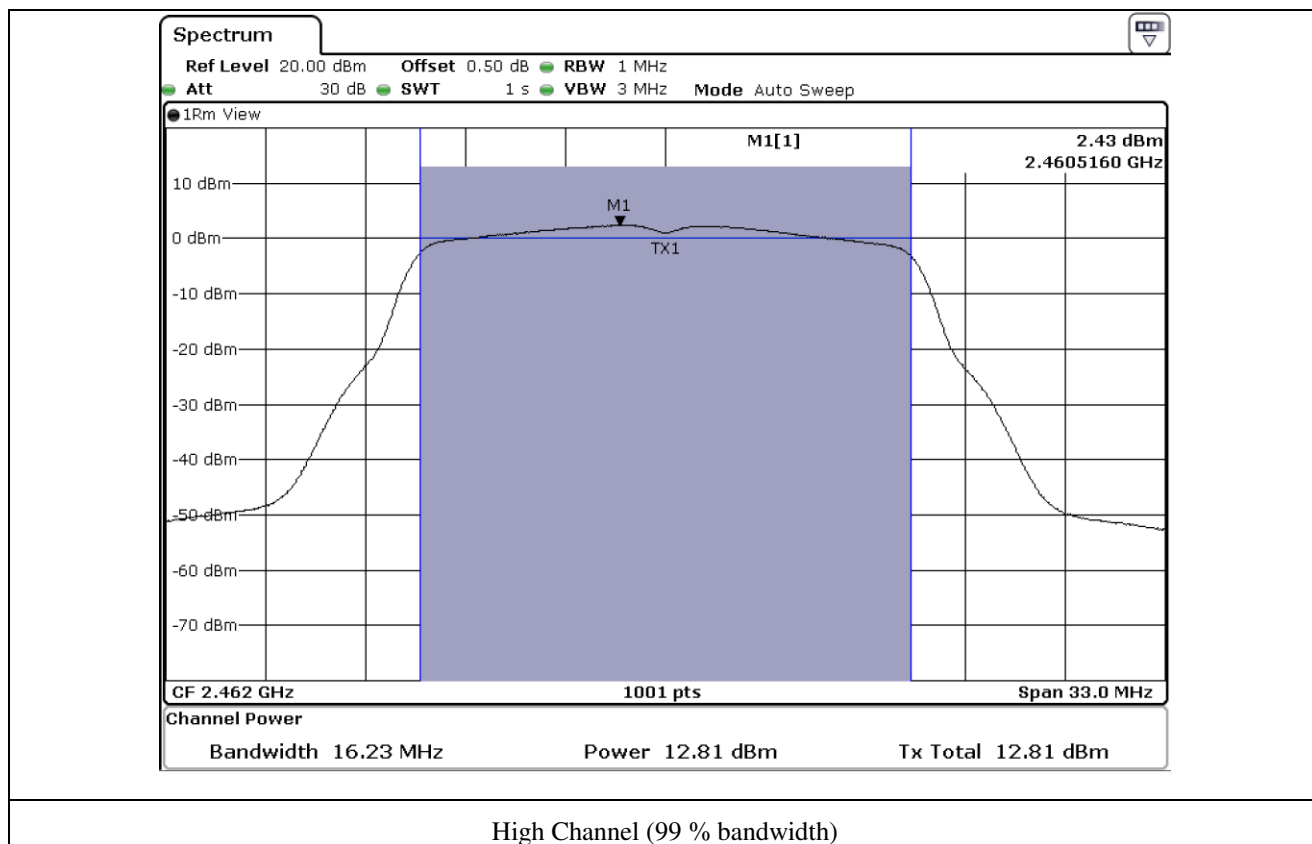




8.5.2.5 Test data for Multiple transmit

-. Test Date : June 27, 2016

-. Test Result : Pass

-. FCC Test data

CHANNEL	FREQUENCY (MHz)	6 dB Bandwidth (MHz)	CALCULATED OUTPUT POWER (dBm)	LIMIT (dBm)	MARGIN (dB)
LOW	2 412	15.49	17.06	30	12.94
MIDDLE	2 442	15.19	25.26	30	4.74
HIGH	2 462	15.19	18.48	30	11.52

Remark 1 : Margin = Limit – Measured Value (=Receiver Reading + Cable Loss)

Remark 2 : Calculated Output Power= $10\log (10^{(\text{Antenna0 Output Power}/10)}+10^{(\text{Antenna1 Output Power}/10)}+10^{(\text{Antenna2 Output Power}/10)})$

Remark 3 : Limit = 30 dBm – Exceeds Antenna gain

Remark 4 : Exceeds Antenna gain = $10\log (10^{(\text{Antenna0 Output Power}/10)}+10^{(\text{Antenna1 Output Power}/10)}+10^{(\text{Antenna2 Output Power}/10)})$

-. IC Test data

CHANNEL	FREQUENCY (MHz)	99 % bandwidth (MHz)	CALCULATED OUTPUT POWER (dBm)	LIMIT (dBm)	MARGIN (dB)
LOW	2 412	16.33	17.44	30	12.56
MIDDLE	2 442	16.28	25.28	30	4.72
HIGH	2 462	16.33	18.70	30	11.30

Remark 1 : Margin = Limit – Measured Value (=Receiver Reading + Cable Loss)

Remark 2 : Calculated Output Power= $10\log (10^{(\text{Antenna1 Output Power}/10)}+10^{(\text{Antenna2 Output Power}/10)})$

Remark 3 : Limit = 30 dBm – Exceeds Antenna gain

Remark 4 : Exceeds Antenna gain = $10\log (10^{(\text{Antenna0 Output Power}/10)}+10^{(\text{Antenna1 Output Power}/10)}+10^{(\text{Antenna2 Output Power}/10)})$



Tested by: Min-Gu, Ji / Project Engineer

8.5.3 Test data for 802.11n_HT20 WLAN Mode

8.5.3.1 Test data for Antenna 0

-. Test Date : June 27, 2016

-. Test Result : Pass

-. FCC Test data

CHANNEL	FREQUENCY (MHz)	6 dB Bandwidth (MHz)	MEASURED VLAUE (dBm)	LIMIT (dBm)	MARGIN (dB)
LOW	2 412	15.19	10.41	30	19.59
MIDDLE	2 442	15.19	18.35	30	11.65
HIGH	2 462	15.19	10.58	30	19.42

Remark. Margin = Limit – Measured Value (=Receiver Reading + Cable Loss)

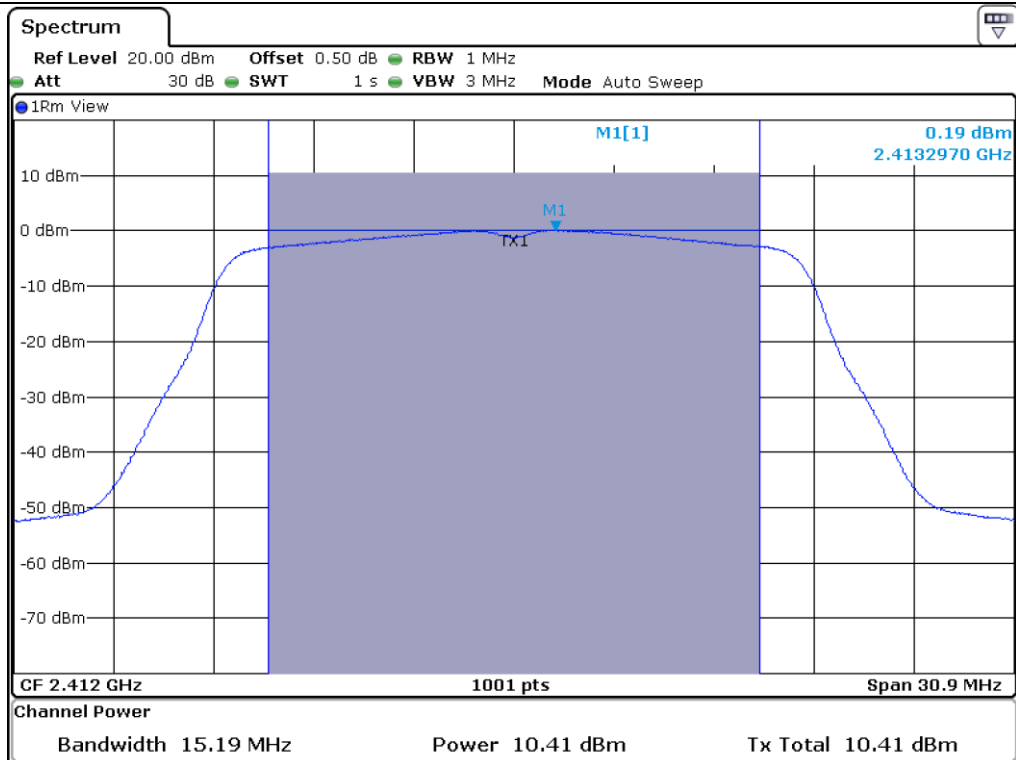
-. IC Test data

CHANNEL	FREQUENCY (MHz)	99 % bandwidth (MHz)	MEASURED VLAUE (dBm)	LIMIT (dBm)	MARGIN (dB)
LOW	2 412	17.48	10.44	30	19.56
MIDDLE	2 442	17.48	18.45	30	11.55
HIGH	2 462	17.48	10.75	30	19.25

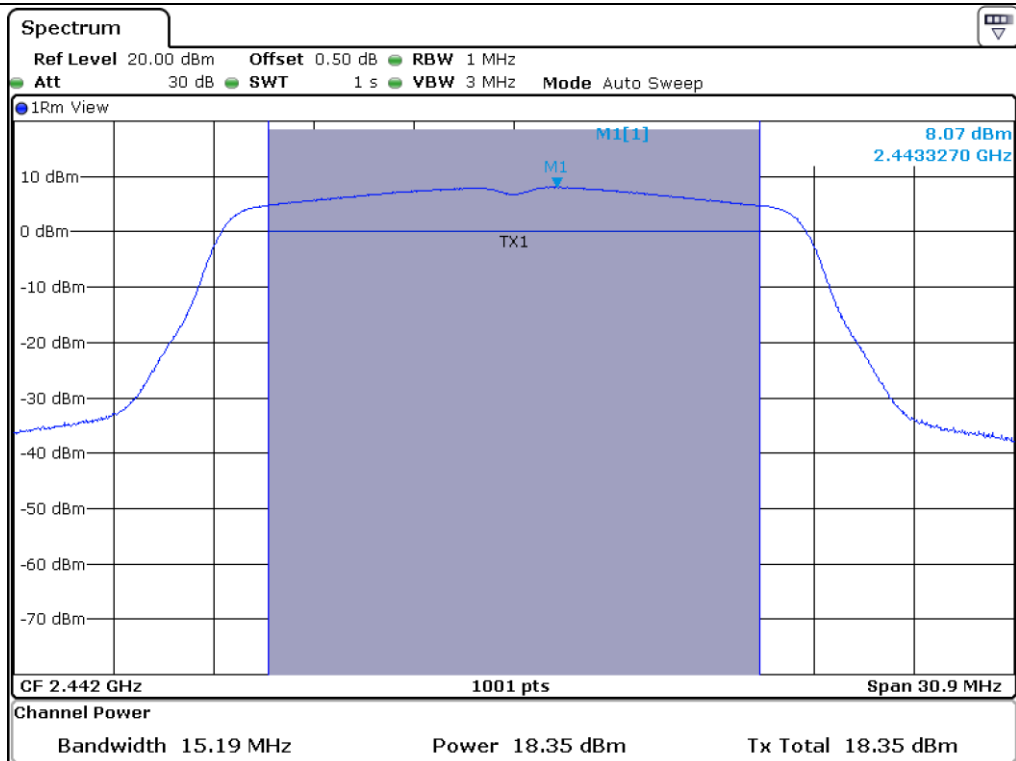
Remark. Margin = Limit – Measured Value (=Receiver Reading + Cable Loss)



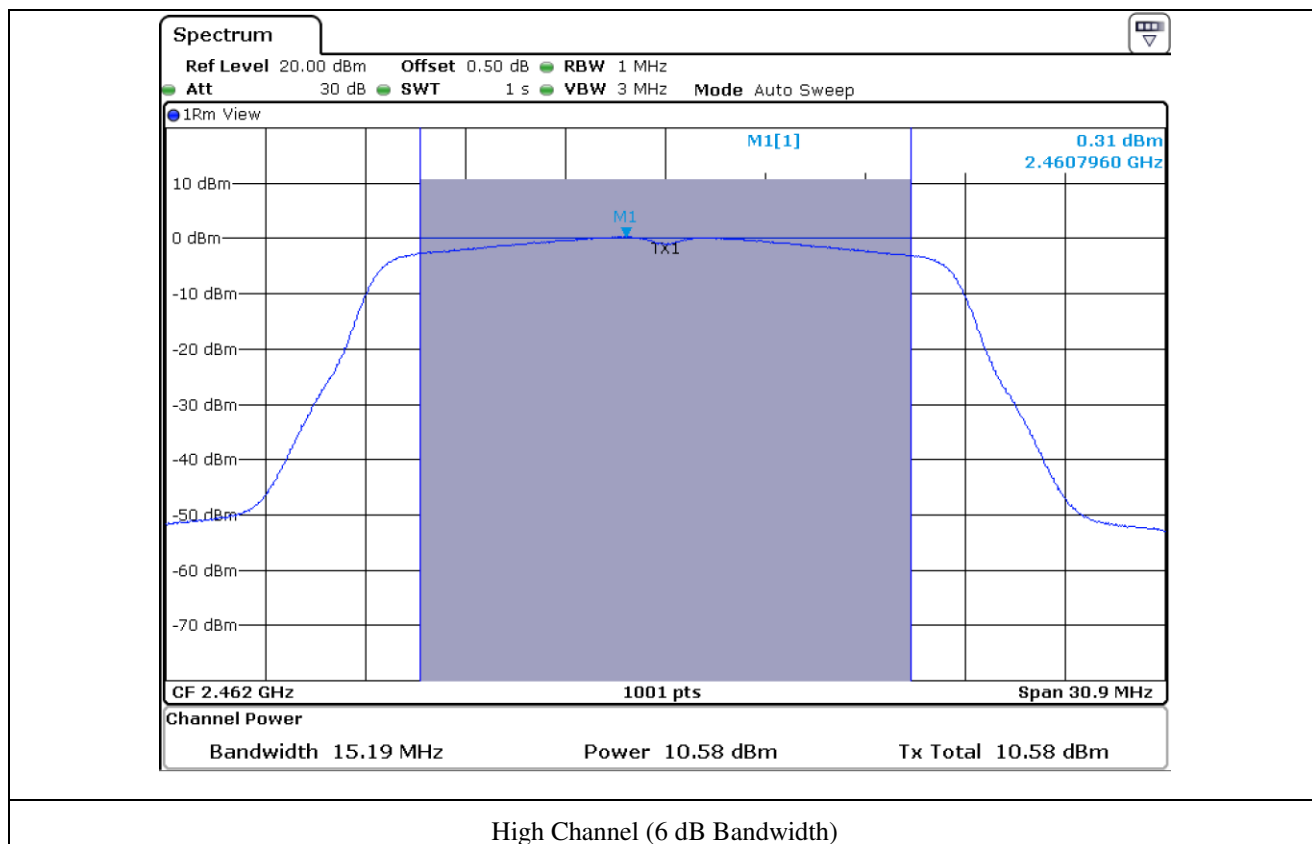
Tested by: Min-Gu, Ji / Project Engineer

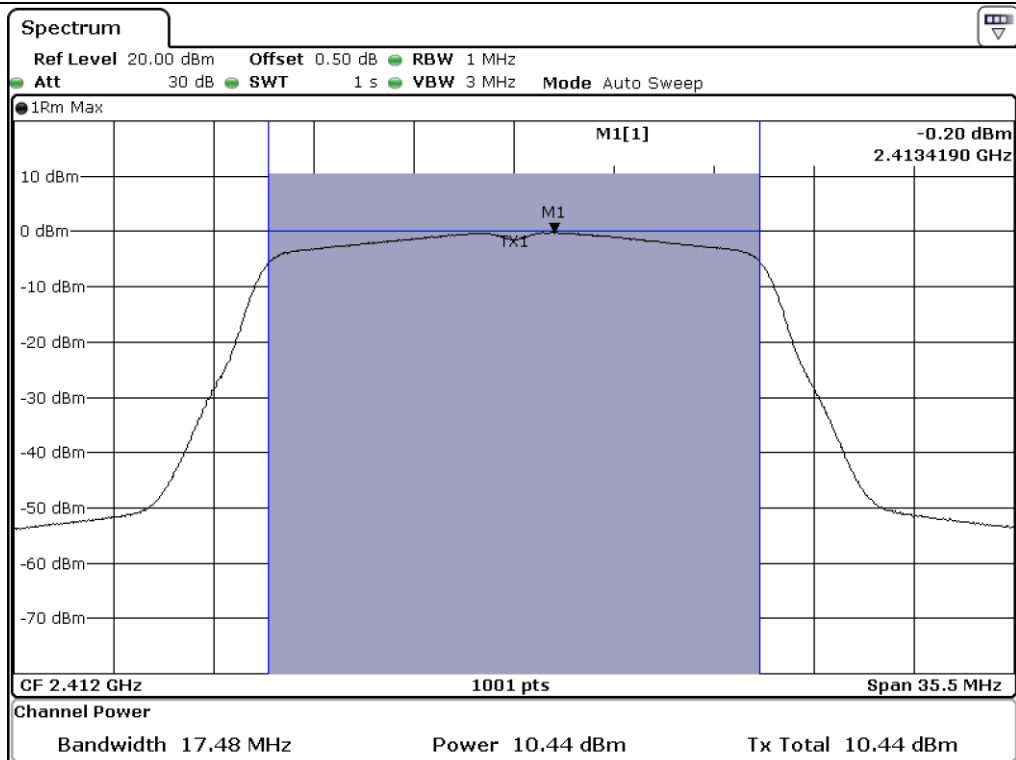


Low Channel (6 dB Bandwidth)

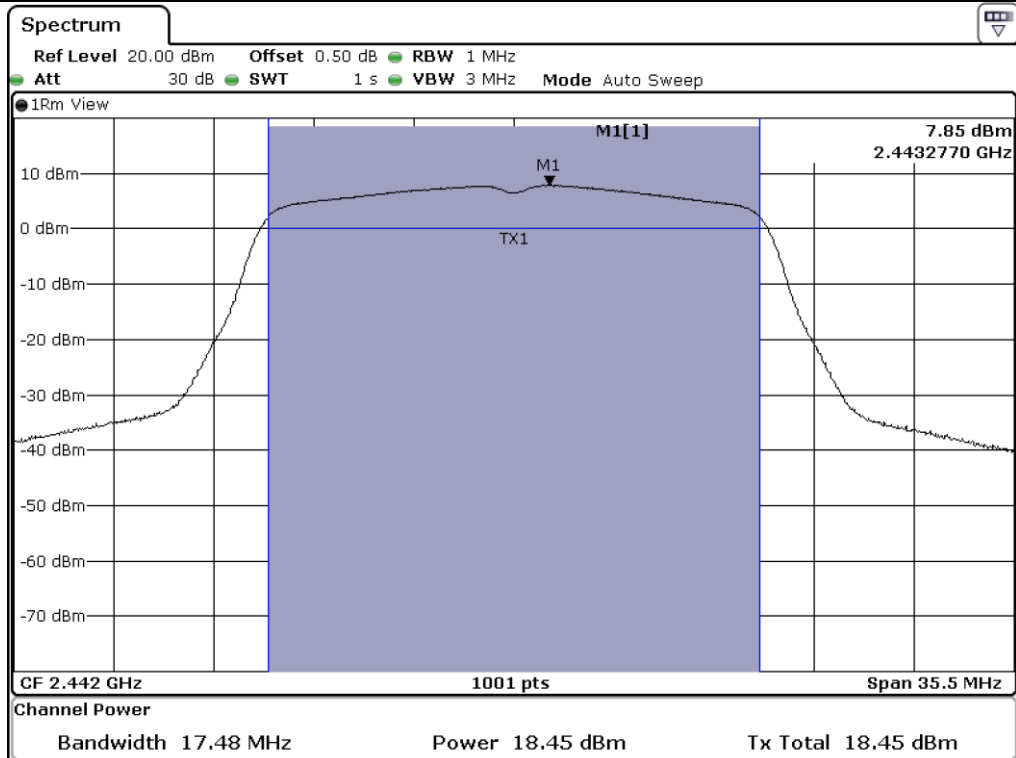


Middle Channel (6 dB Bandwidth)

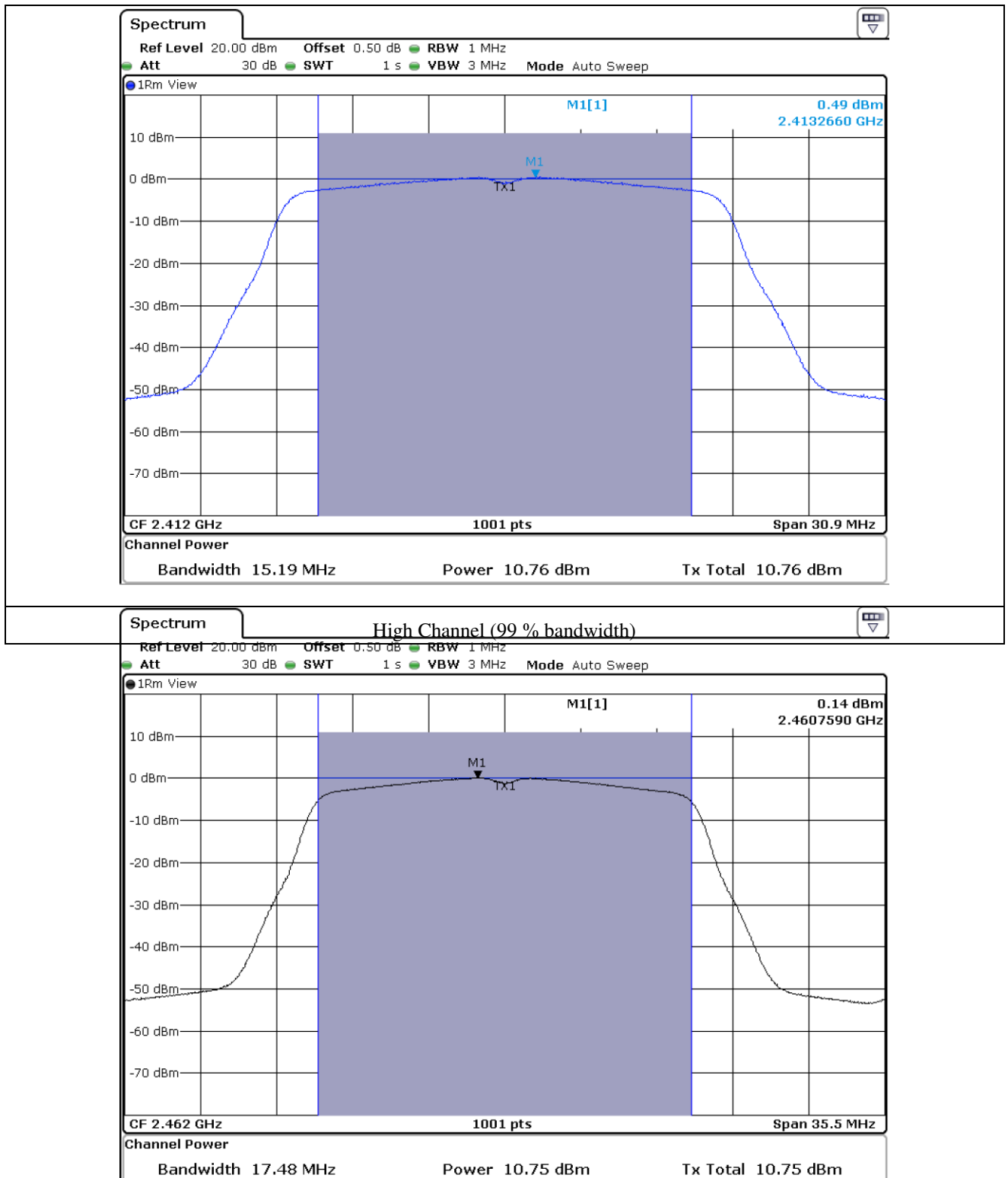




Low Channel (99 % bandwidth)



Middle Channel (99 % bandwidth)



8.5.3.2 Test data for Antenna 1

-. Test Date : June 27, 2016

-. Test Result : Pass

-. FCC Test data

CHANNEL	FREQUENCY (MHz)	6 dB Bandwidth (MHz)	MEASURED VLAUE (dBm)	LIMIT (dBm)	MARGIN (dB)
LOW	2 412	15.19	10.76	30	19.24
MIDDLE	2 442	15.19	18.43	30	11.57
HIGH	2 462	15.19	10.98	30	19.02

Remark. Margin = Limit – Measured Value (=Receiver Reading + Cable Loss)

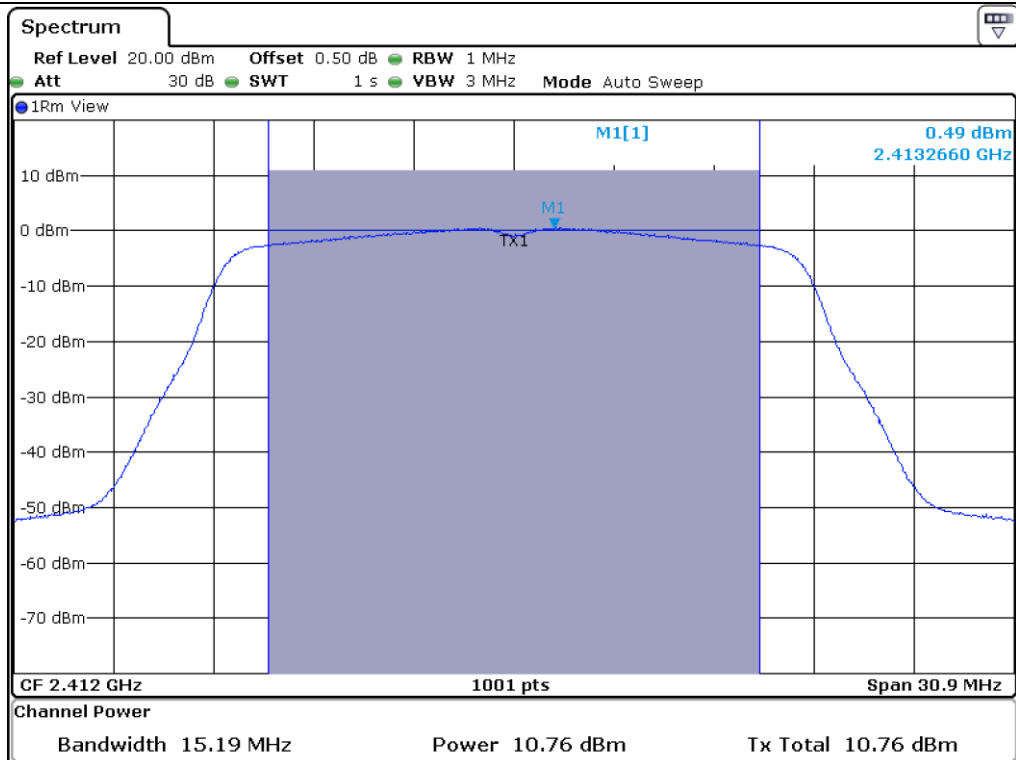
-. IC Test data

CHANNEL	FREQUENCY (MHz)	99 % bandwidth (MHz)	MEASURED VLAUE (dBm)	LIMIT (dBm)	MARGIN (dB)
LOW	2 412	17.48	10.94	30	19.06
MIDDLE	2 442	17.48	18.60	30	11.40
HIGH	2 462	17.48	11.20	30	18.80

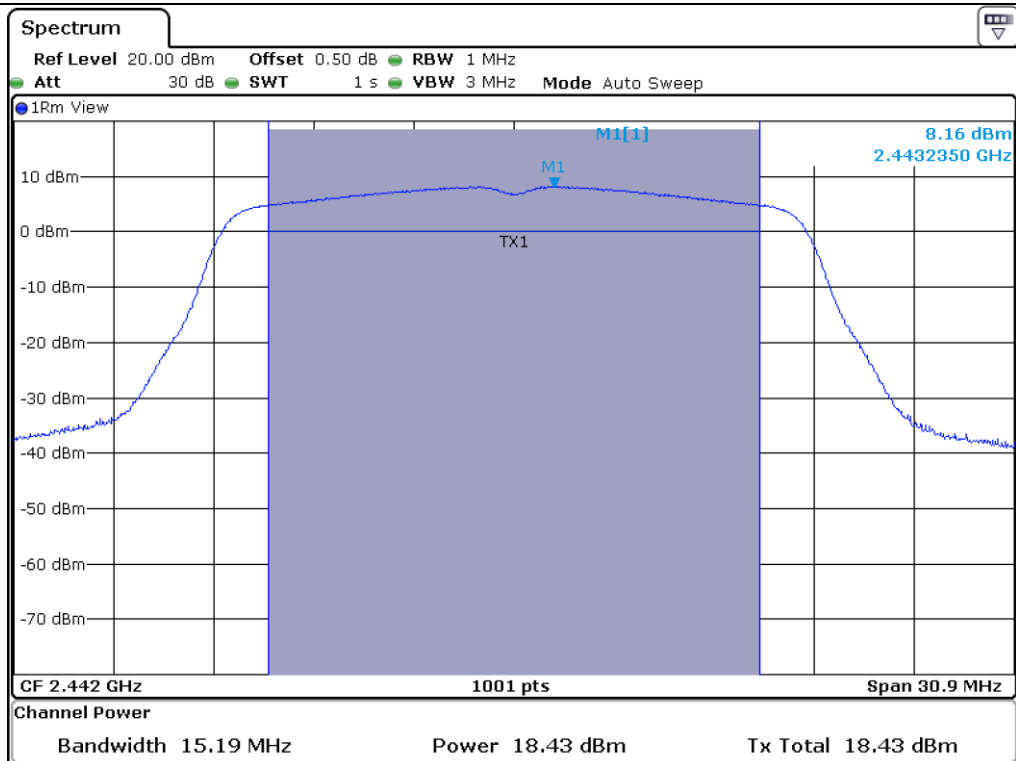
Remark. Margin = Limit – Measured Value (=Receiver Reading + Cable Loss)



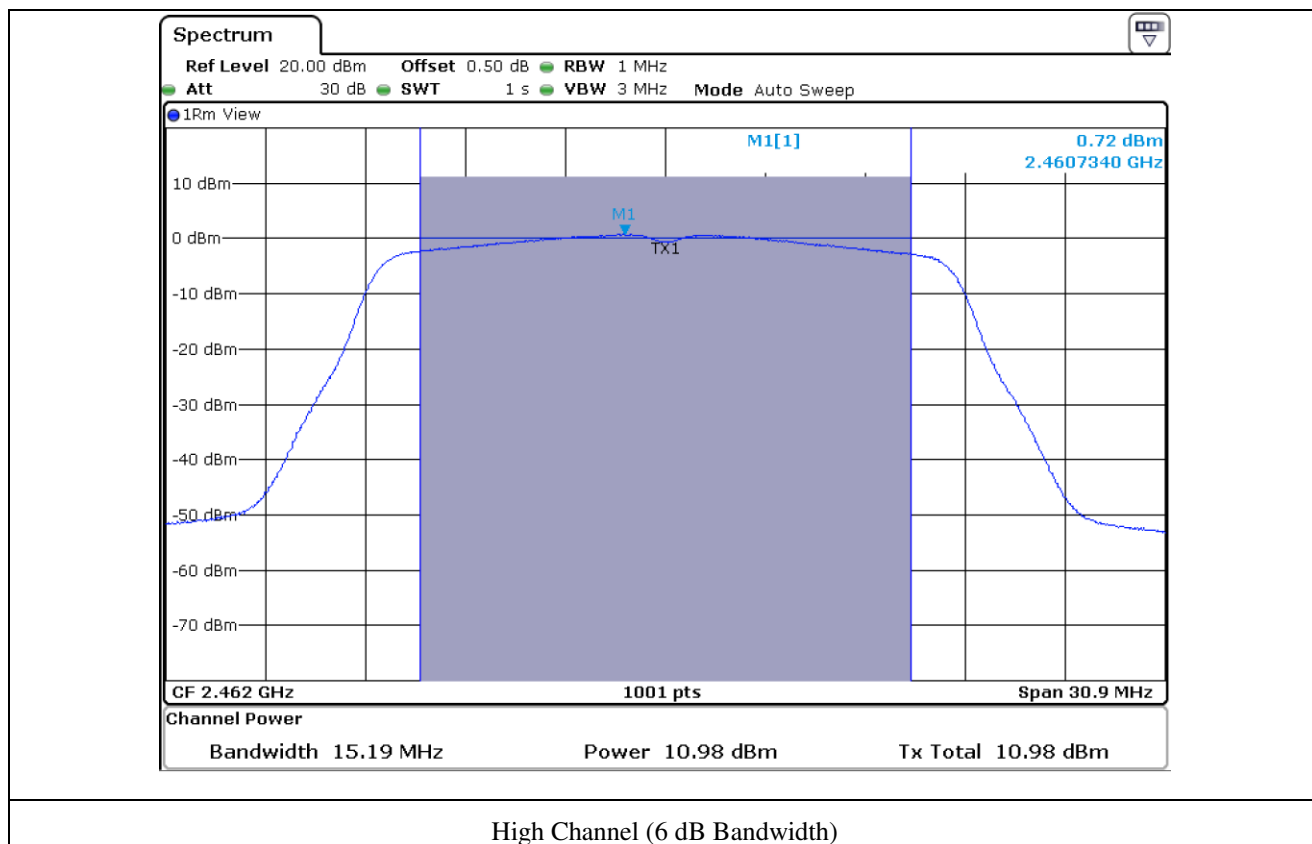
Tested by: Min-Gu, Ji / Project Engineer

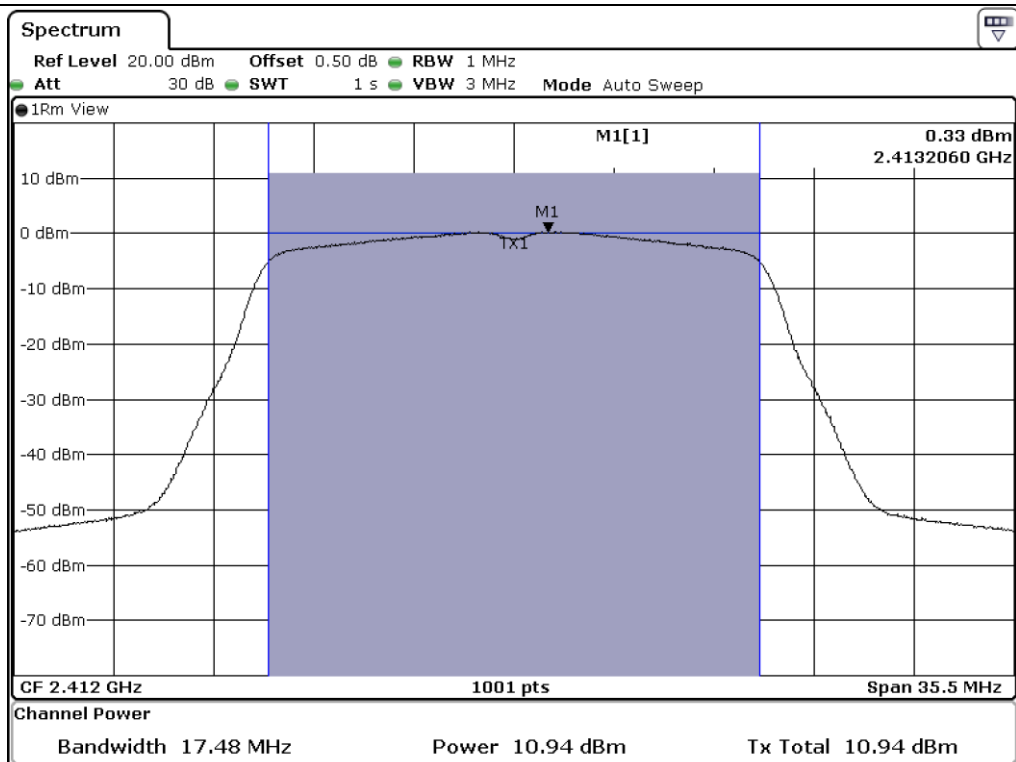


Low Channel (6 dB Bandwidth)

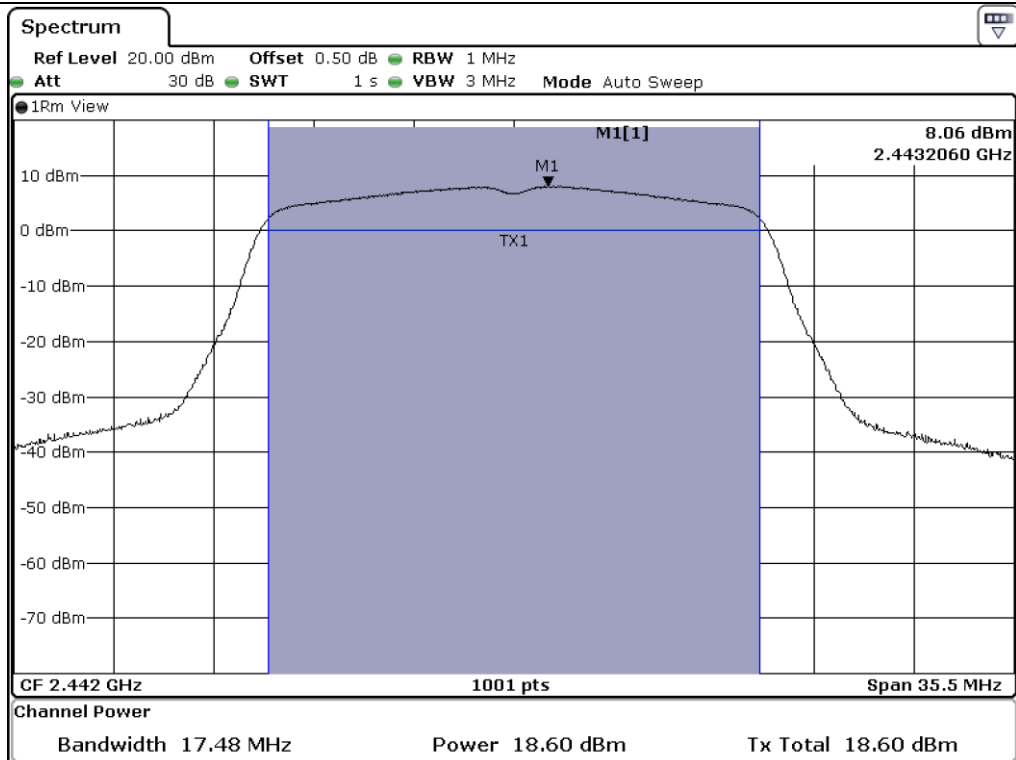


Middle Channel (6 dB Bandwidth)

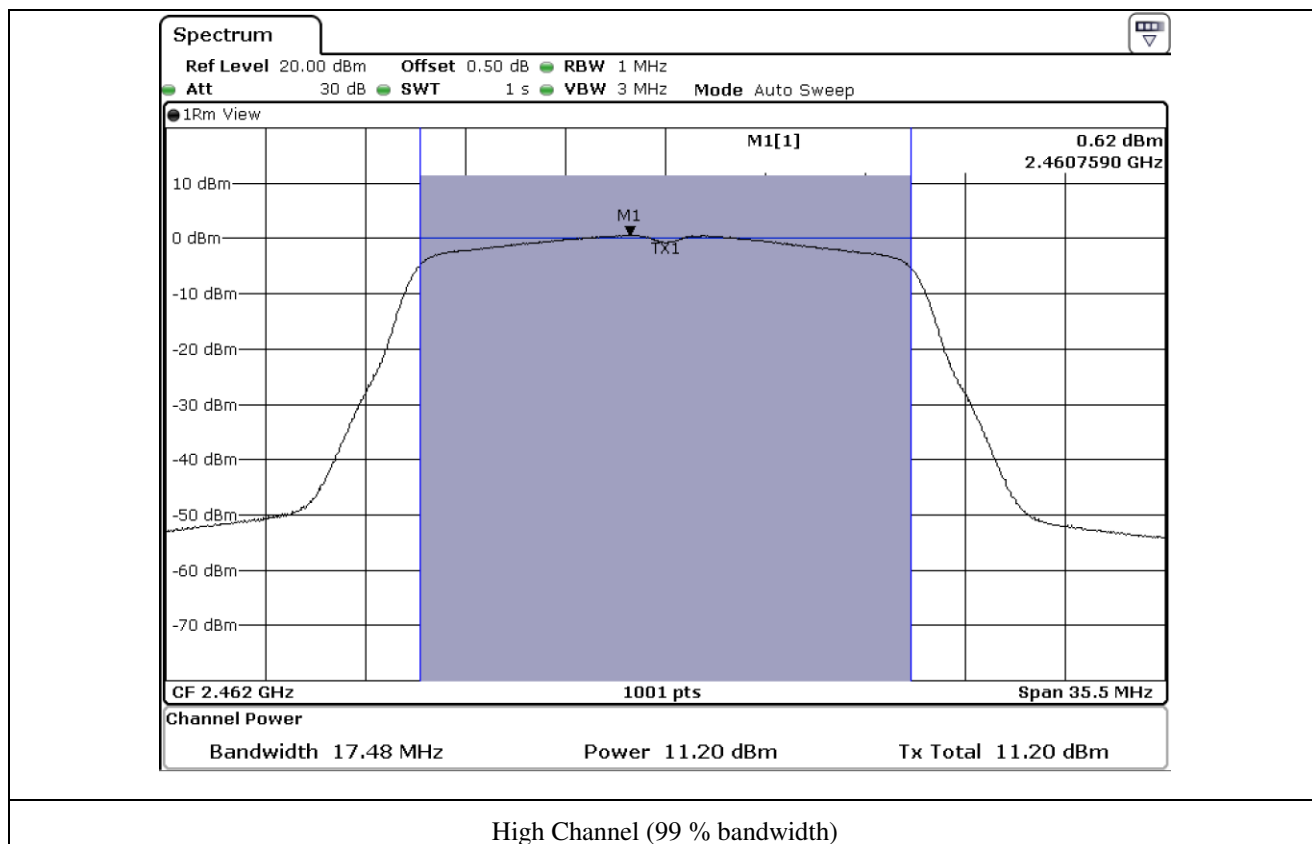




Low Channel (99 % bandwidth)



Middle Channel (99 % bandwidth)



8.5.3.3 Test data for Antenna 2

-. Test Date : June 27, 2016

-. Test Result : Pass

-. FCC Test data

CHANNEL	FREQUENCY (MHz)	6 dB Bandwidth (MHz)	MEASURED VLAUE (dBm)	LIMIT (dBm)	MARGIN (dB)
LOW	2 412	15.19	10.17	30	19.83
MIDDLE	2 442	15.09	18.51	30	11.49
HIGH	2 462	15.19	10.53	30	19.47

Remark. Margin = Limit – Measured Value (=Receiver Reading + Cable Loss)

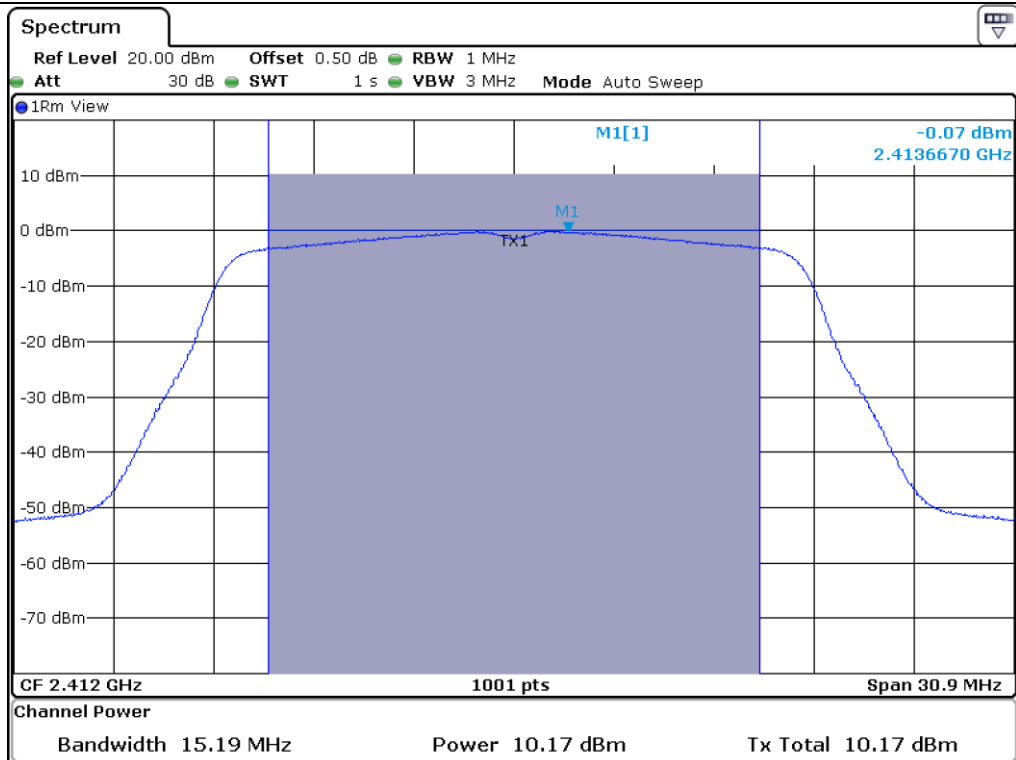
-. IC Test data

CHANNEL	FREQUENCY (MHz)	99 % bandwidth (MHz)	MEASURED VLAUE (dBm)	LIMIT (dBm)	MARGIN (dB)
LOW	2 412	17.48	10.52	30	19.48
MIDDLE	2 442	17.48	18.94	30	11.06
HIGH	2 462	17.48	11.12	30	18.88

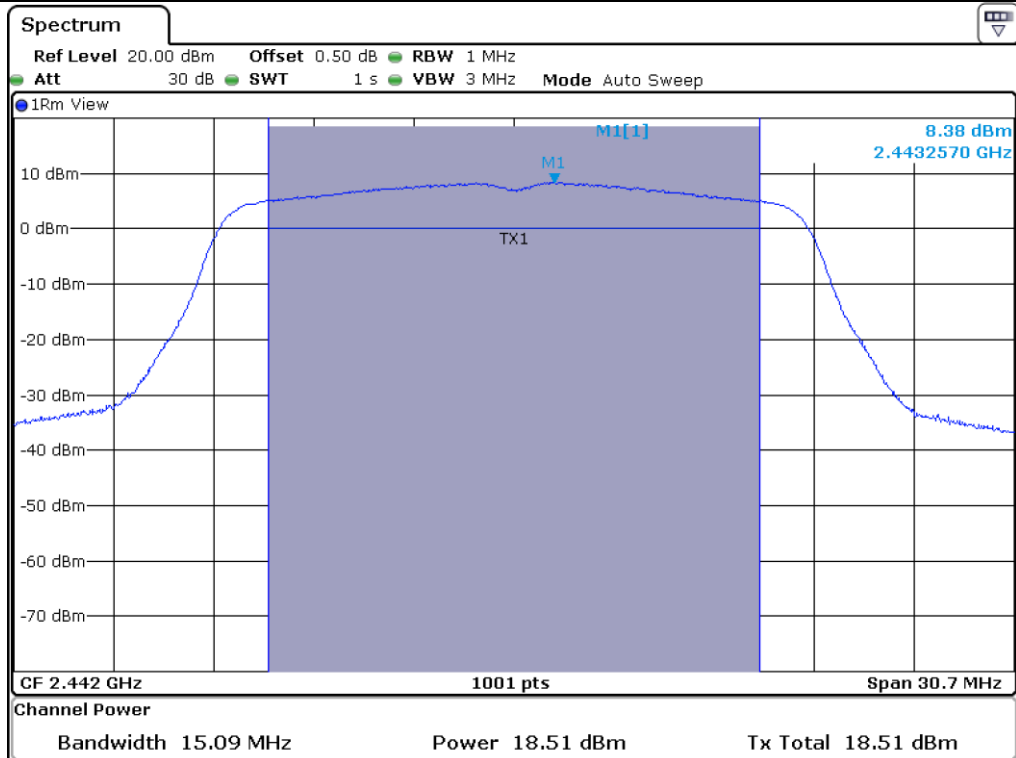
Remark. Margin = Limit – Measured Value (=Receiver Reading + Cable Loss)



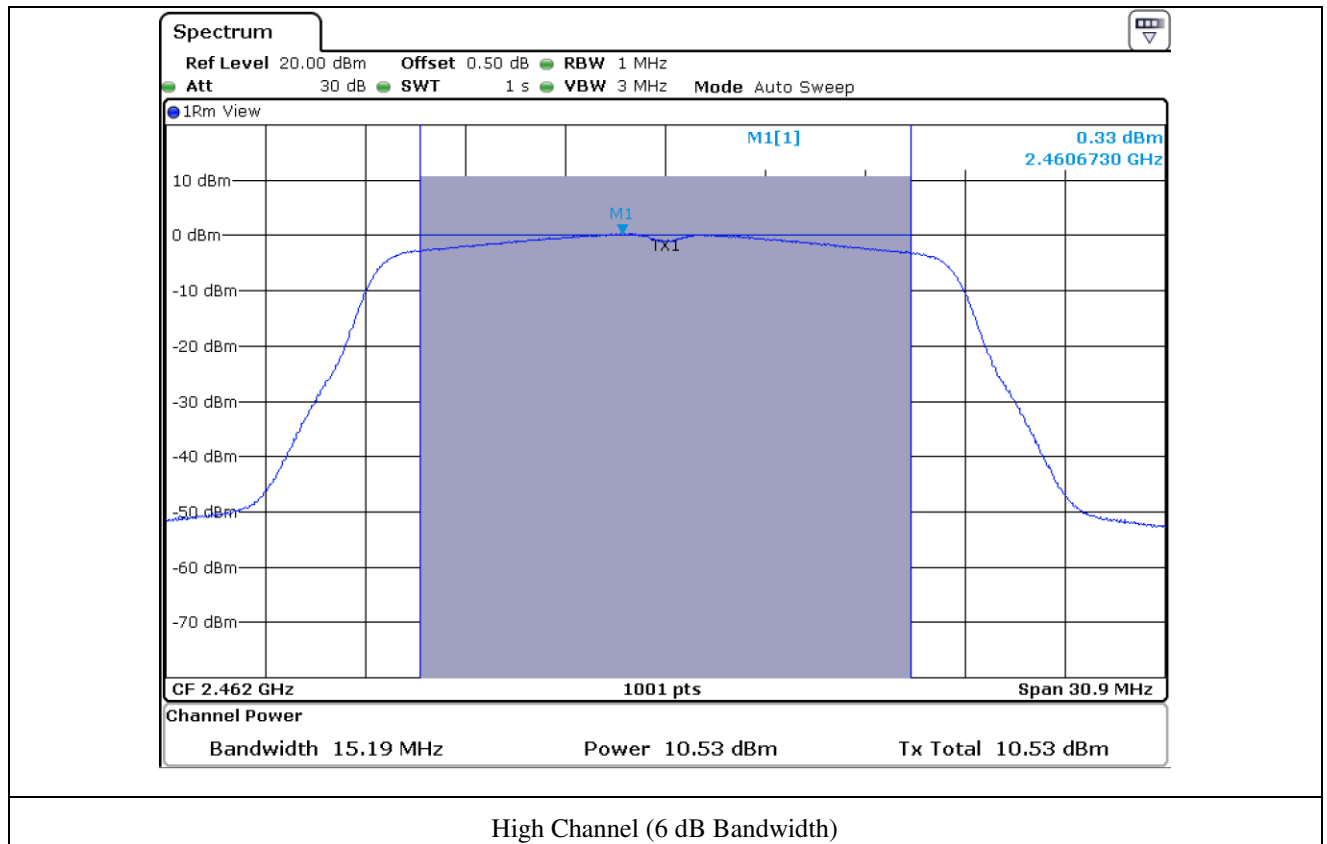
Tested by: Min-Gu, Ji / Project Engineer

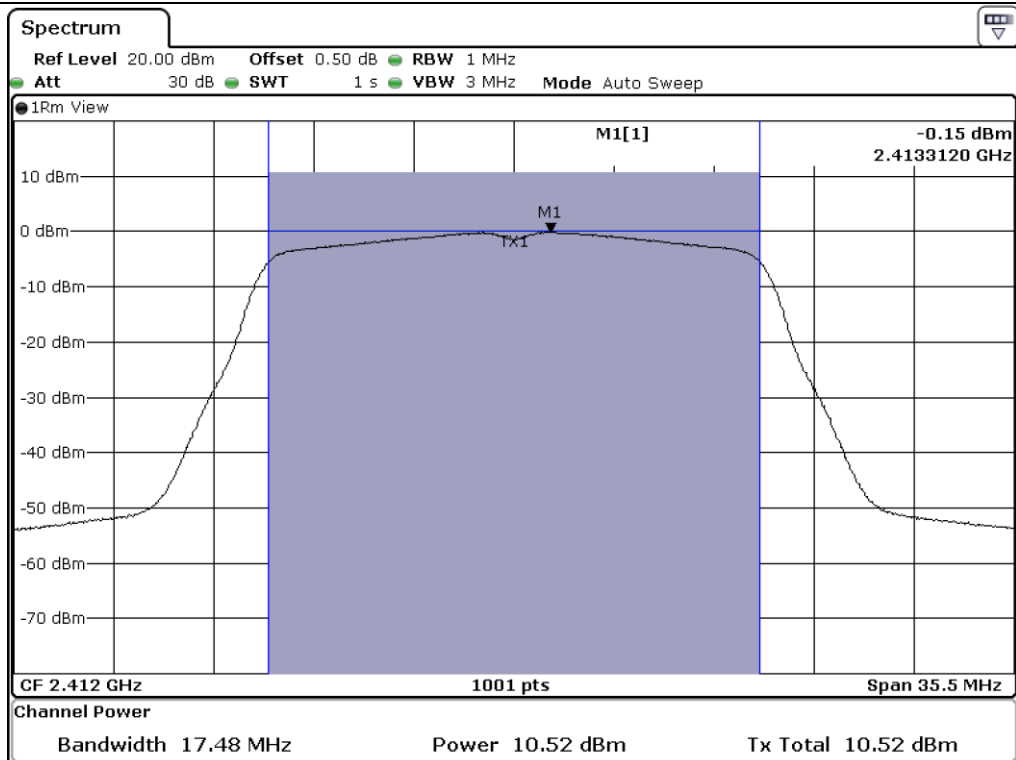


Low Channel (6 dB Bandwidth)

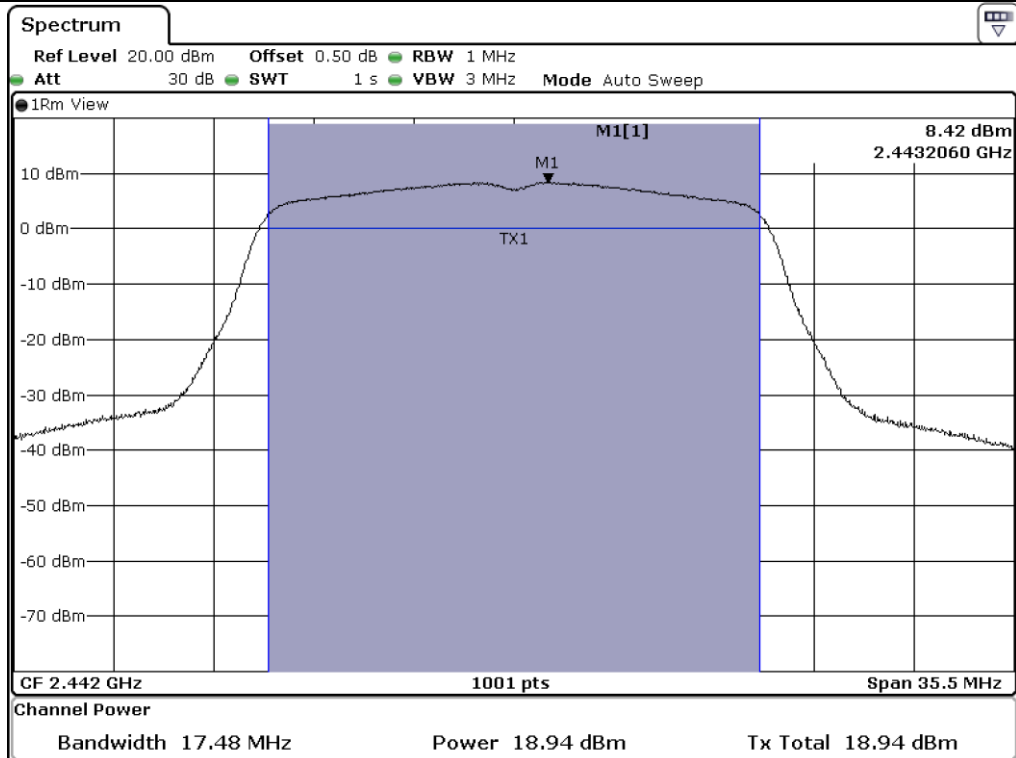


Middle Channel (6 dB Bandwidth)

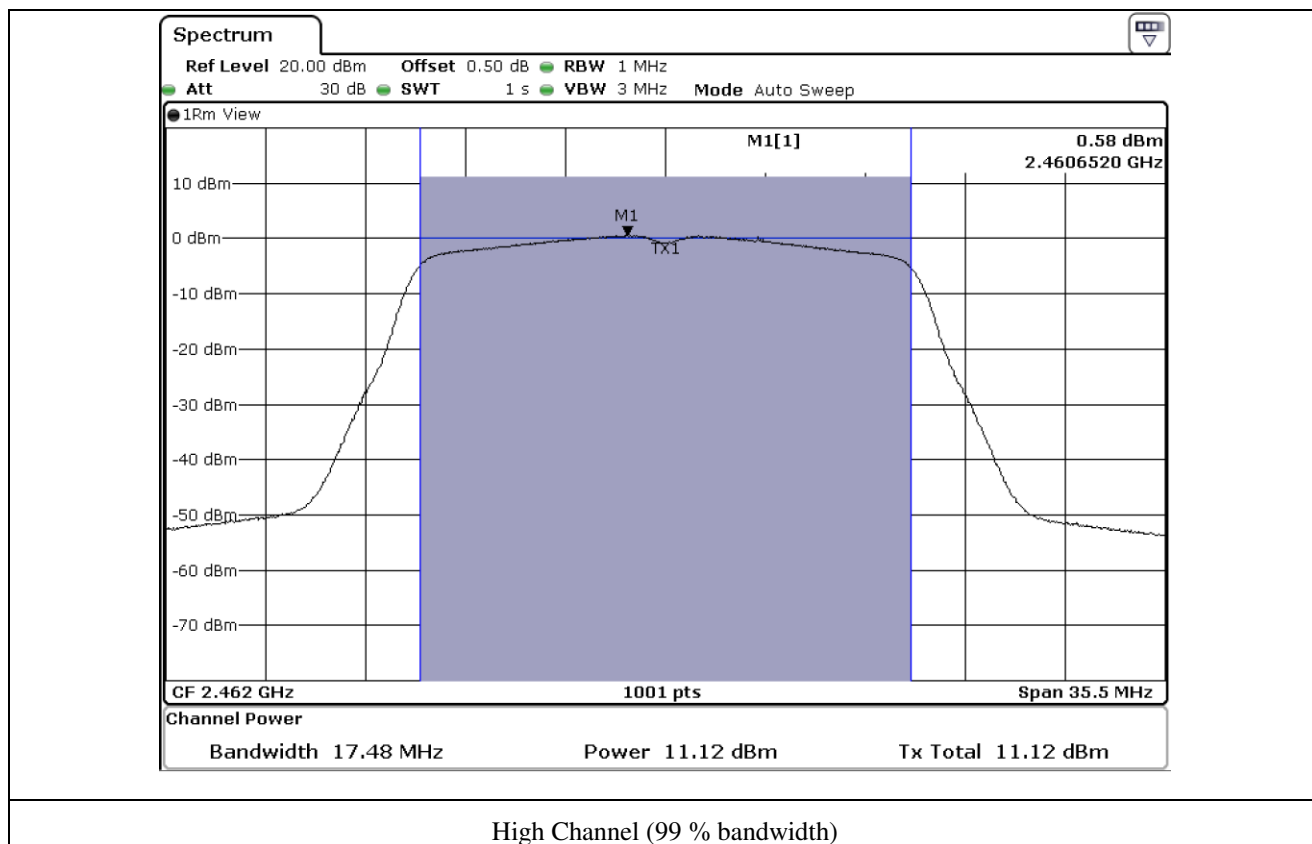




Low Channel (99 % bandwidth)



Middle Channel (99 % bandwidth)



8.5.3.4 Test data for Antenna 3

-. Test Date : June 27, 2016

-. Test Result : Pass

-. FCC Test data

CHANNEL	FREQUENCY (MHz)	6 dB Bandwidth (MHz)	MEASURED VLAUE (dBm)	LIMIT (dBm)	MARGIN (dB)
LOW	2 412	15.19	10.12	30	19.88
MIDDLE	2 442	15.19	18.38	30	11.62
HIGH	2 462	15.14	10.59	30	19.41

Remark. Margin = Limit – Measured Value (=Receiver Reading + Cable Loss)

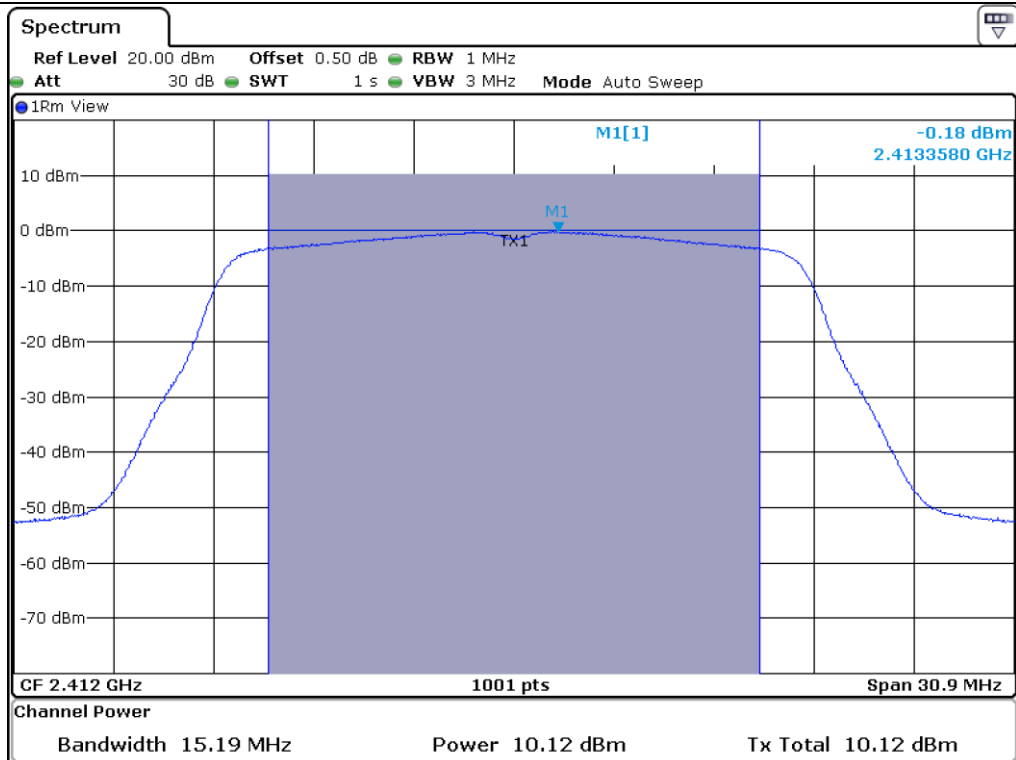
-. IC Test data

CHANNEL	FREQUENCY (MHz)	99 % bandwidth (MHz)	MEASURED VLAUE (dBm)	LIMIT (dBm)	MARGIN (dB)
LOW	2 412	17.48	10.95	30	19.05
MIDDLE	2 442	17.48	18.62	30	11.38
HIGH	2 462	17.53	11.31	30	18.69

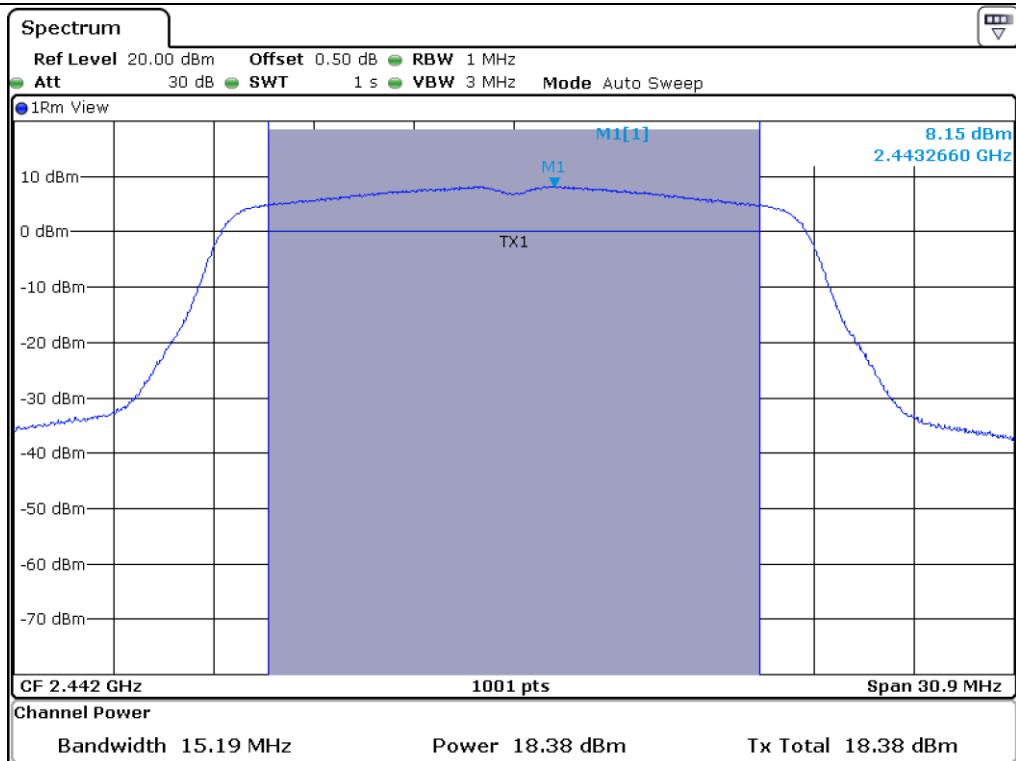
Remark. Margin = Limit – Measured Value (=Receiver Reading + Cable Loss)



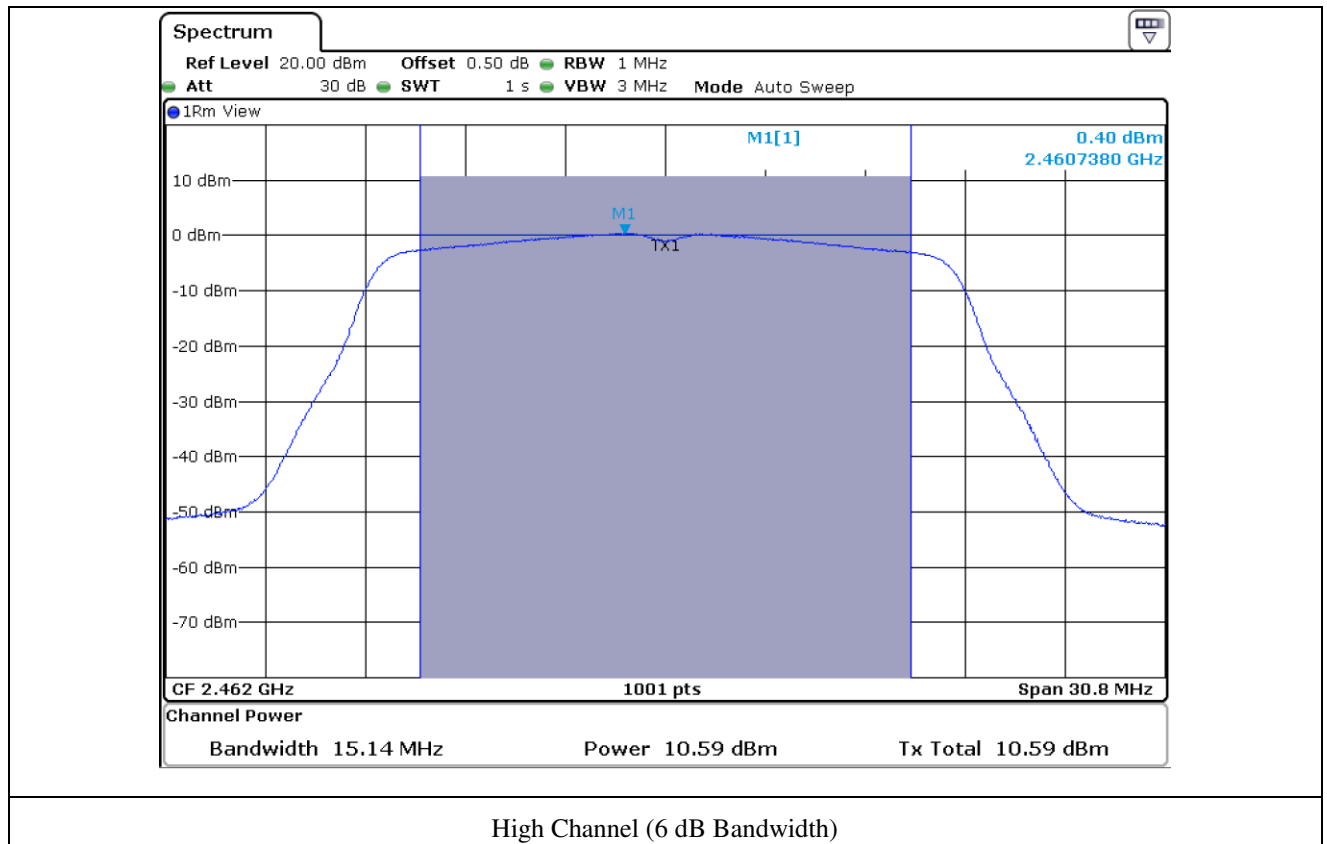
Tested by: Min-Gu, Ji / Project Engineer

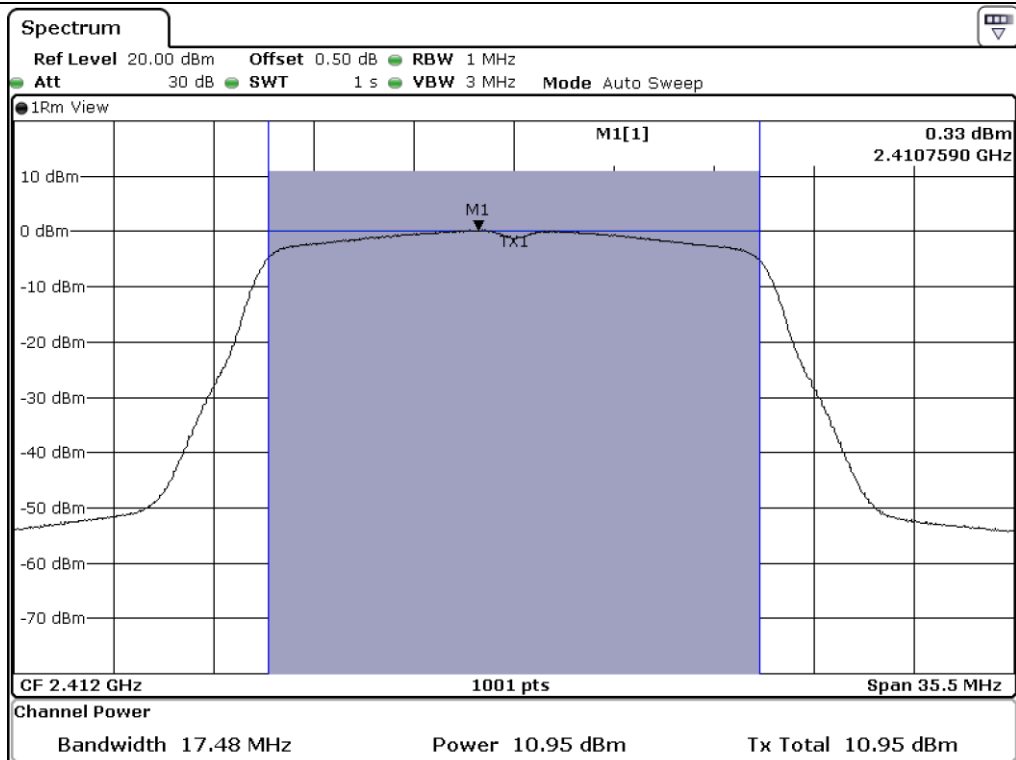


Low Channel (6 dB Bandwidth)

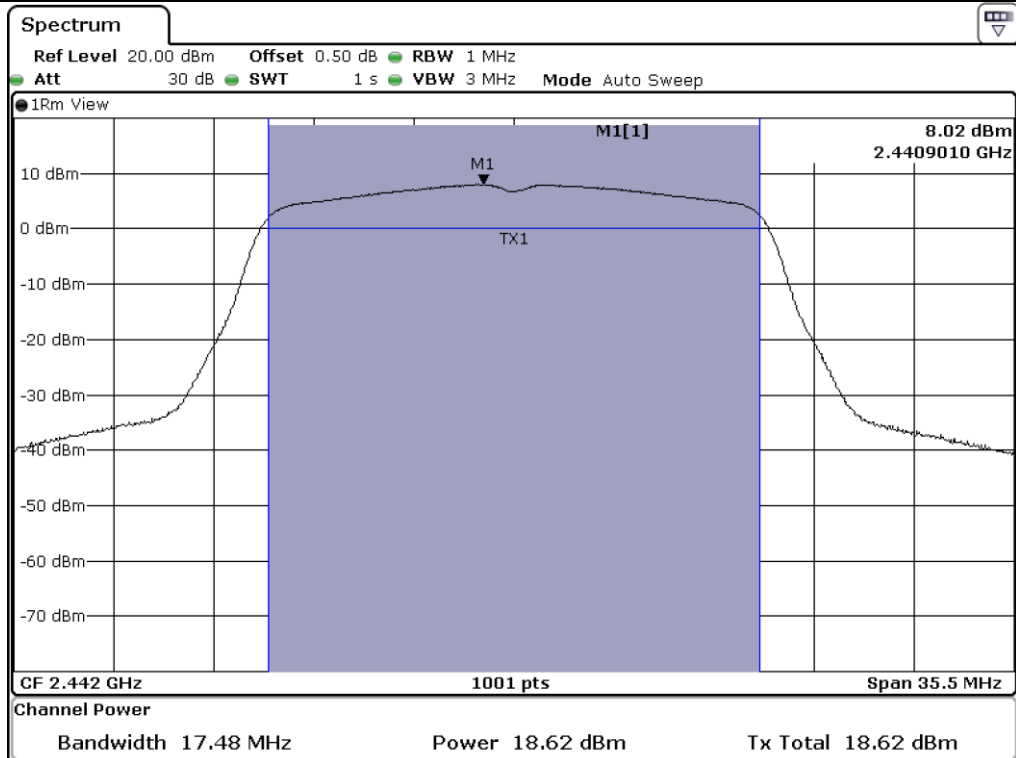


Middle Channel (6 dB Bandwidth)

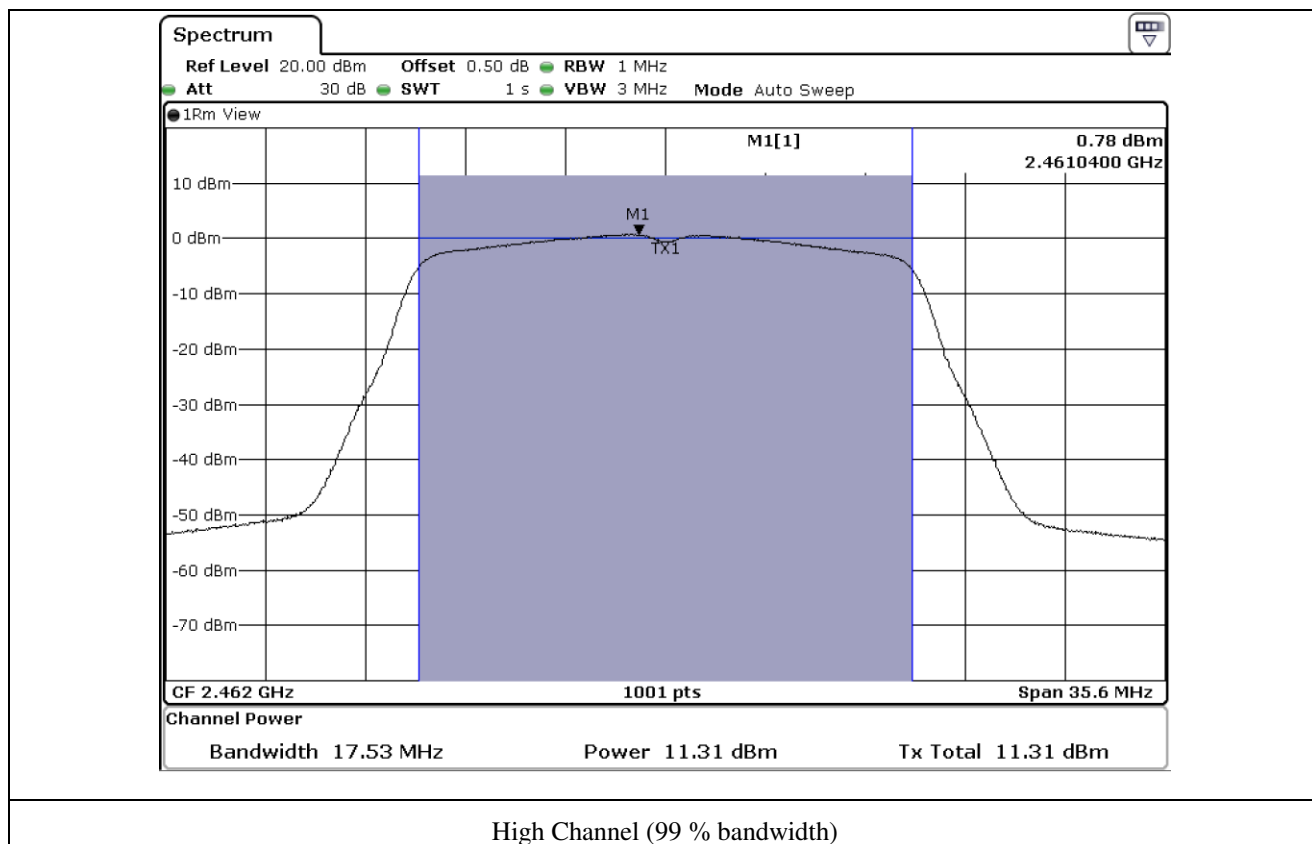




Low Channel (99 % bandwidth)



Middle Channel (99 % bandwidth)



8.5.2.5 Test data for Multiple transmit

-. Test Date : June 27, 2016

-. Test Result : Pass

-. FCC Test data

CHANNEL	FREQUENCY (MHz)	6 dB Bandwidth (MHz)	CALCULATED OUTPUT POWER (dBm)	LIMIT (dBm)	MARGIN (dB)
LOW	2 412	15.19	16.39	30	13.61
MIDDLE	2 442	15.19	24.44	30	5.56
HIGH	2 462	15.19	16.69	30	13.31

Remark 1 : Margin = Limit – Measured Value (=Receiver Reading + Cable Loss)

Remark 2 : Calculated Output Power= $10\log (10^{(\text{Antenna0 Output Power}/10)}+10^{(\text{Antenna1 Output Power}/10)}+10^{(\text{Antenna2 Output Power}/10)})$

Remark 3 : Limit = 30 dBm – Exceeds Antenna gain

Remark 4 : Exceeds Antenna gain = $10\log (10^{(\text{Antenna0 Output Power}/10)}+10^{(\text{Antenna1 Output Power}/10)}+10^{(\text{Antenna2 Output Power}/10)})$

-. IC Test data

CHANNEL	FREQUENCY (MHz)	99 % bandwidth (MHz)	CALCULATED OUTPUT POWER (dBm)	LIMIT (dBm)	MARGIN (dB)
LOW	2 412	17.48	16.74	30	13.26
MIDDLE	2 442	17.48	24.68	30	5.32
HIGH	2 462	17.53	17.12	30	12.88

Remark 1 : Margin = Limit – Measured Value (=Receiver Reading + Cable Loss)

Remark 2 : Calculated Output Power= $10\log (10^{(\text{Antenna1 Output Power}/10)}+10^{(\text{Antenna2 Output Power}/10)})$

Remark 3 : Limit = 30 dBm – Exceeds Antenna gain

Remark 4 : Exceeds Antenna gain = $10\log (10^{(\text{Antenna0 Output Power}/10)}+10^{(\text{Antenna1 Output Power}/10)}+10^{(\text{Antenna2 Output Power}/10)})$



Tested by: Min-Gu, Ji / Project Engineer

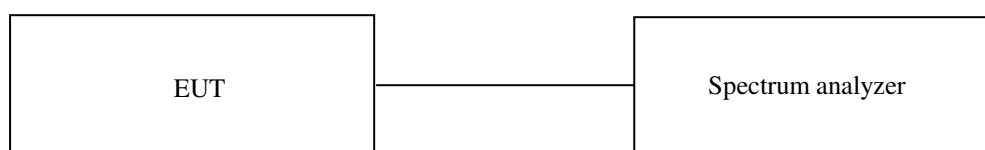
9. 100 kHz BANDWIDTH OUTSIDE THE FREQUENCY BAND

9.1 Operating environment

Temperature : 24 °C
Relative humidity : 46 % R.H.

9.2 Test set-up for conducted measurement

The antenna output of the EUT was connected to the spectrum analyzer. The resolution and video bandwidth is set to 100 kHz, and peak detection was used.



9.3 Test set-up for radiated measurement

The radiated emissions measurements were performed on the 3 m, open-field test site. The EUT was placed on a non-conductive turntable above the ground plane.

The frequency spectrum from 30 MHz to 40 GHz was scanned and maximum emission levels at each frequency recorded. The system was rotated 360°, and the antenna was varied in the height between 1.0 m and 4.0 m in order to determine the maximum emission levels. This procedure was performed for horizontal and vertical polarization of the receiving antenna.

9.4 Test equipment used

	Model Number	Manufacturer	Description	Serial Number	Last Cal.(Interval)
■ -	FSV40	Rohde & Schwarz	Signal Analyzer	101009	May. 31, 2016 (1Y)
■ -	ESU	Rohde & Schwarz	EMI Test Receiver	100261	Apr. 06, 2016 (1Y)
■ -	310N	Sonoma Instrument	Pre-Amplifier	312544	Apr. 05, 2016 (1Y)
■ -	SCU-18	Rohde & Schwarz	Pre-Amplifier	10041	Nov. 23, 2015 (1Y)
■ -	DT3000	Innco System	Turn Table	930611	N/A
■ -	MA4000-EP	Innco System	Antenna Master	3320611	N/A
■ -	VULB9163	Schwarzbeck	TRILOG Broadband Antenna	9163-421	Apr. 15, 2016 (2Y)
■ -	BBHA9120D	Schwarzbeck	Horn Antenna	BBHA9120D295	Aug. 31, 2015 (2Y)
■ -	BBHA9170	Schwarzbeck	Horn Antenna	BBHA9170178	Aug. 31, 2015 (2Y)

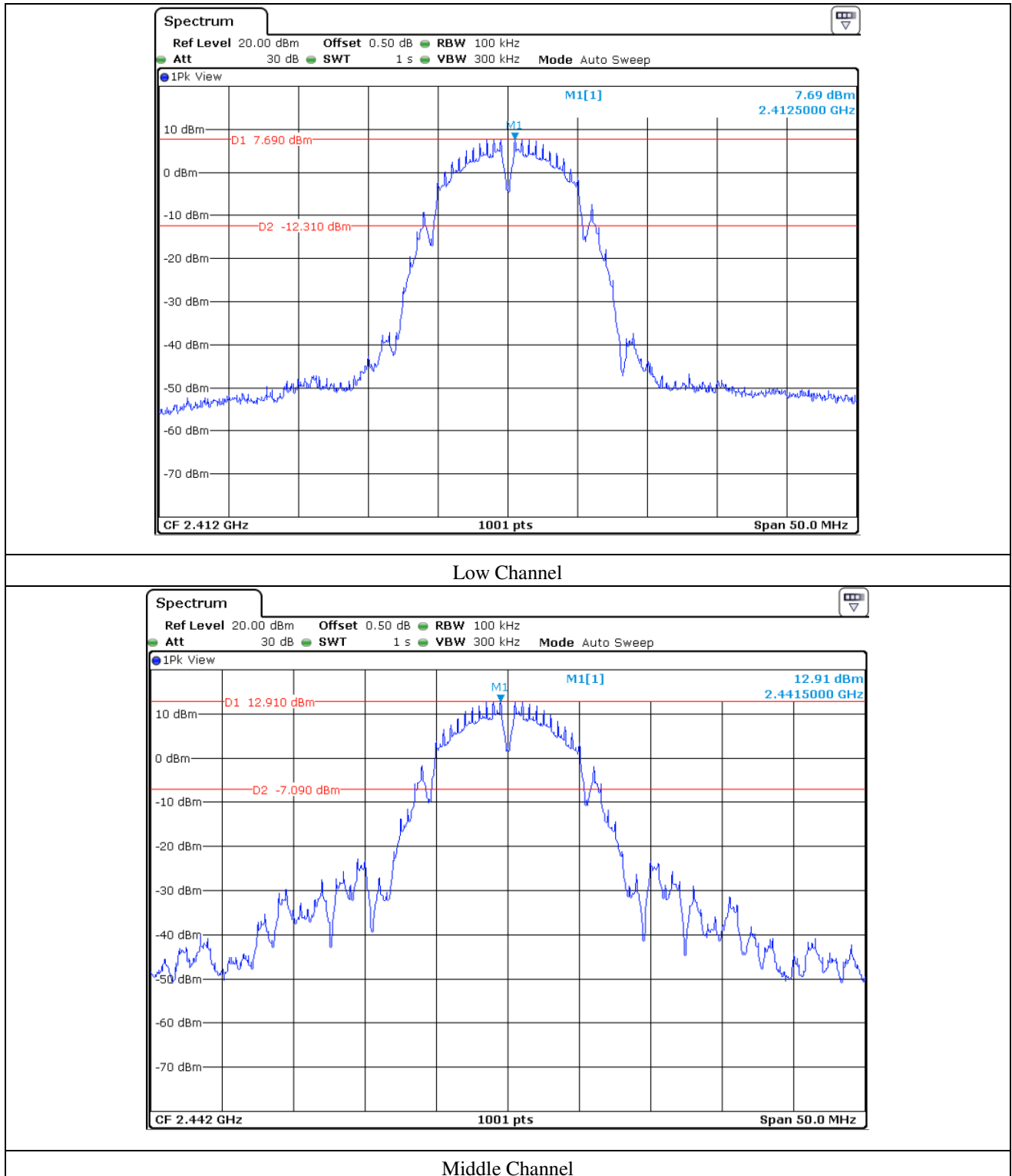
All test equipment used is calibrated on a regular basis.

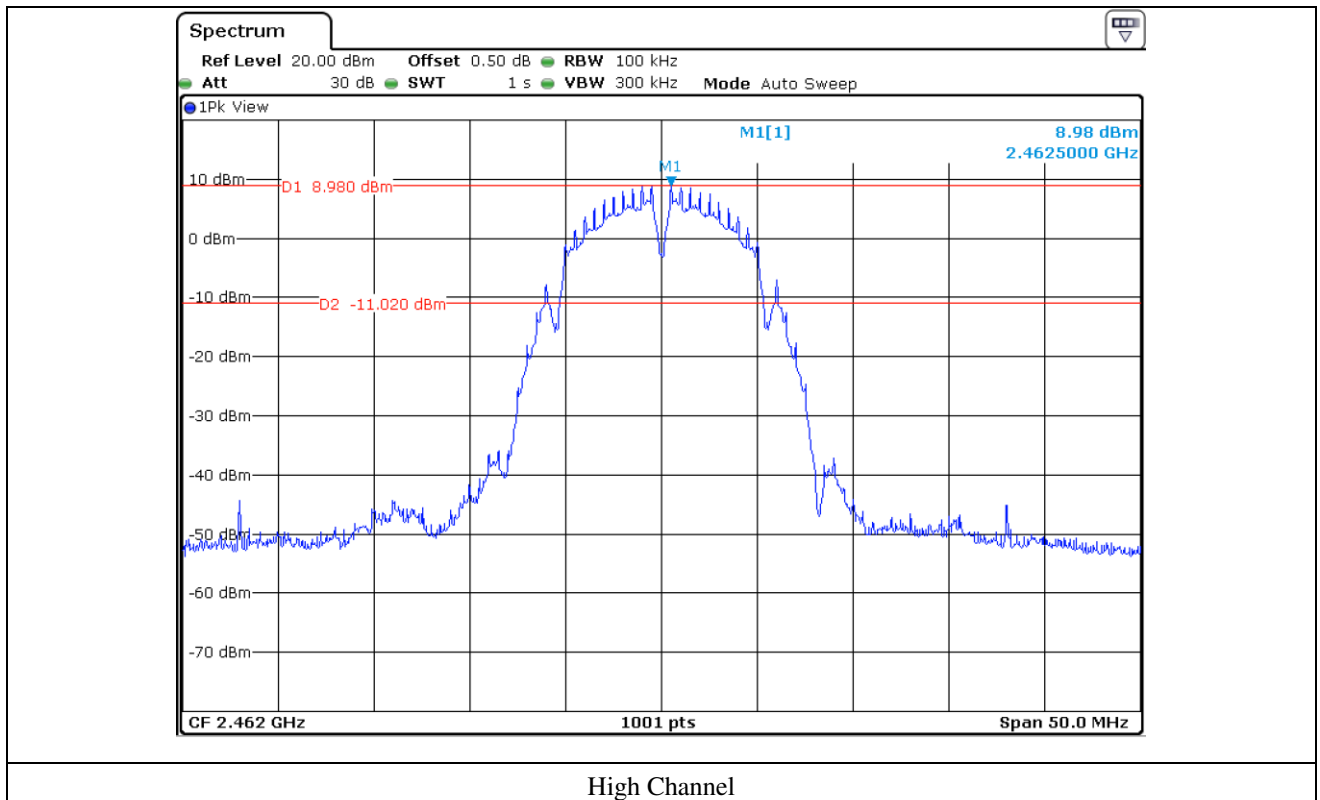
9.5 Test data for conducted emission

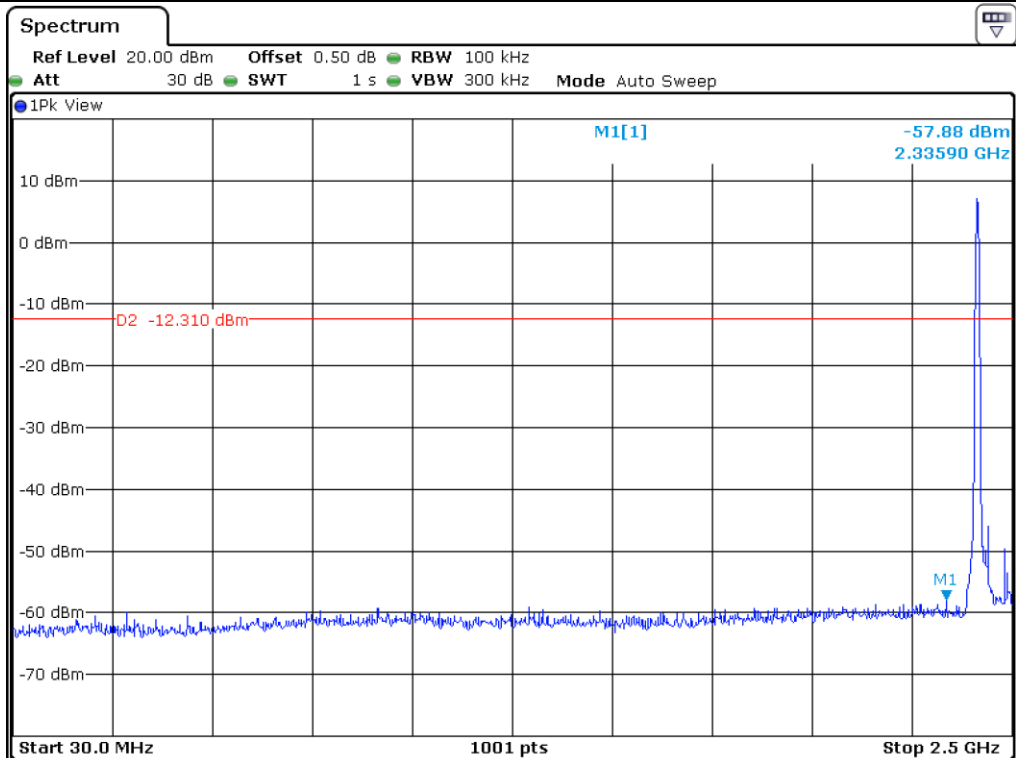
9.5.1 Test data for Monitoring Port

9.5.1.1 Test data for 802.11b WLAN Mode

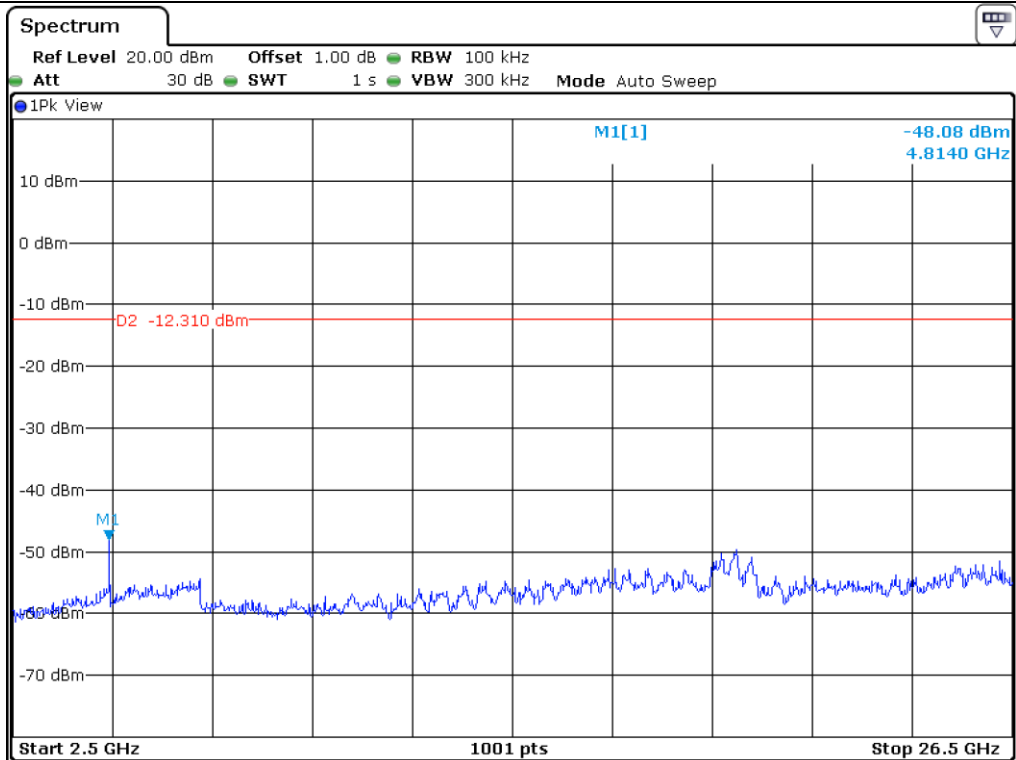
9.5.1.1.1 Test data for Antenna 0



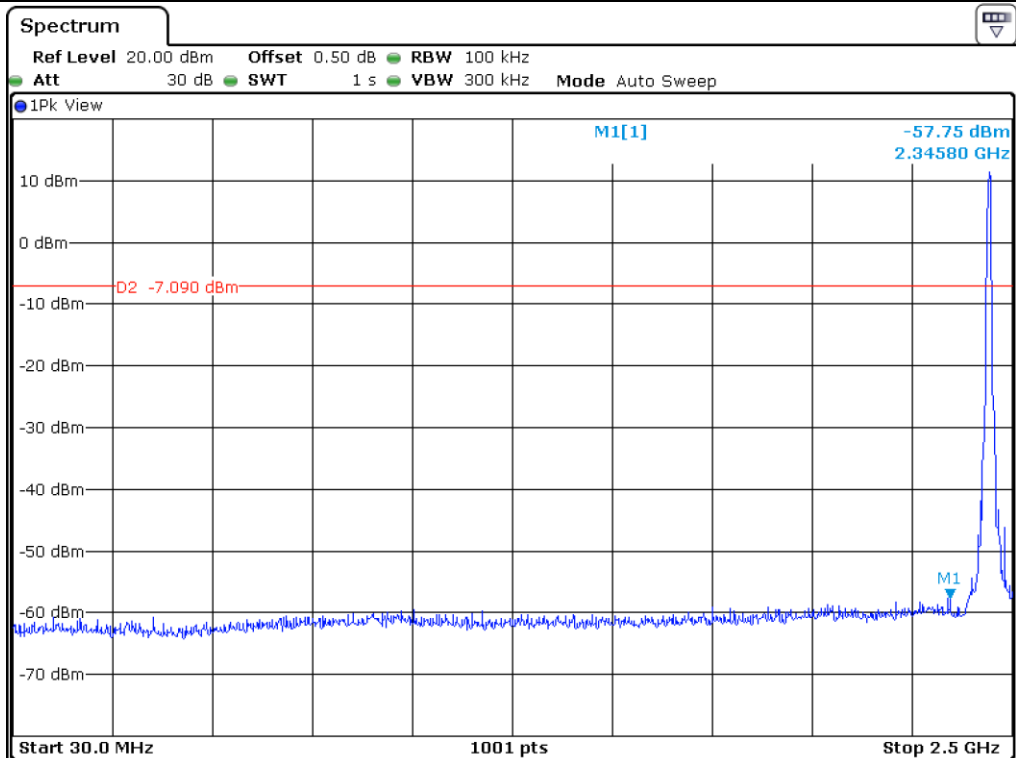




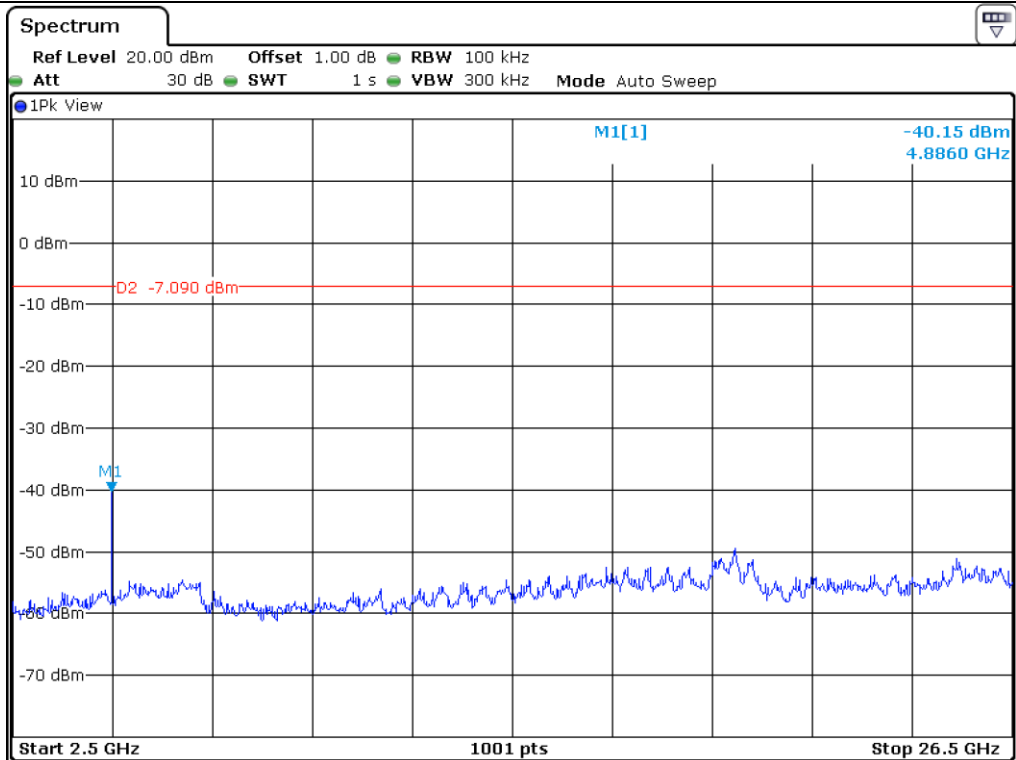
Low Channel



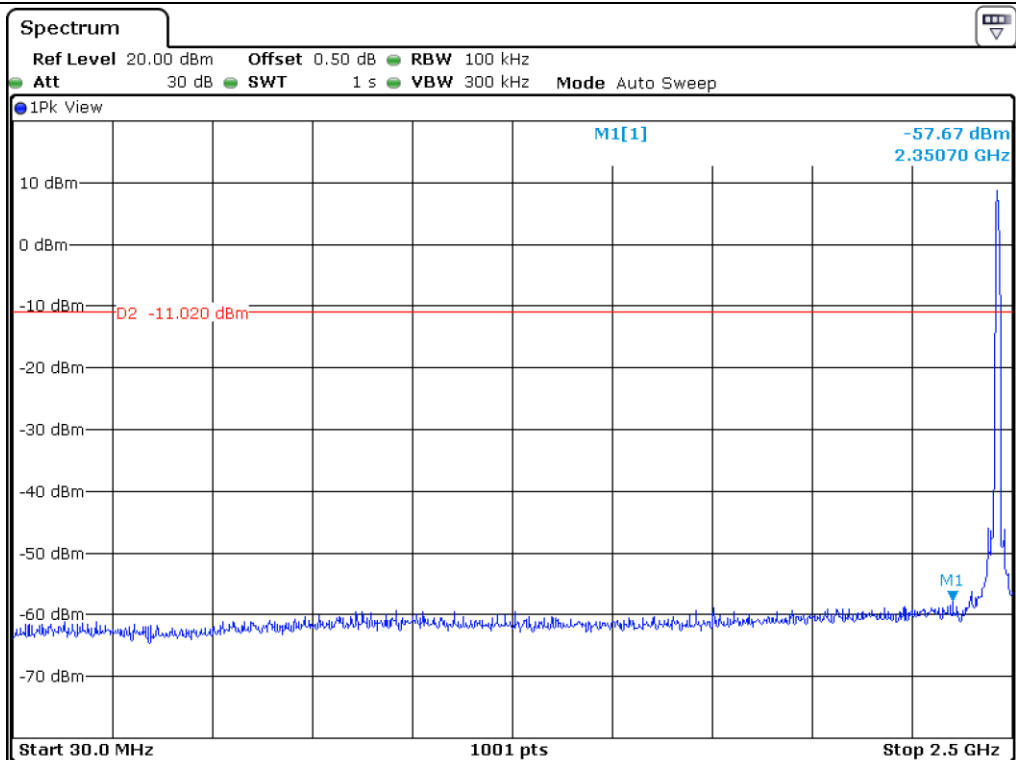
Low Channel



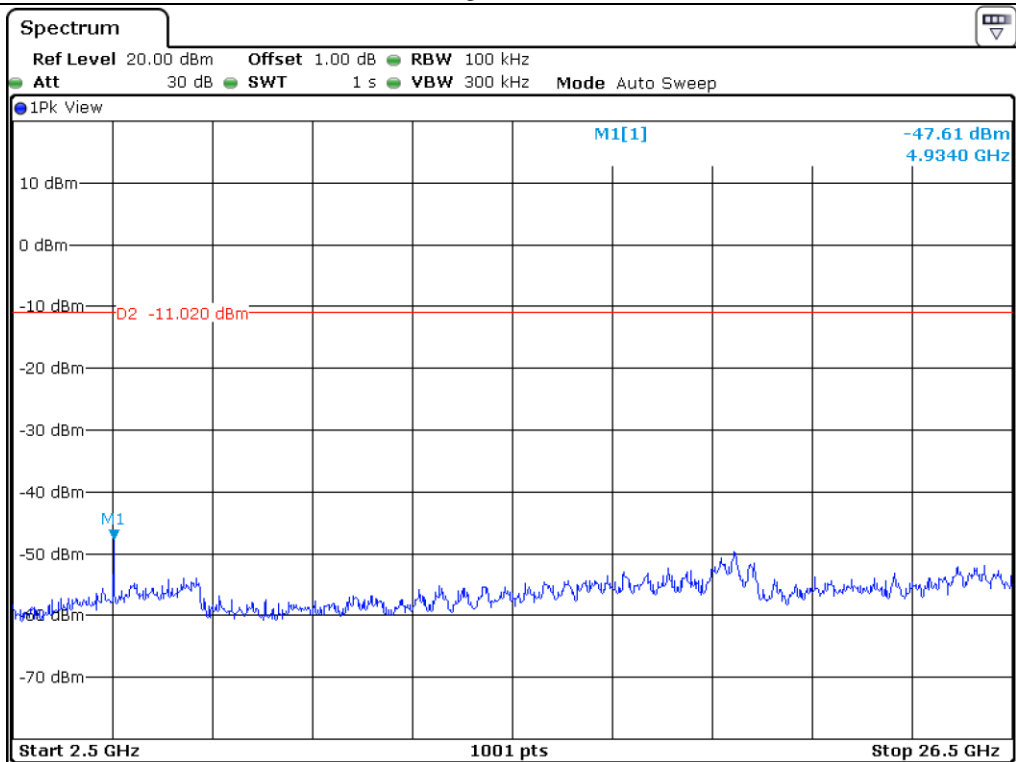
Middle Channel



Middle Channel

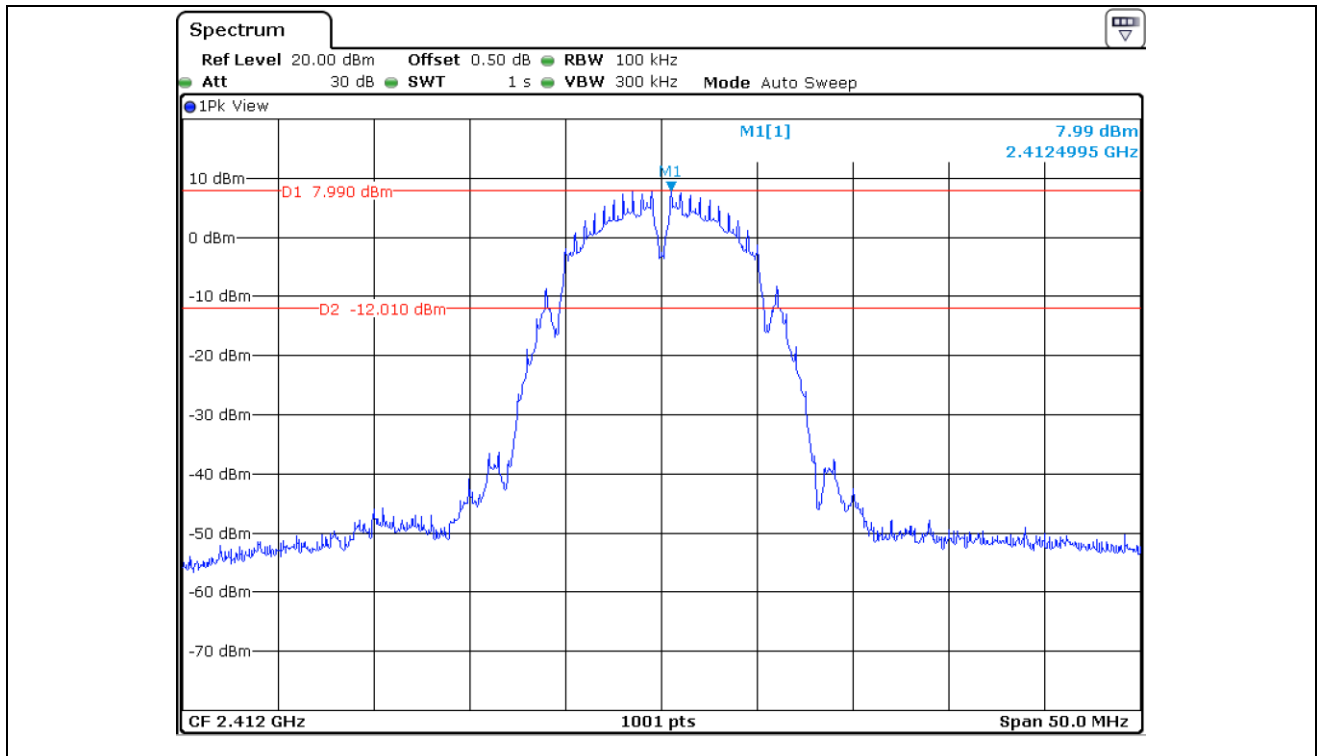


High Channel

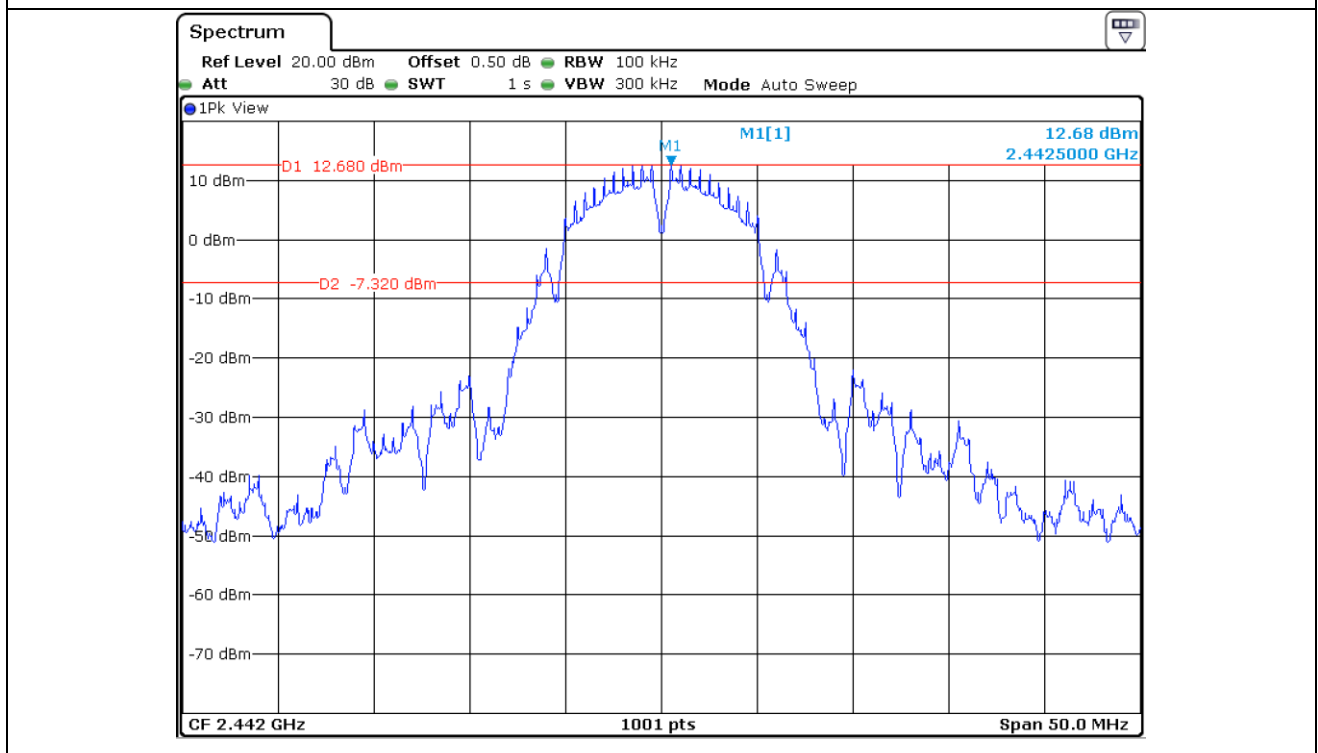


High Channel

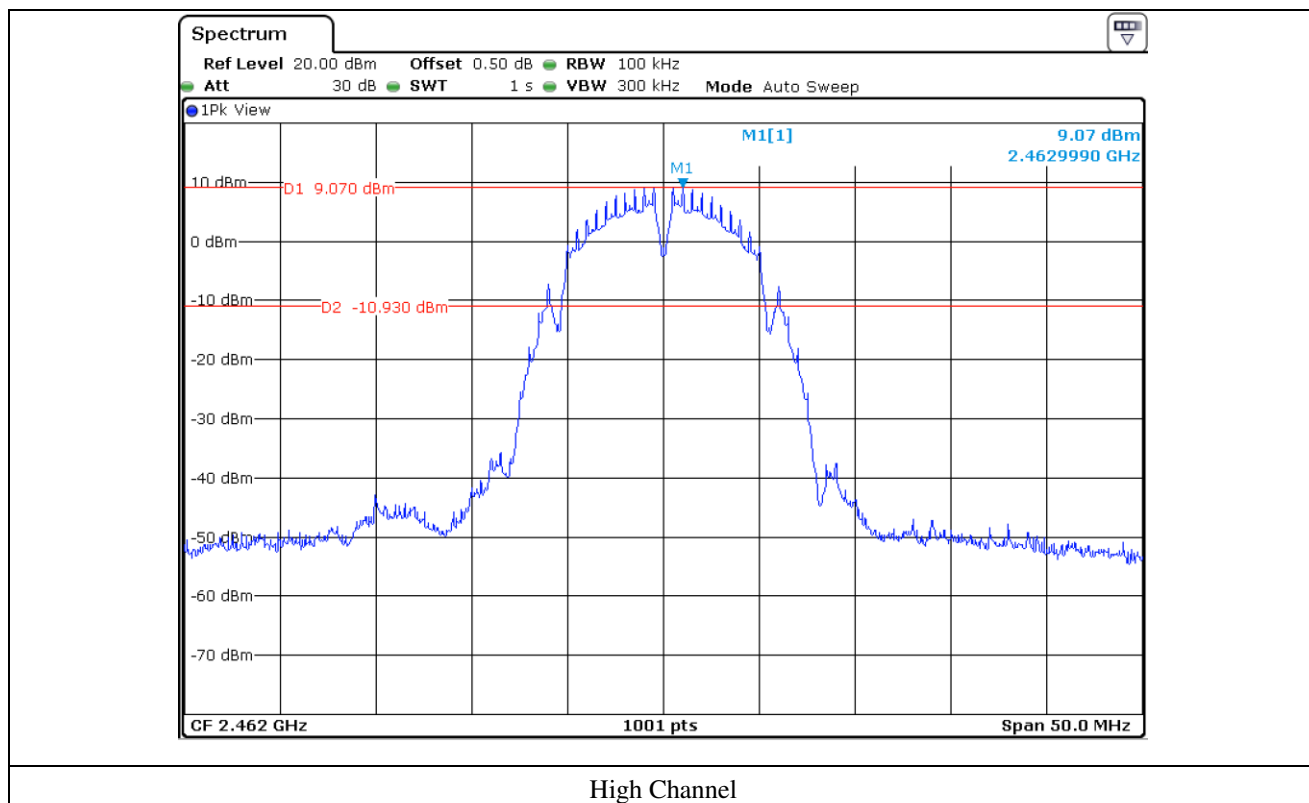
9.5.1.1.2 Test data for Antenna 1

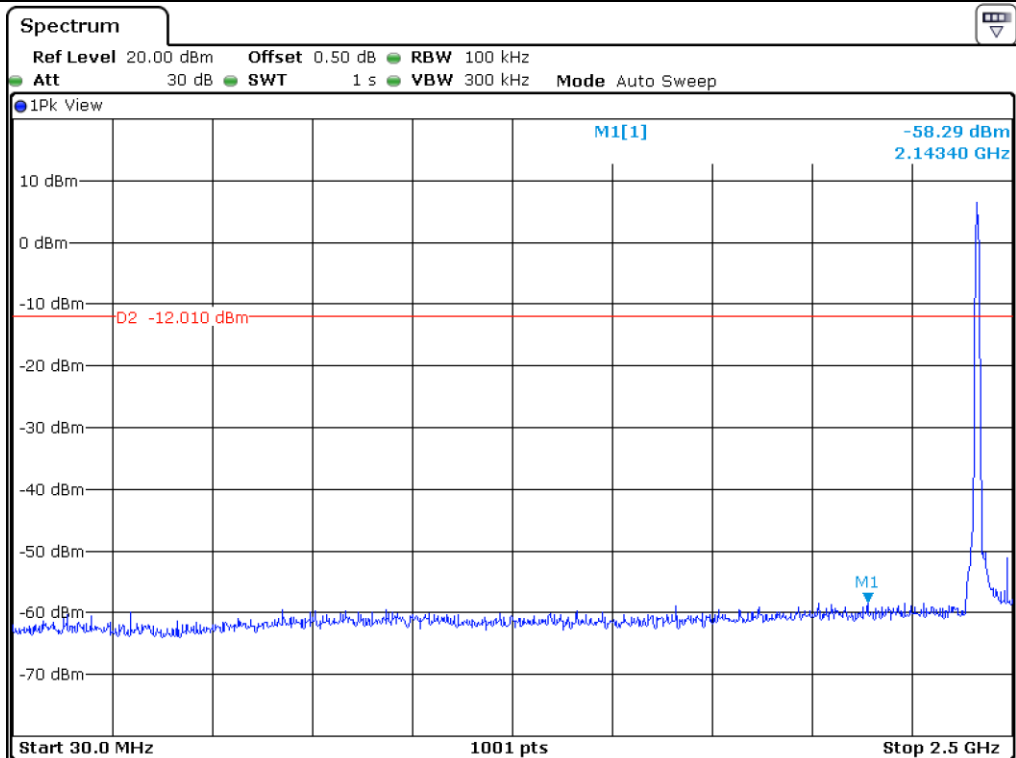


Low Channel

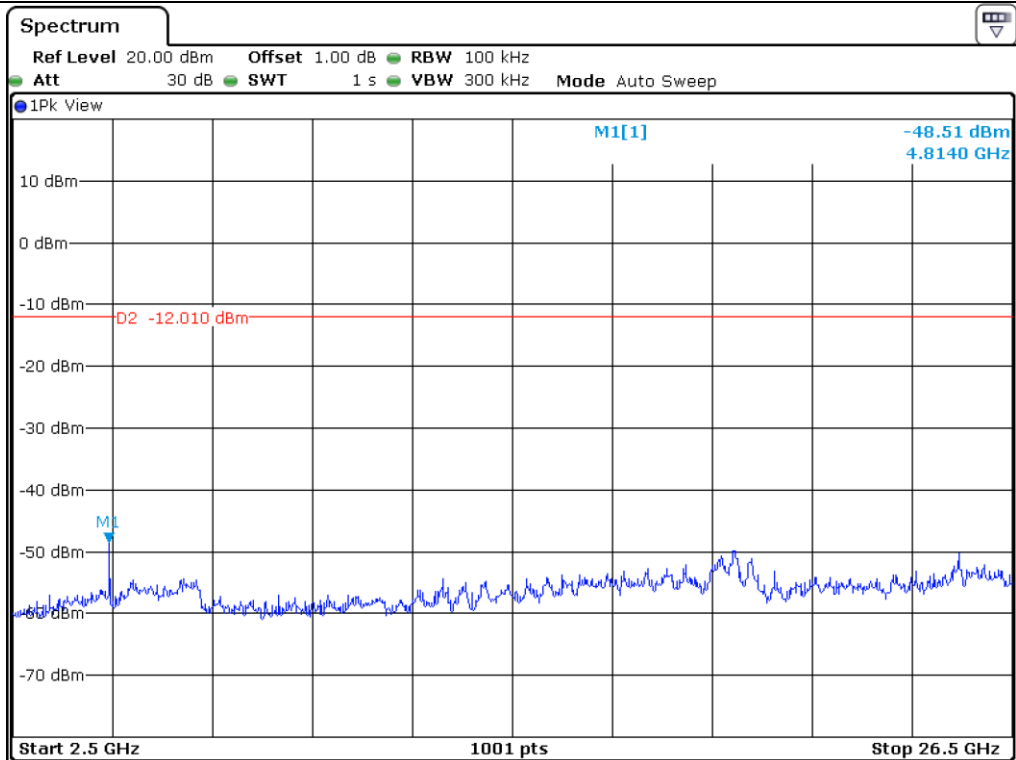


Middle Channel

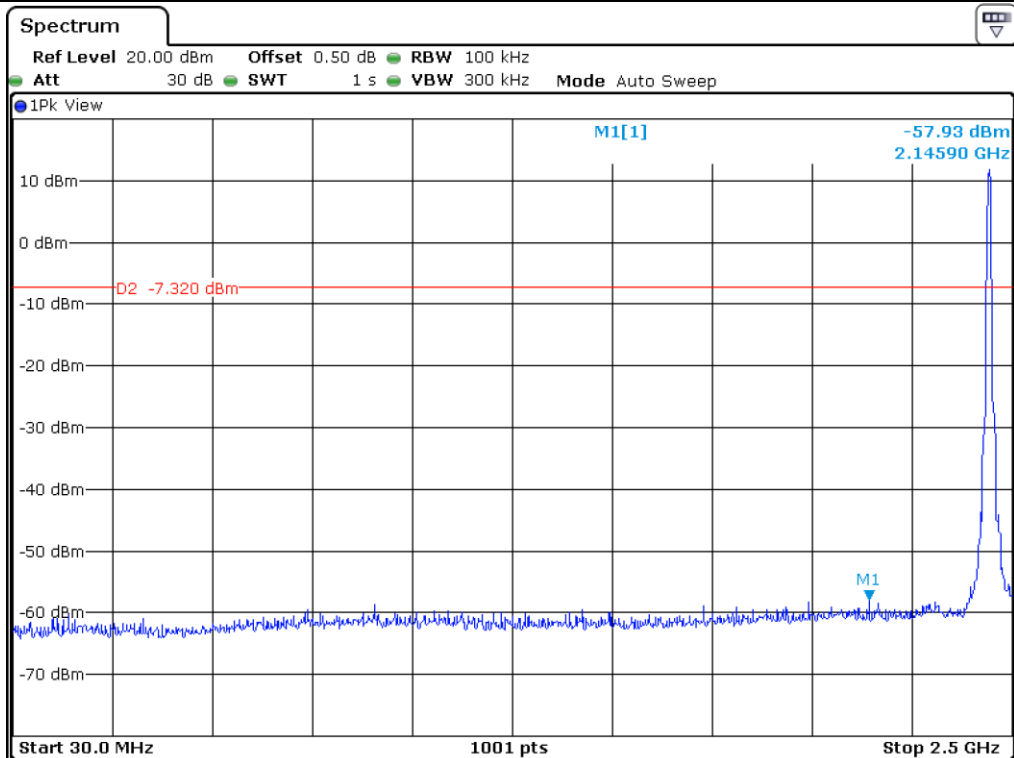




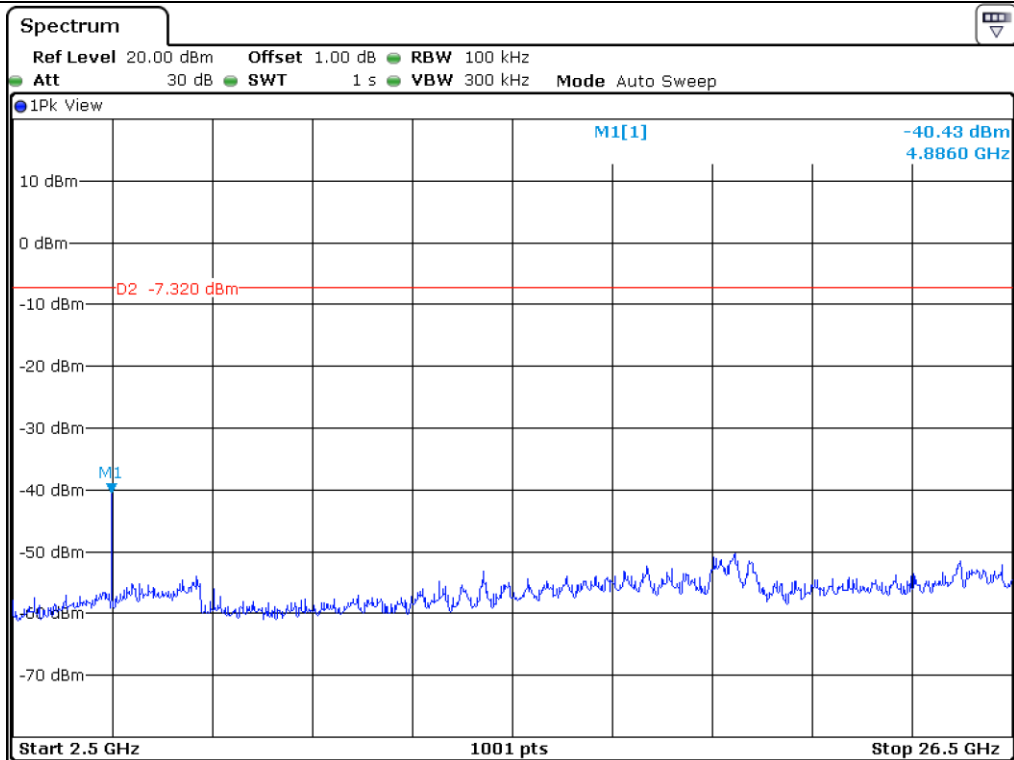
Low Channel



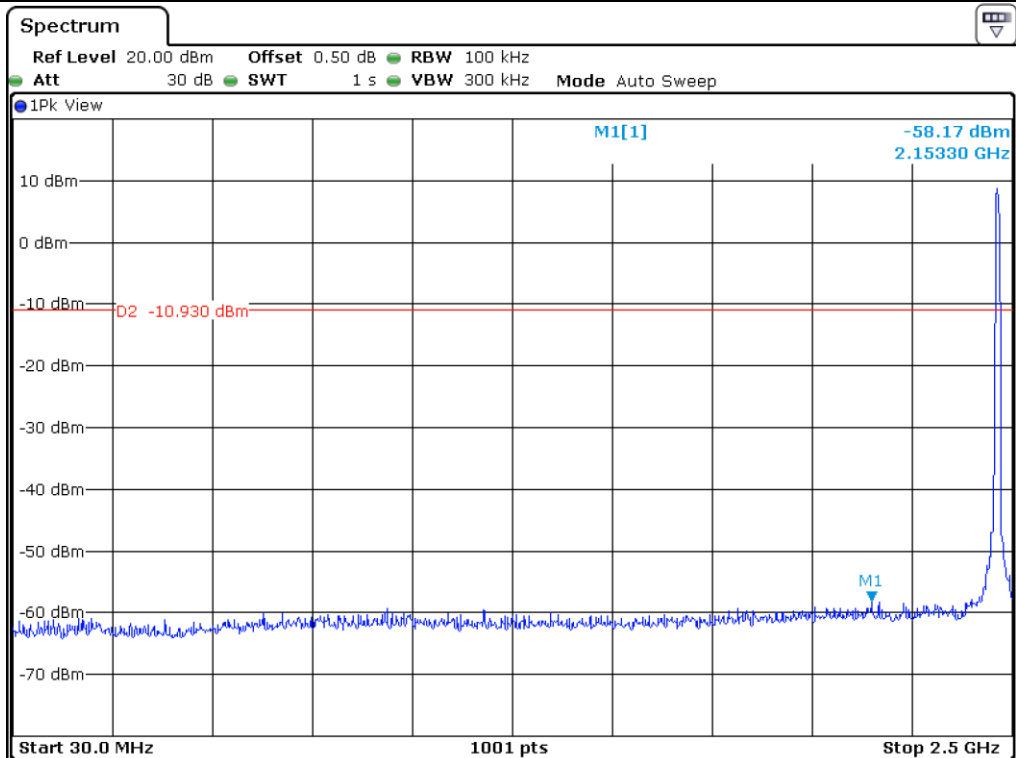
Low Channel



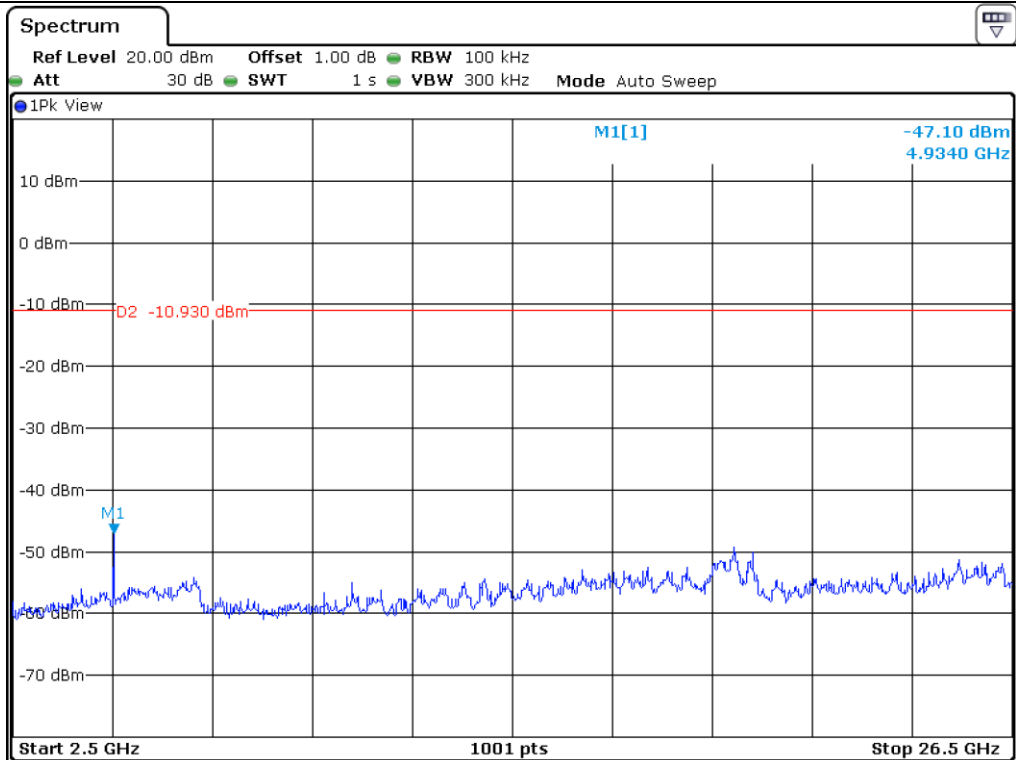
Middle Channel



Middle Channel



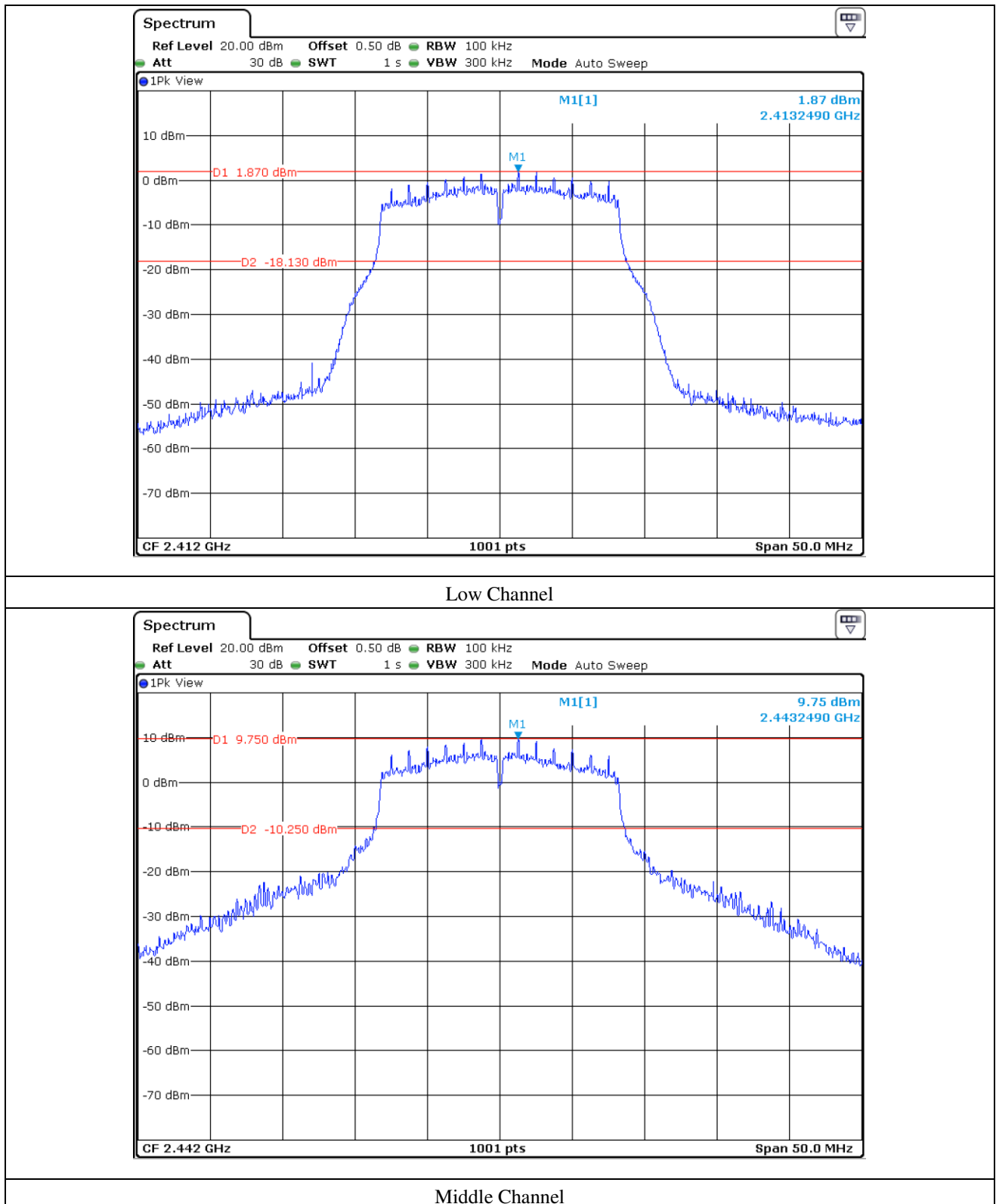
High Channel

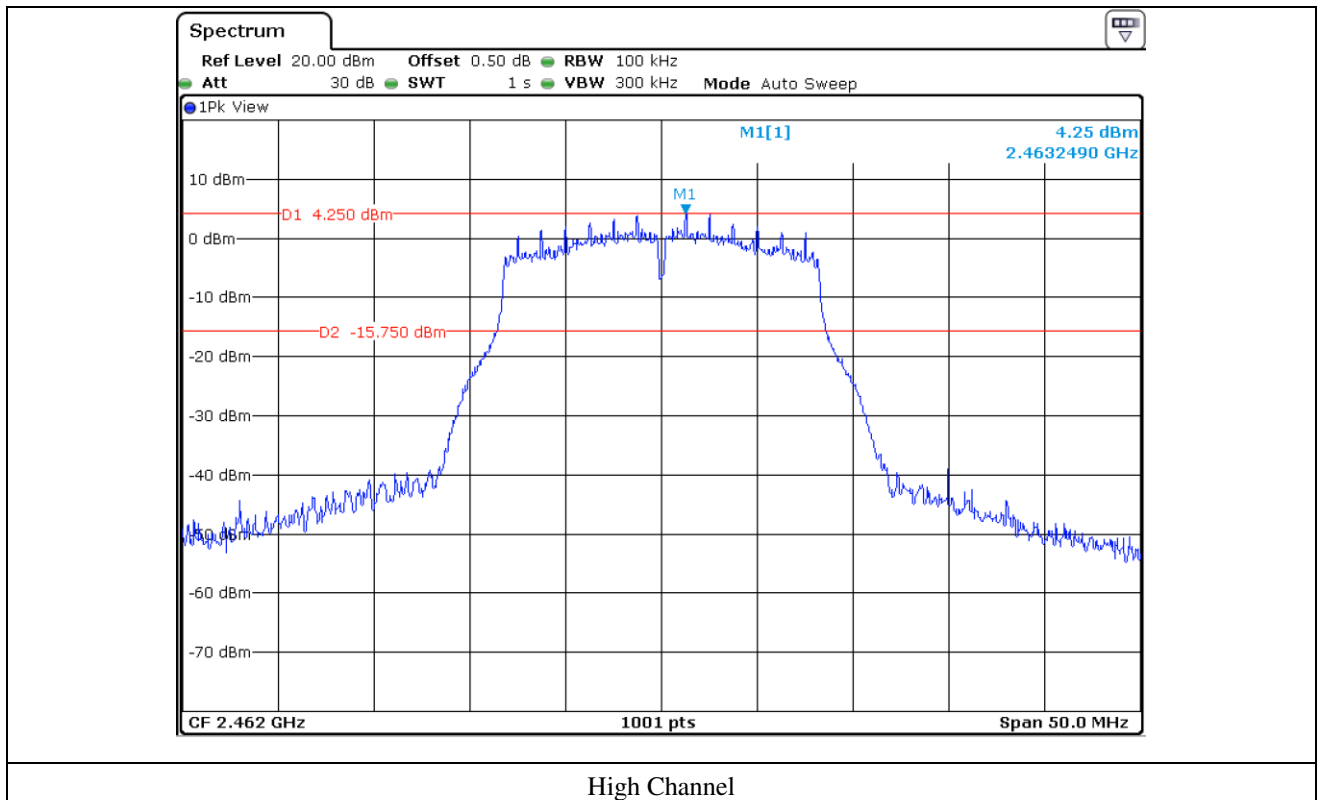


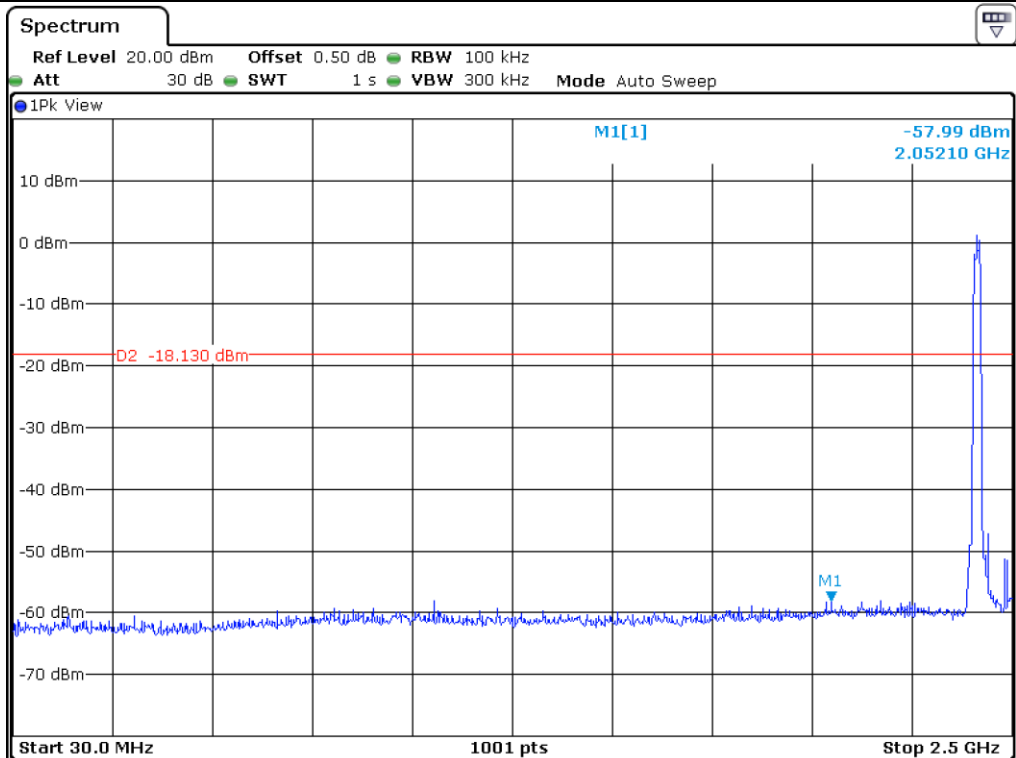
High Channel

9.5.1.2 Test data for 802.11g WLAN Mode

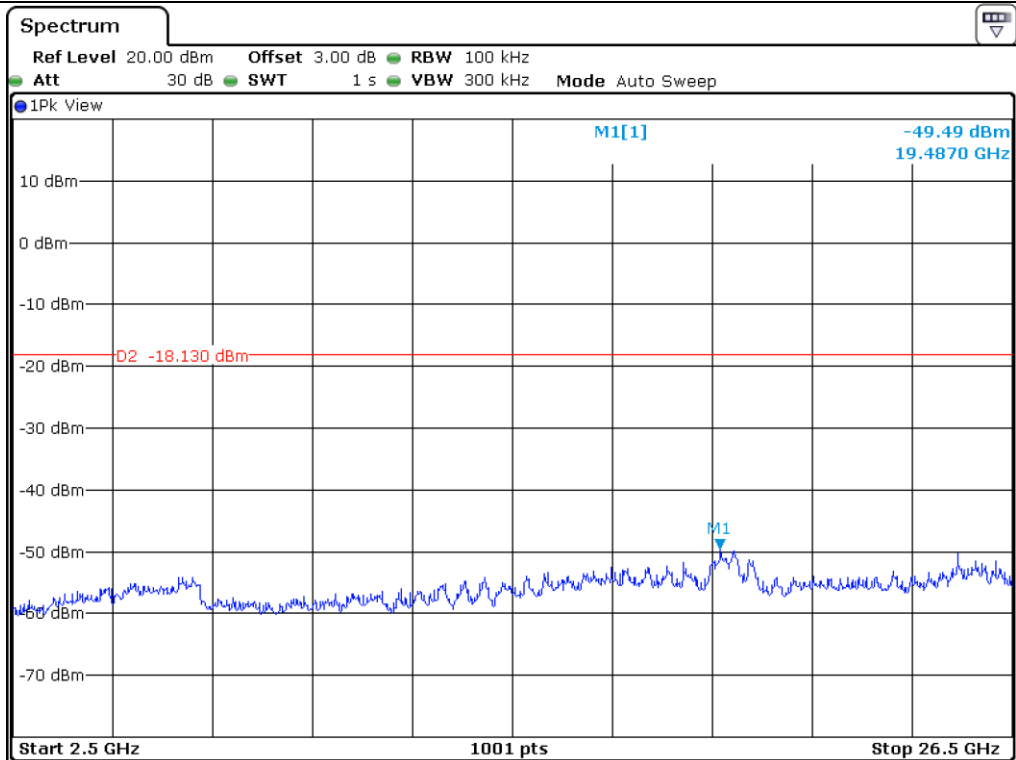
9.5.1.2.1 Test data for Antenna 0



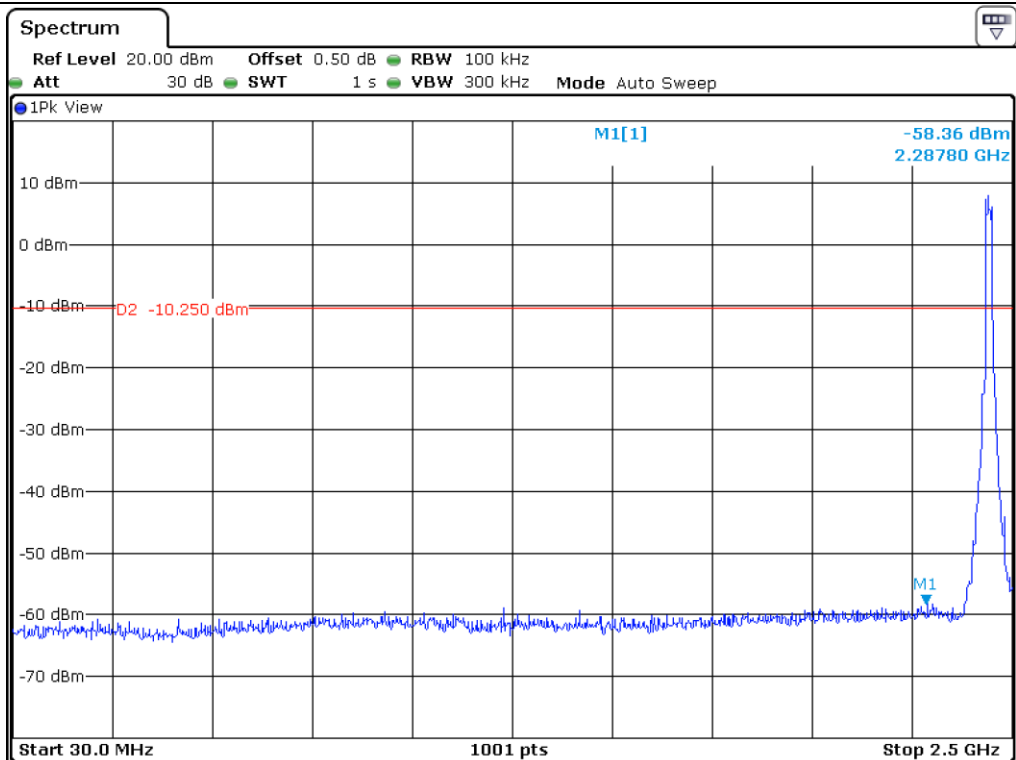




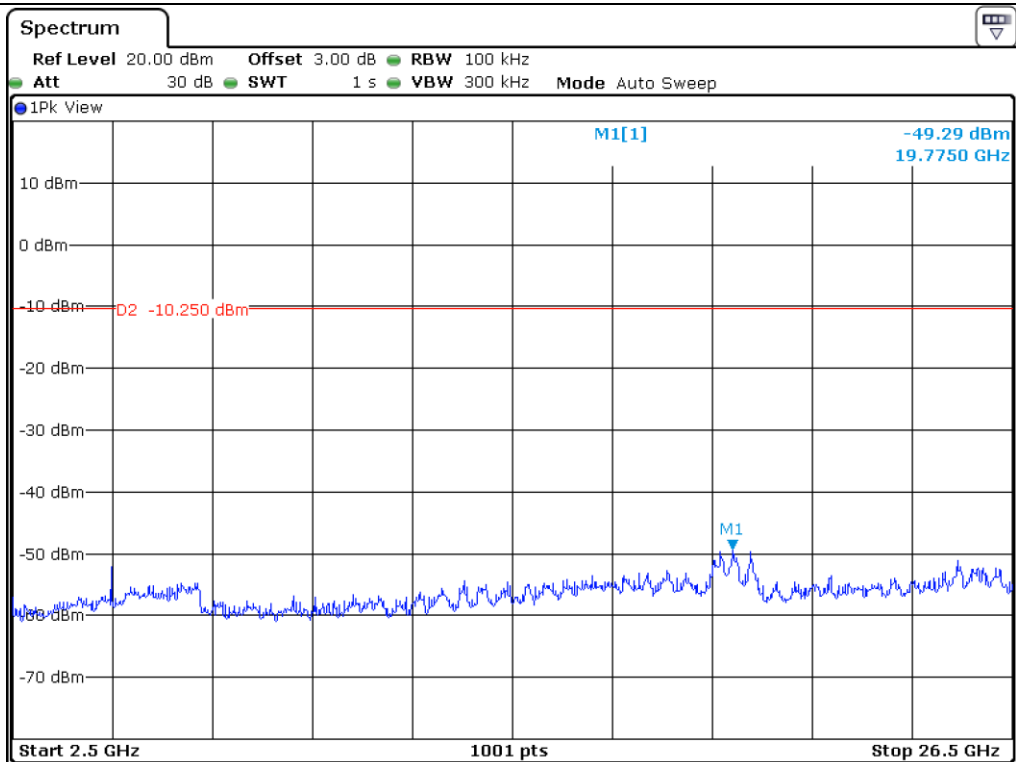
Low Channel



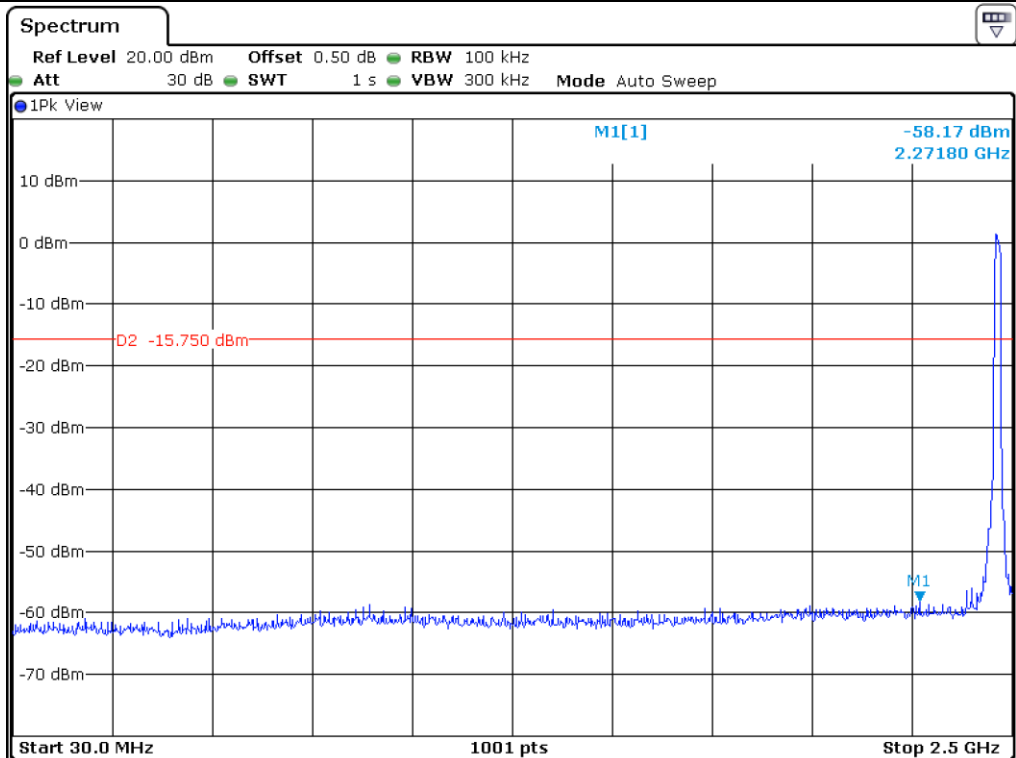
Low Channel



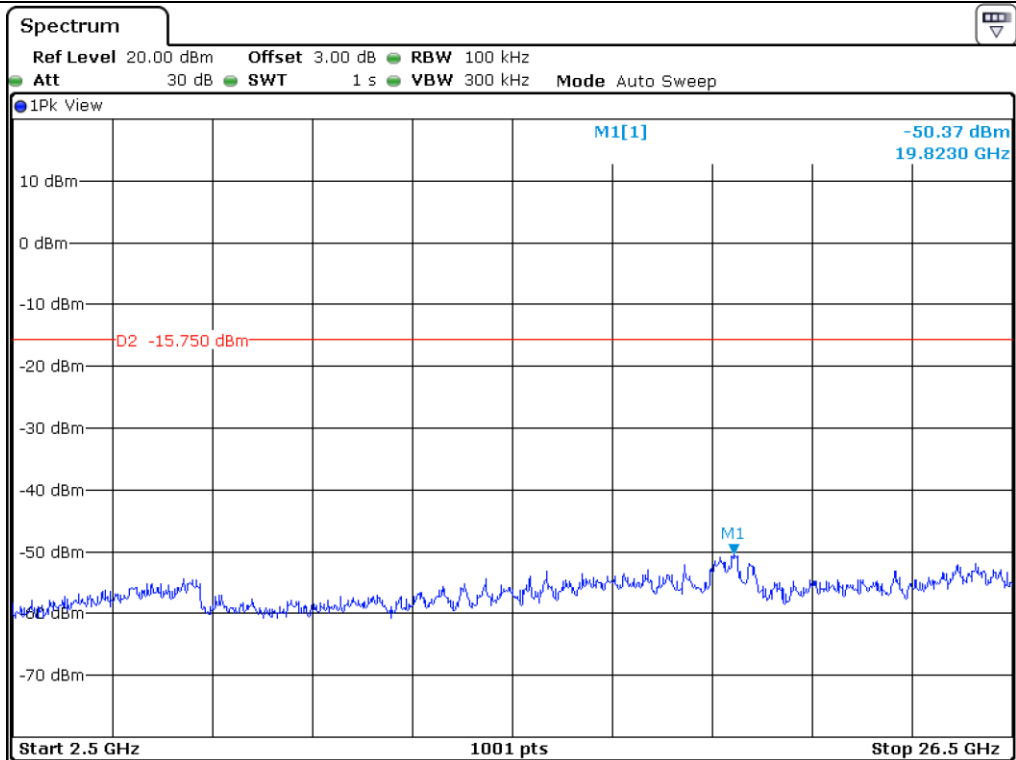
Middle Channel



Middle Channel

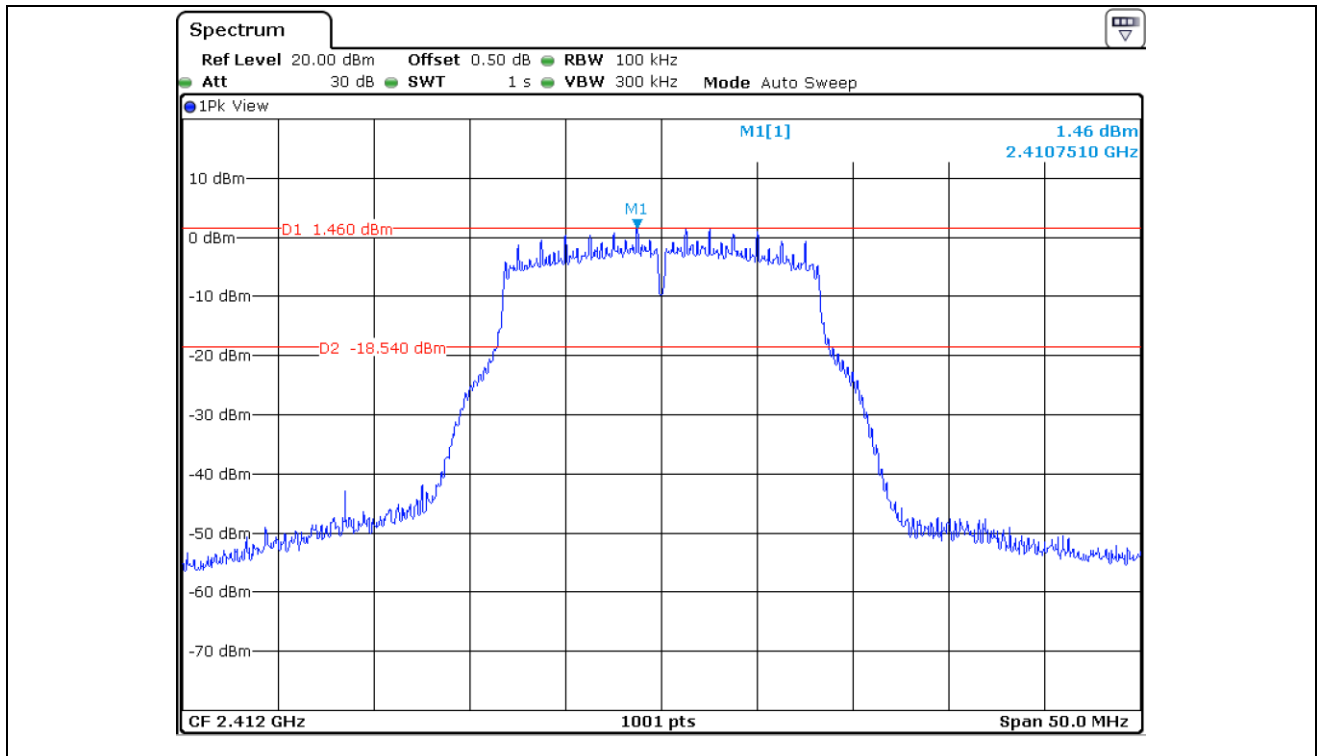


High Channel

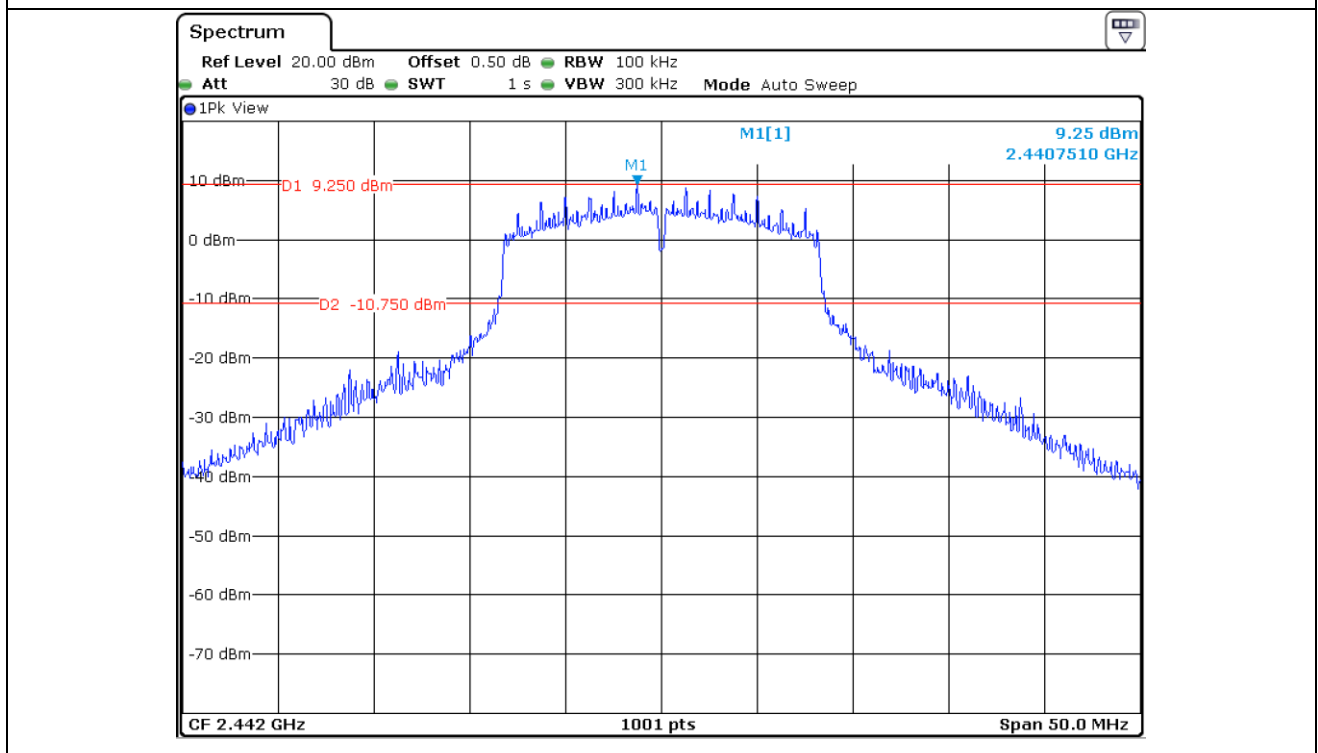


High Channel

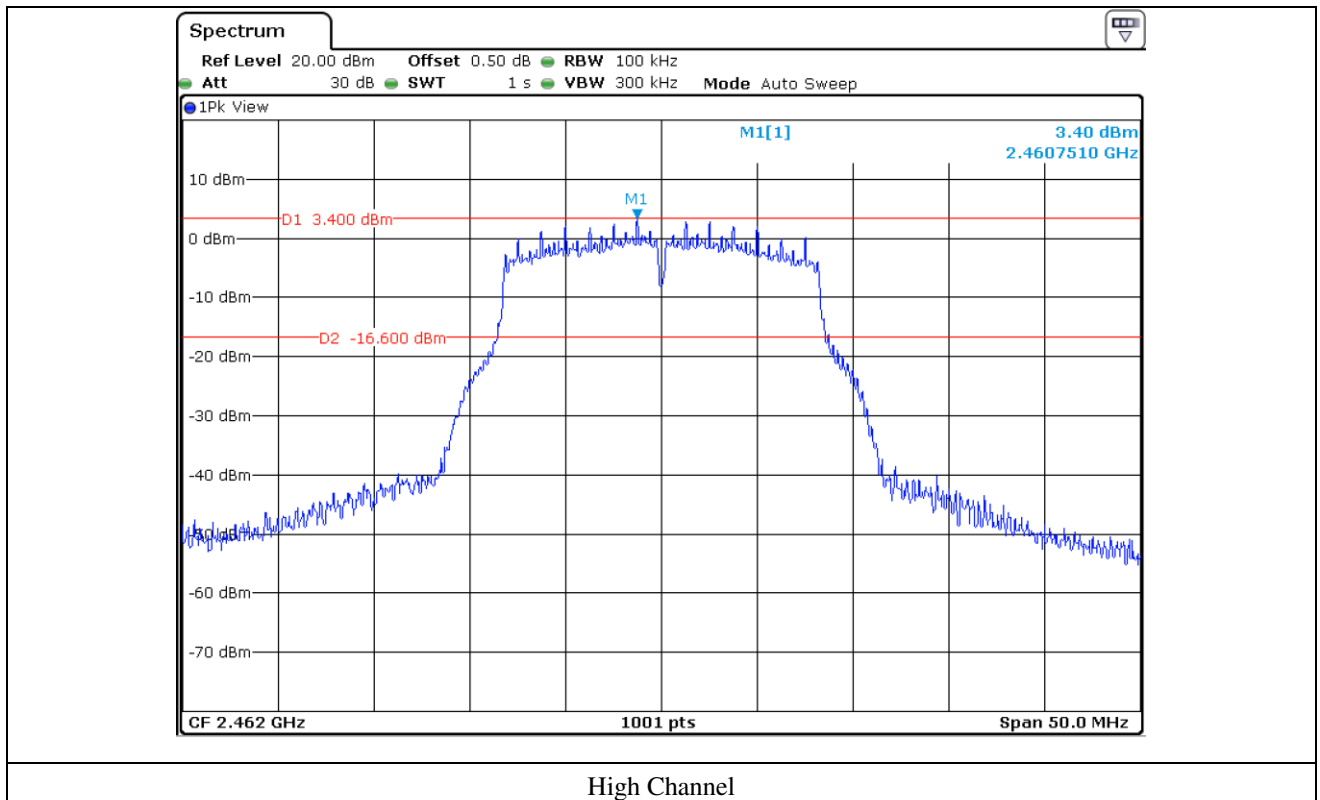
9.5.1.2.2 Test data for Antenna 1

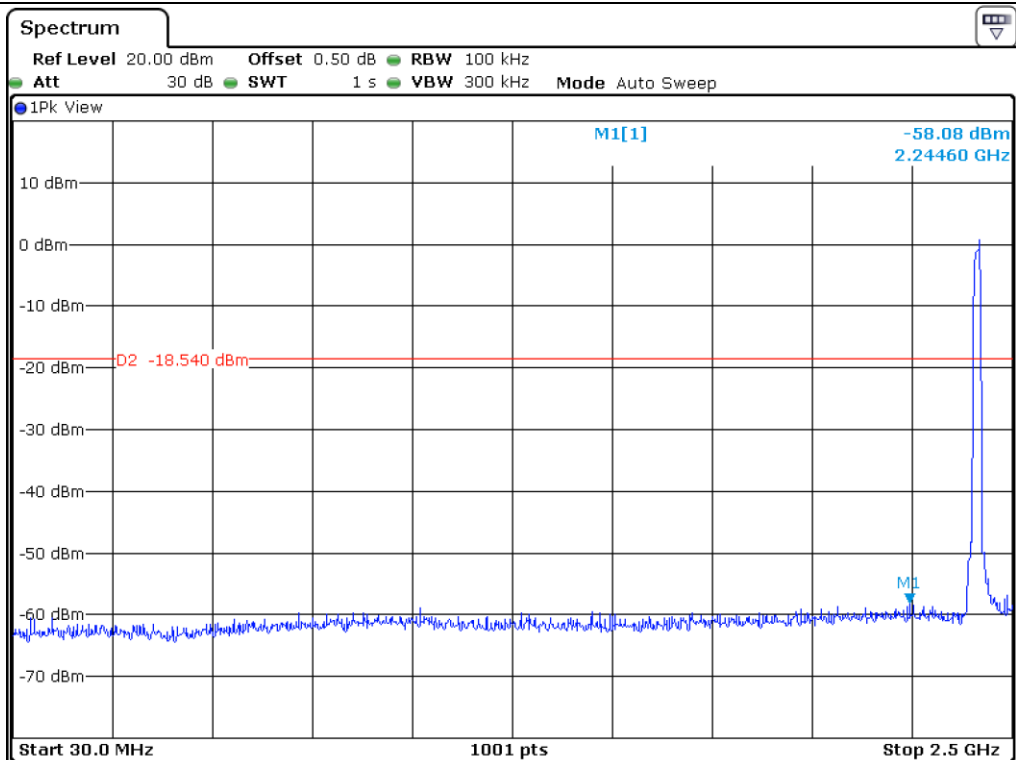


Low Channel

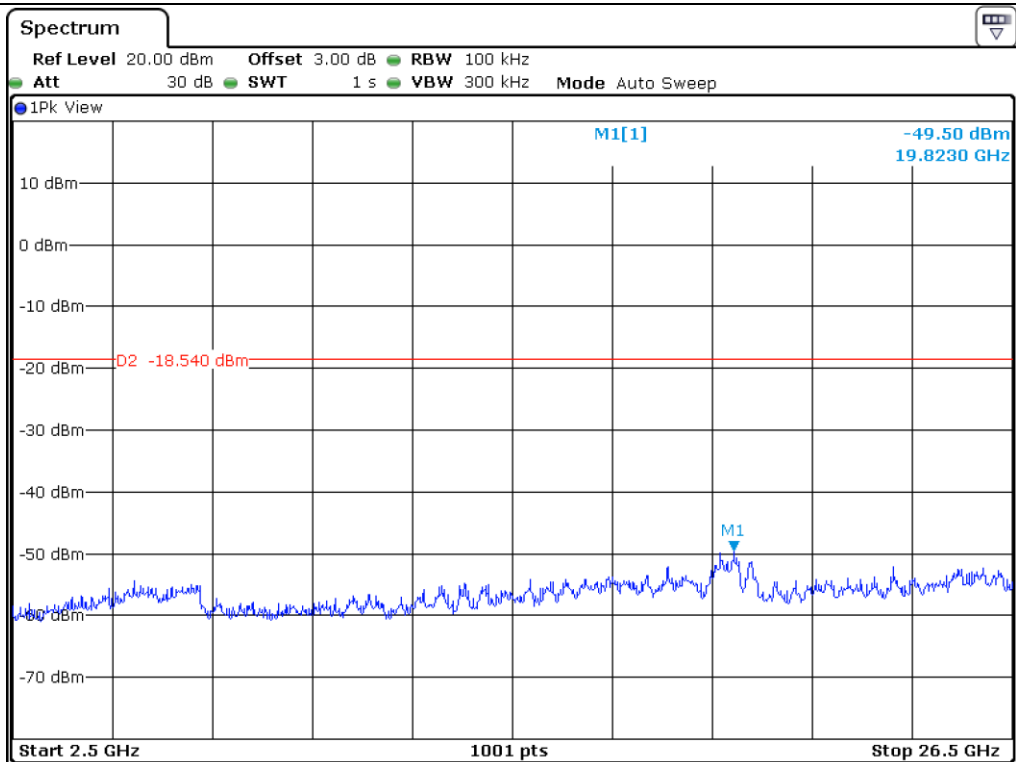


Middle Channel

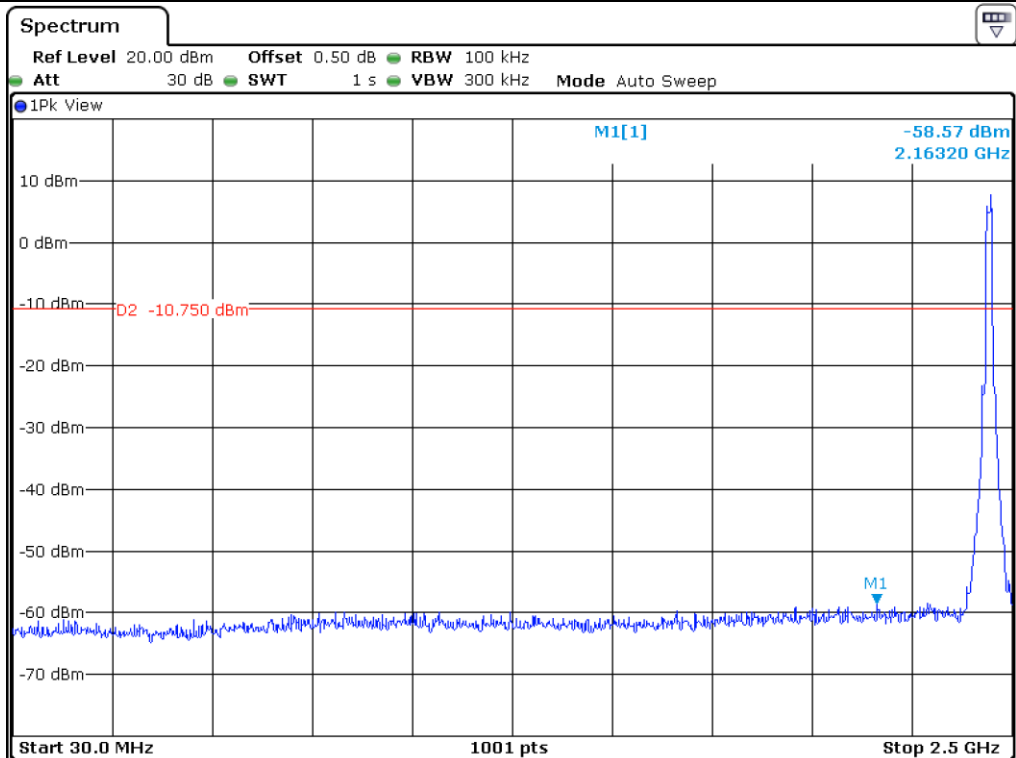




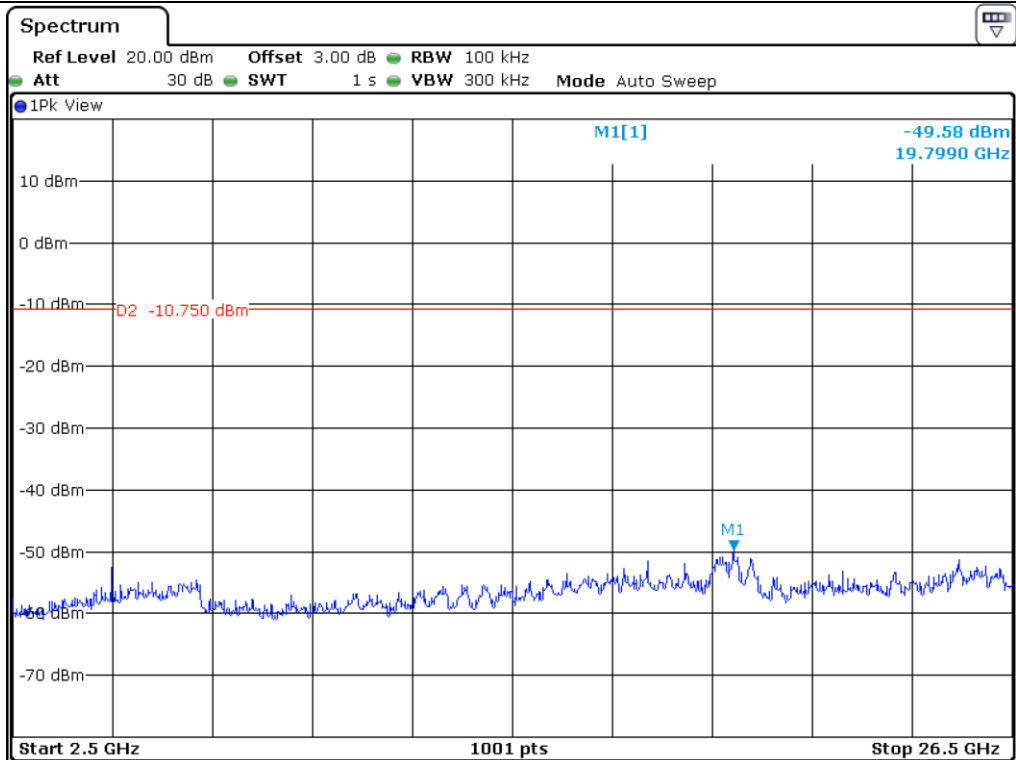
Low Channel



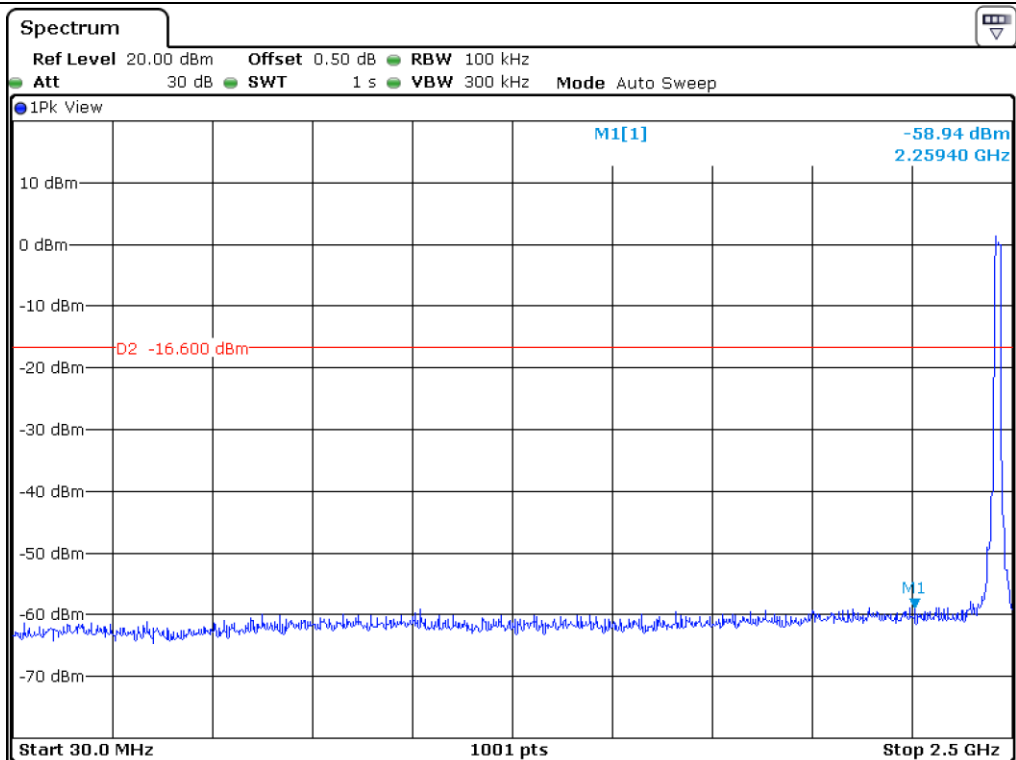
Low Channel



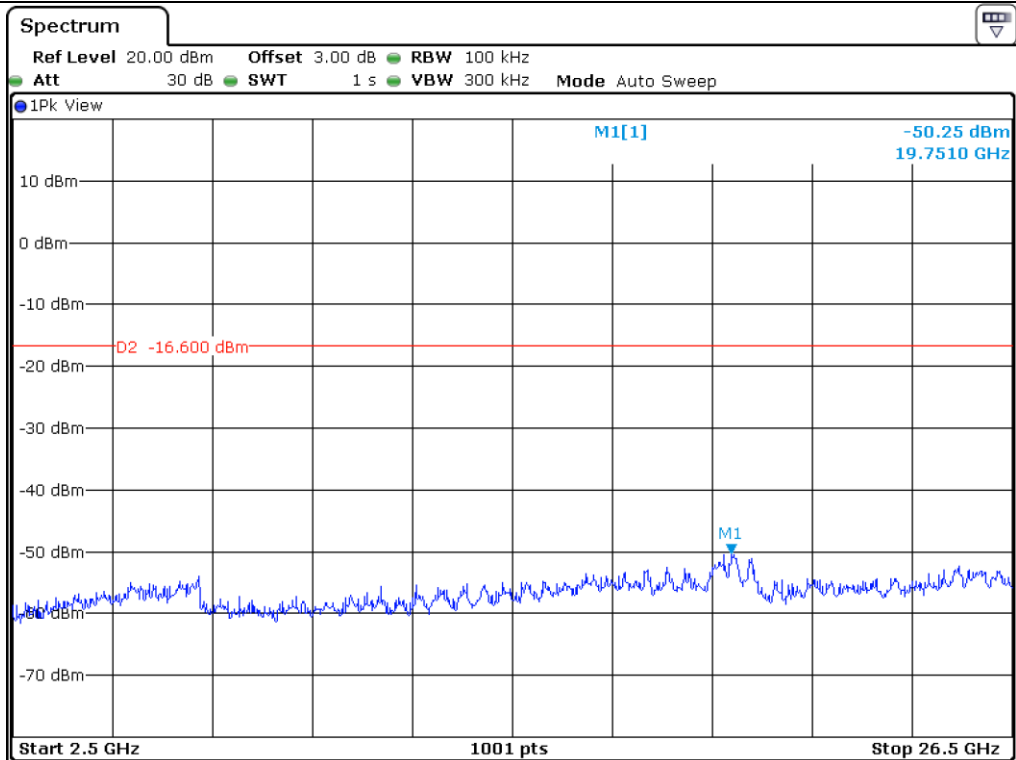
Middle Channel



Middle Channel



High Channel

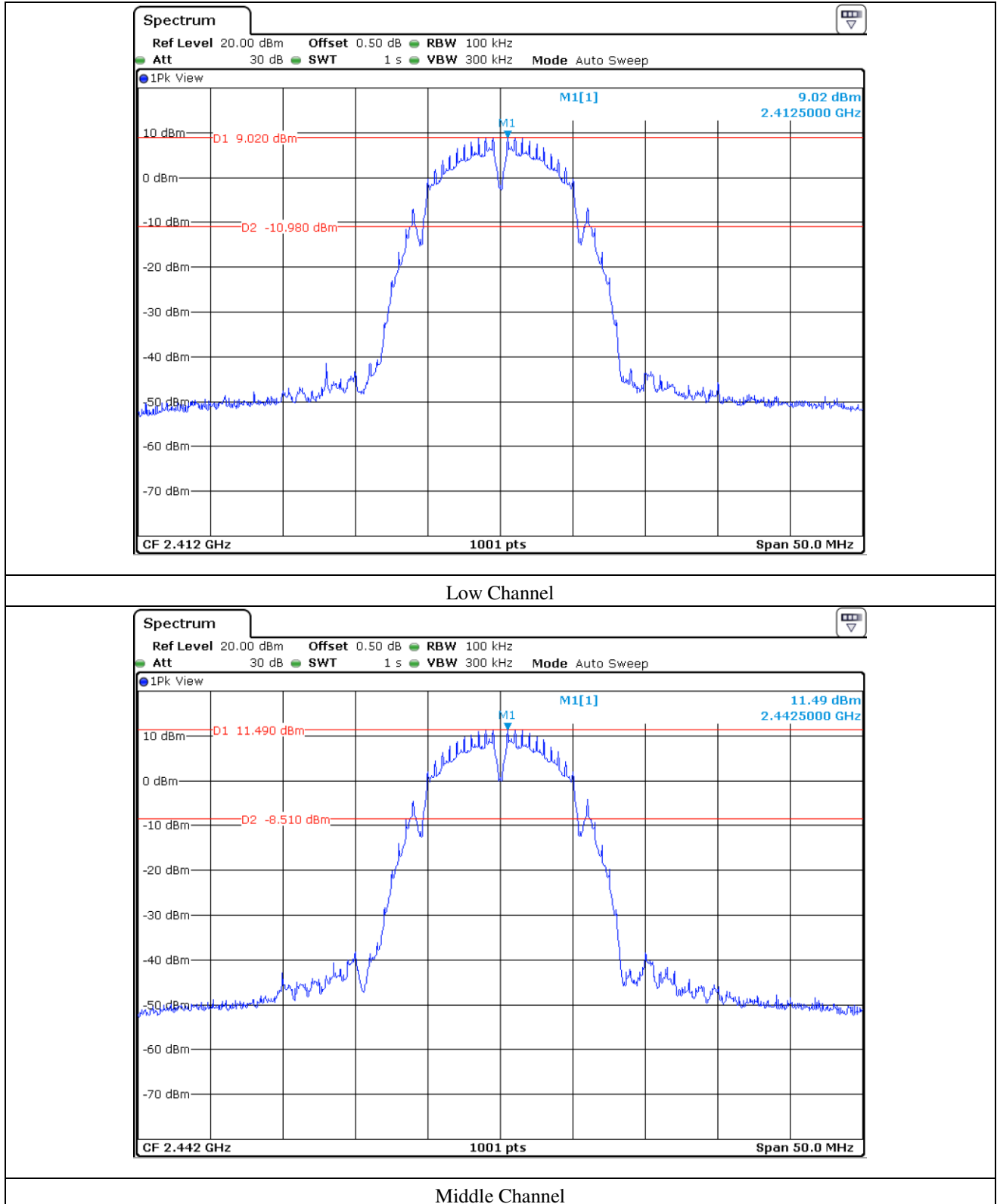


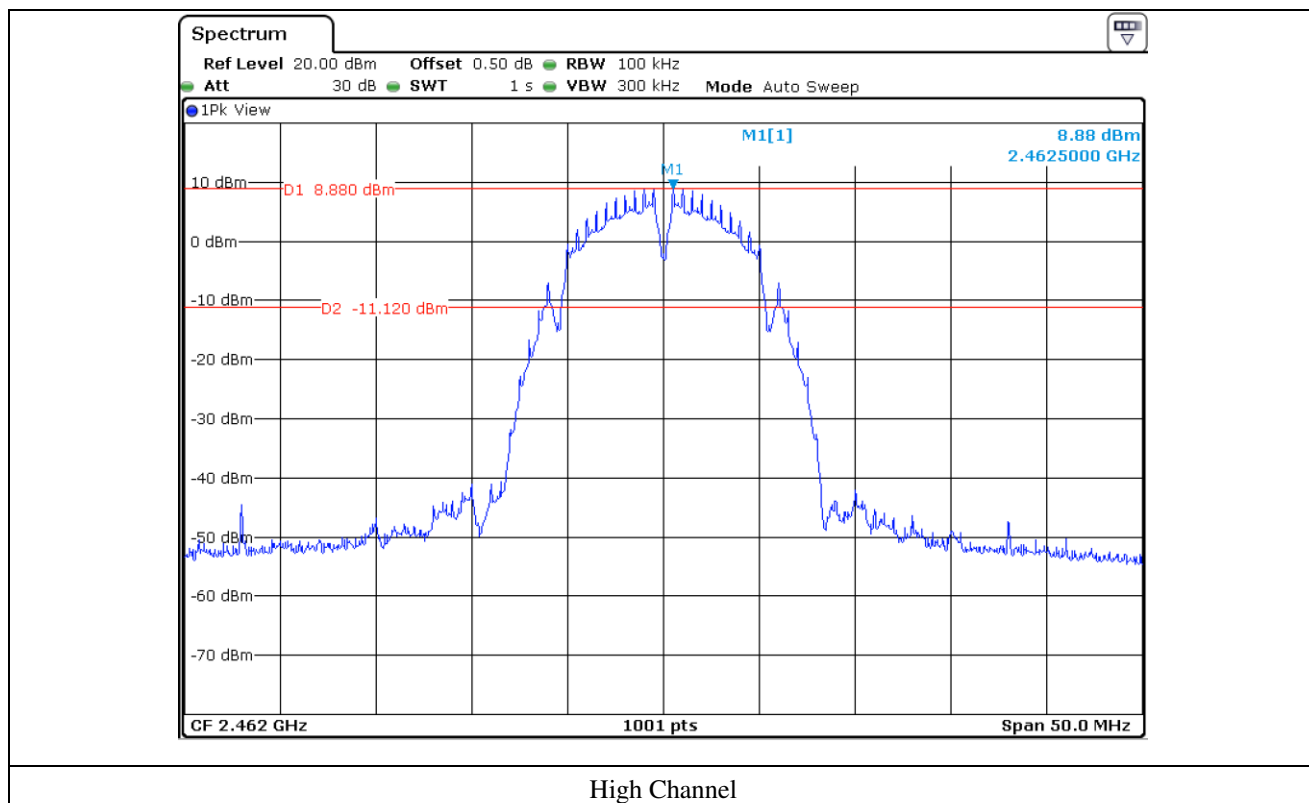
High Channel

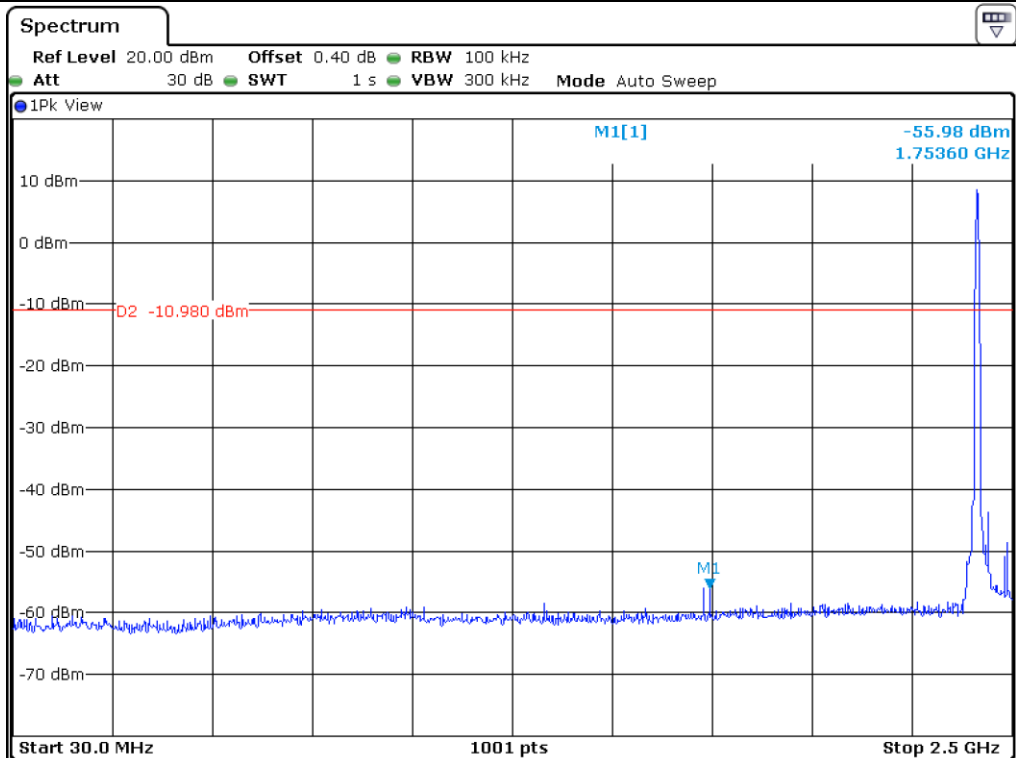
9.5.2 Test data for Service Port

9.5.2.1 Test data for 802.11b WLAN Mode

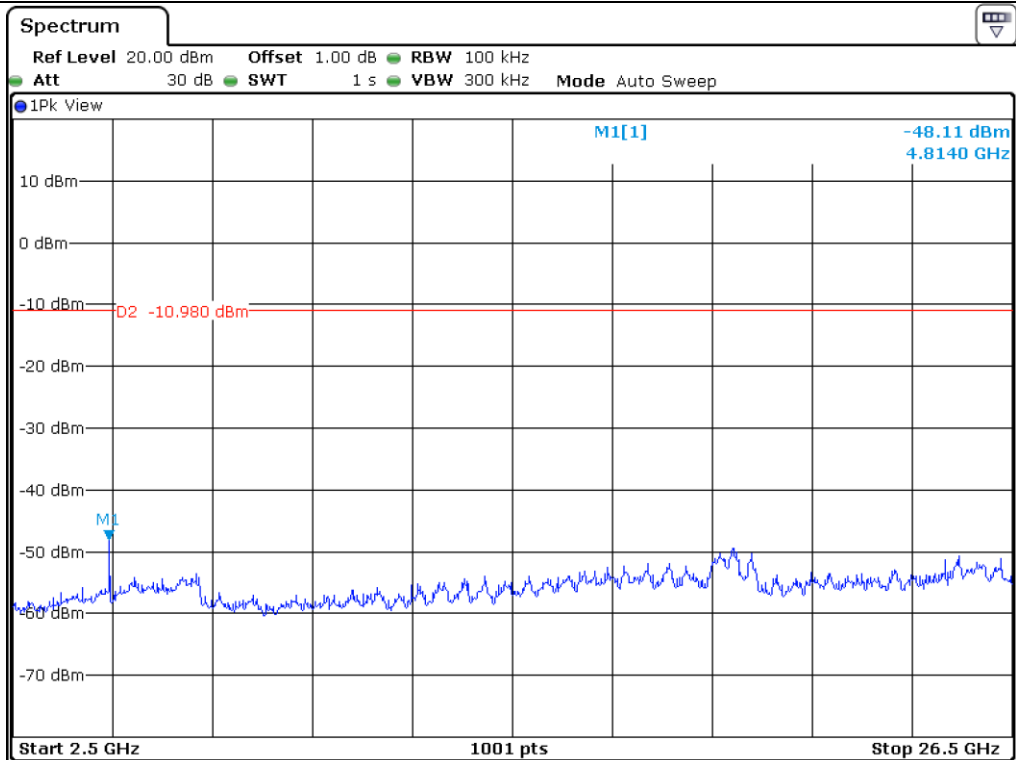
9.5.2.1.1 Test data for Antenna 0



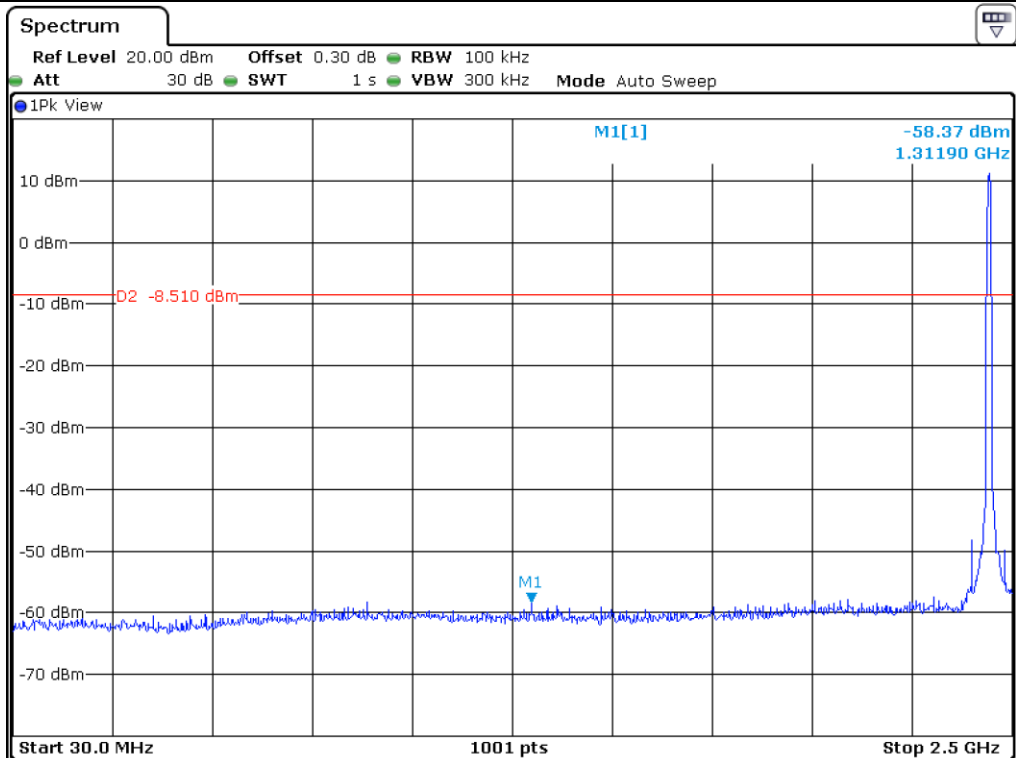




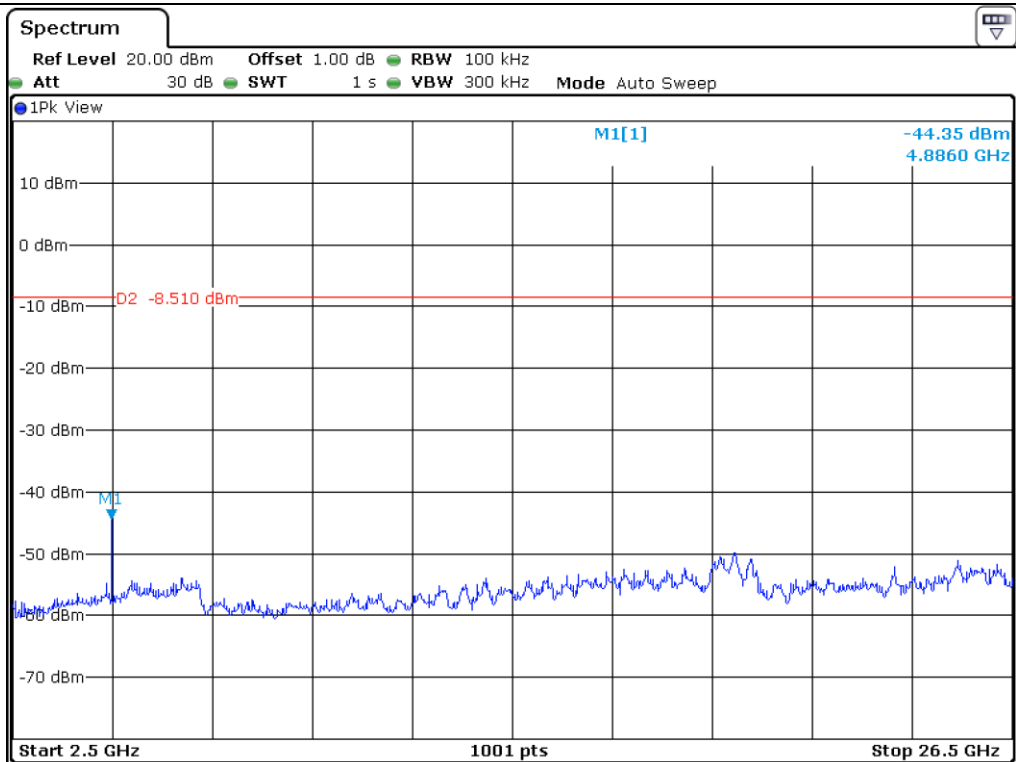
Low Channel



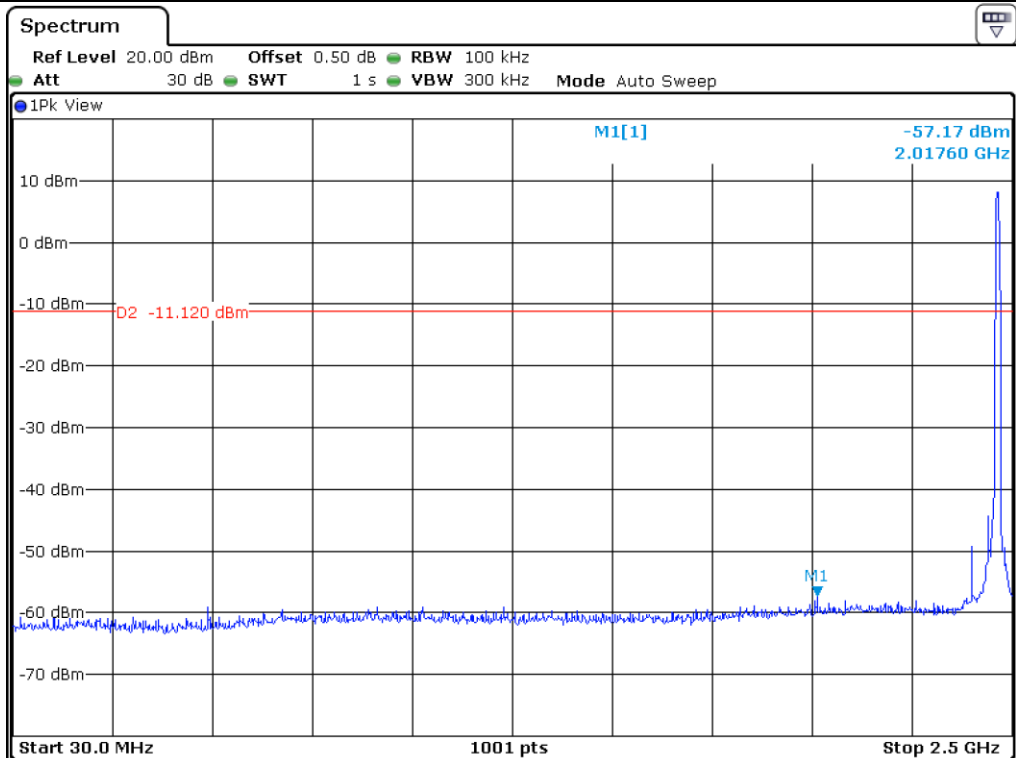
Low Channel



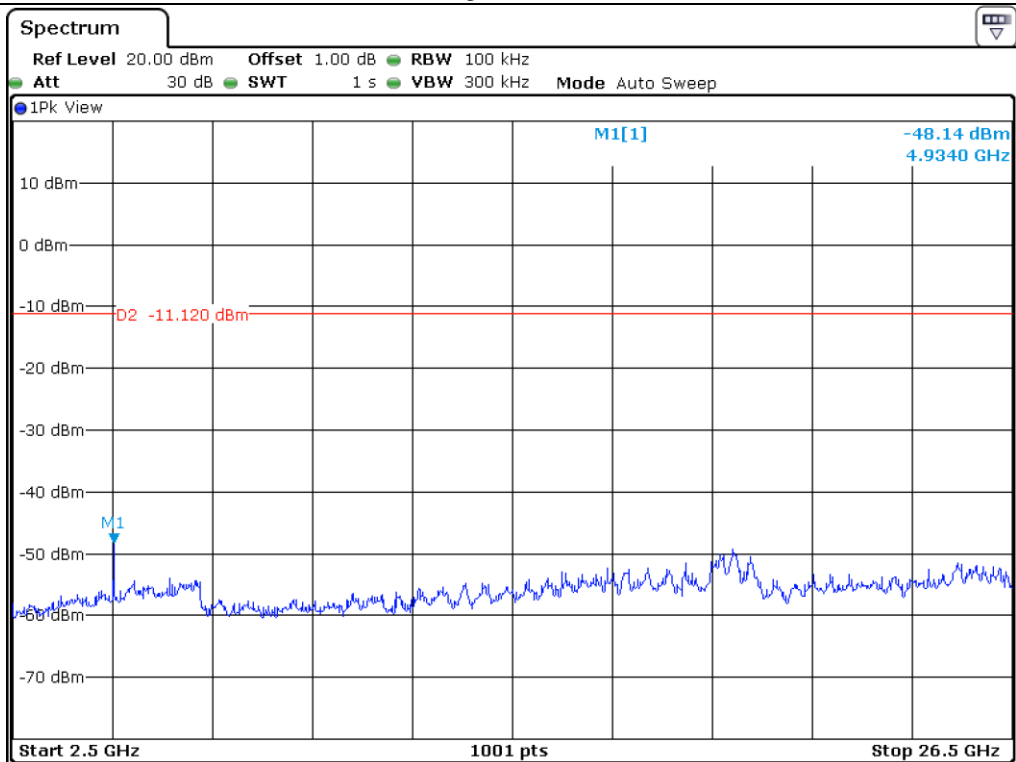
Middle Channel



Middle Channel

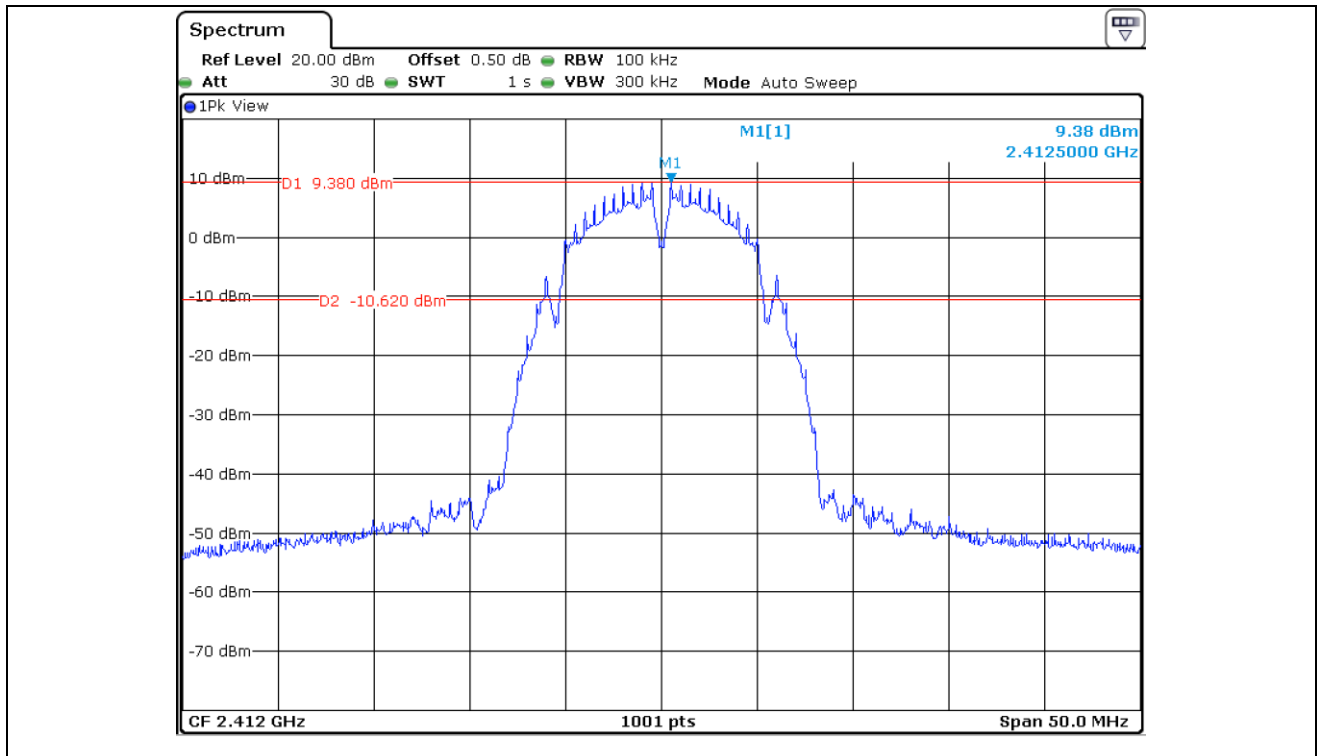


High Channel

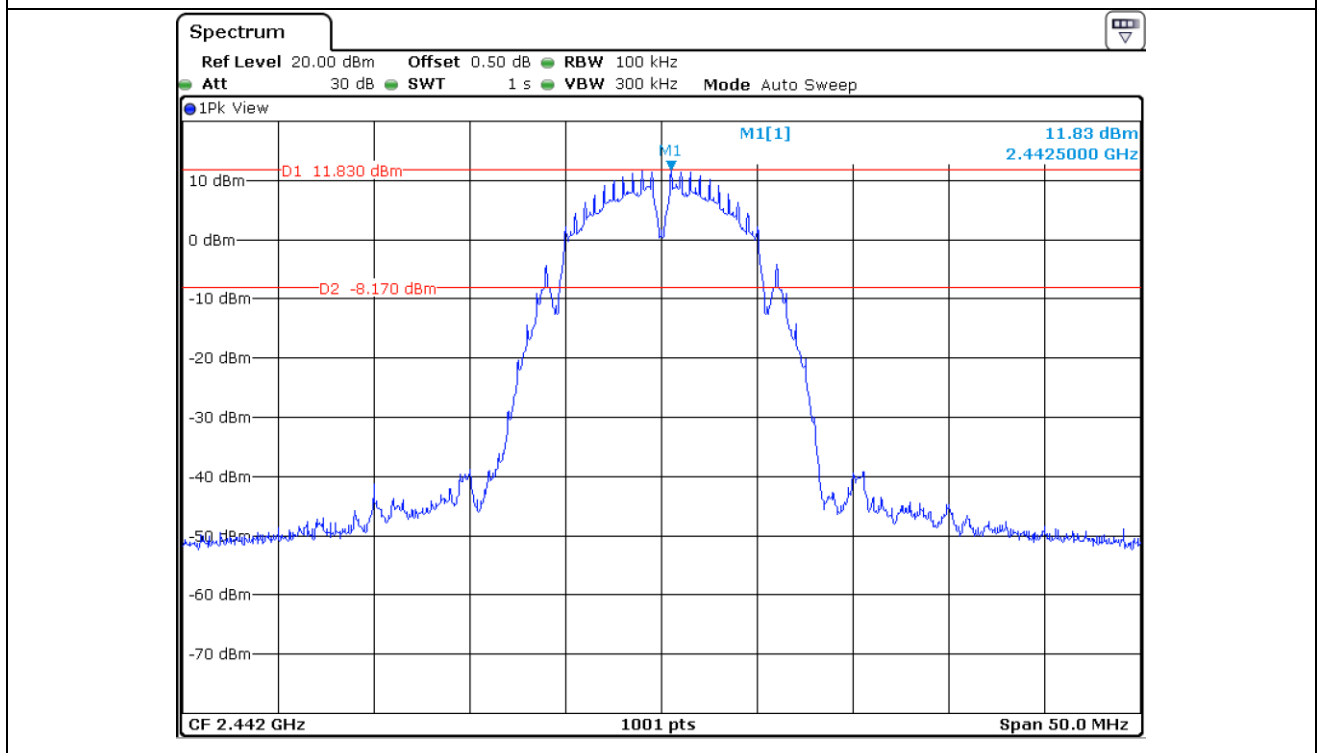


High Channel

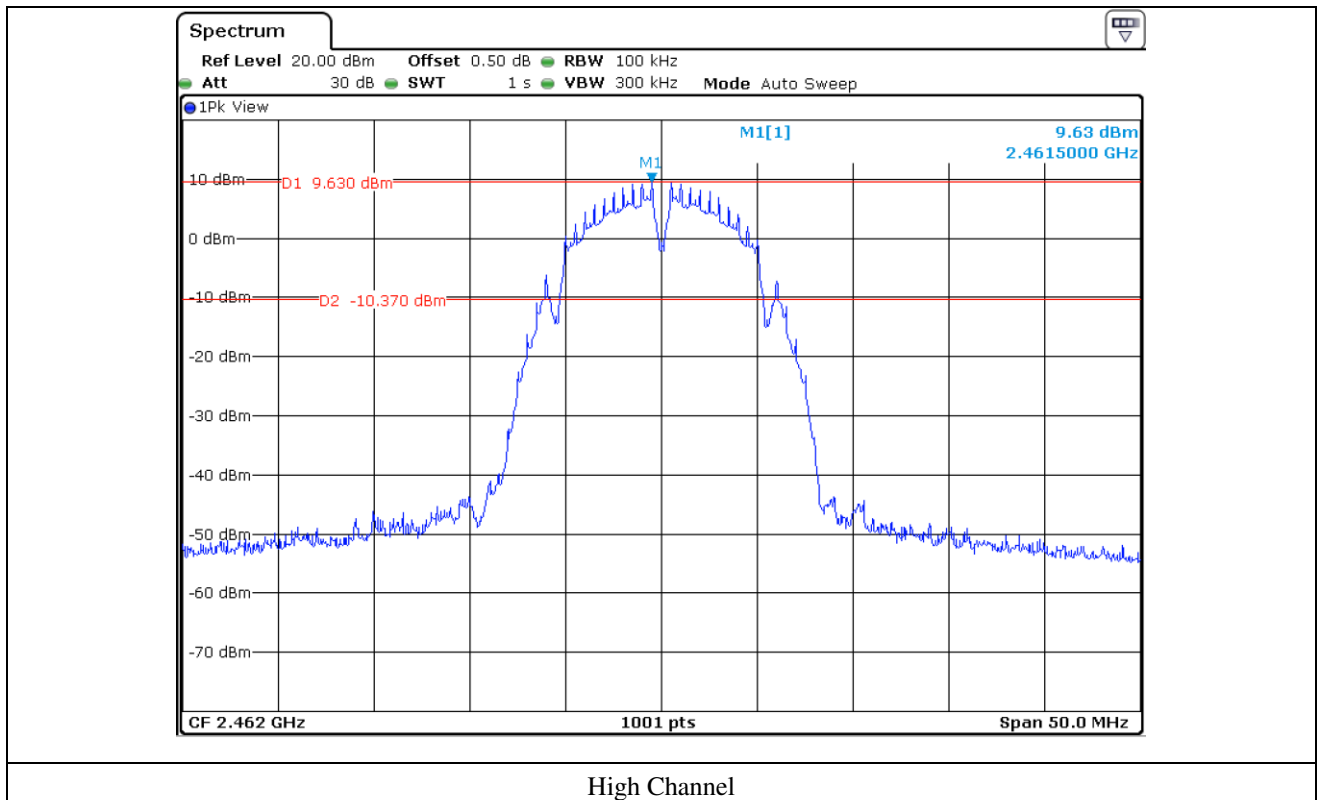
9.5.2.1.2 Test data for Antenna 1

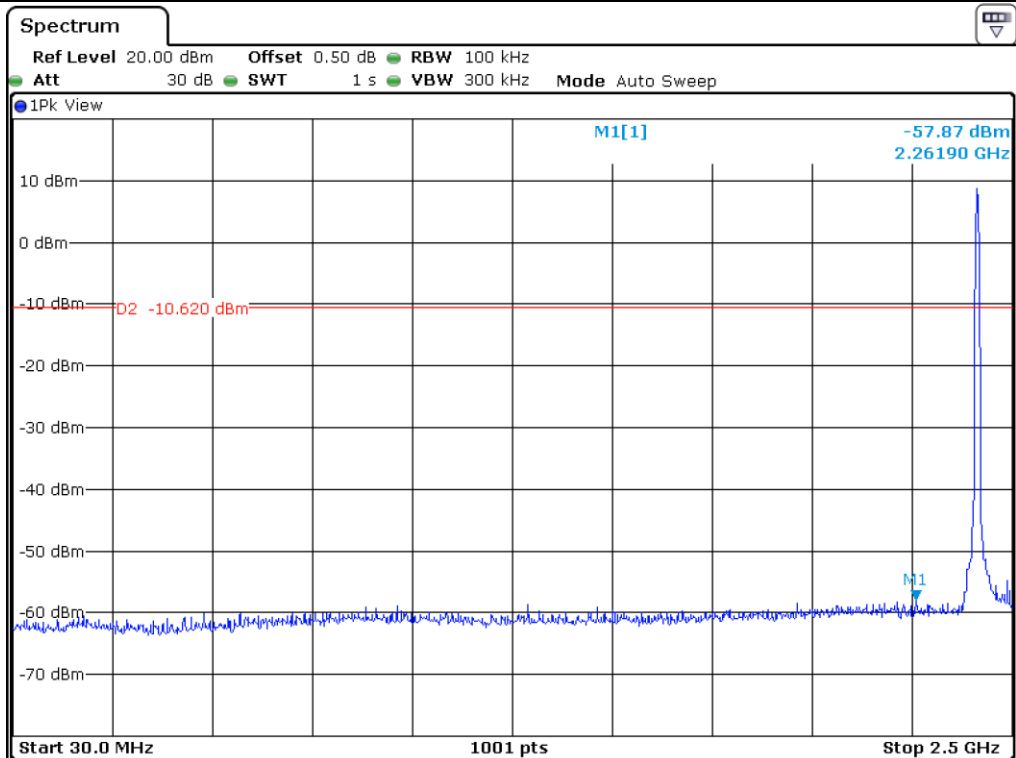


Low Channel

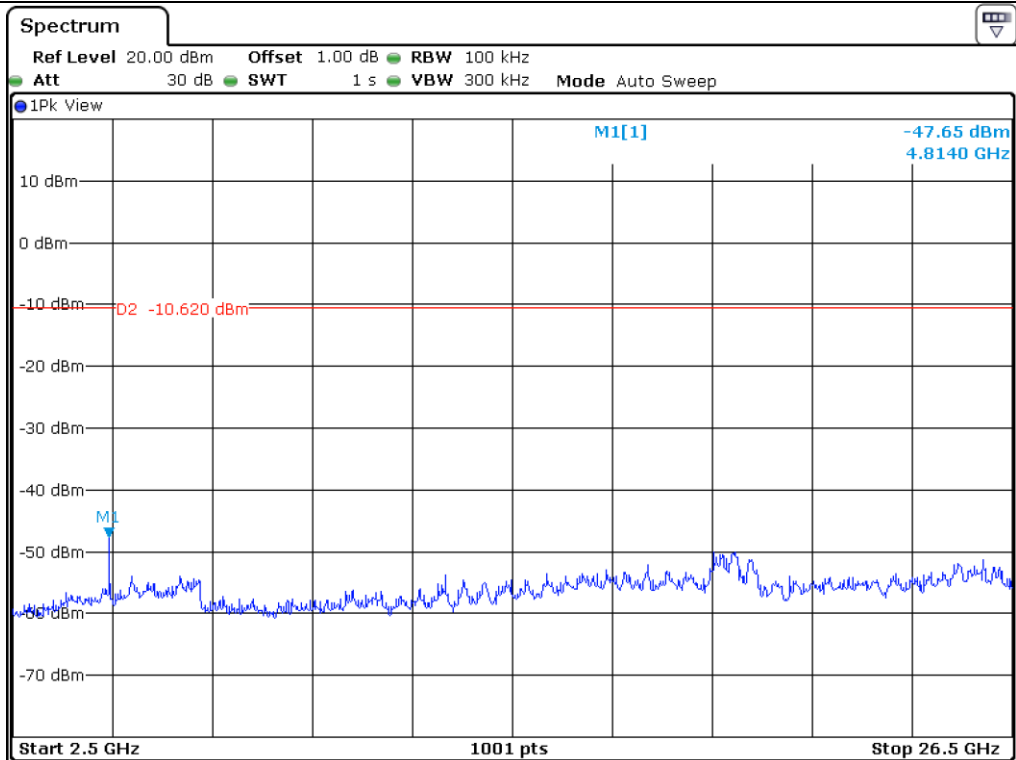


Middle Channel

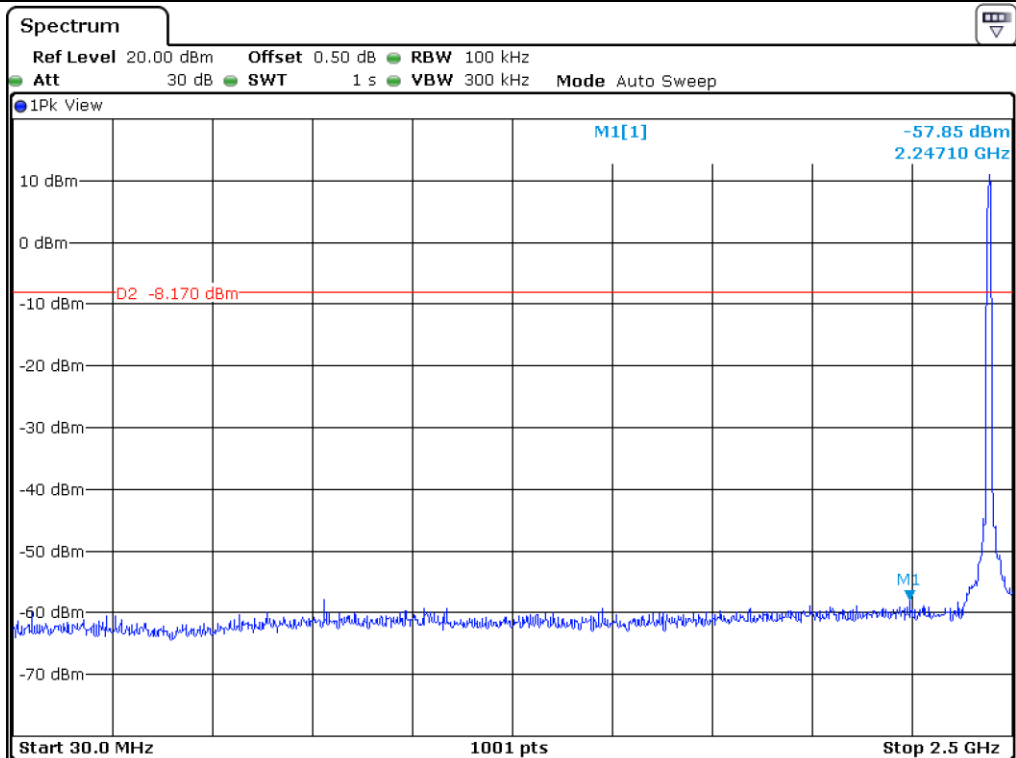




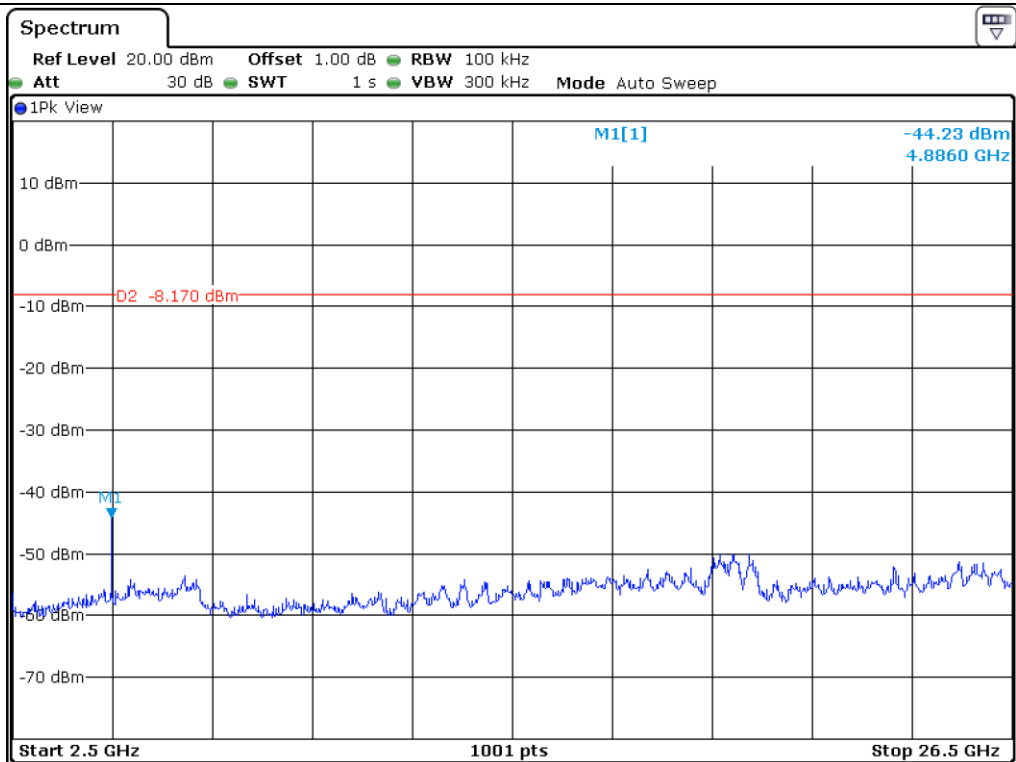
Low Channel



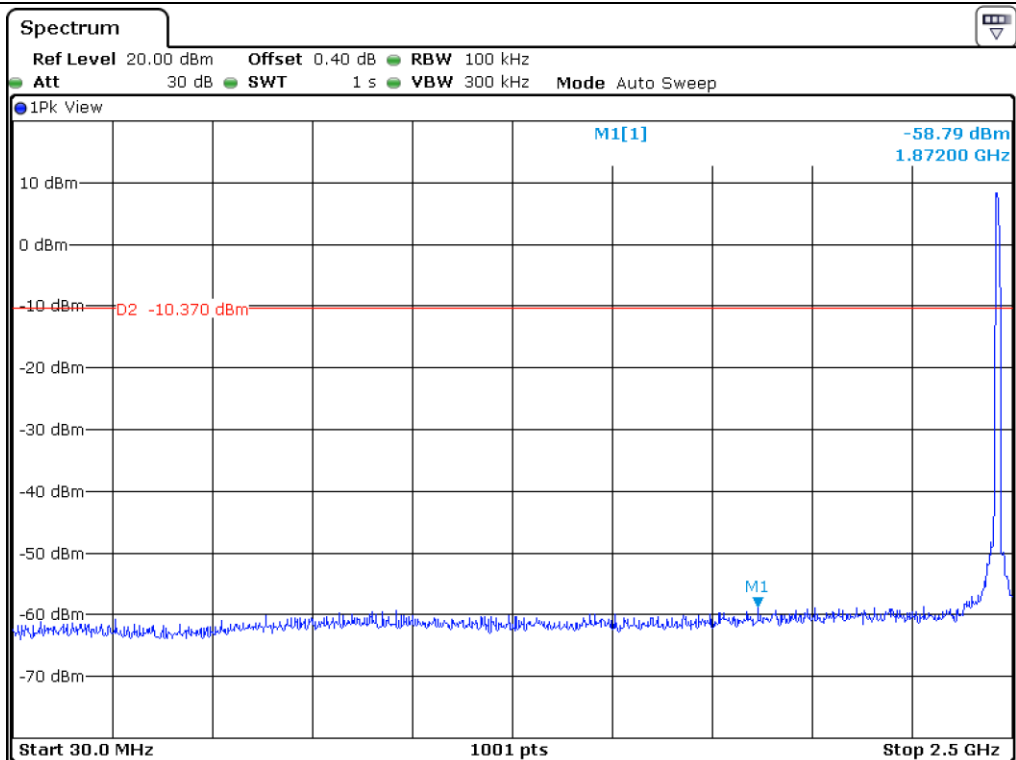
Low Channel



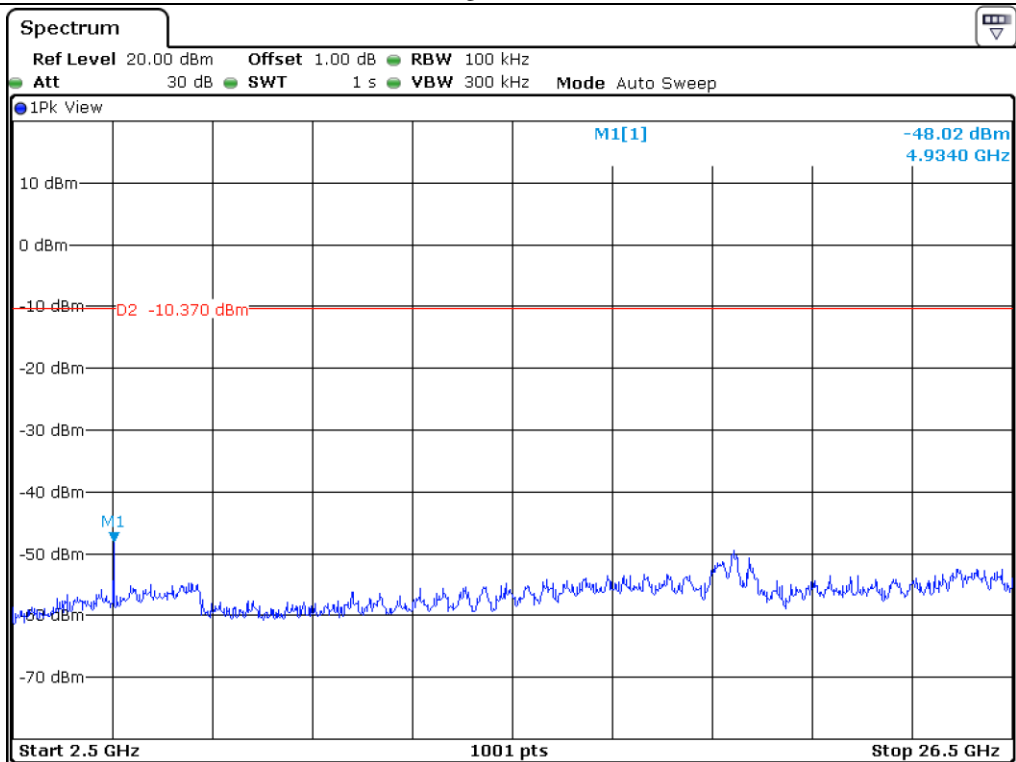
Middle Channel



Middle Channel

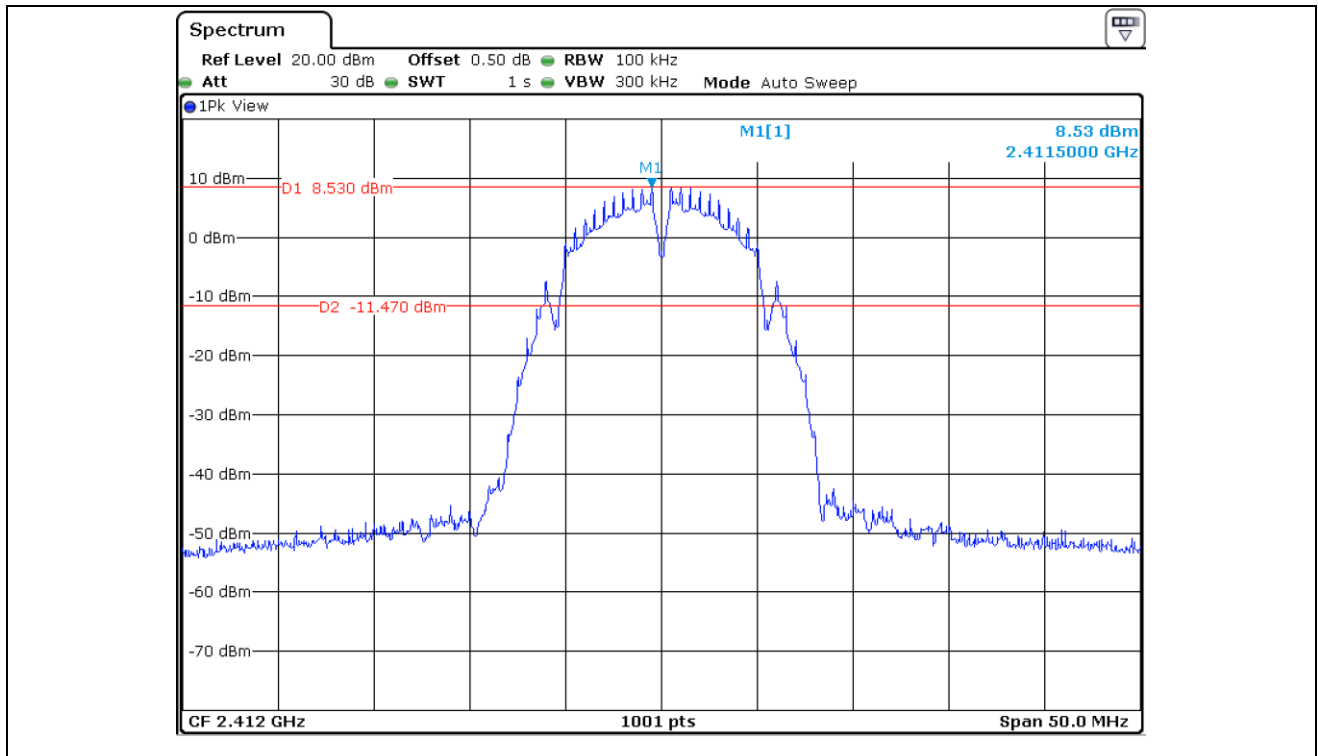


High Channel

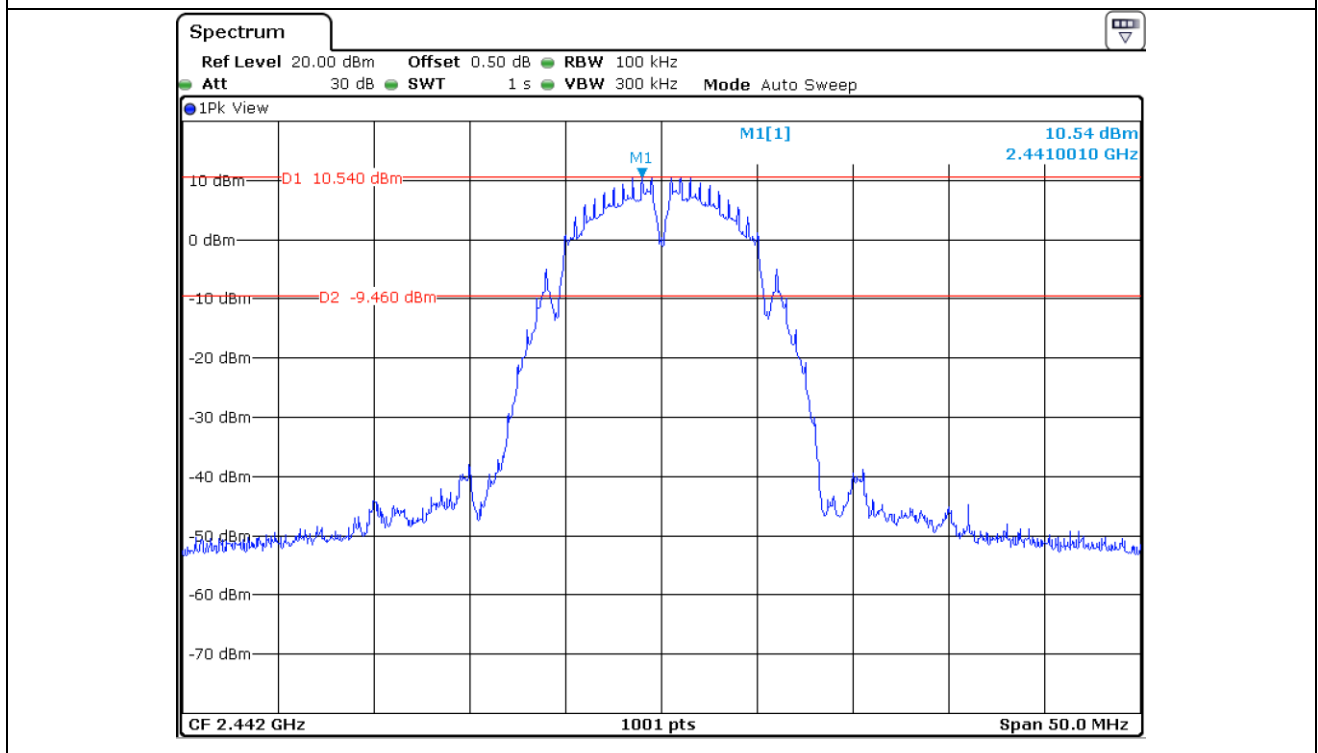


High Channel

9.5.2.1.3 Test data for Antenna 2



Low Channel



Middle Channel