

WLAN Signal Check with Spectrum Analyzer-BP-CC335

System Version

EVM Module : BP-CC3351

WLAN Chipset : XCC3301ENJA

SimpleLink Wi-Fi Tool Version : 4.2.2

Radio Tool
2.3.8

Device Connection Interface
XDS110

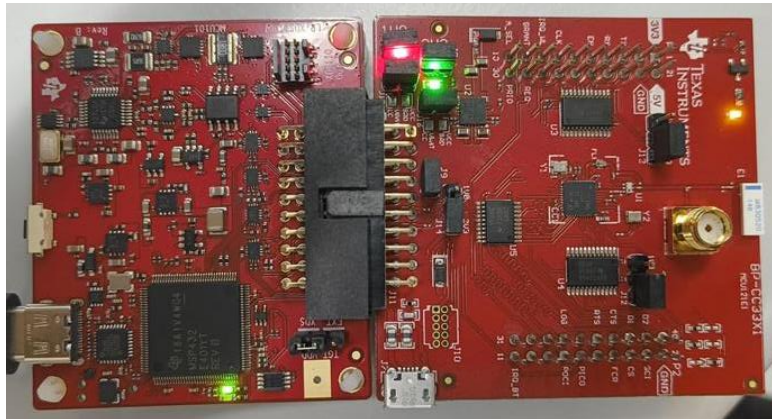
XDS110 Serial Number
LS4204PJ

Device Part Number
CC3301

Device Region
FCC / Canada

Containers Load
Load Default Containers

Start



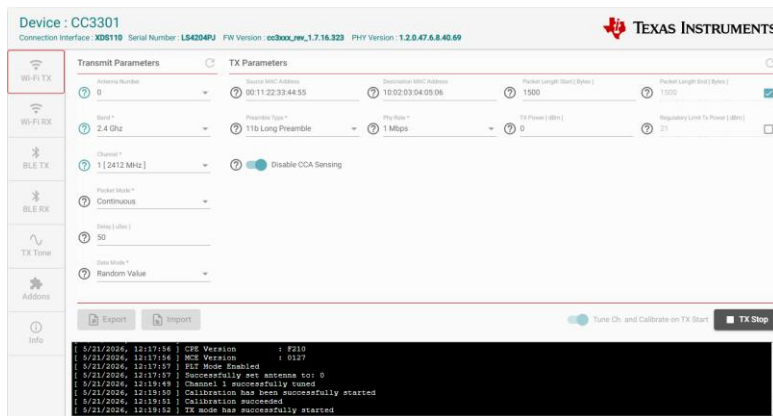
AIM : To measure the 2.4Ghz 802.11b/g/n/ax and BLE waveform using SimpleLink Wi-Fi tool box in spectrum analyser.

Observation :

- 1) In 2.4 GHz Wi-Fi, while increasing the transmit power using the calibration tool, the transmitted signal bandwidth is also increasing.

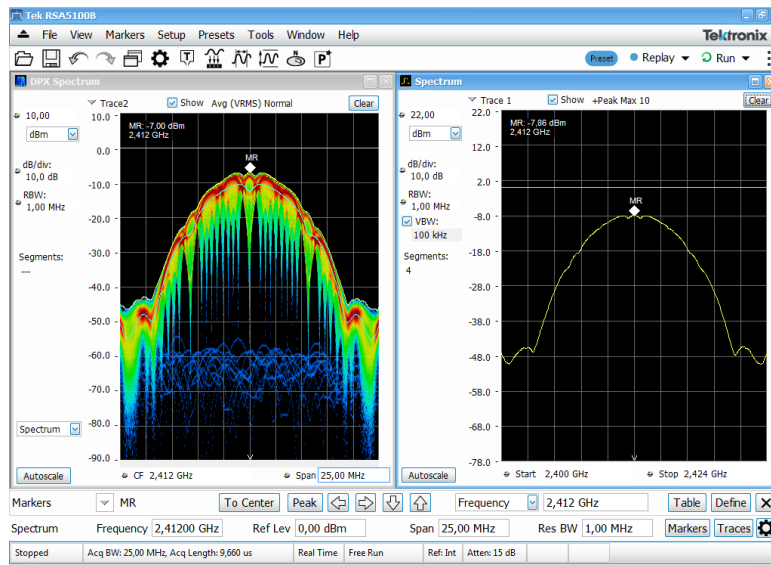
Test 1 : 2.4Ghz 802.11b, Channel1, Datarate 1Mbps, TX power 0dbm, 5dbm, 10dbm, 15dbm

Commands:

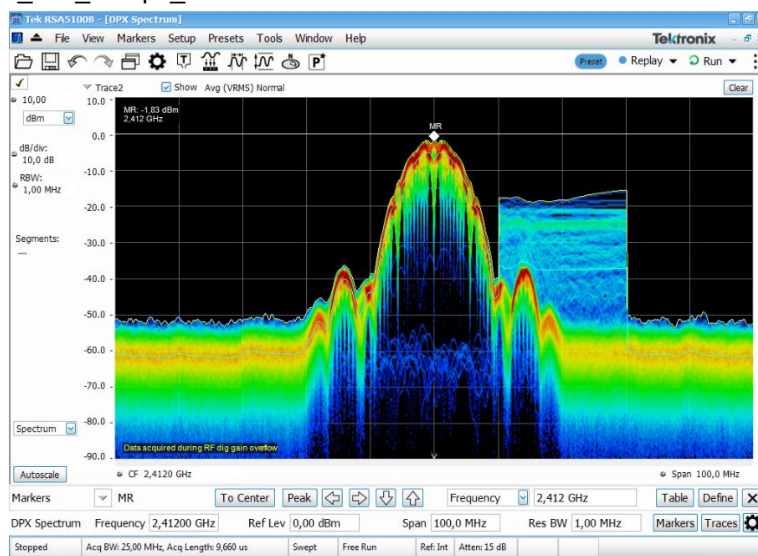


Waveforms:

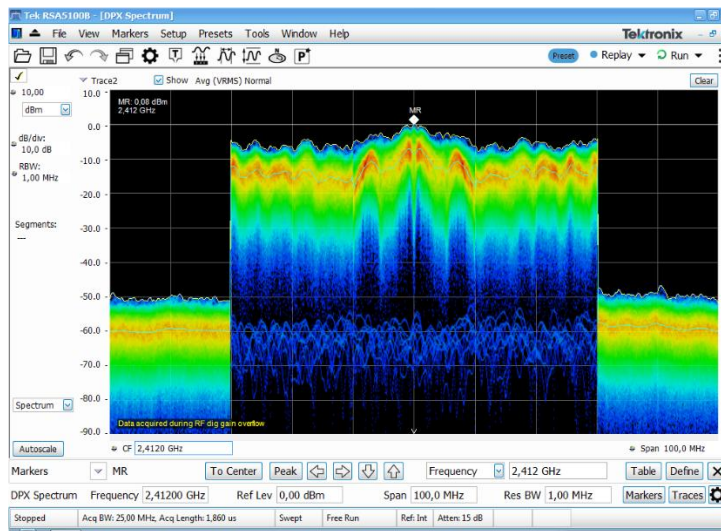
b_ch1_1Mbps_0dbm



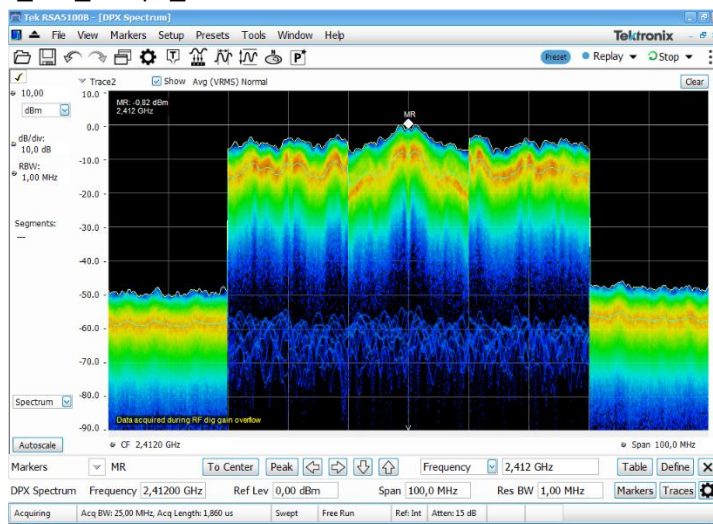
b_ch1_1Mbps_5dbm



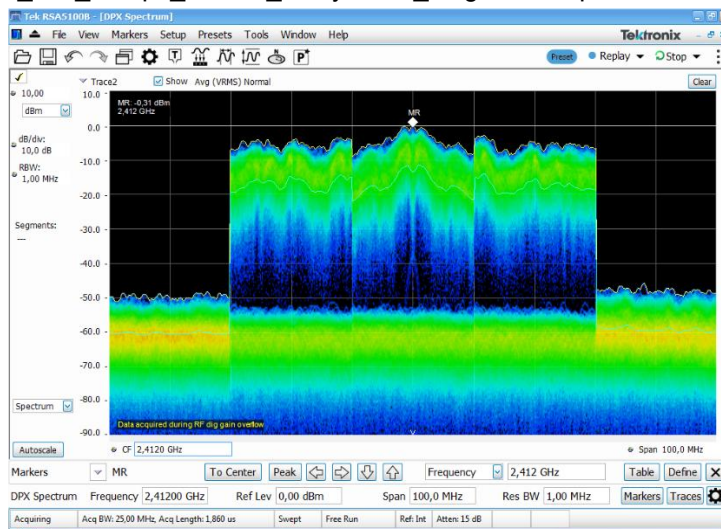
b_ch1_1Mbps_10dbm



b_ch1_1Mbps_15dbm



b_ch1_1Mbps_15dbm_delay-1800_length const packet-100



Test 2 : 2.4Ghz 802.11g, Channel1, Datarate 6Mbps, TX power -10dbm, 0dbm, 5dbm, 10dbm, 20dbm

Commands:

Device : CC3301
Connection Interface : XD5110 Serial Number : LS4204PJ FW Version : cc3300_rev_1.7.16.323 PHY Version : 1.2.0.47.6.8.40.69

TEXAS INSTRUMENTS

Wi-Fi TX

Wi-Fi RX

BLE TX

BLE RX

TX Tone

Addons

Info

Transmit Parameters

Antenna Number
0

Band *
2.4 GHz

Channel *
1 [2412 MHz]

Packet Mode *
Continuous

Delay [dBm]
50

Data Mode *
Random Value

TX Parameters

Source MAC Address
00:11:22:33:44:55

Preamble Type *
11ag Legacy OFDM

Destination MAC Address
10:02:03:04:05:06

Phy Rate *
6 Mbps

Packet Length Start [Bytes]
1500

TX Power [dBm]
0

Packet Length End [Bytes]
1500

Regulatory Limit Tx Power [dBm]
21

Disable CCA Sensing

Export

Import

Tune Ch. and Calibrate on TX Start

TX Start

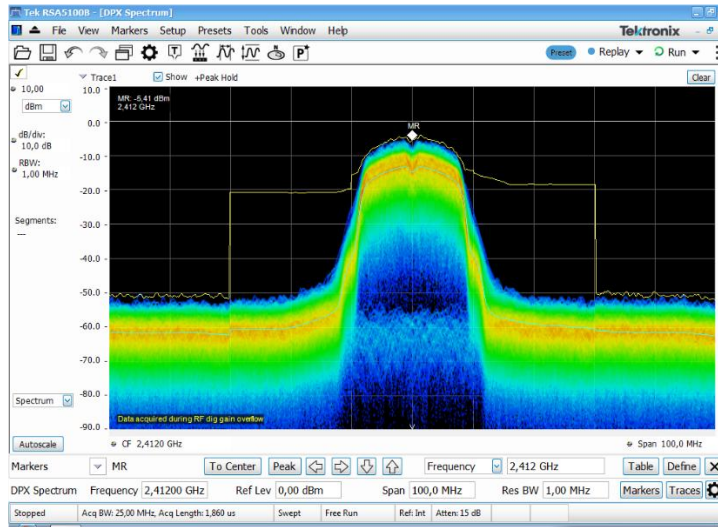
[5/21/2026, 12:28:04] Calibration succeeded
[5/21/2026, 12:28:05] TX mode has successfully started
[5/21/2026, 12:30:05] TX mode has been successfully stopped
[5/21/2026, 12:30:51] Channel 1 successfully tuned
[5/21/2026, 12:30:51] Calibration has been successfully started
[5/21/2026, 12:30:52] Calibration succeeded
[5/21/2026, 12:30:53] TX mode has successfully started
[5/21/2026, 12:31:30] TX mode has been successfully stopped

Waveforms:

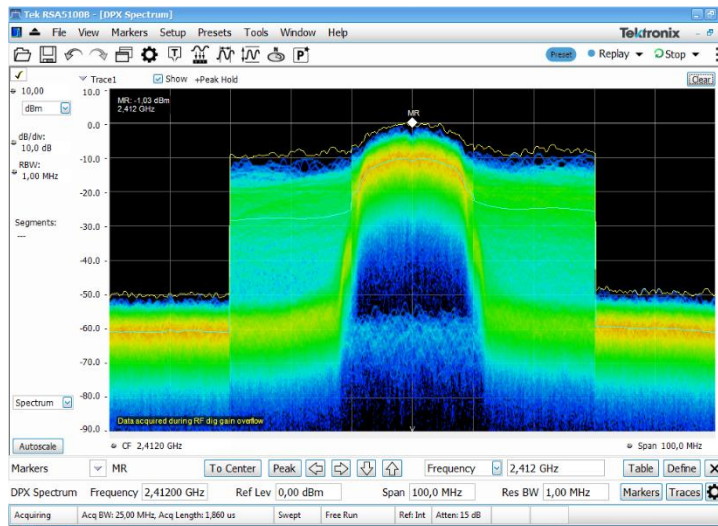
g_ch1_6Mbps_-10dbm

The screenshot displays a Tektronix DPX Spectrum analyzer window. The main plot shows a signal spectrum with a prominent peak at 2.412 GHz. The peak level is marked as MR -10.94 dBm. The frequency span is 100.0 MHz, and the resolution bandwidth (Res BW) is 1.00 MHz. The reference level (Ref Lev) is 0.00 dBm. The acquisition parameters include a bandwidth of 25.00 MHz and a length of 1.860 us. The plot shows a clear signal with some noise floor visible.

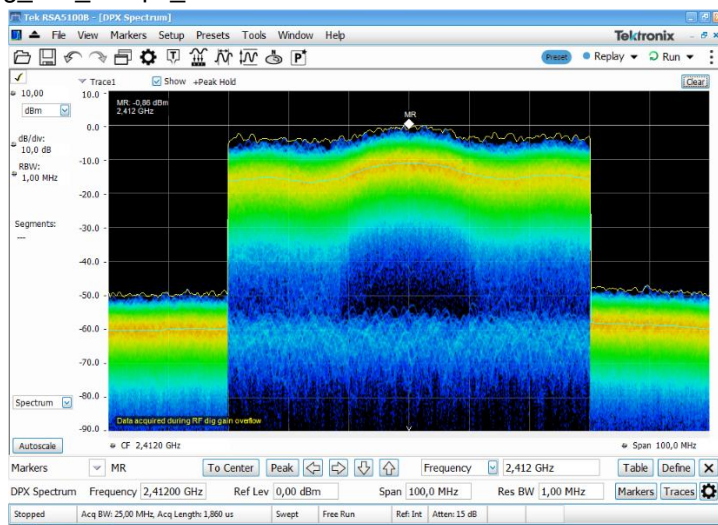
g_ch1_6Mbps_0dbm



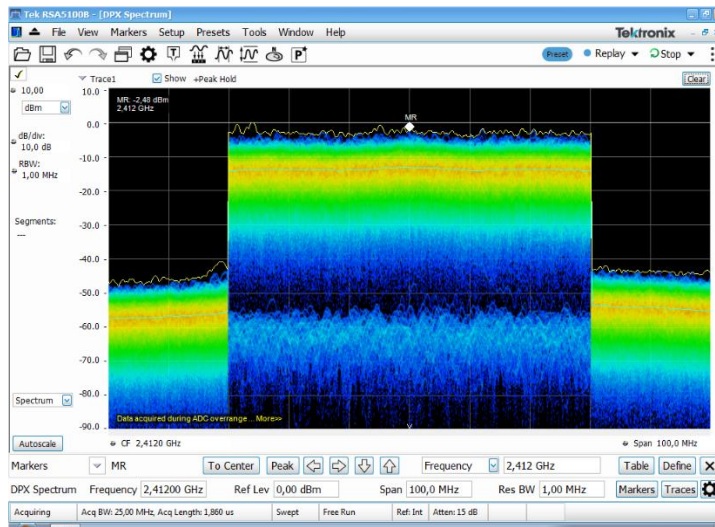
g_ch1_6Mbps_5dbm



g_ch1_6Mbps_10dbm



g_ch1_6Mbps_20dbm

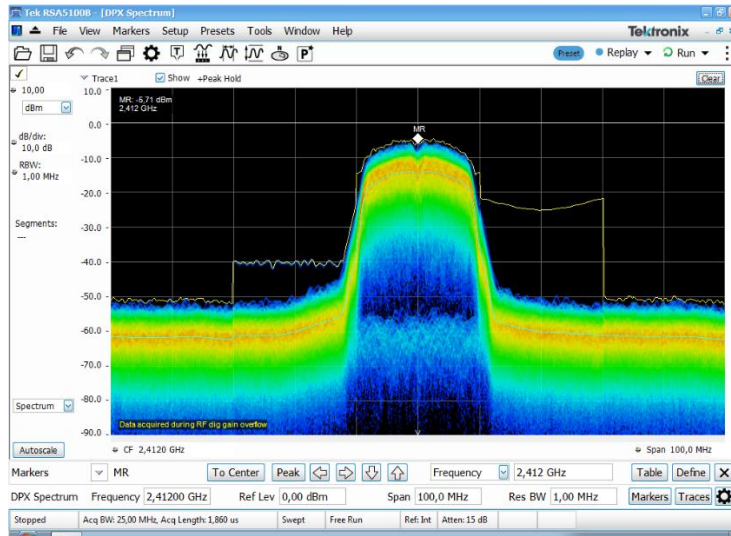


Commands:

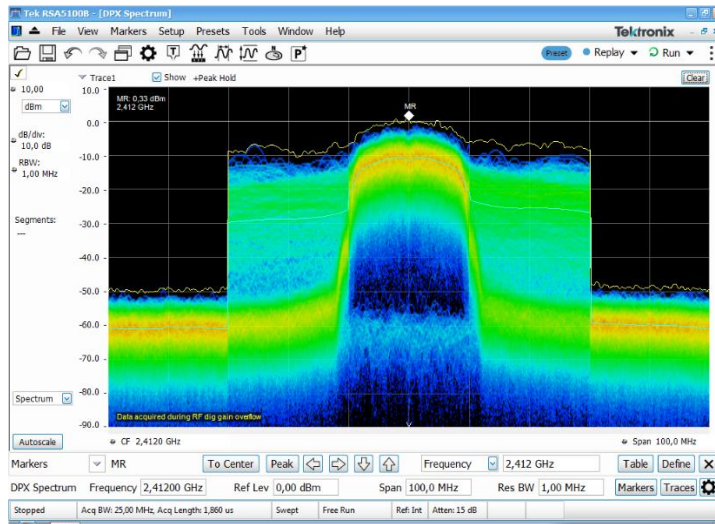
Waveforms:

The screenshot shows the Tektronix RSA7100B software interface. The main display is a spectral plot with a color-coded background (blue to red) and a black trace line. A peak is identified at 2.4120 GHz with a power level of -16.23 dBm. The interface includes a top menu bar (File, View, Markers, Setup, Presets, Tools, Window, Help), a toolbar with icons for file operations and analysis, and several control panels. The left panel shows settings for the trace (dBm, dB/div, RBW, Segments). The bottom panel shows acquisition parameters (Acquiring, Acq BW, Acq Length, Swept, Free Run, Ref. Int, Atten). The right panel shows markers and traces.

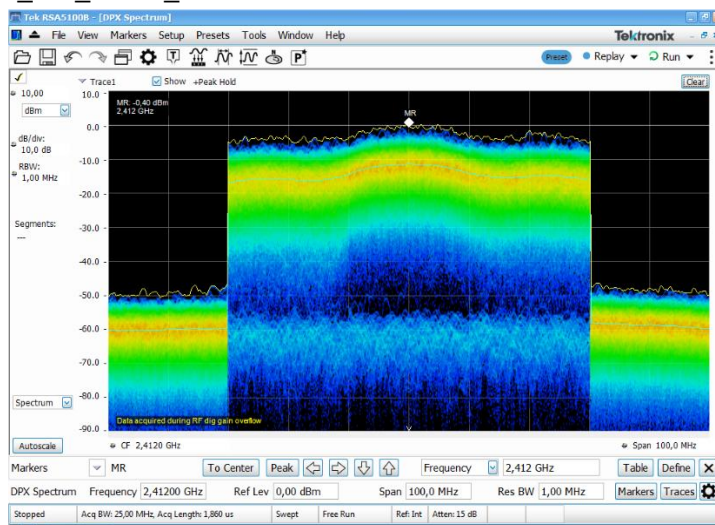
n_ch1_MCS0_0dbm



n_ch1_MCS0_5db



n_ch1_MCS0_10dbm



Test 4 : 2.4Ghz 802.11ax, Channel1, Datarate MCS0, TX power -10dbm, 0dbm, 5dbm

Commands:

Device : CC3301
Connection Interface : XDS110 Serial Number : LS4204RJ FW Version : cc330x_rev_1.7.16.323 PHY Version : 1.2.0.47.6.8.40.69

TEXAS INSTRUMENTS

Wi-Fi TX

Wi-Fi RX

BLE TX

BLE RX

TX Tone

Addons

Info

Transmit Parameters

TX Parameters

Antenna Number
0

Band *
2.4 GHz

Channel *
1 [2412 MHz]

Packet Mode *
Continuous

Delay [uSec]
50

Data Mode *
Random Value

Source MAC Address
00:11:22:33:44:55

Destination MAC Address
10:02:03:04:05:06

Packet Length [Start] [Bytes]
1500

Packet Length [End] [Bytes]
1500

PHY Mode Type *
11ax SU

PHY Rate *
MCS0

TX Power [dBm]
0

Regulatory Limit Tx Power [dBm]
21

Disable CCA Sensing

GI / LTF Type *
2xLTF+0.8 us GI

BSS Color
63

Nominal Packet Padding *
8 usec

Export

Import

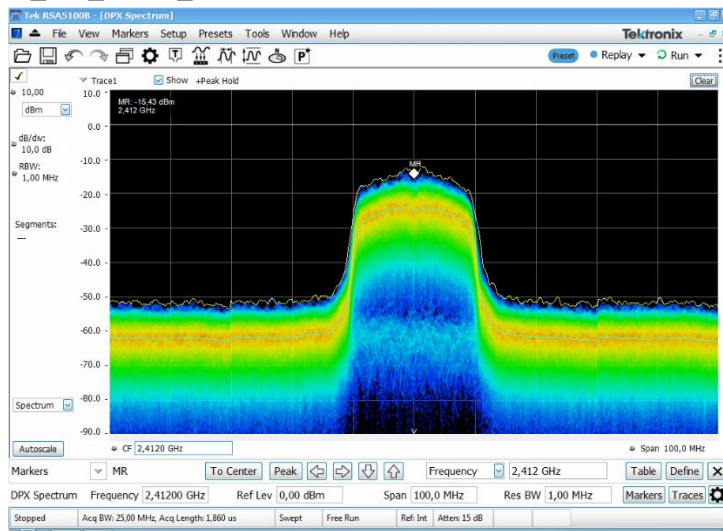
Tune Ch. and Calibrate on TX Start

TX Stop

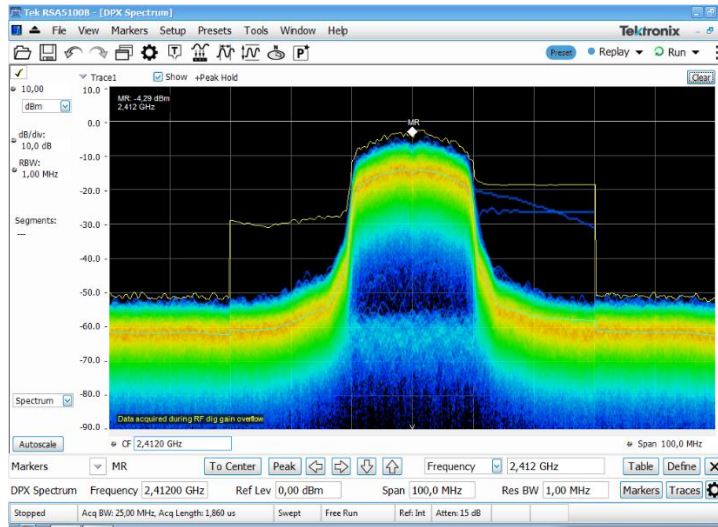
```
[ 5/21/2026, 12:48:35 ] Calibration has been successfully started
[ 5/21/2026, 12:48:36 ] Calibration succeeded
[ 5/21/2026, 12:48:37 ] TX mode has successfully started
[ 5/21/2026, 12:48:38 ] TX mode has been successfully stopped
[ 5/21/2026, 12:48:41 ] Channel 1 successfully tuned
[ 5/21/2026, 12:48:41 ] Calibration has been successfully started
[ 5/21/2026, 12:48:42 ] Calibration succeeded
[ 5/21/2026, 12:48:43 ] TX mode has successfully started
```

Waveforms:

ax_ch1_MCS0_-10dbm



ax_ch1_MCS0_0dbm



ax_ch1_MCS0_5dbm

