

Appendix

Main Test Instruments

Conducted Emission					
Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. date	Cal.Duedate
				(yyyy-mm-dd)	(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	2019/3/2	2020/3/1
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	2019/2/11	2020/2/10
EMI Test Receiver	Rohde & Schwarz	ESCI	SEM004-02	2019/3/2	2020/3/1

RF conducted test					
Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. date	Cal.Duedate
				(yyyy-mm-dd)	(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	2019/1/13	2020/1/12
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

Measurement Uncertainty

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	Conduct emission test	±3.12 dB (9KHz- 30MHz)
5	Temperature test	±1°C
6	Humidity test	±3%
7	DC and low frequency voltages	±0.5%

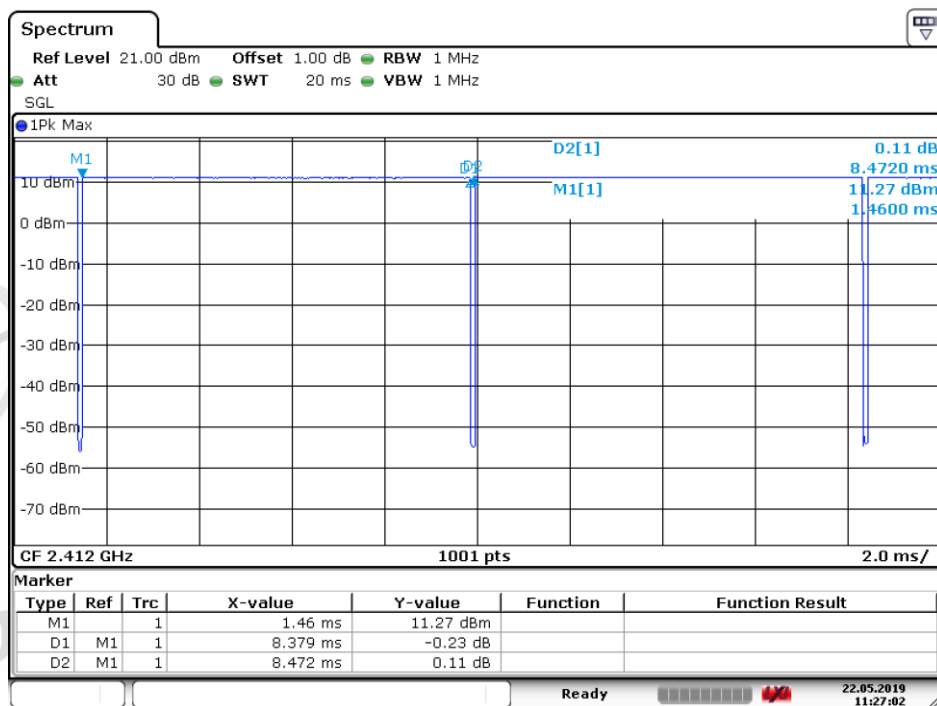
Duty Cycle

Test Results

Test Mode	TX Freq. [MHz]	Duty cycle [%]
11B	Ant 1: CH1	98.90
11G	Ant 1: CH1	96.23
11N20	Ant 1: CH1	96.04
11N40	Ant 1: CH3	86.32

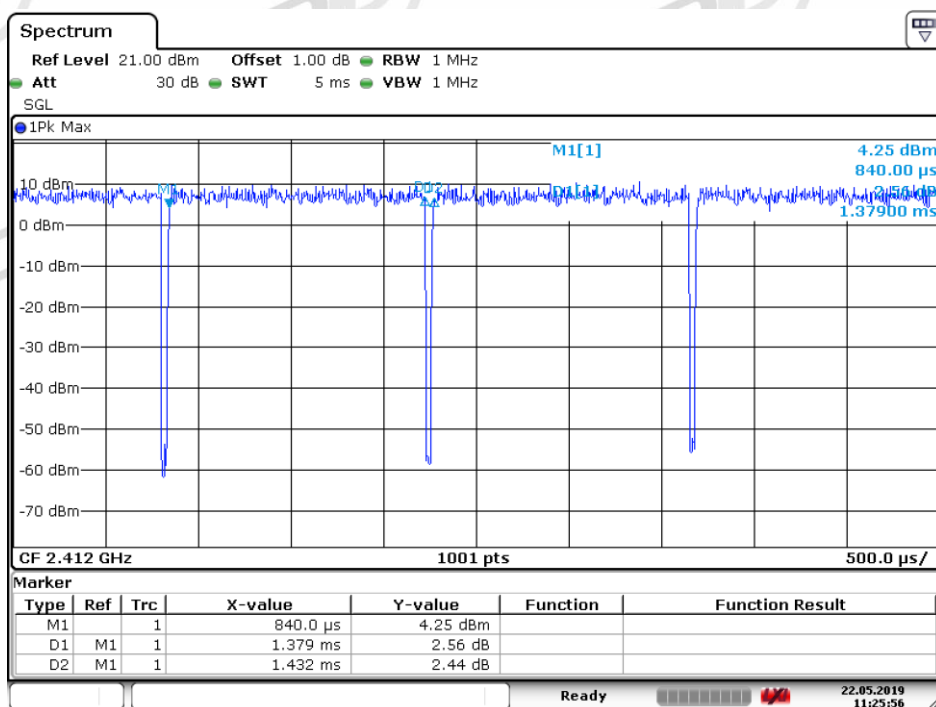
Test Plots

ANT1
11B



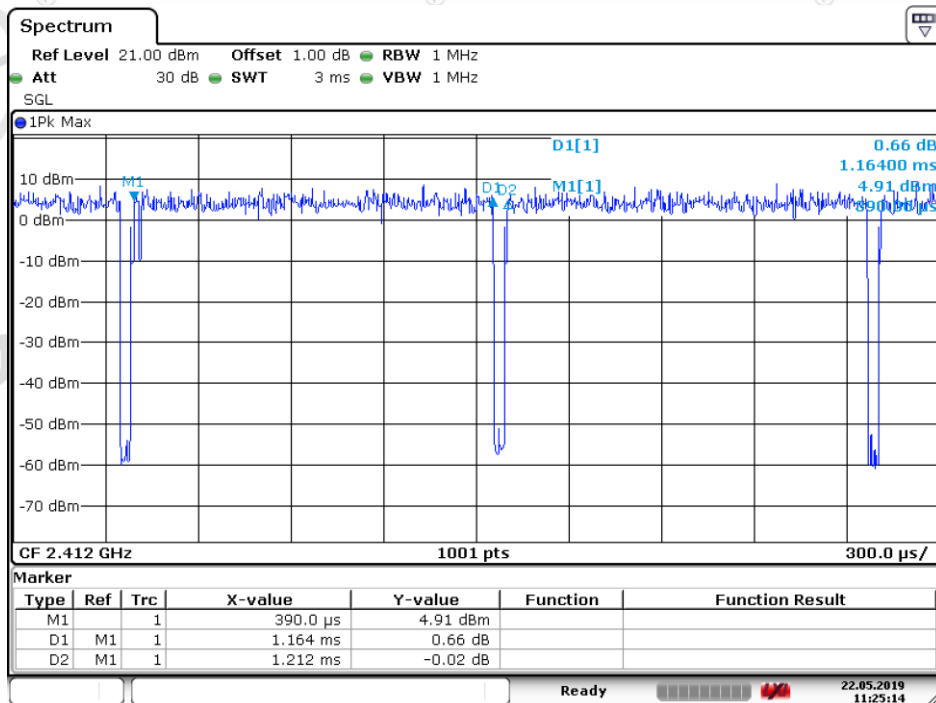
Date: 22.MAY.2019 11:27:02

11G



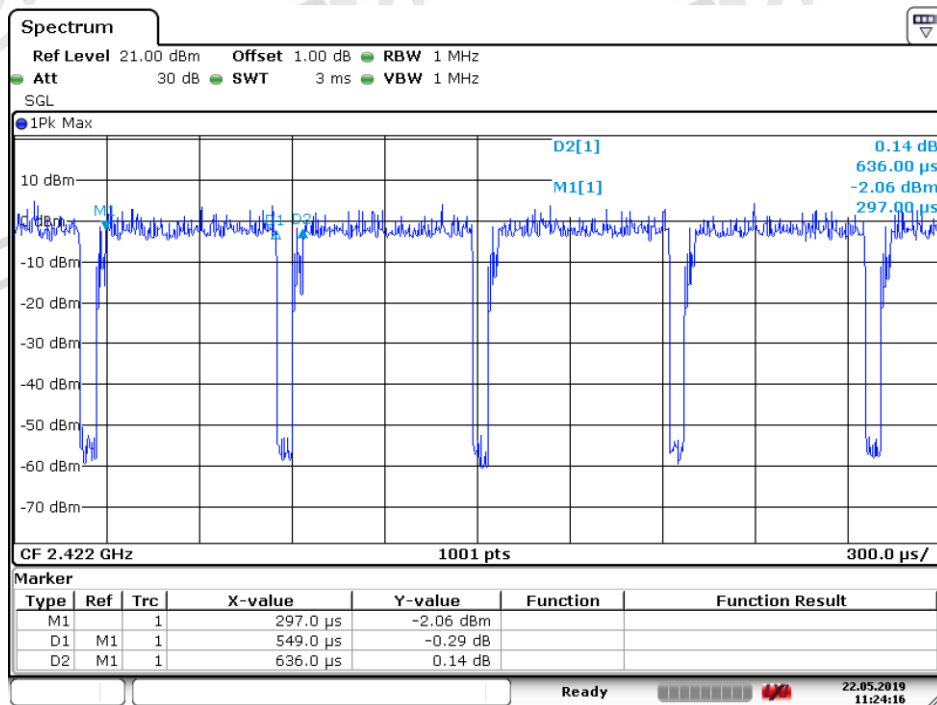
Date: 22.MAY.2019 11:25:56

11N20



Date: 22.MAY.2019 11:25:14

11N40



Date: 22.MAY.2019 11:24:17

Conducted Output Power

Test Results

Measurement Data of Peak Power:

Mode	Test Channel	ANT1	Limit (dBm)	Result
802.11B	Lowest	21.03	30.00	Pass
	Middle	20.85	30.00	Pass
	Highest	20.79	30.00	Pass
802.11G	Lowest	21.93	30.00	Pass
	Middle	21.93	30.00	Pass
	Highest	21.96	30.00	Pass
802.11N20	Lowest	19.95	30.00	Pass
	Middle	20.07	30.00	Pass
	Highest	19.62	30.00	Pass
802.11N40	Lowest	22.22	30.00	Pass
	Middle	22.13	30.00	Pass
	Highest	22.11	30.00	Pass

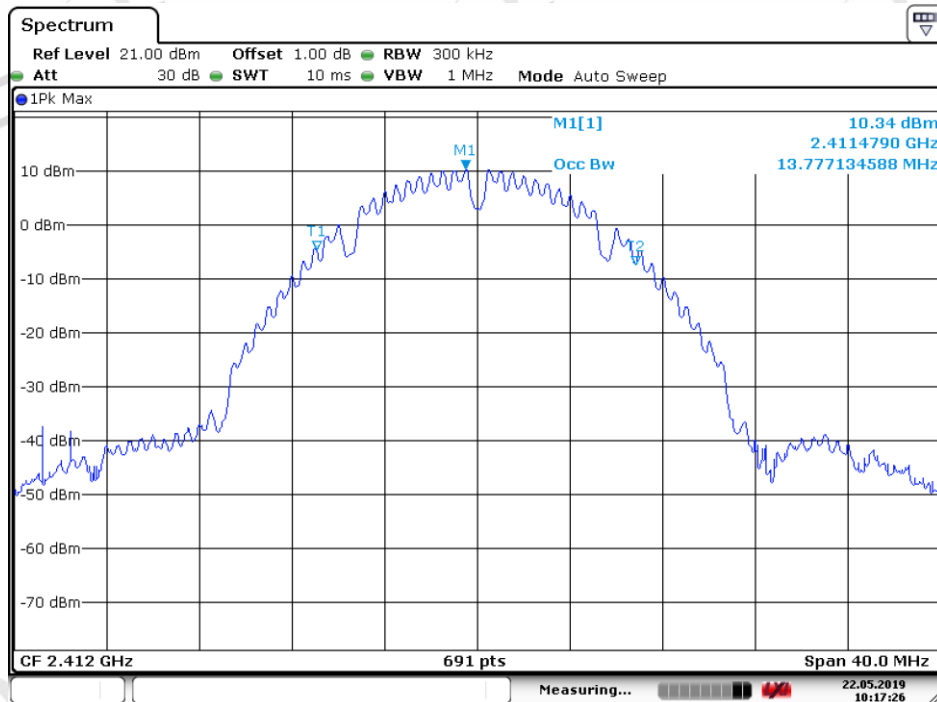
DTS (6 dB) Bandwidth & 99% Occupied Bandwidth**Test Results**

Mode	Test Channel	Occupied Bandwidth (MHz)	6dB Emission Bandwidth (MHz)	Limit (kHz)	Result
802.11B	Lowest	13.78	8.59	≥500	Pass
	Middle	13.84	8.59	≥500	Pass
	Highest	13.84	8.55	≥500	Pass
802.11G	Lowest	16.79	15.58	≥500	Pass
	Middle	16.79	15.19	≥500	Pass
	Highest	16.79	15.46	≥500	Pass
802.11N20	Lowest	17.95	15.15	≥500	Pass
	Middle	17.95	15.19	≥500	Pass
	Highest	17.95	16.15	≥500	Pass
802.11N40	Lowest	36.35	36.12	≥500	Pass
	Middle	36.24	35.88	≥500	Pass
	Highest	36.24	35.56	≥500	Pass

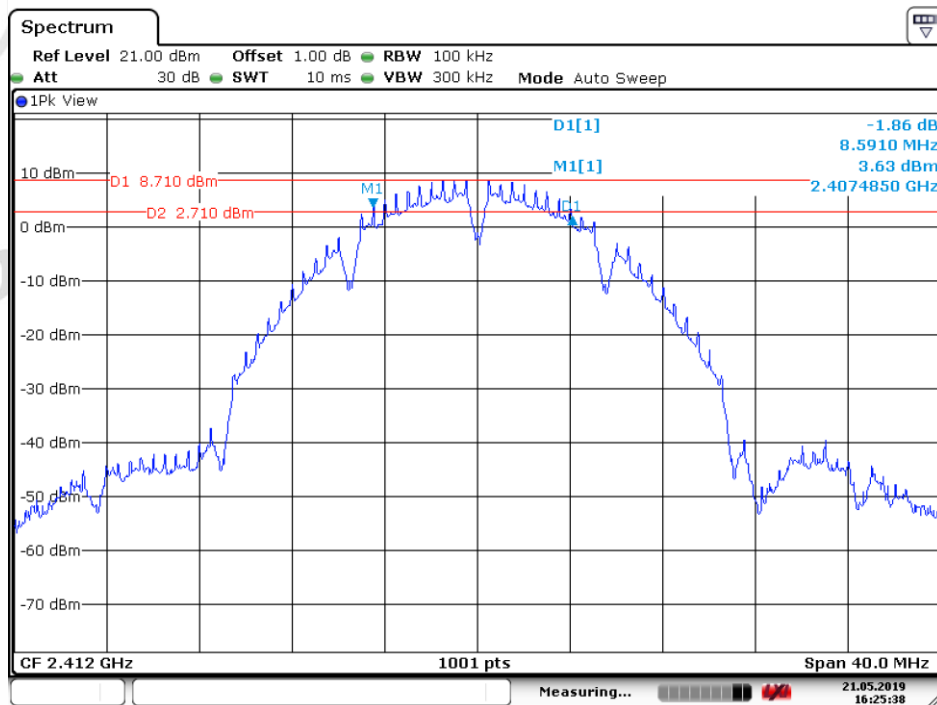
Test plots

ANT1

802.11B_Lowest Channel

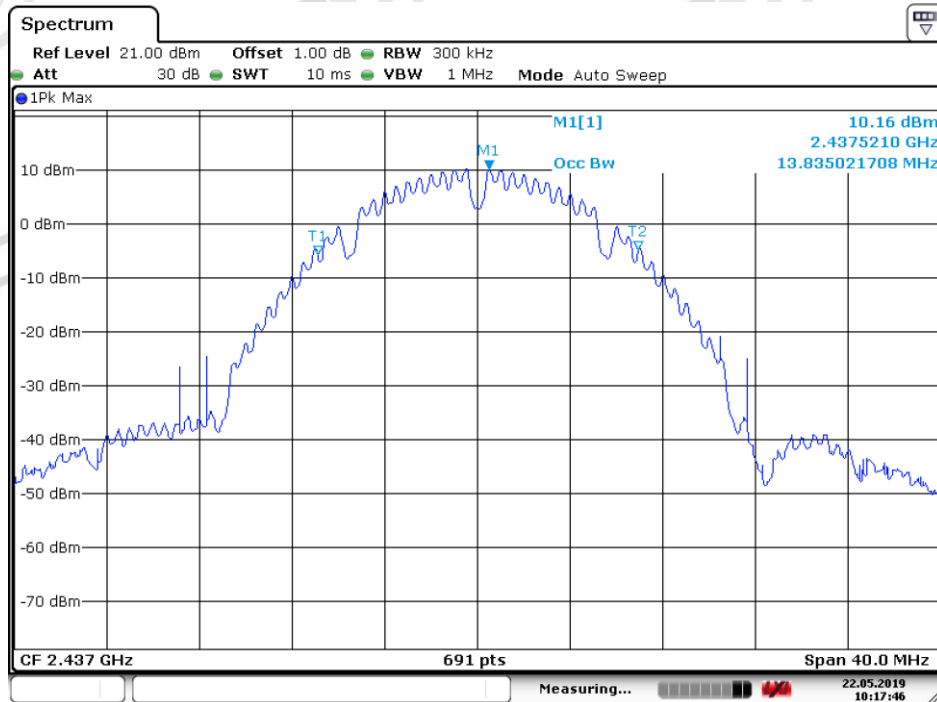


Date: 22.MAY.2019 10:17:26

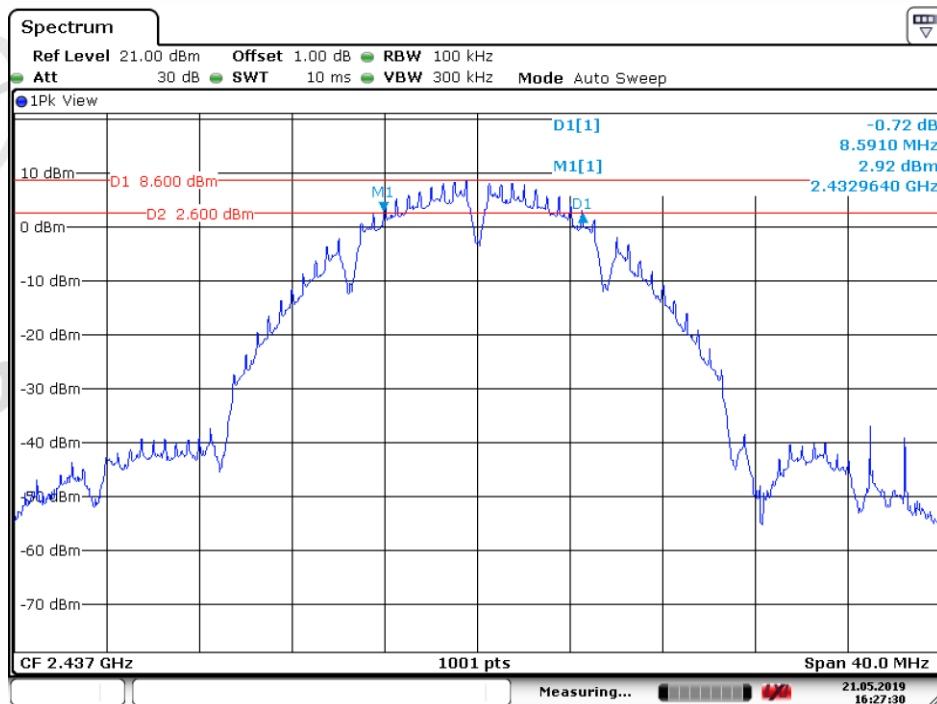


Date: 21.MAY.2019 16:25:38

802.11B Middle Channel

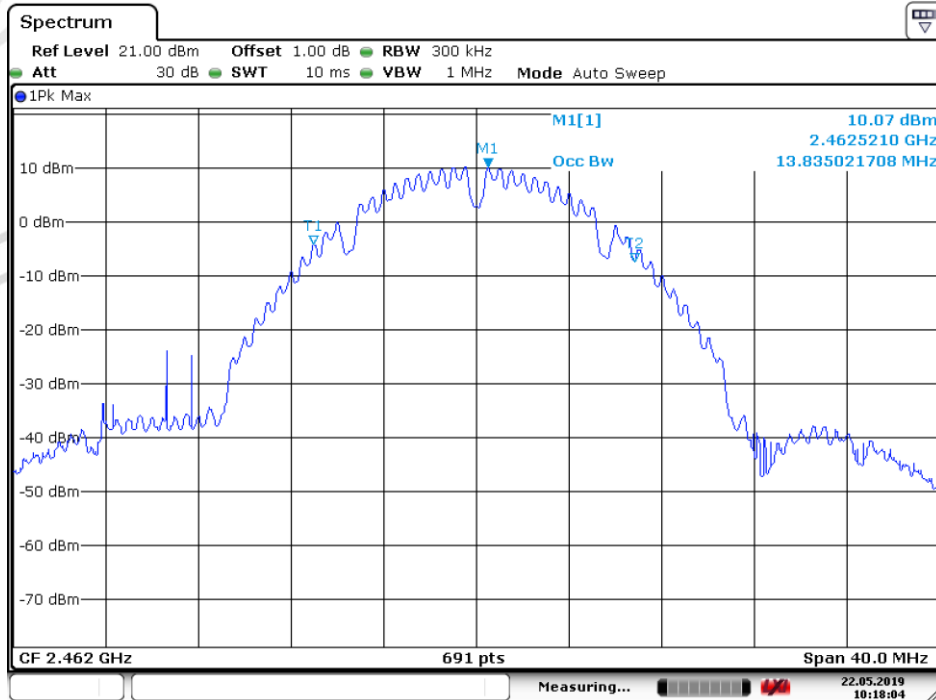


Date: 22.MAY.2019 10:17:47

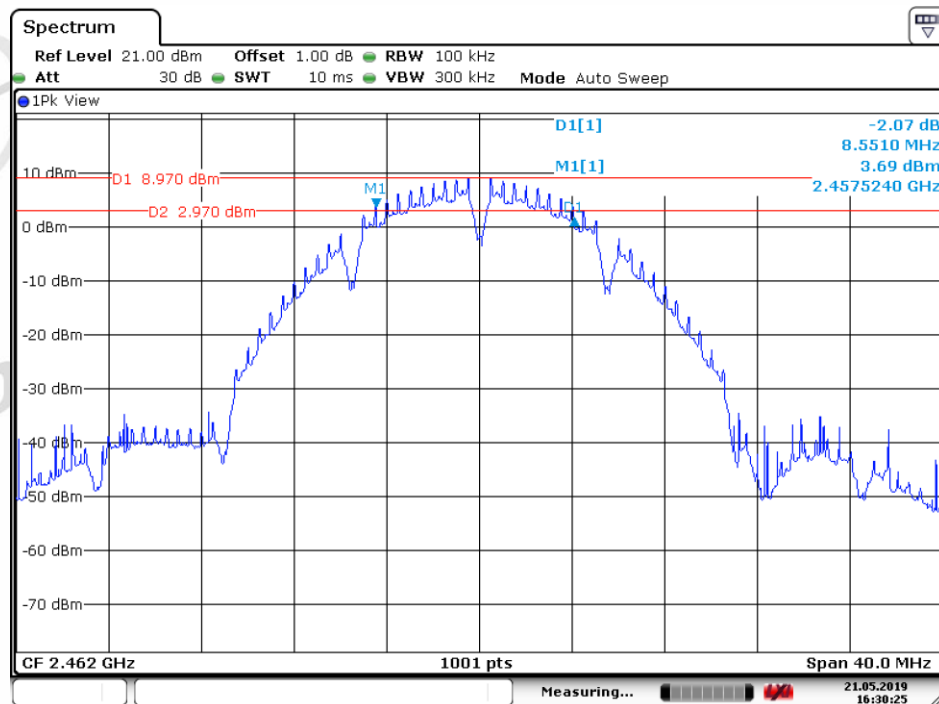


Date: 21.MAY.2019 16:27:30

802.11B_Highest Channel

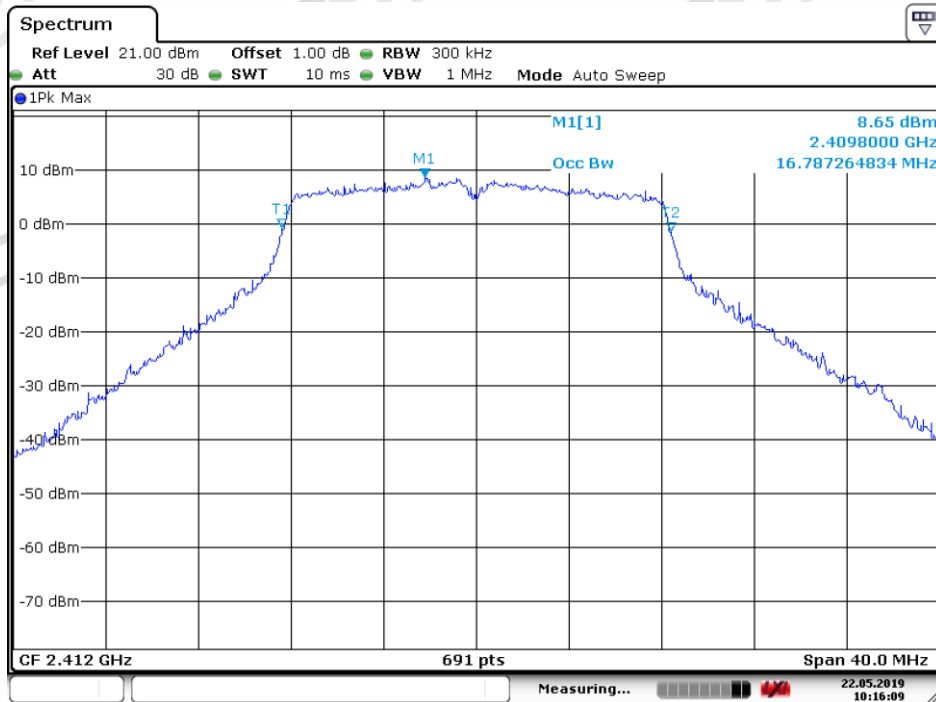


Date: 22.MAY.2019 10:18:05

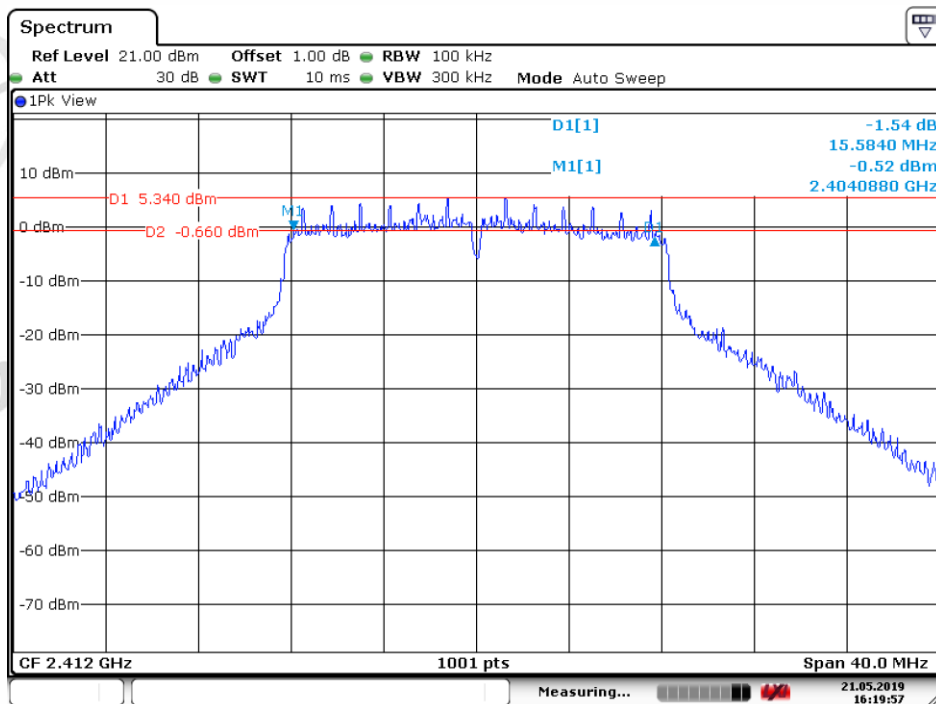


Date: 21.MAY.2019 16:30:25

802.11G_Lowest Channel

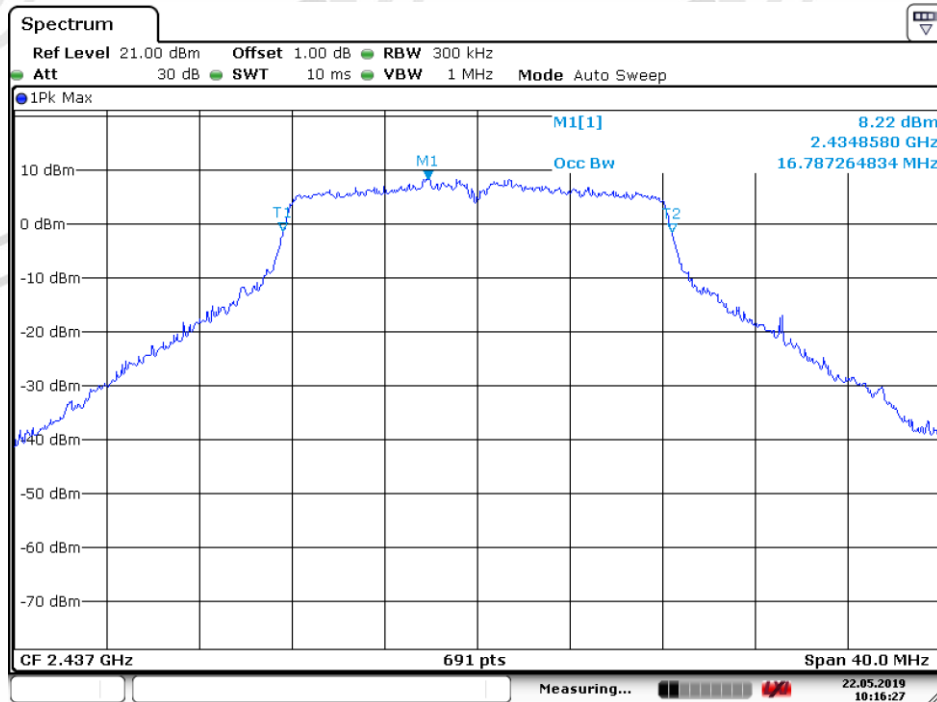


Date: 22.MAY.2019 10:16:09

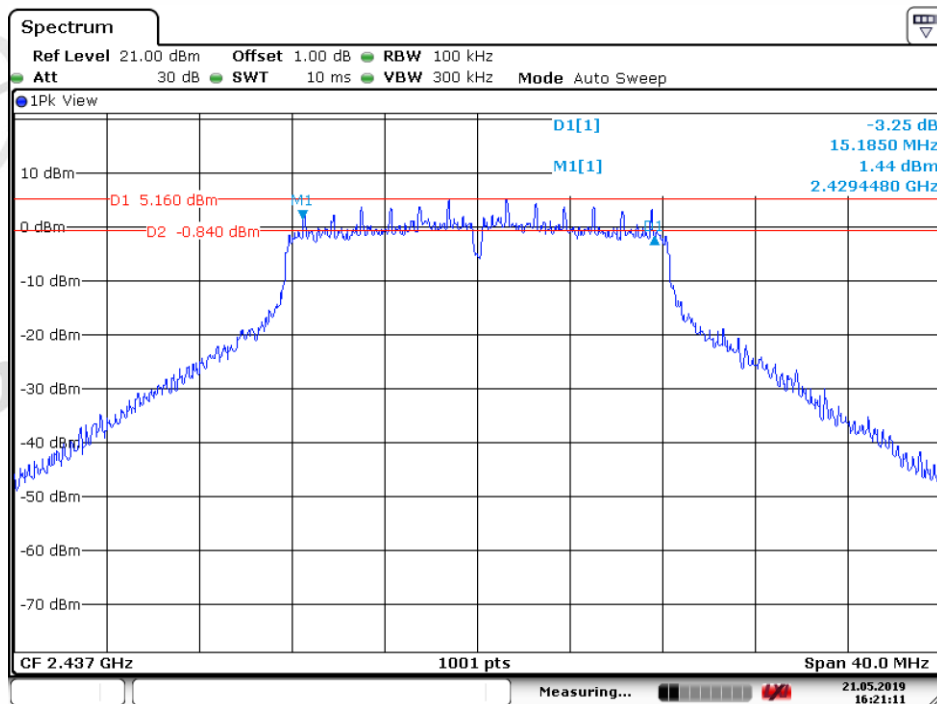


Date: 21.MAY.2019 16:19:57

802.11G_Middle Channel

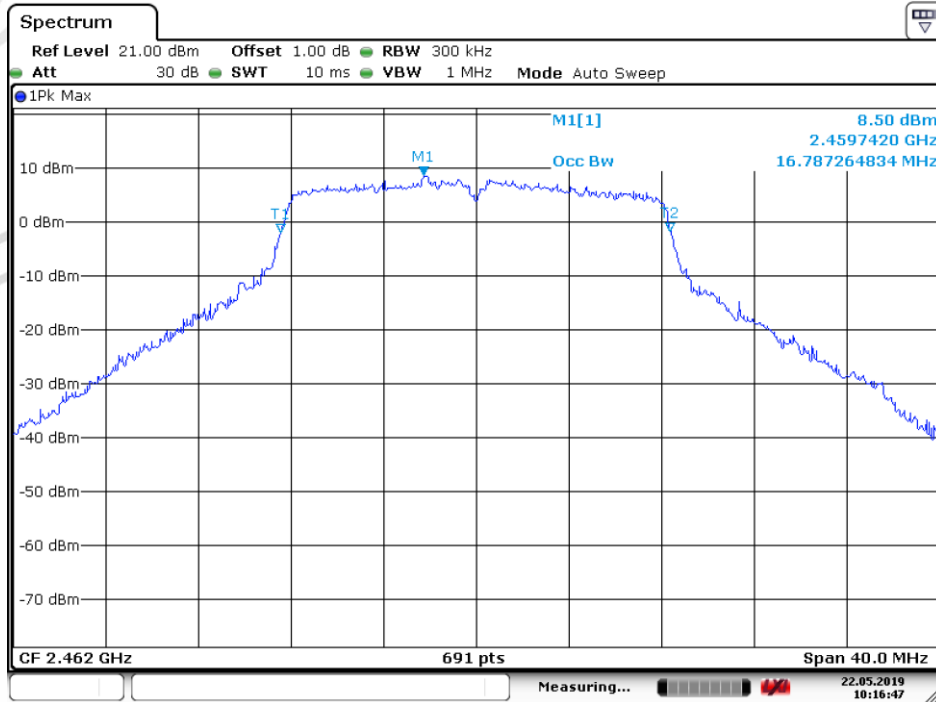


Date: 22.MAY.2019 10:16:28

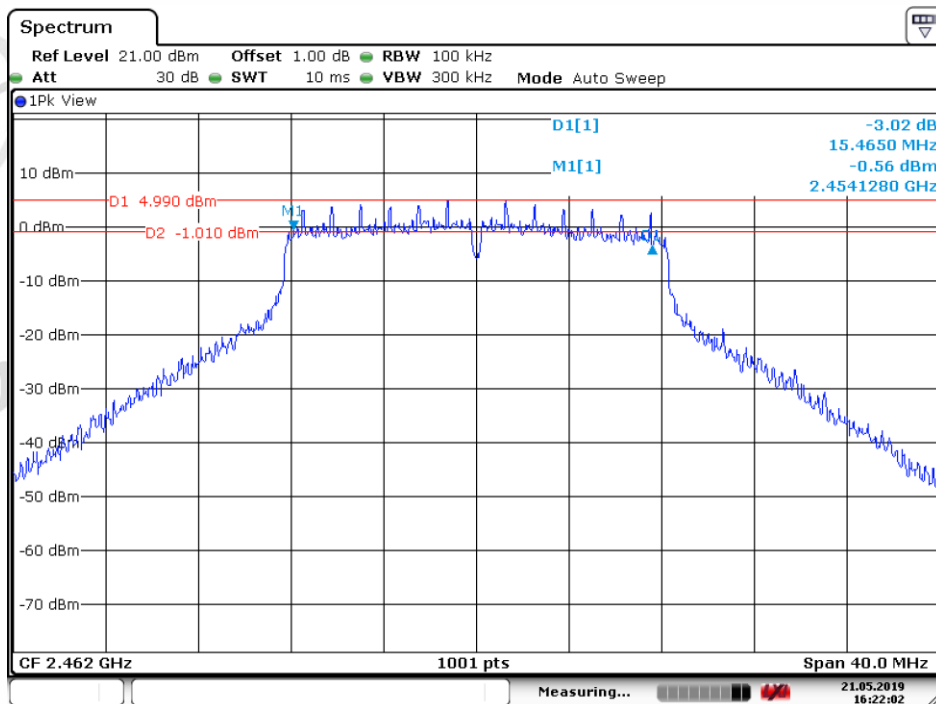


Date: 21.MAY.2019 16:21:11

802.11G_Highest Channel

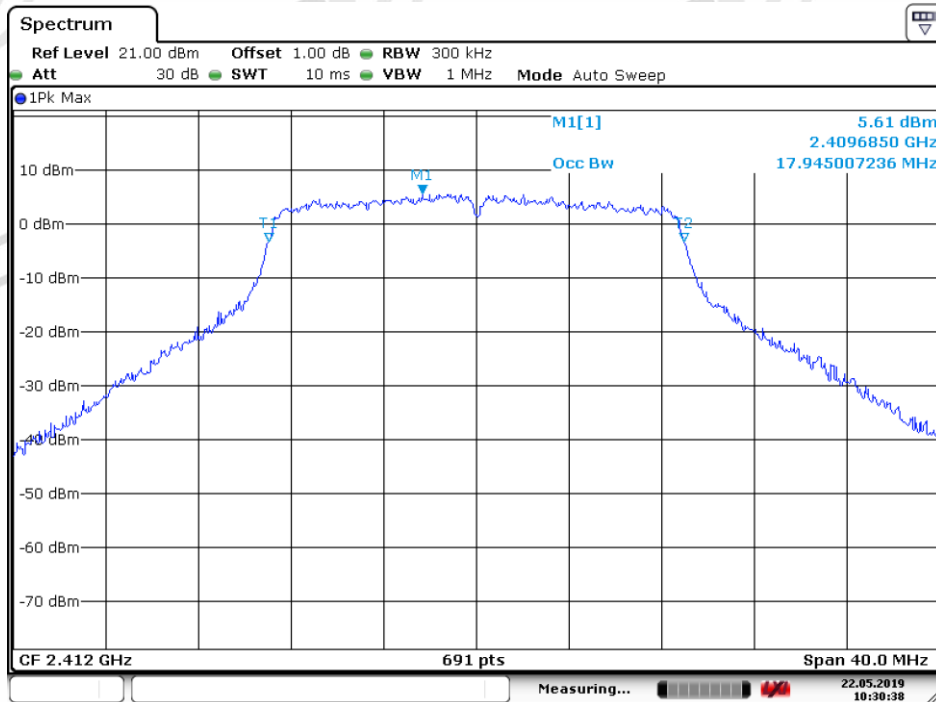


Date: 22.MAY.2019 10:16:47

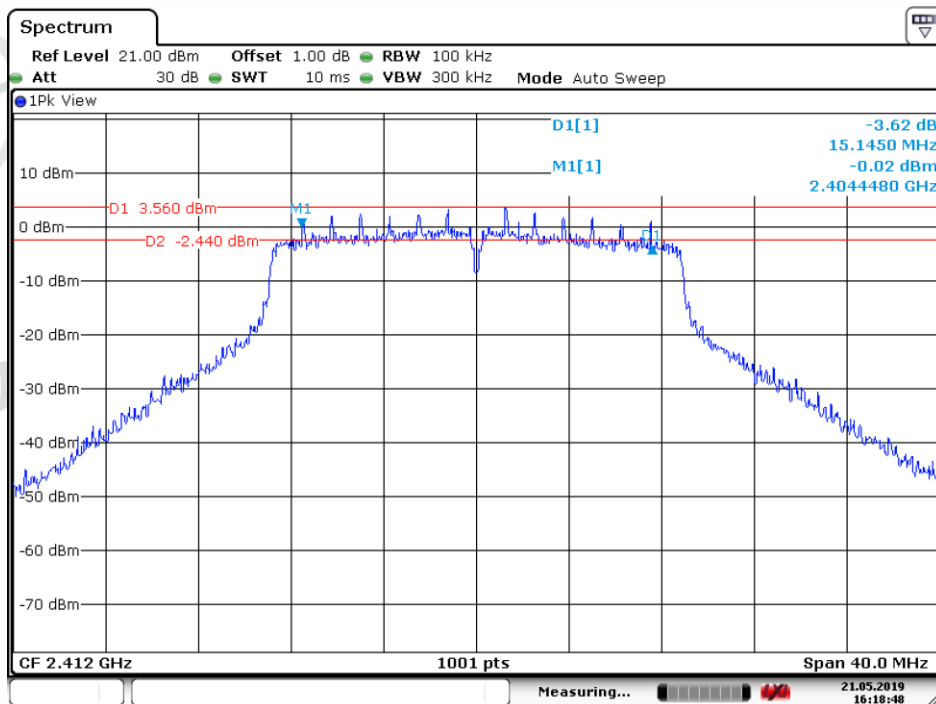


Date: 21.MAY.2019 16:22:02

802.11N20 Lowest Channel

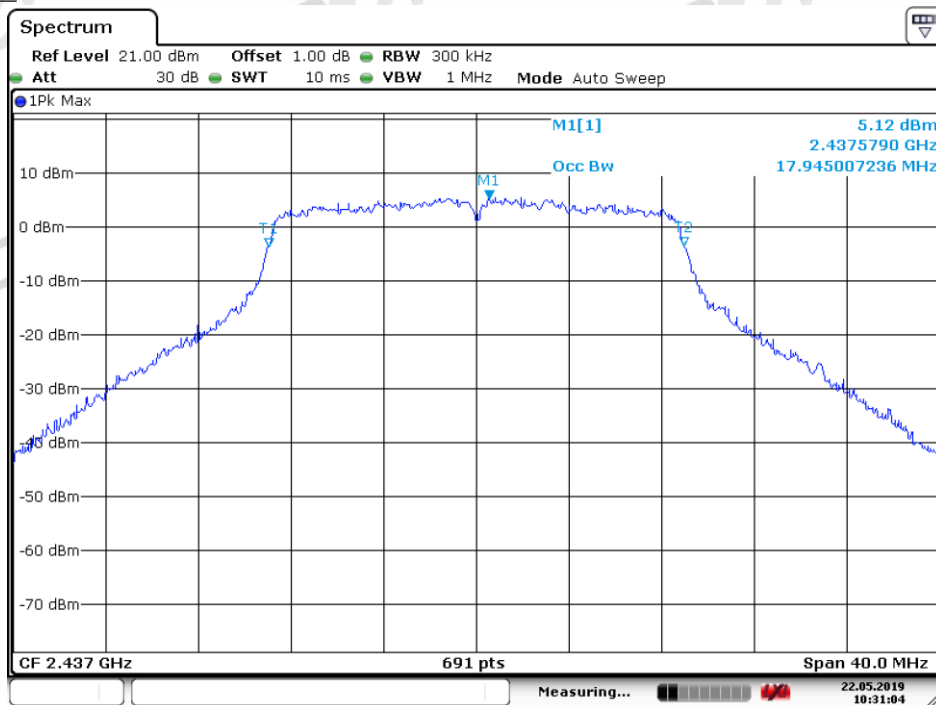


Date: 22.MAY.2019 10:30:38

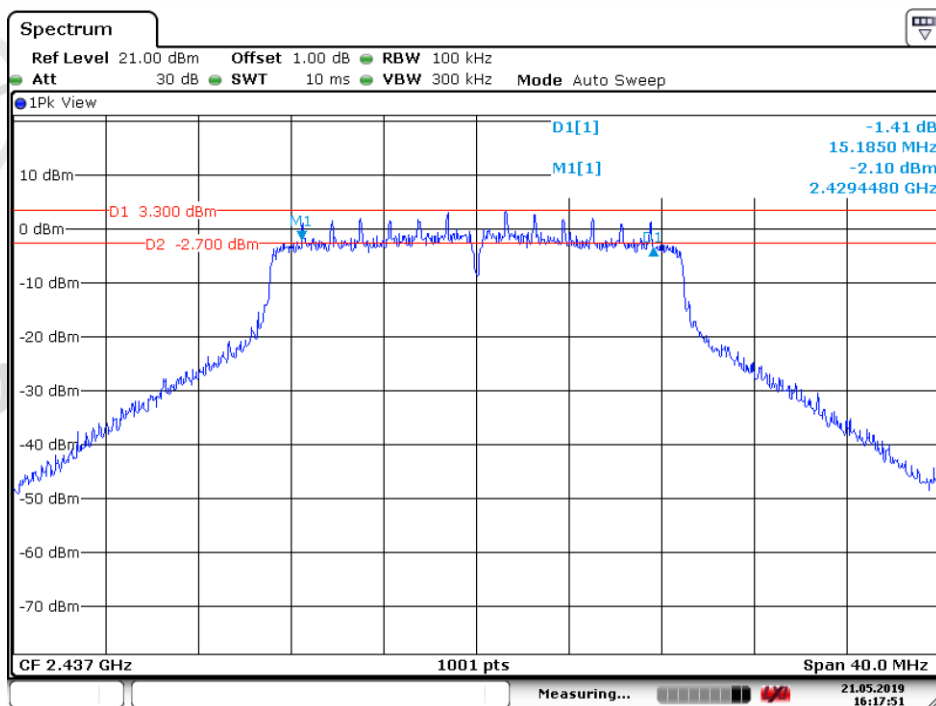


Date: 21.MAY.2019 16:18:49

802.11 N20 Middle Channel

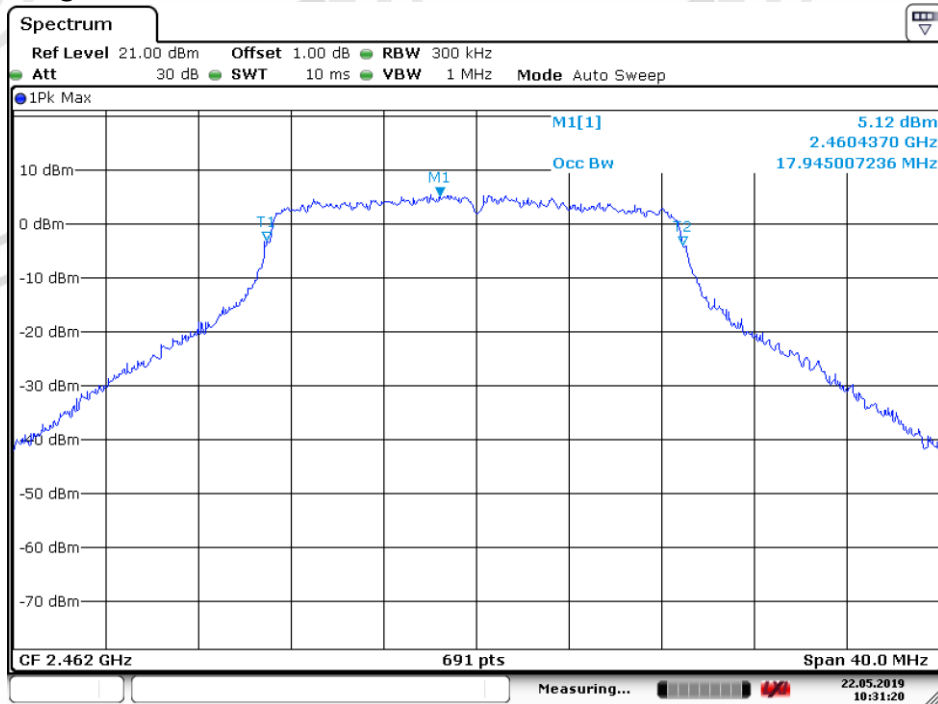


Date: 22.MAY.2019 10:31:04

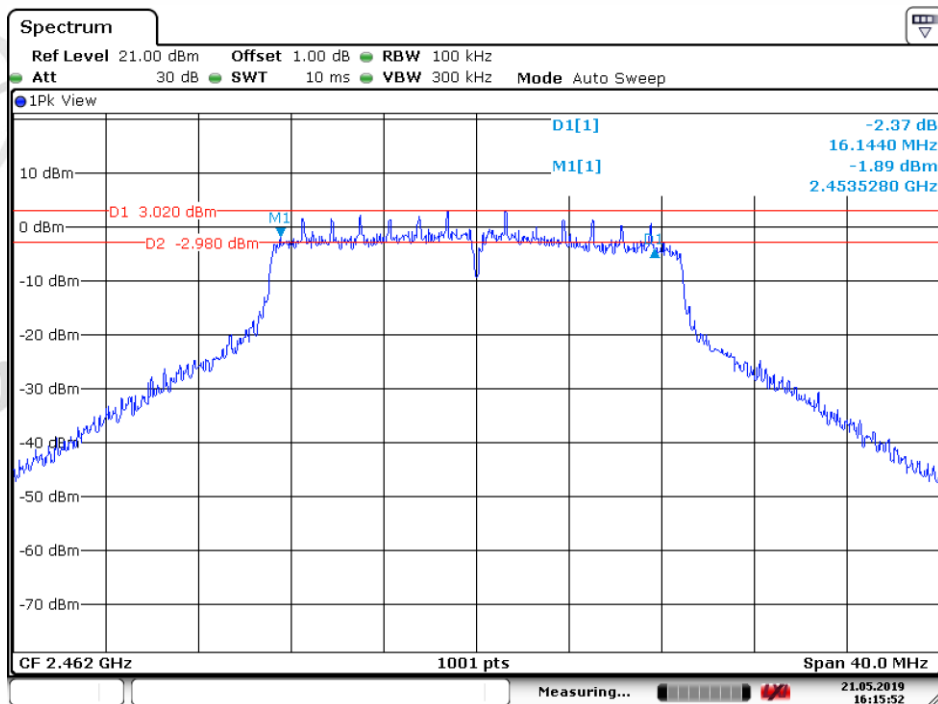


Date: 21.MAY.2019 16:17:52

802.11 N20_Highest Channel

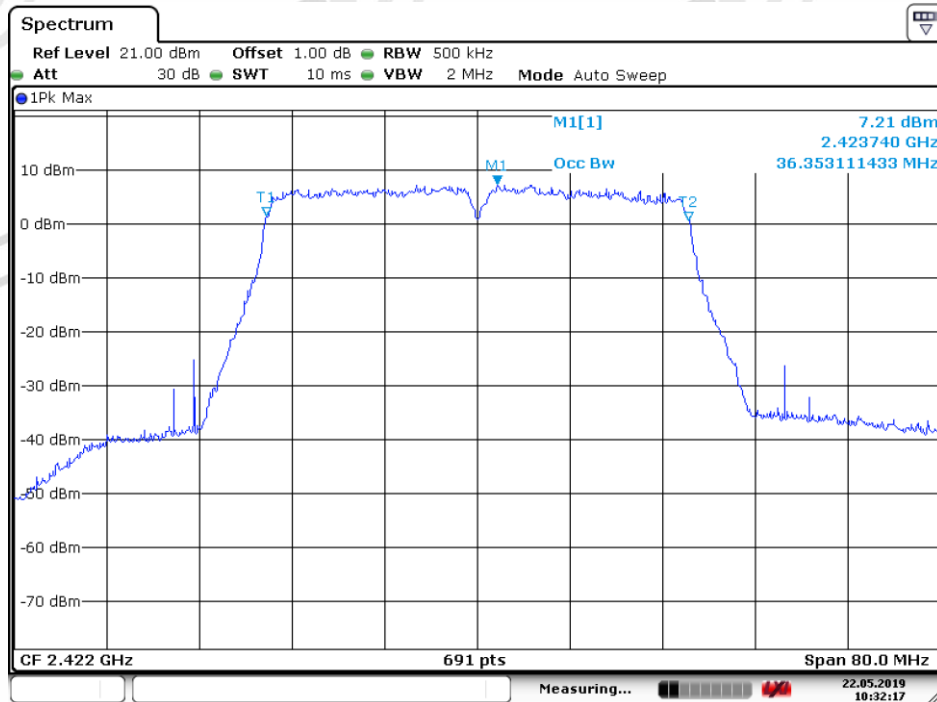


Date: 22.MAY.2019 10:31:21

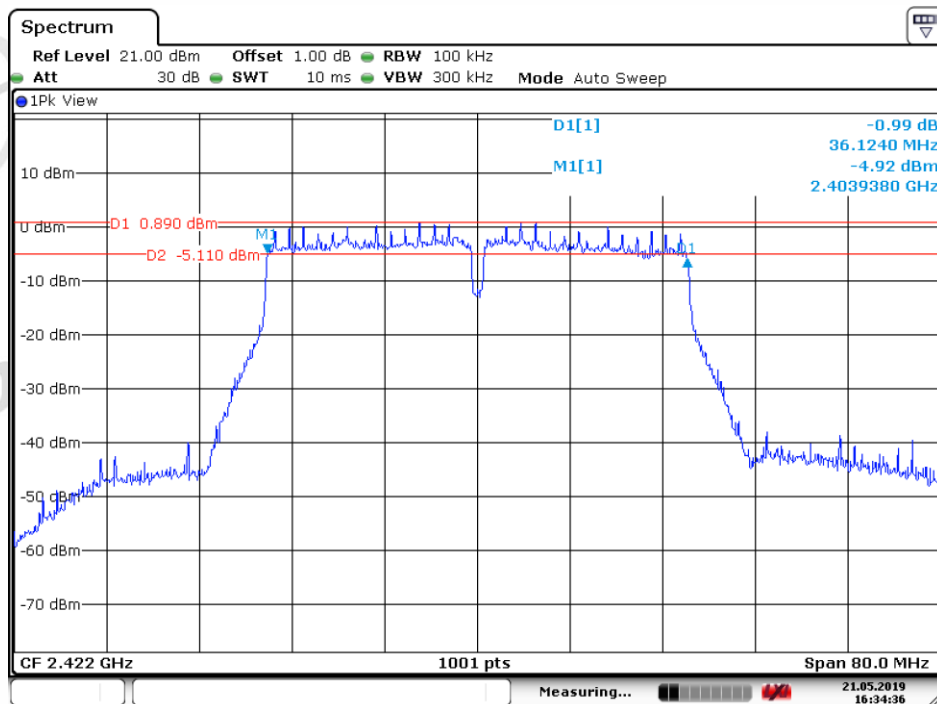


Date: 21.MAY.2019 16:15:52

802.11N40_Lowest Channel

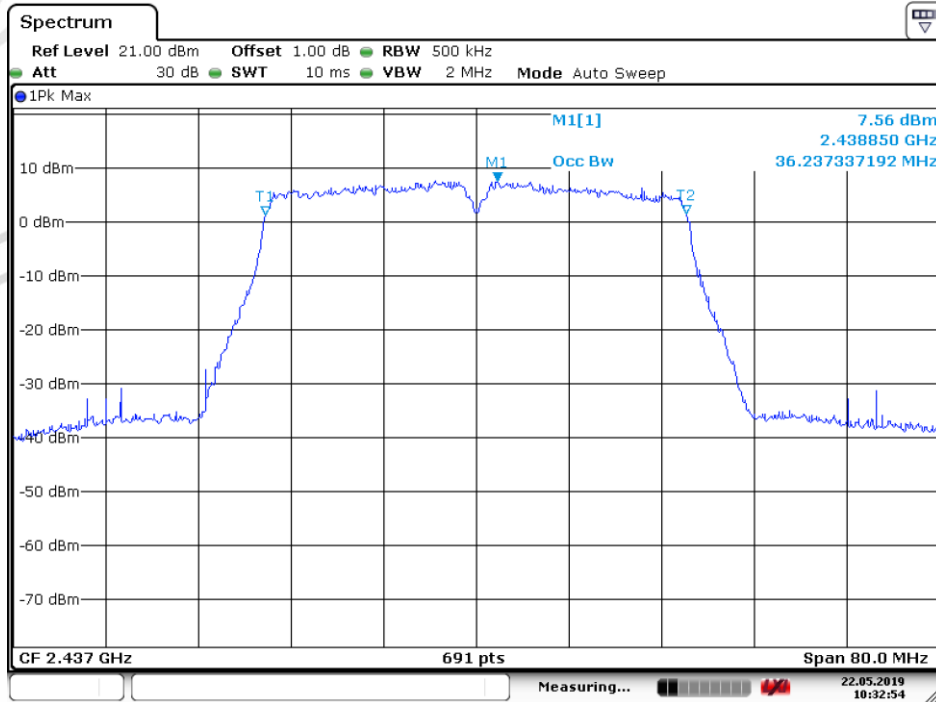


Date: 22.MAY.2019 10:32:18

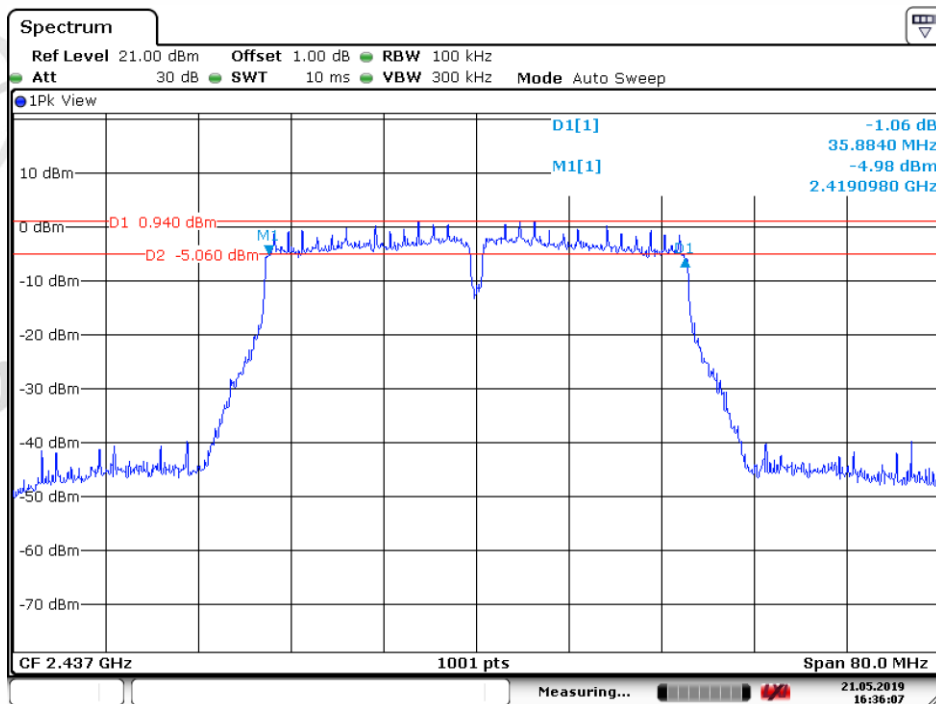


Date: 21.MAY.2019 16:34:37

802.11 N40 Middle Channel

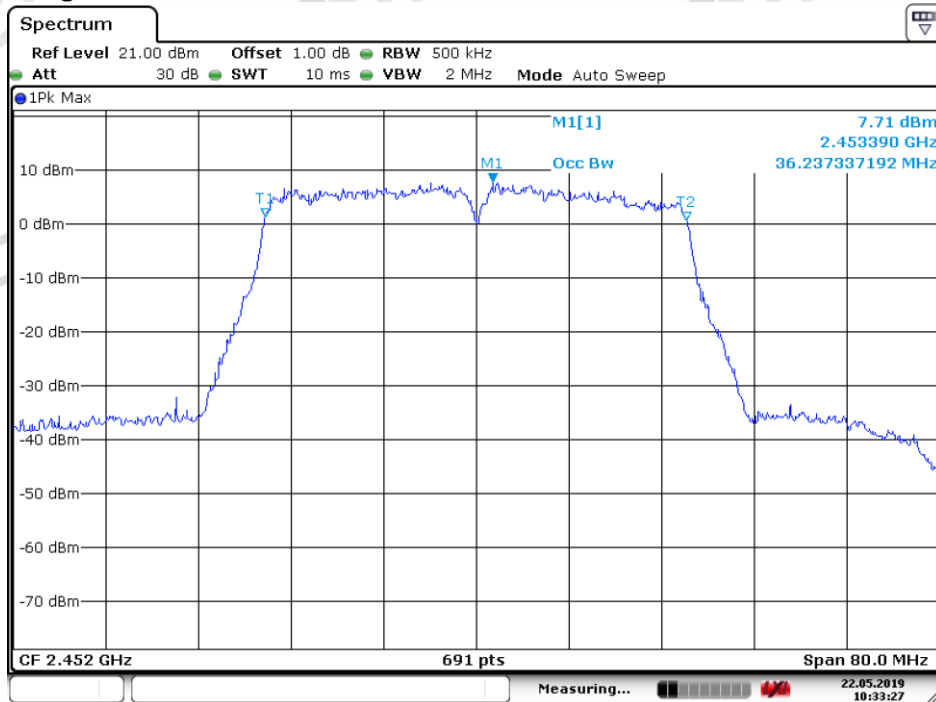


Date: 22.MAY.2019 10:32:54

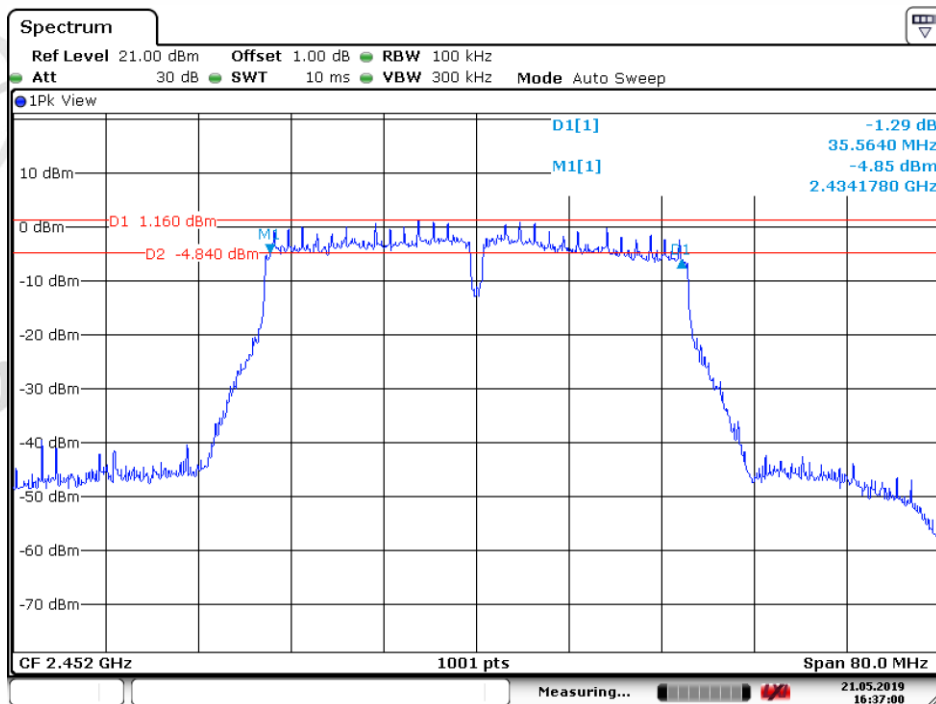


Date: 21.MAY.2019 16:36:07

802.11 N40_Highest Channel



Date: 22.MAY.2019 10:33:28



Date: 21.MAY.2019 16:37:00

Power Spectral Density

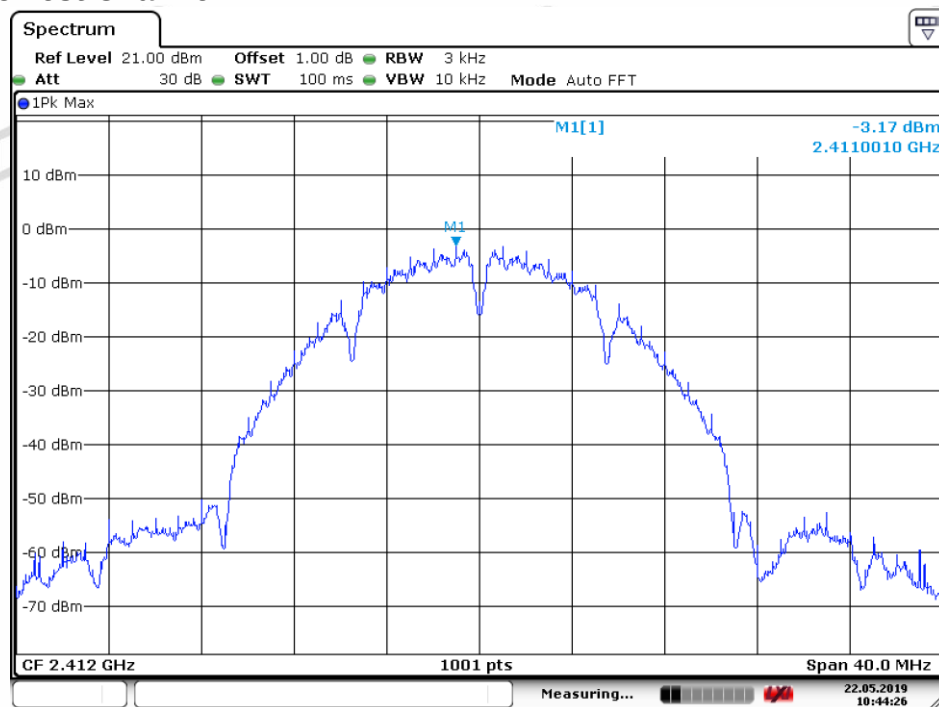
Test Results

Mode	Test Channel	Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)	Result
802.11B	Lowest	-3.17	≤8.00	Pass
	Middle	-3.45	≤8.00	Pass
	Highest	-3.34	≤8.00	Pass
802.11G	Lowest	-9.14	≤8.00	Pass
	Middle	-8.87	≤8.00	Pass
	Highest	-9.42	≤8.00	Pass
802.11N20	Lowest	-10.63	≤8.00	Pass
	Middle	-11.06	≤8.00	Pass
	Highest	-10.48	≤8.00	Pass
802.11N40	Lowest	-12.66	≤8.00	Pass
	Middle	-13.04	≤8.00	Pass
	Highest	-12.58	≤8.00	Pass

Test plots

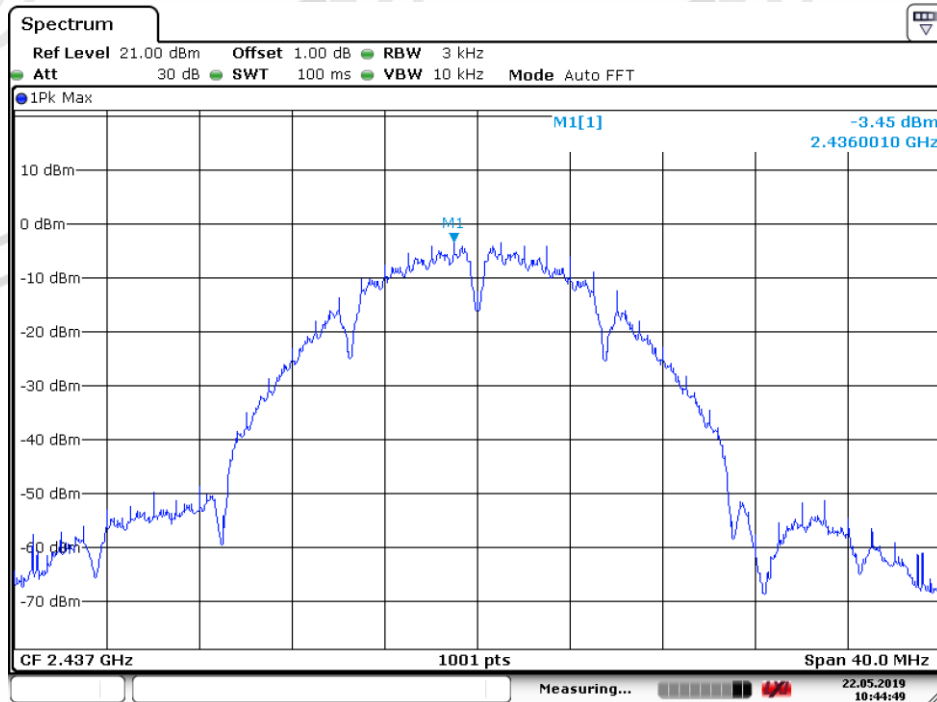
ANT1

802.11B_Lowest Channel



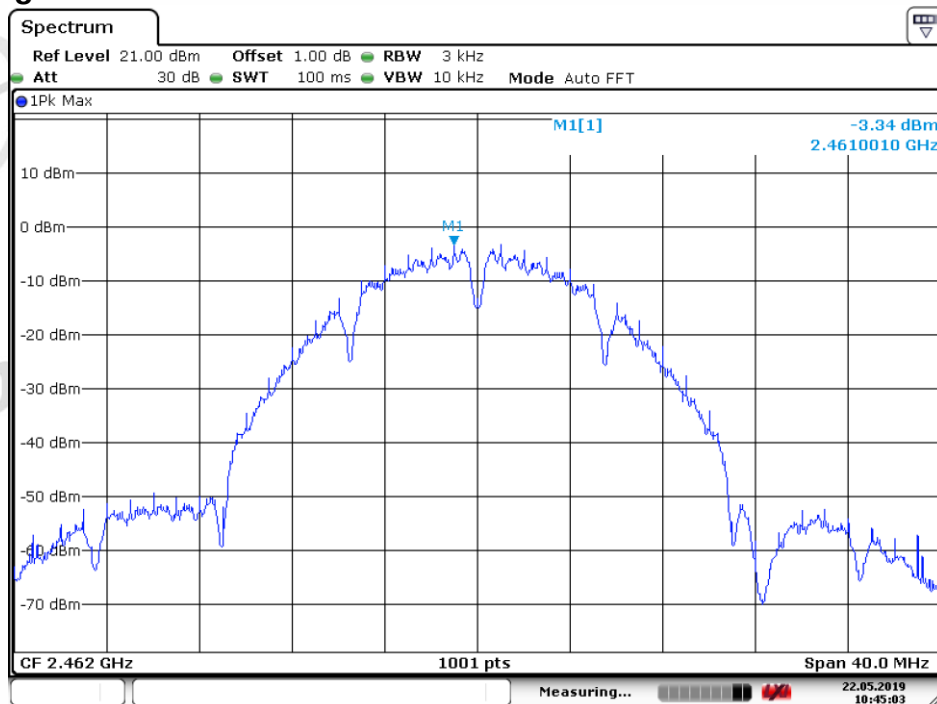
Date: 22.MAY.2019 10:44:27

802.11B_Middle Channel



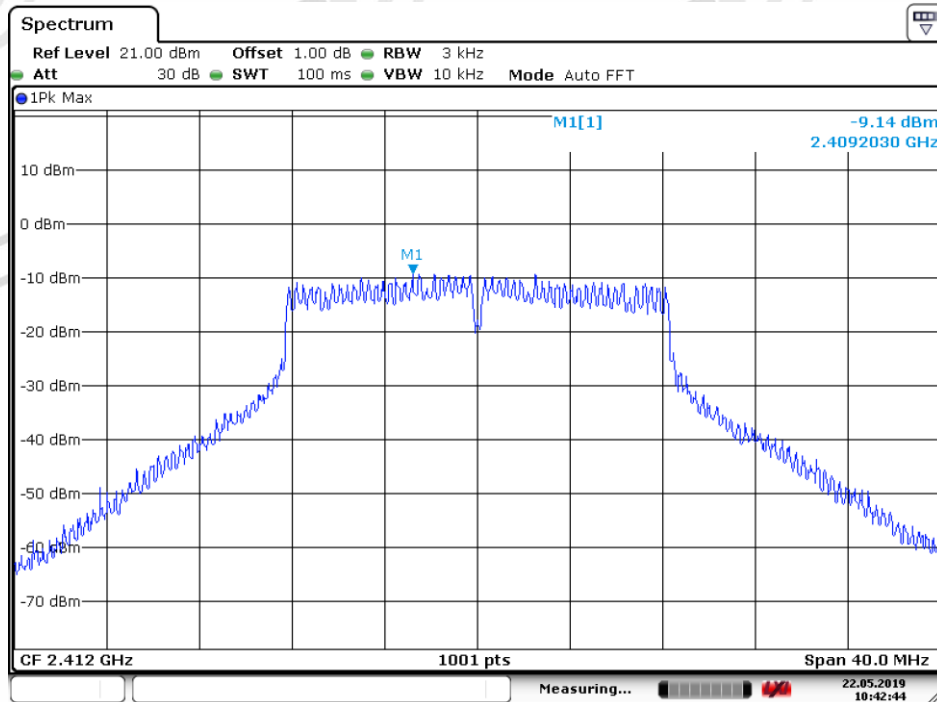
Date: 22.MAY.2019 10:44:49

802.11B_Highest Channel



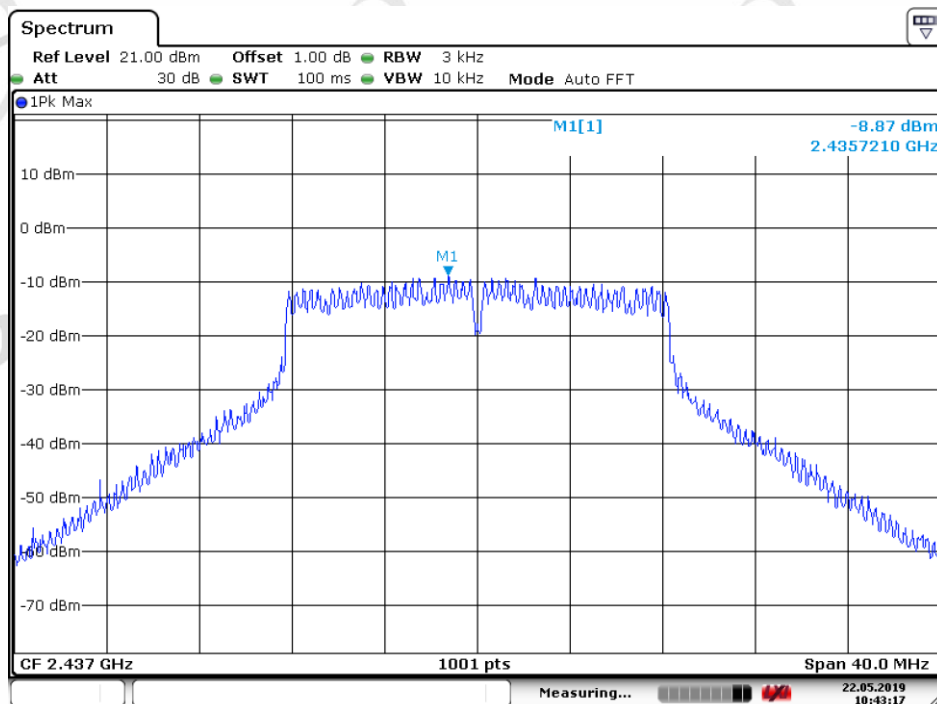
Date: 22.MAY.2019 10:45:03

802.11G_Lowest Channel



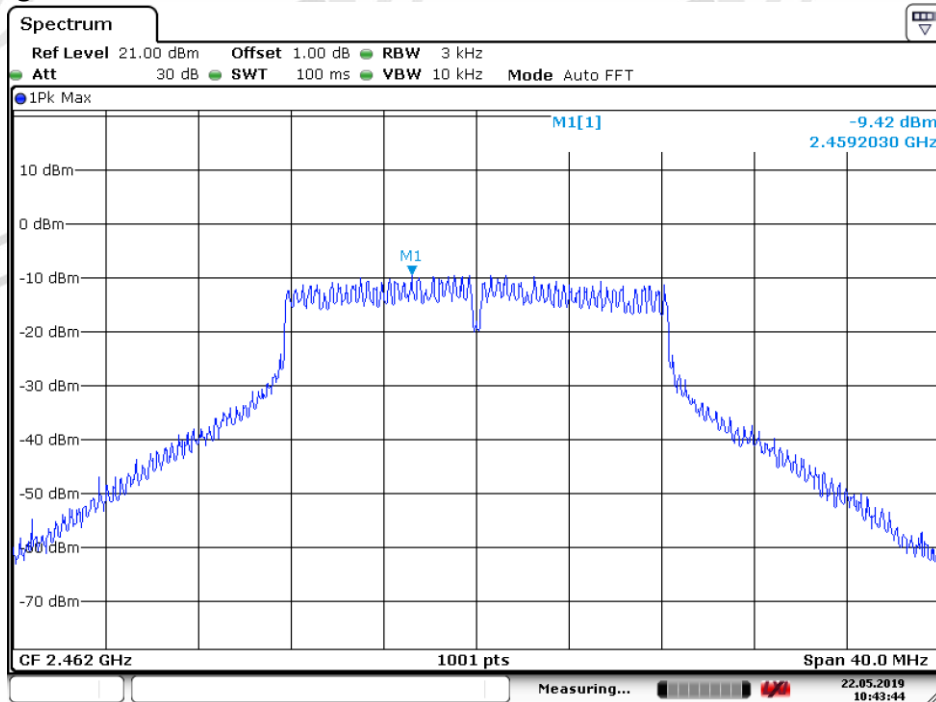
Date: 22.MAY.2019 10:42:45

802.11G_Middle Channel



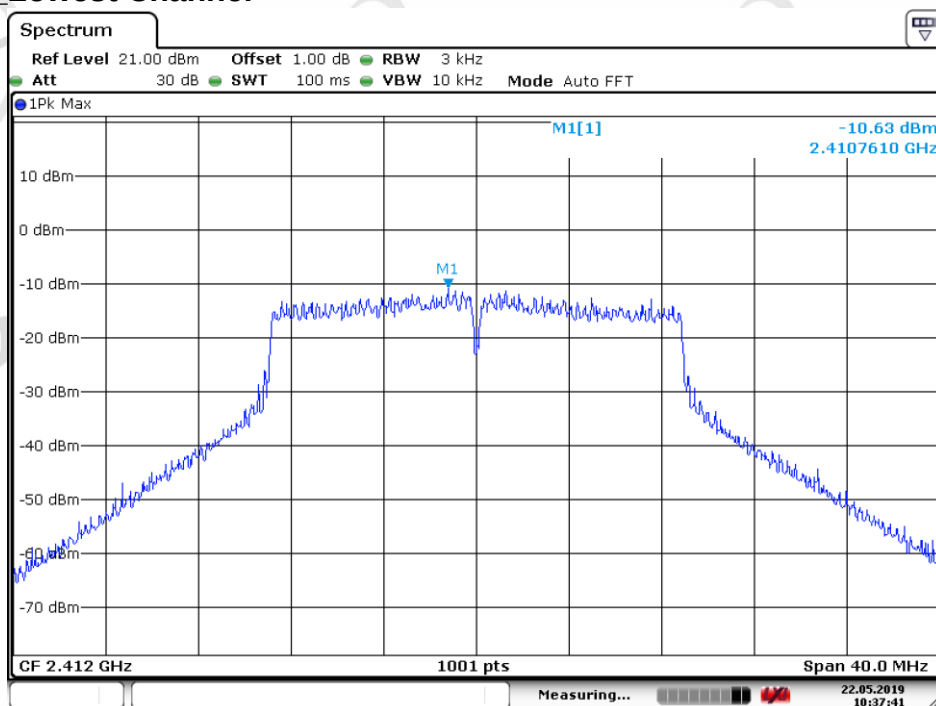
Date: 22.MAY.2019 10:43:17

802.11G_Highest Channel



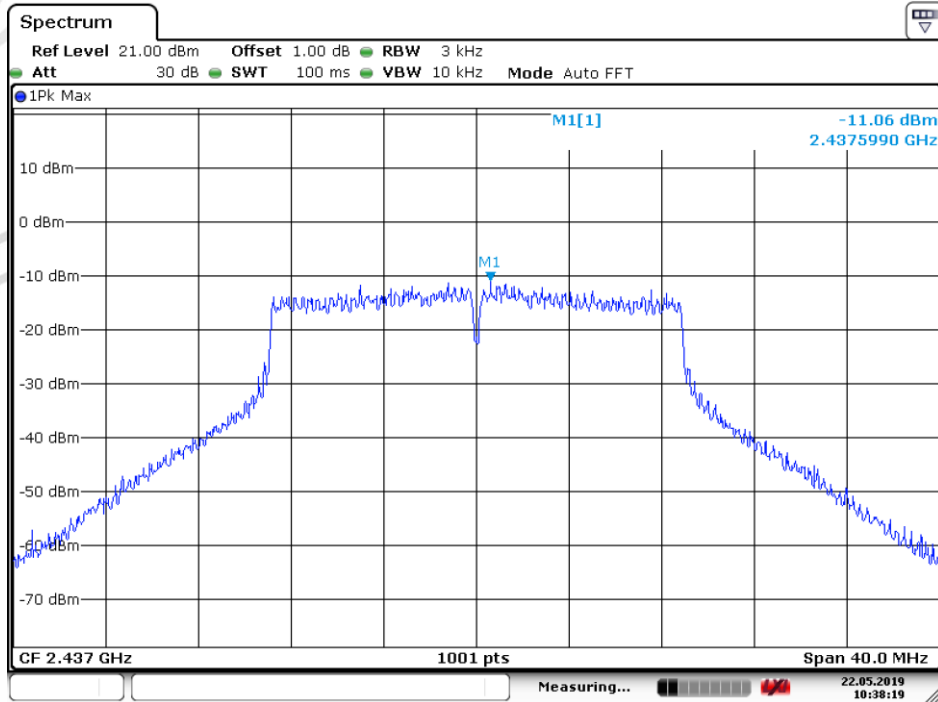
Date: 22.MAY.2019 10:43:44

802.11N20_Lowest Channel



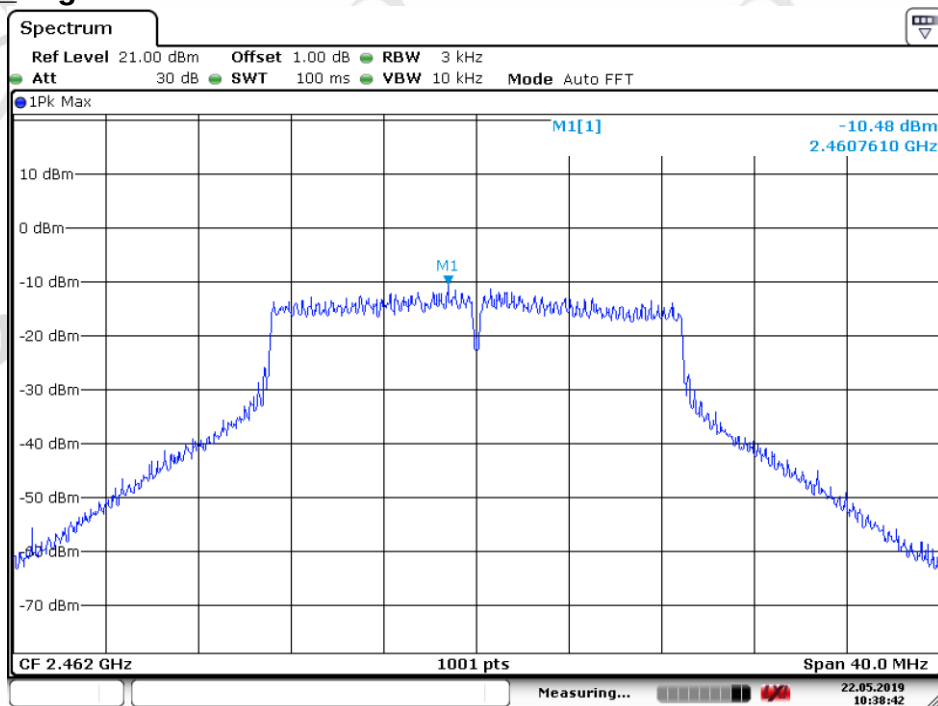
Date: 22.MAY.2019 10:37:41

802.11 N20 Middle Channel



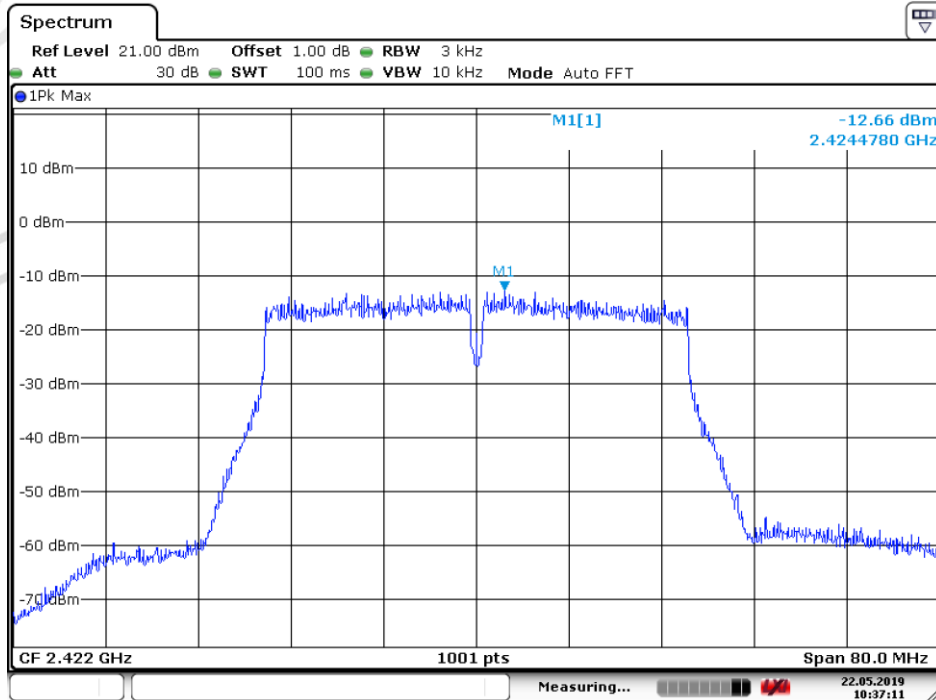
Date: 22.MAY.2019 10:38:20

802.11 N20 Highest Channel



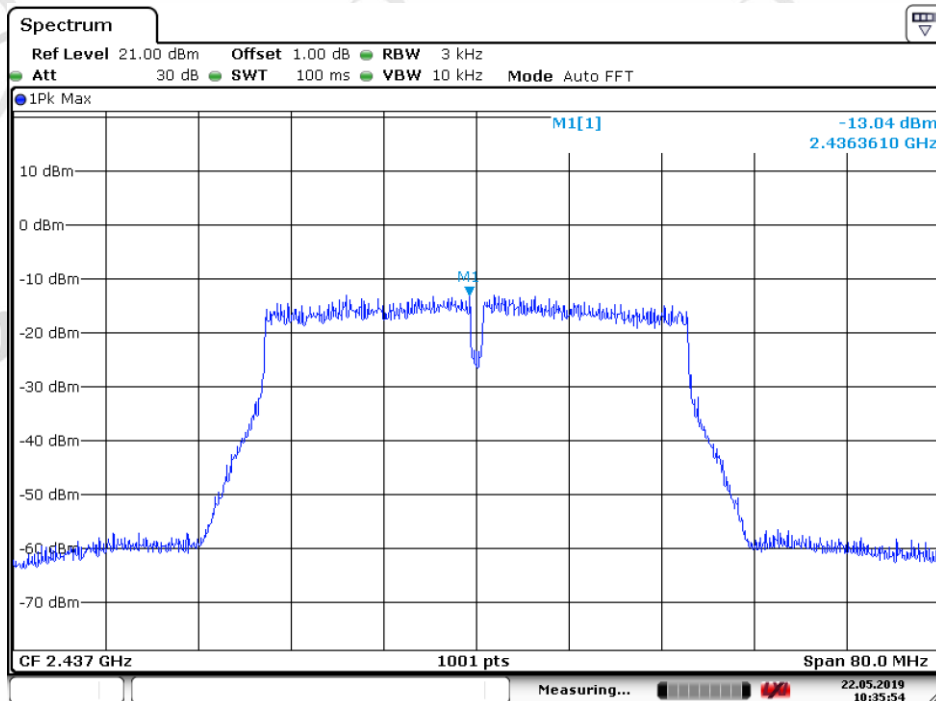
Date: 22.MAY.2019 10:38:42

802.11N40 Lowest Channel



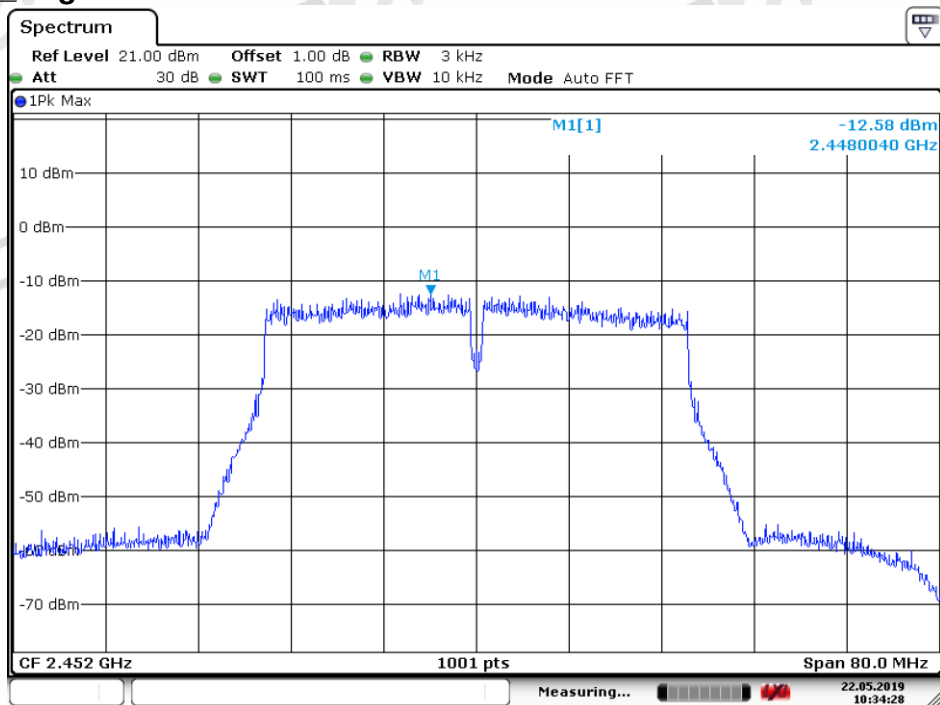
Date: 22.MAY.2019 10:37:12

802.11 N40 Middle Channel



Date: 22.MAY.2019 10:35:54

802.11 N40_Highest Channel



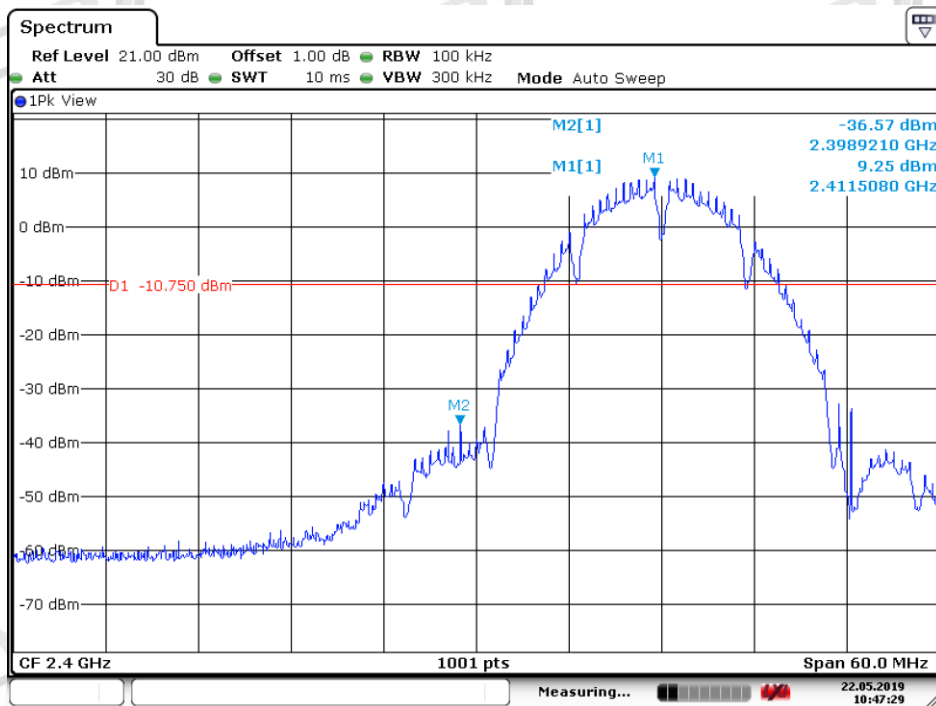
Date: 22.MAY.2019 10:34:29

Band-edge for RF Conducted Emissions

Test plots

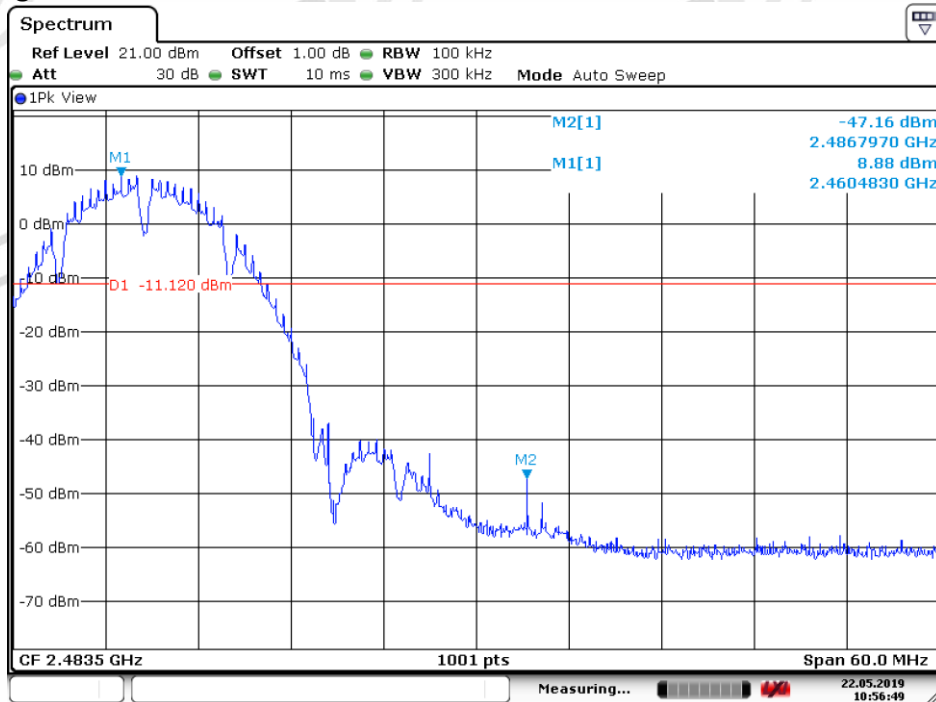
ANT1

802.11B_Lowest Channel



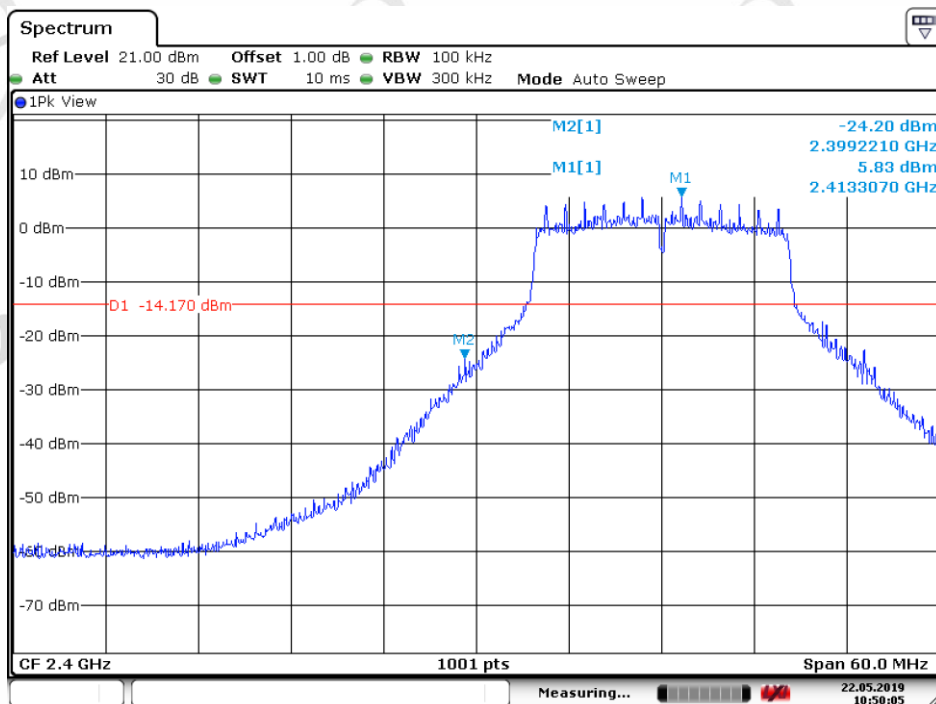
Date: 22.MAY.2019 10:47:30

802.11B_Highest Channel



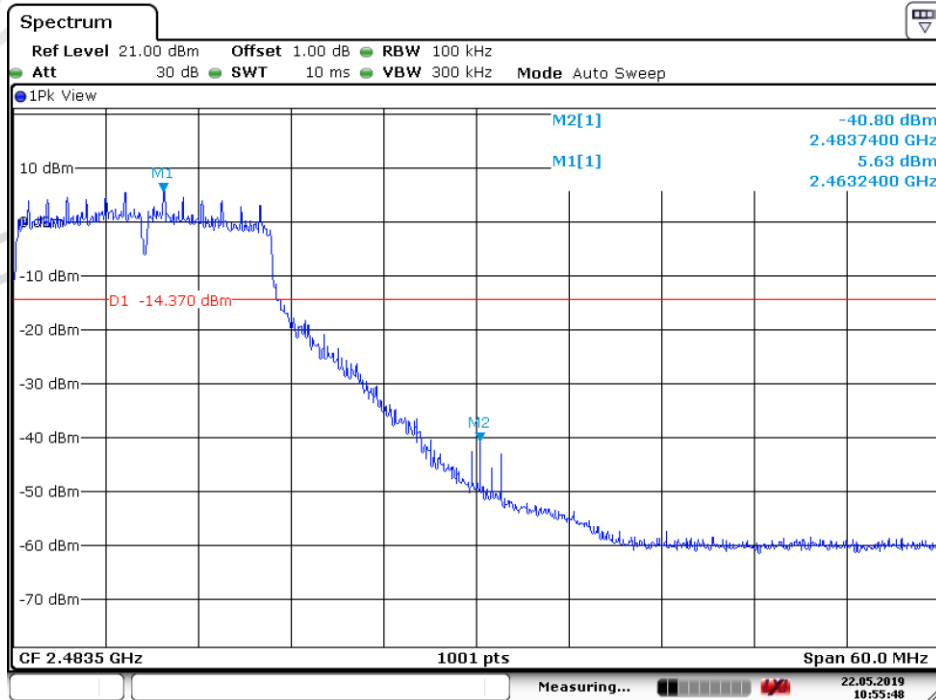
Date: 22.MAY.2019 10:56:49

802.11G_Lowest Channel



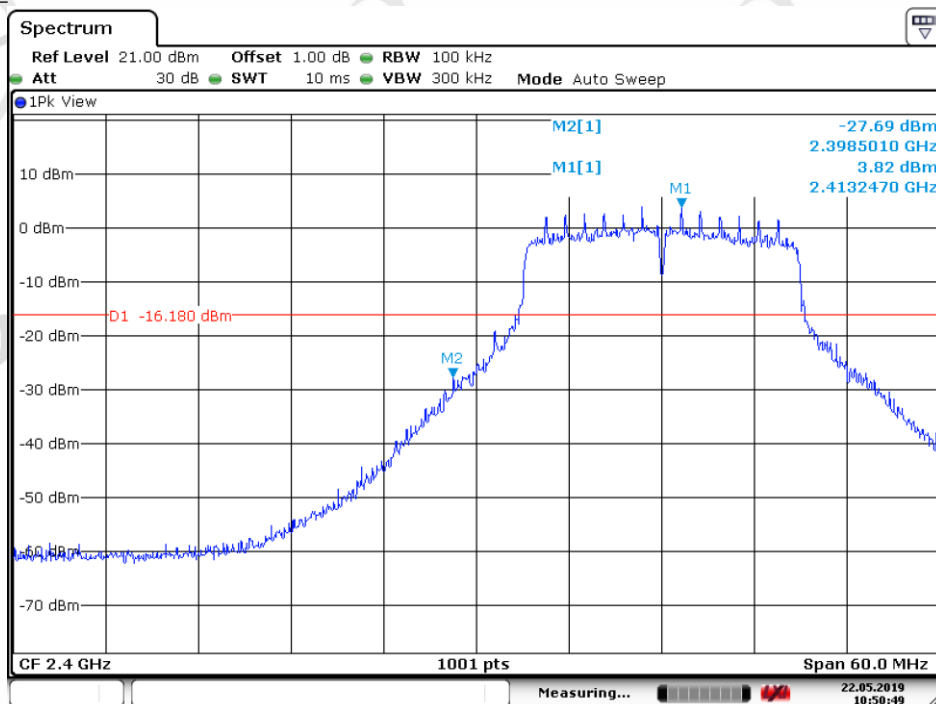
Date: 22.MAY.2019 10:50:06

802.11G_Highest Channel



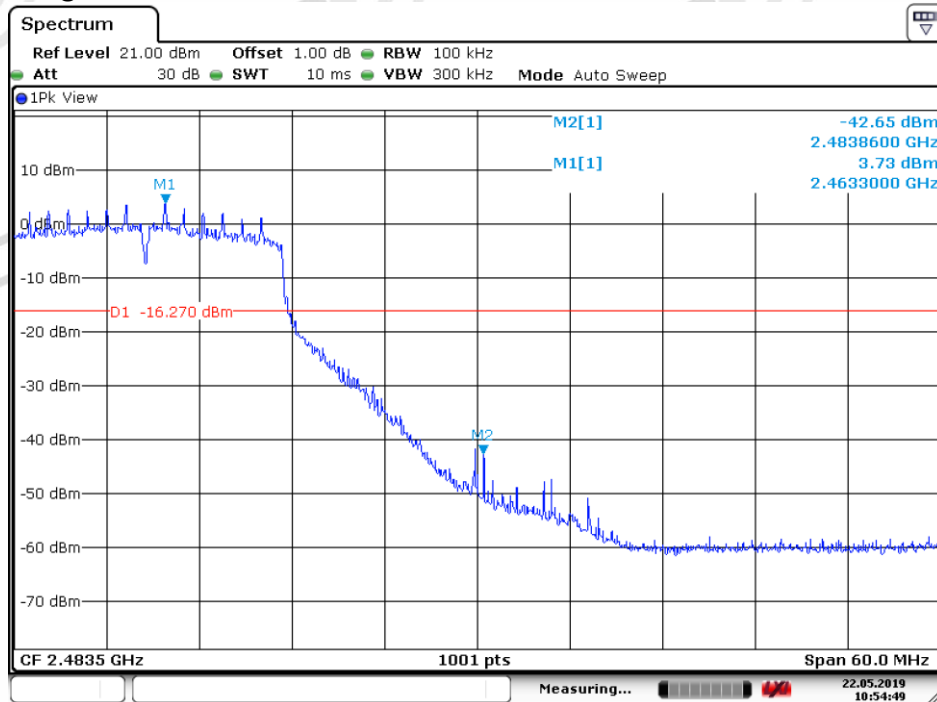
Date: 22.MAY.2019 10:55:48

802.11N20_Lowest Channel



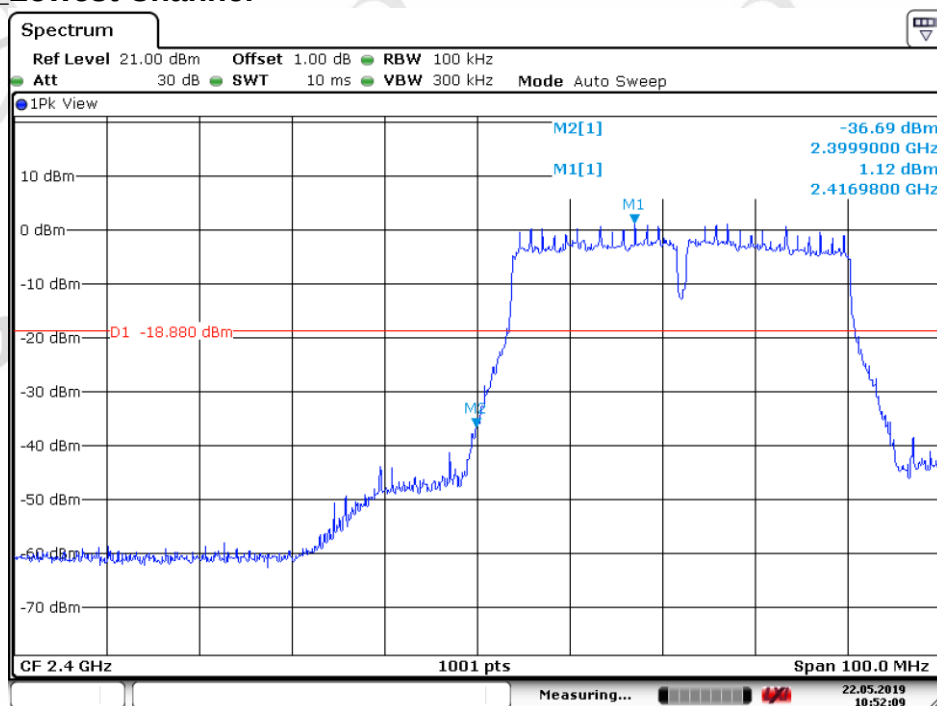
Date: 22.MAY.2019 10:50:49

802.11 N20_Highest Channel



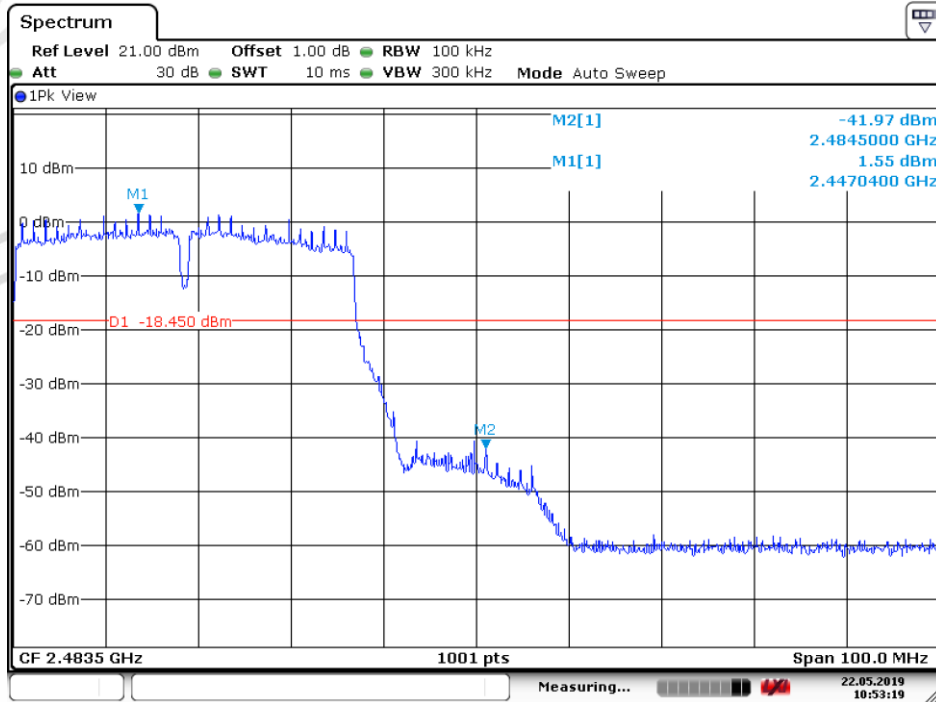
Date: 22.MAY.2019 10:54:49

802.11N40_Lowest Channel



Date: 22.MAY.2019 10:52:09

802.11 N40_Highest Channel



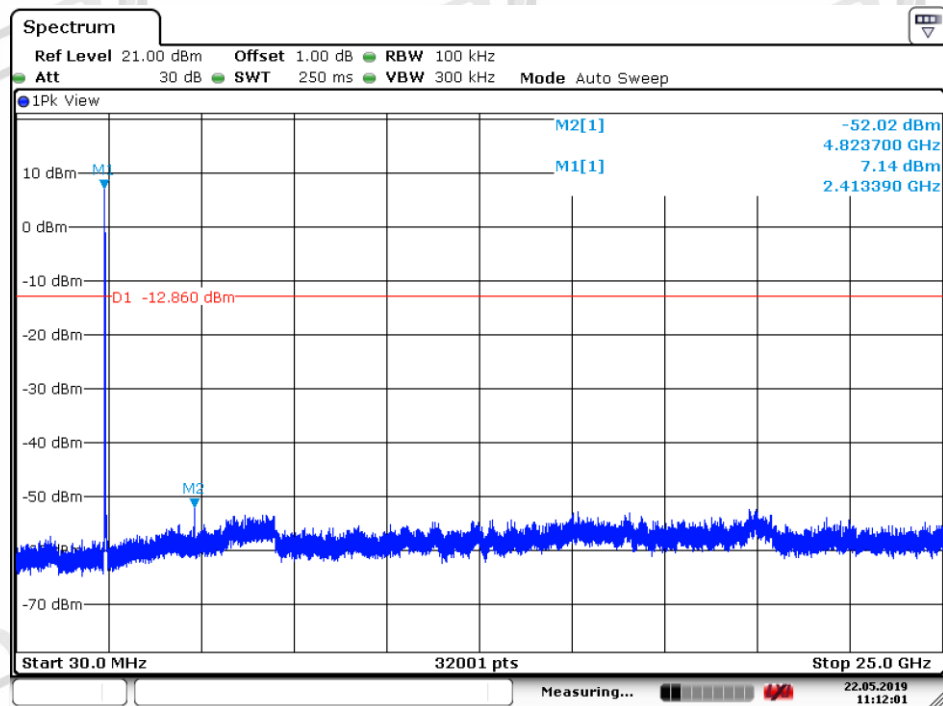
Date: 22.MAY.2019 10:53:19

RF Conducted Spurious Emissions

Test plots

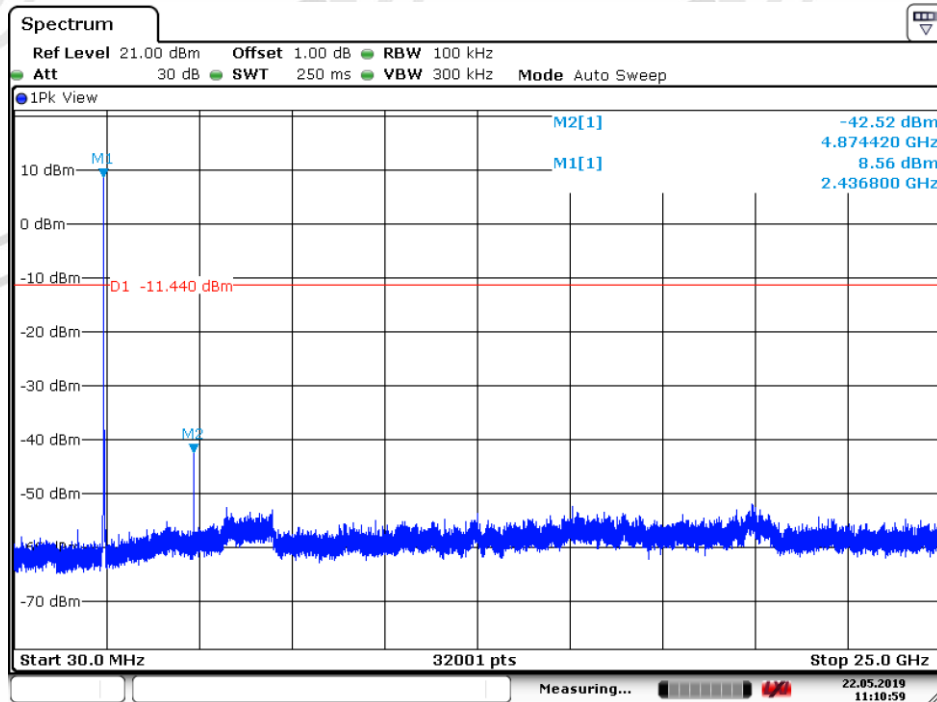
ANT1

802.11B_Lowest Channel



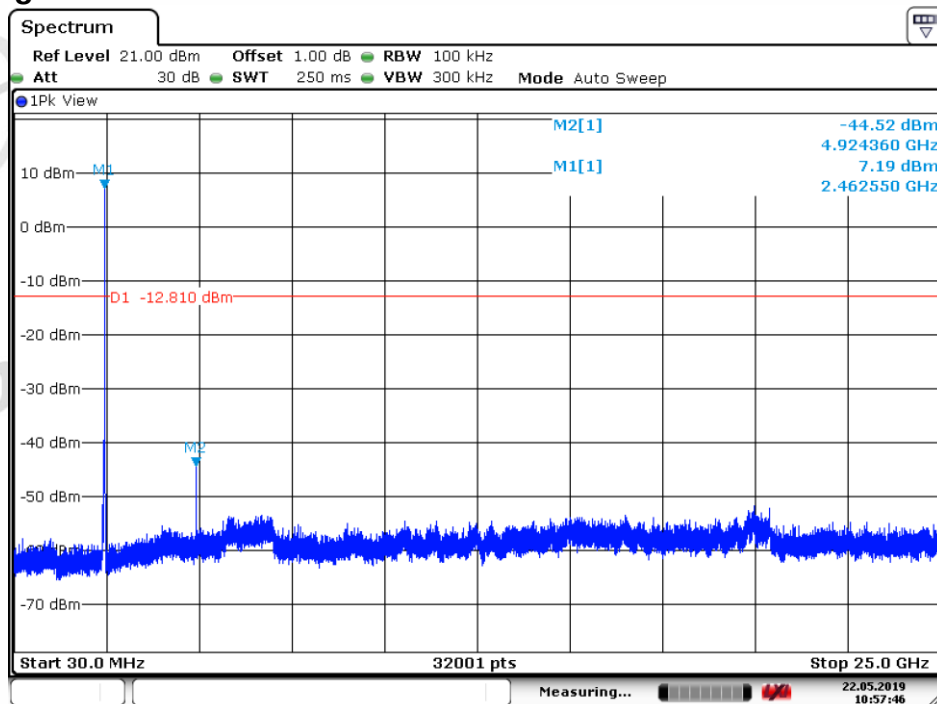
Date: 22.MAY.2019 11:12:01

802.11B_Middle Channel



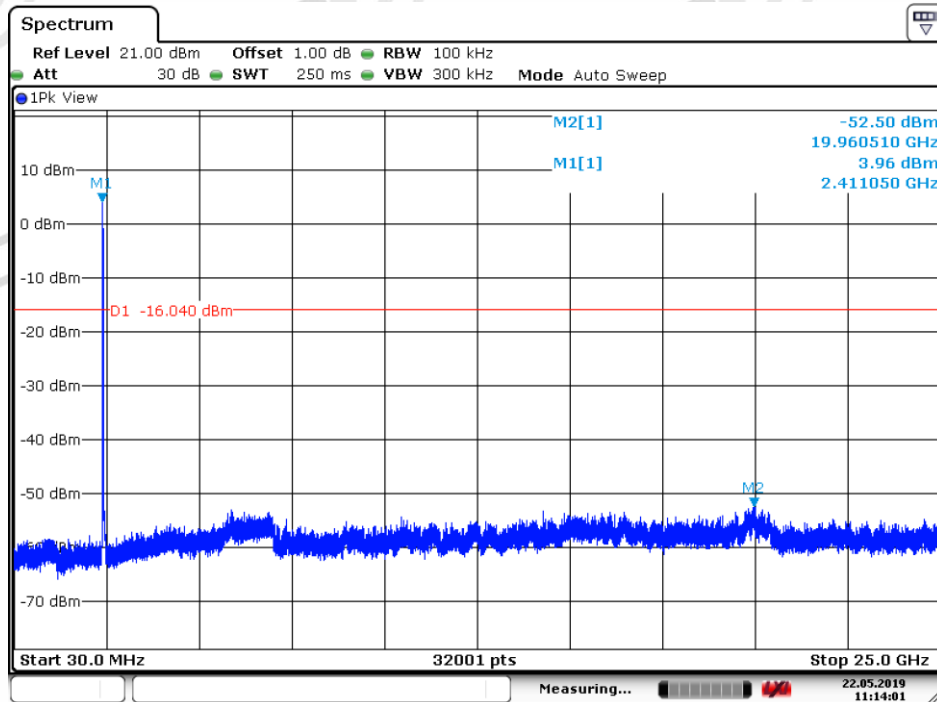
Date: 22.MAY.2019 11:10:59

802.11B_Highest Channel



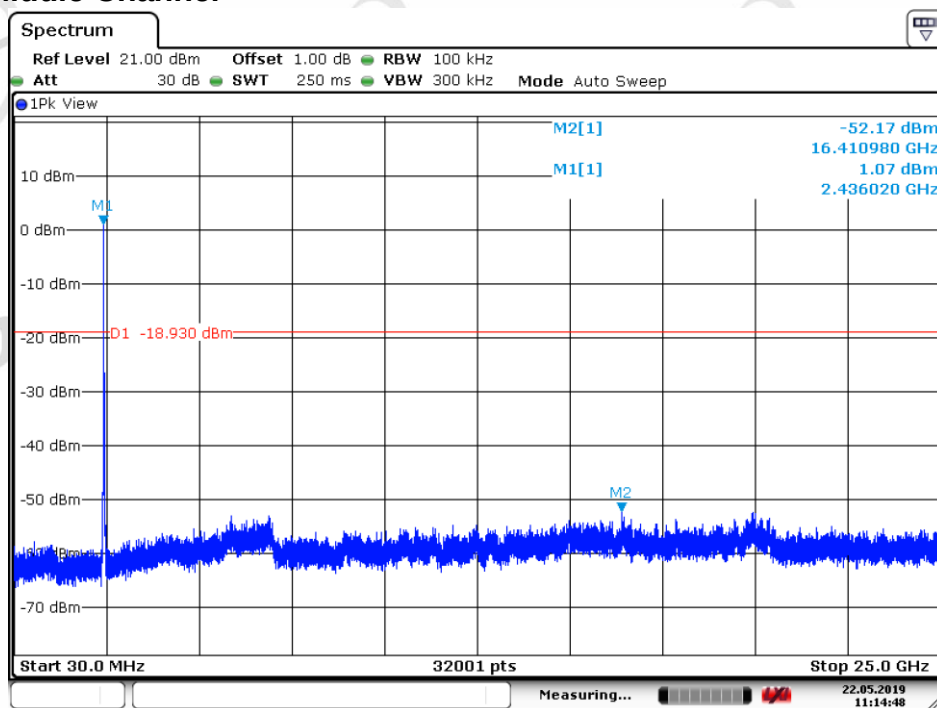
Date: 22.MAY.2019 10:57:47

802.11G_Lowest Channel



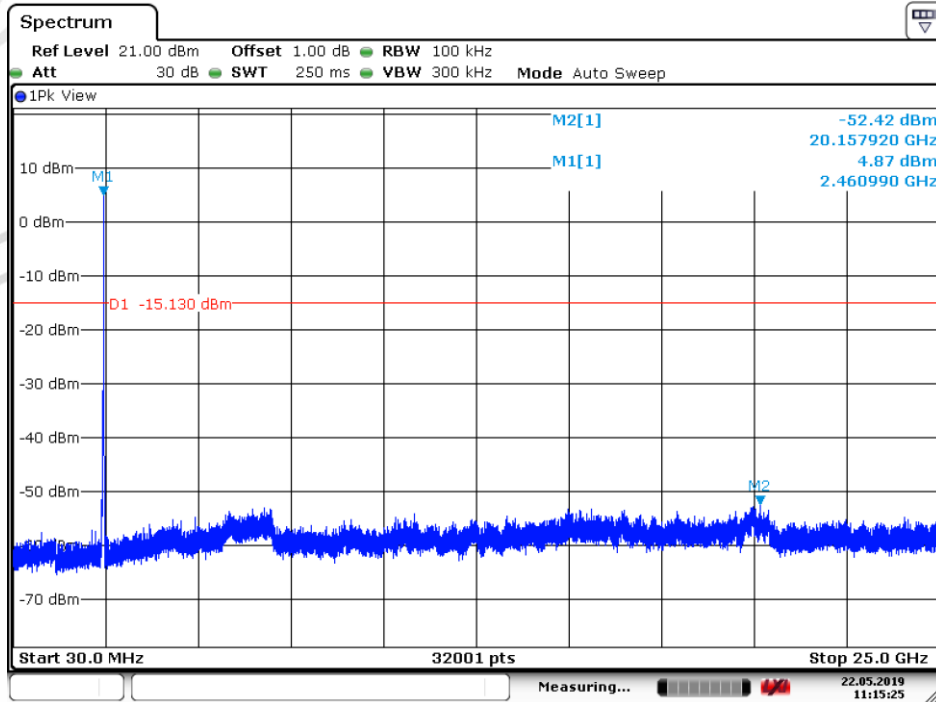
Date: 22.MAY.2019 11:14:02

802.11G_Middle Channel



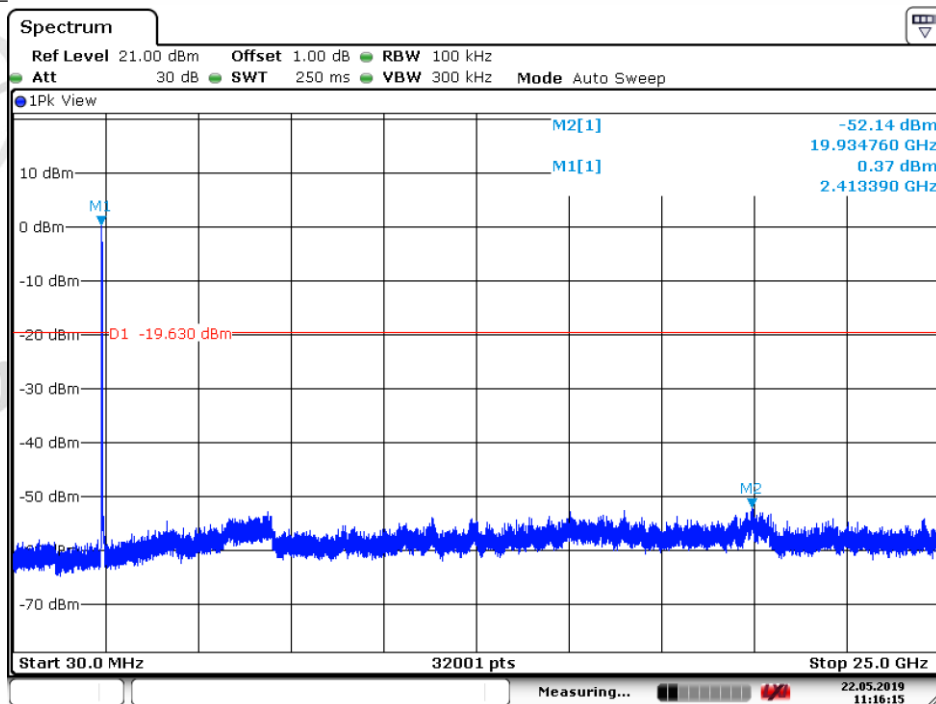
Date: 22.MAY.2019 11:14:48

802.11G_Highest Channel



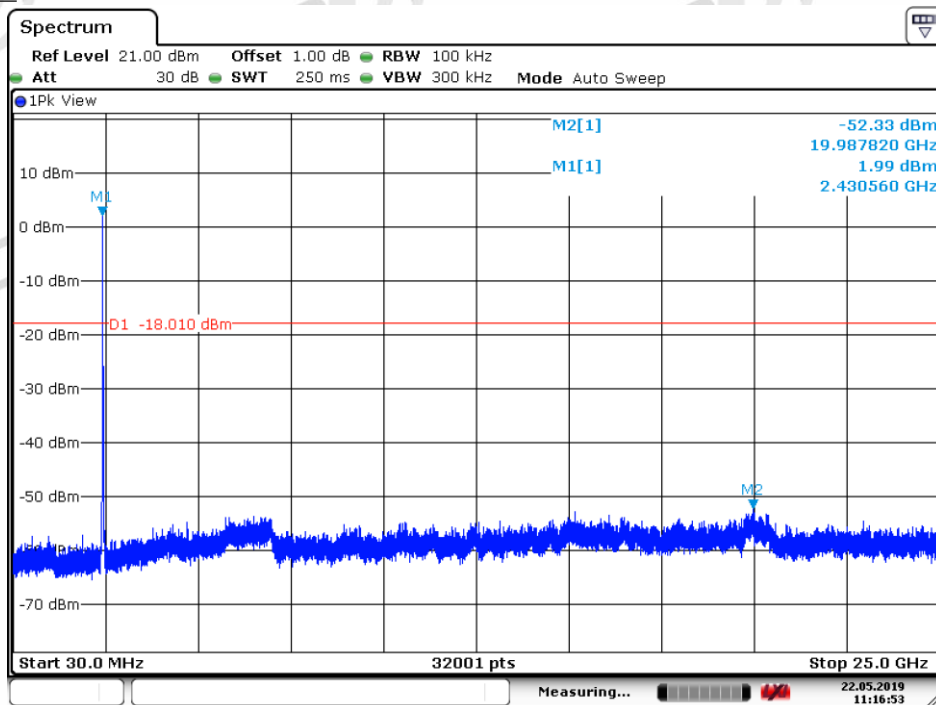
Date: 22.MAY.2019 11:15:25

802.11N20_Lowest Channel



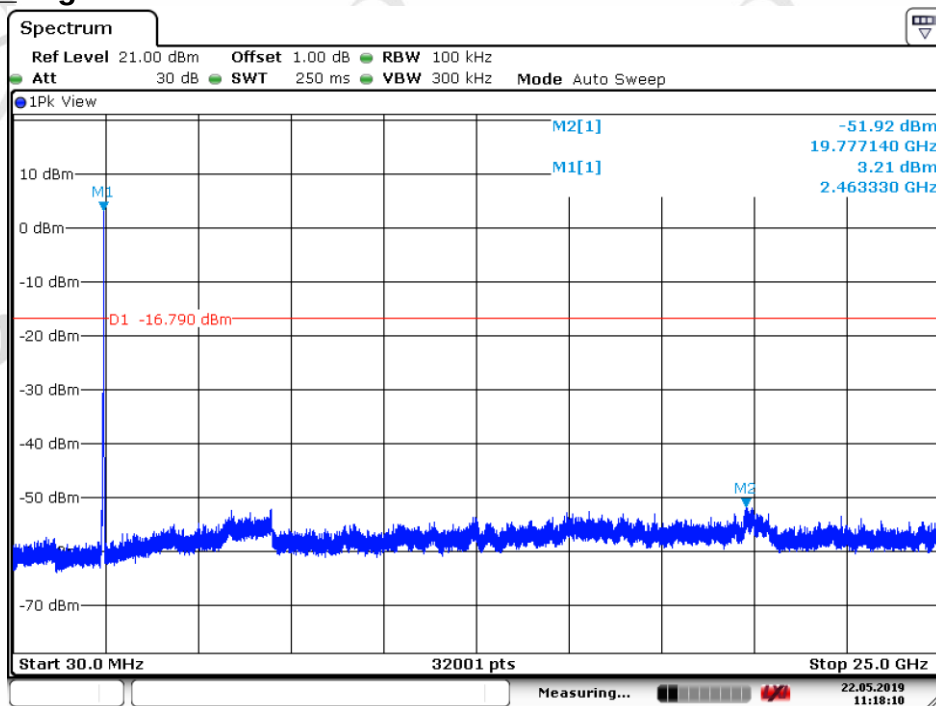
Date: 22.MAY.2019 11:16:15

802.11 N20 Middle Channel



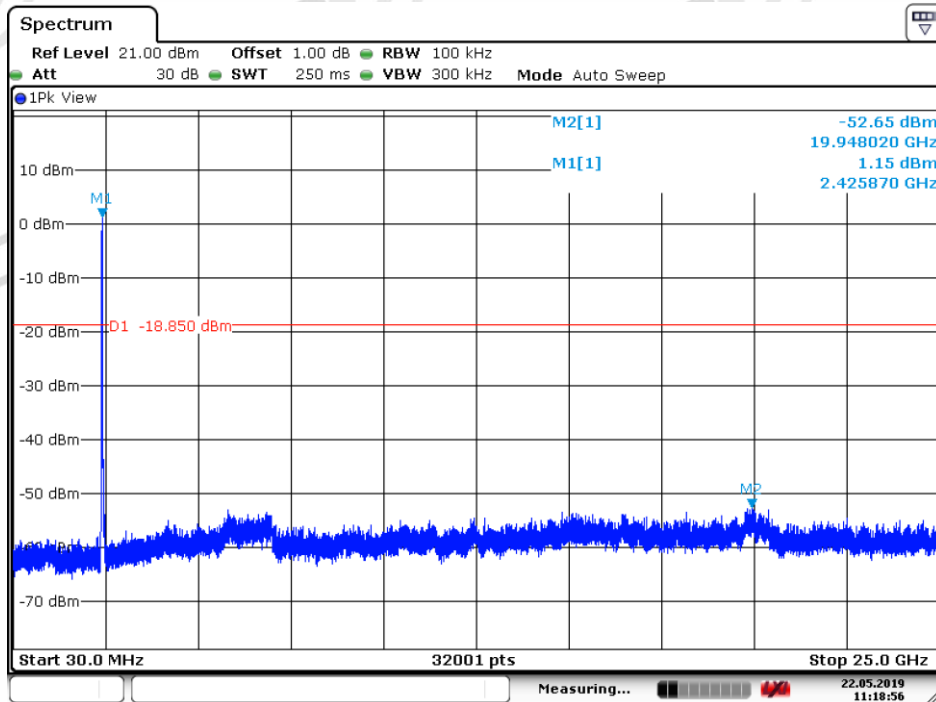
Date: 22.MAY.2019 11:16:54

802.11 N20 Highest Channel



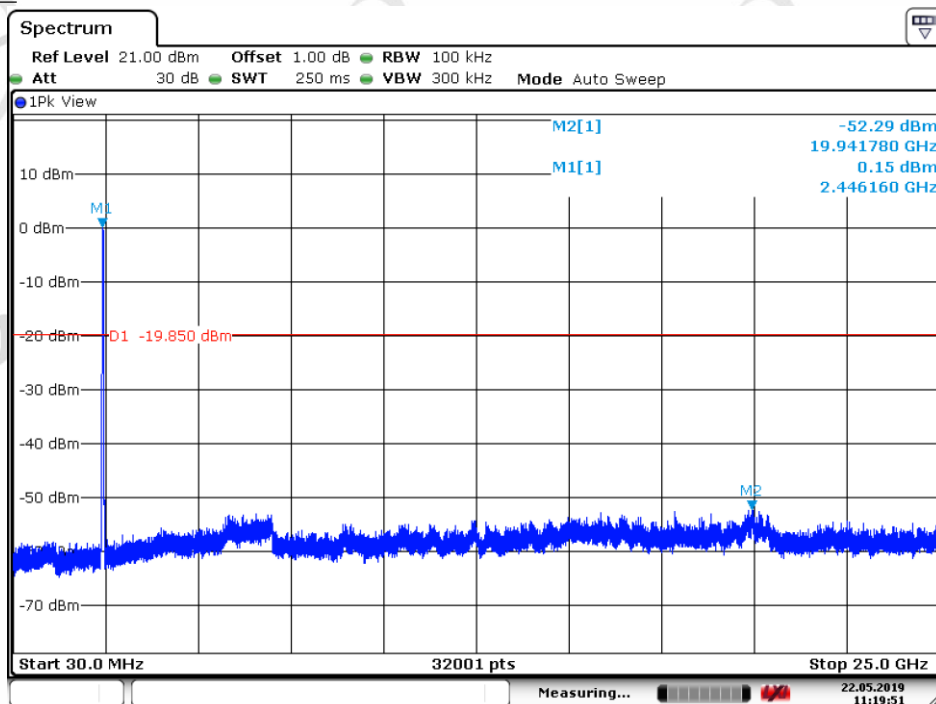
Date: 22.MAY.2019 11:18:11

802.11N40 Lowest Channel



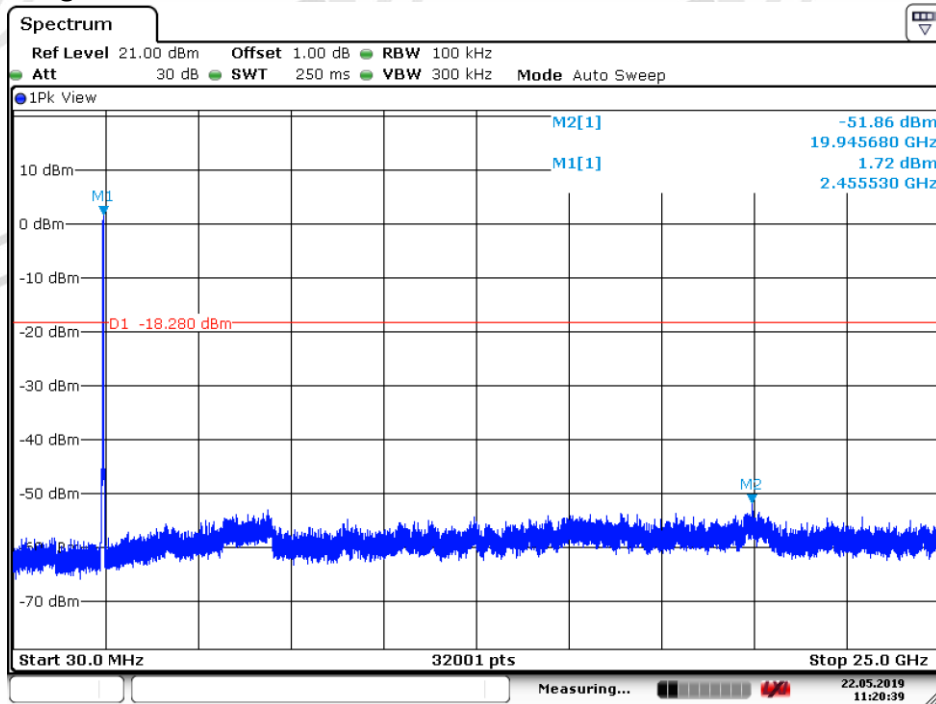
Date: 22.MAY.2019 11:18:57

802.11 N40 Middle Channel



Date: 22.MAY.2019 11:19:51

802.11 N40_Highest Channel



Date: 22.MAY.2019 11:20:40

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.

The End