EMC
TEST REPORT

Report No. : **TS12070052-EME**
Model No. : **DSL-2402HNU-B1B v2, P8802T, Basic Home Station VDSL2 P8802T**
Issued Date : **Aug. 03, 2012**

Applicant:	**ZyXEL Communications Corporation** **6, Innovation Rd II, Science-Based Industrial Park, Hsin-Chu, Taiwan**
Test Method / Standard:	**CFR 47 FCC Part 15.247 & ANSI C63.4 2003**
Test By:	**Intertek Testing Services Taiwan Ltd.** **No. 11, Lane 275, Ko-Nan 1 Street, Chia-Tung Li, Shiang-Shan District, Hsinchu City, Taiwan**

Testing Laboratory
0597

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Terry Hsu / Engineer

The test report was reviewed by: Jimmy Yang

Name Jimmy Yang
Title Engineer

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1. Summary of Test Data

Test/Requirement Description	Applicable Rule	Result
Minimum 6 dB Bandwidth	15.247(a)(2)	Pass
Maximum Output Power	15.247(b)	Pass
Power Spectral Density	15.247(e)	Pass
RF Antenna Conducted Spurious	15.247(d)	Pass
Radiated Spurious Emission	15.247(d), 15.205, 15.209	Pass
Emission on the Band Edge	15.247(d)	Pass
AC Power Line Conducted Emission	15.207	Pass

2. General Information

Identification of the EUT

Product:	Wireless N VDSL2 VoIP IAD With USB
Model No.:	DSL-2402HNU-B1B v2
FCC ID.:	I88P8802T
Frequency Range:	1. 2412 MHz ~ 2462 MHz for 802.11b, 802.11g, 802.11n HT20 2. 2422 MHz ~ 2452 MHz for 802.11n HT40
Channel Number:	1. 11 channels for 2412 MHz ~ 2462 MHz 2. 7 channels for 2422 MHz ~ 2452 MHz
Rated Power:	DC 12 V from Adapter
Power Cord:	N/A
Data Cable:	1. RJ-45 UTP Cat.5 6 meter × 4 2. RJ-11 unshieled cable 1.8 meter × 3
Sample Received:	Jul. 11, 2012
Test Date(s):	Jul. 12, 2012 ~ Aug. 01, 2012
Note 1:	This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to permit copying or distribution of this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.
Note 2:	When determining the test conclusion, the Measurement Uncertainty of test has been considered.

Description of EUT

The EUT is Wireless N VDSL2 VoIP IAD With USB, and was defined as information technology equipment.

The customer confirmed the models listed below were identical to model DSL-2402HNU-B1B v2 (EUT). Different brands served as marketing strategy.

Trade Name	Model Number
MitraStar	DSL-2402HNU-B1B v2
ZyXEL	P8802T
ZyXEL	Basic Home Station VDSL2 P8802T

For more detail features, please refer to User's manual as file name “Installation guide.pdf”

Antenna description

1. Chain 0 (18cm)

The EUT uses a permanently connected antenna.

Antenna Model : RFA-02-3C52H070180CW
Antenna Gain : 3 dBi
Antenna Type : Dipole antenna
Connector Type : Fixed type

2. Chain 1 (22cm)

The EUT uses a permanently connected antenna.

Antenna Model : RFA-02-3C52H070220CW
Antenna Gain : 3 dBi
Antenna Type : Dipole antenna
Connector Type : Fixed type

Adapter information

The EUT will be supplied with a power supply from below list:

No.	Brand	Model no.	Specification
Adapter 1	UMEC	UP0181A-12PA	I/P: 100-240Vac, 50/60Hz, 0.4A MAX. O/P: +12Vdc, 1.5A, 18W MAX.
Adapter 2	UMEC	UP0181A-12PE	I/P: 100-240Vac, 50/60Hz, 0.4A MAX. O/P: +12Vdc, 1.5A, 18W MAX.

Peripherals equipment

Peripherals	Brand	Model No.	Serial No.	Data Cable
Notebook PC	DELL	Latitude D610	2YWZK1S	RJ-45 UTP Cat.5 6 meter × 1
Dummy Load	N/A	N/A	N/A	RJ-45 UTP Cat.5 6 meter × 3
Telephone	TENTEL	K-903S	0514000940	RJ-11 unshieled cable 1.8 meter × 1
Telephone	TENTEL	K-903S	0514000477	RJ-11 unshieled cable 1.8 meter × 1
C.O.	ZyXEL	VES-1616FE-53A	N/A	RJ-11 unshieled cable 1.8 meter × 1
HSDPA USB Stick	Huawei	E169	D45TBB2922102428	N/A

Operation mode

The EUT was supplied with DC 12 V from adapter 1 (Test voltage: 120Vac, 60 Hz). The EUT was tested in TX mode that was controlled by “BCM63168 test command” program and transmitted continuously during the test.

With individual verifying, the maximum output power was found out 1 Mbps data rate for 802.11b mode, 6 Mbps data rate for 802.11g mode, 6.5 Mbps data rate for 802.11n HT 20 mode and 13 Mbps data rate for 802.11n HT 40 mode.

The final tests were executed under these conditions recorded in this report individually. Please refer the details below:

Chain 0: 802.11b channel 6	
Data rate (Mbps)	PK(dBm)
1	16.81
2	16.40
5.5	16.39
11	16.21

Chain 0: 802.11n HT20 channel 6	
Data rate (Mbps)	PK(dBm)
6.5	18.18
13	13.52
19.5	12.72
26	12.33
39	11.13
52	10.21
58.5	9.84
65	9.44

Chain 0: 802.11g channel 6	
Data rate (Mbps)	PK(dBm)
6	19.92
9	16.74
12	16.59
18	15.90
24	15.42
36	14.29
48	13.26
54	12.81

Chain 0: 802.11n HT40 channel 6	
Data rate (Mbps)	PK(dBm)
13	17.80
26	17.57
39	17.51
52	17.45
78	17.28
104	17.13
117	17.12
130	17.06

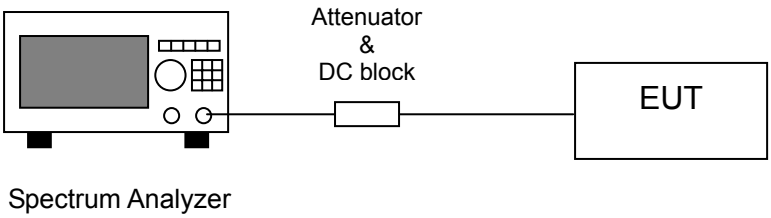
3. Maximum 6 dB Bandwidth

Name of Test	Maximum 6 dB Bandwidth
Base Standard	FCC 15.247 (a)(2)

Test Result: Complies
Measurement Data: See Table & plots below

Method of Measurement:
Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 1-5 % of the emission bandwidth, video bandwidth (VBW) ≥ 3 x RBW. In order to make an accurate measurement, set the span greater than RBW. The 6 dB bandwidth must be greater than 500 kHz.

Test Diagram:

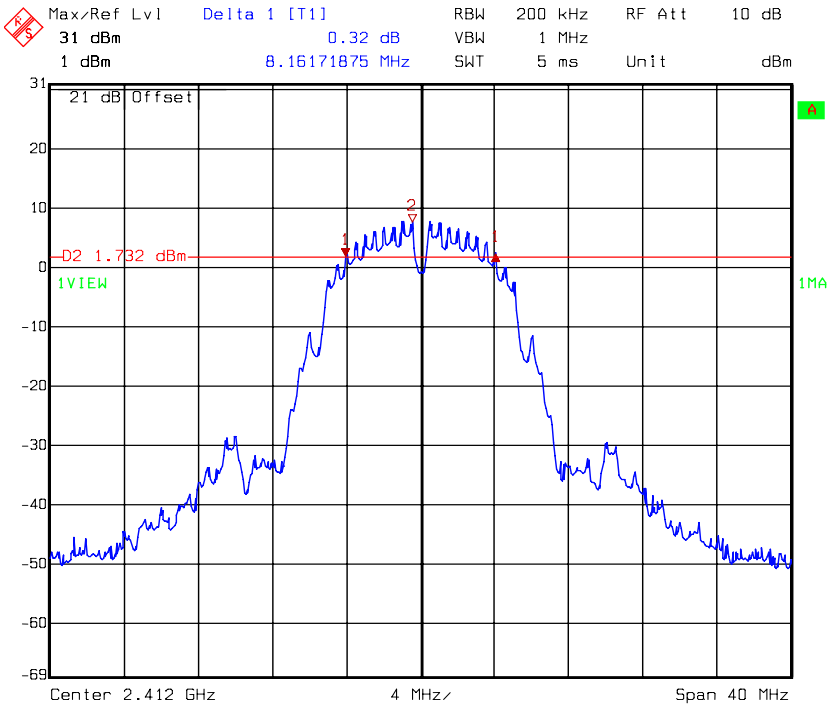


Note: The EUT was tested while in a continuous transmit mode and the worst case data rates are 1 Mbps data rate for 802.11b mode, 6 Mbps data rate for 802.11g mode, 6.5 Mbps data rate for 802.11n HT20 mode and 13 Mbps data rate for 802.11n HT40 mode. The EUT was tuned to a low, middle and high channel.

Table: Maximum 6 dB Bandwidth

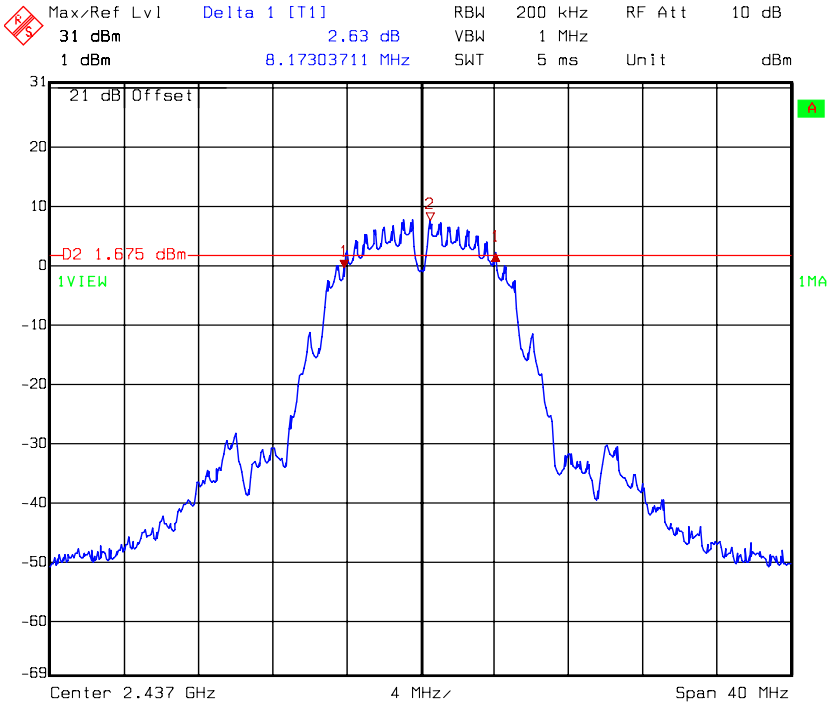
Mode	Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Min. Limit (MHz)	Pass/Fail
802.11b	1	2412	8.16		0.5	Pass
	6	2437	8.17		0.5	Pass
	11	2462	8.18		0.5	Pass
802.11g Chain 0	1	2412	15.26		0.5	Pass
	6	2437	15.65		0.5	Pass
	11	2462	15.29		0.5	Pass
802.11g Chain 1	1	2412	15.87		0.5	Pass
	6	2437	15.86		0.5	Pass
	11	2462	15.85		0.5	Pass
Mode	Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Min. Limit (MHz)	Pass/Fail
			Chain 0	Chain 1		
802.11n HT20	1	2412	17.21	17.16	0.5	Pass
	6	2437	17.22	17.26	0.5	Pass
	11	2462	17.17	17.07	0.5	Pass
802.11n HT40	3	2422	36.64	36.41	0.5	Pass
	6	2437	36.43	36.32	0.5	Pass
	9	2452	36.51	36.34	0.5	Pass

6 dB Bandwidth @ 802.11b mode channel 1



Title: 6dB Occupied Bandwidth (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11b_Chain0_Ch1_2412

6 dB Bandwidth @ 802.11b mode channel 6

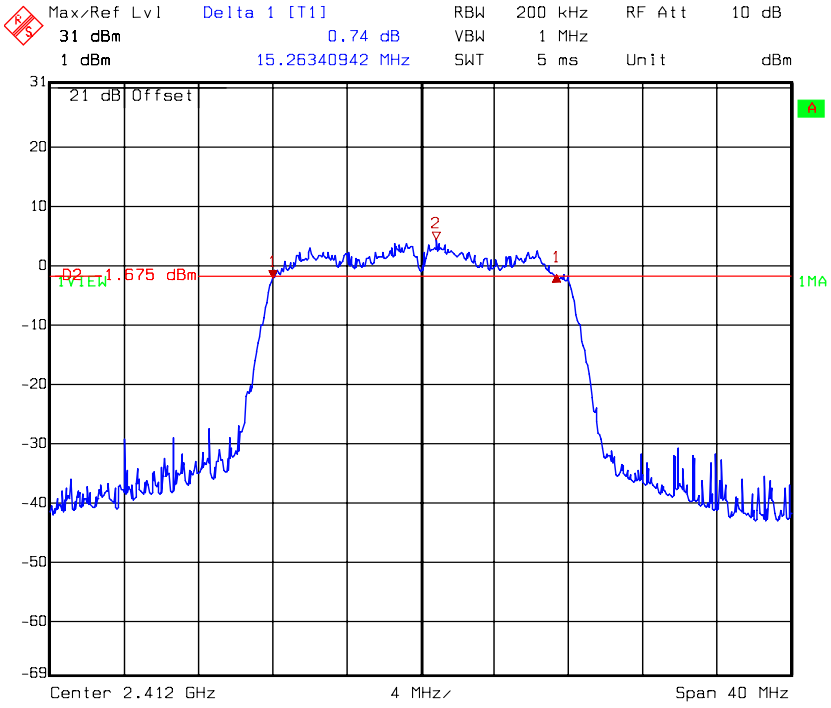


Title: 6dB Occupied Bandwidth (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11b_Chain0_Ch6_2437

6 dB Bandwidth @ 802.11b mode channel 11

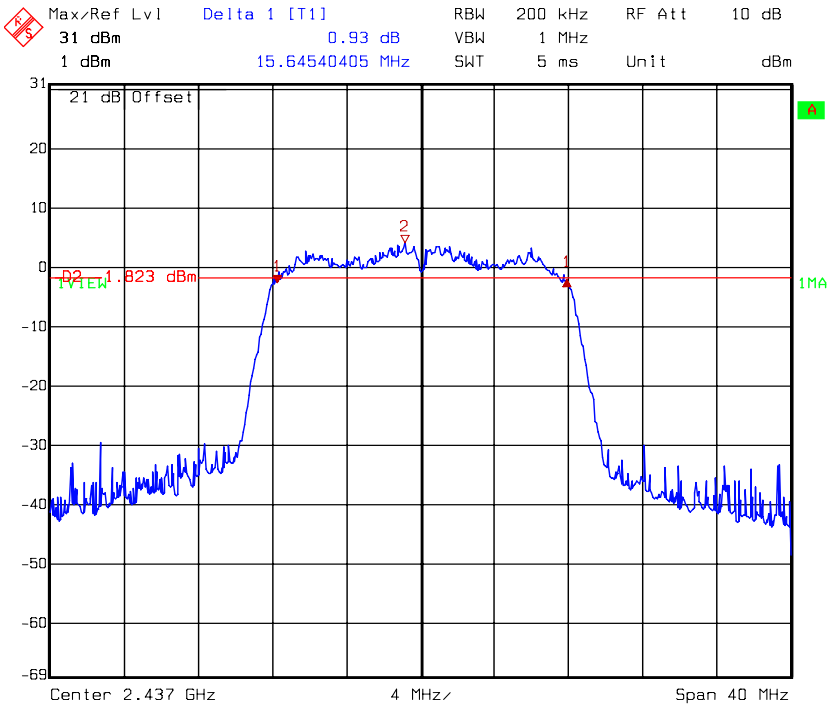
Title: 6dB Occupied Bandwidth (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11b_Chain0_Ch11_2462

Chain 0: 6 dB Bandwidth @ 802.11g mode channel 1



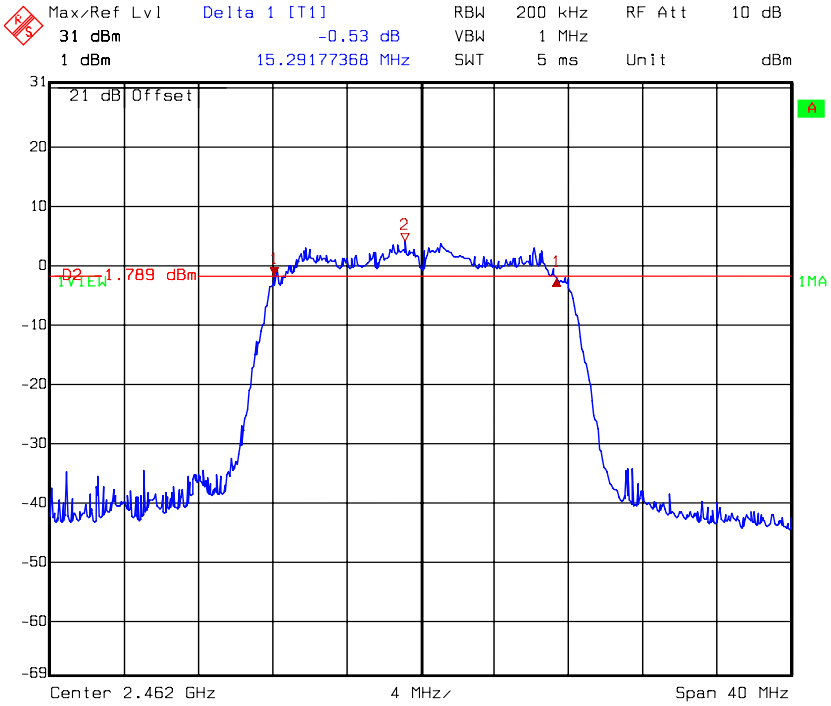
Title: 6dB Occupied Bandwidth (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11g_Chain0_Ch1_2412

Chain 0: 6 dB Bandwidth @ 802.11g mode channel 6



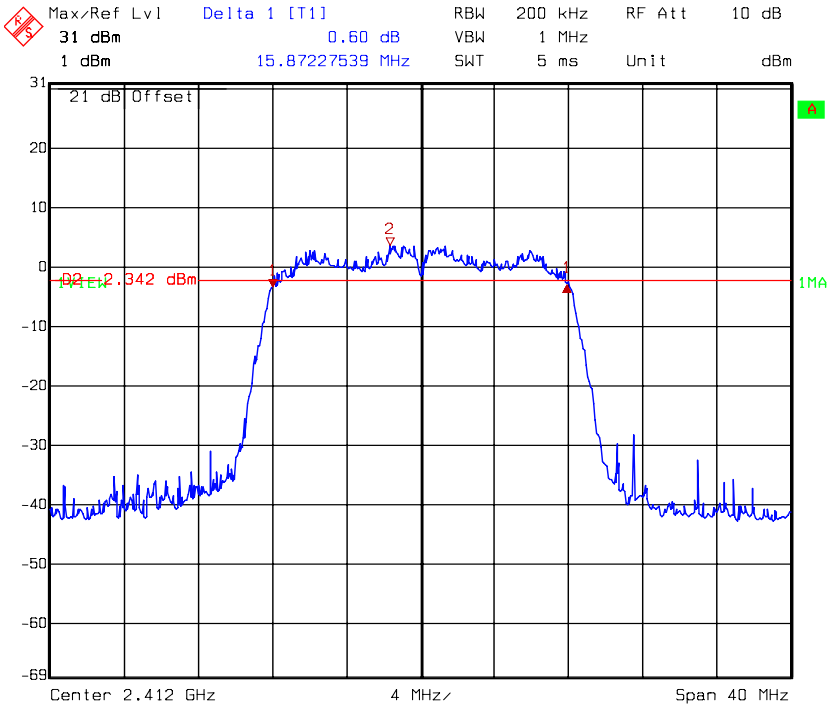
Title: 6dB Occupied Bandwidth (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11g_Chain0_Ch6_2437

Chain 0: 6 dB Bandwidth @ 802.11g mode channel 11



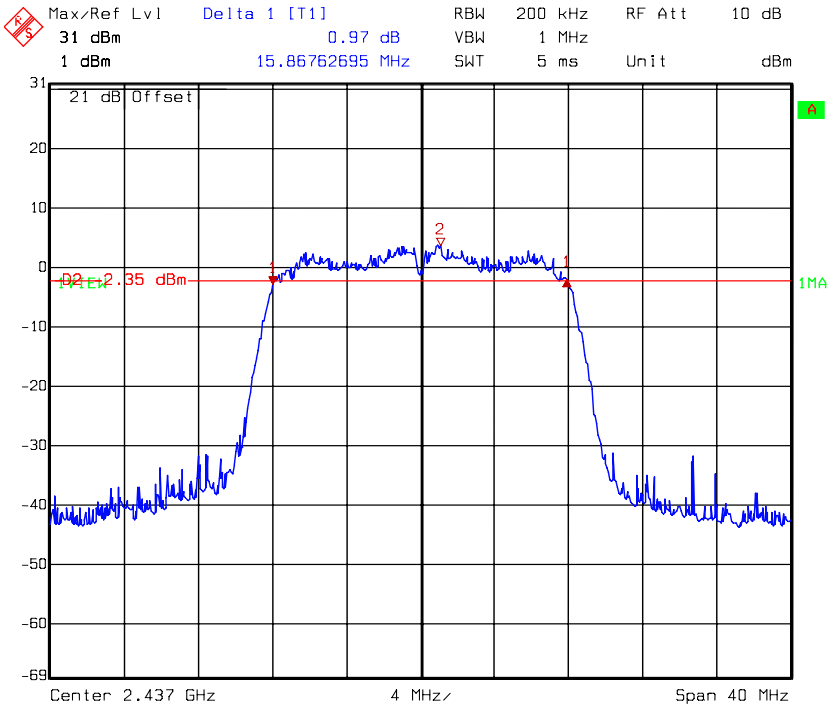
Title: 6dB Occupied Bandwidth (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11g_Chain0_Ch11_2462

Chain 1: 6 dB Bandwidth @ 802.11g mode channel 1



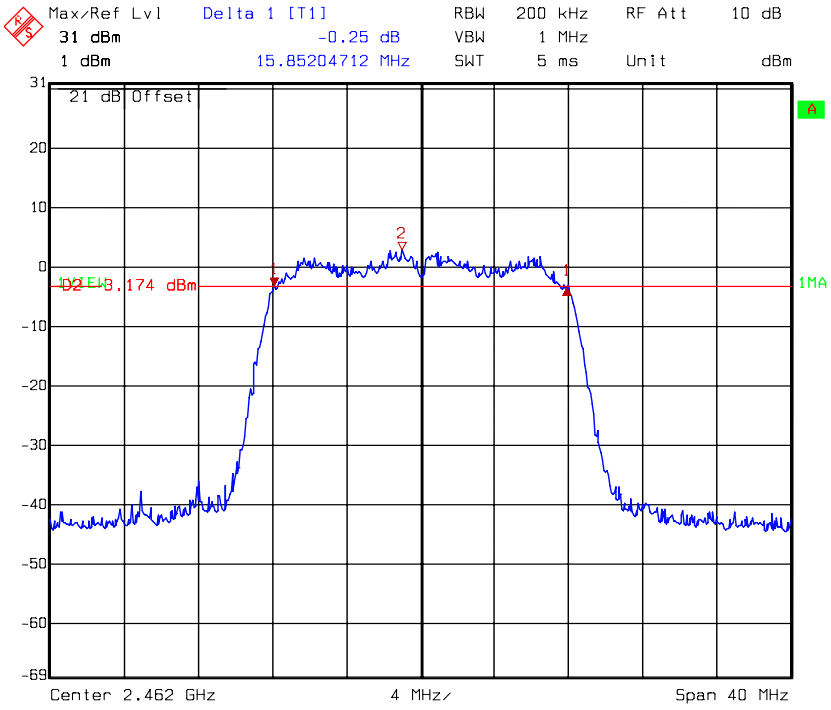
Title: 6dB Occupied Bandwidth (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11g_Chain1_Ch1_2412

Chain 1: 6 dB Bandwidth @ 802.11g mode channel 6



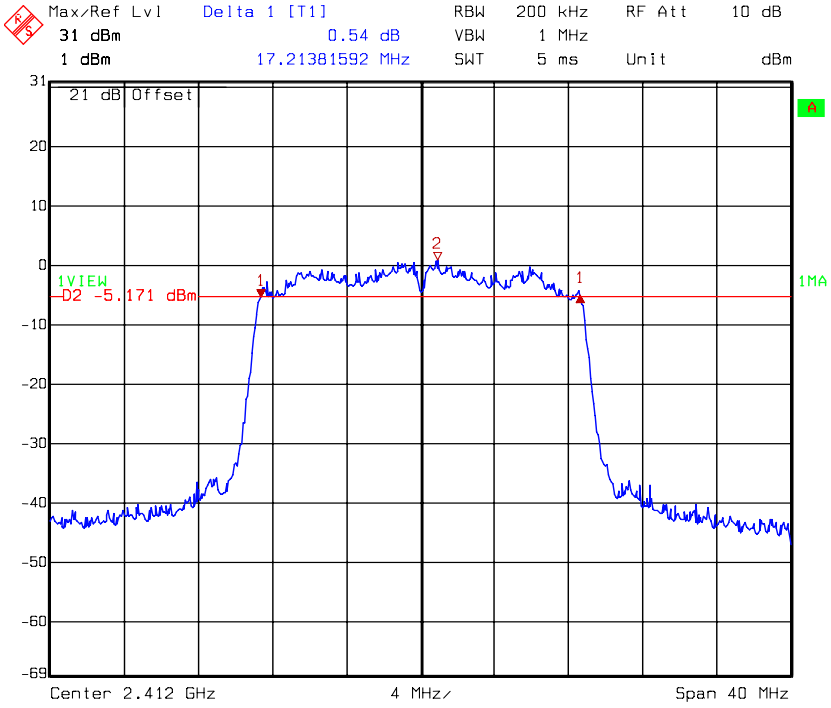
Title: 6dB Occupied Bandwidth (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11g_Chain1_Ch6_2437

Chain 1: 6 dB Bandwidth @ 802.11g mode channel 11



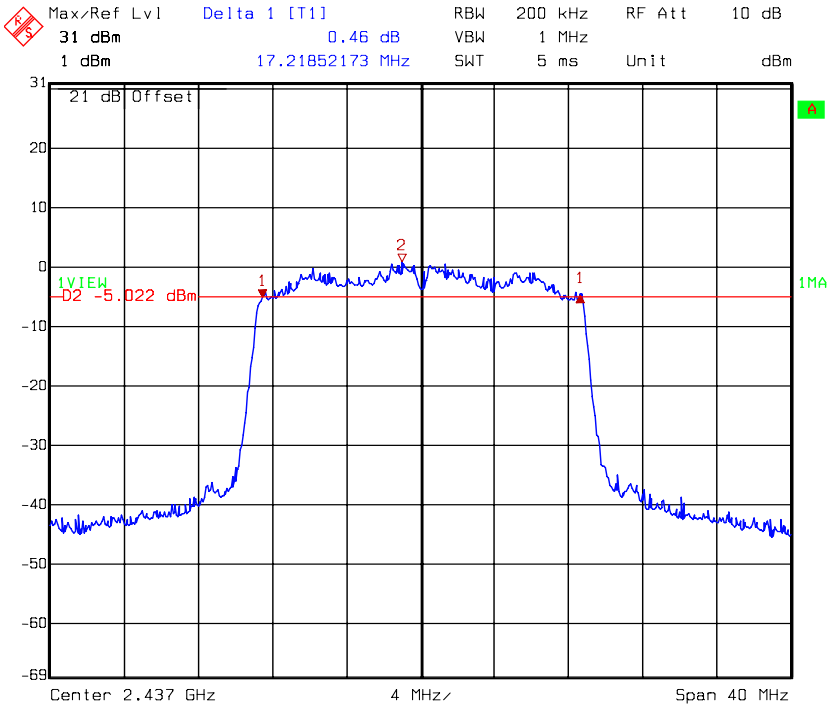
Title: 6dB Occupied Bandwidth (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11g_Chain1_Ch11_2462

Chain 0: 6 dB Bandwidth @ 802.11n HT20 mode channel 1



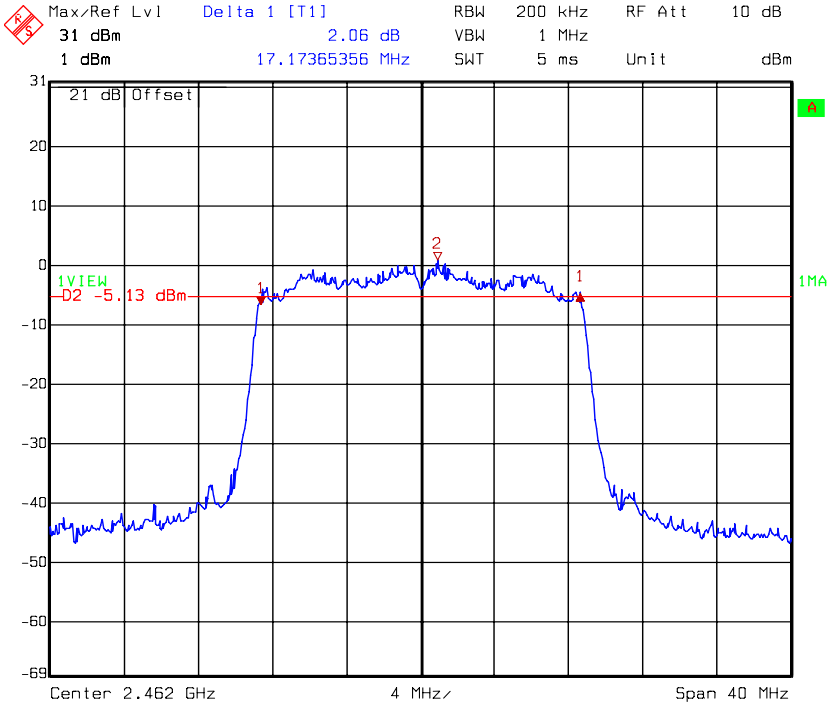
Title: 6dB Occupied Bandwidth (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11n(HT20)_Chain0_Ch1_2412

Chain 0: 6 dB Bandwidth @ 802.11n HT20 mode channel 6



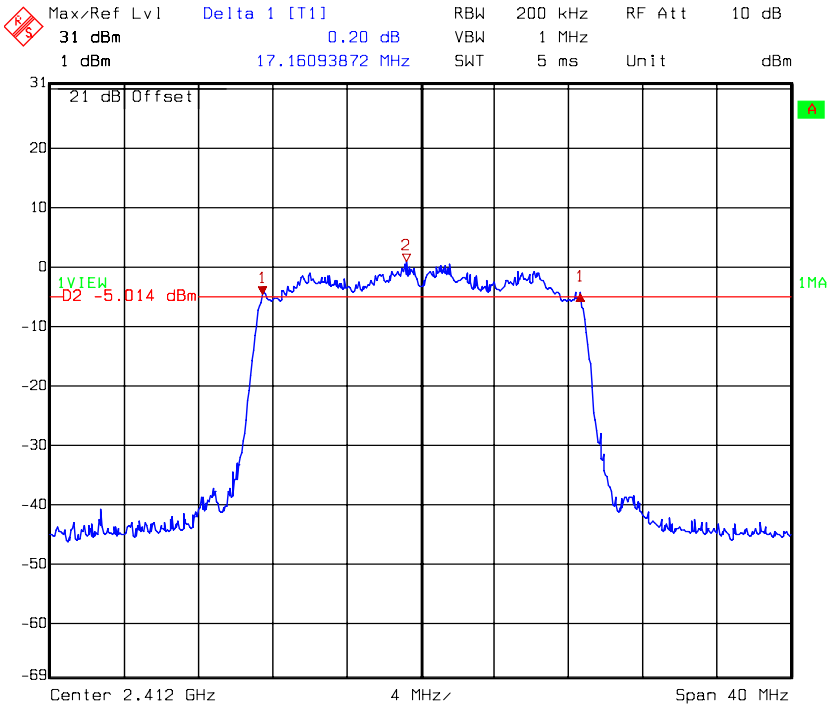
Title: 6dB Occupied Bandwidth (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11n(HT20)_Chain0_Ch6_2437

Chain 0: 6 dB Bandwidth @ 802.11n HT20 mode channel 11



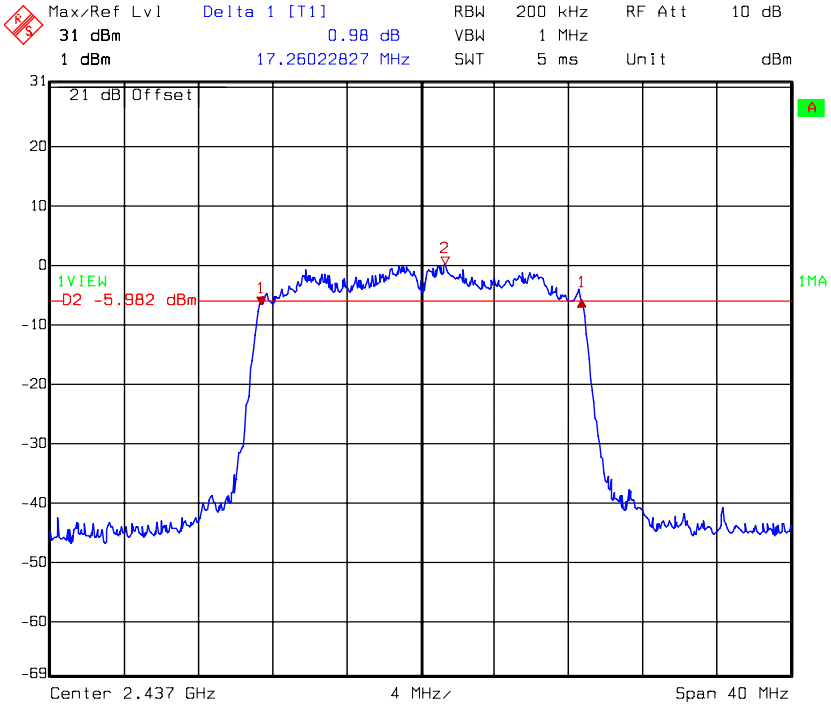
Title: 6dB Occupied Bandwidth (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11n(HT20)_Chain0_Ch11_2462

Chain 1: 6 dB Bandwidth @ 802.11n HT20 mode channel 1



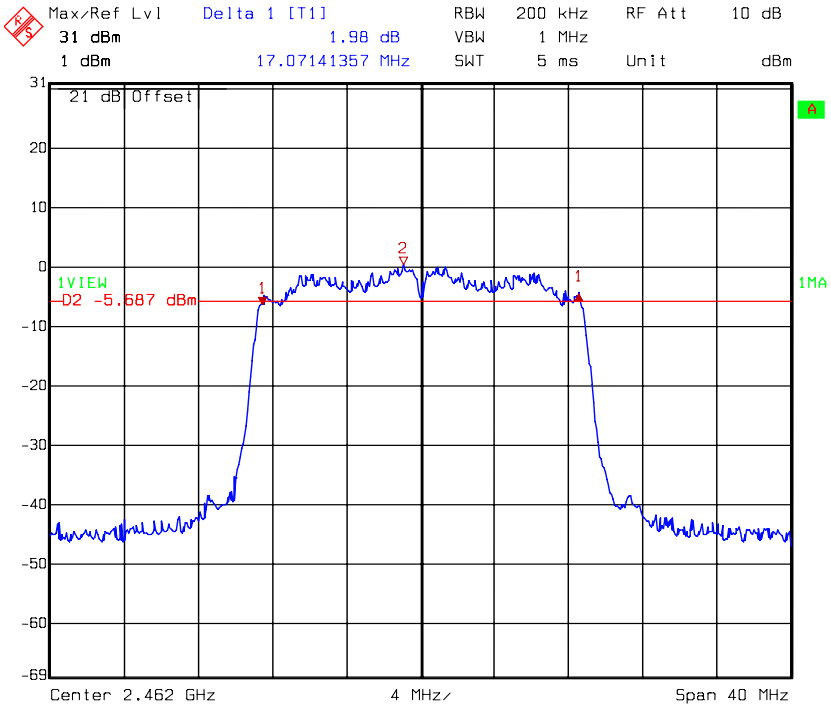
Title: 6dB Occupied Bandwidth (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11n(HT20)_Chain1_Ch1_2412

Chain 1: 6 dB Bandwidth @ 802.11n HT20 mode channel 6



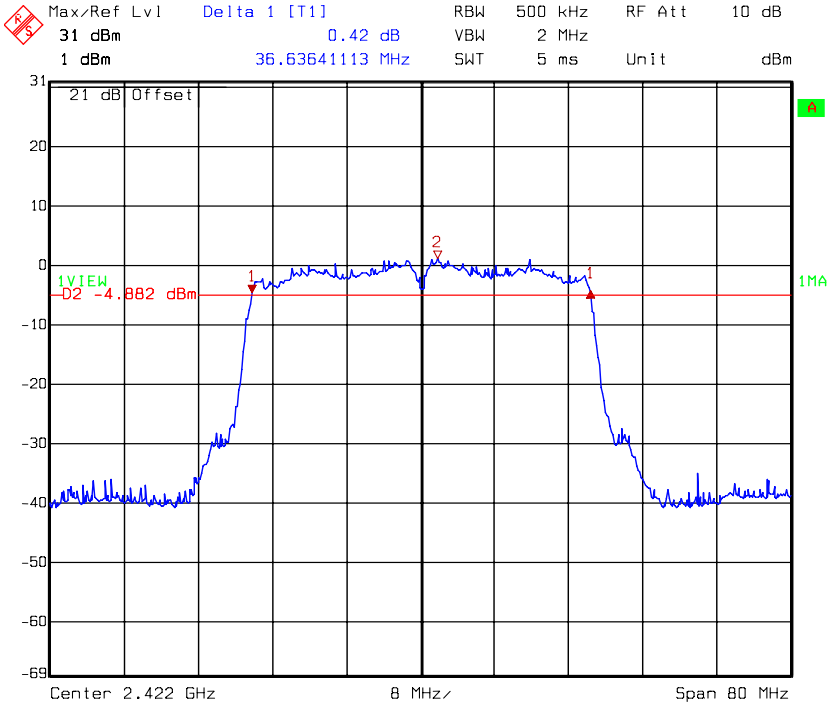
Title: 6dB Occupied Bandwidth (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11n(HT20)_Chain1_Ch6_2437

Chain 1: 6 dB Bandwidth @ 802.11n HT20 mode channel 11



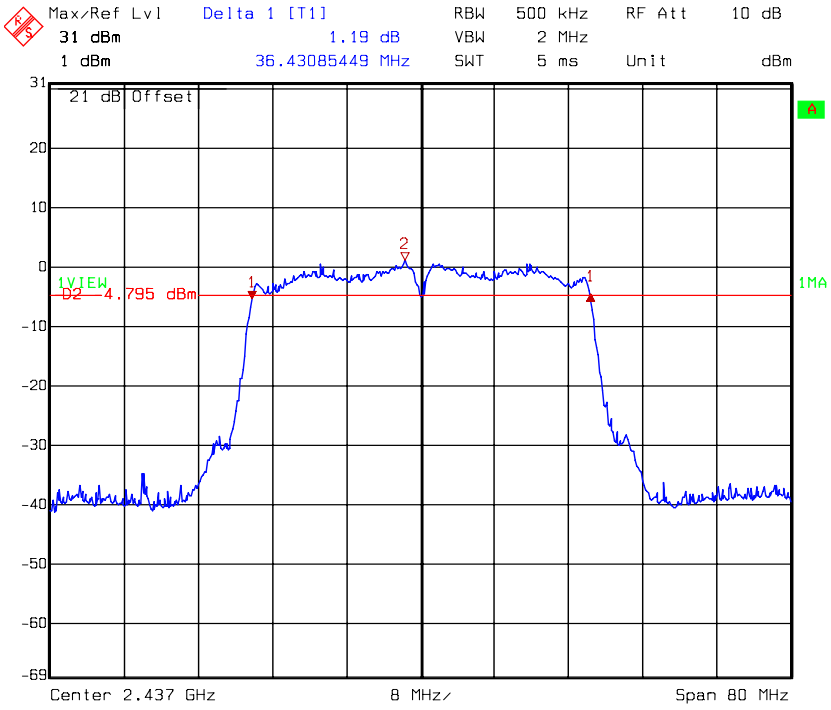
Title: 6dB Occupied Bandwidth (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11n(HT20)_Chain1_Ch11_2462

Chain 0: 6 dB Bandwidth @ 802.11n HT40 mode channel 3



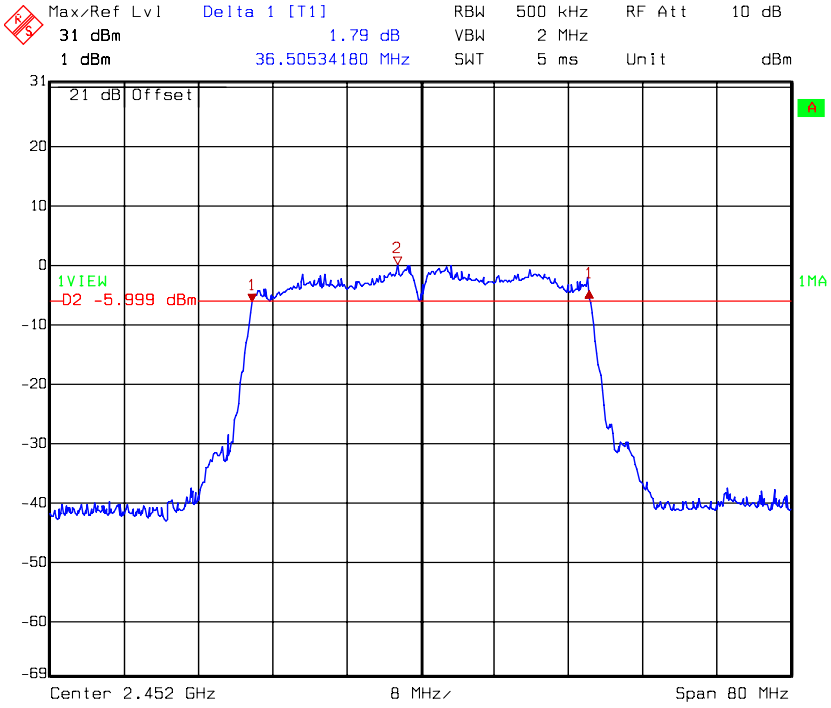
Title: 6dB Occupied Bandwidth (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11n(HT40)_Chain0_Ch3_2422

Chain 0: 6 dB Bandwidth @ 802.11n HT40 mode channel 6



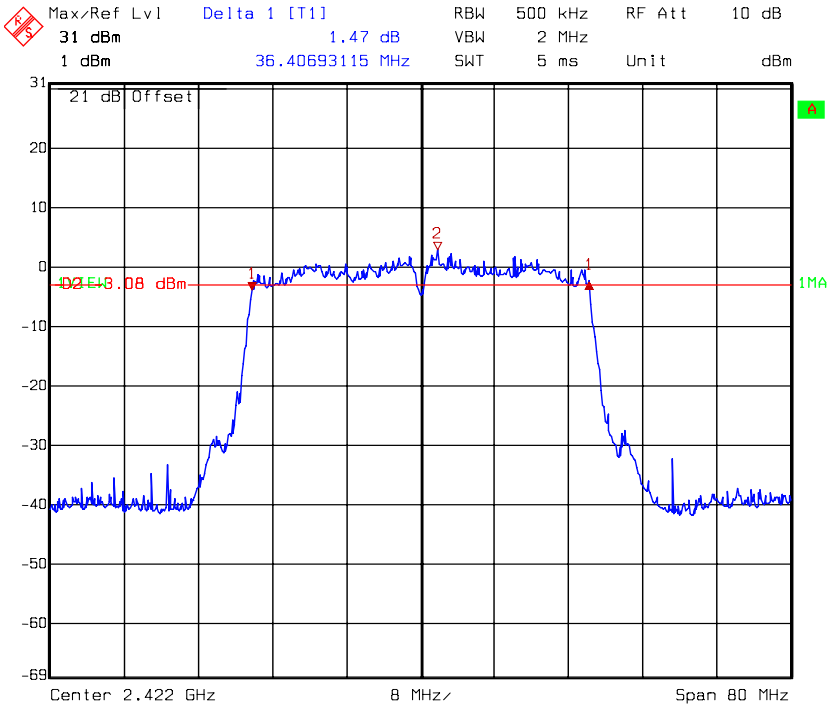
Title: 6dB Occupied Bandwidth (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11n(HT40)_Chain0_Ch6_2437

Chain 0: 6 dB Bandwidth @ 802.11n HT40 mode channel 9



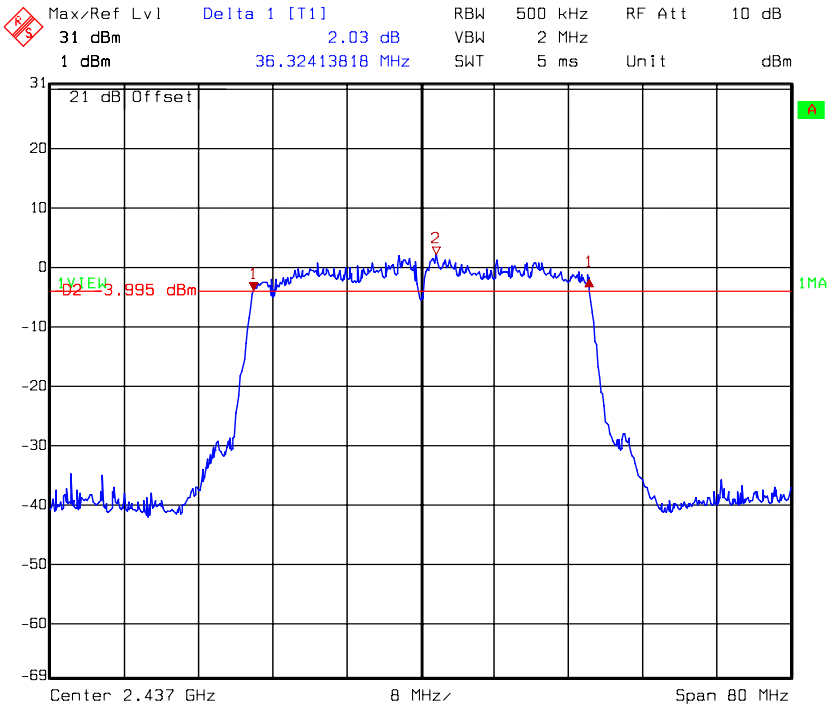
Title: 6dB Occupied Bandwidth (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11n(HT40)_Chain0_Ch9_2452

Chain 1: 6 dB Bandwidth @ 802.11n HT40 mode channel 3



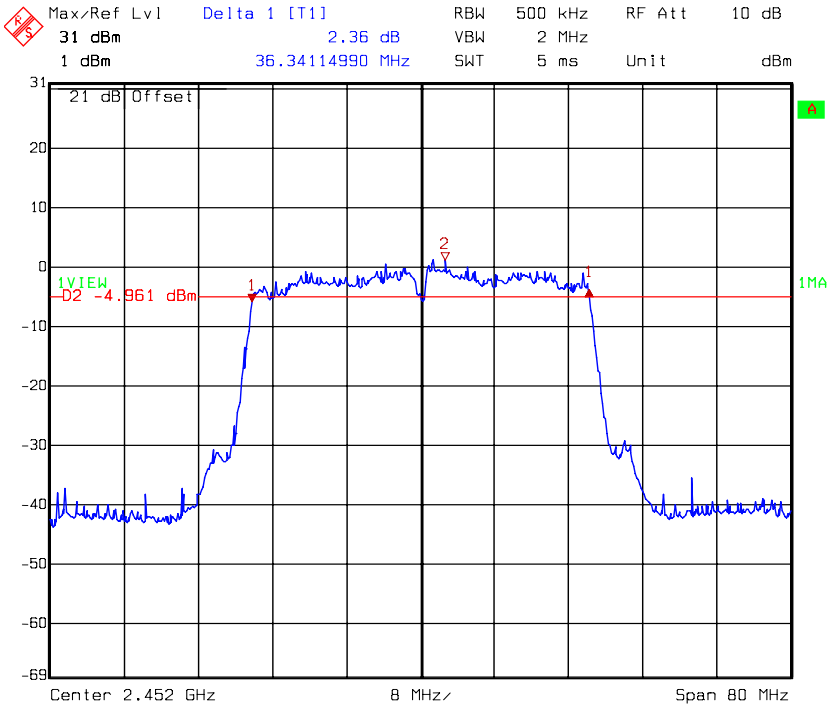
Title: 6dB Occupied Bandwidth (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11n(HT40)_Chain1_Ch3_2422

Chain 1: 6 dB Bandwidth @ 802.11n HT40 mode channel 6



Title: 6dB Occupied Bandwidth (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11n(HT40)_Chain1_Ch6_2437

Chain 1: 6 dB Bandwidth @ 802.11n HT40 mode channel 9



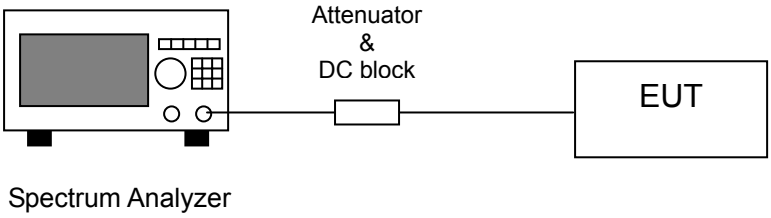
4. 99 % Occupied Bandwidth

Name of Test	99 % Occupied Bandwidth
Base Standard	None; for reporting purposes only

Test Result: Complies
Measurement Data: See Table & plots below

Method of Measurement:
A portion of the transmitted signal is coupled to a Spectrum Analyzer with a resolution bandwidth of at least 1 % of the bandwidth of the transmitted signal. The resolution bandwidth is chosen so as not to reduce the peak level of the measured waveform. The appropriate bandwidth mask is applied to the output waveform to verify compliance.

Test Diagram:

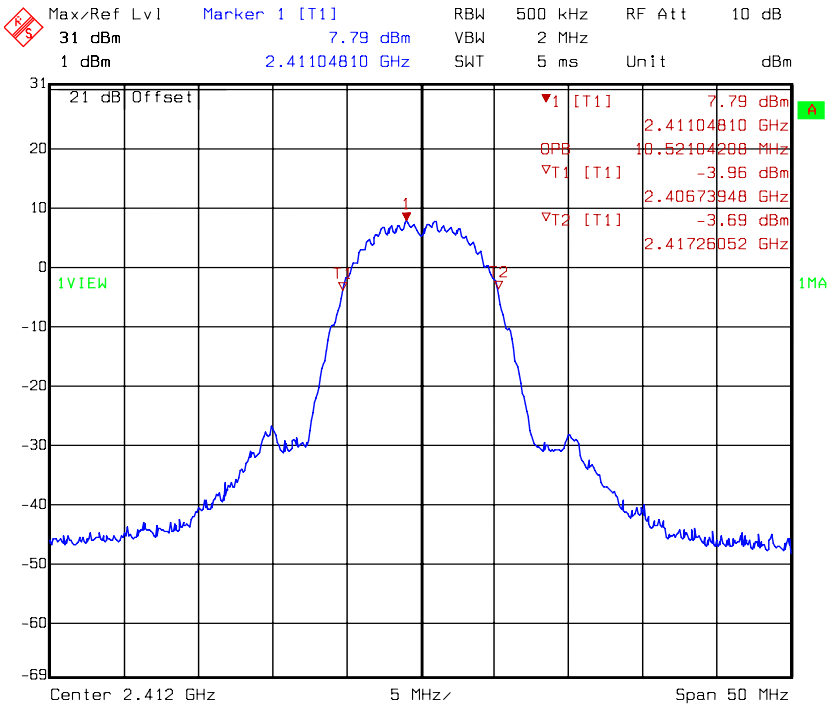


Note: The EUT was tested while in a continuous transmit mode and the worst case data rates are 1 Mbps data rate for 802.11b mode, 6 Mbps data rate for 802.11g mode, 6.5 Mbps data rate for 802.11n HT20 mode and 13 Mbps data rate for 802.11n HT40 mode. The EUT was tuned to a low, middle and high channel.

Table: 99 % Occupied Bandwidth

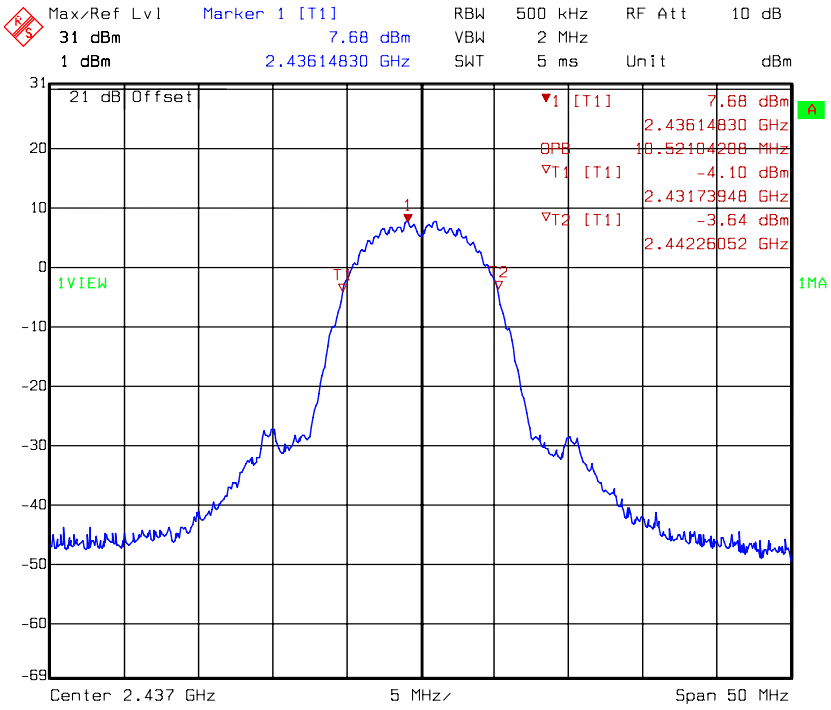
Mode	Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
802.11b	1	2412	10.521	
	6	2437	10.521	
	11	2462	10.521	
802.11g Chain 0	1	2412	16.933	
	6	2437	16.833	
	11	2462	16.733	
802.11g Chain 1	1	2412	16.733	
	6	2437	16.833	
	11	2462	16.833	
Mode	Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
			Chain 0	Chain 1
802.11n HT20	1	2412	17.635	17.635
	6	2437	17.635	17.635
	11	2462	17.635	17.735
802.11n HT40	3	2422	36.673	37.074
	6	2437	36.873	36.874
	9	2452	36.873	36.874

99 % Occupied Bandwidth @ 802.11b mode channel 1



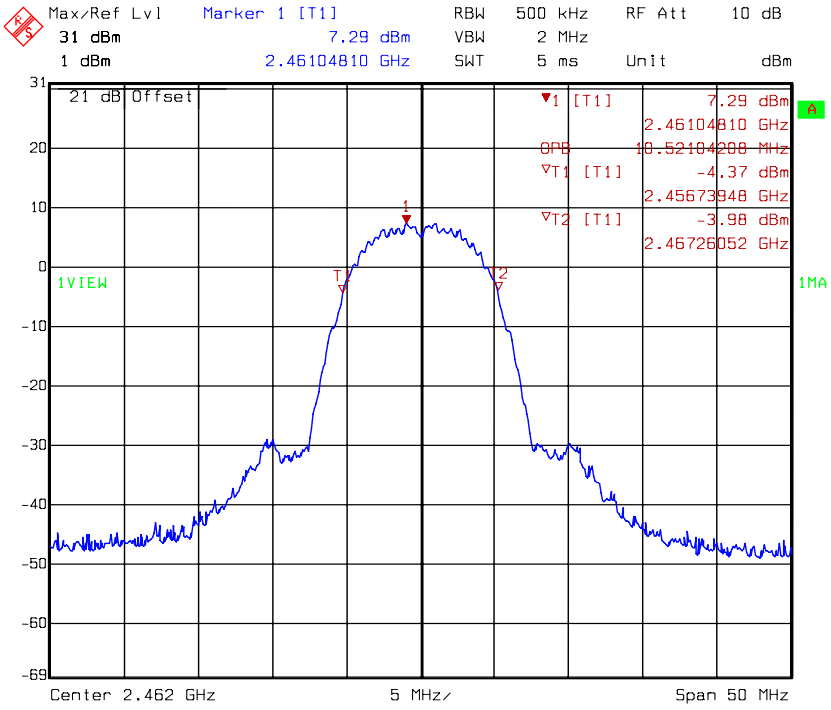
Title: 99% Occupied Bandwidth (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11b_Chain0_Ch1_2412

99 % Occupied Bandwidth @ 802.11b mode channel 6



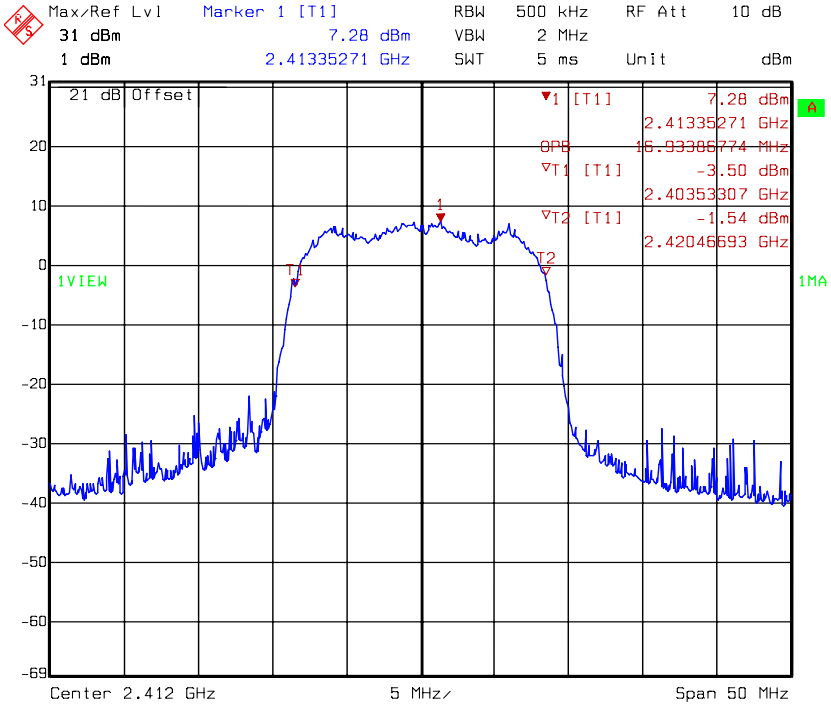
Title: 99% Occupied Bandwidth (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11b_Chain0_Ch6_2437

99 % Occupied Bandwidth @ 802.11b mode channel 11



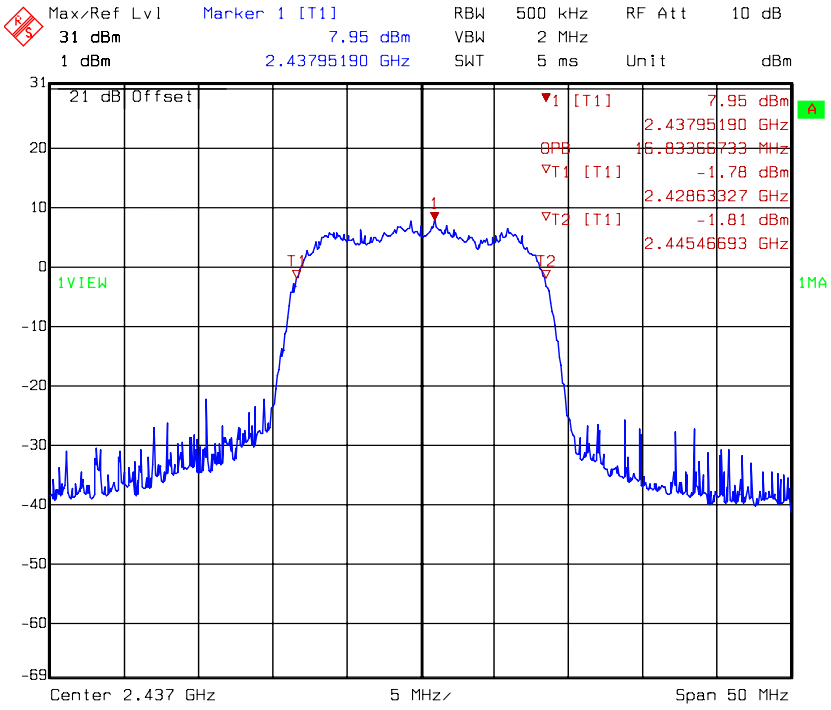
Title: 99% Occupied Bandwidth (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11b_Chain0_Ch11_2462

Chain 0: 99 % Occupied Bandwidth @ 802.11g mode channel 1



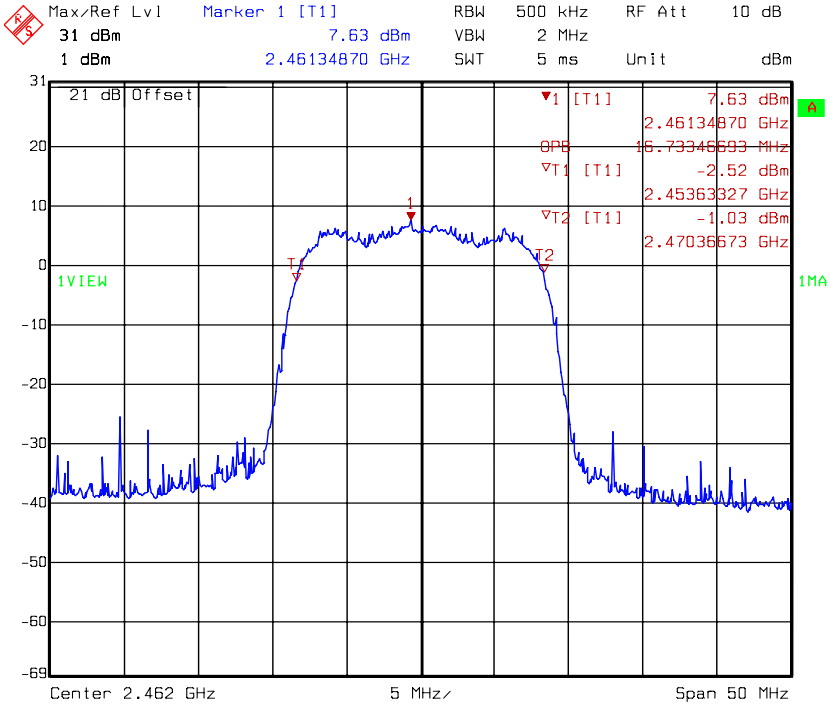
Title: 99% Occupied Bandwidth (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11g_Chain0_Ch1_2412

Chain 0: 99 % Occupied Bandwidth @ 802.11g mode channel 6



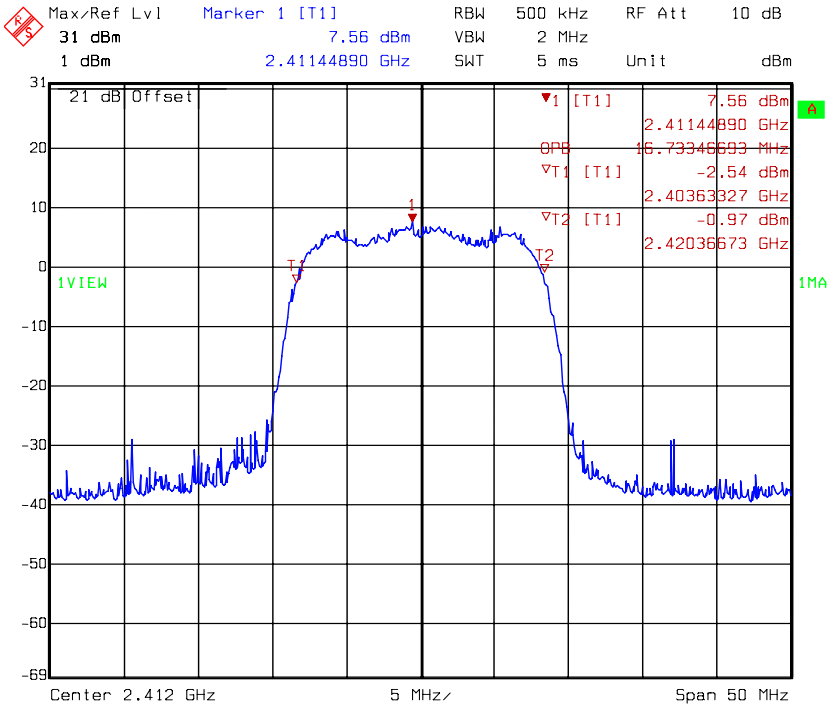
Title: 99% Occupied Bandwidth (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11g_Chain0_Ch6_2437

Chain 0: 99 % Occupied Bandwidth @ 802.11g mode channel 11



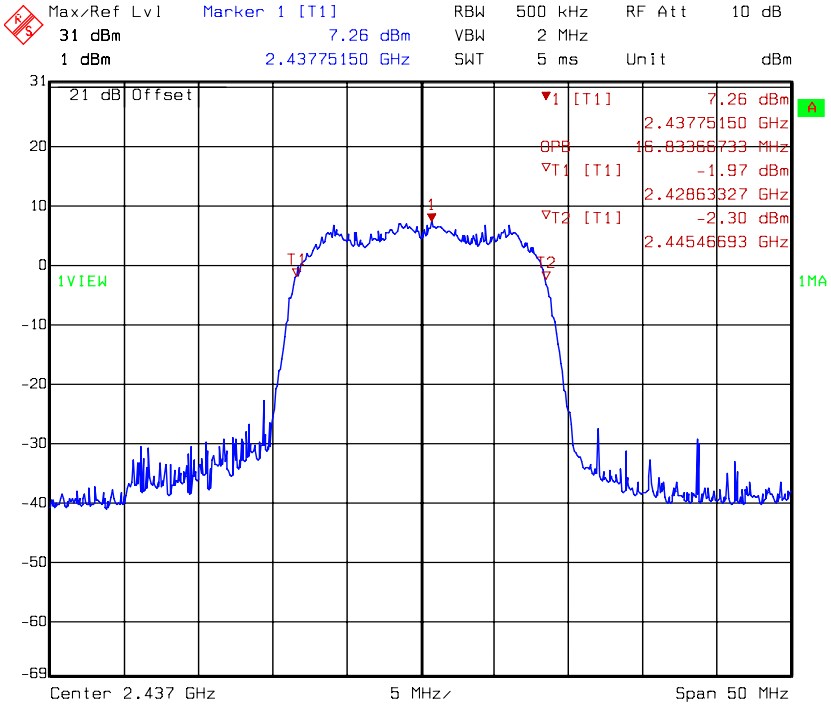
Title: 99% Occupied Bandwidth (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11g_Chain0_Ch11_2462

Chain 1: 99 % Occupied Bandwidth @ 802.11g mode channel 1



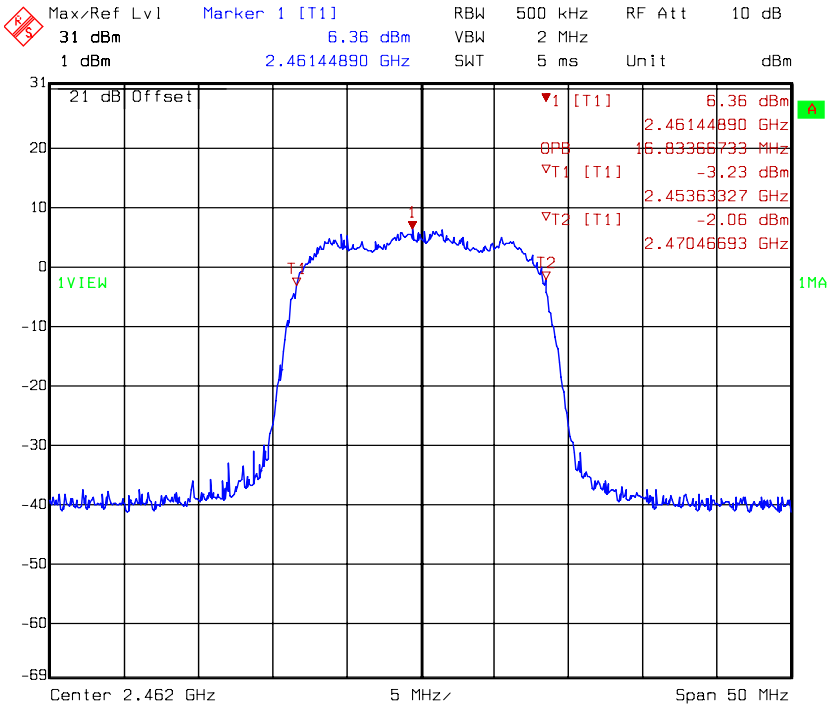
Title: 99% Occupied Bandwidth (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11g_Chain1_Ch1_2412

Chain 1: 99 % Occupied Bandwidth @ 802.11g mode channel 6

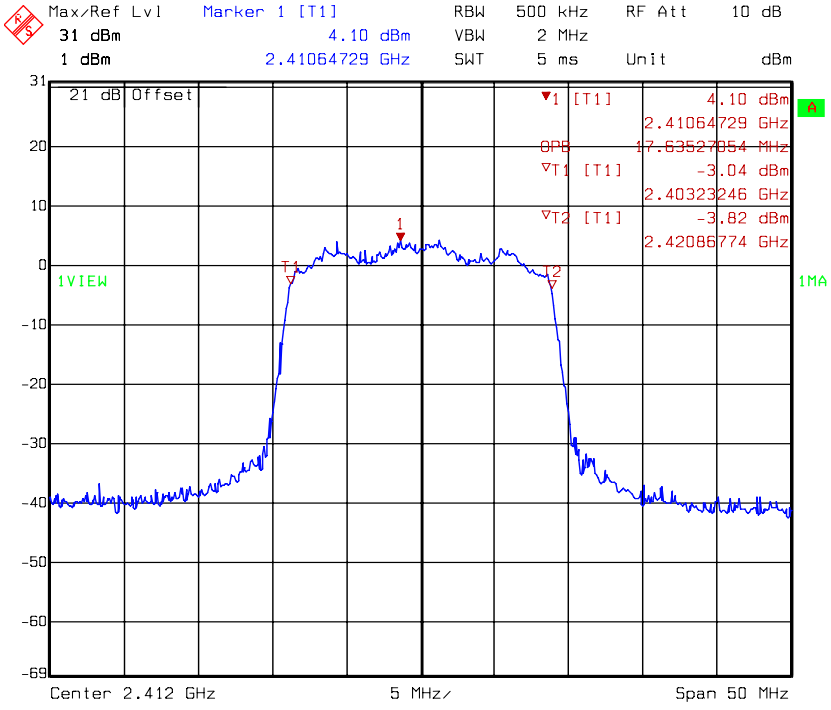


Title: 99% Occupied Bandwidth (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11g_Chain1_Ch6_2437

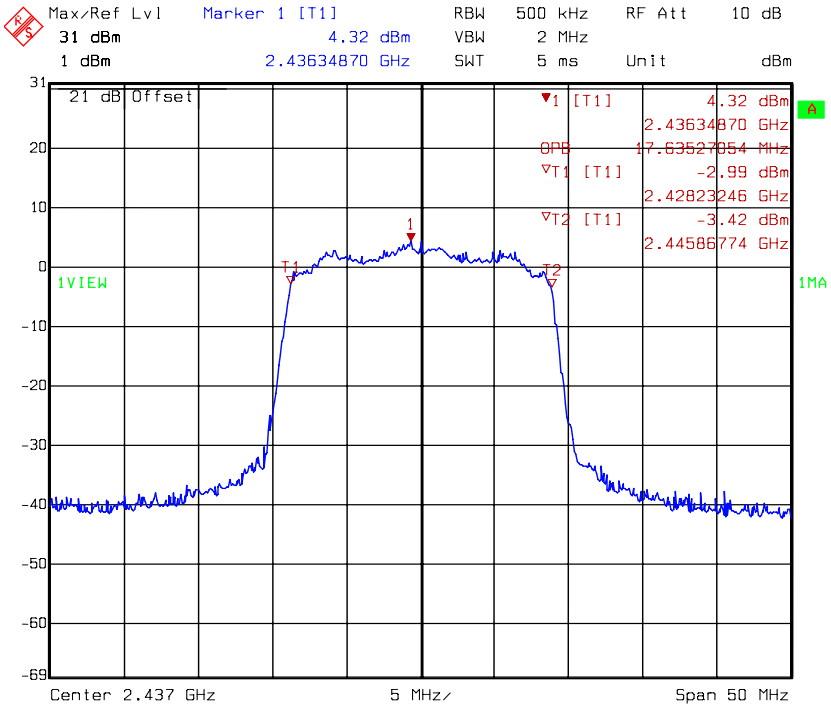
Chain 1: 99 % Occupied Bandwidth @ 802.11g mode channel 11



Chain 0: 99 % Occupied Bandwidth @ 802.11n HT20 mode channel 1

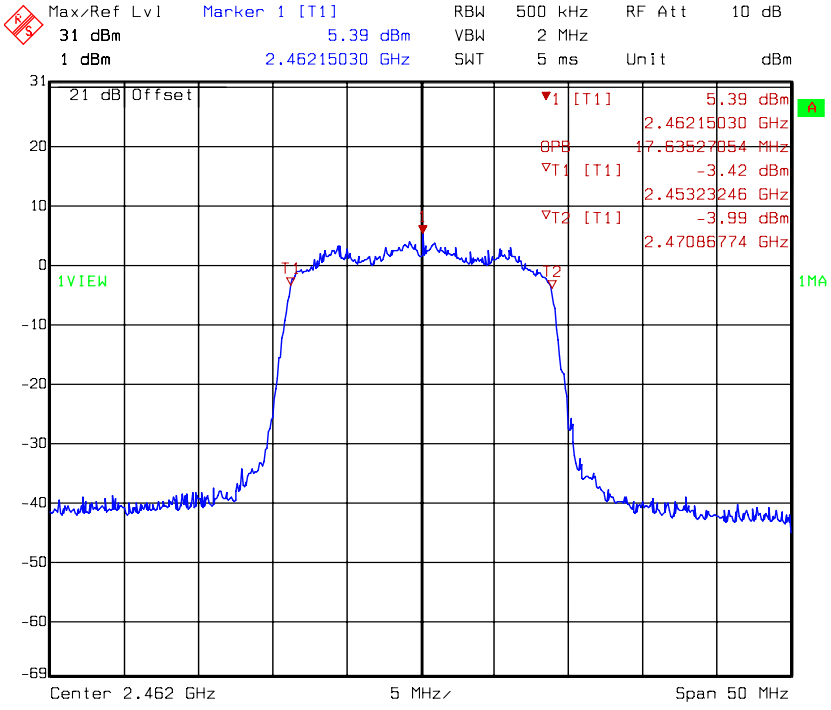


Chain 0: 99 % Occupied Bandwidth @ 802.11n HT20 mode channel 6



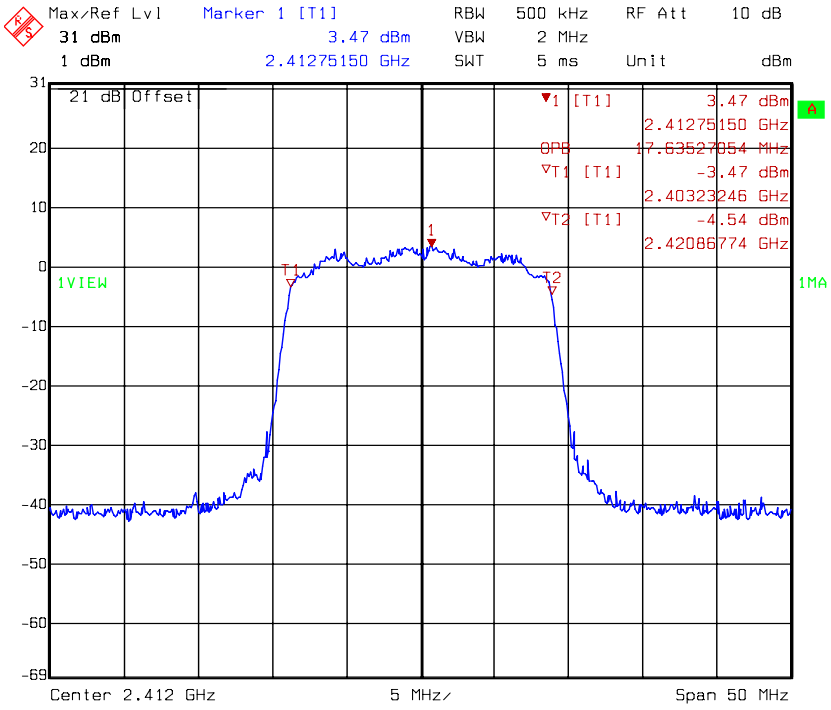
Title: 99% Occupied Bandwidth (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11n(HT20)_Chain0_Ch6_2437

Chain 0: 99 % Occupied Bandwidth@802.11n HT20 mode channel 11



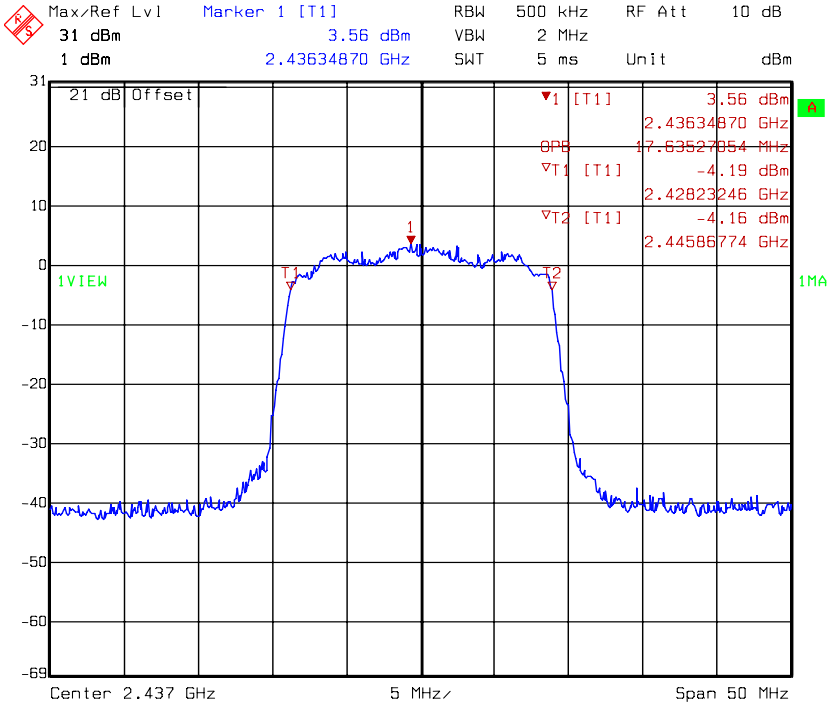
Title: 99% Occupied Bandwidth (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11n(HT20)_Chain0_Ch11_2462

Chain 1: 99 % Occupied Bandwidth @ 802.11n HT20 mode channel 1



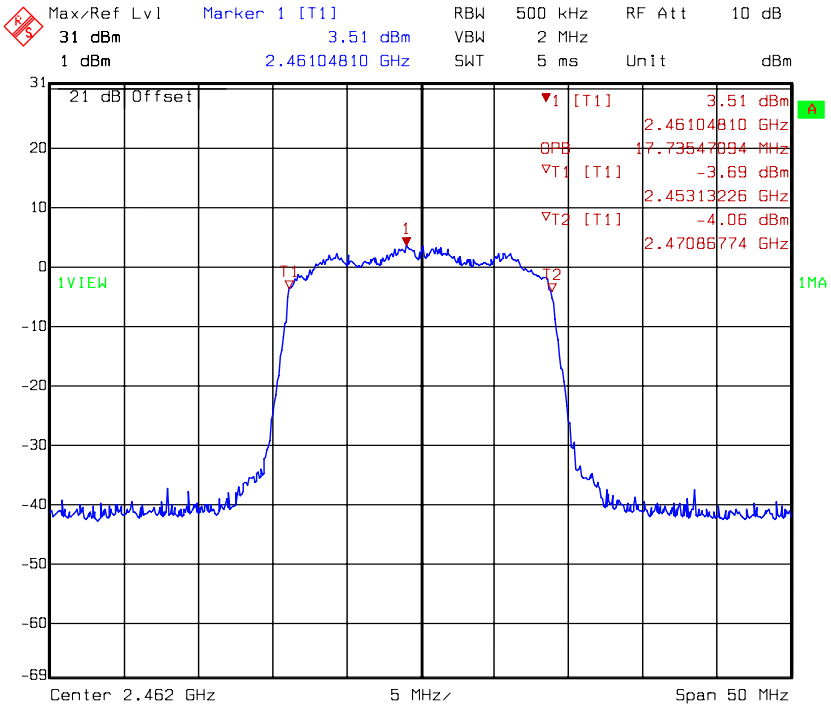
Title: 99% Occupied Bandwidth (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11n(HT20)_Chain1_Ch1_2412

Chain 1: 99 % Occupied Bandwidth @ 802.11n HT20 mode channel 6



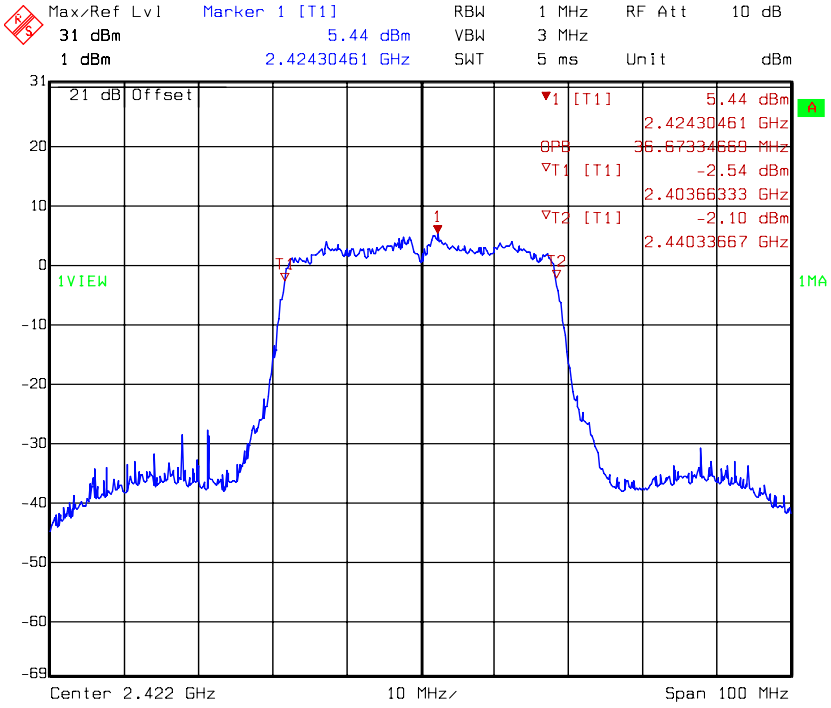
Title: 99% Occupied Bandwidth (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11n(HT20)_Chain1_Ch6_2437

Chain 1: 99 % Occupied Bandwidth@802.11n HT20 mode channel 11



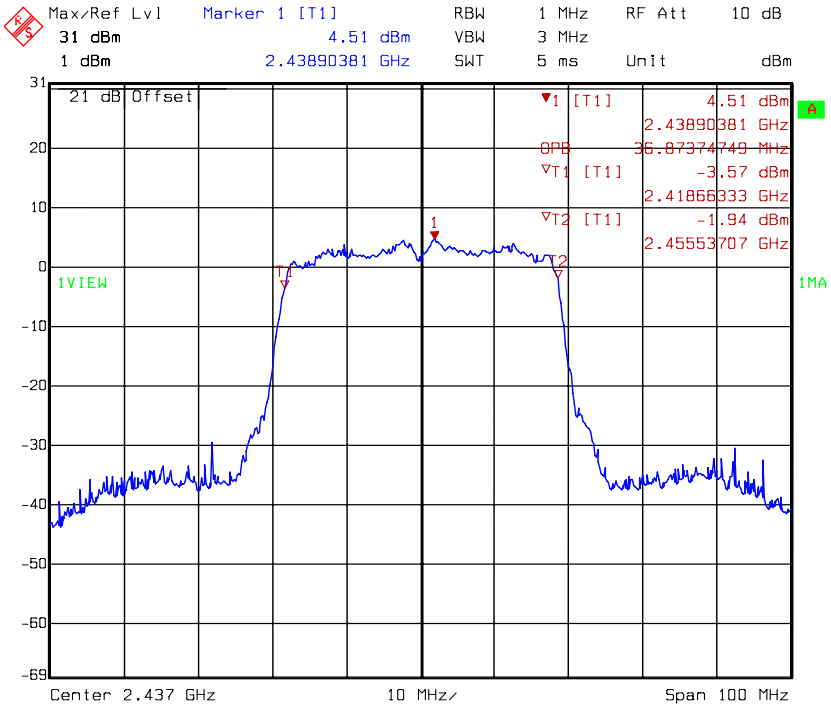
Title: 99% Occupied Bandwidth (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11n(HT20)_Chain1_Ch11_2462

Chain 0: 99 % Occupied Bandwidth @ 802.11n HT40 mode channel 3



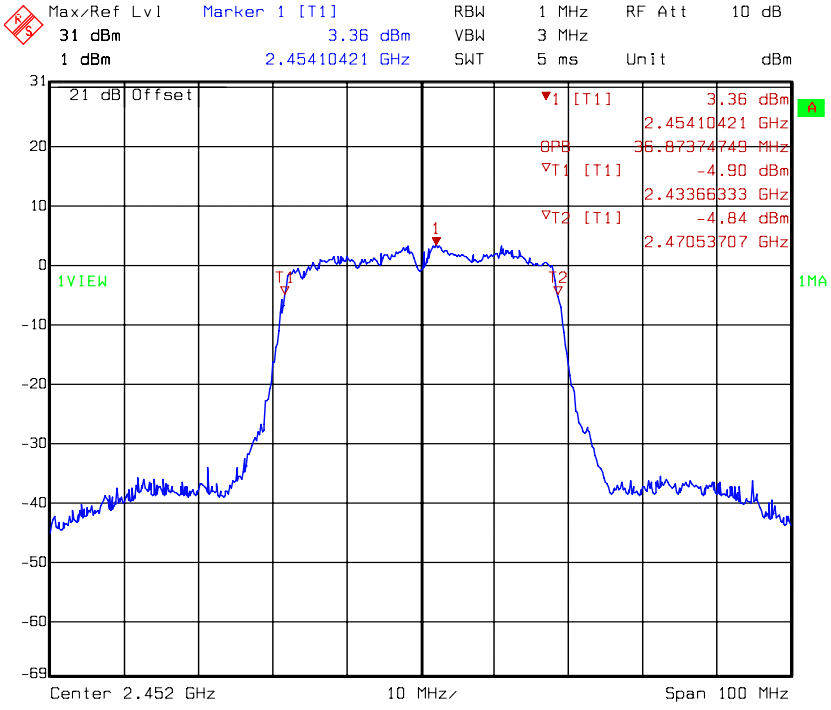
Title: 99% Occupied Bandwidth (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11n(HT40)_Chain0_Ch3_2422

Chain 0: 99 % Occupied Bandwidth @ 802.11n HT40 mode channel 6



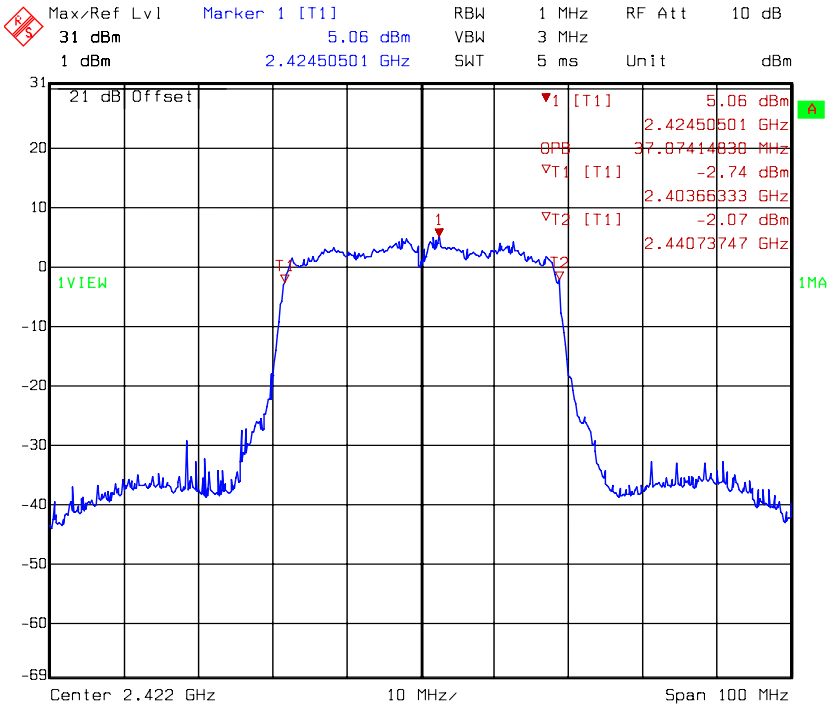
Title: 99% Occupied Bandwidth (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11n(HT40)_Chain0_Ch6_2437

Chain 0: 99 % Occupied Bandwidth @ 802.11n HT40 mode channel 9



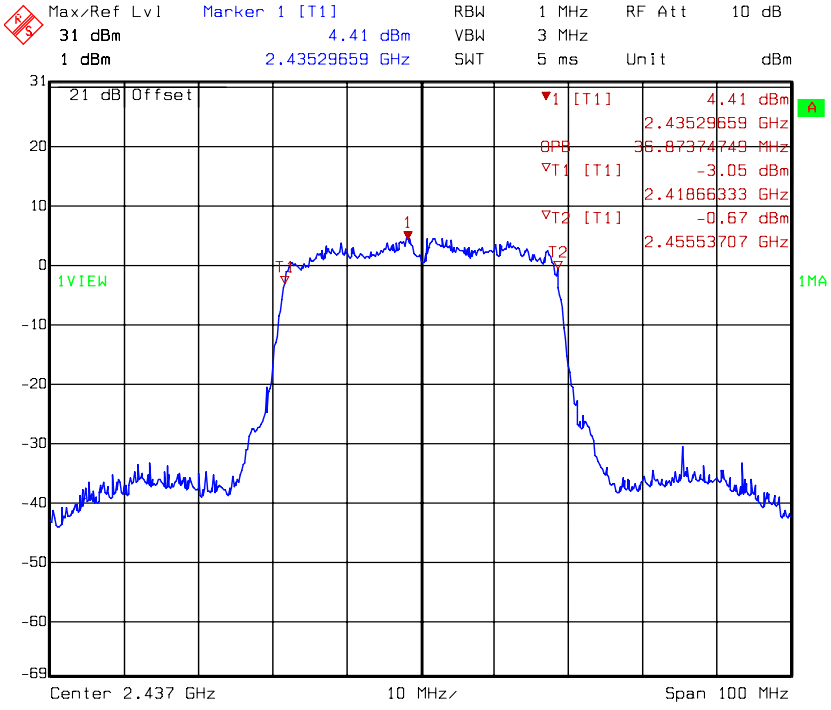
Title: 99% Occupied Bandwidth (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11n(HT40)_Chain0_Ch9_2452

Chain 1: 99 % Occupied Bandwidth @ 802.11n HT40 mode channel 3



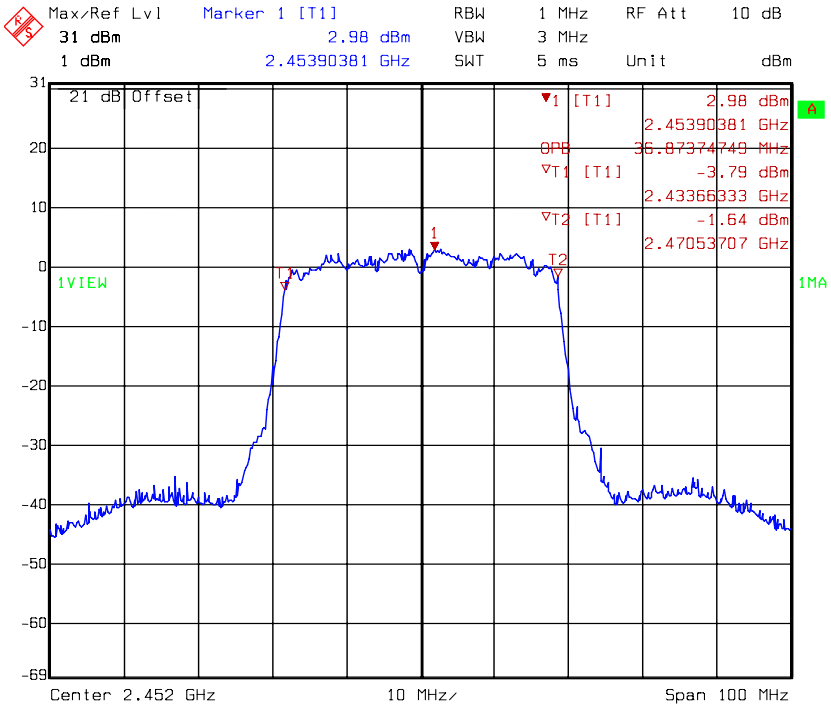
Title: 99% Occupied Bandwidth (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11n(HT40)_Chain1_Ch3_2422

Chain 1: 99 % Occupied Bandwidth @ 802.11n HT40 mode channel 6



Title: 99% Occupied Bandwidth (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11n(HT40)_Chain1_Ch6_2437

Chain 1: 99 % Occupied Bandwidth @ 802.11n HT40 mode channel 9



5. Maximum Output Power

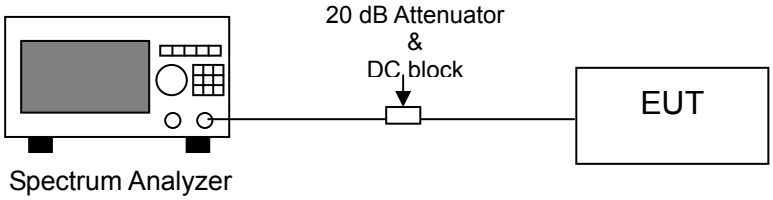
Name of Test	Maximum output power
Base Standard	FCC 15.247(b)

Measurement Uncertainty: ±0.392 dB (k=2)
Test Result: Complies
Measurement Data: See Table below

Method of Measurement:
Reference FCC document: KDB558074 D01

1. This procedure provides an integrated measurement alternative when the maximum available RBW < EBW.
2. Set the RBW = 1 MHz.
3. Set the VBW = 3 MHz.
4. Set the span to a value that is 5-30 % greater than the EBW.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the spectrum analyzer's integrated band power measurement function with band limits set equal to the EBW band edges. If the spectrum analyzer does not have a band power function, sum the spectrum levels at 1 MHz intervals extending across the EBW of the spectrum.

Test Diagram:



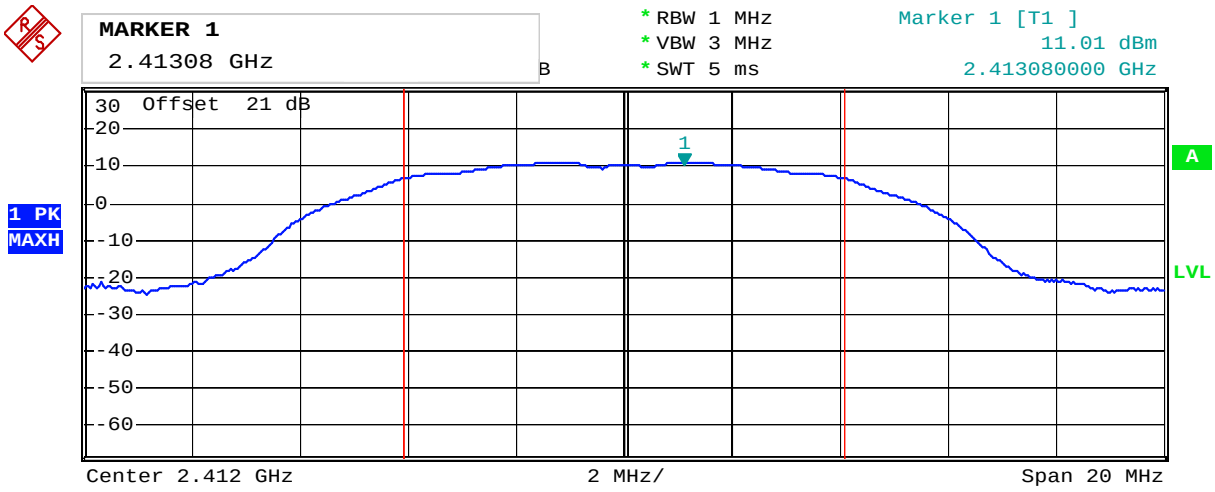
Note 1: §15.247 (b) (4) Except as shown in paragraphs (b)(3) (i), (ii) and (iii) of this section, if transmitting antennas of directional gain greater than 6 dBi are used the peak output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1) or (b)(2) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Table: Maximum output power

Mode	Channel	Frequency	Output Power (dBm)	Calculated Power (mW)	Limit	Margin
		(MHz)	PK	PK	(dBm)	(dB)
802.11b	1	2412	18.16	65.46	30	-11.84
	6	2437	17.97	62.66	30	-12.03
	11	2462	17.78	59.98	30	-12.22
802.11g Chain 0	1	2412	22.76	188.80	30	-7.24
	6	2437	23.24	210.86	30	-6.76
	11	2462	22.81	190.99	30	-7.19
802.11g Chain 1	1	2412	22.17	164.82	30	-7.83
	6	2437	22.07	161.06	30	-7.93
	11	2462	21.91	155.24	30	-8.09

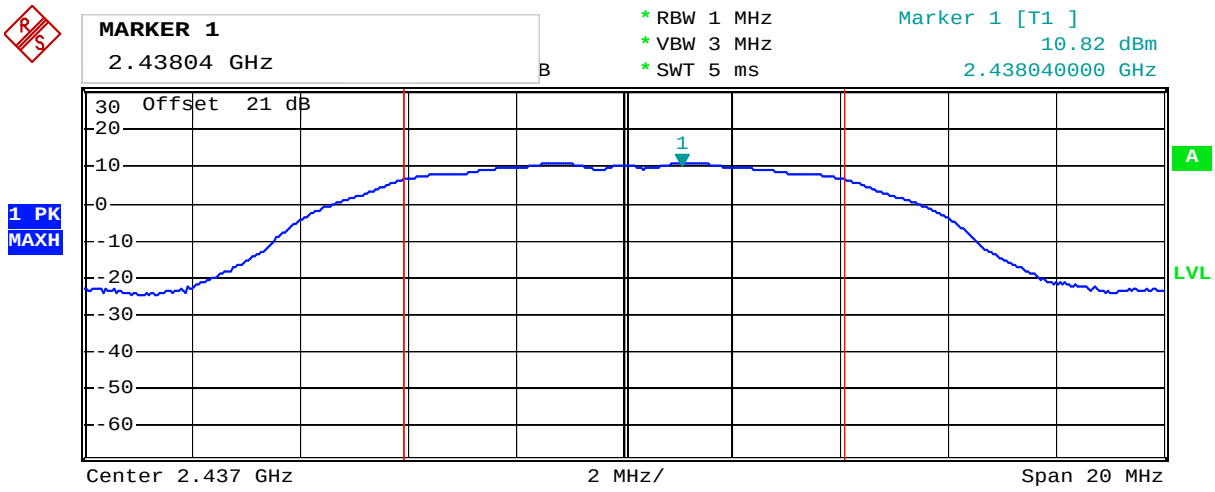
Mode	Channel	Frequency	Output Power (dBm) (PK)		Total Calculated Power (PK)		Limit	Margin
		(MHz)	Chain 0	Chain 1	(mW)	(dBm)	(dBm)	(dB)
802.11n HT20	1	2412	20.54	20.31	220.64	23.44	30	-6.56
	6	2437	20.34	20.10	210.47	23.23	30	-6.77
	11	2462	19.31	19.22	168.87	22.28	30	-7.72
802.11n HT40	3	2422	19.16	19.51	171.74	22.35	30	-7.65
	6	2437	19.26	19.34	170.23	22.31	30	-7.69
	9	2452	18.16	18.37	134.17	21.28	30	-8.72

Maximum output power @ 802.11b mode channel 1



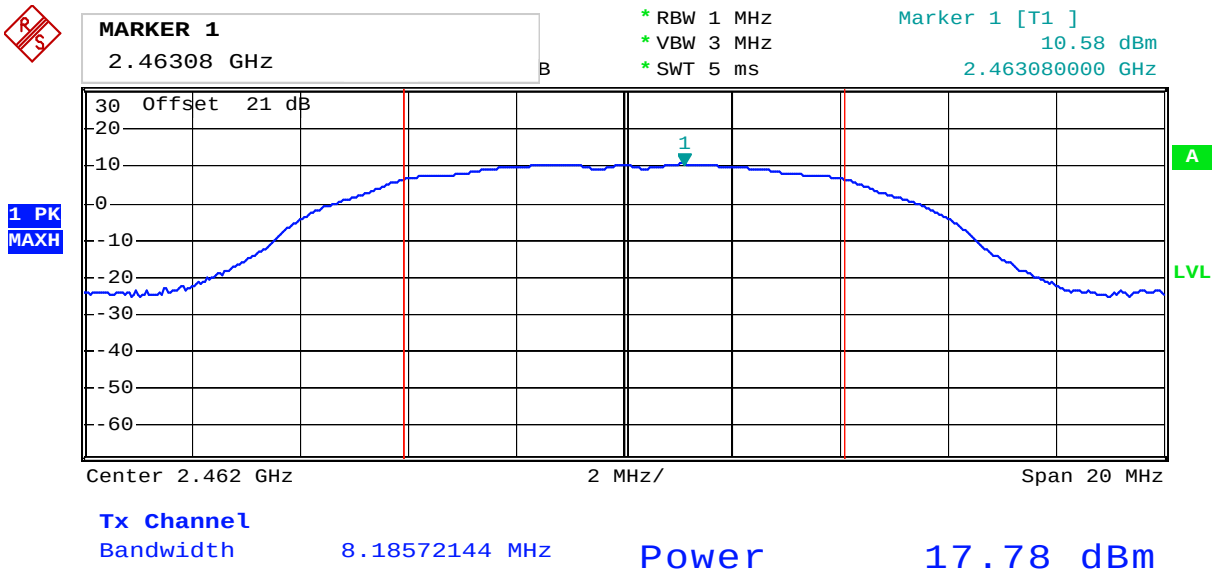
Tx Channel
Bandwidth 8.16171875 MHz Power 18.16 dBm

Maximum output power @ 802.11b mode channel 6

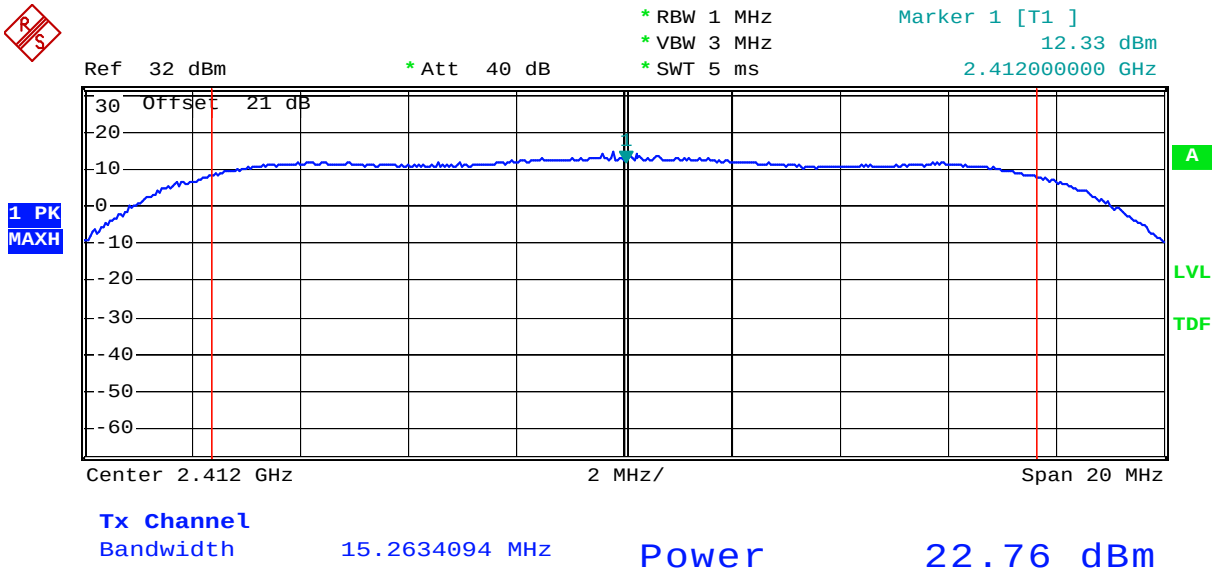


Tx Channel
Bandwidth 8.17303711 MHz Power 17.97 dBm

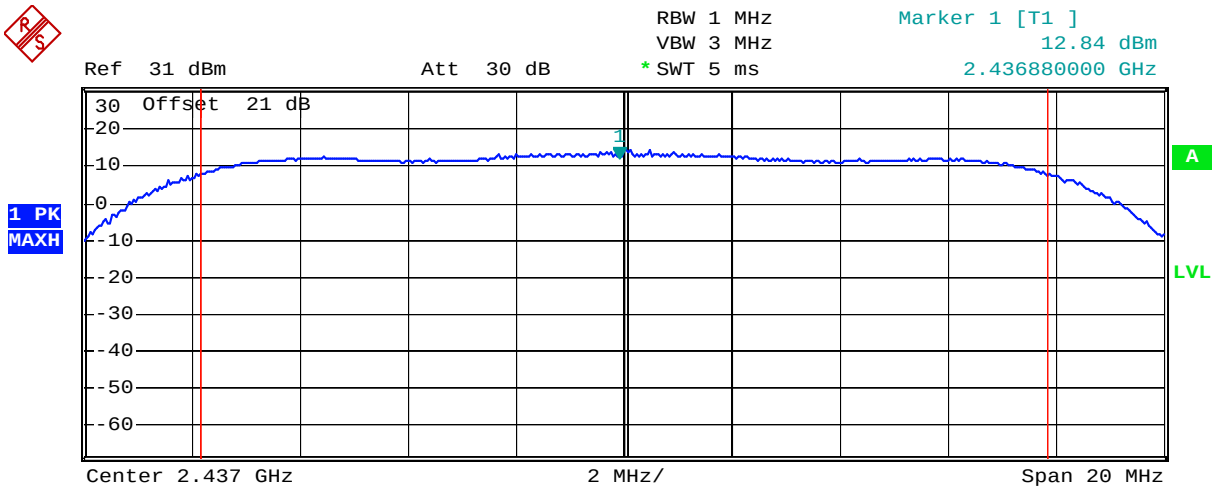
Maximum output power @ 802.11b mode channel 11



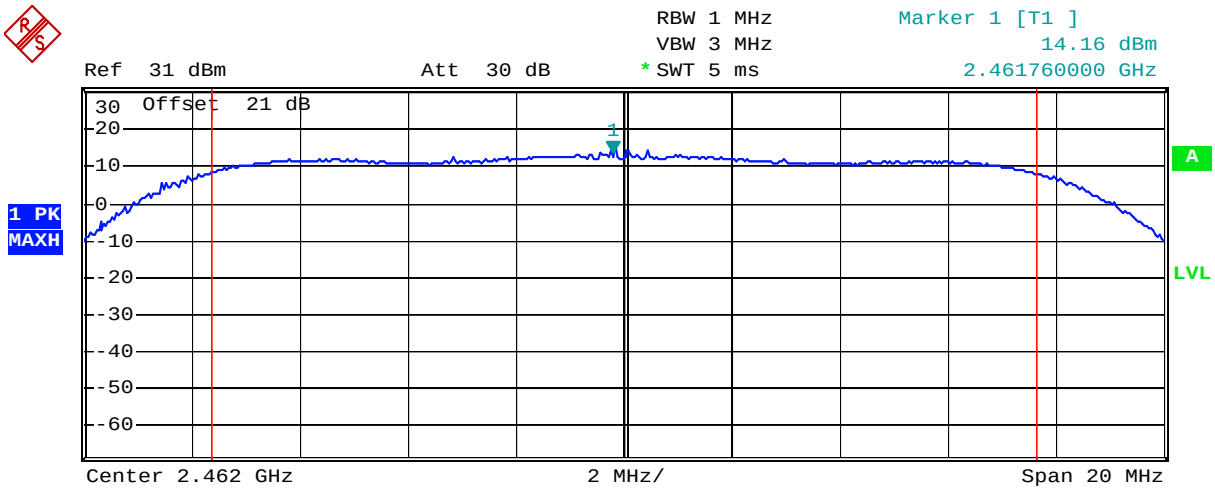
Chain 0: Maximum output power @ 802.11g mode channel 1



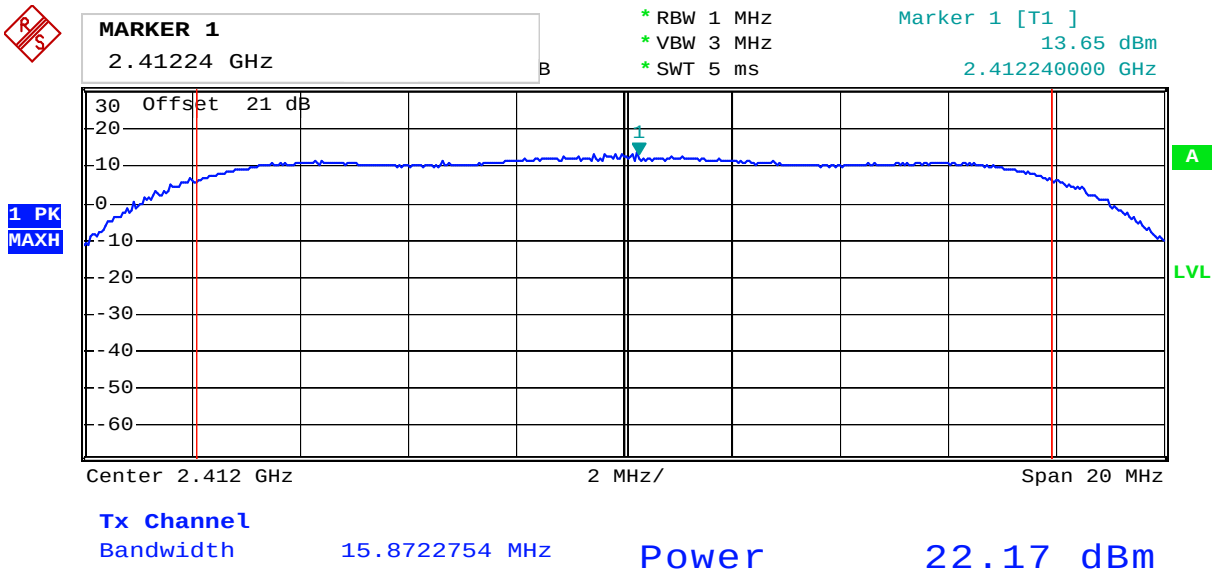
Chain 0: Maximum output power @ 802.11g mode channel 6



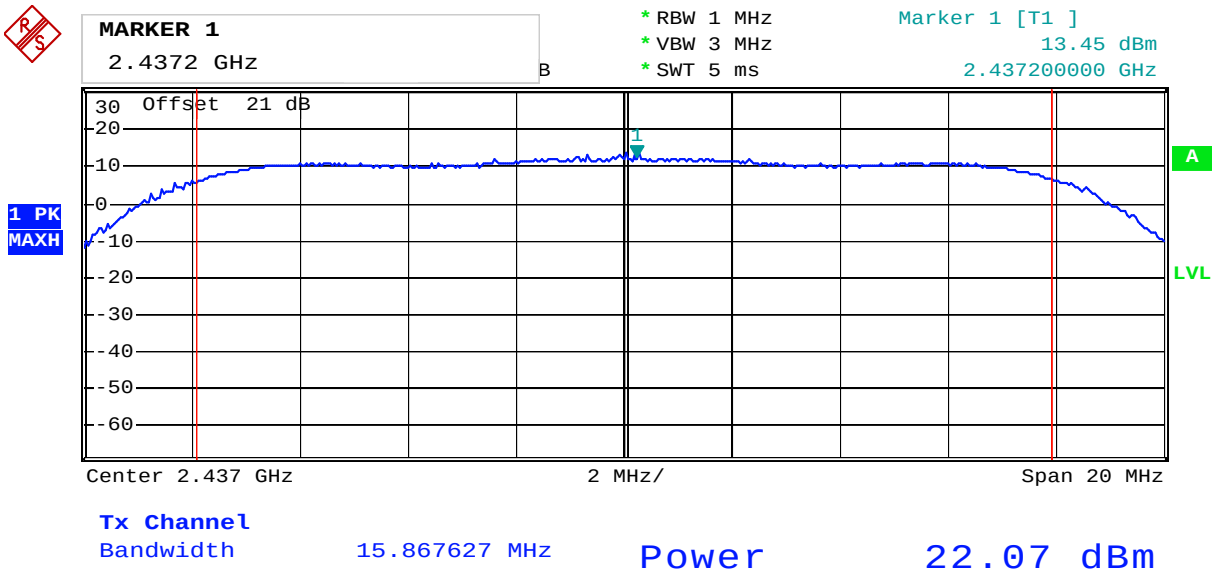
Chain 0: Maximum output power @ 802.11g mode channel 11



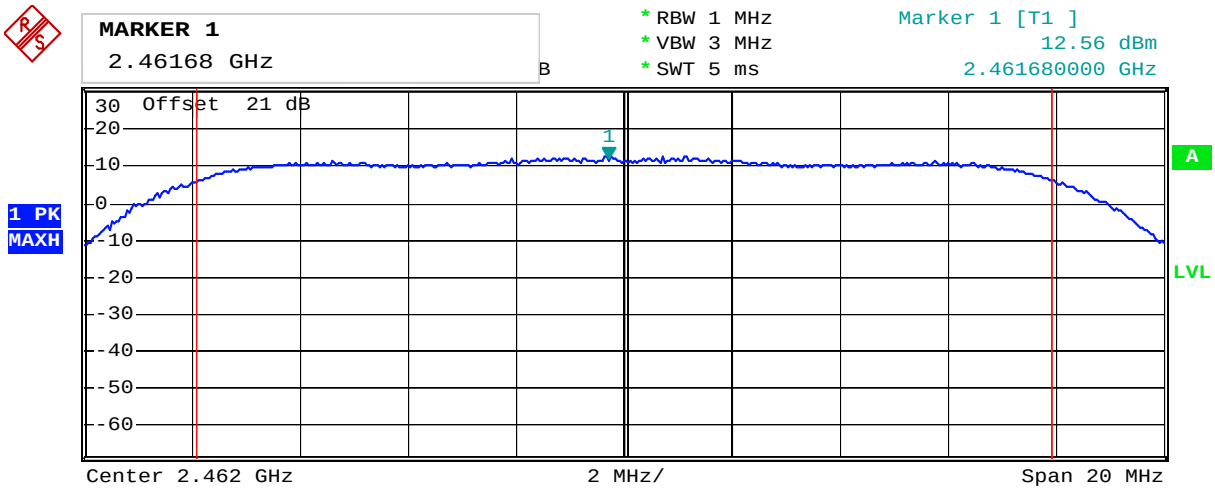
Chain 1: Maximum output power @ 802.11g mode channel 1



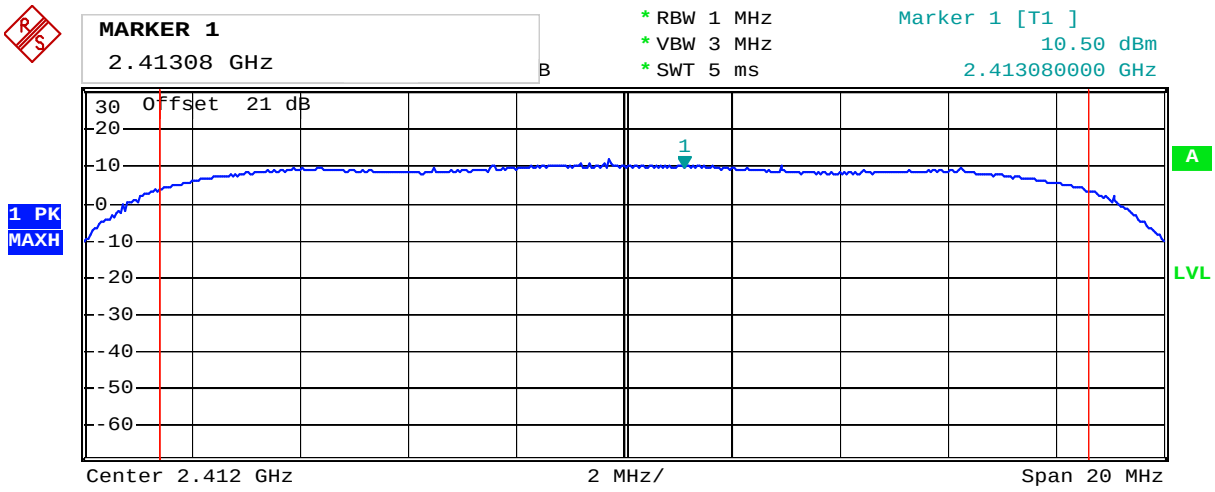
Chain 1: Maximum output power @ 802.11g mode channel 6



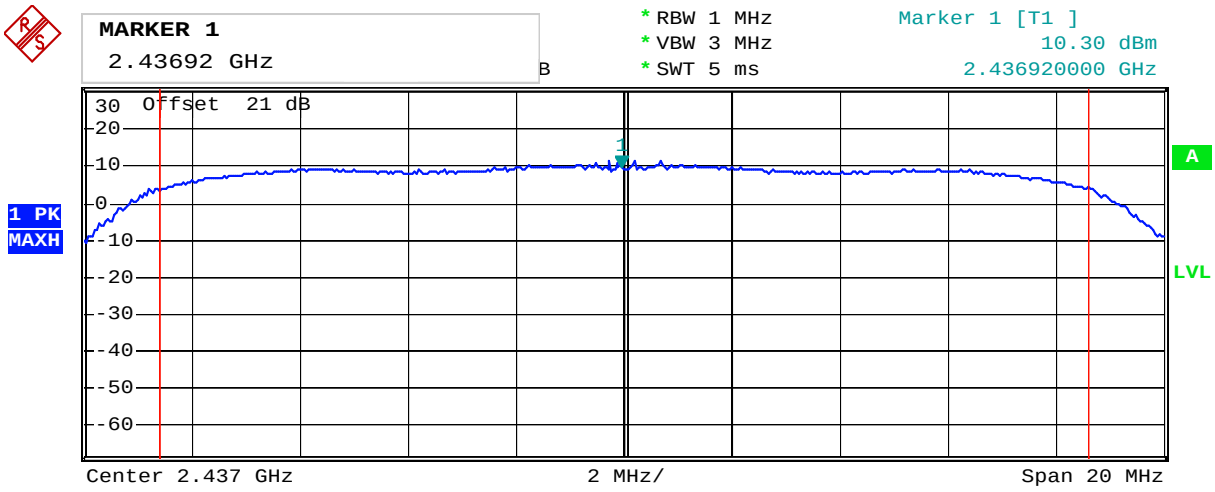
Chain 1: Maximum output power @ 802.11g mode channel 11



Chain 0: Maximum output power @ 802.11n HT20 mode channel 1

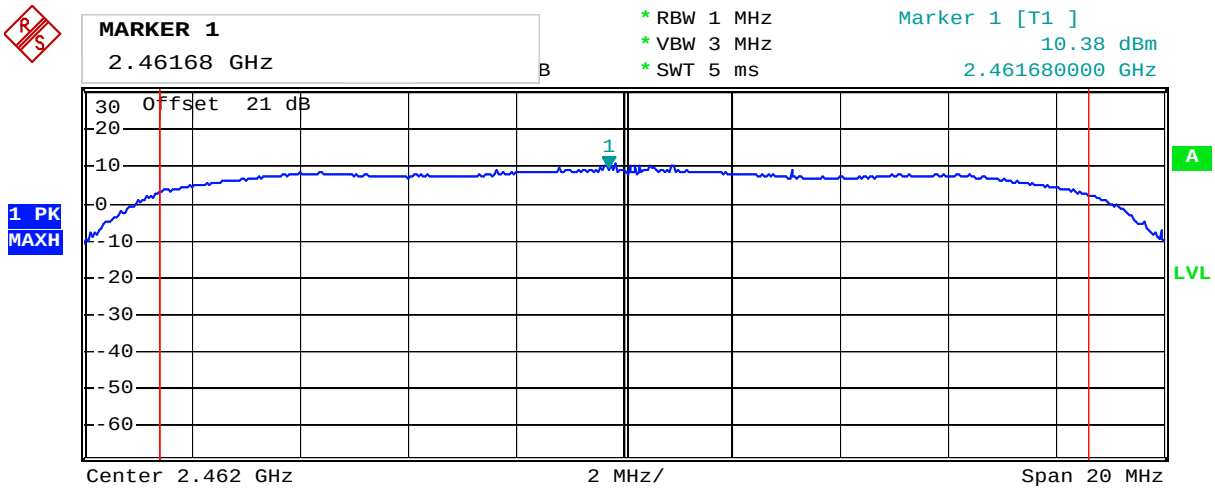


Chain 0: Maximum output power @ 802.11n HT20 mode channel 6



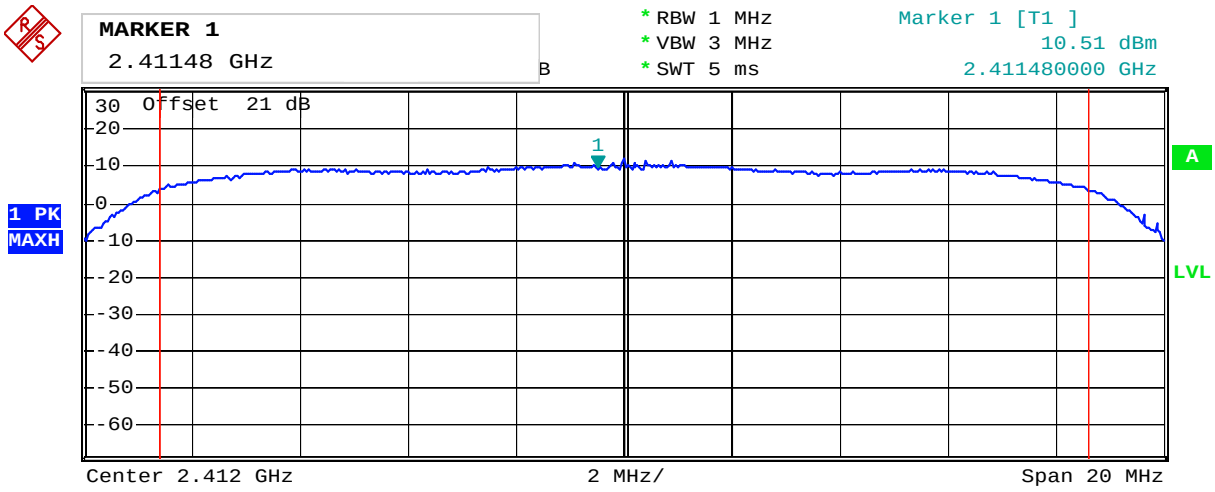
Tx Channel
Bandwidth 17.2185217 MHz Power 20.34 dBm

Chain 0: Maximum output power @802.11n HT20 mode channel 11



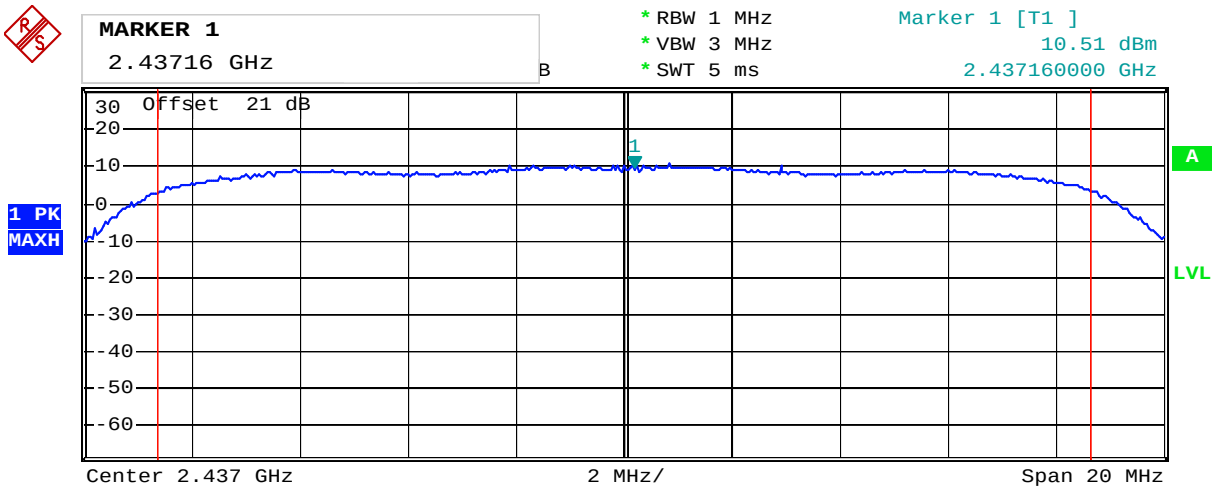
Tx Channel
Bandwidth 17.1736536 MHz Power 19.31 dBm

Chain 1: Maximum output power @ 802.11n HT20 mode channel 1



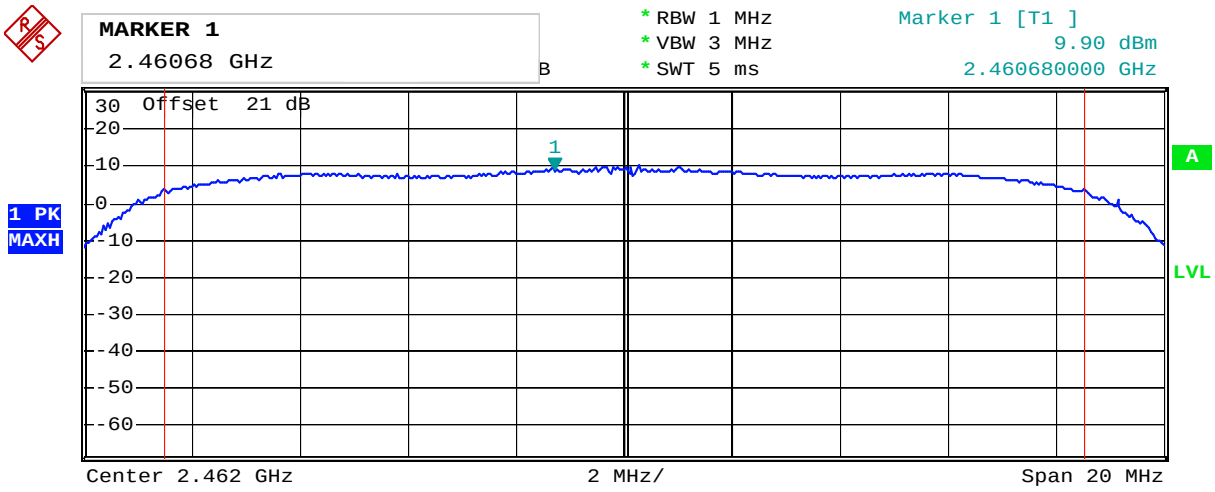
Tx Channel
Bandwidth 17.1609387 MHz Power 20.31 dBm

Chain 1: Maximum output power @ 802.11n HT20 mode channel 6



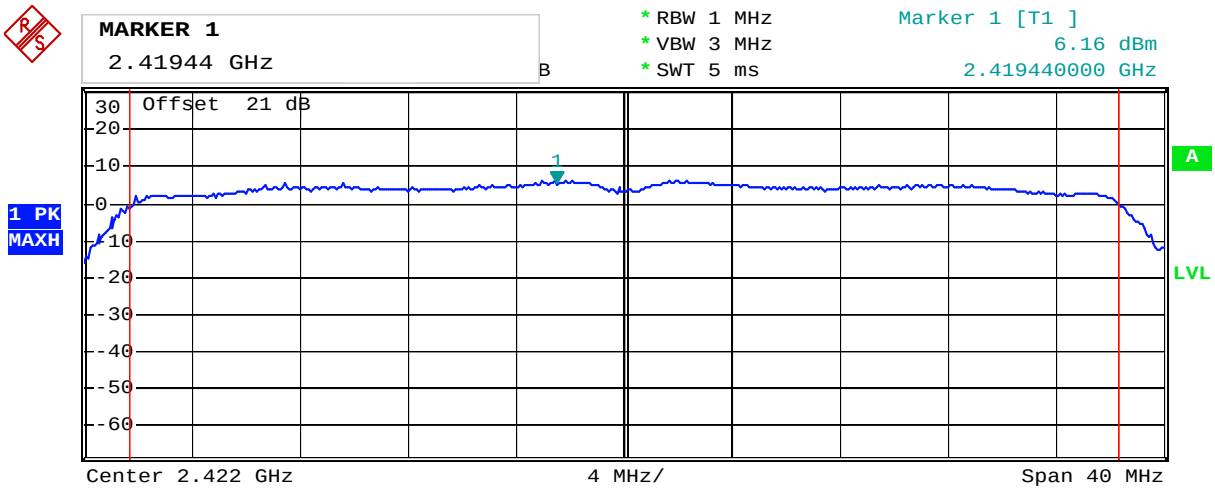
Tx Channel
Bandwidth 17.2602283 MHz Power 20.10 dBm

Chain 1: Maximum output power @802.11n HT20 mode channel 11



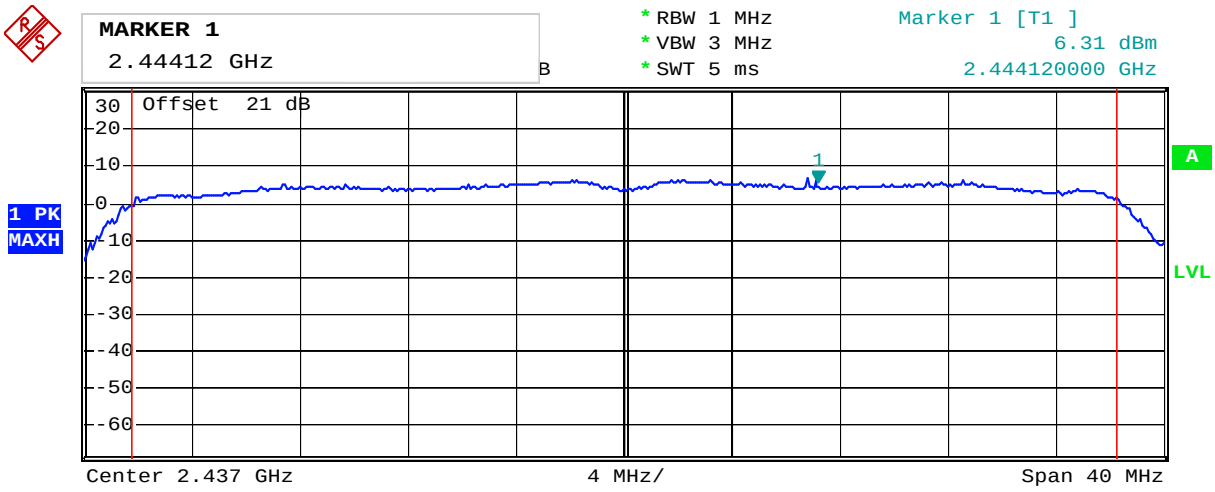
Tx Channel
Bandwidth 17.0714136 MHz Power 19.22 dBm

Chain 0: Maximum output power @ 802.11n HT40 mode channel 3



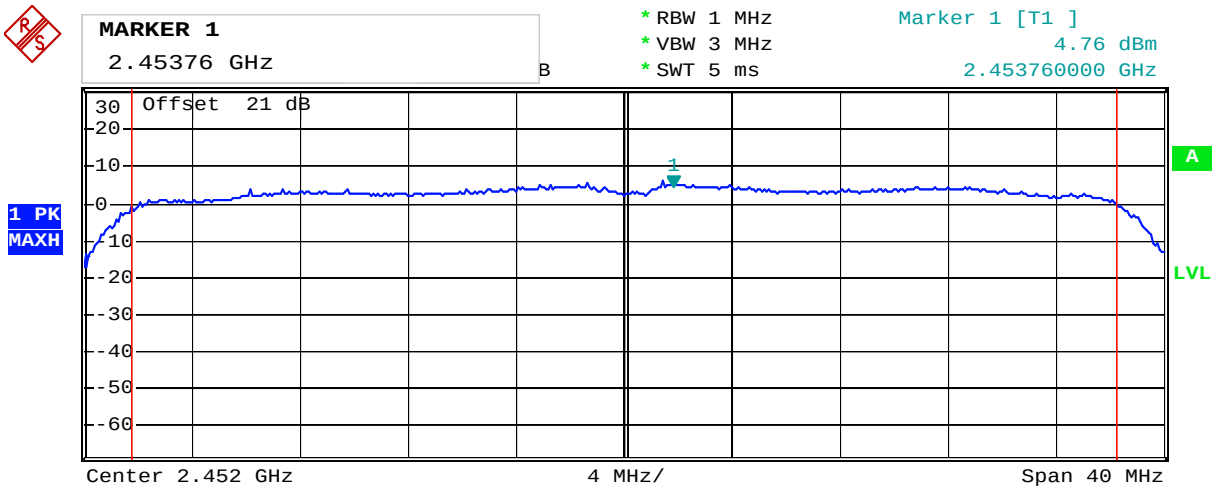
Tx Channel
Bandwidth 36.6364111 MHz Power 19.16 dBm

Chain 0: Maximum output power @ 802.11n HT40 mode channel 6



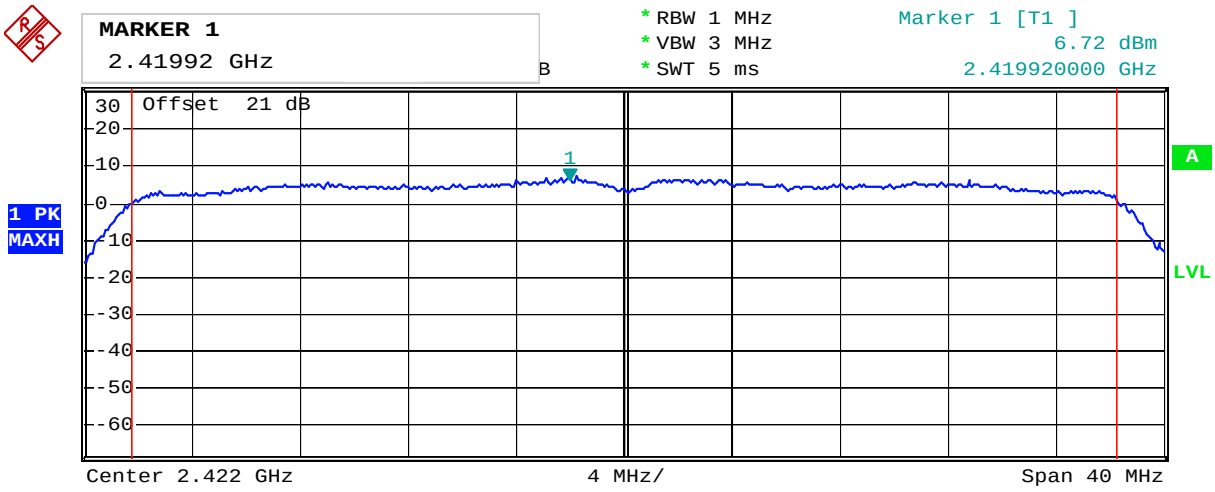
Tx Channel
Bandwidth 36.4308545 MHz Power 19.26 dBm

Chain 0: Maximum output power @ 802.11n HT40 mode channel 9



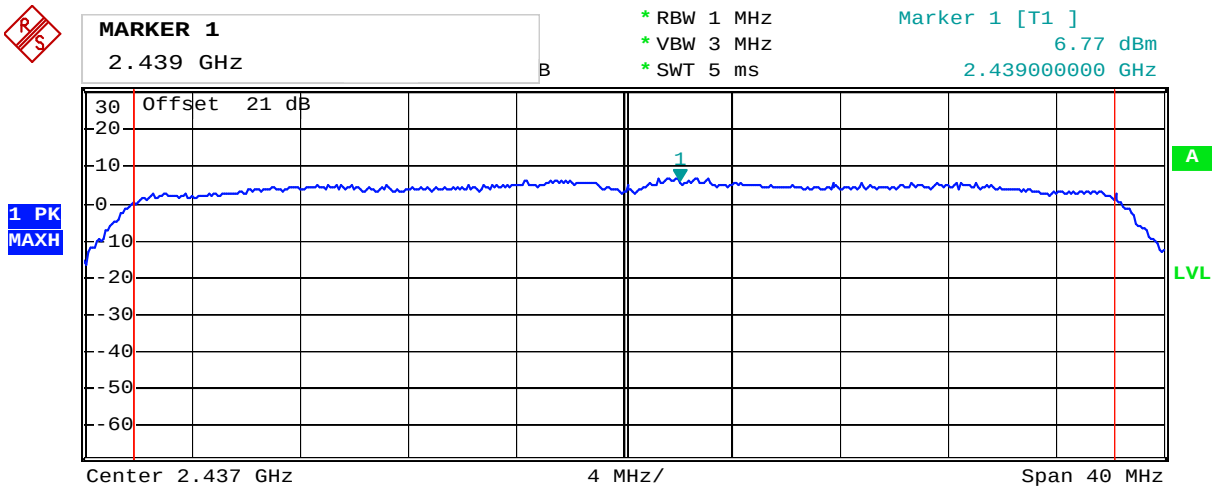
Tx Channel
Bandwidth 36.5053418 MHz Power 18.16 dBm

Chain 1: Maximum output power @ 802.11n HT40 mode channel 3



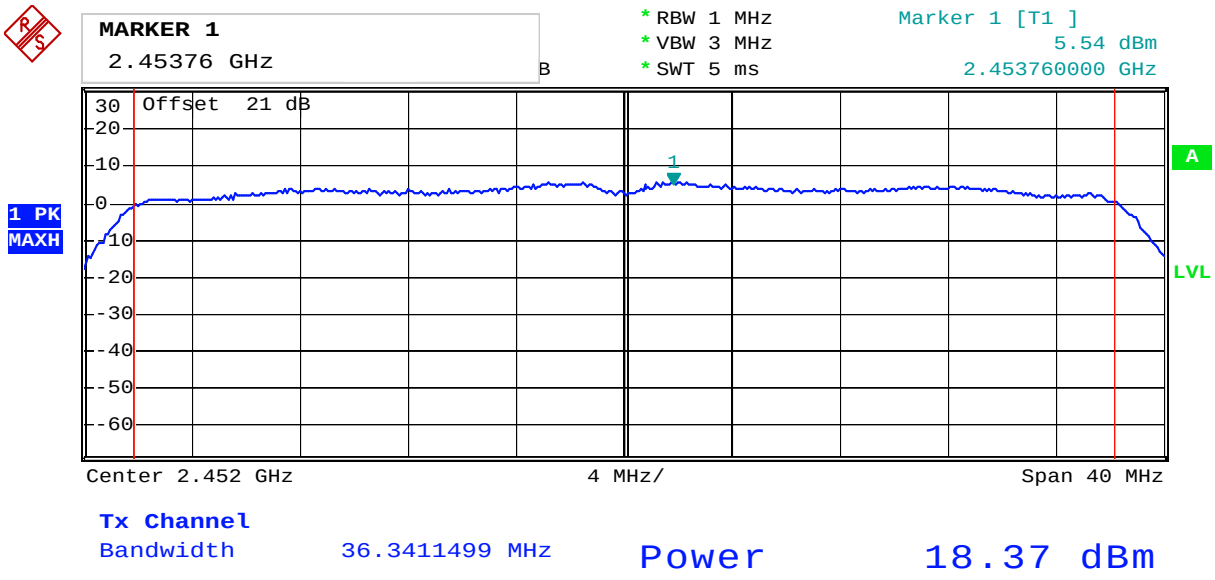
Tx Channel
Bandwidth 36.4069311 MHz Power 19.51 dBm

Chain 1: Maximum output power @ 802.11n HT40 mode channel 6



Tx Channel
Bandwidth 36.3241382 MHz Power 19.34 dBm

Chain 1: Maximum output power @ 802.11n HT40 mode channel 9



6. Power Spectral Density

Name of Test	Power Spectral Density
Base Standard	FCC 15.247(e)

Test Result: Complies
Measurement Data: See Table & plots below

Method of Measurement:
Reference FCC document: KDB558074 D01
The power spectrum density was measured from the antenna port of the EUT using a 50 ohm spectrum analyzer. Set RBW = 100 kHz, VBW ≥ 300 kHz, sweep= auto couple. The peak level measured must be no greater than + 8 dBm. Power spectrum density was read directly and cable loss (1 dB)/external attenuator (20 dB) correction was added to the reading to obtain power at the EUT antenna terminals.

Test Diagram:

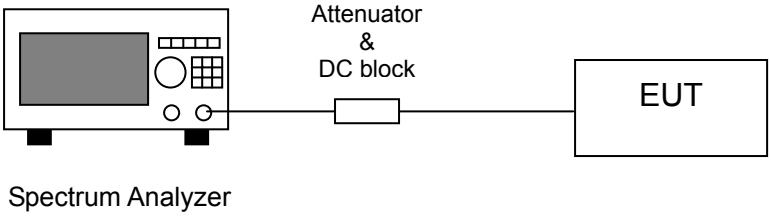


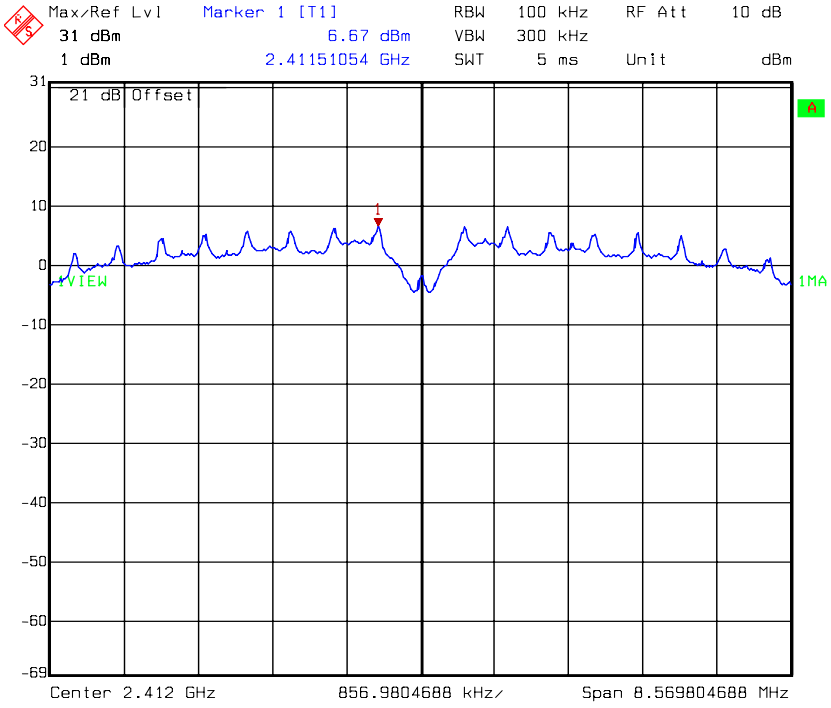
Table: Power Spectral Density

Mode	Channel	Frequency (MHz)	PSD (dBm)	Total PSD (mW)	Limit (dBm)	Margin (dB)
802.11b	1	2412	6.67	4.65	8	-1.33
	6	2437	6.75	4.73	8	-1.25
	11	2462	6.68	4.66	8	-1.32
802.11g Chain 0	1	2412	7.21	5.26	8	-0.79
	6	2437	2.05	1.60	8	-5.95
	11	2462	1.41	1.38	8	-6.59
802.11g Chain 1	1	2412	2.24	1.67	8	-5.76
	6	2437	1.87	1.54	8	-6.13
	11	2462	0.98	1.25	8	-7.02

Mode	Channel	Frequency (MHz)	PSD (dBm)		Correction PSD (dBm)		Limit (dBm)	Margin (dB)
			Chain0	Chain1	DAC0	DAC1		
802.11n HT20	1	2412	-0.49	-1.07	2.52	1.94	8	-6.06
	6	2437	-1.1	-0.85	1.91	2.16	8	-5.84
	11	2462	-0.7	-1.22	2.31	1.79	8	-6.21
802.11n HT40	3	2422	-3.73	-4.28	-0.72	-1.27	8	-9.27
	6	2437	-4.01	-4.31	-1.00	-1.30	8	-9.30
	9	2452	-5.01	-5.45	-2.00	-2.44	8	-10.44

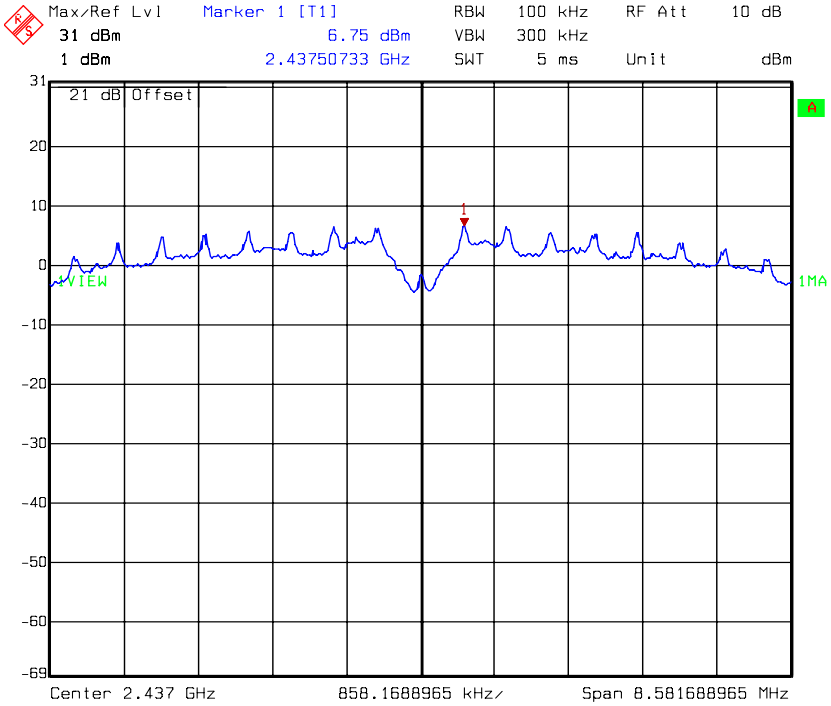
Remark: Correct with 10 log (2) dB.

Power Spectral Density @ 802.11b mode channel 1



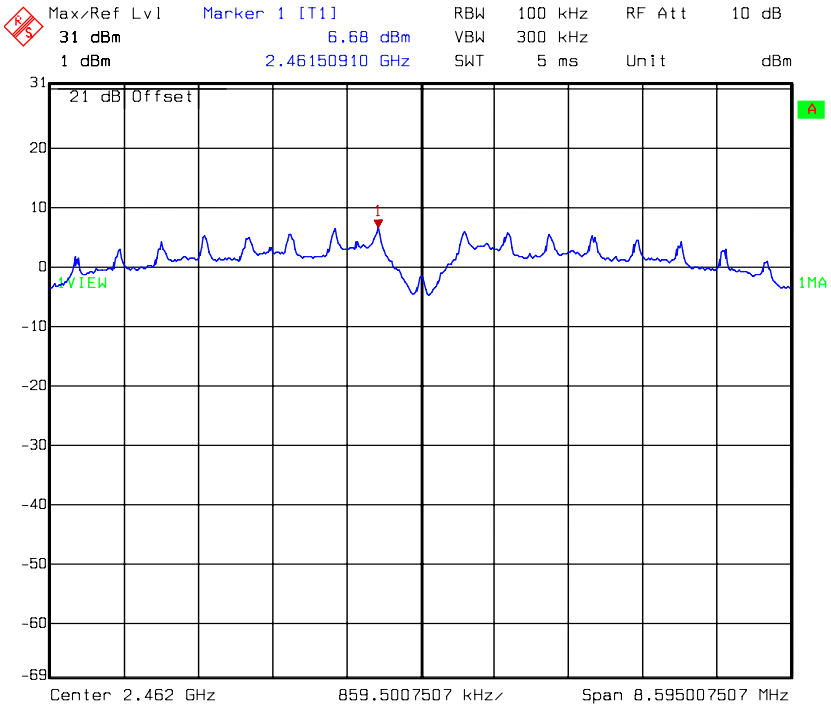
Title: Power Density (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11b_Chain0_Ch1_2412

Power Spectral Density @ 802.11b mode channel 6



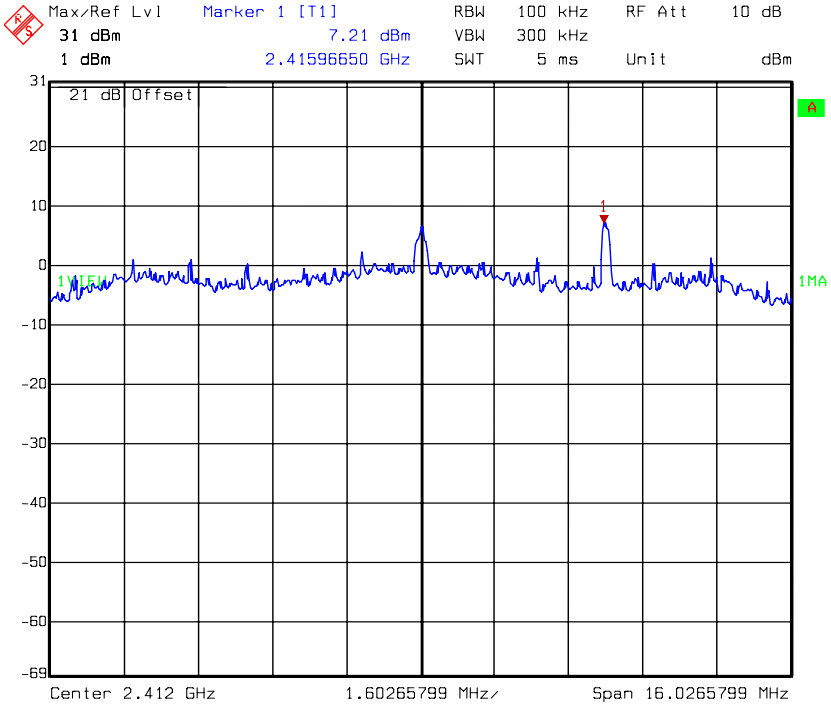
Title: Power Density (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11b_Chain0_Ch6_2437

Power Spectral Density @ 802.11b mode channel 11



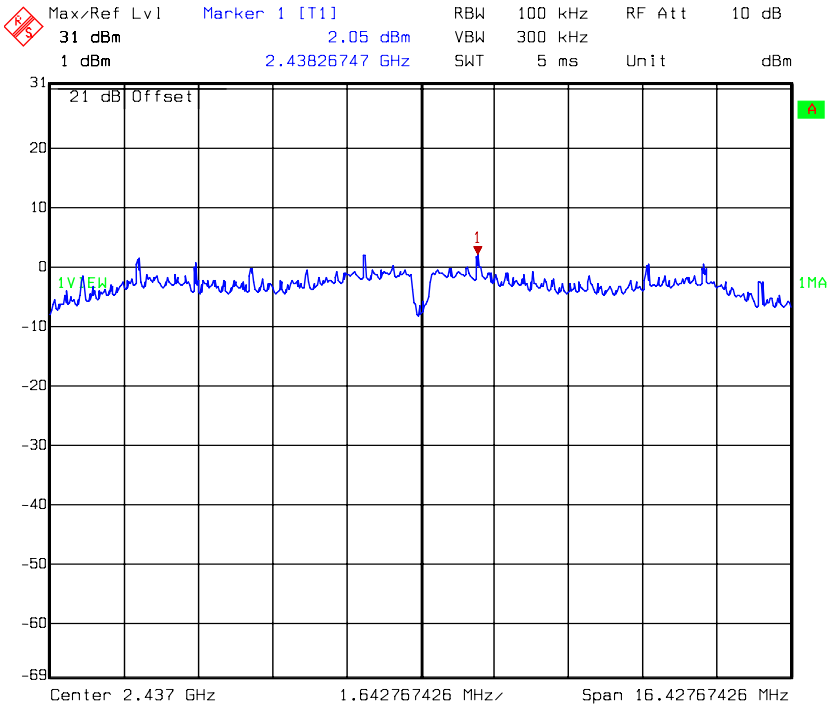
Title: Power Density (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11b_Chain0_Ch11_2462

Chain 0: Power Spectral Density @ 802.11g mode channel 1



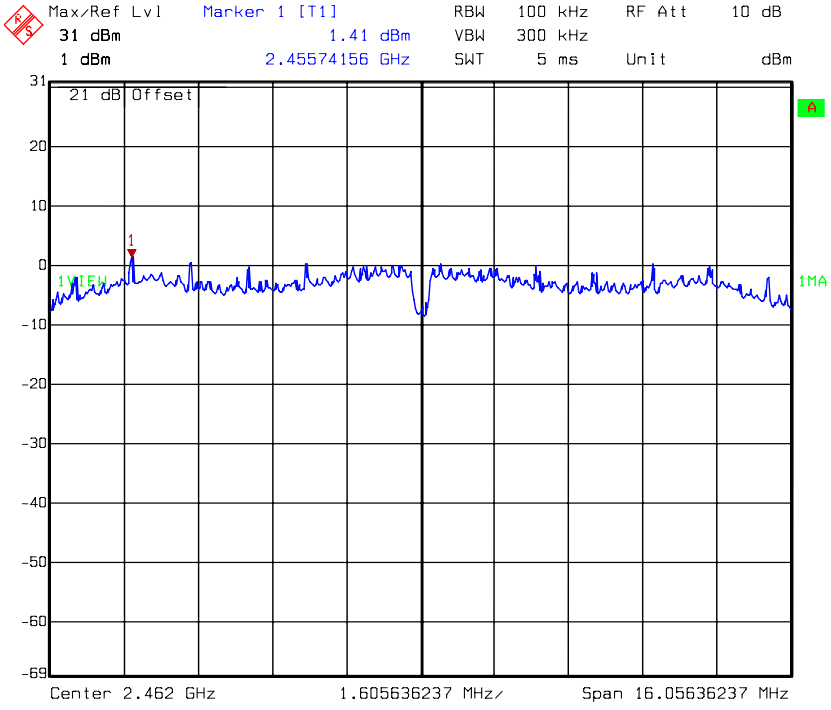
Title: Power Density (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11g_Chain0_Ch1_2412

Chain 0: Power Spectral Density @ 802.11g mode channel 6



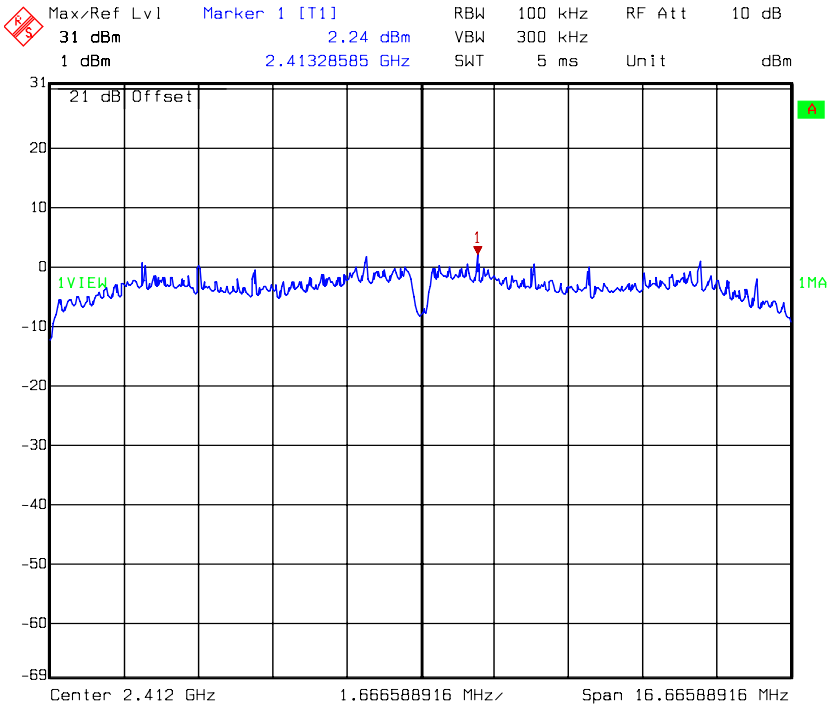
Title: Power Density (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11g_Chain0_Ch6_2437

Chain 0: Power Spectral Density @ 802.11g mode channel 11



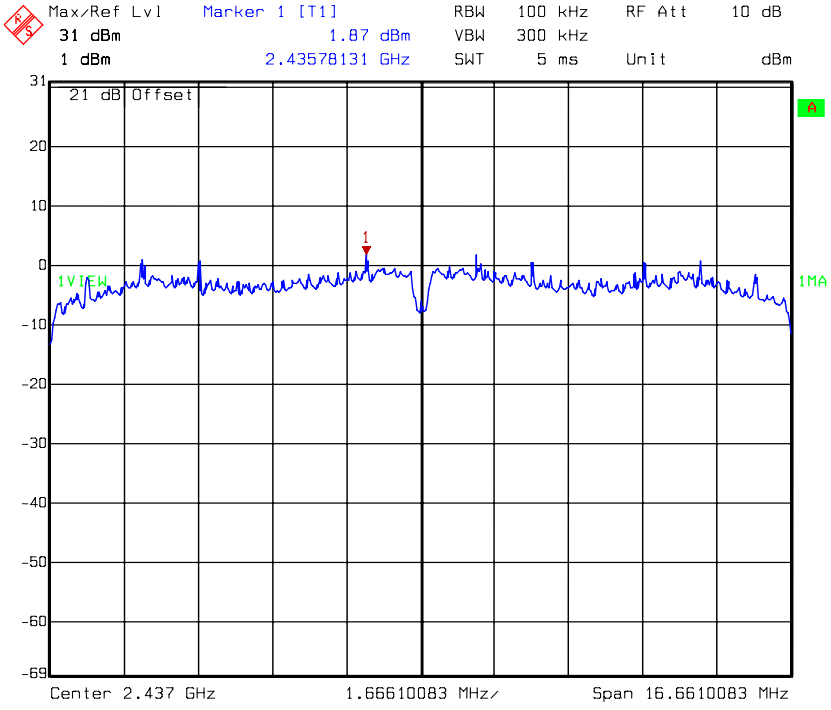
Title: Power Density (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11g_Chain0_Ch11_2462

Chain 1: Power Spectral Density @ 802.11g mode channel 1



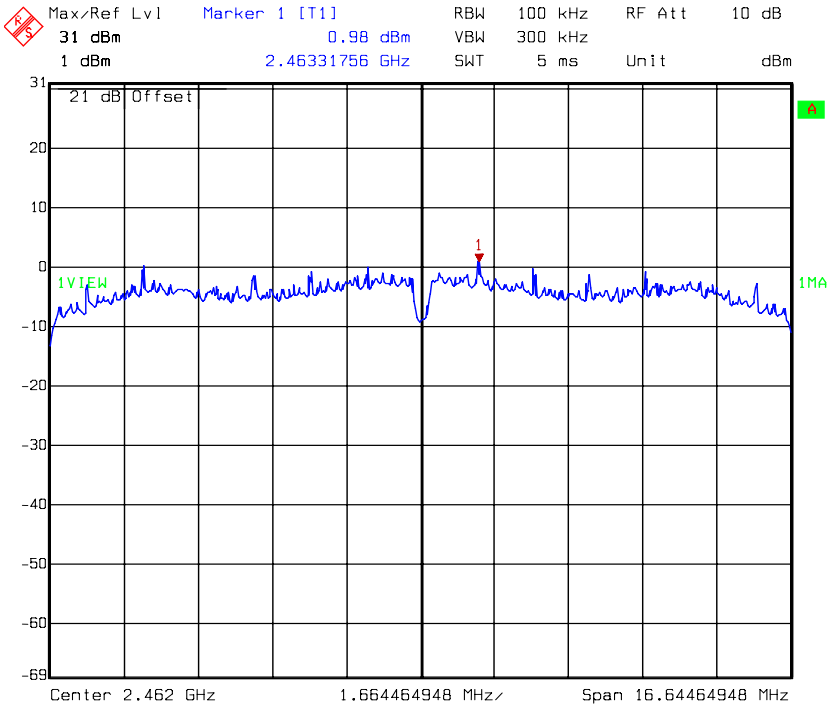
Title: Power Density (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11g_Chain1_Ch1_2412

Chain 1: Power Spectral Density @ 802.11g mode channel 6



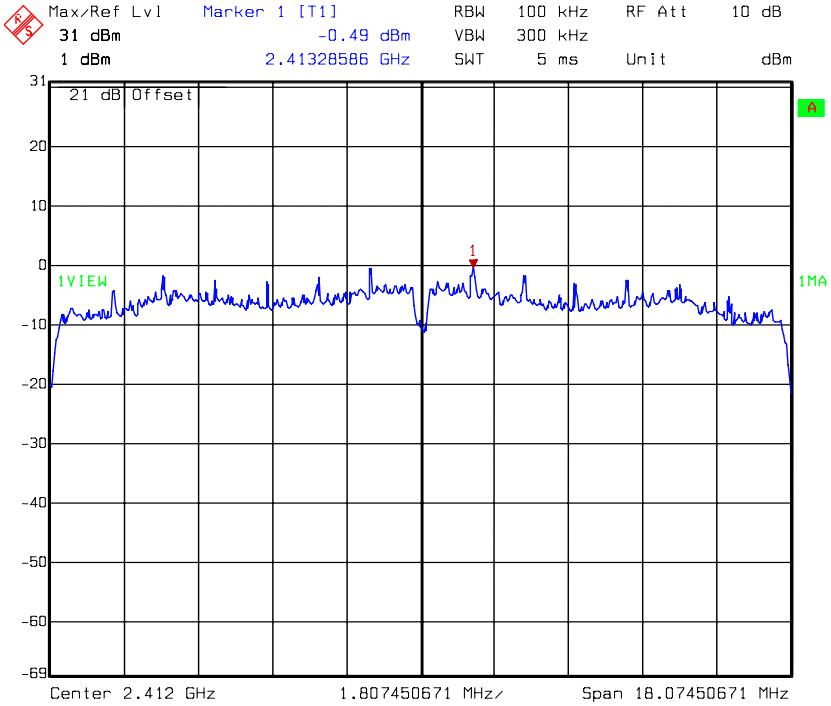
Title: Power Density (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11g_Chain1_Ch6_2437

Chain 1: Power Spectral Density @ 802.11g mode channel 11



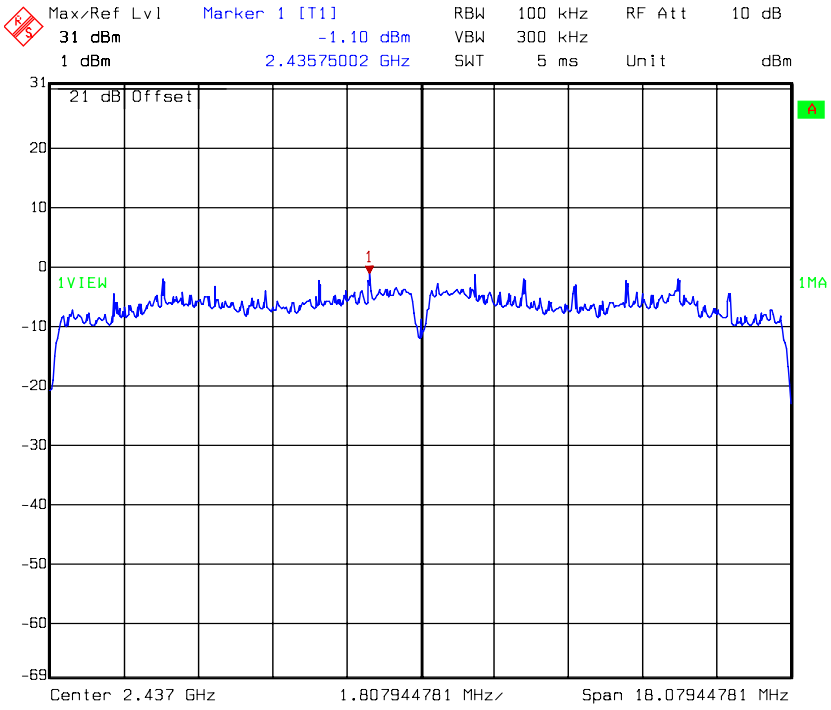
Title: Power Density (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11g_Chain1_Ch11_2462

Chain 0: Power Spectral Density @ 802.11n HT20 mode channel 1



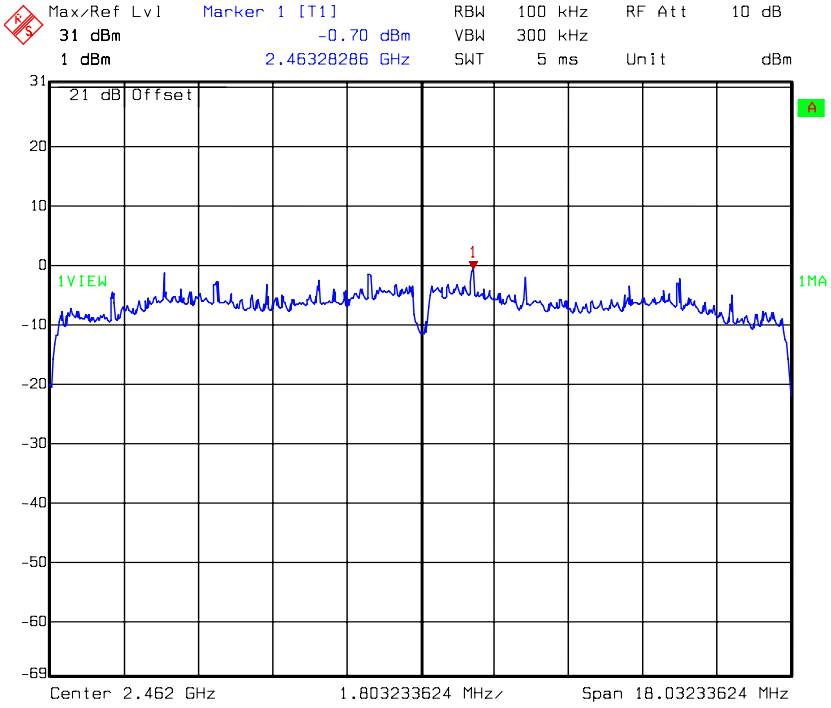
Title: Power Density (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11n(HT20)_Chain0_Ch1_2412

Chain 0: Power Spectral Density @ 802.11n HT20 mode channel 6



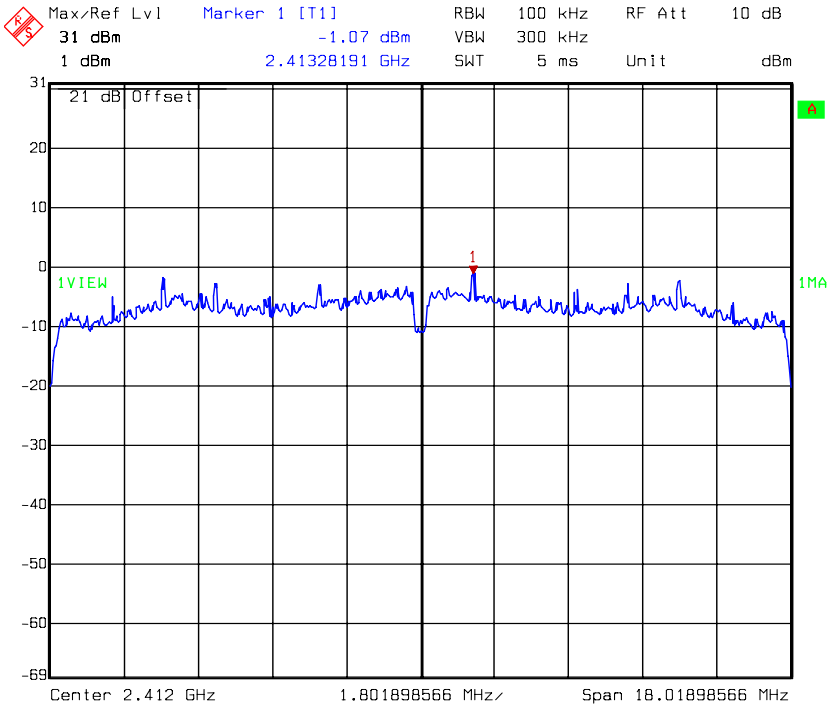
Title: Power Density (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11n(HT20)_Chain0_Ch6_2437

Chain 0: Power Spectral Density @ 802.11n HT20 mode channel 11



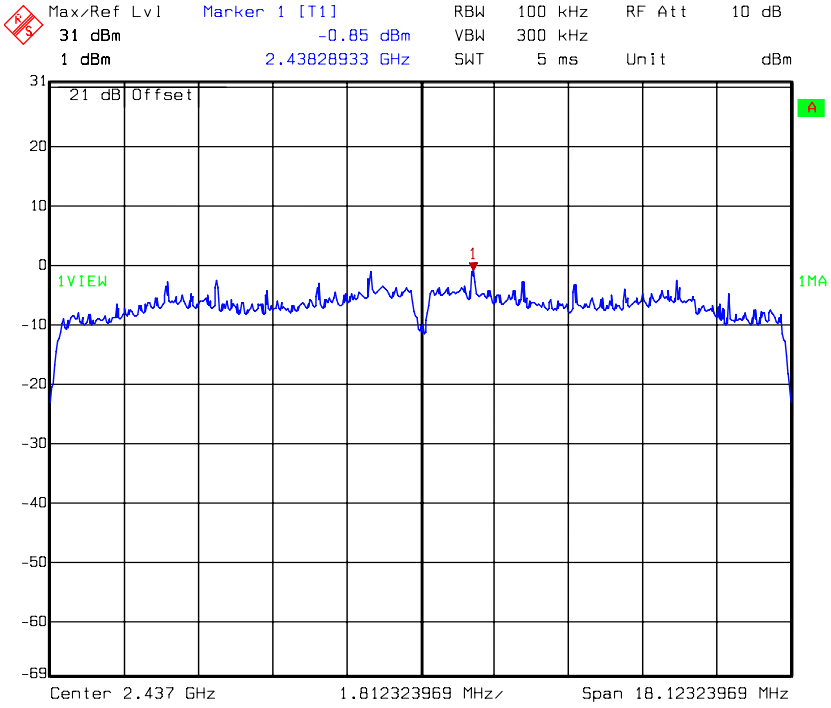
Title: Power Density (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11n(HT20)_Chain0_Ch11_2462

Chain 1: Power Spectral Density @ 802.11n HT20 mode channel 1



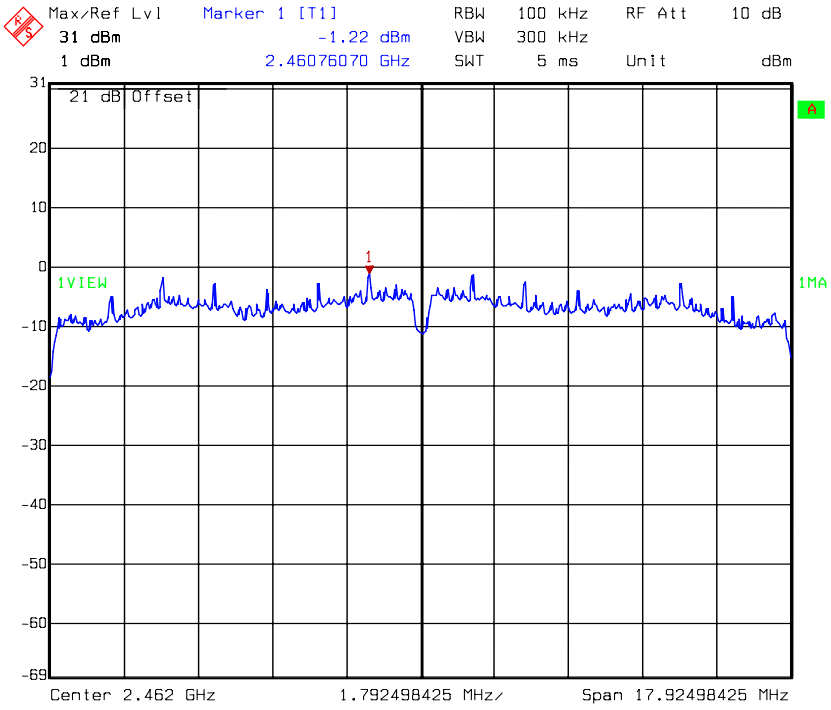
Title: Power Density (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11n(HT20)_Chain1_Ch1_2412

Chain 1: Power Spectral Density @ 802.11n HT20 mode channel 6



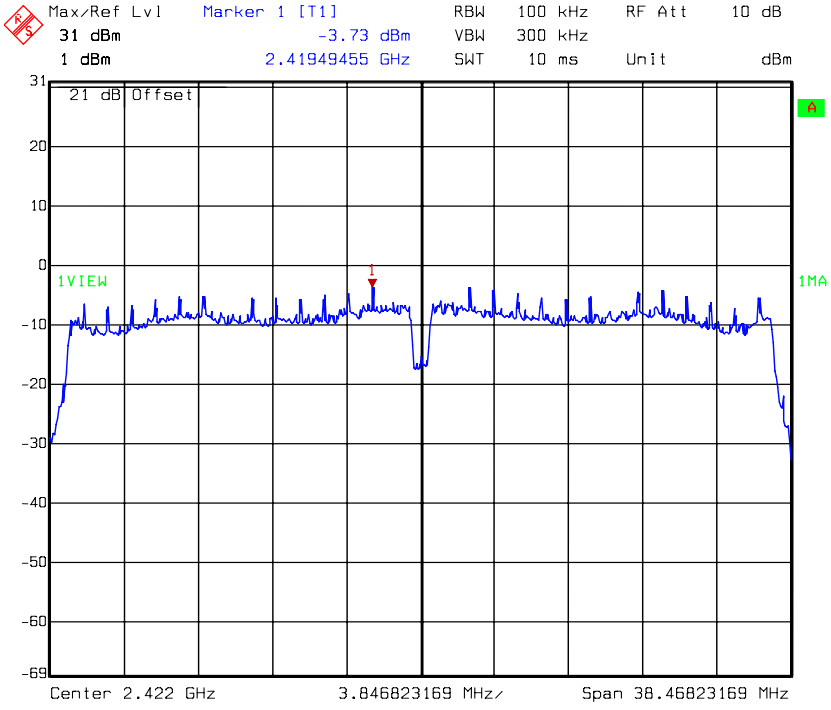
Title: Power Density (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11n(HT20)_Chain1_Ch6_2437

Chain 1: Power Spectral Density @ 802.11n HT20 mode channel 11



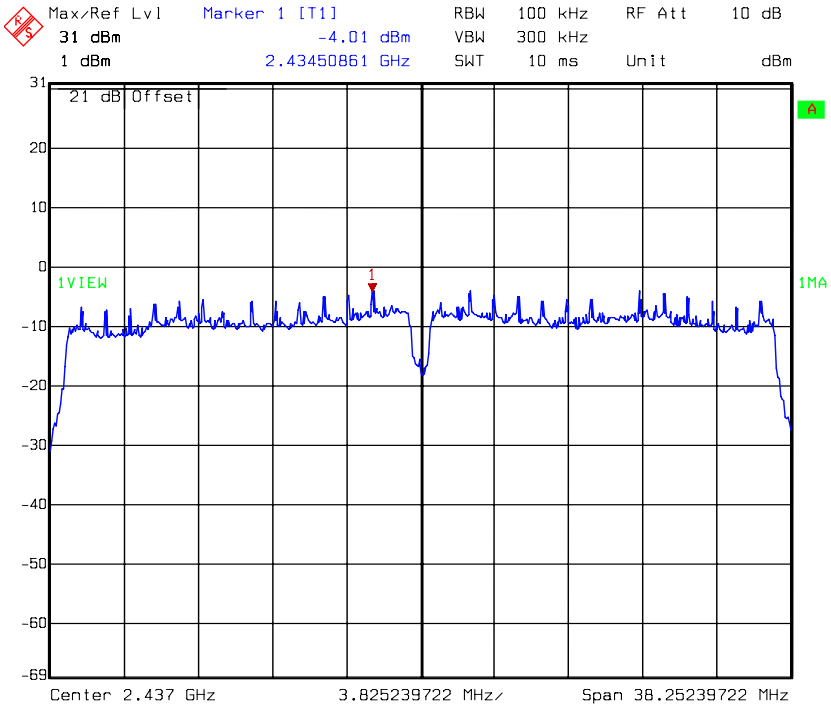
Title: Power Density (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11n(HT20)_Chain1_Ch11_2462

Chain 0: Power Spectral Density @ 802.11n HT40 mode channel 3



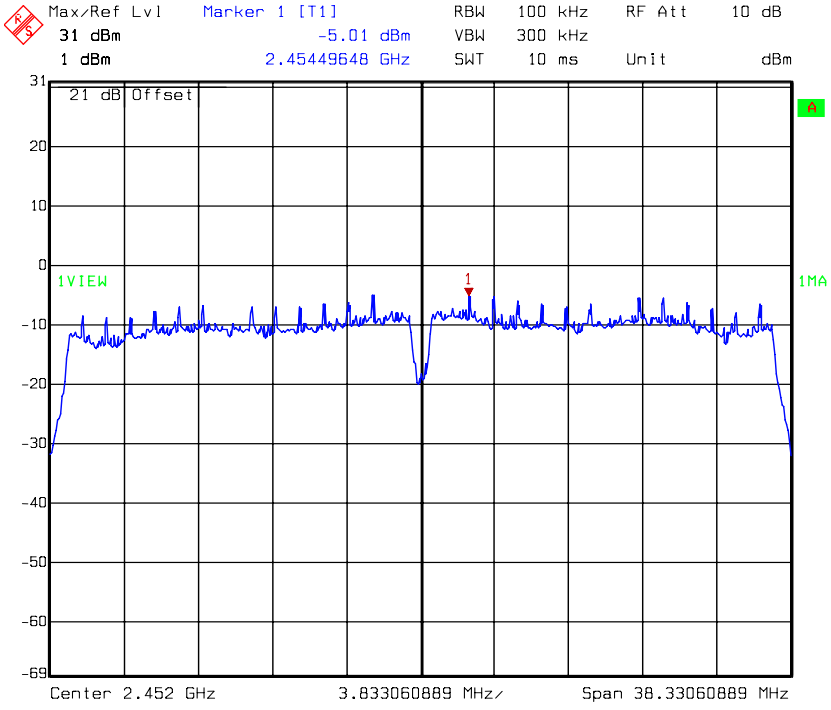
Title: Power Density (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11n(HT40)_Chain0_Ch3_2422

Chain 0: Power Spectral Density @ 802.11n HT40 mode channel 6



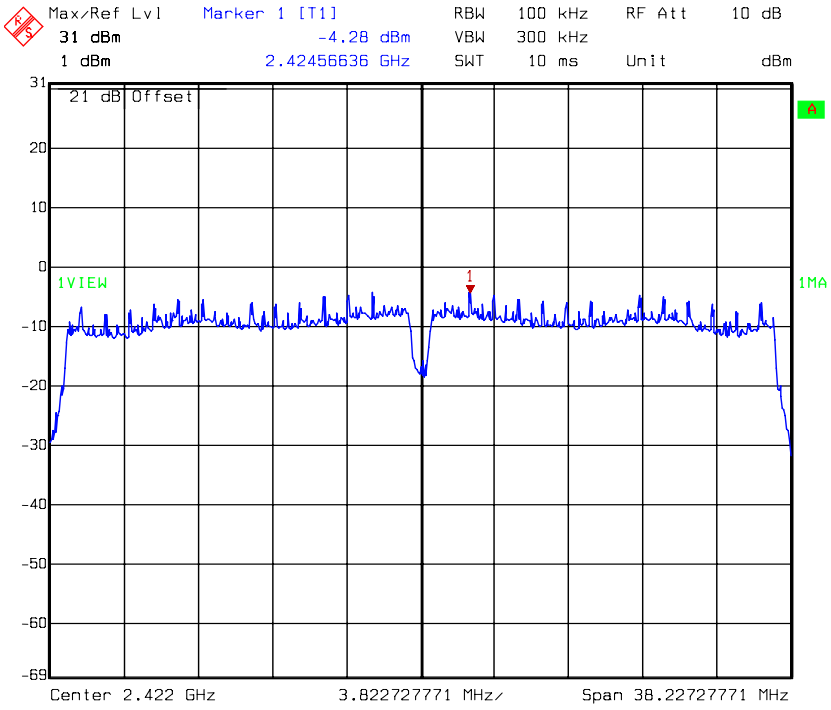
Title: Power Density (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11n(HT40)_Chain0_Ch6_2437

Chain 0: Power Spectral Density @ 802.11n HT40 mode channel 9



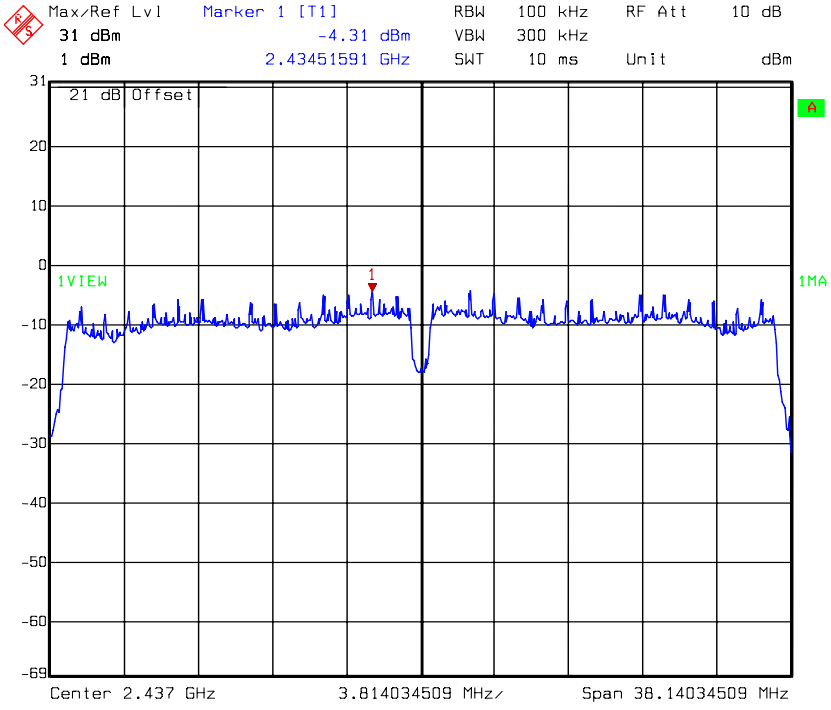
Title: Power Density (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11n(HT40)_Chain0_Ch9_2452

Chain 1: Power Spectral Density @ 802.11n HT40 mode channel 3



Title: Power Density (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11n(HT40)_Chain1_Ch3_2422

Chain 1: Power Spectral Density @ 802.11n HT40 mode channel 6



Title: Power Density (MitraStar , DSL-2402HUN-B1B v2)
Comment A: 802.11n(HT40)_Chain1_Ch6_2437

Chain 1: Power Spectral Density @ 802.11n HT40 mode channel 9