

§15.247(a)(2) – 6 DB BANDWIDTH

Standard Applicable

According to §15.247(a)(2), for direct sequence systems, the minimum 6dB bandwidth shall be at least 500 kHz.

Measurement Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
3. Measure the frequency difference of two frequencies that were attenuated 6 dB from the reference level. Record the frequency difference as the emission bandwidth. (6 dB bandwidth for DTS)
4. Repeat above procedures until all frequencies measured were complete.

Equipment Lists

Manufacturer	Model No.	Description	Calibration Date
HP	8565EC	Spectrum Analyzer	2003-01-22

Measurement Result

Environmental Conditions

Temperature:	25° C
Relative Humidity:	52%
ATM Pressure:	1100 mbar

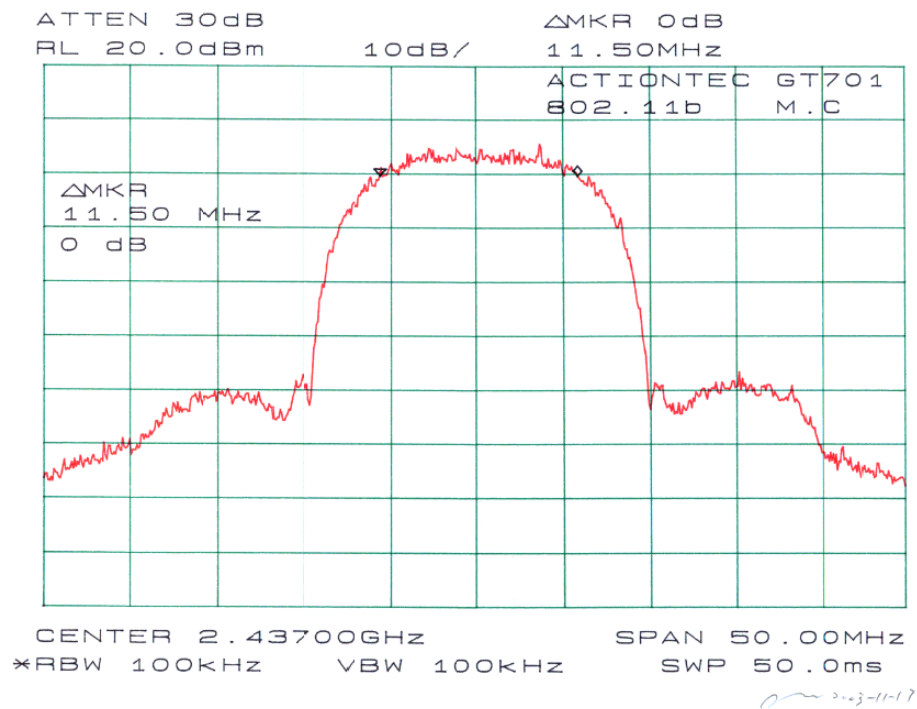
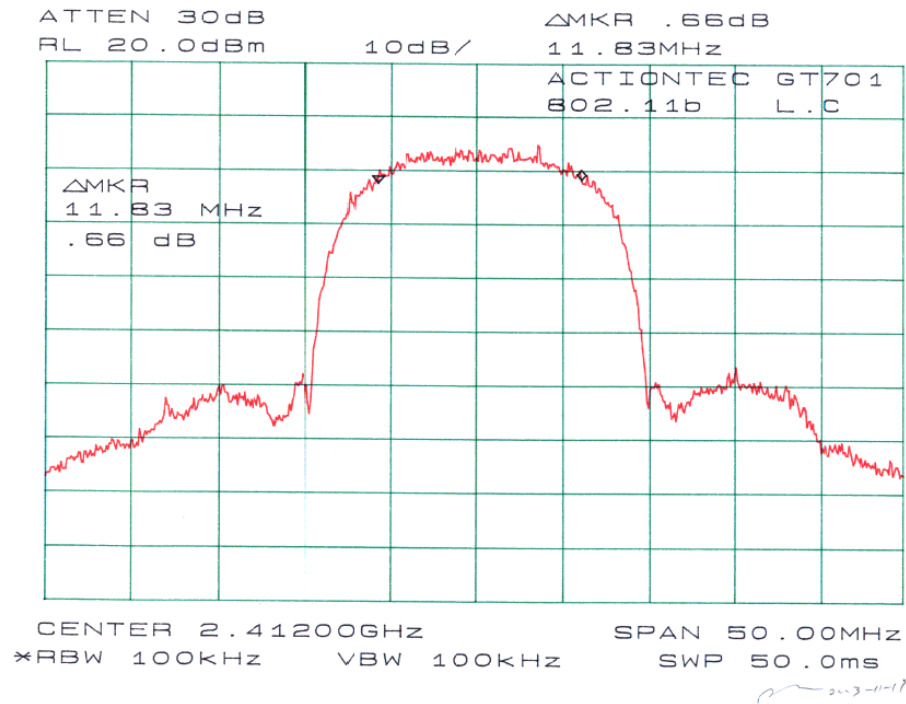
Test Result for 802.11b (15.247)

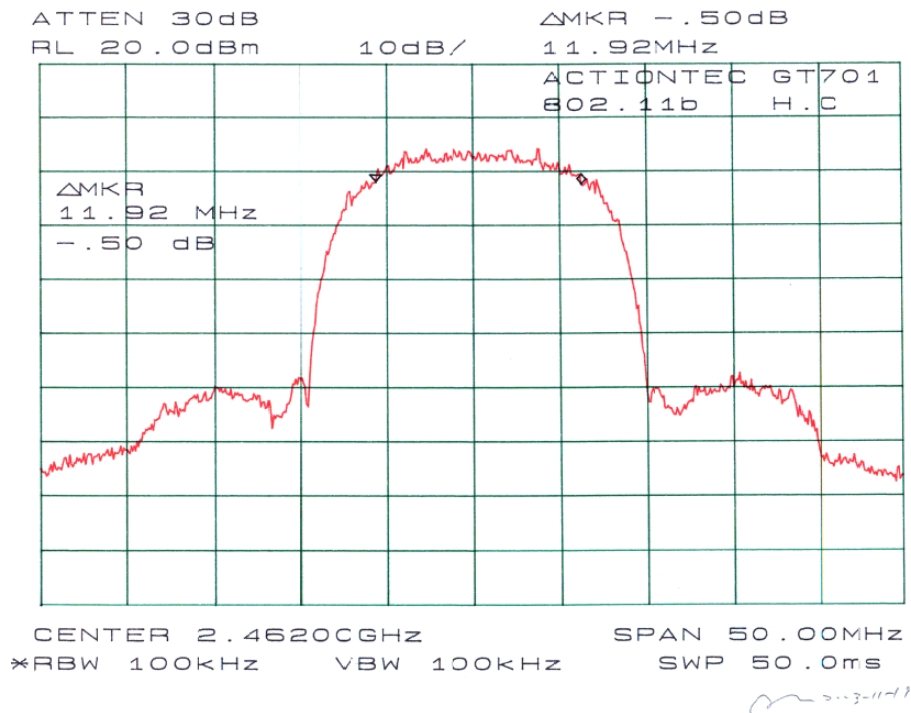
Channel	Frequency (MHz)	Measured (MHz)	Measured (kHz)	Standard (kHz)	Result
Low	2412	11.83	1183	≥ 500	Pass
Mid	2437	11.50	1150	≥ 500	Pass
High	2462	11.92	1192	≥ 500	Pass

Test Result for 802.11g (15.247)

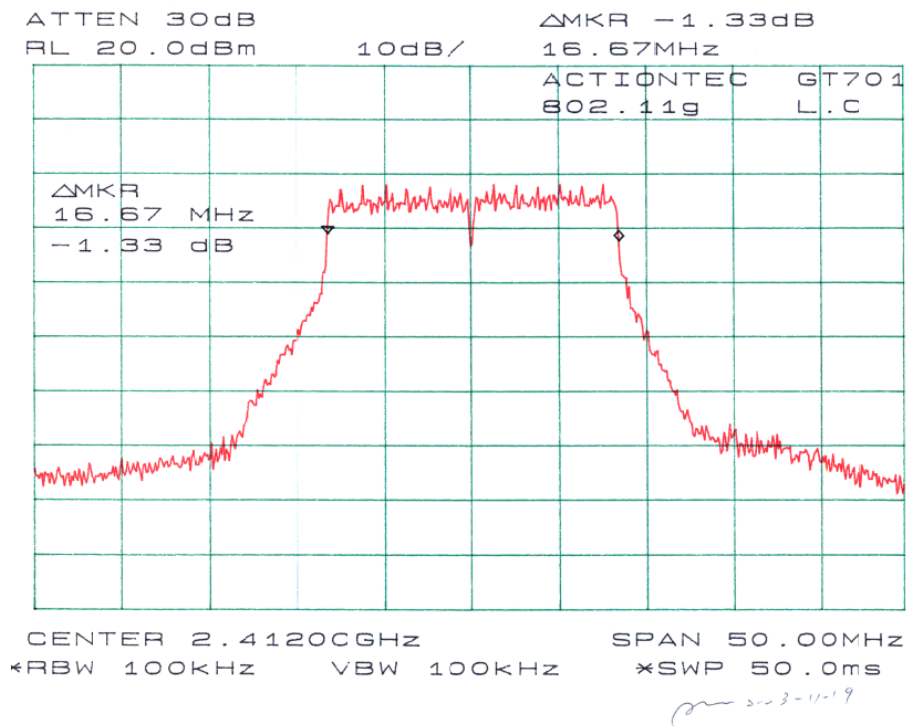
Channel	Frequency (MHz)	Measured (MHz)	Measured (kHz)	Standard (kHz)	Result
Low	2412	16.67	1667	≥ 500	Pass
Mid	2437	16.67	1667	≥ 500	Pass
High	2462	16.83	1683	≥ 500	Pass

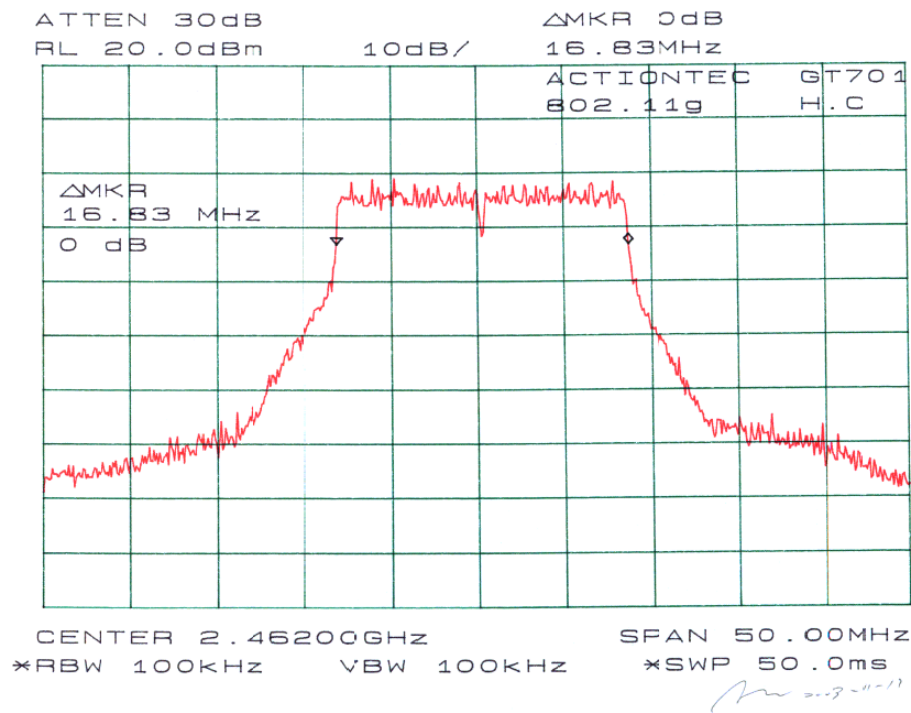
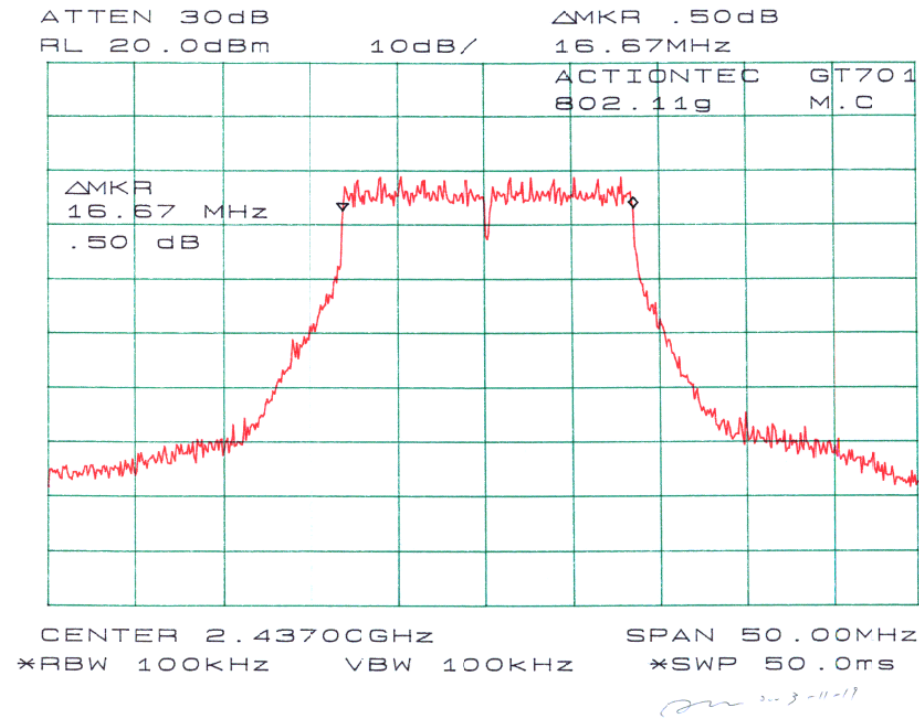
Plots of 6dB Bandwidth for 802.11b (15.247)





Plots of 6dB Bandwidth for 802.11g (15.247)





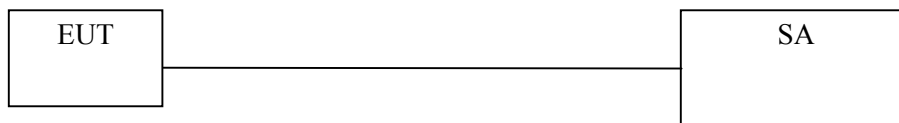
§15.247(b)(3) - PEAK OUTPUT POWER MEASUREMENT

Standard Applicable

According to §15.247(b) (3), for systems using digital modulation in 2400-2483.5 MHz: 1 Watt

Measurement Procedure

1. Place the EUT on a bench and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to a spectrum analyzer.
3. Add a correction factor to the display.



Equipment Lists

Manufacturer	Model No.	Description	Calibration Date
HP	8565EC	Spectrum Analyzer	2003-01-22

Measurement Result

Environmental Conditions

Temperature:	25° C
Relative Humidity:	52%
ATM Pressure:	1100 mbar

Output Power (15.247) for 802.11b

Channel	Frequency (MHz)	RF Power (dBm)	Correction Factor (dB)	Corrected RF Power (dBm)	Corrected RF Power (W)	Limit
Low (Ch1)	2412	7.50	7.7	15.20	0.033	1W (30dBm)
Mid (Ch7)	2437	7.83	7.7	15.53	0.036	1W (30dBm)
High (Ch11)	2462	7.67	7.7	15.37	0.034	1W (30dBm)

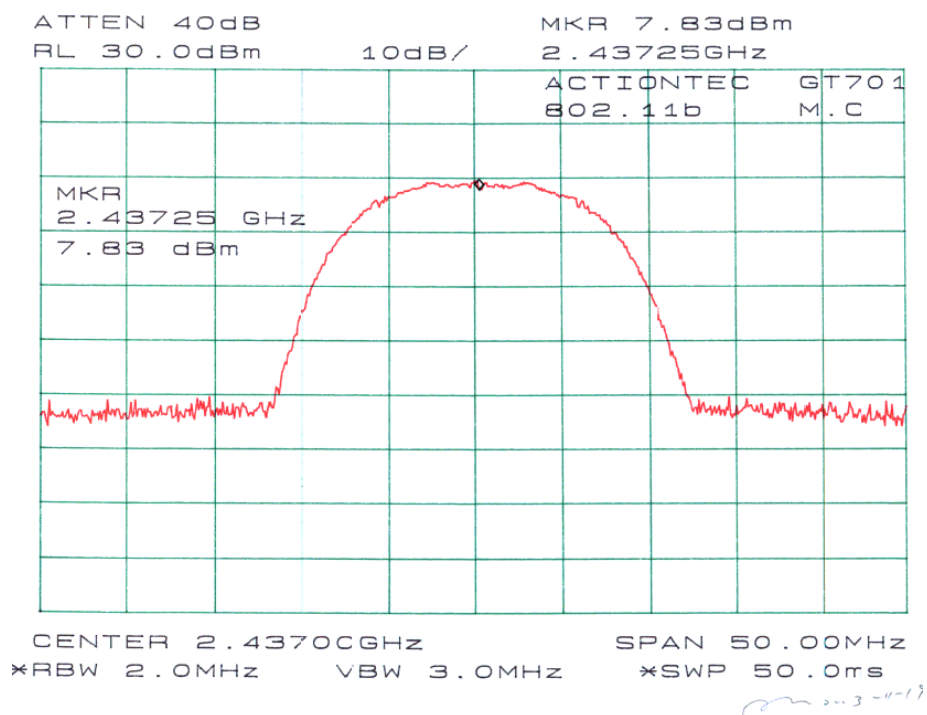
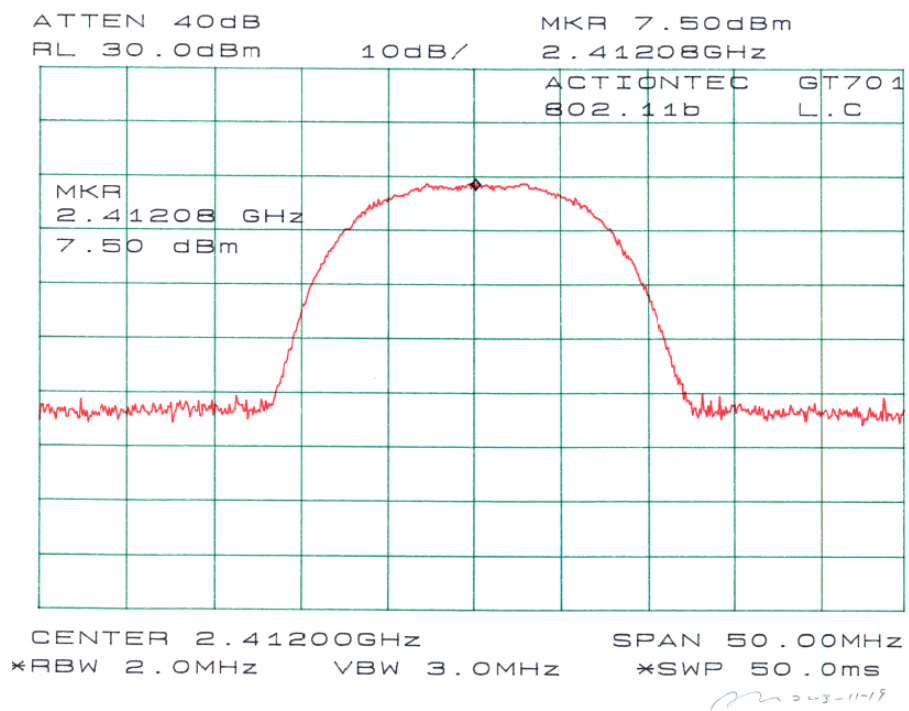
Note: Correction Factor = $10\log(BW_{6dB}/RBW) = 10\log(11.8/2) = 7.7$ dB

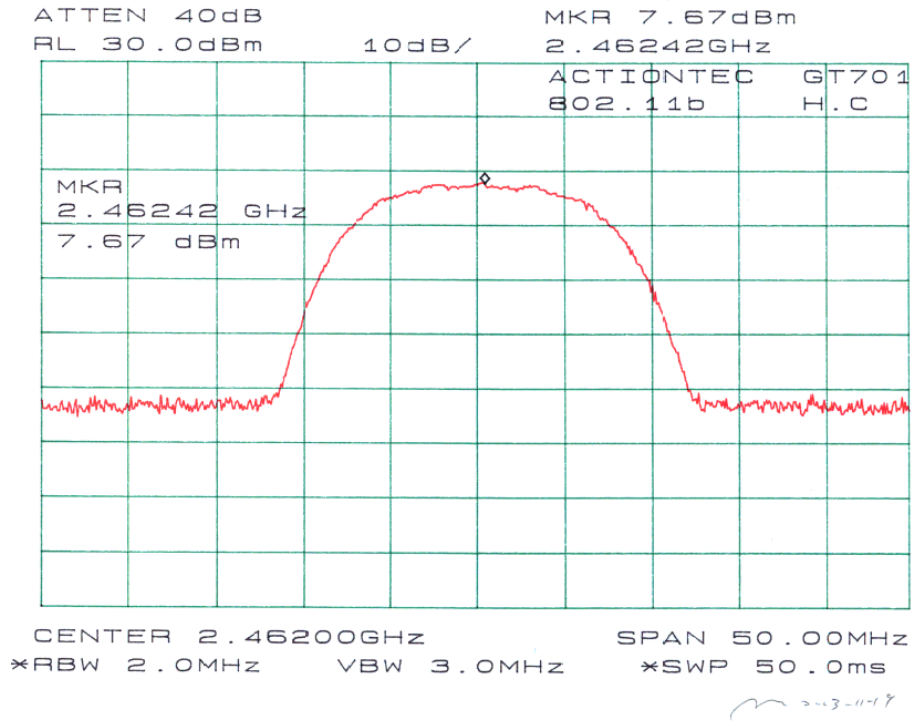
Output Power (15.247) for 802.11g

Channel	Frequency (MHz)	RF Power (dBm)	Correction Factor (dB)	Corrected RF Power (dBm)	Corrected RF Power (W)	Limit
Low (Ch1)	2412	6.50	9.2	15.70	0.037	1W (30dBm)
Mid (Ch7)	2437	6.17	9.2	15.37	0.034	1W (30dBm)
High (Ch11)	2462	6.33	9.2	15.53	0.036	1W (30dBm)

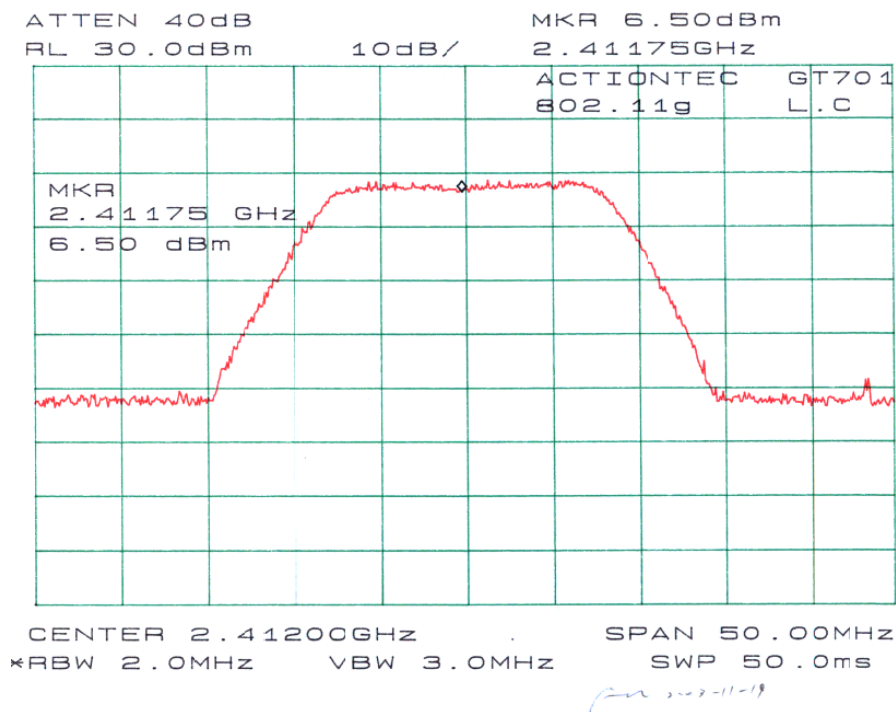
Note: Correction Factor for Turbo Mode = $10\log(BW_{6dB}/RBW) = 10\log(16.7/2.0) = 9.2$ dBm

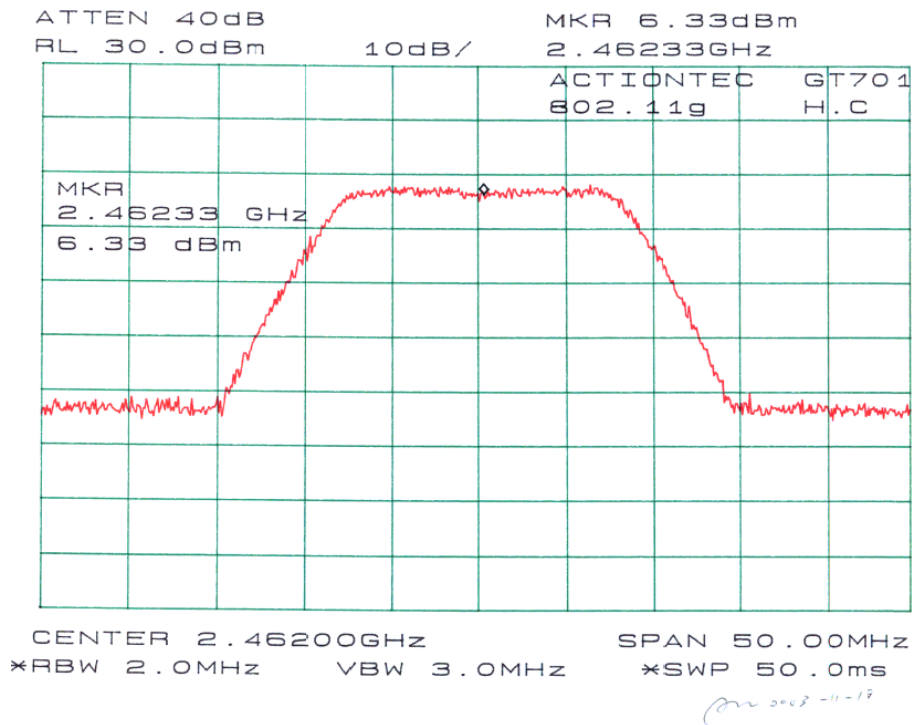
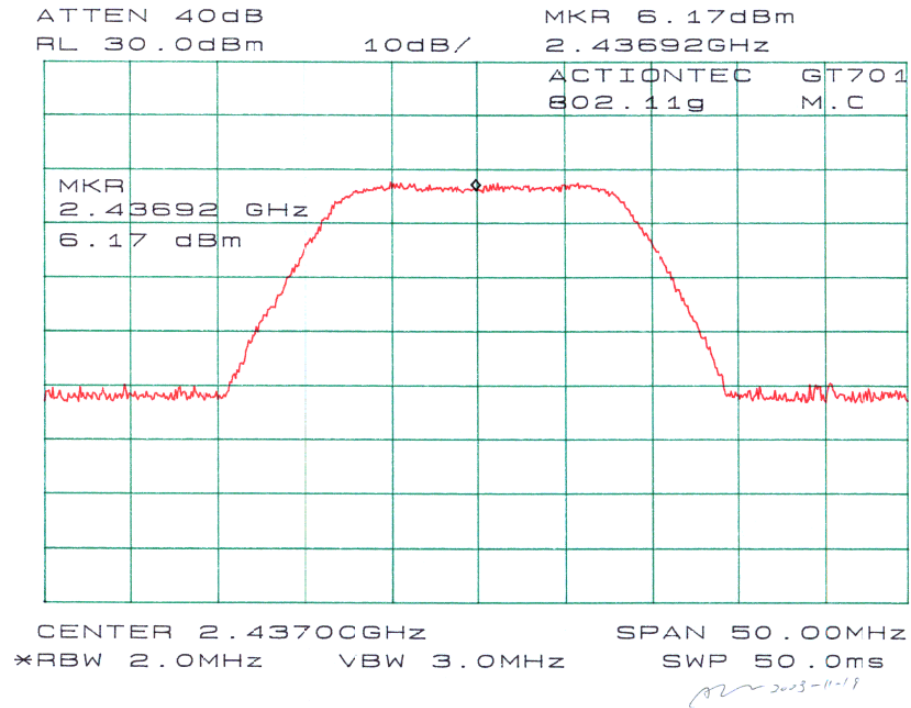
Plots of Peak Output Power for 802.11b (15.247)





Plots of Peak Output Power for 802.11 g (15.247)





§15.247(c) - 100 KHZ BANDWIDTH OF BAND EDGES

Standard Applicable

According to §15.247(c), in *any* 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator 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 an RF conducted or a radiated measurement. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) see §15.205(c)).

Measurement Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set both RBW and VBW of spectrum analyzer to 100 kHz with a convenient frequency span including 100kHz bandwidth from band edge.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

Equipment Lists

Manufacturer	Model No.	Description	Calibration Date
HP	8565EC	Spectrum Analyzer	2003-01-22

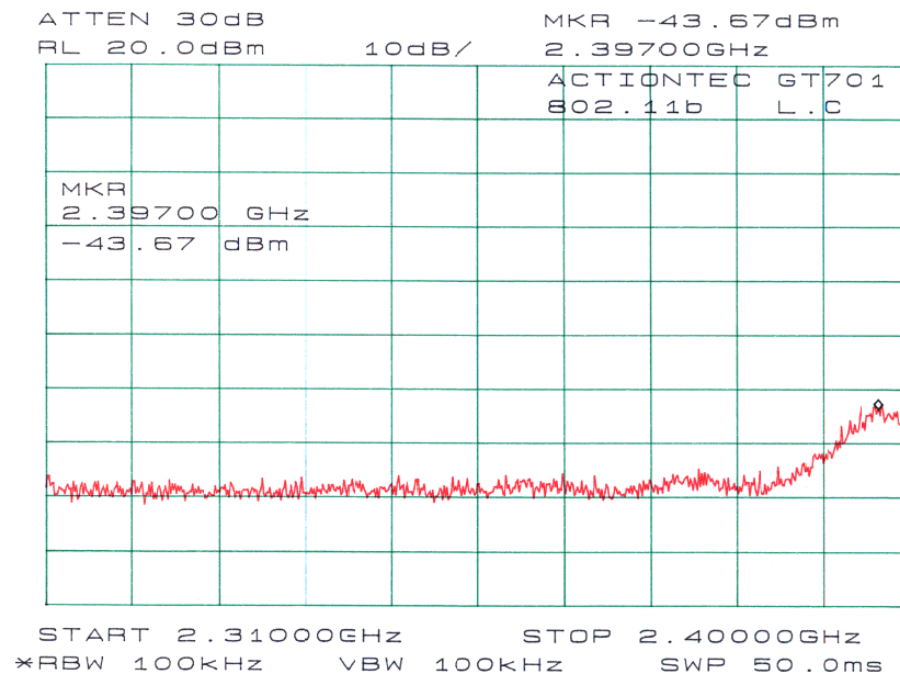
Measure Results

Environmental Conditions

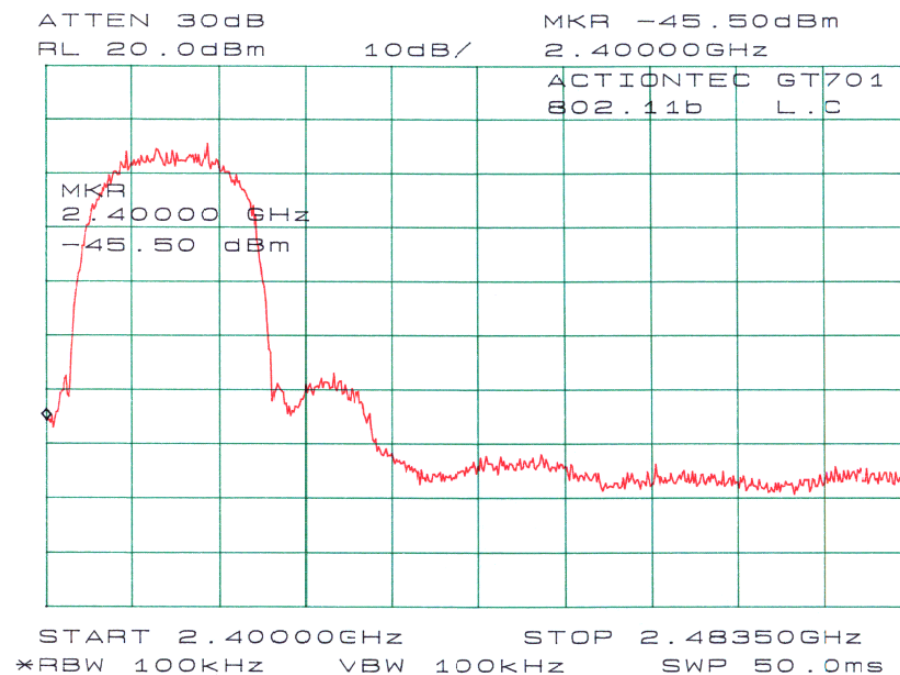
Temperature:	25° C
Relative Humidity:	52%
ATM Pressure:	1100 mbar

Please refer to following pages for plots of band edge.

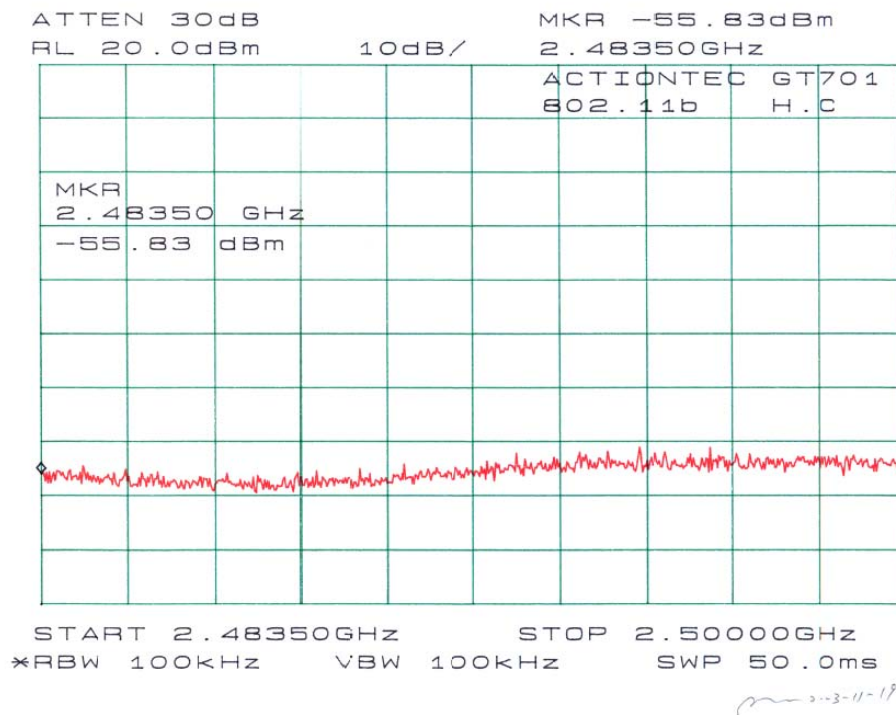
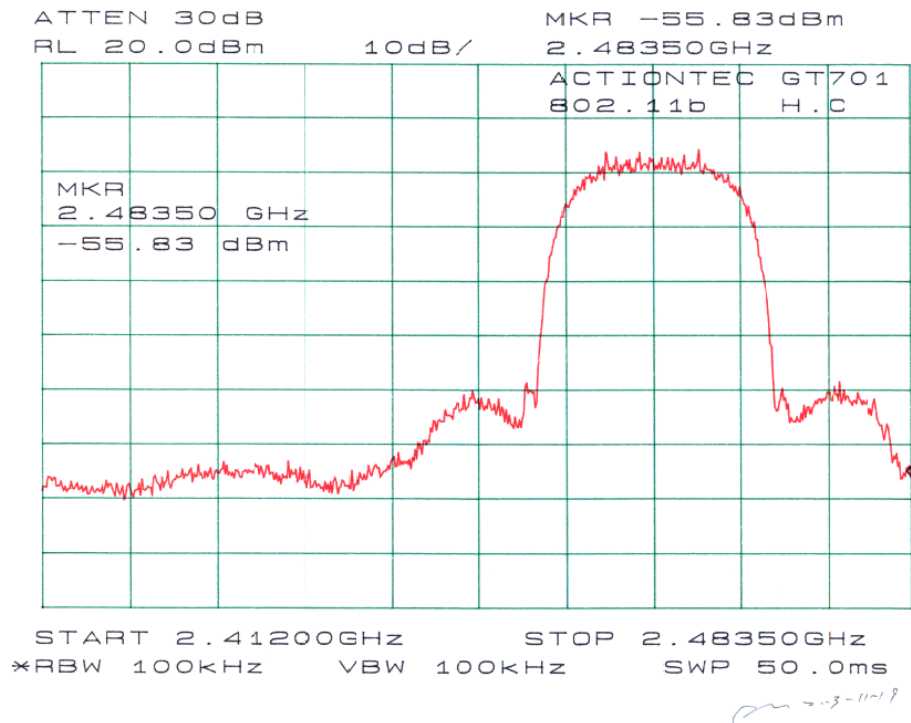
Plots of Band Edge for 802.11b (15.247)



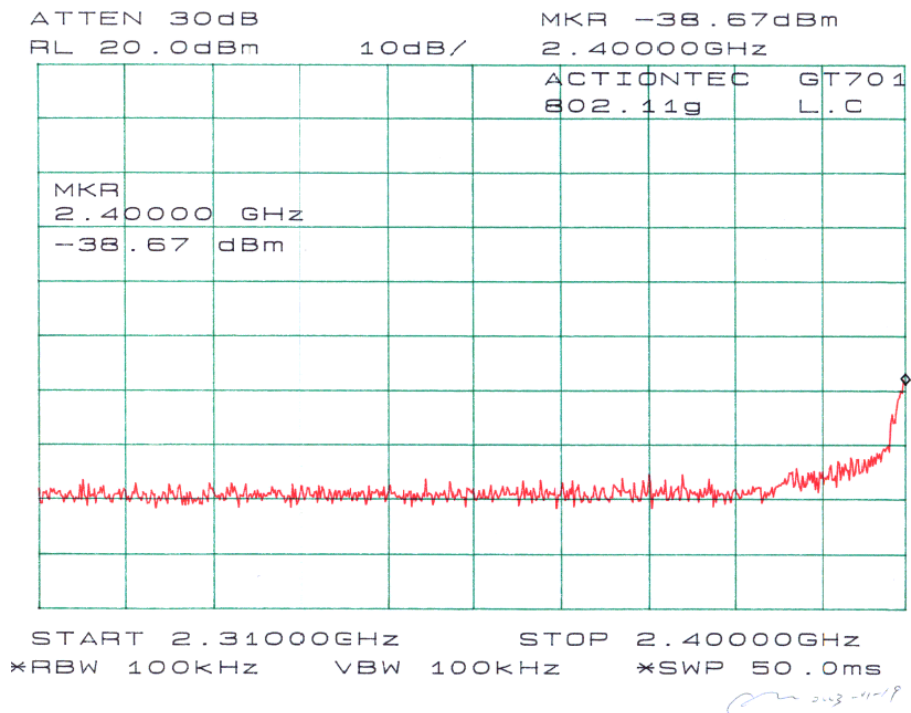
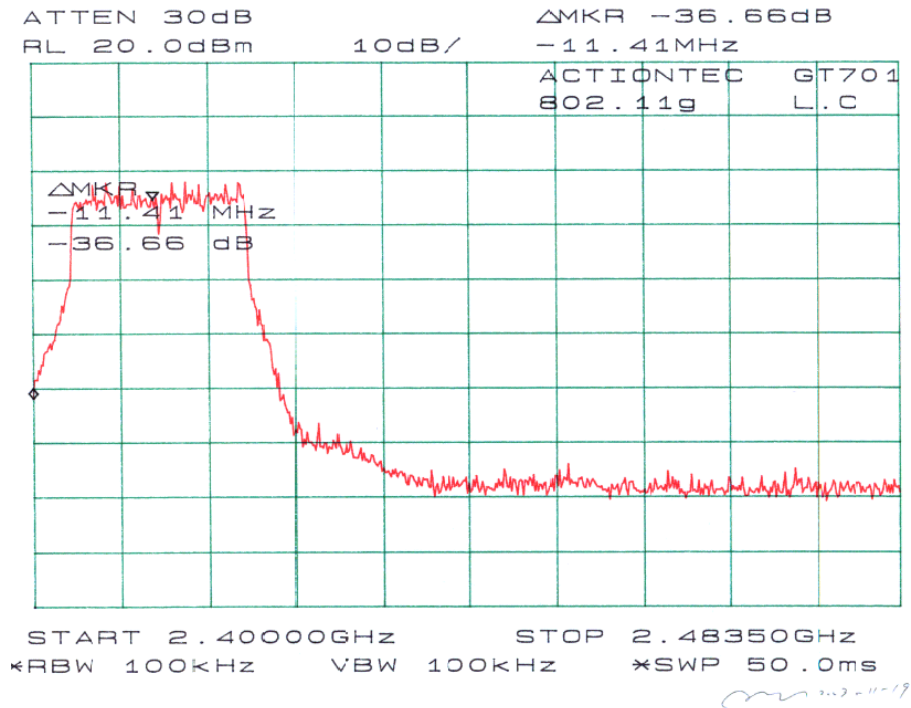
2.3-11-18

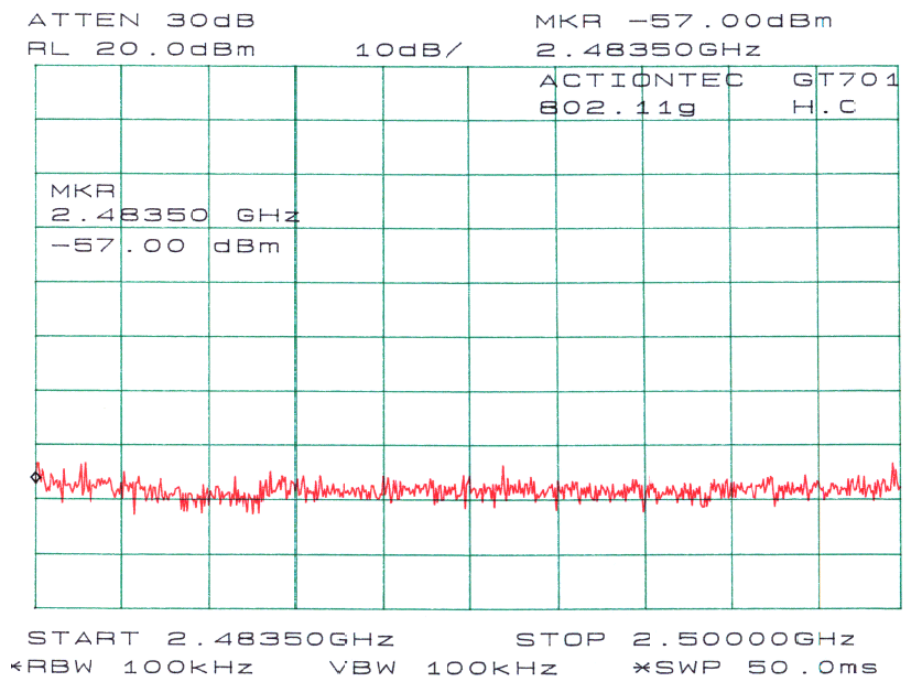
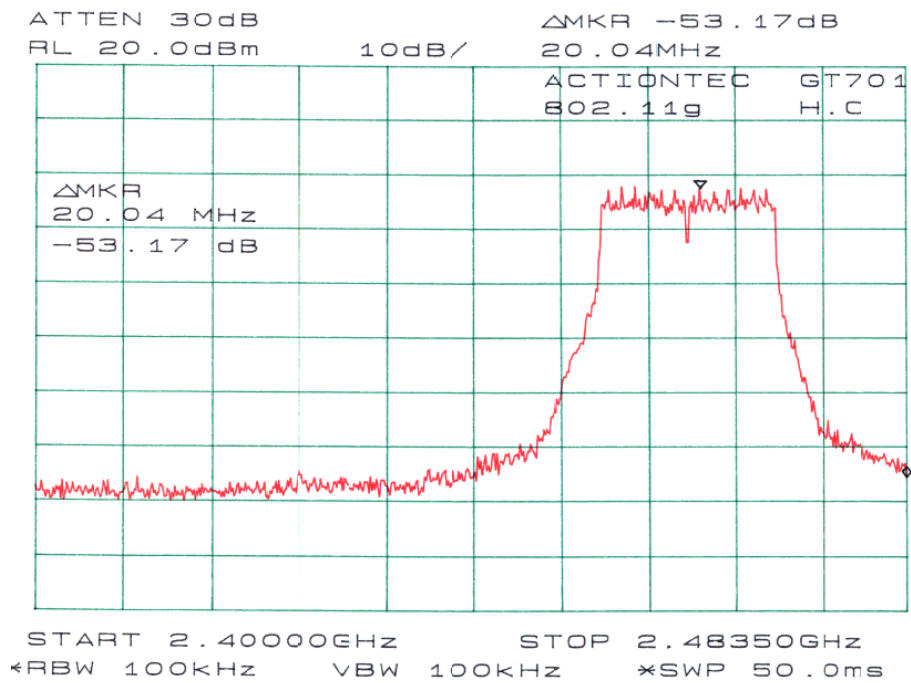


2.3-11-18



Plots of Band Edge for 802.11g (15.247)





§15.247(d) - POWER SPECTRAL DENSITY

Standard Applicable

According to §15.247 (d), for direct sequence systems, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

Measurement Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT was set without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Adjust the center frequency of SA on any frequency be measured and set SA to 6MHz span mode. And then, set RBW and VBW of spectrum analyzer to proper value. (DTS)
4. Adjust the center frequency of SA on any frequency be measured and set SA to 50MHz span mode. And then, set RBW and VBW of spectrum analyzer to proper value. (UNII)
5. Repeat above procedures until all frequencies measured were complete.

Equipment Lists

Manufacturer	Model No.	Description	Calibration Date
HP	8565EC	Spectrum Analyzer	2003-01-22

Measurement Results

Environmental Conditions

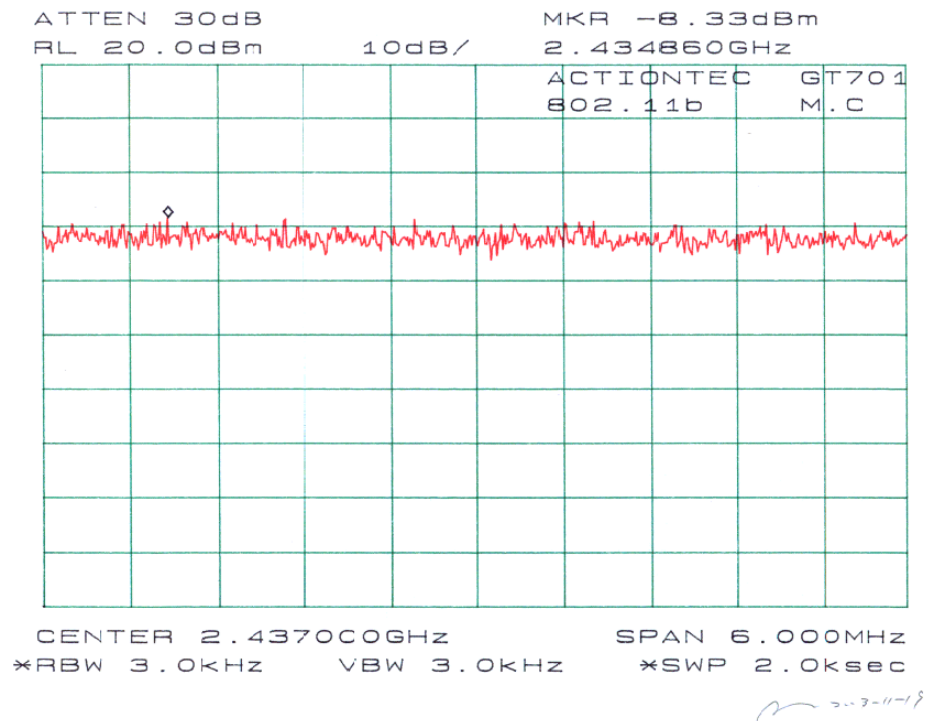
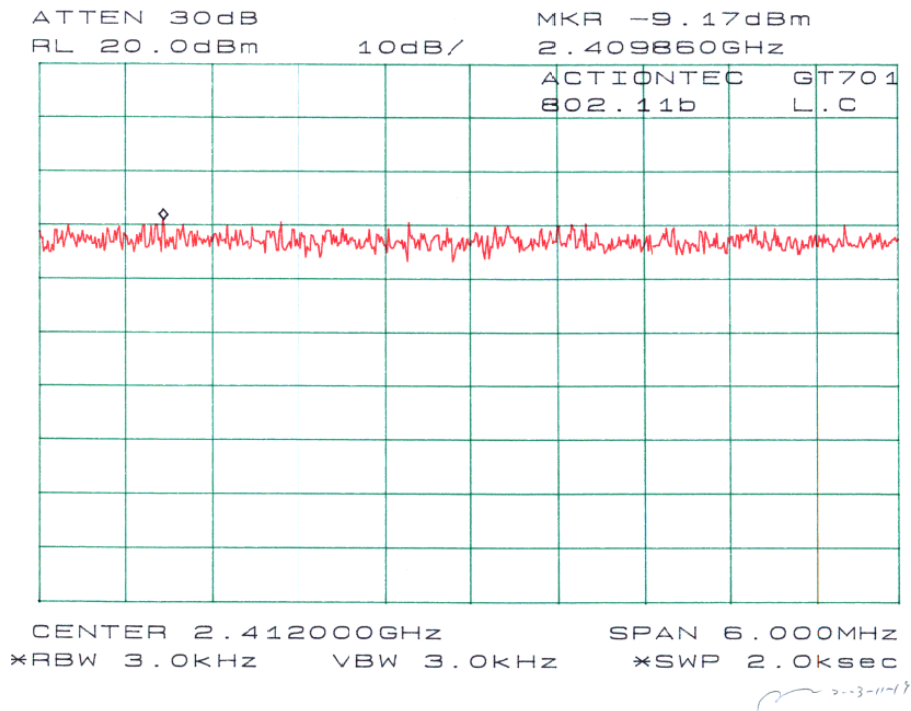
Temperature:	25° C
Relative Humidity:	52%
ATM Pressure:	1100 mbar

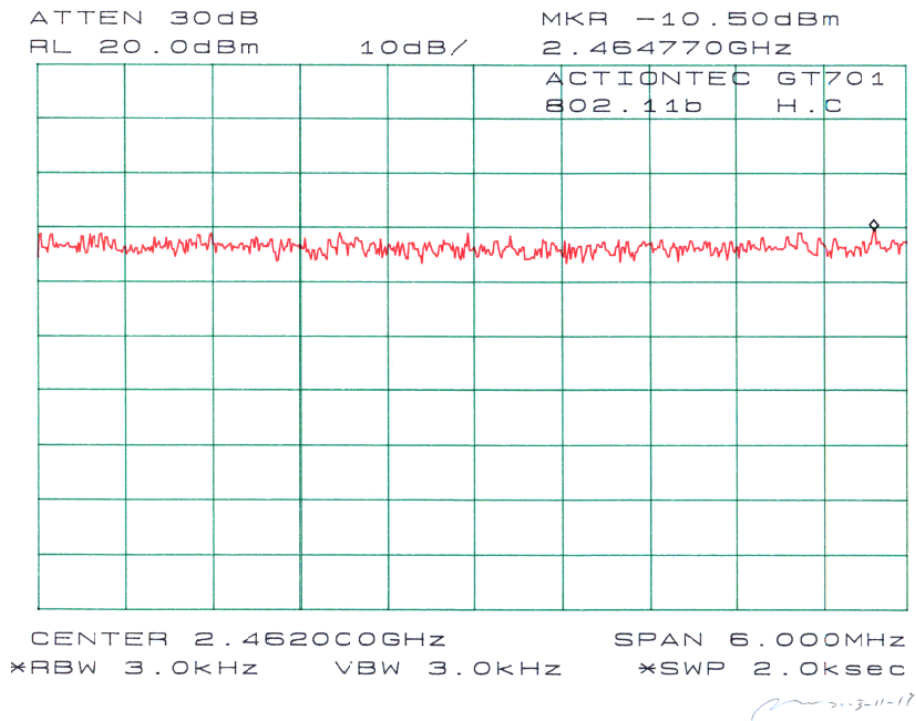
Test Result for 802.11b (15.247)

Channel	Frequency (MHz)	Peak Power Spectral Density (dBm)	Standard (dBm)	Result
Low	2412	-9.17	≤ 8	Pass
Mid	2437	-8.33	≤ 8	Pass
High	2462	-10.50	≤ 8	Pass

Test Result for 802.11g (15.247)

Channel	Frequency (MHz)	Peak Power Spectral Density (dBm)	Standard (dBm)	Result
Low	2412	-14.83	≤ 8	Pass
Mid	2437	-14.67	≤ 8	Pass
High	2462	-14.67	≤ 8	Pass

Plots of Power Spectral Density for 802.11b (15.247)



Plots of Power Spectral Density for 802.11g (15.247)

