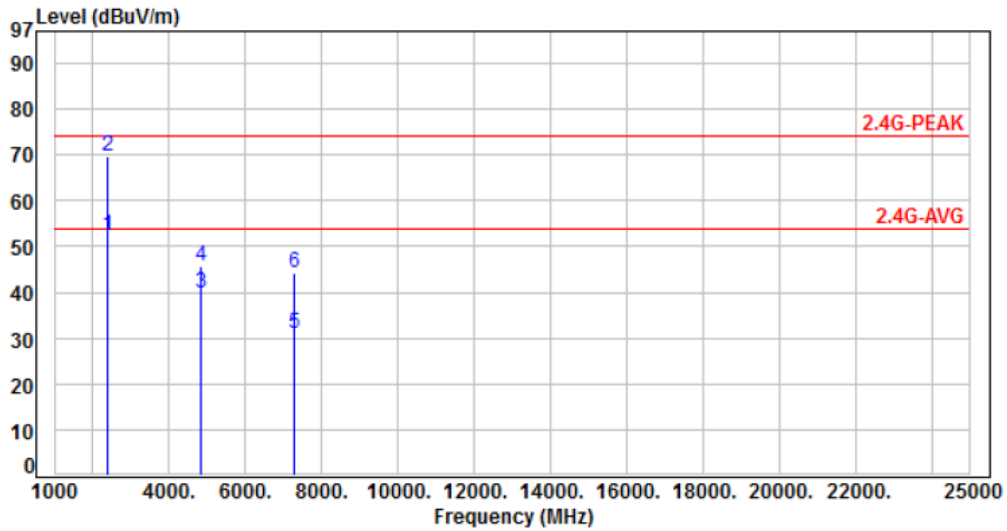




Power	: AC 120V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 4, CH03	Temperature	: 23 °C
Test Date	: Jul. 09, 2018	Humidity	: 61 %

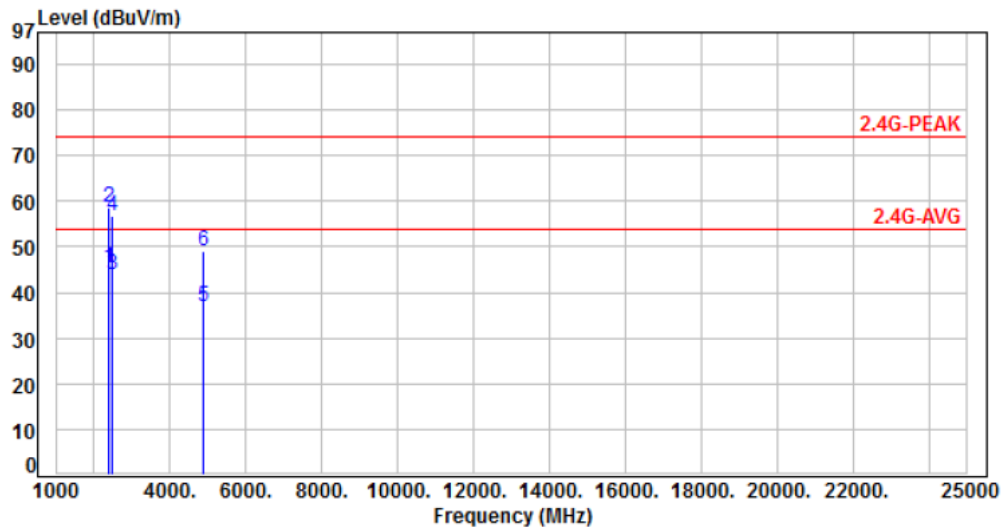


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.96	68.50	52.54	54.00	-1.46	Average	122	303	P
2	2390.00	-15.96	85.64	69.68	74.00	-4.32	Peak	122	303	P
3	4844.00	-8.74	48.67	39.93	54.00	-14.07	Average	102	128	P
4	4844.00	-8.74	54.39	45.65	74.00	-28.35	Peak	102	128	P
5	7266.00	-4.83	35.90	31.07	54.00	-22.93	Average	118	302	P
6	7266.00	-4.83	49.07	44.24	74.00	-29.76	Peak	118	302	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: VERTICAL
Test Mode	: Mode 4, CH06	Temperature	: 23 °C
Test Date	: Jul. 09, 2018	Humidity	: 61 %

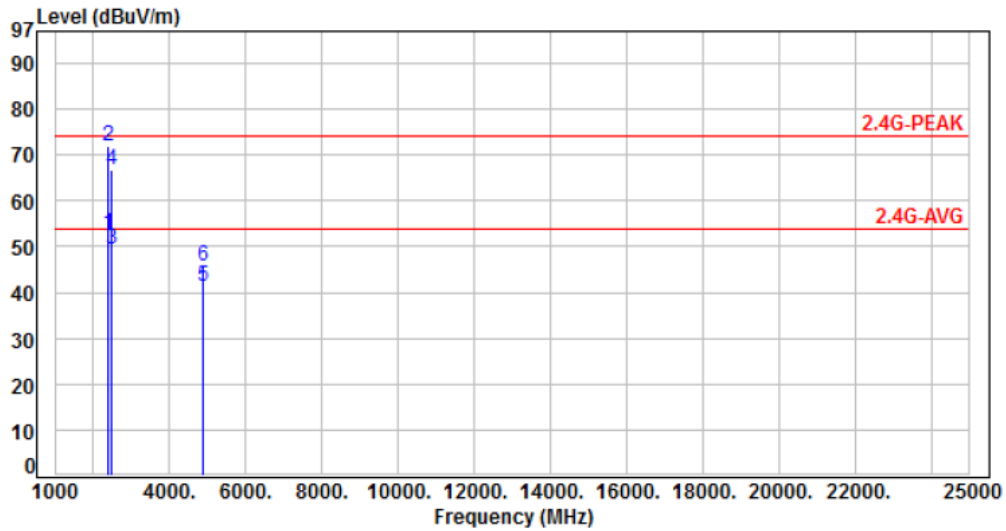


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.96	61.48	45.52	54.00	-8.48	Average	101	222	P
2	2390.00	-15.96	74.52	58.56	74.00	-15.44	Peak	101	222	P
3	2483.50	-15.65	59.41	43.76	54.00	-10.24	Average	101	222	P
4	2483.50	-15.65	72.39	56.74	74.00	-17.26	Peak	101	222	P
5	4874.00	-8.65	45.64	36.99	54.00	-17.01	Average	101	346	P
6	4874.00	-8.65	57.64	48.99	74.00	-25.01	Peak	101	346	P

Note: Level=Reading+Factor
 Margin=Level-Limit
 Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 4, CH06	Temperature	: 23 °C
Test Date	: Jul. 09, 2018	Humidity	: 61 %

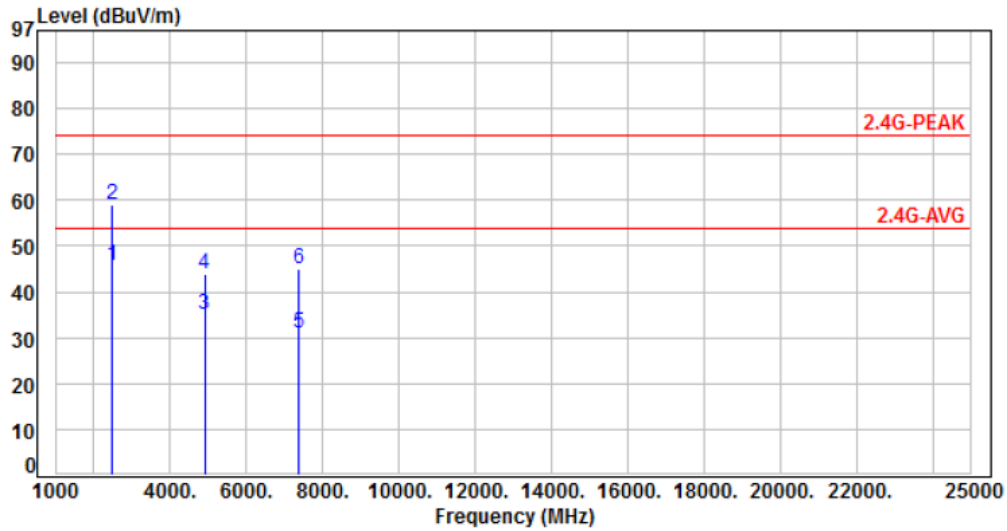


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.96	68.64	52.68	54.00	-1.32	Average	165	305	P
2	2390.00	-15.96	87.85	71.89	74.00	-2.11	Peak	165	305	P
3	2483.50	-15.65	65.11	49.46	54.00	-4.54	Average	165	305	P
4	2483.50	-15.65	82.27	66.62	74.00	-7.38	Peak	165	305	P
5	4874.00	-8.65	50.10	41.45	54.00	-12.55	Average	100	126	P
6	4874.00	-8.65	54.49	45.84	74.00	-28.16	Peak	100	126	P

Note: Level=Reading+Factor
 Margin=Level-Limit
 Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: VERTICAL
Test Mode	: Mode 4, CH09	Temperature	: 23 °C
Test Date	: Jul. 09, 2018	Humidity	: 61 %

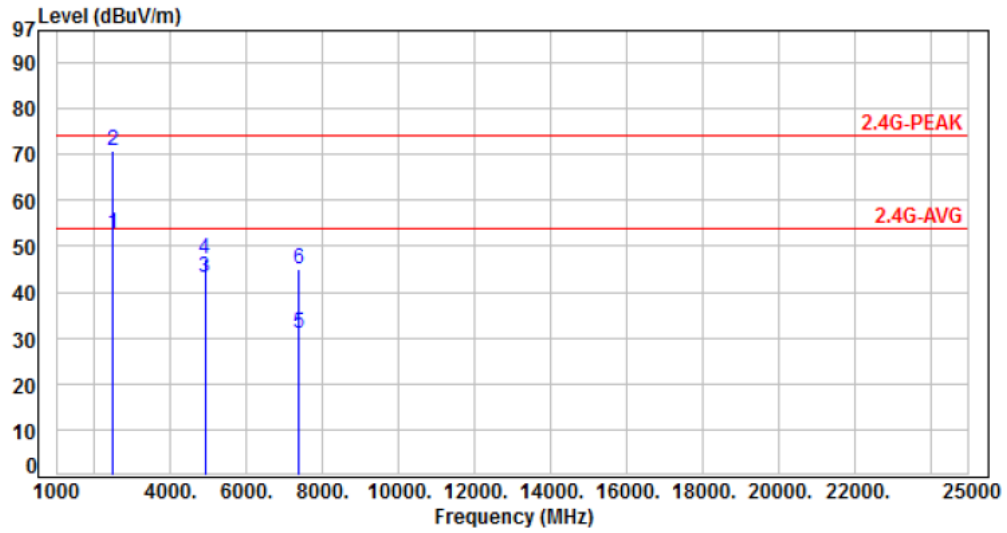


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-15.65	61.54	45.89	54.00	-8.11	Average	301	341	P
2	2483.50	-15.65	74.83	59.18	74.00	-14.82	Peak	301	341	P
3	4904.00	-8.56	43.57	35.01	54.00	-18.99	Average	133	282	P
4	4904.00	-8.56	52.50	43.94	74.00	-30.06	Peak	133	282	P
5	7356.00	-4.57	35.69	31.12	54.00	-22.88	Average	100	313	P
6	7356.00	-4.57	49.61	45.04	74.00	-28.96	Peak	100	313	P

Note: Level=Reading+Factor
 Margin=Level-Limit
 Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 4, CH09	Temperature	: 23 °C
Test Date	: Jul. 09, 2018	Humidity	: 61 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBUV)	Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-15.65	68.32	52.67	54.00	-1.33	Average	115	301	P
2	2483.50	-15.65	86.65	71.00	74.00	-3.00	Peak	115	301	P
3	4904.00	-8.56	51.56	43.00	54.00	-11.00	Average	100	125	P
4	4904.00	-8.56	55.82	47.26	74.00	-26.74	Peak	100	125	P
5	7356.00	-4.57	35.42	30.85	54.00	-23.15	Average	108	326	P
6	7356.00	-4.57	49.52	44.95	74.00	-29.05	Peak	108	326	P

Note: Level=Reading+Factor
 Margin=Level-Limit
 Factor=Antenna Factor + cable loss - Amplifier Factor



6.7 Restricted Bands of Operation

Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.09000 – 0.11000	16.42000 – 16.42300	399.9 – 410.0	4.500 – 5.250
0.49500 – 0.505**	16.69475 – 16.69525	608.0 – 614.0	5.350 – 5.460
2.17350 – 2.19050	16.80425 – 16.80475	960.0 – 1240.0	7.250 – 7.750
4.12500 – 4.12800	25.50000 – 25.67000	1300.0 – 1427.0	8.025 – 8.500
4.17725 – 4.17775	37.50000 – 38.25000	1435.0 – 1626.5	9.000 – 9.200
4.20725 – 4.20775	73.00000 – 74.60000	1645.5 – 1646.5	9.300 – 9.500
6.21500 – 6.21800	74.80000 – 75.20000	1660.0 – 1710.0	10.600 – 12.700
6.26775 – 6.26825	108.00000 – 121.94000	1718.8 – 1722.2	13.250 – 13.400
6.31175 – 6.31225	123.00000 – 138.00000	2200.0 – 2300.0	14.470 – 14.500
8.29100 – 8.29400	149.90000 – 150.05000	2310.0 – 2390.0	15.350 – 16.200
8.36200 – 8.36600	156.52475 – 156.52525	2483.5 – 2500.0	17.700 – 21.400
8.37625 – 8.38675	156.70000 – 156.90000	2655.0 – 2900.0	22.010 – 23.120
8.41425 – 8.41475	162.01250 – 167.17000	3260.0 – 3267.0	23.600 – 24.000
12.29000 – 12.29300	167.72000 – 173.20000	3332.0 – 3339.0	31.200 – 31.800
12.51975 – 12.52025	240.00000 – 285.00000	3345.8 – 3358.0	36.430 – 36.500
12.57675 – 12.57725	322.00000 – 335.40000	3600.0 – 4400.0	Above 38.6
13.36000 – 13.41000			

** : Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz



7. Test of Conducted Spurious Emission

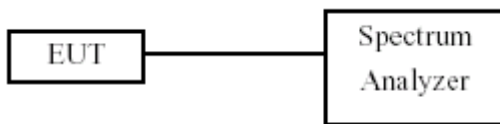
7.1 Test Limit

Below -30dB of the highest emission level of operating band (In 100 kHz Resolution Bandwidth)

7.2 Test Procedure

- a. The transmitter output was connected to the spectrum analyzer via a low lose cable.
- b. Set RBW of spectrum analyzer to 100 KHz and VBW of spectrum analyzer to 300 KHz with convenient frequency span including 100 KHz bandwidth from band edge.
- c. Peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated by at least 30dB relative to the maximum measured in-band peak PSD level.
- d. The band edges was measured and recorded.

7.3 Test Setup Layout



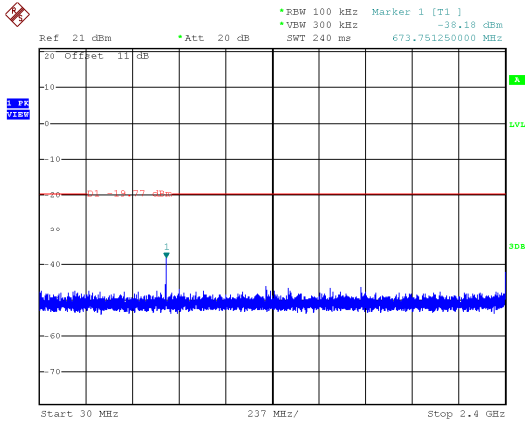
7.4 Test Result and Data

Test Result	: PASS	Temperature	: 23°C
Test Date	: Aug. 20, 2018	Humidity	: 64%

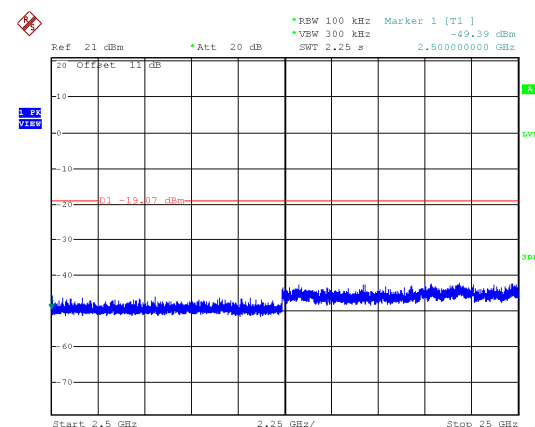
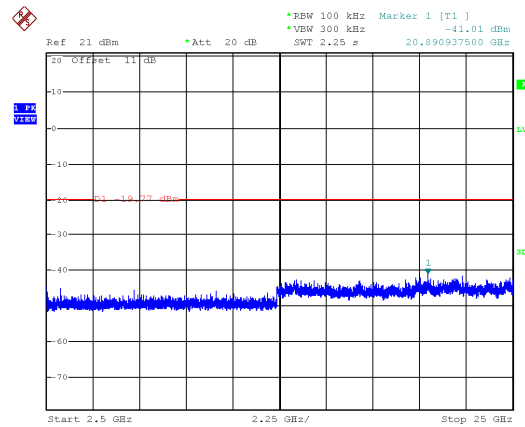
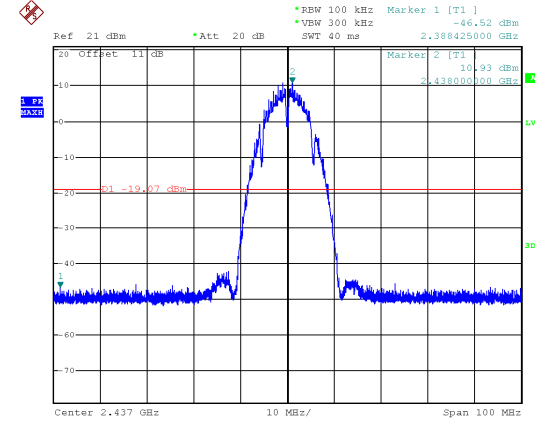
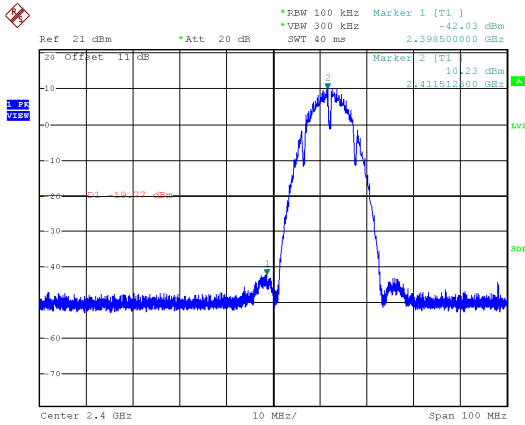
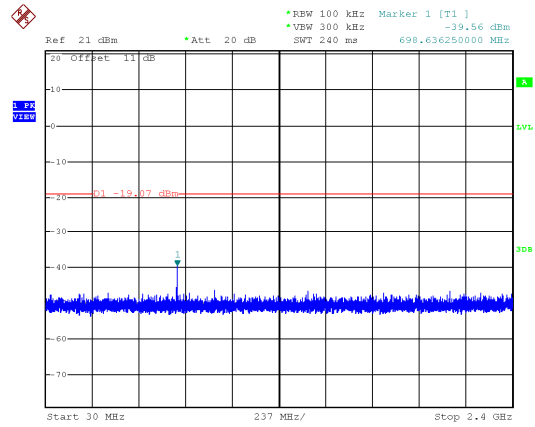
Note: Test plots refers to the following pages.



ANT A
Modulation Type: 802.11b, CH 01

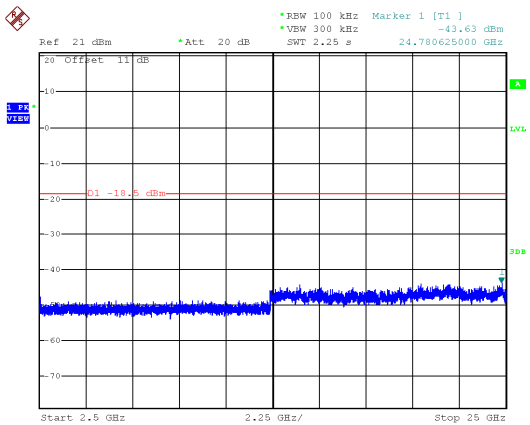
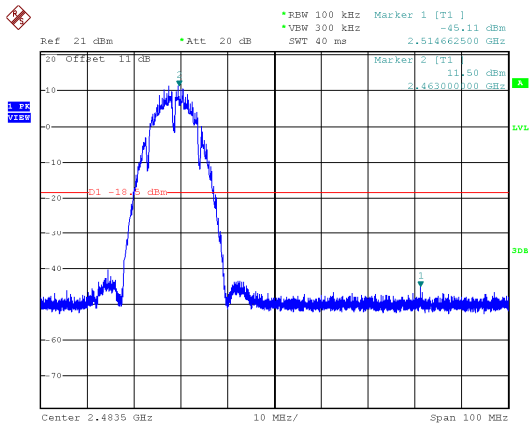
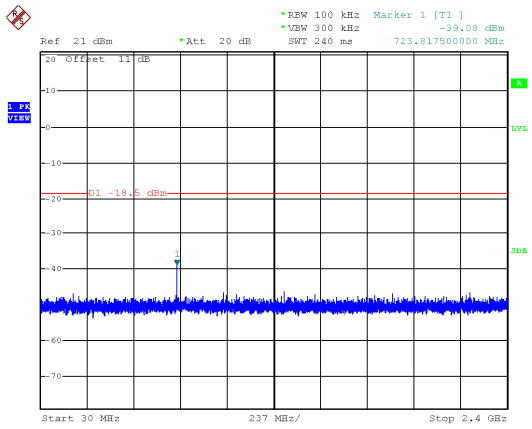


Modulation Type: 802.11b, CH 06





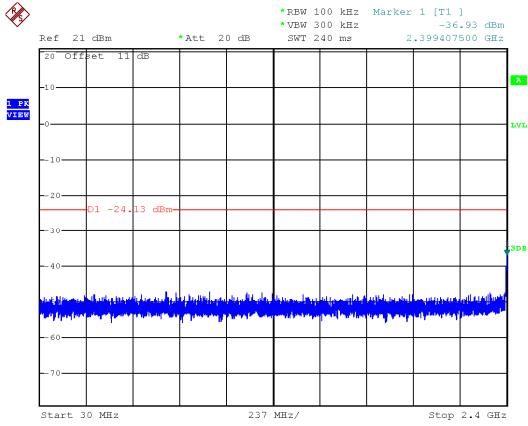
Modulation Type: 802.11b, CH 11



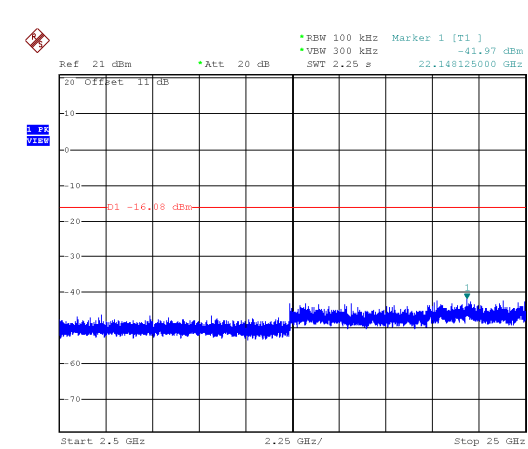
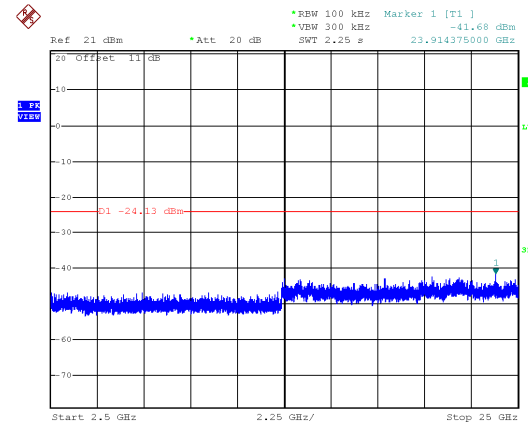
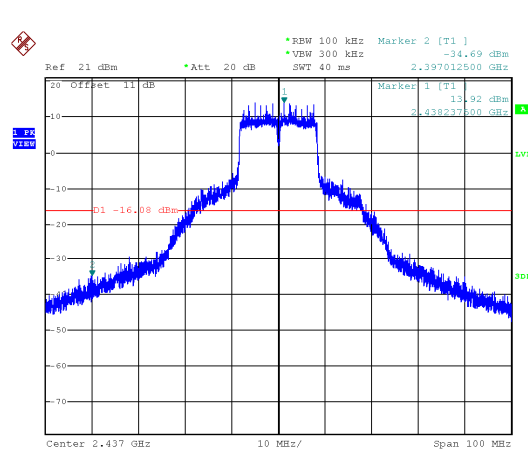
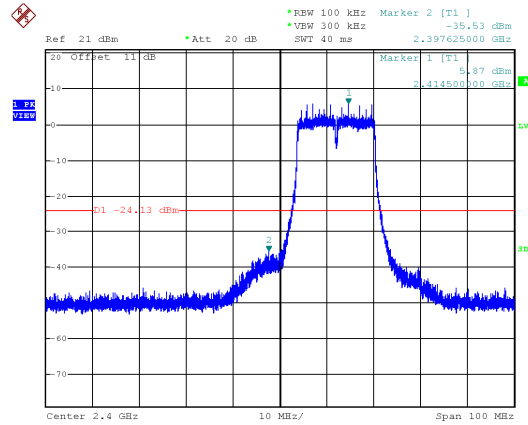
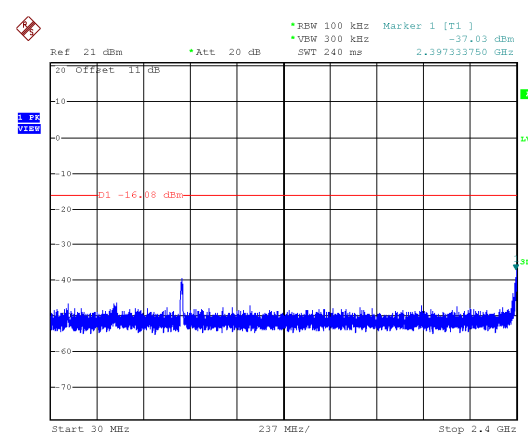


ANT A

Modulation Type: 802.11g, CH 01

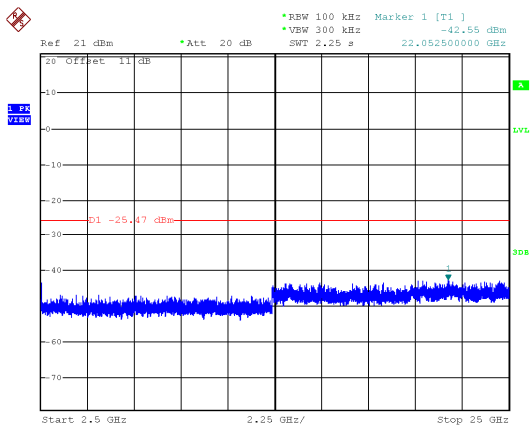
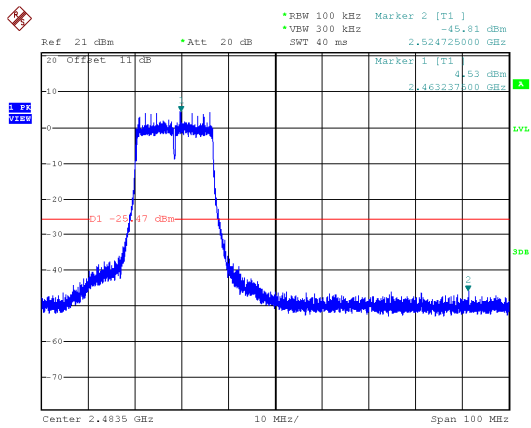
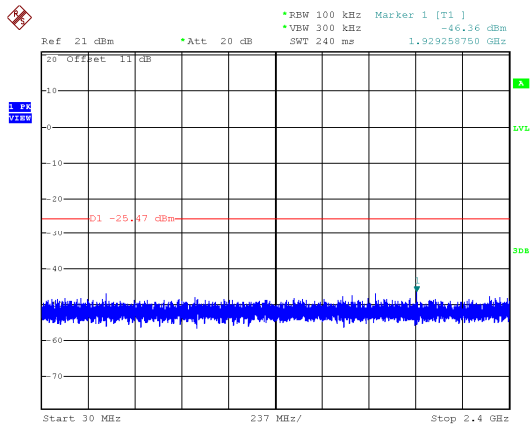


Modulation Type: 802.11g, CH 06





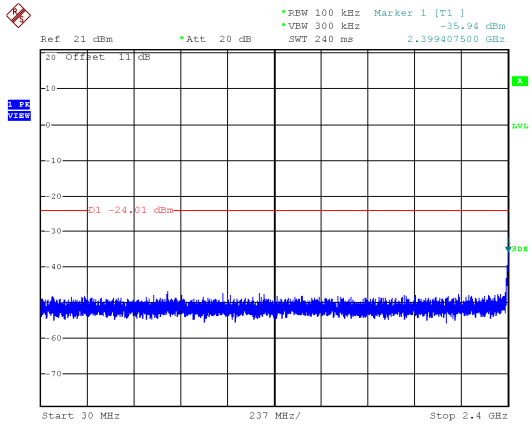
Modulation Type: 802.11g, CH 11



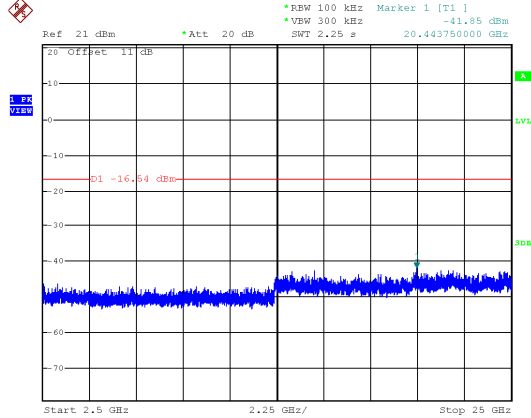
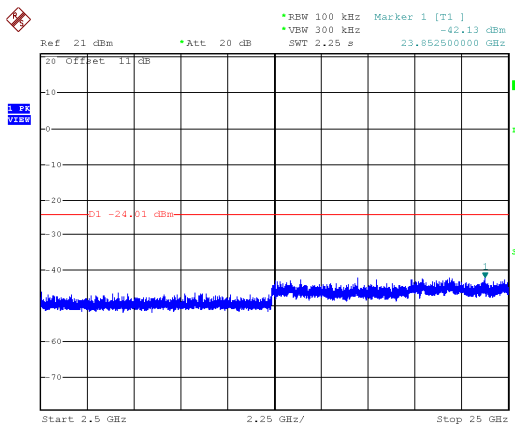
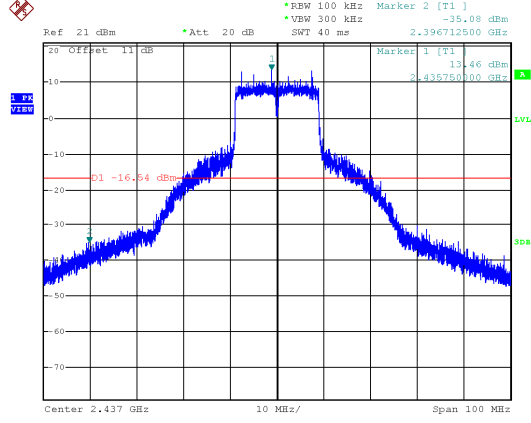
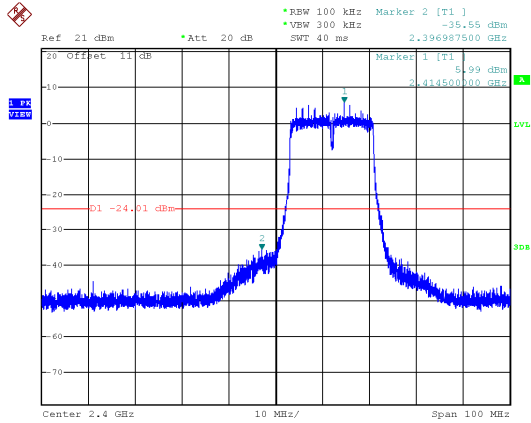
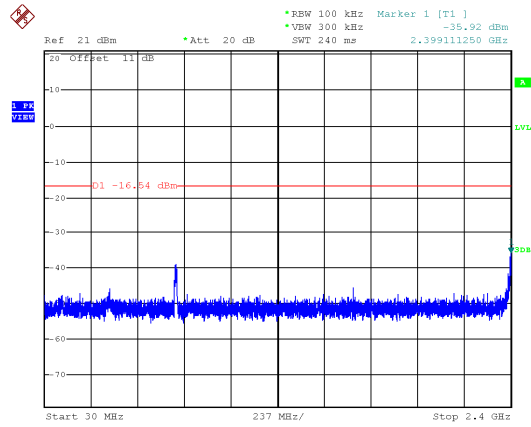


ANT A

Modulation Type: VHT20, CH01

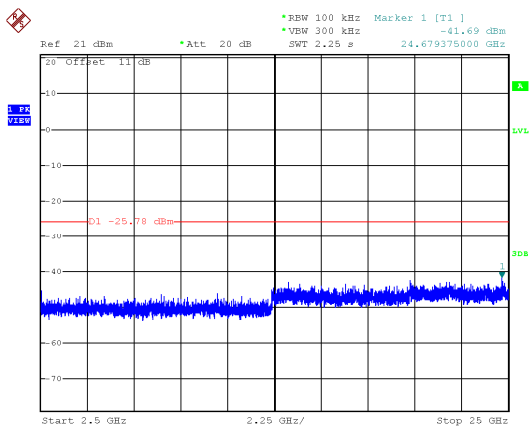
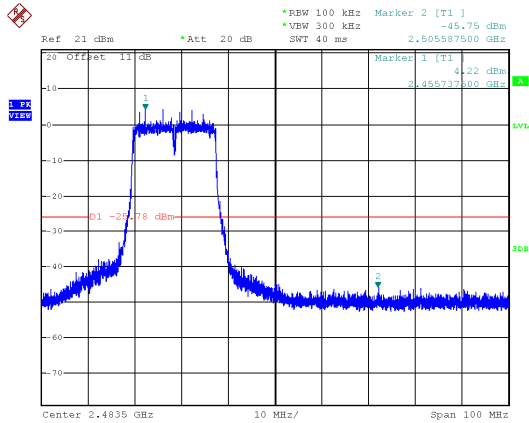
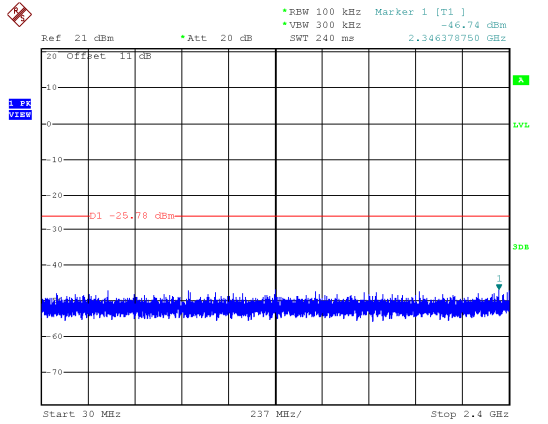


Modulation Type: VHT20, CH06





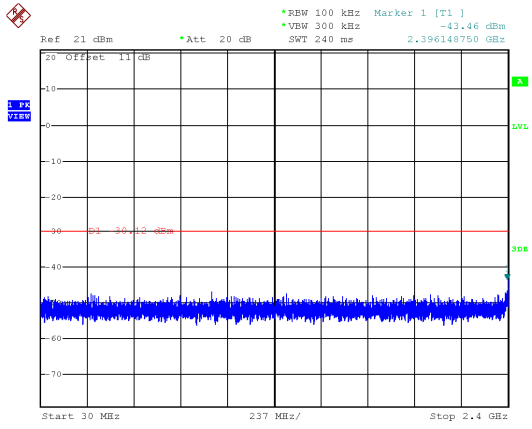
Modulation Type: VHT20, CH11



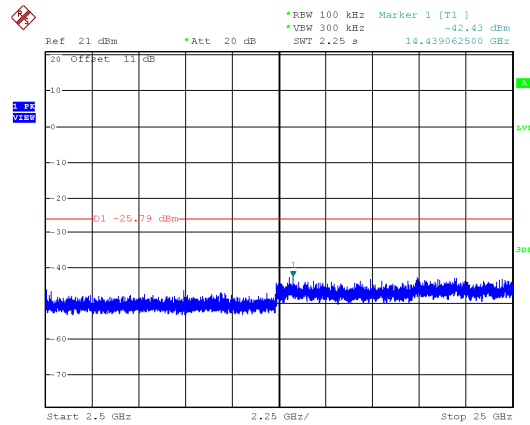
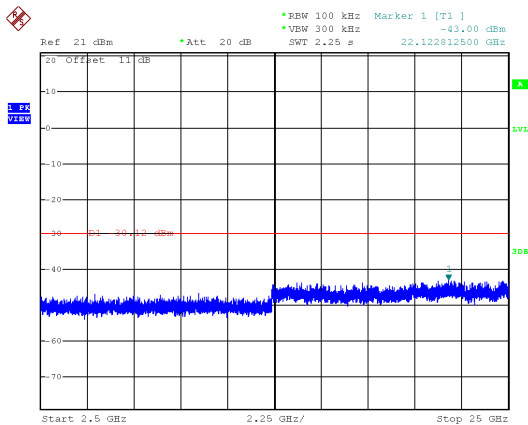
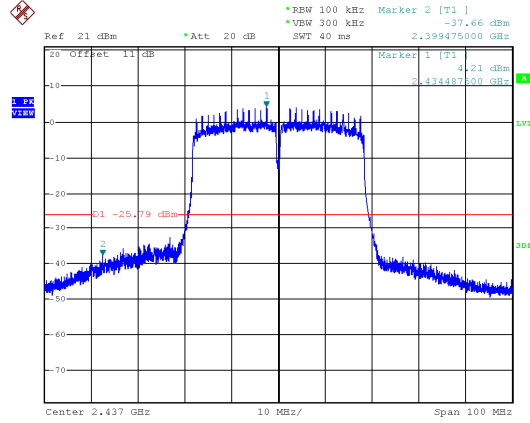
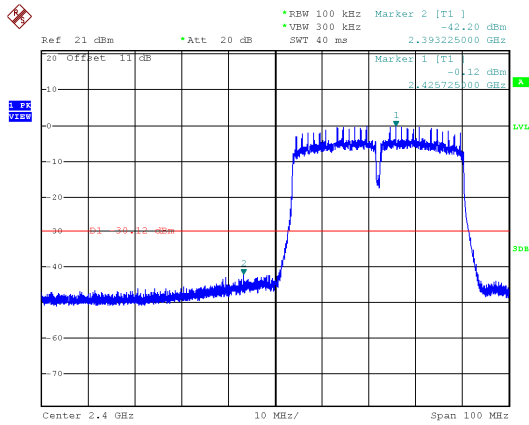
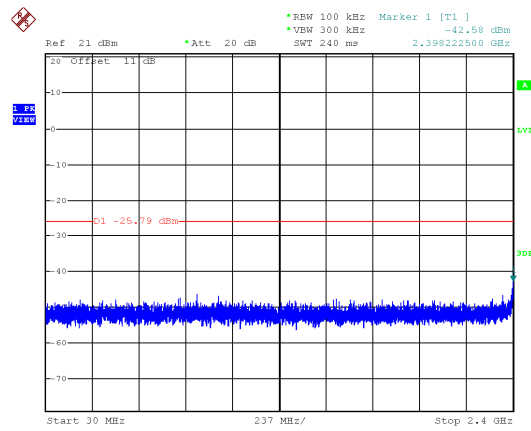


ANT A

Modulation Type: VHT40, CH03

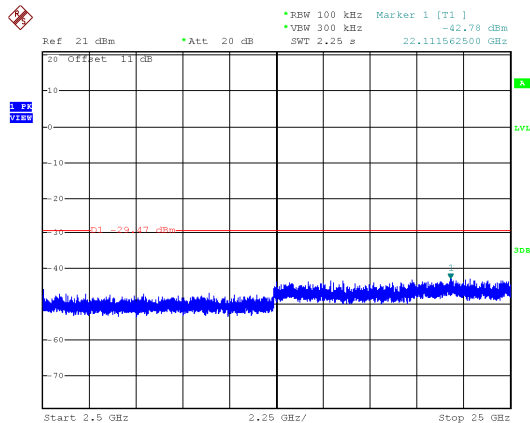
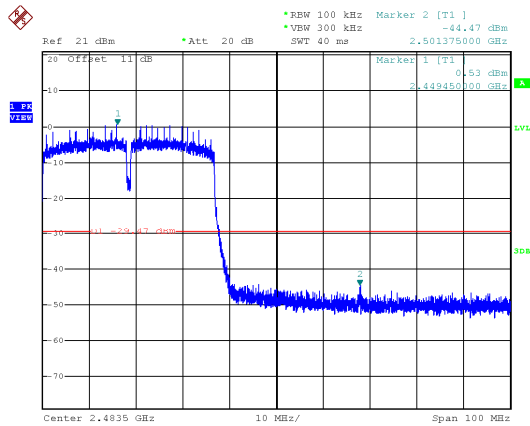
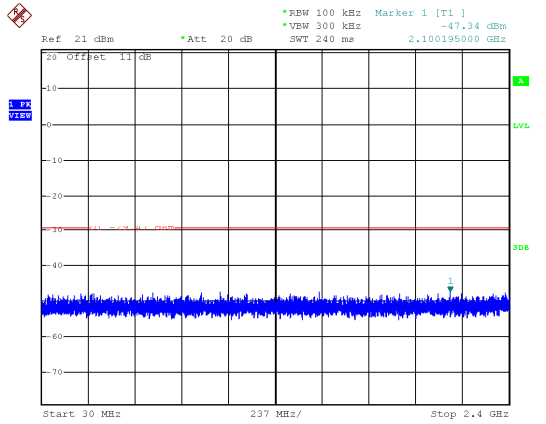


Modulation Type: VHT40, CH06



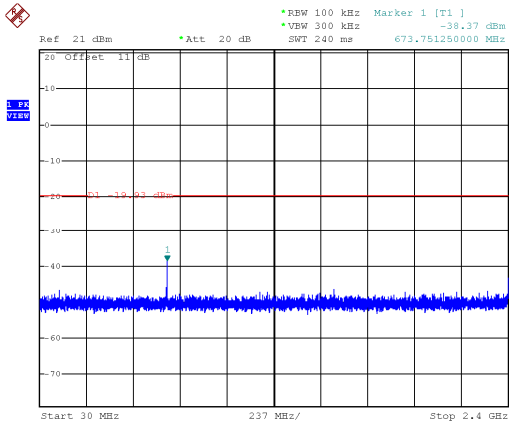


Modulation Type: VHT40, CH09

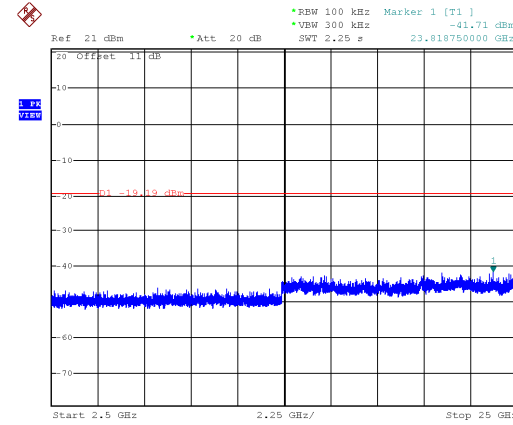
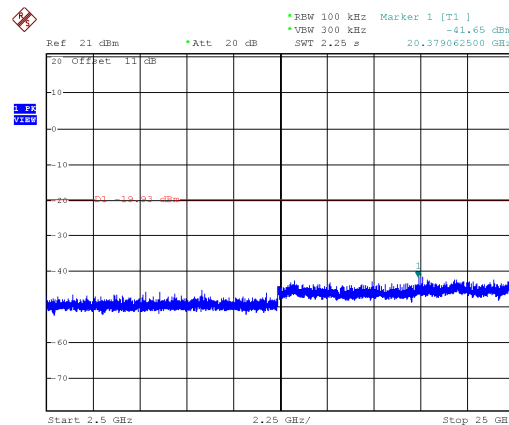
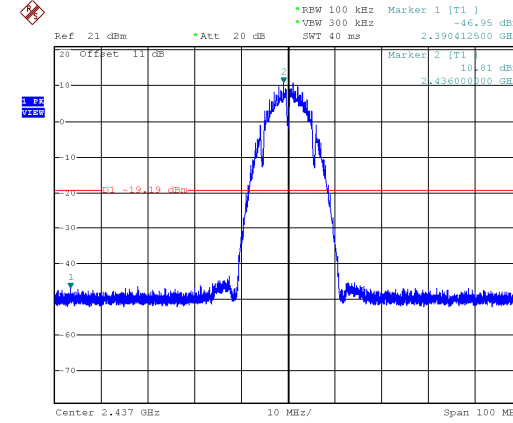
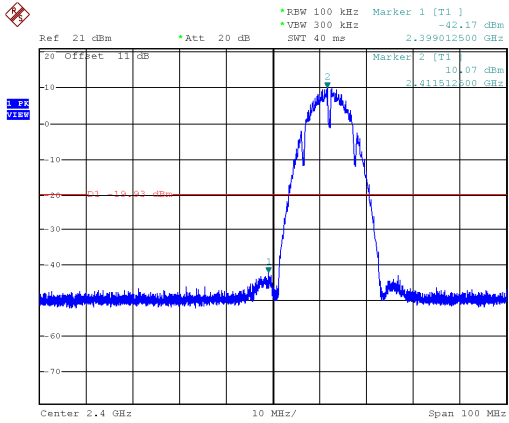
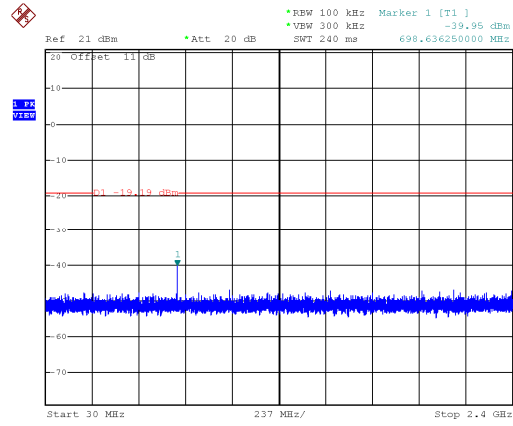




ANT B
Modulation Type: 802.11b, CH 01

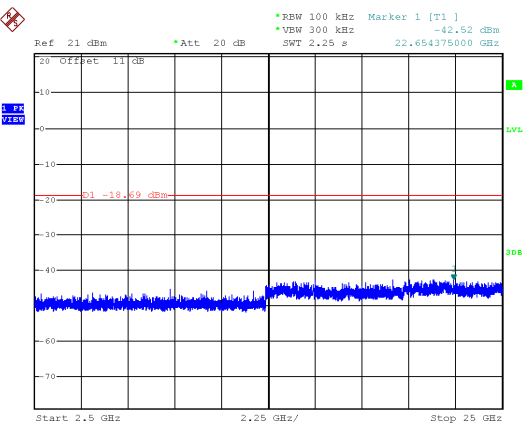
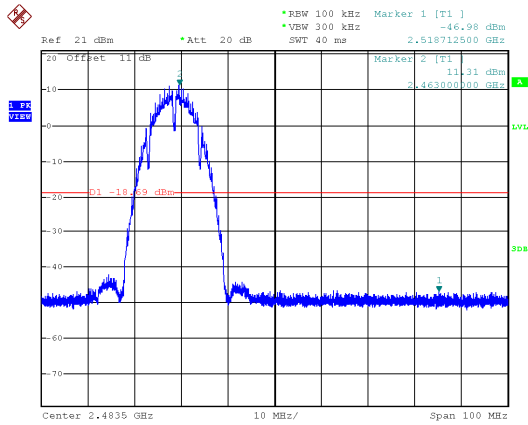
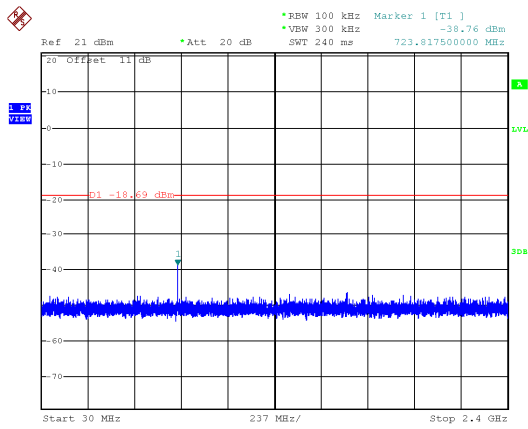


Modulation Type: 802.11b, CH 06





Modulation Type: 802.11b, CH 11

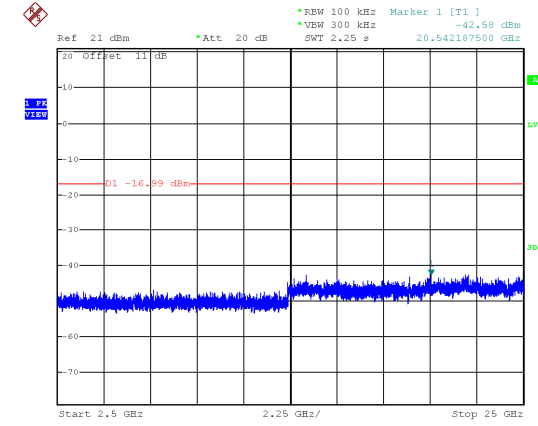
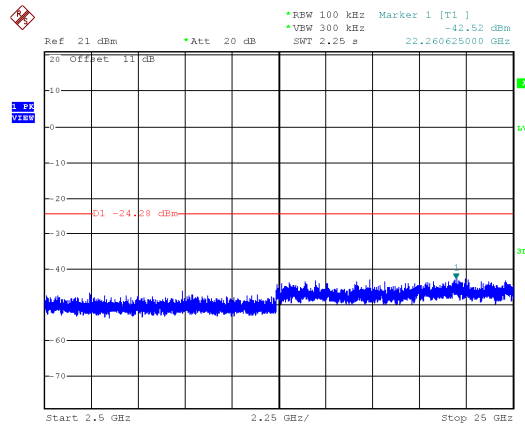
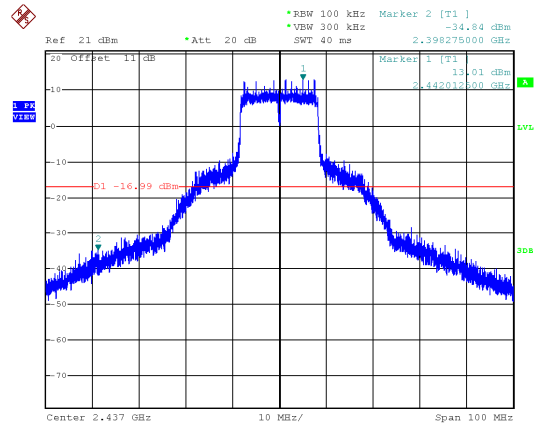
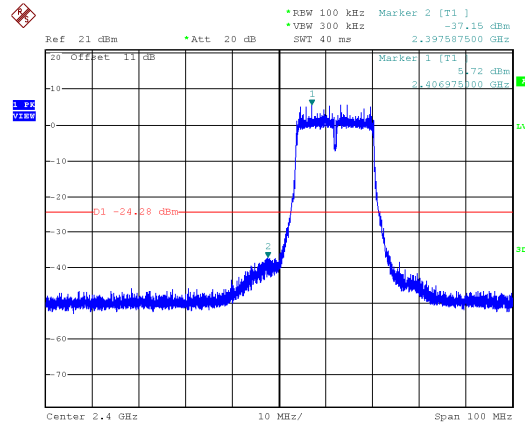
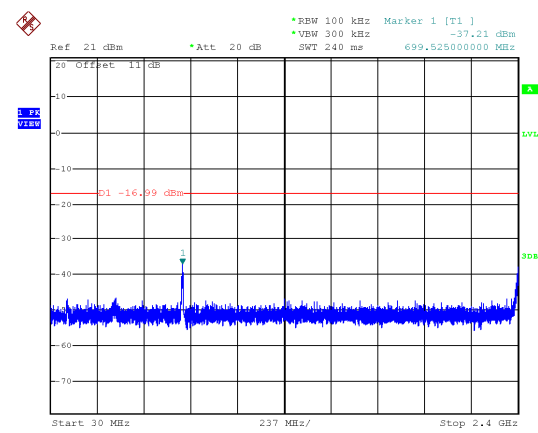
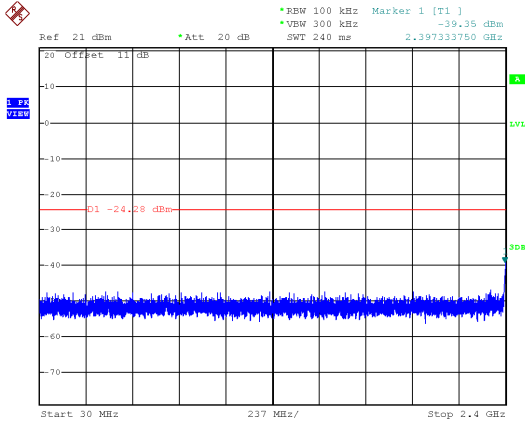




ANT B

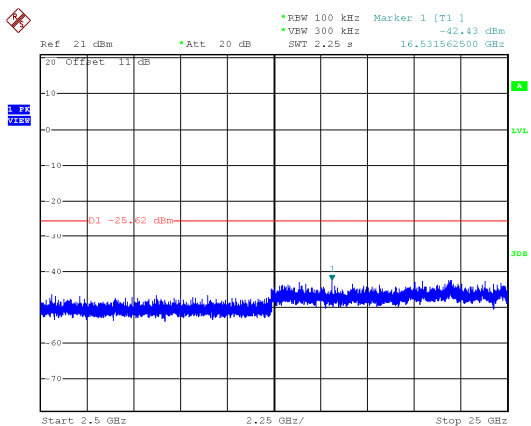
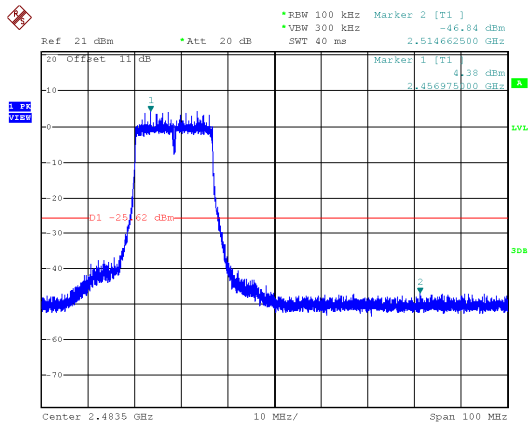
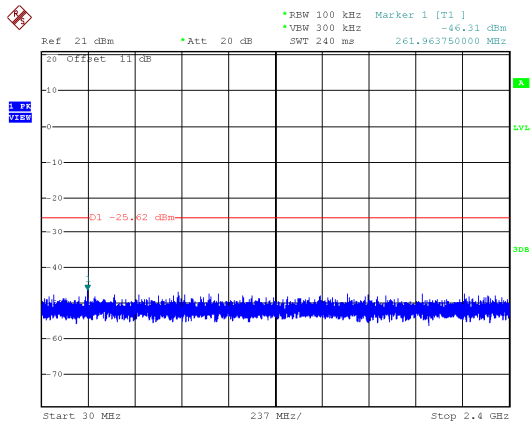
Modulation Type: 802.11g, CH 01

Modulation Type: 802.11g, CH 06





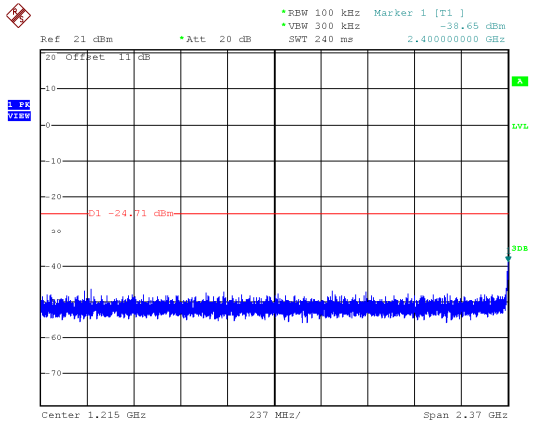
Modulation Type: 802.11g, CH 11



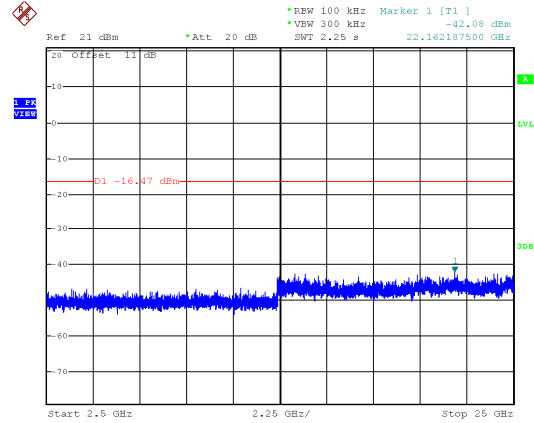
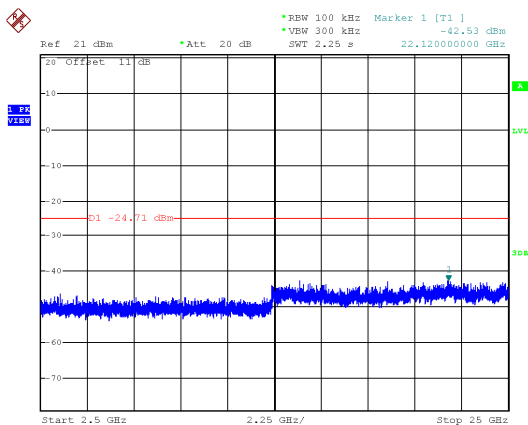
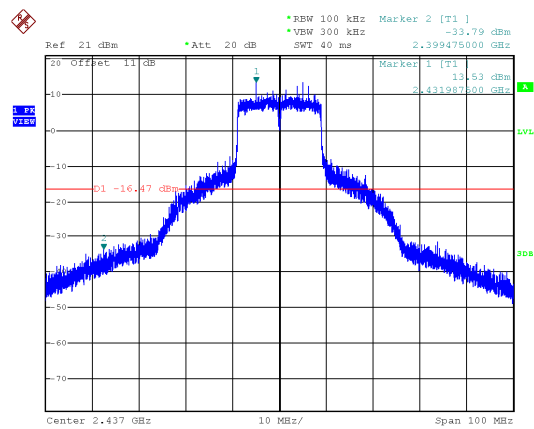
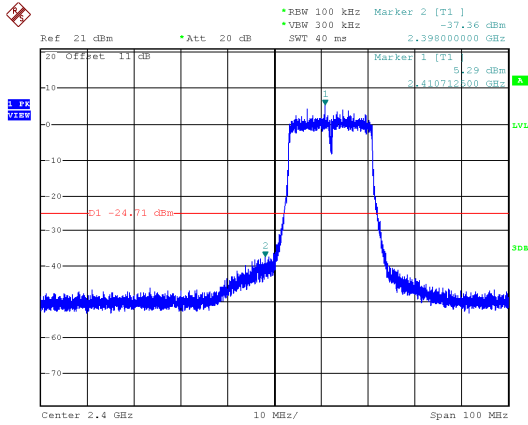
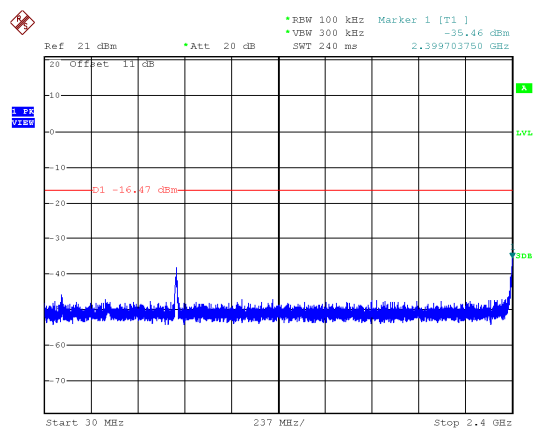


ANT B

Modulation Type: VHT20, CH01

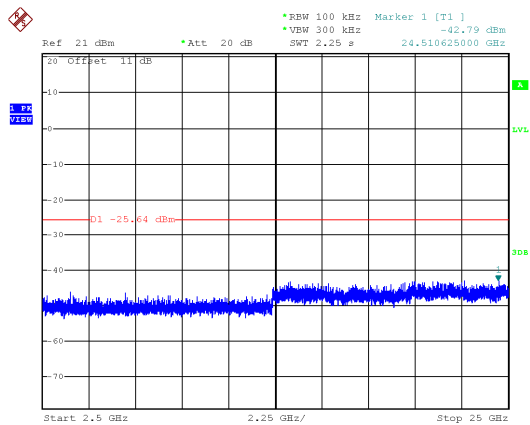
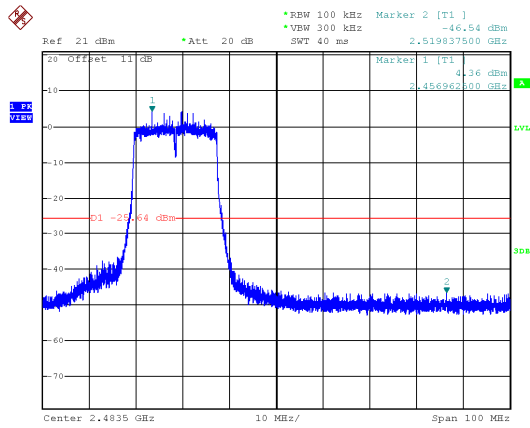
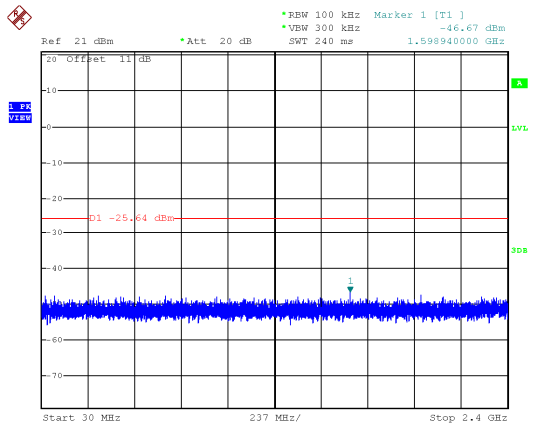


Modulation Type: VHT20, CH06





Modulation Type: VHT20, CH11

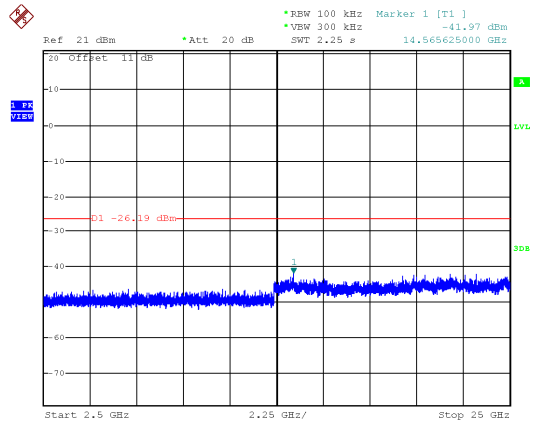
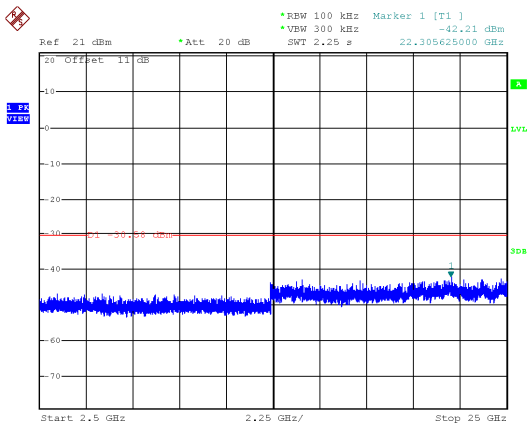
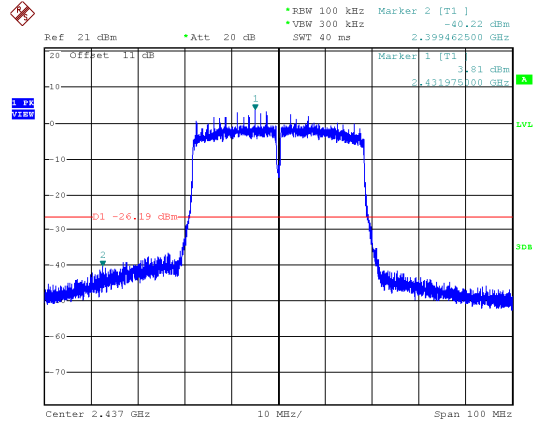
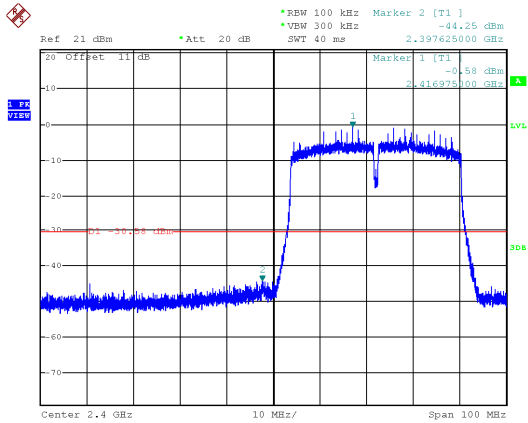
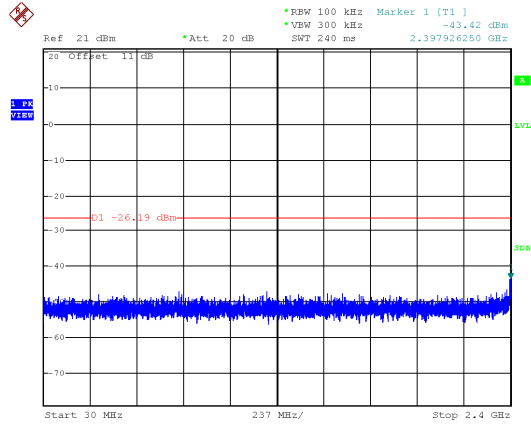
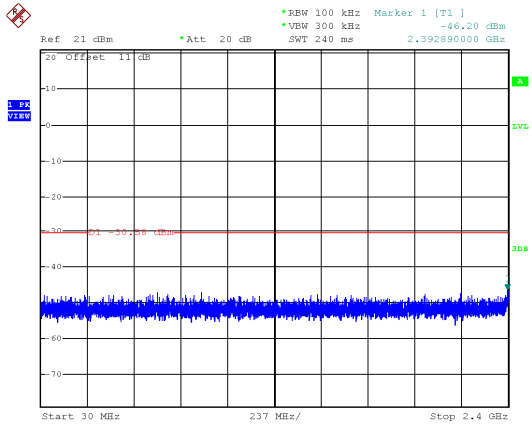




ANT B

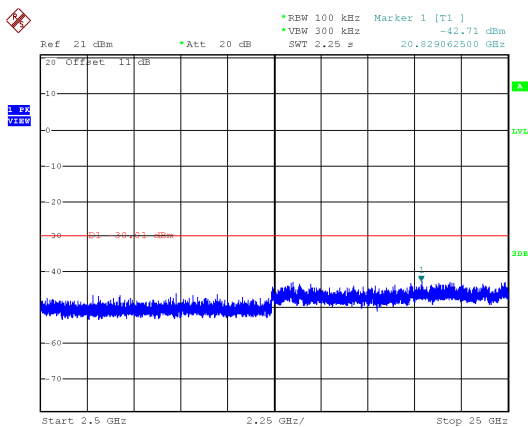
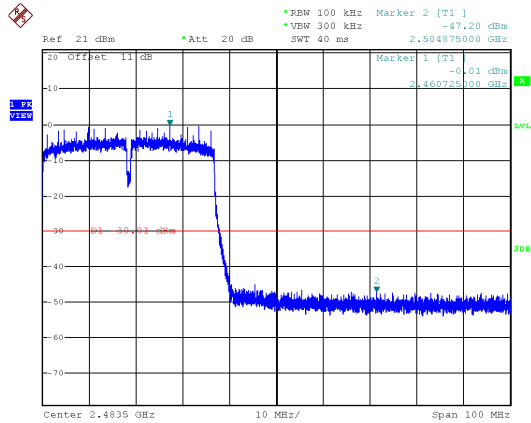
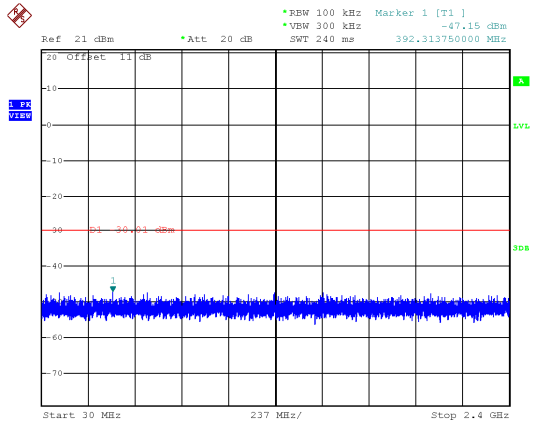
Modulation Type: VHT40, CH03

Modulation Type: VHT40, CH06





Modulation Type: VHT40, CH09





8. On Time, Duty Cycle and Measurement methods

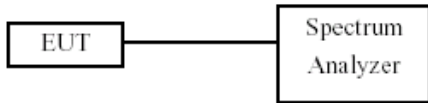
8.1 Test Limit

None; for reporting purposes only.

8.2 Test Procedure

KDB 558074 Zero-Span Spectrum Analyzer Method.

8.3 Test Setup Layout



8.4 Test Result and Data

Temperature : 23°C

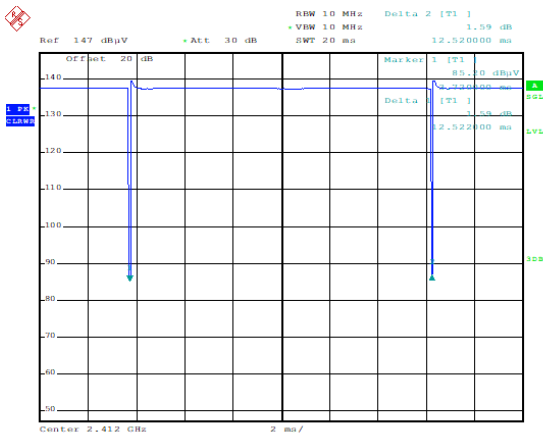
Humidity : 64%

Test Date : Aug. 20, 2018

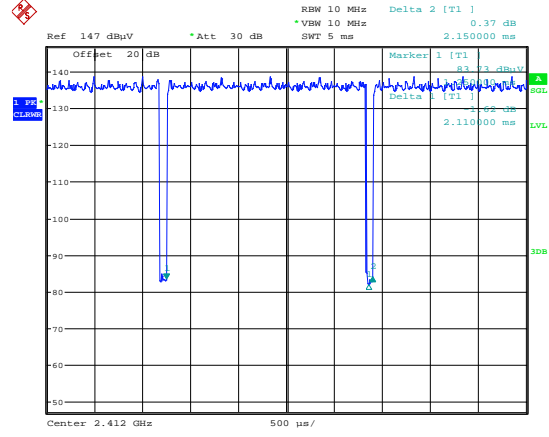
Modulation Type	On Time (msec)	Period Time (msec)	Duty Cycle (%)
802.11b	12.52	12.52	99.98%
802.11g	2.11	2.15	98.14%
VHT20	5.08	5.12	99.22%
VHT40	2.47	2.52	98.02%



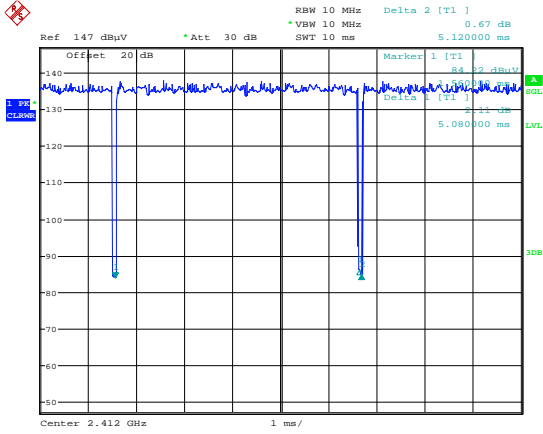
Modulation Standard: 802.11b (1Mbps)



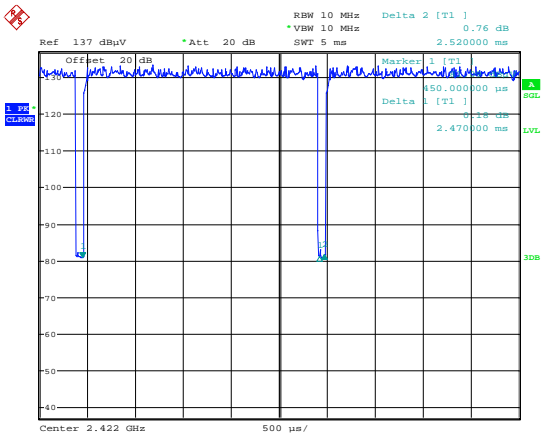
Modulation Standard: 802.11g (6Mbps)



Modulation Standard: VHT20 (6.5Mbps)



Modulation Standard: VHT40 (13.5Mbps)





9.5 Test Result and Data (99% Bandwidth)

Temperature : 23°C

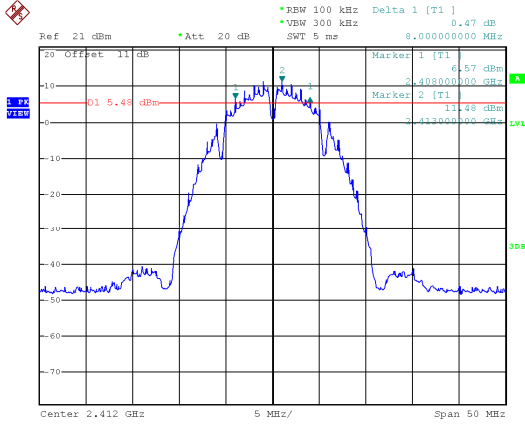
Humidity : 64%

Test Date : Aug. 20, 2018

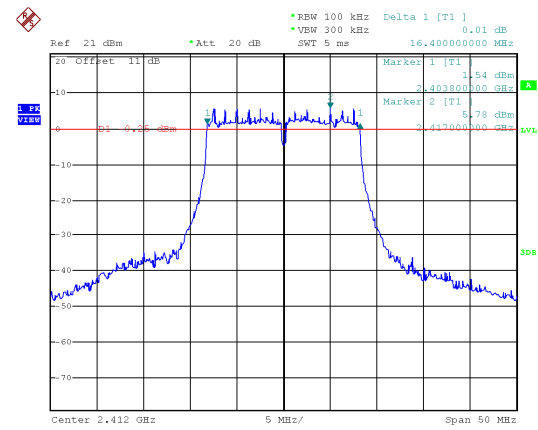
Modulation Type	Channel	Frequency (MHz)	99% Bandwidth (MHz)	
			ANT A	ANT B
IEEE 802.11b (1Mbps)	01	2412	13.00	13.00
	06	2437	12.80	12.80
	11	2462	13.00	13.00
IEEE 802.11g (6Mbps)	01	2412	16.50	16.50
	06	2437	17.90	17.30
	11	2462	16.50	16.50
VHT20 (6.5Mbps)	01	2412	17.70	17.70
	06	2437	18.80	18.50
	11	2462	17.70	17.70
VHT40 (13.5Mbps)	03	2422	36.40	36.20
	06	2437	36.20	36.20
	09	2452	36.20	36.20



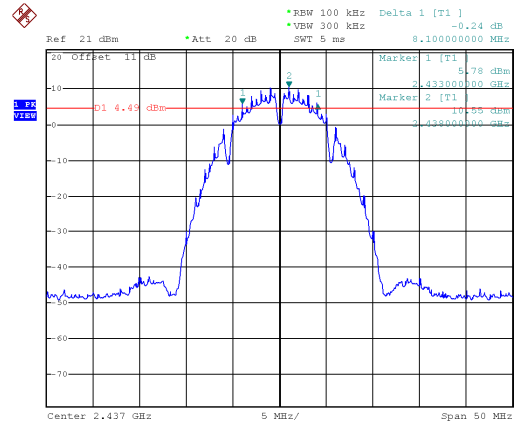
6dB Bandwidth
ANT A
Modulation Type: 802.11b
CH01



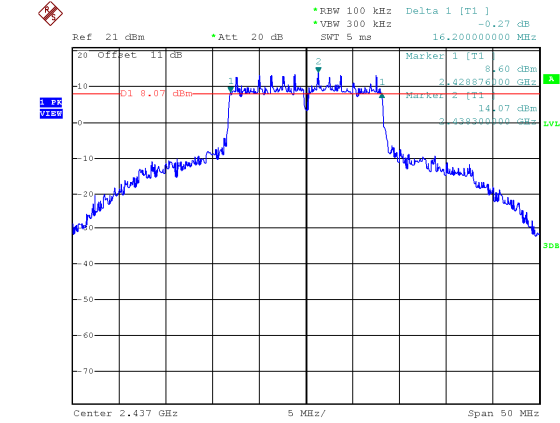
Modulation Type: 802.11g
CH01



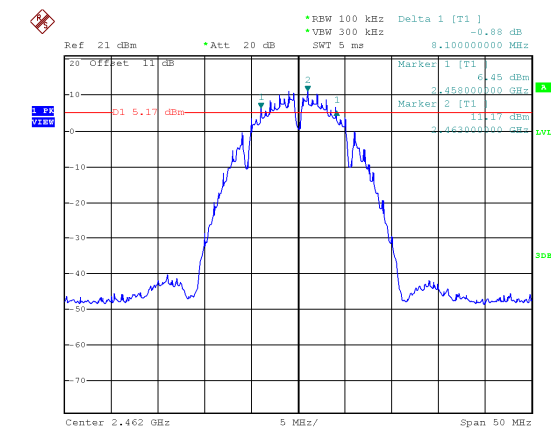
CH06



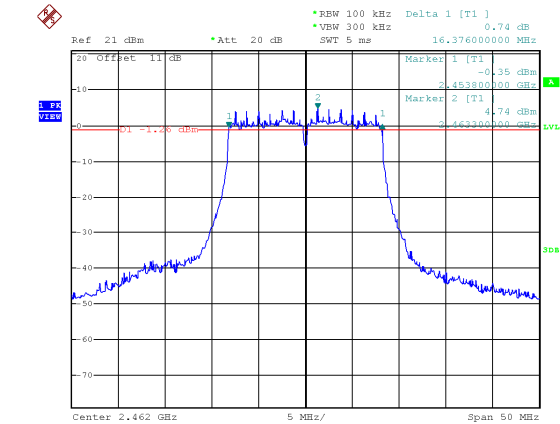
CH06



CH11

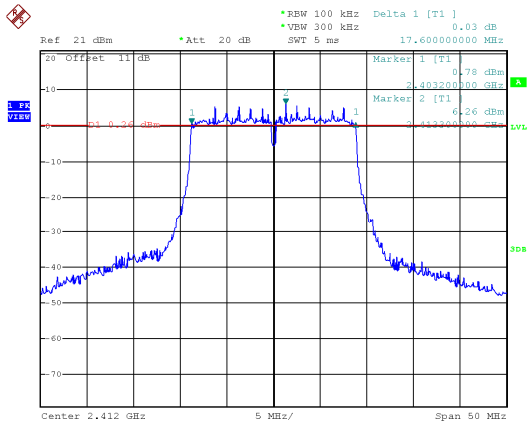


CH11

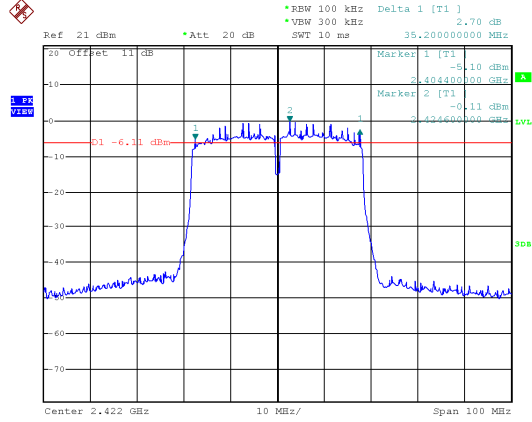




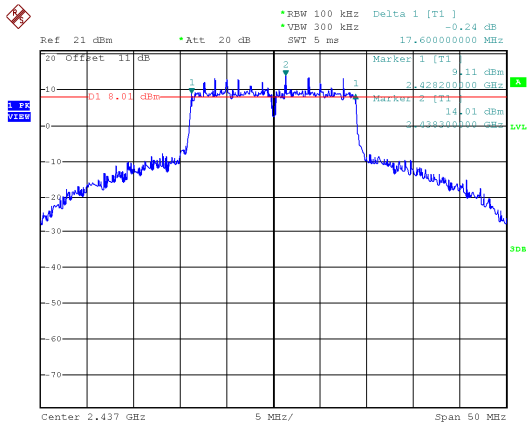
Modulation Type: VHT20
CH01



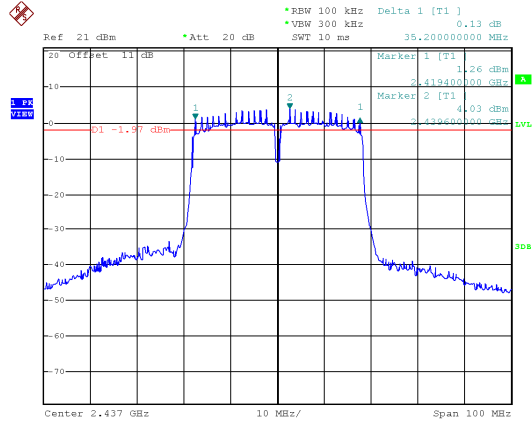
Modulation Type: VHT40
CH03



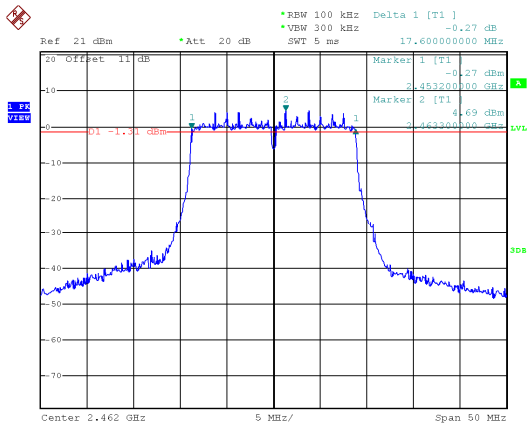
CH06



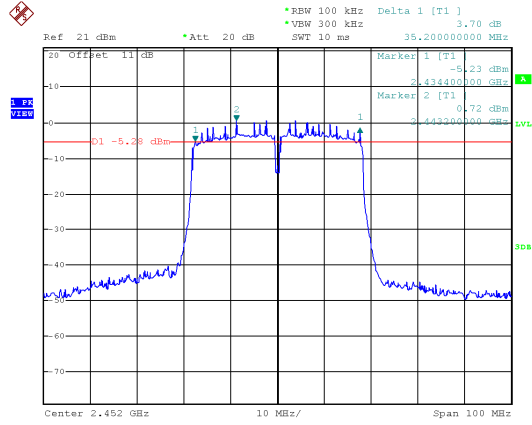
CH06



CH11

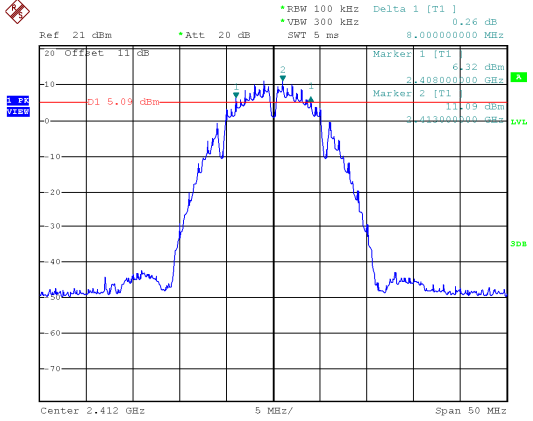


CH09

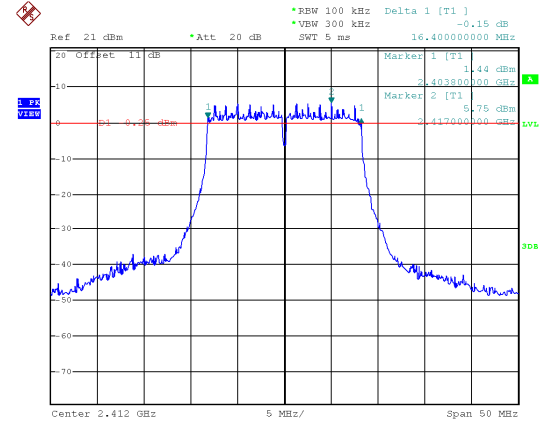




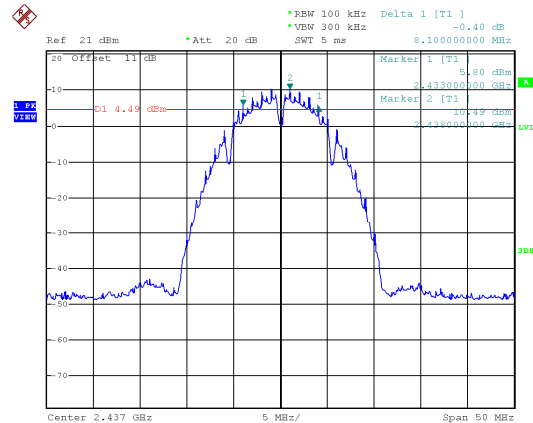
ANT B
Modulation Type: 802.11b
CH01



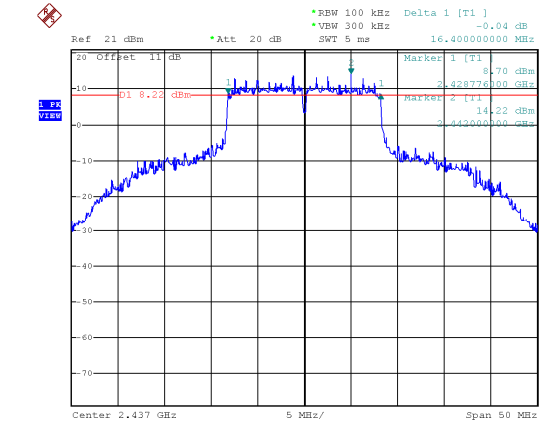
Modulation Type: 802.11g
CH01



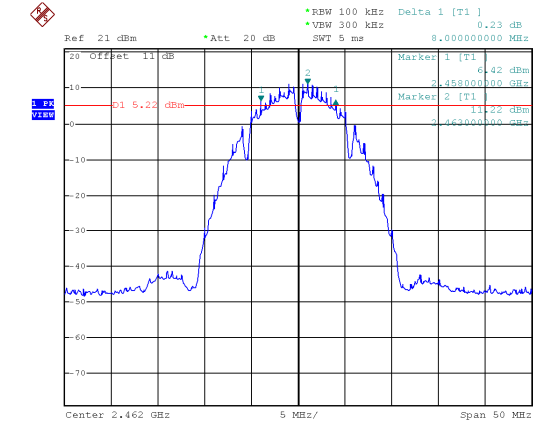
CH06



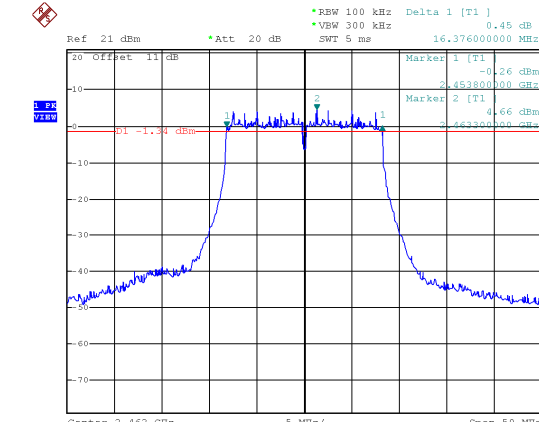
CH06



CH11

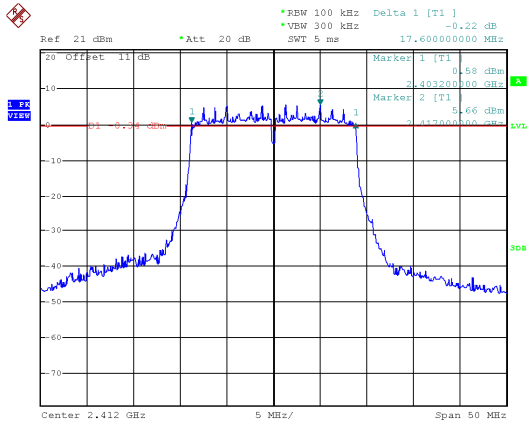


CH11

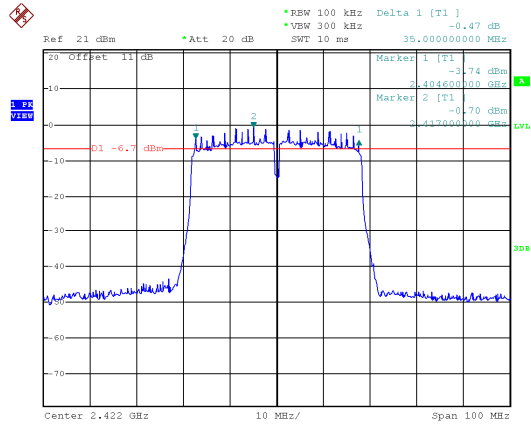




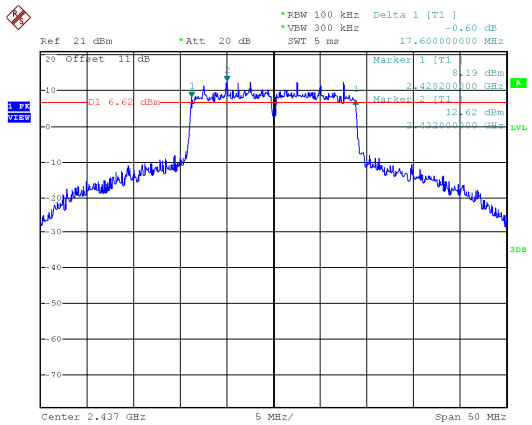
Modulation Type: VHT20
CH01



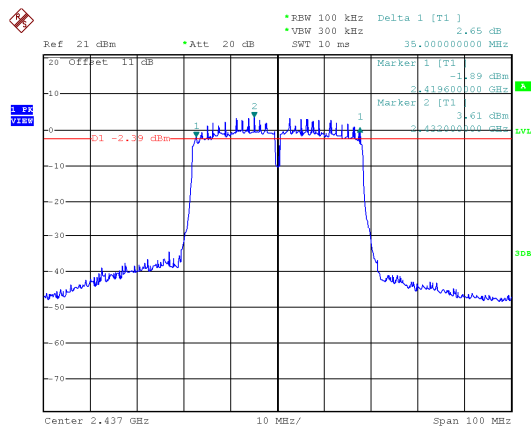
Modulation Type: VHT40
CH03



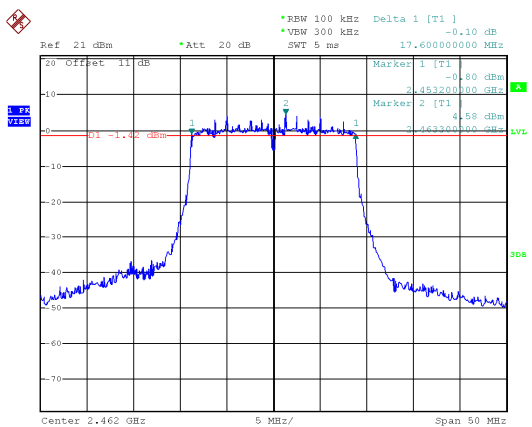
CH06



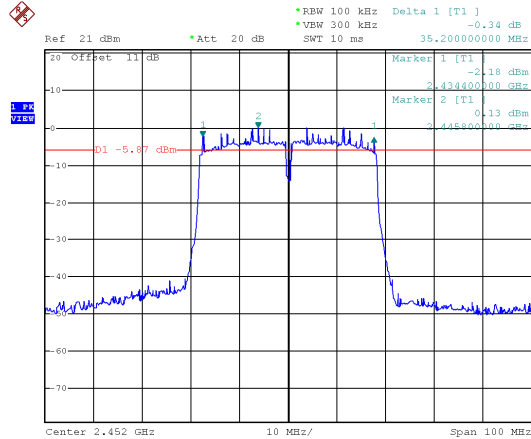
CH06



CH11



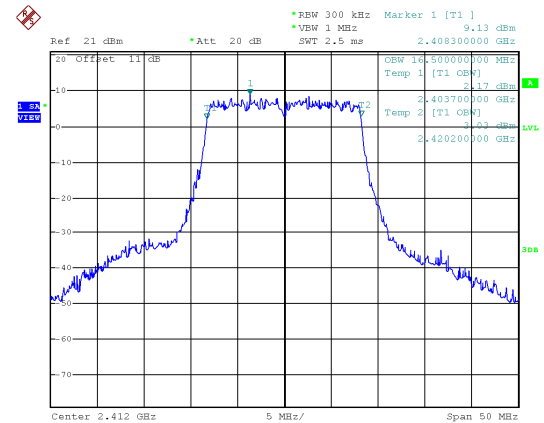
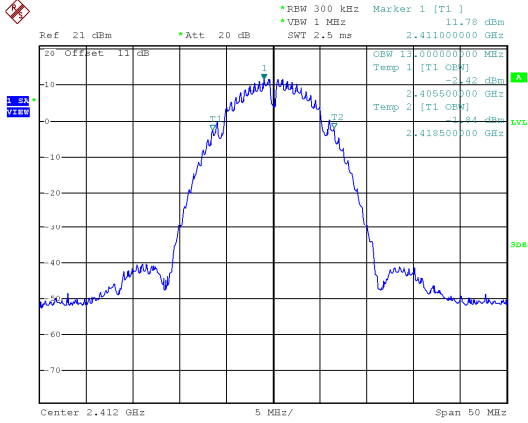
CH09





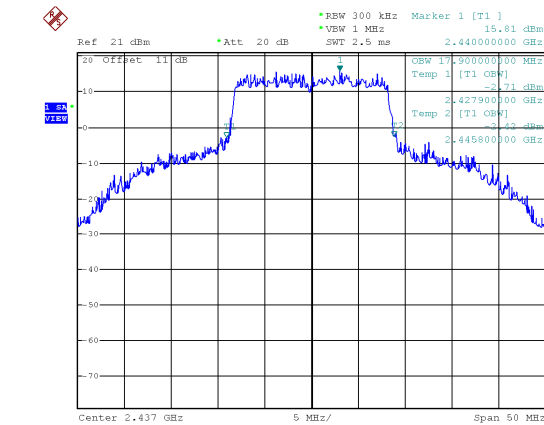
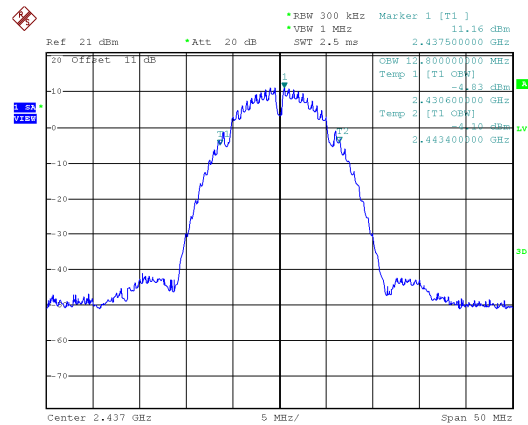
99% Bandwidth
ANT A
Modulation Type: 802.11b
CH01

Modulation Type: 802.11g
CH01



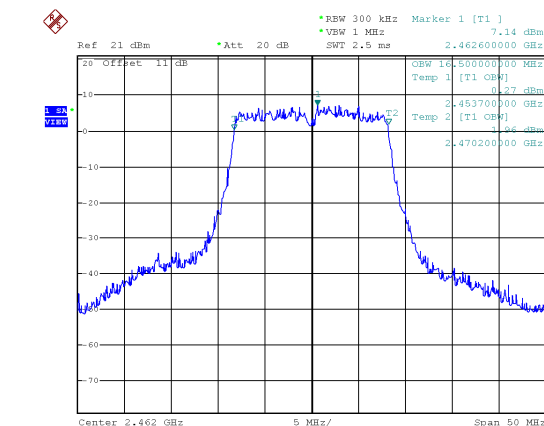
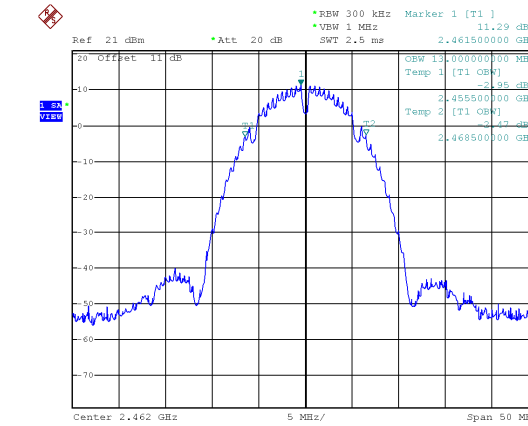
CH06

CH06



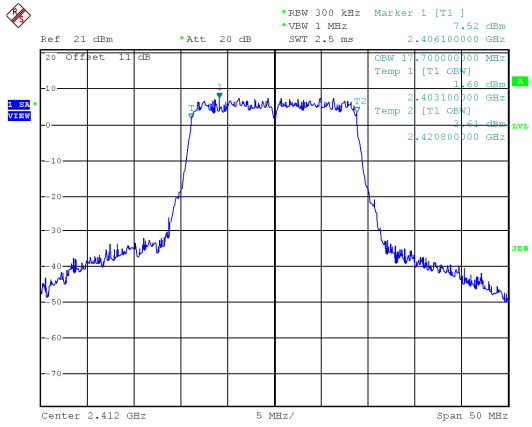
CH11

CH11

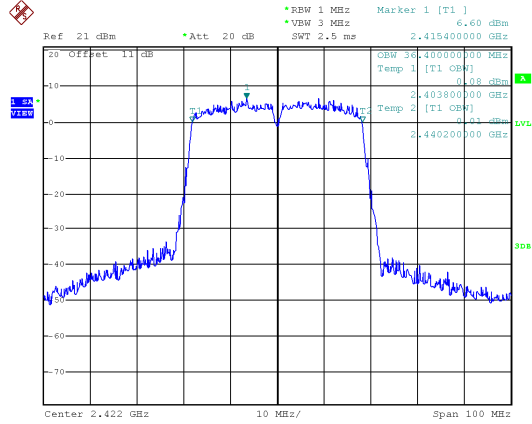




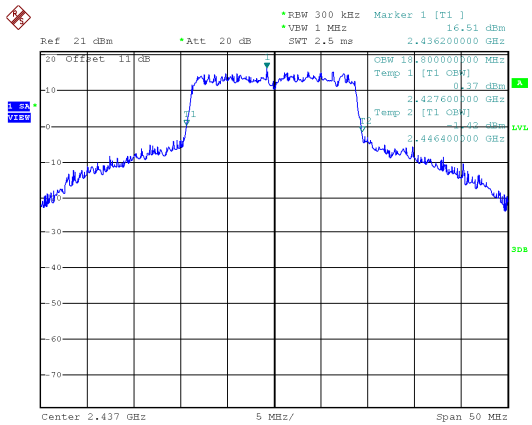
Modulation Type: VHT20
CH01



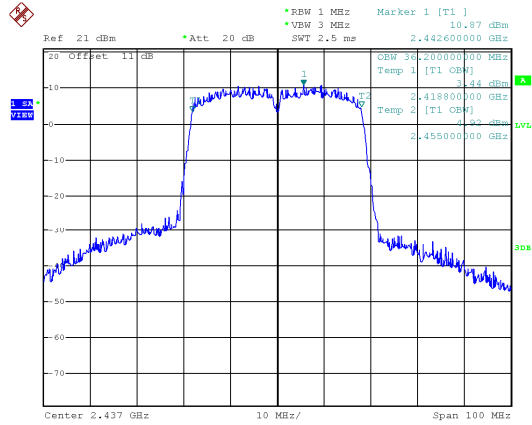
Modulation Type: VHT40
CH03



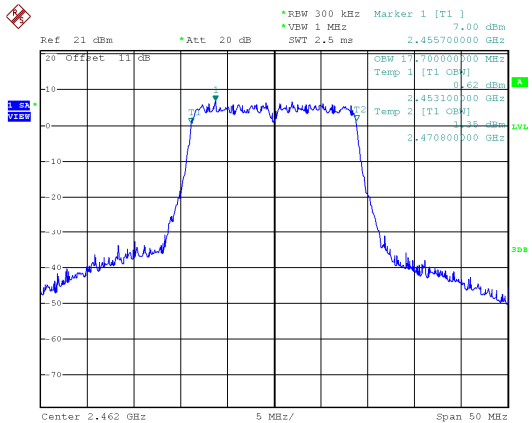
CH06



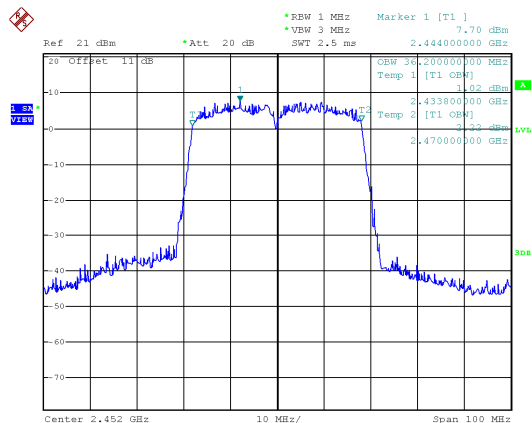
CH06



CH11

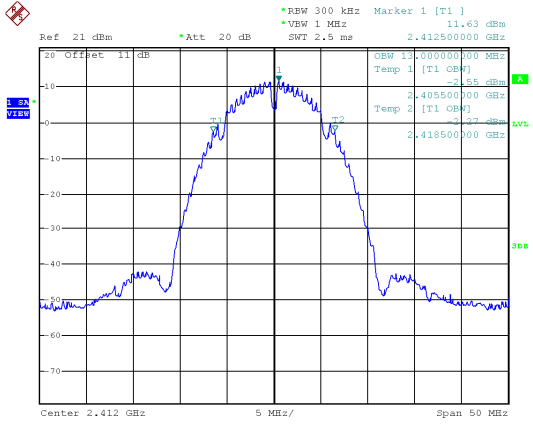


CH09

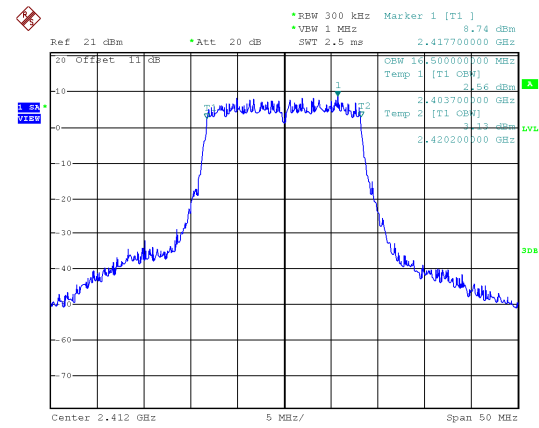




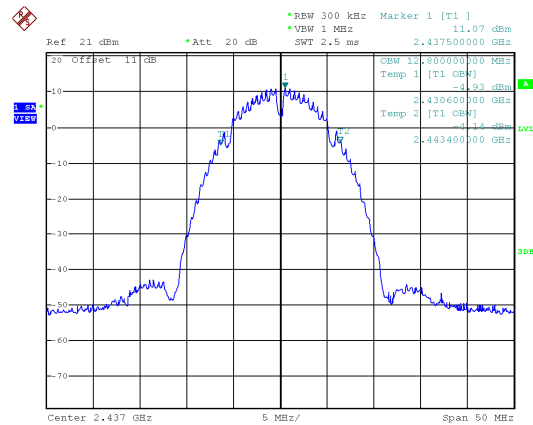
ANT B
Modulation Type: 802.11b
CH01



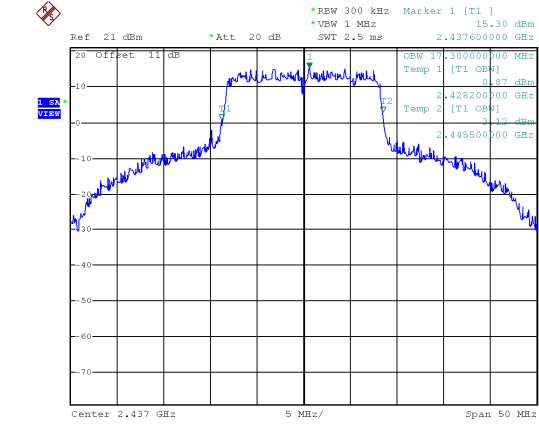
Modulation Type: 802.11g
CH01



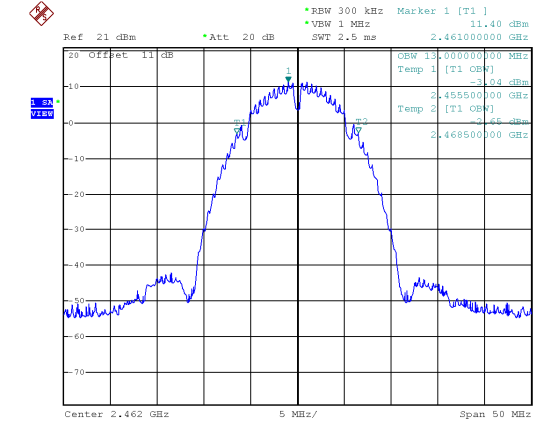
CH06



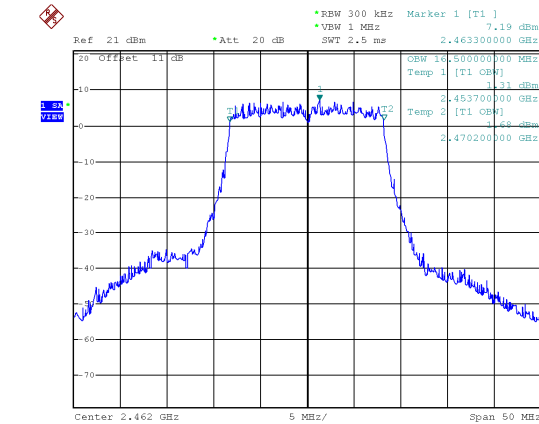
CH06



CH11

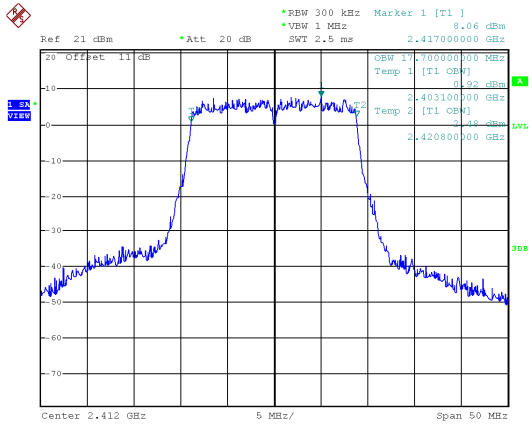


CH11

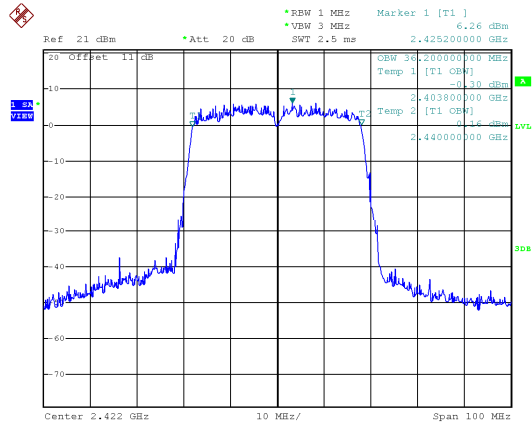




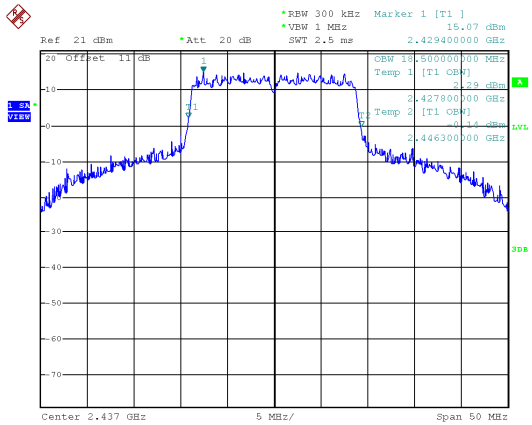
Modulation Type: VHT20
CH01



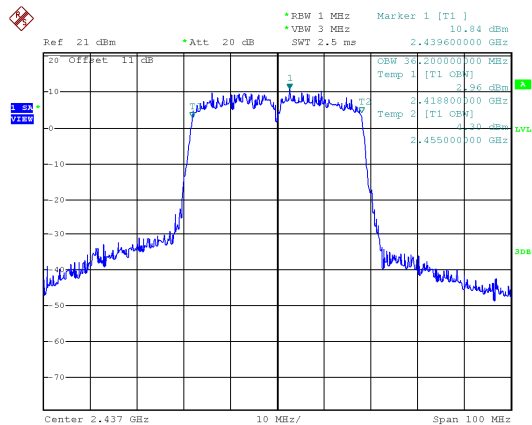
Modulation Type: VHT40
CH03



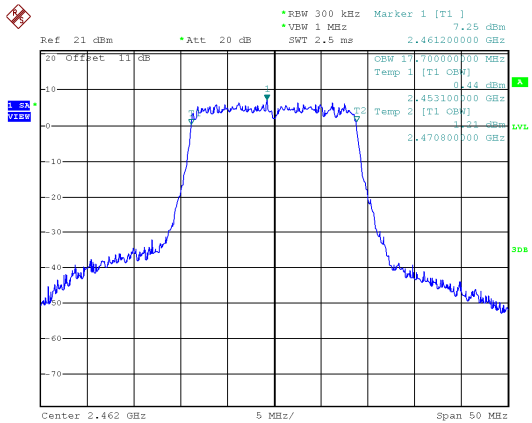
CH06



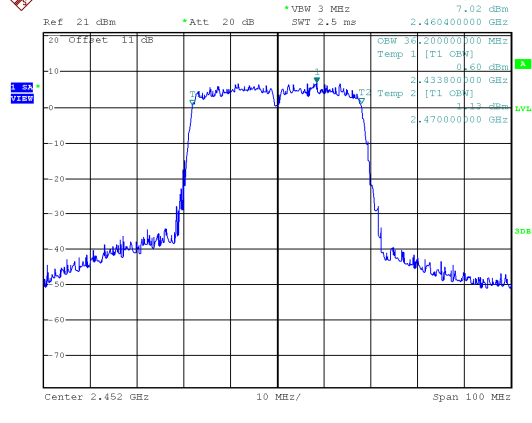
CH06



CH11



CH09





10. Maximum Average Output Power

10.1 Test Limit

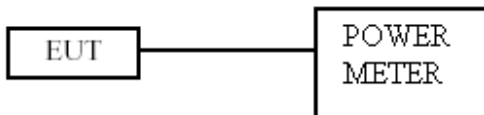
The Maximum Average Output Power Measurement is 30dBm.

If transmitting antennas of directional gain greater than 6 dBi are used, the average output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi

10.2 Test Procedures

The antenna port (RF output) of the EUT was connected to the input (RF input) of a power meter. Power was read directly from the meter and cable loss connection was added to the reading to obtain power at the EUT antenna terminal. The EUT Output Power was set to maximum to produce the worse case test result.

10.3 Test Setup Layout





10.4 Test Result and Data

Temperature : 23°C

Humidity : 64%

Test Date : Aug. 20, 2018

Test Mode : Non-Beamforming

Modulation Type	Channel	Frequency (MHz)	Avg. Power Output (dBm)		Total Power (dBm)	Total Power (mW)	Power Limit (dBm)
			ANT A	ANT B			
IEEE 802.11b (1Mbps)	01	2412	19.74	19.36	22.56	180.49	30.00
	06	2437	18.9	18.64	21.78	150.74	30.00
	11	2462	19.0	18.8	21.91	155.29	30.00
IEEE 802.11g (6Mbps)	01	2412	16.61	16.84	19.74	94.12	30.00
	06	2437	24.6	24.13	27.38	547.22	30.00
	11	2462	15.44	15.56	18.51	70.97	30.00
IEEE 802.11n HT20 (6.5Mbps)	01	2412	16.63	16.71	19.68	92.91	30.00
	06	2437	24.86	24.17	27.54	567.41	30.00
	11	2462	15.0	15.59	18.32	67.85	30.00
IEEE 802.11n HT40 (13.5Mbps)	03	2422	12.86	12.82	15.85	38.46	30.00
	06	2437	16.81	16.99	19.91	97.98	30.00
	09	2452	13.92	14.05	17.00	50.07	30.00
VHT20 (6.5Mbps)	01	2412	16.65	16.74	19.71	93.44	30.00
	06	2437	24.89	24.19	27.56	570.74	30.00
	11	2462	15.03	15.62	18.35	68.32	30.00
VHT40 (13.5Mbps)	03	2422	12.88	12.84	15.87	38.64	30.00
	06	2437	16.85	17.02	19.95	98.77	30.00
	09	2452	13.95	14.09	17.03	50.48	30.00



Temperature : 23°C

Humidity : 64%

Test Date : Aug. 20, 2018

Test Mode : Beamforming

Modulation Type	Channel	Frequency (MHz)	Avg. Power Output (dBm)		Total Power (dBm)	Total Power (mW)	Power Limit (dBm)
			ANT A	ANT B			
IEEE 802.11g (6Mbps)	01	2412	13.6	13.83	16.73	47.06	30.00
	06	2437	21.59	21.12	24.37	273.63	30.00
	11	2462	12.43	12.55	15.50	35.49	30.00
IEEE 802.11n HT20 (6.5Mbps)	01	2412	13.62	13.7	16.67	46.46	30.00
	06	2437	21.85	21.16	24.53	283.73	30.00
	11	2462	11.99	12.58	15.31	33.93	30.00
IEEE 802.11n HT40 (13.5Mbps)	03	2422	9.85	9.81	12.84	19.23	30.00
	06	2437	13.8	13.98	16.90	48.99	30.00
	09	2452	10.91	11.04	13.99	25.04	30.00
VHT20 (6.5Mbps)	01	2412	13.64	13.73	16.70	46.73	30.00
	06	2437	21.88	21.18	24.55	285.39	30.00
	11	2462	12.02	12.61	15.34	34.16	30.00
VHT40 (13.5Mbps)	03	2422	9.87	9.83	12.86	19.32	30.00
	06	2437	13.84	14.01	16.94	49.39	30.00
	09	2452	10.94	11.08	14.02	25.24	30.00



11. Power Spectral Density

11.1 Test Limit

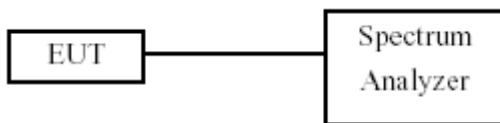
The Maximum of Power Spectral Density Measurement is 8dBm.

If transmitting antennas of directional gain greater than 6 dBi are used, the power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi

11.2 Test Procedures

Reference to KDB558074 DTS Meas Guidance v04 D01

11.3 Test Setup Layout



11.4 Test Result and Data

Temperature : 23°C

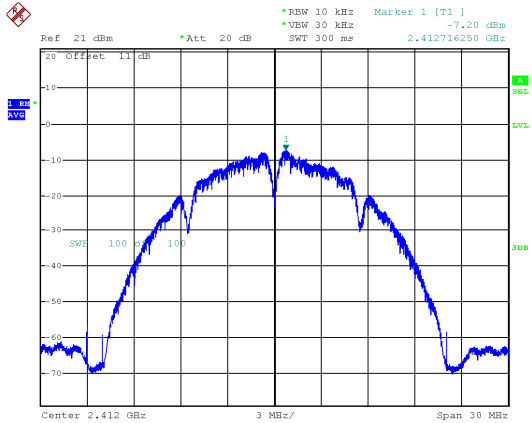
Humidity : 64%

Test Date : Aug. 20, 2018

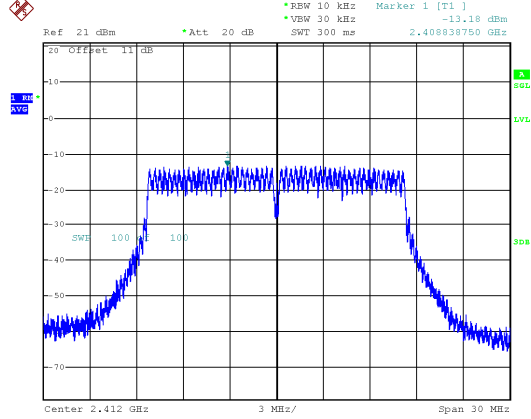
Modulation Type	Channel	Frequency (MHz)	Maximum Power Density of 3 kHz Bandwidth (dBm)		Sum chain (dBm)	Duty Cycle CF(dB)	Total PSD (dBm)	Limit (dBm)
			ANT A	ANT B				
IEEE 802.11b (1Mbps)	01	2412	-7.2	-7.57	-4.37	0.00	-4.37	6.36
	06	2437	-8.49	-8.09	-5.28	0.00	-5.28	6.36
	11	2462	-7.66	-7.83	-4.73	0.00	-4.73	6.36
IEEE 802.11g (6Mbps)	01	2412	-13.18	-13.24	-10.20	0.00	-10.20	6.36
	06	2437	-5.74	-5.78	-2.75	0.00	-2.75	6.36
	11	2462	-14.21	-14.36	-11.27	0.00	-11.27	6.36
VHT20 (6.5Mbps)	01	2412	-12.59	-12.77	-9.67	0.00	-9.67	6.36
	06	2437	-5.13	-5.63	-2.36	0.00	-2.36	6.36
	11	2462	-13.89	-13.89	-10.88	0.00	-10.88	6.36
VHT40 (6.5Mbps)	03	2422	-19.04	-20.04	-16.50	0.00	-16.50	6.36
	06	2437	-15.2	-15.27	-12.22	0.00	-12.22	6.36
	09	2452	-17.83	-18.73	-15.25	0.00	-15.25	6.36



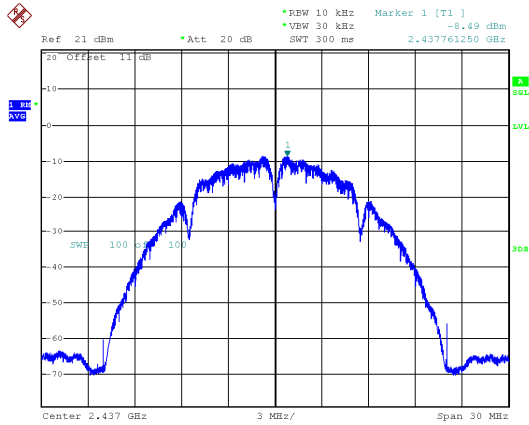
ANT A
Modulation Type: 802.11b
CH01



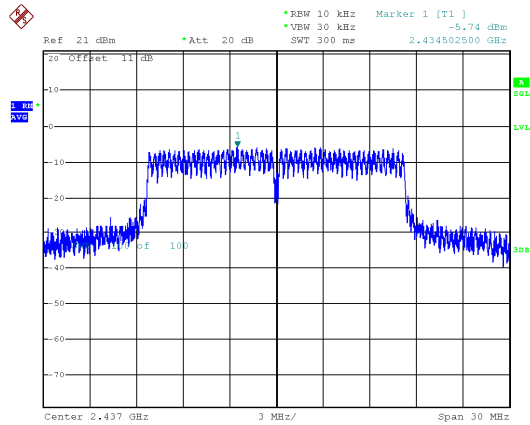
Modulation Type: 802.11g
CH01



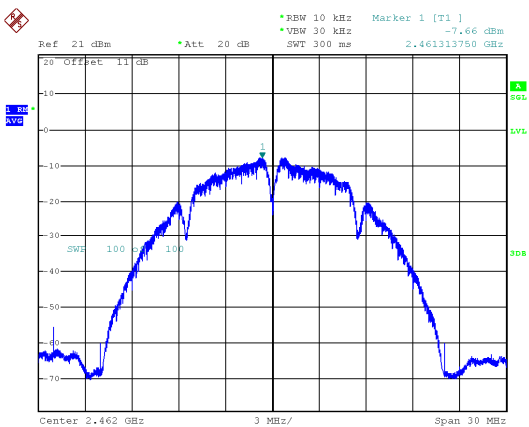
CH06



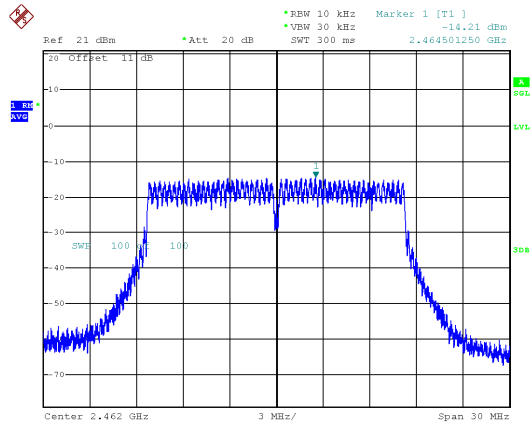
CH06



CH11

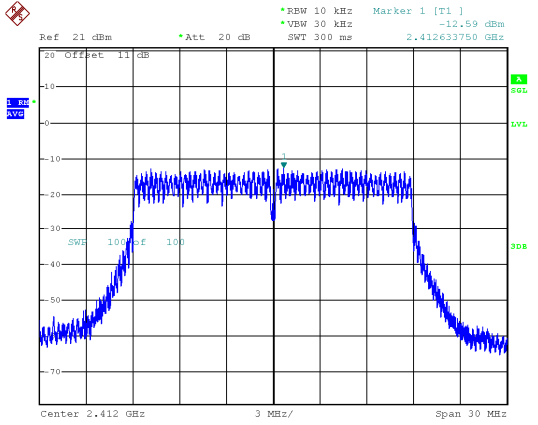


CH11

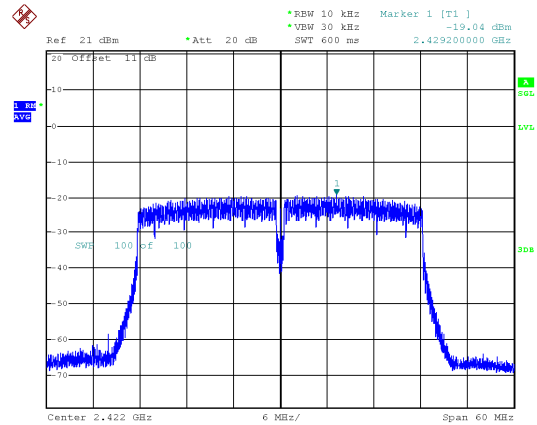




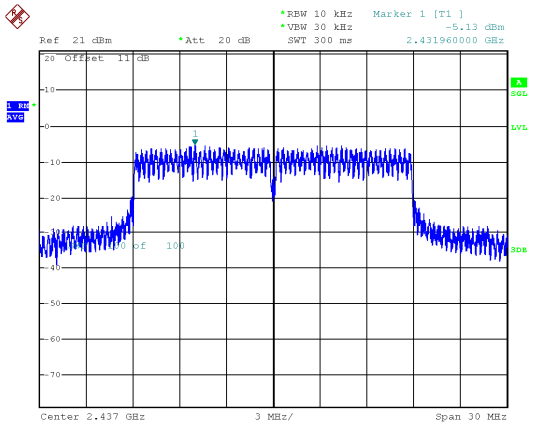
Modulation Type: VHT20
CH01



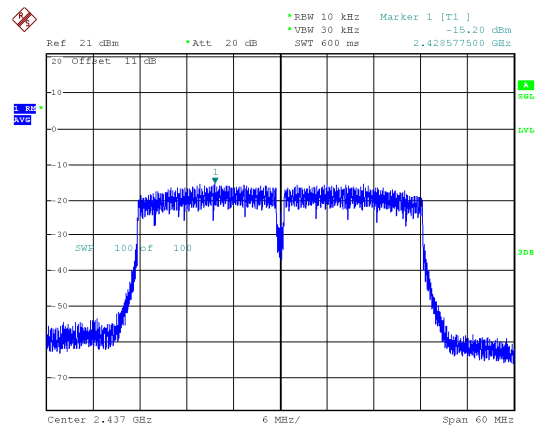
Modulation Type: VHT40
CH03



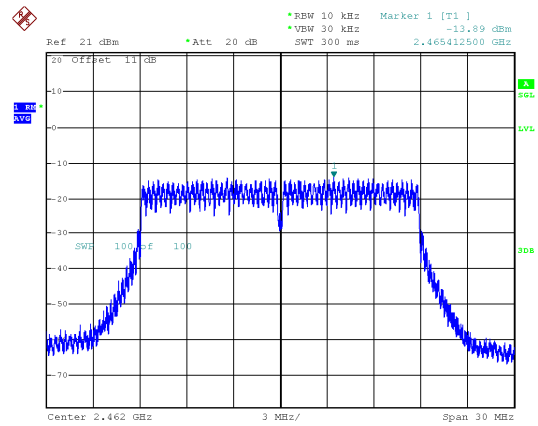
CH06



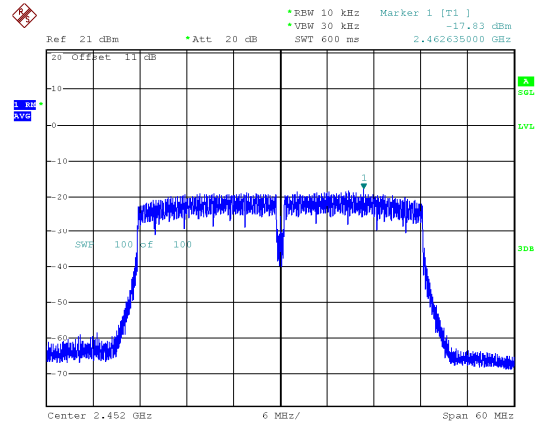
CH06



CH11

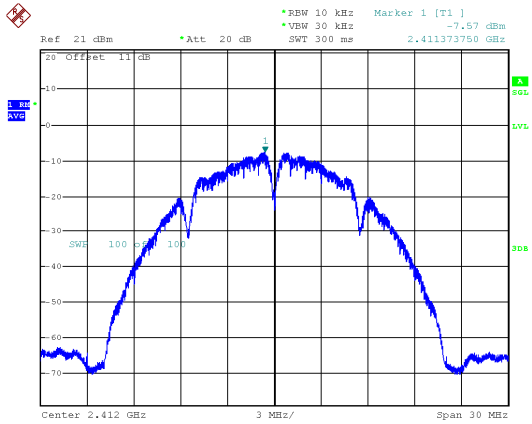


CH09

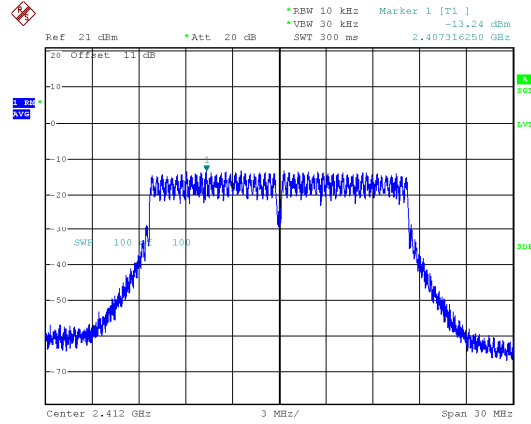




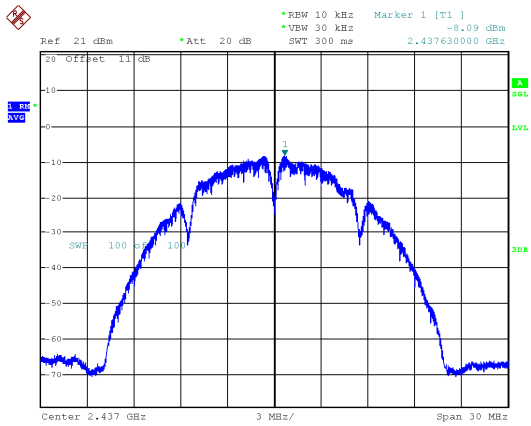
ANT B
Modulation Type: 802.11b
CH01



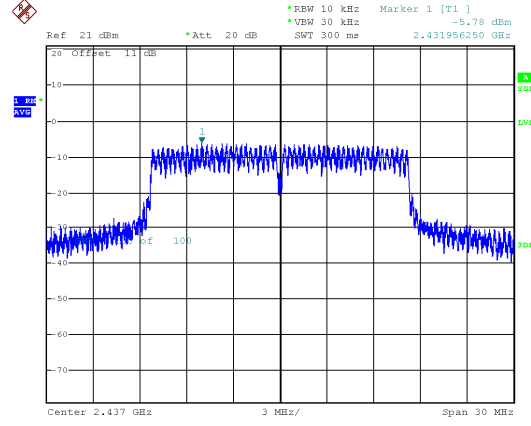
Modulation Type: 802.11g
CH01



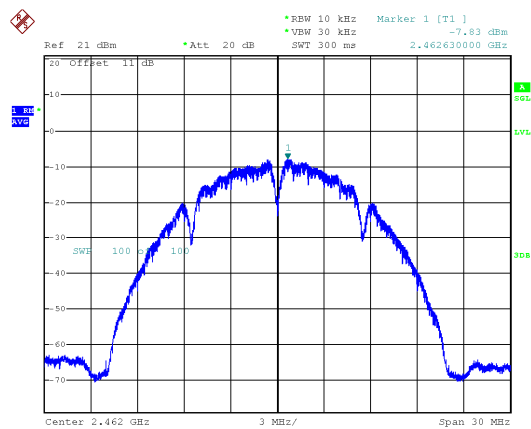
CH06



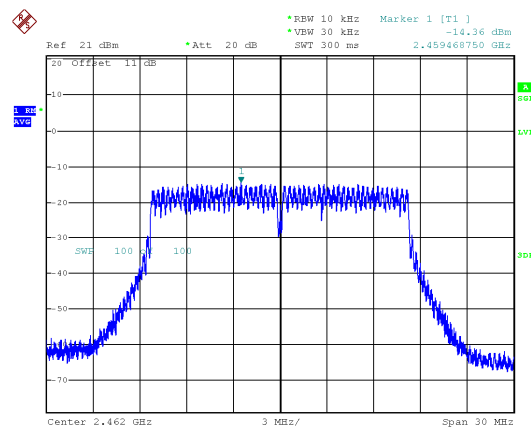
CH06



CH11

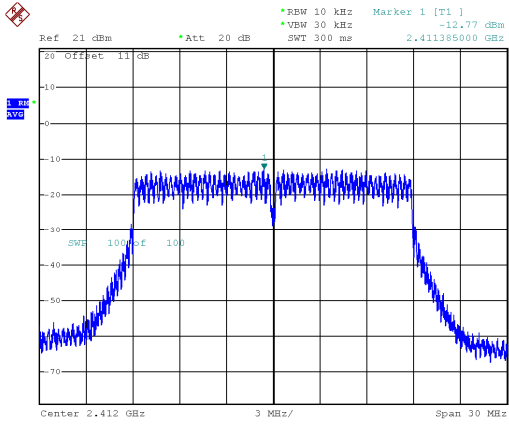


CH11

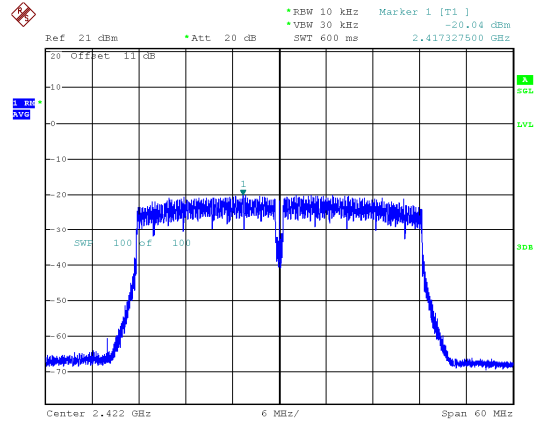




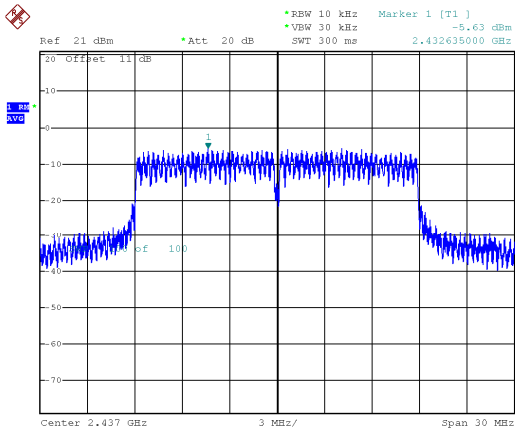
Modulation Type: VHT20
CH01



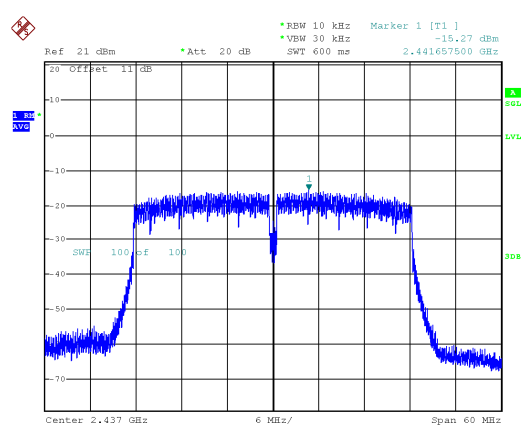
Modulation Type: VHT40
CH03



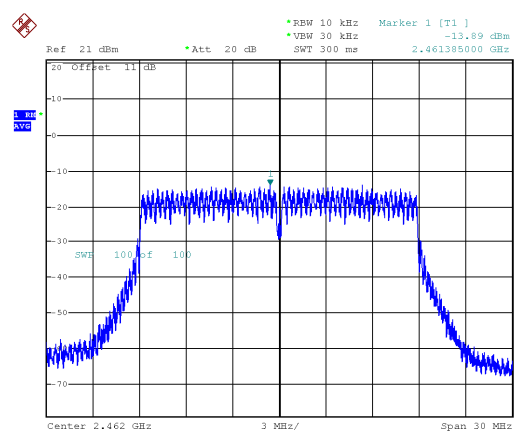
CH06



CH06



CH11



CH09

