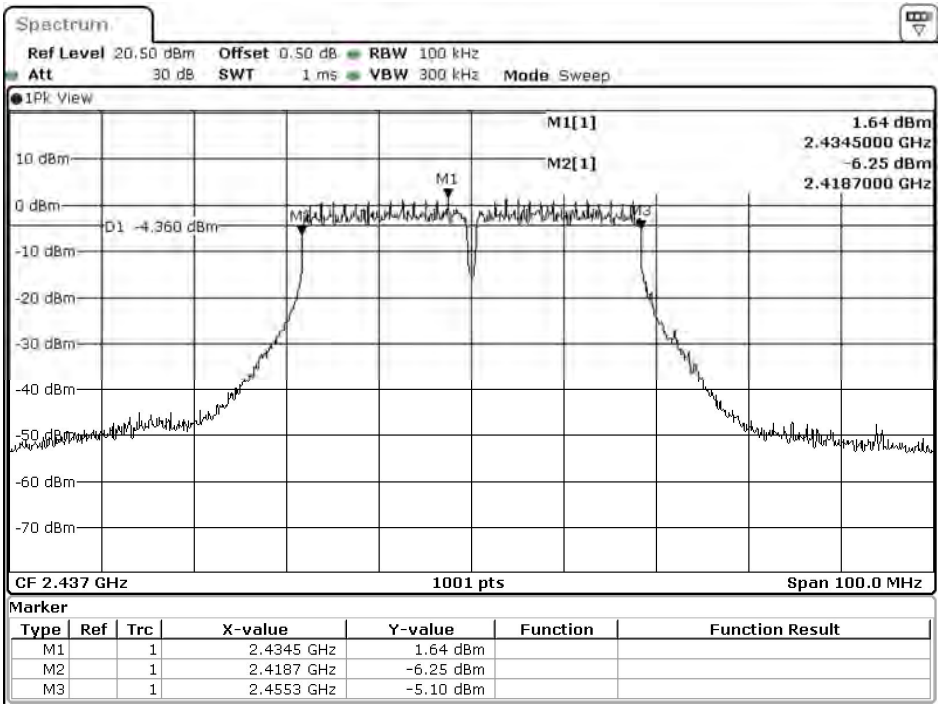
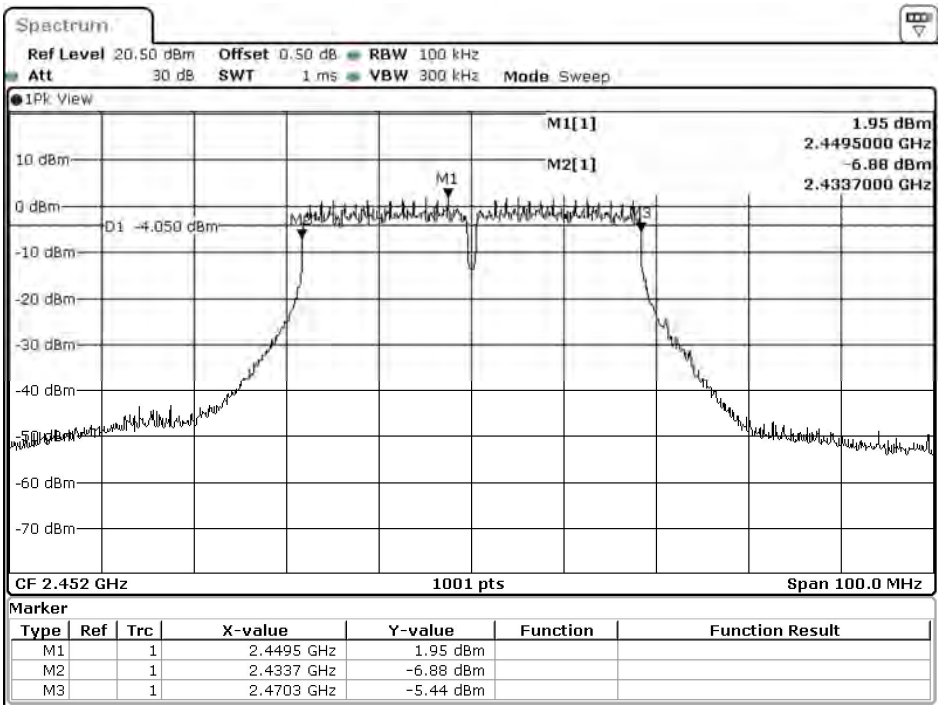


Figure Channel 06: (Chain A)



Date: 19.FEB.2021 08:58:54

Figure Channel 09: (Chain A)

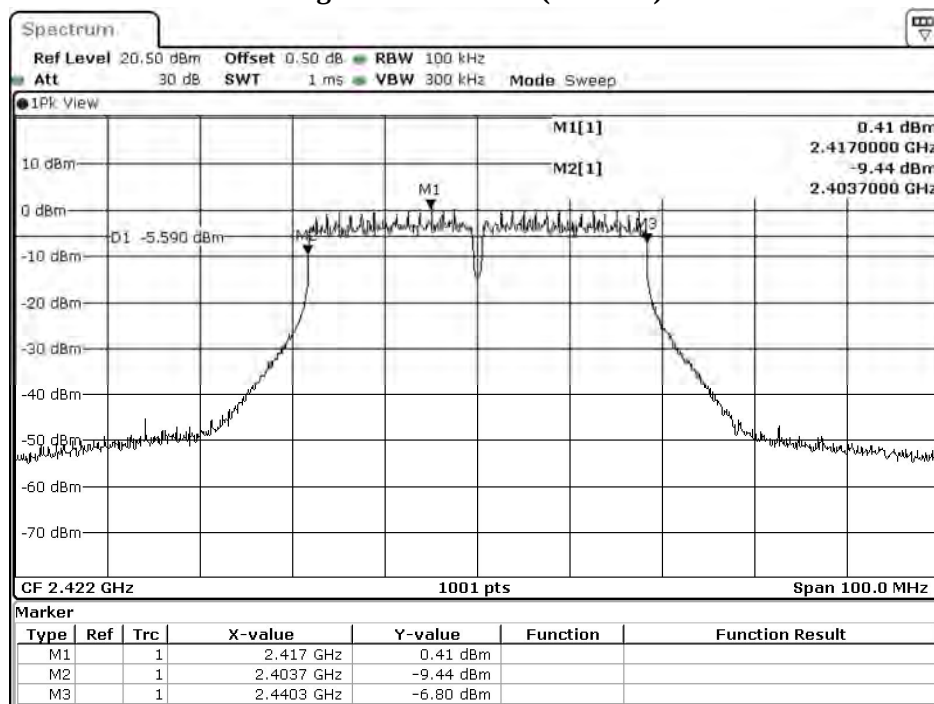


Date: 19.FEB.2021 09:01:27

Product : Wireless module
 Test Item : 6dB Bandwidth Data
 Test Mode : Mode 6: Transmit (802.11ac-40MBW 30Mbps) – Dipole Antenna

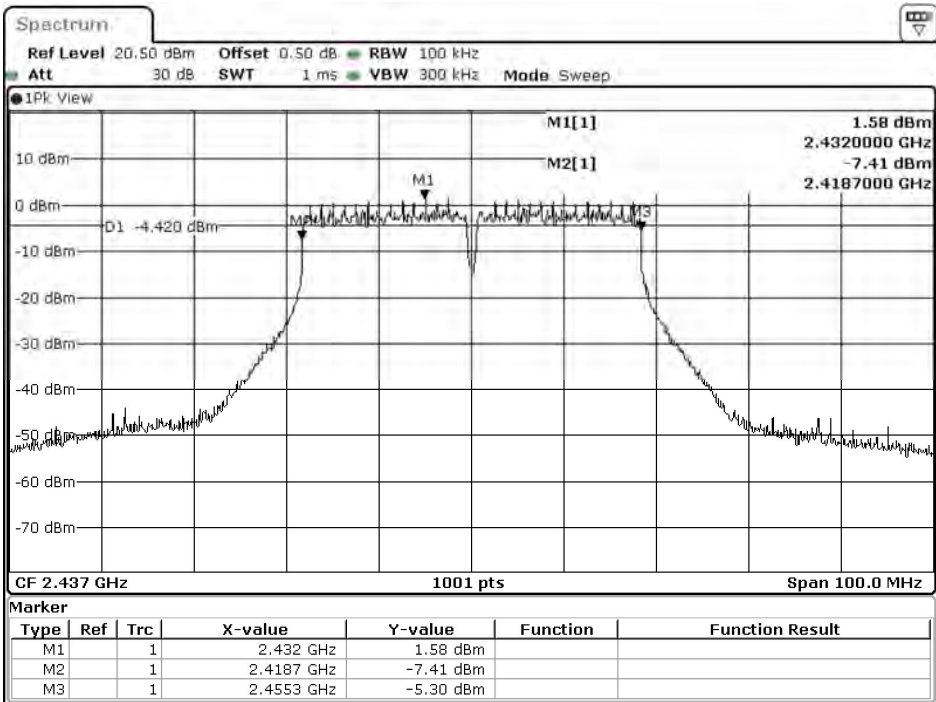
Chain B

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
03	2422	36600	>500	Pass
06	2437	36600	>500	Pass
09	2452	36600	>500	Pass

Figure Channel 03: (Chain B)

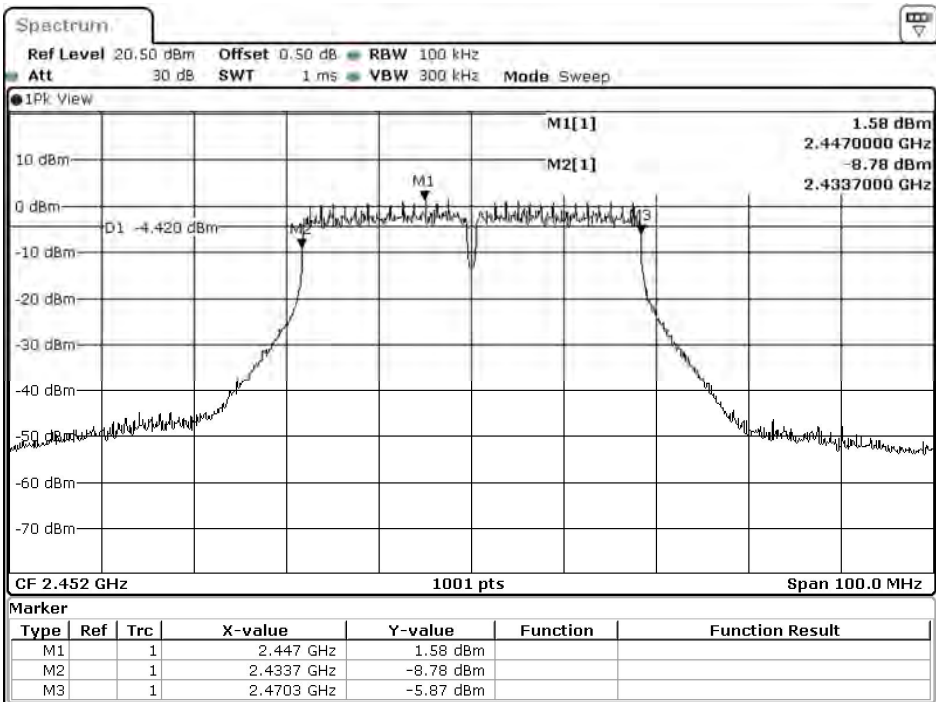
Date: 19.FEB.2021 11:01:39

Figure Channel 06: (Chain B)



Date: 19.FEB.2021 11:04:19

Figure Channel 09: (Chain B)

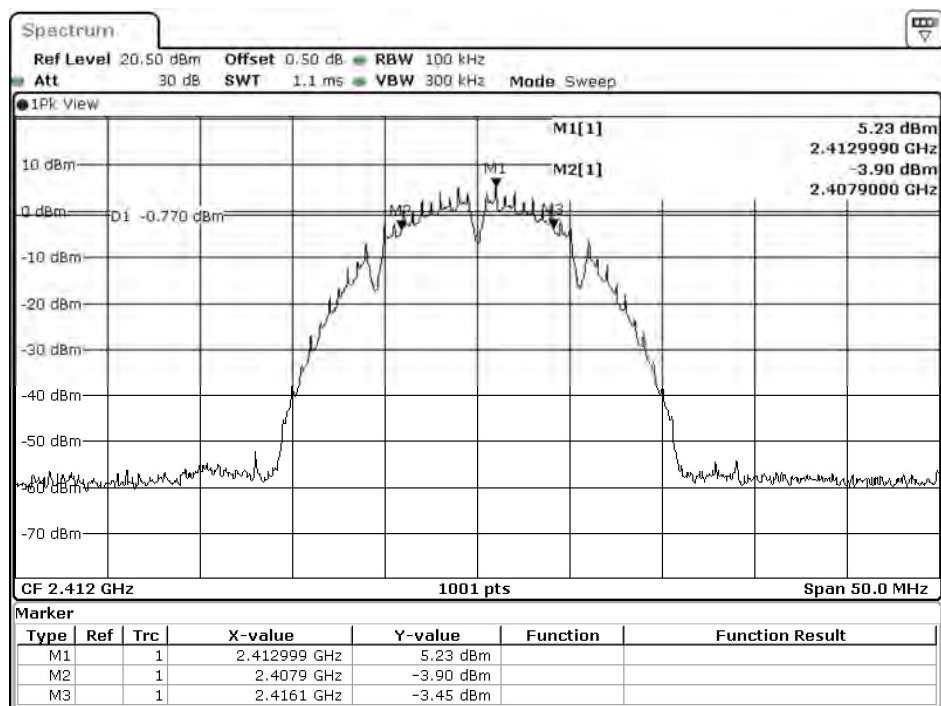


Date: 19.FEB.2021 11:06:52

Product : Wireless module
 Test Item : 6dB Bandwidth Data
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) – Panel Antenna

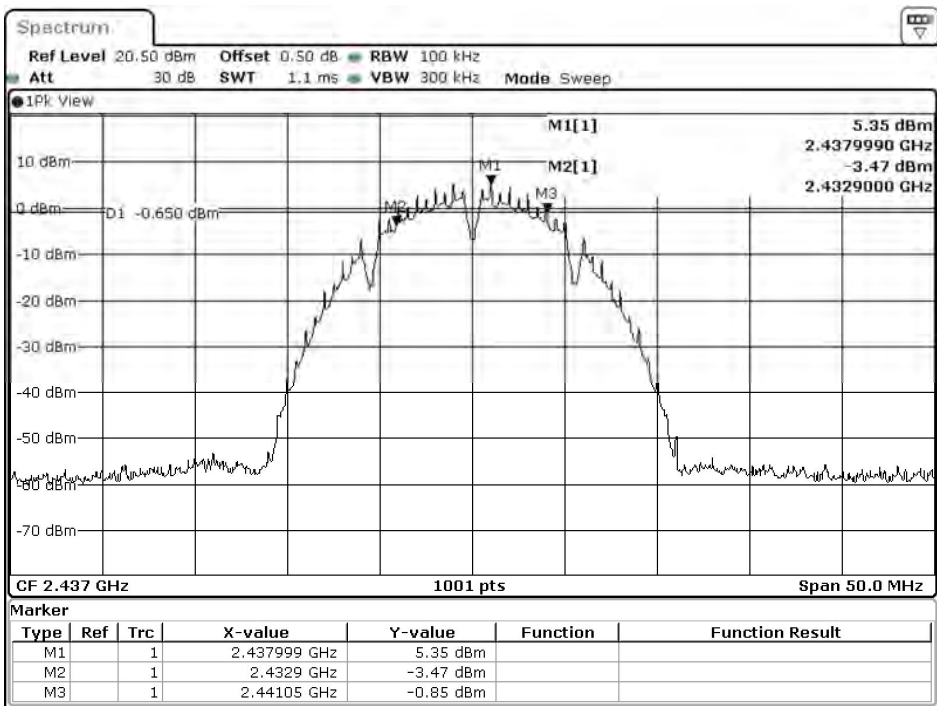
Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
01	2412	8200	>500	Pass
06	2437	8150	>500	Pass
11	2462	8150	>500	Pass

Figure Channel 01:



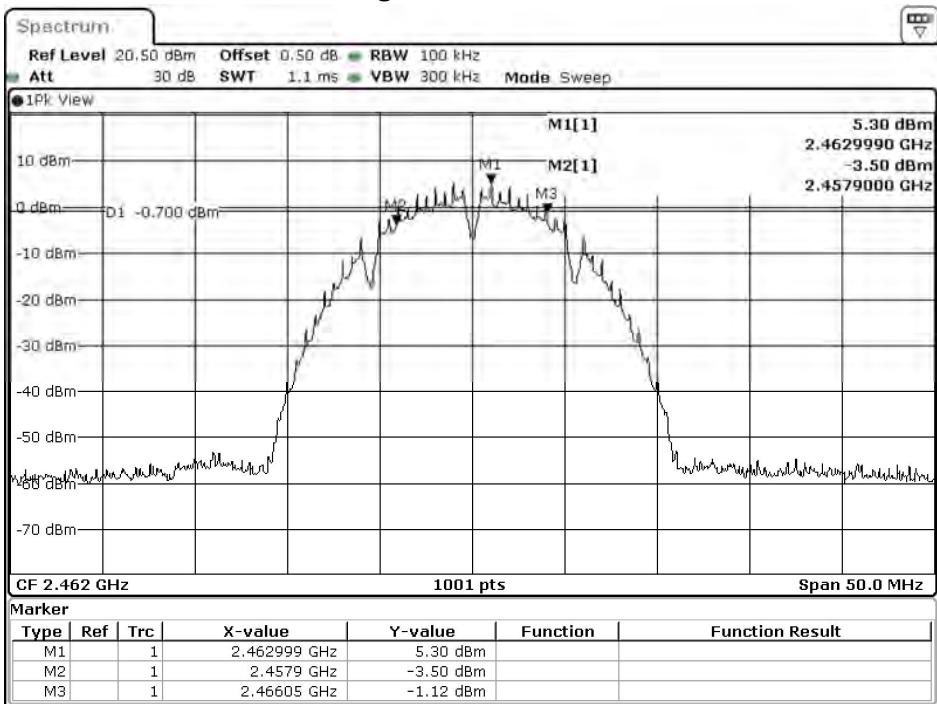
Date: 20.FEB.2021 01:10:30

Figure Channel 06:



Date: 20.FEB.2021 01:13:24

Figure Channel 11:

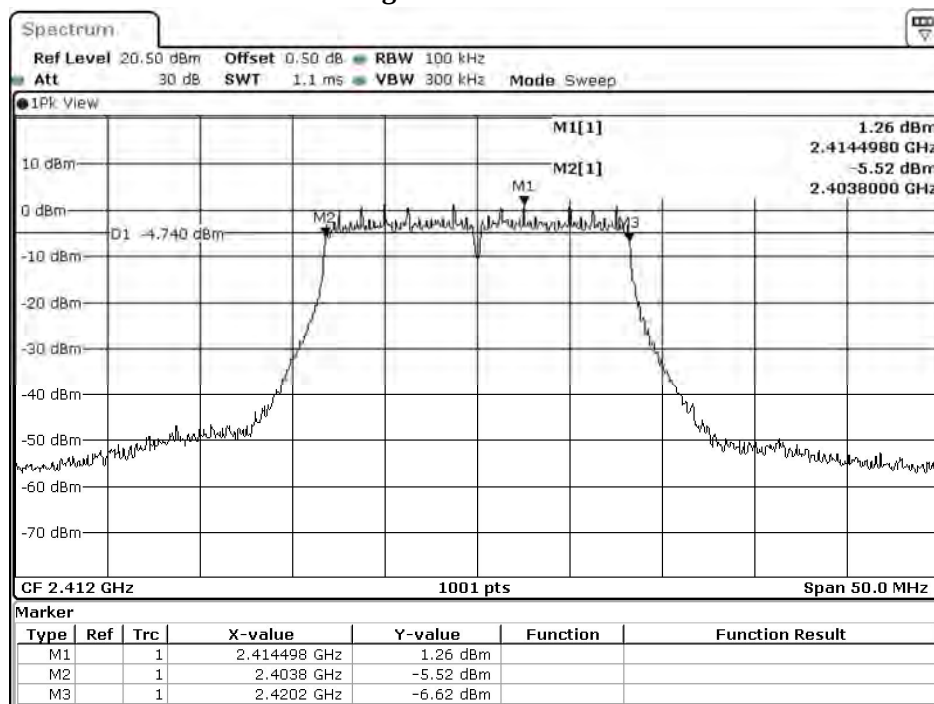


Date: 20.FEB.2021 01:16:16

Product : Wireless module
 Test Item : 6dB Bandwidth Data
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) – Panel Antenna

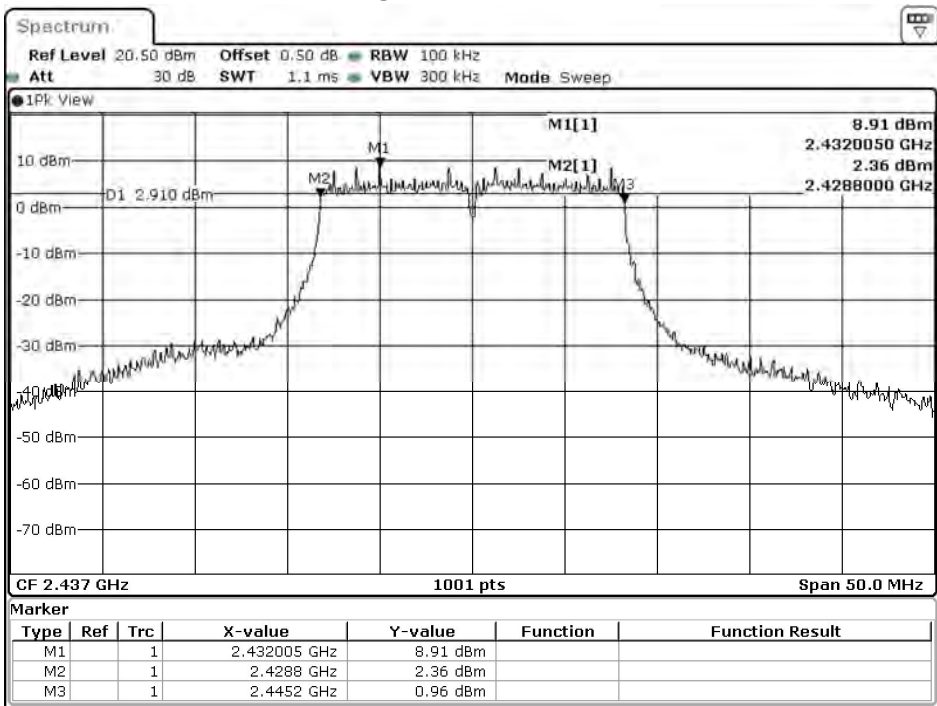
Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
01	2412	16400	>500	Pass
06	2437	16400	>500	Pass
11	2462	16450	>500	Pass

Figure Channel 01:



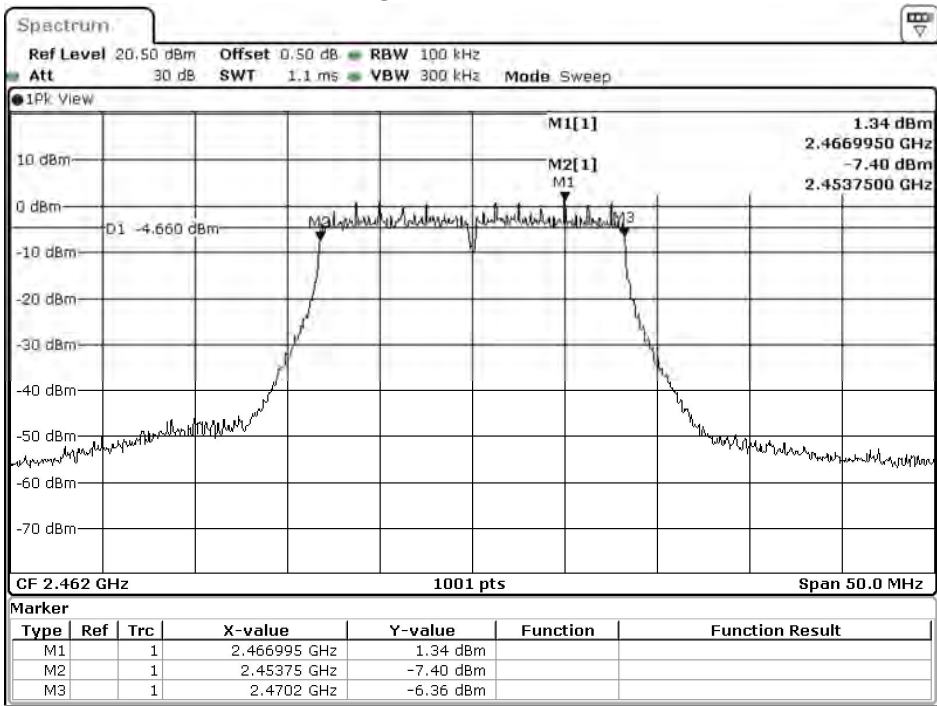
Date: 20.FEB.2021 01:18:52

Figure Channel 06:



Date: 20.FEB.2021 01:21:25

Figure Channel 11:



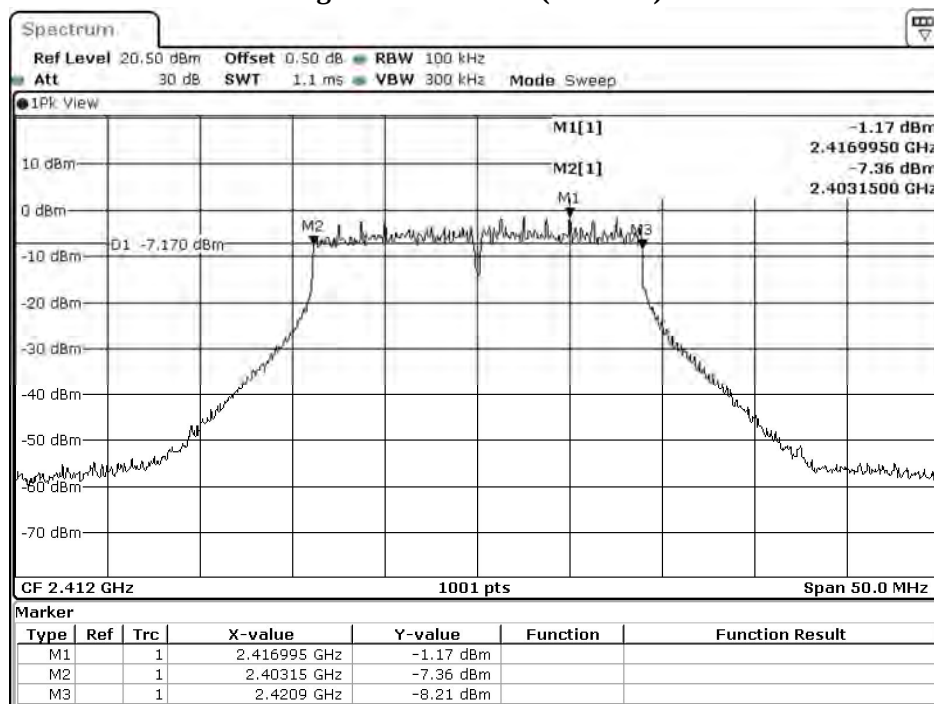
Date: 20.FEB.2021 01:25:57

Product : Wireless module
 Test Item : 6dB Bandwidth Data
 Test Mode : Mode 5: Transmit (802.11ac-20MBW 14.4Mbps) – Panel Antenna

Chain A

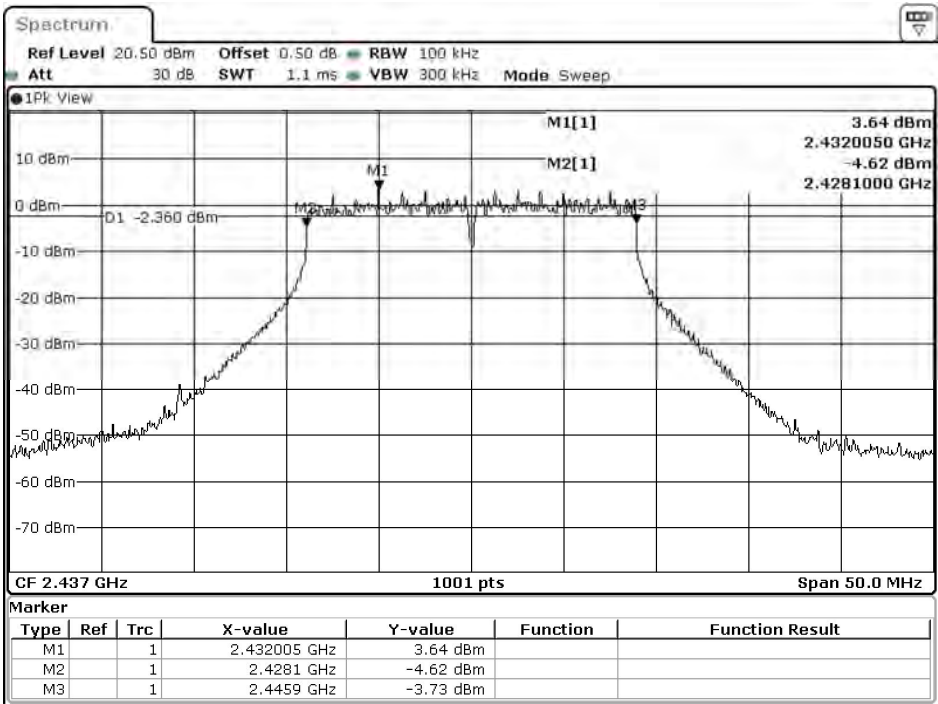
Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
01	2412	17750	>500	Pass
06	2437	17800	>500	Pass
11	2462	17800	>500	Pass

Figure Channel 01: (Chain A)



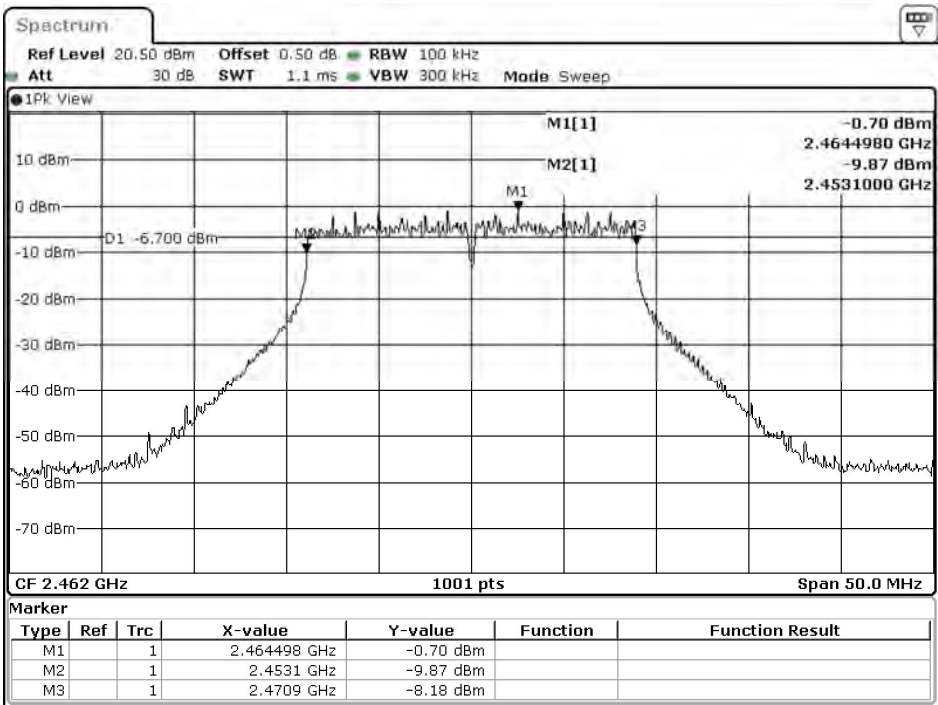
Date: 20.FEB.2021 01:30:24

Figure Channel 06: (Chain A)



Date: 20.FEB.2021 01:33:10

Figure Channel 11: (Chain A)

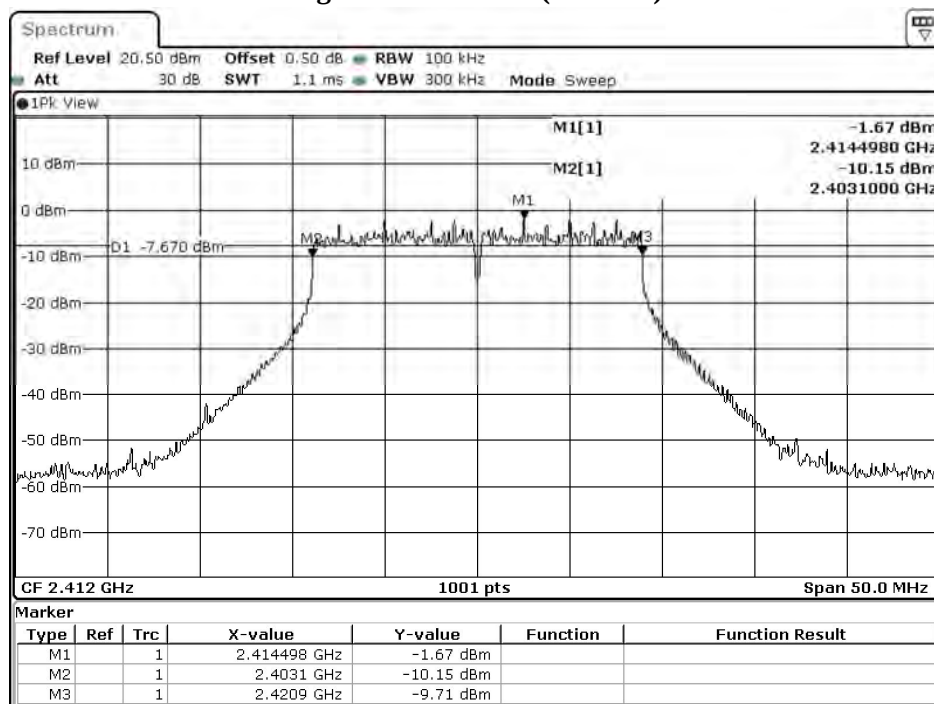


Date: 20.FEB.2021 01:36:04

Product : Wireless module
 Test Item : 6dB Bandwidth Data
 Test Mode : Mode 5: Transmit (802.11ac-20MBW 14.4Mbps) – Panel Antenna

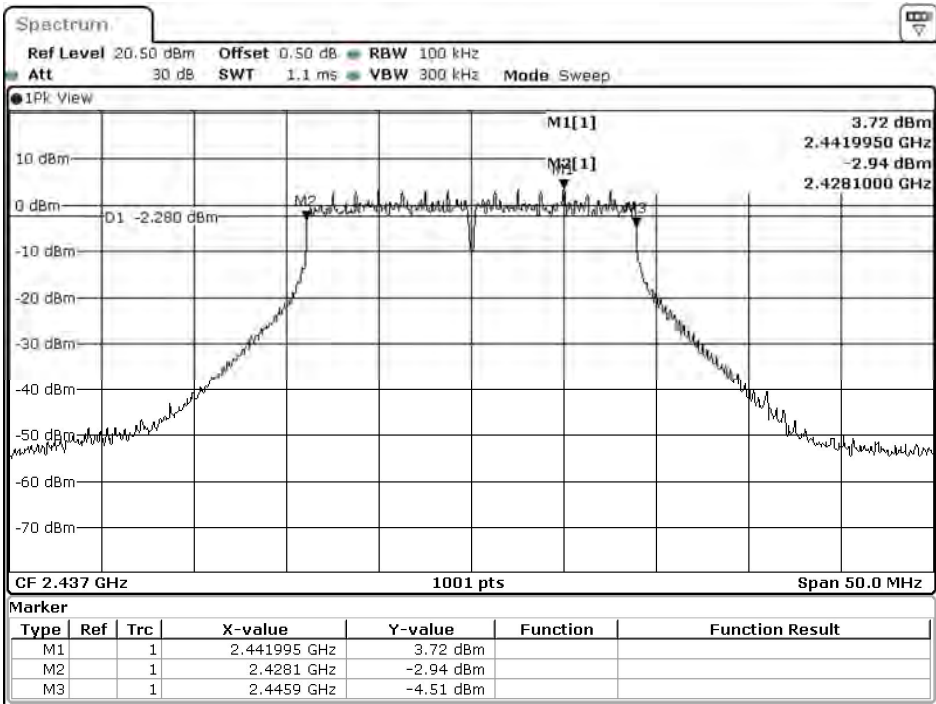
Chain B

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
01	2412	17800	>500	Pass
06	2437	17800	>500	Pass
11	2462	17800	>500	Pass

Figure Channel 01: (Chain B)

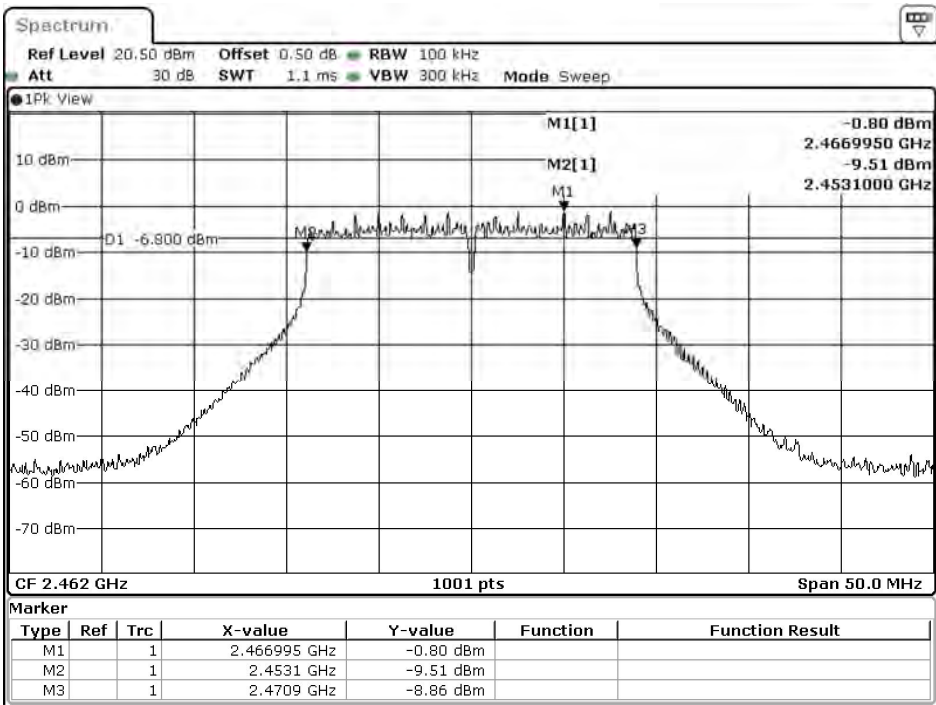
Date: 20.FEB.2021 03:35:50

Figure Channel 06: (Chain B)



Date: 20.FEB.2021 03:38:35

Figure Channel 11: (Chain B)

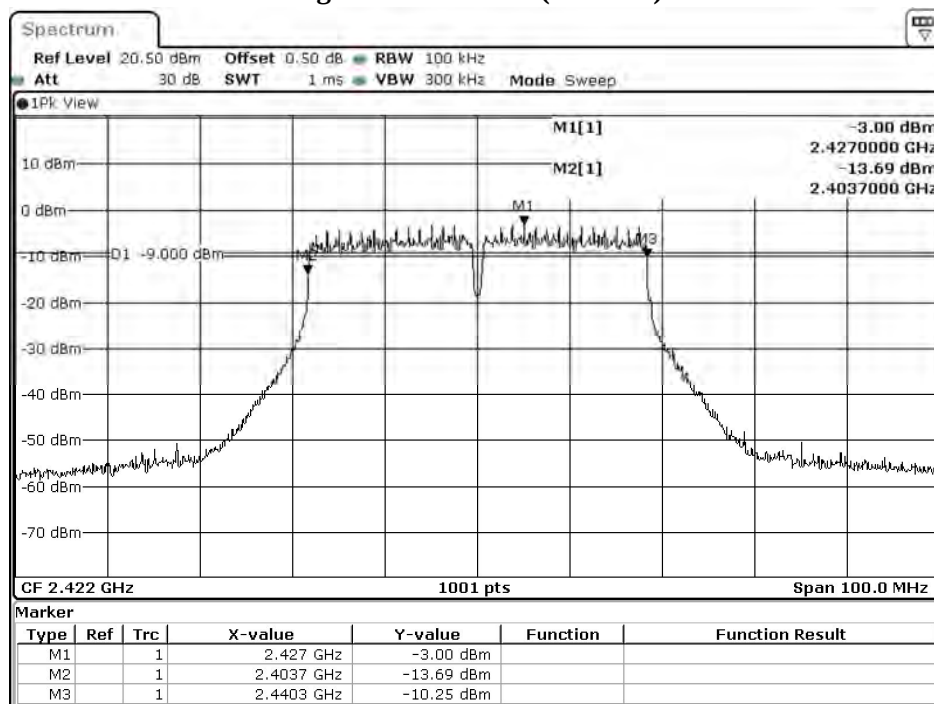


Date: 20.FEB.2021 03:41:29

Product : Wireless module
 Test Item : 6dB Bandwidth Data
 Test Mode : Mode 6: Transmit (802.11ac-40MBW 30Mbps) – Panel Antenna

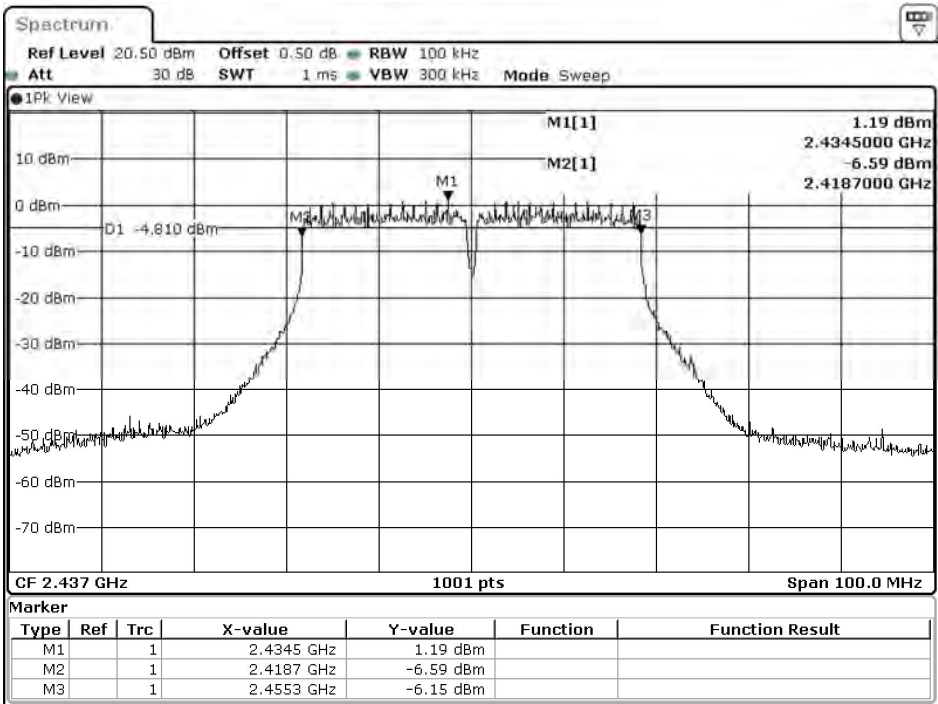
Chain A

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
03	2422	36600	>500	Pass
06	2437	36600	>500	Pass
09	2452	36700	>500	Pass

Figure Channel 03: (Chain A)

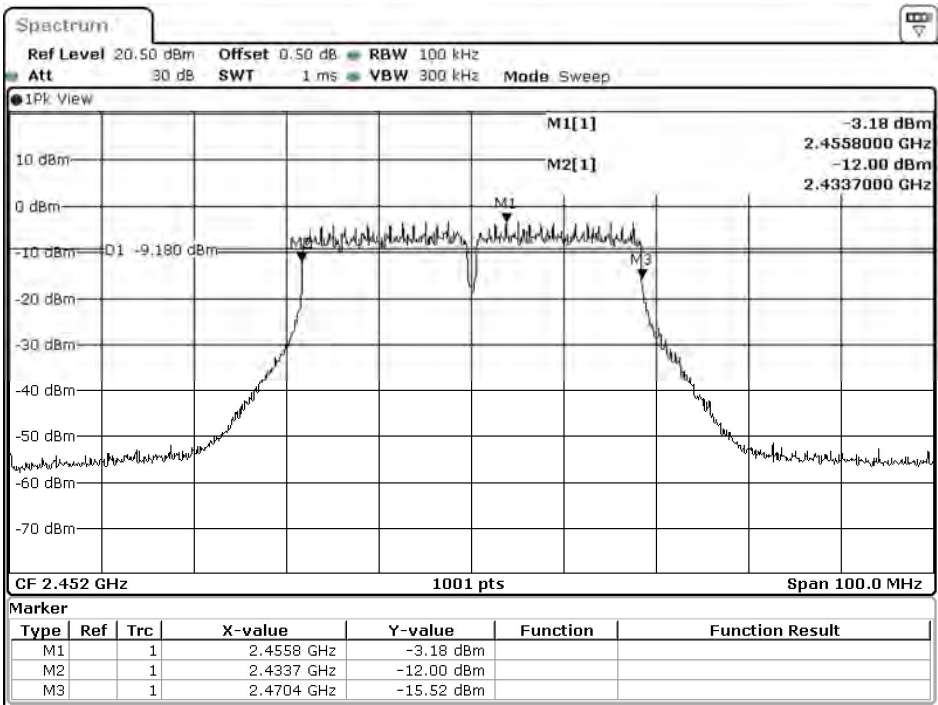
Date: 20.FEB.2021 01:38:58

Figure Channel 06: (Chain A)



Date: 20.FEB.2021 01:48:38

Figure Channel 09: (Chain A)

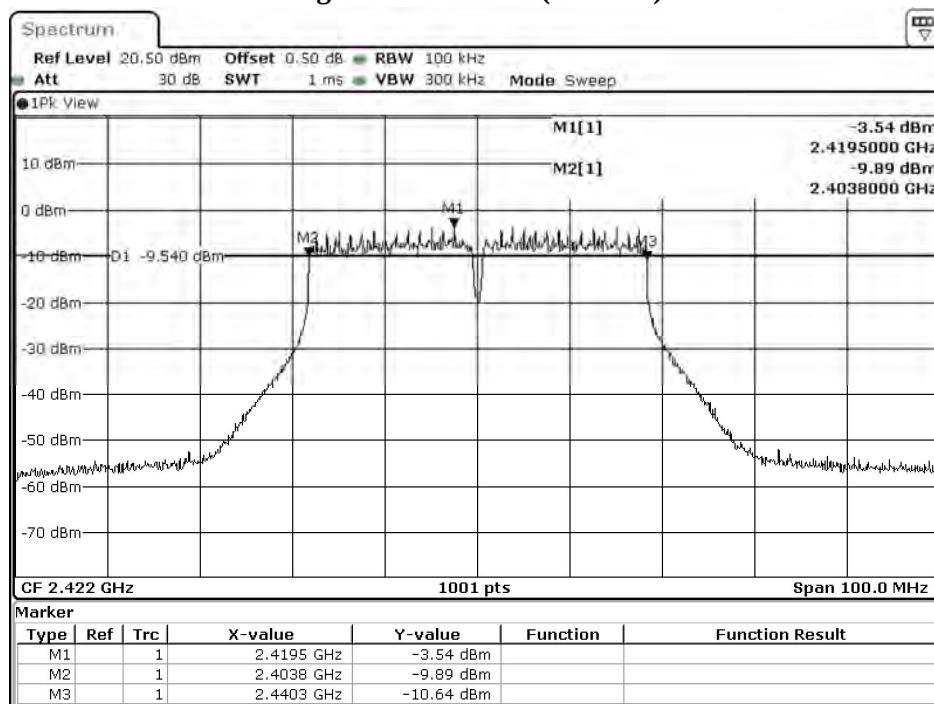


Date: 20.FEB.2021 01:52:17

Product : Wireless module
 Test Item : 6dB Bandwidth Data
 Test Mode : Mode 6: Transmit (802.11ac-40MBW 30Mbps) – Panel Antenna

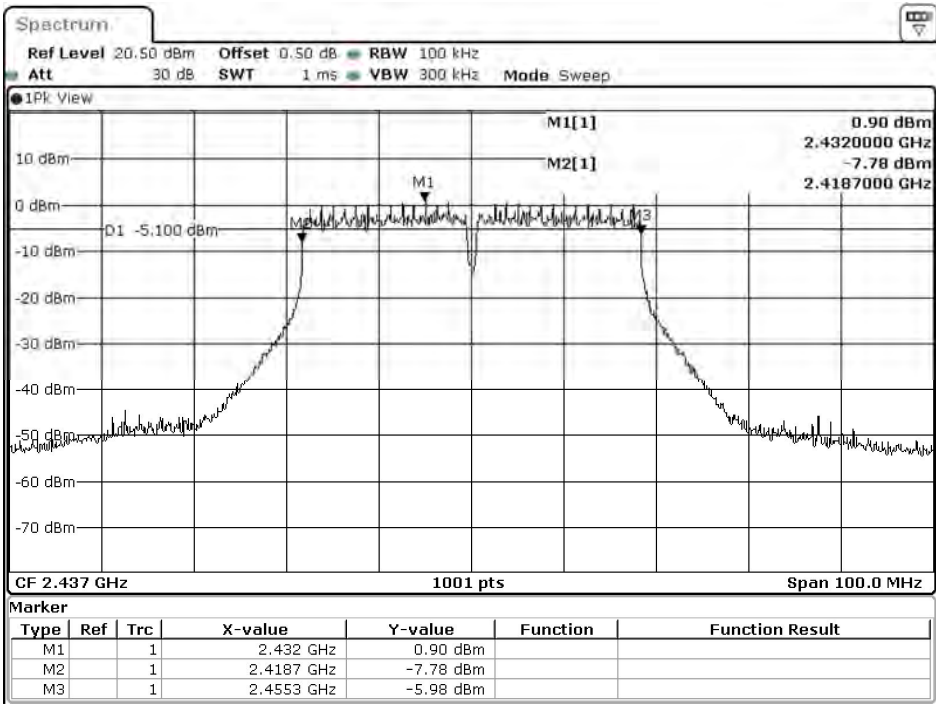
Chain B

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
03	2422	36500	>500	Pass
06	2437	36600	>500	Pass
09	2452	36600	>500	Pass

Figure Channel 03: (Chain B)

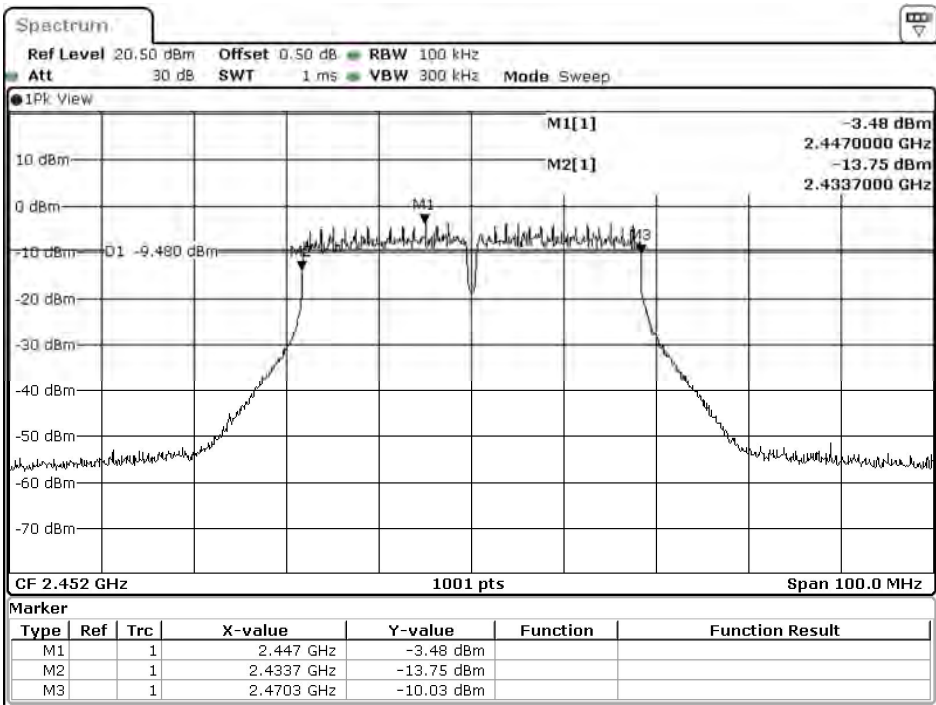
Date: 20.FEB.2021 03:44:23

Figure Channel 06: (Chain B)



Date: 20.FEB.2021 03:54:03

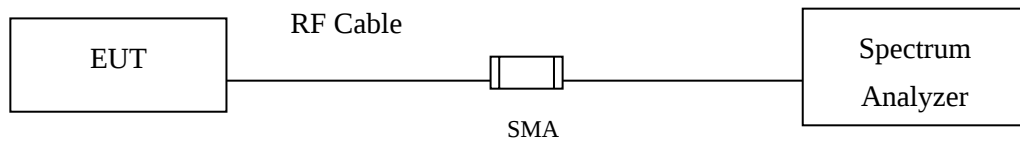
Figure Channel 09: (Chain B)



Date: 20.FEB.2021 03:57:42

8. Power Density

8.1. Test Setup



8.2. Limits

The transmitted power density averaged over any 1 second interval shall not be greater +8dBm in any 3kHz bandwidth.

8.3. Test Procedure

The EUT was setup according to ANSI C63.10, 2013; tested according to DTS test procedure of KDB 558074 for compliance to FCC 47CFR 15.247 requirements.

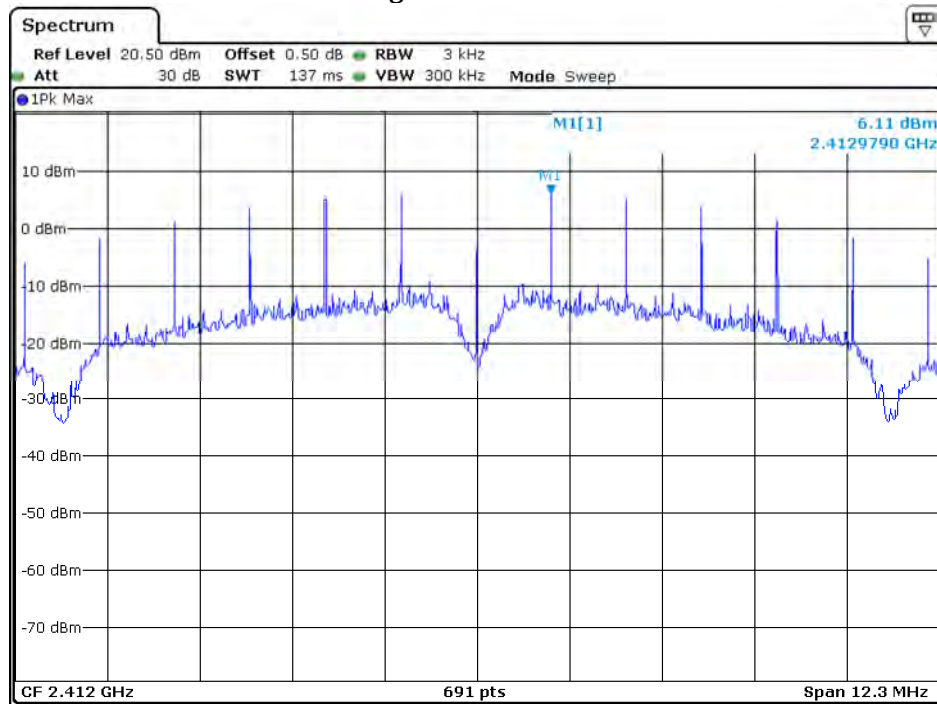
The maximum power spectral density using C63.10 Section 11.10.2 Method PKPSD (peak PSD)

8.4. Test Result of Power Density

Product : Wireless module
 Test Item : Power Density Data
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) – Dipole Antenna

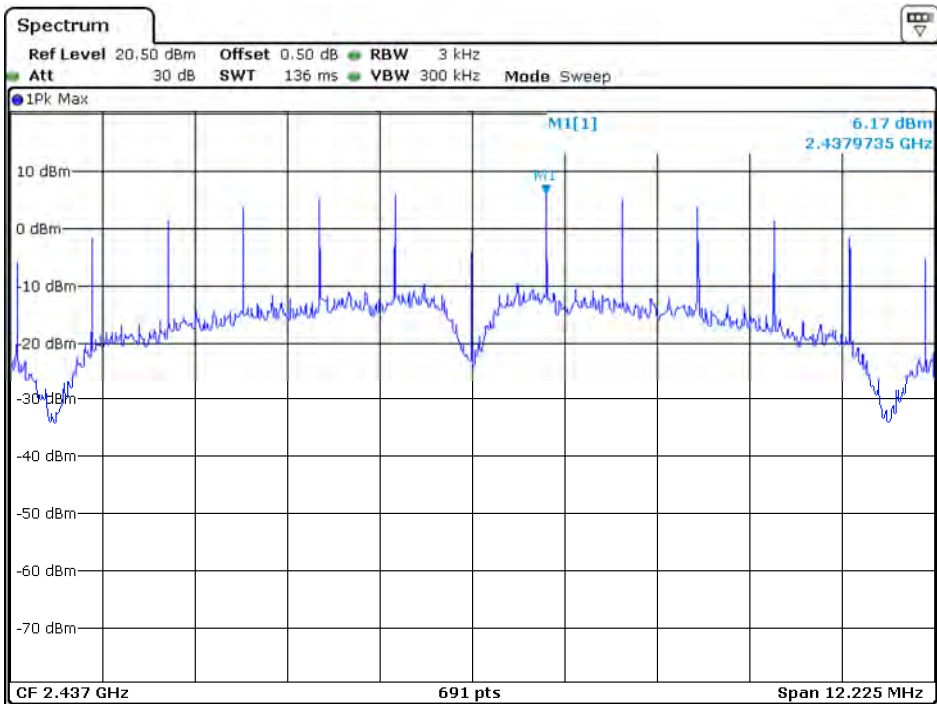
Channel No.	Frequency (MHz)	PPSD/MHz (dBm)	Limit (dBm)	Result
01	2412.000	6.110	$\leq 6.6\text{dBm}$	Pass
06	2437.000	6.170	$\leq 6.6\text{dBm}$	Pass
11	2462.000	6.550	$\leq 6.6\text{dBm}$	Pass

Figure Channel 1:



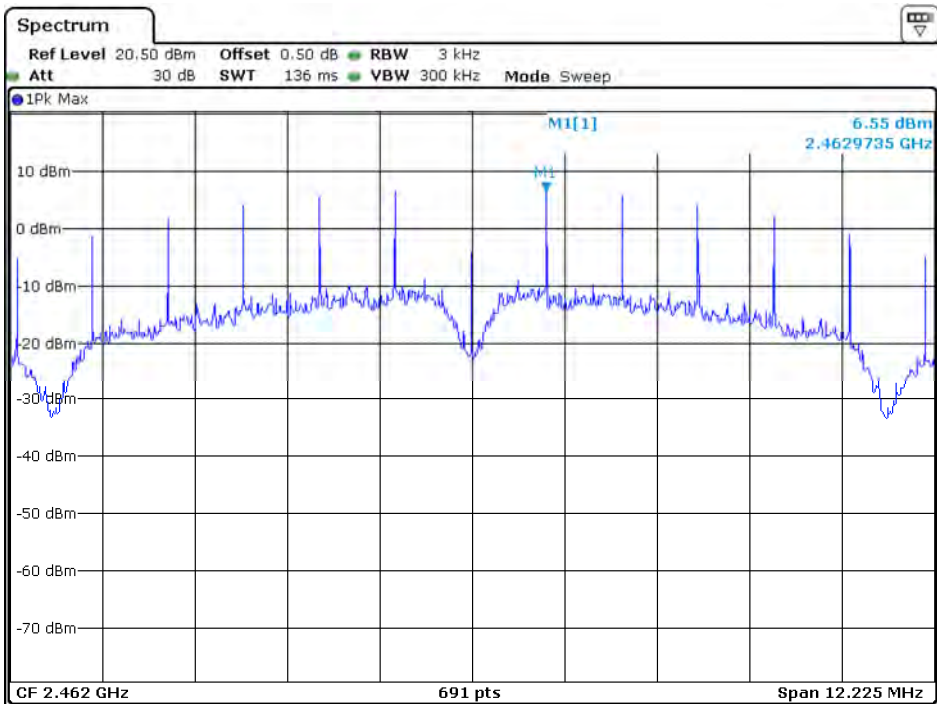
Date: 20.FEB.2021 04:14:26

Figure Channel 6:



Date: 20.FEB.2021 04:18:08

Figure Channel 11:

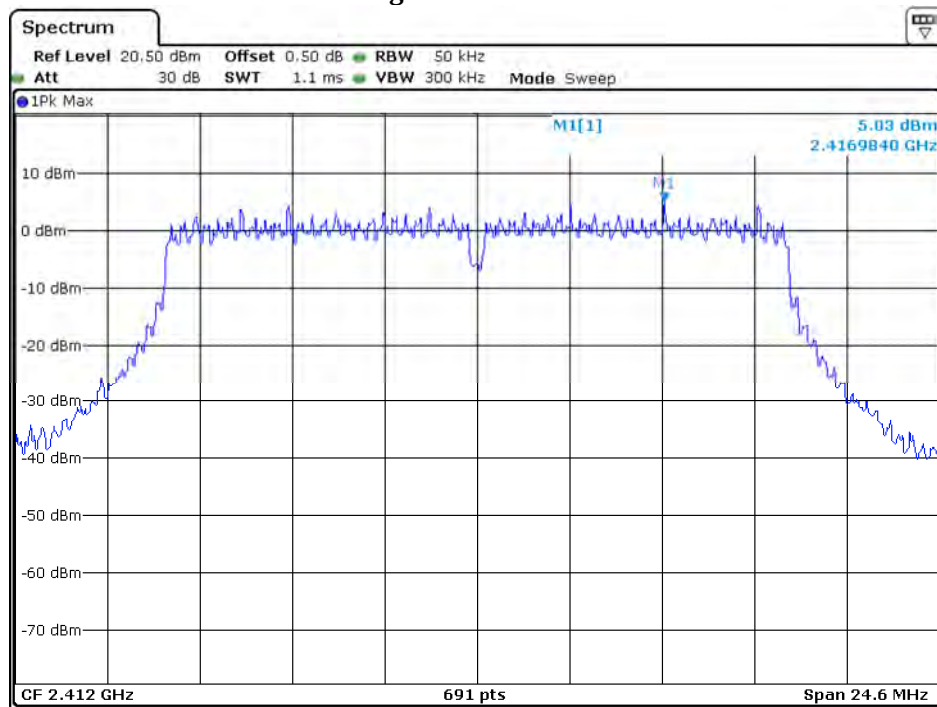


Date: 20.FEB.2021 04:30:04

Product : Wireless module
 Test Item : Power Density Data
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) – Dipole Antenna

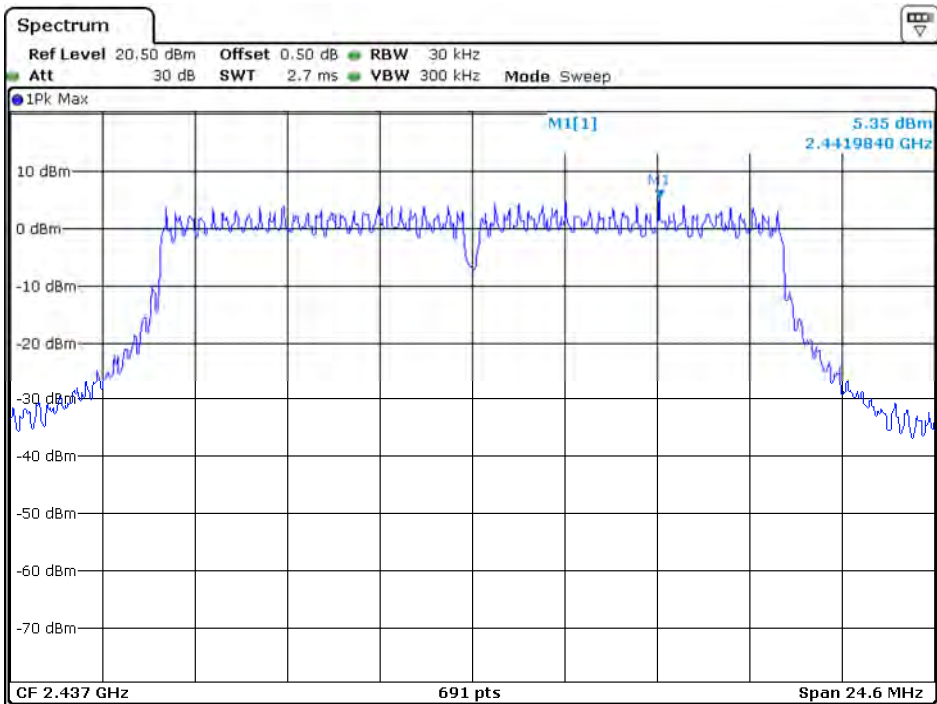
Channel No.	Frequency (MHz)	PPSD/MHz (dBm)	Limit (dBm)	Result
01	2412.000	5.030	≤ 6.6 dBm	Pass
06	2437.000	5.350	≤ 6.6 dBm	Pass
11	2462.000	5.910	≤ 6.6 dBm	Pass

Figure Channel 1:



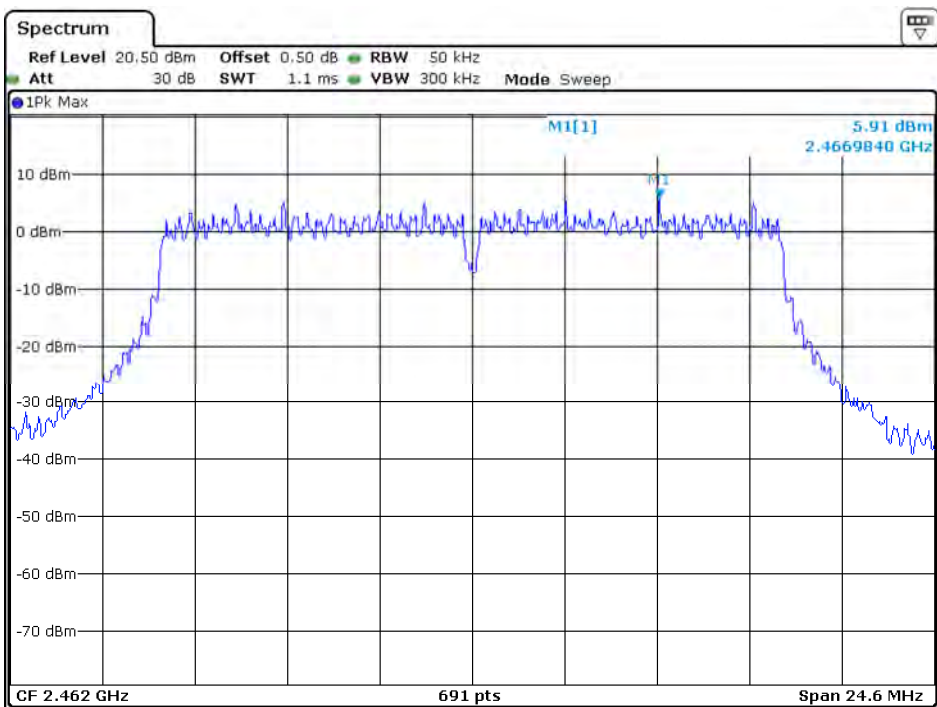
Date: 20.FEB.2021 04:44:53

Figure Channel 6:



Date: 20.FEB.2021 04:47:03

Figure Channel 11:



Date: 20.FEB.2021 04:48:30

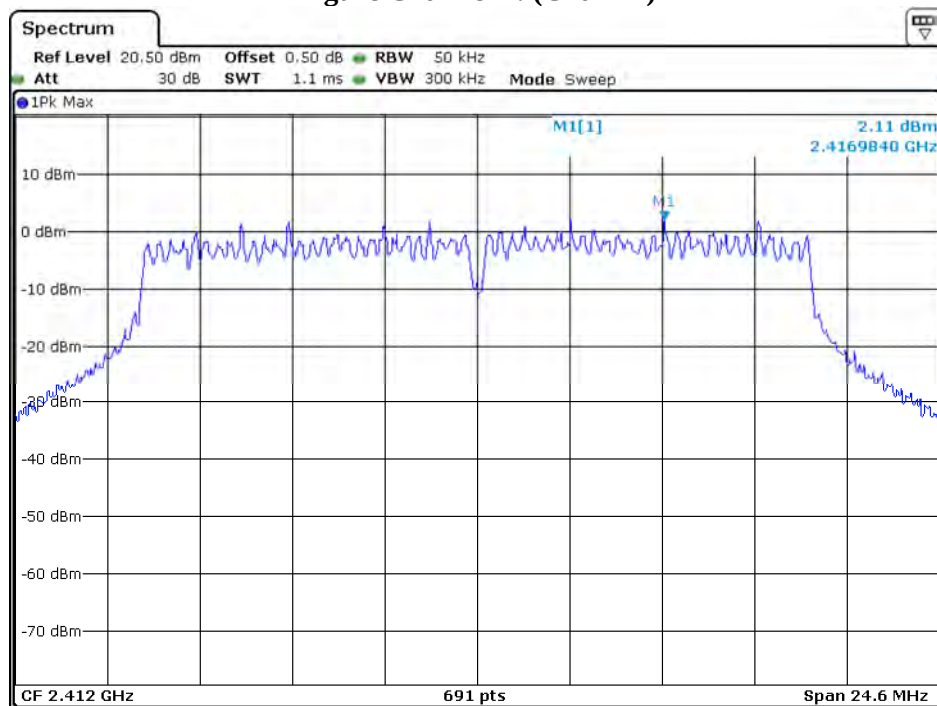
Product : Wireless module
 Test Item : Power Density Data
 Test Mode : Mode 3: Transmit (802.11n-20MBW 14.4Mbps) – Dipole Antenna

Channel No.	Frequency (MHz)	Chain	PPSD/MHz (dBm)	Total PPSD/MHz (dBm)	Limit (dBm)	Result
01	2412.000	A	2.110	5.120	≤ 6.6 dBm	Pass
		B	1.850	4.860	≤ 6.6 dBm	Pass
06	2437.000	A	1.980	4.990	≤ 6.6 dBm	Pass
		B	1.870	4.880	≤ 6.6 dBm	Pass
11	2462.000	A	2.920	5.930	≤ 6.6 dBm	Pass
		B	2.610	5.620	≤ 6.6 dBm	Pass

Note :

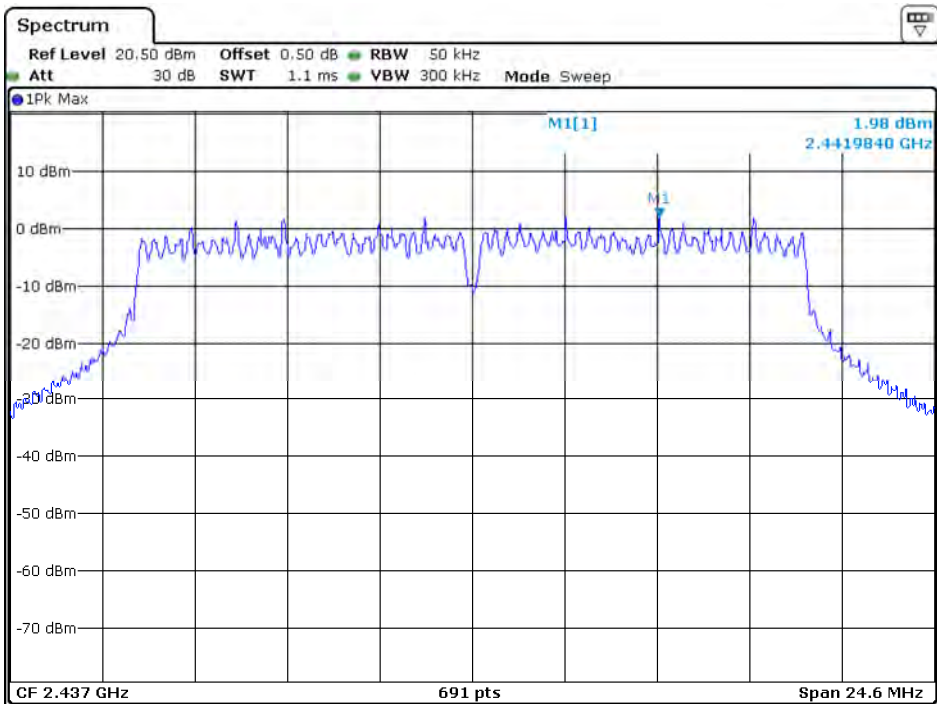
The quantity $10 \cdot \log 2$ (two antennas) is added to the spectrum peak value according to document 662911 D01.

Figure Channel 1: (Chain A)



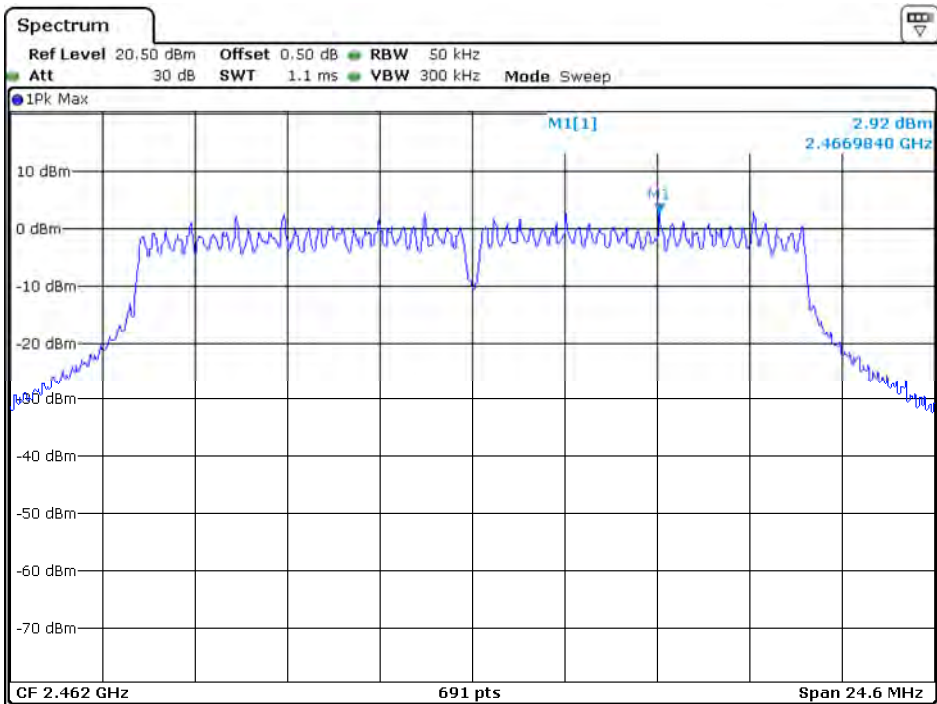
Date: 20.FEB.2021 04:51:57

Figure Channel 6: (Chain A)



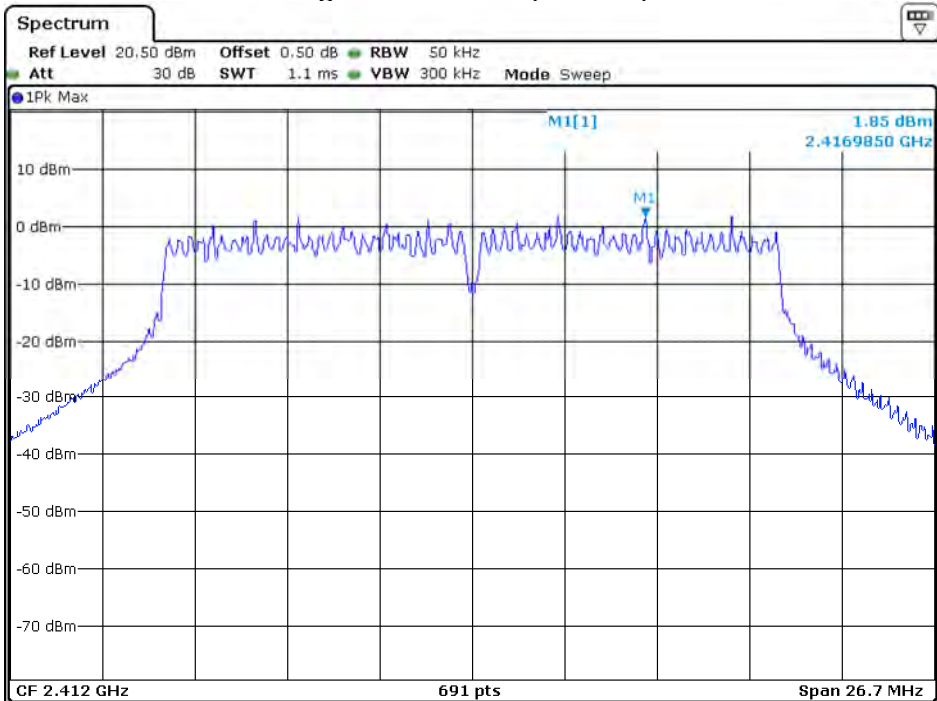
Date: 20.FEB.2021 04:54:33

Figure Channel 11: (Chain A)



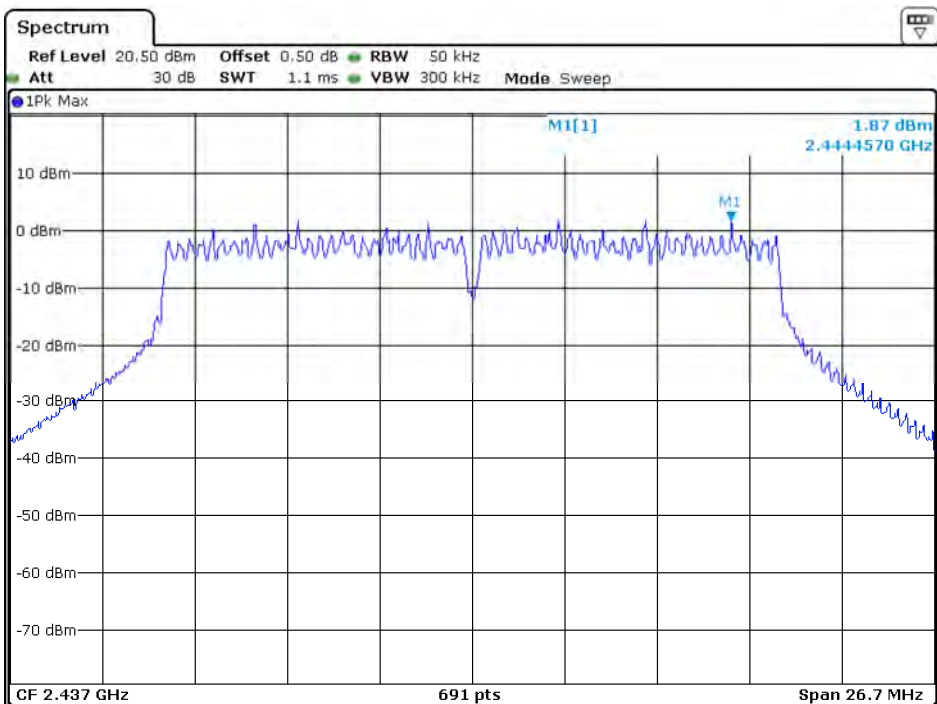
Date: 20.FEB.2021 04:55:50

Figure Channel 1: (Chain B)



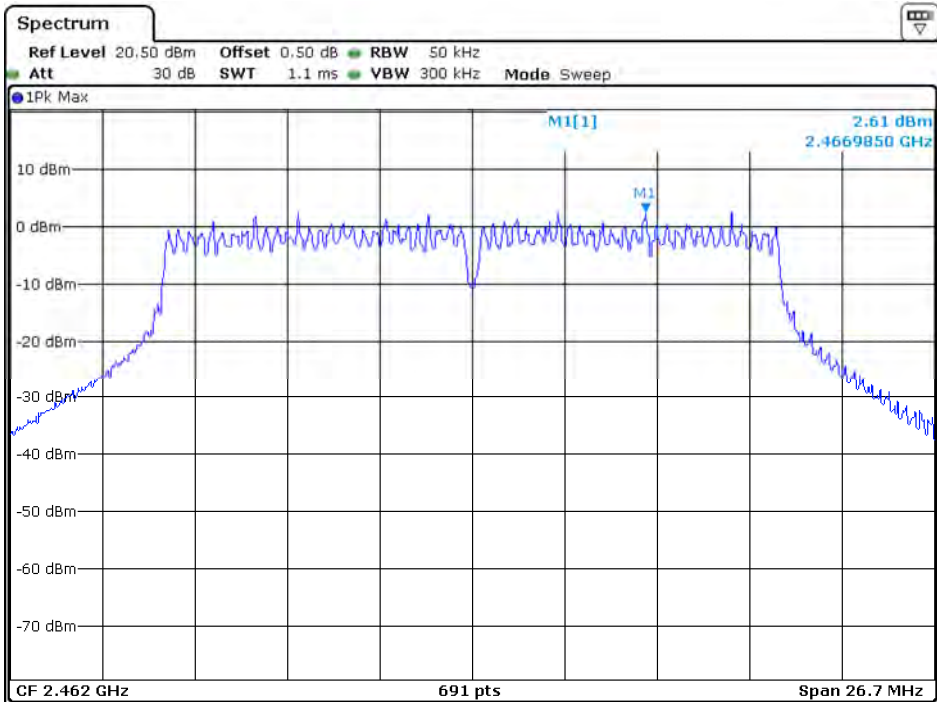
Date: 20.FEB.2021 06:58:01

Figure Channel 6: (Chain B)



Date: 20.FEB.2021 06:59:28

Figure Channel 11: (Chain B)



Date: 20.FEB.2021 07:01:38

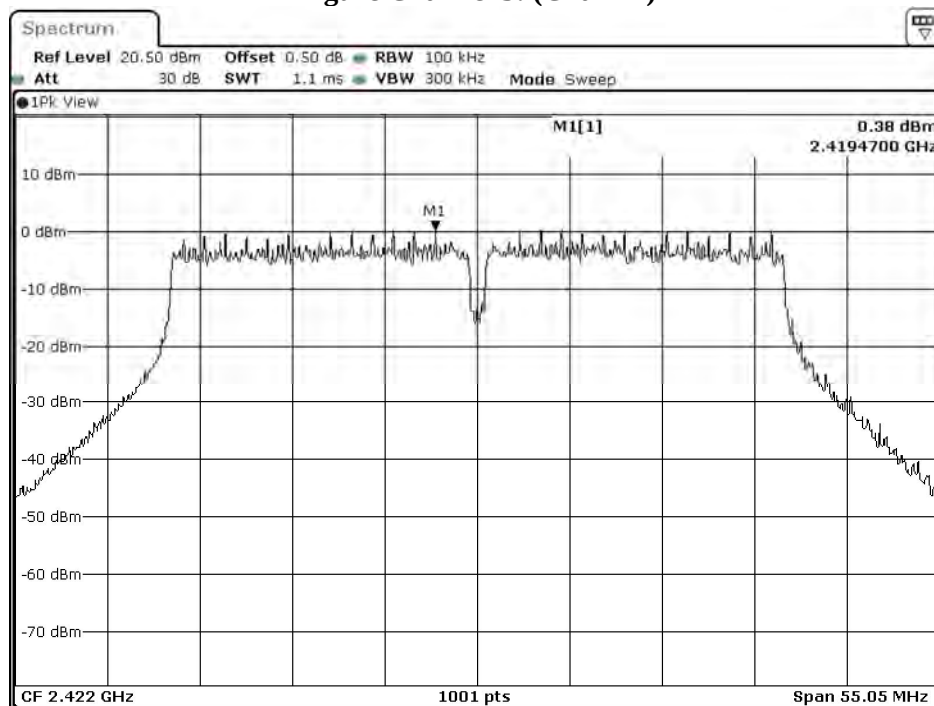
Product : Wireless module
 Test Item : Power Density Data
 Test Mode : Mode 4: Transmit (802.11n-40MBW 30Mbps) – Dipole Antenna

Channel No.	Frequency (MHz)	Chain	PPSD/MHz (dBm)	Total PPSD/MHz (dBm)	Limit (dBm)	Result
03	2422.000	A	0.380	3.390	$\leq 6.6\text{dBm}$	Pass
		B	0.310	3.320	$\leq 6.6\text{dBm}$	Pass
06	2437.000	A	1.460	4.470	$\leq 6.6\text{dBm}$	Pass
		B	1.360	4.370	$\leq 6.6\text{dBm}$	Pass
09	2452.000	A	1.680	4.690	$\leq 6.6\text{dBm}$	Pass
		B	1.410	4.420	$\leq 6.6\text{dBm}$	Pass

Note :

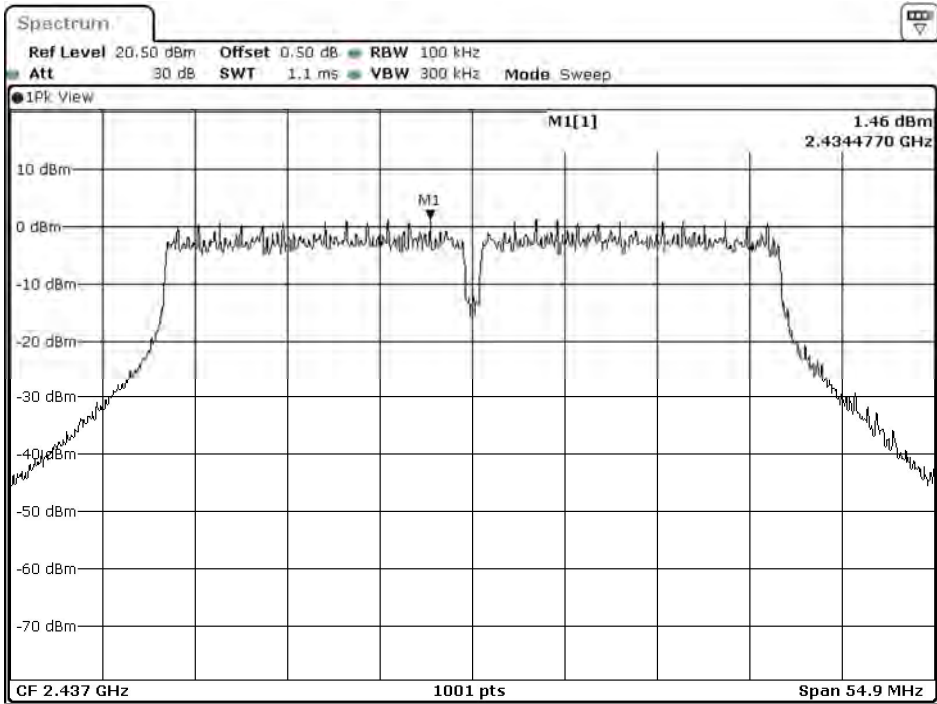
The quantity $10 \cdot \log 2$ (two antennas) is added to the spectrum peak value according to document 662911 D01.

Figure Channel 3: (Chain A)



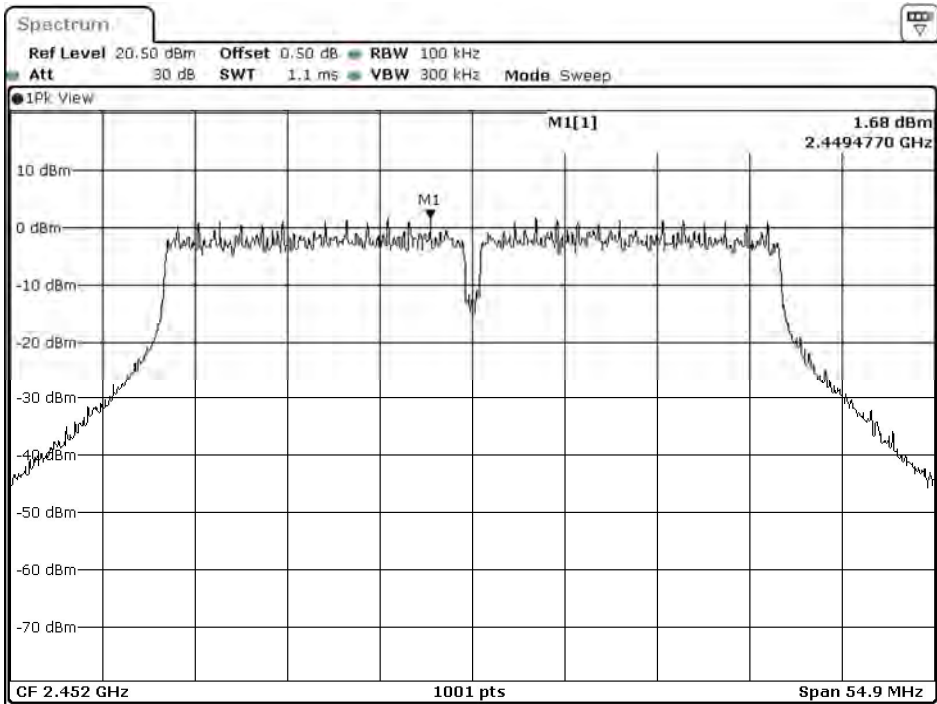
Date: 19.FEB.2021 08:56:38

Figure Channel 6: (Chain A)



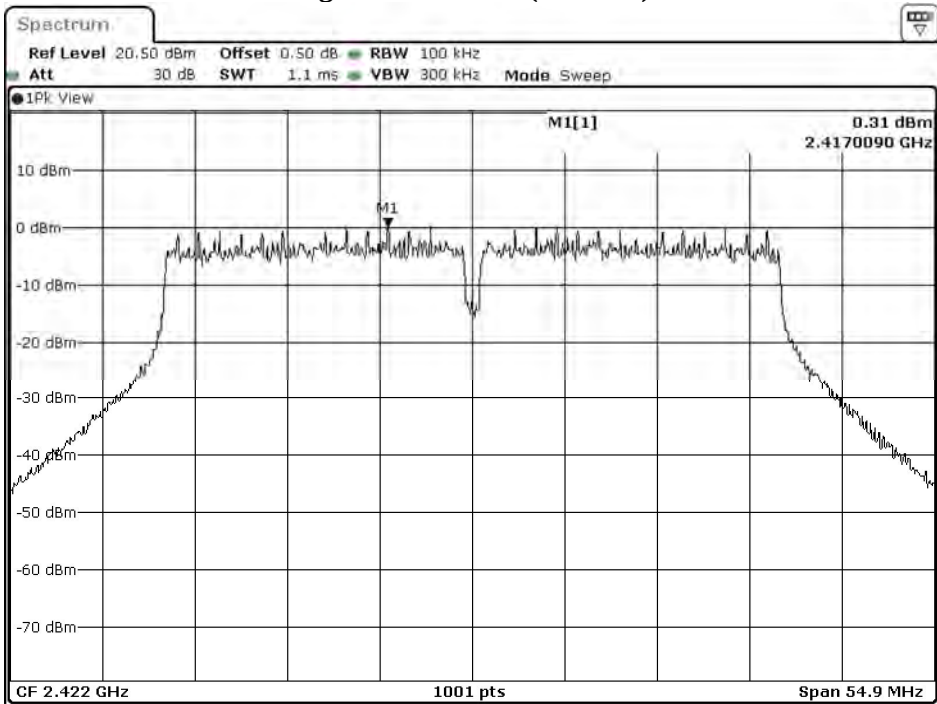
Date: 19.FEB.2021 08:59:17

Figure Channel 9: (Chain A)



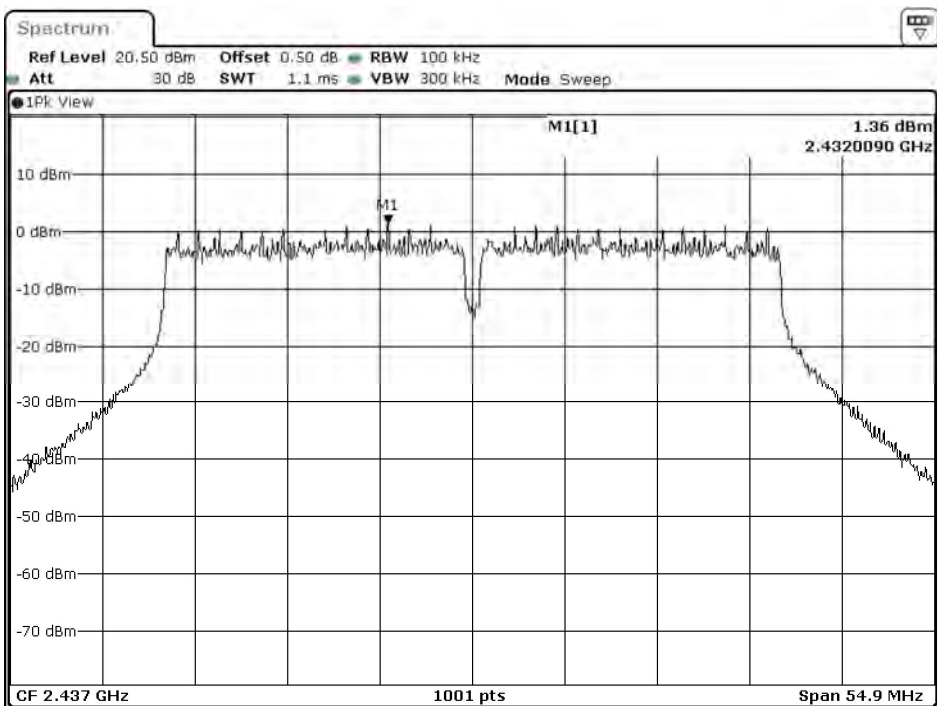
Date: 19.FEB.2021 09:01:51

Figure Channel 3: (Chain B)



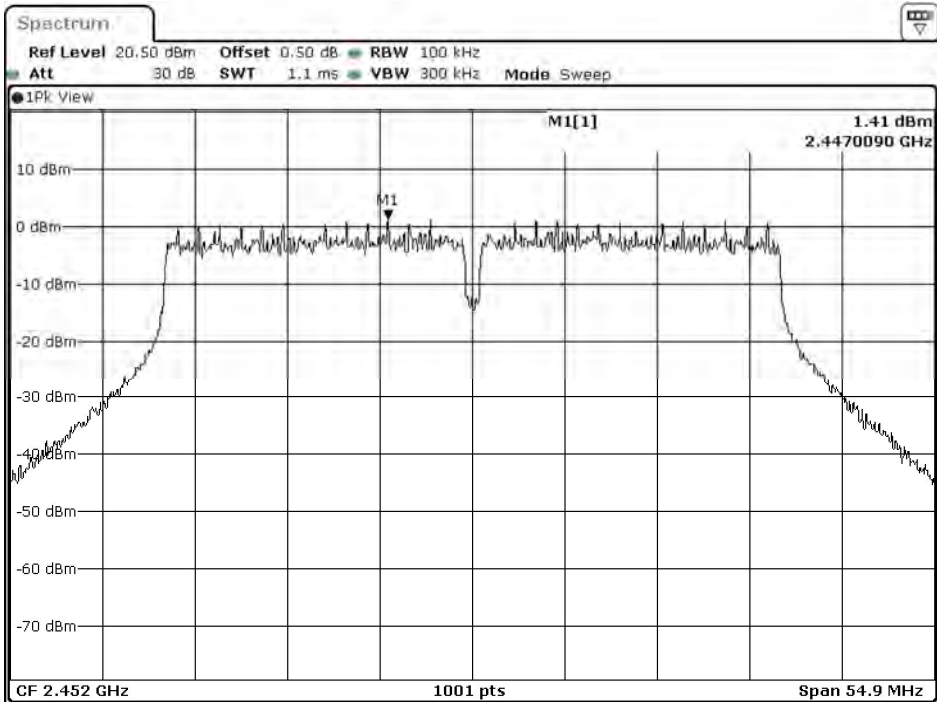
Date: 19.FEB.2021 11:02:03

Figure Channel 6: (Chain B)



Date: 19.FEB.2021 11:04:43

Figure Channel 9: (Chain B)

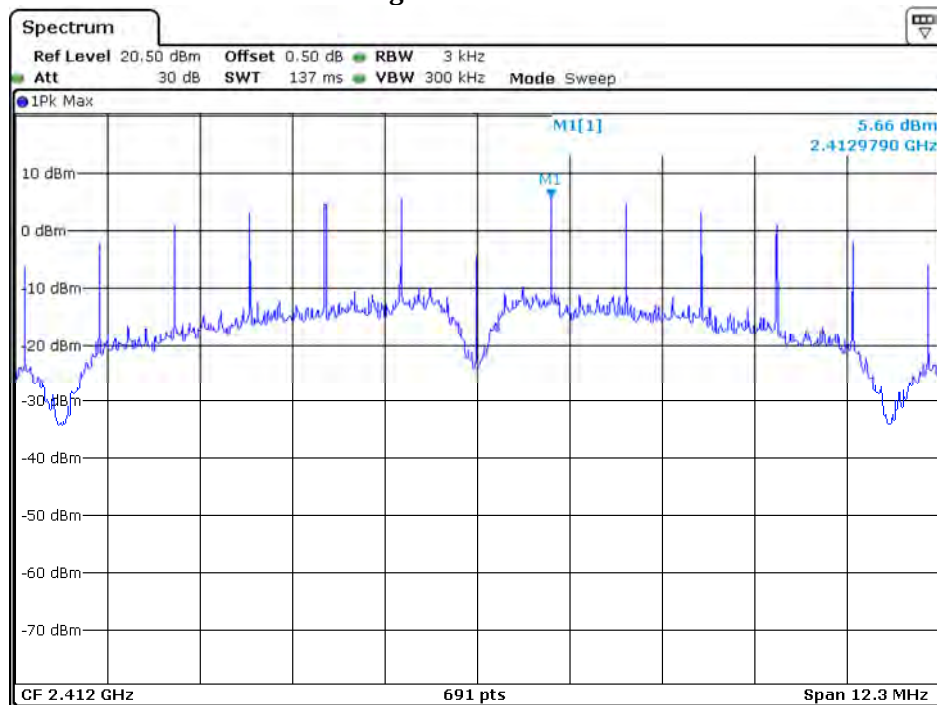


Date: 19.FEB.2021 11:07:16

Product : Wireless module
 Test Item : Power Density Data
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) – Panel Antenna

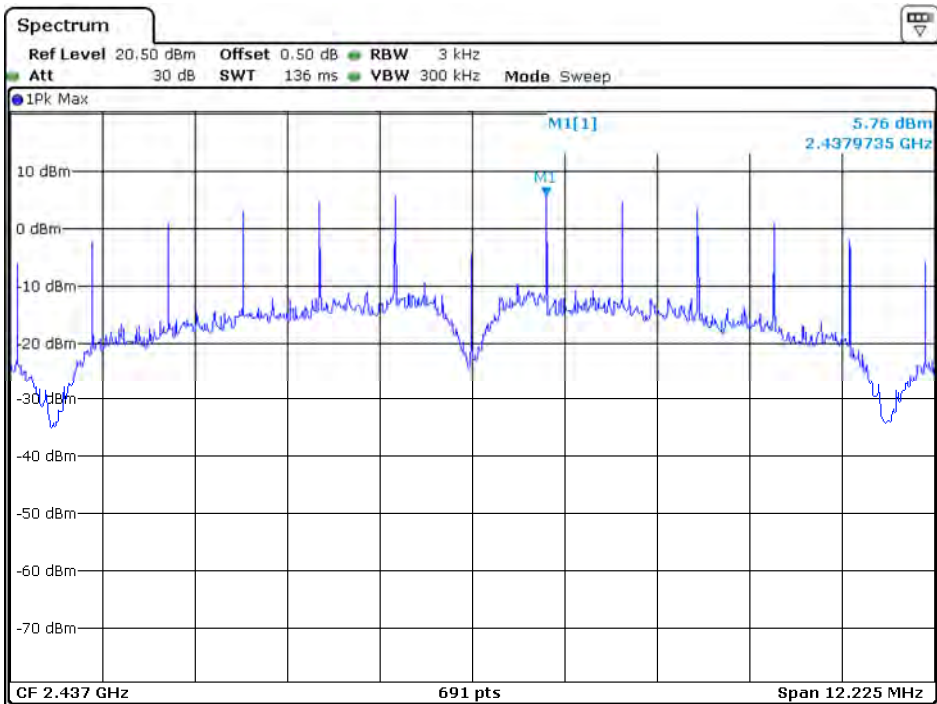
Channel No.	Frequency (MHz)	PPSD/MHz (dBm)	Limit (dBm)	Result
01	2412.000	5.660	≤ 6 dBm	Pass
06	2437.000	5.760	≤ 6 dBm	Pass
11	2462.000	5.690	≤ 6 dBm	Pass

Figure Channel 1:



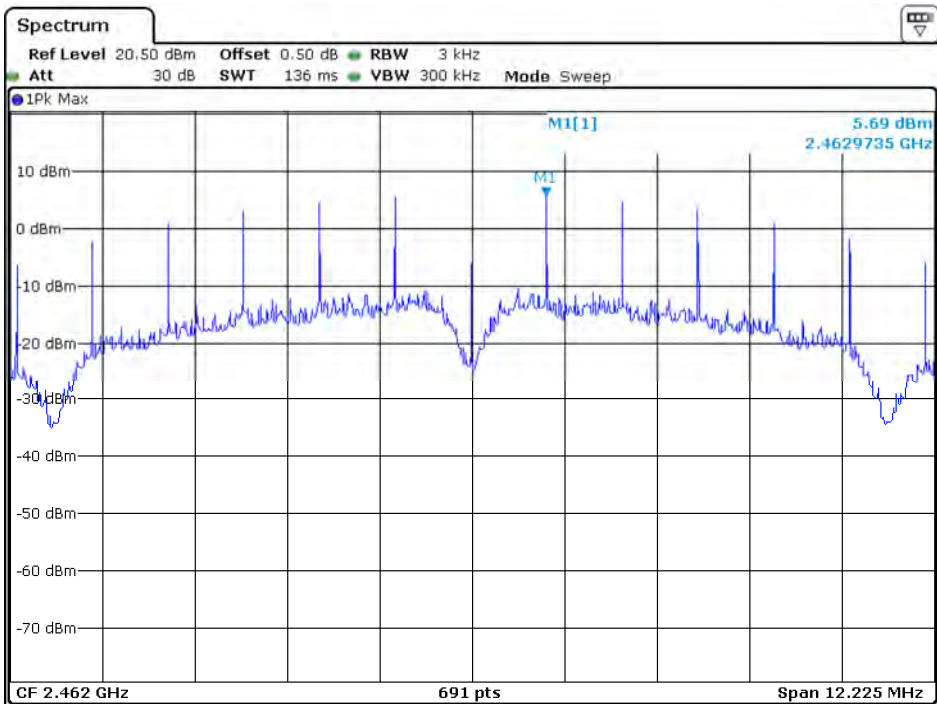
Date: 20.FEB.2021 04:12:04

Figure Channel 6:



Date: 20.FEB.2021 04:24:22

Figure Channel 11:

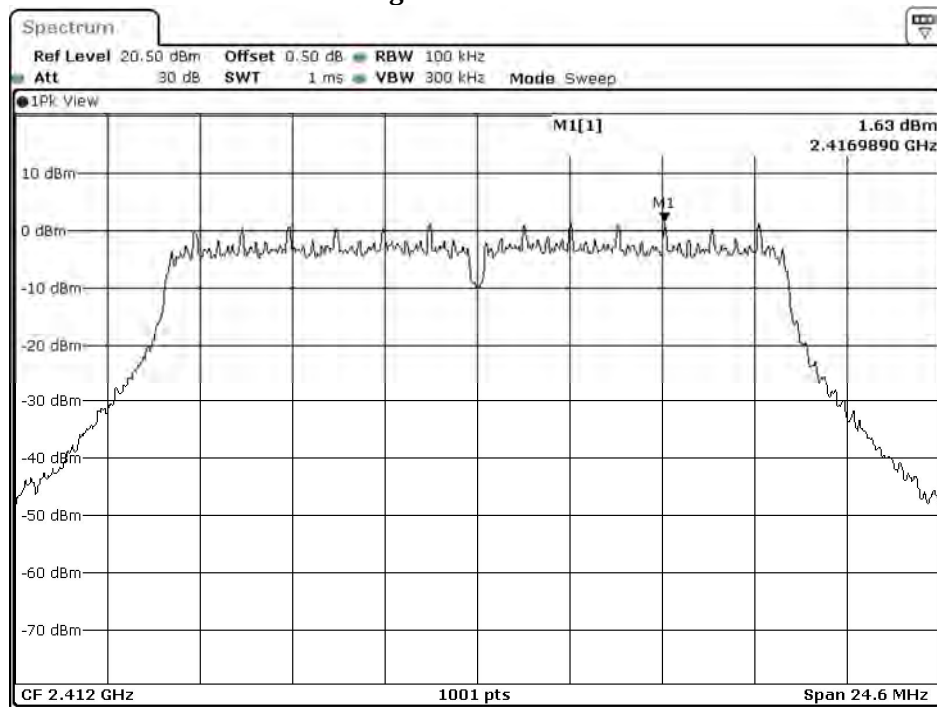


Date: 20.FEB.2021 04:31:52

Product : Wireless module
 Test Item : Power Density Data
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) – Panel Antenna

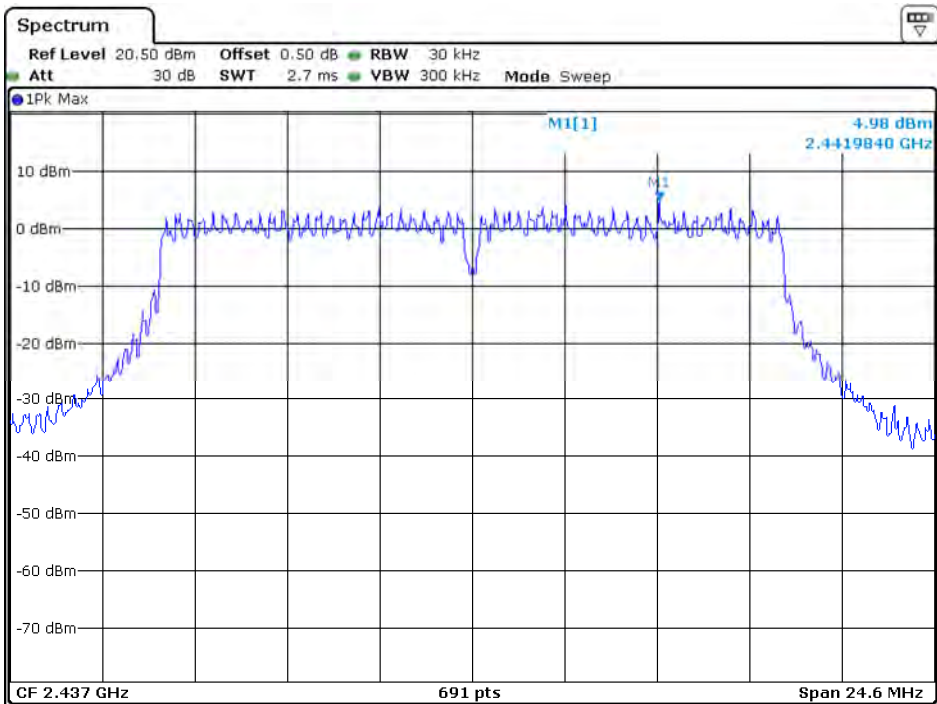
Channel No.	Frequency (MHz)	PPSD/MHz (dBm)	Limit (dBm)	Result
01	2412.000	1.630	≤ 6 dBm	Pass
06	2437.000	4.980	≤ 6 dBm	Pass
11	2462.000	1.400	≤ 6 dBm	Pass

Figure Channel 1:



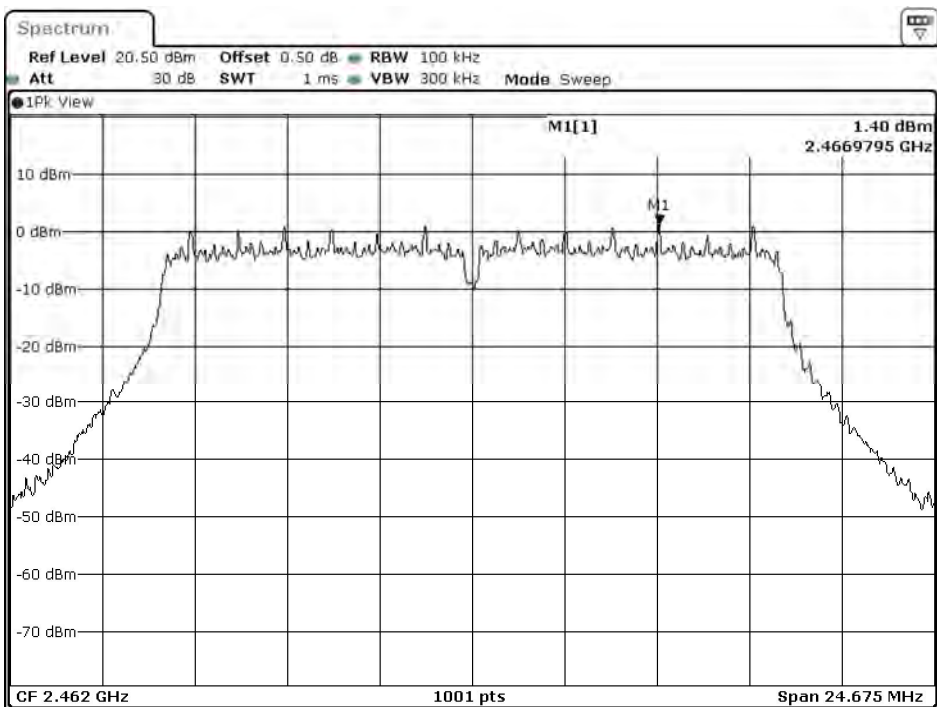
Date: 20.FEB.2021 01:19:14

Figure Channel 6:



Date: 20.FEB.2021 03:35:07

Figure Channel 11:



Date: 20.FEB.2021 01:26:19

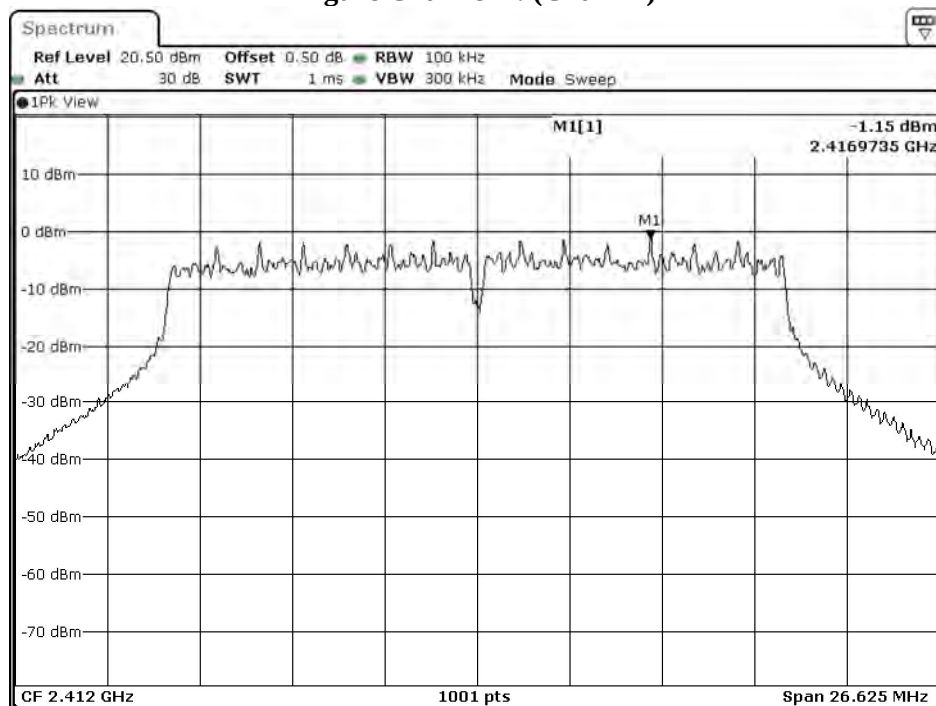
Product : Wireless module
 Test Item : Power Density Data
 Test Mode : Mode 3: Transmit (802.11n-20MBW 14.4Mbps) – Panel Antenna

Channel No.	Frequency (MHz)	Chain	PPSD/MHz (dBm)	Total PPSSD/MHz (dBm)	Limit (dBm)	Result
01	2412.000	A	-1.150	1.860	≤ 6 dBm	Pass
		B	-1.530	1.480	≤ 6 dBm	Pass
06	2437.000	A	1.400	4.410	≤ 6 dBm	Pass
		B	1.390	4.400	≤ 6 dBm	Pass
11	2462.000	A	-0.700	2.310	≤ 6 dBm	Pass
		B	-0.910	2.100	≤ 6 dBm	Pass

Note :

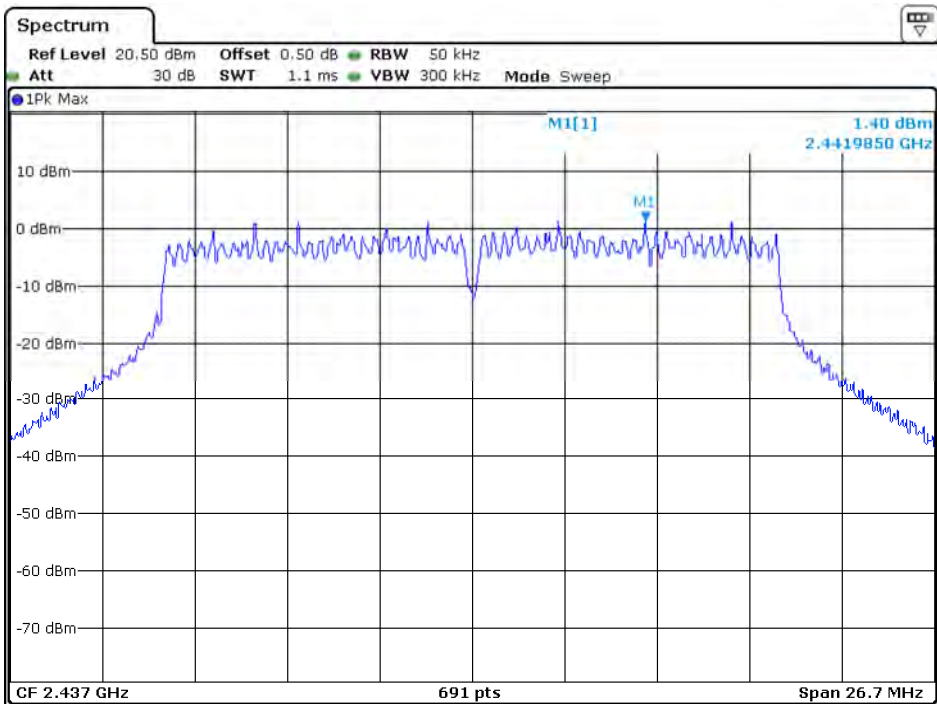
The quantity $10 \cdot \log 2$ (two antennas) is added to the spectrum peak value according to document 662911 D01.

Figure Channel 1: (Chain A)



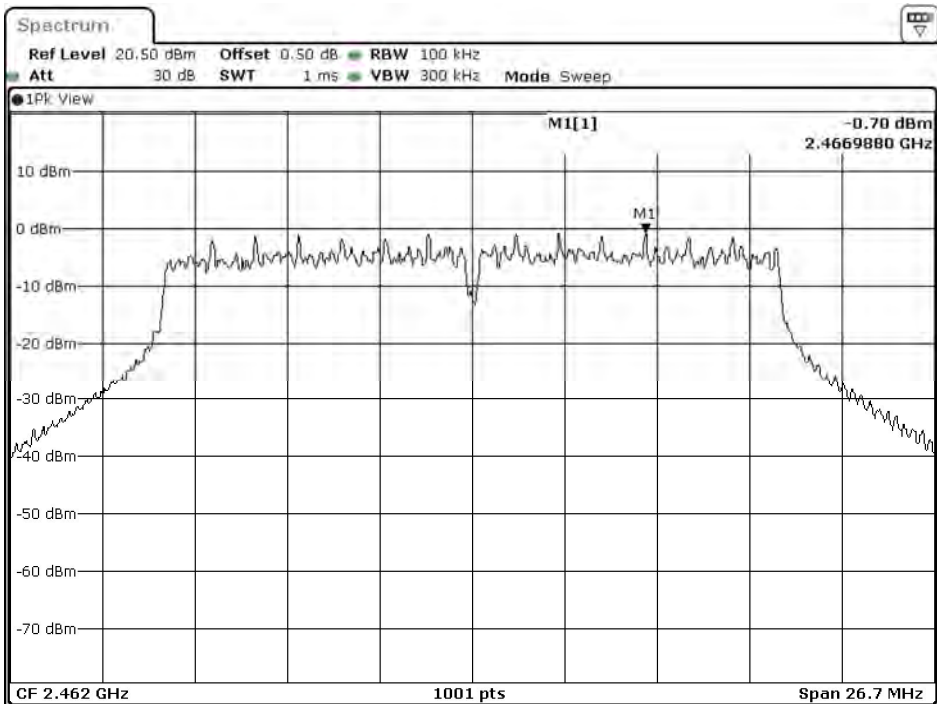
Date: 20.FEB.2021 01:30:48

Figure Channel 6: (Chain A)



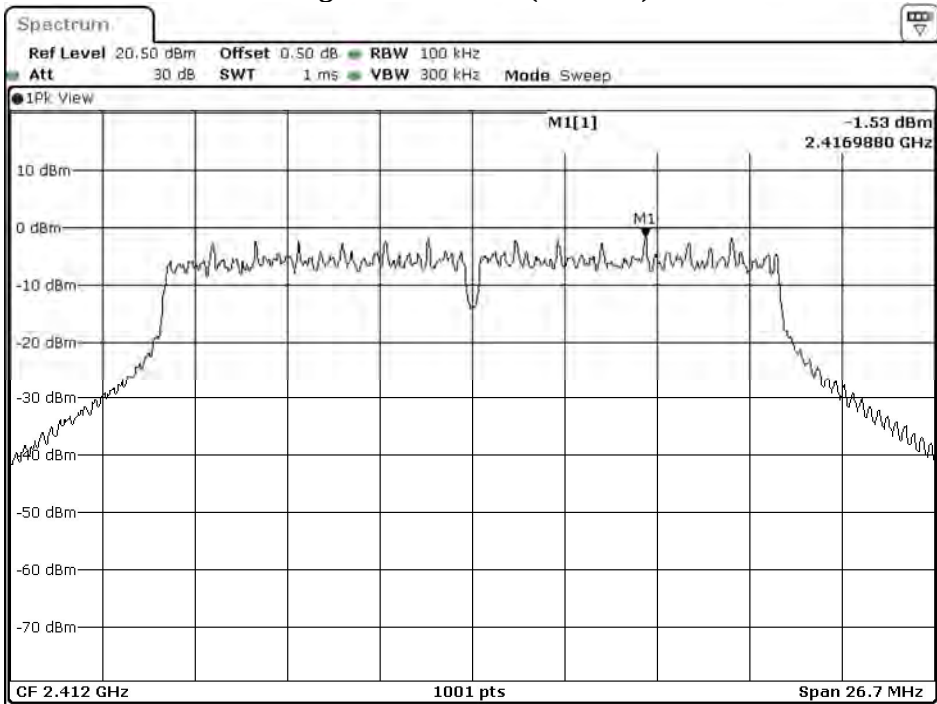
Date: 20.FEB.2021 03:27:03

Figure Channel 11: (Chain A)



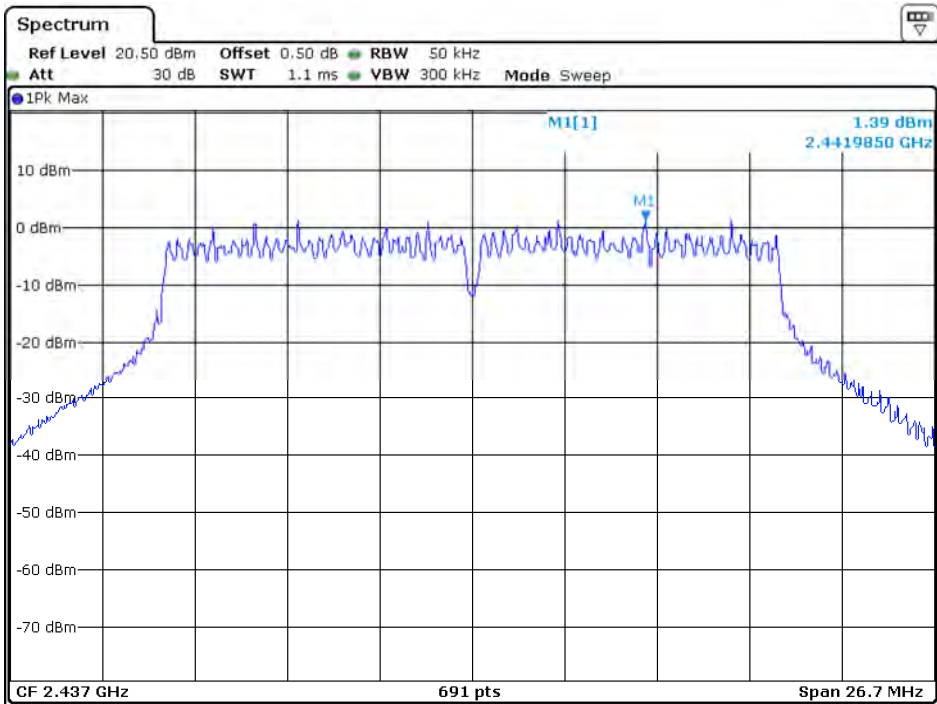
Date: 20.FEB.2021 01:36:28

Figure Channel 1: (Chain B)



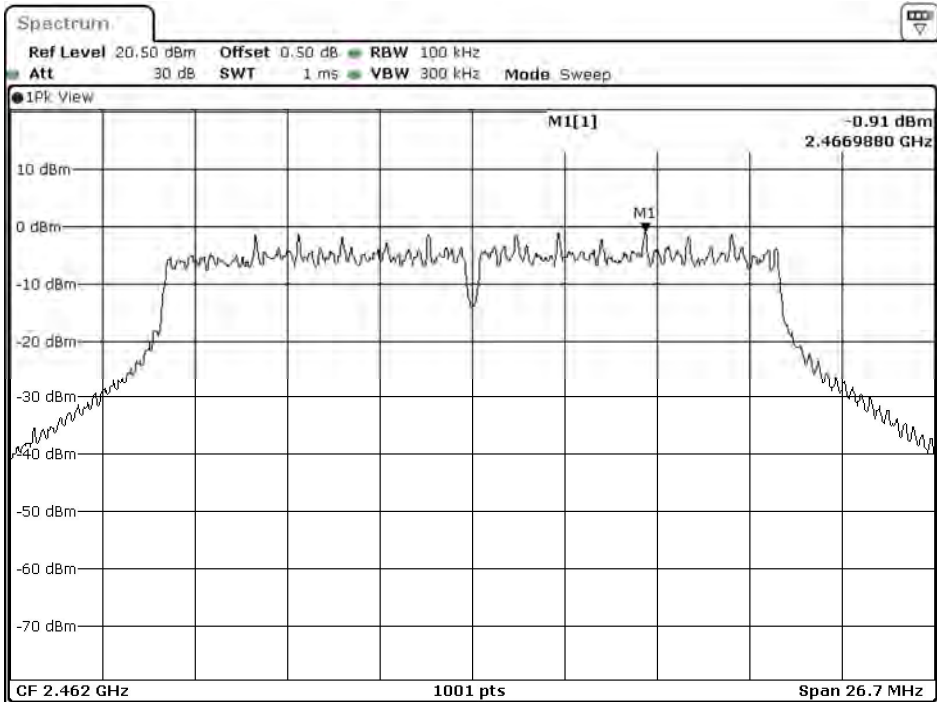
Date: 20.FEB.2021 03:36:13

Figure Channel 6: (Chain B)



Date: 20.FEB.2021 05:35:11

Figure Channel 11: (Chain B)



Date: 20.FEB.2021 03:41:53

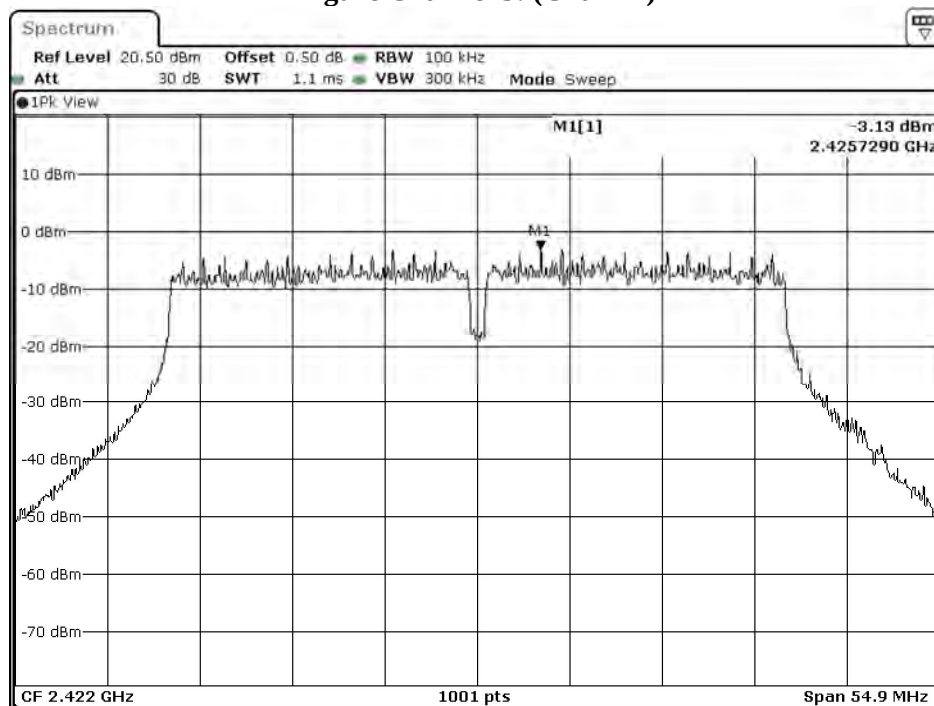
Product : Wireless module
 Test Item : Power Density Data
 Test Mode : Mode 4: Transmit (802.11n-40MBW 30Mbps) – Panel Antenna

Channel No.	Frequency (MHz)	Chain	PPSD/MHz (dBm)	Total PSD/MHz (dBm)	Limit (dBm)	Result
03	2422.000	A	-3.130	-0.120	≤ 6 dBm	Pass
		B	-3.710	-0.700	≤ 6 dBm	Pass
06	2437.000	A	0.960	3.970	≤ 6 dBm	Pass
		B	0.830	3.840	≤ 6 dBm	Pass
09	2452.000	A	-3.360	-0.350	≤ 6 dBm	Pass
		B	-3.730	-0.720	≤ 6 dBm	Pass

Note :

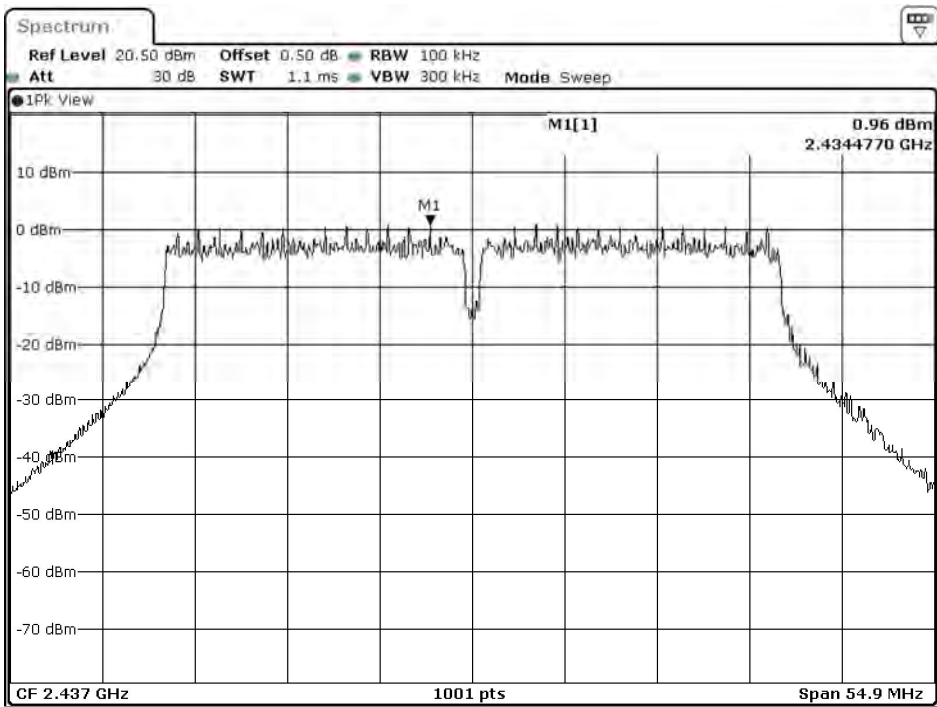
The quantity $10 \cdot \log 2$ (two antennas) is added to the spectrum peak value according to document 662911 D01.

Figure Channel 3: (Chain A)



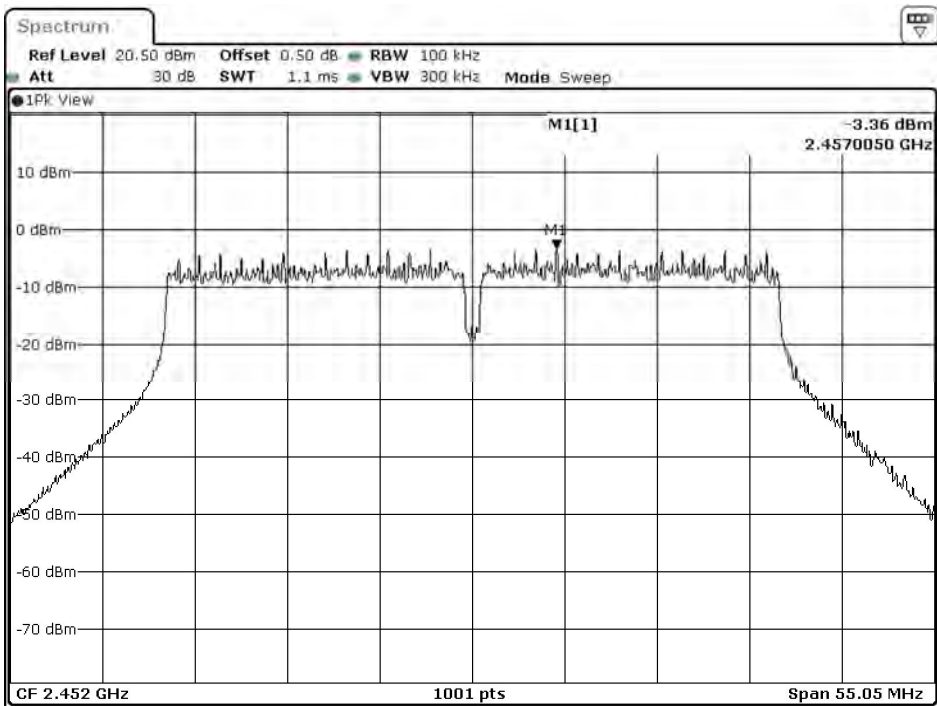
Date: 20.FEB.2021 01:39:21

Figure Channel 6: (Chain A)



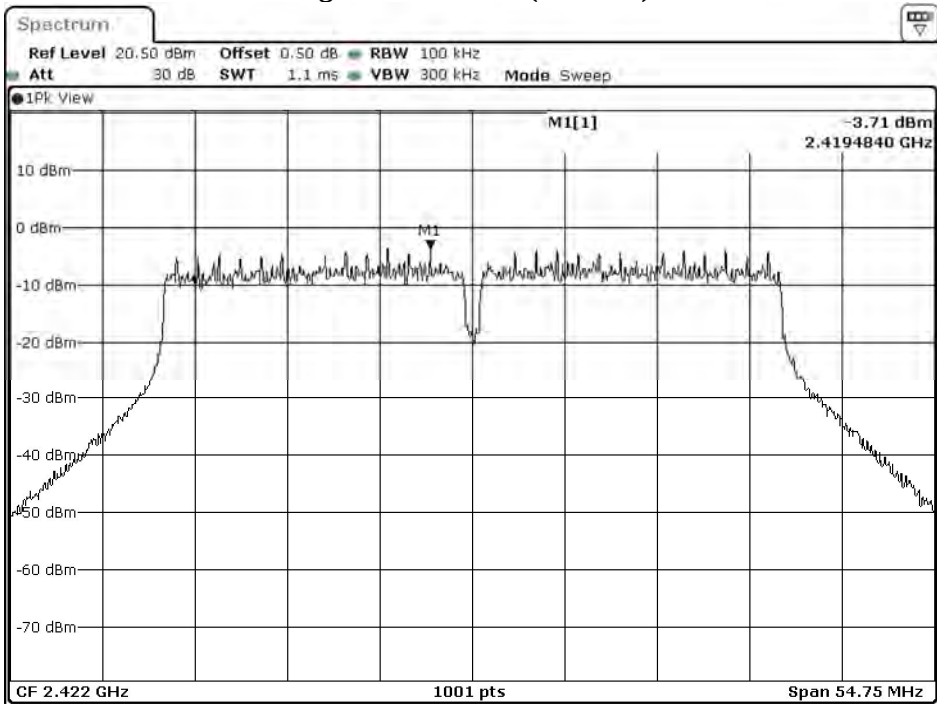
Date: 20.FEB.2021 01:49:02

Figure Channel 9: (Chain A)



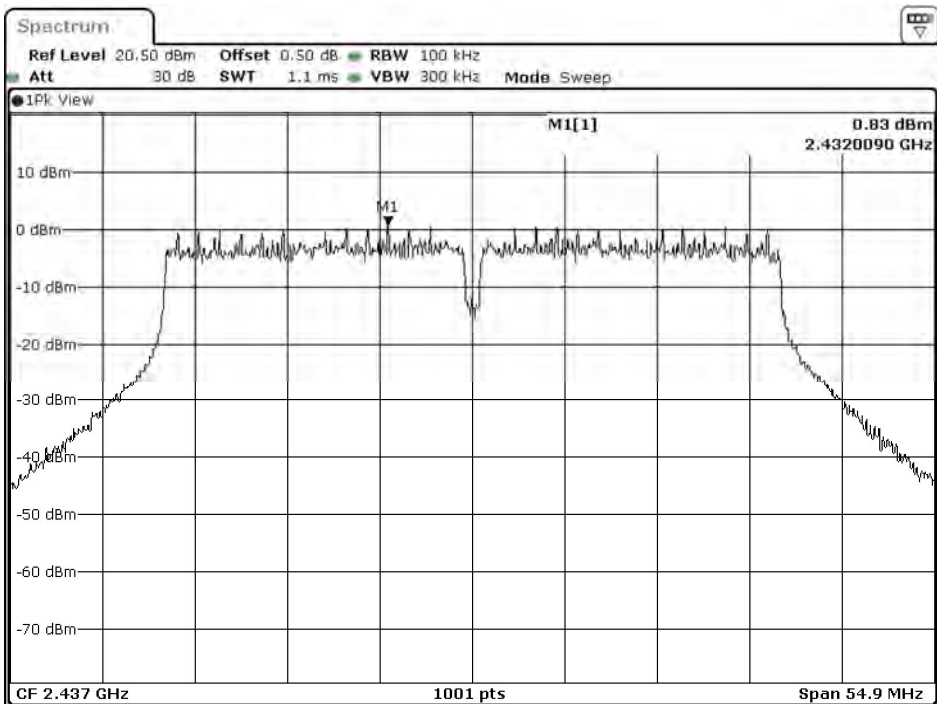
Date: 20.FEB.2021 01:52:41

Figure Channel 3: (Chain B)



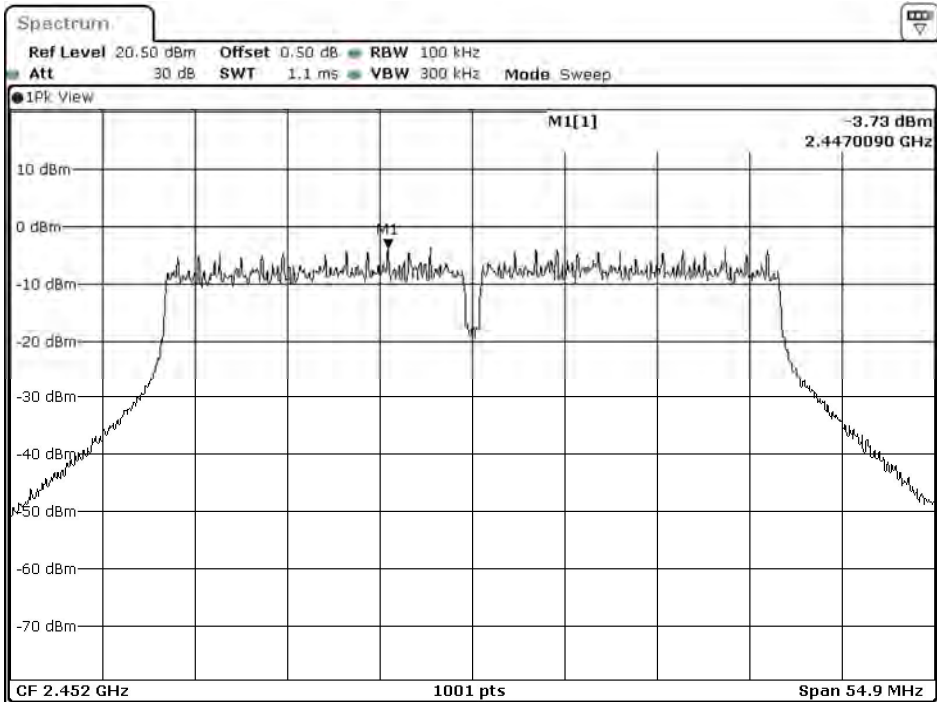
Date: 20.FEB.2021 03:44:46

Figure Channel 6: (Chain B)



Date: 20.FEB.2021 03:54:27

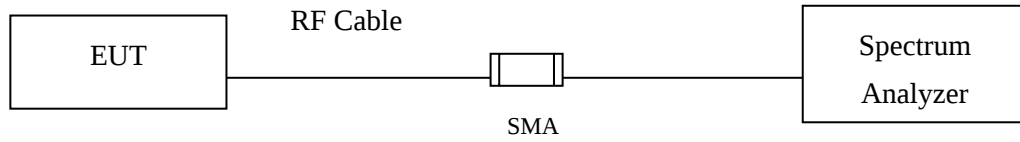
Figure Channel 9: (Chain B)



Date: 20.FEB.2021 03:58:06

9. Duty Cycle

9.1. Test Setup



9.2. Test Procedure

The EUT was setup according to ANSI C63.10 2013; tested according to ANSI C63.10 2013 for compliance to FCC 47CFR 15.247 requirements.

9.3. Test Result of Duty Cycle

Product : Wireless module
Test Item : Duty Cycle
Test Mode : Transmit

Duty Cycle Formula:

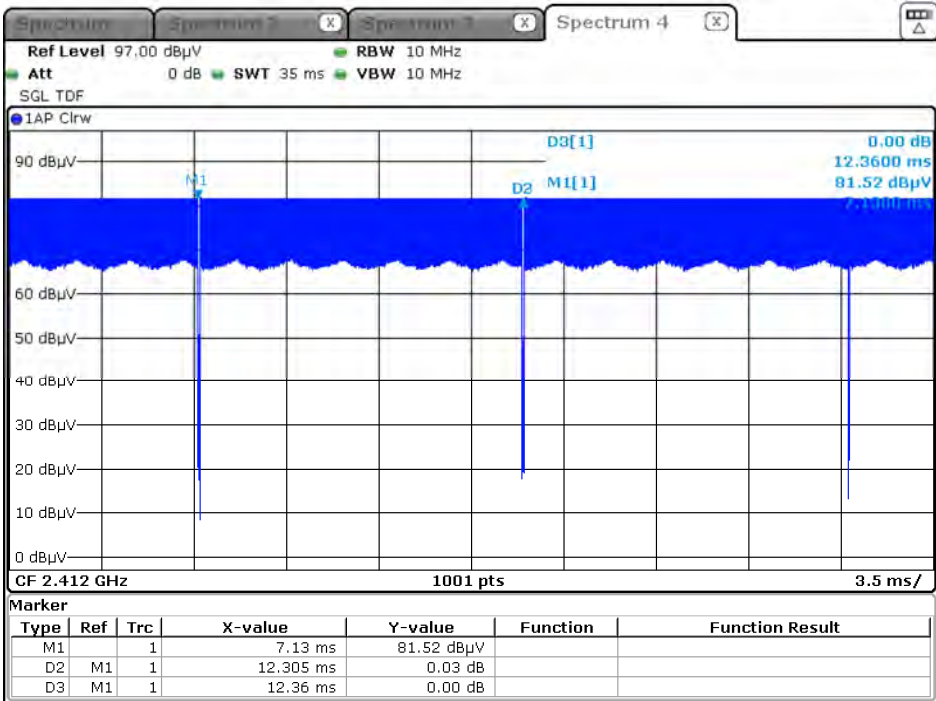
$\text{Duty Cycle} = \text{Ton} / (\text{Ton} + \text{Toff})$

$\text{Duty Factor} = 10 \text{ Log } (1/\text{Duty Cycle})$

Results:

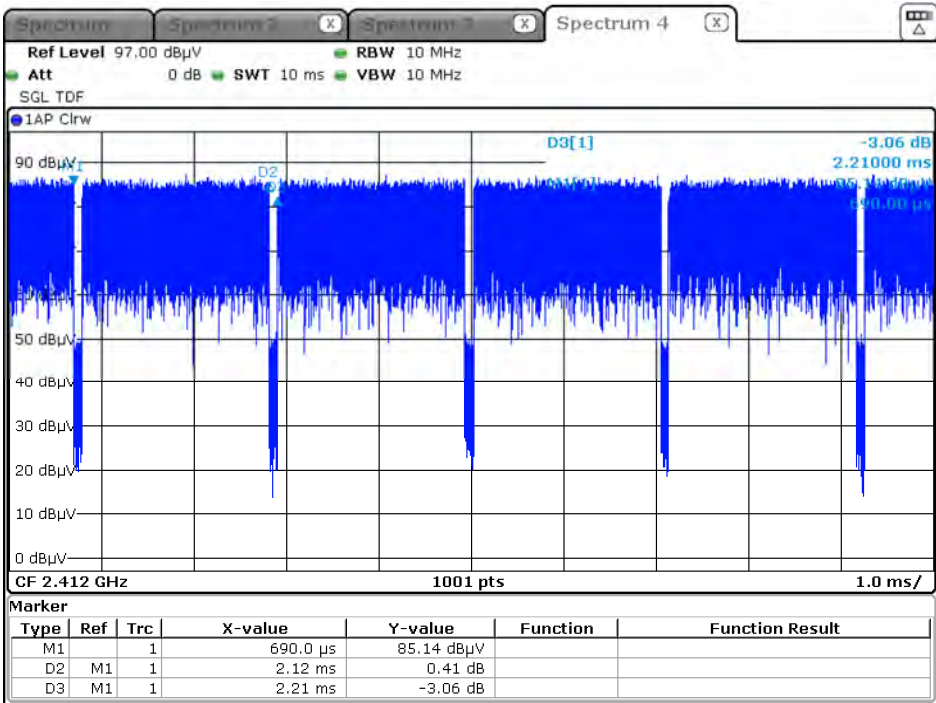
2.4GHz band	Ton (ms)	Ton + Toff (ms)	Duty Cycle (%)	Duty Factor (dB)
802.11 b	12.3050	12.3600	99.56	0.02
802.11 g	2.1200	2.2100	95.93	0.18
802.11 n20	2.6000	2.6800	97.01	0.13
802.11 n40	1.3150	1.4000	93.93	0.27

802.11b



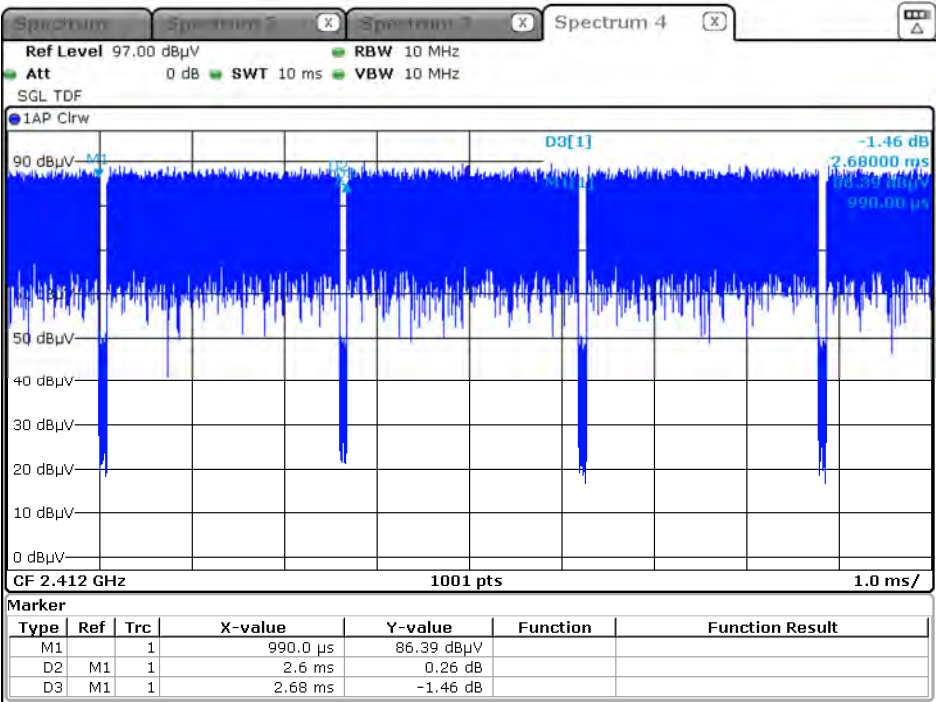
Date: 3.FEB.2021 13:12:02

802.11g



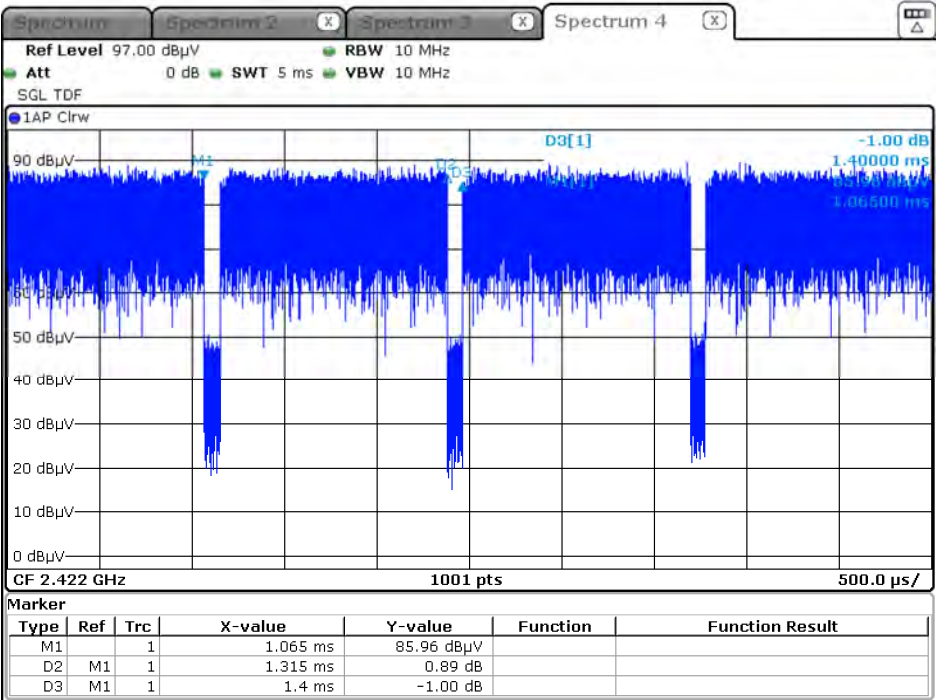
Date: 3.FEB.2021 13:10:31

802.11n20



Date: 3.FEB.2021 13:14:03

802.11n40



Date: 3.FEB.2021 13:31:44

10. EMI Reduction Method During Compliance Testing

No modification was made during testing.