

TEST REPORT

Report Number: 3146806MPK-001
Project Number: 3146806
March 31, 2008

Testing performed on the

802.11 b/g ADSL2+ Wireless Gateway
Model Numbers: 3347-42 and 3357-42
FCC ID: GZ5334742
IC ID: 2525A-334742

to
FCC Part 15 Subpart C (15.247)
RSS-210 Annex 8
for
Motorola Inc.



A2LA Certificate Number: 1755-01

Test Performed by:
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1.0 Summary of Tests

FCC ID: GZ5334742

IC ID: 2525A-334742

TEST	REFERENCE FCC Part 15 C	REFERENCE RSS-210 Annex 8	RESULTS
RF output power	15.247(b)	A8.4	Complies
6 dB Bandwidth	15.247(a)(2)	A8.2(1)	Complies
Power Density	15.247(d)	A8.2(2)	Complies
Out of Band Antenna Conducted Emission	15.247(c)	A8.5	Complies
Out of Band Radiated Emission (except emissions in restricted bands)	15.247(c)	A8.5	Not performed. The EUT passed out-of-band antenna conducted emission
Radiated Emission in Restricted Bands	15.247(c), 15.209, 15.205	A8.5	Complies
AC Conducted Emission	15.207	RSS-Gen	Complies
Radiated Emission from Digital Part and Receiver	15.109	RSS-Gen	Complies
Antenna Requirement	15.203	RSS-Gen	Complies. The EUT does not have an external antenna connector

2.0 General Description

2.1 Product Description

The models 3347-42 and 3357-42, hereinafter – Equipment Under Test (EUT), is an ADSL Annex A Integrated Access Device. It provides the ADSL Wide Area Network Interface, with four 10/100BASE-T Ethernet interfaces and two VoIP ports, as well as an IEEE 802.11b/g wireless interface operating at 2.4 GHz.

The model 3347-42 is the same as the model 3357-42, except the ADSL bin usage is adjusted according to ITU G.992.1 Annex A. The PCB and all other components and software remain the same for both models.

The information about the radio, installed in the model 3347-42 and 3357-42, is presented below.

Applicant	Motorola/Netopia Inc.
Model No.	3347-42 and 3357-42
FCC Identifier	GZ5334742
IC Identifier	2525A-334742
Use of Product	802.11 b/g ADSL2+ Wireless Gateway
Modulation Technique	DSSS, OFDM
Rated RF Output	400 mW (average)
Frequency Range	2412 – 2462 MHz
Type of modulation	DSSS (BPSK, QPSK, CCK), OFDM (BPSK, QPSK, 16QAM, 64QAM)
Number of Channel(s)	11
Antenna(s) & Gain,	Type: Centurion dipole with a right angle male MMCX connector. Max Gain: -2dBi.
Antenna Requirement	The EUT does not have an external antenna connector
Manufacturer Name & Address	Benchmark Electronics Thailand PCL 94 Moo 1 High-Tech Ind Est, Banlane Bang Pa-in Ayudhaya, Thailand, 13160 contact: Watcharin Uthaitan (program manager) email: Watcharin.Uthaitan@bench.com phone: 011 663 535 0890, fax: 011 663 535 0945

EUT receive date: February 8, 2008

EUT receive condition: The EUT was received in good condition with no apparent damage.

Test start date: February 8, 2008

Test completion date: March 21, 2008

The test results in this report pertain only to the item tested.

2.2 Related Submittal(s) Grants

None.

2.3 Test Methodology

Antenna conducted measurements were performed according to the procedure “Measurement of Digital Transmission Systems Operating under Section 15.247”.

Both AC mains line-conducted and radiated emissions measurements were performed according to the procedures in ANSI C63.4 (2003). Radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the "**Data Sheet**" of this Application.

All other measurements were made in accordance with the procedures in part 2 of CFR 47.

2.4 Test Facility

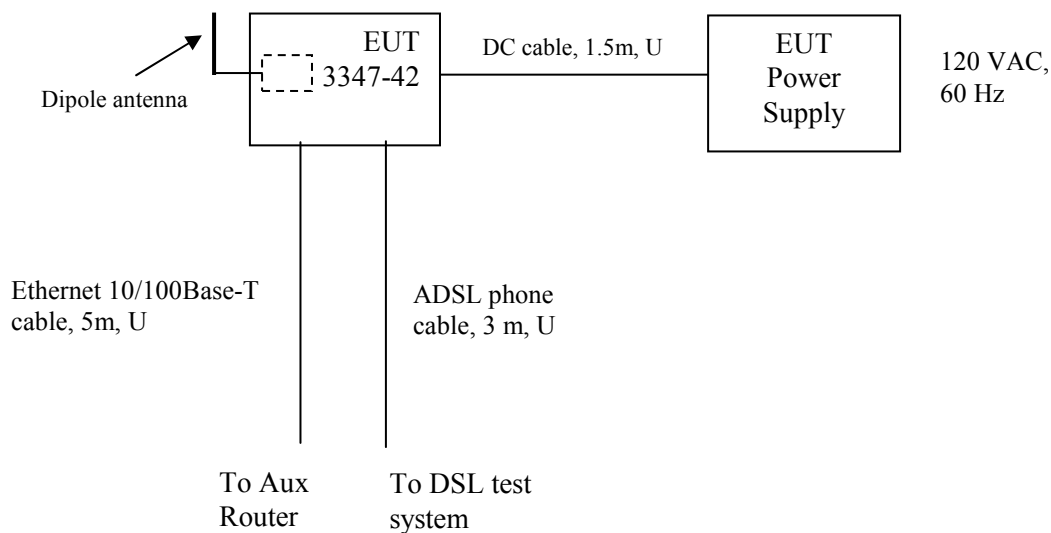
The open area test site and conducted measurement facility used to collect the radiated data is site 1 (10-m semi-anechoic chamber). This test facility and site measurement data have been fully placed on file with the FCC, IC and A2LA accredited.

3.0 System Test Configuration

3.1 Support Equipment

Description	Model No.	Serial No.
Veritas 2000 DSL Test System	ADS-00600 4003	P3806008
Netopia Auxiliary Router	Not Labeled	Not Labeled

3.2 Block Diagram of Test Setup



Power Supply: Leader Electronics Inc., model MU18-2120150-A1

S = Shielded	F = With Ferrite
U = Unshielded	m = Length in Meters

3.3 Justification

For emission testing, the equipment under test (EUT) was configured for testing in a typical fashion (as a customer would normally use it).

Due to the similarity of models 3347-42 and 3357-42, the only model 3347-52 was tested, however, the test result is applicable to both models.

Preliminary testing was performed for all modulation/data rate modes. The following modes were selected for final measurements: CCK 11 Mbps – for 802.11b; OFDM 9 Mbps and 54 Mbps – for 802.11g.

As declared by the Applicant, the transmitter operates with the Duty Cycle of 40% in normal operation. Therefore, the Duty Cycle Correction Factor was taken into account for spurious radiated emissions.

3.4 Mode of Operation During Test

During testing, the transmitter was setup to transmit continuously at maximum RF power on low, middle and high channels.

3.5 Modifications Required for Compliance

Intertek installed no modifications during compliance testing in order to bring the product into compliance (Please note that this does not include changes made specifically by Motorola prior to compliance testing)

3.6 Additions, deviations and exclusions from standards

No additions, deviations or exclusions from the standard were made.

4.0 Measurement Results

4.1 Maximum Conducted Output Power at Antenna Terminals, FCC Rule 15.247(b)

4.1.1 Requirement

For antennas with gains of 6 dBi or less, maximum allowed transmitter output is 1 watt (+30 dBm). For antennas with gains greater than 6 dBi, transmitter output level must be decreased by an amount equal to (GAIN - 6) dBm.

4.1.2 Procedure

The antenna port of the EUT was connected to the input of a spectrum analyzer to measure the Average Transmitter Output Power.

For conducted power measurement for FCC Part 15C testing, the procedure “**Measurement of Digital Transmission Systems Operating under Section 15.247**” is used. In particular – the **Power Output Option 2, Method #1**, - spectral trace averaging and sum the power across the 26-dB bandwidth of the signal.

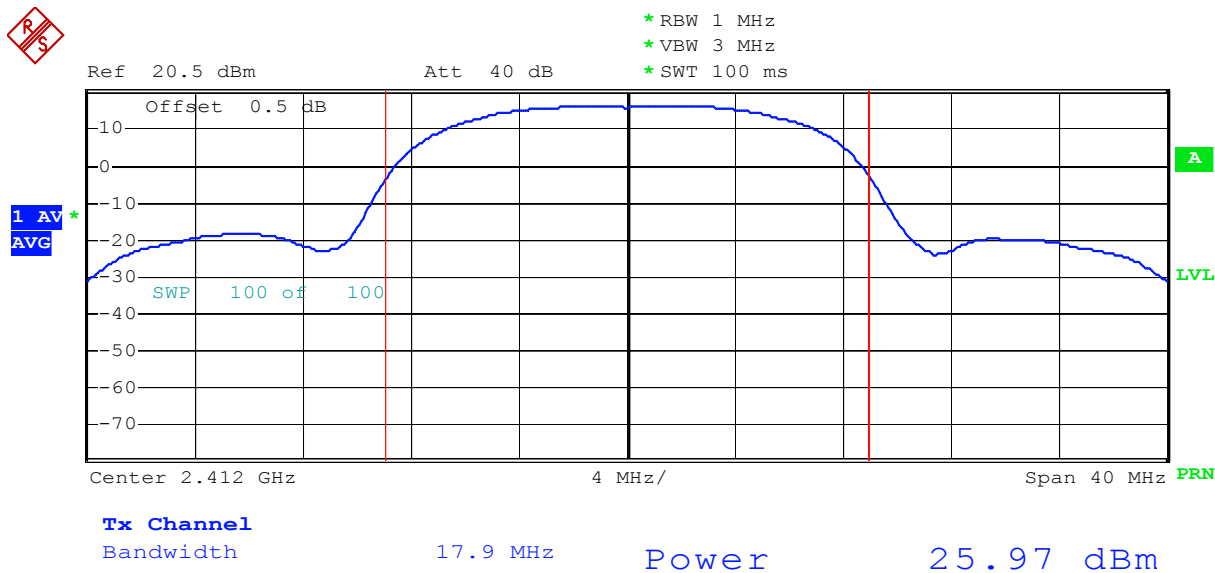
The 26-dB bandwidth was measured and recorded (see the graphs in Appendix A). Then the average power was measured by using a spectrum analyzer build-in facility for “channel power” measurement. Cable loss correction was added to the reading to obtain power at the EUT antenna terminals.

4.1.3 Test Result

The results are presented on the following plots 1.1 – 1.9 and summarized in the table below.

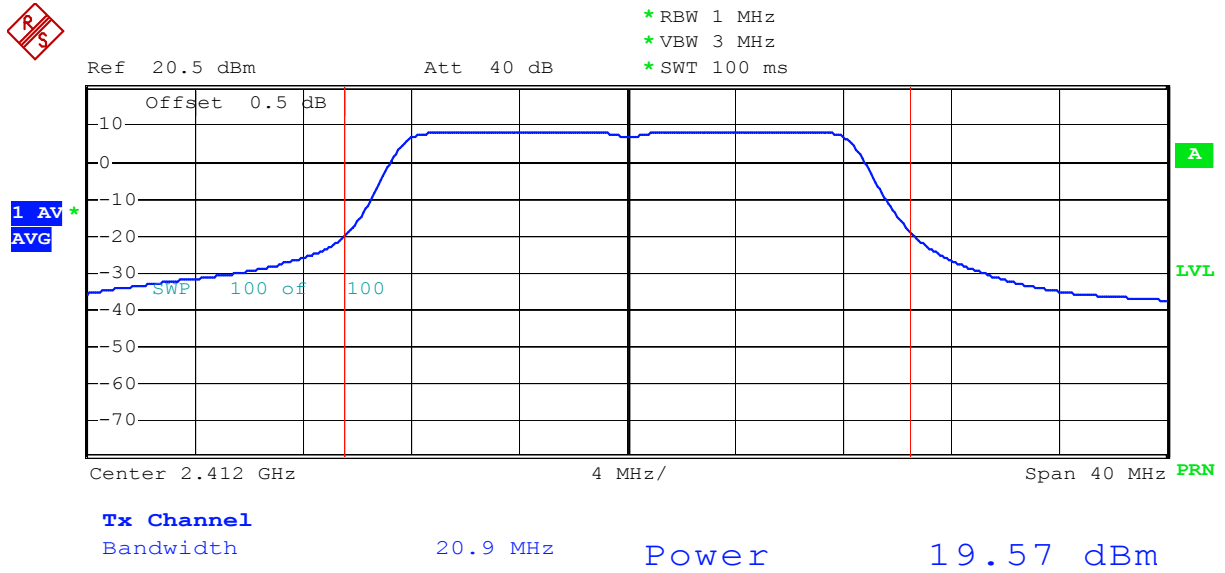
Channel	Frequency MHz	Standard	Date rate Mbps	26-dB Bandwidth MHz	Conducted power (average) dBm	Conducted power Limit dBm	Margin dB	Plot
1	2412	802.11b	11	17.9	26.0	30.0	-3.7	1.1
1	2412	802.11g	9	20.9	19.6	30.0	-7.5	1.2
1	2412	802.11g	54	20.3	19.2	30.0	-6.9	1.3
6	2437	802.11b	11	17.9	25.9	30.0	-3.7	1.4
6	2437	802.11g	9	27.8	25.3	30.0	-4.1	1.5
6	2437	802.11g	54	20.8	23.6	30.0	-6.7	1.6
11	2462	802.11b	11	17.9	25.5	30.0	-3.6	1.7
11	2462	802.11g	9	21.8	20.9	30.0	-7.2	1.8
11	2462	802.11g	54	20.4	20.6	30.0	-7.4	1.9

Plot 1.1



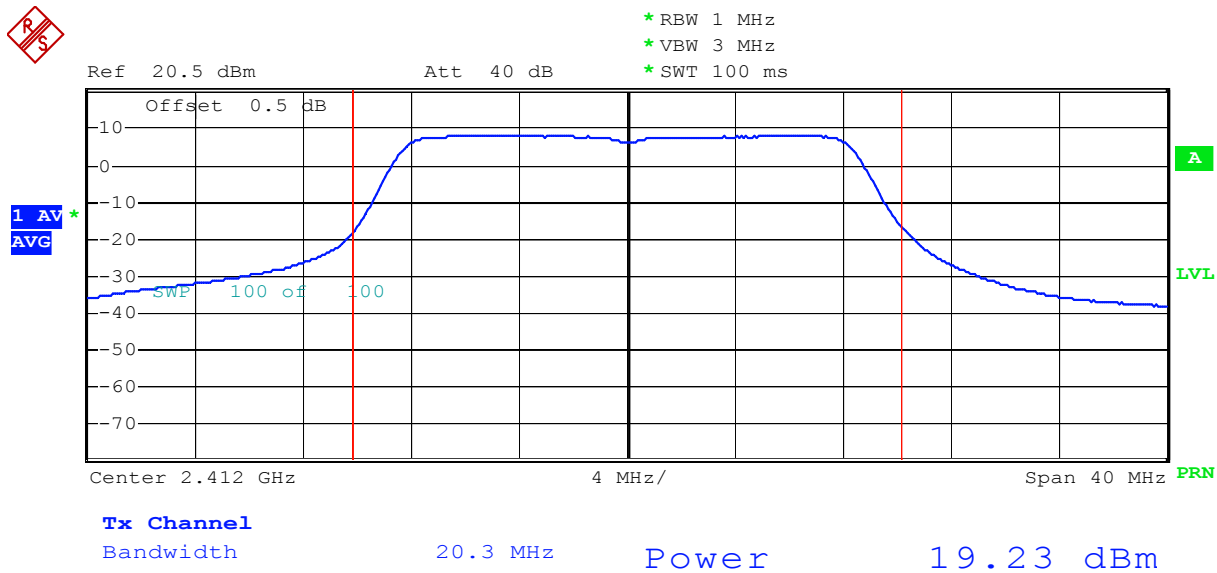
Comment: Power output, average, Ch 1, 11 Mbps
 Date: 6.MAR.2008 13:02:03

Plot 1.2



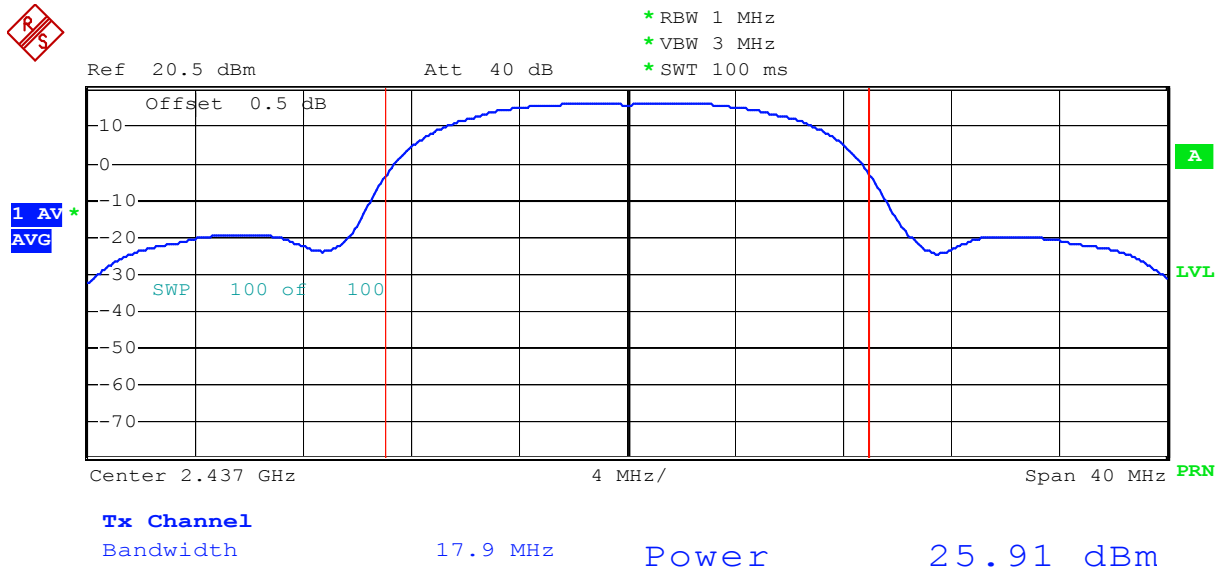
Comment: Power output, average, Ch 1, 9 Mbps
Date: 6.MAR.2008 13:00:56

Plot 1.3



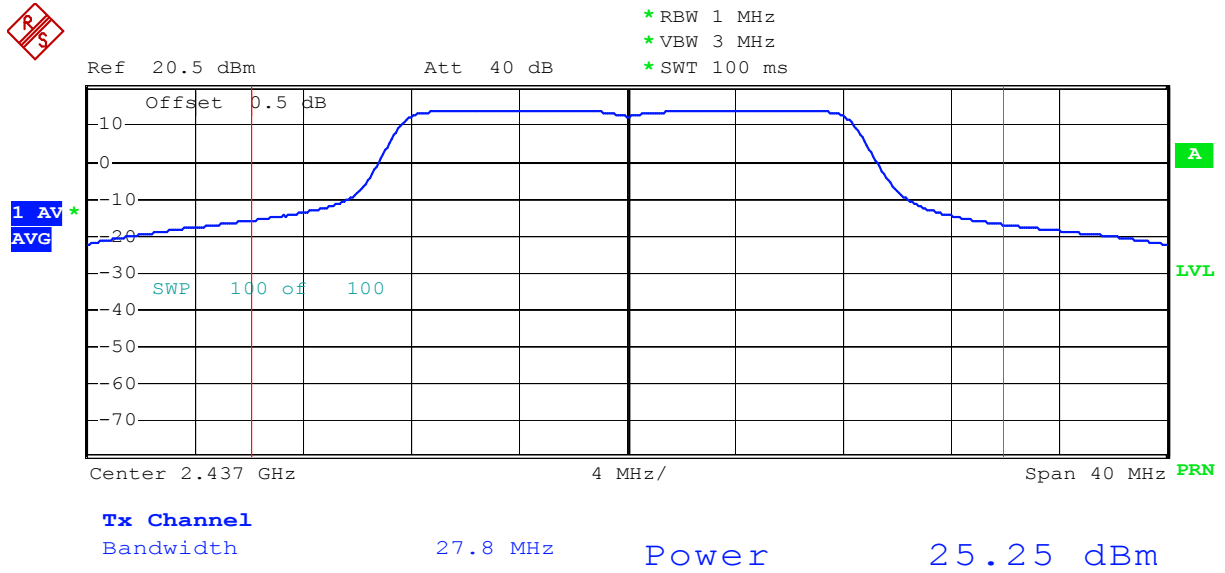
Comment: Power output, average, Ch 1, 54 Mbps
Date: 6.MAR.2008 12:59:27

Plot 1.4



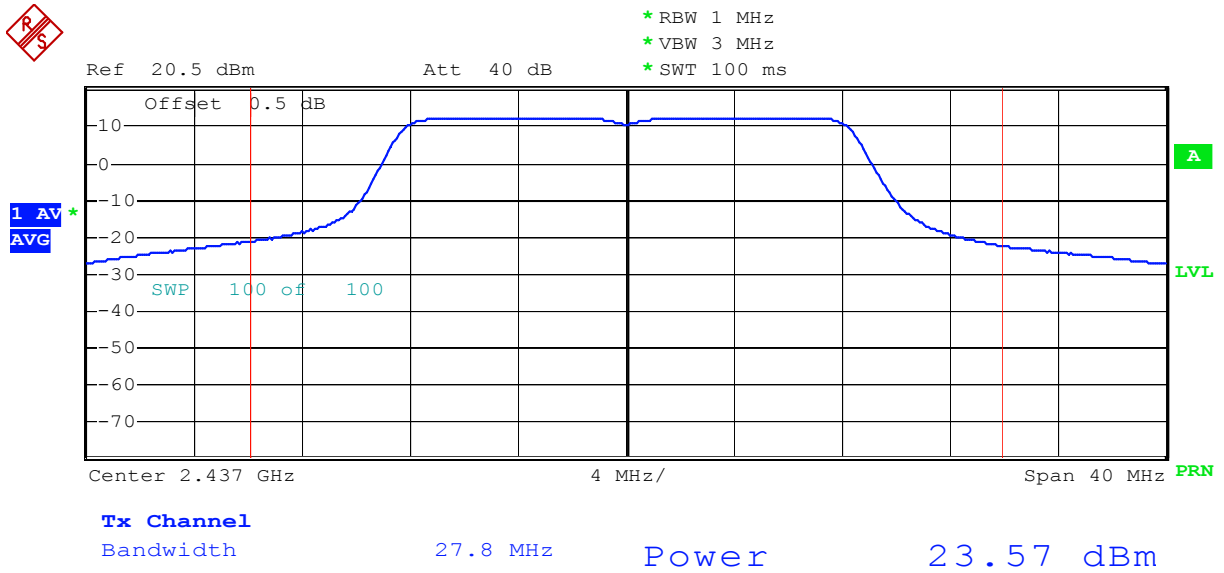
Comment: Power output, average, Ch6, 11 Mbps
Date: 6.MAR.2008 12:46:32

Plot 1.5



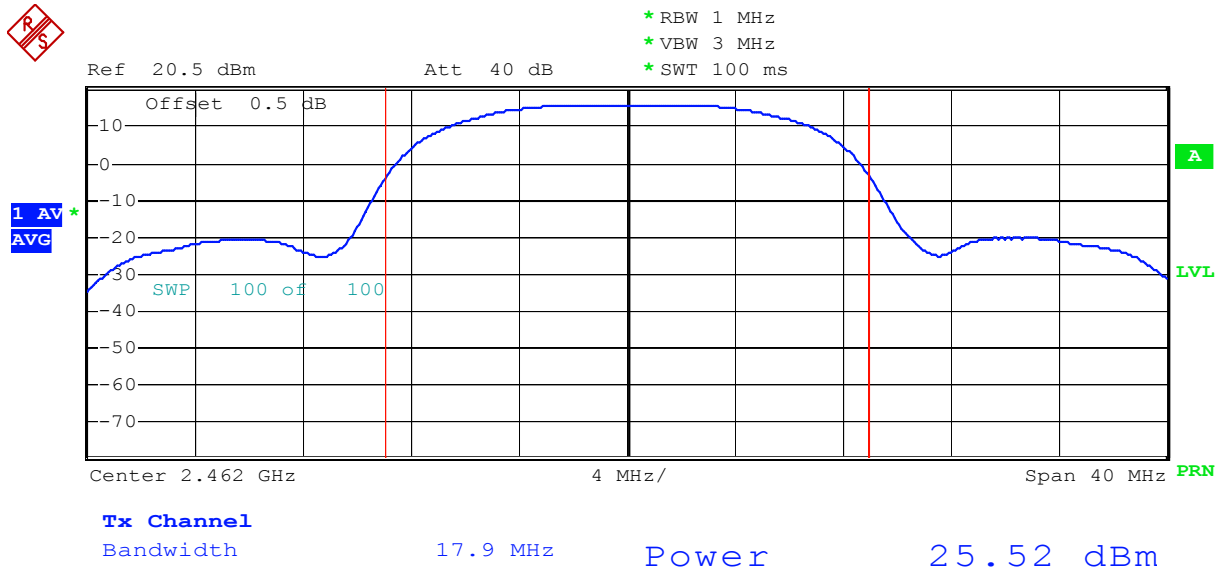
Comment: Power output, average, Ch6, 9 Mbps
 Date: 6.MAR.2008 12:55:28

Plot 1.6



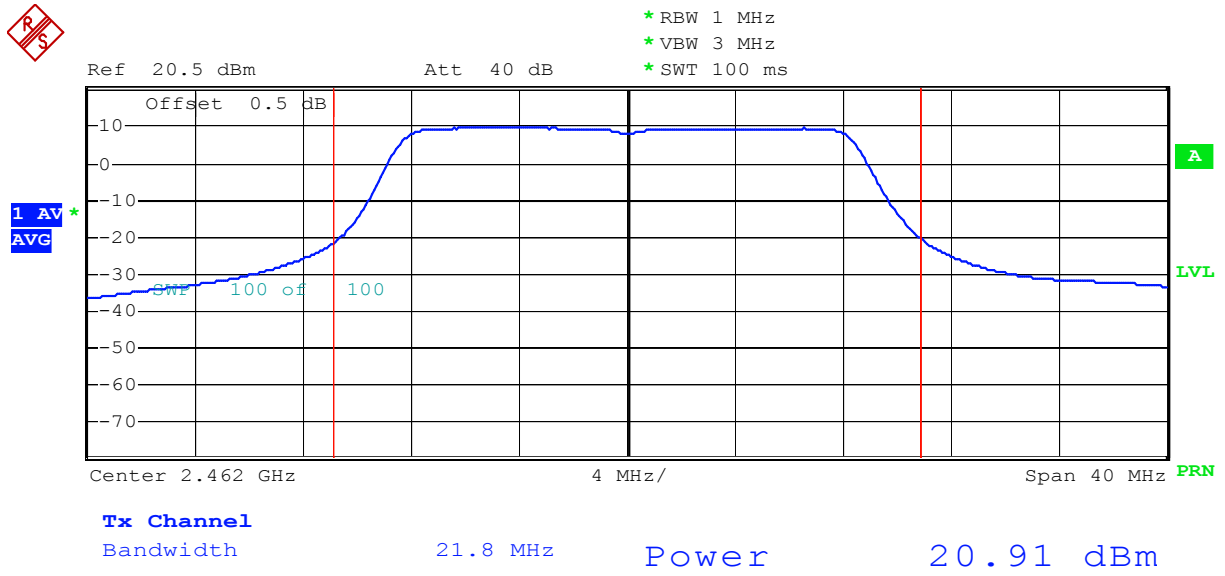
Comment: Power output, average, Ch6, 54 Mbps
Date: 6.MAR.2008 12:57:11

Plot 1.7



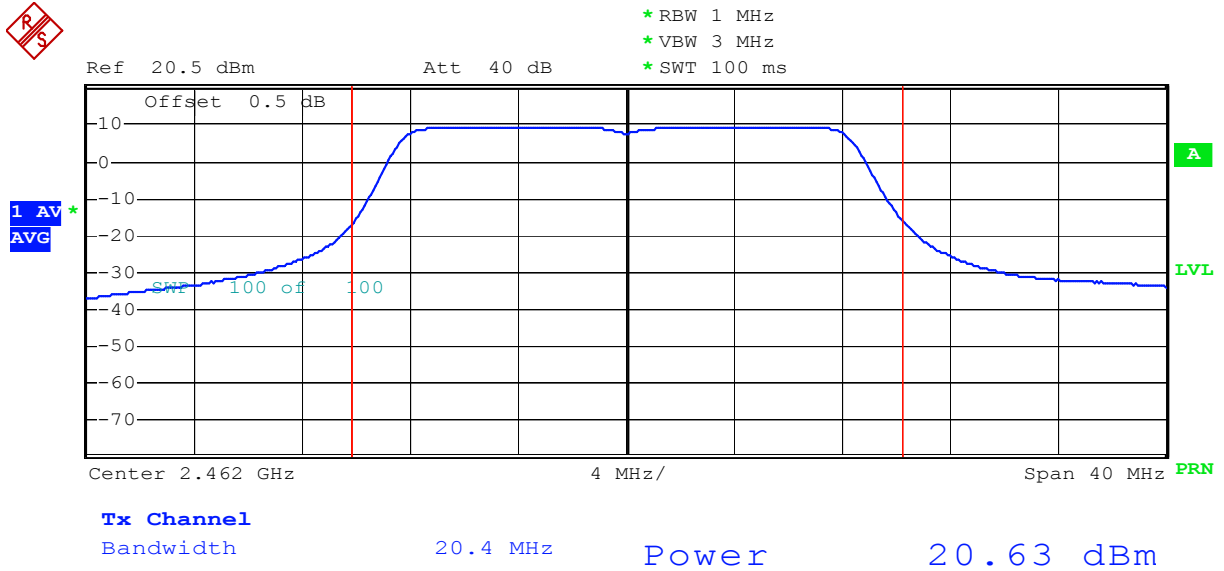
Comment: Power output, average, Ch 11, 11 Mbps
 Date: 6.MAR.2008 13:03:29

Plot 1.8



Comment: Power output, average, Ch 11, 9 Mbps
 Date: 6.MAR.2008 13:04:53

Plot 1.9



Comment: Power output, average, Ch 11, 54 Mbps
 Date: 6.MAR.2008 13:06:20

4.2 6-dB RF Bandwidth,
FCC Rule 15.247(a)(2)

4.2.1 Requirement

The minimum 6-dB bandwidth shall be at least 500 kHz

4.2.2 Procedure

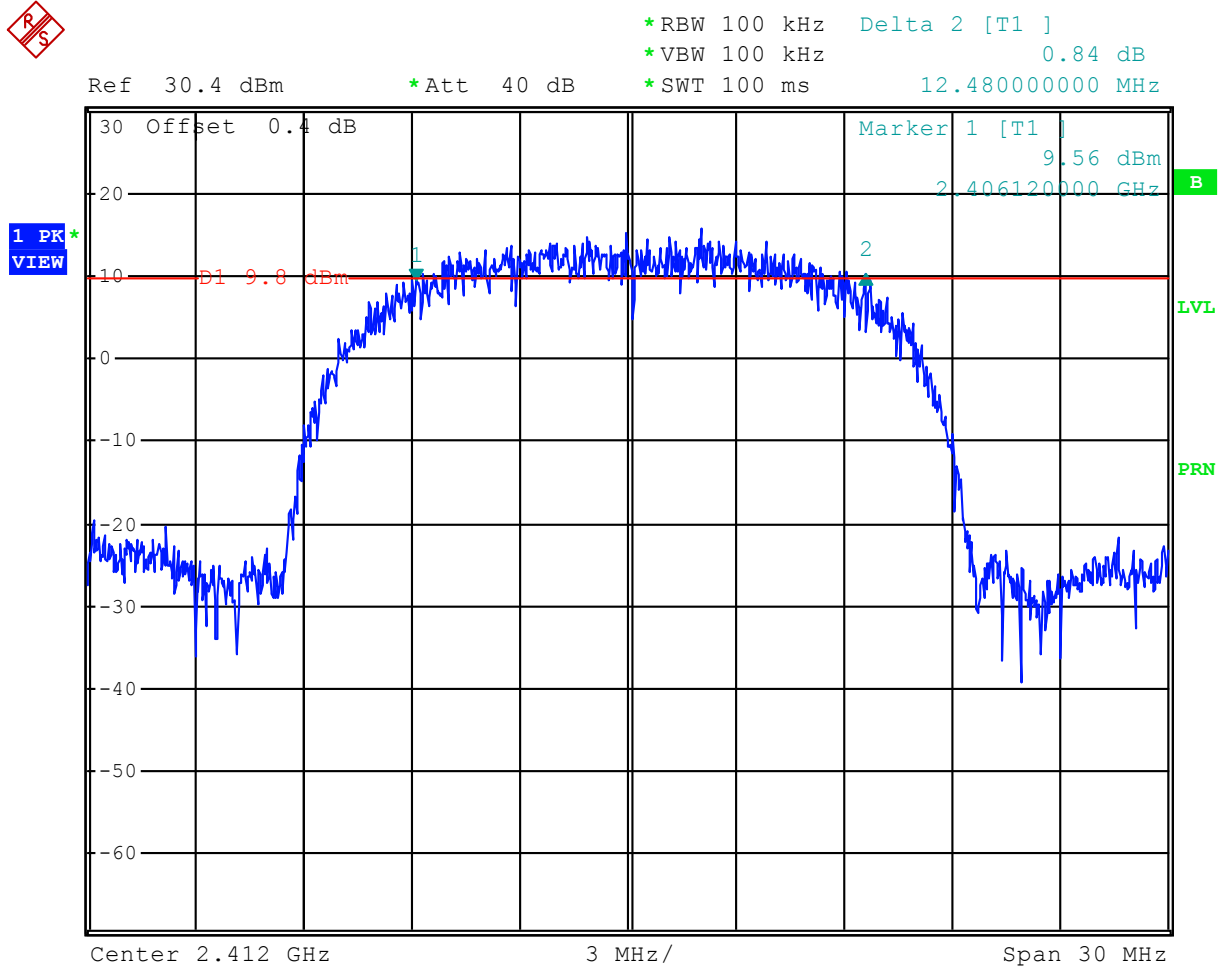
The antenna port of the EUT was connected to the input of a spectrum analyzer. Analyzer RES BW was set to 100 kHz. For each RF output channel investigated, the spectrum analyzer center frequency was set to the channel carrier. A PEAK output reading was taken, a DISPLAY line was drawn 6 dB lower than PEAK level. The 6-dB bandwidth was determined from where the channel output spectrum intersected the display line.

4.2.3 Test Result

The results are presented on the following plots 2.1 – 2.9 and summarized in the table below.

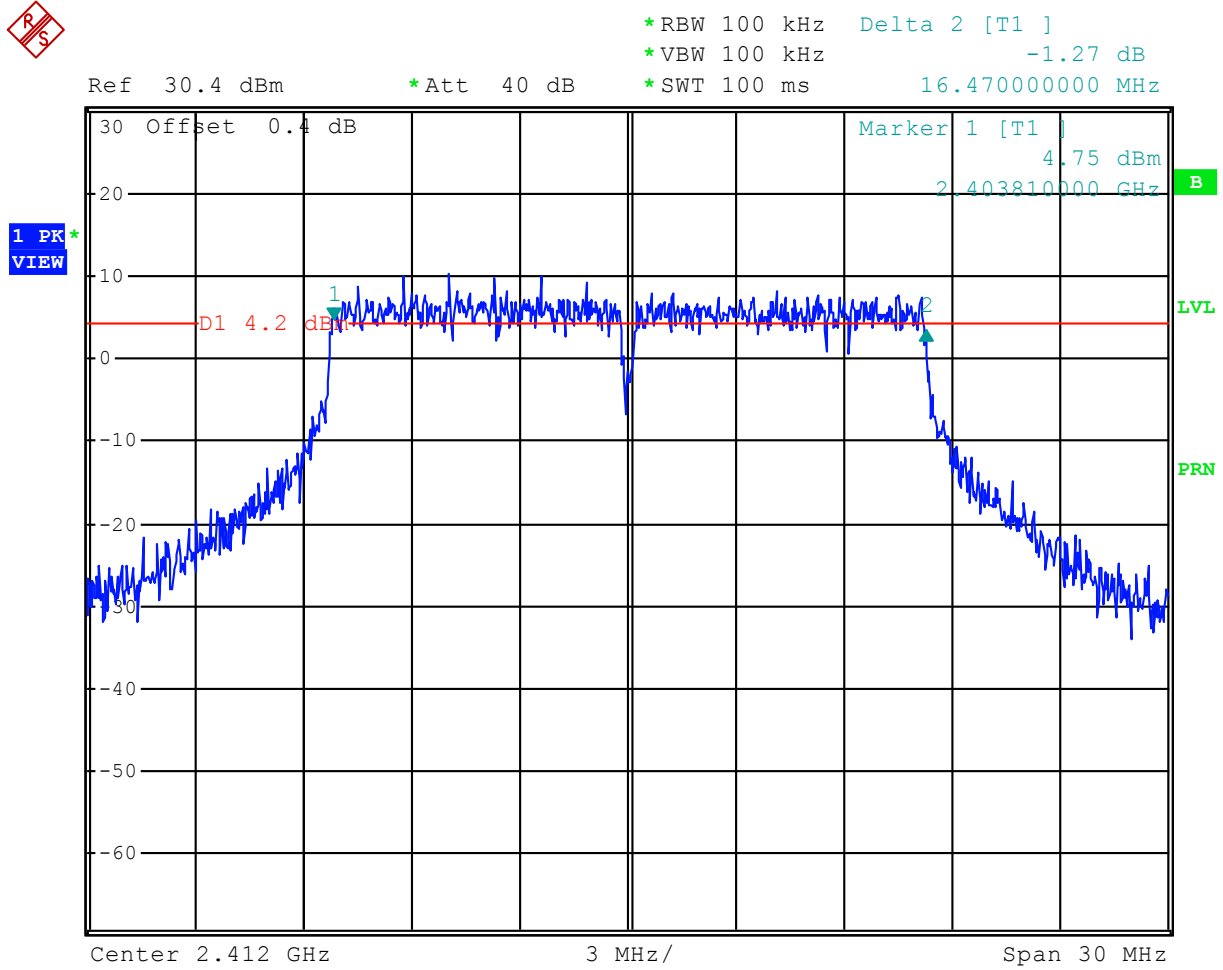
Channel	Frequency MHz	Standard	Date rate Mbps	6-dB Bandwidth MHz	Plot
1	2412	802.11b	11	12.5	2.1
1	2412	802.11g	9	16.5	2.2
1	2412	802.11g	54	16.5	2.3
6	2437	802.11b	11	12.5	2.4
6	2437	802.11g	9	16.6	2.5
6	2437	802.11g	54	16.5	2.6
11	2462	802.11b	11	12.5	2.7
11	2462	802.11g	9	16.5	2.8
11	2462	802.11g	54	16.5	2.9

Plot 2.1



Comment: 6-dB bandwidth, Ch 1, CCK 11 Mbps
 Date: 6.MAR.2008 19:38:20

Plot 2.2

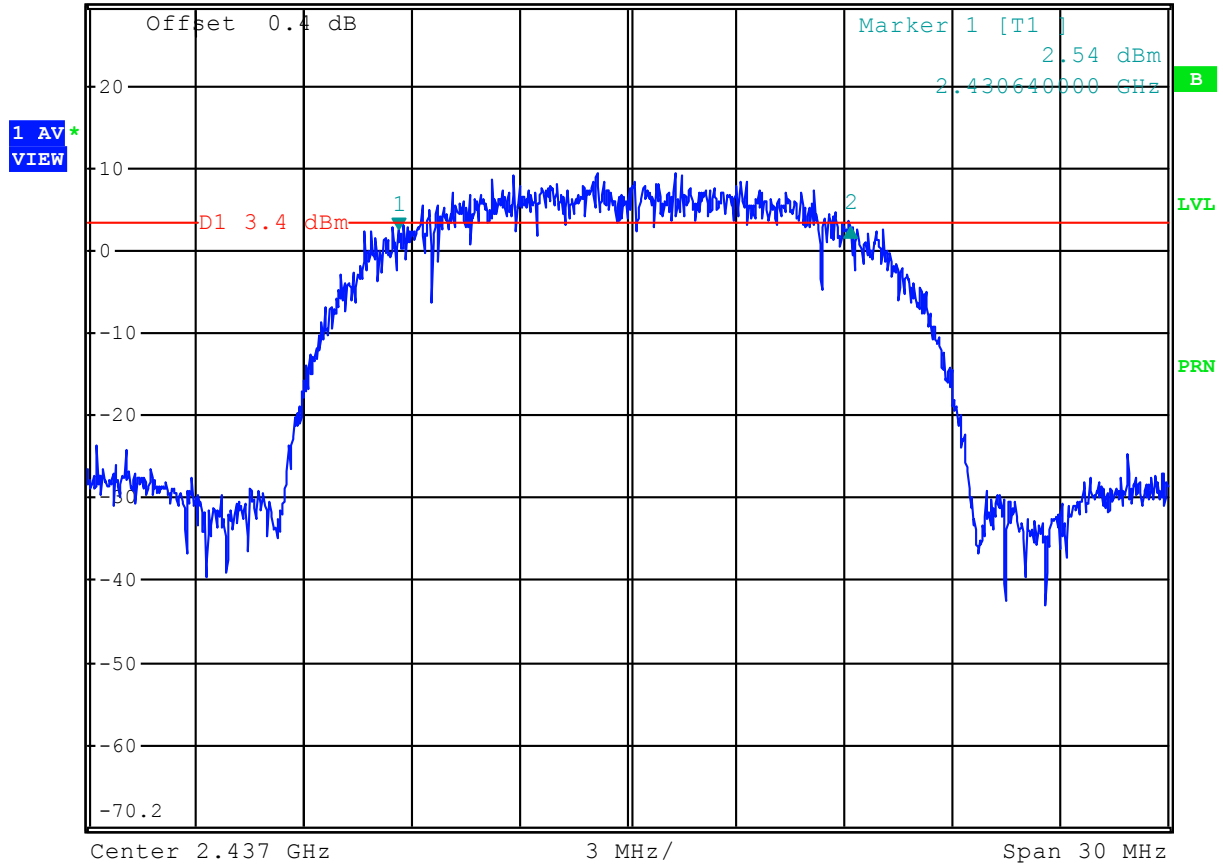


Comment: 6-dB bandwidth, Ch 1, OFDM 9 Mbps
 Date: 6.MAR.2008 19:46:43

Plot 2.4

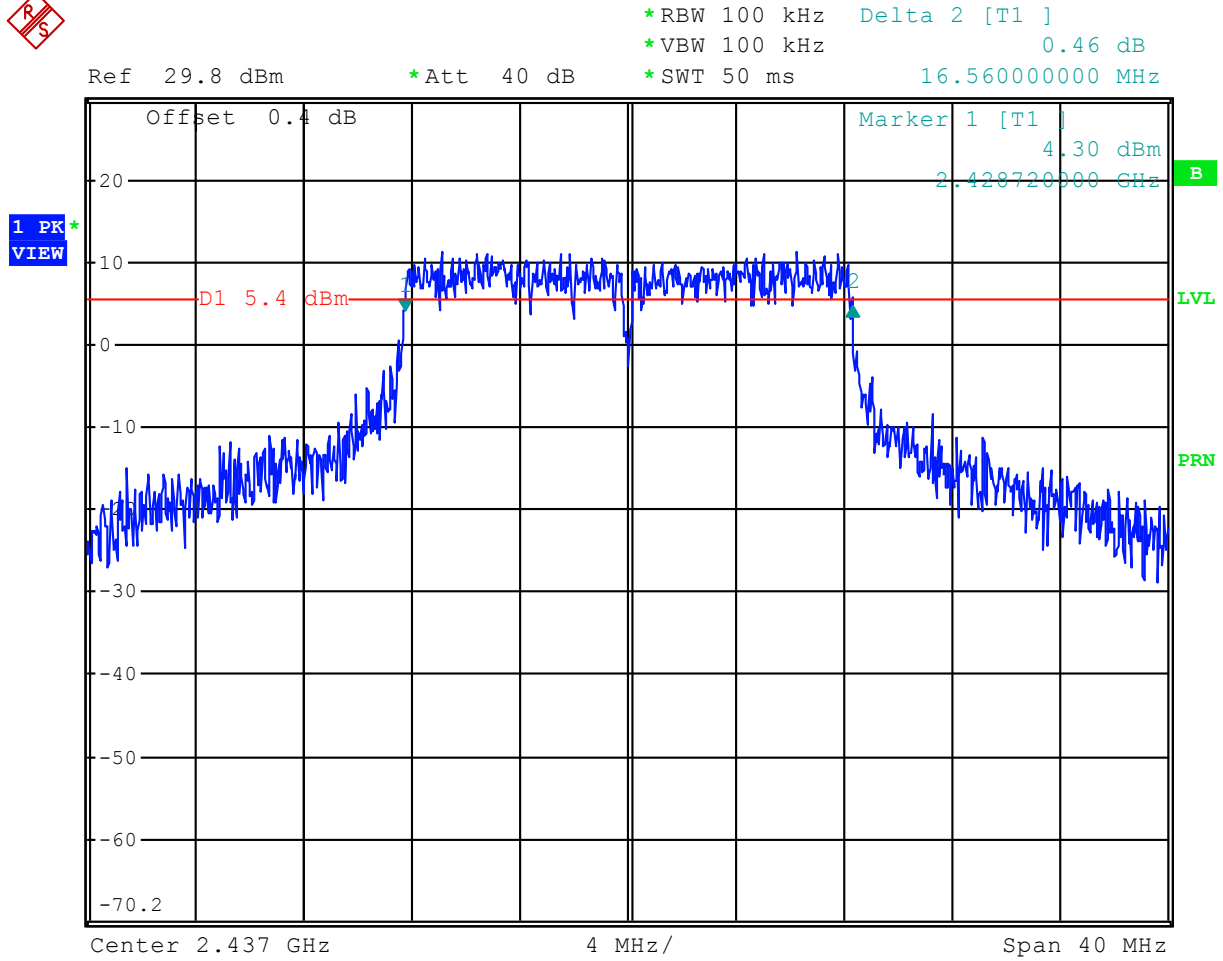


Ref 29.8 dBm *Att 40 dB *RBW 100 kHz Delta 2 [T1]
 *VBW 100 kHz 0.30 dB
 *SWT 100 ms 12.54000000 MHz



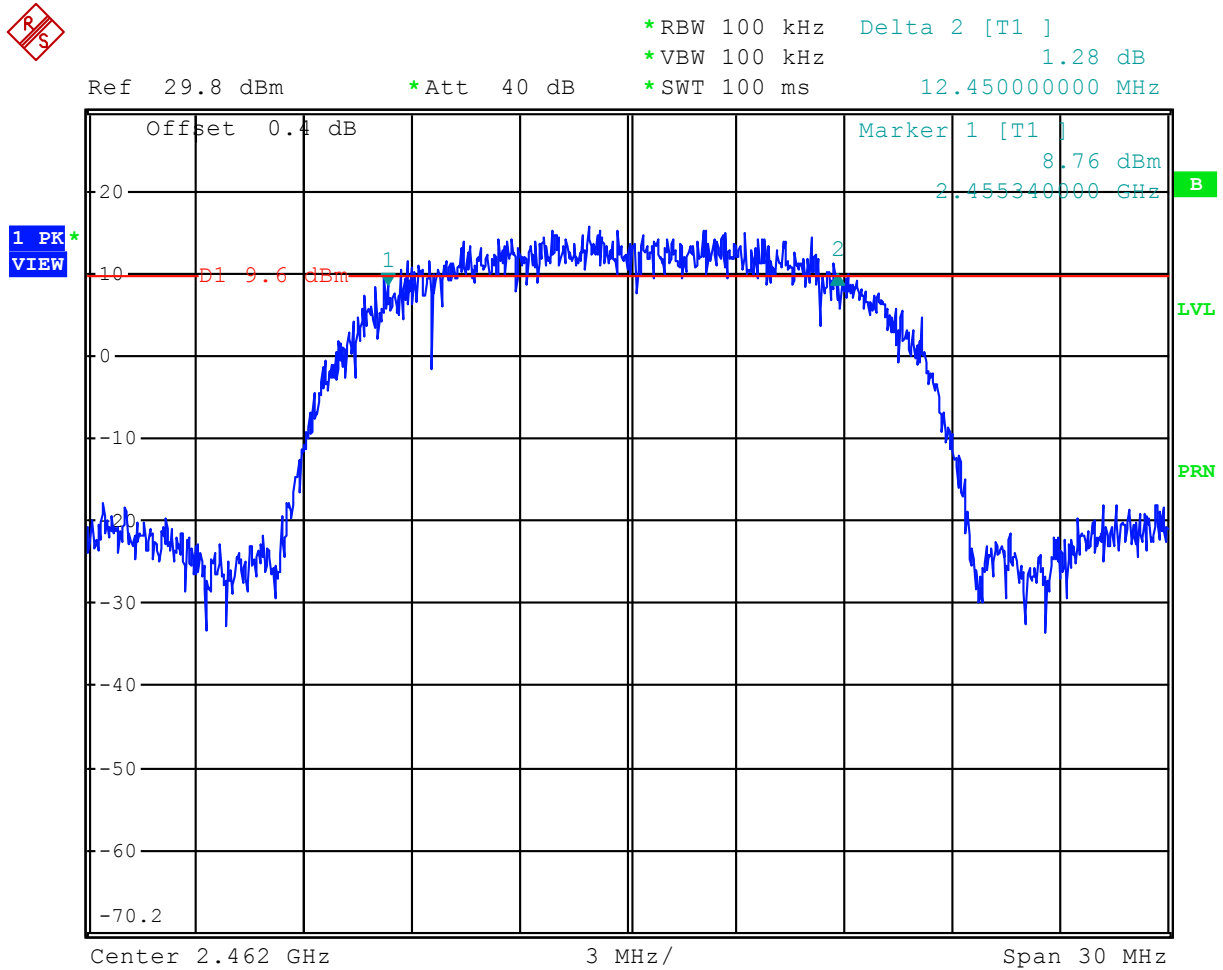
Comment: 6-dB bandwidth, Ch 6, CCK 11 Mbps
 Date: 6.MAR.2008 13:16:13

Plot 2.5



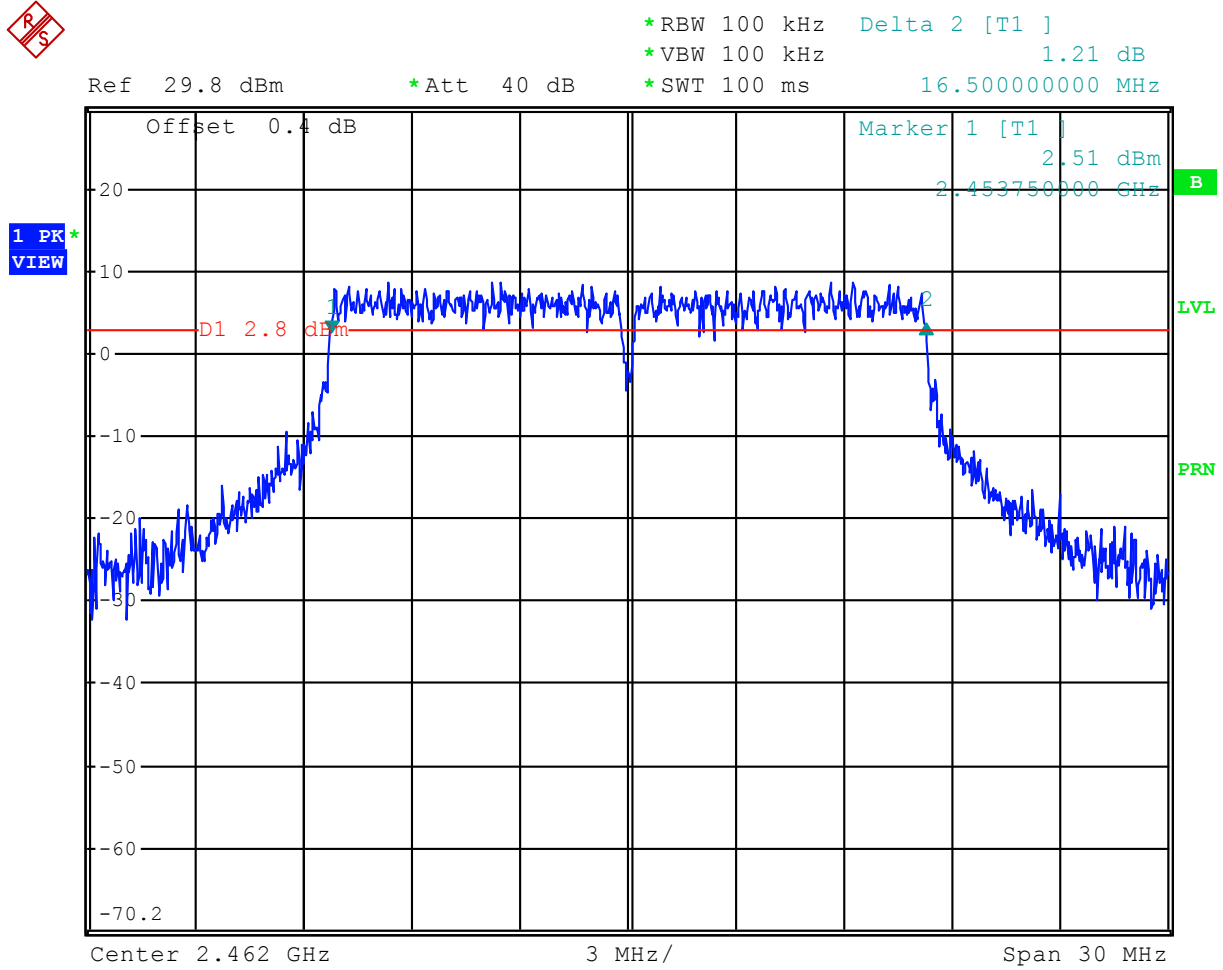
Comment: 6-dB bandwidth, Ch 6, OFDM 9 Mbps
 Date: 6.MAR.2008 20:25:14

Plot 2.7



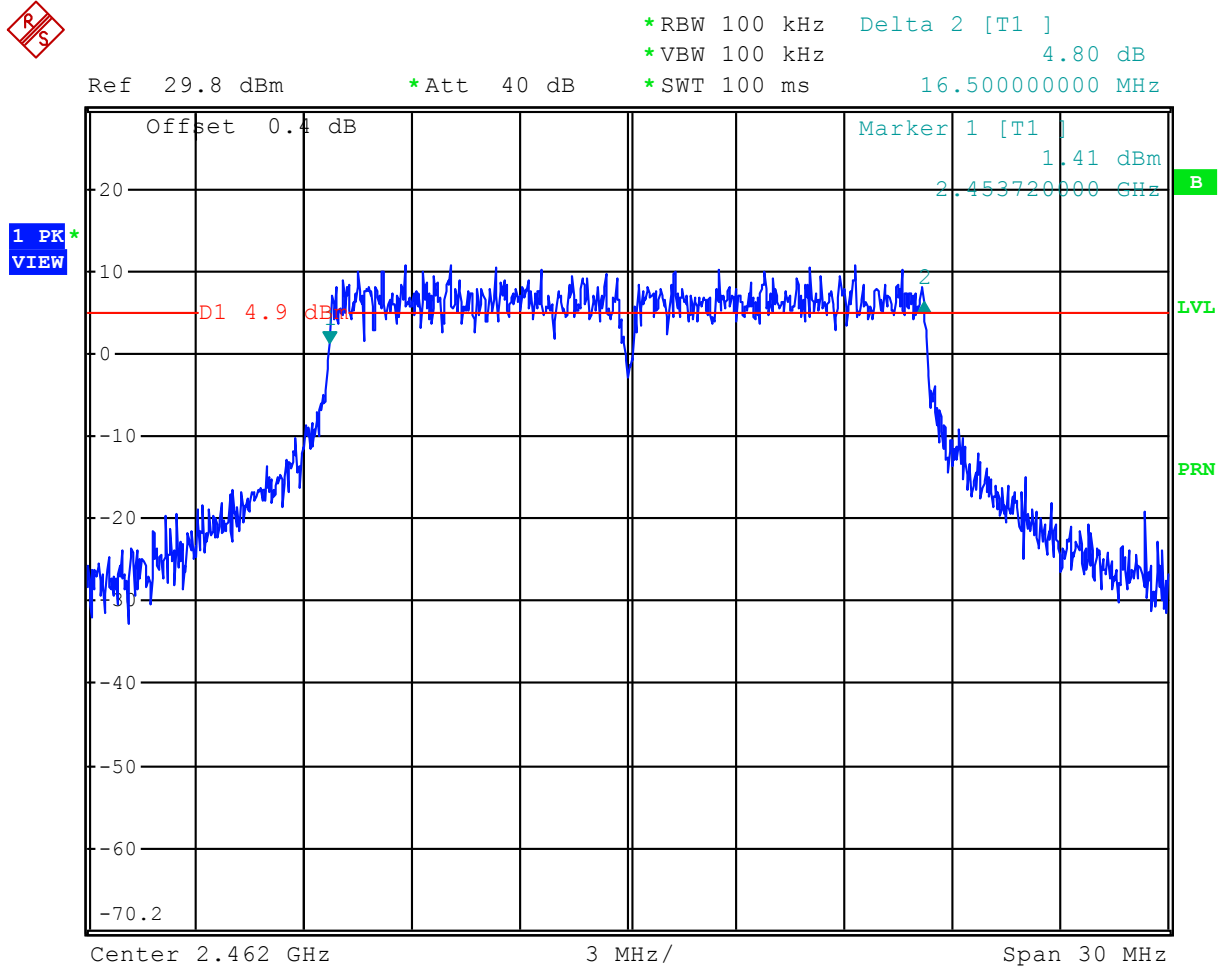
Comment: 6-dB bandwidth, Ch 11, CCK 11 Mbps
 Date: 6.MAR.2008 13:21:52

Plot 2.8



Comment: 6-dB bandwidth, Ch 11, OFDM 9 Mbps
 Date: 6.MAR.2008 13:19:05

Plot 2.9



Comment: 6-dB bandwidth, Ch 11, OFDM 54 Mbps
 Date: 6.MAR.2008 14:12:39

4.3 Power Spectral Density FCC Rule 15.247(d)

4.3.1 Requirement

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

4.3.2 Procedure

The antenna port of the EUT was connected to the input of a spectrum analyzer to measure the Average Transmitter Output Power.

For conducted power measurement for FCC Part 15C testing, the procedure “**Measurement of Digital Transmission Systems Operating under Section 15.247**” is used. In particular – the **PSD Option 2**, - sample detector and spectral trace averaging.

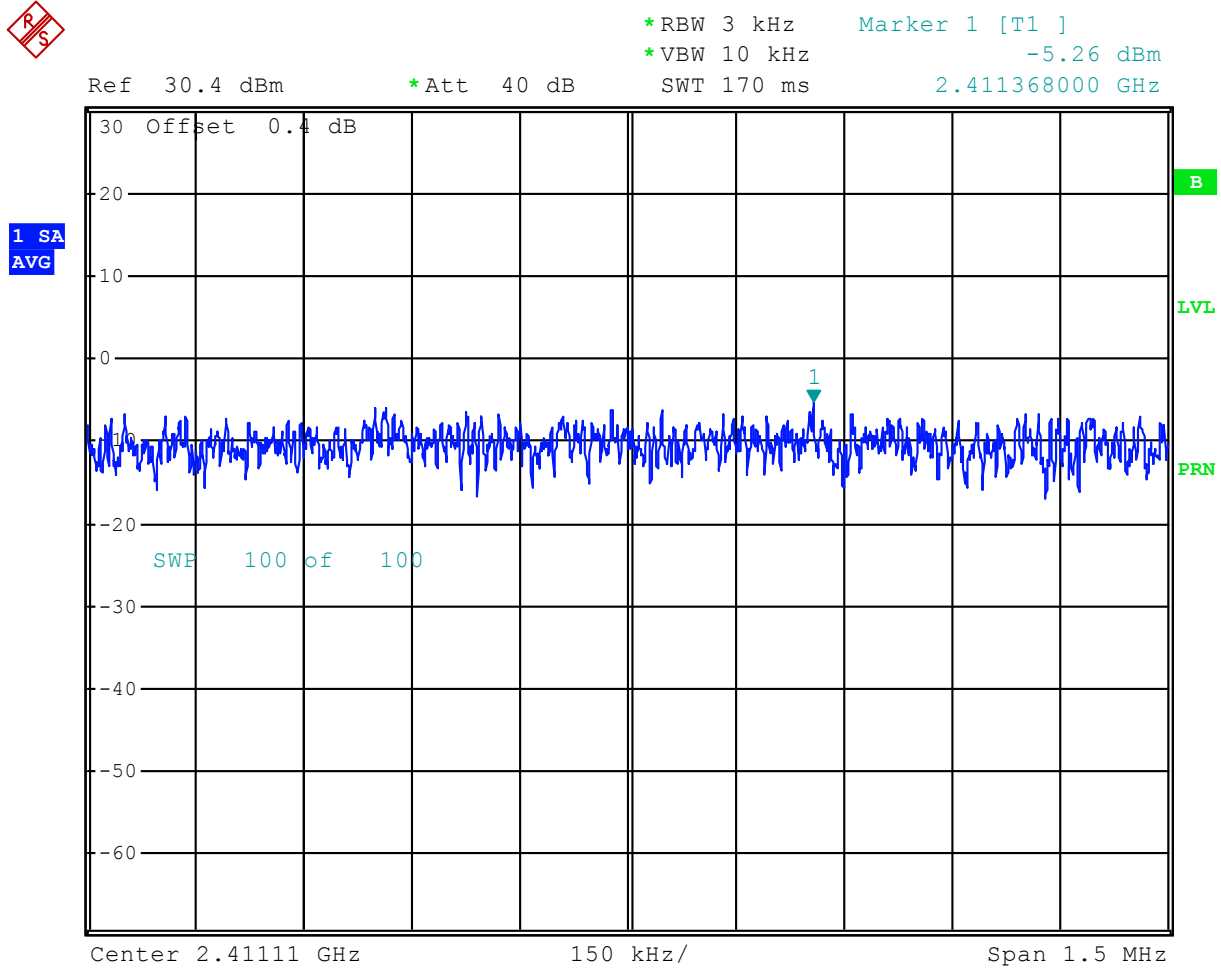
4.3.3 Test Result

The results are presented on the following plots 3.1 – 3.6 and summarized in the table below.

Channel	Frequency MHz	Standard	Date rate Mbps	PSD (average) dBm	PSD Limit dBm	Margin dB	Plot
1	2412	802.11b	11	-5.3	8.0	-13.3	3.1
1	2412	802.11g	9	-13.5	8.0	-21.5	3.2
6	2437	802.11b	11	-4.7	8.0	-12.7	3.3
6	2437	802.11g	9	-11.4	8.0	-19.4	3.4
11	2462	802.11b	11	-5.2	8.0	-13.2	3.5
11	2462	802.11g	9	-12.2	8.0	-20.2	3.6

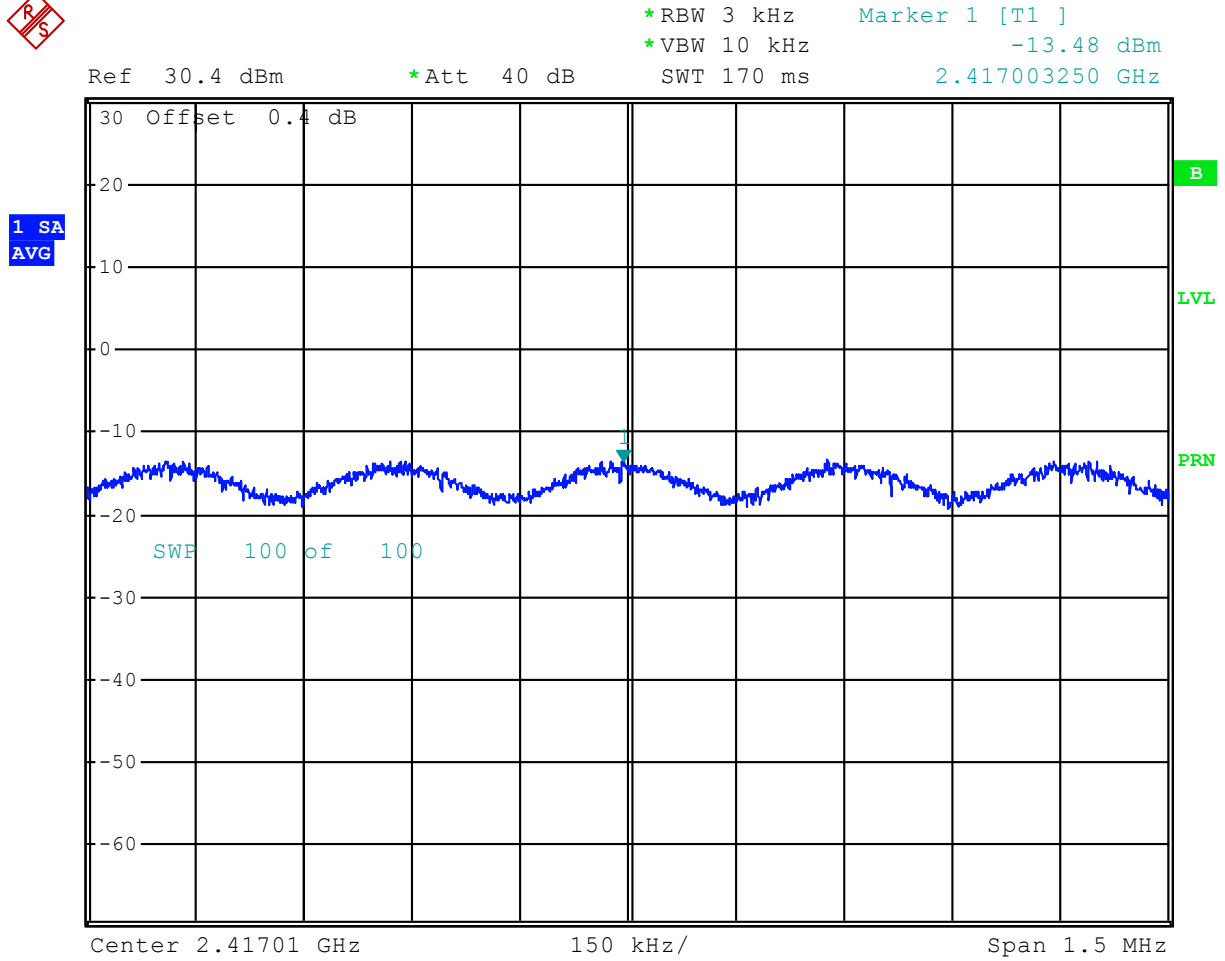
The EUT passed by 12.7 dB

Plot 3.1



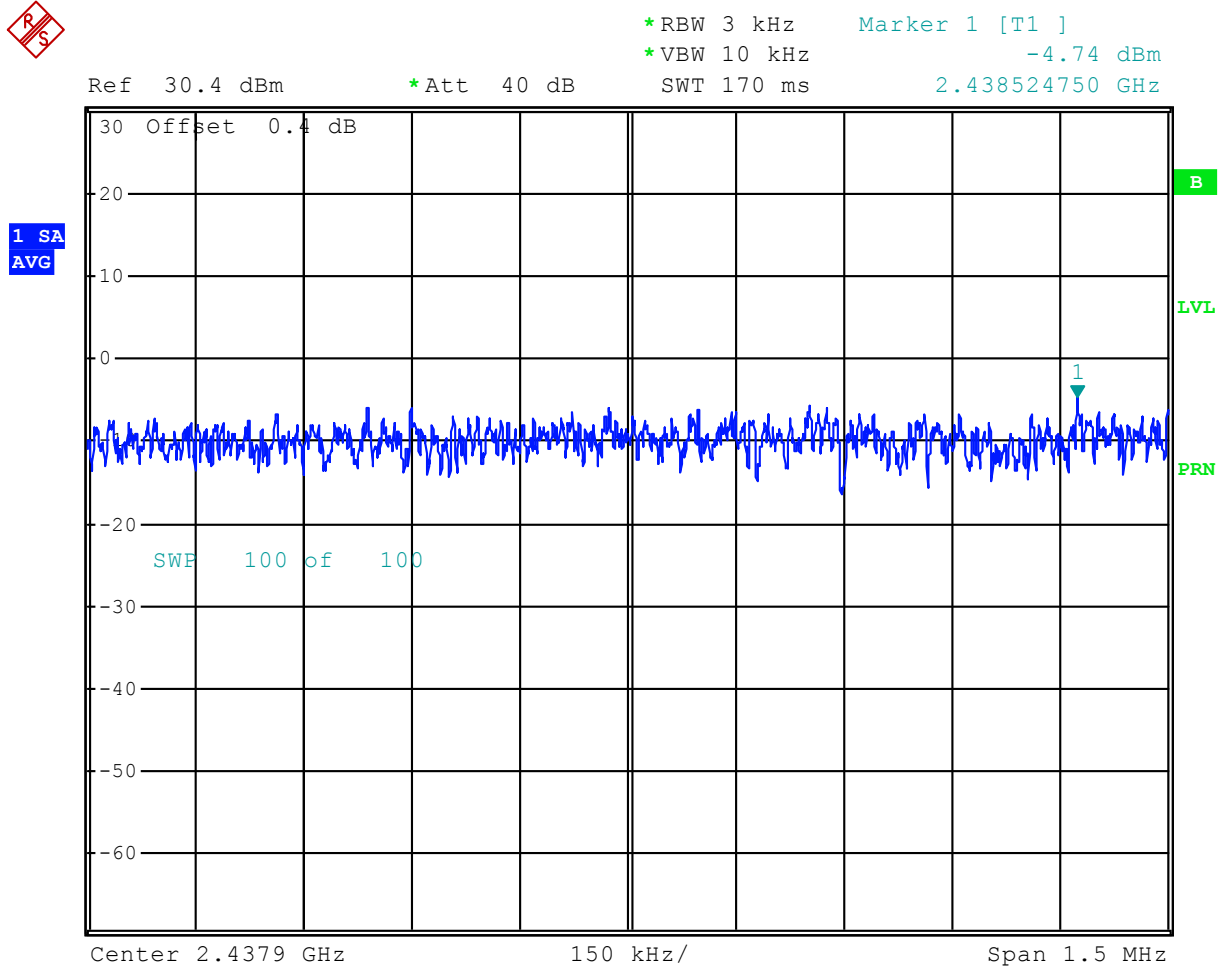
Comment: PSD, Ch 1, CCK 11 Mbps
 Date: 6.MAR.2008 21:41:31

Plot 3.2



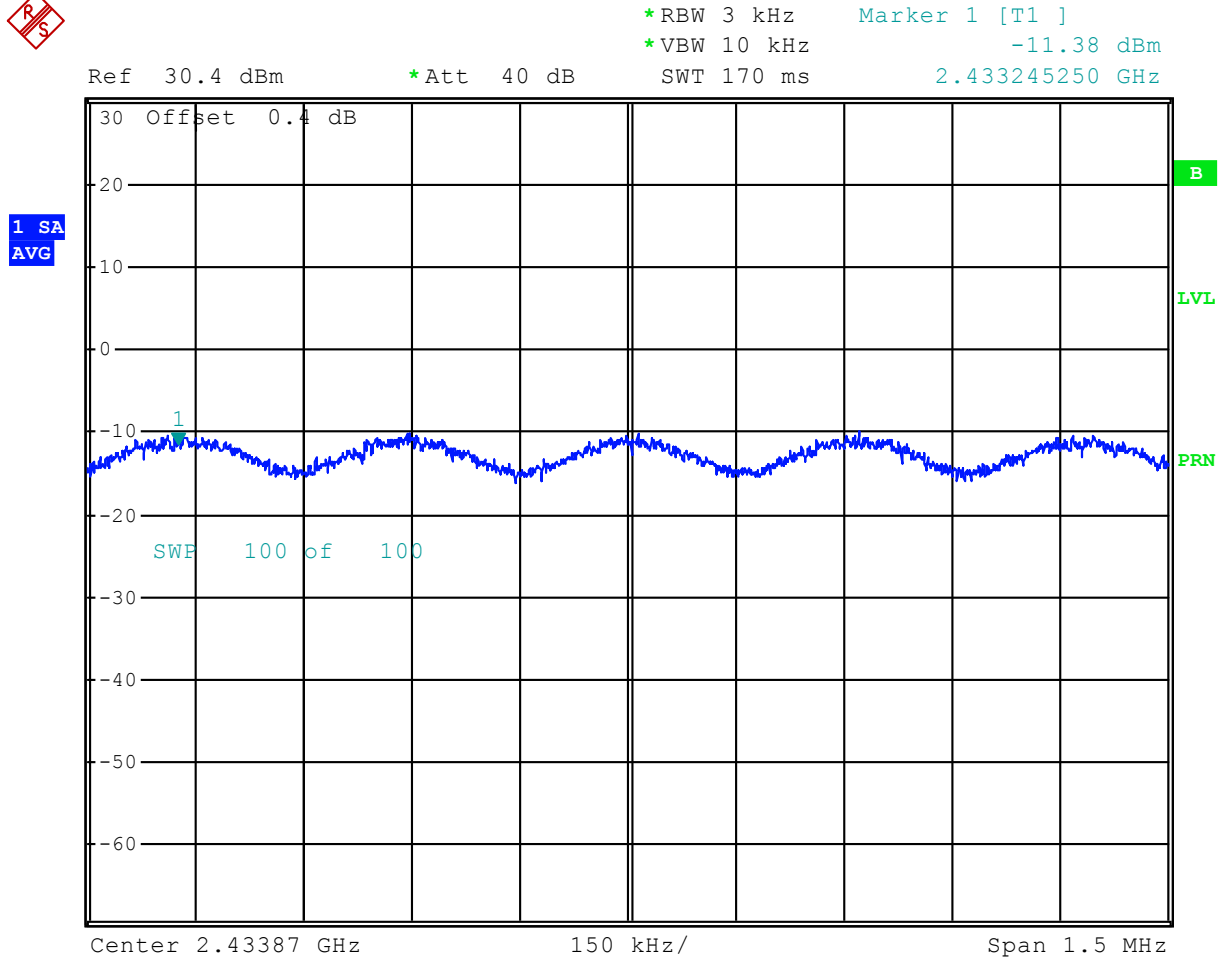
Comment: PSD, Ch 1, OFDM 9 Mbps
 Date: 6.MAR.2008 21:44:06

Plot 3.3



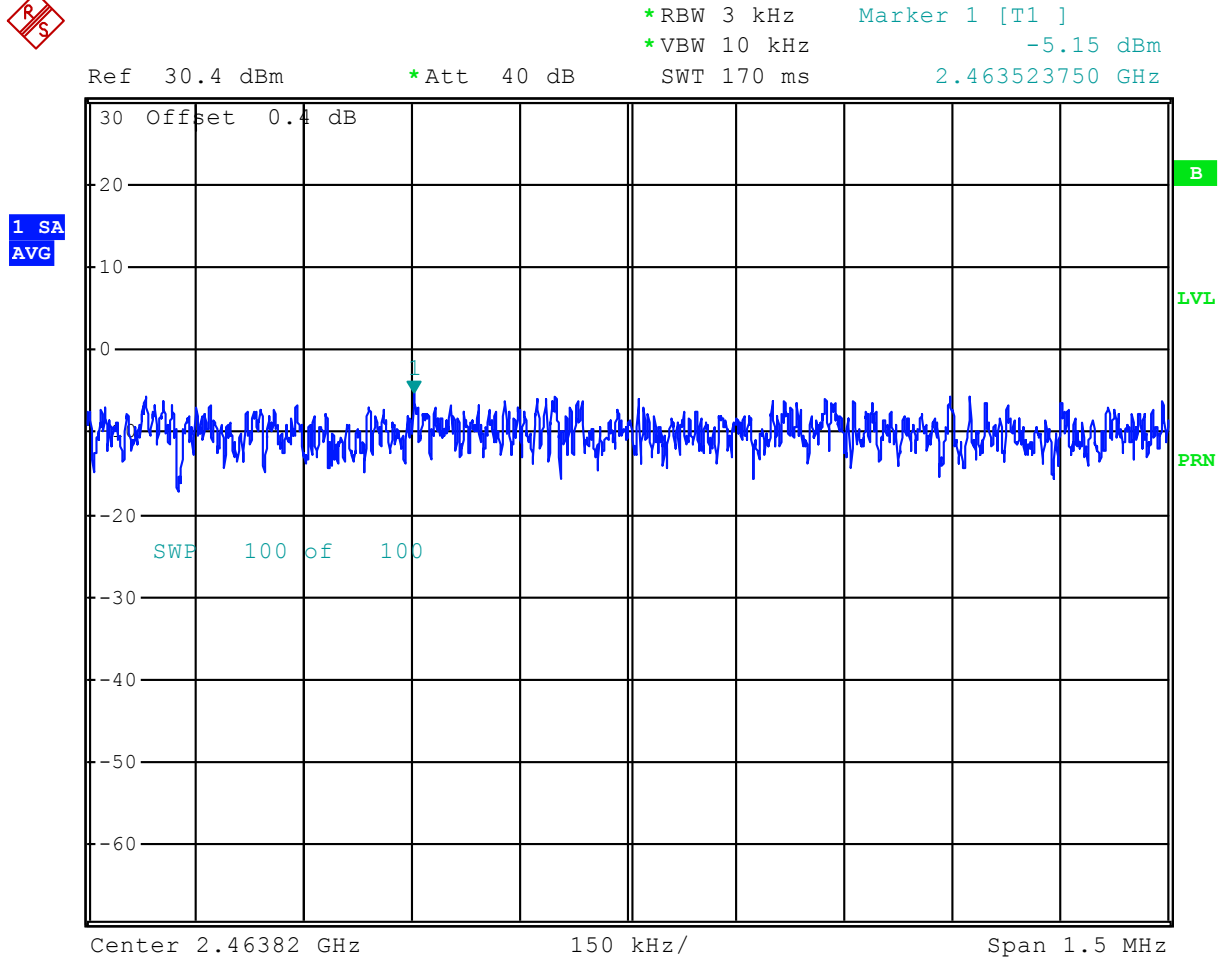
Comment: PSD, Ch 6, CCK 11 Mbps
Date: 6.MAR.2008 21:39:32

Plot 3.4



Comment: PSD, Ch 6, OFDM 9 Mbps
 Date: 6.MAR.2008 21:37:04

Plot 3.5

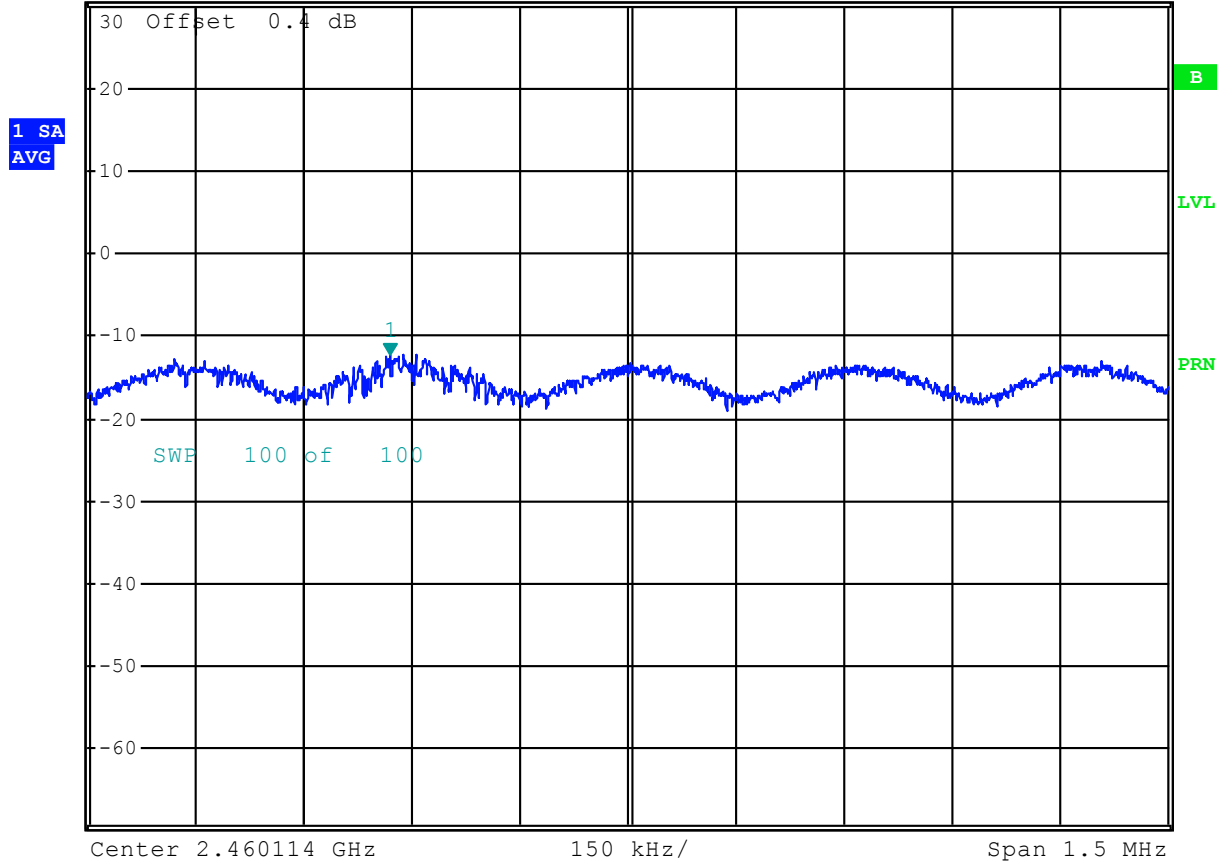


Comment: PSD, Ch 11, CCK 11 Mbps
Date: 6.MAR.2008 21:29:13

Plot 3.6



*RBW 3 kHz Marker 1 [T1]
 *VBW 10 kHz -12.17 dBm
 Ref 30.4 dBm *Att 40 dB SWT 170 ms 2.459784000 GHz



Comment: PSD, Ch 11, OFDM 9 Mbps
 Date: 6.MAR.2008 21:33:34

4.4 Out-of-Band Conducted Emissions, FCC Rule 15.247(c)

4.4.1 Requirement

In any 100 kHz bandwidths outside the EUT pass-band, the RF power shall be at least 30 dB below that of the maximum in-band 100 kHz emissions.

4.4.2 Procedure

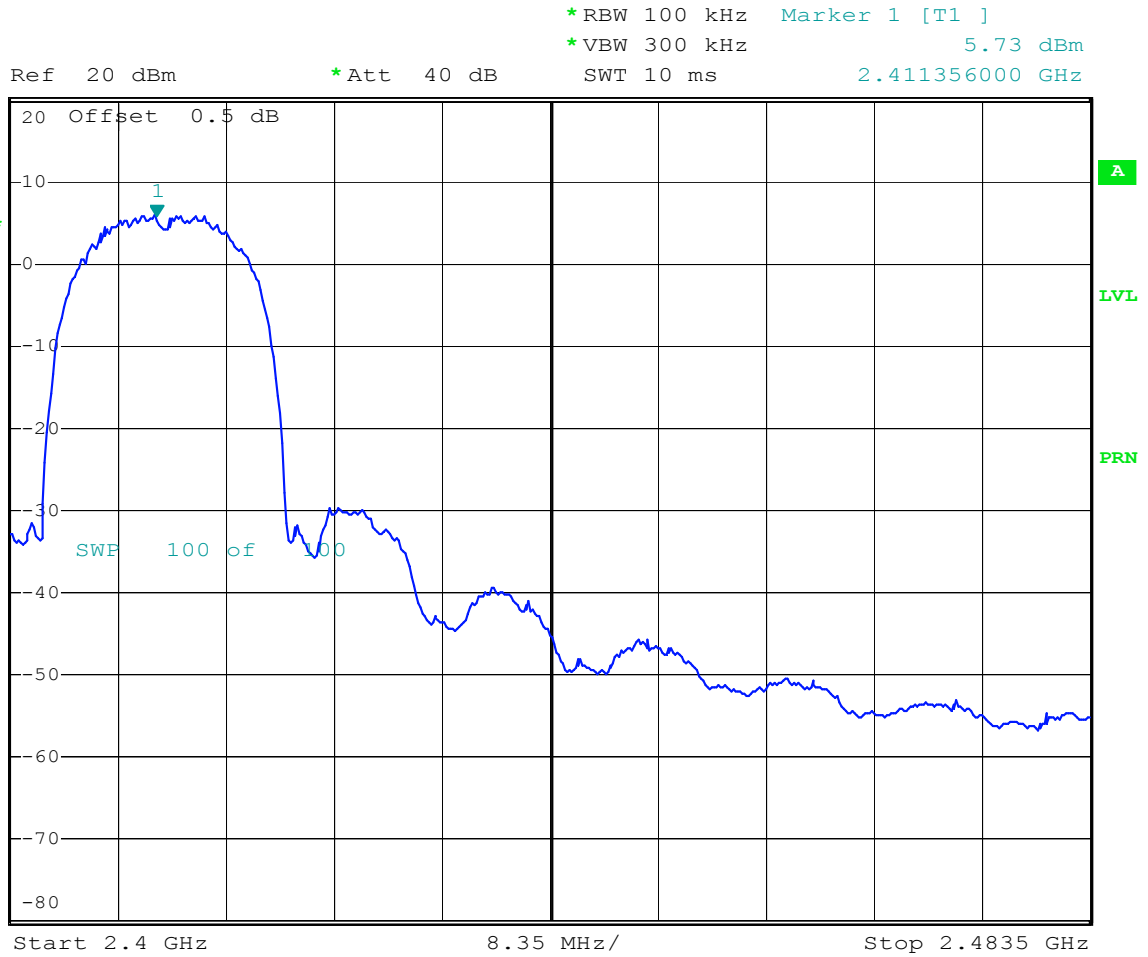
A spectrum analyzer was connected to the antenna port of the transmitter. Analyzer Resolution Bandwidth was set to 100 kHz. For each channel investigated, the in-band and out-of-band emission measurements were performed using a ample detector and averaging over 100 traces. The out-of-band emissions were measured from 30 MHz to 25 GHz.

4.4.3 Test Result

Refer to the table below and plots. The worst-case attenuation is 36.1 dB (see plots 4.2 and 4.4).

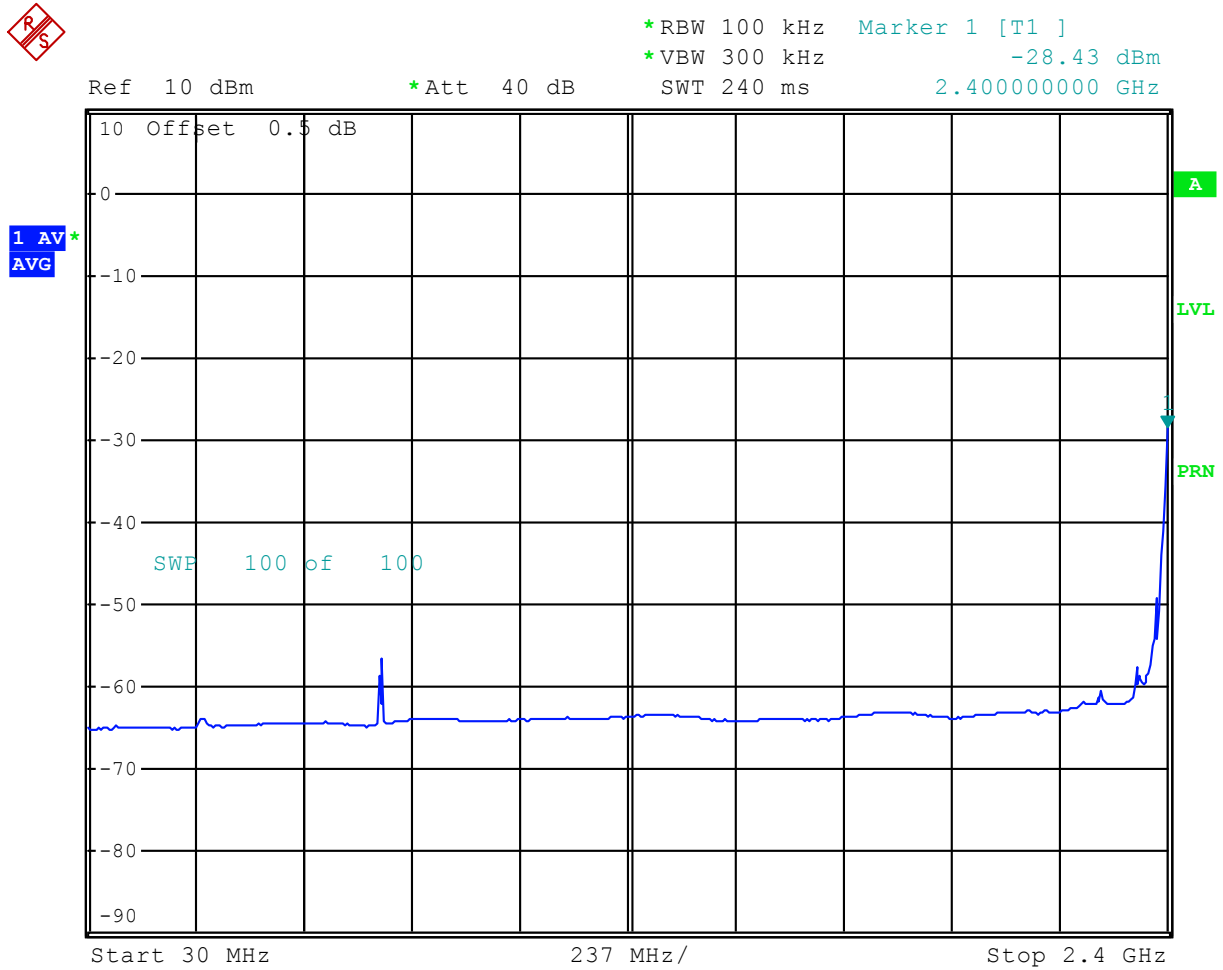
Frequency (MHz)	Channel	Standard	Data rate Mbps	Description	Plot
2412	1	802.11b	11	In-band	4.1
	1	802.11g	9	In-band	4.2
	1	802.11b	11	Scan 30 MHz – 2.4 GHz	4.3
	1	802.11g	9	Scan 30 MHz – 2.4 GHz	4.4
	1	802.11b	11	Scan 2.4835 GHz – 10 GHz	4.5
	1	802.11g	9	Scan 2.4835 GHz – 10 GHz	4.6
	1	802.11b	11	Scan 10 GHz – 25 GHz	4.7
	1	802.11g	9	Scan 10 GHz – 25 GHz	4.8
2437	6	802.11b	11	In-band	4.9
	6	802.11g	9	In-band	4.10
	6	802.11b	11	Scan 30 MHz – 2.4 GHz	4.11
	6	802.11g	9	Scan 30 MHz – 2.4 GHz	4.12
	6	802.11b	11	Scan 2.4835 GHz – 10 GHz	4.13
	6	802.11b	11	Scan 10 GHz – 25 GHz	4.14
2462	11	802.11b	11	In-band	4.15
	11	802.11g	9	In-band	4.16
	11	802.11b	11	Scan 30 MHz – 2.4 GHz	4.17
	11	802.11g	9	Scan 30 MHz – 2.4 GHz	4.18
	11	802.11b	11	Scan 2.4835 GHz – 10 GHz	4.19
	11	802.11b	11	Scan 10 GHz – 25 GHz	4.20

Plot 4.1



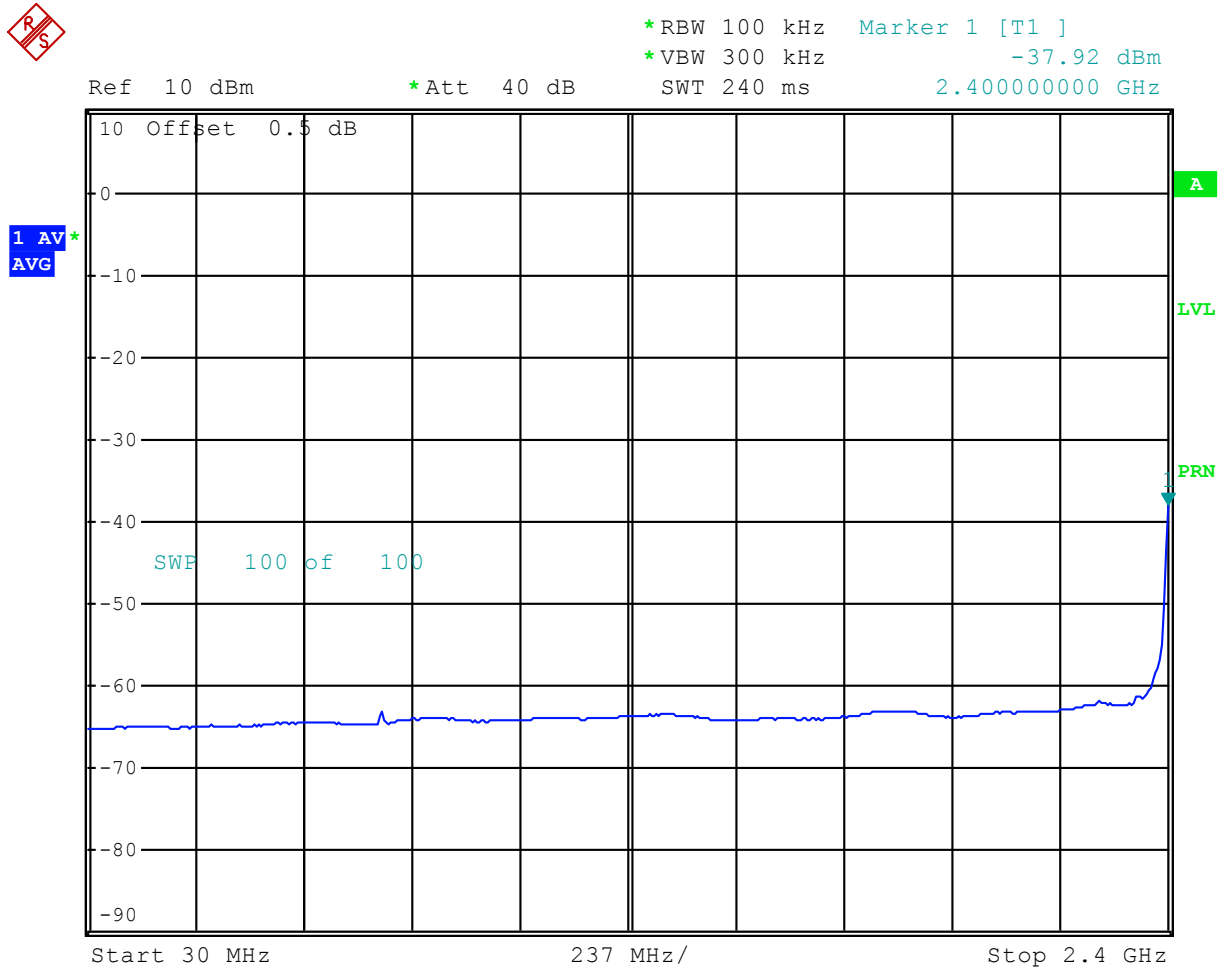
Comment: Conducted out-of-band emission, average, Ch 1, 11 Mbps
 Date: 18.MAR.2008 18:28:04

Plot 4.3



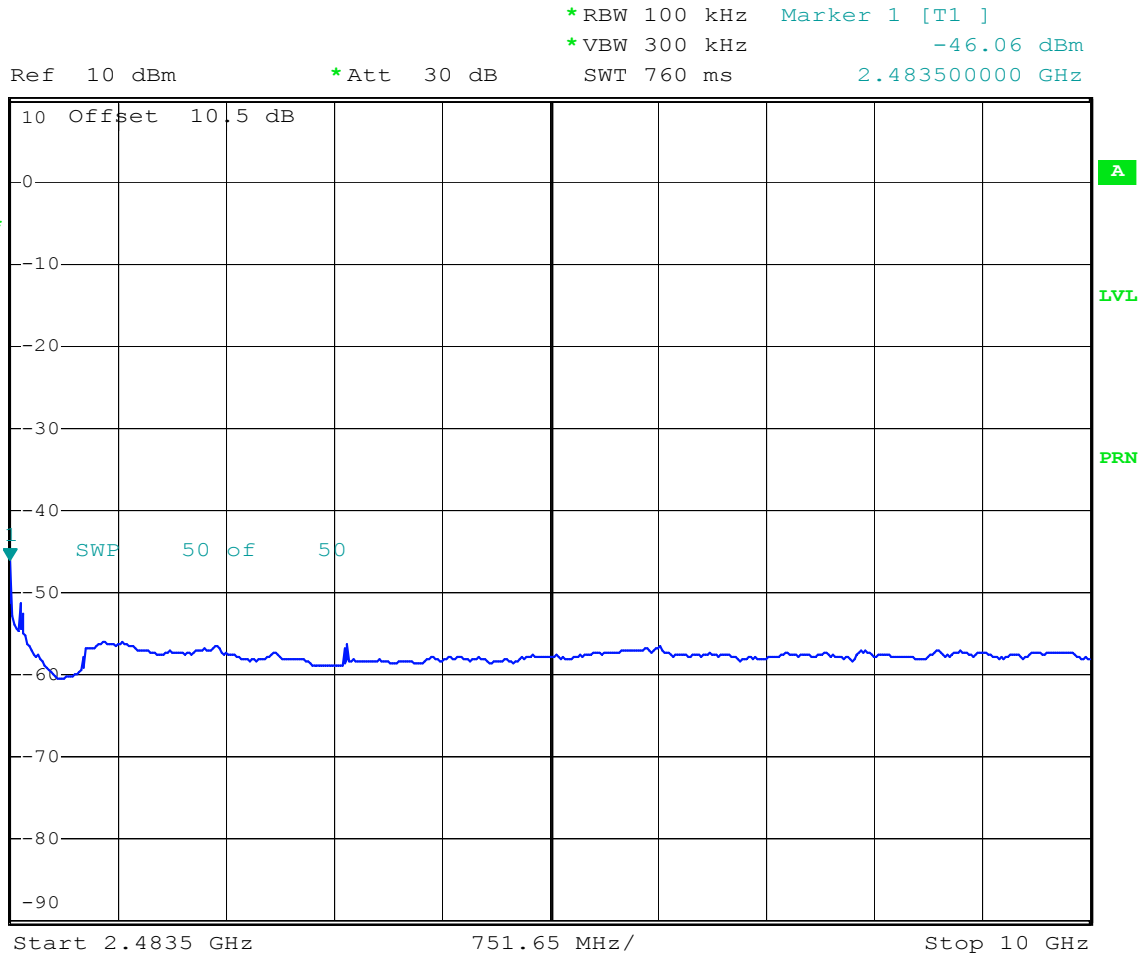
Comment: Conducted out-of-band emissions, average, ch 1, 11 Mbps
 Date: 18.MAR.2008 19:39:46

Plot 4.4



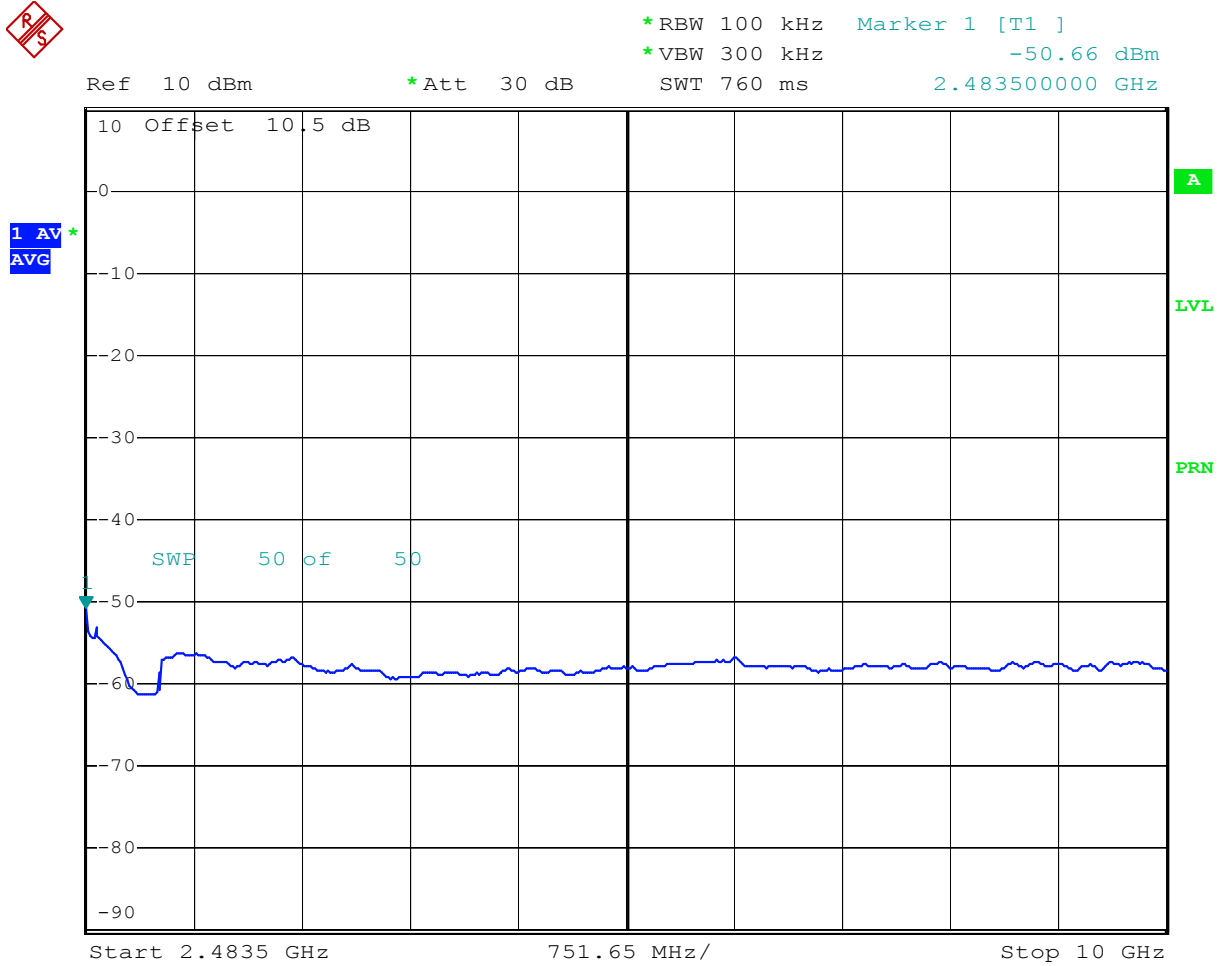
Comment: Conducted out-of-band emissions, average, ch 1, 9 Mbps
 Date: 18.MAR.2008 19:41:47

Plot 4.5



Comment: Conducted out-of-band emission, average, Ch 1, 11 Mbps
 Date: 18.MAR.2008 18:32:10

Plot 4.6

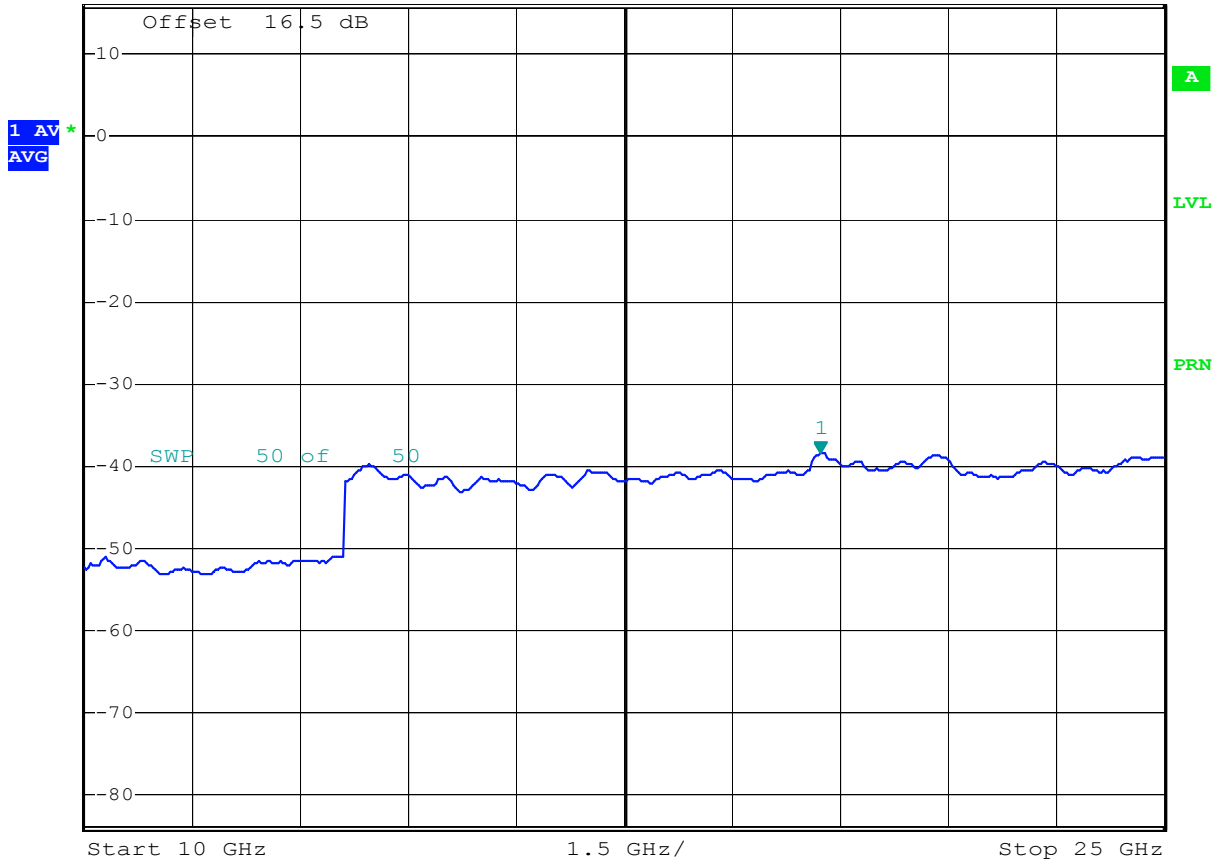


Comment: Conducted out-of-band emission, average, Ch 1, 9 Mbps
 Date: 18.MAR.2008 18:34:21

Plot 4.7

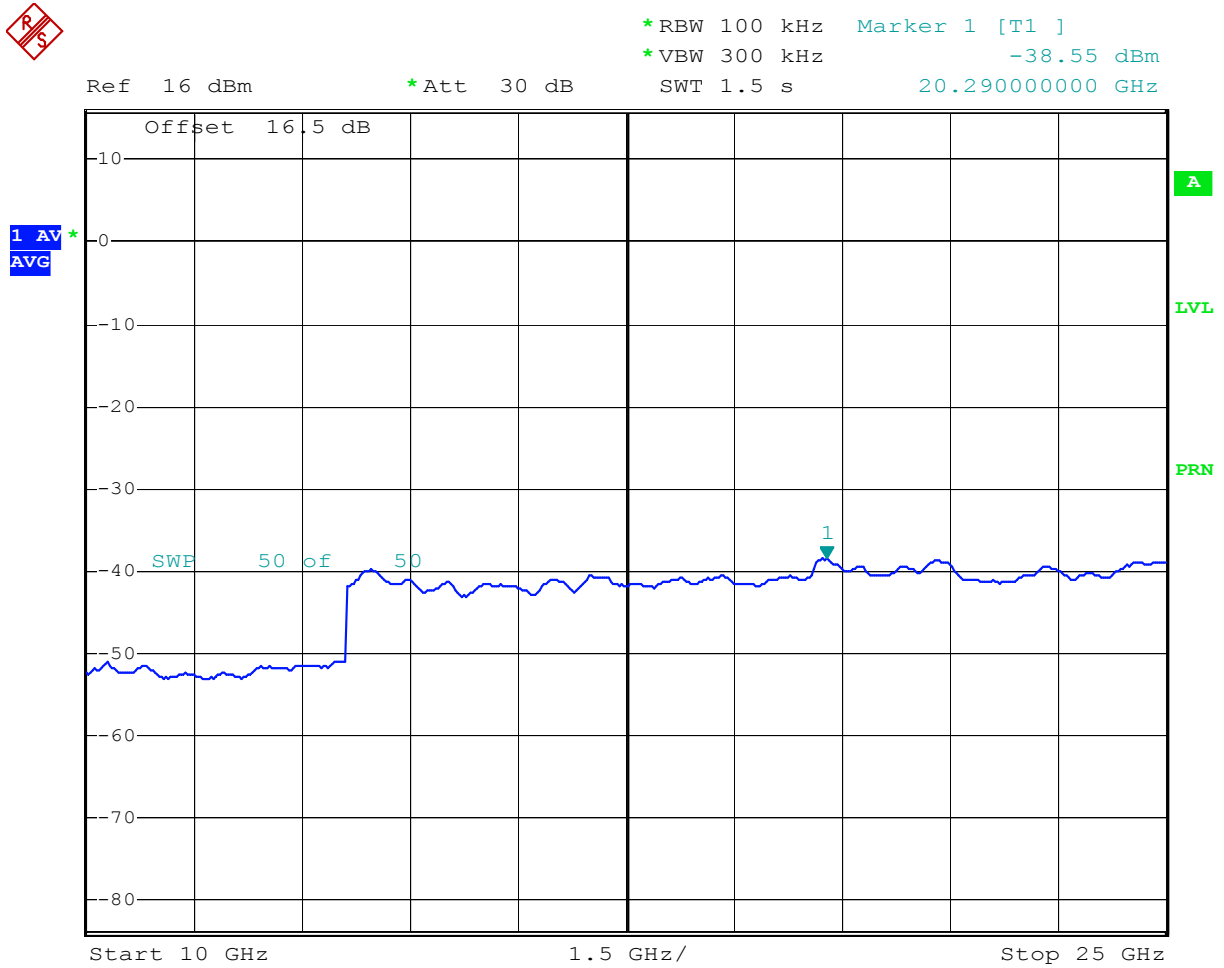


*RBW 100 kHz Marker 1 [T1]
 *VBW 300 kHz -38.52 dBm
 Ref 16 dBm *Att 30 dB SWT 1.5 s 20.23000000 GHz



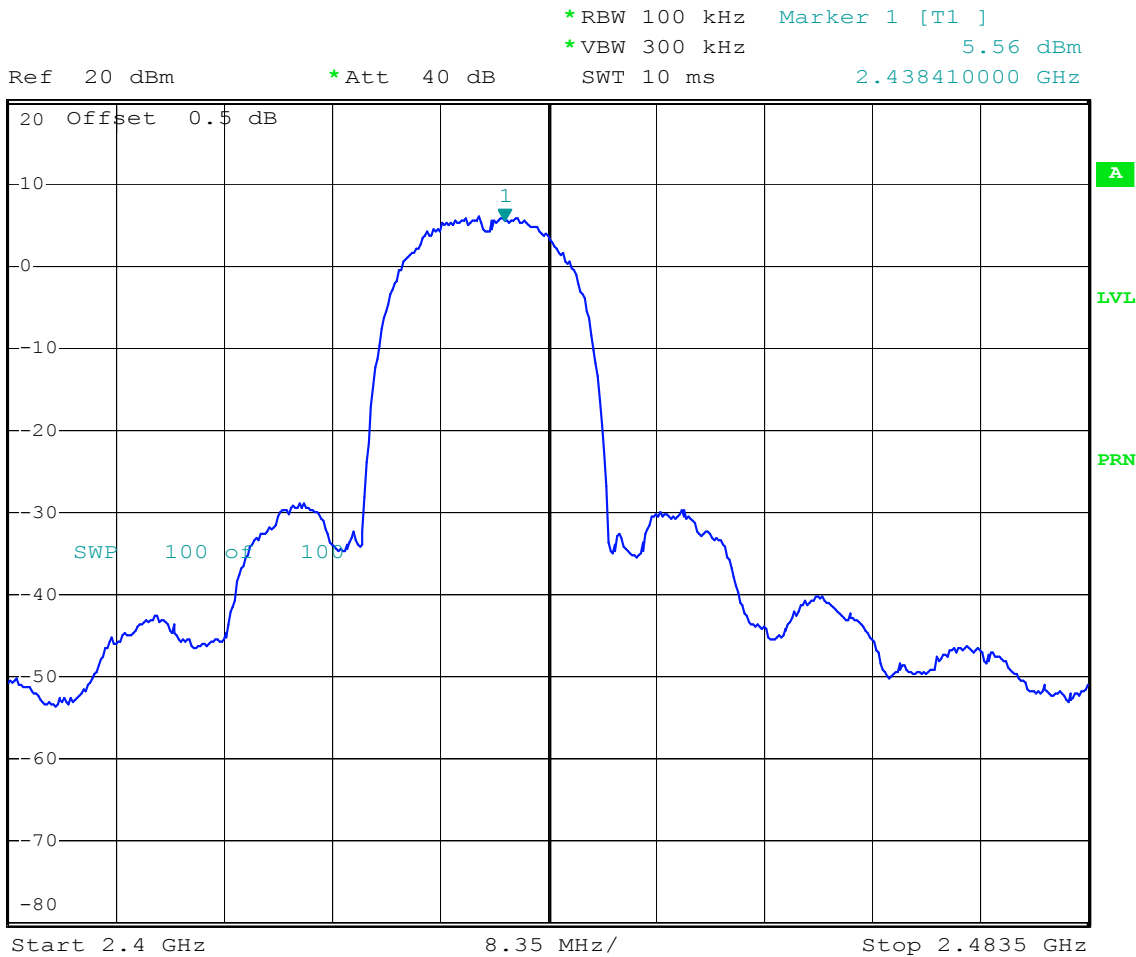
Comment: Conducted out-of-band emission, average, Ch 1, 11 Mbps
 Date: 18.MAR.2008 18:41:24

Plot 4.8



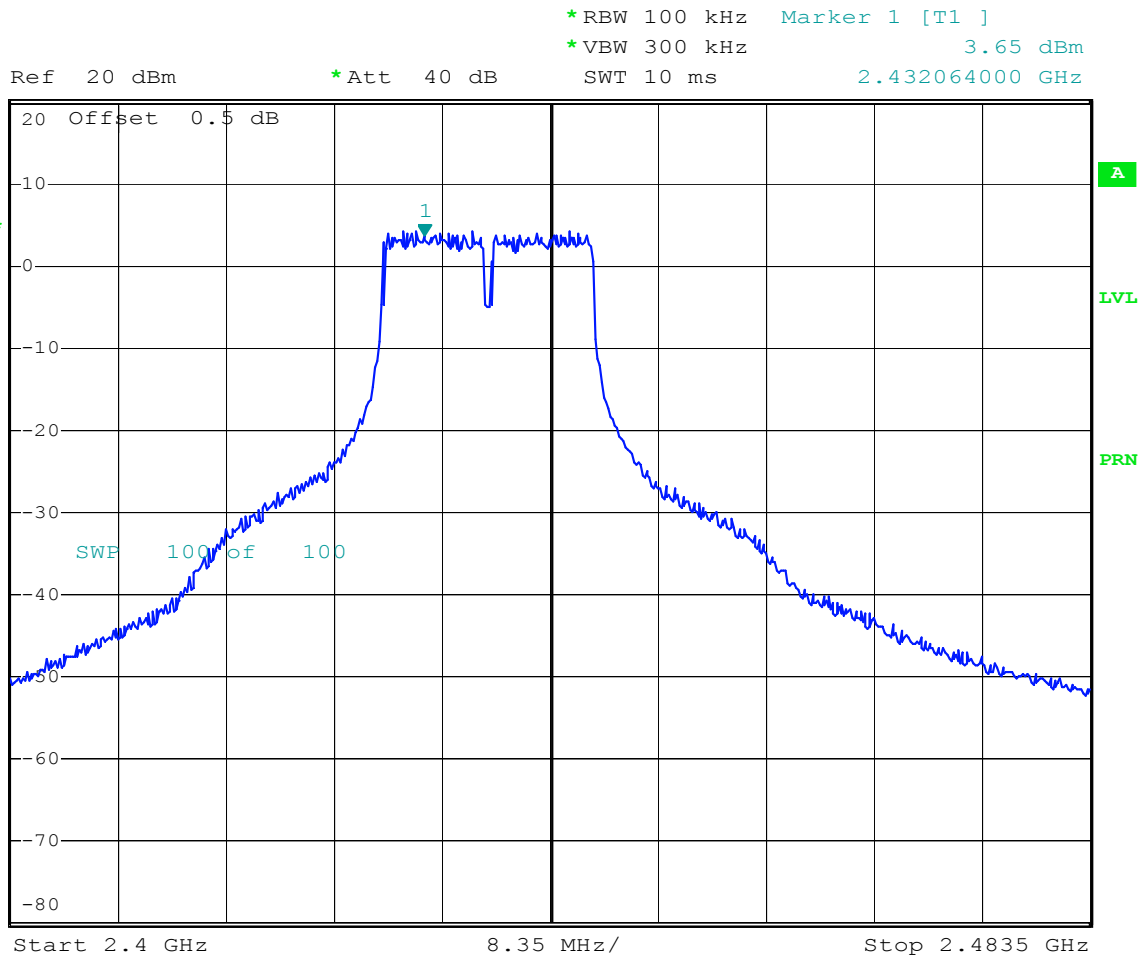
Comment: Conducted out-of-band emission, average, Ch 1, 9 Mbps
 Date: 18.MAR.2008 18:37:28

Plot 4.9



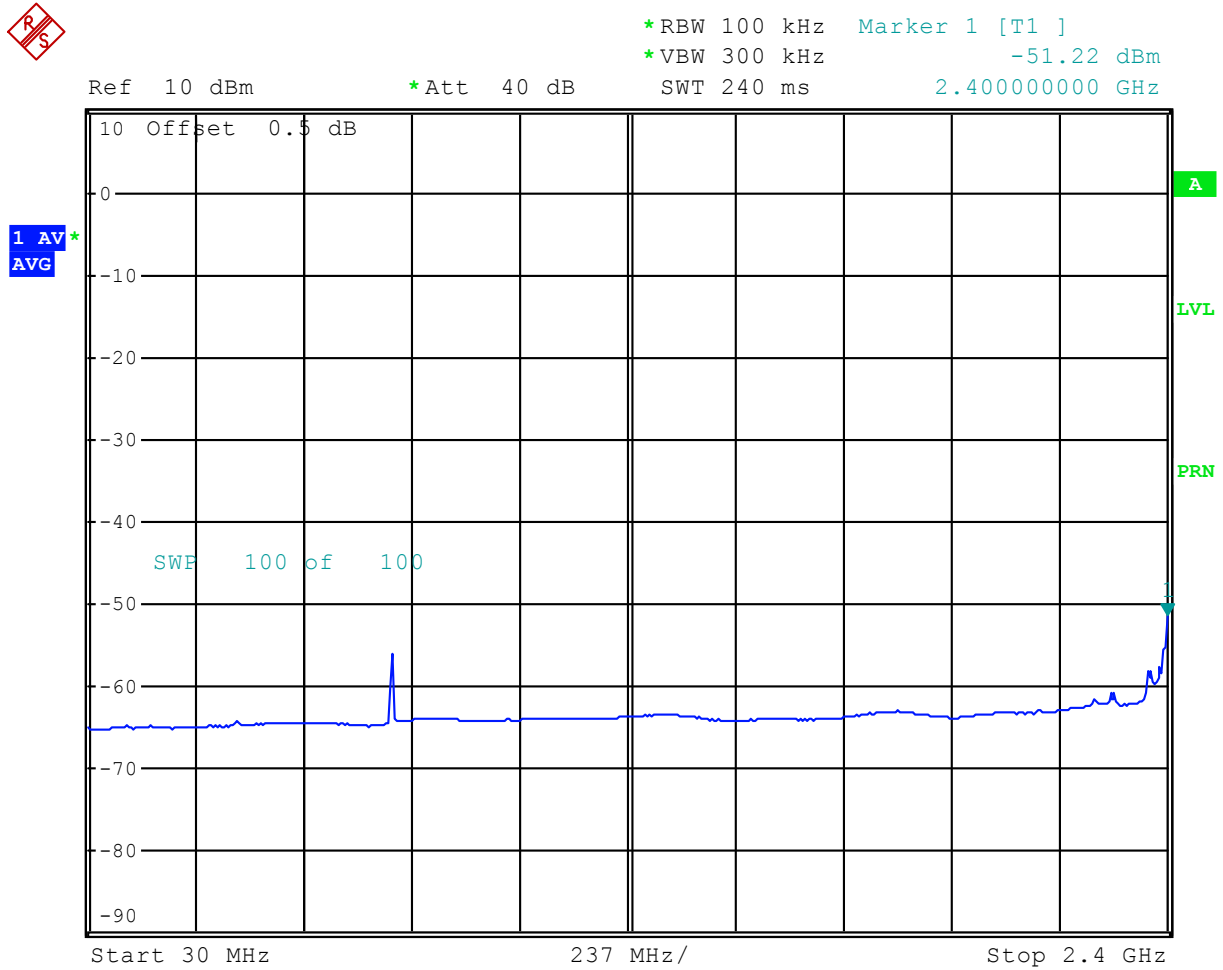
Comment: Conducted out-of-band emission, average, Ch 6, 11 Mbps
Date: 18.MAR.2008 18:49:40

Plot 4.10



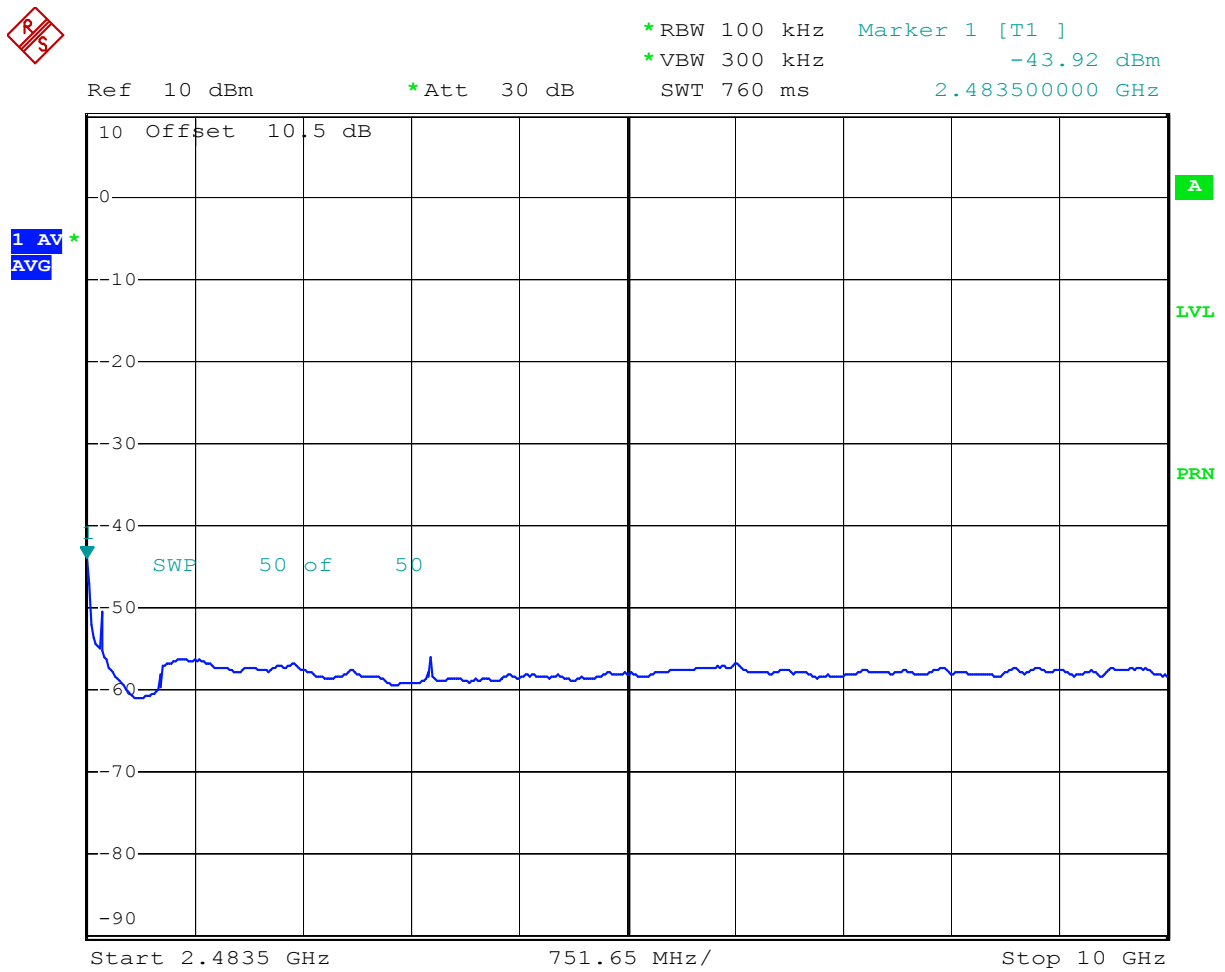
Comment: Conducted out-of-band emission, average, Ch 6, 9 Mbps
Date: 18.MAR.2008 18:48:33

Plot 4.11



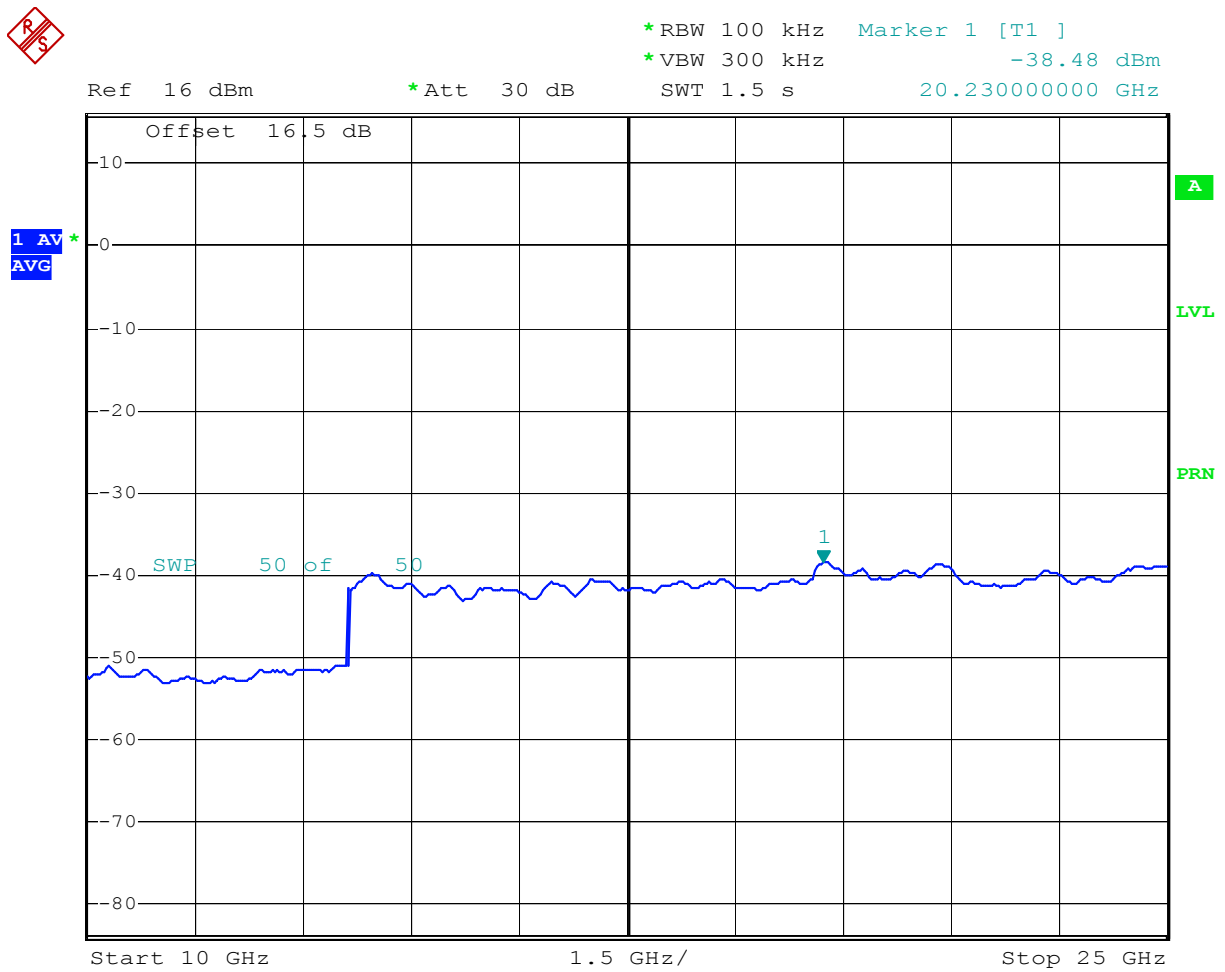
Comment: Conducted out-of-band emissions, average, ch 6, 11 Mbps
 Date: 18.MAR.2008 19:45:43

Plot 4.13



Comment: Conducted out-of-band emission, average, Ch 6, 11 Mbps
 Date: 18.MAR.2008 19:18:28

Plot 4.14

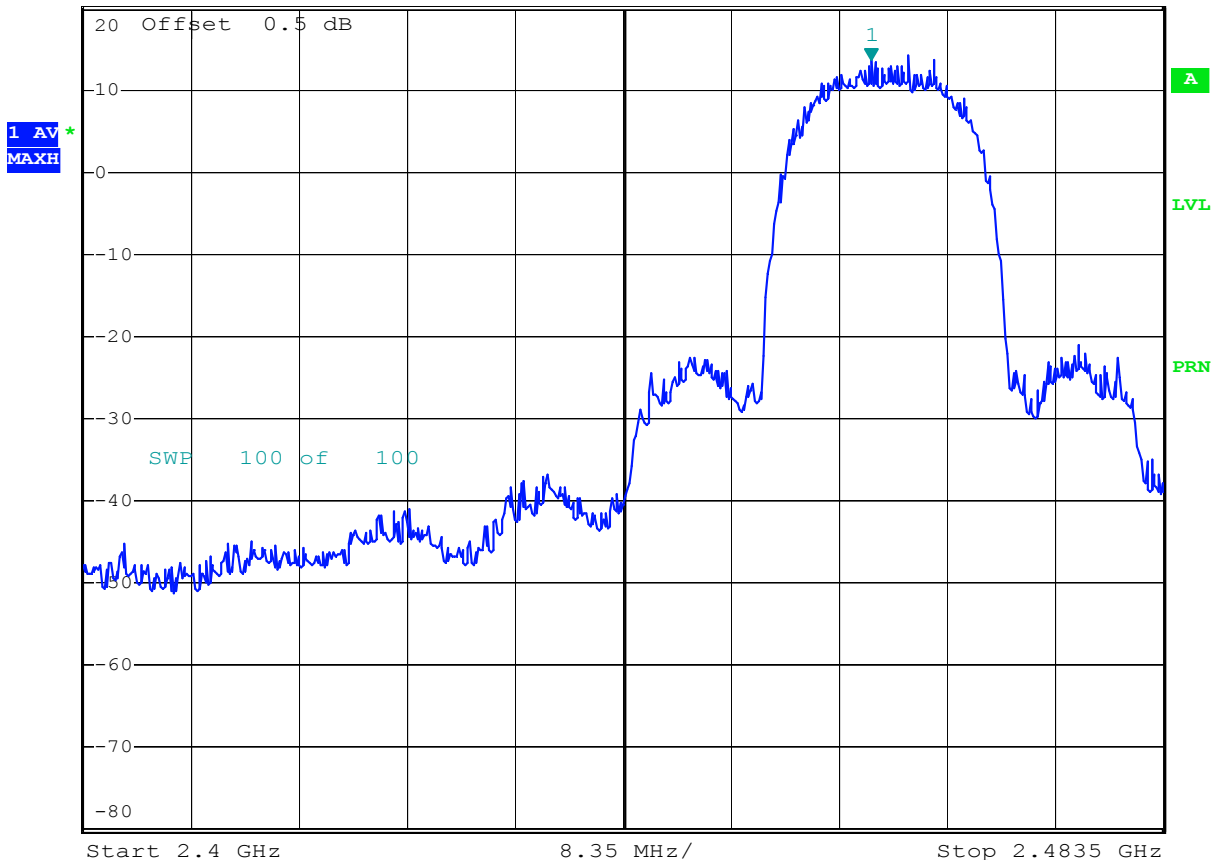


Comment: Conducted out-of-band emission, average, Ch 6, 11 Mbps
 Date: 18.MAR.2008 19:25:27

Plot 4.15

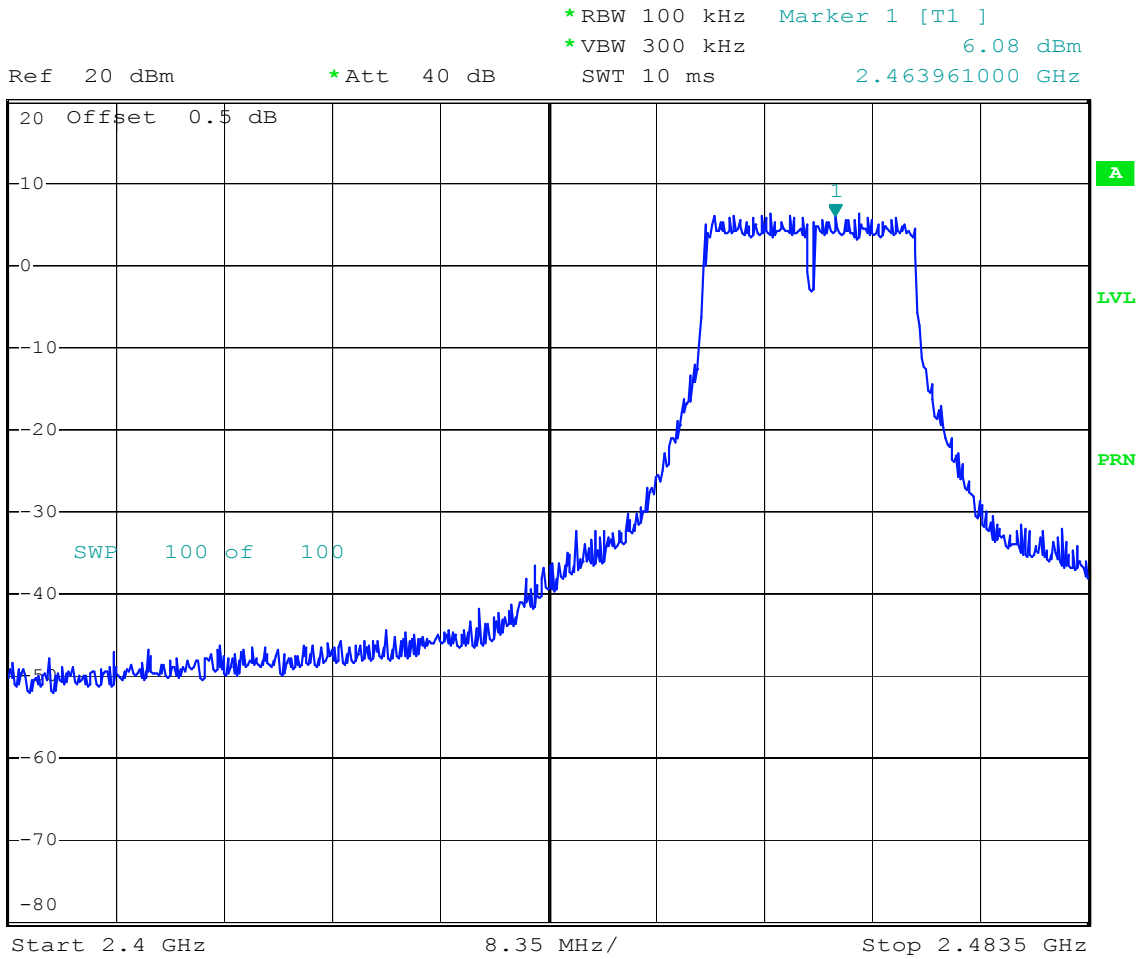


Ref 20 dBm *Att 40 dB *RBW 100 kHz Marker 1 [T1]
 *VBW 300 kHz 13.66 dBm
 SWT 10 ms 2.460955000 GHz



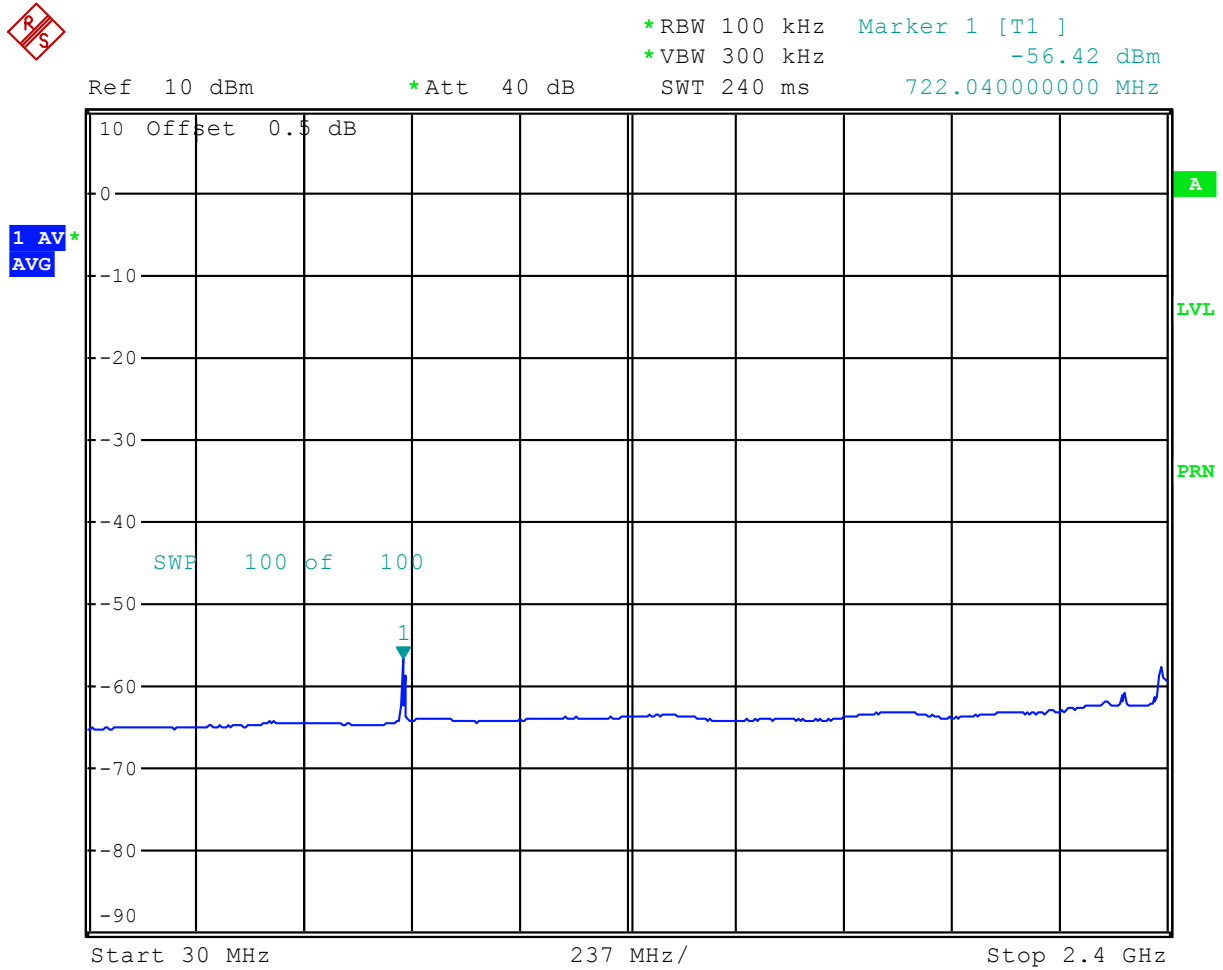
Comment: Conducted out-of-band emission, average, Ch 11, 11 Mbps
 Date: 18.MAR.2008 19:32:16

Plot 4.16



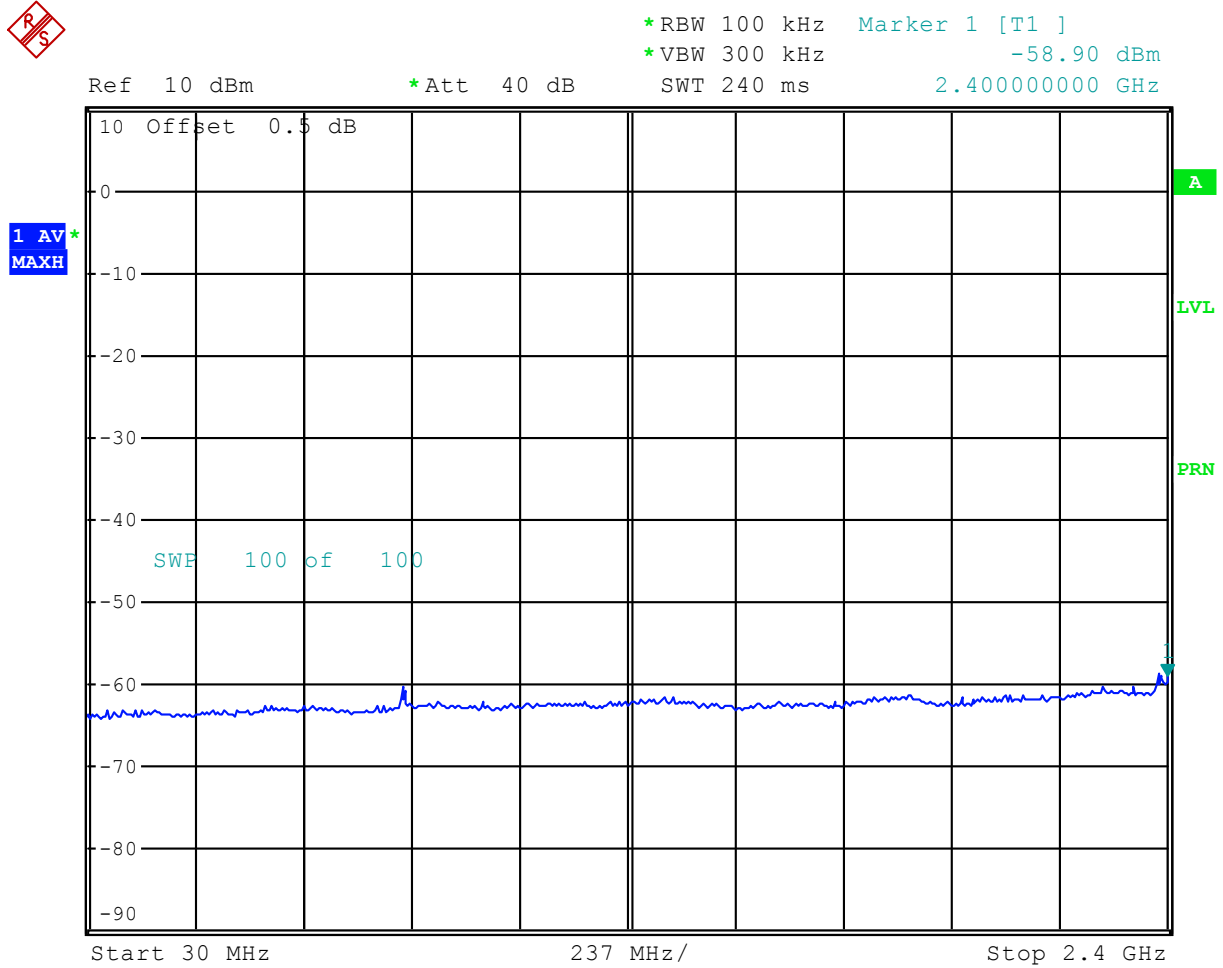
Comment: Conducted out-of-band emission, average, Ch 11, 9 Mbps
 Date: 18.MAR.2008 19:31:15

Plot 4.17



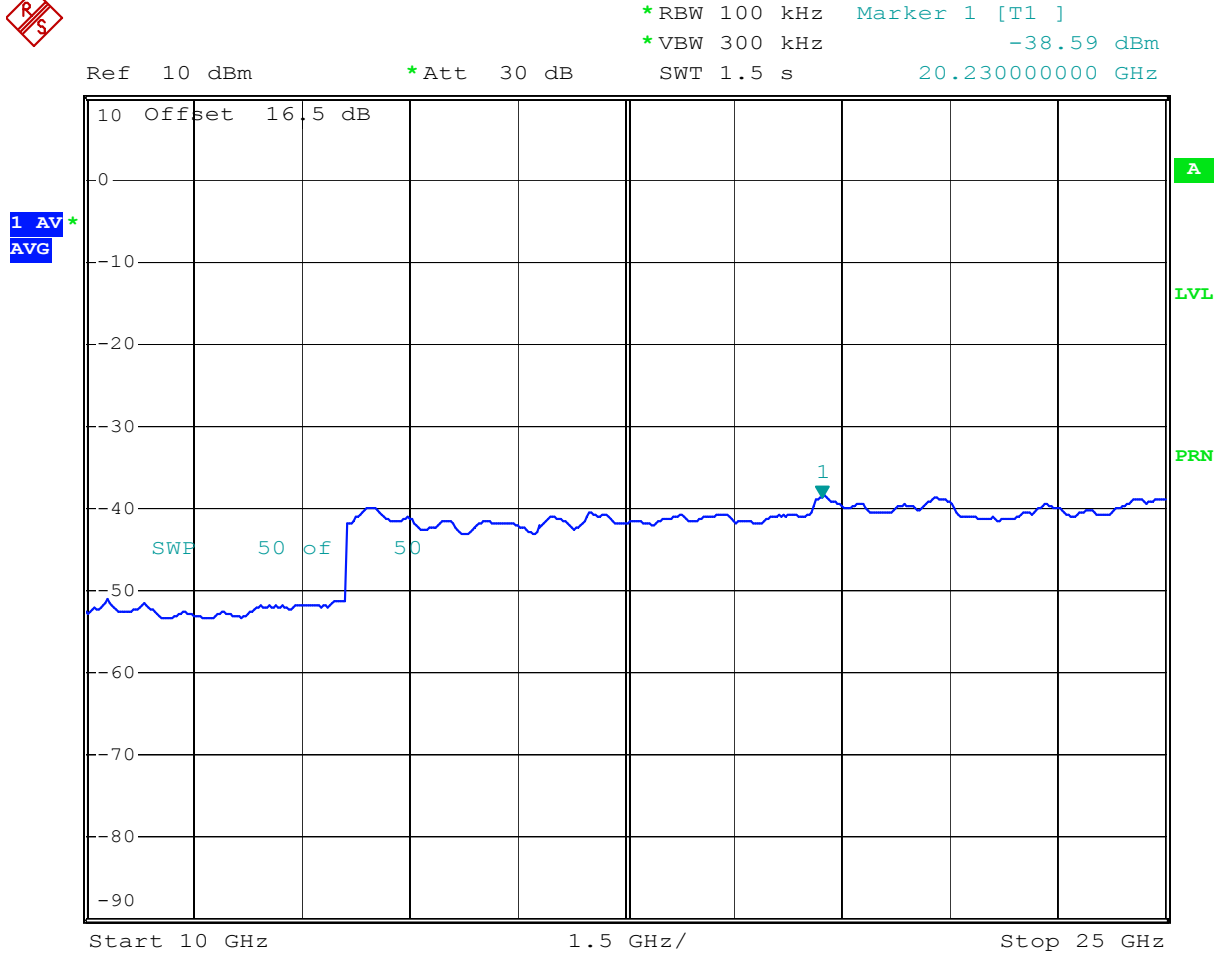
Comment: Conducted out-of-band emissions, average, ch 11, 11 Mbps
Date: 18.MAR.2008 19:48:12

Plot 4.18



Comment: Conducted out-of-band emissions, average, ch 11, 9 Mbps
Date: 18.MAR.2008 19:50:03

Plot 4.20



Comment: Conducted out-of-band emission, average, Ch 11, 11 Mbps
 Date: 18.MAR.2008 19:42:12

4.5 Out of Band Radiated Emissions (except emissions in restricted bands) FCC Rule 15.247(c)

4.5.1 Procedure

For out of band radiated emissions (except for frequencies in restricted bands) that are close to or that exceed the 20 dB attenuation requirement described in the specification, radiated measurements were performed at a 3 m separation distance to determine whether these emissions complied with the general radiated emission requirement.

4.5.2 Test Result

Test was not performed, the EUT passed out-of-band antenna conducted emission test.

4.6 Transmitter Radiated Emissions in Restricted Bands, FCC Rule 15.247(c), 15.209, 15.205

4.6.1 Requirement

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)).

4.6.2 Procedure

Radiated emission measurements were performed from 30 MHz to 25,000 MHz. Spectrum Analyzer Resolution Bandwidth is 100 kHz or greater for frequencies 30 MHz to 1000 MHz, 1 MHz - for frequencies above 1000 MHz.

The EUT is placed on a plastic turntable. If the EUT attaches to peripherals, they are connected and operational (as typical as possible). During testing, all cables were manipulated to produce worst-case emissions. The signal is maximized through rotation. The antenna height and polarization are varied during the search for maximum signal level. The antenna height is varied from 1 to 4 meters.

Radiated emissions are taken at three meters unless the signal level is too low for measurement at that distance. If necessary, a pre-amplifier is used and/or the test is conducted at a closer distance. All readings are extrapolated back to the equivalent three-meter reading using inverse scaling with distance.

Data is included of the worst-case configuration (the configuration which resulted in the highest emission levels).

4.6.3 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$FS = RA + AF + CF - AG$; if measurement is performed at a distance other than specified in the rule, a Distance Correction Factor (DCF) shall be added.

Where FS = Field Strength in $\text{dB}(\mu\text{V}/\text{m})$

RA = Receiver Amplitude (including preamplifier) in $\text{dB}(\mu\text{V})$; AF = Antenna Factor in $\text{dB}(1/\text{m})$

CF = Cable Attenuation Factor in dB ; AG = Amplifier Gain in dB

Assume a receiver reading of $52.0 \text{ dB}(\mu\text{V})$ is obtained. The antennas factor of $7.4 \text{ dB}(1/\text{m})$ and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted, giving field strength of $32 \text{ dB}(\mu\text{V}/\text{m})$. This value in $\text{dB}(\mu\text{V}/\text{m})$ was converted to its corresponding level in $\mu\text{V}/\text{m}$.

$RA = 52.0 \text{ dB}(\mu\text{V})$

$AF = 7.4 \text{ dB}(1/\text{m})$

$CF = 1.6 \text{ dB}$

$AG = 29.0 \text{ dB}$

$FS = 52.0 + 7.4 + 1.6 - 29.0 = 32 \text{ dB}(\mu\text{V}/\text{m})$.

Level in $\mu\text{V}/\text{m} = \text{Common Antilogarithm} [(32 \text{ dB}\mu\text{V}/\text{m})/20] = 39.8 \mu\text{V}/\text{m}$.

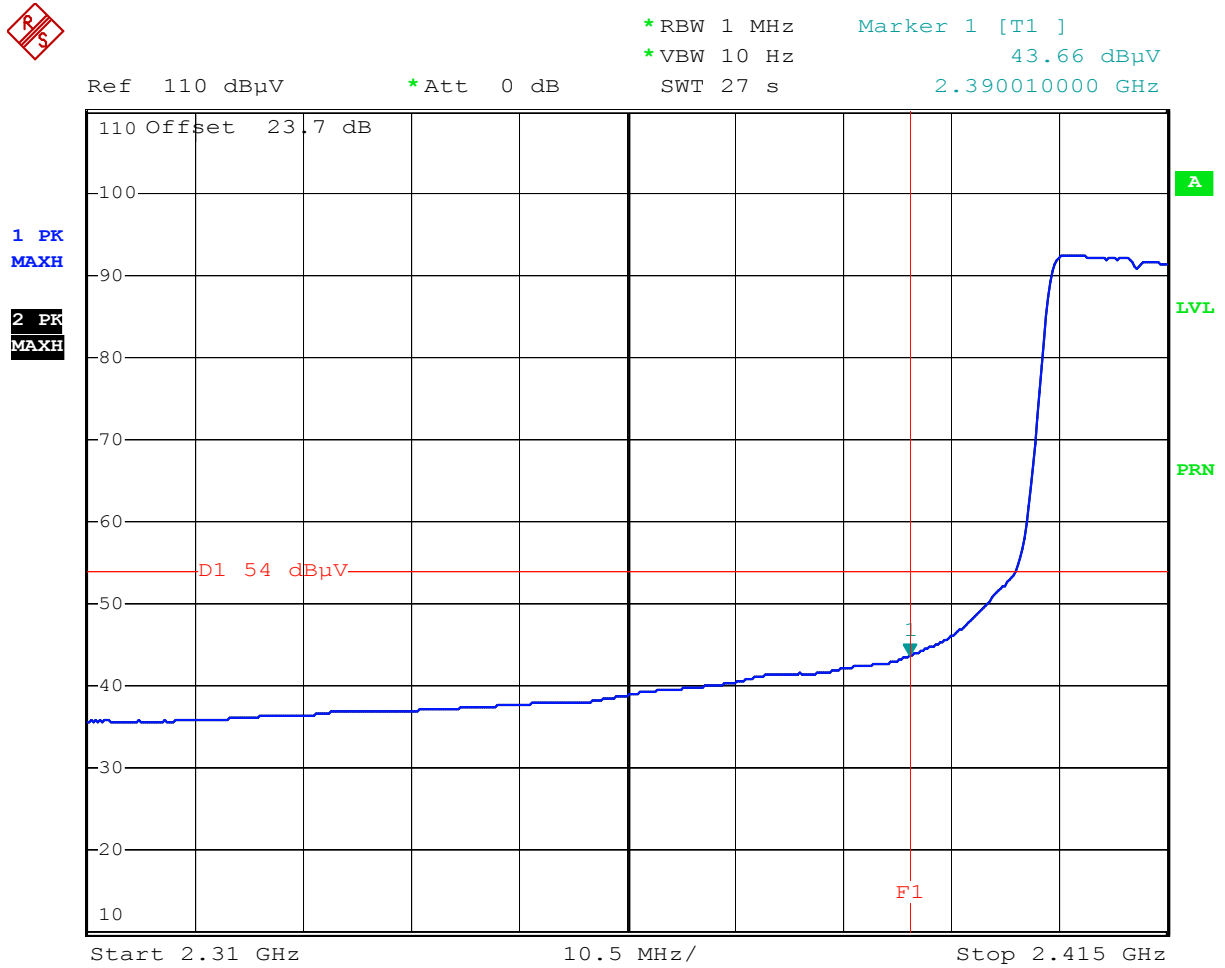
4.6.4 Test Result – bands: 2483.5 – 2500 MHz and 2310 – 2390 MHz

On the following graphs 6.2, 6.4, 6.6, 6.8, the antenna factor and cable loss are included in the spectrum analyzer reference level OFFSET. Therefore, the Marker Reading shows the Peak Field Strength at 3m distance.

On the following graphs 6.1, 6.3, 6.5, 6.7, the antenna factor, cable loss and Duty Cycle Correction Factor of 8 dB are included in the spectrum analyzer reference level OFFSET. Therefore, the Marker Reading shows the Average Field Strength at 3m distance.

The EUT passed the test by 1.4 dB.

Plot 6.1

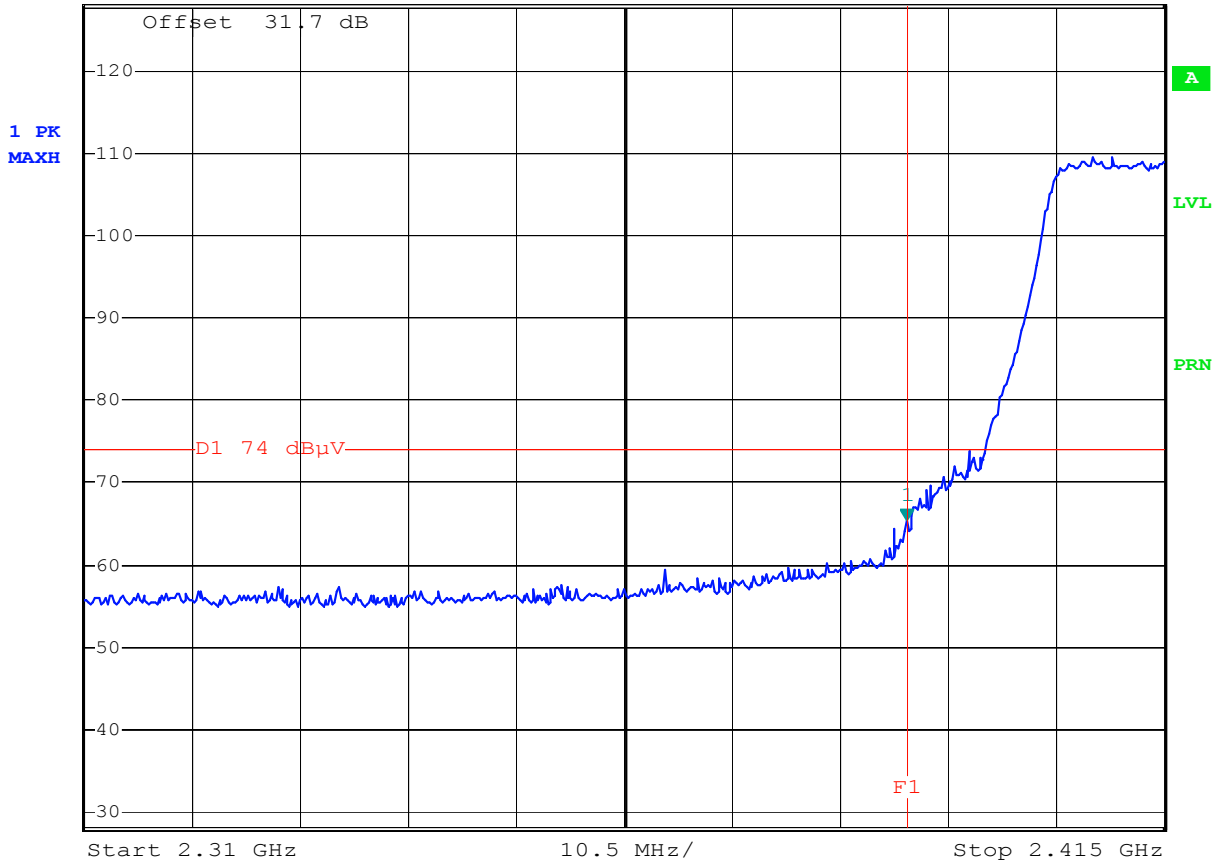


Comment: FS on the band-edge freq. average, Ch 1, OFDM 9 Mbps
 Date: 6.MAR.2008 15:26:39

Plot 6.2

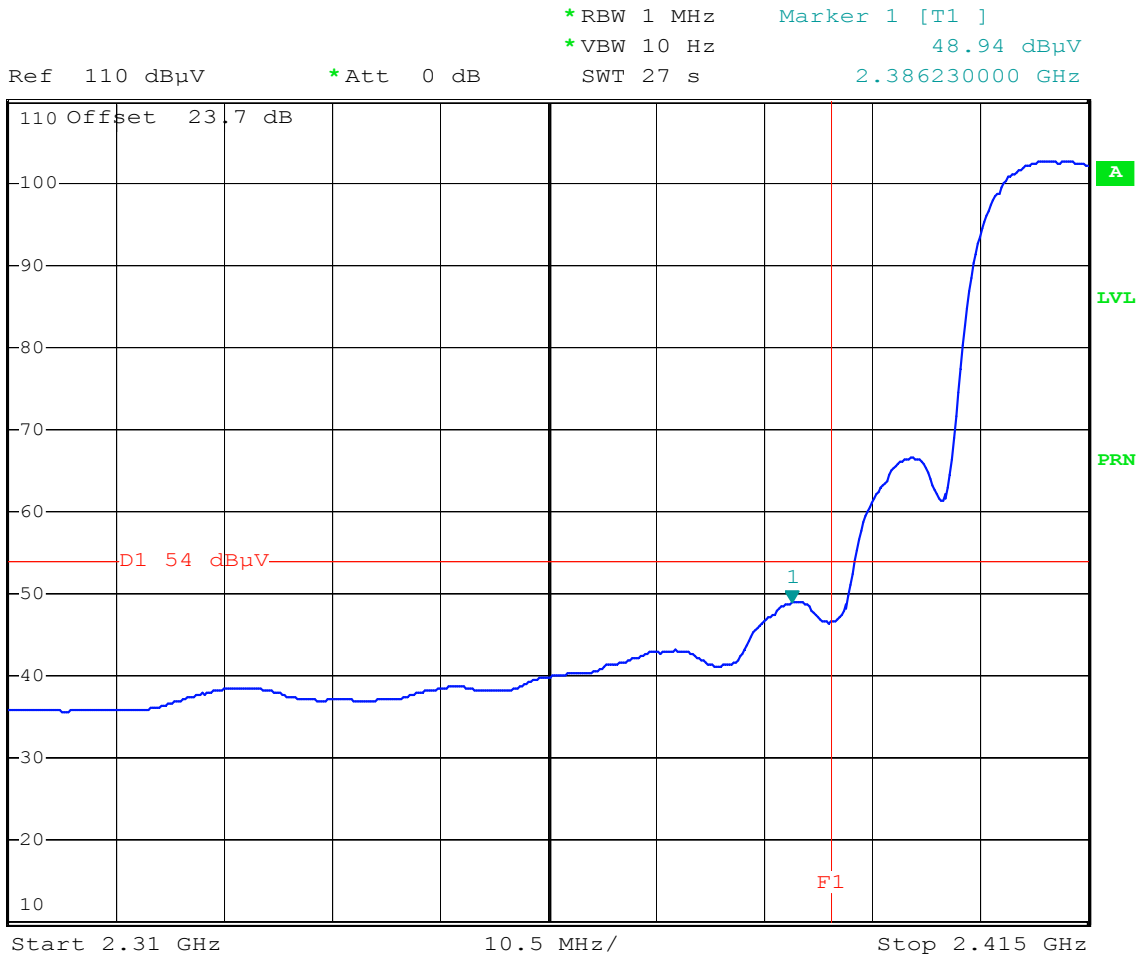


Ref 128 dBµV *Att 0 dB *RBW 1 MHz Marker 1 [T1]
 *VBW 1 MHz 65.41 dBµV
 SWT 5 ms 2.390010000 GHz



Comment: FS on the band-edge freq. peak, Ch 1, OFDM 9 Mbps
 Date: 6.MAR.2008 18:11:38

Plot 6.3

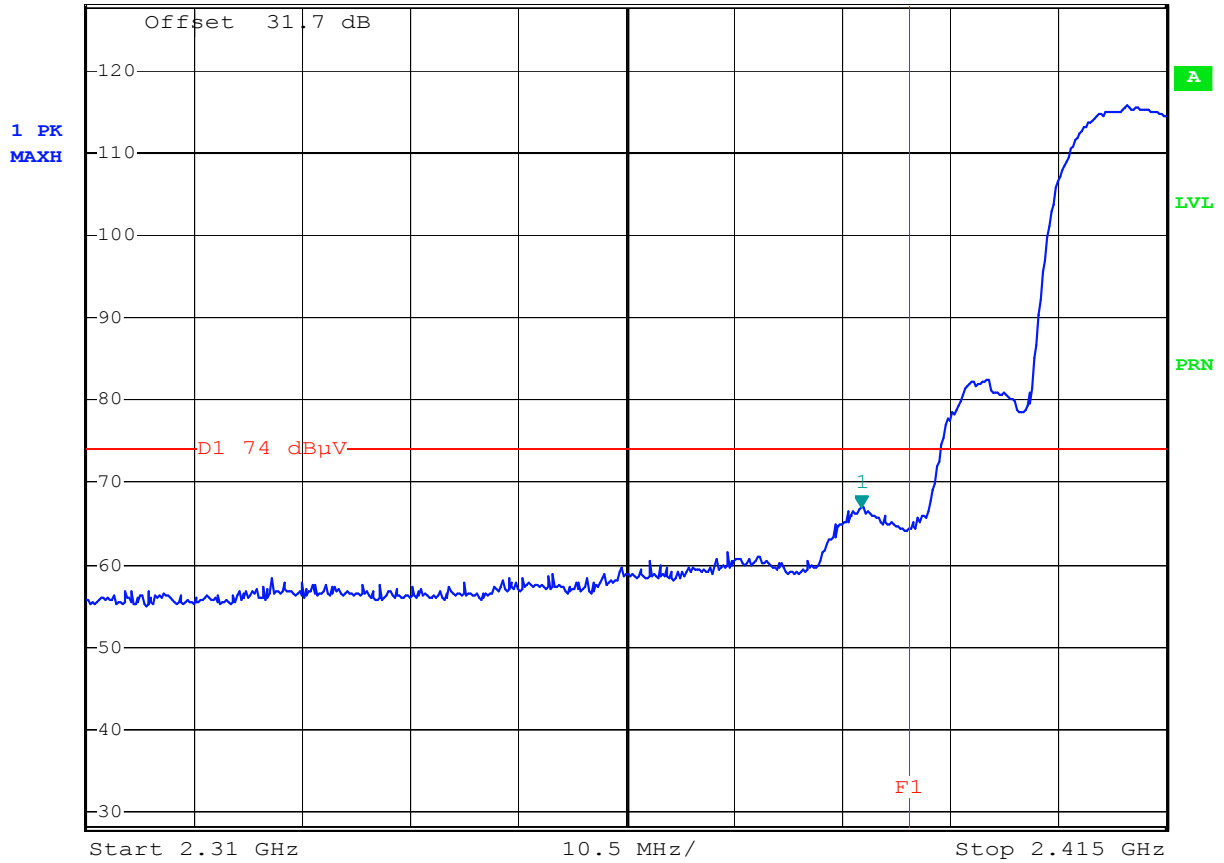


Comment: FS on the band-edge freq. average, Ch 1, CCK 11 Mbps
 Date: 6.MAR.2008 15:35:14

Plot 6.4

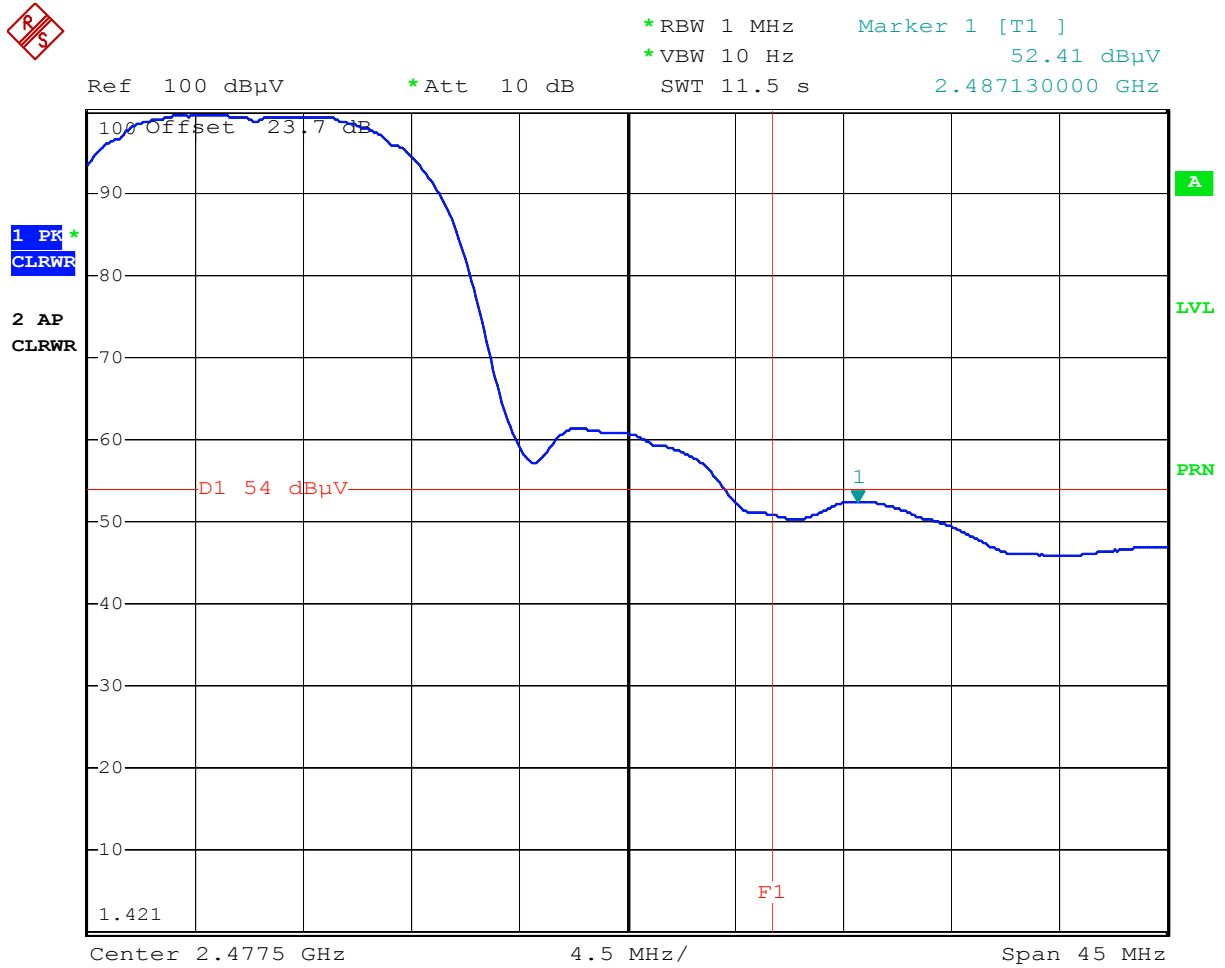


*RBW 1 MHz Marker 1 [T1]
 *VBW 1 MHz 66.90 dBμV
 Ref 128 dBμV *Att 0 dB SWT 5 ms 2.385390000 GHz



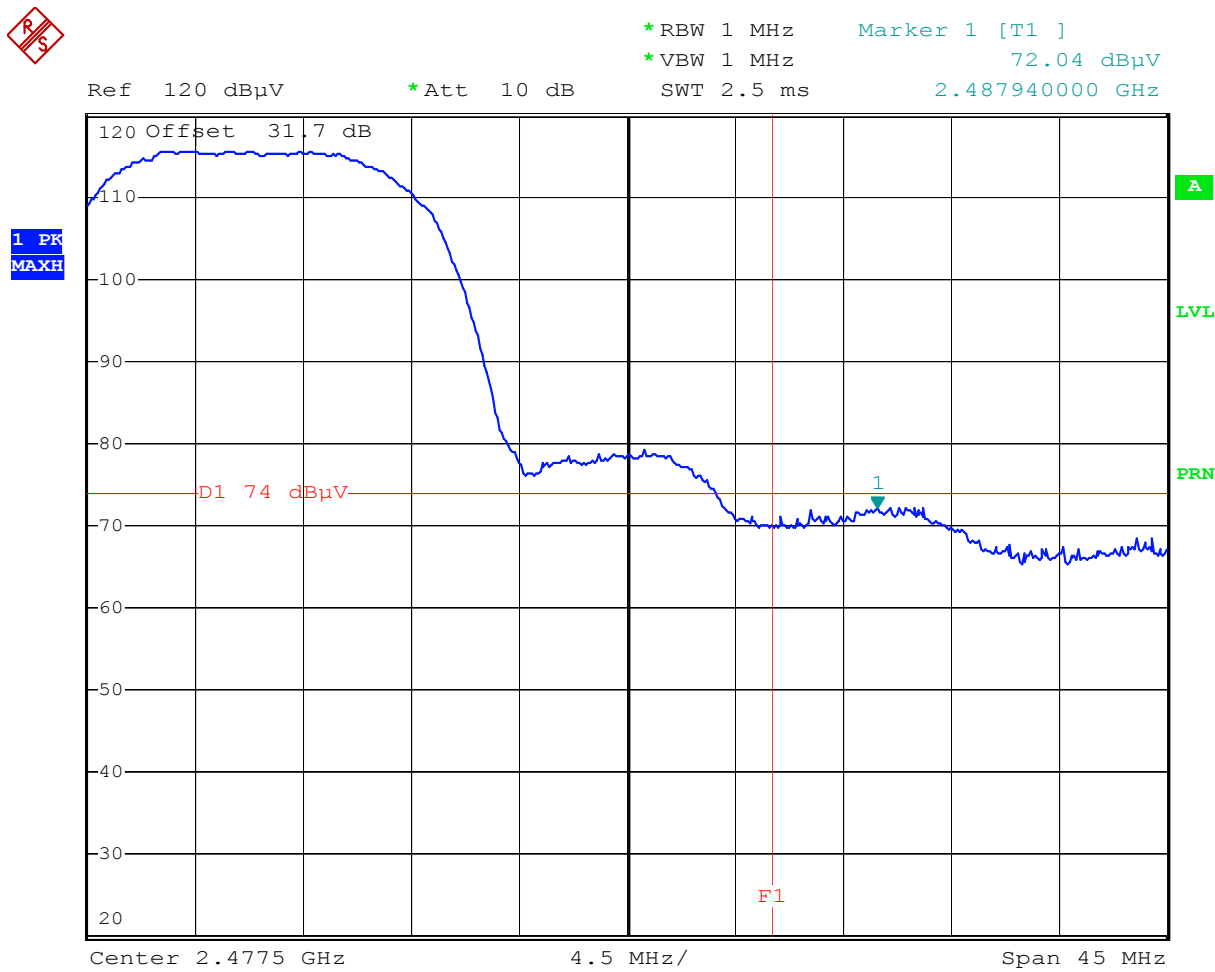
Comment: FS on the band-edge freq. peak, Ch 1, CCK 11 Mbps
 Date: 6.MAR.2008 18:05:35

Plot 6.5



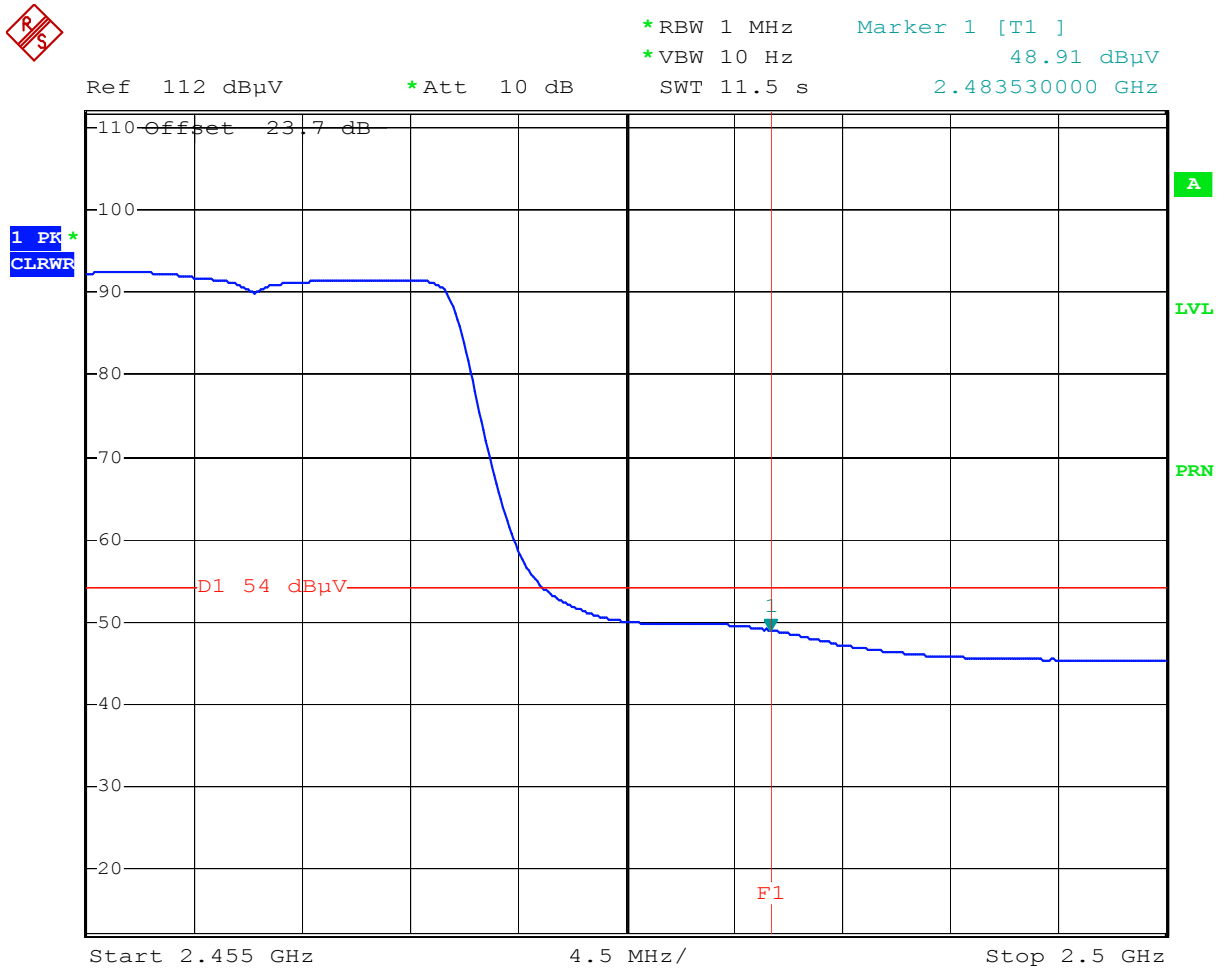
Comment: Spurious emission on band-edge fr., average, Ch 11, 11 Mbps
 Date: 11.MAR.2008 22:24:35

Plot 6.6



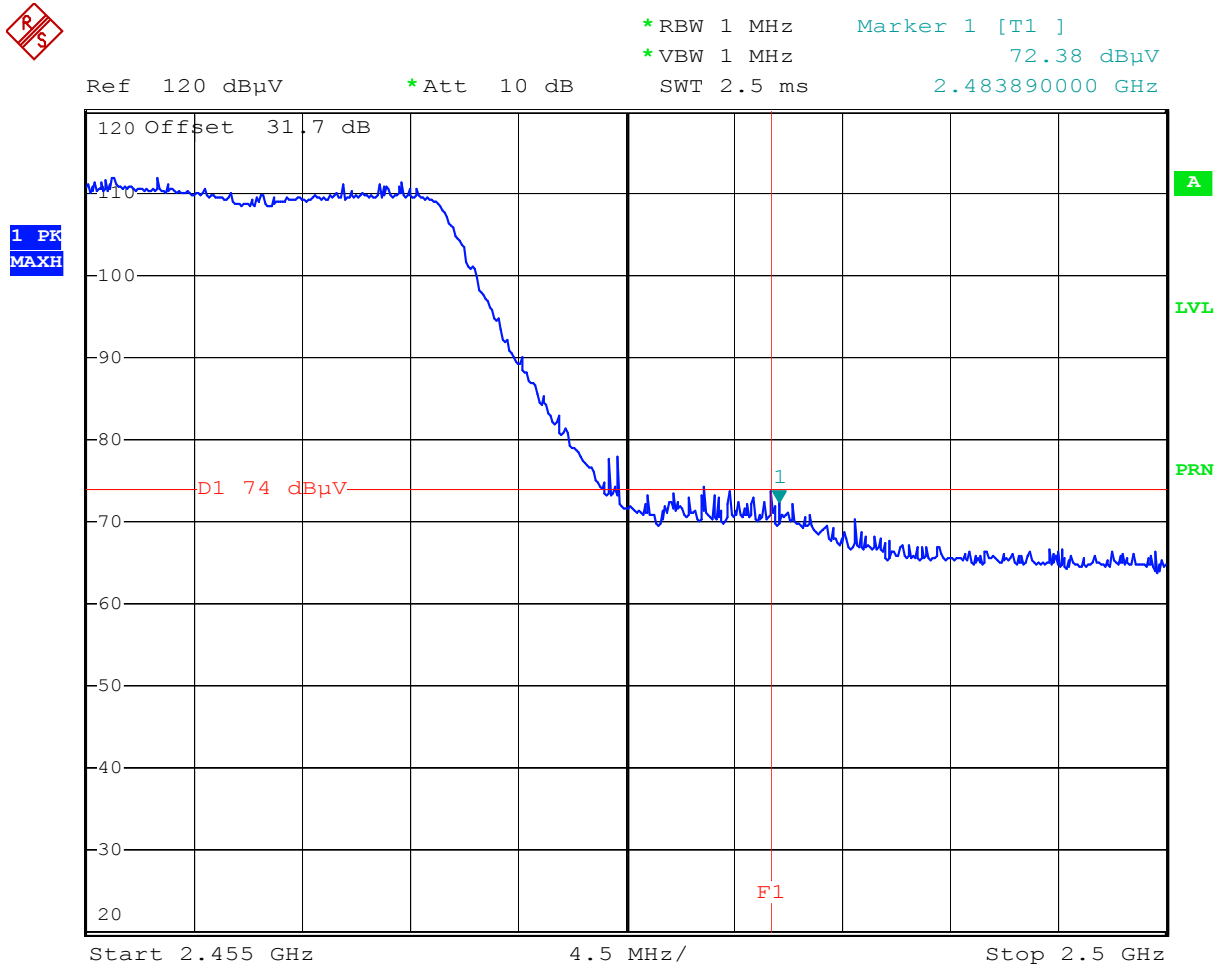
Comment: Spurious emission on band-edge fr., peak, Ch 11, 11 Mbps
 Date: 11.MAR.2008 22:28:39

Plot 6.7



Comment: Spurious emission on band-edge fr., average, Ch 11, 9 Mbps
 Date: 11.MAR.2008 22:38:16

Plot 6.8



Comment: Spurious emission on band-edge fr., peak, Ch 11, 9 Mbps
Date: 11.MAR.2008 22:35:58

4.6.5 Test Result - other restricted bands

The data on the following pages lists the significant emission frequencies, the limit and the margin of compliance for the worst-case configuration.

Results	Complies by 11.5 dB
----------------	----------------------------

Temperature: 20.0 C	Company: Motorola
Humidity: 50.0 %	Model: 3347-42, Lancet
Date: March 19, 2008	Engineer: DC
Data rate: 9 Mbps	

Measured at 3m

Frequency		FS at 3m	SA reading	Amp	Cable loss	Antenna factor	FS Limit	Margin
MHz		dB(uV/m)	dB(uV)	dB	dB	dB(1/m)	dB(uV/m)	dB
Ch: 1, 2412 MHz								
4824.0	Peak	49.8	48.8	35.2	2.8	33.4	74.0	-24.2
4824.0	Average	39.2	38.2	35.2	2.8	33.4	54.0	-14.8
7236.0	Peak	43.3	37.5	34.7	4.2	36.3	74.0	-30.7
7236.0	Average	33.1	27.3	34.7	4.2	36.3	54.0	-20.9
12060.0	Peak	51.5	40.7	34.0	6.0	38.8	74.0	-22.5
12060.0	Average	40.5	29.7	34.0	6.0	38.8	54.0	-13.5
Ch: 6, 2437 MHz								
4874.0	Peak	50.9	49.3	35.2	3.0	33.8	74.0	-23.1
4874.0	Average	40.3	38.7	35.2	3.0	33.8	54.0	-13.7
7311.0	Peak	51.1	44.2	34.7	4.5	37.1	74.0	-22.9
7311.0	Average	40.6	33.7	34.7	4.5	37.1	54.0	-13.4
12185.0	Peak	53.3	41.5	34.0	6.6	39.2	74.0	-20.7
12185.0	Average	42.5	30.7	34.0	6.6	39.2	54.0	-11.5
Ch: 11, 2462 MHz								
4924.0	Peak	44.9	42.1	35.2	3.5	34.5	74.0	-29.1
4924.0	Average	32.7	29.9	35.2	3.5	34.5	54.0	-21.3
7386.0	Peak	44.6	36.7	34.7	4.8	37.8	74.0	-29.4
7386.0	Average	32.3	24.4	34.7	4.8	37.8	54.0	-21.7
12310.0	Peak	52.4	39.8	34.0	7.1	39.5	74.0	-21.6
12310.0	Average	41.9	29.3	34.0	7.1	39.5	54.0	-12.1

All other emissions not reported are at least 10 dB below the limit.

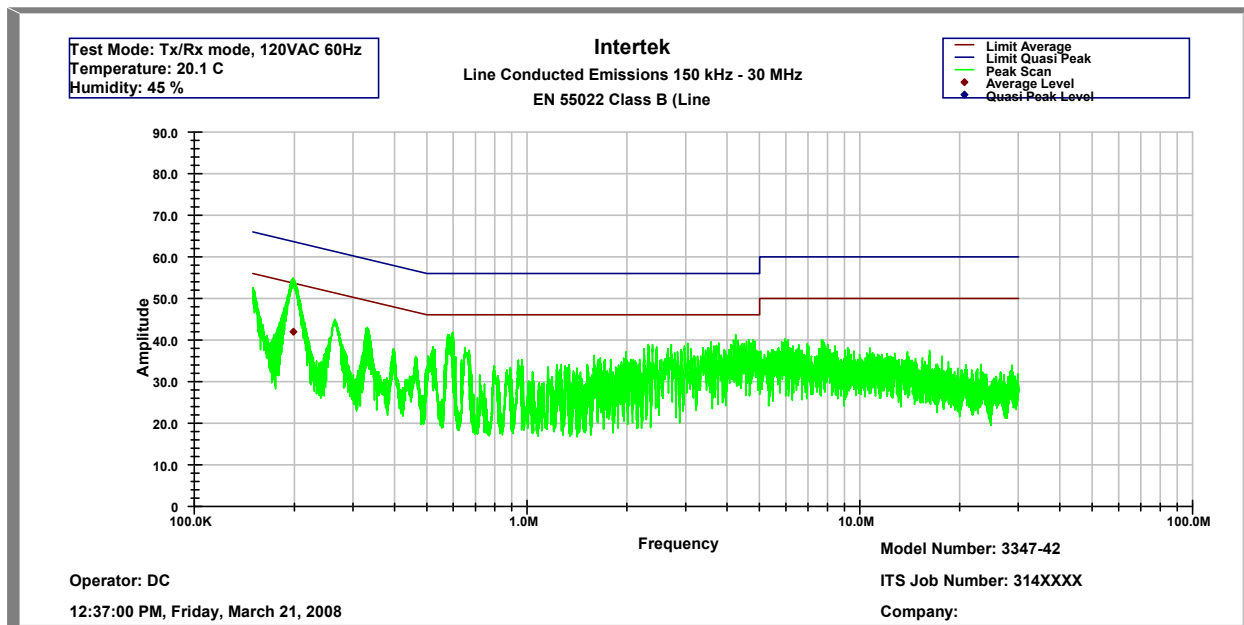
4.7 AC Line Conducted Emission,
FCC Rule 15.207

4.7.1 Procedure

AC line conducted emission test was performed according the ANSI C63.4 standard. The EUT was connected to AC Line through the LISN.

4.7.2 Test Result

Results	Complies by 7.8 dB
----------------	---------------------------

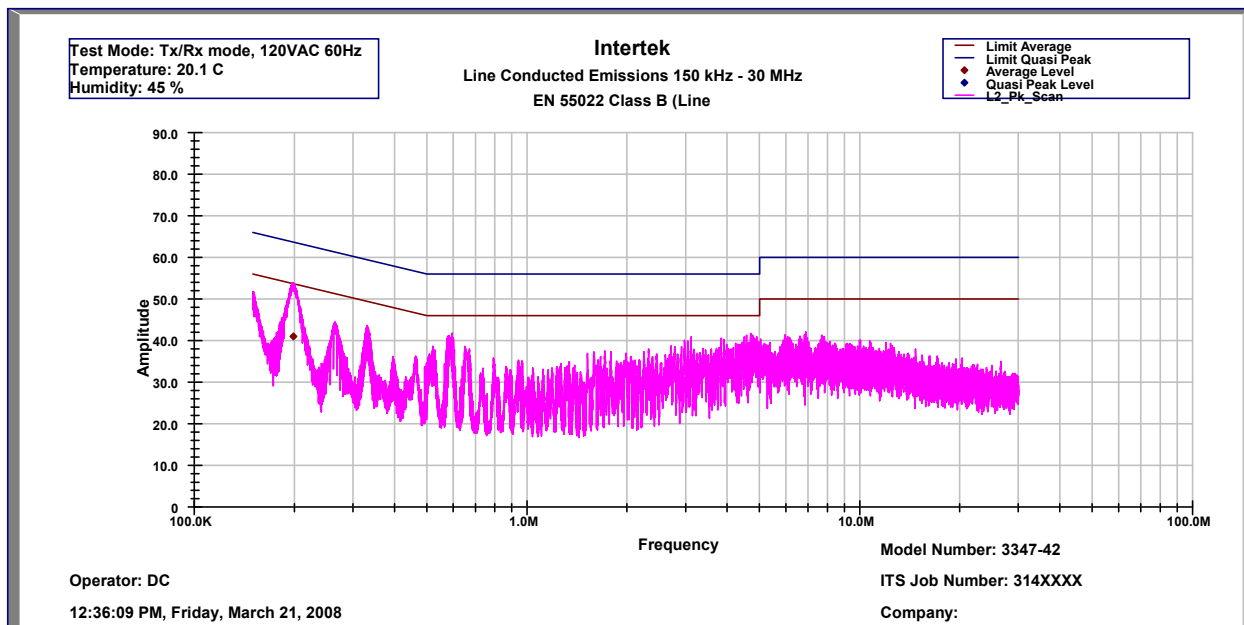


Intertek
Line Conducted Emissions 150 kHz - 30 MHz
EN 55022 Class B (Line 1)

Operator: DC
 12:37:00 PM, Friday, March 21, 2008

Model Number: 3347-42
 Company: Motorola

Frequency MHz	Pk Level (dBuV)	Av Level (dBuV)	QP Level (dBuV)	Av Limit (dBuV)	QP Limit (dBuV)	Av Margin (dBuV)	QP Margin (dBuV)
0.16	45.2	-	-	55.8	65.8	-10.6	-20.6
0.18	46.1	-	-	55.0	65.0	-8.9	-18.9
0.20	54.8	42.0	-	54.6	64.6	-12.6	-9.8
0.26	44.9	-	-	52.7	62.7	-7.8	-17.8



Intertek
Line Conducted Emissions 150 kHz - 30 MHz
EN 55022 Class B (Line 2)

Operator: DC
12:36:09 PM, Friday, March 21, 2008

Model Number: 3347-42
Company: Motorola

Frequency MHz	Pk Level (dBuV)	Av Level (dBuV)	QP Level (dBuV)	Av Limit (dBuV)	QP Limit (dBuV)	Av Margin (dBuV)	QP Margin (dBuV)
0.18	45.4	-	-	55.1	65.1	-9.7	-19.7
0.20	53.8	41.0	-	54.6	64.6	-13.6	-10.8
0.26	44.5	-	-	52.7	62.7	-8.2	-18.2
0.33	43.6	-	-	50.8	60.8	-7.3	-17.3
0.60	41.8	-	-	46.0	56.0	-4.2	-14.2
6.88	42.1	-	-	50.0	60.0	-7.9	-17.9

Test Mode: Tx/Rx mode, 120VAC 60Hz
Temperature: 20.1 C
Humidity: 45 %

4.8 Radiation exposure evaluation

The model 3347-02 is a Wireless ADSL Router. It is desktop or wall-mounted device used with AC power adapter in mobile application, at least 20 cm from any body part of the user or nearby persons.

The maximum conducted average power is 26.0 dBm, antenna is fix-mounted, -2 dBi gain (maximum). Therefore, to comply with RF Exposure Requirement, the MPE is calculated.

The maximum Average EIRP calculated is 0.251 W. The Power Density can be calculated using the formula

$$S = \text{EIRP} / 4\pi D^2$$

Where: S is Power Density in W/m^2
D is the distance from the antenna.

At distance of 0.2 m, $S = 0.5 \text{ W}/\text{m}^2$ which is below MPE Limit of $10 \text{ W}/\text{m}^2$

5.0 List of Test Equipment

Measurement equipment used for emission compliance testing utilized the equipment on the following list:

Equipment	Manufacturer	Model/Type	Serial #	Cal Int	Cal Due
EMI Receiver	Hewlett Packard	8546A	3710A00373	12	10/02/08
Spectrum Analyzer	R & S	FSP40	036612004	12	10/01/08
BI-Log Antenna	EMCO	3143	9509-1160	12	09/05/08
Horn Antenna	EMCO	3115	8812-3049	12	07/16/08
Horn Antenna	EMCO	3160-09	Not Labeled	#	#
Pre-Amplifier	Sonoma Inst.	310	185634	12	09/26/08
Pre-Amplifier	Miteq	AMF-4D-001180-24-10P	799159	12	07/13/08
Spectrum Analyzer with 85650 QP Adapter	Hewlett Packard	8566B	2403A06796	12	06/21/08
LISN	FCC	FCC-LISN-50-50-M-H	2012	12	08/02/08

No Calibration required

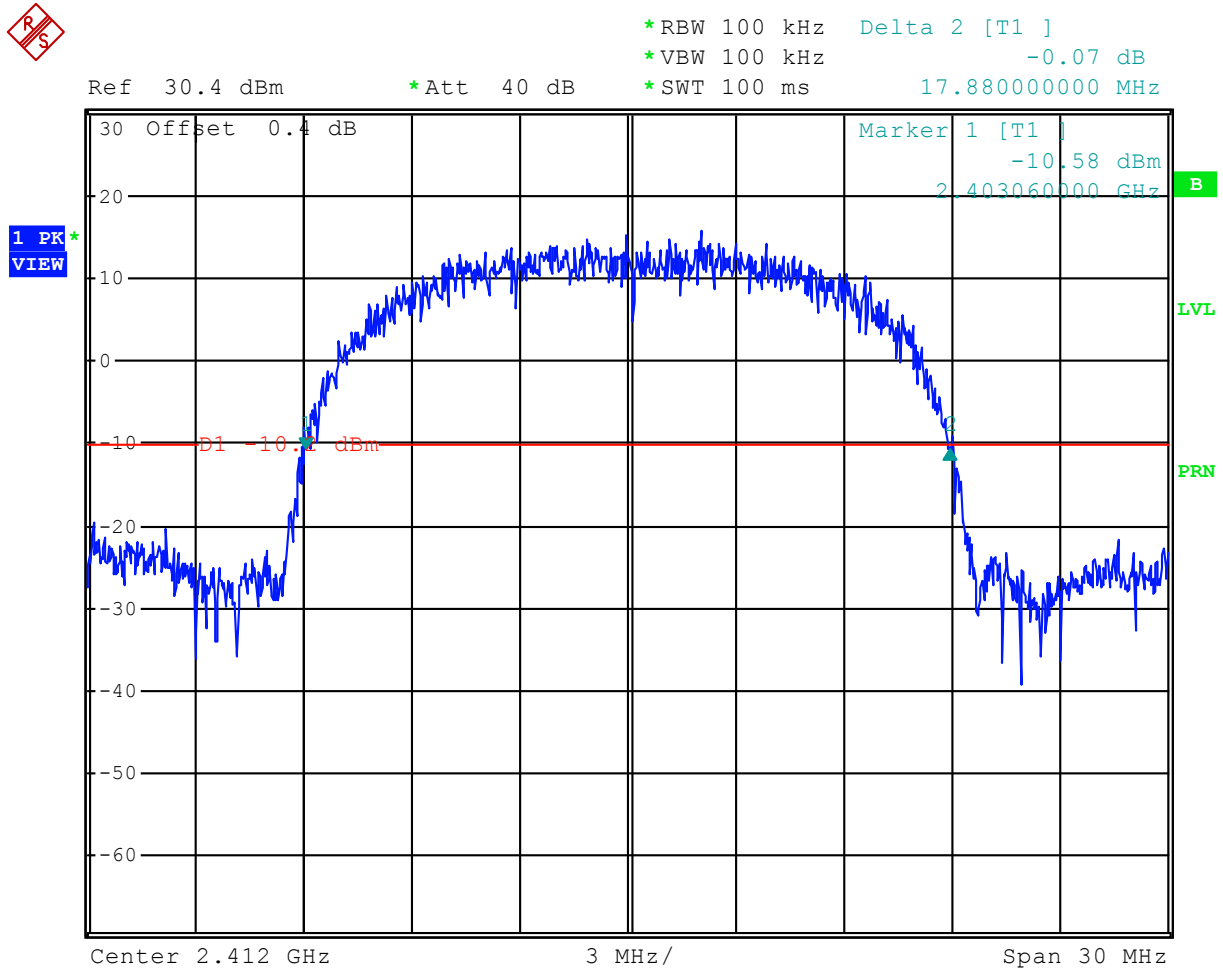
6.0 Document History

Revision/ Job Number	Writer Initials	Date	Change
1.0 / 3146806	DC	March 31, 2008	Original document

Appendix A – 26-dB Bandwidth and Occupied Bandwidth

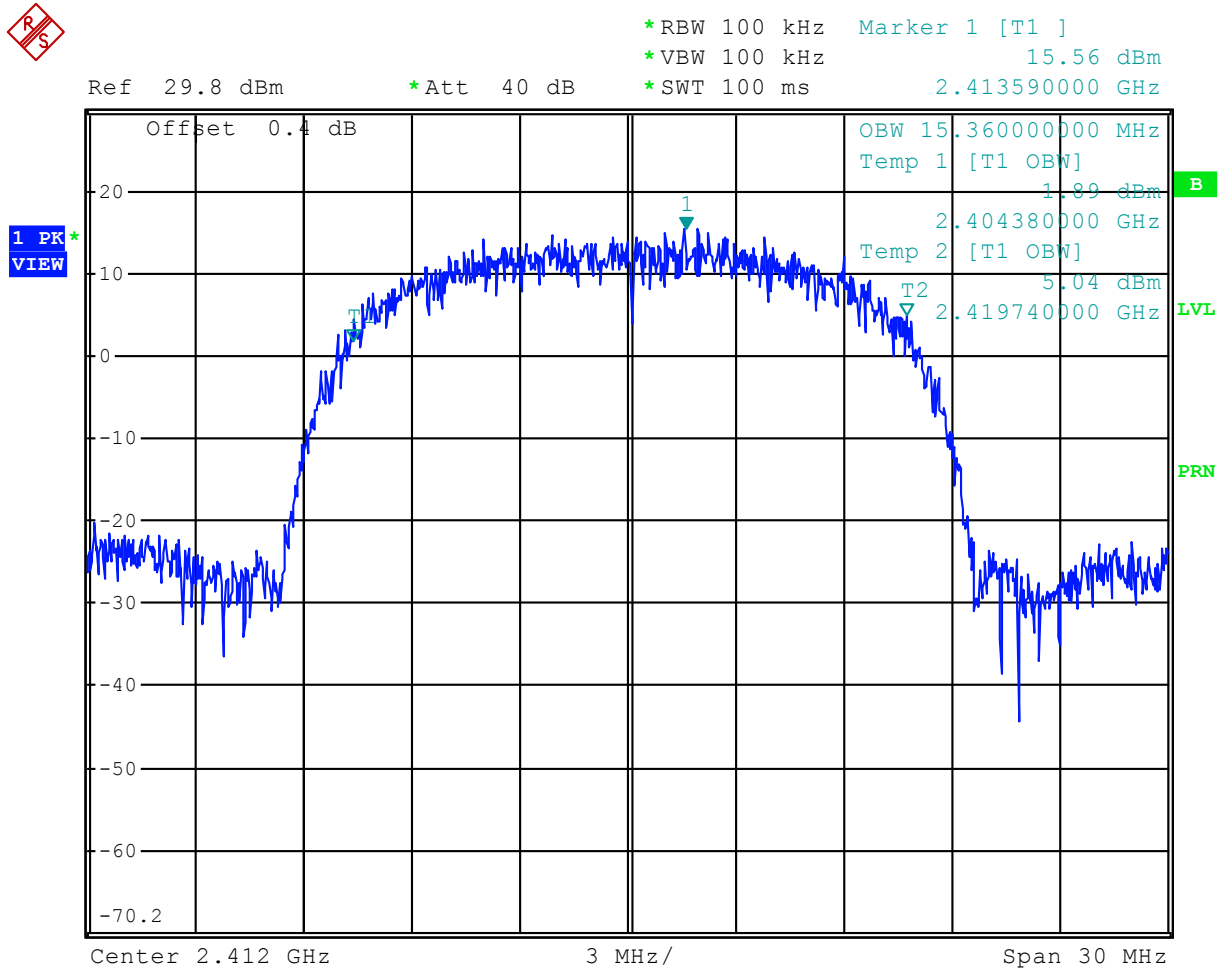
Channel	Frequency MHz	Standard	Date rate Mbps	26-dB Bandwidth MHz	Occupied Bandwidth MHz	Plot
1	2412	802.11b	11	17.9	15.4	A1, A2
1	2412	802.11g	9	20.9	16.5	A3, A4
1	2412	802.11g	54	20.3	16.5	A5, A6
6	2437	802.11b	11	17.9	15.3	A7, A8
6	2437	802.11g	9	27.8	16.8	A9, A10
6	2437	802.11g	54	20.8	16.5	A11, A12
11	2462	802.11b	11	17.9	15.4	A13, A14
11	2462	802.11g	9	21.8	16.5	A15, A16
11	2462	802.11g	54	20.4	16.5	A17, A18

Plot A1



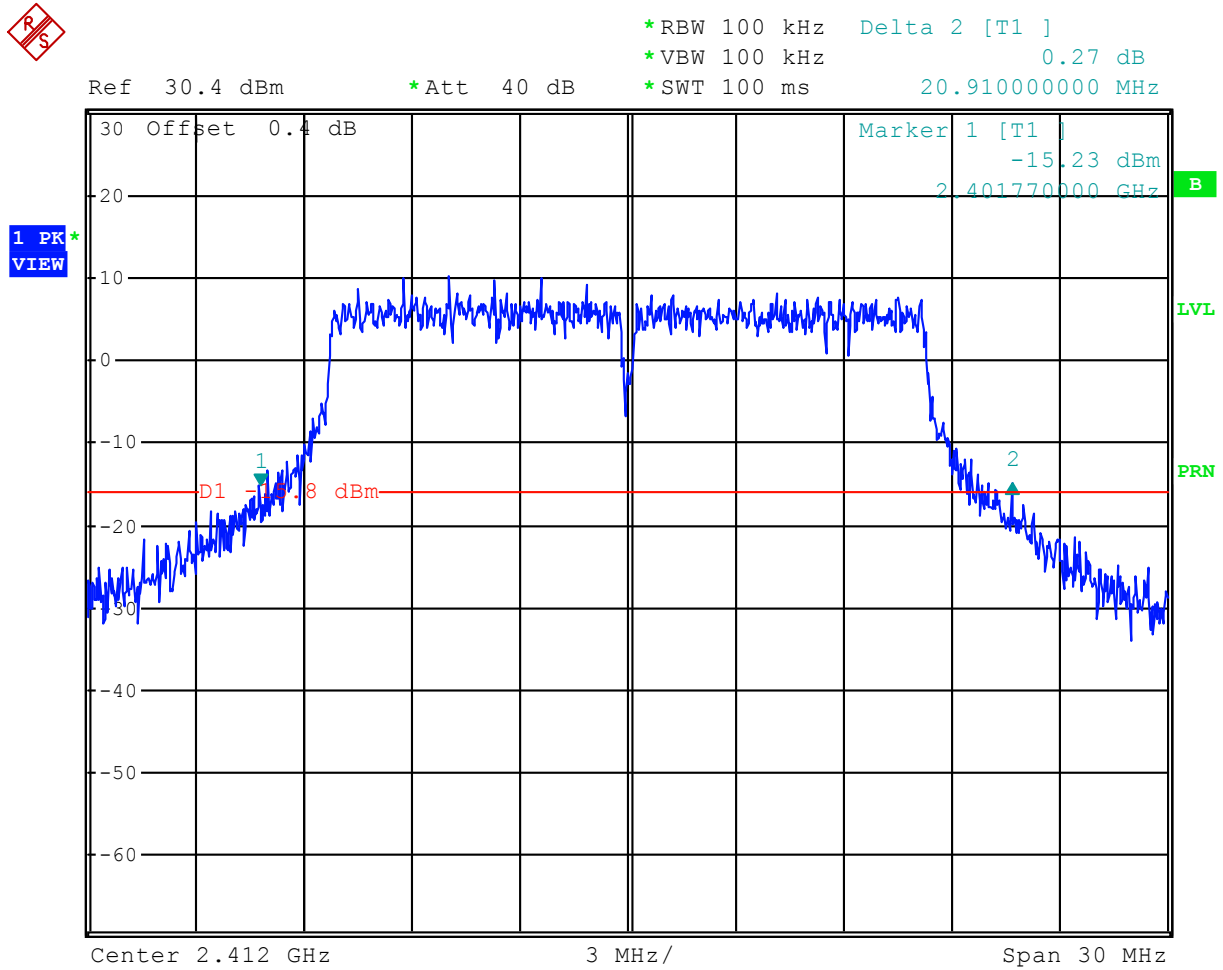
Comment: 26-dB bandwidth, Ch 1, CCK 11 Mbps

Plot A2



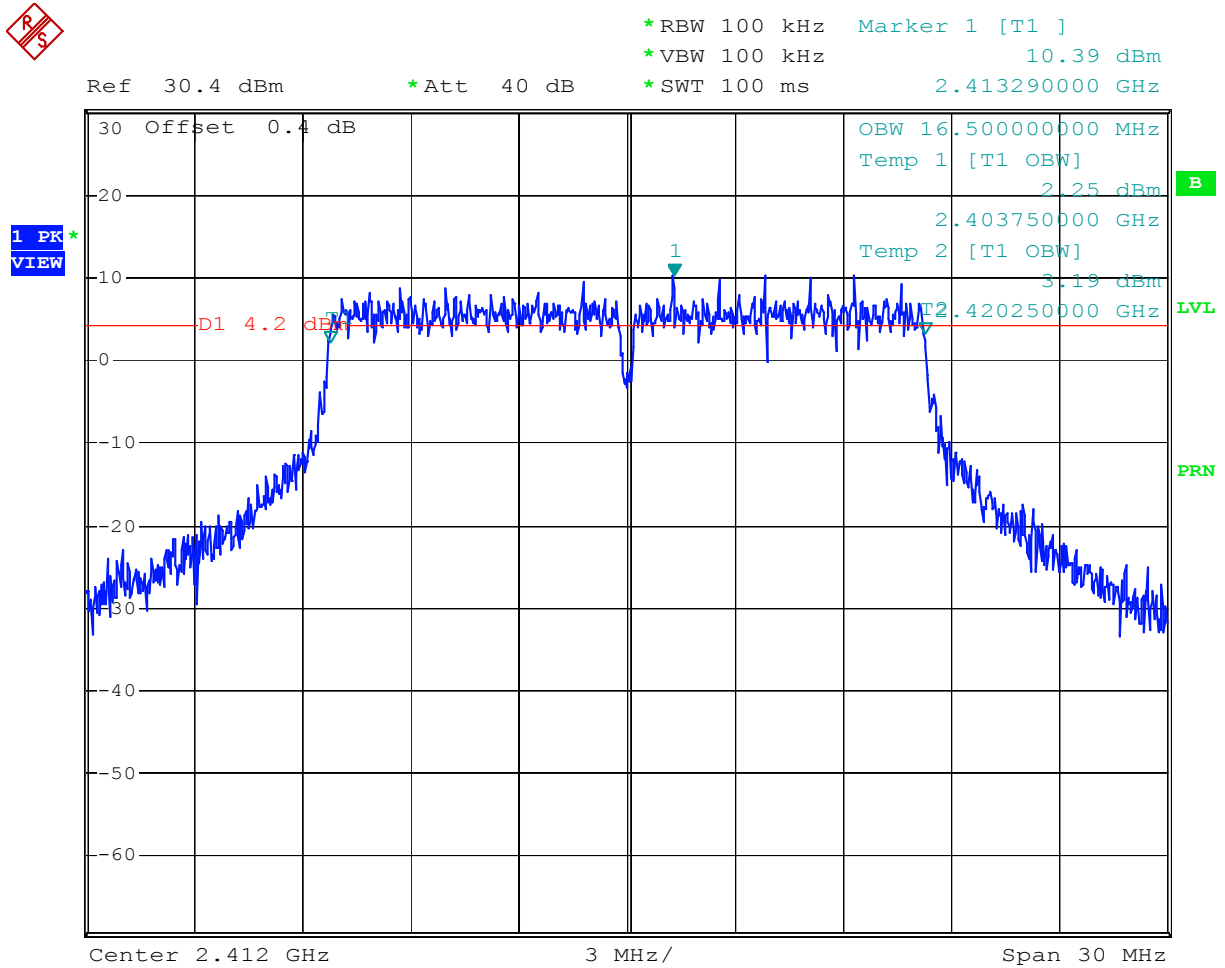
Comment: Occupied bandwidth, Ch 1, CCK 11 Mbps

Plot A3



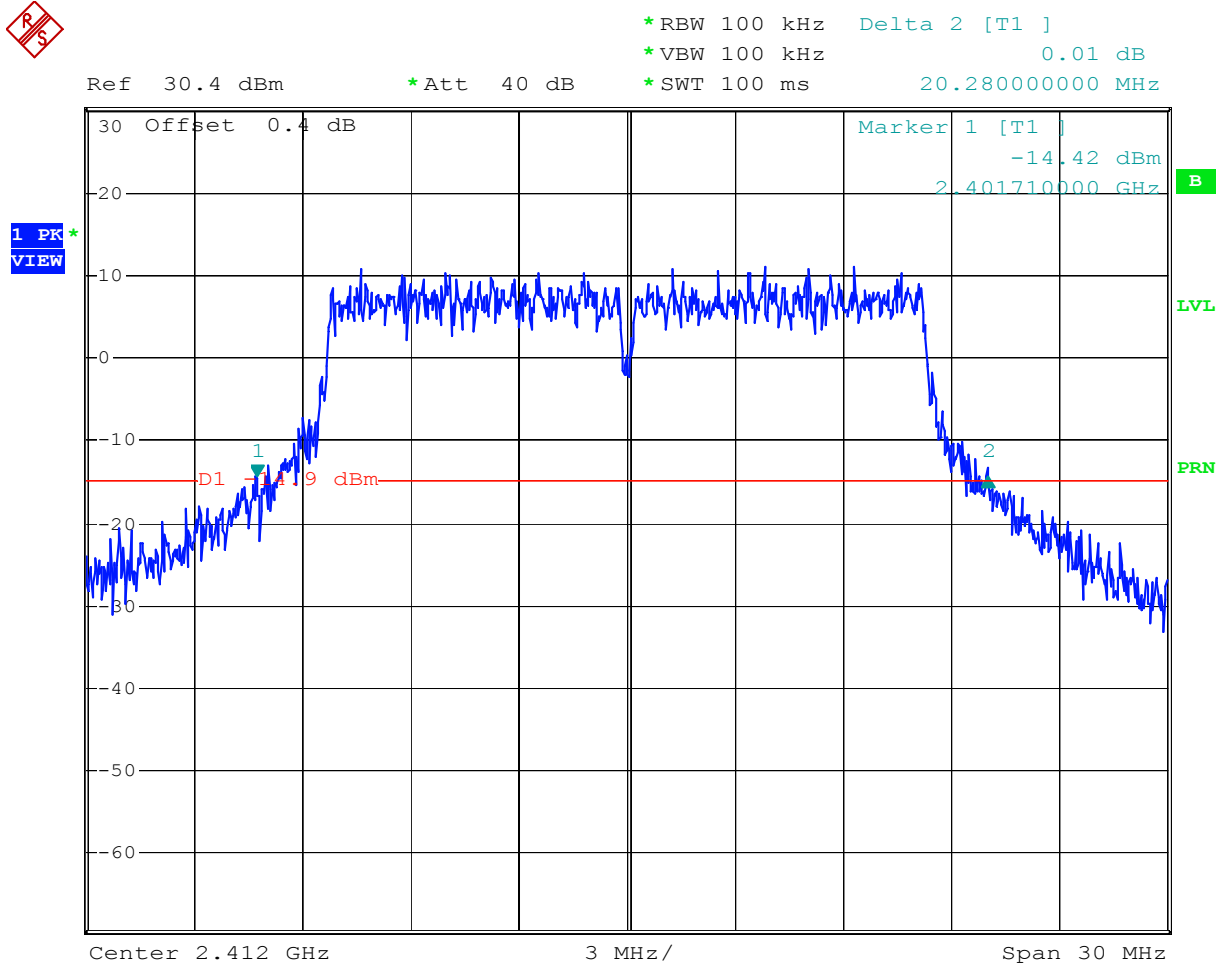
Comment: 26-dB bandwidth, Ch 1, OFDM 9 Mbps

Plot A4



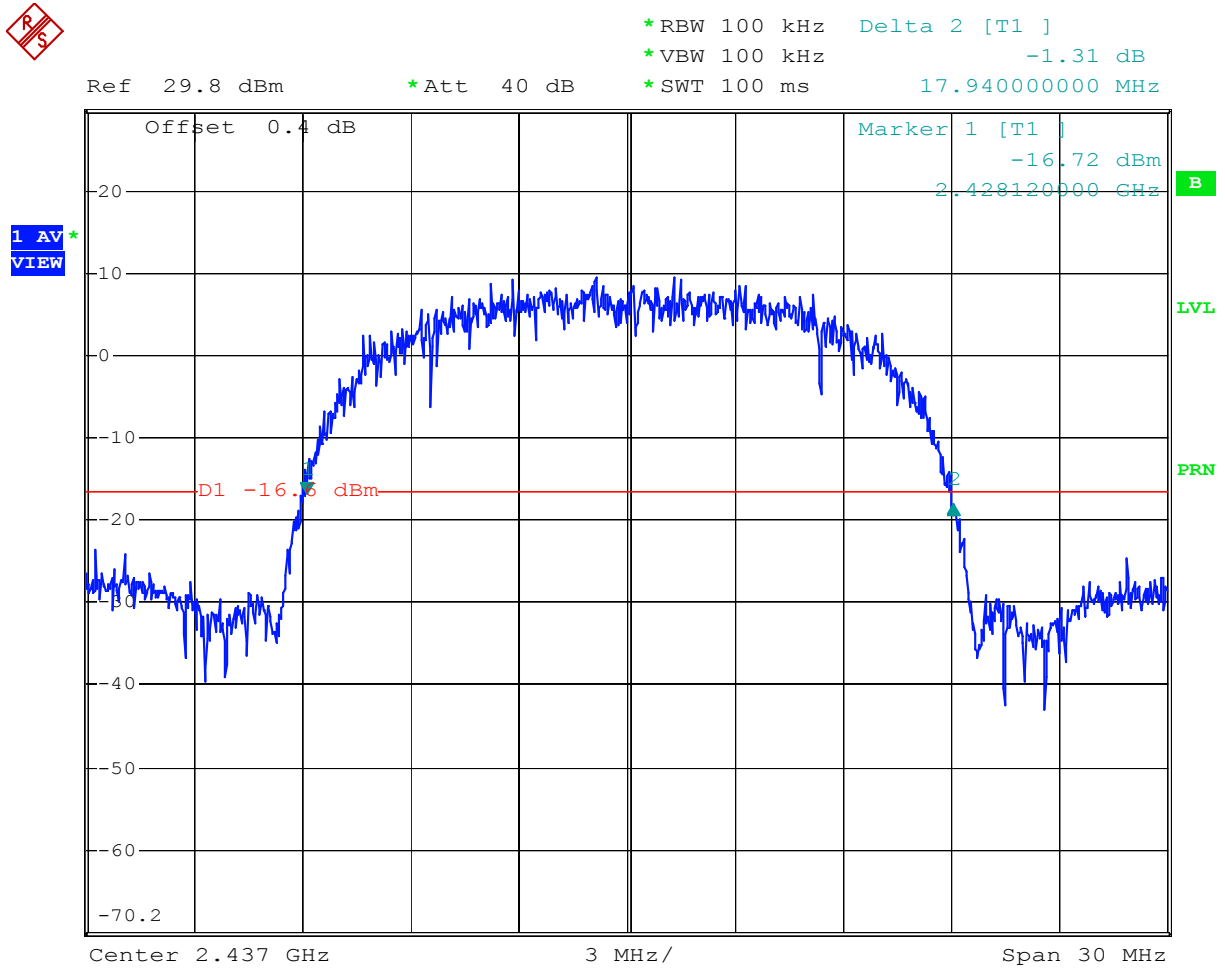
Comment: Occupied bandwidth, Ch 1, OFDM 9 Mbps

Plot A5



Comment: 26-dB bandwidth, Ch 1, OFDM 54 Mbps

Plot A7

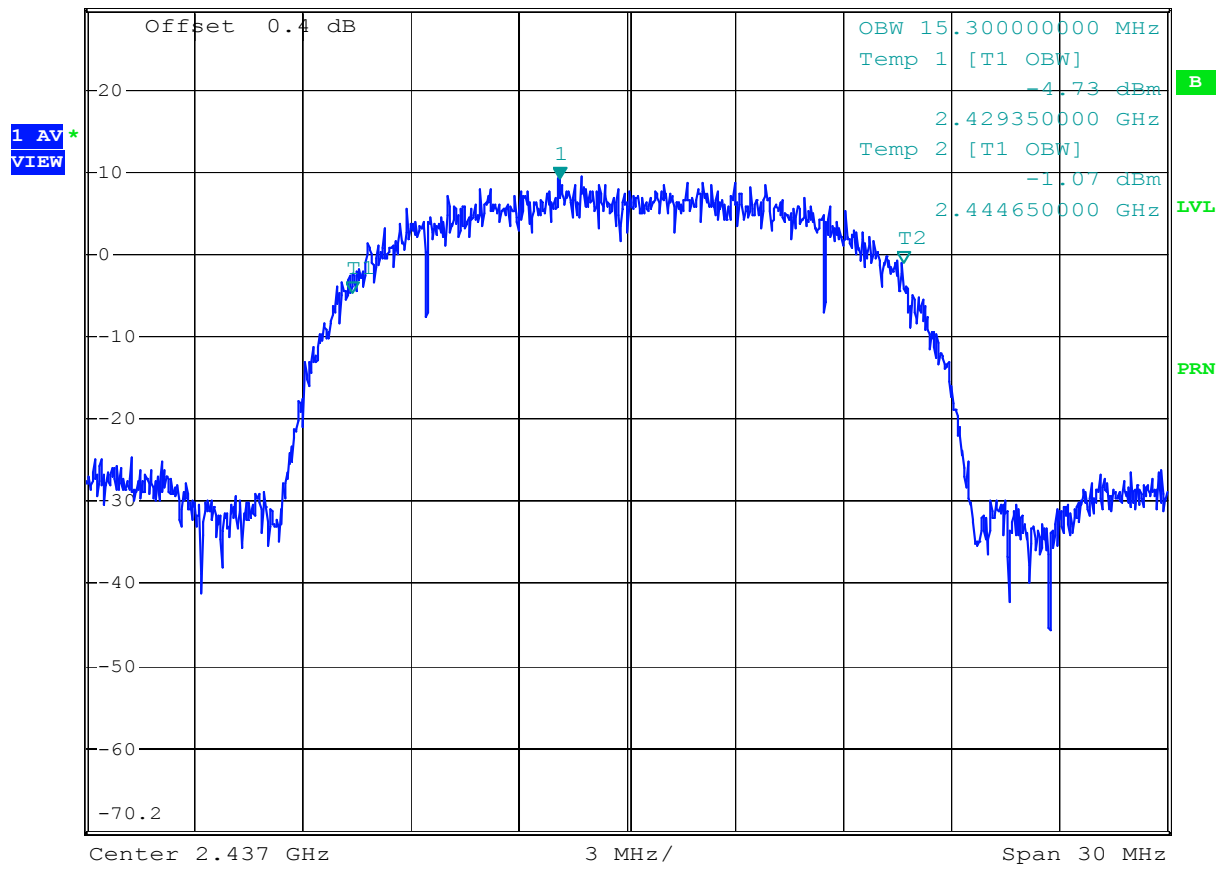


Comment: 26-dB bandwidth, Ch 6, CCK 11 Mbps

Plot A8



Ref 29.8 dBm *Att 40 dB *RBW 100 kHz Marker 1 [T1]
 *VBW 100 kHz 9.11 dBm
 *SWT 100 ms 2.435110000 GHz

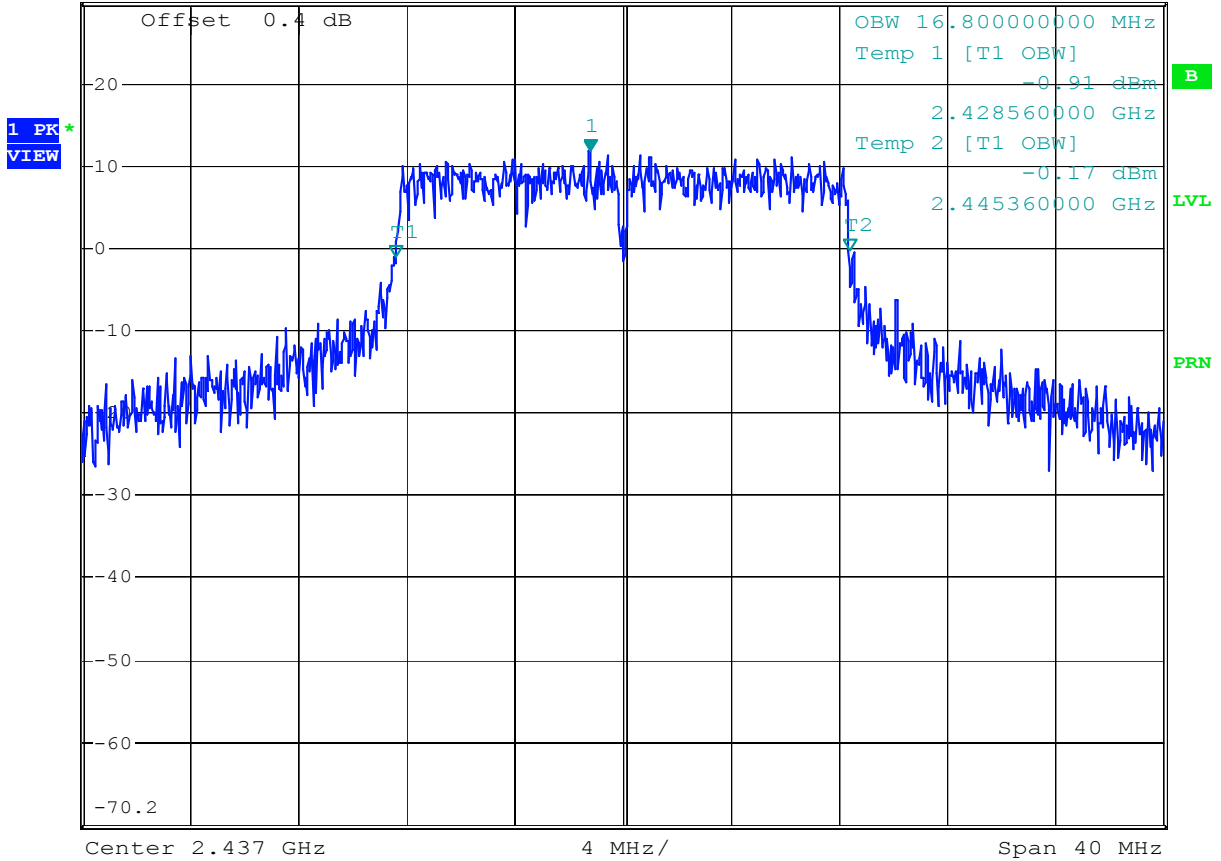


Comment: Occupied bandwidth, Ch 6, CCK 11 Mbps

Plot A10

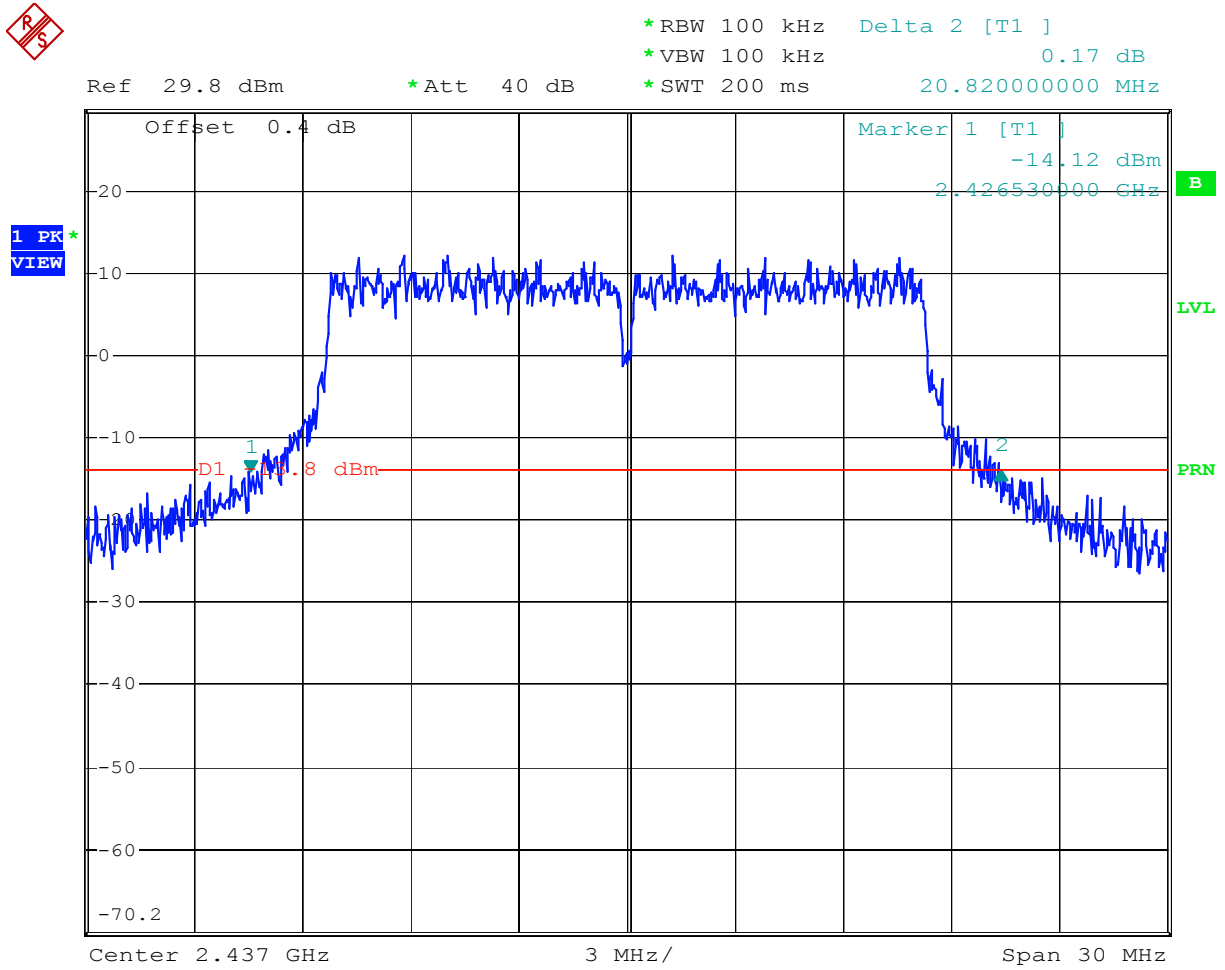


Ref 29.8 dBm *Att 40 dB *RBW 100 kHz Marker 1 [T1] 11.83 dBm
*VBW 100 kHz 2.435800000 GHz
*SWT 50 ms



Comment: Occupied bandwidth, Ch 6, OFDM 9 Mbps

Plot A11

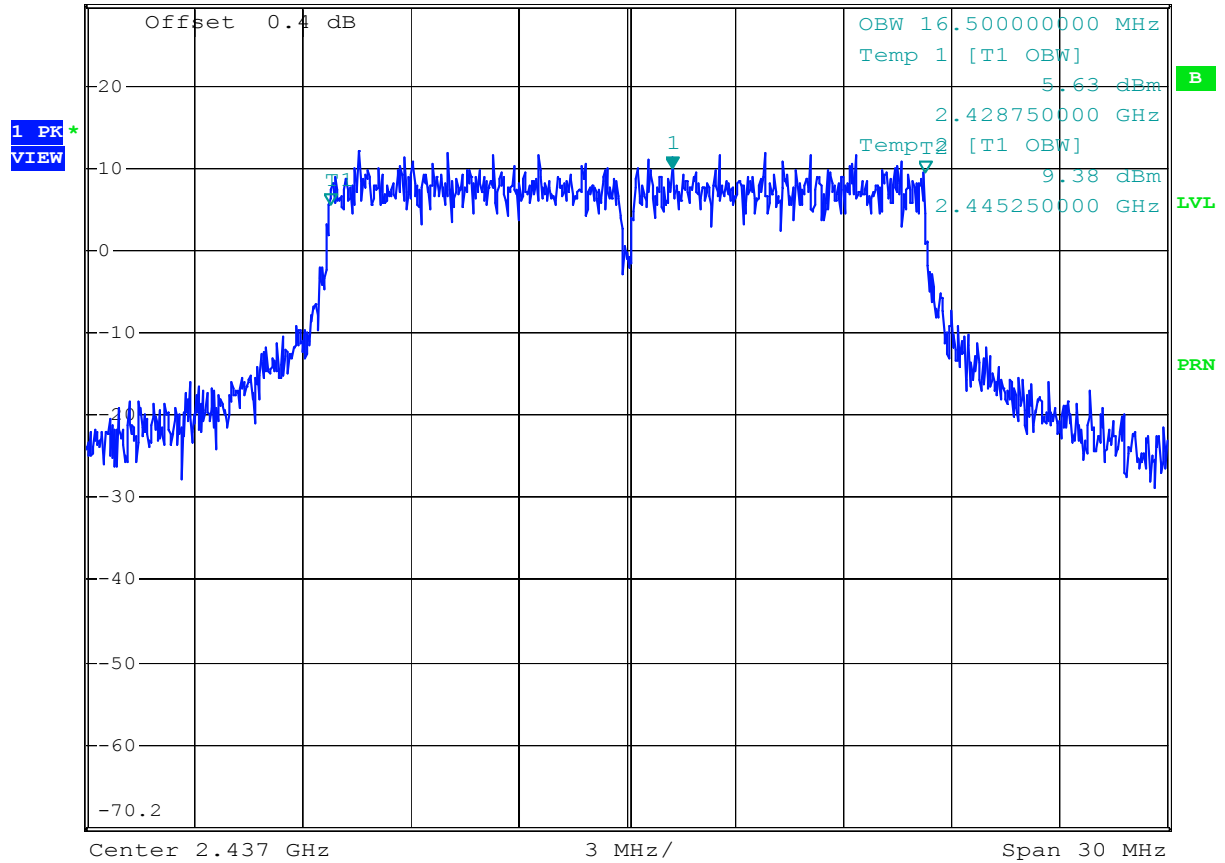


Comment: 26-dB bandwidth, Ch 6, OFDM 54 Mbps

Plot A12

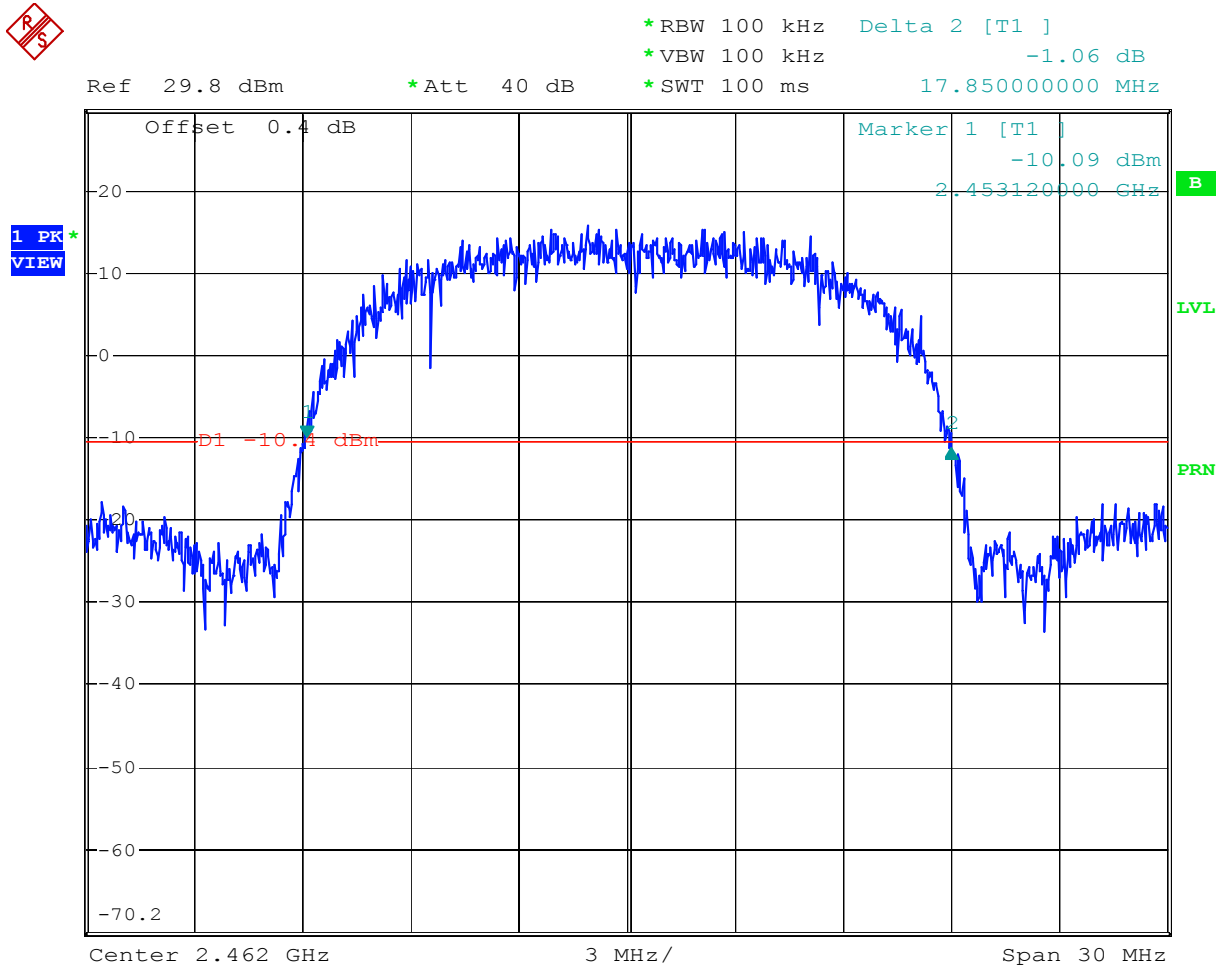


*RBW 100 kHz Marker 1 [T1]
 *VBW 100 kHz 10.05 dBm
 Ref 29.8 dBm *Att 40 dB *SWT 100 ms 2.438260000 GHz



Comment: Occupied bandwidth, Ch 6, OFDM 54 Mbps

Plot A13

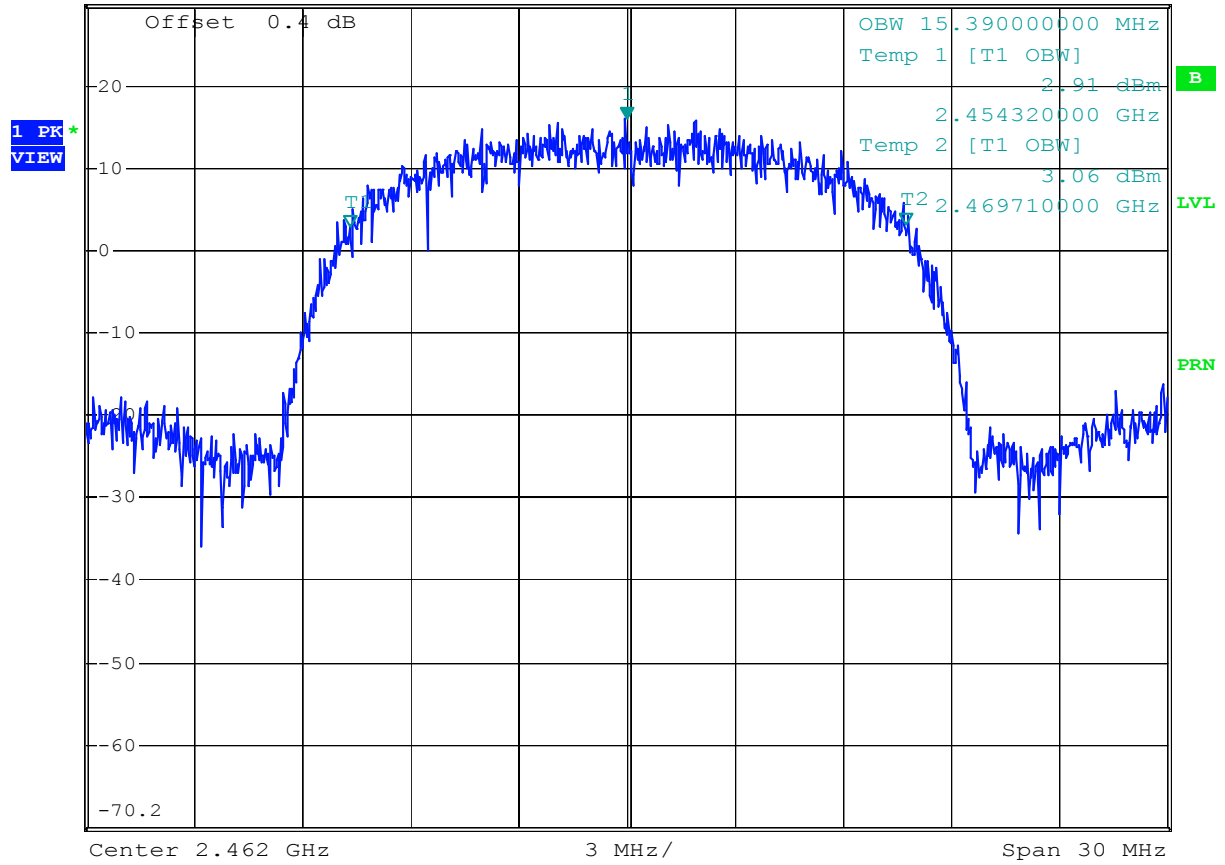


Comment: 26-dB bandwidth, Ch 11, CCK 11 Mbps

Plot A14



*RBW 100 kHz Marker 1 [T1]
 *VBW 100 kHz 15.94 dBm
 *SWT 100 ms 2.461970000 GHz
 Ref 29.8 dBm *Att 40 dB

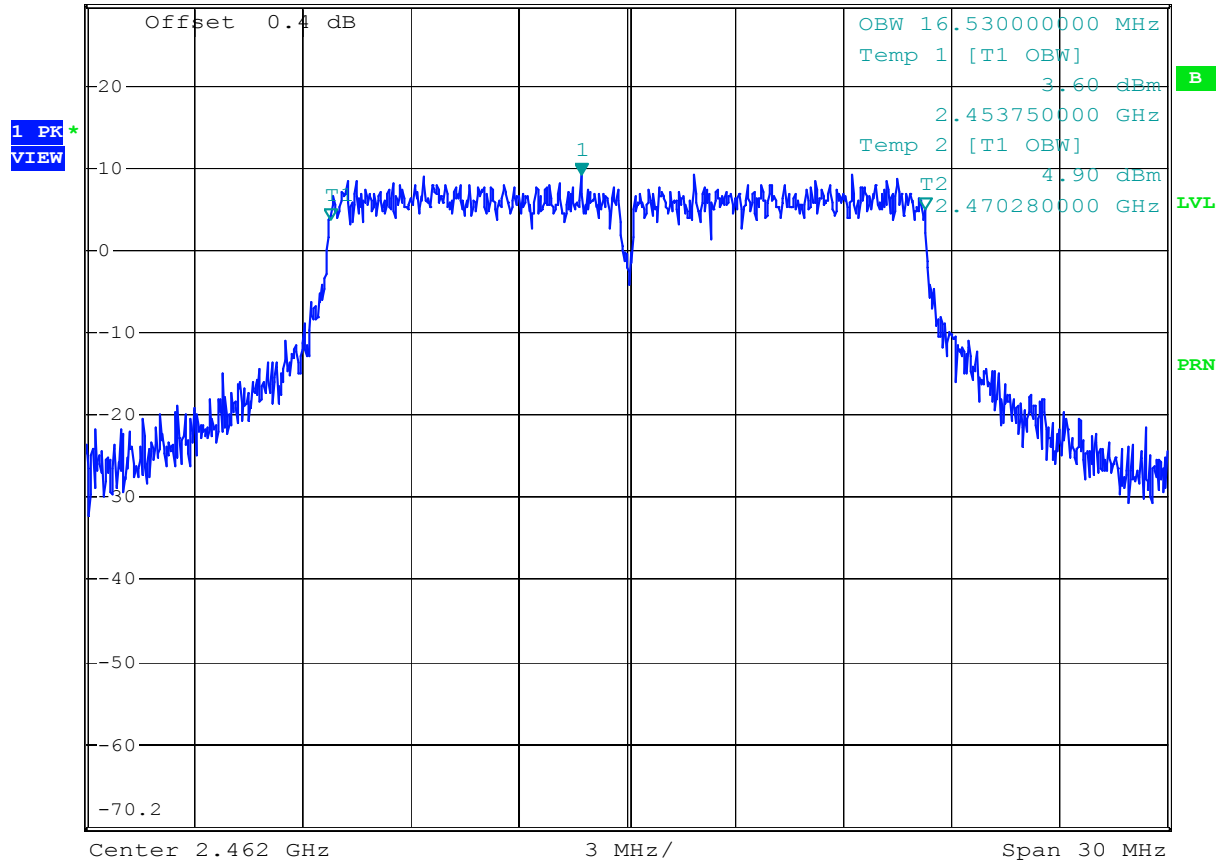


Comment: Occupied bandwidth, Ch 11, CCK 11 Mbps

Plot A16



Ref 29.8 dBm *Att 40 dB *RBW 100 kHz Marker 1 [T1]
 *VBW 100 kHz 9.18 dBm
 *SWT 100 ms 2.460740000 GHz

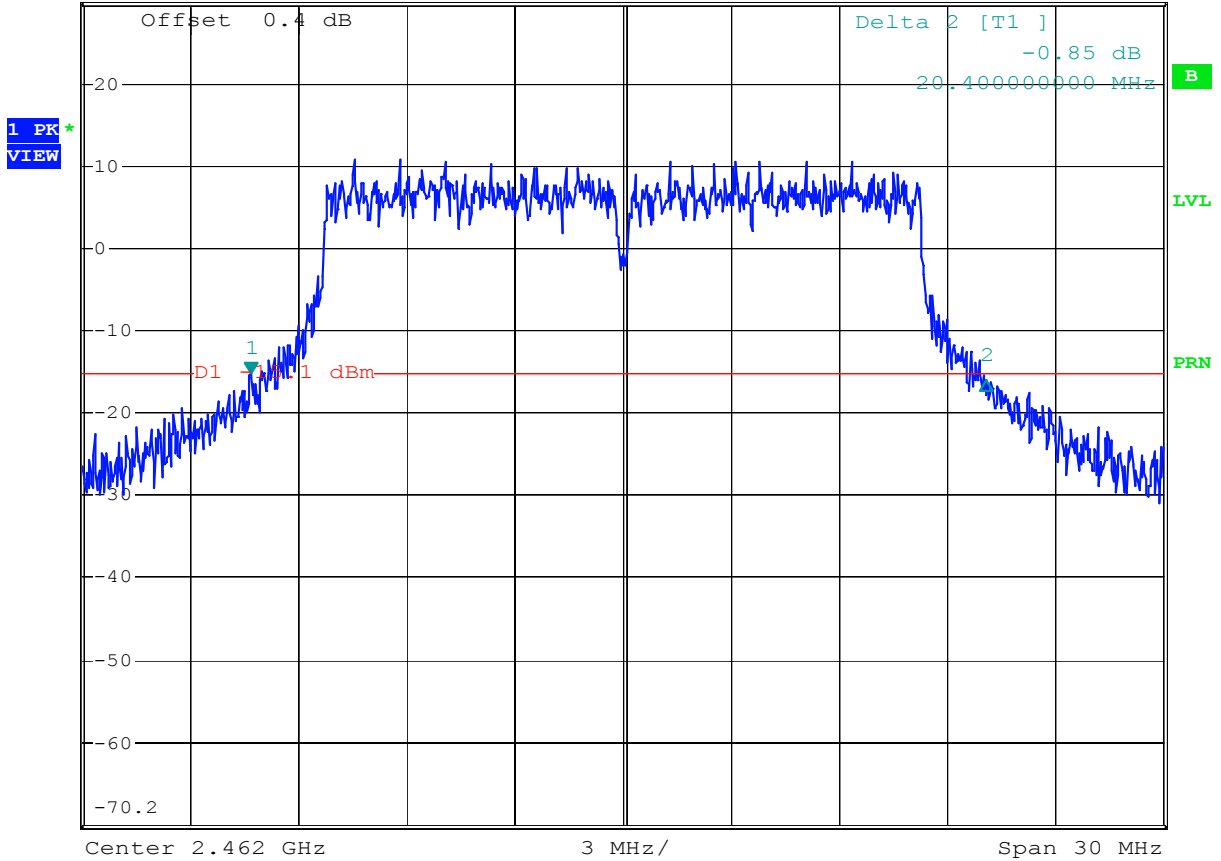


Comment: Occupied bandwidth, Ch 11, OFDM 9 Mbps

Plot A17



Ref 29.8 dBm *Att 40 dB *RBW 100 kHz Marker 1 [T1]
 *VBW 100 kHz -15.20 dBm
 *SWT 100 ms 2.451680000 GHz

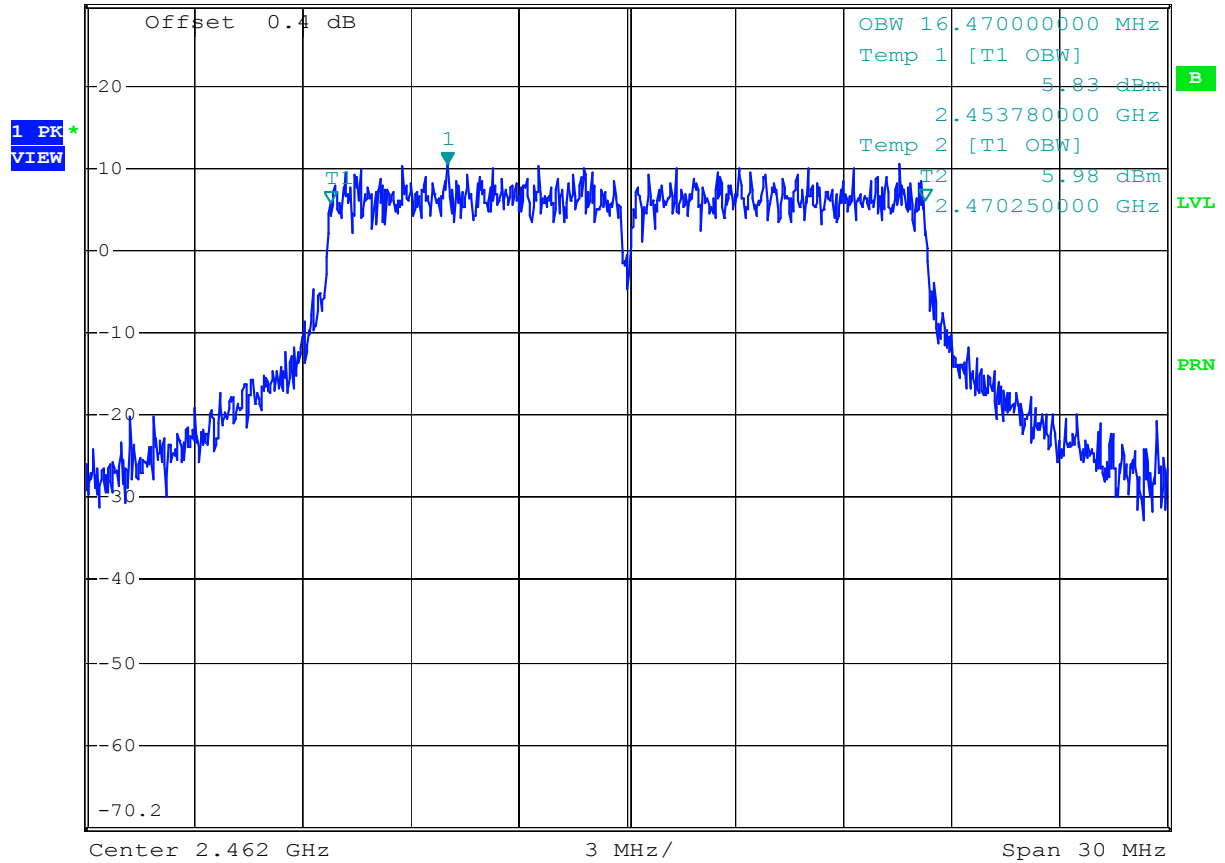


Comment: 26-dB bandwidth, Ch 11, OFDM 54 Mbps

Plot A18



Ref 29.8 dBm *Att 40 dB *RBW 100 kHz Marker 1 [T1]
 *VBW 100 kHz 10.52 dBm
 *SWT 100 ms 2.457020000 GHz



Comment: Occupied bandwidth, Ch 11, OFDM 54 Mbps