

**FCC 1****Output power of fundamental emissions**
acc. FCC Subpart C § 15.209 / RSS-247

Ref.-No.: 20/01-0031

Summary of the findings

Test conditions	Polarization of receiving antenna	Tested frequency [MHz]	Meas value [dBm]	Limit [dBm]	Result
Position: X	V	2437	20,89	30,00	pass
Position: X	H	2437	24,64	30,00	pass
Position: Y	V	2437	20,33	30,00	pass
Position: Y	H	2437	21,24	30,00	pass
Position: Z	V	2437	24,55	30,00	pass
Position: Z	H	2437	22,88	30,00	pass

Highest operating frequency - 802.11b 20MHz / CCK – MCS=0; 1 MBps / TX/RX1 / ext. Antenna typ 2



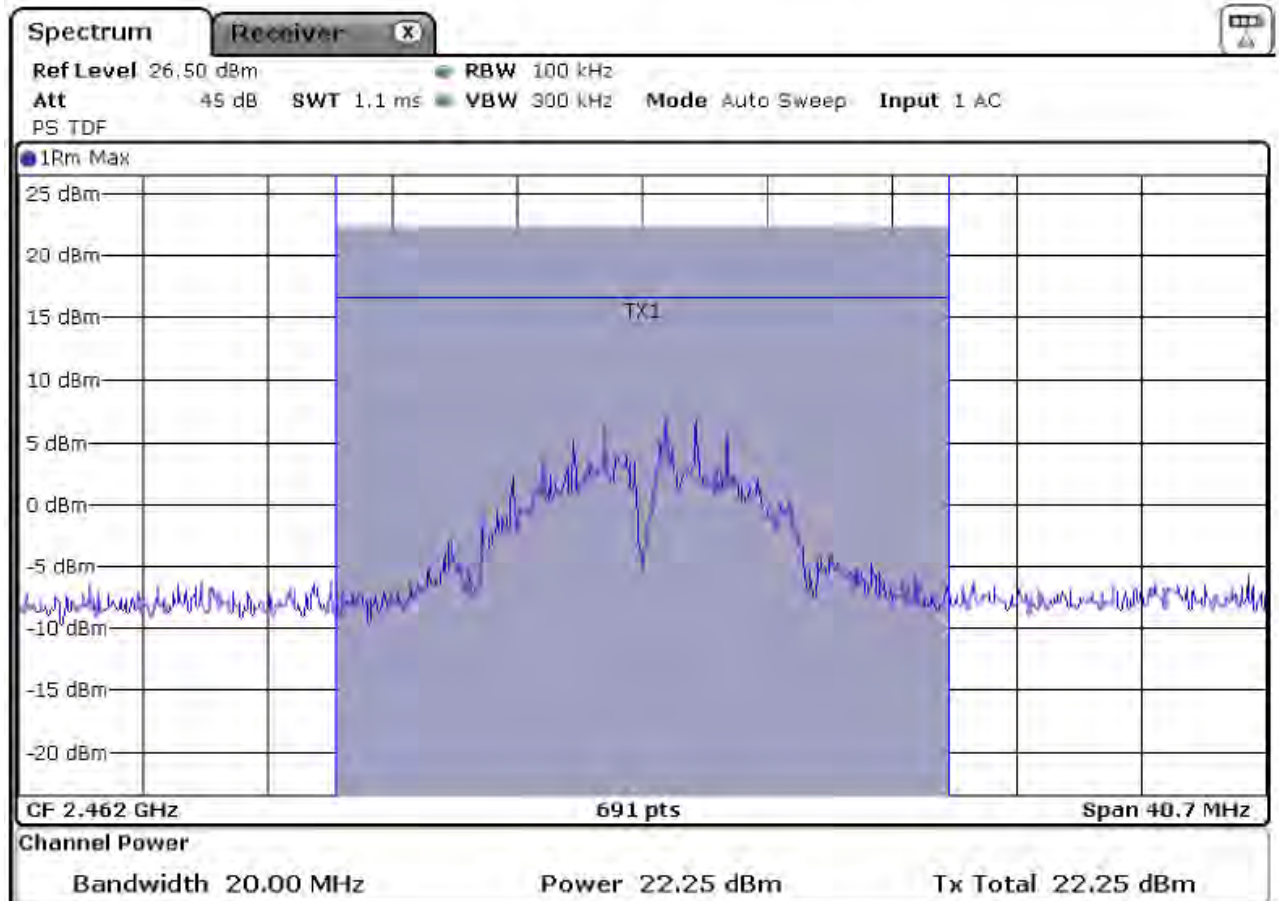
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Output power of fundamental emissions
acc. FCC Subpart C § 15.209 / RSS-247



Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11b, CH.11, CCK, BW = 20 MHz



Position: X / Polarisation: V

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2462	22,25	7,75	30,00	pass



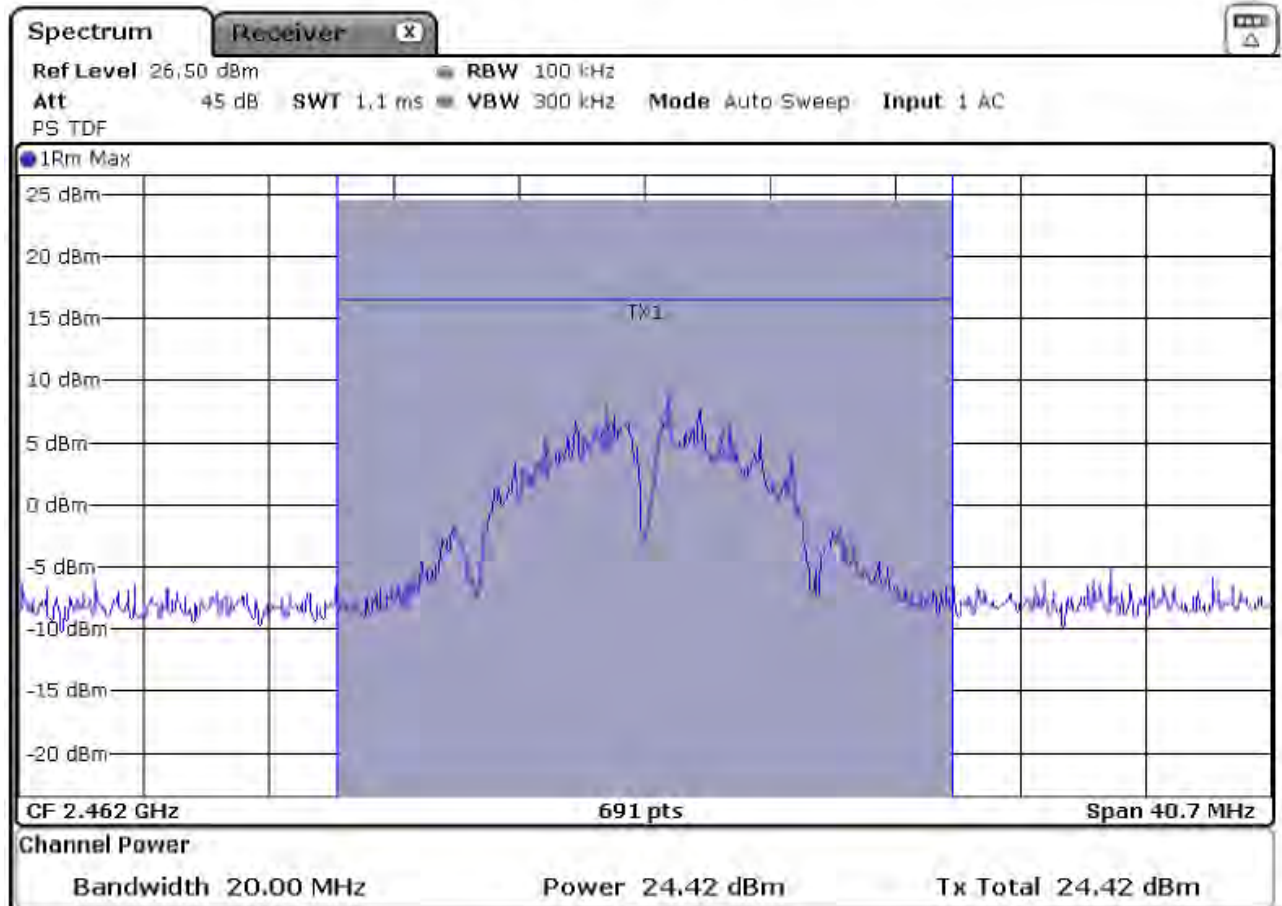
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Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11b, CH. 11, CCK, BW = 20 MHz



Position: X / Polarisation: H

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2462	24,42	5,58	30,00	pass



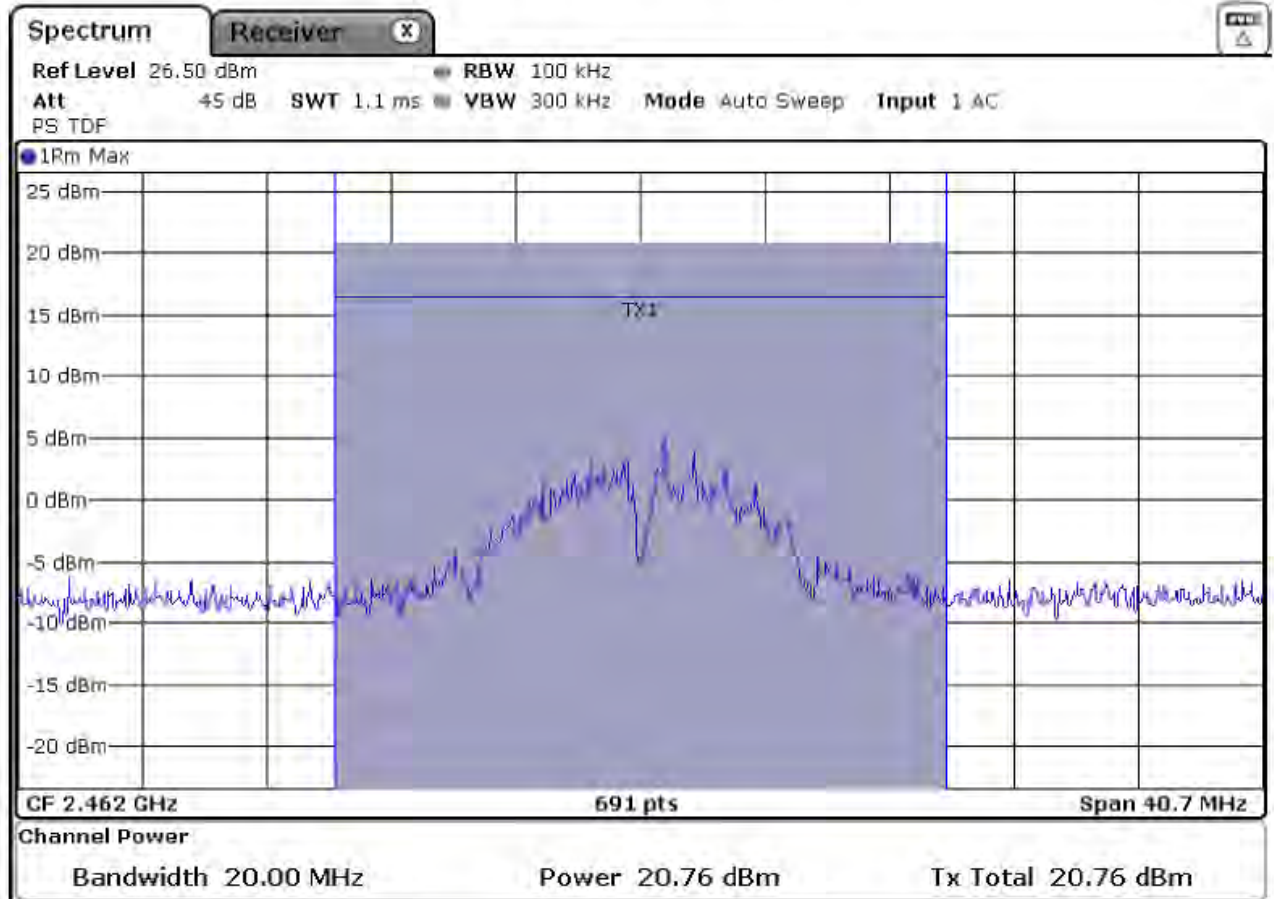
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Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11b, CH.11, CCK, BW = 20 MHz



Position: Y / Polarisation: V

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2462	20,76	9,24	30,00	pass



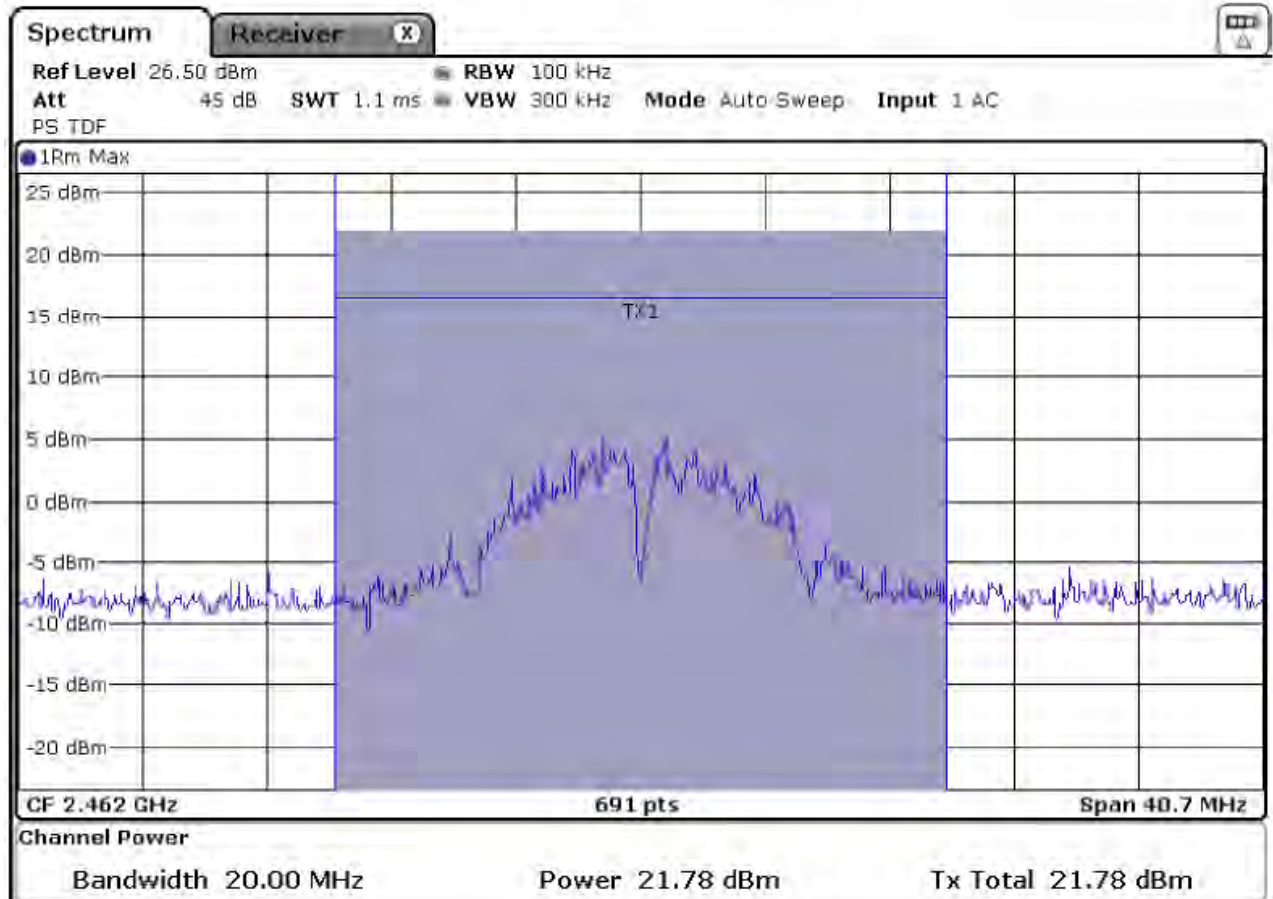
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Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11b, CH.11, CCK, BW = 20 MHz



Position: Y / Polarisation: H

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2462	21,78	8,22	30,00	pass



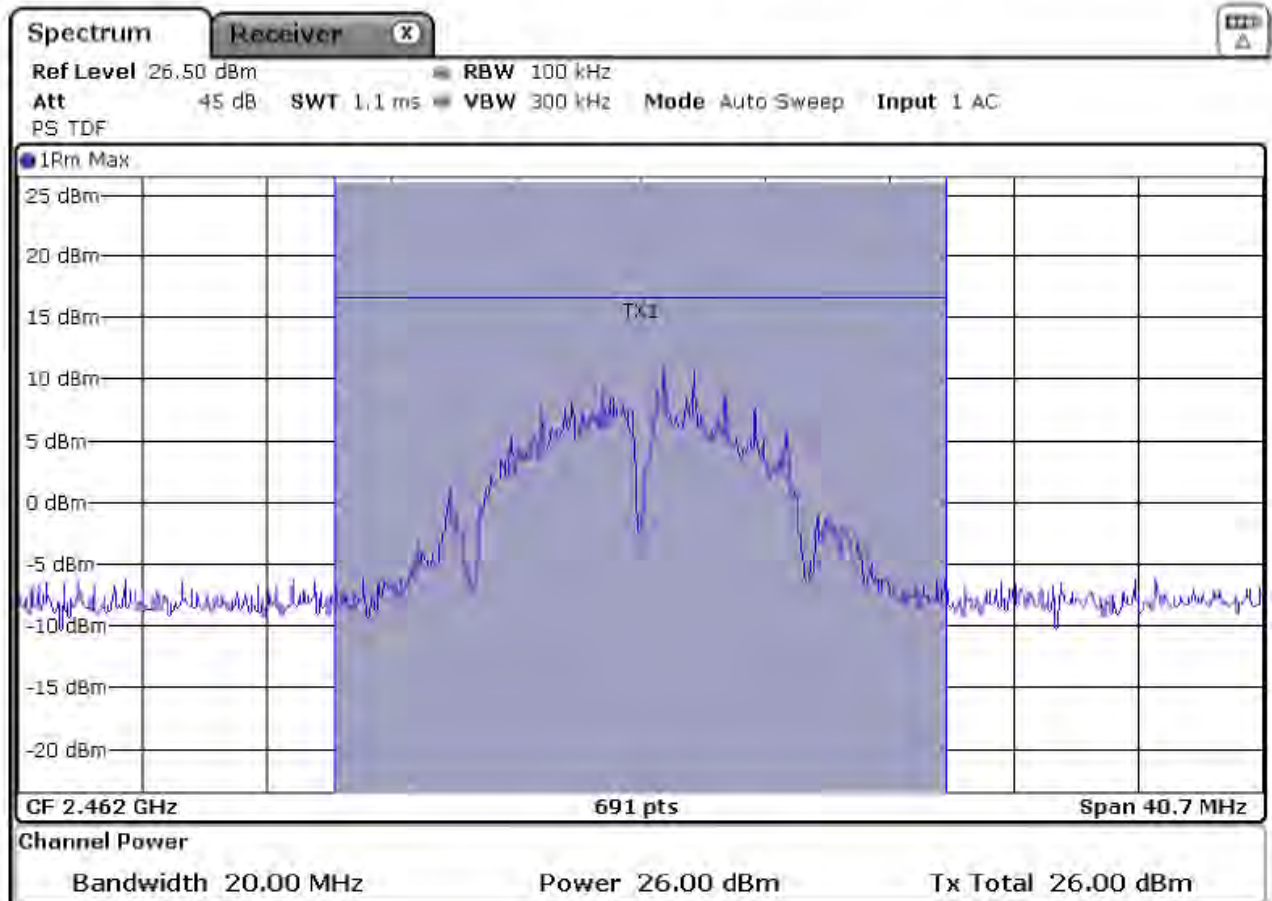
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Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11b, CH.11, CCK, BW = 20 MHz



Position: Z / Polarisation: V

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2462	26,00	4,00	30,00	pass



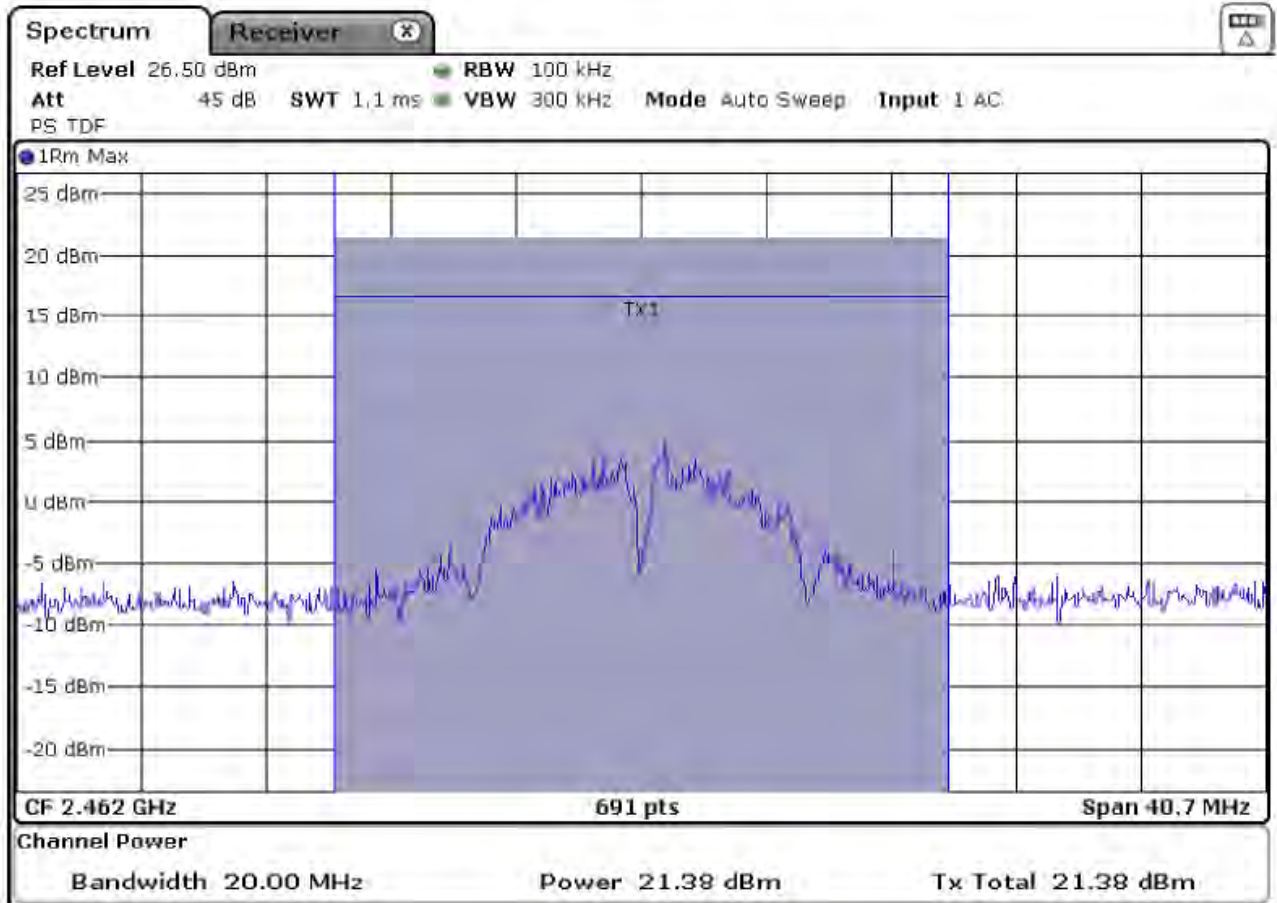
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Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11b, CH.11, CCK, BW = 20 MHz



Position: Z / Polarisation: H

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2462	21,38	8,62	30,00	pass



FCC 1

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Ref.-No.: 20/01-0031

Summary of the findings

Test conditions	Polarization of receiving antenna	Tested frequency [MHz]	Meas value [dBm]	Limit [dBm]	Result
Position: X	V	2462	22,25	30,00	pass
Position: X	H	2462	24,42	30,00	pass
Position: Y	V	2462	20,76	30,00	pass
Position: Y	H	2462	21,78	30,00	pass
Position: Z	V	2462	26,00	30,00	pass
Position: Z	H	2462	21,38	30,00	pass

Lowest operating frequency - 802.11g 20MHz / OFDM – MCS=0; 6 MBps / TX/RX0 / ext. Antenna typ 2



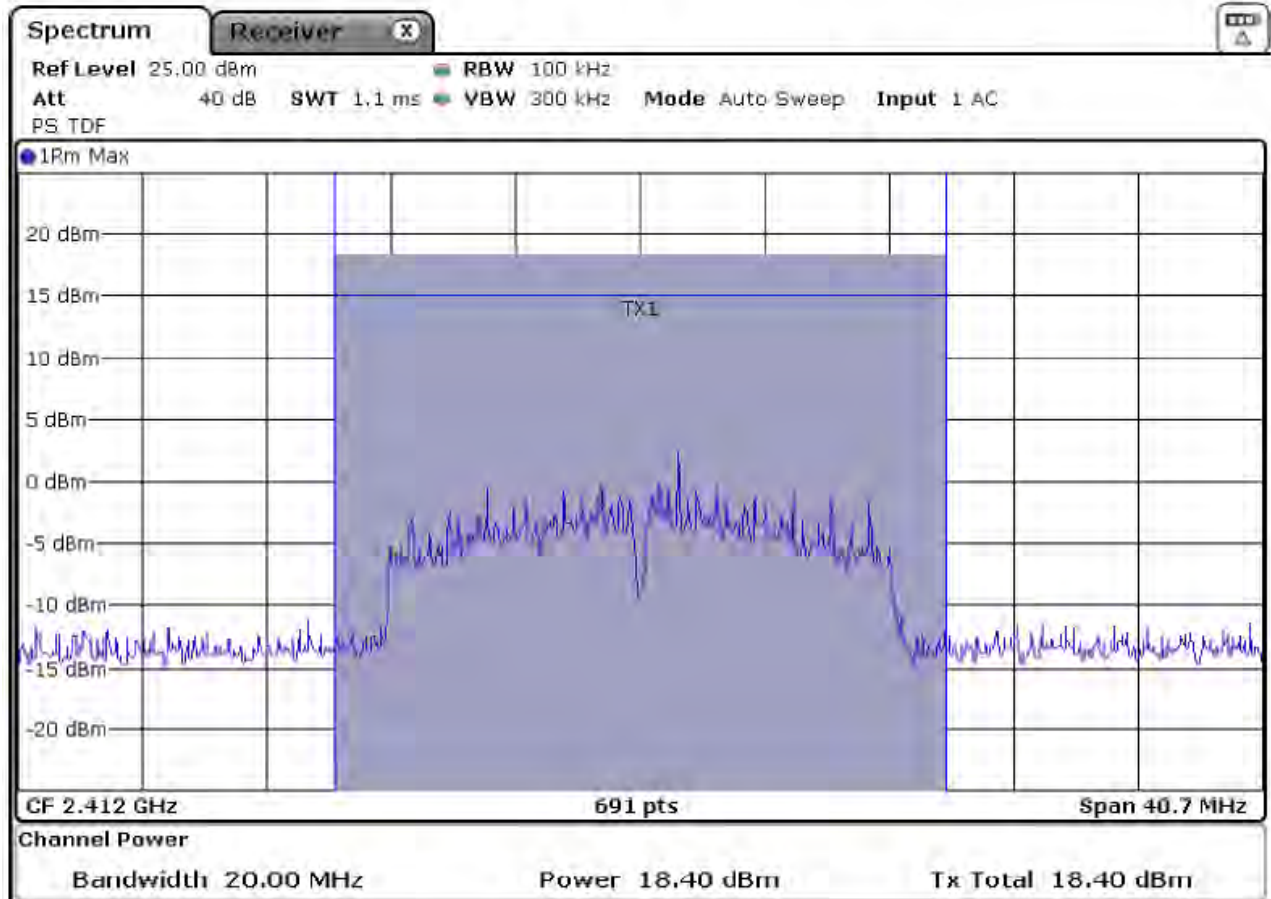
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Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11g, CH.01, OFDM, BW = 20 MHz



Position: X/Y/Z / Polarisation: V

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2412	18,40	11,60	30,00	pass



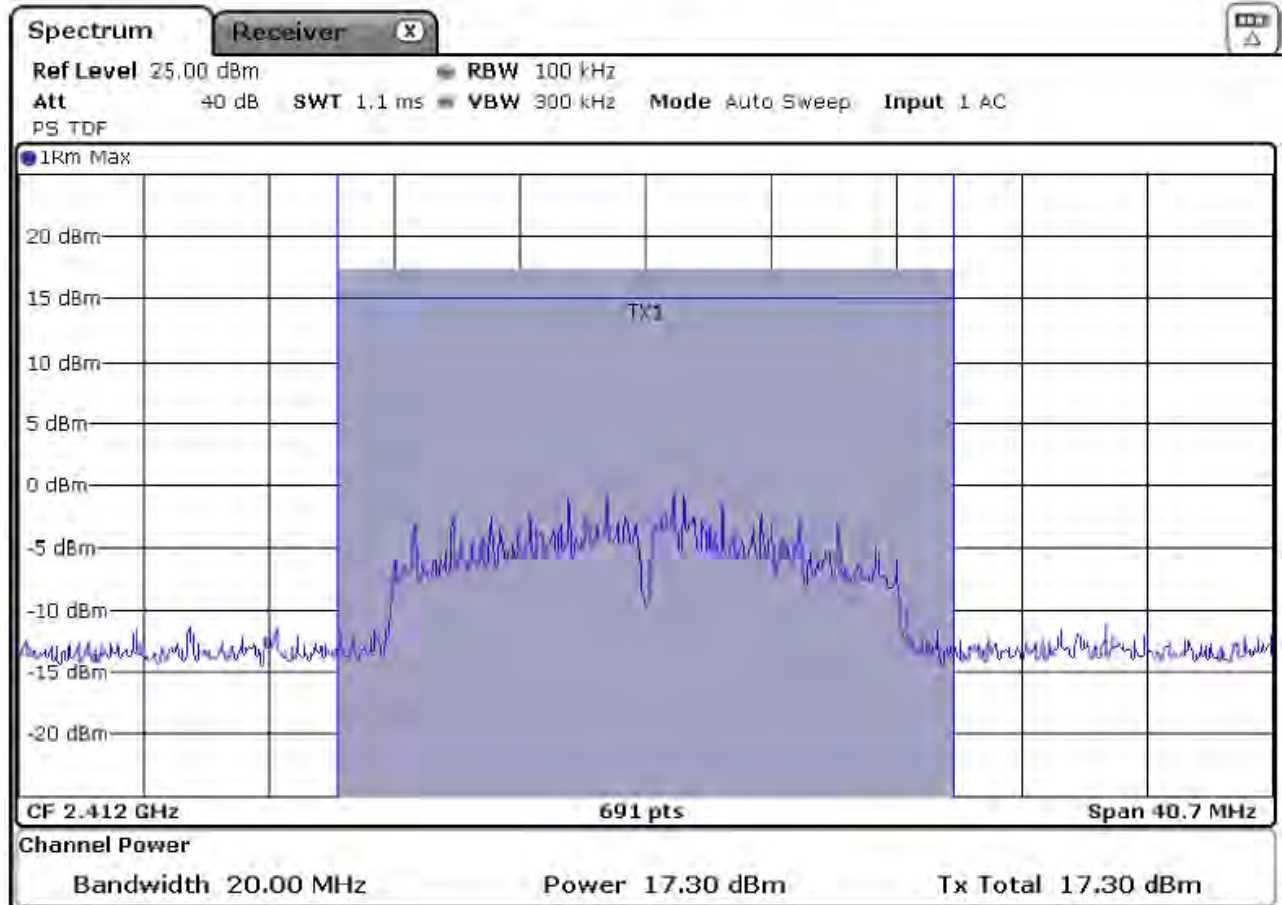
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Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11g, CH.01, OFDM, BW = 20 MHz



Position: X/Y/Z / Polarisation: H

Freque. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2412	17,30	12,70	30,00	pass

Middle operating frequency - 802.11g 20MHz / OFDM – MCS=0; 6 MBps / TX/RX0 / ext. Antenna typ 2



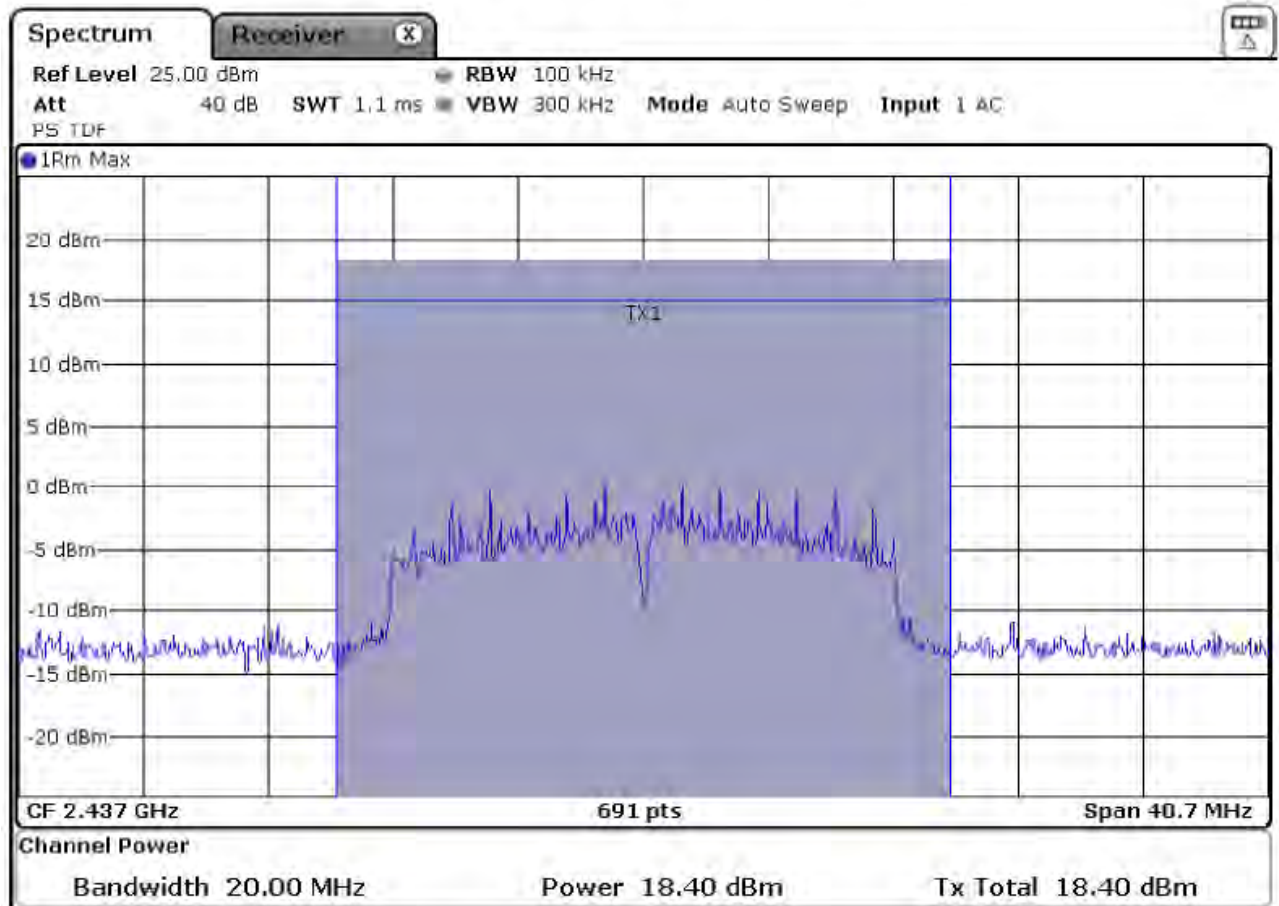
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Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11g, CH.06, OFDM, BW = 20 MHz



Position: X/Y/Z / Polarisation: V				
Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2437	18,40	11,60	30,00	pass



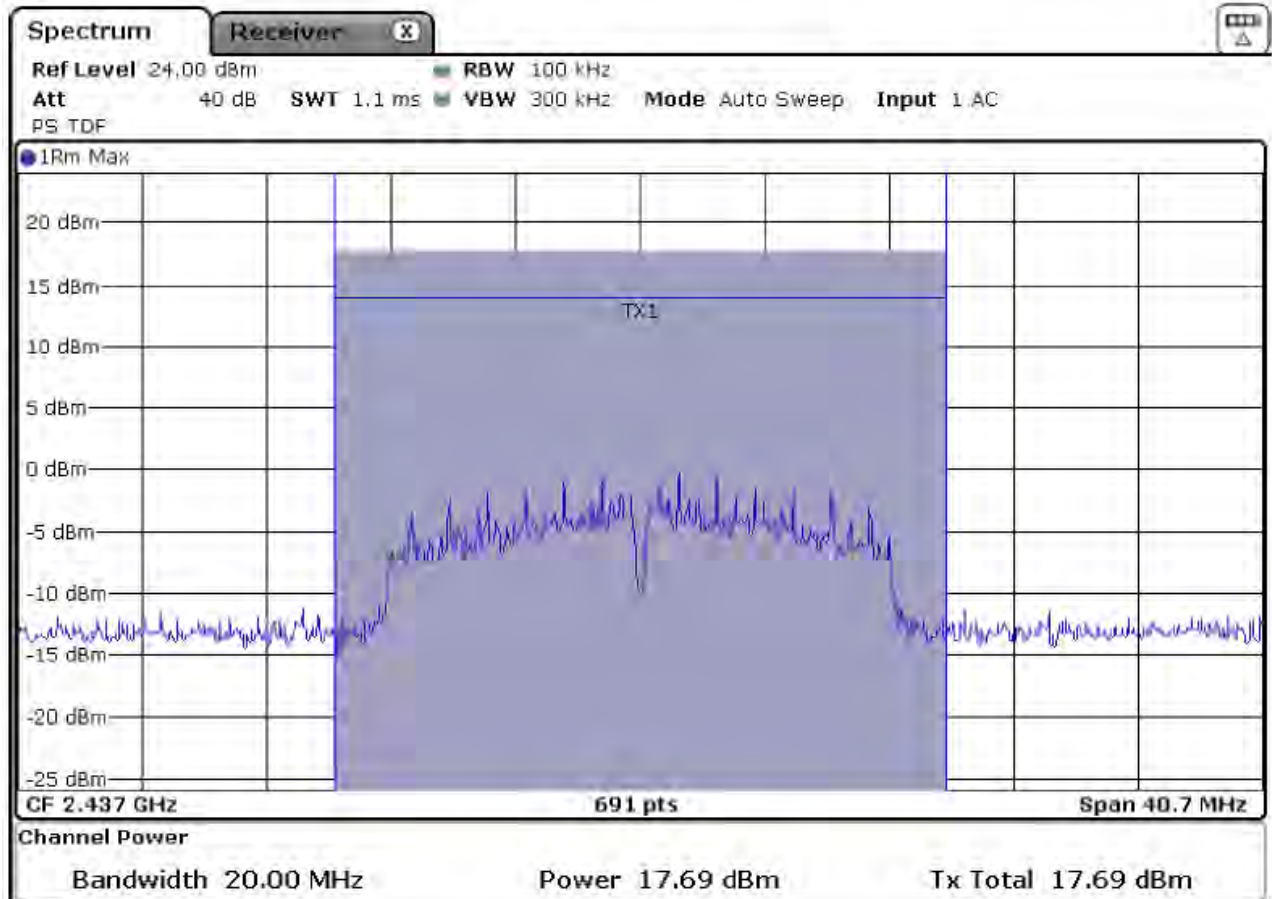
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Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11g, CH.06, OFDM, BW = 20 MHz



Position: X/Y/Z / Polarisation: H

Freque. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2437	17,69	12,31	30,00	pass

Highest operating frequency - 802.11g 20MHz / OFDM – MCS=0; 6 MBps / TX/RX0 / ext. Antenna typ 2



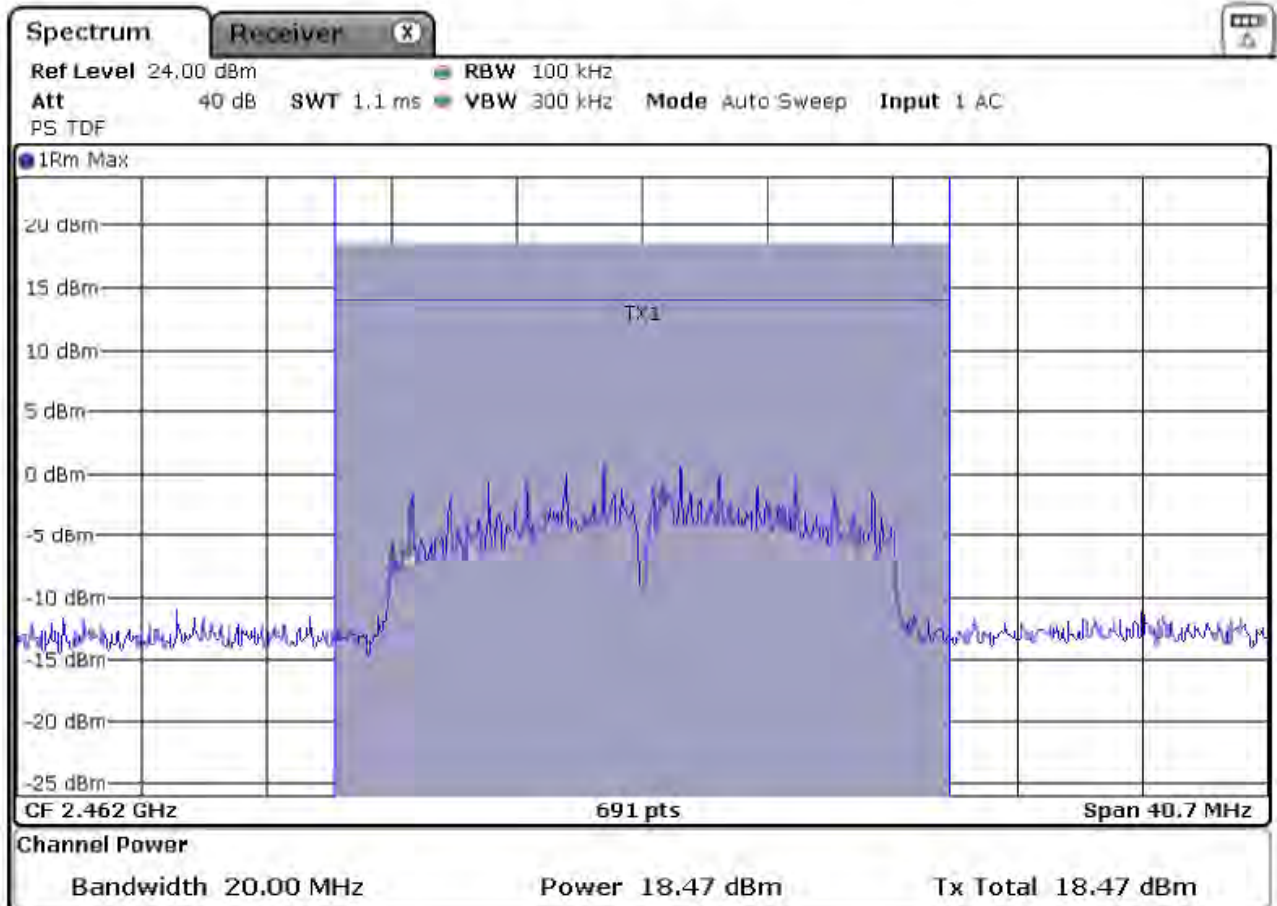
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Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11g, CH.11, OFDM, BW = 20 MHz



Position: X/Y/Z / Polarisation: V

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2462	18,47	11,53	30,00	pass



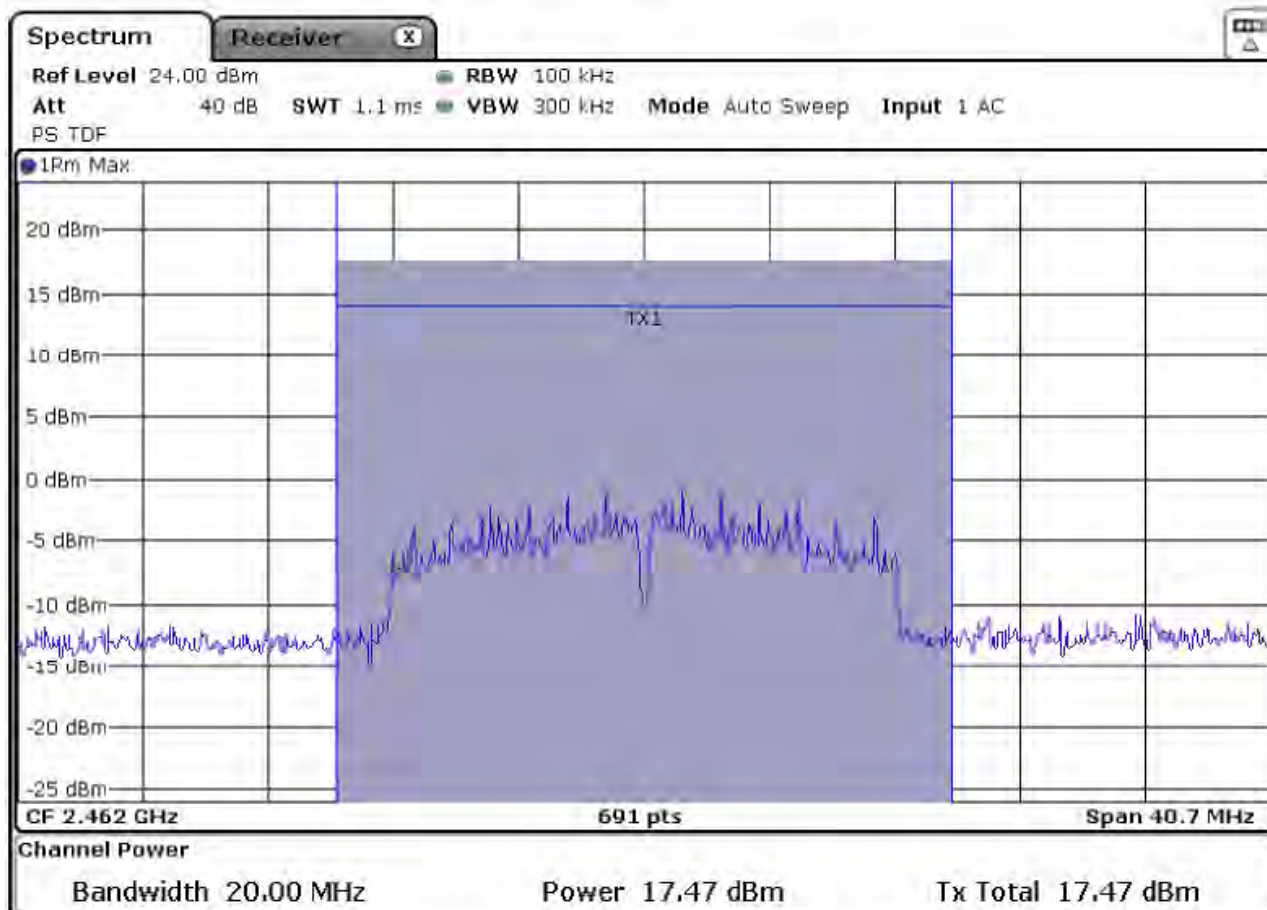
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Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11g, CH.11, OFDM, BW = 20 MHz



Position: X/Y/Z / Polarisation: H

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2462	17,47	12,53	30,00	pass

Maximum output power radiated measurement:
802.11g 20MHz / OFDM – MCS=0; 6 MBps / TX/RX0 / external Antenna typ 2

Channel	Frequency [MHz]	Output Power		Limit		Result
		[dBm]	[mW]	[dBm]	[mW]	
1	2412	18.40	69.18	30	1000	Pass
6	2437	18.40	69.18	30	1000	Pass
11	2462	18.47	70.31	30	1000	Pass

Lowest operating frequency - 802.11g 20MHz / OFDM – MCS=0; 6 MBps / TX/RX1 / ext. Antenna typ2



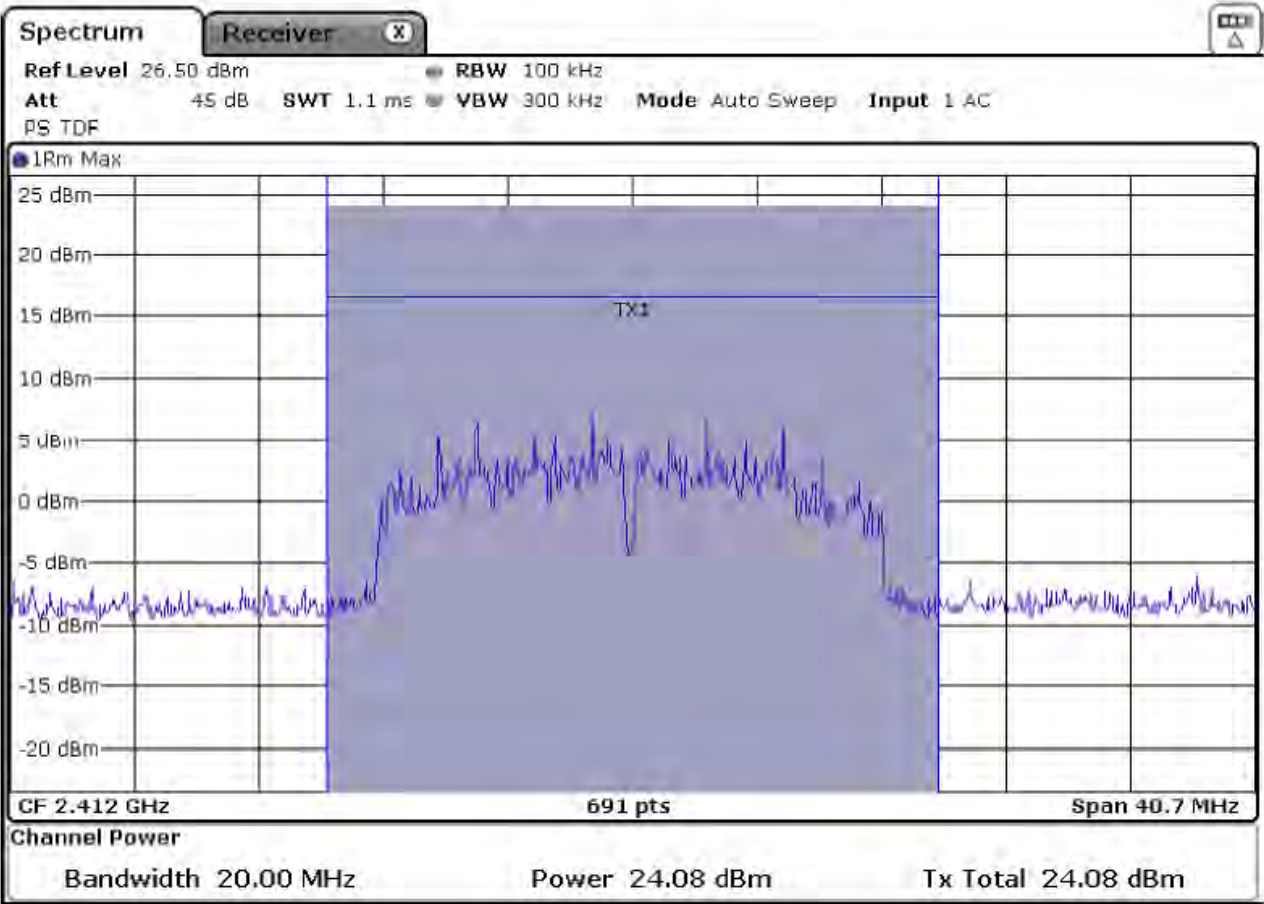
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Output power of fundamental emissions
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Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11g, CH.1, OFDM, BW = 20 MHz



Position: X / Polarisation: V				
Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2412	24,08	5,92	30,00	pass

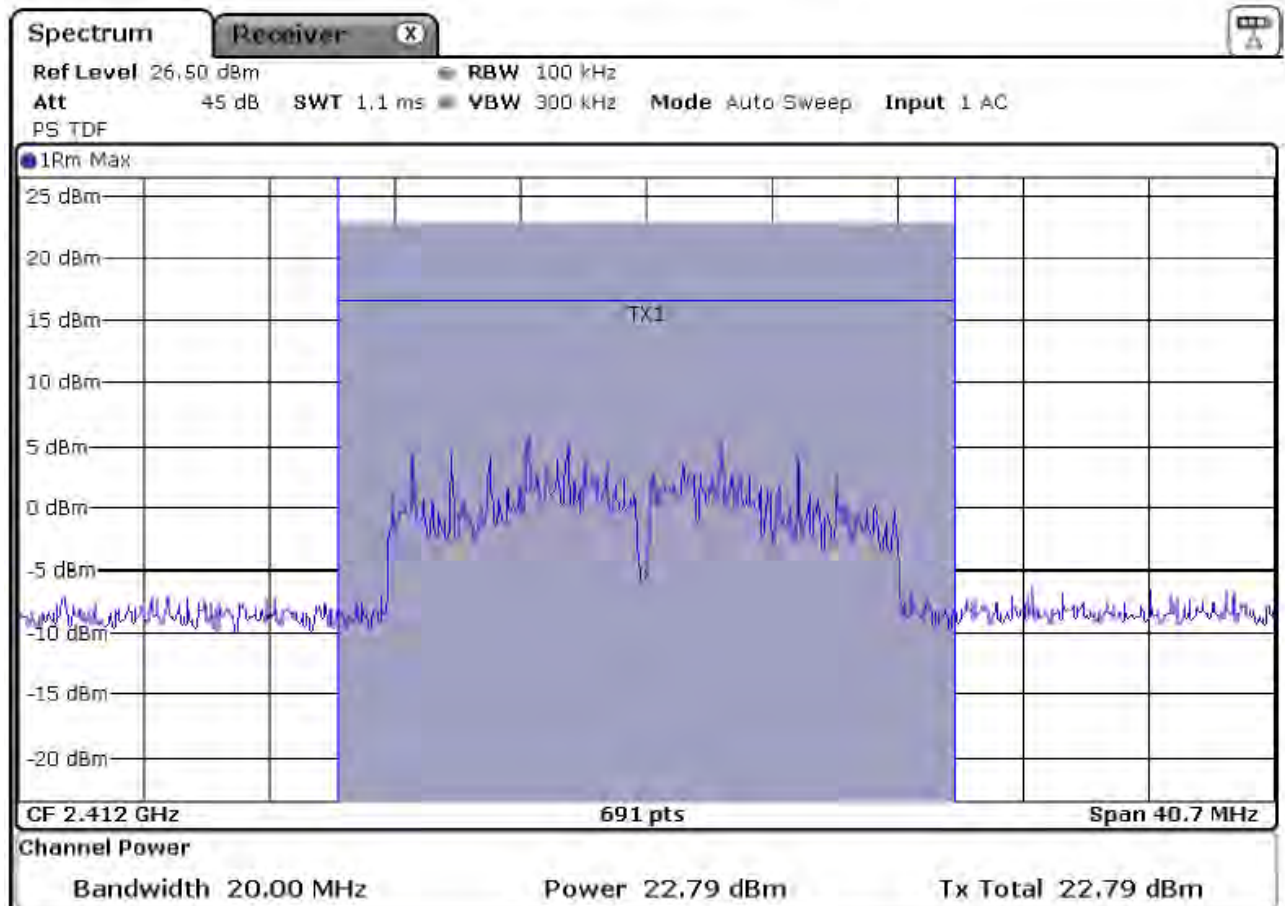


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Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11g, CH.1, OFDM, BW = 20 MHz



Position: X / Polarisation: H

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2412	22.79	7.21	30.00	pass



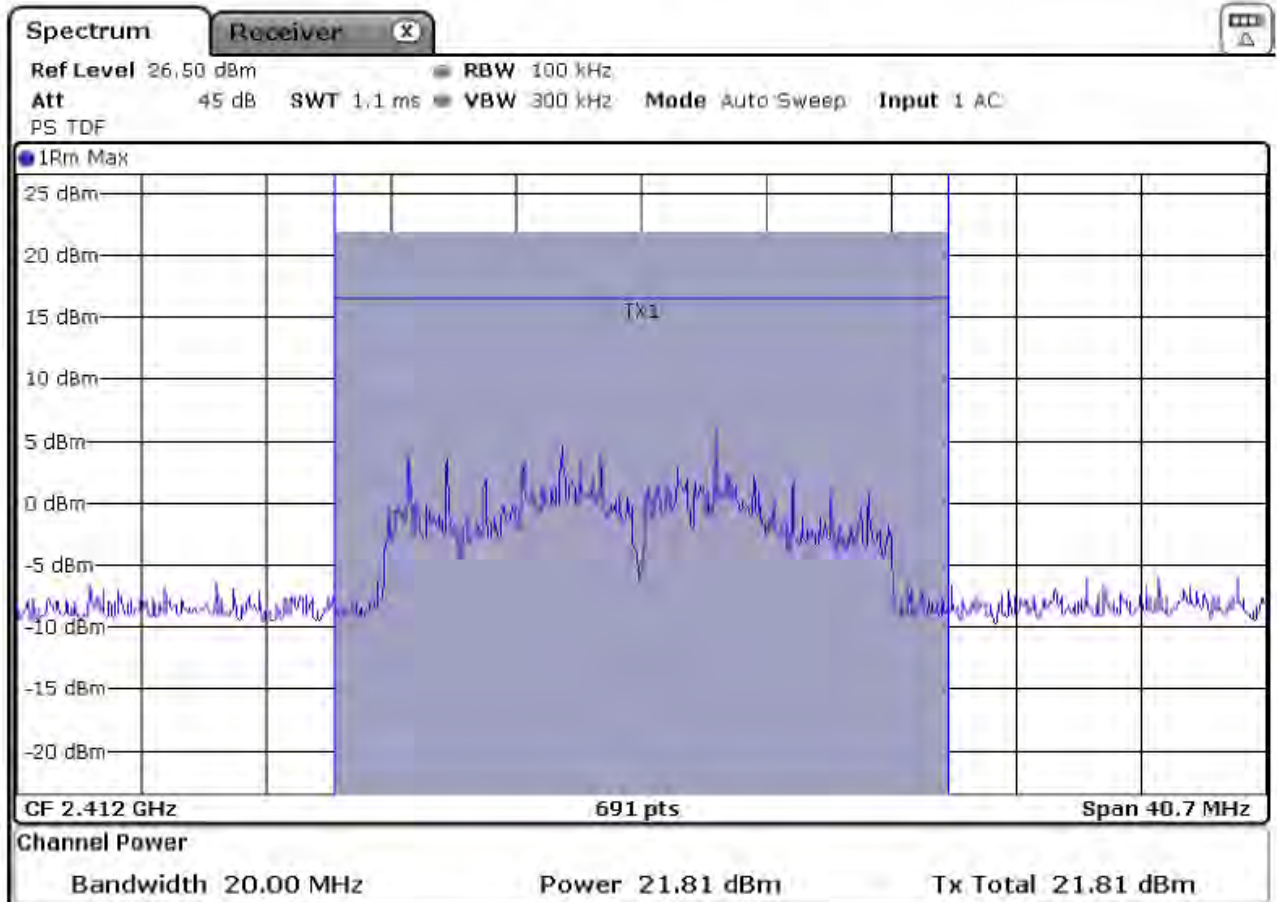
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Output power of fundamental emissions
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Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11g, CH.1, OFDM, BW = 20 MHz



Position: Y / Polarisation: V

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2412	21,81	8,19	30,00	pass

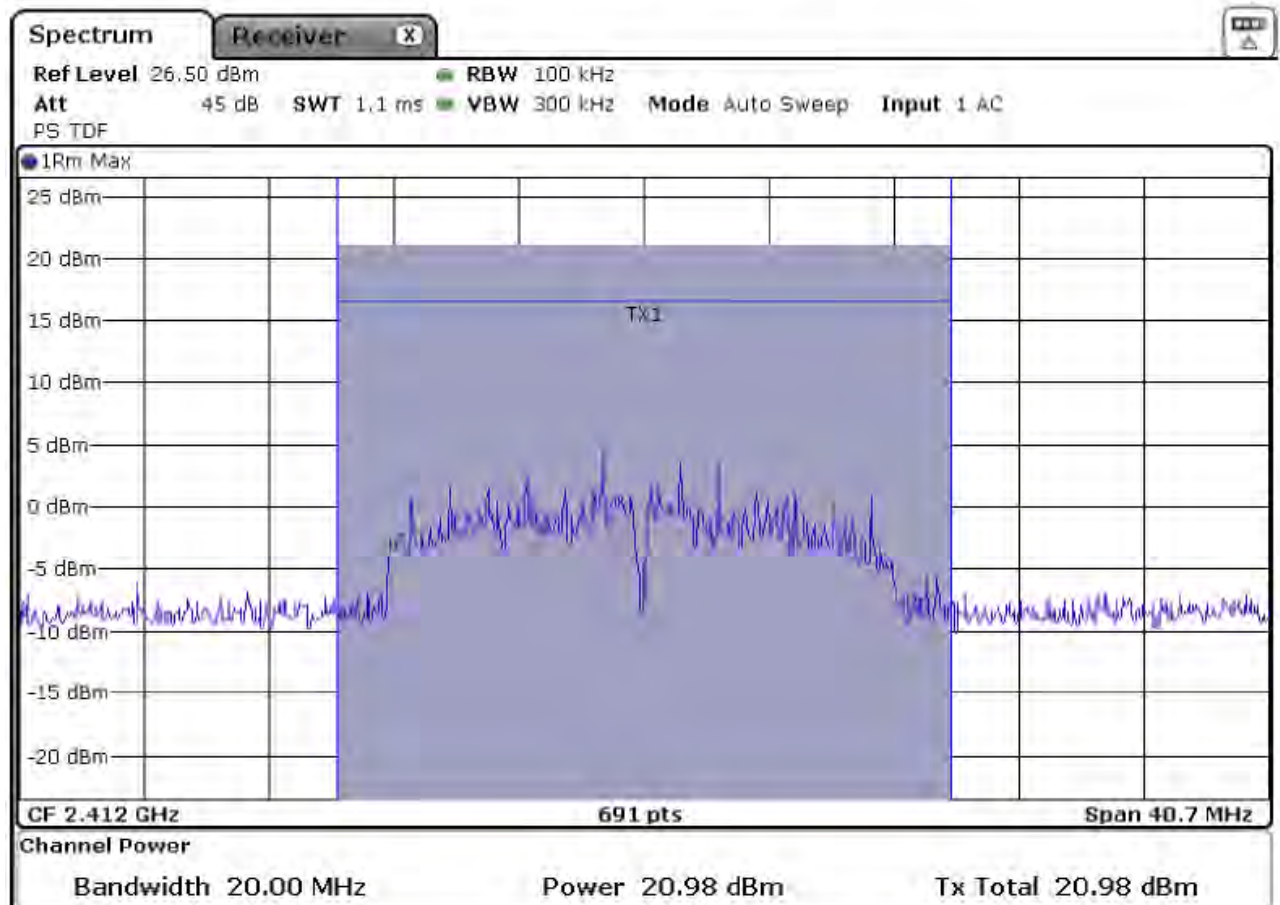


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Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11g, CH.1, OFDM, BW = 20 MHz



Position: Y / Polarisation: H

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2412	20,98	9,02	30,00	pass



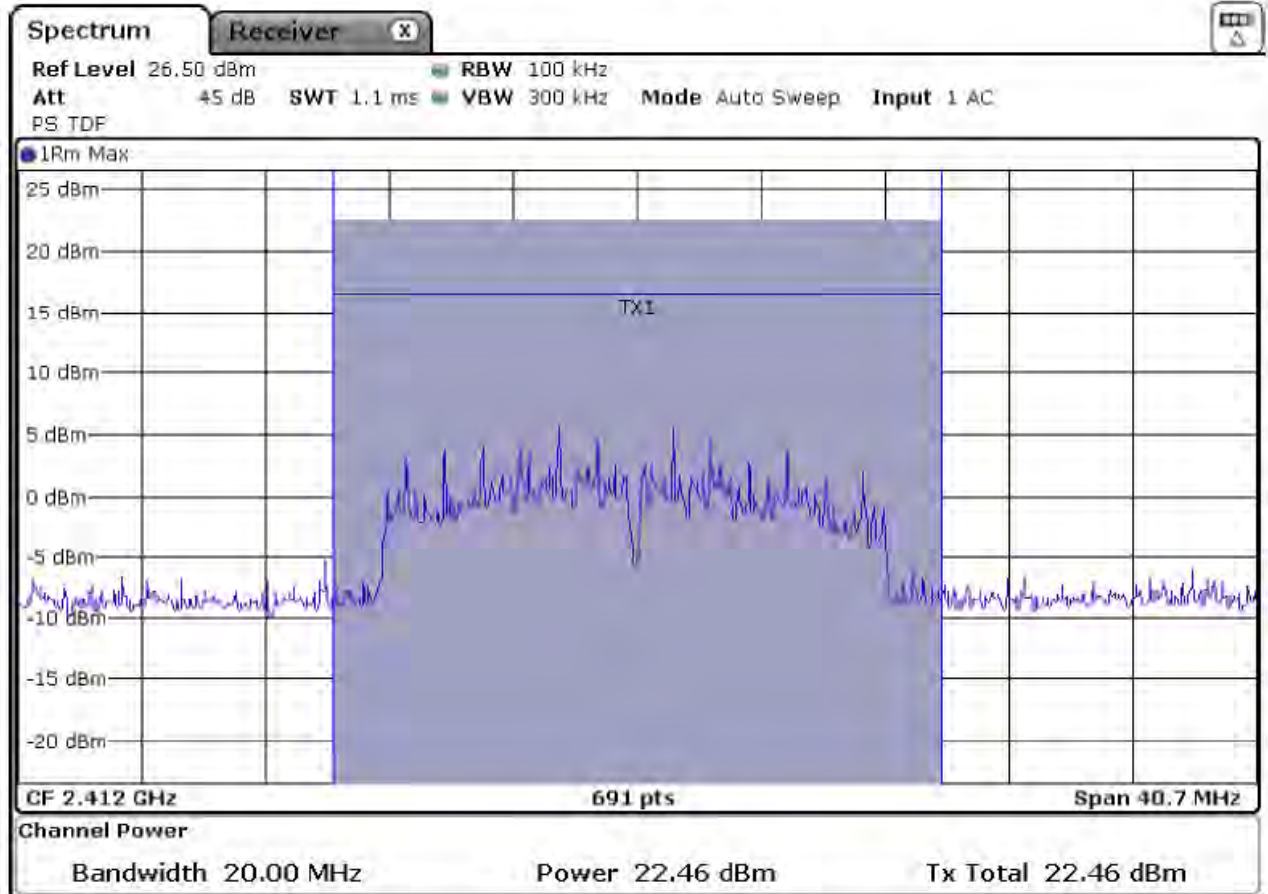
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Operating Mode: WLAN 802.11g, CH.1, OFDM, BW = 20 MHz



Position: Z / Polarisation: V

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2412	22,46	7,54	30,00	pass



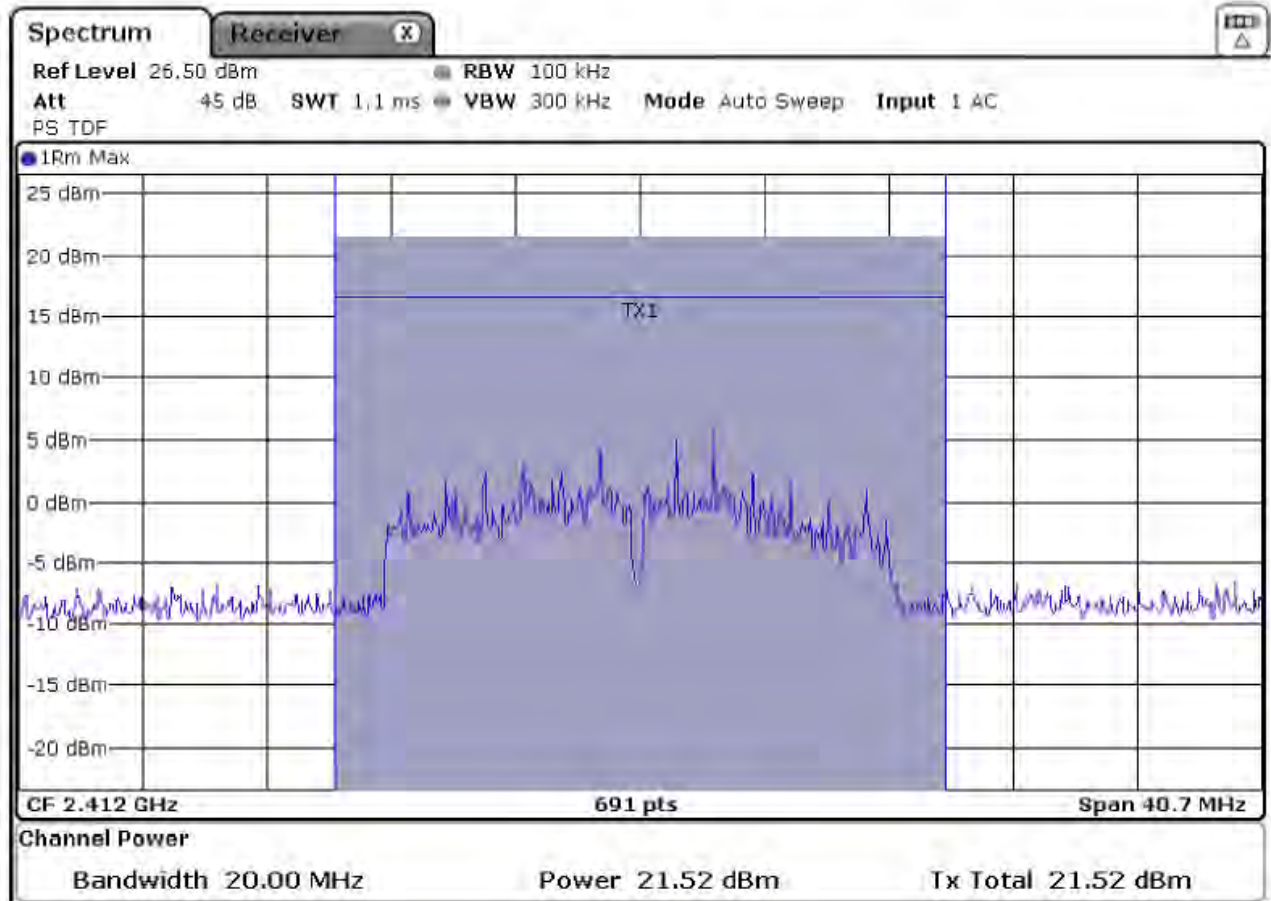
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Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11g, CH.1, OFDM, BW = 20 MHz



Position: Z / Polarisation: H

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2412	21,52	8,48	30,00	pass

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Summary of the findings

Test conditions	Polarization of receiving antenna	Tested frequency [MHz]	Meas value [dBm]	Limit [dBm]	Result
Position: X	V	2412	24,08	30,00	pass
Position: X	H	2412	22,79	30,00	pass
Position: Y	V	2412	21,81	30,00	pass
Position: Y	H	2412	20,98	30,00	pass
Position: Z	V	2412	22,46	30,00	pass
Position: Z	H	2412	21,52	30,00	pass

Middle operating frequency - 802.11g 20MHz / OFDM – MCS=0; 6 MBps / TX/RX1 / ext. Antenna typ 2



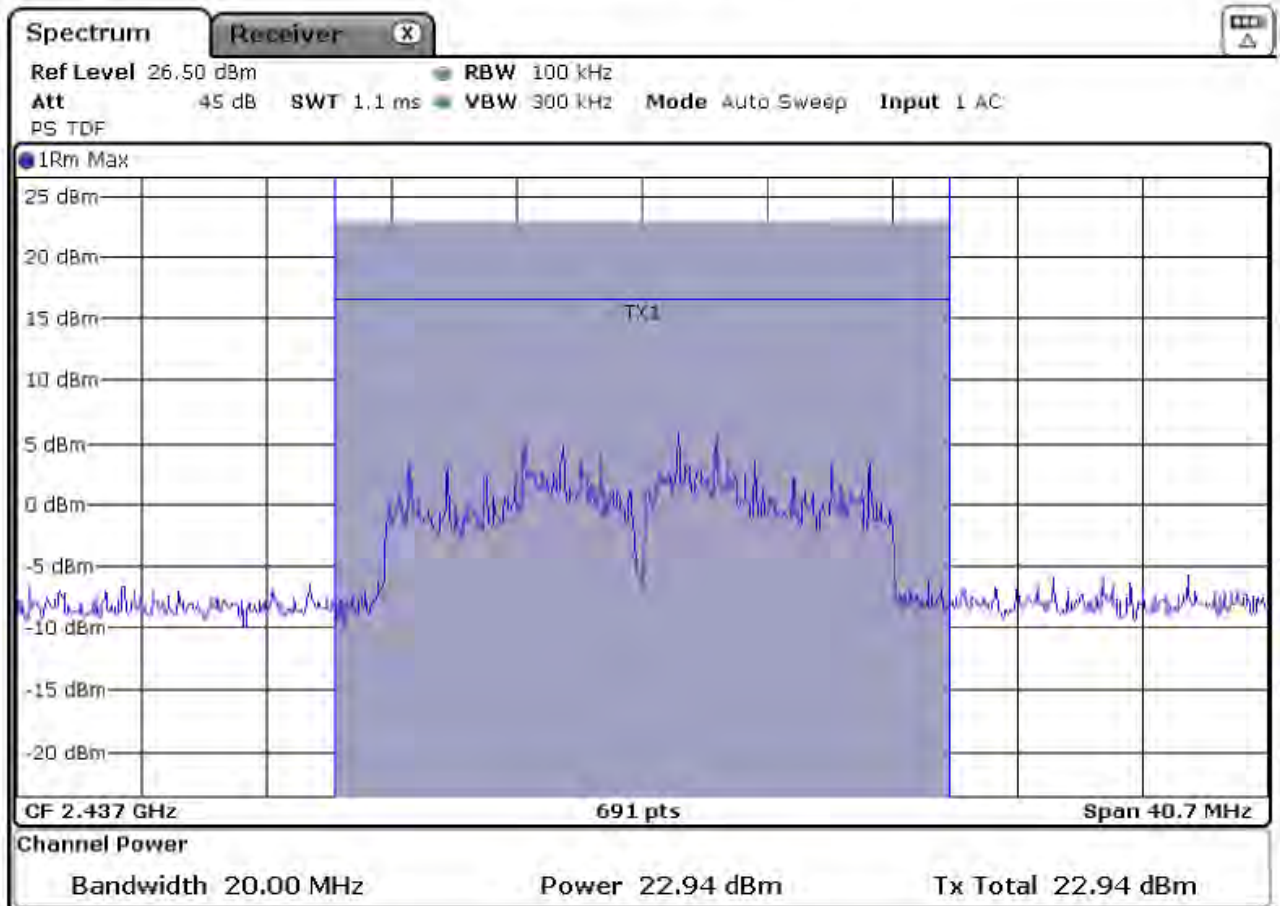
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Output power of fundamental emissions
acc. FCC Subpart C § 15.209 / RSS-247



Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11g, CH.6, OFDM, BW = 20 MHz



Position: X / Polarisation: V

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2437	22,94	7,06	30,00	pass



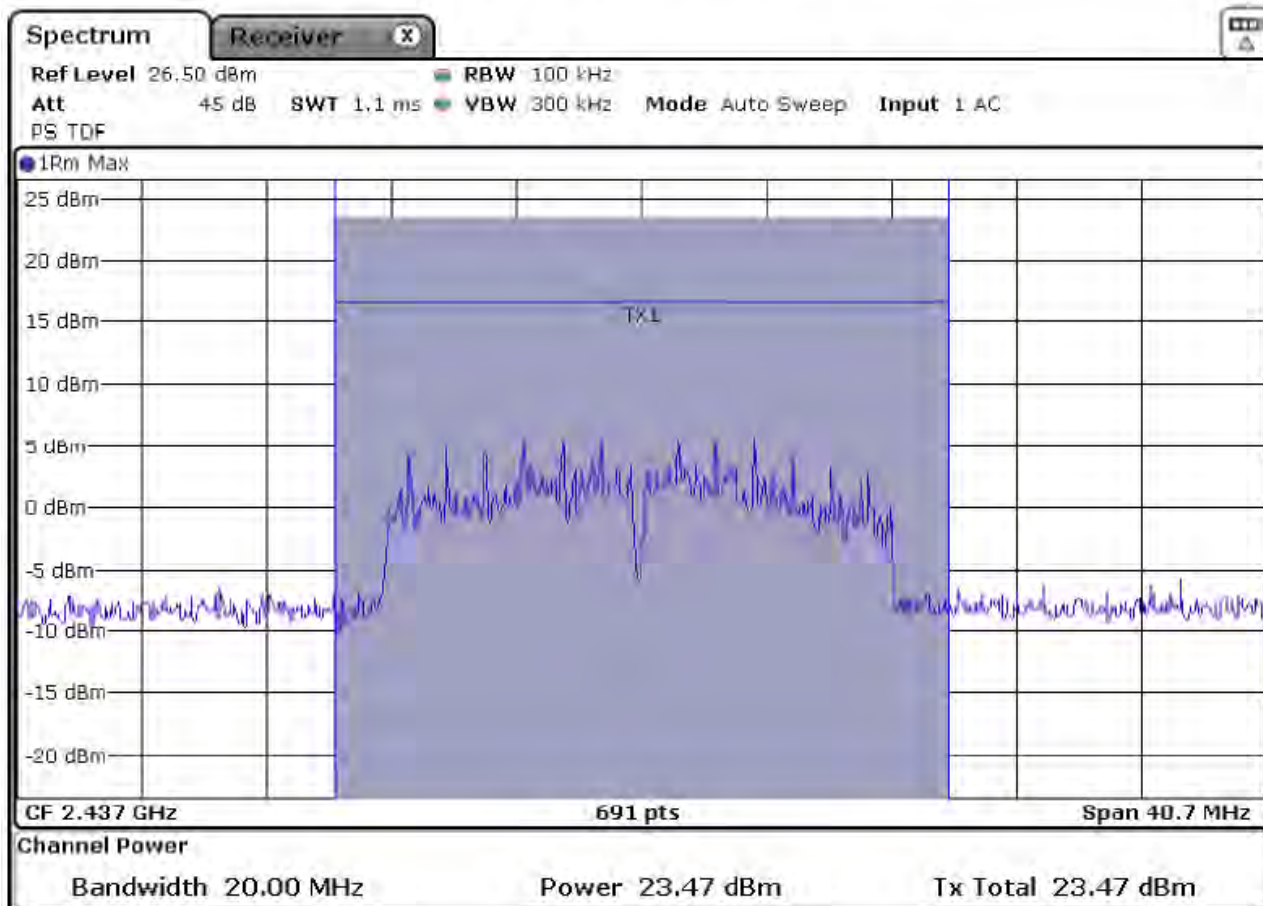
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Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11g, CH.6, OFDM, BW = 20 MHz



Position: X / Polarisation: H

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2437	23,47	6,53	30,00	pass

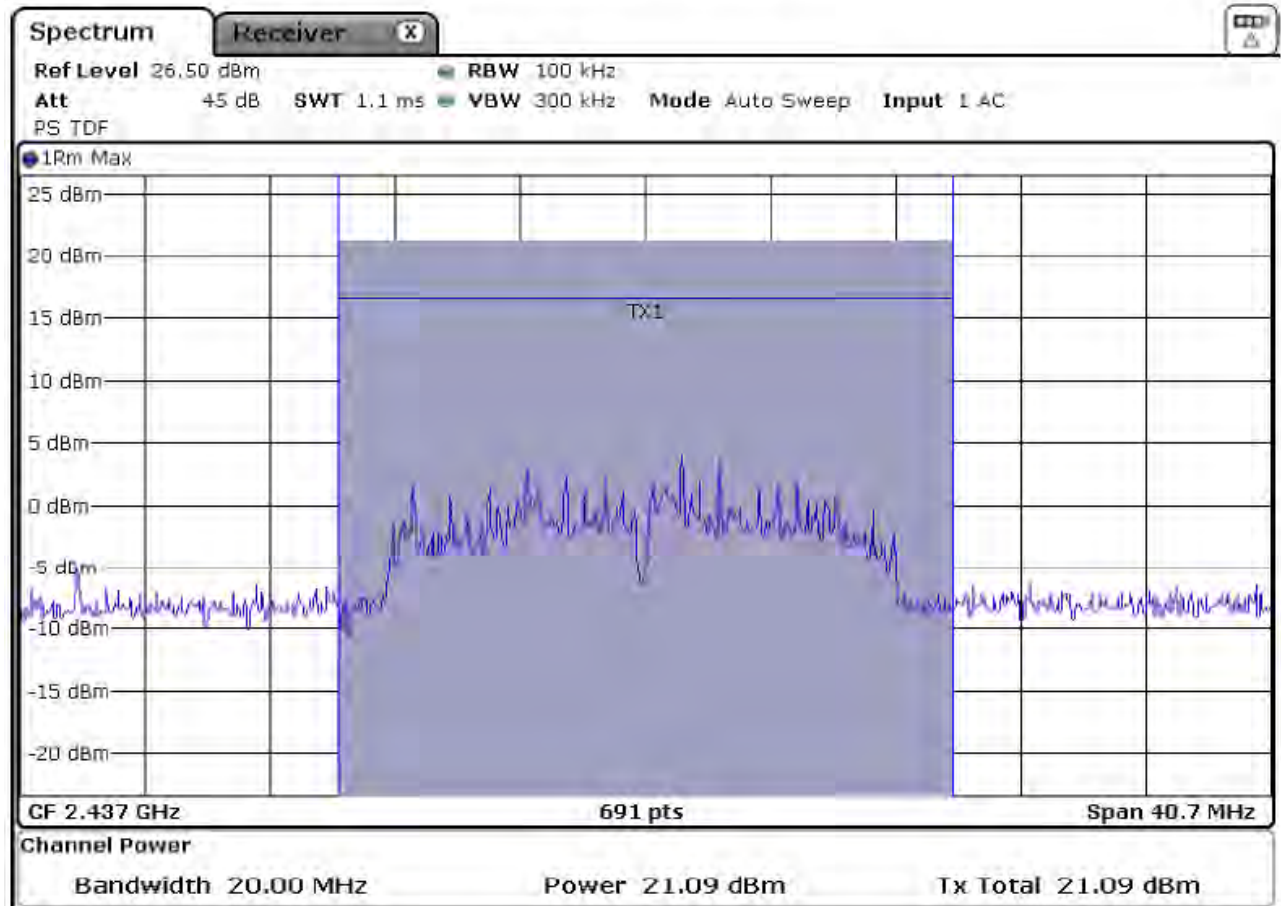


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Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11g, CH.6, OFDM, BW = 20 MHz



Position: Y / Polarisation: V

Freque. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2437	21,09	8,91	30,00	pass



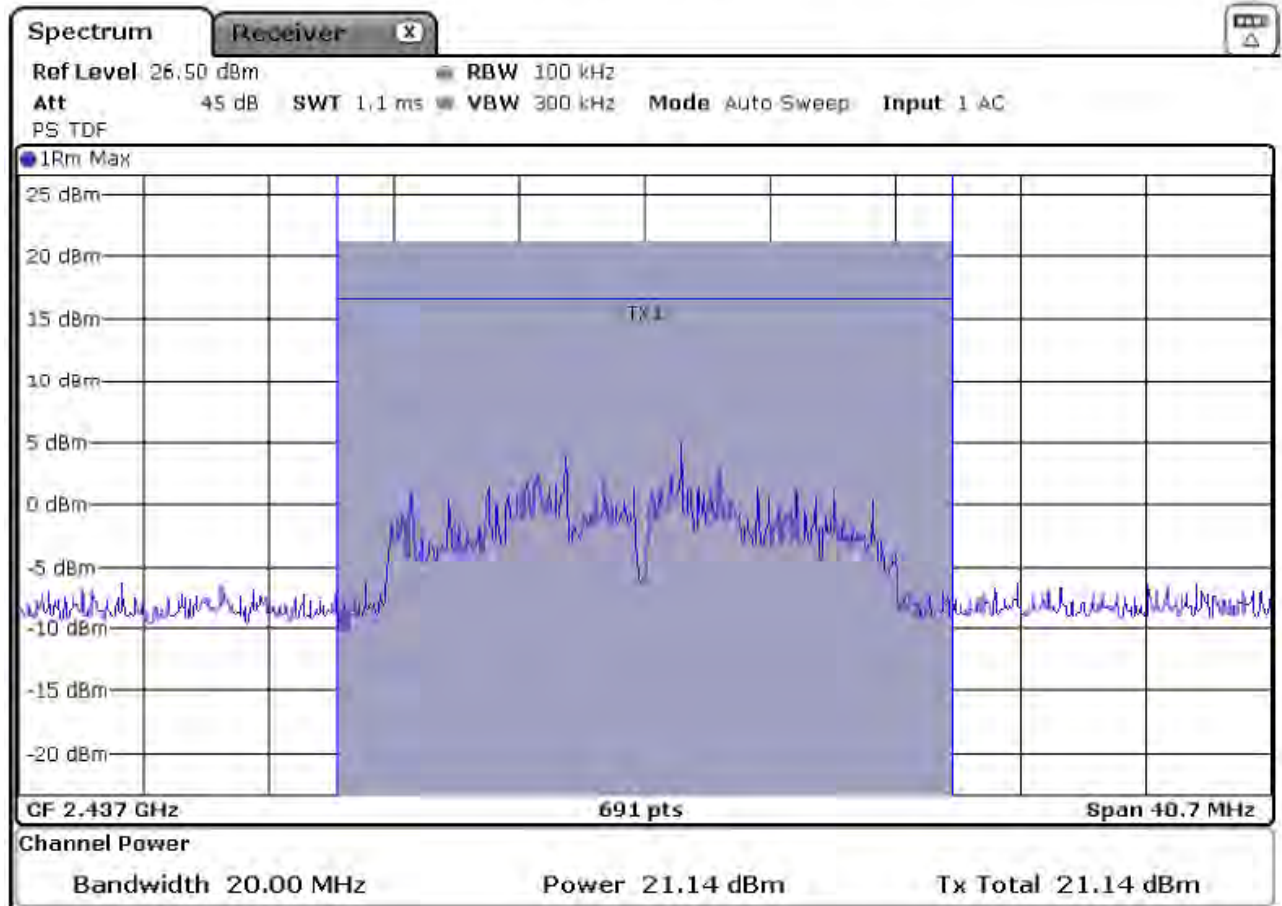
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Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11g, CH.6, OFDM, BW = 20 MHz



Position: Y / Polarisation: H

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2437	21,14	8,86	30,00	pass

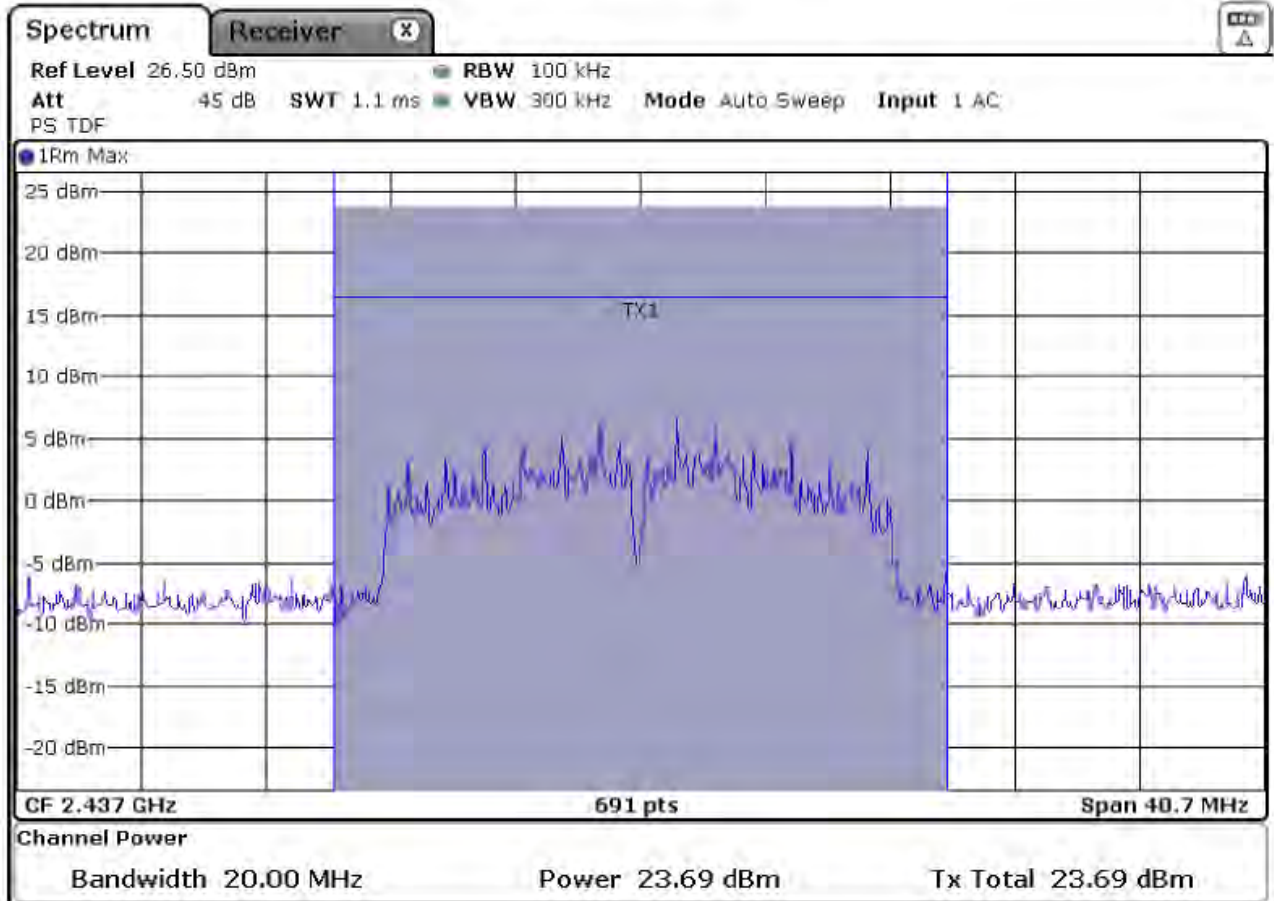


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Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11g, CH.6, OFDM, BW = 20 MHz



Position: Z / Polarisation: V

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2437	23,69	6,31	30,00	pass



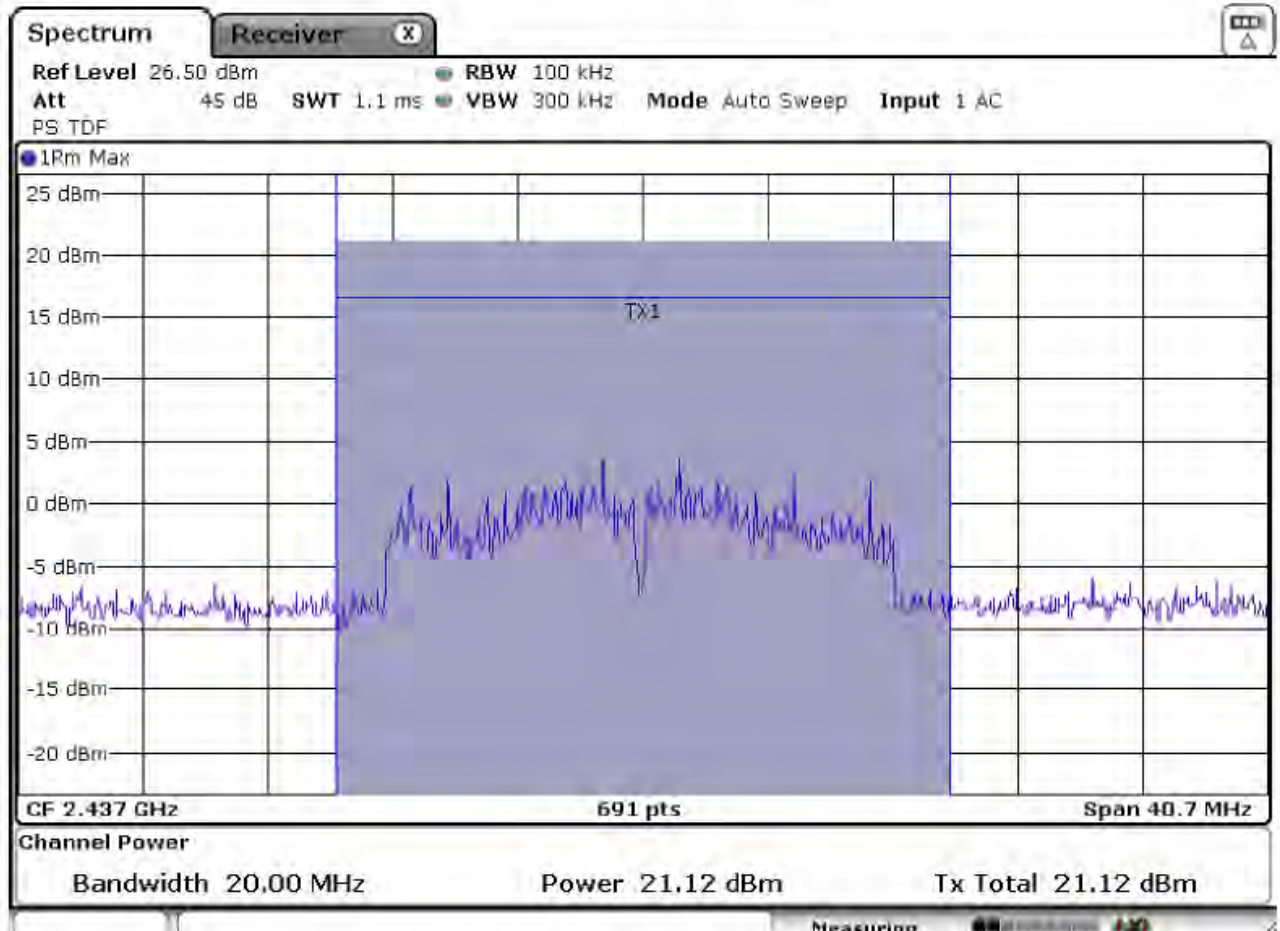
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Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11g, CH.6, OFDM, BW = 20 MHz



Position: Z / Polarisation: H

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2437	21,12	8,88	30,00	pass



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Ref.-No.: 20/01-0031

Summary of the findings

Test conditions	Polarization of receiving antenna	Tested frequency [MHz]	Meas value [dBm]	Limit [dBm]	Result
Position: X	V	2437	22,94	30,00	pass
Position: X	H	2437	23,47	30,00	pass
Position: Y	V	2437	21,09	30,00	pass
Position: Y	H	2437	21,14	30,00	pass
Position: Z	V	2437	23,69	30,00	pass
Position: Z	H	2437	21,12	30,00	pass

Highest operating frequency - 802.11g 20MHz / OFDM – MCS=0; 6 MBps / TX/RX1 / ext. Antenna typ 2



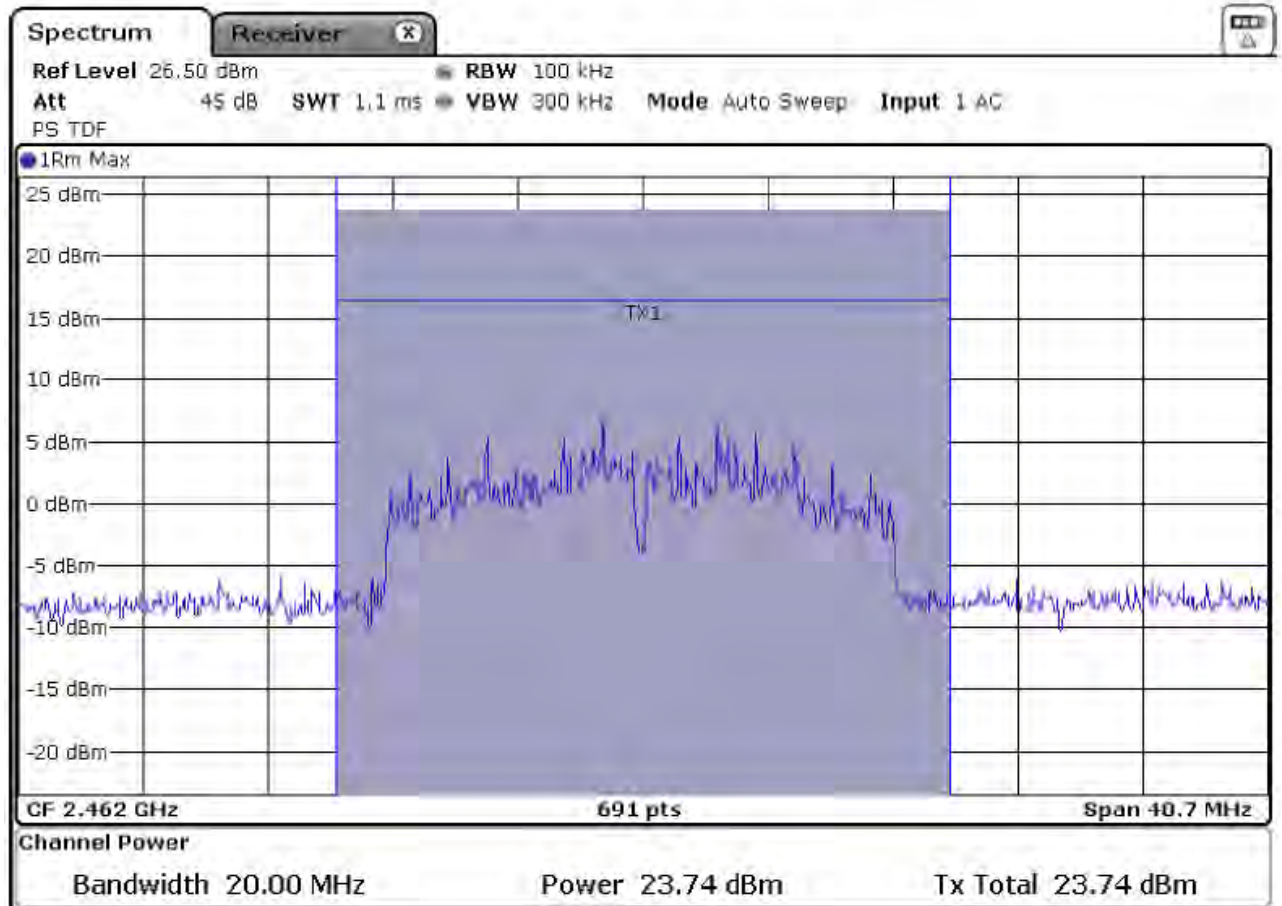
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Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11g, CH.11, OFDM, BW = 20 MHz



Position: X / Polarisation: V

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2462	23,74	6,26	30,00	pass

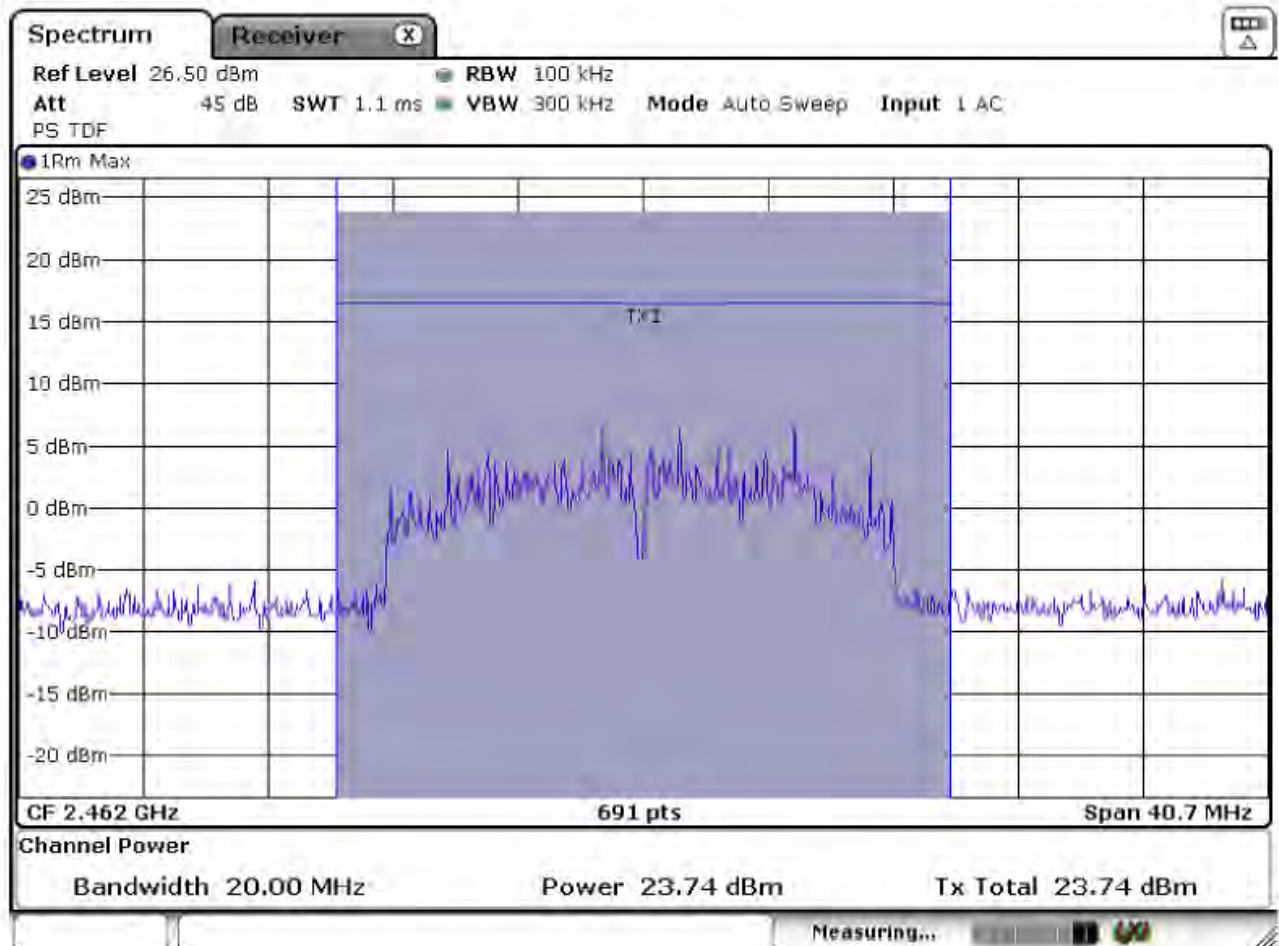


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Output power of fundamental emissions
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Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11g, CH.11, OFDM, BW = 20 MHz



Date: 16.SEP.2021 15:22:41

Position: X / Polarisation: H				
Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2462	23,74	6,26	30,00	pass



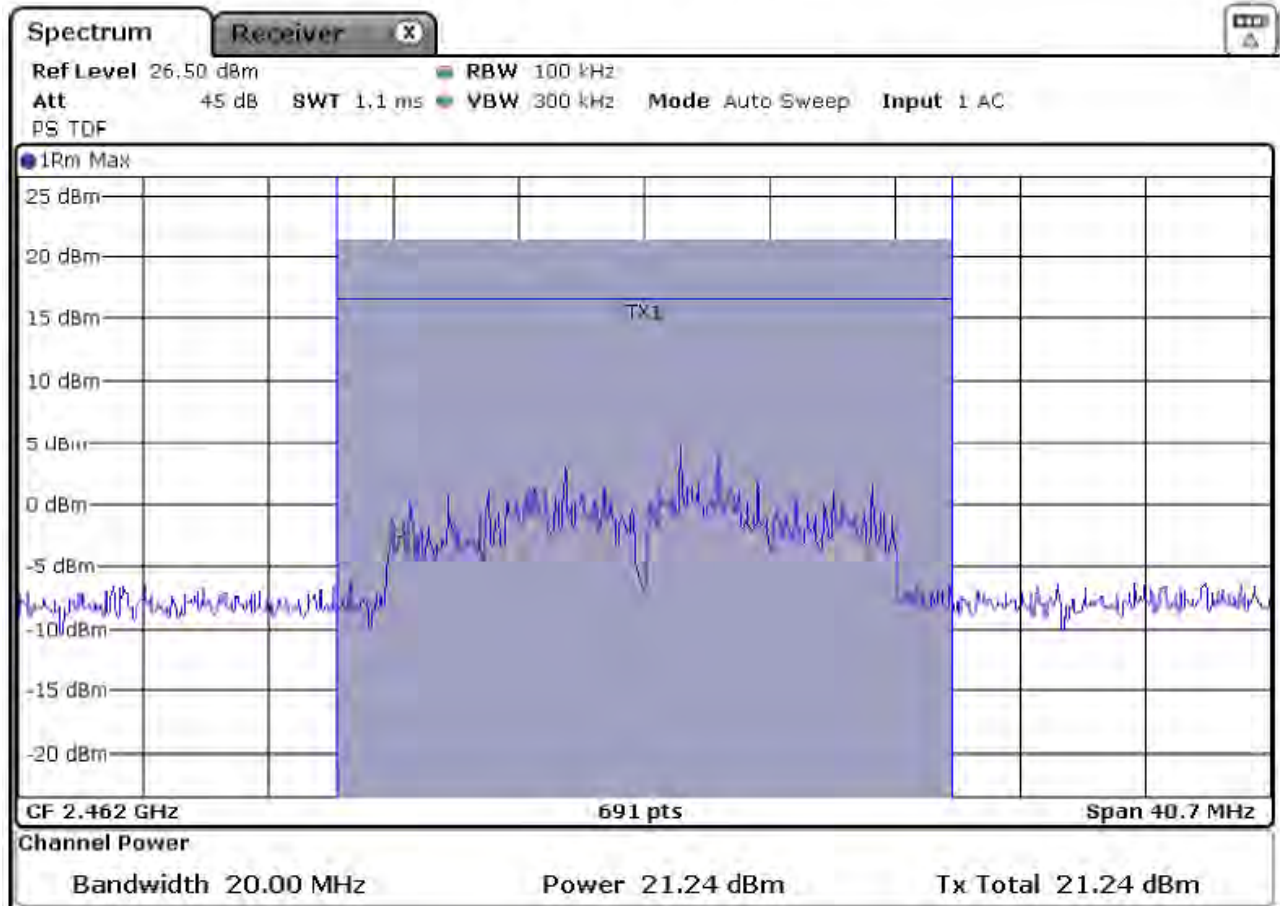
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Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11g, CH.11, OFDM, BW = 20 MHz



Position: Y / Polarisation: V

Freque. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2462	21,24	8,76	30,00	pass



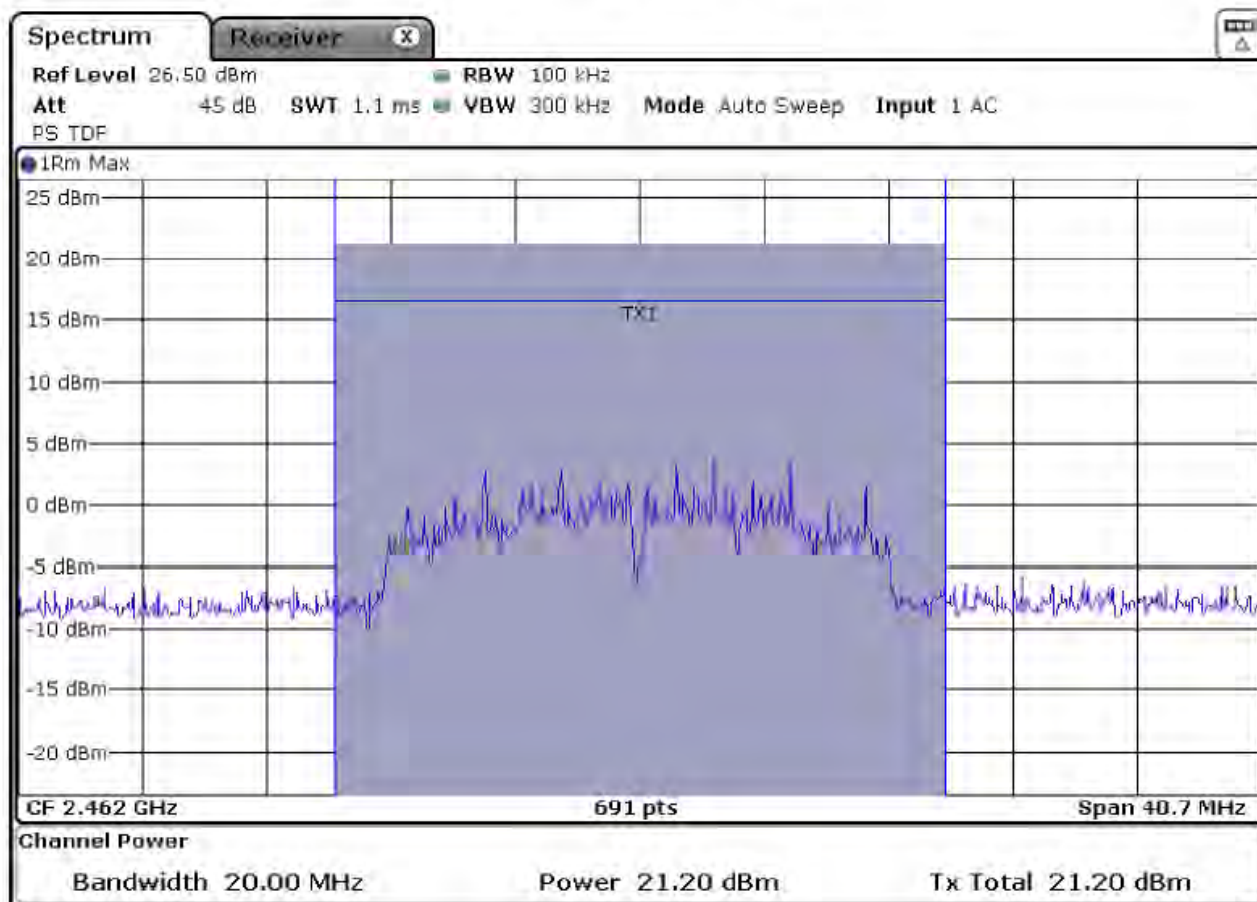
FCC 1

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Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11g, CH.11, OFDM, BW = 20 MHz



Position: Y / Polarisation: H

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2462	21,20	8,80	30,00	pass



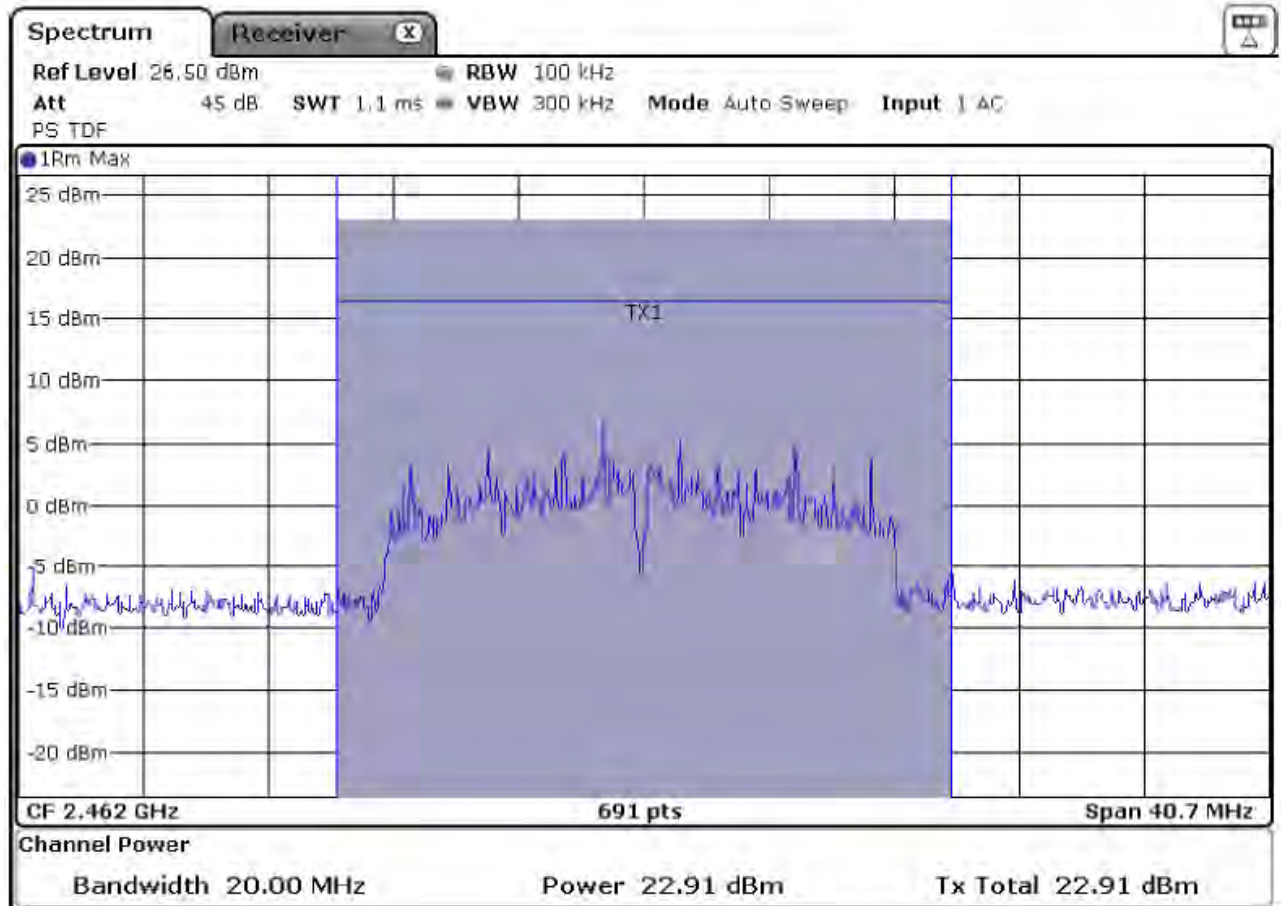
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Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11g, CH.11, OFDM, BW = 20 MHz



Position: Z / Polarisation: V

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2462	22,91	7,09	30,00	pass

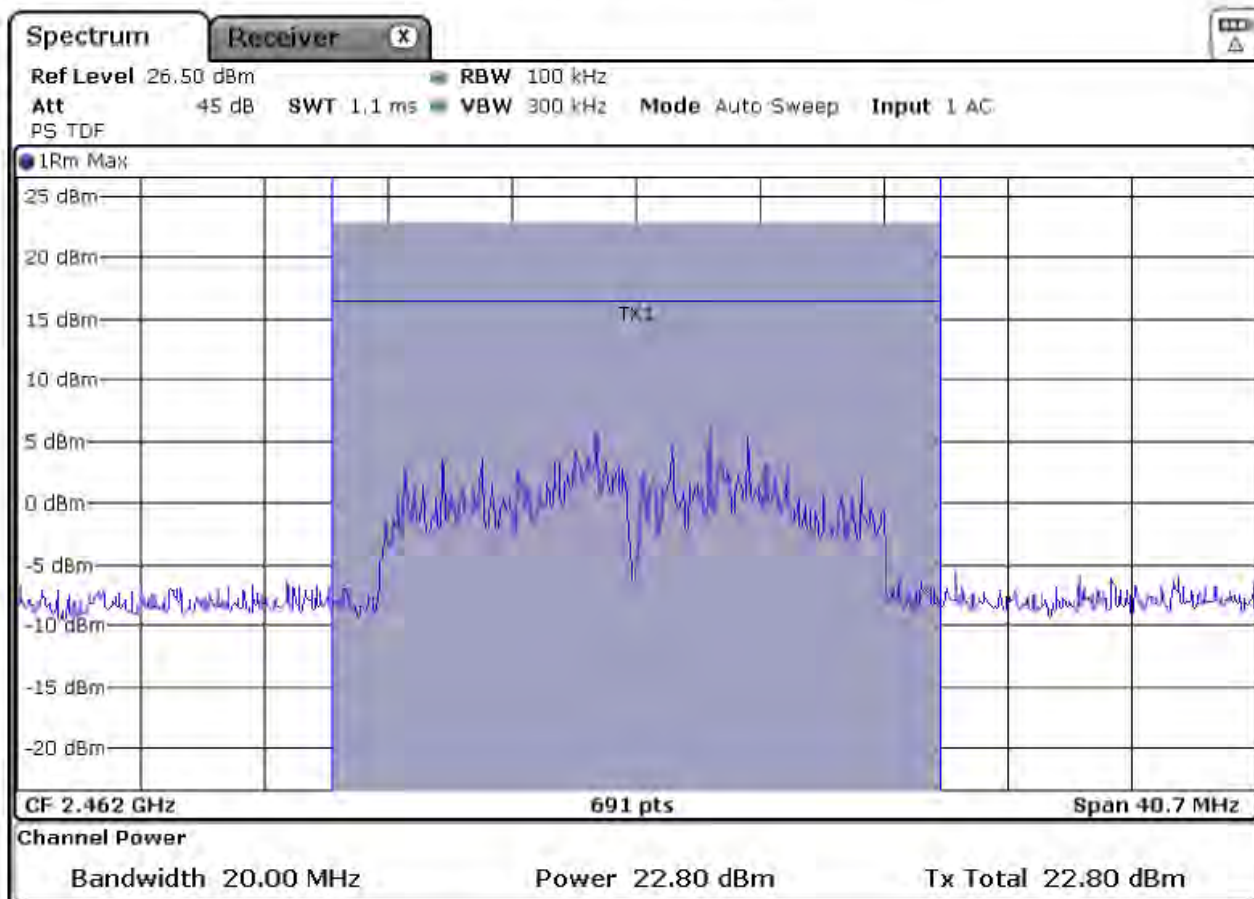


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Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11g, CH.11, OFDM, BW = 20 MHz



Position: Z / Polarisation: H

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2462	22,80	7,20	30,00	pass

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Summary of the findings

Test conditions	Polarization of receiving antenna	Tested frequency [MHz]	Meas value [dBm]	Limit [dBm]	Result
Position: X	V	2462	23,74	30,00	pass
Position: X	H	2462	23,74	30,00	pass
Position: Y	V	2462	21,24	30,00	pass
Position: Y	H	2462	21,20	30,00	pass
Position: Z	V	2462	22,91	30,00	pass
Position: Z	H	2462	22,80	30,00	pass

Maximum output power radiated measurement:

802.11g 20MHz / OFDM – MCS=0; 6 MBps / TX/RX1 / external Antenna typ 2

Channel	Frequency [MHz]	Output Power		Limit		Result
		[dBm]	[mW]	[dBm]	[mW]	
1	2412	24.08	255.86	30	1000	Pass
6	2437	23.69	233.88	30	1000	Pass
11	2462	23.74	236,59	30	1000	Pass

Maximum output power conducted measurement:

802.11g 20MHz / OFDM – MCS=0; 6 MBps / TX/RX0 + TX/RX1 / external Antenna typ 2

Channel	Frequency [MHz]	Output TX/RX0 [mW]	Output TX/RX1 [mW]	Total Output Power		Limit		Result
				[dBm]	[mW]	[dBm]	[mW]	
1	2412	69.18	255.86	25.12	325.04	30	1000	Pass
6	2437	69.18	233.88	24.82	303.06	30	1000	Pass
11	2462	70.31	236,59	24.87	306.90	30	1000	Pass

According to KDB 662911 D01

Lowest operating frequency - 802.11n 20MHz / HT MixMode – MCS=0; 6.5 MBps /
TX/RX0 / ext. Antenna typ 2



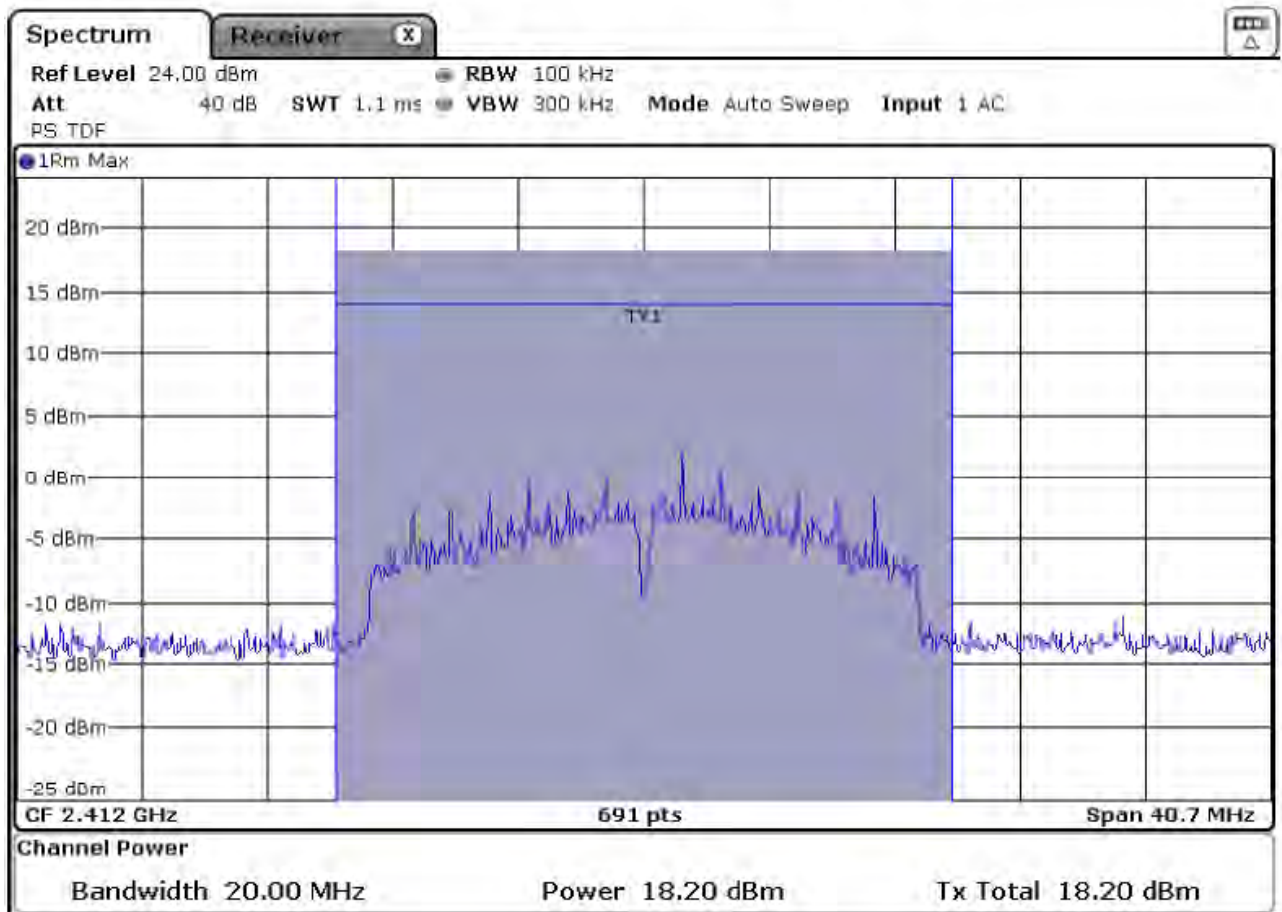
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Output power of fundamental emissions
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Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11n, CH.01, HT:Greenfield, BW = 20 MHz



Position: X/Y/Z / Polarisation: V

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2412	18,20	11,80	30,00	pass

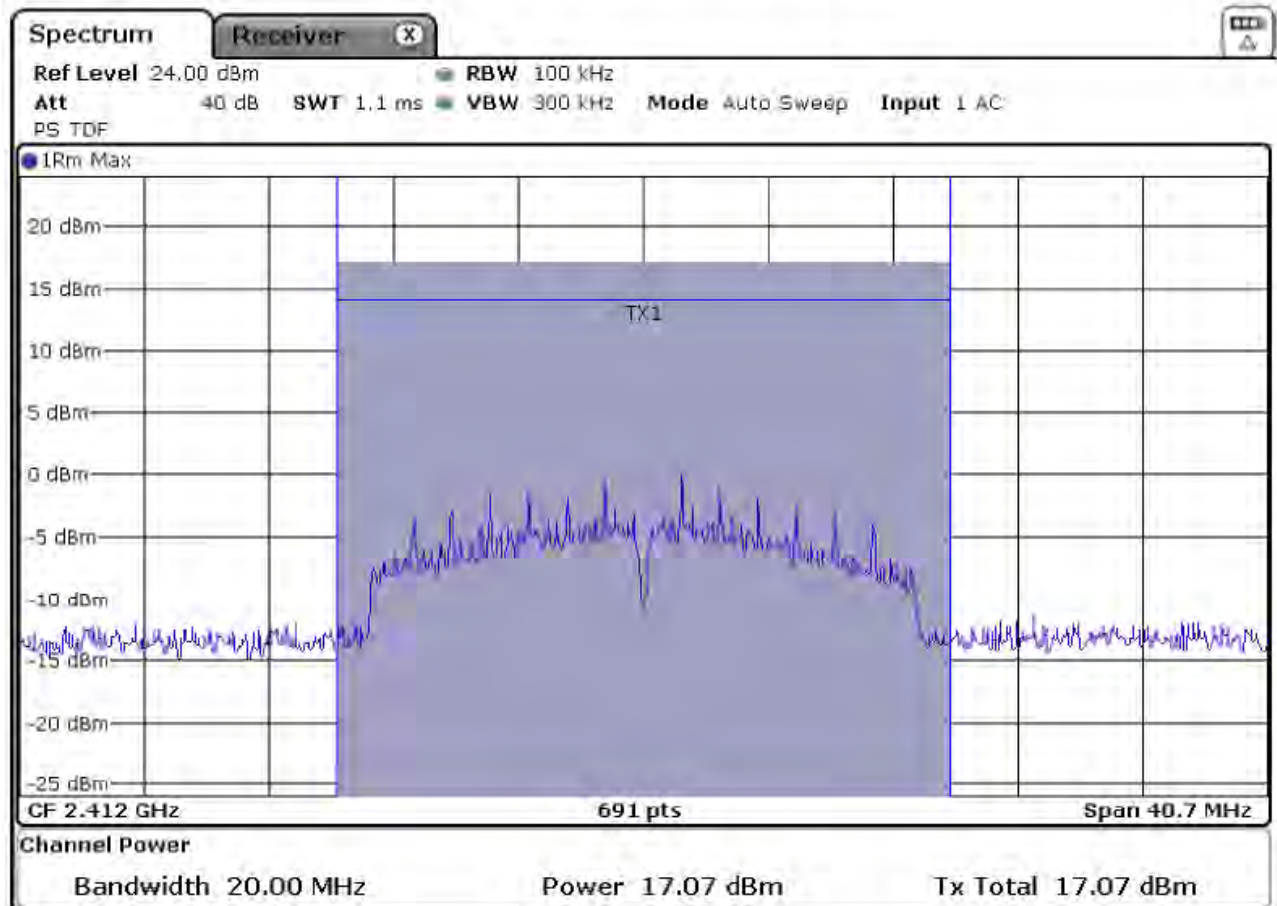


FCC 1
Output power of fundamental emissions
acc. FCC Subpart C § 15.209 / RSS-247



Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11n, CH.01, HT:Greenfield, BW = 20 MHz



Position: X/Y/Z / Polarisation: H

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2412	17.07	12.93	30.00	pass

Middle operating frequency - 802.11n 20MHz / HT MixMode – MCS=0; 6.5 MBps /
TX/RX0 / ext. Antenna typ 2



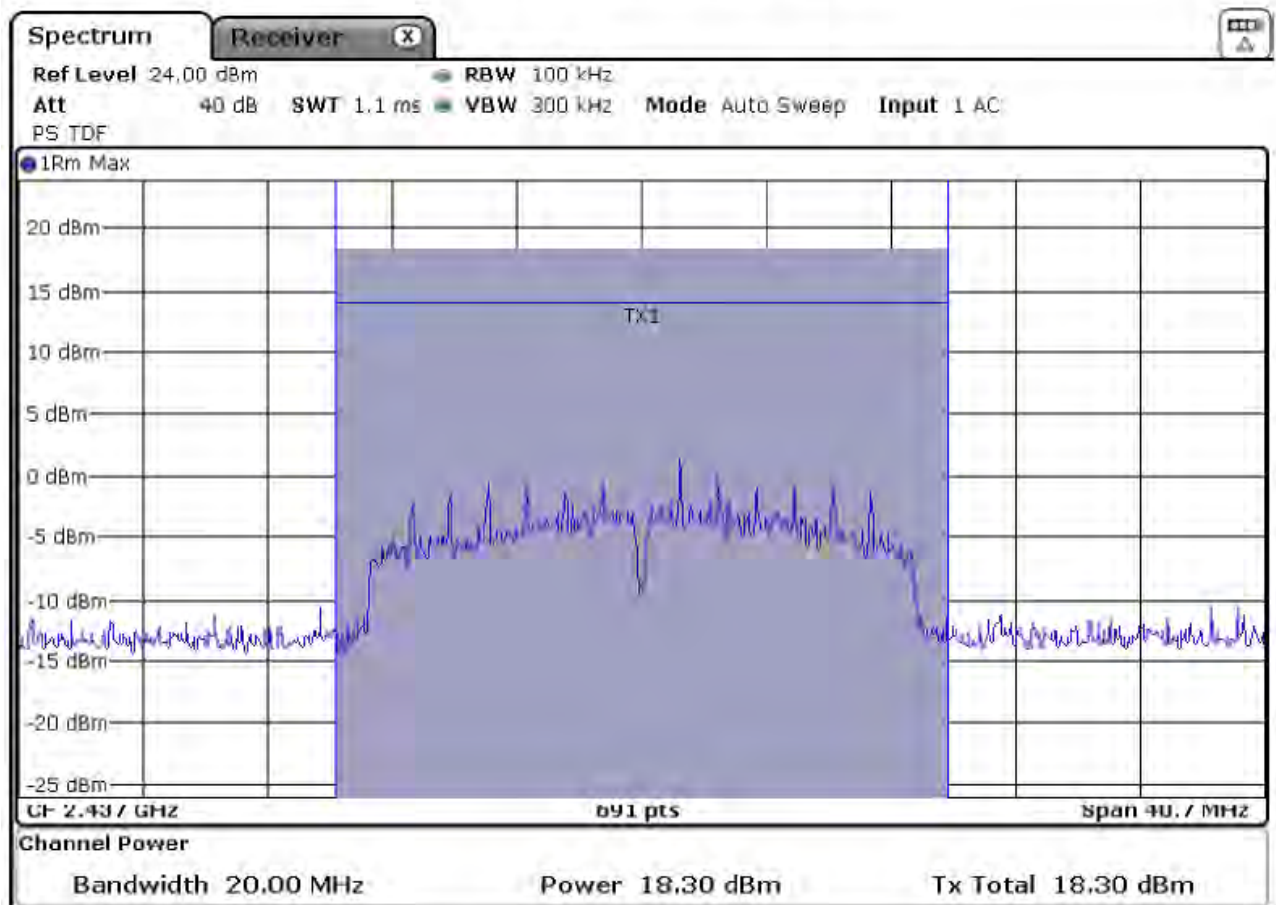
FCC 1

Output power of fundamental emissions
acc. FCC Subpart C § 15.209 / RSS-247



Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11n, CH.06, HT:Greenfield, BW = 20 MHz



Position: X/Y/Z / Polarisation: V

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2437	18,30	11,70	30,00	pass



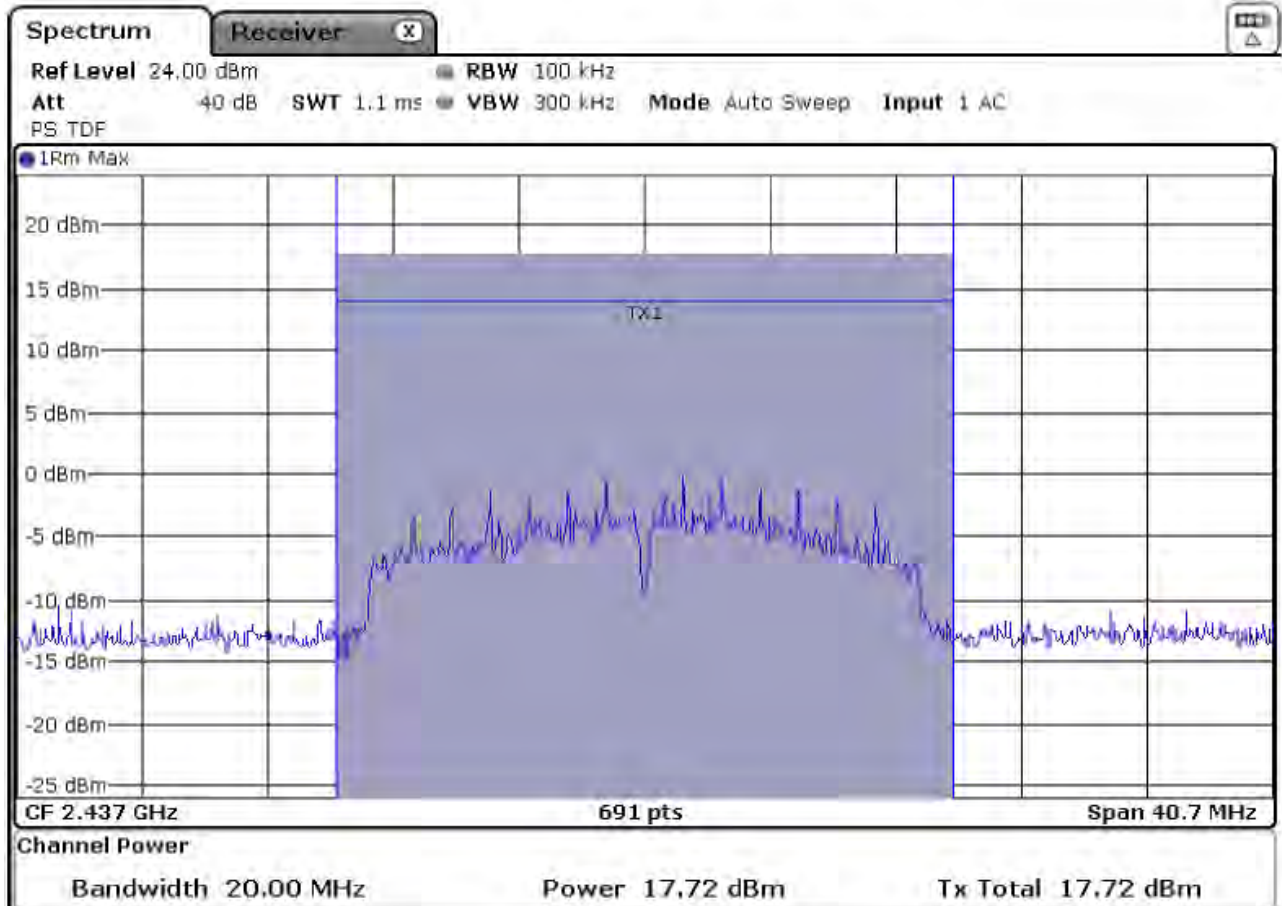
FCC 1

Output power of fundamental emissions
acc. FCC Subpart C § 15.209 / RSS-247



Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11n, CH.06, HT:Greenfield, BW = 20 MHz



Position: X/Y/Z / Polarisation: H

Freque. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2437	17,72	12,28	30,00	pass

Highest operating frequency - 802.11n 20MHz / HT MixMode – MCS=0; 6.5 MBps /
TX/RX0 / ext. Antenna typ 2



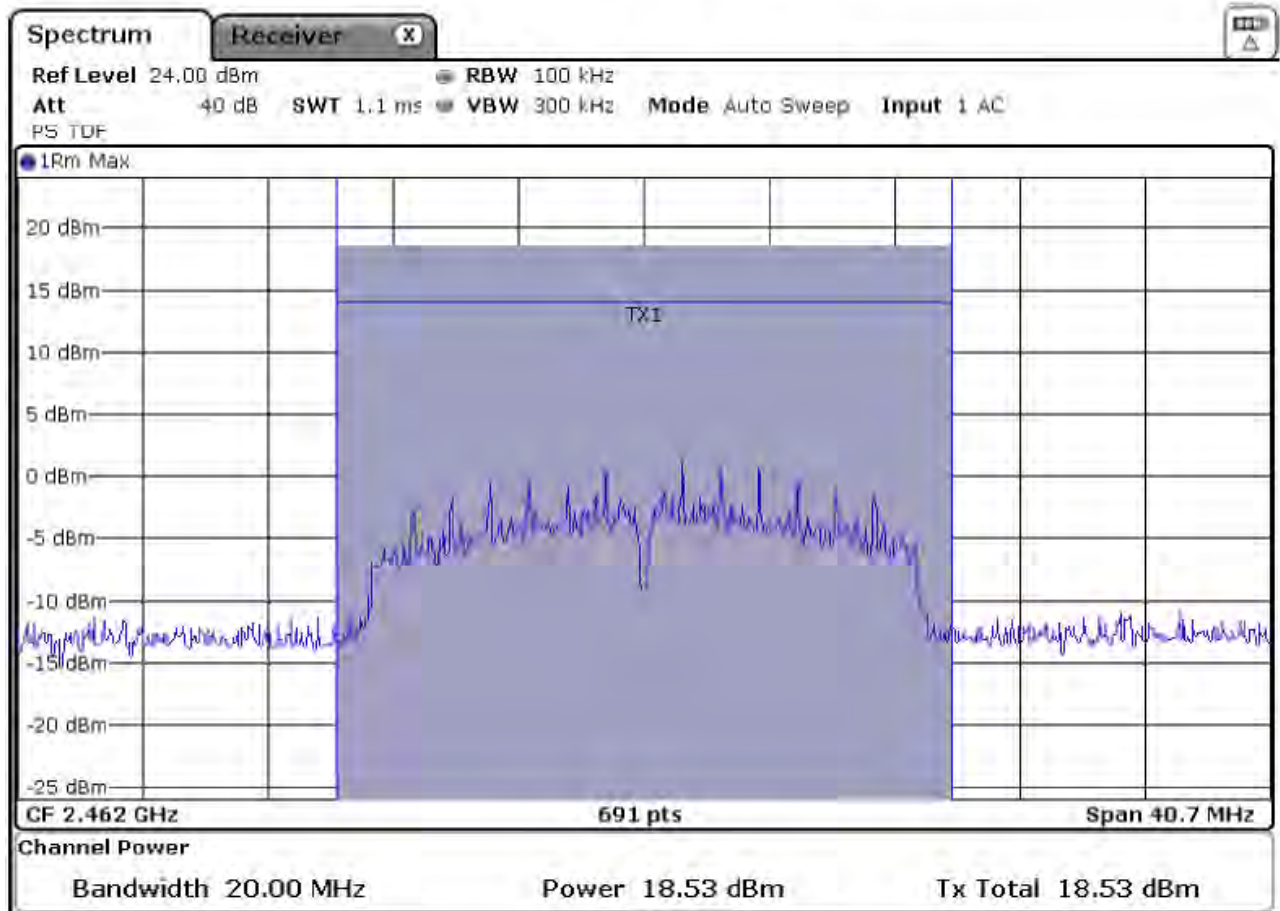
FCC 1

Output power of fundamental emissions
acc. FCC Subpart C § 15.209 / RSS-247



Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11n, CH.11, HT:Greenfield , BW = 20 MHz



Position: X/Y/Z / Polarisation: V

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2462	18,53	11,47	30,00	pass



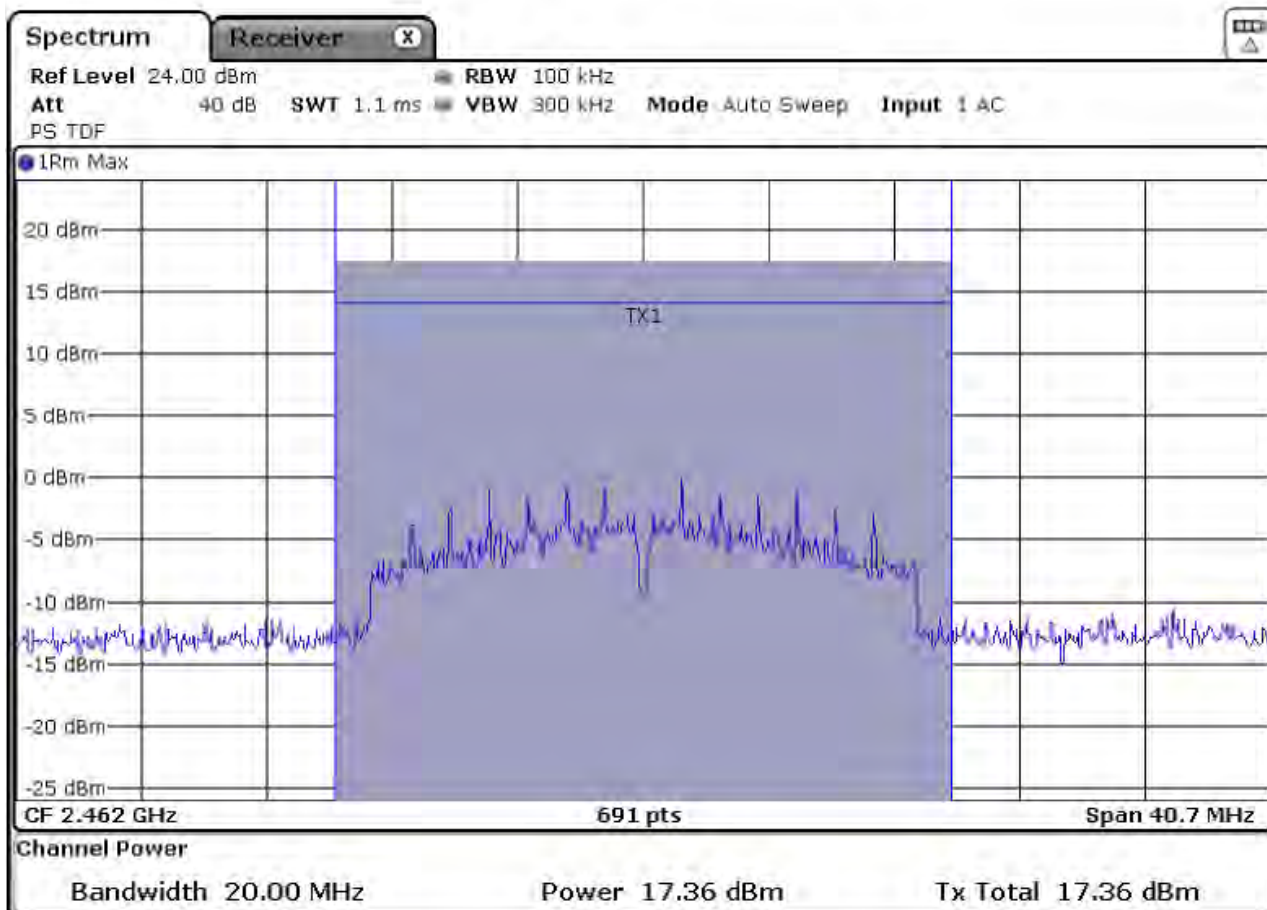
FCC 1

Output power of fundamental emissions
acc. FCC Subpart C § 15.209 / RSS-247



Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11n, CH:11, HT:Greenfield, BW = 20 MHz



Position: X/Y/Z / Polarisation: H

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2462	17,36	12,64	30,00	pass

Maximum output power radiated measurement:
802.11n 20MHz / HT MixMode – MCS=0; 6.5 MBps / TX/RX0 / ext. Antenna typ 2

Channel	Frequency [MHz]	Output Power		Limit		Result
		[dBm]	[mW]	[dBm]	[mW]	
1	2412	18.20	66.07	30	1000	Pass
6	2437	18.30	67.61	30	1000	Pass
11	2462	18.53	71.29	30	1000	Pass

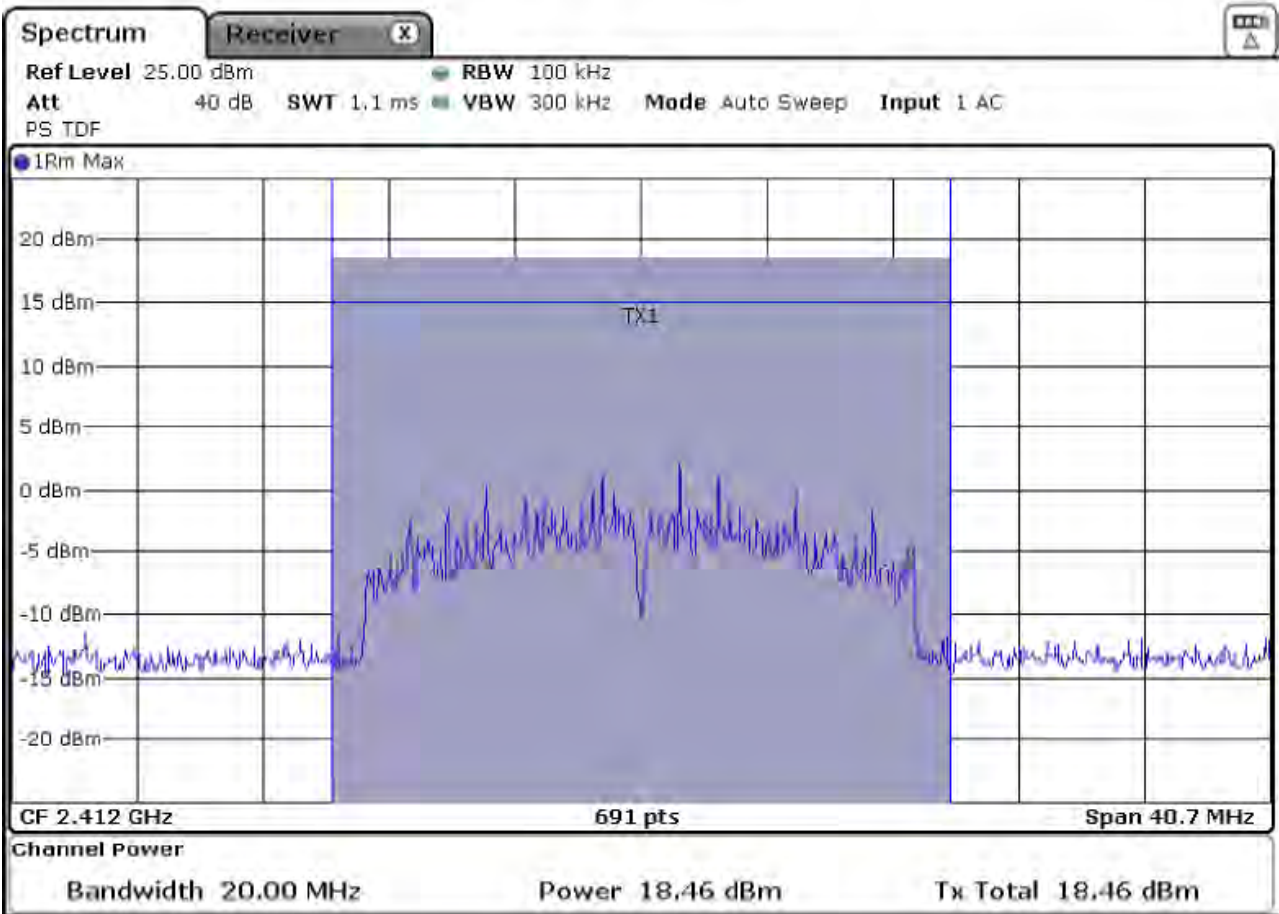
Lowest operating frequency - 802.11n 20MHz / HT MixMode – MCS=0; 6.5 MBps / TX/RX1 / ext. Antenna typ 2



FCC 1
Output power of fundamental emissions
acc. FCC Subpart C § 15.209 / RSS-247



Ref.-No.: 20/01-0031
Operating Mode: WLAN 802.11n, CH.1, HT: Greenfield, BW = 20 MHz



Position: X / Polarisation: V				
Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2412	18,46	11,54	30,00	pass



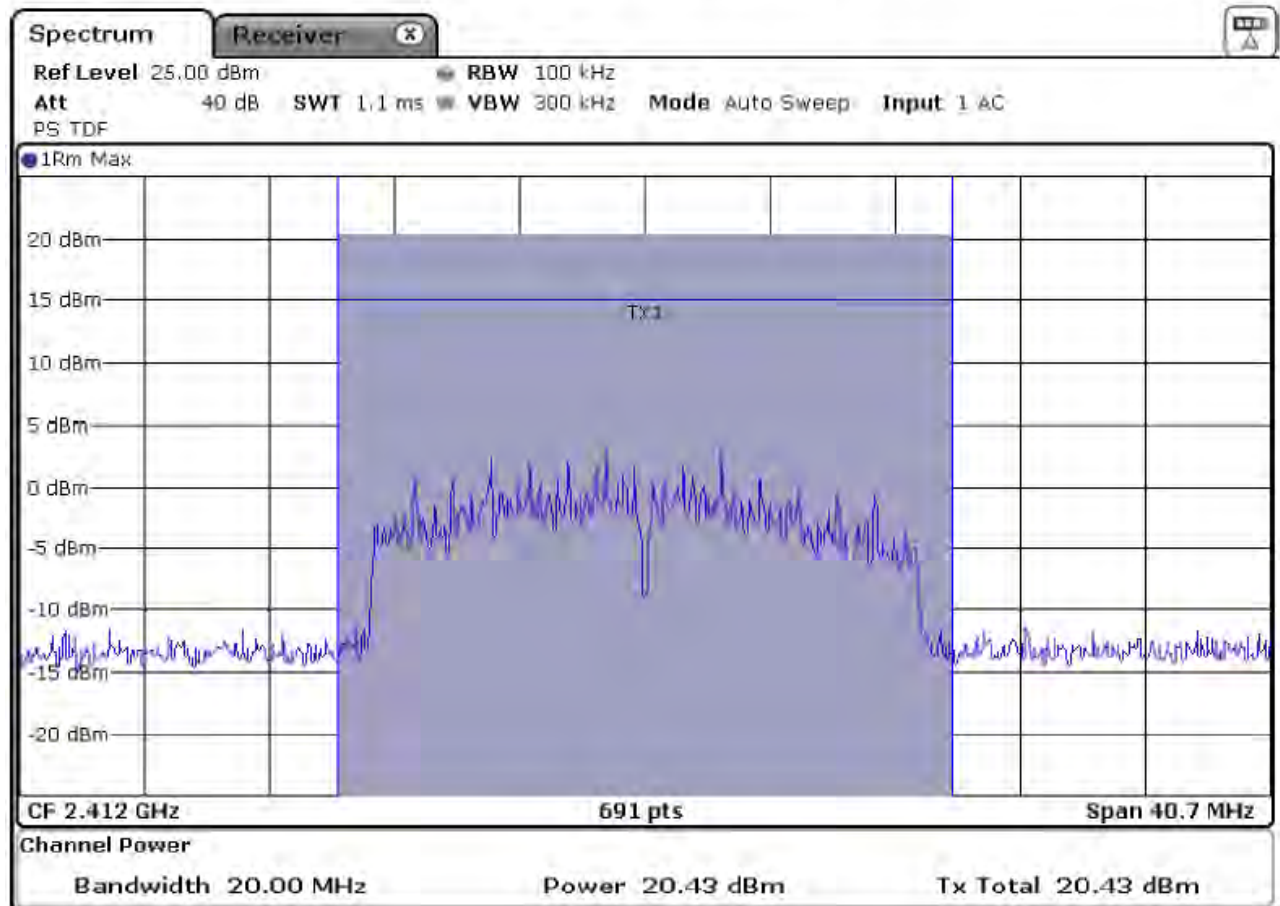
FCC 1

Output power of fundamental emissions
acc. FCC Subpart C § 15.209 / RSS-247



Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11n, CH.1, HT: Greenfield, BW = 20 MHz



Position: X / Polarisation: H

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2412	20,43	9,57	30,00	pass

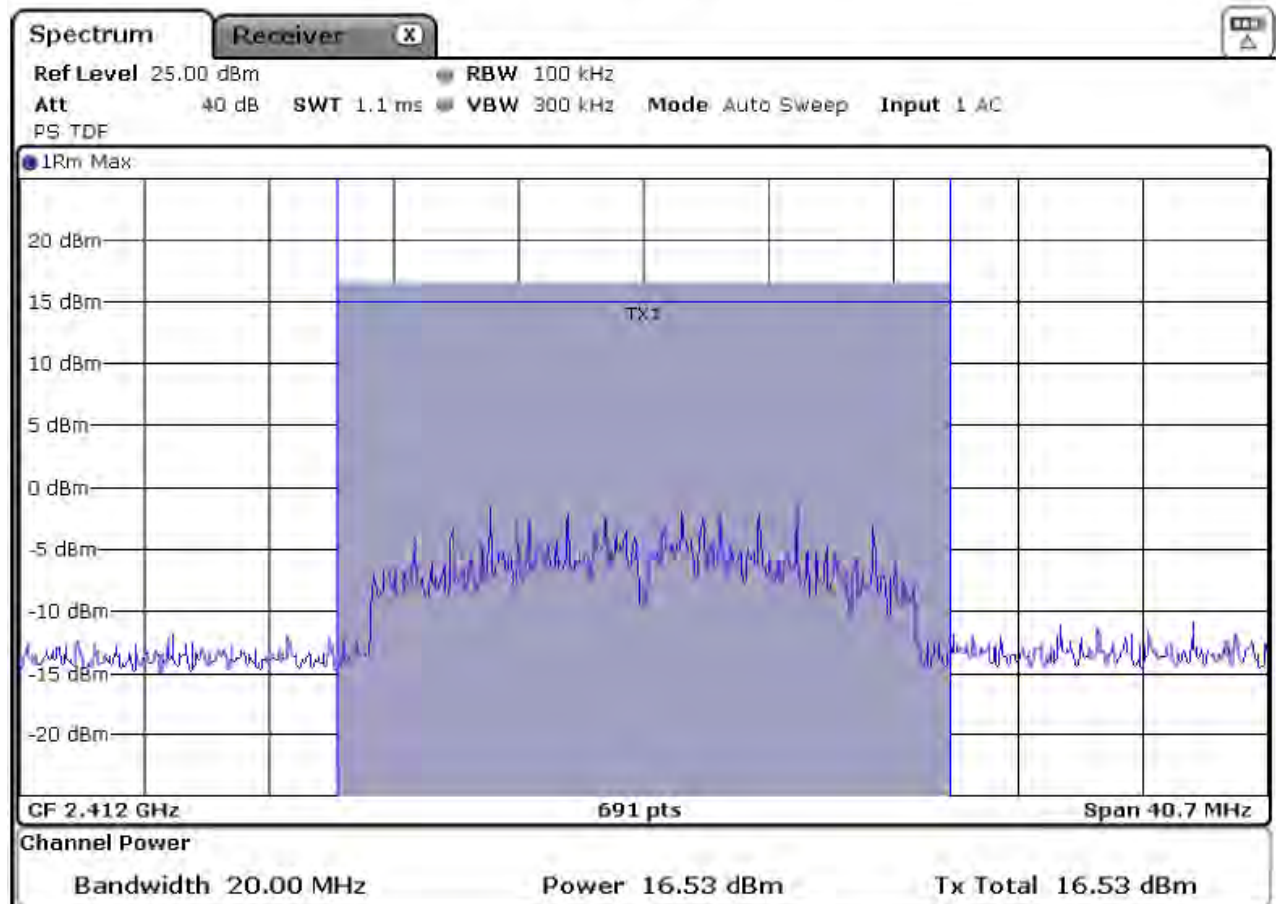


FCC 1
Output power of fundamental emissions
acc. FCC Subpart C § 15.209 / RSS-247



Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11n, CH.1, HT: Greenfield, BW = 20 MHz



Position: Y / Polarisation: V

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2412	16,53	13,47	30,00	pass



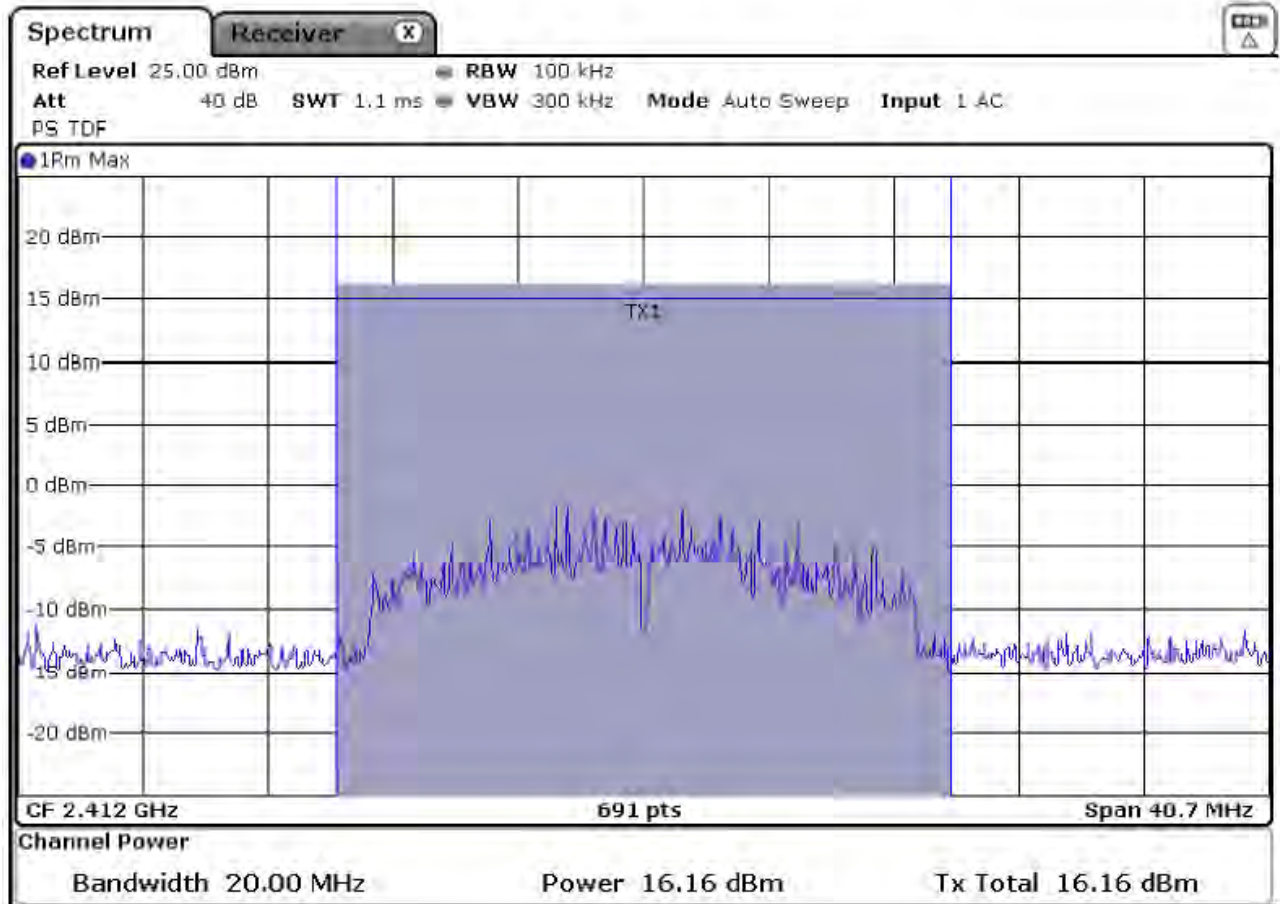
FCC 1

Output power of fundamental emissions
acc. FCC Subpart C § 15.209 / RSS-247



Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11n, CH.1, HT: Greenfield, BW = 20 MHz



Position: Y / Polarisation: H

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2412	16,16	13,84	30,00	pass



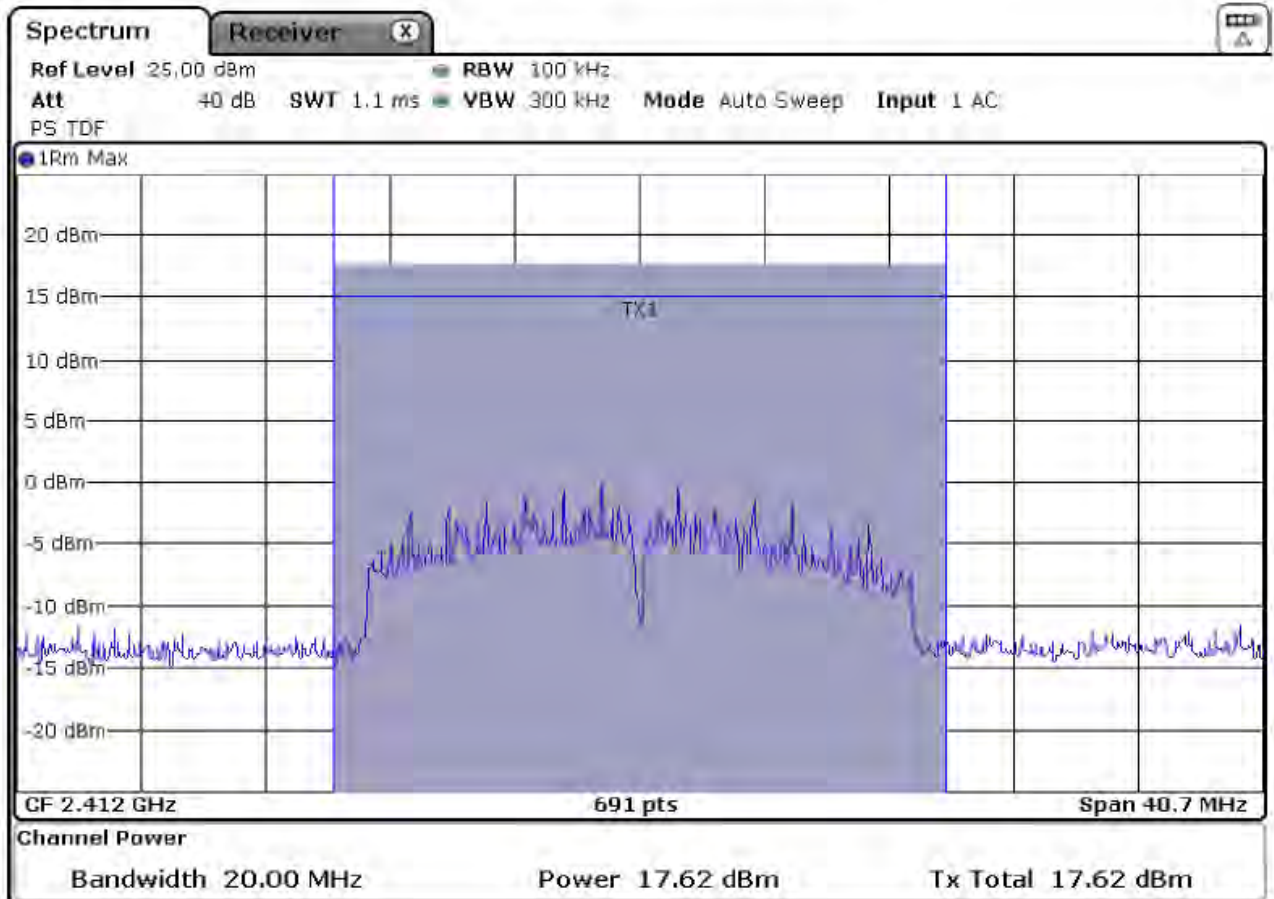
FCC 1

Output power of fundamental emissions
acc. FCC Subpart C § 15.209 / RSS-247



Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11n, CH.1, HT: Greenfield, BW = 20 MHz



Position: Z / Polarisation: V

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2412	17,62	12,38	30,00	pass



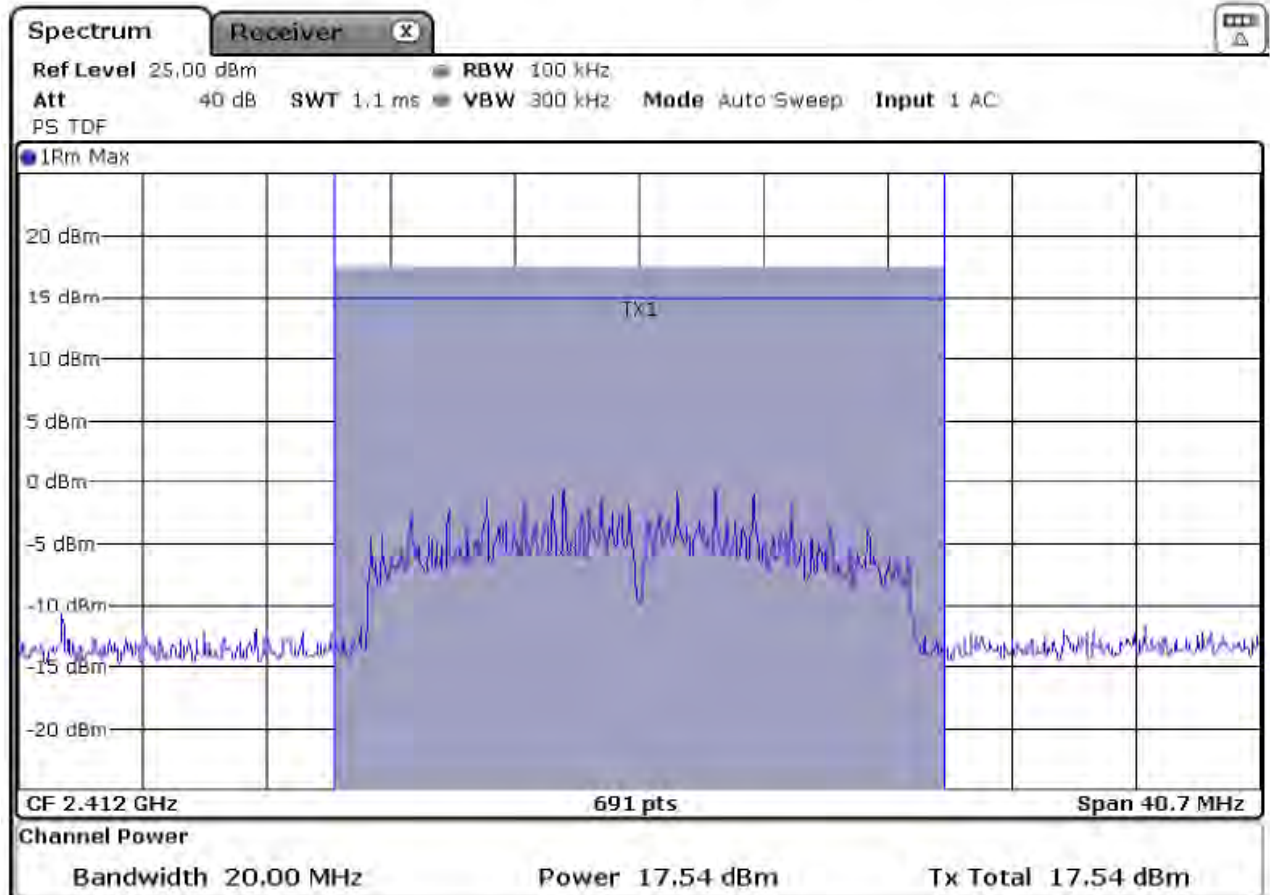
FCC 1

Output power of fundamental emissions
acc. FCC Subpart C § 15.209 / RSS-247



Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11n, CH.1, HT: Greenfield, BW = 20 MHz



Position: Z / Polarisation: H

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2412	17,54	12,46	30,00	pass

	FCC 1 Output power of fundamental emissions acc. FCC Subpart C § 15.209 / RSS-247	
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Ref.-No.: 20/01-0031

Summery of the findings

Test conditions	Polarization of receiving antenna	Tested frequency [MHz]	Meas value [dBm]	Limit [dBm]	Result
Position: X	V	2412	18,46	30,00	pass
Position: X	H	2412	20,43	30,00	pass
Position: Y	V	2412	16,53	30,00	pass
Position: Y	H	2412	16,16	30,00	pass
Position: Z	V	2412	17,62	30,00	pass
Position: Z	H	2412	17,54	30,00	pass

Middle operating frequency - 802.11n 20MHz / HT MixMode – MCS=0; 6.5 MBps /
TX/RX1 / ext. Antenna typ 2



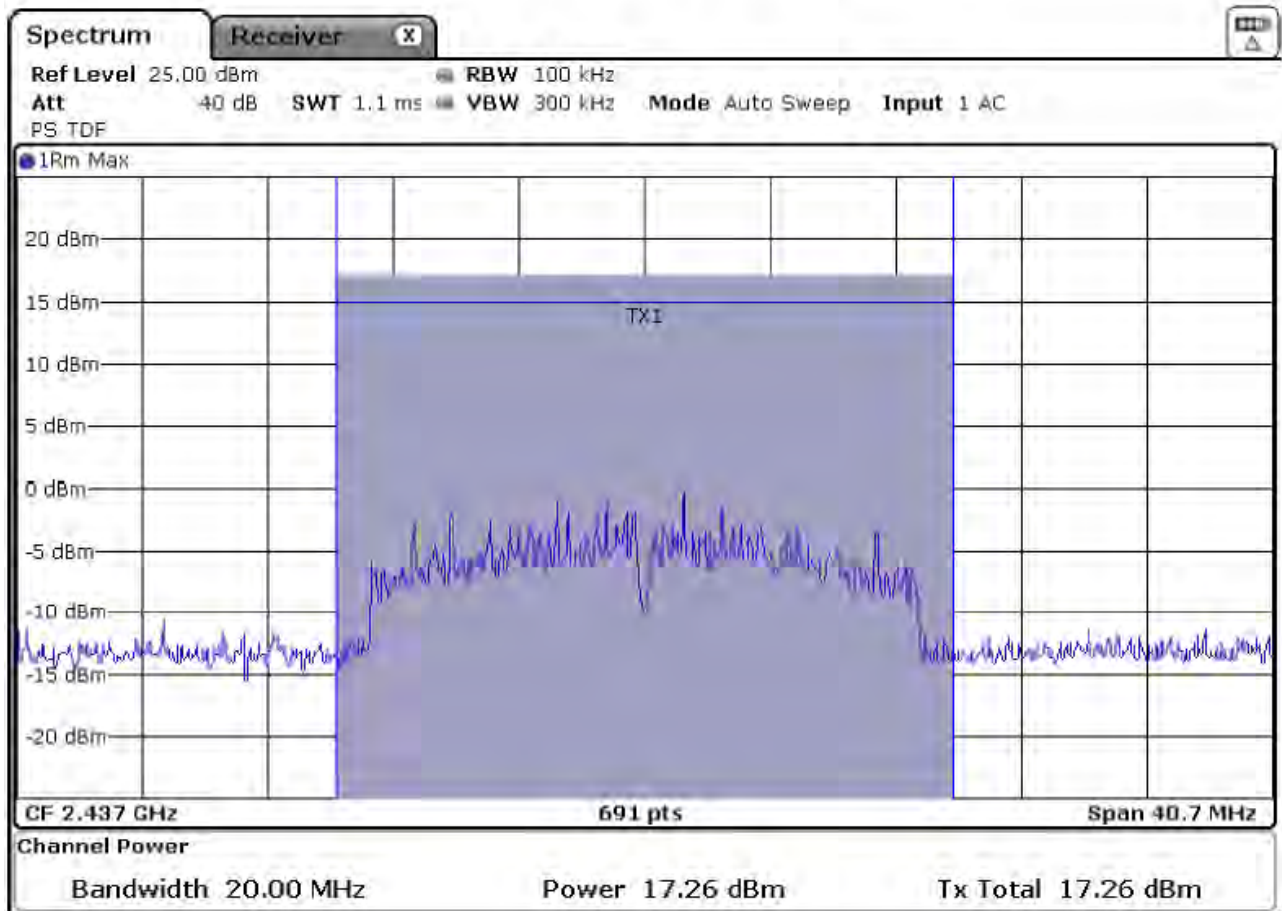
FCC 1

Output power of fundamental emissions
acc. FCC Subpart C § 15.209 / RSS-247



Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11n, CH.6, HT: Greenfield, BW = 20 MHz



Position: X / Polarisation: V

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2437	17,26	12,74	30,00	pass



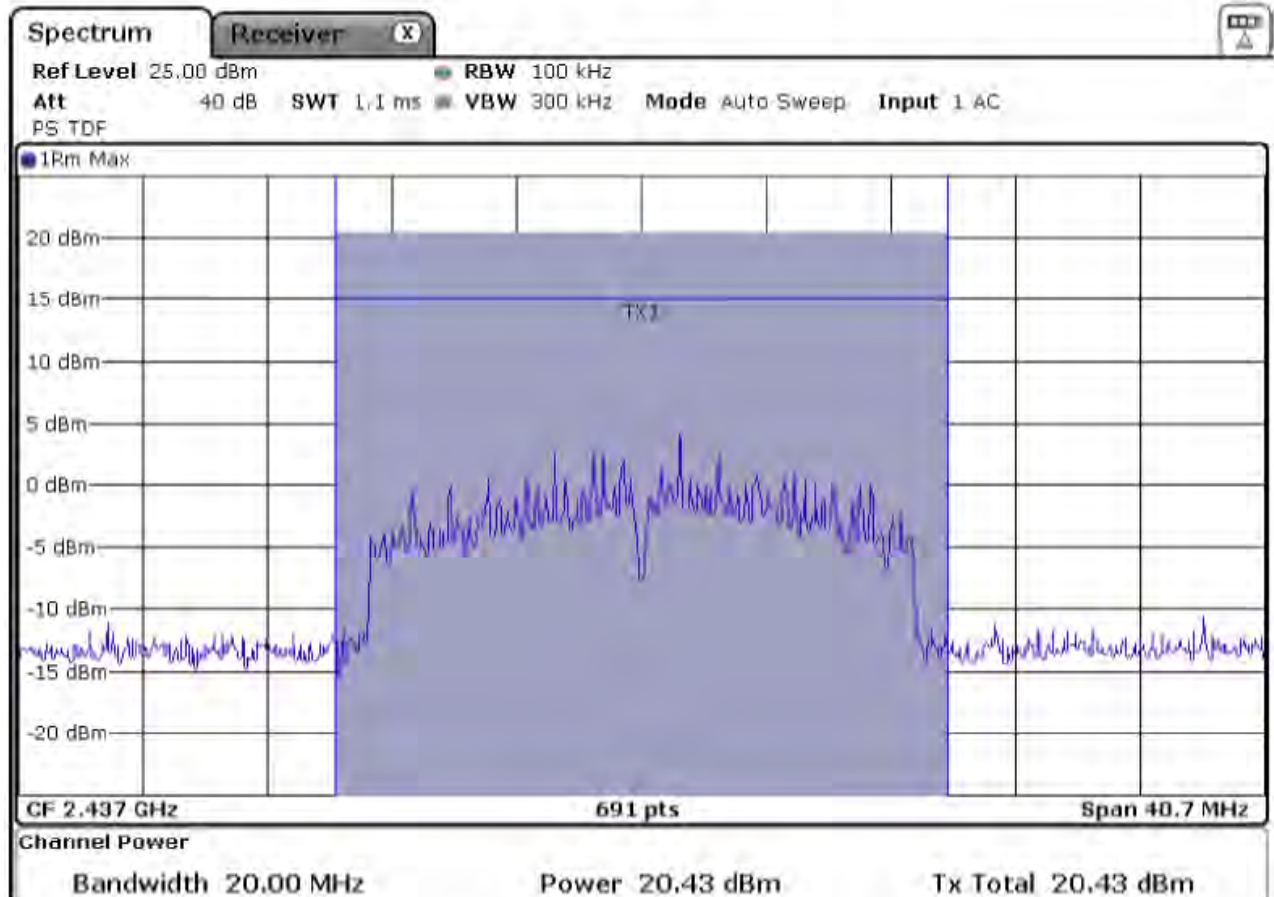
FCC 1

Output power of fundamental emissions
acc. FCC Subpart C § 15.209 / RSS-247



Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11n, CH.6, HT: Greenfield, BW = 20 MHz



Position: X / Polarisation: H

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2437	20,43	9,57	30,00	pass



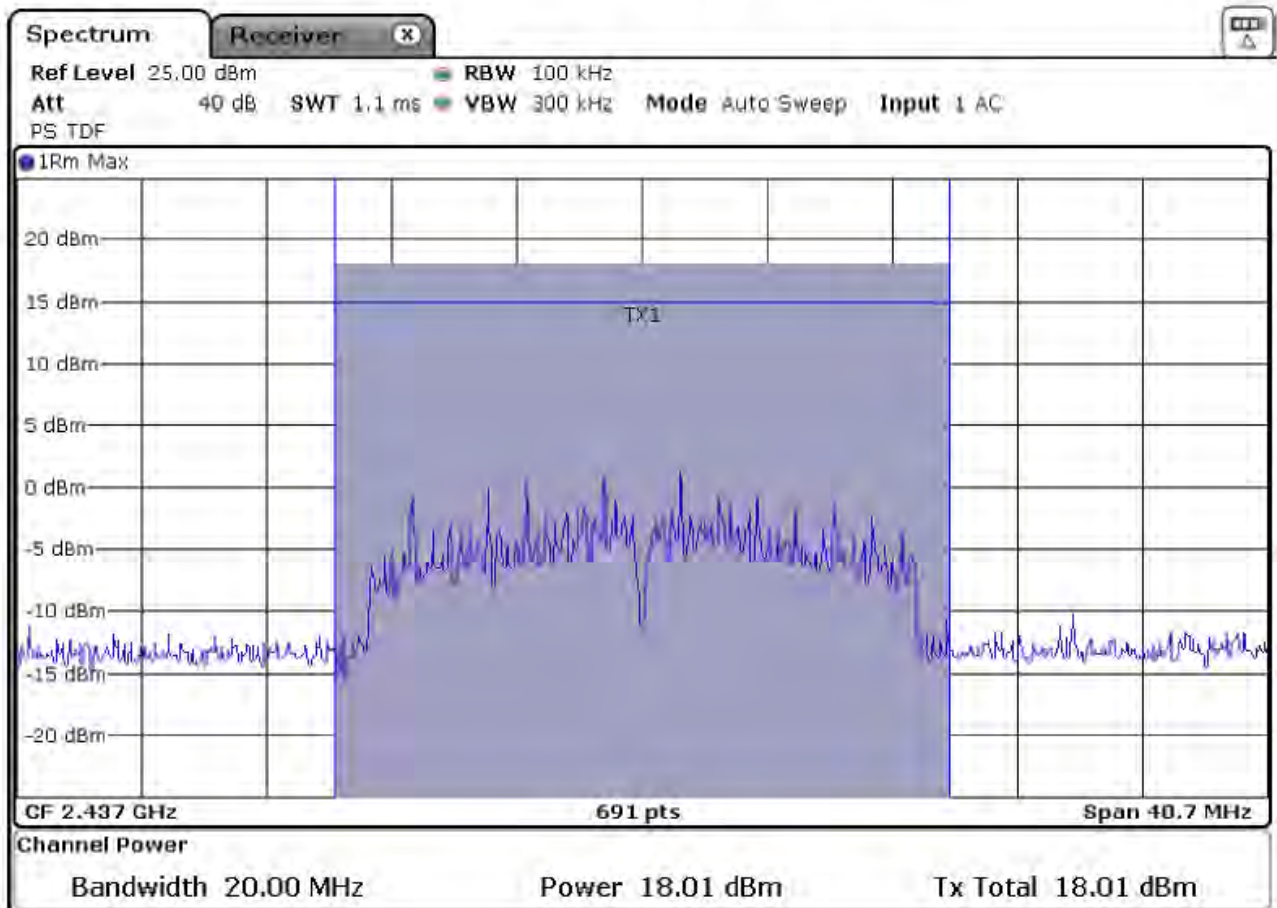
FCC 1

Output power of fundamental emissions
acc. FCC Subpart C § 15.209 / RSS-247



Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11n, CH.6, HT: Greenfield, BW = 20 MHz



Position: Y / Polarisation: V

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2437	18,01	11,99	30,00	pass



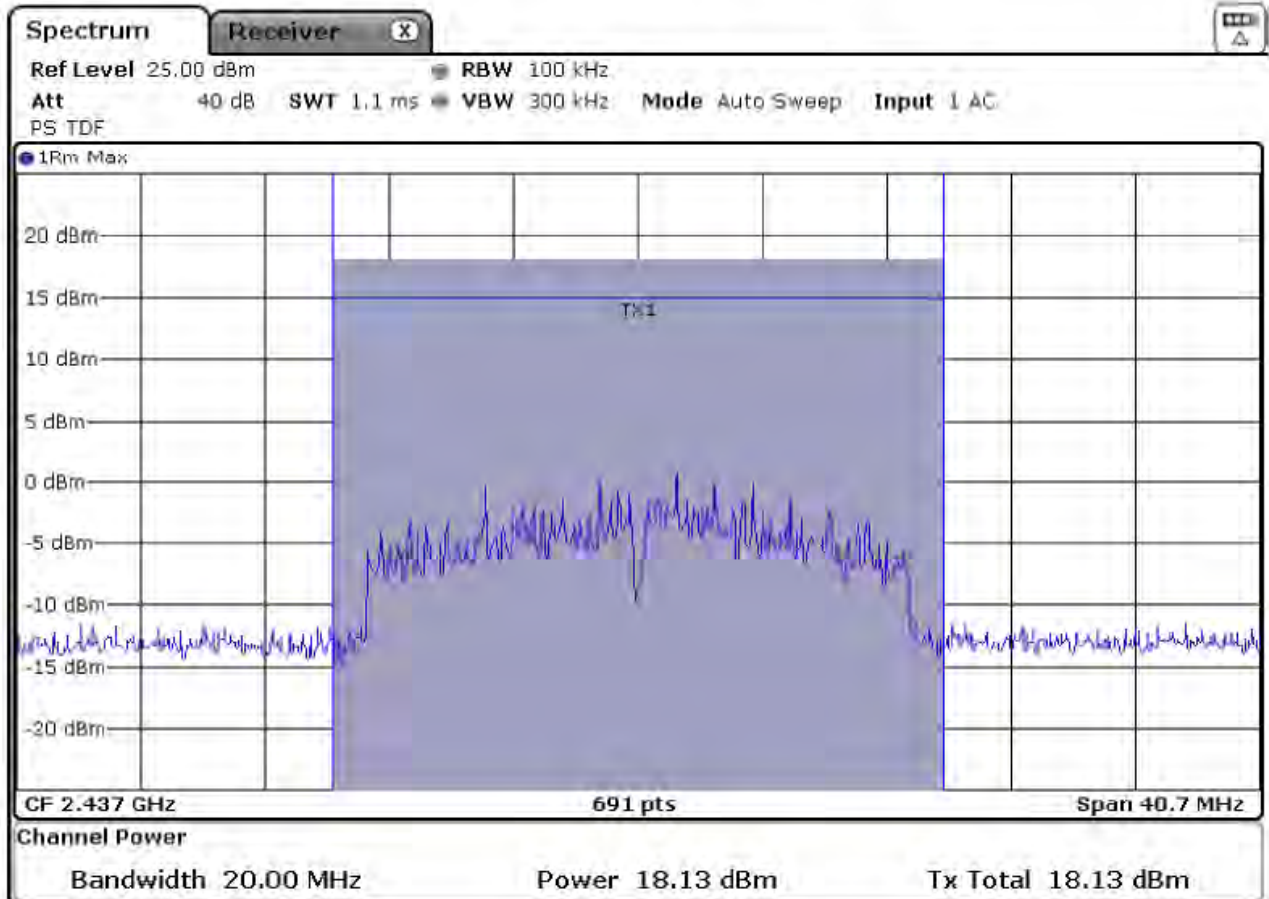
FCC 1

Output power of fundamental emissions
acc. FCC Subpart C § 15.209 / RSS-247



Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11n, CH.6, HT: Greenfield, BW = 20 MHz



Position: Y / Polarisation: H

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2437	18,13	11,87	30,00	pass



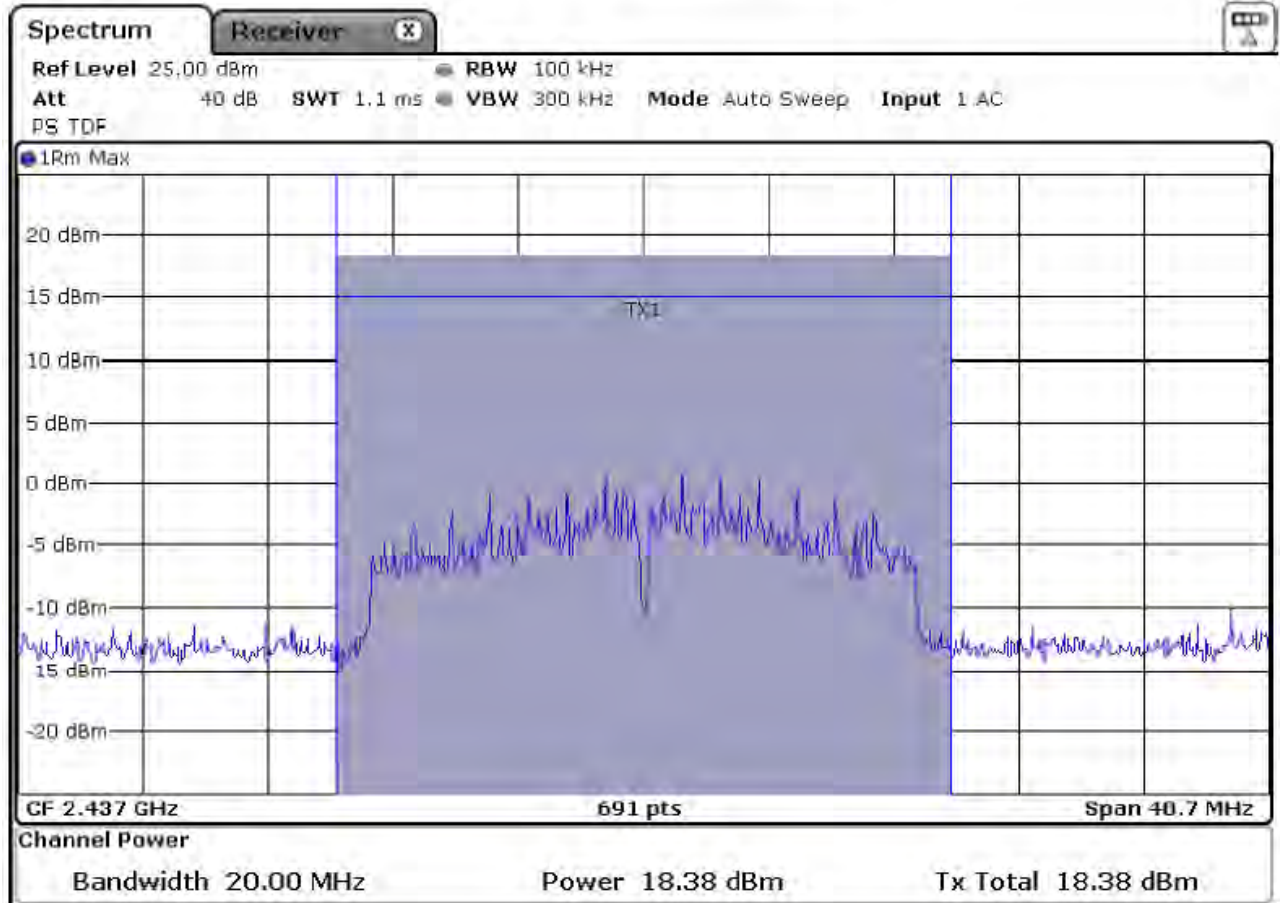
FCC 1

Output power of fundamental emissions
acc. FCC Subpart C § 15.209 / RSS-247



Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11n, CH.6, HT: Greenfield, BW = 20 MHz



Position: Z / Polarisation: V

Freque. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2437	18,38	11,62	30,00	pass

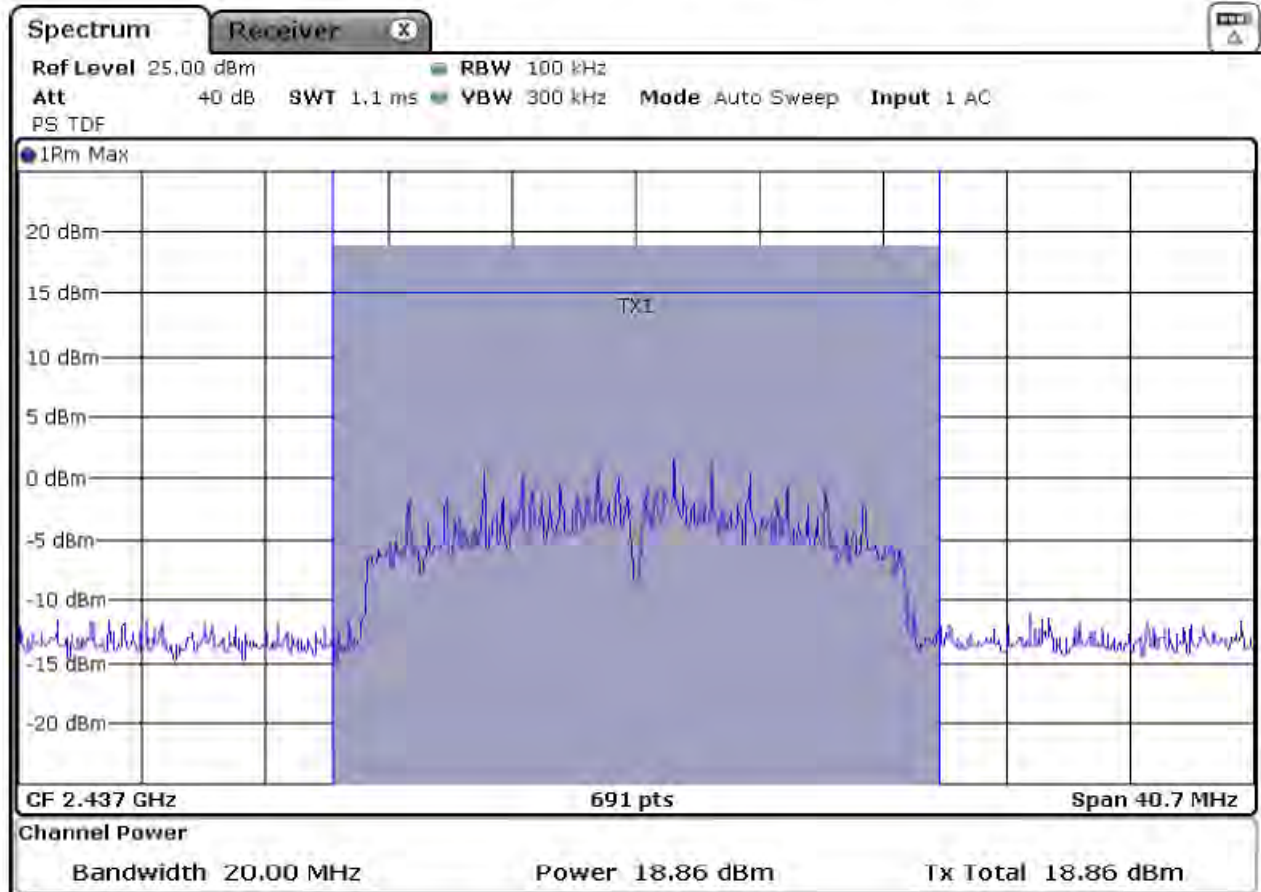


FCC 1
Output power of fundamental emissions
acc. FCC Subpart C § 15.209 / RSS-247



Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11n, CH.6, HT: Greenfield, BW = 20 MHz



Position: Z / Polarisation: H

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2437	18,86	11,14	30,00	pass



FCC 1

Output power of fundamental emissions
acc. FCC Subpart C § 15.209 / RSS-247



Ref.-No.: 20/01-0031

Summary of the findings

Test conditions	Polarization of receiving antenna	Tested frequency [MHz]	Meas value [dBm]	Limit [dBm]	Result
Position: X	V	2437	17,26	30,00	pass
Position: X	H	2437	20,43	30,00	pass
Position: Y	V	2437	18,01	30,00	pass
Position: Y	H	2437	18,13	30,00	pass
Position: Z	V	2437	18,38	30,00	pass
Position: Z	H	2437	18,86	30,00	pass

Highest operating frequency - 802.11n 20MHz / HT MixMode – MCS=0; 6.5 MBps /
TX/RX1 / ext. Antenna typ 2



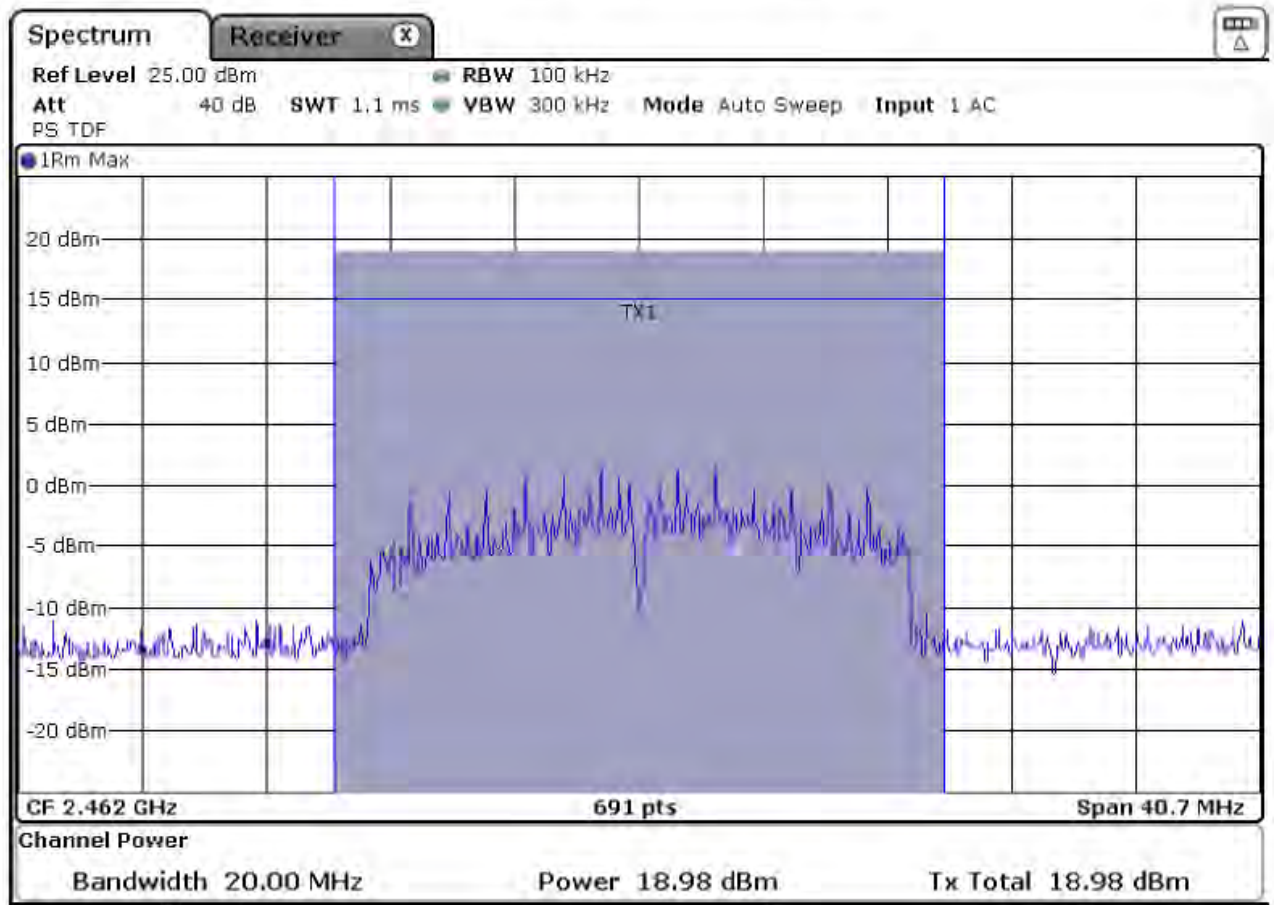
FCC 1

Output power of fundamental emissions
acc. FCC Subpart C § 15.209 / RSS-247



Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11n, CH.11, HT: Greenfield, BW = 20 MHz



Position: X / Polarisation: V

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2462	18,98	11,02	30,00	pass



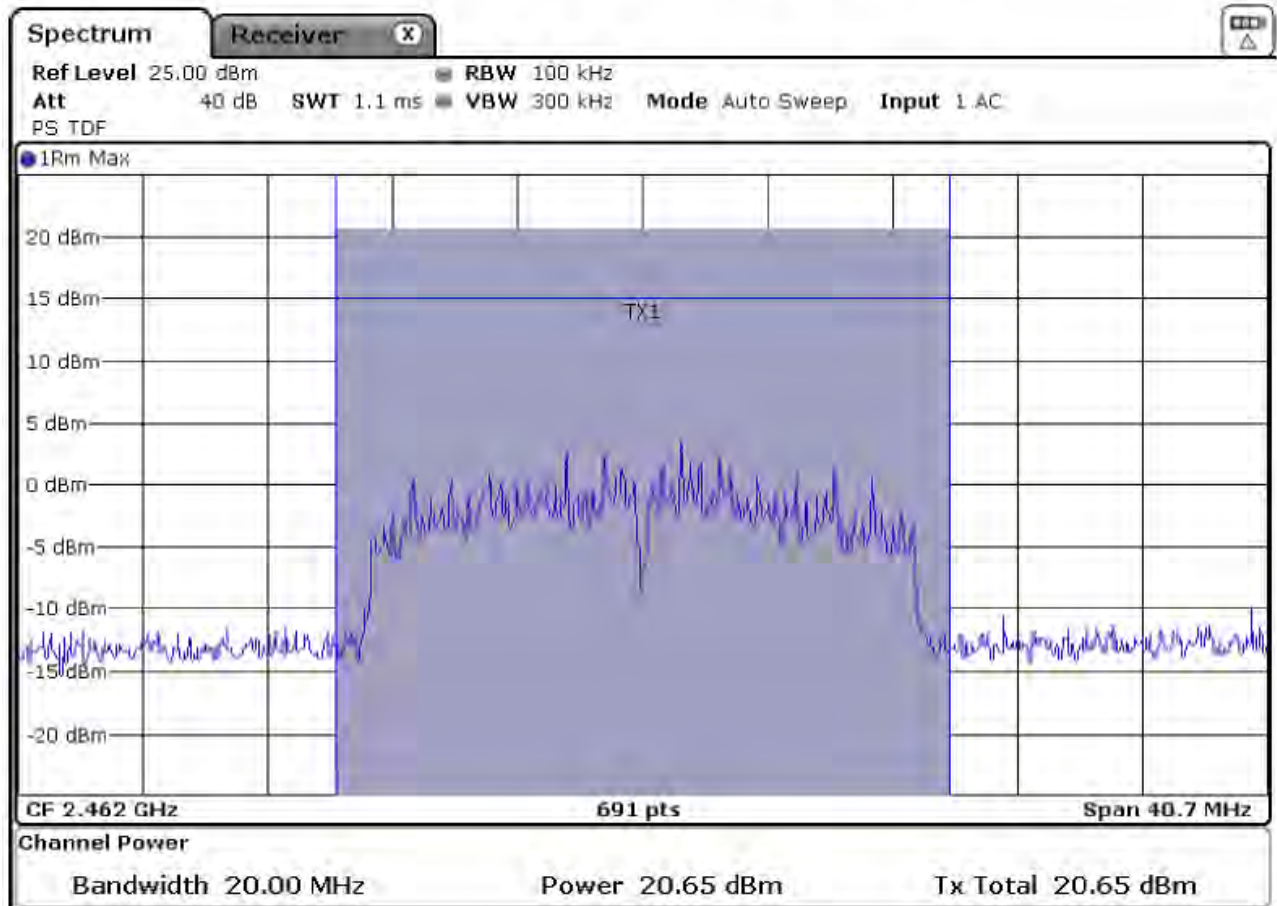
FCC 1

Output power of fundamental emissions
acc. FCC Subpart C § 15.209 / RSS-247



Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11n, CH.11, HT: Greenfield, BW = 20 MHz



Position: X / Polarisation: H

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2462	20,65	9,35	30,00	pass

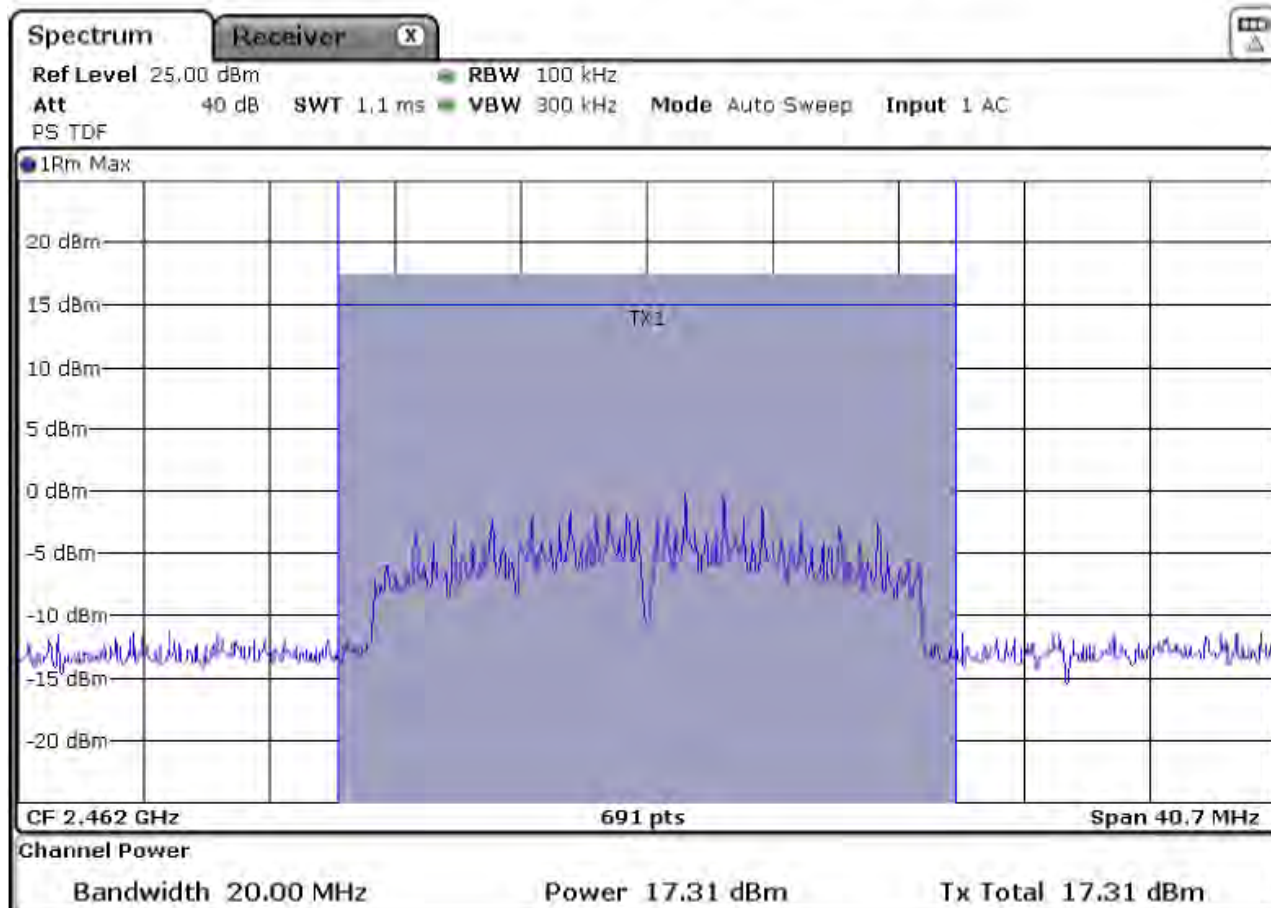


FCC 1
Output power of fundamental emissions
acc. FCC Subpart C § 15.209 / RSS-247



Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11n, CH.11, HT: Greenfield, BW = 20 MHz



Position: Y / Polarisation: V

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2462	17,31	12,69	30,00	pass



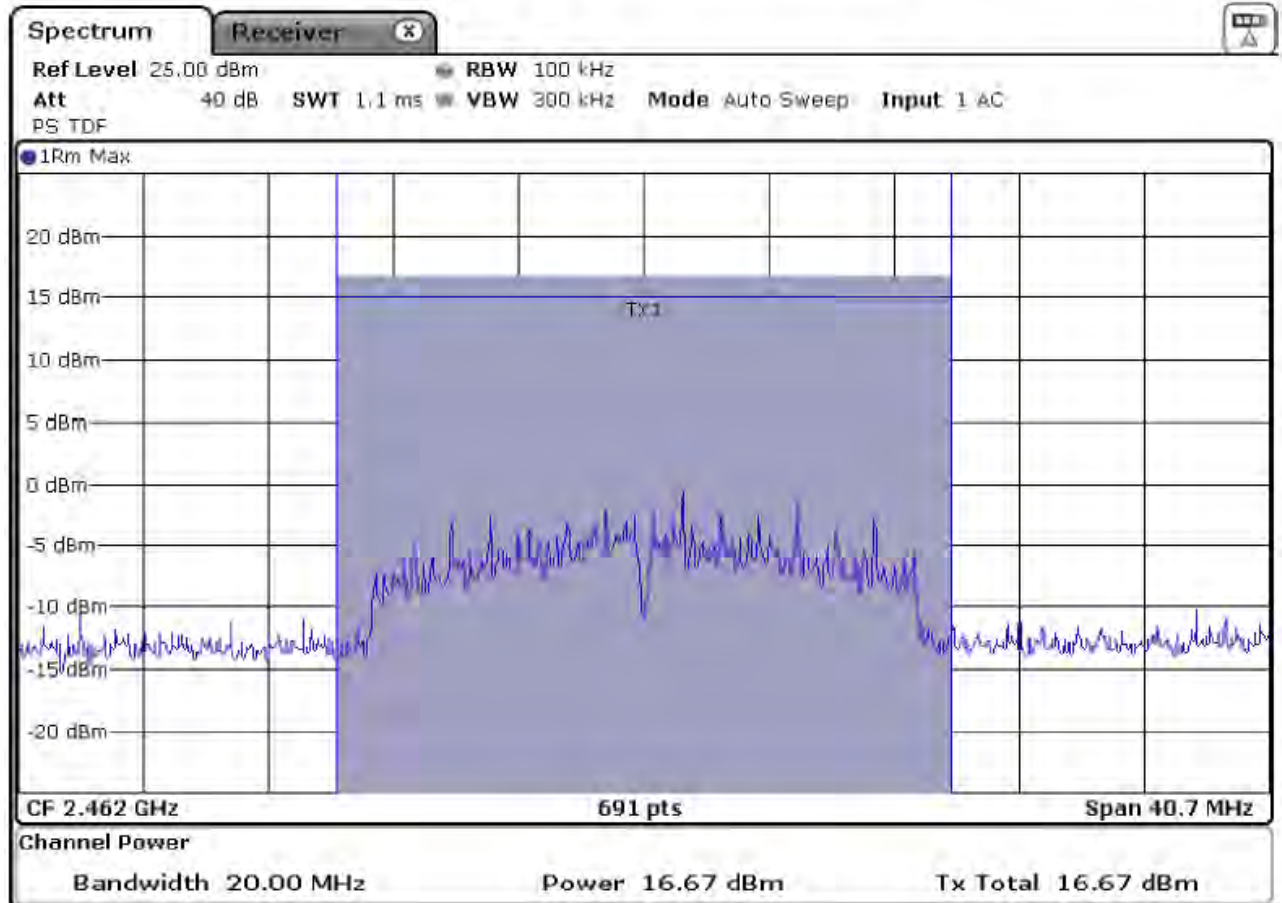
FCC 1

Output power of fundamental emissions
acc. FCC Subpart C § 15.209 / RSS-247



Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11n, CH.11, HT: Greenfield, BW = 20 MHz



Position: Y / Polarisation: H

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2462	16,67	13,33	30,00	pass



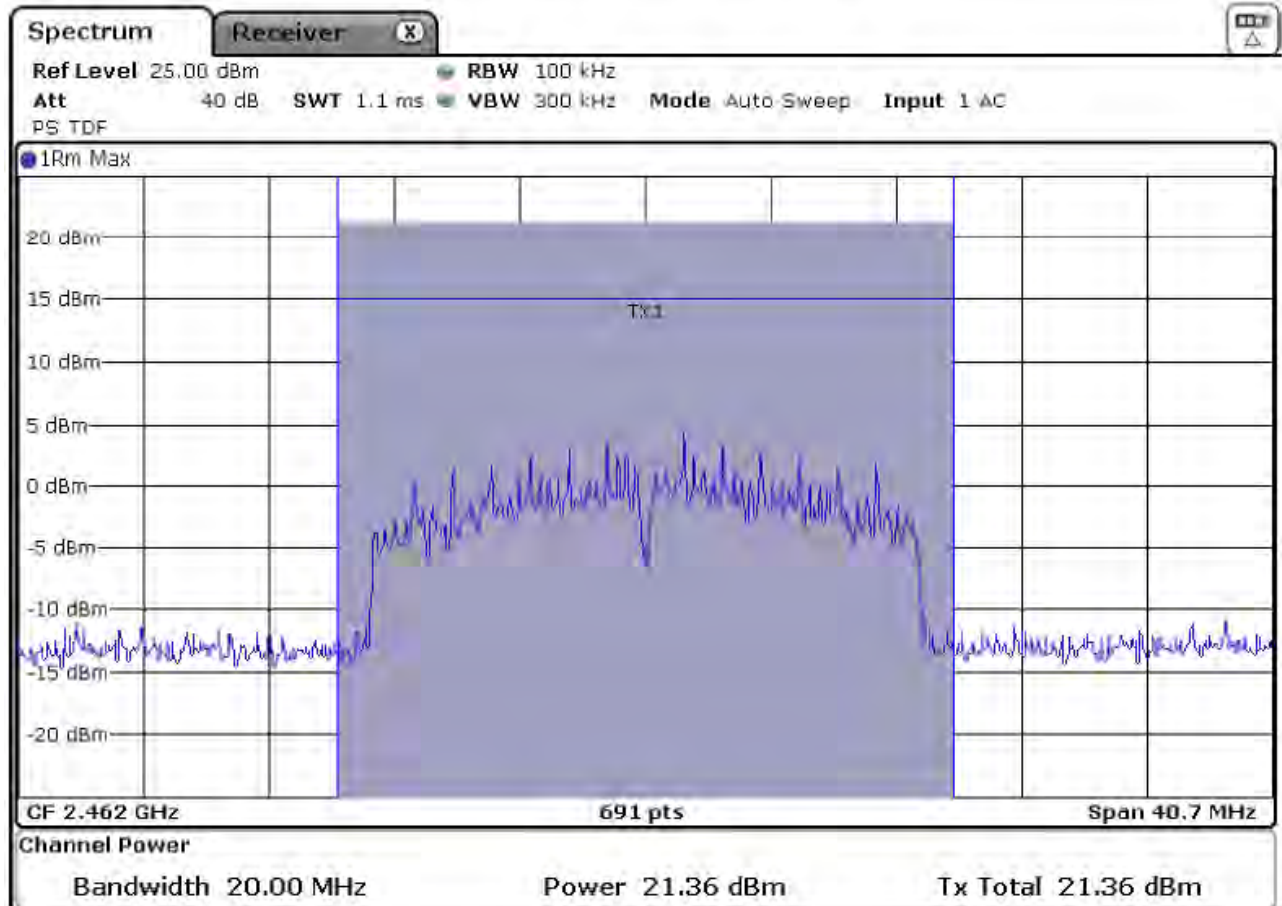
FCC 1

Output power of fundamental emissions
acc. FCC Subpart C § 15.209 / RSS-247



Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11n, CH.11, HT: Greenfield, BW = 20 MHz



Position: Z / Polarisation: V

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2462	21,36	8,64	30,00	pass



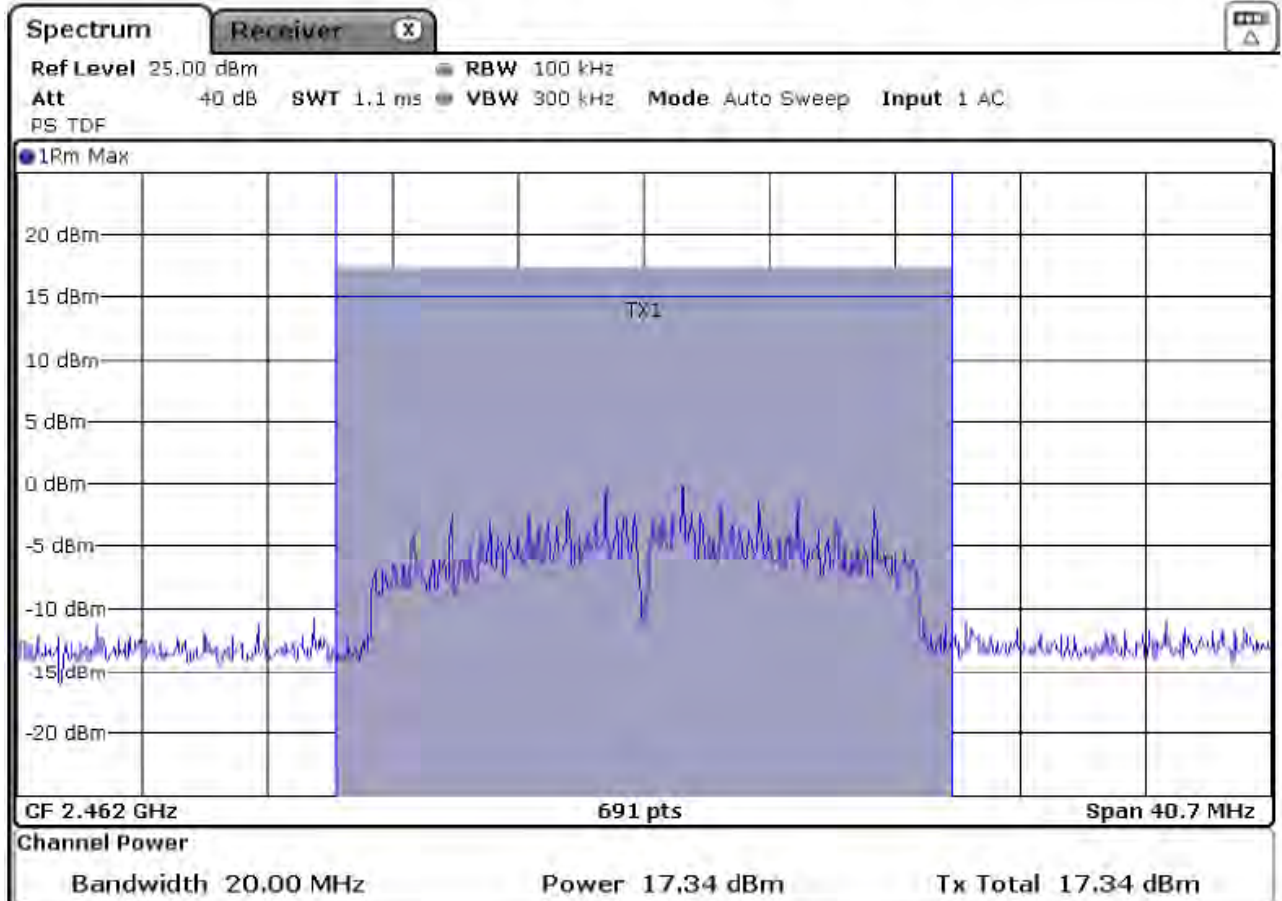
FCC 1

Output power of fundamental emissions
acc. FCC Subpart C § 15.209 / RSS-247



Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11n, CH.11, HT: Greenfield, BW = 20 MHz



Position: Z / Polarisation: H

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2462	17,34	12,66	30,00	pass



FCC 1

Output power of fundamental emissions
acc. FCC Subpart C § 15.209 / RSS-247



Ref-No.: 20/01-0031

Summary of the findings

Test conditions	Polarization of receiving antenna	Tested frequency [MHz]	Meas value [dBm]	Limit [dBm]	Result
Position: X	V	2462	18,98	30,00	pass
Position: X	H	2462	20,65	30,00	pass
Position: Y	V	2462	17,31	30,00	pass
Position: Y	H	2462	16,67	30,00	pass
Position: Z	V	2462	21,36	30,00	pass
Position: Z	H	2462	17,34	30,00	pass

Channel	Frequency [MHz]	Output Power		Limit		Result
		[dBm]	[mW]	[dBm]	[mW]	
1	2412	20.43	110.41	30	1000	Pass
6	2437	20.43	110.41	30	1000	Pass
11	2462	21.36	136.77	30	1000	Pass

Channel	Frequency [MHz]	Output TX/RX0 [mW]	Output TX/RX1 [mW]	Total Output Power		Limit		Result
				[dBm]	[mW]	[dBm]	[mW]	
1	2412	66.07	110.41	22.47	176.48	30	1000	Pass
6	2437	67.61	110.41	22.50	178.02	30	1000	Pass
11	2462	71.29	136.77	23.18	208.06	30	1000	Pass

According to KDB 662911 D01

Lowest operating frequency - 802.11n 40MHz / HT MixMode – MCS=0; 6.5 MBps /
TX/RX0 / ext. Antenna typ 2



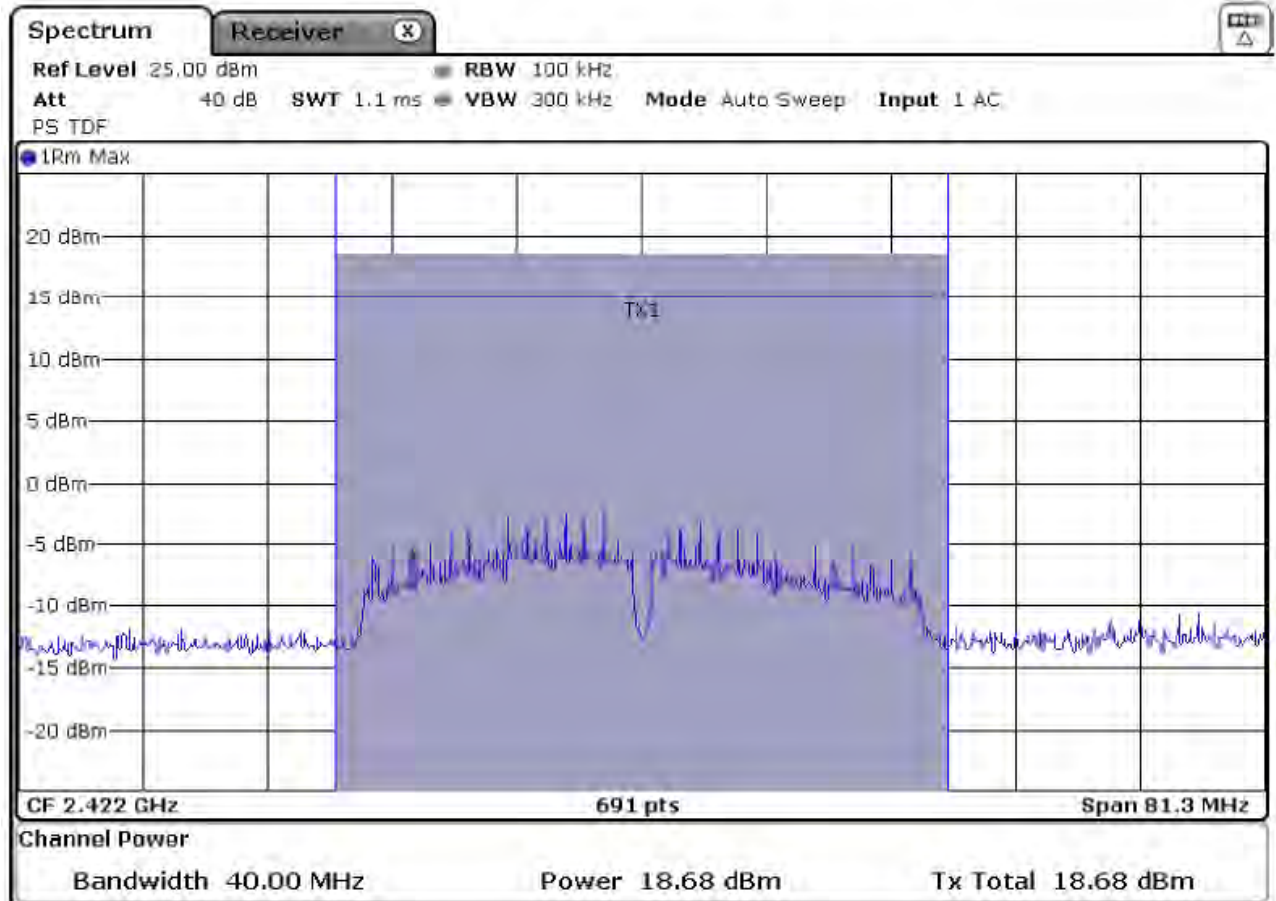
FCC 1

Output power of fundamental emissions
acc. FCC Subpart C § 15.209 / RSS-247



Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11n, CH.03, HT:Greenfield , BW = 40 MHz



Position: X/Y/Z / Polarisation: V

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2422	18,68	11,32	30,00	pass

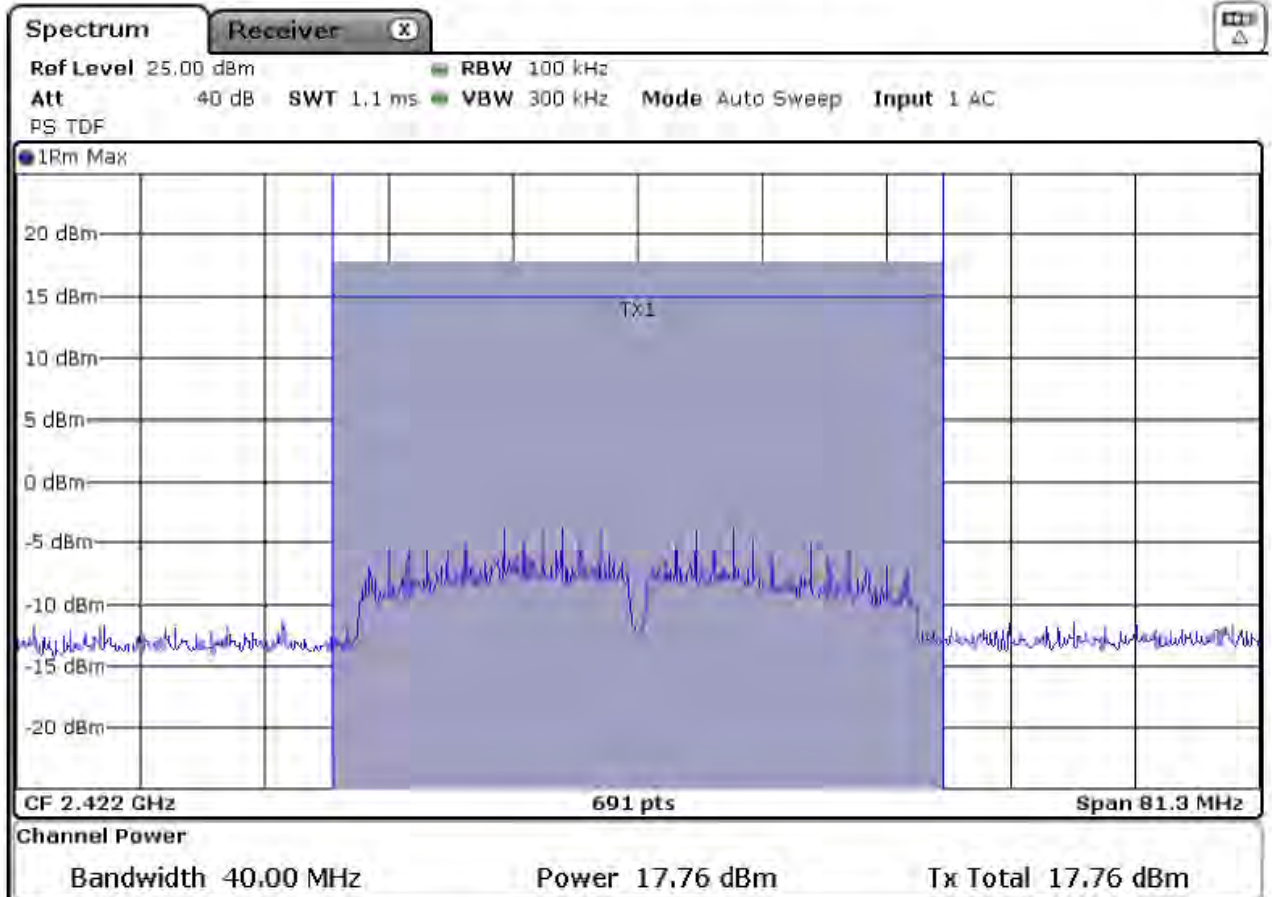


FCC 1
Output power of fundamental emissions
acc. FCC Subpart C § 15.209 / RSS-247



Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11n, CH.03, HT:Greenfield, BW = 40 MHz



Position: X/Y/Z / Polarisation: H

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2422	17,76	12,24	30,00	pass

Lowest operating frequency - 802.11n 40MHz / HT MixMode – MCS=0; 6.5 MBps /
TX/RX0 / ext. Antenna typ 2



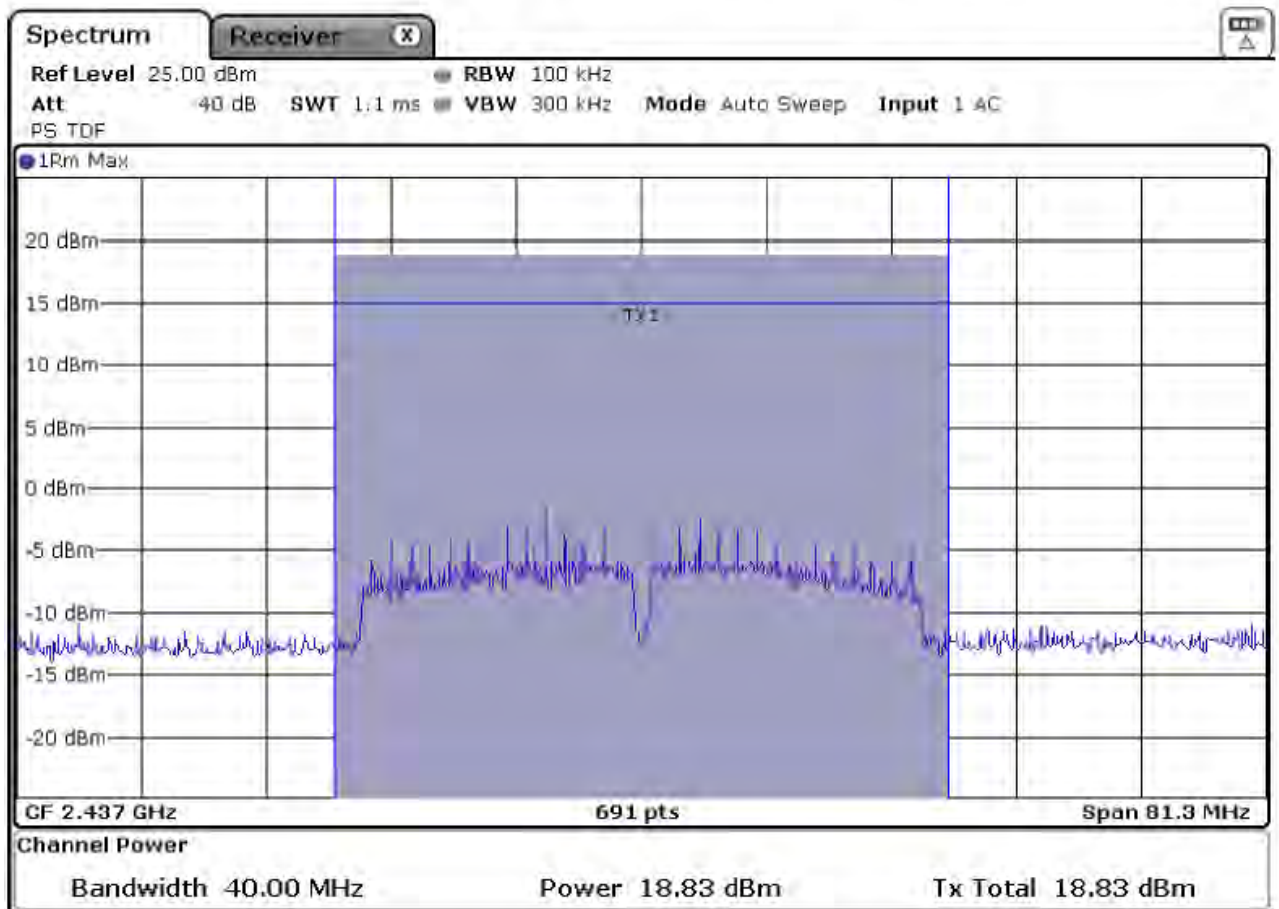
FCC 1

Output power of fundamental emissions
acc. FCC Subpart C § 15.209 / RSS-247



Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11n, CH.06, HT:Greenfield, BW = 40 MHz



Position: X/Y/Z / Polarisation: V

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2437	18,83	11,17	30,00	pass



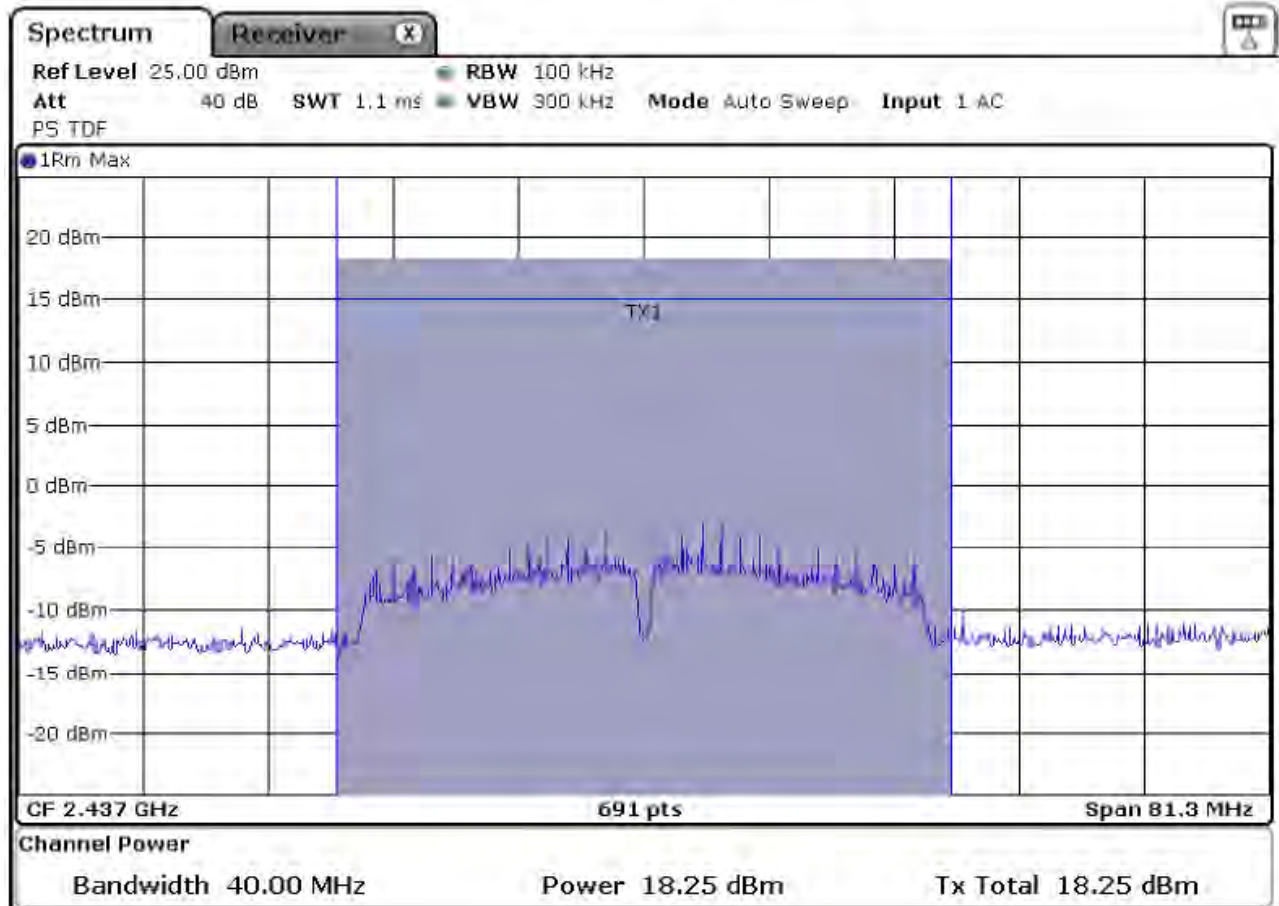
FCC 1

Output power of fundamental emissions
acc. FCC Subpart C § 15.209 / RSS-247



Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11n, CH.06, HT:Greenfield, BW = 40 MHz



Position: X/Y/Z / Polarisation: H

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2437	18,25	11,75	30,00	pass

Lowest operating frequency - 802.11n 40MHz / HT MixMode – MCS=0; 6.5 MBps /
TX/RX0 / ext. Antenna typ 2



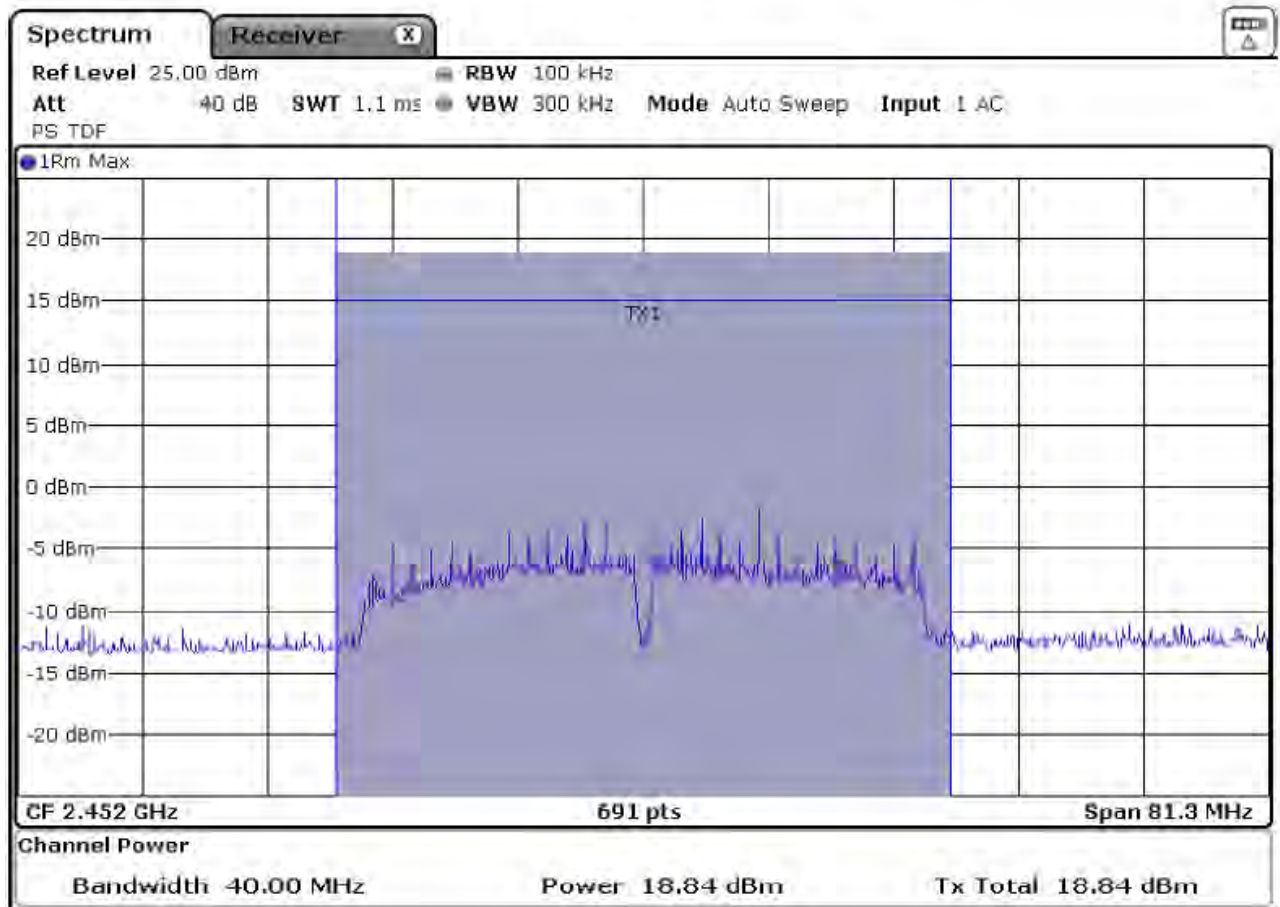
FCC 1

Output power of fundamental emissions
acc. FCC Subpart C § 15.209 / RSS-247



Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11n, CH.09, HT:Greenfield , BW = 40 MHz



Position: X/Y/Z / Polarisation: V

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2452	18,84	11,16	30,00	pass



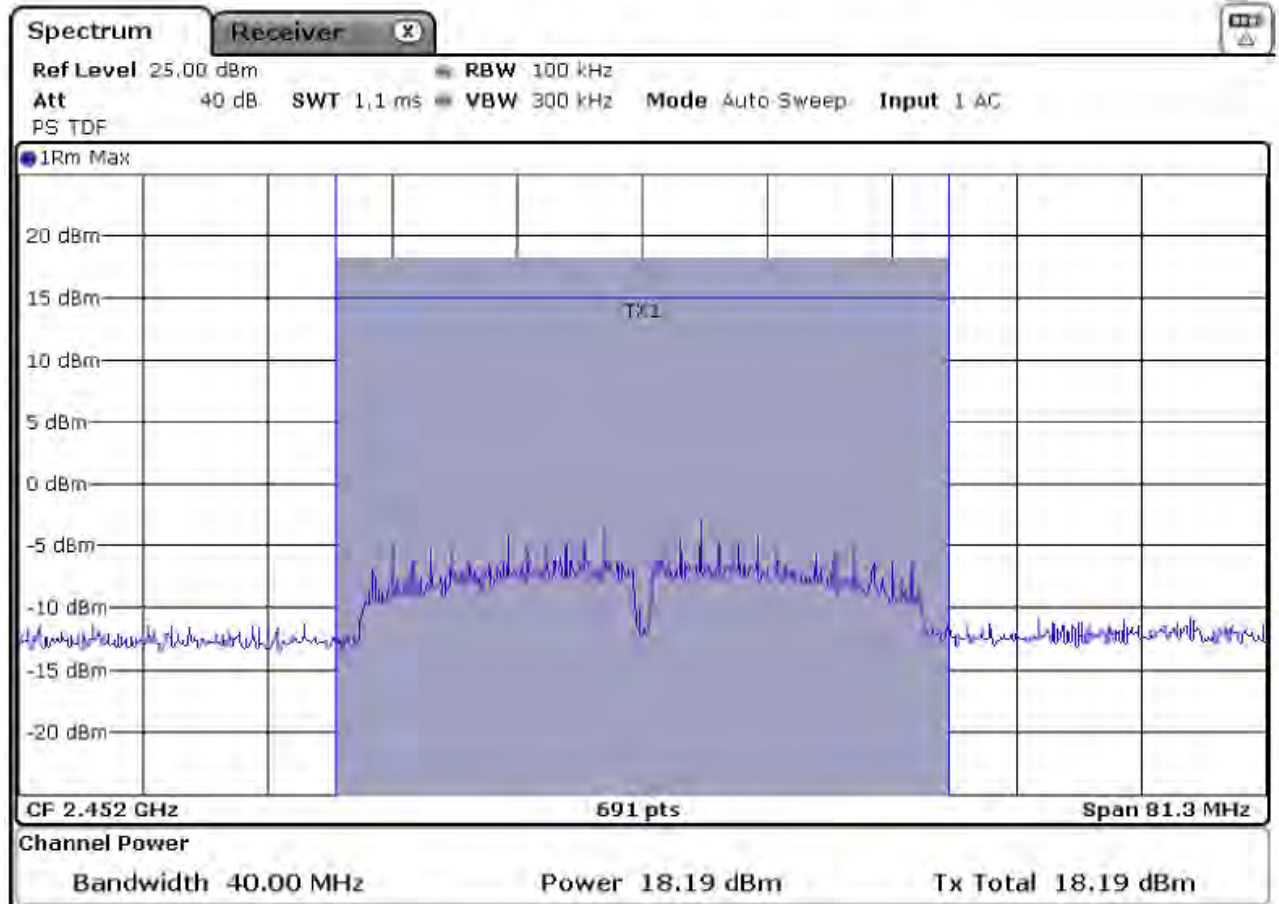
FCC 1

Output power of fundamental emissions
acc. FCC Subpart C § 15.209 / RSS-247



Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11n, CH.09, HT:Greenfield, BW = 40 MHz



Position: X/Y/Z / Polarisation: H

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2452	18,19	11,81	30,00	pass

Maximum output power radiated measurement:
802.11n 40MHz / HT MixMode – MCS=0; 6.5 MBps / TX/RX0 / ext. Antenna typ 2

Channel	Frequency [MHz]	Output Power		Limit		Result
		[dBm]	[mW]	[dBm]	[mW]	
1	2412	18.68	73.79	30	1000	Pass
6	2437	18.83	76.38	30	1000	Pass
9	2452	18.84	76.56	30	1000	Pass

Lowest operating frequency - 802.11n 40MHz / HT MixMode – MCS=0; 6.5 MBps /
TX/RX1 / ext. Antenna typ 2



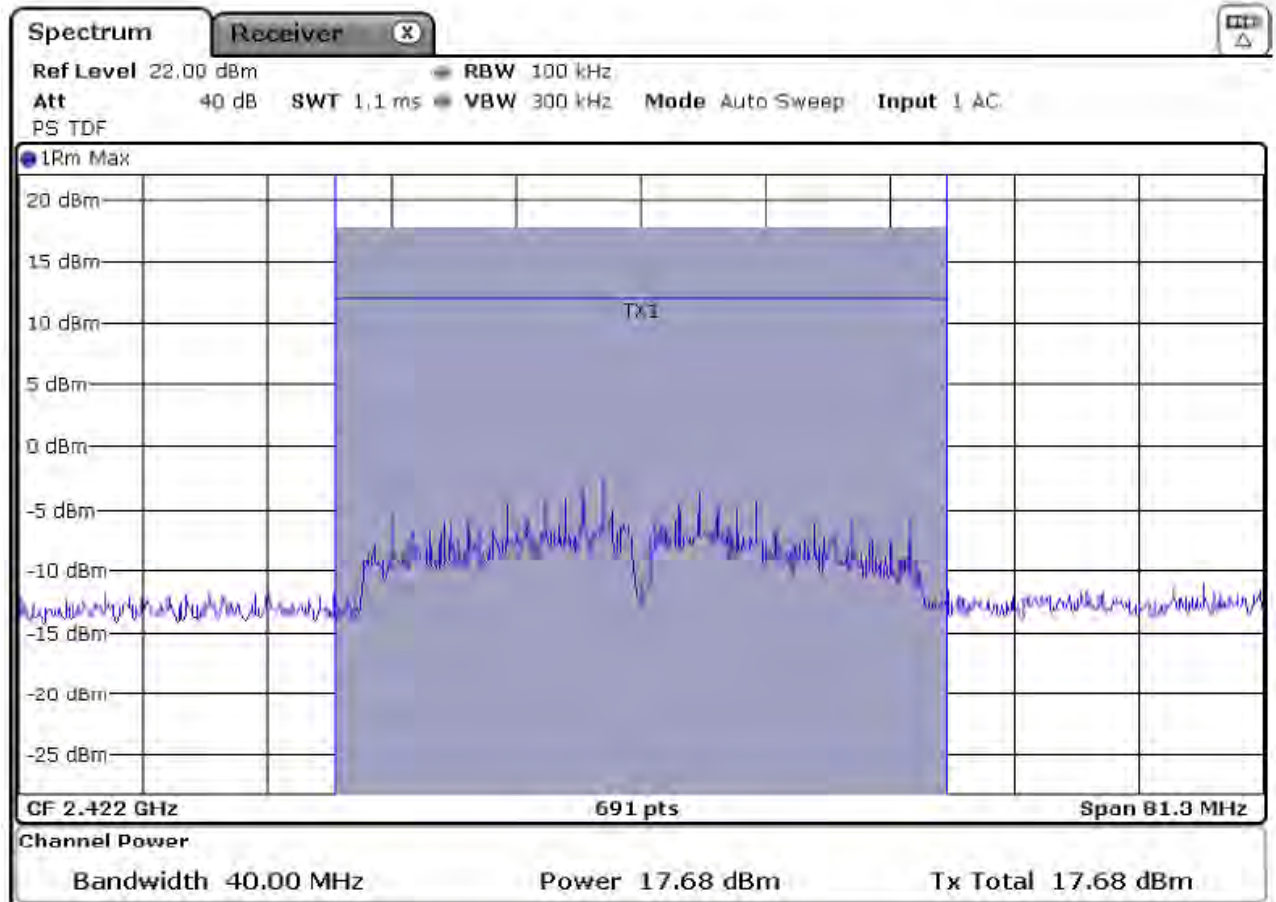
FCC 1

Output power of fundamental emissions
acc. FCC Subpart C § 15.209 / RSS-247



Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11n, CH.3, HT: Greenfield, BW = 40 MHz



Position: X / Polarisation: V

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2422	17,68	12,32	30,00	pass



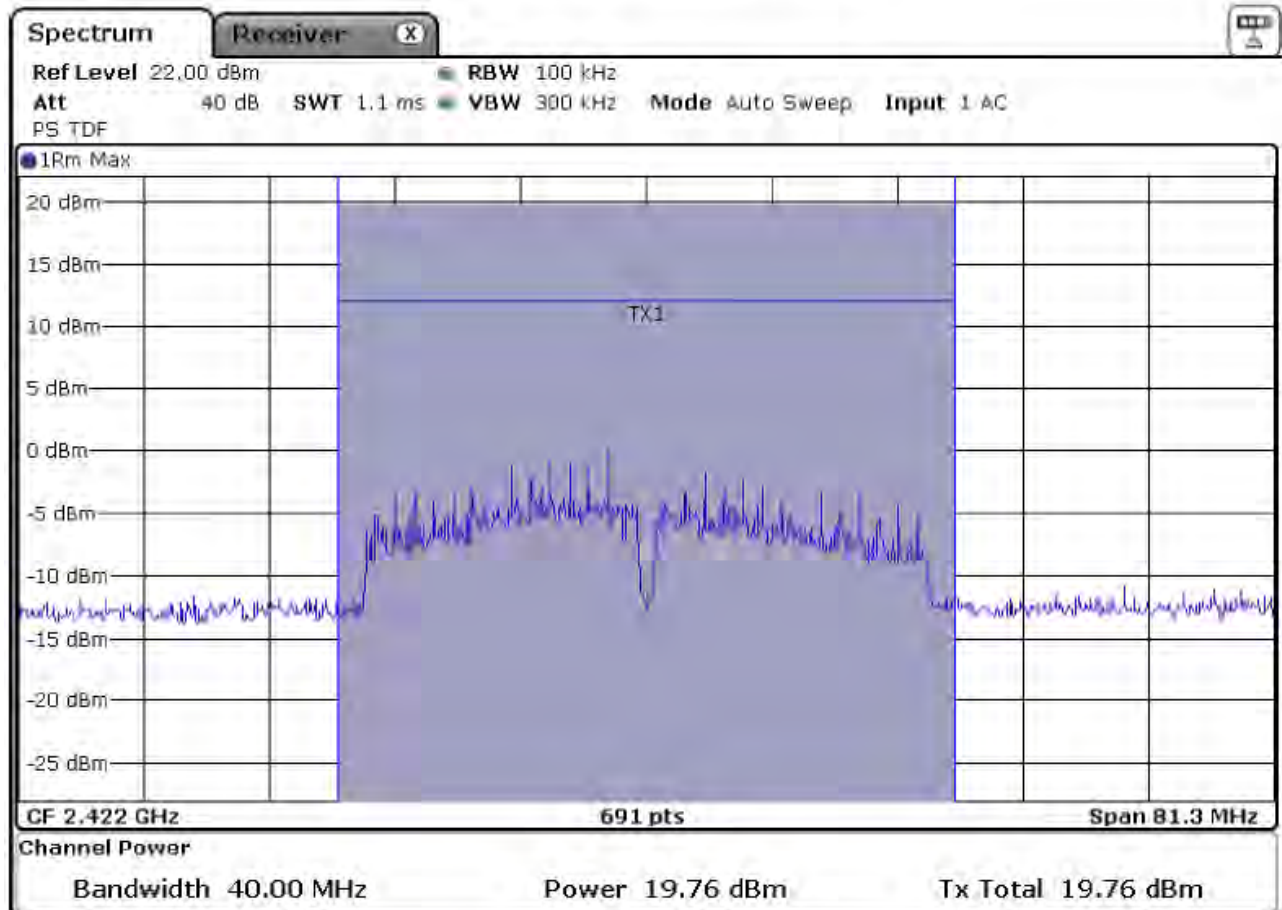
FCC 1

Output power of fundamental emissions
acc. FCC Subpart C § 15.209 / RSS-247



Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11n; CH.3; HT: Greenfield; BW = 40 MHz



Position: X / Polarisation: H

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2422	19,76	10,24	30,00	pass



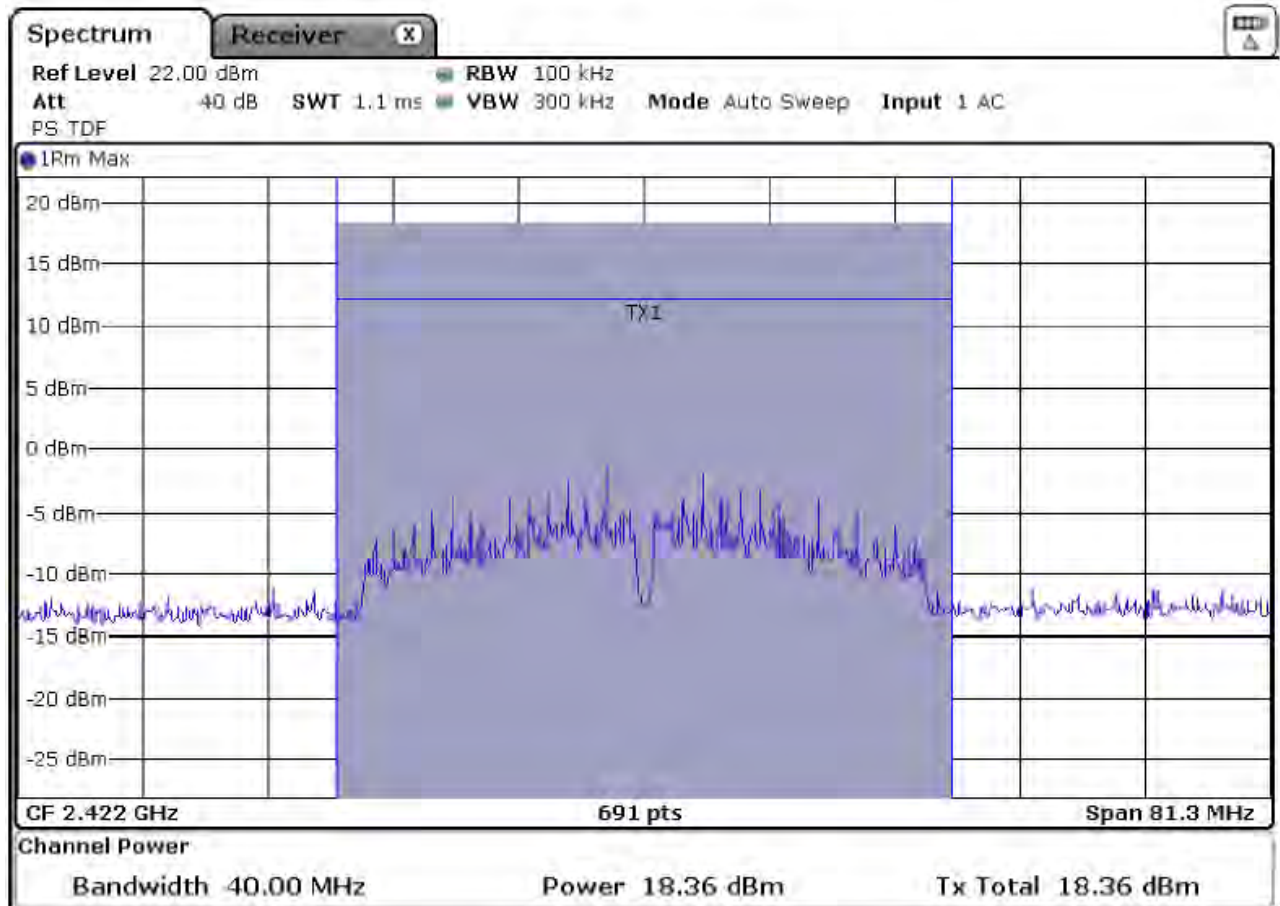
FCC 1

Output power of fundamental emissions
acc. FCC Subpart C § 15.209 / RSS-247



Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11n, CH.3, HT: Greenfield, BW = 40 MHz



Position: Y / Polarisation: V

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2422	18,36	11,64	30,00	pass



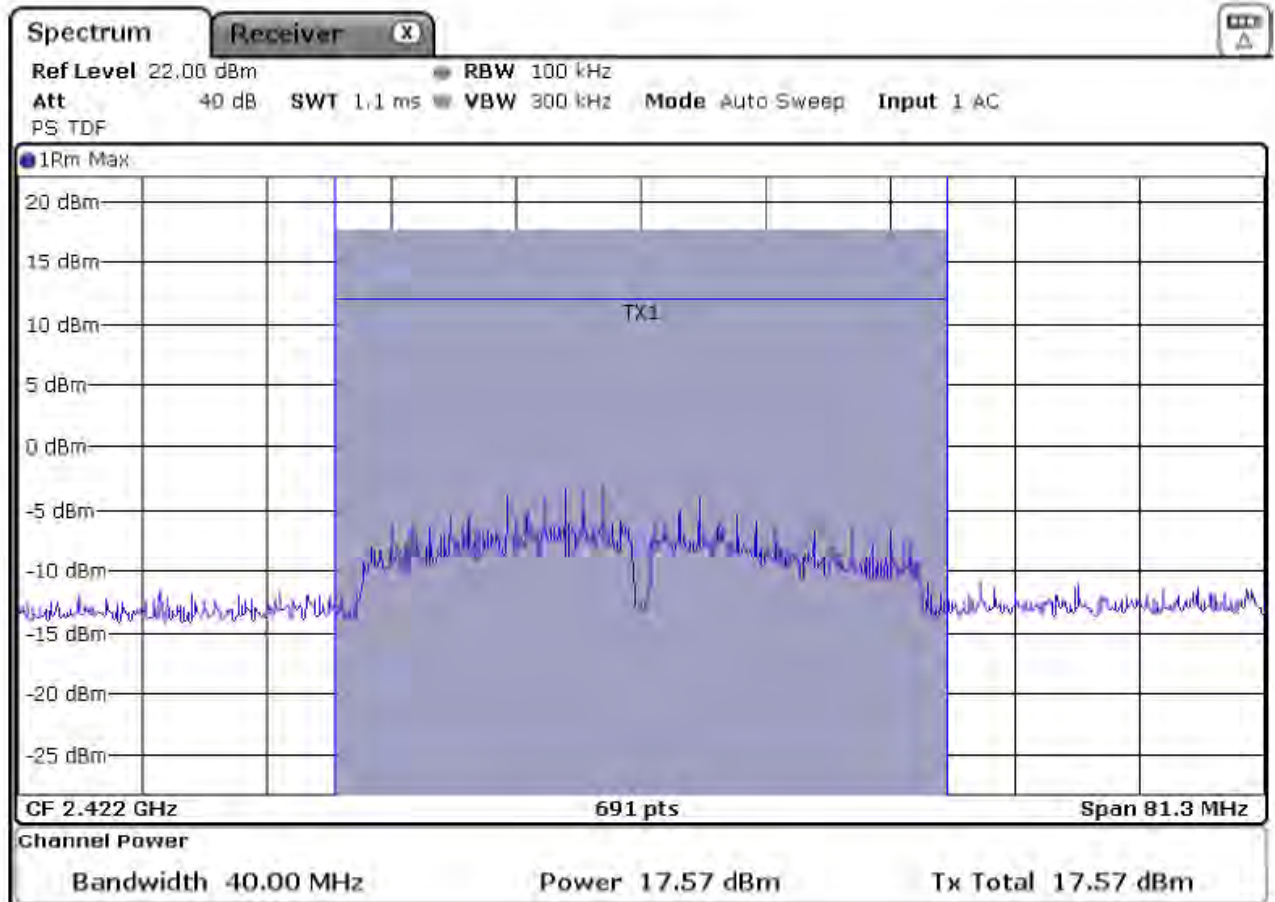
FCC 1

Output power of fundamental emissions
acc. FCC Subpart C § 15.209 / RSS-247



Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11n, CH.3, HT: Greenfield, BW = 40 MHz



Position: Y / Polarisation: H

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2422	17,57	12,43	30,00	pass



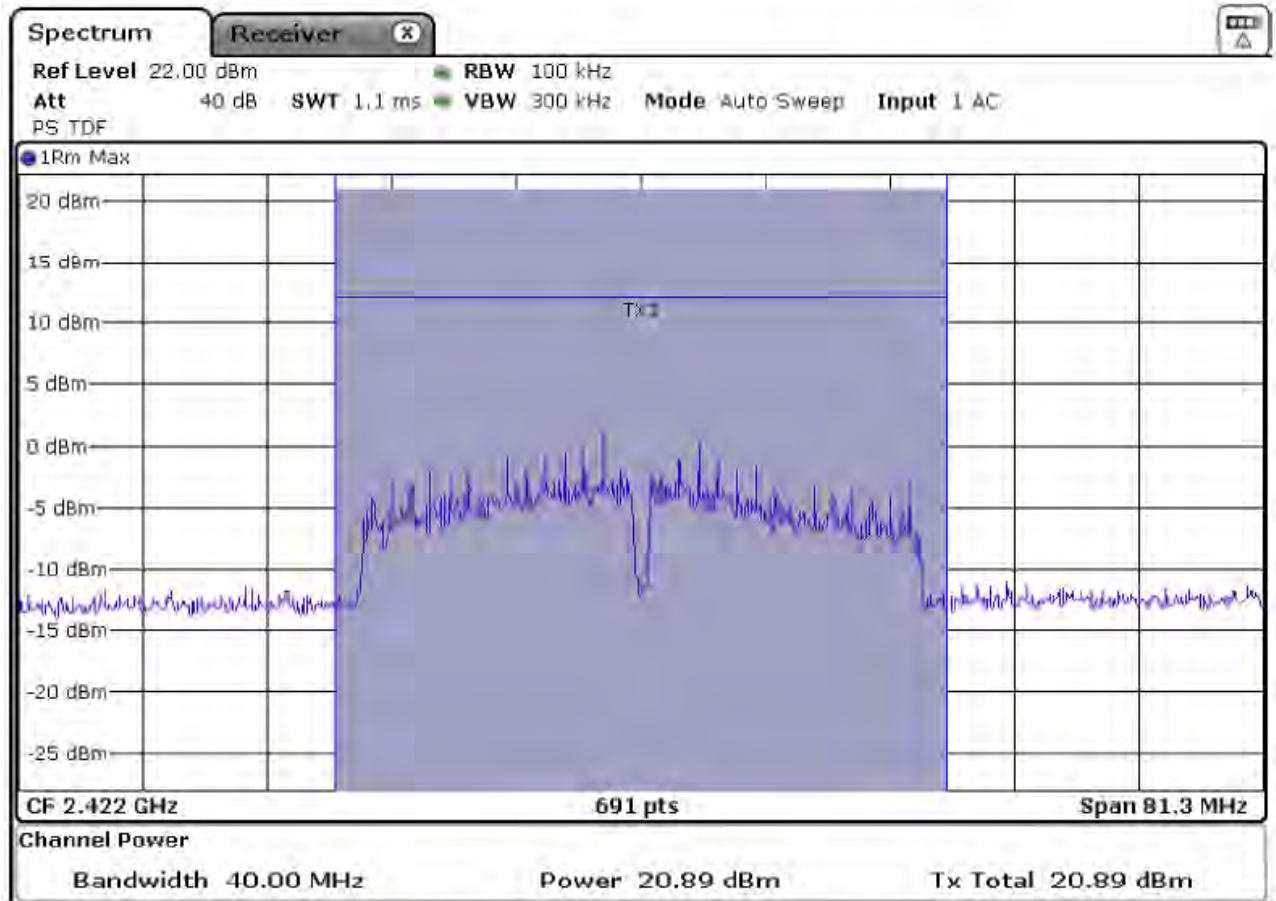
FCC 1

Output power of fundamental emissions
acc. FCC Subpart C § 15.209 / RSS-247



Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11n, CH.3, HT: Greenfield, BW = 40 MHz



Position: Z / Polarisation: V

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2422	20,89	9,11	30,00	pass



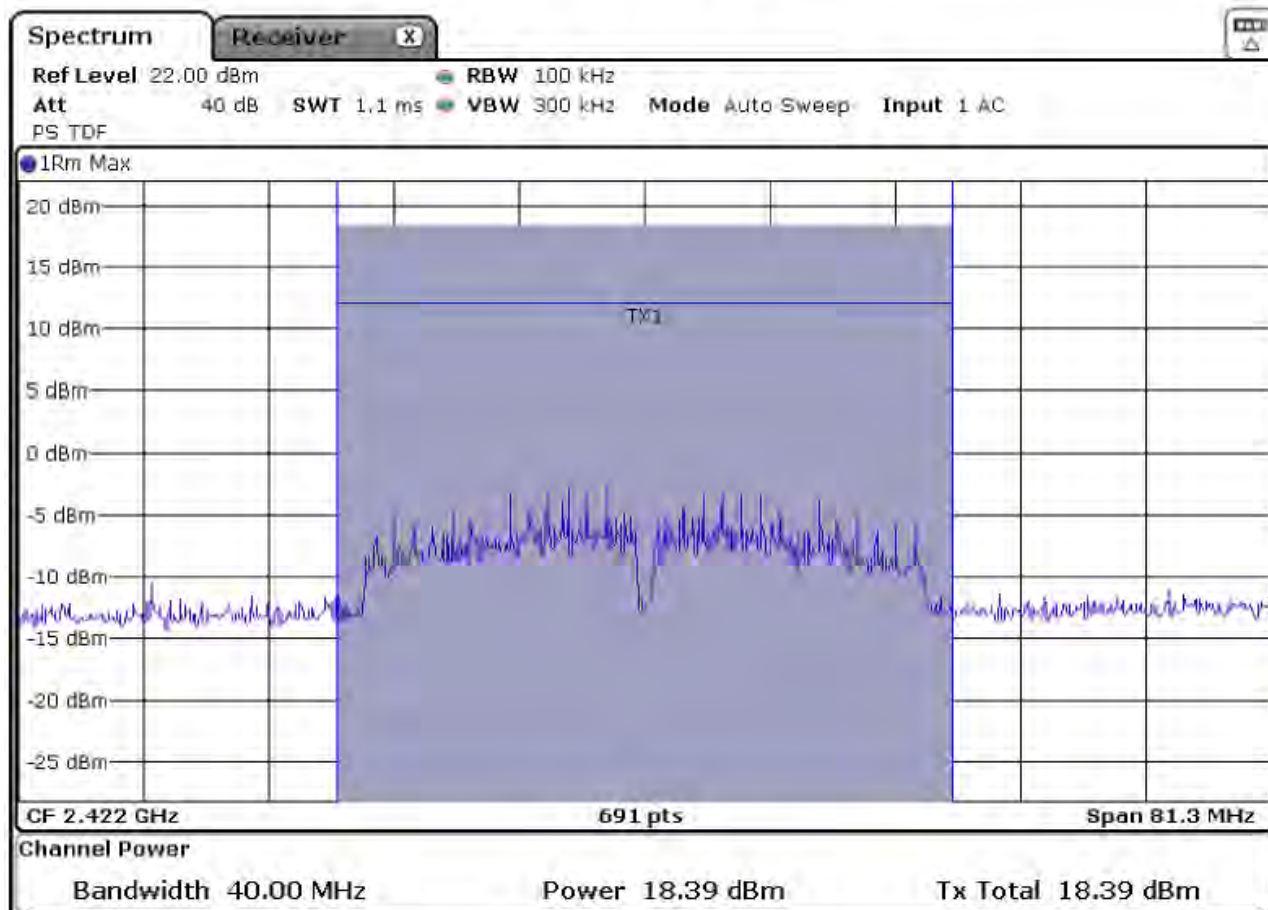
FCC 1

Output power of fundamental emissions
acc. FCC Subpart C § 15.209 / RSS-247



Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11n, CH.3, HT: Greenfield, BW = 40 MHz



Position: Z / Polarisation: H

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2422	18,39	11,61	30,00	pass



FCC 1

Output power of fundamental emissions
 acc. FCC Subpart C § 15.209 / RSS-247



Ref.-No.: 20/01-0031

Summary of the findings

Test conditions	Polarization of receiving antenna	Tested frequency [MHz]	Meas value [dBm]	Limit [dBm]	Result
Position: X	V	2422	17,68	30,00	pass
Position: X	H	2422	19,76	30,00	pass
Position: Y	V	2422	18,36	30,00	pass
Position: Y	H	2422	17,57	30,00	pass
Position: Z	V	2422	20,89	30,00	pass
Position: Z	H	2422	18,39	30,00	pass

Lowest operating frequency - 802.11n 40MHz / HT MixMode – MCS=0; 6.5 MBps /
TX/RX1 / ext. Antenna typ 2



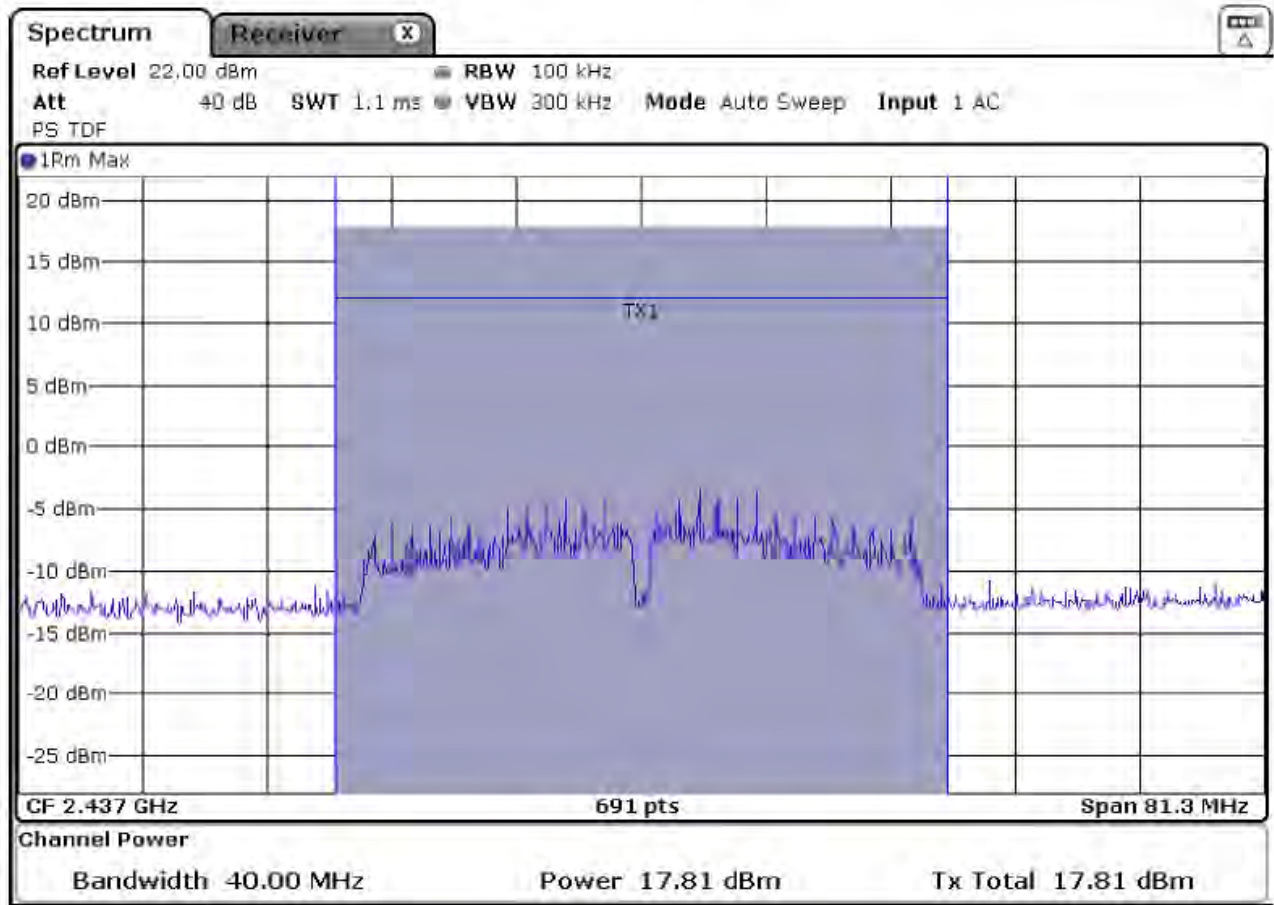
FCC 1

Output power of fundamental emissions
acc. FCC Subpart C § 15.209 / RSS-247



Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11n, CH.6, HT: Greenfield, BW = 40 MHz



Position: X / Polarisation: V

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2437	17,81	12,19	30,00	pass



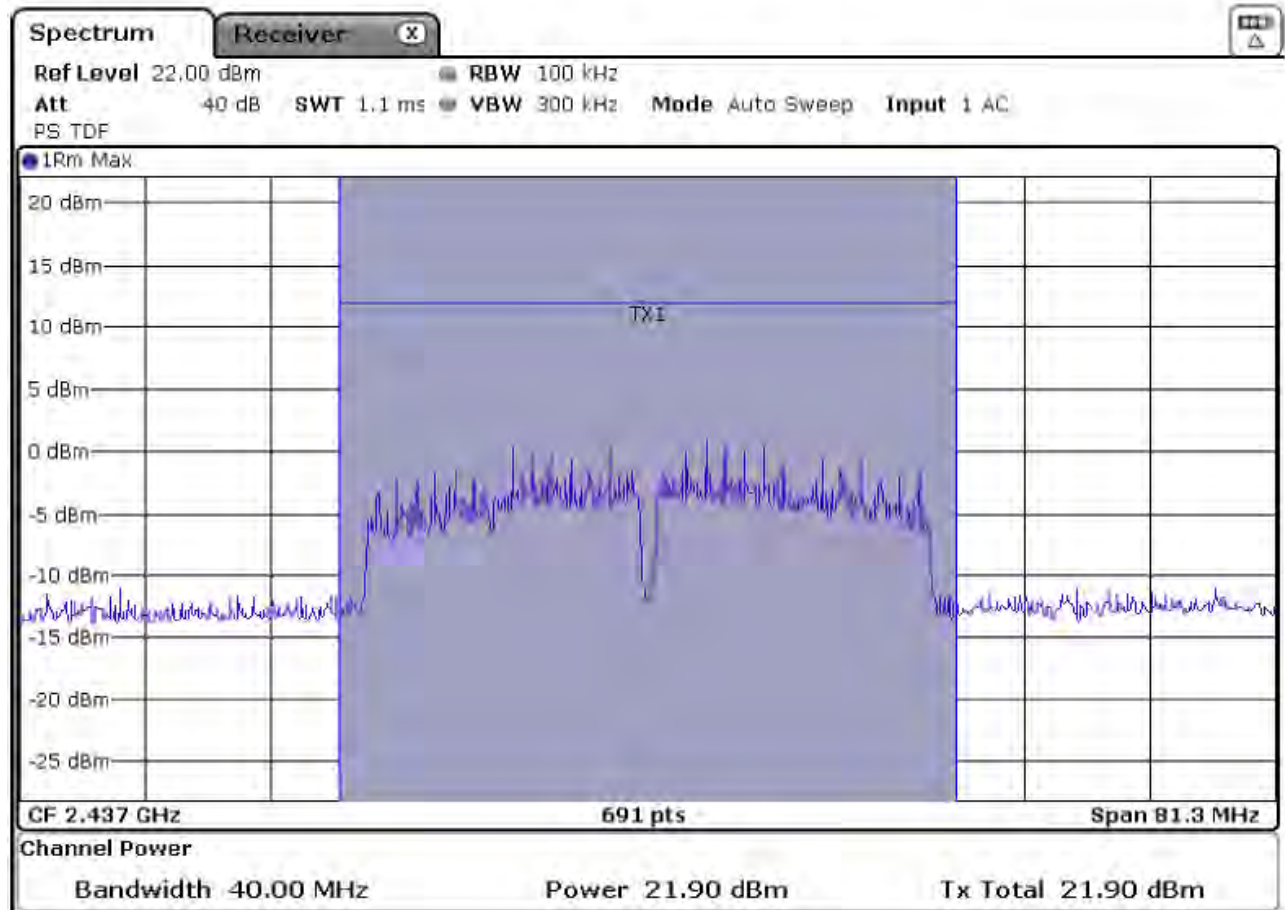
FCC 1

Output power of fundamental emissions
acc. FCC Subpart C § 15.209 / RSS-247



Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11n, CH.6, HT: Greenfield, BW = 40 MHz



Position: X / Polarisation: H

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2437	21,90	8,10	30,00	pass



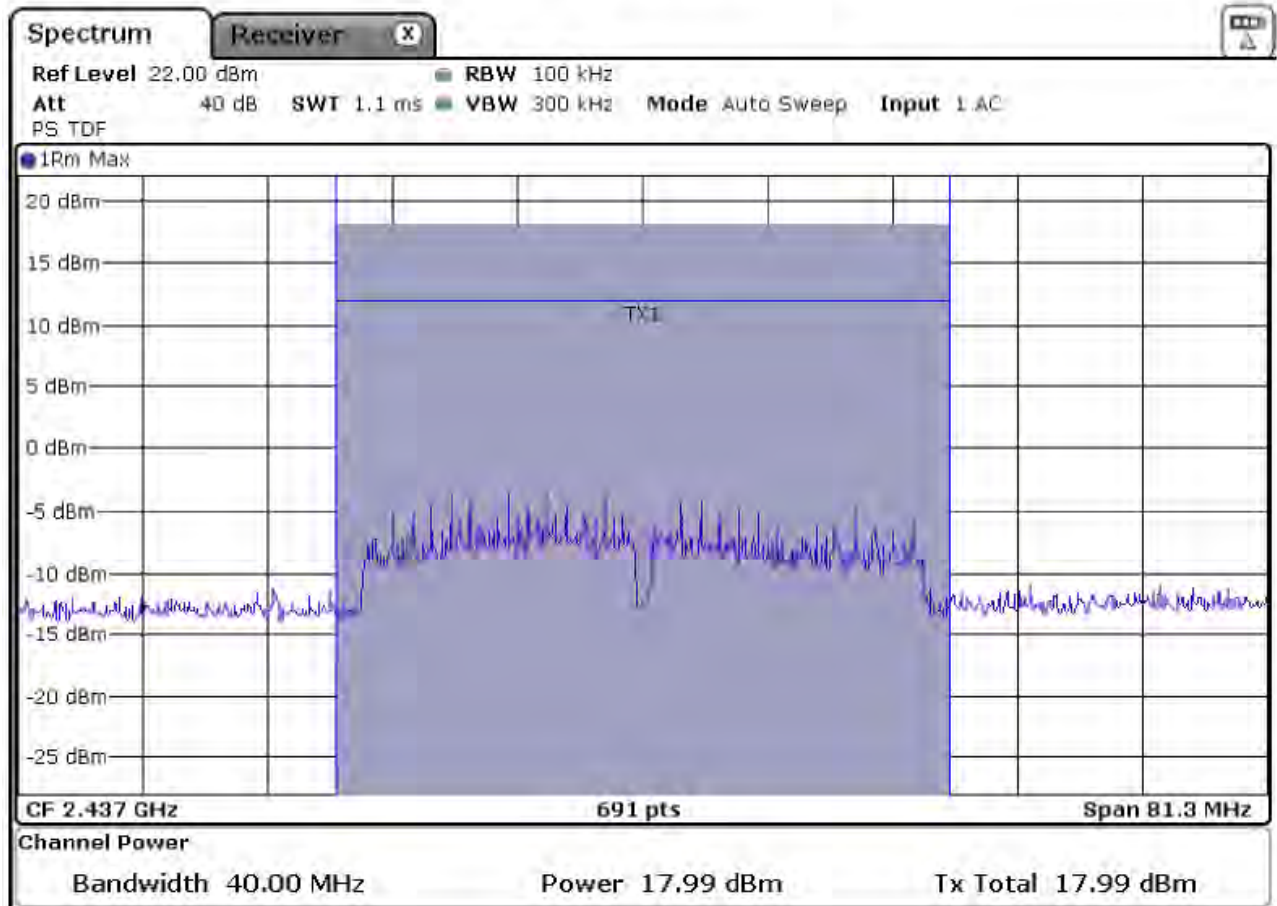
FCC 1

Output power of fundamental emissions
acc. FCC Subpart C § 15.209 / RSS-247



Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11n, CH.6, HT: Greenfield, BW = 40 MHz



Position: Y / Polarisation: V

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2437	17,99	12,01	30,00	pass



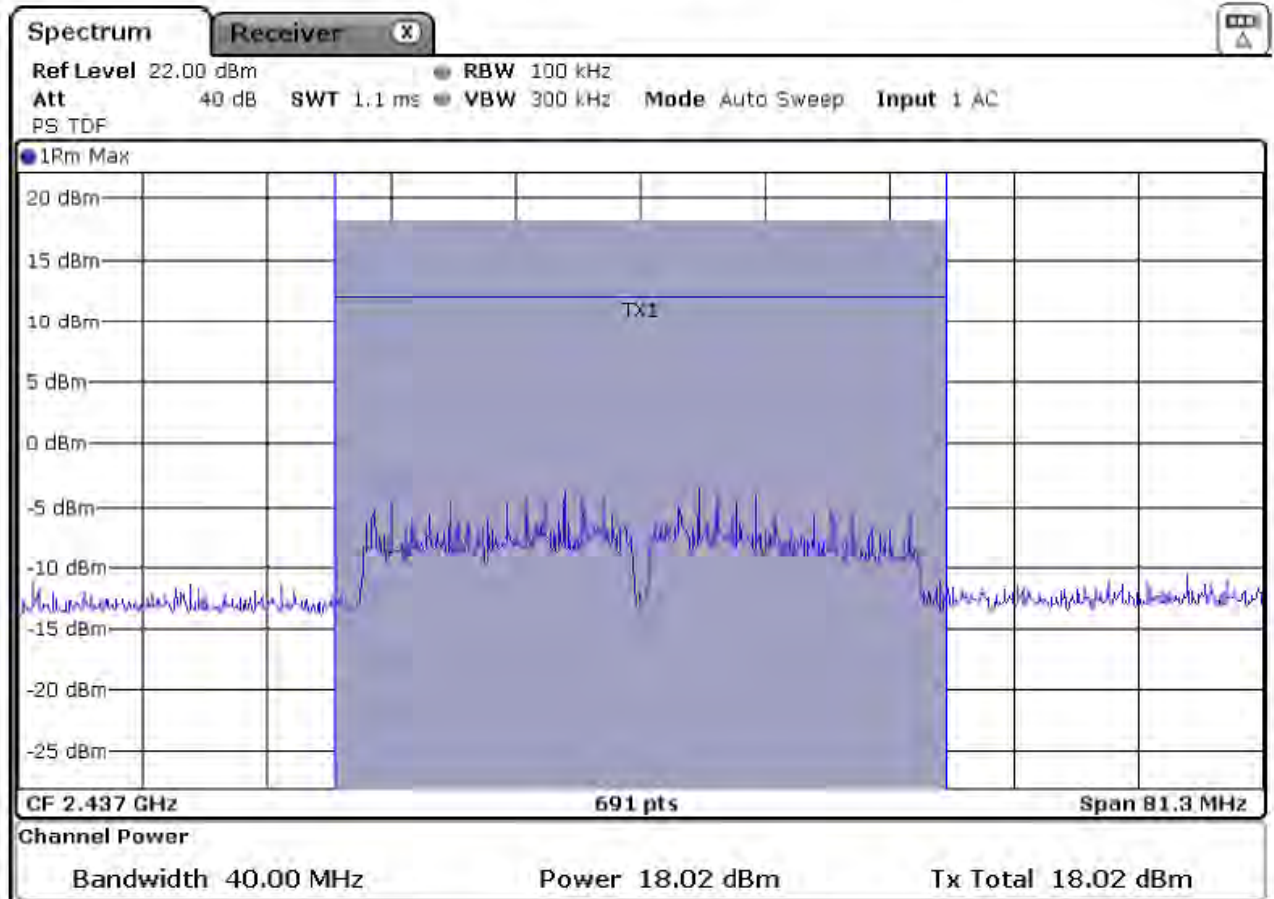
FCC 1

Output power of fundamental emissions
acc. FCC Subpart C § 15.209 / RSS-247



Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11n, CH.6, HT: Greenfield, BW = 40 MHz



Position: Y / Polarisation: H

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2462	18,02	11,98	30,00	pass



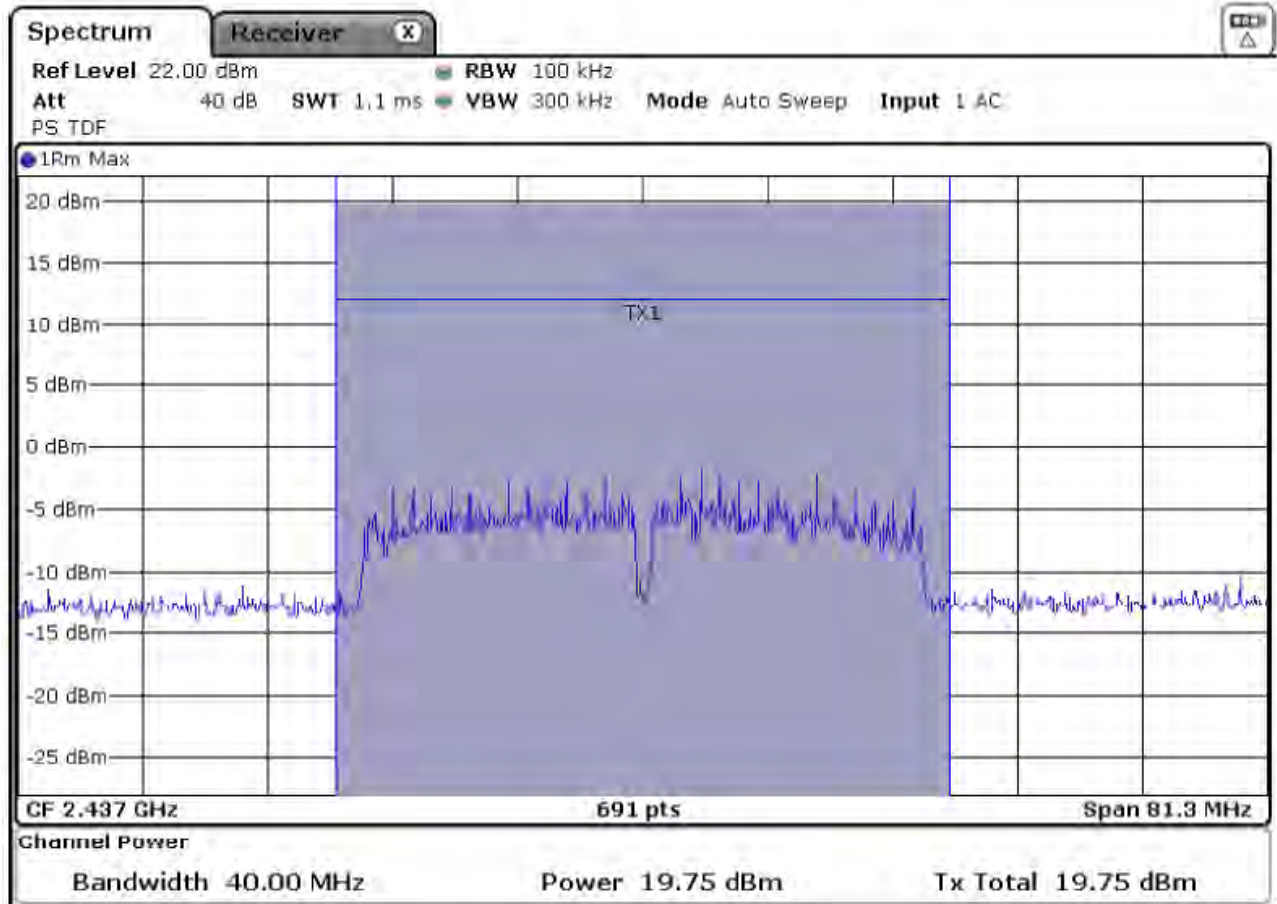
FCC 1

Output power of fundamental emissions
acc. FCC Subpart C § 15.209 / RSS-247



Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11n, CH.6, HT: Greenfield, BW = 40 MHz



Position: Z / Polarisation: V

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2437	19,75	10,25	30,00	pass



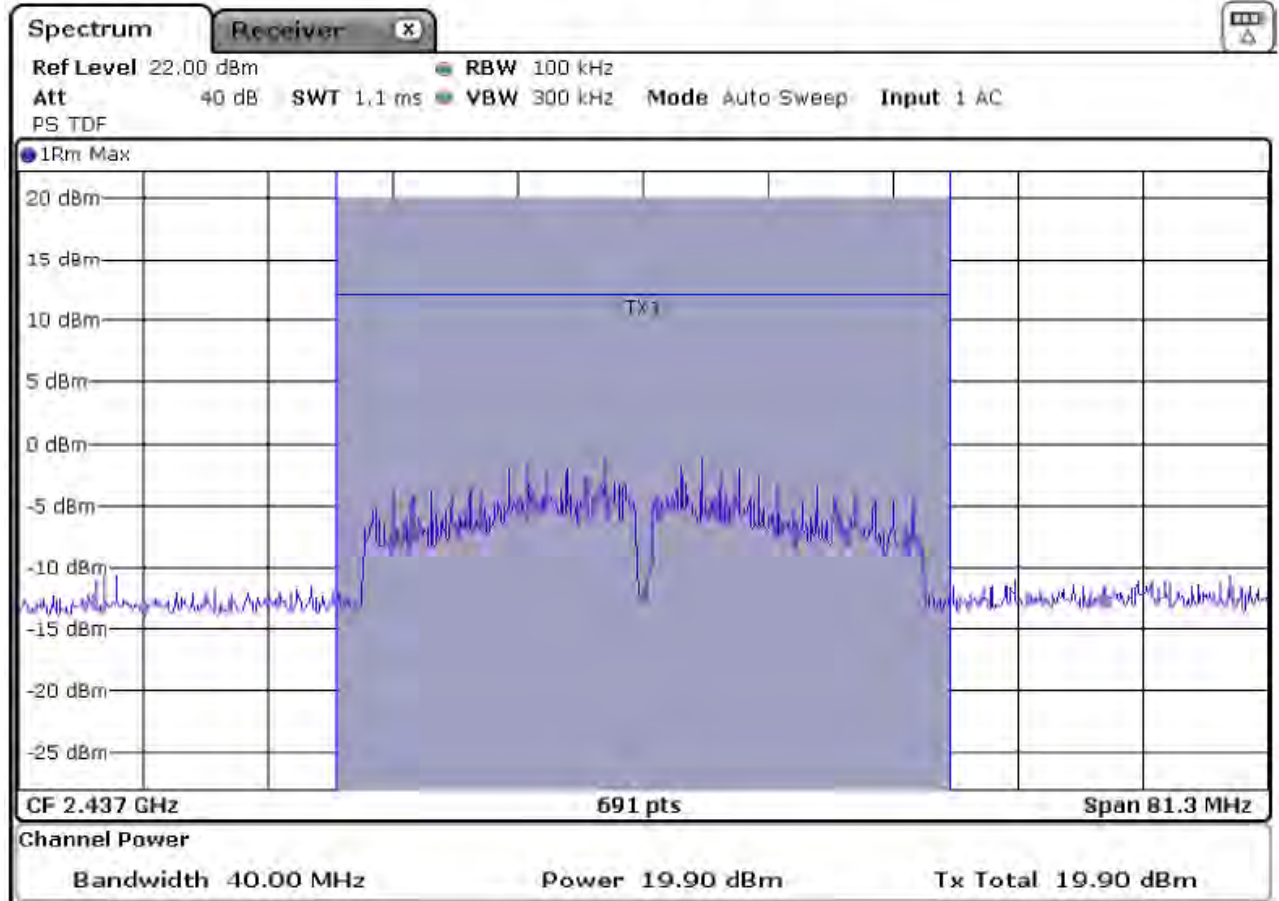
FCC 1

Output power of fundamental emissions
acc. FCC Subpart C § 15.209 / RSS-247



Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11n, CH.6, HT: Greenfield, BW = 40 MHz



Position: Z / Polarisation: H

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2437	19,90	10,10	30,00	pass

**FCC 1****Output power of fundamental emissions**
acc. FCC Subpart C § 15.209 / RSS-247

Ref.-No.: 20/01-0031

Summary of the findings

Test conditions	Polarization of receiving antenna	Tested frequency [MHz]	Meas value [dBm]	Limit [dBm]	Result
Position: X	V	2437	17,81	30,00	pass
Position: X	H	2437	21,90	30,00	pass
Position: Y	V	2437	17,99	30,00	pass
Position: Y	H	2437	18,02	30,00	pass
Position: Z	V	2437	19,75	30,00	pass
Position: Z	H	2437	19,90	30,00	pass

Lowest operating frequency - 802.11n 40MHz / HT MixMode – MCS=0; 6.5 MBps /
TX/RX1 / ext. Antenna typ 2



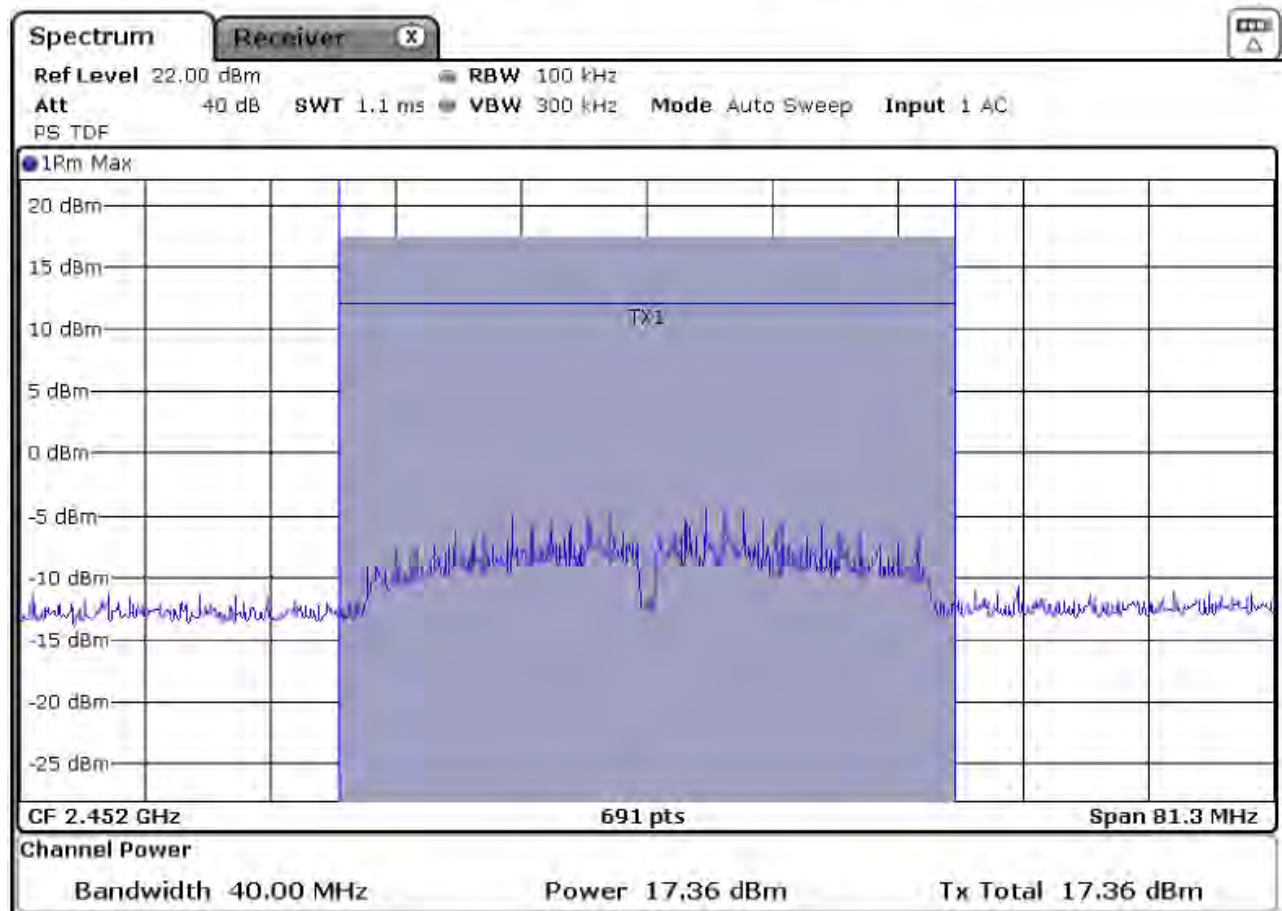
FCC 1

Output power of fundamental emissions
acc. FCC Subpart C § 15.209 / RSS-247



Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11n, CH.9, HT: Greenfield, BW = 40 MHz



Position: X / Polarisation: V

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2452	17,36	12,64	30,00	pass



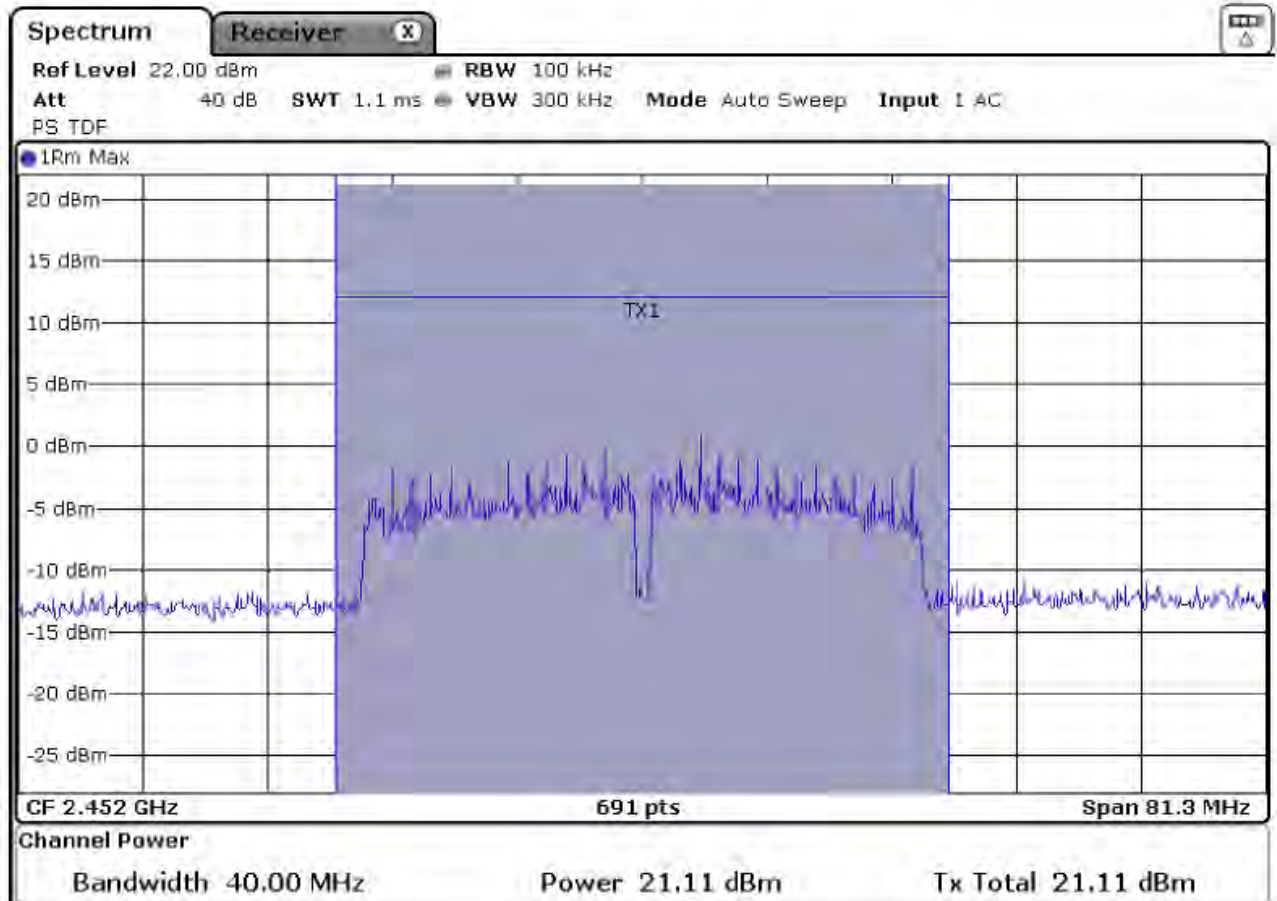
FCC 1

Output power of fundamental emissions
acc. FCC Subpart C § 15.209 / RSS-247



Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11n, CH.9, HT: Greenfield, BW = 40 MHz



Position: X / Polarisation: H

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2452	21,11	8,89	30,00	pass



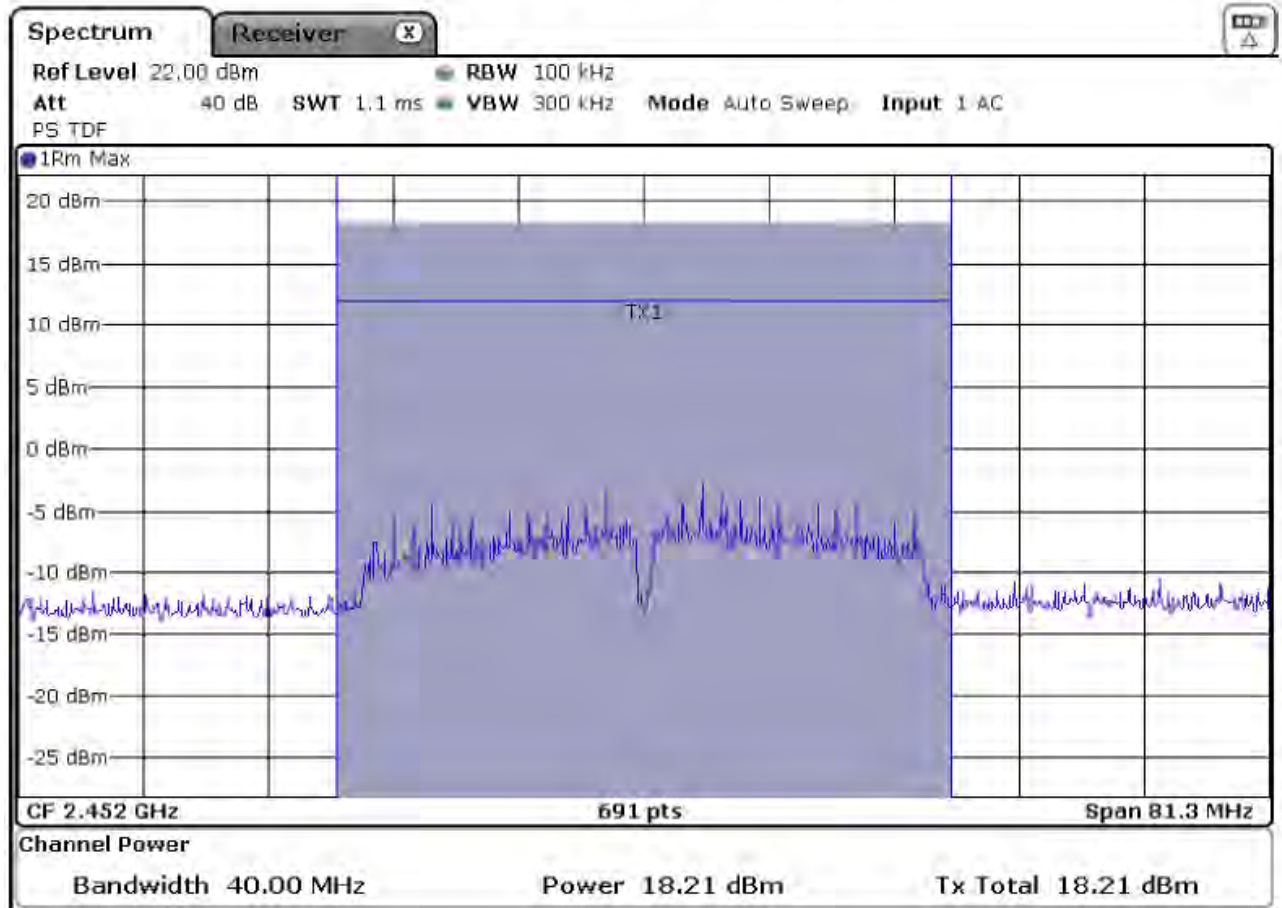
FCC 1

Output power of fundamental emissions
acc. FCC Subpart C § 15.209 / RSS-247



Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11n, CH.9, HT: Greenfield, BW = 40 MHz



Position: Y / Polarisation: V

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2452	18,21	11,79	30,00	pass



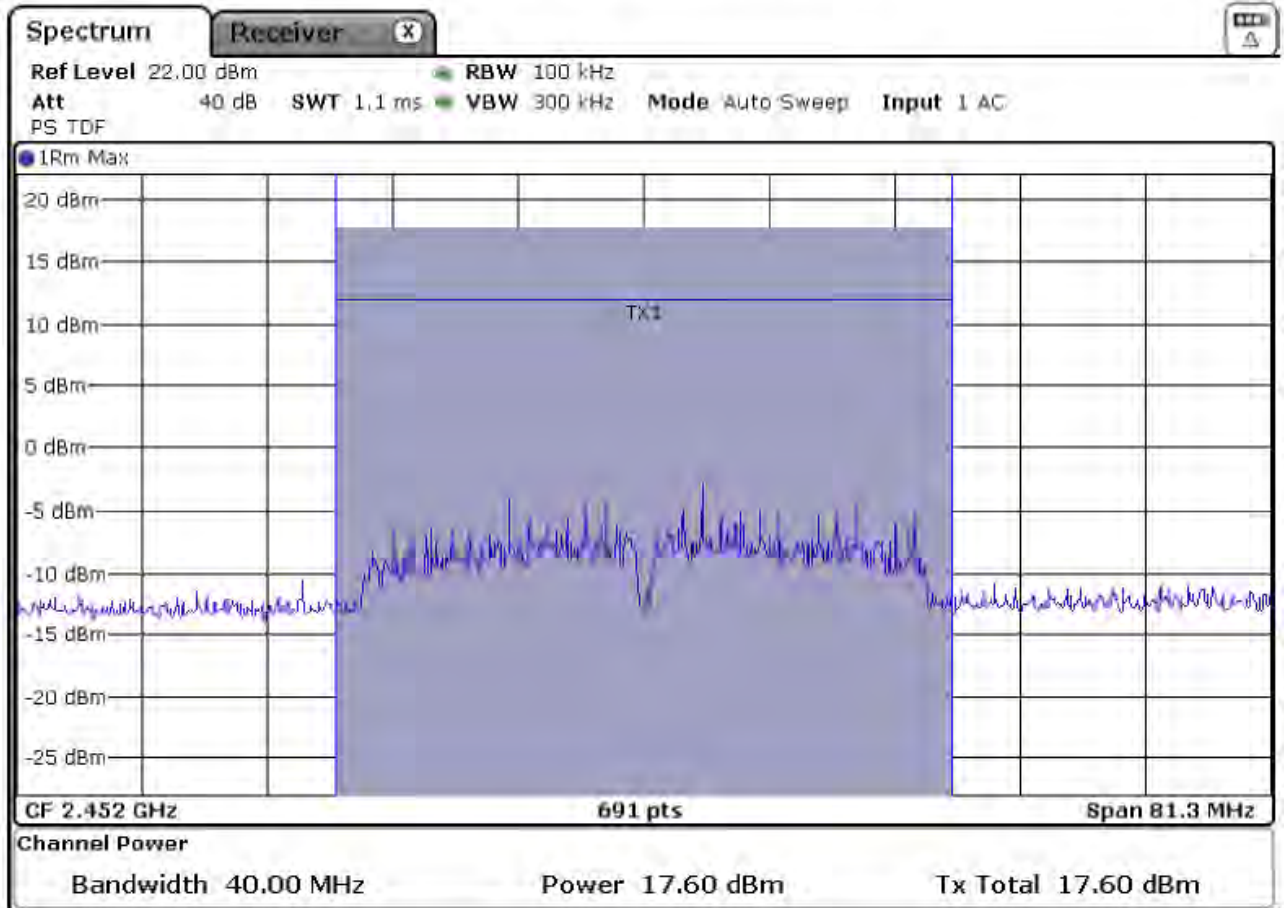
FCC 1

Output power of fundamental emissions
acc. FCC Subpart C § 15.209 / RSS-247



Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11n, CH.9, HT: Greenfield, BW = 40 MHz



Position: Y / Polarisation: H

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2452	17,60	12,30	30,00	pass



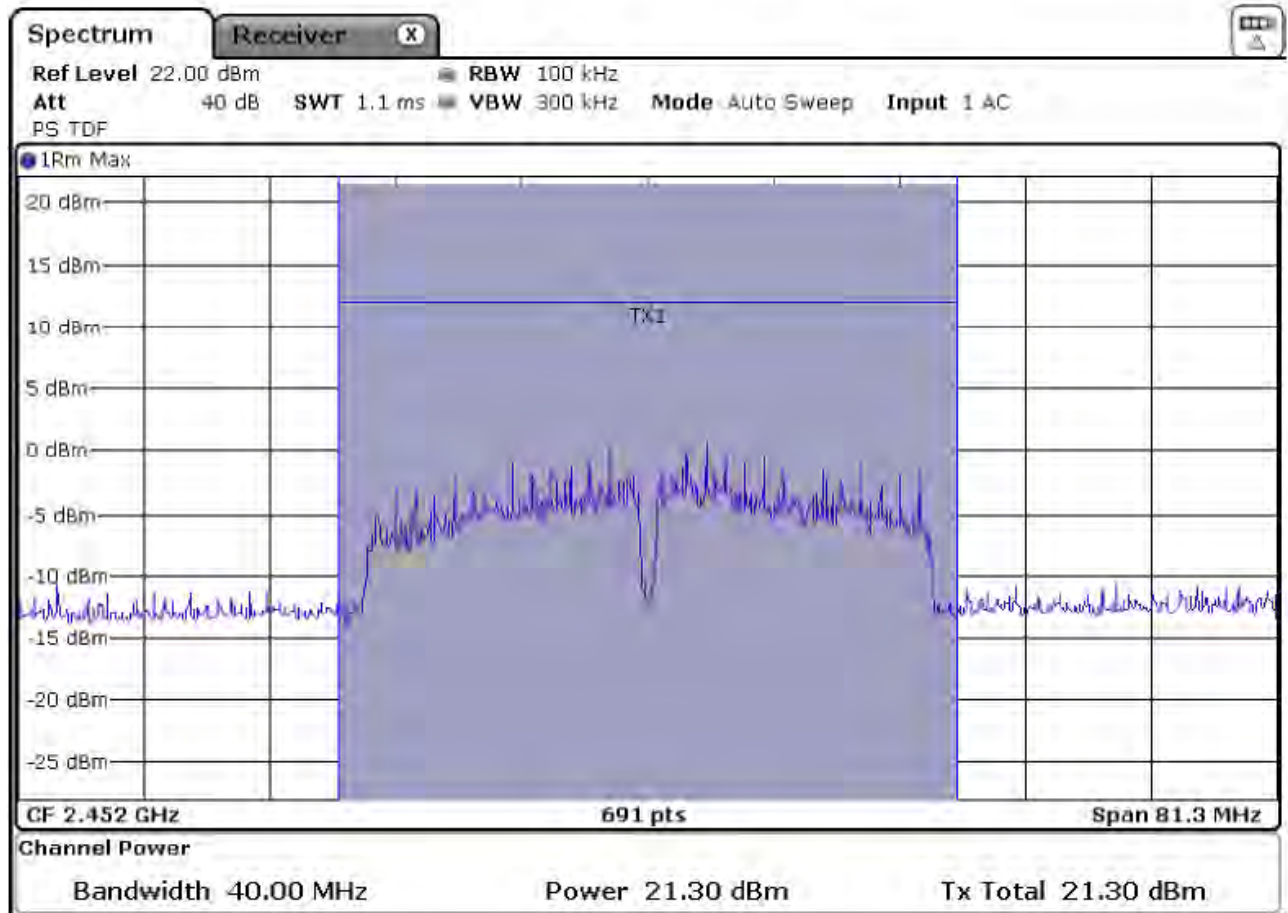
FCC 1

Output power of fundamental emissions
acc. FCC Subpart C § 15.209 / RSS-247



Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11n, CH.9, HT: Greenfield, BW = 40 MHz



Position: Z / Polarisation: V

Frequ. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2452	21,30	8,70	30,00	pass



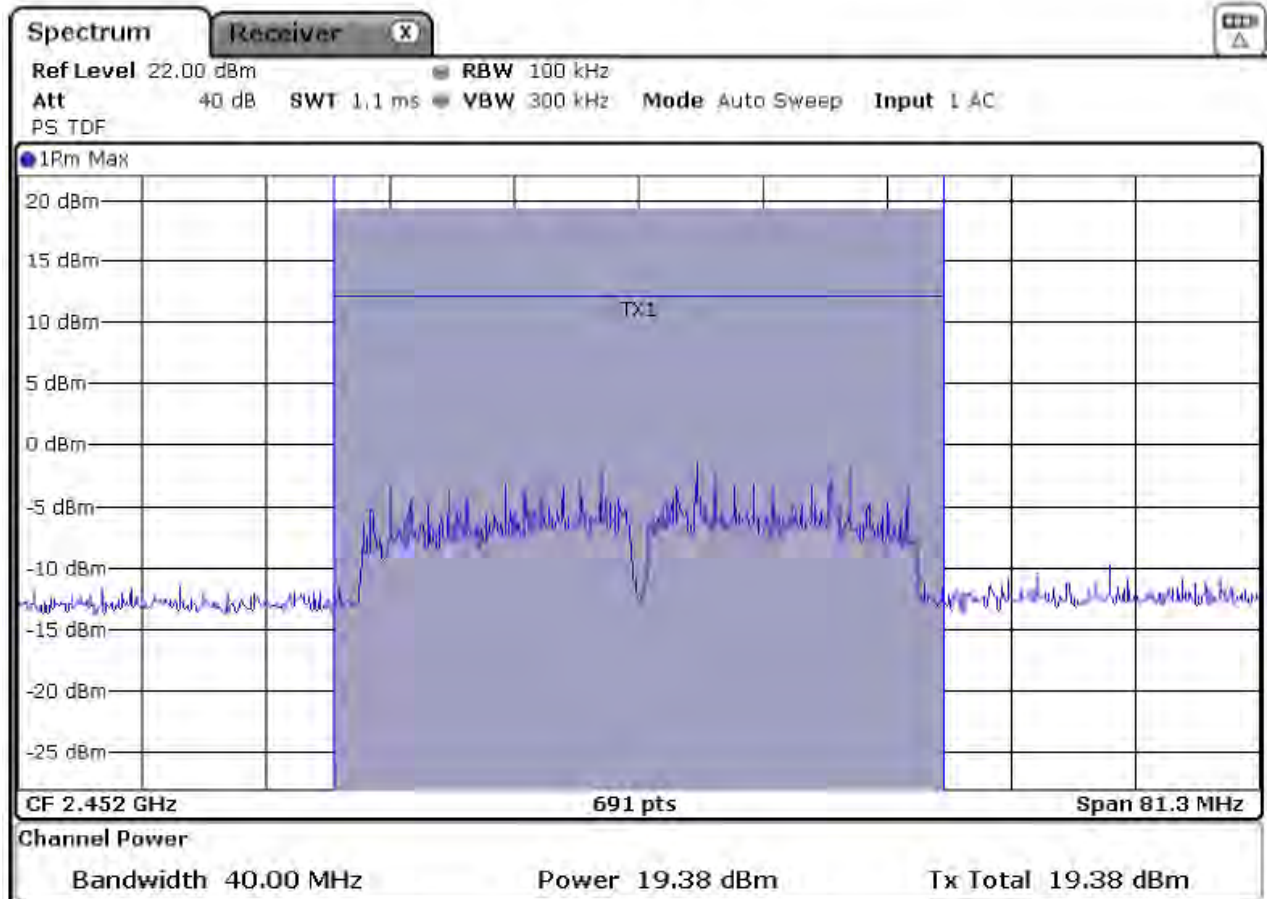
FCC 1

Output power of fundamental emissions
acc. FCC Subpart C § 15.209 / RSS-247



Ref.-No.: 20/01-0031

Operating Mode: WLAN 802.11n, CH.9, HT: Greenfield, BW = 40 MHz



Position: Z / Polarisation: H

Freque. [MHz]	Level [dBm]	Margin to Limit [dB]	Limit [dBm]	Result
2452	19,38	10,62	30,00	pass

	FCC 1 Output power of fundamental emissions acc. FCC Subpart C § 15.209 / RSS-247	
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Ref.-No.: 20/01-0031

Summary of the findings

Test conditions	Polarization of receiving antenna	Tested frequency [MHz]	Meas value [dBm]	Limit [dBm]	Result
Position: X	V	2452	17,36	30,00	pass
Position: X	H	2452	21,11	30,00	pass
Position: Y	V	2452	18,21	30,00	pass
Position: Y	H	2452	17,60	30,00	pass
Position: Z	V	2452	21,30	30,00	pass
Position: Z	H	2452	19,38	30,00	pass

Maximum output power radiated measurement:
802.11n 40MHz / HT MixMode – MCS=0; 6.5 MBps / TX/RX1 / ext. Antenna typ 2

Channel	Frequency [MHz]	Output Power		Limit		Result
		[dBm]	[mW]	[dBm]	[mW]	
1	2412	20.89	122.74	30	1000	Pass
6	2437	21.90	154.88	30	1000	Pass
9	2452	21.30	134.90	30	1000	Pass

Maximum output power conducted measurement:
802.11n 40MHz / HT MixMode – MCS=0; 6.5 MBps / TX/RX0 + TX/RX1 / external Antenna typ 2

Channel	Frequency [MHz]	Output TX/RX0 [mW]	Output TX/RX1 [mW]	Total Output Power		Limit		Result
				[dBm]	[mW]	[dBm]	[mW]	
1	2412	73.79	122.74	22.93	196.53	30	1000	Pass
6	2437	76.38	154.88	23.64	231.26	30	1000	Pass
9	2452	76.56	134.90	23.25	211.46	30	1000	Pass

According to KDB 662911 D01

8.3. Power Spectral Density

Applied standards

- e-CFR Title 47 Chapter I Subchapter A Part 15 Subpart C §15.247 (e)
- RSS-247 issue 2 Section 5.2 (b)

Limit

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

Test equipment and test set up

Test equipment used for conducted measurements as given in clause Test equipment of this report.
Test setup used for conducted measurements as given in clause Test setups of this report.

Description

The maximum average conducted output power was used to determine compliance to the fundamental output power limit. So the maximum average conducted PSD level is measured with a power averaging (rms) detector.

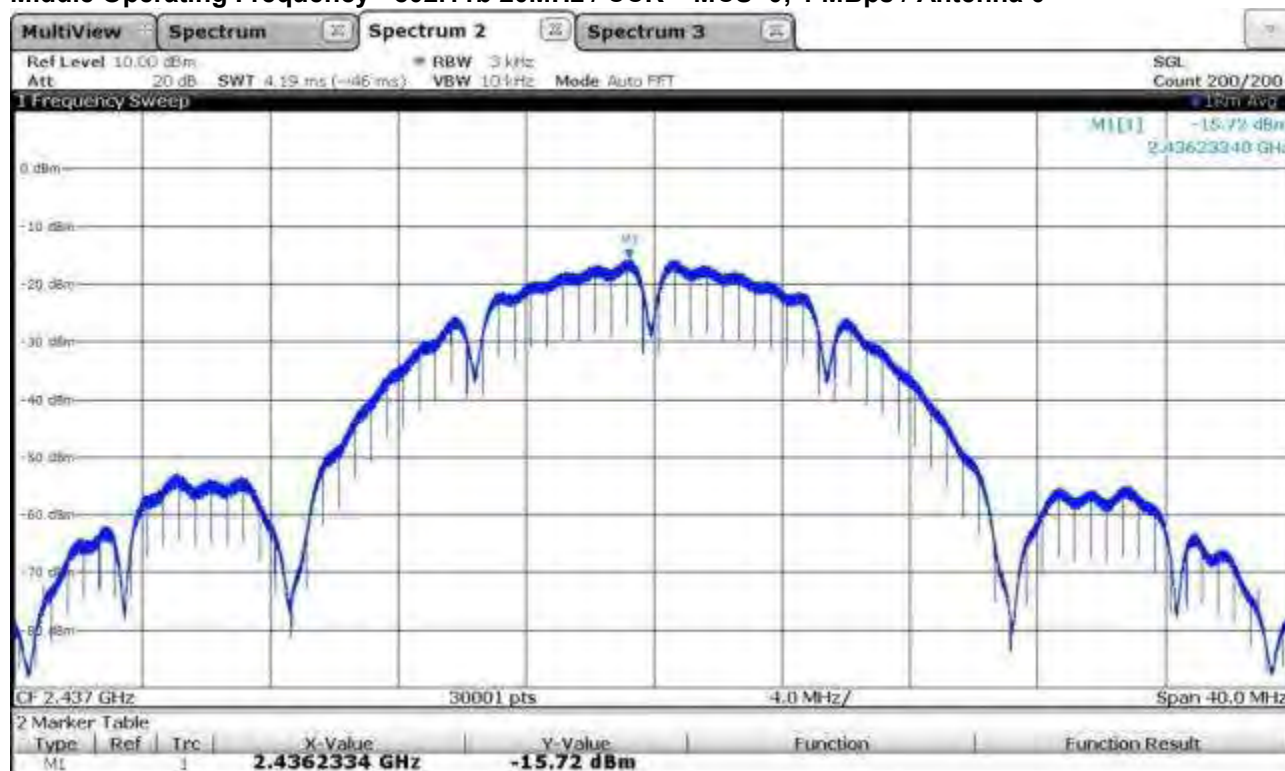
The Measurement was performed on: 06.03.2020 and 09.03.2020

Conducted measurement data

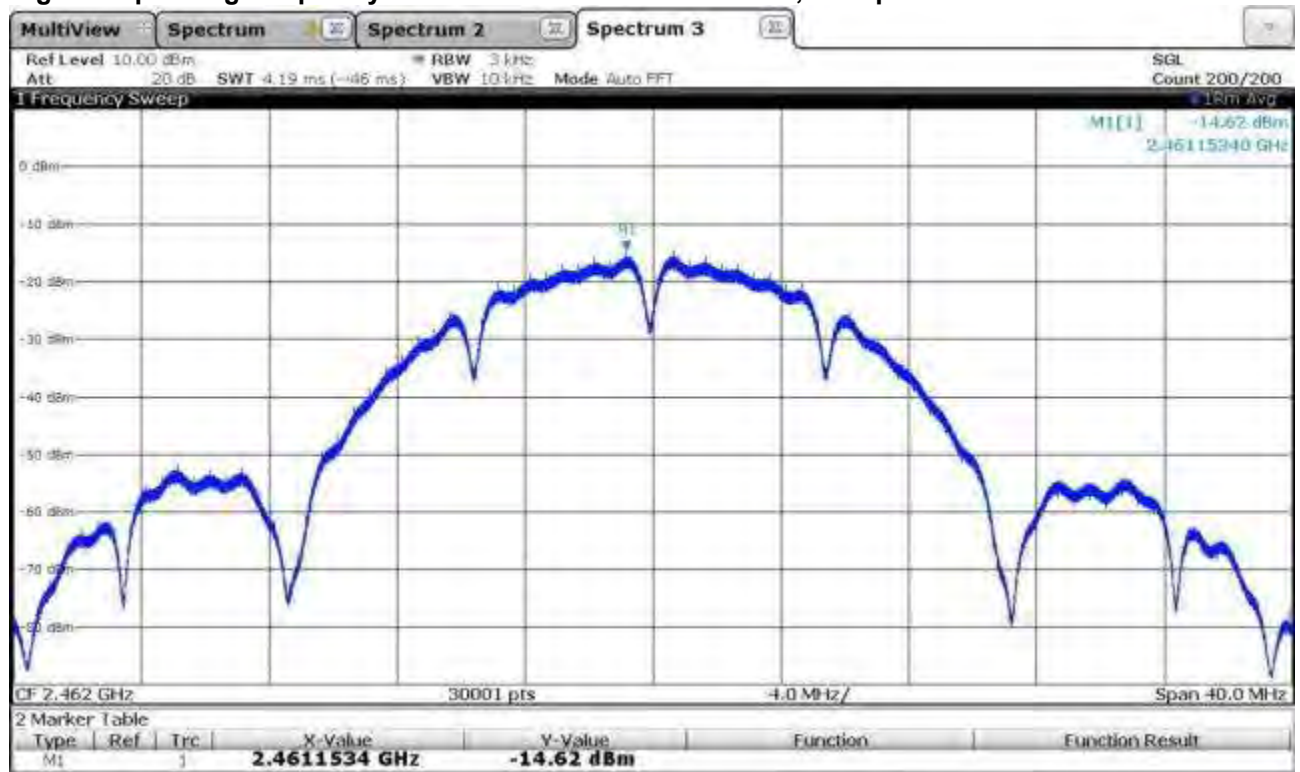
Lowest operating frequency - 802.11b 20MHz / CCK – MCS=0; 1 MBps / Antenna 0



Middle Operating Frequency - 802.11b 20MHz / CCK – MCS=0; 1 MBps / Antenna 0



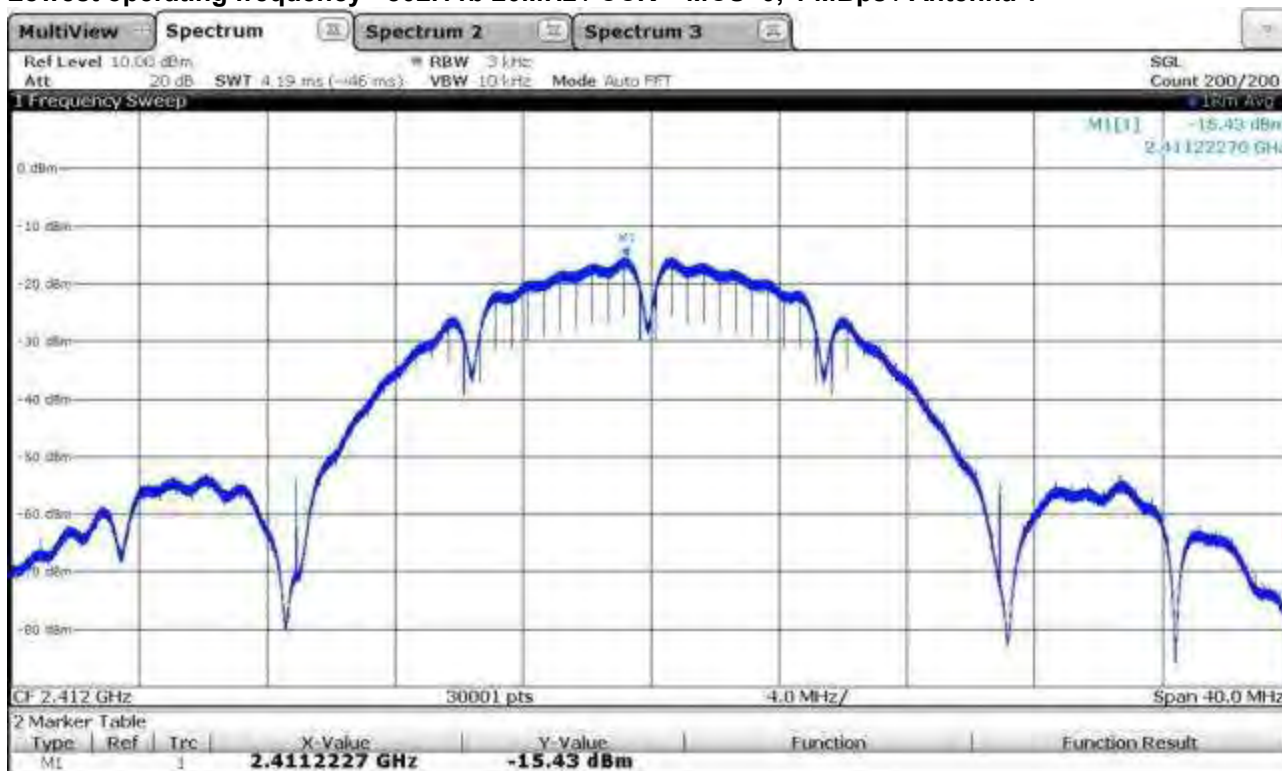
Highest Operating Frequency - 802.11b 20MHz / CCK – MCS=0; 1 MBps / Antenna 0



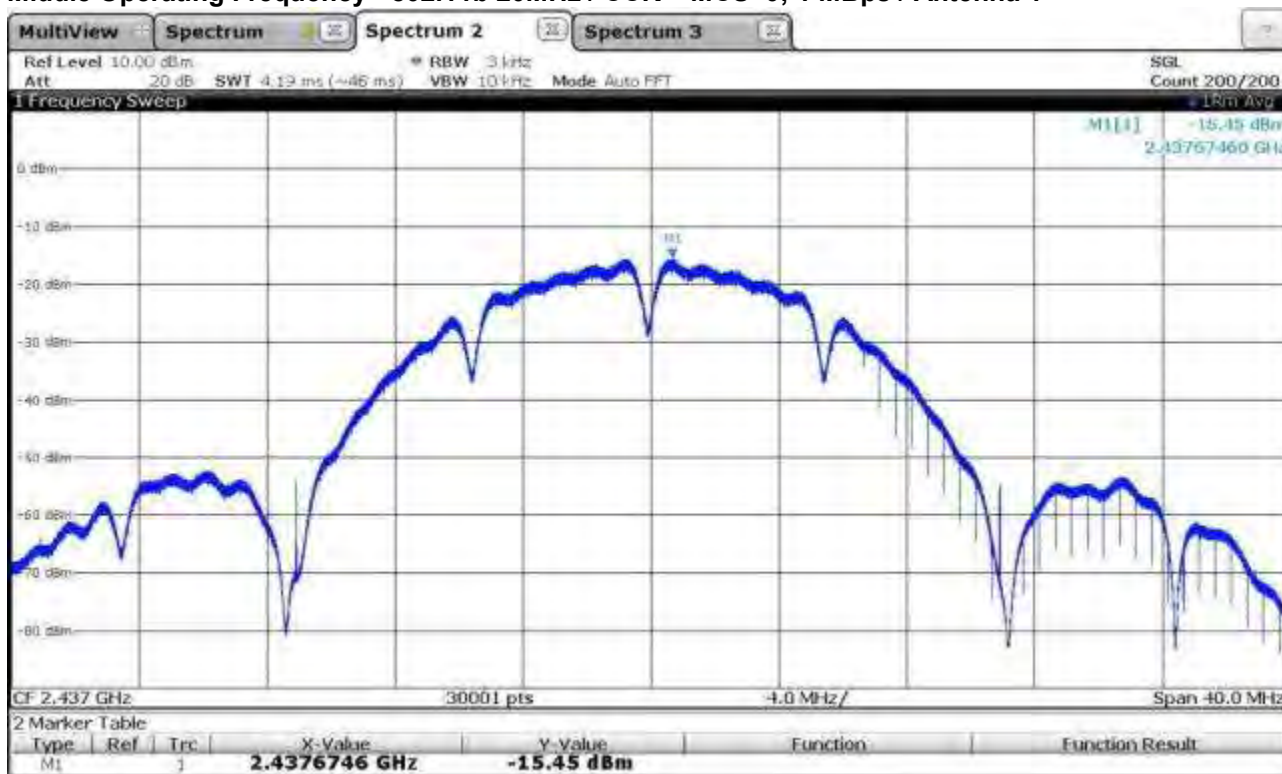
Maximum power spectral density 802.11b 20MHz / CCK – MCS=0; 1 MBps / Antenna 0

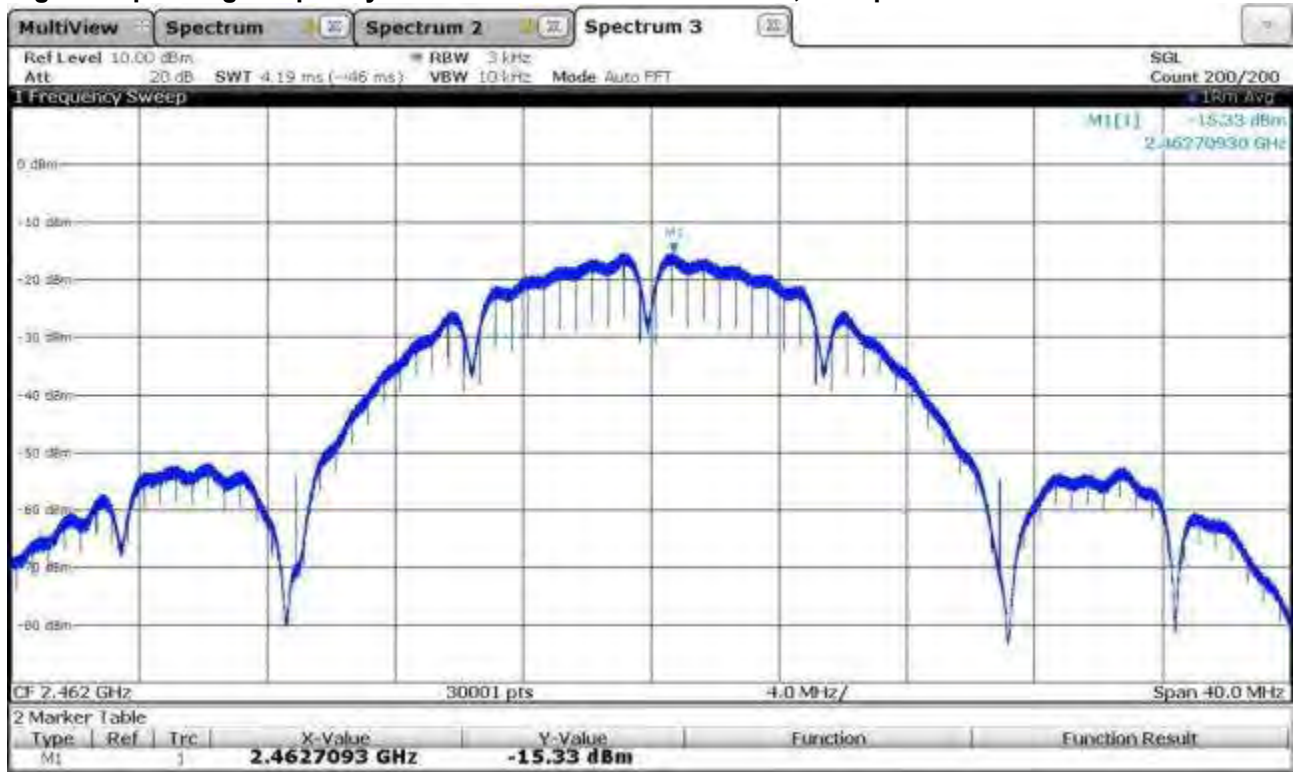
Channel	Frequency [MHz]	Reading of Analyzer [dBm / 3 kHz]	Cable Loss [dB]	Power Spectral Density [dBm / 3 kHz]	Limit [dBm / 3 kHz]	Result
1	2412	-15.52	1.2	-14.32	8	Pass
6	2437	-15.72	1.2	-14.52	8	Pass
11	2462	-14.62	1.2	-13.42	8	Pass

Lowest operating frequency - 802.11b 20MHz / CCK – MCS=0; 1 MBps / Antenna 1



Middle Operating Frequency - 802.11b 20MHz / CCK – MCS=0; 1 MBps / Antenna 1



Highest Operating Frequency - 802.11b 20MHz / CCK – MCS=0; 1 MBps / Antenna 1

**Maximum power spectral density
802.11b 20MHz / CCK – MCS=0; 1 MBps / Antenna 1**

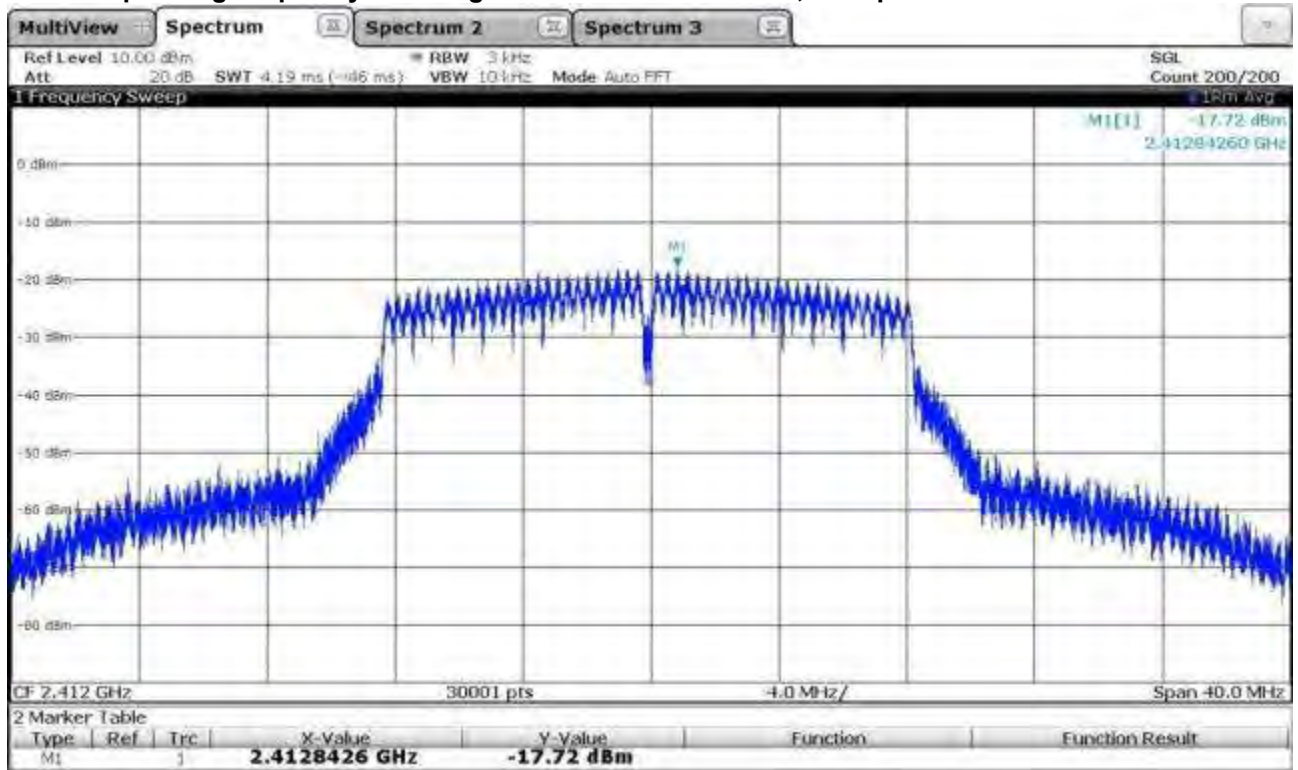
Channel	Frequency [MHz]	Reading of Analyzer [dBm / 3 kHz]	Cable Loss [dB]	Power Spectral Density [dBm / 3 kHz]	Limit [dBm / 3 kHz]	Result
1	2412	-15.43	1.2	-14.23	8	Pass
6	2437	-15.45	1.2	-14.25	8	Pass
11	2462	-15.33	1.2	-14.13	8	Pass

**Maximum power spectral density
802.11b 20MHz / CCK – MCS=0; 1 MBps / Antenna 0 + Antenna 1**

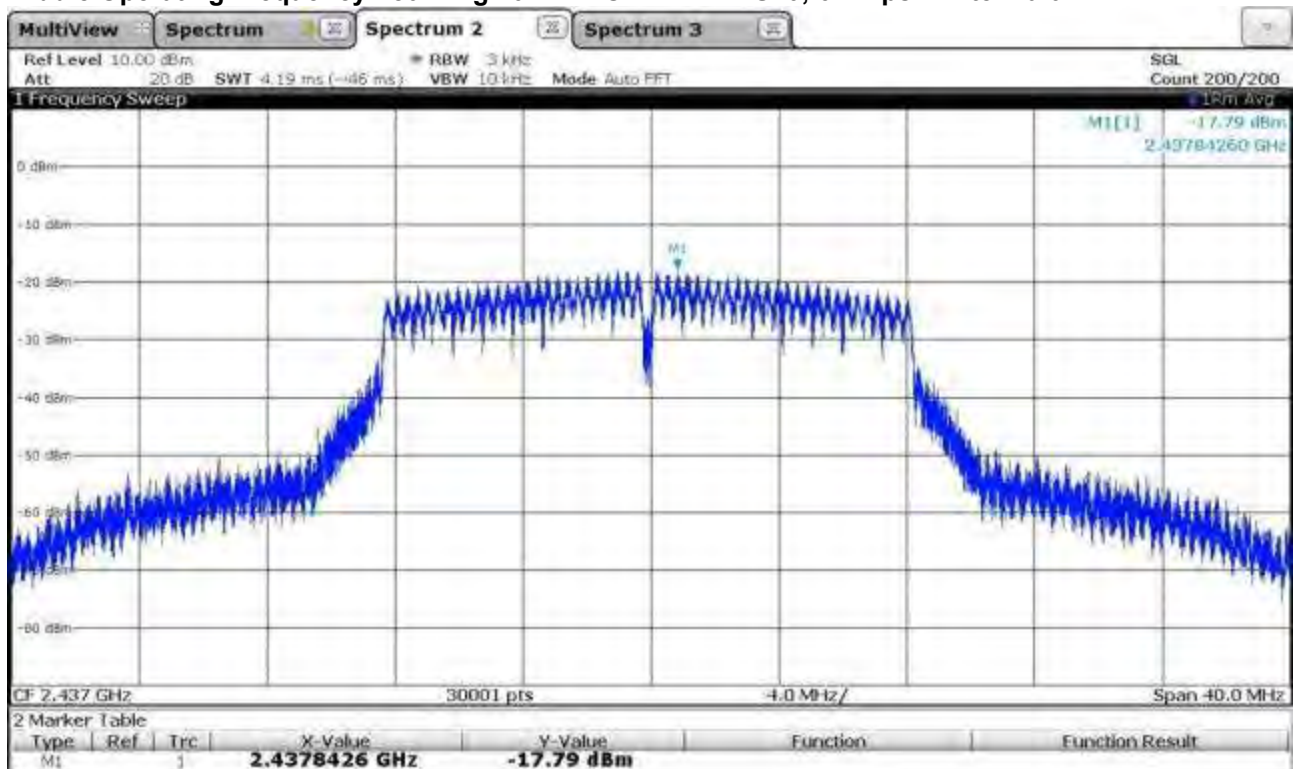
Channel	Frequency [MHz]	Highest PSD of Ant 0 or Ant 1 [dBm/3kHz]	PSD calculated * Ant 0 + Ant 1 [dBm/3kHz]	Limit [dBm/3kHz]	Result
1	2412	-14.23	-11.22	8	Pass
6	2437	-14.25	-11.24	8	Pass
11	2462	-13.42	-10.41	8	Pass

* According to KDB 662911 D01, add 10 log (N_{ANT}) dB, N = 2

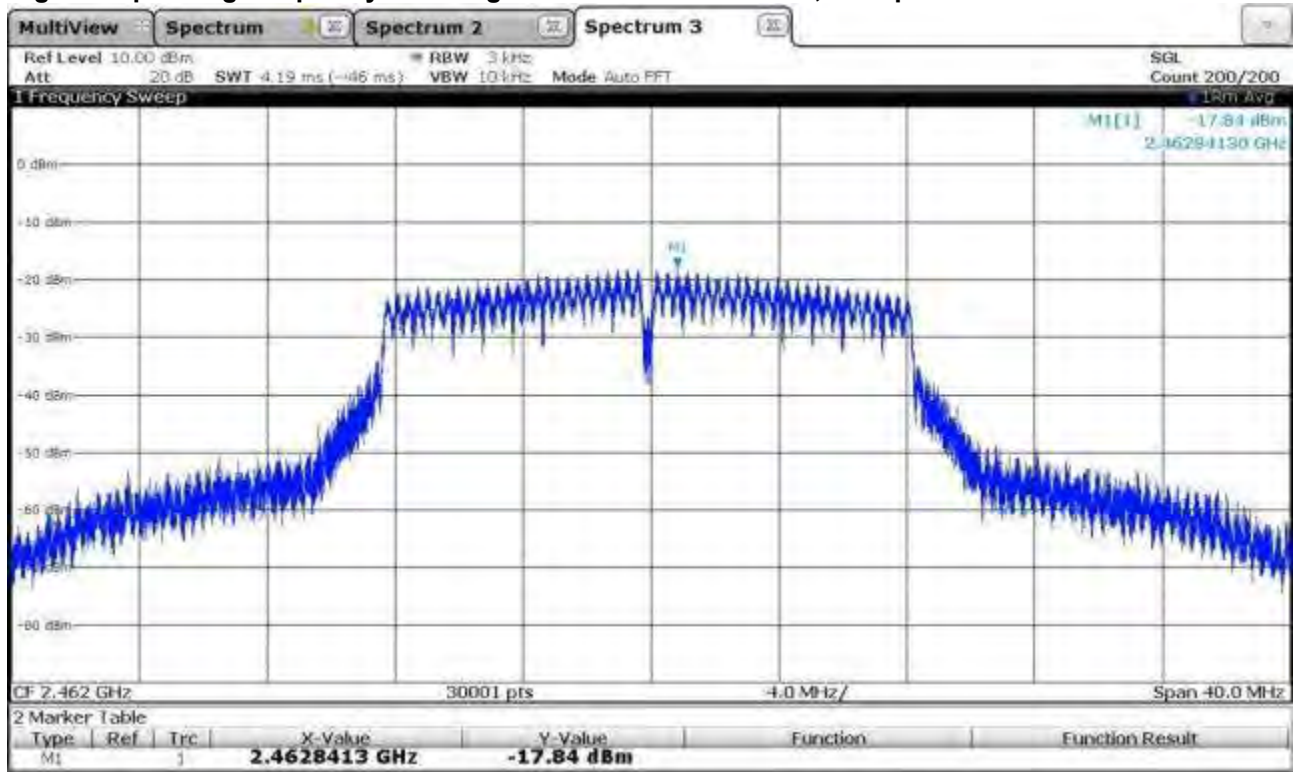
Lowest operating frequency - 802.11g 20MHz / OFDM – MCS=0; 6 MBps / Antenna 0



Middle Operating Frequency - 802.11g 20MHz / OFDM – MCS=0; 6 MBps / Antenna 0



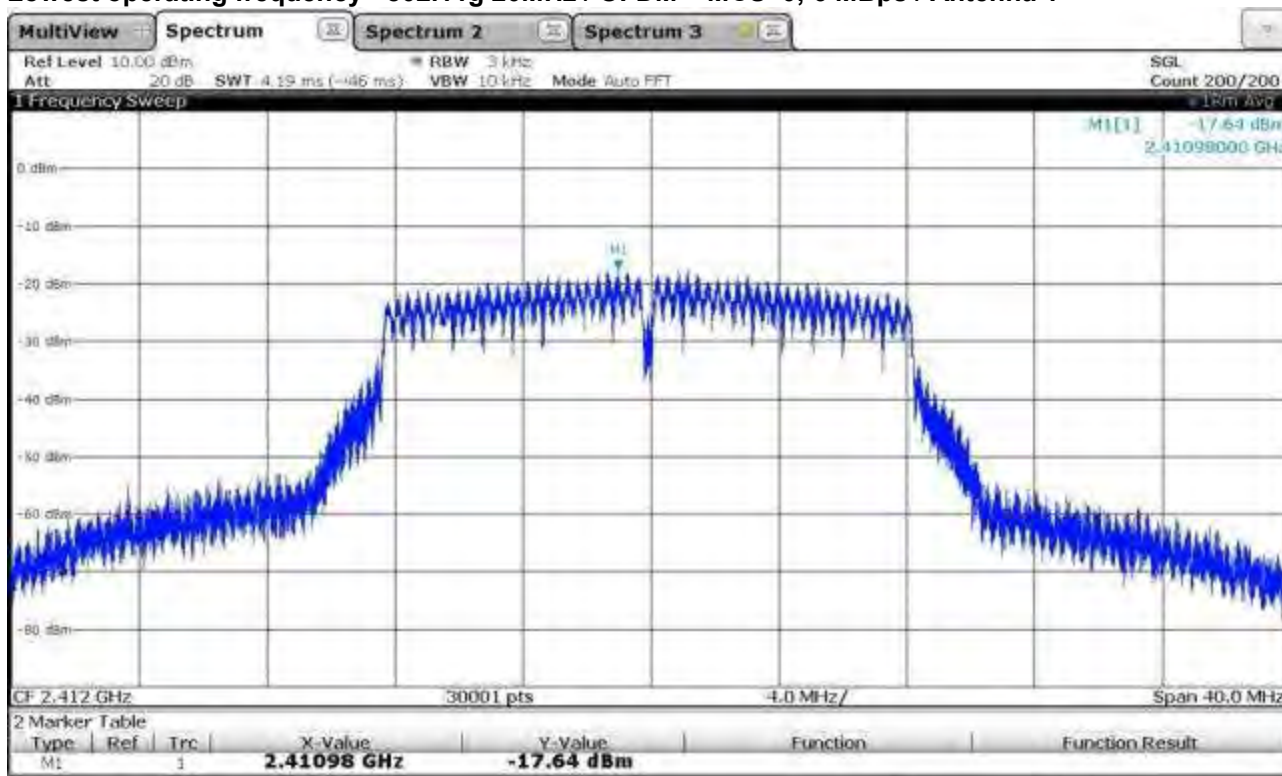
Highest Operating Frequency - 802.11g 20MHz / OFDM – MCS=0; 6 MBps / Antenna 0



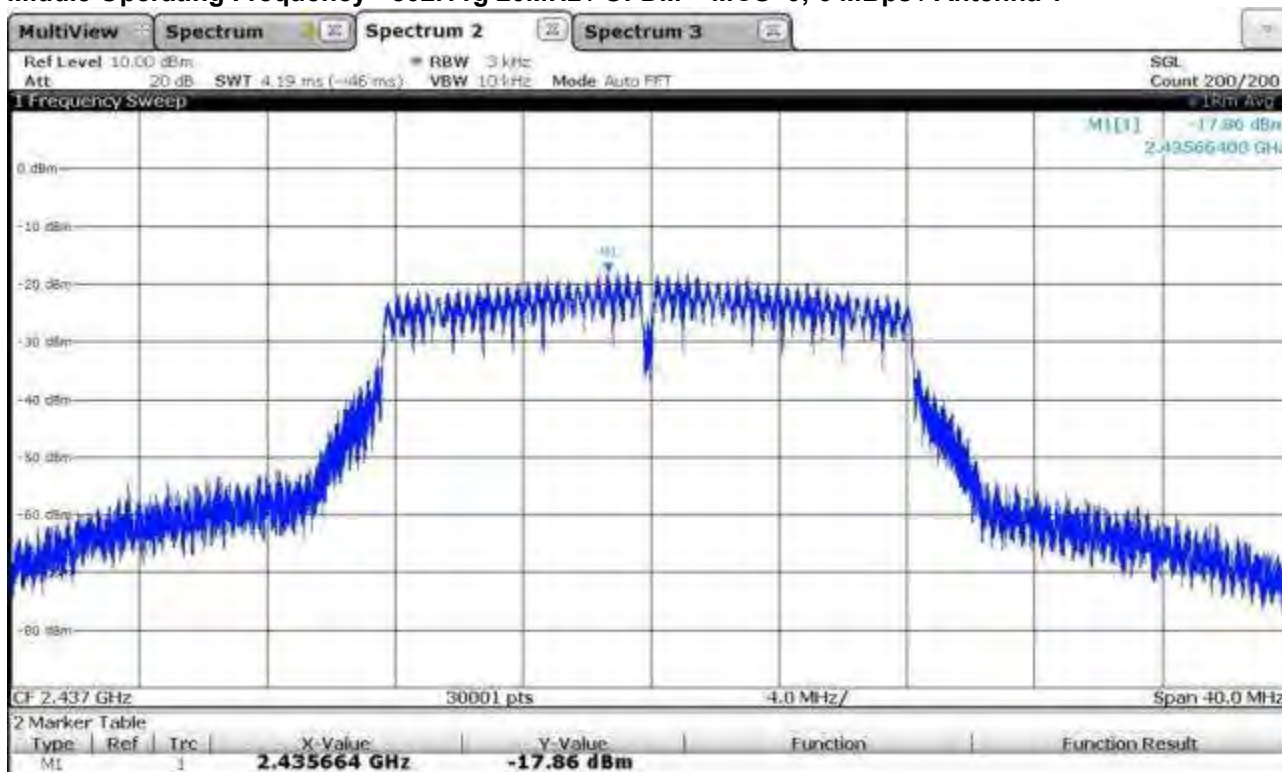
Maximum power spectral density
802.11g 20MHz / OFDM – MCS=0; 6 MBps / Antenna 0

Channel	Frequency [MHz]	Reading of Analyzer [dBm / 3 kHz]	Cable Loss [dB]	Power Spectral Density [dBm / 3 kHz]	Limit [dBm / 3 kHz]	Result
1	2412	-17.72	1.2	-16.52	8	Pass
6	2437	-17.79	1.2	-16.59	8	Pass
11	2462	-17.84	1.2	-16.64	8	Pass

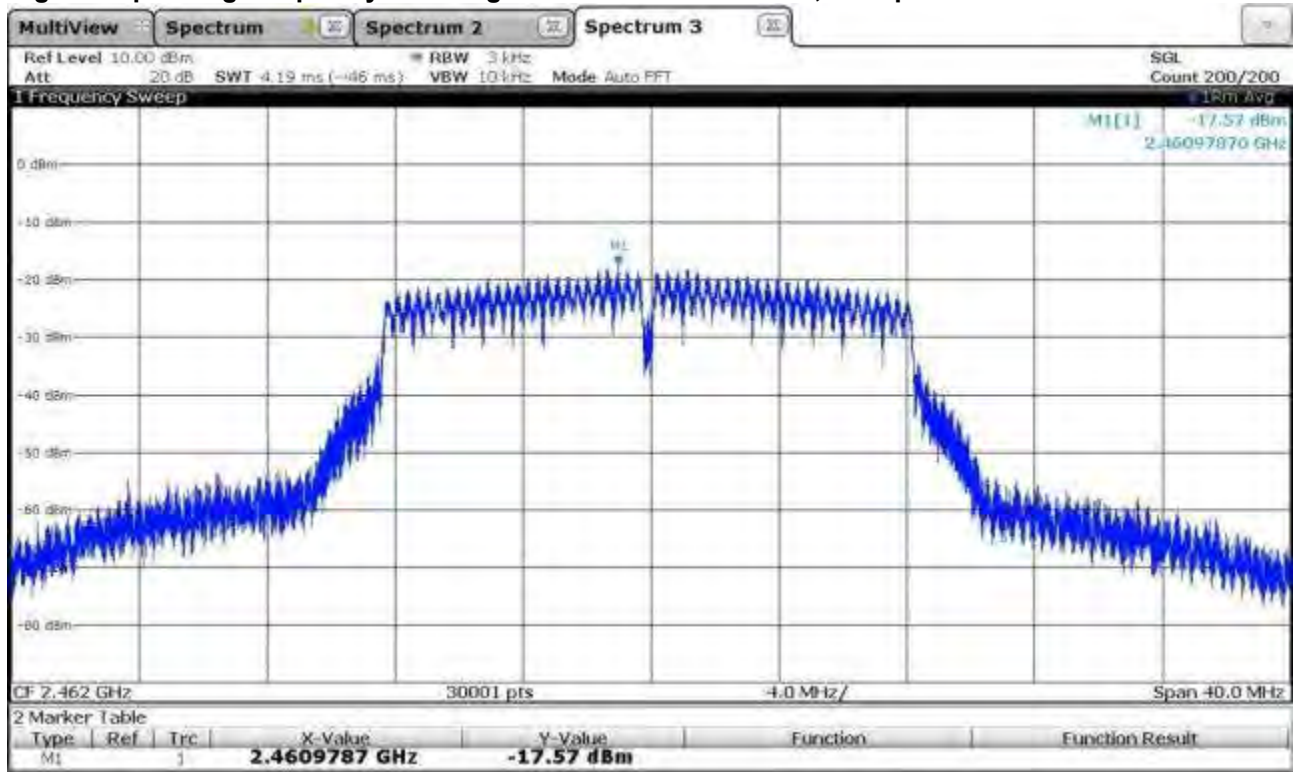
Lowest operating frequency - 802.11g 20MHz / OFDM – MCS=0; 6 MBps / Antenna 1



Middle Operating Frequency - 802.11g 20MHz / OFDM – MCS=0; 6 MBps / Antenna 1



Highest Operating Frequency - 802.11g 20MHz / OFDM – MCS=0; 6 MBps / Antenna 1



Maximum power spectral density 802.11g 20MHz / OFDM – MCS=0; 6 MBps / Antenna 1

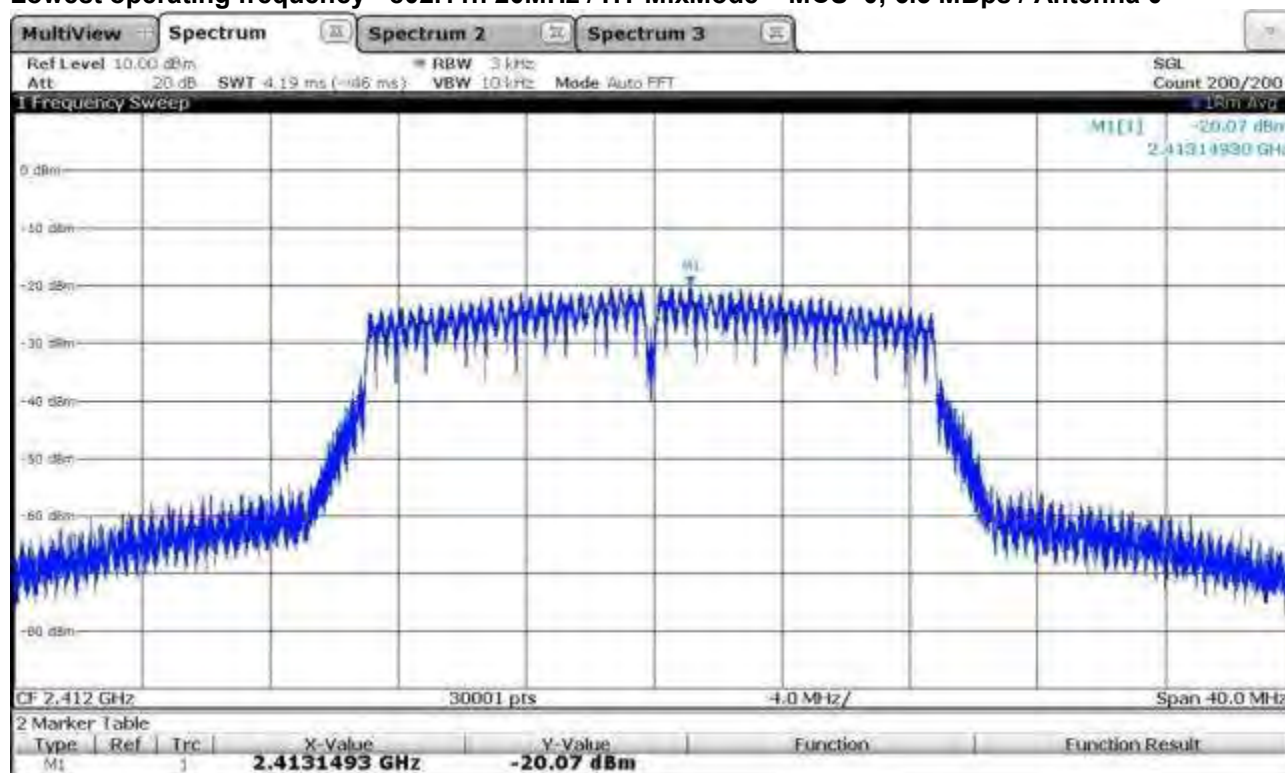
Channel	Frequency [MHz]	Reading of Analyzer [dBm / 3 kHz]	Cable Loss [dB]	Power Spectral Density [dBm / 3 kHz]	Limit [dBm / 3 kHz]	Result
1	2412	-17.64	1.2	-16.44	8	Pass
6	2437	-17.86	1.2	-16.66	8	Pass
11	2462	-17.57	1.2	-16.37	8	Pass

Maximum power spectral density 802.11g 20MHz / OFDM – MCS=0; 6 MBps / Antenna 0 + Antenna 1

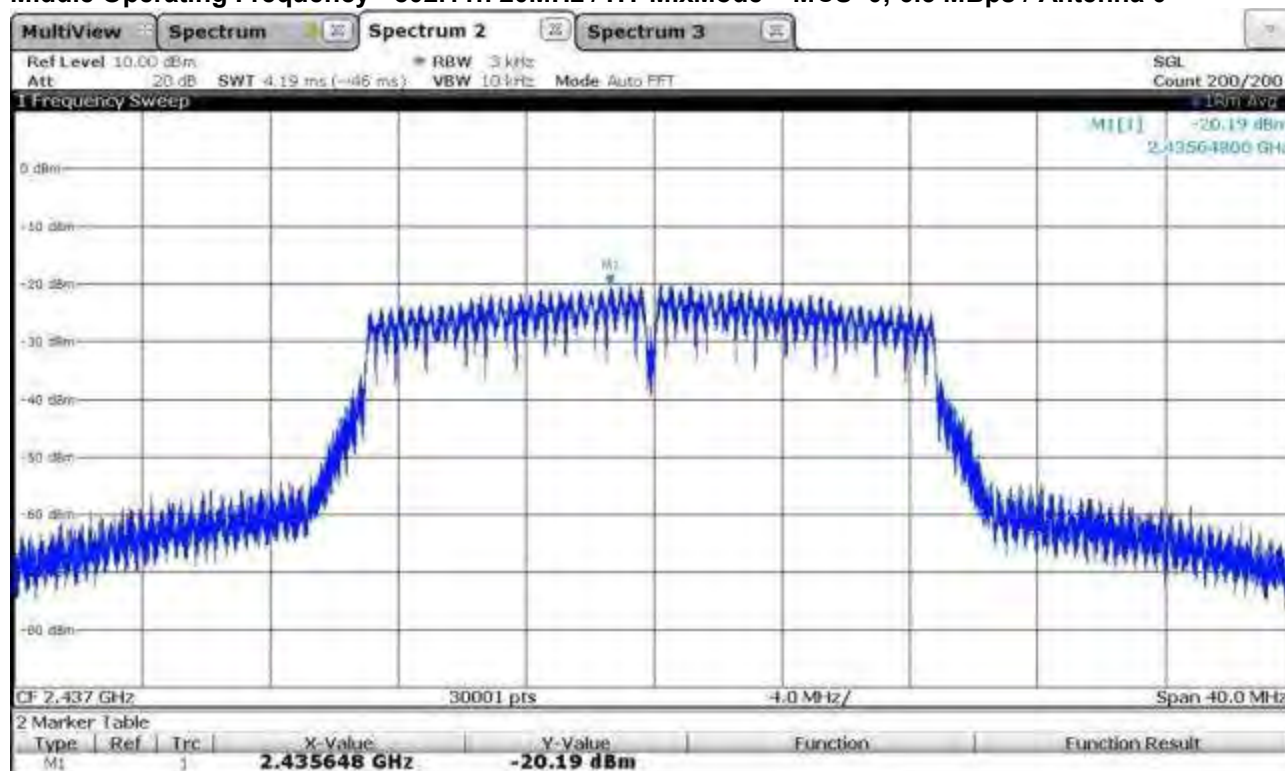
Channel	Frequency [MHz]	Highest PSD of Ant 0 or Ant 1 [dBm/3kHz]	PSD calculated * Ant 0 + Ant 1 [dBm/3kHz]	Limit [dBm/3kHz]	Result
1	2412	-16.44	-13.43	8	Pass
6	2437	-16.59	-13.58	8	Pass
11	2462	-16.37	-13.36	8	Pass

* According to KDB 662911 D01, add 10 log (N_{ANT}) dB, N = 2

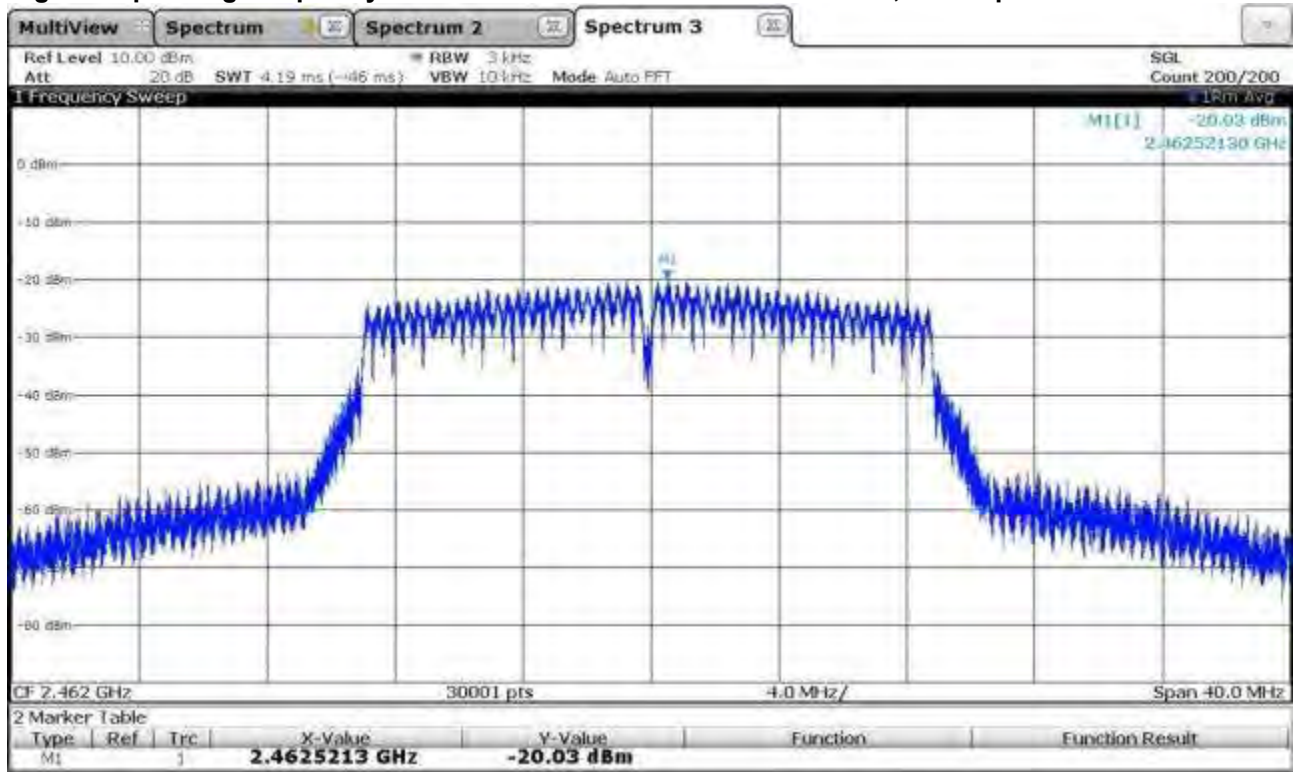
Lowest operating frequency - 802.11n 20MHz / HT MixMode – MCS=0; 6.5 MBps / Antenna 0



Middle Operating Frequency - 802.11n 20MHz / HT MixMode – MCS=0; 6.5 MBps / Antenna 0



Highest Operating Frequency - 802.11n 20MHz / HT MixMode – MCS=0; 6.5 MBps / Antenna 0

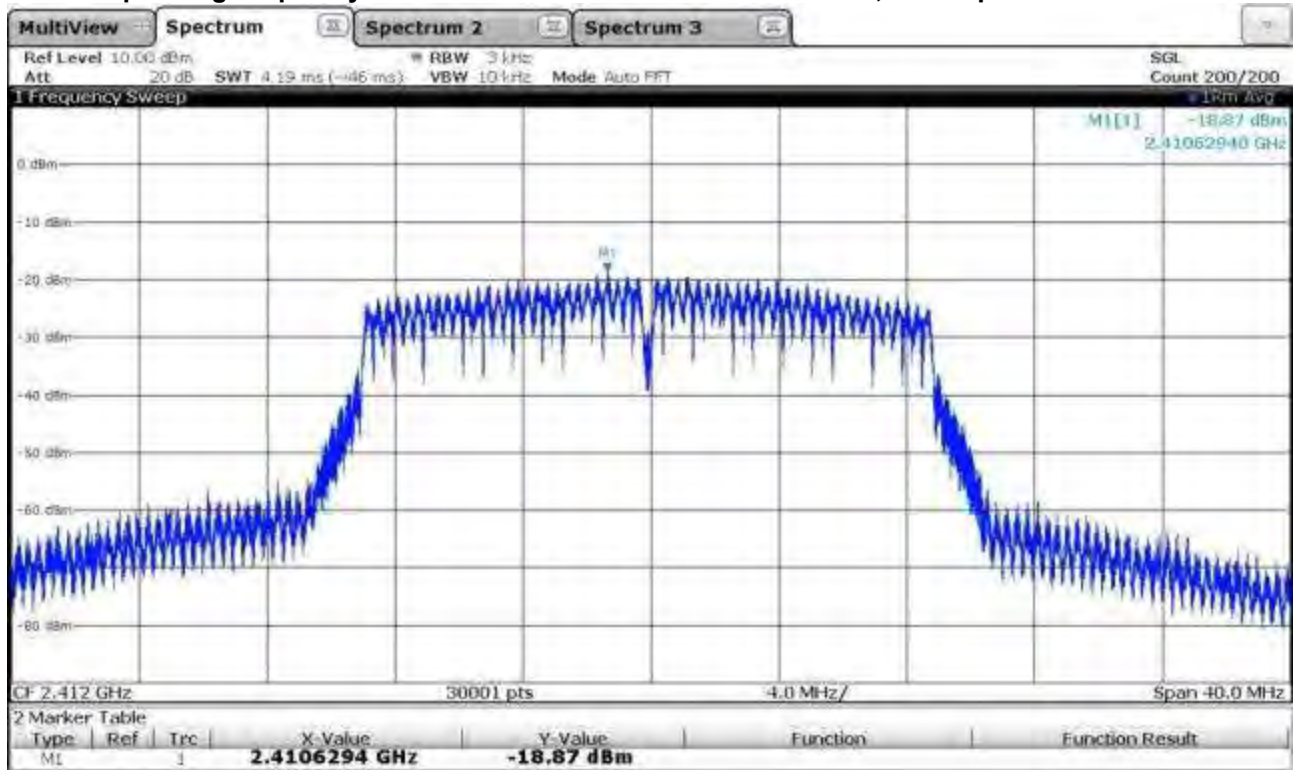


Maximum power spectral density

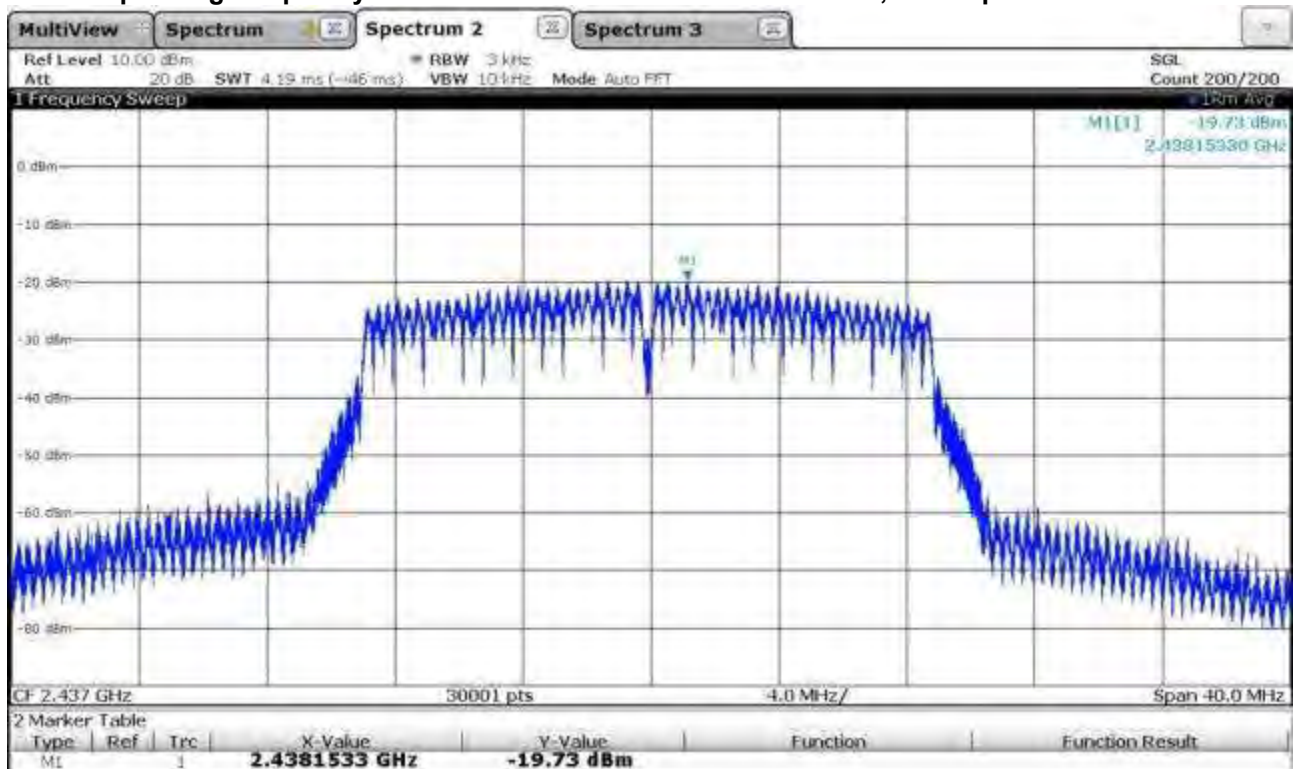
802.11n 20MHz / HT MixMode – MCS=0; 6.5 MBps / Antenna 0

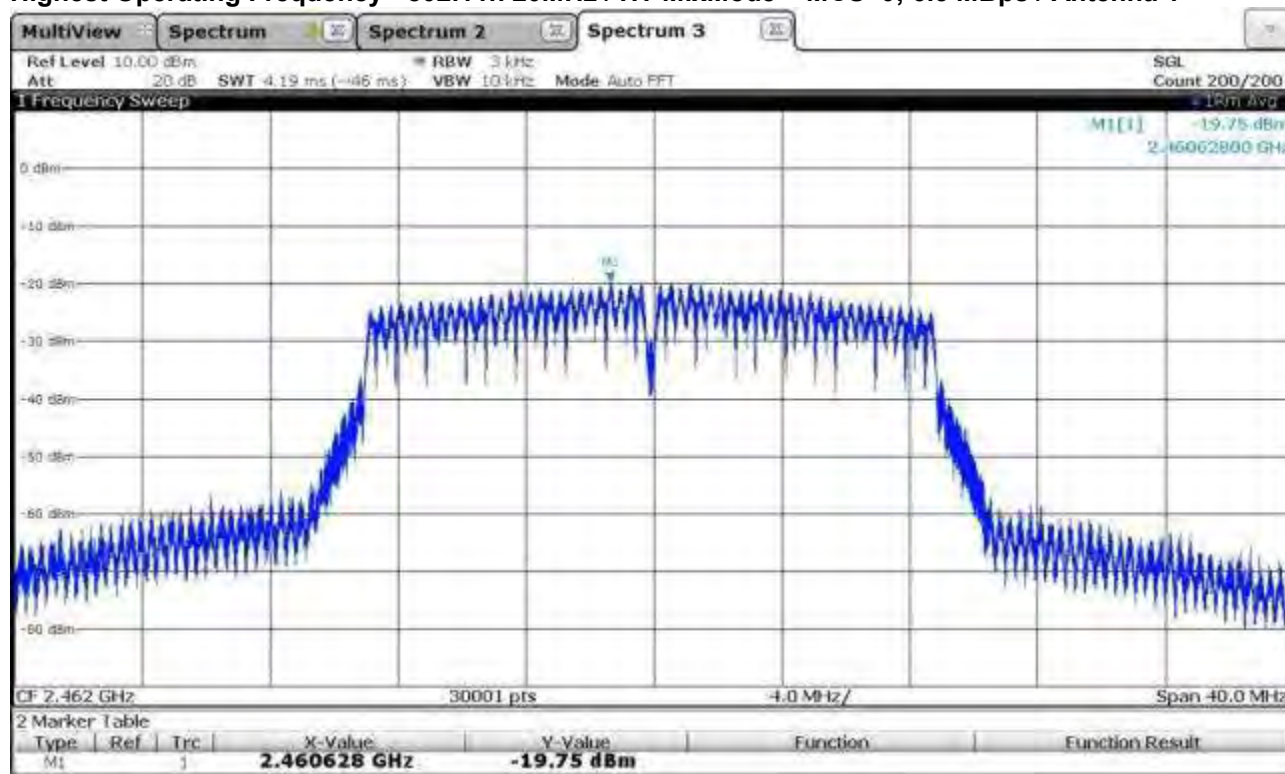
Channel	Frequency [MHz]	Reading of Analyzer [dBm / 3 kHz]	Cable Loss [dB]	Power Spectral Density [dBm / 3 kHz]	Limit [dBm / 3 kHz]	Result
1	2412	-20.07	1.2	-18.87	8	Pass
6	2437	-20.19	1.2	-18.99	8	Pass
11	2462	-20.03	1.2	-18.83	8	Pass

Lowest operating frequency - 802.11n 20MHz / HT MixMode – MCS=0; 6.5 MBps / Antenna 1



Middle Operating Frequency - 802.11n 20MHz / HT MixMode – MCS=0; 6.5 MBps / Antenna 1



Highest Operating Frequency - 802.11n 20MHz / HT MixMode – MCS=0; 6.5 MBps / Antenna 1

Maximum power spectral density
802.11n 20MHz / HT MixMode – MCS=0; 6.5 MBps / Antenna 1

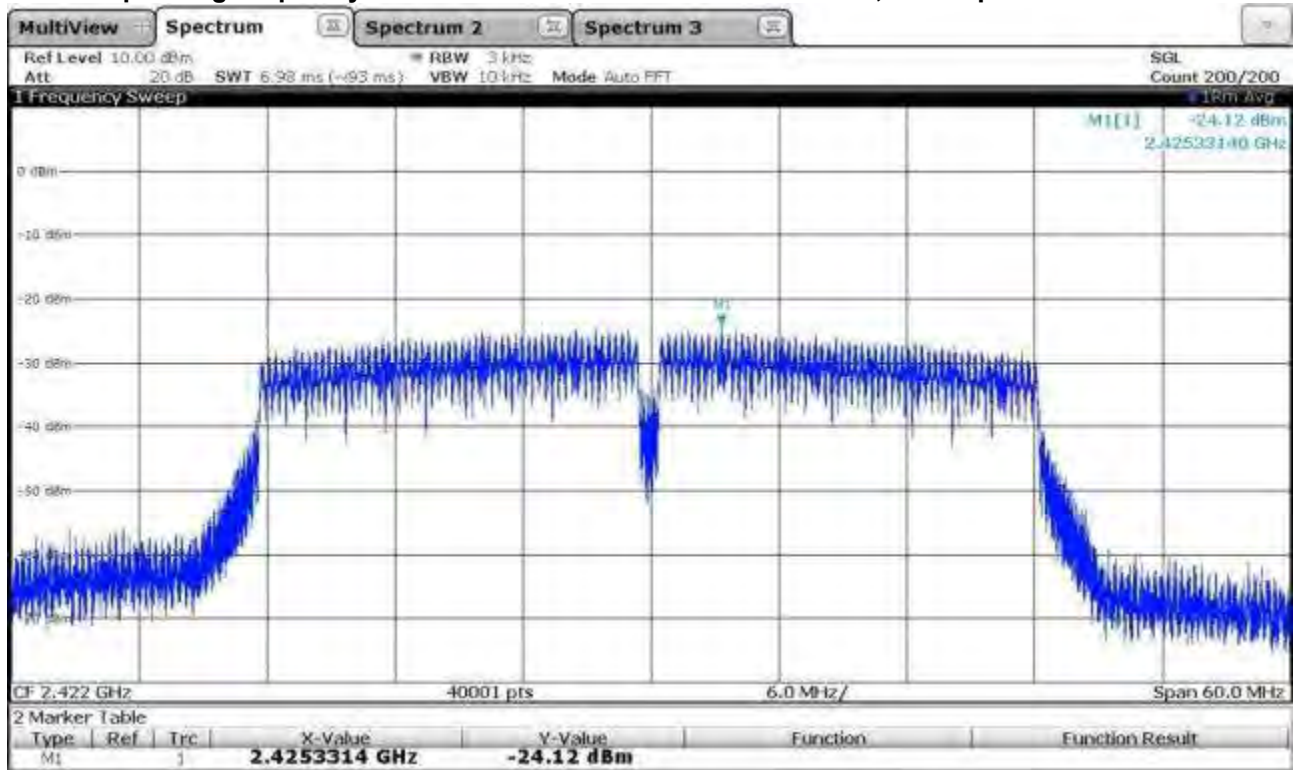
Channel	Frequency [MHz]	Reading of Analyzer [dBm / 3 kHz]	Cable Loss [dB]	Power Spectral Density [dBm / 3 kHz]	Limit [dBm / 3 kHz]	Result
1	2412	-18.87	1.2	-17.67	8	Pass
6	2437	-19.73	1.2	-18.53	8	Pass
11	2462	-19.75	1.2	-18.55	8	Pass

Maximum power spectral density
802.11n 20MHz / HT MixMode – MCS=0; 6.5 MBps / Antenna 0 + Antenna 1

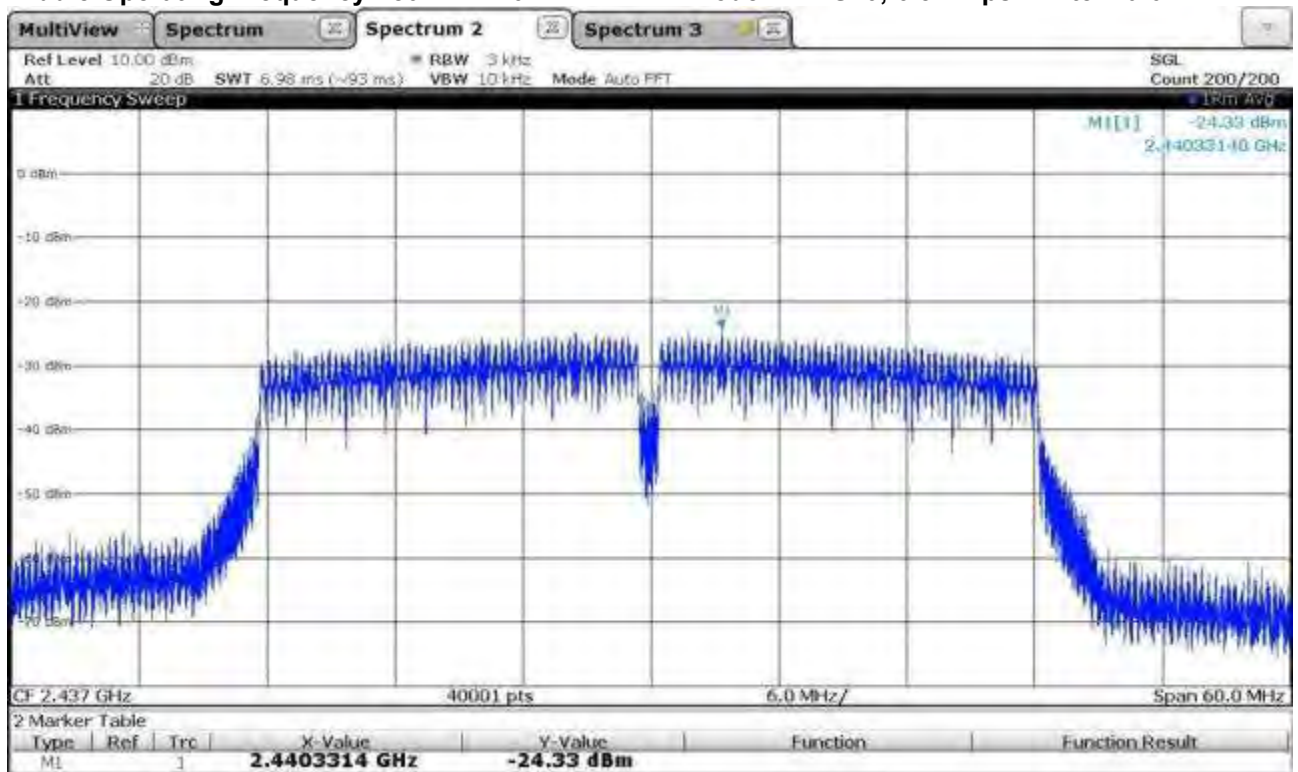
Channel	Frequency [MHz]	Highest PSD of Ant 0 or Ant 1 [dBm/3kHz]	PSD calculated * Ant 0 + Ant 1 [dBm/3kHz]	Limit [dBm/3kHz]	Result
1	2412	-17.67	-14.66	8	Pass
6	2437	-18.53	-15.52	8	Pass
11	2462	-18.55	-15.54	8	Pass

* According to KDB 662911 D01, add 10 log (N_{ANT}) dB, N = 2

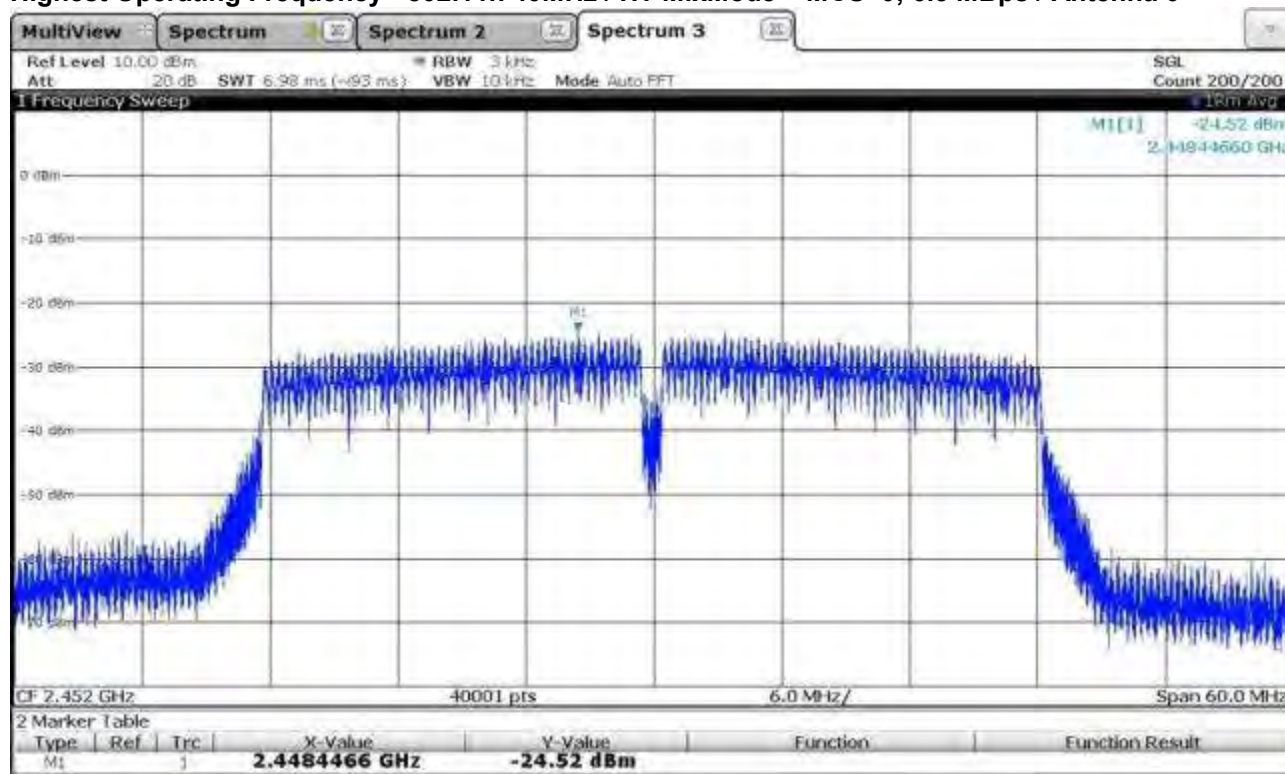
Lowest operating frequency - 802.11n 40MHz / HT MixMode – MCS=0; 6.5 MBps / Antenna 0



Middle Operating Frequency - 802.11n 40MHz / HT MixMode – MCS=0; 6.5 MBps / Antenna 0



Highest Operating Frequency - 802.11n 40MHz / HT MixMode – MCS=0; 6.5 MBps / Antenna 0

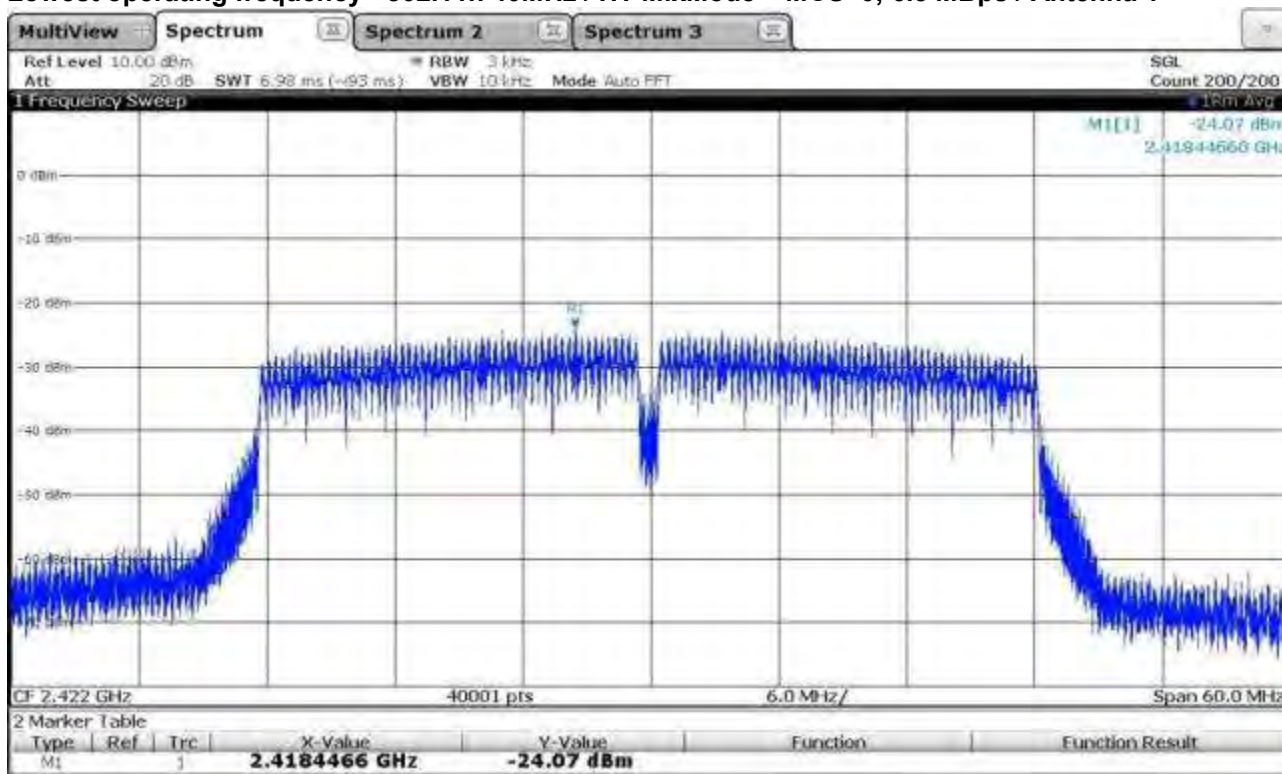


Maximum power spectral density

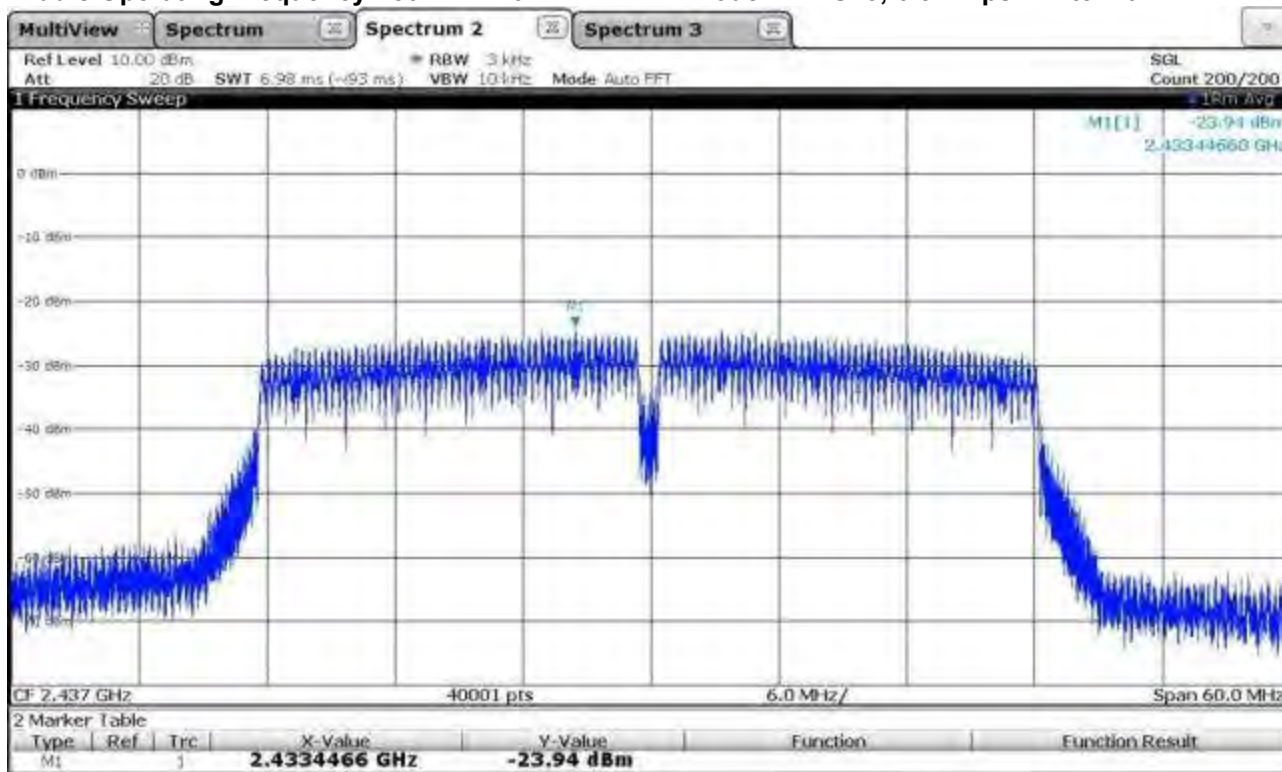
802.11n 40MHz / HT MixMode – MCS=0; 6.5 MBps / Antenna 0

Channel	Frequency [MHz]	Reading of Analyzer [dBm / 3 kHz]	Cable Loss [dB]	Power Spectral Density [dBm / 3 kHz]	Limit [dBm / 3 kHz]	Result
3	2422	-24.12	1.2	-22.92	8	Pass
6	2437	-24.33	1.2	-23.13	8	Pass
9	2452	-24.52	1.2	-23.32	8	Pass

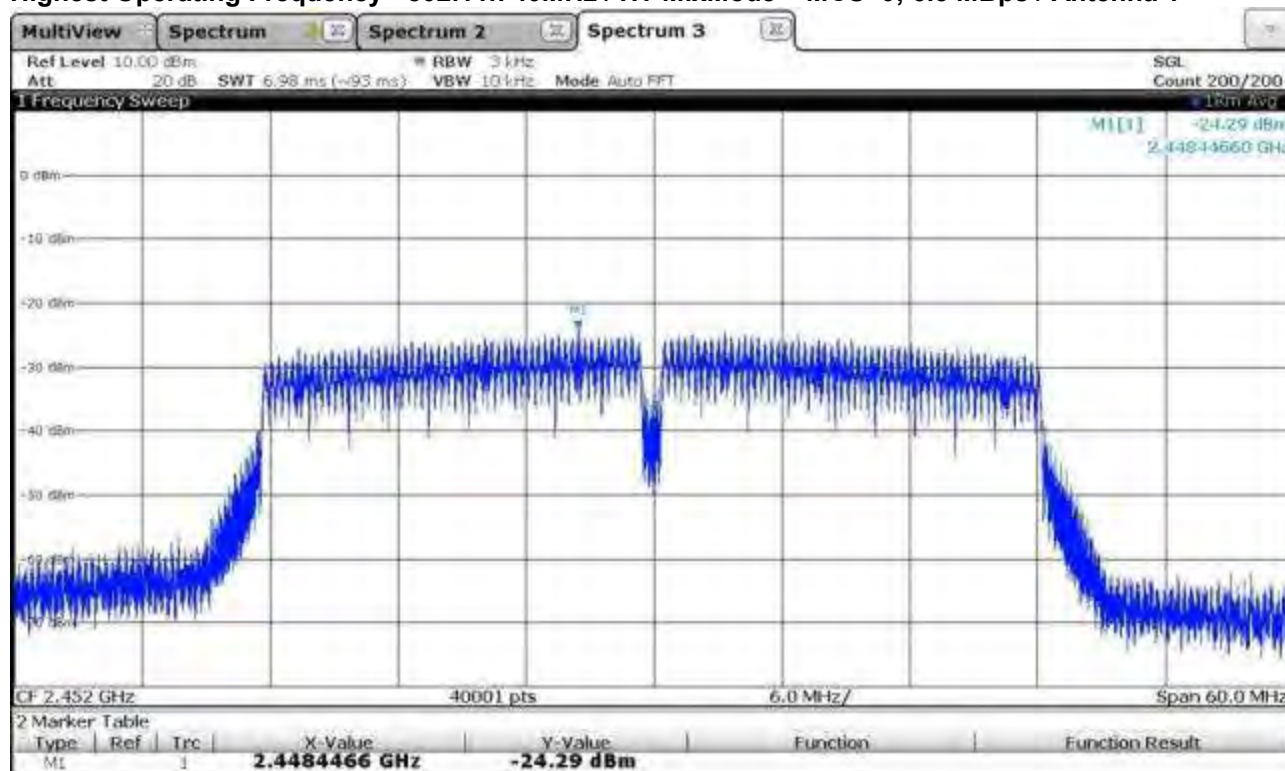
Lowest operating frequency - 802.11n 40MHz / HT MixMode – MCS=0; 6.5 MBps / Antenna 1



Middle Operating Frequency - 802.11n 40MHz / HT MixMode – MCS=0; 6.5 MBps / Antenna 1



Highest Operating Frequency - 802.11n 40MHz / HT MixMode – MCS=0; 6.5 MBps / Antenna 1



Maximum power spectral density

802.11n 40MHz / HT MixMode – MCS=0; 6.5 MBps / Antenna 1

Channel	Frequency [MHz]	Reading of Analyzer [dBm / 3 kHz]	Cable Loss [dB]	Power Spectral Density [dBm / 3 kHz]	Limit [dBm / 3 kHz]	Result
3	2422	-24.07	1.2	-22.87	8	Pass
6	2437	-23.94	1.2	-22.74	8	Pass
9	2452	-24.29	1.2	-23.09	8	Pass

Maximum power spectral density

802.11n 40MHz / HT MixMode – MCS=0; 6.5 MBps / Antenna 0 + Antenna 1

Channel	Frequency [MHz]	Highest PSD of Ant 0 or Ant 1 [dBm/3kHz]	PSD calculated * Ant 0 + Ant 1 [dBm/3kHz]	Limit [dBm/3kHz]	Result
3	2422	-22.87	-19.86	8	Pass
6	2437	-22.74	-19.73	8	Pass
9	2452	-23.09	-20.08	8	Pass

* According to KDB 662911 D01, add $10 \log(N_{ANT})$ dB, $N = 2$

Results

From the measurement data obtained, the tested sample was considered to have **COMPLIED** with the requirements for the **Power Spectral Density**.

8.4. Band-Edges Measurement / Out of Band Emissions

Applied standards

- e-CFR Title 47 Chapter I Subchapter A Part 15 Subpart C §15.247 (d)
- RSS-247 issue 2 Section 5.5

Limit

In any 100 kHz 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 30 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power. Emissions which fall in the restricted bands, as defined in §15.205 Restricted Bands of operation as well as in restricted bands of the RSS-Gen Issue 5 (see Section 8.10 Restricted Frequency Bands) and must also comply with the radiated emission limits specified in §15.209 Radiated emission limits as well as the limits specified in RSS-Gen Table 5.

Test equipment and test set up

Test equipment used for Band Edge measurements as given in clause Test equipment of this report.
Test setup used for Band Edge measurements as given in clause Test setups of this report.

Description

For restricted Bands:

The Emission must comply with the radiated emission limits. Measured with Average and Peak detector.

For non restricted Bands:

The band edge is measured at an amplitude level reduced from the reference level by a specified ratio. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency.

The measurements are initially carried out according to the requirements for restricted bands, as these requirements are more stringent. If the limit value is exceeded in a non-restricted band according to the restricted band specifications, the measurement is repeated again with requirements for non restricted bands in order to prove the conformity.

Note: It was not necessary to carry out a re-test for non restricted band requirements for the tested EUT.

Detector function selection and bandwidth

For the measurement, an EMI test receiver that have CISPR peak detector as well as average detector were used.

Band Edge for restricted Band

Frequency range:	Bandwidth	
See measurement graph	RBW:	1 MHz
	VBW:	3 MHz

Band Edge for non restricted Band

Frequency range:	Bandwidth	
See measurement graph	RBW:	100 kHz
	VBW:	300 kHz

Measurement

The Measurement was performed on: 18.06.2020



FCC 3
Band edge emission
according to



FCC §15.247, RSS-247, FCC §15.209 RSS-Gen

Ref.-No.: 20/01-0031

Product: Transmitting/Receiving System

Sample: 02

Date: 18.06.2020

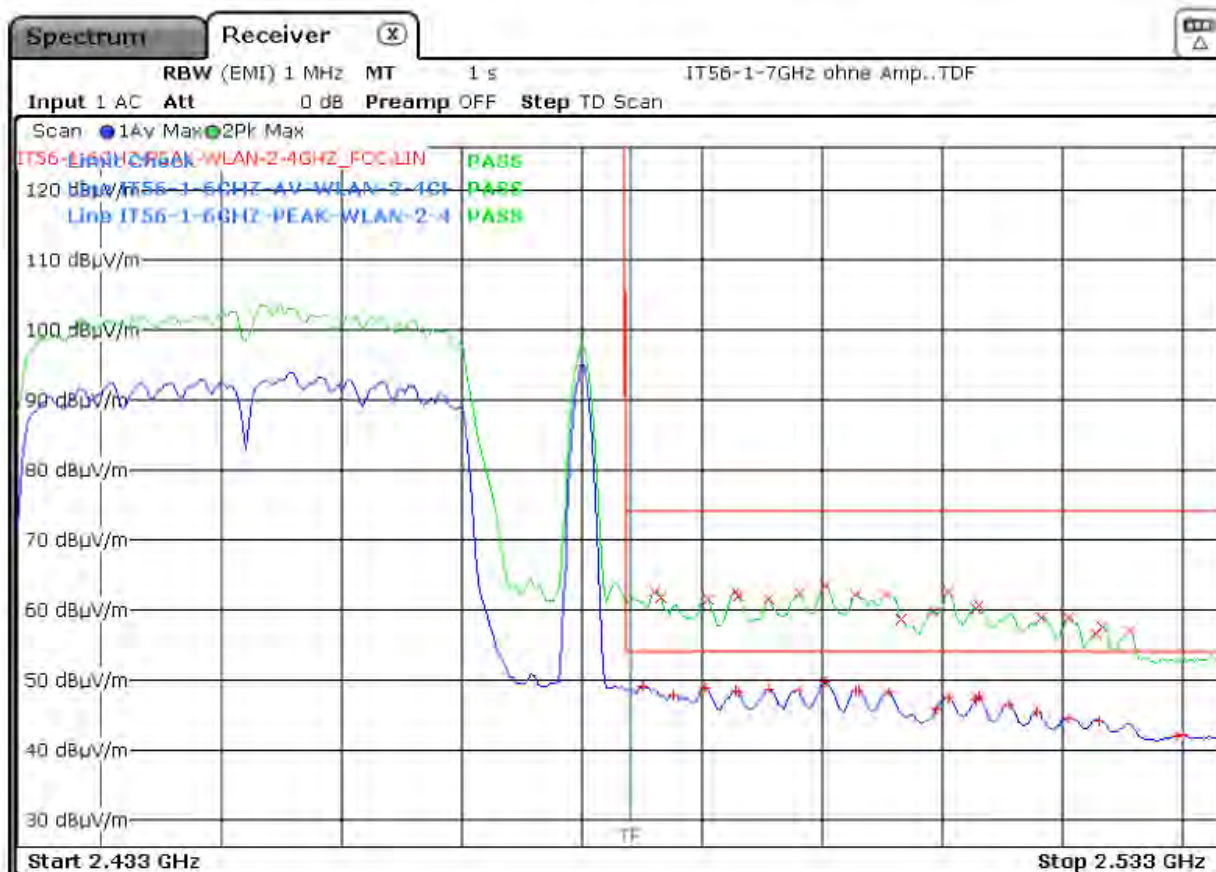
Operator: BI

Remarks:

pass fail

Result: ☒ ☐

Operation mode: WLAN CH.9; BW = 40MHz; Greenfield; 802.11n; BT CH.78; 8DPSK;
High edge; ANT0; ANT 1 and BT-ANT. active



Polarisation: V									
Detector Average					Detector Peak				
Frequ. [GHz]	Level [dBµV/m]	Margin to Limit [dB]	Limit [dBµV/m]	Result	Frequ. [GHz]	Level [dBµV/m]	Margin to Limit [dB]	Limit [dBµV/m]	Result
2,5003	49,61	-4,39	54,00	pass	2,5003	63,42	-10,58	74,00	pass
2,4850	49,07	-4,93	54,00	pass	2,4860	62,57	-11,43	74,00	pass
2,4903	48,91	-5,09	54,00	pass	2,5105	62,56	-11,44	74,00	pass
2,4955	48,57	-5,43	54,00	pass	2,4928	62,52	-11,48	74,00	pass
2,4928	48,50	-5,50	54,00	pass	2,4980	62,20	-11,80	74,00	pass
2,5028	48,48	-5,52	54,00	pass	2,5028	62,14	-11,86	74,00	pass



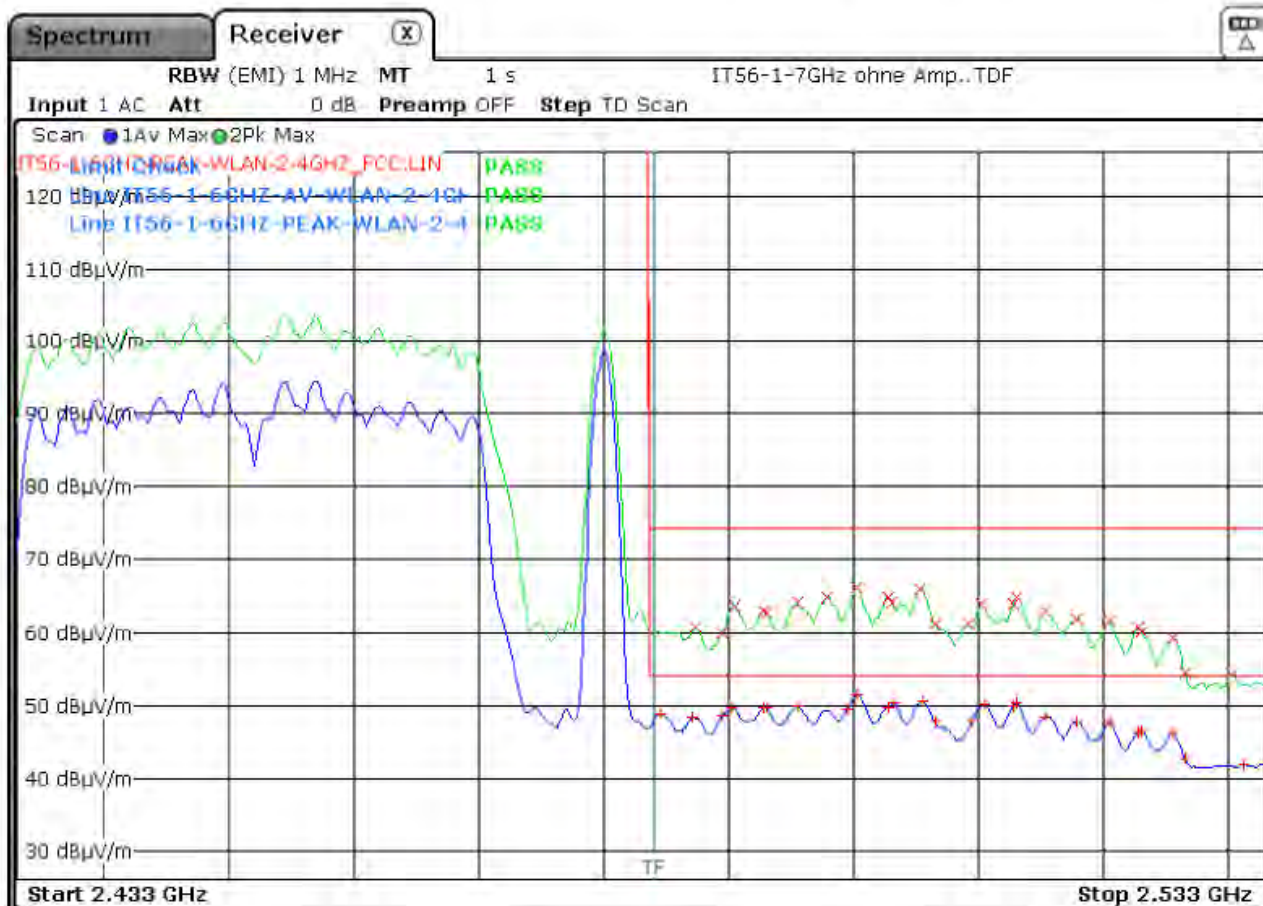
FCC 3
Band edge emission
according to



FCC §15.247, RSS-247, FCC §15.209 RSS-Gen

Ref.-No.: 20/01-0031

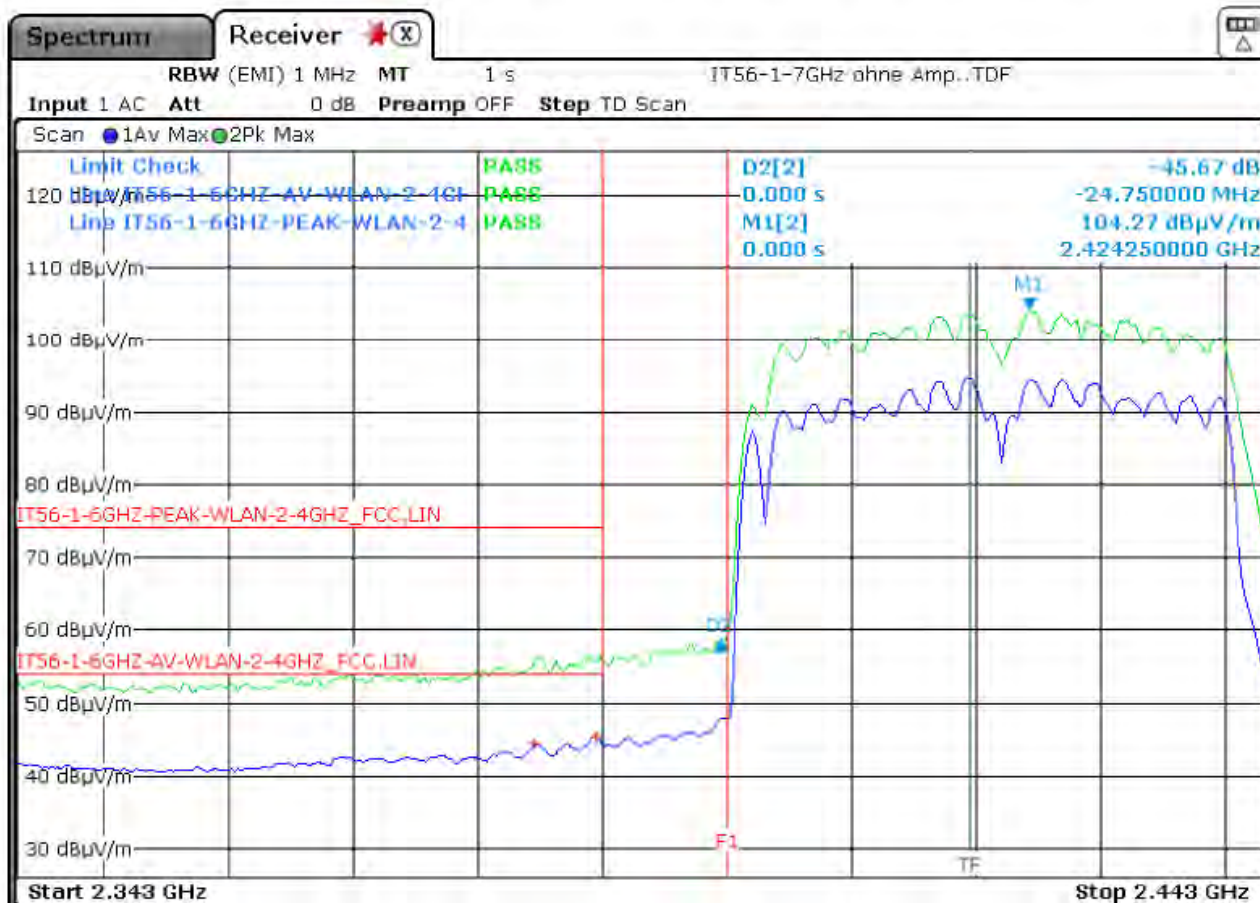
Operation mode: WLAN CH.9; BW = 40MHz; Greenfield; 802.11n; BT CH.78; 8DPSK;
High edge; ANT0; ANT 1 and BT-ANT. active



Polarisation: H									
Detector Average					Detector Peak				
Frequ. [GHz]	Level [dBμV/m]	Margin to Limit [dB]	Limit [dBμV/m]	Result	Frequ. [GHz]	Level [dBμV/m]	Margin to Limit [dB]	Limit [dBμV/m]	Result
2,5003	51,50	-2,50	54,00	pass	2,5003	66,05	-7,95	74,00	pass
2,5055	50,49	-3,51	54,00	pass	2,5053	65,82	-8,18	74,00	pass
2,5033	50,33	-3,67	54,00	pass	2,4978	64,79	-9,21	74,00	pass
2,5130	50,25	-3,75	54,00	pass	2,5028	64,78	-9,22	74,00	pass
2,5105	50,06	-3,94	54,00	pass	2,5130	64,64	-9,36	74,00	pass
2,4955	49,88	-4,12	54,00	pass	2,5030	64,15	-9,85	74,00	pass

Ref.-No.: 20/01-0031

Operation mode: WLAN CH.3; BW = 40MHz; Greenfield; 802.11n; BT CH.0; 8DPSK;
Low edge; ANT0; ANT 1 and BT-ANT. active



Polarisation: V									
Detector Average					Detector Peak				
Frequ. [GHz]	Level [dBµV/m]	Margin to Limit [dB]	Limit [dBµV/m]	Result	Frequ. [GHz]	Level [dBµV/m]	Margin to Limit [dB]	Limit [dBµV/m]	Result
2,3895	45,38	-8,62	54,00	pass	all emissions are 10dB below limit				pass
2,3845	44,46	-9,54	54,00	pass					



FCC 3

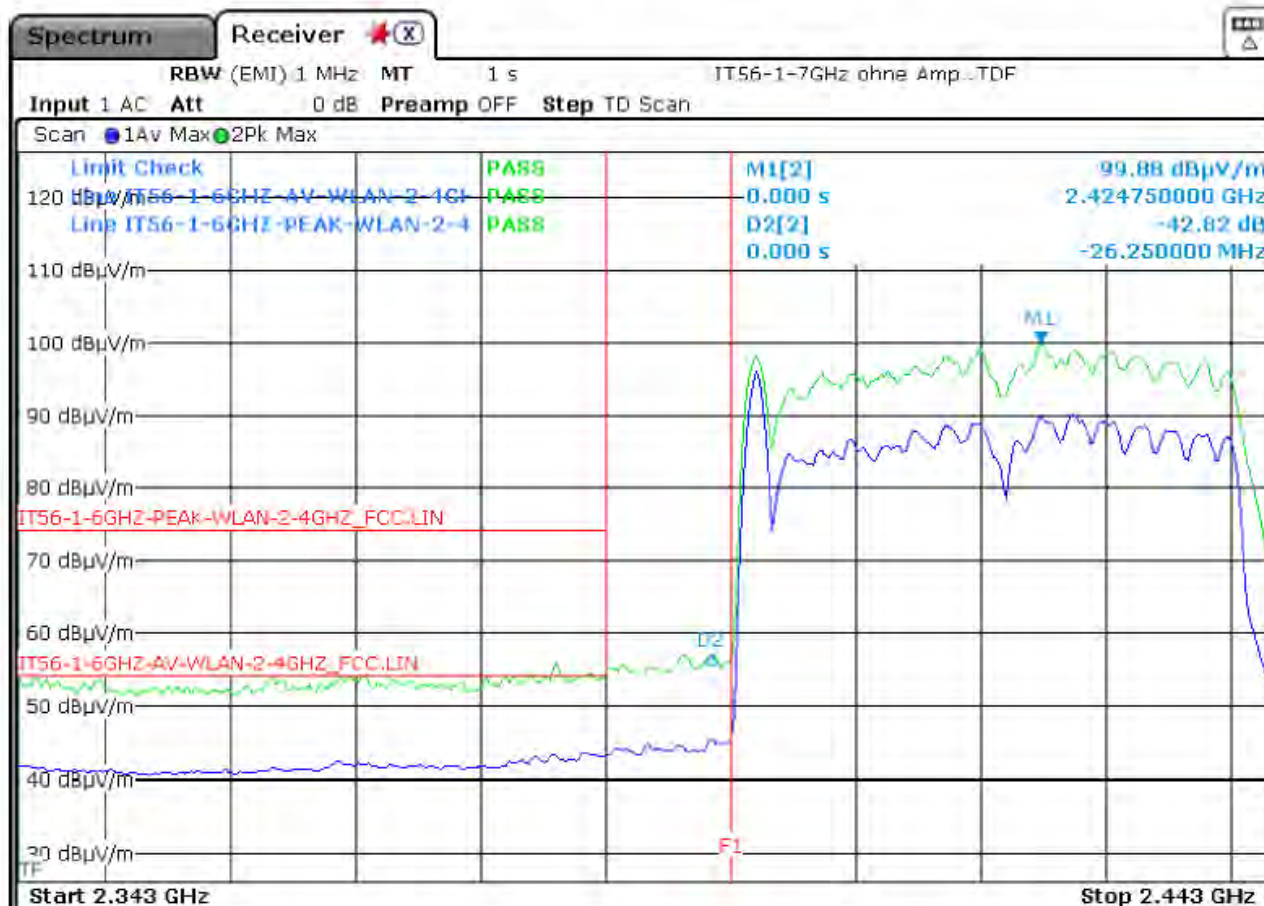
Band edge emission
according to

FCC §15.247, RSS-247, FCC §15.209 RSS-Gen



Ref.-No.: 20/01-0031

Operation mode: WLAN CH.3; BW = 40MHz; Greenfield; 802.11n; BT CH.0; 8DPSK;
Low edge; ANT0; ANT 1 and BT-ANT. active



Polarisation: H									
Detector Average					Detector Peak				
Frequ. [GHz]	Level [dBµV/m]	Margin to Limit [dB]	Limit [dBµV/m]	Result	Frequ. [GHz]	Level [dBµV/m]	Margin to Limit [dB]	Limit [dBµV/m]	Result
all emissions are 10dB below limit				pass	all emissions are 10dB below limit				pass



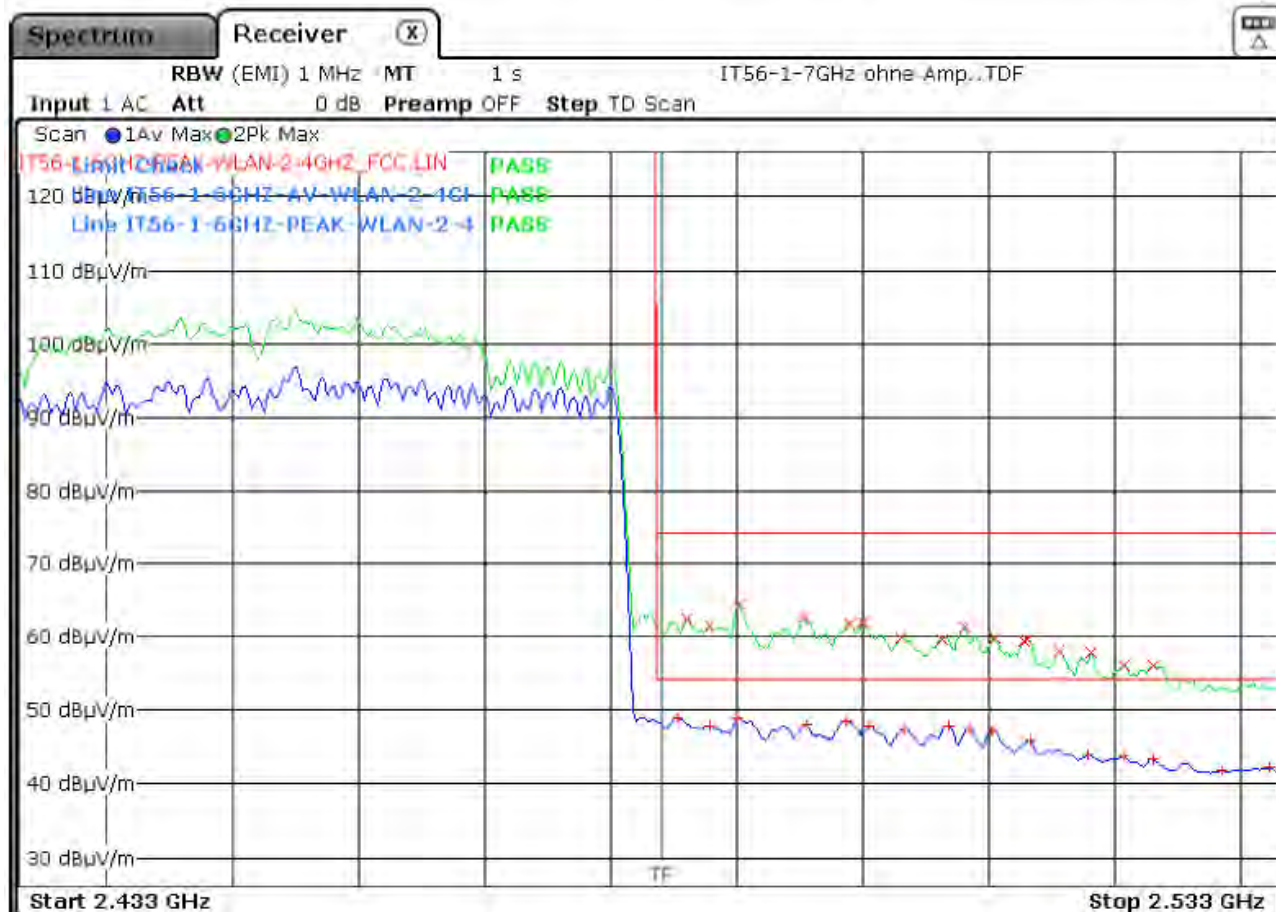
FCC 3
Band edge emission
according to



FCC §15.247, RSS-247, FCC §15.209 RSS-Gen

Ref.-No.: 20/01-0031

Operation mode: WLAN CH.9; BW = 40MHz; Greenfield; 802.11n; BT Hopping 8DPSK;
High edge; ANT0; ANT 1 and BT-ANT. active



Polarisation: V									
Detector Average					Detector Peak				
Frequ. [GHz]	Level [dBµV/m]	Margin to Limit [dB]	Limit [dBµV/m]	Result	Frequ. [GHz]	Level [dBµV/m]	Margin to Limit [dB]	Limit [dBµV/m]	Result
2,4853	48,93	-5,07	54,00	pass	2,4903	64,19	-9,81	74,00	pass
2,4900	48,90	-5,10	54,00	pass	2,4953	62,47	-11,53	74,00	pass
2,4988	48,42	-5,58	54,00	pass	2,4860	62,36	-11,64	74,00	pass
2,4955	47,86	-6,14	54,00	pass	2,5000	61,85	-12,15	74,00	pass
2,5068	47,81	-6,19	54,00	pass	2,4990	61,62	-12,38	74,00	pass
2,4878	47,74	-6,26	54,00	pass	2,4878	61,43	-12,57	74,00	pass



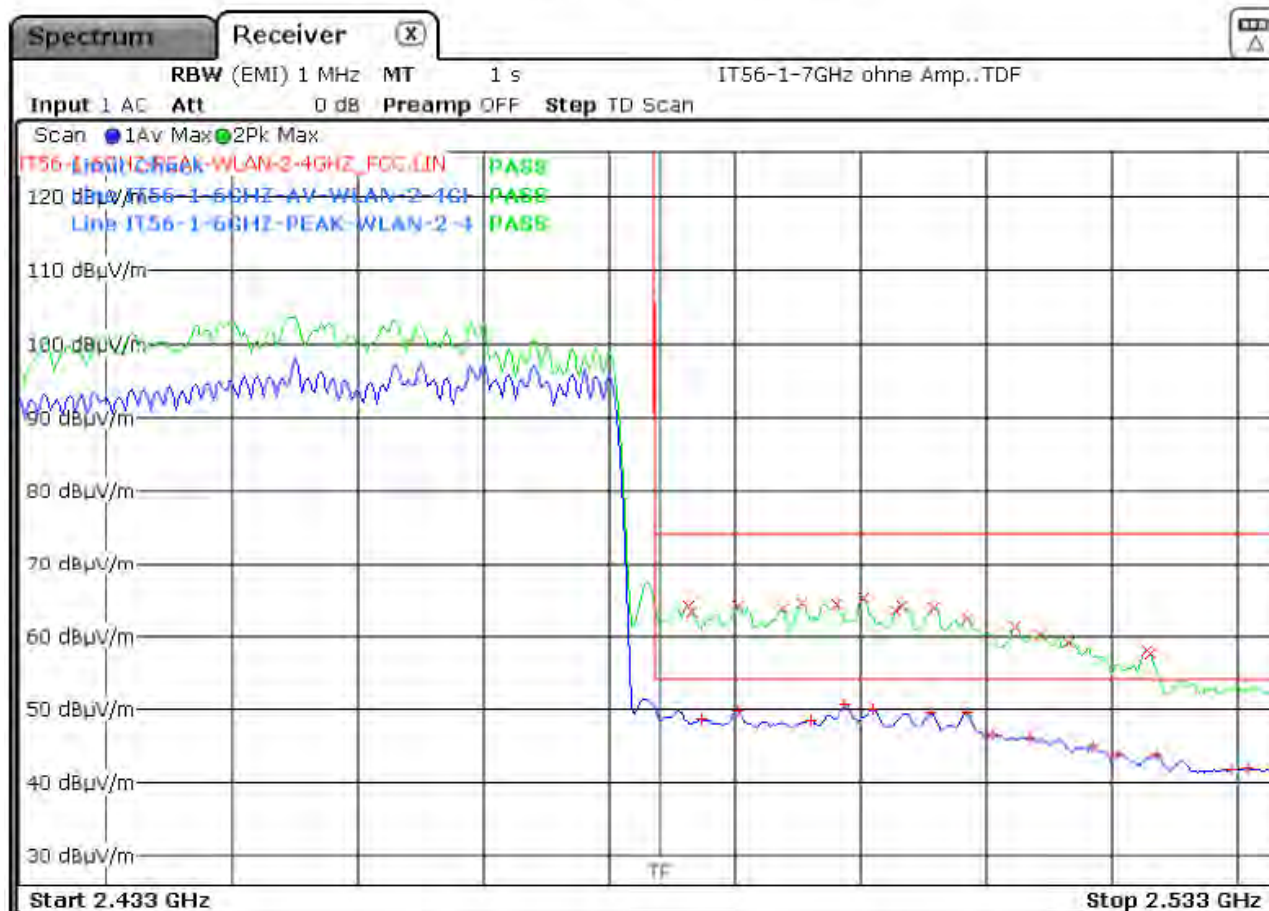
FCC 3
Band edge emission
according to



FCC §15.247, RSS-247, FCC §15.209 RSS-Gen

Ref.-No.: 20/01-0031

Operation mode: WLAN CH.9; BW = 40MHz; Greenfield; 802.11n; BT Hopping 8DPSK;
High edge; ANT0; ANT 1 and BT-ANT active



Polarisation: H									
Detector Average					Detector Peak				
Frequ. [GHz]	Level [dBµV/m]	Margin to Limit [dB]	Limit [dBµV/m]	Result	Frequ. [GHz]	Level [dBµV/m]	Margin to Limit [dB]	Limit [dBµV/m]	Result
2,4988	50,50	-3,50	54,00	pass	2,5003	65,04	-8,96	74,00	pass
2,5010	49,96	-4,04	54,00	pass	2,4953	64,37	-9,63	74,00	pass
2,4903	49,69	-4,31	54,00	pass	2,4980	64,28	-9,72	74,00	pass
2,5055	49,46	-4,54	54,00	pass	2,5033	64,15	-9,85	74,00	pass
2,5085	49,43	-4,57	54,00	pass	2,4863	64,04	-9,96	74,00	pass
2,4873	48,51	-5,49	54,00	pass	2,4903	64,01	-9,99	74,00	pass



FCC 3

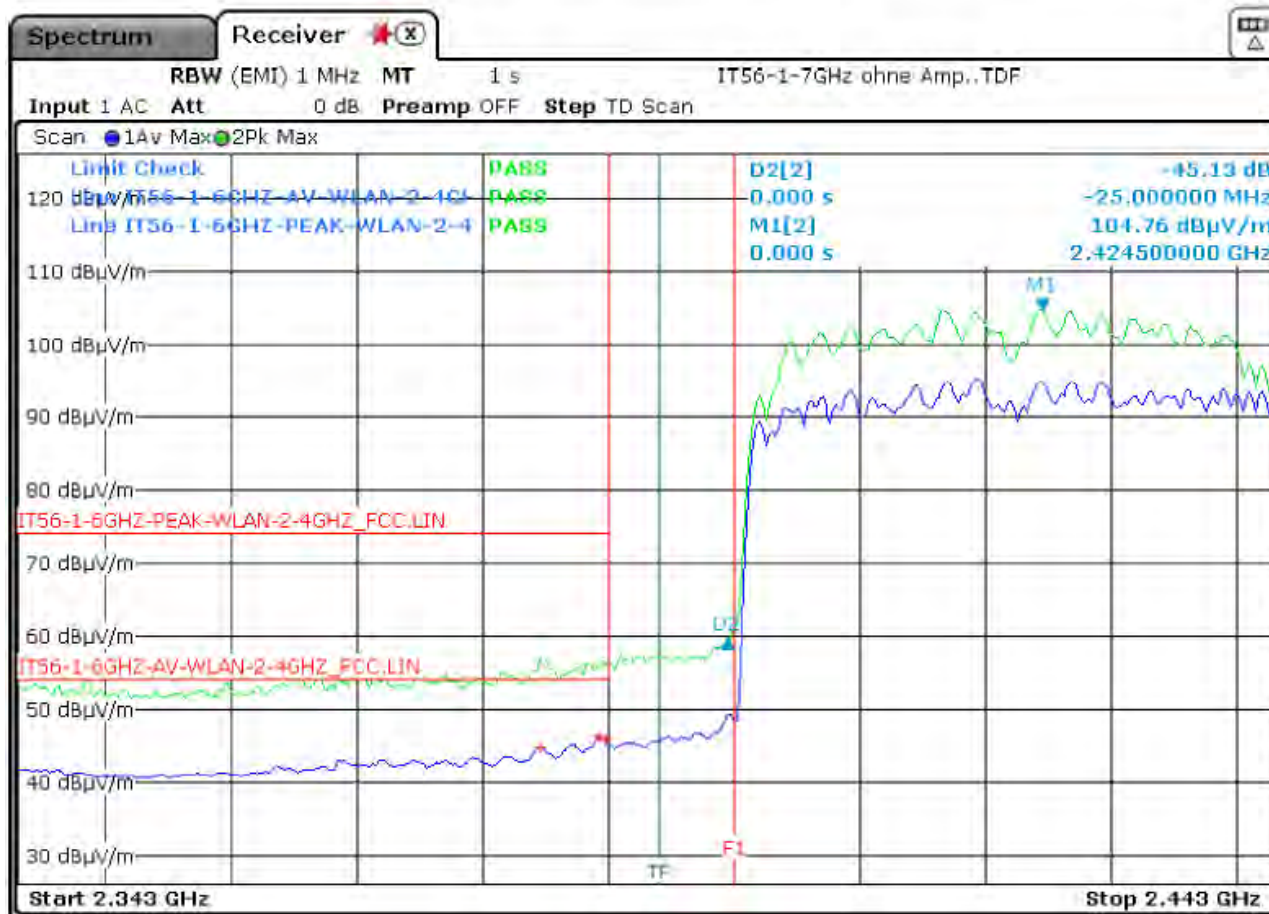
Band edge emission
according to

FCC §15.247, RSS-247, FCC §15.209 RSS-Gen



Ref-No.: 20/01-0031

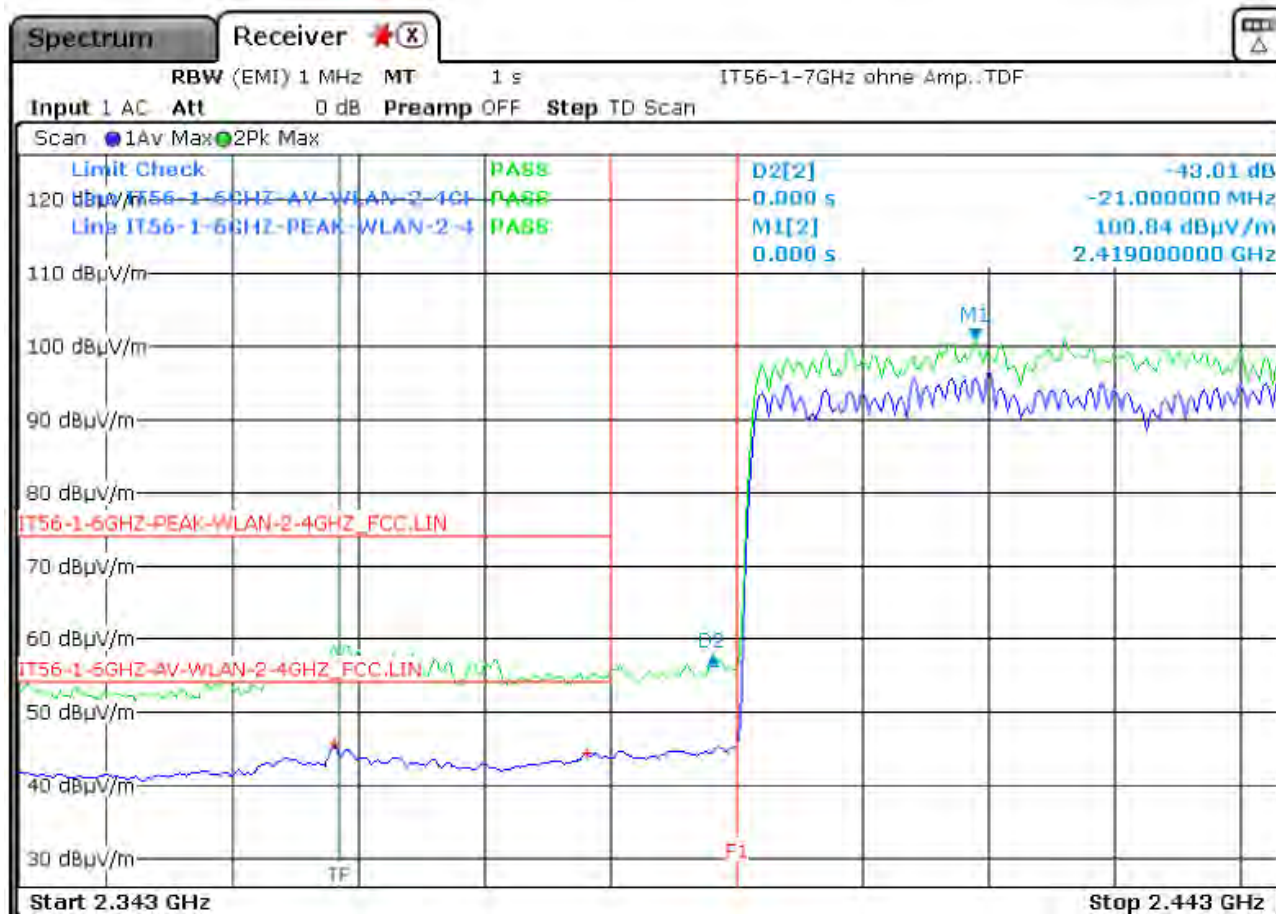
Operation mode: WLAN CH.3; BW = 40MHz; Greenfield; 802.11n; BT Hopping 8DPSK;
Low edge; ANT0; ANT 1 and BT-ANT. active

[illegible]

FCC §15.247, RSS-247, FCC §15.209 RSS-Gen

Ref -No - 20/01-0031

Operation mode: WLAN CH.3; BW = 40MHz; Greenfield; 802.11n; BT Hopping 8DPSK;
Low edge: ANT0; ANT 1 and BT-ANT. active

[illegible]



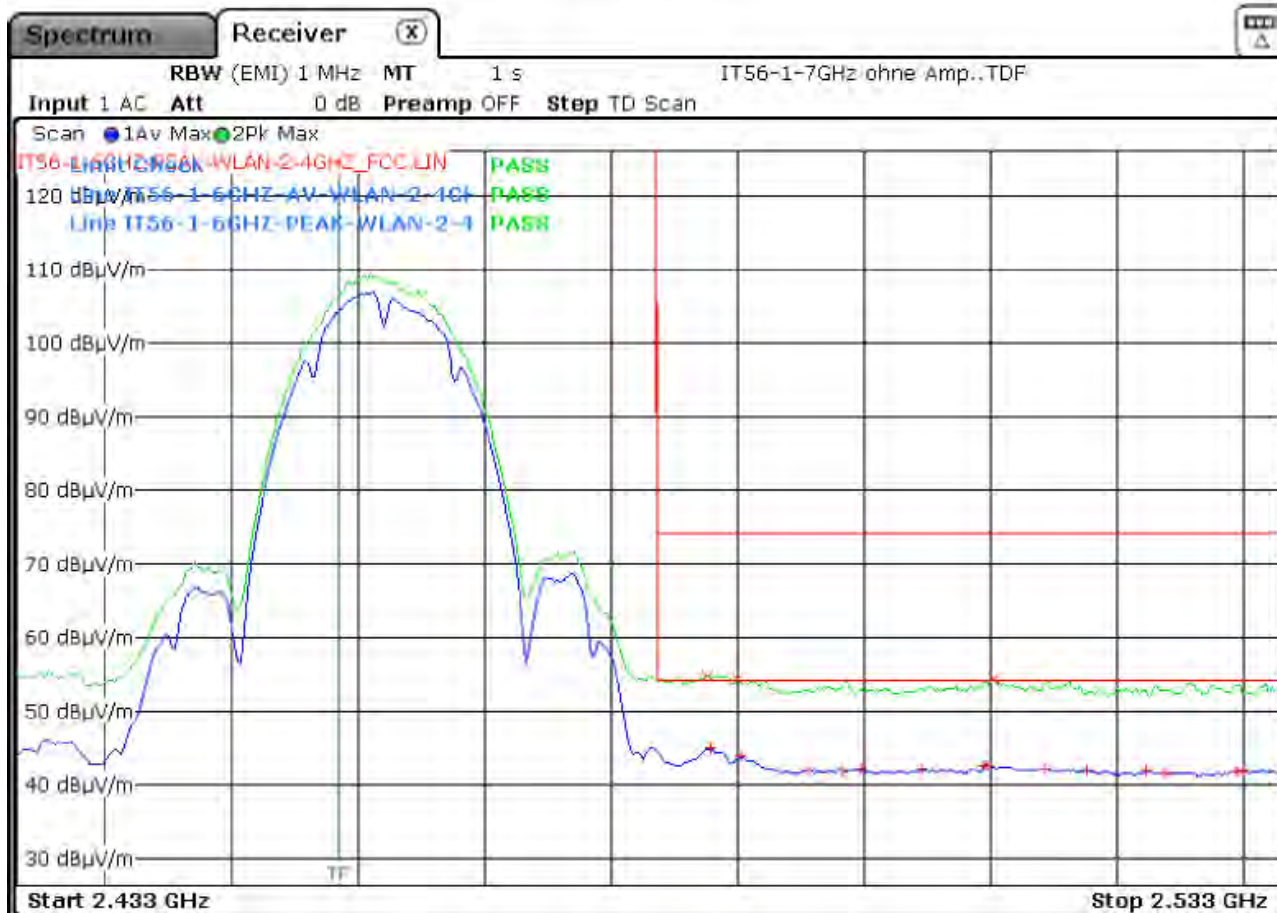
FCC 3
Band edge emission
according to



FCC §15.247, RSS-247, FCC §15.209 RSS-Gen

Ref.-No.: 20/01-0031

Operation mode: WLAN CH.11; BW = 20MHz; CCK; 802.11b;
High edge; ANT0; ANT 1 active



Polarisation: V

Detector Average					Detector Peak				
Frequ. [GHz]	Level [dBμV/m]	Margin to Limit [dB]	Limit [dBμV/m]	Result	Frequ. [GHz]	Level [dBμV/m]	Margin to Limit [dB]	Limit [dBμV/m]	Result
2,4878	44,84	-9,16	54,00	pass	2,4875	54,69	-19,31	74,00	pass
2,4903	43,78	-10,22	54,00	pass	2,4900	54,28	-19,72	74,00	pass
2,5095	42,63	-11,37	54,00	pass	2,5103	54,17	-19,83	74,00	pass
2,5098	42,52	-11,48	54,00	pass					
2,5143	42,18	-11,82	54,00	pass					
2,5045	42,01	-11,99	54,00	pass					



FCC 3

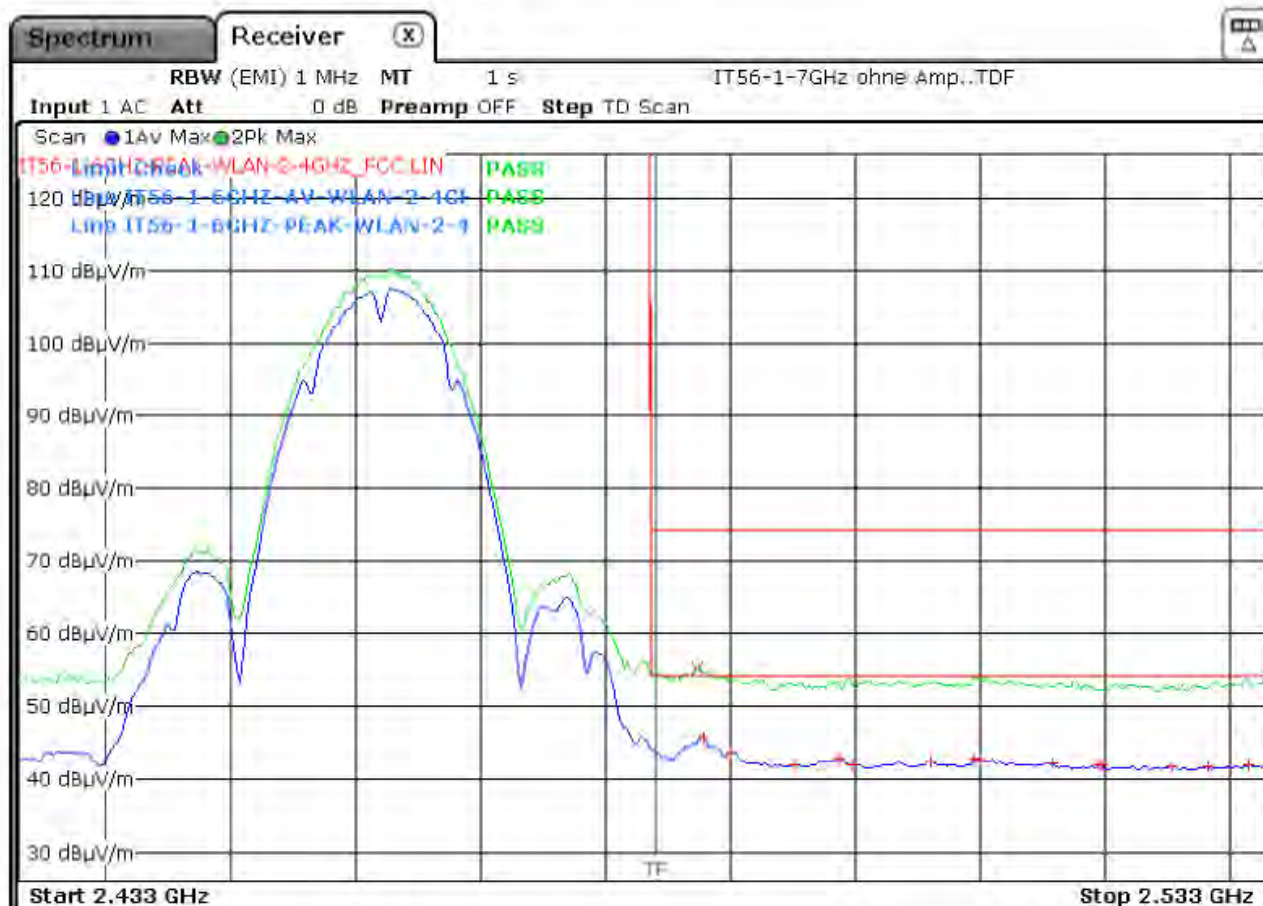
Band edge emission
according to

FCC §15.247, RSS-247, FCC §15.209 RSS-Gen



Ref.-No.: 20/01-0031

Operation mode: WLAN CH.11; BW = 20MHz; CCK; 802.11b;
High edge; ANT0; ANT 1 active

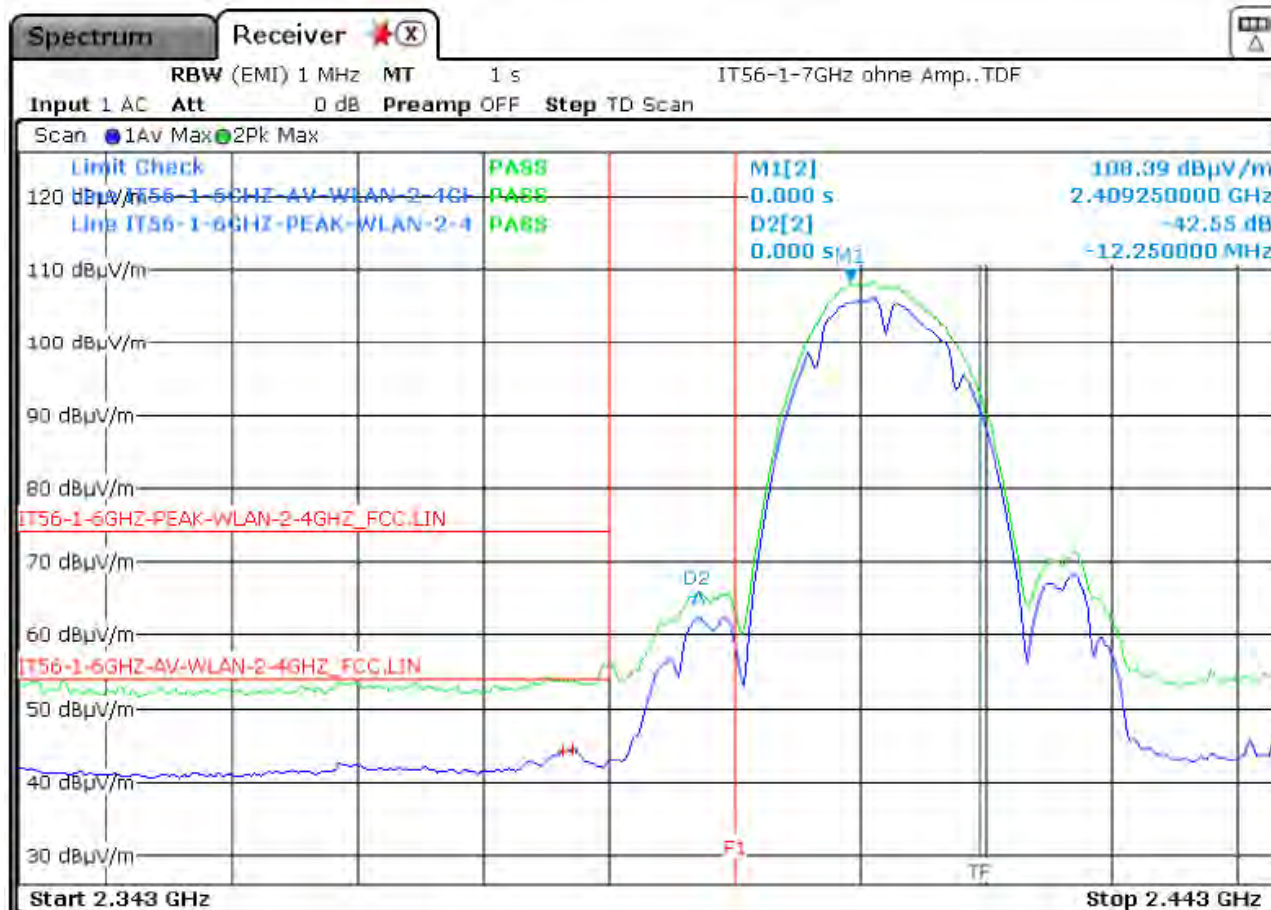


Polarisation: H									
Detector Average					Detector Peak				
Frequ. [GHz]	Level [dBμV/m]	Margin to Limit [dB]	Limit [dBμV/m]	Result	Frequ. [GHz]	Level [dBμV/m]	Margin to Limit [dB]	Limit [dBμV/m]	Result
2,4878	45,54	-8,46	54,00	pass	2,4873	55,22	-18,78	74,00	pass
2,4900	43,68	-10,32	54,00	pass	2,5330	54,13	-19,87	74,00	pass
2,4988	42,67	-11,33	54,00	pass					
2,5095	42,67	-11,33	54,00	pass					
2,5100	42,50	-11,50	54,00	pass					
2,5060	42,40	-11,60	54,00	pass					

FCC §15.247, RSS-247, FCC §15.209 RSS-Gen

Ref.-No.: 20/01-0031

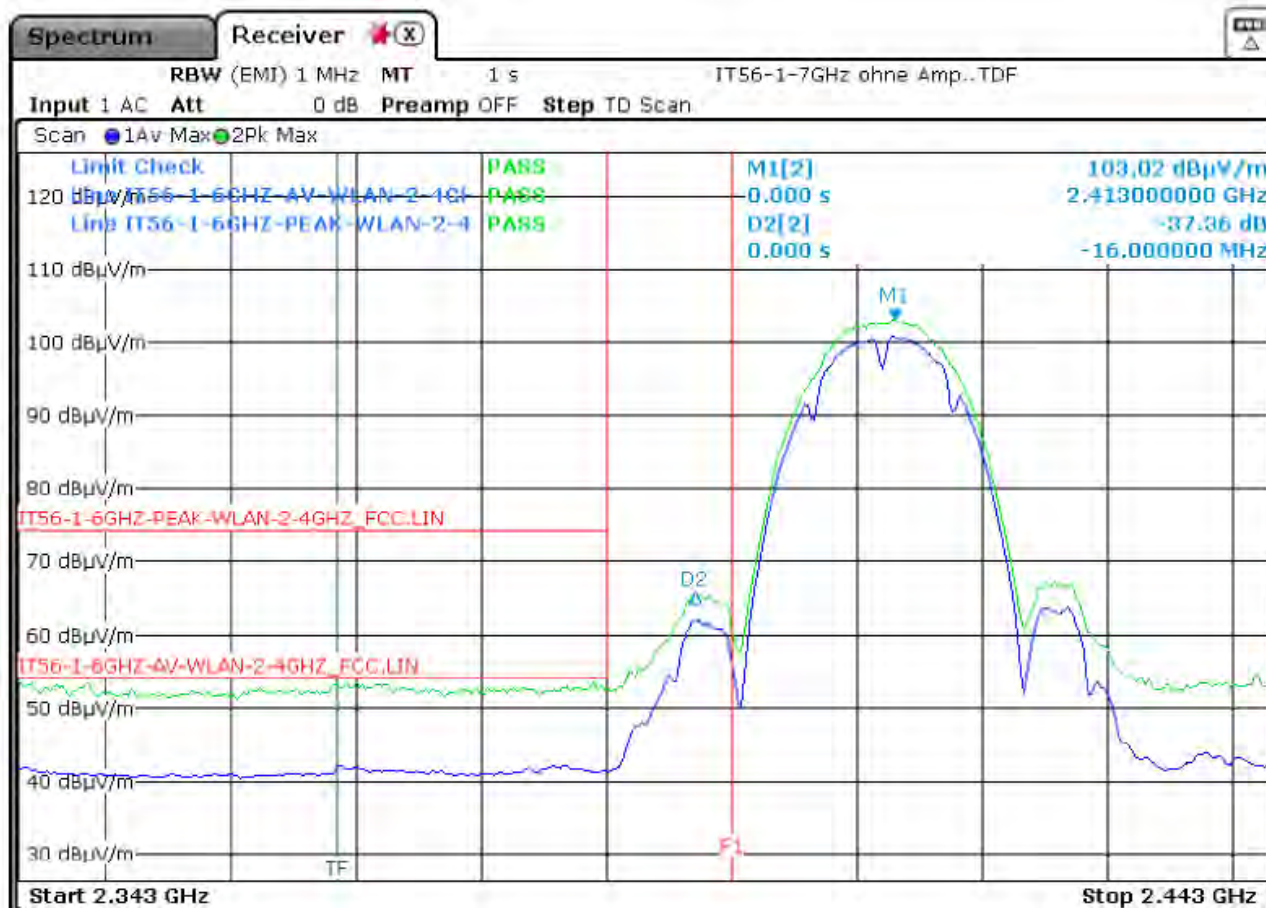
Operation mode: WLAN CH.1; BW = 20MHz; CCK; 802.11b;
Low edge; ANT0; ANT 1 active

[illegible]

FCC §15.247, RSS-247, FCC §15.209 RSS-Gen

Ref.-No.: 20/01-0031

Operation mode: WLAN CH.1; BW = 20MHz; CCK; 802.11b;
Low edge: ANT0; ANT 1 active



Polarisation: H									
Detector Average					Detector Peak				
Frequ. [GHz]	Level [dBµV/m]	Margin to Limit [dB]	Limit [dBµV/m]	Result	Frequ. [GHz]	Level [dBµV/m]	Margin to Limit [dB]	Limit [dBµV/m]	Result
all emissions are 10dB below limit				pass	all emissions are 10dB below limit				pass



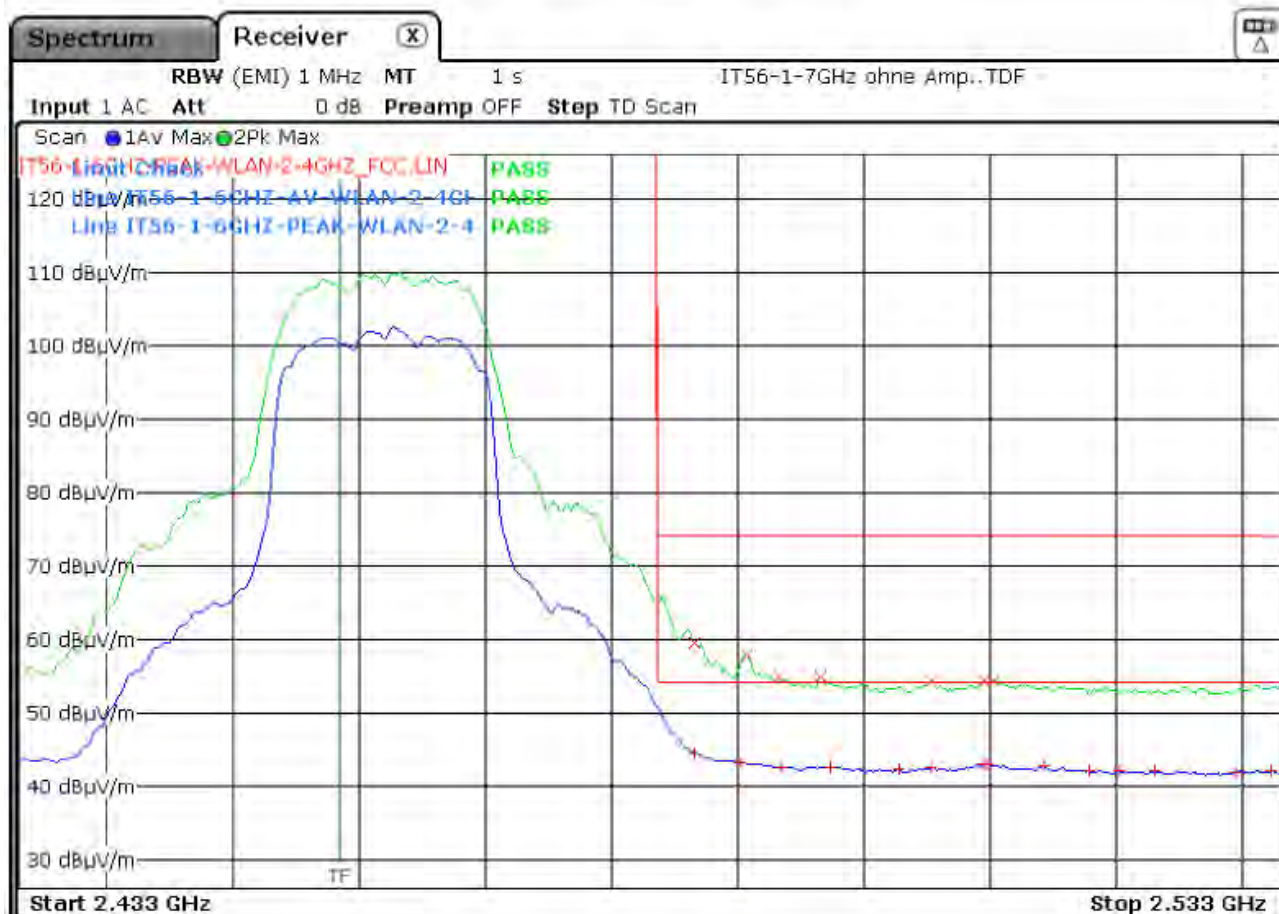
FCC 3
Band edge emission
according to



FCC §15.247, RSS-247, FCC §15.209 RSS-Gen

Ref.-No.: 20/01-0031

Operation mode: WLAN CH.11; BW = 20MHz; OFDM; 802.11g;
High edge; ANT0; ANT 1 active



Polarisation: V									
Detector Average					Detector Peak				
Frequ. [GHz]	Level [dBµV/m]	Margin to Limit [dB]	Limit [dBµV/m]	Result	Frequ. [GHz]	Level [dBµV/m]	Margin to Limit [dB]	Limit [dBµV/m]	Result
2,4865	44,56	-9,44	54,00	pass	2,4865	59,41	-14,59	74,00	pass
2,4903	43,27	-10,73	54,00	pass	2,4908	57,81	-16,19	74,00	pass
2,5098	42,92	-11,08	54,00	pass	2,4965	54,92	-19,08	74,00	pass
2,5095	42,91	-11,09	54,00	pass	2,4933	54,91	-19,09	74,00	pass
2,5143	42,67	-11,33	54,00	pass	2,5053	54,36	-19,64	74,00	pass
2,4973	42,62	-11,38	54,00	pass	2,5103	54,32	-19,68	74,00	pass



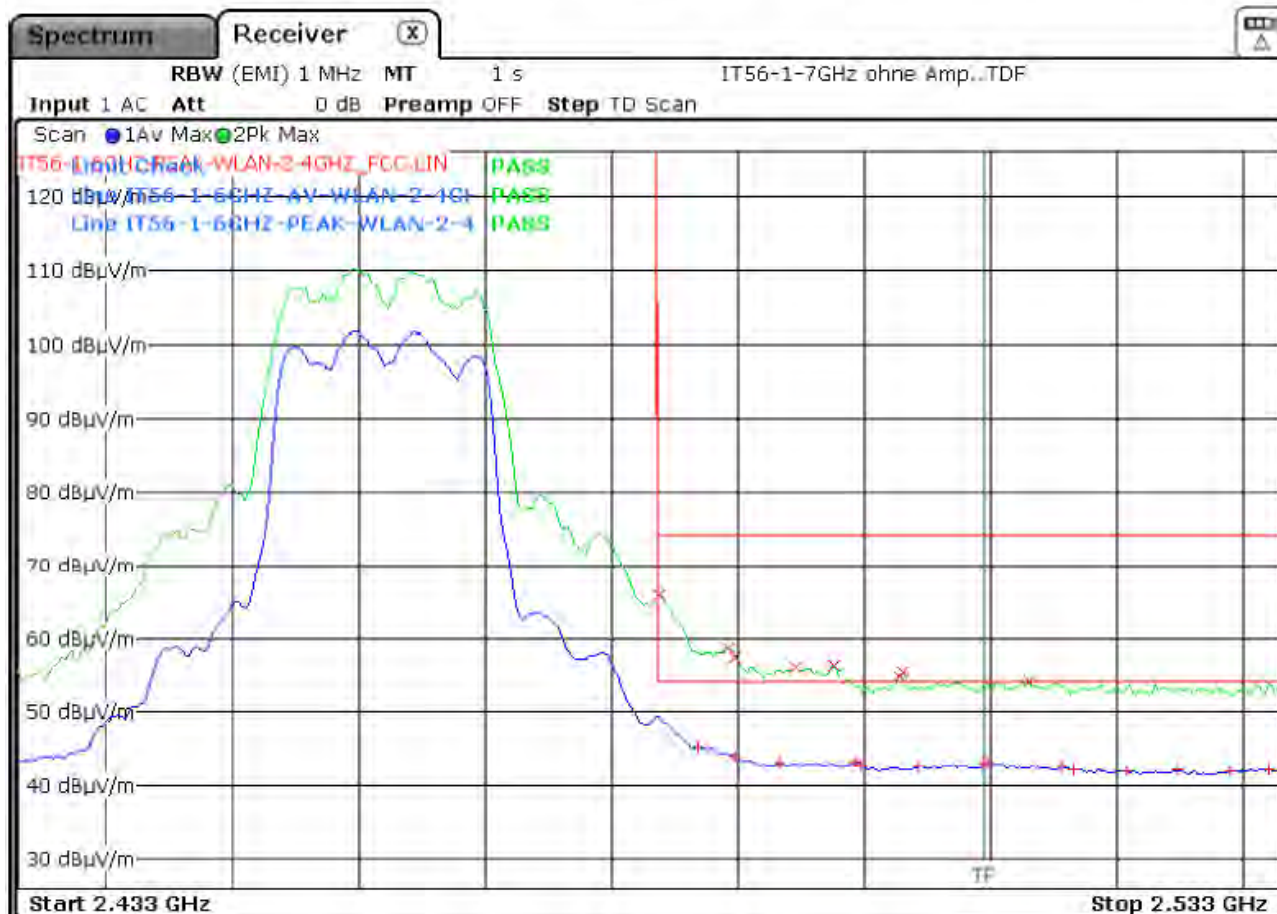
FCC 3
Band edge emission
according to



FCC §15.247, RSS-247, FCC §15.209 RSS-Gen

Ref.-No.: 20/01-0031

Operation mode: WLAN CH.11; BW = 20MHz; OFDM; 802.11g;
High edge; ANT0; ANT 1 active



Polarisation: H									
Detector Average					Detector Peak				
Frequ. [GHz]	Level [dBµV/m]	Margin to Limit [dB]	Limit [dBµV/m]	Result	Frequ. [GHz]	Level [dBµV/m]	Margin to Limit [dB]	Limit [dBµV/m]	Result
2,4868	45,07	-8,93	54,00	pass	2,4838	65,82	-8,18	74,00	pass
2,4898	43,76	-10,24	54,00	pass	2,4893	58,65	-15,35	74,00	pass
2,4993	43,07	-10,93	54,00	pass	2,4898	57,31	-16,69	74,00	pass
2,5095	43,05	-10,95	54,00	pass	2,4975	56,16	-17,84	74,00	pass
2,5098	42,93	-11,07	54,00	pass	2,4945	56,03	-17,97	74,00	pass
2,4933	42,89	-11,11	54,00	pass	2,5030	55,27	-18,73	74,00	pass



FCC 3

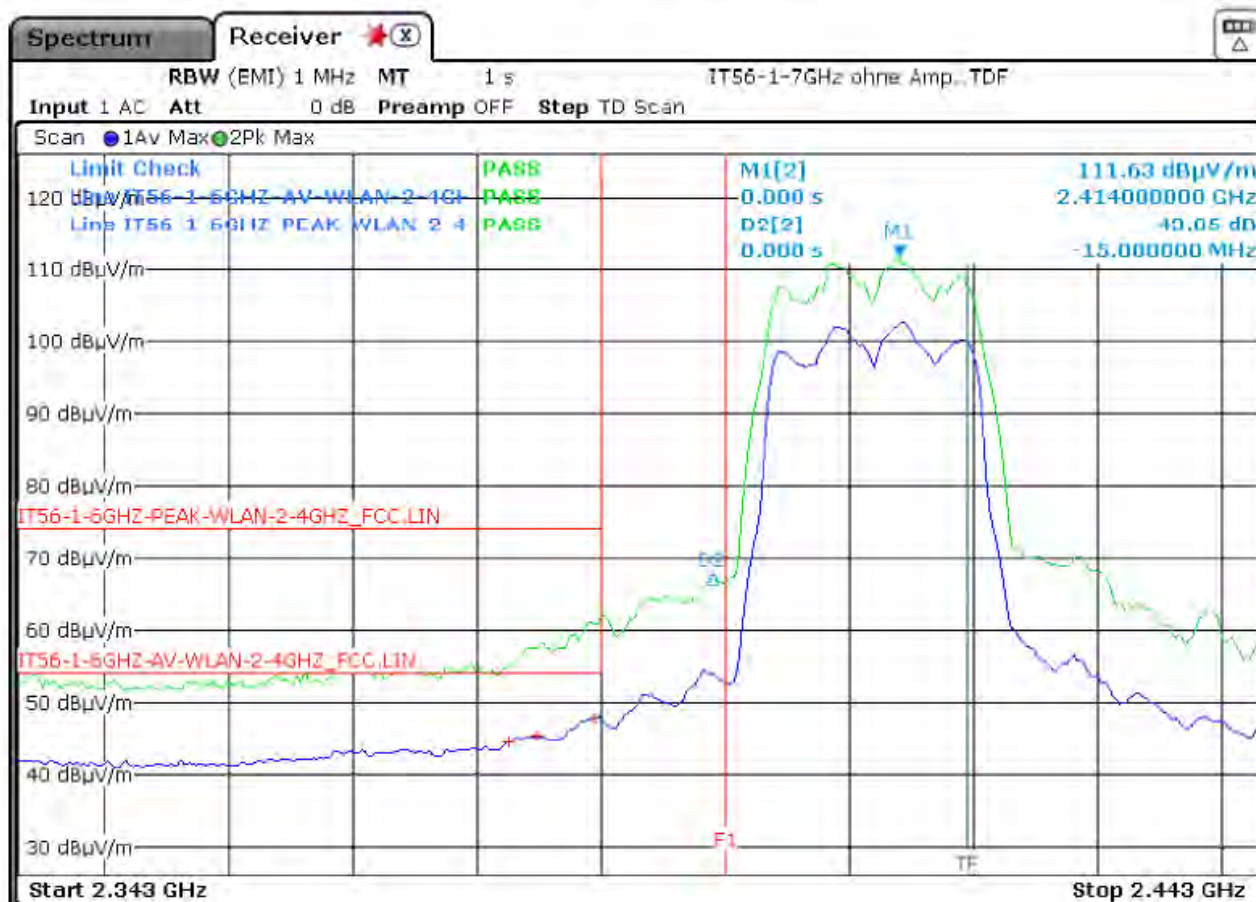
Band edge emission
according to

FCC §15.247, RSS-247, FCC §15.209 RSS-Gen



Ref.-No.: 20/01-0031

Operation mode: WLAN CH.1; BW = 20MHz; OFDM; 802.11g;
Low edge; ANT0; ANT 1 active



Polarisation: V									
Detector Average					Detector Peak				
Frequ. [GHz]	Level [dBµV/m]	Margin to Limit [dB]	Limit [dBµV/m]	Result	Frequ. [GHz]	Level [dBµV/m]	Margin to Limit [dB]	Limit [dBµV/m]	Result
2,3895	47,73	-6,27	54,00	pass	all emissions are 10dB below limit				pass
2,3848	45,24	-8,76	54,00	pass					
2,3825	44,41	-9,59	54,00	pass					



FCC 3

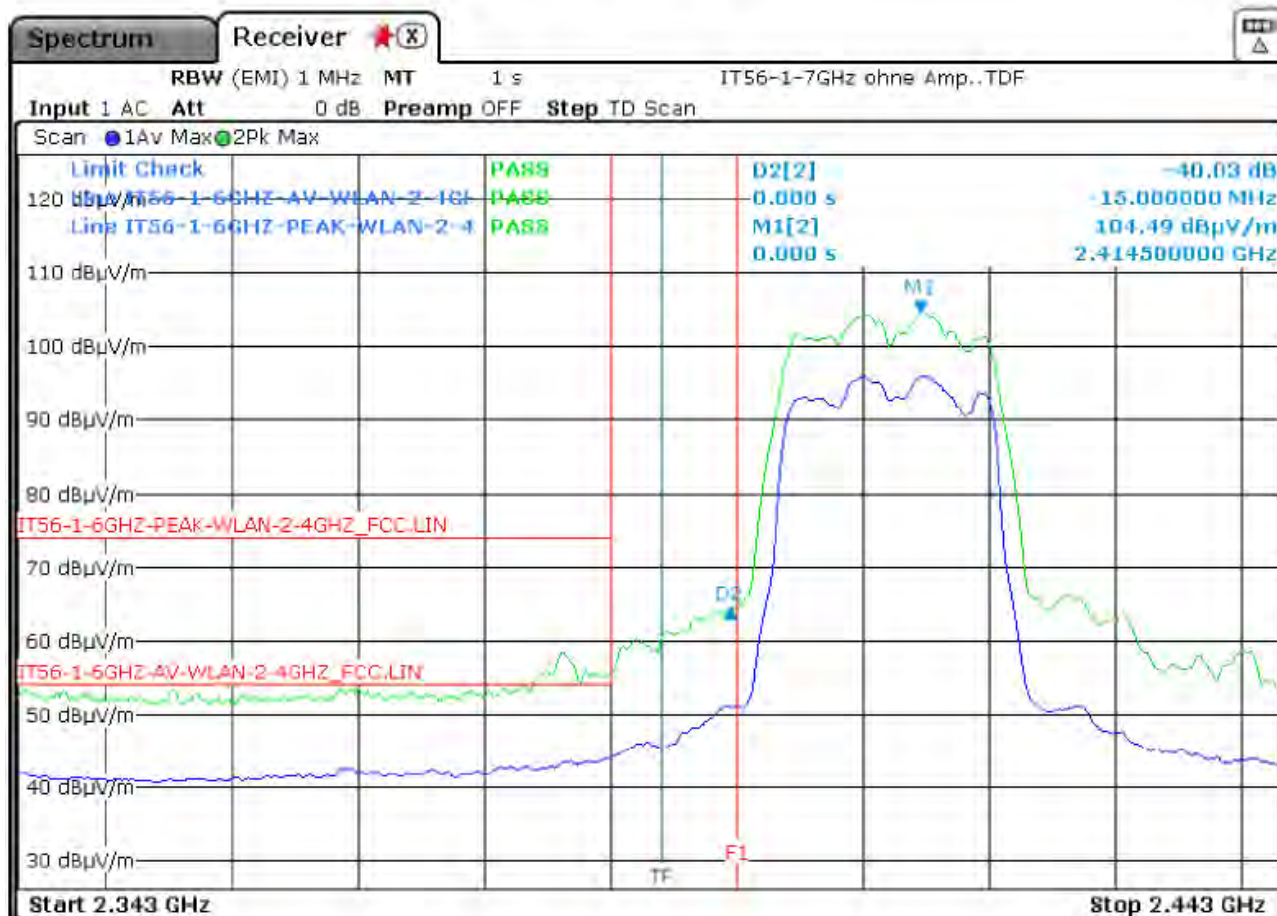
Band edge emission
according to

FCC §15.247, RSS-247, FCC §15.209 RSS-Gen



Ref.-No.: 20/01-0031

Operation mode: WLAN CH.1; BW = 20MHz; OFDM; 802.11g;
Low edge; ANT0; ANT 1 active

[illegible]



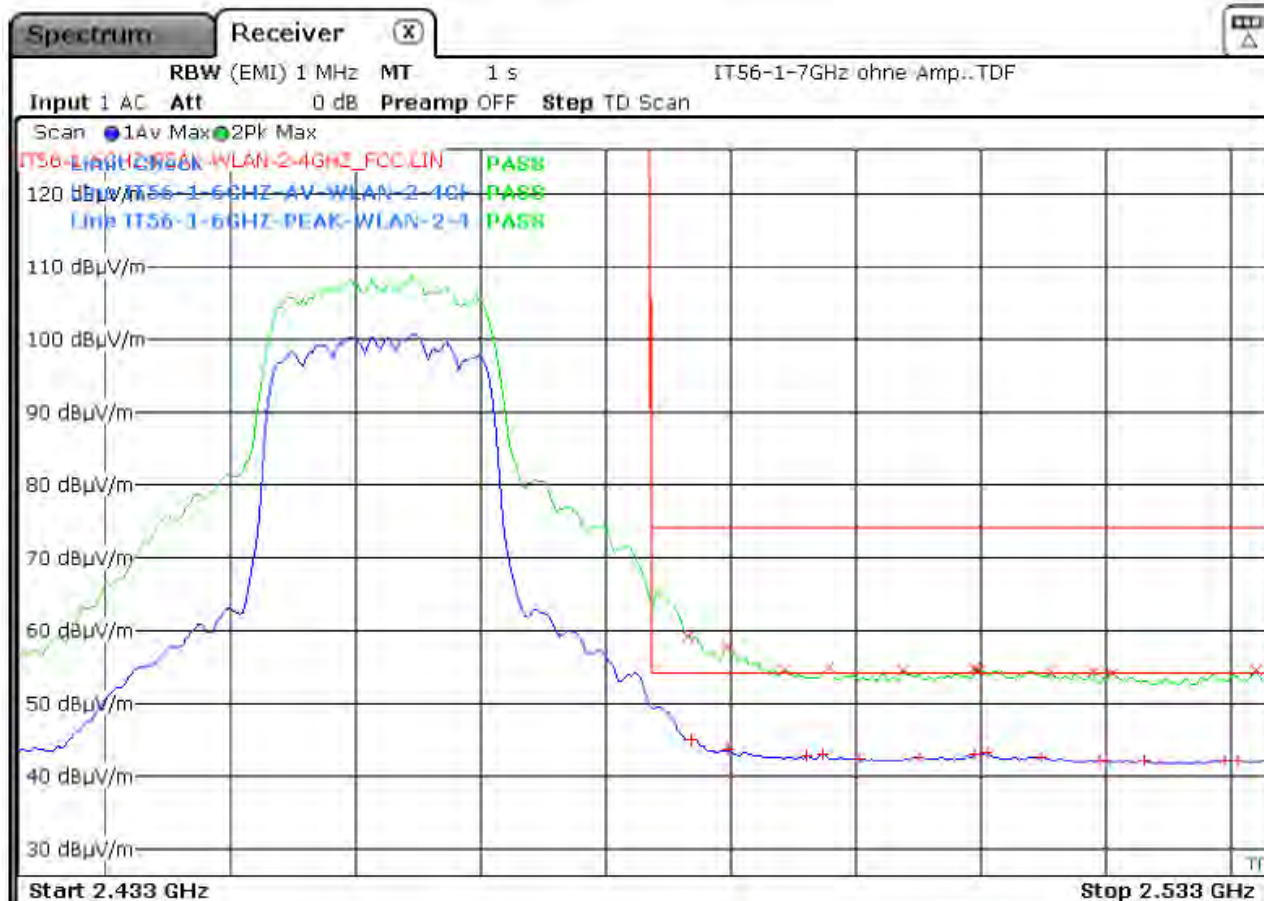
FCC 3
Band edge emission
according to



FCC §15.247, RSS-247, FCC §15.209 RSS-Gen

Ref.-No.: 20/01-0031

Operation mode: WLAN CH.11; BW = 20MHz; Greenfield; 802.11n;
High edge; ANT0; ANT 1 active



Polarisation: V									
Detector Average					Detector Peak				
Frequ. [GHz]	Level [dBμV/m]	Margin to Limit [dB]	Limit [dBμV/m]	Result	Frequ. [GHz]	Level [dBμV/m]	Margin to Limit [dB]	Limit [dBμV/m]	Result
2,4868	44,83	-9,17	54,00	pass	2,4865	59,08	-14,92	74,00	pass
2,4898	43,62	-10,38	54,00	pass	2,4898	57,59	-16,41	74,00	pass
2,5105	43,19	-10,81	54,00	pass	2,4978	54,91	-19,09	74,00	pass
2,4973	42,95	-11,05	54,00	pass	2,5095	54,71	-19,29	74,00	pass
2,5095	42,86	-11,14	54,00	pass	2,5098	54,54	-19,46	74,00	pass
2,4960	42,74	-11,26	54,00	pass	2,4943	54,49	-19,51	74,00	pass



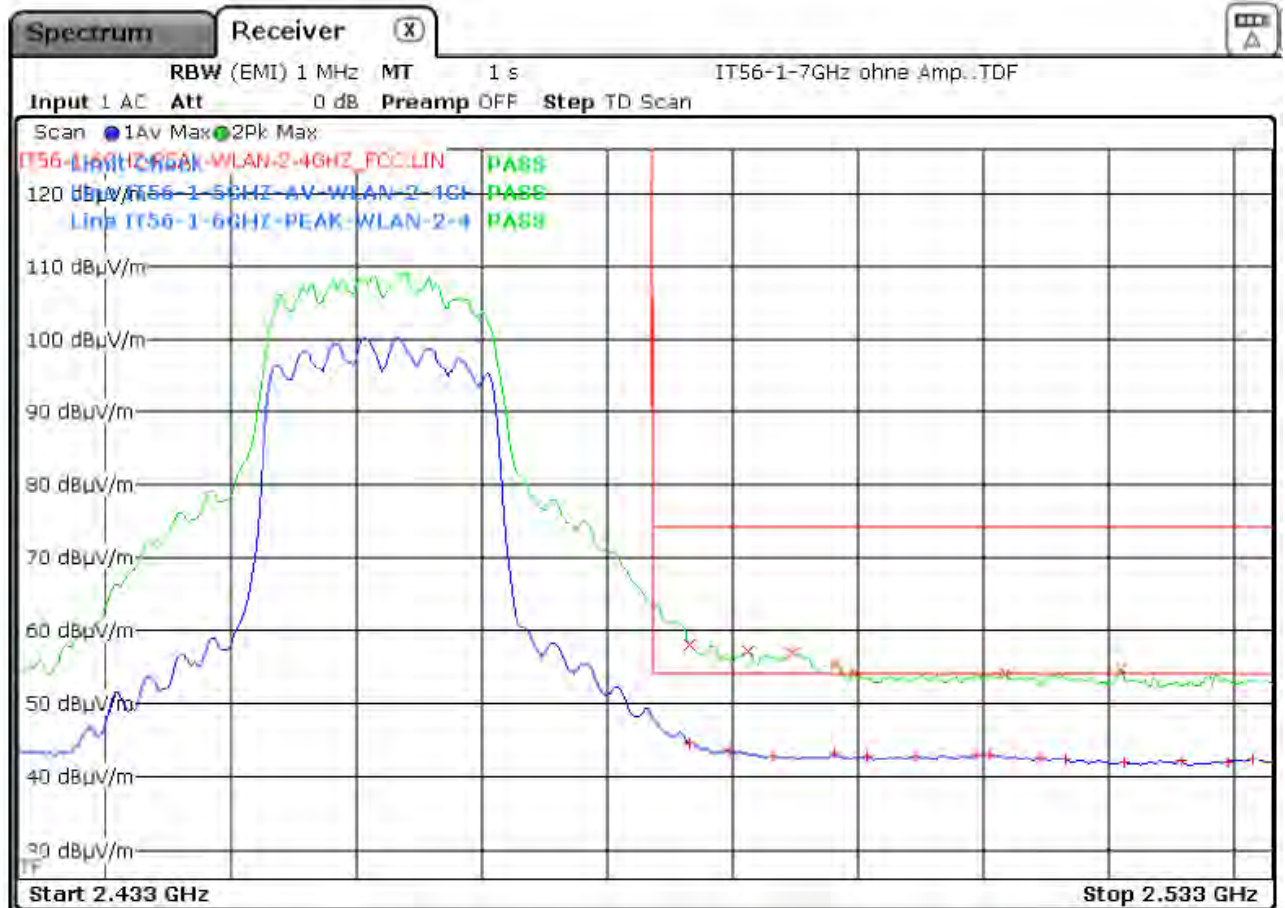
FCC 3
Band edge emission
according to



FCC §15.247, RSS-247, FCC §15.209 RSS-Gen

Ref.-No.: 20/01-0031

Operation mode: WLAN CH.11; BW = 20MHz; Greenfield; 802.11n;
High edge; ANT0; ANT 1 active



Polarisation: H									
Detector Average					Detector Peak				
Frequ. [GHz]	Level [dBµV/m]	Margin to Limit [dB]	Limit [dBµV/m]	Result	Frequ. [GHz]	Level [dBµV/m]	Margin to Limit [dB]	Limit [dBµV/m]	Result
2,4865	44,49	-9,51	54,00	pass	2,4865	57,96	-16,04	74,00	pass
2,4898	43,29	-10,71	54,00	pass	2,4913	56,98	-17,02	74,00	pass
2,4980	43,16	-10,84	54,00	pass	2,4948	56,85	-17,15	74,00	pass
2,5105	43,01	-10,99	54,00	pass	2,4983	55,36	-18,64	74,00	pass
2,5095	42,99	-11,01	54,00	pass	2,5210	54,62	-19,38	74,00	pass
2,4933	42,74	-11,26	54,00	pass	2,5118	54,03	-19,97	74,00	pass



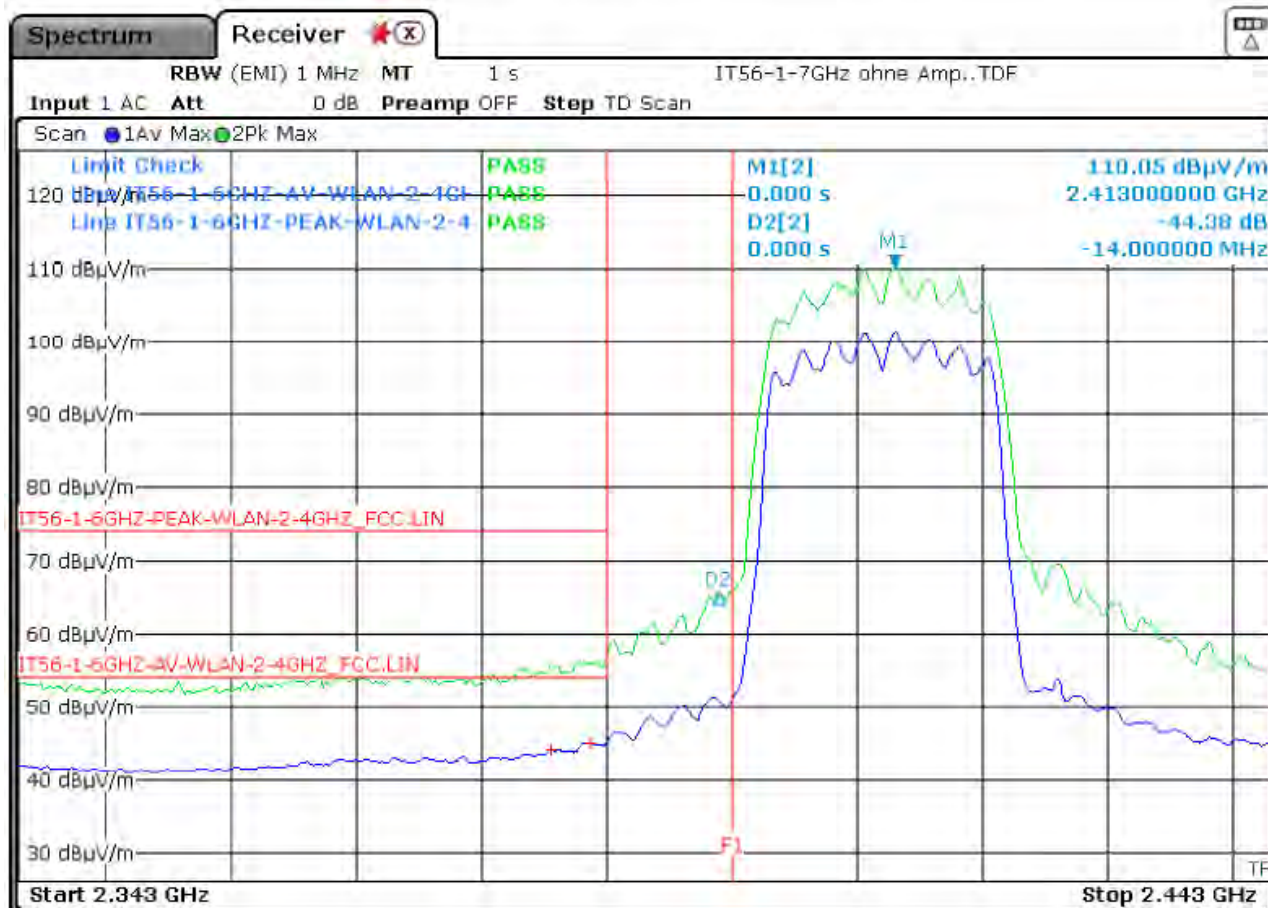
FCC 3
Band edge emission
according to



FCC §15.247, RSS-247, FCC §15.209 RSS-Gen

Ref.-No.: 20/01-0031

Operation mode: WLAN CH.1; BW = 20MHz; Greenfield; 802.11n;
Low edge; ANT0; ANT 1 active



Polarisation: V									
Detector Average					Detector Peak				
Frequ. [GHz]	Level [dBµV/m]	Margin to Limit [dB]	Limit [dBµV/m]	Result	Frequ. [GHz]	Level [dBµV/m]	Margin to Limit [dB]	Limit [dBµV/m]	Result
2,3888	45,01	-8,99	54,00	pass	all emissions are 10dB below limit				pass
2,3855	44,01	-9,99	54,00	pass					



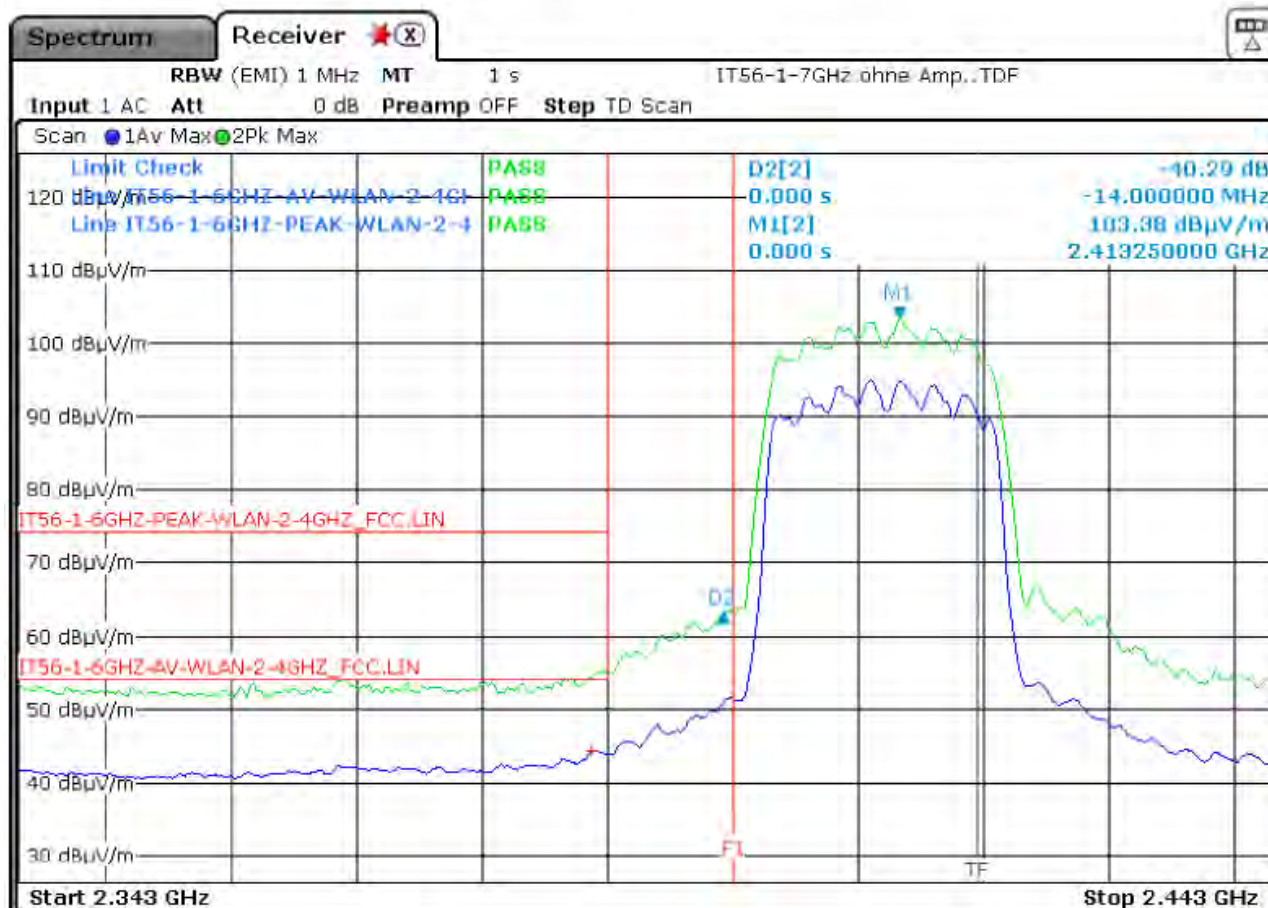
FCC 3
Band edge emission
according to



FCC §15.247, RSS-247, FCC §15.209 RSS-Gen

Ref-No: 20/01-0031

Operation mode: WLAN CH.1; BW = 20MHz; Greenfield; 802.11n;
Low edge; ANT0; ANT 1 active

[illegible]



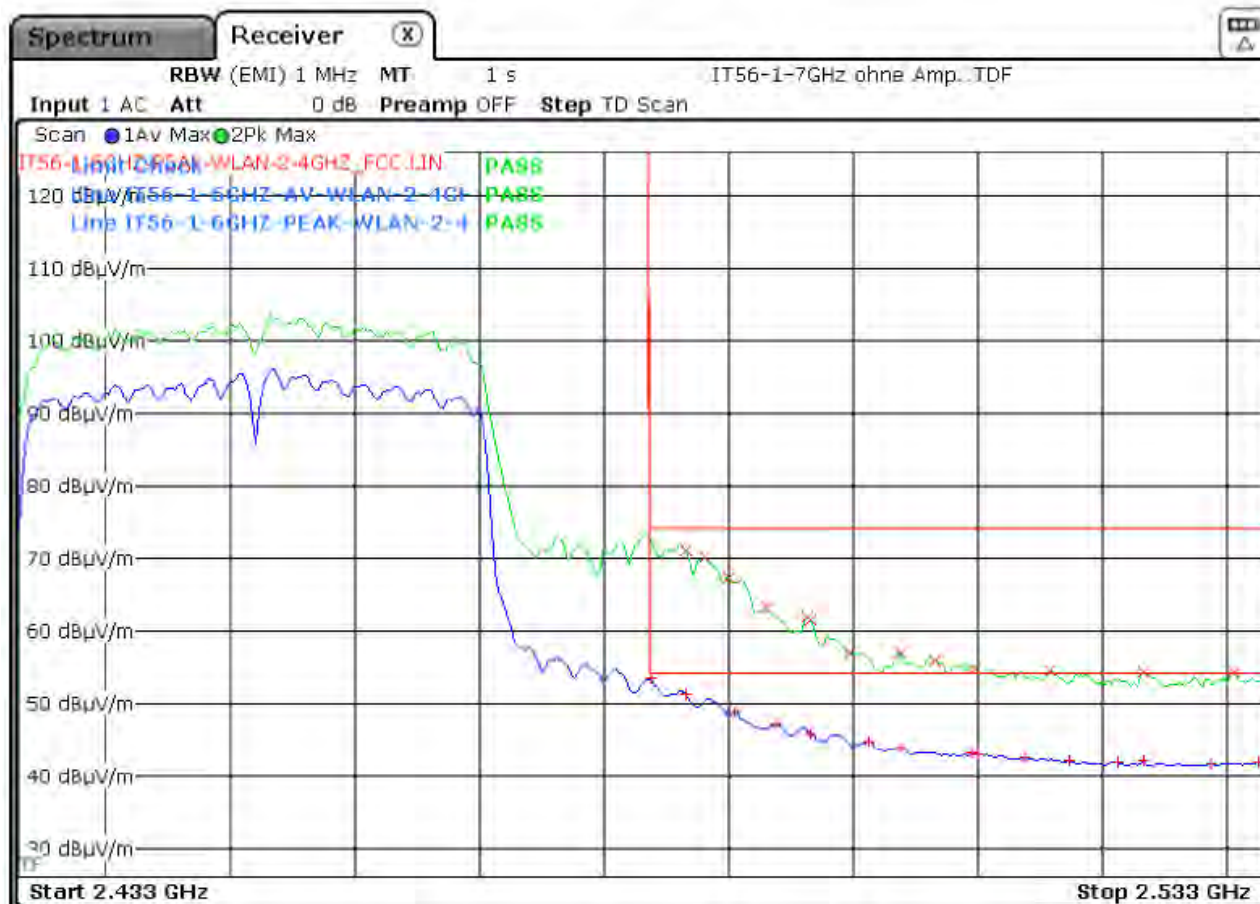
FCC 3
Band edge emission
according to



FCC §15.247, RSS-247, FCC §15.209 RSS-Gen

Ref.-No.: 20/01-0031

Operation mode: WLAN CH.9; BW = 40MHz; Greenfield; 802.11n;
High edge; ANT0; ANT 1 active



Polarisation: V									
Detector Average					Detector Peak				
Frequ. [GHz]	Level [dBµV/m]	Margin to Limit [dB]	Limit [dBµV/m]	Result	Frequ. [GHz]	Level [dBµV/m]	Margin to Limit [dB]	Limit [dBµV/m]	Result
2,4838	53,33	-0,67	54,00	pass	2,4865	71,00	-3,00	74,00	pass
2,4865	51,20	-2,80	54,00	pass	2,4880	70,06	-3,94	74,00	pass
2,4905	48,74	-5,26	54,00	pass	2,4900	67,30	-6,70	74,00	pass
2,4938	47,00	-7,00	54,00	pass	2,4930	63,15	-10,85	74,00	pass
2,4965	45,79	-8,21	54,00	pass	2,4963	61,85	-12,15	74,00	pass
2,5013	44,77	-9,23	54,00	pass	2,4965	61,51	-12,49	74,00	pass



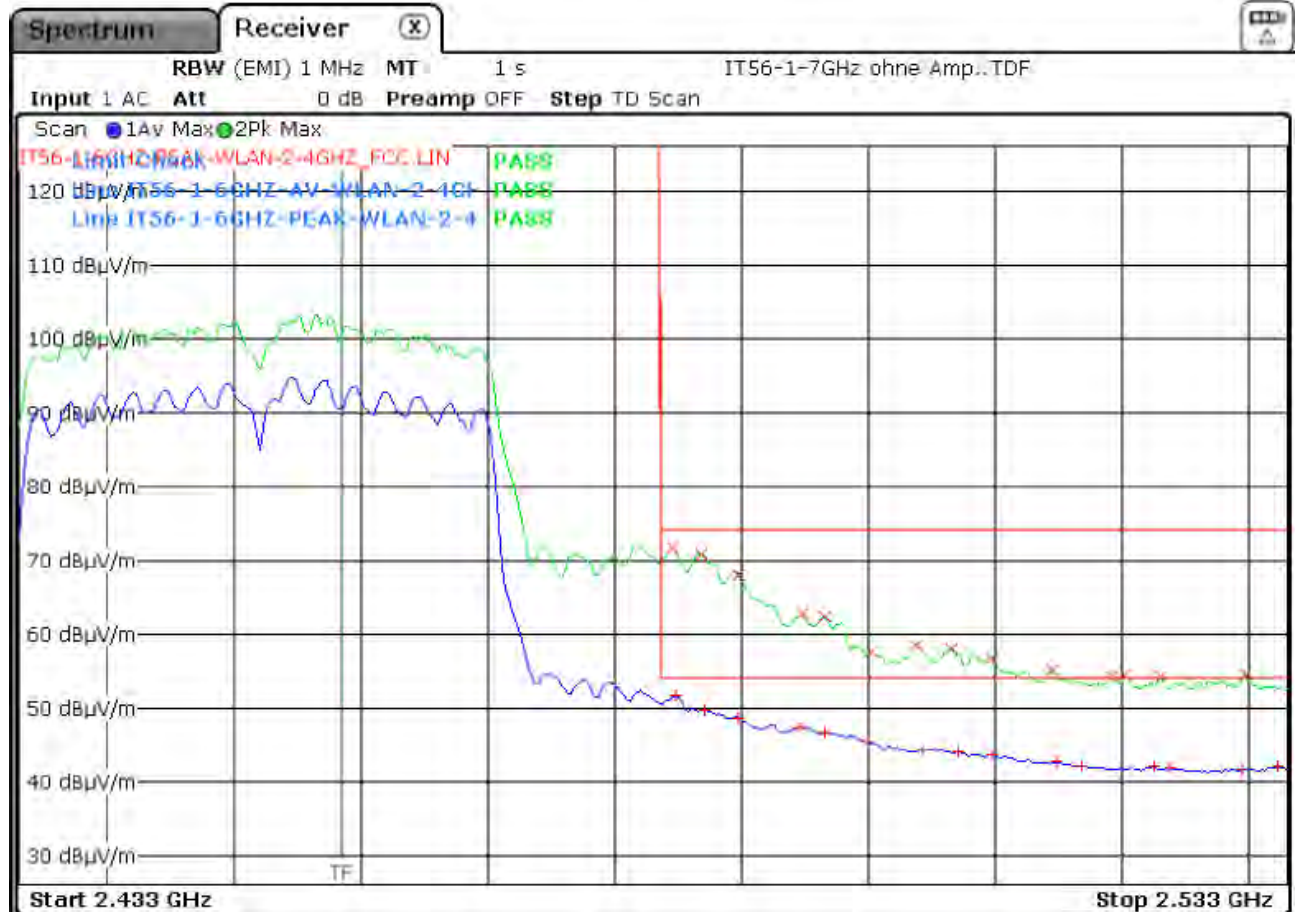
FCC 3
Band edge emission
according to



FCC §15.247, RSS-247, FCC §15.209 RSS-Gen

Ref.-No.: 20/01-0031

Operation mode: WLAN CH.9; BW = 40MHz; Greenfield; 802.11n;
High edge; ANT0; ANT 1 active



Polarisation: H									
Detector Average					Detector Peak				
Frequ. [GHz]	Level [dBμV/m]	Margin to Limit [dB]	Limit [dBμV/m]	Result	Frequ. [GHz]	Level [dBμV/m]	Margin to Limit [dB]	Limit [dBμV/m]	Result
2,4848	51,62	-2,38	54,00	pass	2,4845	71,66	-2,34	74,00	pass
2,4870	49,79	-4,21	54,00	pass	2,4868	70,88	-3,12	74,00	pass
2,4898	48,53	-5,47	54,00	pass	2,4898	67,98	-6,02	74,00	pass
2,4945	47,30	-6,70	54,00	pass	2,4948	62,69	-11,31	74,00	pass
2,4965	46,64	-7,36	54,00	pass	2,4965	62,25	-11,75	74,00	pass
2,5000	45,35	-8,65	54,00	pass	2,5038	58,32	-15,68	74,00	pass



FCC 3

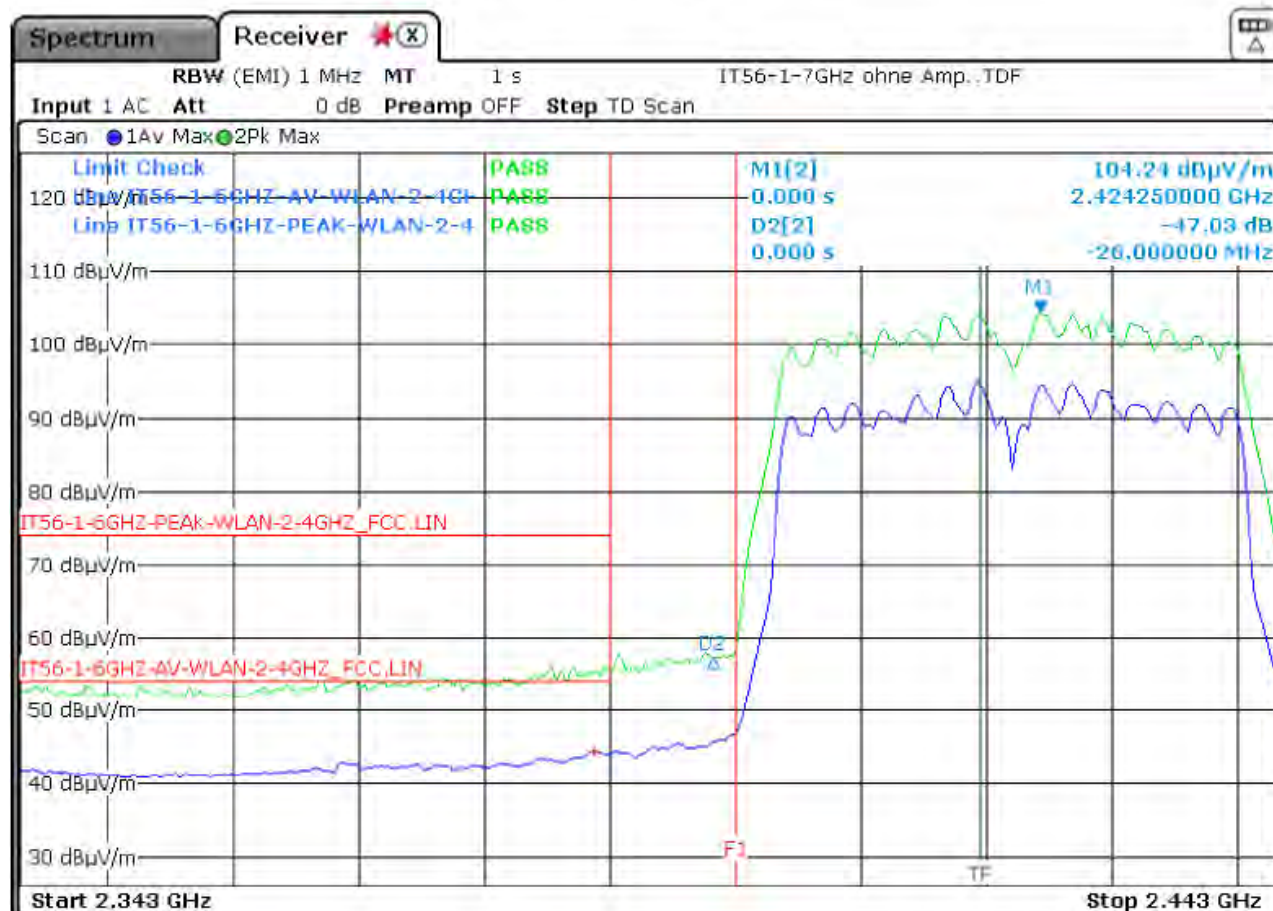
Band edge emission
according to

FCC §15.247, RSS-247, FCC §15.209 RSS-Gen



Ref-No: 20/01-0031

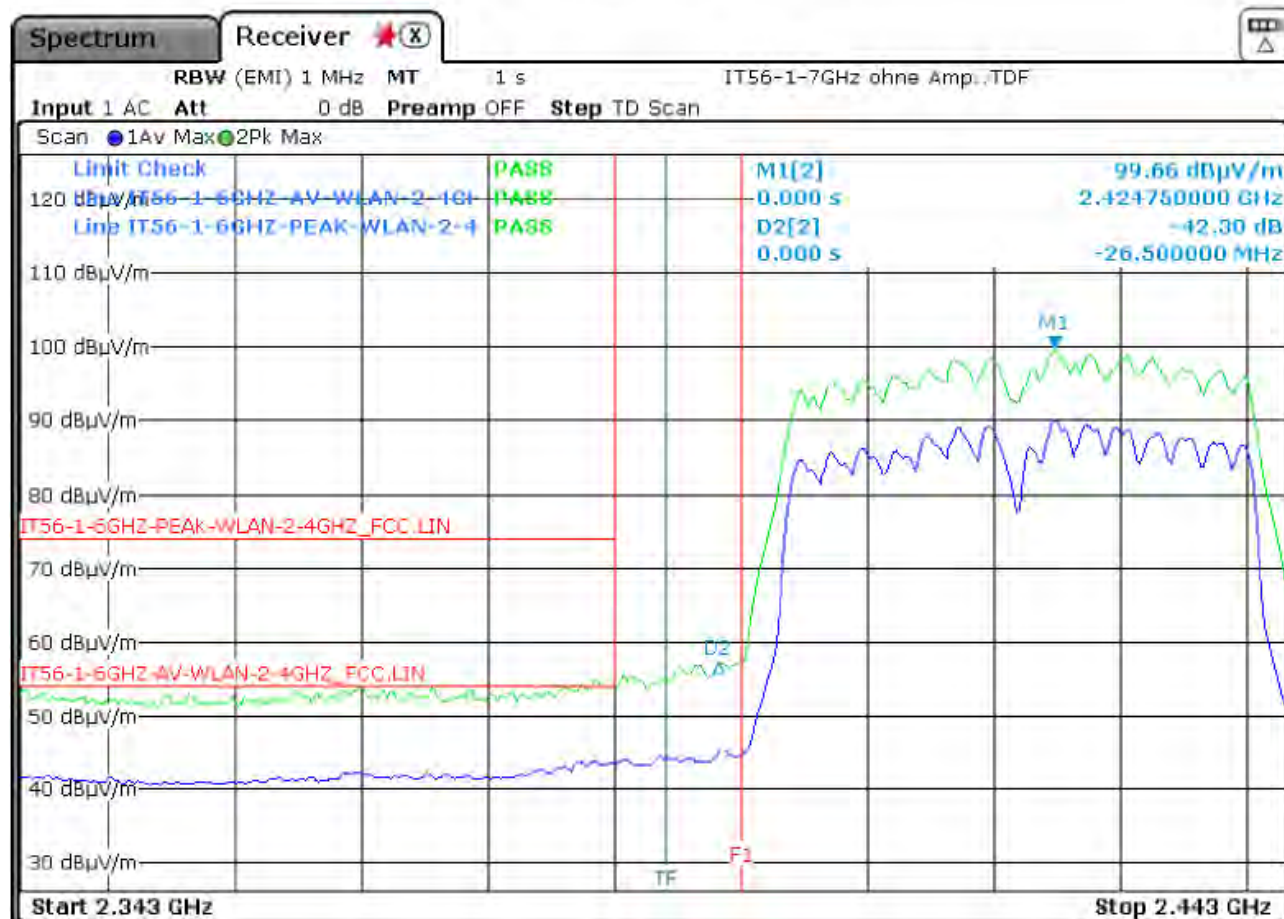
Operation mode: WLAN CH.3; BW = 40MHz; Greenfield; 802.11n;
Low edge; ANT0; ANT 1 active

[illegible]

FCC §15.247, RSS-247, FCC §15.209 RSS-Gen

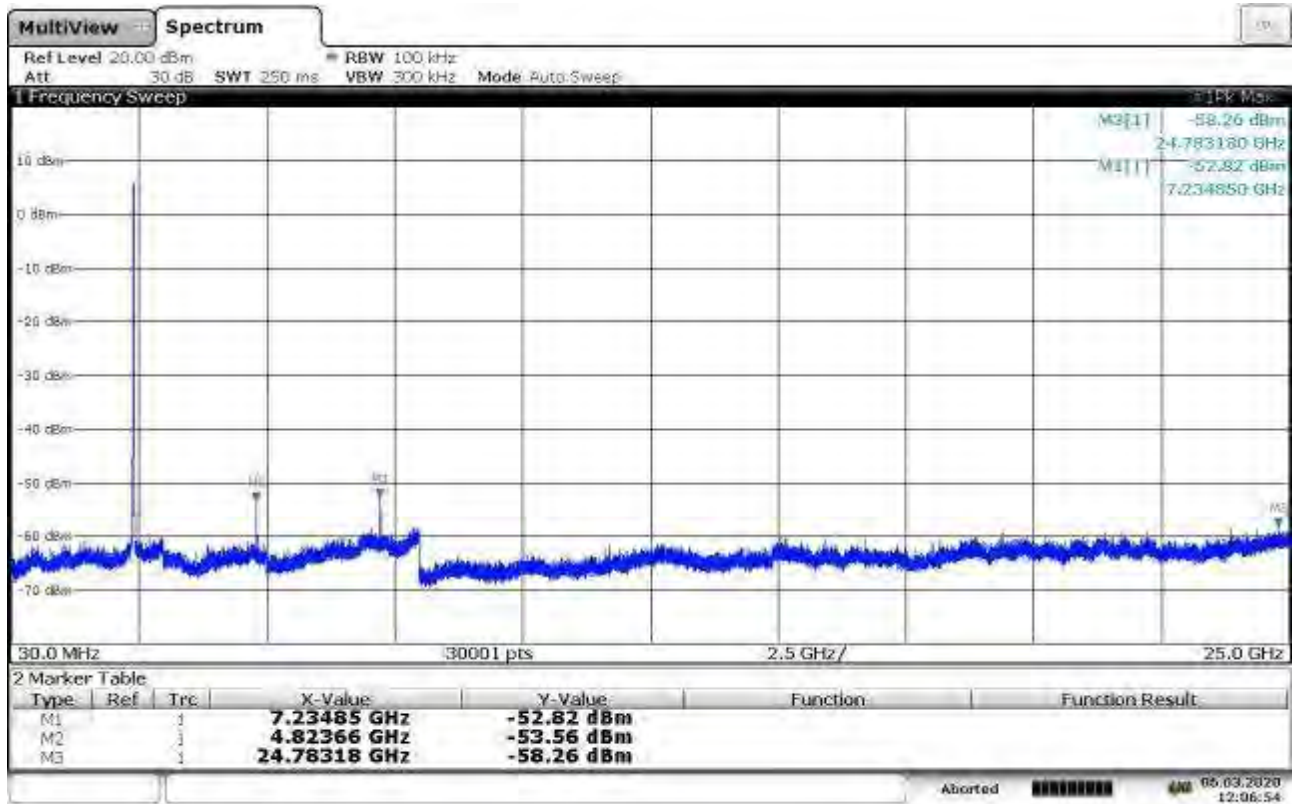
Ref.-No: 20/01-0031

Operation mode: WLAN CH.3; BW = 40MHz; Greenfield; 802.11n;
Low edge; ANT0; ANT 1 active

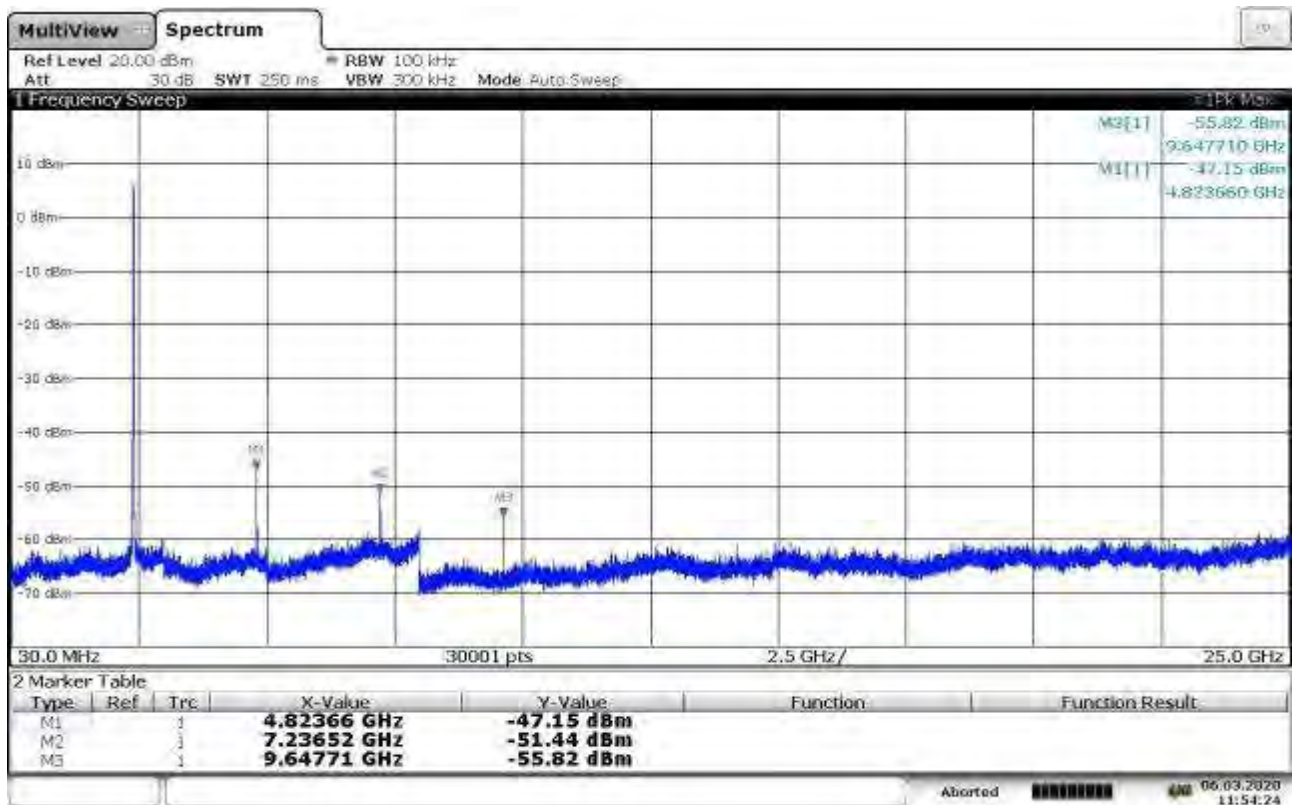
[illegible]

Out of Band Emission

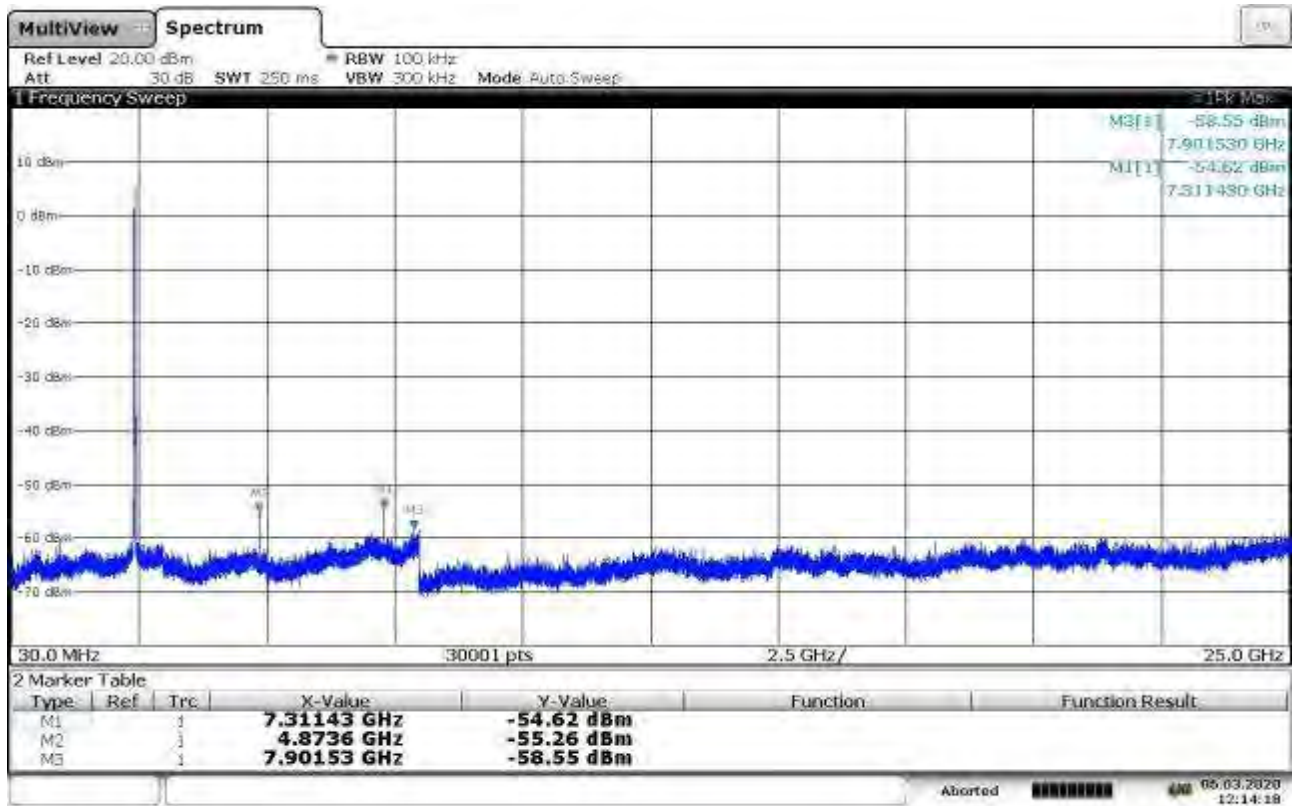
802.11b: BW 20MHz 2412 MHz ANT 0



802.11b: BW 20MHz 2412 MHz ANT 1

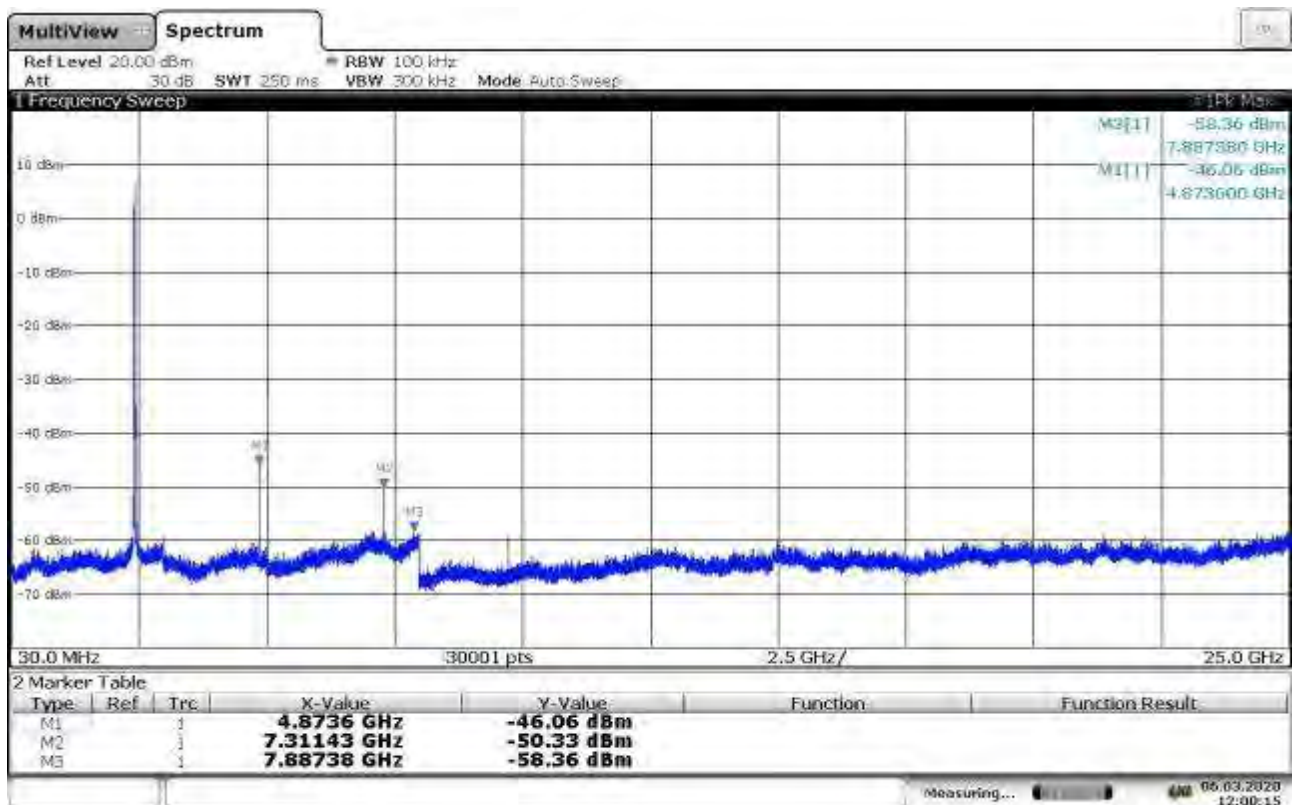


802.11b: BW 20MHz 2437 MHz ANT 0



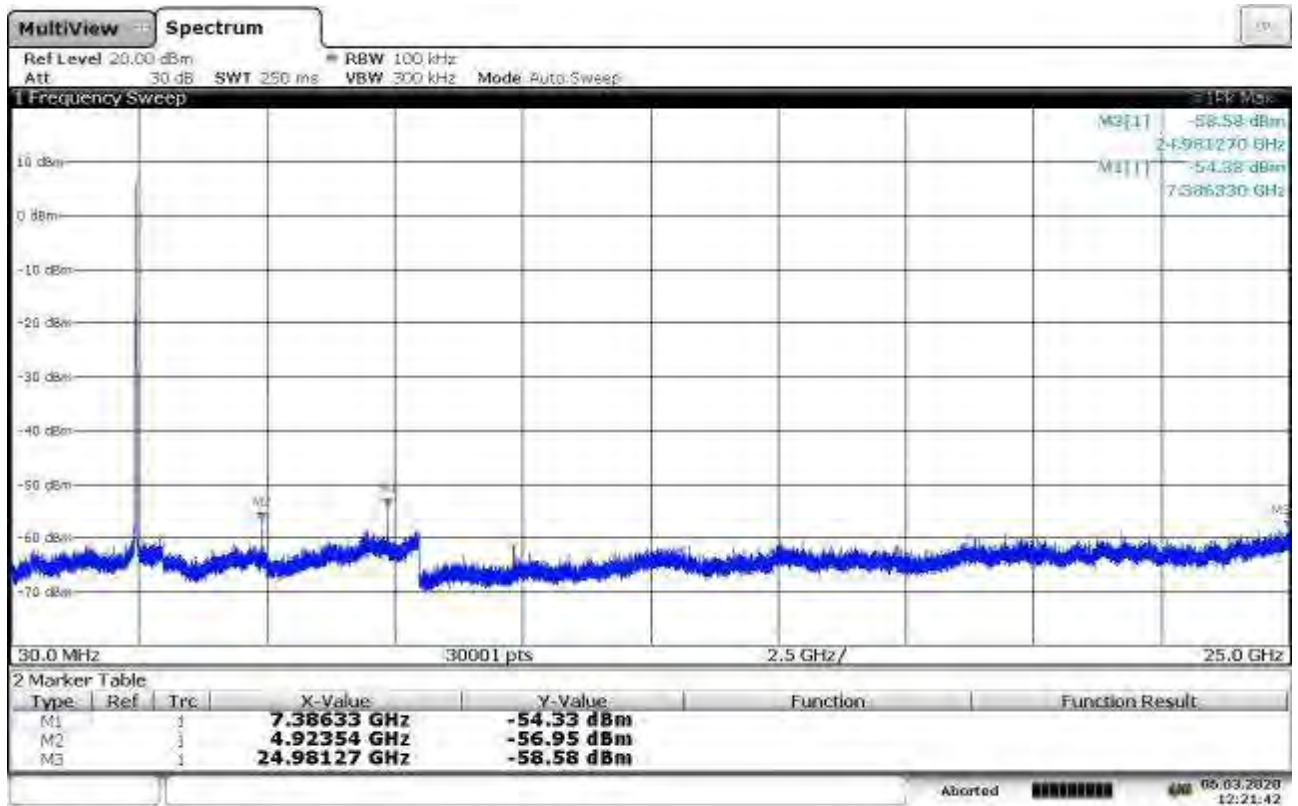
12:14:19 06.03.2020

802.11b: BW 20MHz 2437 MHz ANT 1



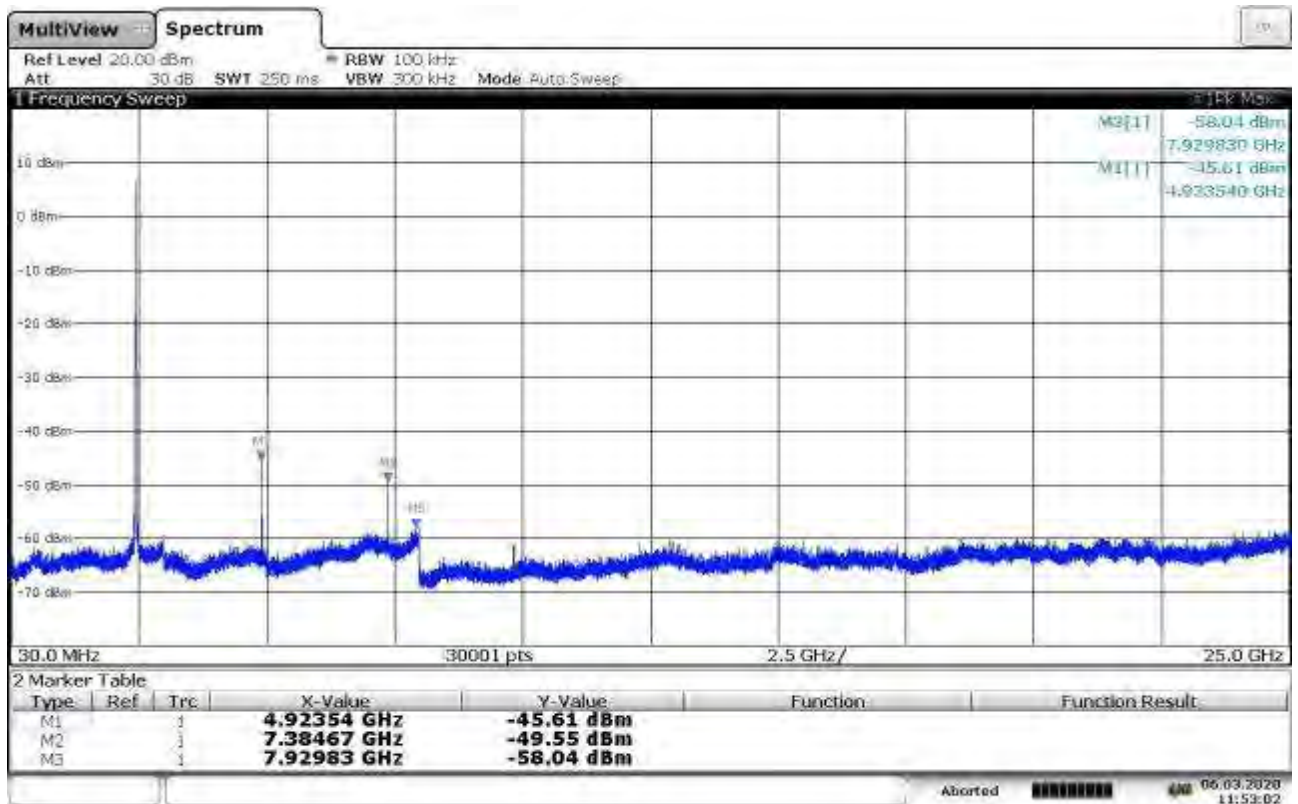
12:00:16 06.03.2020

802.11b: BW 20MHz 2462 MHz ANT 0



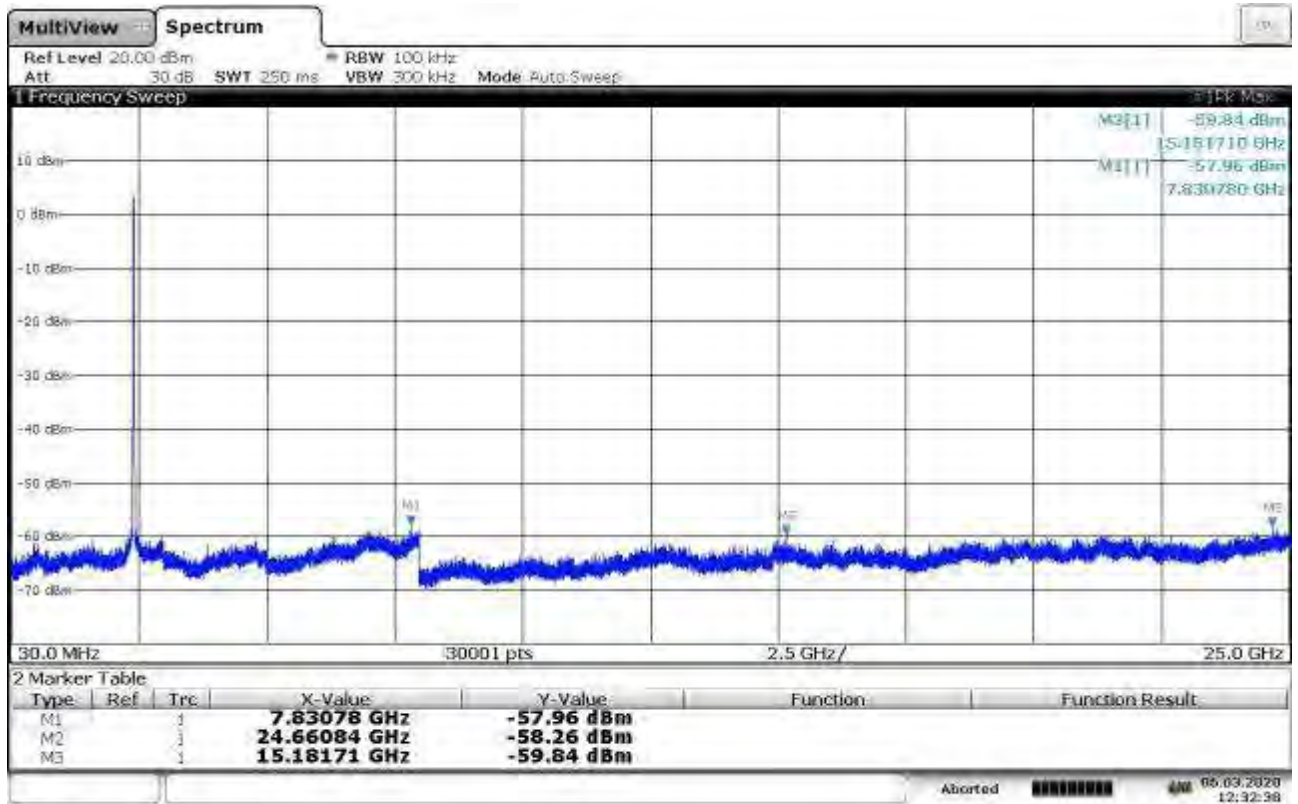
12:21:43 06.03.2020

802.11b: BW 20MHz 2462 MHz ANT 1

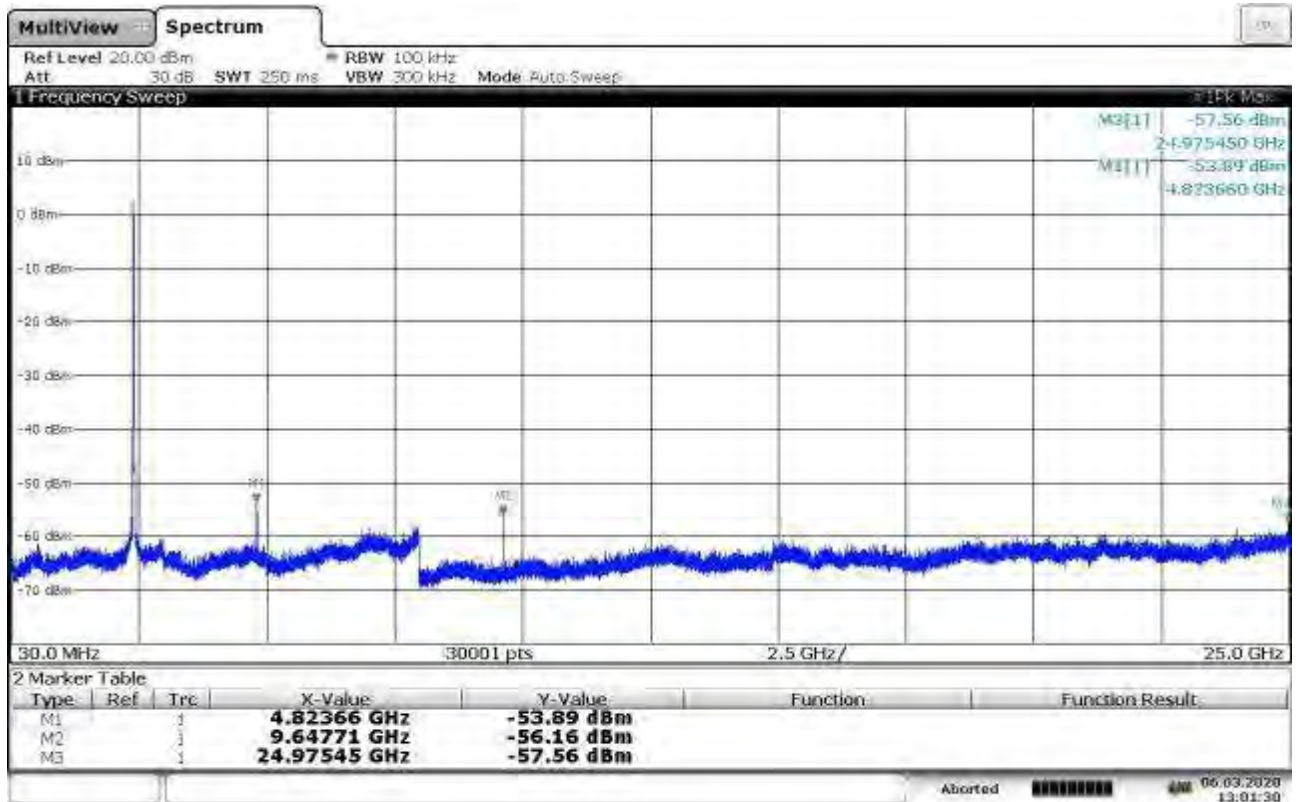


11:53:02 06.03.2020

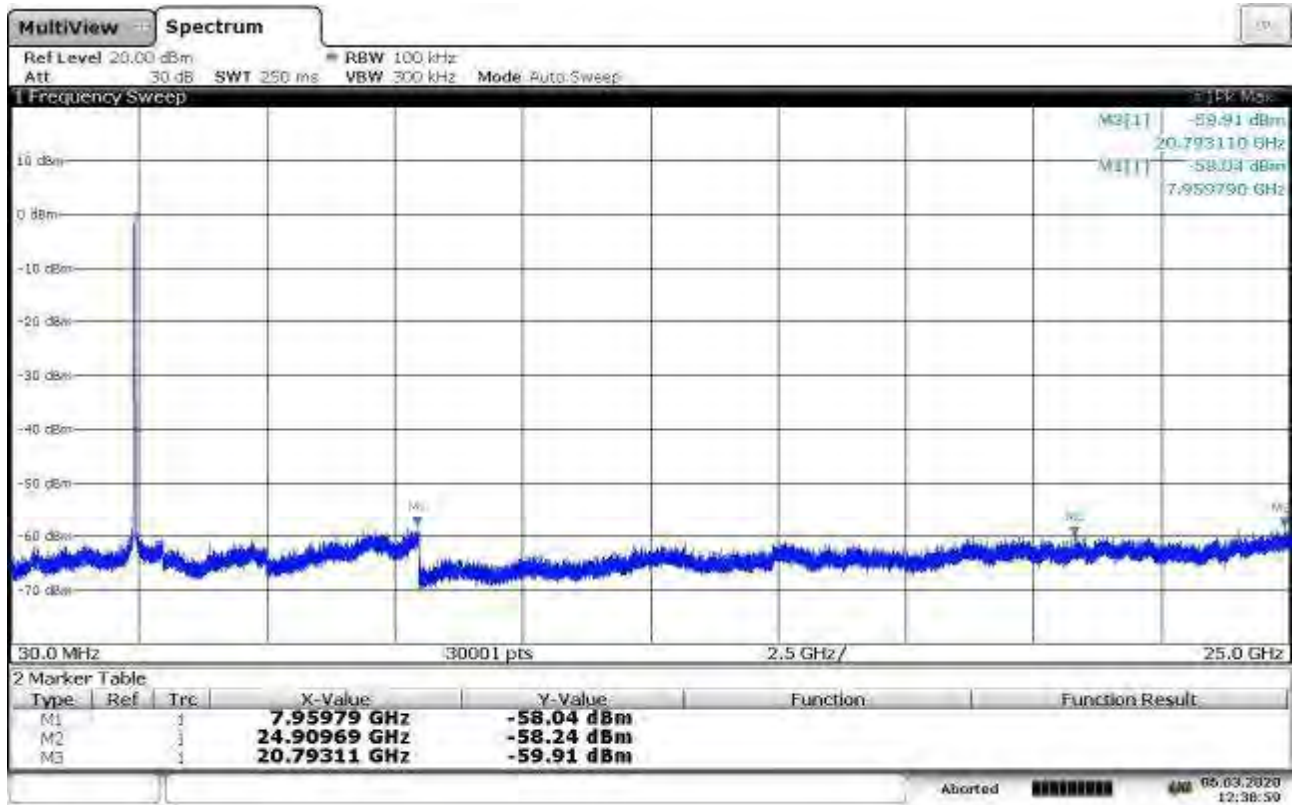
802.11g: BW 20MHz 2412 MHz ANT 0



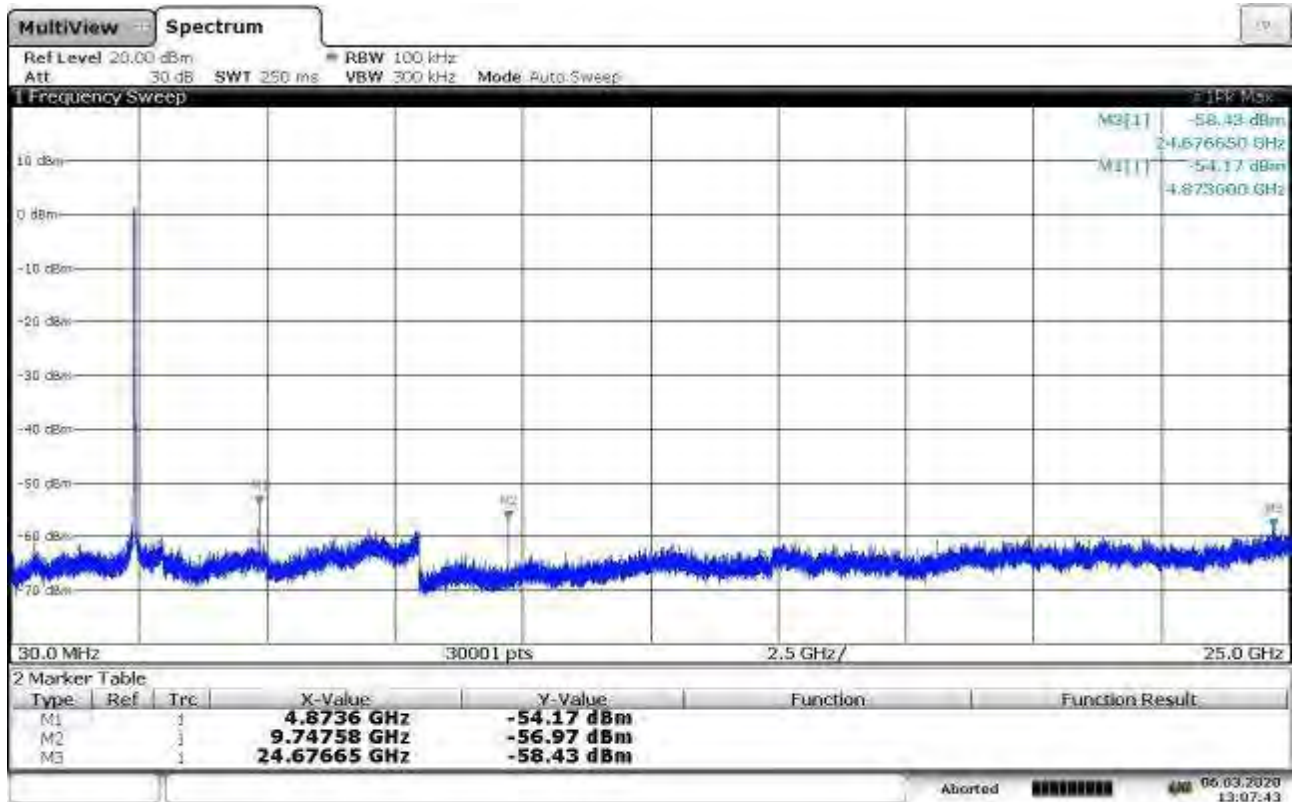
802.11g: BW 20MHz 2412 MHz ANT 1



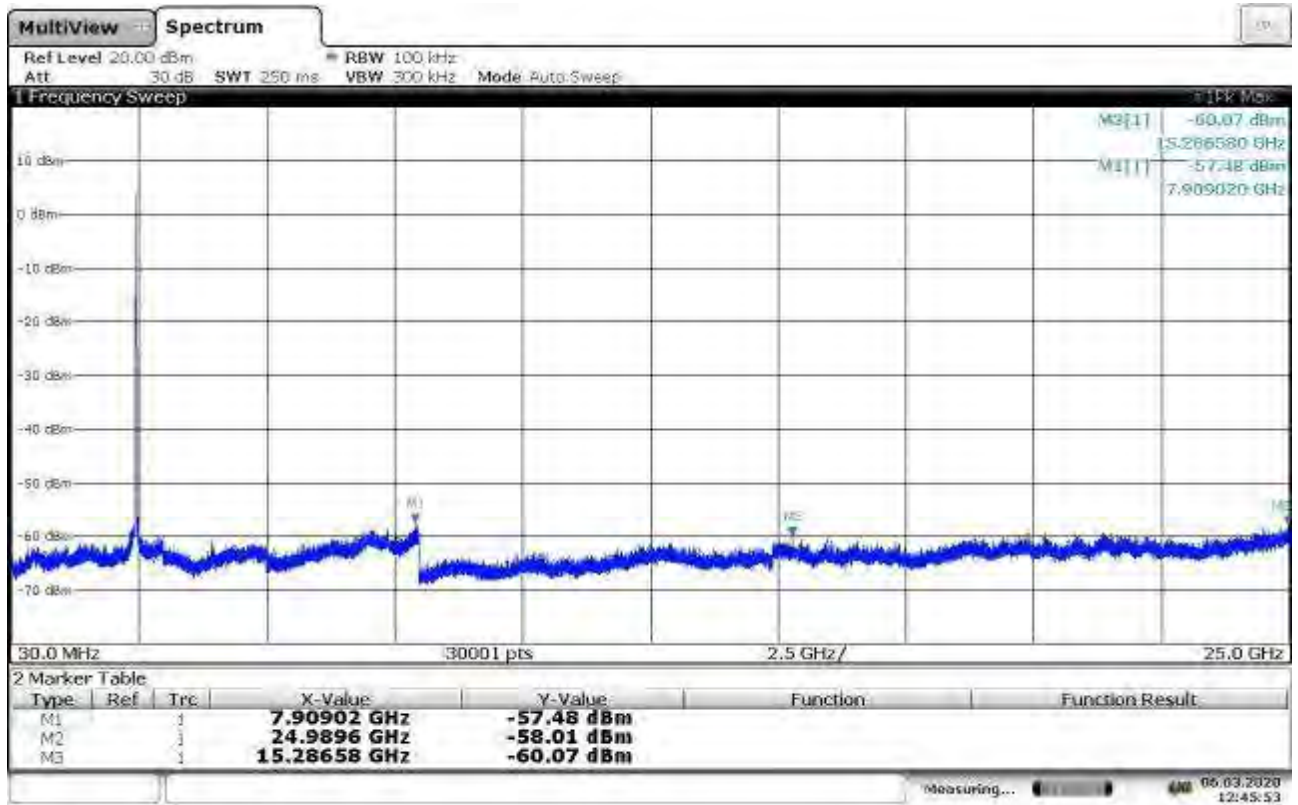
802.11g: BW 20MHz 2437 MHz ANT 0



802.11g: BW 20MHz 2437 MHz ANT 1

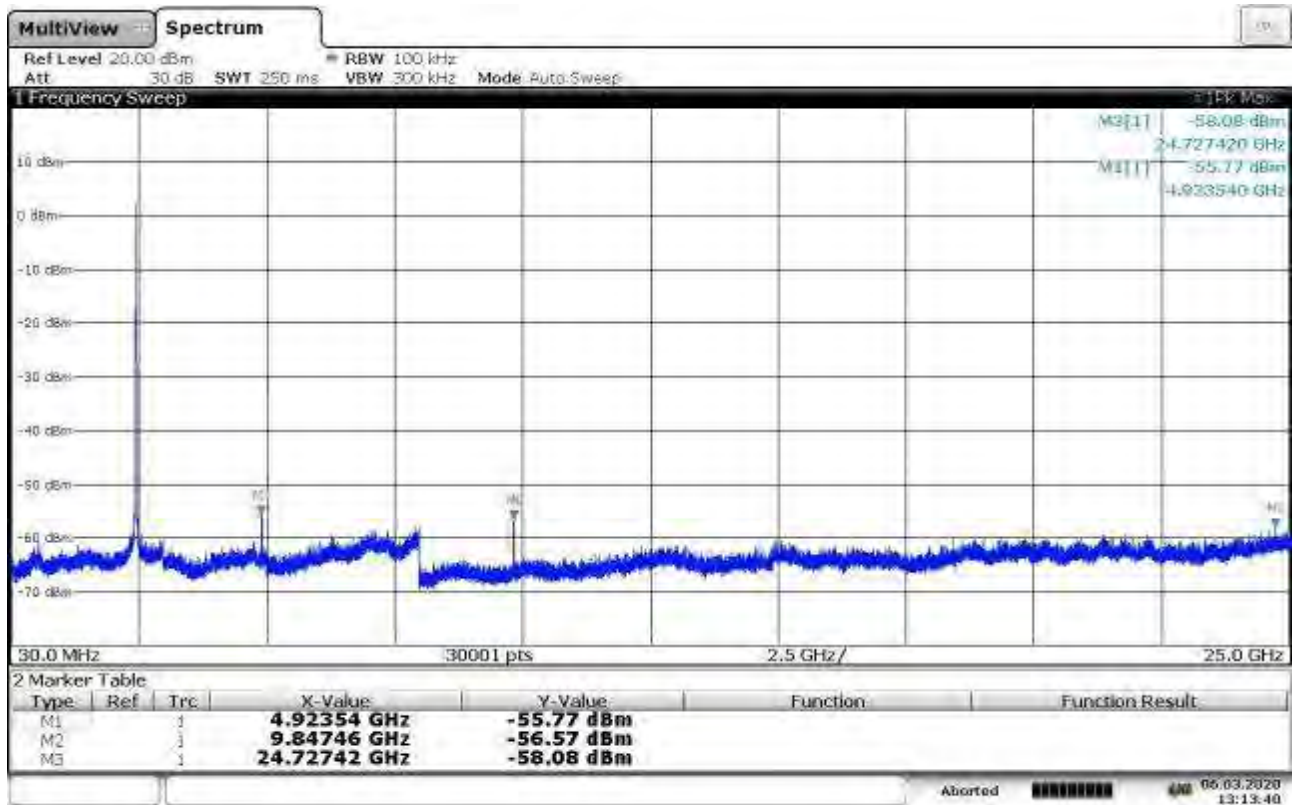


802.11g: BW 20MHz 2462 MHz ANT 0



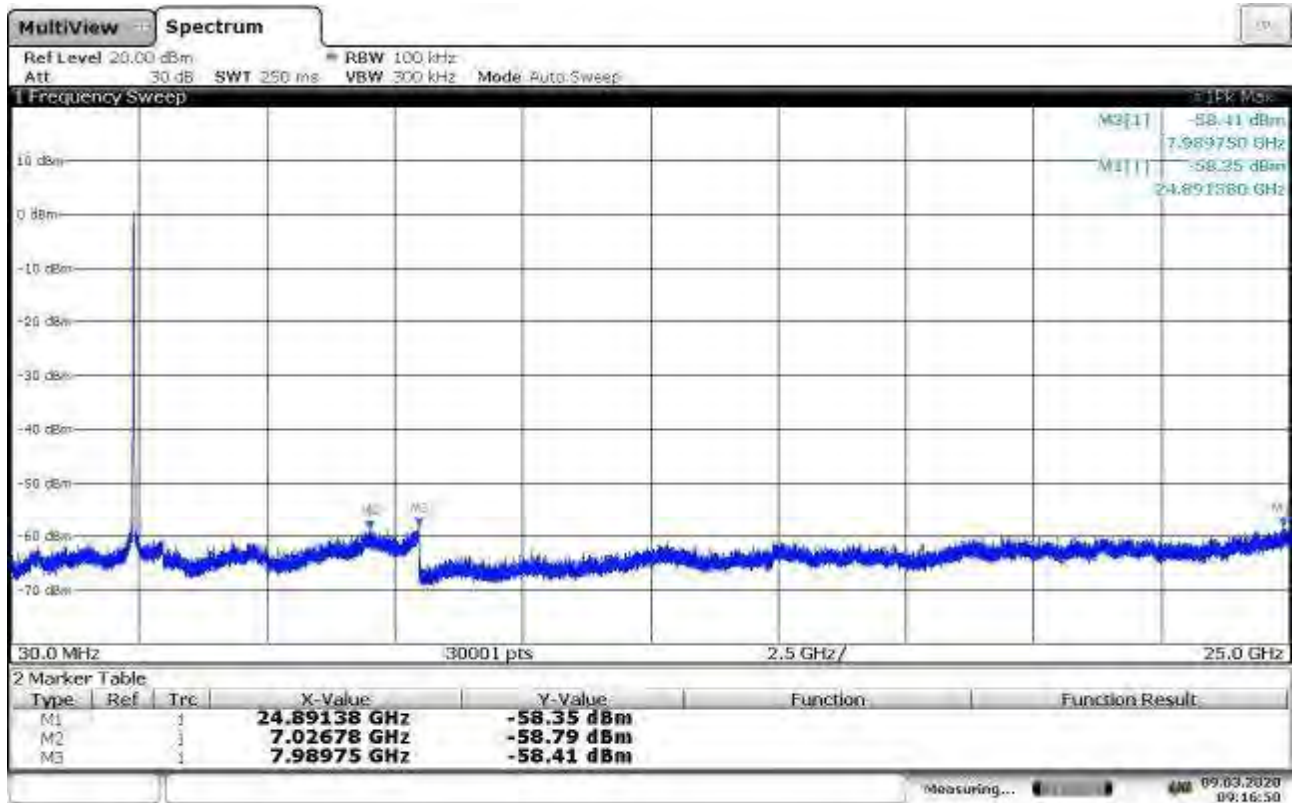
12:45:54 06.03.2020

802.11g: BW 20MHz 2462 MHz ANT 1



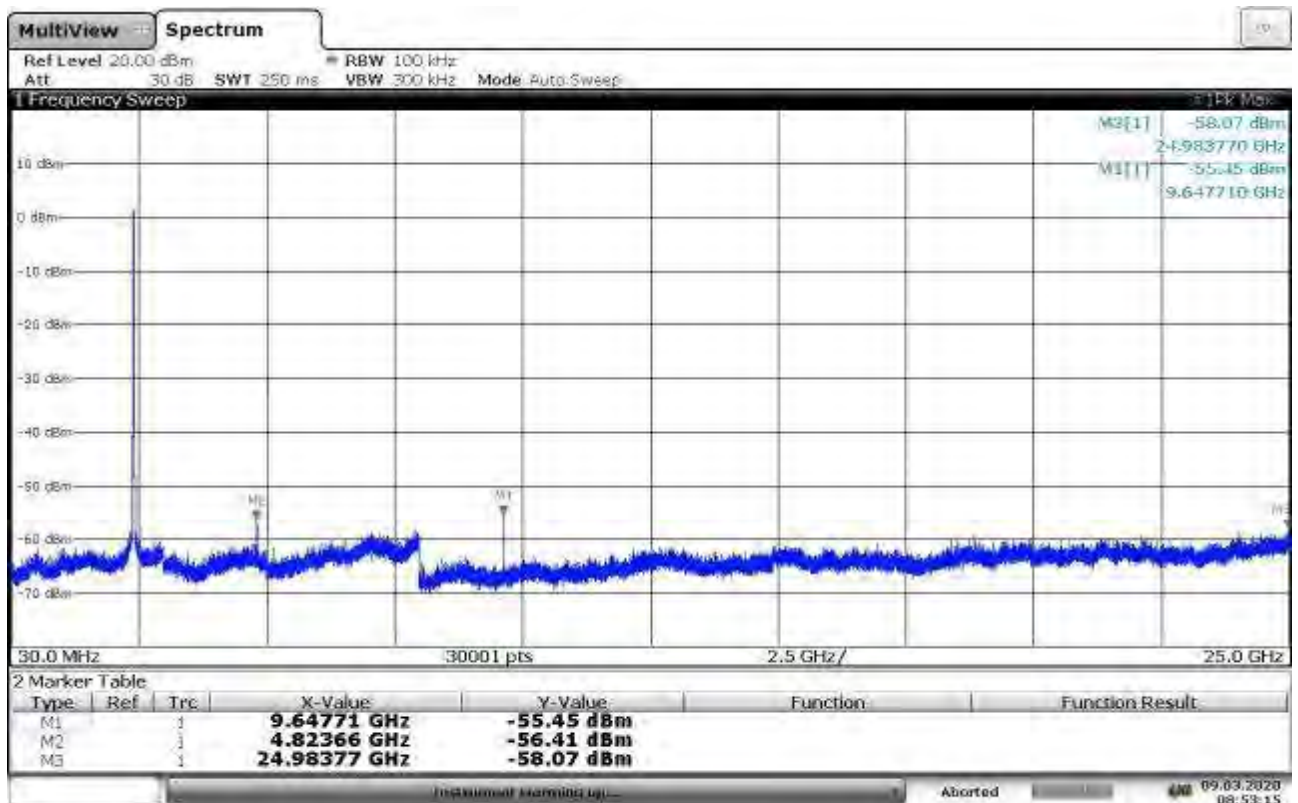
13:13:41 06.03.2020

802.11n: BW 20MHz 2412 MHz ANT 0



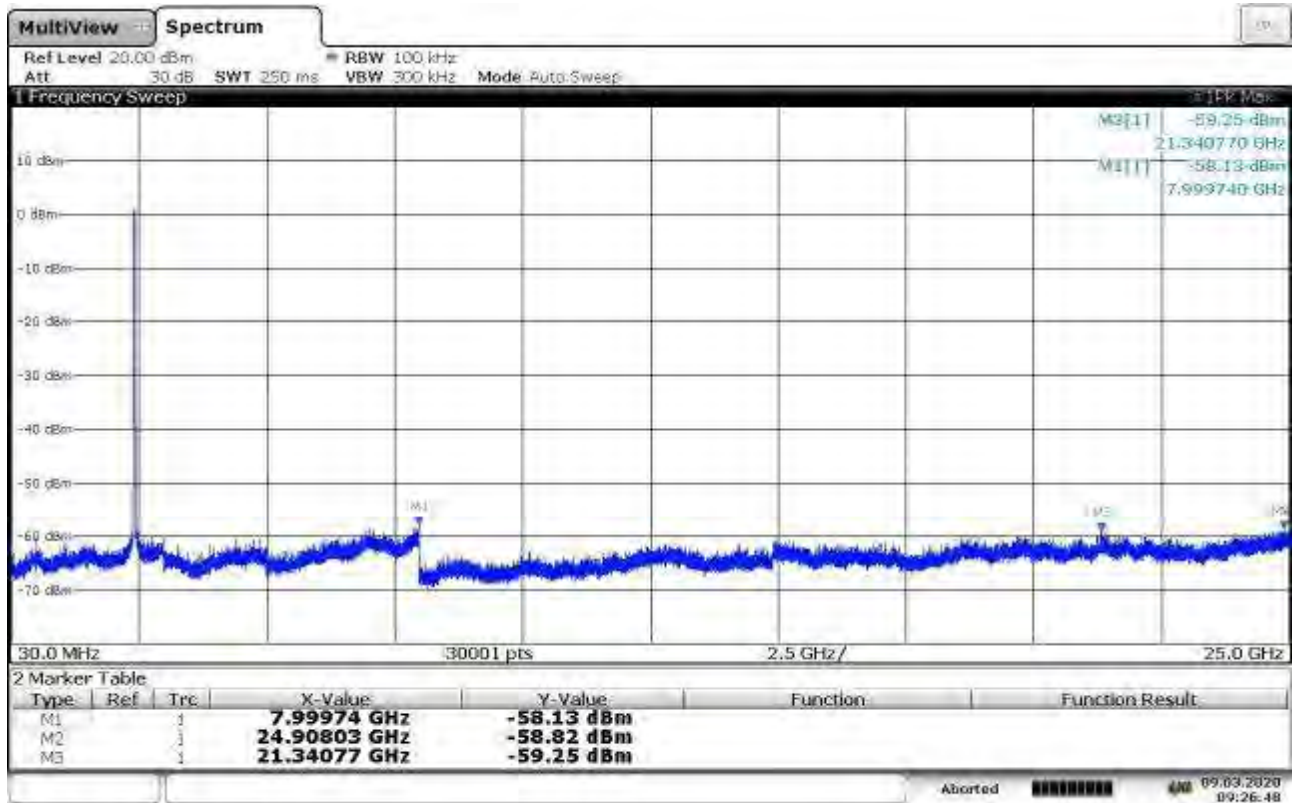
09:16:51 09.03.2020

802.11n: BW 20MHz 2412 MHz ANT 1



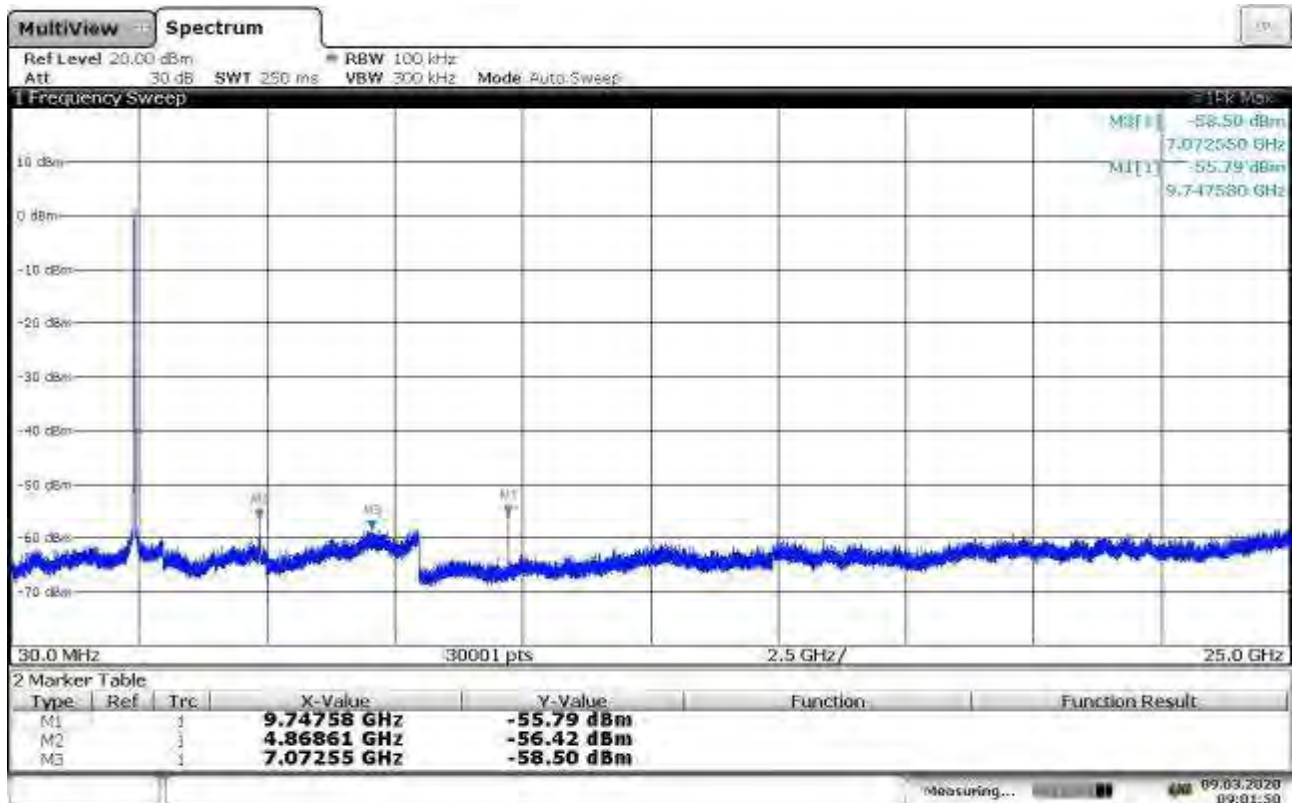
08:53:17 09.03.2020

802.11n: BW 20MHz 2437 MHz ANT 0



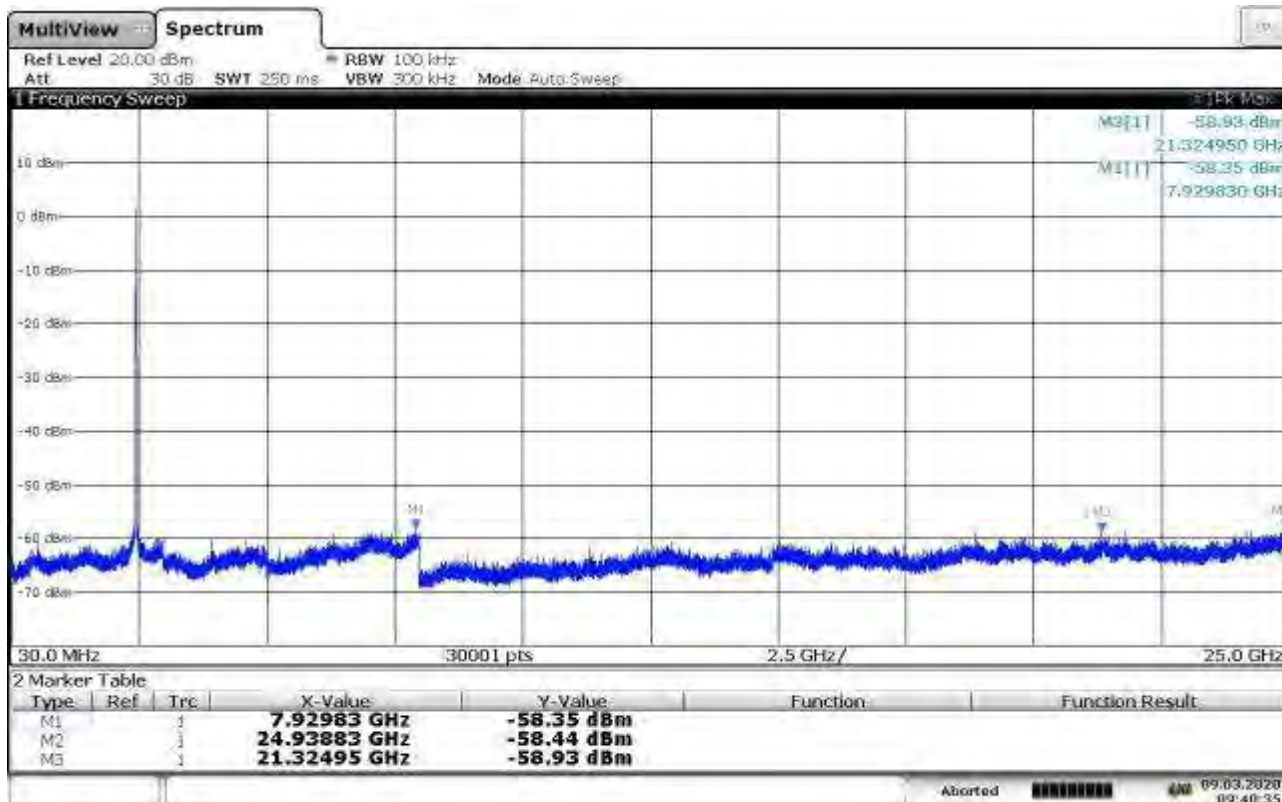
09:26:49 09.03.2020

802.11n: BW 20MHz 2437 MHz ANT 1

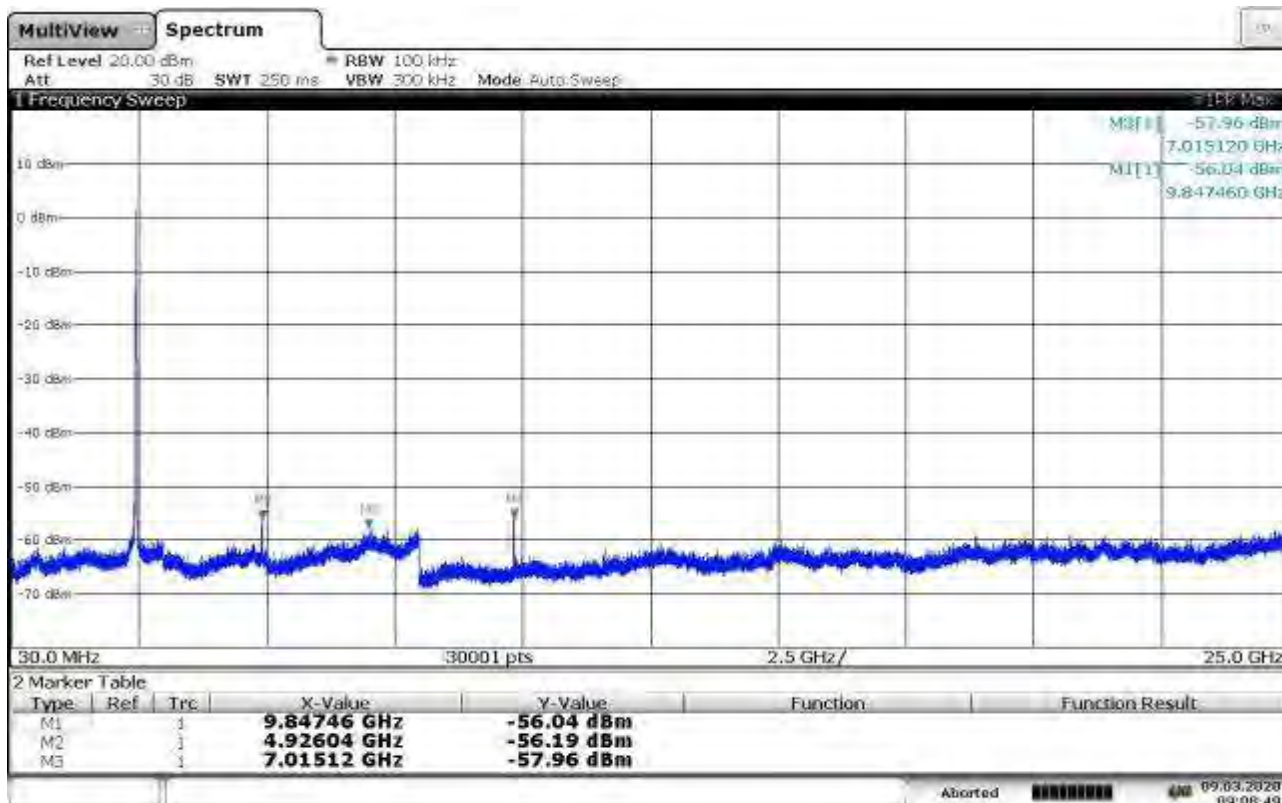


09:01:51 09.03.2020

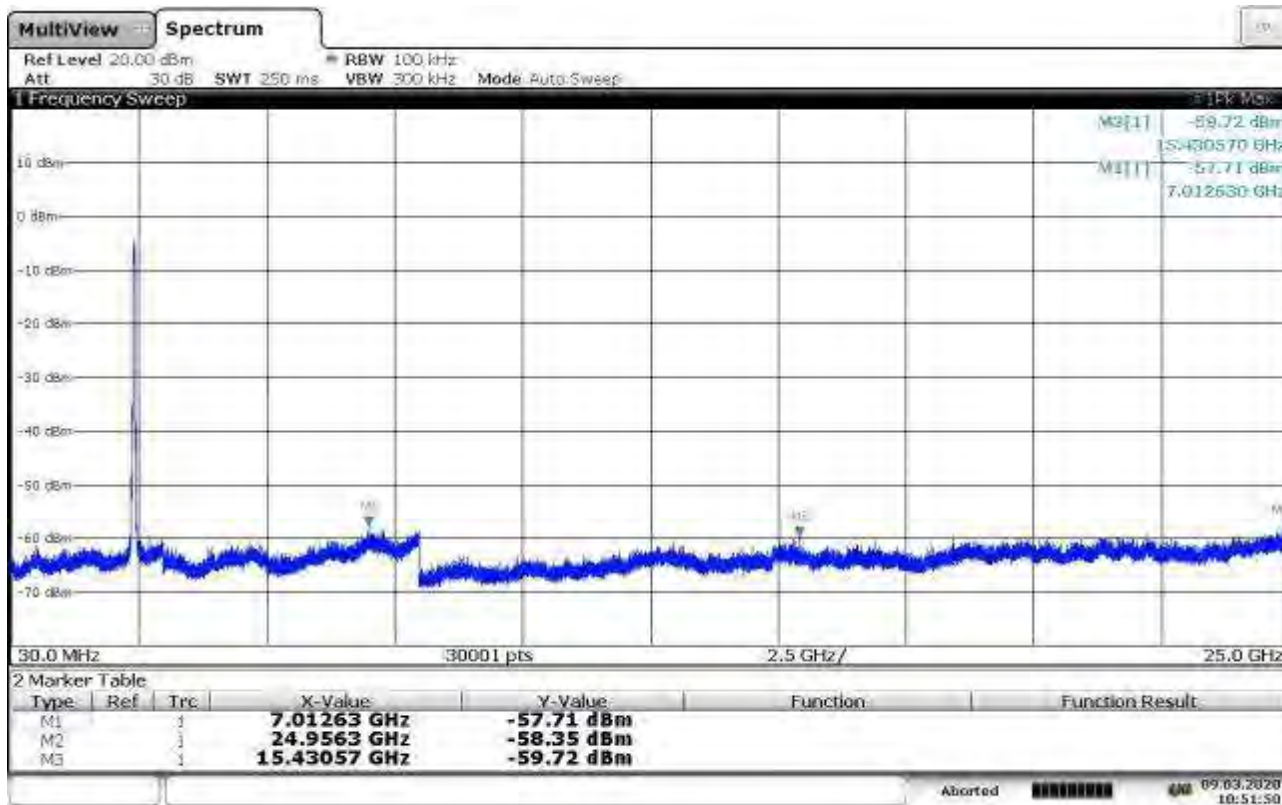
802.11n: BW 20MHz 2462 MHz ANT 0



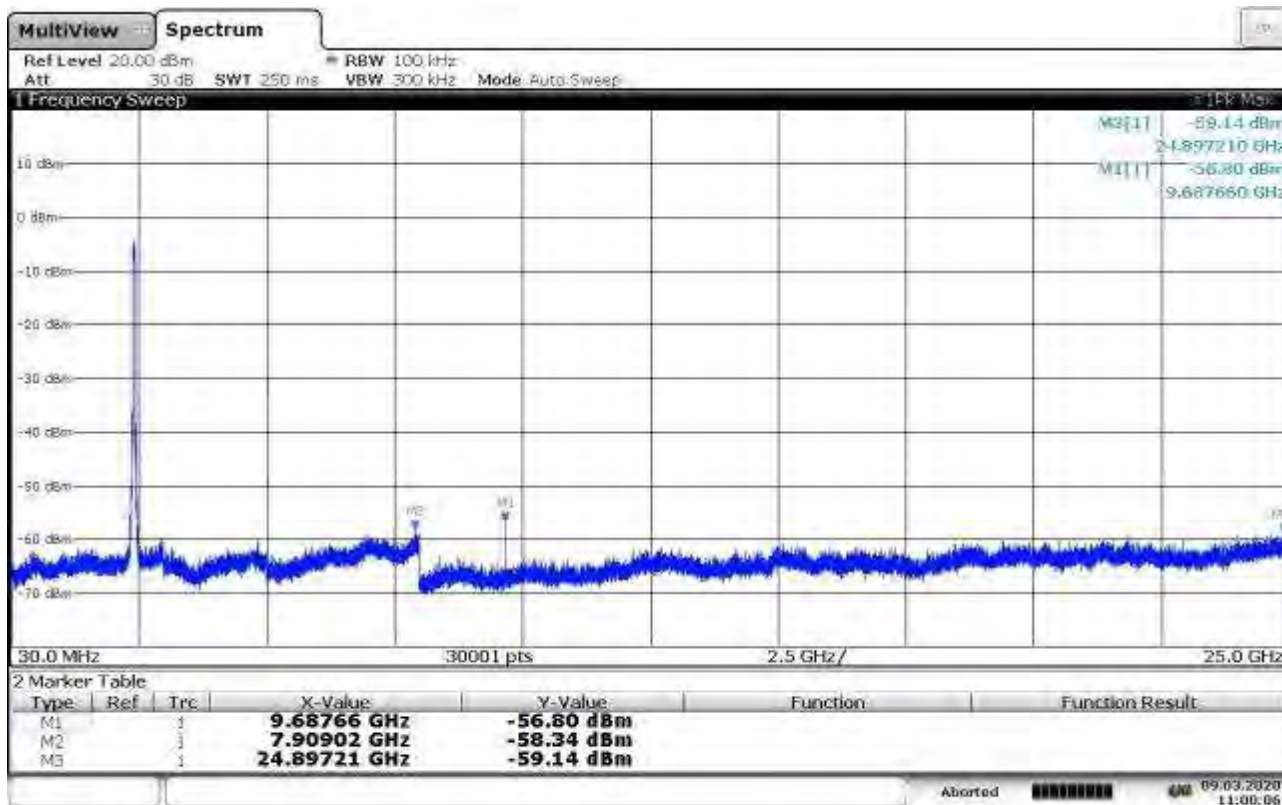
802.11n: BW 20MHz 2462 MHz ANT 1



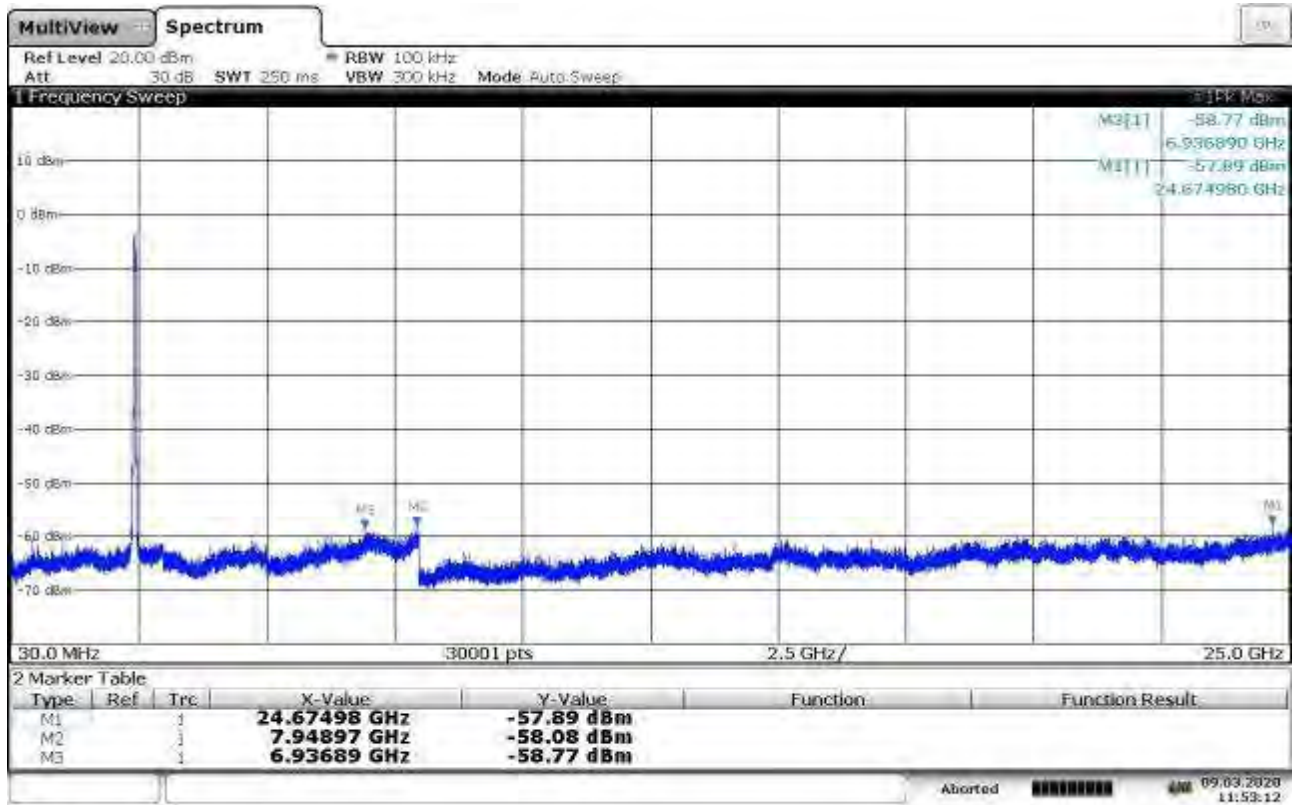
802.11n: BW 40MHz 2422 MHz ANT 0



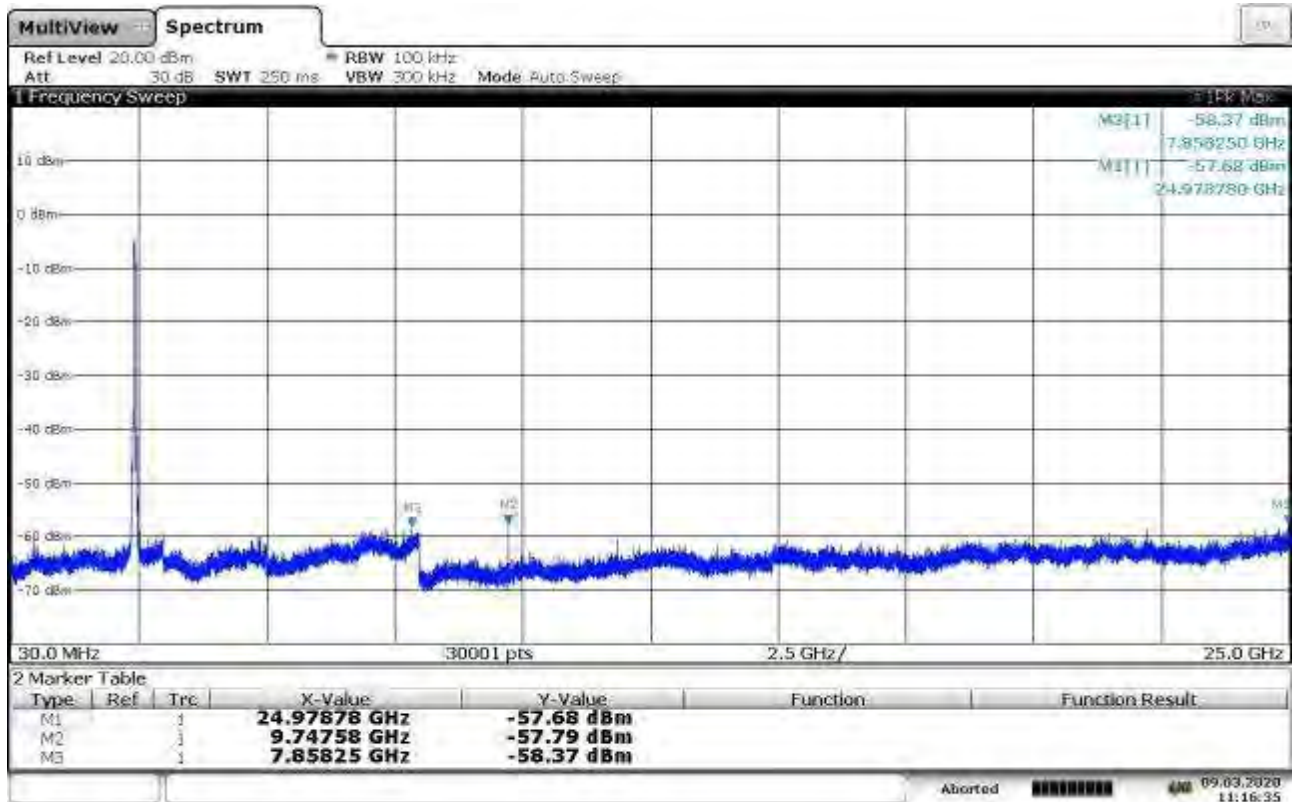
802.11n: BW 40MHz 2422 MHz ANT 1



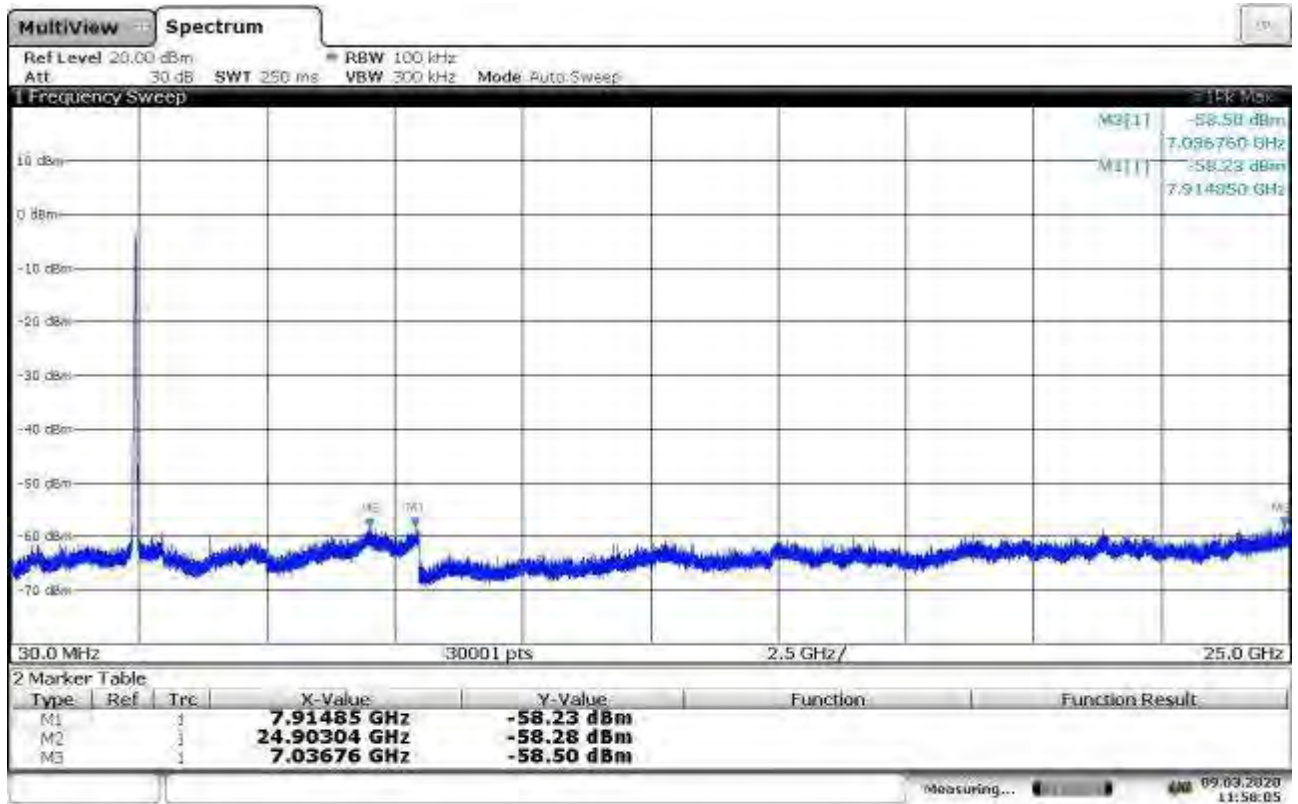
802.11n: BW 40MHz 2437 MHz ANT 0



802.11n: BW 40MHz 2437 MHz ANT 1

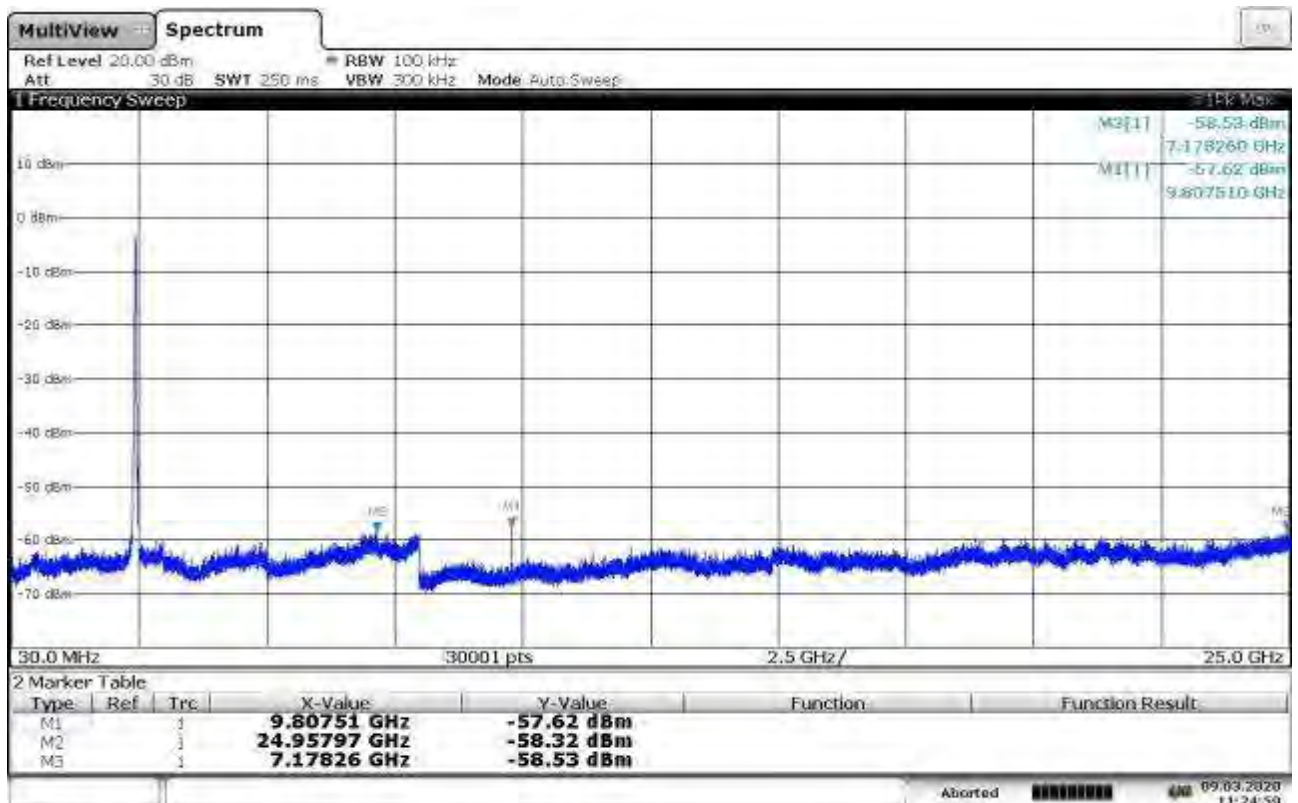


802.11n: BW 40MHz 2452 MHz ANT 0



11:58:06 09.03.2020

802.11n: BW 40MHz 2452 MHz ANT 1



11:25:00 09.03.2020

Results

From the measurement data obtained, the tested sample was considered to have **COMPLIED** with the requirements for the **Band Edges / Out of Band Emission**.

8.5. 99% Power Bandwidth

Applied standards

-RSS-Gen issue 5 Section 6.7

Test equipment and test set up

Test equipment used for conducted measurements as given in clause Test equipment of this report.

Test setup used for conducted measurements as given in clause Test setups of this report.

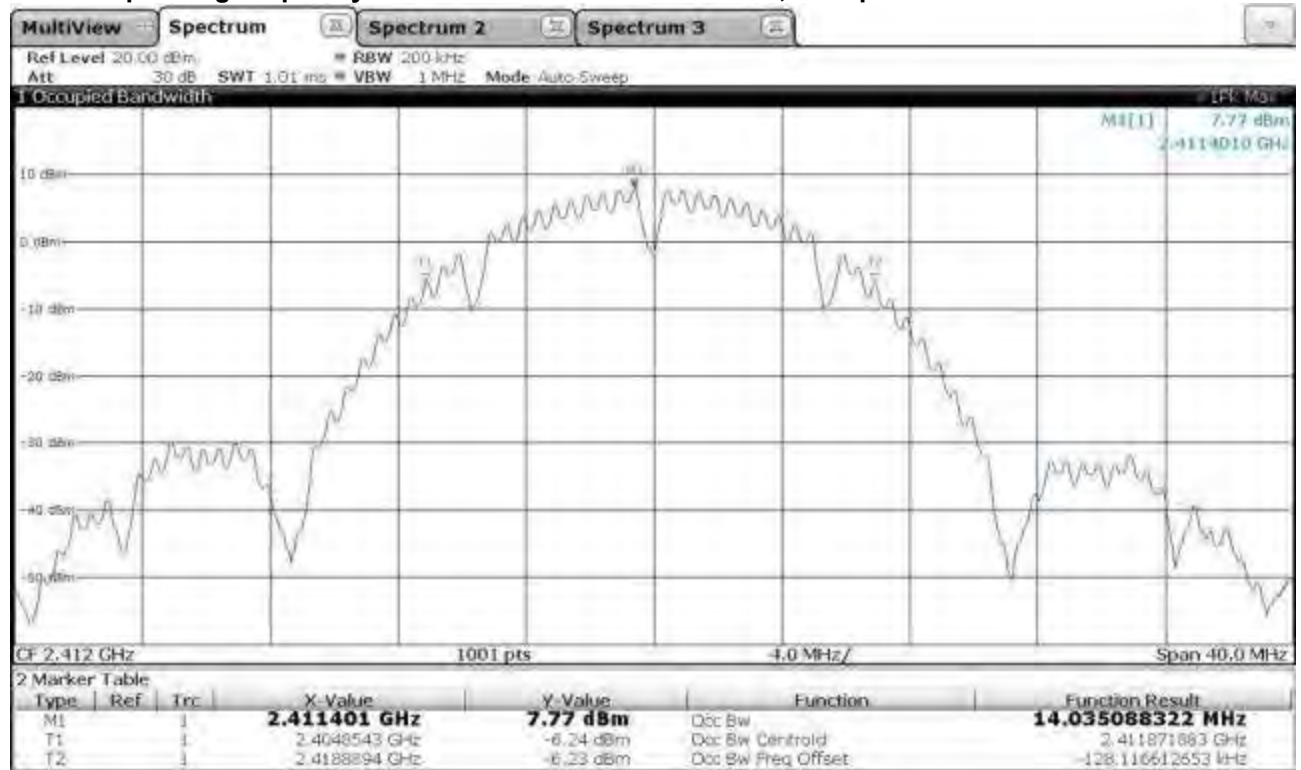
Description

The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission. The 99% power bandwidth function of the instrument was used for the measurement.

The Measurement was performed on: 06.03.2020 and 09.03.2020

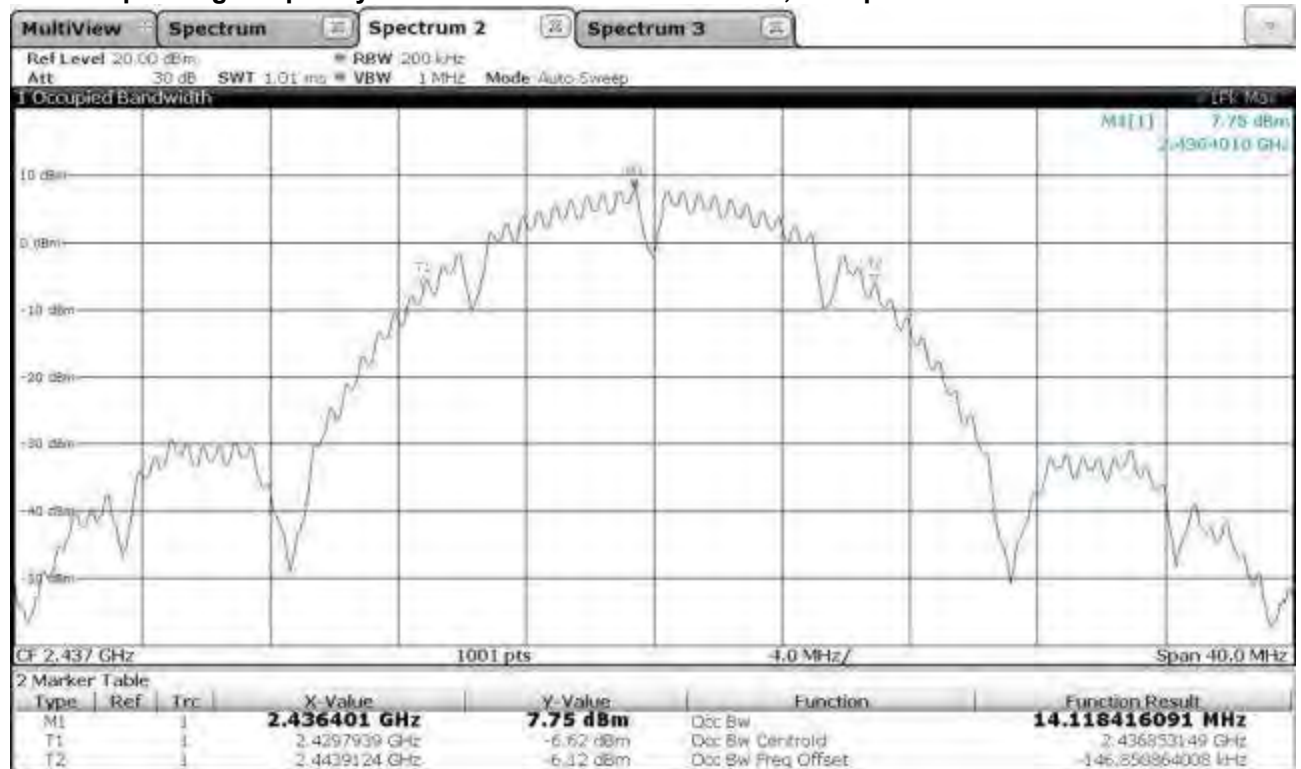
Conducted measurement data

Lowest operating frequency - 802.11b 20MHz / CCK – MCS=0; 1 MBps / Antenna 0



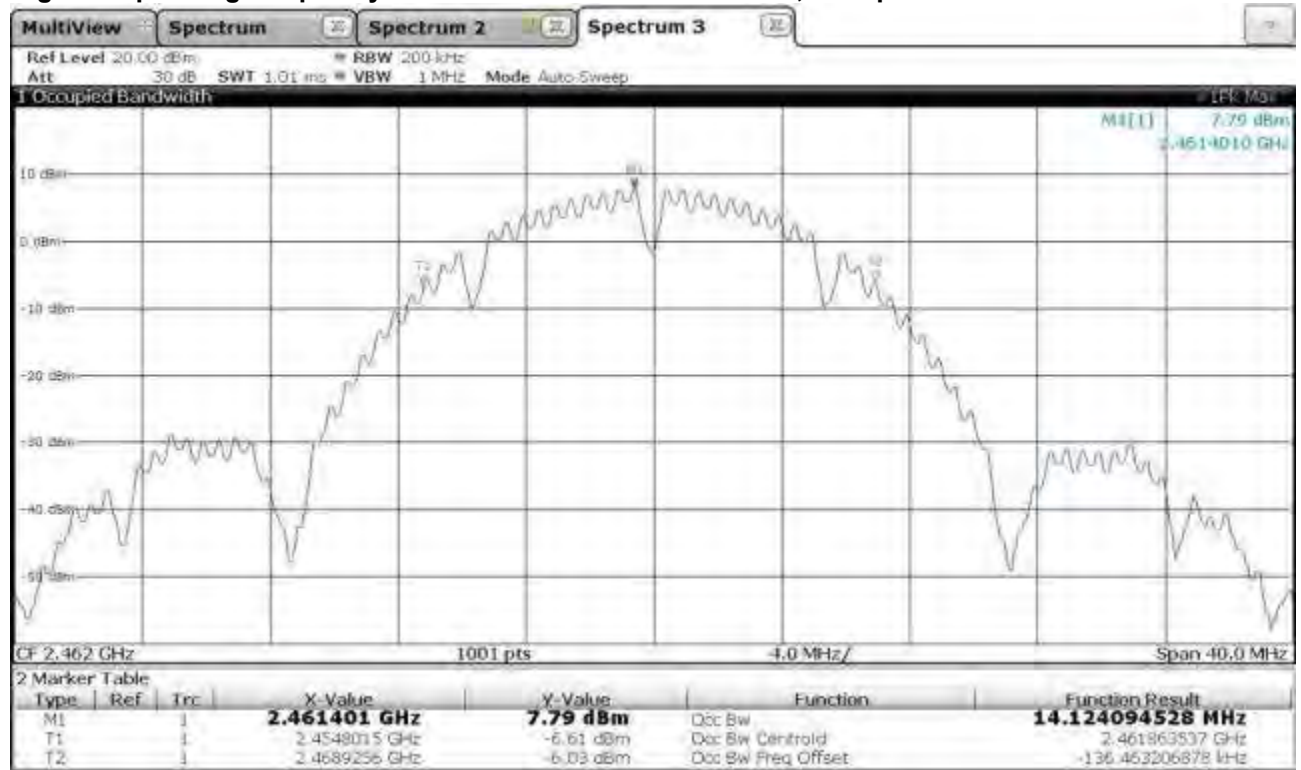
Channel	Frequency [MHz]	99% Power Bandwidth [MHz]	Limit [MHz]	Result
1	2412	14.035088322	-/-	Pass

Middle Operating Frequency - 802.11b 20MHz / CCK – MCS=0; 1 MBps / Antenna 0



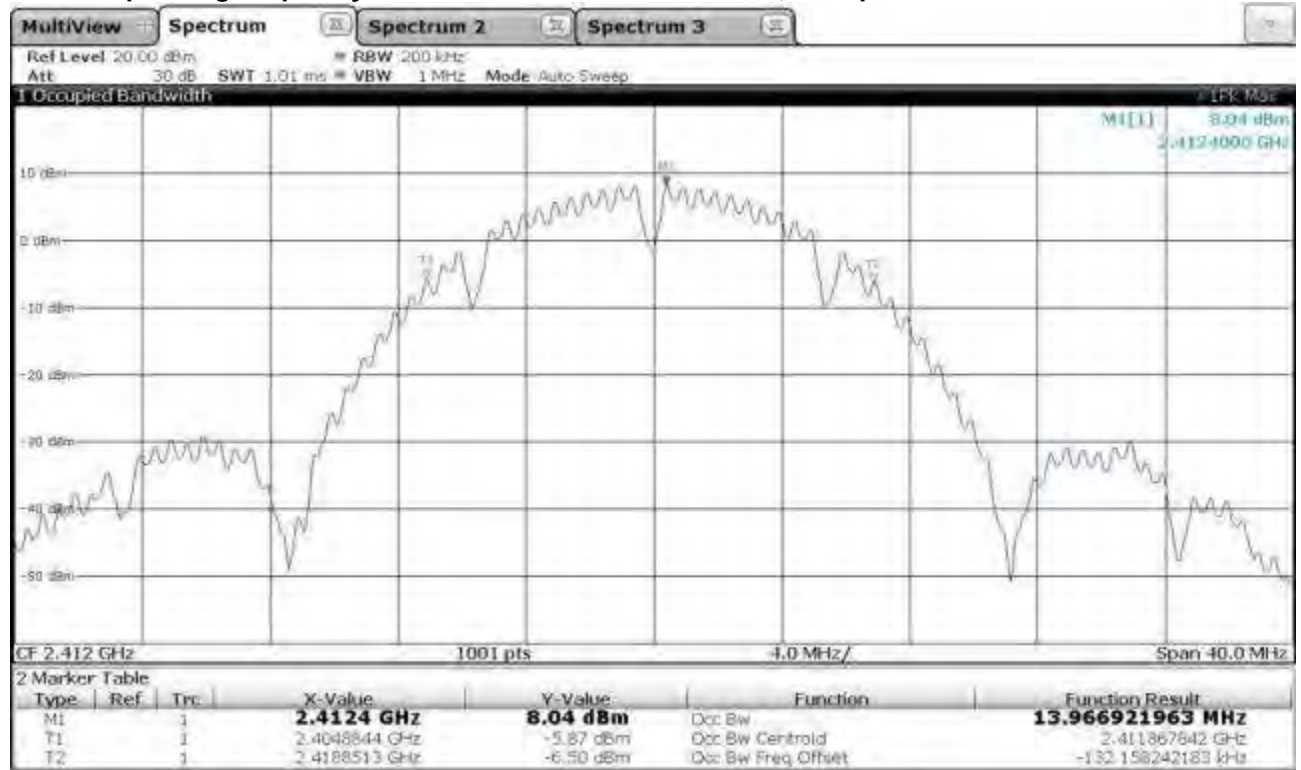
Channel	Frequency [MHz]	99% Power Bandwidth [MHz]	Limit [MHz]	Result
6	2437	14.118416091	-/-	Pass

Highest Operating Frequency - 802.11b 20MHz / CCK – MCS=0; 1 MBps / Antenna 0



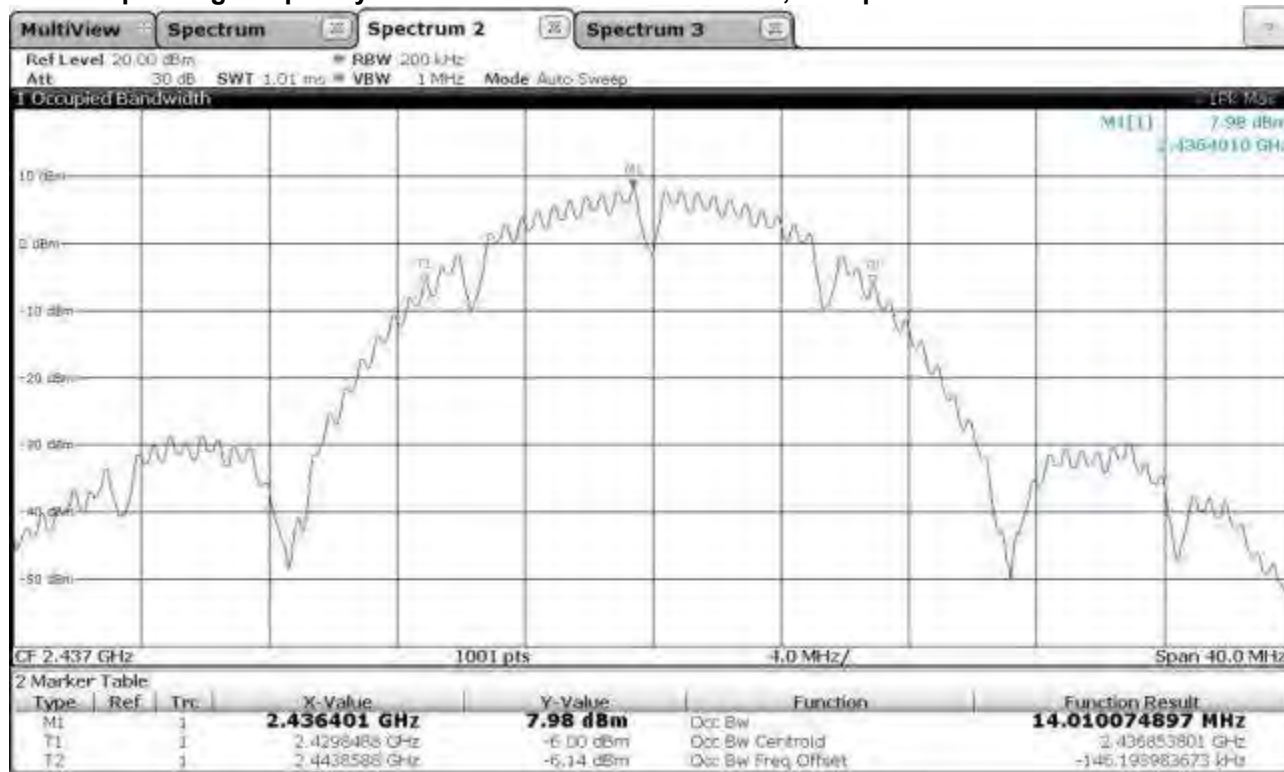
Channel	Frequency [MHz]	99% Power Bandwidth [MHz]	Limit [MHz]	Result
11	2462	14.124094528	-/-	Pass

Lowest operating frequency - 802.11b 20MHz / CCK – MCS=0; 1 MBps / Antenna 1



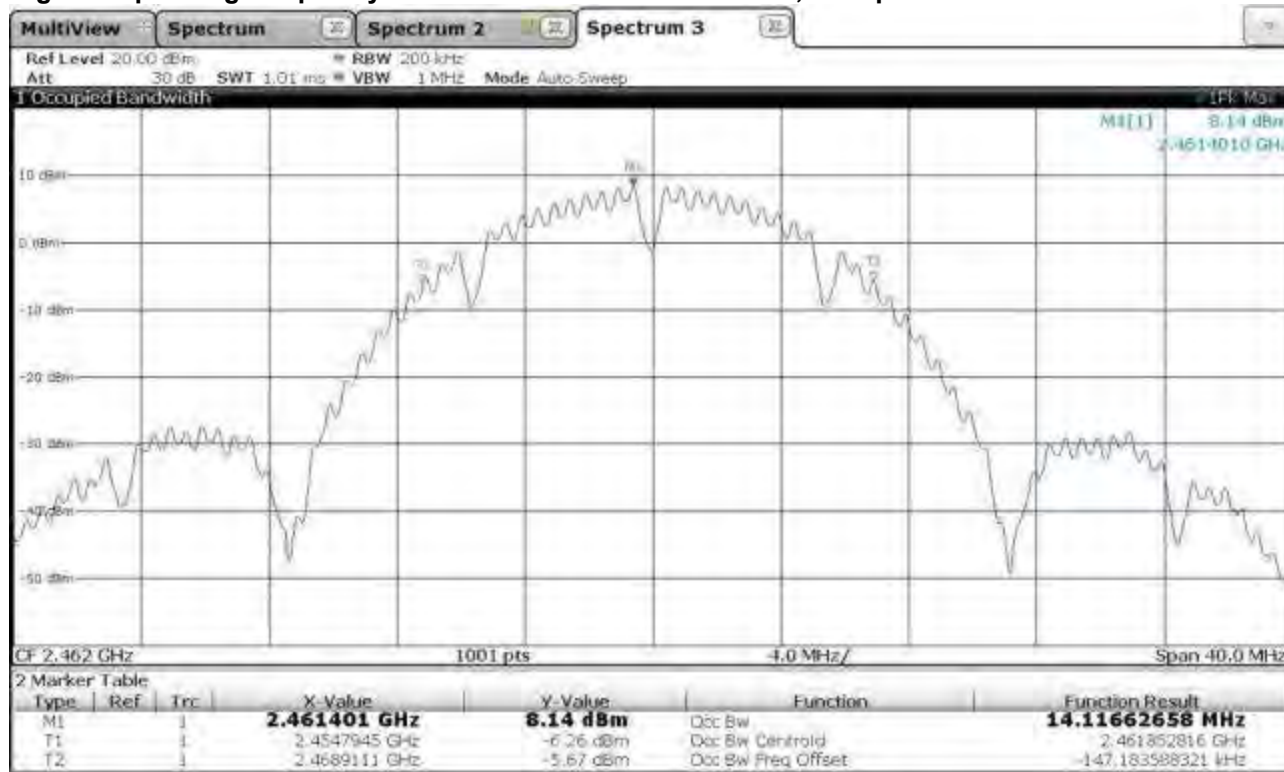
Channel	Frequency [MHz]	99% Power Bandwidth [MHz]	Limit [MHz]	Result
1	2412	13.966921963	-/-	Pass

Middle Operating Frequency - 802.11b 20MHz / CCK – MCS=0; 1 MBps / Antenna 1



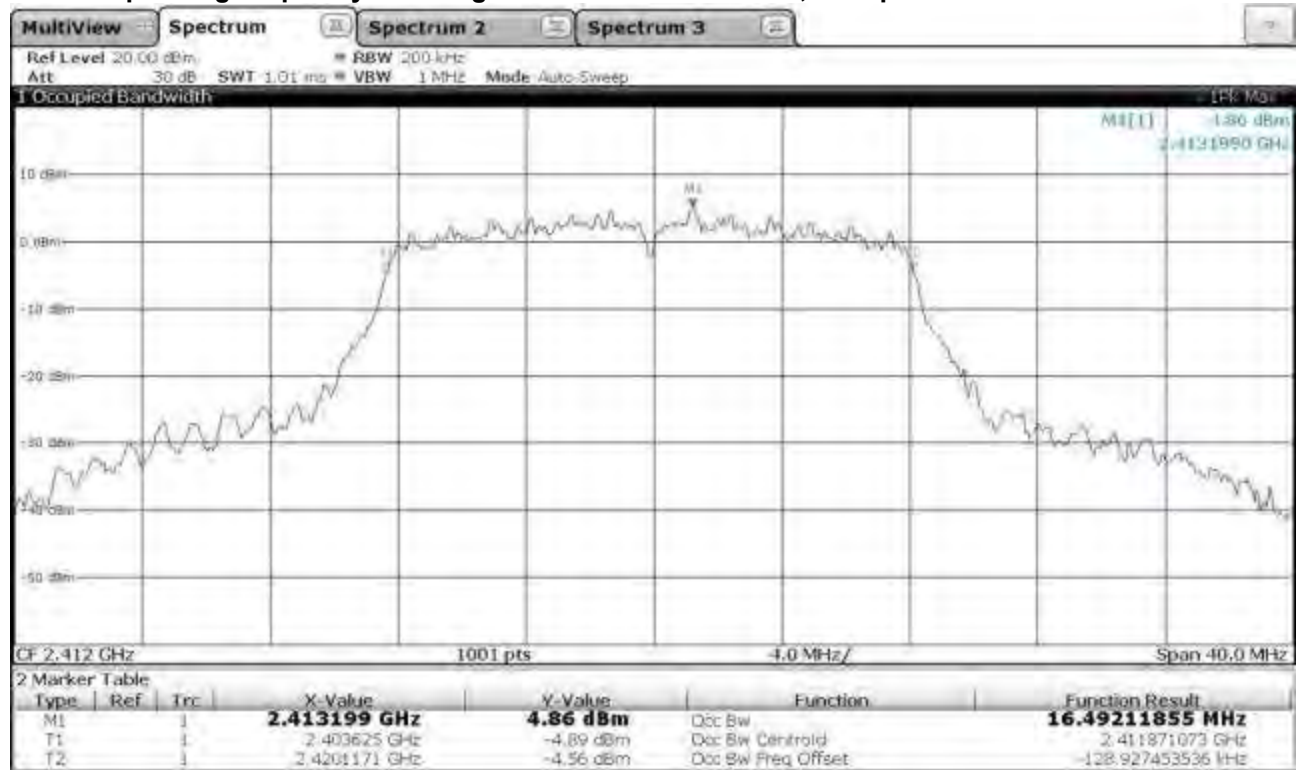
Channel	Frequency [MHz]	99% Power Bandwidth [MHz]	Limit [MHz]	Result
6	2437	14.010074897	-/-	Pass

Highest Operating Frequency - 802.11b 20MHz / CCK – MCS=0; 1 MBps / Antenna 1



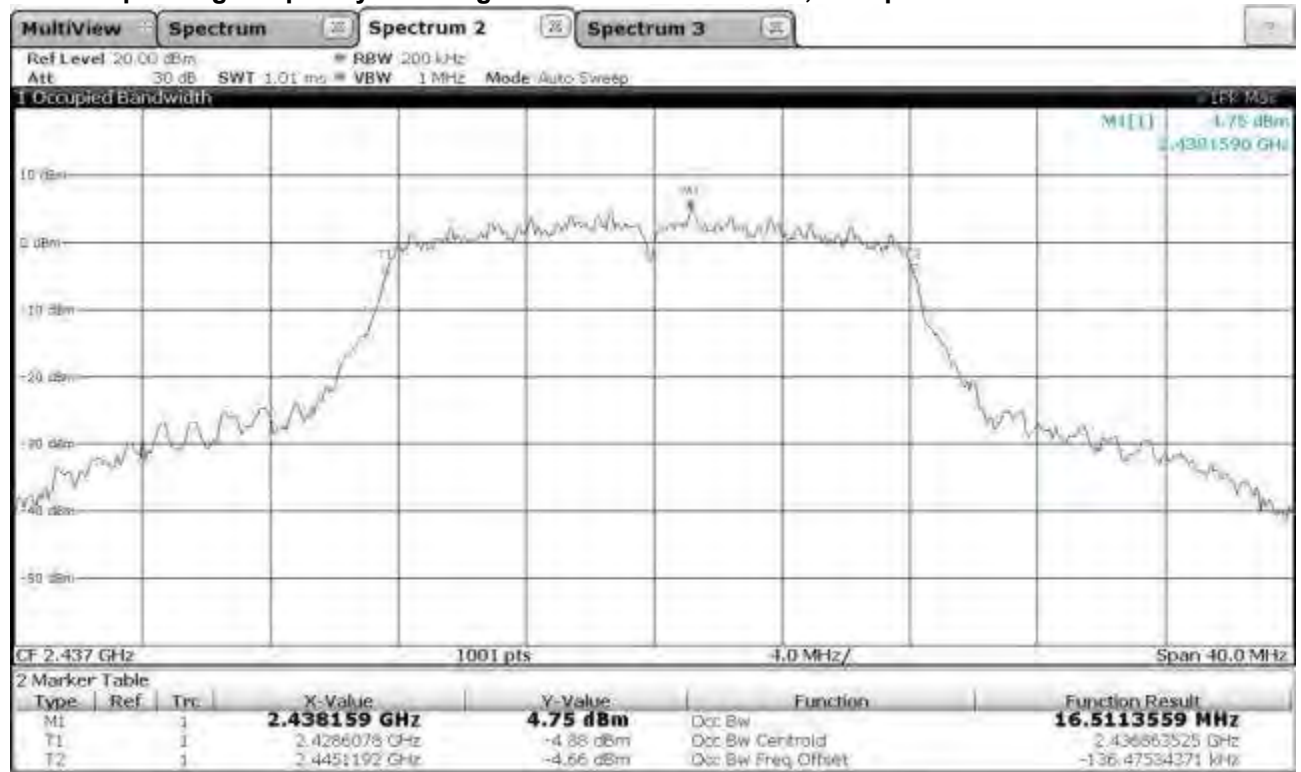
Channel	Frequency [MHz]	99% Power Bandwidth [MHz]	Limit [MHz]	Result
11	2462	14.11662658	-/-	Pass

Lowest operating frequency - 802.11g 20MHz / OFDM – MCS=0; 6 MBps / Antenna 0



Channel	Frequency [MHz]	99% Power Bandwidth [MHz]	Limit [MHz]	Result
1	2412	16.49211855	-/-	Pass

Middle Operating Frequency - 802.11g 20MHz / OFDM – MCS=0; 6 MBps / Antenna 0



Channel	Frequency [MHz]	99% Power Bandwidth [MHz]	Limit [MHz]	Result
6	2437	16.5113559	-/-	Pass

Highest Operating Frequency - 802.11g 20MHz / OFDM – MCS=0; 6 MBps / Antenna 0



Channel	Frequency [MHz]	99% Power Bandwidth [MHz]	Limit [MHz]	Result
11	2462	16.528527133	-/-	Pass

Lowest operating frequency - 802.11g 20MHz / OFDM – MCS=0; 6 MBps / Antenna 1



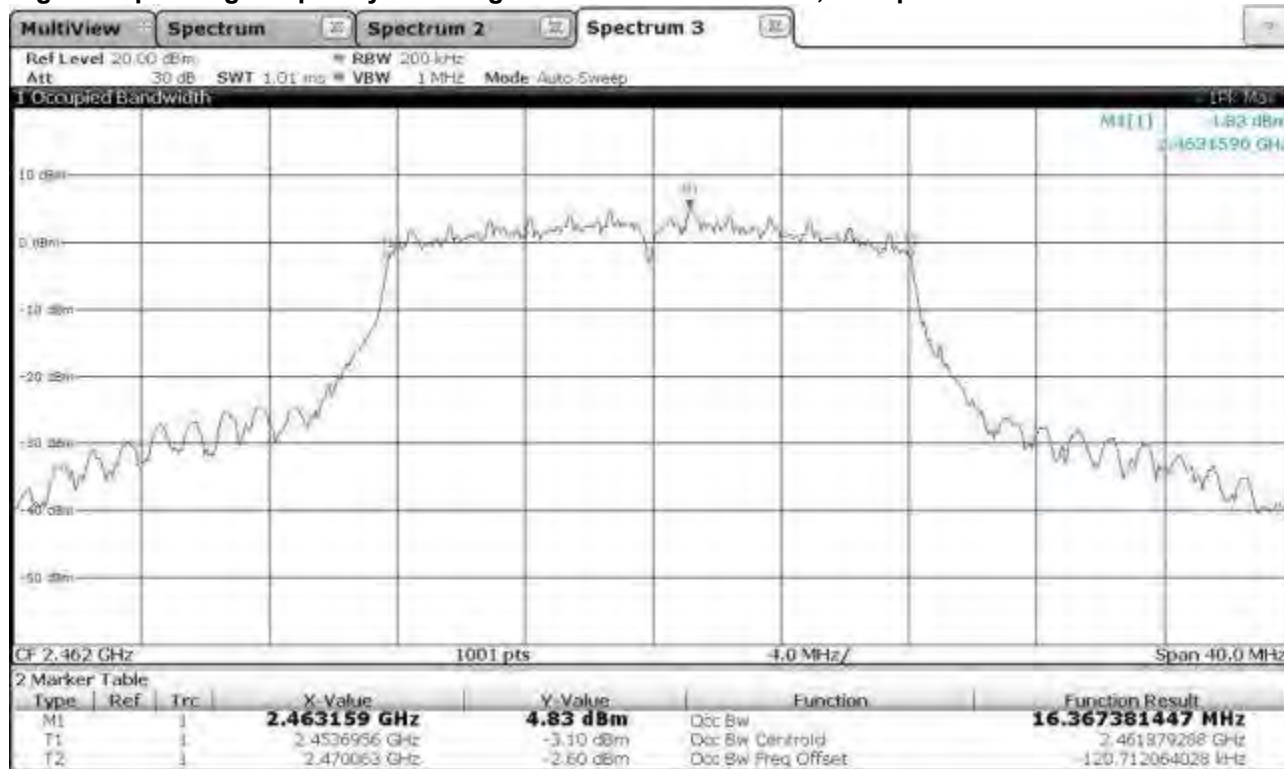
Channel	Frequency [MHz]	99% Power Bandwidth [MHz]	Limit [MHz]	Result
1	2412	16.357600919	-/-	Pass

Middle Operating Frequency - 802.11g 20MHz / OFDM – MCS=0; 6 MBps / Antenna 1



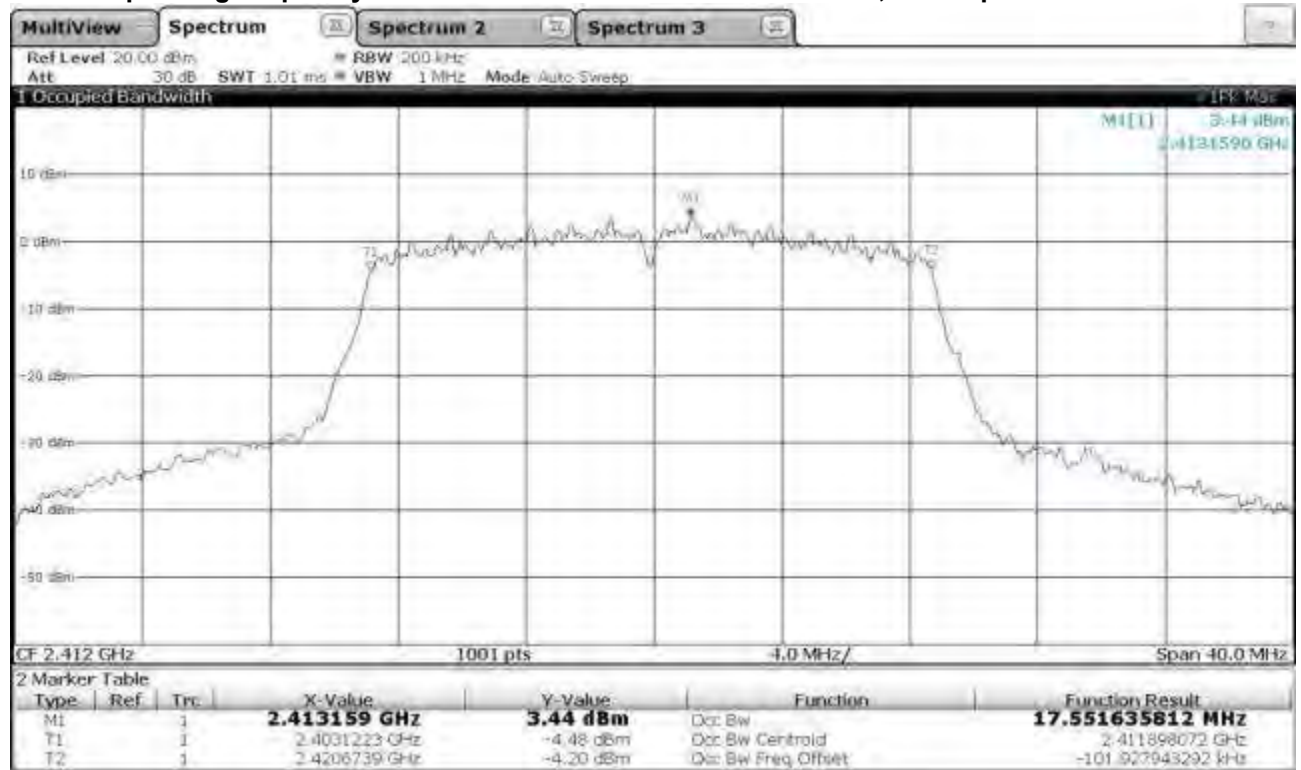
Channel	Frequency [MHz]	99% Power Bandwidth [MHz]	Limit [MHz]	Result
6	2437	16.363281149	-/-	Pass

Highest Operating Frequency - 802.11g 20MHz / OFDM – MCS=0; 6 MBps / Antenna 1



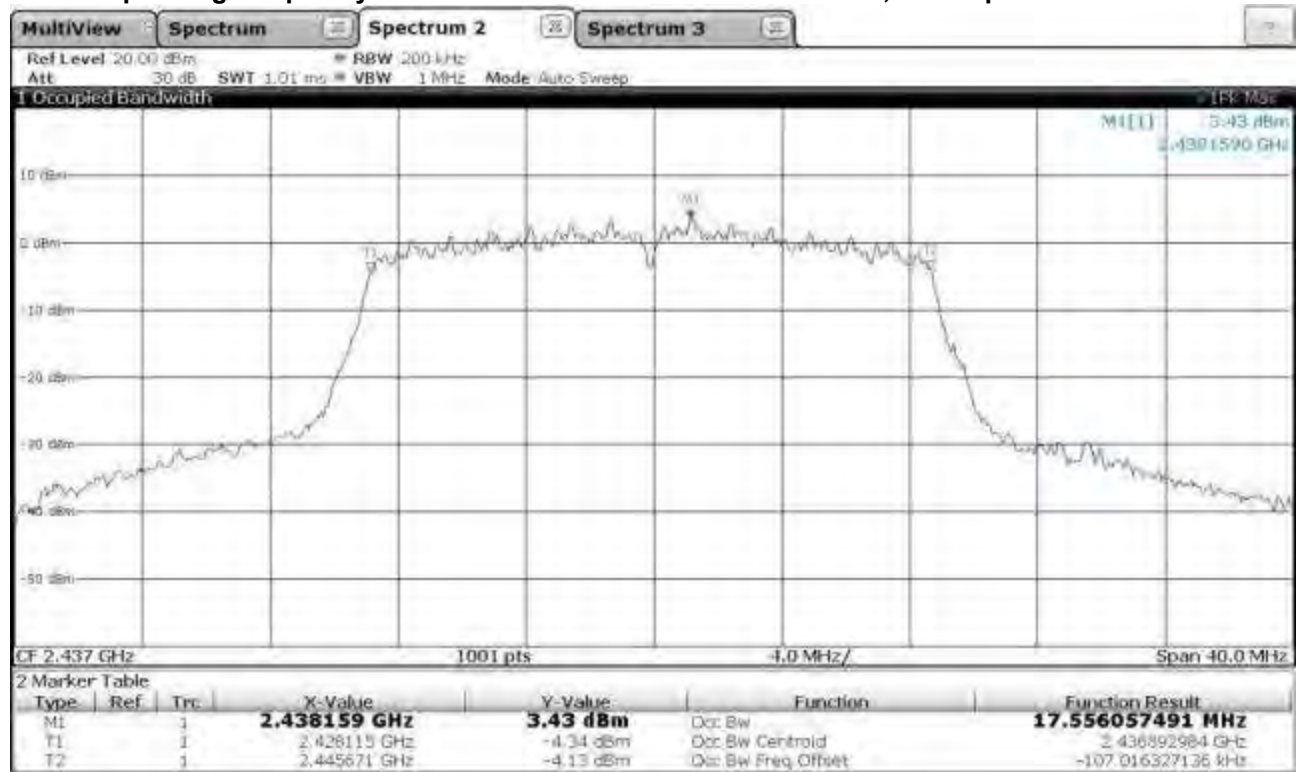
Channel	Frequency [MHz]	99% Power Bandwidth [MHz]	Limit [MHz]	Result
11	2462	16.367381447	-/-	Pass

Lowest operating frequency - 802.11n 20MHz / HT MixMode – MCS=0; 6.5 MBps / Antenna 0



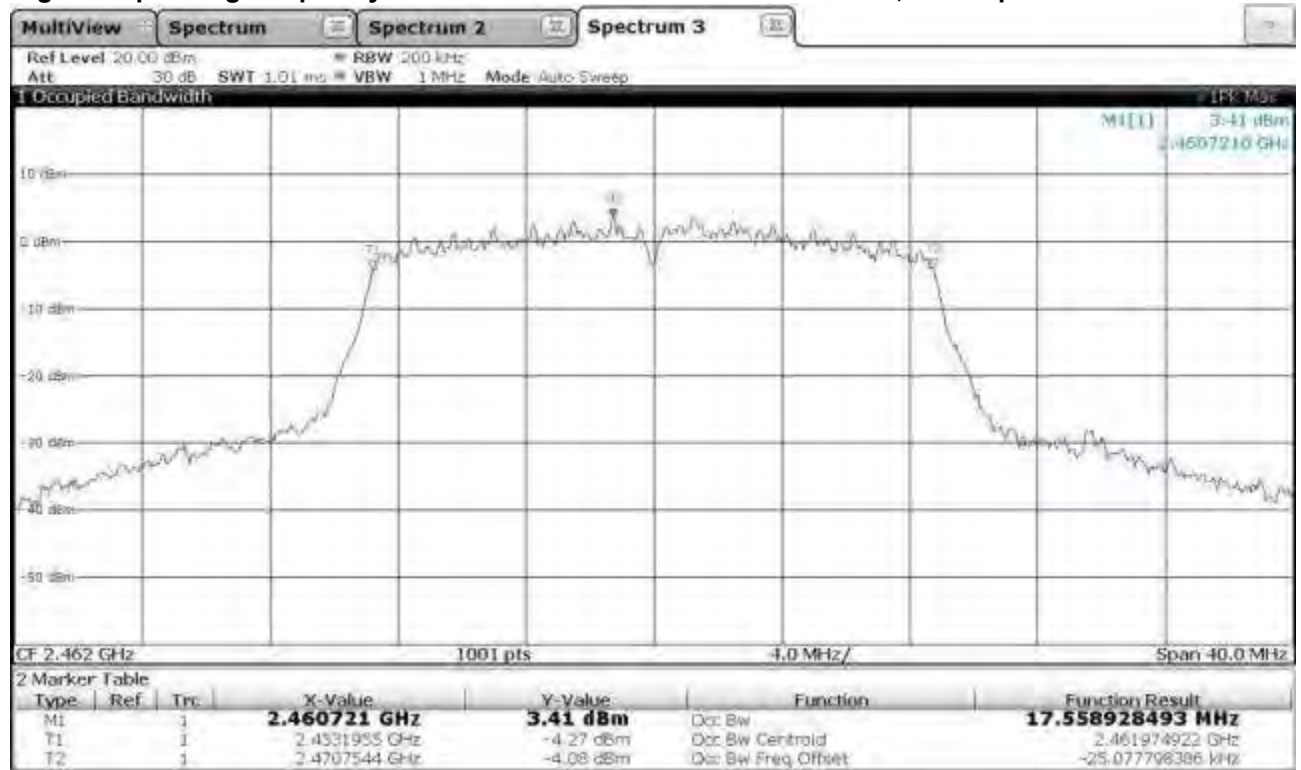
Channel	Frequency [MHz]	99% Power Bandwidth [MHz]	Limit [MHz]	Result
1	2412	17.551635812	-/-	Pass

Middle Operating Frequency - 802.11n 20MHz / HT MixMode – MCS=0; 6.5 MBps / Antenna 0



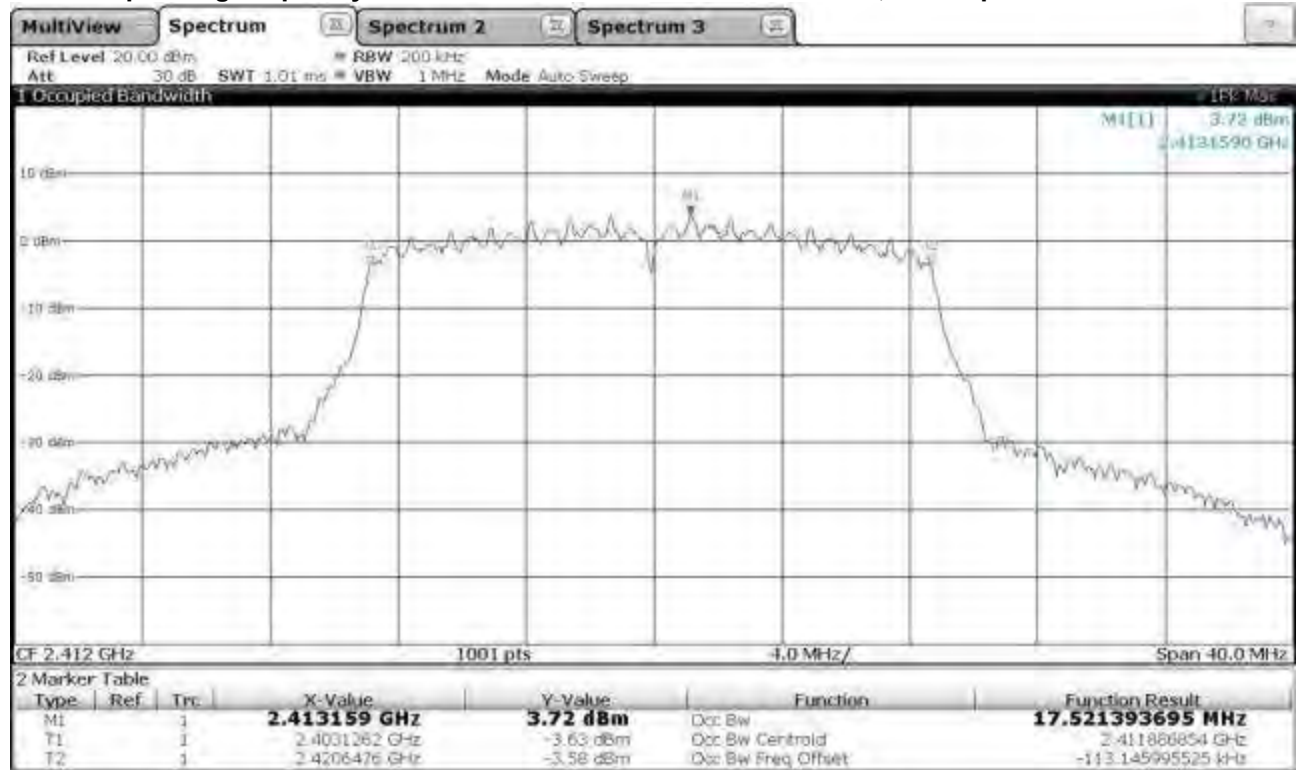
Channel	Frequency [MHz]	99% Power Bandwidth [MHz]	Limit [MHz]	Result
6	2437	17.556057491	-/-	Pass

Highest Operating Frequency - 802.11n 20MHz / HT MixMode – MCS=0; 6.5 MBps / Antenna 0



Channel	Frequency [MHz]	99% Power Bandwidth [MHz]	Limit [MHz]	Result
11	2462	17.558928493	-/-	Pass

Lowest operating frequency - 802.11n 20MHz / HT MixMode – MCS=0; 6.5 MBps / Antenna 1



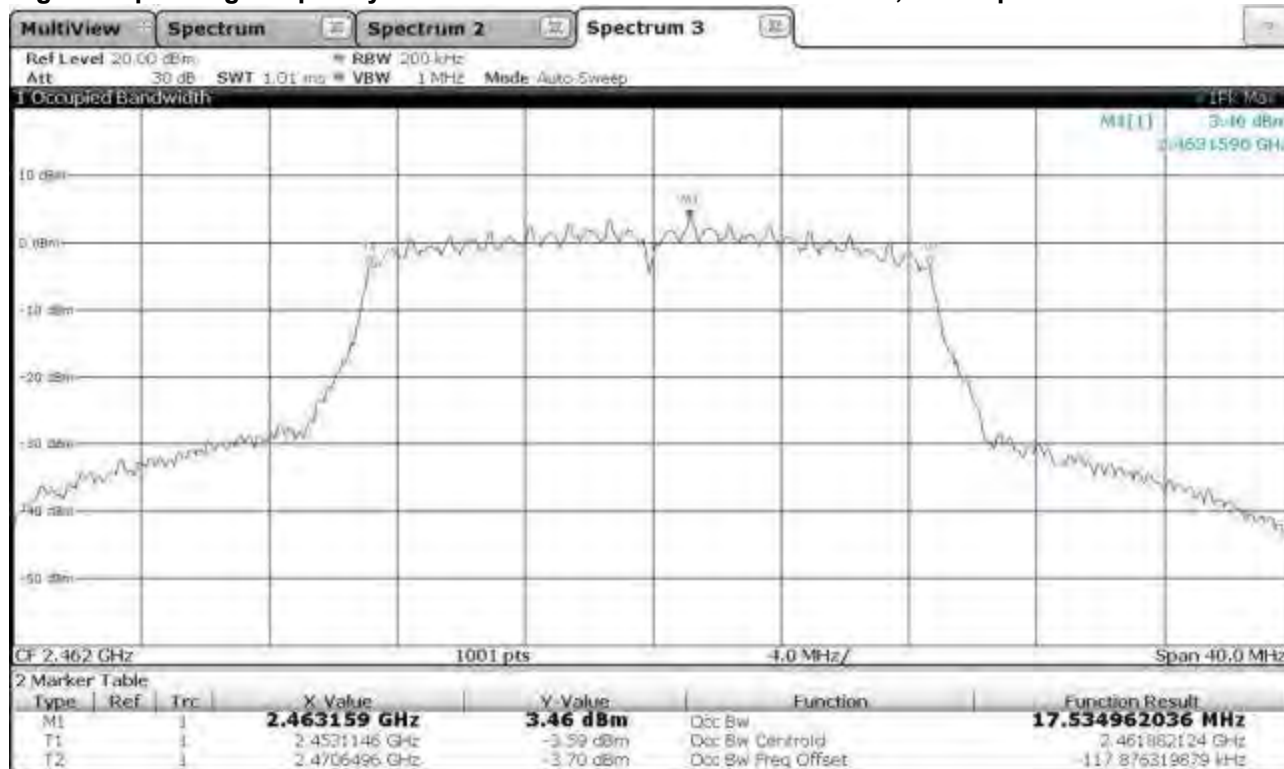
Channel	Frequency [MHz]	99% Power Bandwidth [MHz]	Limit [MHz]	Result
1	2412	17.521393695	-/-	Pass

Middle Operating Frequency - 802.11n 20MHz / HT MixMode – MCS=0; 6.5 MBps / Antenna 1



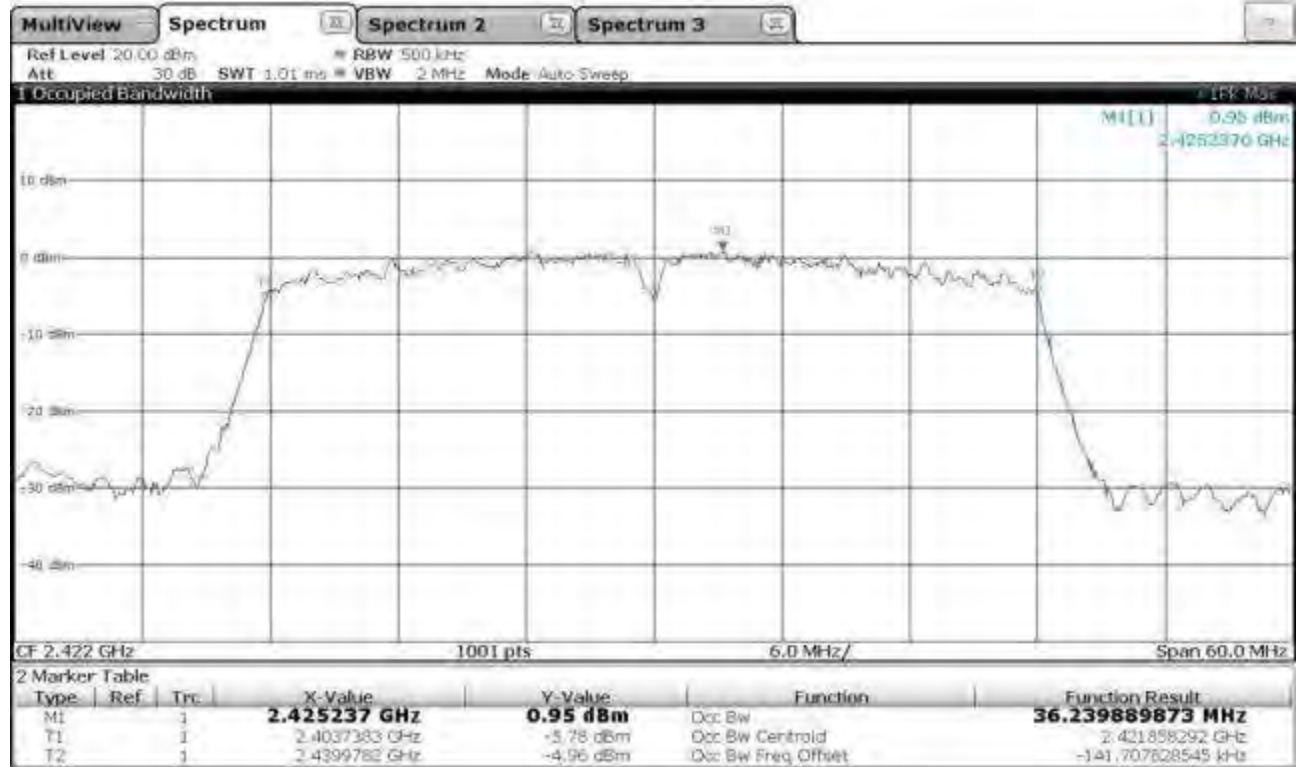
Channel	Frequency [MHz]	99% Power Bandwidth [MHz]	Limit [MHz]	Result
6	2437	17.52611874	-/-	Pass

Highest Operating Frequency - 802.11n 20MHz / HT MixMode – MCS=0; 6.5 MBps / Antenna 1



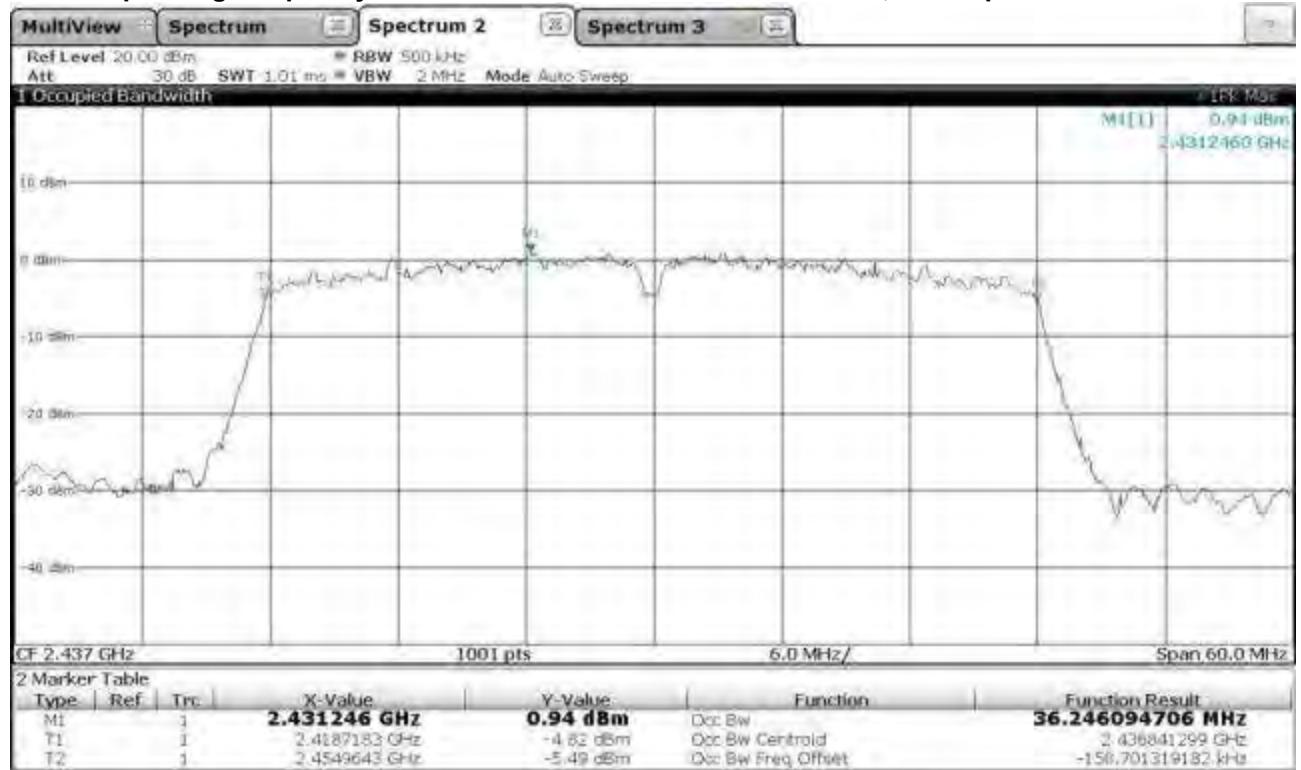
Channel	Frequency [MHz]	99% Power Bandwidth [MHz]	Limit [MHz]	Result
11	2462	17.534962036	-/-	Pass

Lowest operating frequency - 802.11n 40MHz / HT MixMode – MCS=0; 6.5 MBps / Antenna 0



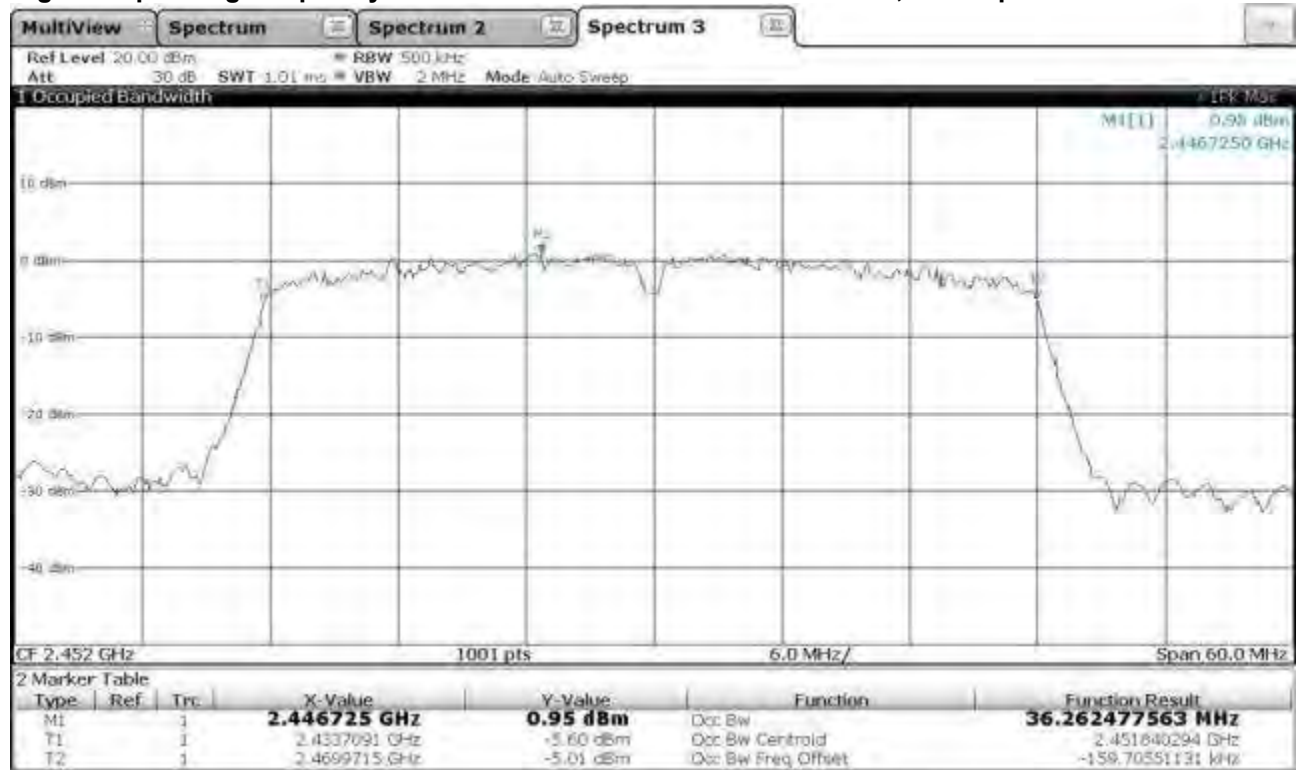
Channel	Frequency [MHz]	99% Power Bandwidth [MHz]	Limit [MHz]	Result
3	2422	36.239889873	-/-	Pass

Middle Operating Frequency - 802.11n 40MHz / HT MixMode – MCS=0; 6.5 MBps / Antenna 0



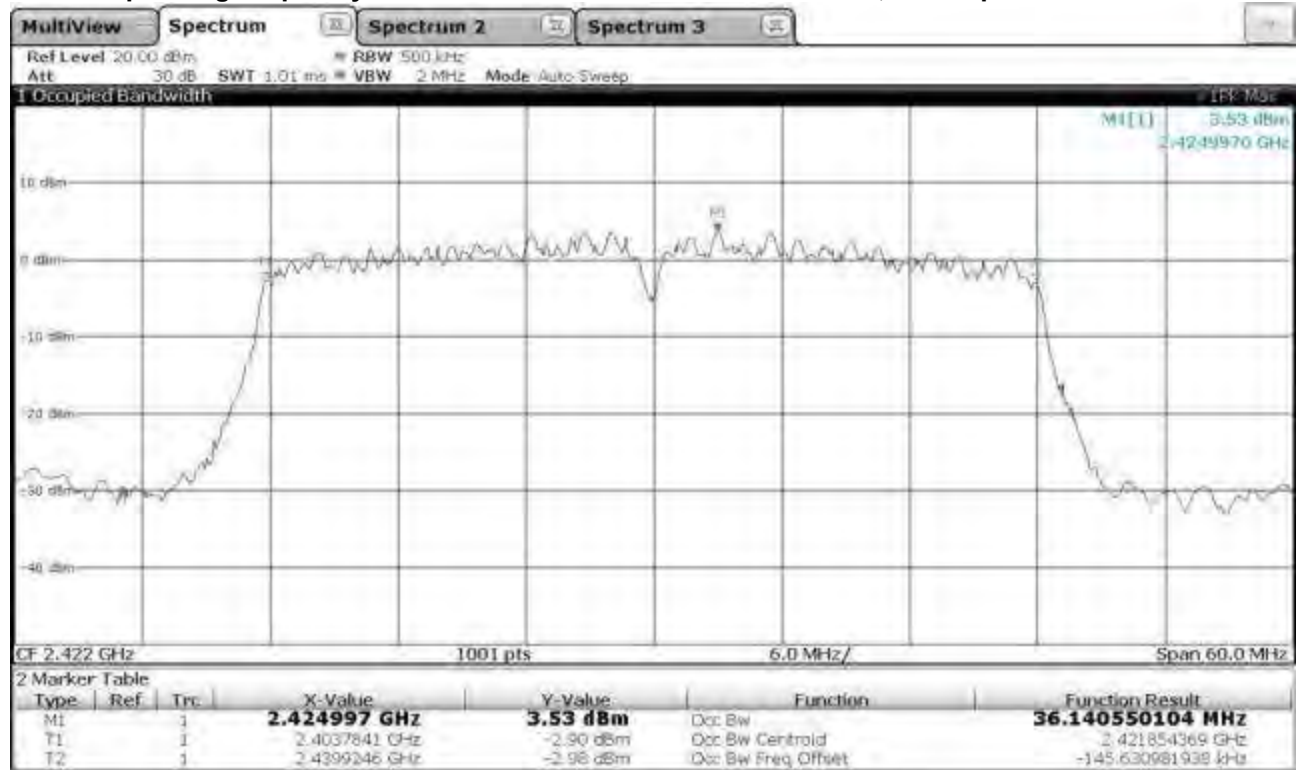
Channel	Frequency [MHz]	99% Power Bandwidth [MHz]	Limit [MHz]	Result
6	2437	36.246094706	-/-	Pass

Highest Operating Frequency - 802.11n 40MHz / HT MixMode – MCS=0; 6.5 MBps / Antenna 0



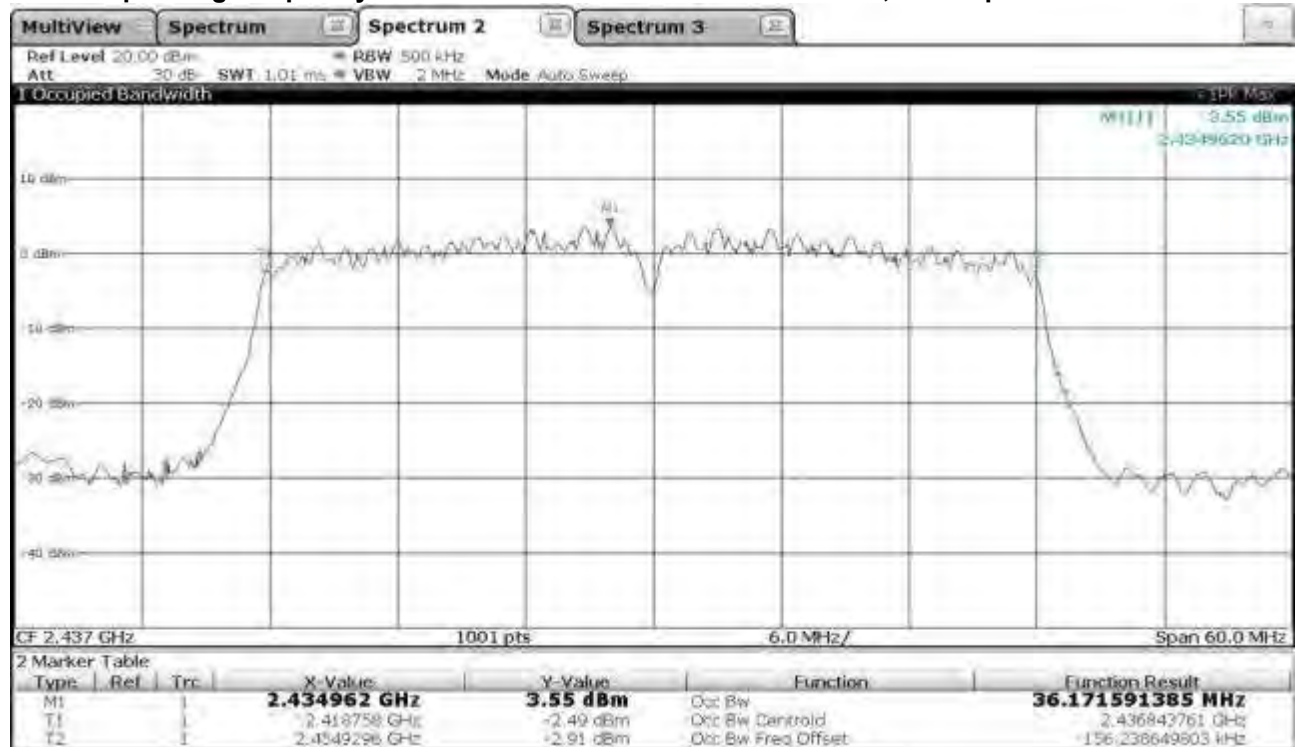
Channel	Frequency [MHz]	99% Power Bandwidth [MHz]	Limit [MHz]	Result
9	2452	36.262477563	-/-	Pass

Lowest operating frequency - 802.11n 40MHz / HT MixMode – MCS=0; 6.5 MBps / Antenna 1



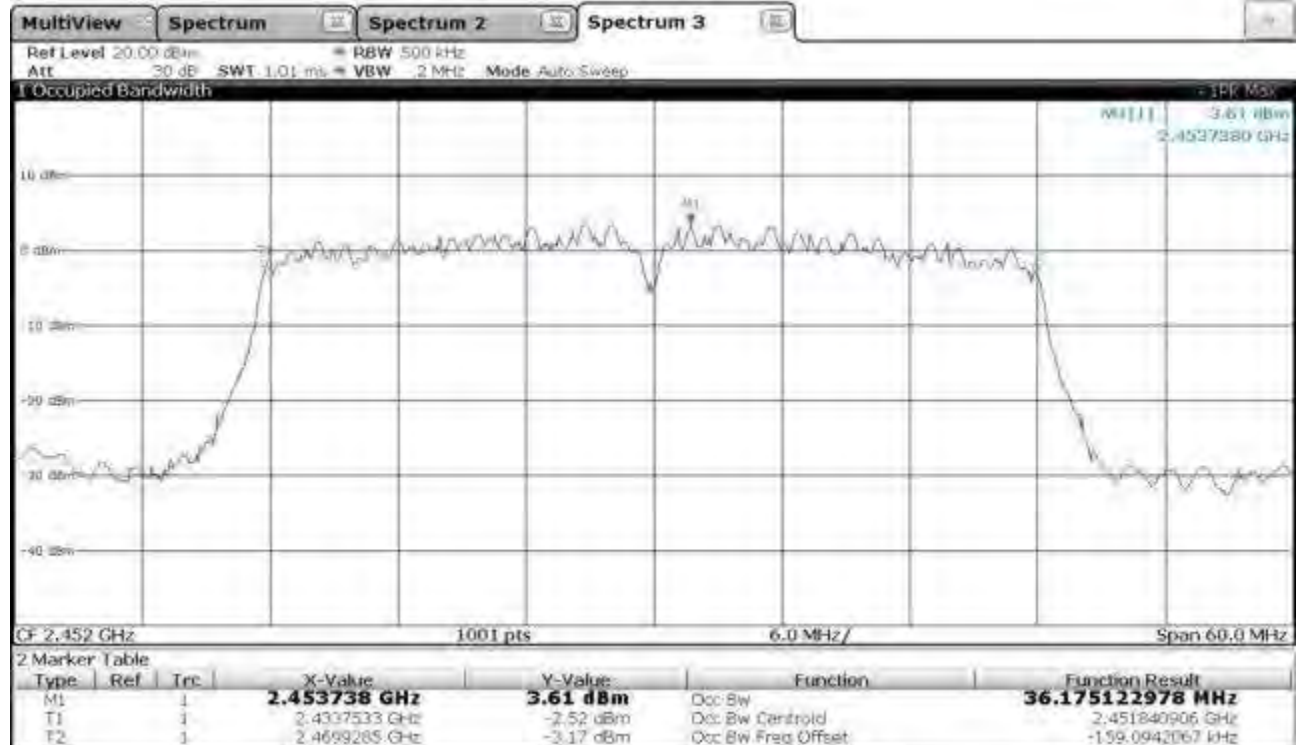
Channel	Frequency [MHz]	99% Power Bandwidth [MHz]	Limit [MHz]	Result
3	2422	36.140550104	-/-	Pass

Middle Operating Frequency - 802.11n 40MHz / HT MixMode – MCS=0; 6.5 MBps / Antenna 1



Channel	Frequency [MHz]	99% Power Bandwidth [MHz]	Limit [MHz]	Result
6	2437	36.171591385	-/-	Pass

Highest Operating Frequency - 802.11n 40MHz / HT MixMode – MCS=0; 6.5 MBps / Antenna 1



Channel	Frequency [MHz]	99% Power Bandwidth [MHz]	Limit [MHz]	Result
9	2452	36.175122978	-/-	Pass

Results

From the measurement data obtained, the tested sample was considered to have **COMPLIED** with the requirements for the **99% Power Bandwidth**.

9. Test equipment

Test equipment used for radiated Measurements:

Kind of equipment	Manufacturer	Type	Ident no.	Serial no.	Calibrated on (y-m)	Calibration interval
Signal Spectrum Analyzer 2Hz – 26.5 GHz	Rohde & Schwarz	FSW 26 Instrument FW 2.60	11571	102047	2019-Jan.	3 years
ESR7 EMI Testreceiver 7GHz	Rohde & Schwarz	ESR7	11676	101694	2018-March	3 years
Test-Receiver	Rohde & Schwarz	ESVS30	10572	833825/010	2020-April	3 years
Antenna 9 kHz – 30 MHz	EMCO	6502	10546	2018	2017-Nov.	3 years
Antenna 30 MHz – 1 GHz	Chase	CBL6111C	10022	1064	2019-Dec.	3 years
Antenna 1GHz – 18 GHz	Electro Metric	RGA50/60	10273	2753	2017-Nov.	3 years
Broadband-Hornantenne 15 - 26,5 (40) GHz	Schwarzbeck	BBHA 9170	11580	BBHA91706 21	2019-Dec.	3 years
Broadband-Preamplifier 1-18 GHz	Schwarzbeck	BBV9718	11231	9718-002	2017-Oct.	3 years
Preamplifier 18 - 40 GHz	CERNEX	CBM18403523	11679	29711	2019 - July	3 years
Cable	el-spec GmbH	FlexCore-SMA11-SMA11-8000-ARM	11625	-/-	2017-Dec.	3 years
Shielded room/Chamber	Frankonia	SAC3 "SEMI-ANECHOIC-CHAMBER"	11609	004/16	2019-March	3 years
Band Reject Filter	Telemeter	BRF-2450-150-7-N (0441)	11243	-/-	-/-	-/-
Above 26 GHz Substitution procedure						
Spectrum Analyzer	Rohde & Schwarz	FSMS 26	10481	839014/004	-/-	-/-
Spectrum-Analyzer Display	Rohde & Schwarz	FSMS 26	10482	838509/010	-/-	-/-
Harmonic Mixer	Rohde & Schwarz	FS-Z40	10779	842529/003	-/-	-/-
Harmonic Mixer LO-Amp.	Rohde & Schwarz	FS-Z30	10780	624413/005	-/-	-/-
Phase3 Ultra Low Loss Cable Assembly	TECH-INTER	GC12-K1K1-197	11718	1GVT4 19047702 001	-/-	-/-
Preamplifier 18 - 40 GHz	CERNEX	CBM18403523	11679	29711	2019 - July	3 years
A-INFO Braodband Horn Antenna	EMCO Elektronik GmbH	LB-180400-KF	11716	J211060840	-/-	-/-
Signal-Generator 100 KHz - 40 GHz	Rohde & Schwarz	SMB100A	11563	177769	2019-Jan.	3 years
Broadband-Hornantenne 15 - 26,5 (40) GHz	Schwarzbeck	BBHA 9170	11580	BBHA91706 21	2019-Dec.	3 years

Test equipment used for Band Edge Measurements:

Kind of equipment	Manufacturer	Type	Ident no.	Serial no.	Calibrated on (y-m)	Calibration interval
ESR7 EMI Testreceiver 7GHz	Rohde & Schwarz	ESR7	11676	101694	2018-March	3 years
Antenna 1GHz – 18 GHz	Electro Metric	RGA50/60	10273	2753	2017-Nov.	3 years
Cable	el-spec GmbH	FlexCore-SMA11-SMA11-8000-ARM	11625	-/-	2017-Dec.	3 years
Shielded room/Chamber	Frankonia	SAC3 "SEMI-ANECHOIC-CHAMBER"	11609	004/16	2019-March	3 years

Test equipment used for conducted measurements:

Kind of equipment	Manufacturer	Type	Ident no.	Serial no.	Calibrated on (y-m)	Calibration interval
Signal Spectrum Analyzer 2Hz – 26.5 GHz	Rohde & Schwarz	FSW 26 Instrument FW 2.60	11571	102047	2019 - Jan.	3 years
EMI-Test-Receiver	Rohde & Schwarz	ESR7 Instrument FW 3.36	11505	101103	2017 - Nov.	3 years
Automatisation unit RF switch and power meter	Rohde & Schwarz	OSP120 and OSP B157	11573	101282	2017 - Dec.	3 years
Cable	el-spec GmbH	FlexCore-SMA11-SMA11-8000-ARM	11625	-/-	2017 - Dec.	3 years

Test equipment used for Conducted Mains emissions:

Kind of equipment	Manufacturer	Type	Ident no.	Serial no.	Calibrated on (y-m)	Calibration interval
Test-Receiver	Rohde & Schwarz	ESHS30	10571	842053/008	2019 – Mar.	3 years
Software	PKM	PKM U5/6	-/-	V1.01.03	-/-	-/-
Line impedance stabilisation network (LISN)	Rohde & Schwarz	ESH2-Z5	10139	879675/028	2019 – Jan.	3 years
Shielded room	Siemens	(6,2 x 4,7 x 3,3) m (l x w x h) DC – 10 GHz	10113	1	-/-	-/-

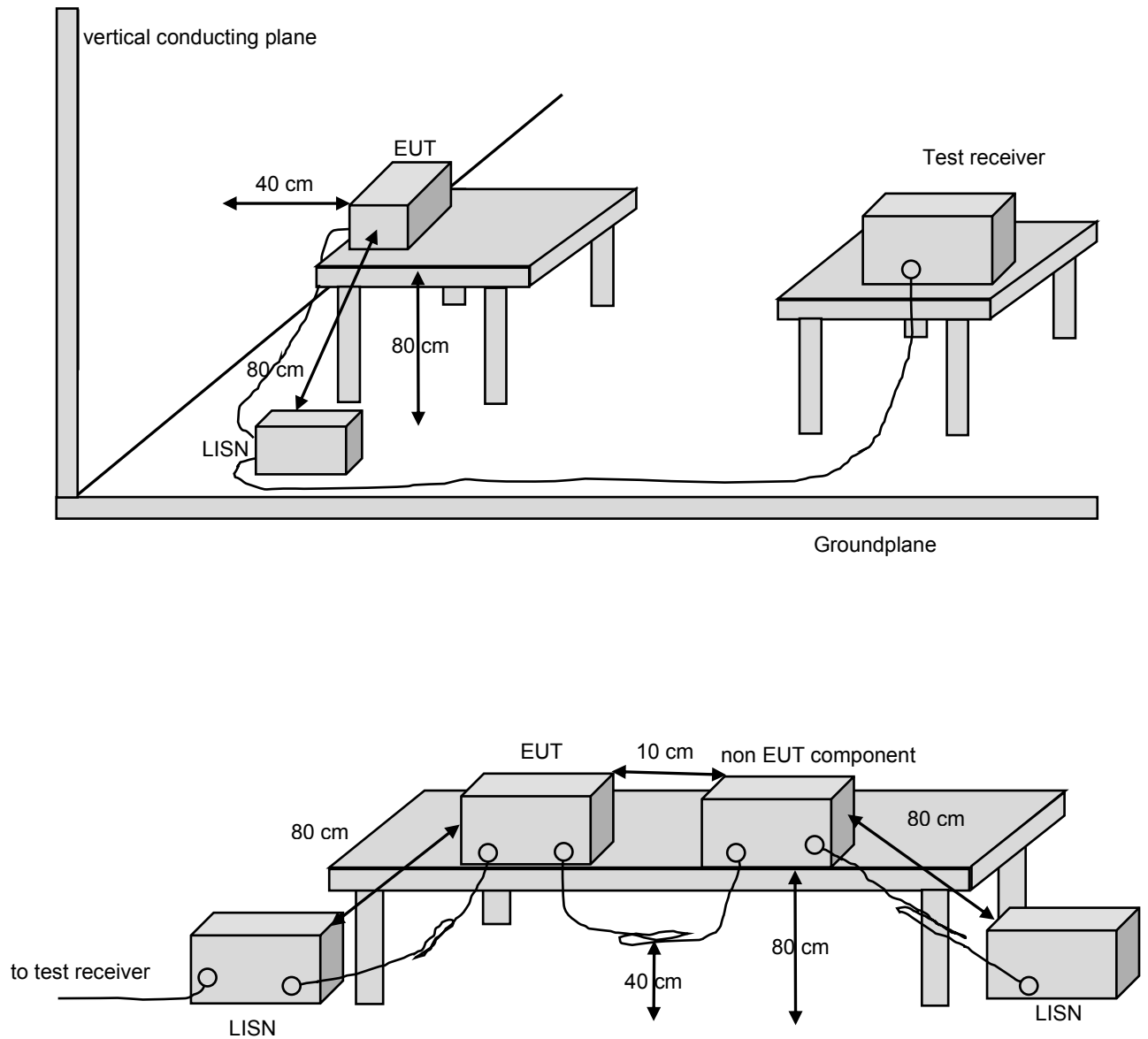
All measurements were made with measuring instruments, including any accessories that may affect test results, calibrated according to the requests of ISO/IEC 17025 according to which the test site is accredited from DAkkS. Measurement of conducted mains emissions was made with instruments conforming to American National Standard Specification, ANSI C63.4-2014.

Test equipment to support EUT functions:

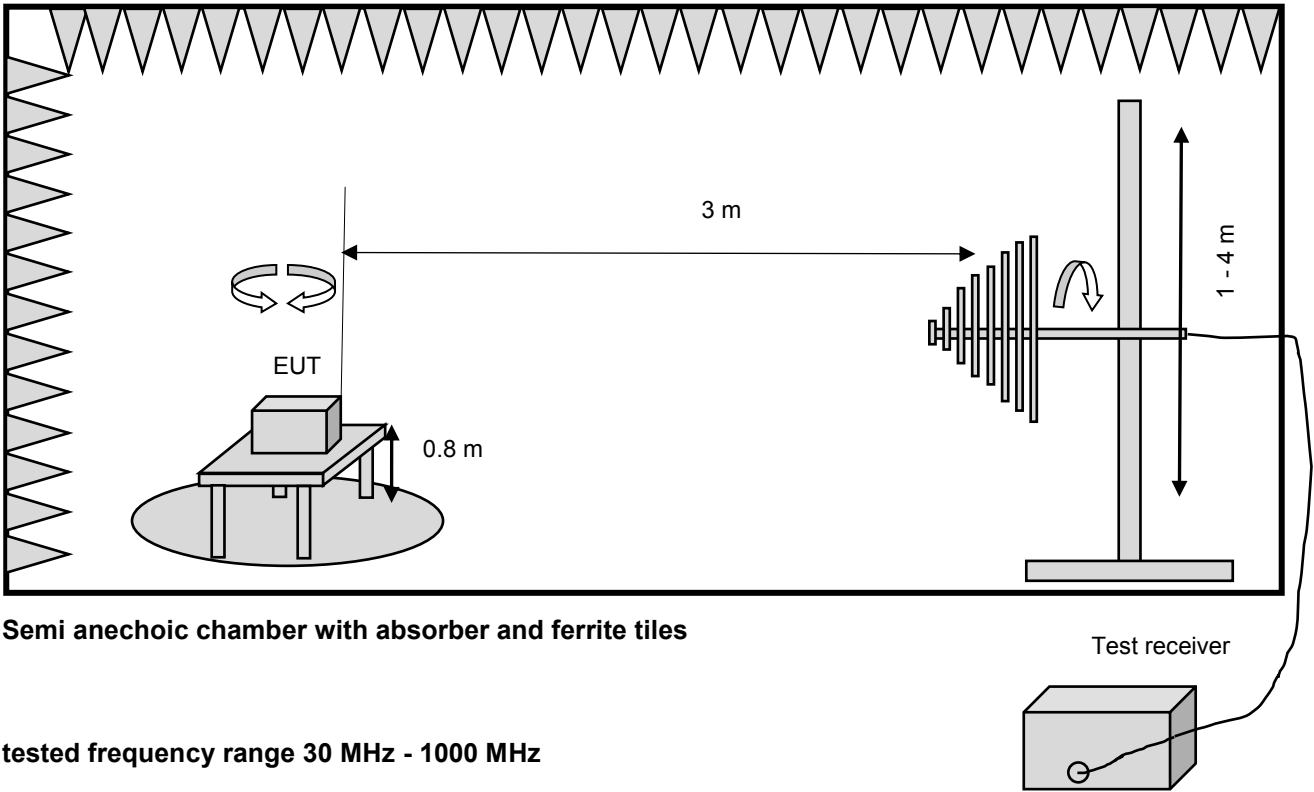
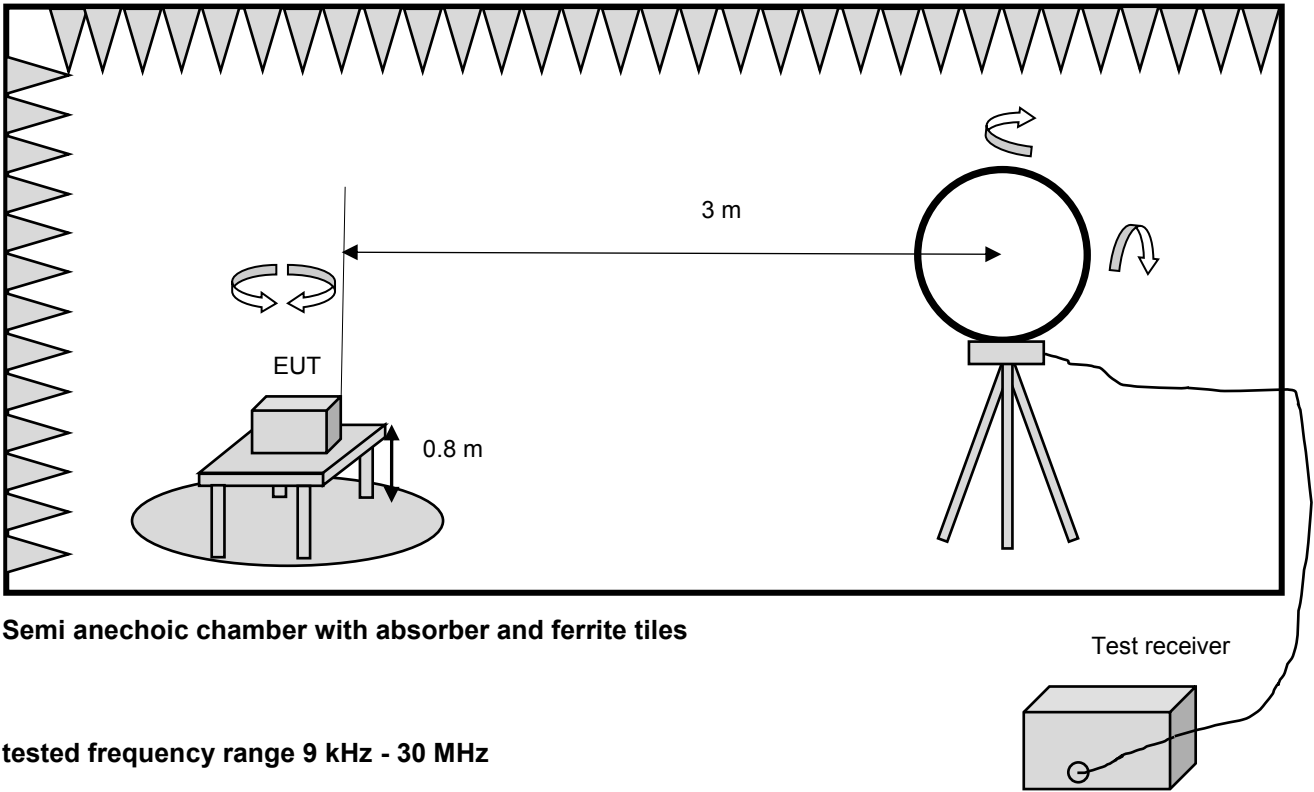
Kind of equipment	Manufacturer	Type	Ident no.
Laptop	DELL	Inspiron	11488
AC-Adaptor [Laptop/EUT]	DELL	DA130PE1-00	Part of 11488
Test Adaptor Board	Vestel (Client)	17TEST02	Client
Software	Provided by Vestel (Client)	MT7662U QA Tool	-/-

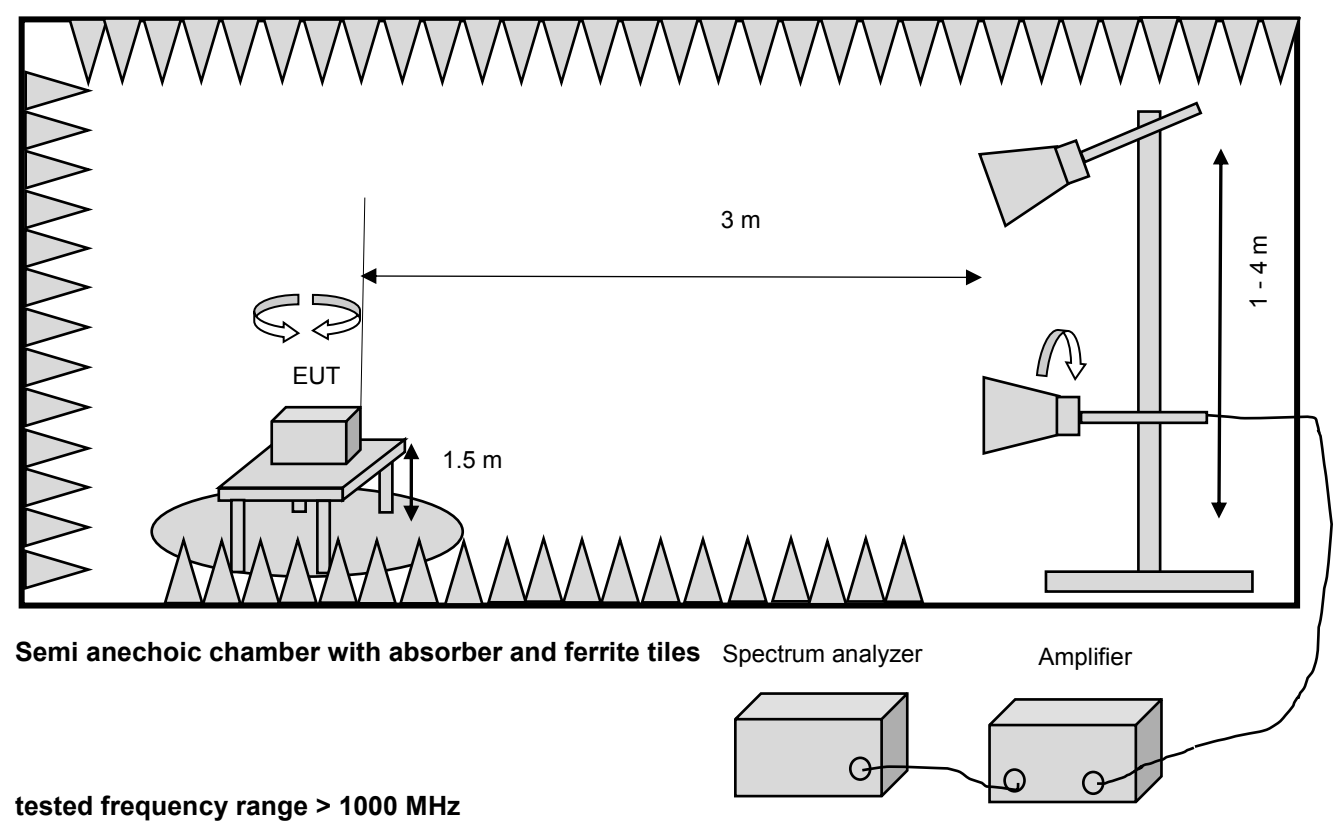
10. Test setups

Block diagram Conducted Mains emissions

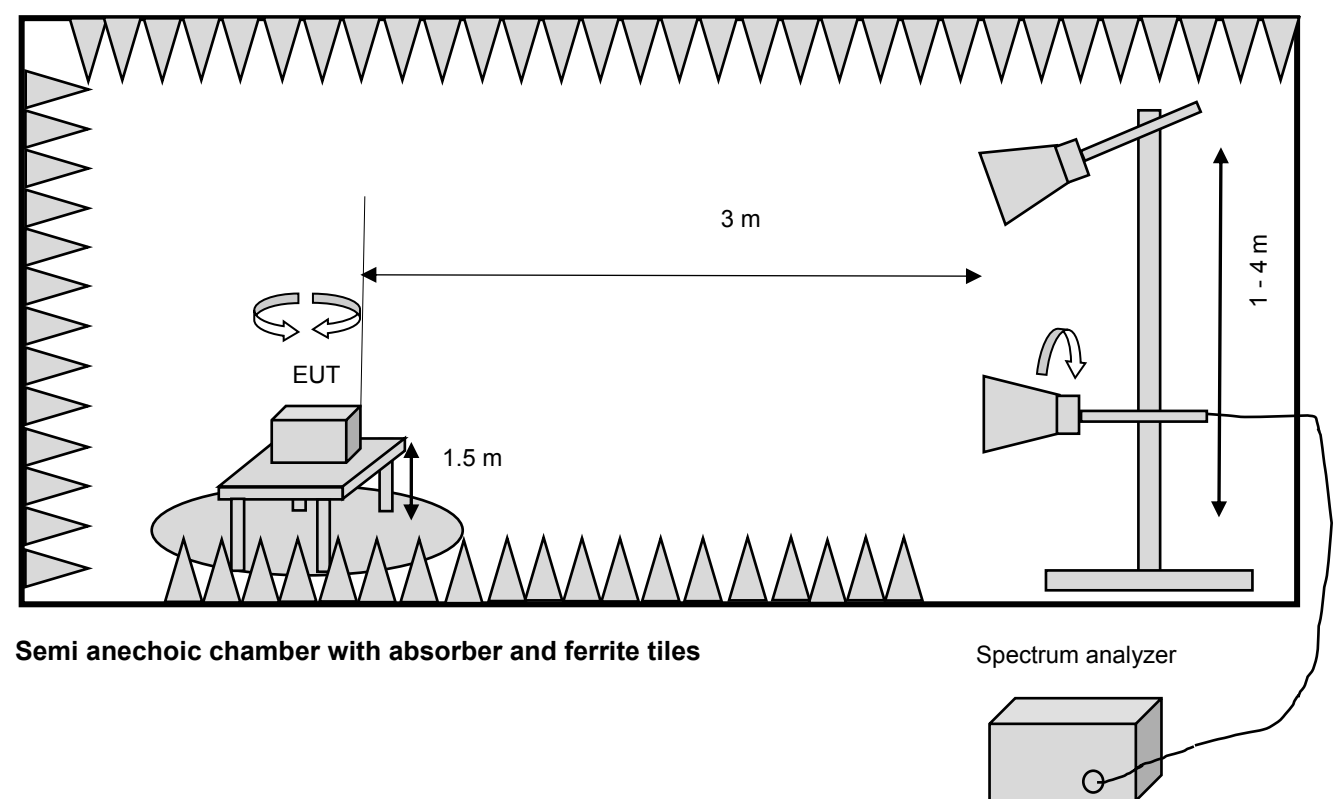


Block diagram Radiated emissions

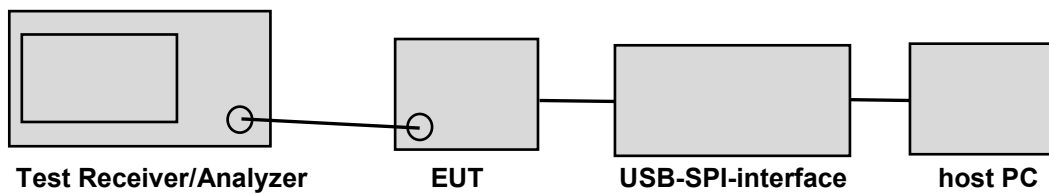




Block diagram Band Edge emissions



Block diagram for conducted measurements



11. Measurement uncertainty

according to CISPR 16-4-2 Edition 2.0 2011-06

Measurement	calculated uncertainty U_{lab}	Specified CISPR uncertainty according CISPR 16-4-2 Edition 2.0 2011-06, table 1 U_{CISPR}
Conducted disturbance at mains port using AMN 9 kHz – 150 kHz	3.6 dB	3.8 dB
Conducted disturbance at mains port using AMN 150 kHz – 30 MHz	3.2 dB	3.4 dB
Magn. fieldstrength 9kHz - 30MHz	3.4 dB	-/-
Radiated disturbance (electric field strength in the SAC) 30 MHz to 1 000 MHz	4.7 dB	6.3 dB
Radiated disturbance (electric field strength in the SAC) 1 GHz to 26.5 GHz	4.1 dB	-/-
Radiated disturbance (electric field strength in the SAC) 26.5 GHz to 40 GHz	3.1 dB	-/-

Measurement	calculated uncertainty U_{lab}	Maximum measurement uncertainty
Channel Bandwidth	1.17 %	±5 %
RF output power, conducted	±1.36 dB	±1.5 dB
Power Spectral Density, conducted	±1.99 dB	±3 dB
Unwanted Emissions, conducted	±1.71 dB	±3 dB
All emissions, radiated	±4.8 dB	±6 dB
Temperature	±0.72 °C	±3 °C
Supply voltages	±0.76 % (DC up to 40V)	±3 %
	±1.74 % (AC 50Hz up to 400V)	
Time	±0.012 %	±5 %

The measurement uncertainty describes the overall uncertainty of the given measured value during the operation of the EUT in the above mentioned way.

The measurements uncertainty was calculated in accordance with CISPR 16-4-2 Edition 2.0 2011-06.

The measurement uncertainty was given with a confidence of 95 % ($k = 2$).

12. Photos setup

Refer to “0031-fcc-ised-photos test setup.pdf” file

13. Conclusions

From the measurement data obtained, the tested sample was considered to have **COMPLIED** with the requirements for the relevant §15.247 Operation within the bands 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz.

From the measurement data obtained, the tested sample was considered to have **COMPLIED** with the requirements for the relevant RSS-247 issue 02 Digital Transmission Systems (DTSS), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network.

Following specific modifications and/or special attributes are necessary to pass the above mentioned requirements:

none

12.11.2021

Erstellt am/prepared on

M. Wundrak, Laboratory Engineer

(Name/name / Stellung/position)



(Unterschrift/signature)

12.11.2021

Freigabe am/released on

K. Simon, Head of Laboratory

(Name/name / Stellung/position)



(Unterschrift/signature)

	Test report no.: 20/01-0031	Page 359 of 359 pages
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14. Photos of tested sample

Refer to “0031-fcc-ised-ext-photos.pdf” file

End of test report