3.3 Output Power Measurement

3.3.1 Limit

For systems using digital modulation in the 2400-2483.5 MHz, the limit for the peak output power is 30 dBm. If transmitting antenna of directional gain greater than 6 dBi is used, the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point to point operation, the limit has to be reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

3.3.2 Measurement instruments

The measurement instruments are listed in chapter 2.5 of this report.

3.3.3 Test setup

The test setup is as shown in chapter 2.3 of this report.

3.3.4 Test procedure

1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r05.
2. The RF output of EUT was connected to the spectrum analyser by RF cable and attenuator.
3. The path loss was compensated to the results for each measurement. This path loss is stored within the transducer table of the Spectrum analyser.

3.3.5 Test results of Output Power Measurement

Duty cycle

Technology Std.	Channel	Frequency (MHz)	Data rate	Duty cycle (%)
IEEE 802.11b	1(Low)	2412	11 Mbps	98.70
	6(Mid)	2437	11 Mbps	98.70
	11 (High)	2462	11 Mbps	100
IEEE 802.11g	1(Low)	2412	54 Mbps	85.19
	6(Mid)	2437	54 Mbps	85.19
	11 (High)	2462	54 Mbps	85.19

Peak method

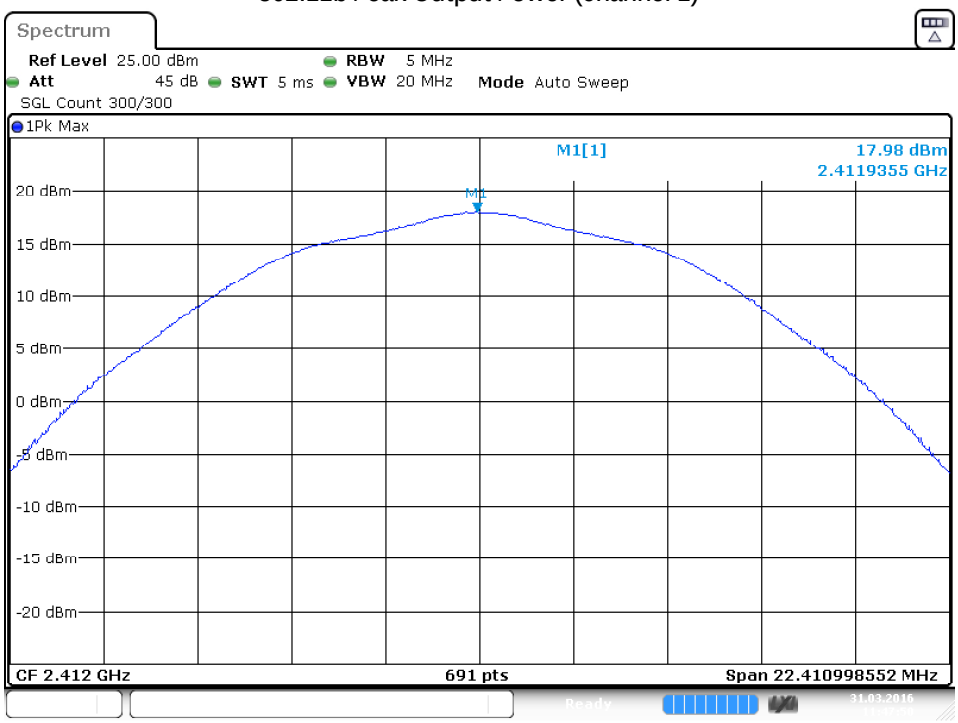
Technology Std.	Channel	Frequency (MHz)	Data rate	Peak output power (dBm)
IEEE 802.11b	1(Low)	2412	11 Mbps	17.98
	6(Mid)	2437	11 Mbps	17.95
	11 (High)	2462	11 Mbps	17.12
Uncertainty	±0.63 dB			

Average method

Technology Std.	Channel	Frequency (MHz)	Data rate	Average output power (dBm)
IEEE 802.11g	1(Low)	2412	54 Mbps	2.33
	6(Mid)	2437	54 Mbps	2.34
	11 (High)	2462	54 Mbps	1.99
Uncertainty	±0.63 dB			

3.3.6 Plots of Output Power Measurement

802.11b Peak Output Power (Channel 1)

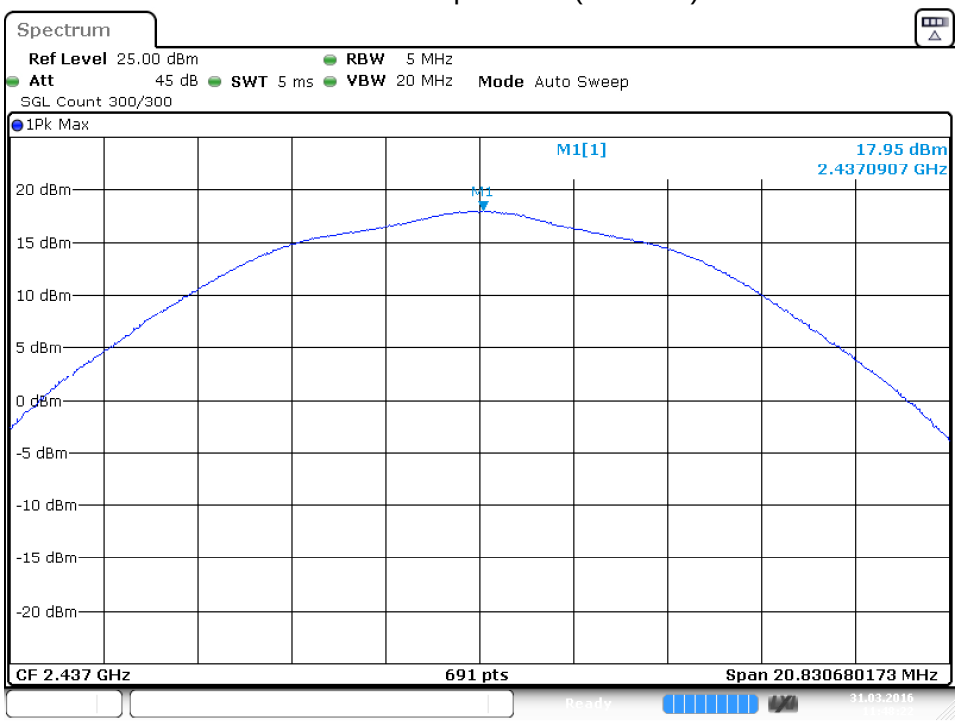


IEEE802_11b_QBPSK_11M, channel: 1 : Maximum Peak conducted o

utput power

Date: 31.MAR.2016 11:47:51

802.11b Peak Output Power (Channel 6)

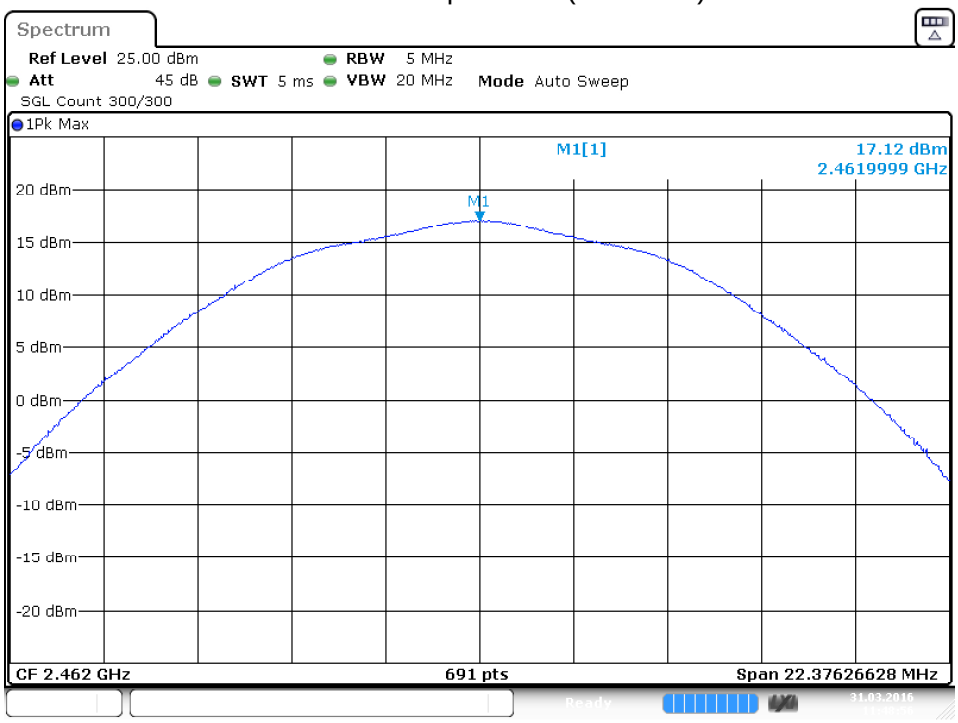


IEEE802_11b_QBPSK_11M, channel: 6 : Maximum Peak conducted o

utput power

Date: 31.MAR.2016 11:48:23

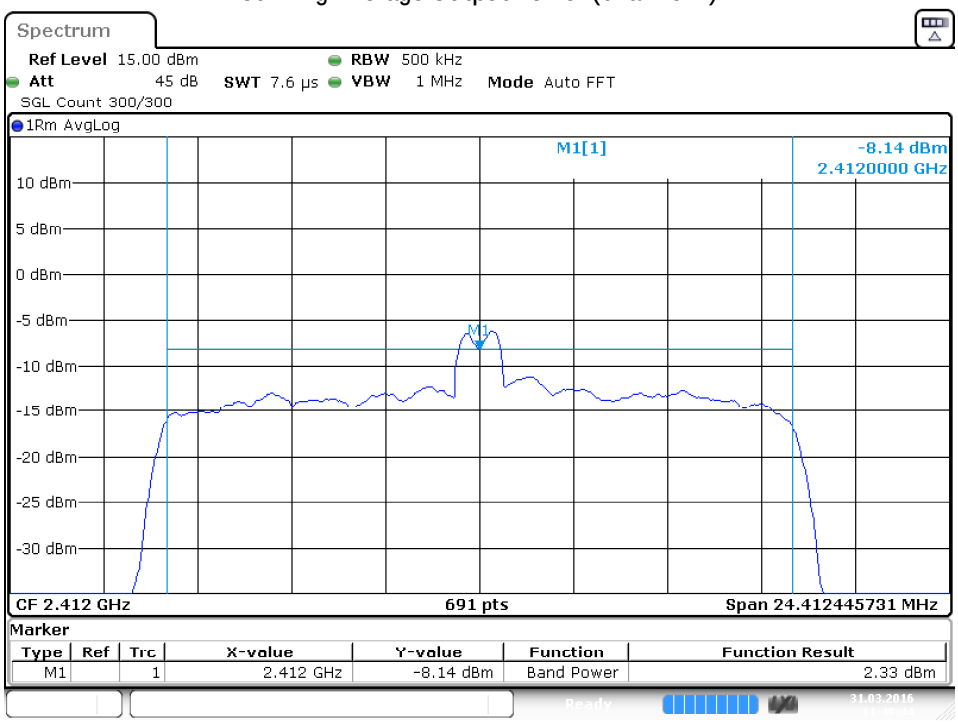
802.11b Peak Output Power (Channel 11)



IEEE802_11b_QBPSK_11M, channel: 11 : Maximum Peak conducted output power

Date: 31.MAR.2016 11:48:56

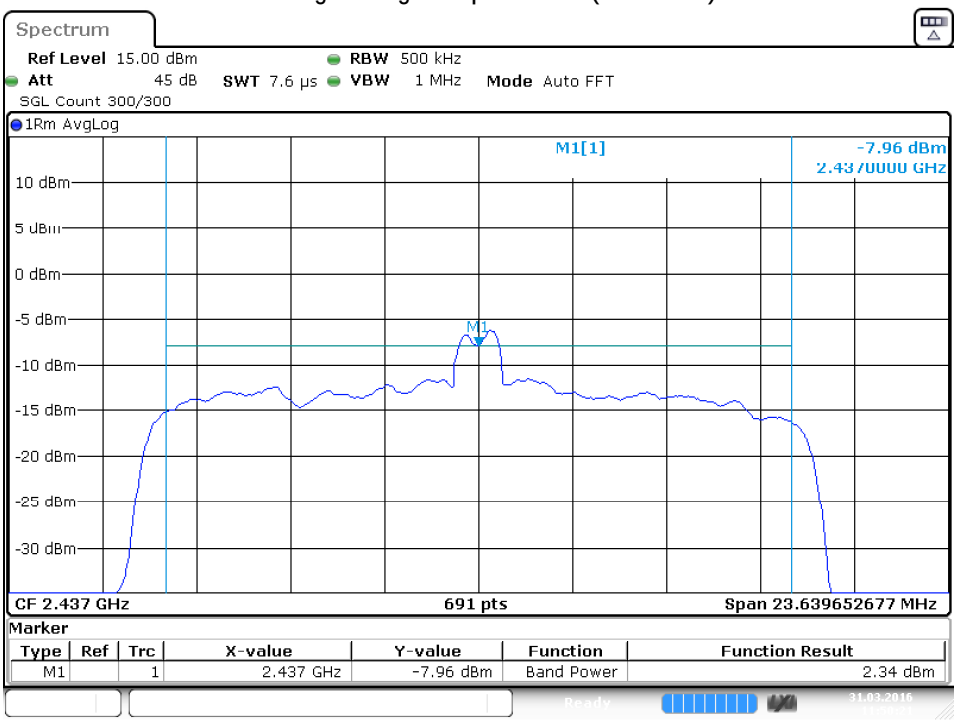
802.11g Average Output Power (Channel 1)



IEEE802_11g_OFDM_54M, channel: 1 : Maximum Peak conducted output power

Date: 31.MAR.2016 11:49:44

802.11g Average Output Power (Channel 6)

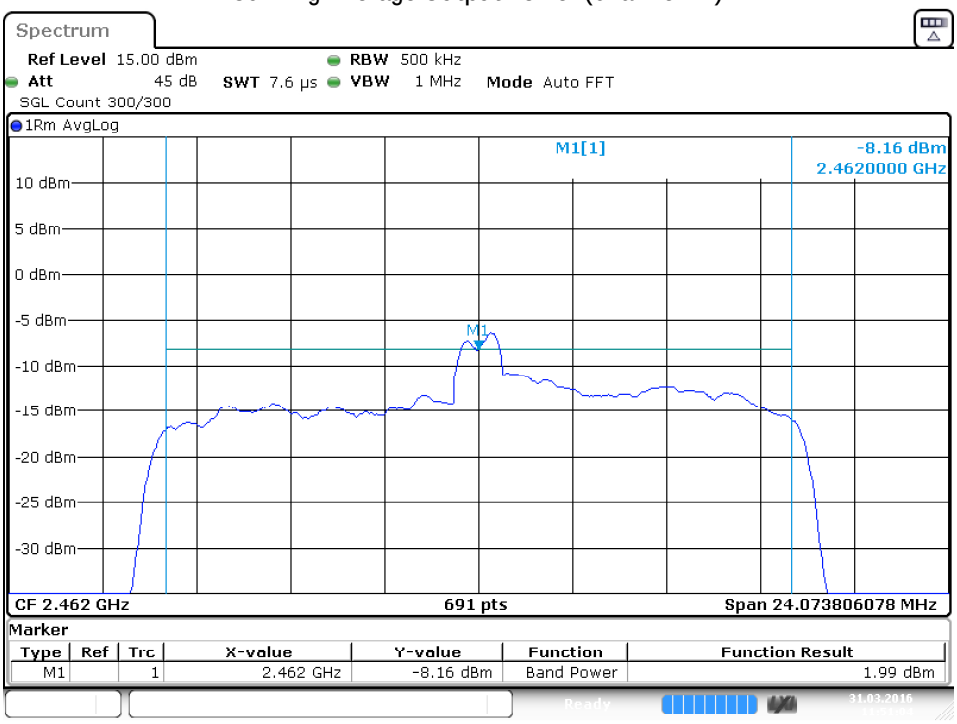


IEEE802_11g_OFDM_54M, channel: 6 : Maximum Peak conducted ou

tput power

Date: 31.MAR.2016 11:50:21

802.11g Average Output Power (Channel 11)



IEEE802_11g_OFDM_54M, channel: 11 : Maximum Peak conducted o

utput power

Date: 31.MAR.2016 11:51:03

3.4 Power Spectral Density

3.4.1 Limit

The peak power spectral density shall not be greater than 8 dBm in any 3 kHz band at any time interval of continuous transmission.

3.4.2 Measurement instruments

The measurement instruments are listed in chapter 2.5 of this report.

3.4.3 Test setup

The test setup is as shown in chapter 2.3 of this report.

3.4.4 Test procedure

1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r05.
2. The RF output of EUT was connected to the spectrum analyser by RF cable and attenuator.
3. The path loss was compensated to the results for each measurement. This path loss is stored within the transducer table of the Spectrum analyser.

3.4.5 Test results of Power Spectral Density Measurement

Peak Power spectral density

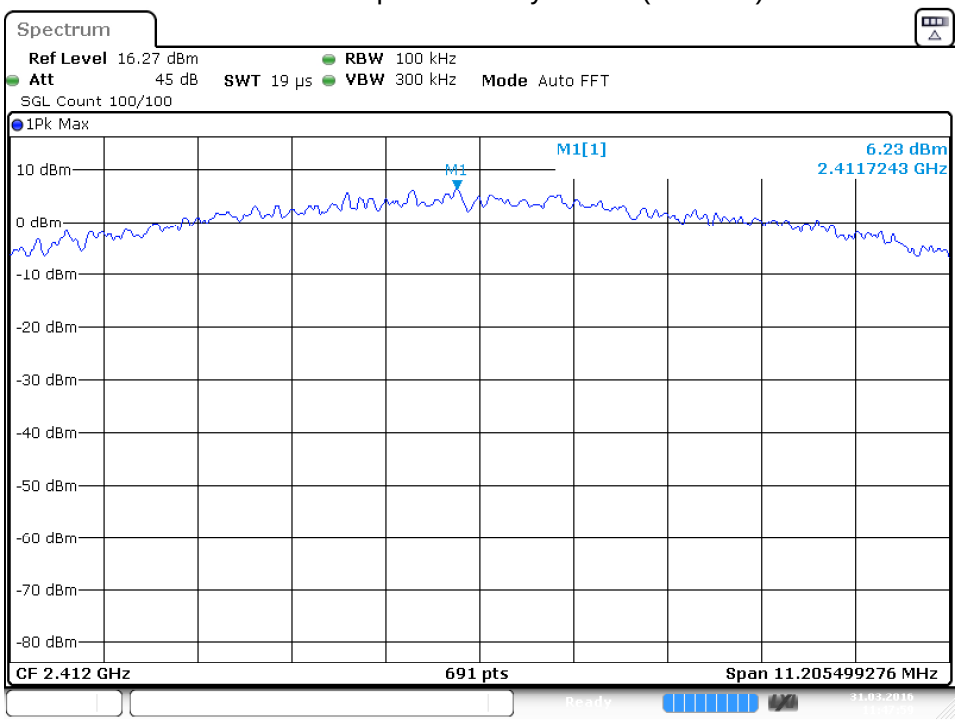
Technology Std.	Channel	Frequency (MHz)	Data rate	PSD/100 kHz (dBm)
IEEE 802.11b	1(Low)	2412	11 Mbps	6,23
	6(Mid)	2437	11 Mbps	6,47
	11 (High)	2462	11 Mbps	5,81
Uncertainty	±0.63 dB			

Average Power spectral density

Technology Std.	Channels	Frequency (MHz)	Data rate	PSD/100 kHz (dBm)
IEEE 802.11g	1(Low)	2412	54 Mbps	-11,09
	6(Mid)	2437	54 Mbps	-11,22
	11 (High)	2462	54 Mbps	-11,26
Uncertainty	±0.63 dB			

3.4.6 Plots of the Power Spectral Density Measurements

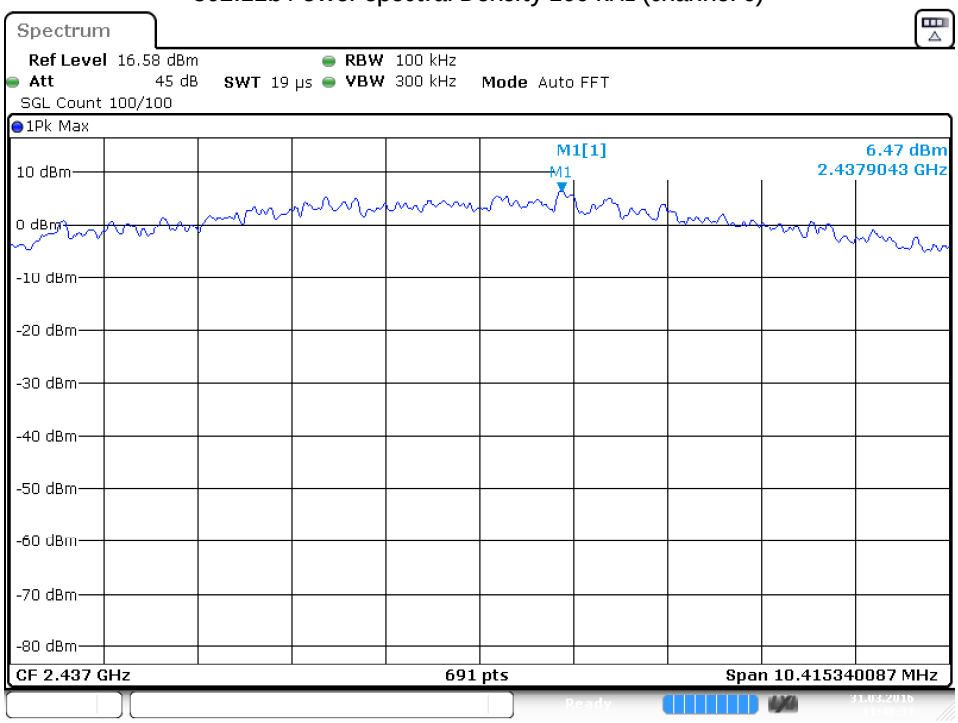
802.11b Power Spectral Density 100 kHz (channel 1)



IEEE802_11b_QBPSK_11M,1 : Power spectral density

Date: 31.MAR.2016 11:48:00

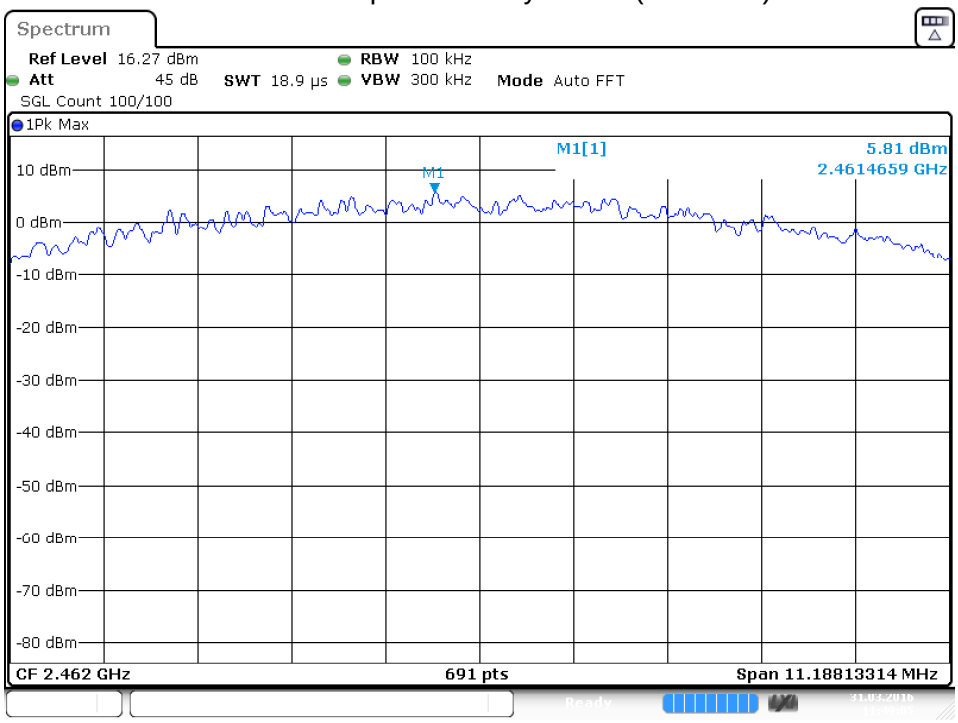
802.11b Power Spectral Density 100 kHz (channel 6)



IEEE802_11b_QBPSK_11M,6 : Power spectral density

Date: 31.MAR.2016 11:48:32

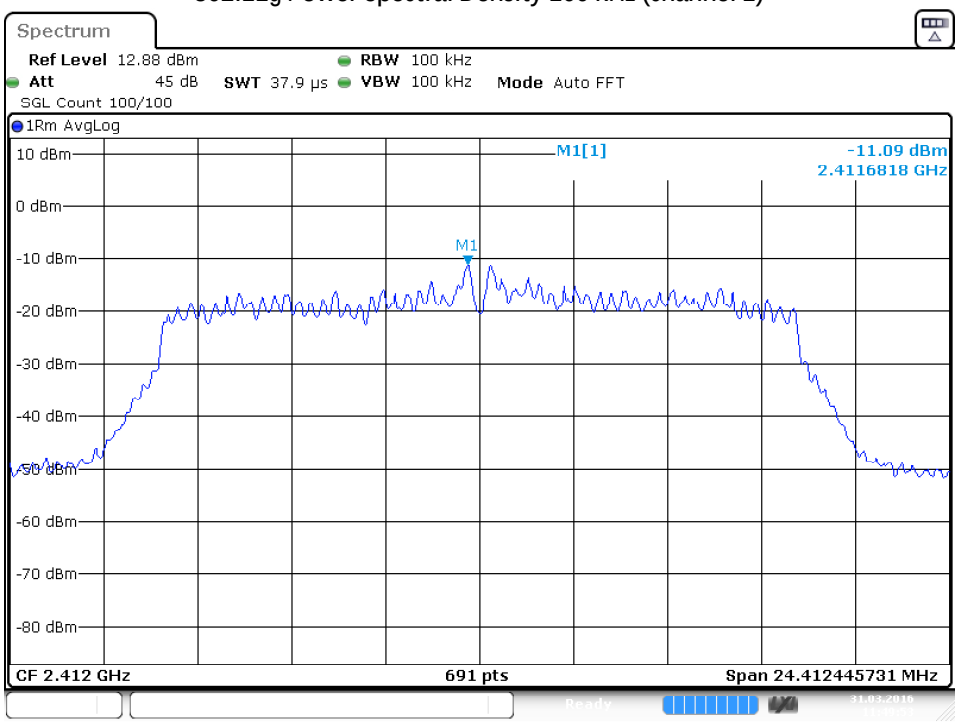
802.11b Power Spectral Density 100 kHz (channel 11)



IEEE802_11b_QBPSK_11M,11 : Power spectral density

Date: 31.MAR.2016 11:49:05

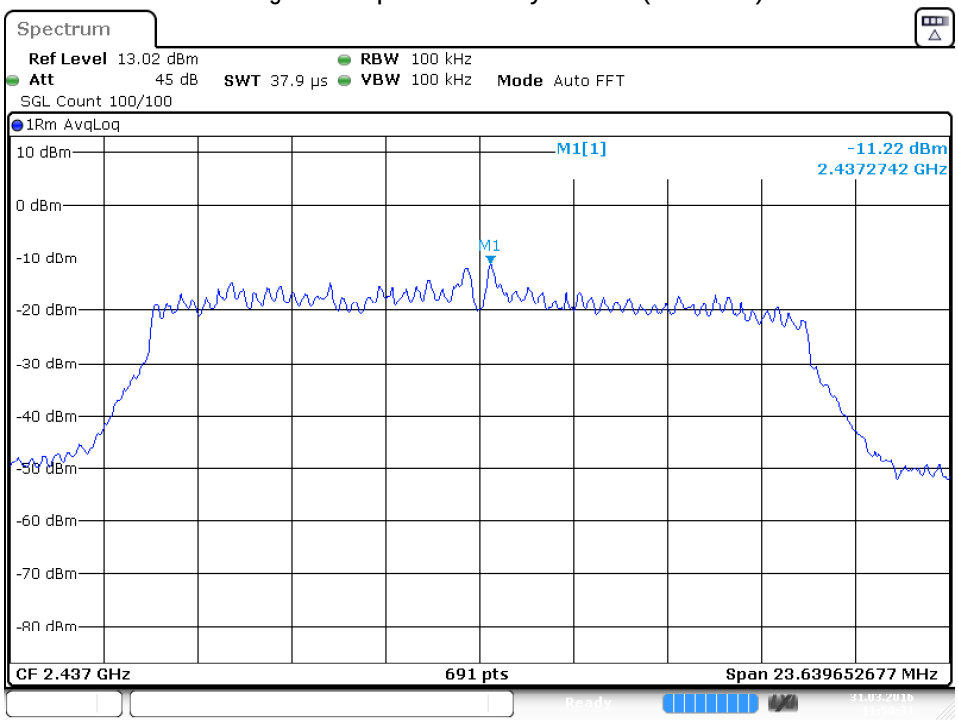
802.11g Power Spectral Density 100 kHz (channel 1)



IEEE802_11g_OFDM_54M, channel: 1 : Power spectral density

Date: 31.MAR.2016 11:49:53

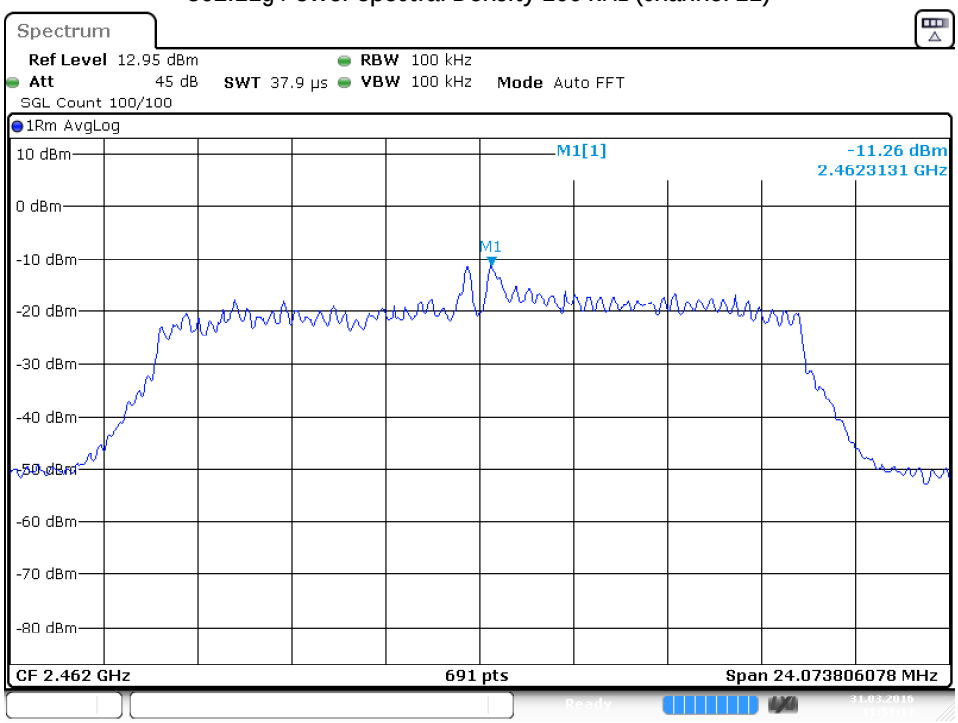
802.11g Power Spectral Density 100 kHz (channel 6)



IEEE802_11g_OFDM_54M, channel: 6 : Power spectral density

Date: 31.MAR.2016 11:50:31

802.11g Power Spectral Density 100 kHz (channel 11)



IEEE802_11g_OFDM_54M, channel: 11 : Power spectral density

Date: 31.MAR.2016 11:51:13

3.5 Conducted Band edge and Spurious Emissions Measurement

3.5.1 Limit

Spurious Emissions:
In any 100 kHz bandwidth outside the operating frequency band, the RF power shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either a RF conducted or a radiated measurement.

Band edge:
At the edge of the authorized band the RF power shall be at least 20 dB down.

3.5.2 Measurement instruments

The measurement instruments are listed in chapter 2.5 of this report.

3.5.3 Test setup

The test setup is as shown in chapter 2.3 of this report.

3.5.4 Test procedure

According to KDB Publication 558074 V03r05, sections 11.3 and 12.1

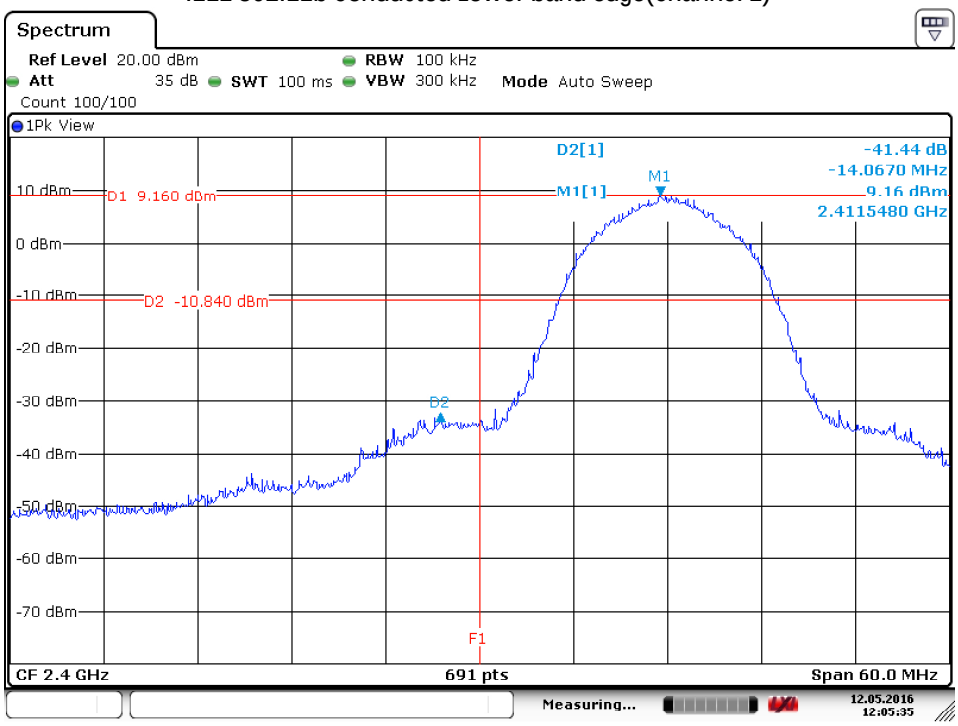
3.5.5 Test results of conducted Band Edges Measurements

Band edge

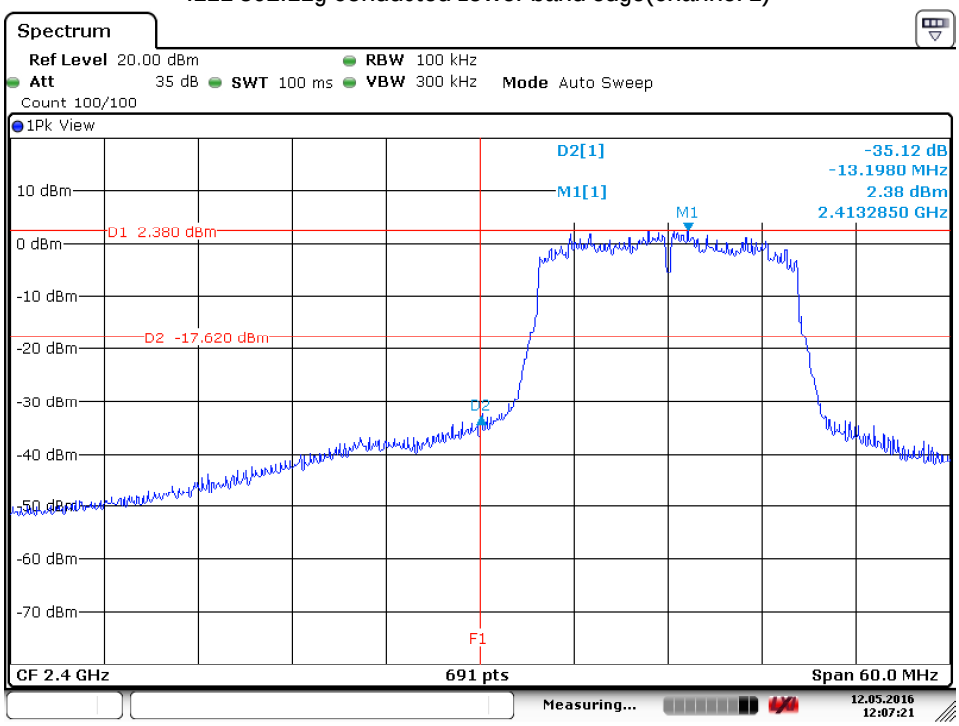
Technology Std.	Channels	Frequency (MHz)	Data rate	20 dB down (dB)	Limit (dBm)
IEEE 802.11b	1(Low)	2402	11Mbps	-44.44	-10.84
IEEE 802.11g	1(Low)	2402	54 Mbps	-35.12	-17.62
Uncertainty	±0.63 dB				

3.5.6 Plots of the Conducted Spurious an Band edge Measurements

IEEE 802.11b Conducted Lower band edge(Channel 1)



IEEE 802.11g Conducted Lower band edge(Channel 1)

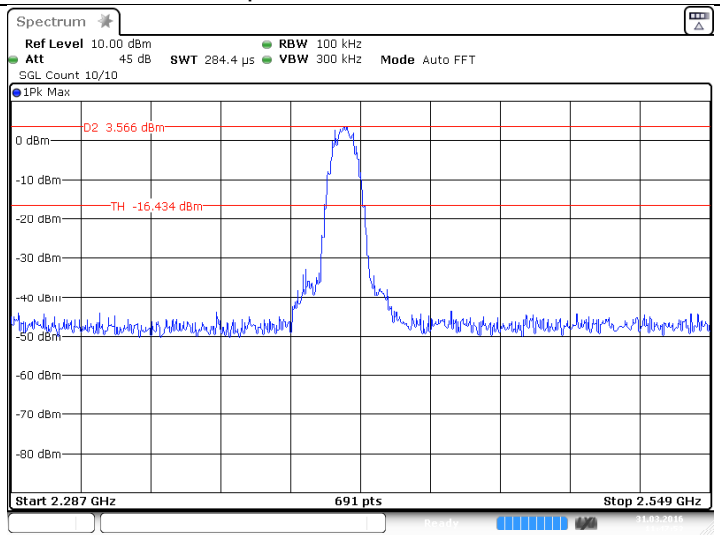
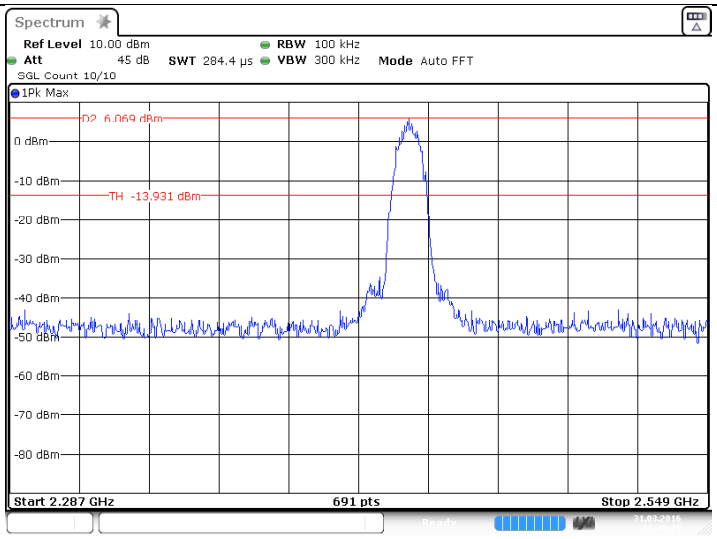
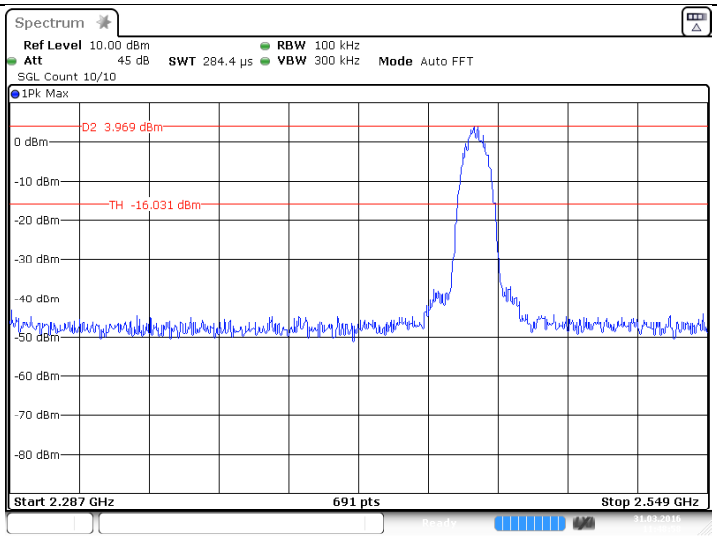


IEEE802_11 Channel: 11 : Measure Occupied Bandwidth

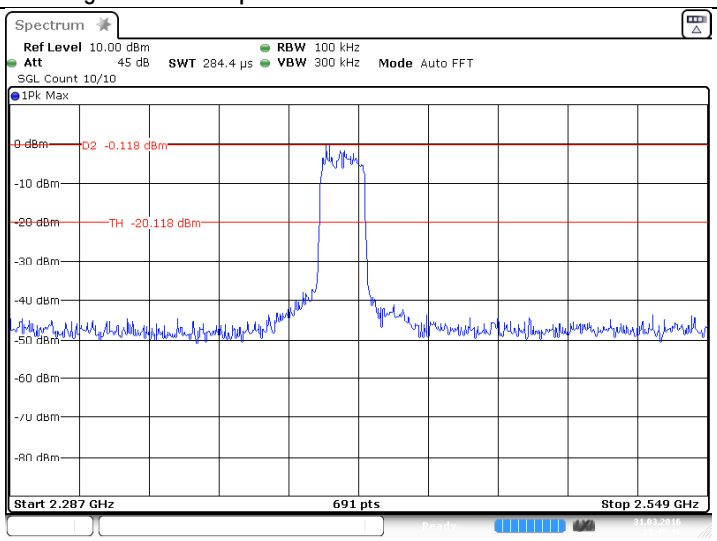
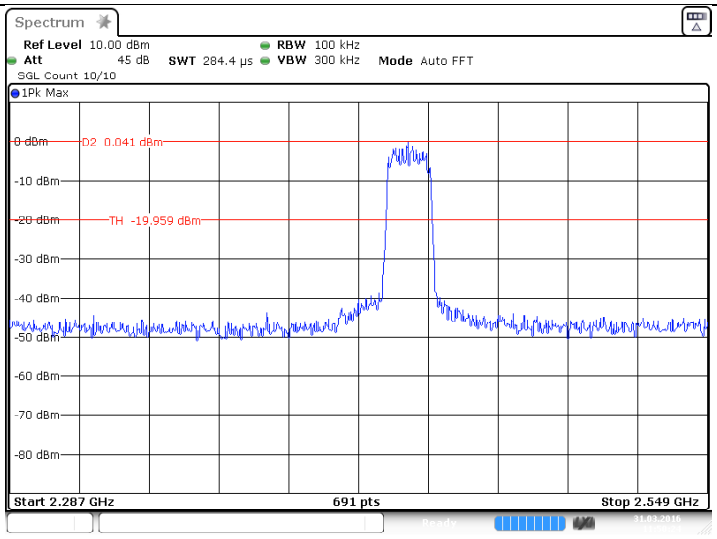
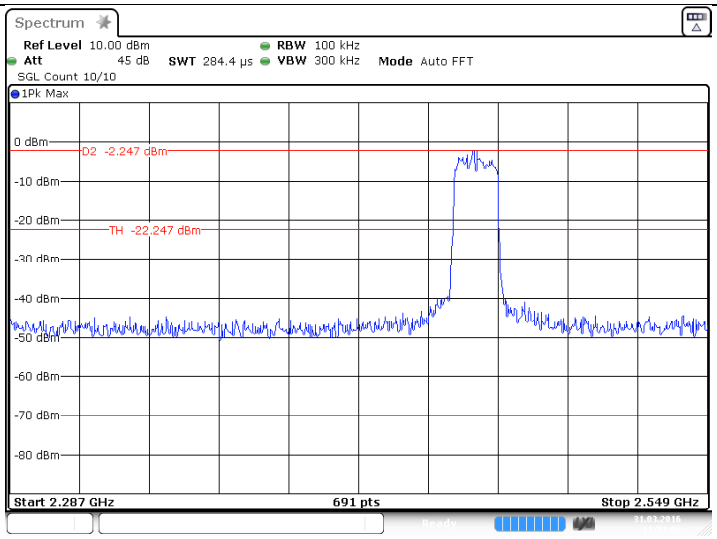
Date: 12.MAY.2016 12:07:21

As channel 11 is more than 20 MHz away from the band edge, no measurements were performed for channel 11

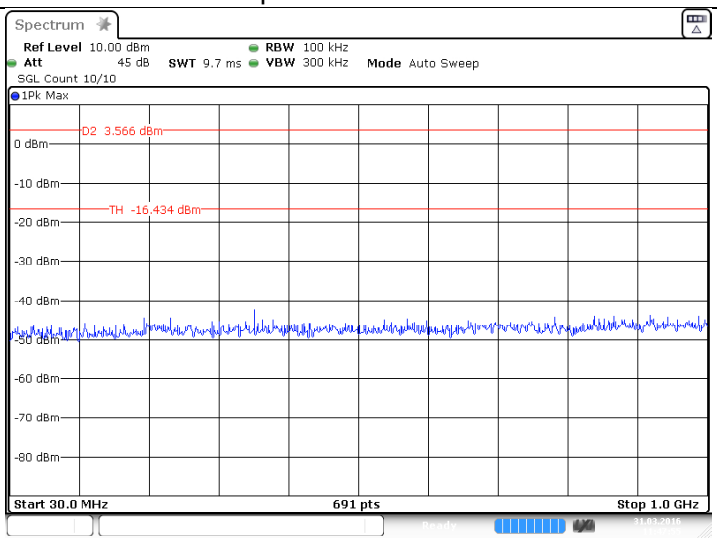
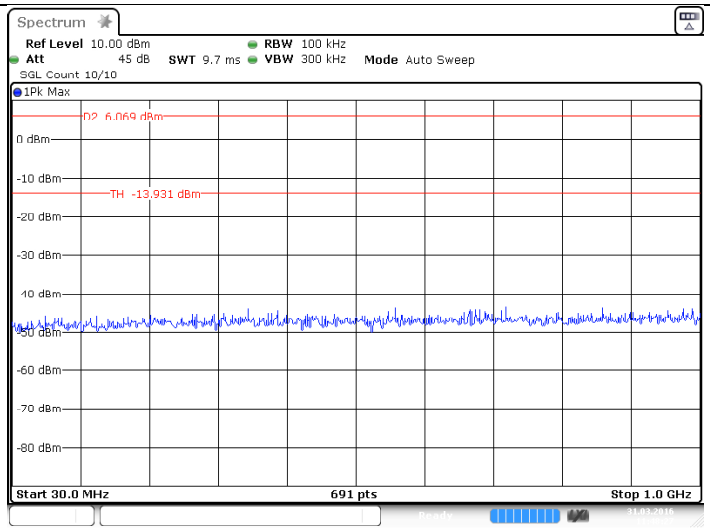
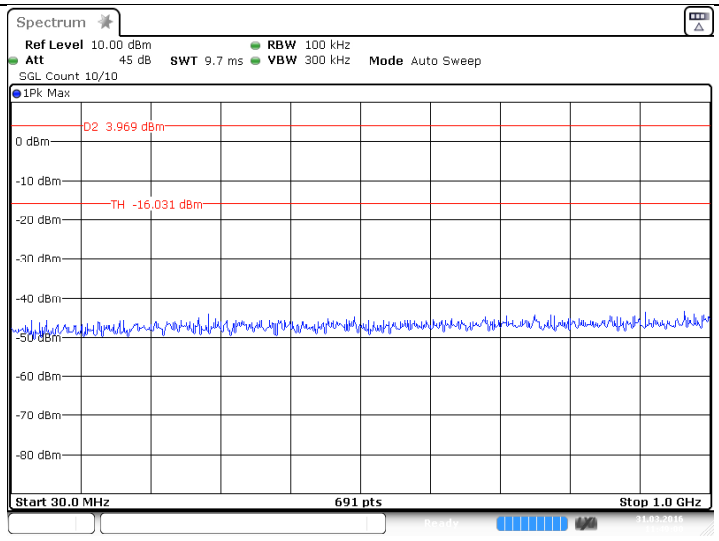
IEEE 802.11b Conducted Spurious Emissions Fundamental level

Ch. 1	
Ch. 6	
Ch. 11	

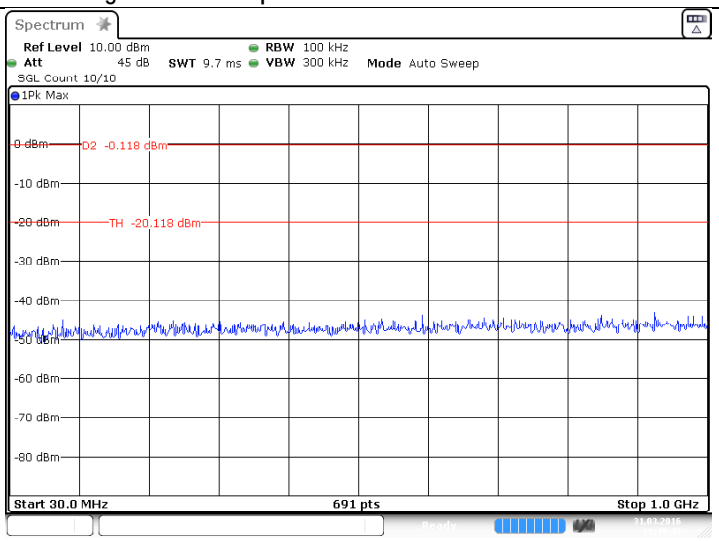
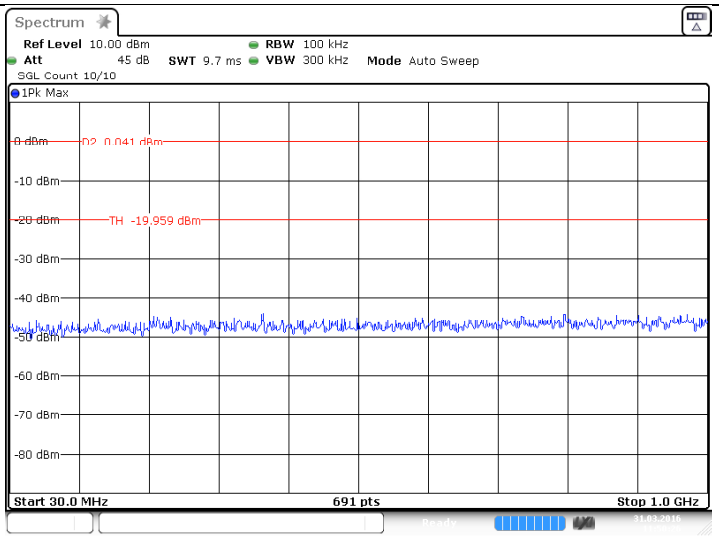
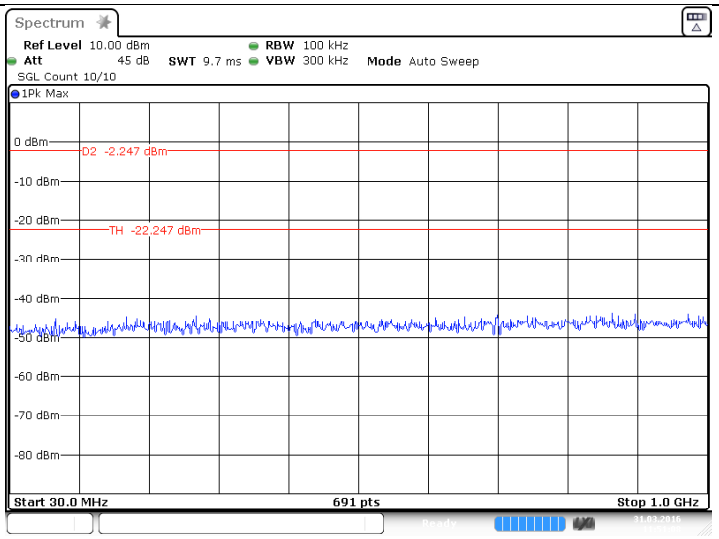
IEEE 802.11g Conducted Spurious Emissions Fundamental level

Ch. 1	
Ch. 6	
Ch. 11	

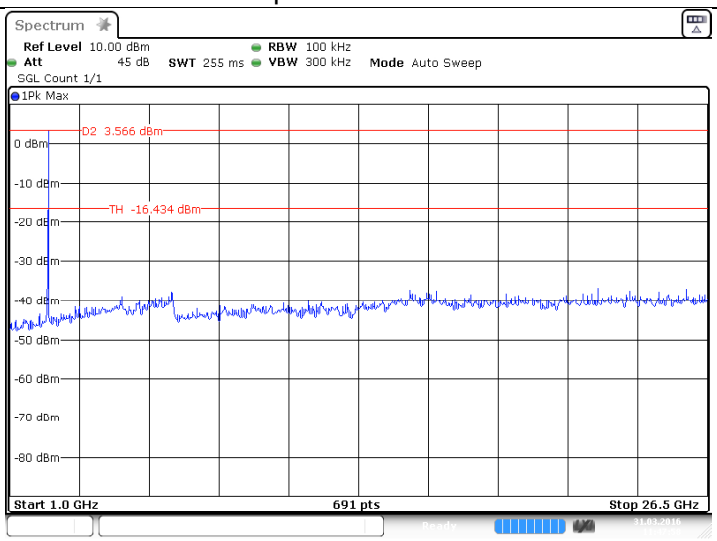
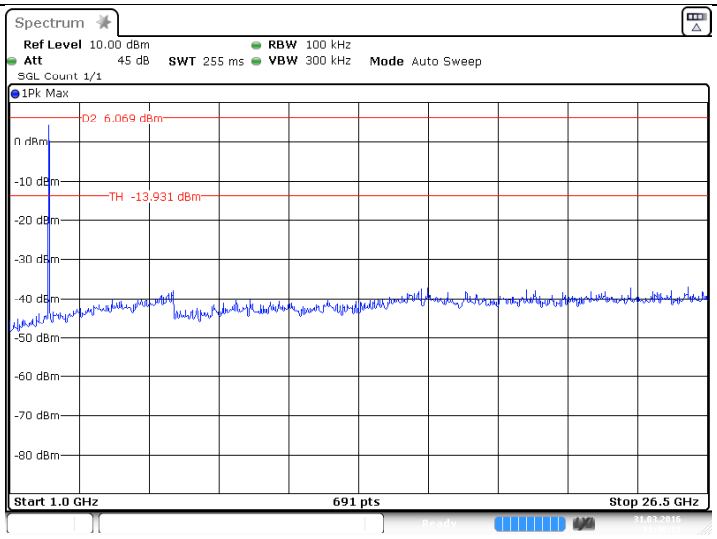
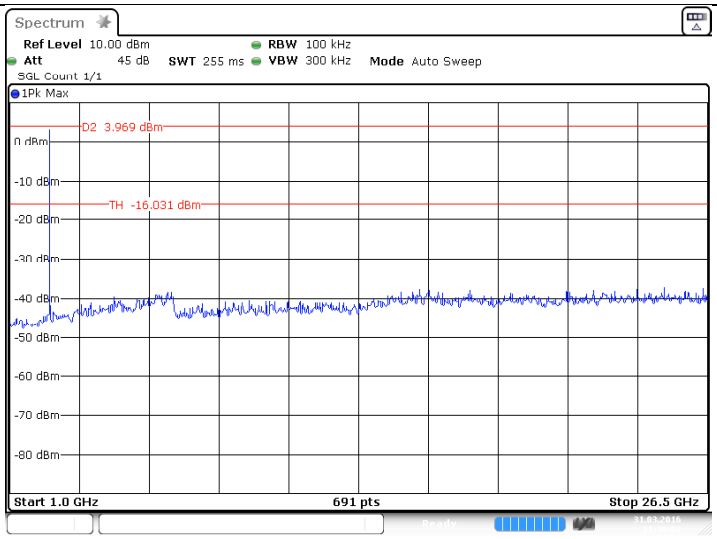
IEEE 802.11b Conducted Spurious Emissions 30 – 1000 MHz

Ch. 1	
Ch. 6	
Ch. 11	

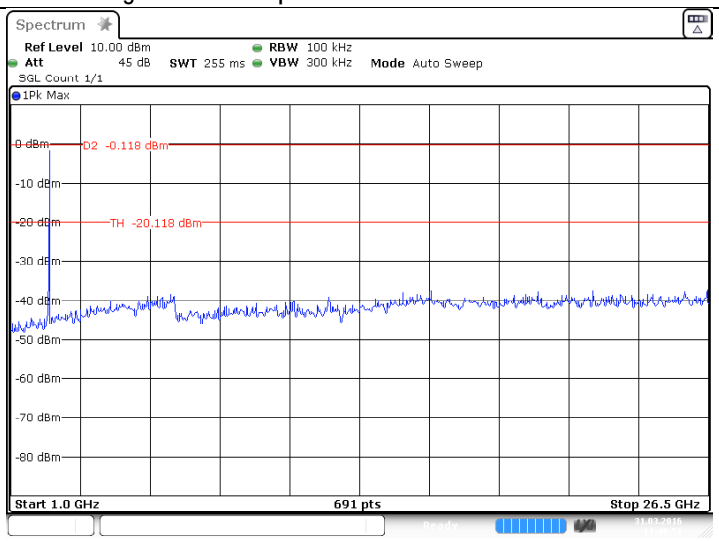
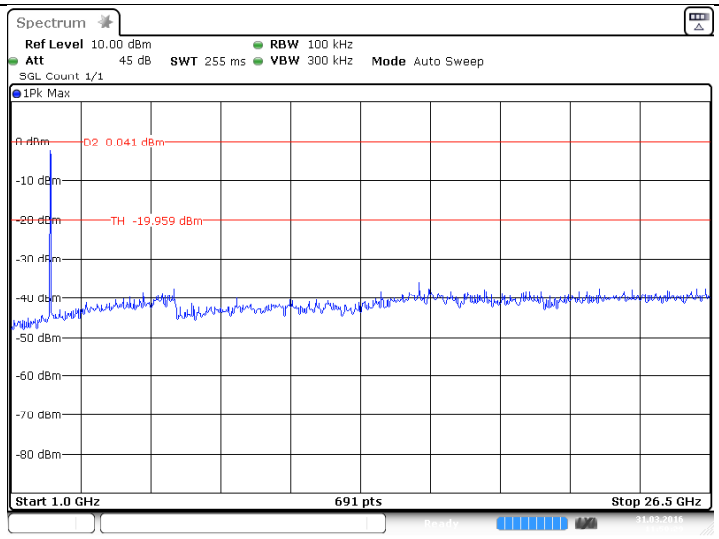
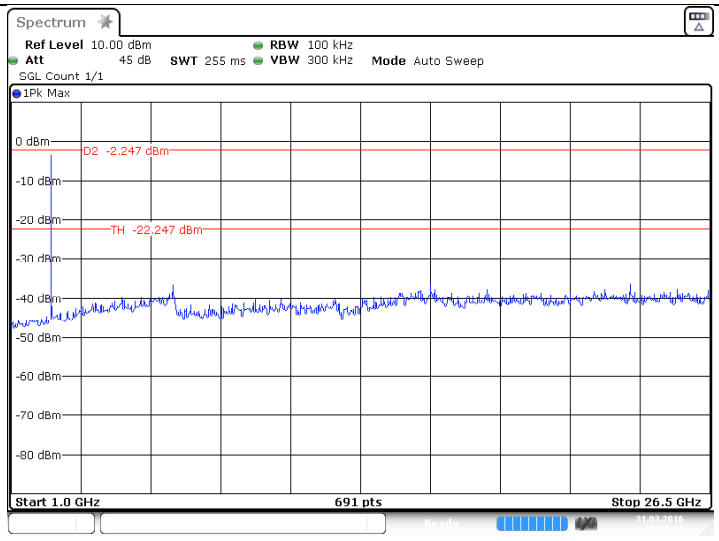
IEEE 802.11g Conducted Spurious Emissions 30 – 1000 MHz

Ch. 1	
Ch. 6	
Ch. 11	

IEEE 802.11b Conducted Spurious Emissions 1 – 26.5 GHz

Ch. 1	
Ch. 6	
Ch. 11	

IEEE 802.11g Conducted Spurious Emissions 1 – 26.5 GHz

Ch. 1	
Ch. 6	
Ch. 11	

3.6 Radiated Spurious Emissions Measurement

3.6.1 Limit

In any 100 kHz bandwidth outside the operating frequency band, the RF power shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either a RF conducted or a radiated measurement.

3.6.2 Measurement instruments

The measurement instruments are listed in chapter 2.5 of this report.

3.6.3 Test setup

The test setup is as shown in chapter 2.4 of this report.

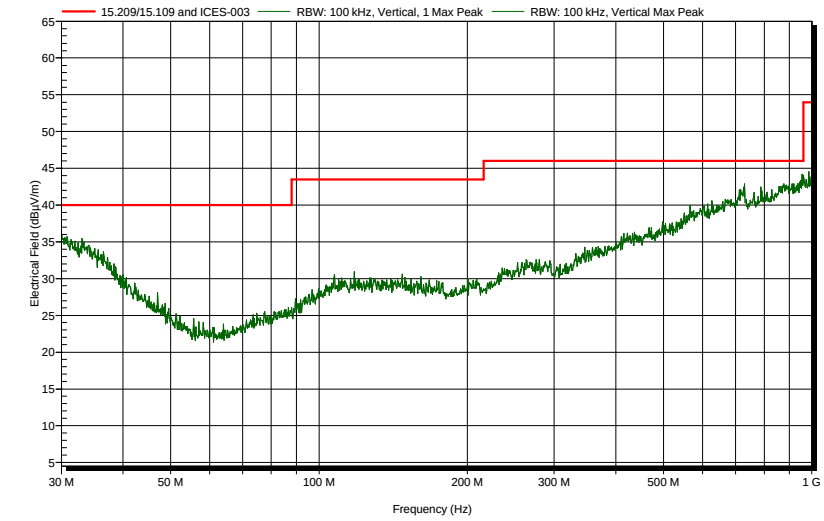
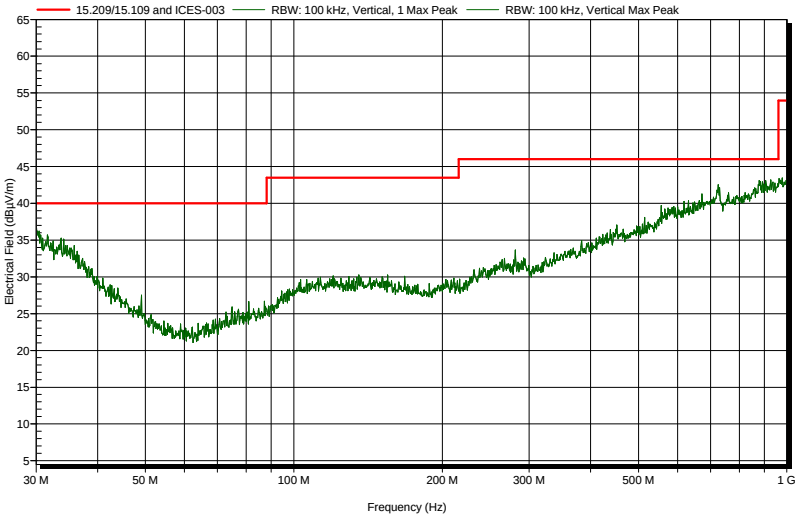
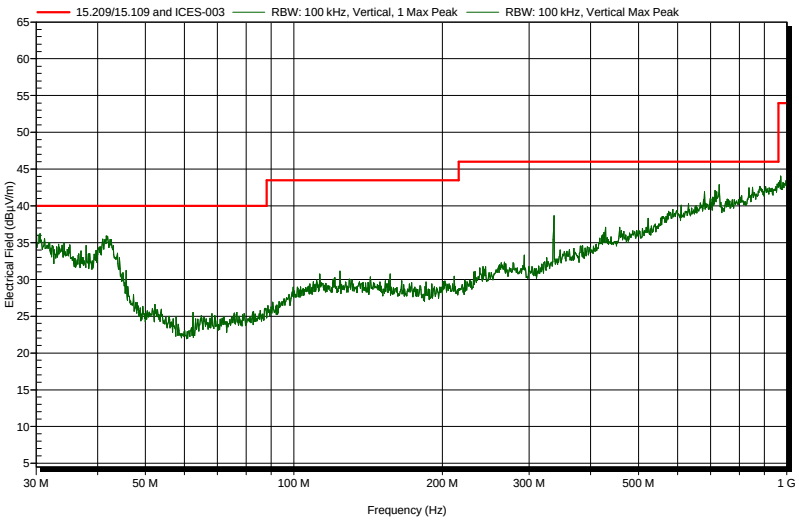
3.6.4 Test procedure

According to KDB Publication 558074 V03r05, sections 11.3 and 12.1

3.6.5 Plots of the Radiated Spurious Emissions Measurement

IEEE 802.11b 30 MHz to 1 GHz

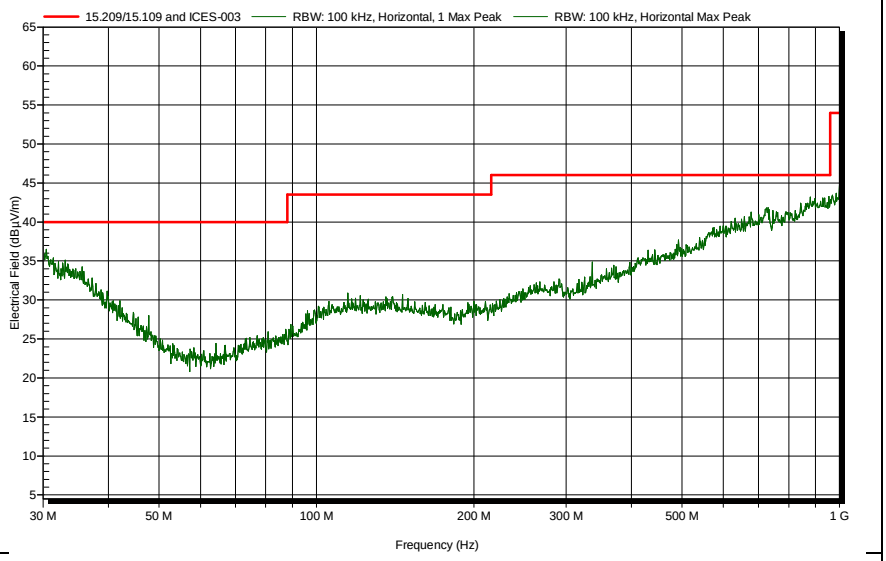
Vertical polarization

Low ch	
Mid ch	
High ch	

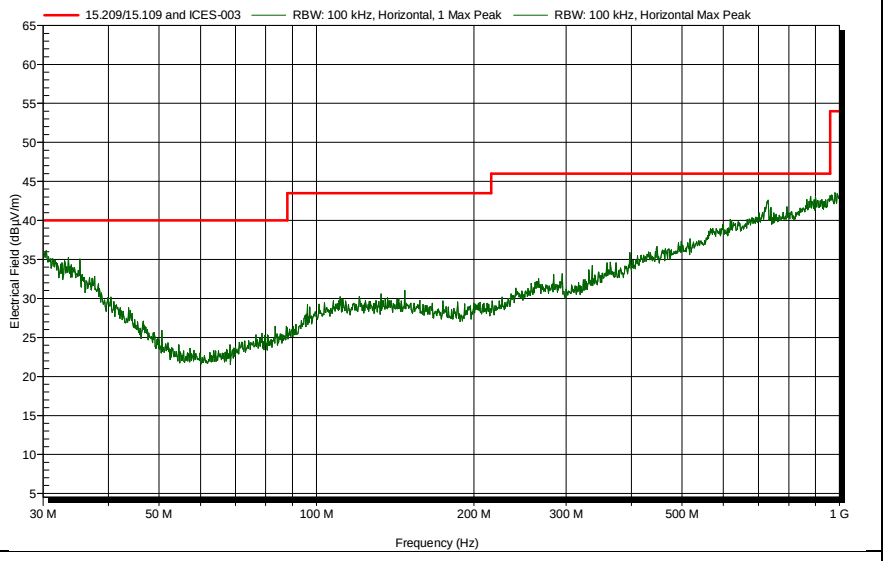
IEEE 802.11b 30 MHz to 1 GHz

Horizontal polarization

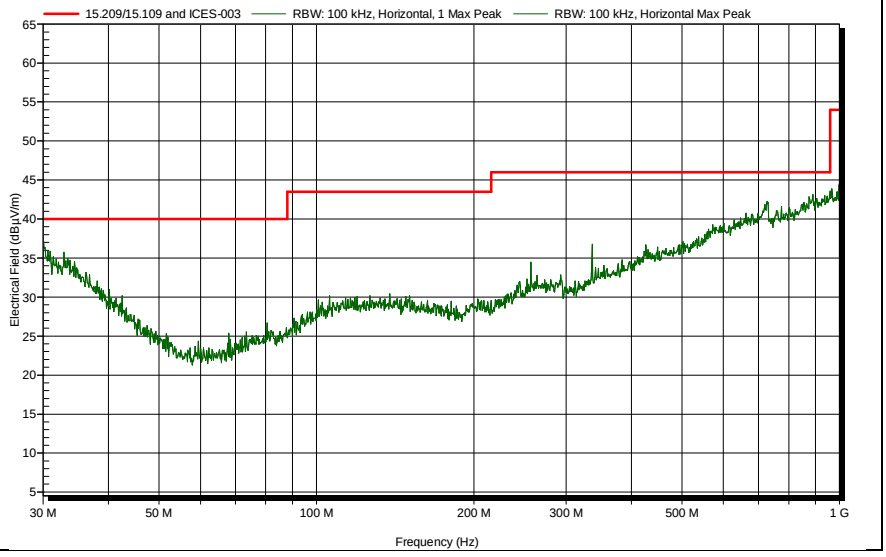
Low ch



Mid ch



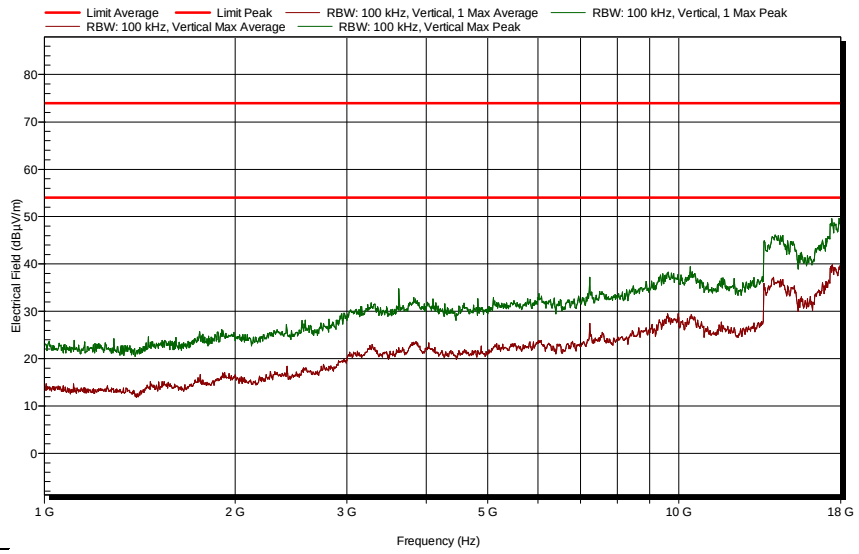
High ch



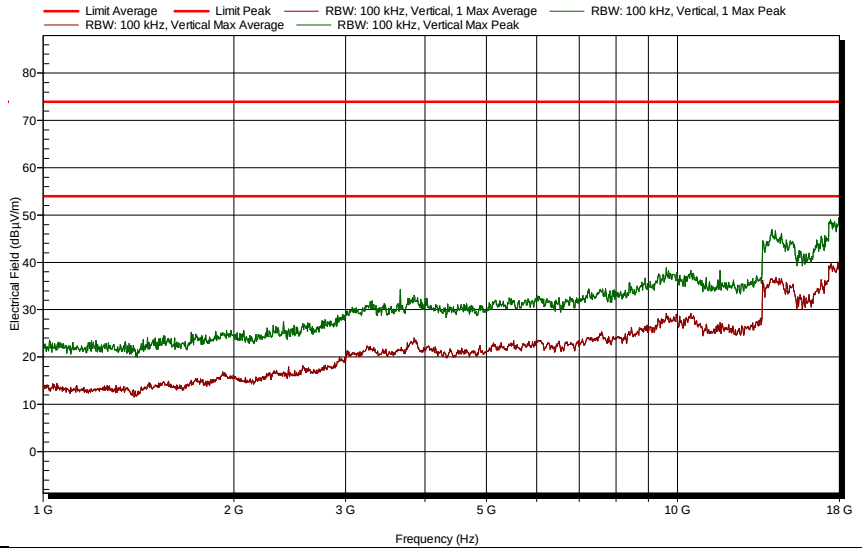
IEEE 802.11b 1 GHz to 18 GHz

Vertical polarization

Low ch



Mid ch



High ch