Produkte
Products

Prüfbericht - Nr.: *Test Report No.:*	**02422603 001**		**Seite 1 von 82** *Page 1 of 82*
Auftraggeber: *Client:*	**Redpine Signals Inc.** **2107 N.First Street,** **Suite 680** **San Jose, CA 95131-2019** **U.S.A**		
Gegenstand der Prüfung: *Test item:*	**802.11 abgn MODULE**		
Bezeichnung: *Identification:*	**RS9110-N-11-03**	**Serien-Nr.:** *Serial No.*	**Engineering Sample**
Wareneingangs-Nr.: *Receipt No.:*	**1403011050**	**Eingangsdatum:** *Date of receipt:*	**07.08.2010**
Prüfort: *Testing location:*	**Refer Page 4 of 82 for test facilities**		
Prüfgrundlage: *Test specification:*	**FCC Part 15, Subpart E**		
Prüfergebnis: *Test Result:*	**Der Prüfgegenstand entspricht oben genannter Prüfgrundlage(n).** *The tests item passed the test specification(s).*		
Prüflaboratorium: *Testing Laboratory:*	**TÜV Rheinland (India) Pvt. Ltd.** Alpha Tower, Sigma Soft Tech Park, # 7, Whitefield Main Road, Varthur Kodi, Bangalore – 560066, India		

geprüft / *tested by:*

10.06.2011	Vinay.N Engineer	Vinay.N
Datum *Date*	**Name/Stellung** *Name/Position*	**Unterschrift** *Signature*

kontrolliert / *reviewed by:*

13.06.2011	ManagerKalyan Varm Manager	Kalyan
Datum *Date*	**Name/Stellung** *Name/Position*	**Unterschrift** *Signature*

Sonstiges /*Other Aspects:* **FCC ID : XF6- RS9110N1103**

Abkürzungen:				***Abbreviations:***			
	P(ass)	=	***entspricht Prüfgrundlage***		***P(ass)***	=	***passed***
	F(ail)	=	***entspricht nicht Prüfgrundlage***		***F(ail)***	=	***failed***
	N/A	=	***nicht anwendbar***		***N/A***	=	***not applicable***
	N/T	=	***nicht getestet***		***N/T***	=	***not tested***

Test Result Summary

Clause	Test Item	Result
15.407 (a)	99% And 26 dB Occupied Bandwidth	Pass
15.407 (a)	Maximum Conducted Output Power	Pass
15.407 (a)	Power Spectral Density	Pass
15.407 (a)	Peak Excursion	Pass
15.209	Radiated Emissions	Pass
15.205	Restricted Bands of operation	Pass
15.407 (b)	Unwanted emission	Pass

Content

List of Test and Measurement Instruments

Wipro Technologies, Bangalore

List of Test and Measurements

Equipment	Manufacturer	Type	S/N	Calibration Due Date
EMI Test Receiver	Rohde & Schwarz	ESIB40	100306	24.03.2012
Hybrid Log Periodic Antenna	TDK	HLP3003C	130334	21.03.2012
Broadband Horn Antenna	Schwarzbeck Mess-Electronik	BBHA9170	9170-344	21.03.2012
Double Ridged Horn Antenna	Schwarzbeck Mess-Electronik	BBHA9120D	9120D-687	21.03.2012
Pre-Amplifier	TDK-RFSolution	PA-02	100008	15.02.2012
Spectrum Analyser	Agilent Technologies	E4407B	US41192772	27.01.2012

Testing Facilities

1) Wipro Technologies
Survey No. 70,77,78 / 8A, Dodda Kannelli,
Sarjapur Road, Bangalore – 560 035
India

2) HCL Technologies
73-74, Ground Floor,
South Phase, Ambattur Estate,
Ambattur, Chennai – 600058
India

General Product Information

Product Function and Intended Use

The Product has many applications.viz.

- Multi-mode cellular phones, smart phones, and PDAs needing Wi-Fi capability
- VoWiFi handsets
- Personal Media Players
- Digital still cameras and camcorders

Ratings and System Details

Operating Frequency	5150 - 5350 MHz 5470 – 5725 MHz	
No. of channel	19	
Channel Spacing	20 MHz	
Transmitted Power	802.11a	13.49 dBm
	802.11n	13.67 dBm
Modulation	802.11a	OFDM with BPSK,QPSK, 16-QAM, 64-QAM
	802.11n	BPSK,QPSK,16-QAM,64-QAM
Data Rate	802.11n: 6.5, 13, 19.5, 26, 39, 52, 58.5, 65 Mbps 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps	
Antenna Type	Chip	
Number of antenna	One	
Antenna Gain	0.5 dBi	
Supply Voltage	3.1-3.6 V DC	
Dimensions	104 mm x 34 mm x 12 mm (Board) 20 mm x 17.5 mm x 3.45 mm (Module)	
Environmental	-40ºC to +85ºC	

Test Conditions:

Voltage: 110V AC, 60Hz

Environmental conditions:

Temperature: +23 º C

RH: 62%

Note: 2.4GHz test results are covered in Test report: 02422602 001 and 5725 MHz – 5850 MHz test results are covered in Test Report: 02423392 001.

Operation Descriptions

The RS9110-N-11-03 module is a complete IEEE802.11abgn Wi-Fi client device with an integrated MAC, baseband processor, and RF transceiver and power amplifier. Based on the Redpine's Lite-FiTM RS9110 MAC/baseband processor, the module provides a complete end-to-end solution for ultra low power WLAN applications. It conforms to the draft 802.11n standard in single-stream mode for handheld devices and includes an embedded processor with a rich set of peripherals offering minimal load on a host processor, to which it can connect through SDIO and SPI interfaces. In a small form factor of 20 x 17.5 sq mm and operation on a single power supply.

Test Set-up and Operation Mode

Principle of Configuration Selection

Emission: The test was performed under continuous transmission to obtain the maximum emissions.

Test Operation and Test Software

- Redpine's Lite-Fi™ device driver which was installed in a Personal Digital Assistant (PDA) was used to control channels, data rates and power levels

Special Accessories and Auxiliary Equipment

The EUT was tested together with the following additional accessory:

- Personal Digital Assiatant (PDA) for controlling different transmits channels, transmit profiles and power levels.

Countermeasures to achieve EMC Compliance

- None

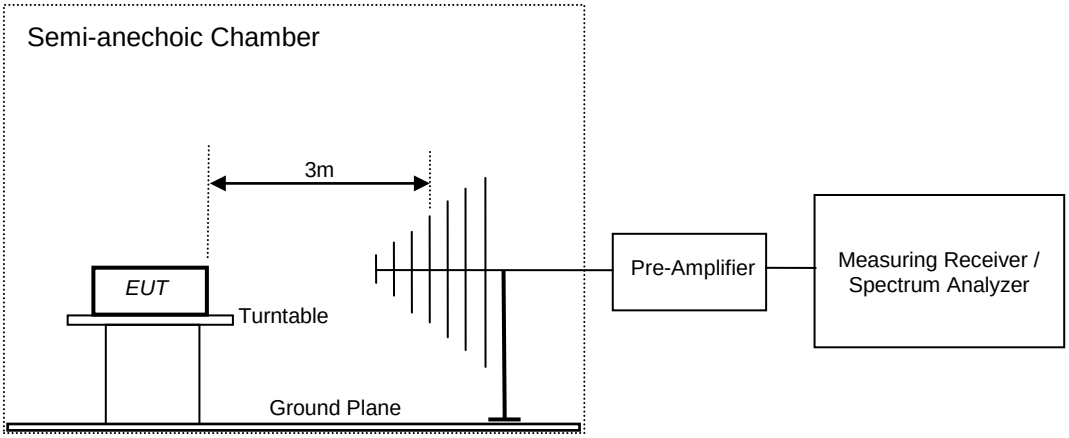
Table of carrier frequencies

Frequency Band	Channel No.	Frequency (MHz)
5150 – 5250 MHz	36	5180
	40	5200
	44	5220
	48	5240
5250 – 5350 MHz	52	5260
	56	5280
	60	5300
	64	5320
5470 – 5725 MHz	100	5500
	104	5520
	108	5540
	112	5560
	116	5580
	120	5600
	124	5620
	128	5640
	132	5660
	136	5680
	140	5700

Test Methodology

Radiated Emission Test

The radiated emission measurement was performed according to the procedures in ANSI C63.4-2003. The equipment under test (EUT) was placed at the middle of the 80 cm high turntable, and the EUT is 3 meters far from the measuring antenna. The turntable was rotated 360° for obtaining the maximum emission. The height of the measuring antennas was scanned between 1m and 4m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations. Repeat the measurement steps until the maximum emissions were obtained. The measurement above 1000MHz was performed by horn antenna. The measurement below 30MHz was performed by loop antenna.
The EUT was rotated around the X-, Y-, and Z-Axis and the results from worst case axis are recorded.



Test Results

99% and 26 dB Occupied Bandwidth — Section 15.407 (a)

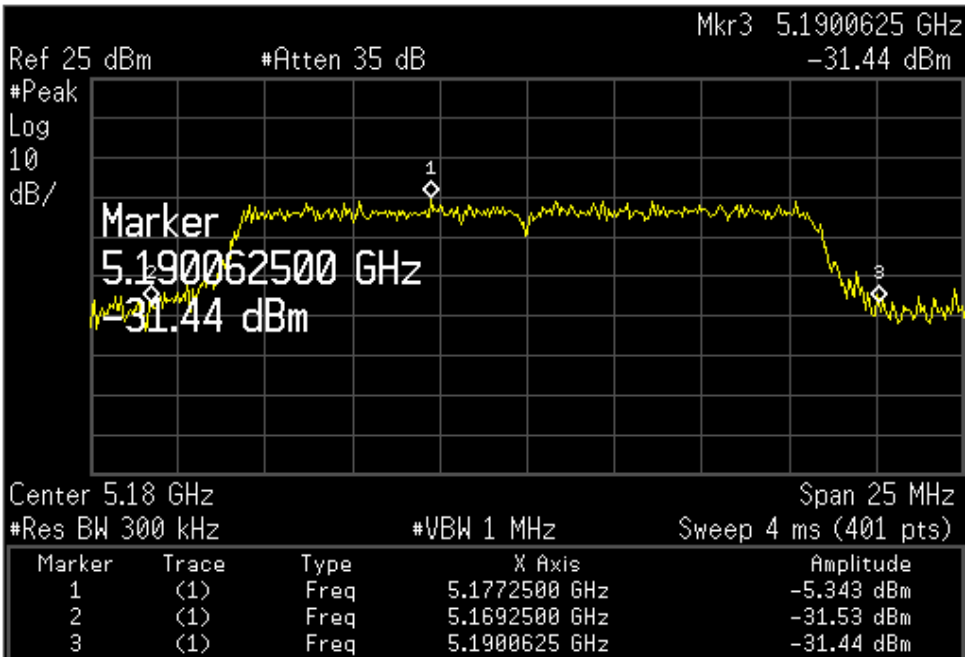
Test Specification	FCC Part 15 Section 15.407(a)
Measurement Bandwidth (RBW)	300 kHz

Test Method:

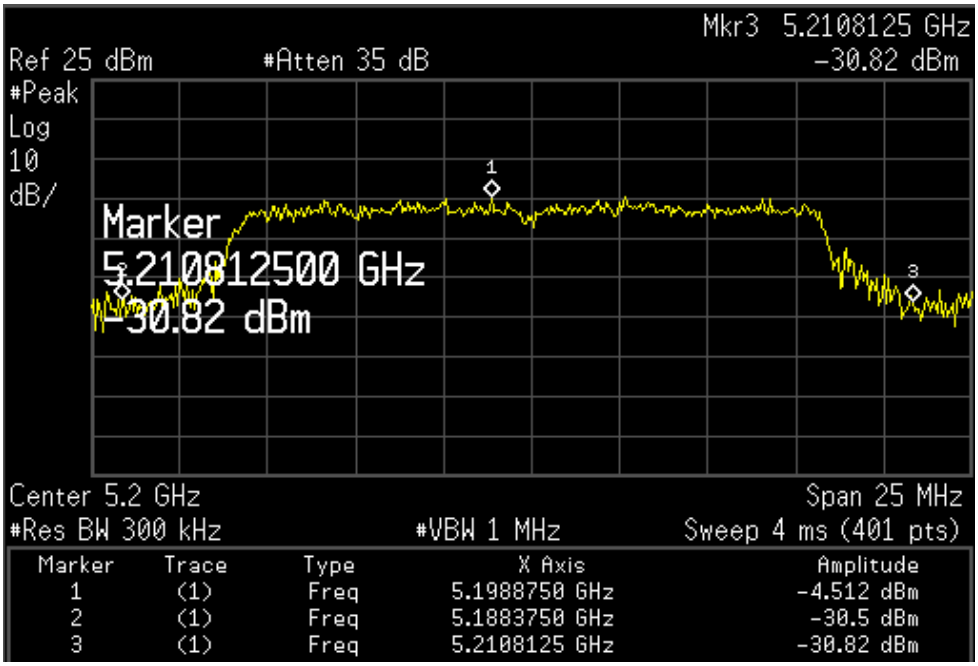
Test Result:

Modulation: 802.11a

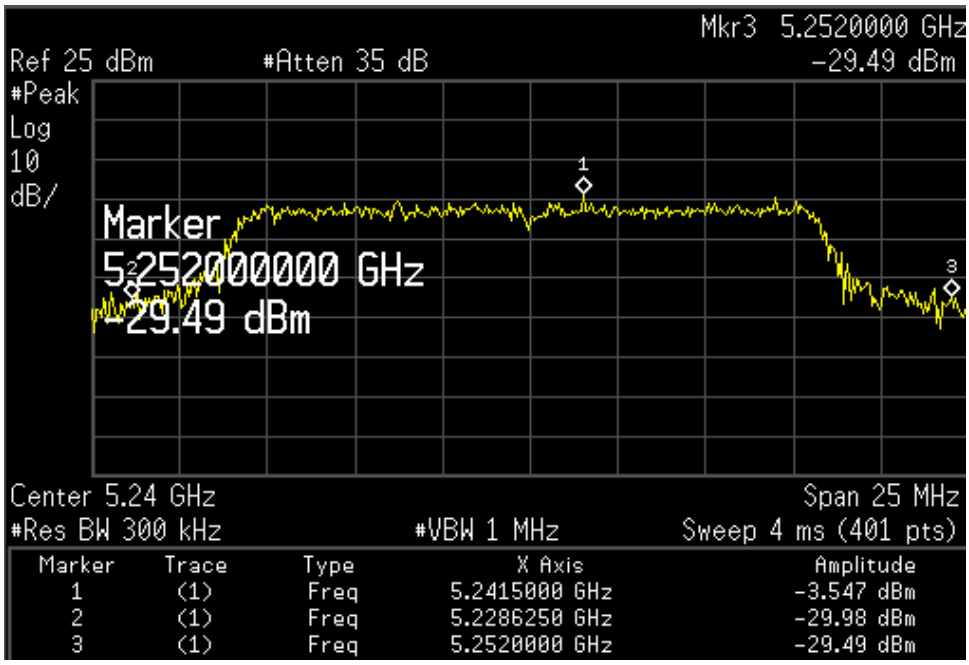
Channel	Frequency (MHz)	26 dB Band width (MHz)	99% Occupied Bandwidth (MHz)
36	5180	20.81	16.75
40	5200	22.44	16.71
48	5240	23.38	16.52
52	5260	23.12	16.56
60	5300	22.94	16.81
64	5320	22.87	16.67
100	5500	23.75	16.73
120	5600	21.69	16.64
140	5700	20.06	16.48



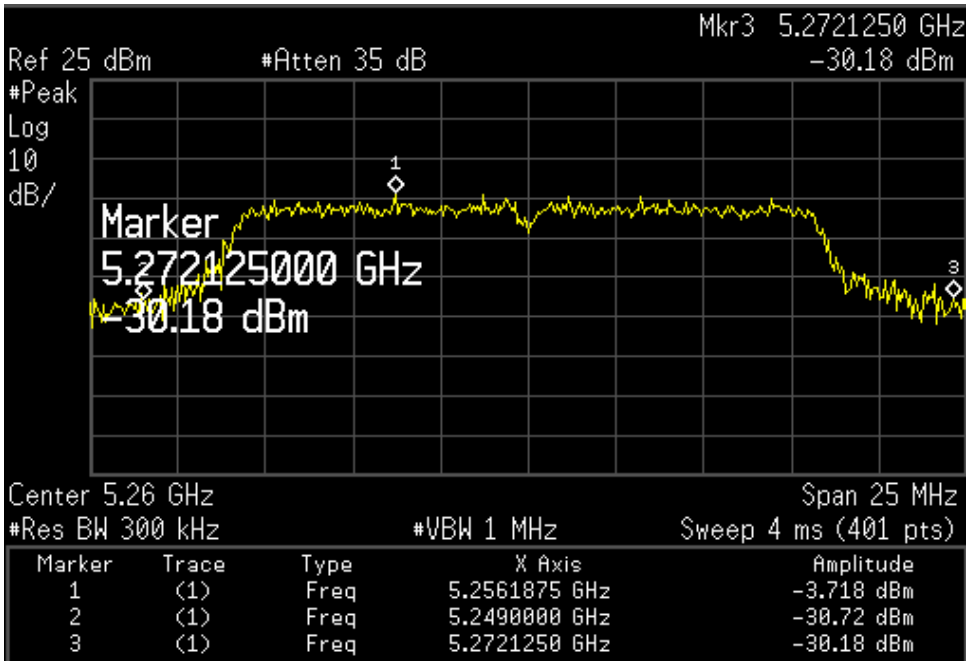
26 dB Bandwidth **Channel Frequency: 5180**



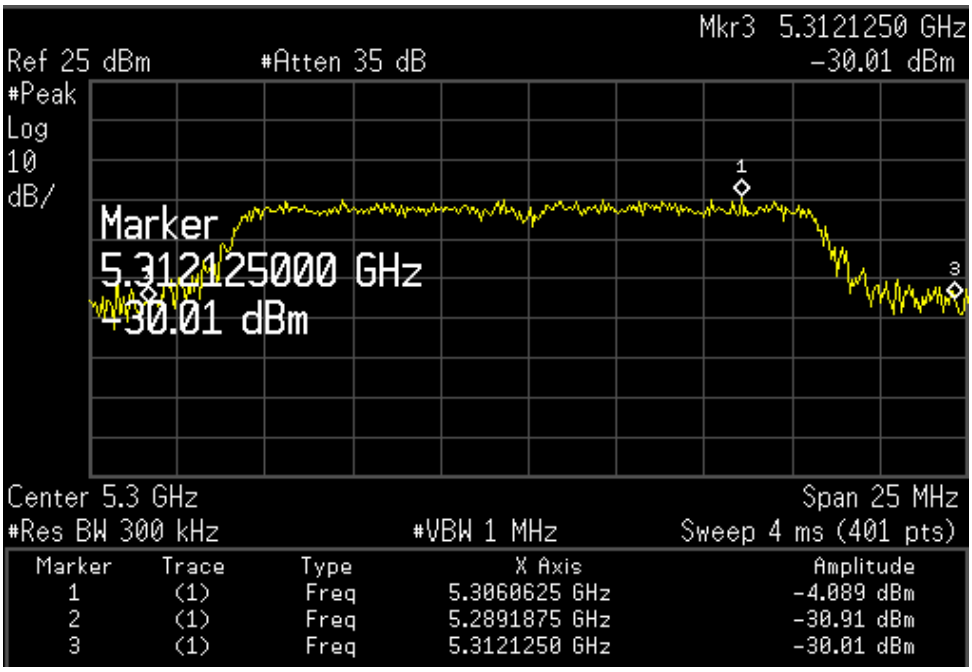
26 dB Bandwidth **Channel Frequency: 5200**



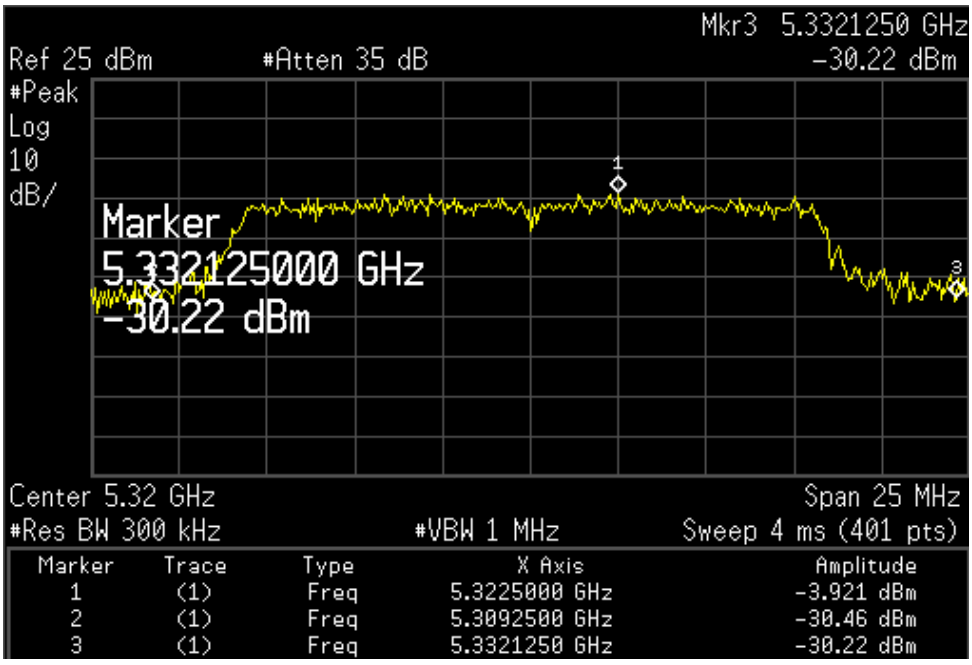
26 dB Bandwidth **Channel Frequency: 5240**



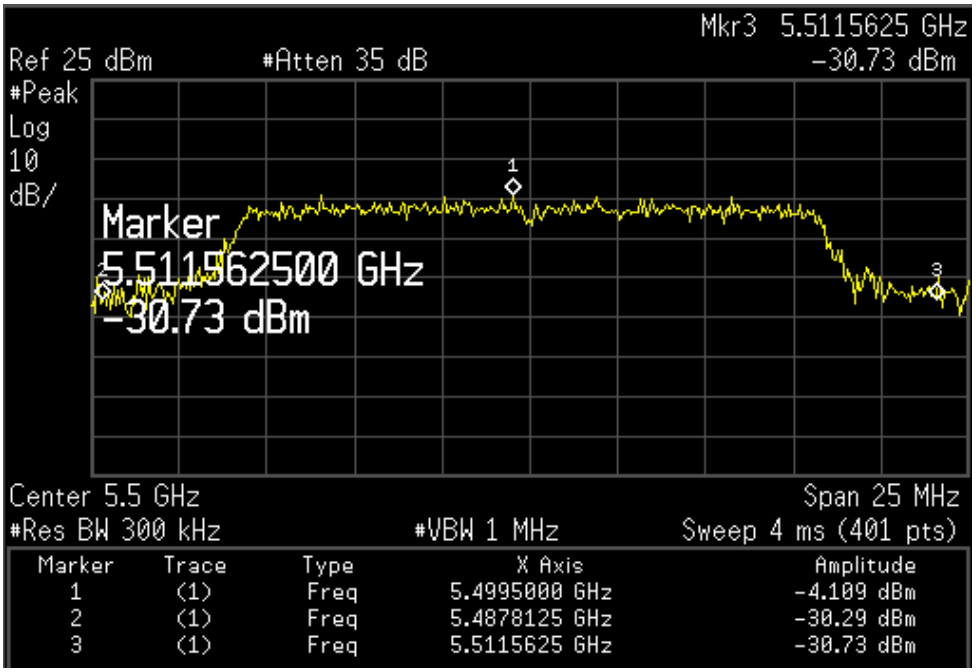
26 dB Bandwidth **Channel Frequency: 5260**



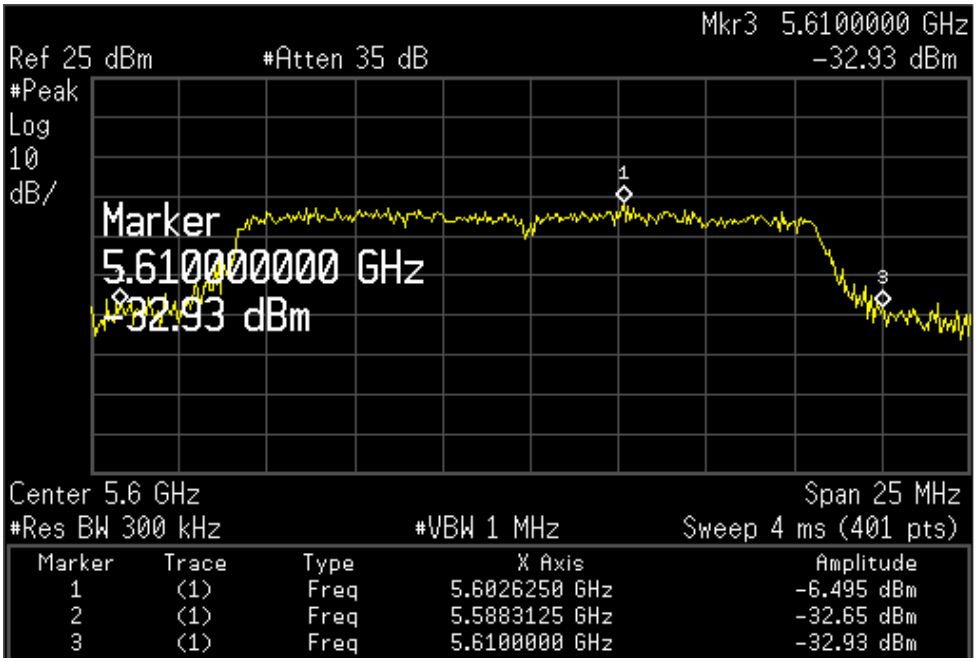
26 dB Bandwidth **Channel Frequency: 5300**



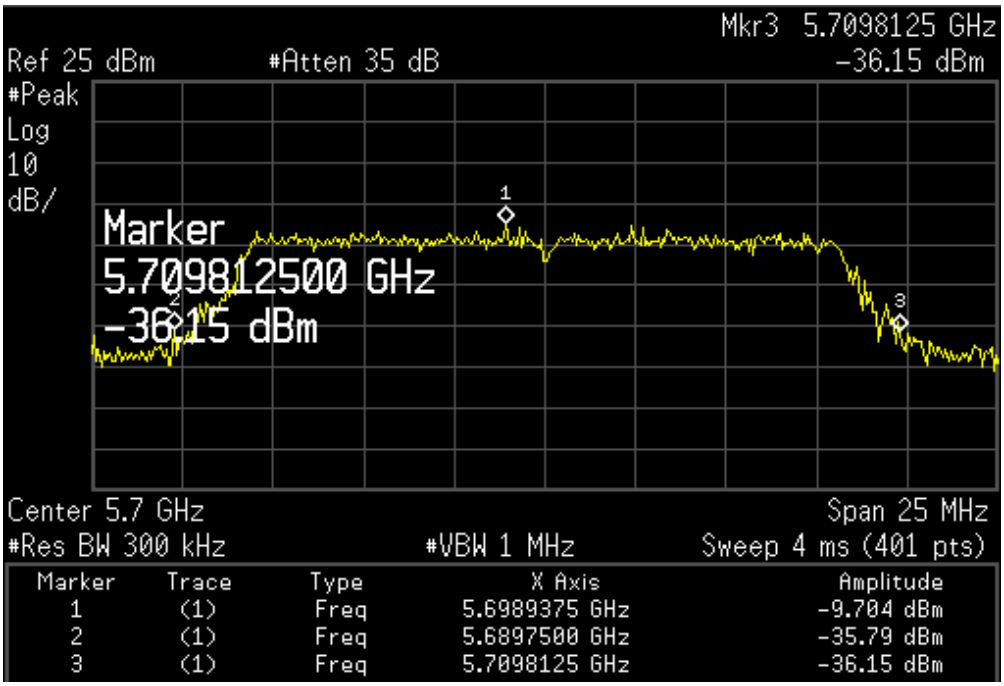
26 dB Bandwidth **Channel Frequency: 5320**



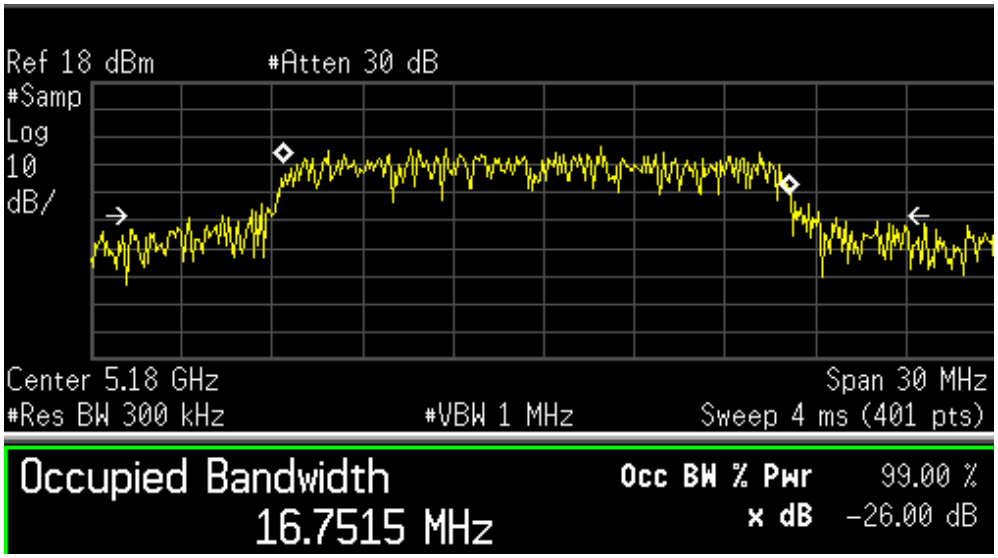
26 dB Bandwidth **Channel Frequency: 5500**



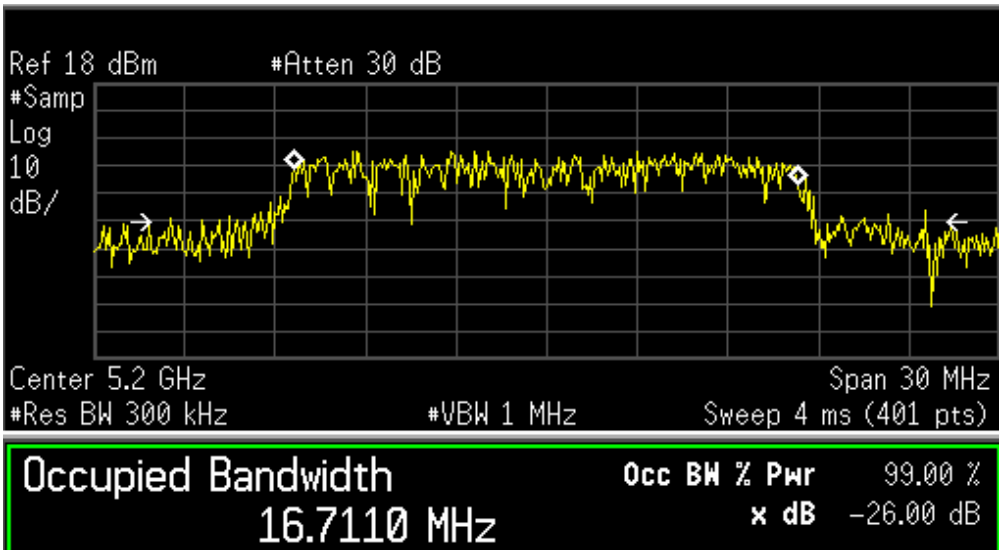
26 dB Bandwidth **Channel Frequency: 5600**



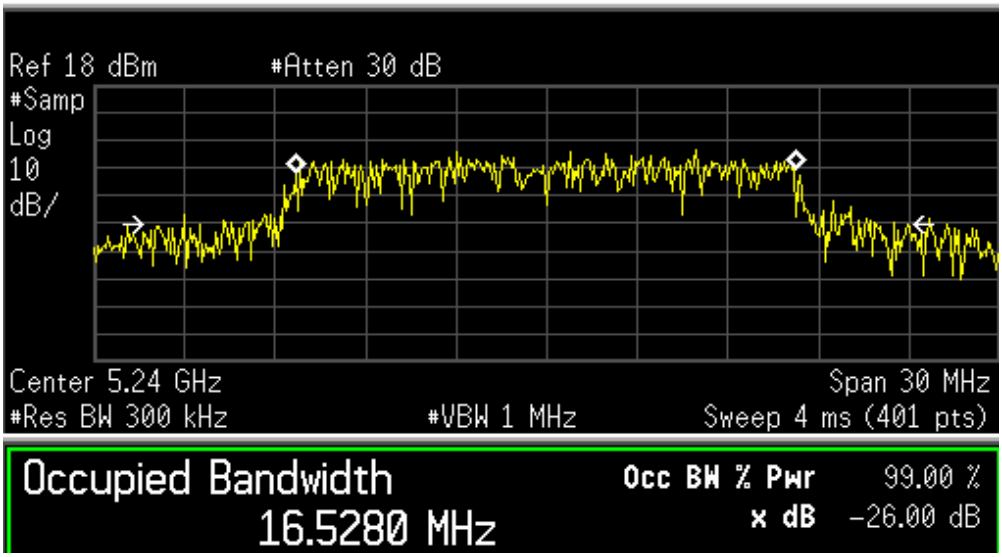
26 dB Bandwidth **Channel Frequency: 5700**



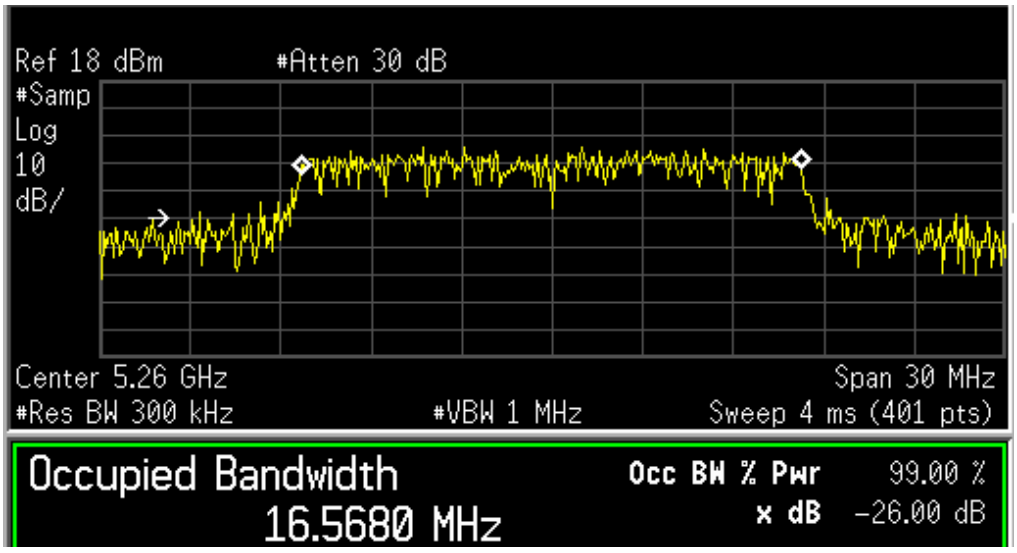
Occupied Bandwidth **Channel Frequency: 5180**



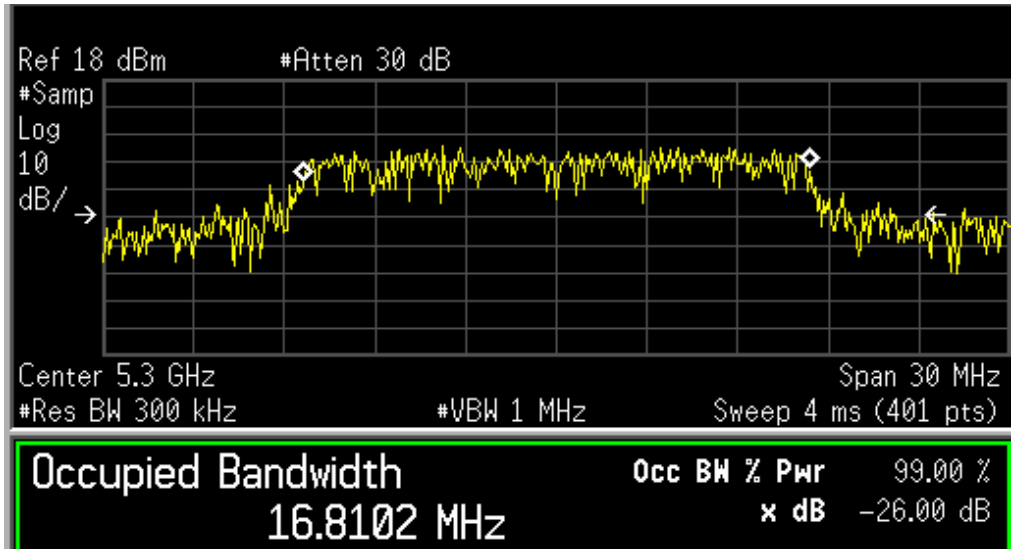
Occupied Bandwidth **Channel Frequency: 5200**



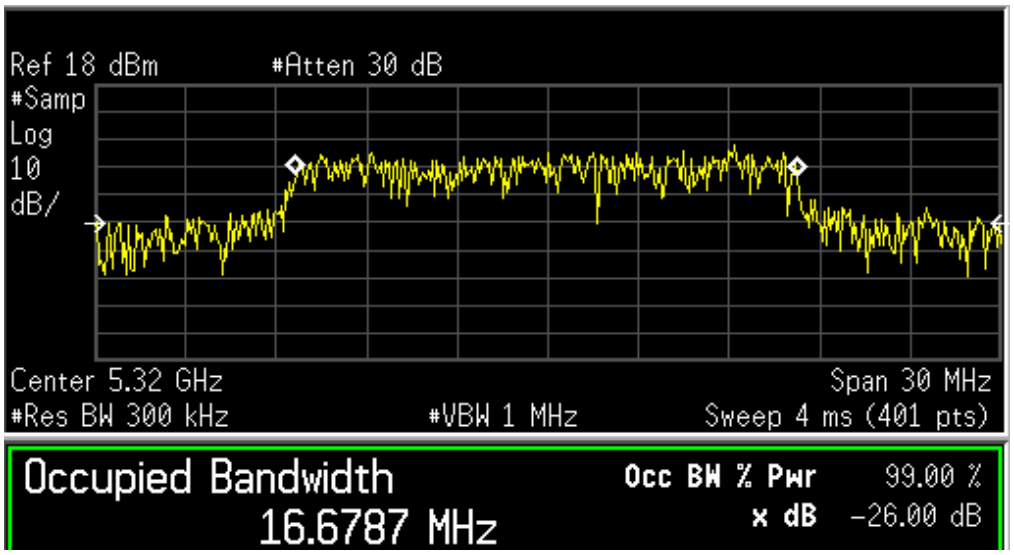
Occupied Bandwidth **Channel Frequency: 5240**



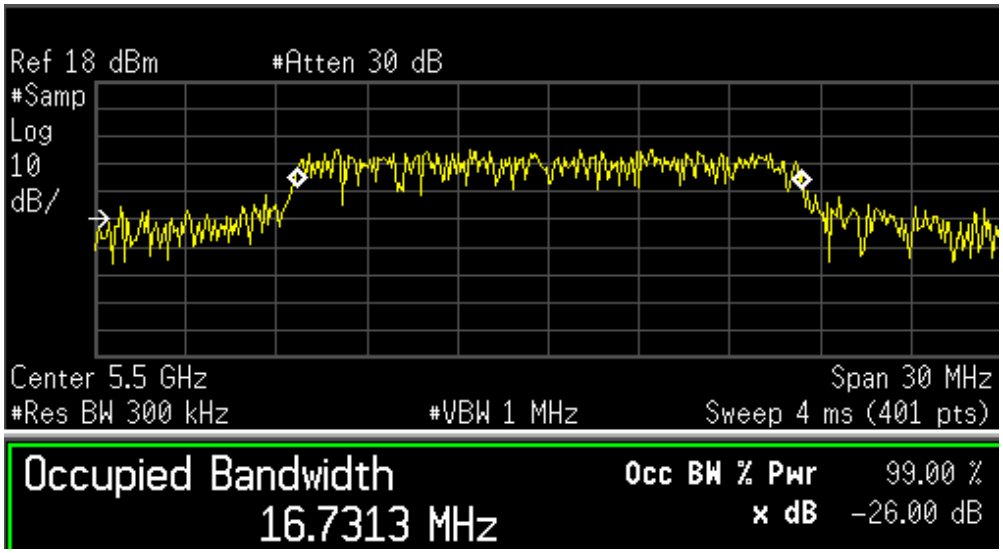
Occupied Bandwidth **Channel Frequency: 5260**



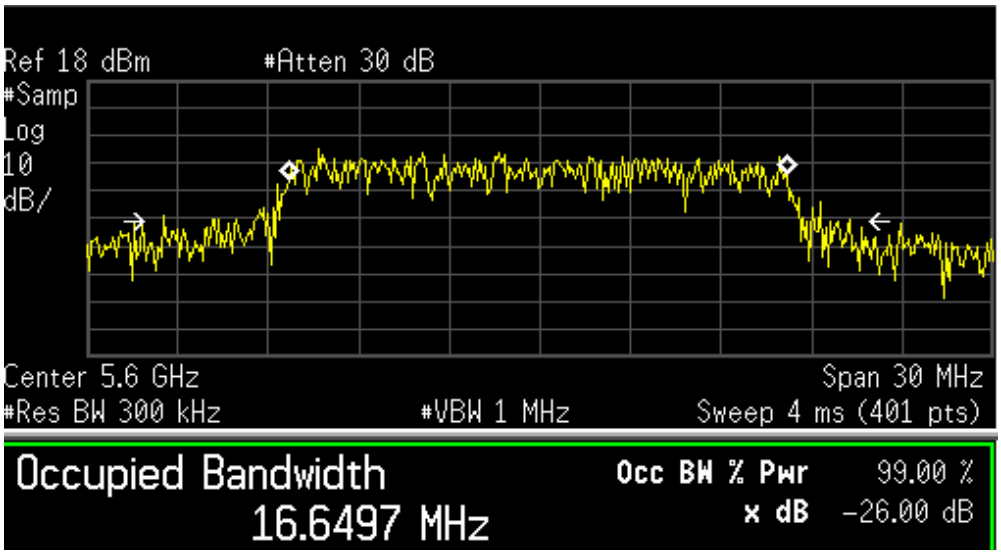
Occupied Bandwidth **Channel Frequency: 5300**



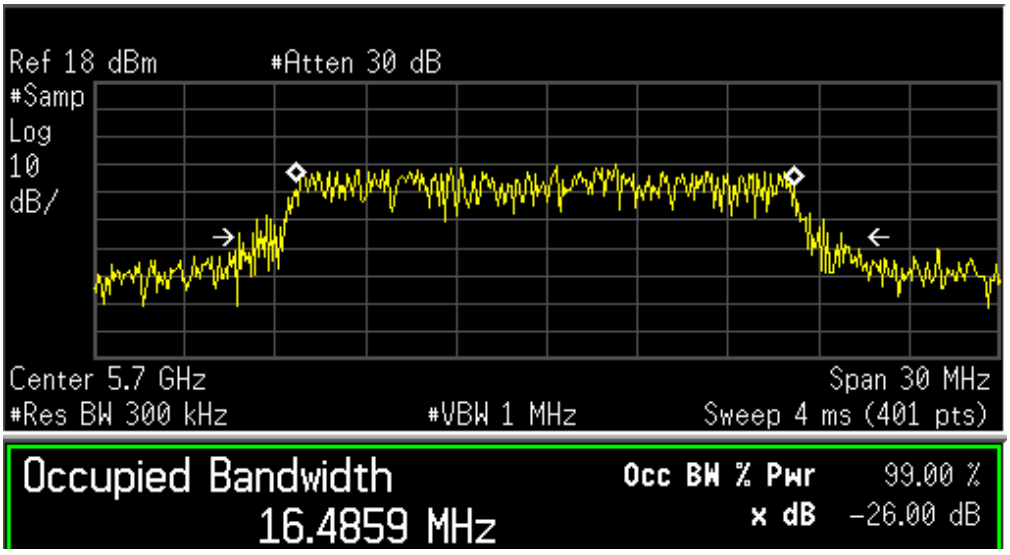
Occupied Bandwidth **Channel Frequency: 5320**



Occupied Bandwidth **Channel Frequency: 5500**



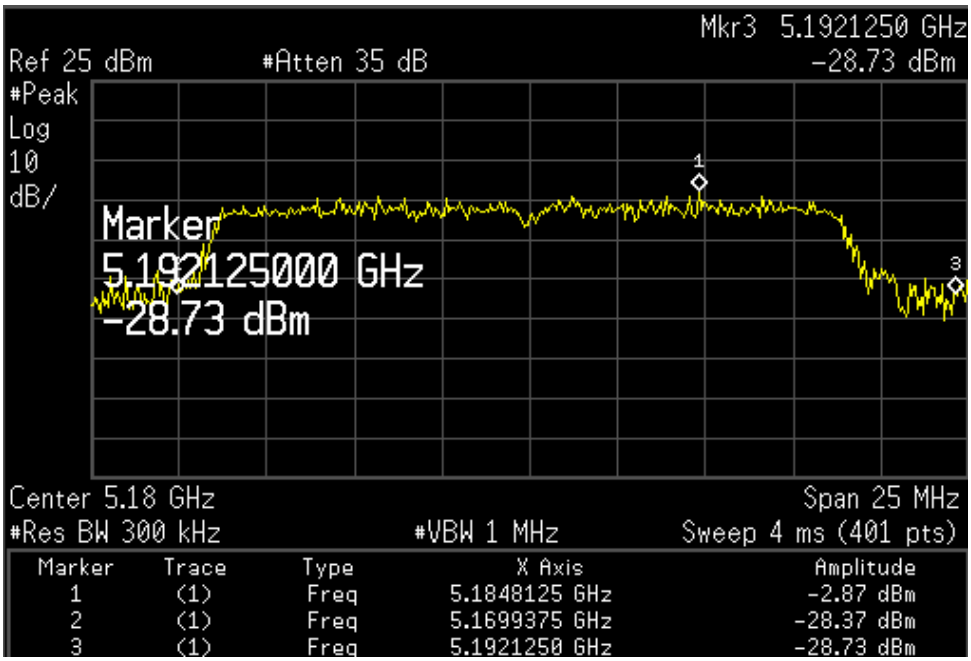
Occupied Bandwidth **Channel Frequency: 5600**



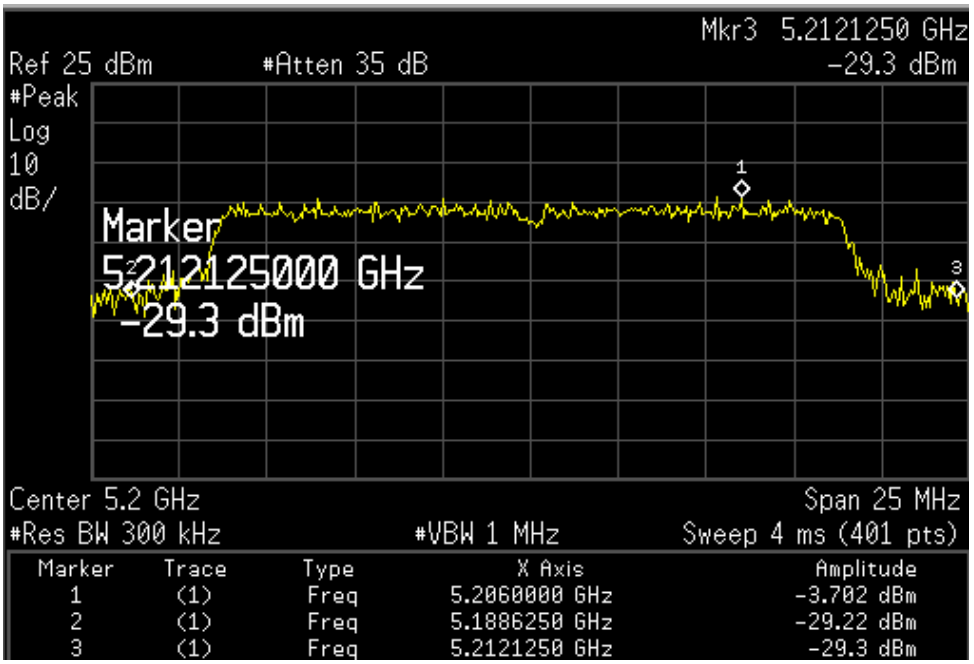
Occupied Bandwidth **Channel Frequency: 5700**

Modulation: 802.11n

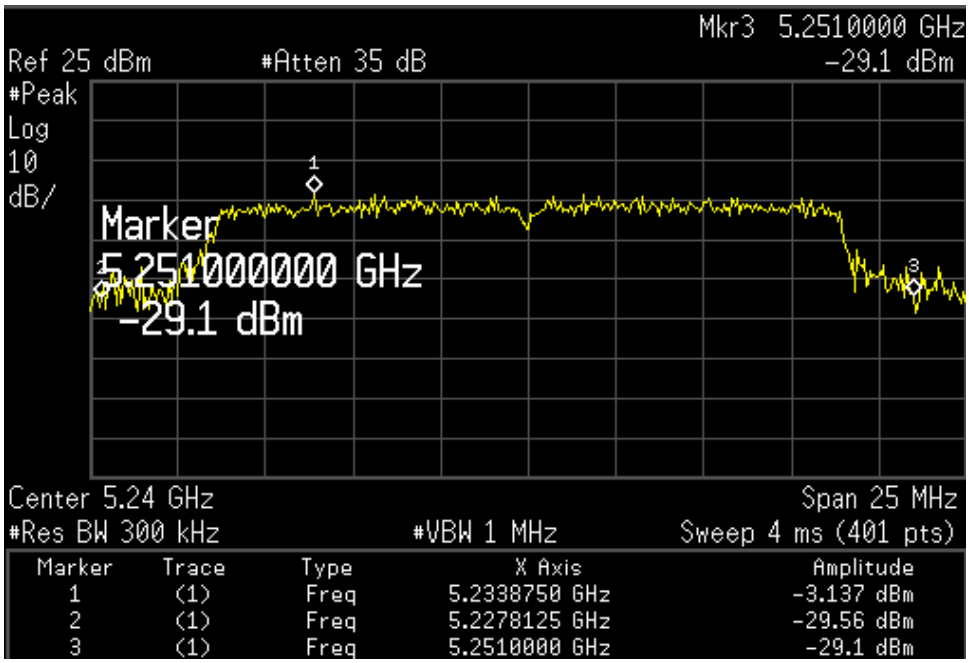
Channel	Frequency (MHz)	26 dB Band width (MHz)	99% Occupied Bandwidth (MHz)
36	5180	22.19	17.73
40	5200	23.50	17.90
48	5240	23.19	17.91
52	5260	23.69	17.89
60	5300	23.25	17.94
64	5320	24.50	18.00
100	5500	23.62	17.93
120	5600	22.62	17.64
140	5700	20.44	17.72



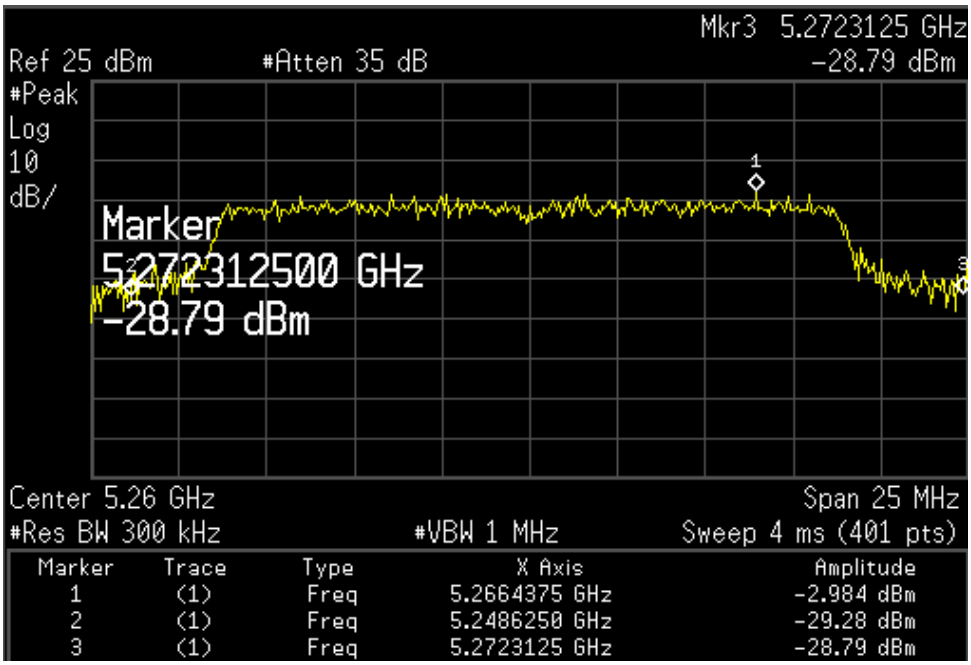
26 dB Bandwidth **Channel Frequency: 5180**



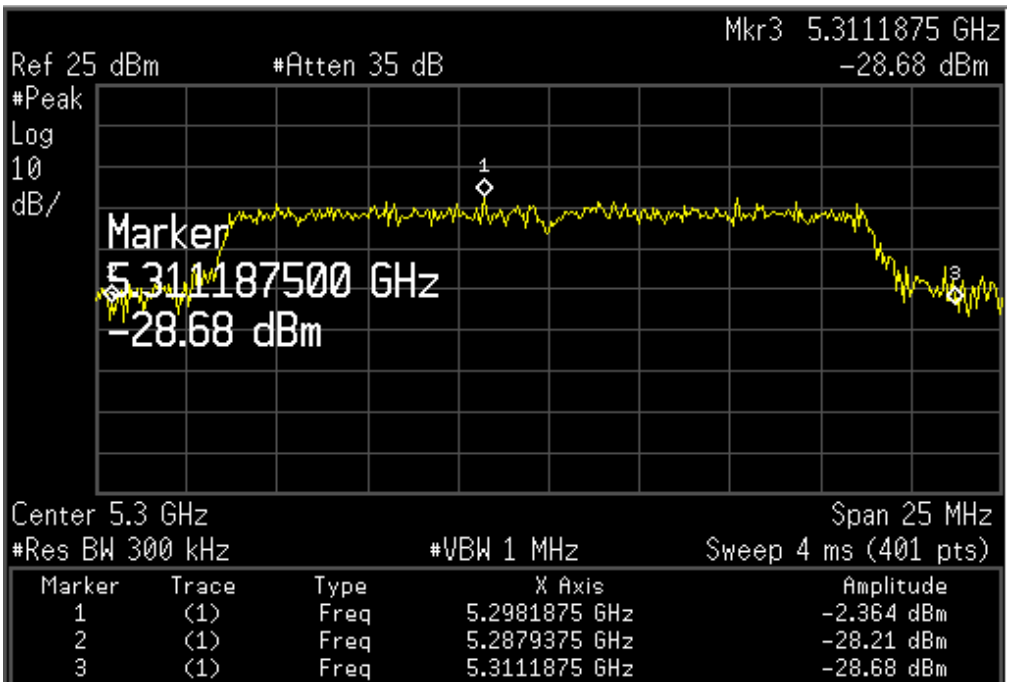
26 dB Bandwidth **Channel Frequency: 5200**



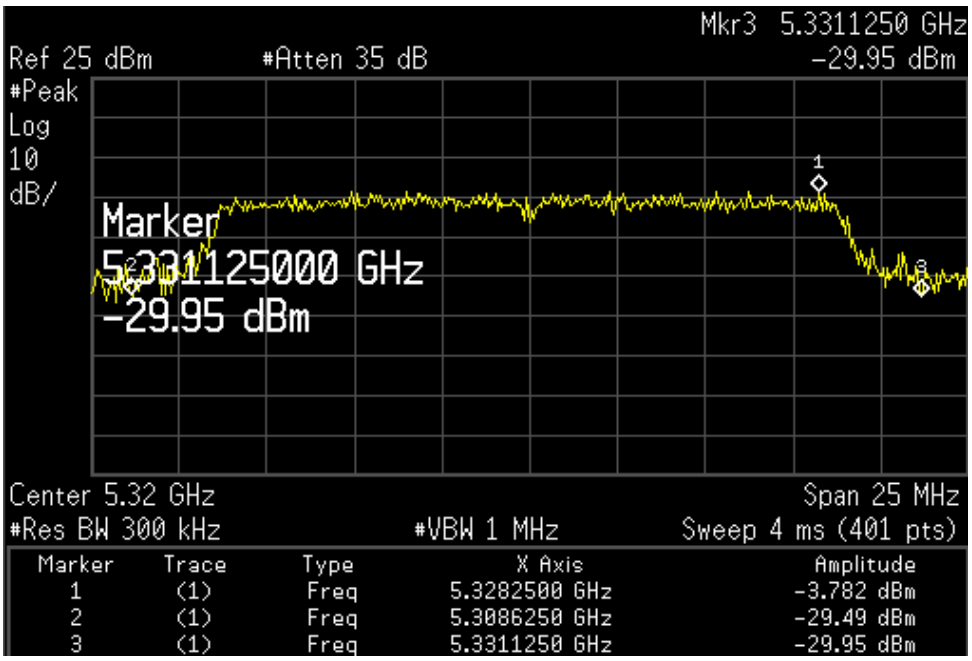
26 dB Bandwidth **Channel Frequency: 5240**



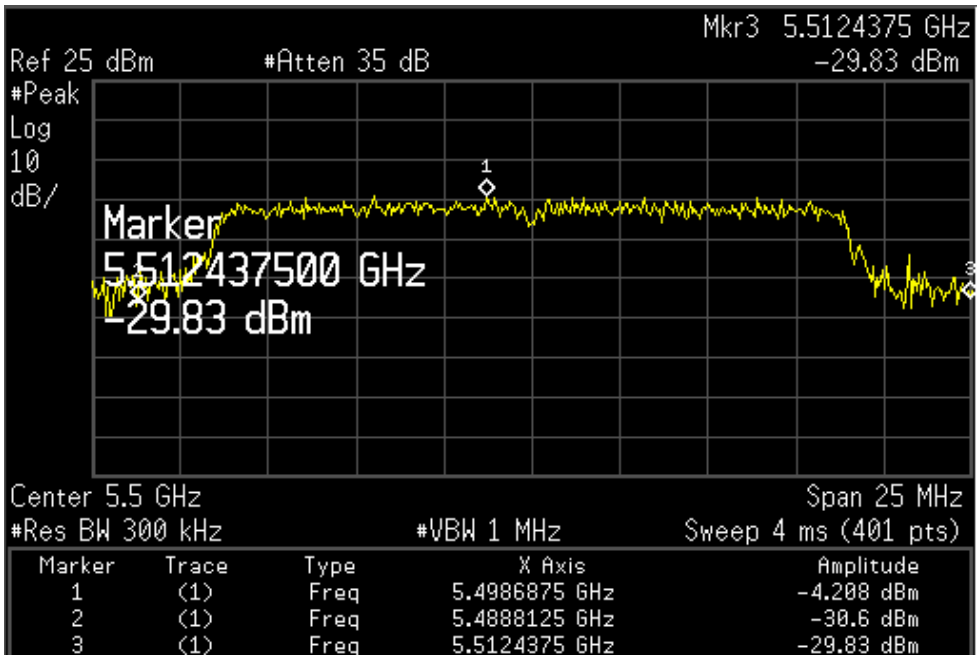
26 dB Bandwidth **Channel Frequency: 5260**



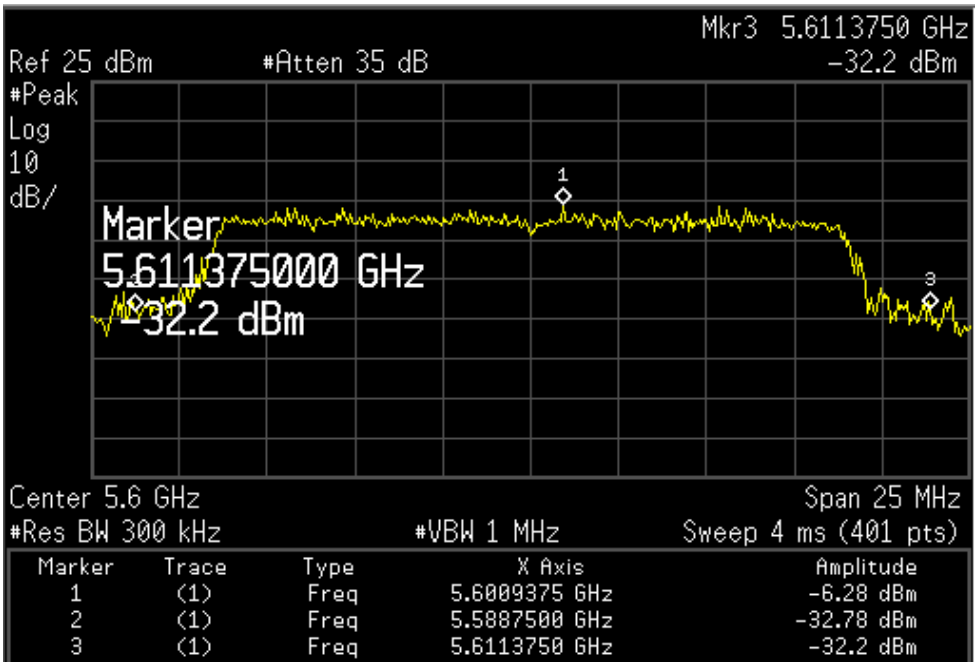
26 dB Bandwidth **Channel Frequency: 5300**



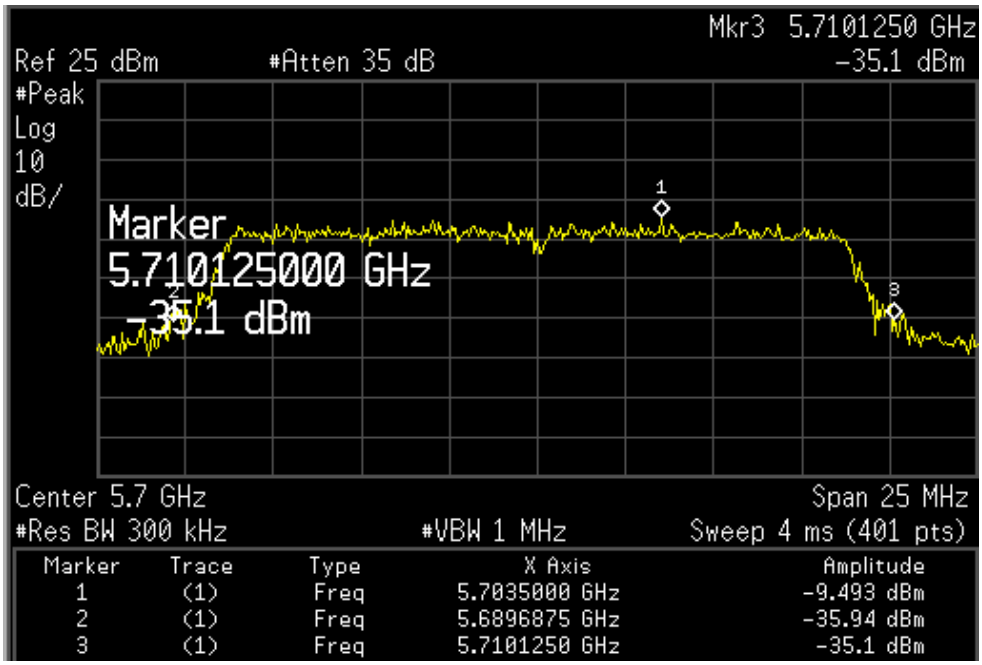
26 dB Bandwidth **Channel Frequency: 5320**



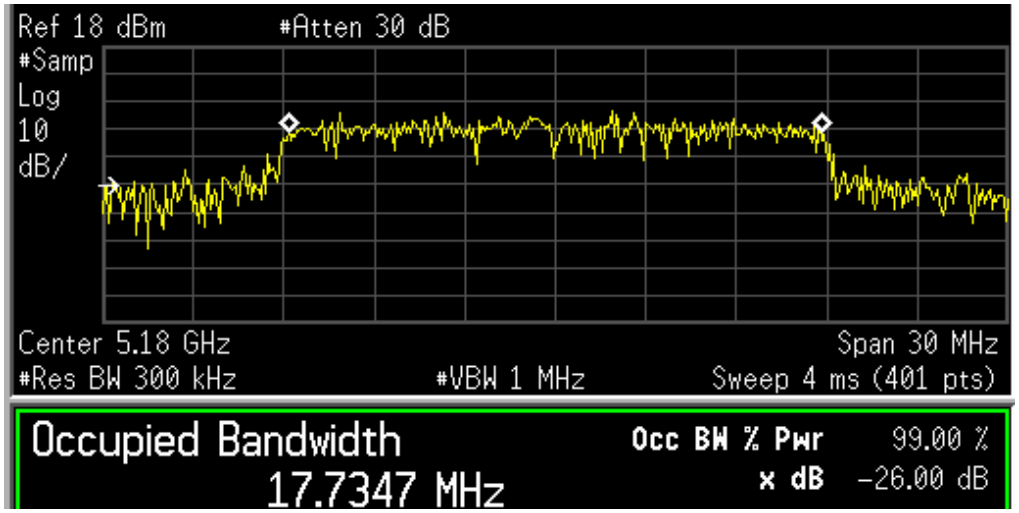
26 dB Bandwidth **Channel Frequency: 5500**



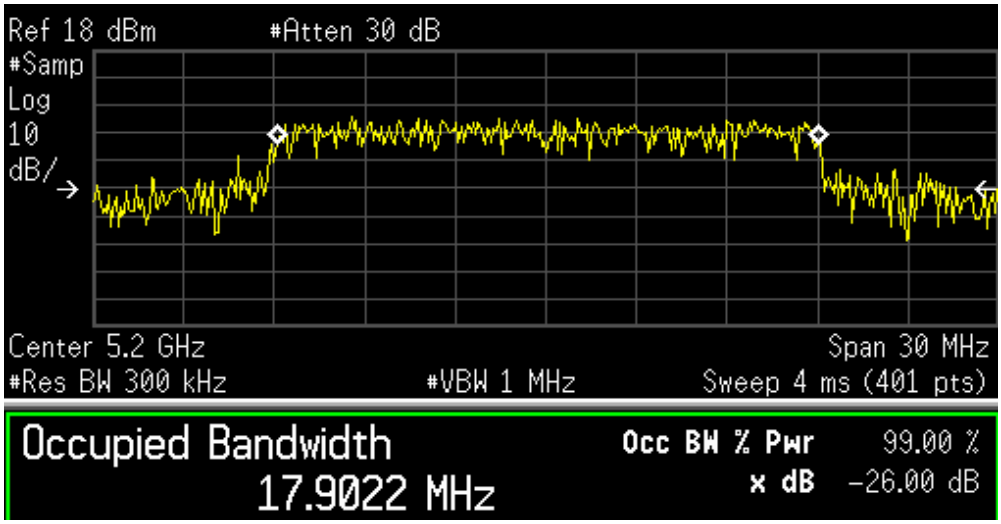
26 dB Bandwidth **Channel Frequency: 5600**



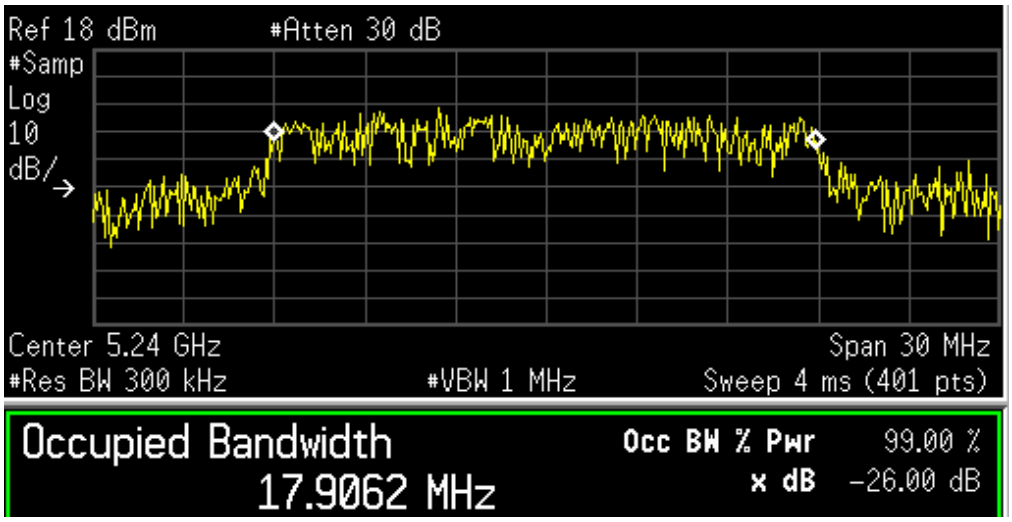
26 dB Bandwidth **Channel Frequency: 5700**



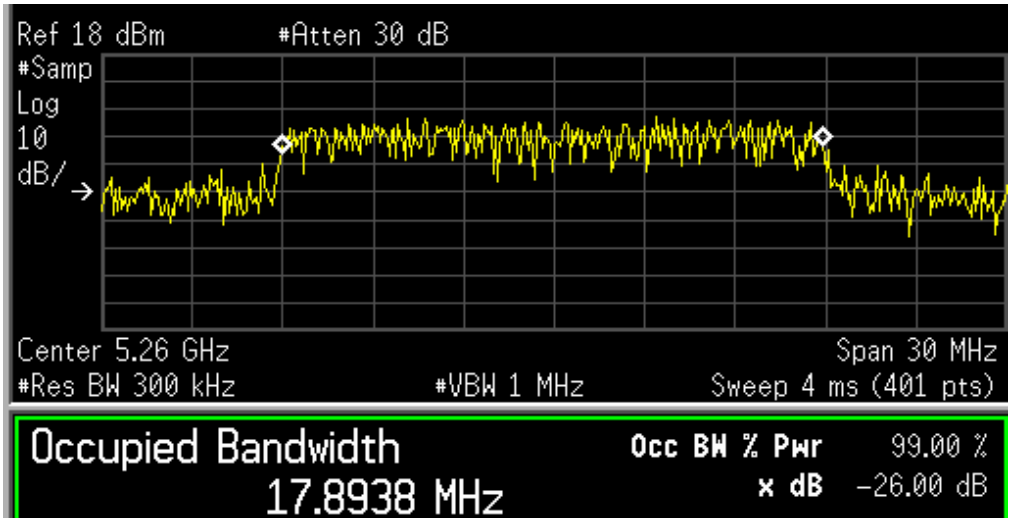
Occupied Bandwidth **Channel Frequency: 5180**



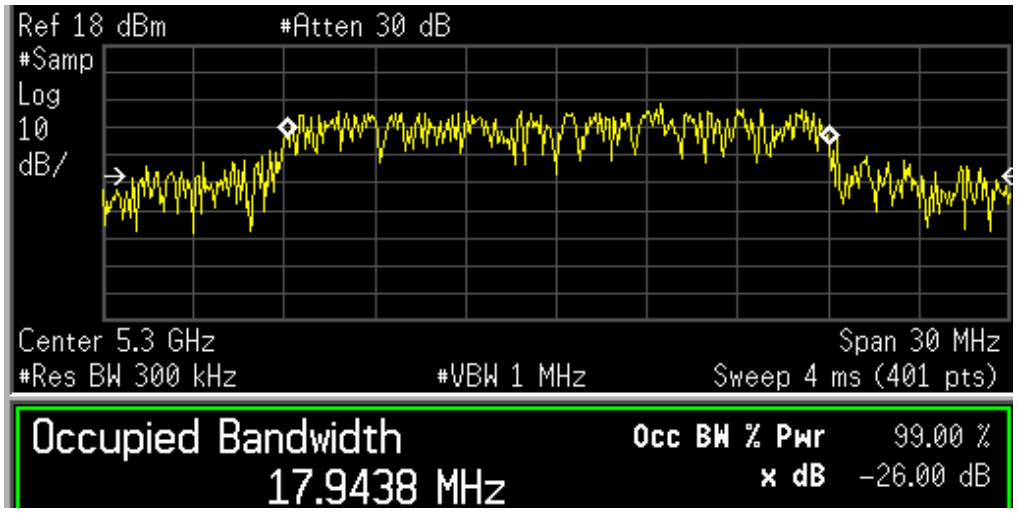
Occupied Bandwidth **Channel Frequency: 5200**



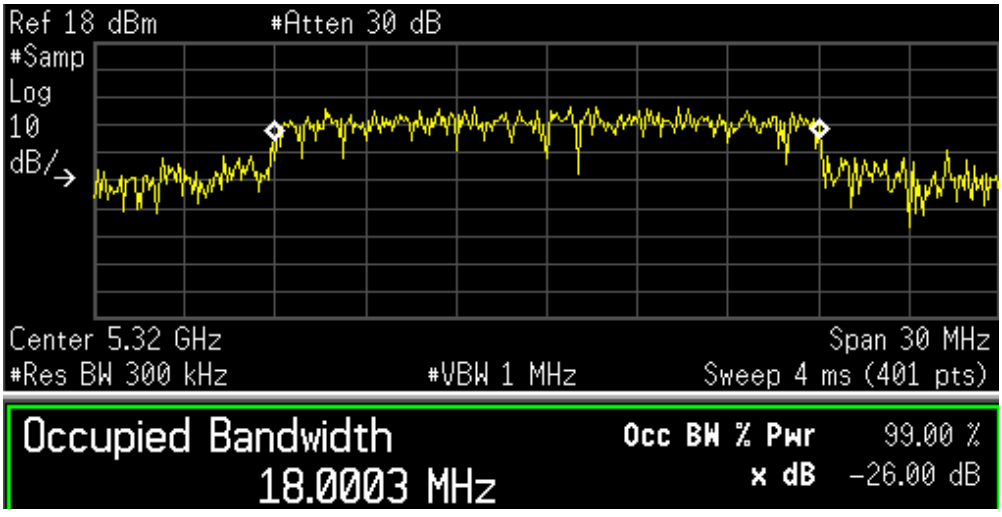
Occupied Bandwidth **Channel Frequency: 5240**



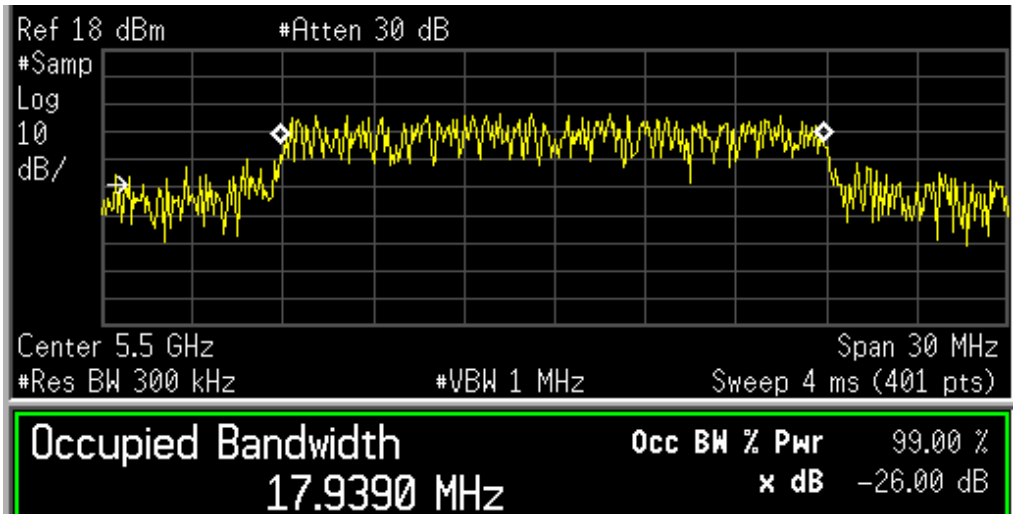
Occupied Bandwidth **Channel Frequency: 5260**



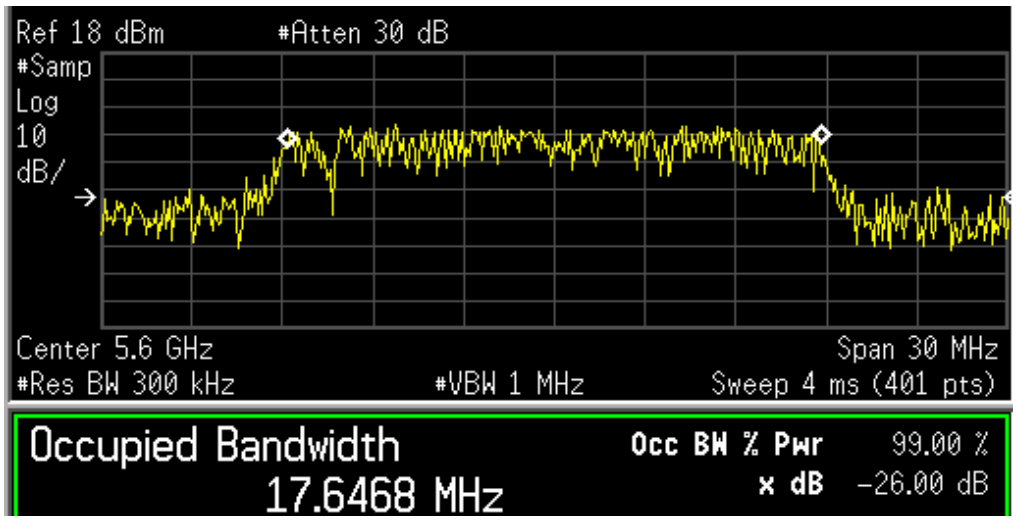
Occupied Bandwidth **Channel Frequency: 5300**



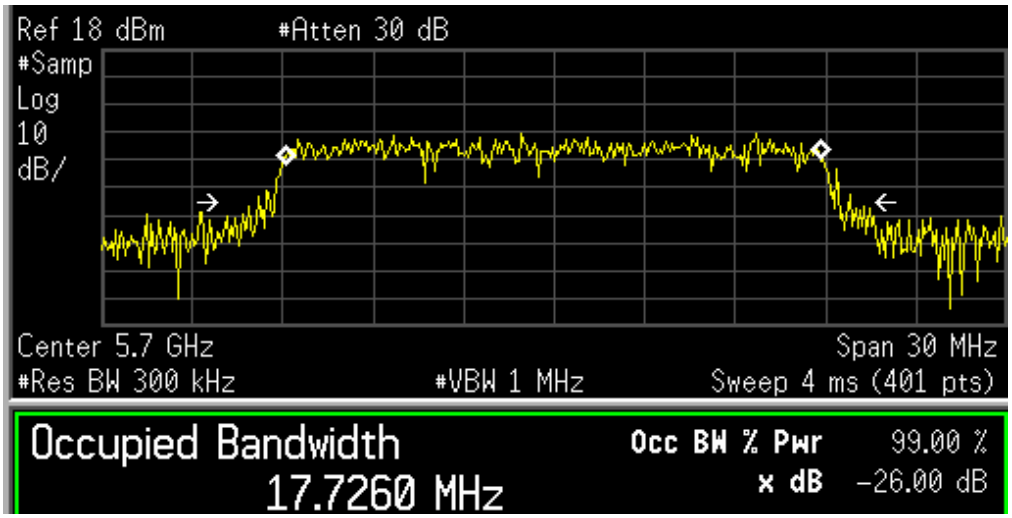
Occupied Bandwidth **Channel Frequency: 5320**



Occupied Bandwidth **Channel Frequency: 5500**



Occupied Bandwidth **Channel Frequency: 5600**



Occupied Bandwidth **Channel Frequency: 5700**

Conducted Peak Output Power — Section 15.407 (a)

Result — **Pass**

Test Specification	FCC Part 15 Section 15.407
Measurement Bandwidth (RBW)	1 MHz
Requirement	For the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW or 4 dBm + 10log B, where B is the 26- dB emission bandwidth in MHz For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10log B, where B is the 26 dB emission bandwidth in MHz.

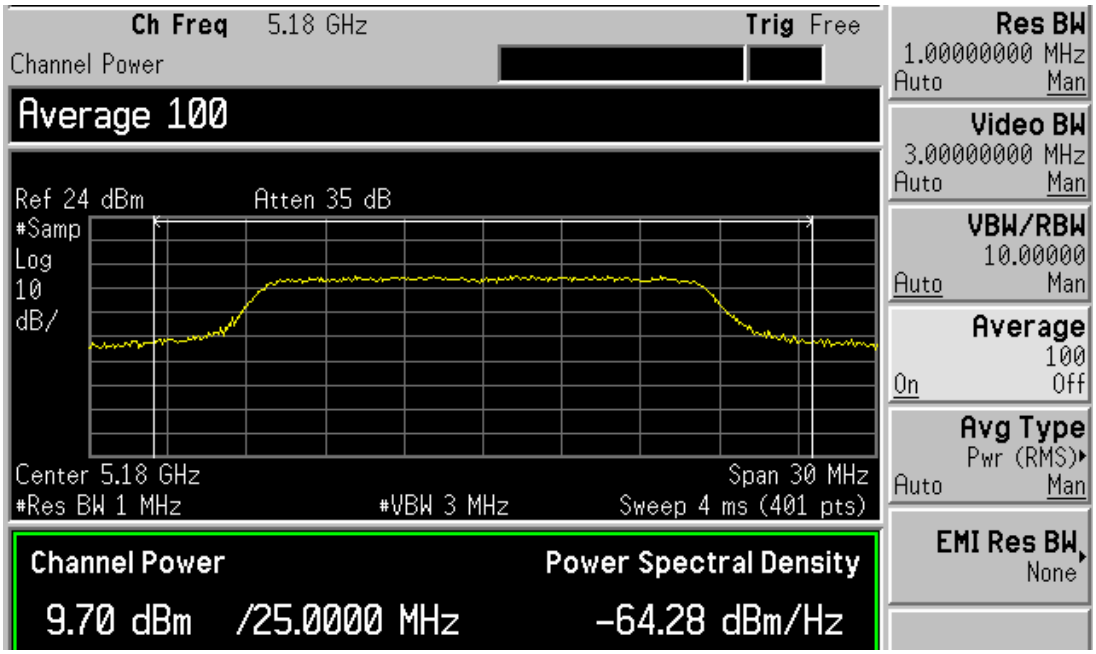
Note: for measurement of output power method #1 was used

Test Method:

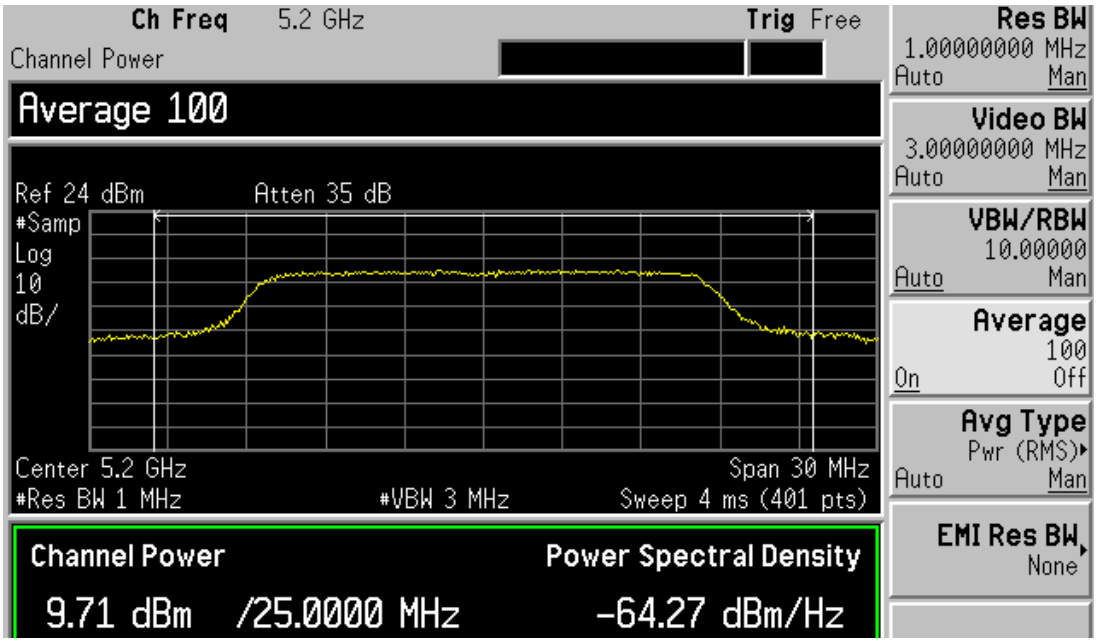
Test Result:

Modulation: 802.11a

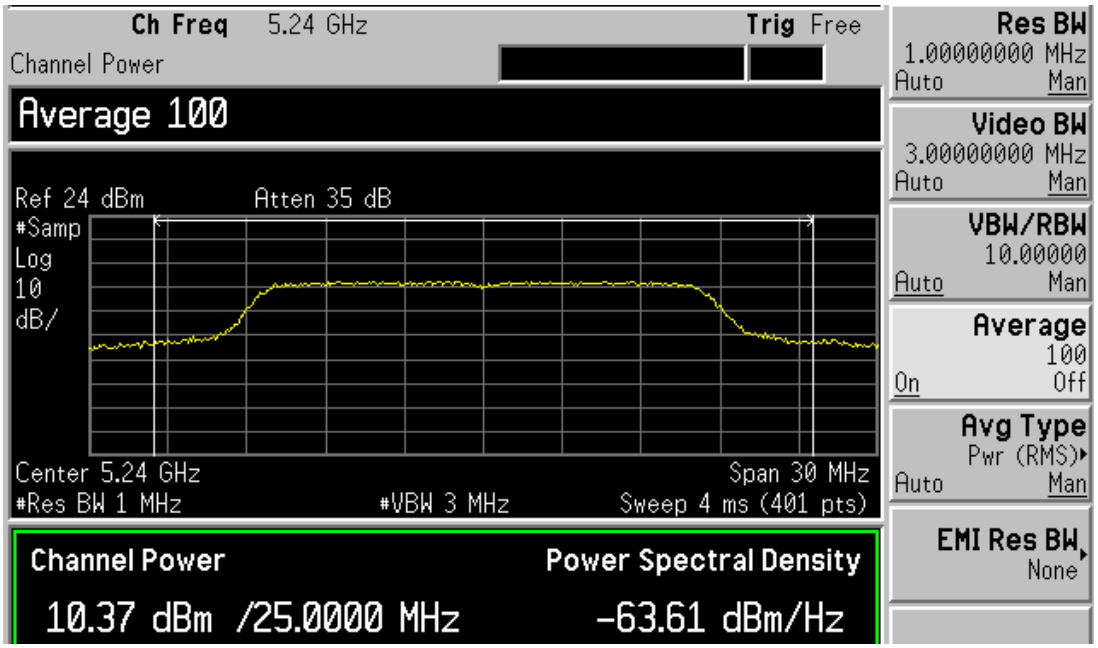
Channel No.	Frequency (MHz)	Measured RF Output power (dBm)	Cable Loss (dB)	Total Output power (dBm)	Limit (dBm)	Margin (dB)
36	5180	09.70	2.18	11.88	17.00	-5.12
40	5200	09.71	2.18	11.89	17.00	-5.11
48	5240	10.37	2.18	12.55	17.00	-4.45
52	5260	10.81	2.68	13.49	24.00	-10.51
60	5300	9.84	2.68	12.52	24.00	-11.48
64	5320	10.27	2.68	12.95	24.00	-11.05
100	5500	09.72	2.93	12.65	24.00	-11.35
120	5600	06.84	2.93	09.77	24.00	-14.23
140	5700	02.16	2.93	05.09	24.00	-18.91



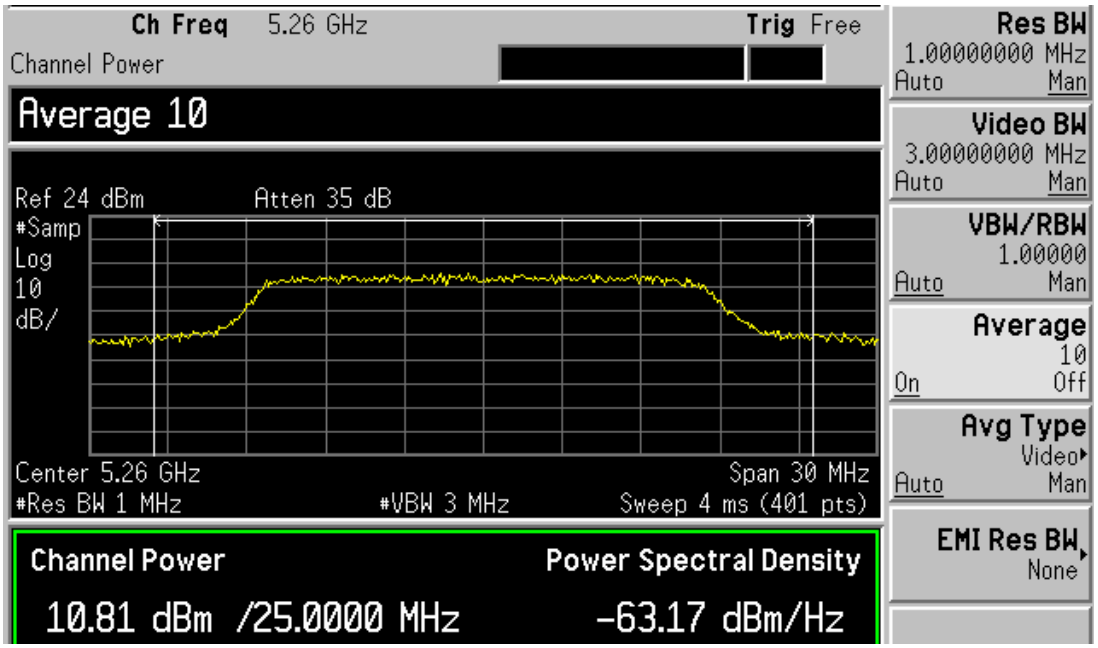
Channel Frequency: 5180



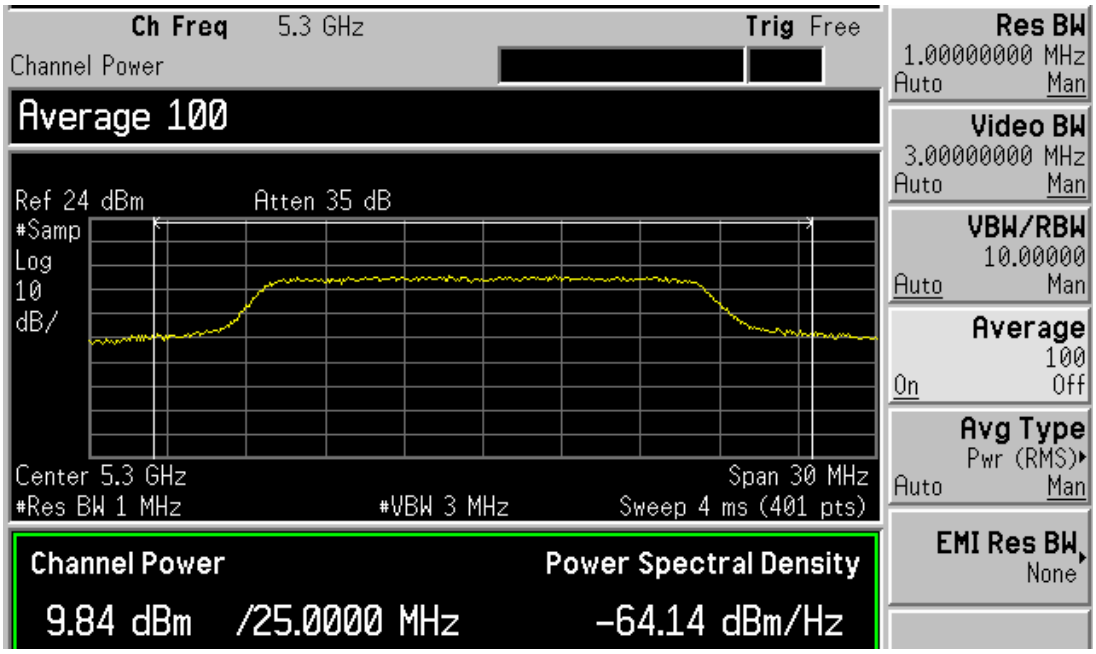
Channel Frequency: 5200



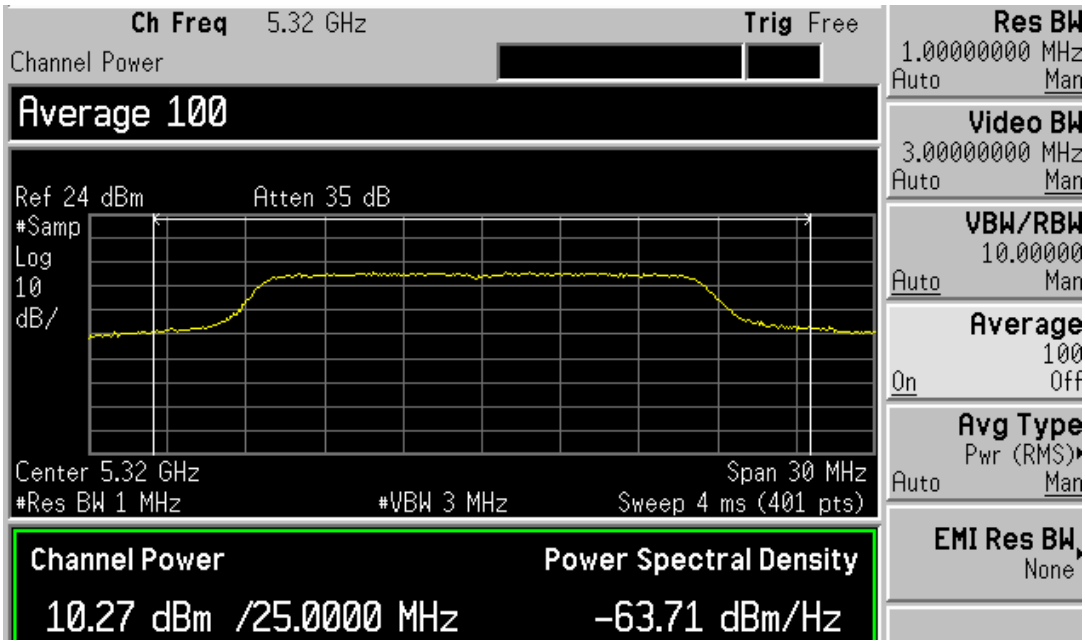
Channel Frequency: 5240



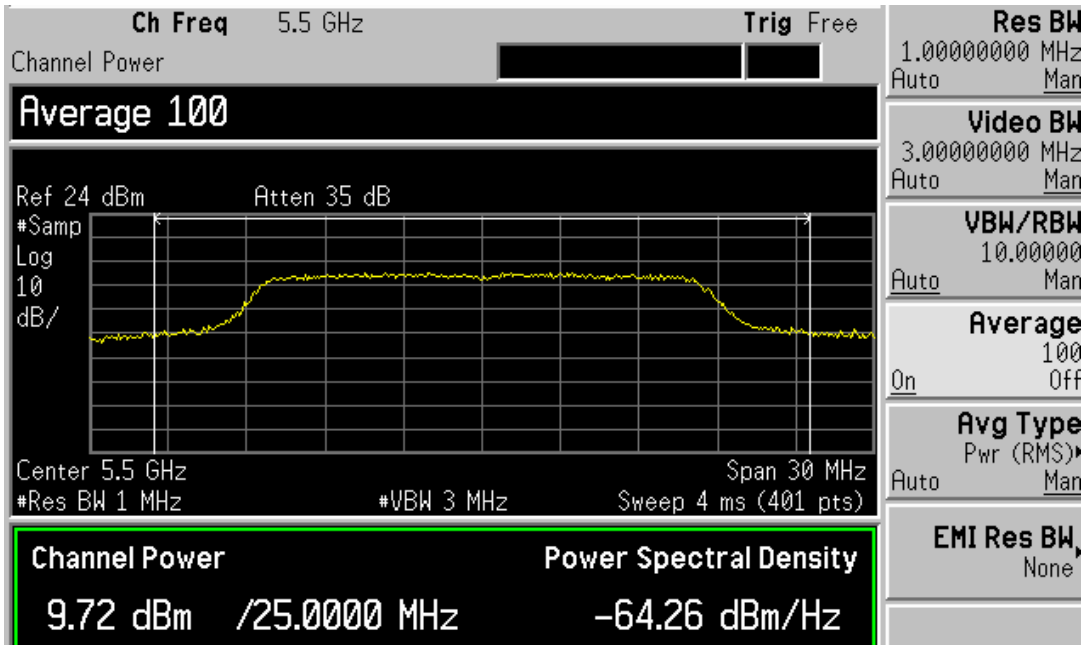
Channel Frequency: 5260



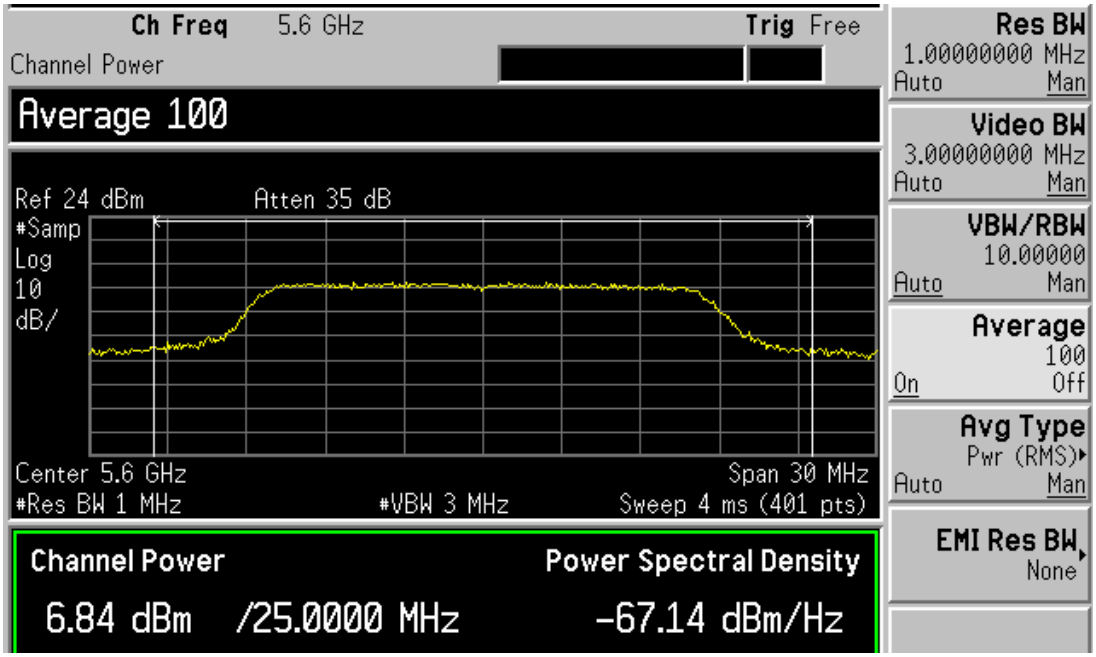
Channel Frequency: 5300



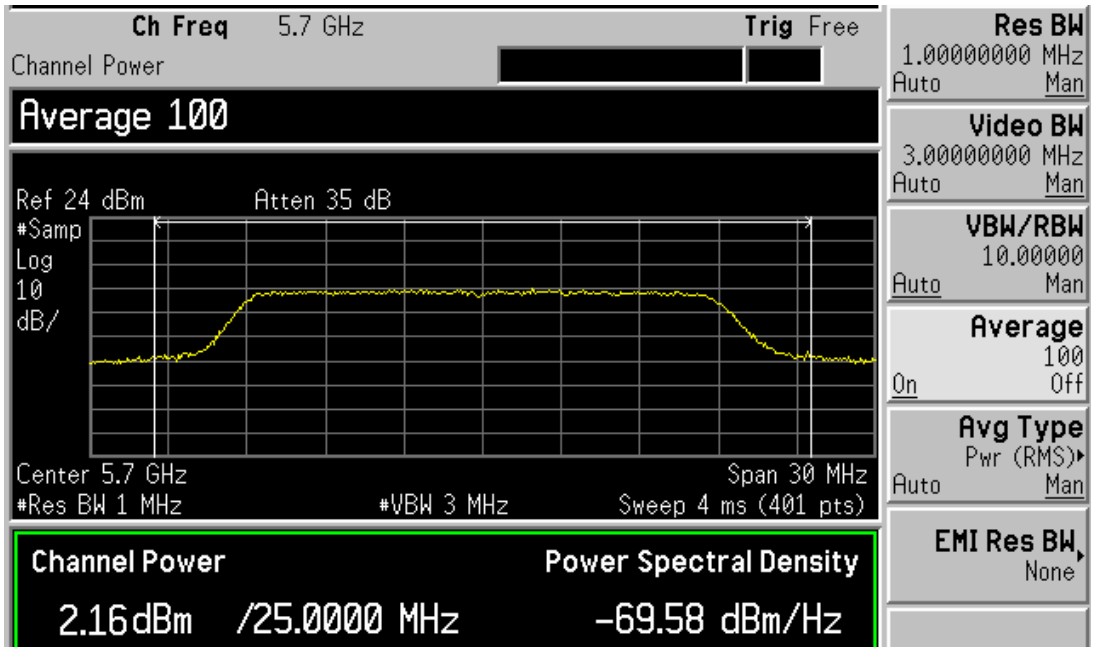
Channel Frequency: 5320



Channel Frequency: 5500



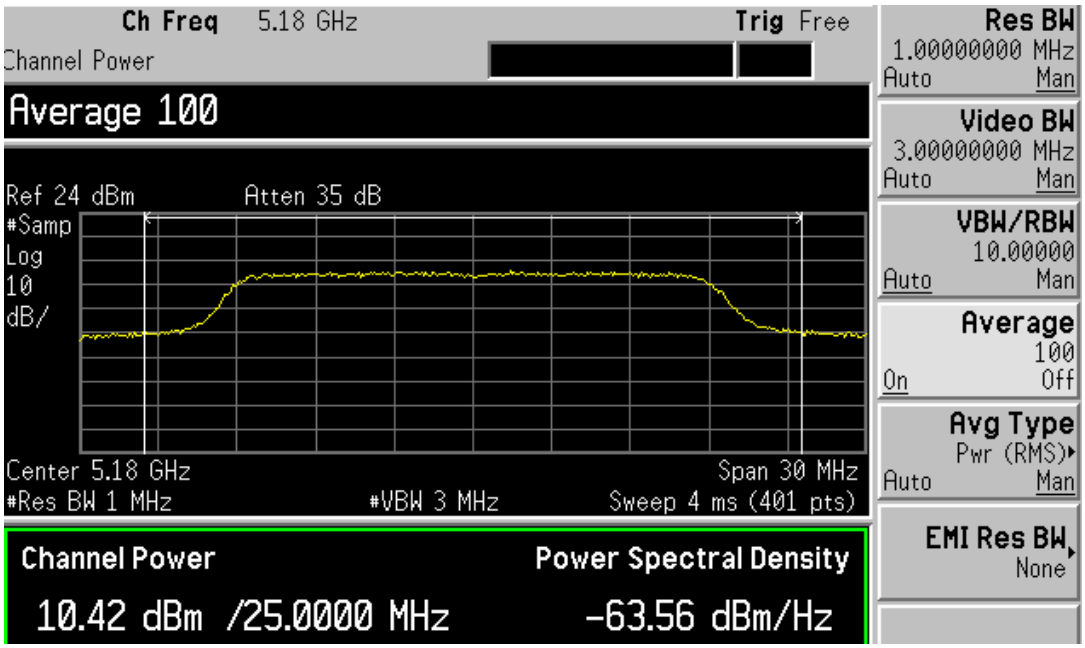
Channel Frequency: 5600



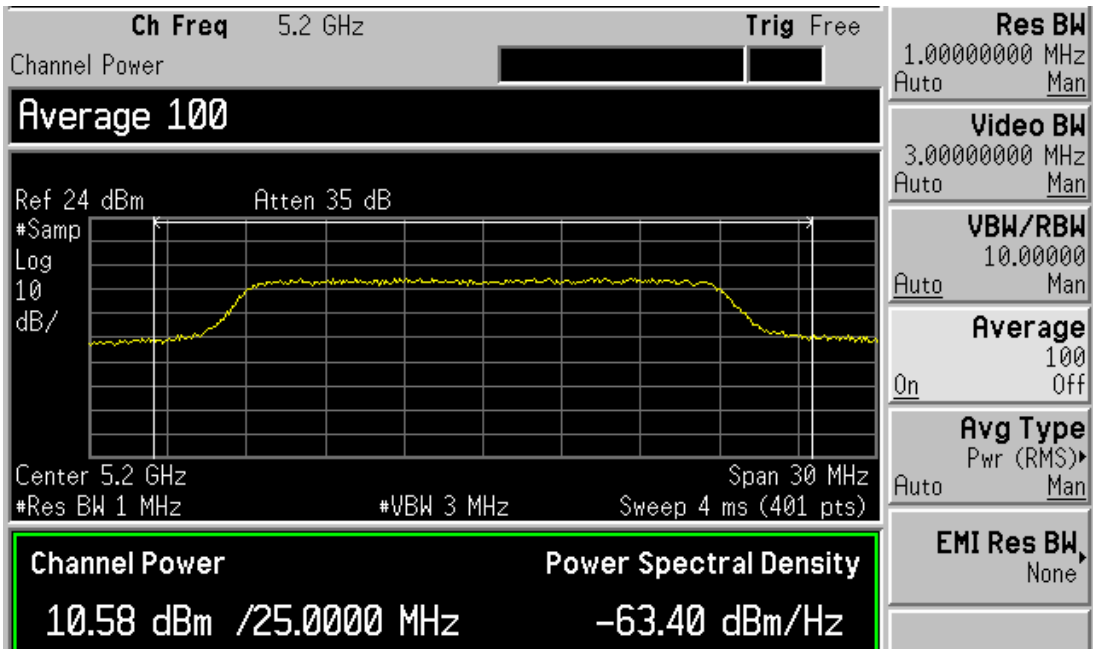
Channel Frequency: 5700

Modulation: 802.11n

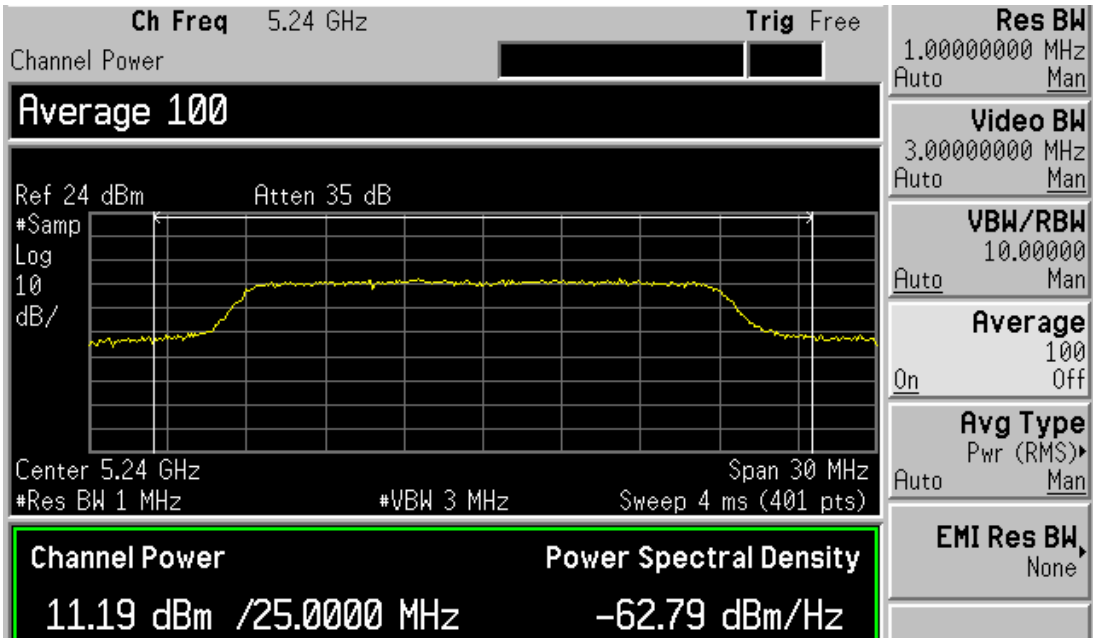
Channel	Frequency (MHz)	Measured RF Output power (dBm)	Cable Loss (dB)	Total Output power (dBm)	Limit (dBm)	Margin (dBm)
36	5180	10.42	2.18	12.60	17.00	-04.40
40	5200	10.58	2.18	12.76	17.00	-04.24
48	5240	11.19	2.18	13.37	17.00	-03.63
52	5260	10.69	2.68	13.37	24.00	-10.63
60	5300	10.55	2.68	13.23	24.00	-10.77
64	5320	10.99	2.68	13.67	24.00	-10.33
100	5500	10.31	2.93	13.24	24.00	-10.76
120	5600	07.04	2.93	09.97	24.00	-14.03
140	5700	04.40	2.93	07.33	24.00	-16.67



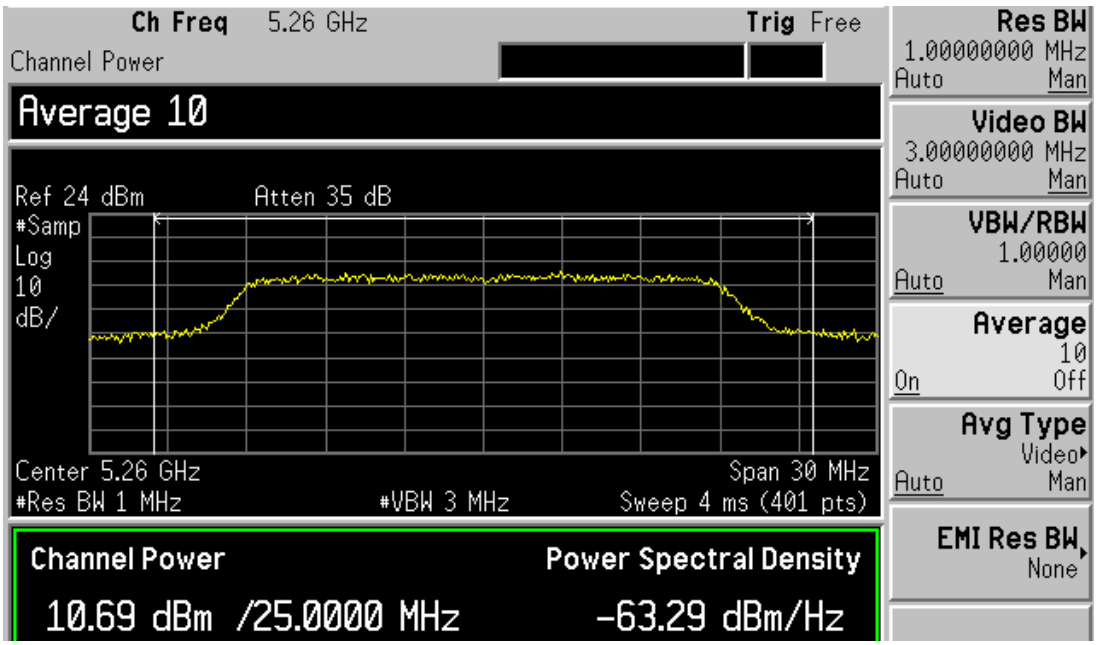
Channel Frequency: 5180



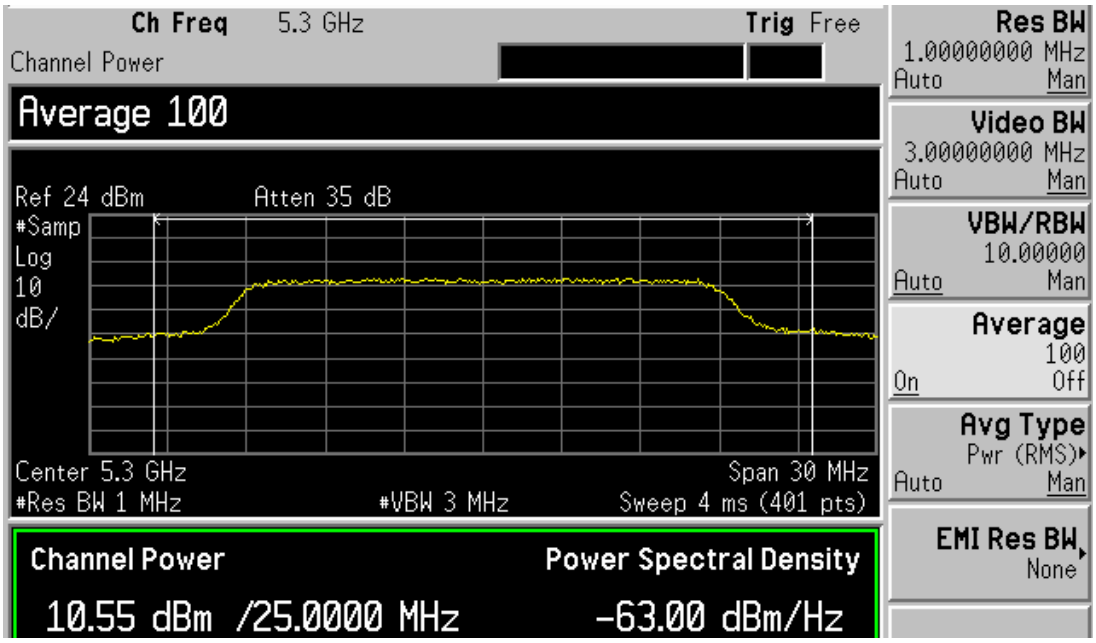
Channel Frequency: 5200



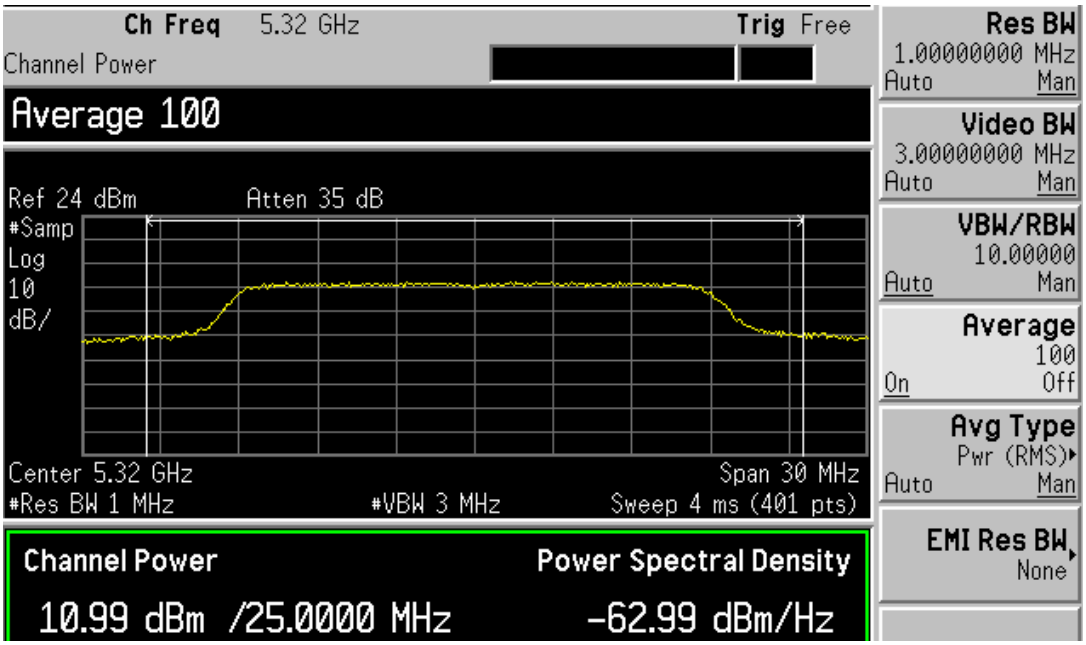
Channel Frequency: 5240



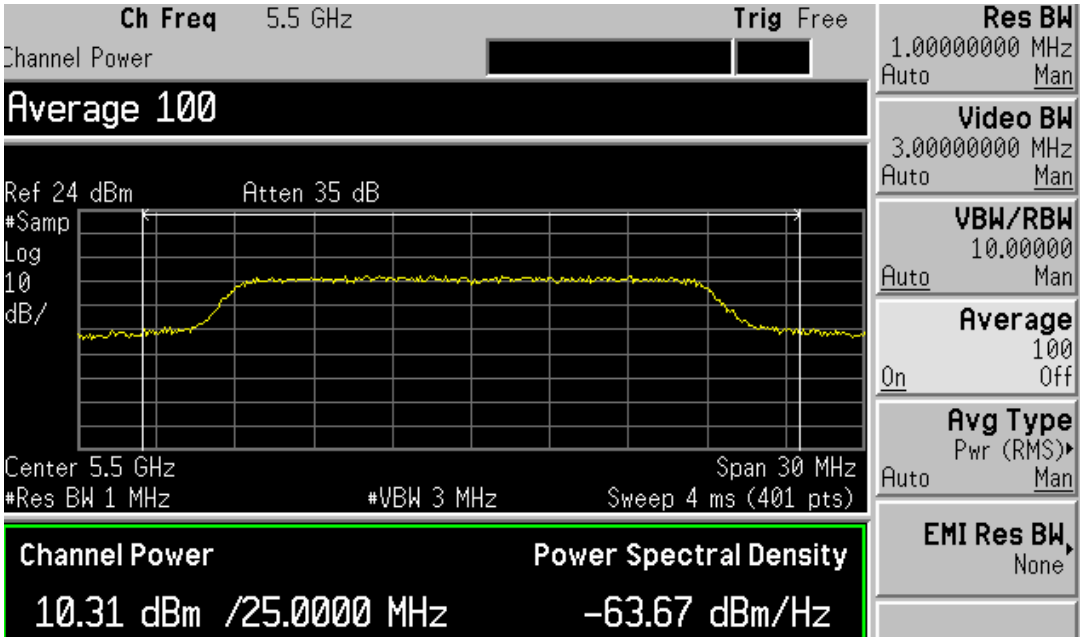
Channel Frequency: 5260



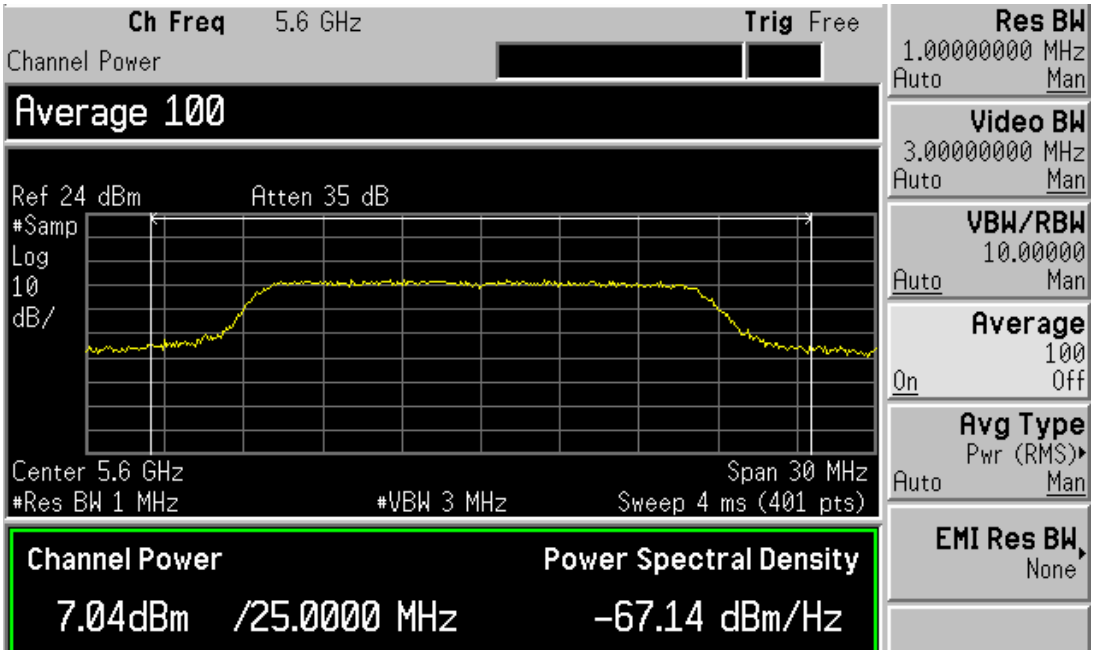
Channel Frequency: 5300



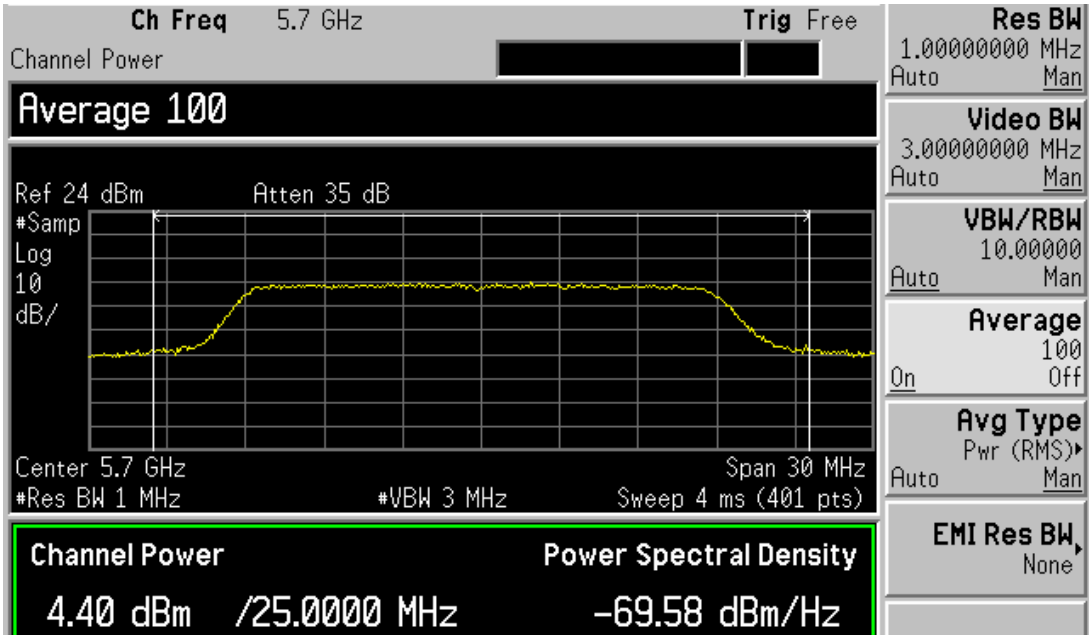
Channel Frequency: 5320



Channel Frequency: 5500



Channel Frequency: 5600



Channel Frequency: 5700

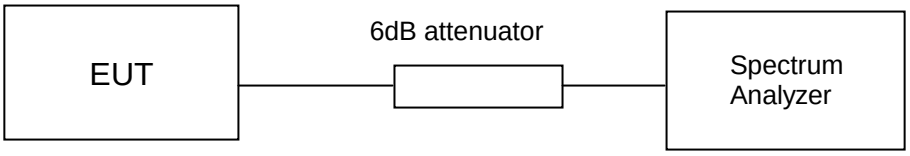
Power Spectral Density — Section 15.407 (a)

Result **Pass**

Test Specification	FCC Part 15 Section 15.407 (a)
Detector Function	Sample
Requirement	For the band 5.15-5.25 GHz, the peak power spectral density shall not exceed 4 dBm in any 1-MHz band. For the 5.25-5.35 GHz and 5.47-5.725 GHz bands the peak power spectral density shall not exceed 11 dBm in any 1 megahertz band\

Note: for measurement of Power Density Method 2 was used

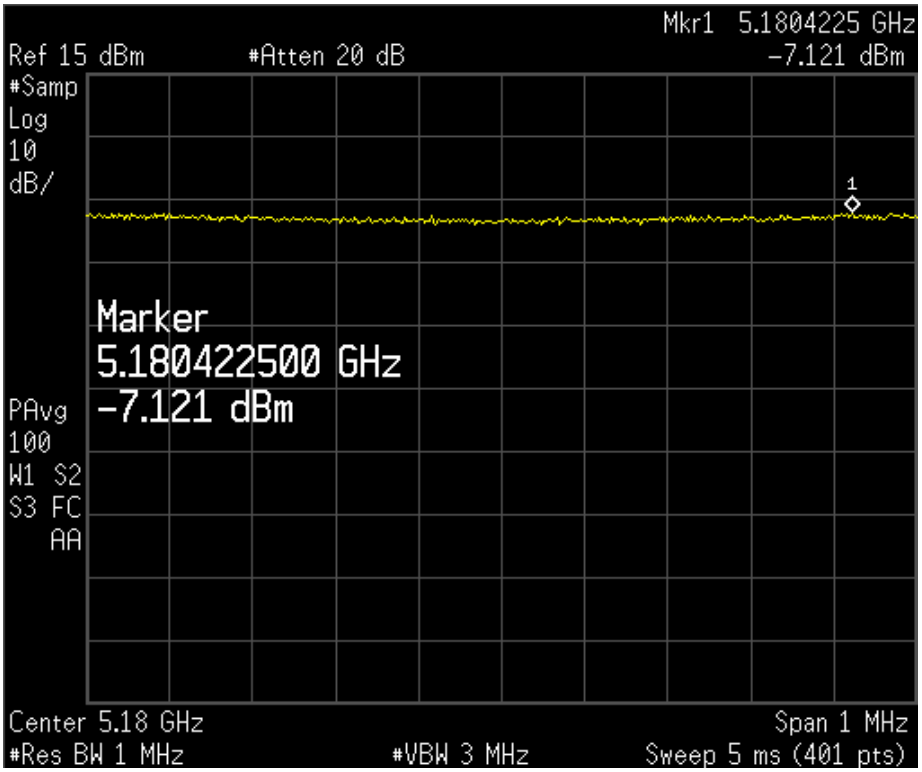
Test Method:



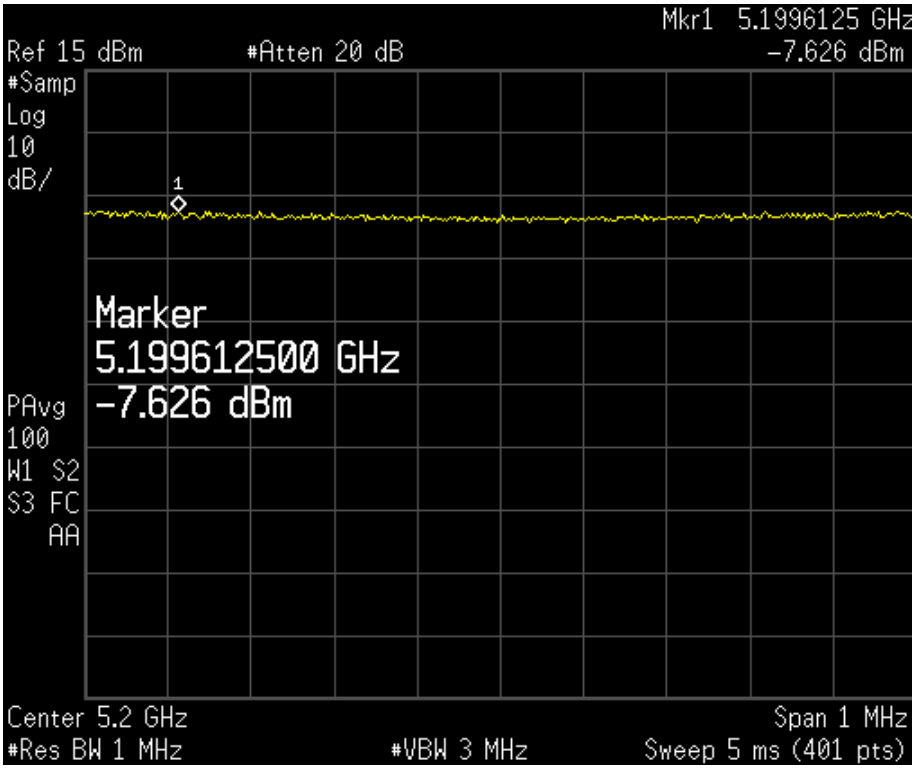
Test Result:

Modulation: 802.11a

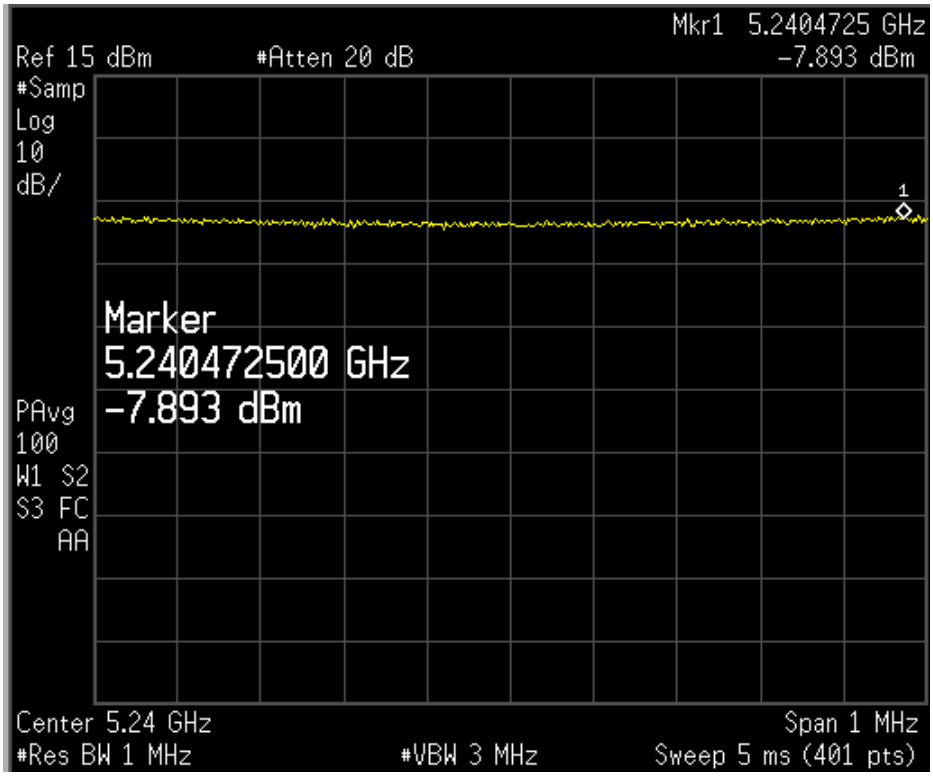
Channel No.	Frequency (MHz)	Measured RF Output power (dBm)	Attenuator + Cable Loss (dB)	Total Output power (dBm)	Limit (dBm)	Margin (dB)
36	5180	-7.12	8.18	1.06	4.00	-2.94
40	5200	-7.62	8.18	0.56	4.00	-3.44
48	5240	-7.89	8.18	0.29	4.00	-3.71
52	5260	-7.36	8.68	1.32	11.00	-9.68
60	5300	-7.85	8.68	0.83	11.00	-10.17
64	5320	-7.62	8.68	1.06	11.00	-9.94
100	5500	-8.30	8.93	0.63	11.00	-10.37
120	5600	-10.64	8.93	-1.71	11.00	-12.71
140	5700	-14.85	8.93	-5.92	11.00	-16.92



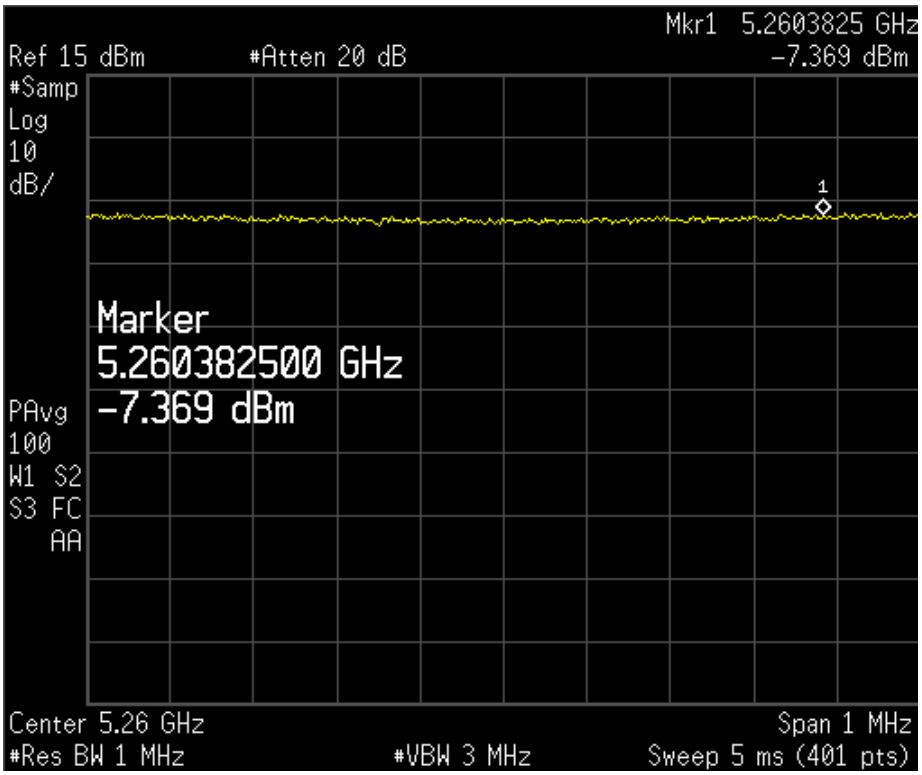
Channel Frequency: 5180



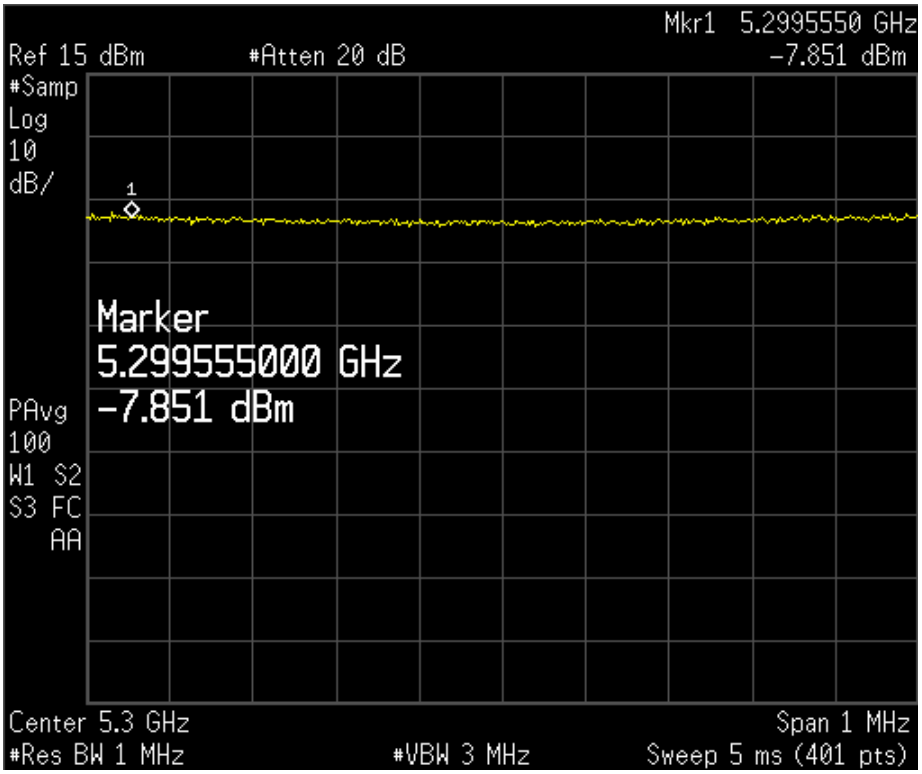
Channel Frequency: 5200



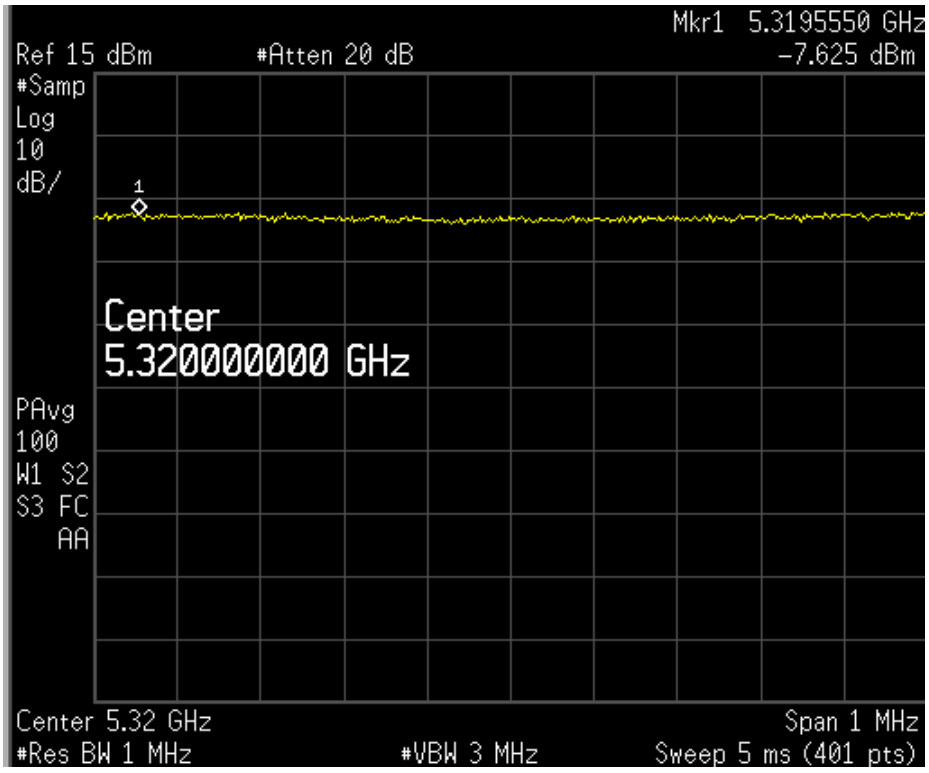
Channel Frequency: 5240



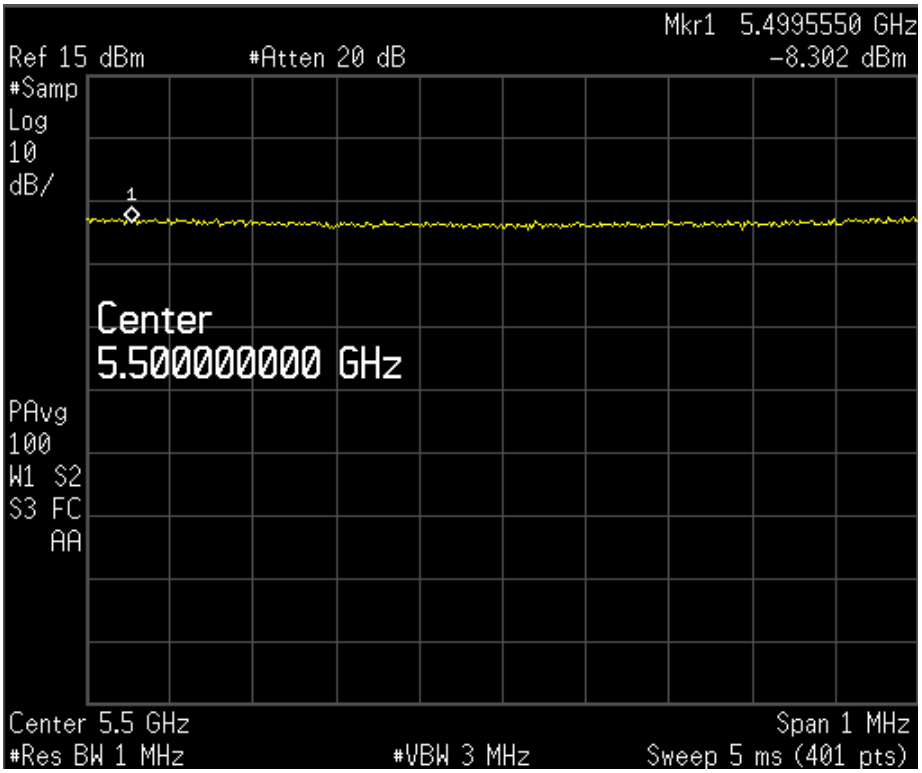
Channel Frequency: 5260



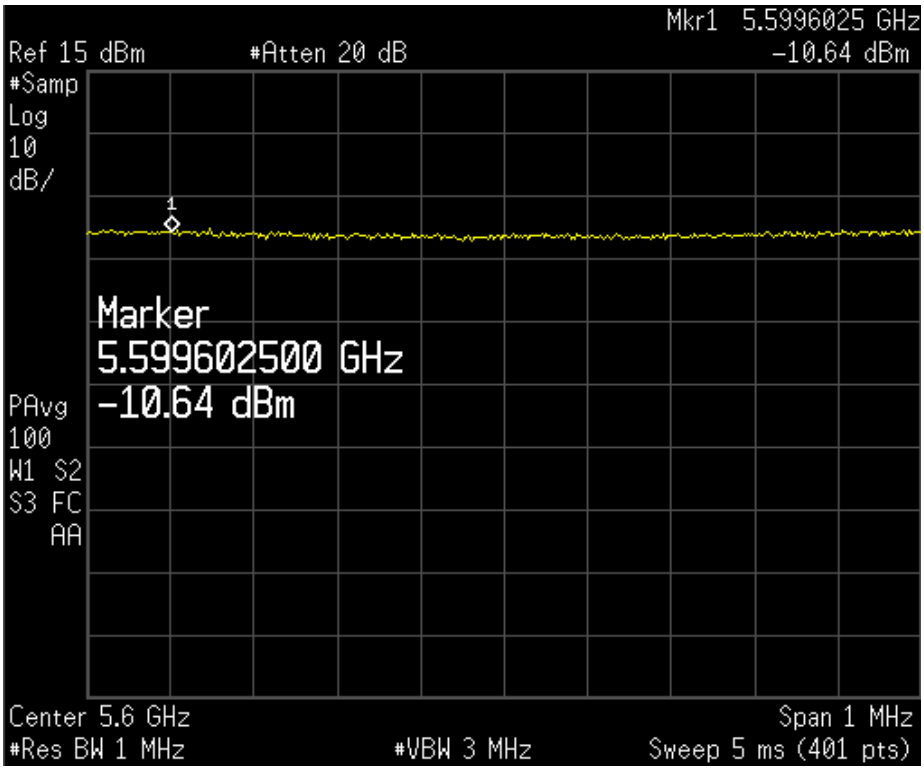
Channel Frequency: 5300



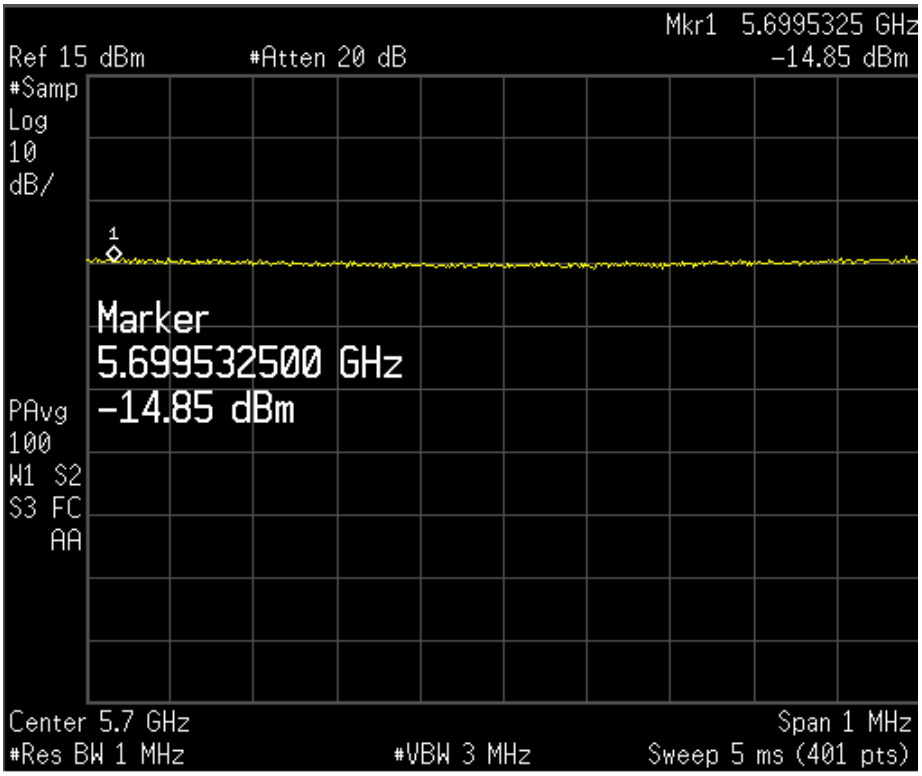
Channel Frequency: 5320



Channel Frequency: 5500



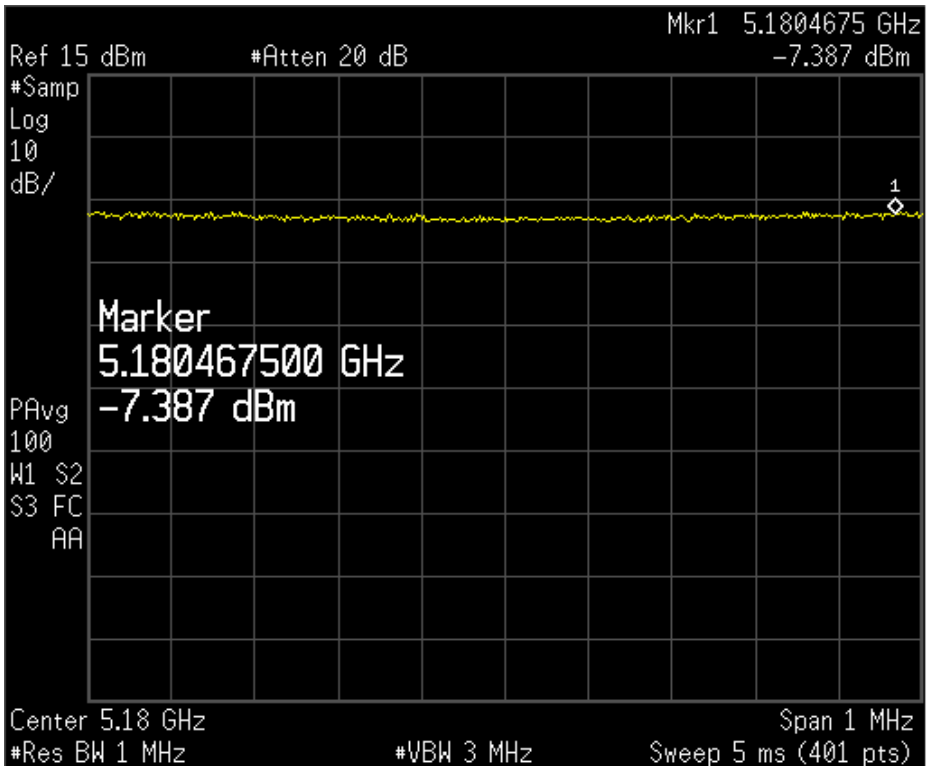
Channel Frequency: 5600



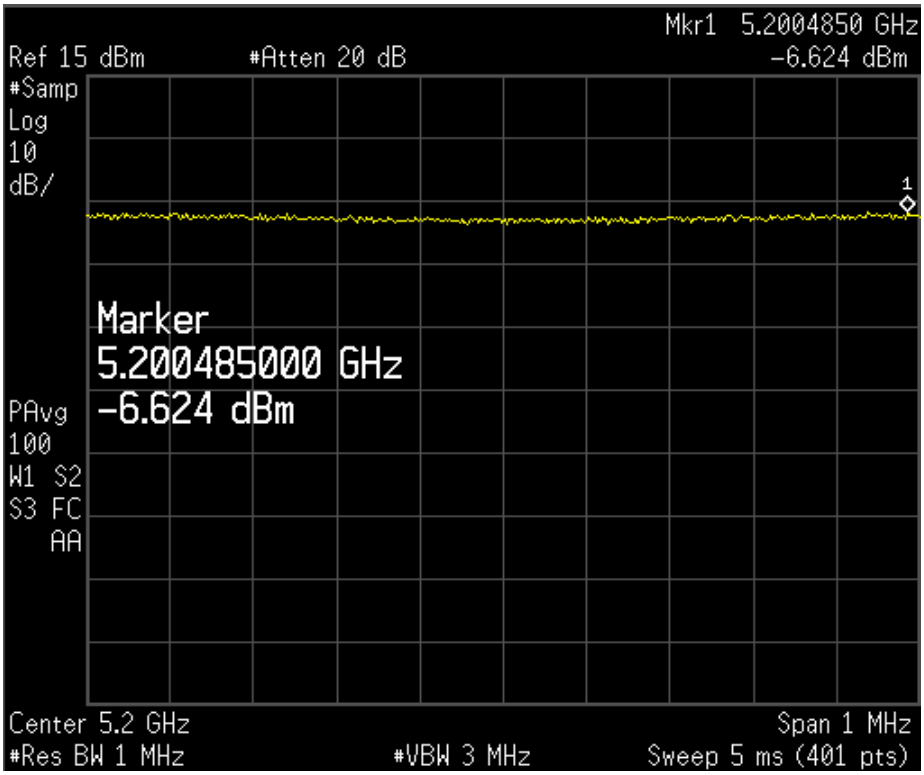
Channel Frequency: 5700

Modulation: 802.11n

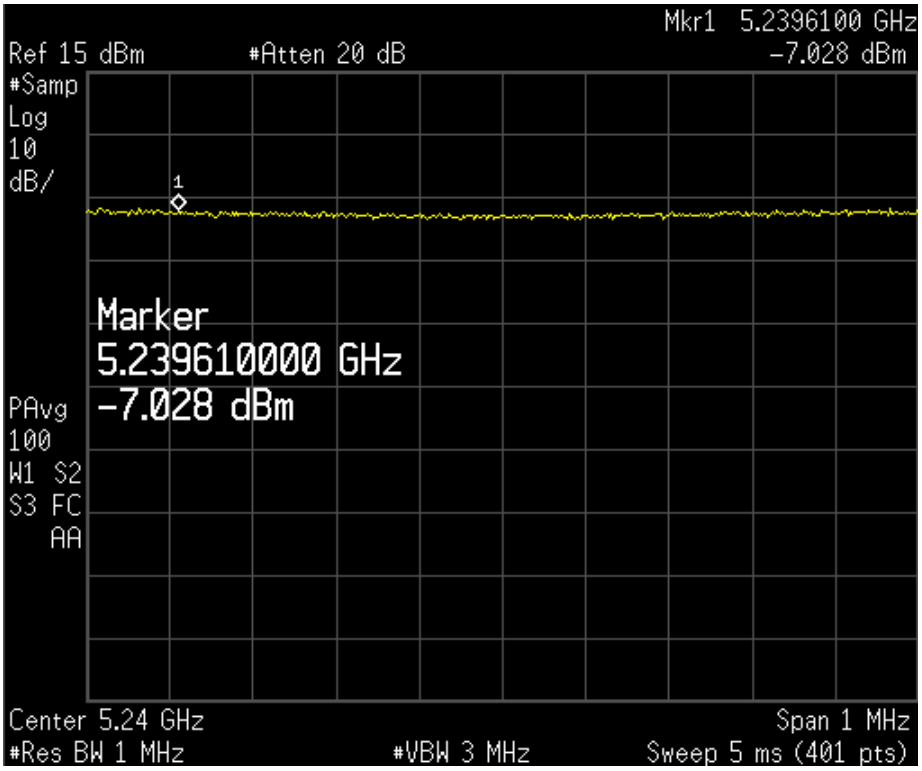
Channel No.	Frequency (MHz)	Measured RF Output power (dBm)	Attenuator + Cable Loss (dB)	Total Output power (dBm)	Limit (dBm)	Margin (dB)
36	5180	-7.38	8.18	0.80	4.00	-3.20
40	5200	-6.62	8.18	1.56	4.00	-2.44
48	5240	-7.02	8.18	1.16	4.00	-2.84
52	5260	-7.22	8.68	1.46	11.00	-9.54
60	5300	-6.63	8.68	2.05	11.00	-8.95
64	5320	-7.11	8.68	1.57	11.00	-9.43
100	5500	-9.15	8.93	-0.22	11.00	-11.22
120	5600	-9.95	8.93	-1.02	11.00	-12.02
140	5700	-16.55	8.93	-7.62	11.00	-18.62



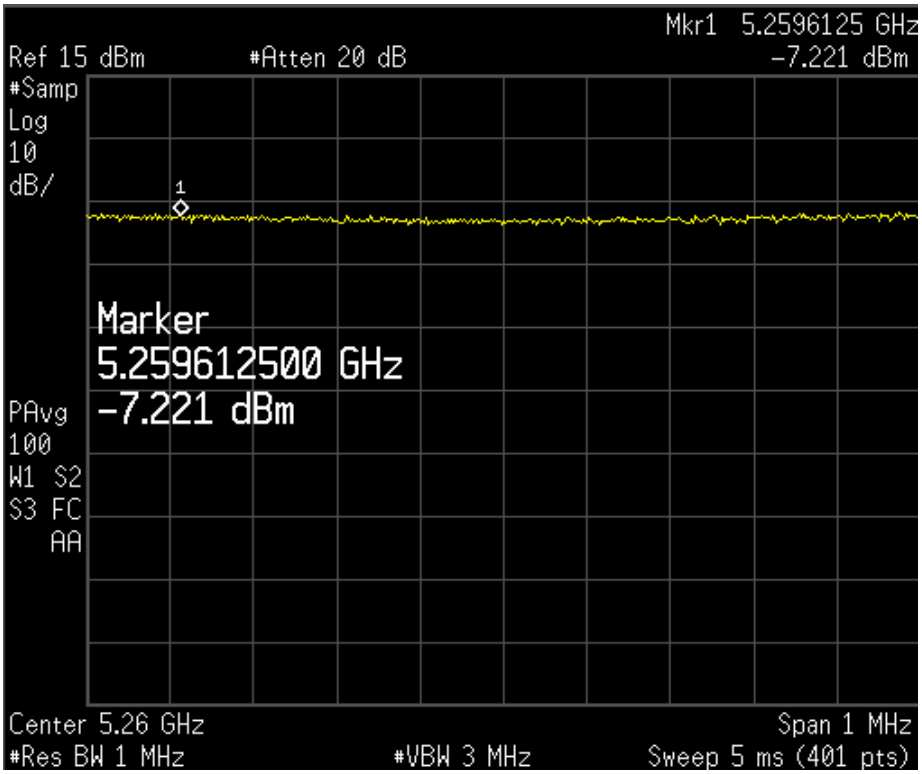
Channel Frequency: 5180



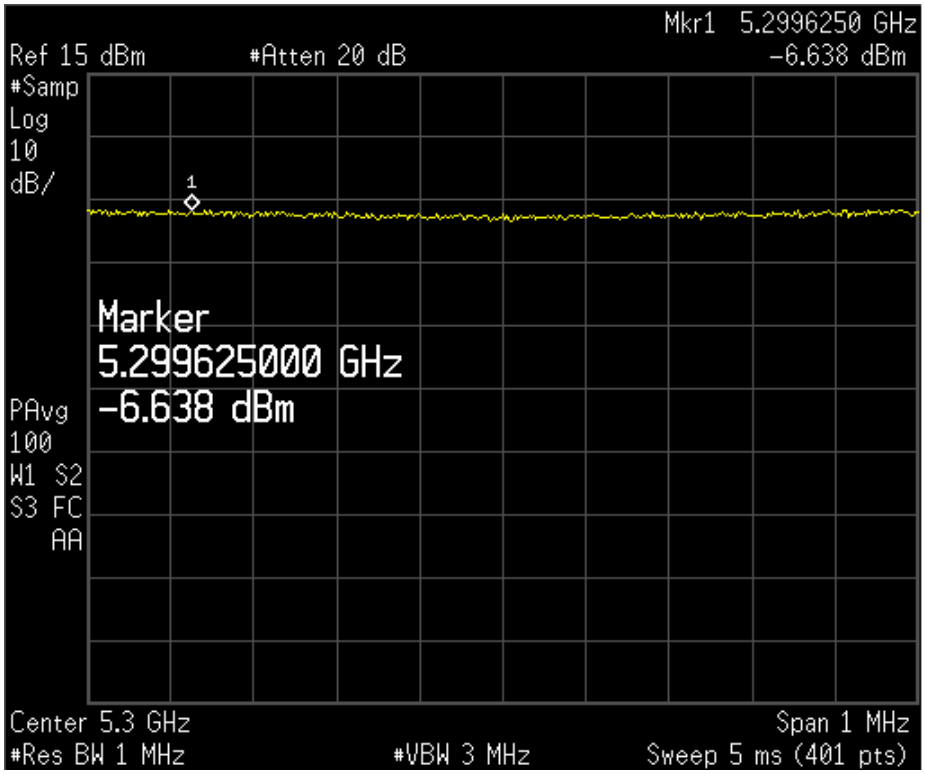
Channel Frequency: 5200



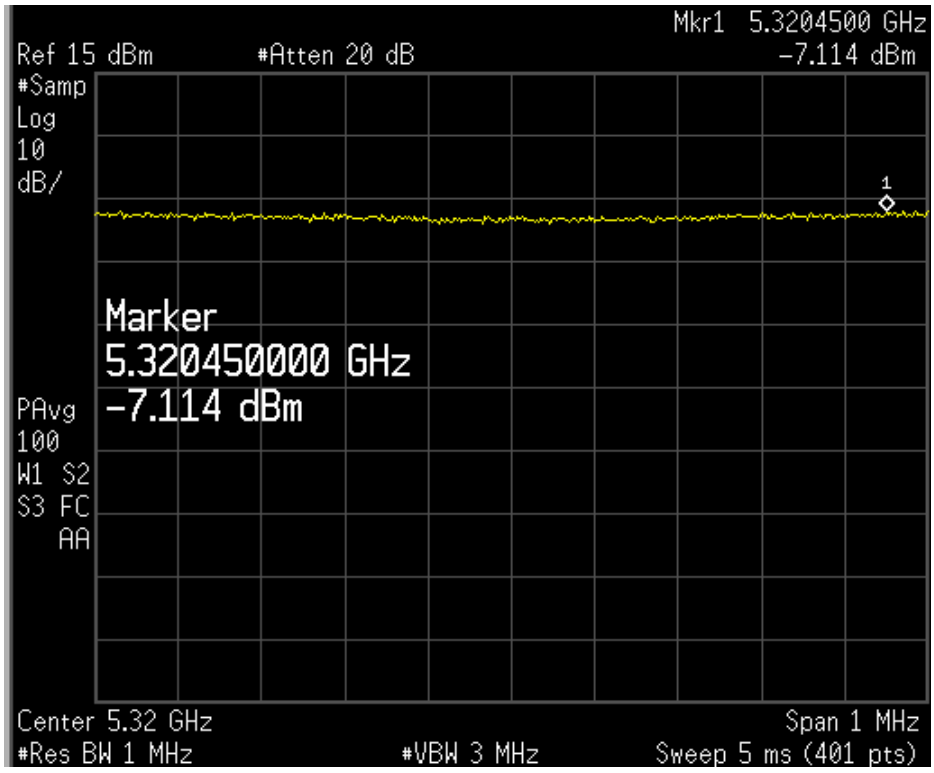
Channel Frequency: 5240



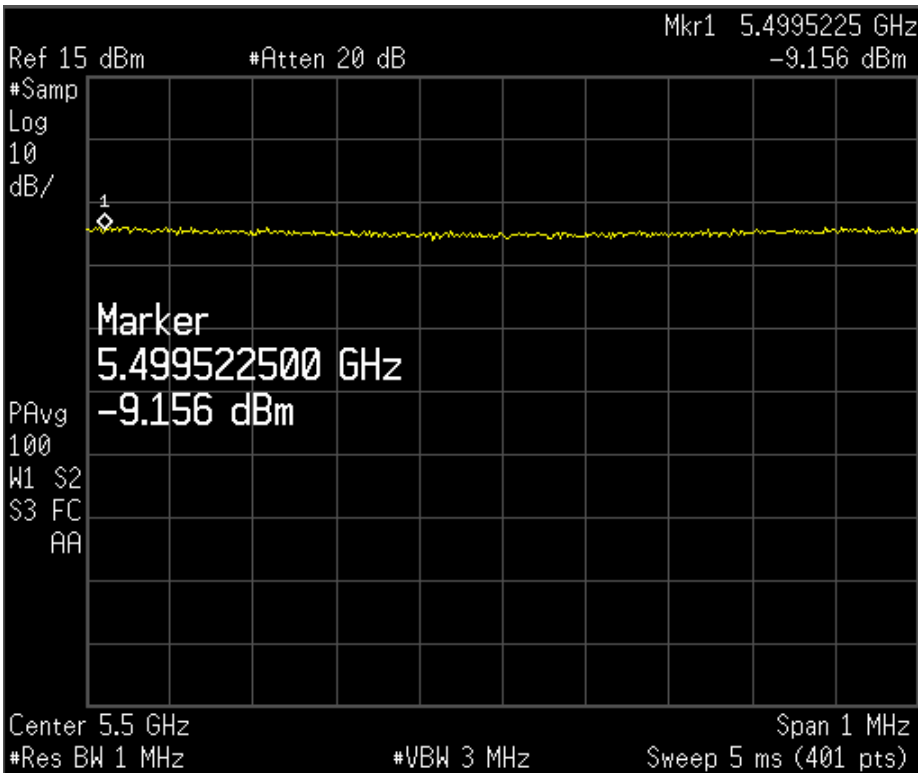
Channel Frequency: 5260



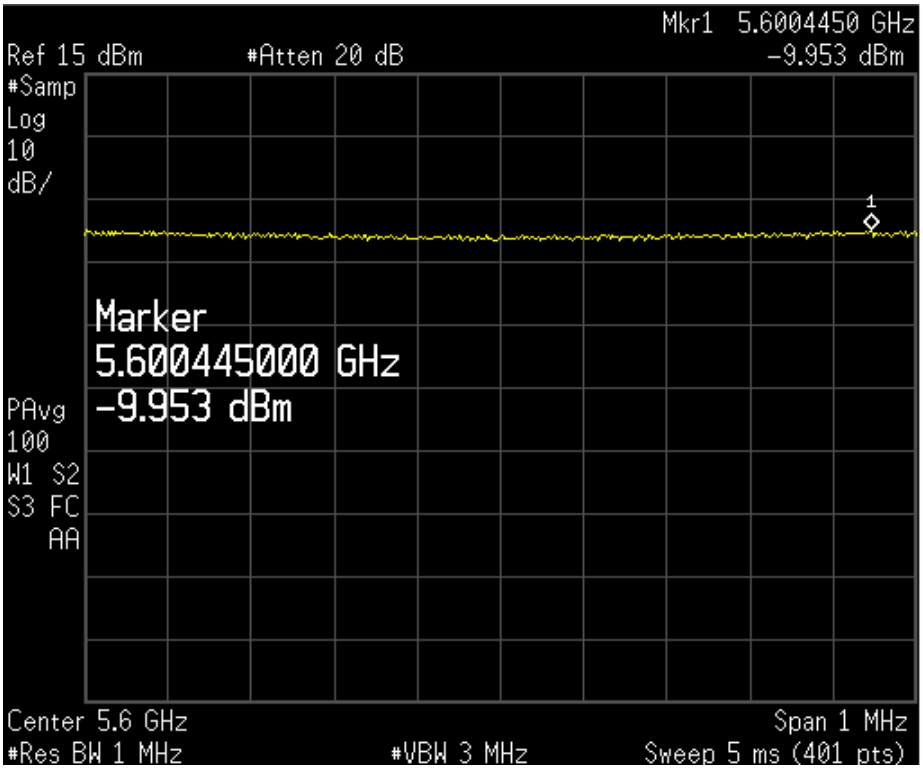
Channel Frequency: 5300



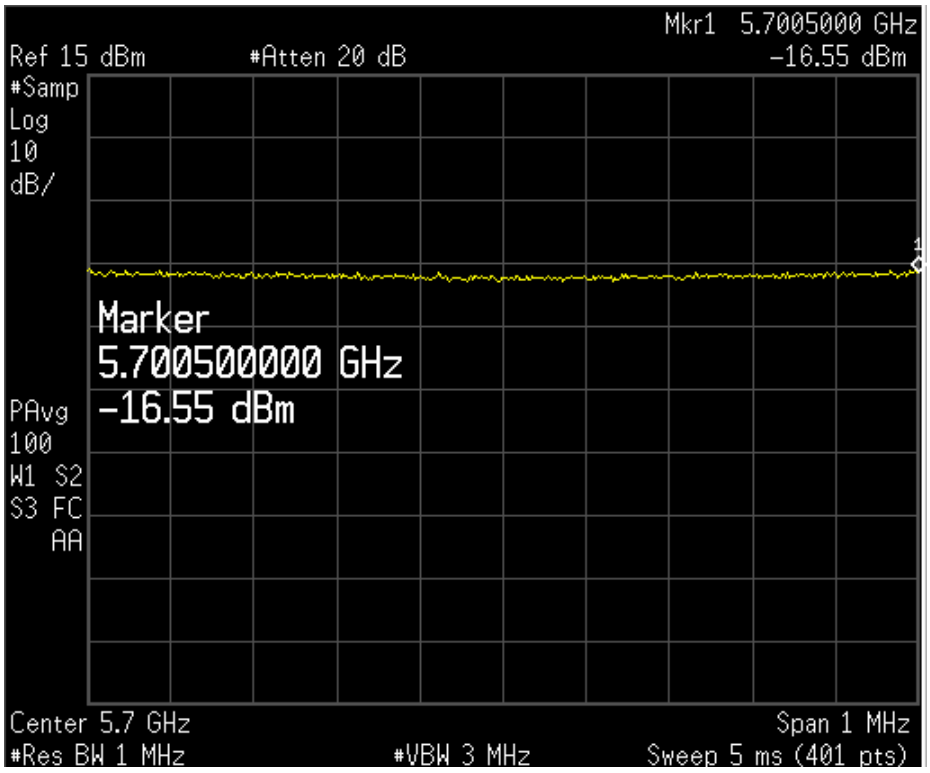
Channel Frequency: 5320



Channel Frequency: 5500



Channel Frequency: 5600



Channel Frequency: 5700

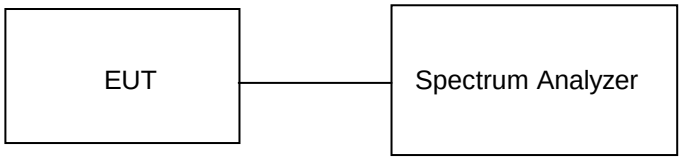
Peak Excursion — Section 15.407 (a)

Result **Pass**

Test Specification	FCC Part 15 Section 15.407 (a)
Requirement	The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the maximum conducted output power shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

Note: for peak excursion measurement 2nd trace created using settings as described in method #1

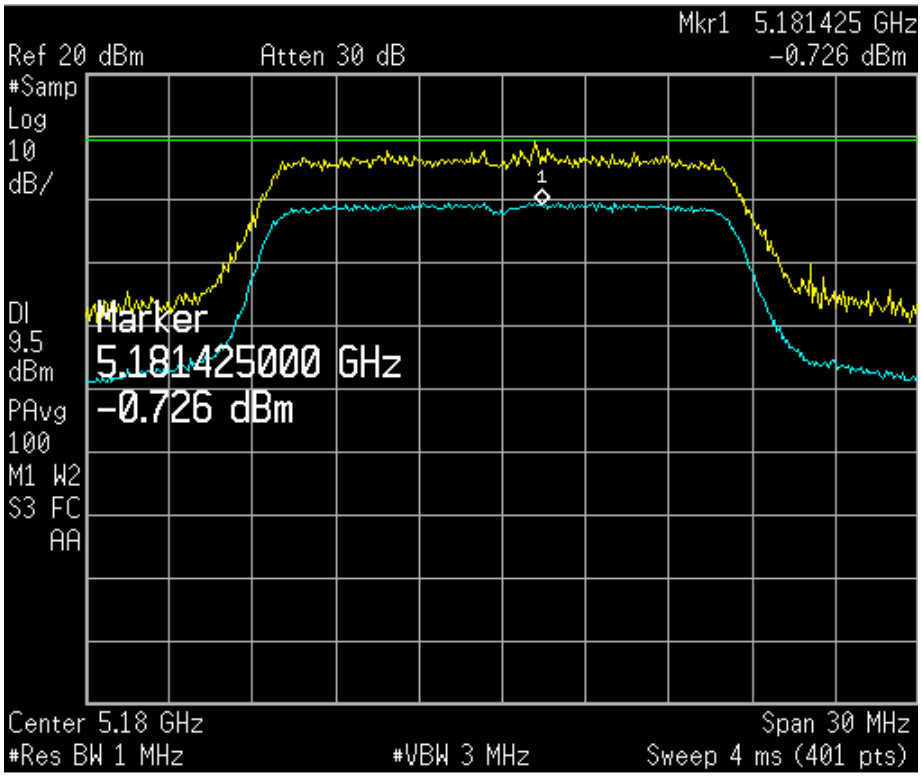
Test Method:



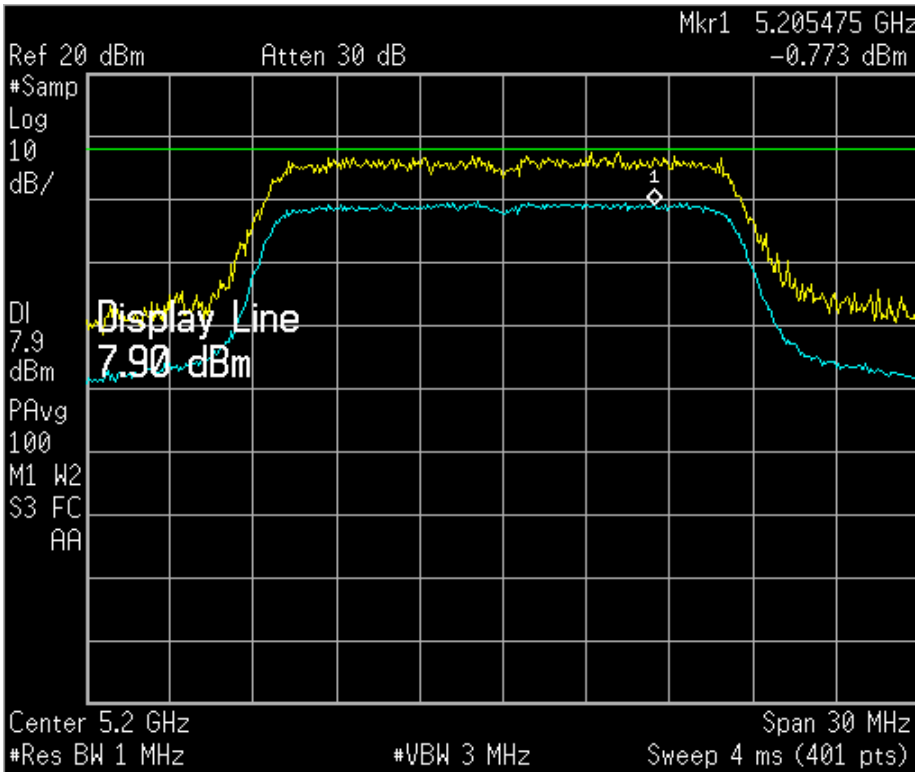
Test Result:

Modulation: 802.11a

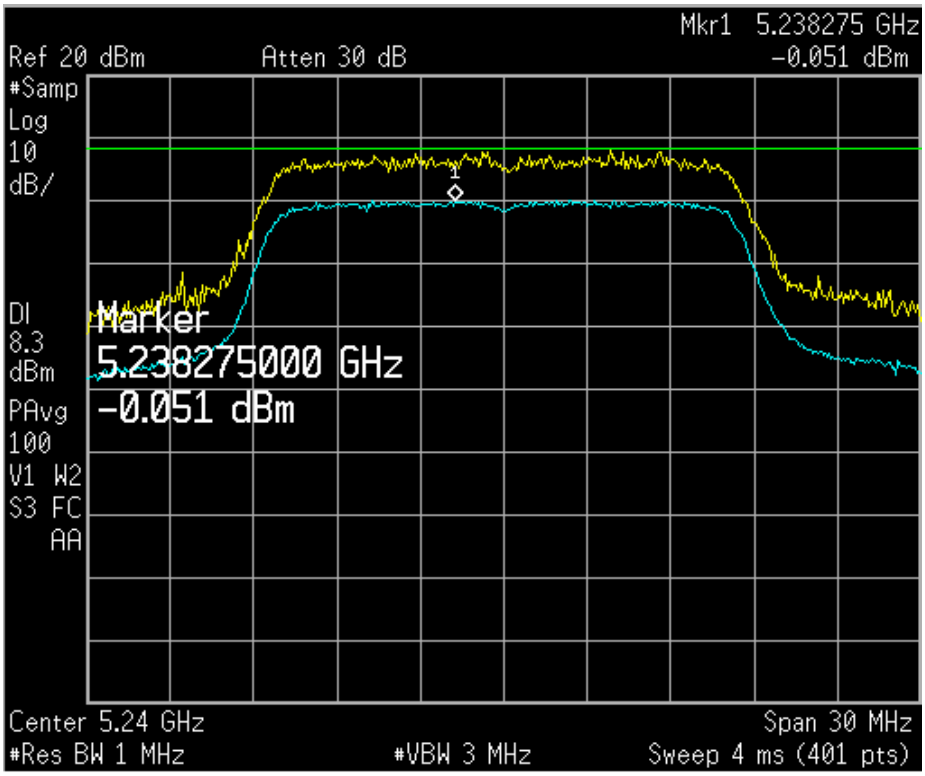
Channel No.	Frequency (MHz)	Peak Excursion (dB)	Limit (dBm)	Margin (dB)
36	5180.00	10.23	13.00	-2.77
40	5200.00	08.67	13.00	-4.33
48	5240.00	08.35	13.00	-4.65
52	5260.00	08.97	13.00	-4.03
60	5300.00	08.17	13.00	-4.83
64	5320.00	07.83	13.00	-5.17
100	5500.00	08.53	13.00	-4.47
120	5600.00	09.05	13.00	-3.95
140	5700.00	08.43	13.00	-4.57



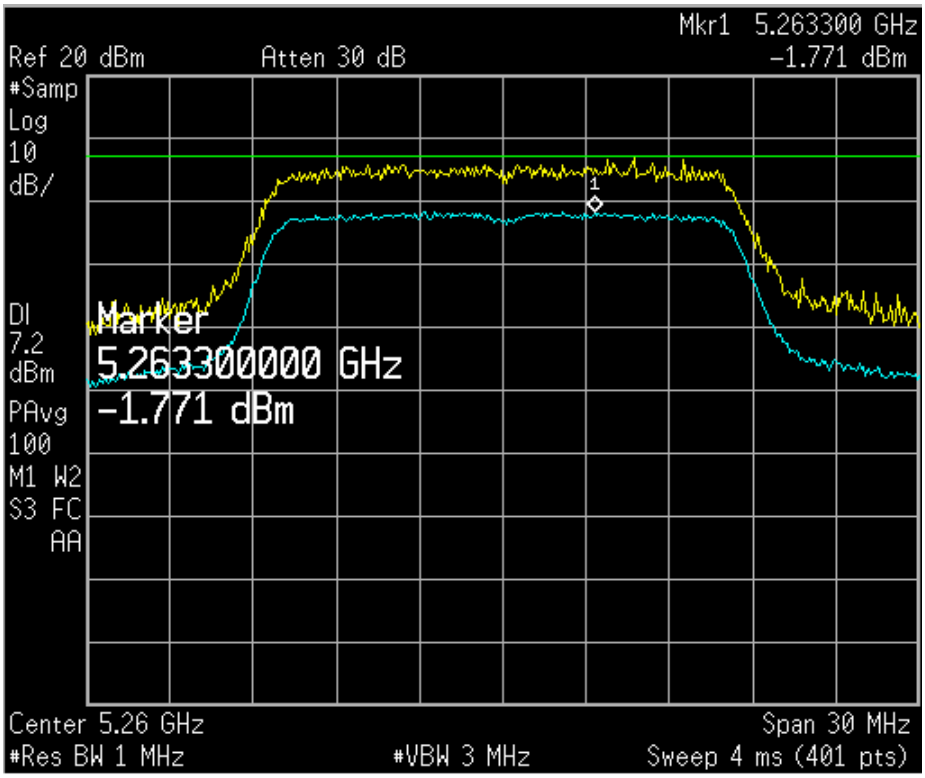
Channel Frequency: 5180



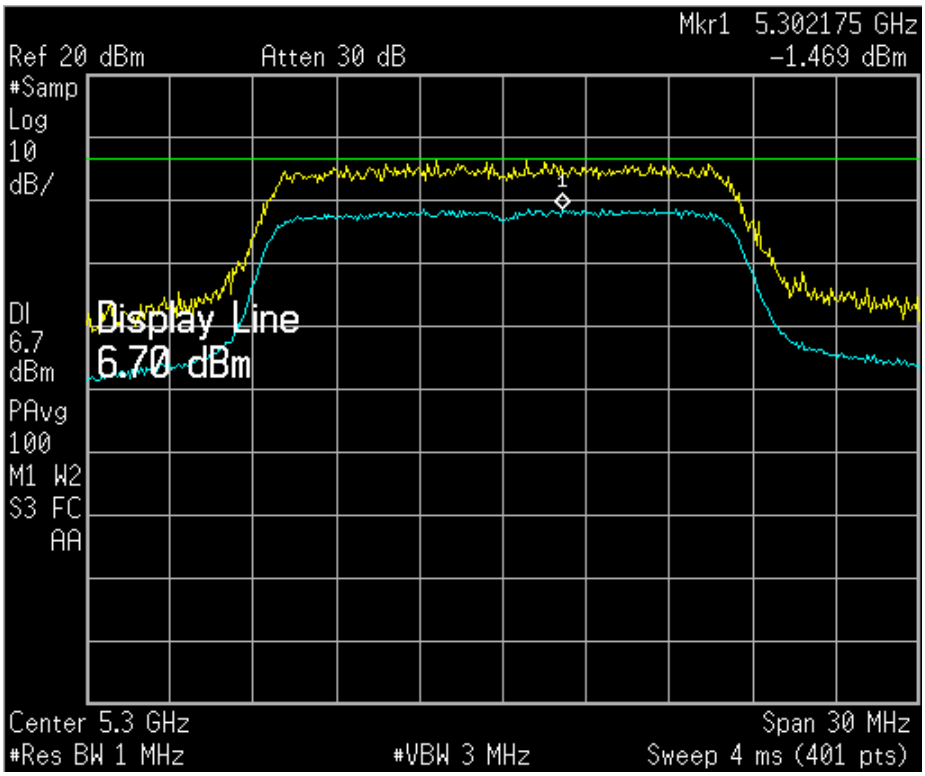
Channel Frequency: 5200



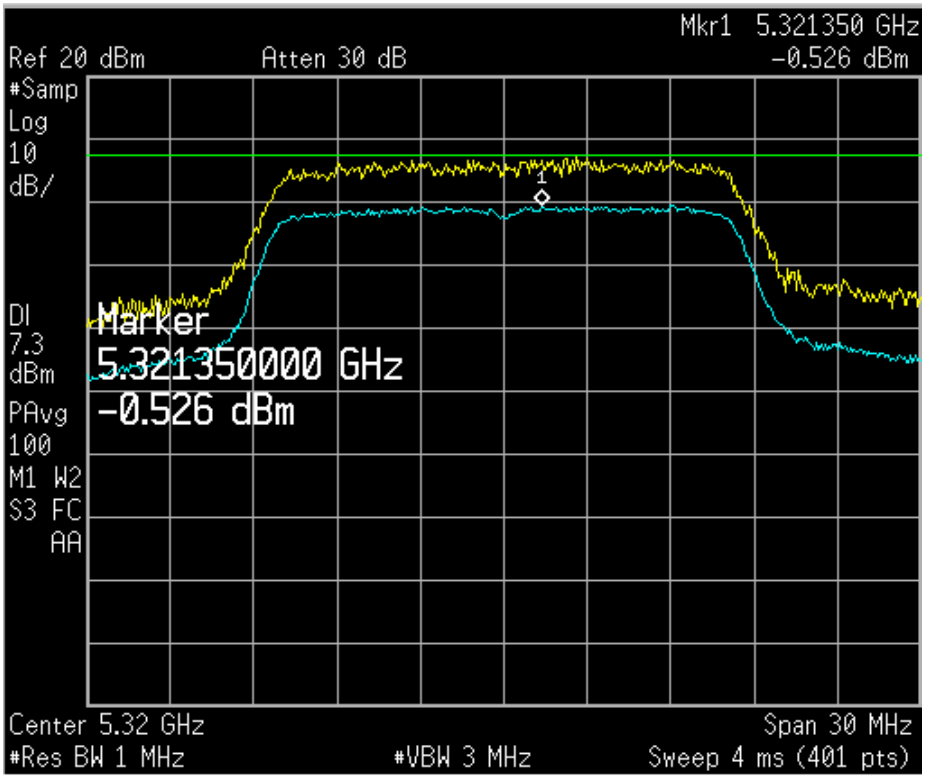
Channel Frequency: 5240



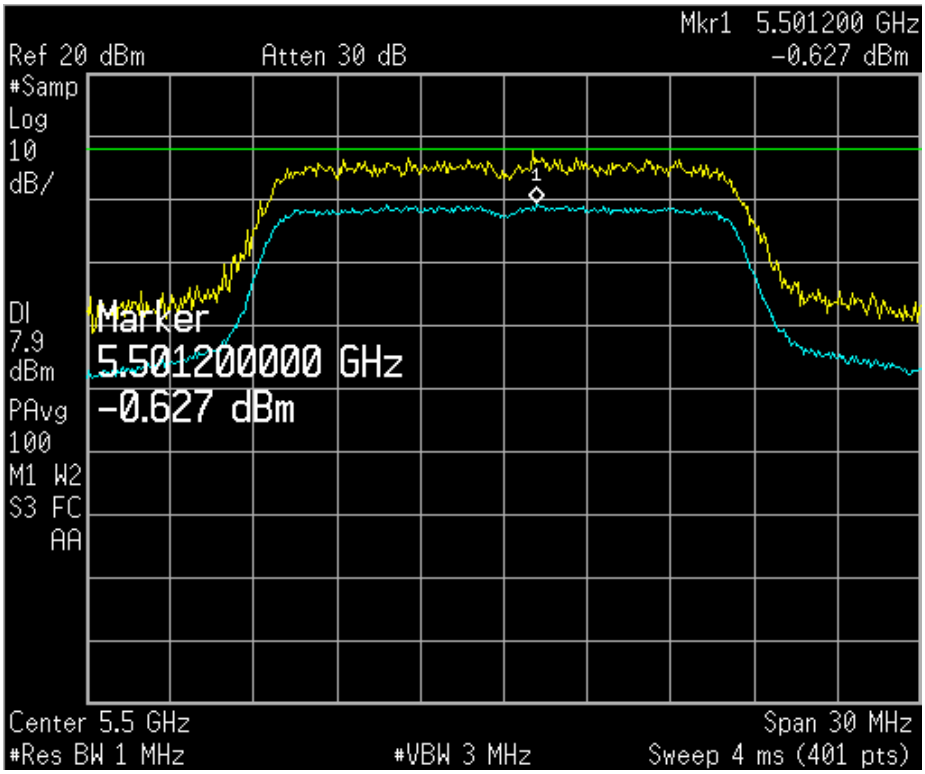
Channel Frequency: 5260



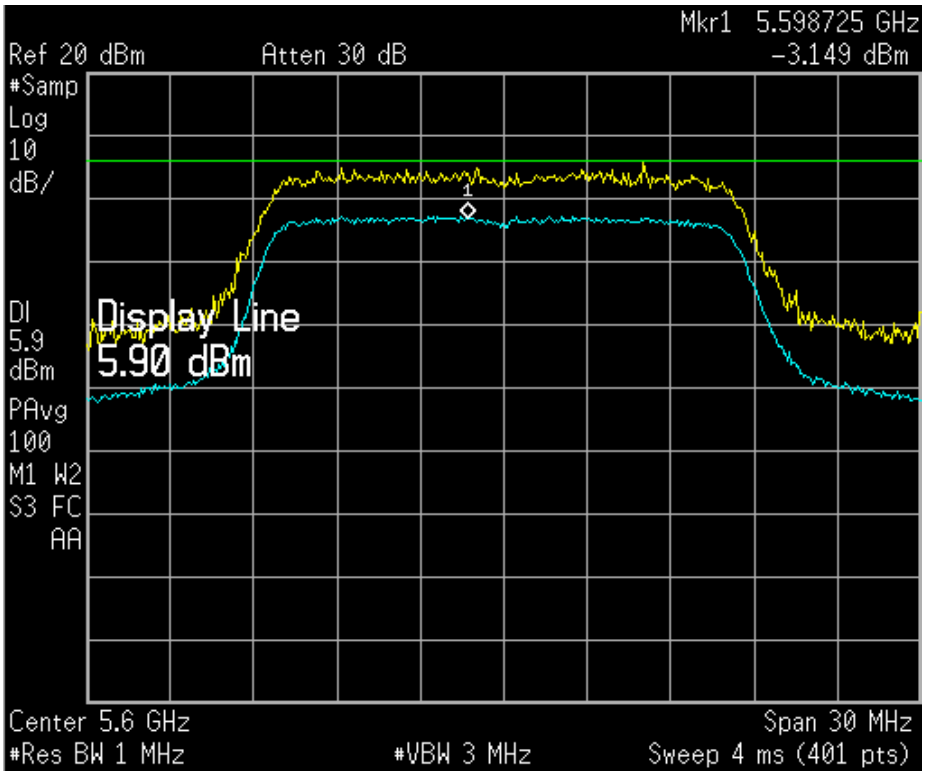
Channel Frequency: 5300



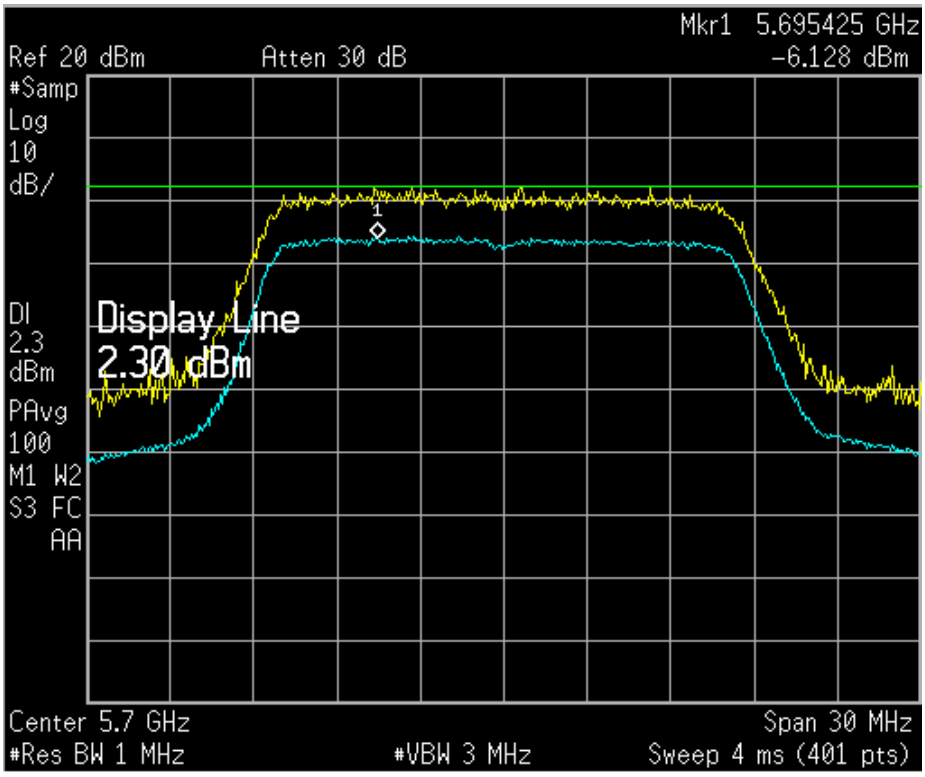
Channel Frequency: 5320



Channel Frequency: 5500



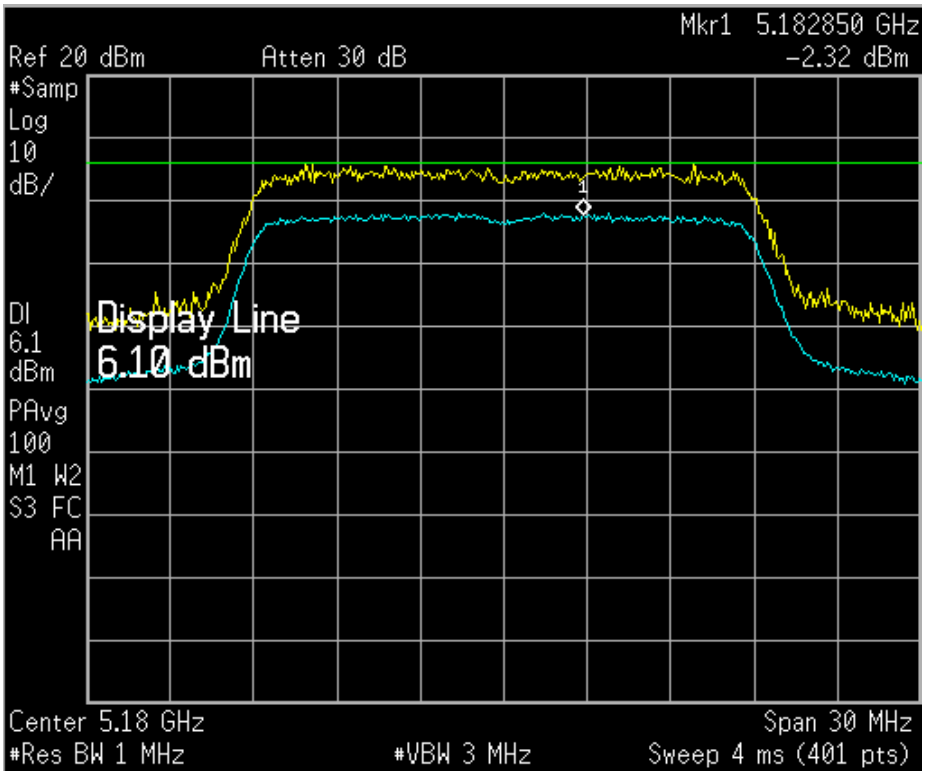
Channel Frequency: 5600



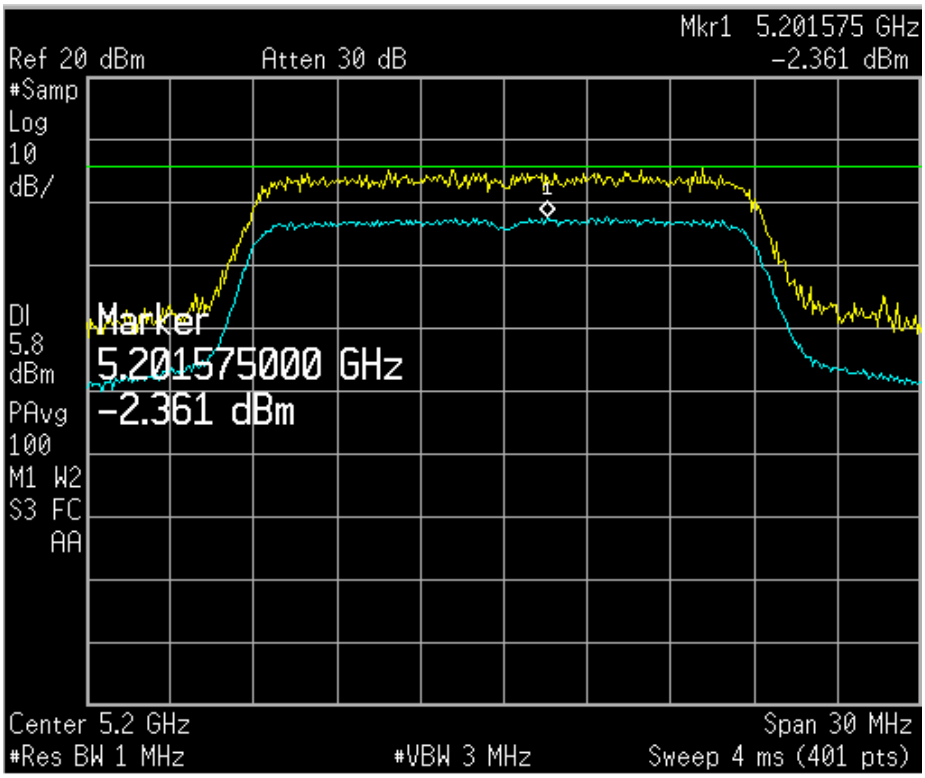
Channel Frequency: 5700

Modulation: 802.11n

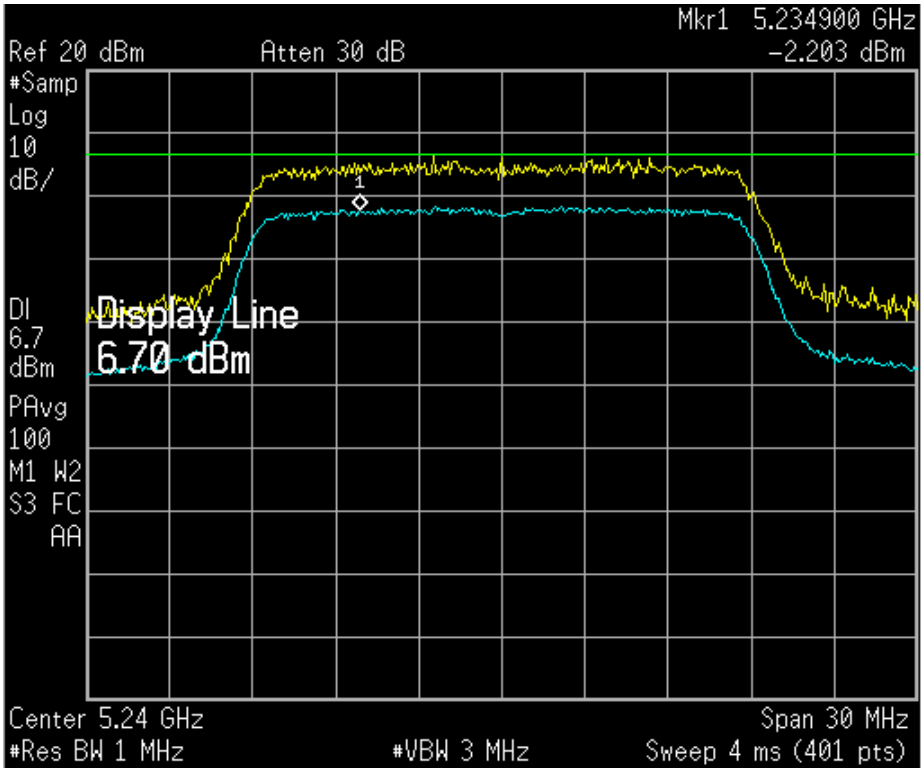
Channel No.	Frequency (MHz)	Peak Excursion (dB)	Limit (dBm)	Margin (dB)
36	5180.00	08.42	13.00	-4.58
40	5200.00	08.16	13.00	-4.84
48	5240.00	08.90	13.00	-4.10
52	5260.00	08.76	13.00	-4.24
60	5300.00	08.31	13.00	-4.69
64	5320.00	07.82	13.00	-5.18
100	5500.00	08.68	13.00	-4.32
120	5600.00	09.00	13.00	-4.00
140	5700.00	08.14	13.00	-4.86



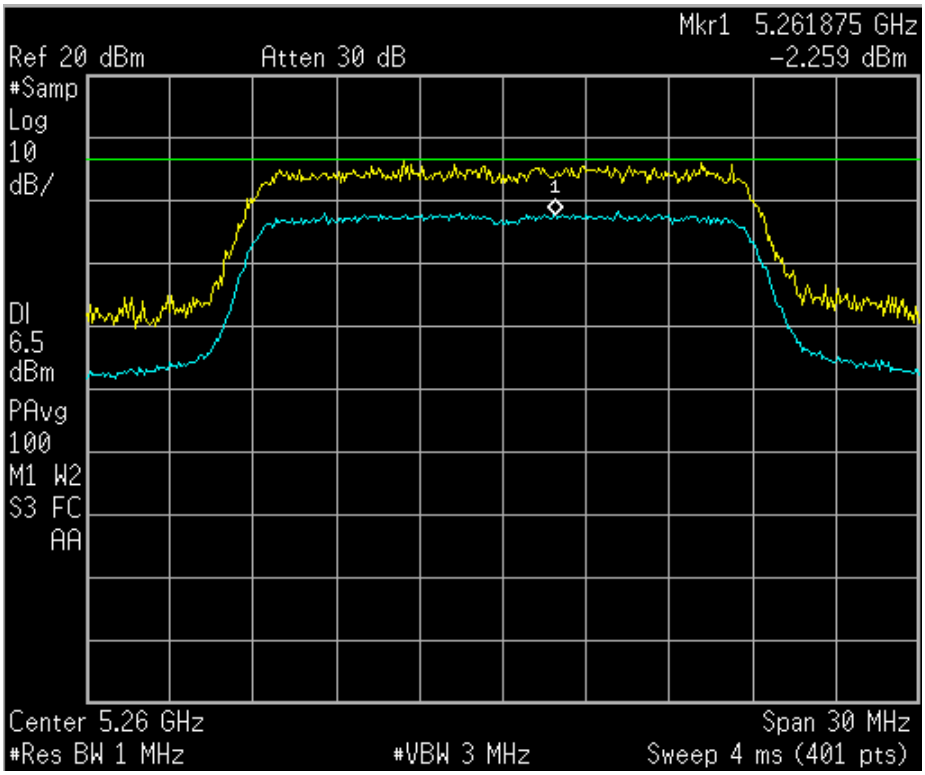
Channel Frequency: 5180



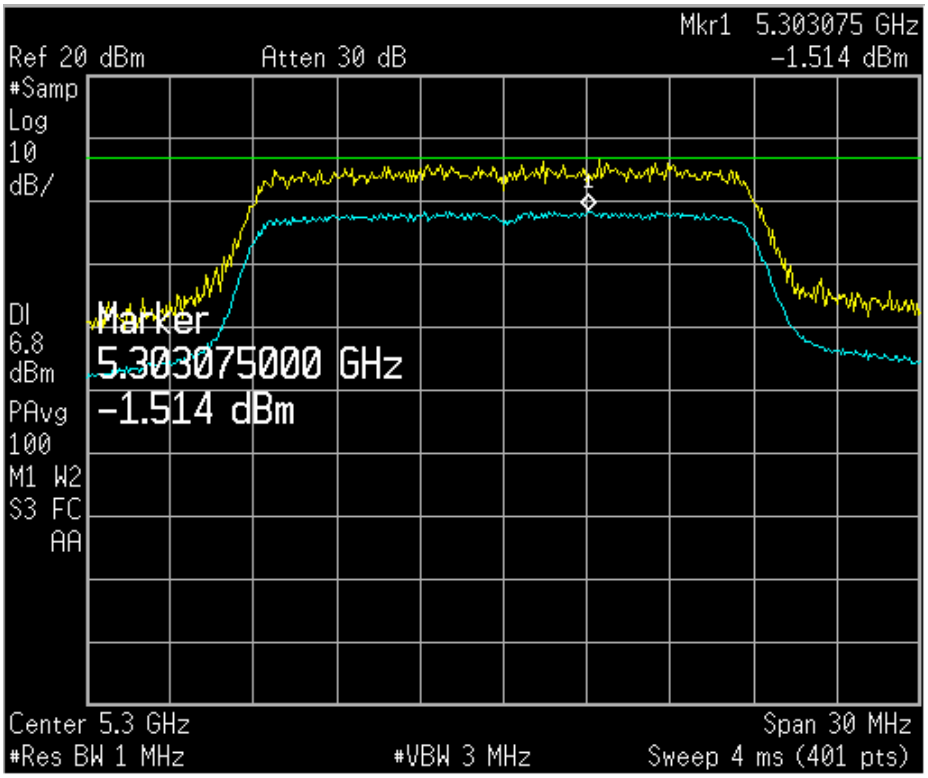
Channel Frequency: 5200



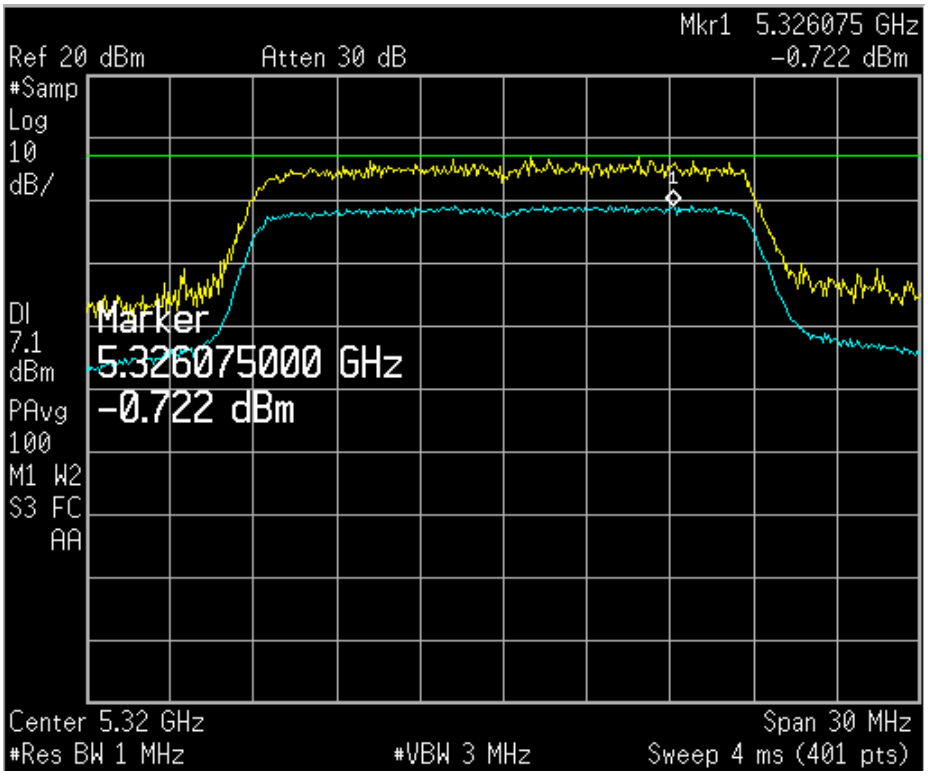
Channel Frequency: 5240



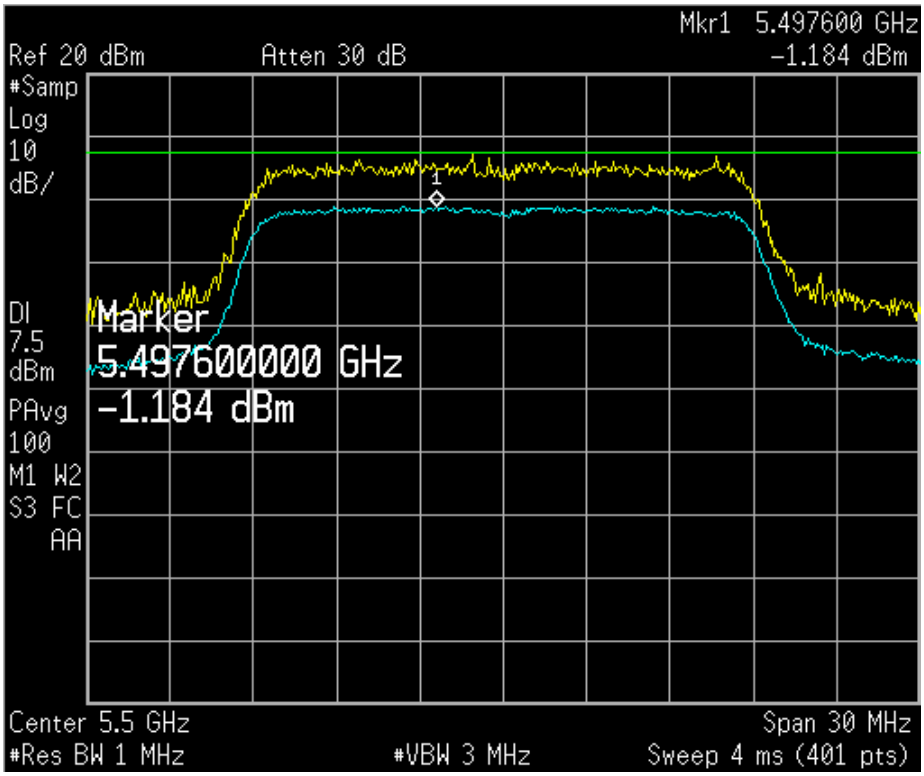
Channel Frequency: 5260



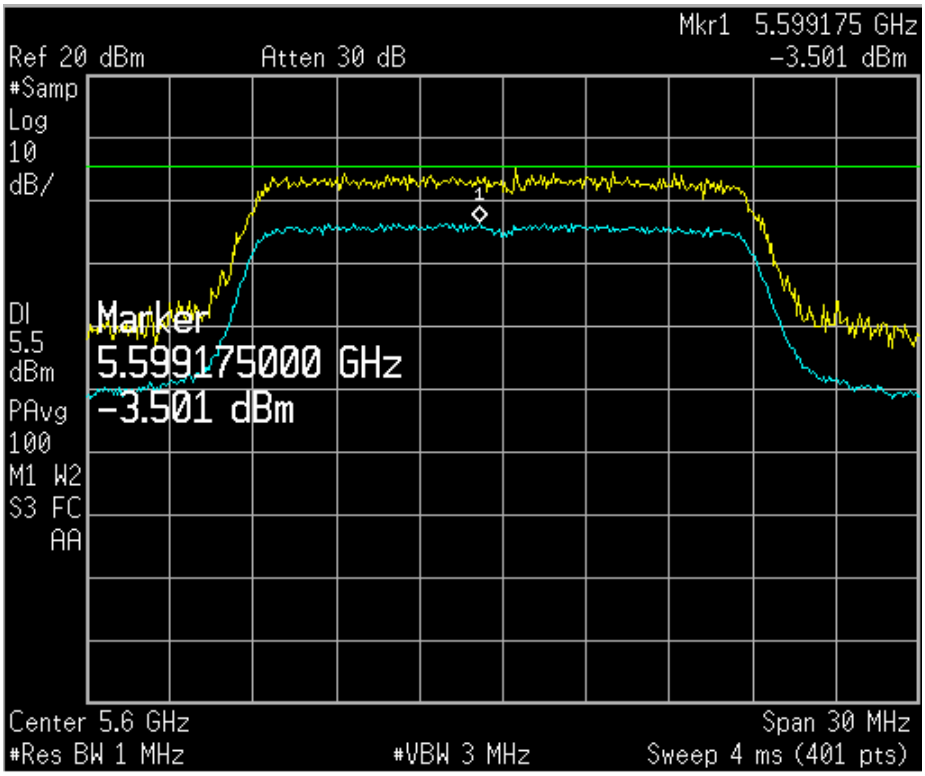
Channel Frequency: 5300



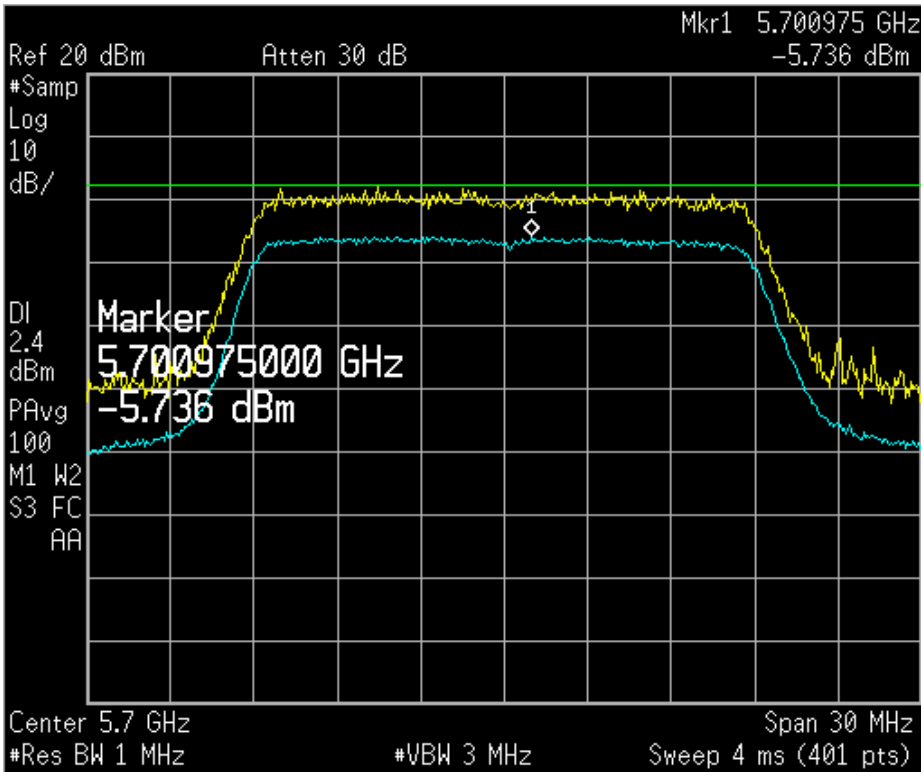
Channel Frequency: 5320



Channel Frequency: 5500



Channel Frequency: 5600



Channel Frequency: 5700

Spurious Radiated Emissions Section 15.209 /15.407 (b) (6)

Result **Pass**

Test Specification	FCC Part 15 Section 15.209
Test Method	ANSI C63.4-2003
Measurement Location	Semi Anechoic Chamber
Measuring Distance	3m
Detection	QP for frequency below 1GHz, Peak/Average for frequency above 1GHz
Requirement	Should Comply with the limits stated in the below table.

Limit for Radiated Emission of Section 15.209:

Frequency (MHz)	Field strength (μV/m)	Field strength (dBμV/m)	Distance of Measurement (m)
0.009 – 0.490	2400/F(kHz)	48.50 – 13.80	300*
0.490 – 1.705	24000/F(kHz)	33.80 – 23.00	30*
1.705 -30	30	29.54	30*
30-88	100	40.0	3
88-216	150	43.5	3
216-960	200	46.0	3
Above 960	500	54.0	3

Remark: * the limit shows in the table above of frequency range 0.009 – 0.490, 0.490 – 1.705 MHz and 1.705-30MHz is at 300 meter, 30 meter and 30 meter range respectively, which corresponds to 88,50 – 53.80, 53.80 – 43.00 and 49.5dBμV/m at 3m range by extrapolation calculation and the measurement of loop antenna.

The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz Radiated emission limits in these three bands are based on measurements employing an average detector.

Test results:

Modulation: 802.11a

Fundamental Frequency (MHz)	Antenna Polarization	Spurious Emission (MHz)	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
5180.00	V	33.96	22.90	40.00	-17.10
		35.96	26.80	40.00	-13.20
		40.00	29.40	40.00	-10.60
		44.00	20.50	40.00	-19.50
		77.96	21.50	40.00	-18.50
		87.44	25.90	40.00	-14.10
		147.12	24.10	43.50	-19.40
		162.48	24.30	43.50	-19.20
		200.00	30.50	43.50	-13.00
		399.98	39.60	46.00	-06.40
		440.00	39.80	46.00	-06.20
		519.98	42.30	46.00	-03.70
		600.02	39.10	46.00	-06.90
		956.30	32.90	46.00	-13.10
		5178.80(P)	98.70	-	*
		5181.20(AV)	87.50	-	*
		10364.40(P)	50.40	68.23	-17.83
		10362.00(AV)	39.20	54.00	-14.80
	H	32.00	11.60	40.00	-28.40
		170.16	30.00	43.50	-13.50
		200.00	36.60	43.50	-06.90
		212.96	32.50	43.50	-11.00
		279.98	37.90	46.00	-08.10
		440.00	38.20	46.00	-07.80
		680.00	36.70	46.00	-09.30
		903.80	33.20	46.00	-12.80
		5184.40(P)	98.50	-	*
		5181.20(AV)	87.50	-	*
		10362.00(P)	51.30	68.23	-16.93
		10362.00(AV)	37.50	54.00	-16.50
5240.00	V	33.96	22.90	40.00	-17.10
		35.96	26.80	40.00	-13.20
		40.00	29.40	40.00	-10.60
		44.00	20.50	40.00	-19.50
		77.96	21.50	40.00	-18.50
		87.44	25.90	40.00	-14.10
		147.12	24.10	43.50	-19.40
		162.48	24.30	43.50	-19.20
		200.00	30.50	43.50	-13.00
		399.98	39.60	46.00	-06.40
		440.00	39.80	46.00	-06.20
		519.98	42.30	46.00	-03.70

		600.02	39.10	46.00	-06.90
		956.30	32.90	46.00	-13.10
		5240.80(P)	93.70	-	*
		5238.40(AV)	84.10	-	*
		10477.60(P)	50.70	68.23	-17.53
		10477.60(AV)	37.90	54.00	-16.10
	H	32.00	11.60	40.00	-28.40
		135.56	19.00	43.50	-24.50
		143.96	19.80	43.50	-23.70
		170.16	30.00	43.50	-13.50
		200.00	36.60	43.50	-06.90
		212.96	32.50	43.50	-11.00
		279.98	37.90	46.00	-08.10
		440.00	38.20	46.00	-07.80
		680.00	36.70	46.00	-09.30
		903.80	33.20	46.00	-12.80
		5241.60(P)	96.50	-	*
		5244.00(AV)	85.80	-	*
		10478.00(P)	52.00	68.23	-16.23
		10478.00(AV)	39.20	54.00	-14.80
5320.00	V	33.96	22.90	40.00	-17.10
		35.96	26.80	40.00	-13.20
		40.00	29.40	40.00	-10.60
		44.00	20.50	40.00	-19.50
		77.96	21.50	40.00	-18.50
		87.44	25.90	40.00	-14.10
		136.48	21.60	43.50	-21.90
		147.12	24.10	43.50	-19.40
		162.48	24.30	43.50	-19.20
		200.00	30.50	43.50	-13.00
		399.98	39.60	46.00	-06.40
		440.00	39.80	46.00	-06.20
		519.98	42.30	46.00	-03.70
		600.02	39.10	46.00	-06.90
		956.30	32.90	46.00	-13.10
		5314.80(P)	87.80	-	*
		5314.00(AV)	77.80	-	*
		10640.80(P)	49.30	68.23	-18.93
		10640.80(AV)	36.80	54.00	-17.20
	H	32.00	11.60	40.00	-28.40
		170.16	30.00	43.50	-13.50
		200.00	36.60	43.50	-06.90
		212.96	32.50	43.50	-11.00
		279.98	37.90	46.00	-08.10
		440.00	38.20	46.00	-07.80
		680.00	36.70	46.00	-09.30
		903.80	33.20	46.00	-12.80
		5314.80(P)	88.10	-	*
		5314.00(AV)	77.70	-	*

		10640.00(P)	43.50	68.23	-24.73
		10640.00(AV)	29.10	54.00	-24.90
5500.00	H	200.00	34.15	43.50	-09.35
		280.00	34.18	46.00	-11.82
		440.05	37.97	46.00	-08.03
		520.00	37.95	46.00	-08.05
		5500(Av)	80.25	*	-
		5500(P)	91.85	*	-
		11000(P)	64.43	68.23	-03.80
		11000(Av)	46.50	54.00	-07.50
	V	200.00	37.54	43.50	-05.96
		440.05	43.86	46.00	-02.14
		520.00	44.97	46.00	-01.03
		5500(P)	94.15	*	-
		5500(Av)	81.20	*	-
		11000(P)	63.68	68.23	-04.55
		11000(Av)	45.28	54.00	-08.72
5600.00	H	200.00	34.62	43.50	-08.88
		280.00	36.23	46.00	-09.77
		360.20	36.68	46.00	-09.32
		440.05	38.05	46.00	-07.95
		5600 (P)	104.82	*	-
		5600 (Av)	79.78	*	-
		11200 (P)	61.74	68.23	-06.49
		11200 (Av)	51.17	54.00	-02.83
	V	200.00	33.74	43.50	-09.76
		440.05	40.45	46.00	-05.55
		520.00	41.1	46.00	-04.90
		520.05	40.51	46.00	-05.49
		5600.00 (P)	107.38	*	-
		5600.00 (Av)	83.31	*	-
		11200.00 (P)	59.46	68.23	-08.77
		11200.00 (Av)	47.29	54.00	-06.71
5700.00	H	200.00	34.62	43.50	-08.88
		280.00	36.23	46.00	-09.77
		360.20	36.68	46.00	-09.32
		440.05	38.05	46.00	-07.95
		5700.00 (P)	92.09	*	-
		5700.00 (Av)	77.60	*	-
		11400.00 (P)	62.51	68.23	-05.72
		11400.00 (Av)	41.35	54.00	-12.65
	V	200.00	33.74	43.50	-09.76
		440.05	40.45	46.00	-05.55
		520.00	41.10	46.00	-04.90
		520.05	40.51	46.00	-05.49

		5700.00 (P)	95.34	*	-
		5700.00 (Av)	81.54	*	-
		11400.00 (P)	60.54	68.23	-07.59
		11400.00 (Av)	40.56	54.00	-13.44

* Operation Band
P-->Peak
AV-->Average

Modulation: 802.11n

Fundamental Frequency (MHz)	Antenna Polarization	Spurious Emission (MHz)	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
5180.00	V	33.96	22.90	40.00	-17.10
		35.96	26.80	40.00	-13.20
		40.00	29.40	40.00	-10.60
		44.00	20.50	40.00	-19.50
		77.96	21.50	40.00	-18.50
		87.44	25.90	40.00	-14.10
		136.48	21.60	43.50	-21.90
		147.12	24.10	43.50	-19.40
		162.48	24.30	43.50	-19.20
		399.98	39.60	46.00	-06.40
		440.00	39.80	46.00	-06.20
		519.98	42.30	46.00	-03.70
		600.02	39.10	46.00	-06.90
		956.30	32.90	46.00	-13.10
		5183.20(P)	96.60	-	*
		5181.60(AV)	86.50	-	*
		10363.60(P)	52.20	68.23	-16.03
		10362.00(AV)	38.20	54.00	-15.80
	H	41.08	15.10	40.00	-24.90
		170.16	30.00	43.50	-13.50
		200.00	36.60	43.50	-06.90
		200.00	33.00	43.50	-10.50
		279.98	37.50	46.00	-08.50
		440.00	39.70	46.00	-06.30
		680.00	36.90	46.00	-09.10
		921.26	32.90	46.00	-13.10
		5176.40(P)	96.70	-	*
		5178.80(AV)	87.10	-	*
		10360.80(P)	51.90	68.23	-16.33
		10361.20(AV)	38.10	54.00	-15.90
5240.00	V	33.96	22.90	40.00	-17.10
		35.96	26.80	40.00	-13.20
		40.00	29.40	40.00	-10.60
		44.00	20.50	40.00	-19.50
		77.96	21.50	40.00	-18.50
		87.44	25.90	40.00	-14.10

		147.12	24.10	43.50	-19.40
		162.48	24.30	43.50	-19.20
		399.98	39.60	46.00	-06.40
		440.00	39.80	46.00	-06.20
		519.98	42.30	46.00	-03.70
		600.02	39.10	46.00	-06.90
		956.30	32.90	46.00	-13.10
		5242.00(P)	95.80	-	*
		5238.80(AV)	84.70	-	*
		10478.00(P)	51.80	68.23	-16.43
		10478.00(AV)	37.80	54.00	-16.20
	H	41.08	15.10	40.00	24.90
		170.16	30.00	43.50	-13.50
		200.00	36.60	43.50	-06.90
		200.00	33.00	43.50	-10.50
		279.98	37.50	46.00	-08.50
		440.00	39.70	46.00	-06.30
		680.00	36.90	46.00	-09.10
		921.26	32.90	46.00	-13.10
		5241.60(P)	95.30	-	*
		5243.60(AV)	85.80	-	*
		10476.80(P)	50.90	68.23	-17.33
		10476.80(AV)	38.30	54.00	-15.70
5320.00	V	33.96	22.90	40.00	-17.10
		35.96	26.80	40.00	-13.20
		40.00	29.40	40.00	-10.60
		44.00	20.50	40.00	-19.50
		77.96	21.50	40.00	-18.50
		87.44	25.90	40.00	-14.10
		147.12	24.10	43.50	-19.40
		162.48	24.30	43.50	-19.20
		399.98	39.60	46.00	-06.40
		440.00	39.80	46.00	-06.20
		519.98	42.30	46.00	-03.70
		600.02	39.10	46.00	-06.90
		956.30	32.90	46.00	-13.10
		5316.80(P)	92.10	-	*
		5318.80(AV)	82.10	-	*
		10640.00(P)	49.10	68.23	-19.13
		10640.00(AV)	35.20	54.00	-18.80
	H	41.08	15.10	40.00	-24.90
		170.16	30.00	43.50	-13.50
		200.00	36.60	43.50	-06.90
		279.98	37.50	46.00	-08.50
		440.00	39.70	46.00	-06.30
		680.00	36.90	46.00	-09.10
		921.26	32.90	46.00	-13.10
		5313.60(P)	92.90	-	*
		5313.20(AV)	83.20	-	*
		10640.00(P)	40.90	68.23	-27.33
		10640.00(AV)	36.60	54.00	-17.40
5500.00	H	200.00	34.15	43.50	-09.35
		280.00	34.18	46.00	-11.82
		440.05	37.97	46.00	-08.03

		520.00	37.95	46.00	-08.05
		5500(P)	90.64	*	-
		5500(Av)	78.59	*	-
		11000(P)	57.35	68.23	-01.54
		11000(Av)	46.15	54.00	-07.85
		200.00	37.54	43.50	-05.96
		440.05	43.86	46.00	-02.14
		520.00	44.97	46.00	-01.03
	V	5500(P)	92.62	*	-
		5500(Av)	81.23	*	-
		11000(P)	52.76	68.23	-15.47
		11000(Av)	45.97	54.00	-08.03
		200.00	34.62	43.50	-08.88
		280.00	36.23	46.00	-09.77
		360.20	36.68	46.00	-09.32
	H	520.05	36.15	46.00	-09.85
		5600.00 (P)	91.44	*	-
		5600.00 (Av)	78.69	*	-
		11200.00 (P)	55.28	68.23	-12.95
5600.00		11200.00 (Av)	47.56	54.00	-06.44
		200.00	33.74	43.50	-09.76
		440.05	42.45	46.00	-03.55
		520.00	42.1	46.00	-03.9
	V	520.05	40.31	46.00	-05.69
		5600.00 (P)	96.07	*	-
		5600.00 (Av)	81.56	*	-
		11200.00 (P)	58.47	68.23	-09.76
		11200.00 (Av)	47.56	54.00	-06.44
		200.00	34.62	43.50	-08.88
		280.00	36.23	46.00	-09.77
		360.20	36.68	46.00	-09.32
	H	520.05	36.15	46.00	-09.85
		5700.00 (P)	101.36	*	-
		5700.00 (Av)	75.69	*	-
		11400.00 (P)	58.61	68.23	-9.62
5700.00		11400.00 (Av)	42.63	54.00	-13.37
		200.00	33.74	43.50	-09.76
		440.05	42.45	46.00	-03.55
		520.00	42.1	46.00	-03.90
		520.05	40.31	46.00	-05.69
		5700.00 (P)	81.54	*	-
		5700.00 (Av)	74.23	*	-
		11400.00 (P)	57.41	68.23	-10.82
		11400.00 (Av)	40.50	54.00	-13.50

* Operation Band
P-->Peak detector
AV-->Average

Restricted Bands of Operation — Section 15.205
Result — Pass

Test Specification	FCC Part 15 Section 15.205
Test Method	ANSI C63.4-2003
Measurement Location	Semi Anechoic Chamber
Measuring Distance	3m
Detection	Peak and Average for frequency above 1GHz

Modulation	Fundamental Frequency (MHz)	Antenna Polarization	Spurious Emission (MHz)	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
802.11a	5180	V	5150.00	57.71(P)	68.23	-10.52
			5150.00	43.55(Av)	54.00	-10.45
		H	5150.00	55.35(P)	68.23	-12.88
			5150.00	42.65(Av)	54.00	-11.35
	5320	V	5350.00	48.71(P)	68.23	-19.52
			5350.00	40.58(Av)	54.00	-13.42
		H	5350.00	47.52(P)	68.23	-20.71
			5350.00	41.35(Av)	54.00	-12.65
	5500	V	5470.00	55.12(P)	68.23	-13.11
			5470.00	39.97 (Av)	54.00	-14.03
		H	5470.00	51.35(P)	68.23	-16.88
			5470.00	41.65(Av)	54.00	-12.35
802.11n	5180	V	5150.00	57.37(P)	68.23	-10.86
			5150.00	41.17(Av)	54.00	-12.83
		H	5150.00	56.32(P)	68.23	-11.91
			5150.00	40.36(Av)	54.00	-13.64
	5320	V	5350.00	62.64(P)	68.23	-5.59
			5350.00	43.98(Av)	54.00	-10.02
		H	5350.00	58.62(P)	68.23	-9.61
			5350.00	41.68(Av)	54.00	-12.32
	5500	V	5470.00	57.48(P)	68.23	-10.75
			5470.00	41.06(Av)	54.00	-12.94
		H	5470.00	55.62(P)	68.23	-12.61
			5470.00	38.64(Av)	54.00	-15.36

P---> Peak detector
Av-->Average Detector

Out of Band Emission

Result

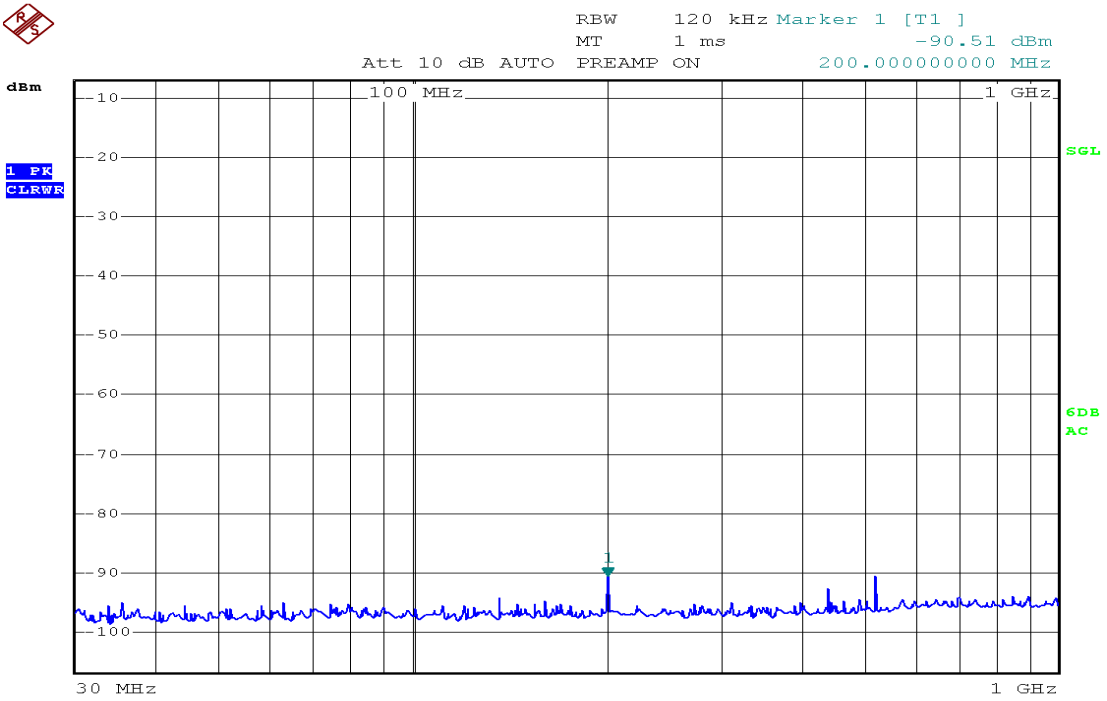
Section 15.407 (b)

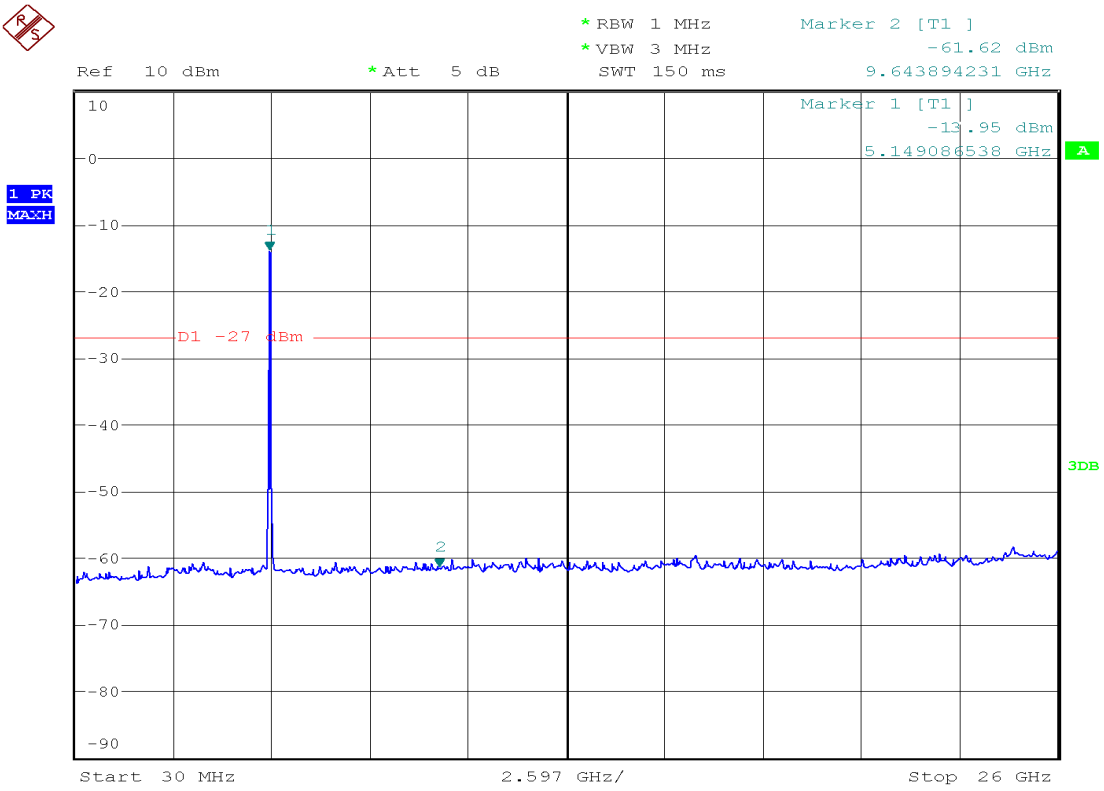
Pass

Test Specification	FCC Part 15 Subpart E Section 15.407 (b)
Requirement	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 EIRP of -27 dBm/MHz. 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 EIRP of -27 dBm/MHz. 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 EIRP of -27 dBm/MHz.

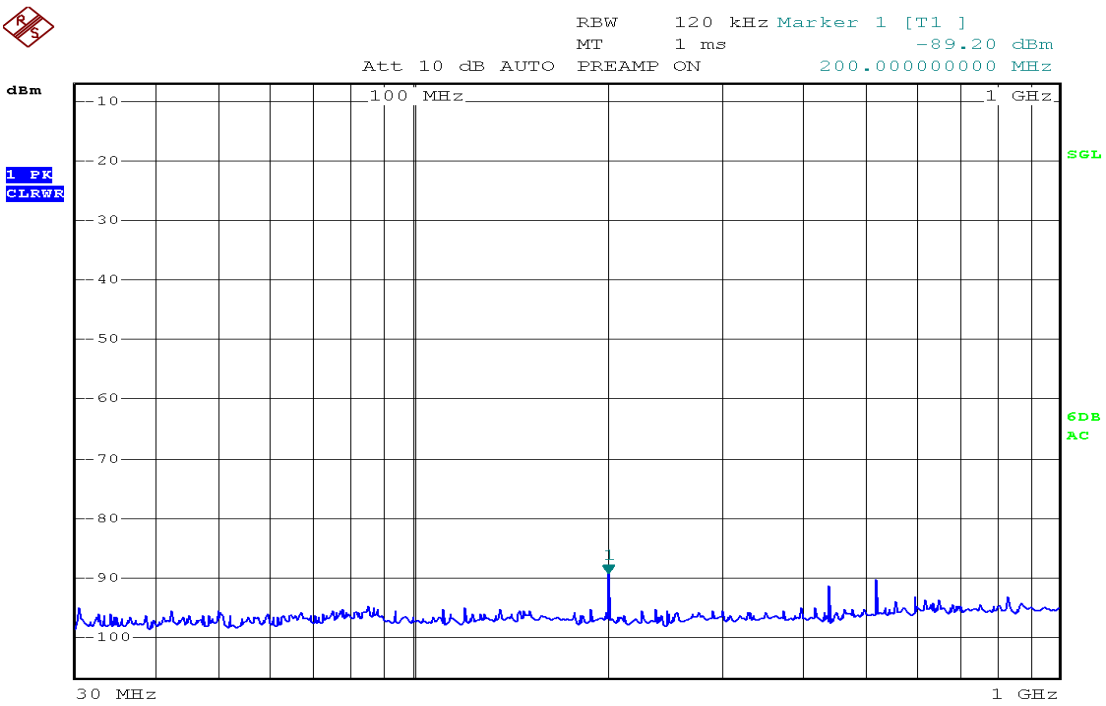
Test Results

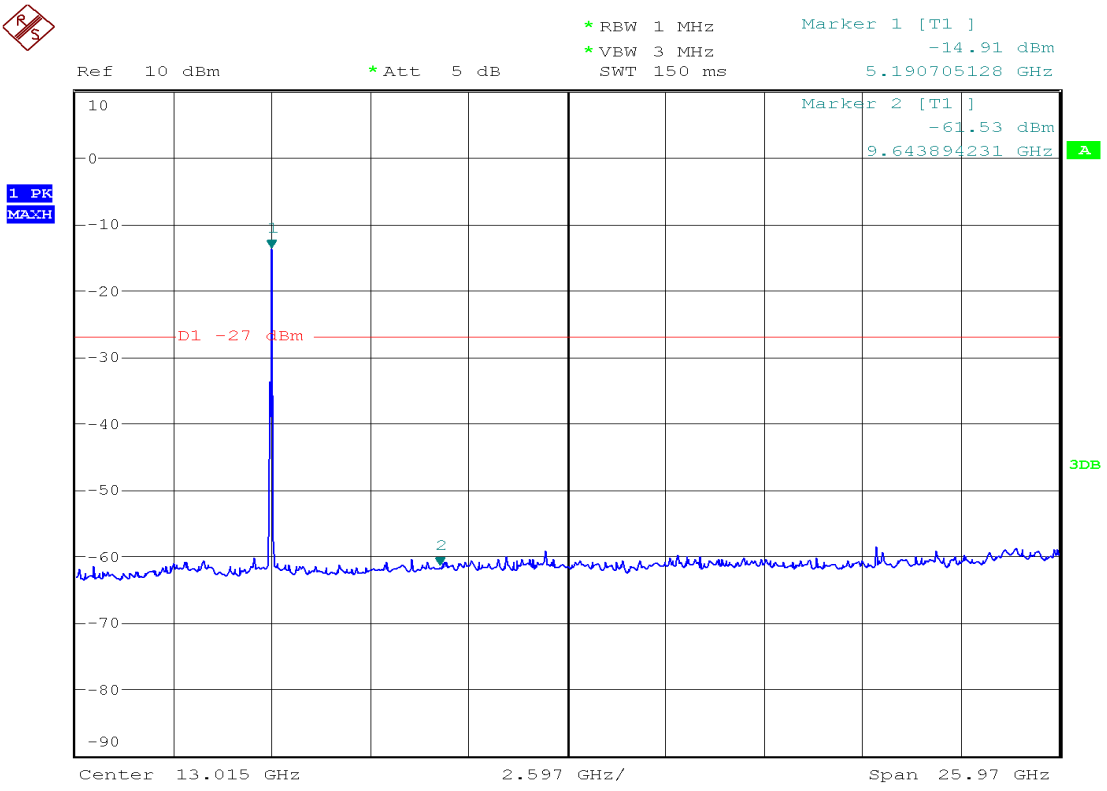
Modulation: 802.11a



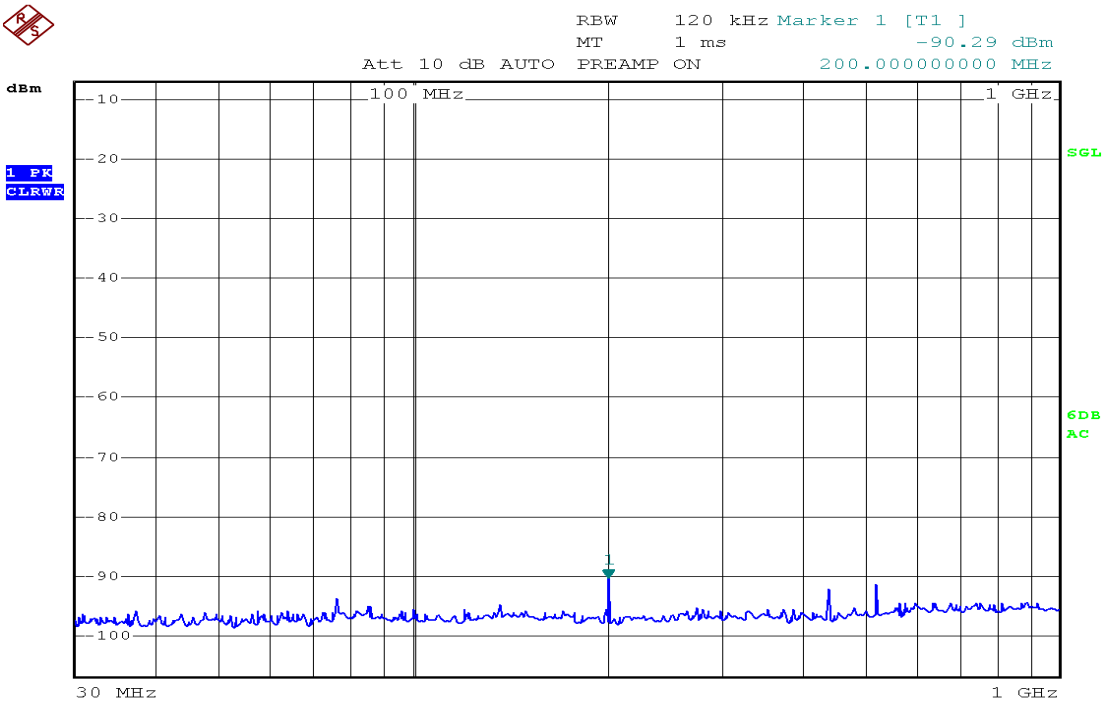


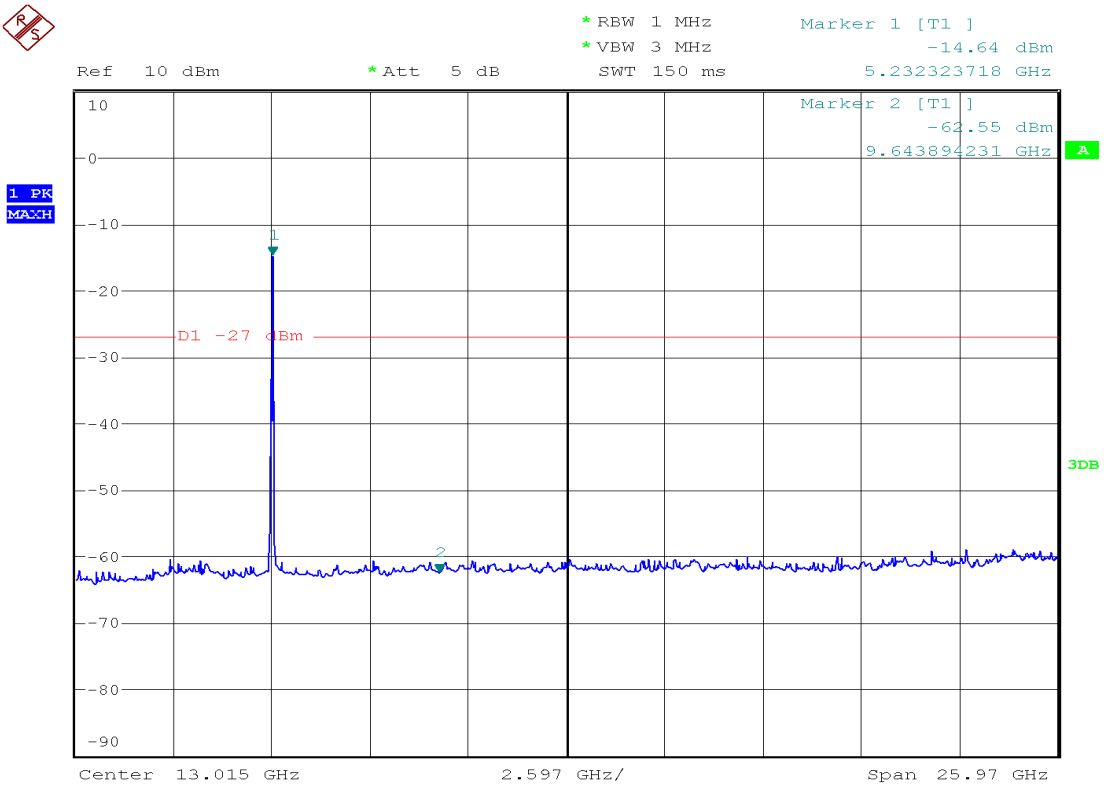
Channel Frequency: 5180MHz



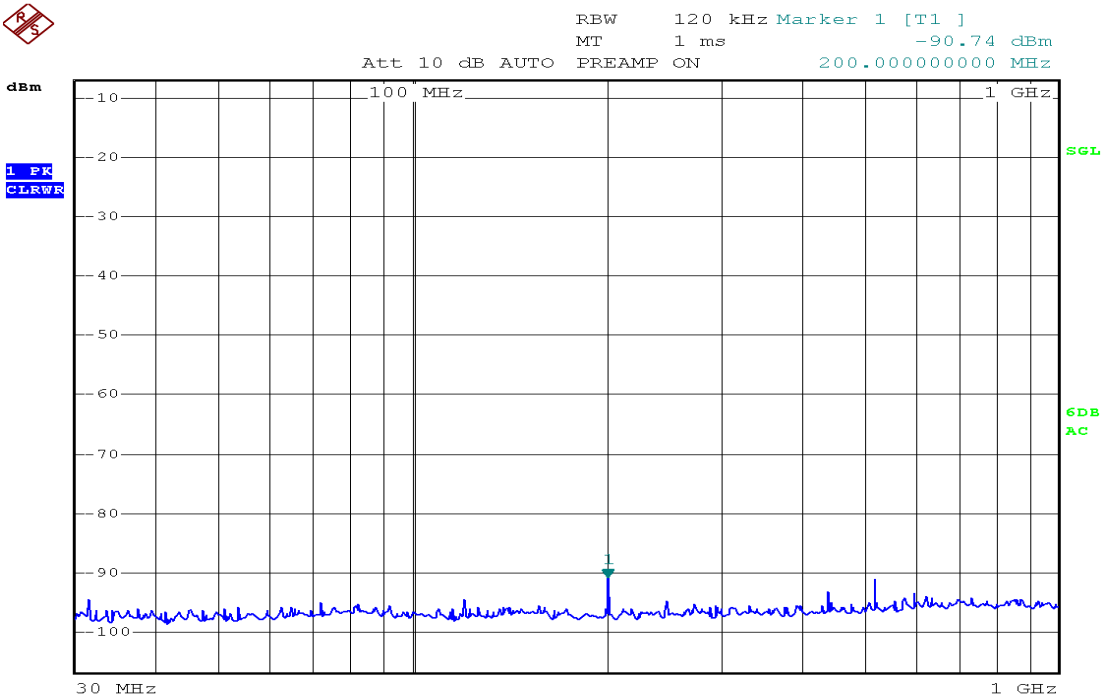


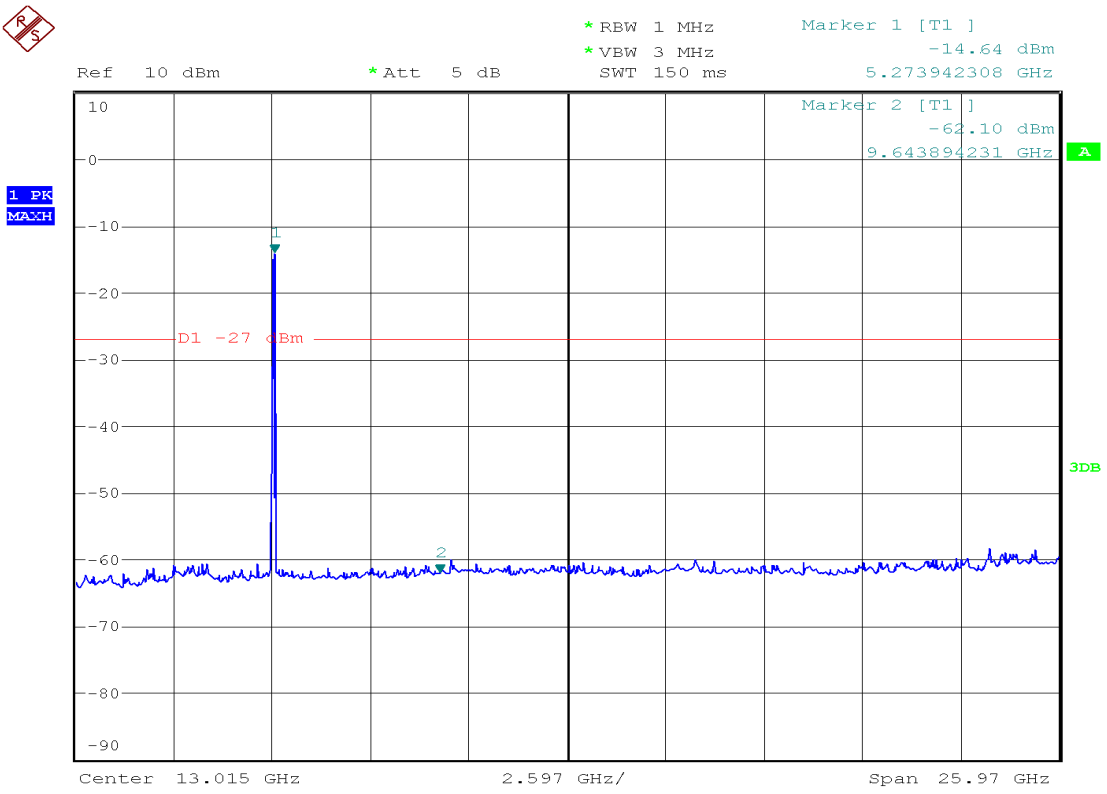
Channel Frequency: 5200 MHz



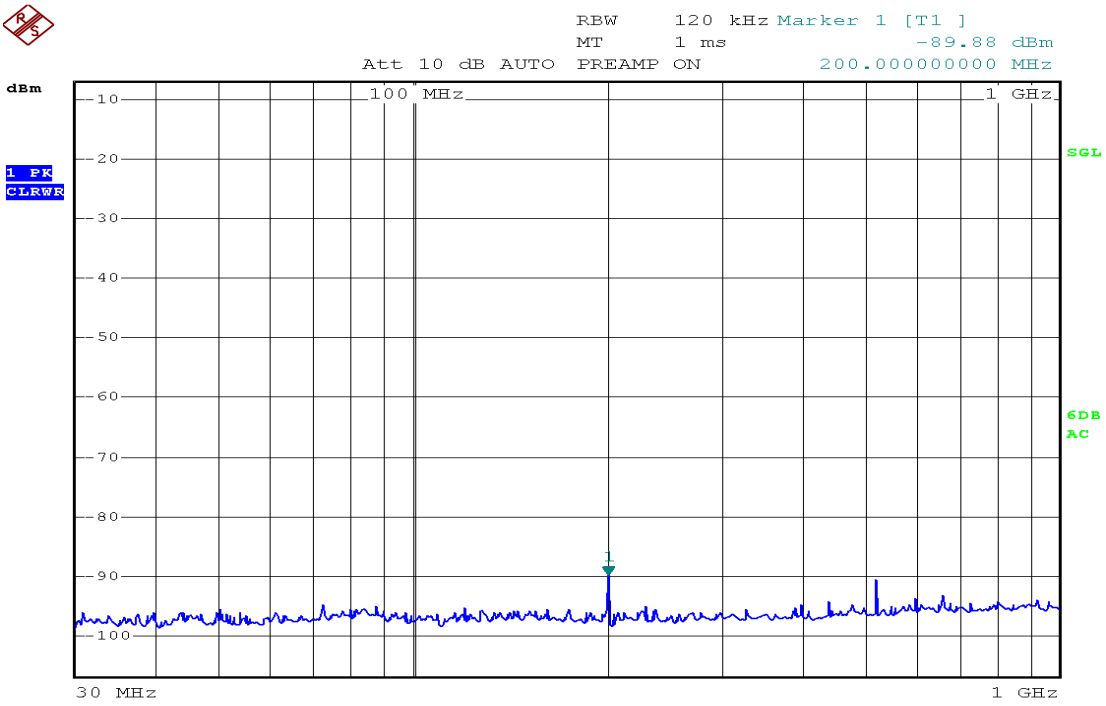


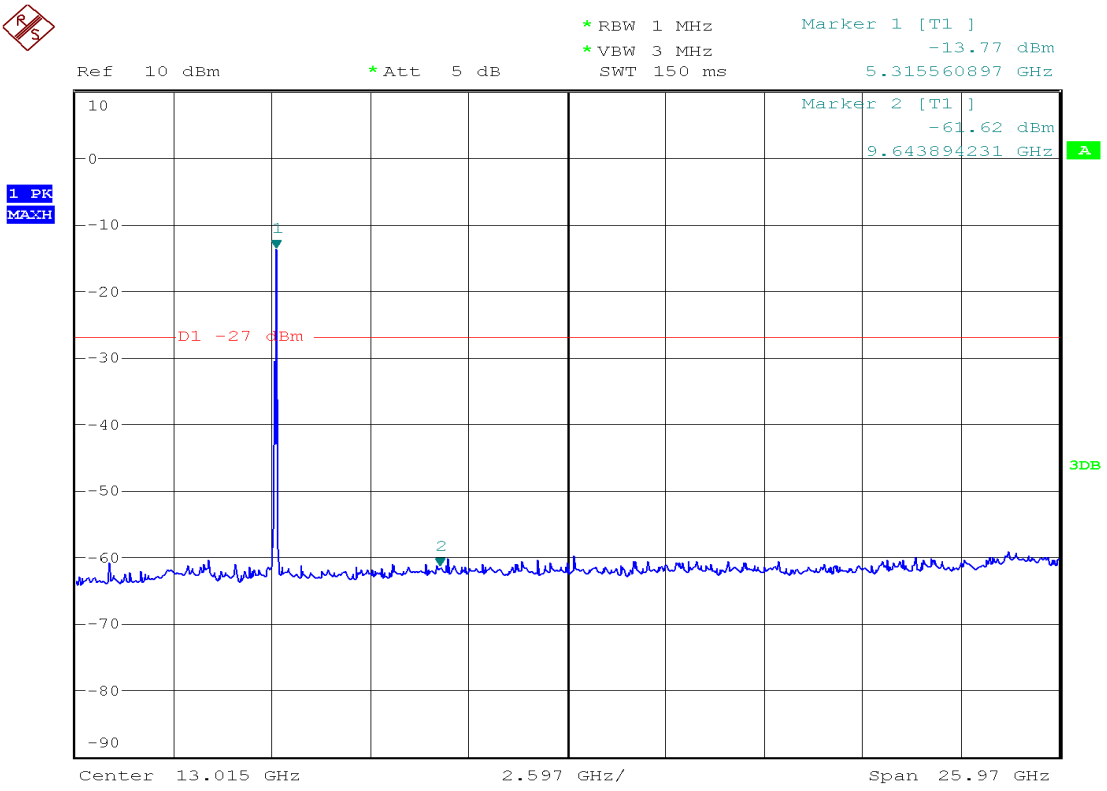
Channel Frequency: 5240 MHz



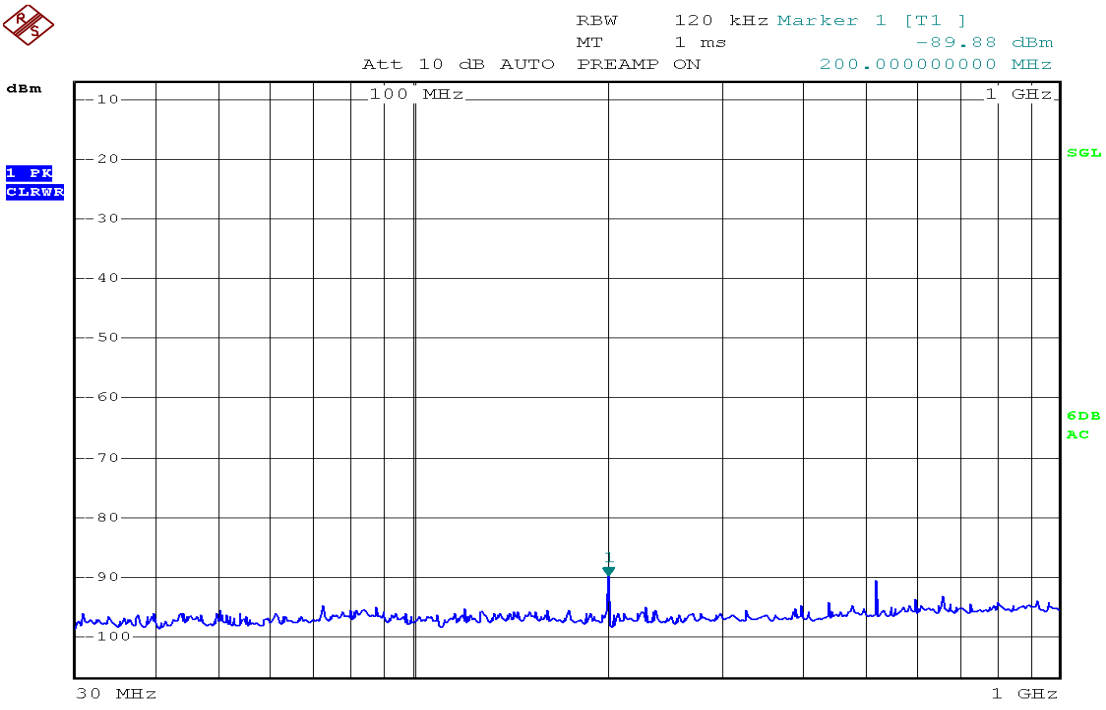


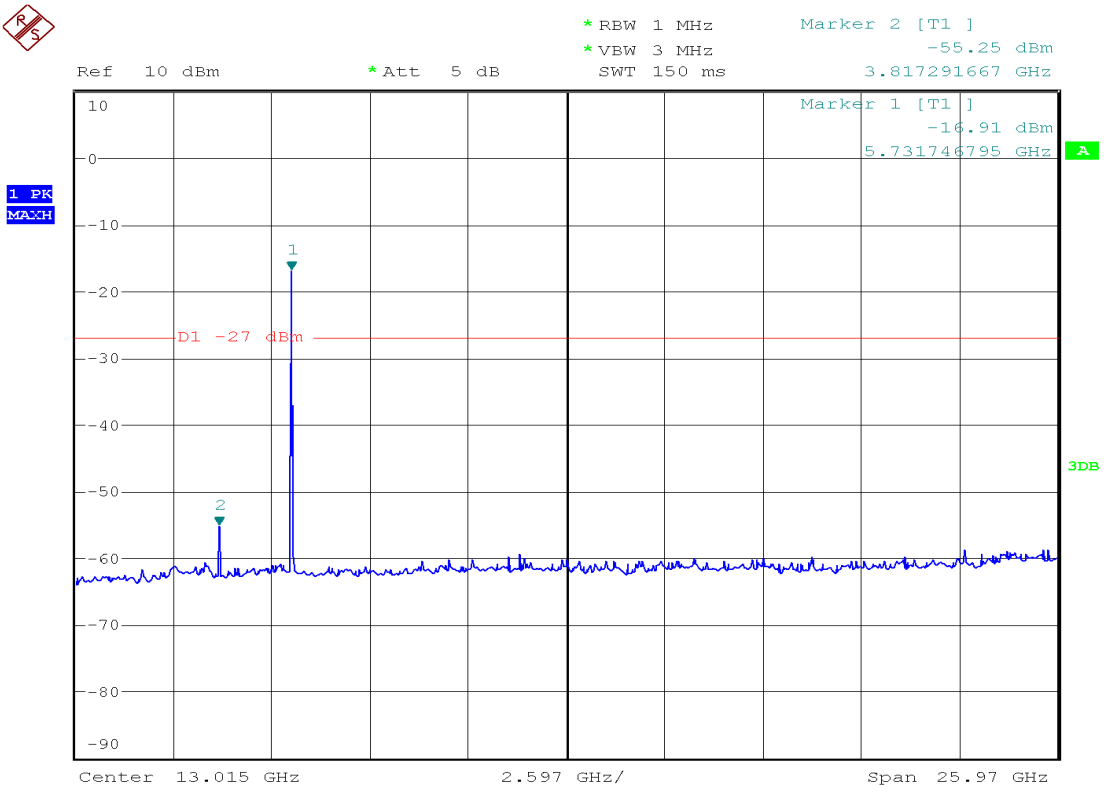
Channel Frequency: 5260 MHz





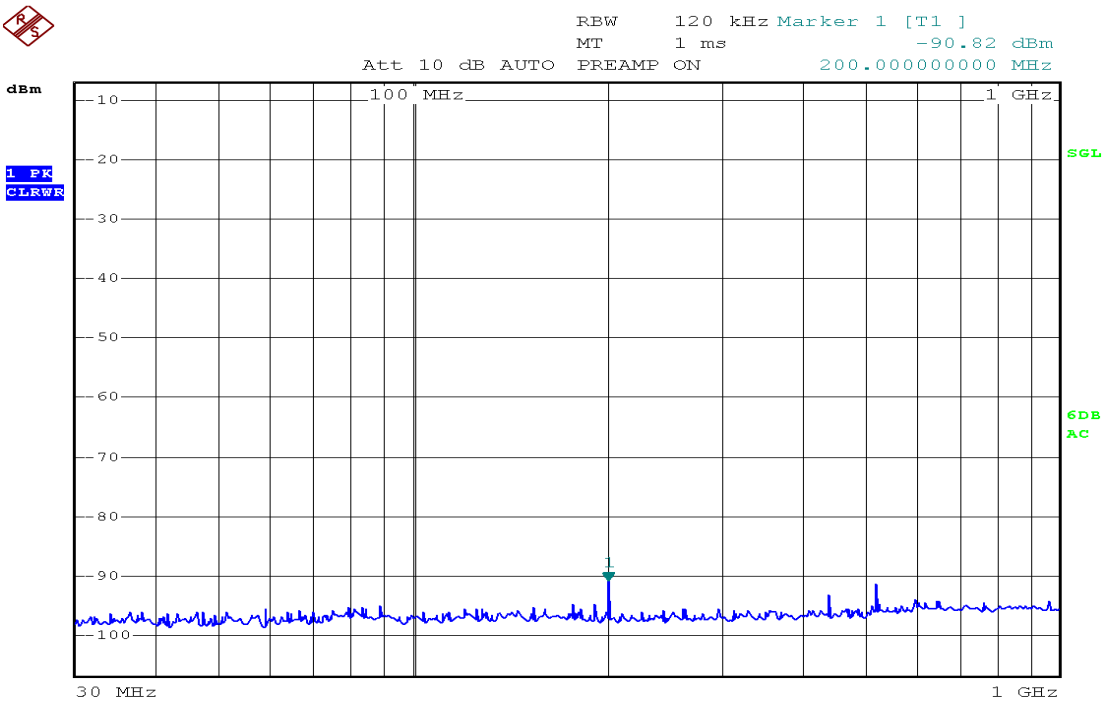
Channel Frequency: 5300 MHz

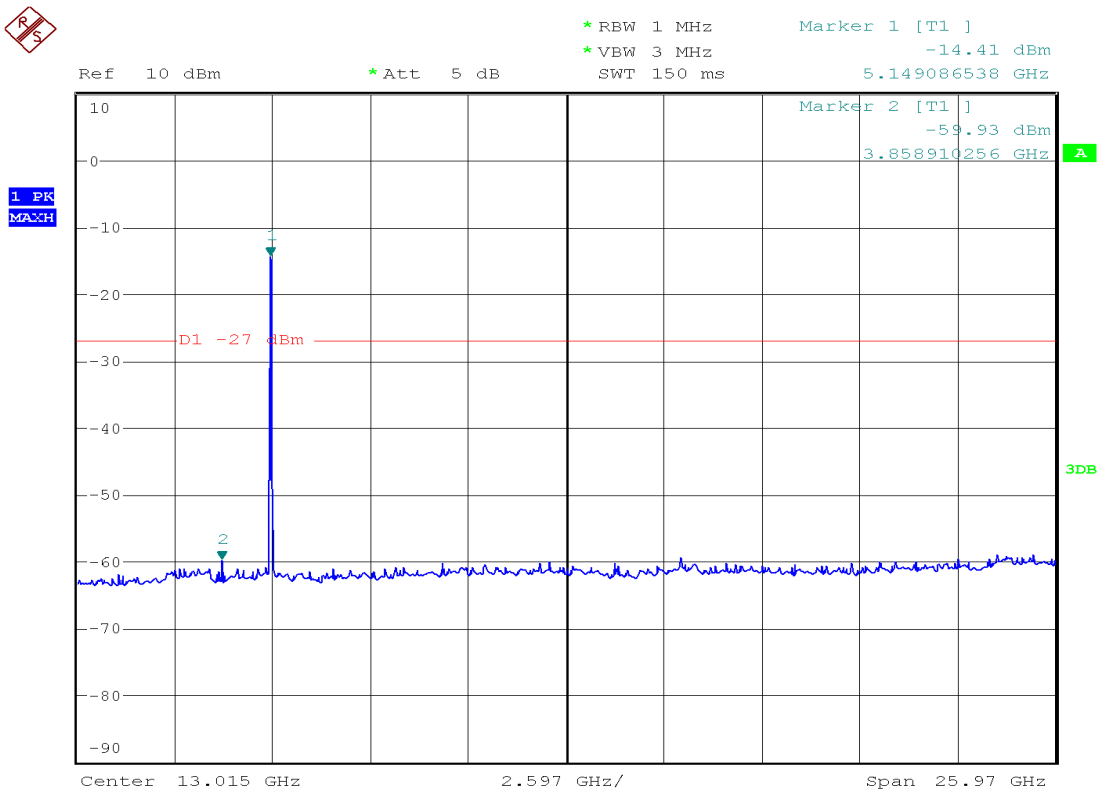




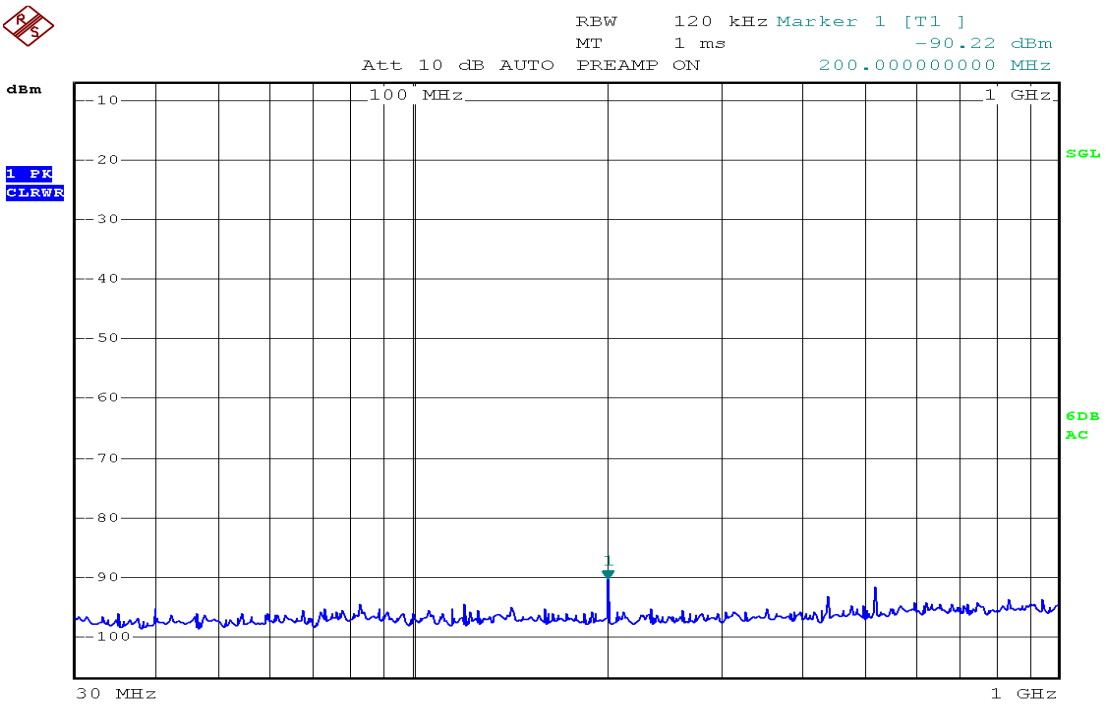
Channel Frequency: 5320 MHz

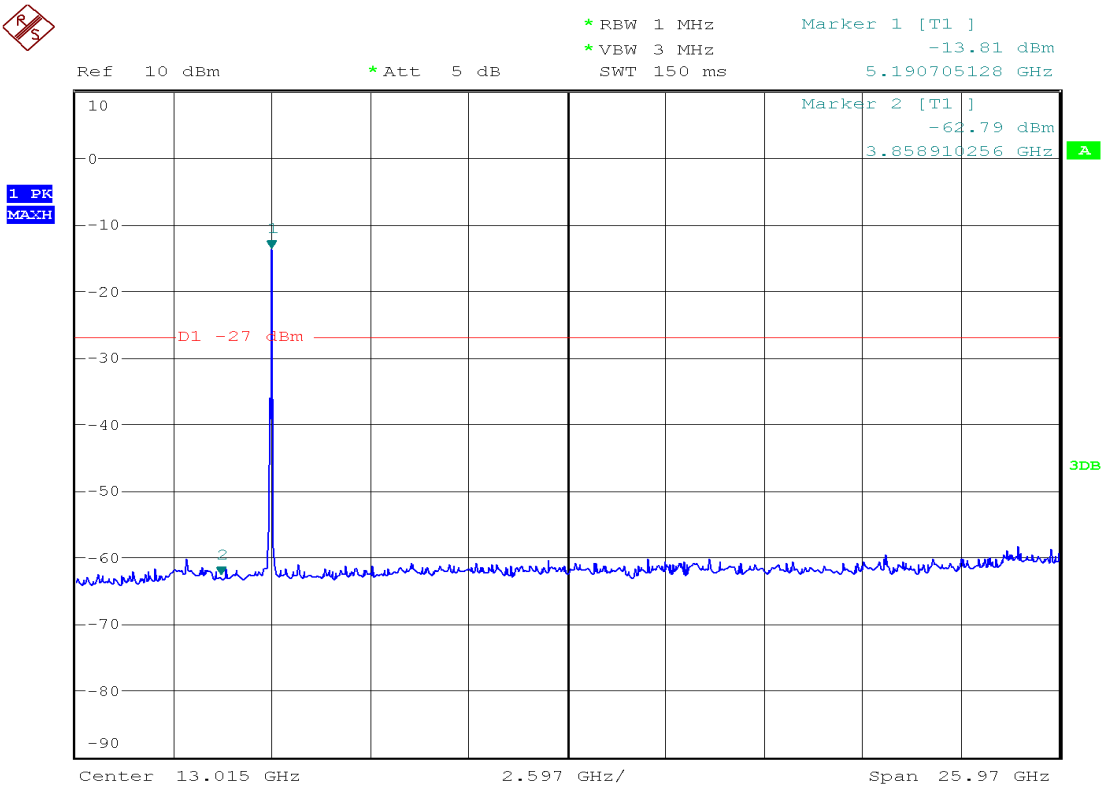
Modulation: 802.11n



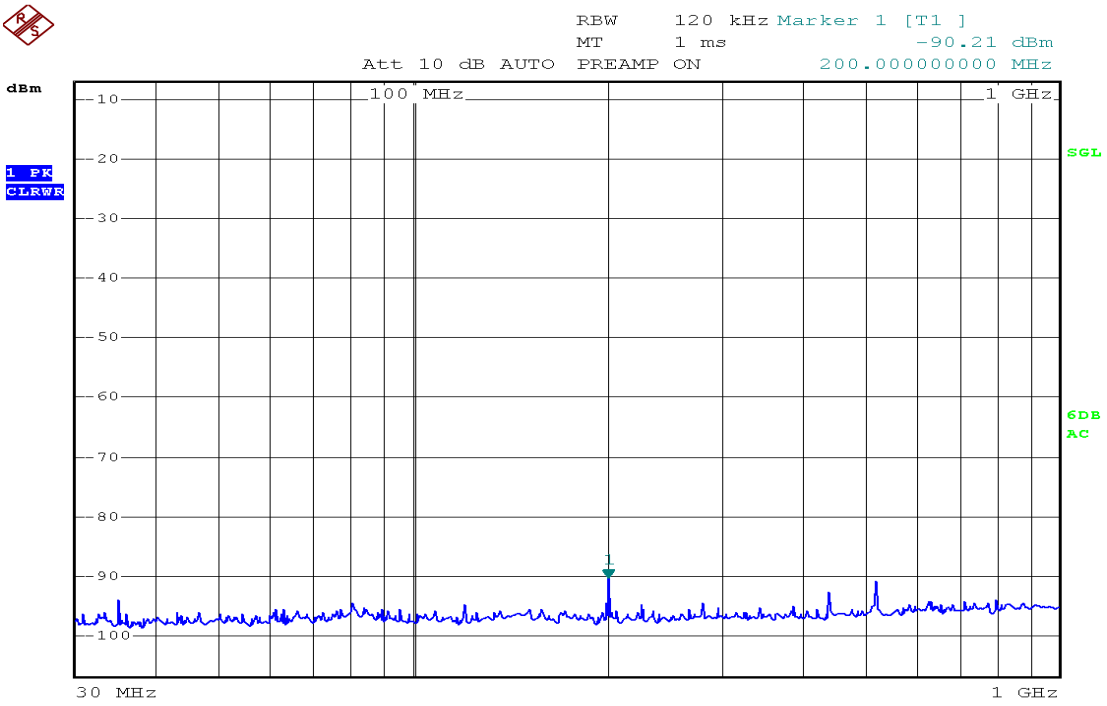


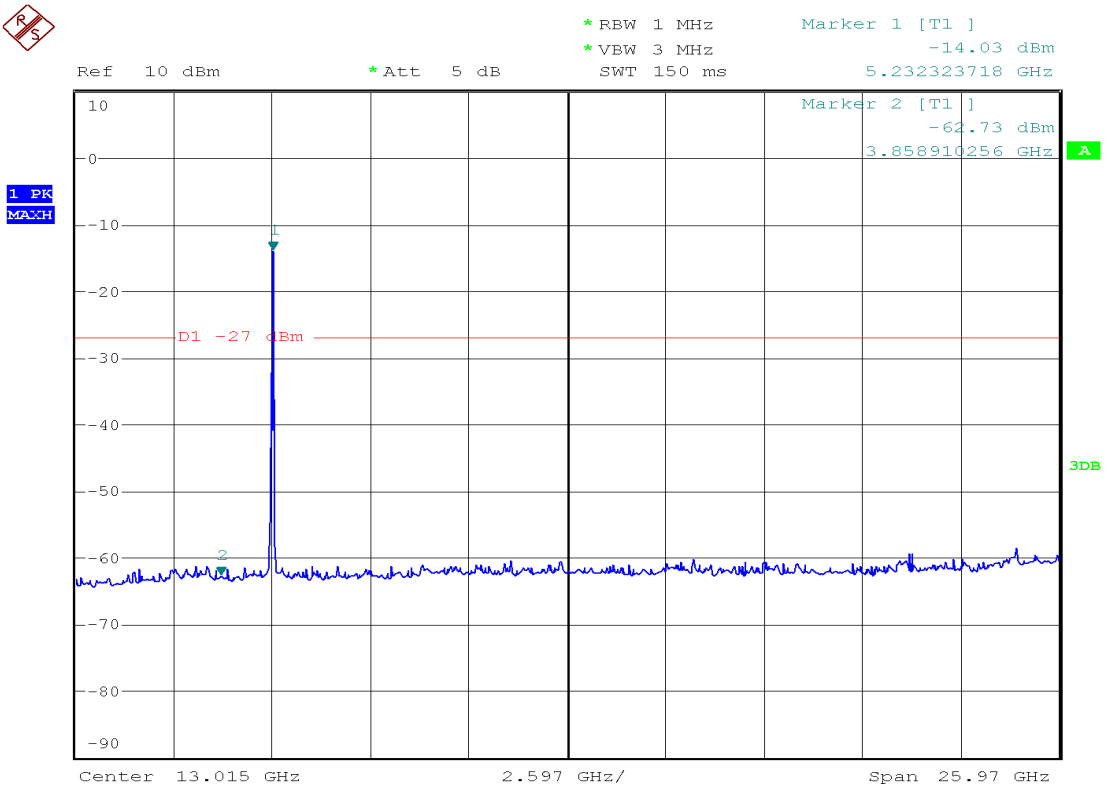
Channel Frequency: 5180MHz



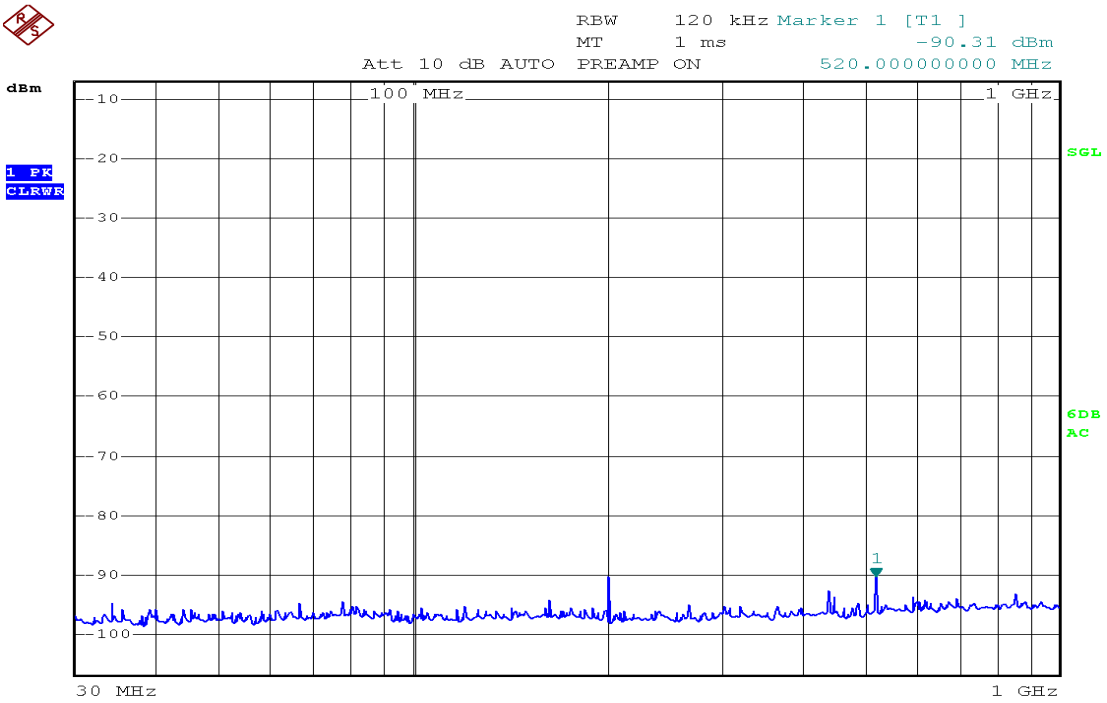


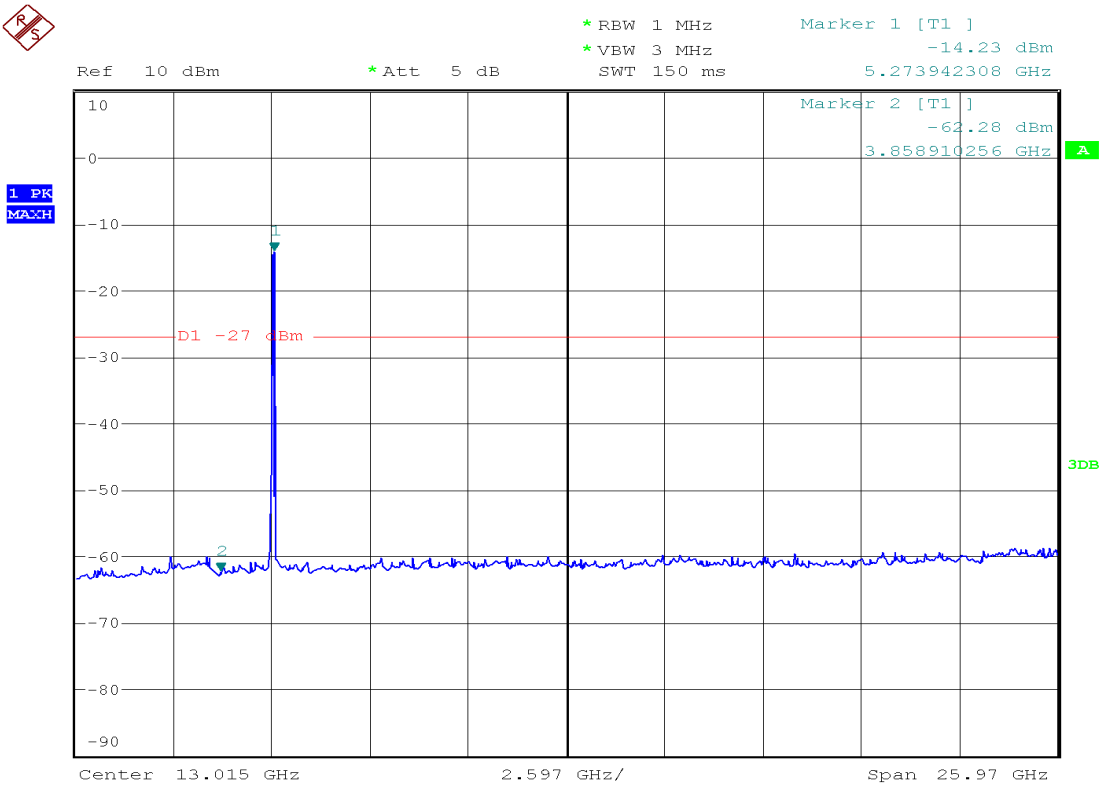
Channel Frequency: 5200 MHz



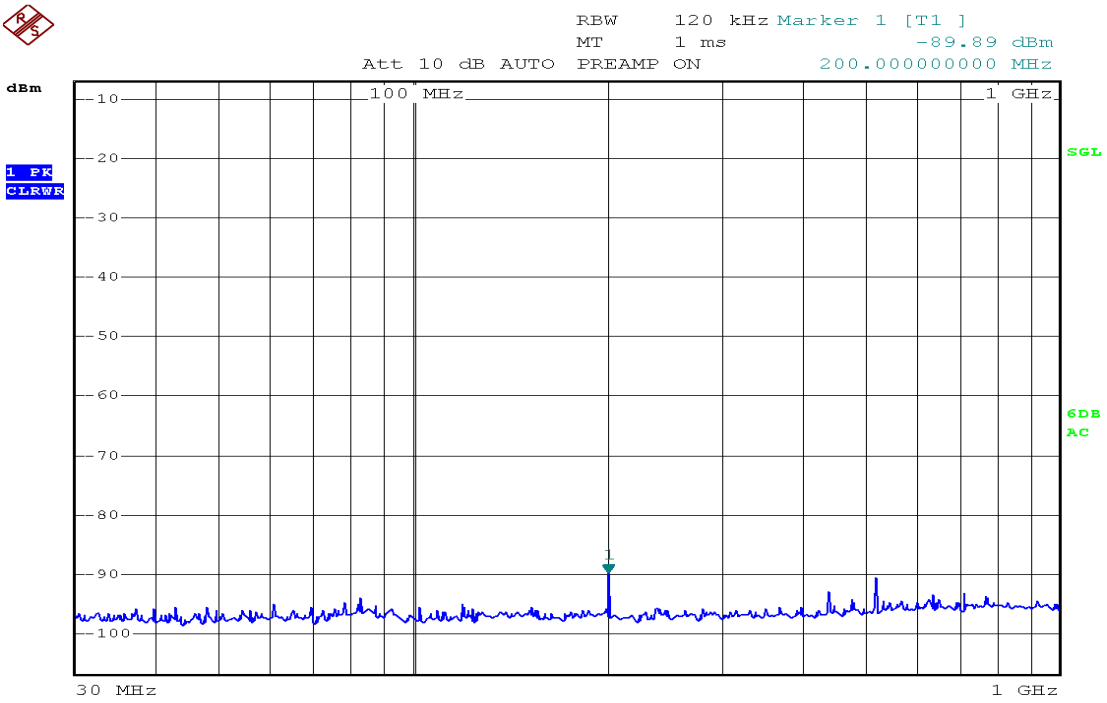


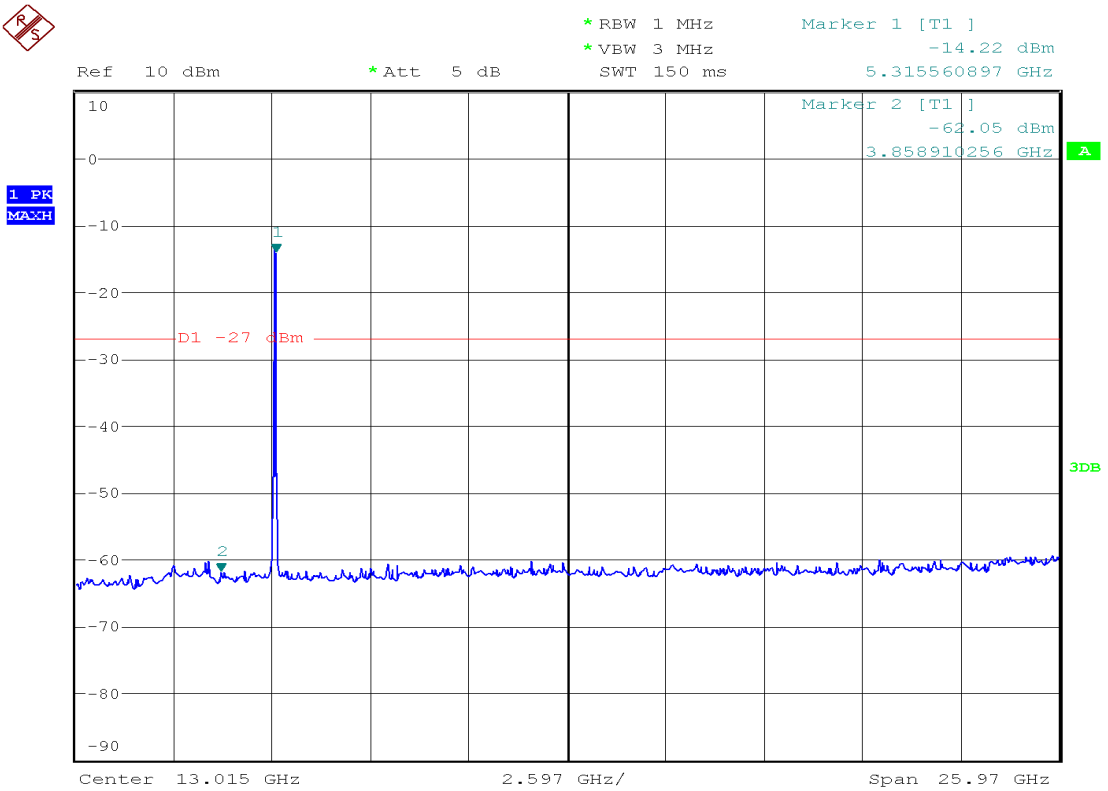
Channel Frequency: 5240 MHz



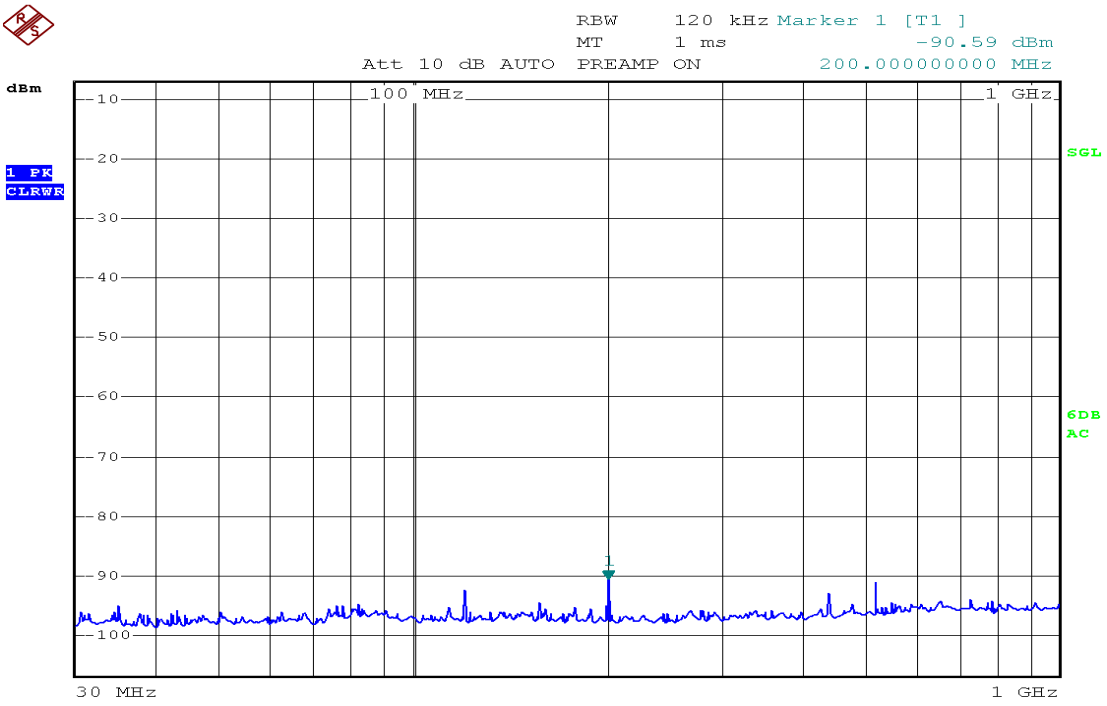


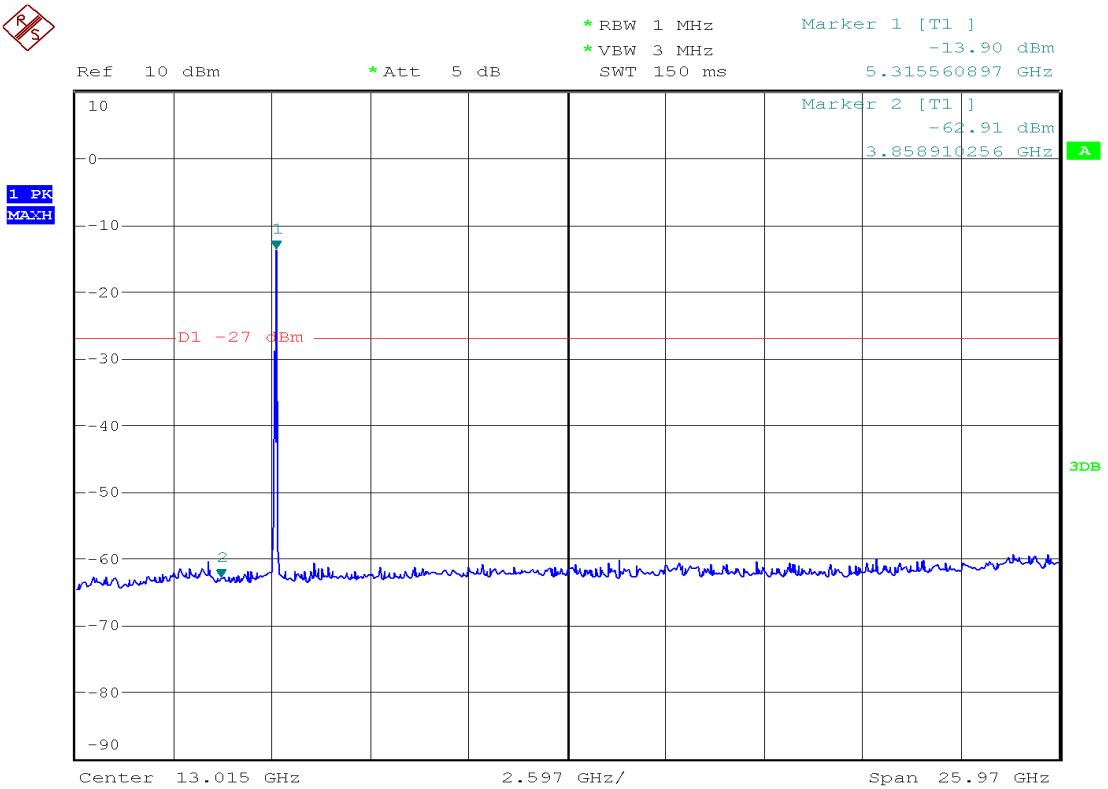
Channel Frequency: 5260 MHz





Channel Frequency: 5300 MHz





Channel Frequency: 5320 MHz