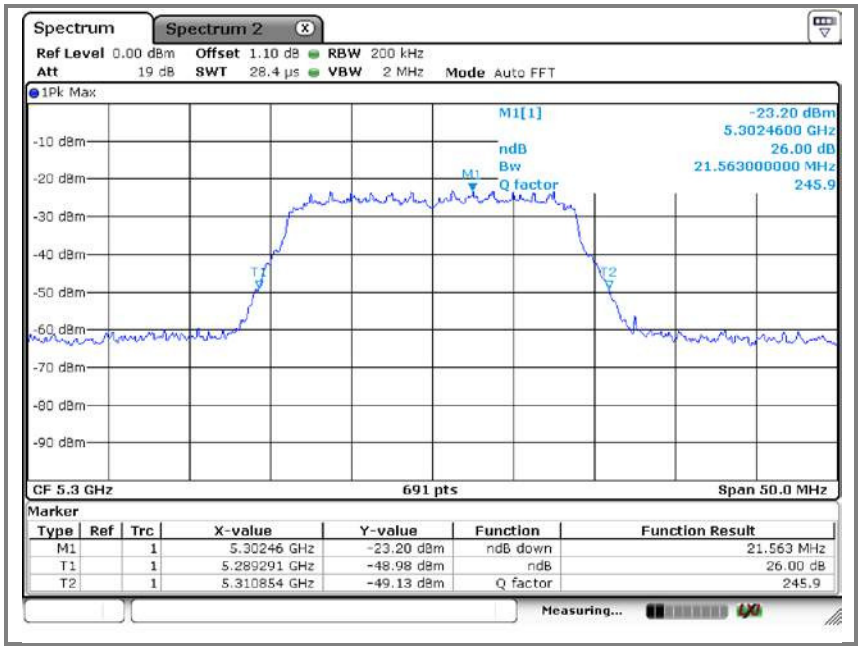
A. Low channel(5260 ㎒)- 26 ㏈ bandwidth



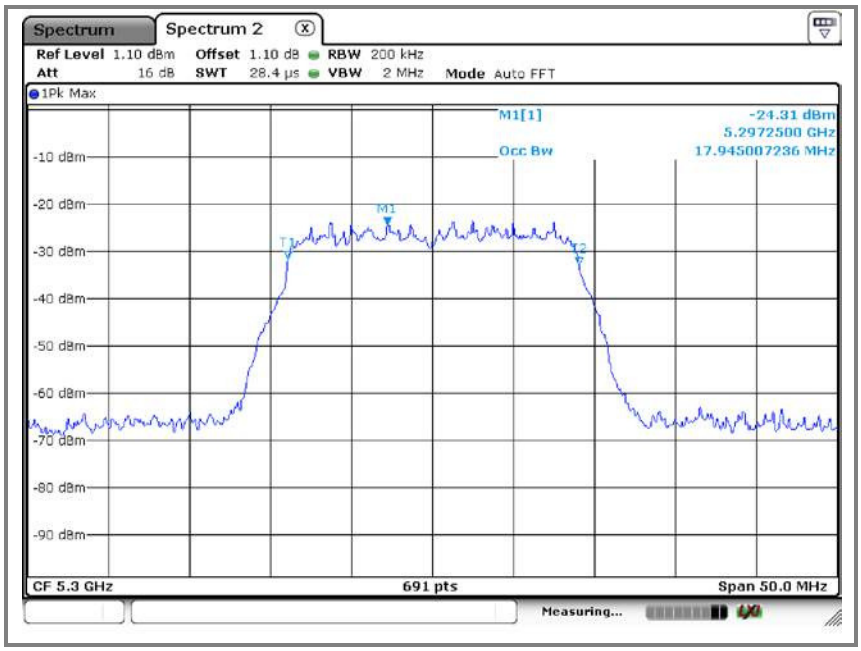
A. Low channel(5260 ㎒)– 99% bandwidth



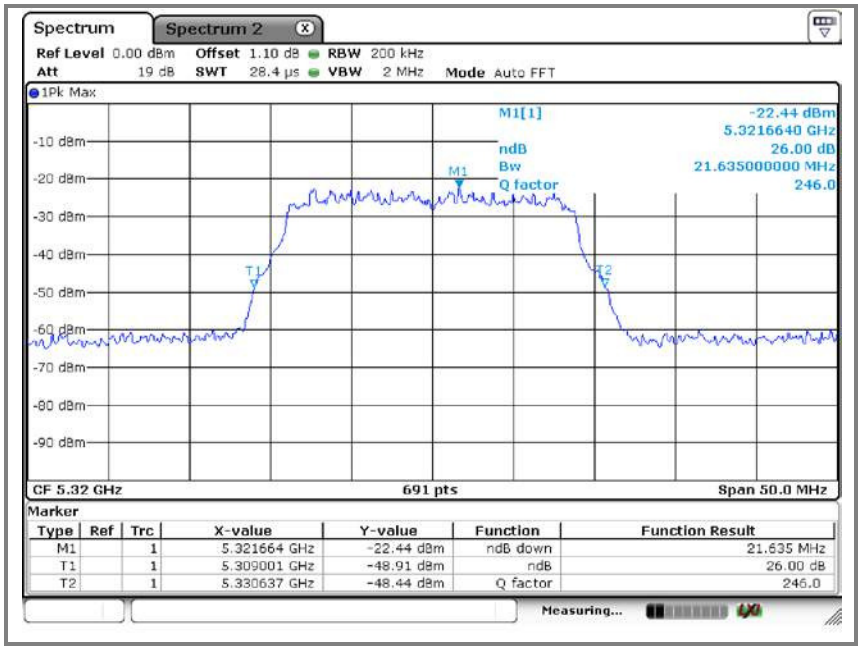
B. Middle channel(5300 ㎒)- 26 ㏈ bandwidth



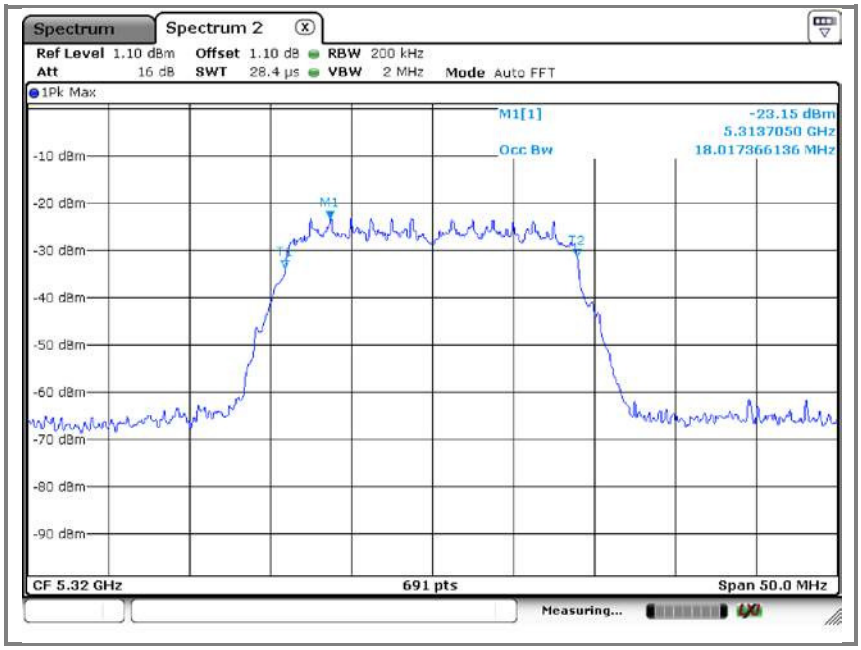
B. Middle channel(5300 ㎒)– 99% bandwidth



C. High channel(5320 ㎒)- 26 ㏈ bandwidth

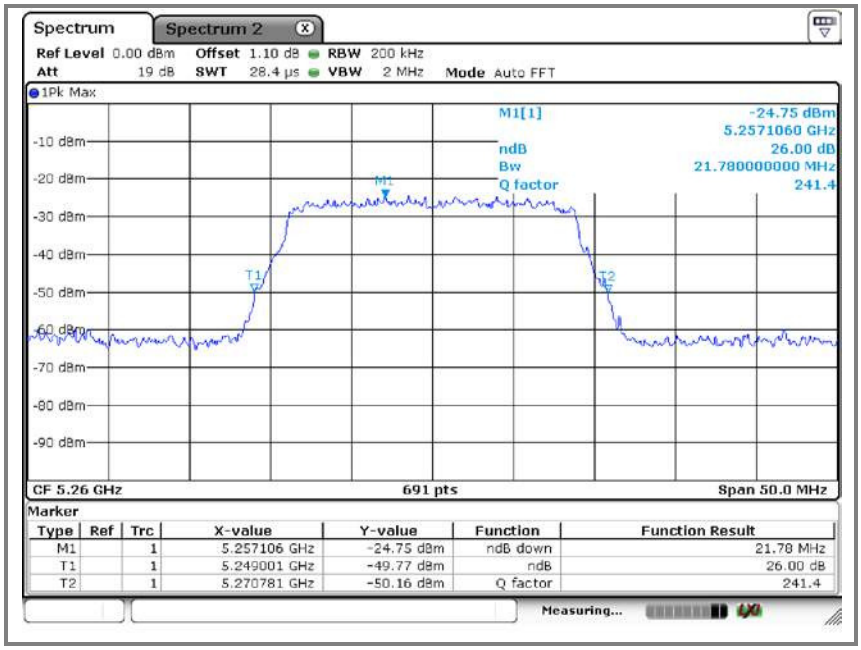


C. High channel(5320 ㎒)– 99% bandwidth

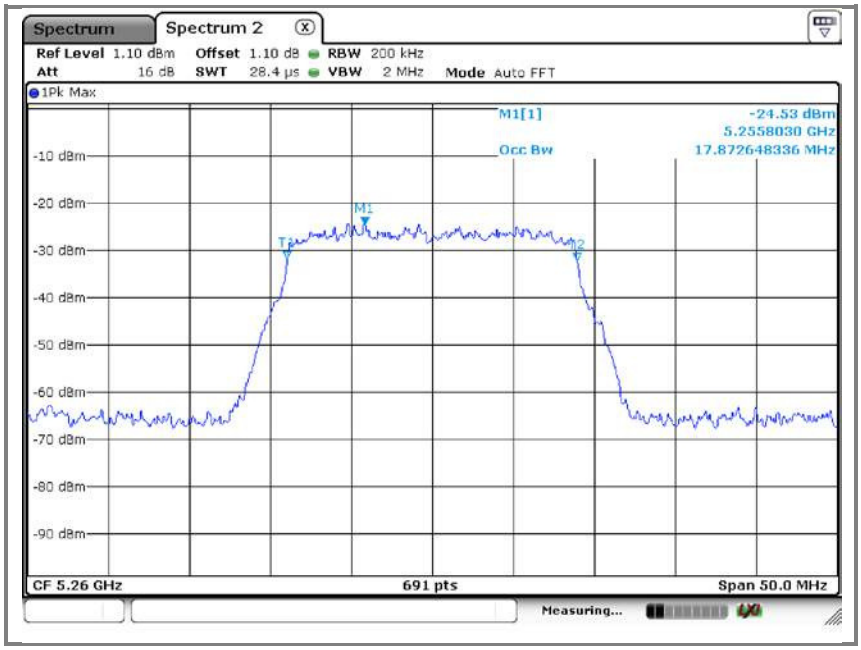


Operation mode: U-NII-2A(n_HT20)

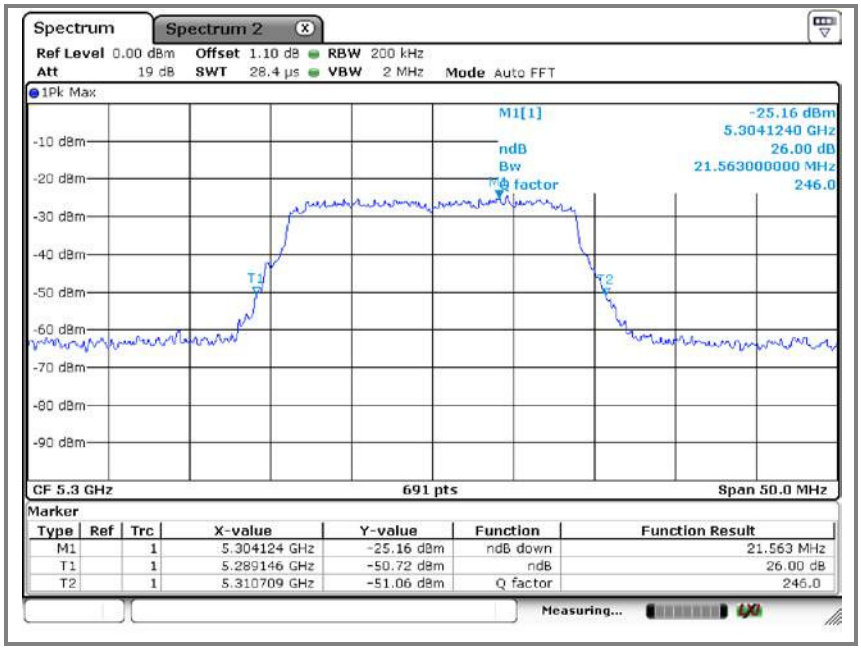
A. Low channel(5260 ㎒)- 26 ㏈ bandwidth



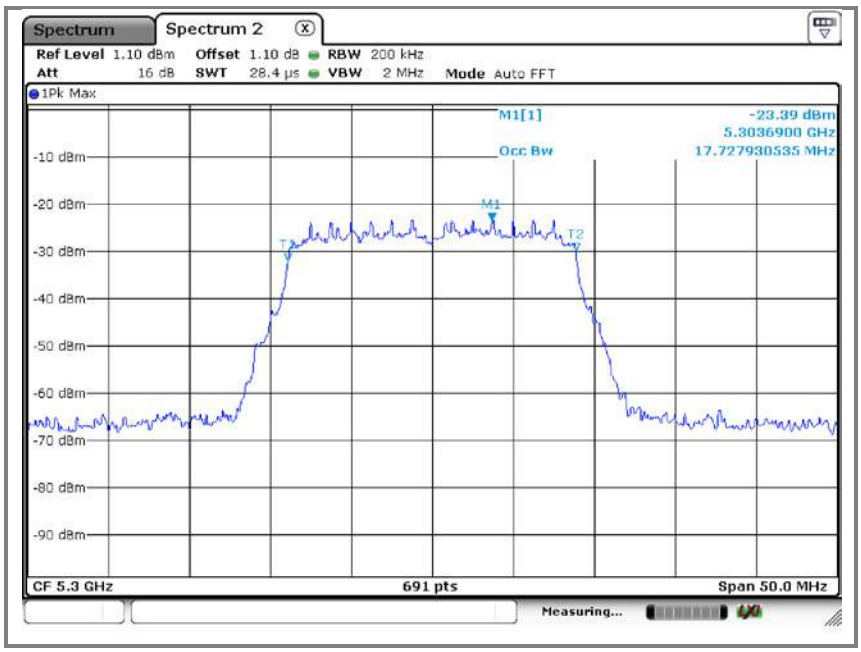
A. Low channel(5260 ㎒)– 99% bandwidth



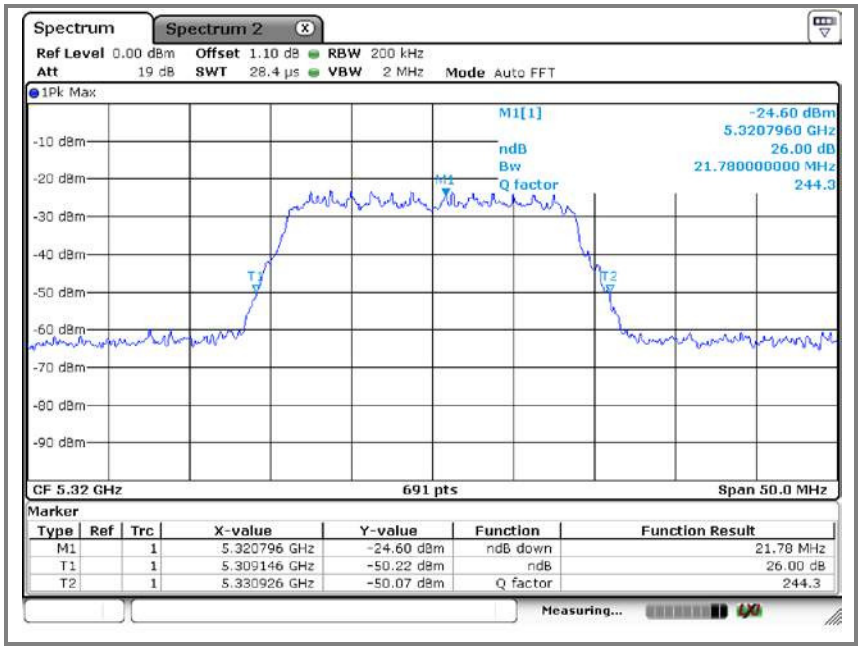
B. Middle channel(5300 ㎒)- 26 ㏈ bandwidth



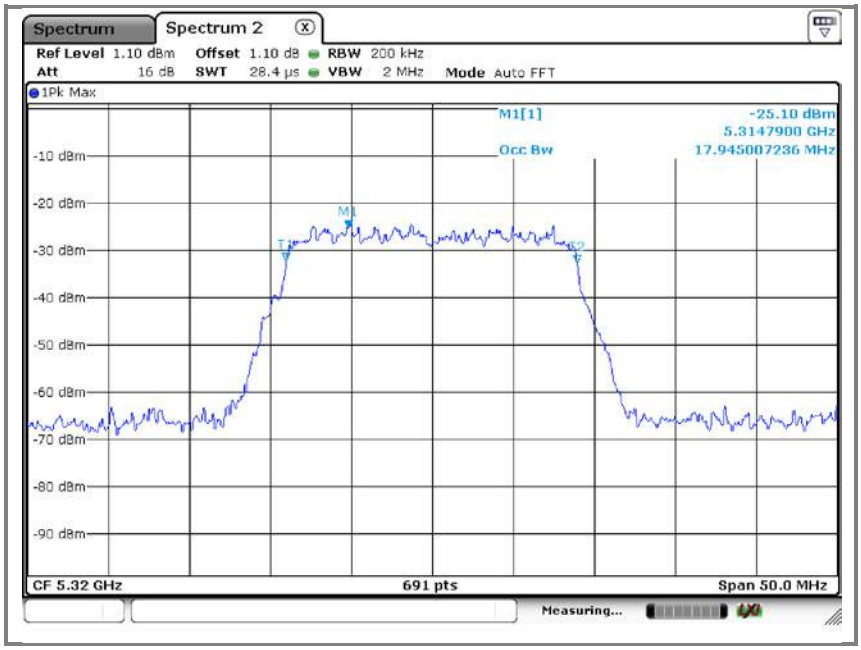
B. Middle channel(5300 ㎒)– 99% bandwidth



C. High channel(5320 ㎒)- 26 ㏈ bandwidth

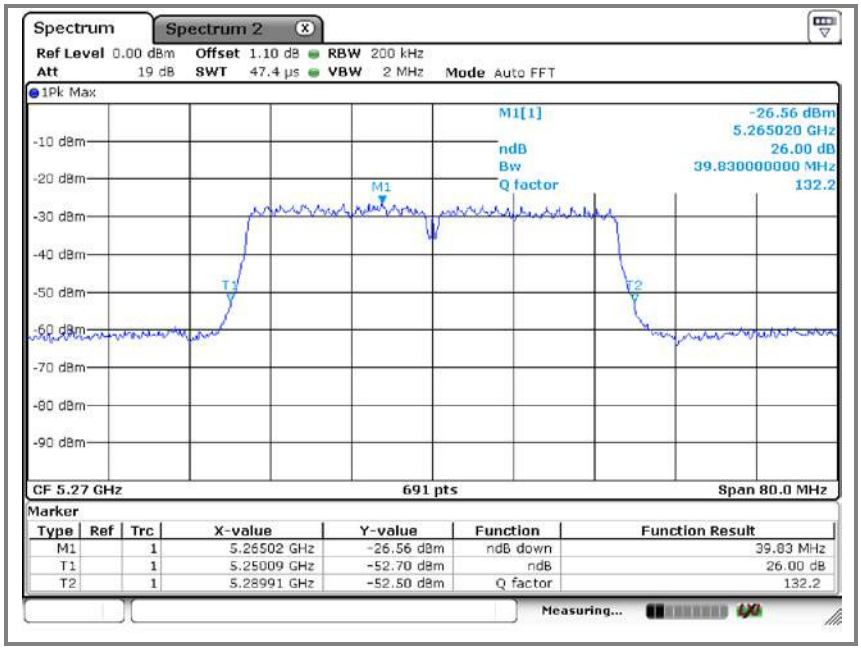


C. High channel(5320 ㎒)– 99% bandwidth

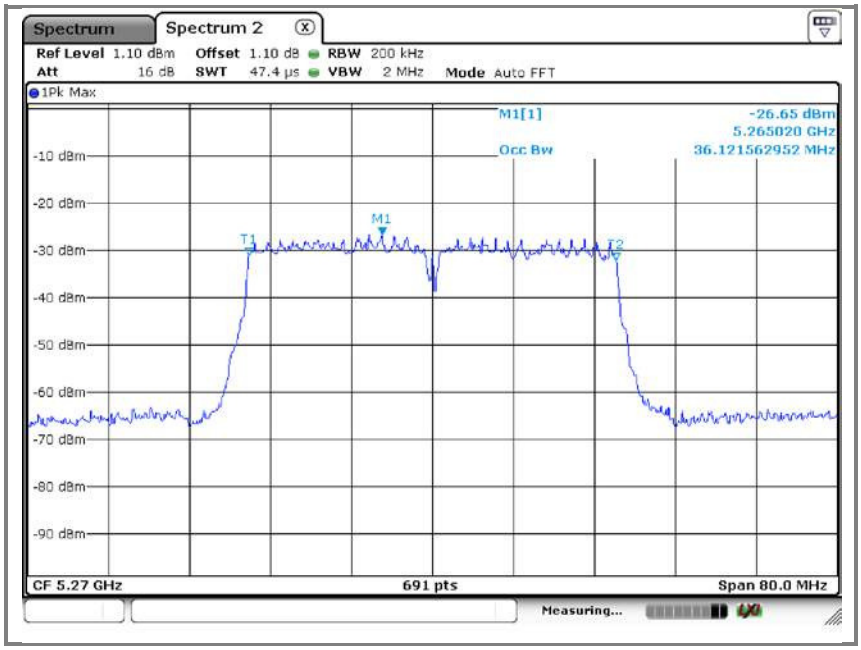


Operation mode: U-NII-2A(n_HT40)

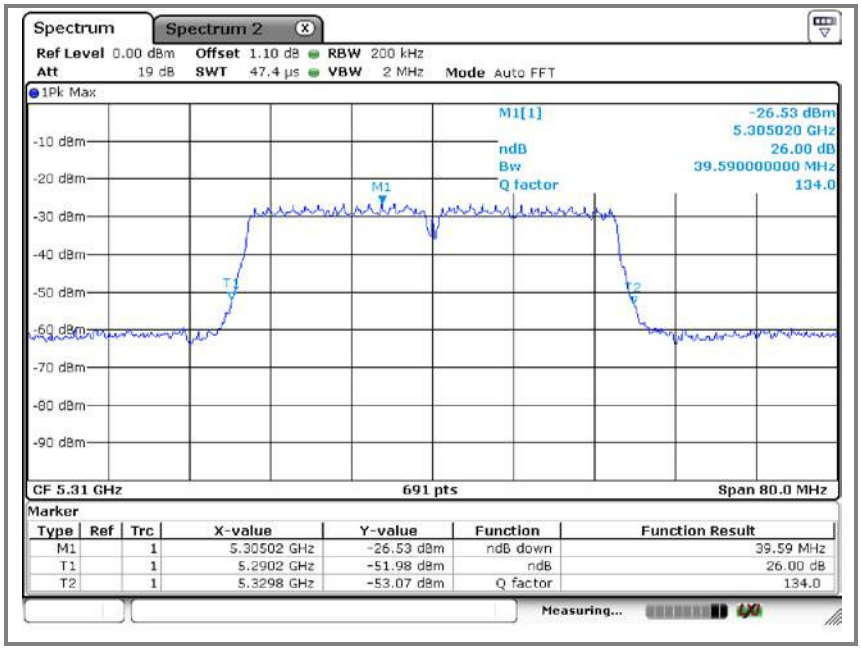
A. Low channel(5270 ㎒)- 26 ㏈ bandwidth



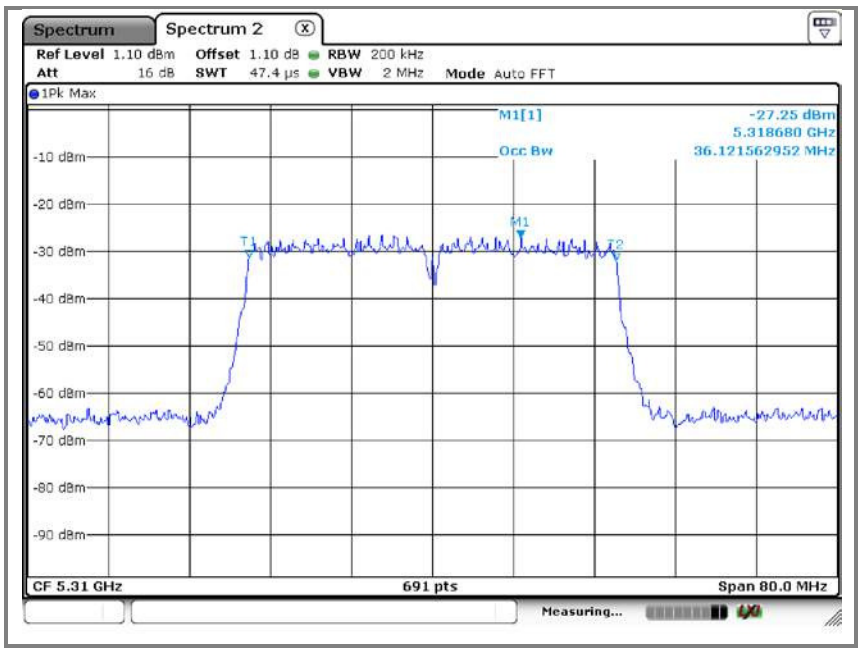
A. Low channel(5270 ㎒)– 99% bandwidth



B. High channel(5310 ㎒)- 26 ㏈ bandwidth

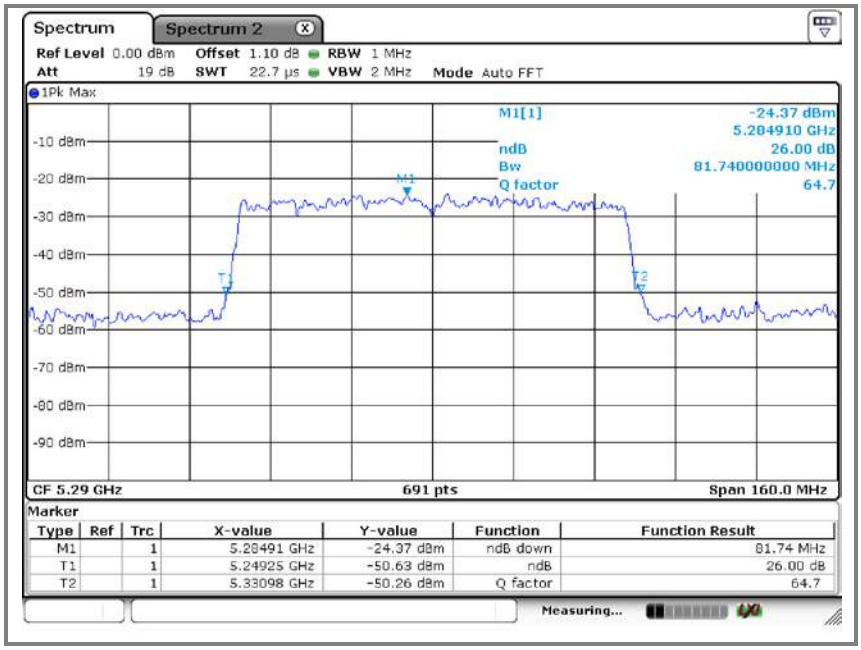


B. High channel(5310 ㎒)– 99% bandwidth

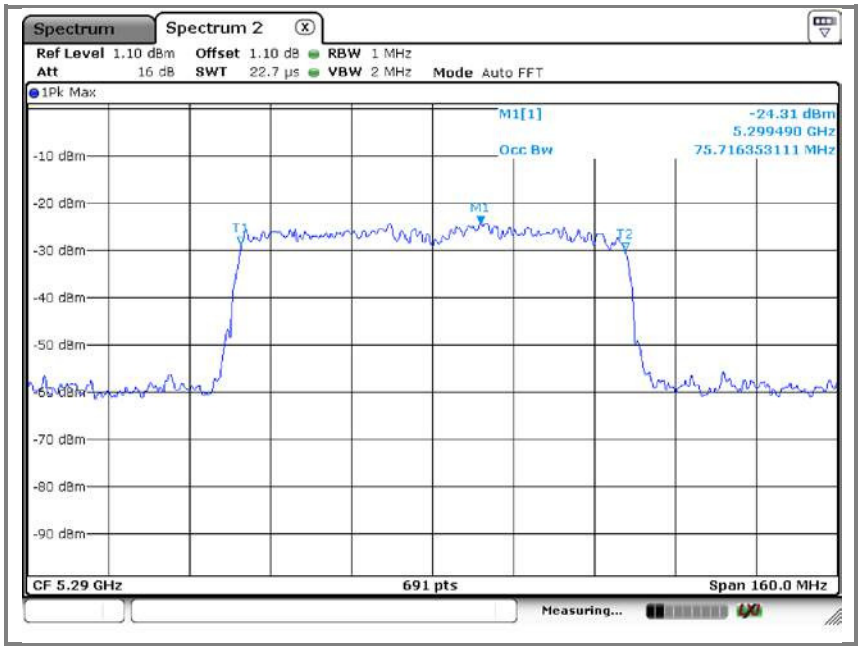


Operation mode: U-NII-2A(VHT80)

A. Low channel(5290 ㎒)- 26 ㏈ bandwidth

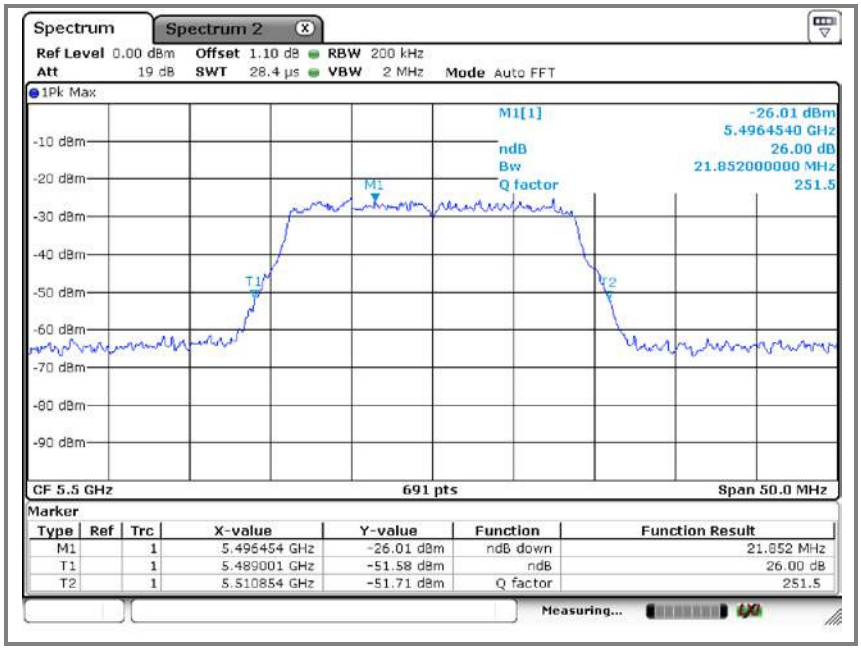


A. Low channel(5290 ㎒)– 99% bandwidth

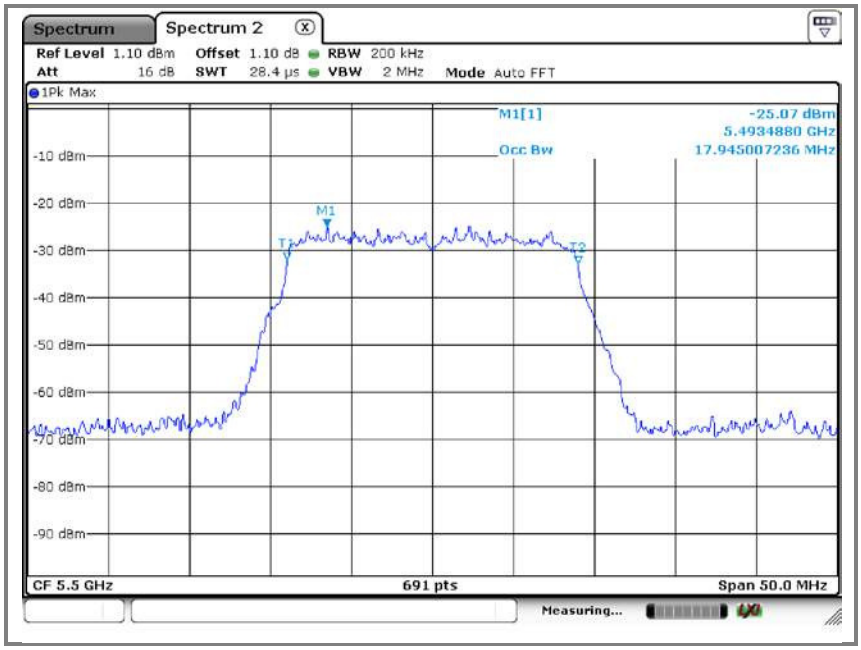


Operation mode: U-NII-2C

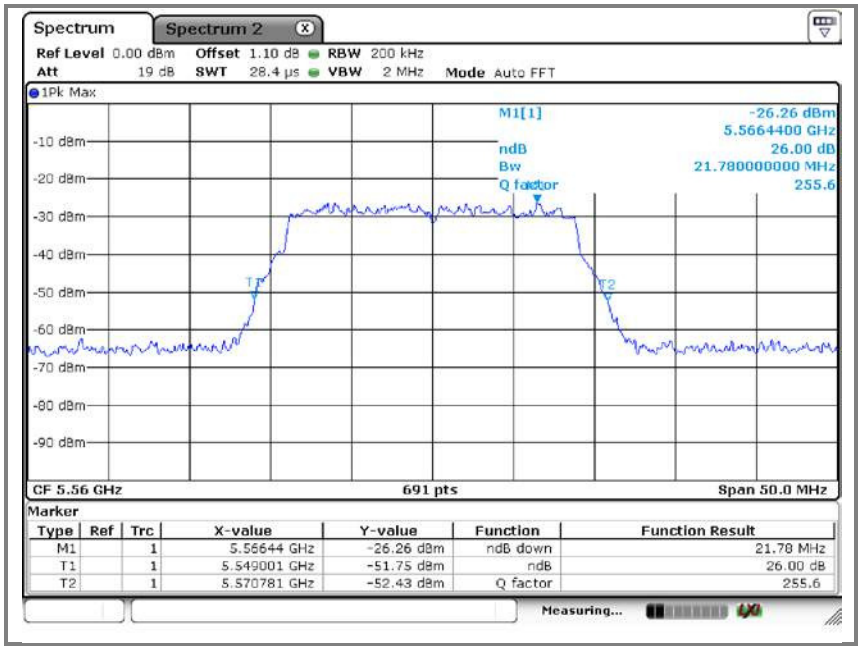
A. Low channel(5500 ㎒)- 26 ㏈ bandwidth



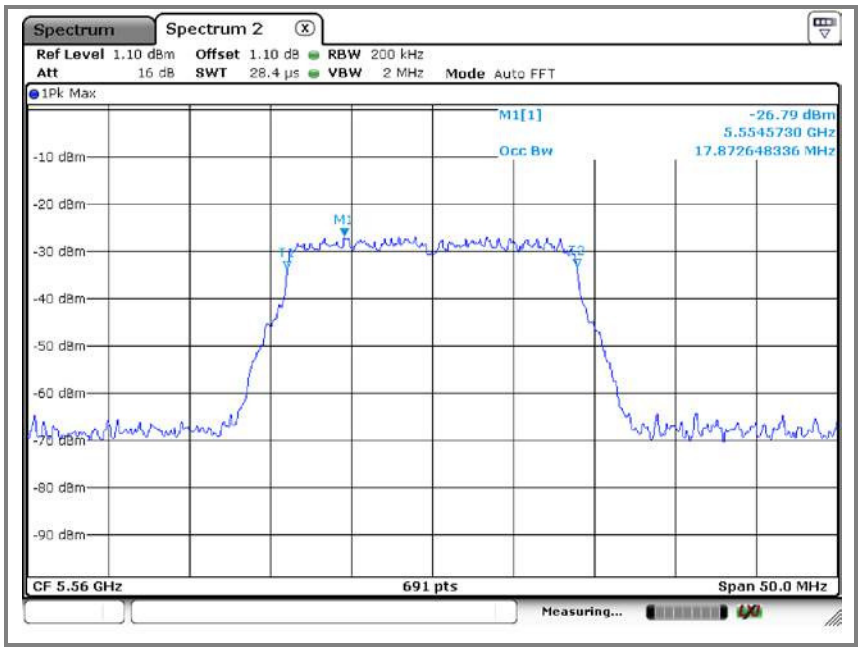
A. Low channel(5500 ㎒)– 99% bandwidth



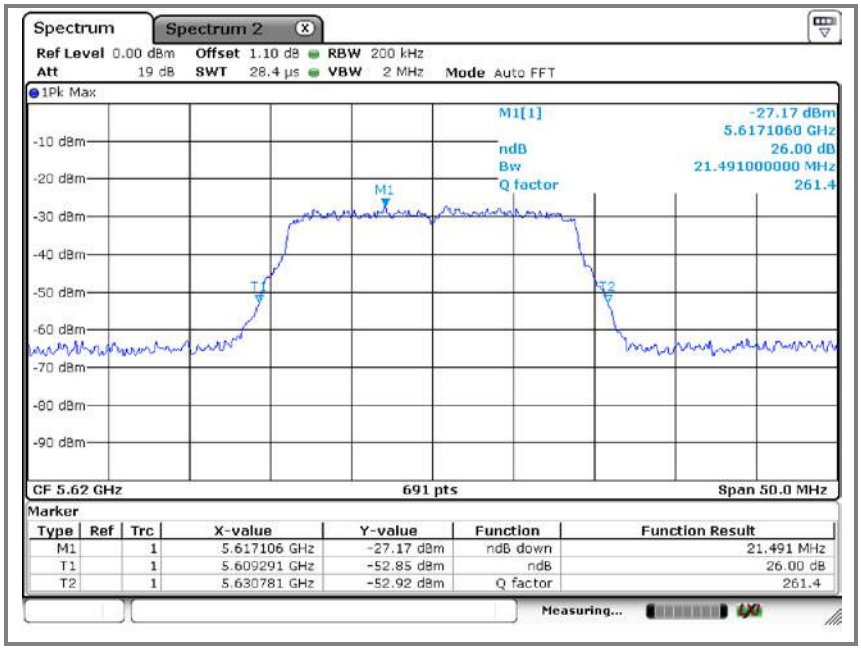
B. Middle channel(5560 ㎒)- 26 ㏈ bandwidth



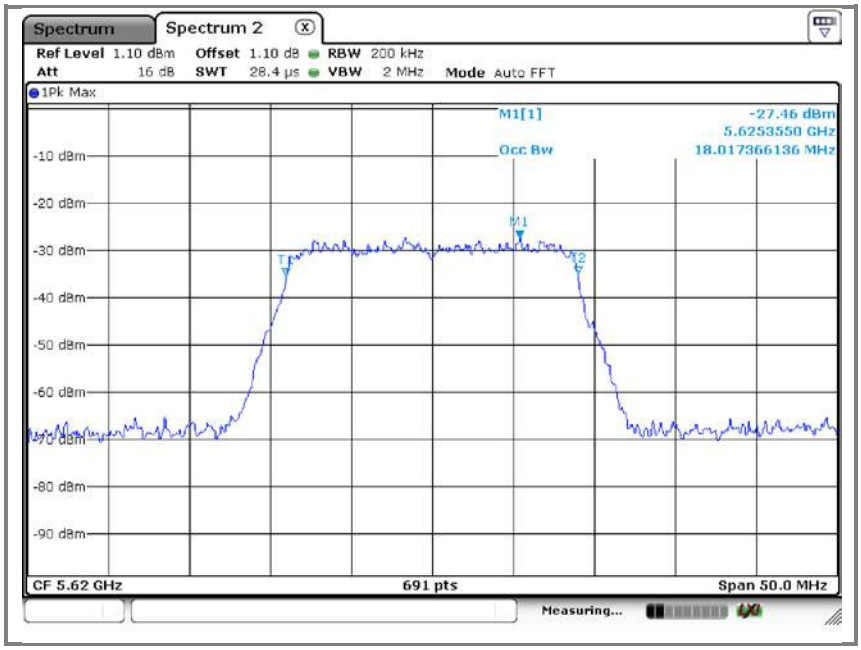
B. Middle channel(5560 ㎒)– 99% bandwidth



C. High channel(5620 ㎒)- 26 ㏈ bandwidth

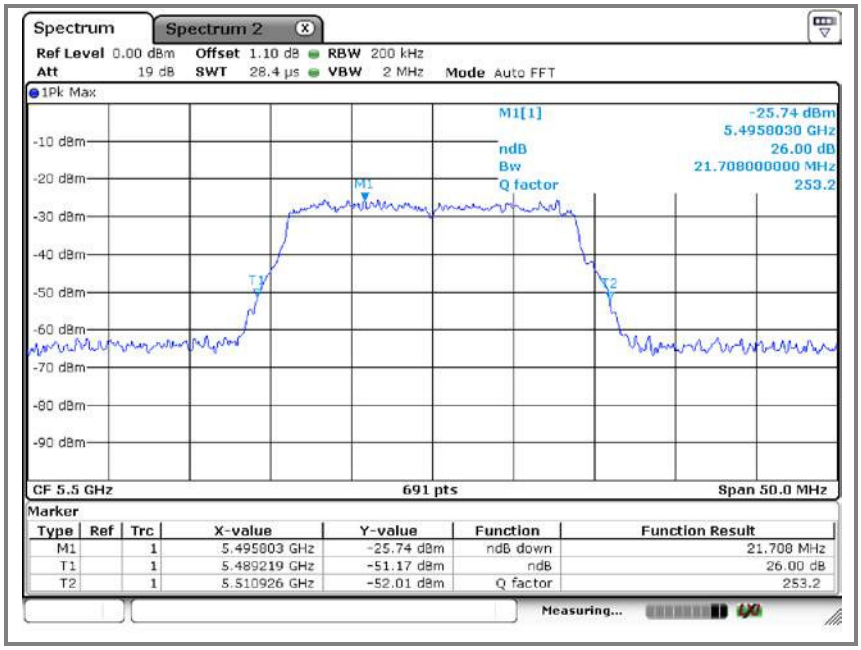


C. High channel(5620 ㎒)– 99% bandwidth

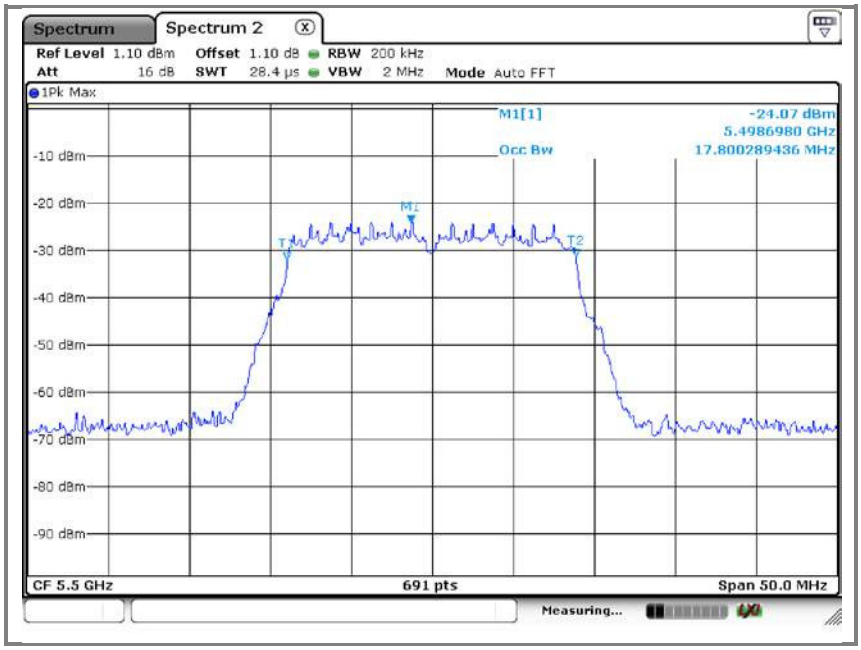


Operation mode: U-NII-2C(n_HT20)

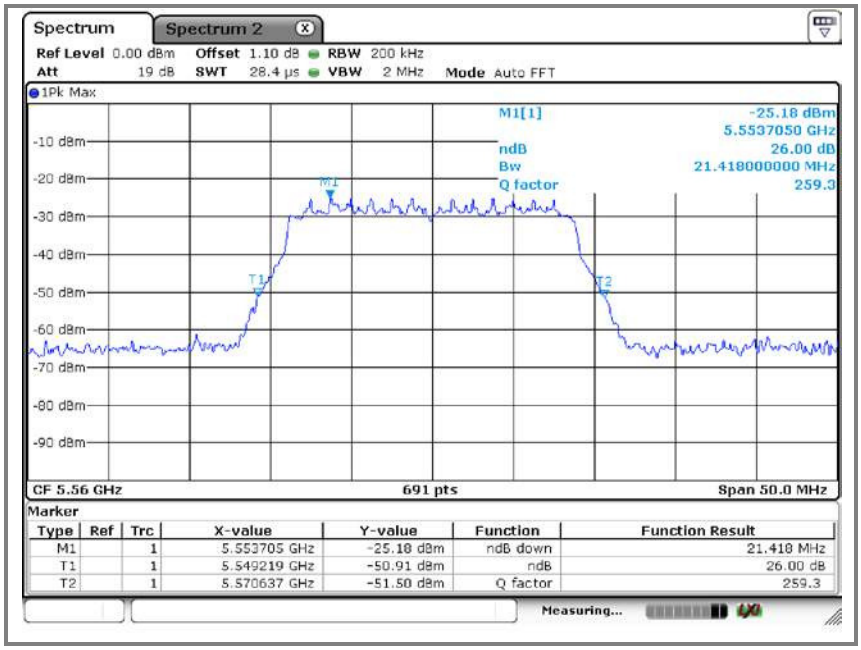
A. Low channel(5500 ㎒)- 26 ㏈ bandwidth



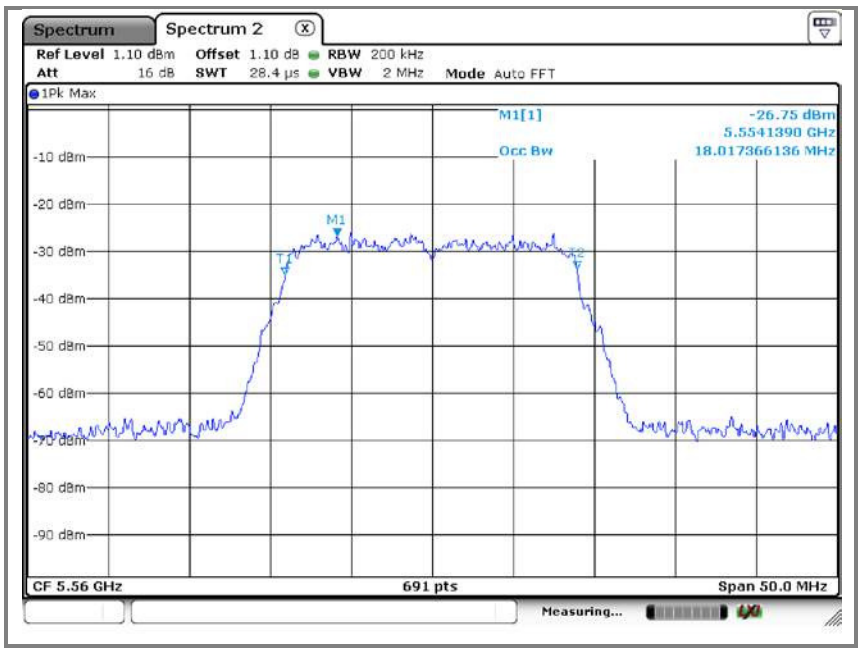
A. Low channel(5500 ㎒)– 99% bandwidth



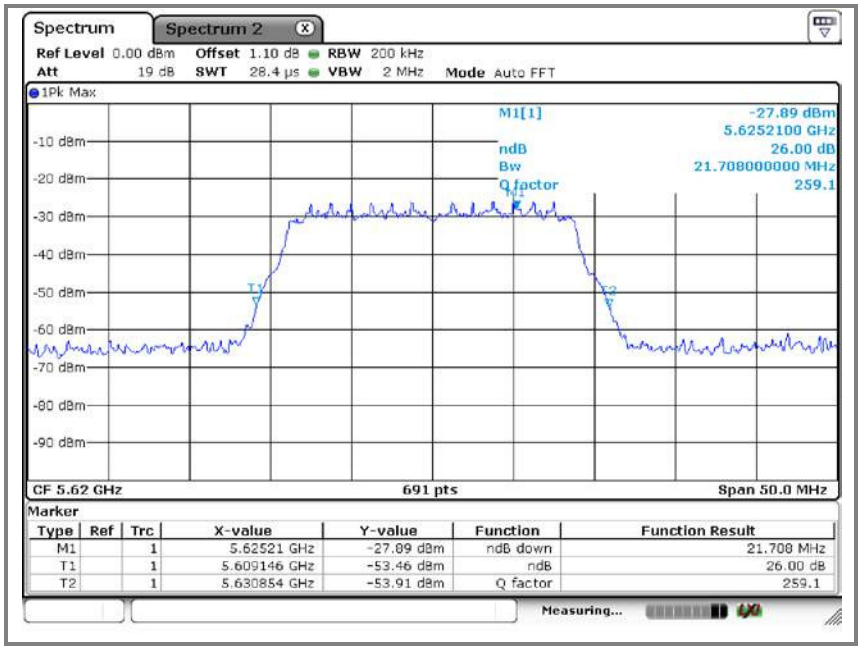
B. Middle channel(5560 ㎒)- 26 ㏈ bandwidth



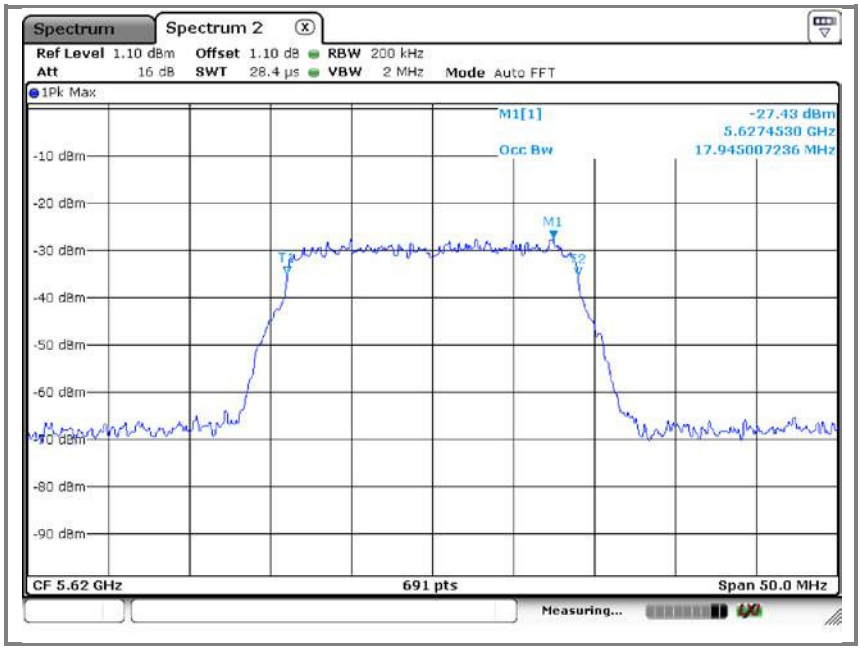
B. Middle channel(5560 ㎒)– 99% bandwidth



C. High channel(5620 ㎒)- 26 ㏈ bandwidth

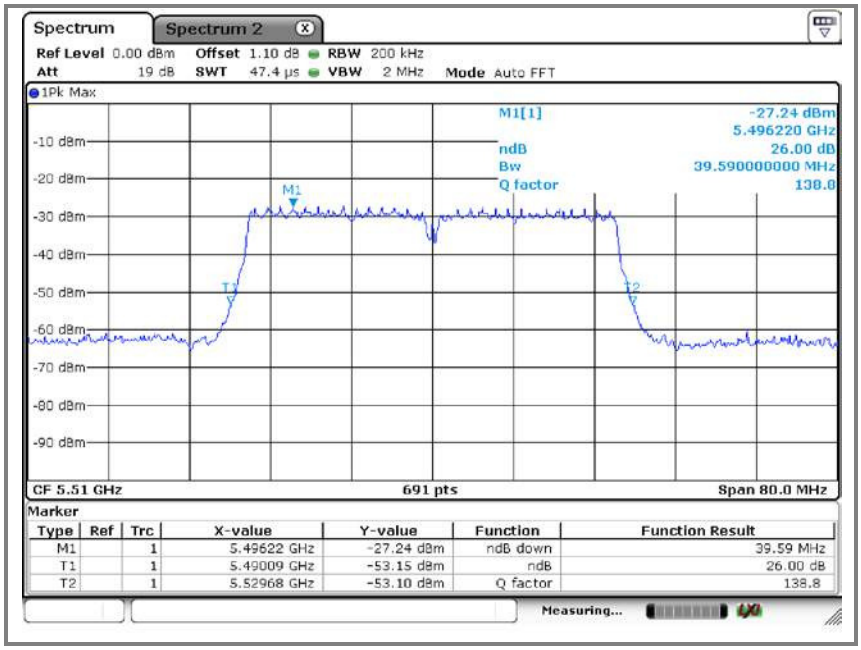


C. High channel(5620 ㎒)– 99% bandwidth

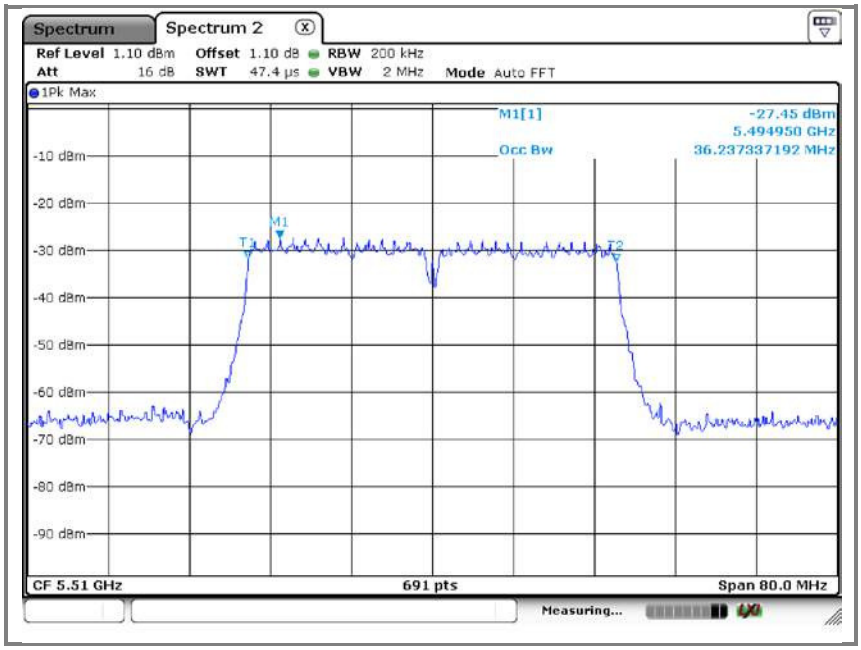


Operation mode: U-NII-2C(n_HT40)

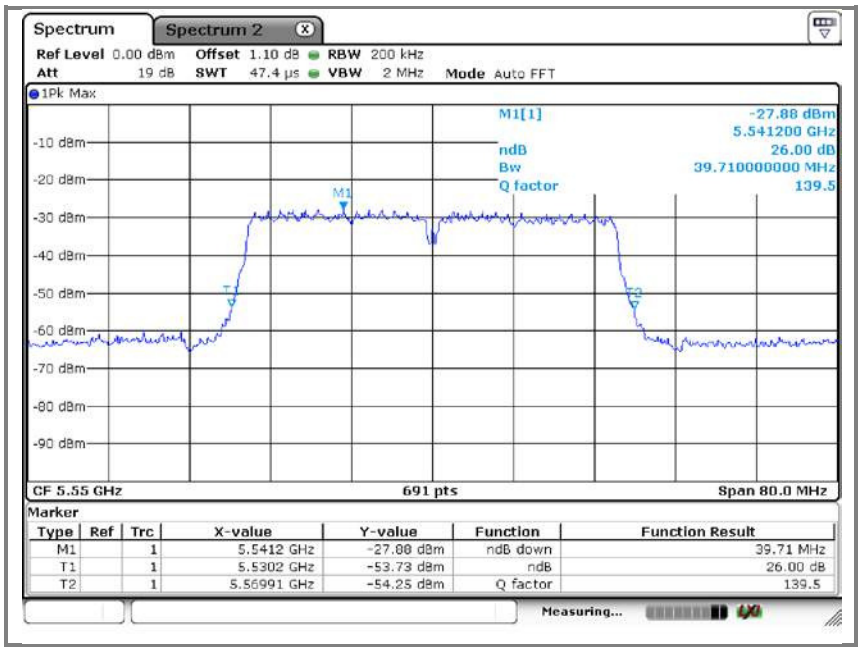
A. Low channel(5510 ㎒)- 26 ㏈ bandwidth



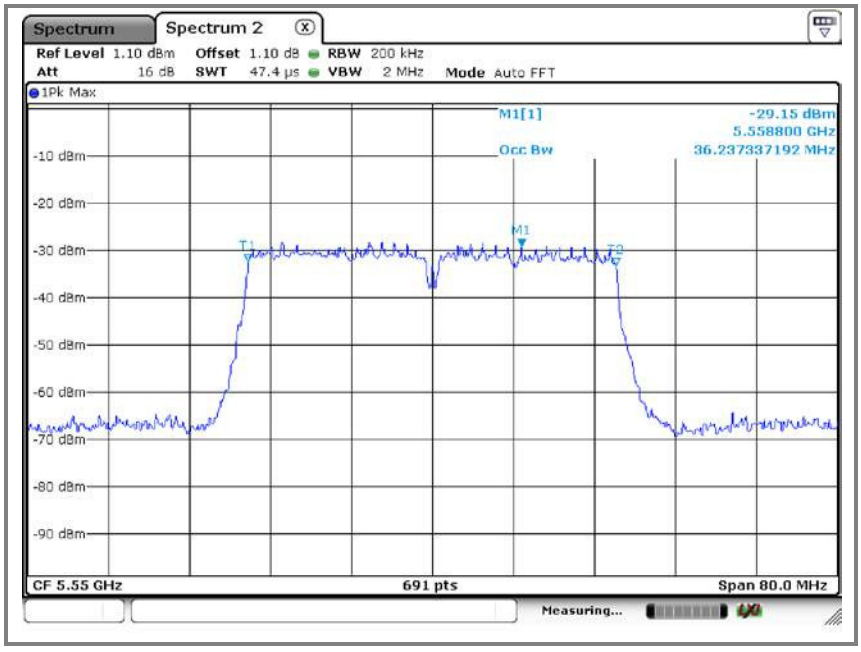
A. Low channel(5510 ㎒)– 99% bandwidth



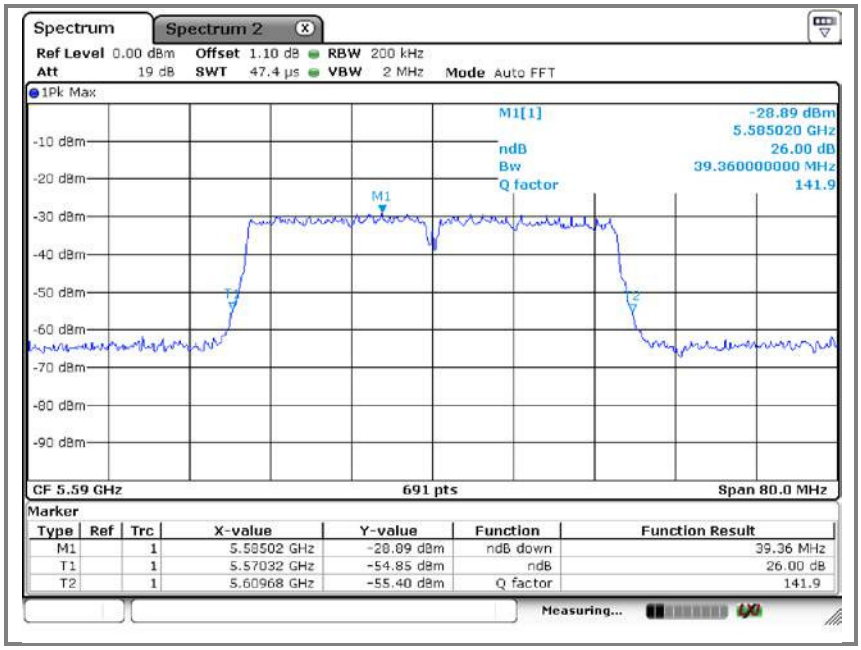
B. Middle channel(5550 ㎒)- 26 ㏈ bandwidth



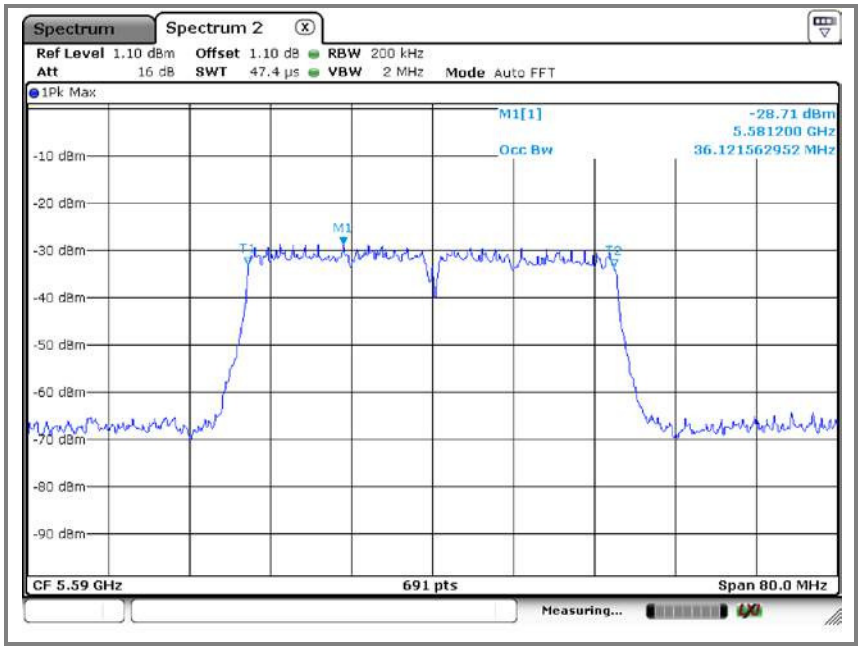
B. Middle channel(5550 ㎒)– 99% bandwidth



C. High channel(5590 ㎒)- 26 ㏈ bandwidth

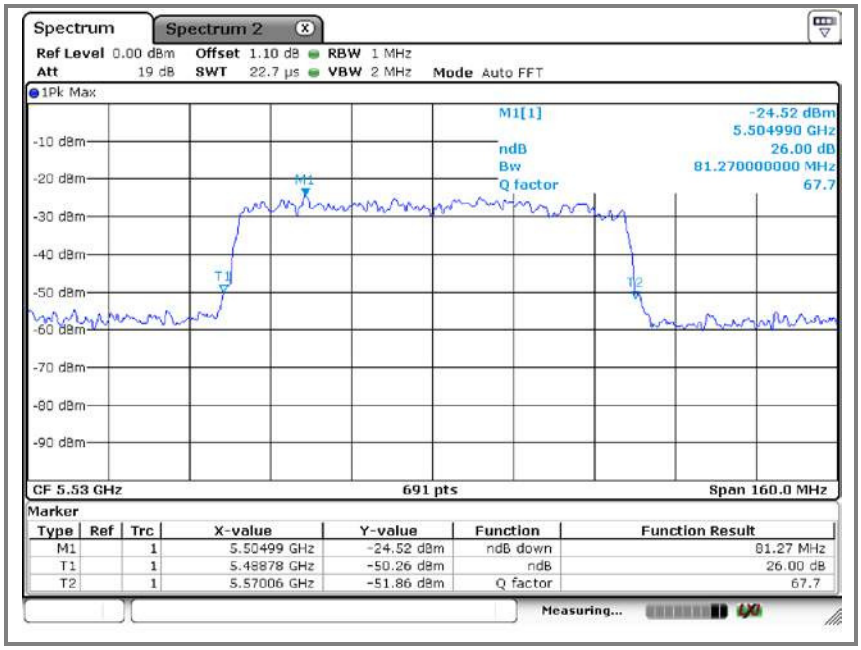


C. High channel(5590 ㎒)– 99% bandwidth

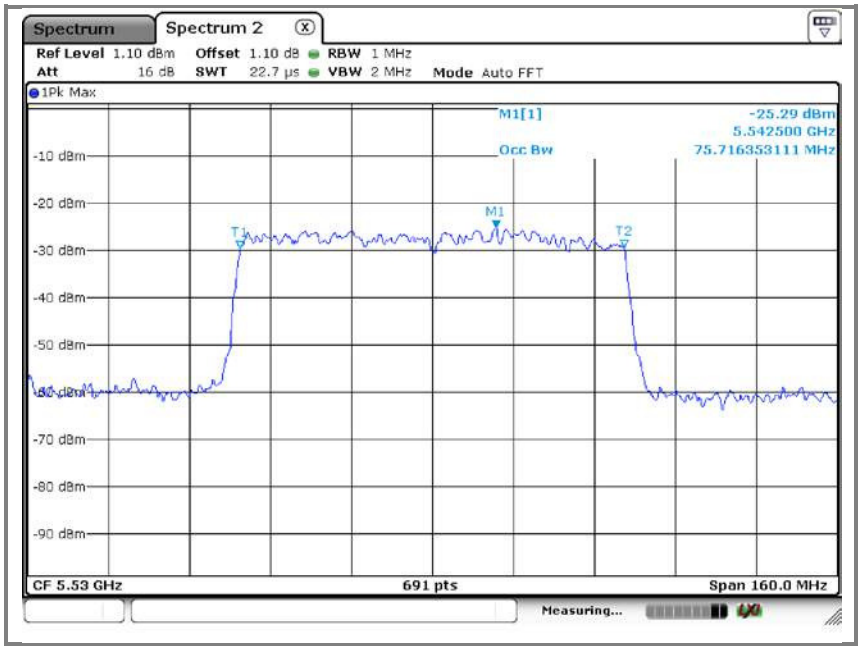


Operation mode: U-NII-2C(VHT80)

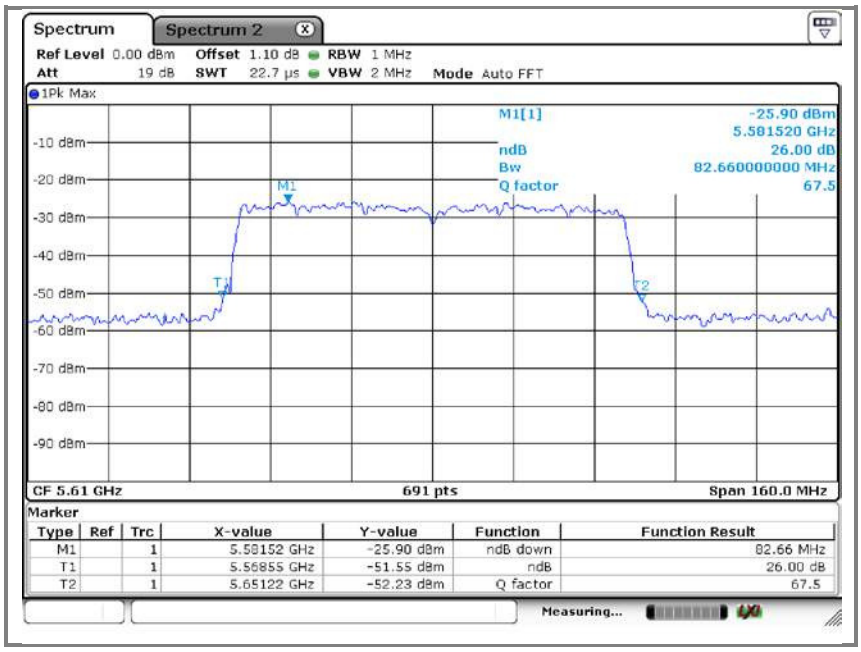
A. Low channel(5530 ㎒)- 26 ㏈ bandwidth



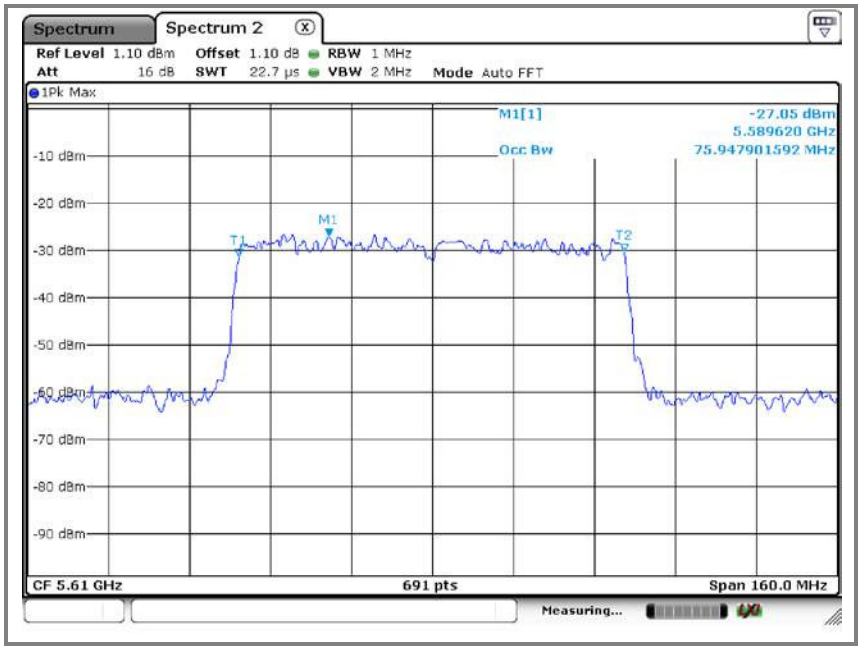
A. Low channel(5530 ㎒)– 99% bandwidth



A. High channel(5610 ㎒)- 26 ㏈ bandwidth

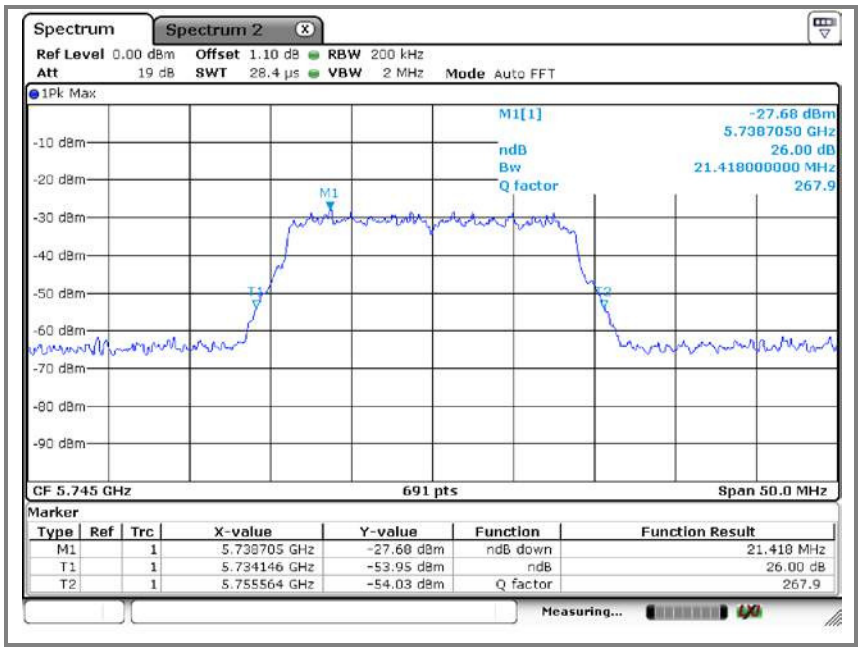


A. High channel(5610 ㎒)– 99% bandwidth

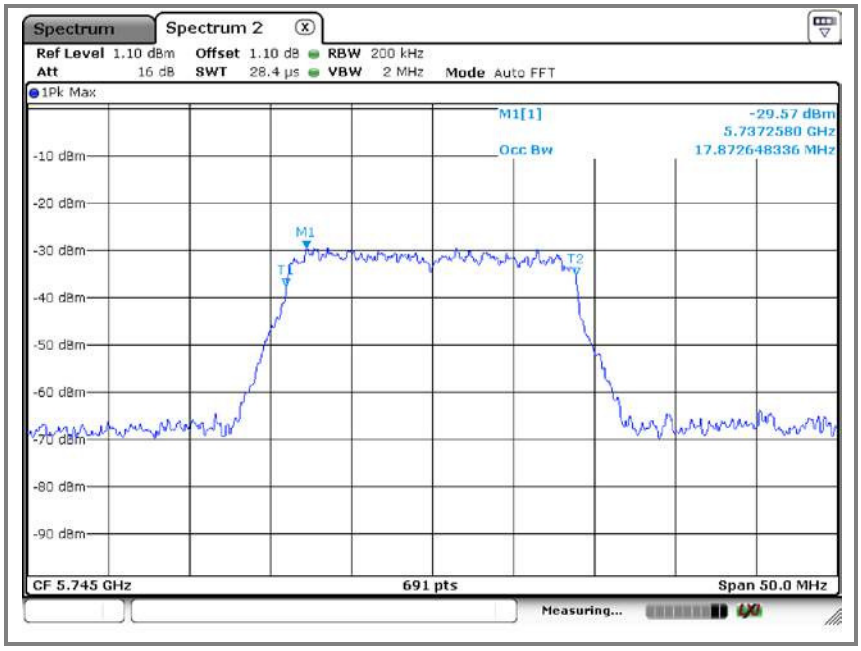


Operation mode: U-NII-3

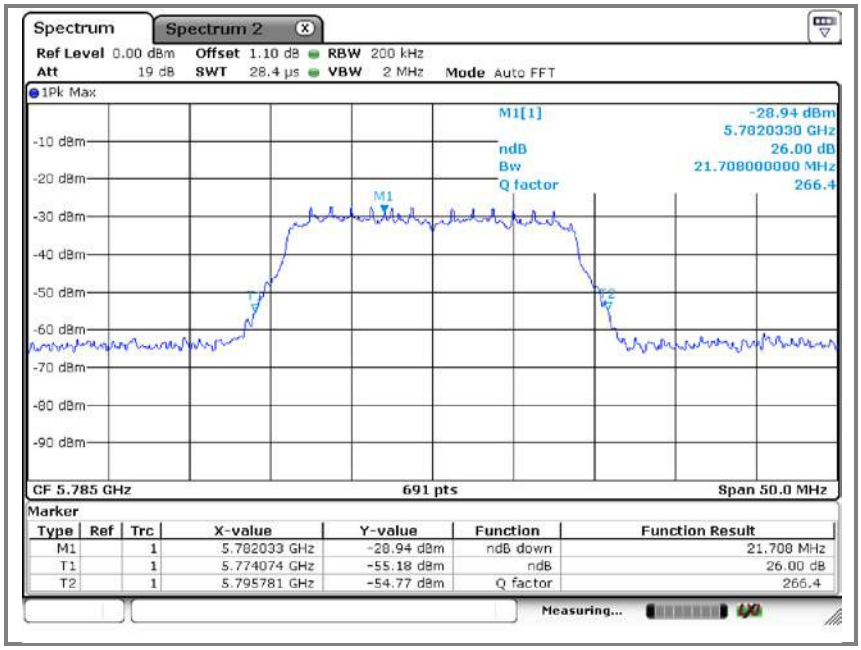
A. Low channel(5745 ㎒)- 26 ㏈ bandwidth



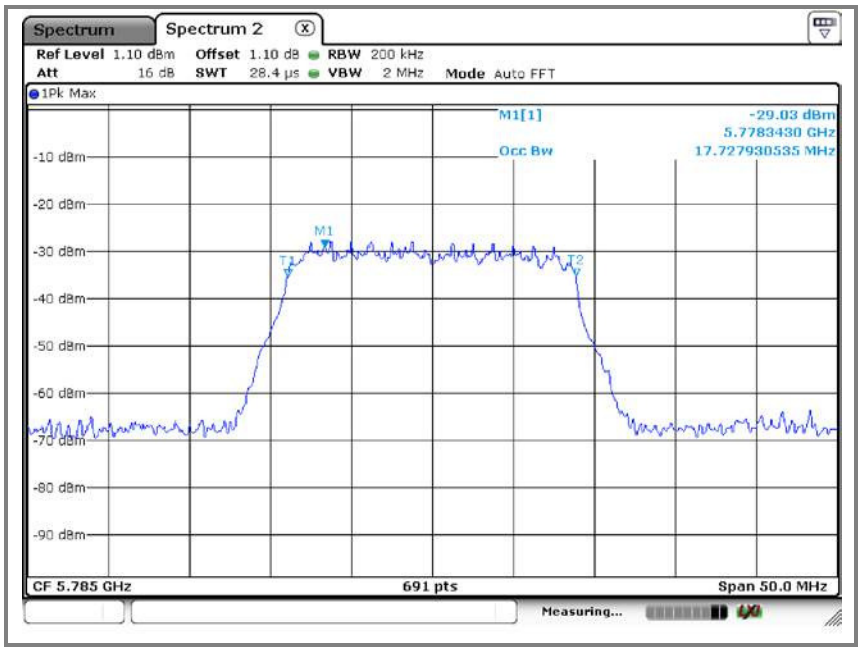
A. Low channel(5745 ㎒)– 99% bandwidth



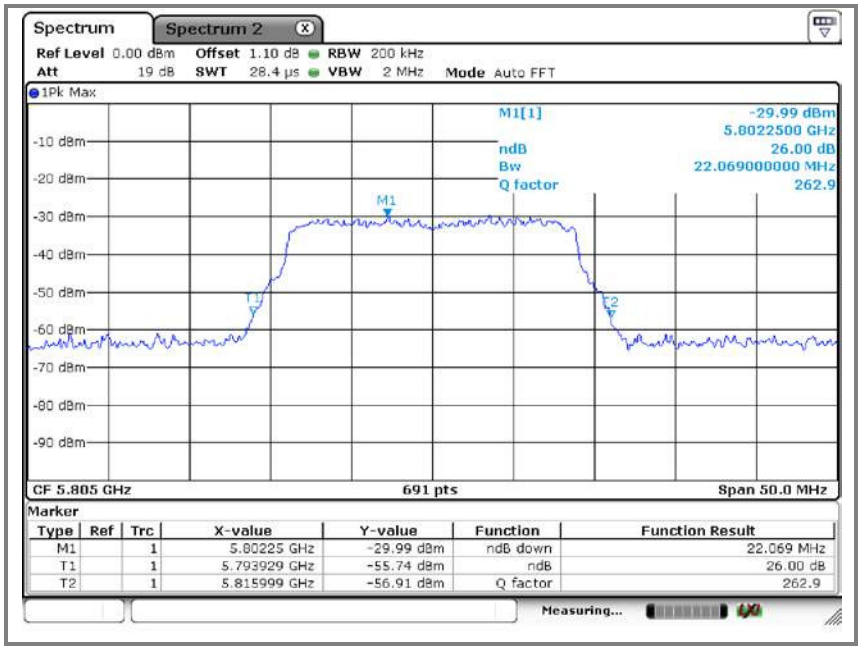
B. Middle channel(5785 ㎒)- 26 ㏈ bandwidth



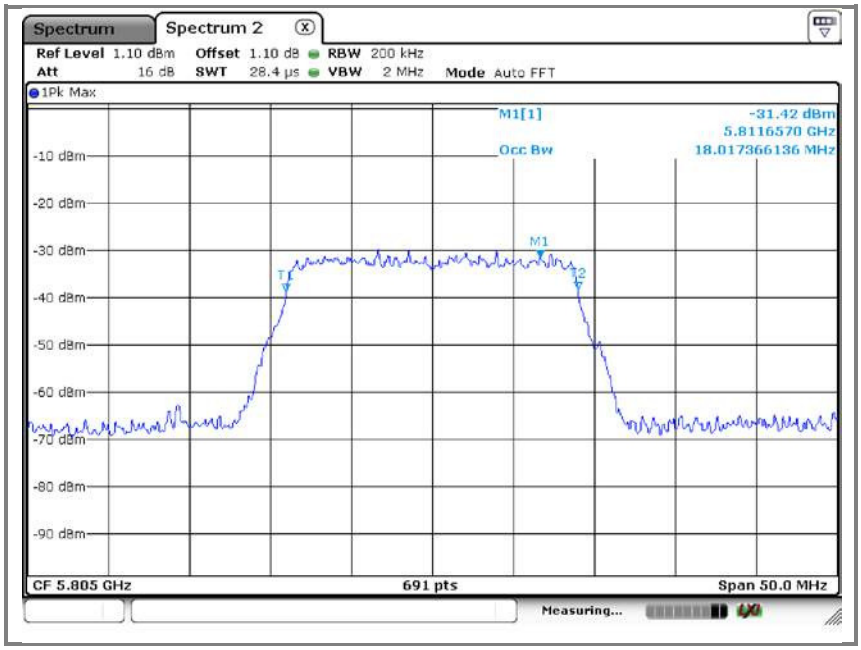
B. Middle channel(5785 ㎒)– 99% bandwidth



C. High channel(5805 ㎒)- 26 ㏈ bandwidth

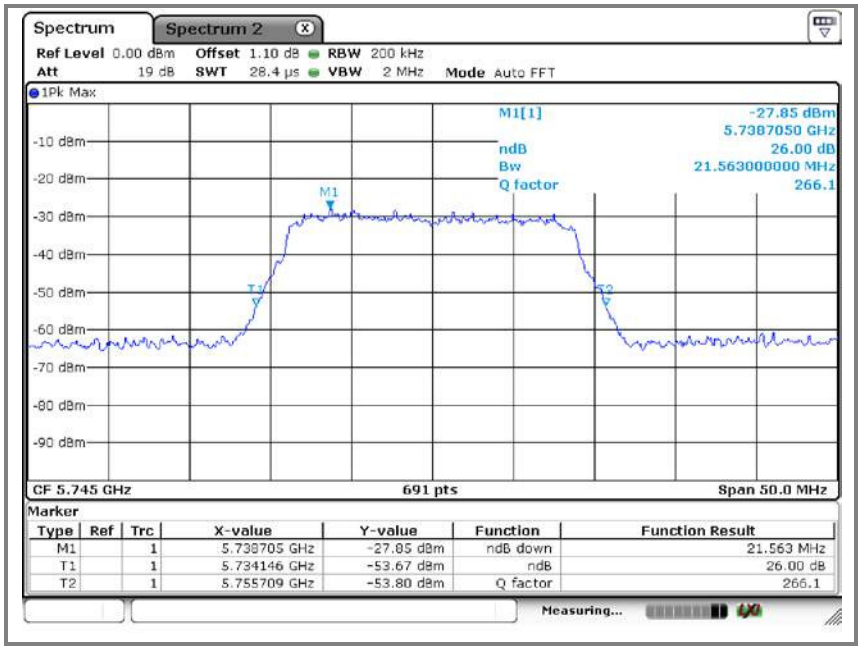


C. High channel(5805 ㎒)– 99% bandwidth

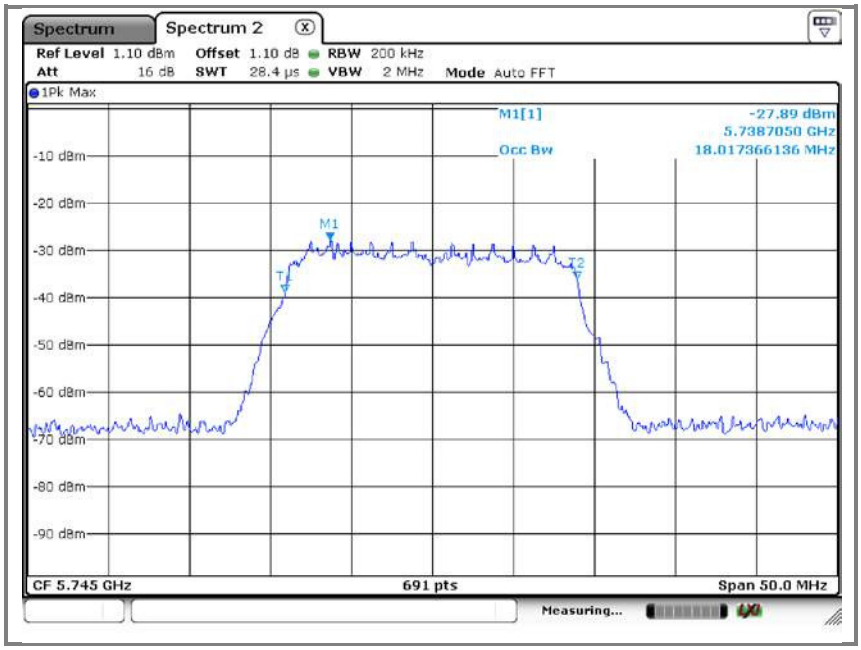


Operation mode: U-NII-3(n_HT20)

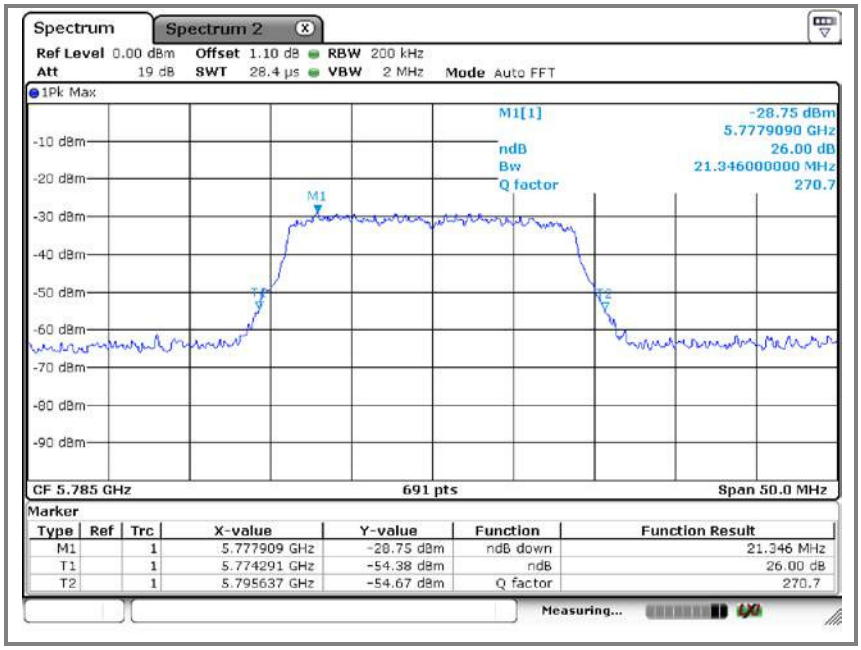
A. Low channel(5745 ㎒)- 26 ㏈ bandwidth



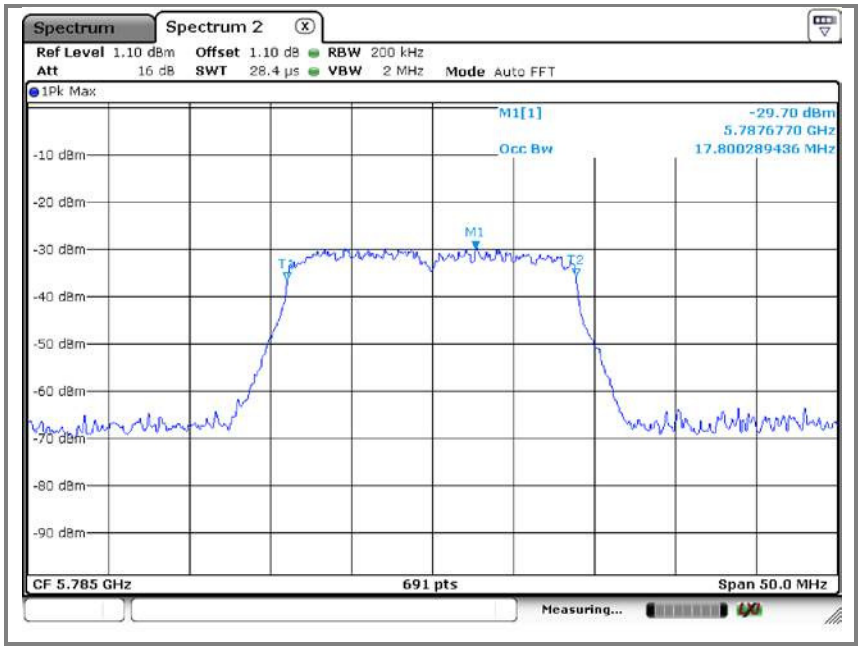
A. Low channel(5745 ㎒)– 99% bandwidth



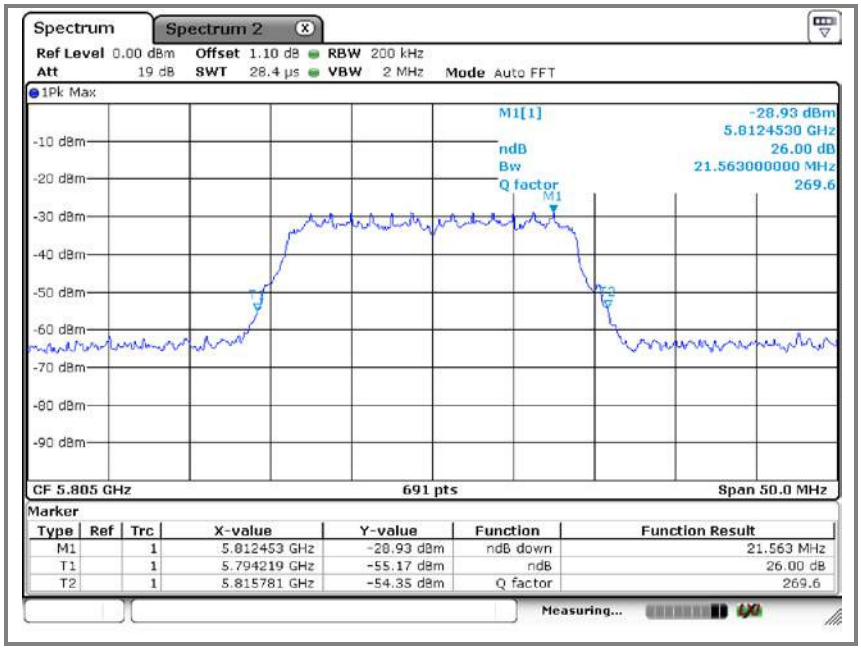
B. Middle channel(5785 ㎒)- 26 ㏈ bandwidth



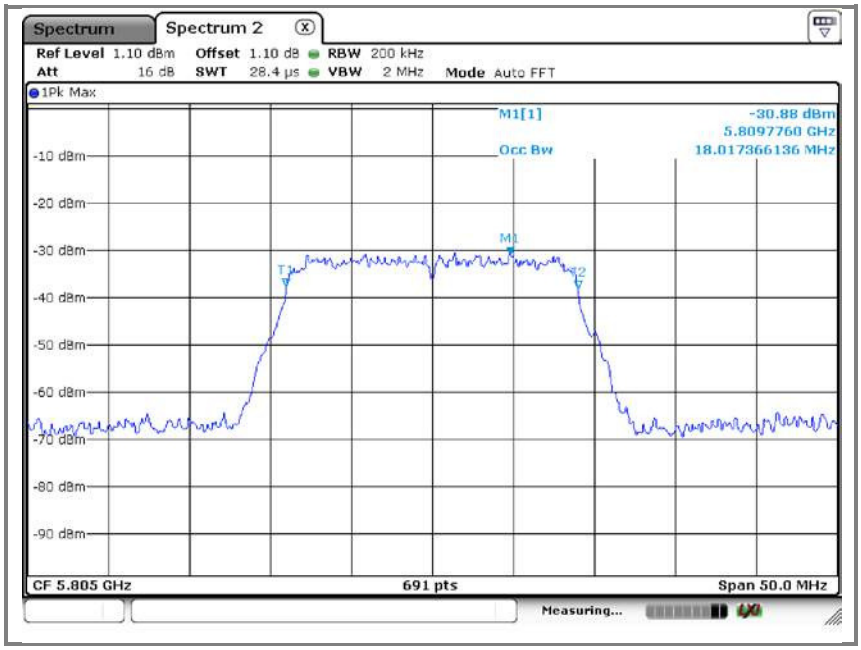
B. Middle channel(5785 ㎒)– 99% bandwidth



C. High channel(5805 ㎒)- 26 ㏈ bandwidth

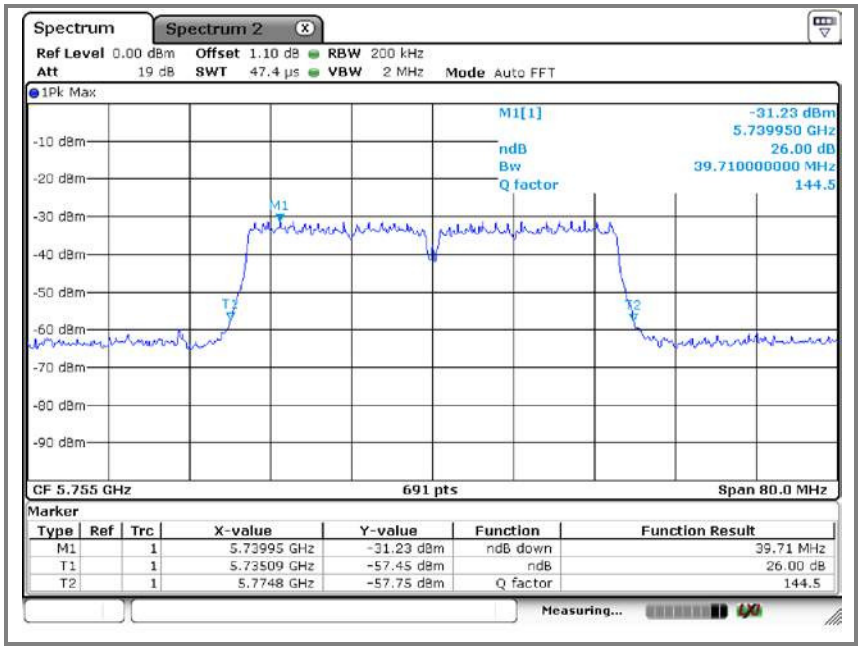


C. High channel(5805 ㎒)– 99% bandwidth

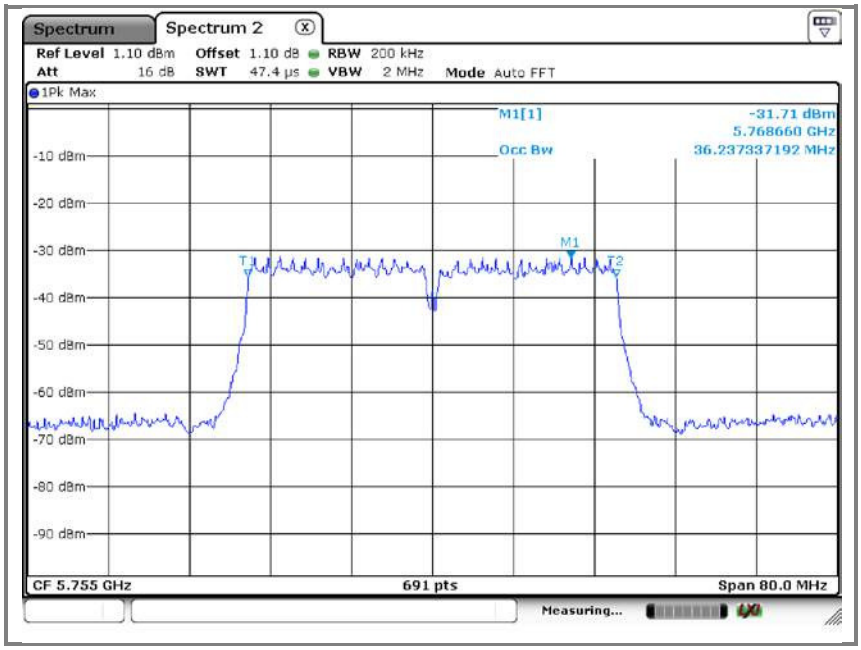


Operation mode: U-NII-3(n_HT40)

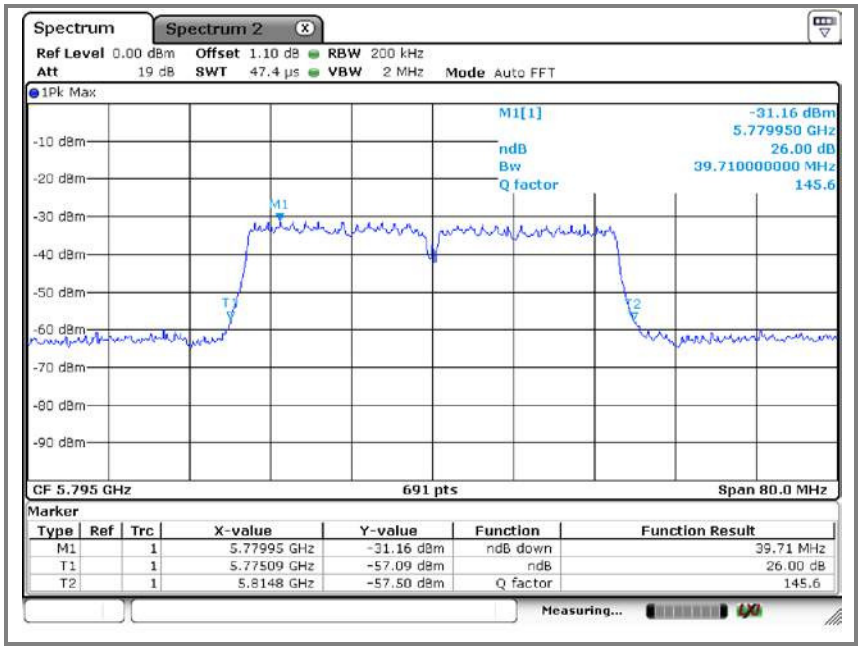
A. Low channel(5755 ㎒)- 26 ㏈ bandwidth



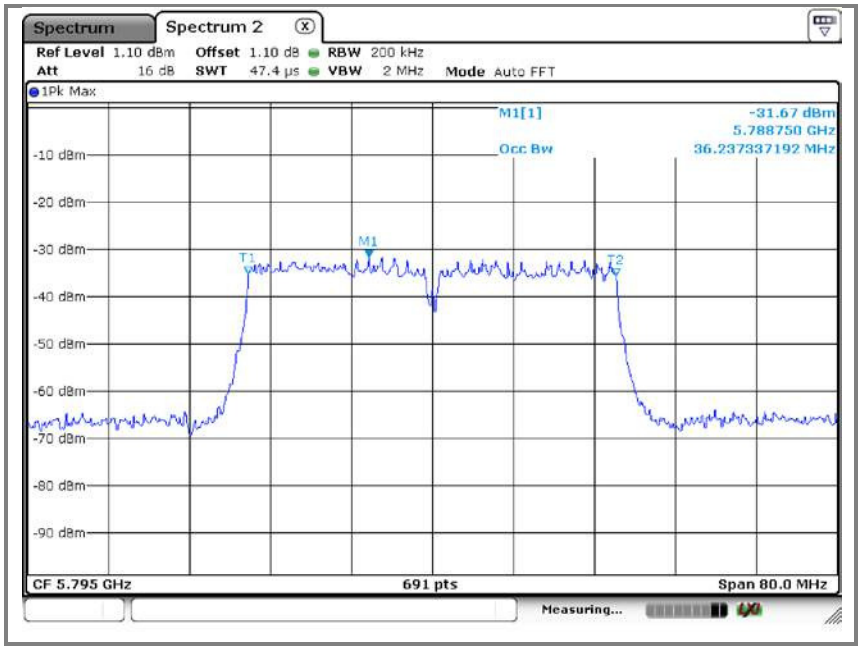
A. Low channel(5755 ㎒)– 99% bandwidth



B. High channel(5795 ㎒)- 26 ㏈ bandwidth

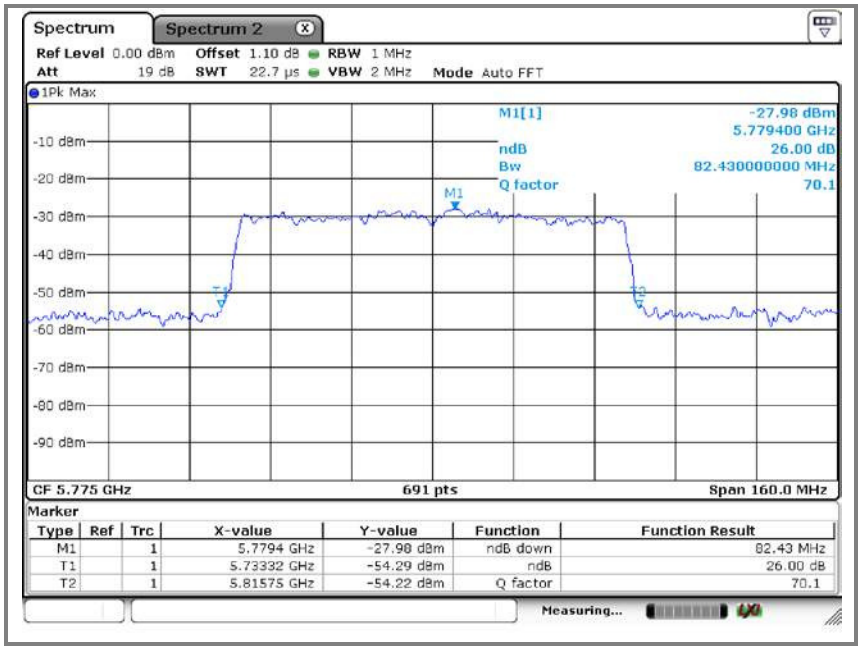


B. High channel(5795 ㎒)– 99% bandwidth

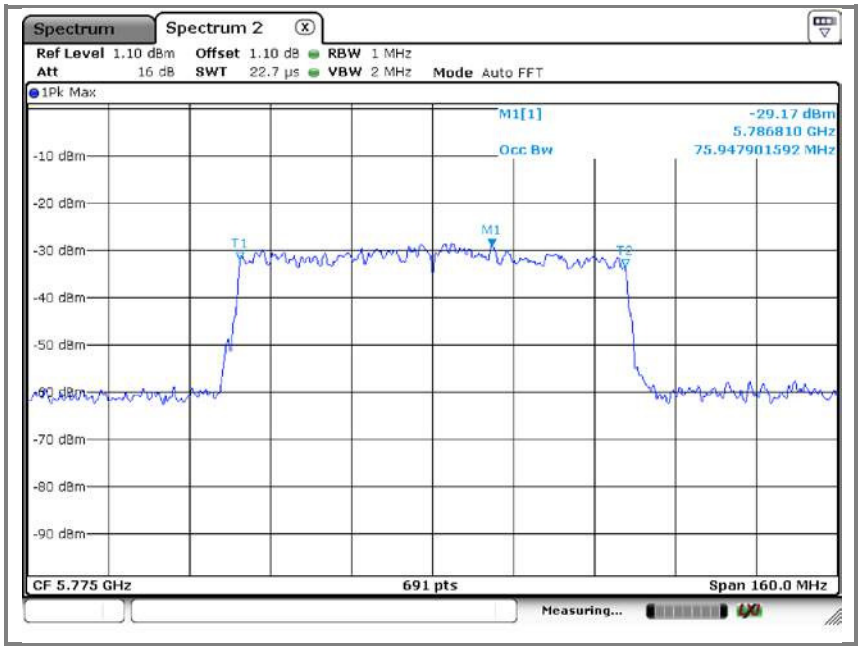


Operation mode: U-NII-3(VHT80)

A. Low channel(5775 ㎒)- 26 ㏈ bandwidth



A. Low channel(5775 ㎒)– 99% bandwidth



6. Maximum Conducted Output power

6.1. Limit

Frequency Band	Limit
5150-5250MHz	Not exceed 250mW(24dBm)
5250-5350MHz	The lesser of 250mW(24dBm) or 11+ 10logB
5470-5725MHz	The lesser of 250mW(24dBm) or 11+ 10logB
5725-5850MHz	Not exceed 1W(30dBm)
*Where B is the 26dB emission bandwidth in MHz	

The maximum e.i.r.p. shall not exceed 200 mW or 10 + 10 $\log_{10}$B, dBm, whichever power is less. B is the 99% emission bandwidth in megahertz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

6.2. Test procedure (KDB 789033)

Measurement of maximum conducted output power using a spectrum analyzer requires integrating the spectrum across a frequency span that encompasses, at a minimum, either the EBW or the 99% occupied bandwidth of the signal.[1] However, the EBW must be used to determine bandwidth dependent limits on maximum conducted output power in accordance with § 15.407(a).

a) The test method shall be selected as follows:

(i) Method SA-1 or SA-1 Alternative (averaging with the EUT transmitting at full power throughout each sweep) shall be applied if either of the following conditions can be satisfied:

- The EUT transmits continuously (or with a duty cycle ≥ 98%).

Sweep triggering or gating can be implemented in a way that the device transmits at the maximum power control level throughout the duration of each of the instrument sweeps to be averaged. This condition can generally be achieved by triggering the instrument's sweep if the duration of the sweep (with the analyzer configured as in Method SA-1, below) is equal to or shorter than the duration *T* of each transmission from the EUT and if those transmissions exhibit full power throughout their durations.

(ii) Method SA-2 or SA-2 Alternative (averaging across on and off times of the EUT transmissions, followed by duty cycle correction) shall be applied if the conditions of (i) cannot be achieved and the transmissions exhibit a constant duty cycle during the measurement duration. Duty cycle will be considered to be constant if variations are less than ± 2%.

(iii) Method SA-3 (power averaging (rms) detection with max hold) or SA-3 Alternative (reduced VBW with max hold) shall be applied if the conditions of (i) and (ii) cannot be achieved.

6.4. Test results

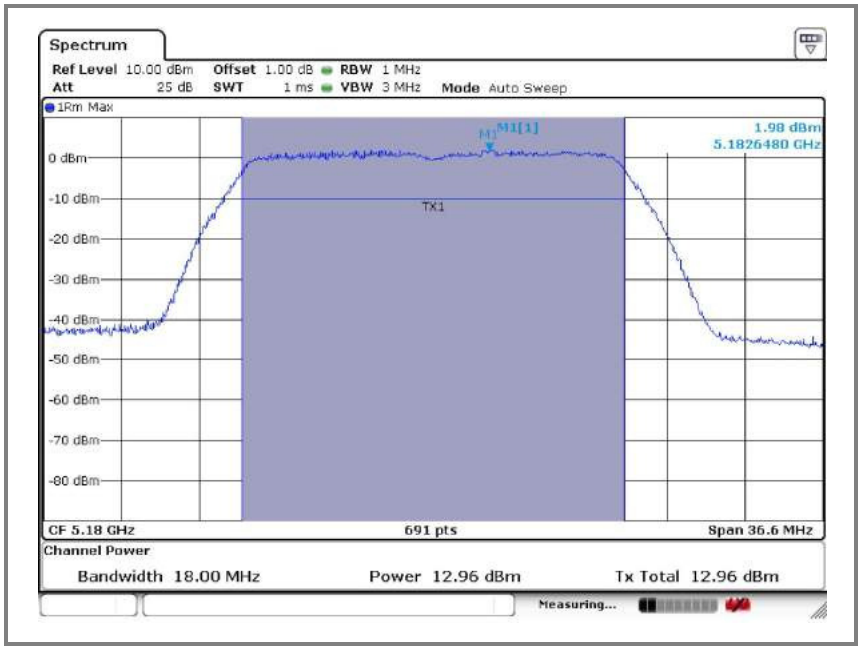
Ambient temperature: 22℃
Relative humidity: 45% R.H.

Mode	Frequency(㎒)	Output Power(㏈m)
U-NII-1	5 180	12.96
	5 220	10.98
	5 240	11.51
U-NII-1(n_HT20)	5 180	11.61
	5 220	10.44
	5 240	11.31
U-NII-1(n_HT40)	5 190	11.30
	5 230	11.04
U-NII-1(VHT80)	5 210	10.58
U-NII-2A	5 260	11.28
	5 300	12.23
	5 320	11.70
U-NII-2A(n_HT20)	5 260	11.47
	5 300	11.81
	5 320	12.17
U-NII-2A(n_HT40)	5 270	11.18
	5 310	11.62
U-NII-2A(VHT80)	5 290	10.99
U-NII-2C	5 500	11.93
	5 560	12.20
	5 620	12.22
U-NII-2C(n_HT20)	5 500	13.16
	5 560	11.40
	5 620	11.65
U-NII-2C(n_HT40)	5 510	11.37
	5 550	11.99
	5 590	11.56
U-NII-2C(VHT80)	5 530	10.74
	5 610	10.90

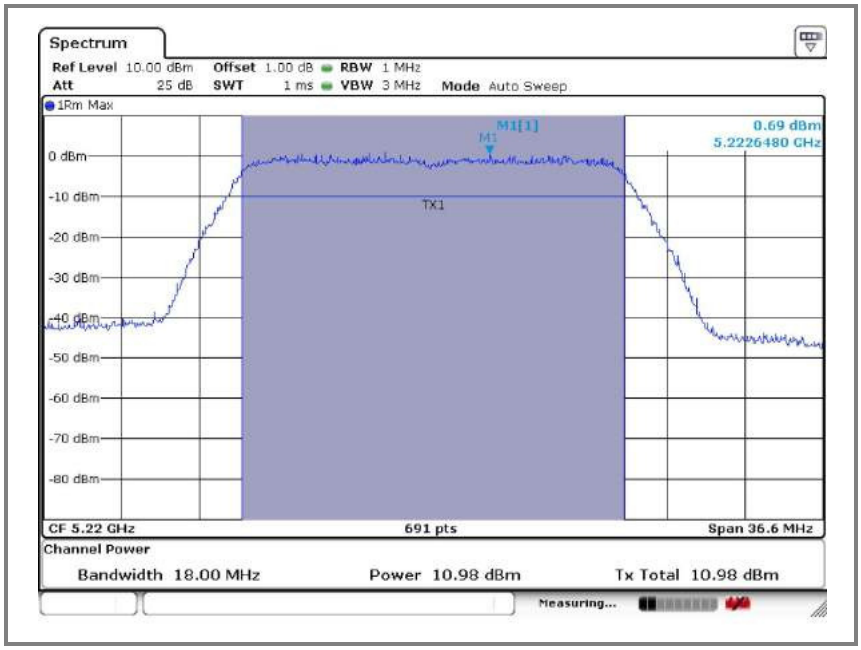
Mode	Frequency(㎒)	Output Power(㏈m)
U-NII-3	5 745	10.27
	5 785	10.33
	5 805	8.98
U-NII-3(n_HT20)	5 745	10.02
	5 785	9.68
	5 805	8.75
U-NII-3(n_HT40)	5 755	9.51
	5 795	8.88
U-NII-3(VHT80)	5 775	8.78

Operation mode: U-NII-1

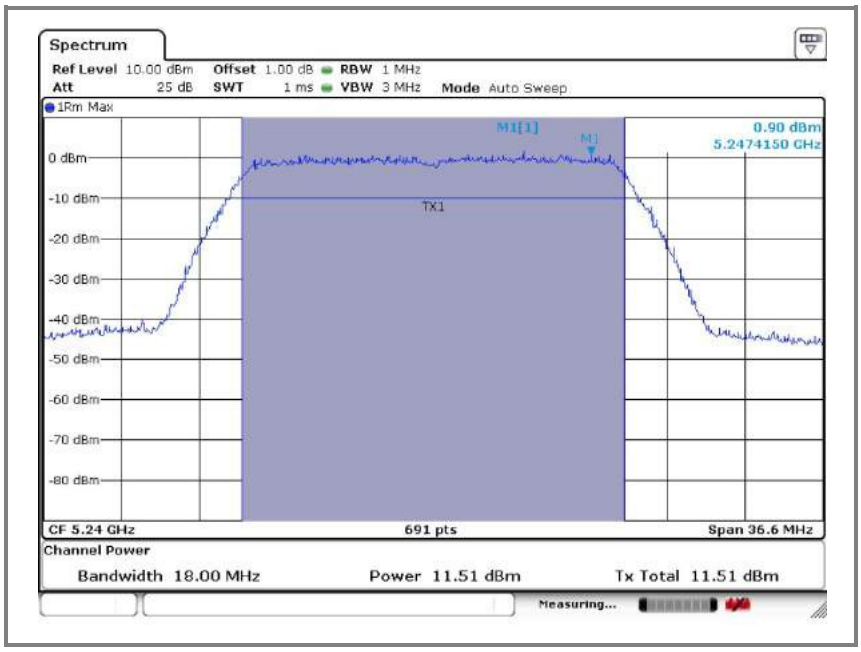
A. Low channel(5180 ㎒)



B. Middle channel(5220 ㎒)

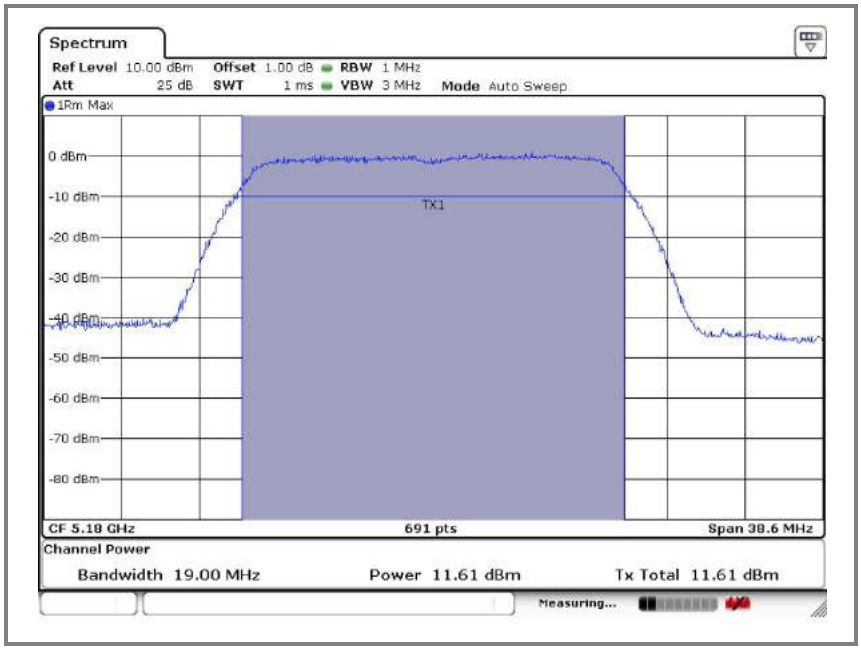


C. High channel(5240 ㎒)

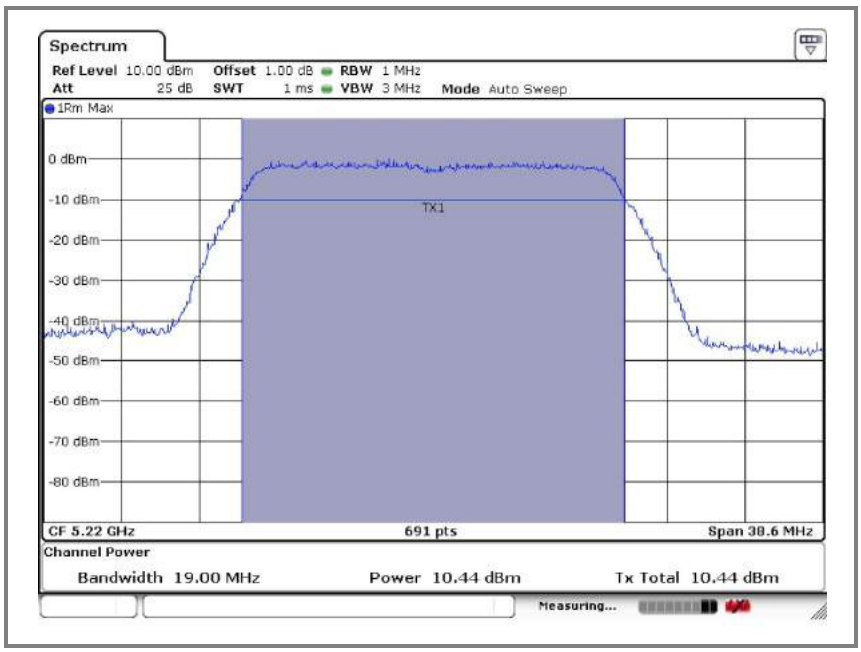


Operation mode: U-NII-1(n_HT20)

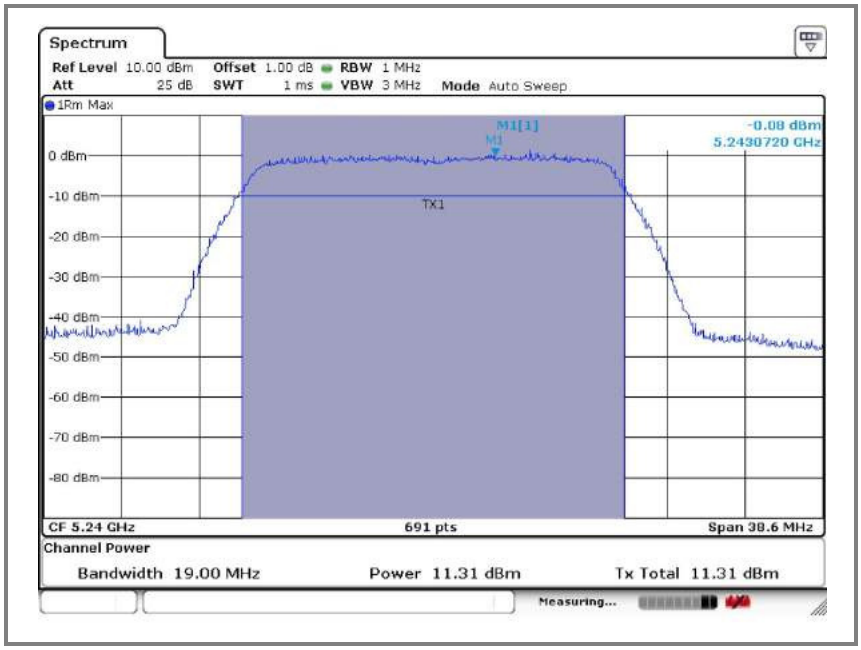
A. Low channel(5180 ㎒)



B. Middle channel(5220 ㎒)

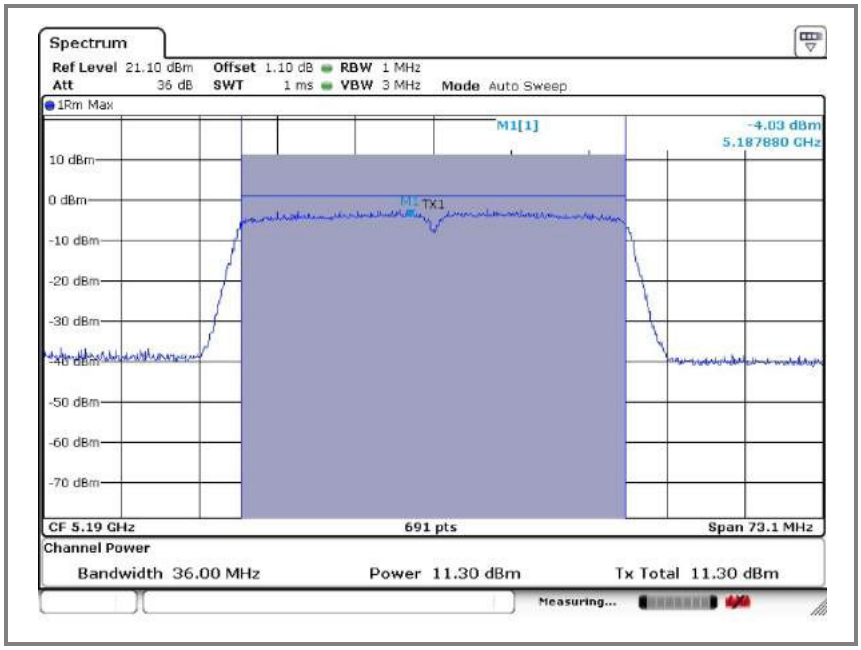


C. High channel(5240 ㎒)

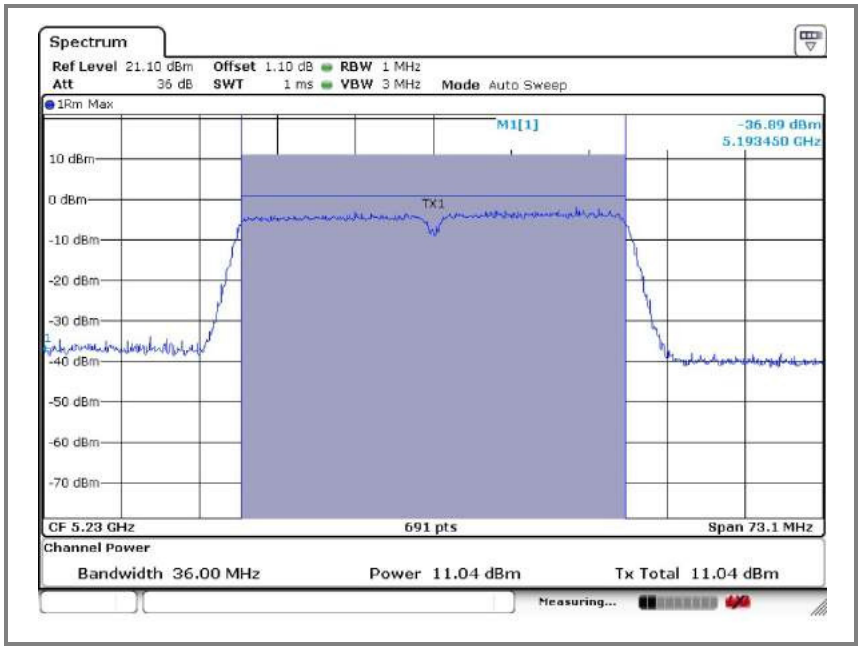


Operation mode: U-NII-1(n_HT40)

A. Low channel(5190 ㎒)

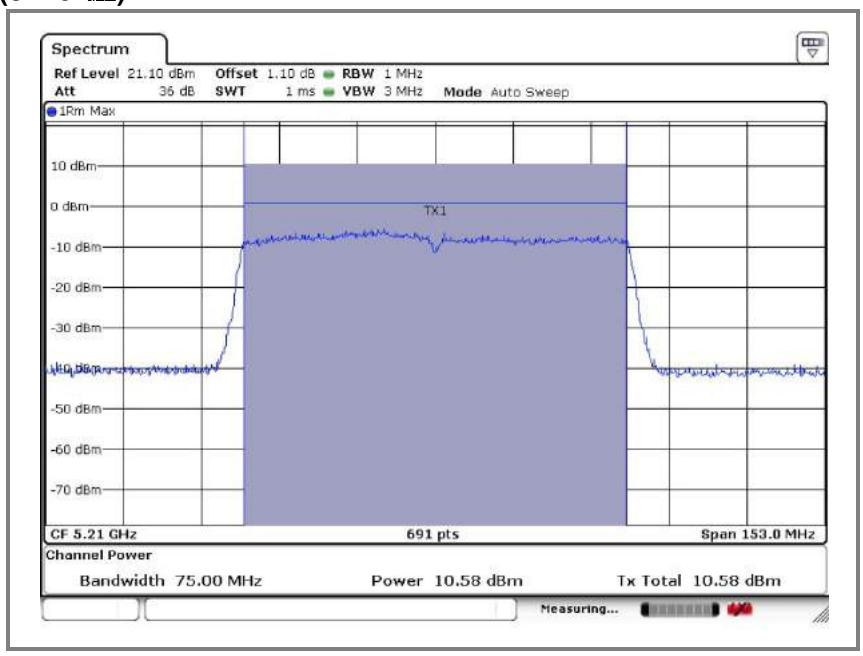


B. High channel(5230 ㎒)



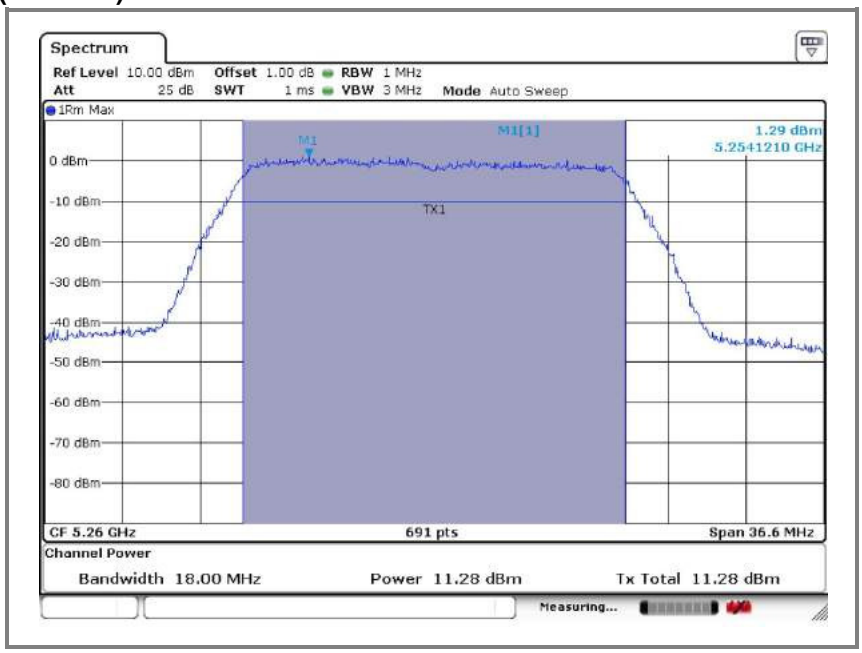
Operation mode: U-NII-1(VHT80)

A. Low channel(5210 ㎒)

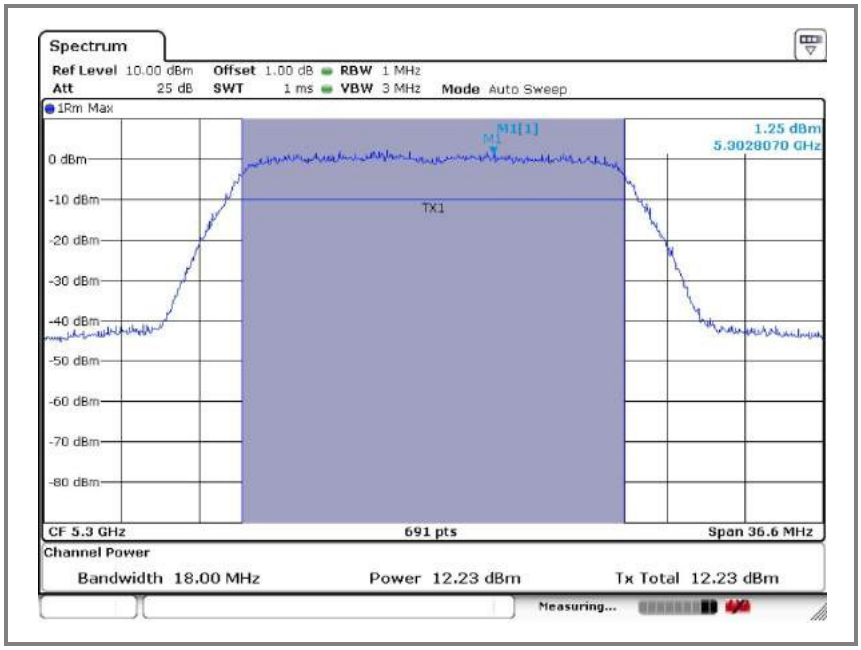


Operation mode: U-NII-2A

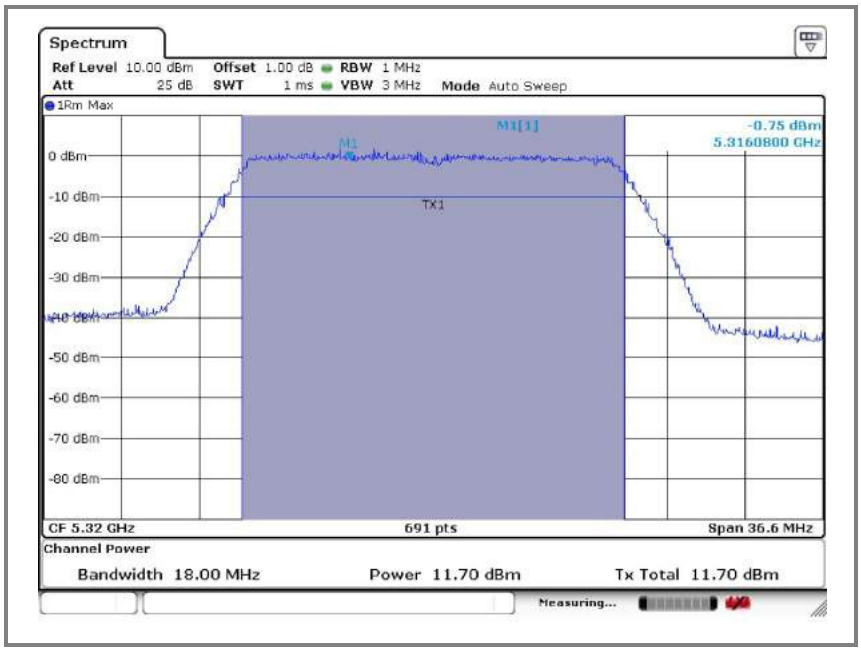
A. Low channel(5260 ㎒)



B. Middle channel(5300 ㎒)

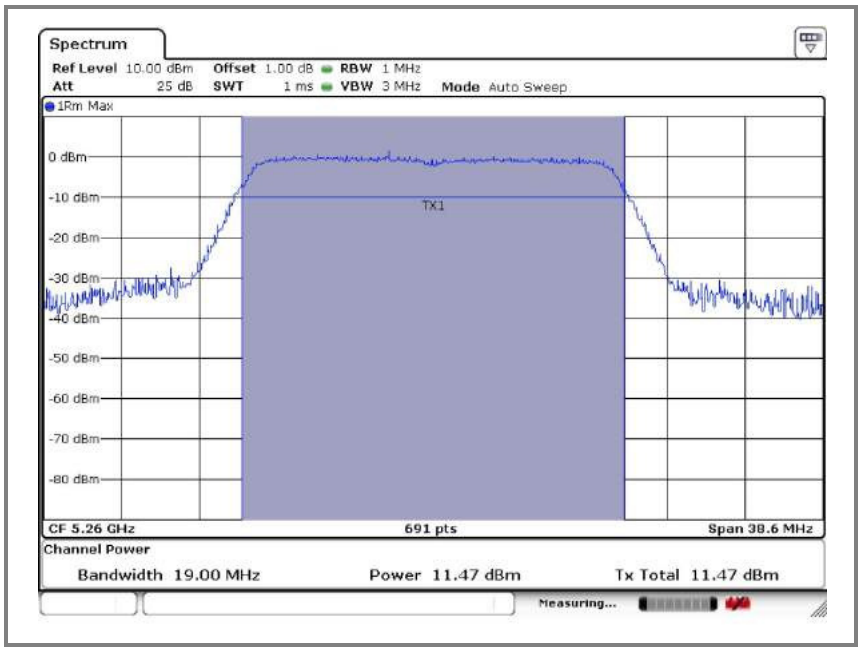


C. High channel(5320 ㎒)

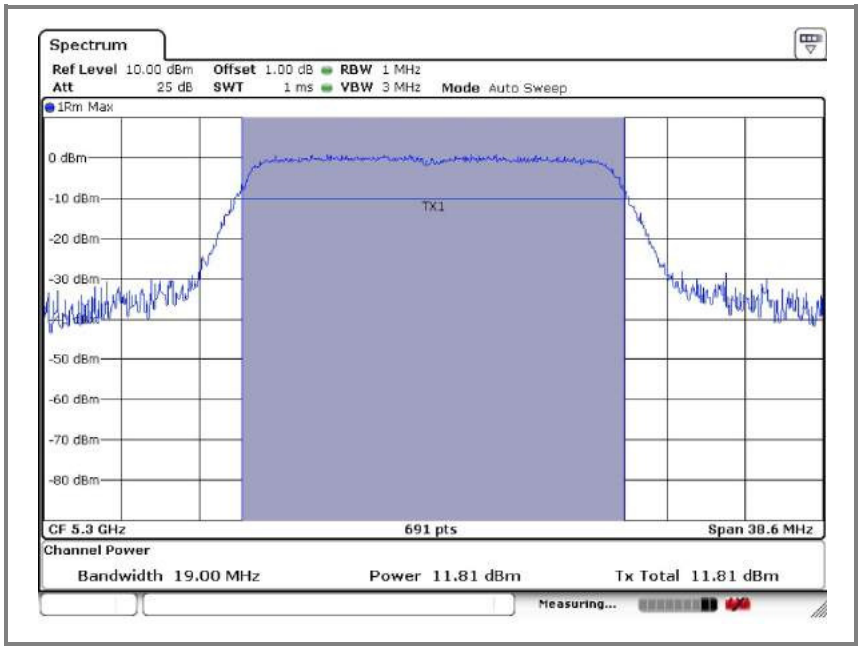


Operation mode: U-NII-2A(n_HT20)

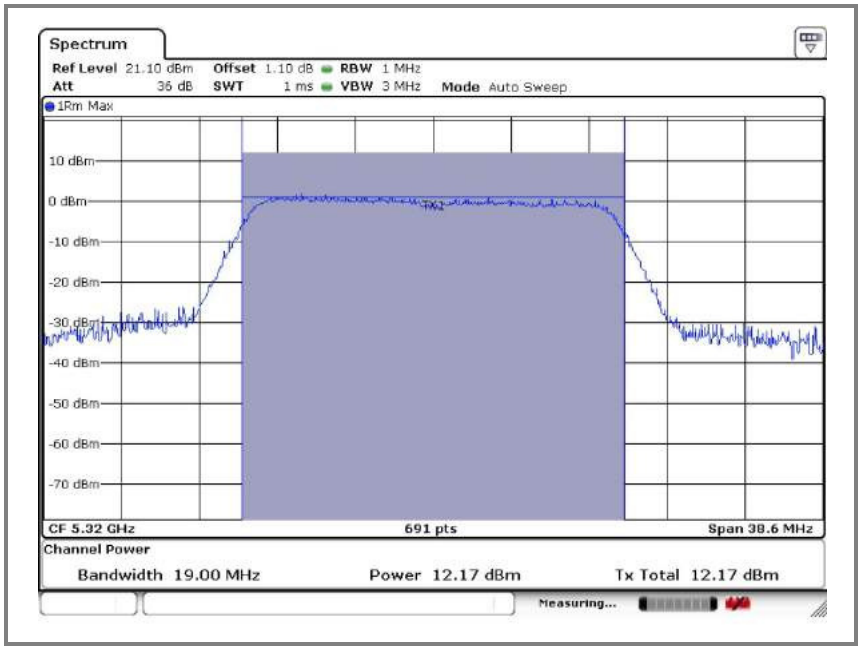
A. Low channel(5260 ㎒)



B. Middle channel(5300 ㎒)

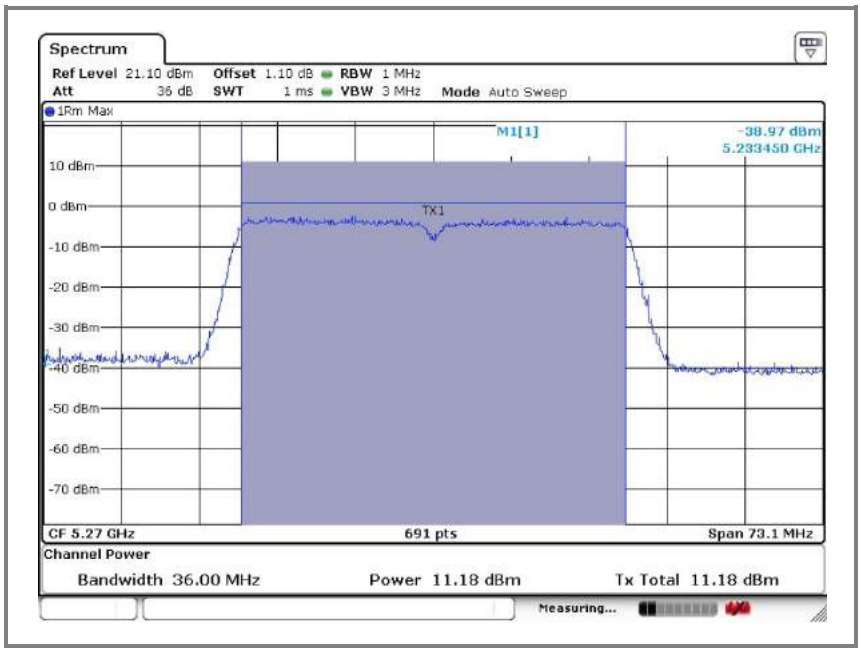


C. High channel(5320 ㎒)

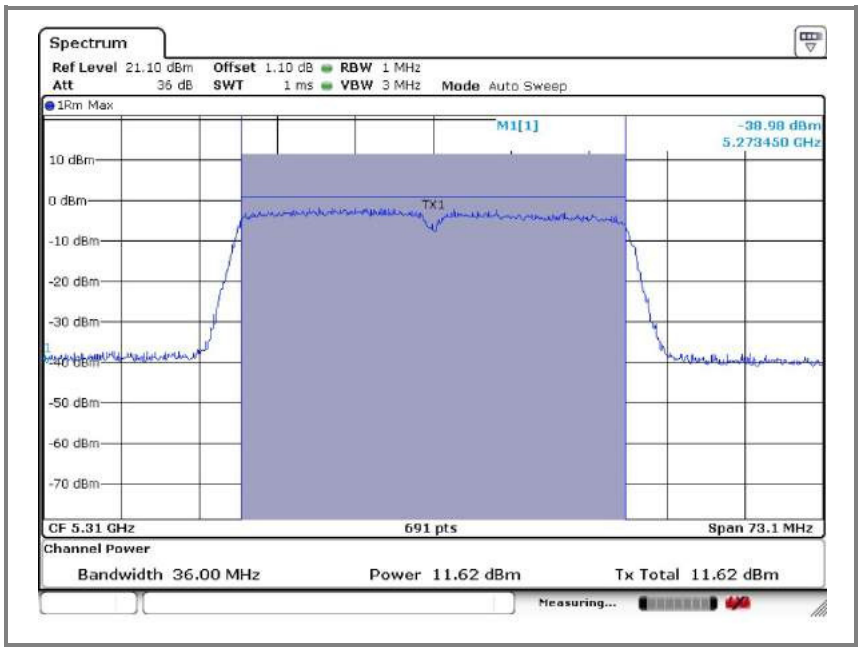


Operation mode: U-NII-2A(n_HT40)

A. Low channel(5270 ㎒)

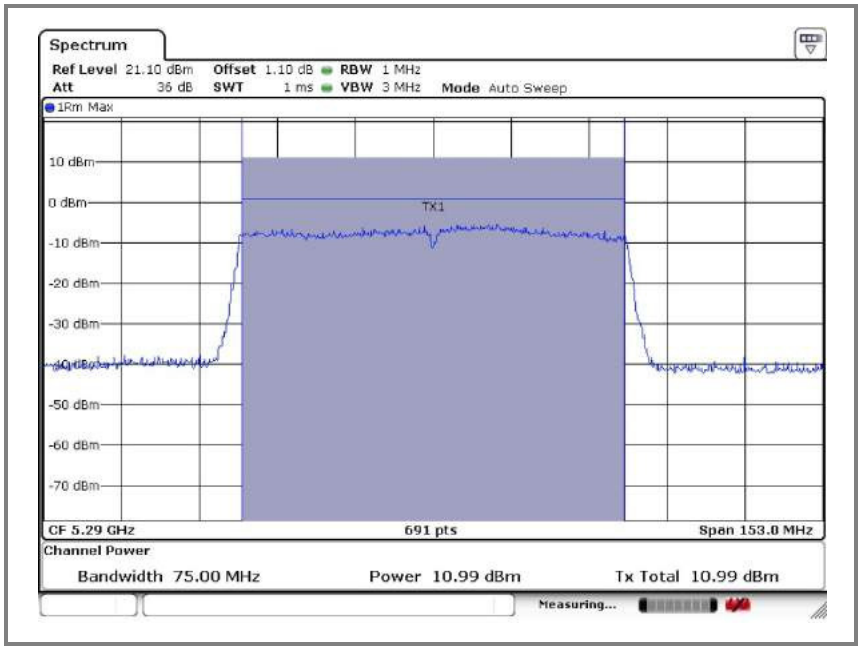


B. High channel(5310 ㎒)



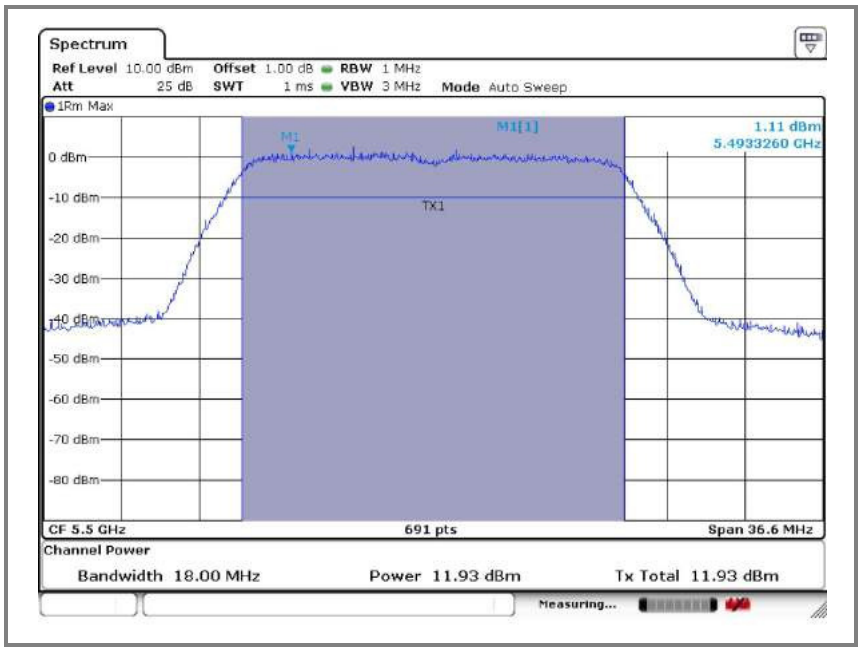
Operation mode: U-NII-2A(VHT80)

A. Low channel(5290 ㎒)

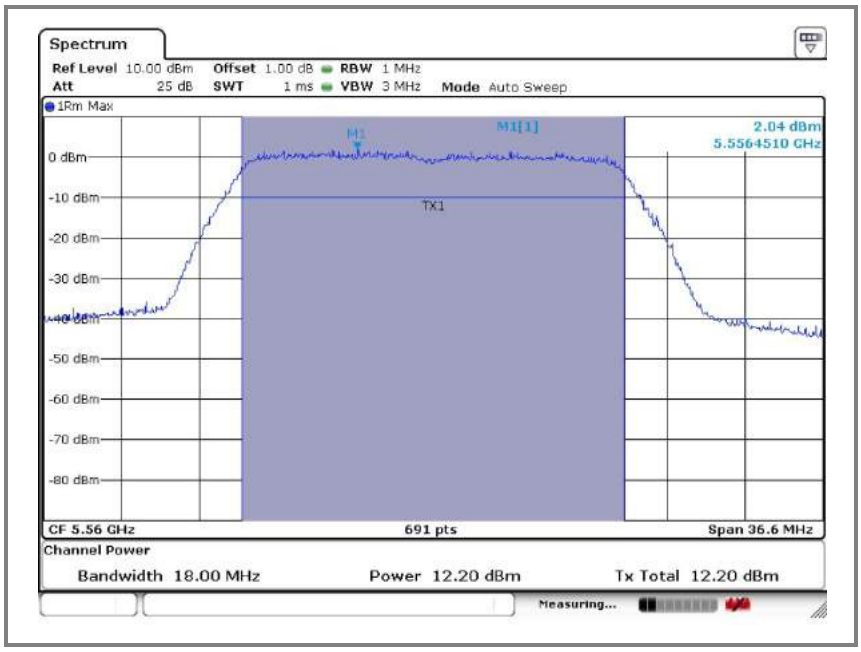


Operation mode: U-NII-2C

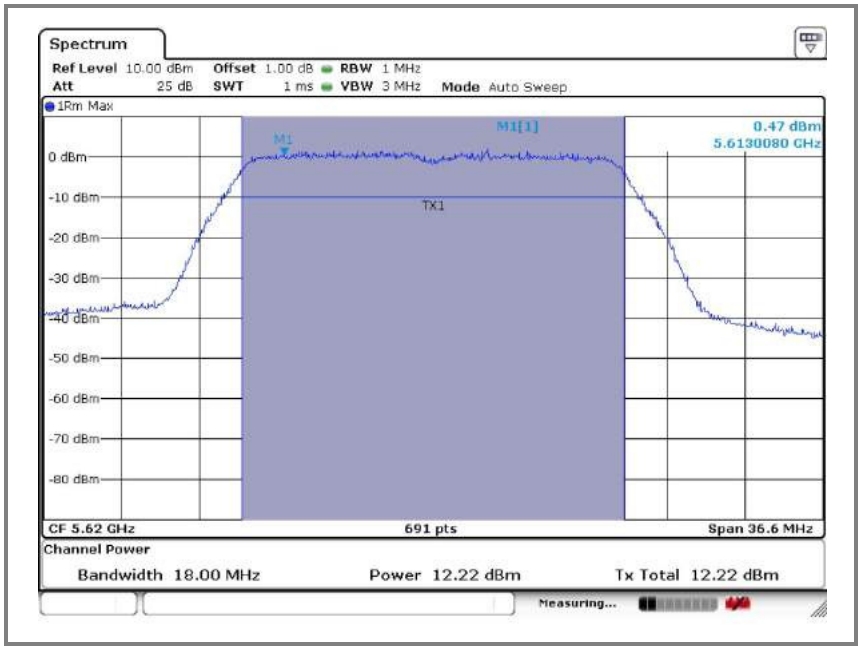
A. Low channel(5500 ㎒)



B. Middle channel(5560 ㎒)

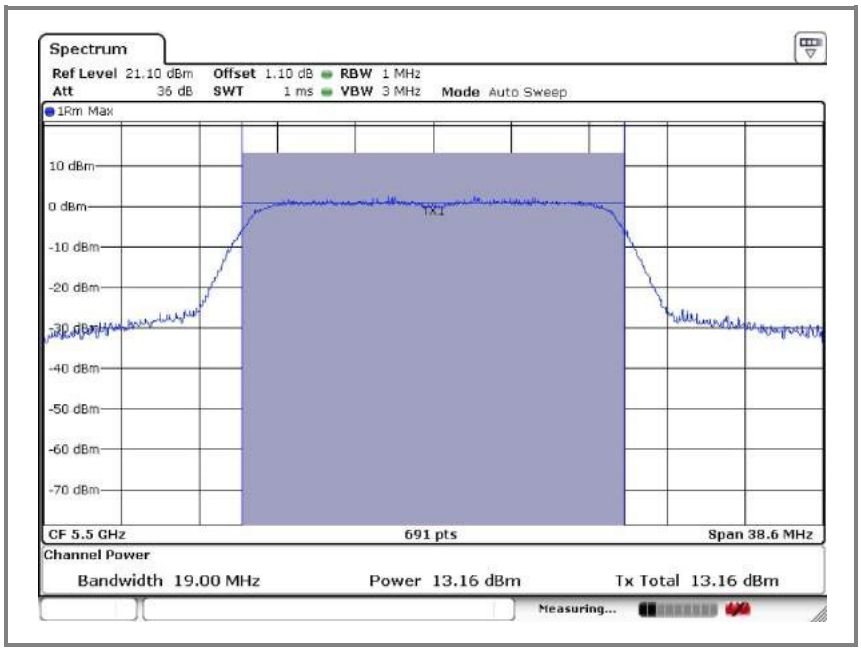


C. High channel(5620 ㎒)

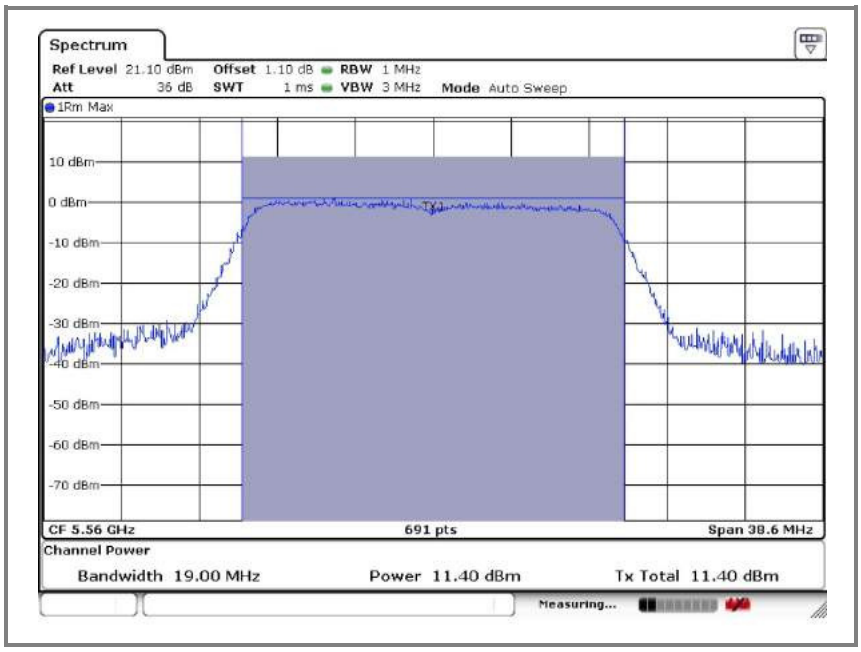


Operation mode: U-NII-2C(n_HT20)

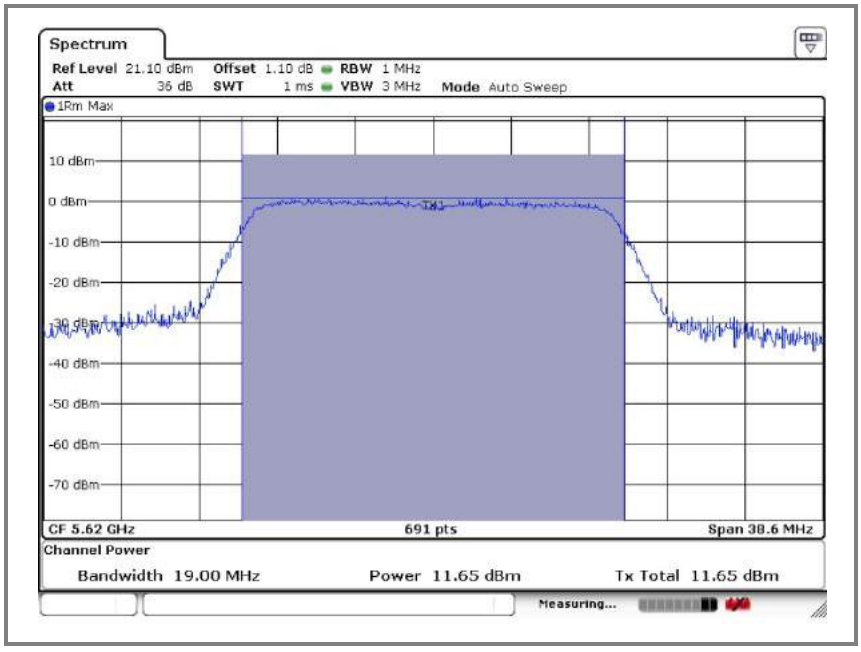
A. Low channel(5500 ㎒)



B. Middle channel(5560 ㎒)

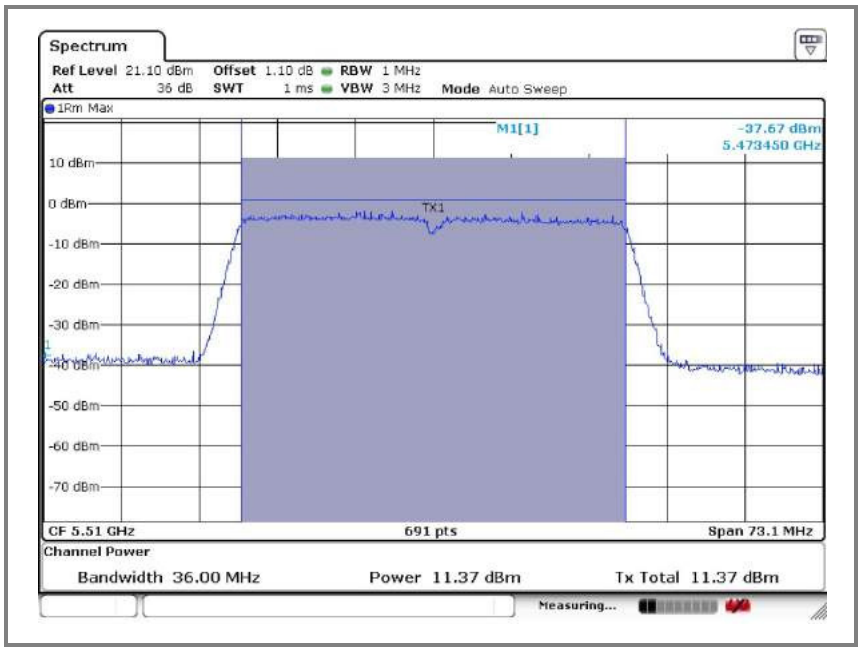


C. High channel(5620 ㎒)

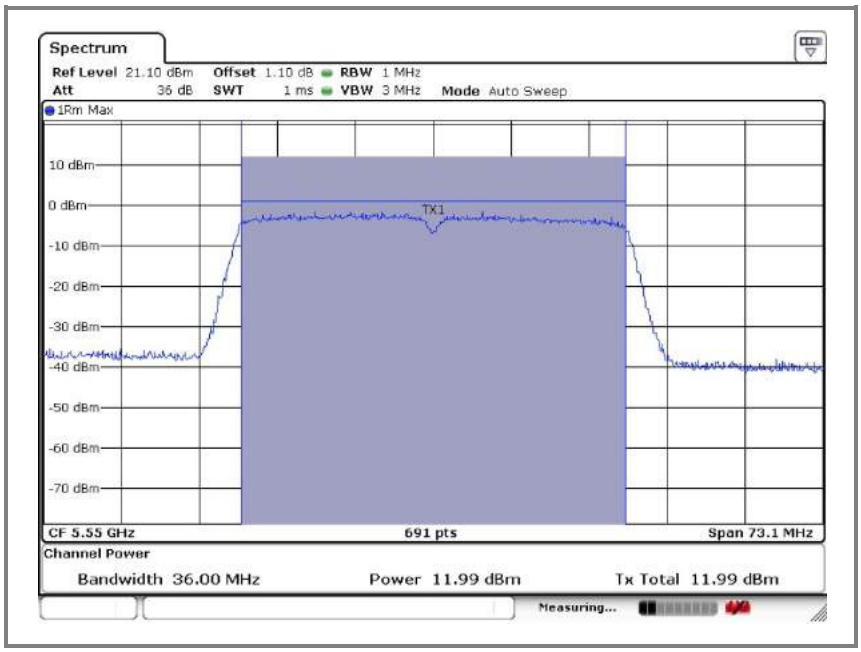


Operation mode: U-NII-2C(n_HT40)

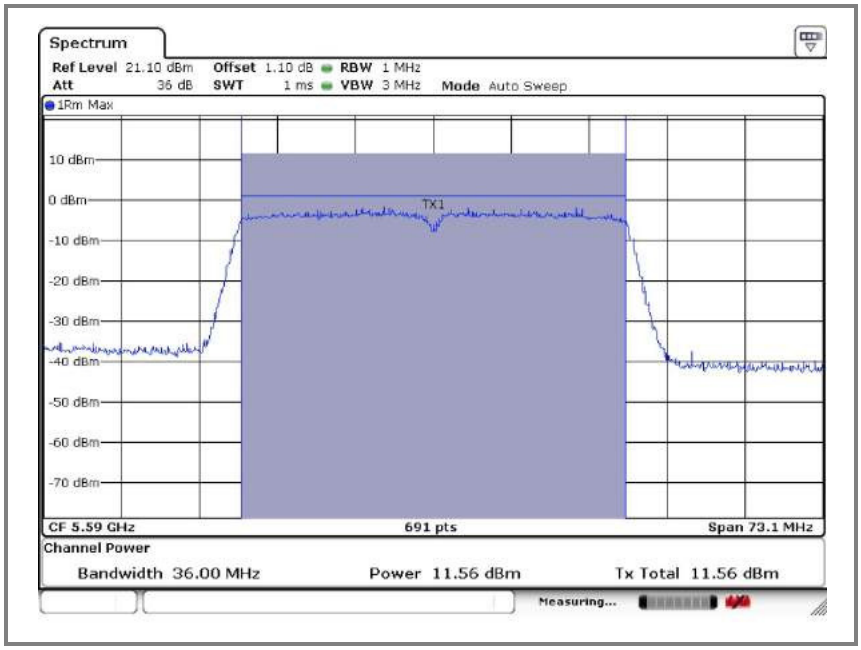
A. Low channel(5510 ㎒)



B. Middle channel(5550 ㎒)

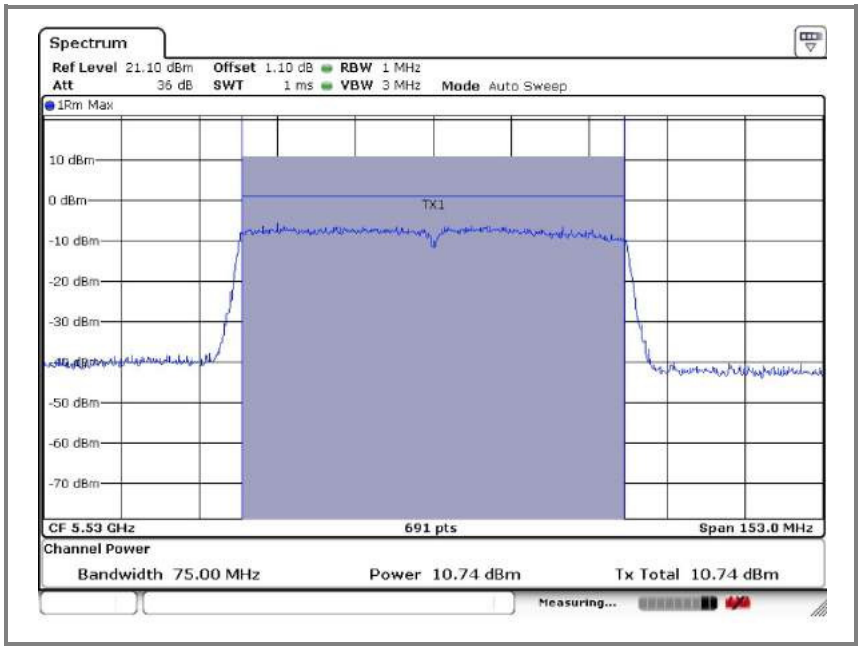


C. High channel(5590 ㎒)

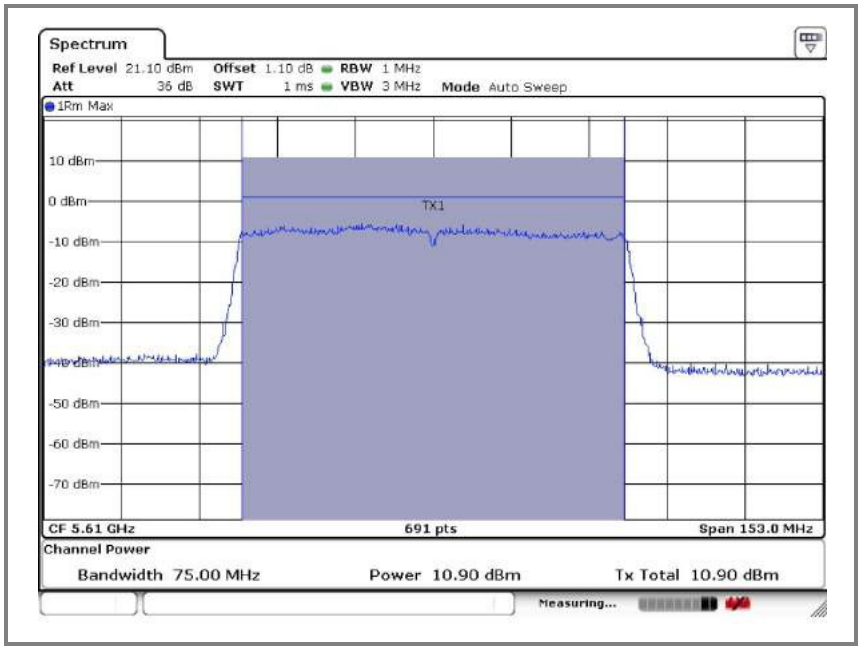


Operation mode: U-NII-2C(VHT80)

A. Low channel(5530 ㎒)

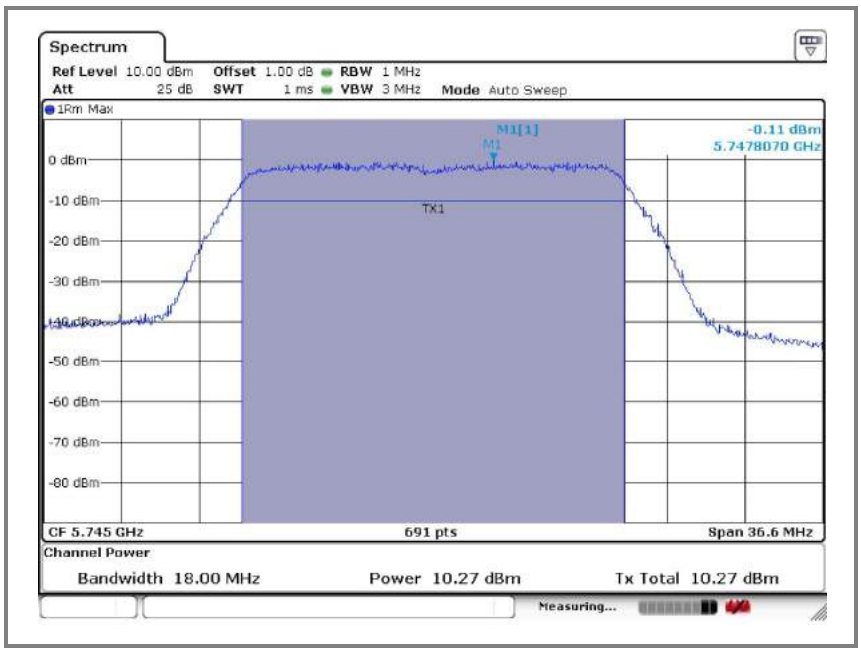


A. High channel(5610 ㎒)

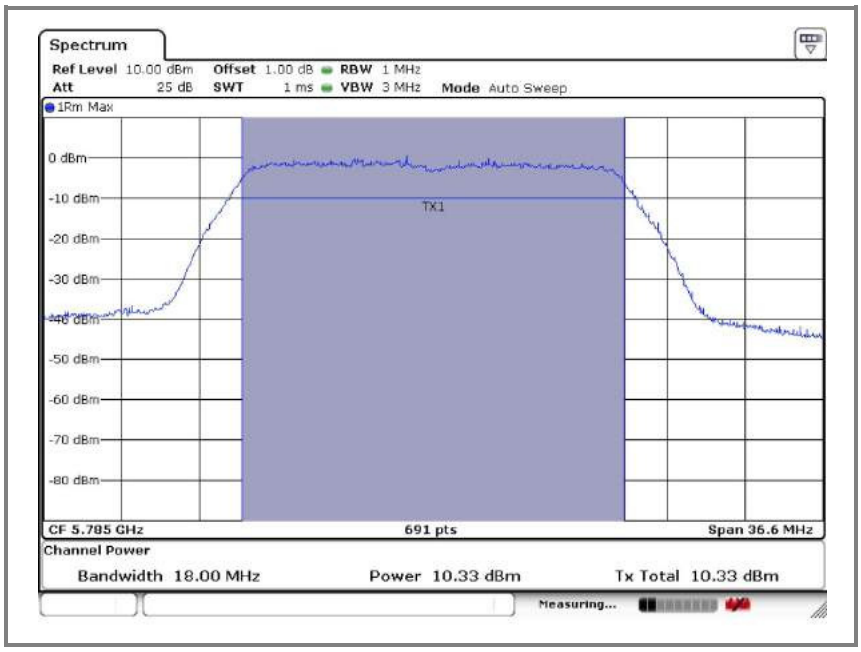


Operation mode: U-NII-3

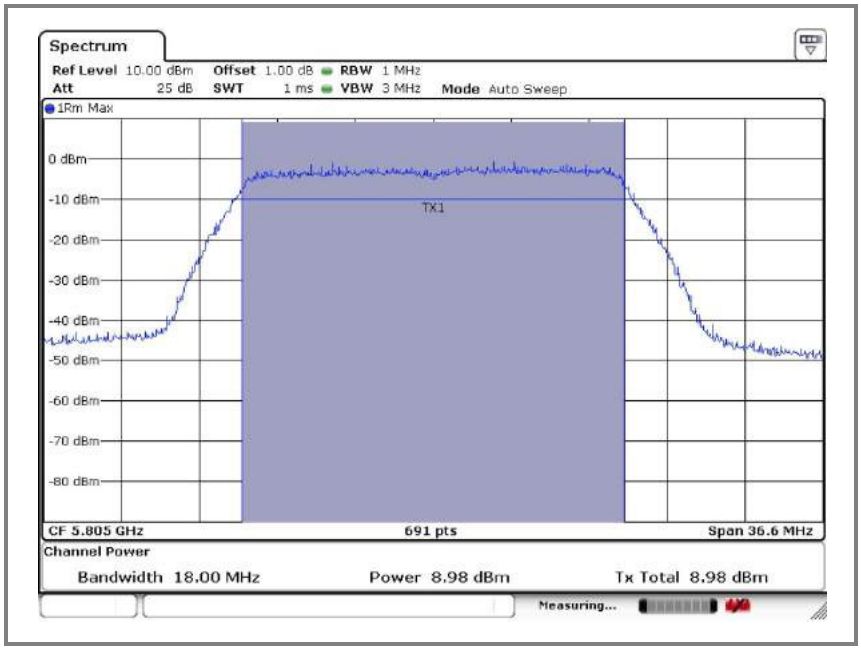
A. Low channel(5745 ㎒)



B. Middle channel(5785 ㎒)

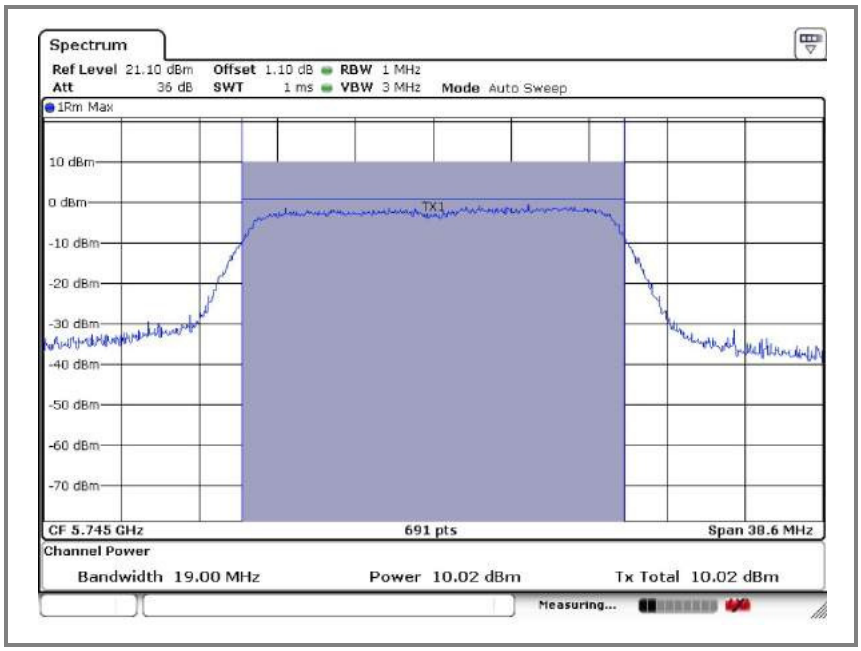


C. High channel(5805 ㎒)

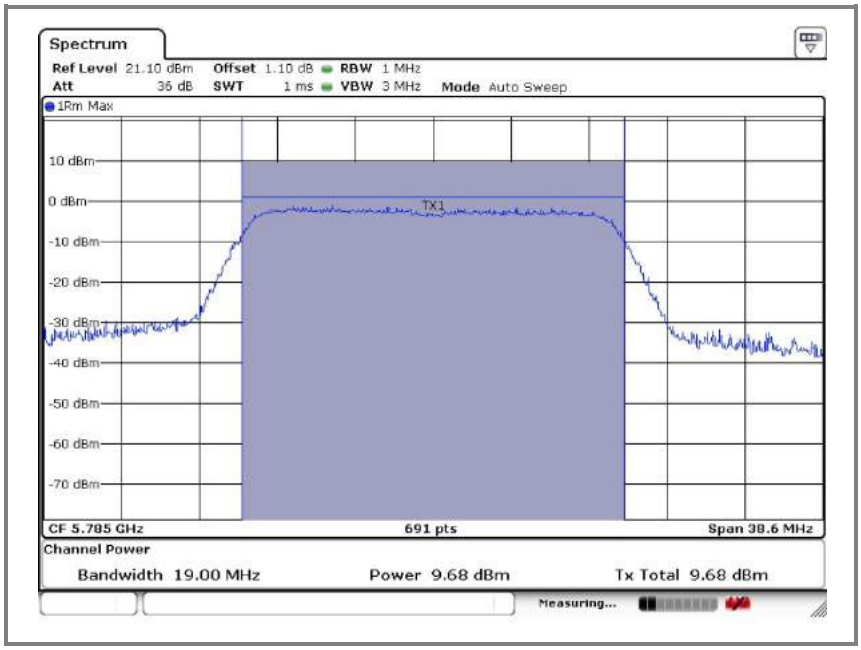


Operation mode: U-NII-3(n_HT20)

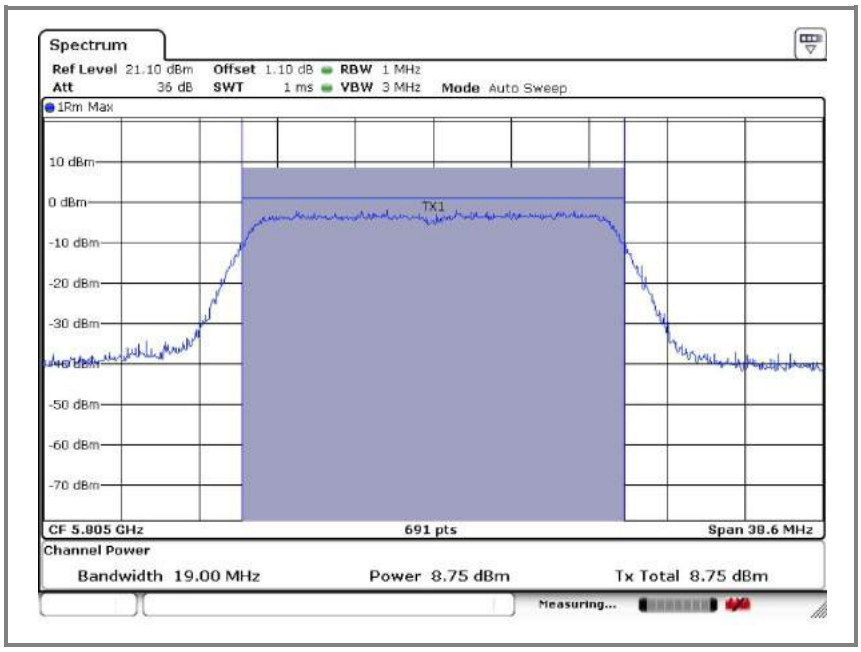
A. Low channel(5745 ㎒)



B. Middle channel(5785 ㎒)

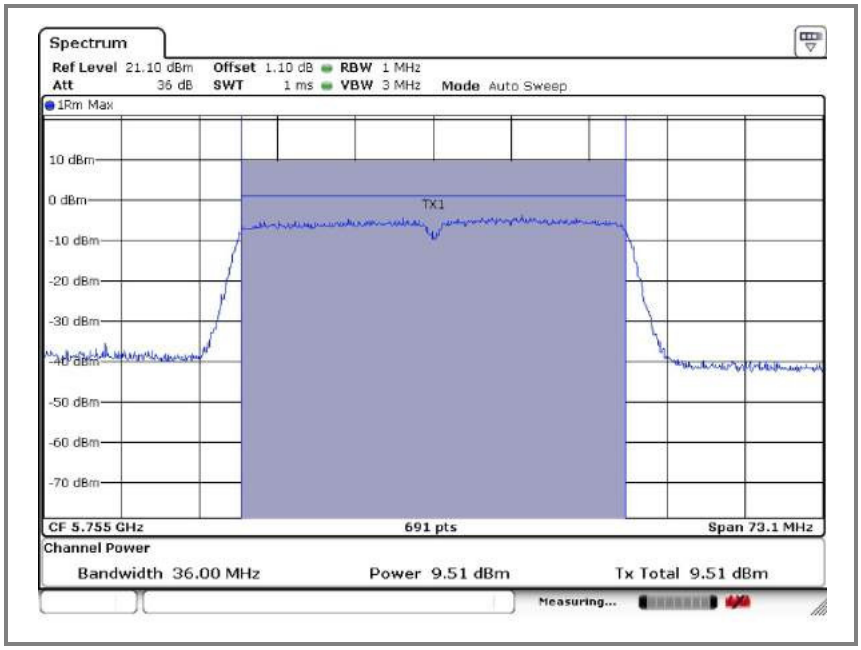


C. High channel(5805 ㎒)

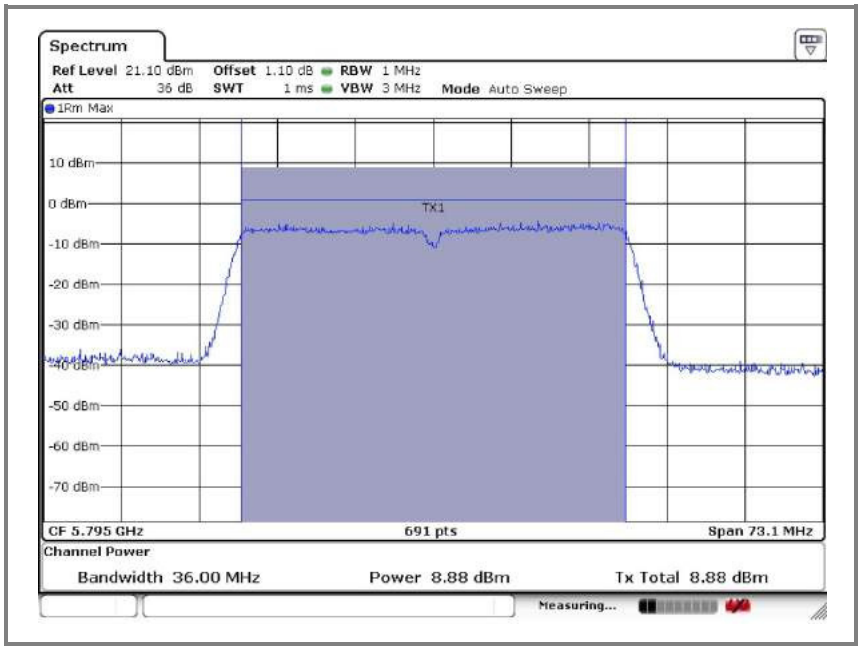


Operation mode: U-NII-3(n_HT40)

A. Low channel(5755 ㎒)

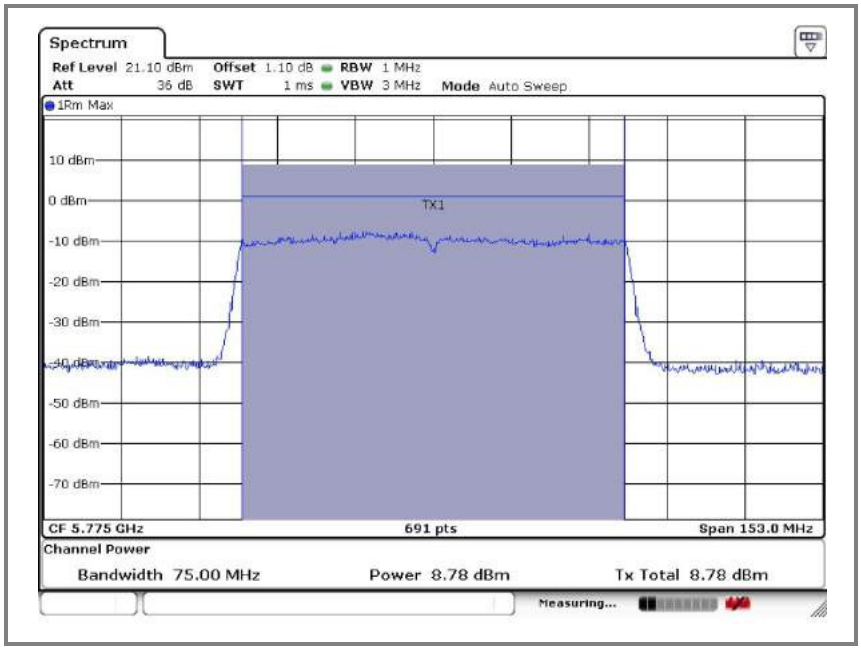


B. High channel(5795 ㎒)



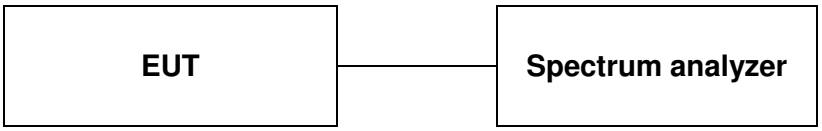
Operation mode: U-NII-3(VHT80)

A. Low channel(5775 ㎒)



7. power spectral density

7.1. Test setup



7.2. Test Overview and Limit

Frequency Band	Limit
5150-5250MHz	The power spectral density less than 11dBm/1MHz
5250-5350MHz	The power spectral density less than 11dBm/1MHz
5470-5725MHz	The power spectral density less than 11dBm/1MHz
5725-5850MHz	The power spectral density less than 30dBm/500kHz

7.3. Test procedure (KDB 789033)

1. Create an average power spectrum for the EUT operating mode being tested by following the instructions in section II.E.2. for measuring maximum conducted output power using a spectrum analyzer or EMI receiver: select the appropriate test method (SA-1, SA-2, SA-3, or alternatives to each) and apply it up to, but not including, the step labeled, “Compute power….” (This procedure is required even if the maximum conducted output power measurement was performed using a power meter, method PM.)

2. Use the peak search function on the instrument to find the peak of the spectrum and record its value.

3. Make the following adjustments to the peak value of the spectrum, if applicable:
a) If Method SA-2 or SA-2 Alternative was used, add 10 log (1/x), where x is the duty cycle, to the peak of the spectrum.

b) If Method SA-3 Alternative was used and the linear mode was used in step II.E.2.g)(viii), add 1 dB to the final result to compensate for the difference between linear averaging and power averaging.
4. The result is the Maximum PSD over 1 MHz reference bandwidth.

5. For devices operating in the bands 5.15-5.25 GHz, 5.25-5.35 GHz, and 5.47-5.725 GHz, the above procedures make use of 1 MHz RBW to satisfy directly the 1 MHz reference bandwidth specified in § 15.407(a)(5). For devices operating in the band 5.725-5.85 GHz, the rules specify a measurement bandwidth of 500 kHz. Many spectrum analyzers do not have 500 kHz RBW, thus a narrower RBW may need to be used. The rules permit the use of a RBWs less than 1 MHz, or 500 kHz, “provided that the measured power is integrated over the full reference bandwidth” to show the total power over the specified measurement bandwidth (i.e., 1 MHz, or 500 kHz). If measurements are performed using a reduced resolution bandwidth (< 1 MHz, or < 500 kHz) and integrated over 1 MHz, or 500 kHz bandwidth, the following adjustments to the procedures apply:
a) Set RBW ≥ 1/T, where T is defined in section II.B.I.a).

b) Set VBW ≥ 3 RBW.

c) If measurement bandwidth of Maximum PSD is specified in 500 kHz, add 10 log (500 kHz/RBW) to the measured result, whereas RBW (<500 kHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.

d) If measurement bandwidth of Maximum PSD is specified in 1 MHz, add 10 log (1MHz/RBW) to the measured result, whereas RBW (< 1 MHz) is the reduced resolution bandwidth of spectrum analyzer set during measurement.

e) Care must be taken to ensure that the measurements are performed during a period of continuous transmission or are corrected upward for duty cycle.
Note: As a practical matter, it is recommended to use reduced RBW of 100 kHz for the sections 5.c) and 5.d) above, since RBW=100 KHZ is available on nearly all spectrum analyzers.

7.4. Test results

Ambient temperature: 22℃
Relative humidity: 45% R.H.

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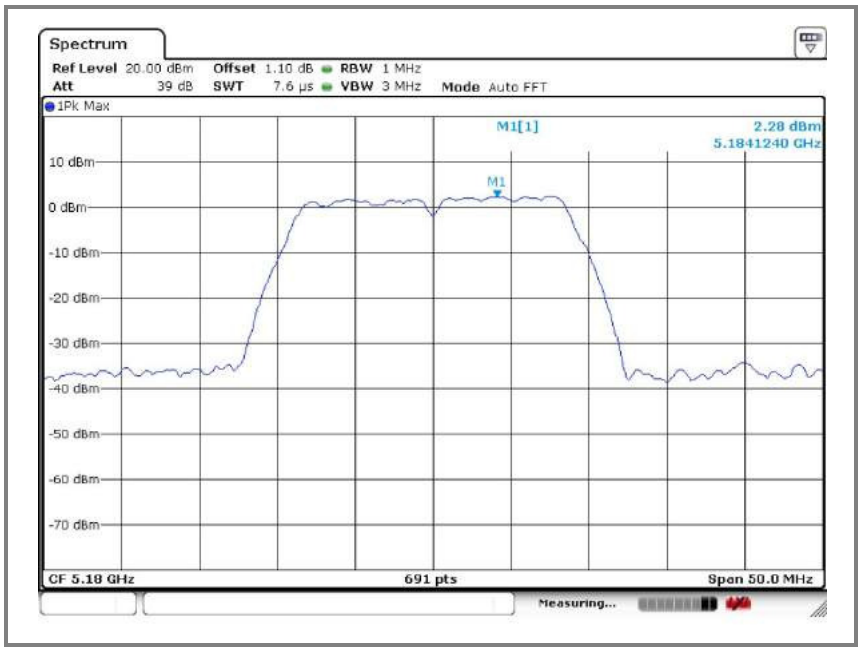
Mode	Frequency (㎒)	Power Spectral Density (dB **m** /1 ㎒)	Limit (dB **m** /1 ㎒)
U-NII-1	5 180	2.28	11dBm
	5 220	1.99	
	5 240	2.21	
U-NII-1(n_HT20)	5 180	3.38	
	5 220	2.18	
	5 240	3.36	
U-NII-1(n_HT40)	5 190	0.97	
	5 230	-0.07	
U-NII-1(VHT80)	5 210	-3.85	
U-NII-2A	5 260	2.50	11dBm
	5 300	3.38	
	5 320	3.13	
U-NII-2A(n_HT20)	5 260	3.04	
	5 300	3.41	
	5 320	3.29	
U-NII-2A(n_HT40)	5 270	1.67	
	5 310	-0.51	
U-NII-2A(VHT80)	5 290	-1.48	
U-NII-2C	5 500	2.91	11dBm
	5 560	2.81	
	5 620	3.13	
U-NII-2C(n_HT20)	5 500	2.90	
	5 560	2.66	
	5 620	2.05	
U-NII-2C(n_HT40)	5 510	0.16	
	5 550	0.22	
	5 590	-0.54	
U-NII-2C(VHT80)	5 530	-3.22	
	5 610	-2.43	

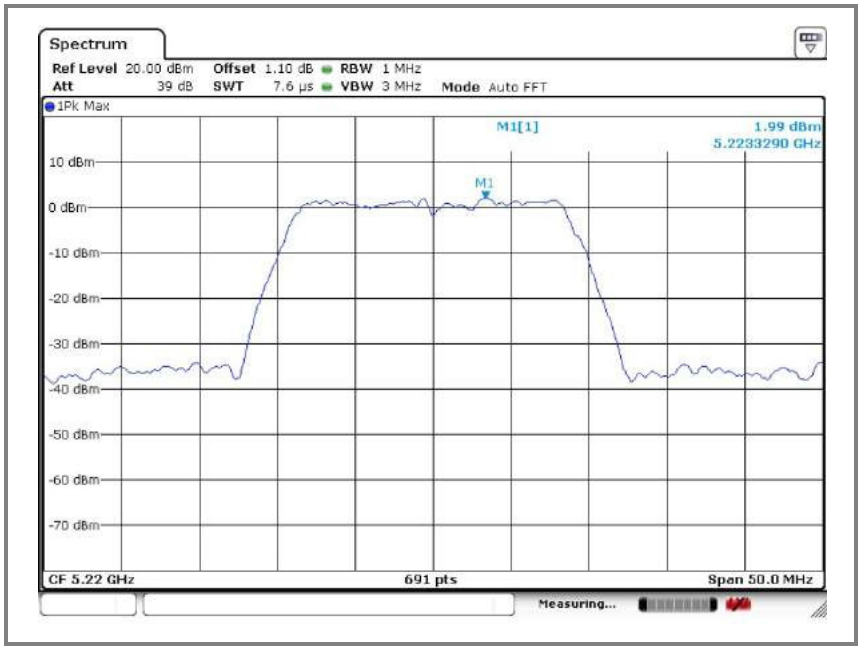
Mode	Frequency (㎒)	Power Spectral Density (dB **m** /500kHz)	Limit (dB **m** /500kHz)
U-NII-3	5 745	-2.92	30
	5 785	-4.19	
	5 805	-4.32	
U-NII-3(n_HT20)	5 745	-2.50	
	5 785	-2.36	
	5 805	-3.71	
U-NII-3(n_HT40)	5 755	-5.36	
	5 795	-5.40	
U-NII-3(VHT80)	5 775	-8.33	

Operation mode: U-NII-1

A. Low channel(5180 ㎒)



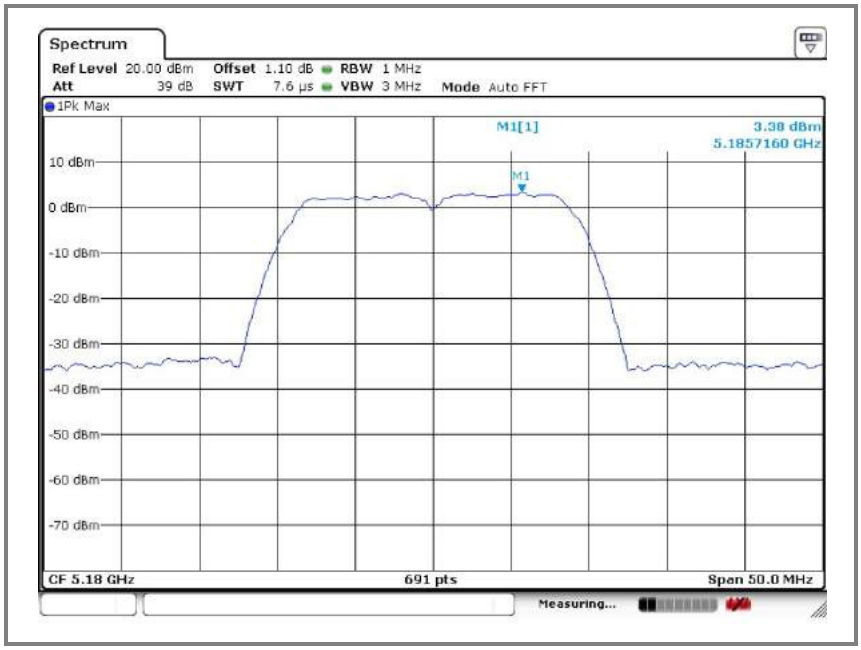
B. Middle channel(5220 ㎒)



C. High channel(5240 ㎒)

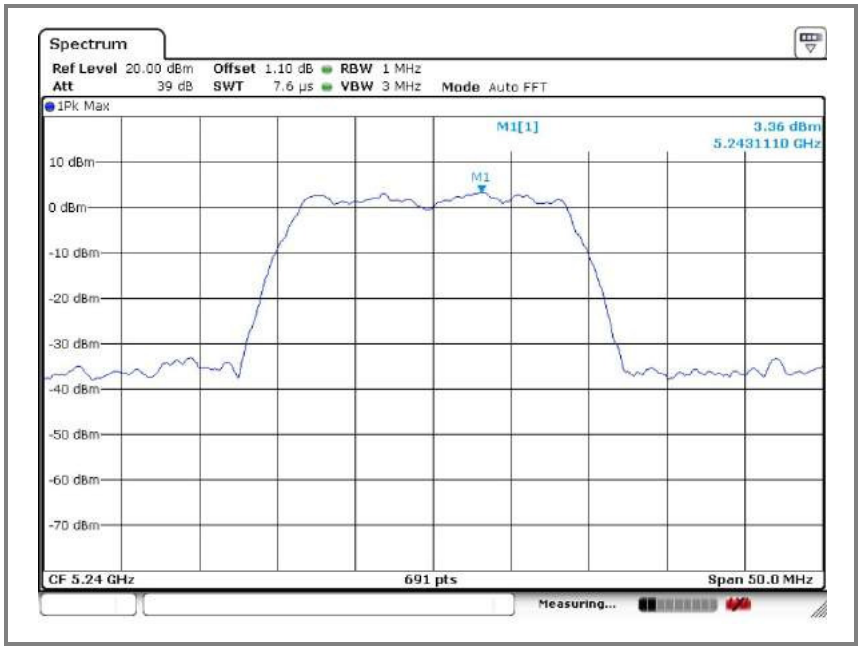
Operation mode: U-NII-1(n_HT20)

A. Low channel(5180 ㎒)



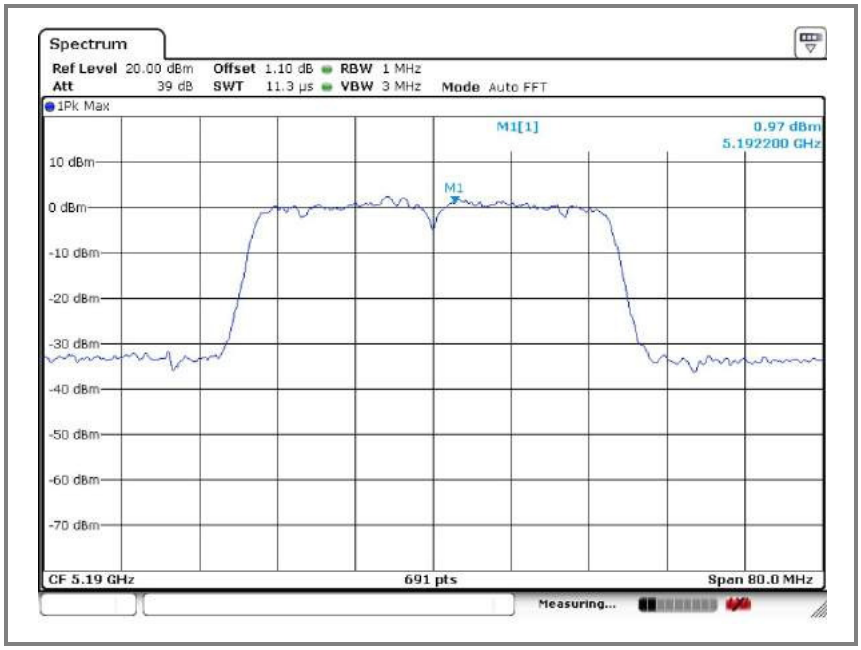
B. Middle channel(5220 ㎒)

C. High channel(5240 ㎒)



Operation mode: U-NII-1(n_HT40)

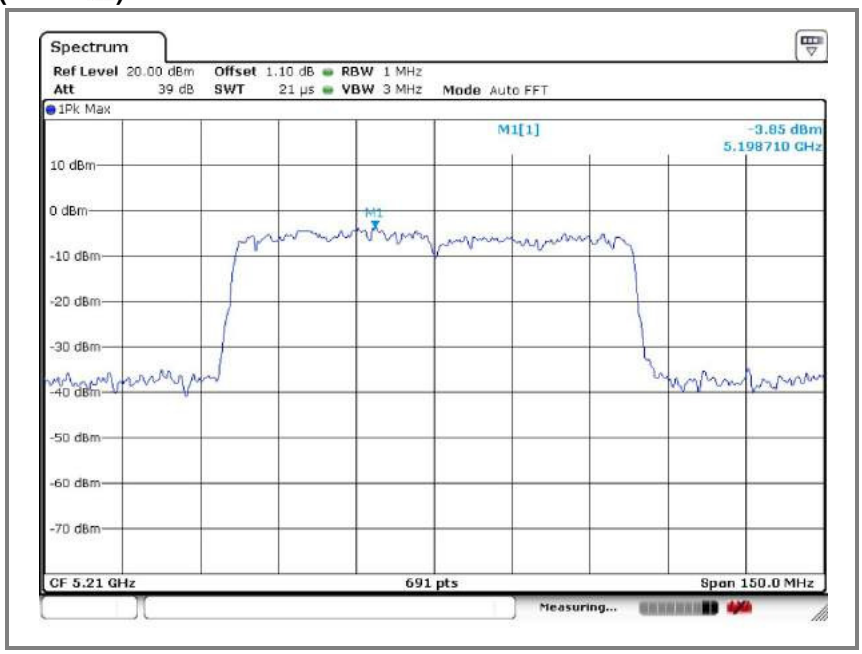
A. Low channel(5190 ㎒)



B. High channel(5230 ㎒)

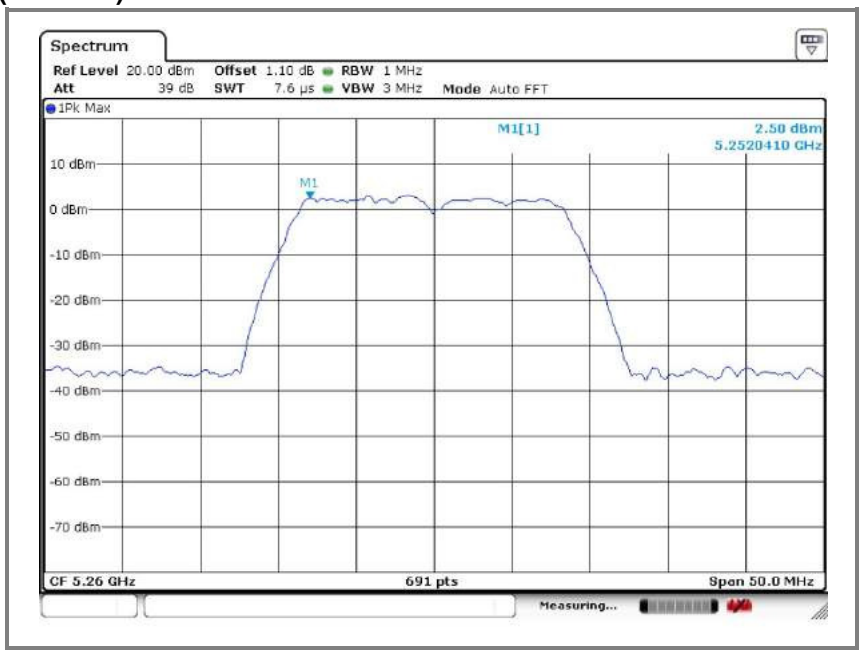
Operation mode: U-NII-1(VHT80)

A. Low channel(5210 ㎒)

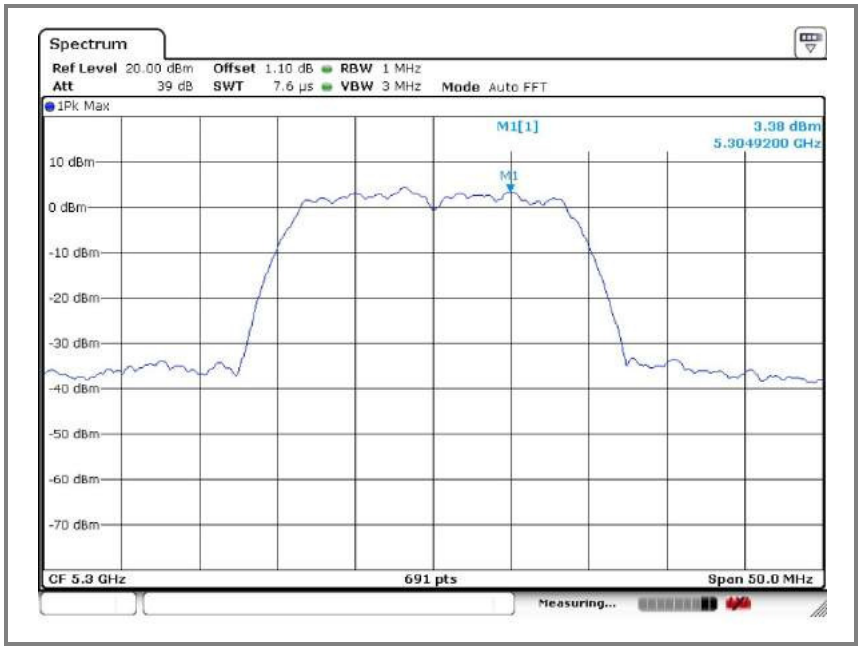


Operation mode: U-NII-2A

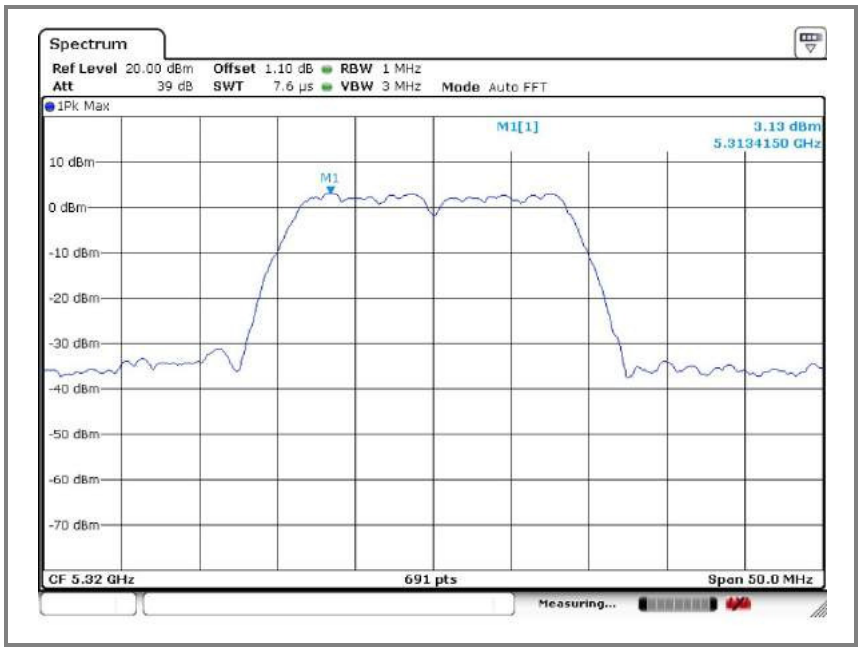
A. Low channel(5260 ㎒)



B. Middle channel(5300 ㎒)

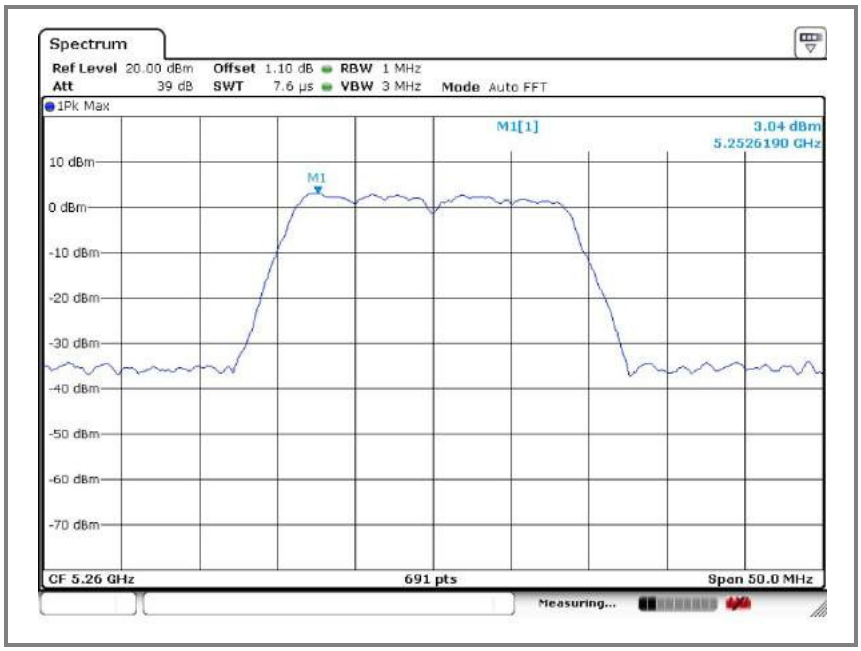


C. High channel(5320 ㎒)

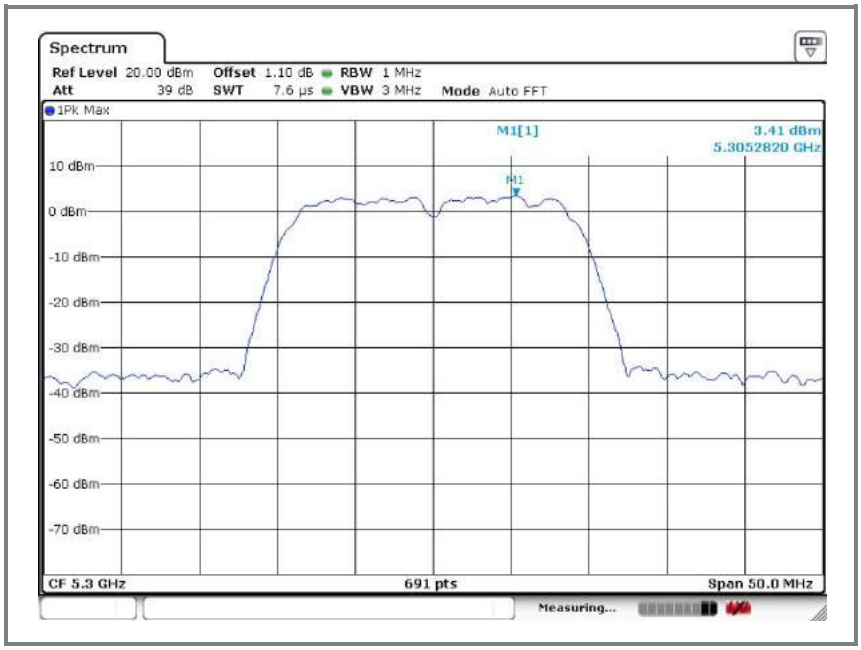


Operation mode: U-NII-2A(n_HT20)

A. Low channel(5260 ㎒)



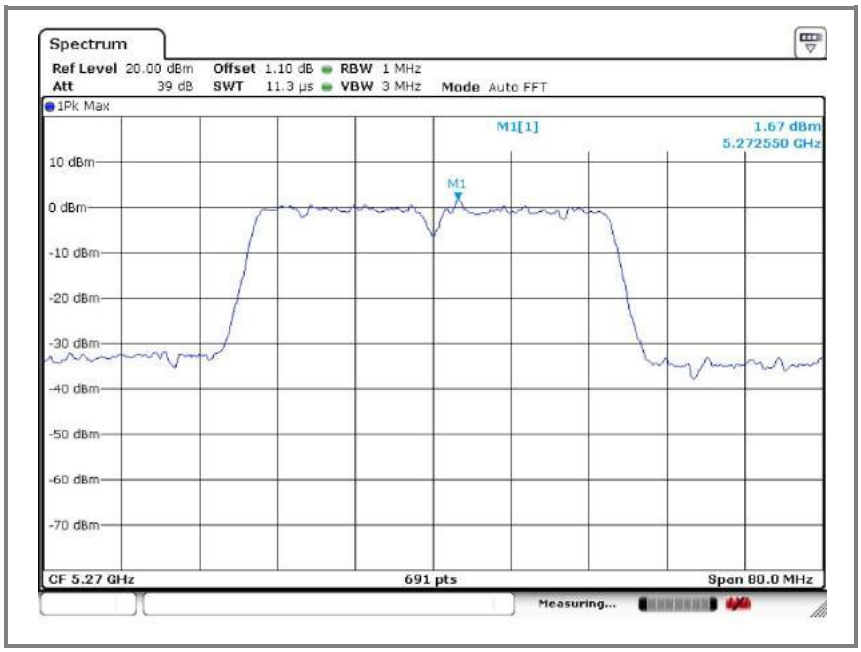
B. Middle channel(5300 ㎒)



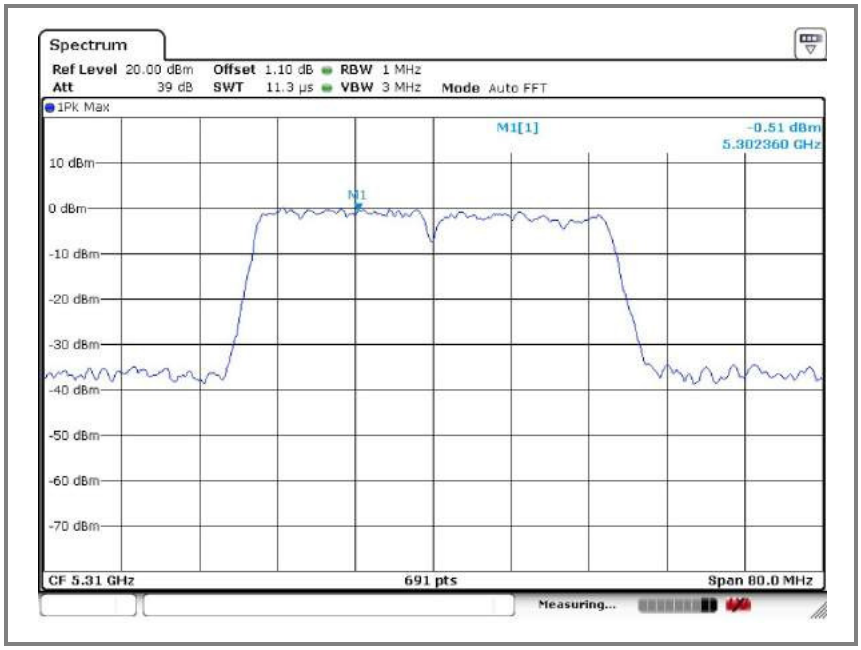
C. High channel(5320 ㎒)

Operation mode: U-NII-2A(n_HT40)

A. Low channel(5270 ㎒)

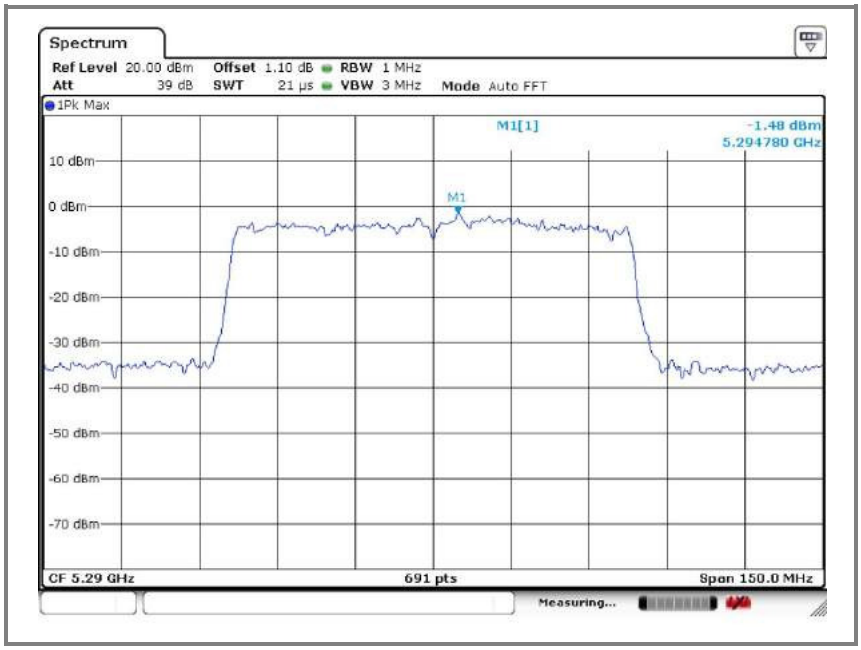


B. High channel(5310 ㎒)



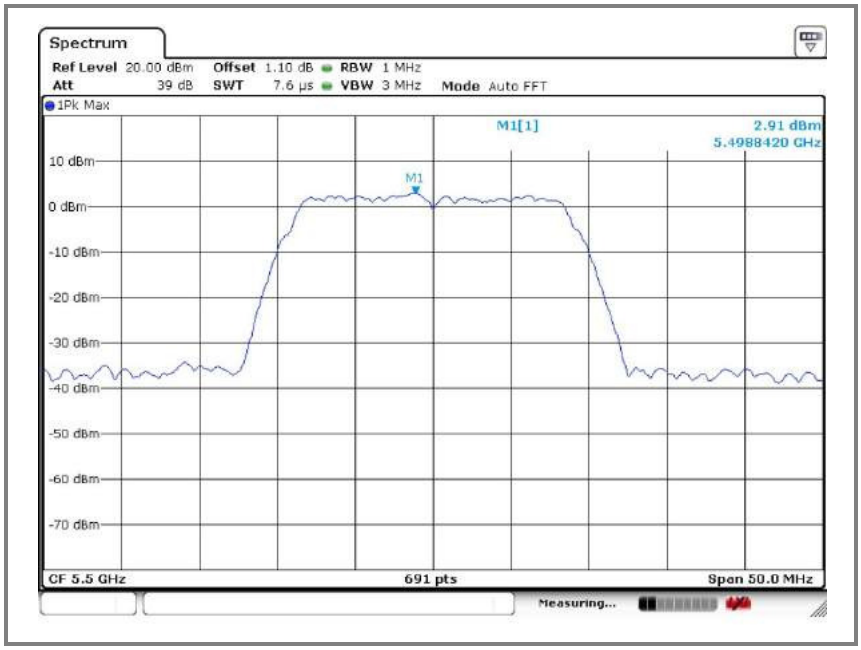
Operation mode: U-NII-2A(VHT80)

A. Low channel(5290 ㎒)

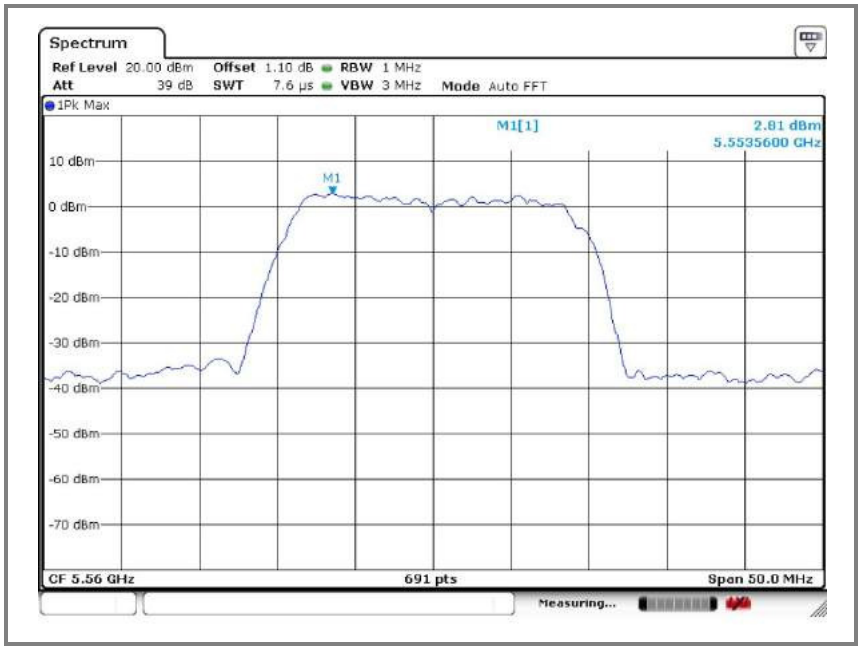


Operation mode: U-NII-2C

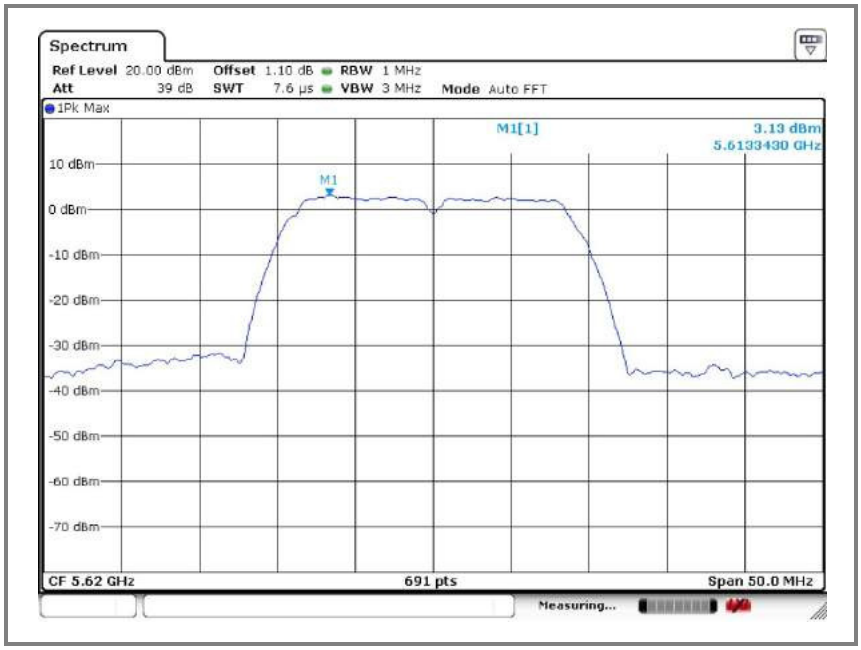
A. Low channel(5500 ㎒)



B. Middle channel(5560 ㎒)

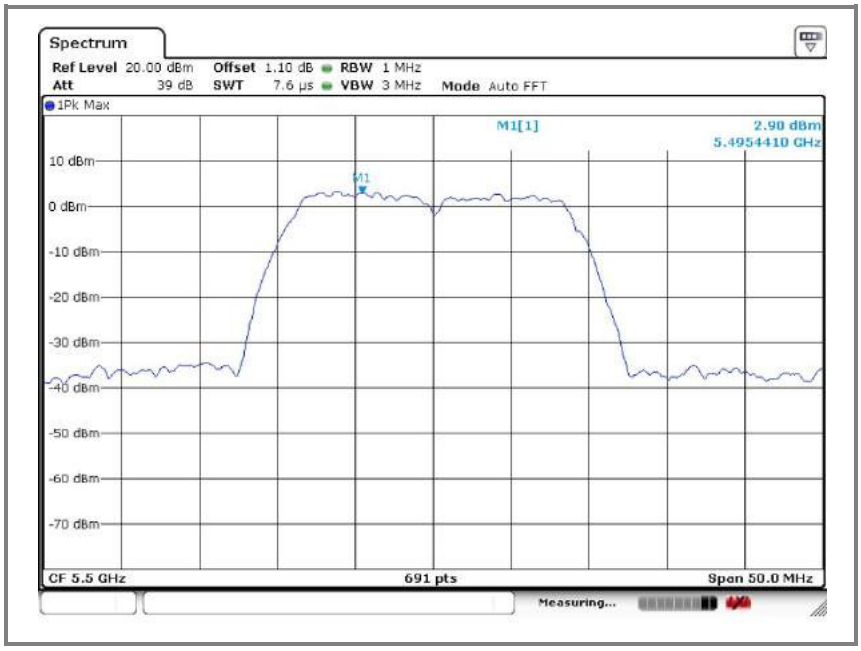


C. High channel(5620 ㎒)

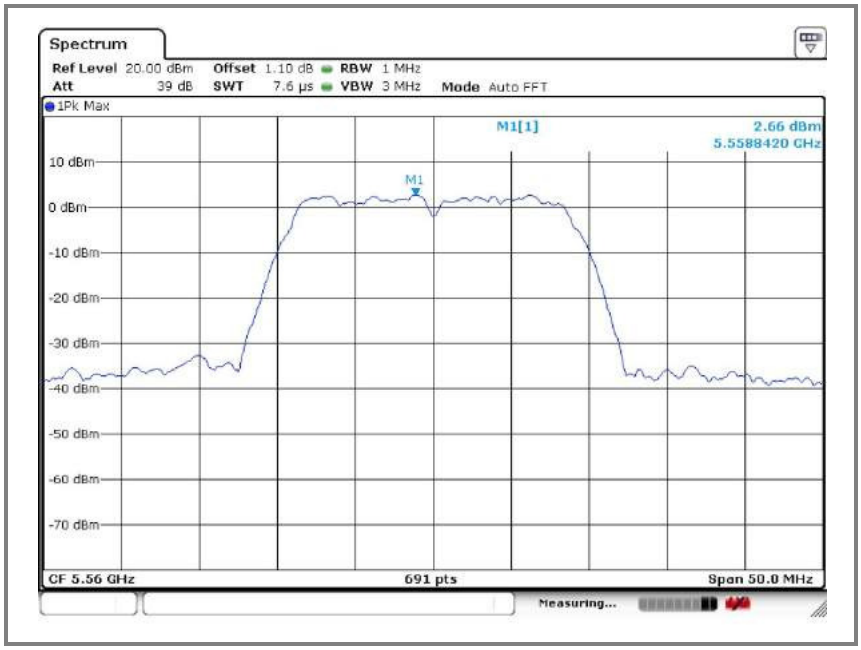


Operation mode: U-NII-2C(n_HT20)

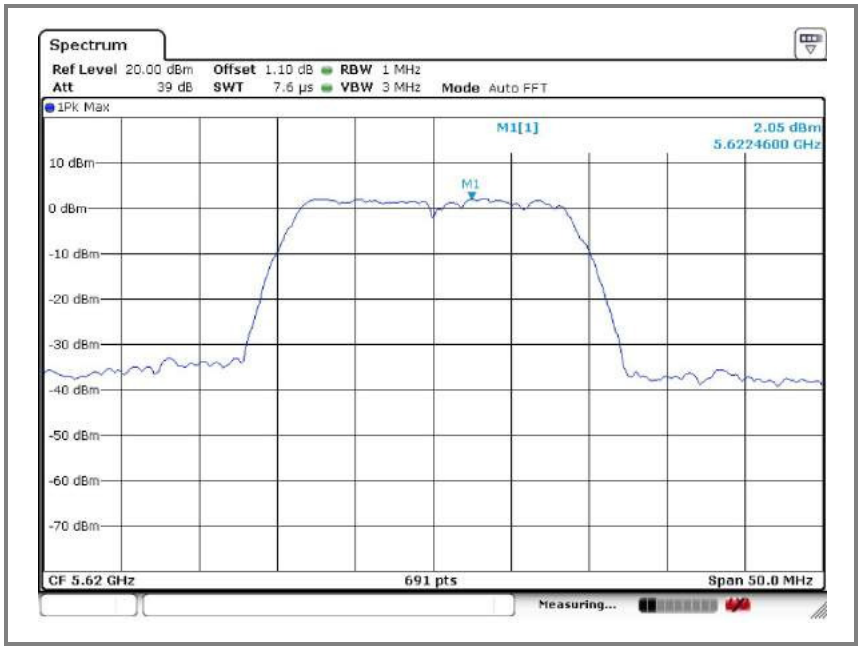
A. Low channel(5500 ㎒)



B. Middle channel(5560 ㎒)

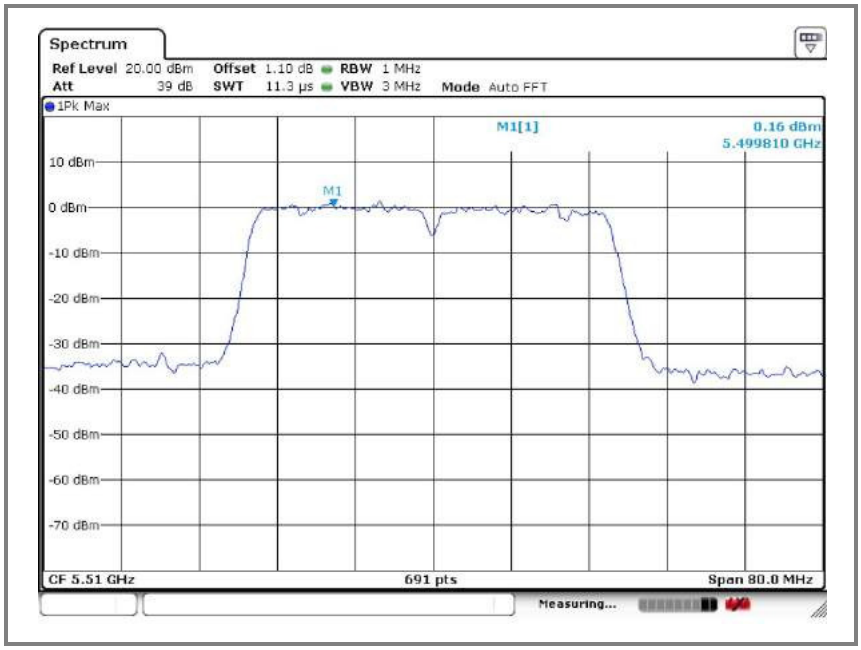


C. High channel(5620 ㎒)

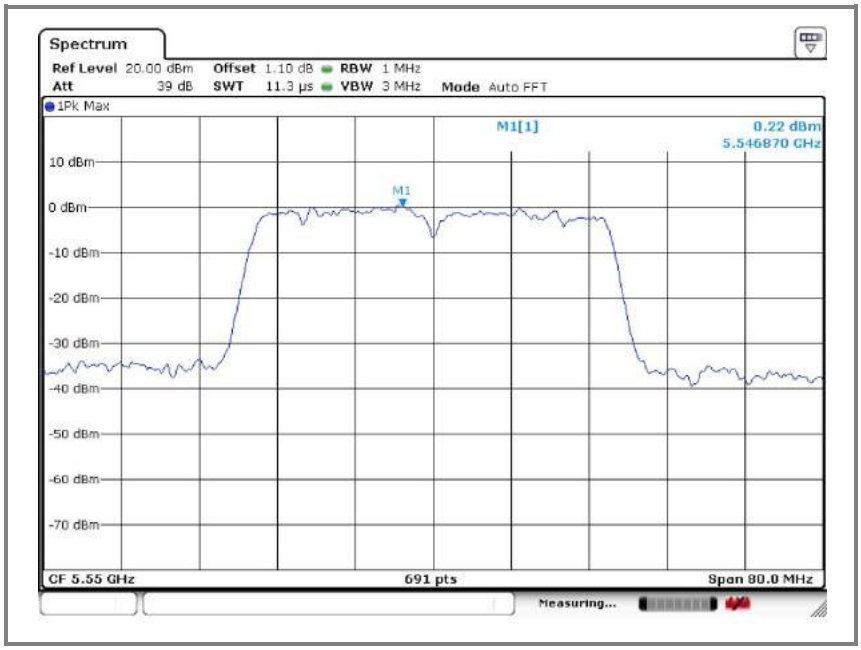


Operation mode: U-NII-2C(n_HT40)

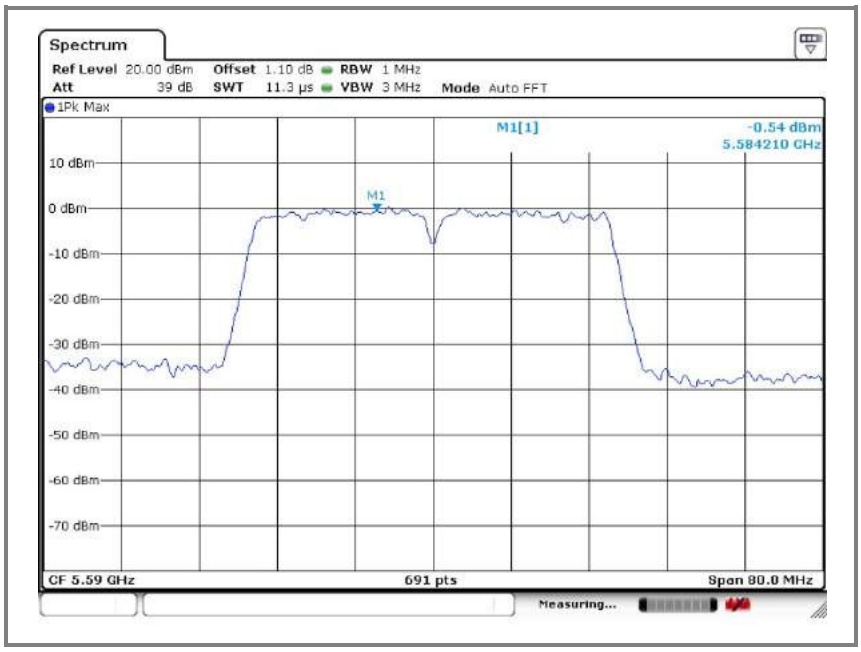
A. Low channel(5510 ㎒)



B. Middle channel(5550 ㎒)

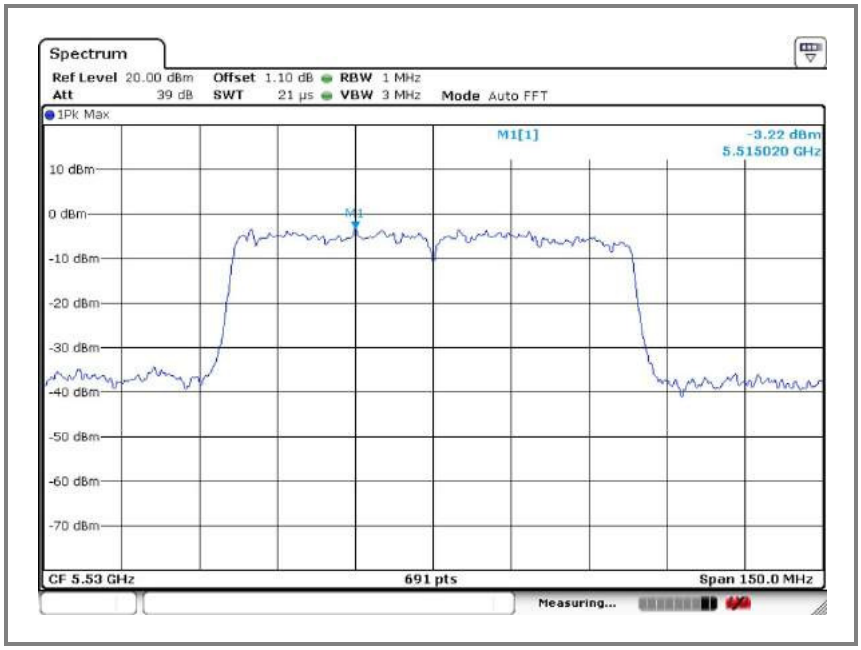


C. High channel(5590 ㎒)

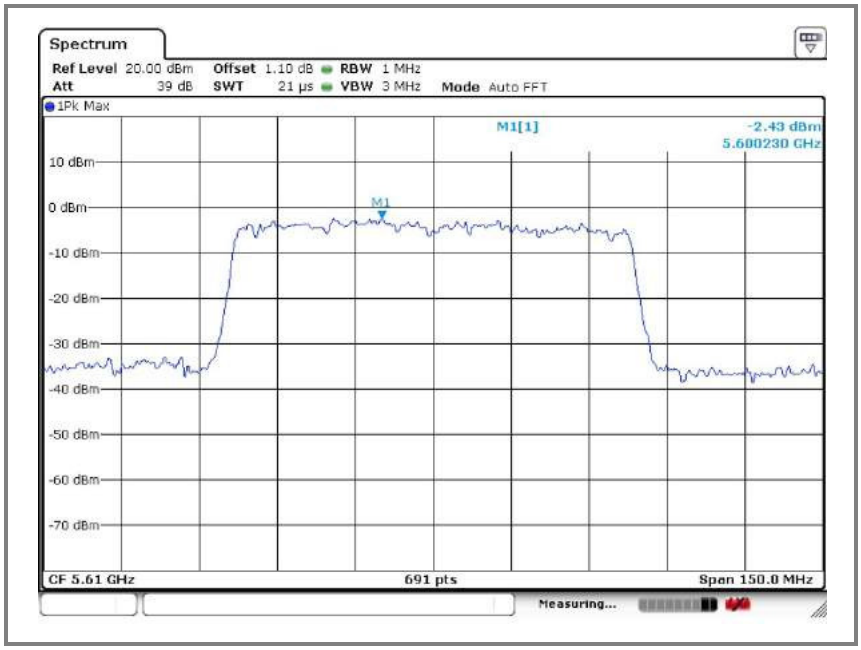


Operation mode: U-NII-2C(VHT80)

A. Low channel(5530 ㎒)

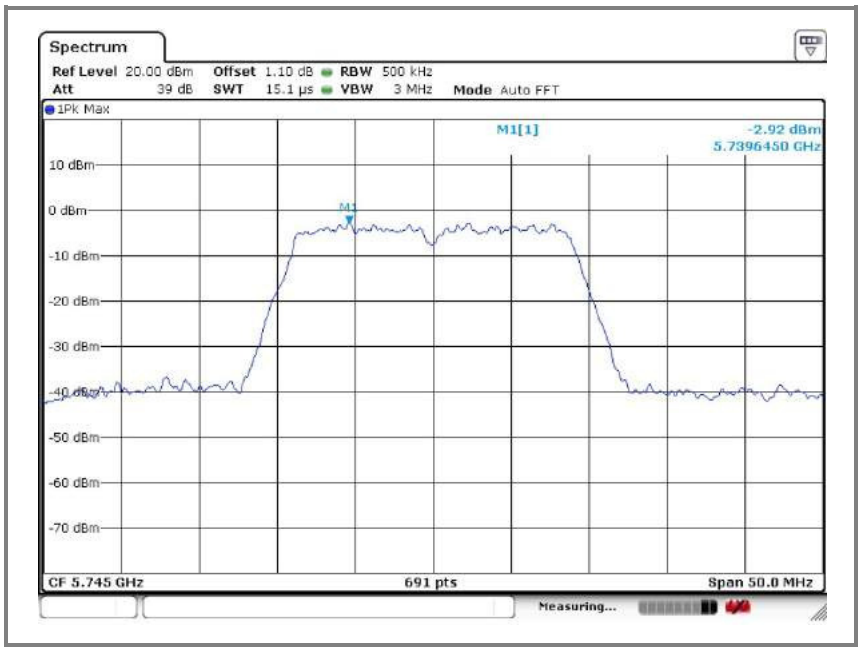


A. High channel(5610 ㎒)



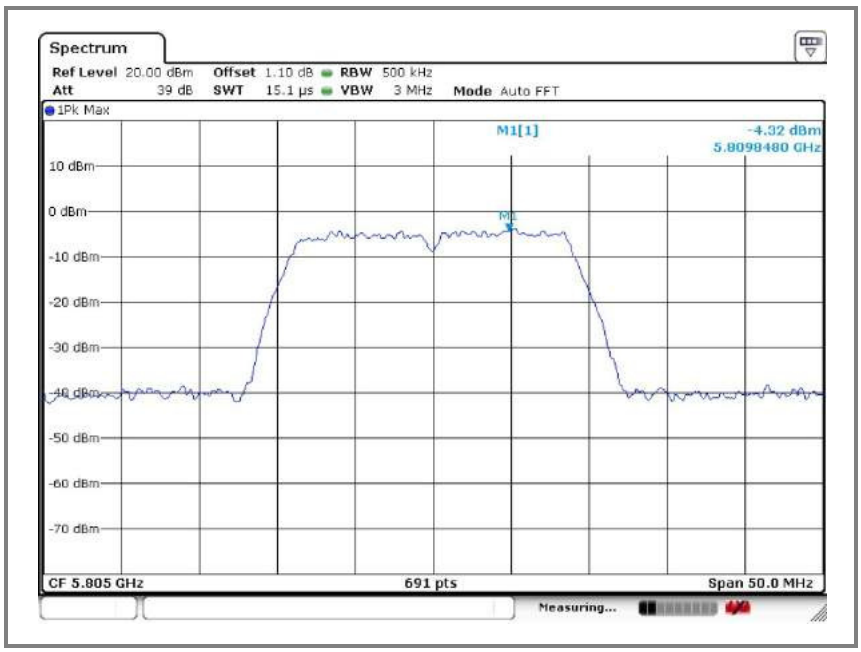
Operation mode: U-NII-3

A. Low channel(5745 ㎒)



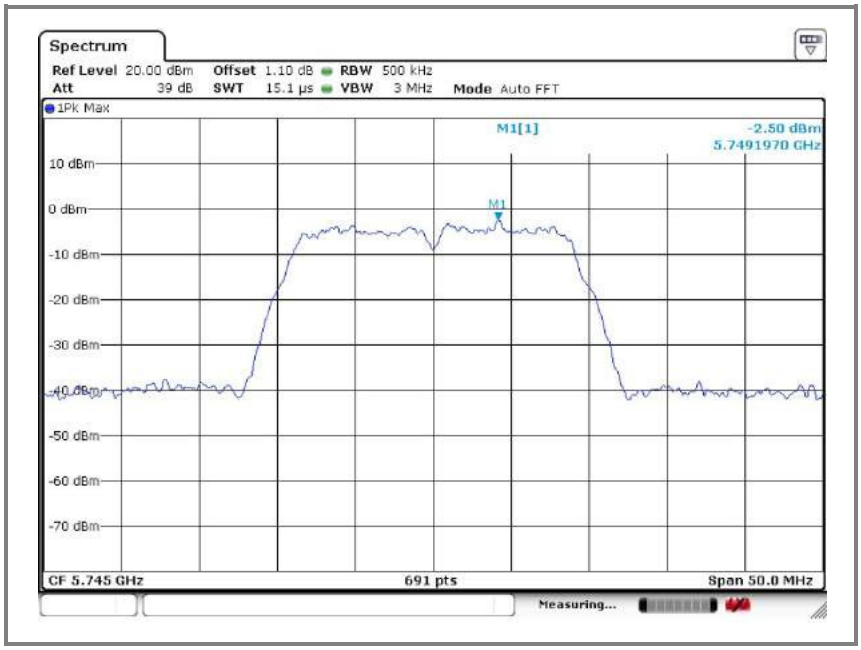
B. Middle channel(5785 ㎒)

C. High channel(5805 ㎒)

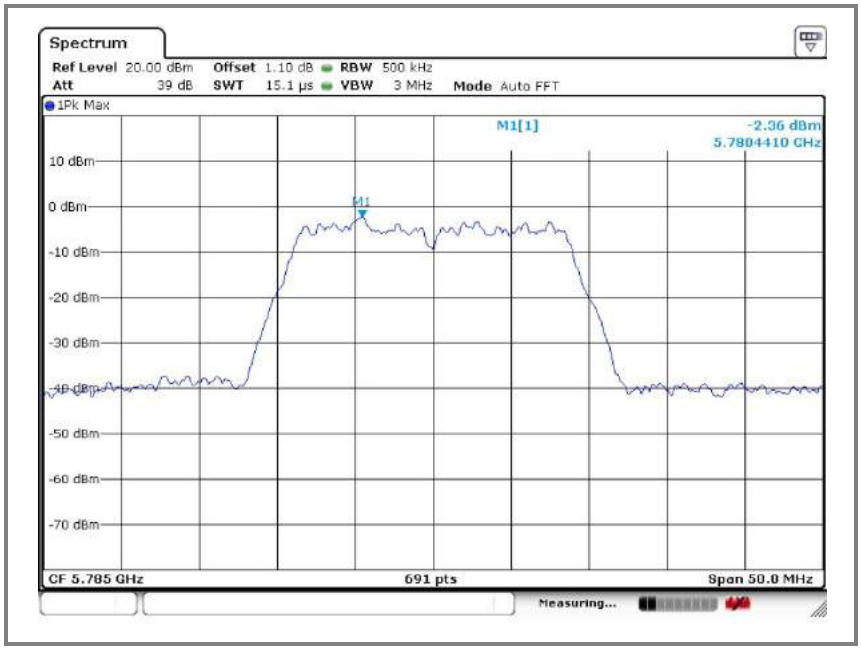


Operation mode: U-NII-3(n_HT20)

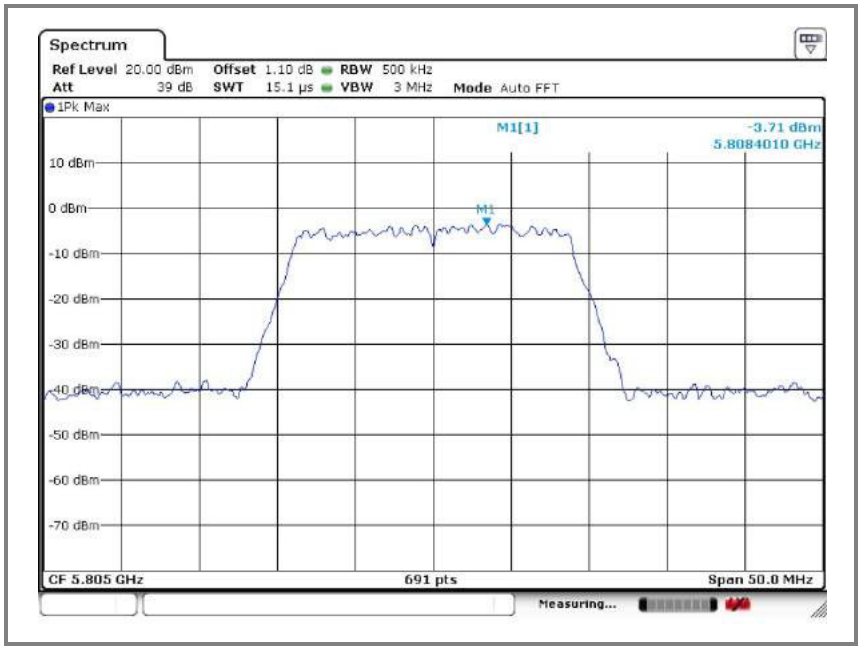
A. Low channel(5745 ㎒)



B. Middle channel(5785 ㎒)

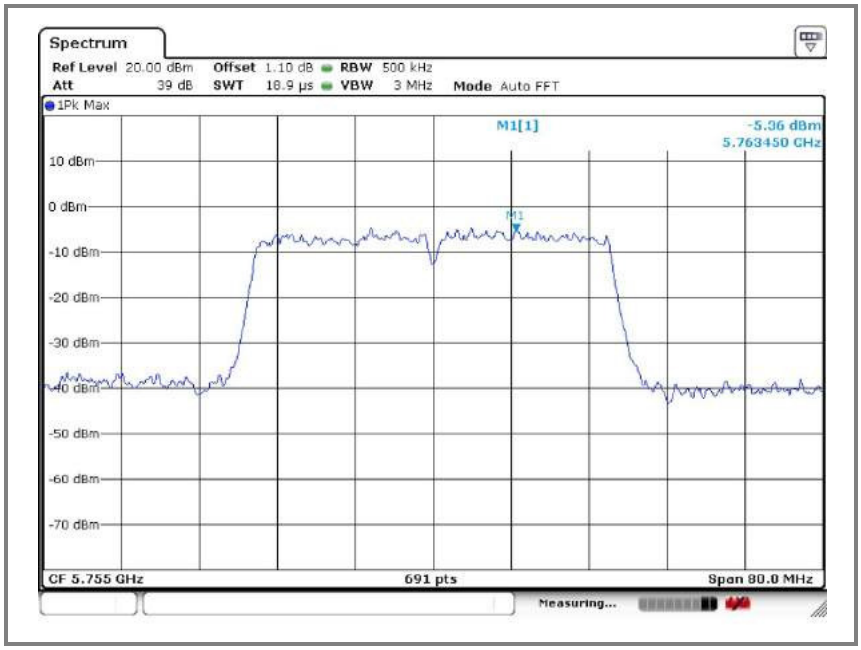


C. High channel(5805 ㎒)

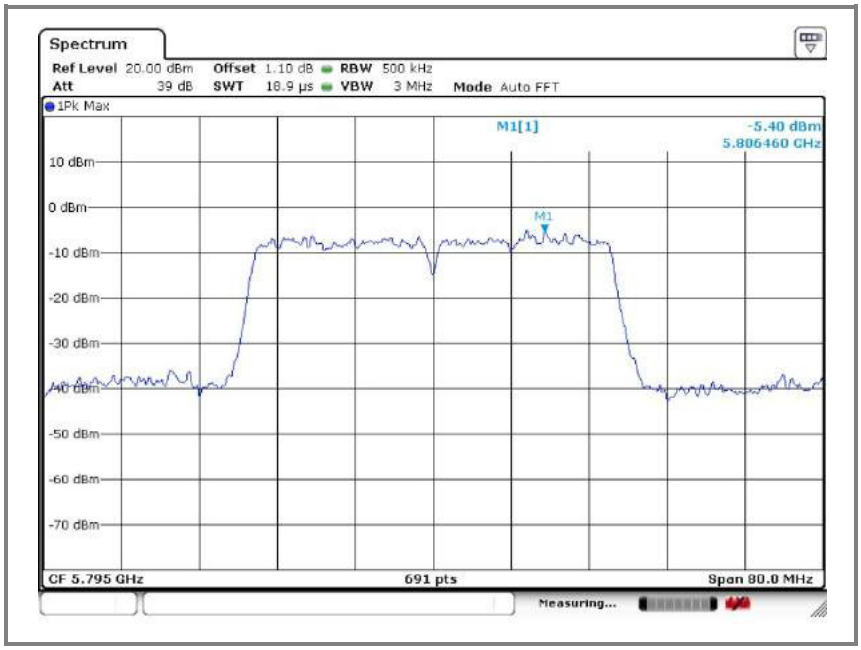


Operation mode: U-NII-3(n_HT40)

A. Low channel(5755 ㎒)

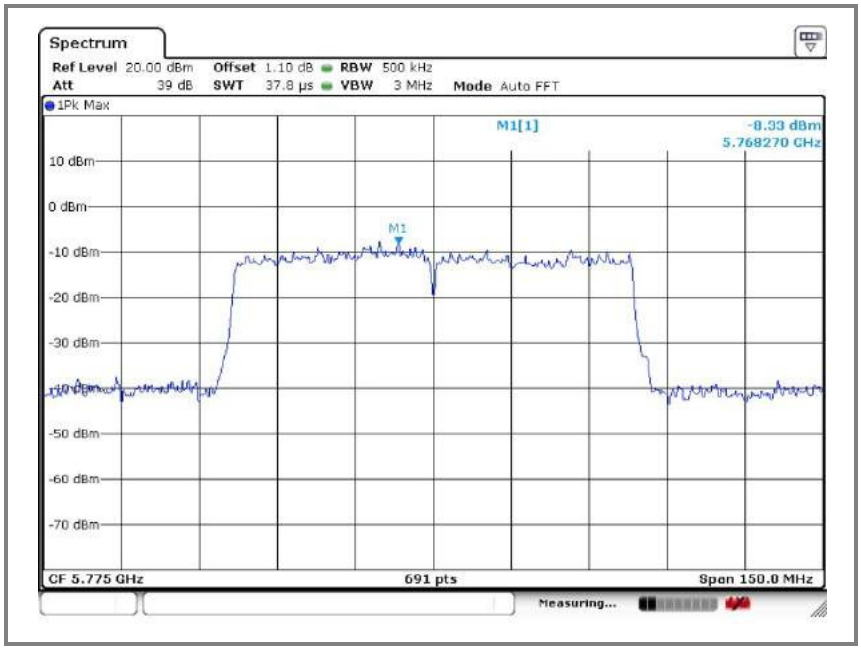


B. High channel(5795 ㎒)



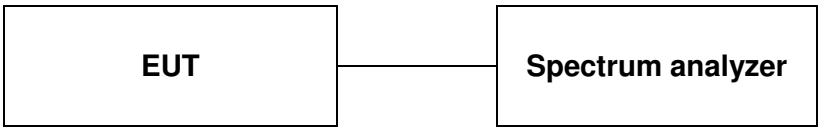
Operation mode: U-NII-3(VHT80)

A. Low channel(5775 ㎒)



8. 6 dB Bandwidth

8.1. Test setup



8.2. Limit

Within the 5.725-5.85 ㎓ band, the minimum 6 ㏈ bandwidth of U-NII devices shall be at least 500 ㎑.

8.3. Test procedure

Test procedure
KDB 789033 D02 v01r03– Section C.2, KDB 644545 D03 v01
1. Set RBW = 100 ㎑
2. Set the video bandwidth (VBW) ≥ 3 × RBW.
3. Detector = peak.
4. Sweep = auto couple.
5. Allow the trace to stabilize
6. 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 ㏈ relative to the maximum level measured in the fundamental emission.
7. In case of band crossing channels 138, 142 and 144, the measurement is complied with section D of KDB 644545_D03 v01.

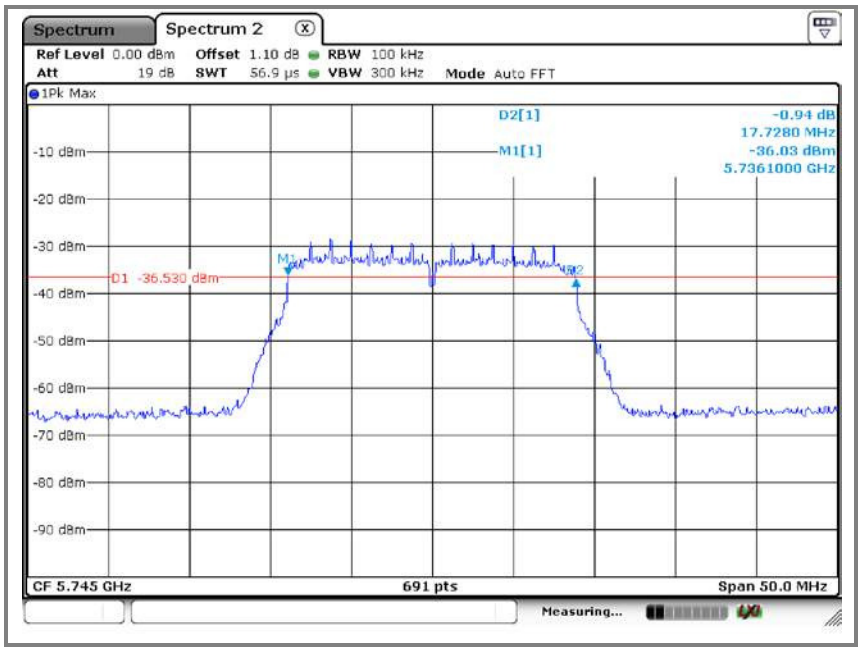
8.4. Test results

Ambient temperature: 22℃
Relative humidity: 45 % R.H.

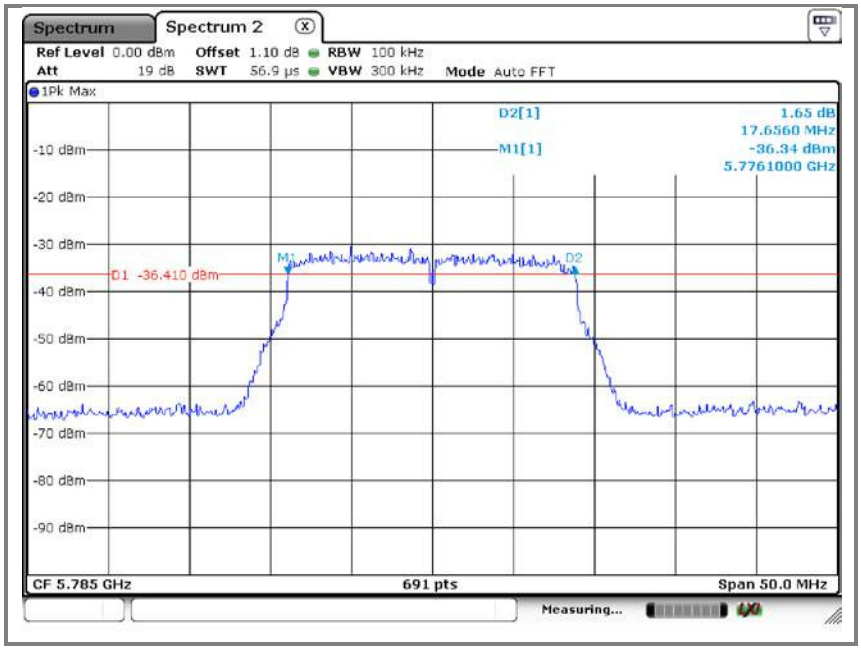
Mode	Frequency (㎒)	6 ㏈ bandwidth (㎒)
U-NII-3	5 745	17.73
	5 785	17.66
	5 805	17.55
U-NII-3(n_HT20)	5 745	17.73
	5 785	17.68
	5 805	17.70
U-NII-3(n_HT40)	5 755	36.61
	5 795	36.61
U-NII-3(VHT80)	5 775	76.27

Operation mode: U-NII-3

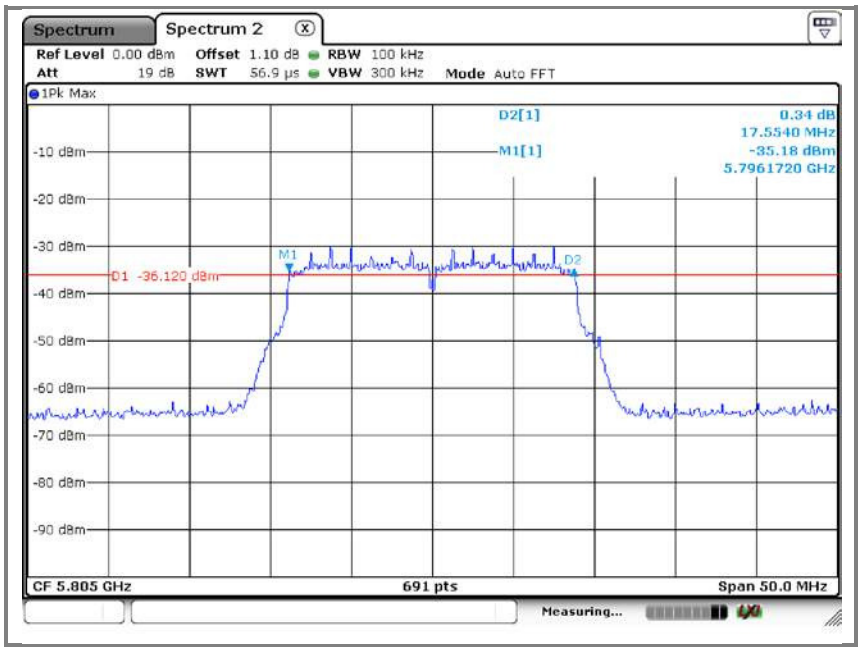
A. Low channel(5745 ㎒)



B. Middle channel(5785 ㎒)

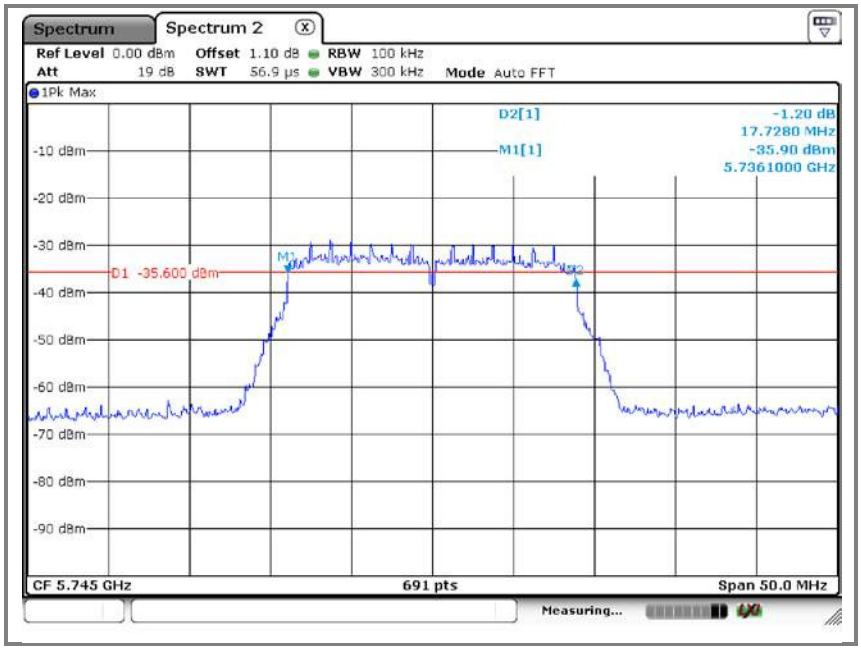


C. High channel(5805 ㎒)

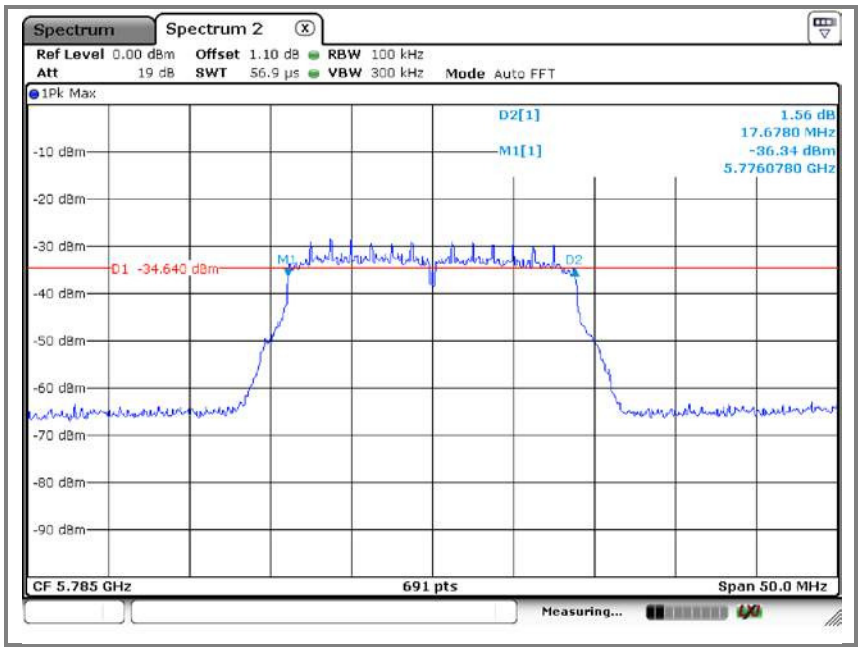


Operation mode: U-NII-3(n_HT20)

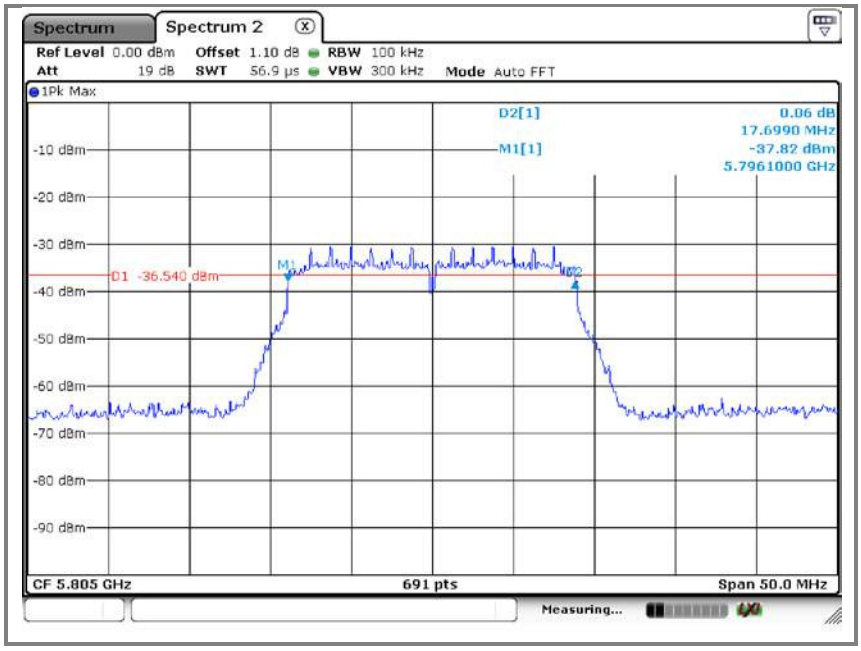
A. Low channel(5745 ㎒)



B. Middle channel(5785 ㎒)

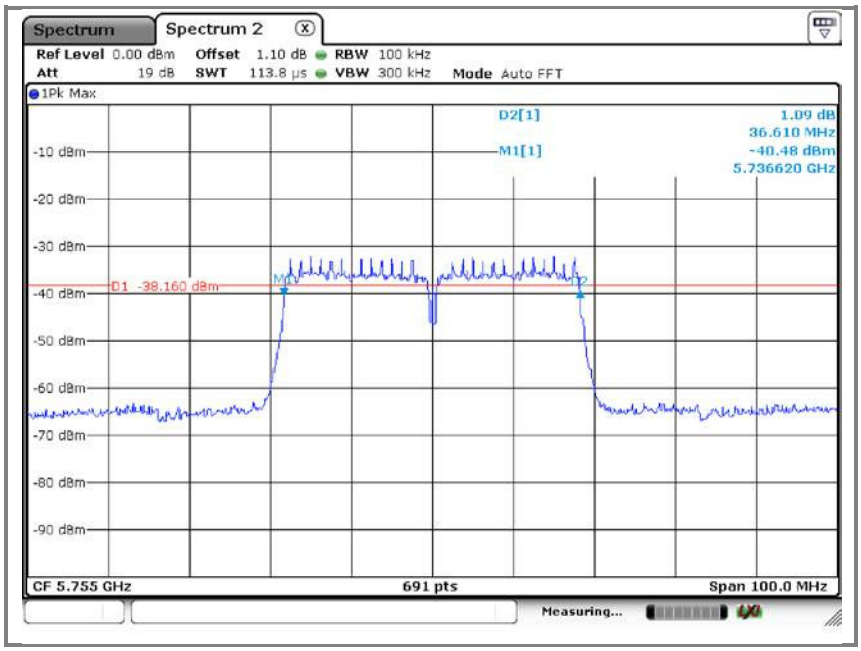


C. High channel(5805 ㎒)

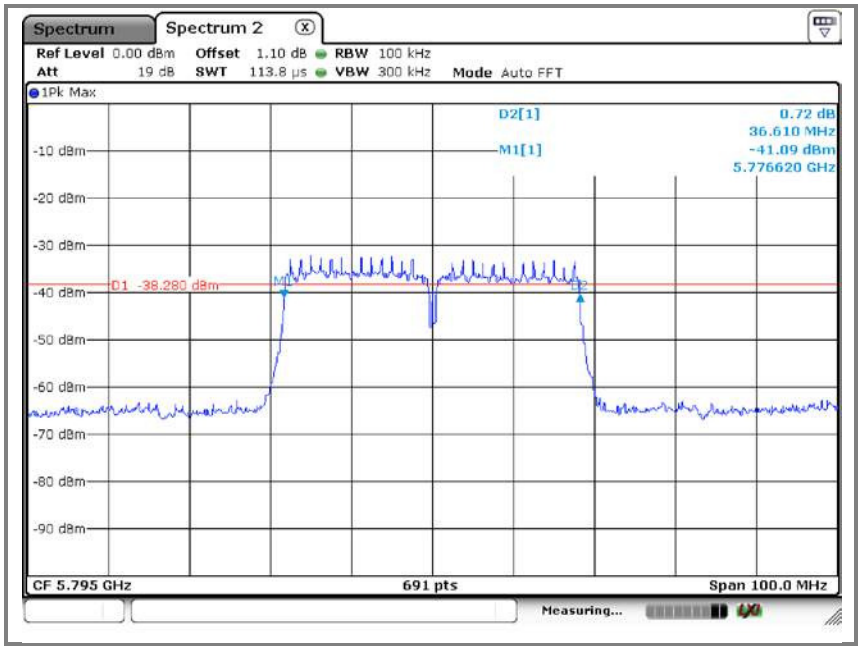


Operation mode: U-NII-3(n_HT40)

A. Low channel(5755 ㎒)

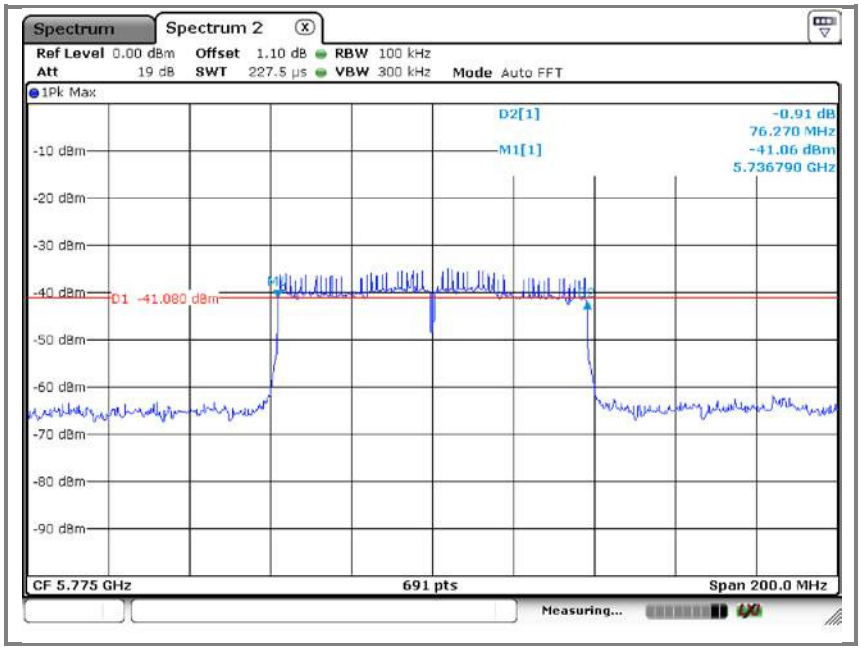


B. High channel(5795 ㎒)



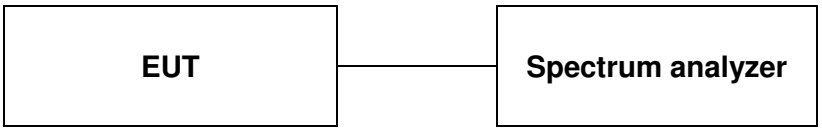
Operation mode: U-NII-3(VHT80)

A. Low channel(5775 ㎒)



9. Frequency stability

9.1. Test setup



9.2. Limit

Not applicable

9.3. Test procedure

a. The EUT was placed inside the environmental test chamber and powered by nominal AC/DC voltage.
b. Turn the EUT on and couple its output to a spectrum analyzer.
c. Turn the EUT off and set the chamber to the highest temperature specified.
d. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize.
e. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
f. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

9.4. Test results

Operation mode: Normal mode

Operation Frequency :5 180 ㎒ (Worst case)

VOLTAGE (%)	POWER (VDC)	TEMP (dB)	FREQ (Hz)	Deviation (%)
100%	13.5	+20(Ref)	5179 973 370	0.000 514
100%		-20	5179 973 523	0.000 511
100%		-10	5179 985 623	0.000 278
100%		0	5179 962 352	0.000 727
100%		+10	5179 756 262	0.004 705
100%		+20	5179 982 523	0.000 337
100%		+25	5179 562 331	0.008 449
100%		+30	5179 985 523	0.000 279
100%		+40	5179 985 632	0.000 277
100%		+50	5179 953 655	0.000 895
100%		+60	5179 981 264	0.000 362
85%	11.48	+20	5179 943 265	0.001 095
115%	15.53	+20	5179 953 356	0.000 900

Operation Frequency :5 260 ㎒ (Worst case)

VOLTAGE (%)	POWER (VDC)	TEMP (dB)	FREQ (Hz)	Deviation (%)
100%	13.5	+20(Ref)	5259 974 240	0.000 497
100%		-20	5259 976 665	0.000 450
100%		-10	5259 975 663	0.000 470
100%		0	5259 975 213	0.000 479
100%		+10	5259 971 132	0.000 557
100%		+20	5259 971 236	0.000 555
100%		+25	5259 976 638	0.000 451
100%		+30	5259 976 318	0.000 457
100%		+40	5259 976 384	0.000 456
100%		+50	5259 978 875	0.000 408
100%		+60	5259 976 336	0.000 457
85%	11.48	+20	5259 971 223	0.000 556
115%	15.53	+20	5259 971 135	0.000 557

Operation Frequency :5 500 ㎒ (Worst case)

VOLTAGE (%)	POWER (VDC)	TEMP (dB)	FREQ (Hz)	Deviation (%)
100%	13.5	+20(Ref)	5499 973 960	0.000 503
100%		-20	5499 974 562	0.000 491
100%		-10	5499 972 123	0.000 538
100%		0	5499 978 884	0.000 408
100%		+10	5499 973 125	0.000 519
100%		+20	5499 976 312	0.000 457
100%		+25	5499 978 812	0.000 409
100%		+30	5499 972 331	0.000 534
100%		+40	5499 973 620	0.000 509
100%		+50	5499 976 212	0.000 459
100%		+60	5499 979 982	0.000 386
85%	11.48	+20	5499 973 105	0.000 519
115%	15.53	+20	5499 970 236	0.000 575

Operation Frequency :5 745 ㎒ (Worst case)

VOLTAGE (%)	POWER (VDC)	TEMP (dB)	FREQ (Hz)	Deviation (%)
100%	13.5	+20(Ref)	5744 972 220	0.000 536
100%		-20	5744 973 623	0.000 509
100%		-10	5744 976 621	0.000 451
100%		0	5744 976 889	0.000 446
100%		+10	5744 978 894	0.000 407
100%		+20	5744 970 566	0.000 568
100%		+25	5744 976 315	0.000 457
100%		+30	5744 948 623	0.000 992
100%		+40	5744 974 539	0.000 492
100%		+50	5744 973 105	0.000 519
100%		+60	5744 978 650	0.000 412
85%	11.48	+20	5744 976 328	0.000 457
115%	15.53	+20	5744 976 621	0.000 451

10. RF exposure evaluation

10.1 Environmental evaluation and exposure limit according to FCC CFR 47 part 1, 1.1307(b), 1.1310

According to §15.247(e)(i) and §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines. According to KDB 447498 (2)(a)(i)

Limits for maximum permissible exposure (MPE)

Frequency range (㎒)	Electric field strength(V/m)	Magnetic field strength (A/m)	Power density (㎽/㎠)	Average time
(A) Limits for Occupational / Control exposures				
300 – 1 500	--	--	F/300	6
1 500 – 100 000	--	--	5	6
(B) Limits for General Population / Uncontrol Exposures				
300 – 1 500	--	--	F/1 500	6
1 500 – 100 000	--	--	1	30

10.2. Friis transmission formula : Pd=(Pout*G)\(4*pi*R2)

Where
Pd= Power density in ㎽/㎠
Pout=output power to antenna in ㎽
G= Numeric gain of the antenna relative to isotropic antenna
Pi=3.1416
R= distance between observation point and center of the radiator in cm
Pd the limit of MPE, 1 ㎽/㎠. If we know the maximum gain of the antenna and total power input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.

10.3. Test result of RF exposure evaluation

Test Item : RF Exposure evaluation data
Test Mode : Normal operation

10.4. Output power into antenna & RF exposure evaluation distance

Mode	Frequency (㎒)	Output Peak power to antenna (dBm)	Antenna gain(dBi)	Antenna Gain (dBi) Numeric	Powerdensity at 20 ㎝ (㎽/㎠)	Power density Limits (㎽/㎠)
U-NII-1	5 180	12.96	0.00	1.00	0.003 9	1
	5 220	10.98			0.002 4	
	5 240	11.51			0.002 8	
U-NII-1(n_HT20)	5 180	11.61			0.002 8	
	5 220	10.44			0.002 2	
	5 240	11.31			0.002 7	
U-NII-1(n_HT40)	5 190	11.30			0.002 7	
	5 230	11.04			0.002 5	
U-NII-1(VHT80)	5 210	10.58			0.002 3	
U-NII-2A	5 260	11.28	0.00	1.00	0.002 7	
	5 300	12.23			0.003 3	
	5 320	11.70			0.002 9	
U-NII-2A(n_HT20)	5 260	11.47			0.002 8	
	5 300	11.81			0.003 0	
	5 320	12.17			0.003 3	
U-NII-2A(n_HT40)	5 270	11.18			0.002 6	
	5 310	11.62			0.002 9	
U-NII-2A(VHT80)	5 290	10.99			0.002 5	
U-NII-2C	5 500	11.93	0.00	1.00	0.003 1	
	5 560	12.20			0.003 3	
	5 620	12.22			0.003 3	
U-NII-2C(n_HT20)	5 500	13.16			0.004 1	
	5 560	11.40			0.002 7	
	5 620	11.65			0.002 9	
U-NII-2C(n_HT40)	5 510	11.37			0.002 7	
	5 550	11.99			0.003 1	
	5 590	11.56			0.002 9	
U-NII-2C(VHT80)	5 530	10.74			0.002 4	
	5 610	10.90			0.002 4	
U-NII-3	5 745	10.27	0.00	1.00	0.002 1	
	5 785	10.33			0.002 1	
	5 805	8.98			0.001 6	
U-NII-3(n_HT20)	5 745	10.02			0.002 0	
	5 785	9.68			0.001 8	
	5 805	8.75			0.001 5	
U-NII-3(n_HT40)	5 755	9.51			0.001 8	
	5 795	8.88			0.001 5	
U-NII-3(VHT40)	5 775	8.78			0.001 5	

※ Remark

The power density P_d (5th column) at a distance of 20 ㎝ calculated from the friis transmission formula is far below the limit of 1 ㎽/㎠ .

11. Antenna requirement

11.1. Standard Applicable

For intentional device, according to FCC 47 CFR Section §15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section §15.247 (b) if transmitting antennas of directional gain greater than 6 dBi are used.

11.2. Antenna Connected Construction

Antenna used in this product is PCB antenna

Antenna gain is 0.00 dBi.