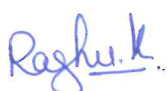


Produkte
Products

Prüfbericht - Nr.:		ULR-TC568819300000069F		Seite 1 von 126 Page 1 of 126	
<i>Test Report No.:</i>					
Auftraggeber: <i>Client:</i>	GE Healthcare Phase V Plot No #122, Phase II EPIP Whitefield Road, Bangalore 560066, India				
Gegenstand der Prüfung: <i>Test item:</i>	Ultrasound Scanner				
Bezeichnung: <i>Identification:</i>	Vscan Extend	Serien-Nr.: <i>Serial No.</i>	VH162525NC		
Wareneingangs-Nr.: <i>Receipt No.:</i>	166187860	Eingangsdatum: <i>Date of receipt:</i>	23.10.2019		
Prüfort: <i>Testing location:</i>	Refer Page 5 of 126 for test facilities				
Prüfgrundlage: <i>Test specification:</i>	FCC Part 15 Subpart C 15.247 ANSI C63.10-2013 & RSS 247 Issue 2 and RSS Gen Issue 5				
Prüfergebnis: <i>Test Result:</i>	Der Prüfgegenstand entspricht oben genannter Prüfgrundlage(n). The test items passed the test specification(s).				
Prüflaboratorium: <i>Testing Laboratory:</i>	TÜV Rheinland (India) Pvt. Ltd. 27/B, 2nd cross, Electronic City Phase 1 Bangalore – 560 100. India FCC Test Site Registration no.: 496599 ISED Test Site Number.: 346E-1				
geprüft / tested by:		kontrolliert / reviewed by:			
24.10.2019	Rajesh M Gowda Engineer		15.10.2019	Raghavendra G Katti Assistant Manager	
Datum <i>Date</i>	Name/Stellung <i>Name/Position</i>	Unterschrift <i>Signature</i>	Datum <i>Date</i>	Name/Stellung <i>Name/Position</i>	Unterschrift <i>Signature</i>
Sonstiges / Other Aspects:					
FCC ID :YOMVSCANEXTEND; Class 2 Permissive Change IC : 9136A-VSCANEXTEND; Class 2 Permissive Change					
Abkürzungen:	P(ass) = entspricht Prüfgrundlage F(ail) = entspricht nicht Prüfgrundlage N/A = nicht anwendbar N/T = nicht getestet		Abbreviations:	P(ass) = passed F(ail) = failed N/A = not applicable N/T = not tested	
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. <i>This test report relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any safety mark on this or similar products.</i>					

Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

Seite 2 von 126

Page 2 of 126

TEST SUMMARY

Test Item	Clause		Result
	FCC	ISED	
Maximum conducted (average) output power	FCC 15.247(b) (3)	RSS 247 Issue 2, Section 5.4 (4)	Pass
Maximum Power Spectral Density	FCC 15.247(e)	RSS 247 Issue 2, Section 5.2 (2)	Pass
DTS Bandwidth	FCC 15.247(a) (2)	RSS 247 Issue 2, Section 5.2 (1)	Pass
Emissions in non-restricted frequency bands	FCC 15.247(d)	RSS 247 Issue 2, Section 5.5	Pass
Spurious Radiated Emissions and Restricted Bands of Operation	FCC 15.209 / FCC 15.205	RSS-Gen Issue 5, Section 8.9/8.10	Pass
Conducted Emissions on a.c Power Lines	FCC 15.207	RSS-Gen Issue 5, Section 8.8	Pass

Discipline: Electronics Testing
Group: EMC Test Facility

Note:

1. The module is originally certified for FCC with FCC ID: YOMVSCANEXTEND, and IC: 9136A-VSCANEXTEND with respect to the changes made originally certified module class 2 permissive change has been applied.
2. Conducted measurements are done according to the procedure given in KDB No 558074 D01 15.247 Measurement Guidance v05r02
3. Product uses an off-the-shelf smartphone to display the image and transferring data to DICOM, Cloud DICOM, and Windows servers using Wi-Fi connectivity. Remaining RF protocols Cellular, Bluetooth, GPS are disabled via firmware, and is declared by the client.

Legal Manufacturer Details

GE Vingmed Ultrasound, A/S
Strandpomenaden 45,
3183 Horten,
Norway

Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

Seite 3 von 126

Page 3 of 126

Table of Contents

1	GENERAL REMARKS	4
1.1	Complimentary Materials.....	4
2	TEST SITES.....	5
2.1	Testing Facilities.....	5
2.2	List of Test and Measurement Instruments.....	5
3	GENERAL PRODUCT INFORMATION	6
3.1	Product Function and Intended Use.....	6
3.2	Ratings and System Details	6
3.1	Measurement Uncertainty:	6
4	TEST SET-UP AND OPERATION MODE	7
4.1	Principle of Configuration Selection	7
4.2	Test Operation and Test Software	7
4.3	Special Accessories and Auxiliary Equipment	7
4.4	Countermeasures to achieve EMC Compliance	7
4.5	Test modes – data rates and modulations	7
4.6	List of Frequencies and Frequency bands	7
5	TEST METHODOLOGY	8
5.1	Radiated Emission Test	8
5.1.1	Test Setup Configuration	8
6	TEST RESULTS	10
6.1	Maximum conducted output power	10
6.2	Maximum Power Spectral Density	29
6.3	DTS Bandwidth	48
6.4	Emissions in non-restricted frequency bands and conducted spurious emission.....	67
6.4.1	Emissions in non-restricted frequency bands	67
6.4.2	Conducted Spurious Emission	92
6.5	Radiated spurious emission and emissions in restricted bands of operation	110
7	CONDUCTED EMISSION TEST ON A.C. POWER LINE.....	123
8	LIST OF TABLES	126
9	LIST OF FIGURES.....	126

Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

Seite 4 von 126

Page 4 of 126

1 GENERAL REMARKS

1.1 Complimentary Materials

All attachments are integral part of this test report.

1. TEST SETUP PHOTOS
2. EUT EXTERNAL PHOTOS
3. EUT INTERNAL PHOTOS
4. FCC LABEL AND LABEL LOCATION
5. BLOCK DIAGRAM
6. SPECIFICATION OF EUT
7. SCHEMATIC DIAGRAMS
8. BILL OF MATERIAL
9. USER MANUAL
10. Maximum Permissible Exposure Information

Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

Seite 5 von 126

Page 5 of 126

2 TEST SITES

2.1 Testing Facilities

1. TÜV Rheinland (India) Private Limited
108 , Beside ISBR Business School,
Electronic city Phase I
Bangalore - 560 100.
2. TÜV Rheinland (India) Pvt. Ltd.
27/B, 2nd corss, Electronic City Phase 1
Bangalore – 560 100. India

2.2 List of Test and Measurement Instruments

Table 1: Test and measurements instrument used

Equipment	Manufacturer	Model Name	Serial Number	Firmware Versions	Calibration Due Date	Periodicity	Used for Test Items
Spectrum Analyser	Agilent Technologies	E4407B	US411927 72	A.14.06	28-03-2020	Yearly	Antenna - Port Measurements
EMI Receiver	Rohde & Schwarz	ESU 40	100288	4.43 SP3	11-10-2020	Yearly	Radiated spurious emission
Active loop antenna	Schwarzbeck	FMZB 1519 B	1519B-00111	-	16/01/2020	Yearly	
Biconical Antenna	Schwarzbeck mess-elektronik	VHBB-9124 / BBA-9106	01028	-	16-01-2020	Yearly	
Log-Periodic Antenna	Schwarzbeck mess-elektronik	VUSLP-9111B	9111B-111	-	17-01-2020	Yearly	
Broadband Horn Antenna	Schwarzbeck	BBHA 9120 D	9120D-1944	-	16-01-2020	Yearly	
Anechoic Chamber	Frankonia	-	-	-	-	-	AC Power line conducted emission
EMI Receiver	Rohde & Schwarz	ESR7	101133	-	16-01-2020	Yearly	
LISN	Rohde & Schwarz	ENV 216	100022	-	05-09-2020	Yearly	
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100811	-	01-08-2020	Yearly	

Table 2: Instrument application Software versions

Sl. No	Test Type	Application software	Version
1	Radiated spurious emission measurement- 3 meter Fully Anechoic Chamber	EMC 32	10.50.00

3 GENERAL PRODUCT INFORMATION

3.1 Product Function and Intended Use

Vscan Extend is a general purpose handheld diagnostic ultrasound imaging system for use by qualified and trained health care professionals enabling visualization and measurement of anatomical structures and fluid.

3.2 Ratings and System Details

Table 3: Ratings and System Details as declared by client

Frequency Range	2400MHz – 2480MHz
No. of channel	11
Channel Spacing	5MHz
Data Rate	802.11b: 1,2, 5.5,11 Mbps 802.11g: 6, 9, 12, 18, 24, 36,48, 54 Mbps 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11nHT20: 6.5, 13, 19.5, 26, 39, 52, 58.5,65Mbps 802.11nHT40: 13.5, 27, 40.5, 54, 81, 108, 121.5, 135 Mbps
Modulation	802.11b: DSSS with CCK 802.11g: OFDM with BPSK, QPSK, 16-QAM, 64-QAM 802.11n: OFDM with BPSK, QPSK, 16-QAM, 64-QAM
Number of antenna	One
Antenna Gain and Type	1.2 dBi and Internal FPC
Supply Voltage	7.4 VDC Battery
Dimensions	168 x 76 x 22 mm
Environmental Condition	Operating temperature is 0°C to 40°C

Disclaimer:

The information/data is supplied by the client and the same is considered to arrive at the final value. Any changes made apart from the specified specification, can directly impact on the tests results.

3.1 Measurement Uncertainty:

Table 4: Measurement Uncertainty

Parameter	Uncertainty
Occupied Channel Bandwidth	±5 %
RF output power, conducted	±1.5 dB
Power Spectral Density, conducted	±3 dB
Unwanted Emissions, conducted	±3 dB
All emissions, radiated	±6 dB
Temperature	±3 °C
Supply Voltages	±3 %
Time	±5 %

Note: The listed uncertainties are the worst case uncertainties for the entire range of measurements and are for the reporting purpose only and are not used in determining the PASS/FAIL of the results.

4 TEST SET-UP AND OPERATION MODE

4.1 Principle of Configuration Selection

Transmission was enabled with continuous transmission on low, middle and high channels.

4.2 Test Operation and Test Software

Test software was used to enable the continuous transmission, changing channels (low/mid/high) and data rates on the EUT for the tests in this report.

Test Software - v1.2.2

Hardware version - v16

4.3 Special Accessories and Auxiliary Equipment

- None

4.4 Countermeasures to achieve EMC Compliance

- None

4.5 Test modes – data rates and modulations

- For radiated spurious emissions only the worst case results and are reported in this report.

4.6 List of Frequencies and Frequency bands

Frequency Band (MHz)	Channel No.	Channel Frequency (MHz)
2400 – 2483.5	1	2412
	2	2417
	3	2422
	4	2427
	5	2432
	6	2437
	7	2442
	8	2447
	9	2452
	10	2457
	11	2462

Table 5: List of Wi-Fi center Frequencies

Protocol: Wi-Fi:

Channel Bandwidth: 20MHz

Channel low: 2412MHz

Channel mid: 2442MHz

Channel High: 2462MHz

Channel Bandwidth: 40MHz

Channel low: 2422MHz

Channel High: 2452MHz

Note:

TUV Sample Identification number: Conducted sample - A001012783-001
Radiated sample - A001012783-002

5 TEST METHODOLOGY

5.1 Radiated Emission Test

The radiated emission measurement was performed according to the procedures in ANSI C63.10-2013. The equipment under test (EUT) was placed at the middle of the 80 cm high turntable for below 1 GHz & 1.5 m height for above 1 GHz measurement, and the EUT is 3 meters far from the measuring antenna. The turntable was rotated 360° for obtaining the maximum emission. The height of the measuring antennas was scanned between 1 m and 4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations. Repeat the measurement steps until the maximum emissions were obtained. The measurement above 1000 MHz was performed by horn antenna, The measurement below 30 MHz was performed by loop antenna, Measurement from 30 MHz to 200 MHz was performed by Baloon and Biconical Antenna, and measurement from 200 MHz to 1 GHz was performed by Log-Periodic Antenna.

The EUT was rotated around the X-, Y-, and Z-Axis and the results from worst case axis are recorded.

5.1.1 Test Setup Configuration

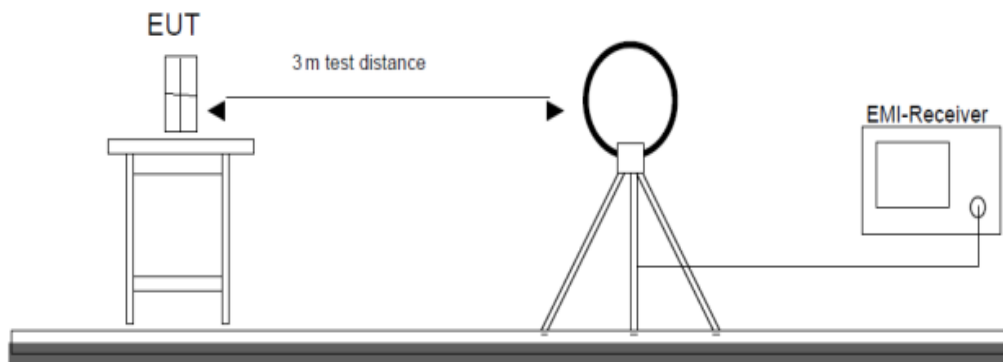


Figure 1: Frequency Range 9 kHz- 30 MHz

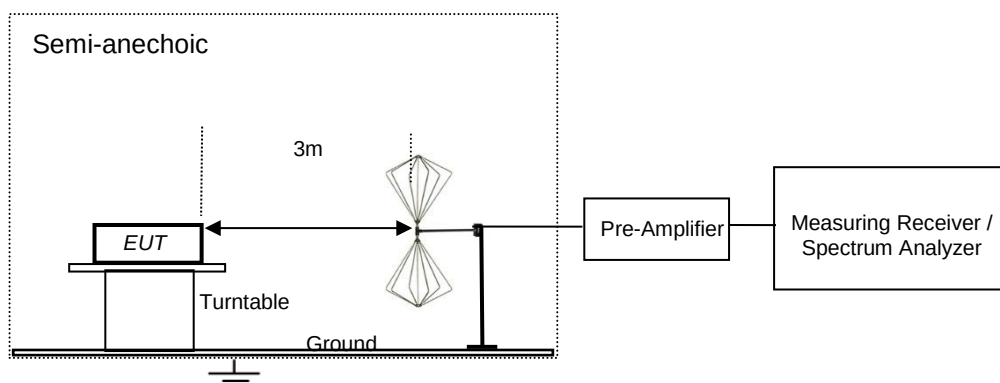


Figure 2: Frequency Range 30 MHz – 200 MHz

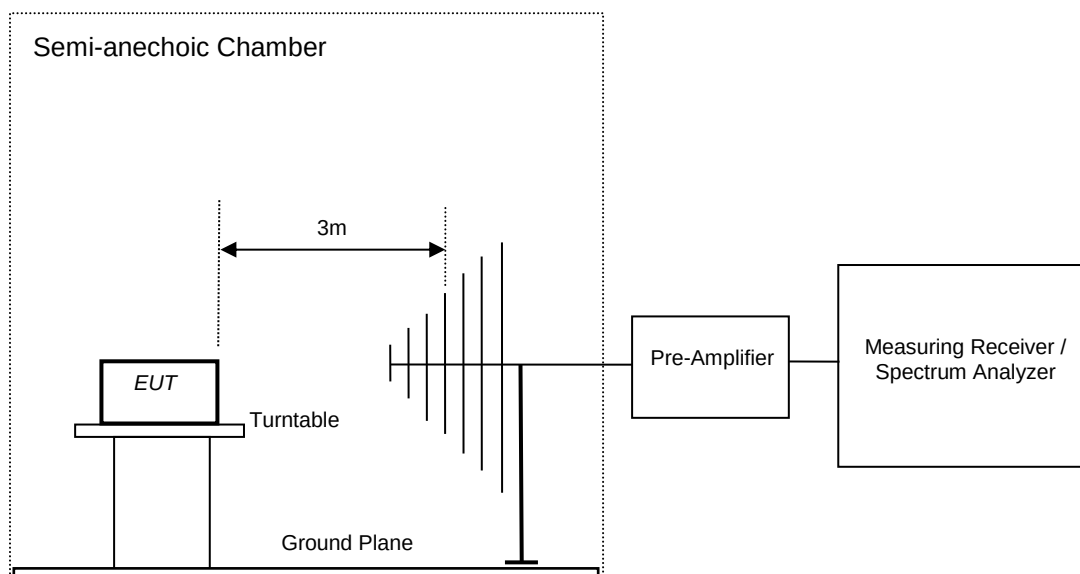


Figure 3: Frequency Range 200 MHz - 1GHz

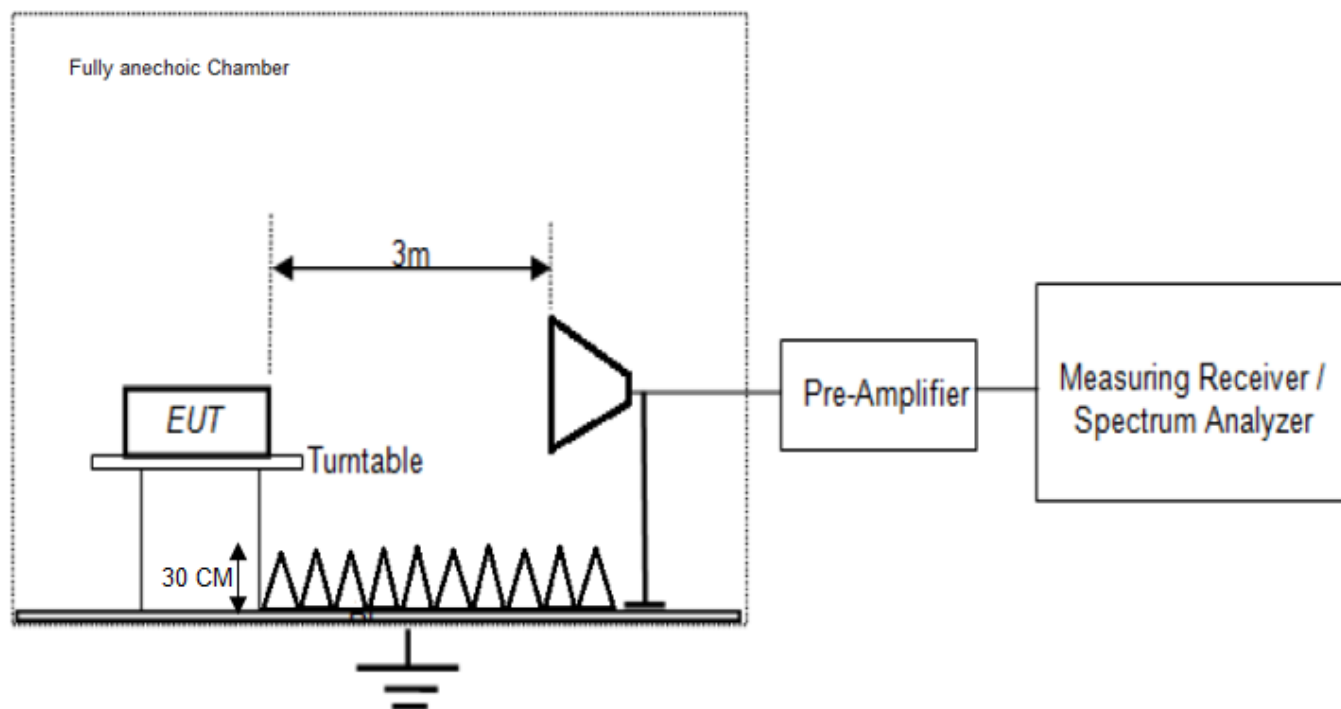


Figure 4: Frequency Range 1GHz – 26GHz

Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

Seite 10 von 126

Page 10 of 126

6 Test Results

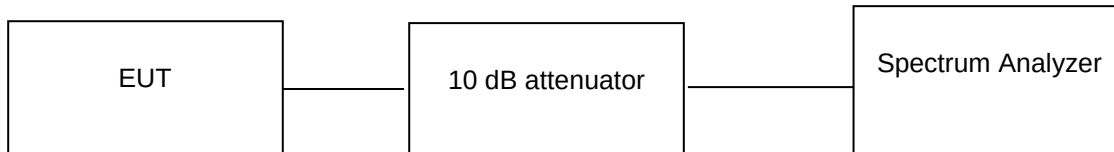
6.1 Maximum conducted output power

Result

Pass

Test Specification	FCC part 15 Subpart C 15.247 (b)(3) / RSS 247 Issue 2, Section 5.4 (4)
Measurement Bandwidth	300 kHz
Detector	Average
Requirement	$\leq 1 \text{ W}$ (30 dBm)

Test Method:



Environmental and Test conditions:

Normal Temperature = +25 °C

Voltage (V norm) = 7.4 VDC

RH = 63.2 %

Test results:

10 dB attenuator + 0.6dB Cable loss = 10.6 dB offset is considered in below result

Protocol: 802.11b

Data rate (Mbps)	Channel Frequency (MHz)	Average Power (dBm)	Limit (dBm)
1	2412	12.19	30
	2442	12.44	30
	2462	12.24	30
11	2412	11.82	30
	2442	12.05	30
	2462	12.08	30

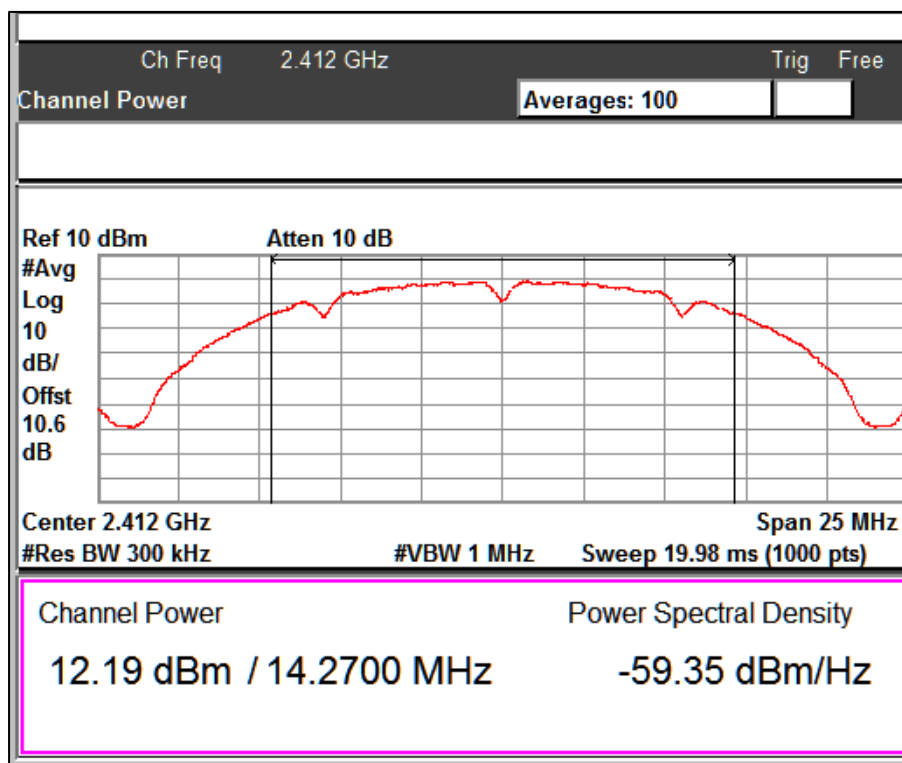
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

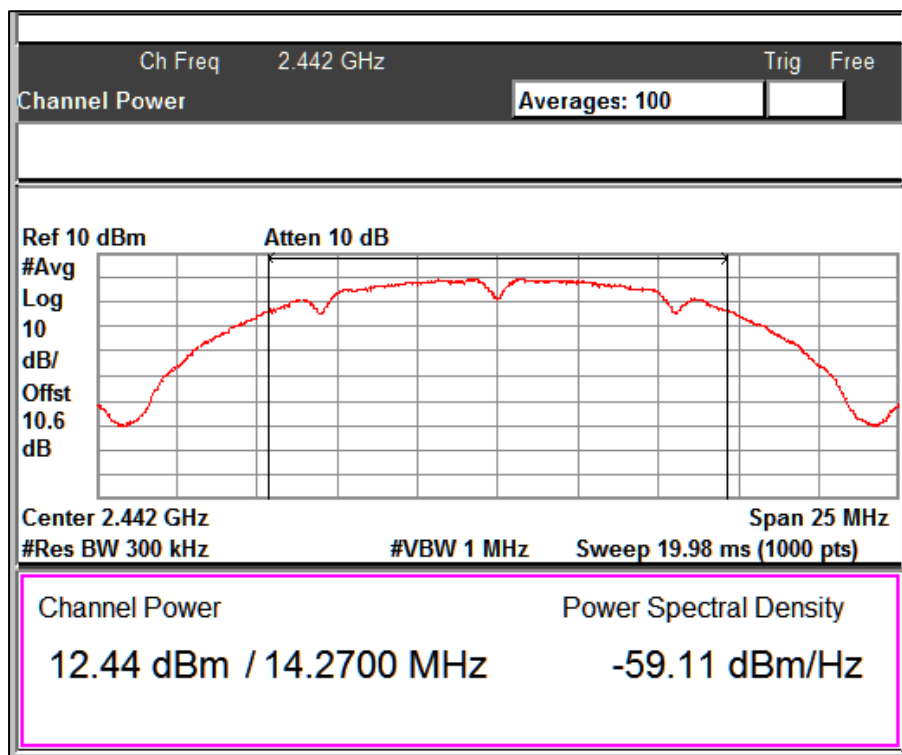
Seite 11 von 126

Page 11 of 126



Channel Frequency: 2412 MHz

Data Rate: 1Mbps



Channel Frequency: 2442 MHz

Data Rate: 1Mbps

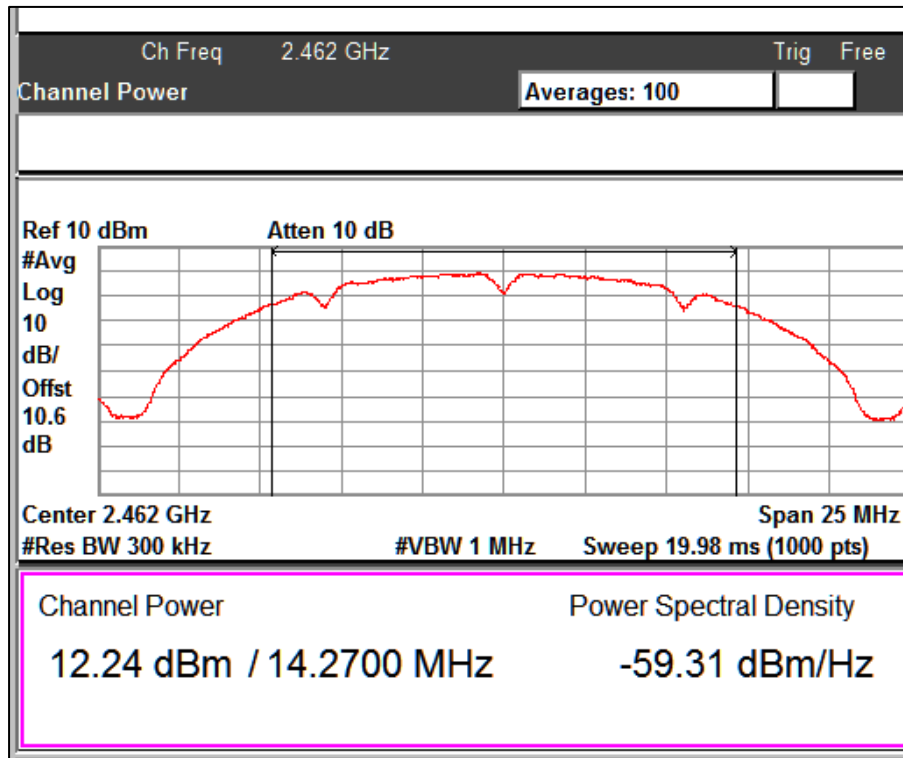
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

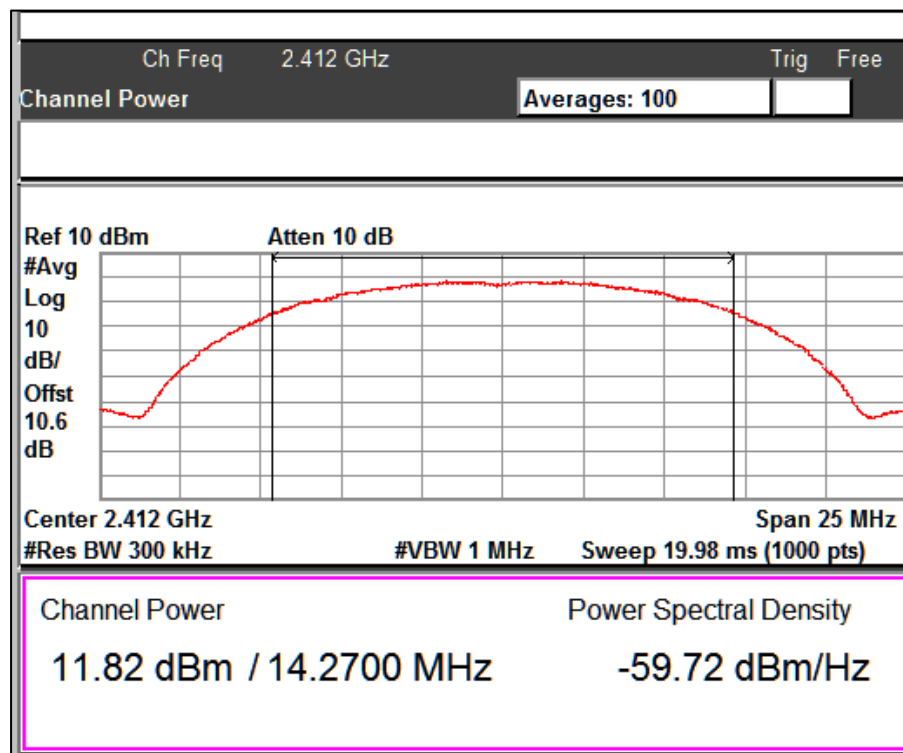
Seite 12 von 126

Page 12 of 126



Channel Frequency: 2462 MHz

Data Rate: 1Mbps



Channel Frequency: 2412 MHz

Data Rate: 11Mbps

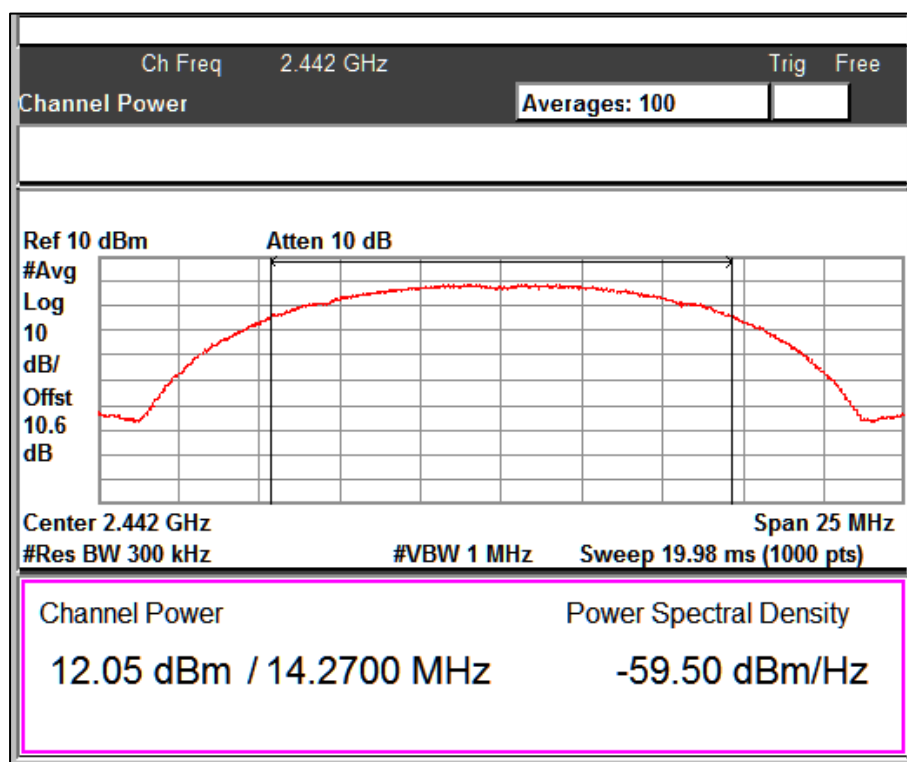
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

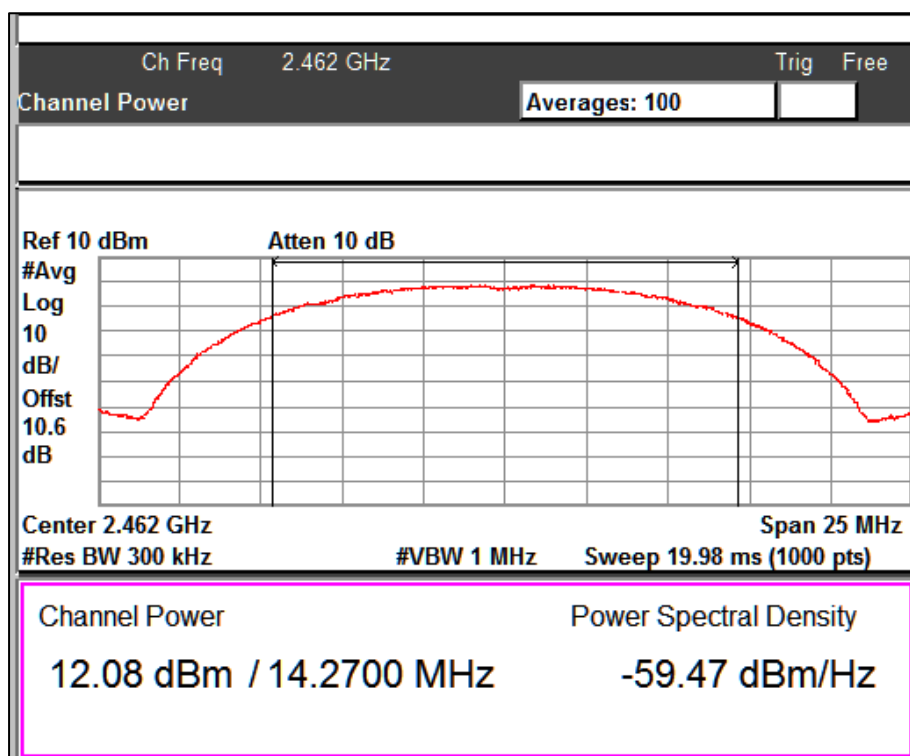
Seite 13 von 126

Page 13 of 126



Channel Frequency: 2442 MHz

Data Rate: 11Mbps



Channel Frequency: 2462 MHz

Data Rate: 11Mbps

Prüfbericht - Nr.:

Test Report No.:

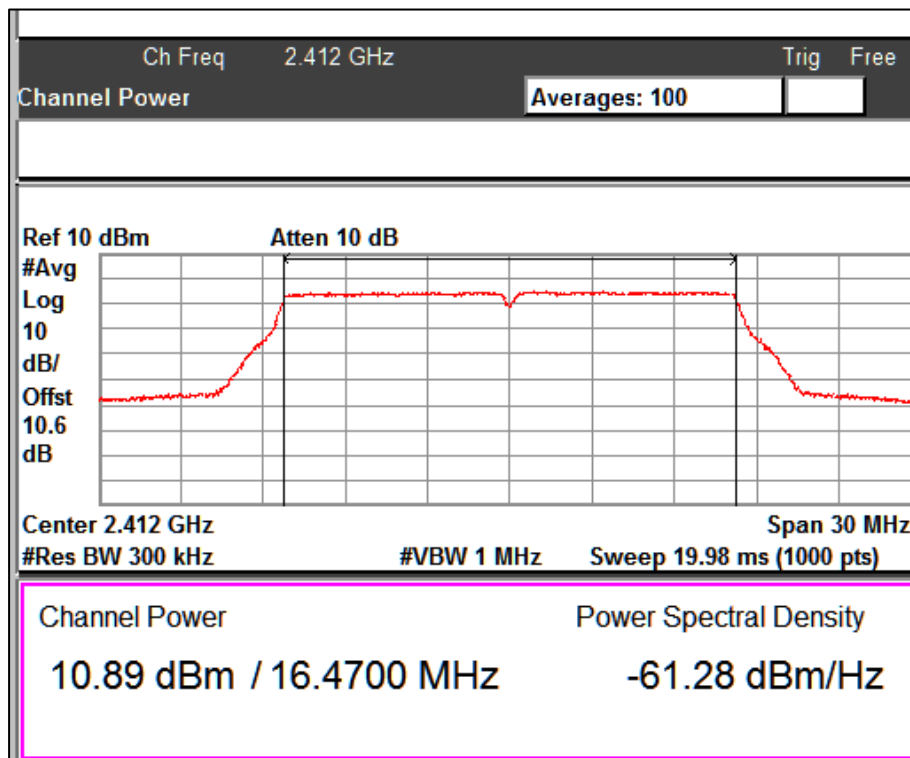
ULR-TC568819300000069F

Seite 14 von 126

Page 14 of 126

Protocol: 802.11g

Data rate (Mbps)	Channel Frequency (MHz)	Average Power (dBm)	Limit (dBm)
6	2412	10.89	30
	2442	11.03	30
	2462	10.96	30
24	2412	10.21	30
	2442	10.80	30
	2462	10.54	30
54	2412	10.32	30
	2442	10.66	30
	2462	10.53	30



Channel Frequency: 2412 MHz

Data Rate: 6Mbps

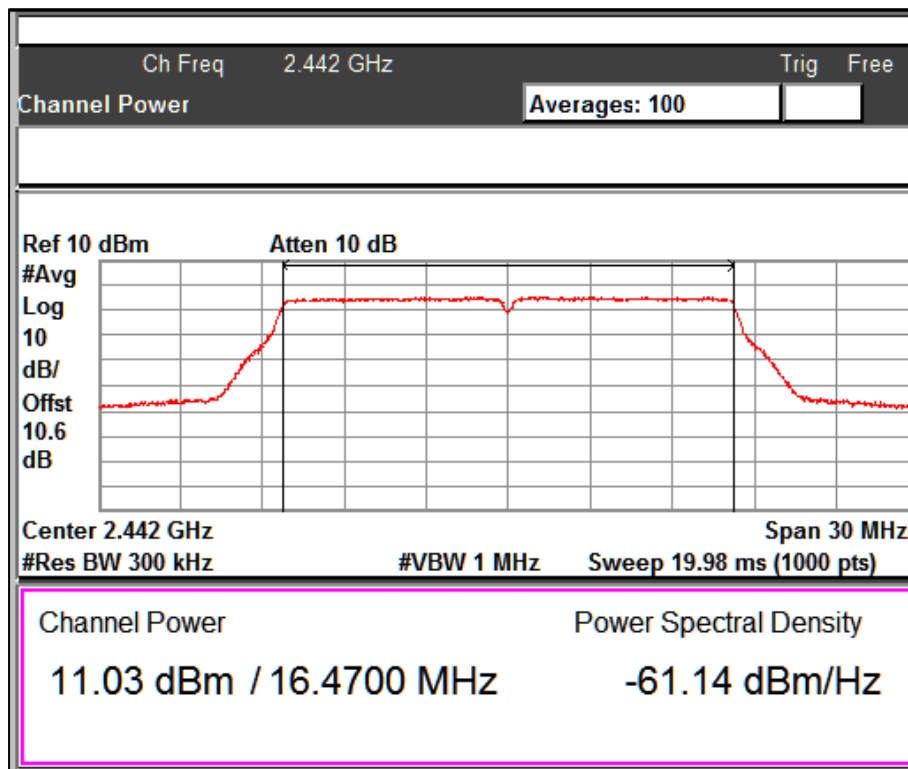
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

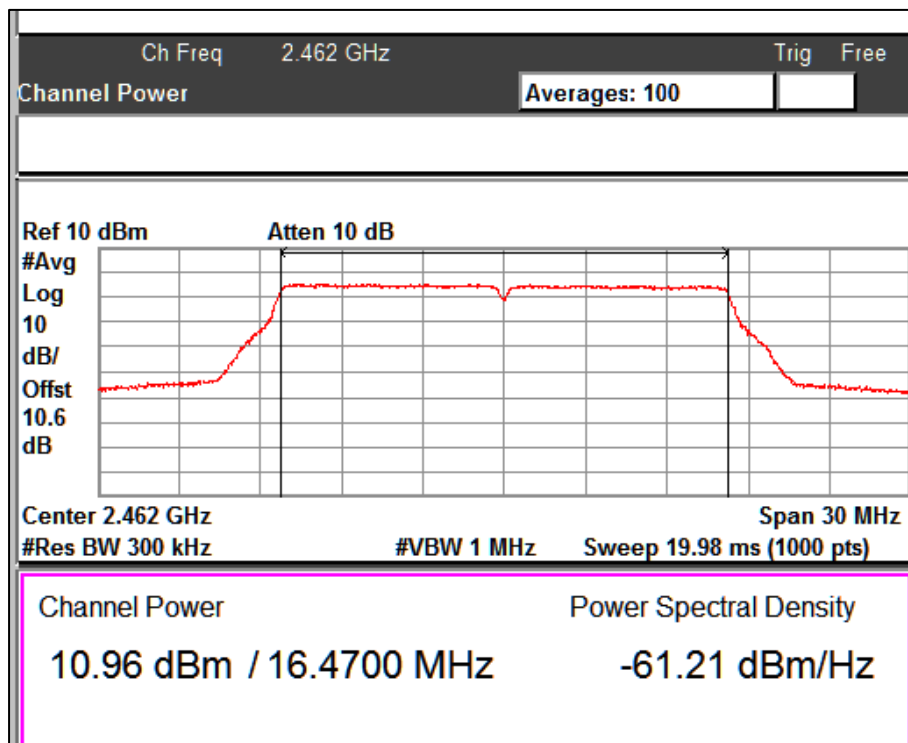
Seite 15 von 126

Page 15 of 126



Channel Frequency: 2442 MHz

Data Rate: 6Mbps



Channel Frequency: 2462 MHz

Data Rate: 6Mbps

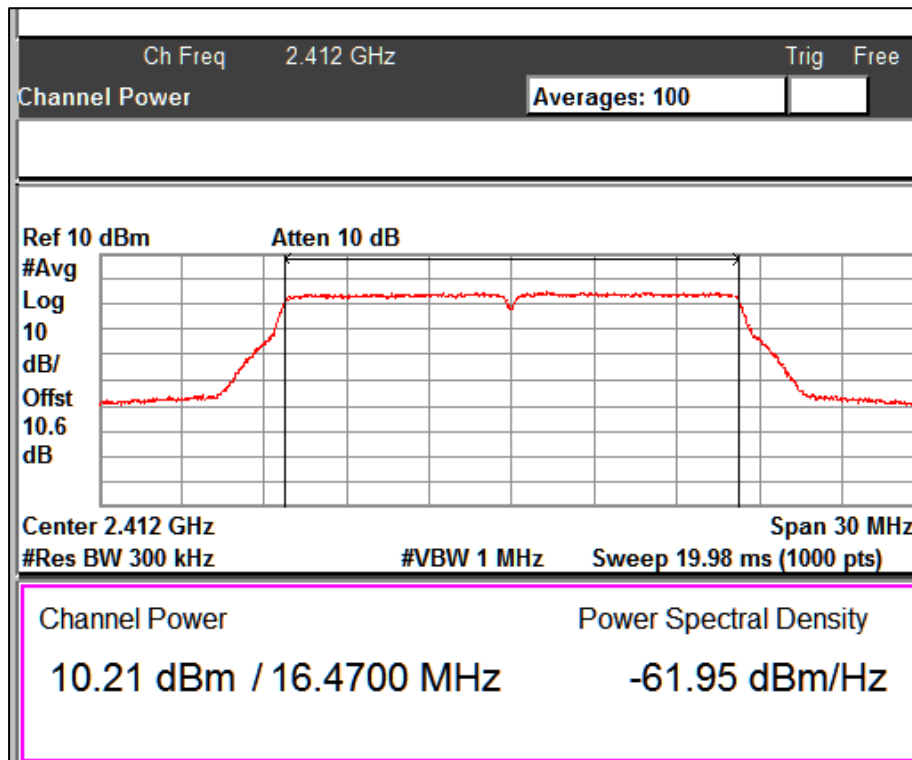
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

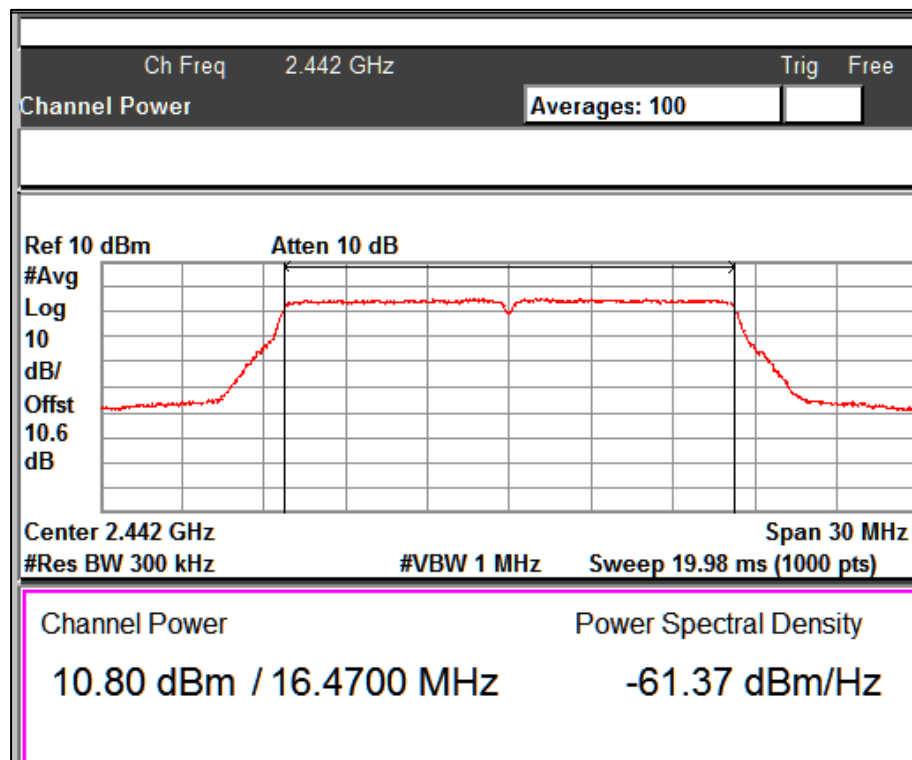
Seite 16 von 126

Page 16 of 126



Channel Frequency: 2412 MHz

Data Rate: 24Mbps



Channel Frequency: 2442 MHz

Data Rate: 24Mbps

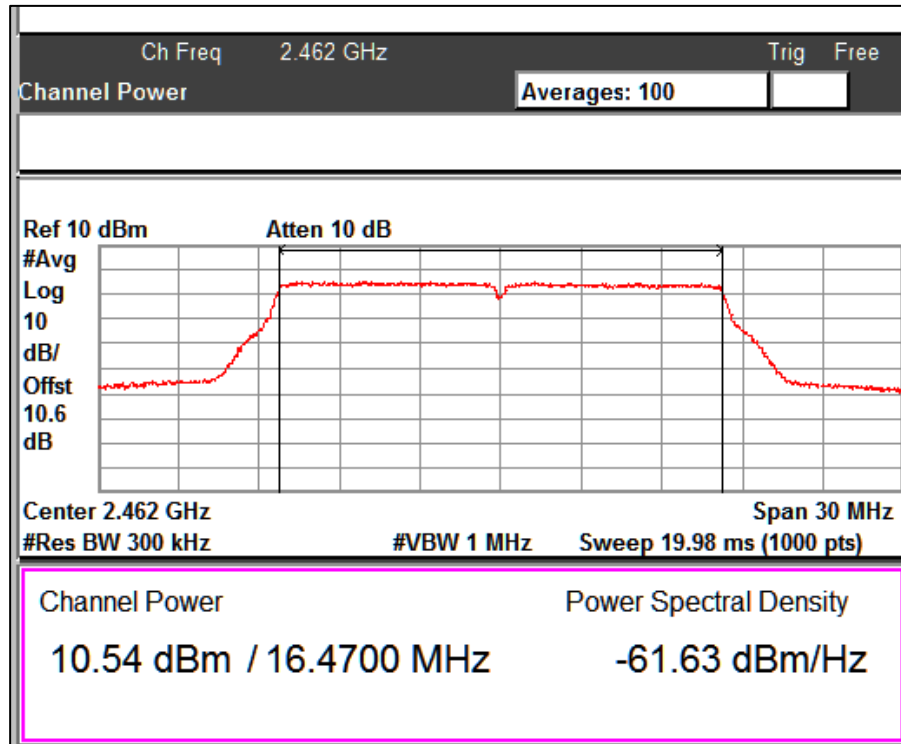
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

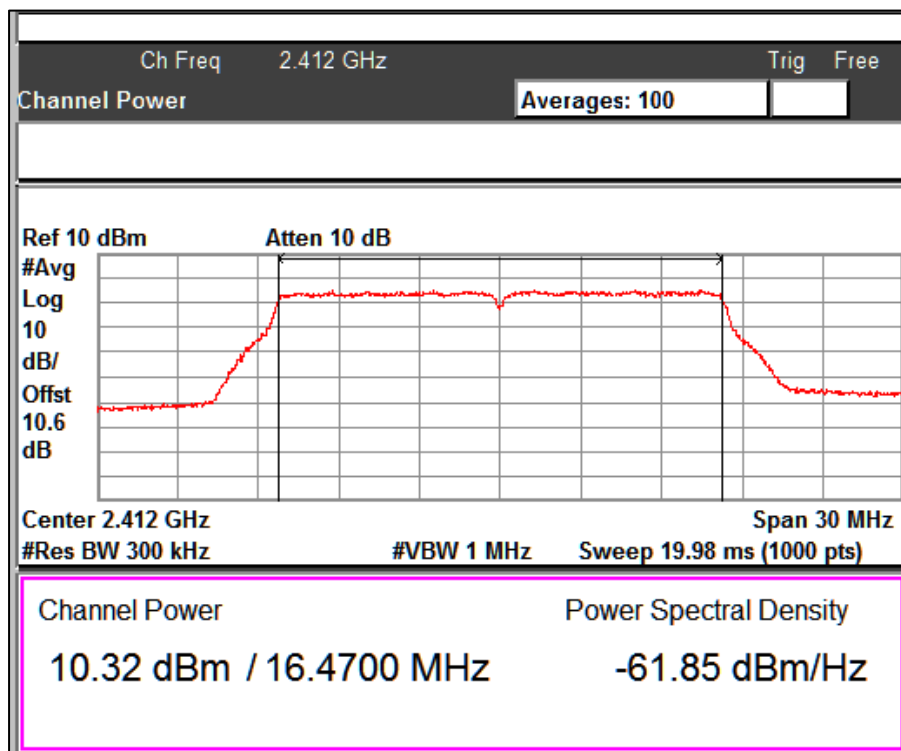
Seite 17 von 126

Page 17 of 126



Channel Frequency: 2462 MHz

Data Rate: 24Mbps



Channel Frequency: 2412 MHz

Data Rate: 54Mbps

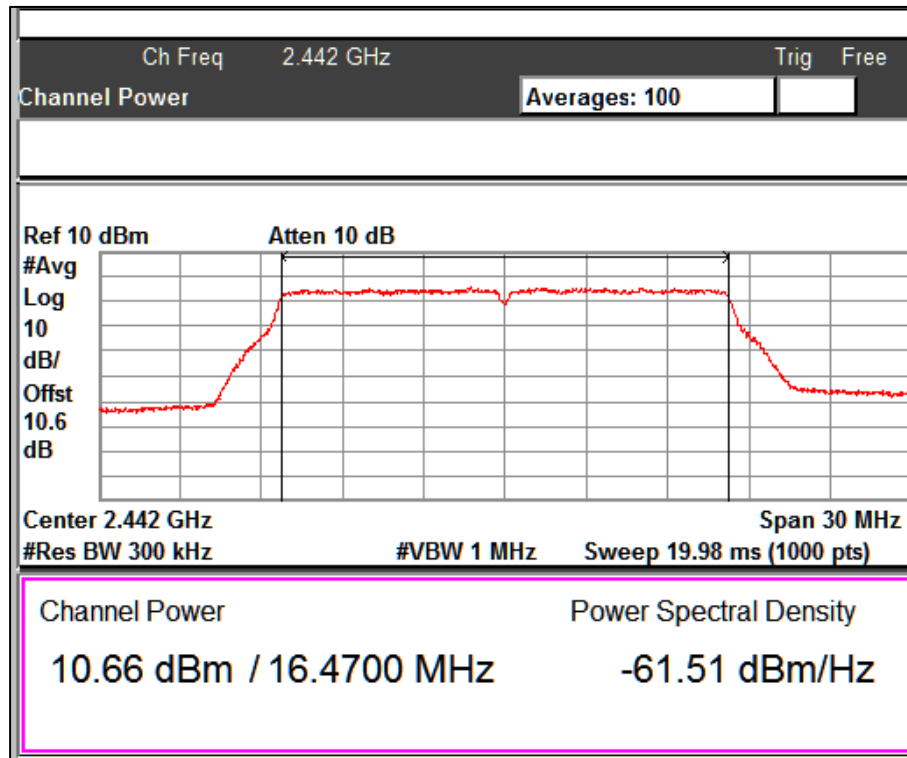
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

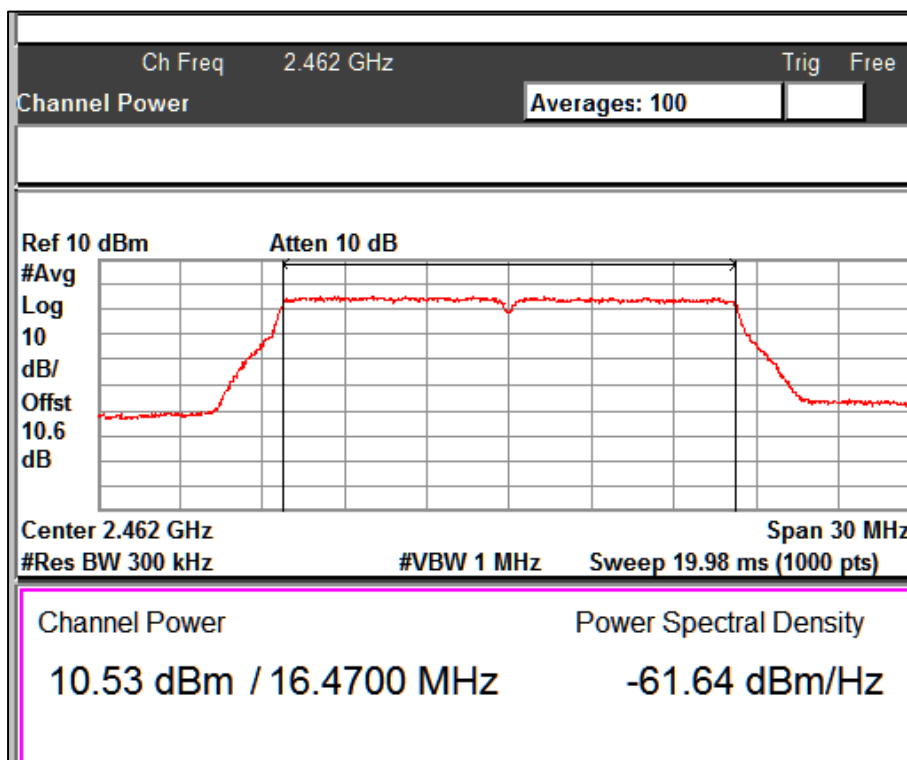
Seite 18 von 126

Page 18 of 126



Channel Frequency: 2442 MHz

Data Rate: 54Mbps



Channel Frequency: 2462 MHz

Data Rate: 54Mbps

Prüfbericht - Nr.:

Test Report No.:

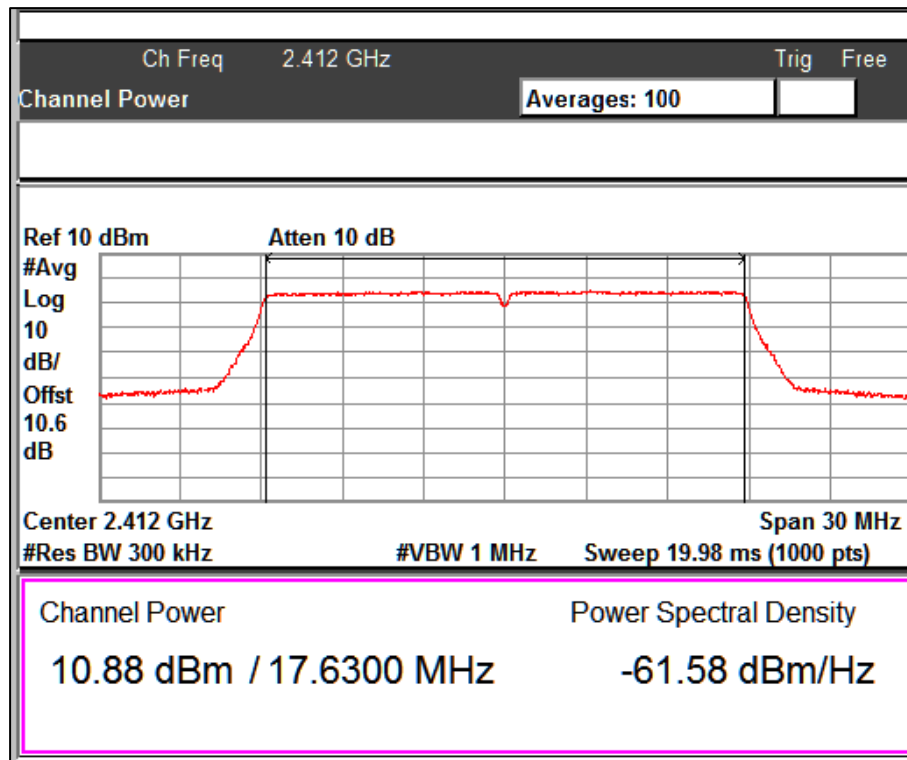
ULR-TC568819300000069F

Seite 19 von 126

Page 19 of 126

Protocol: 802.11n_HT20

Data rate (Mbps)	Channel Frequency (MHz)	Average Power (dBm)	Limit (dBm)
MCS0	2412	10.88	30
	2442	10.74	30
	2462	10.97	30
MCS4	2412	10.53	30
	2442	10.69	30
	2462	10.58	30
MCS7	2412	9.76	30
	2442	9.89	30
	2462	9.76	30



Channel Frequency: 2412 MHz

Data Rate: MCS0

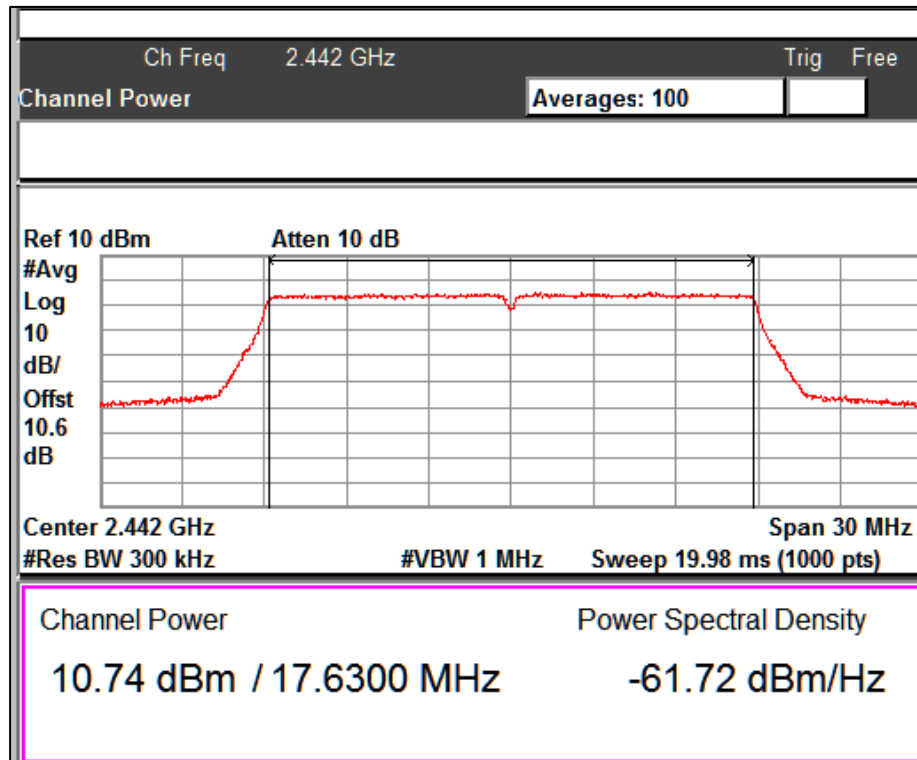
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

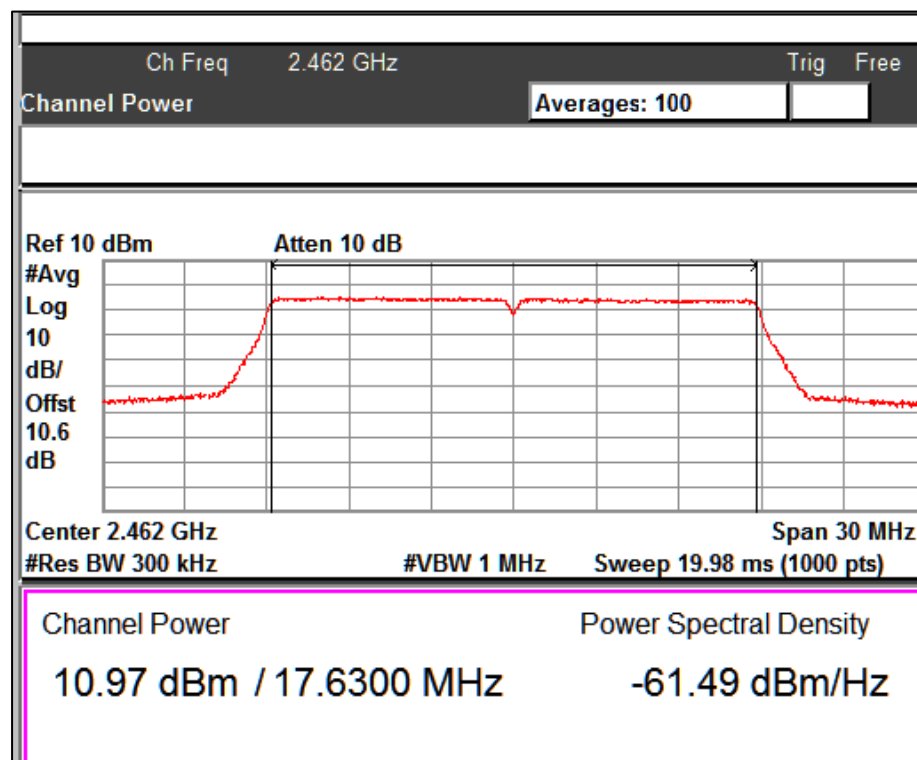
Seite 20 von 126

Page 20 of 126



Channel Frequency: 2442 MHz

Data Rate: MCS0



Channel Frequency: 2462 MHz

Data Rate: MCS0

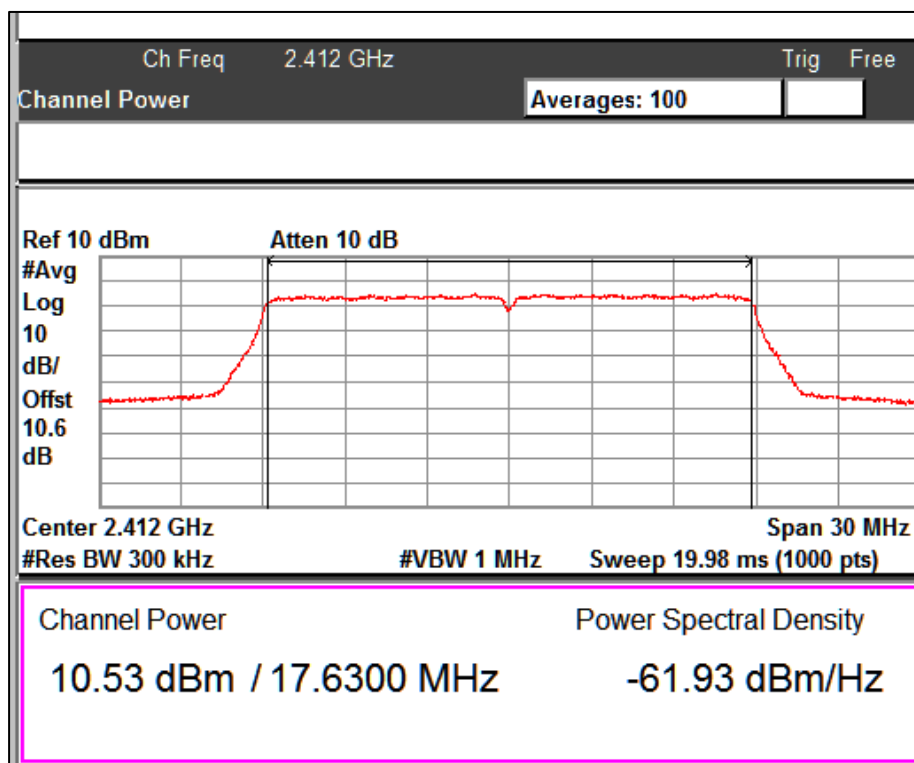
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

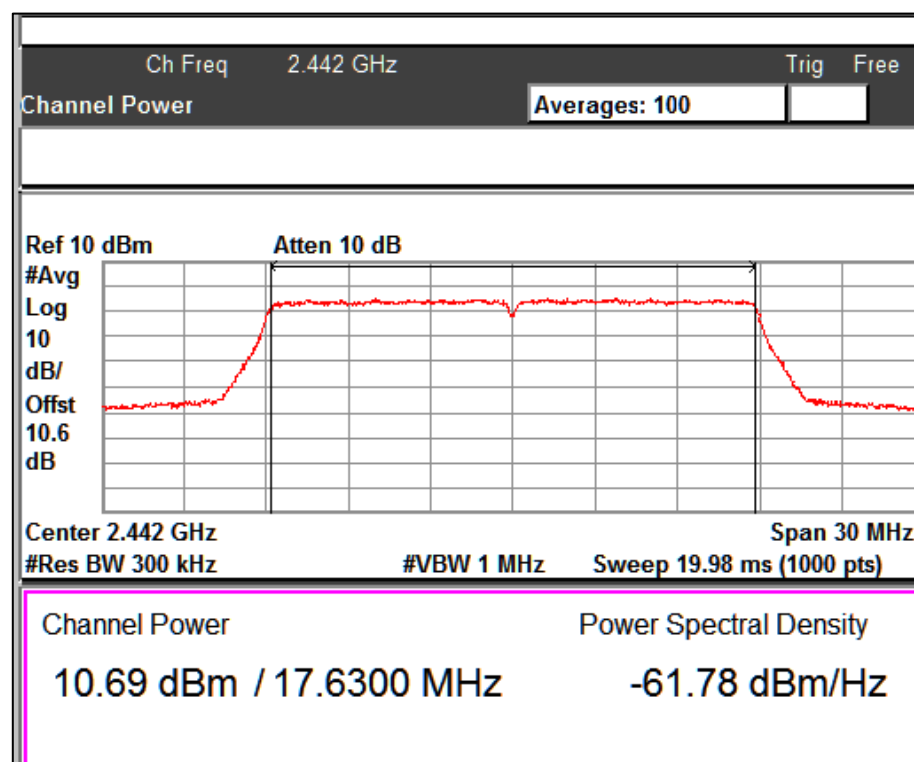
Seite 21 von 126

Page 21 of 126



Channel Frequency: 2412 MHz

Data Rate: MCS4



Channel Frequency: 2442 MHz

Data Rate: MCS4

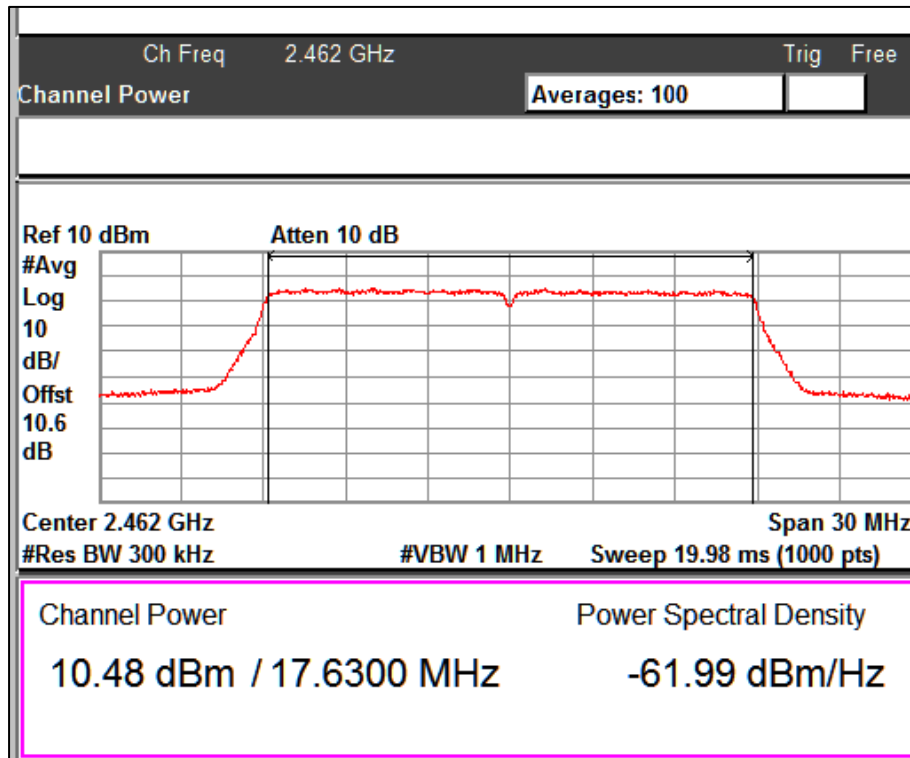
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

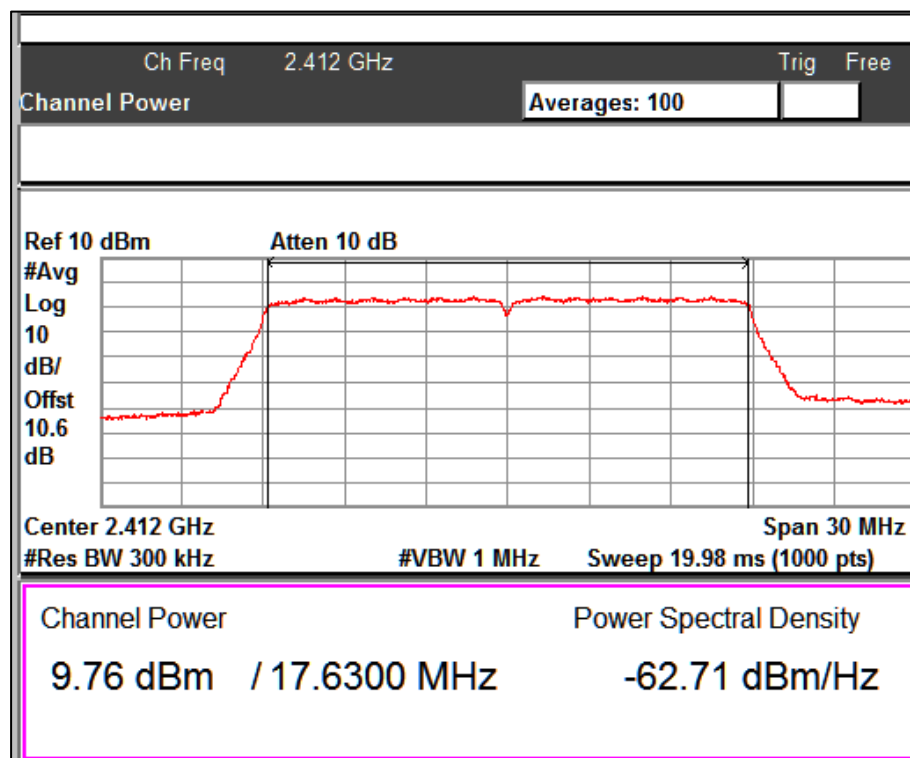
Seite 22 von 126

Page 22 of 126



Channel Frequency: 2462 MHz

Data Rate: MCS4



Channel Frequency: 2412 MHz

Data Rate: MCS7

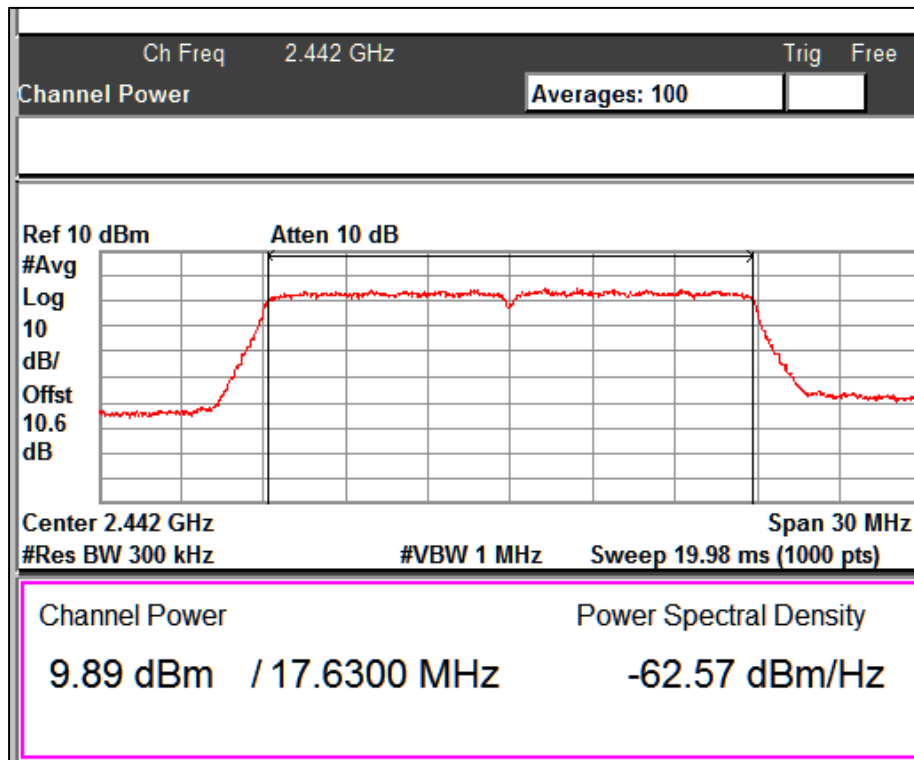
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

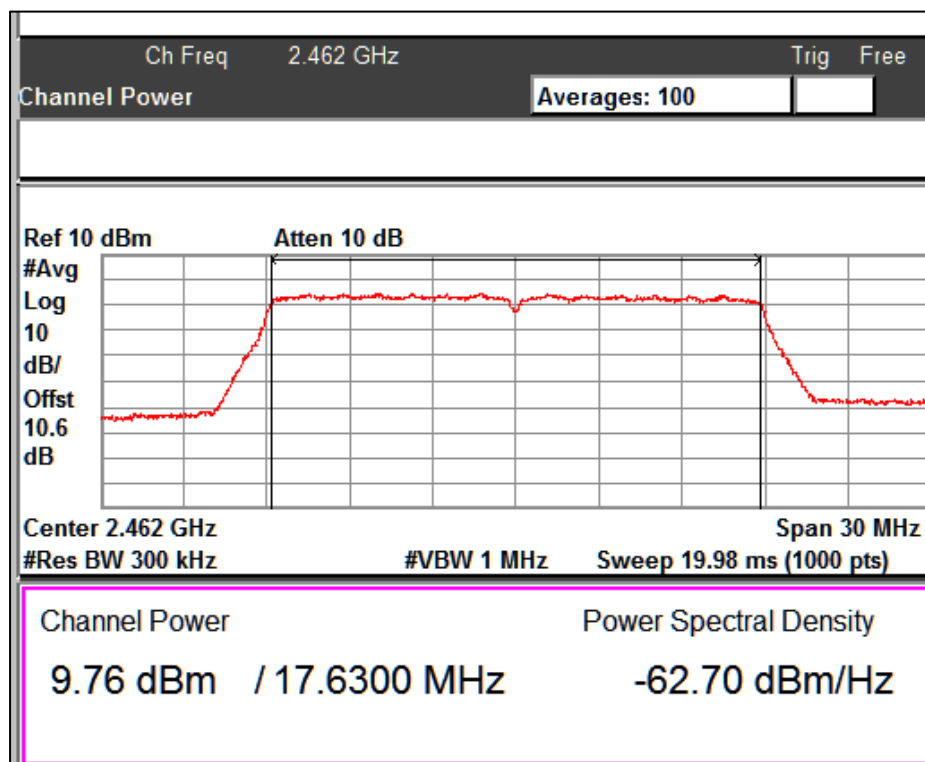
Seite 23 von 126

Page 23 of 126



Channel Frequency: 2442 MHz

Data Rate: MCS7



Channel Frequency: 2462 MHz

Data Rate: MCS7

Prüfbericht - Nr.:

Test Report No.:

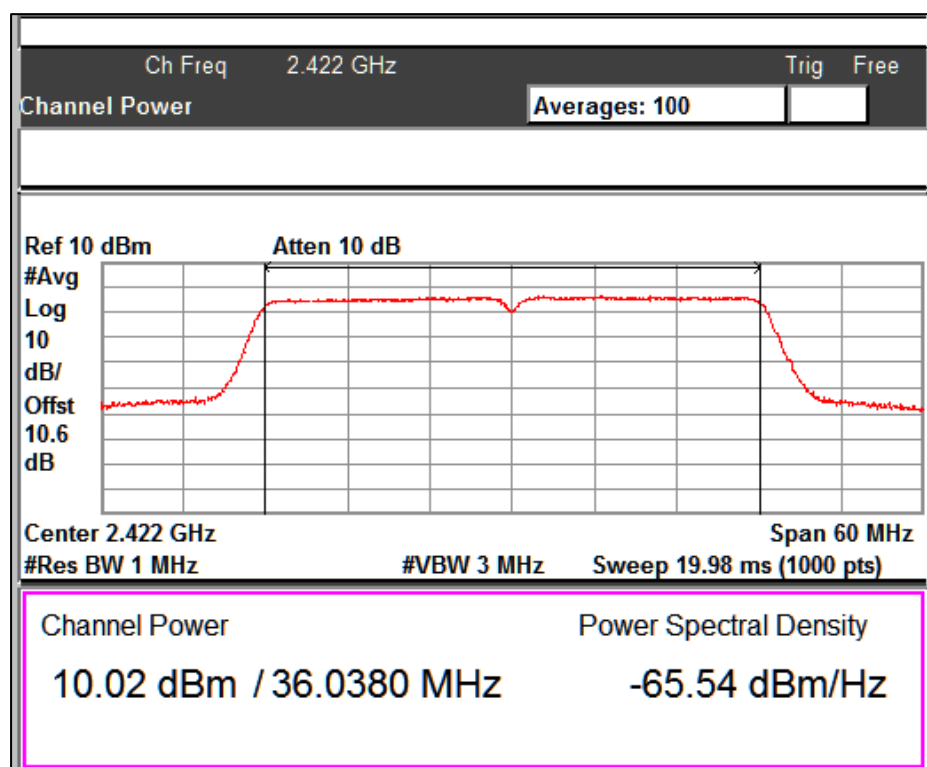
ULR-TC568819300000069F

Seite 24 von 126

Page 24 of 126

Protocol: 802.11n_HT40

Data rate (Mbps)	Channel Frequency (MHz)	Average Power (dBm)	Limit (dBm)
MCS0	2422	10.02	30
	2442	9.99	30
	2452	9.98	30
MCS4	2422	9.04	30
	2442	9.27	30
	2452	9.17	30
MCS7	2422	8.10	30
	2442	8.09	30
	2452	8.06	30



Channel Frequency: 2422 MHz

Data Rate: MCS0

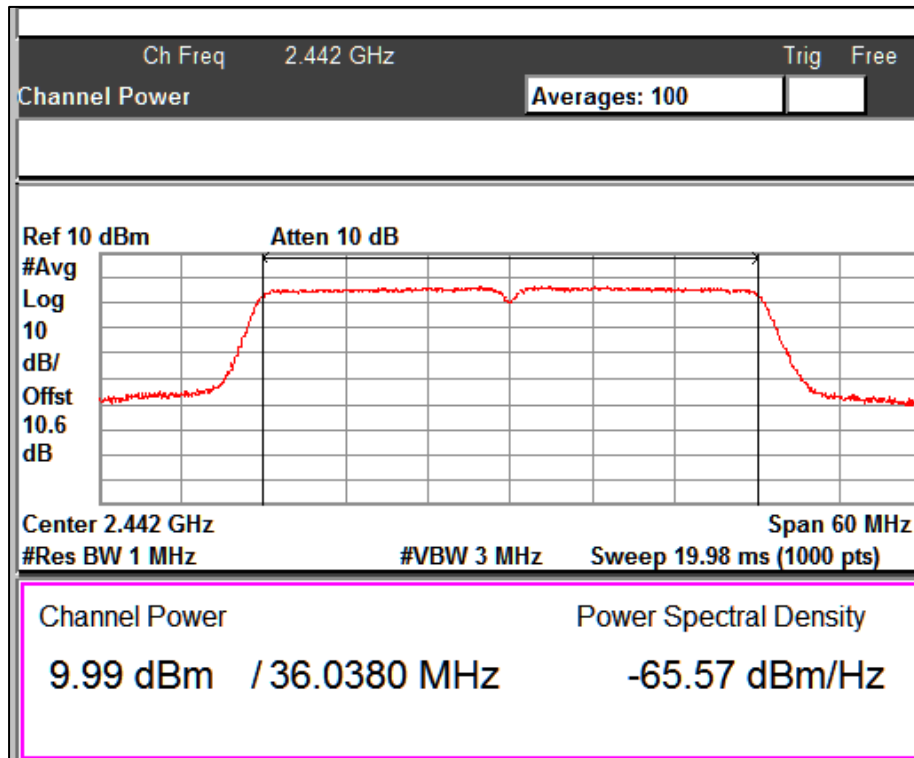
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

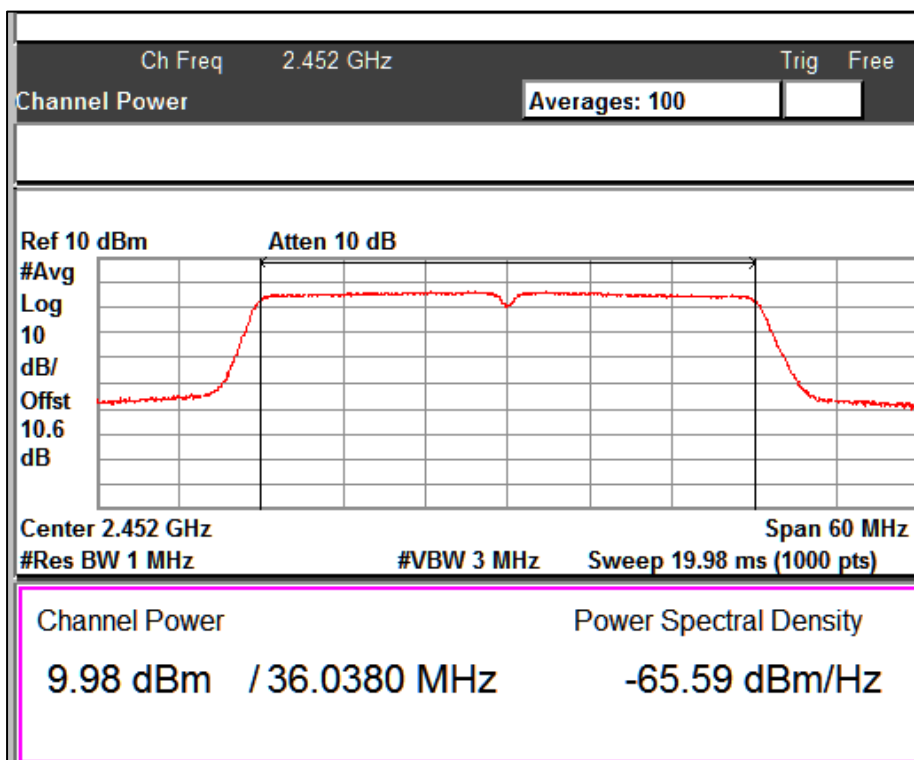
Seite 25 von 126

Page 25 of 126



Channel Frequency: 2442 MHz

Data Rate: MCS0



Channel Frequency: 2452 MHz

Data Rate: MCS0

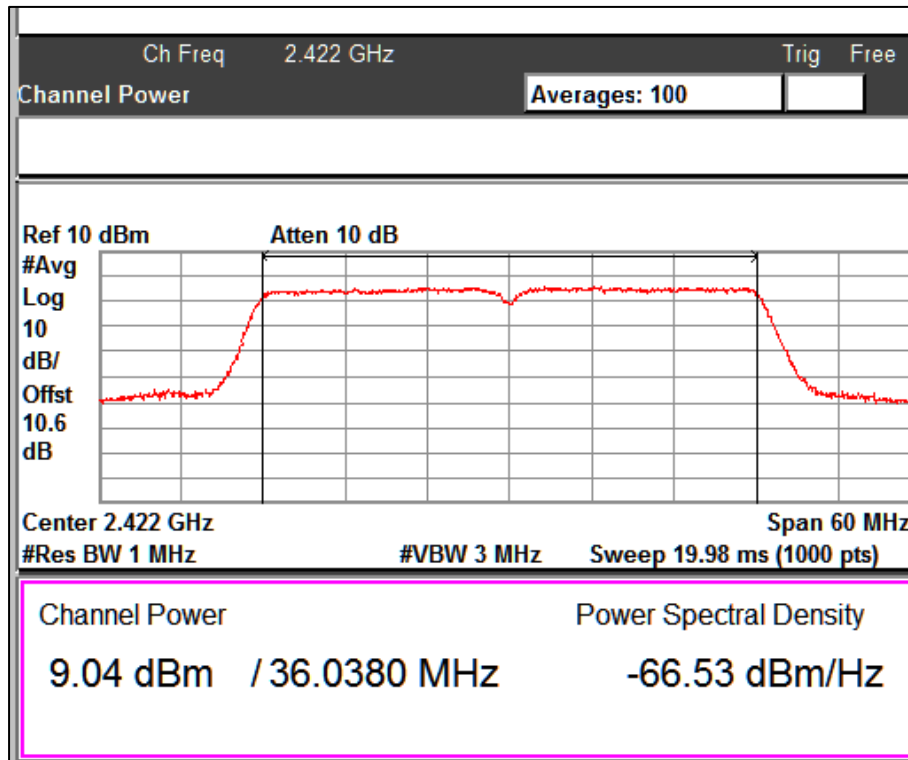
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

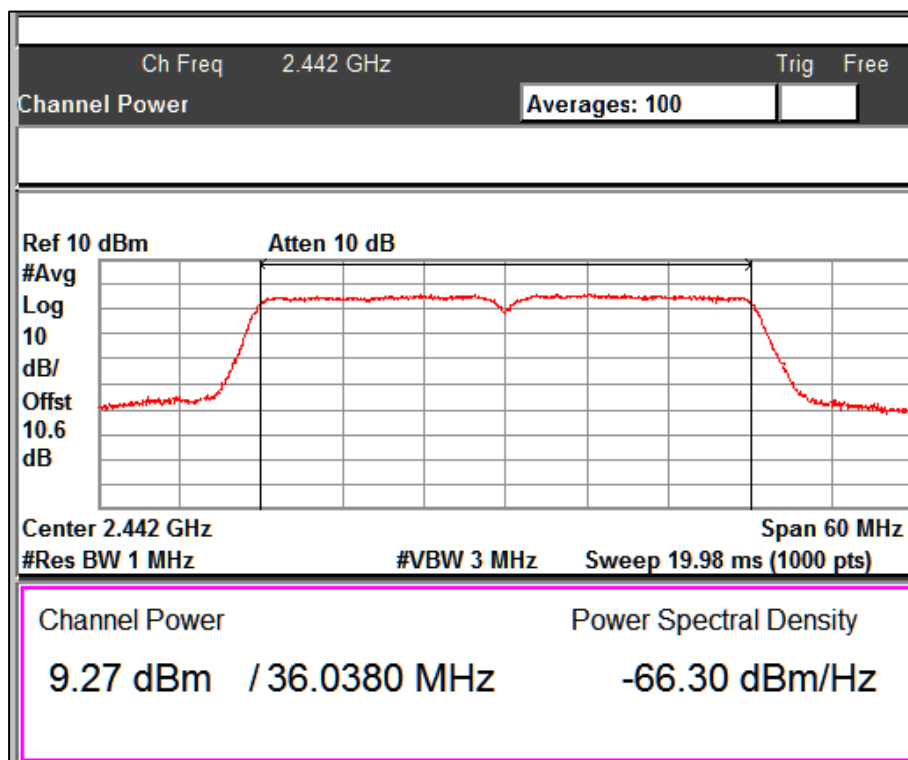
Seite 26 von 126

Page 26 of 126



Channel Frequency: 2422 MHz

Data Rate: MCS4



Channel Frequency: 2442 MHz

Data Rate: MCS4

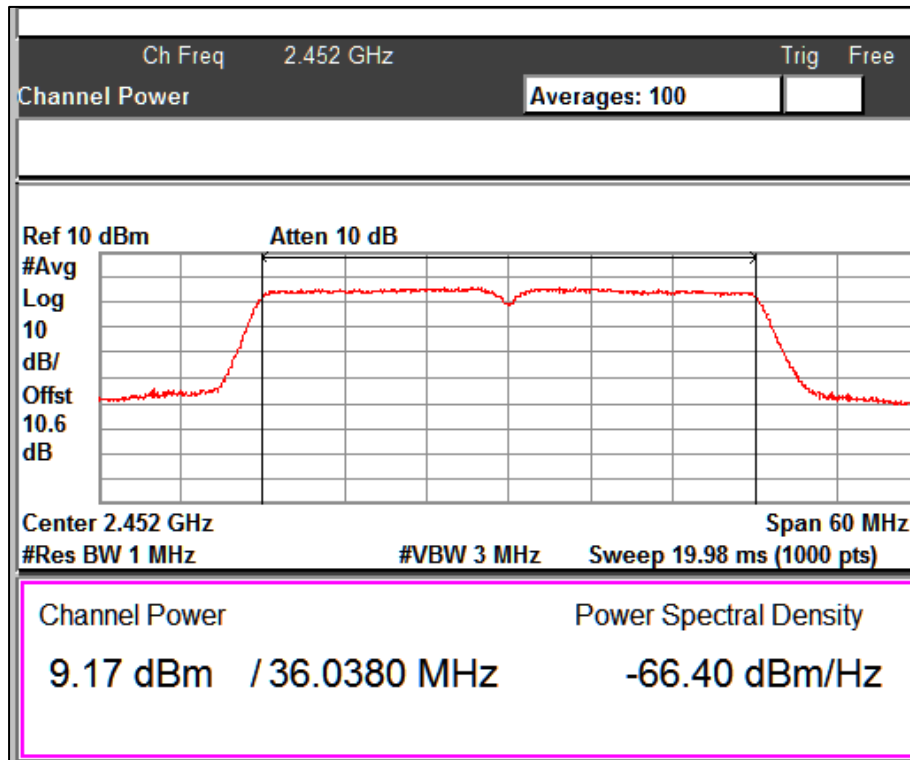
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

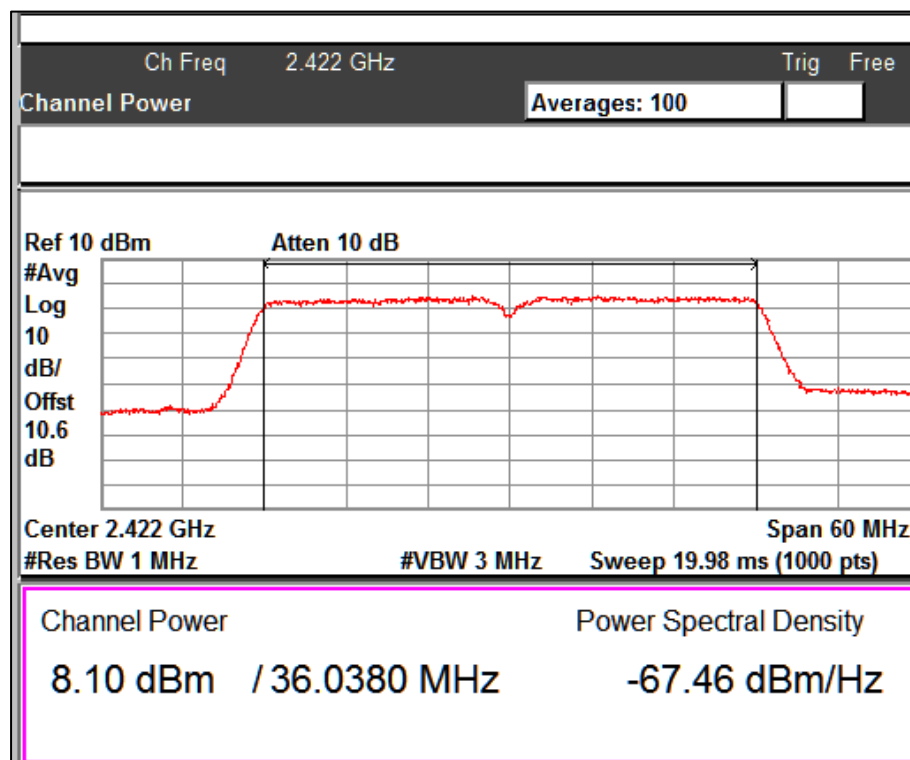
Seite 27 von 126

Page 27 of 126



Channel Frequency: 2452 MHz

Data Rate: MCS4



Channel Frequency: 2422 MHz

Data Rate: MCS7

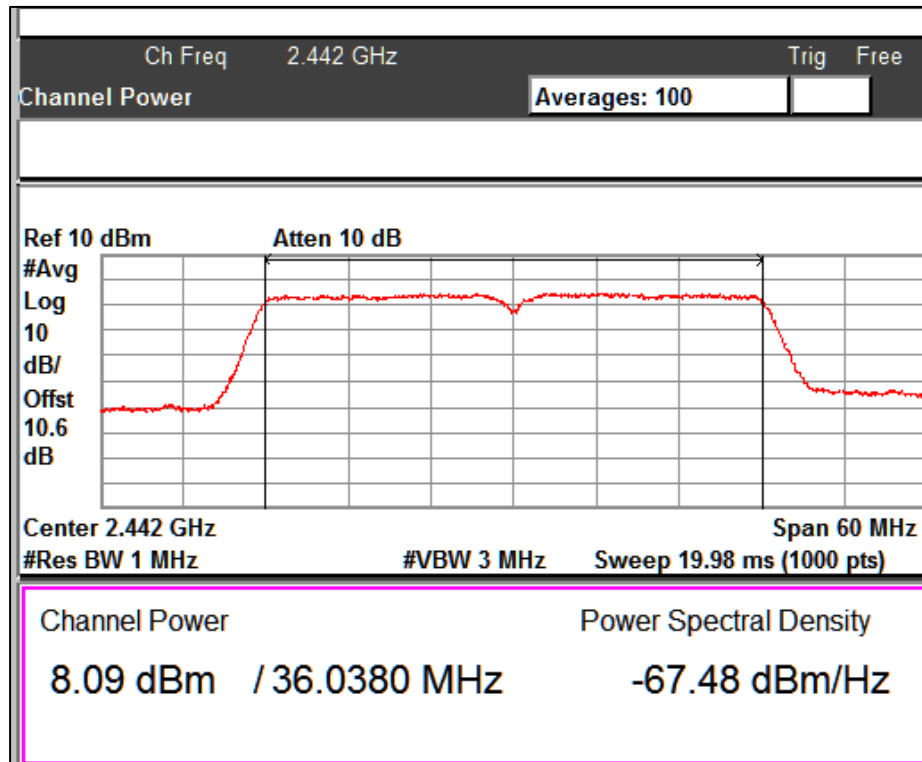
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

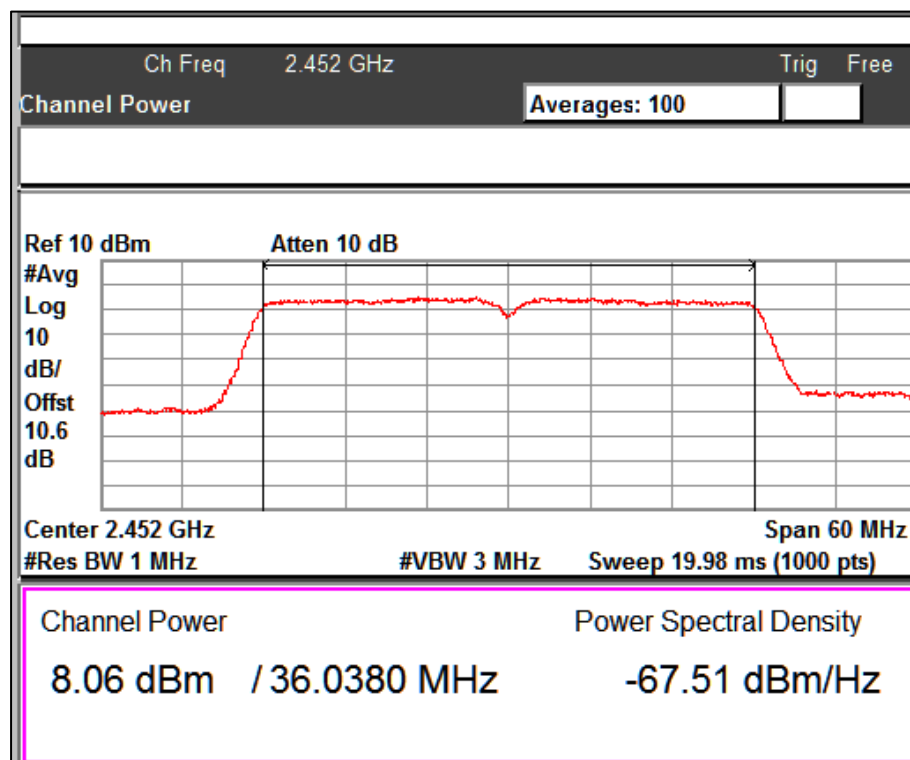
Seite 28 von 126

Page 28 of 126



Channel Frequency: 2442 MHz

Data Rate: MCS7



Channel Frequency: 2452 MHz

Data Rate: MCS7

Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

Seite 29 von 126

Page 29 of 126

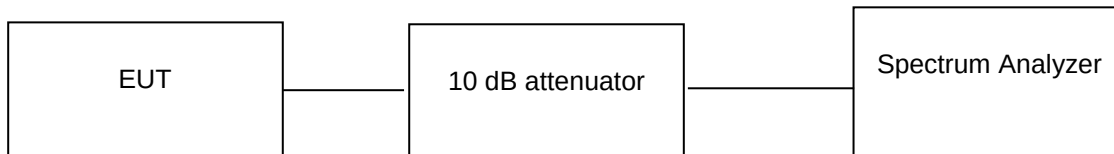
6.2 Maximum Power Spectral Density

Result

Pass

Test Specification FCC Part 15 Subpart C Section 15.247 (e) / RSS 247 Issue 2, Section 5.2 (2)
 Detector Function Average
 Port of testing Antenna port
 Requirement For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm.

Test Method:



Environmental and Test conditions:

Normal Temperature = +25 °C

Voltage (V norm) = 7.4 VDC

RH = 63.2 %

Test results:

10 dB attenuator + 0.6 dB Cable loss = 10.6 dB offset is considered in below result

Protocol: 802.11b

Data Rate (Mbps)	Channel Frequency (MHz)	Total PSD (dBm)	Limit (dBm)
1	2412	-5.37	8
	2442	-5.24	8
	2462	-5.32	8
11	2412	-6.18	8
	2442	-6.52	8
	2462	-6.08	8

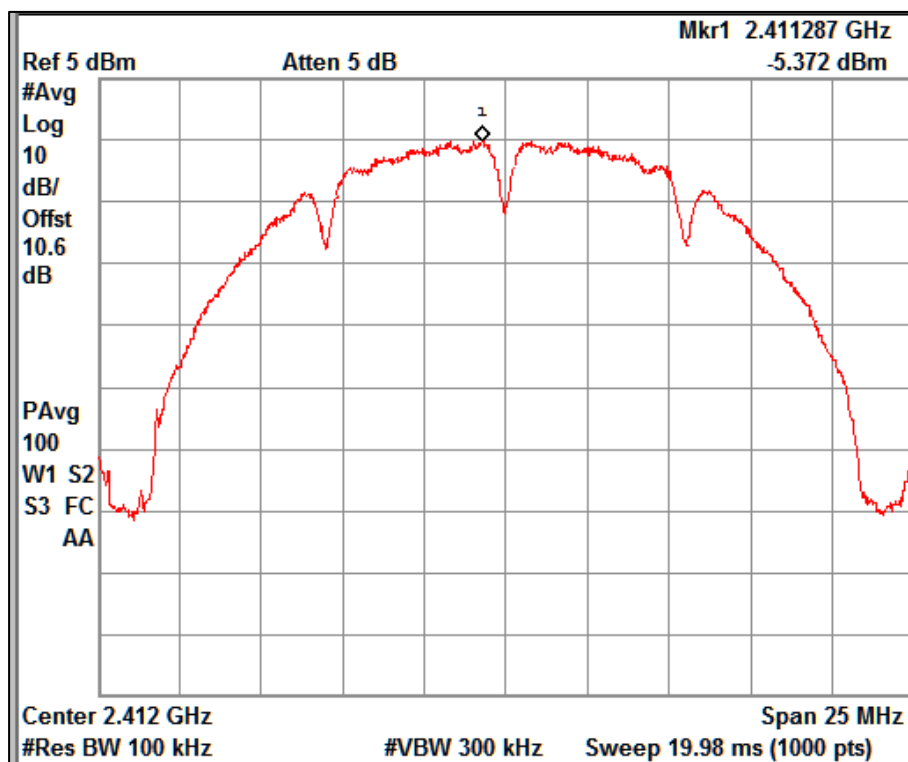
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

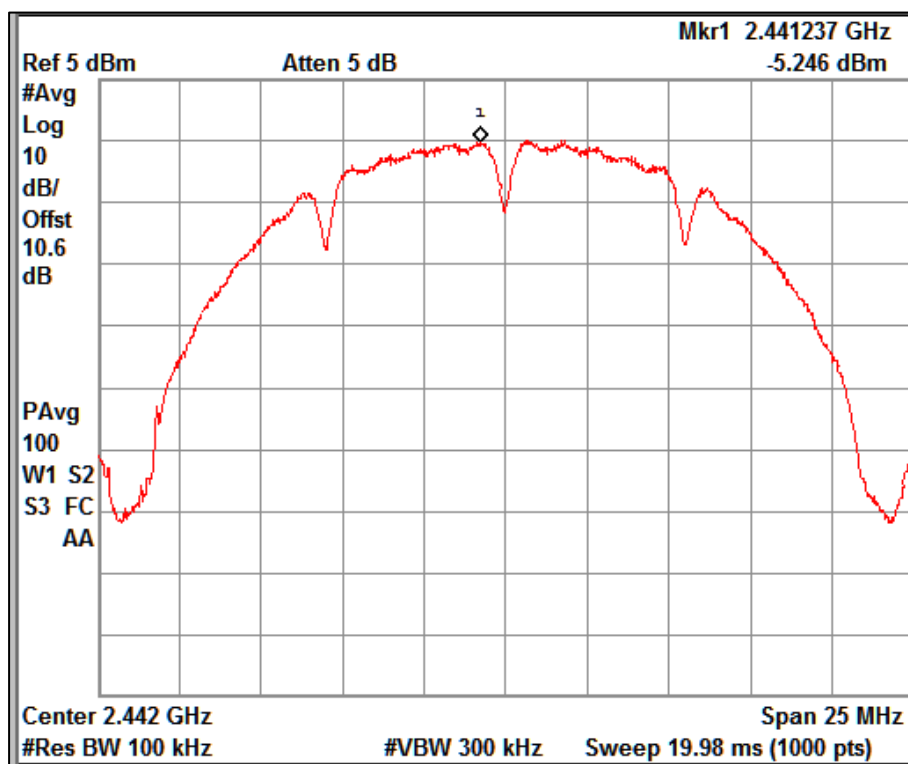
Seite 30 von 126

Page 30 of 126



Channel Frequency: 2412 MHz

Data Rate: 1Mbps



Channel Frequency: 2442 MHz

Data Rate: 1Mbps

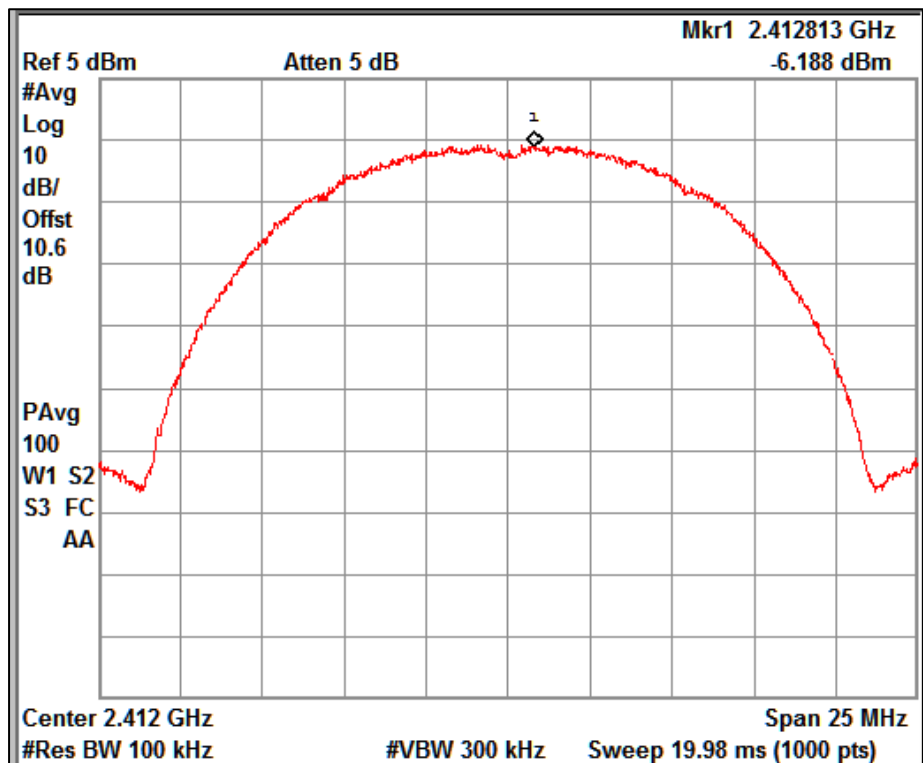
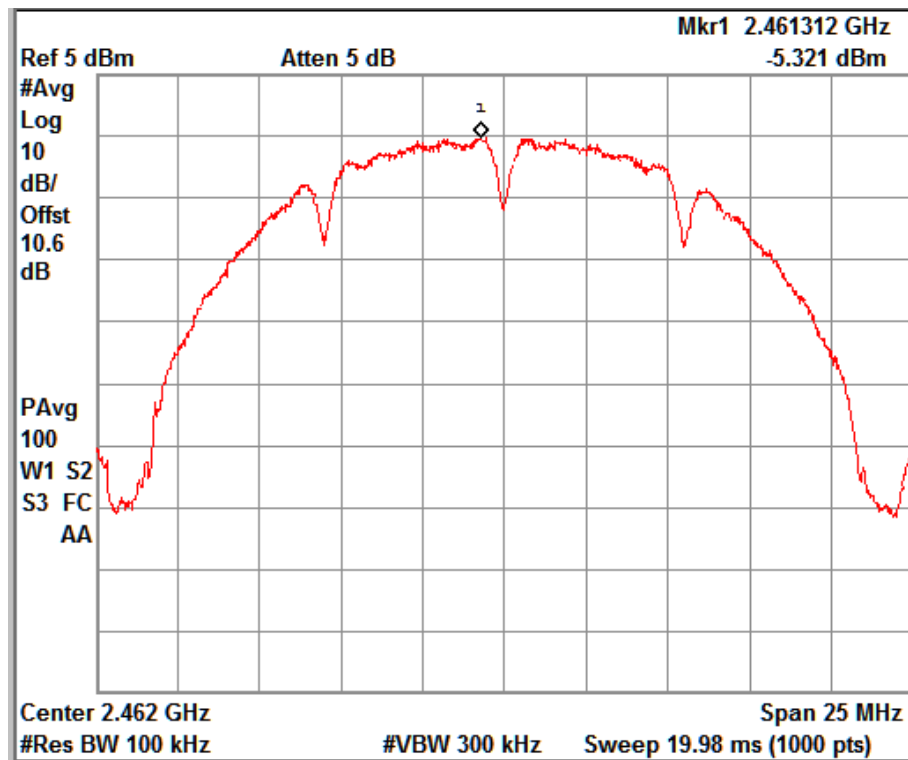
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

Seite 31 von 126

Page 31 of 126



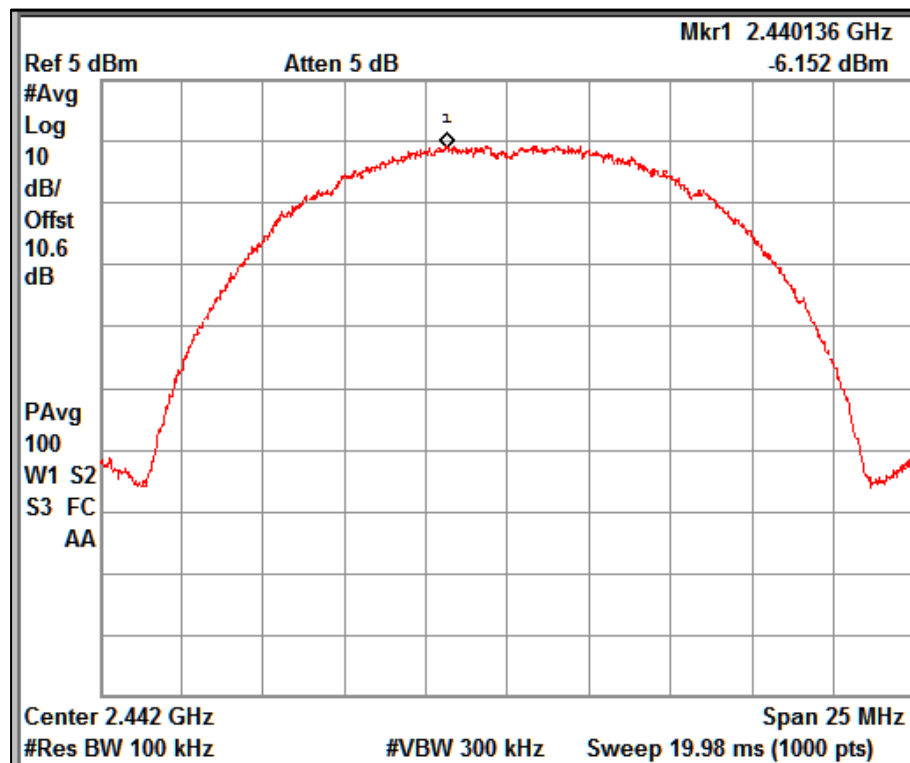
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

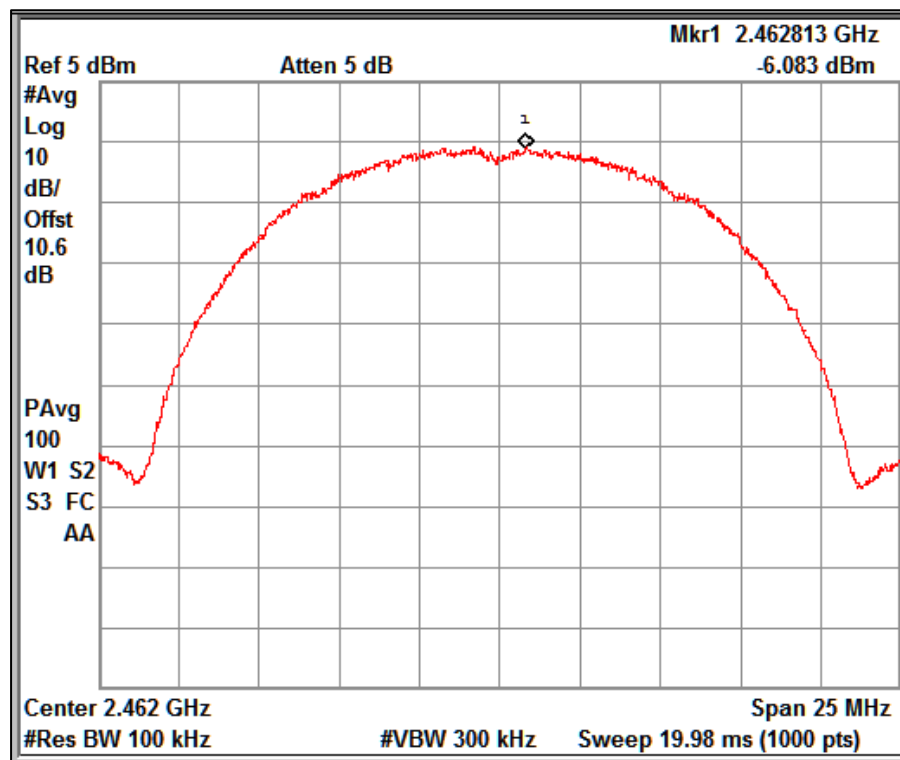
Seite 32 von 126

Page 32 of 126



Channel Frequency: 2442 MHz

Data Rate: 11Mbps



Channel Frequency: 2462 MHz

Data Rate: 11Mbps

Prüfbericht - Nr.:

Test Report No.:

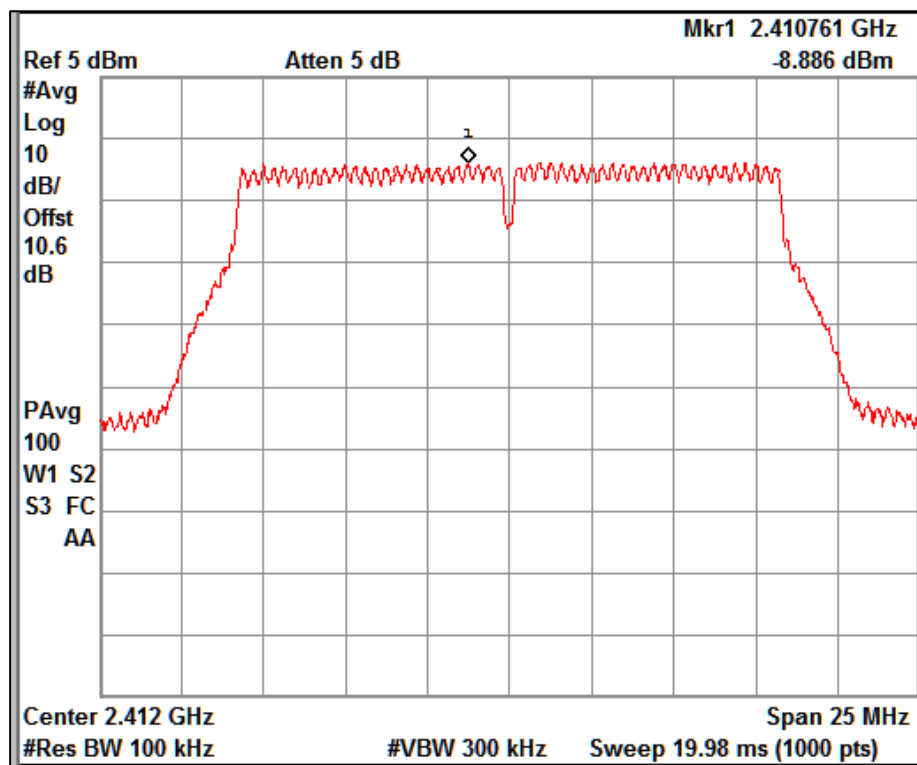
ULR-TC568819300000069F

Seite 33 von 126

Page 33 of 126

Protocol: 802.11g

Data Rate (Mbps)	Channel Frequency (MHz)	Total PSD (dBm)	Limit (dBm)
6	2412	-8.88	8
	2442	-8.56	8
	2462	-8.64	8
24	2412	-9.30	8
	2442	-8.15	8
	2462	-8.75	8
54	2412	-8.79	8
	2442	-8.24	8
	2462	-8.18	8



Channel Frequency: 2412 MHz

Data Rate: 6Mbps

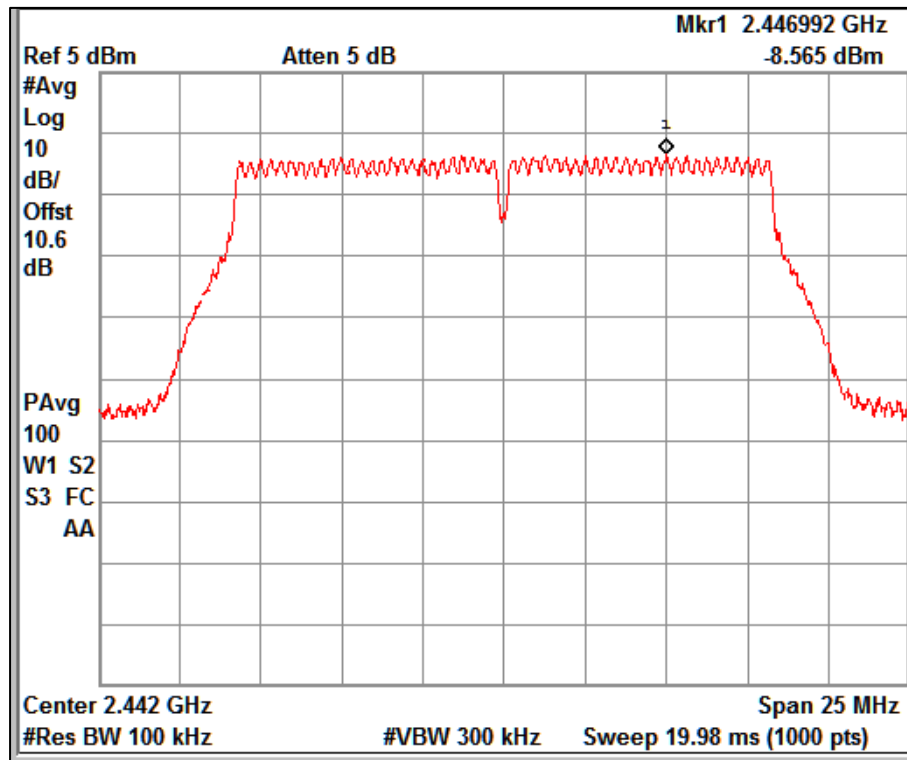
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

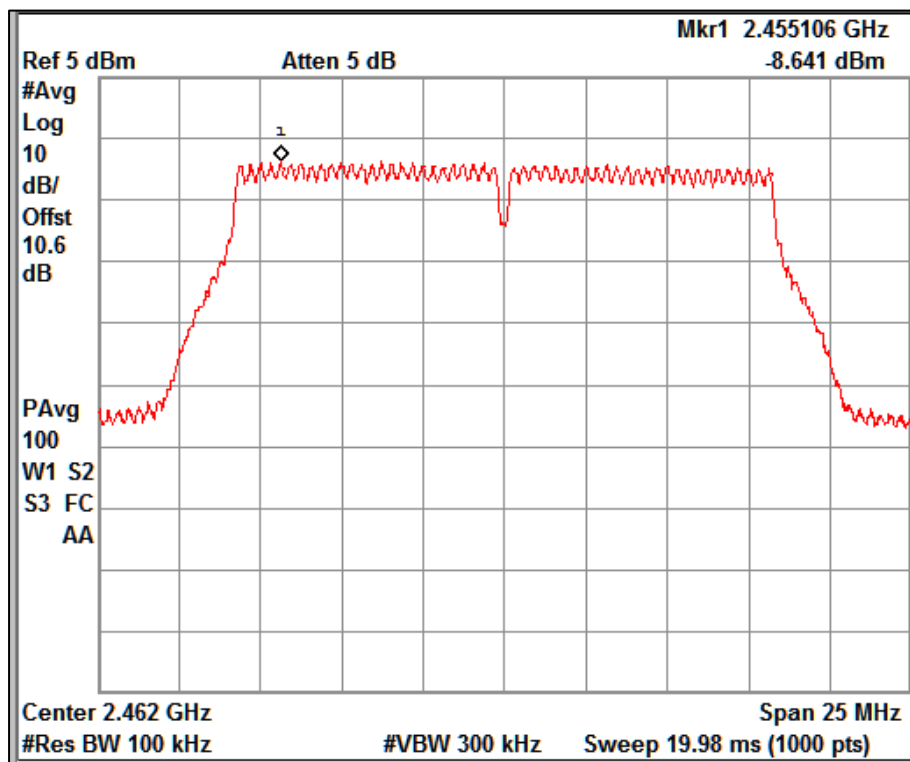
Seite 34 von 126

Page 34 of 126



Channel Frequency: 2442 MHz

Data Rate: 6Mbps



Channel Frequency: 2462 MHz

Data Rate: 6Mbps

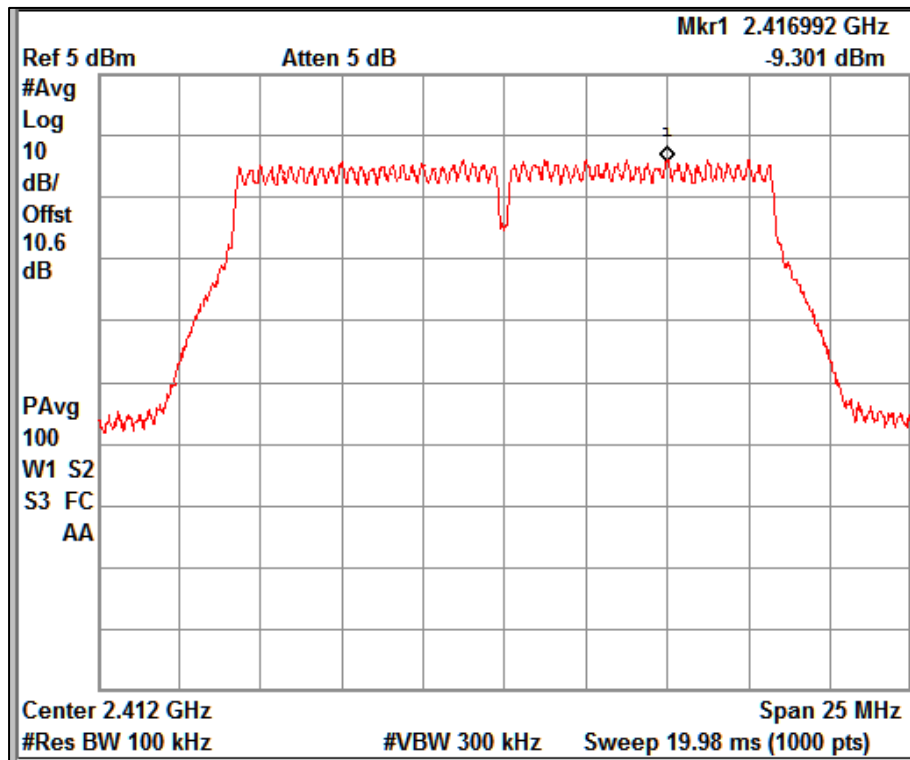
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

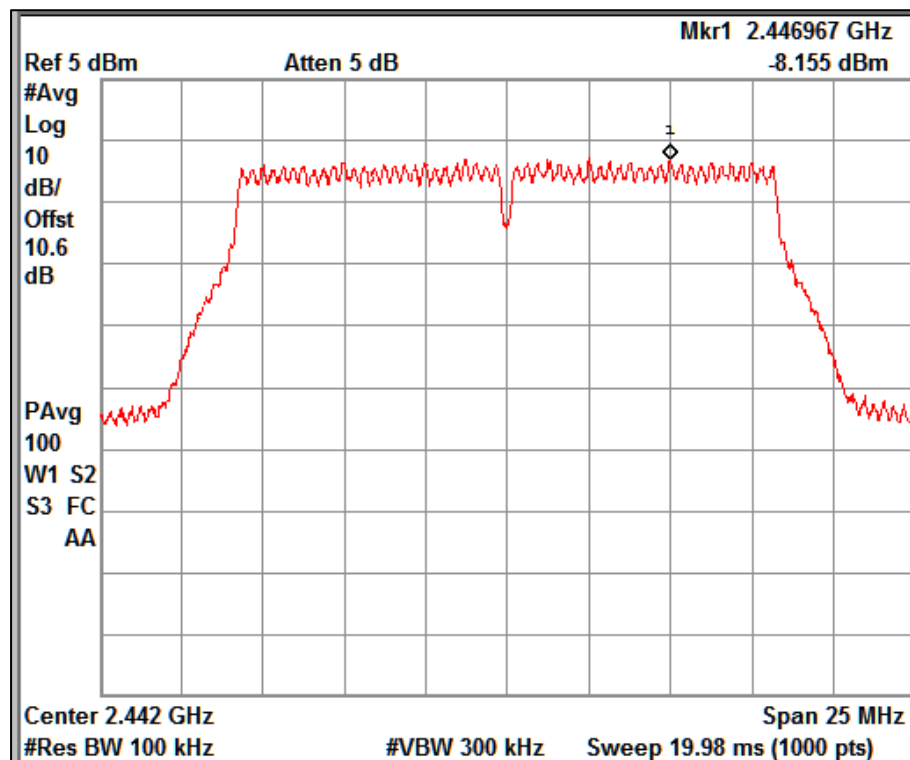
Seite 35 von 126

Page 35 of 126



Channel Frequency: 2412 MHz

Data Rate: 24Mbps



Channel Frequency: 2442 MHz

Data Rate: 24Mbps

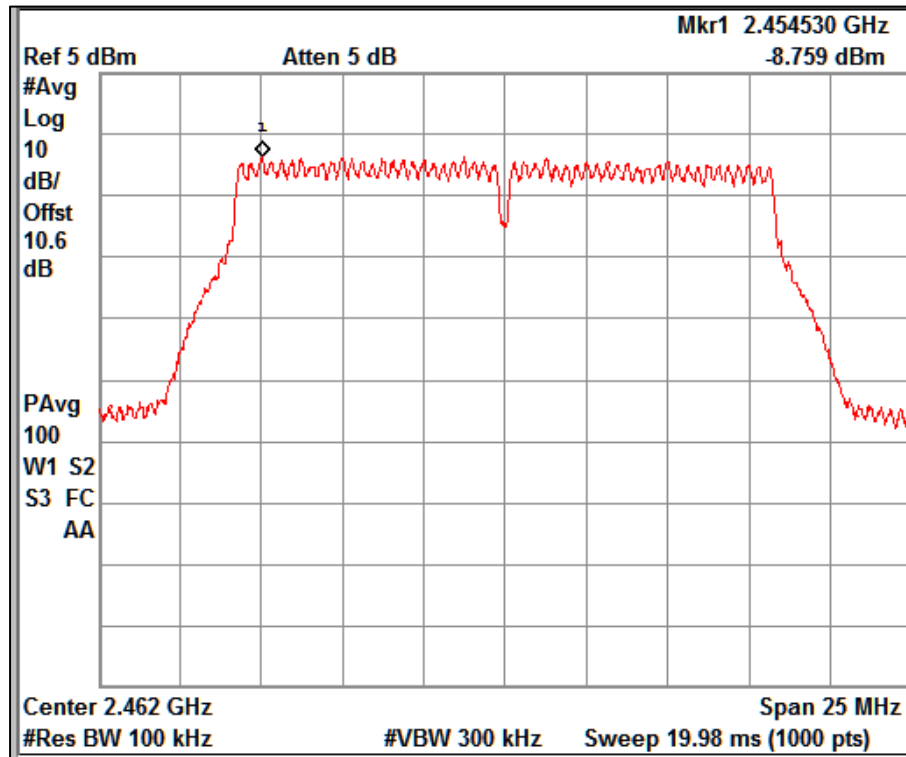
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

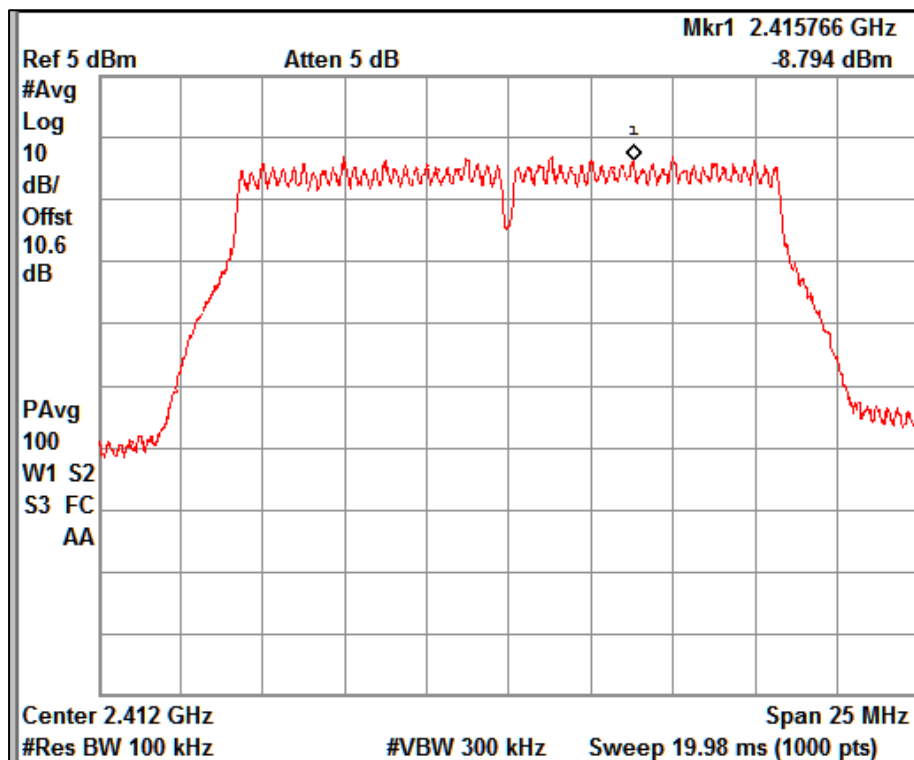
Seite 36 von 126

Page 36 of 126



Channel Frequency: 2462 MHz

Data Rate: 24Mbps



Channel Frequency: 2412 MHz

Data Rate: 54Mbps

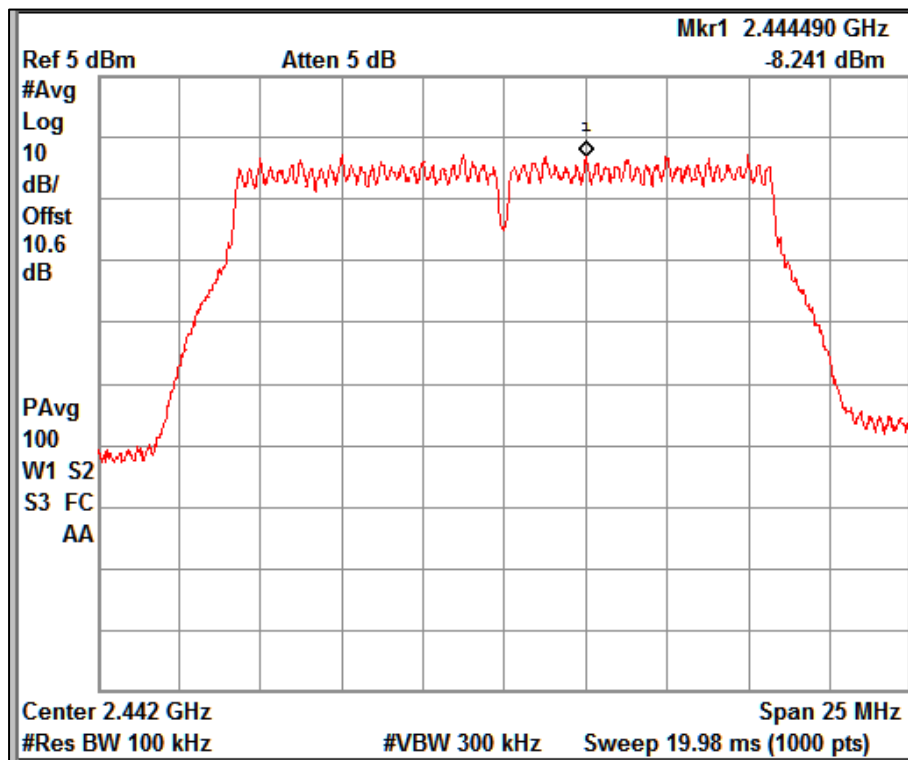
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

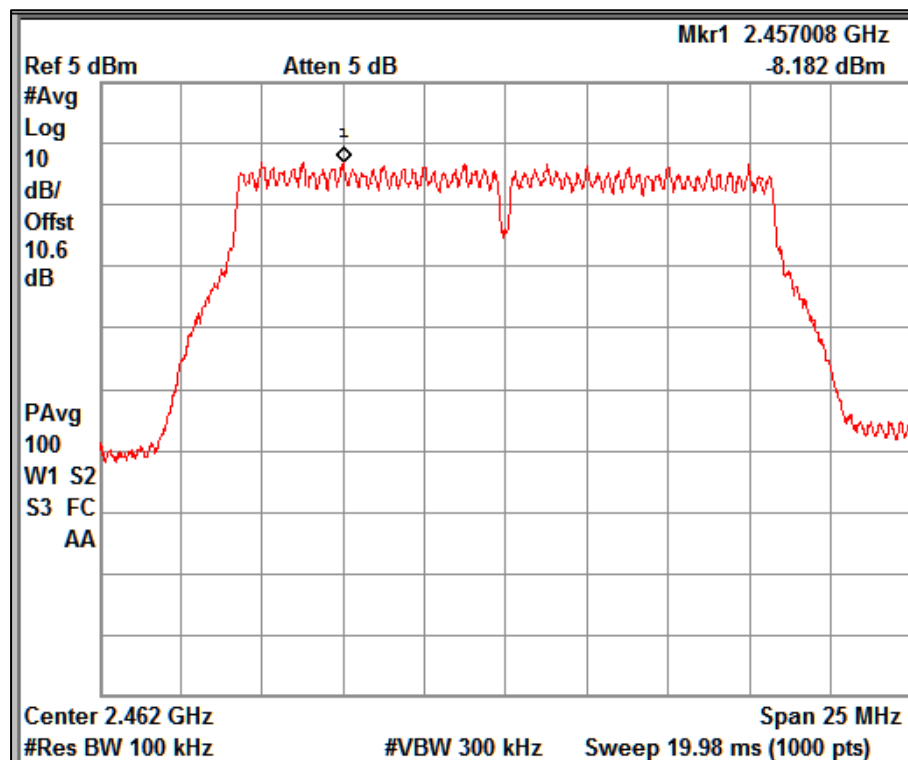
Seite 37 von 126

Page 37 of 126



Channel Frequency: 2442 MHz

Data Rate: 54Mbps



Channel Frequency: 2462 MHz

Data Rate: 54Mbps

Prüfbericht - Nr.:

Test Report No.:

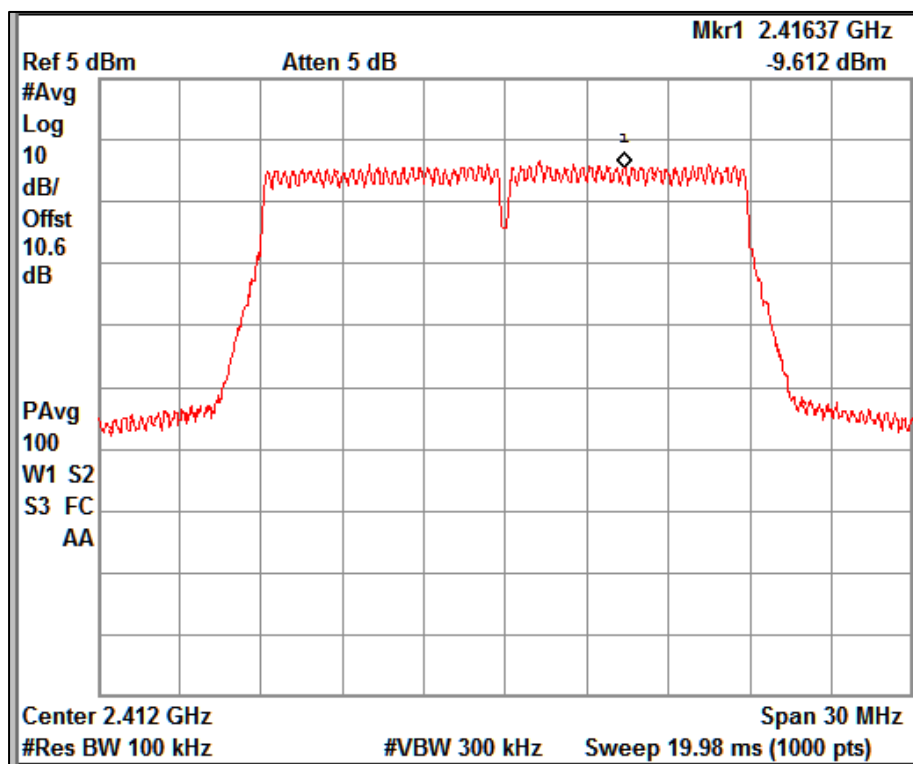
ULR-TC568819300000069F

Seite 38 von 126

Page 38 of 126

Protocol: 802.11n_HT20

Data Rate (Mbps)	Channel Frequency (MHz)	Total PSD (dBm)	Limit (dBm)
MCS0	2412	-9.61	8
	2442	-9.16	8
	2462	-8.84	8
MCS4	2412	-8.66	8
	2442	-8.49	8
	2462	-8.99	8
MCS7	2412	-9.00	8
	2442	-8.22	8
	2462	-8.73	8



Channel Frequency: 2412 MHz

Data Rate: MCS0

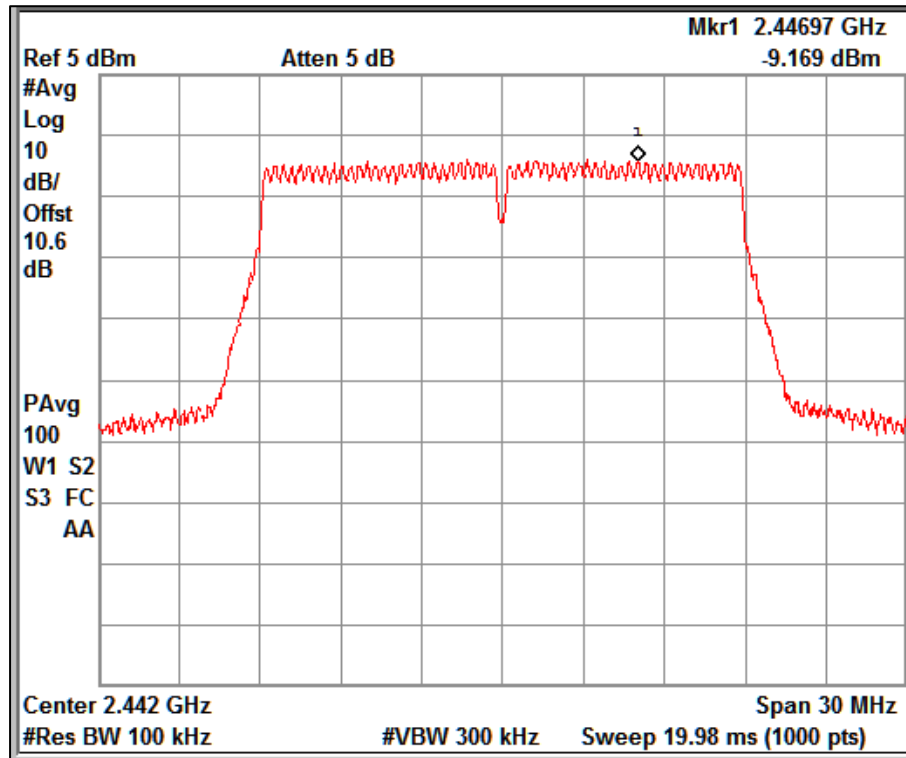
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

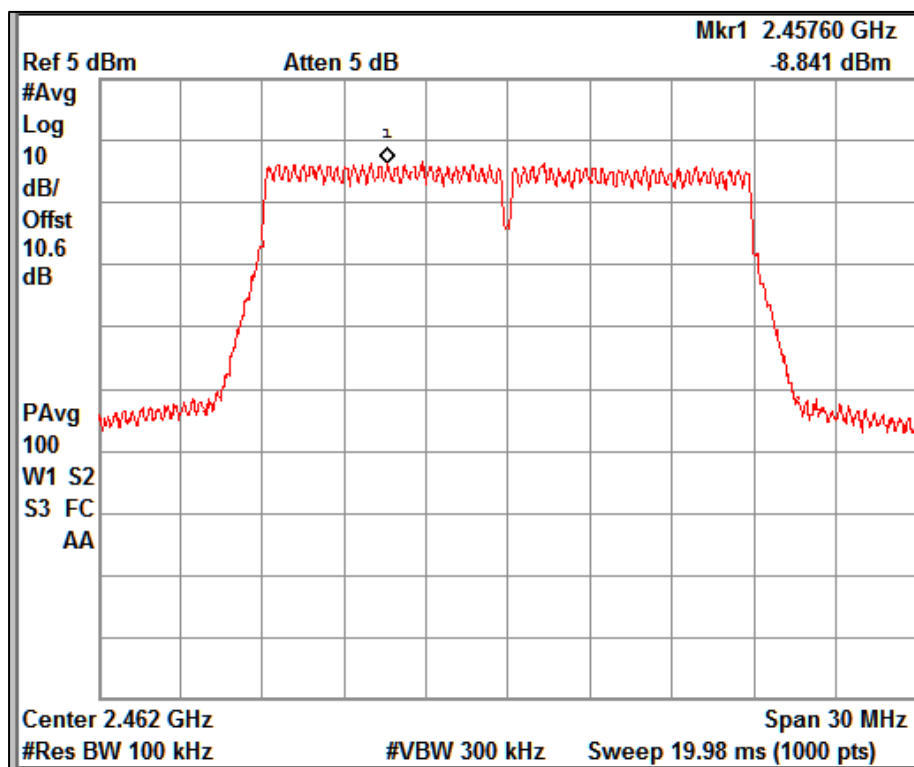
Seite 39 von 126

Page 39 of 126



Channel Frequency: 2442 MHz

Data Rate: MCS0



Channel Frequency: 2462 MHz

Data Rate: MCS0

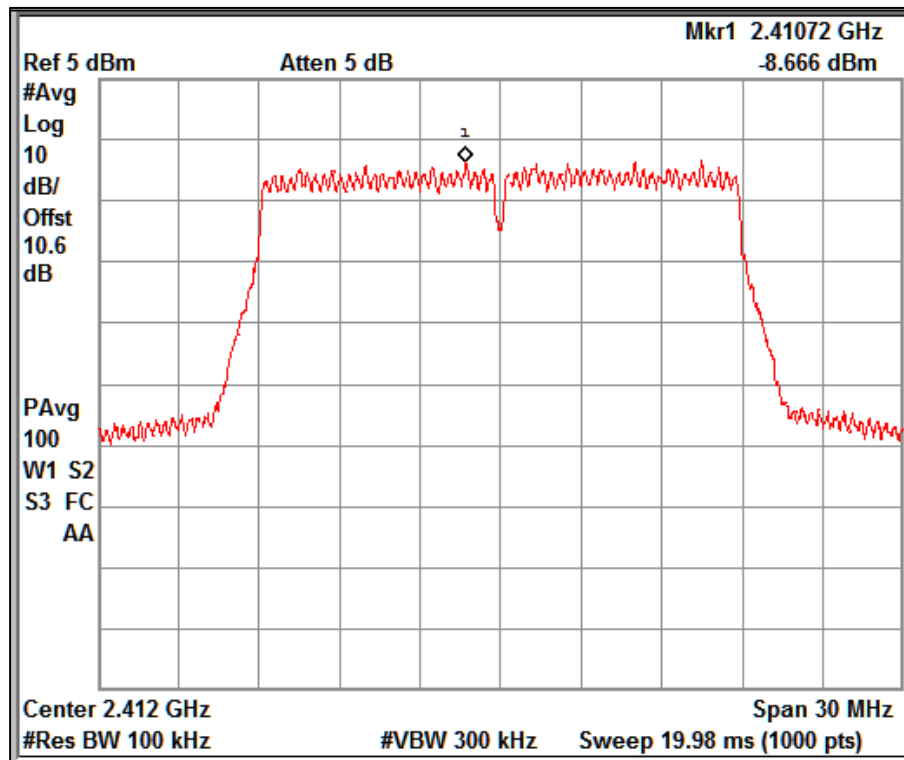
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

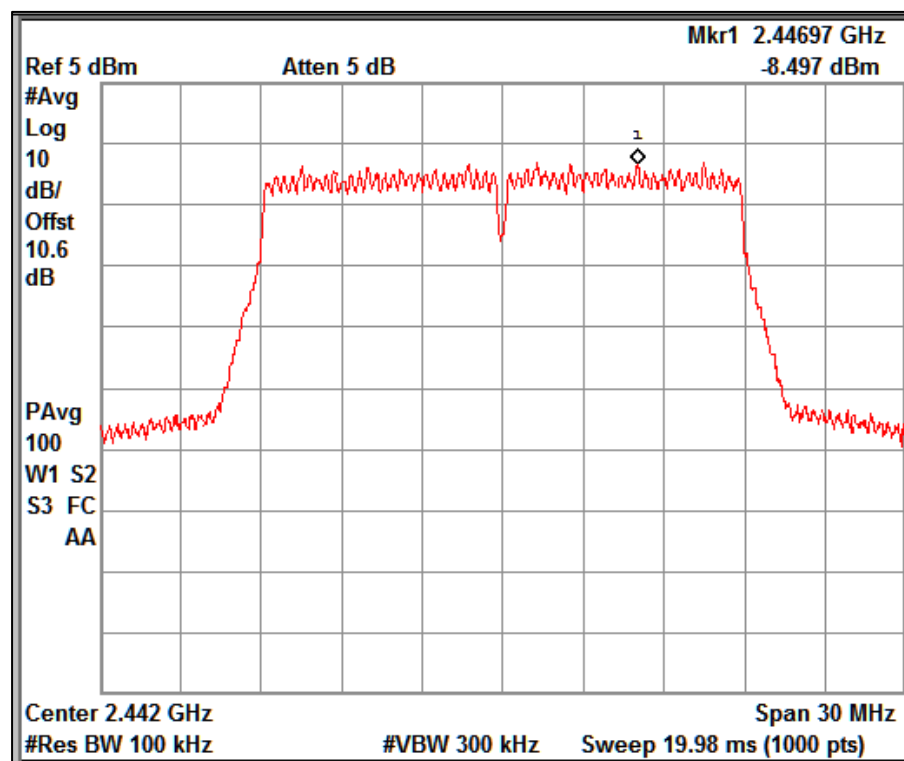
Seite 40 von 126

Page 40 of 126



Channel Frequency: 2412 MHz

Data Rate: MCS4



Channel Frequency: 2442 MHz

Data Rate: MCS4

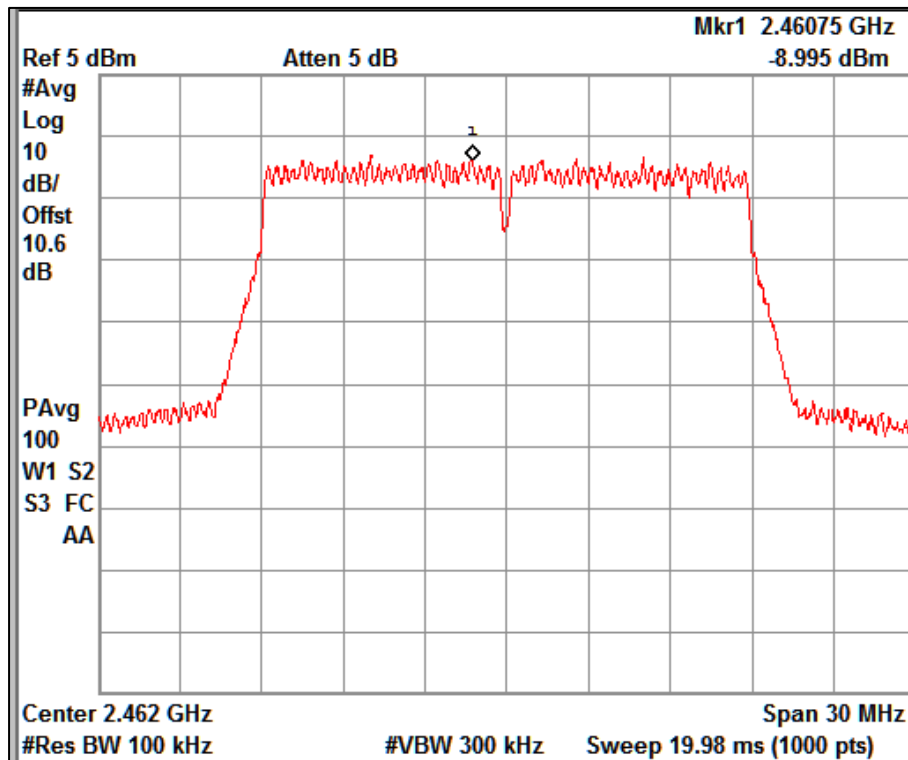
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

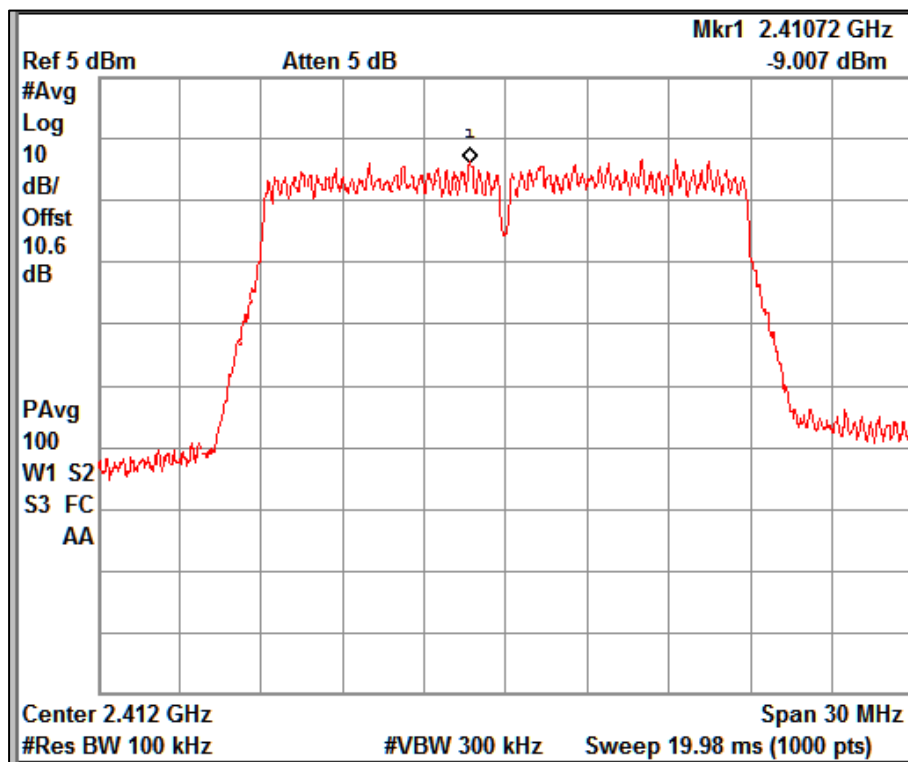
Seite 41 von 126

Page 41 of 126



Channel Frequency: 2462 MHz

Data Rate: MCS4



Channel Frequency: 2412 MHz

Data Rate: MCS7

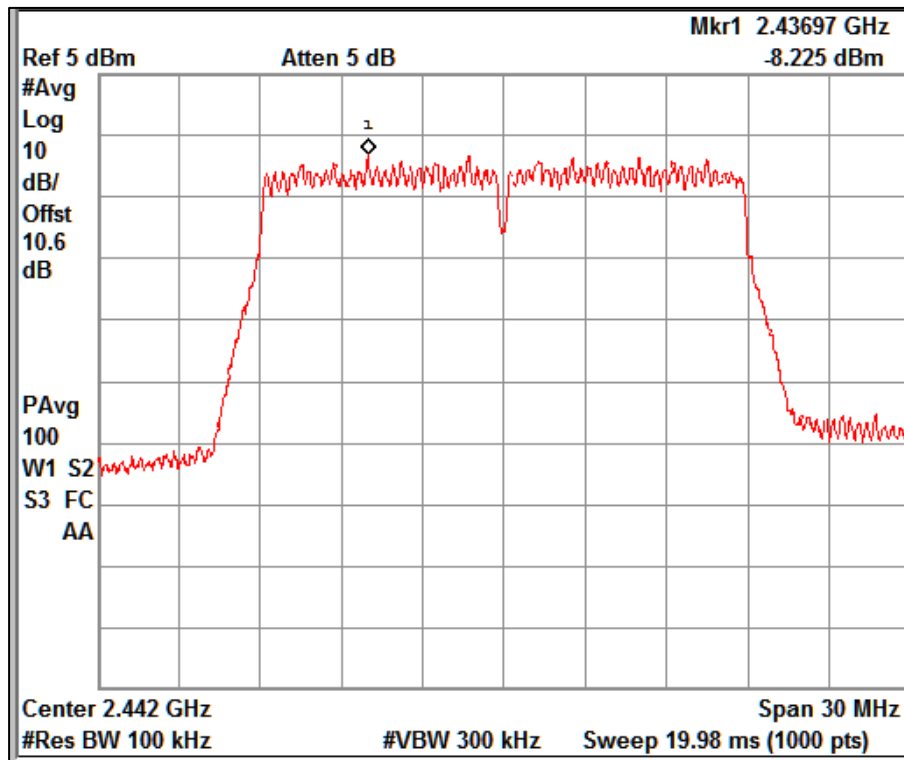
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

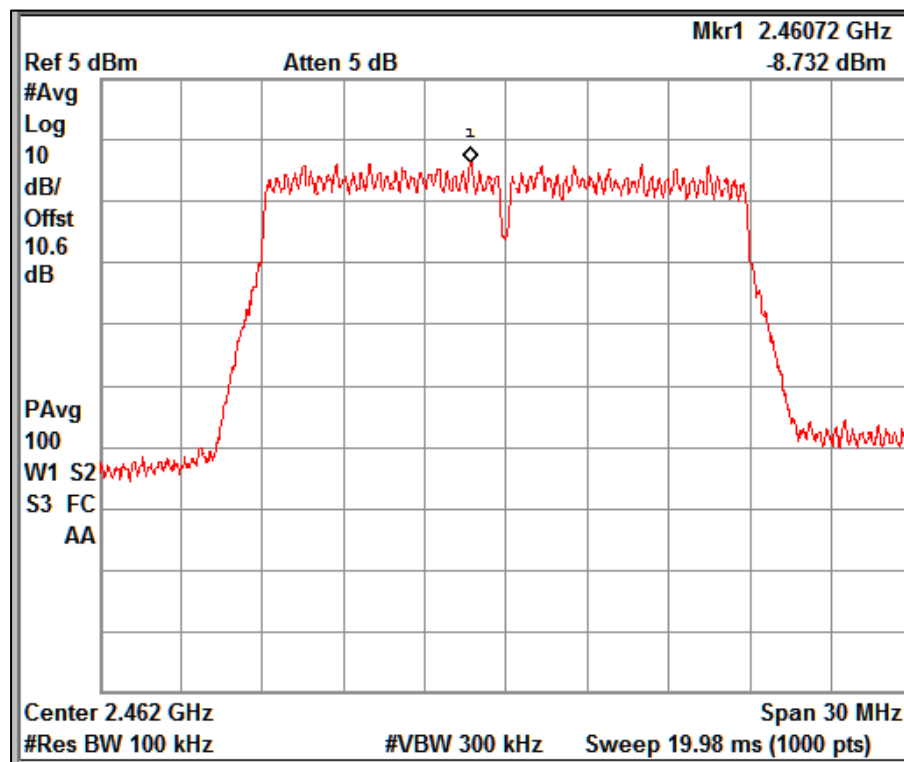
Seite 42 von 126

Page 42 of 126



Channel Frequency: 2442 MHz

Data Rate: MCS7



Channel Frequency: 2462 MHz

Data Rate: MCS7

Prüfbericht - Nr.:

Test Report No.:

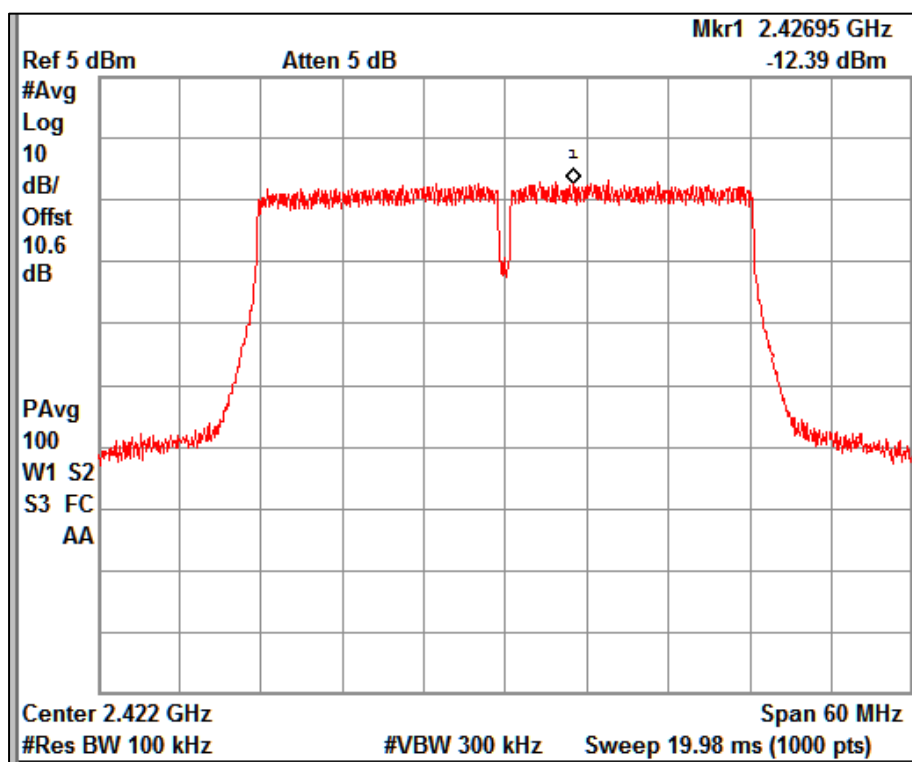
ULR-TC568819300000069F

Seite 43 von 126

Page 43 of 126

Protocol: 802.11n_HT40

Data Rate (Mbps)	Channel Frequency (MHz)	Total PSD (dBm)	Limit (dBm)
MCS0	2422	-12.39	8
	2442	-12.34	8
	2452	-12.07	8
MCS4	2422	-11.17	8
	2442	-10.88	8
	2452	-10.76	8
MCS7	2422	-12.02	8
	2442	-12.90	8
	2452	-11.68	8



Channel Frequency: 2422 MHz

Data Rate: MCS0

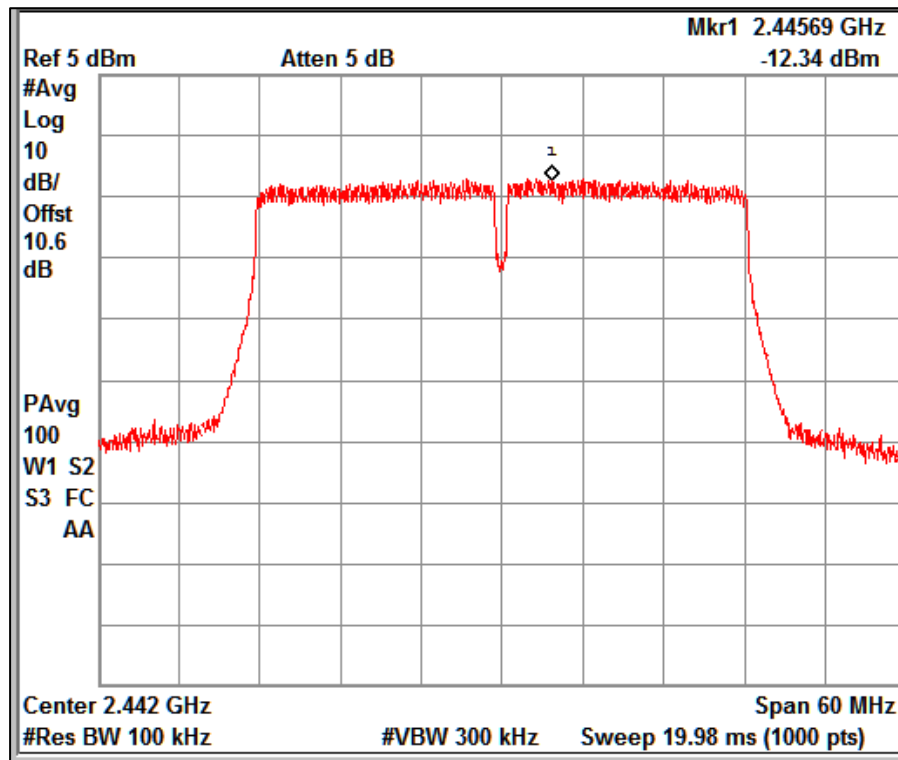
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

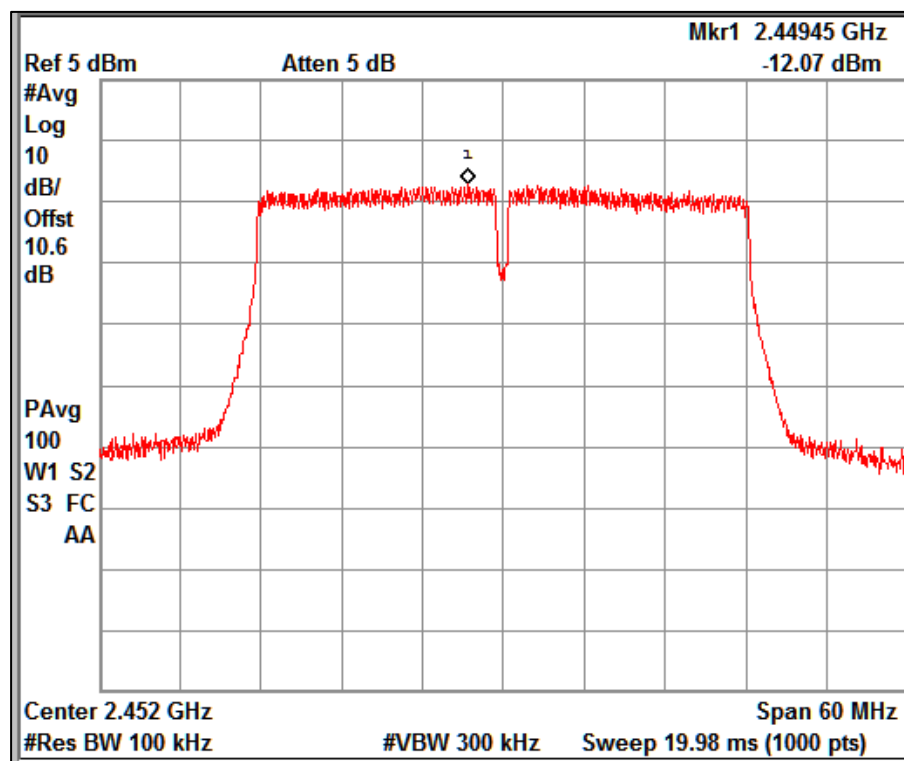
Seite 44 von 126

Page 44 of 126



Channel Frequency: 2442 MHz

Data Rate: MCS0



Channel Frequency: 2452 MHz

Data Rate: MCS0

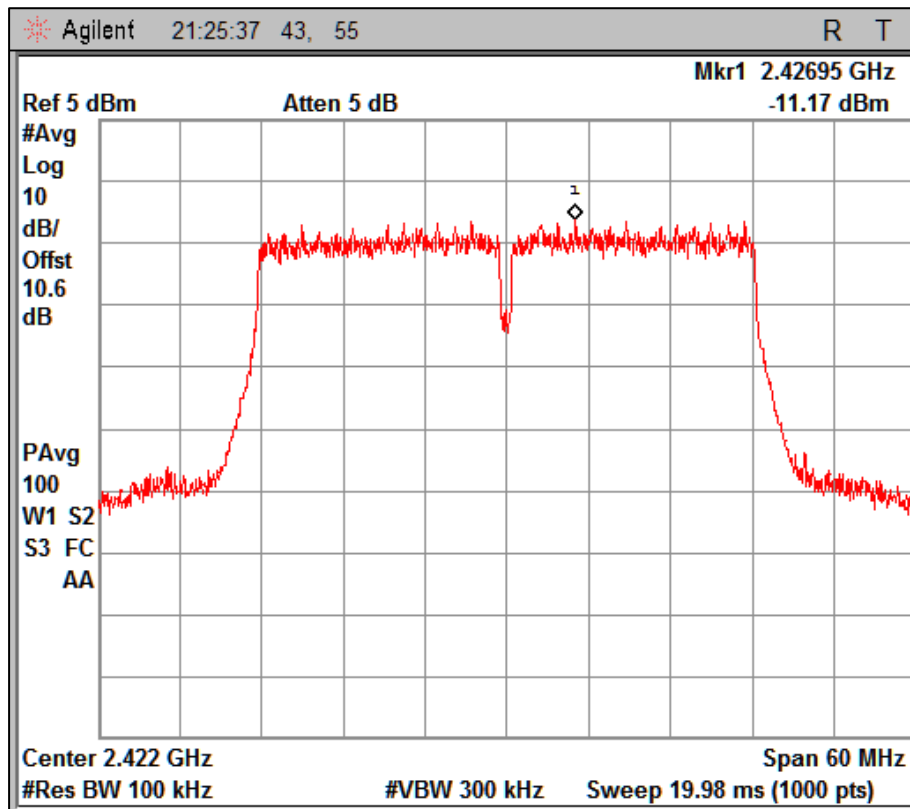
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

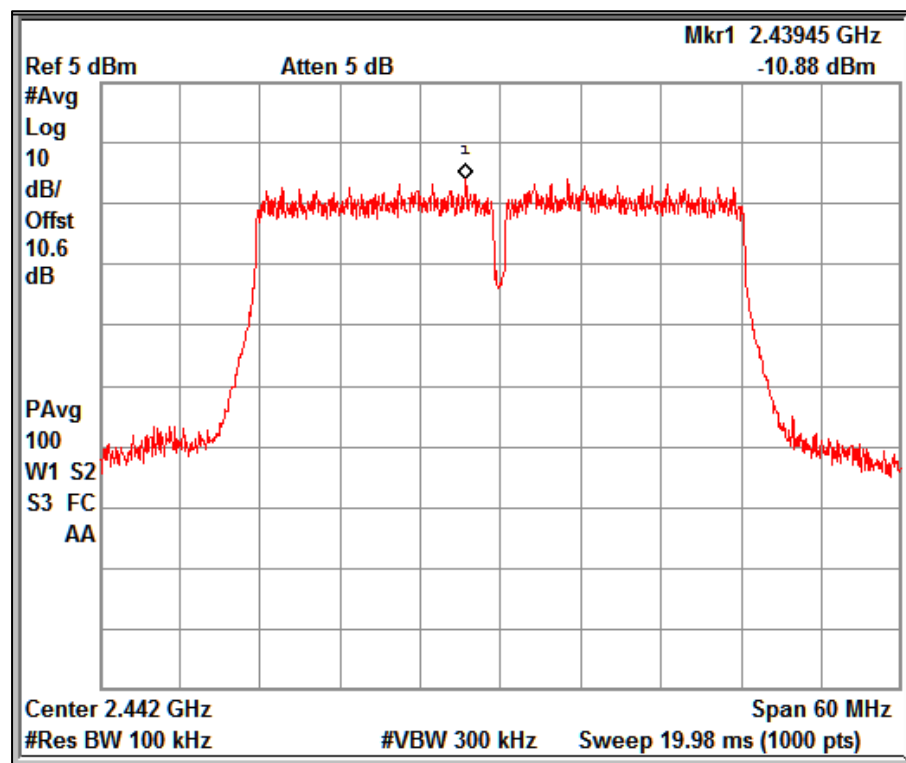
Seite 45 von 126

Page 45 of 126



Channel Frequency: 2422 MHz

Data Rate: MCS4



Channel Frequency: 2442 MHz

Data Rate: MCS4

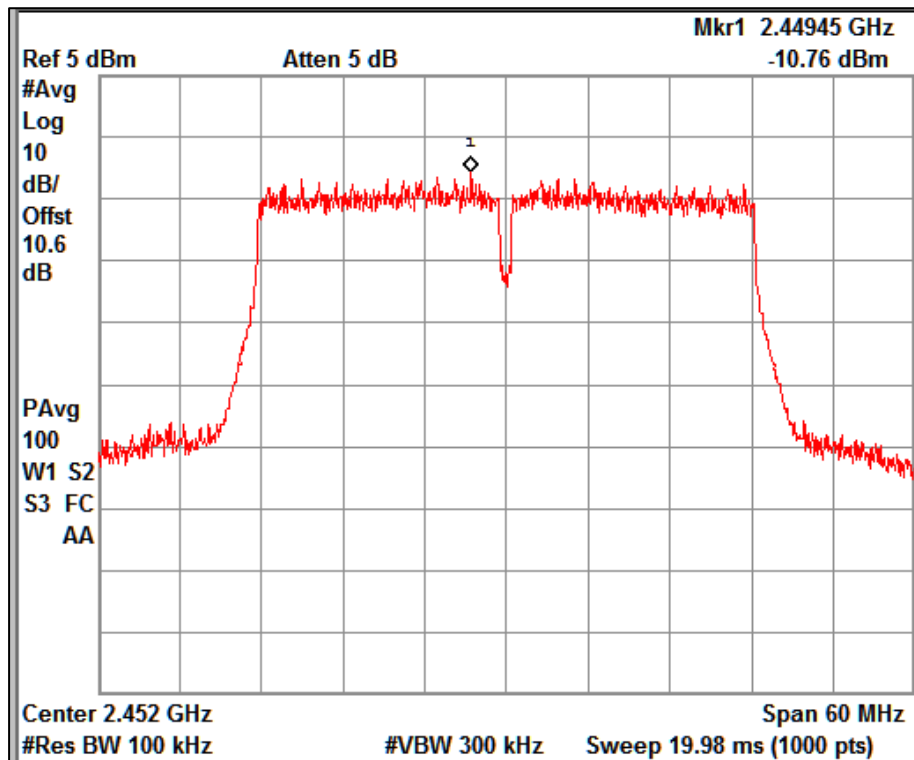
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

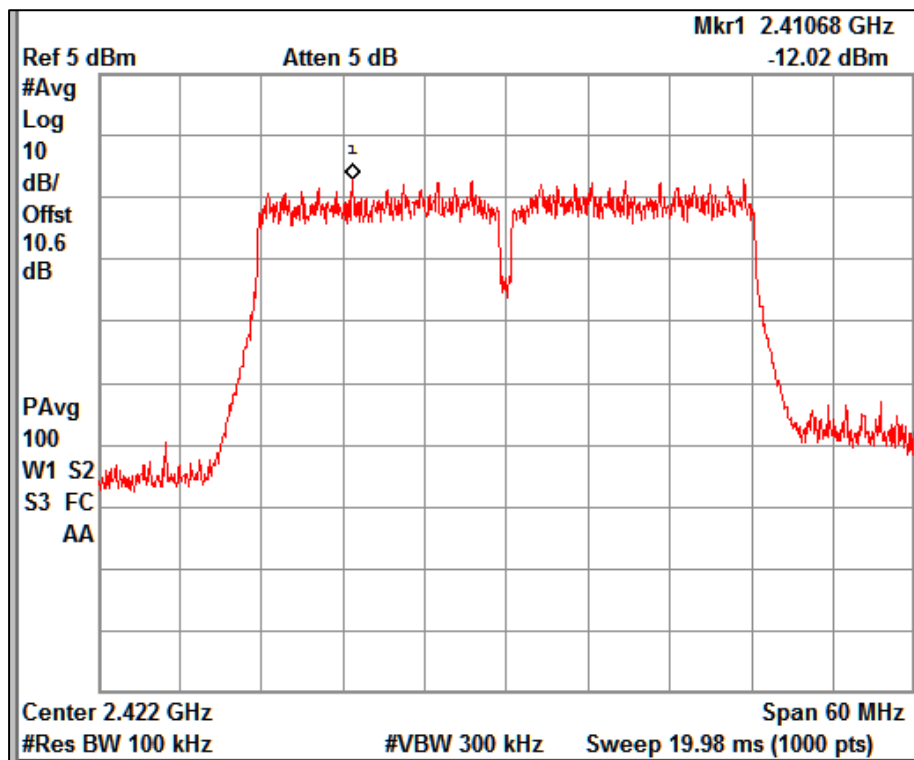
Seite 46 von 126

Page 46 of 126



Channel Frequency: 2452 MHz

Data Rate: MCS4



Channel Frequency: 2422 MHz

Data Rate: MCS7

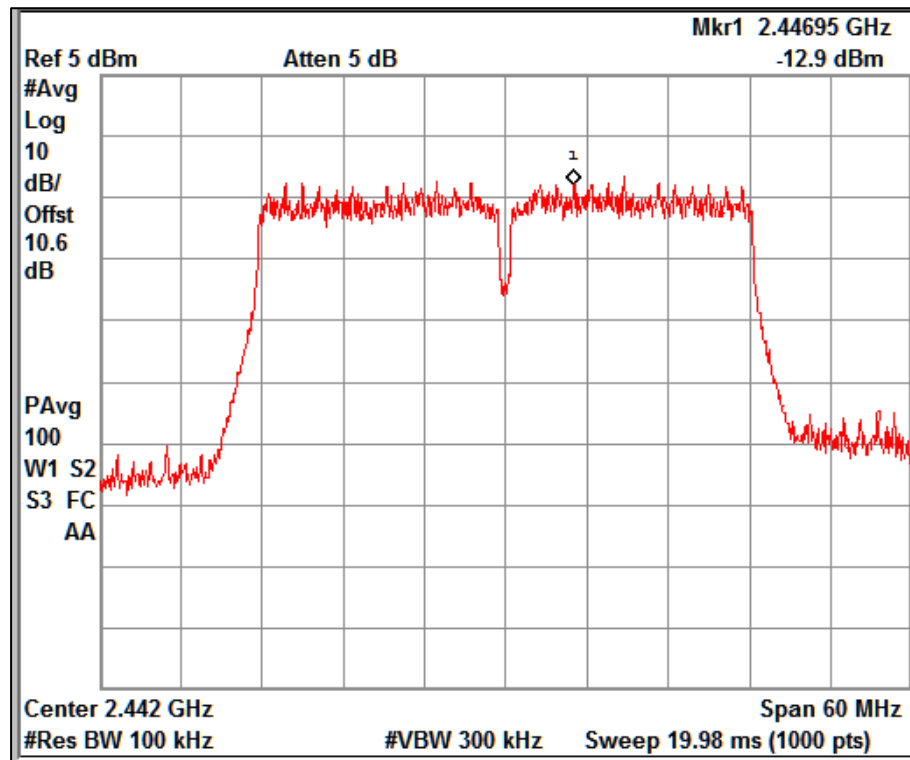
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

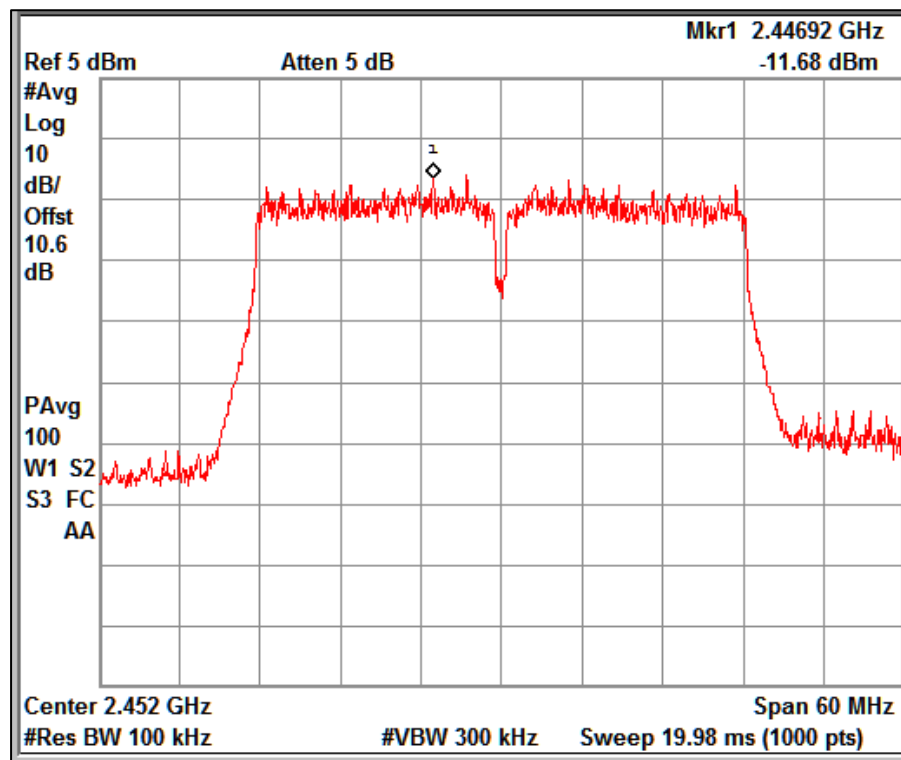
Seite 47 von 126

Page 47 of 126



Channel Frequency: 2442 MHz

Data Rate: MCS7



Channel Frequency: 2452 MHz

Data Rate: MCS7

Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

Seite 48 von 126

Page 48 of 126

6.3 DTS Bandwidth

Result

Pass

Test Specification

FCC part 15 Subpart C Section 15.247 (a)(2) / RSS 247 Issue 2, Section 5.2 (1)

Detector

Peak

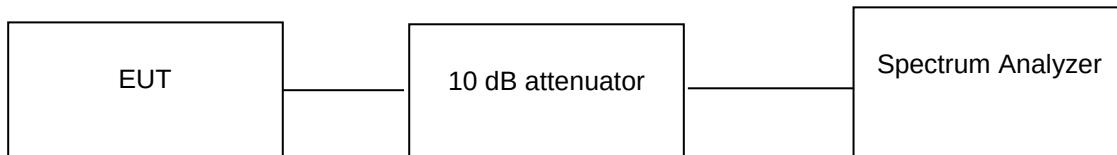
Port of testing

Antenna Port

Requirement

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

Test Method:



Test results for 802.11b

Environmental and Test conditions:

Normal Temperature = +25 °C

Voltage (V norm) = 7.4 VDC

RH = 63.2 %

Test results:

10 dB attenuator + 0.6 dB Cable loss = 10.6 dB offset is considered in below result

Protocol: 802.11b

Data Rate (Mbps)	Channel Frequency (MHz)	6dB Bandwidth (MHz)	99% OBW (MHz)
1	2412	9.99	14.18
	2442	10.06	14.22
	2462	10.08	14.27
11	2412	10.17	14.05
	2442	10.07	14.13
	2462	9.71	14.11

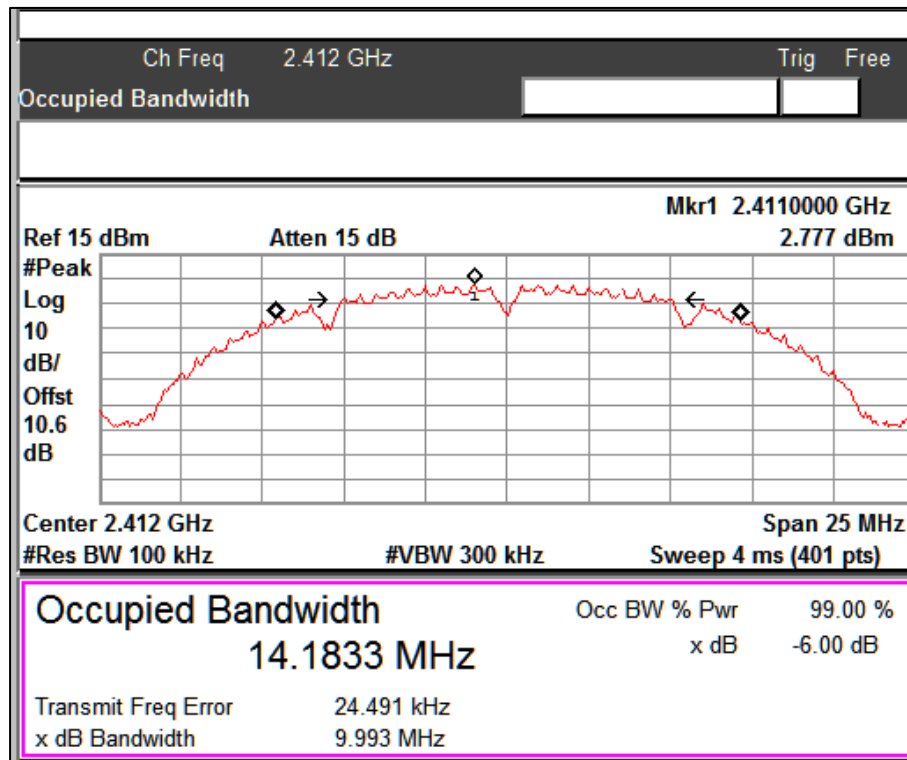
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

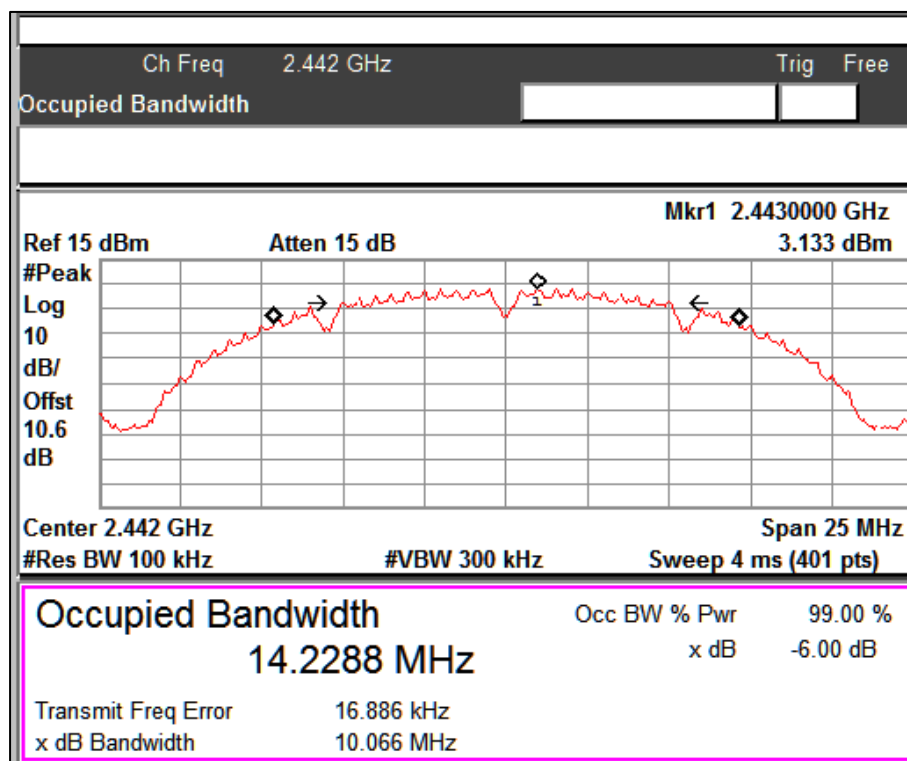
Seite 49 von 126

Page 49 of 126



Channel Frequency: 2412 MHz

Data Rate: 1Mbps



Channel Frequency: 2442 MHz

Data Rate: 1Mbps

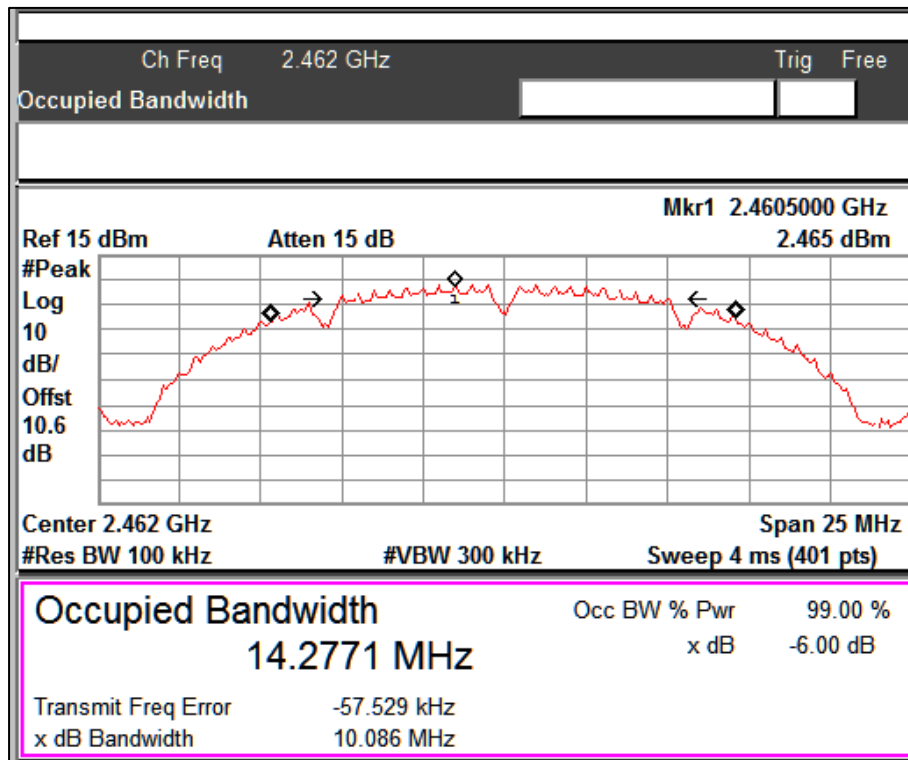
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

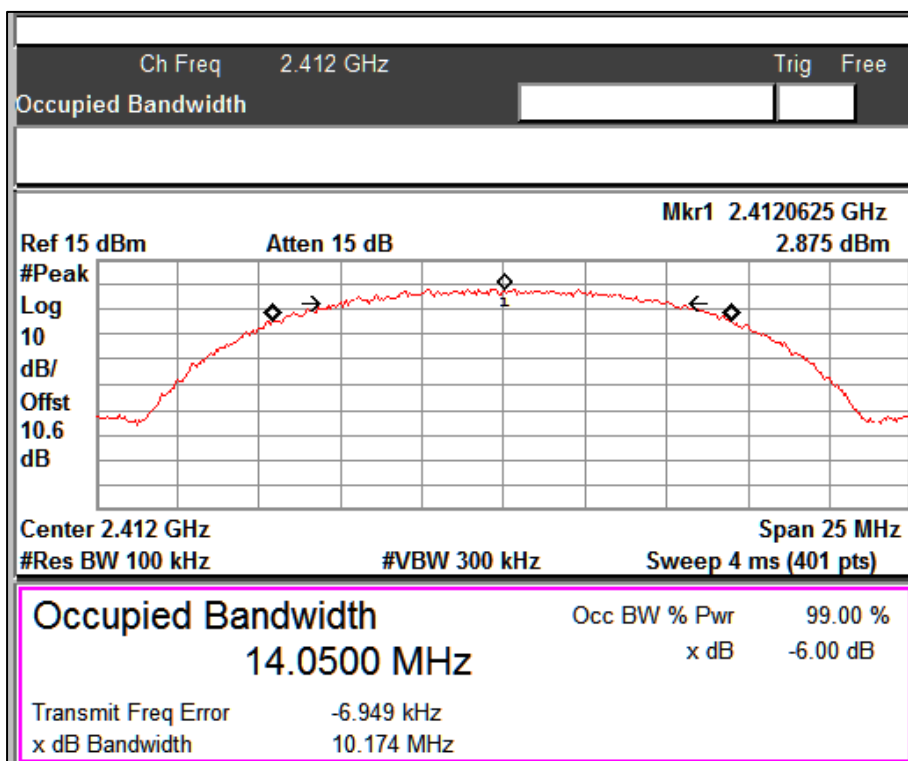
Seite 50 von 126

Page 50 of 126



Channel Frequency: 2462 MHz

Data Rate: 1Mbps



Channel Frequency: 2412 MHz

Data Rate: 11Mbps

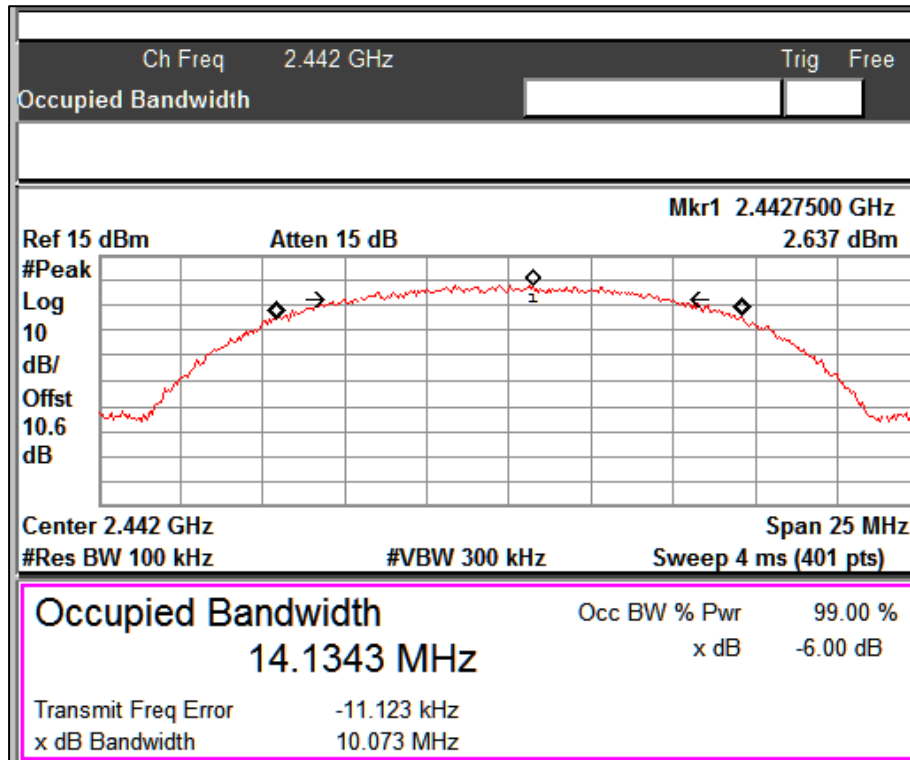
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

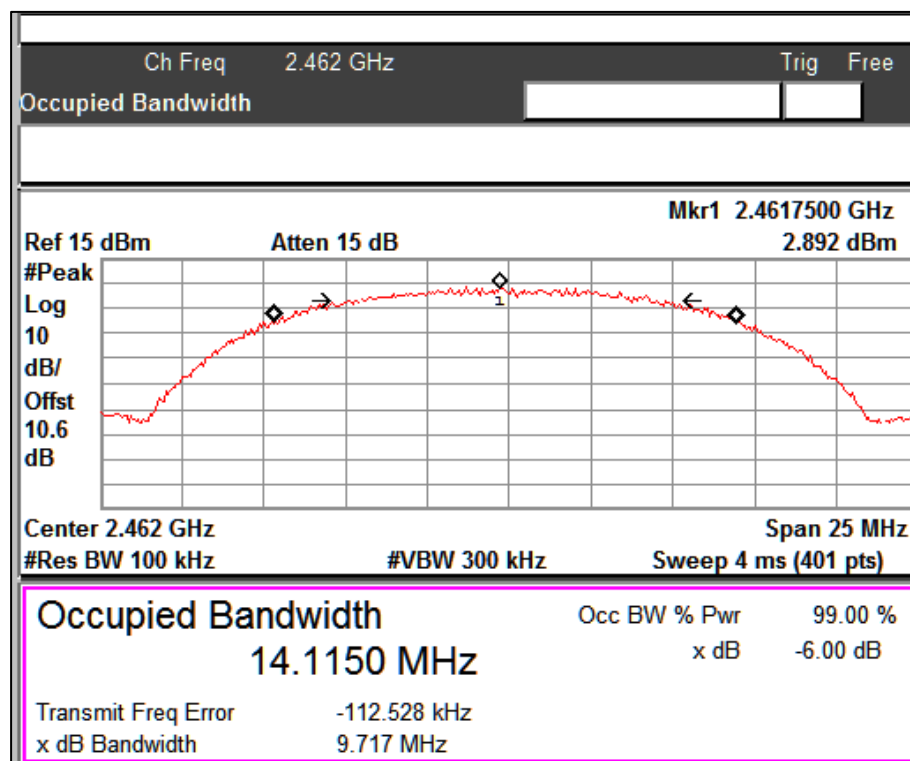
Seite 51 von 126

Page 51 of 126



Channel Frequency: 2442 MHz

Data Rate: 11Mbps



Channel Frequency: 2462 MHz

Data Rate: 11Mbps

Prüfbericht - Nr.:

Test Report No.:

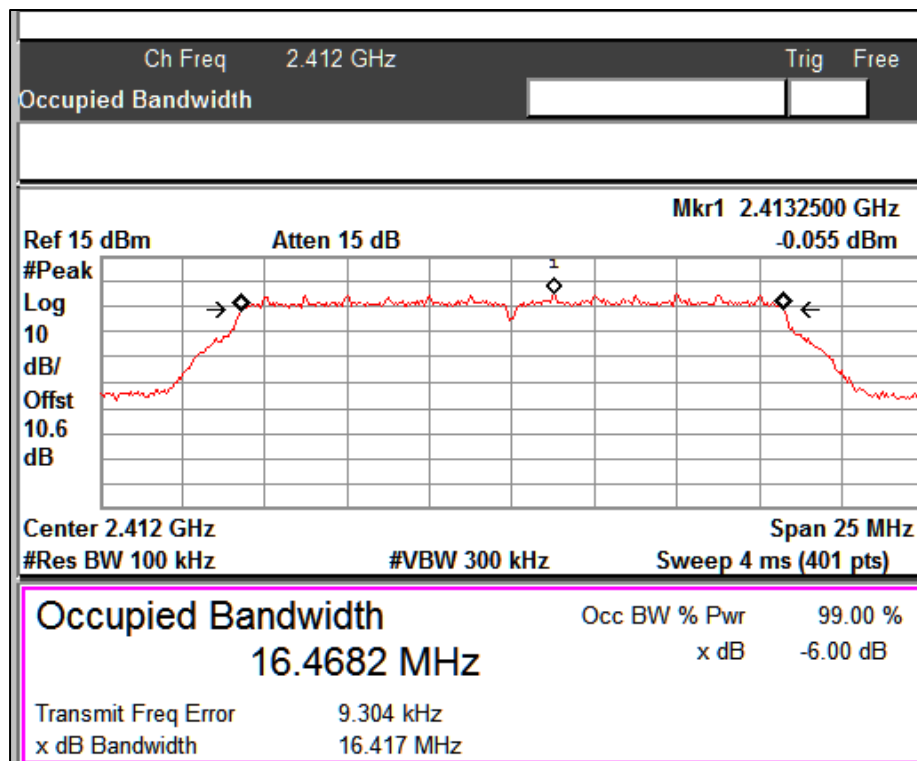
ULR-TC568819300000069F

Seite 52 von 126

Page 52 of 126

Protocol: 802.11g

Data Rate (Mbps)	Channel Frequency (MHz)	6dB Bandwidth (MHz)	99% OBW (MHz)
6	2412	16.41	16.46
	2442	16.41	16.47
	2462	16.39	16.47
24	2412	16.53	16.42
	2442	16.51	16.42
	2462	16.51	16.43
54	2412	16.53	16.43
	2442	16.53	16.43
	2462	16.53	16.43



Channel Frequency: 2412 MHz

Data Rate: 6Mbps

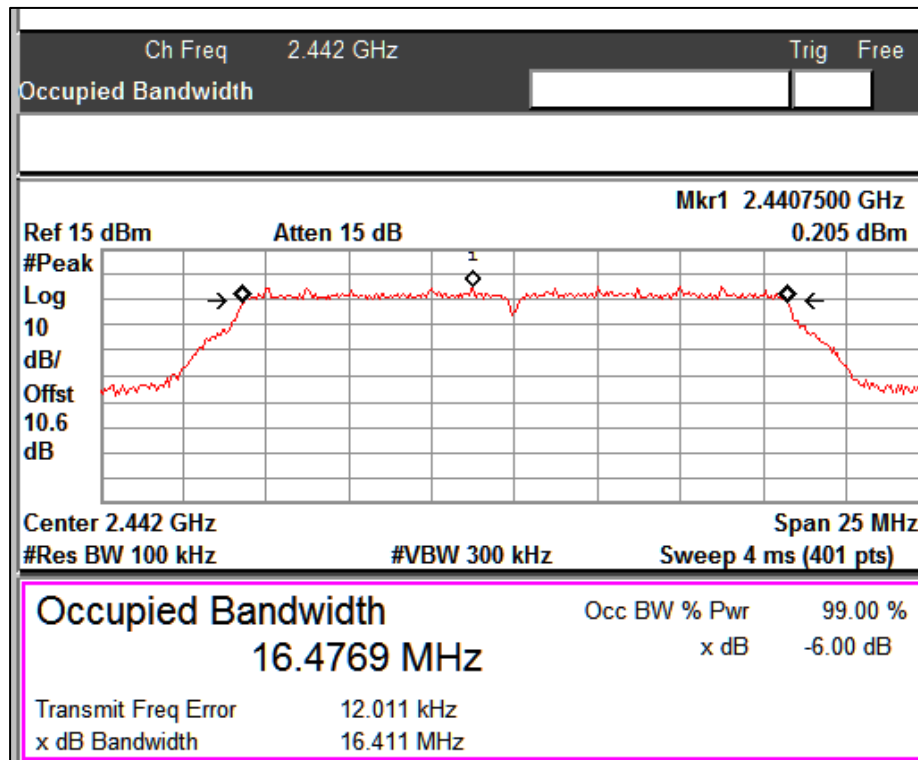
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

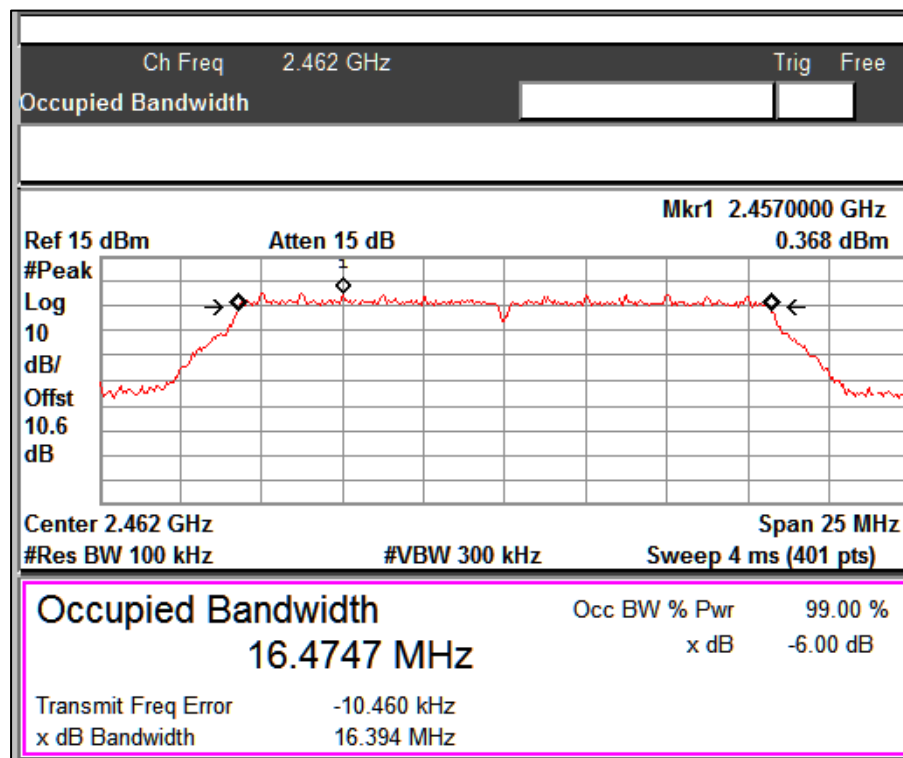
Seite 53 von 126

Page 53 of 126



Channel Frequency: 2442 MHz

Data Rate: 6Mbps



Channel Frequency: 2462 MHz

Data Rate: 6Mbps

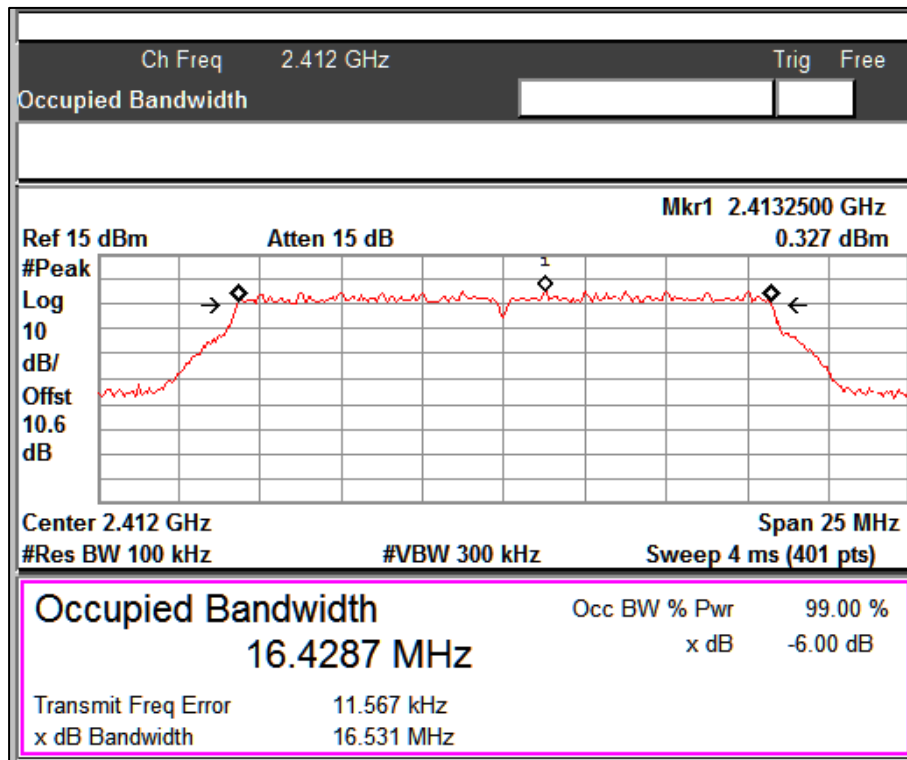
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

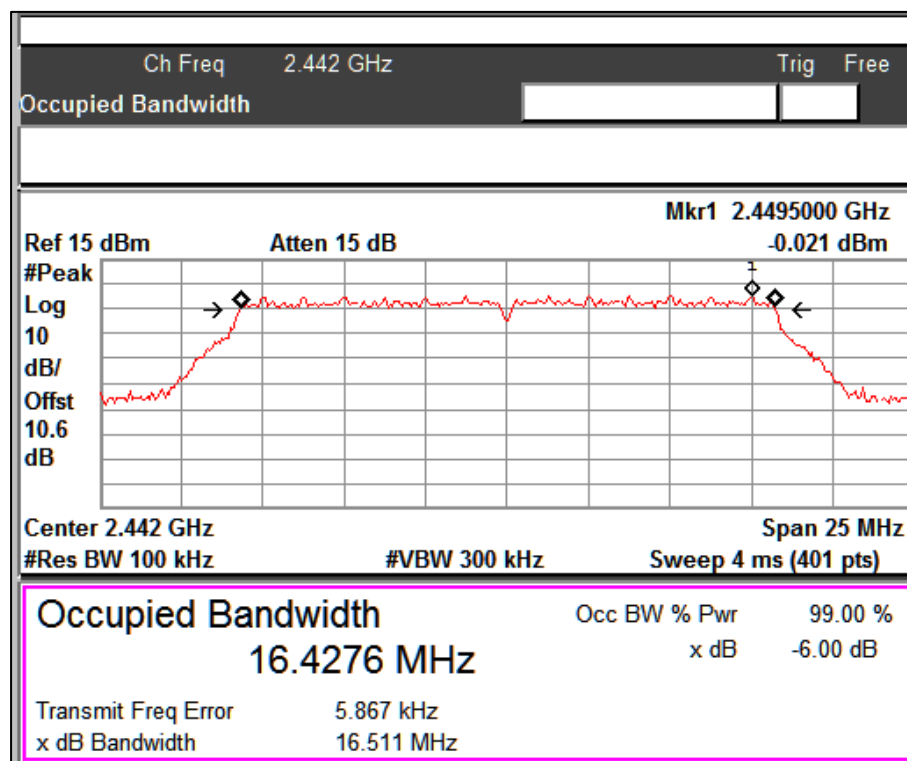
Seite 54 von 126

Page 54 of 126



Channel Frequency: 2412 MHz

Data Rate: 24Mbps



Channel Frequency: 2442 MHz

Data Rate: 24Mbps

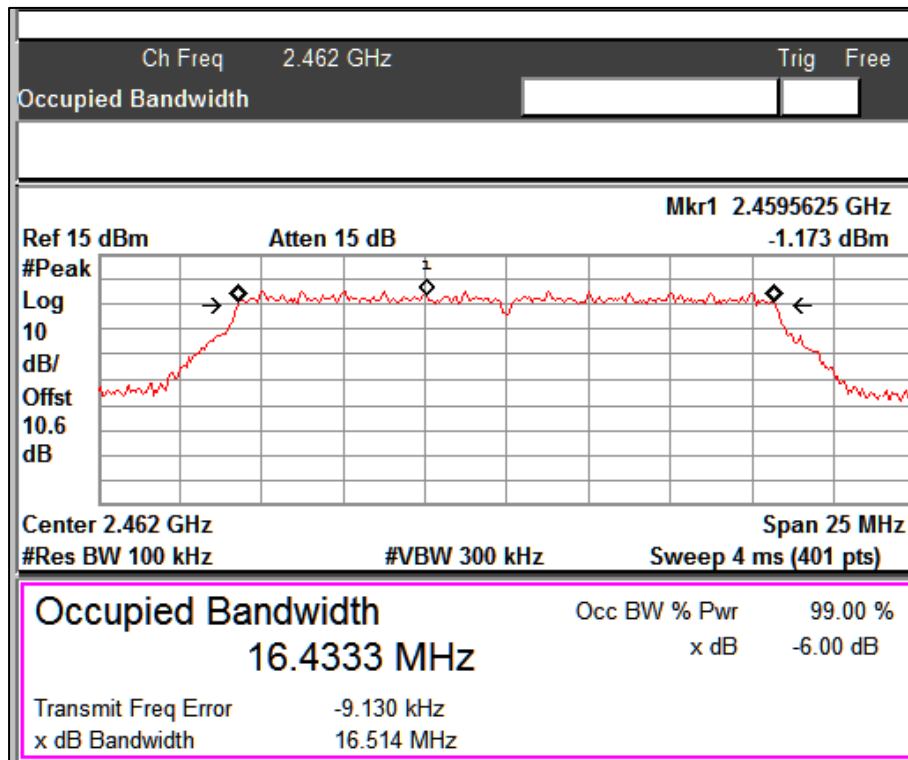
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

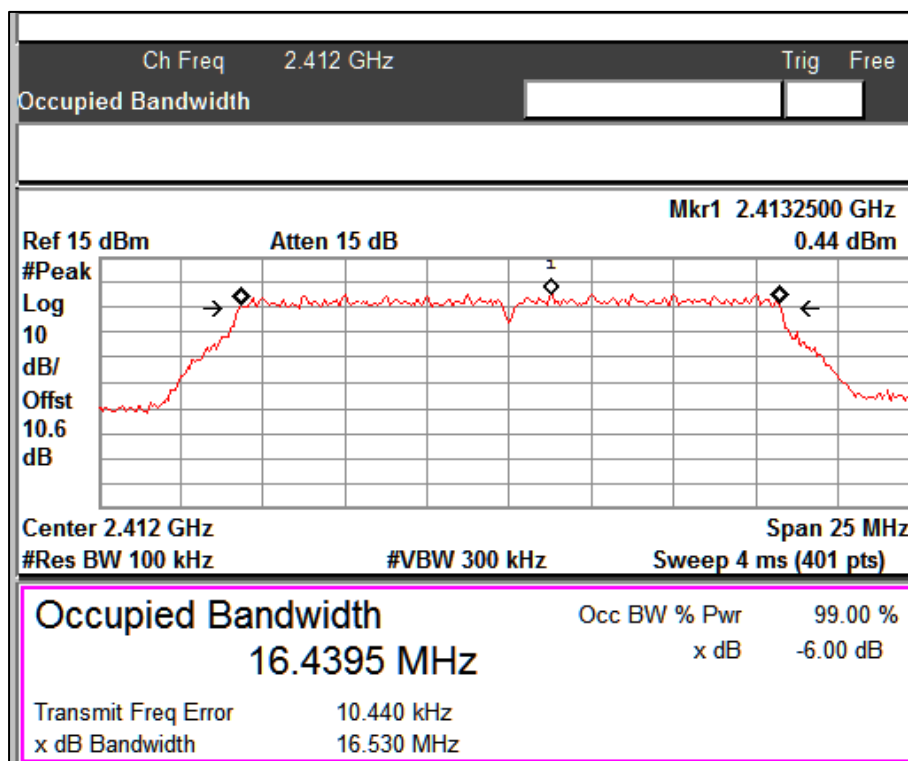
Seite 55 von 126

Page 55 of 126



Channel Frequency: 2462 MHz

Data Rate: 24Mbps



Channel Frequency: 2412 MHz

Data Rate: 54Mbps

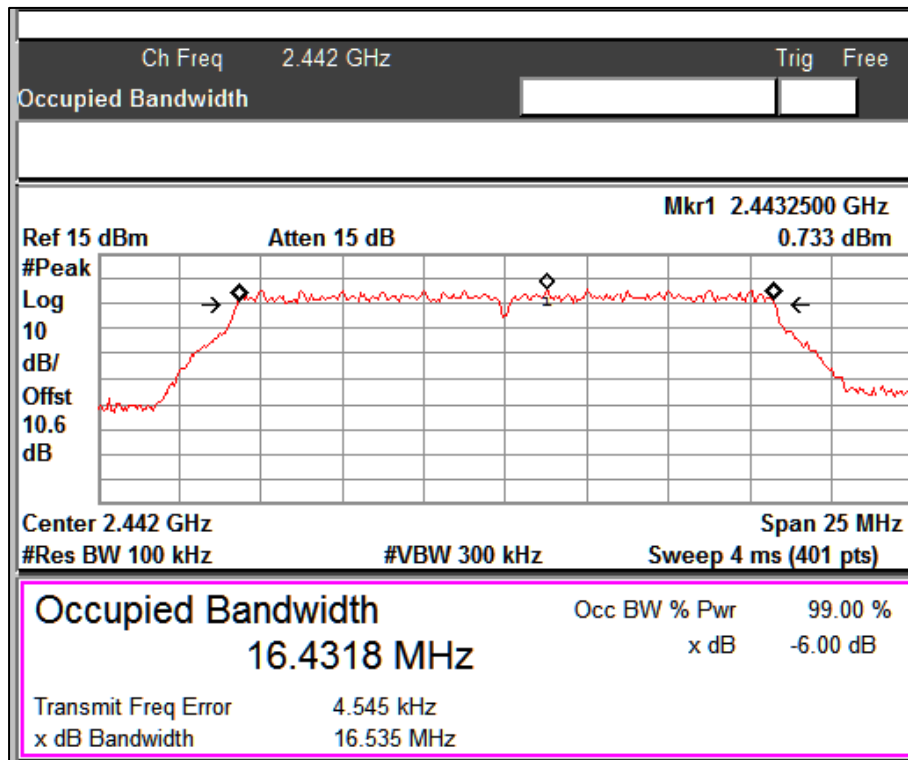
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

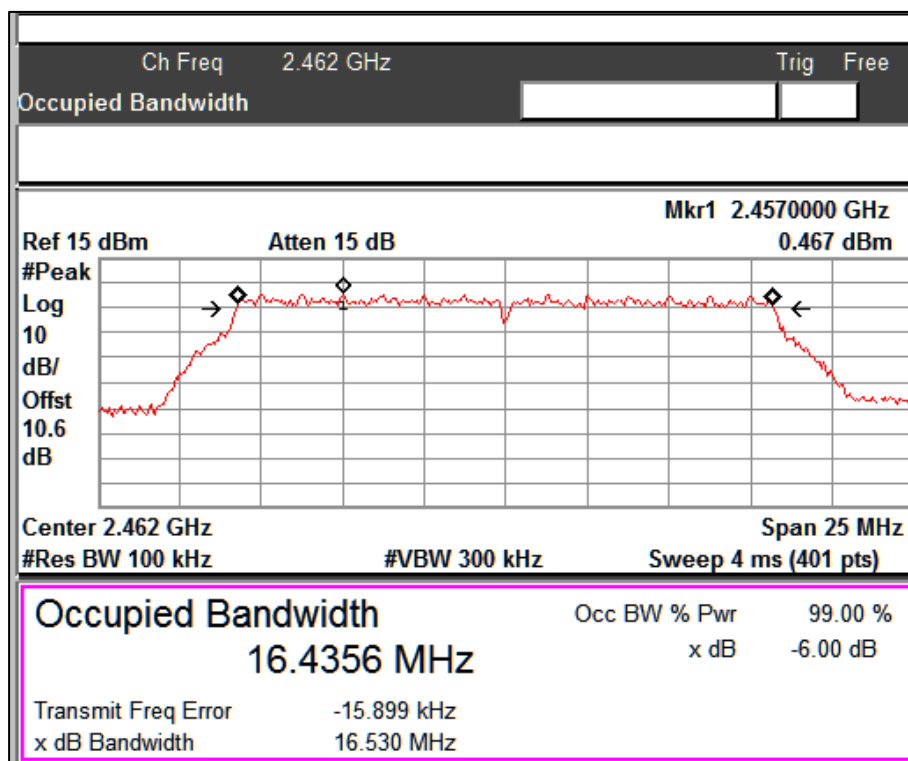
Seite 56 von 126

Page 56 of 126



Channel Frequency: 2442 MHz

Data Rate: 54Mbps



Channel Frequency: 2462 MHz

Data Rate: 54Mbps

Prüfbericht - Nr.:

Test Report No.:

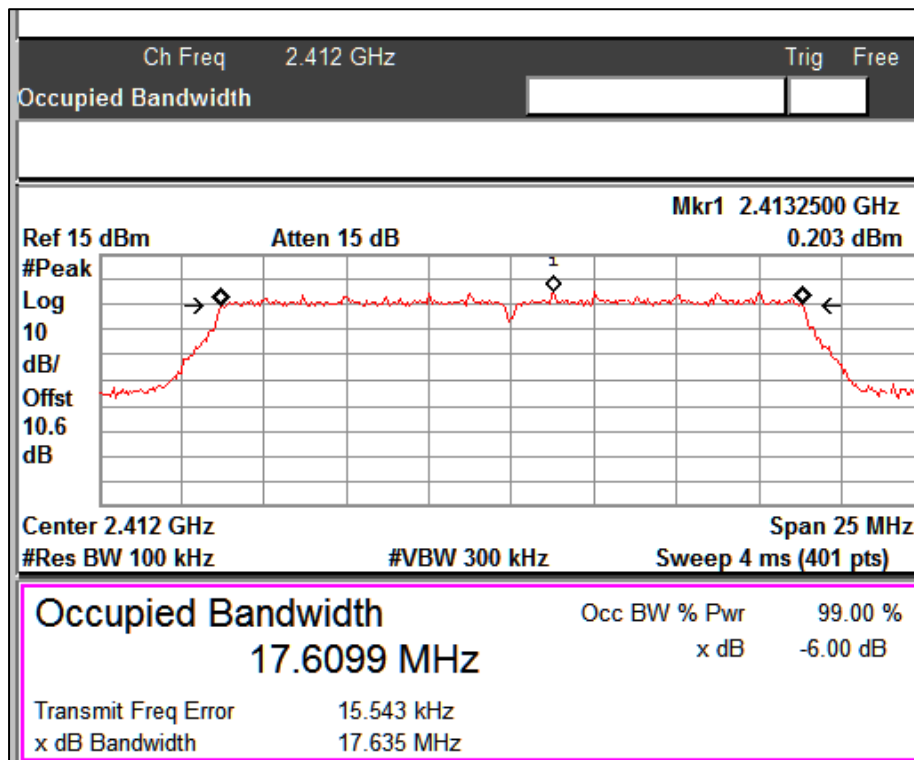
ULR-TC568819300000069F

Seite 57 von 126

Page 57 of 126

Protocol: 802.11n_HT20

Data Rate (Mbps)	Channel Frequency (MHz)	6dB Bandwidth (MHz)	99% OBW (MHz)
MCS0	2412	17.63	17.60
	2442	17.61	17.60
	2462	17.62	17.63
MCS4	2412	17.52	17.60
	2442	17.74	17.61
	2462	17.73	17.61
MCS7	2412	17.73	17.59
	2442	17.72	17.60
	2462	17.77	17.62



Channel Frequency: 2412 MHz

Data Rate: MCS0

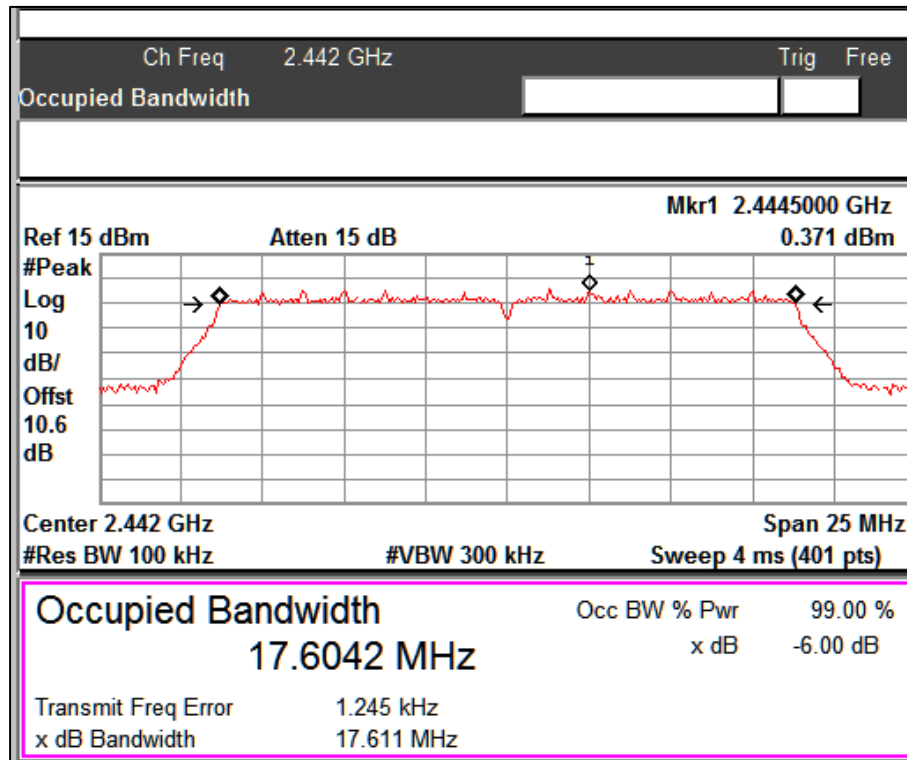
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

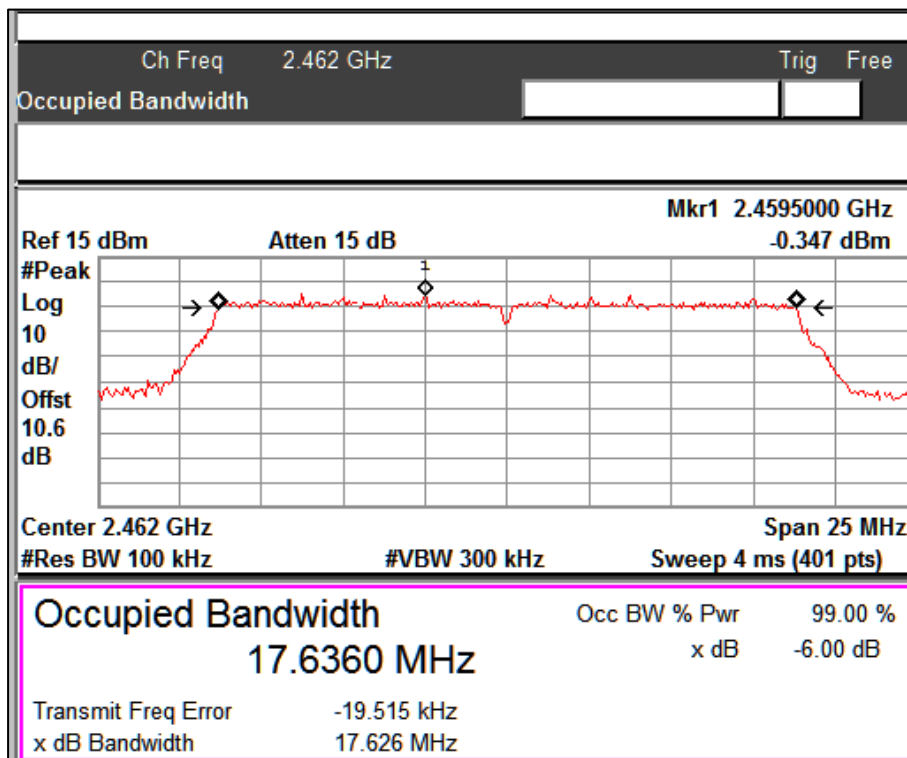
Seite 58 von 126

Page 58 of 126



Channel Frequency: 2442 MHz

Data Rate: MCS0



Channel Frequency: 2462 MHz

Data Rate: MCS0

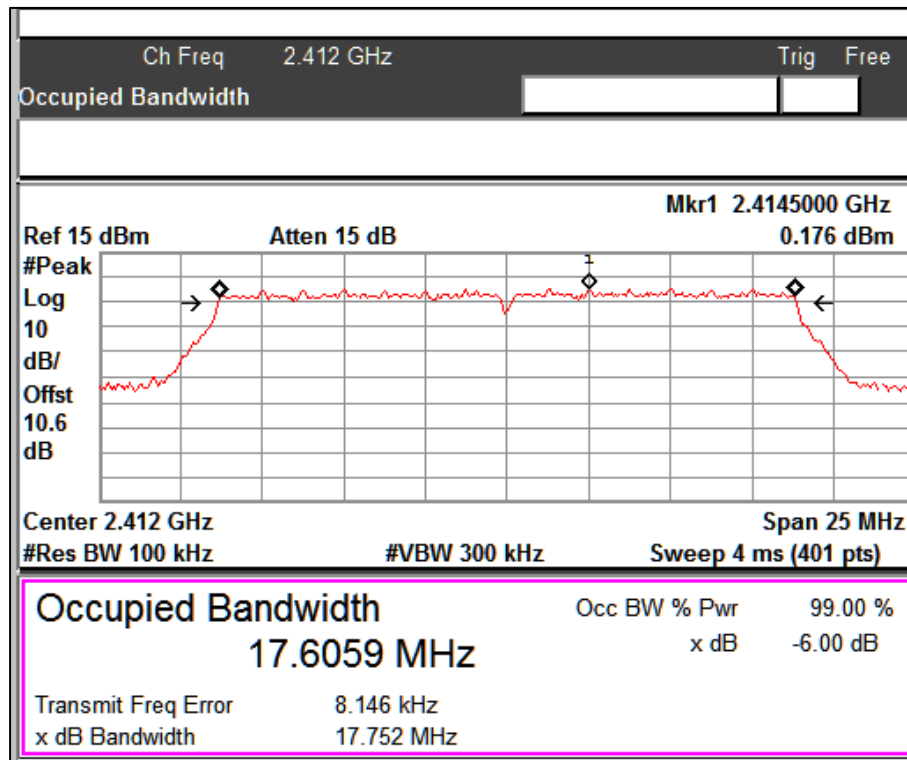
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

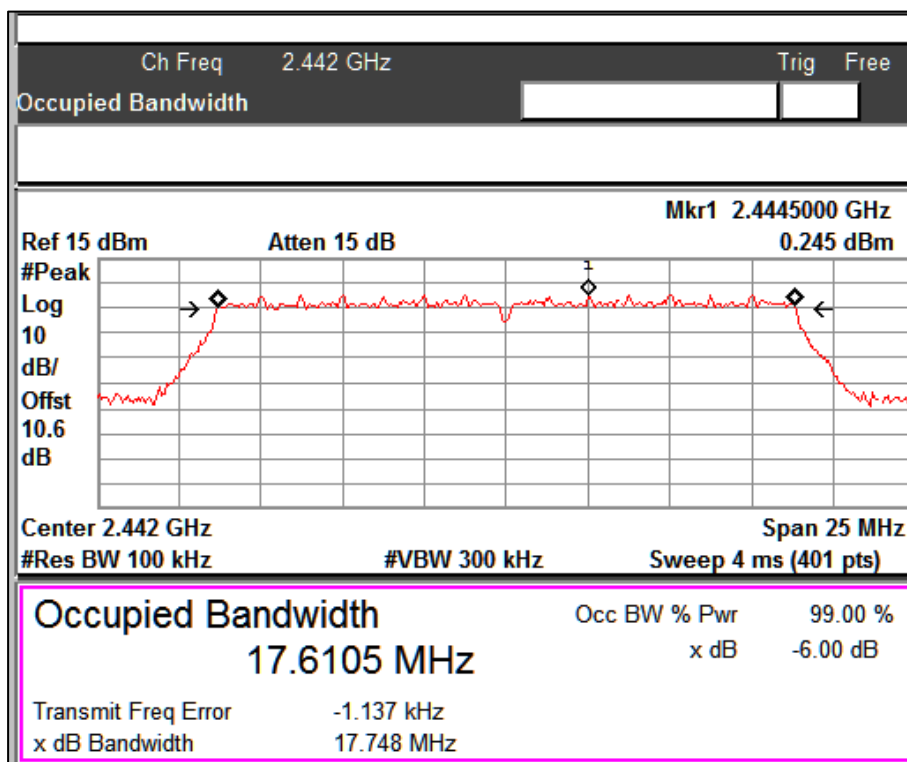
Seite 59 von 126

Page 59 of 126



Channel Frequency: 2412 MHz

Data Rate: MCS4



Channel Frequency: 2442 MHz

Data Rate: MCS4

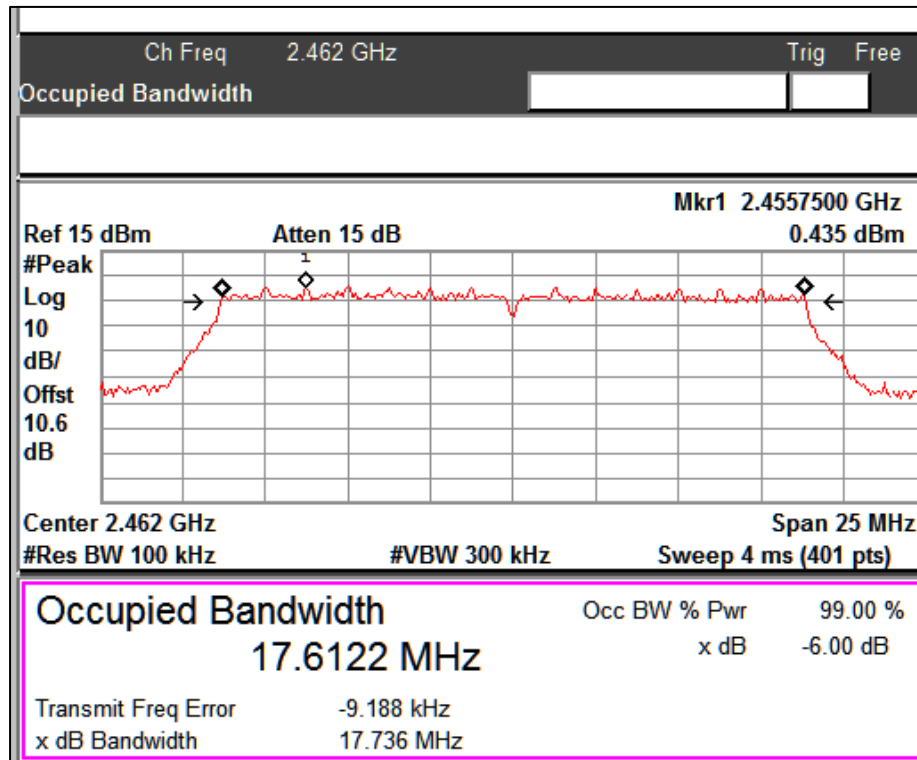
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

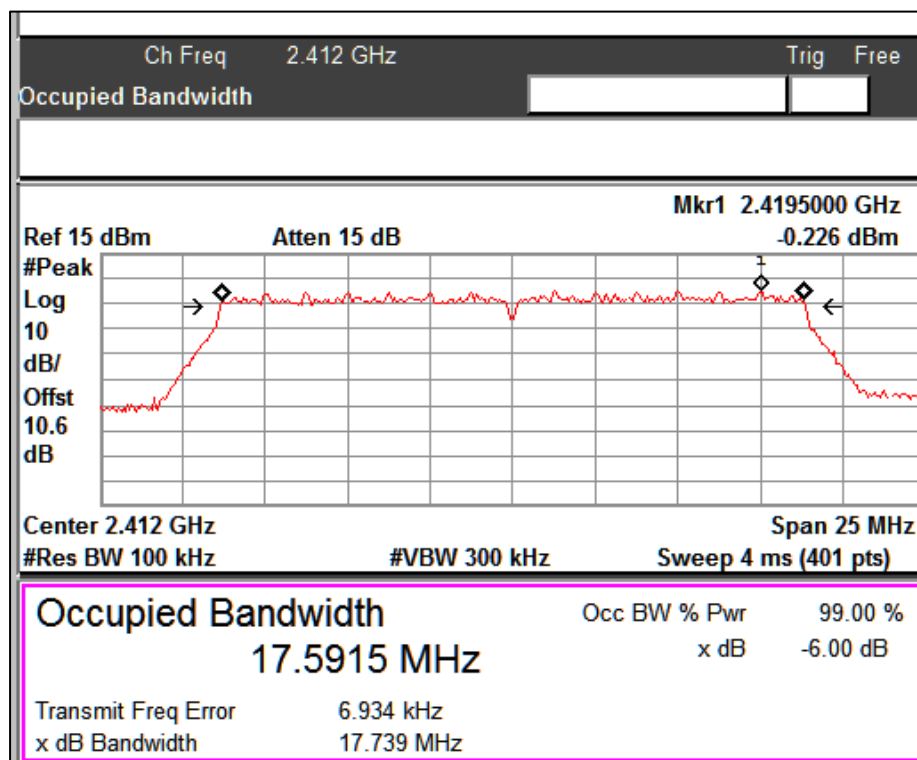
Seite 60 von 126

Page 60 of 126



Channel Frequency: 2462 MHz

Data Rate: MCS4



Channel Frequency: 2412 MHz

Data Rate: MCS7

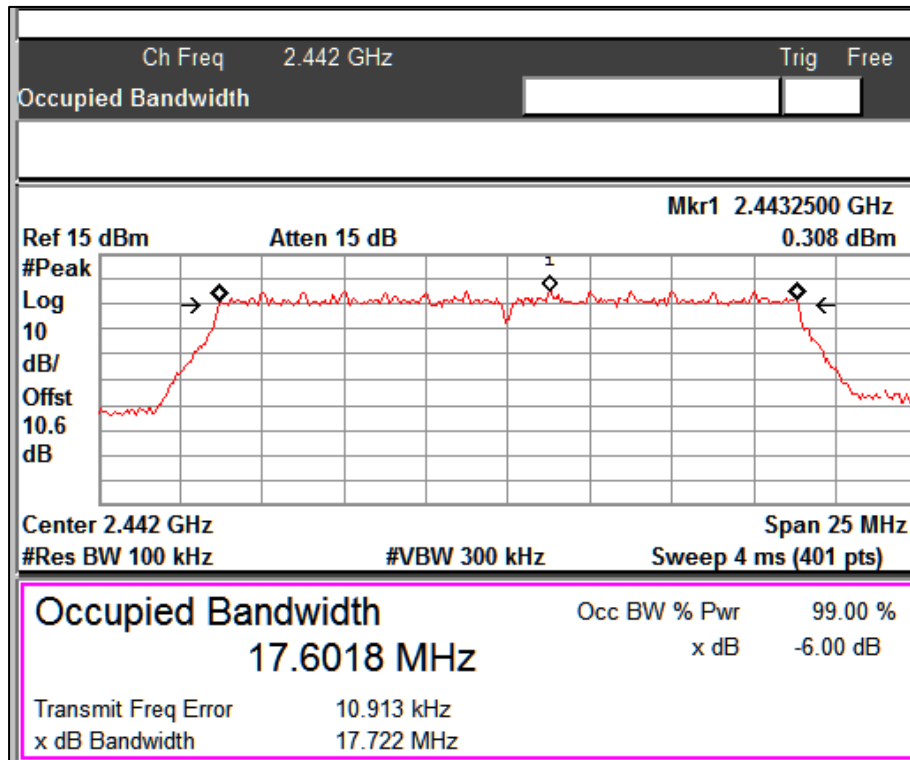
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

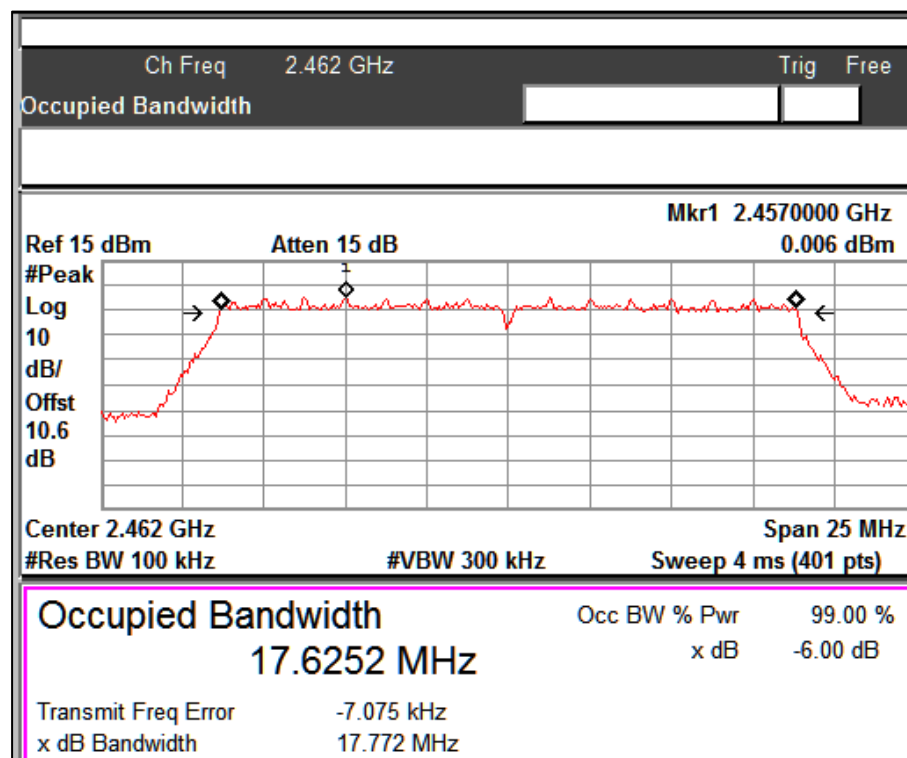
Seite 61 von 126

Page 61 of 126



Channel Frequency: 2442 MHz

Data Rate: MCS7



Channel Frequency: 2462 MHz

Data Rate: MCS7

Prüfbericht - Nr.:

Test Report No.:

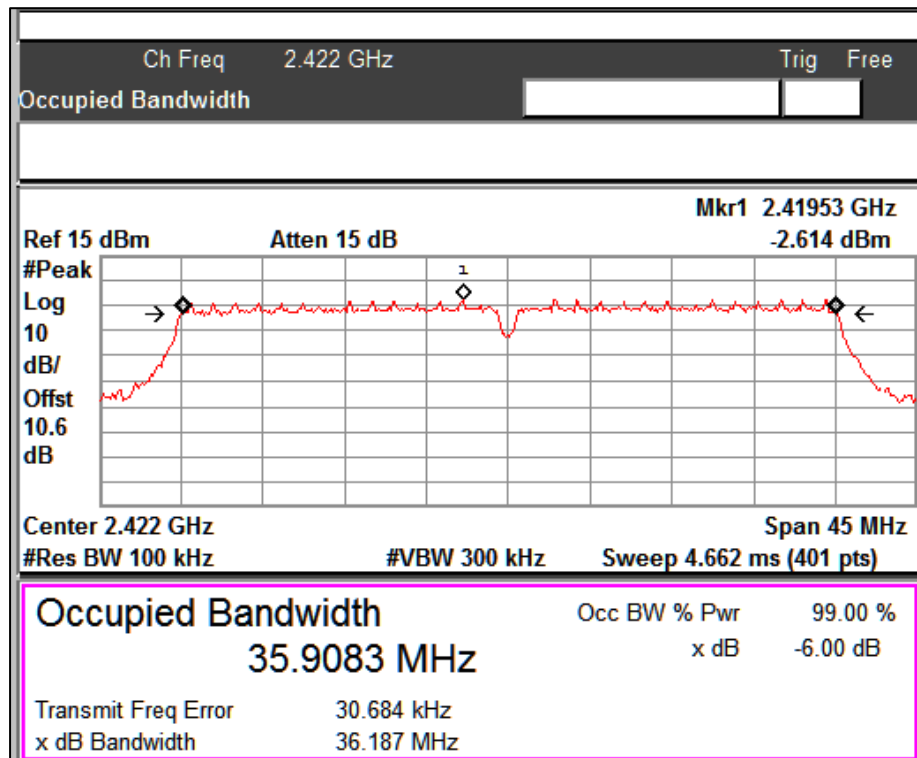
ULR-TC568819300000069F

Seite 62 von 126

Page 62 of 126

Protocol: 802.11n_HT40

Data Rate (Mbps)	Channel Frequency (MHz)	6dB Bandwidth (MHz)	99% OBW (MHz)
MCS0	2422	36.18	35.90
	2442	35.78	35.81
	2452	35.61	35.86
MCS4	2422	36.46	36.00
	2442	36.22	35.97
	2452	36.32	35.97
MCS7	2422	36.44	35.98
	2442	36.29	35.92
	2452	36.37	35.96



Channel Frequency: 2422 MHz

Data Rate: MCS0

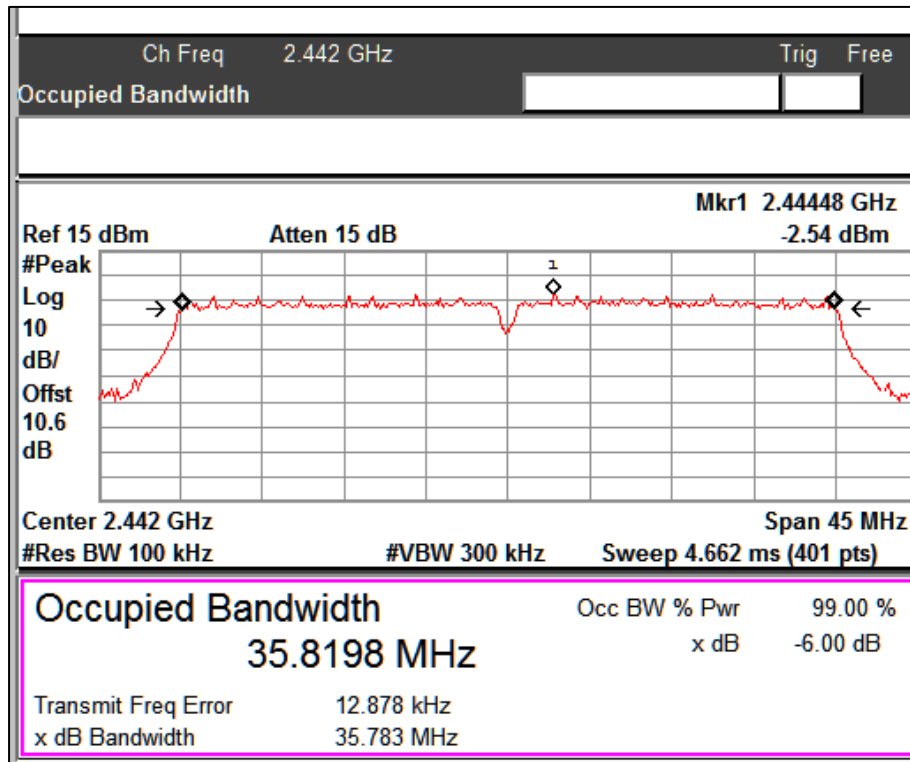
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

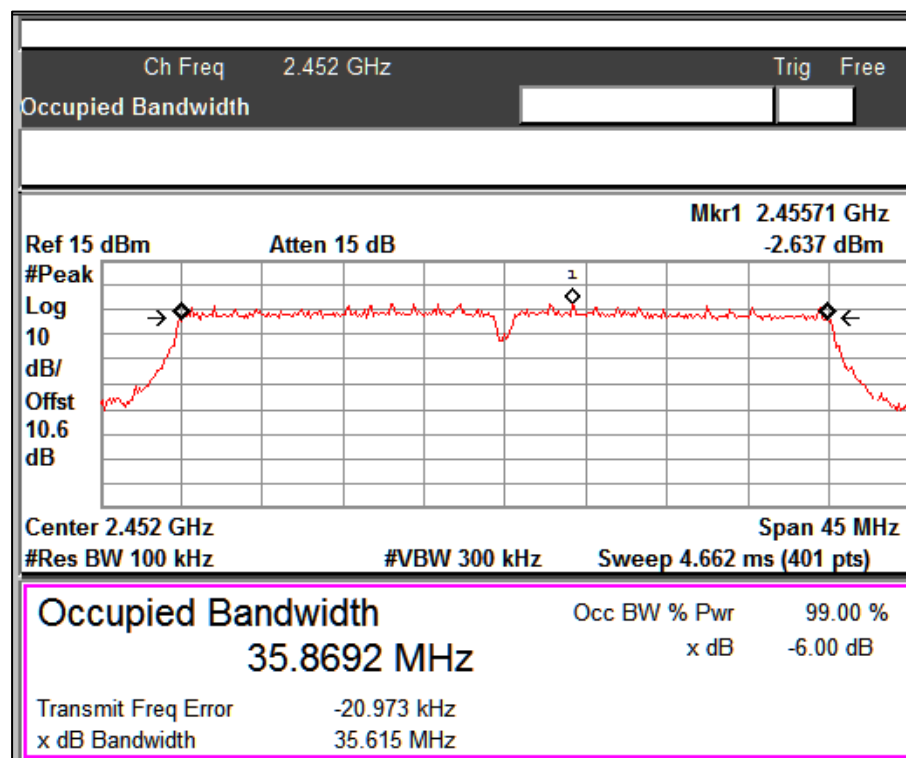
Seite 63 von 126

Page 63 of 126



Channel Frequency: 2442 MHz

Data Rate: MCS0



Channel Frequency: 2452 MHz

Data Rate: MCS0

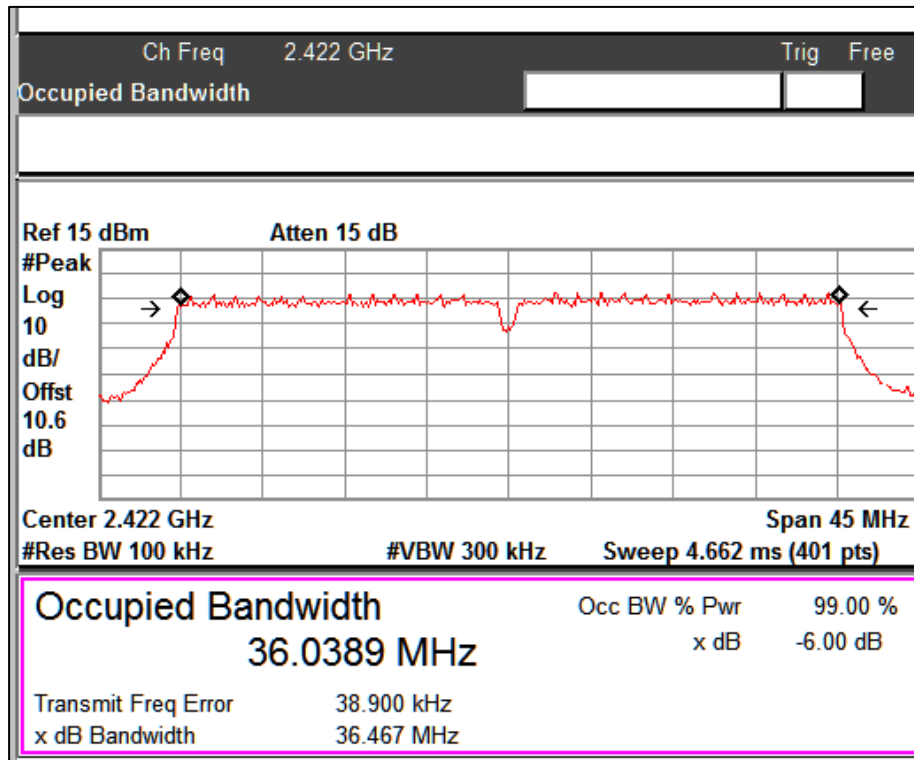
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

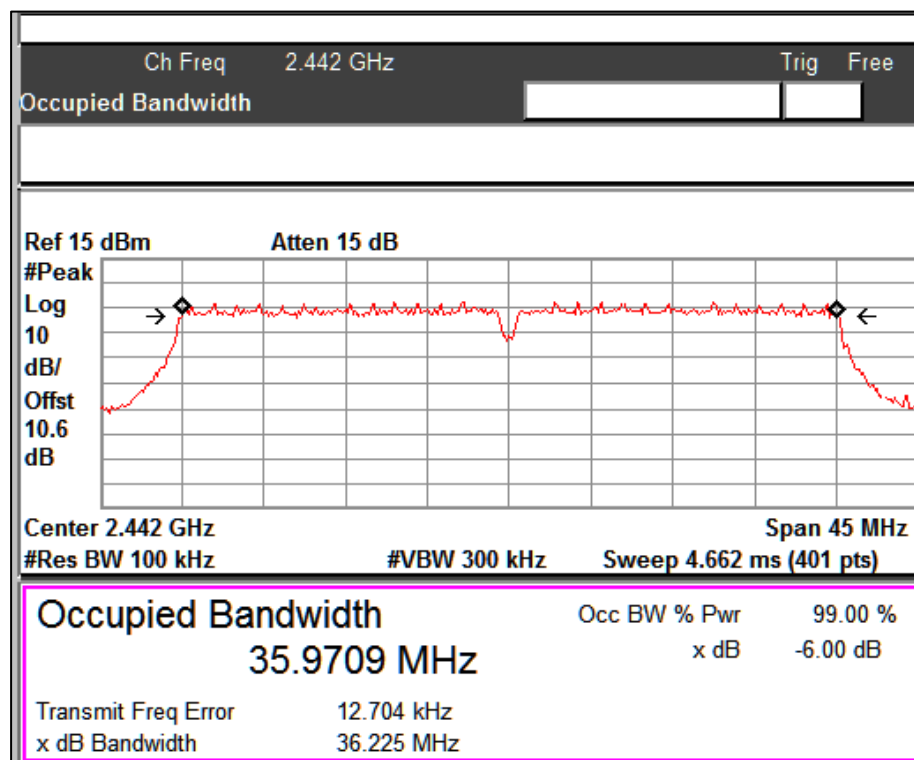
Seite 64 von 126

Page 64 of 126



Channel Frequency: 2422 MHz

Data Rate: MCS4



Channel Frequency: 2442 MHz

Data Rate: MCS4

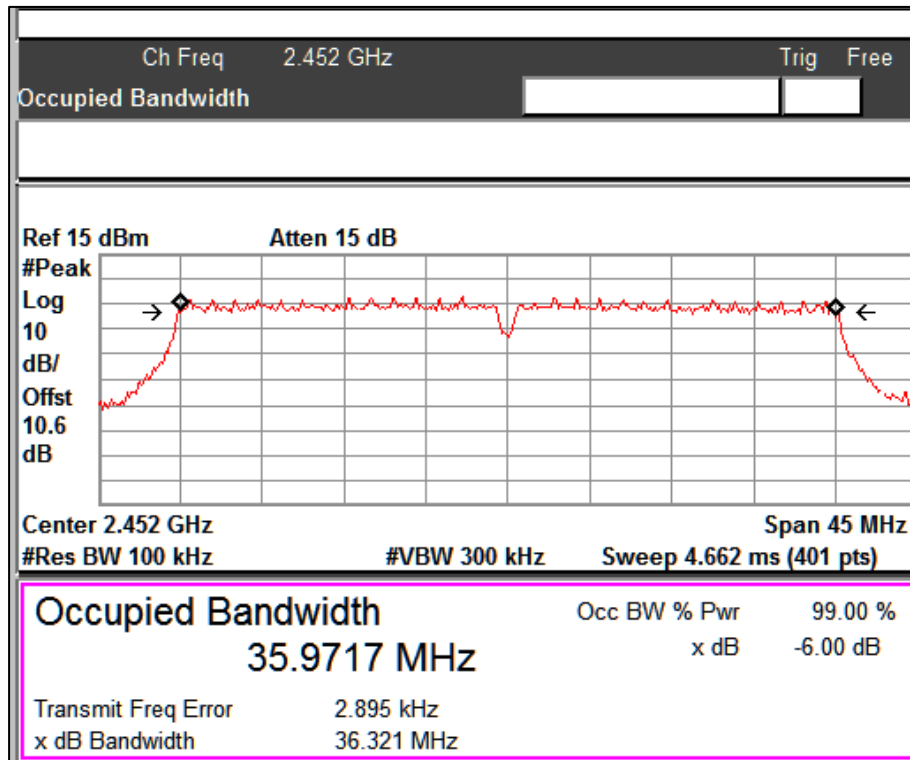
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

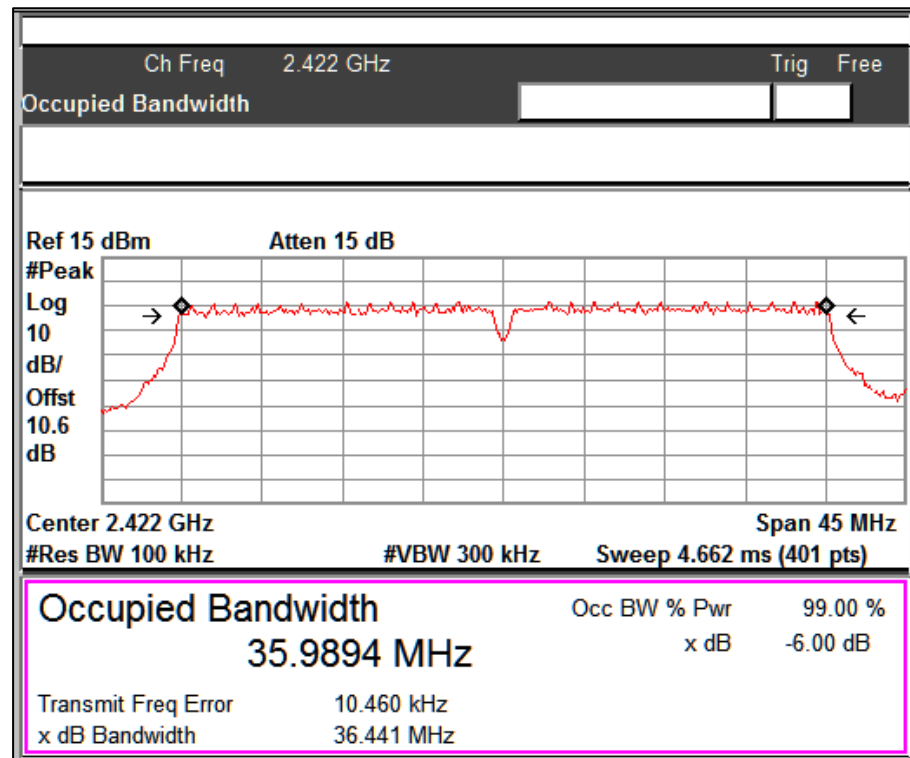
Seite 65 von 126

Page 65 of 126



Channel Frequency: 2452 MHz

Data Rate: MCS4



Channel Frequency: 2422 MHz

Data Rate: MCS7

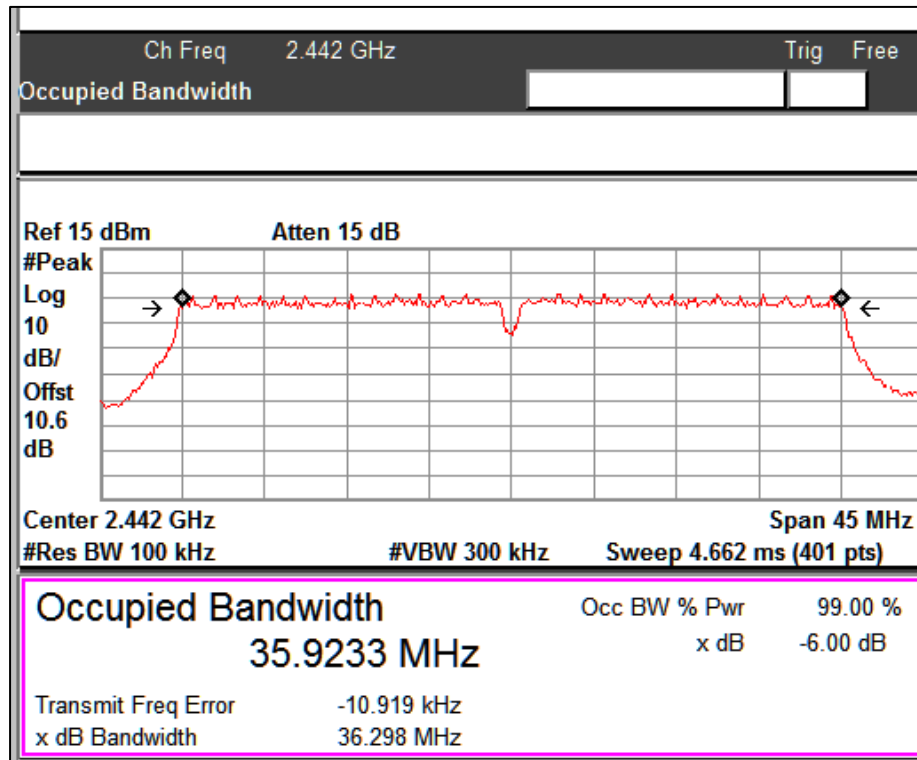
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

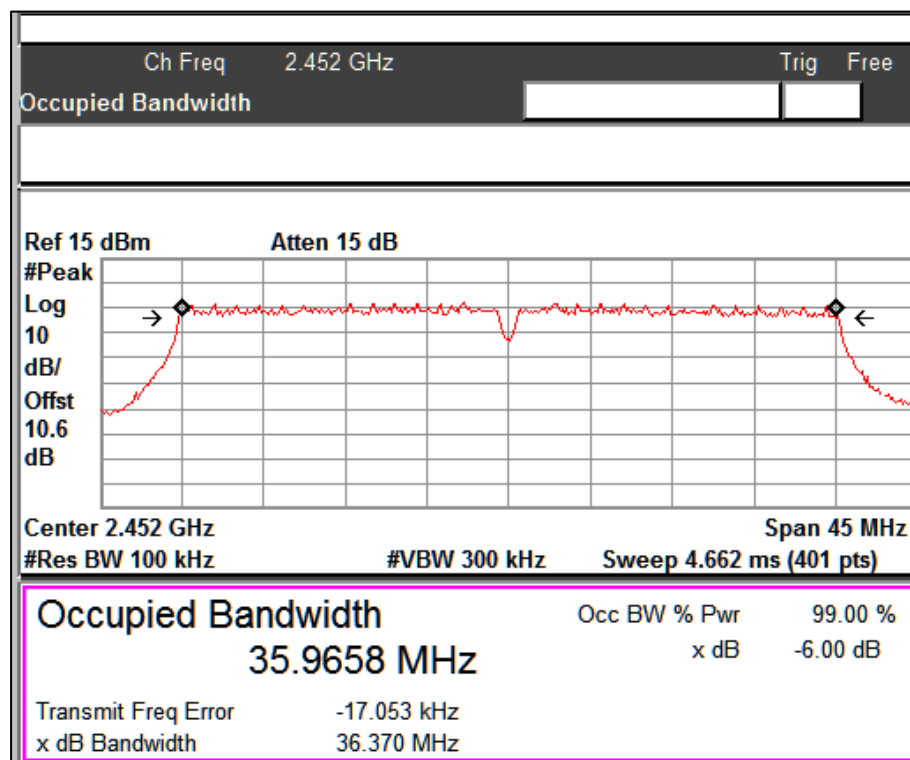
Seite 66 von 126

Page 66 of 126



Channel Frequency: 2442 MHz

Data Rate: MCS7



Channel Frequency: 2452 MHz

Data Rate: MCS7

Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

Seite 67 von 126

Page 67 of 126

6.4 Emissions in non-restricted frequency bands and conducted spurious emission

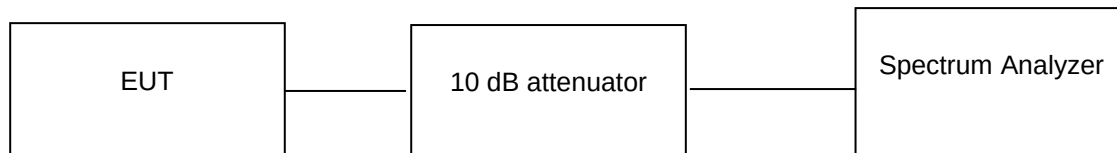
6.4.1 Emissions in non-restricted frequency bands

Result

Pass

Test Specification	FCC Part 15 Subpart C Section 15.247 (d) / RSS 247 Issue 2, Section 5.5
Detector Function	Peak
Port of testing	Antenna port
Requirement	In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the Highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

Test Method:



Environmental and Test conditions:

Normal Temperature = +25 °C

Voltage (V norm) = 7.4 VDC

RH = 63.2 %

Test results:

10 dB attenuator + 0.6 dB Cable loss = 10.6 dB offset is considered in below result

Test Results:

Protocol: 802.11b

Data Rate (Mbps)	Channel Frequency (MHz)	Value of Band edge		Reference value B (dBm)	Band Edge Value A~B (dBm)	Limit (dBm)
		Frequency (MHz)	Value A (dBm)			
1	2412	2400	-51.81	3.27	-55.08	-30
	2462	2483.5	-51.69	3.02	-54.71	-30
11	2412	2400	-46.97	3.15	-50.12	-30
	2462	2483.5	-52.39	3.29	-55.68	-30

Prüfbericht - Nr.:

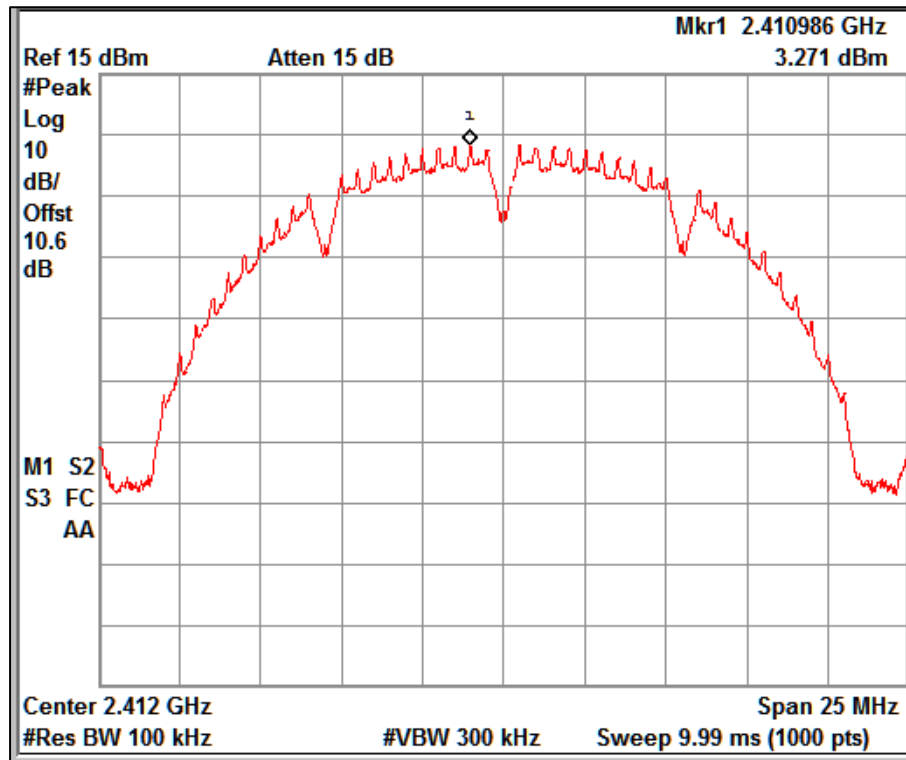
Test Report No.:

ULR-TC568819300000069F

Seite 68 von 126

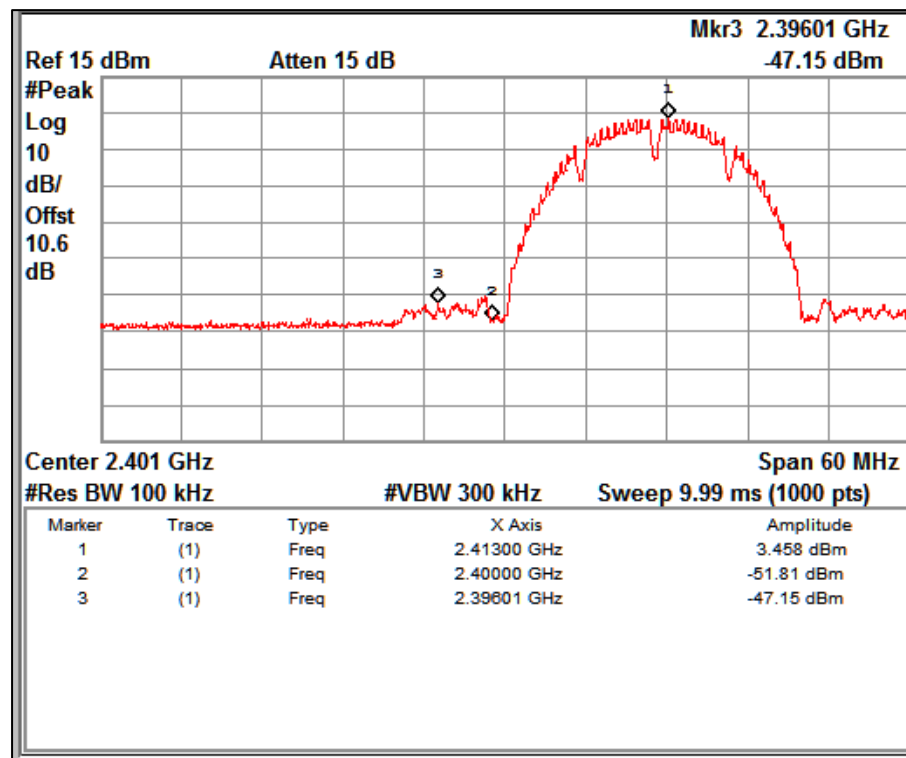
Page 68 of 126

Reference Plot



Channel Frequency: 2412 MHz

Data rate: 1Mbps



Channel Frequency: 2412 MHz

Data rate: 1Mbps

Prüfbericht - Nr.:

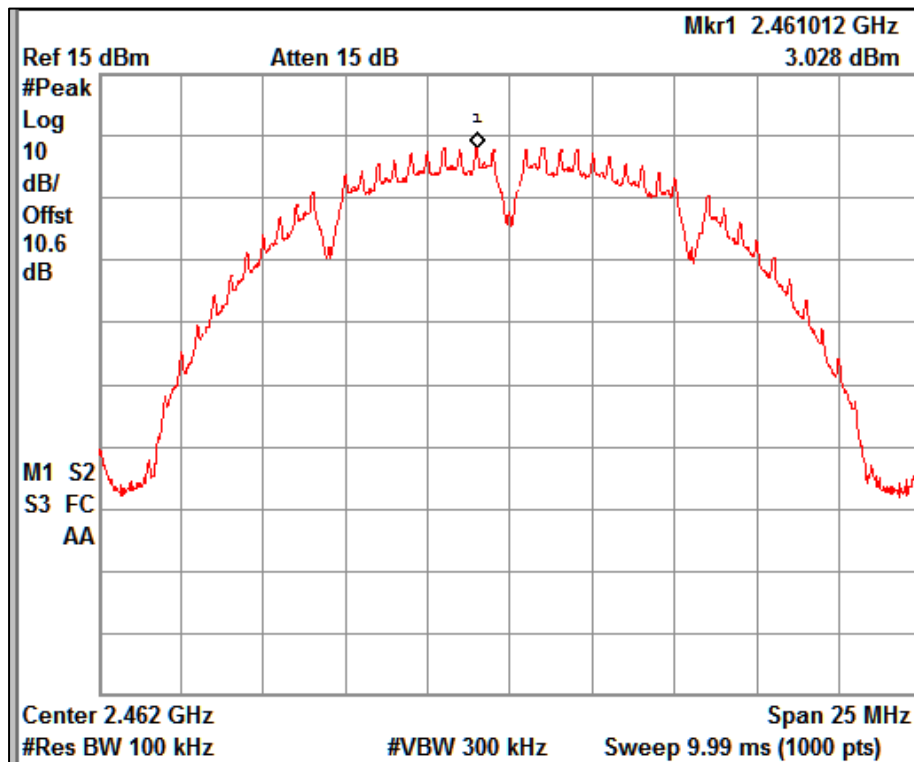
Test Report No.:

ULR-TC568819300000069F

Seite 69 von 126

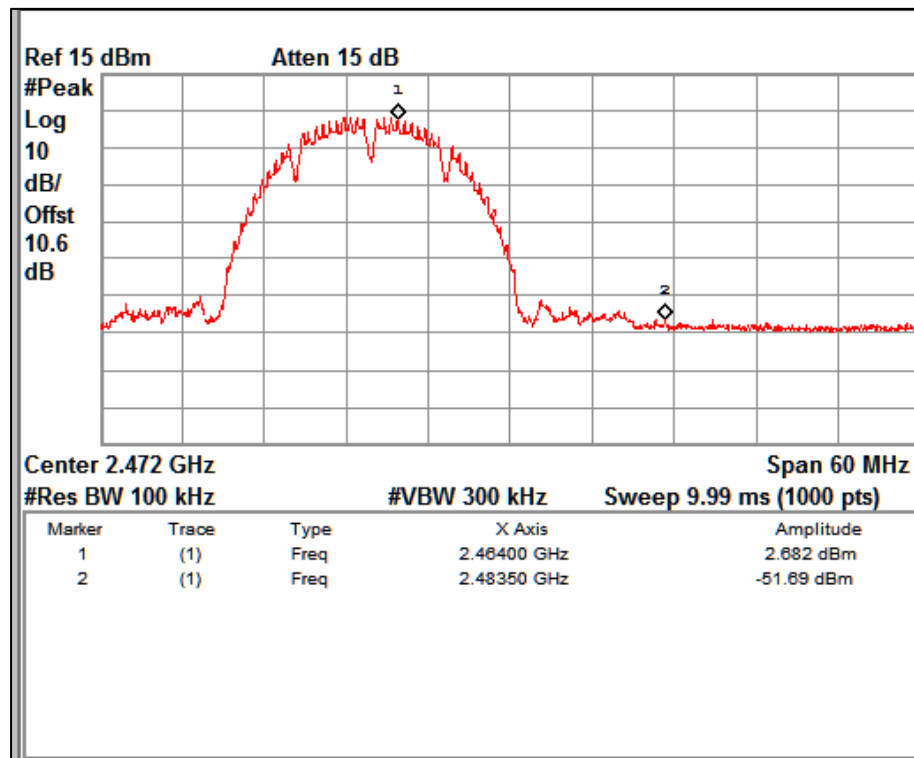
Page 69 of 126

Reference Plot



Channel Frequency: 2462 MHz

Data rate: 1Mbps



Channel Frequency: 2462 MHz

Data rate: 1Mbps

Prüfbericht - Nr.:

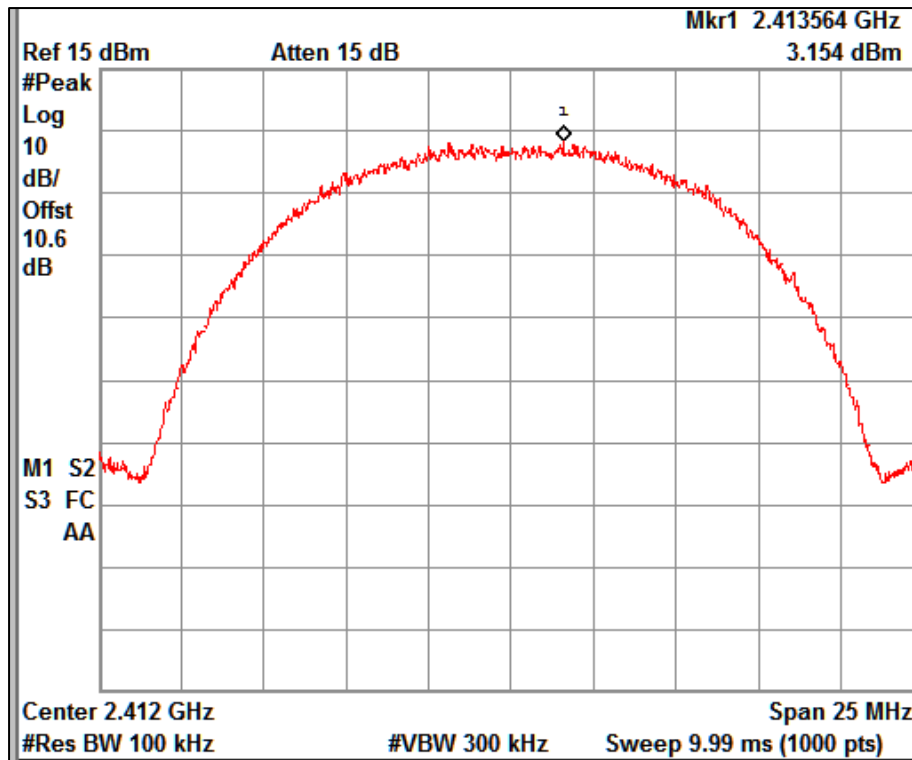
Test Report No.:

ULR-TC568819300000069F

Seite 70 von 126

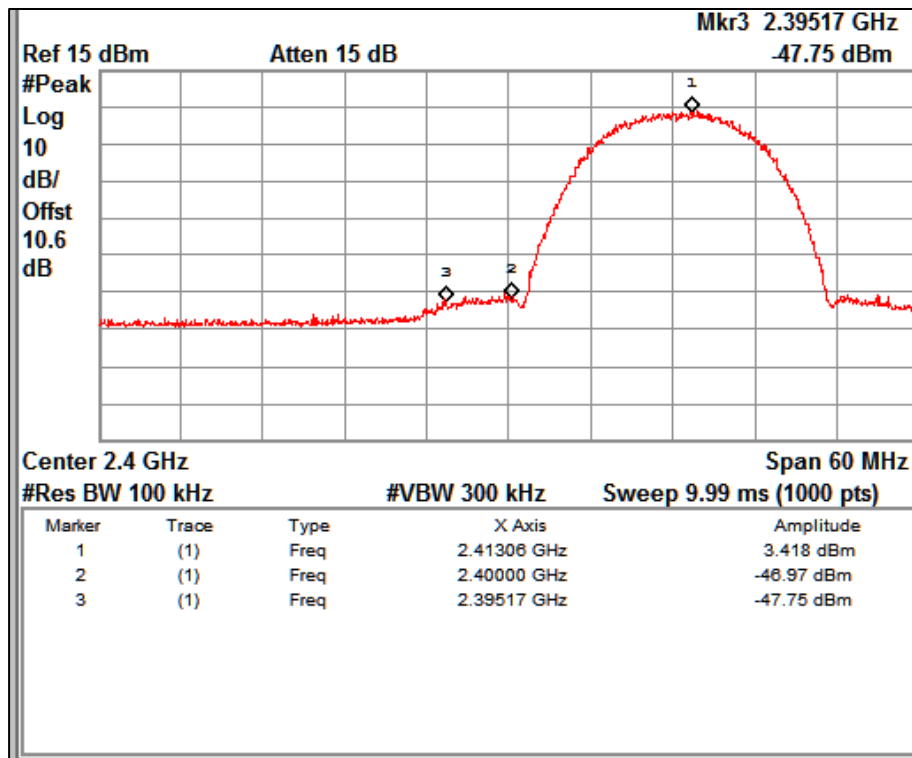
Page 70 of 126

Reference Plot



Channel Frequency: 2412 MHz

Data rate: 11Mbps



Channel Frequency: 2412 MHz

Data rate: 11Mbps

Prüfbericht - Nr.:

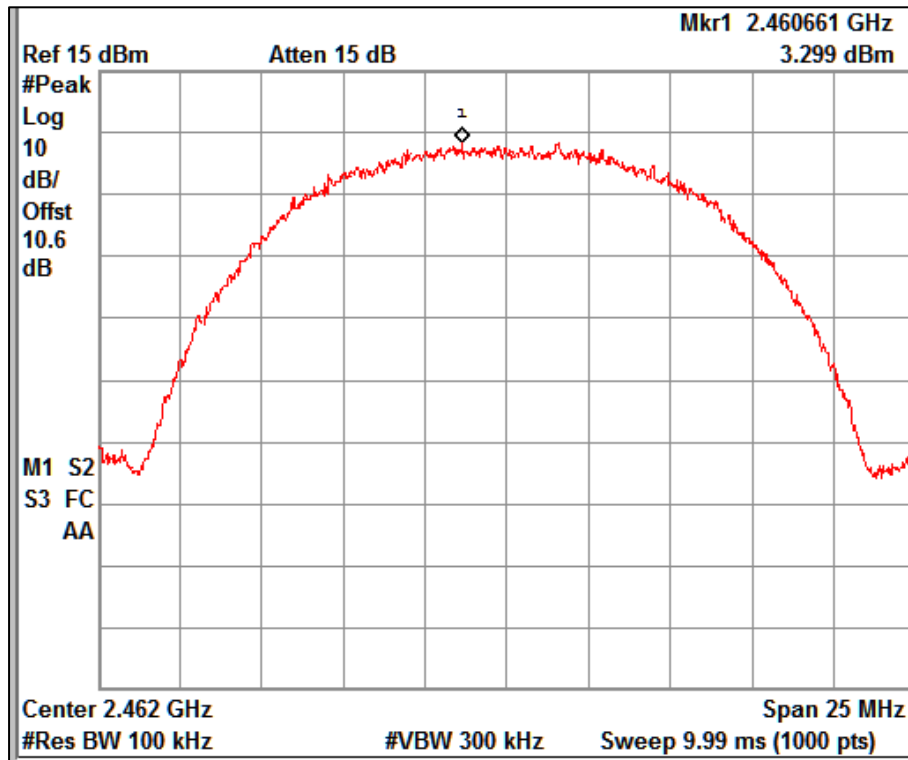
Test Report No.:

ULR-TC568819300000069F

Seite 71 von 126

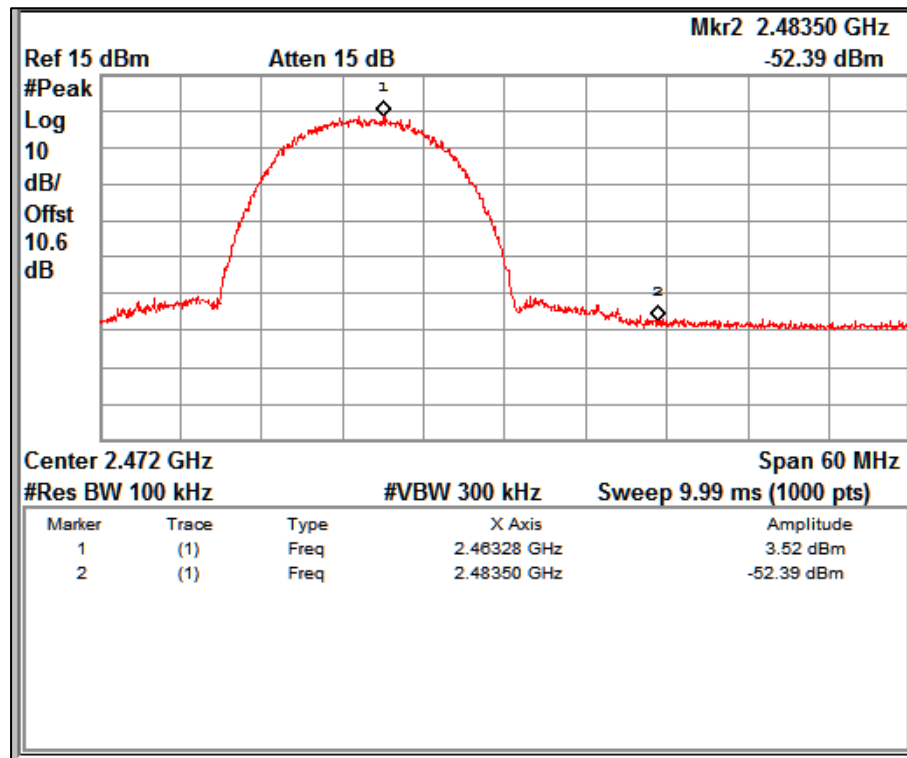
Page 71 of 126

Reference Plot



Channel Frequency: 2462 MHz

Data rate: 11Mbps



Channel Frequency: 2462 MHz

Data rate: 11Mbps

Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

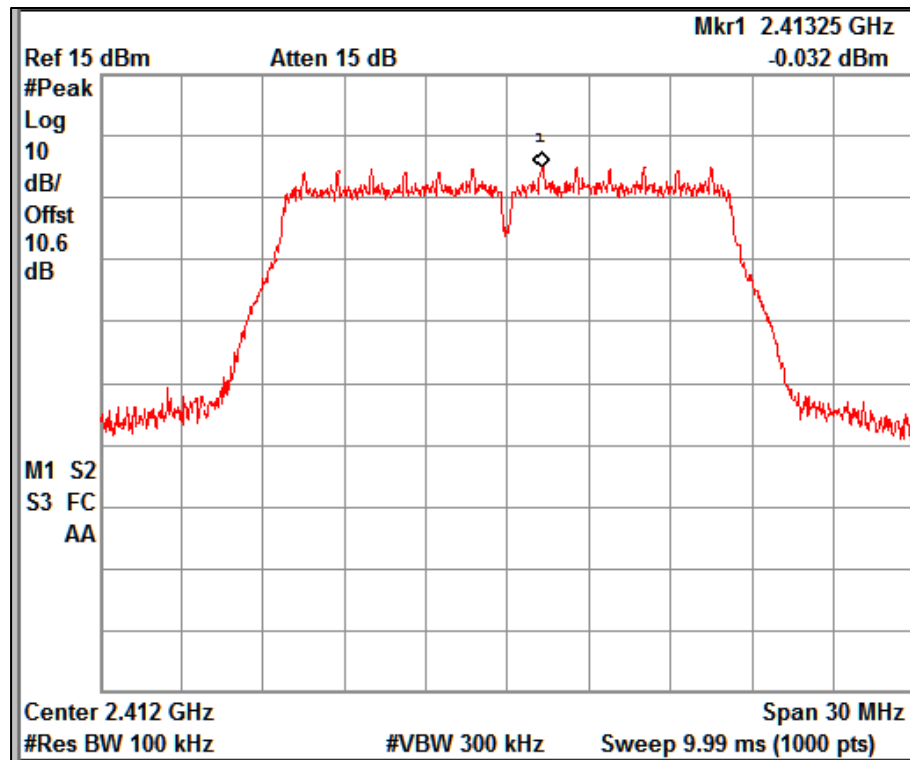
Seite 72 von 126

Page 72 of 126

Protocol: 802.11g

Data Rate (Mbps)	Channel Frequency (MHz)	Value of Band edge		Reference value B (dBm)	Band Edge Value A-B (dBm)	Limit (dBm)
		Frequency (MHz)	Value A (dBm)			
6	2412	2400	-39.3	-0.03	-39.27	-30
	2462	2483.5	-48.73	0.18	-48.91	-30
24	2412	2400	-42.37	0.06	-42.43	-30
	2462	2483.5	-49.13	0.01	-49.14	-30
54	2412	2400	-45.82	0.00	-45.82	-30
	2462	2483.5	-46.22	0.54	-46.76	-30

Reference Plot



Channel Frequency: 2412 MHz

Data rate: 6Mbps

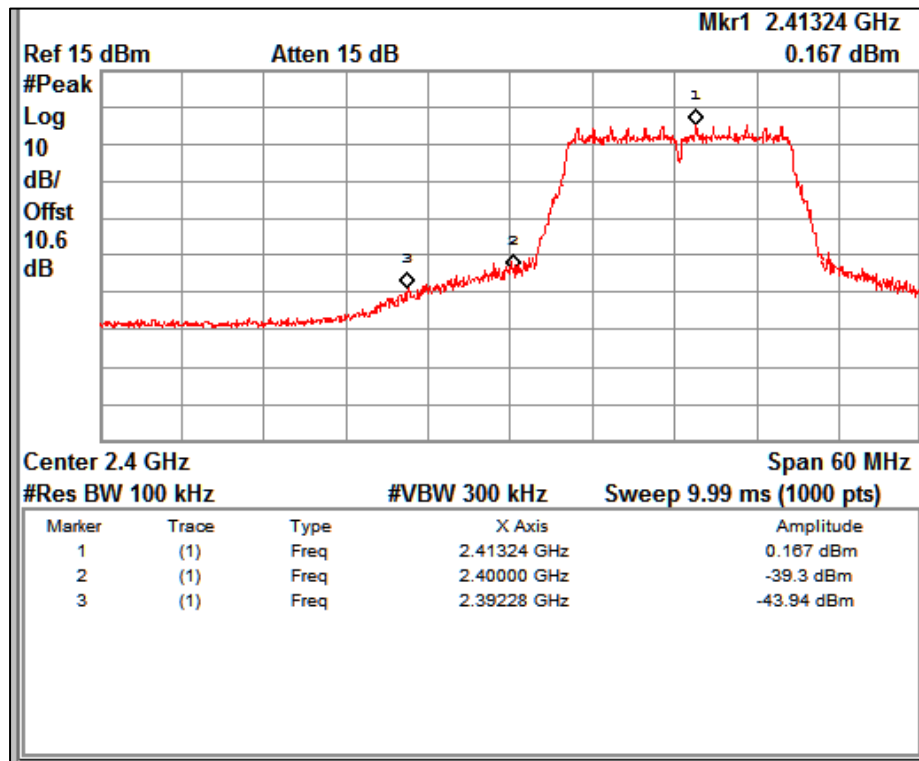
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

Seite 73 von 126

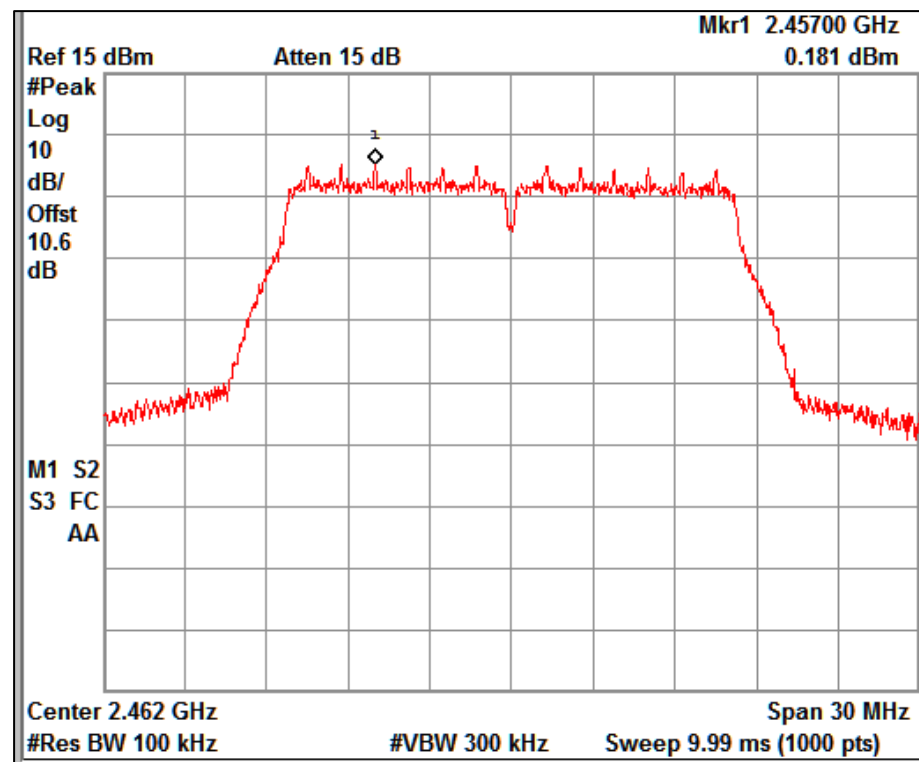
Page 73 of 126



Channel Frequency: 2412 MHz

Data rate: 6Mbps

Reference Plot



Channel Frequency: 2462 MHz

Data rate: 6Mbps

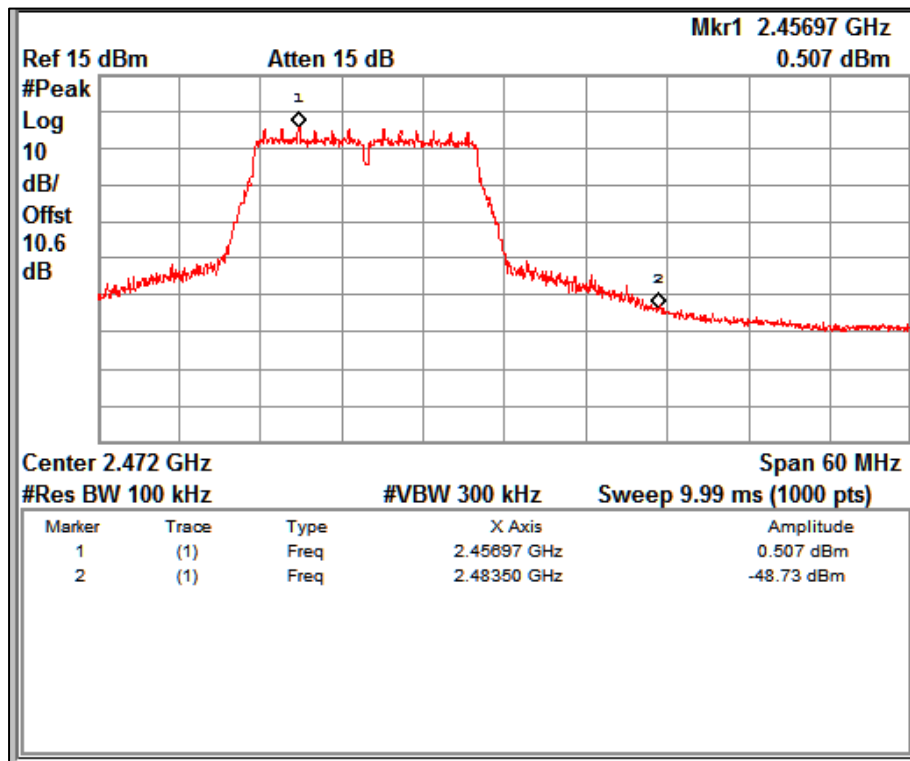
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

Seite 74 von 126

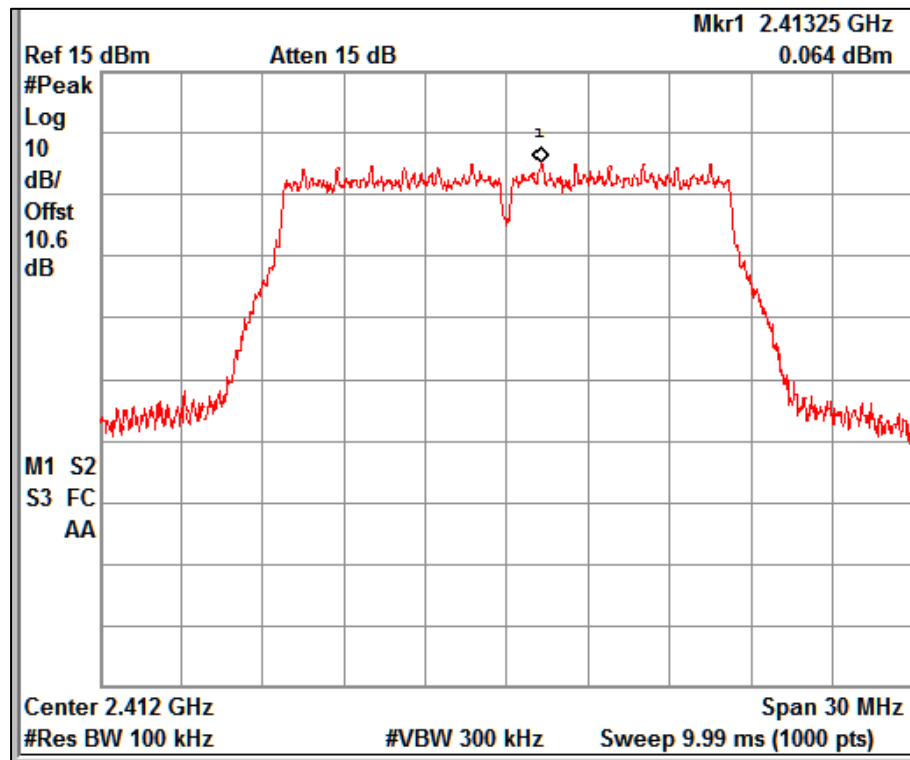
Page 74 of 126



Channel Frequency: 2462 MHz

Data rate: 6Mbps

Reference Plot



Channel Frequency: 2412 MHz

Data rate: 24Mbps

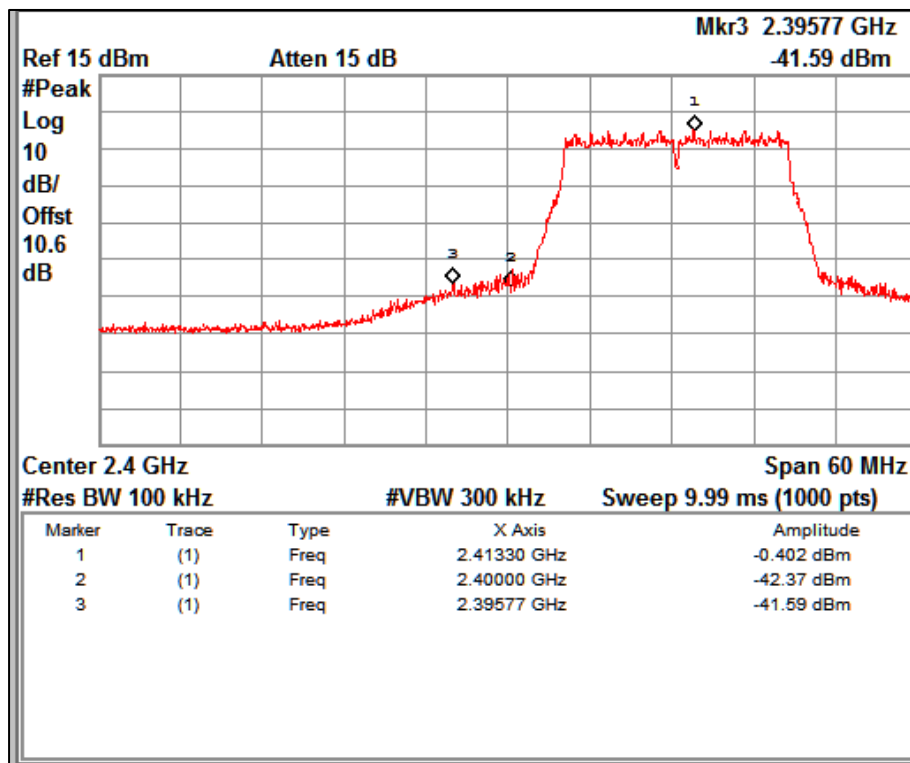
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

Seite 75 von 126

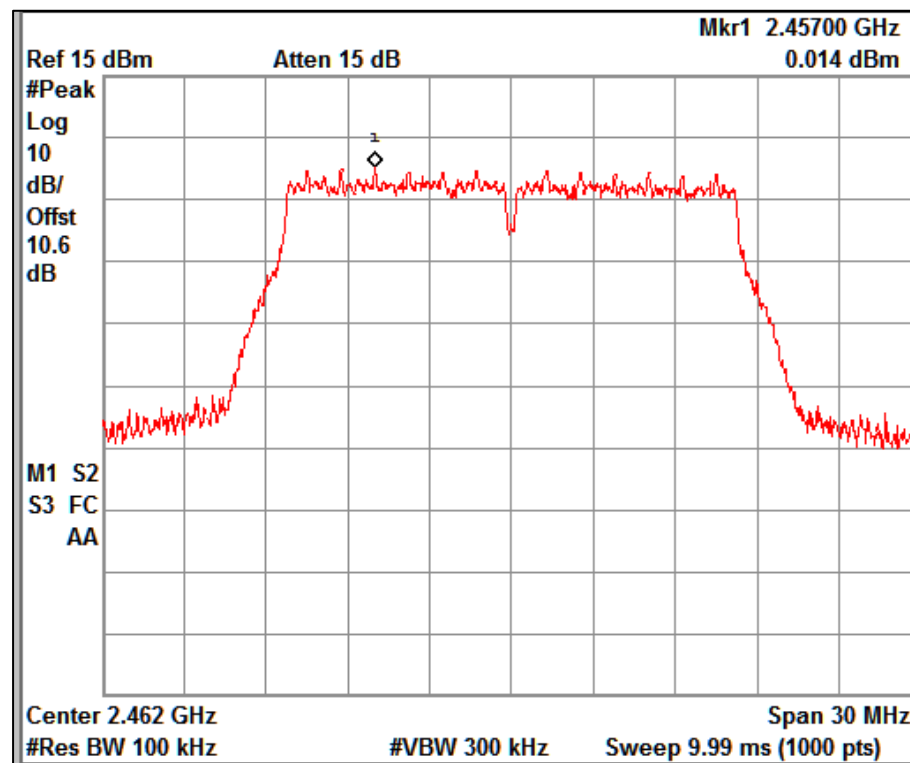
Page 75 of 126



Channel Frequency: 2412 MHz

Data rate: 24Mbps

Reference Plot



Channel Frequency: 2462 MHz

Data rate: 24Mbps

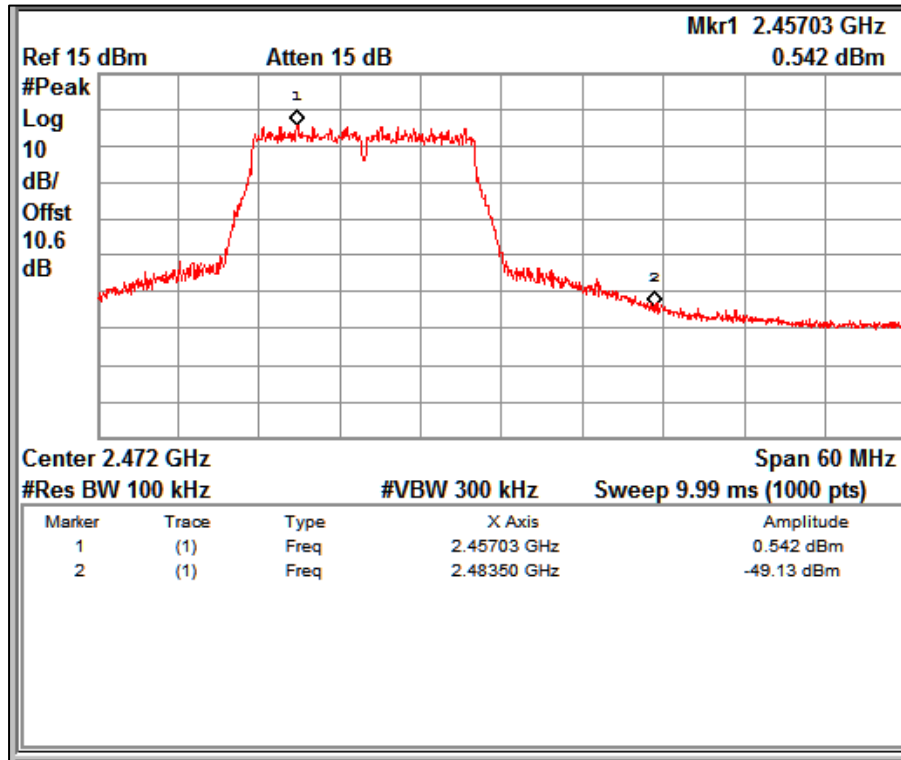
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

Seite 76 von 126

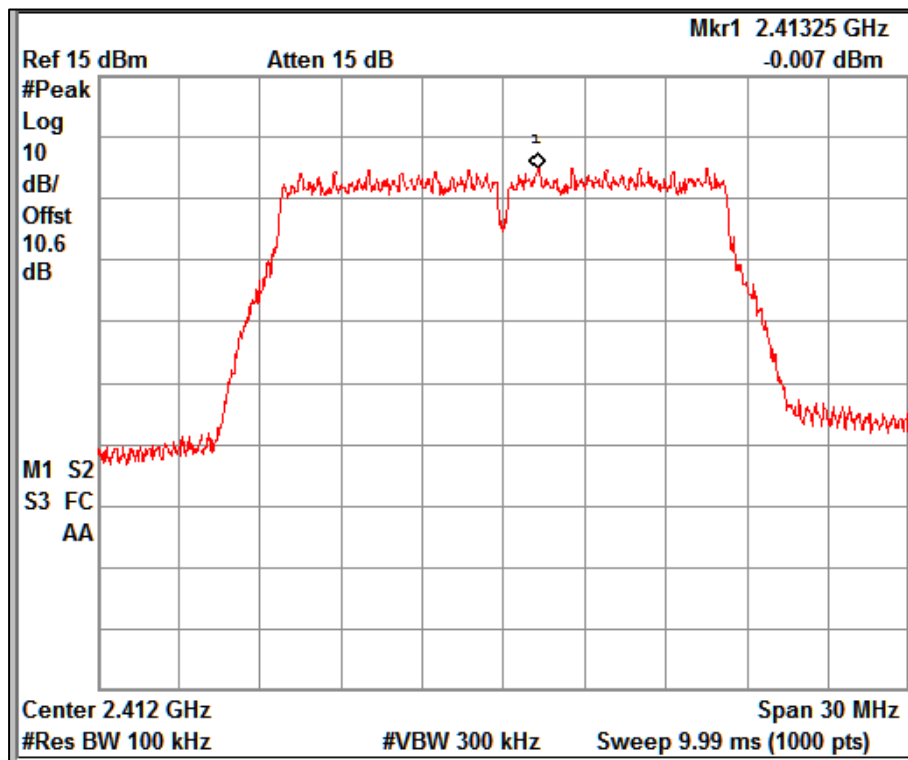
Page 76 of 126



Channel Frequency: 2462 MHz

Data rate: 24Mbps

Reference Plot



Channel Frequency: 2412 MHz

Data rate: 54Mbps

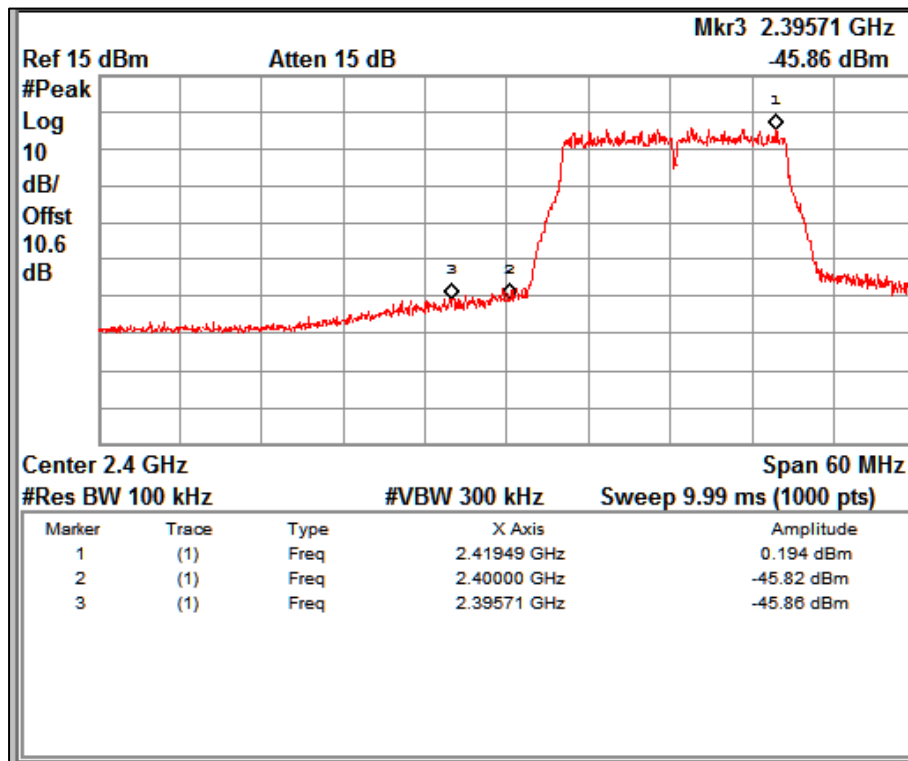
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

Seite 77 von 126

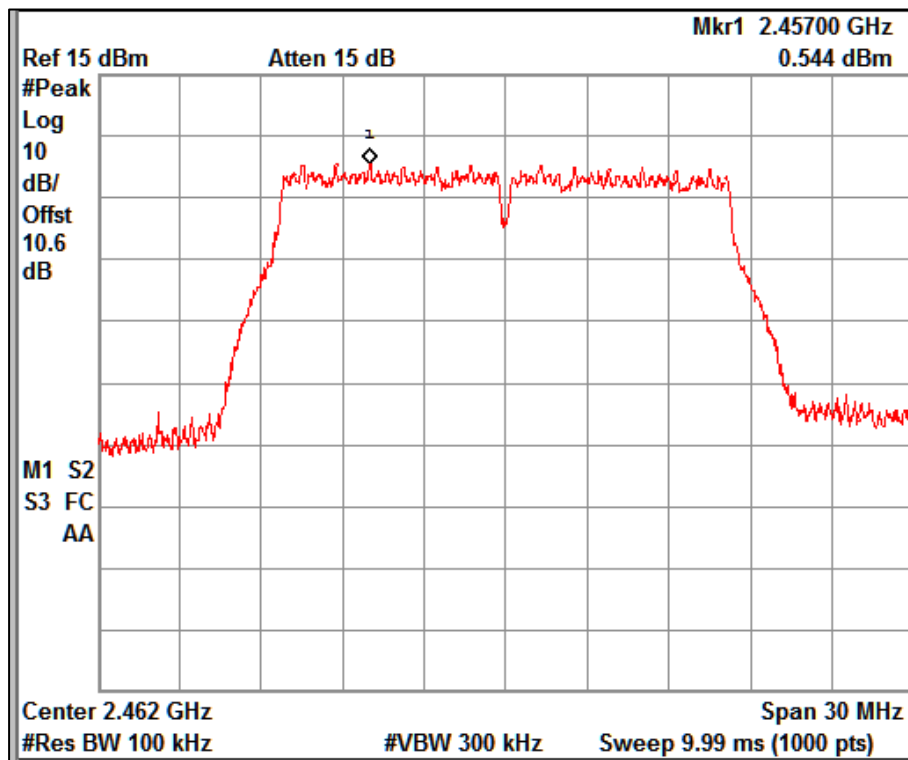
Page 77 of 126



Channel Frequency: 2412 MHz

Data rate: 54Mbps

Reference Plot



Channel Frequency: 2462 MHz

Data rate: 54Mbps

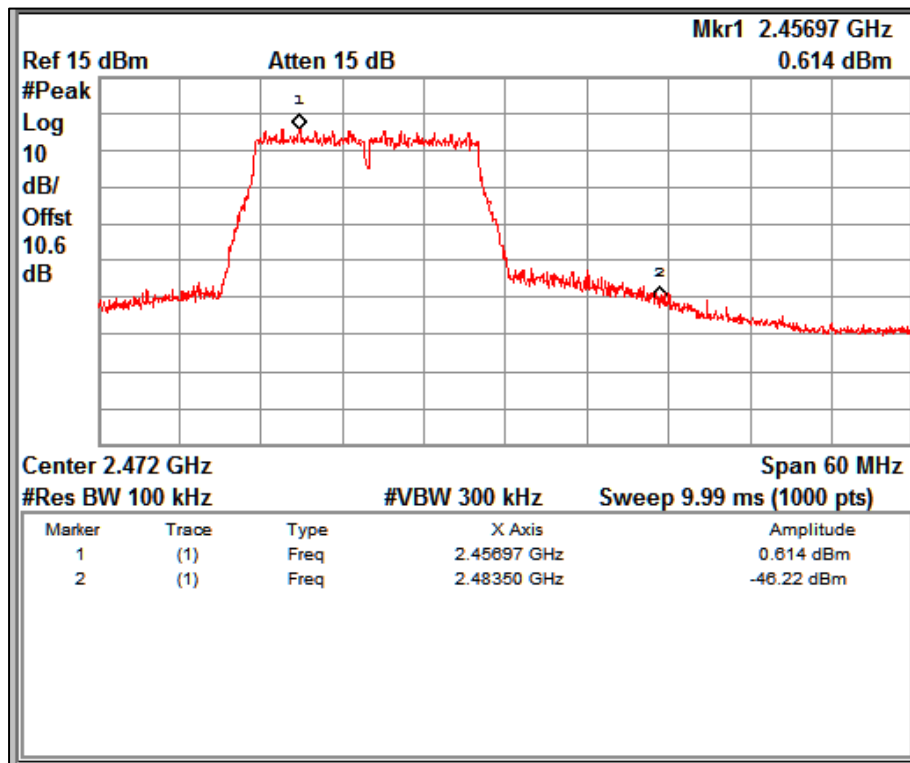
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

Seite 78 von 126

Page 78 of 126



Channel Frequency: 2462 MHz

Data rate: 54Mbps

Protocol: 802.11 n mode HT20

Data Rate (Mbps)	Channel Frequency (MHz)	Value of Band edge		Reference value B (dBm)	Band Edge Value A~B (dBm)	Limit (dBm)
		Frequency (MHz)	Value A (dBm)			
MCS0	2412	2400	-39.21	0.27	-39.48	-30
	2462	2483.5	-47.21	0.02	-47.23	-30
MCS4	2412	2400	-41.77	0.34	-42.11	-30
	2462	2483.5	-48.27	0.08	-48.35	-30
MCS7	2412	2400	-47.4	-0.52	-46.88	-30
	2462	2483.5	-45.54	-0.23	-45.31	-30

Prüfbericht - Nr.:

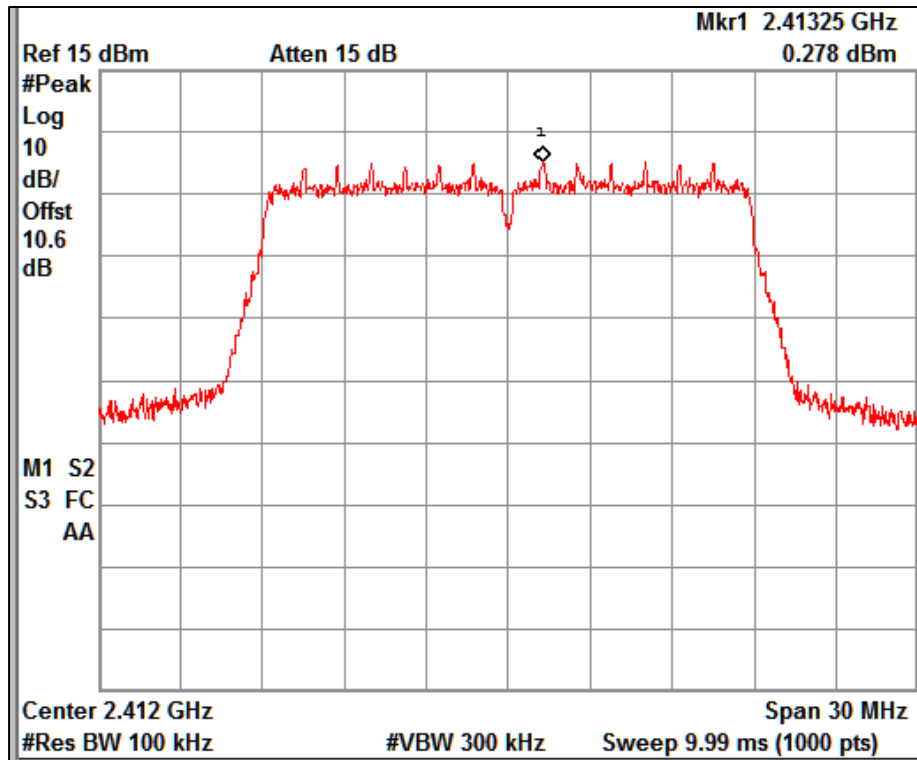
Test Report No.:

ULR-TC568819300000069F

Seite 79 von 126

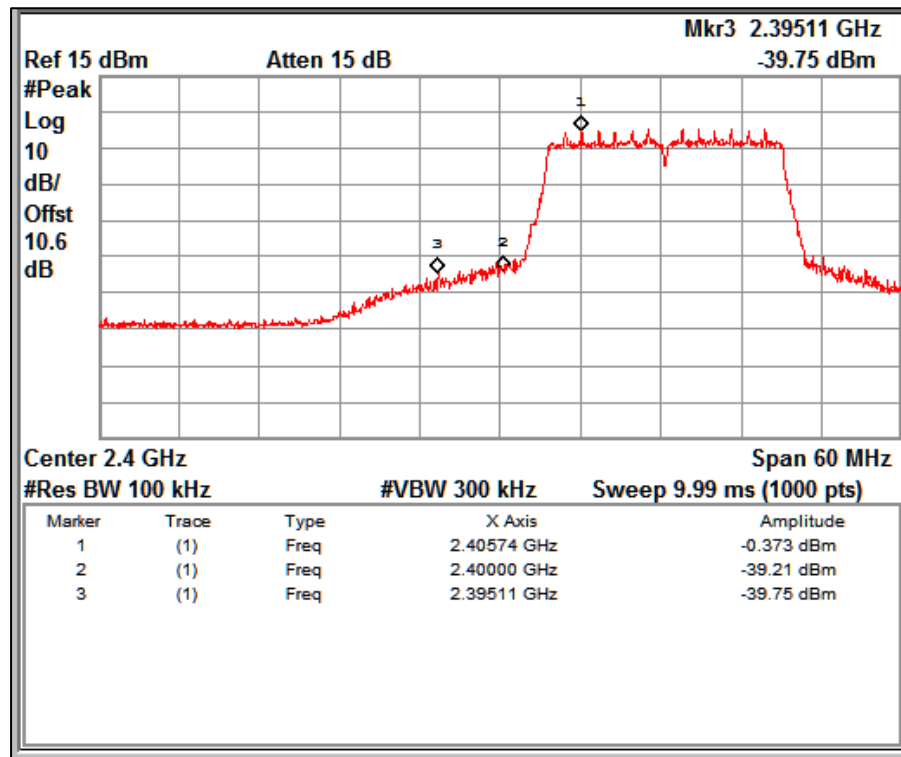
Page 79 of 126

Reference Plot



Channel Frequency: 2412 MHz

Data rate: MCS0



Channel Frequency: 2412 MHz

Data rate: MCS0

Prüfbericht - Nr.:

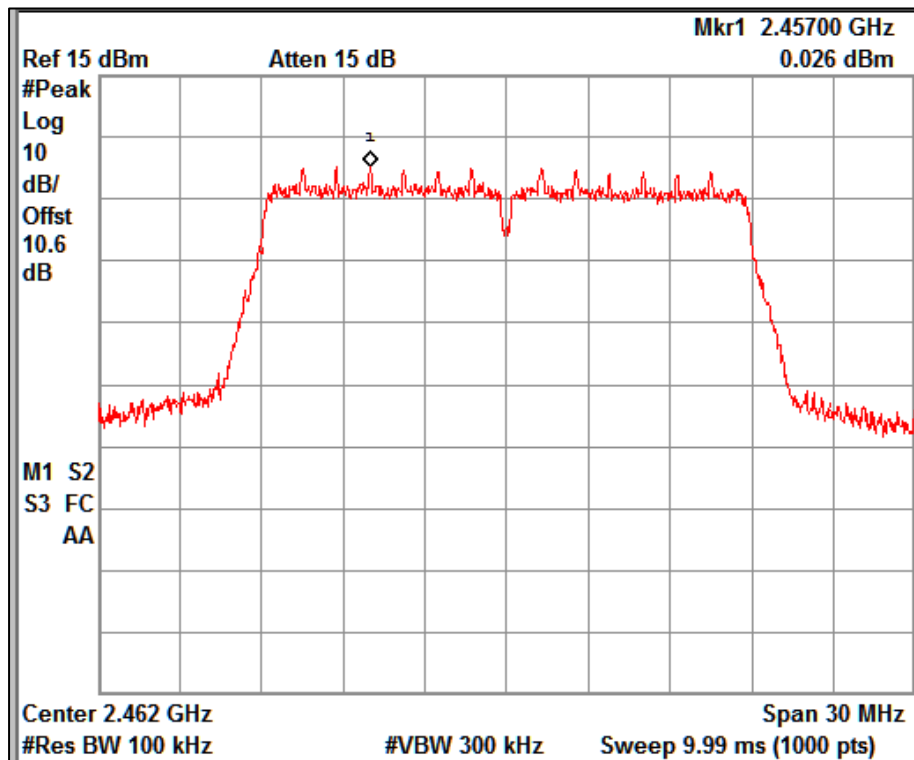
Test Report No.:

ULR-TC568819300000069F

Seite 80 von 126

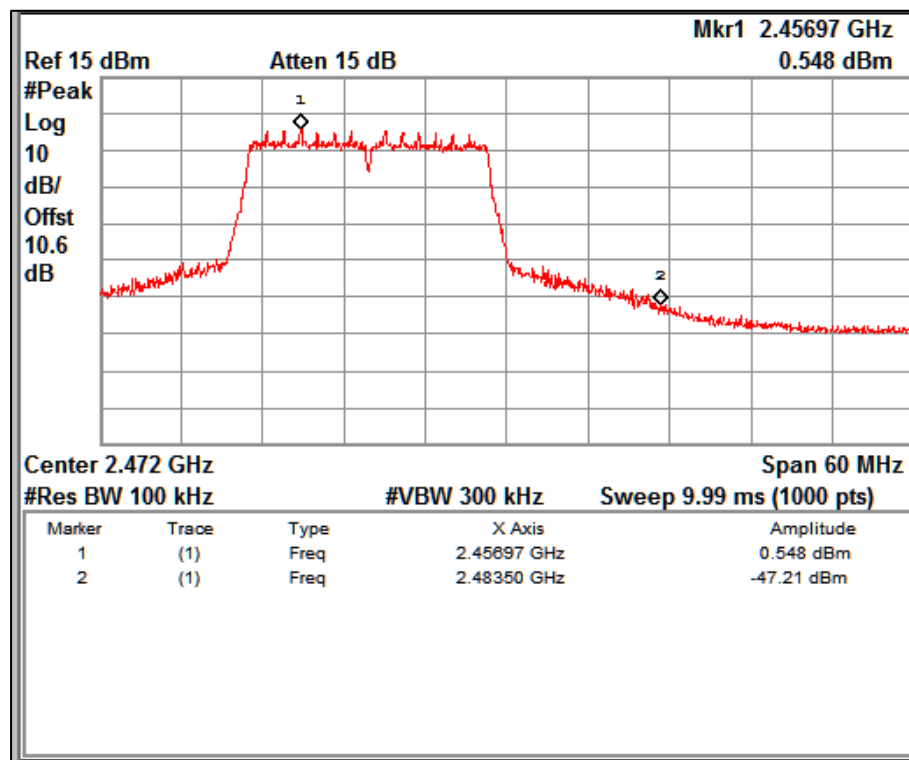
Page 80 of 126

Reference Plot



Channel Frequency: 2462 MHz

Data rate: MCS0



Channel Frequency: 2462 MHz

Data rate: MCS0

Prüfbericht - Nr.:

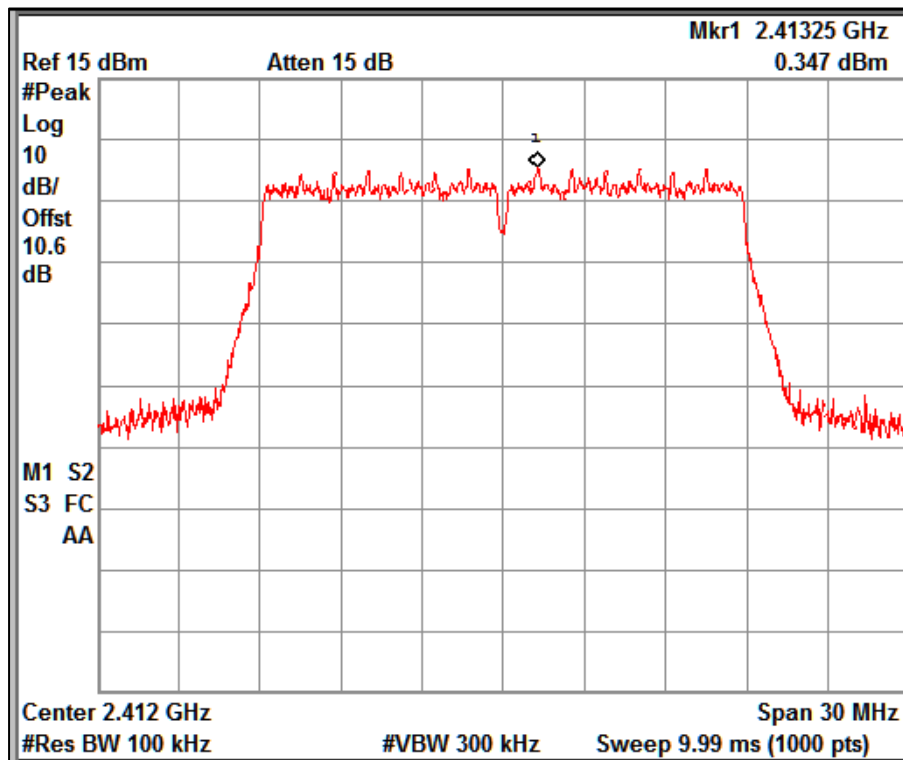
Test Report No.:

ULR-TC568819300000069F

Seite 81 von 126

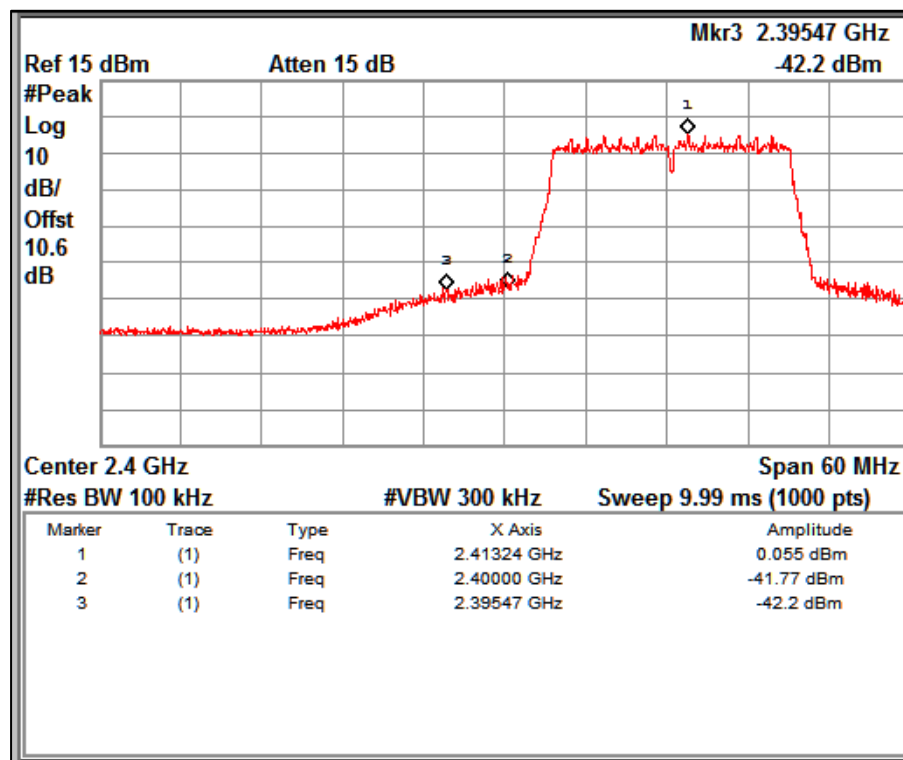
Page 81 of 126

Reference Plot



Channel Frequency: 2412 MHz

Data rate: MCS4



Channel Frequency: 2412 MHz

Data rate: MCS4

Prüfbericht - Nr.:

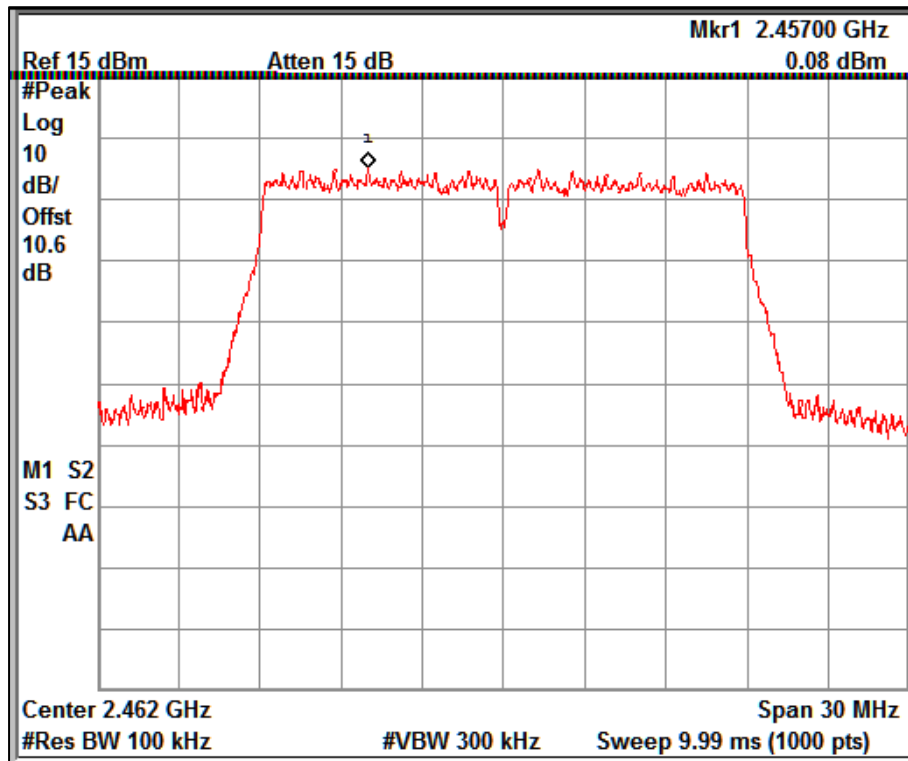
Test Report No.:

ULR-TC568819300000069F

Seite 82 von 126

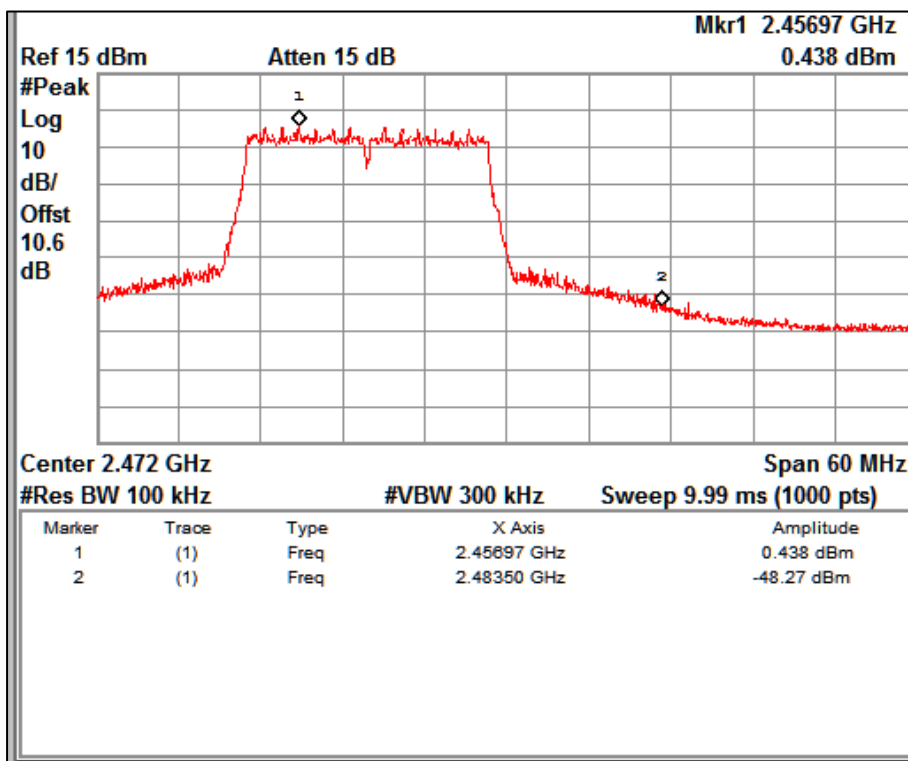
Page 82 of 126

Reference Plot



Channel Frequency: 2462 MHz

Data rate: MCS4



Channel Frequency: 2462 MHz

Data rate: MCS4

Prüfbericht - Nr.:

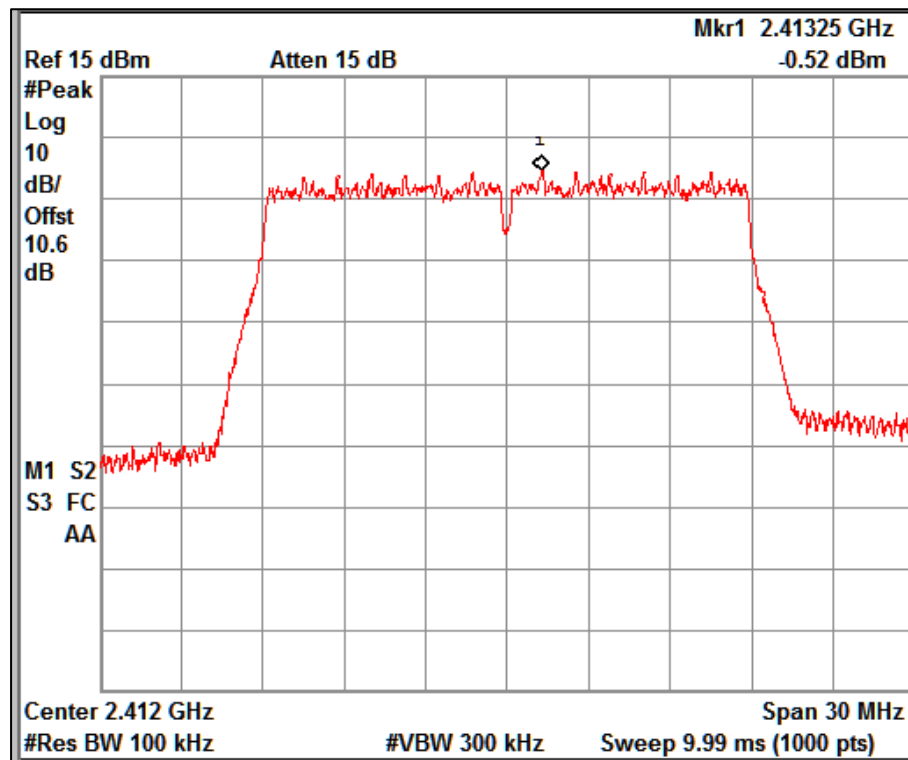
Test Report No.:

ULR-TC568819300000069F

Seite 83 von 126

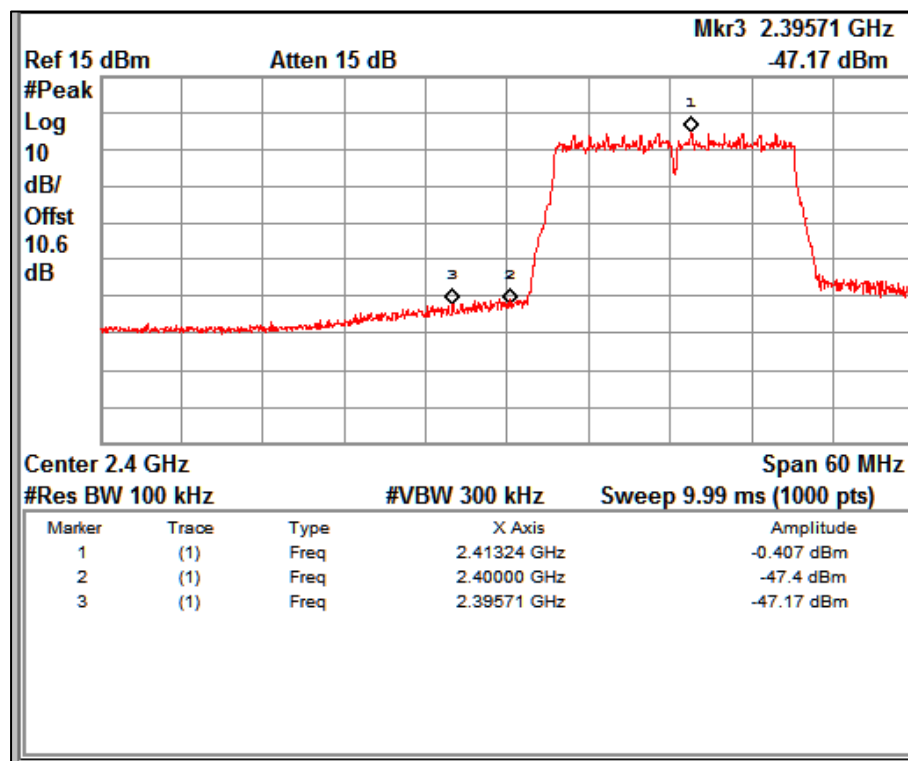
Page 83 of 126

Reference Plot



Channel Frequency: 2412 MHz

Data rate: MCS7



Channel Frequency: 2412 MHz

Data rate: MCS7

Prüfbericht - Nr.:

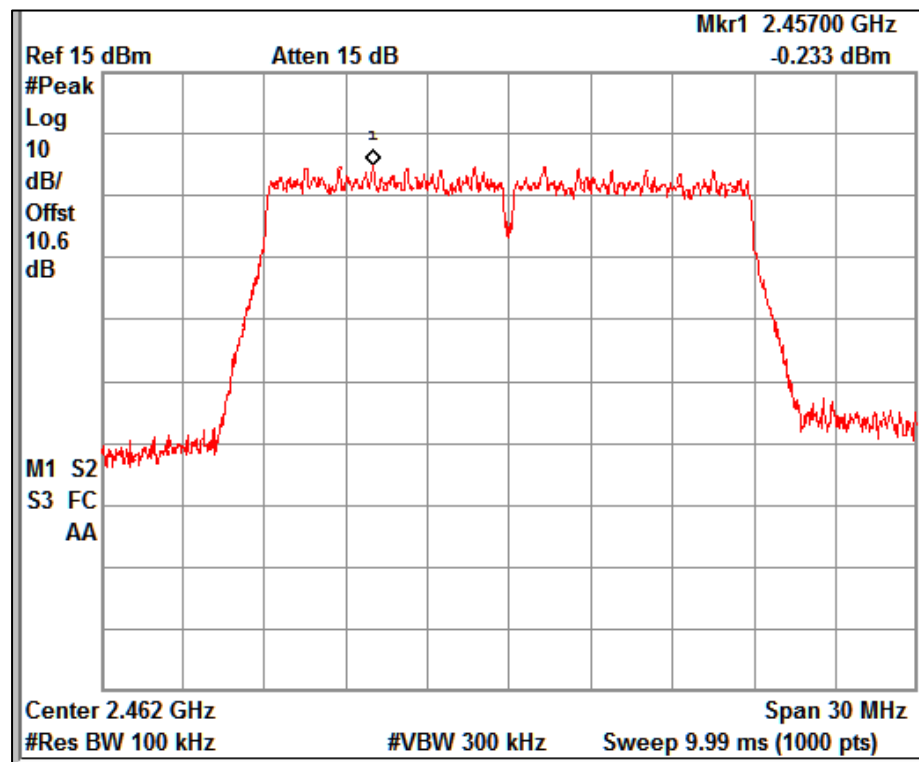
Test Report No.:

ULR-TC568819300000069F

Seite 84 von 126

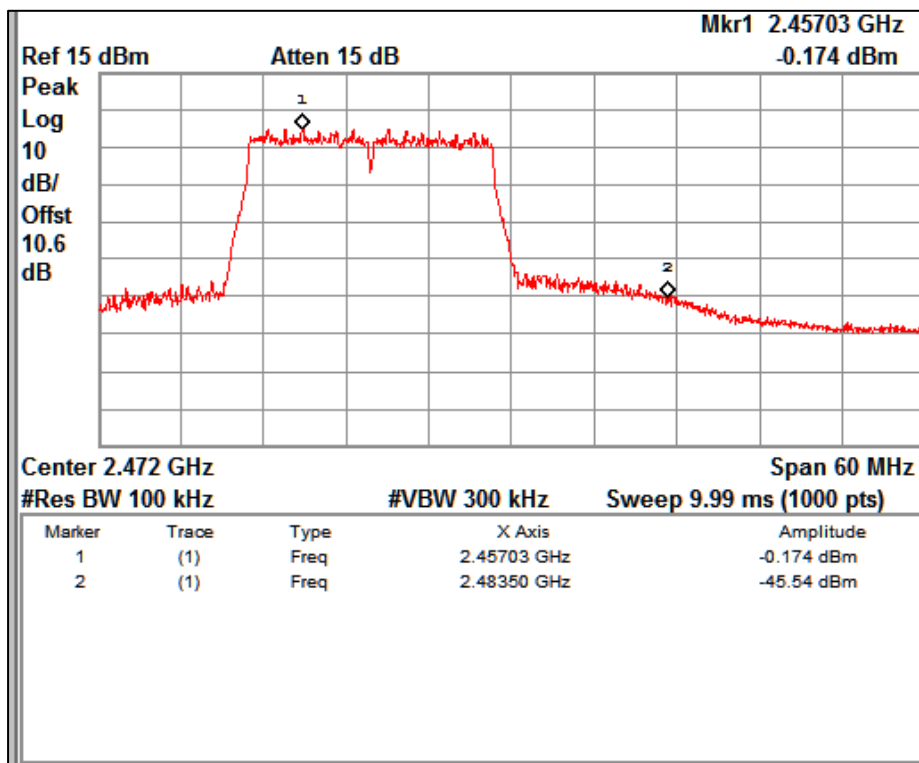
Page 84 of 126

Reference Plot



Channel Frequency: 2462 MHz

Data rate: MCS7



Channel Frequency: 2462 MHz

Data rate: MCS7

Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

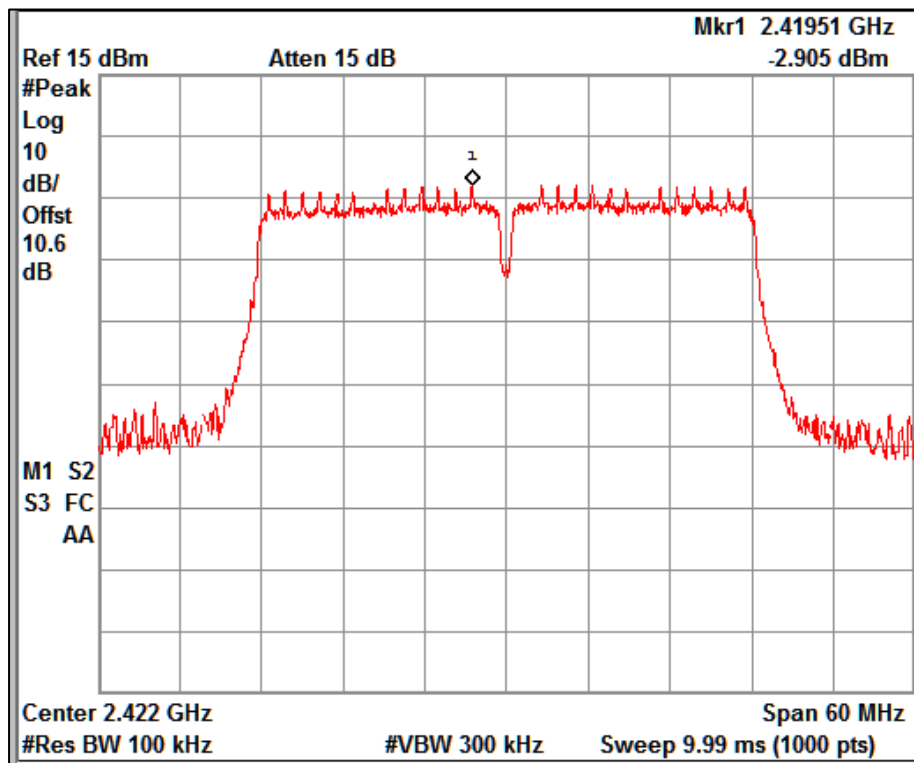
Seite 85 von 126

Page 85 of 126

Protocol: 802.11 n mode HT40

Data Rate (Mbps)	Channel Frequency (MHz)	Value of Band edge		Reference value B (dBm)	Band Edge Value A~B (dBm)	Limit (dBm)
		Frequency (MHz)	Value A (dBm)			
MCS0	2422	2400	-41.66	-2.90	-38.76	-30
	2452	2483.5	-47.34	-2.81	-44.53	-30
MCS4	2422	2400	-46.01	-3.29	-42.72	-30
	2452	2483.5	-49.25	-2.60	-46.65	-30
MCS7	2422	2400	-46.55	-3.24	-43.31	-30
	2452	2483.5	-42.58	-2.97	-39.61	-30

Reference Plot



Channel Frequency: 2422 MHz

Data rate: MCS0

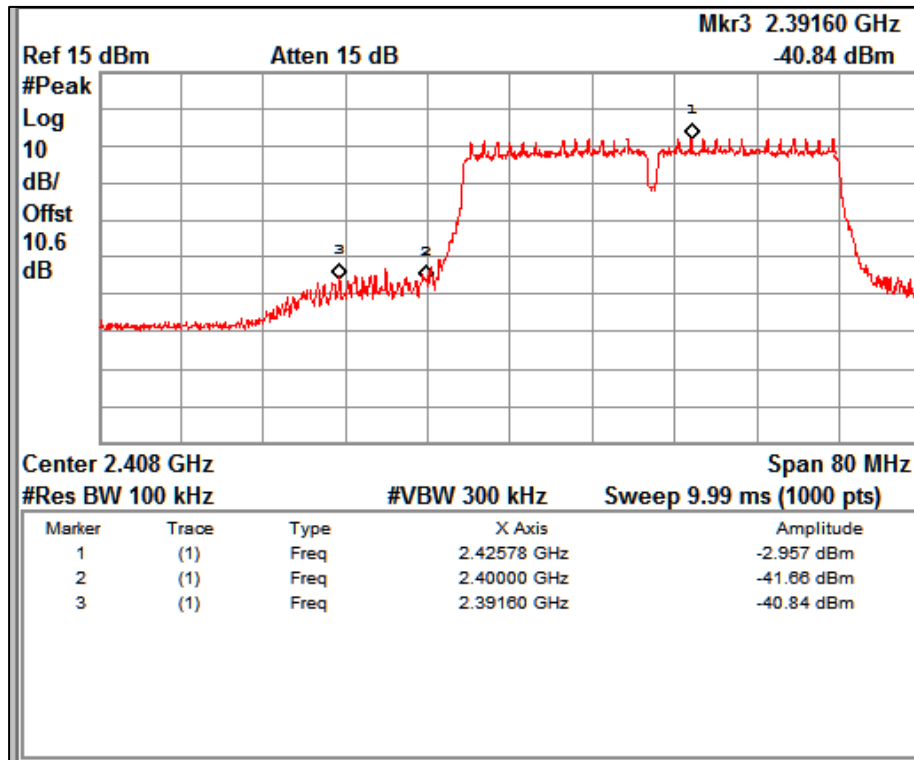
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

Seite 86 von 126

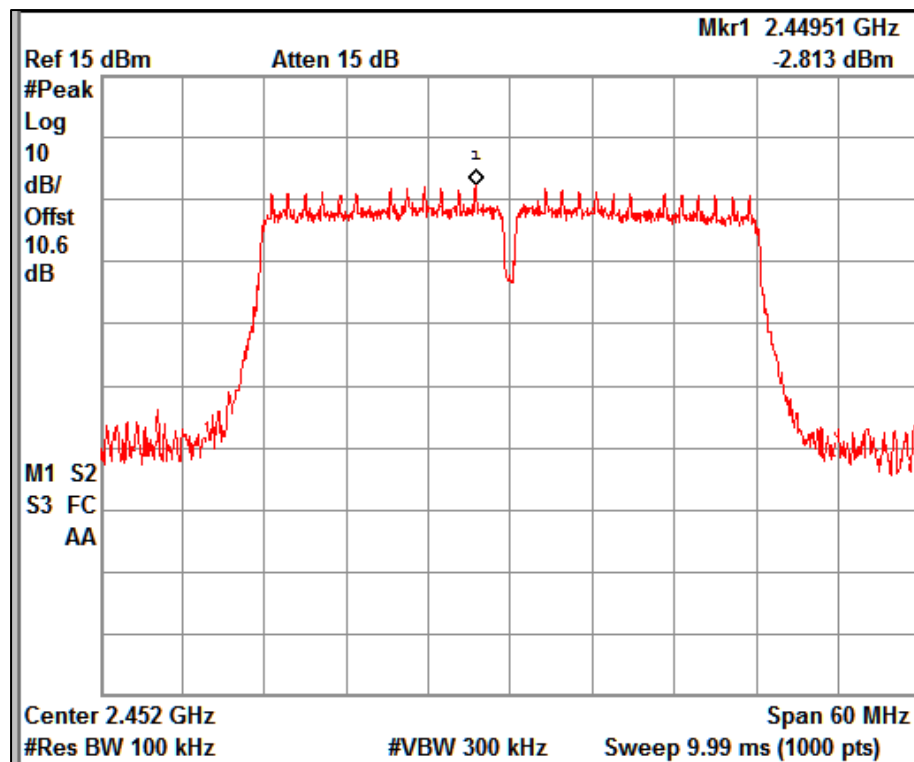
Page 86 of 126



Channel Frequency: 2422 MHz

Data rate: MCS0

Reference Plot



Channel Frequency: 2452 MHz

Data rate: MCS0

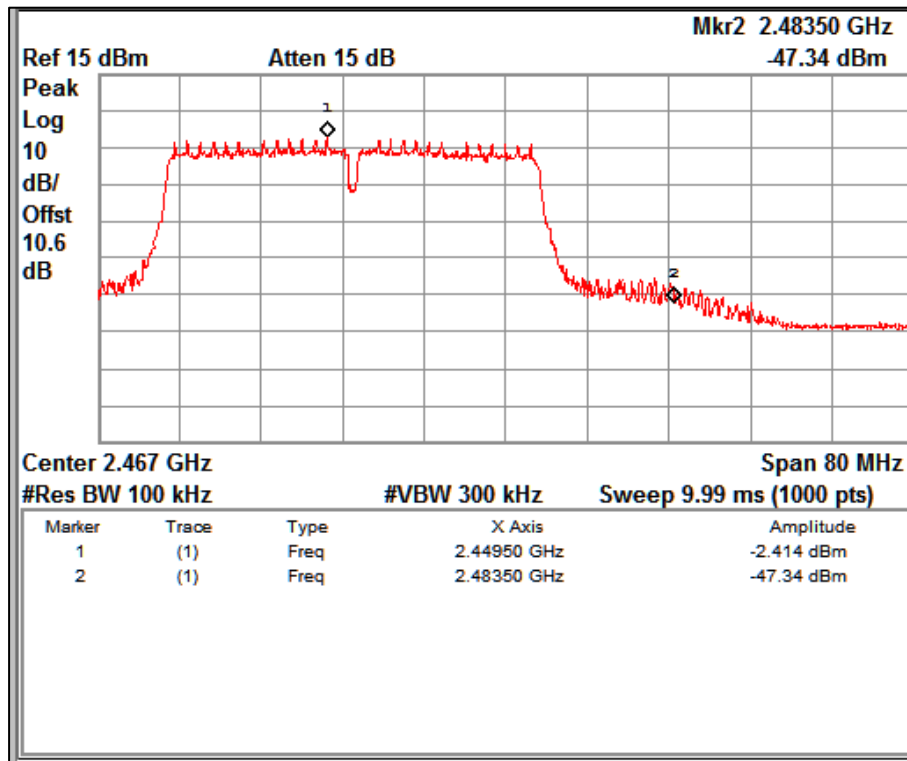
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

Seite 87 von 126

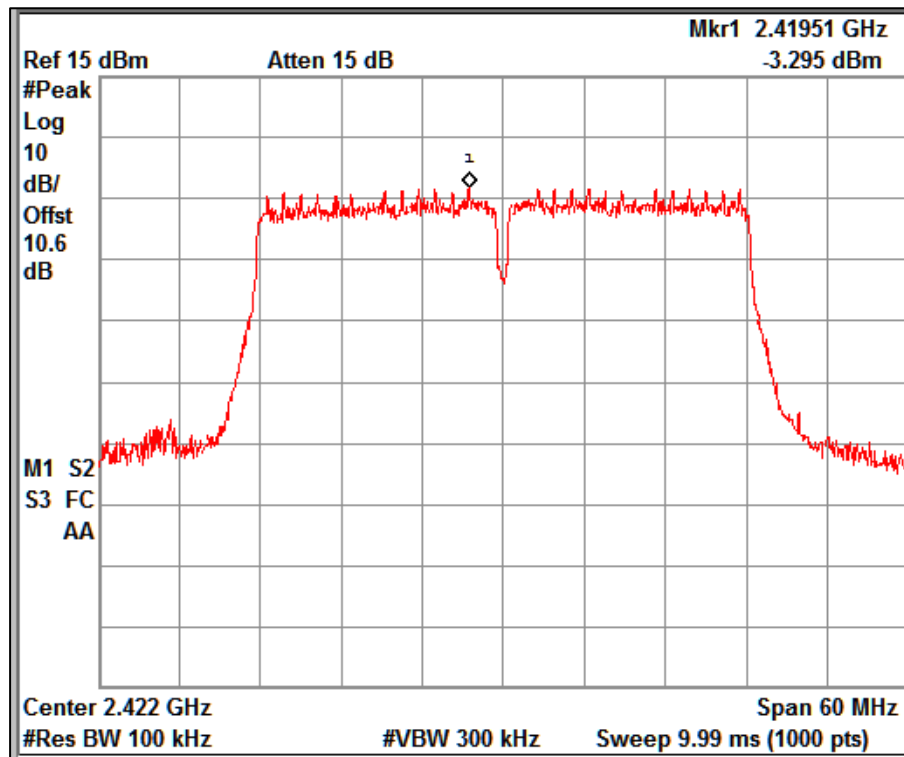
Page 87 of 126



Channel Frequency: 2452 MHz

Data rate: MCS0

Reference Plot



Channel Frequency: 2422 MHz

Data rate: MCS4

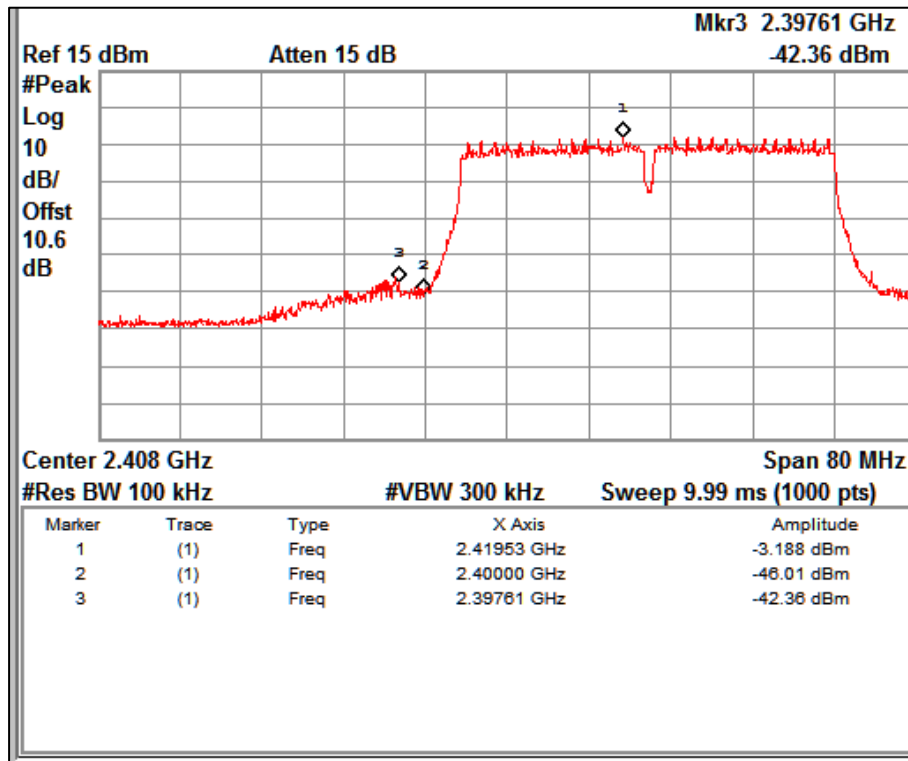
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

Seite 88 von 126

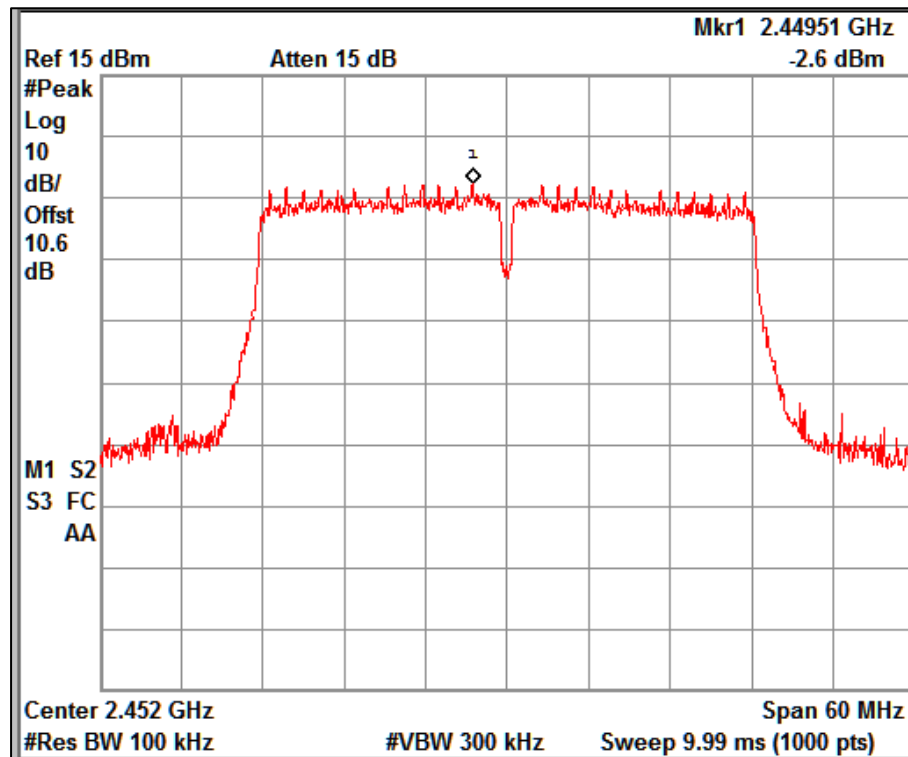
Page 88 of 126



Channel Frequency: 2422 MHz

Data rate: MCS4

Reference Plot



Channel Frequency: 2452 MHz

Data rate: MCS4

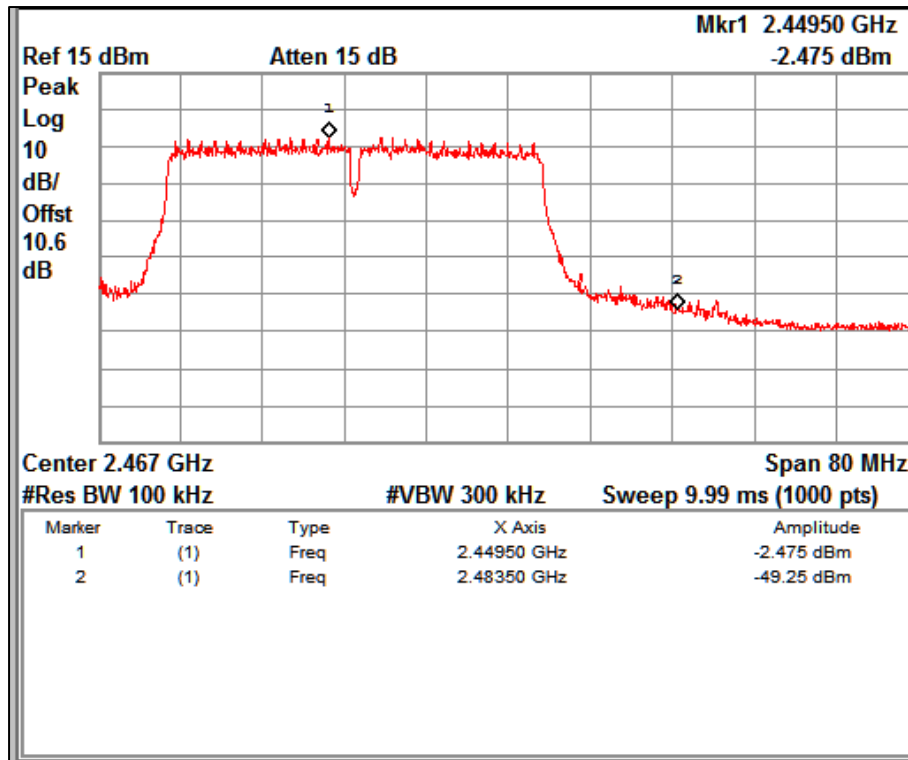
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

Seite 89 von 126

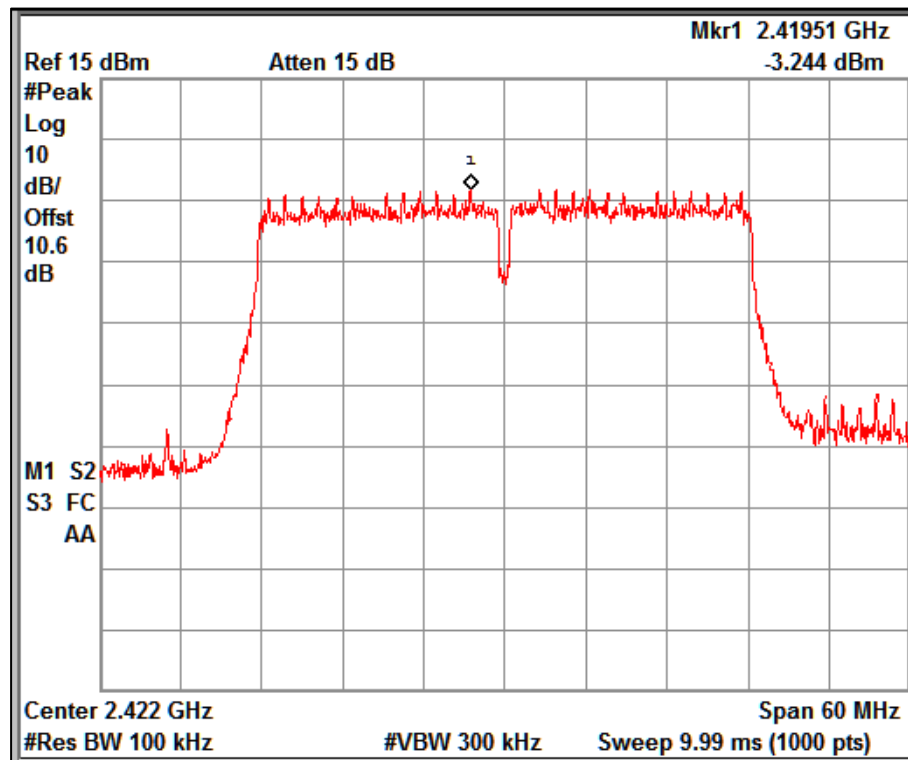
Page 89 of 126



Channel Frequency: 2452 MHz

Data rate: MCS4

Reference Plot



Channel Frequency: 2422 MHz

Data rate: MCS7

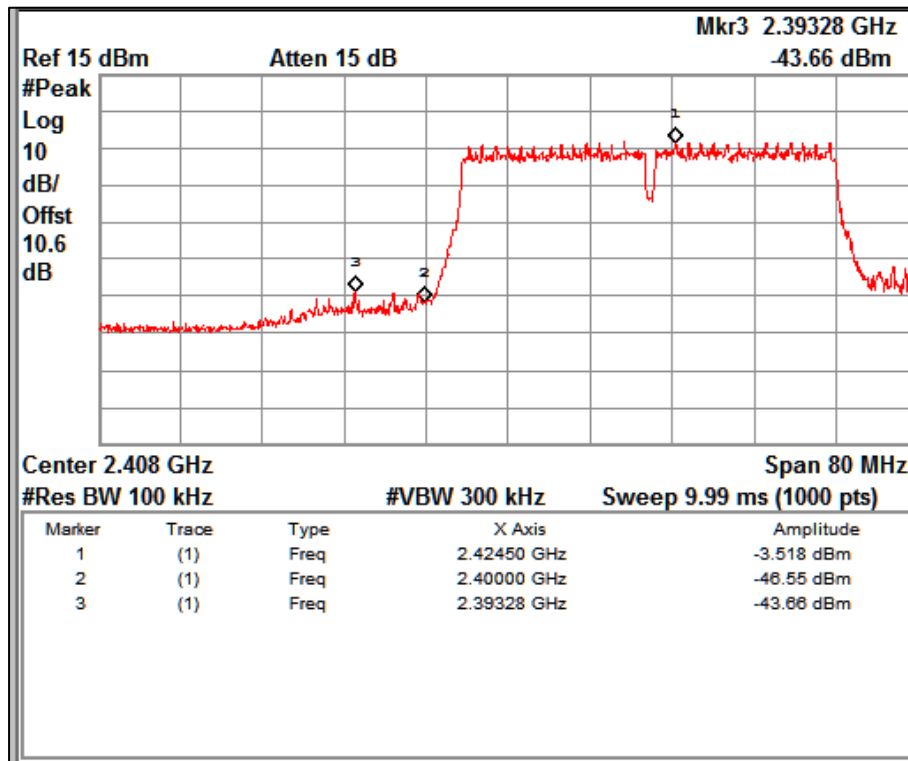
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

Seite 90 von 126

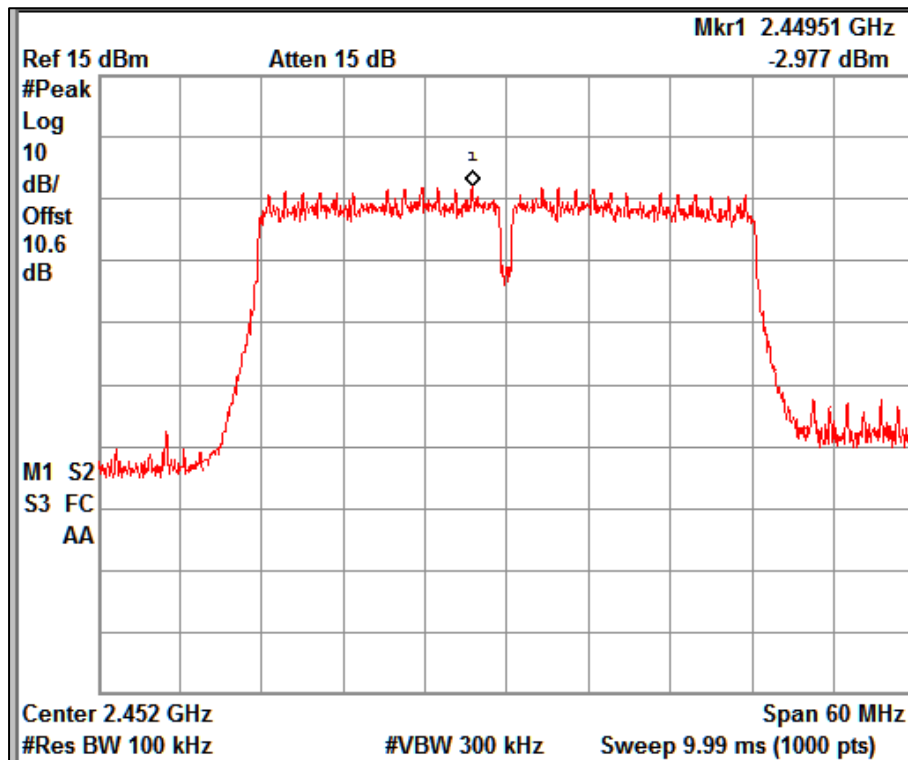
Page 90 of 126



Channel Frequency: 2422 MHz

Data rate: MCS7

Reference Plot



Channel Frequency: 2452 MHz

Data rate: MCS7

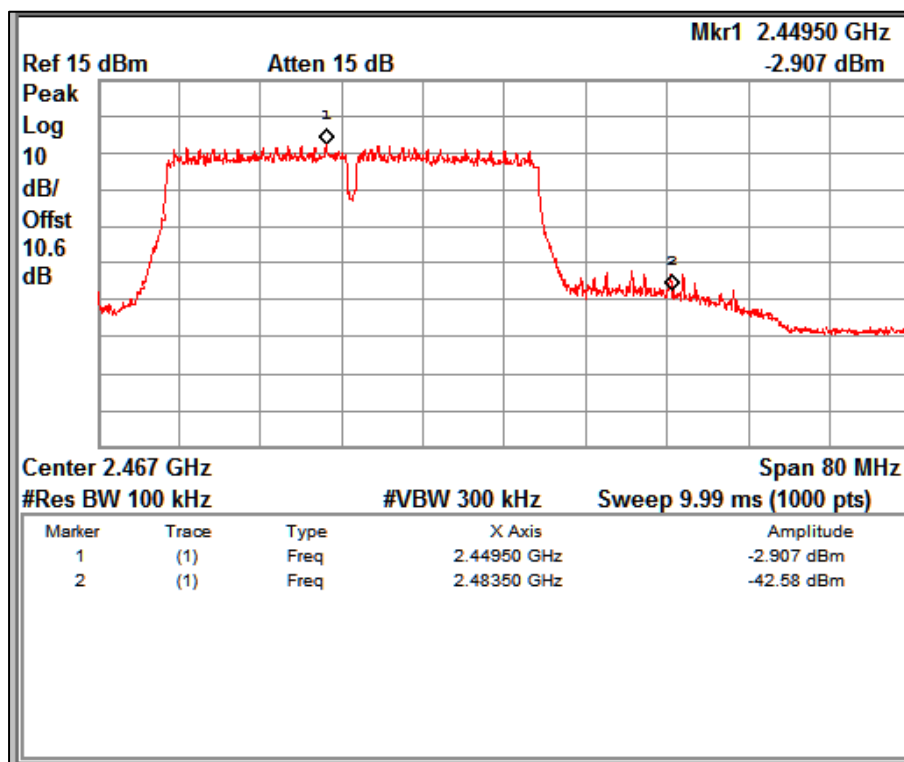
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

Seite 91 von 126

Page 91 of 126



Channel Frequency: 2452 MHz

Data rate: MCS7

Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

Seite 92 von 126

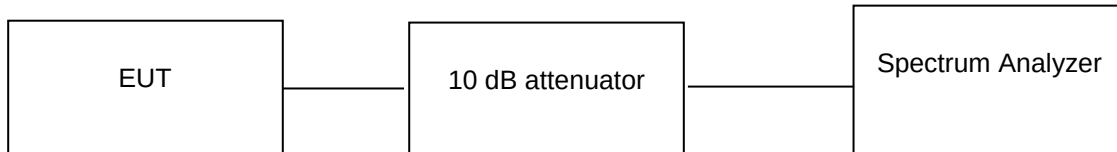
Page 92 of 126

6.4.2 Conducted Spurious Emission

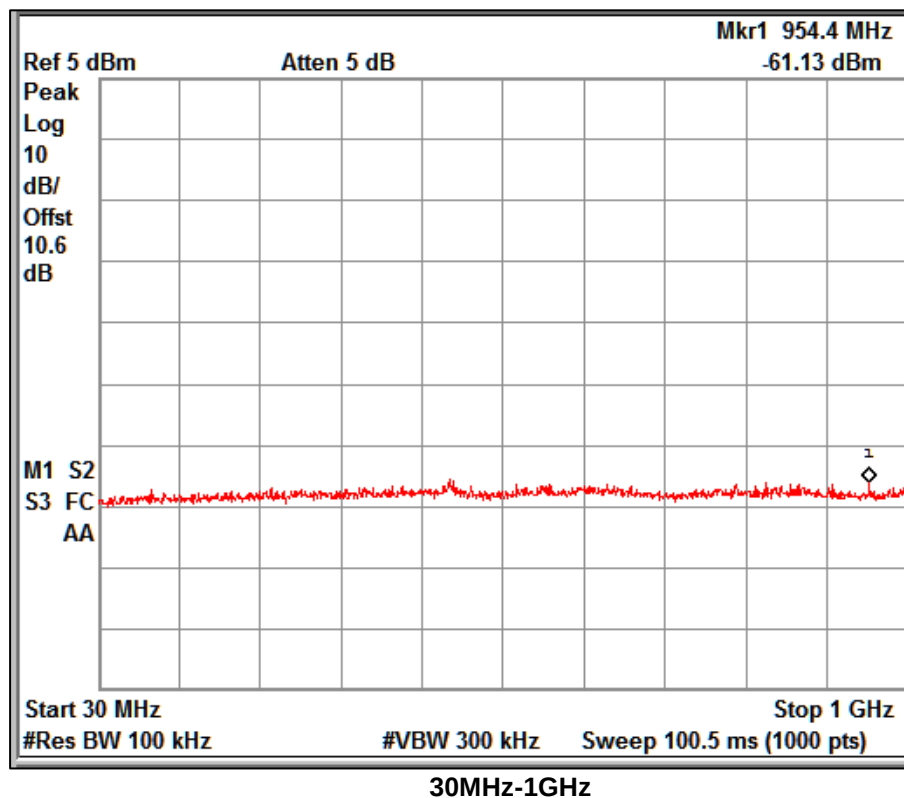
Result

Pass

Test Method:



Test results:



Prüfbericht - Nr.:

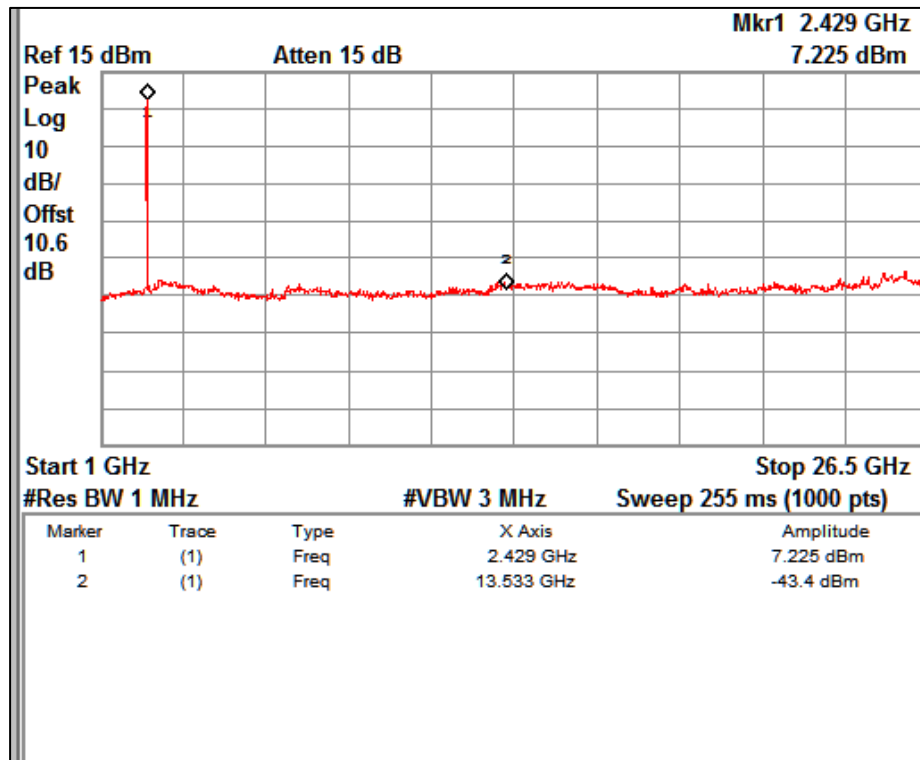
Test Report No.:

ULR-TC568819300000069F

Seite 93 von 126

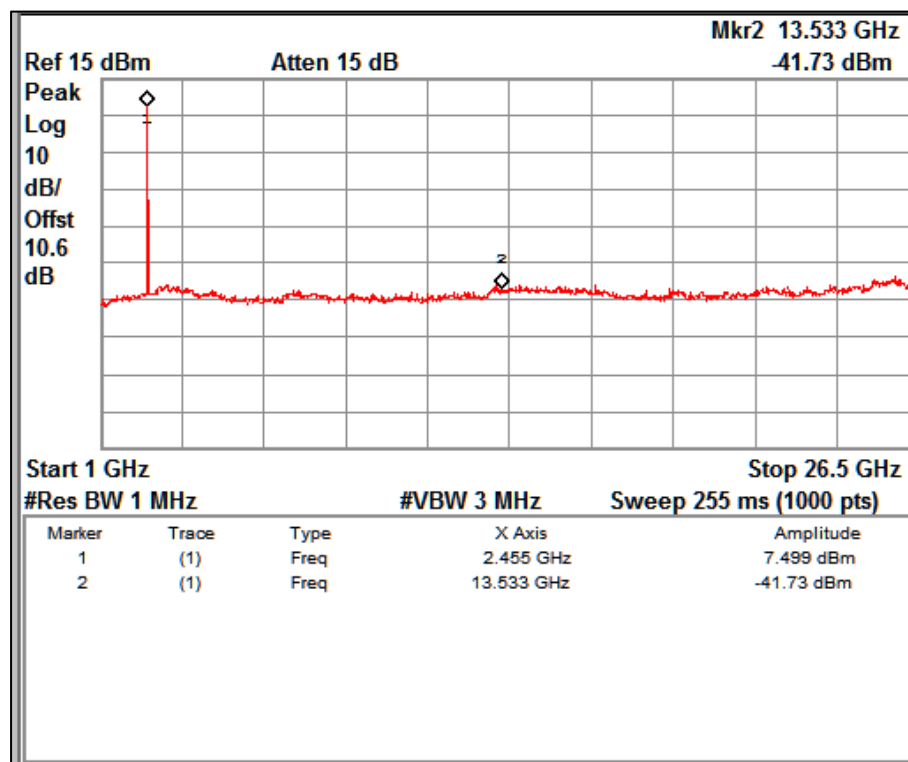
Page 93 of 126

Protocol: 802.11b
1GHz-26.5GHz



Channel Frequency: 2412 MHz

Data rate: 1Mbps



Channel Frequency: 2442 MHz

Data rate: 1Mbps

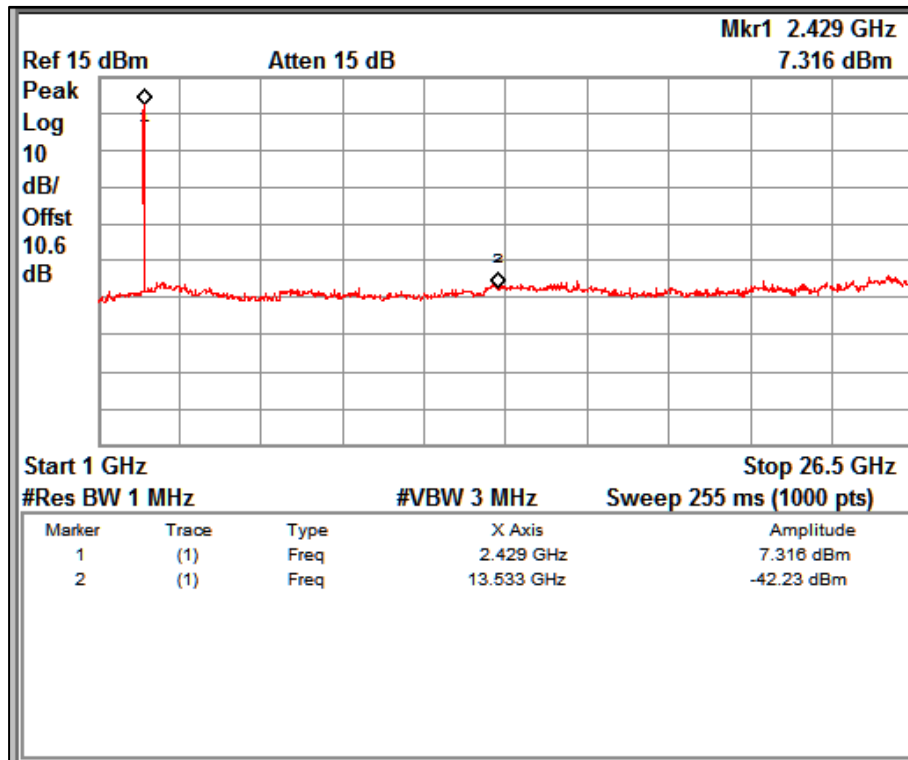
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

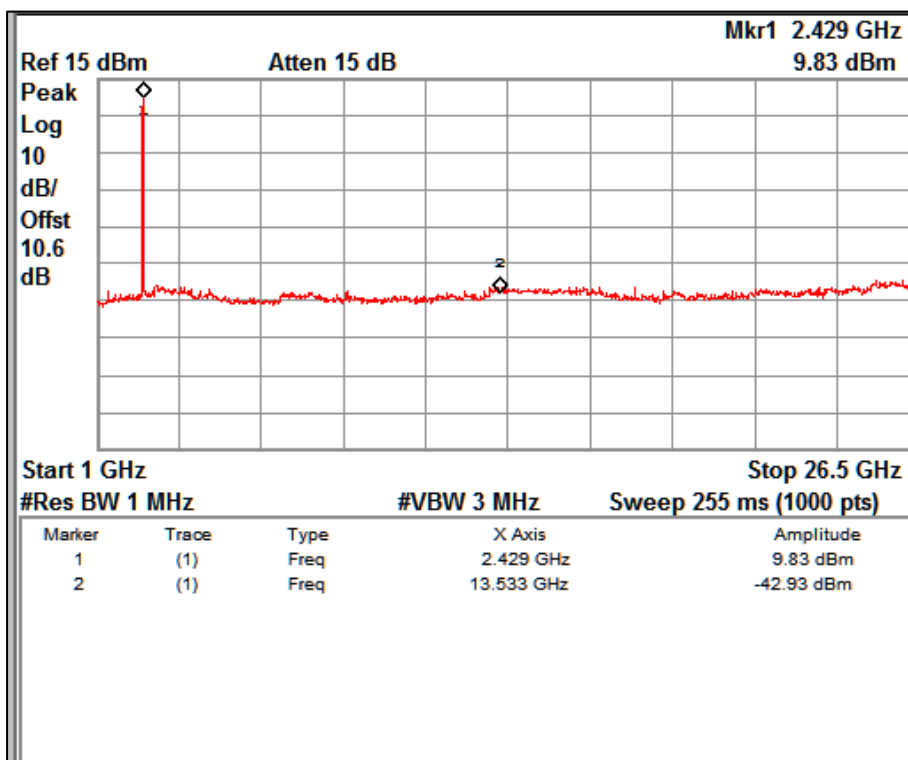
Seite 94 von 126

Page 94 of 126



Channel Frequency: 2462 MHz

Data rate: 1Mbps



Channel Frequency: 2412 MHz

Data rate: 11Mbps

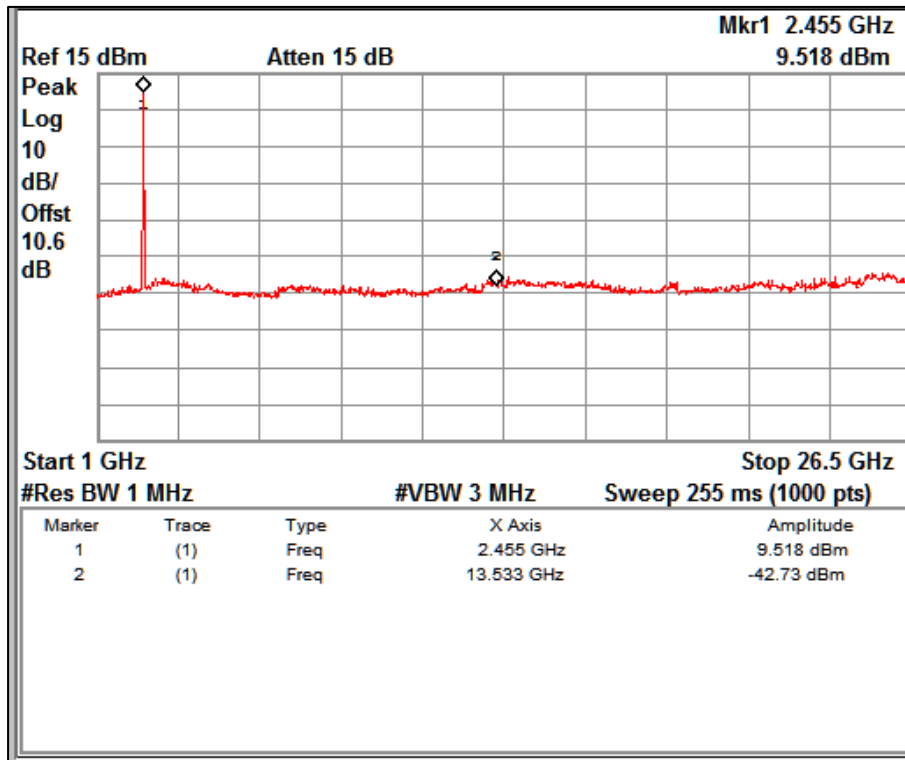
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

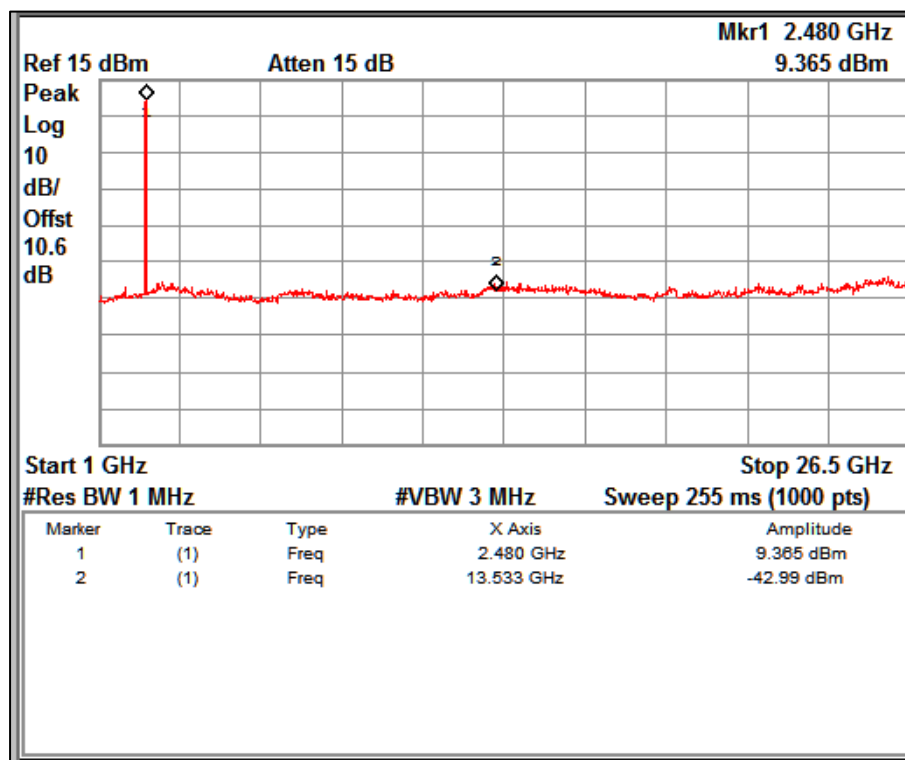
Seite 95 von 126

Page 95 of 126



Channel Frequency: 2442 MHz

Data rate: 11Mbps



Channel Frequency: 2462 MHz

Data rate: 11Mbps

Prüfbericht - Nr.:

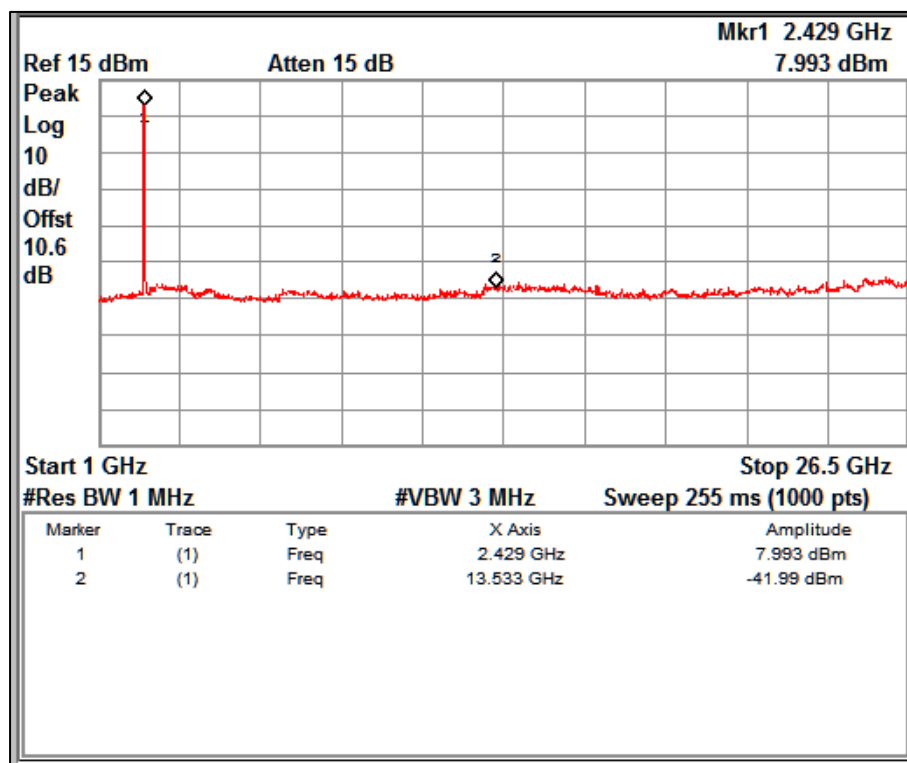
Test Report No.:

ULR-TC568819300000069F

Seite 96 von 126

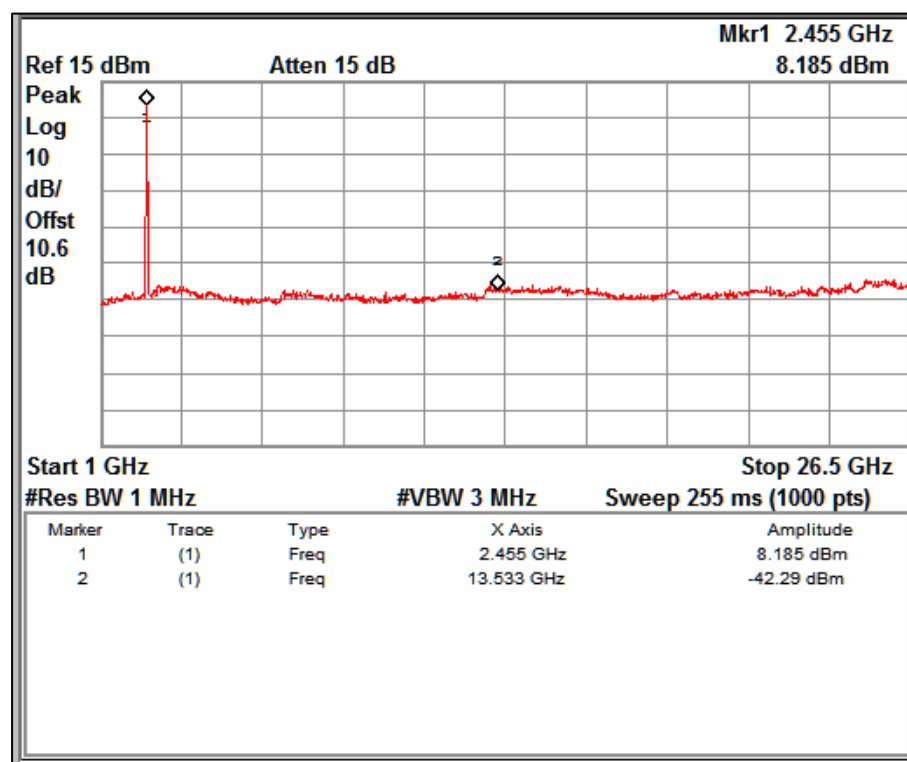
Page 96 of 126

Protocol: 802.11b



Channel Frequency: 2412 MHz

Data rate: 6Mbps



Channel Frequency: 2442 MHz

Data rate: 6Mbps

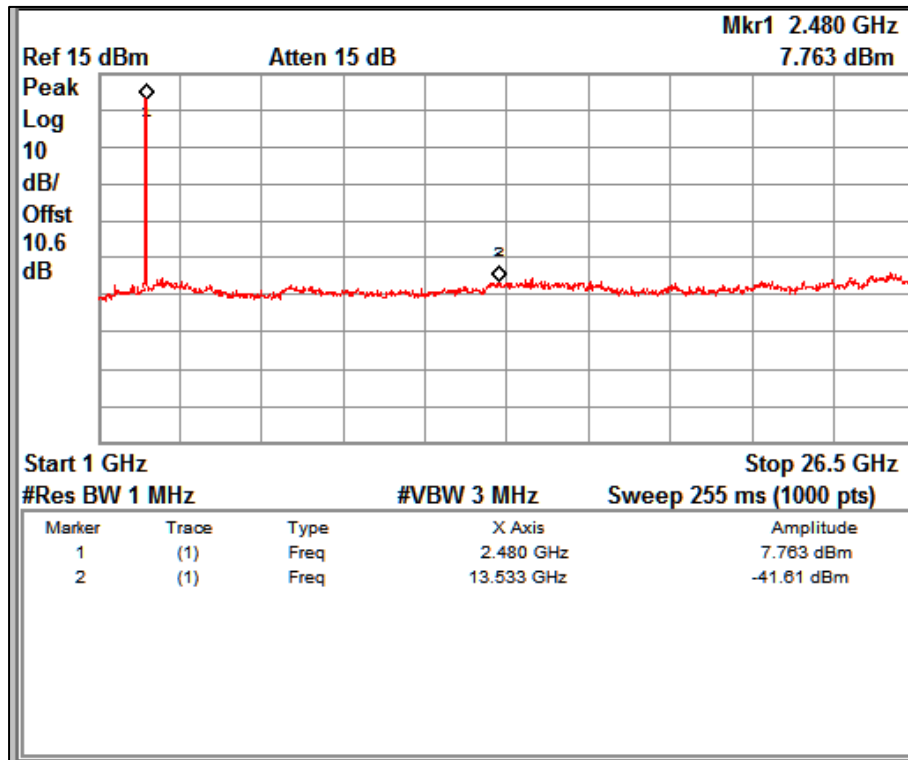
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

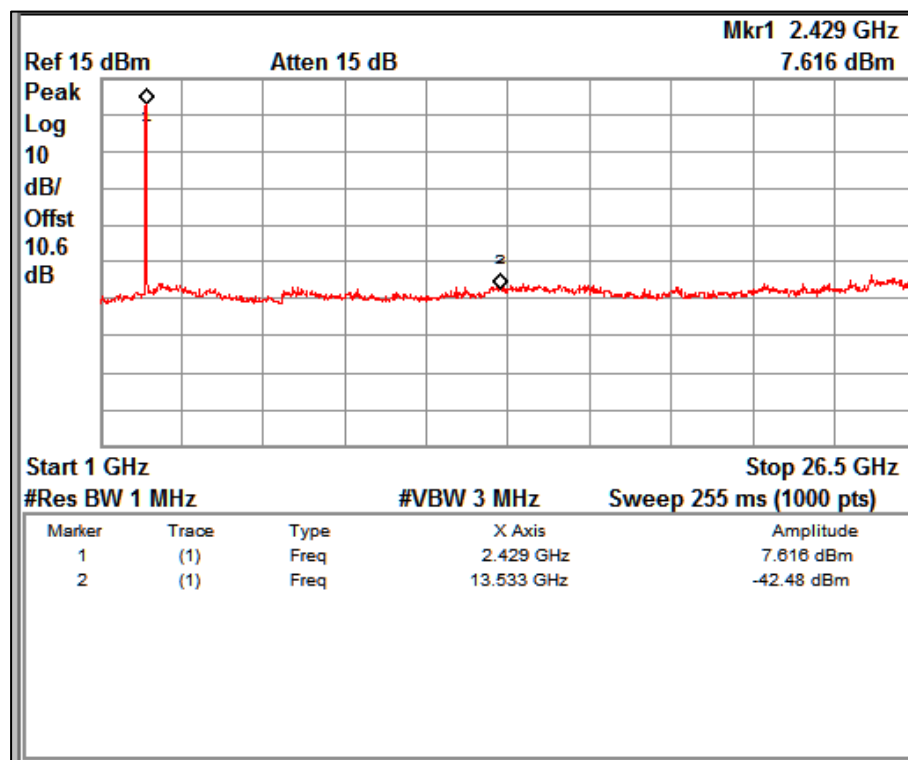
Seite 97 von 126

Page 97 of 126



Channel Frequency: 2462 MHz

Data rate: 6Mbps



Channel Frequency: 2412 MHz

Data rate: 24Mbps

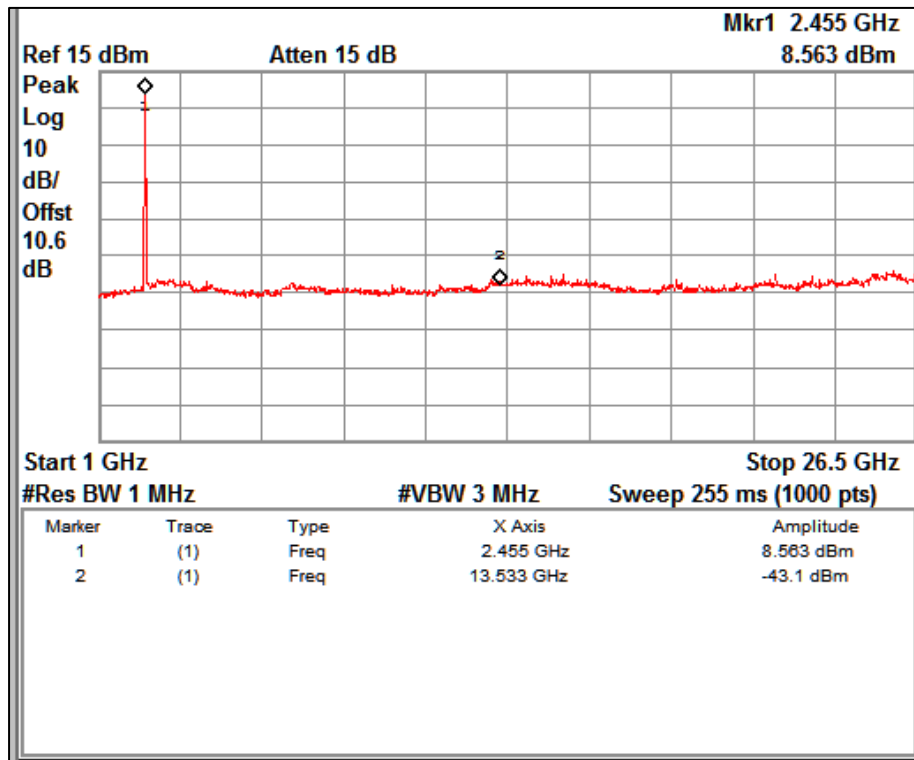
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

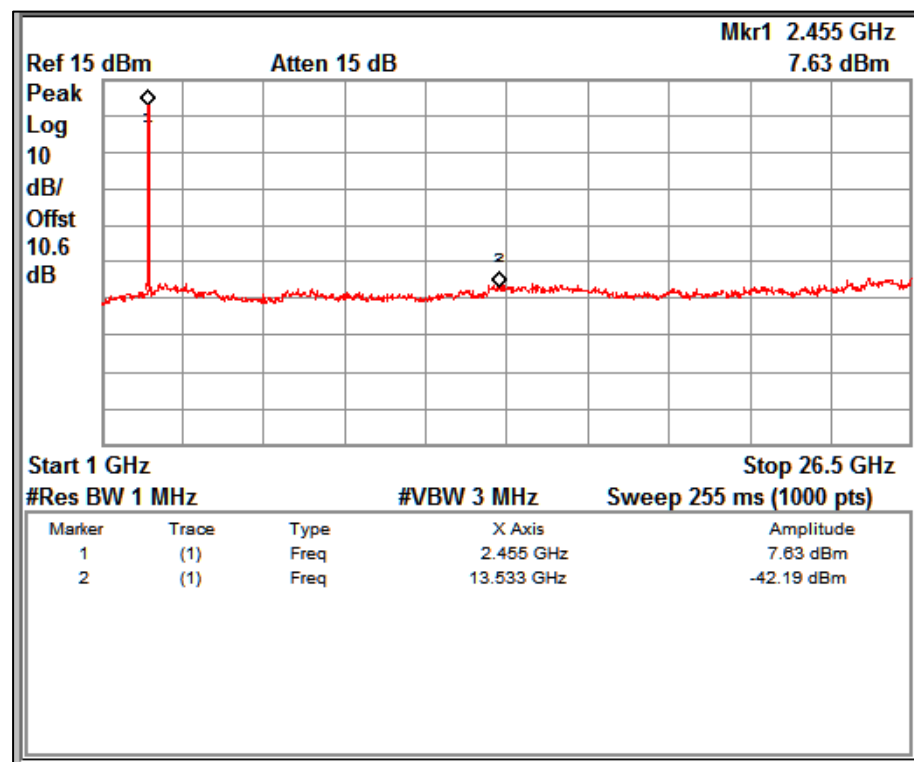
Seite 98 von 126

Page 98 of 126



Channel Frequency: 2442 MHz

Data rate: 24Mbps



Channel Frequency: 2462 MHz

Data rate: 24Mbps

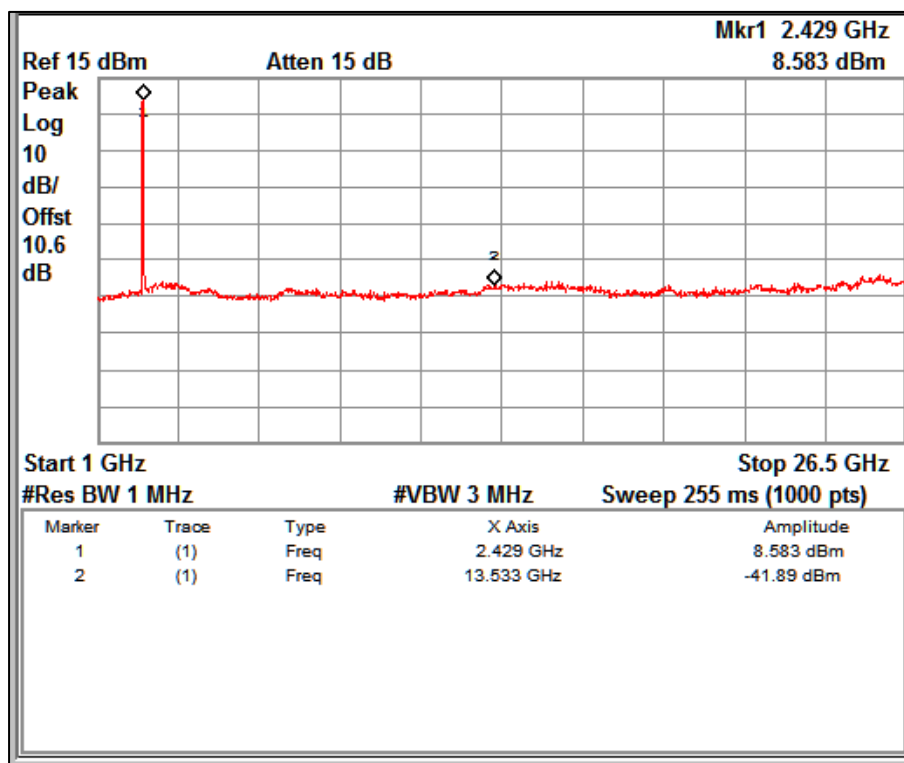
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

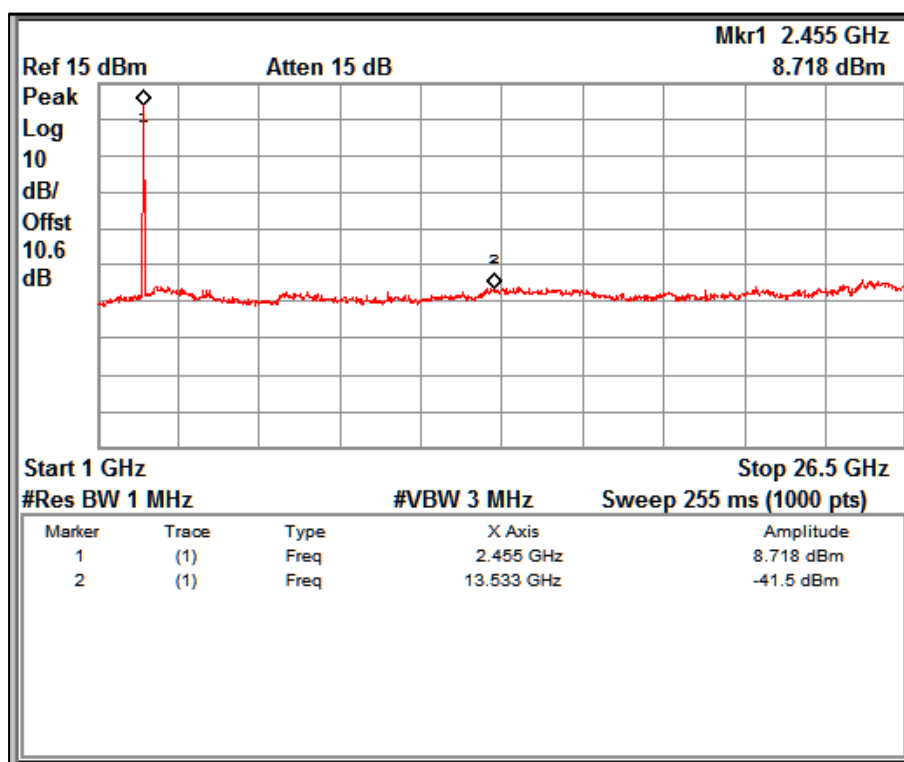
Seite 99 von 126

Page 99 of 126



Channel Frequency: 2412 MHz

Data rate: 54Mbps



Channel Frequency: 2442 MHz

Data rate: 54Mbps

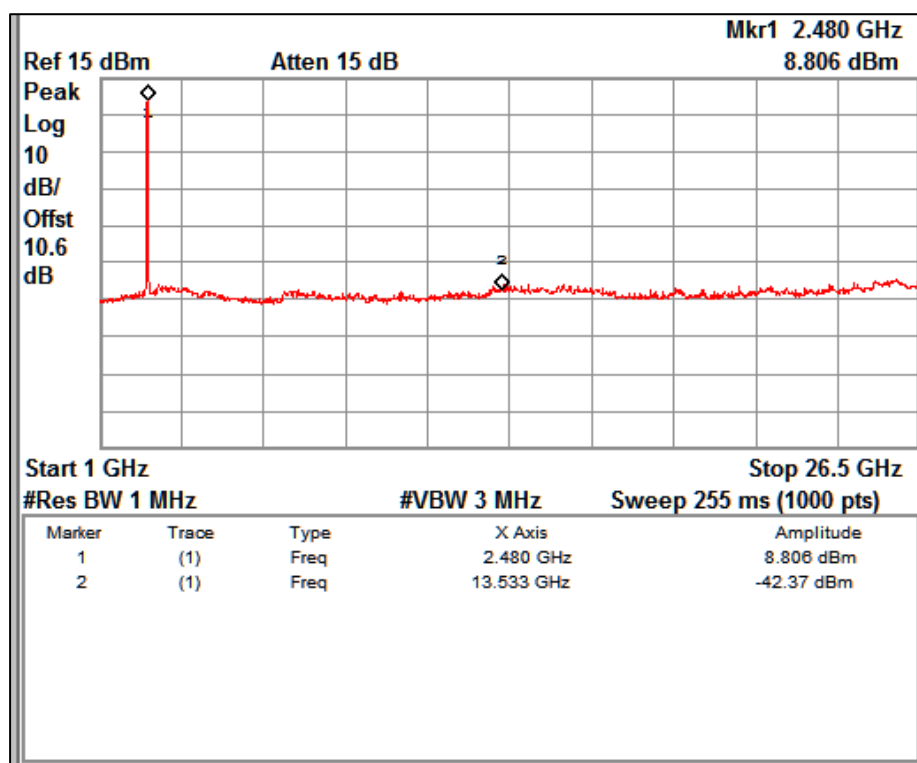
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

Seite 100 von 126

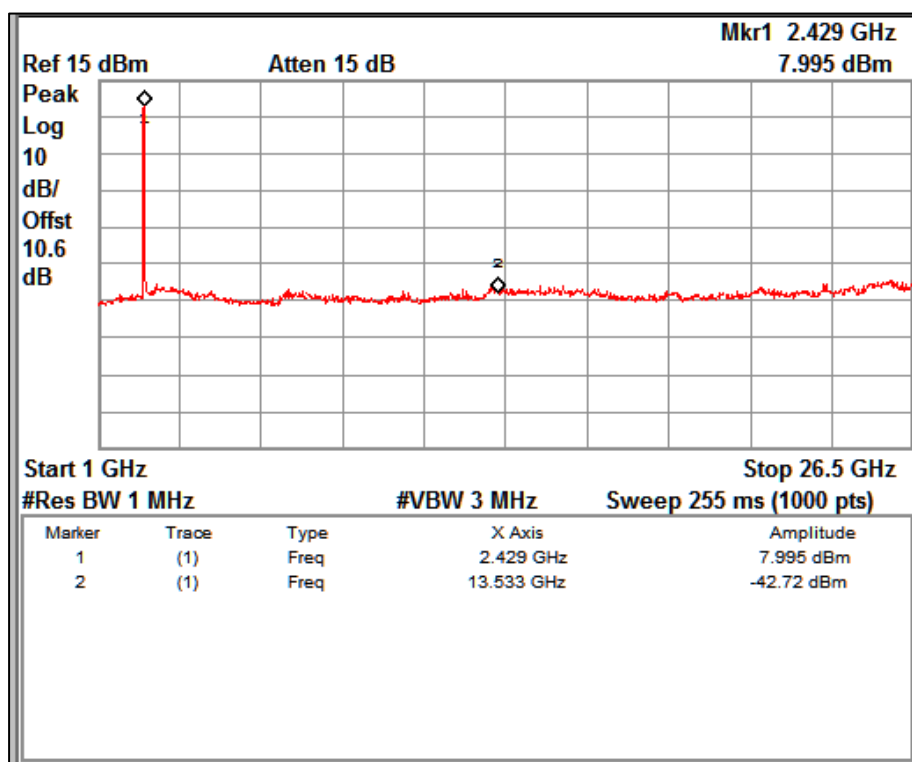
Page 100 of 126



Channel Frequency: 2462 MHz

Data rate: 54Mbps

Protocol: 802.11 n mode HT20



Channel Frequency: 2412 MHz

Data rate: MCS0

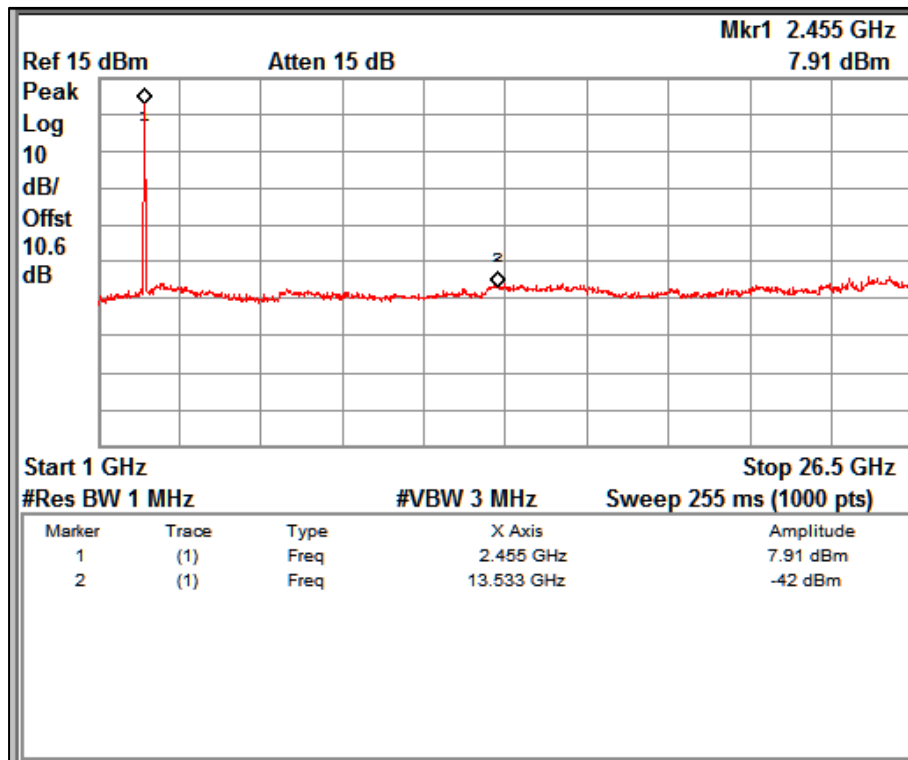
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

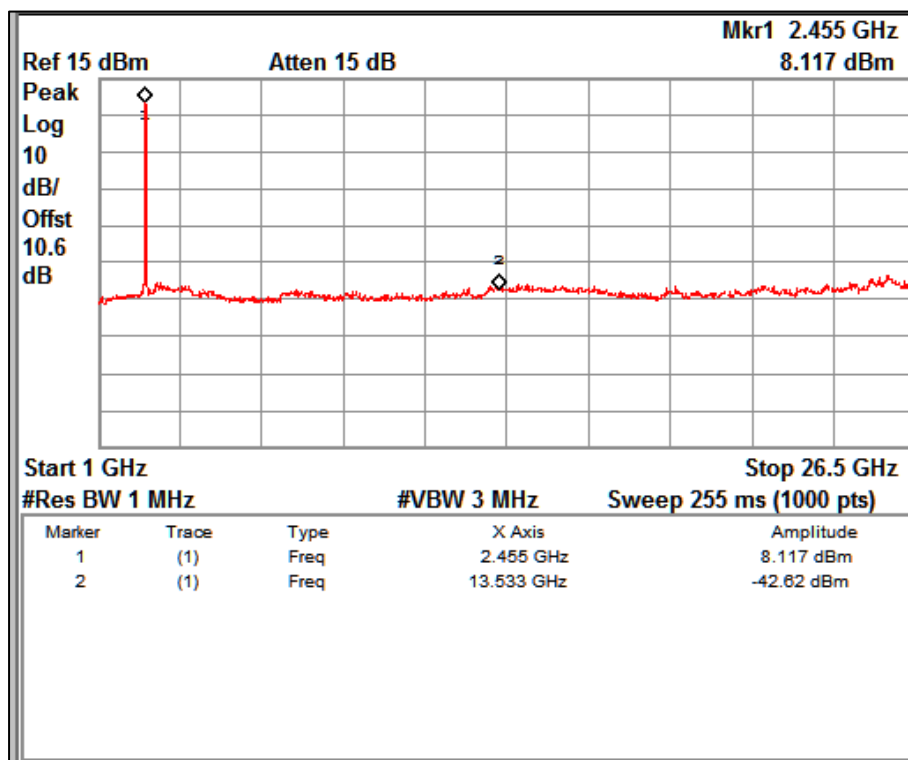
Seite 101 von 126

Page 101 of 126



Channel Frequency: 2442 MHz

Data rate: MCS0



Channel Frequency: 2462 MHz

Data rate: MCS0

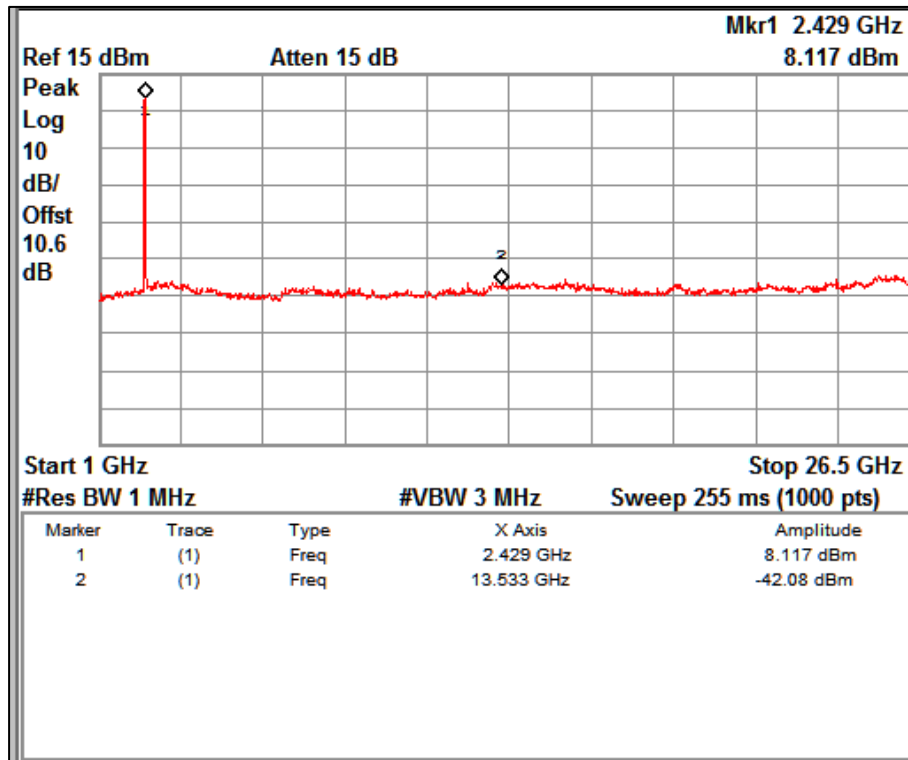
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

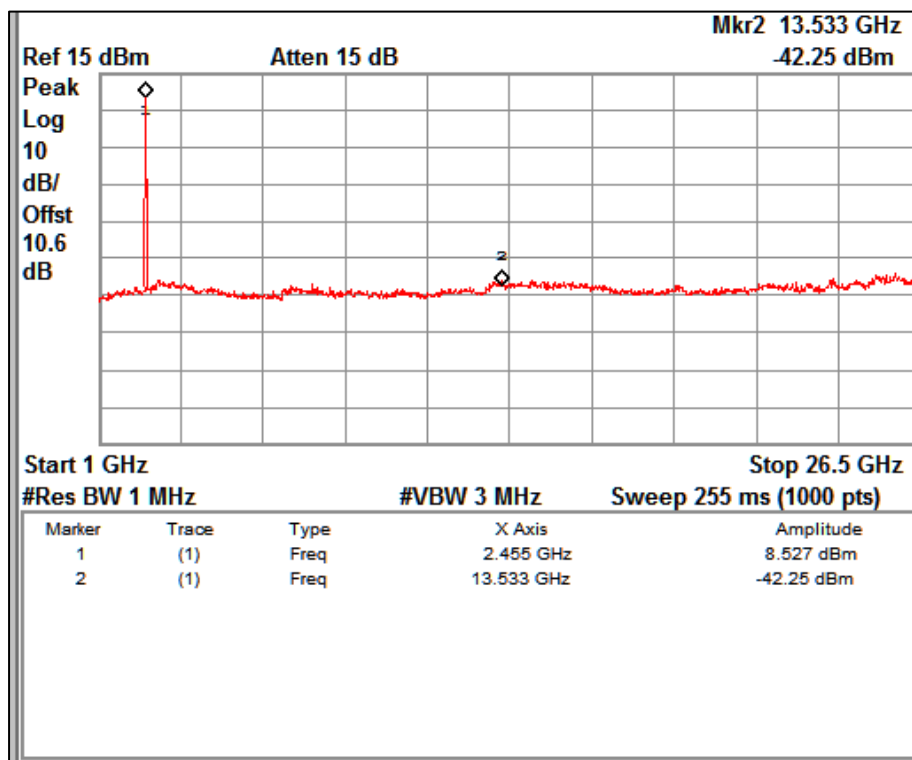
Seite 102 von 126

Page 102 of 126



Channel Frequency: 2412 MHz

Data rate: MCS4



Channel Frequency: 2442 MHz

Data rate: MCS4

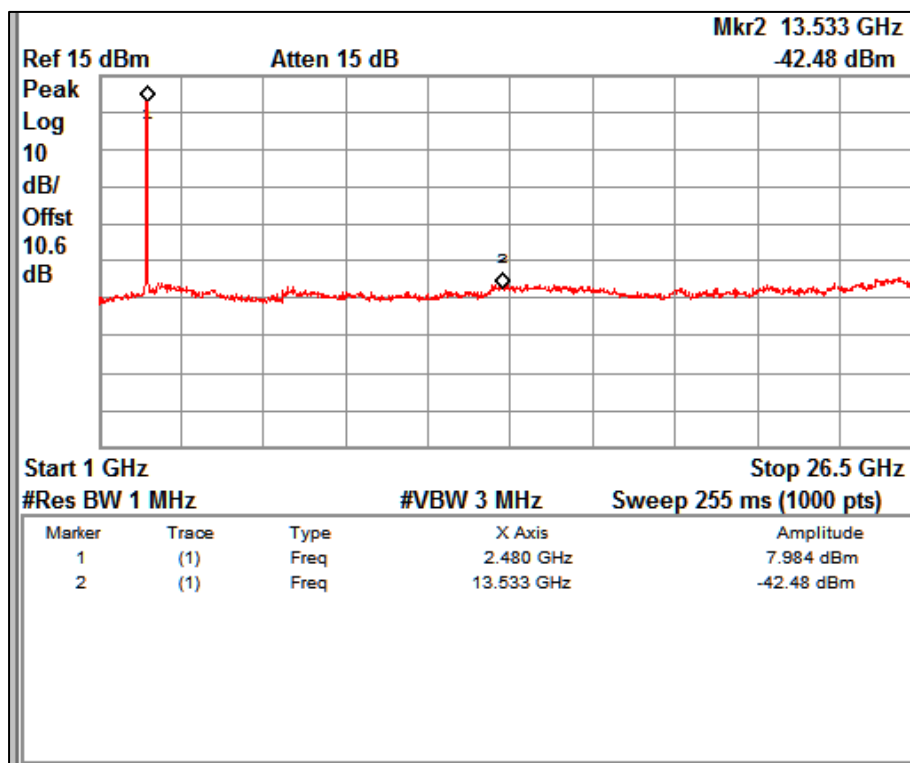
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

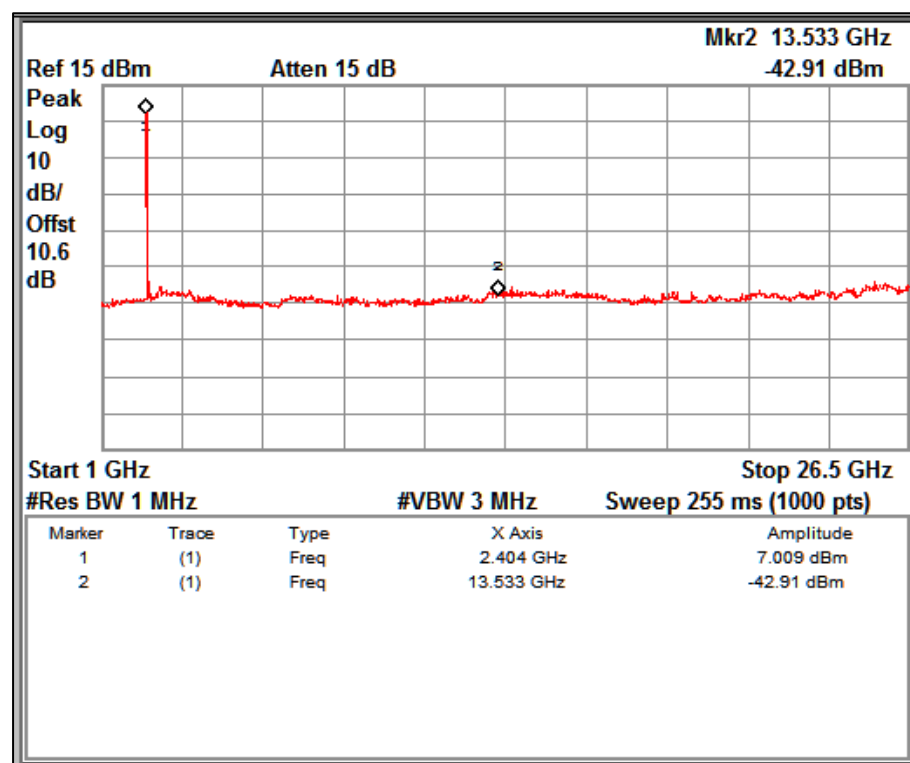
Seite 103 von 126

Page 103 of 126



Channel Frequency: 2462 MHz

Data rate: MCS4



Channel Frequency: 2412 MHz

Data rate: MCS7

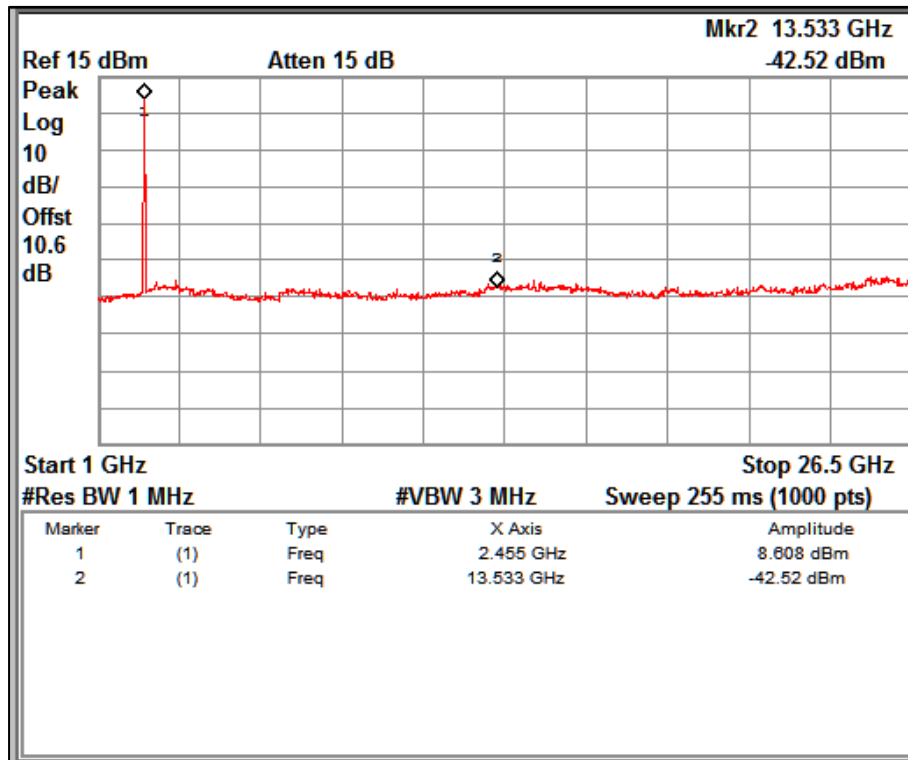
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

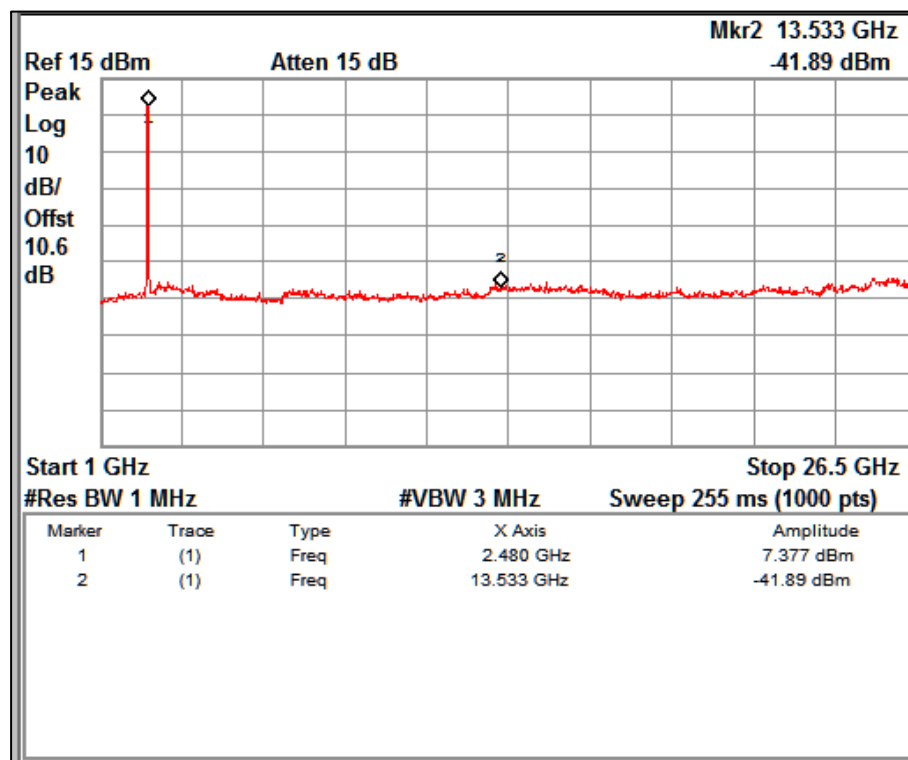
Seite 104 von 126

Page 104 of 126



Channel Frequency: 2442 MHz

Data rate: MCS7



Channel Frequency: 2462 MHz

Data rate: MCS7

Prüfbericht - Nr.:

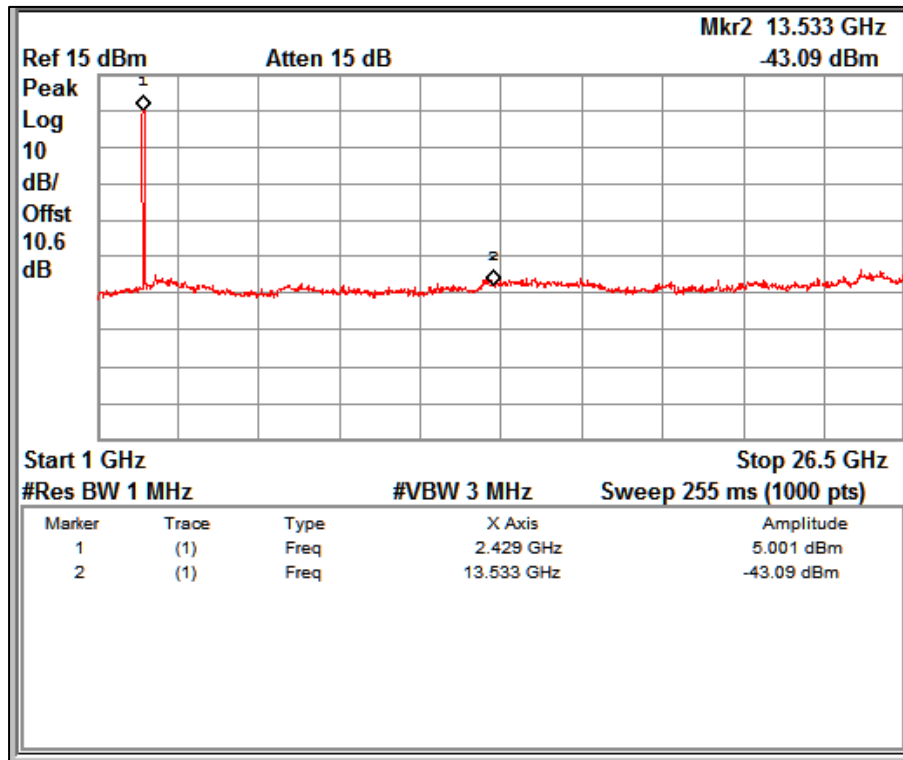
Test Report No.:

ULR-TC568819300000069F

Seite 105 von 126

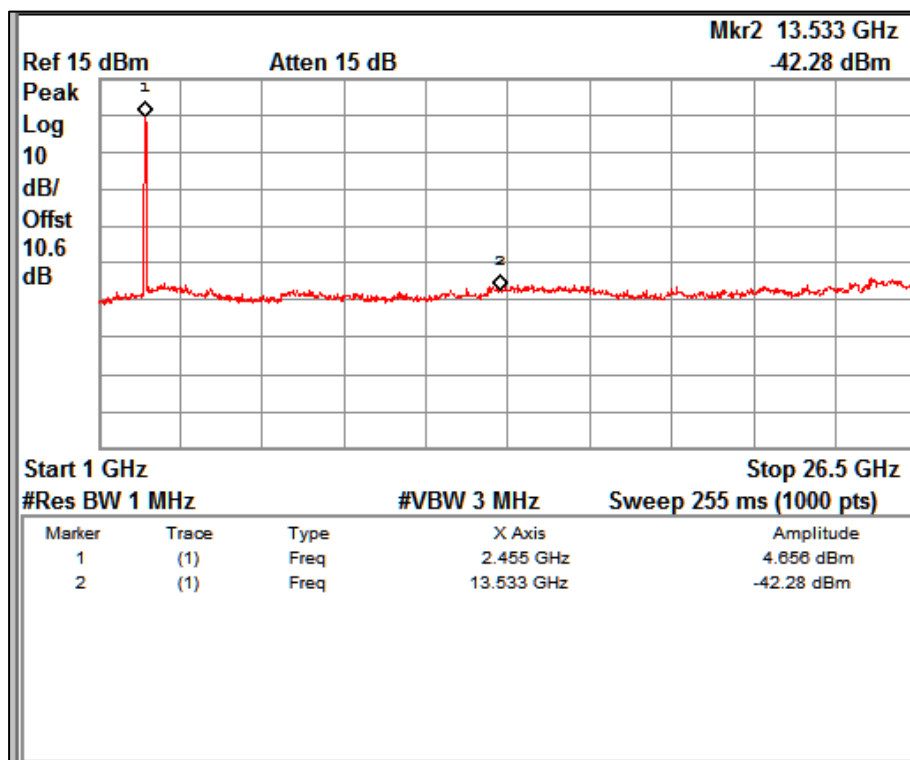
Page 105 of 126

Protocol: 802.11n_HT40



Channel Frequency: 2422 MHz

Data rate: MCS0



Channel Frequency: 2442 MHz

Data rate: MCS0

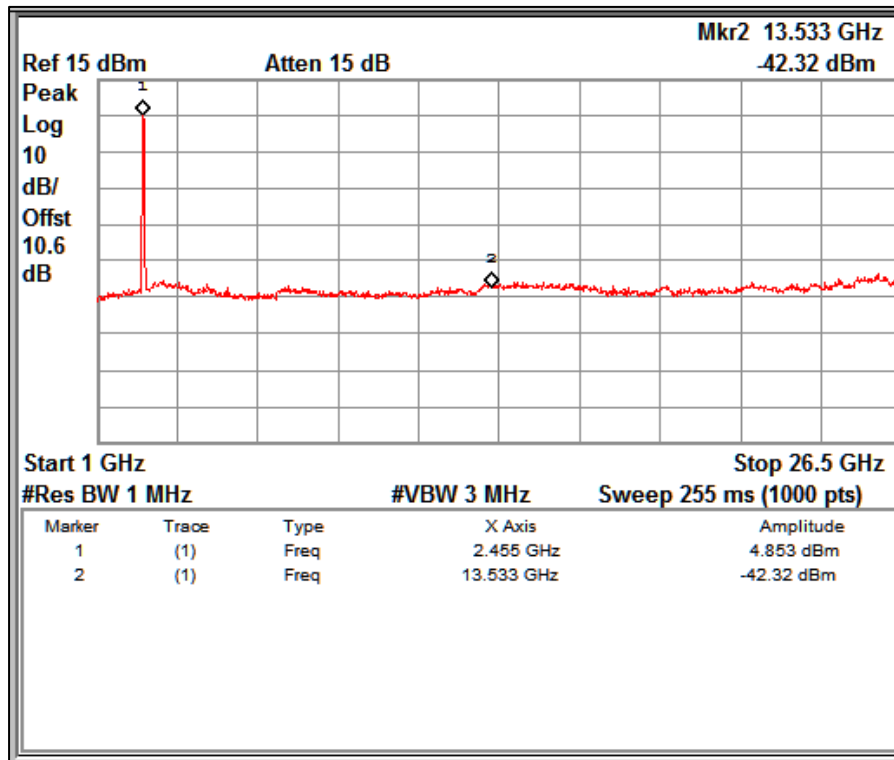
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

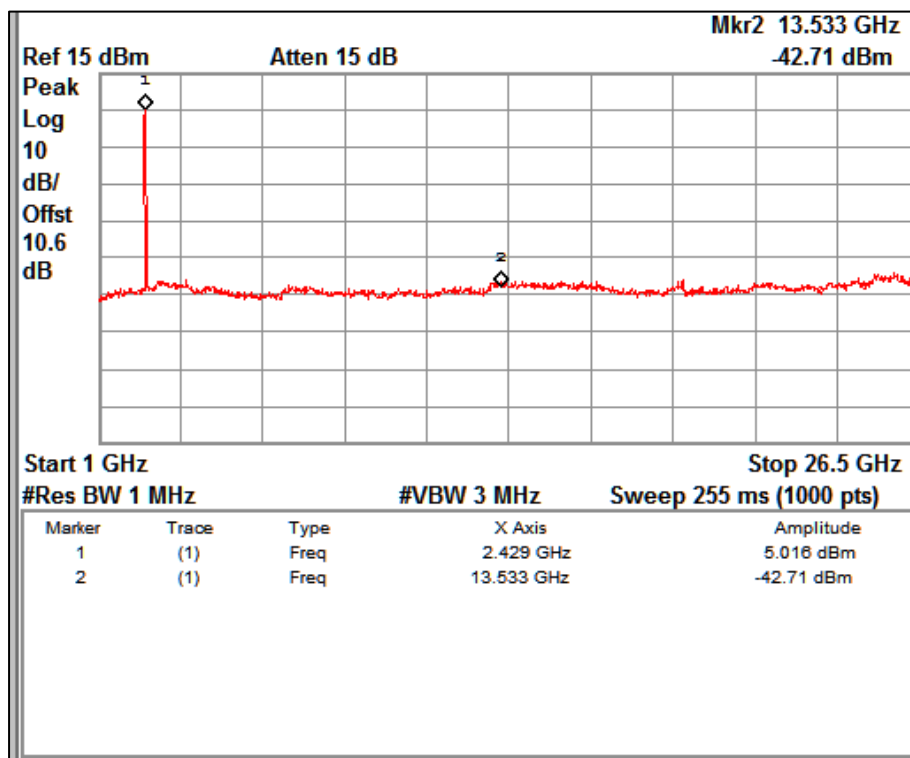
Seite 106 von 126

Page 106 of 126



Channel Frequency: 2452 MHz

Data rate: MCS0



Channel Frequency: 2422 MHz

Data rate: MCS4

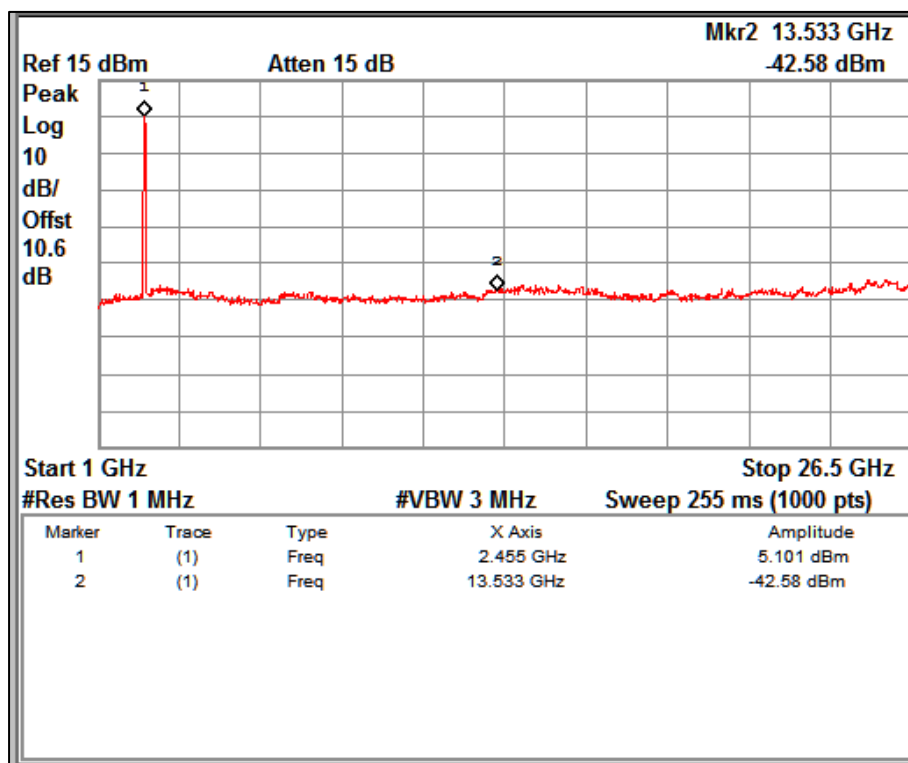
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

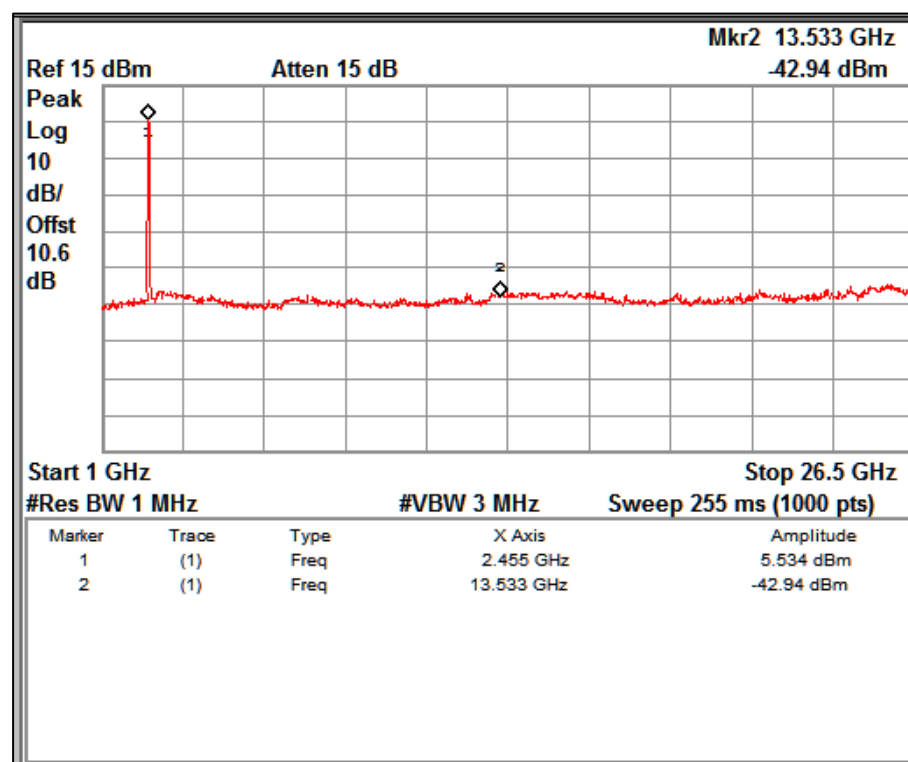
Seite 107 von 126

Page 107 of 126



Channel Frequency: 2442 MHz

Data rate: MCS4



Channel Frequency: 2452 MHz

Data rate: MCS4

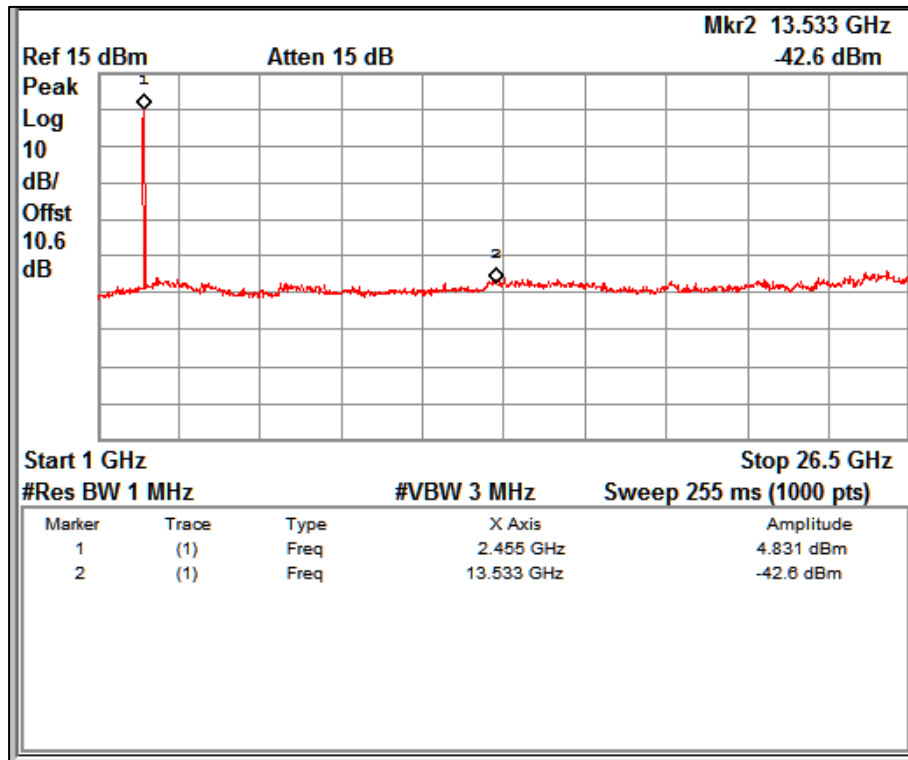
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

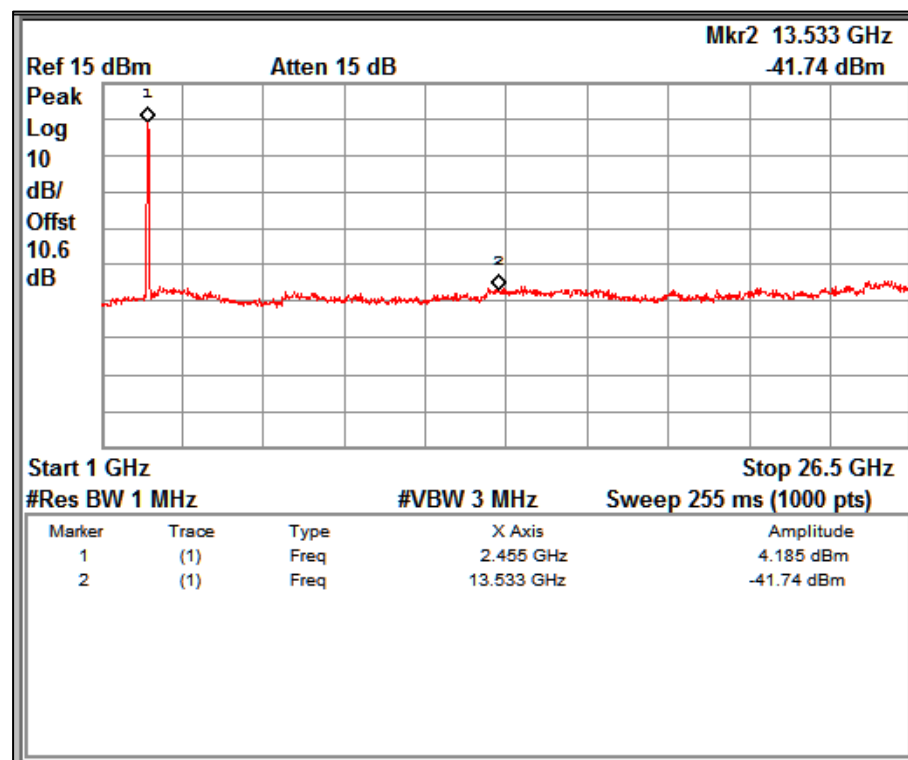
Seite 108 von 126

Page 108 of 126



Channel Frequency: 2422 MHz

Data rate: MCS7



Channel Frequency: 2442 MHz

Data rate: MCS7

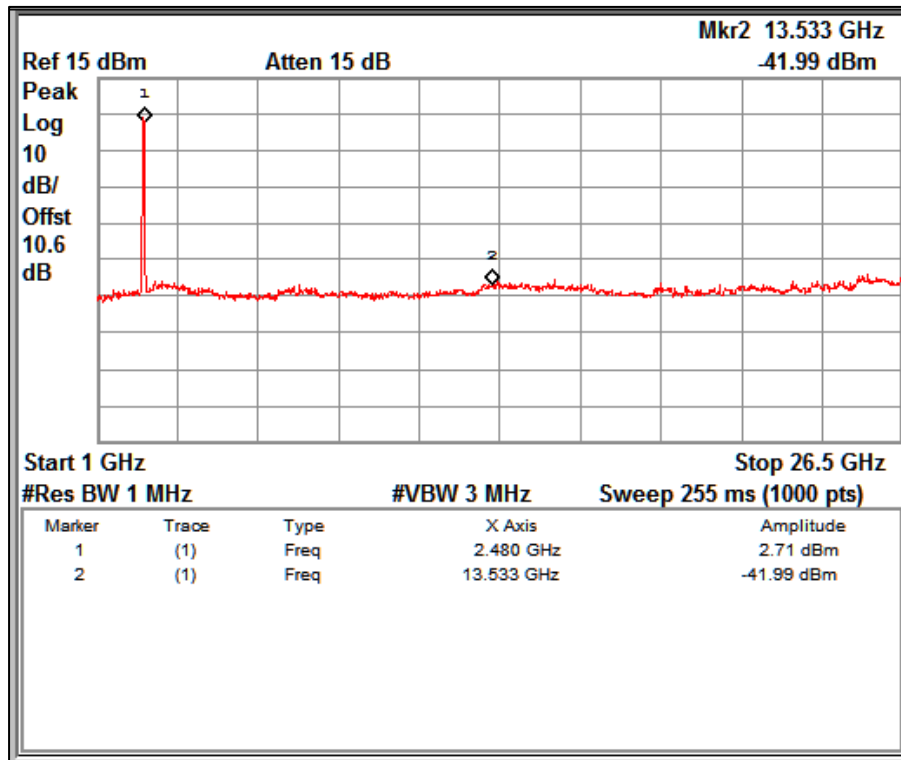
Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

Seite 109 von 126

Page 109 of 126



Channel Frequency: 2452 MHz

Data rate: MCS7

6.5 Radiated spurious emission and emissions in restricted bands of operation

Result

Pass

Test Specification	FCC part 15 Subpart C Section 15.247 (d) / (15.209 & 15.205)/ RSS-Gen Issue 4, Section 8.9/8.10
Test Method	ANSI C 63.10 – 2013
Measurement Location	Fully Anechoic Chamber
Measuring Distance	3 m
Detector	QP for frequency below 1 GHz, Average for frequency above 1 GHz
Requirement	As per the limits mentioned in the below table

Limits for Radiated Emission of Section 15.209:

Frequency (MHz)	Field strength (μV/m)	Field strength (dBμV/m)	Distance of Measurement (m)
0.009 – 0.490	2400/F(kHz)	48.50 – 13.80	300*
0.490 – 1.705	24000/F(kHz)	33.80 – 23.00	30*
1.705 -30	30	29.54	30*
30-88	100	40.0	3
88-216	150	43.5	3
216-960	200	46.0	3
Above 960	500	54.0	3

Remark: * the limit shows in the table above of frequency range 0.009 – 0.490, 0.490 – 1.705 MHz and 1.705-30MHz is at 300 meter, 30 meter and 30 meter range respectively, which corresponds to 128-93.8, 73.80-62.95, 69.54 dBμV/m at 3m range by extrapolation calculation and the measurement of loop antenna.

The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz Radiated emission limits in these three bands are based on measurements employing an average detector.

Test Conditions:

Supply Voltage: 7.4 VDC Battery

Environmental conditions:

Temperature: +23.6°C RH: 64.6 %

Note:

Measurements were made as per section 8.6 in KDB 558074 D01 15.247 Measurement Guidance v05r02

Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

Seite 111 von 126

Page 111 of 126

Test results:

No emissions found in frequency 9 kHz to 30 MHz

Test results for the frequencies in range between 30MHz-1GHz (Charging Mode)

Polarization	Frequency (MHz)	Field strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
Vertical	51.08	32.17	40.00	-7.83
	63.03	32.00	40.00	-8.00
	124.78	26.83	43.50	-16.67
	324.02	29.29	46.00	-16.71
	486.05	26.02	46.00	-19.98
	972.05	31.32	54.00	-22.68
Horizontal	51.13	25.22	40.00	-14.78
	124.72	28.27	43.50	-15.23
	194.75	32.42	43.50	-11.08
	204.1	21.99	43.50	-21.51
	243.01	18.17	46.00	-27.83
	899.81	33.22	46.00	-12.78

Test results for the frequencies in range between 30MHz-1GHz (Battery Mode)

Polarization	Frequency (MHz)	Field strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
Vertical	87.42	17.18	40.00	-22.82
	142.57	19.55	43.50	-23.95
	180.06	19.91	43.50	-23.59
	480.02	27.66	46.00	-18.34
	560.00	29.68	46.00	-16.32
	810.05	33.56	46.00	-12.44
Horizontal	125.08	26.45	43.50	-17.05
	162.25	29.15	43.50	-14.35
	180.05	37.10	43.50	-6.40
	280.02	24.32	46.00	-21.68
	559.89	26.48	46.00	-19.52
	810.80	30.20	46.00	-15.80

Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

Seite 112 von 126

Page 112 of 126

Test results for the frequencies in range between 1GHz-26.5GHz

Protocol: 802.11b

Data rate: 1Mbps

Channel	Polarization	Frequency (MHz)	Field strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
Low	Vertical	2390(Pk)	39.91	74	-34.09
		2390(Av)	27.14	54	-26.86
		2412(Pk)	87.65	*	-
		2412(Av)	84.94	*	-
		4824(Pk)	43.03	74	-30.64
		4824(Av)	29.15	54	-24.63
		7236(Pk)	No Harmonics Found		
		7236(Av)			
	Horizontal	2390(Pk)	41.63	74	-32.37
		2390(Av)	28.13	54	-25.87
		2412(Pk)	90.98	*	-
		2412(Av)	88.53	*	-
		4824(Pk)	43.36	74	-30.64
		4824(Av)	29.37	54	-24.63
		7236(Pk)	No Harmonics Found		
		7236(Av)			
Mid	Vertical	2442(Av)	87.71	*	-
		2442(Av)	85.17	*	-
		4884(Pk)	43.58	74	-30.42
		4884(Av)	29.51	54	-24.49
		7326(Pk)	No Harmonics Found		
		7326(Av)			
	Horizontal	2442(Pk)	91.25	*	-
		2442(Av)	88.69	*	-
		4884(Pk)	43.48	74	-30.52
		4884(Av)	29.60	54	-24.40
		7326(Pk)	No Harmonics Found		
		7326(Av)			
High	Vertical	2462(Pk)	86.86	*	-
		2462(Av)	84.38	*	-
		2483.5(Pk)	38.26	74	-35.74
		2483.5(Av)	26.16	54	-27.84
		4924(Pk)	43.27	74	-30.73
		4924(Av)	29.31	54	-24.69
		7386(Pk)	No Harmonics Found		
		7386(Av)			
	Horizontal	2462(Pk)	90.34	*	-
		2462(Av)	87.82	*	-
		2483.5(Pk)	39.76	74	-34.24
		2483.5(Av)	27.77	54	-26.23
		4924(Pk)	43.71	74	-30.29
		4924(Av)	29.31	54	-24.69
		7386(Pk)	No Harmonics Found		
		7386(Av)			

*- : Fundamental Frequency

Pk: Peak Detector; Av: Average Detector

Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

Seite 113 von 126

Page 113 of 126

Data rate: 11Mbps

Channel	Polarization	Frequency (MHz)	Field strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
Low	Vertical	2390(Pk)	41.11	74	-32.89
		2390(Av)	27.19	54	-26.81
		2412(Pk)	92.98	*	-
		2412(Av)	84.68	*	-
		4824(Pk)	43.69	74	-30.65
		4824(Av)	29.42	54	-24.59
		7236(Pk)	No Harmonics Found		
		7236(Av)			
	Horizontal	2390(Pk)	41.69	74	-32.31
		2390(Av)	27.95	54	-26.05
		2412(Pk)	95.90	*	-
		2412(Av)	87.46	*	-
		4824(Pk)	43.35	74	-30.65
		4824(Av)	29.41	54	-24.59
		7236(Pk)	No Harmonics Found		
		7236(Av)			
Mid	Vertical	2442(Av)	92.64	*	-
		2442(Av)	84.74	*	-
		4884(Pk)	43.85	74	-30.15
		4884(Av)	29.57	54	-24.43
		7326(Pk)	49.05	74	-24.95
		7326(Av)	35.07	54	-18.93
	Horizontal	2442(Pk)	96.08	*	-
		2442(Av)	88.15	*	-
		4884(Pk)	43.70	74	-30.30
		4884(Av)	29.54	54	-24.46
		7326(Pk)	48.99	74	-25.01
		7326(Av)	35.11	54	-18.89
High	Vertical	2462(Pk)	92.37	*	-
		2462(Av)	84.15	*	-
		2483.5(Pk)	39.02	74	-34.98
		2483.5(Av)	26.00	54	-28.00
		4924(Pk)	43.58	74	-30.42
		4924(Av)	29.25	54	-24.75
		7386(Pk)	No Harmonics Found		
		7386(Av)			
	Horizontal	2462(Pk)	95.67	*	-
		2462(Av)	87.46	*	-
		2483.5(Pk)	40.69	74	-33.31
		2483.5(Av)	27.31	54	-26.69
		4924(Pk)	43.50	74	-30.50
		4924(Av)	29.25	54	-24.75
		7386(Pk)	No Harmonics Found		
		7386(Av)			

*- : Fundamental Frequency

Pk: Peak Detector; Av: Average Detector

Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

Seite 114 von 126

Page 114 of 126

Protocol: 802.11 g

Data rate: 6Mbps

Channel	Polarization	Frequency (MHz)	Field strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
Low	Vertical	2390(Pk)	52.67	74	-21.33
		2390(Av)	33.66	54	-20.34
		2412(Pk)	91.52	*	-
		2412(Av)	81.16	*	-
		4824(Pk)	43.37	74	-30.62
		4824(Av)	29.54	54	-24.47
		7236(Pk)	No Harmonics Found		
		7236(Av)			
	Horizontal	2390(Pk)	52.67	74	-21.33
		2390(Av)	34.33	54	-19.67
		2412(Pk)	94.33	*	-
		2412(Av)	83.79	*	-
		4824(Pk)	43.38	74	-30.62
		4824(Av)	29.53	54	-24.47
		7236(Pk)	No Harmonics Found		
		7236(Av)			
Mid	Vertical	2442(Av)	91.43	*	-
		2442(Av)	81.17	*	-
		4884(Pk)	43.75	74	-30.25
		4884(Av)	29.43	54	-24.57
		7326(Pk)	No Harmonics Found		
		7326(Av)			
	Horizontal	2442(Pk)	94.34	*	-
		2442(Av)	84.37	*	-
		4884(Pk)	43.28	74	-30.72
		4884(Av)	29.56	54	-24.44
		7326(Pk)	No Harmonics Found		
		7326(Av)			
High	Vertical	2462(Pk)	90.44	*	-
		2462(Av)	79.92	*	-
		2483.5(Pk)	48.71	74	-25.29
		2483.5(Av)	30.80	54	-23.20
		4924(Pk)	43.34	74	-30.66
		4924(Av)	29.34	54	-24.66
		7386(Pk)	No Harmonics Found		
		7386(Av)			
	Horizontal	2462(Pk)	93.77	*	-
		2462(Av)	83.26	*	-
		2483.5(Pk)	49.85	74	-24.15
		2483.5(Av)	32.89	54	-21.11
		4924(Pk)	43.10	74	-30.90
		4924(Av)	29.32	54	-24.68
		7386(Pk)	No Harmonics Found		
		7386(Av)			

*- : Fundamental Frequency

Pk: Peak Detector; Av: Average Detector

Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

Seite 115 von 126

Page 115 of 126

Data rate: 24Mbps

Channel	Polarization	Frequency (MHz)	Field strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
Low	Vertical	2390(Pk)	50.95	74	-23.05
		2390(Av)	33.46	54	-20.54
		2412(Pk)	92.61	*	-
		2412(Av)	80.80	*	-
		4824(Pk)	43.60	74	-30.17
		4824(Av)	29.46	54	-24.46
		7236(Pk)	No Harmonics Found		
		7236(Av)			
	Horizontal	2390(Pk)	51.55	74	-22.45
		2390(Av)	34.33	54	-19.67
		2412(Pk)	94.93	*	-
		2412(Av)	83.64	*	-
		4824(Pk)	43.83	74	-30.17
		4824(Av)	29.54	54	-24.46
		7236(Pk)	No Harmonics Found		
		7236(Av)			
Mid	Vertical	2442(Av)	93.97	*	-
		2442(Av)	80.87	*	-
		4884(Pk)	44.24	74	-29.76
		4884(Av)	29.53	54	-24.47
		7326(Pk)	No Harmonics Found		
		7326(Av)			
	Horizontal	2442(Pk)	96.27	*	-
		2442(Av)	84.31	*	-
		4884(Pk)	44.13	74	-29.87
		4884(Av)	29.55	54	-24.45
		7326(Pk)	No Harmonics Found		
		7326(Av)			
High	Vertical	2462(Pk)	91.92	*	-
		2462(Av)	79.71	*	-
		2483.5(Pk)	46.59	74	-27.41
		2483.5(Av)	90.75	54	36.75
		4924(Pk)	43.35	74	-30.65
		4924(Av)	29.39	54	-24.61
		7386(Pk)	No Harmonics Found		
		7386(Av)			
	Horizontal	2462(Pk)	94.76	*	-
		2462(Av)	83.10	*	-
		2483.5(Pk)	48.44	74	-25.56
		2483.5(Av)	32.81	54	-21.19
		4924(Pk)	43.28	74	-30.72
		4924(Av)	29.36	54	-24.64
		7386(Pk)	No Harmonics Found		
		7386(Av)			

*- : Fundamental Frequency

Pk: Peak Detector; Av: Average Detector

Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

Seite 116 von 126

Page 116 of 126

Data rate: 54Mbps

Channel	Polarization	Frequency (MHz)	Field strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
Low	Vertical	2390(Pk)	47.51	74	-26.49
		2390(Av)	32.60	54	-21.40
		2412(Pk)	92.66	*	-
		2412(Av)	80.29	*	-
		4824(Pk)	43.62	74	-30.76
		4824(Av)	29.51	54	-24.55
		7236(Pk)	No Harmonics Found		
		7236(Av)			
	Horizontal	2390(Pk)	49.11	74	-24.89
		2390(Av)	33.01	54	-20.99
		2412(Pk)	95.22	*	-
		2412(Av)	82.89	*	-
		4824(Pk)	43.24	74	-30.76
		4824(Av)	29.45	54	-24.55
		7236(Pk)	No Harmonics Found		
		7236(Av)			
Mid	Vertical	2442(Av)	93.50	*	-
		2442(Av)	80.45	*	-
		4884(Pk)	43.56	74	-30.44
		4884(Av)	29.63	54	-24.37
		7326(Pk)	No Harmonics Found		
		7326(Av)			
	Horizontal	2442(Pk)	96.26	*	-
		2442(Av)	83.59	*	-
		4884(Pk)	43.44	74	-30.56
		4884(Av)	29.59	54	-24.41
		7326(Pk)	No Harmonics Found		
		7326(Av)			
High	Vertical	2462(Pk)	92.42	*	-
		2462(Av)	79.59	*	-
		2483.5(Pk)	54.60	74	-19.40
		2483.5(Av)	35.36	54	-18.64
		4924(Pk)	43.46	74	-30.54
		4924(Av)	29.33	54	-24.67
		7386(Pk)	No Harmonics Found		
		7386(Av)			
	Horizontal	2462(Pk)	95.01	*	-
		2462(Av)	82.45	*	-
		2483.5(Pk)	56.76	74	-17.24
		2483.5(Av)	37.36	54	-16.64
		4924(Pk)	43.72	74	-30.28
		4924(Av)	29.37	54	-24.63
		7386(Pk)	No Harmonics Found		
		7386(Av)			

*- : Fundamental Frequency

Pk: Peak Detector; Av: Average Detector

Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

Seite 117 von 126

Page 117 of 126

Protocol: 802.11 n HT20

Data rate: MCS0

Channel	Polarization	Frequency (MHz)	Field strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
Low	Vertical	2390(Pk)	57.68	74	-16.32
		2390(Av)	36.01	54	-17.99
		2412(Pk)	91.99	*	-
		2412(Av)	81.51	*	-
		4824(Pk)	43.52	74	-30.35
		4824(Av)	29.36	54	-24.66
		7236(Pk)	No Harmonics Found		
		7236(Av)			
	Horizontal	2390(Pk)	57.83	74	-16.17
		2390(Av)	36.73	54	-17.27
		2412(Pk)	94.24	*	-
		2412(Av)	84.03	*	-
		4824(Pk)	43.65	74	-30.35
		4824(Av)	29.34	54	-24.66
		7236(Pk)	No Harmonics Found		
		7236(Av)			
Mid	Vertical	2442(Av)	91.89	*	-
		2442(Av)	81.36	*	-
		4884(Pk)	43.48	74	-30.52
		4884(Av)	29.50	54	-24.50
		7326(Pk)	No Harmonics Found		
		7326(Av)			
	Horizontal	2442(Pk)	94.66	*	-
		2442(Av)	84.50	*	-
		4884(Pk)	42.92	74	-31.08
		4884(Av)	29.49	54	-24.51
		7326(Pk)	No Harmonics Found		
		7326(Av)			
High	Vertical	2462(Pk)	90.67	*	-
		2462(Av)	80.28	*	-
		2483.5(Pk)	52.74	74	-21.26
		2483.5(Av)	32.84	54	-21.16
		4924(Pk)	43.43	74	-30.57
		4924(Av)	29.30	54	-24.70
		7386(Pk)	No Harmonics Found		
		7386(Av)			
	Horizontal	2462(Pk)	93.20	*	-
		2462(Av)	83.13	*	-
		2483.5(Pk)	55.14	74	-18.86
		2483.5(Av)	34.60	54	-19.40
		4924(Pk)	43.33	74	-30.67
		4924(Av)	29.42	54	-24.58
		7386(Pk)	No Harmonics Found		
		7386(Av)			

*: Fundamental Frequency

Pk: Peak Detector; Av: Average Detector

Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

Seite 118 von 126

Page 118 of 126

Data rate: MCS4

Channel	Polarization	Frequency (MHz)	Field strength (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
Low	Vertical	2390(Pk)	54.25	74	-19.75
		2390(Av)	34.58	54	-19.42
		2412(Pk)	92.58	*	-
		2412(Av)	79.91	*	-
		4824(Pk)	44.06	74	-31.48
		4824(Av)	29.40	54	-24.59
		7236(Pk)	No Harmonics Found		
		7236(Av)			
	Horizontal	2390(Pk)	53.79	74	-20.21
		2390(Av)	35.45	54	-18.55
		2412(Pk)	94.50	*	-
		2412(Av)	82.99	*	-
		4824(Pk)	42.52	74	-31.48
		4824(Av)	29.41	54	-24.59
		7236(Pk)	No Harmonics Found		
		7236(Av)			
Mid	Vertical	2442(Av)	92.45	*	-
		2442(Av)	80.03	*	-
		4884(Pk)	43.30	74	-30.70
		4884(Av)	29.52	54	-24.48
		7326(Pk)	No Harmonics Found		
		7326(Av)			
	Horizontal	2442(Pk)	95.47	*	-
		2442(Av)	83.50	*	-
		4884(Pk)	43.57	74	-30.43
		4884(Av)	29.45	54	-24.55
		7326(Pk)	No Harmonics Found		
		7326(Av)			
High	Vertical	2462(Pk)	90.46	*	-
		2462(Av)	78.35	*	-
		2483.5(Pk)	47.62	74	-26.38
		2483.5(Av)	30.58	54	-23.42
		4924(Pk)	42.88	74	-31.12
		4924(Av)	29.32	54	-24.68
		7386(Pk)	No Harmonics Found		
		7386(Av)			
	Horizontal	2462(Pk)	94.20	*	-
		2462(Av)	82.37	*	-
		2483.5(Pk)	50.50	74	-23.50
		2483.5(Av)	33.03	54	-20.97
		4924(Pk)	43.20	74	-30.80
		4924(Av)	29.34	54	-24.66
		7386(Pk)	No Harmonics Found		
		7386(Av)			

*- : Fundamental Frequency

Pk: Peak Detector; Av: Average Detector

Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

Seite 119 von 126

Page 119 of 126

Data rate: MCS7

Channel	Polarization	Frequency (MHz)	Field strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
Low	Vertical	2390(Pk)	48.85	74	-25.15
		2390(Av)	31.77	54	-22.23
		2412(Pk)	91.86	*	-
		2412(Av)	78.87	*	-
		4824(Pk)	44.13	74	-28.86
		4824(Av)	29.51	54	-24.52
		7236(Pk)	No Harmonics Found		
		7236(Av)			
	Horizontal	2390(Pk)	49.57	74	-24.43
		2390(Av)	33.30	54	-20.70
		2412(Pk)	94.90	*	-
		2412(Av)	82.14	*	-
		4824(Pk)	45.14	74	-28.86
		4824(Av)	29.48	54	-24.52
		7236(Pk)	No Harmonics Found		
		7236(Av)			
Mid	Vertical	2442(Av)	91.04	*	-
		2442(Av)	78.70	*	-
		4884(Pk)	43.78	74	-30.22
		4884(Av)	29.53	54	-24.47
		7326(Pk)	No Harmonics Found		
		7326(Av)			
	Horizontal	2442(Pk)	94.65	*	-
		2442(Av)	82.75	*	-
		4884(Pk)	43.40	74	-30.60
		4884(Av)	29.46	54	-24.54
		7326(Pk)	No Harmonics Found		
		7326(Av)			
High	Vertical	2462(Pk)	90.17	*	-
		2462(Av)	77.43	*	-
		2483.5(Pk)	50.07	74	-23.93
		2483.5(Av)	33.99	54	-20.01
		4924(Pk)	43.92	74	-30.08
		4924(Av)	29.31	54	-24.69
		7386(Pk)	No Harmonics Found		
		7386(Av)			
	Horizontal	2462(Pk)	93.78	*	-
		2462(Av)	81.59	*	-
		2483.5(Pk)	53.86	74	-20.14
		2483.5(Av)	36.46	54	-17.54
		4924(Pk)	43.84	74	-30.16
		4924(Av)	29.31	54	-24.69
		7386(Pk)	No Harmonics Found		
		7386(Av)			

*- : Fundamental Frequency

Pk: Peak Detector; Av: Average Detector

Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

Seite 120 von 126

Page 120 of 126

Protocol: 802.11n_HT40

Data rate: MCS0

Channel	Polarization	Frequency (MHz)	Field strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
Low	Vertical	2390(Pk)	53.86	74	-20.14
		2390(Av)	33.79	54	-20.21
		2422(Pk)	88.67	*	-
		2422(Av)	77.76	*	-
		4844(Pk)	43.35	74	-30.66
		4844(Av)	29.57	54	-24.47
		7266(Pk)	NHF		
		7266(Av)			
	Horizontal	2390(Pk)	54.65	74	-19.35
		2390(Av)	34.96	54	-19.04
		2422(Pk)	92.20	*	-
		2422(Av)	81.50	*	-
		4844(Pk)	43.34	74	-30.66
		4844(Av)	29.53	54	-24.47
		7266(Pk)	No Harmonics Found		
		7266(Av)			
Mid	Vertical	2442(Av)	88.70	*	-
		2442(Av)	77.82	*	-
		4884(Pk)	43.35	74	-30.65
		4884(Av)	29.57	54	-24.43
		7326(Pk)	No Harmonics Found		
		7326(Av)			
	Horizontal	2442(Pk)	91.66	*	-
		2442(Av)	81.08	*	-
		4884(Pk)	43.34	74	-30.66
		4884(Av)	29.53	54	-24.47
		7326(Pk)	No Harmonics Found		
		7326(Av)			
High	Vertical	2452(Pk)	88.25	*	-
		2452(Av)	78.02	*	-
		2483.5(Pk)	50.41	74	-23.59
		2483.5(Av)	30.32	54	-23.68
		4904(Pk)	43.03	74	-30.97
		4904(Av)	29.31	54	-24.69
		7356(Pk)	No Harmonics Found		
		7356(Av)			
	Horizontal	2452(Pk)	90.98	*	-
		2452(Av)	81.14	*	-
		2483.5(Pk)	52.53	74	-21.47
		2483.5(Av)	31.99	54	-22.01
		4904(Pk)	43.07	74	-30.93
		4904(Av)	29.37	54	-24.63
		7356(Pk)	No Harmonics Found		
		7356(Av)			

*- : Fundamental Frequency

Pk: Peak Detector; Av: Average Detector

Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

Seite 121 von 126

Page 121 of 126

Data rate: MCS4

Channel	Polarization	Frequency (MHz)	Field strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
Low	Vertical	2390(Pk)	49.16	74	-24.84
		2390(Av)	32.61	54	-21.39
		2422(Pk)	90.00	*	-
		2422(Av)	76.67	*	-
		4844(Pk)	43.92	74	-30.22
		4844(Av)	29.58	54	-24.40
		7266(Pk)	No Harmonics Found		
		7266(Av)			
	Horizontal	2390(Pk)	49.00	74	-25.00
		2390(Av)	33.60	54	-20.40
		2422(Pk)	92.99	*	-
		2422(Av)	80.05	*	-
		4844(Pk)	43.78	74	-30.22
		4844(Av)	29.60	54	-24.40
		7266(Pk)	No Harmonics Found		
		7266(Av)			
Mid	Vertical	2442(Av)	93.30	*	-
		2442(Av)	80.54	*	-
		4884(Pk)	43.92	74	-30.08
		4884(Av)	29.58	54	-24.42
		7326(Pk)	No Harmonics Found		
		7326(Av)			
	Horizontal	2442(Pk)	93.89	*	-
		2442(Av)	80.67	*	-
		4884(Pk)	43.59	74	-30.22
		4884(Av)	29.42	54	-24.40
		7326(Pk)	No Harmonics Found		
		7326(Av)			
High	Vertical	2452(Pk)	90.13	*	-
		2452(Av)	77.01	*	-
		2483.5(Pk)	44.50	74	-29.5
		2483.5(Av)	29.06	54	-24.94
		4904(Pk)	42.87	74	-31.13
		4904(Av)	29.31	54	-24.69
		7356(Pk)	No Harmonics Found		
		7356(Av)			
	Horizontal	2452(Pk)	93.17	*	-
		2452(Av)	79.95	*	-
		2483.5(Pk)	48.39	74	-25.61
		2483.5(Av)	31.11	54	-22.89
		4904(Pk)	43.59	74	-30.41
		4904(Av)	29.42	54	-24.58
		7356(Pk)	No Harmonics Found		
		7356(Av)			

*: Fundamental Frequency

Pk: Peak Detector; Av: Average Detector

Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

Seite 122 von 126

Page 122 of 126

Data rate: MCS7

Channel	Polarization	Frequency (MHz)	Field strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
Low	Vertical	2390(Pk)	48.85	74	-25.15
		2390(Av)	31.77	54	-22.23
		2422(Pk)	91.86	*	-
		2422(Av)	78.87	*	-
		4844(Pk)	44.13	74	-28.86
		4844(Av)	29.51	54	-24.52
		7266(Pk)	No Harmonics Found		
		7266(Av)			
	Horizontal	2390(Pk)	49.57	74	-24.43
		2390(Av)	33.30	54	-20.70
		2422(Pk)	94.90	*	-
		2422(Av)	82.14	*	-
		4844(Pk)	45.14	74	-28.86
		4844(Av)	29.48	54	-24.52
		7266(Pk)	No Harmonics Found		
		7266(Av)			
Mid	Vertical	2442(Av)	91.04	*	-
		2442(Av)	78.70	*	-
		4884(Pk)	43.78	74	-30.22
		4884(Av)	29.53	54	-24.47
		7326(Pk)	No Harmonics Found		
		7326(Av)			
	Horizontal	2442(Pk)	94.65	*	-
		2442(Av)	82.75	*	-
		4884(Pk)	43.40	74	-30.60
		4884(Av)	29.46	54	-24.54
		7326(Pk)	No Harmonics Found		
		7326(Av)			
High	Vertical	2452(Pk)	90.17	*	-
		2452(Av)	77.43	*	-
		2483.5(Pk)	50.07	74	-23.93
		2483.5(Av)	33.99	54	-20.01
		4904(Pk)	43.92	74	-30.08
		4904(Av)	29.31	54	-24.69
		7356(Pk)	No Harmonics Found		
		7356(Av)			
	Horizontal	2452(Pk)	93.78	*	-
		2452(Av)	81.59	*	-
		2483.5(Pk)	53.86	74	-20.14
		2483.5(Av)	36.46	54	-17.54
		4904(Pk)	43.84	74	-30.16
		4904(Av)	29.31	54	-24.69
		7356(Pk)	No Harmonics Found		
		7356(Av)			

*- : Fundamental Frequency

Pk: Peak Detector; Av: Average Detector

Note: Field strength (dBμV/m) = Measured value (dBμV) +Cable loss (dB) +antenna factor (dB)-preamplifier gain (dB)

Prüfbericht - Nr.:

Test Report No.:

ULR-TC568819300000069F

Seite 123 von 126

Page 123 of 126

7 Conducted Emission Test on A.C. Power Line

Result

Pass

Test Specification : FCC Part 15 Section 15.207
Test Method : ANSI C63.10-2013
Testing Location : Screened room
Measurement Bandwidth : 9kHz
Frequency Range : 150kHz – 30MHz
Supply Voltage : 110VAC,60Hz

Limit of section 15.207

Frequency of emission	QP Limit	AV Limit
(MHz)	(dB μ V)	(dB μ V/m)
0.15 – 0.5	66 – 56*	56 – 46*
0.5 – 5	56	46
5 – 30	60	50

* Decreases with the logarithm of the frequency

Prüfbericht - Nr.:

Test Report No.:

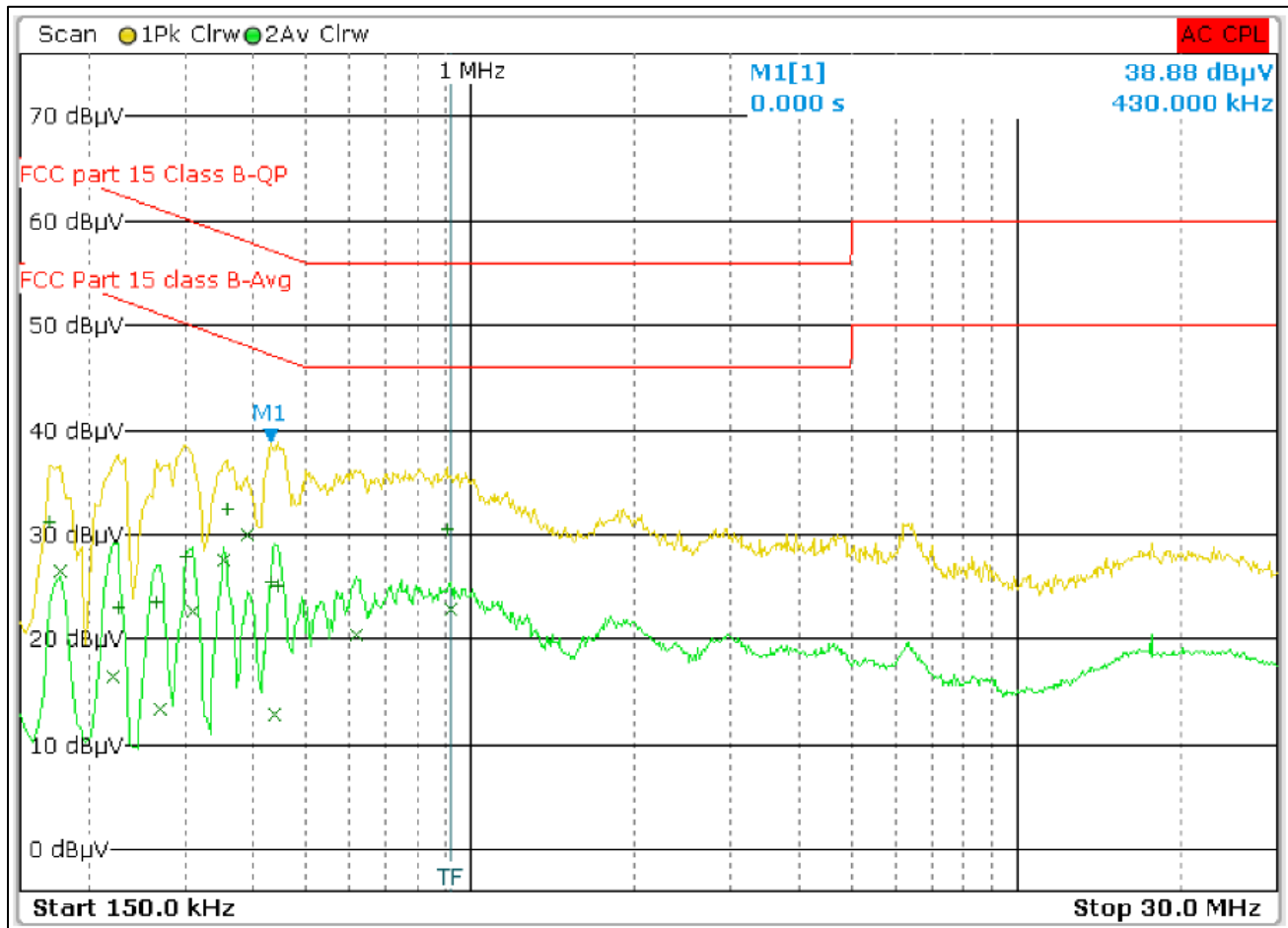
ULR-TC568819300000069F

Seite 124 von 126

Page 124 of 126

Test Result: LINE Graphs and Tables

110v AC , 60Hz



Line Graph

Trace	Frequency	Level (dBμV)	Phase	Detector	Delta Limit/dB
2	390.000000000 kHz	30.04		Average	-18.02
2	354.000000000 kHz	27.49		Average	-21.38
2	922.000000000 kHz	22.91		Average	-23.09
1	906.000000000 kHz	30.52		Quasi Peak	-25.48
2	618.000000000 kHz	20.37		Average	-25.63
1	358.000000000 kHz	32.43		Quasi Peak	-26.34
2	310.000000000 kHz	22.61		Average	-27.36
2	178.000000000 kHz	26.55		Average	-28.03
1	430.000000000 kHz	25.41		Quasi Peak	-31.84
1	446.000000000 kHz	25.07		Quasi Peak	-31.88
1	302.000000000 kHz	27.82		Quasi Peak	-32.37
1	170.000000000 kHz	31.24		Quasi Peak	-33.72
2	438.000000000 kHz	12.97		Average	-34.13
2	222.000000000 kHz	16.45		Average	-36.29
1	266.000000000 kHz	23.53		Quasi Peak	-37.71
2	270.000000000 kHz	13.40		Average	-37.72
1	226.000000000 kHz	22.95		Quasi Peak	-39.65

Line Table

Prüfbericht - Nr.:

Test Report No.:

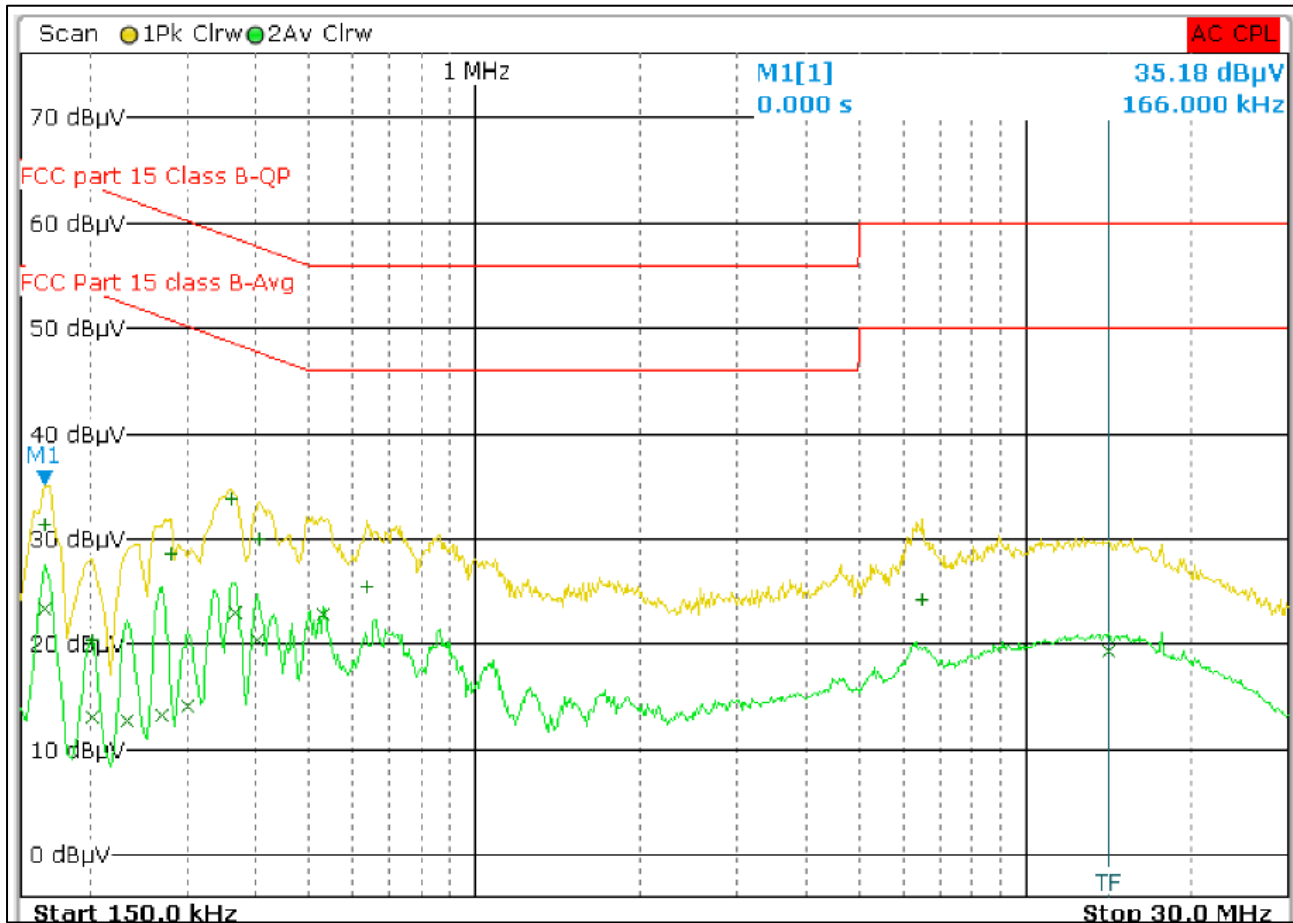
ULR-TC568819300000069F

Seite 125 von 126

Page 125 of 126

Test Result: Neutral Graphs and Tables

110v AC , 60Hz



Neutral Graph

Trace	Frequency	Level (dBμV)	Phase	Detector	Delta Limit/dB
2	530.000000000 kHz	22.86		Average	-23.14
1	362.000000000 kHz	33.86		Quasi Peak	-24.82
2	366.000000000 kHz	23.07		Average	-25.52
2	402.000000000 kHz	20.34		Average	-27.47
1	406.000000000 kHz	30.04		Quasi Peak	-27.69
1	638.000000000 kHz	25.48		Quasi Peak	-30.52
2	14.114000000 MHz	19.34		Average	-30.66
2	166.000000000 kHz	23.41		Average	-31.75
1	282.000000000 kHz	28.58		Quasi Peak	-32.18
1	166.000000000 kHz	31.34		Quasi Peak	-33.82
1	6.490000000 MHz	24.29		Quasi Peak	-35.71
2	302.000000000 kHz	14.12		Average	-36.07
2	270.000000000 kHz	13.22		Average	-37.90
2	234.000000000 kHz	12.68		Average	-39.63
2	202.000000000 kHz	13.09		Average	-40.44
1	202.000000000 kHz	20.36		Quasi Peak	-43.17

Neutral Table

8 LIST OF TABLES

Table 1: Test and measurements instrument used.....	5
Table 2: Instrument application Software versions	5
Table 3: Ratings and System Details as declared by client	6
Table 4: Measurement Uncertainty	6
Table 5: List of Wi-Fi center Frequencies	7

9 LIST OF FIGURES

Figure 1: Frequency Range 9 kHz- 30 MHz	8
Figure 2: Frequency Range 30 MHz – 200 MHz	8
Figure 3: Frequency Range 200 MHz - 1GHz	9
Figure 4: Frequency Range 1GHz – 26GHz.....	9

Power Level settings used during the test

Mode	Rate	Max Transmitted Power
b	1Mbps	14.5 ± 1 dBm
	2Mbps	14.5 ± 1 dBm
	5.5Mbps	14.5 ± 1 dBm
	11Mbps	14.5 ± 1 dBm
g	6Mbps	13.5 ± 1 dBm
	9Mbps	13.5 ± 1 dBm
	12Mbps	13.5 ± 1 dBm
	18Mbps	13.5 ± 1 dBm
	24Mbps	13.5 ± 1 dBm
	36Mbps	13.5 ± 1 dBm
	48Mbps	13.5 ± 1 dBm
	54Mbps	13.5 ± 1 dBm
n (20MHz/40MHz)	MCS0	13.5 ± 1 dBm
	MCS1	13.5 ± 1 dBm
	MCS2	13.5 ± 1 dBm
	MCS3	13.5 ± 1 dBm
	MCS4	13.5 ± 1 dBm
	MCS5	13 ± 1 dBm
	MCS6	13 ± 1 dBm
	MCS7	13 ± 1 dBm

END OF TEST REPORT