§15.247(a)(2) & §15.407 – 6 DB BANDWIDTH and 26 DB BANDWIDTH

Standard Applicable

According to §15.247(a)(2), for direct sequence systems, the minimum 6dB bandwidth shall be at least 500 kHz. According to §15.407, 26dB Bandwidth should be shown.

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. Same as (3) except 26 dB. (26dB bandwidth for 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 Result

Environmental Conditions

Temperature:	12° C
Relative Humidity:	48%
ATM Pressure:	1100 mbar

Test Result for 802.11b (15.247)

Channel	Frequency (MHz)	Measured (MHz)	Standard (kHz)	Result
Low	2412	10.25 MHz	≥ 500	Compliant
Mid	2442	10.33 MHz	≥ 500	Compliant
High	2462	10.50 MHz	≥ 500	Compliant

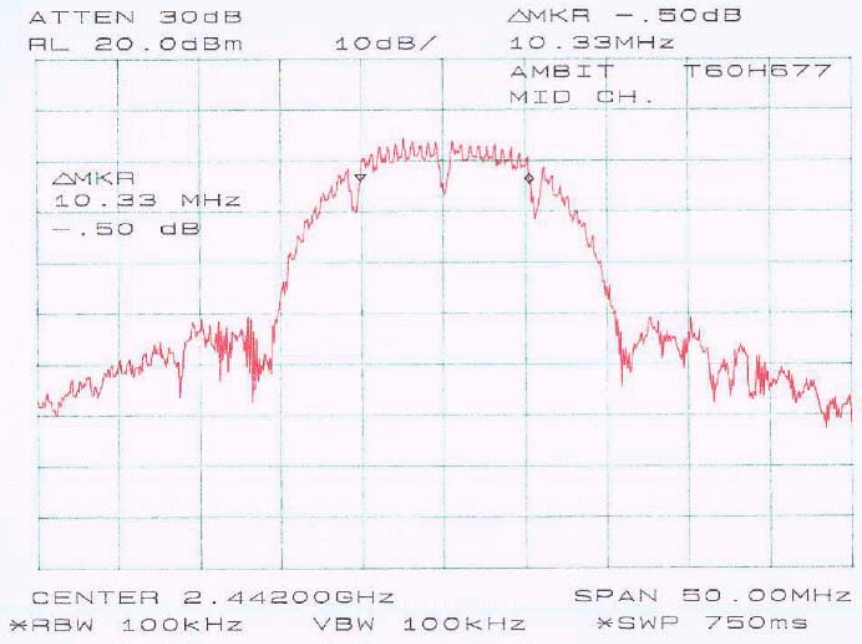
Test Result for 802.11g (15.247)

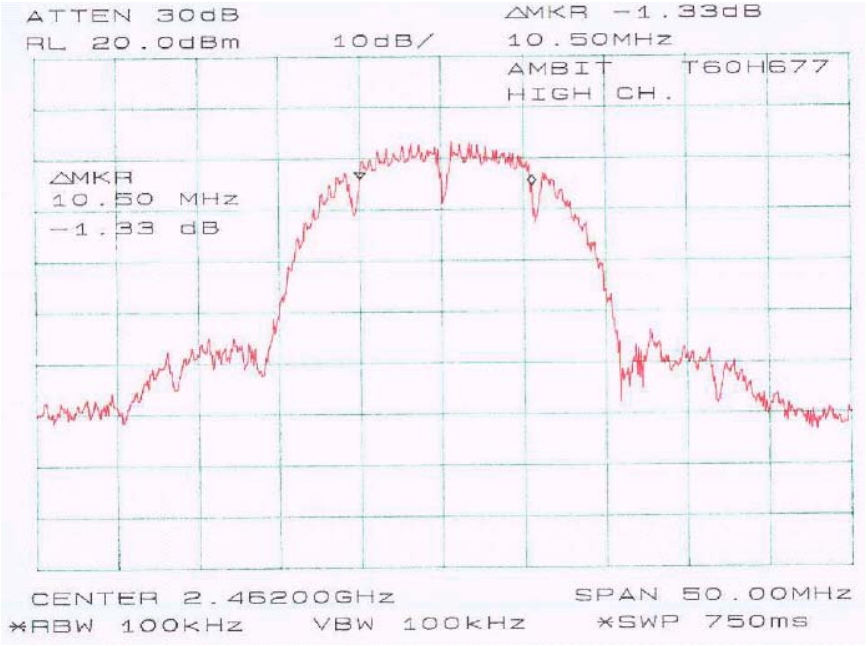
	Frequency (MHz)	Measured (MHz)	Standard (kHz)	Result
J1 Port	2412	16.83	≥ 500	Compliant
	2442	16.92	≥ 500	Compliant
	2462	16.83	≥ 500	Compliant

Test Result for 802.11a MHz Band (15.407)

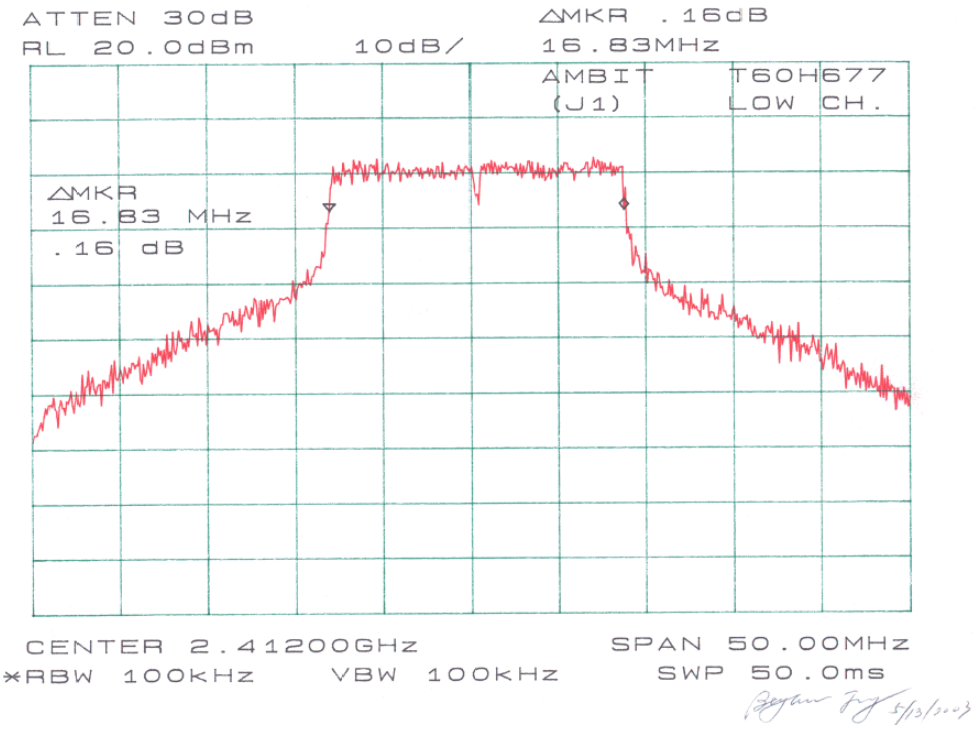
Band	Channel	Frequency (MHz)	Measured (MHz)
Low	Low	5150	23.33
	Mid	5200	23.25
	High	5250	23.58
Mid	Low	5250	23.83
	Mid	5300	23.08
	High	5350	23.83
High	Low	5725	23.00
	Mid	5775	23.75
	High	5825	23.50

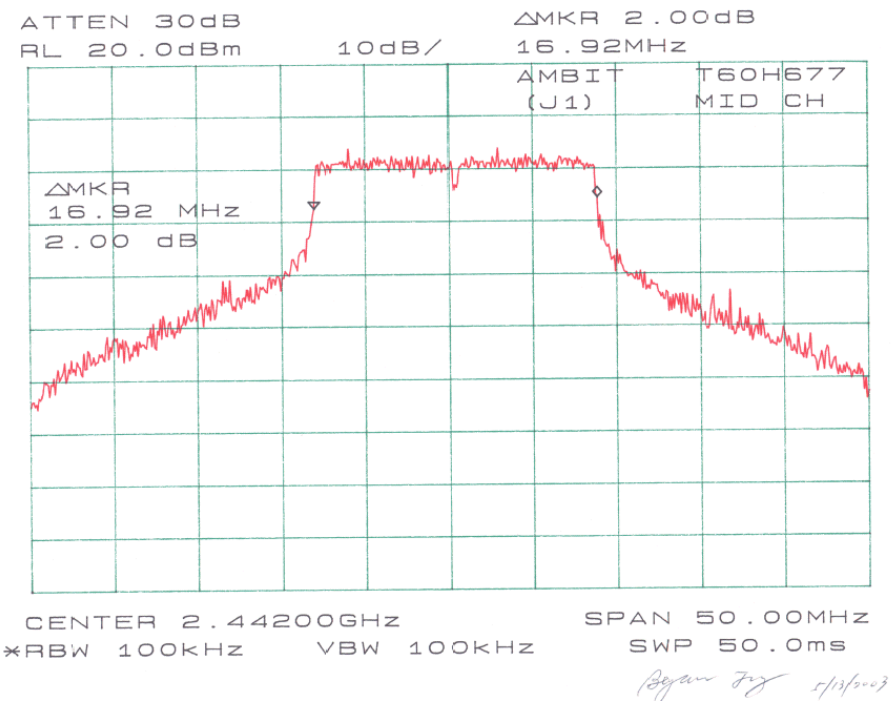
Plots of 6dB Bandwidth for 802.11b (15.247)

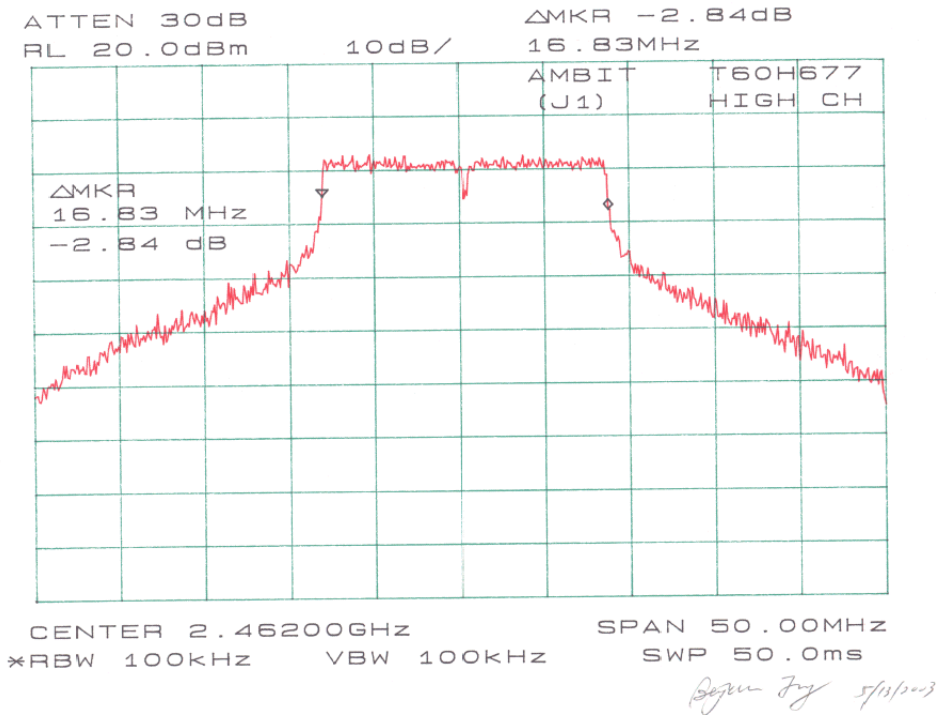




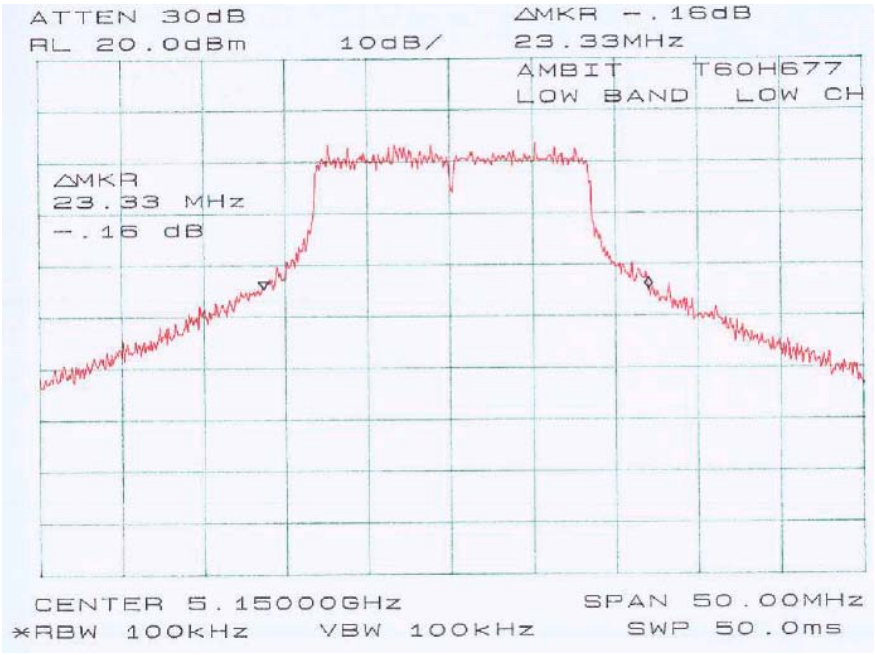
Plots of 6dB Bandwidth for 802.11g (15.247)

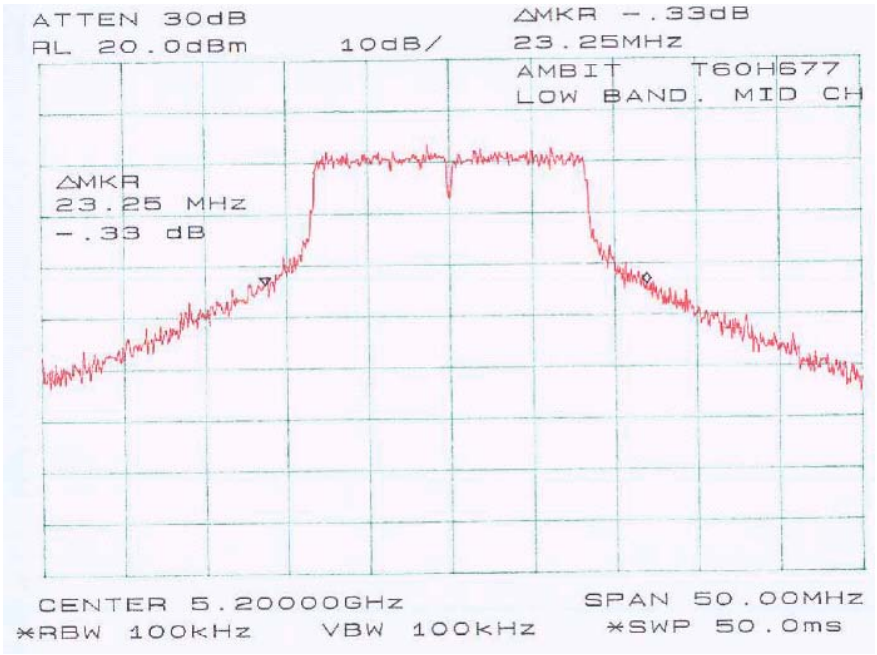


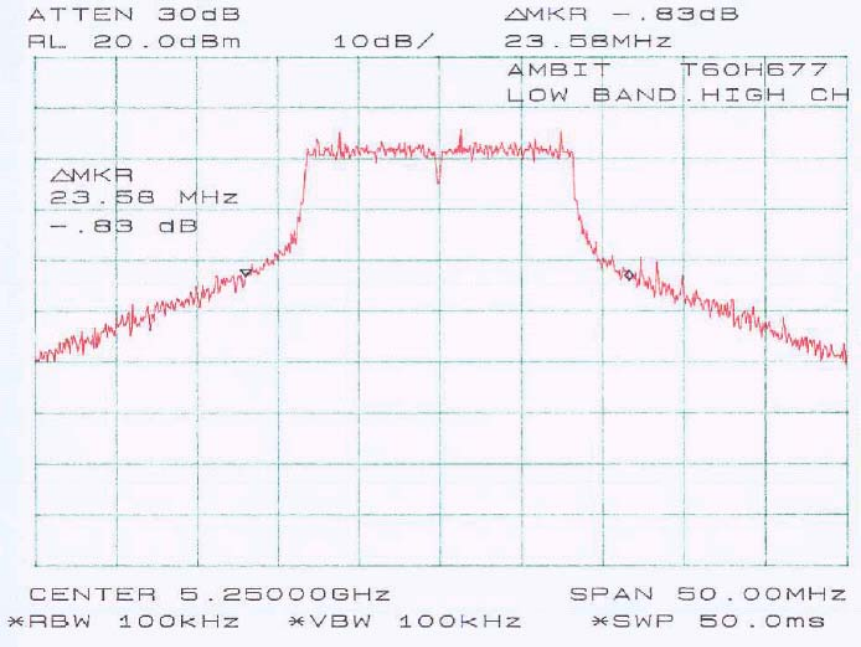

ATTEN 30dB
RL 20.0dBm
10dB/
ΔMKR 2.00dB
16.92MHz
AMBIT T60H677
(J1) MID CH
ΔMKR
16.92 MHz
2.00 dB
CENTER 2.44200GHz
SPAN 50.00MHz
*RBW 100kHz
VBW 100kHz
SWP 50.0ms

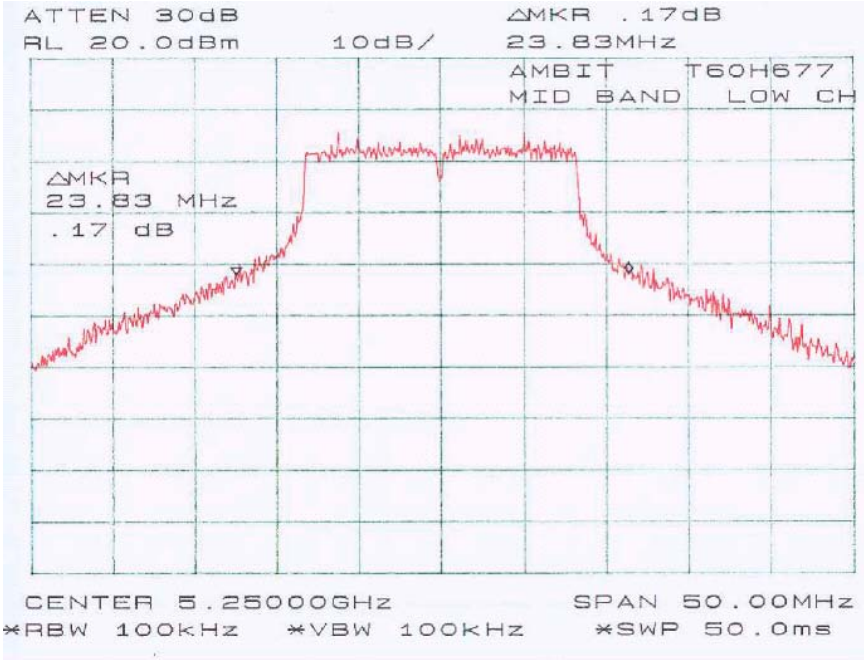

ATTEN 30dB
RL 20.0dBm
10dB/
ΔMKR −2.84dB
16.83MHz
AMBIT T60H677
(J1) HIGH CH
ΔMKR
16.83 MHz
−2.84 dB
CENTER 2.46200GHz
SPAN 50.00MHz
*RBW 100kHz
VBW 100kHz
SWP 50.0ms

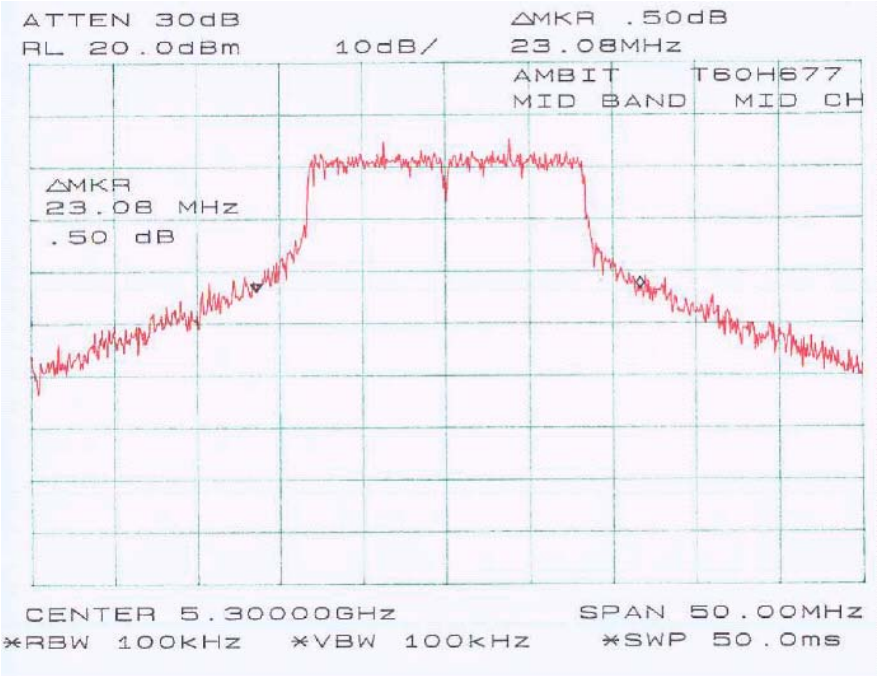
Plots of 26dB Bandwidth for 802.11a (15.407)

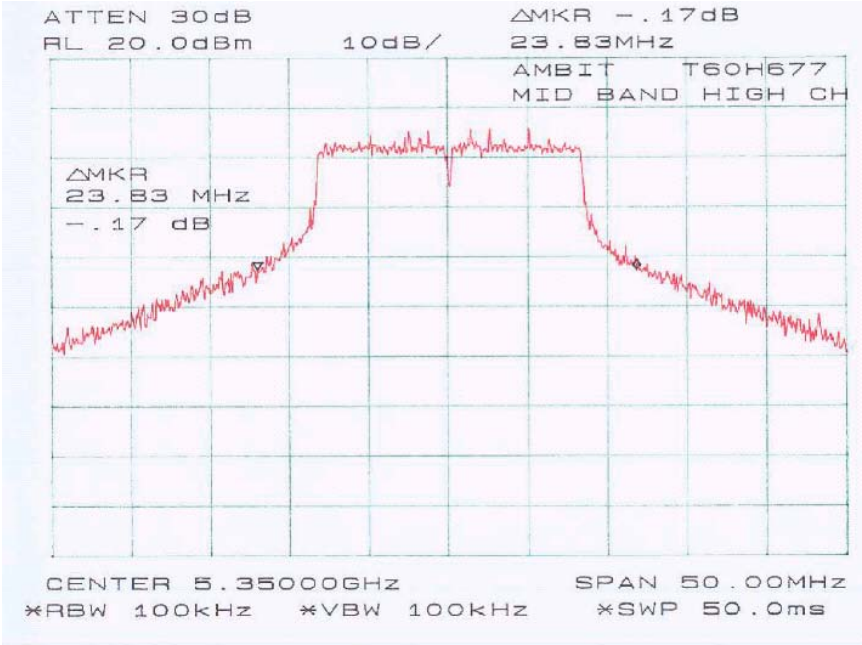


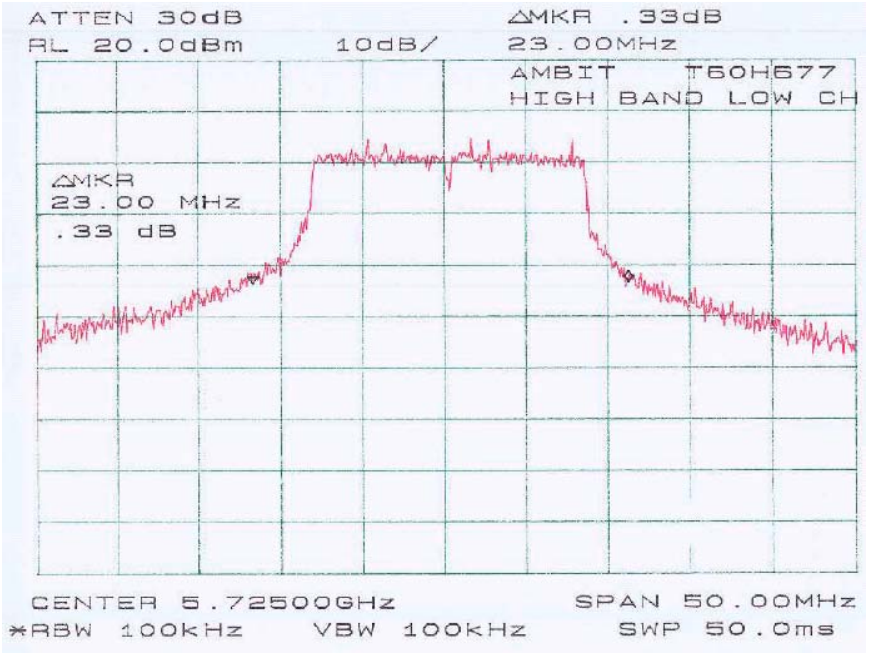


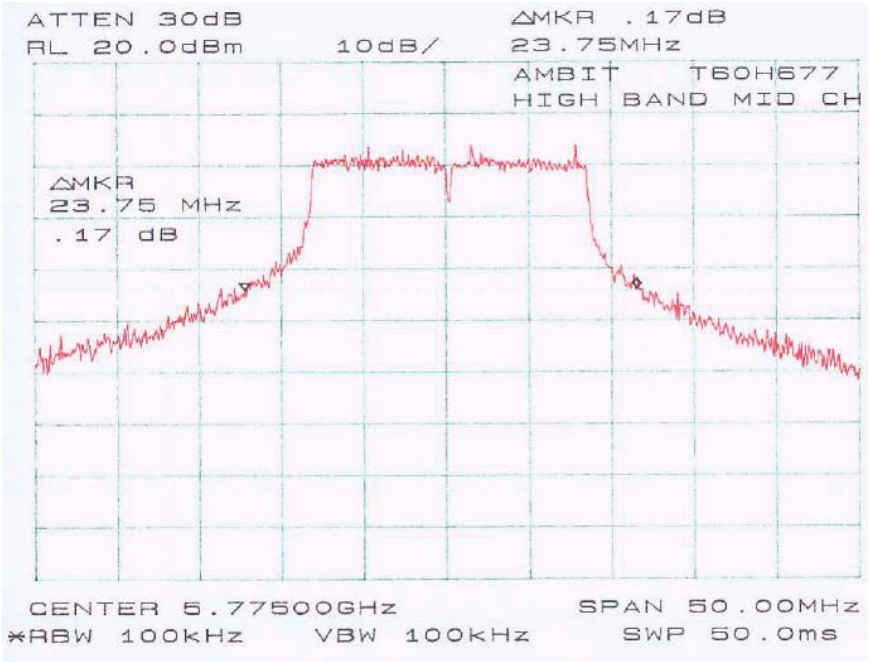

ATTEN 30dB
RL 20.0dBm
10dB/
ΔMKR -.83dB
23.58MHz
AMBIT T60H677
LOW BAND.HIGH CH
ΔMKR
23.58 MHz
-.83 dB
CENTER 5.25000GHz
SPAN 50.00MHz
*RBW 100kHz
*VBW 100kHz
*SWP 50.0ms

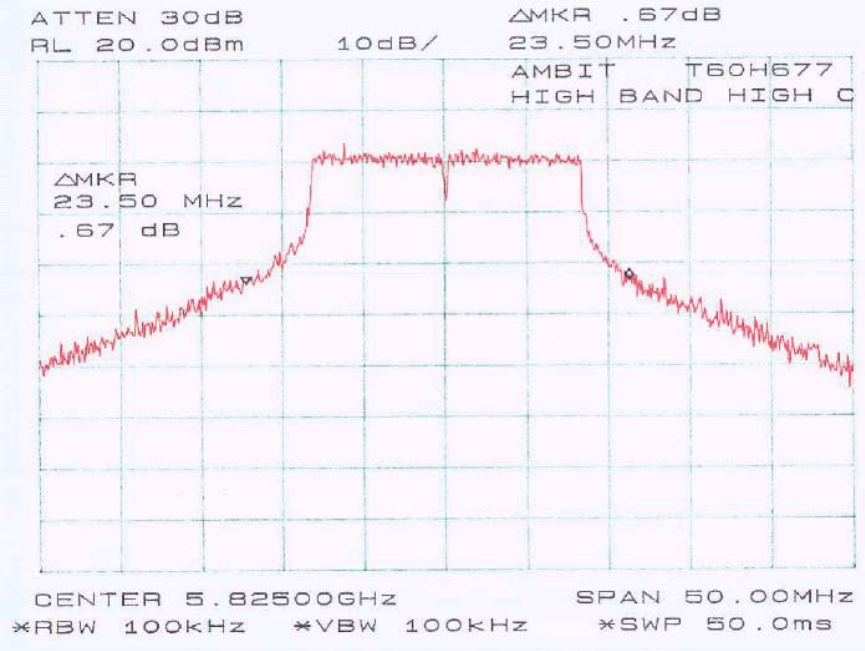

ATTEN 30dB
RL 20.0dBm
10dB/
ΔMKR .17dB
23.83MHz
AMBIT T60H677
MID BAND LOW CH
ΔMKR
23.83 MHz
.17 dB
CENTER 5.25000GHz
SPAN 50.00MHz
*RBW 100kHz
*VBW 100kHz
*SWP 50.0ms


ATTEN 30dB
RL 20.0dBm
10dB/
ΔMKR .50dB
23.08MHz
AMBIT T60H677
MID BAND MID CH
ΔMKR
23.08 MHz
.50 dB
CENTER 5.30000GHz
SPAN 50.00MHz
*RBW 100kHz
*VBW 100kHz
*SWP 50.0ms


ATTEN 30dB
RL 20.0dBm
10dB/
ΔMKR -.17dB
23.83MHz
AMBIT T60H677
MID BAND HIGH CH
ΔMKR
23.83 MHz
-.17 dB
CENTER 5.35000GHz
SPAN 50.00MHz
*RBW 100kHz
*VBW 100kHz
*SWP 50.0ms


ATTEN 30dB
RL 20.0dBm
10dB/
ΔMKR .33dB
23.00MHz
AMBIT T60H677
HIGH BAND LOW CH
ΔMKR
23.00 MHz
.33 dB
CENTER 5.72500GHz
SPAN 50.00MHz
*RBW 100kHz
VBW 100kHz
SWP 50.0ms


ATTEN 30dB
RL 20.0dBm
10dB/
ΔMKR .17dB
23.75MHz
AMBIT T60H677
HIGH BAND MID CH
ΔMKR
23.75 MHz
.17 dB
CENTER 5.77500GHz
SPAN 50.00MHz
*RBW 100kHz
VBW 100kHz
SWP 50.0ms


ATTEN 30dB
RL 20.0dBm
10dB/
ΔMKR .67dB
23.50MHz
AMBIT T60H677
HIGH BAND HIGH C
ΔMKR
23.50 MHz
.67 dB
CENTER 5.82500GHz
SPAN 50.00MHz
*RBW 100kHz
*VBW 100kHz
*SWP 50.0ms

§15.247(b)(3), §15.407(a)(2) - PEAK OUTPUT POWER MEASUREMENT

Standard Applicable

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

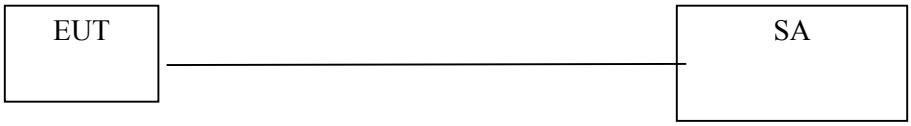
According to §15.407(a)(1), for the band 5.15-5.25 GHz, the peak transmit power over the frequency band of operation shall not exceed the lesser of 50 mW or 4 dBm + 10logB, where B is the 26-dB emission bandwidth in MHz.

According to §15.407(a)(2), for the band 5.25-5.35 GHz, the peak transmit power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10logB, where B is the 26-dB emission bandwidth in MHz.

According to §15.407(a)(3), for the band 5.725-5.825 GHz, the peak transmit power over the frequency band of operation shall not exceed the lesser of 1 W or 17 dBm + 10logB, where B is the 26-dB emission bandwidth in MHz.

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:	12° C
Relative Humidity:	48%
ATM Pressure:	1100 mbar

RF Output Power (15.247) for 802.11b

Port	Channel	Frequency (MHz)	Output Power (dBm)	Correction Factor (dB)	Corrected Output Power (dBm)	Output Power (W)	Standard (W)	Result
J1	Low	2412	9.5	7.2	16.70	0.0468	≤ 1W	Compliant
	Mid	2437	9.17	7.2	16.37	0.0434	≤ 1W	Compliant
	High	2462	8.67	7.2	15.87	0.0386	≤ 1W	Compliant

Note: Correction Factor = 10Log(BW6dB/RBW) = 10Log(10.5/2) = 7.2dB

RF Output Power (15.247) for 802.11g

	Channel	Frequency (MHz)	Peak Output Power (dBm)	Correction Factor (dBm)	Corrected Factor (dBm)	Output Power (W)	Standard (W)	Result
J1 Port	Low	2412	6.33	9.3	15.63	0.037	≤ 1 W	Compliant
	Mid	2442	6.50	9.3	15.80	0.038	≤ 1 W	Compliant
	High	2462	6.67	9.3	15.97	0.040	≤ 1 W	Compliant

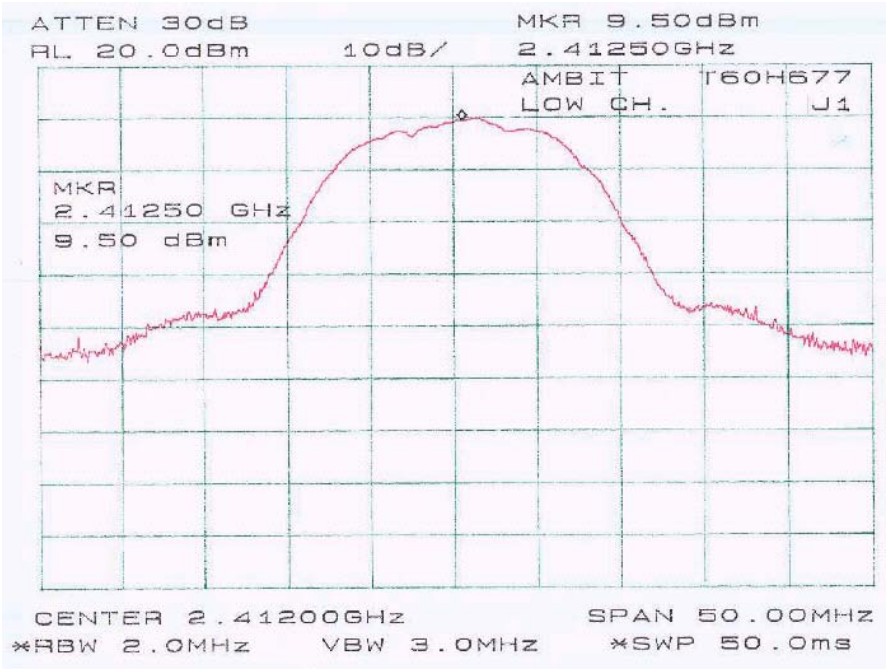
Note: Correction Factor = 10 log (BW6dB/RBW) = 10 log (17/2.0) = 9.3 dBm

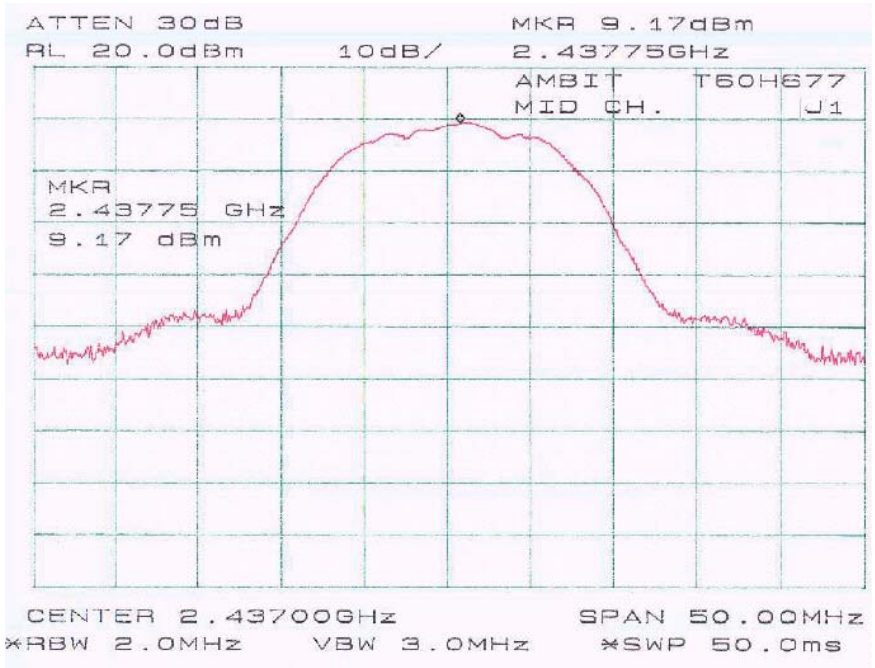
RF Output Power (15.407) for 802.11a

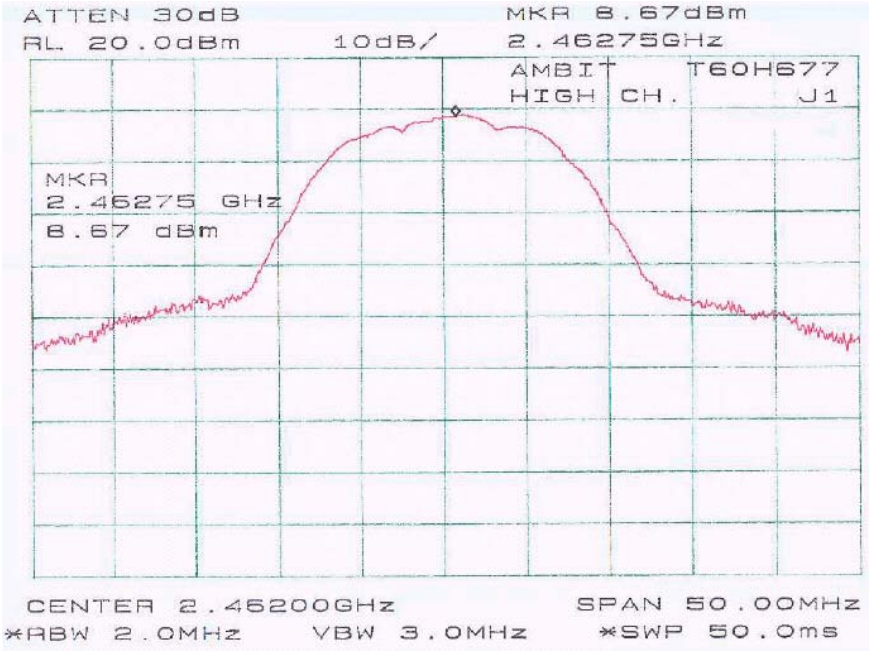
Band	Channel (MHz)	Frequency (MHz)	Output Power (dBm)	Correction Factor (dB)	Corrected Output Power (dBm)	Output Power (W)	Standard (mW)	Result
Low	Low	5150	5.83	10.7	16.53	0.0449	<50	Compliant
	Mid	5200	6	10.7	16.7	0.0468	<50	Compliant
	High	5250	5.5	10.7	16.2	0.0417	<50	Compliant
Mid	Low	5250	5.5	10.7	16.2	0.0417	<50	Compliant
	Mid	5300	5.33	10.7	16.03	0.0401	<50	Compliant
	High	5330	5.83	10.7	16.53	0.0449	<50	Compliant
High	Low	5745	5.33	10.7	16.03	0.0401	<50	Compliant
	Mid	5775	5.67	10.7	16.37	0.0434	<50	Compliant
	High	5810	5.83	10.7	16.53	0.0449	<50	Compliant

Note: Correction Factor = 10Log(BW26dB/RBW) = 10Log(23.83/2) = 10.7dB
Test mode: target power = 15.0, ext pw detector = 1, xpdgain = 6, ob = 1, db = 2, b-ob = 1

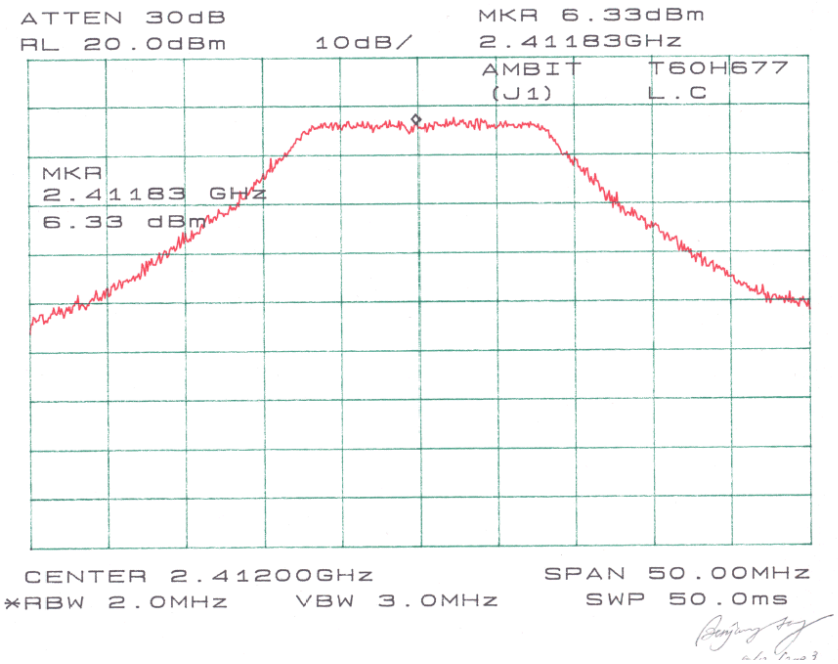
Plots of Peak Output Power for 802.11b (15.247)

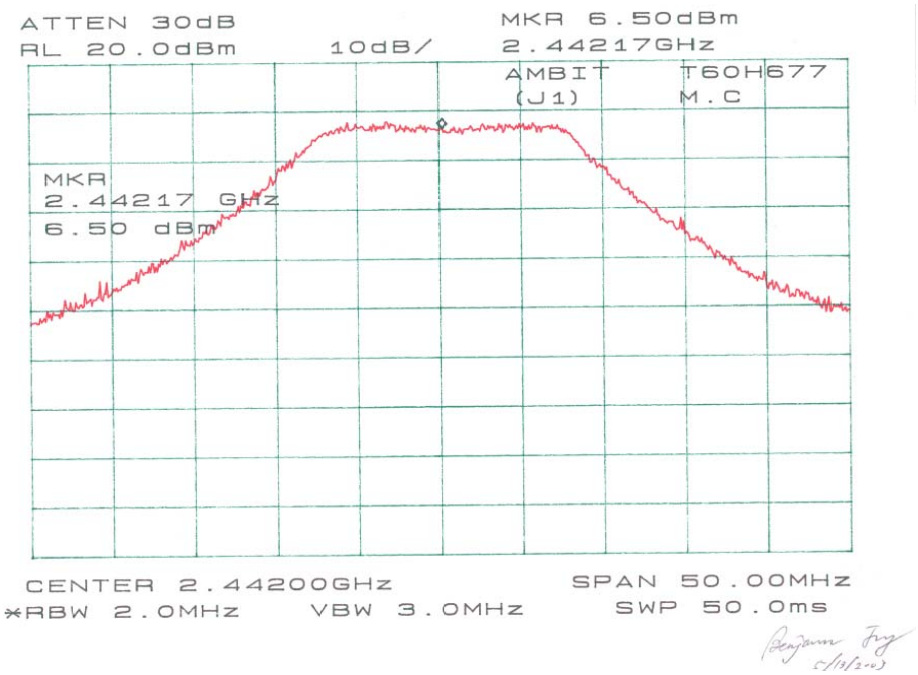


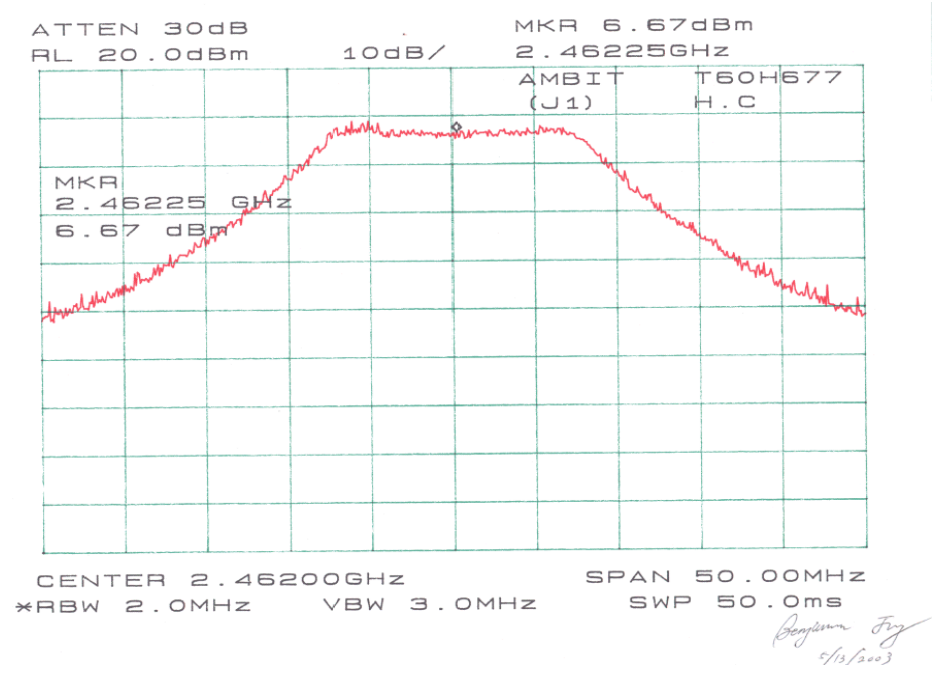




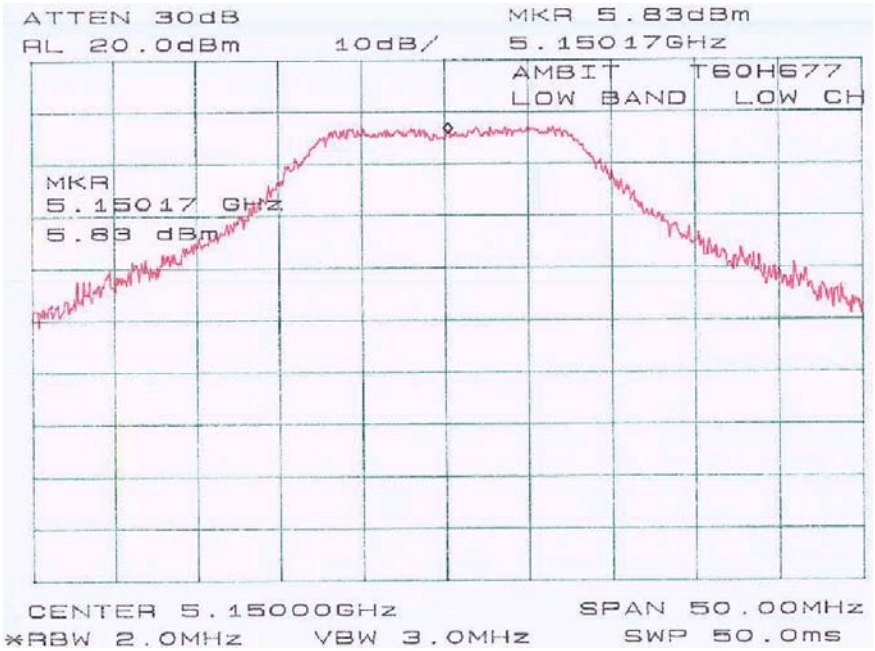
Plots of Peak Output Power for 802.11 g (15.247)

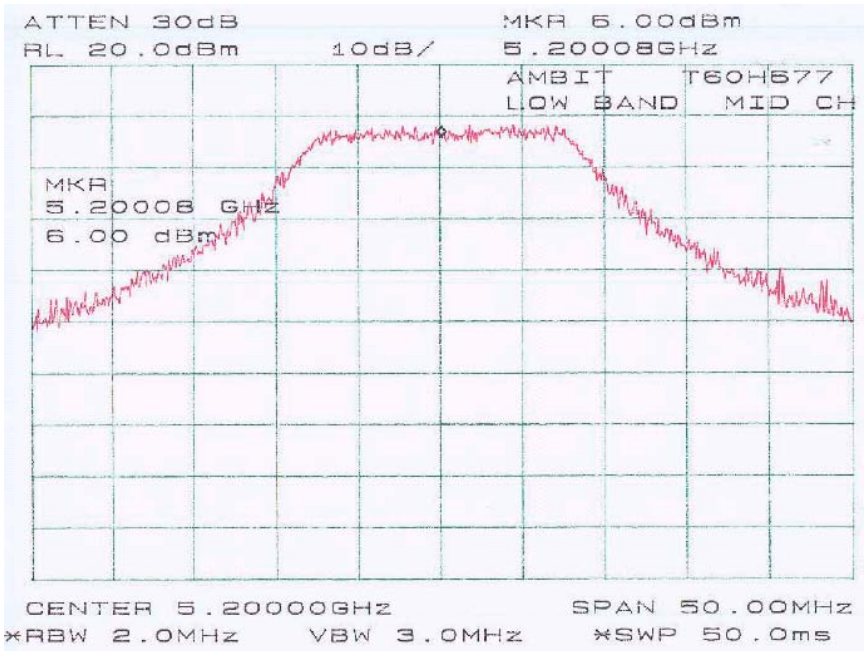


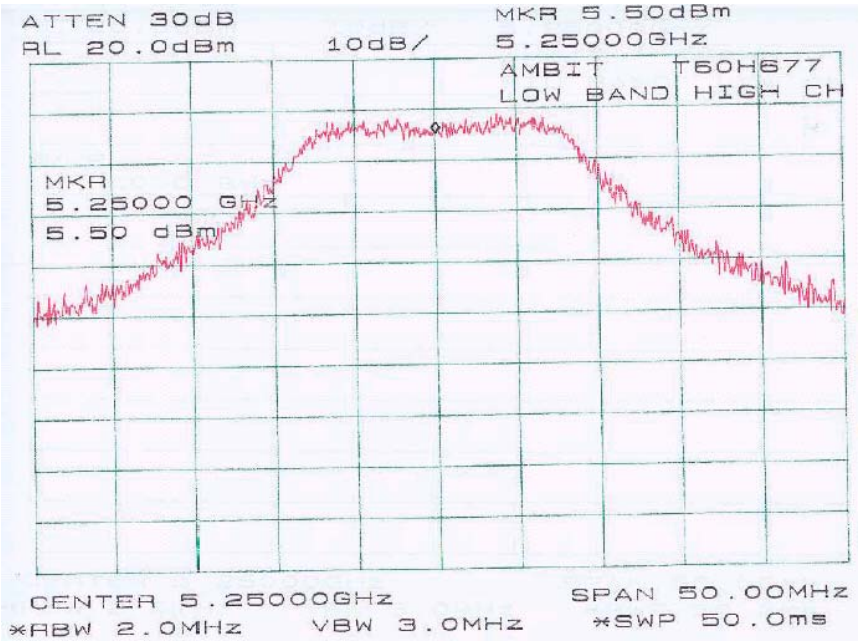

ATTEN 30dB
RL 20.0dBm
10dB/
MKR 6.50dBm
2.44217GHz
AMBIT T60H677
(J1) M.C
MKR
2.44217 GHz
6.50 dBm
CENTER 2.44200GHz
SPAN 50.00MHz
*RBW 2.0MHz
VBW 3.0MHz
SWP 50.0ms

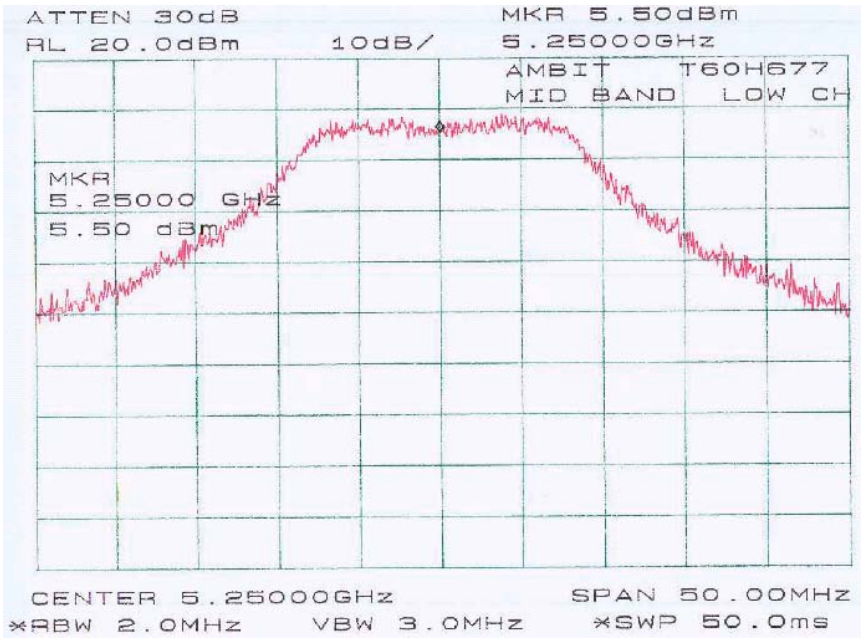

ATTEN 30dB
RL 20.0dBm
10dB/
MKR 6.67dBm
2.46225GHz
AMBIT T60H677
(J1) H.C
MKR
2.46225 GHz
6.67 dBm
CENTER 2.46200GHz
SPAN 50.00MHz
*RBW 2.0MHz
VBW 3.0MHz
SWP 50.0ms

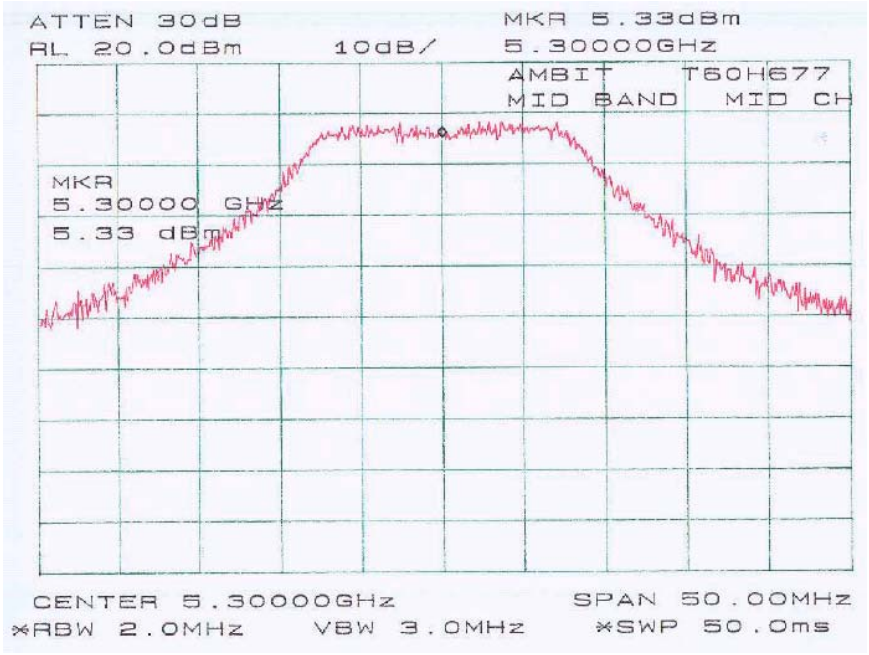
Plots of Peak Output Power for 802.11a (15.407)

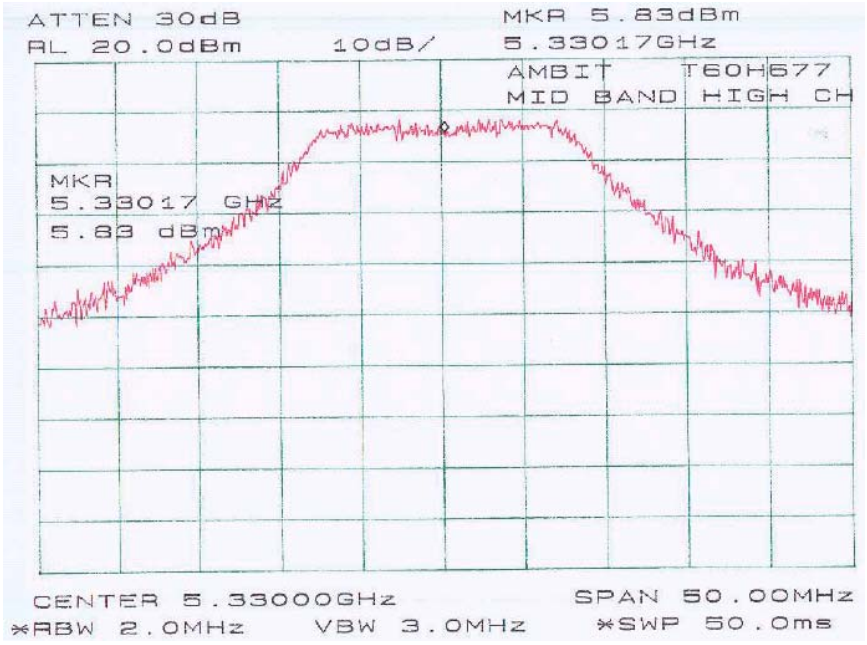


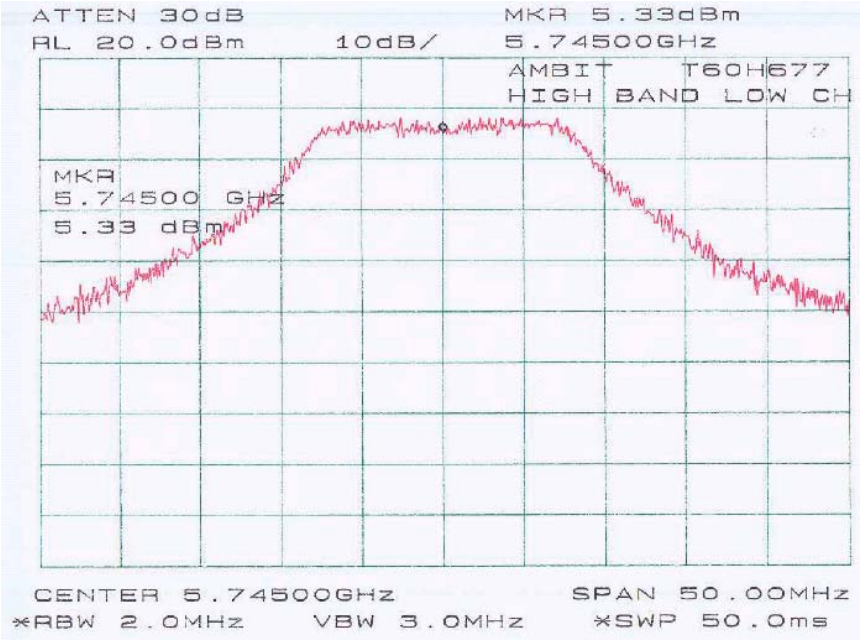


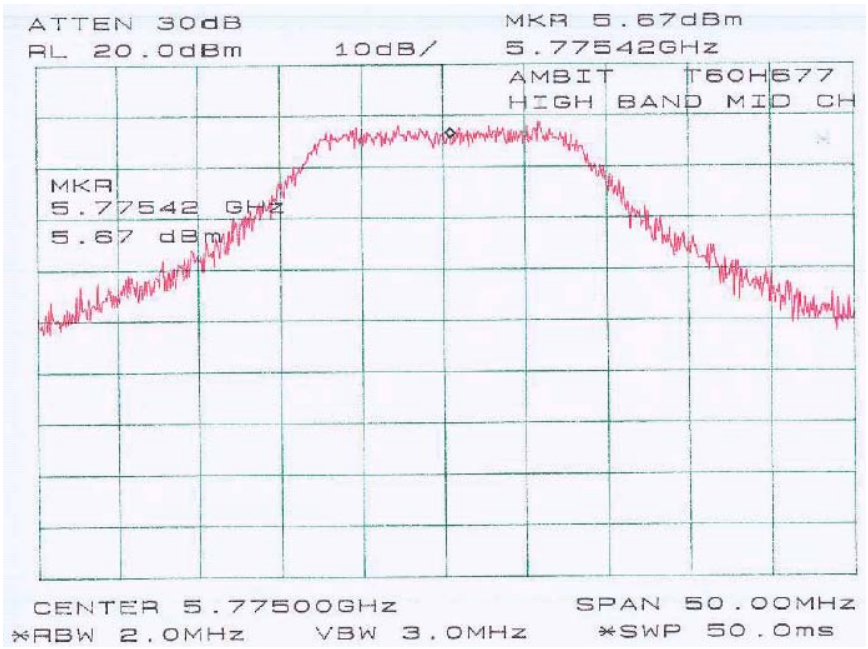

ATTEN 30dB
RL 20.0dBm
10dB/
MKR 5.50dBm
5.25000GHz
AMBIT T60H677
LOW BAND HIGH CH
MKR
5.25000 GHz
5.50 dBm
CENTER 5.25000GHz
SPAN 50.00MHz
*RBW 2.0MHz
VBW 3.0MHz
*SWP 50.0ms

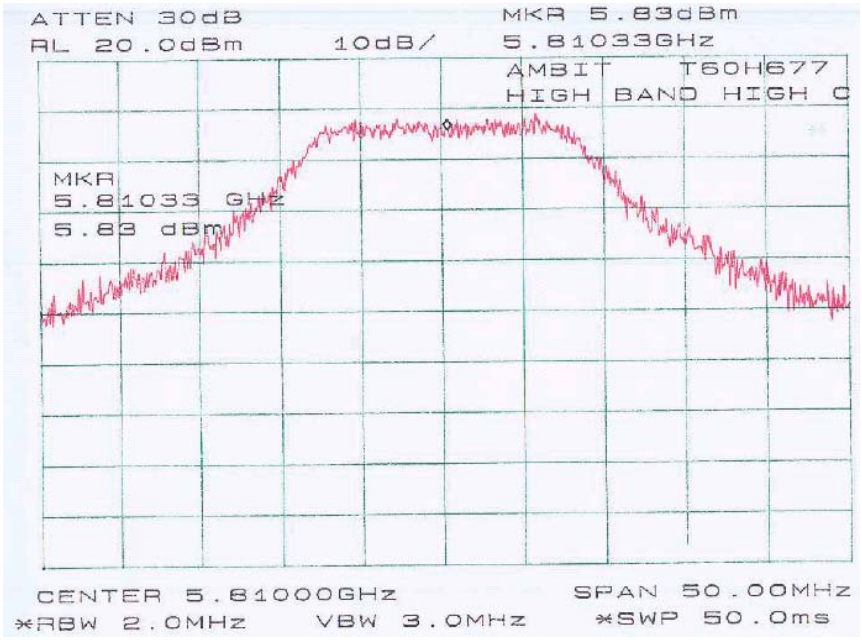

ATTEN 30dB
RL 20.0dBm
10dB/
MKR 5.50dBm
5.25000GHz
AMBIT T60H677
MID BAND LOW CH
MKR
5.25000 GHz
5.50 dBm
CENTER 5.25000GHz
SPAN 50.00MHz
*RBW 2.0MHz
VBW 3.0MHz
*SWP 50.0ms


ATTEN 30dB
RL 20.0dBm
10dB/
MKR 5.33dBm
5.30000GHz
AMBIT T60H677
MID BAND MID CH
MKR
5.30000 GHz
5.33 dBm
CENTER 5.30000GHz
SPAN 50.00MHz
*RBW 2.0MHz
VBW 3.0MHz
*SWP 50.0ms


ATTEN 30dB
RL 20.0dBm
10dB/
MKR 5.83dBm
5.33017GHz
AMBIT T60H677
MID BAND HIGH CH
MKR
5.33017 GHz
5.83 dBm
CENTER 5.33000GHz
SPAN 50.00MHz
*RBW 2.0MHz
VBW 3.0MHz
*SWP 50.0ms


ATTEN 30dB
RL 20.0dBm
10dB/
MKR 5.33dBm
5.74500GHz
AMBIT T60H677
HIGH BAND LOW CH
MKR
5.74500 GHz
5.33 dBm
CENTER 5.74500GHz
SPAN 50.00MHz
*RBW 2.0MHz
VBW 3.0MHz
*SWP 50.0ms


ATTEN 30dB
RL 20.0dBm
10dB/
MKR 5.67dBm
5.77542GHz
AMBIT T60H677
HIGH BAND MID CH
MKR
5.77542 GHz
5.67 dBm
CENTER 5.77500GHz
SPAN 50.00MHz
*RBW 2.0MHz
VBW 3.0MHz
*SWP 50.0ms


ATTEN 30dB
RL 20.0dBm
10dB/
MKR 5.83dBm
5.81033GHz
AMBIT T60H677
HIGH BAND HIGH C
MKR
5.81033 GHz
5.83 dBm
CENTER 5.81000GHz
SPAN 50.00MHz
*RBW 2.0MHz
VBW 3.0MHz
*SWP 50.0ms

§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
Agilent	8564E	Spectrum Analyzer	2003-08-26

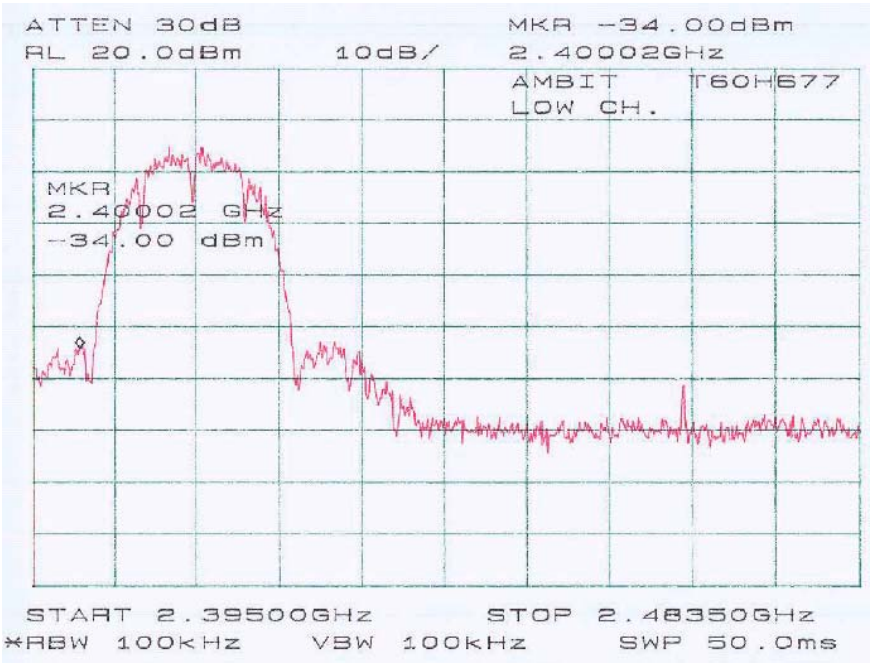
Measure Results

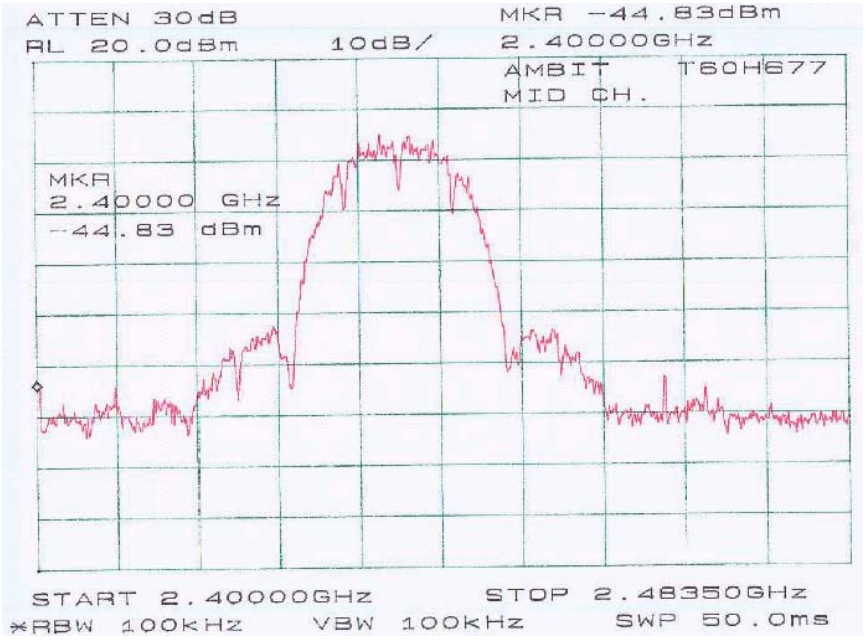
Environmental Conditions

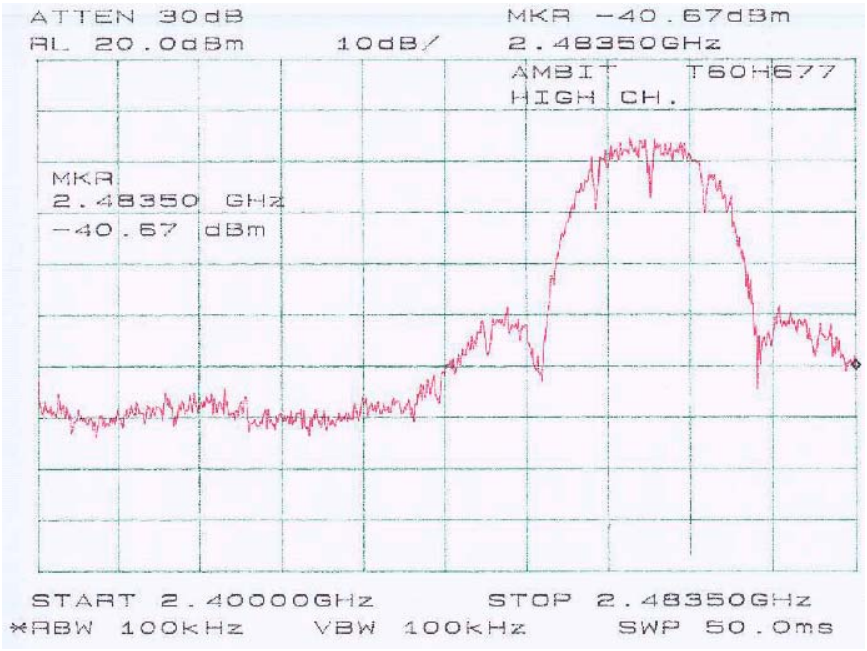
Temperature:	12° C
Relative Humidity:	48%
ATM Pressure:	1100 mbar

Please refer to following pages for plots of band edge.

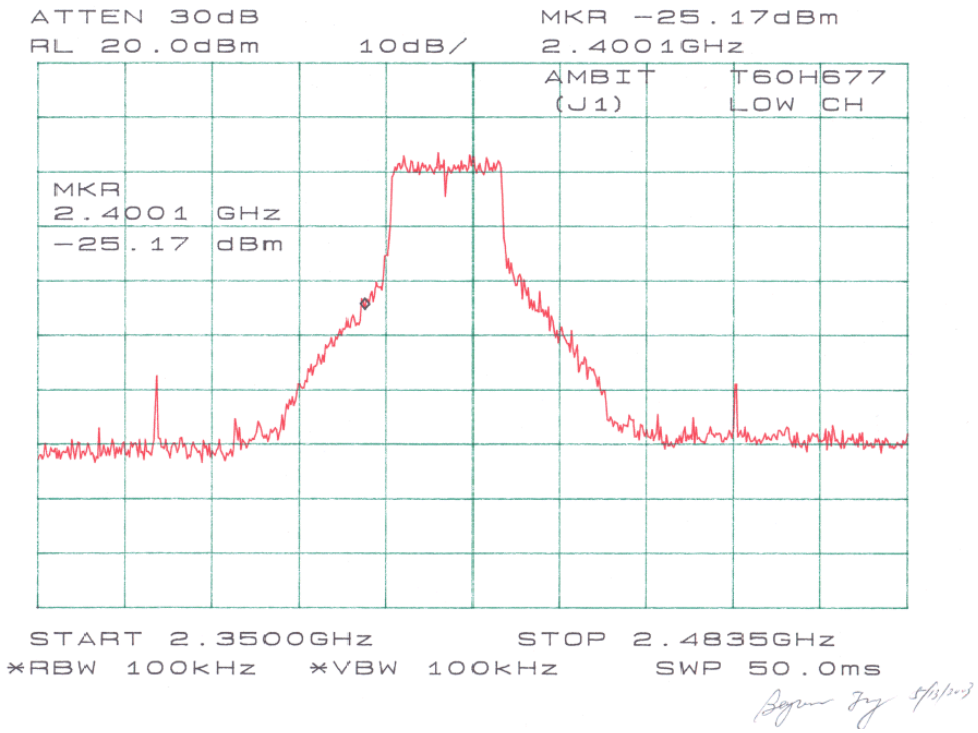
Plots of Band Edge for 802.11b (15.247)

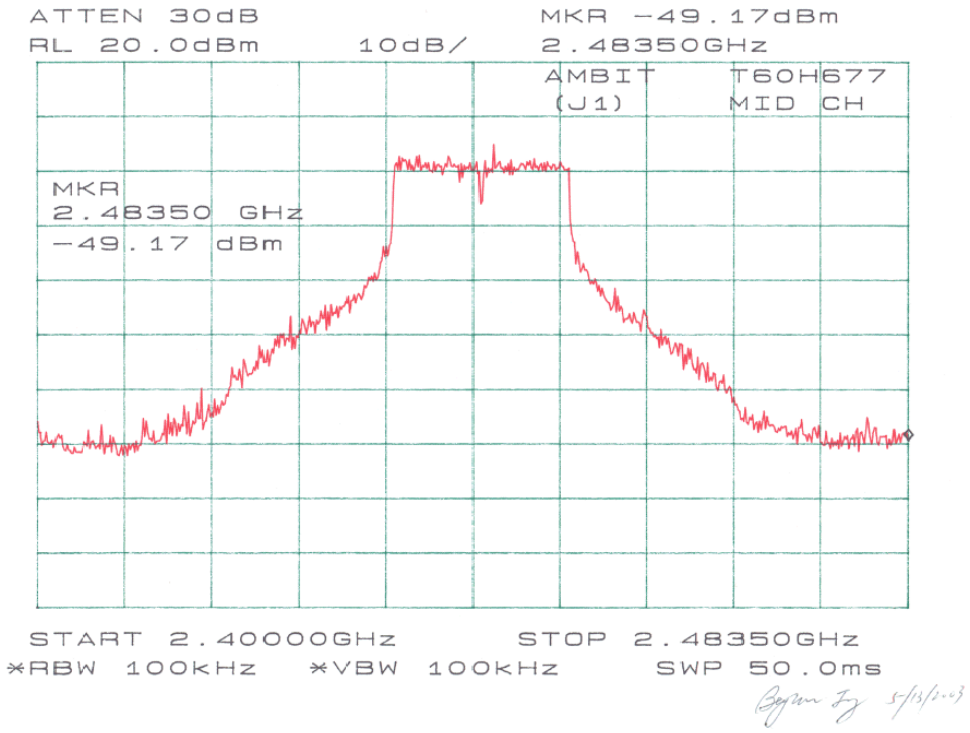


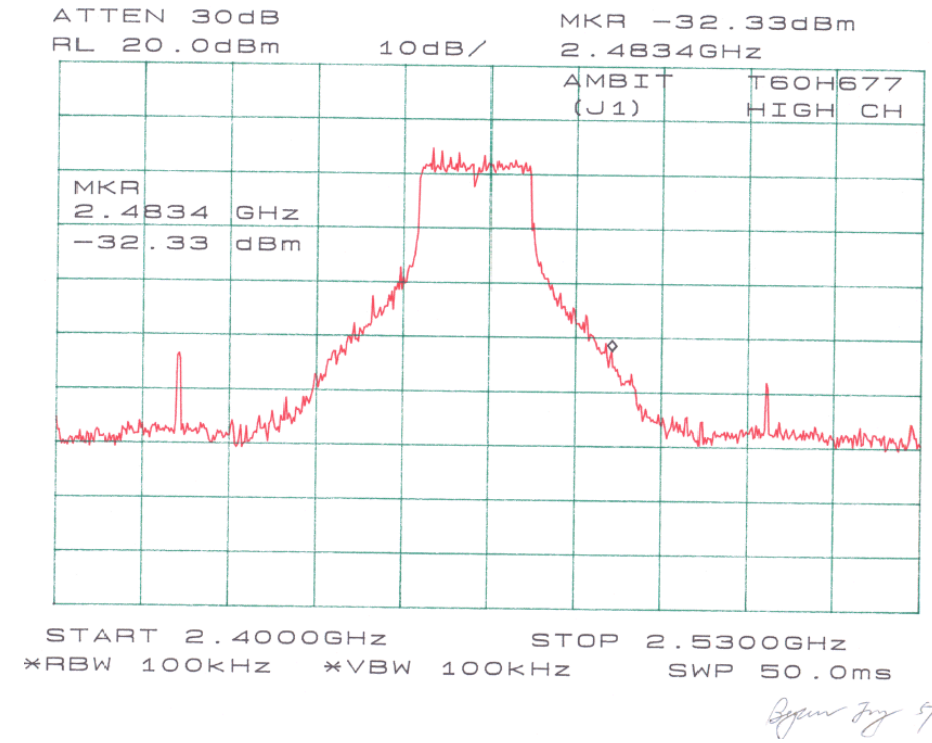




Plots of Band Edge for 802.11g (15.247)




ATTEN 30dB
RL 20.0dBm
10dB/
MKR -49.17dBm
2.48350GHz
AMBIT
(J1)
T60H677
MID CH
MKR
2.48350 GHz
-49.17 dBm
START 2.40000GHz
STOP 2.48350GHz
*RBW 100kHz
*VBW 100kHz
SWP 50.0ms


ATTEN 30dB
RL 20.0dBm
10dB/
MKR -32.33dBm
2.4834GHz
AMBIT
(J1)
T60H677
HIGH CH
MKR
2.4834 GHz
-32.33 dBm
START 2.4000GHz
STOP 2.5300GHz
*RBW 100kHz
*VBW 100kHz
SWP 50.0ms

§15.247(d) & §15.407(a)(2) - 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.

According to §15.407(a) (1), for the band 5.15-5.25 GHz, the peak power spectral density shall not exceed 4 dBm in any 1-MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

According to §15.407(a) (2), for the band 5.25-5.35 GHz, the peak power spectral density shall not exceed 11 dBm in any 1-MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceed 6 dBi.

According to §15.407(a) (3), for the band 5.725-5.825 GHz, the peak power spectral density shall not exceed 17 dBm in any 1-MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

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
Agilent	8564E	Spectrum Analyzer	2003-08-26

Measurement Results

Environmental Conditions

Temperature:	12° C
Relative Humidity:	48%
ATM Pressure:	1100 mbar

Test Result for 802.11b (15.247)

Channel	Frequency (MHz)	Peak Power Spectral Density (dBm)	Standard (dBm)	Result
Low	2412	-10.67	≤ 8	Compliant
Mid	2437	-10.33	≤ 8	Compliant
High	2462	-12.00	≤ 8	Compliant

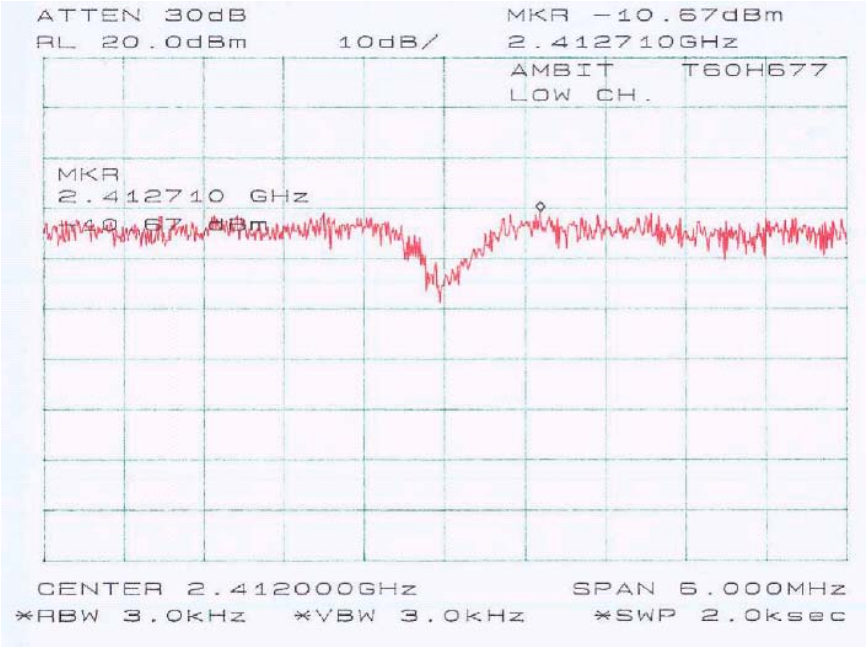
Test Result for 802.11b (15.247)

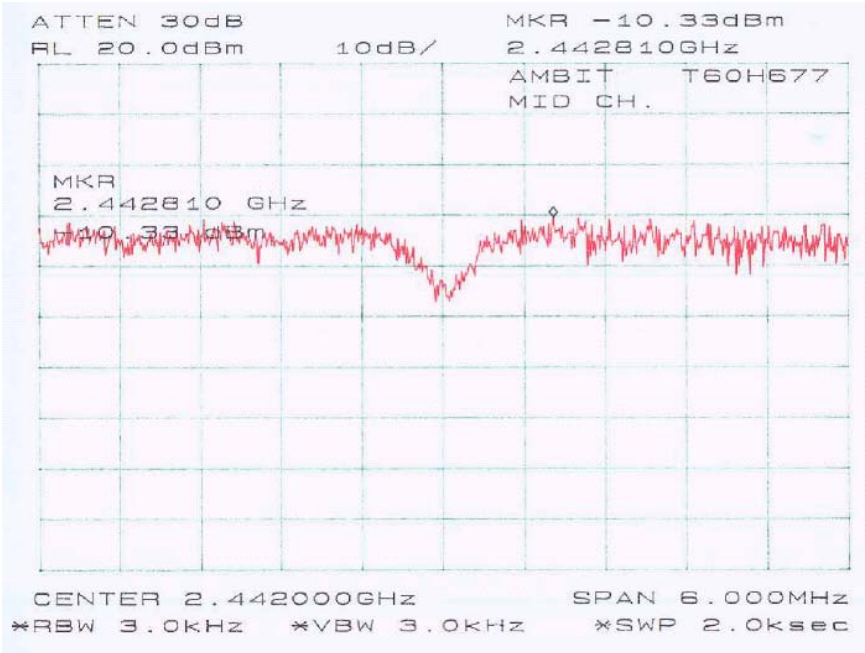
	Frequency (MHz)	Peak Power Spectral Density	Standard (dBm)	Result
J1 Port	2412	-6.17	≤ 8	Compliant
	2442	-8.67	≤ 8	Compliant
	2462	-9.17	≤ 8	Compliant

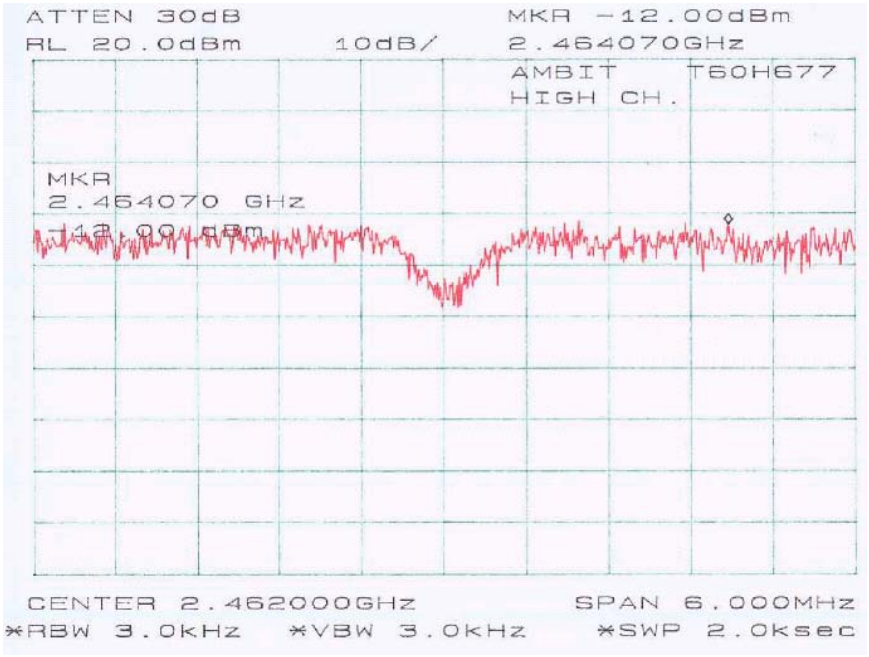
Test Result for 802.11a (15.407)

Band	Channel	Frequency (MHz)	Peak Power Spectral Density (dBm)	Standard (dBm)	Result
Low	Low	5150	-8.83	≤ 4	Compliant
	Mid	5200	-10.17	≤ 4	Compliant
	High	5250	-9.50	≤ 4	Compliant
Mid	Low	5250	-8.83	≤ 11	Compliant
	Mid	5300	-9.67	≤ 11	Compliant
	High	5330	-7.50	≤ 11	Compliant
High	Low	5745	-8.17	≤ 17	Compliant
	Mid	5775	-9.83	≤ 17	Compliant
	High	5810	-10.00	≤ 17	Compliant

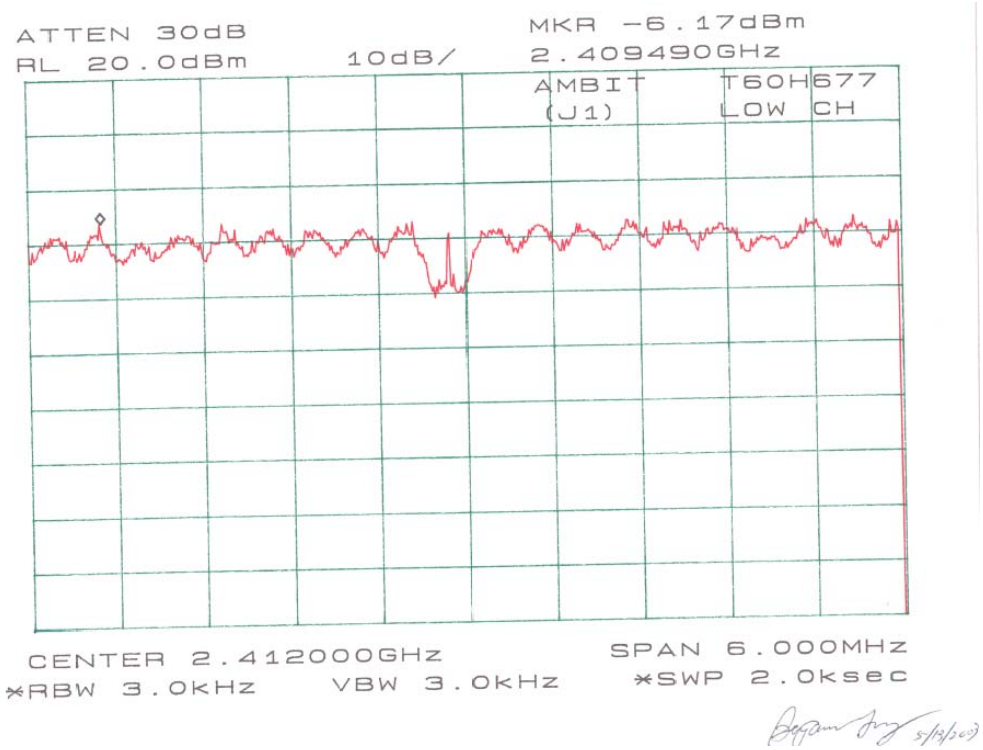
Plots of Power Spectral Density for 802.11b (15.247)

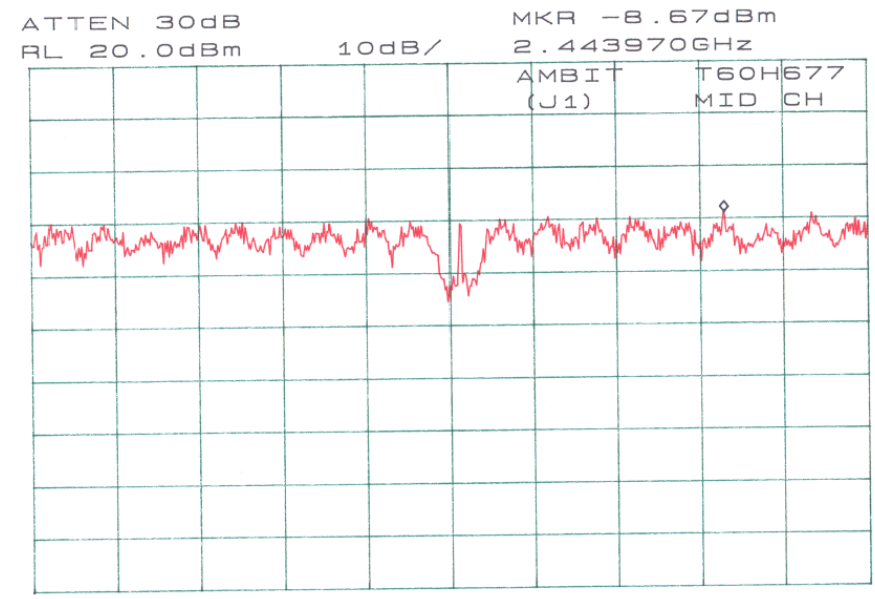


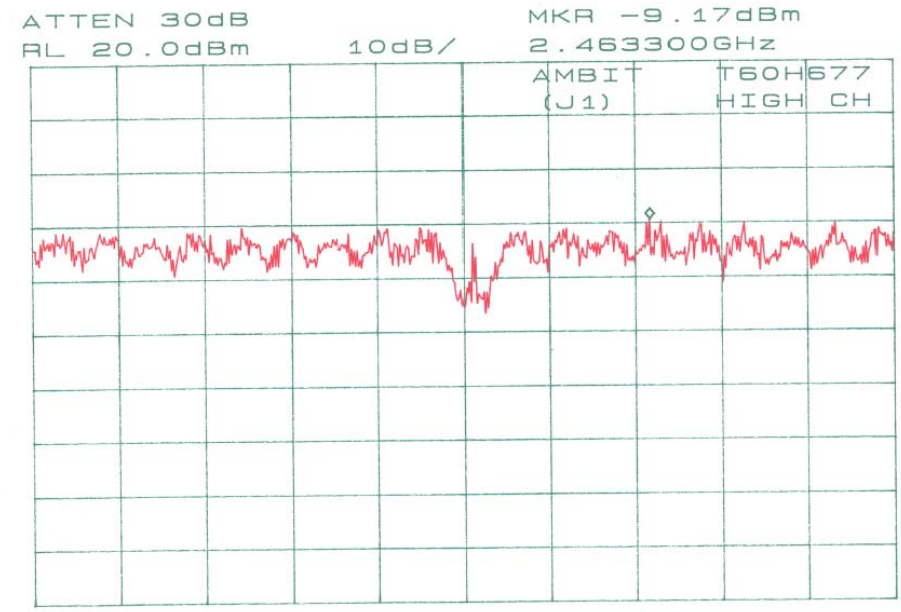




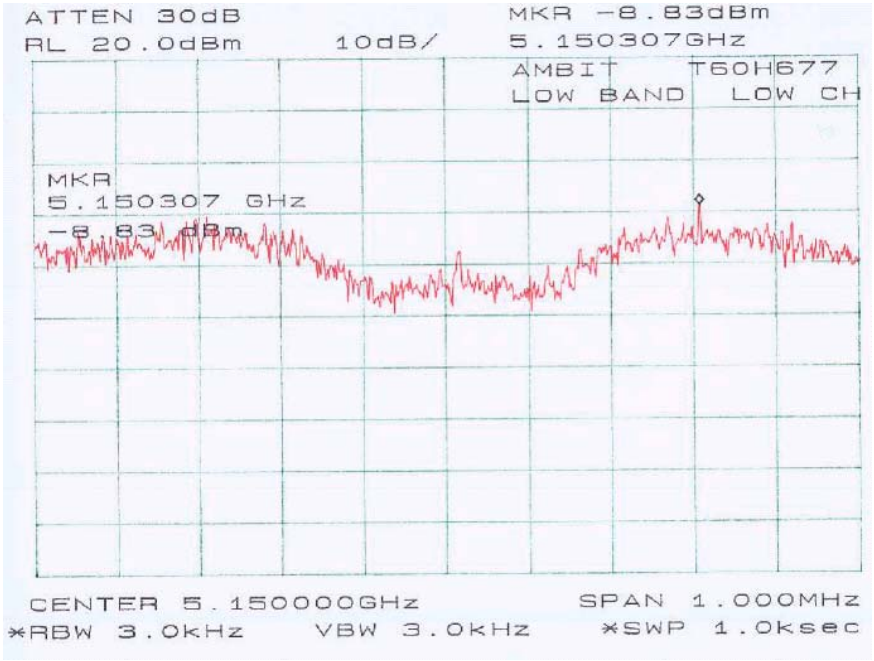
Plots of Power Spectral Density for 802.11g (15.247)

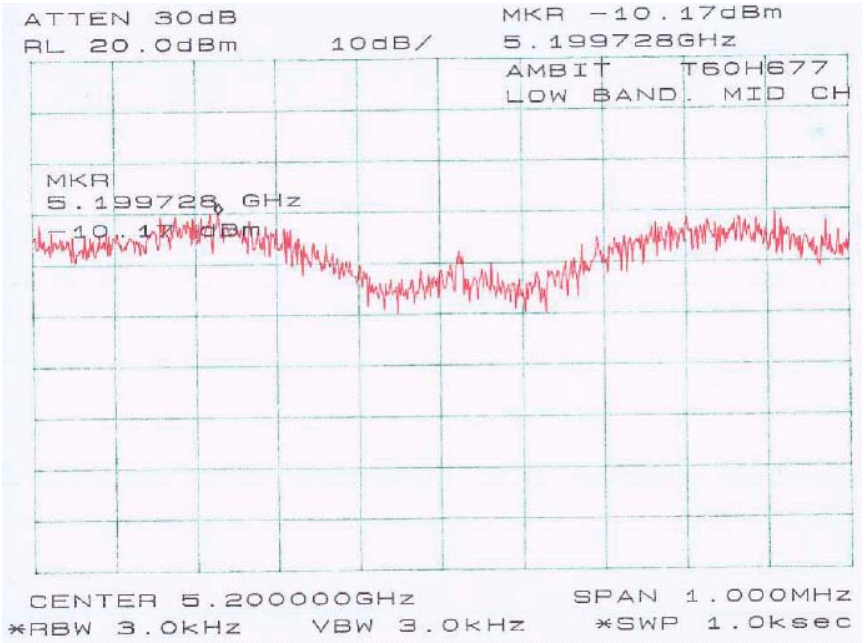


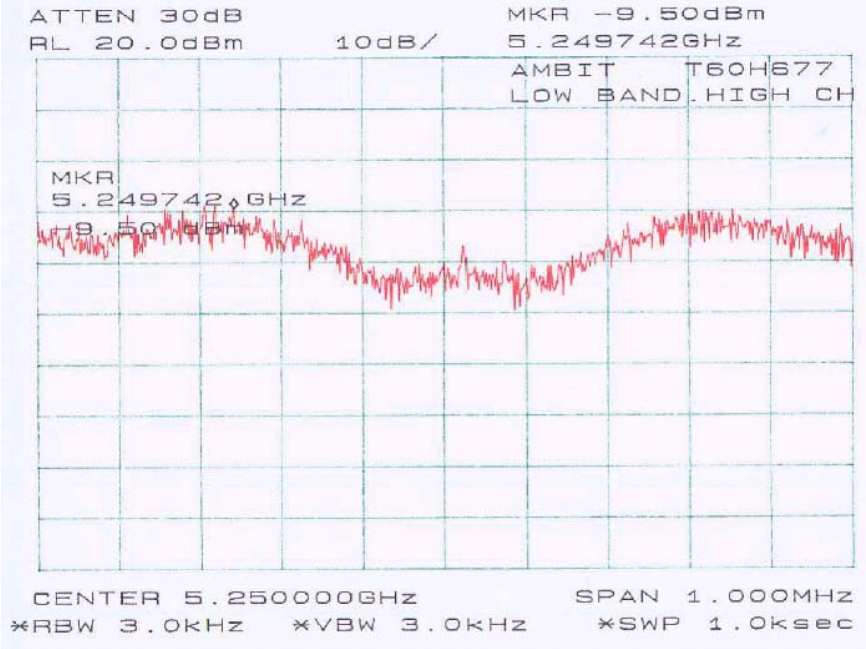

ATTEN 30dB
RL 20.0dBm
10dB/
MKR -8.67dBm
2.443970GHz
AMBIT T60H677
(J1) MID CH
CENTER 2.442000GHz
SPAN 6.000MHz
*RBW 3.0kHz
VBW 3.0kHz
*SWP 2.0ksec

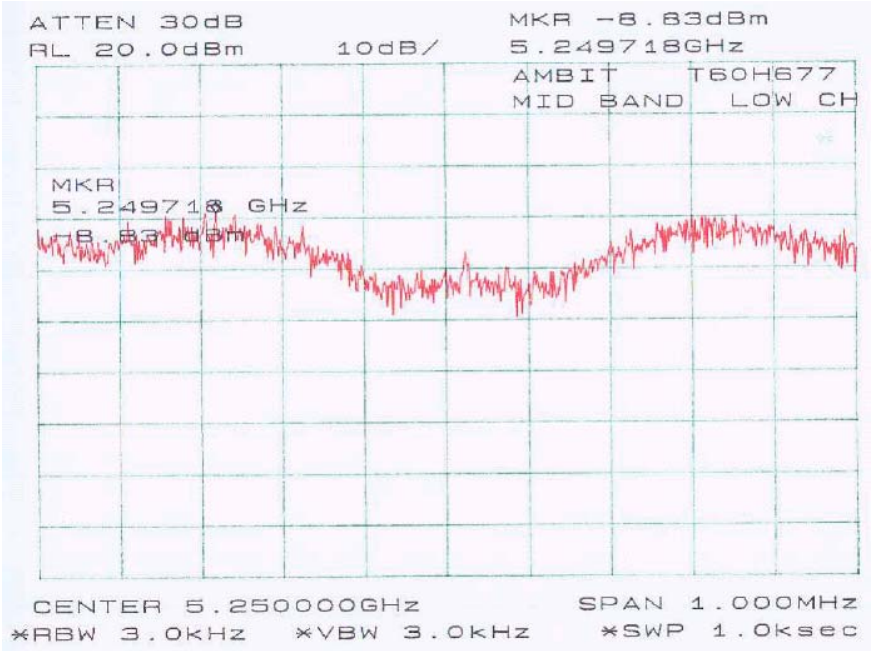

ATTEN 30dB
RL 20.0dBm
10dB/
MKR -9.17dBm
2.463300GHz
AMBIT T60H677
(J1) HIGH CH
CENTER 2.462000GHz
SPAN 6.000MHz
*RBW 3.0kHz
VBW 3.0kHz
*SWP 2.0ksec

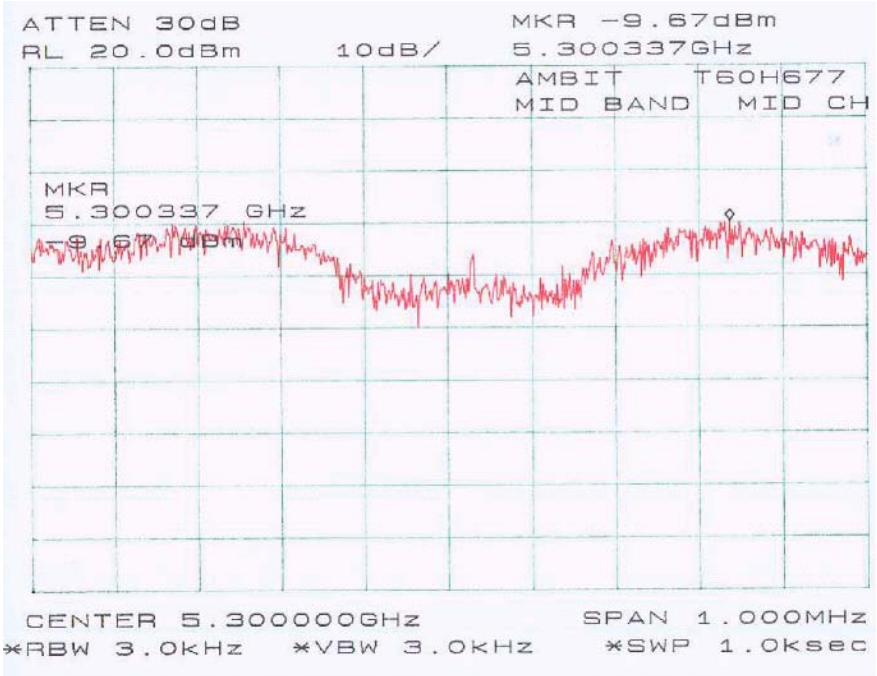
Plots of Spectral Density for 802.11a (15.407)

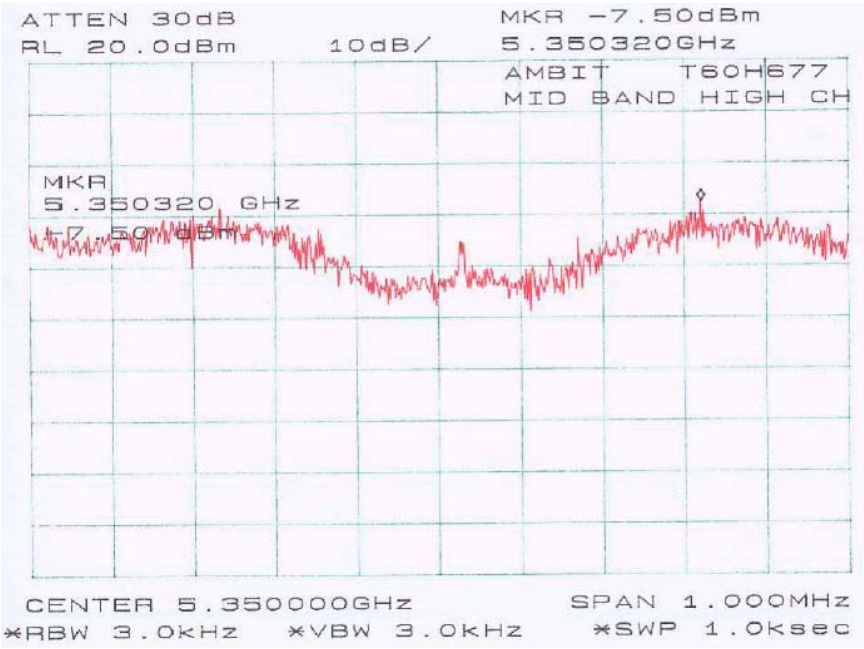


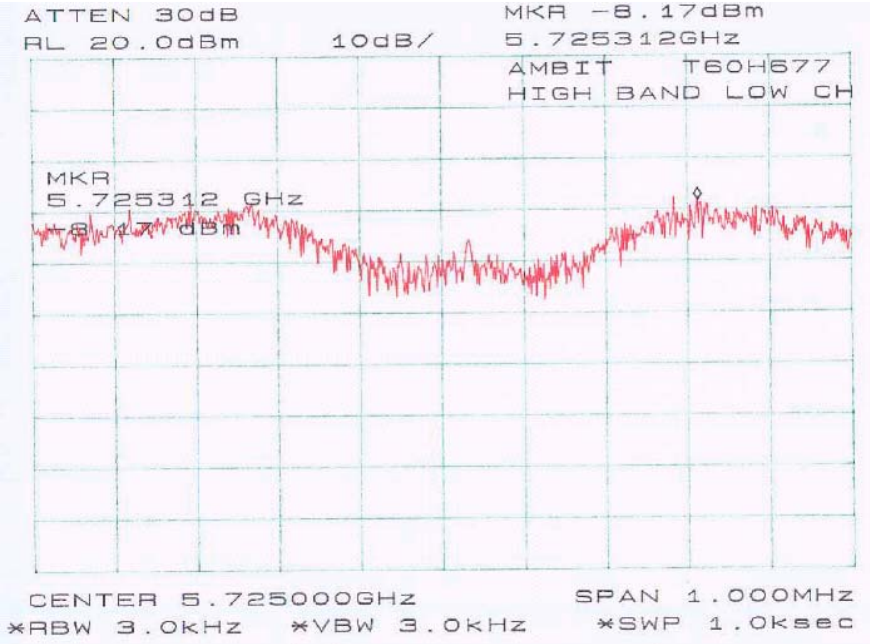


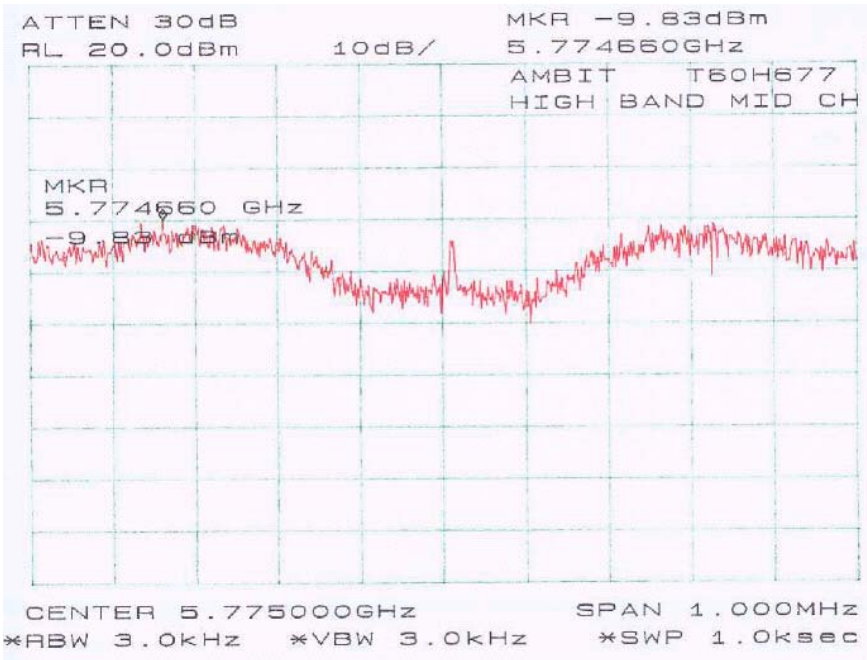

ATTEN 30dB
RL 20.0dBm
10dB/
MKR -9.50dBm
5.249742GHz
AMBIT T60H677
LOW BAND. HIGH CH
MKR
5.249742 GHz
-9.50 dBm
CENTER 5.250000GHz
SPAN 1.000MHz
*RBW 3.0kHz
*VBW 3.0kHz
*SWP 1.0ksec

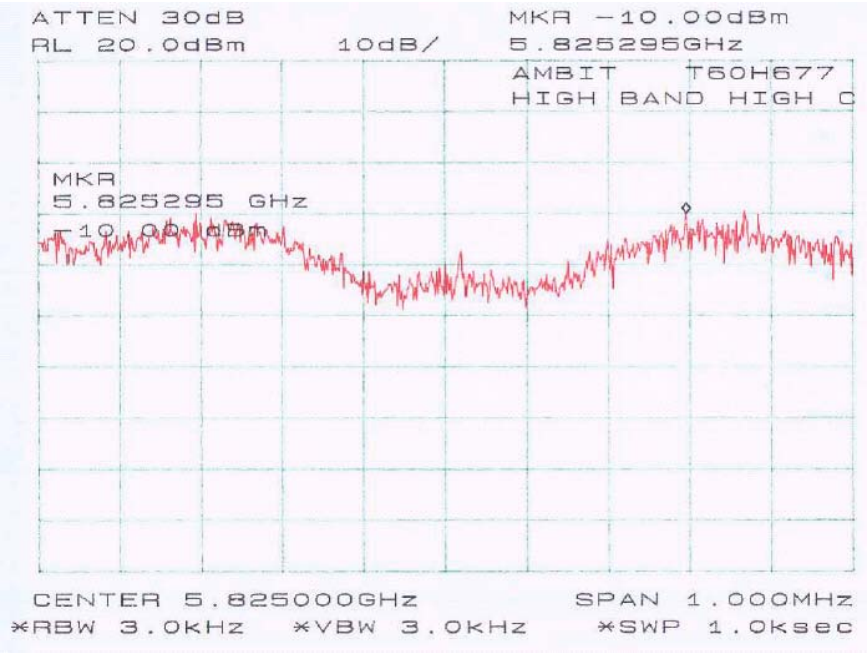

ATTEN 30dB
RL 20.0dBm
10dB/
MKR -8.83dBm
5.249718GHz
AMBIT T60H677
MID BAND LOW CH
MKR
5.249718 GHz
-8.83 dBm
CENTER 5.250000GHz
SPAN 1.000MHz
*RBW 3.0kHz
*VBW 3.0kHz
*SWP 1.0ksec


ATTEN 30dB
RL 20.0dBm
10dB/
MKR -9.67dBm
5.300337GHz
AMBIT T60H677
MID BAND MID CH
MKR
5.300337 GHz
-9.67 dBm
CENTER 5.300000GHz
SPAN 1.000MHz
*RBW 3.0kHz
*VBW 3.0kHz
*SWP 1.0ksec


ATTEN 30dB
RL 20.0dBm
10dB/
MKR -7.50dBm
5.350320GHz
AMBIT T60H677
MID BAND HIGH CH
MKR
5.350320 GHz
-7.50 dBm
CENTER 5.350000GHz
SPAN 1.000MHz
*RBW 3.0kHz
*VBW 3.0kHz
*SWP 1.0ksec


ATTEN 30dB
RL 20.0dBm
10dB/
MKR -8.17dBm
5.725312GHz
AMBIT T60H677
HIGH BAND LOW CH
MKR
5.725312 GHz
CENTER 5.725000GHz
SPAN 1.000MHz
*RBW 3.0kHz
*VBW 3.0kHz
*SWP 1.0ksec


ATTEN 30dB
RL 20.0dBm
10dB/
MKR -9.83dBm
5.774660GHz
AMBIT T60H677
HIGH BAND MID CH
MKR
5.774660 GHz
CENTER 5.775000GHz
SPAN 1.000MHz
*RBW 3.0kHz
*VBW 3.0kHz
*SWP 1.0ksec


ATTEN 30dB
RL 20.0dBm
10dB/
MKR -10.00dBm
5.825295GHz
AMBIT T60H677
HIGH BAND HIGH C
MKR
5.825295 GHz
-10.00 dBm
CENTER 5.825000GHz
SPAN 1.000MHz
*RBW 3.0KHz
*VBW 3.0KHz
*SWP 1.0ksec

§15.407(a)(6) - Peak Excursion To Average Ratio

Standard Applicable

According to §15.407(a)(6), the ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the peak transmit power (measured as specified above) shall not exceed 13dB across any 1MHz bandwidth or the emission bandwidth whichever is less.

Test Procedure

For this test, the EUT's antenna was removed and replaced with a SMA jack to UMP2.0 plug test cable, so output power levels were calculated from conducted emission levels.

The analyzer center frequency was set to the EUT carrier frequency. For the peak value trace A, the analyzer resolution and video bandwidth were set to 1MHz. Do a MAX HOLD, then VIEW. For the average value trace B, the analyzer resolution bandwidth was set to 1MHz, the video bandwidth was set to 30kHz. MAX HOLD then VIEW trace B also.

The delta from the peak value trace and the Average should not exceed 13dBm across any 1MHz bandwidth.

Equipment Lists

Manufacturer	Model No.	Description	Calibration Date
Agilent	8564E	Spectrum Analyzer	2003-08-26

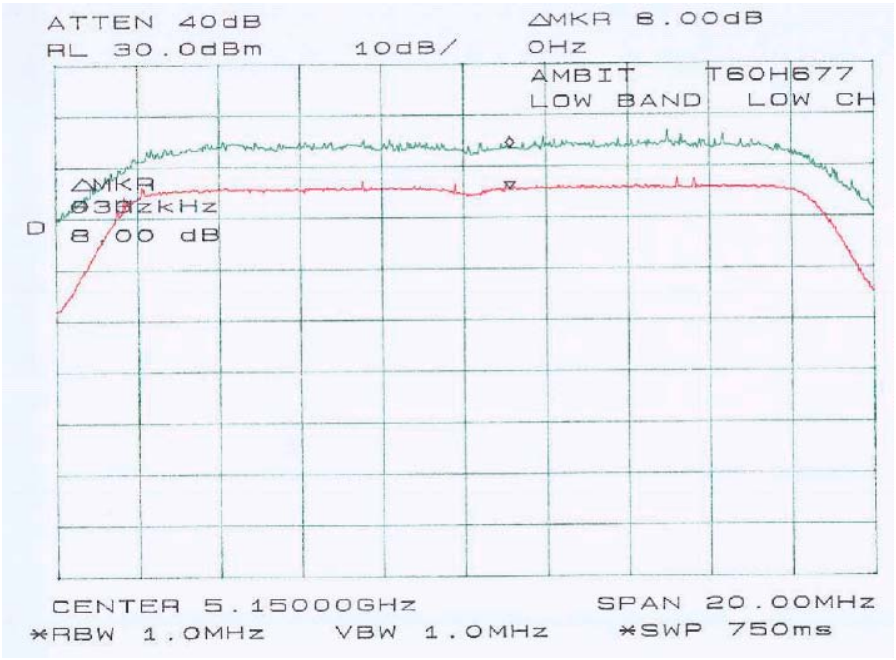
Test Result for

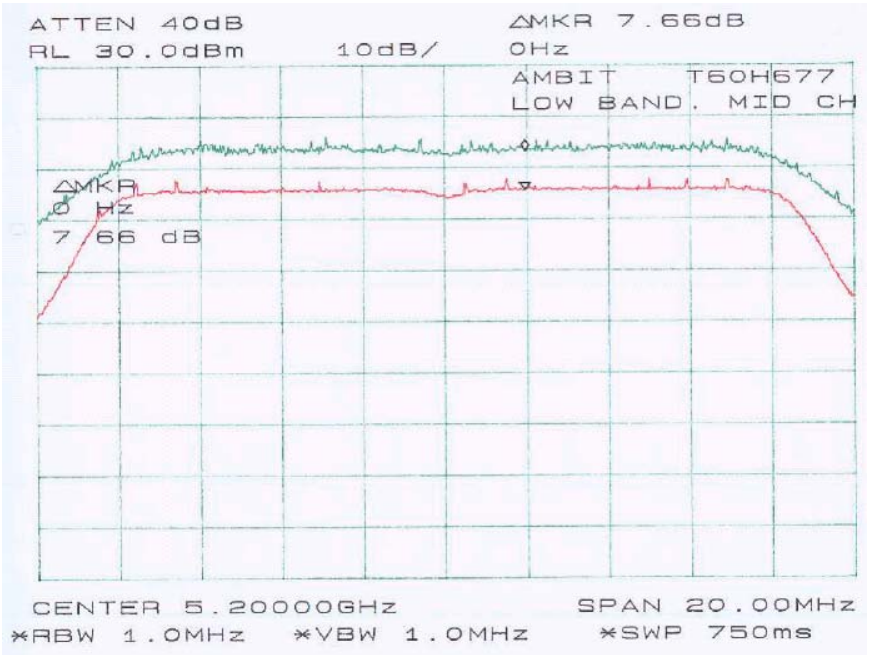
Environmental Conditions

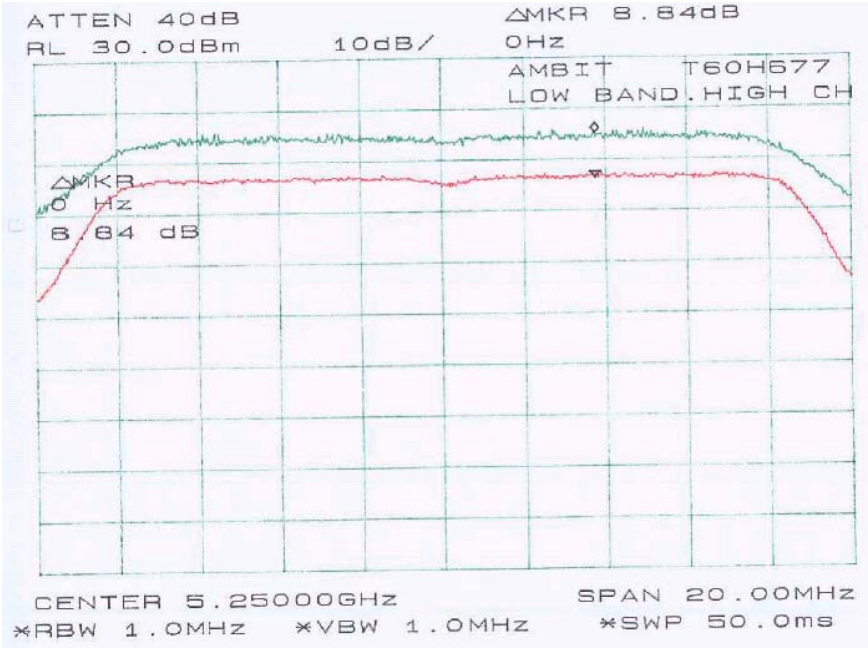
Temperature:	12° C
Relative Humidity:	48%
ATM Pressure:	1100 mbar

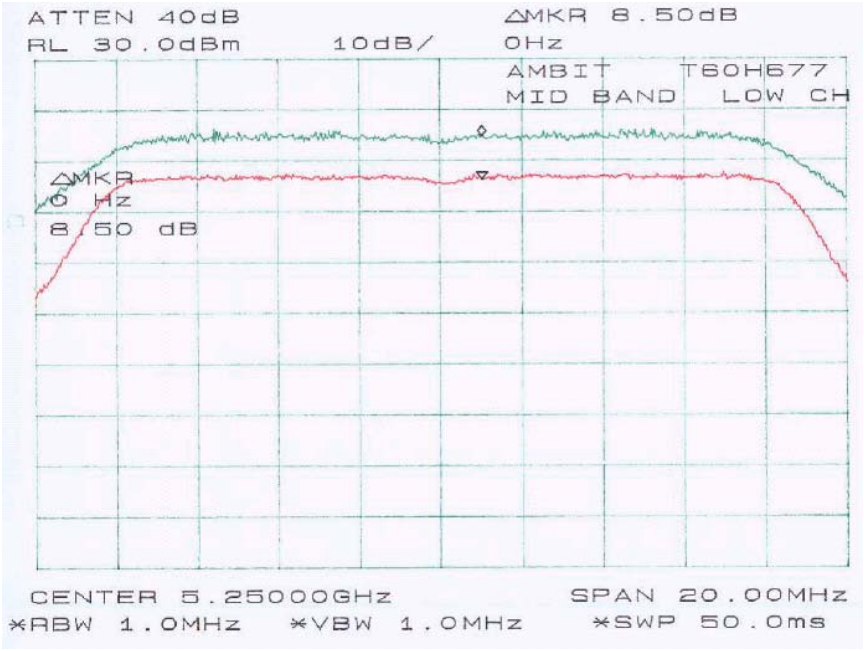
Band	Channel	Frequency (MHz)	Reading (dB)	Limit (dBm)	Result
Low	Low	5150	8.00	13	Compliant
	Mid	5200	7.66	13	Compliant
	High	5250	8.84	13	Compliant
Mid	Low	5250	8.50	13	Compliant
	Mid	5300	8.33	13	Compliant
	High	5330	8.00	13	Compliant
High	Low	5745	7.17	13	Compliant
	Mid	5775	7.17	13	Compliant
	High	5810	6.84	13	Compliant

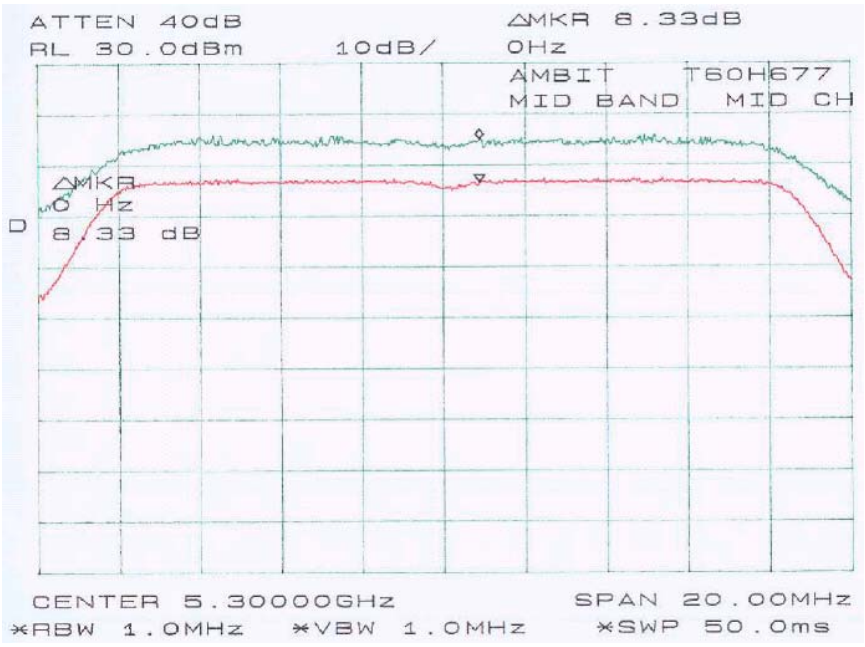
Please see the hereinafter plots for more detail.

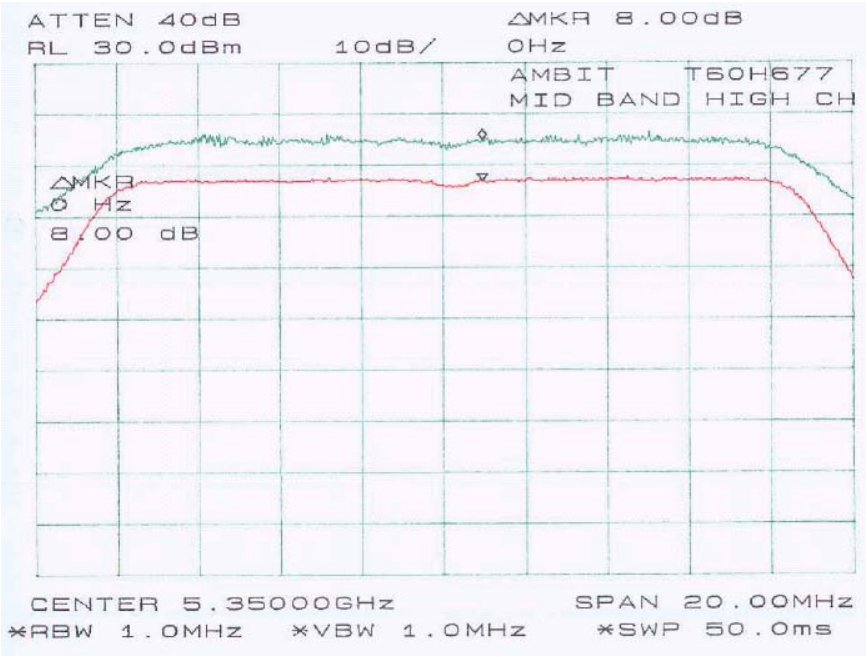

ATTEN 40dB
RL 30.0dBm
10dB/
ΔMKR 8.00dB
0Hz
AMBIT T60H677
LOW BAND LOW CH
ΔMKR
638.2kHz
8.00 dB
CENTER 5.15000GHz
SPAN 20.00MHz
*RBW 1.0MHz
VBW 1.0MHz
*SWP 750ms

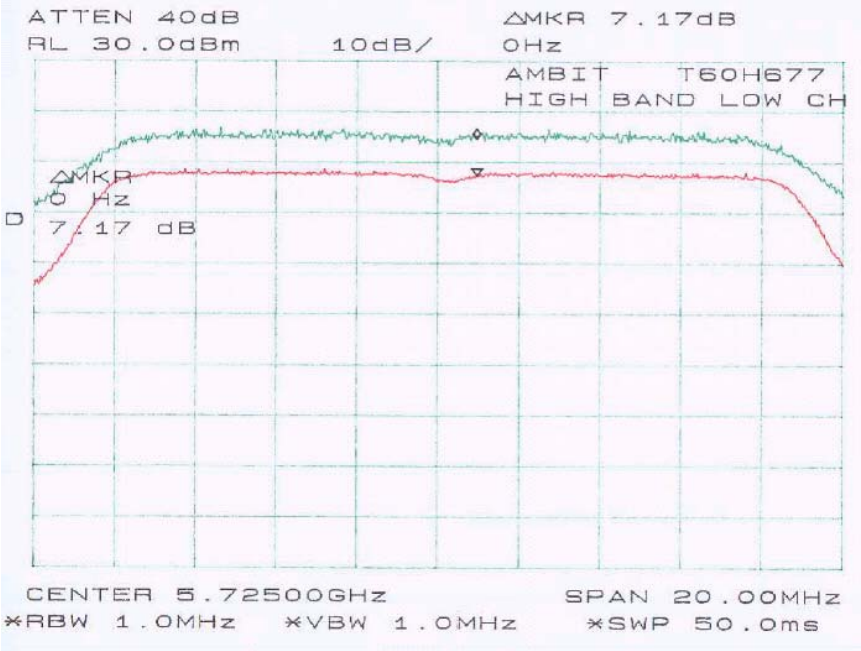

ATTEN 40dB
RL 30.0dBm
10dB/
ΔMKR 7.66dB
0Hz
AMBIT T60H677
LOW BAND. MID CH
ΔMKR
0 Hz
7.66 dB
CENTER 5.20000GHz
SPAN 20.00MHz
*RBW 1.0MHz
*VBW 1.0MHz
*SWP 750ms

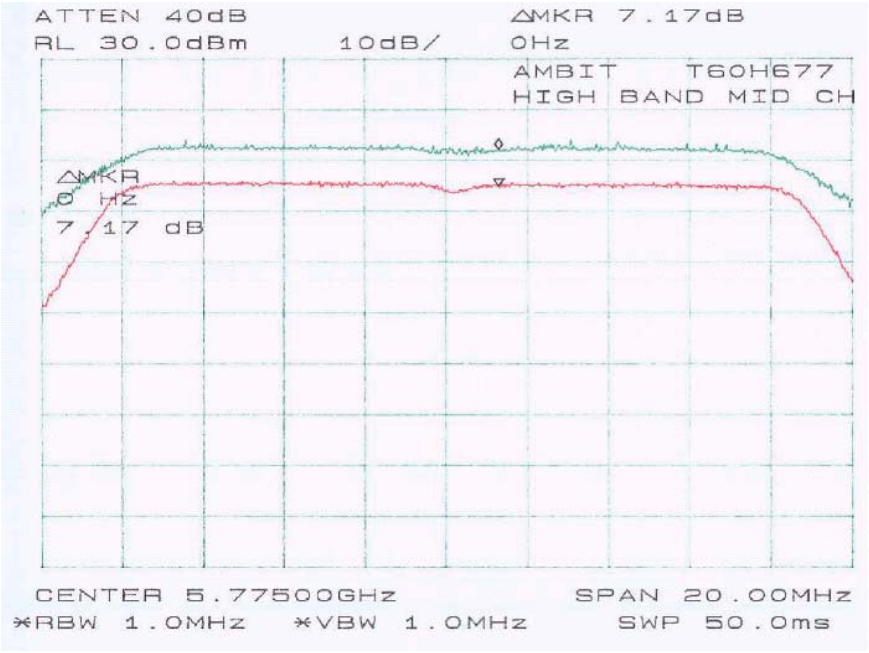

ATTEN 40dB
RL 30.0dBm
10dB/
ΔMKR 8.84dB
0Hz
AMBIT T60H677
LOW BAND.HIGH CH
ΔMKR
0 Hz
8.84 dB
CENTER 5.25000GHz
SPAN 20.00MHz
*RBW 1.0MHz
*VBW 1.0MHz
*SWP 50.0ms

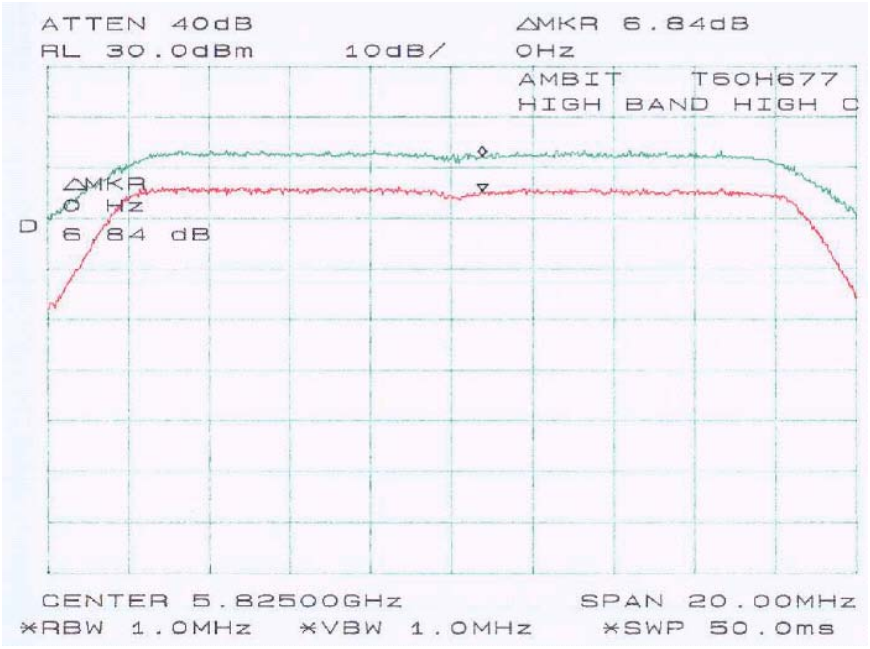

ATTEN 40dB
RL 30.0dBm
10dB/
ΔMKR 8.50dB
0Hz
AMBIT T60H677
MID BAND LOW CH
ΔMKR
0 Hz
8.50 dB
CENTER 5.25000GHz
SPAN 20.00MHz
*RBW 1.0MHz
*VBW 1.0MHz
*SWP 50.0ms


ATTEN 40dB
RL 30.0dBm
10dB/
ΔMKR 8.33dB
0Hz
AMBIT T60H677
MID BAND MID CH
ΔMKR
0 Hz
8.33 dB
CENTER 5.30000GHz
SPAN 20.00MHz
*RBW 1.0MHz
*VBW 1.0MHz
*SWP 50.0ms


ATTEN 40dB
RL 30.0dBm
10dB/
ΔMKR 8.00dB
0Hz
AMBIT T60H677
MID BAND HIGH CH
ΔMKR
0 Hz
8.00 dB
CENTER 5.35000GHz
SPAN 20.00MHz
*RBW 1.0MHz
*VBW 1.0MHz
*SWP 50.0ms


ATTEN 40dB
RL 30.0dBm
10dB/
ΔMKR 7.17dB
0Hz
AMBIT T60H677
HIGH BAND LOW CH
ΔMKR
0 Hz
7.17 dB
CENTER 5.72500GHz
SPAN 20.00MHz
*RBW 1.0MHz
*VBW 1.0MHz
*SWP 50.0ms


ATTEN 40dB
RL 30.0dBm
10dB/
ΔMKR 7.17dB
0Hz
AMBIT T60H677
HIGH BAND MID CH
ΔMKR
0 Hz
7.17 dB
CENTER 5.77500GHz
SPAN 20.00MHz
*RBW 1.0MHz
*VBW 1.0MHz
SWP 50.0ms


ATTEN 40dB
RL 30.0dBm
10dB/
ΔMKR 6.84dB
0Hz
AMBIT T60H677
HIGH BAND HIGH C
ΔMKR
0 Hz
6.84 dB
CENTER 5.82500GHz
SPAN 20.00MHz
*RBW 1.0MHz
*VBW 1.0MHz
*SWP 50.0ms

§15.407(b) - Out Of Band Emission

Standard Applicable

§15.407 (b), undesirable emission limits: except as shown in paragraph (b)(6) of this section, the peak emission outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

§15.407 (b)(1), for transmitters operating in the 5.15-5.25 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz.

§15.407 (b)(2), for transmitters operating in the 5.25 – 5.35 GHz band: all emissions outside of the 5.15 – 5.25 GHz band shall not exceed an EIRP of –27 dBm/MHz. Devices operating in the 5.25 – 5.35 GHz band that generate emissions in the 5.15 – 5.25 GHz band must meet all applicable technical requirements for operation in the 5.15 – 5.25 GHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of –27 dBm/MHz in the 5.15 – 5.25 GHz band.

§15.407 (b)(3), for transmitters operating in the 5.725 – 5.825 GHz band: all emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an EURP of –17dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emission shall not exceed an EIRP of –27 dBm/MHz.

Test Procedure

For this test, the EUT's antenna was removed and replaced with a low loss cable, so output power levels were calculated from conducted emission levels.

The analyzer center frequency was set to the EUT carrier frequency. The analyzer resolution and video bandwidth were set to 1MHz. The entire band from 30kHz to 40GHz was investigated.

Every suspected signal was also investigated through radiated emission. Refer to section 15.205 restricted bands of operation.

Equipment Lists

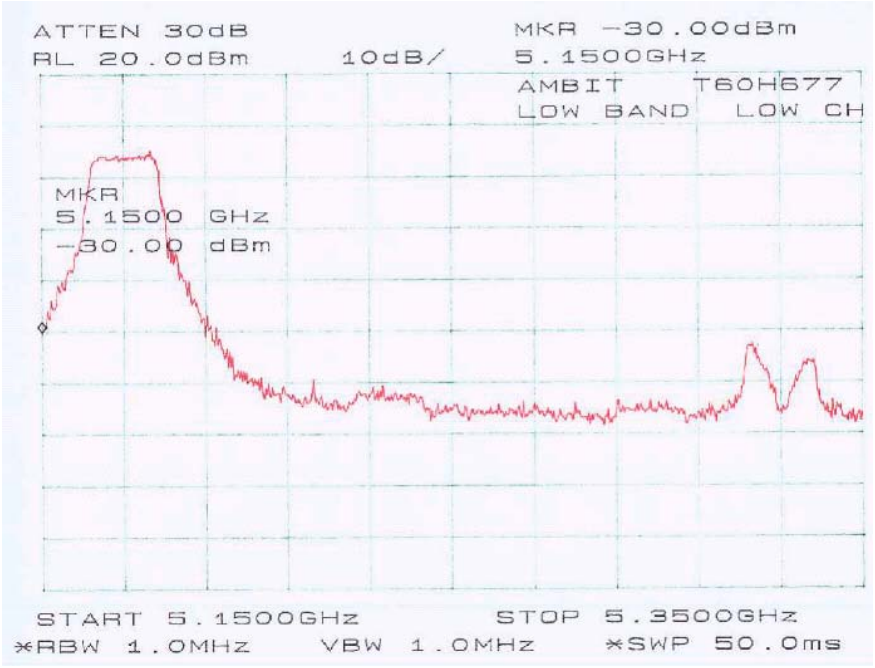
Manufacturer	Model No.	Description	Calibration Date
Agilent	8564E	Spectrum Analyzer	2003-08-26

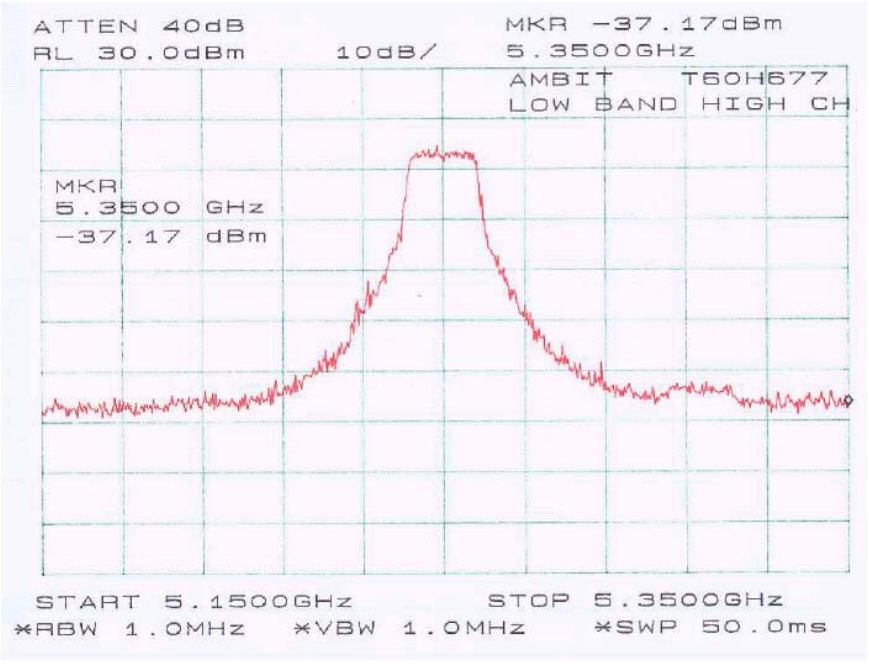
Test Result

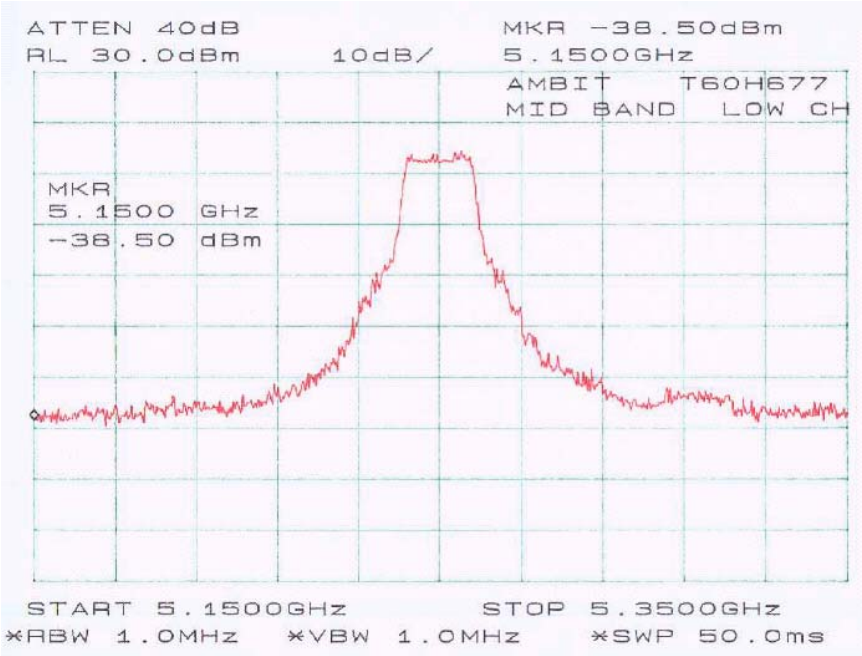
Environmental Conditions

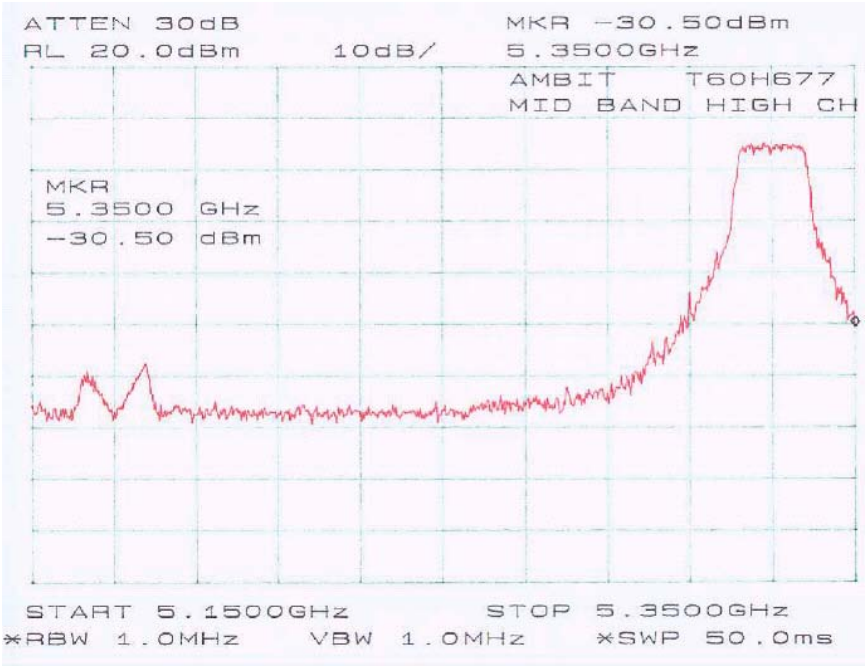
Temperature:	12° C
Relative Humidity:	48%
ATM Pressure:	1100 mbar

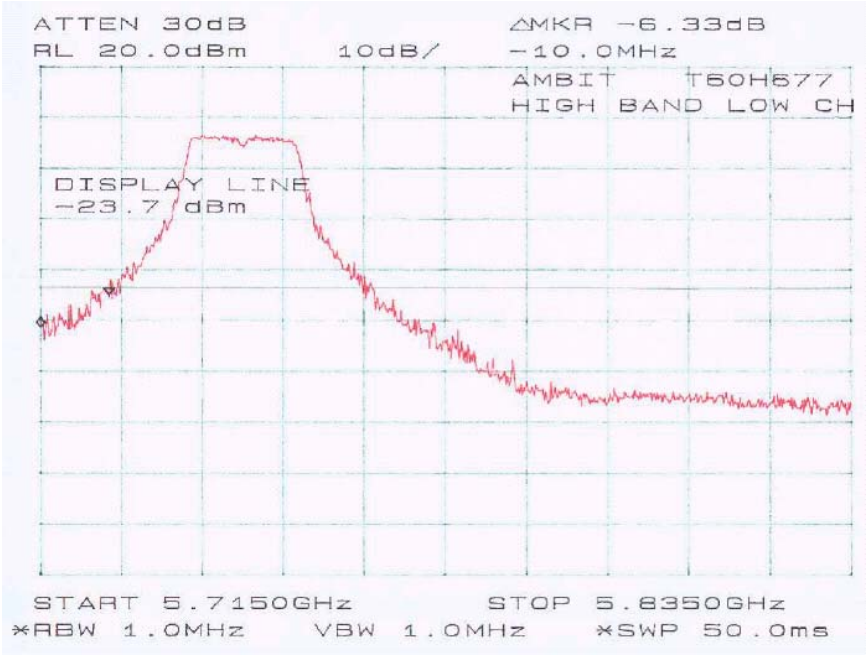
Please refer to the following plots.

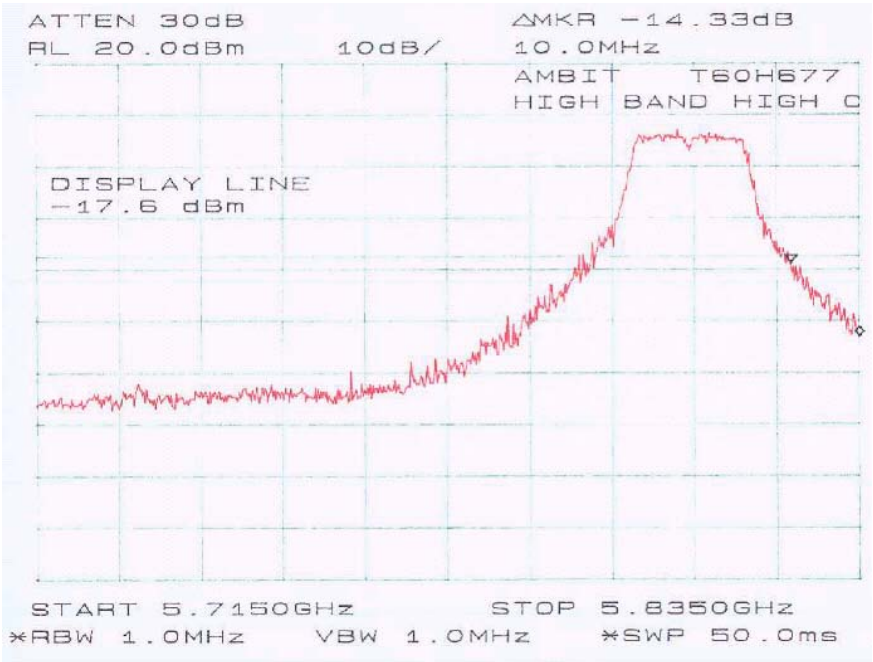

ATTEN 30dB
RL 20.0dBm
10dB/
MKR -30.00dBm
5.1500GHz
AMBIT T60H677
LOW BAND LOW CH
MKR
5.1500 GHz
-30.00 dBm
START 5.1500GHz
STOP 5.3500GHz
*RBW 1.0MHz
VBW 1.0MHz
*SWP 50.0ms


ATTEN 40dB
RL 30.0dBm
10dB/
MKR -37.17dBm
5.3500GHz
AMBIT T60H677
LOW BAND HIGH CH
MKR
5.3500 GHz
-37.17 dBm
START 5.1500GHz
STOP 5.3500GHz
*RBW 1.0MHz
*VBW 1.0MHz
*SWP 50.0ms


ATTEN 40dB
RL 30.0dBm
10dB/
MKR -38.50dBm
5.1500GHz
AMBIT T60H677
MID BAND LOW CH
MKR
5.1500 GHz
-38.50 dBm
START 5.1500GHz
STOP 5.3500GHz
*RBW 1.0MHz
*VBW 1.0MHz
*SWP 50.0ms


ATTEN 30dB
RL 20.0dBm
10dB/
MKR -30.50dBm
5.3500GHz
AMBIT T60H677
MID BAND HIGH CH
MKR
5.3500 GHz
-30.50 dBm
START 5.1500GHz
STOP 5.3500GHz
*RBW 1.0MHz
VBW 1.0MHz
*SWP 50.0ms


ATTEN 30dB
RL 20.0dBm
10dB/
ΔMKR -6.33dB
-10.0MHz
AMBIT T60H677
HIGH BAND LOW CH
DISPLAY LINE
-23.7 dBm
START 5.7150GHz
STOP 5.8350GHz
*RBW 1.0MHz
VBW 1.0MHz
*SWP 50.0ms


ATTEN 30dB
RL 20.0dBm
10dB/
ΔMKR -14.33dB
10.0MHz
AMBIT T60H677
HIGH BAND HIGH C
DISPLAY LINE
-17.6 dBm
START 5.7150GHz
STOP 5.8350GHz
*RBW 1.0MHz
VBW 1.0MHz
*SWP 50.0ms

15.407(c) - Discontinue Transmitting With Absence Of Data Or Operational Failure

According to § 15.407 (c), the device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signaling information or the user of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application a description of how this requirement is met.

Please refer to respective technical description.

§15.407(g) - Frequency Stability

Standard Applicable

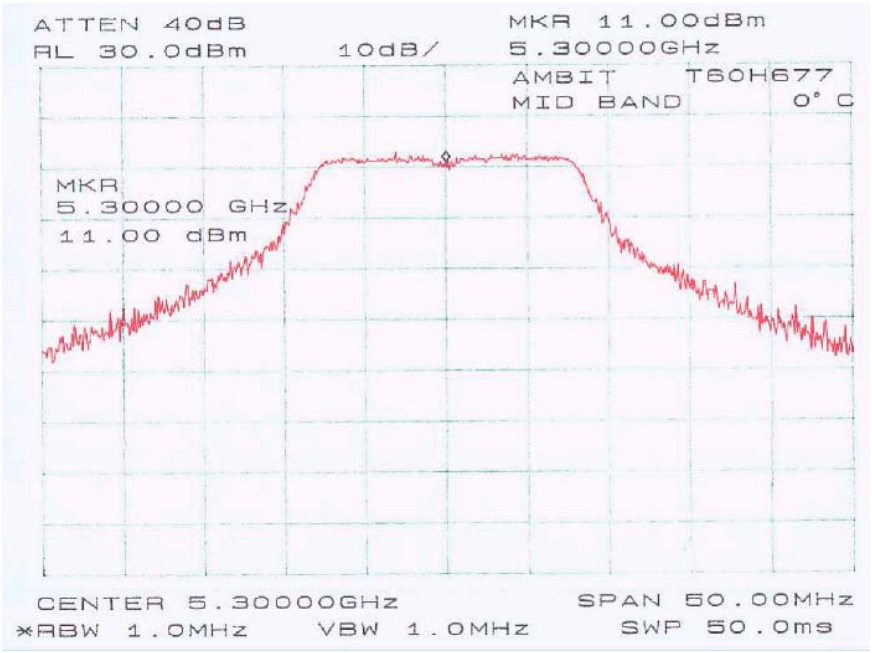
According to §15.407 (g), manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation .

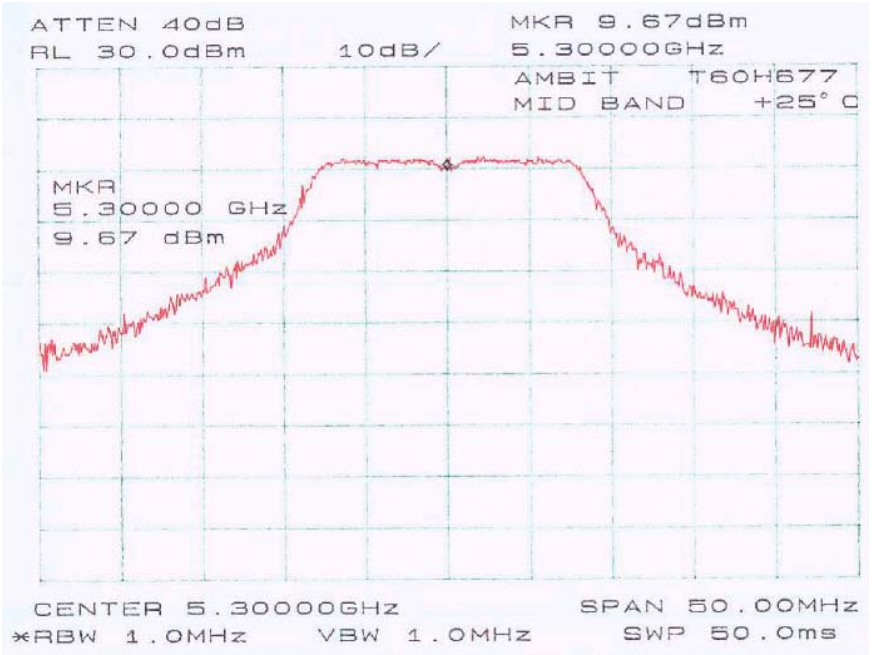
Measurement Result

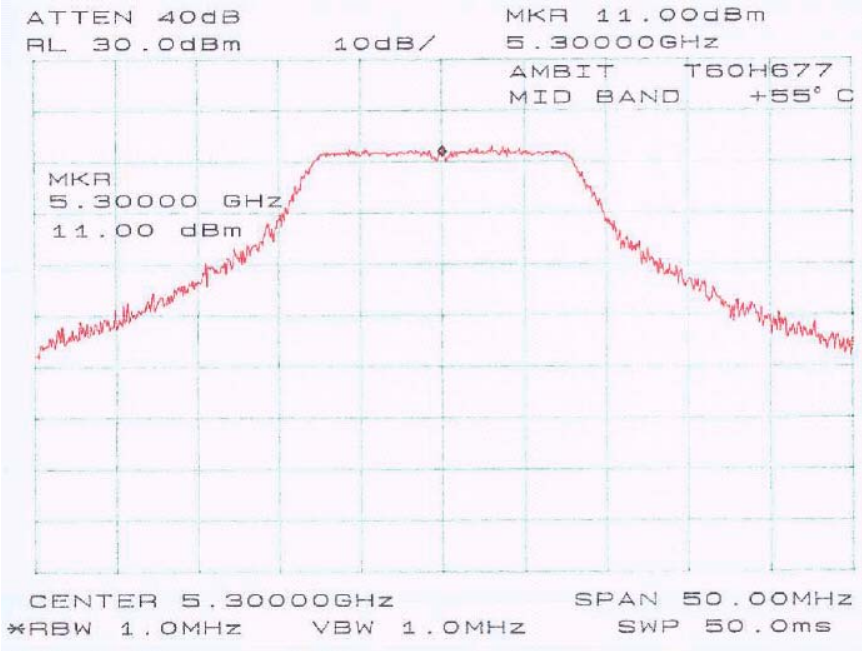
Environmental Conditions

Temperature:	12° C
Relative Humidity:	48%
ATM Pressure:	1100 mbar

Please refer to the following plots.


ATTEN 40dB
RL 30.0dBm
10dB/
MKR 11.00dBm
5.30000GHz
AMBIT T60H677
MID BAND 0° C
MKR
5.30000 GHz
11.00 dBm
CENTER 5.30000GHz
SPAN 50.00MHz
*RBW 1.0MHz
VBW 1.0MHz
SWP 50.0ms


ATTEN 40dB
RL 30.0dBm
10dB/
MKR 9.67dBm
5.30000GHz
AMBIT T60H677
MID BAND +25° C
MKR
5.30000 GHz
9.67 dBm
CENTER 5.30000GHz
SPAN 50.00MHz
*RBW 1.0MHz
VBW 1.0MHz
SWP 50.0ms


ATTEN 40dB
RL 30.0dBm
10dB/
MKR 11.00dBm
5.30000GHz
AMBIT T60H677
MID BAND +55° C
MKR
5.30000 GHz
11.00 dBm
CENTER 5.30000GHz
SPAN 50.00MHz
*RBW 1.0MHz
VBW 1.0MHz
SWP 50.0ms