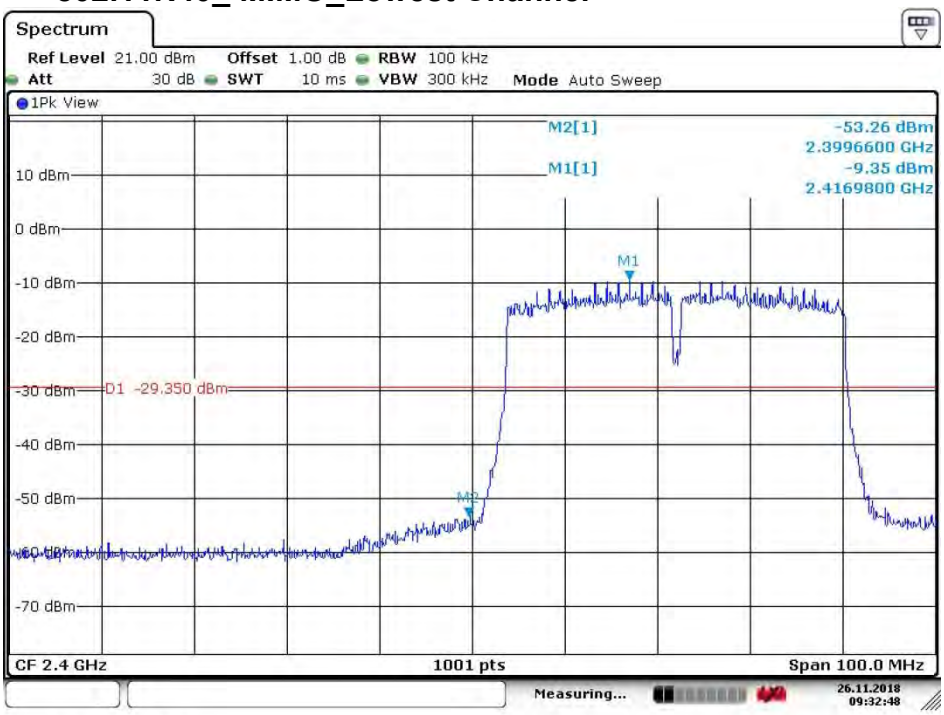
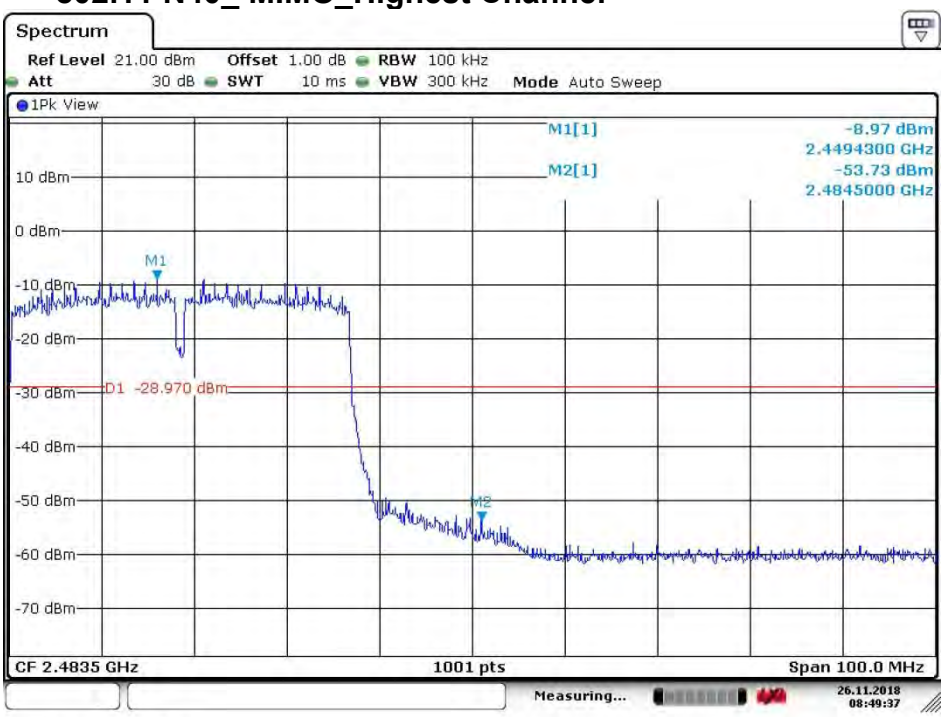
4.7.1.2.13 802.11N40_ MIMO_Lowest Channel



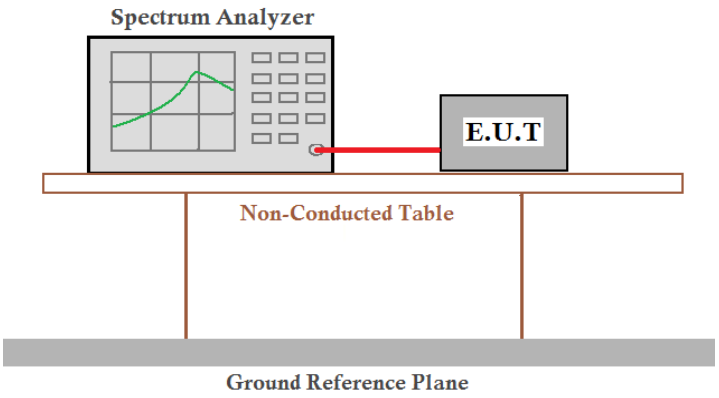
Date: 26.NOV.2018 09:32:48

4.7.1.2.14 802.11 N40_ MIMO_Highest Channel



Date: 26.NOV.2018 08:49:38

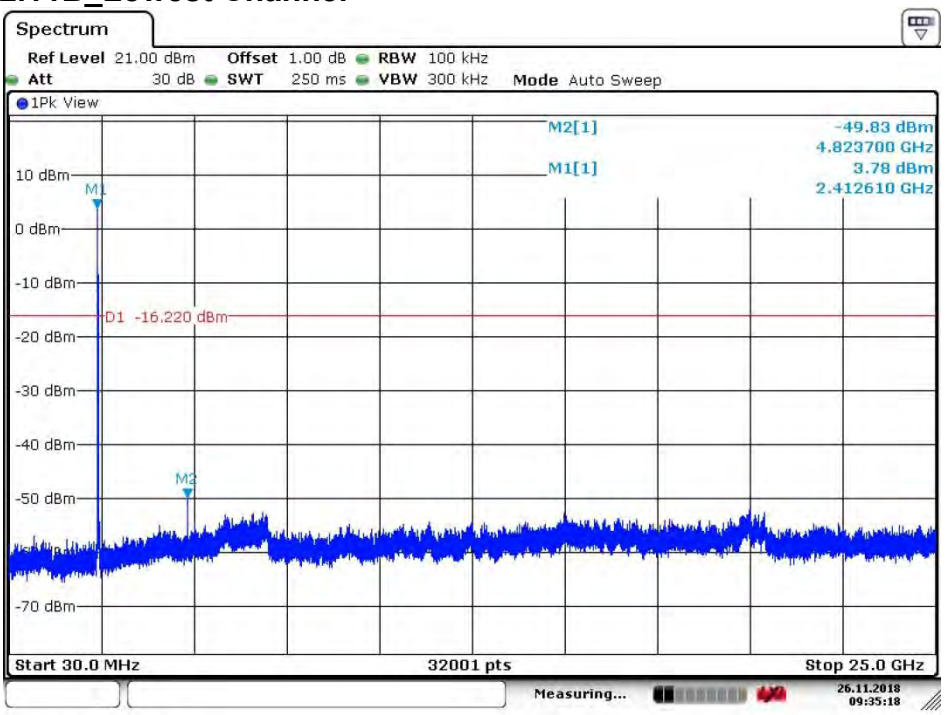
4.8 RF Conducted Spurious Emissions

Test Requirement:	47 CFR Part 15C Section 15.247 (d)
Test Method:	ANSI C63.10: 2013 Section 11.11
Test Setup:	
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates
Final Test Mode:	Through Pre-scan, find the 1Mbps of rate is the worst case of 802.11B; 6Mbps of rate is the worst case of 802.11G ; 6.5Mbps of rate is the worst case of 802.11N(HT20); 13Mbps of rate is the worst case of 802.11N(HT20) MIMO; 13.5Mbps of rate is the worst case of 802.11N(HT40) ; 27Mbps of rate is the worst case of 802.11N(HT40) MIMO.
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.
Instruments Used:	Refer to section 5.10 for details
Test Results:	Pass

4.8.1 Test plots

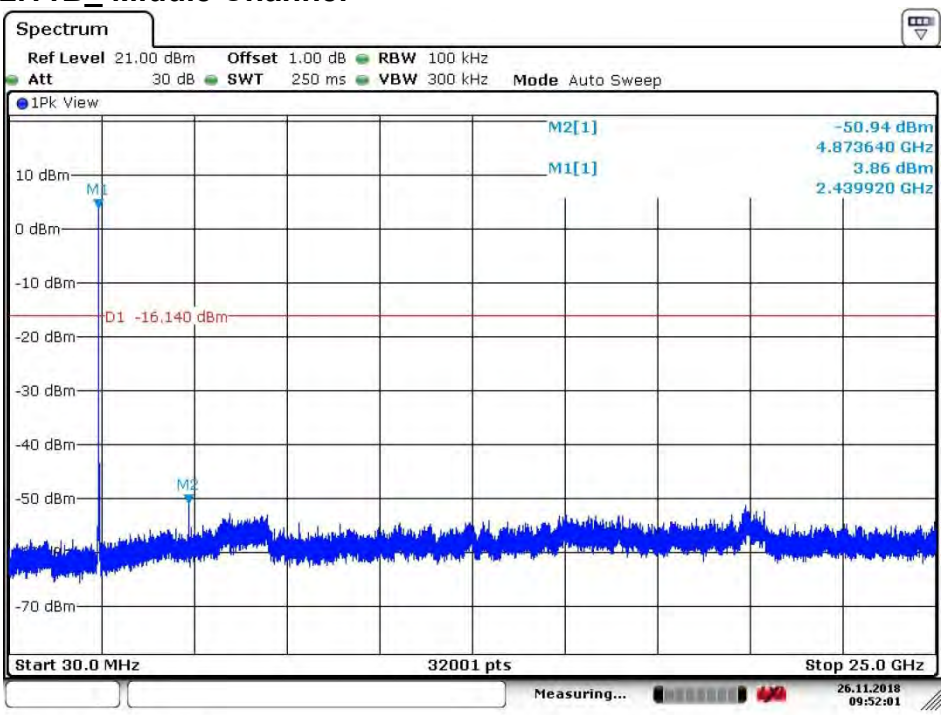
4.8.1.1 ANT1:

4.8.1.1.1 802.11B_Lowest Channel



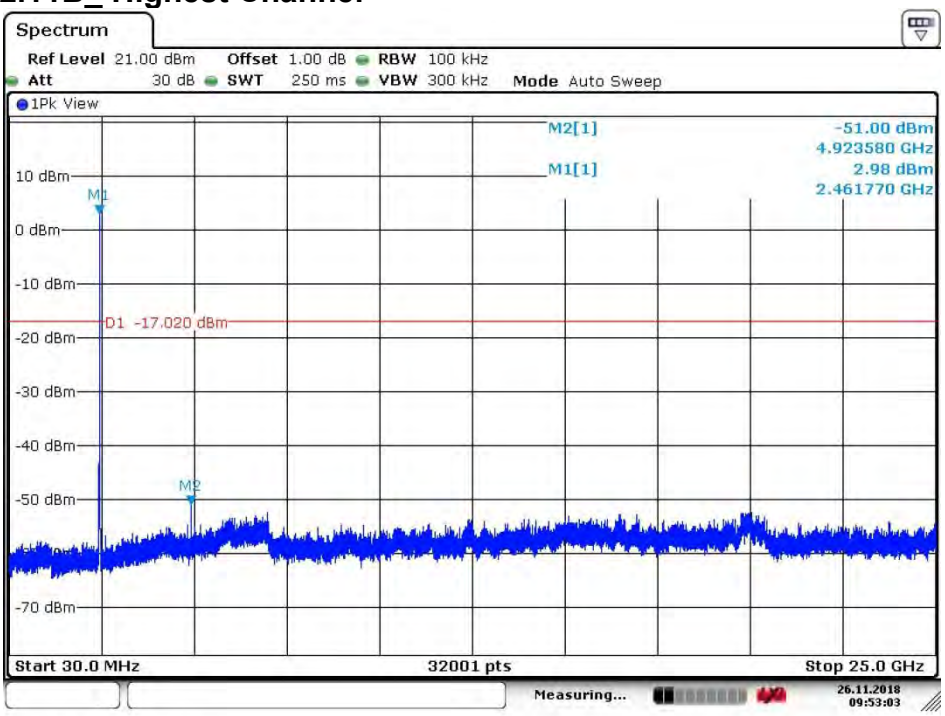
Date: 26.NOV.2018 09:35:18

4.8.1.1.2 802.11B_ Middle Channel



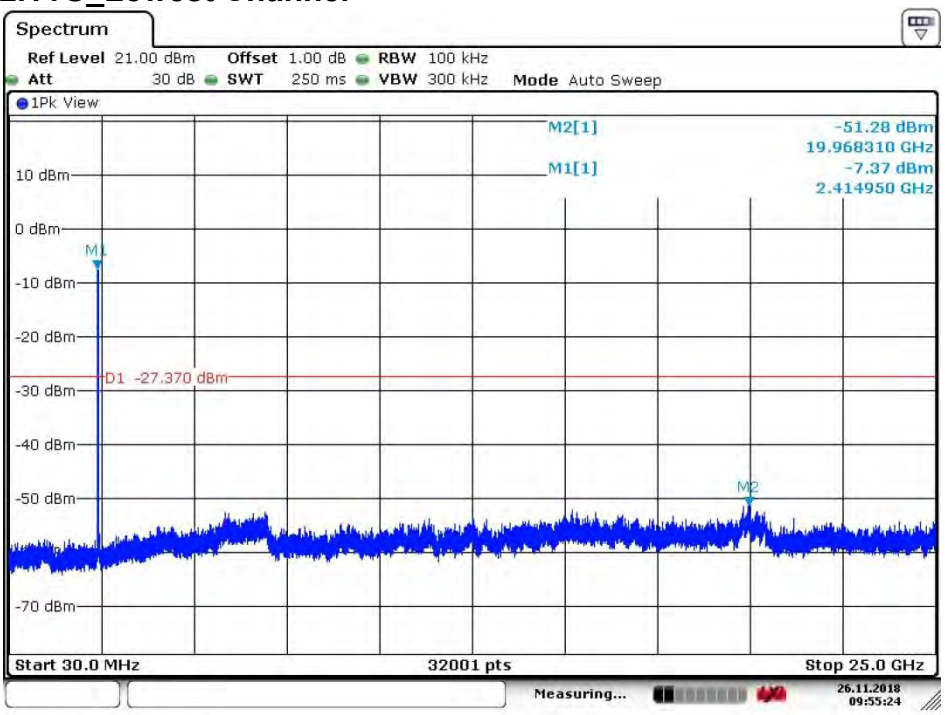
Date: 26.NOV.2018 09:52:01

4.8.1.1.3 802.11B_ Highest Channel



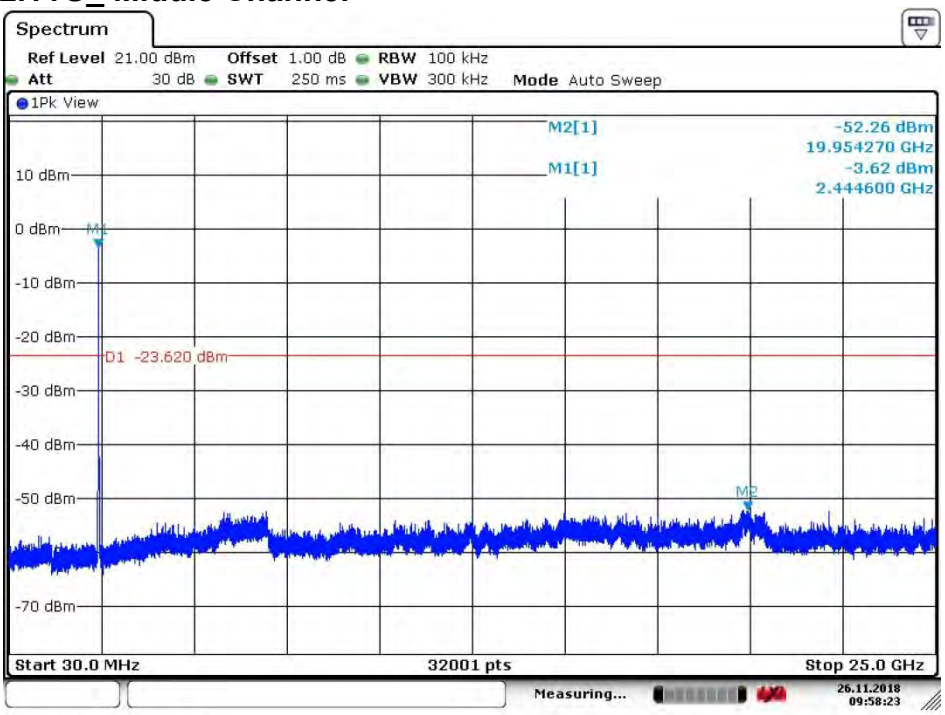
Date: 26.NOV.2018 09:53:03

4.8.1.1.4 802.11G_Lowest Channel



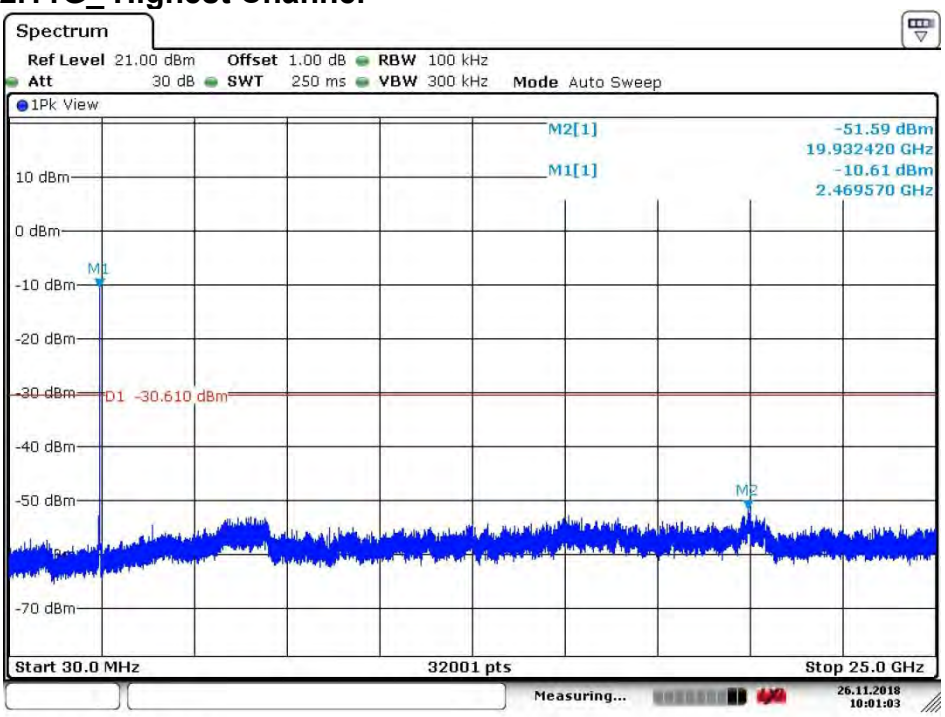
Date: 26.NOV.2018 09:55:24

4.8.1.1.5 802.11G_ Middle Channel



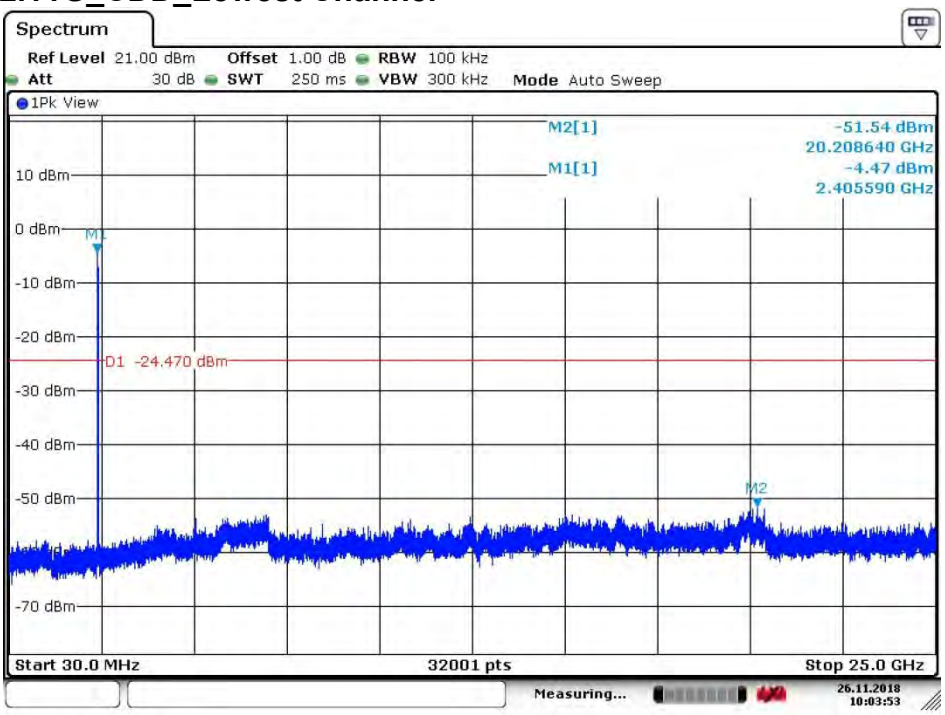
Date: 26.NOV.2018 09:58:24

4.8.1.1.6 802.11G_ Highest Channel



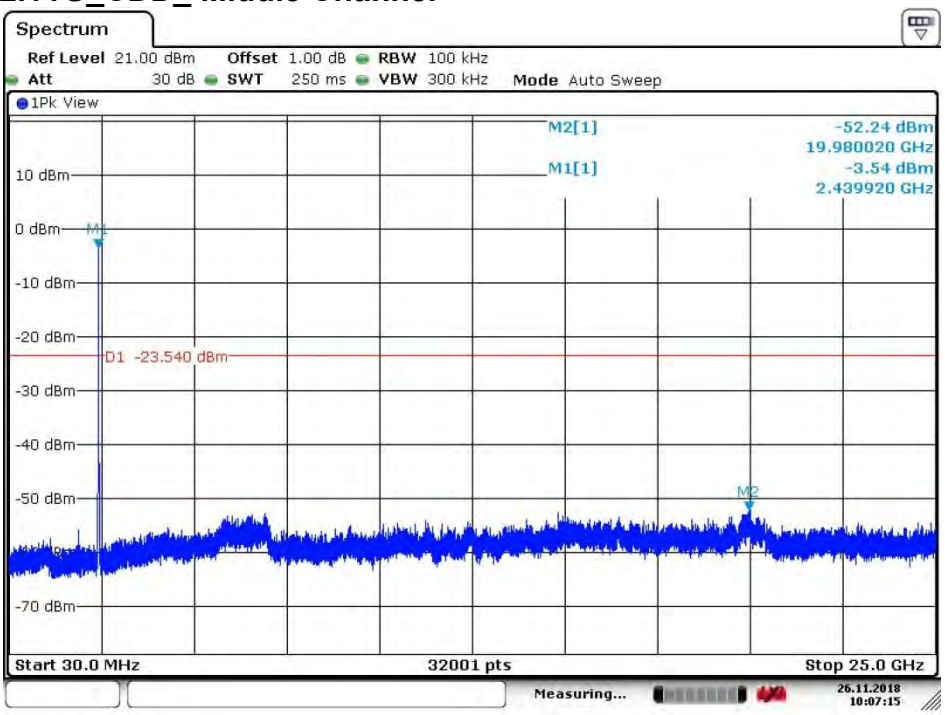
Date: 26.NOV.2018 10:01:04

4.8.1.1.7 802.11G_CDD_Lowest Channel



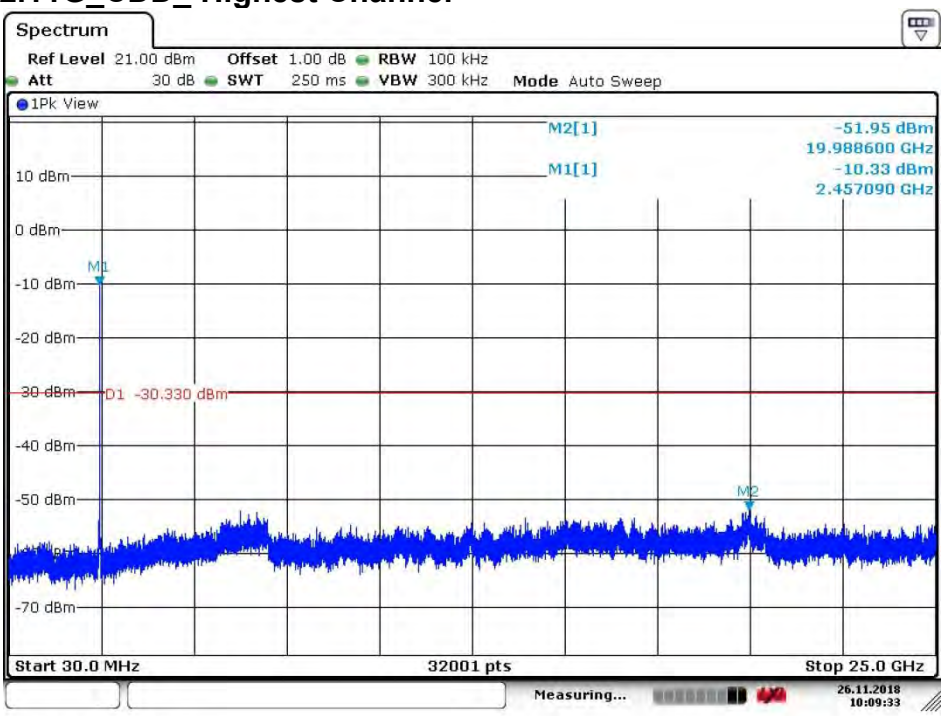
Date: 26.NOV.2018 10:03:53

4.8.1.1.8 802.11G_CDD_ Middle Channel



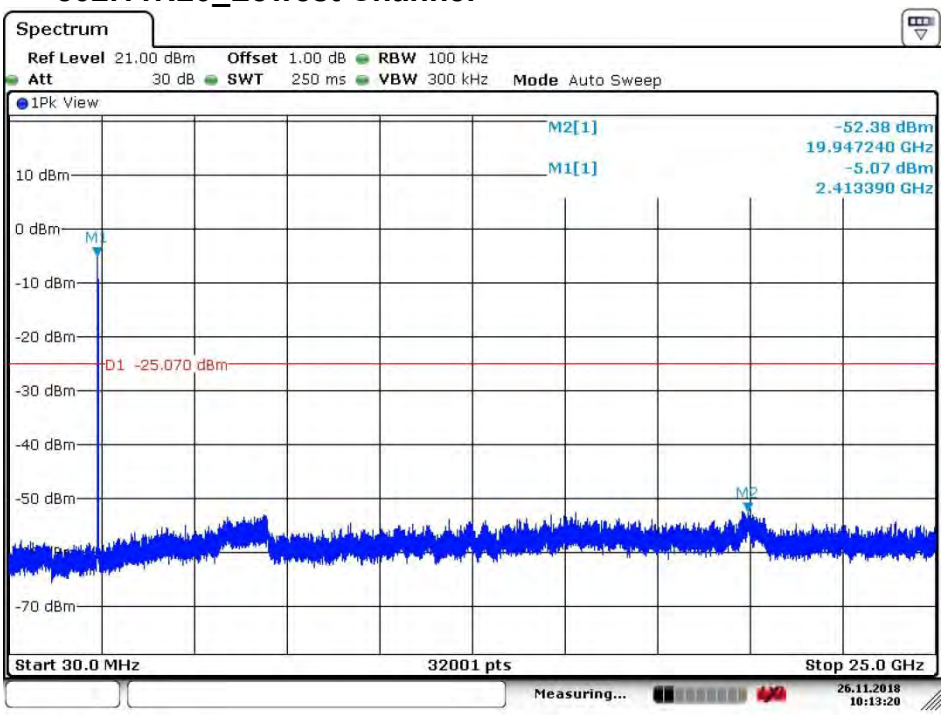
Date: 26.NOV.2018 10:07:15

4.8.1.1.9 802.11G_CDD_ Highest Channel



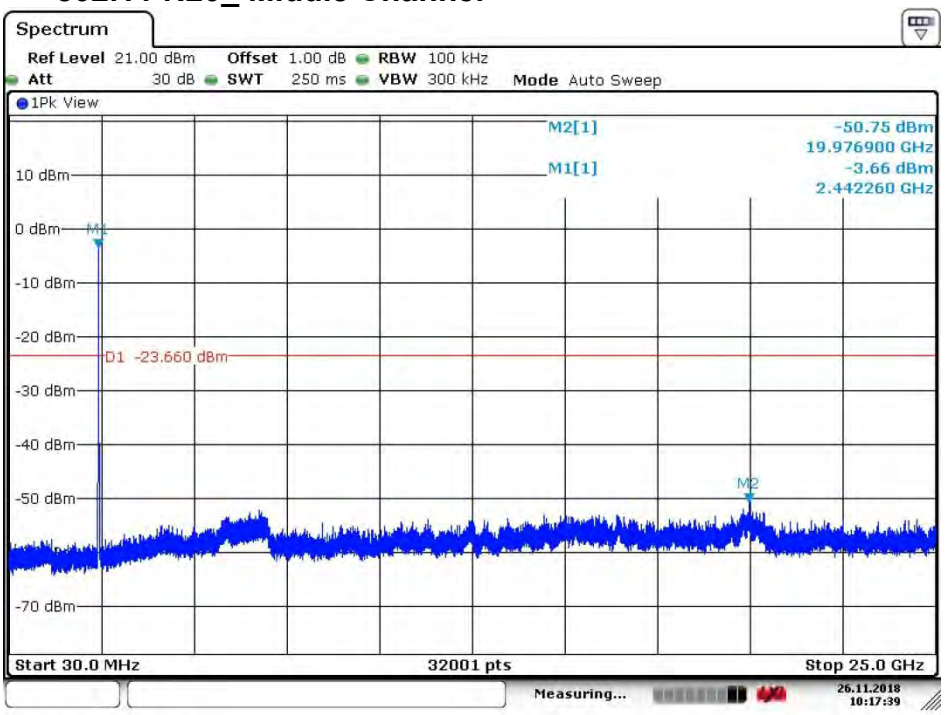
Date: 26.NOV.2018 10:09:33

4.8.1.1.10 802.11N20_Lowest Channel



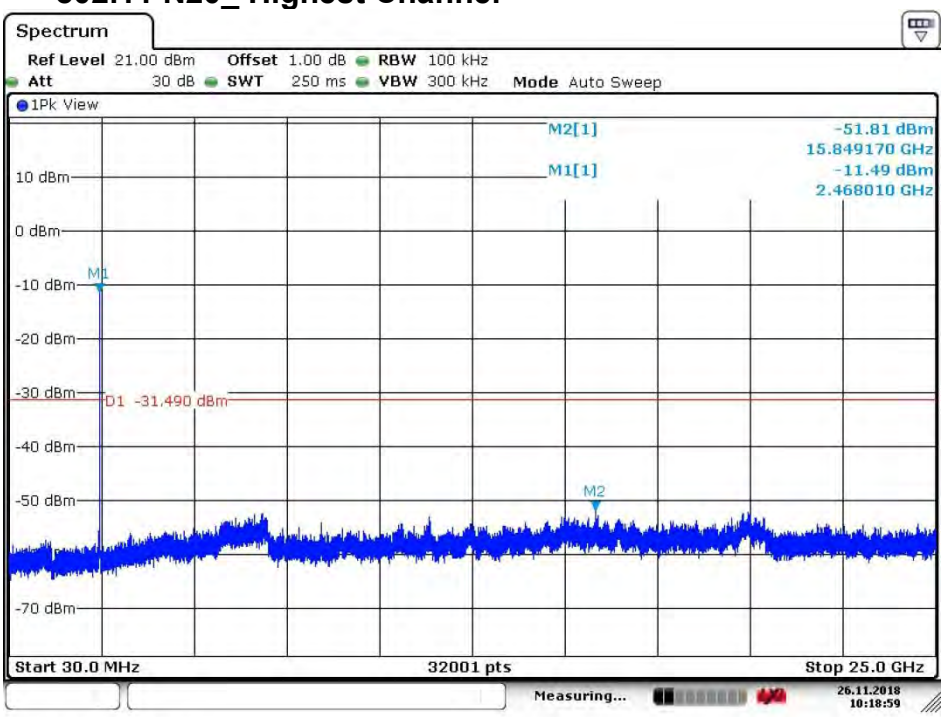
Date: 26.NOV.2018 10:13:20

4.8.1.1.11 802.11 N20_ Middle Channel



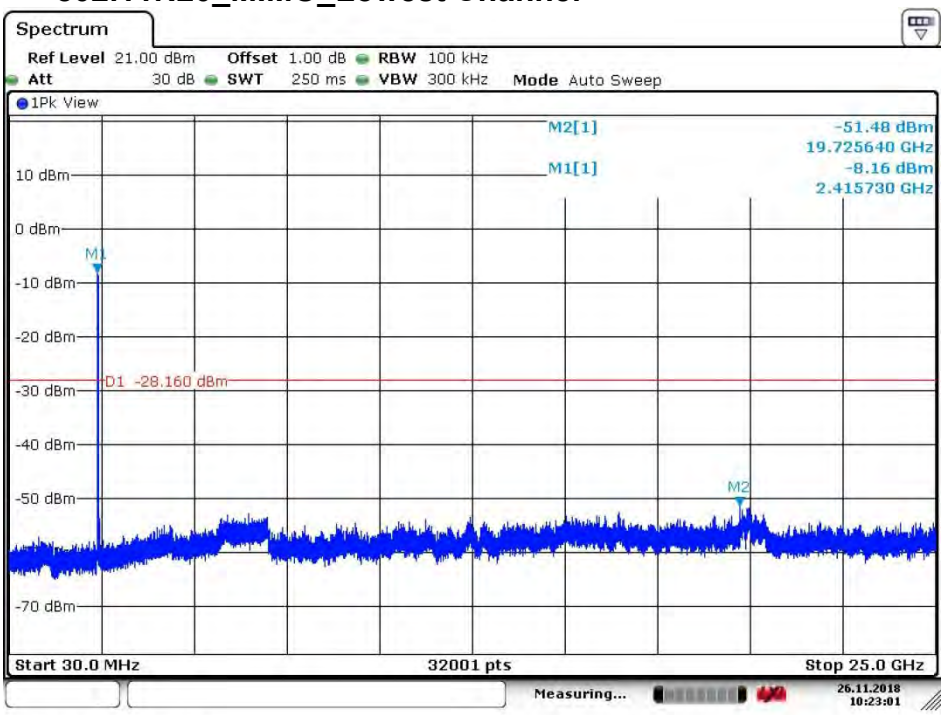
Date: 26.NOV.2018 10:17:40

4.8.1.1.12 802.11 N20_ Highest Channel



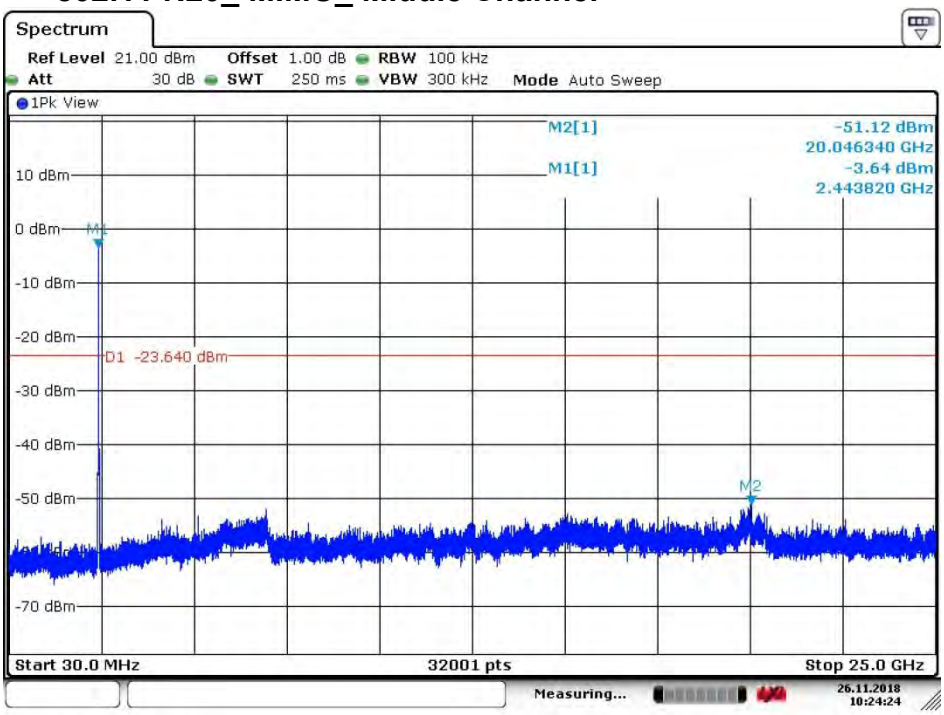
Date: 26.NOV.2018 10:19:00

4.8.1.1.13 802.11N20_MIMO_Lowest Channel



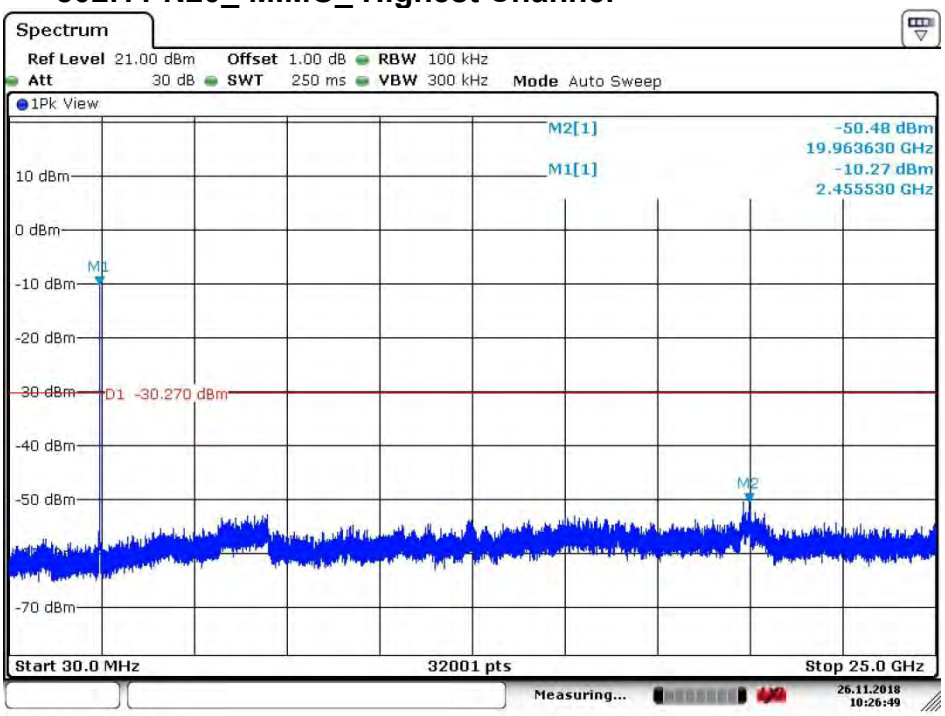
Date: 26.NOV.2018 10:23:01

4.8.1.1.14 802.11 N20_ MIMO_ Middle Channel



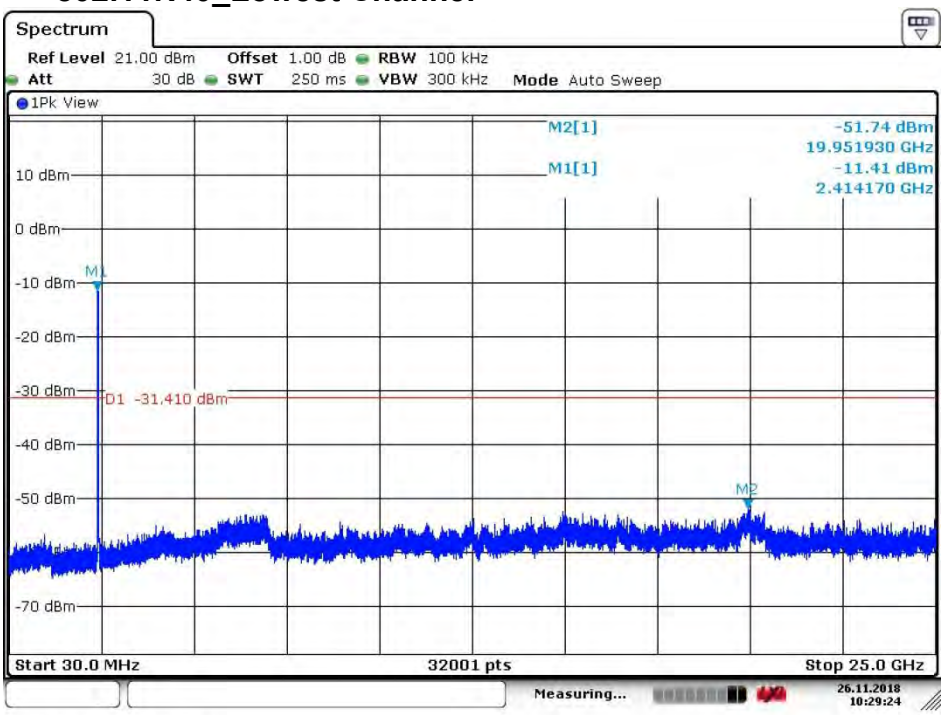
Date: 26.NOV.2018 10:24:25

4.8.1.1.15 802.11 N20_ MIMO_ Highest Channel



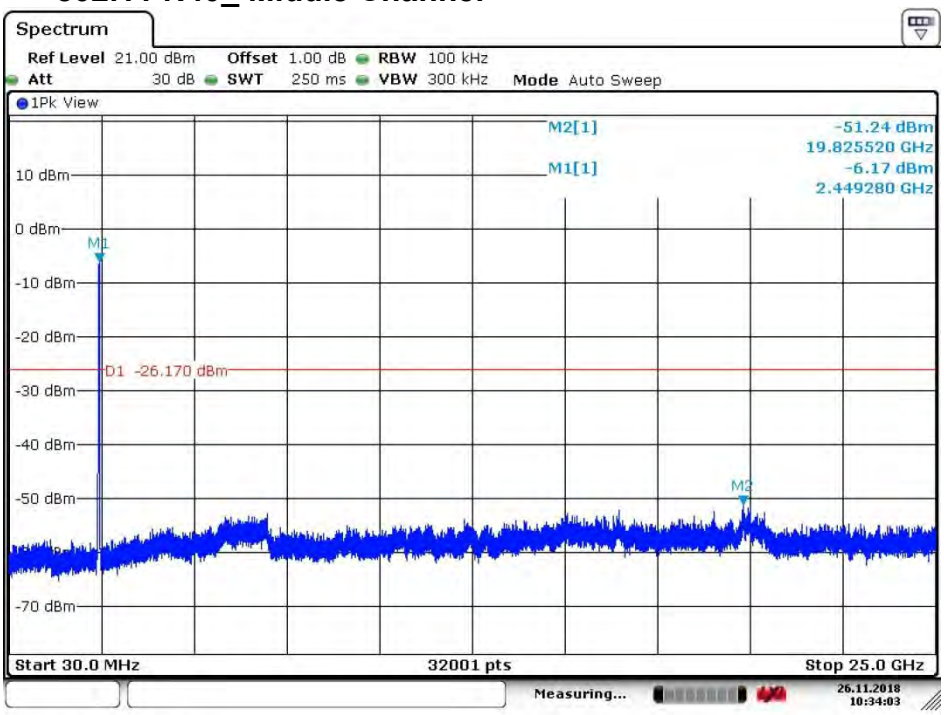
Date: 26.NOV.2018 10:26:50

4.8.1.1.16 802.11N40_Lowest Channel



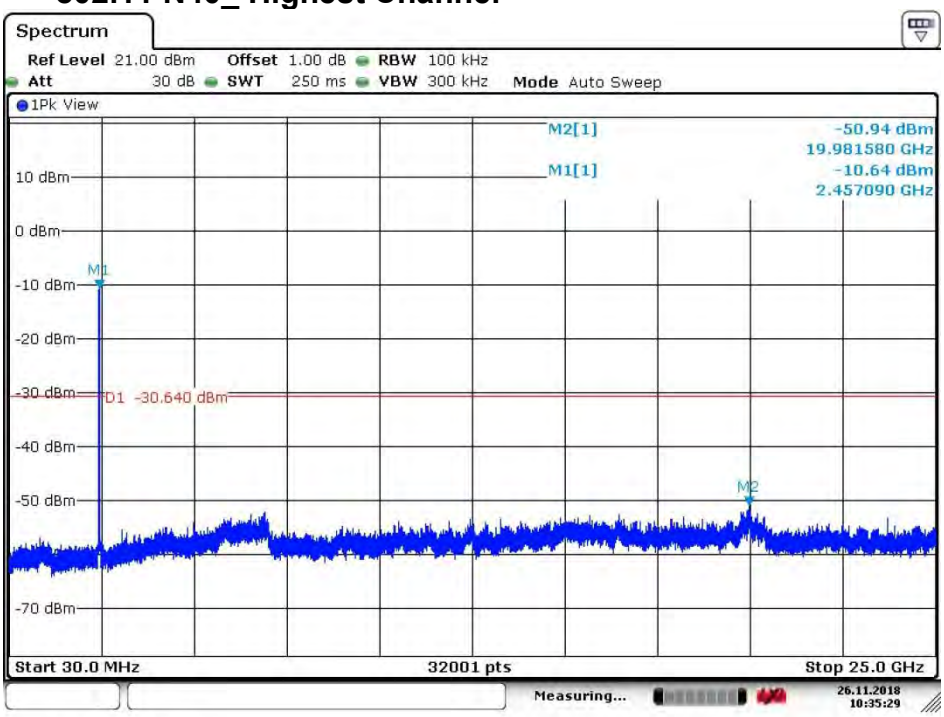
Date: 26.NOV.2018 10:29:24

4.8.1.1.17 802.11 N40_ Middle Channel



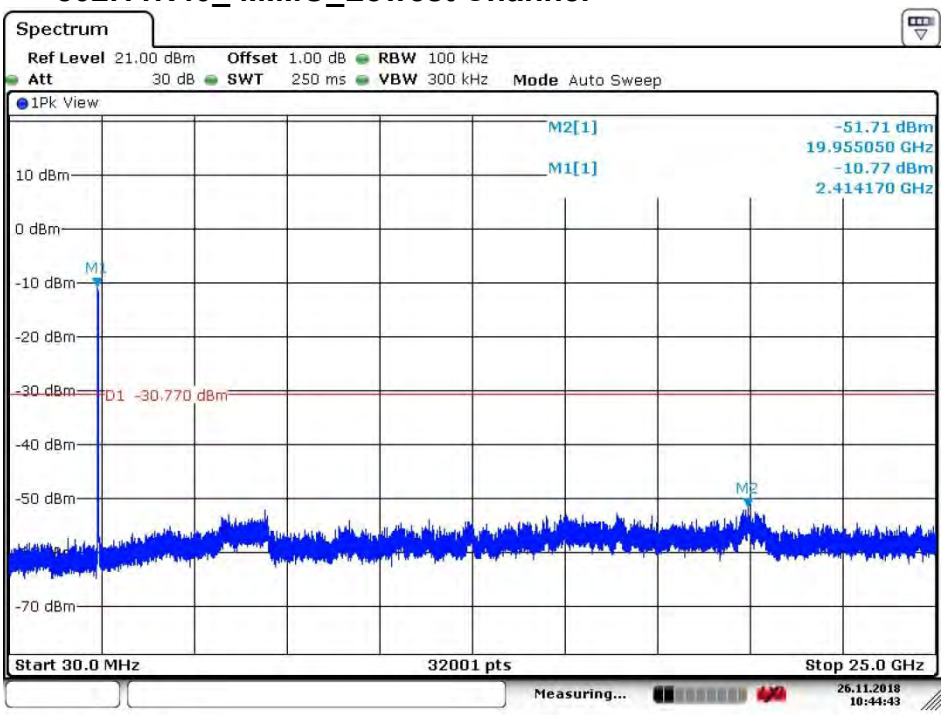
Date: 26.NOV.2018 10:34:03

4.8.1.1.18 802.11 N40_ Highest Channel



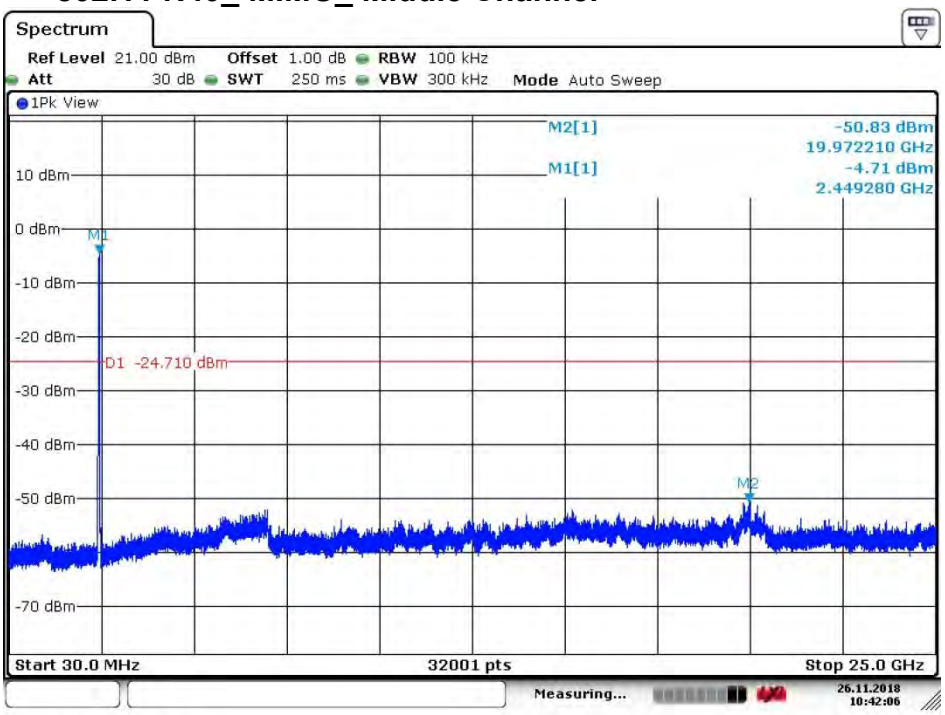
Date: 26.NOV.2018 10:35:30

4.8.1.1.19 802.11N40_ MIMO_Lowest Channel



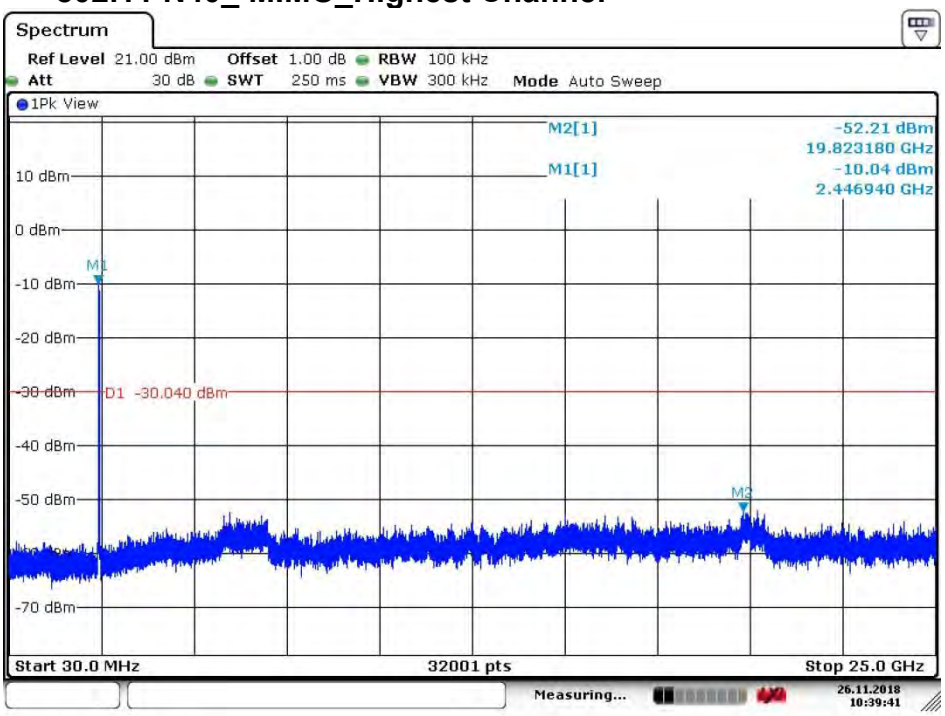
Date: 26.NOV.2018 10:44:43

4.8.1.1.20 802.11 N40_ MIMO_ Middle Channel



Date: 26.NOV.2018 10:42:06

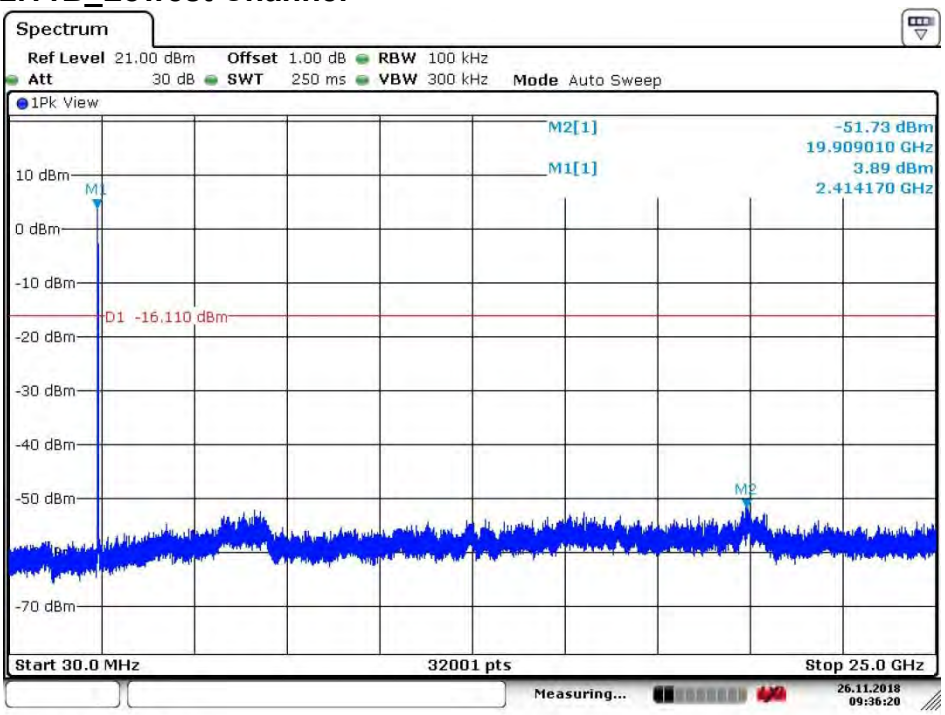
4.8.1.1.21 802.11 N40_ MIMO_Highest Channel



Date: 26.NOV.2018 10:39:41

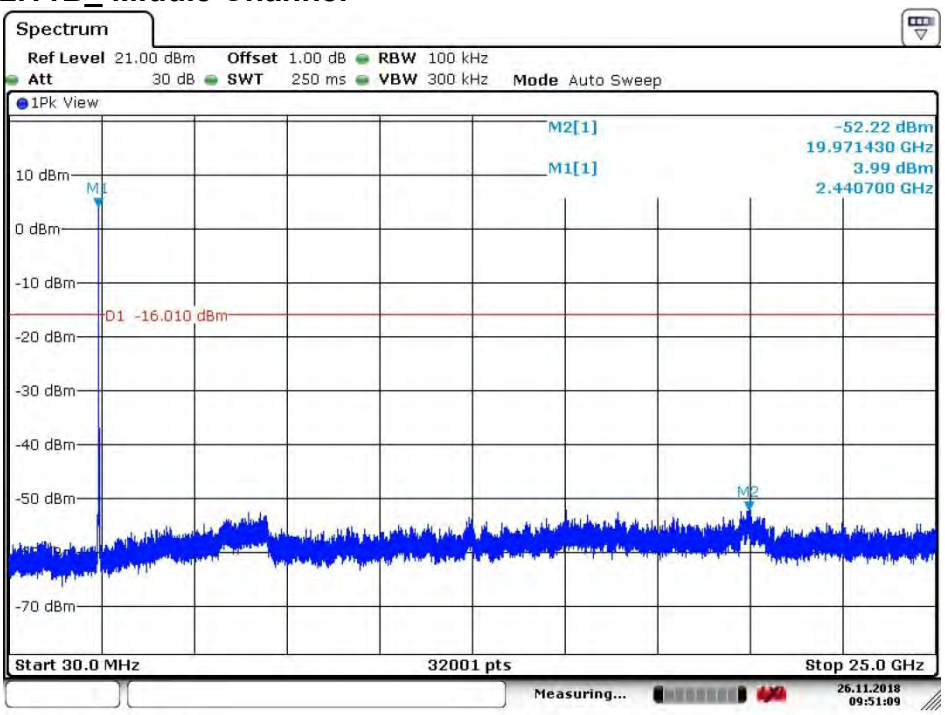
4.8.1.2 ANT2:

4.8.1.2.1 802.11B_Lowest Channel



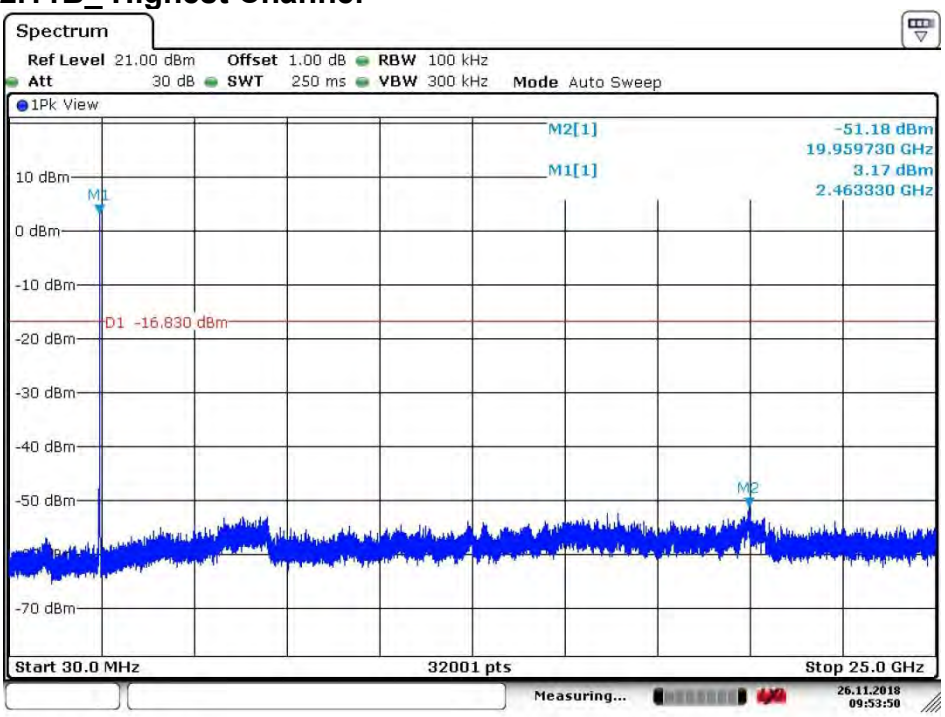
Date: 26.NOV.2018 09:36:20

4.8.1.2.2 802.11B_ Middle Channel



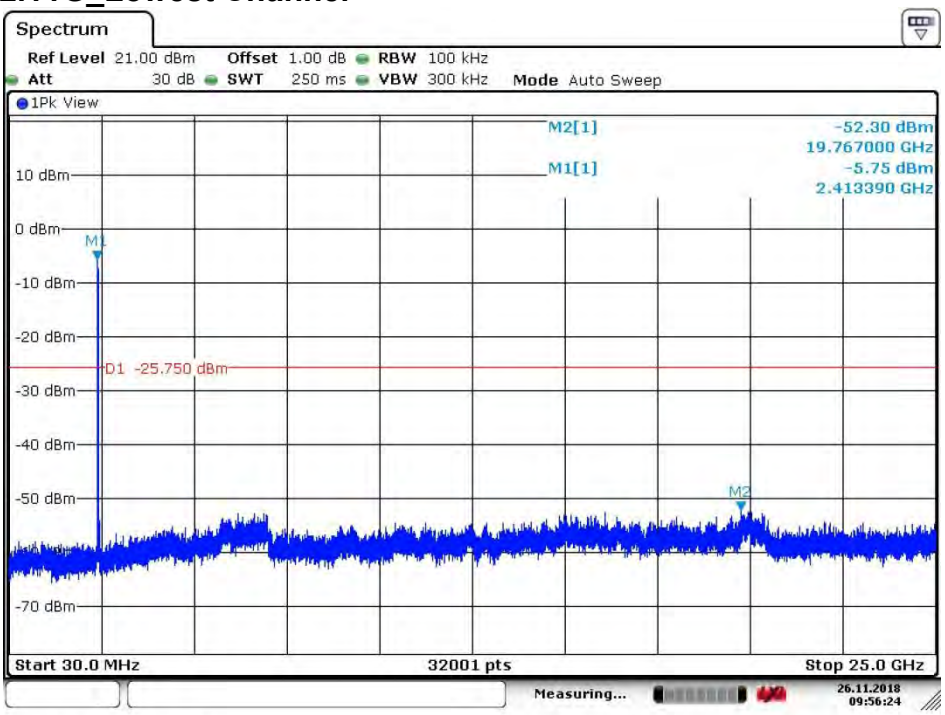
Date: 26.NOV.2018 09:51:10

4.8.1.2.3 802.11B_ Highest Channel



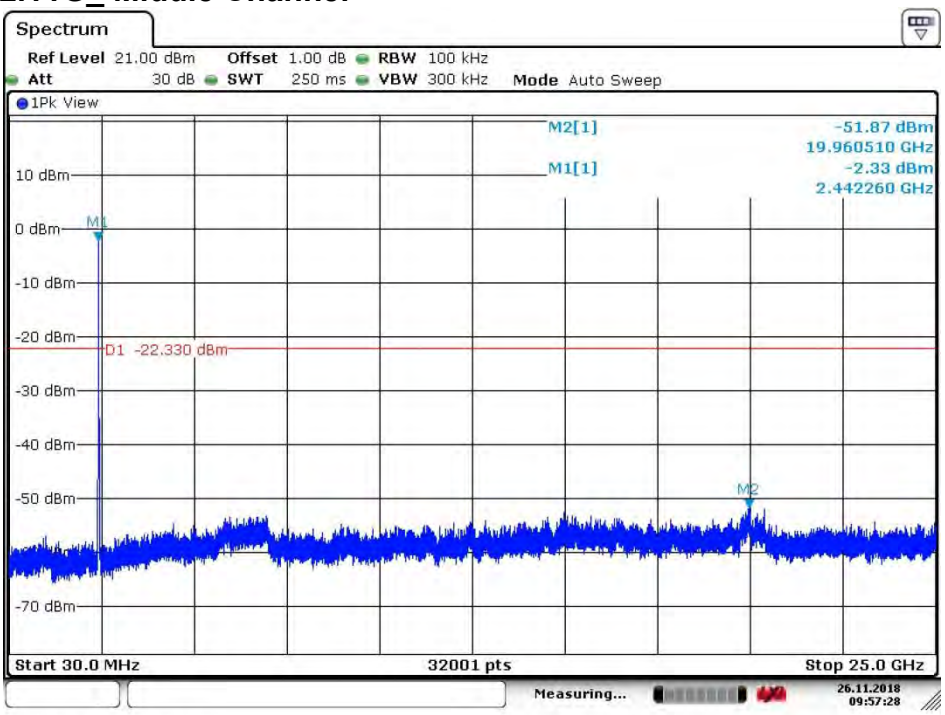
Date: 26.NOV.2018 09:53:50

4.8.1.2.4 802.11G_Lowest Channel



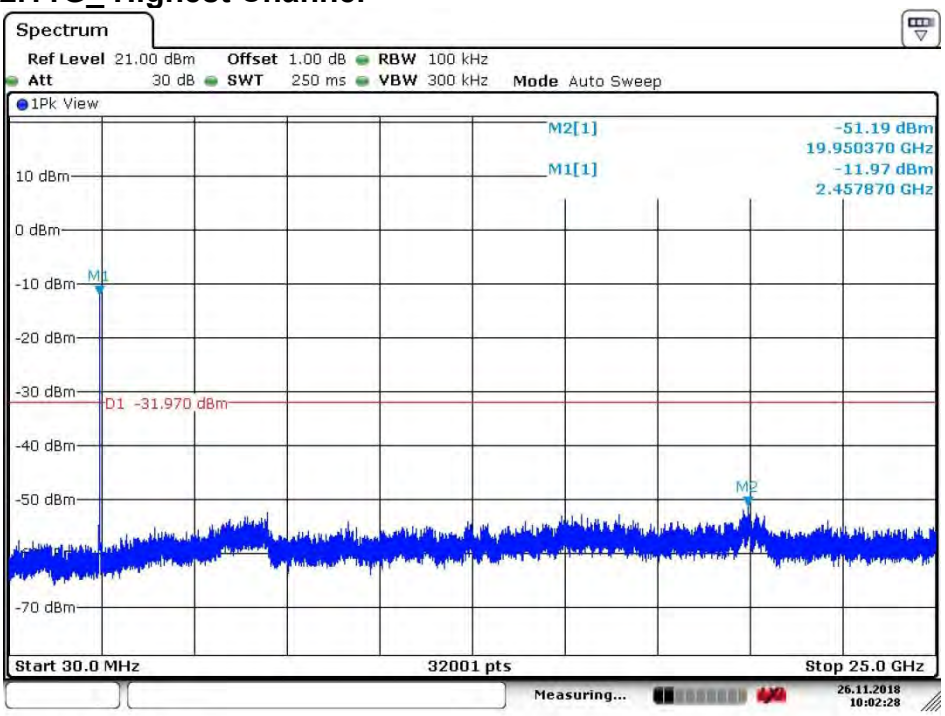
Date: 26.NOV.2018 09:56:24

4.8.1.2.5 802.11G_ Middle Channel



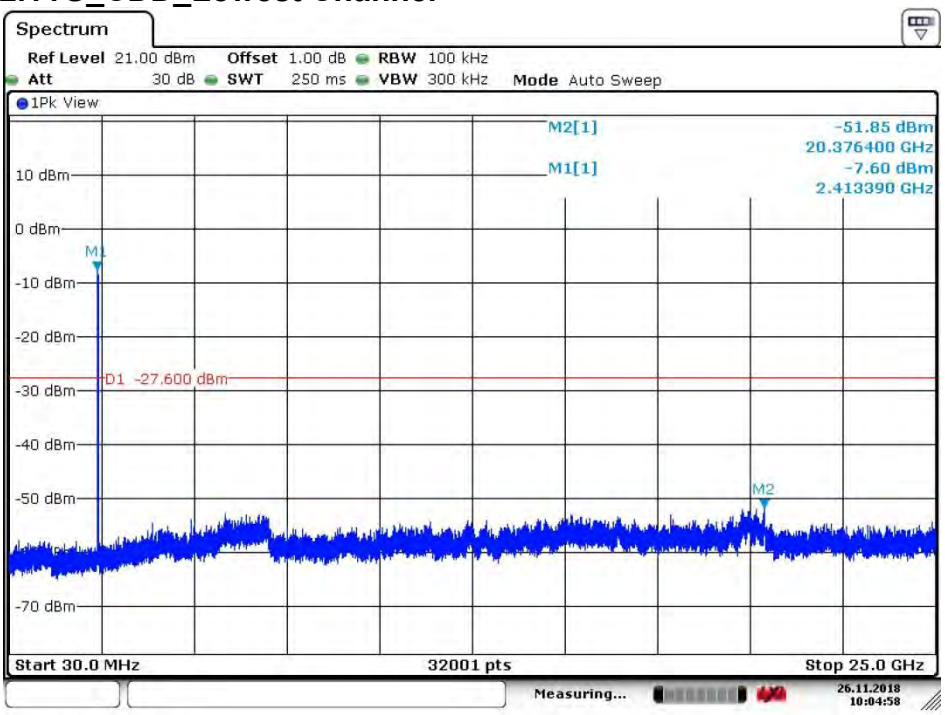
Date: 26.NOV.2018 09:57:28

4.8.1.2.6 802.11G_ Highest Channel



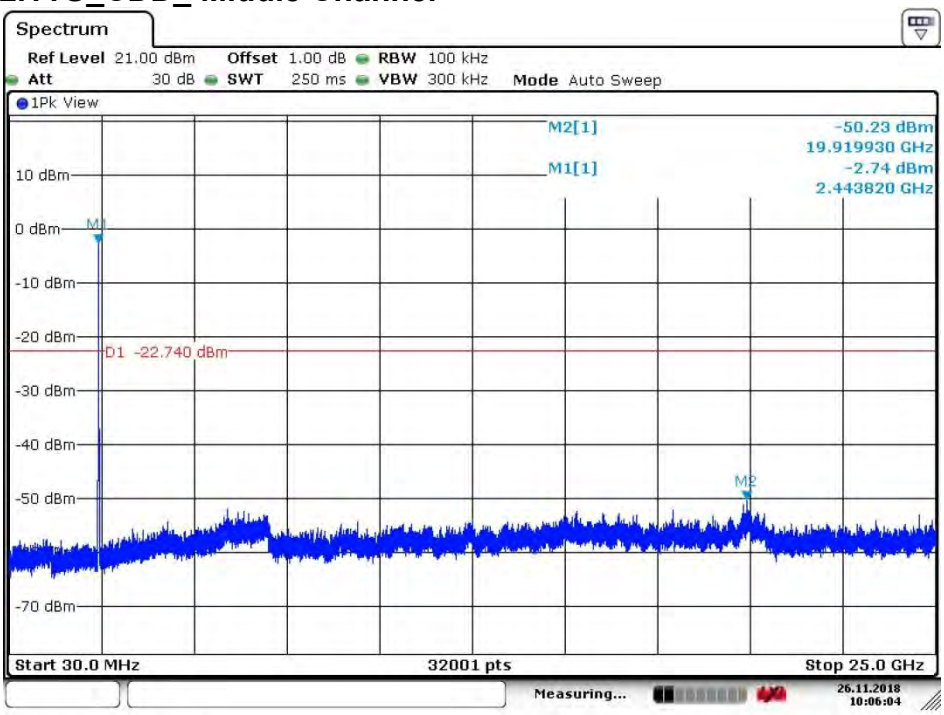
Date: 26.NOV.2018 10:02:28

4.8.1.2.7 802.11G_CDD_Lowest Channel



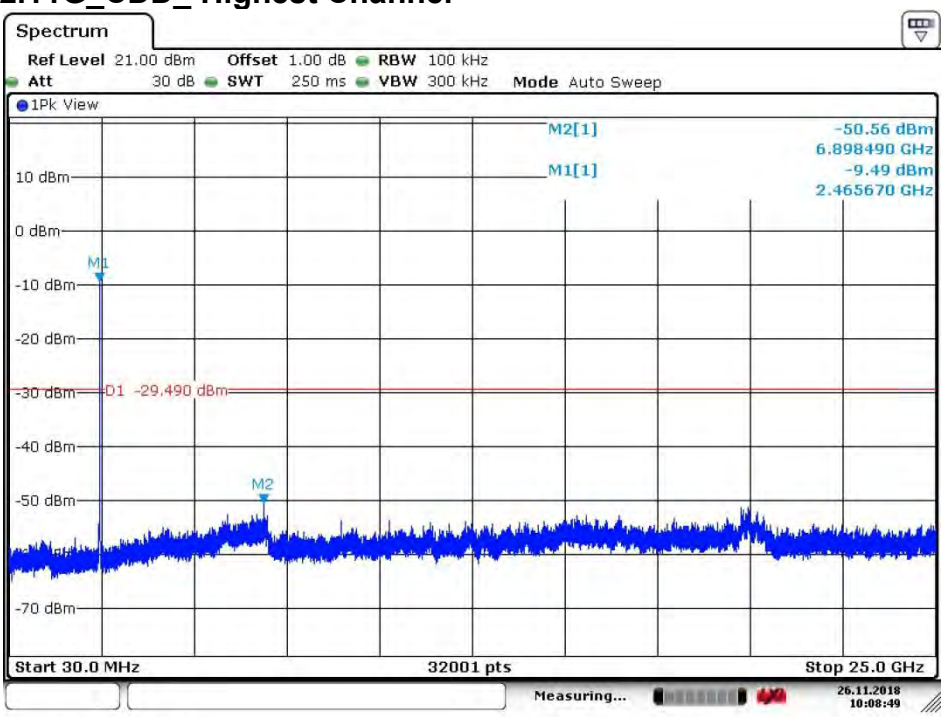
Date: 26.NOV.2018 10:04:58

4.8.1.2.8 802.11G_CDD_ Middle Channel



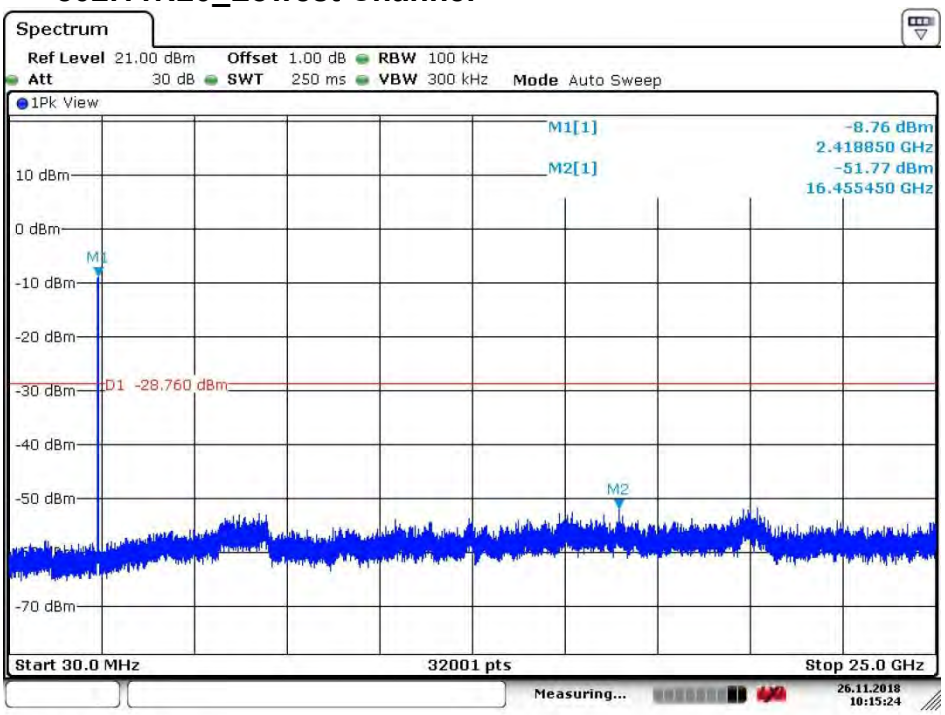
Date: 26.NOV.2018 10:06:04

4.8.1.2.9 802.11G_CDD_ Highest Channel



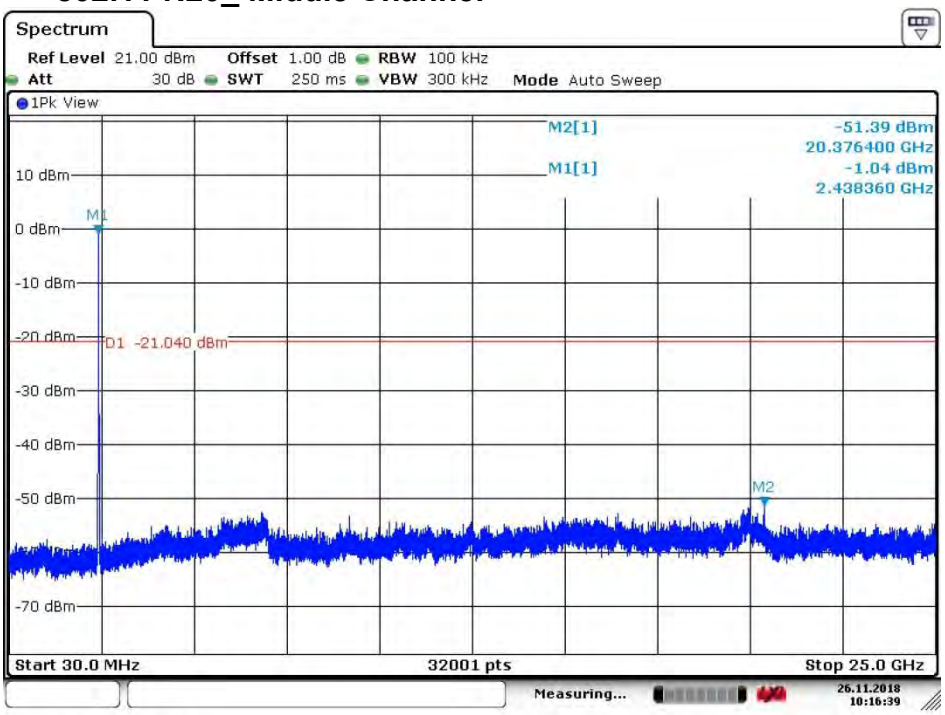
Date: 26.NOV.2018 10:08:49

4.8.1.2.10 802.11N20_Lowest Channel



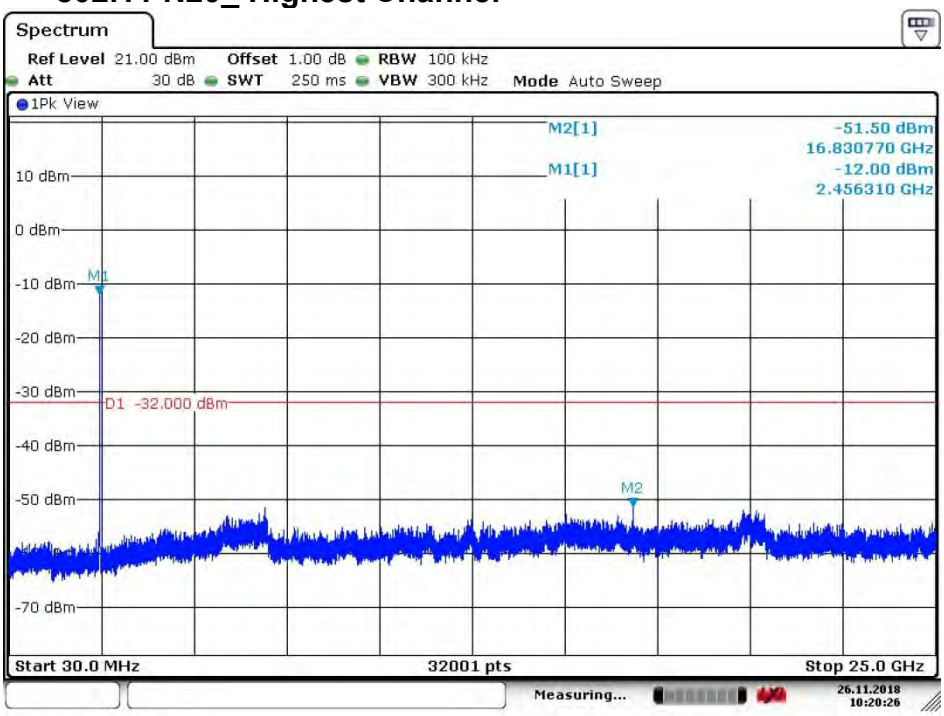
Date: 26.NOV.2018 10:15:25

4.8.1.2.11 802.11 N20_ Middle Channel



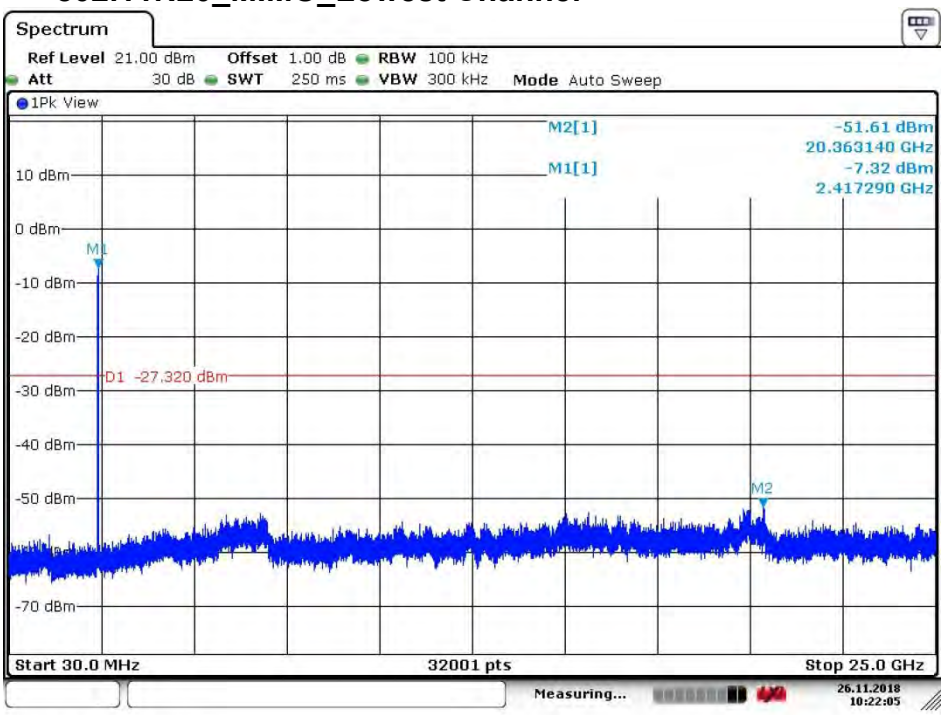
Date: 26.NOV.2018 10:16:40

4.8.1.2.12 802.11 N20_ Highest Channel



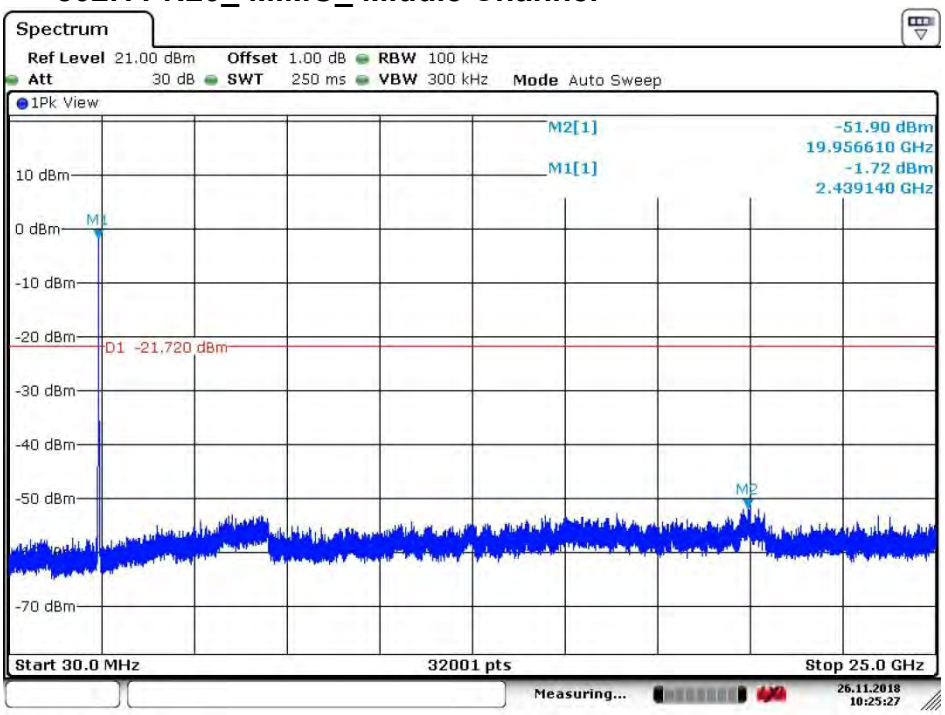
Date: 26.NOV.2018 10:20:26

4.8.1.2.13 802.11N20_MIMO_Lowest Channel



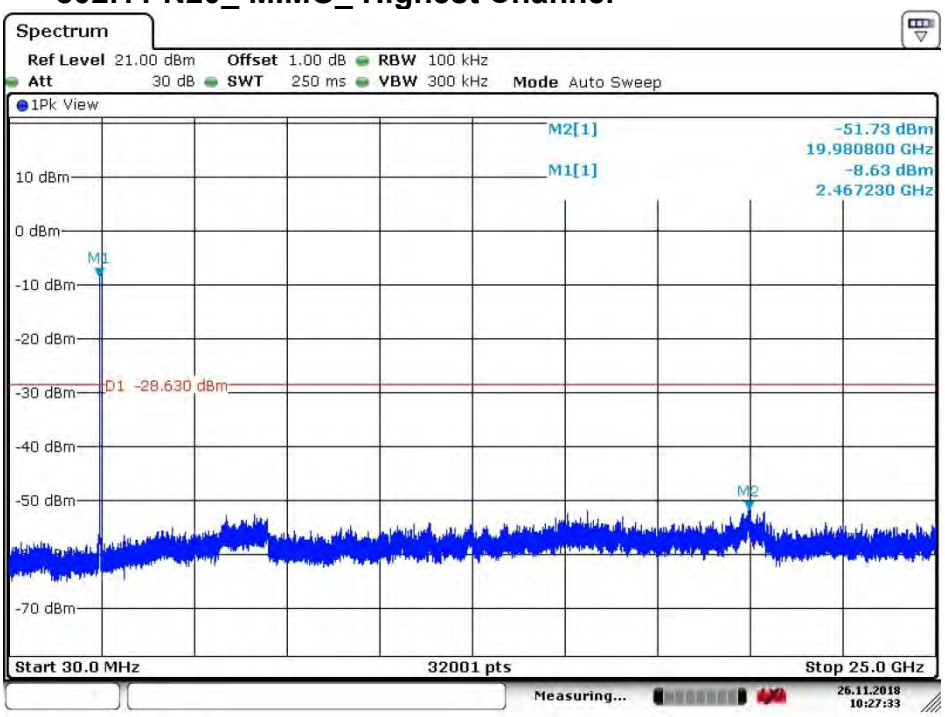
Date: 26.NOV.2018 10:22:05

4.8.1.2.14 802.11 N20_ MIMO_ Middle Channel



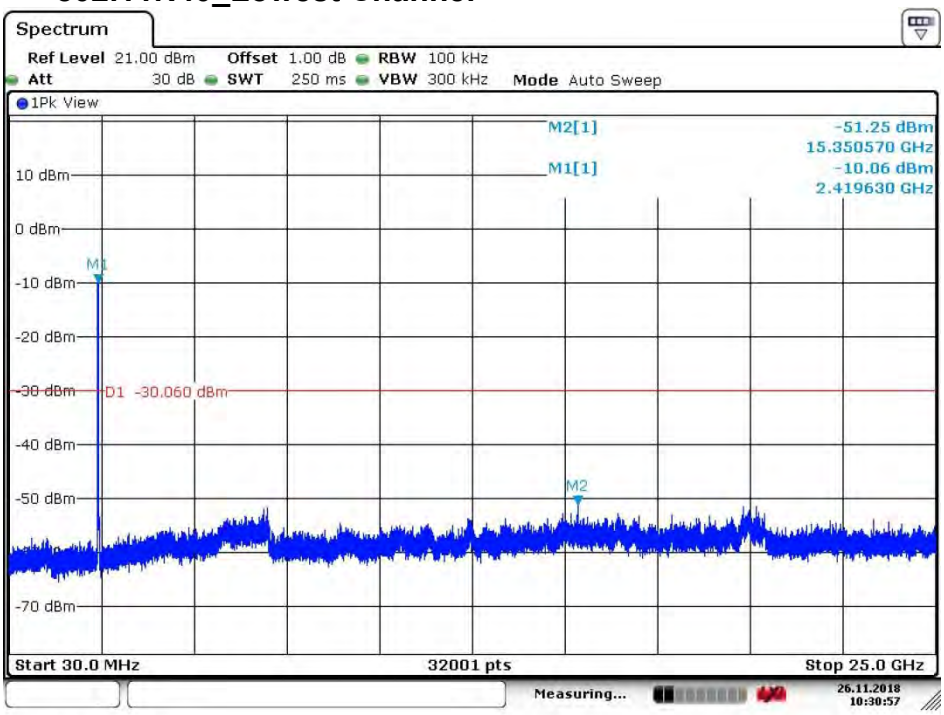
Date: 26.NOV.2018 10:25:27

4.8.1.2.15 802.11 N20_ MIMO_ Highest Channel



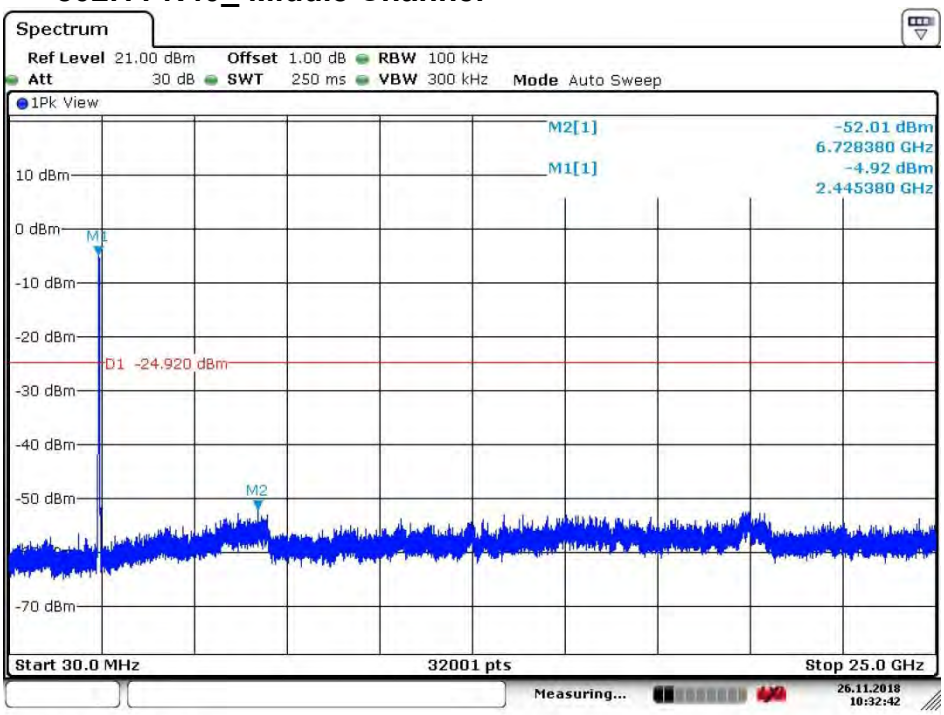
Date: 26.NOV.2018 10:27:34

4.8.1.2.16 802.11N40_Lowest Channel



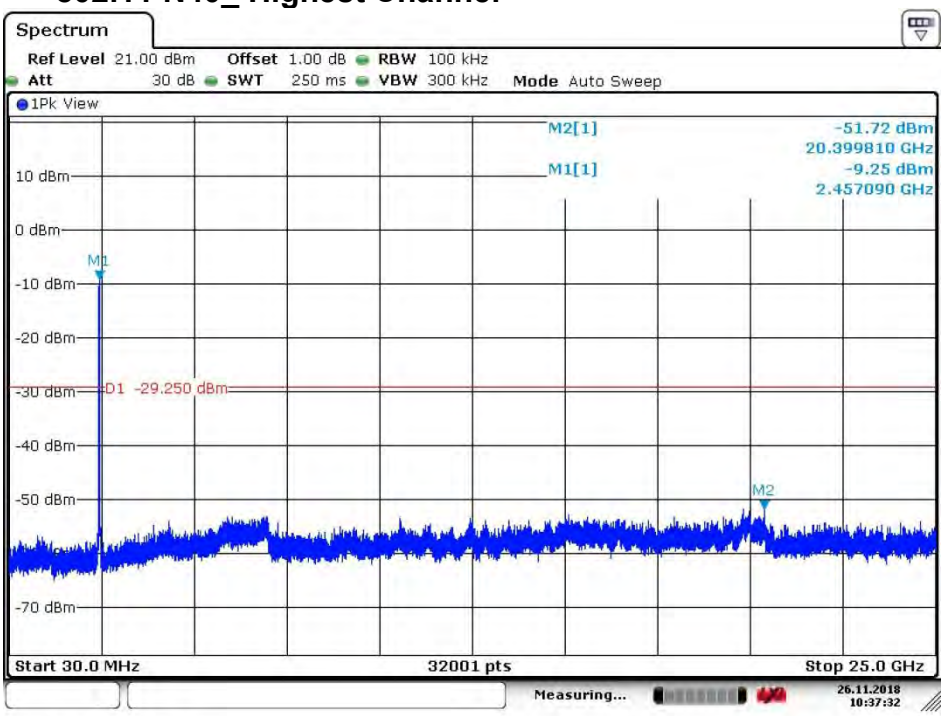
Date: 26.NOV.2018 10:30:58

4.8.1.2.17 802.11 N40_ Middle Channel



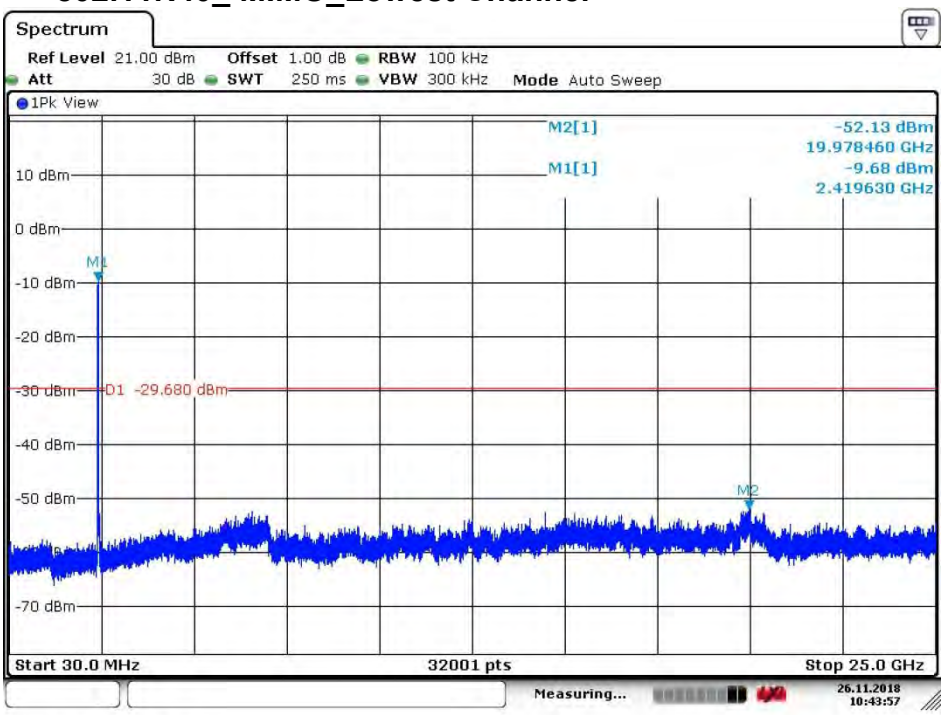
Date: 26.NOV.2018 10:32:42

4.8.1.2.18 802.11 N40_ Highest Channel



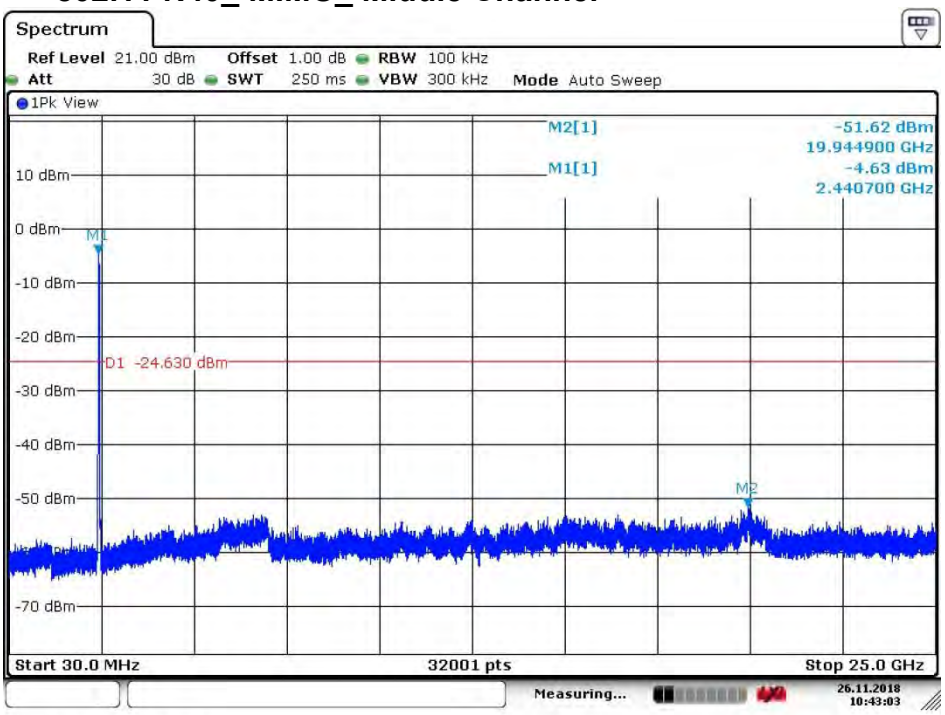
Date: 26.NOV.2018 10:37:32

4.8.1.2.19 802.11N40_ MIMO_Lowest Channel



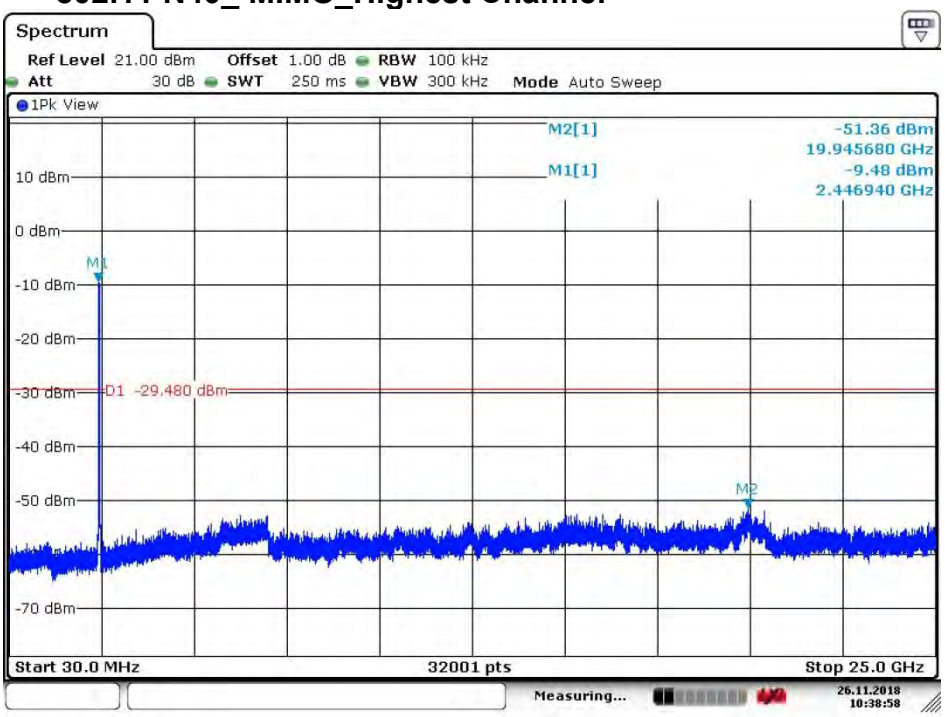
Date: 26.NOV.2018 10:43:58

4.8.1.2.20 802.11 N40_ MIMO_ Middle Channel



Date: 26.NOV.2018 10:43:04

4.8.1.2.21 802.11 N40_ MIMO_Highest Channel



Date: 26.NOV.2018 10:38:58

Remark:

Scan from 9kHz to 25GHz, the disturbance between 9KHz to 30MHz was very low, and the above harmonics were the highest point could be found when testing, The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

4.9 Radiated Spurious Emissions

Test Requirement:	47 CFR Part 15C Section 15.209 and 15.205				
Test Method:	ANSI C63.10 :2013 Section 11.12				
Test Site:	Measurement Distance: 3m or 10m (Semi-Anechoic Chamber)				
Receiver Setup:	Frequency	Detector	RBW	VBW	Remark
	0.009MHz-0.090MHz	Peak	10kHz	30kHz	Peak
	0.009MHz-0.090MHz	Average	10kHz	30kHz	Average
	0.090MHz-0.110MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
	0.110MHz-0.490MHz	Peak	10kHz	30kHz	Peak
	0.110MHz-0.490MHz	Average	10kHz	30kHz	Average
	0.490MHz -30MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
	30MHz-1GHz	Quasi-peak	100 kHz	300kHz	Quasi-peak
	Above 1GHz	Peak	1MHz	3MHz	Peak
		Peak	1MHz	10Hz	Average
Limit:	Frequency	Field strength (microvolt/meter)	Limit (dBuV/m)	Remark	Measurement distance (m)
	0.009MHz-0.490MHz	2400/F(kHz)	-	-	300
	0.490MHz-1.705MHz	24000/F(kHz)	-	-	30
	1.705MHz-30MHz	30	-	-	30
	30MHz-88MHz	100	40.0	Quasi-peak	3
	88MHz-216MHz	150	43.5	Quasi-peak	3
	216MHz-960MHz	200	46.0	Quasi-peak	3
	960MHz-1GHz	500	54.0	Quasi-peak	3
	Above 1GHz	500	54.0	Average	3
	Remark: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.				

Test Setup:

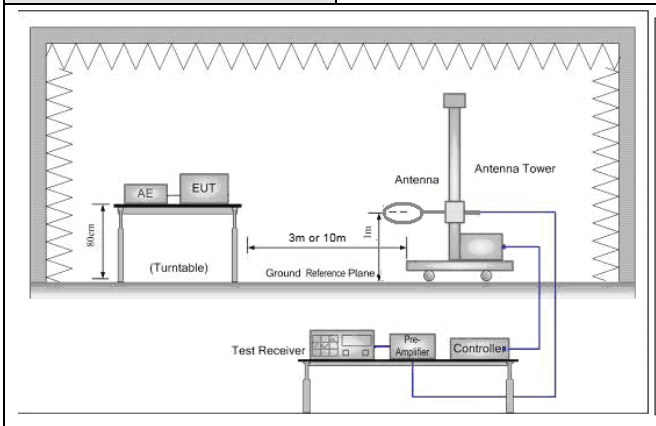


Figure 1. Below 30MHz

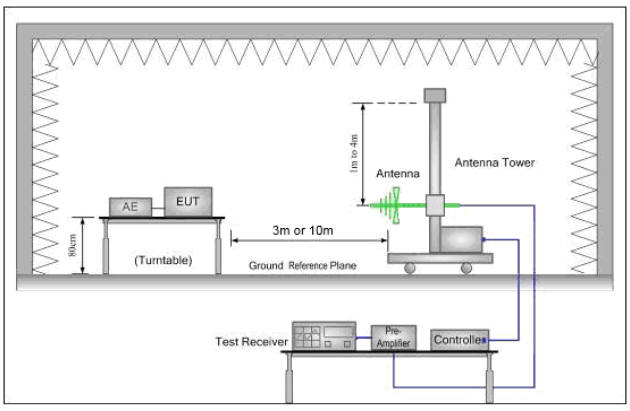


Figure 2. 30MHz to 1GHz

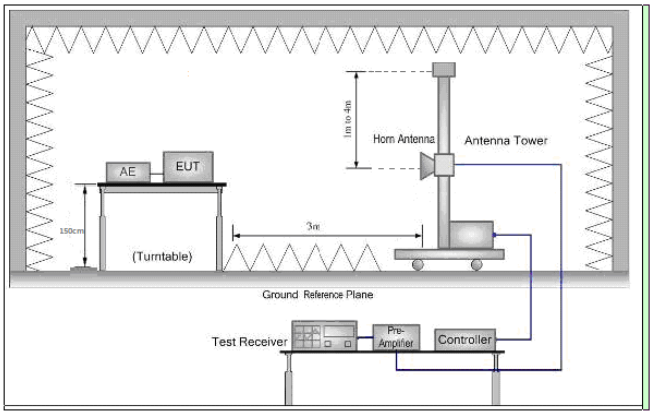


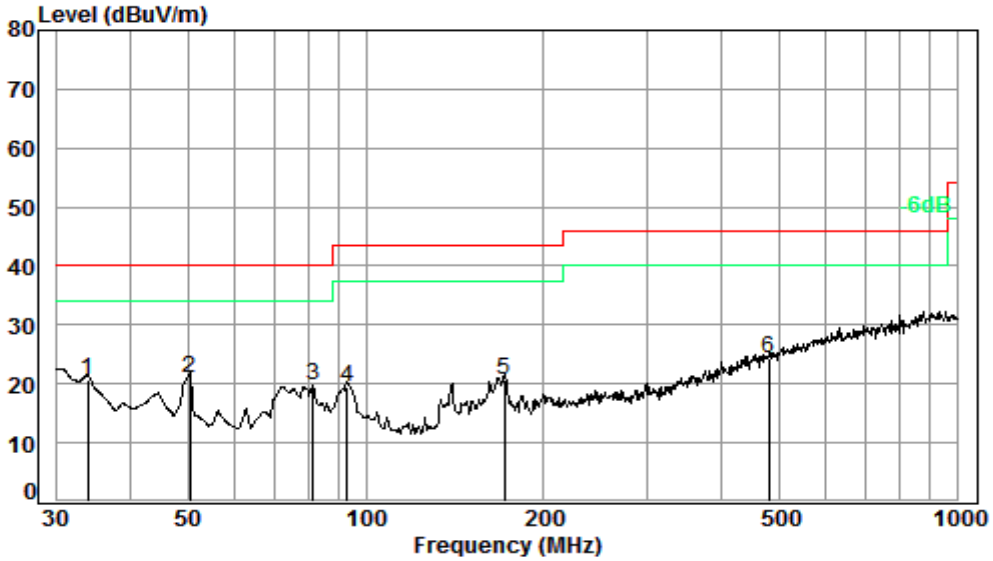
Figure 3. Above 1 GHz

Test Procedure:	a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation. b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. d. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters(for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. g. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet. h. Test the EUT in the lowest channel, the middle channel ,the Highest channel i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, And found the X axis positioning which it is worse case. j. Repeat above procedures until all frequencies measured was complete.
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates. Charge + Transmitting mode.
Final Test Mode:	Pretest the EUT at Charge + Transmitting mode. Through Pre-scan, find the 1Mbps of rate is the worst case of 802.11B; 6Mbps of rate is the worst case of 802.11G ; 6.5Mbps of rate is the worst case of 802.11N(HT20); 13Mbps of rate is the worst case of 802.11N(HT20) MIMO; 13.5Mbps of rate is the worst case of 802.11N(HT40) ;

	27Mbps of rate is the worst case of 802.11N(HT40) MIMO. For below 1GHz, through Pre-scan, find the 1Mbps of rate of 802.11B at lowest channel is the worst case. Only the worst case is recorded in the report.
Instruments Used:	Refer to section 5.10 for details
Test Results:	Pass

4.9.1 Radiated emission below 1GHz

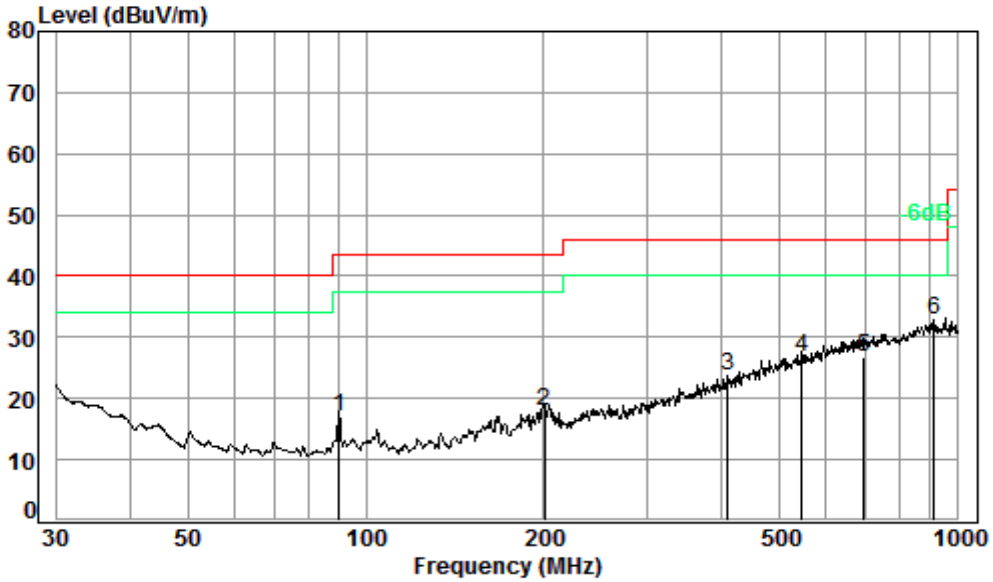
4.9.1.1 Charge + Transmitting, Vertical



Condition: 3m VERTICAL
Job No. : B0003
Test mode: a

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	33.92	0.60	20.37	27.65	27.26	20.58	40.00	-19.42
2 pp	50.41	0.80	14.16	27.60	33.50	20.86	40.00	-19.14
3	81.50	1.10	12.17	27.50	33.97	19.74	40.00	-20.26
4	93.11	1.13	13.39	27.51	32.52	19.53	43.50	-23.97
5	171.39	1.36	15.73	27.52	30.98	20.55	43.50	-22.95
6	480.53	2.53	24.21	27.85	25.58	24.47	46.00	-21.53

4.9.1.2 Charge + Transmitting, Horizontal



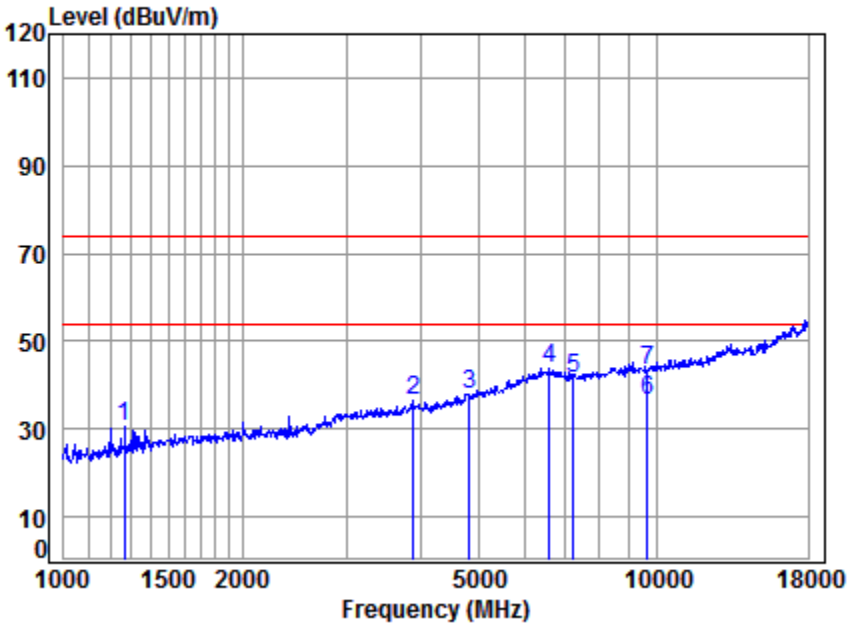
Condition: 3m HORIZONTAL
Job No. : B0003
Test mode: a

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	90.22	1.10	13.12	27.51	30.29	17.00	43.50	-26.50
2	200.69	1.40	16.53	27.53	27.46	17.86	43.50	-25.64
3	408.95	2.24	22.62	27.75	26.47	23.58	46.00	-22.42
4	545.18	2.65	25.55	27.80	26.24	26.64	46.00	-19.36
5	694.42	2.89	27.83	27.56	23.50	26.66	46.00	-19.34
6 pp	912.86	3.61	29.87	27.04	26.33	32.77	46.00	-13.23

4.9.2 Transmitter emission above 1GHz

4.9.2.1 ANT1:

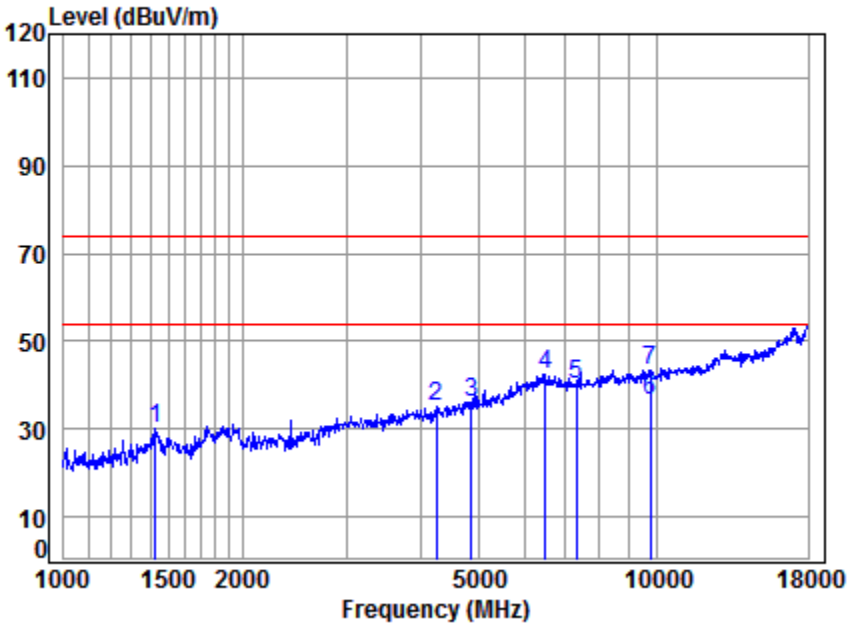
4.9.2.1.1 802.11B_Lowest Channel_ Peak_ Vertical



Site : chamber
Condition: 3m VERTICAL
Job No : B0003
Mode : 2412 TX RSE
Note : 2.4G WIFI 11B
: ANT1

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1267.454	4.68	24.89	40.54	41.63	30.66	74.00	-43.34	peak
2	3890.255	6.87	32.49	42.62	39.82	36.56	74.00	-37.44	peak
3	4824.000	7.91	34.00	43.63	39.58	37.86	74.00	-36.14	peak
4	6583.209	11.30	35.65	42.34	39.01	43.62	74.00	-30.38	peak
5	7236.000	10.07	36.09	41.83	37.25	41.58	74.00	-32.42	peak
6	9648.000	10.77	37.69	38.36	26.51	36.61	54.00	-17.39	Average
7	9648.000	10.77	37.69	38.36	33.41	43.51	74.00	-30.49	peak

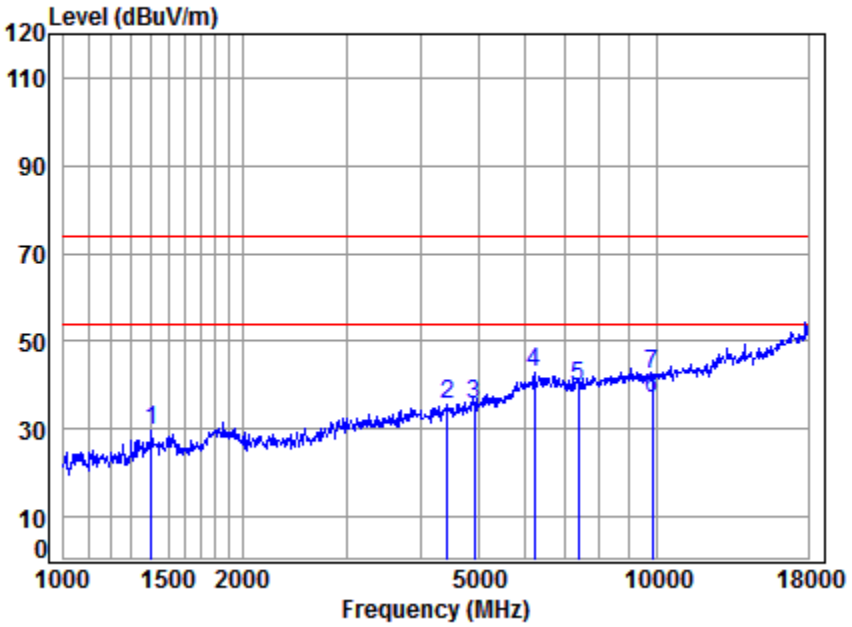
4.9.2.1.2 802.11B_ Middle Channel_ Peak_ Vertical



Site : chamber
Condition: 3m VERTICAL
Job No : B0003
Mode : 2437 TX RSE
Note : 2.4G WIFI 11B
: ANT1

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1426.916	5.24	25.53	40.66	40.08	30.19	74.00	-43.81	peak
2	4254.921	7.28	33.17	43.04	37.84	35.25	74.00	-38.75	peak
3	4874.000	7.96	34.05	43.68	37.91	36.24	74.00	-37.76	peak
4	6488.754	11.52	35.59	42.41	37.94	42.64	74.00	-31.36	peak
5	7311.000	10.05	36.15	41.78	35.60	40.02	74.00	-33.98	peak
6	9748.000	10.82	37.75	38.20	26.34	36.71	54.00	-17.29	Average
7	9748.000	10.82	37.75	38.20	33.01	43.38	74.00	-30.62	peak

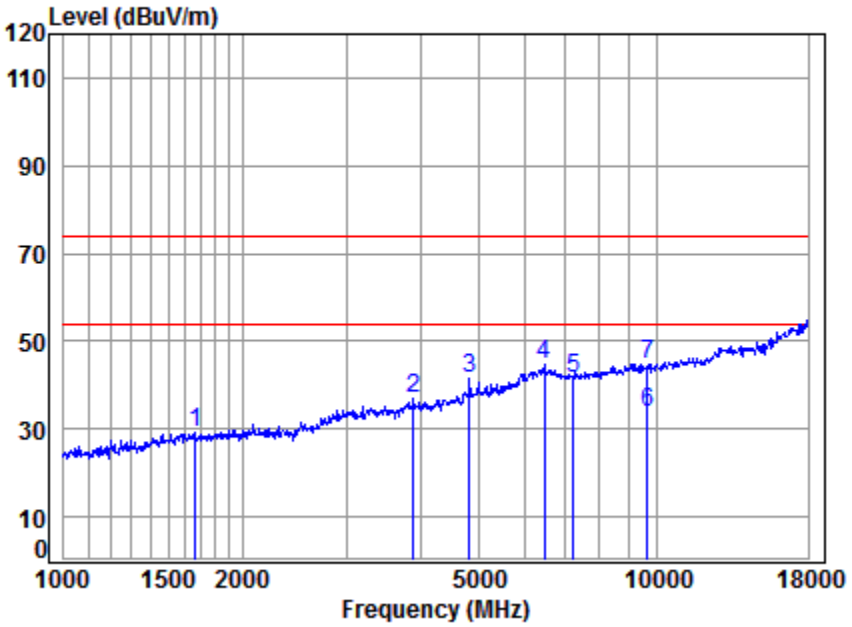
4.9.2.1.3 802.11B_ Highest Channel_ Peak_ Vertical



Site : chamber
Condition: 3m VERTICAL
Job No : B0003
Mode : 2462 TX RSE
Note : 2.4G WIFI 11B
: ANT1

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1406.443	5.17	25.45	40.64	39.87	29.85	74.00	-44.15	peak
2	4443.453	7.50	33.50	43.25	37.87	35.62	74.00	-38.38	peak
3	4924.000	8.01	34.11	43.73	37.12	35.51	74.00	-38.49	peak
4	6213.441	10.99	35.32	42.64	39.11	42.78	74.00	-31.22	peak
5	7386.000	10.03	36.21	41.72	35.40	39.92	74.00	-34.08	peak
6	9848.000	10.87	37.81	38.04	26.54	37.18	54.00	-16.82	Average
7	9848.000	10.87	37.81	38.04	31.72	42.36	74.00	-31.64	peak

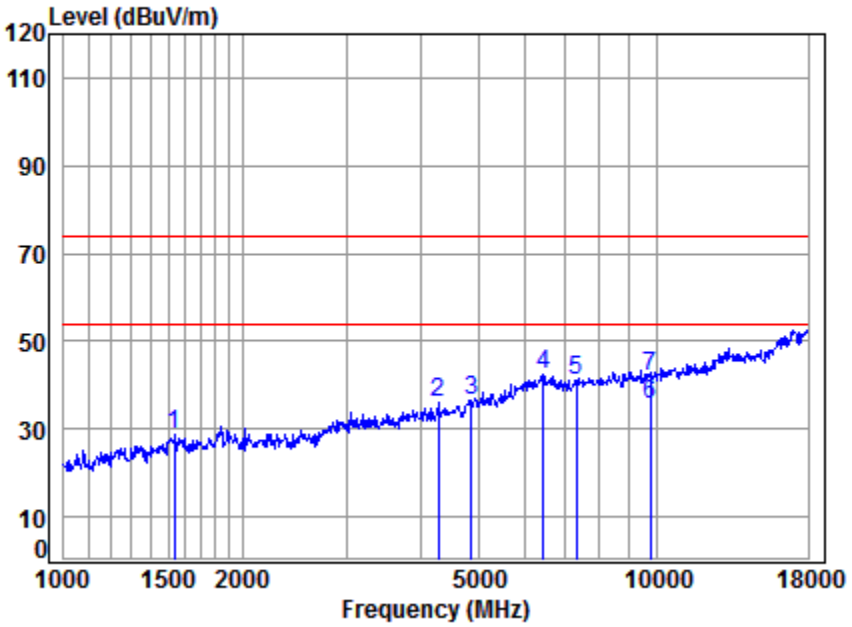
4.9.2.1.4 802.11B_Lowest Channel_ Peak_ Horizontal



Site : chamber
Condition: 3m HORIZONTAL
Job No : B0003
Mode : 2412 TX RSE
Note : 2.4G WIFI 11B
: ANT1

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1667.951	5.27	26.54	40.81	38.16	29.16	74.00	-44.84	peak
2	3890.255	6.87	32.49	42.62	40.11	36.85	74.00	-37.15	peak
3	4824.000	7.91	34.00	43.63	43.03	41.31	74.00	-32.69	peak
4	6470.026	11.48	35.57	42.43	40.04	44.66	74.00	-29.34	peak
5	7236.000	10.07	36.09	41.83	37.36	41.69	74.00	-32.31	peak
6	9648.000	10.77	37.69	38.36	23.67	33.77	54.00	-20.23	Average
7	9648.000	10.77	37.69	38.36	34.50	44.60	74.00	-29.40	peak

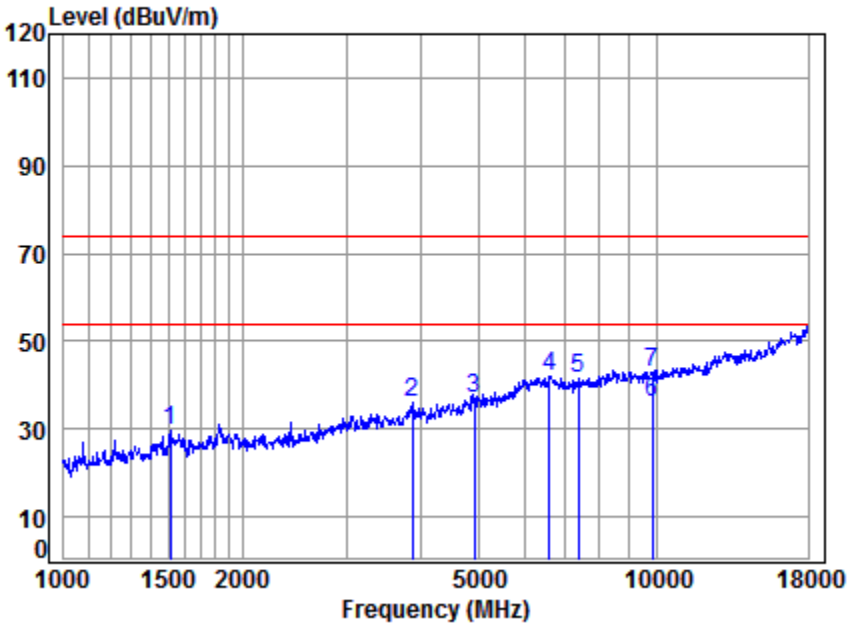
4.9.2.1.5 802.11B_ Middle Channel_ Peak_ Horizontal



Site : chamber
Condition: 3m HORIZONTAL
Job No : B0003
Mode : 2437 TX RSE
Note : 2.4G WIFI 11B
: ANT1

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1538.281	5.43	25.98	40.73	37.92	28.60	74.00	-45.40	peak
2	4279.589	7.31	33.22	43.07	38.79	36.25	74.00	-37.75	peak
3	4874.000	7.96	34.05	43.68	37.98	36.31	74.00	-37.69	peak
4	6451.353	11.45	35.55	42.44	38.00	42.56	74.00	-31.44	peak
5	7311.000	10.05	36.15	41.78	36.43	40.85	74.00	-33.15	peak
6	9748.000	10.82	37.75	38.20	25.36	35.73	54.00	-18.27	Average
7	9748.000	10.82	37.75	38.20	31.47	41.84	74.00	-32.16	peak

4.9.2.1.6 802.11B_ Highest Channel_ Peak_ Horizontal

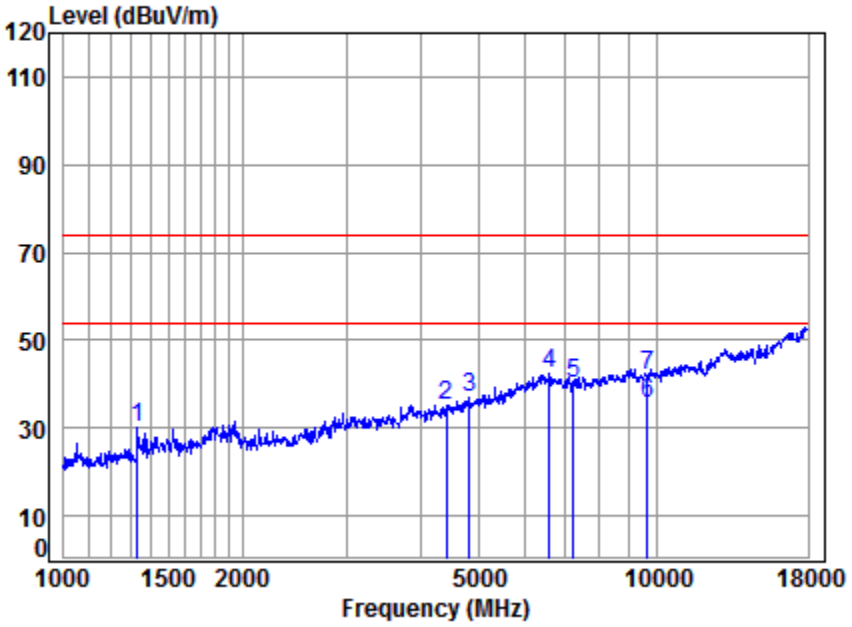


Site : chamber
Condition: 3m HORIZONTAL
Job No : B0003
Mode : 2462 TX RSE
Note : 2.4G WIFI 11B
: ANT1

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1511.833	5.46	25.85	40.71	38.85	29.45	74.00	-44.55	peak
2	3879.027	6.86	32.47	42.61	39.10	35.82	74.00	-38.18	peak
3	4924.000	8.01	34.11	43.73	38.34	36.73	74.00	-37.27	peak
4	6602.265	11.24	35.66	42.32	37.30	41.88	74.00	-32.12	peak
5	7386.000	10.03	36.21	41.72	37.07	41.59	74.00	-32.41	peak
6	9848.000	10.87	37.81	38.04	25.60	36.24	54.00	-17.76	Average
7	9848.000	10.87	37.81	38.04	32.27	42.91	74.00	-31.09	peak

4.9.2.2 ANT2:

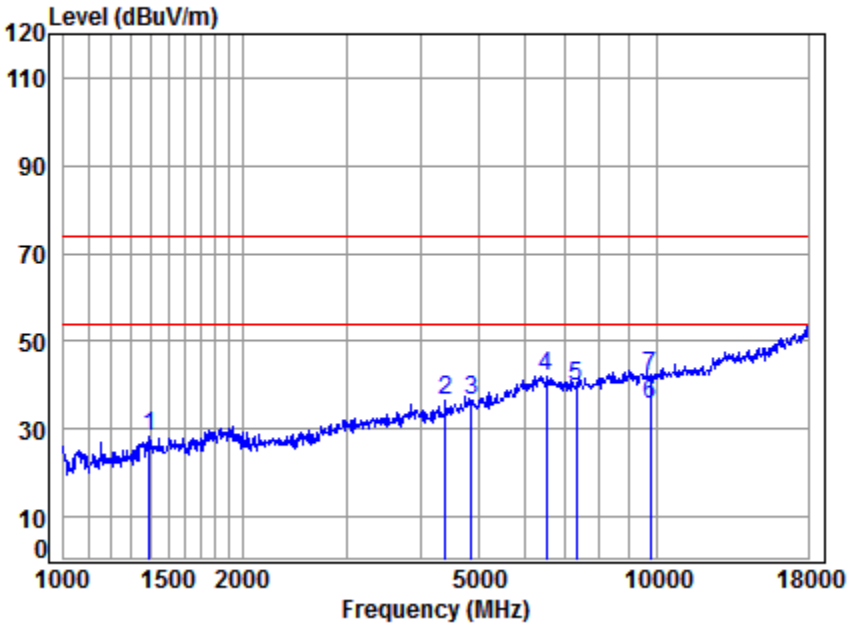
4.9.2.2.1 802.11B_Lowest Channel_ Peak_ Vertical



Site : chamber
Condition: 3m VERTICAL
Job No : B0003
Mode : 2412 TX RSE
Note : 2.4G WIFI 11B
: ANT2

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1331.288	4.91	25.15	40.59	40.67	30.14	74.00	-43.86	peak
2	4417.841	7.47	33.46	43.22	37.62	35.33	74.00	-38.67	peak
3	4824.000	7.91	34.00	43.63	38.62	36.90	74.00	-37.10	peak
4	6602.265	11.24	35.66	42.32	37.99	42.57	74.00	-31.43	peak
5	7236.000	10.07	36.09	41.83	35.93	40.26	74.00	-33.74	peak
6	9648.000	10.77	37.69	38.36	25.33	35.43	54.00	-18.57	Average
7	9648.000	10.77	37.69	38.36	31.70	41.80	74.00	-32.20	peak

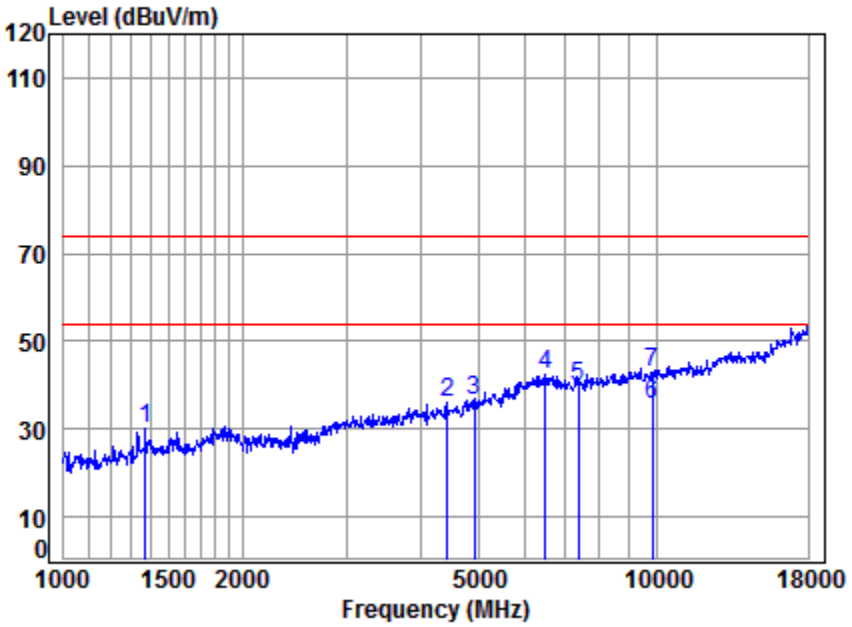
4.9.2.2.2 802.11B_ Middle Channel_ Peak_ Vertical



Site : chamber
Condition: 3m VERTICAL
Job No : B0003
Mode : 2437 TX RSE
Note : 2.4G WIFI 11B
: ANT2

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1394.300	5.13	25.40	40.63	38.62	28.52	74.00	-45.48	peak
2	4405.090	7.46	33.44	43.20	38.61	36.31	74.00	-37.69	peak
3	4874.000	7.96	34.05	43.68	38.02	36.35	74.00	-37.65	peak
4	6507.536	11.52	35.60	42.40	37.39	42.11	74.00	-31.89	peak
5	7311.000	10.05	36.15	41.78	35.24	39.66	74.00	-34.34	peak
6	9748.000	10.82	37.75	38.20	25.06	35.43	54.00	-18.57	Average
7	9748.000	10.82	37.75	38.20	31.58	41.95	74.00	-32.05	peak

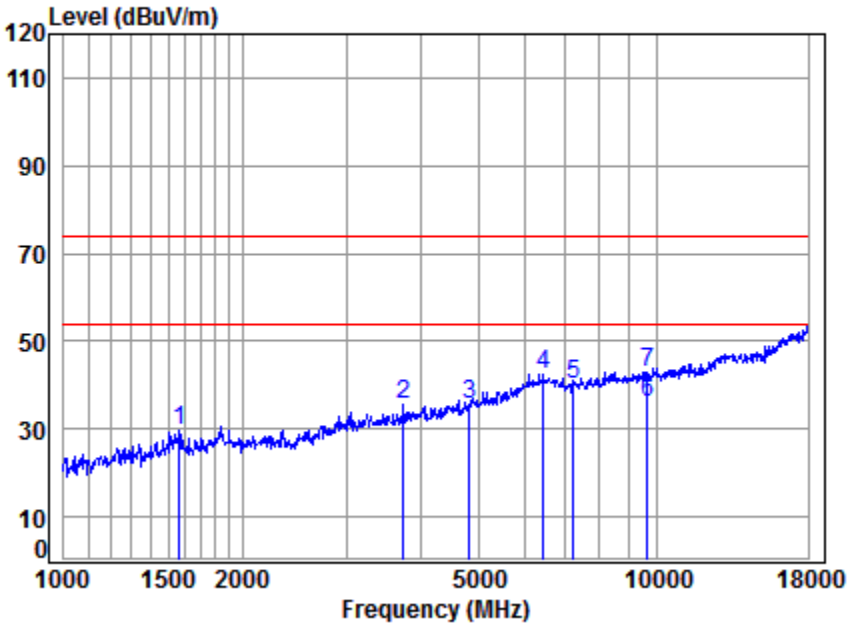
4.9.2.2.3 802.11B_ Highest Channel_ Peak_ Vertical



Site : chamber
Condition: 3m VERTICAL
Job No : B0003
Mode : 2462 TX RSE
Note : 2.4G WIFI 11B
: ANT2

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1374.295	5.06	25.33	40.62	40.44	30.21	74.00	-43.79	peak
2	4430.628	7.48	33.48	43.23	38.19	35.92	74.00	-38.08	peak
3	4924.000	8.01	34.11	43.73	38.06	36.45	74.00	-37.55	peak
4	6488.754	11.52	35.59	42.41	37.70	42.40	74.00	-31.60	peak
5	7386.000	10.03	36.21	41.72	35.39	39.91	74.00	-34.09	peak
6	9848.000	10.87	37.81	38.04	25.18	35.82	54.00	-18.18	Average
7	9848.000	10.87	37.81	38.04	32.15	42.79	74.00	-31.21	peak

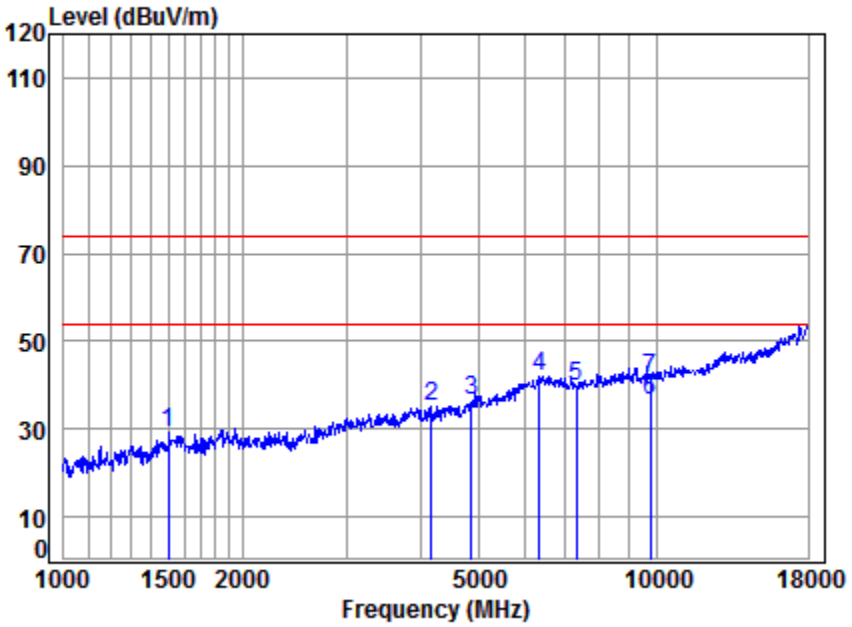
4.9.2.2.4 802.11B_Lowest Channel_ Peak_ Horizontal



Site : chamber
Condition: 3m HORIZONTAL
Job No : B0003
Mode : 2412 TX RSE
Note : 2.4G WIFI 11B
: ANT2

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1569.721	5.39	26.12	40.75	38.75	29.51	74.00	-44.49	peak
2	3746.792	6.73	32.21	42.44	39.21	35.71	74.00	-38.29	peak
3	4824.000	7.91	34.00	43.63	37.25	35.53	74.00	-38.47	peak
4	6451.353	11.45	35.55	42.44	38.08	42.64	74.00	-31.36	peak
5	7236.000	10.07	36.09	41.83	35.66	39.99	74.00	-34.01	peak
6	9648.000	10.77	37.69	38.36	26.13	36.23	54.00	-17.77	Average
7	9648.000	10.77	37.69	38.36	32.69	42.79	74.00	-31.21	peak

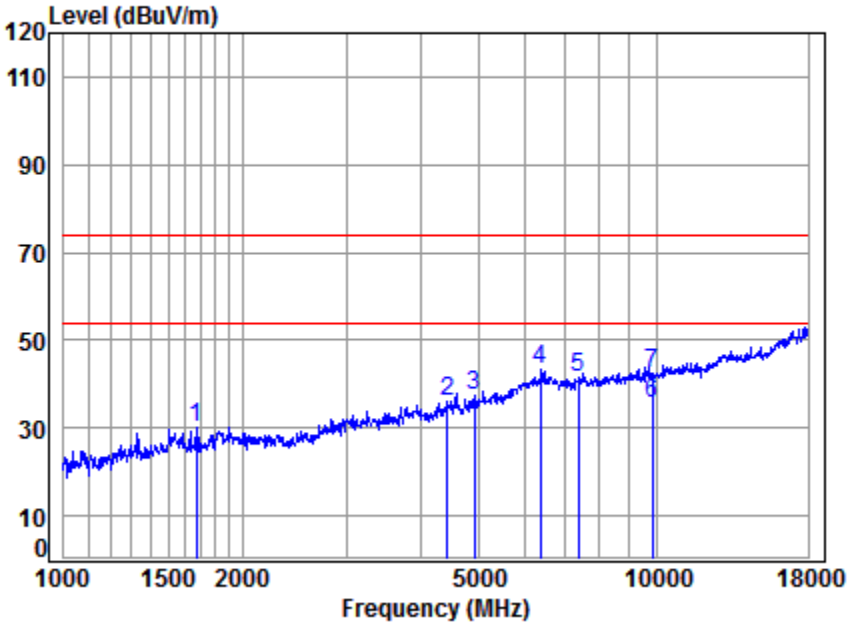
4.9.2.2.5 802.11B_ Middle Channel_ Peak_ Horizontal



Site : chamber
Condition: 3m HORIZONTAL
Job No : B0003
Mode : 2437 TX RSE
Note : 2.4G WIFI 11B
: ANT2

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1503.119	5.48	25.81	40.71	38.41	28.99	74.00	-45.01	peak
2	4169.698	7.18	33.02	42.95	37.88	35.13	74.00	-38.87	peak
3	4874.000	7.96	34.05	43.68	38.17	36.50	74.00	-37.50	peak
4	6340.436	11.24	35.44	42.54	37.80	41.94	74.00	-32.06	peak
5	7311.000	10.05	36.15	41.78	35.41	39.83	74.00	-34.17	peak
6	9748.000	10.82	37.75	38.20	26.15	36.52	54.00	-17.48	Average
7	9748.000	10.82	37.75	38.20	30.96	41.33	74.00	-32.67	peak

4.9.2.2.6 802.11B_ Highest Channel_ Peak_ Horizontal

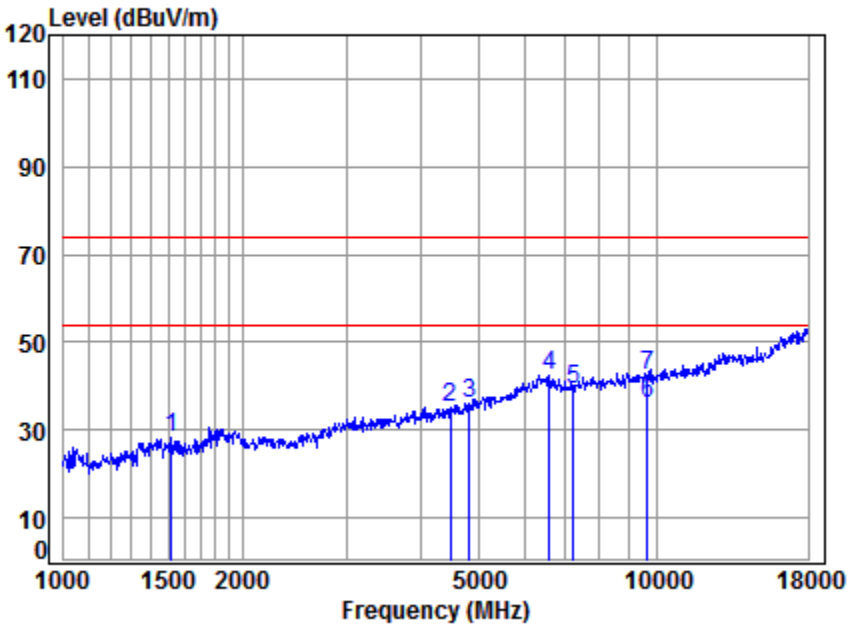


Site : chamber
Condition: 3m HORIZONTAL
Job No : B0003
Mode : 2462 TX RSE
Note : 2.4G WIFI 11B
: ANT2

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1672.779	5.26	26.56	40.82	39.13	30.13	74.00	-43.87	peak
2	4430.628	7.48	33.48	43.23	38.32	36.05	74.00	-37.95	peak
3	4924.000	8.01	34.11	43.73	39.20	37.59	74.00	-36.41	peak
4	6377.195	11.31	35.48	42.51	38.85	43.13	74.00	-30.87	peak
5	7386.000	10.03	36.21	41.72	37.12	41.64	74.00	-32.36	peak
6	9848.000	10.87	37.81	38.04	24.76	35.40	54.00	-18.60	Average
7	9848.000	10.87	37.81	38.04	31.93	42.57	74.00	-31.43	peak

4.9.2.3 CDD & MIMO:

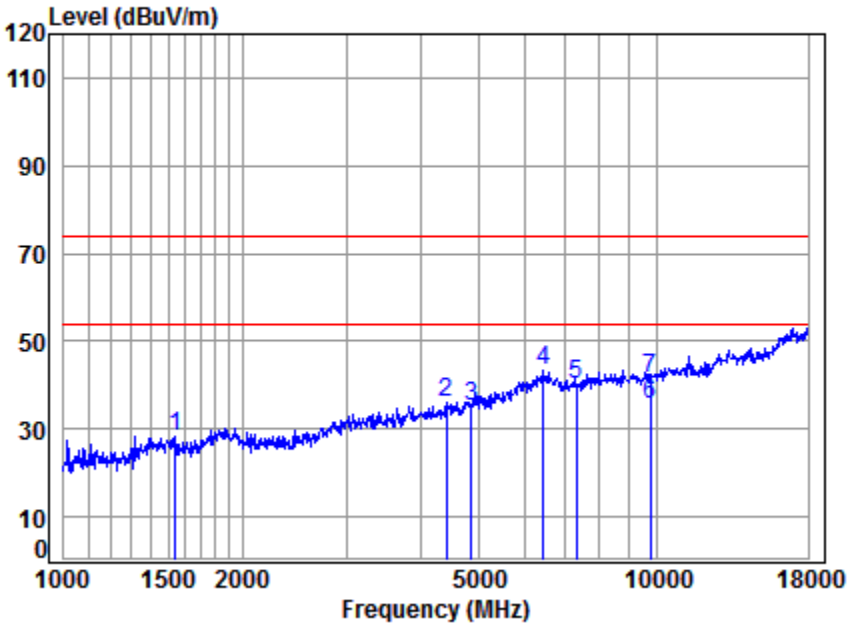
4.9.2.3.1 802.11G_ CDD_Lowest Channel_ Vertical



Site : chamber
Condition: 3m VERTICAL
Job No : B0003
Mode : 2412 TX RSE
Note : 2.4G WIFI 11G
: CDD

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1520.598	5.45	25.89	40.72	37.59	28.21	74.00	-45.79	peak
2	4495.125	7.55	33.59	43.30	37.41	35.25	74.00	-38.75	peak
3	4824.000	7.91	34.00	43.63	37.88	36.16	74.00	-37.84	peak
4	6602.265	11.24	35.66	42.32	38.08	42.66	74.00	-31.34	peak
5	7236.000	10.07	36.09	41.83	35.09	39.42	74.00	-34.58	peak
6	9648.000	10.77	37.69	38.36	26.12	36.22	54.00	-17.78	Average
7	9648.000	10.77	37.69	38.36	32.17	42.27	74.00	-31.73	peak

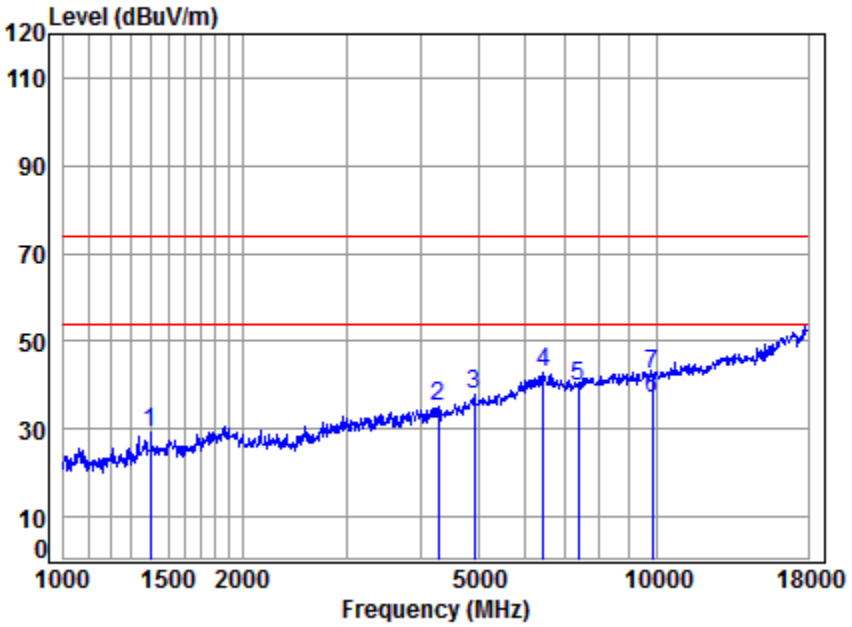
4.9.2.3.2 802.11G_ CDD_Middle Channel_ Vertical



Site : chamber
Condition: 3m VERTICAL
Job No : B0003
Mode : 2437 TX RSE
Note : 2.4G WIFI 11G
: CDD

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1542.733	5.42	26.00	40.73	37.70	28.39	74.00	-45.61	peak
2	4417.841	7.47	33.46	43.22	38.20	35.91	74.00	-38.09	peak
3	4874.000	7.96	34.05	43.68	36.91	35.24	74.00	-38.76	peak
4	6432.732	11.41	35.54	42.46	38.67	43.16	74.00	-30.84	peak
5	7311.000	10.05	36.15	41.78	35.67	40.09	74.00	-33.91	peak
6	9748.000	10.82	37.75	38.20	25.19	35.56	54.00	-18.44	Average
7	9748.000	10.82	37.75	38.20	31.13	41.50	74.00	-32.50	peak

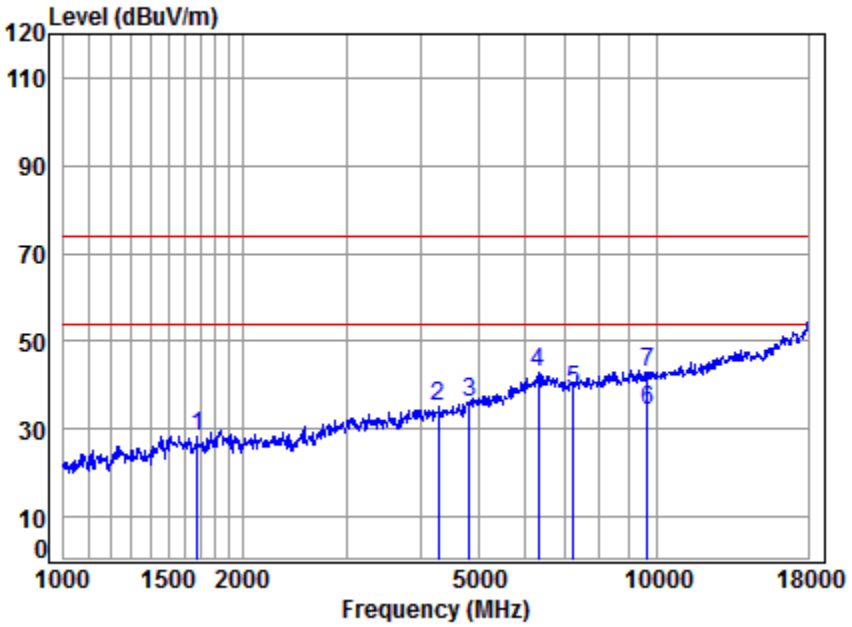
4.9.2.3.3 802.11G_ CDD_Highest Channel_ Vertical



Site : chamber
Condition: 3m VERTICAL
Job No : B0003
Mode : 2462 TX RSE
Note : 2.4G WIFI 11G
: CDD

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1402.384	5.16	25.43	40.64	39.05	29.00	74.00	-45.00	peak
2	4279.589	7.31	33.22	43.07	37.50	34.96	74.00	-39.04	peak
3	4924.000	8.01	34.11	43.73	39.70	38.09	74.00	-35.91	peak
4	6451.353	11.45	35.55	42.44	38.46	43.02	74.00	-30.98	peak
5	7386.000	10.03	36.21	41.72	35.31	39.83	74.00	-34.17	peak
6	9848.000	10.87	37.81	38.04	26.19	36.83	54.00	-17.17	Average
7	9848.000	10.87	37.81	38.04	31.60	42.24	74.00	-31.76	peak

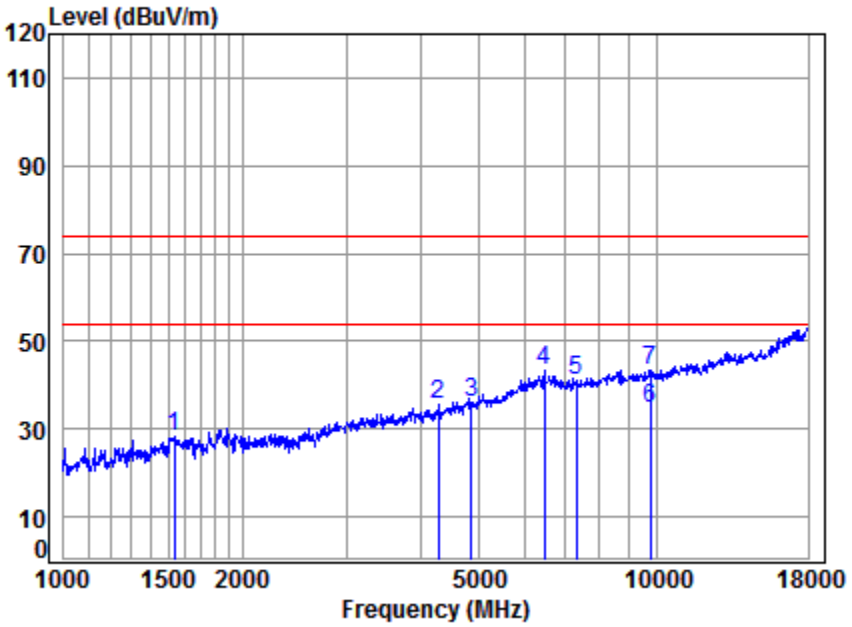
4.9.2.3.4 802.11G_ CDD_Lowest Channel_ Horizontal



Site : chamber
Condition: 3m HORIZONTAL
Job No : B0003
Mode : 2412 TX RSE
Note : 2.4G WIFI 11G
: CDD

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1677.621	5.25	26.58	40.82	37.48	28.49	74.00	-45.51	peak
2	4291.977	7.33	33.24	43.08	37.44	34.93	74.00	-39.07	peak
3	4824.000	7.91	34.00	43.63	37.59	35.87	74.00	-38.13	peak
4	6322.136	11.20	35.43	42.55	38.66	42.74	74.00	-31.26	peak
5	7236.000	10.07	36.09	41.83	34.50	38.83	74.00	-35.17	peak
6	9648.000	10.77	37.69	38.36	24.28	34.38	54.00	-19.62	Average
7	9648.000	10.77	37.69	38.36	32.94	43.04	74.00	-30.96	peak

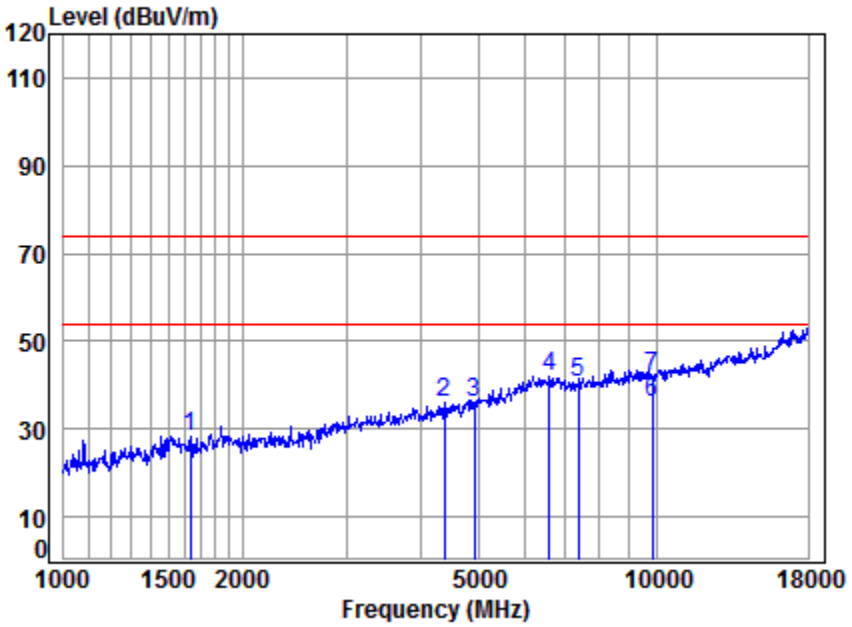
4.9.2.3.5 802.11G_ CDD_Middle Channel_ Horizontal



Site : chamber
Condition: 3m HORIZONTAL
Job No : B0003
Mode : 2437 TX RSE
Note : 2.4G WIFI 11G
: CDD

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1533.841	5.44	25.96	40.73	37.66	28.33	74.00	-45.67	peak
2	4291.977	7.33	33.24	43.08	37.97	35.46	74.00	-38.54	peak
3	4874.000	7.96	34.05	43.68	37.74	36.07	74.00	-37.93	peak
4	6470.026	11.48	35.57	42.43	38.58	43.20	74.00	-30.80	peak
5	7311.000	10.05	36.15	41.78	36.80	41.22	74.00	-32.78	peak
6	9748.000	10.82	37.75	38.20	24.19	34.56	54.00	-19.44	Average
7	9748.000	10.82	37.75	38.20	32.81	43.18	74.00	-30.82	peak

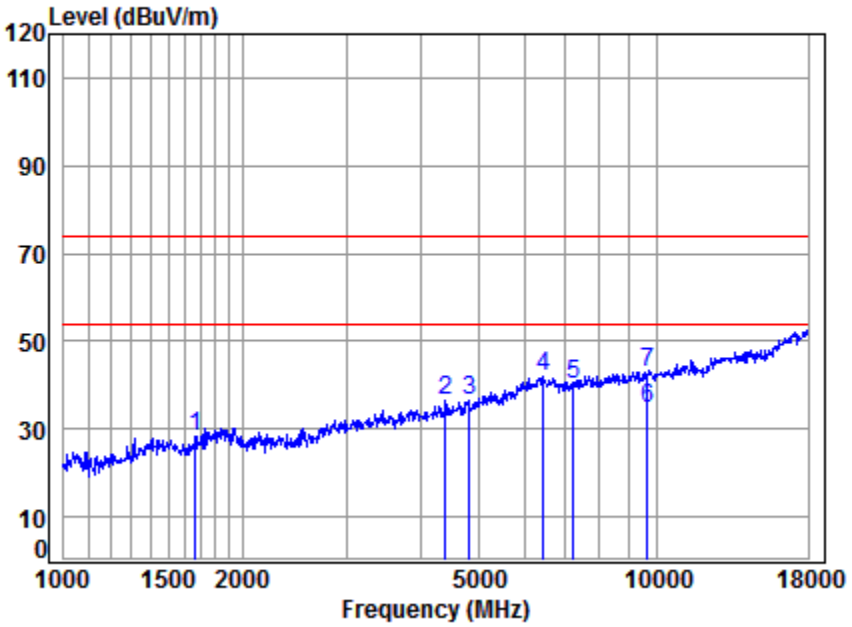
4.9.2.3.6 802.11G_ CDD_Highest Channel_ Horizontal



Site : chamber
Condition: 3m HORIZONTAL
Job No : B0003
Mode : 2462 TX RSE
Note : 2.4G WIFI 11G
: CDD

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1634.543	5.31	26.40	40.79	37.56	28.48	74.00	-45.52	peak
2	4379.699	7.43	33.39	43.18	38.23	35.87	74.00	-38.13	peak
3	4924.000	8.01	34.11	43.73	37.44	35.83	74.00	-38.17	peak
4	6602.265	11.24	35.66	42.32	37.32	41.90	74.00	-32.10	peak
5	7386.000	10.03	36.21	41.72	35.89	40.41	74.00	-33.59	peak
6	9848.000	10.87	37.81	38.04	25.39	36.03	54.00	-17.97	Average
7	9848.000	10.87	37.81	38.04	31.19	41.83	74.00	-32.17	peak

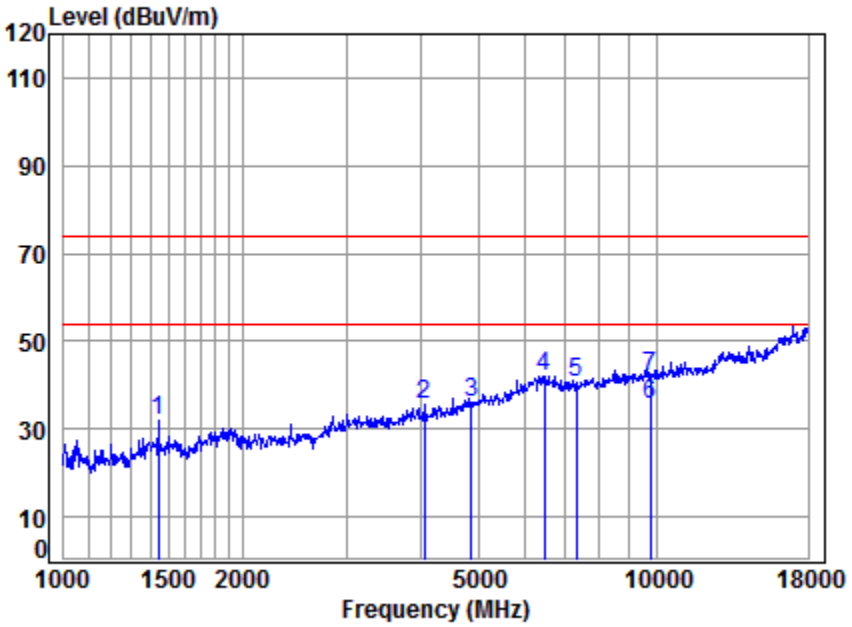
4.9.2.3.7 802.11N20_MIMO_Lowest Channel_ Vertical



Site : chamber
Condition: 3m VERTICAL
Job No : B0003
Mode : 2412 TX SE
Note : 2.4G WIFI 11N 20
: MIMO

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1667.951	5.27	26.54	40.81	37.48	28.48	74.00	-45.52	peak
2	4405.090	7.46	33.44	43.20	38.94	36.64	74.00	-37.36	peak
3	4824.000	7.91	34.00	43.63	38.20	36.48	74.00	-37.52	peak
4	6451.353	11.45	35.55	42.44	37.24	41.80	74.00	-32.20	peak
5	7236.000	10.07	36.09	41.83	35.99	40.32	74.00	-33.68	peak
6	9648.000	10.77	37.69	38.36	24.35	34.45	54.00	-19.55	Average
7	9648.000	10.77	37.69	38.36	32.83	42.93	74.00	-31.07	peak

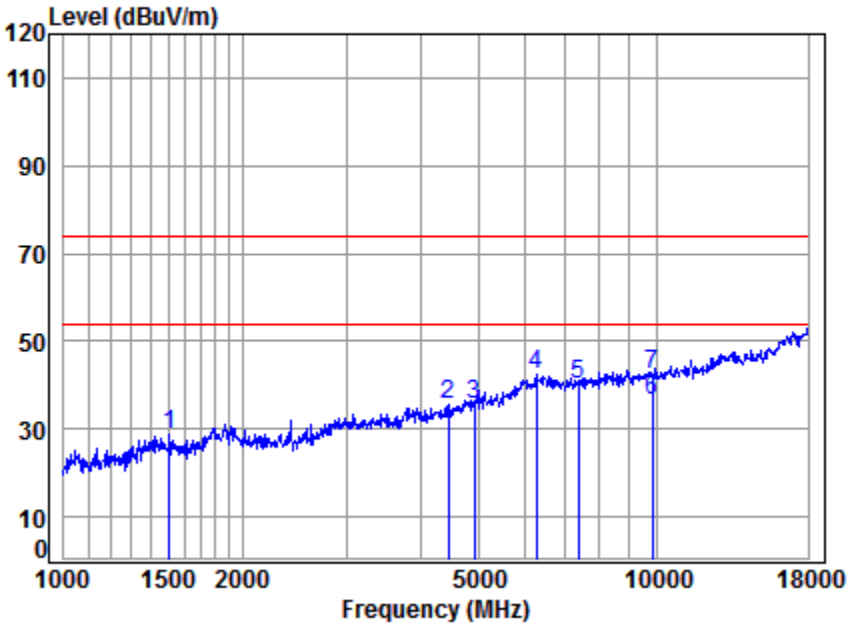
4.9.2.3.8 802.11N20_ MIMO_Middle Channel_ Vertical



Site : chamber
Condition: 3m VERTICAL
Job No : B0003
Mode : 2437 TX SE
Note : 2.4G WIFI 11N 20
: MIMO

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1443.509	5.30	25.59	40.67	41.50	31.72	74.00	-42.28	peak
2	4050.904	7.04	32.80	42.81	38.52	35.55	74.00	-38.45	peak
3	4874.000	7.96	34.05	43.68	37.71	36.04	74.00	-37.96	peak
4	6470.026	11.48	35.57	42.43	37.55	42.17	74.00	-31.83	peak
5	7311.000	10.05	36.15	41.78	36.19	40.61	74.00	-33.39	peak
6	9748.000	10.82	37.75	38.20	25.39	35.76	54.00	-18.24	Average
7	9748.000	10.82	37.75	38.20	31.45	41.82	74.00	-32.18	peak

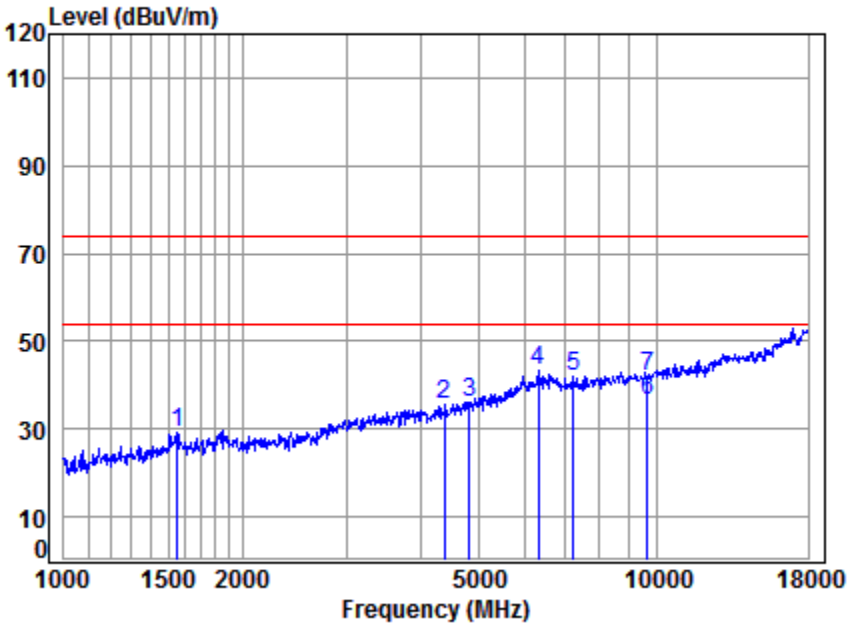
4.9.2.3.9 802.11N20_ MIMO_Highest Channel_ Vertical



Site : chamber
Condition: 3m VERTICAL
Job No : B0003
Mode : 2462 TX SE
Note : 2.4G WIFI 11N 20
: MIMO

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1507.470	5.47	25.83	40.71	38.20	28.79	74.00	-45.21	peak
2	4456.315	7.51	33.53	43.26	37.74	35.52	74.00	-38.48	peak
3	4924.000	8.01	34.11	43.73	37.41	35.80	74.00	-38.20	peak
4	6267.553	11.10	35.37	42.60	38.62	42.49	74.00	-31.51	peak
5	7386.000	10.03	36.21	41.72	35.54	40.06	74.00	-33.94	peak
6	9848.000	10.87	37.81	38.04	25.74	36.38	54.00	-17.62	Average
7	9848.000	10.87	37.81	38.04	31.62	42.26	74.00	-31.74	peak

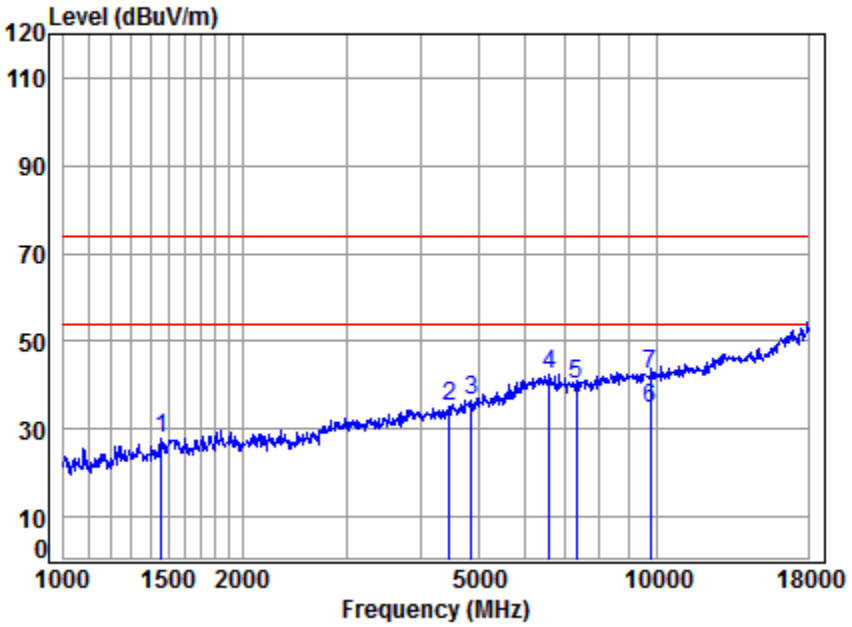
4.9.2.3.10 802.11N20_ MIMO_Lowest Channel_ Horizontal



Site : chamber
Condition: 3m HORIZONTAL
Job No : B0003
Mode : 2412 TX SE
Note : 2.4G WIFI 11N 20
: MIMO

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1551.677	5.41	26.04	40.74	38.30	29.01	74.00	-44.99	peak
2	4392.376	7.44	33.42	43.19	37.79	35.46	74.00	-38.54	peak
3	4824.000	7.91	34.00	43.63	37.87	36.15	74.00	-37.85	peak
4	6322.136	11.20	35.43	42.55	39.11	43.19	74.00	-30.81	peak
5	7236.000	10.07	36.09	41.83	37.59	41.92	74.00	-32.08	peak
6	9648.000	10.77	37.69	38.36	26.18	36.28	54.00	-17.72	Average
7	9648.000	10.77	37.69	38.36	31.98	42.08	74.00	-31.92	peak

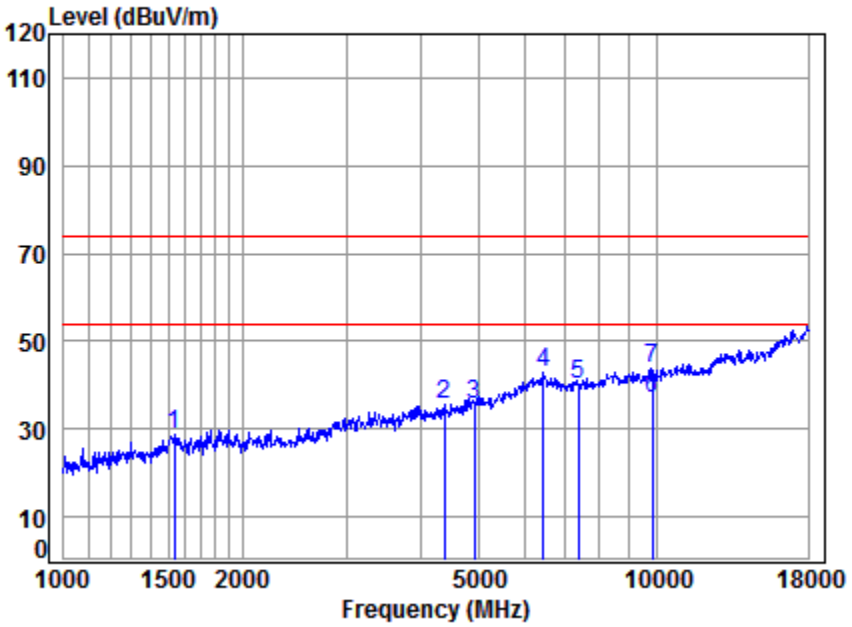
4.9.2.3.11 802.11N20_ MIMO_ Middle Channel_ Horizontal



Site : chamber
Condition: 3m HORIZONTAL
Job No : B0003
Mode : 2437 TX SE
Note : 2.4G WIFI 11N 20
: MIMO

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1460.295	5.35	25.65	40.68	37.55	27.87	74.00	-46.13	peak
2	4469.214	7.53	33.55	43.27	37.12	34.93	74.00	-39.07	peak
3	4874.000	7.96	34.05	43.68	38.39	36.72	74.00	-37.28	peak
4	6583.209	11.30	35.65	42.34	37.72	42.33	74.00	-31.67	peak
5	7311.000	10.05	36.15	41.78	35.73	40.15	74.00	-33.85	peak
6	9748.000	10.82	37.75	38.20	24.16	34.53	54.00	-19.47	Average
7	9748.000	10.82	37.75	38.20	32.22	42.59	74.00	-31.41	peak

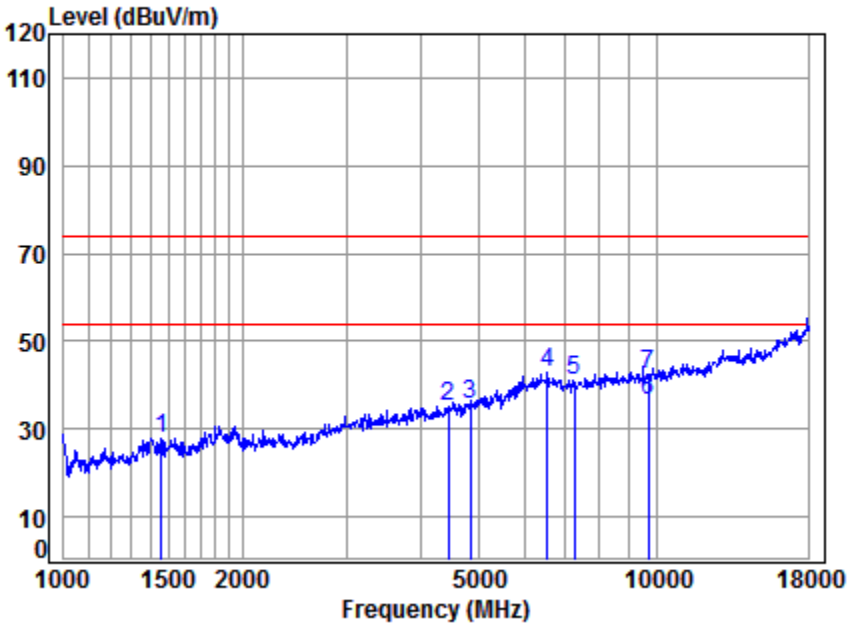
4.9.2.3.12 802.11N20_ MIMO_ Highest Channel_ Horizontal



Site : chamber
Condition: 3m HORIZONTAL
Job No : B0003
Mode : 2462 TX SE
Note : 2.4G WIFI 11N 20
: MIMO

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1538.281	5.43	25.98	40.73	37.91	28.59	74.00	-45.41	peak
2	4392.376	7.44	33.42	43.19	38.06	35.73	74.00	-38.27	peak
3	4924.000	8.01	34.11	43.73	37.24	35.63	74.00	-38.37	peak
4	6432.732	11.41	35.54	42.46	38.57	43.06	74.00	-30.94	peak
5	7386.000	10.03	36.21	41.72	35.41	39.93	74.00	-34.07	peak
6	9848.000	10.87	37.81	38.04	26.34	36.98	54.00	-17.02	Average
7	9848.000	10.87	37.81	38.04	33.09	43.73	74.00	-30.27	peak

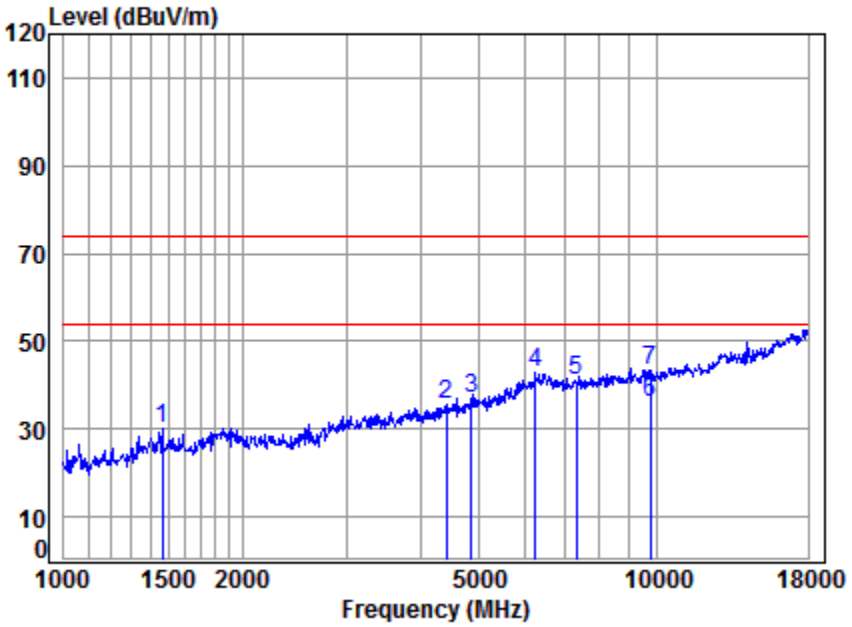
4.9.2.3.13 802.11N40_ MIMO_Lowest Channel_ Vertical



Site : chamber
Condition: 3m VERTICAL
Job No : B0003
Mode : 2422 TX RSE
Note : 2.4G WIFI 11N 40
: MIMO

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1460.295	5.35	25.65	40.68	37.71	28.03	74.00	-45.97	peak
2	4456.315	7.51	33.53	43.26	37.43	35.21	74.00	-38.79	peak
3	4844.000	7.93	34.02	43.65	37.33	35.63	74.00	-38.37	peak
4	6545.263	11.41	35.63	42.37	38.02	42.69	74.00	-31.31	peak
5	7266.000	10.06	36.12	41.81	36.87	41.24	74.00	-32.76	peak
6	9688.000	10.79	37.71	38.30	26.34	36.54	54.00	-17.46	Average
7	9688.000	10.79	37.71	38.30	32.17	42.37	74.00	-31.63	peak

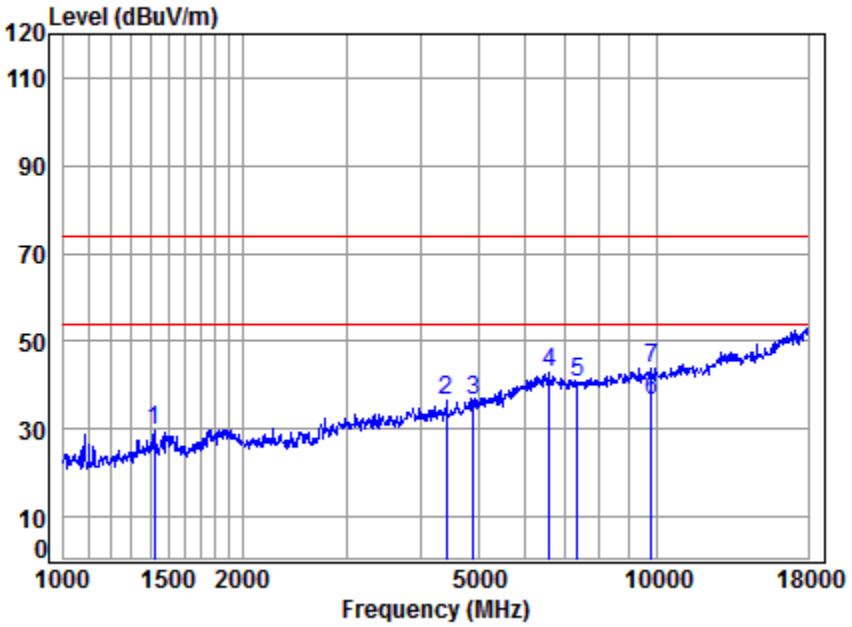
4.9.2.3.14 802.11N40_ MIMO_Middle Channel_ Vertical



Site : chamber
Condition: 3m VERTICAL
Job No : B0003
Mode : 2437 TX RSE
Note : 2.4G WIFI 11N 40
: MIMO

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1464.522	5.37	25.67	40.68	39.63	29.99	74.00	-44.01	peak
2	4417.841	7.47	33.46	43.22	37.79	35.50	74.00	-38.50	peak
3	4874.000	7.96	34.05	43.68	38.53	36.86	74.00	-37.14	peak
4	6249.464	11.06	35.35	42.61	39.00	42.80	74.00	-31.20	peak
5	7311.000	10.05	36.15	41.78	36.57	40.99	74.00	-33.01	peak
6	9748.000	10.82	37.75	38.20	25.74	36.11	54.00	-17.89	Average
7	9748.000	10.82	37.75	38.20	32.76	43.13	74.00	-30.87	peak

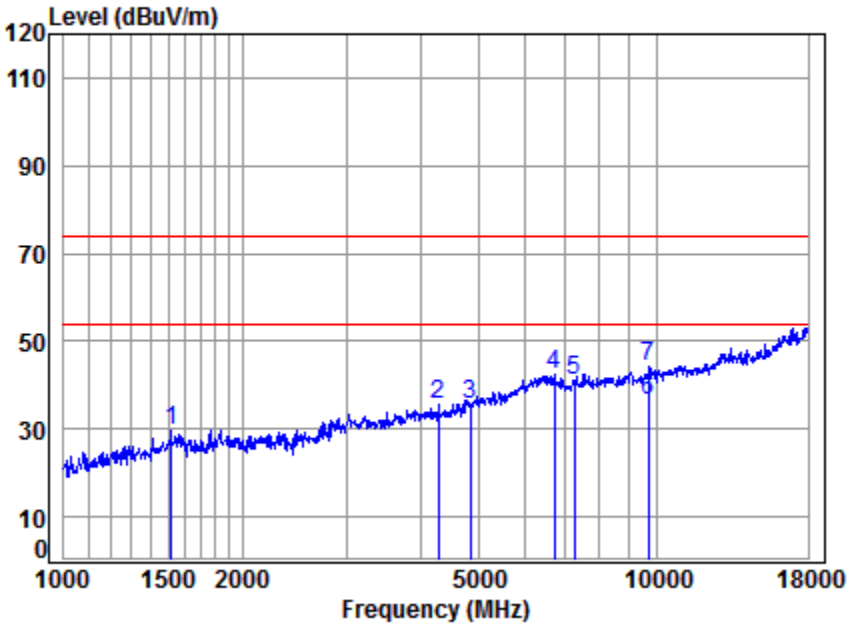
4.9.2.3.15 802.11N40_ MIMO_ Highest Channel_ Vertical



Site : chamber
Condition: 3m VERTICAL
Job No : B0003
Mode : 2452 TX RSE
Note : 2.4G WIFI 11N 40
: MIMO

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1422.798	5.23	25.51	40.65	39.62	29.71	74.00	-44.29	peak
2	4417.841	7.47	33.46	43.22	38.92	36.63	74.00	-37.37	peak
3	4904.000	7.99	34.09	43.71	38.36	36.73	74.00	-37.27	peak
4	6602.265	11.24	35.66	42.32	38.24	42.82	74.00	-31.18	peak
5	7356.000	10.04	36.19	41.75	35.96	40.44	74.00	-33.56	peak
6	9808.000	10.85	37.79	38.10	26.15	36.69	54.00	-17.31	Average
7	9808.000	10.85	37.79	38.10	33.18	43.72	74.00	-30.28	peak

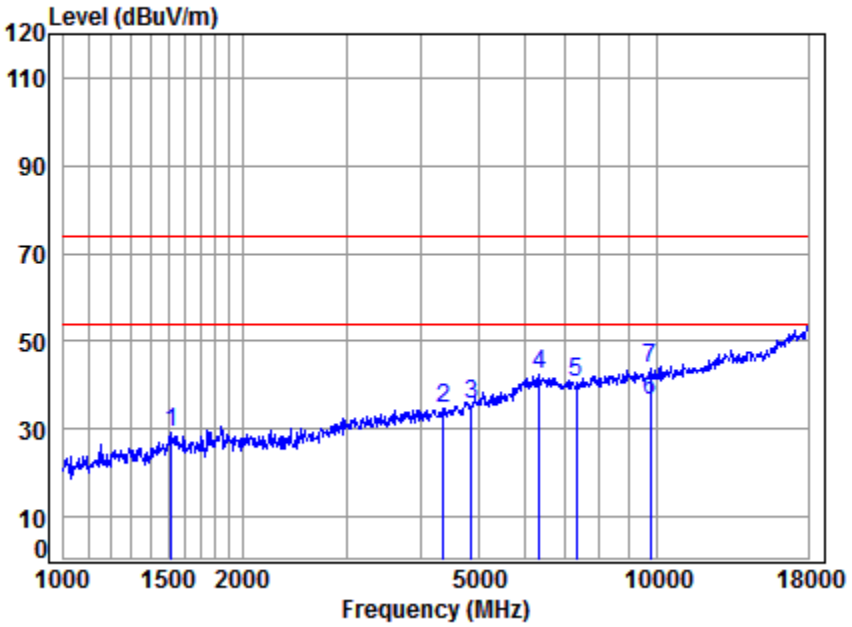
4.9.2.3.16 802.11N40_ MIMO_Lowest Channel_ Horizontal



Site : chamber
Condition: 3m HORIZONTAL
Job No : B0003
Mode : 2422 TX RSE
Note : 2.4G WIFI 11N 40
: MIMO

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1516.210	5.46	25.87	40.72	39.26	29.87	74.00	-44.13	peak
2	4279.589	7.31	33.22	43.07	37.90	35.36	74.00	-38.64	peak
3	4844.000	7.93	34.02	43.65	37.51	35.81	74.00	-38.19	peak
4	6717.762	10.91	35.73	42.23	38.01	42.42	74.00	-31.58	peak
5	7266.000	10.06	36.12	41.81	36.91	41.28	74.00	-32.72	peak
6	9688.000	10.79	37.71	38.30	26.19	36.39	54.00	-17.61	Average
7	9688.000	10.79	37.71	38.30	33.92	44.12	74.00	-29.88	peak

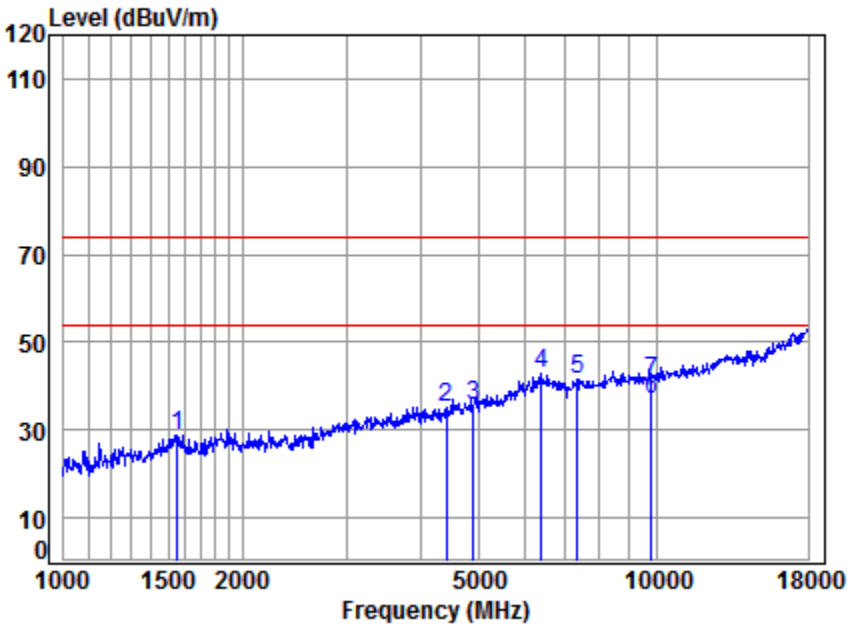
4.9.2.3.17 802.11N40_ MIMO_ Middle Channel_ Horizontal



Site : chamber
Condition: 3m HORIZONTAL
Job No : B0003
Mode : 2437 TX RSE
Note : 2.4G WIFI 11N 40
: MIMO

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1520.598	5.45	25.89	40.72	38.42	29.04	74.00	-44.96	peak
2	4367.058	7.41	33.37	43.16	37.23	34.85	74.00	-39.15	peak
3	4874.000	7.96	34.05	43.68	37.33	35.66	74.00	-38.34	peak
4	6340.436	11.24	35.44	42.54	38.11	42.25	74.00	-31.75	peak
5	7311.000	10.05	36.15	41.78	36.16	40.58	74.00	-33.42	peak
6	9748.000	10.82	37.75	38.20	26.16	36.53	54.00	-17.47	Average
7	9748.000	10.82	37.75	38.20	33.26	43.63	74.00	-30.37	peak

4.9.2.3.18 802.11N40_ MIMO_Highest Channel_ Horizontal



Site : chamber
Condition: 3m HORIZONTAL
Job No : B0003
Mode : 2452 TX RSE
Note : 2.4G WIFI 11N 40
: MIMO

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1551.677	5.41	26.04	40.74	38.15	28.86	74.00	-45.14	peak
2	4417.841	7.47	33.46	43.22	37.40	35.11	74.00	-38.89	peak
3	4904.000	7.99	34.09	43.71	37.42	35.79	74.00	-38.21	peak
4	6395.654	11.34	35.50	42.49	38.42	42.77	74.00	-31.23	peak
5	7356.000	10.04	36.19	41.75	37.17	41.65	74.00	-32.35	peak
6	9808.000	10.85	37.79	38.10	26.33	36.87	54.00	-17.13	Average
7	9808.000	10.85	37.79	38.10	30.56	41.10	74.00	-32.90	peak

Remark:

1) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

   Final Test Level =Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor

2) Scan from 9kHz to 25GHz, the disturbance between 9KHz to 30MHz and 18GHz to 25GHz was very low, and the above harmonics were the highest point could be found when testing, The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

3）As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. So, only the peak measurements were shown in the report.

4）All Modes have been tested, but only the worst case data displayed in this report.

4.10 Restricted bands around fundamental frequency

Test Requirement:	47 CFR Part 15C Section 15.209 and 15.205		
Test Method:	ANSI C63.10: 2013 Section 11.12		
Test Site:	Measurement Distance: 3m or 10m (Semi-Anechoic Chamber)		
Limit:	Frequency	Limit (dBuV/m @3m)	Remark
	30MHz-88MHz	40.0	Quasi-peak Value
	88MHz-216MHz	43.5	Quasi-peak Value
	216MHz-960MHz	46.0	Quasi-peak Value
	960MHz-1GHz	54.0	Quasi-peak Value
	Above 1GHz	54.0	Average Value
		74.0	Peak Value
Test Setup:			

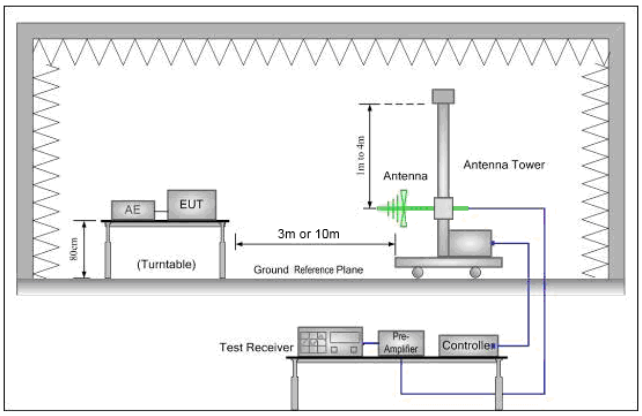


Figure 1. 30MHz to 1GHz

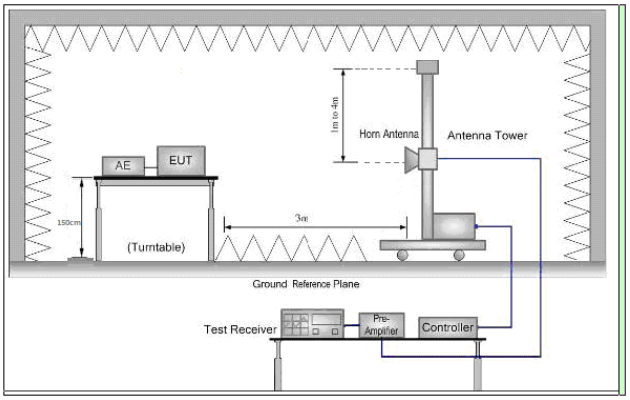


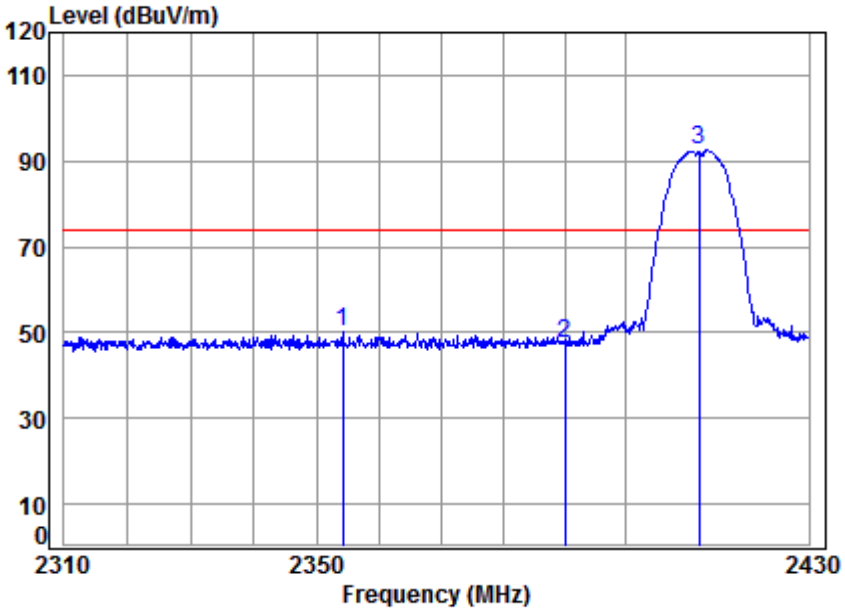
Figure 2. Above 1 GHz

Test Procedure:	a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation. b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation. c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. d. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. g. Place a marker at the end of the restricted band closest to the transmit frequency to show compliance. Also measure any emissions in the restricted bands. Save the spectrum analyzer plot. Repeat for each power and modulation for lowest and highest channel h. Test the EUT in the lowest channel , the Highest channel i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode,And found the X axis positioning which it is worse case. j. Repeat above procedures until all frequencies measured was complete.
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates. Charge + Transmitting mode.
Final Test Mode:	Pretest the EUT at Charge +Transmitting mode. Through Pre-scan, find the 1Mbps of rate is the worst case of 802.11B; 6Mbps of rate is the worst case of 802.11G ; 6.5Mbps of rate is the worst case of 802.11N(HT20); 13Mbps of rate is the worst case of 802.11N(HT20) MIMO; 13.5Mbps of rate is the worst case of 802.11N(HT40) ; 27Mbps of rate is the worst case of 802.11N(HT40) MIMO. Only the worst case is recorded in the report.
Instruments Used:	Refer to section 5.10 for details
Test Results:	Pass

Test plot as follows:

4.10.1 ANT1:

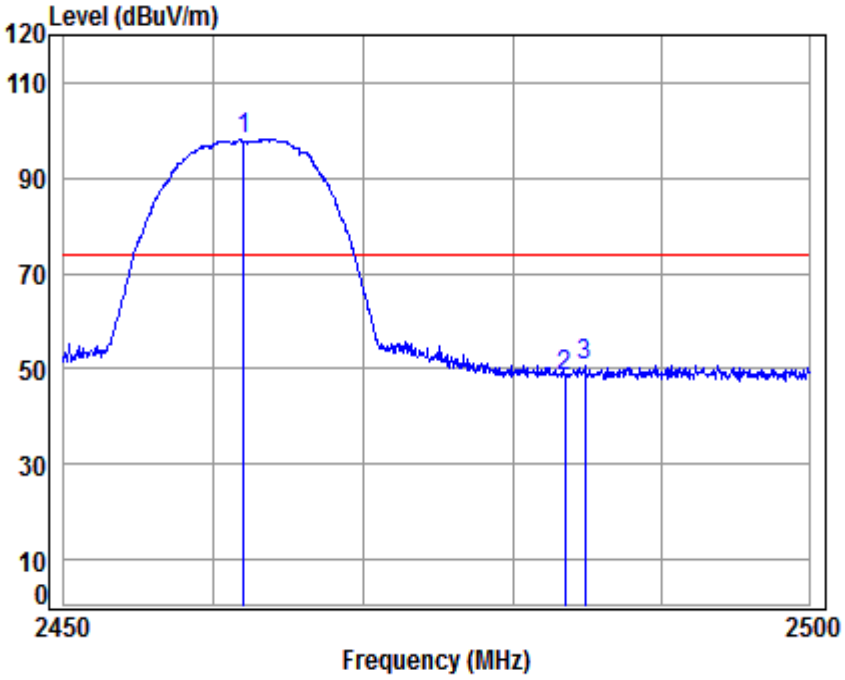
4.10.1.1 802.11B_Lowest Channel_ Peak_ Vertical



Site : chamber
Condition: 3m VERTICAL
Job No : B0003
Mode : 2412 Band edge
NOTE : 2.4G WIFI 11B
: ANT1

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2354.170	5.43	28.46	41.86	58.33	50.36	74.00	-23.64	peak
2	2390.000	5.47	28.52	41.87	55.37	47.49	74.00	-26.51	peak
3 *	2412.000	5.50	28.56	41.88	100.42	92.60	74.00	18.60	peak

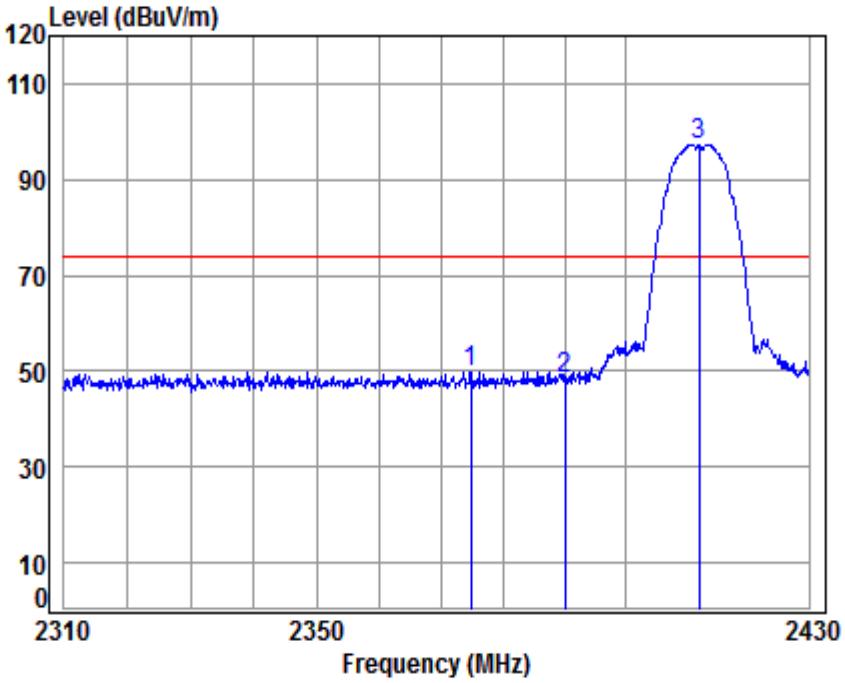
4.10.1.2 802.11B_ Highest Channel_ Peak_ Vertical



Site : chamber
Condition: 3m VERTICAL
Job No : B0003
Mode : 2462 Band edge
: 2.4G WIFI 11B
: ANT1

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 *	2462.000	5.57	28.64	41.20	105.29	98.30	74.00	24.30	peak
2	2483.500	5.60	28.67	41.21	55.43	48.49	74.00	-25.51	peak
3	2484.844	5.60	28.68	41.21	57.54	50.61	74.00	-23.39	peak

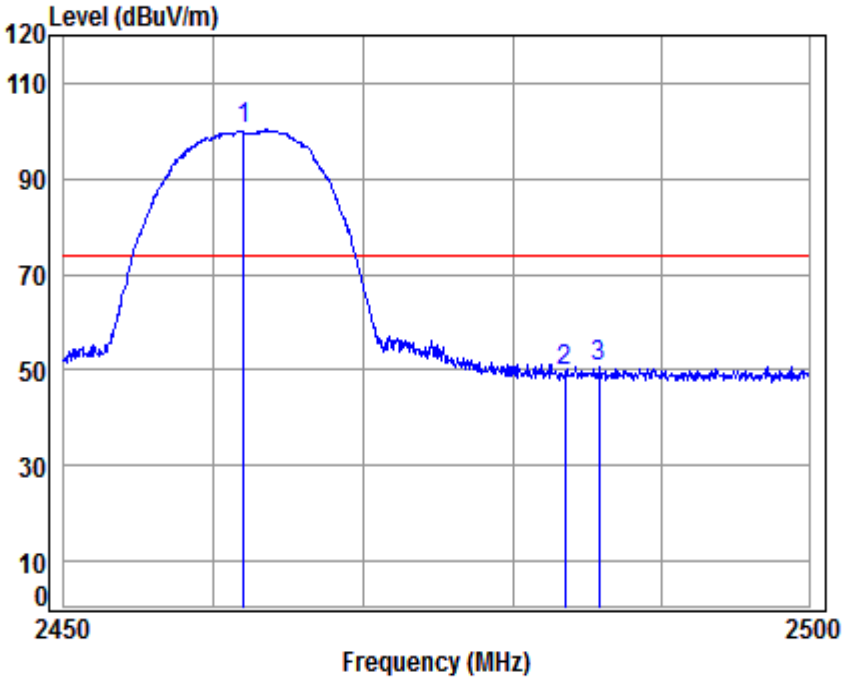
4.10.1.3 802.11B_Lowest Channel_ Peak_ Horizontal



Site : chamber
Condition: 3m HORIZONTAL
Job No : B0003
Mode : 2412 Band edge
NOTE : 2.4G WIFI 11B
: ANT1

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2374.766	5.45	28.49	41.87	57.77	49.84	74.00	-24.16	peak
2	2390.000	5.47	28.52	41.87	56.32	48.44	74.00	-25.56	peak
3 *	2412.000	5.50	28.56	41.88	105.22	97.40	74.00	23.40	peak

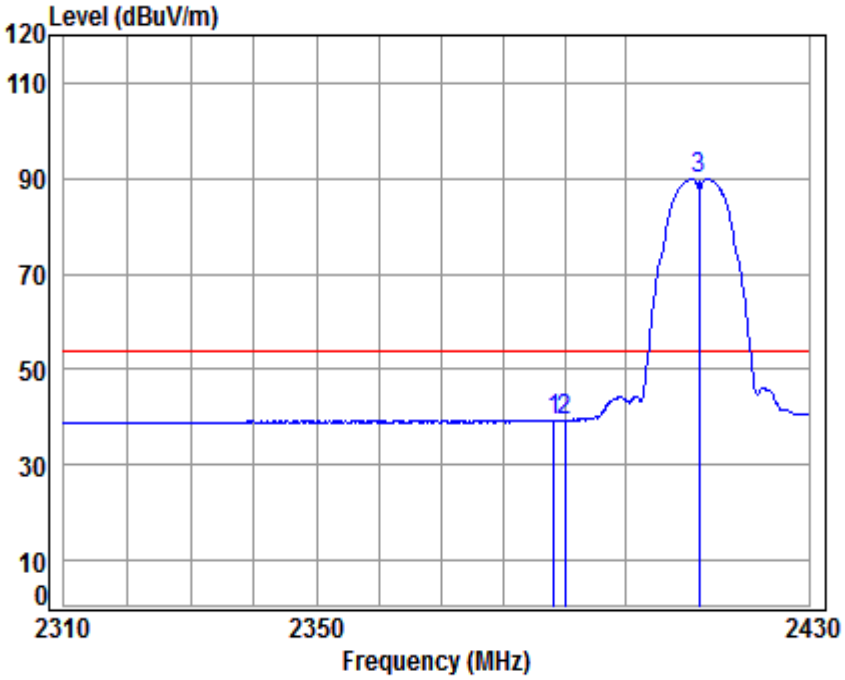
4.10.1.4 802.11B_ Highest Channel_ Peak_ Horizontal



Site : chamber
Condition: 3m HORIZONTAL
Job No : B0003
Mode : 2462 Band edge
: 2.4G WIFI 11B
: ANT1

		Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
		MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	*	2462.000	5.57	28.64	41.20	107.23	100.24	74.00	26.24	peak
2		2483.500	5.60	28.67	41.21	56.58	49.64	74.00	-24.36	peak
3		2485.798	5.60	28.68	41.21	57.76	50.83	74.00	-23.17	peak

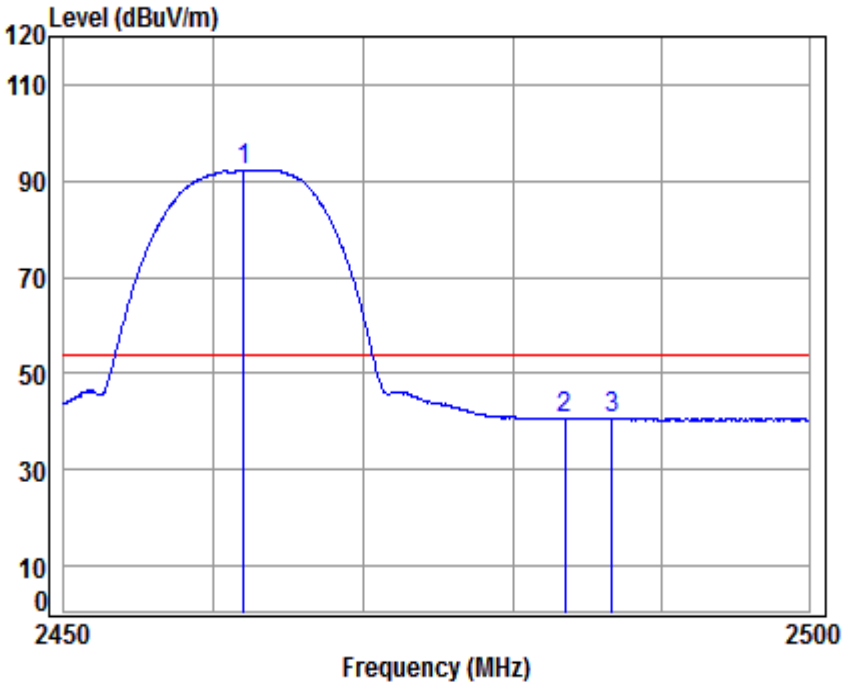
4.10.1.5 802.11B_Lowest Channel_ Average_ Vertical



Site : chamber
Condition: 3m VERTICAL
Job No : B0003
Mode : 2412 Band edge
NOTE : 2.4G WIFI 11B
: ANT1

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2388.274	5.47	28.52	41.87	47.28	39.40	54.00	-14.60	Average
2	2390.000	5.47	28.52	41.87	47.19	39.31	54.00	-14.69	Average
3 *	2412.000	5.50	28.56	41.88	97.63	89.81	54.00	35.81	Average

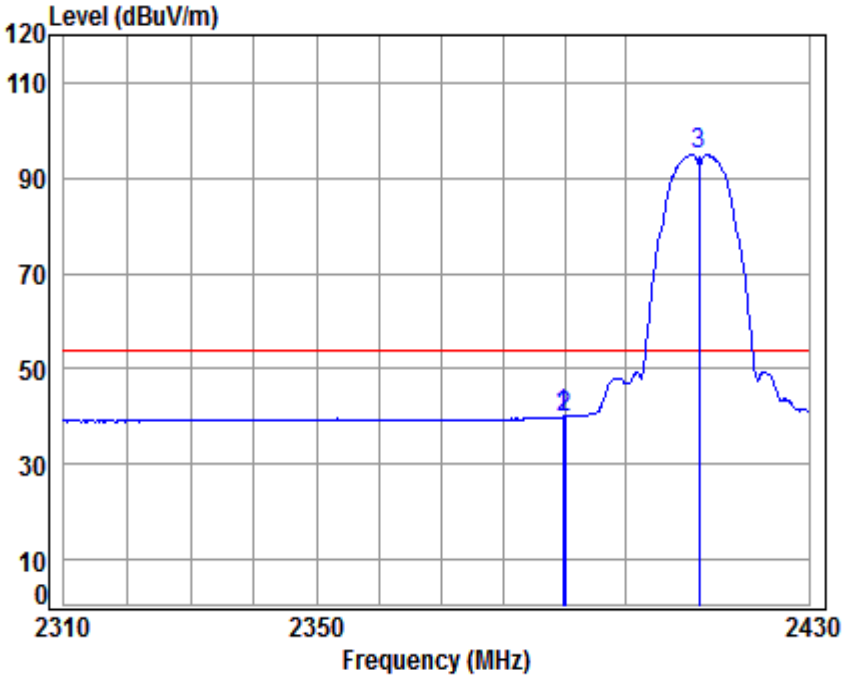
4.10.1.6 802.11B_ Highest Channel_ Average _ Vertical



Site : chamber
Condition: 3m VERTICAL
Job No : B0003
Mode : 2462 Band edge
: 2.4G WIFI 11B
: ANT1

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 *	2462.000	5.57	28.64	41.20	99.38	92.39	54.00	38.39	Average
2	2483.500	5.60	28.67	41.21	47.58	40.64	54.00	-13.36	Average
3	2486.702	5.60	28.68	41.21	47.71	40.78	54.00	-13.22	Average

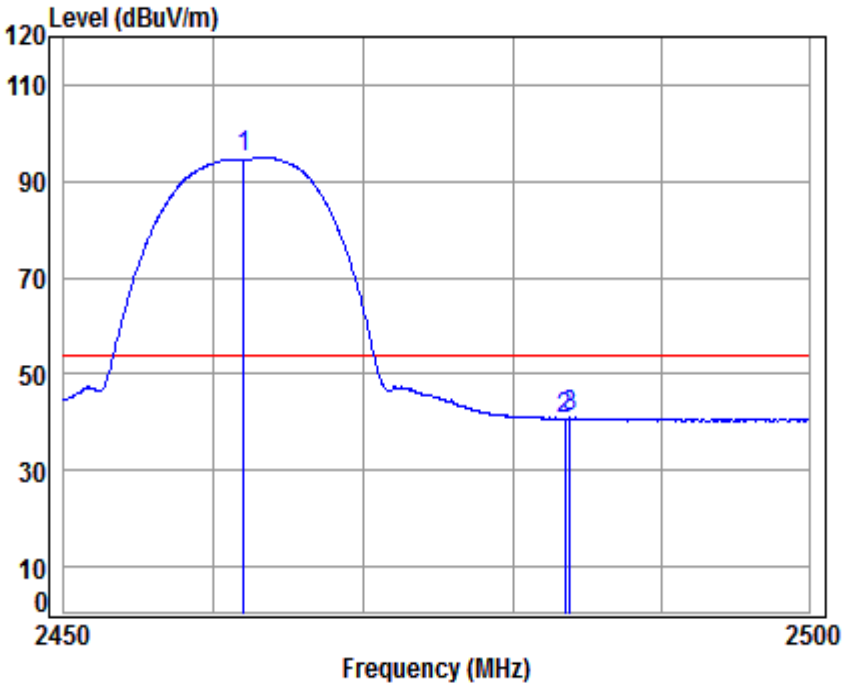
4.10.1.7 802.11B_Lowest Channel_ Average _ Horizontal



Site : chamber
Condition: 3m HORIZONTAL
Job No : B0003
Mode : 2412 Band edge
NOTE : 2.4G WIFI 11B
: ANT1

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2389.726	5.47	28.52	41.87	47.81	39.93	54.00	-14.07	Average
2	2390.000	5.47	28.52	41.87	47.76	39.88	54.00	-14.12	Average
3 *	2412.000	5.50	28.56	41.88	102.63	94.81	54.00	40.81	Average

4.10.1.8 802.11B_ Highest Channel_ Average_ Horizontal

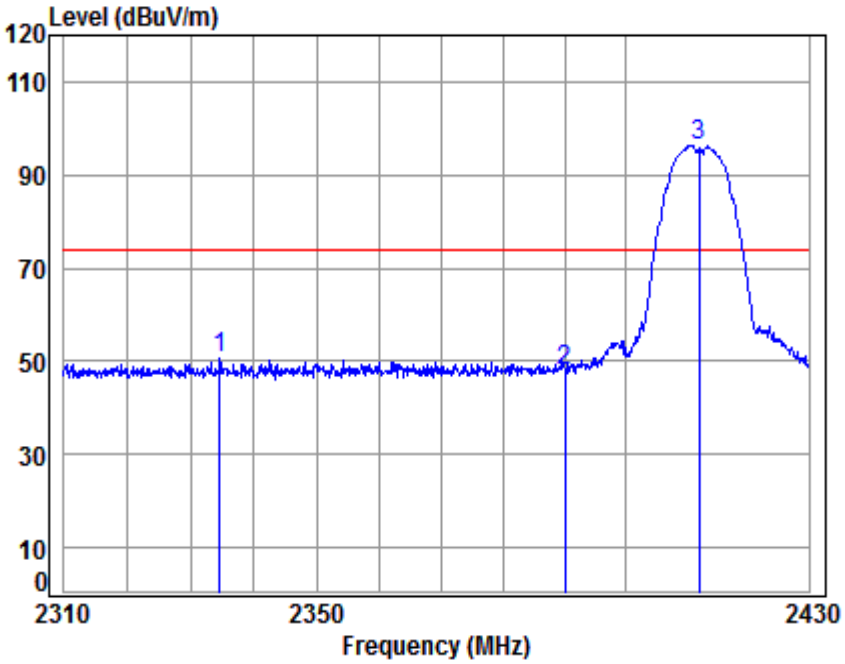


Site : chamber
Condition: 3m HORIZONTAL
Job No : B0003
Mode : 2462 Band edge
: 2.4G WIFI 11B
: ANT1

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 *	2462.000	5.57	28.64	41.20	101.88	94.89	54.00	40.89	Average
2	2483.500	5.60	28.67	41.21	47.72	40.78	54.00	-13.22	Average
3	2483.840	5.60	28.67	41.21	47.93	40.99	54.00	-13.01	Average

4.10.2 ANT2:

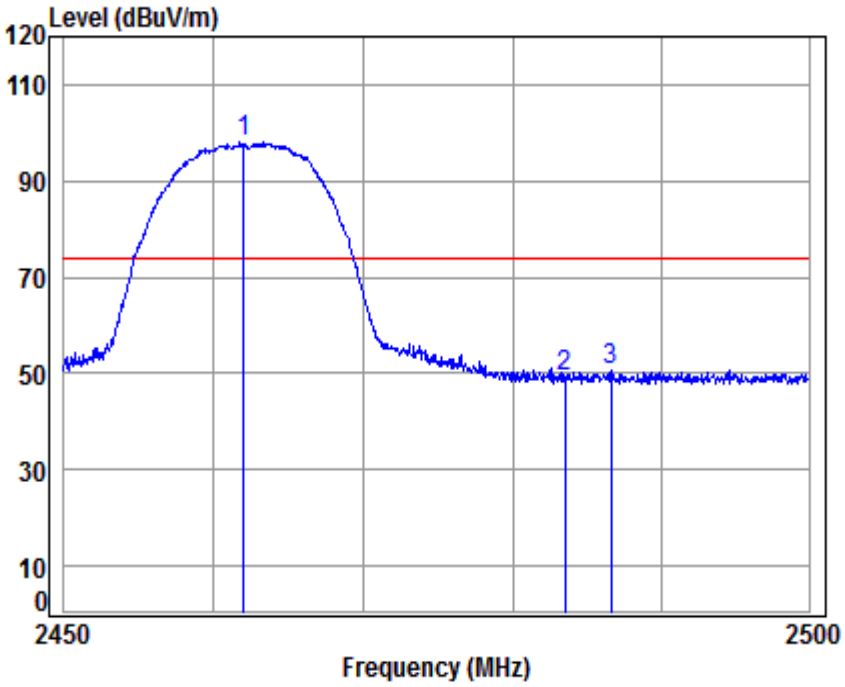
4.10.2.1 802.11B_Lowest Channel_ Peak_ Vertical



Site : chamber
Condition: 3m VERTICAL
Job No : B0003
Mode : 2412 Band edge
: 2.4G WIFI 11B
: ANT2

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2334.580	5.40	28.42	41.15	58.07	50.74	74.00	-23.26	peak
2	2390.000	5.47	28.52	41.17	55.24	48.06	74.00	-25.94	peak
3 *	2412.000	5.50	28.56	41.18	103.46	96.34	74.00	22.34	peak

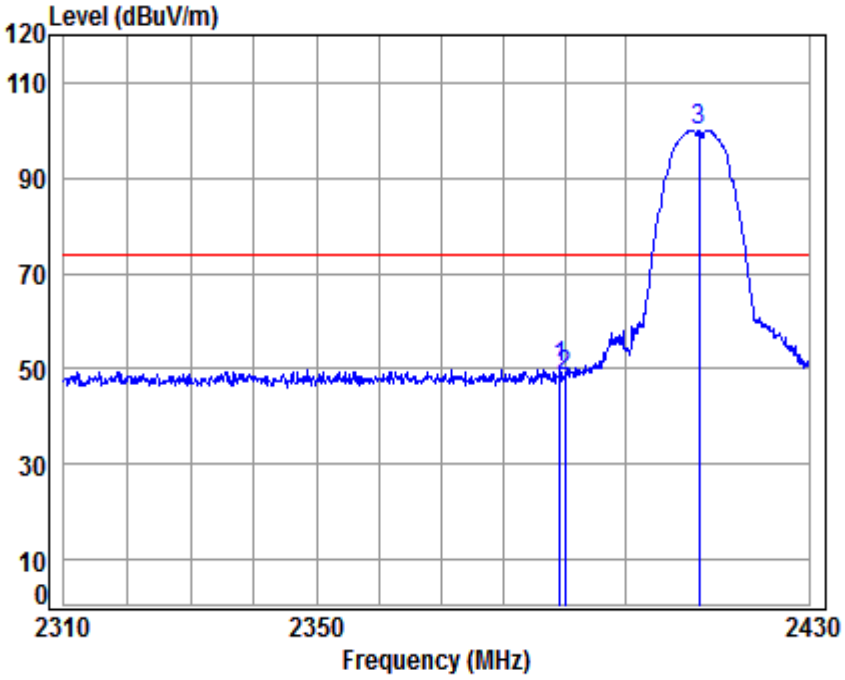
4.10.2.2 802.11B_ Highest Channel_ Peak_ Vertical



Site : chamber
Condition: 3m VERTICAL
Job No : B0003
Mode : 2462 Band edge
: 2.4G WIFI 11B
: ANT2

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 *	2462.000	5.57	28.64	41.20	104.89	97.90	74.00	23.90	peak
2	2483.500	5.60	28.67	41.21	56.26	49.32	74.00	-24.68	peak
3	2486.601	5.60	28.68	41.21	57.47	50.54	74.00	-23.46	peak

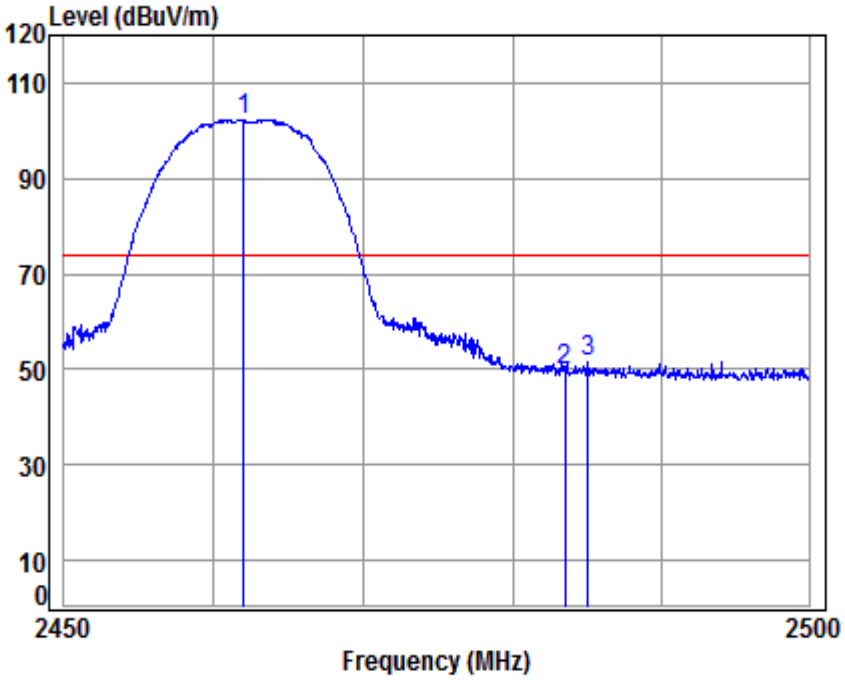
4.10.2.3 802.11B_Lowest Channel_ Peak_ Horizontal



Site : chamber
Condition: 3m HORIZONTAL
Job No : B0003
Mode : 2412 Band edge
: 2.4G WIFI 11B
: ANT2

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2389.242	5.47	28.52	41.17	57.54	50.36	74.00	-23.64	peak
2	2390.000	5.47	28.52	41.17	55.65	48.47	74.00	-25.53	peak
3 *	2412.000	5.50	28.56	41.18	107.27	100.15	74.00	26.15	peak

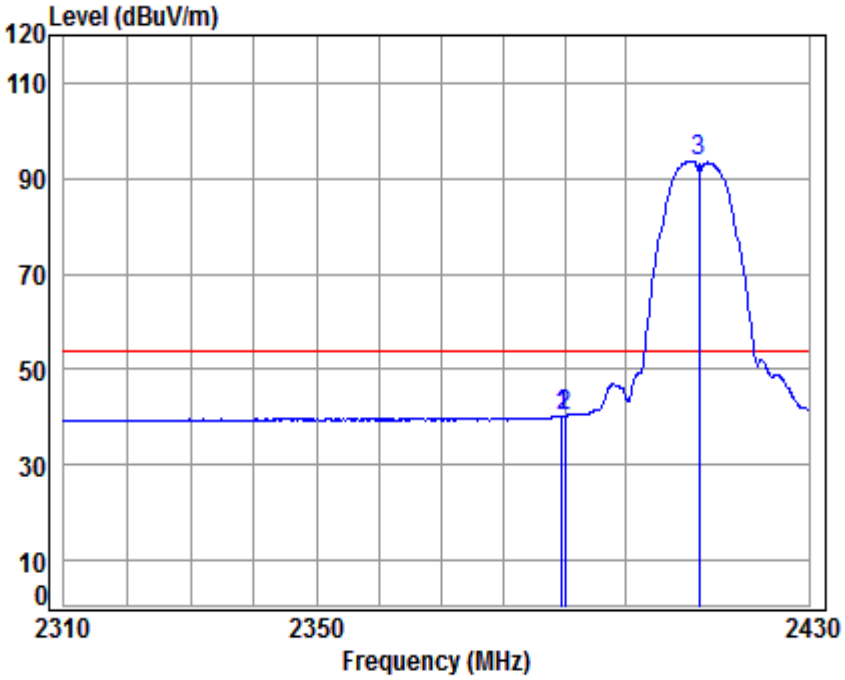
4.10.2.4 802.11B_ Highest Channel_ Peak_ Horizontal



Site : chamber
Condition: 3m HORIZONTAL
Job No : B0003
Mode : 2462 Band edge
: 2.4G WIFI 11B
: ANT2

		Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
		MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	*	2462.000	5.57	28.64	41.20	109.39	102.40	74.00	28.40	peak
2		2483.500	5.60	28.67	41.21	56.80	49.86	74.00	-24.14	peak
3		2485.044	5.60	28.68	41.21	58.32	51.39	74.00	-22.61	peak

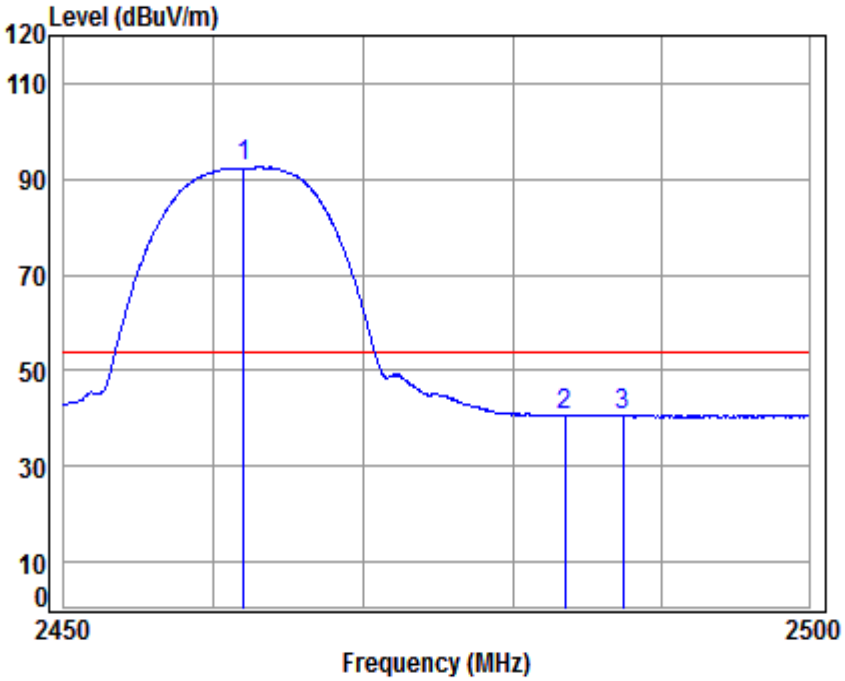
4.10.2.5 802.11B_Lowest Channel_ Average_ Vertical



Site : chamber
Condition: 3m VERTICAL
Job No : B0003
Mode : 2412 Band edge
: 2.4G WIFI 11B
: ANT2

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2389.484	5.47	28.52	41.17	47.34	40.16	54.00	-13.84	Average
2	2390.000	5.47	28.52	41.17	47.30	40.12	54.00	-13.88	Average
3 *	2412.000	5.50	28.56	41.18	100.79	93.67	54.00	39.67	Average

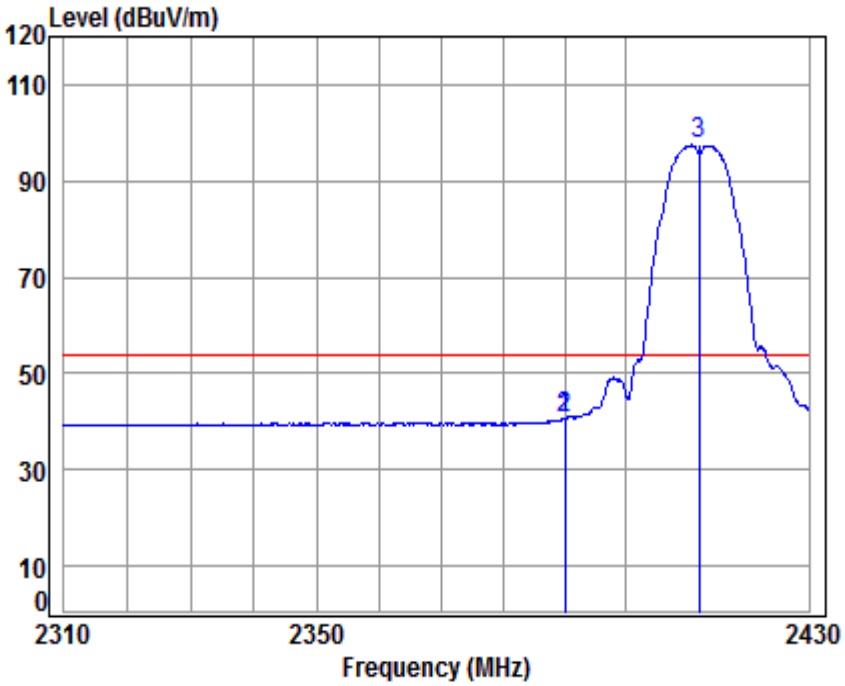
4.10.2.6 802.11B_ Highest Channel_ Average _ Vertical



Site : chamber
Condition: 3m VERTICAL
Job No : B0003
Mode : 2462 Band edge
: 2.4G WIFI 11B
: ANT2

		Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
		MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	*	2462.000	5.57	28.64	41.20	99.43	92.44	54.00	38.44	Average
2		2483.500	5.60	28.67	41.21	47.56	40.62	54.00	-13.38	Average
3		2487.405	5.60	28.68	41.21	47.66	40.73	54.00	-13.27	Average

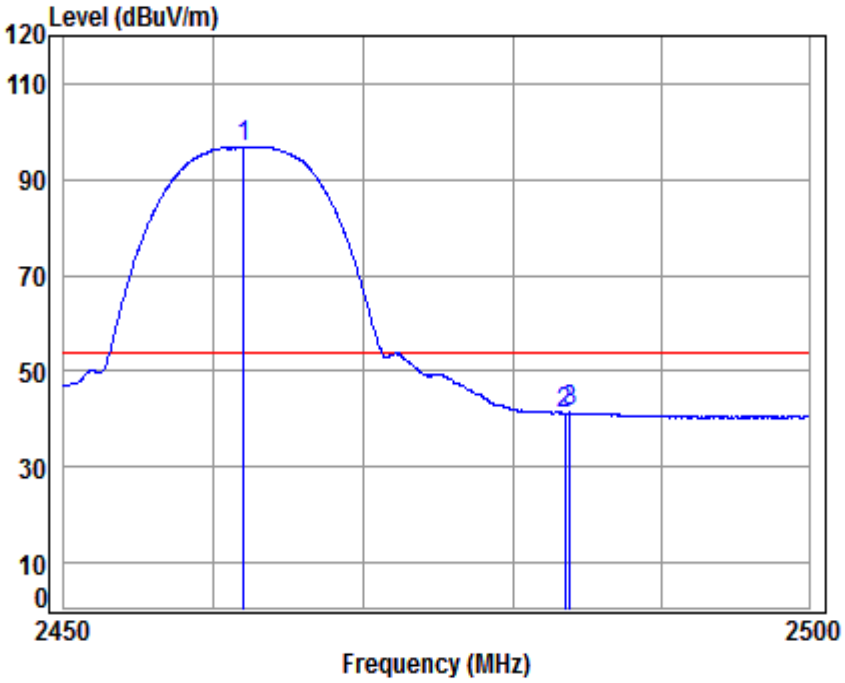
4.10.2.7 802.11B_Lowest Channel_ Average _ Horizontal



Site : chamber
Condition: 3m HORIZONTAL
Job No : B0003
Mode : 2412 Band edge
: 2.4G WIFI 11B
: ANT2

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2389.968	5.47	28.52	41.17	47.92	40.74	54.00	-13.26	Average
2	2390.000	5.47	28.52	41.17	47.92	40.74	54.00	-13.26	Average
3 *	2412.000	5.50	28.56	41.18	104.54	97.42	54.00	43.42	Average

4.10.2.8 802.11B_ Highest Channel_ Average_ Horizontal

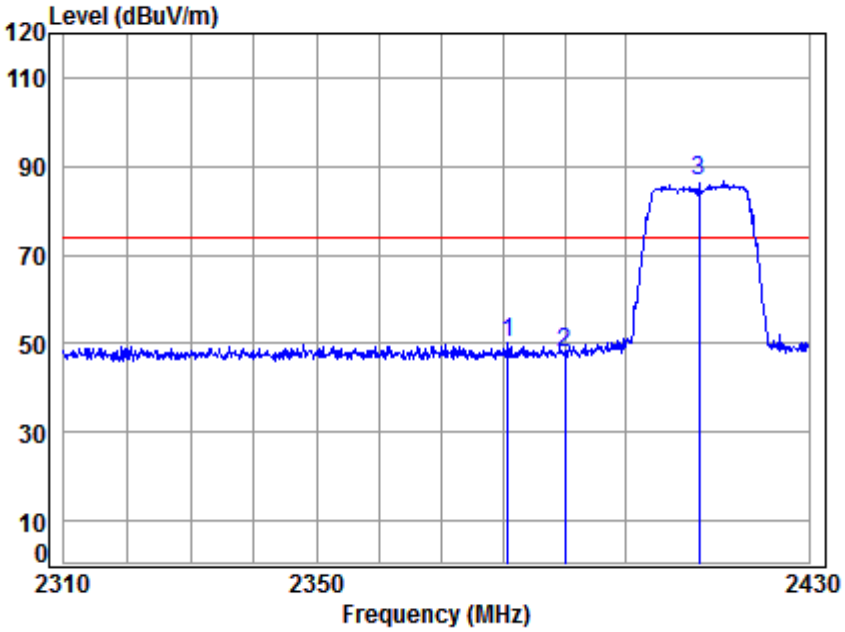


Site : chamber
Condition: 3m HORIZONTAL
Job No : B0003
Mode : 2462 Band edge
: 2.4G WIFI 11B
: ANT2

		Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
		MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	*	2462.000	5.57	28.64	41.20	103.72	96.73	54.00	42.73	Average
2		2483.500	5.60	28.67	41.21	48.10	41.16	54.00	-12.84	Average
3		2483.840	5.60	28.67	41.21	48.25	41.31	54.00	-12.69	Average

4.10.3 CDD & MIMO:

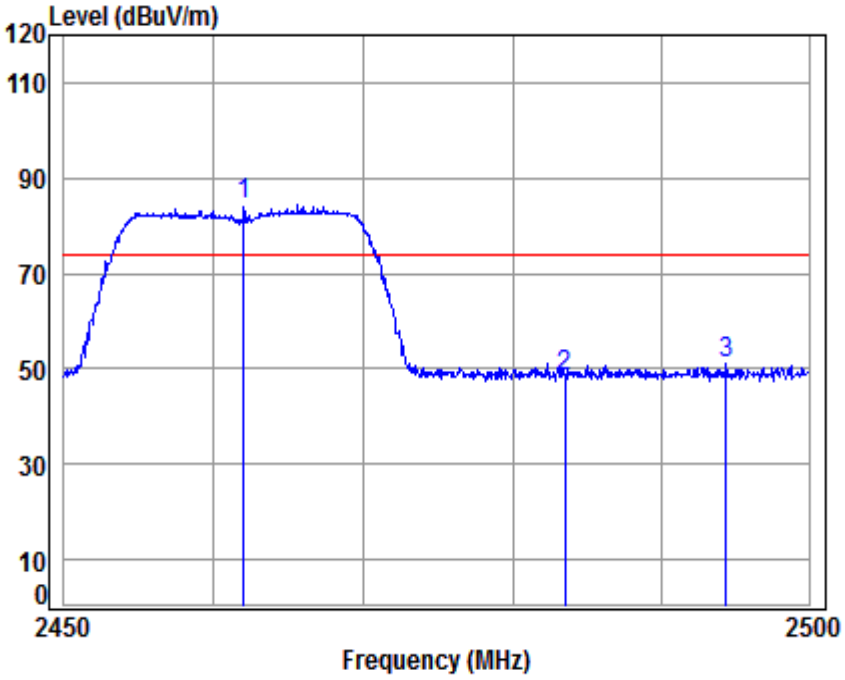
4.10.3.1 802.11G_CDD_Lowest Channel_ Peak_ Vertical



Site : chamber
Condition: 3m VERTICAL
Job No : B0003
Mode : 2412 Band edge
: 2.4G WIFI 11G
: CDD

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2380.787	5.46	28.50	41.17	57.42	50.21	74.00	-23.79	peak
2	2390.000	5.47	28.52	41.17	54.90	47.72	74.00	-26.28	peak
3 *	2412.000	5.50	28.56	41.18	93.95	86.83	74.00	12.83	peak

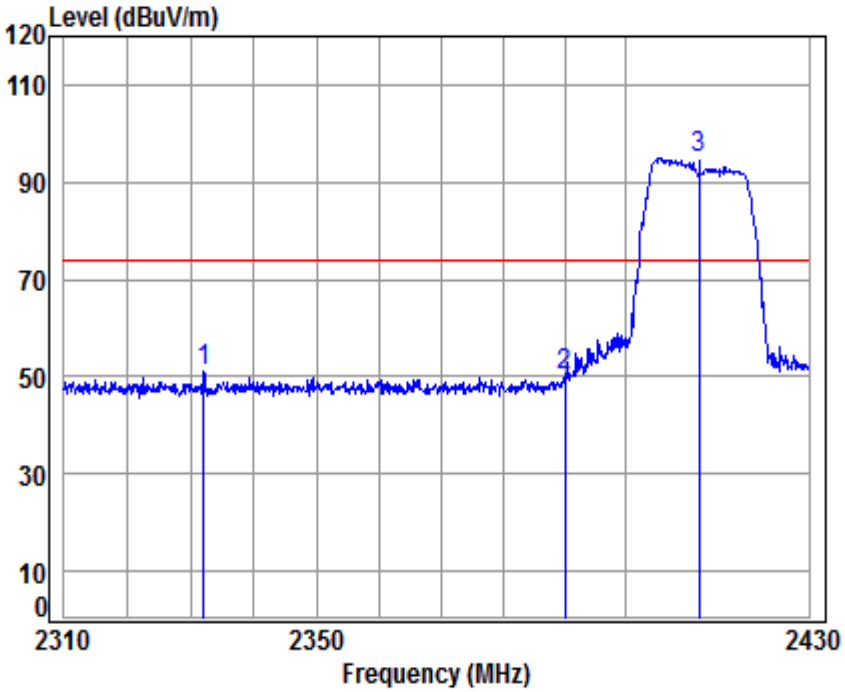
4.10.3.2 802.11G_CDD_ Highest Channel_ Peak_ Vertical



Site : chamber
Condition: 3m VERTICAL
Job No : B0003
Mode : 2462 Band edge
: 2.4G WIFI 11G
: CDD

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 *	2462.000	5.57	28.64	41.20	91.18	84.19	74.00	10.19	peak
2	2483.500	5.60	28.67	41.21	55.49	48.55	74.00	-25.45	peak
3	2494.400	5.61	28.69	41.22	58.15	51.23	74.00	-22.77	peak

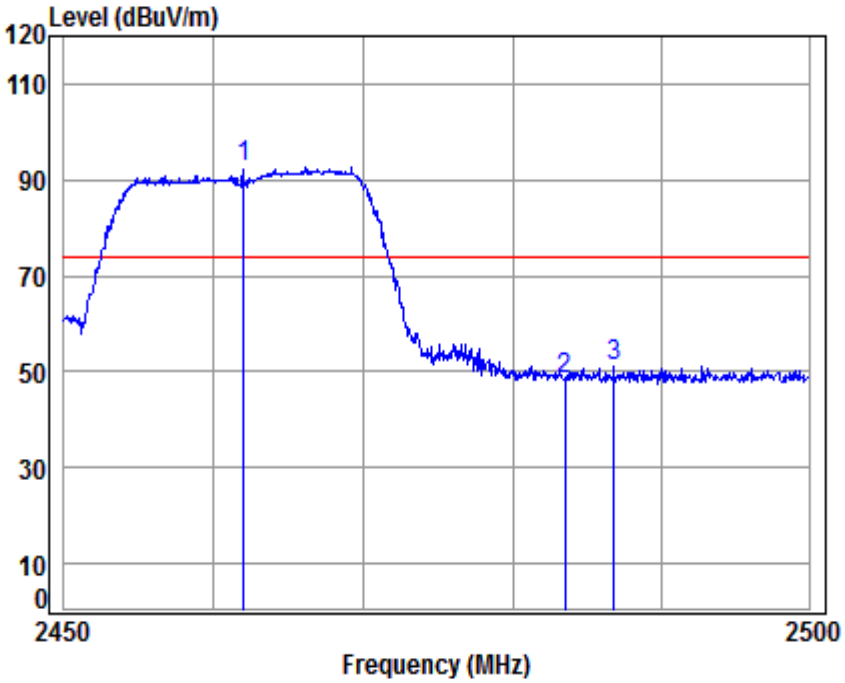
4.10.3.3 802.11G_ CDD_Lowest Channel_ Peak_ Horizontal



Site : chamber
Condition: 3m HORIZONTAL
Job No : B0003
Mode : 2412 Band edge
: 2.4G WIFI 11G
: CDD

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2332.099	5.40	28.42	41.15	58.44	51.11	74.00	-22.89	peak
2	2390.000	5.47	28.52	41.17	57.38	50.20	74.00	-23.80	peak
3 *	2412.000	5.50	28.56	41.18	101.98	94.86	74.00	20.86	peak

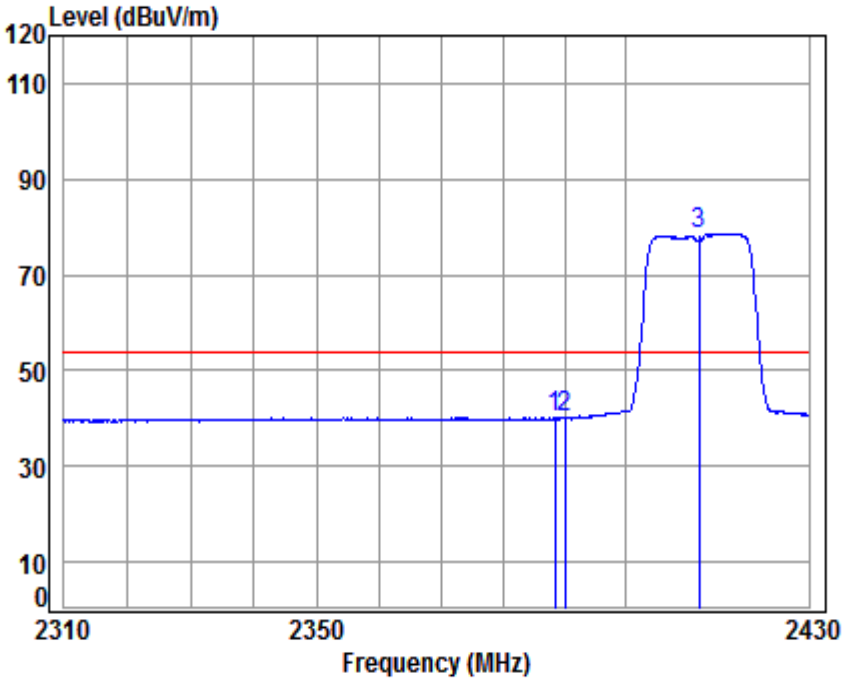
4.10.3.4 802.11G_ CDD_ Highest Channel_ Peak_ Horizontal



Site : chamber
Condition: 3m HORIZONTAL
Job No : B0003
Mode : 2462 Band edge
: 2.4G WIFI 11G
: CDD

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 *	2462.000	5.57	28.64	41.20	99.49	92.50	74.00	18.50	peak
2	2483.500	5.60	28.67	41.21	55.23	48.29	74.00	-25.71	peak
3	2486.802	5.60	28.68	41.21	57.94	51.01	74.00	-22.99	peak

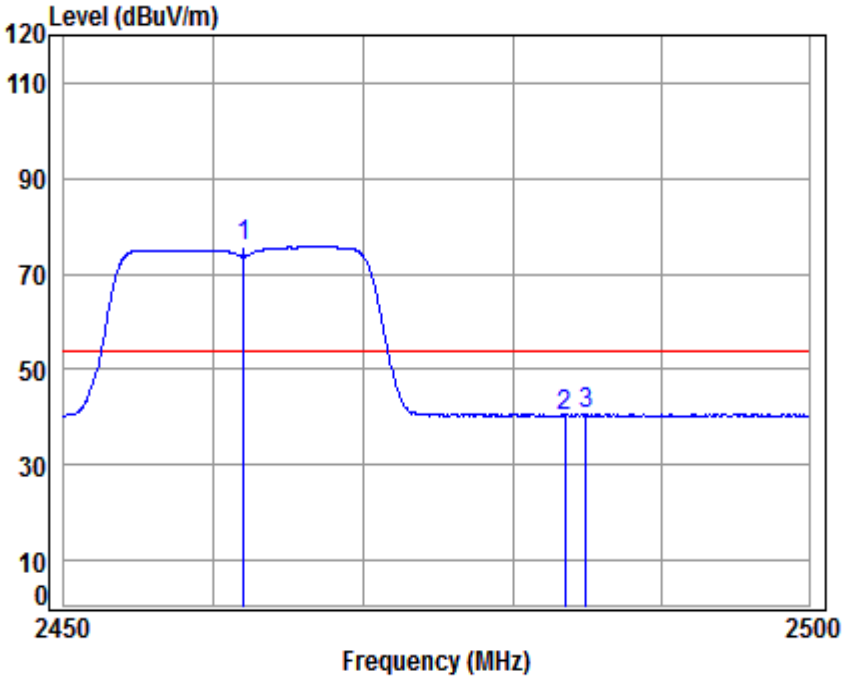
4.10.3.5 802.11G_ CDD_Lowest Channel_ Average_ Vertical



Site : chamber
Condition: 3m VERTICAL
Job No : B0003
Mode : 2412 Band edge
: 2.4G WIFI 11G
: CDD

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2388.395	5.47	28.52	41.17	47.38	40.20	54.00	-13.80	Average
2	2390.000	5.47	28.52	41.17	47.33	40.15	54.00	-13.85	Average
3 *	2412.000	5.50	28.56	41.18	85.57	78.45	54.00	24.45	Average

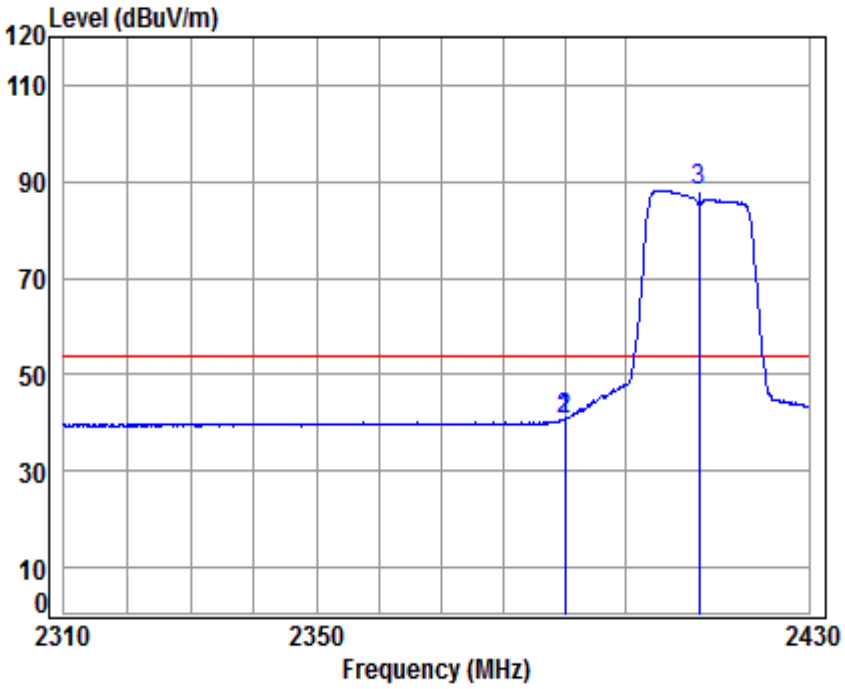
4.10.3.6 802.11G_ CDD_ Highest Channel_ Average _ Vertical



Site : chamber
Condition: 3m VERTICAL
Job No : B0003
Mode : 2462 Band edge
: 2.4G WIFI 11G
: CDD

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 *	2462.000	5.57	28.64	41.20	82.68	75.69	54.00	21.69	Average
2	2483.500	5.60	28.67	41.21	47.25	40.31	54.00	-13.69	Average
3	2484.944	5.60	28.68	41.21	47.55	40.62	54.00	-13.38	Average

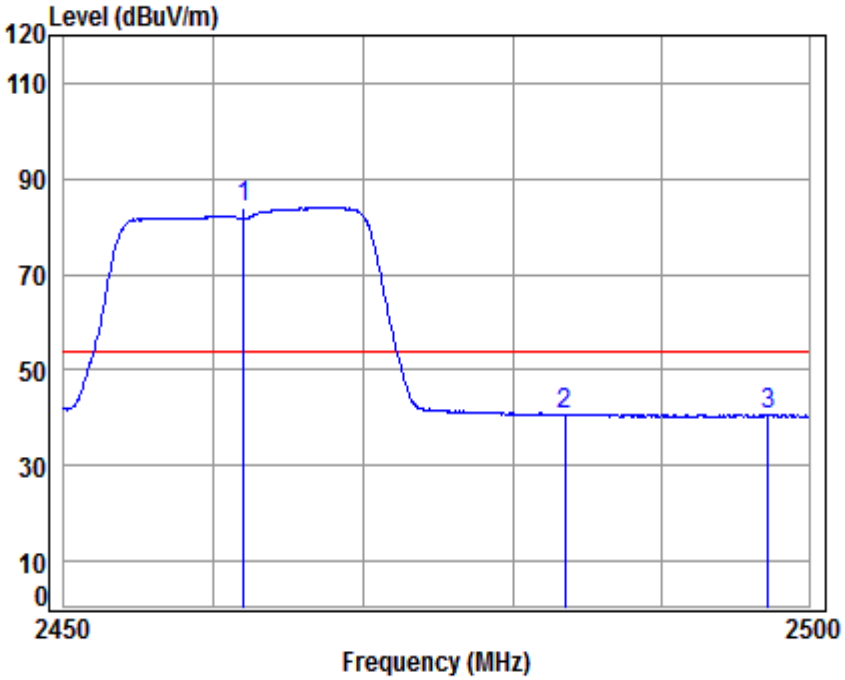
4.10.3.7 802.11G_ CDD_Lowest Channel_ Average _ Horizontal



Site : chamber
Condition: 3m HORIZONTAL
Job No : B0003
Mode : 2412 Band edge
: 2.4G WIFI 11G
: CDD

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2389.968	5.47	28.52	41.17	47.95	40.77	54.00	-13.23	Average
2	2390.000	5.47	28.52	41.17	47.95	40.77	54.00	-13.23	Average
3 *	2412.000	5.50	28.56	41.18	95.37	88.25	54.00	34.25	Average

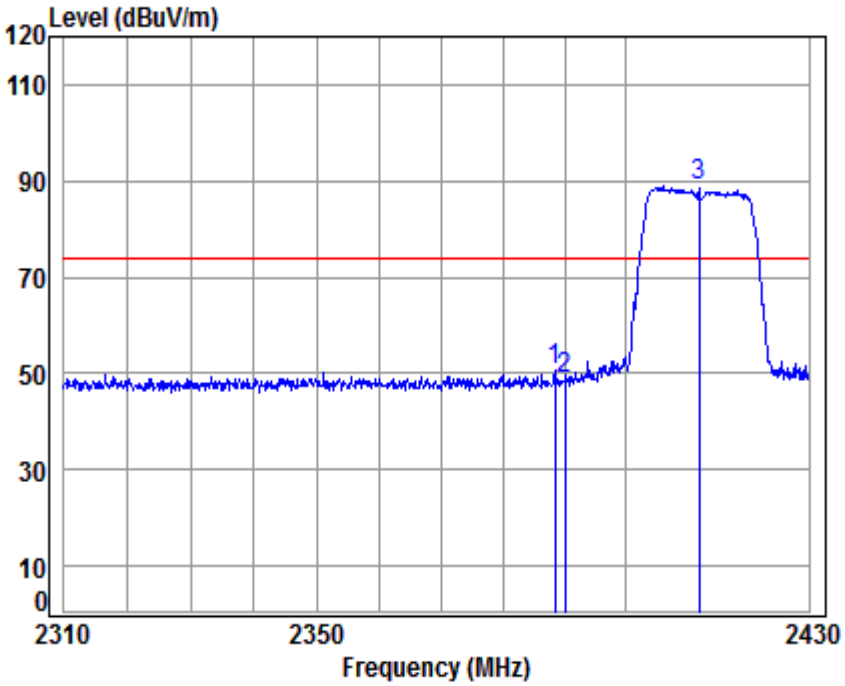
4.10.3.8 802.11G_ CDD_ Highest Channel_ Average_ Horizontal



Site : chamber
Condition: 3m HORIZONTAL
Job No : B0003
Mode : 2462 Band edge
: 2.4G WIFI 11G
: CDD

		Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
		MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	*	2462.000	5.57	28.64	41.20	90.91	83.92	54.00	29.92	Average
2		2483.500	5.60	28.67	41.21	47.50	40.56	54.00	-13.44	Average
3		2497.274	5.62	28.70	41.22	47.55	40.65	54.00	-13.35	Average

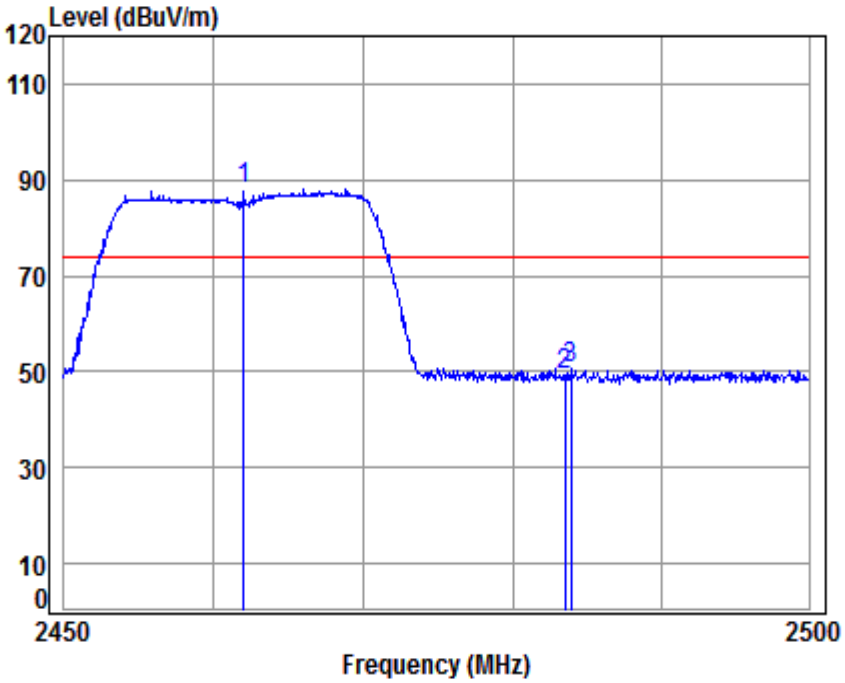
4.10.3.9 802.11N20_MIMO_Lowest Channel_ Peak_ Vertical



Site : chamber
Condition: 3m VERTICAL
Job No : B0003
Mode : 2412 Band edge
: 2.4G WIFI 11N20
: MIMO

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2388.395	5.47	28.52	41.17	57.61	50.43	74.00	-23.57	peak
2	2390.000	5.47	28.52	41.17	55.88	48.70	74.00	-25.30	peak
3 *	2412.000	5.50	28.56	41.18	96.11	88.99	74.00	14.99	peak

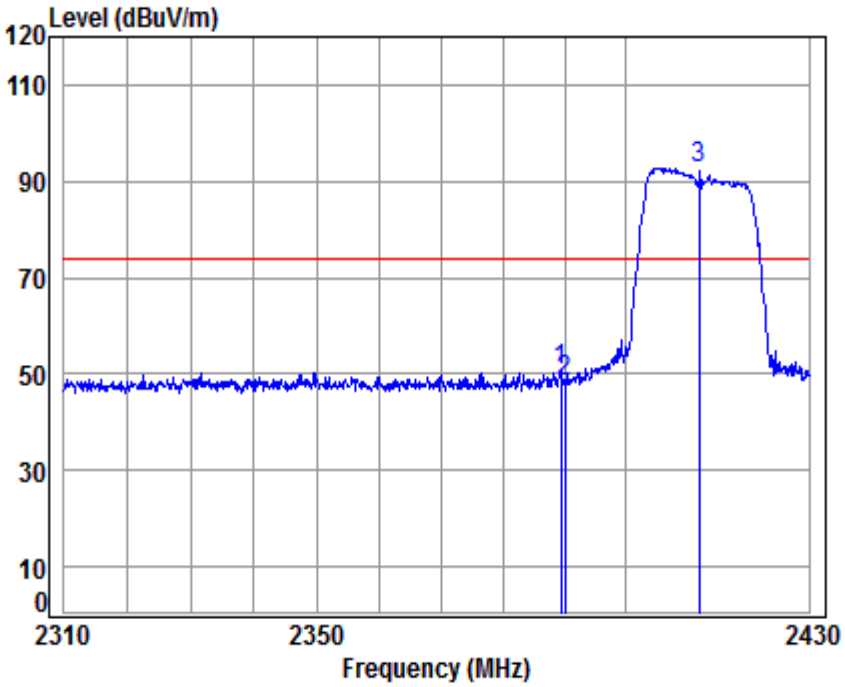
4.10.3.10 802.11N20_MIMO_Highest Channel_ Peak_ Vertical



Site : chamber
Condition: 3m VERTICAL
Job No : B0003
Mode : 2462 Band edge
: 2.4G WIFI 11N20
: MIMO

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 *	2462.000	5.57	28.64	41.20	95.12	88.13	74.00	14.13	peak
2	2483.500	5.60	28.67	41.21	56.06	49.12	74.00	-24.88	peak
3	2483.940	5.60	28.67	41.21	57.72	50.78	74.00	-23.22	peak

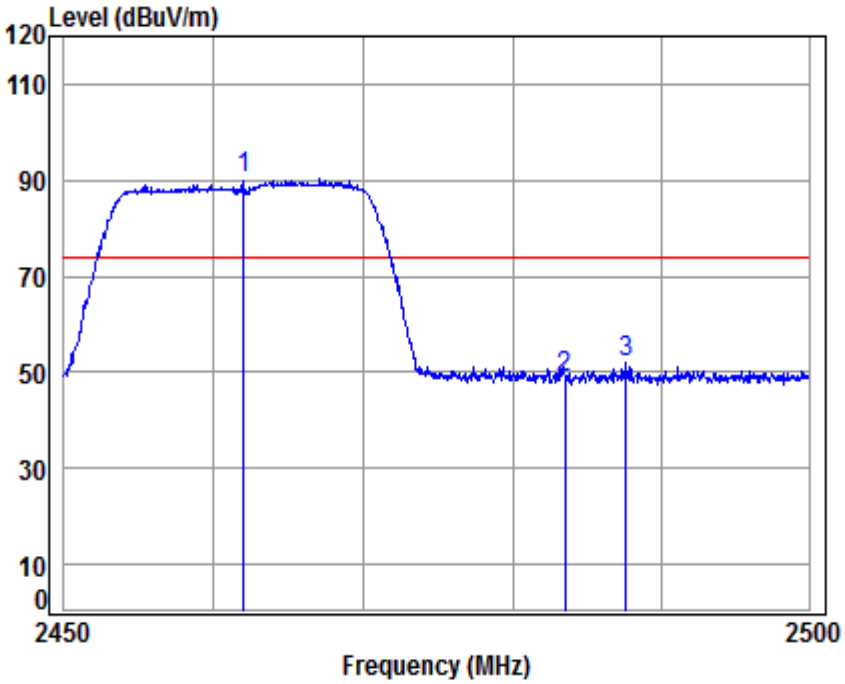
4.10.3.11 802.11N20_ MIMO_Lowest Channel_ Peak_ Horizontal



Site : chamber
Condition: 3m HORIZONTAL
Job No : B0003
Mode : 2412 Band edge
: 2.4G WIFI 11N20
: MIMO

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2389.363	5.47	28.52	41.17	57.63	50.45	74.00	-23.55	peak
2	2390.000	5.47	28.52	41.17	55.54	48.36	74.00	-25.64	peak
3 *	2412.000	5.50	28.56	41.18	99.87	92.75	74.00	18.75	peak

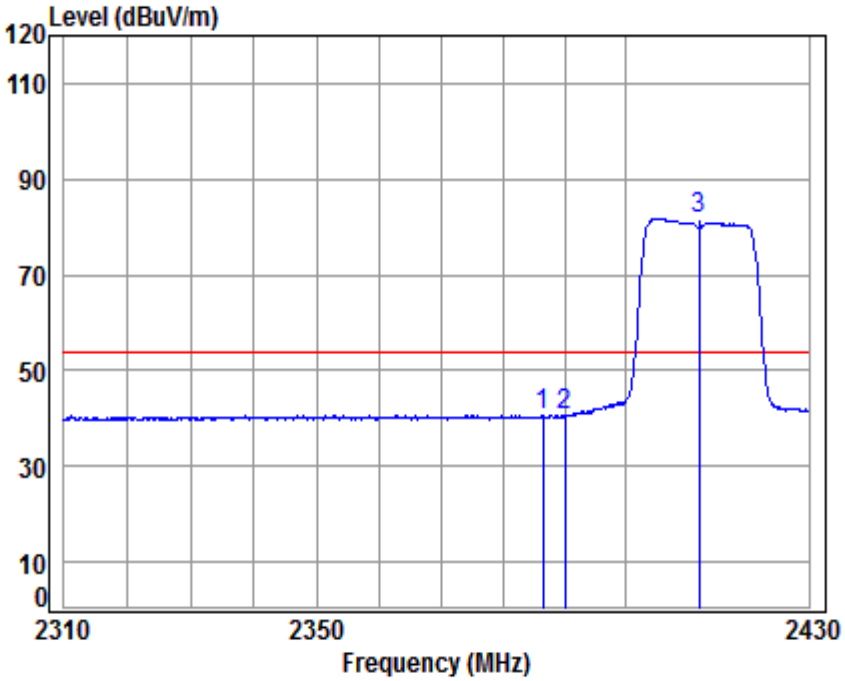
4.10.3.12 802.11N20_ MIMO_Highest Channel_ Peak_ Horizontal



Site : chamber
Condition: 3m HORIZONTAL
Job No : B0003
Mode : 2462 Band edge
: 2.4G WIFI 11N20
: MIMO

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 *	2462.000	5.57	28.64	41.20	97.17	90.18	74.00	16.18	peak
2	2483.500	5.60	28.67	41.21	55.81	48.87	74.00	-25.13	peak
3	2487.656	5.60	28.68	41.21	58.75	51.82	74.00	-22.18	peak

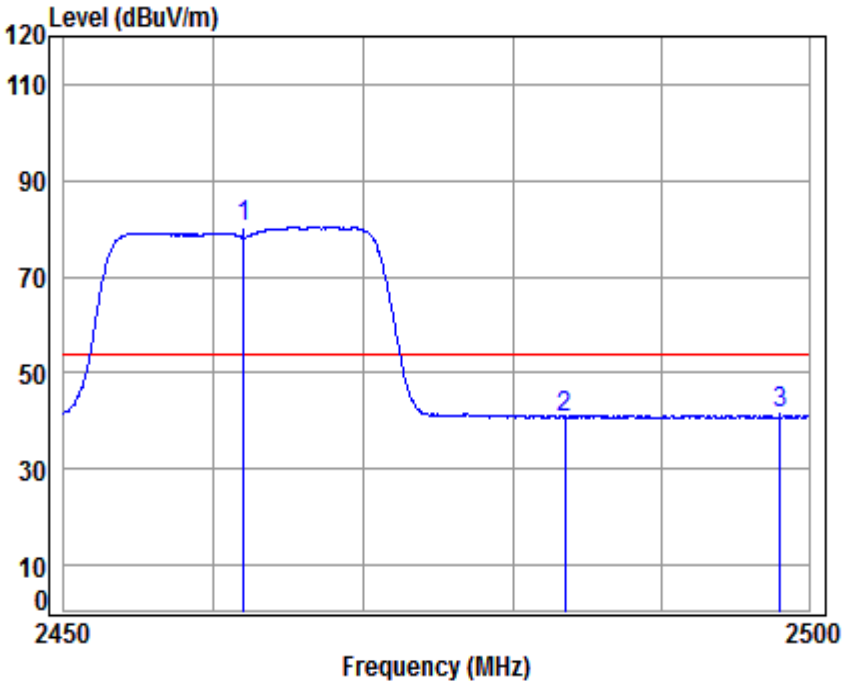
4.10.3.13 802.11N20_ MIMO_Lowest Channel_ Average_ Vertical



Site : chamber
Condition: 3m VERTICAL
Job No : B0003
Mode : 2412 Band edge
: 2.4G WIFI 11N20
: MIMO

		Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
		MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1		2386.461	5.47	28.51	41.17	47.81	40.62	54.00	-13.38	Average
2		2390.000	5.47	28.52	41.17	47.58	40.40	54.00	-13.60	Average
3	*	2412.000	5.50	28.56	41.18	88.83	81.71	54.00	27.71	Average

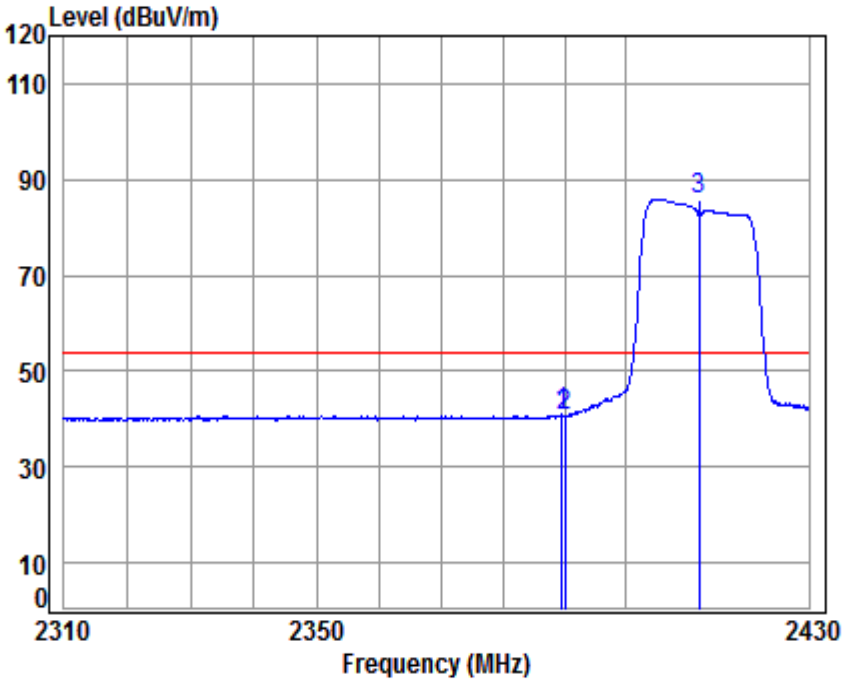
4.10.3.14 802.11N20_ MIMO_ Highest Channel_ Average _ Vertical



Site : chamber
Condition: 3m VERTICAL
Job No : B0003
Mode : 2462 Band edge
: 2.4G WIFI 11N20
: MIMO

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 *	2462.000	5.57	28.64	41.20	87.40	80.41	54.00	26.41	Average
2	2483.500	5.60	28.67	41.21	47.76	40.82	54.00	-13.18	Average
3	2498.031	5.62	28.70	41.22	48.21	41.31	54.00	-12.69	Average

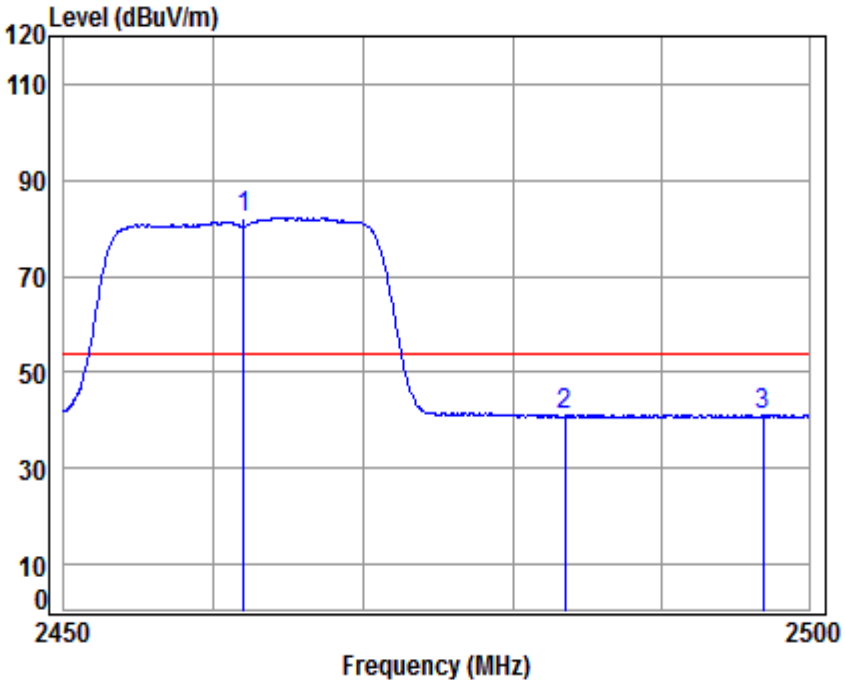
4.10.3.15 802.11N20_ MIMO_Lowest Channel_ Average _ Horizontal



Site : chamber
Condition: 3m HORIZONTAL
Job No : B0003
Mode : 2412 Band edge
: 2.4G WIFI 11N20
: MIMO

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2389.605	5.47	28.52	41.17	48.02	40.84	54.00	-13.16	Average
2	2390.000	5.47	28.52	41.17	47.79	40.61	54.00	-13.39	Average
3 *	2412.000	5.50	28.56	41.18	92.89	85.77	54.00	31.77	Average

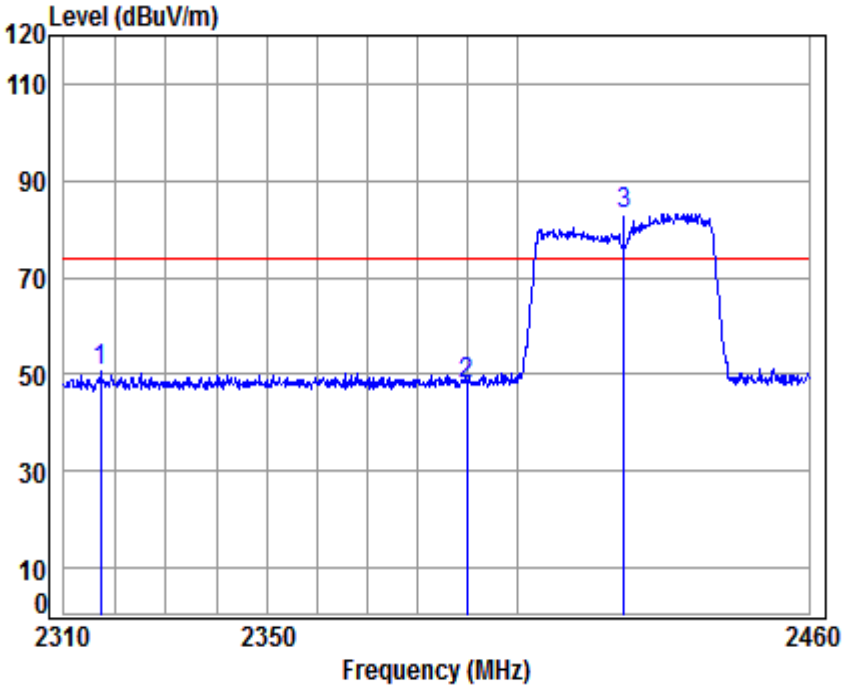
4.10.3.16 802.11N20_ MIMO_ Highest Channel_ Average_ Horizontal



Site : chamber
Condition: 3m HORIZONTAL
Job No : B0003
Mode : 2462 Band edge
: 2.4G WIFI 11N20
: MIMO

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 *	2462.000	5.57	28.64	41.20	89.19	82.20	54.00	28.20	Average
2	2483.500	5.60	28.67	41.21	47.79	40.85	54.00	-13.15	Average
3	2496.921	5.62	28.70	41.22	48.11	41.21	54.00	-12.79	Average

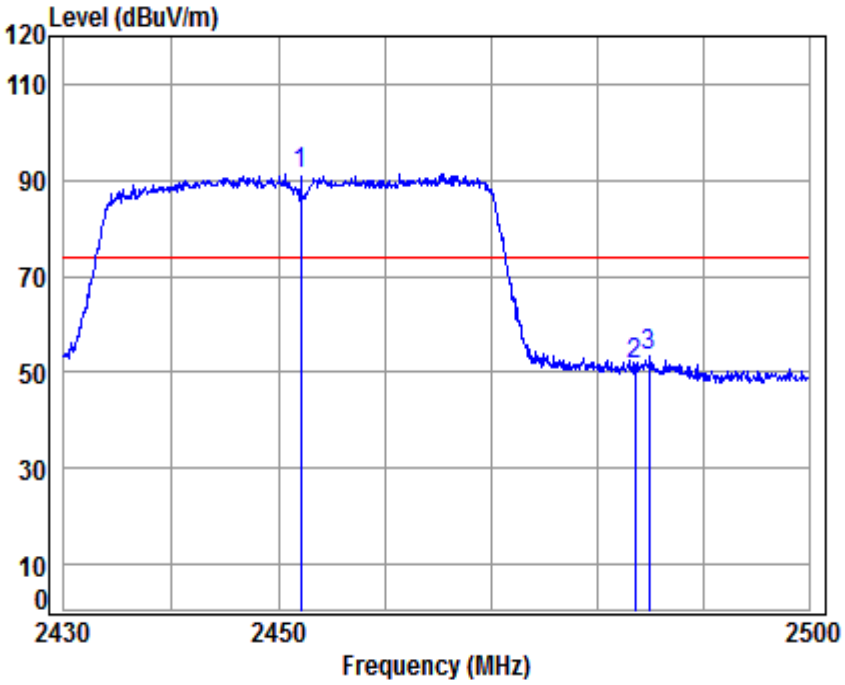
4.10.3.17 802.11N40_ MIMO_Lowest Channel_ Peak_ Vertical



Site : chamber
Condition: 3m VERTICAL
Job No : B0003
Mode : 2422 Band edge
: 2.4G WIFI 11N40
: MIMO

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2317.132	5.37	28.39	41.14	58.05	50.67	74.00	-23.33	peak
2	2390.000	5.47	28.52	41.17	54.93	47.75	74.00	-26.25	peak
3 *	2422.000	5.52	28.57	41.19	90.35	83.25	74.00	9.25	peak

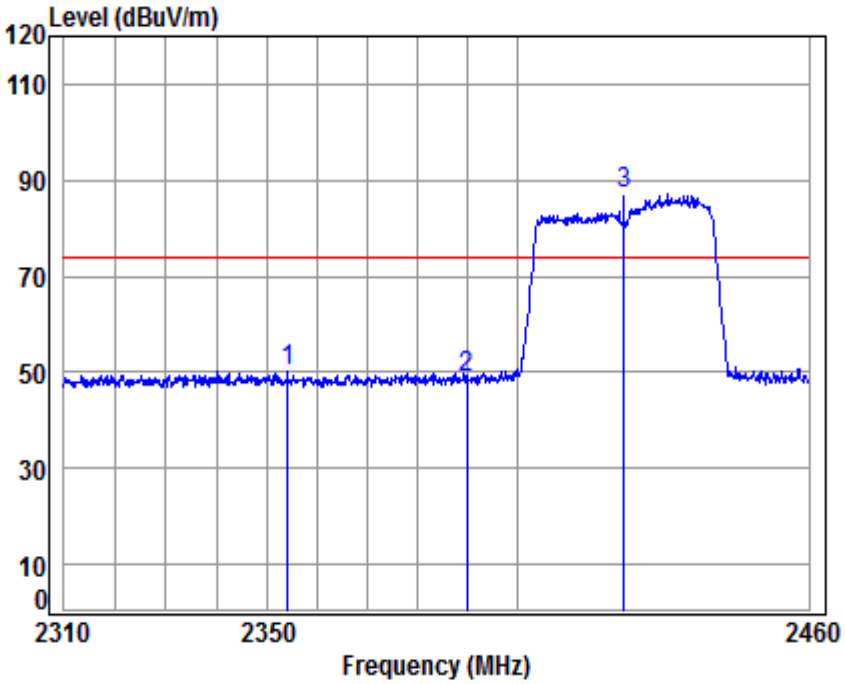
4.10.3.18 802.11N40_ MIMO_ Highest Channel_ Peak_ Vertical



Site : chamber
Condition: 3m VERTICAL
Job No : B0003
Mode : 2452 Band edge
: 2.4G WIFI 11N40
: MIMO

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 *	2452.000	5.56	28.62	41.20	98.17	91.15	74.00	17.15	peak
2	2483.500	5.60	28.67	41.21	58.42	51.48	74.00	-22.52	peak
3	2484.852	5.60	28.68	41.21	60.09	53.16	74.00	-20.84	peak

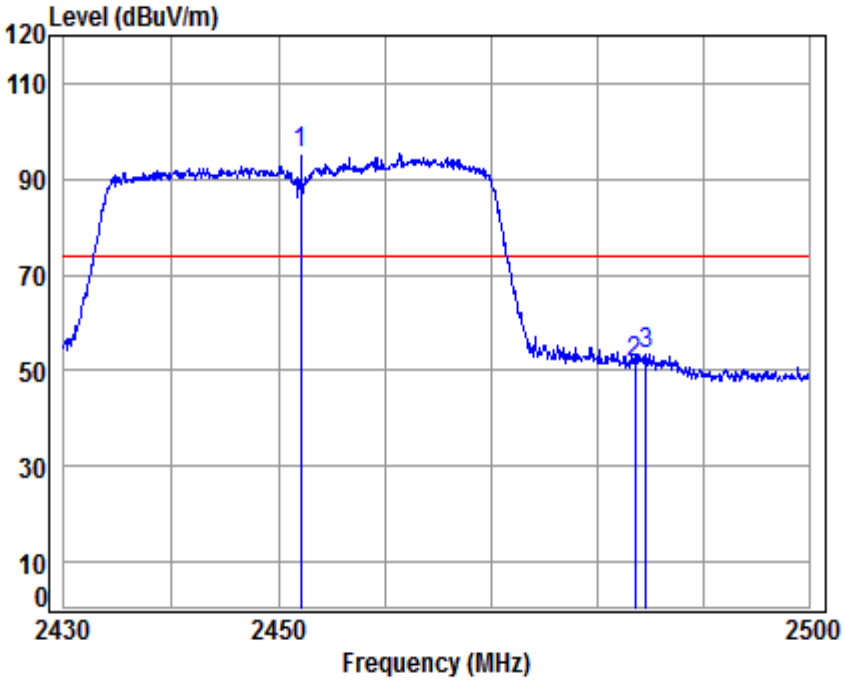
4.10.3.19 802.11N40_ MIMO_Lowest Channel_ Peak_ Horizontal



Site : chamber
Condition: 3m HORIZONTAL
Job No : B0003
Mode : 2422 Band edge
: 2.4G WIFI 11N40
: MIMO

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2354.013	5.43	28.46	41.16	57.46	50.19	74.00	-23.81	peak
2	2390.000	5.47	28.52	41.17	55.79	48.61	74.00	-25.39	peak
3 *	2422.000	5.52	28.57	41.19	94.19	87.09	74.00	13.09	peak

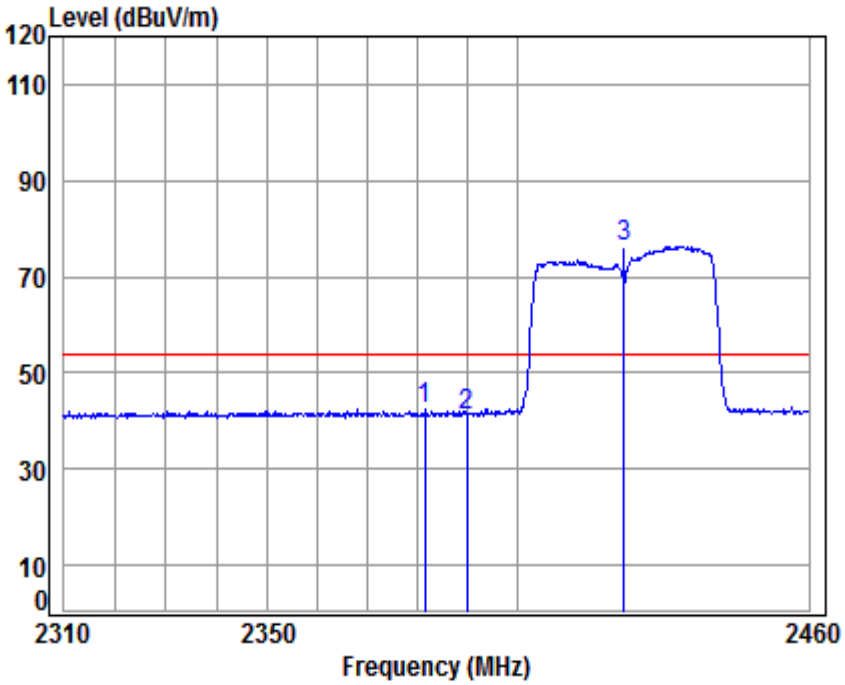
4.10.3.20 802.11N40_ MIMO_ Highest Channel_ Peak_ Horizontal



Site : chamber
Condition: 3m HORIZONTAL
Job No : B0003
Mode : 2452 Band edge
: 2.4G WIFI 11N40
: MIMO

		Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
		MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	*	2452.000	5.56	28.62	41.20	102.20	95.18	74.00	21.18	peak
2		2483.500	5.60	28.67	41.21	58.48	51.54	74.00	-22.46	peak
3		2484.500	5.60	28.67	41.21	60.49	53.55	74.00	-20.45	peak

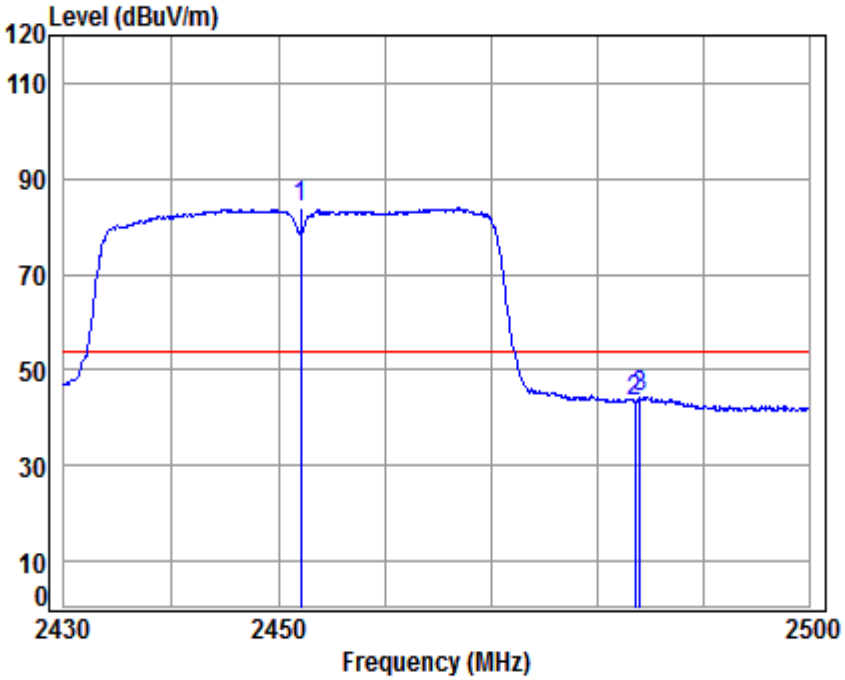
4.10.3.21 802.11N40_ MIMO_Lowest Channel_ Average_ Vertical



Site : chamber
Condition: 3m VERTICAL
Job No : B0003
Mode : 2422 Band edge
: 2.4G WIFI 11N40
: MIMO

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2381.572	5.46	28.50	41.17	49.66	42.45	54.00	-11.55	Average
2	2390.000	5.47	28.52	41.17	48.46	41.28	54.00	-12.72	Average
3 *	2422.000	5.52	28.57	41.19	83.40	76.30	54.00	22.30	Average

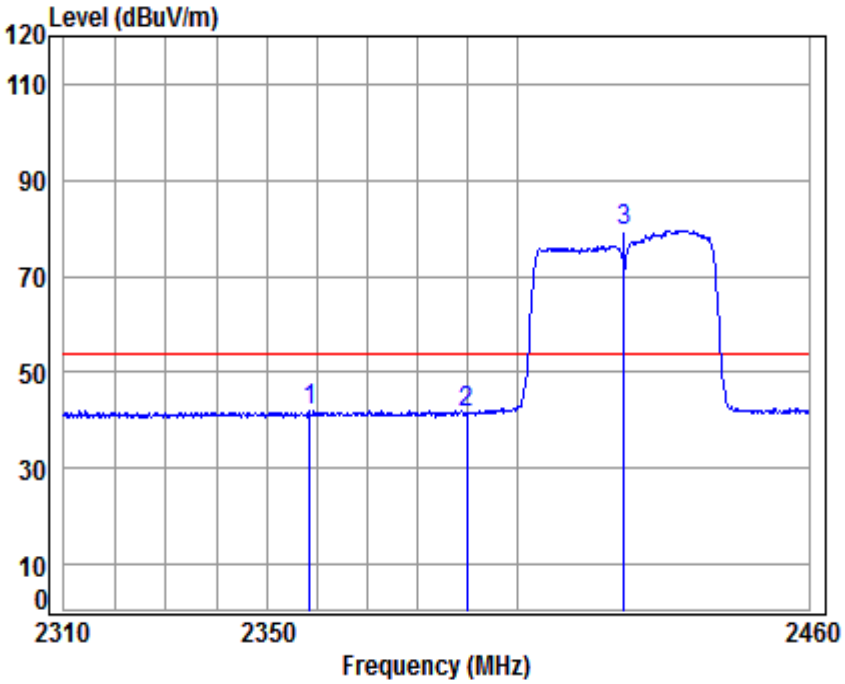
4.10.3.22 802.11N40_ MIMO_ Highest Channel_ Average _ Vertical



Site : chamber
Condition: 3m VERTICAL
Job No : B0003
Mode : 2452 Band edge
: 2.4G WIFI 11N40
: MIMO

		Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
		MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	*	2452.000	5.56	28.62	41.20	90.81	83.79	54.00	29.79	Average
2		2483.500	5.60	28.67	41.21	50.40	43.46	54.00	-10.54	Average
3		2483.935	5.60	28.67	41.21	51.39	44.45	54.00	-9.55	Average

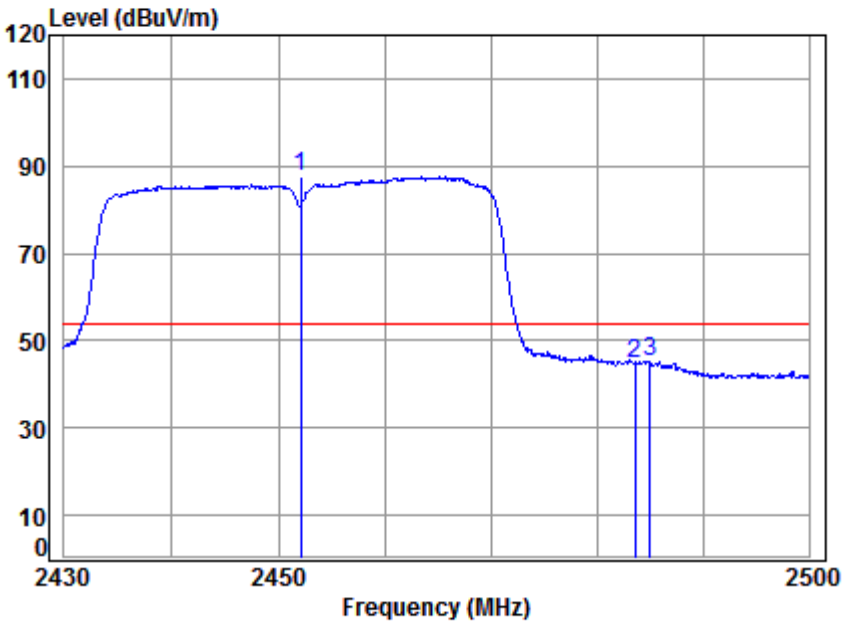
4.10.3.23 802.11N40_ MIMO_Lowest Channel_ Average _ Horizontal



Site : chamber
Condition: 3m HORIZONTAL
Job No : B0003
Mode : 2422 Band edge
: 2.4G WIFI 11N40
: MIMO

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2358.460	5.43	28.46	41.16	49.28	42.01	54.00	-11.99	Average
2	2390.000	5.47	28.52	41.17	48.84	41.66	54.00	-12.34	Average
3 *	2422.000	5.52	28.57	41.19	86.70	79.60	54.00	25.60	Average

4.10.3.24 802.11N40_ MIMO_ Highest Channel_ Average_ Horizontal



Site : chamber
Condition: 3m HORIZONTAL
Job No : B0003
Mode : 2452 Band edge
: 2.4G WIFI 11N40
: MIMO

		Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
		MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	*	2452.000	5.56	28.62	41.20	94.50	87.48	54.00	33.48	Average
2		2483.500	5.60	28.67	41.21	51.53	44.59	54.00	-9.41	Average
3		2484.923	5.60	28.68	41.21	52.28	45.35	54.00	-8.65	Average

Remark:
The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:
Final Test Level =Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor

All Modes have been tested, but only the worst case data displayed in this report.

5 Measurement Uncertainty (95% confidence levels, k=2)

No.	Item	Measurement Uncertainty
1	Total RF power, conducted	±0.75dB
2	RF power density, conducted	±2.84dB
3	Spurious emissions, conducted	±0.75dB
4	Radiated Spurious emission test	±4.5dB (30MHz-1GHz)
		±4.8dB (1GHz-25GHz)
5	Conduct emission test	±3.12 dB (9KHz- 30MHz)
6	Temperature test	±1°C
7	Humidity test	±3%
8	DC and low frequency voltages	±0.5%

6 Equipment List

Conducted Emission					
Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. date (yyyy-mm-dd)	Cal.Duedate (yyyy-mm-dd)
Shielding Room	ZhongYu Electron	GB-88	SEM001-06	2017/5/10	2020/5/9
LISN	Rohde & Schwarz	ENV216	SEM007-01	2018/9/2	2019/9/2
LISN	ETS-LINDGREN	Feb-16	SEM007-02	2018/4/2	2019/4/1
Measurement Software	AUDIX	e3 V5.4.1221d	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM024-01	2018/7/12	2019/7/11
2 Line ISN	Fischer Custom Communications Inc.	FCC-TLISN-T2-02	EMC0122	2018/2/14	2019/2/13
EMI Test Receiver	Rohde & Schwarz	ESCI	SEM004-02	2018/4/2	2019/4/1

RF conducted test					
Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. date (yyyy-mm-dd)	Cal.Duedate (yyyy-mm-dd)
DC Power Supply	Agilent Technologies Inc	66311B	W009-09	2018/9/15	2019/9/15
Signal Analyzer	Rohde & Schwarz	FSV	W025-05	2018/3/13	2019/3/12
Coaxial Cable	SGS	N/A	SEM031-01	2018/7/13	2019/7/12
Attenuator	Weinschel Associates	WA41	SEM021-09	N/A	N/A
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2018/9/2	2019/9/2
Temperature Chamber	GIANT FORCE	ICT-150-40-CP-AR	W027-03	2018/11/27	2019/11/27
Power Meter	Rohde & Schwarz	NRVS	SEM014-02	2018/9/2	2019/9/2

RE in Chamber					
Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. date (yyyy-mm-dd)	Cal.Due date (yyyy-mm-dd)
3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEM001-01	2017/8/5	2020/8/4
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM025-01	2018/7/12	2019/7/11
MXE EMI Receiver (20Hz-8.4GHz)	Agilent Technologies	N9038A	SEM004-05	2018/9/2	2019/9/2
BiConiLog Antenna (26-3000MHz)	ETS-LINDGREN	3142C	SEM003-01	2017/6/27	2020/6/26
Pre-amplifier (0.1-1.3GHz)	Agilent Technologies	8447D	SEM005-01	2018/4/2	2019/4/1

RE in Chamber					
Test Equipment	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal. Date (yyyy-mm-dd)**	**Cal. Due date (yyyy-mm-dd)**
10m Semi-Anechoic Chamber	SAEMC	FSAC1018	SEM001-03	2018/3/31	2021/3/30
EMI Test Receiver (9k-7GHz)	Rohde & Schwarz	ESR	SEM004-03	2018/4/2	2019/4/1
Trilog-Broadband Antenna(25M-2GHz)	Schwarzbeck	VULB9168	SEM003-18	2016/6/29	2019/6/28
Pre-amplifier (9k-1GHz)	Sonoma	310N	SEM005-03	2018/4/13	2019/4/12
Loop Antenna (9kHz-30MHz)	ETS-Lindgren	6502	SEM003-08	2017/8/22	2020/8/21
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM029-01	2018/7/12	2019/7/11

RE in Chamber					
Test Equipment	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal. date (yyyy-mm-dd)**	**Cal.Due date (yyyy-mm-dd)**
3m Semi-Anechoic Chamber	AUDIX	N/A	SEM001-02	2018/3/13	2021/3/12
Measurement Software	AUDIX	e3V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM026-01	2018/7/12	2019/7/11
EXA Signal Analyzer (10Hz-26.5GHz)	Agilent Technologies Inc	N9010A	SEM004-09	2018/4/13	2019/4/12
BiConiLog Antenna (26-3000MHz)	ETS-Lindgren	3142C	SEM003-01	2017/6/27	2020/6/26
Horn Antenna (0.8-18GHz)	Rohde & Schwarz	HF907	SEM003-07	2018/4/13	2021/4/12
Pre-amplifier(0.1-1.3GHz)	HP	8447D	SEM005-02	2018/9/2	2019/9/2
Low Noise Amplifier(100MHz-18GHz)	Black Diamond Series	BDLNA-0118-352810	SEM005-05	2018/9/27	2019/9/27
Pre-amplifier(18-26GHz)	Rohde & Schwarz	CH14-H052	SEM005-17	2018/4/2	2019/4/1
Band filter	N/A	N/A	SEM023-01	N/A	N/A

7 Photographs - EUT Constructional Details

Refer to Appendix A - Photographs of EUT Constructional Details for HR/2018/B0003.

The End