

Appendix

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1. Equipment List

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

2. 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	Conduct emission test	±3.12 dB (9KHz- 30MHz)

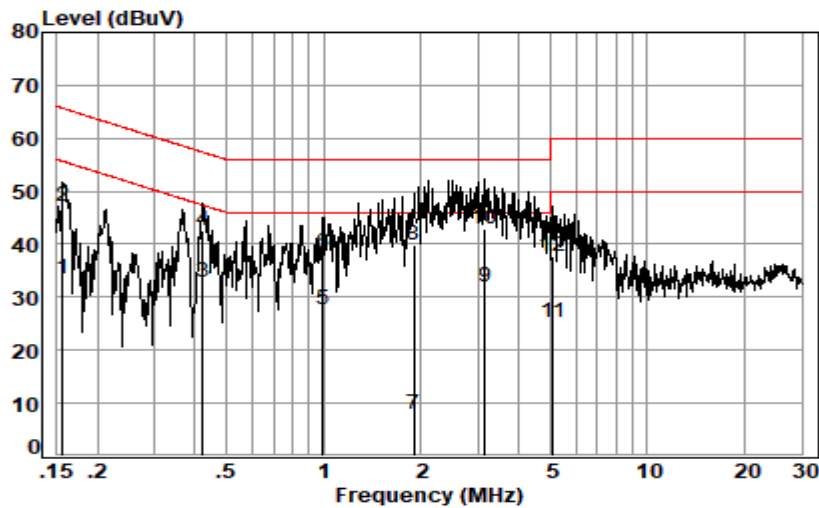
3. AC Power Line Conducted Emissions

Measurement Data

An initial pre-scan was performed on the live and neutral lines with peak detector.

Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

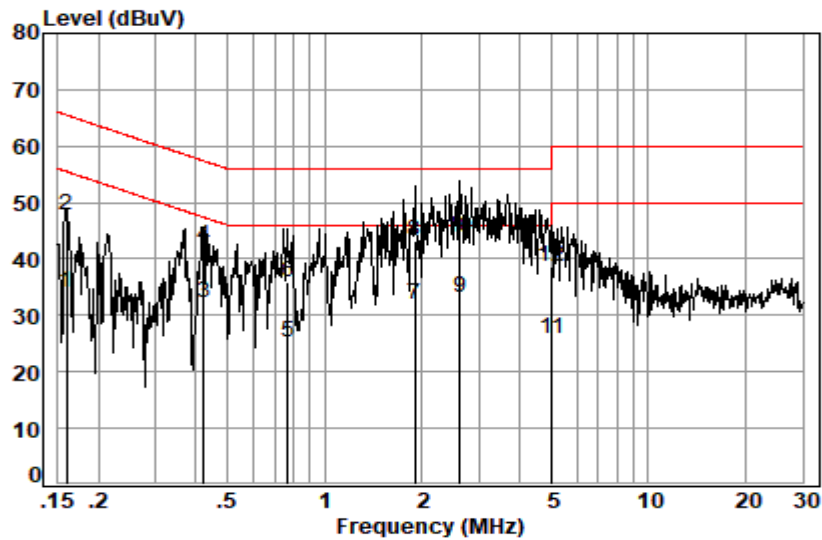
Live Line:



Site : Shielding Room
Condition: Line
Job No. : 14418CR
Test mode: g

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.1565	0.01	9.66	23.78	33.45	55.65	-22.20	Average
2	0.1565	0.01	9.66	37.62	47.29	65.65	-18.36	QP
3	0.4237	0.05	9.67	22.99	32.71	47.37	-14.66	Average
4	0.4237	0.05	9.67	32.86	42.58	57.37	-14.79	QP
5	0.9944	0.09	9.74	17.81	27.64	46.00	-18.36	Average
6	0.9944	0.09	9.74	28.41	38.24	56.00	-17.76	QP
7	1.8979	0.15	9.72	-1.91	7.96	46.00	-38.04	Average
8	1.8979	0.15	9.72	30.09	39.96	56.00	-16.04	QP
9	3.1563	0.16	9.71	22.18	32.05	46.00	-13.95	Average
10	3.1563	0.16	9.71	33.07	42.94	56.00	-13.06	QP
11	5.1118	0.17	9.74	15.47	25.38	50.00	-24.62	Average
12	5.1118	0.17	9.74	27.93	37.84	60.00	-22.16	QP

Neutral Line:



Site : Shielding Room
 Condition: Neutral
 Job No. : 14418CR
 Test mode: g

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.1590	0.01	9.63	24.31	33.95	55.52	-21.57	Average
2	0.1590	0.01	9.63	38.02	47.66	65.52	-17.86	QP
3	0.4237	0.05	9.65	22.44	32.14	47.37	-15.23	Average
4	0.4237	0.05	9.65	32.48	42.18	57.37	-15.19	QP
5	0.7670	0.08	9.69	15.55	25.32	46.00	-20.68	Average
6	0.7670	0.08	9.69	26.28	36.05	56.00	-19.95	QP
7	1.8979	0.15	9.69	22.10	31.94	46.00	-14.06	Average
8	1.8979	0.15	9.69	33.24	43.08	56.00	-12.92	QP
9	2.6221	0.16	9.68	23.33	33.17	46.00	-12.83	Average
10	2.6221	0.16	9.68	34.11	43.95	56.00	-12.05	QP
11	5.0312	0.17	9.71	16.04	25.92	50.00	-24.08	Average
12	5.0312	0.17	9.71	28.66	38.54	60.00	-21.46	QP

Remarks:

1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Test Level = Receiver Reading + LISN Factor + Cable Loss.

4. Duty Cycle

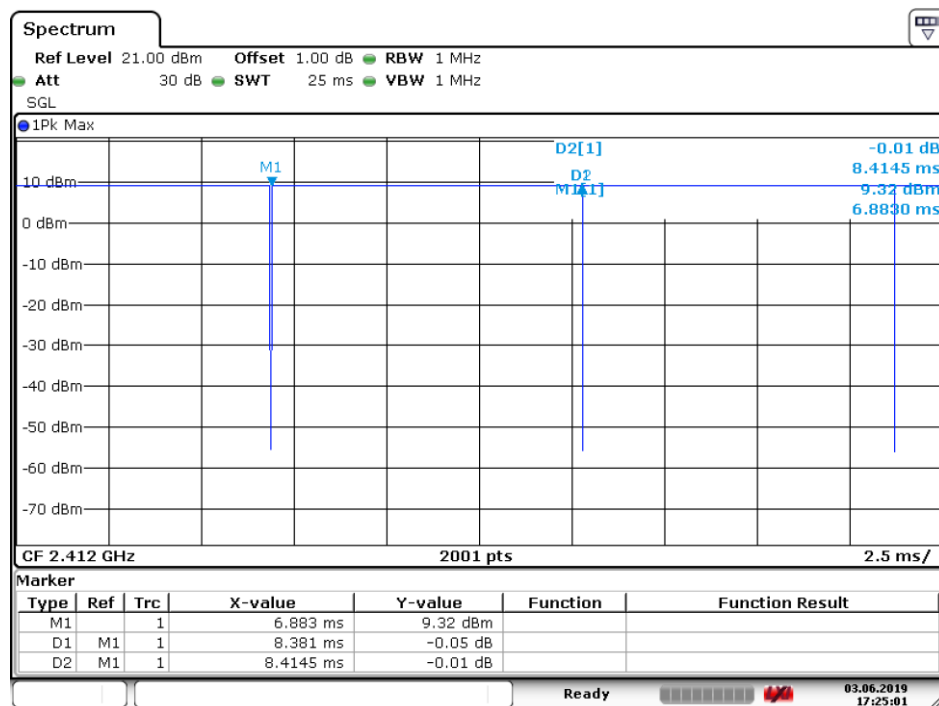
4.1. Test Results

Test Mode	TX Freq. [MHz]	Duty cycle [%]
11B	Ant 1: CH1	99.64
11G	Ant 1: CH1	95.63
11N20	Ant 1: CH1	95.83
11N40	Ant 1: CH3	89.23

4.2. Test Plots

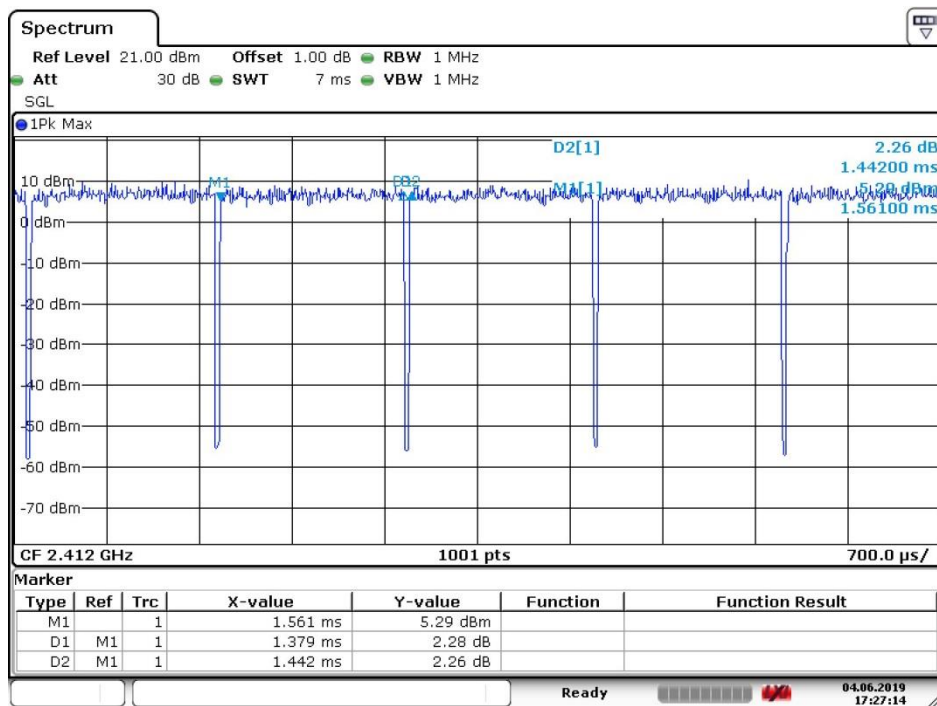
ANT1

11B



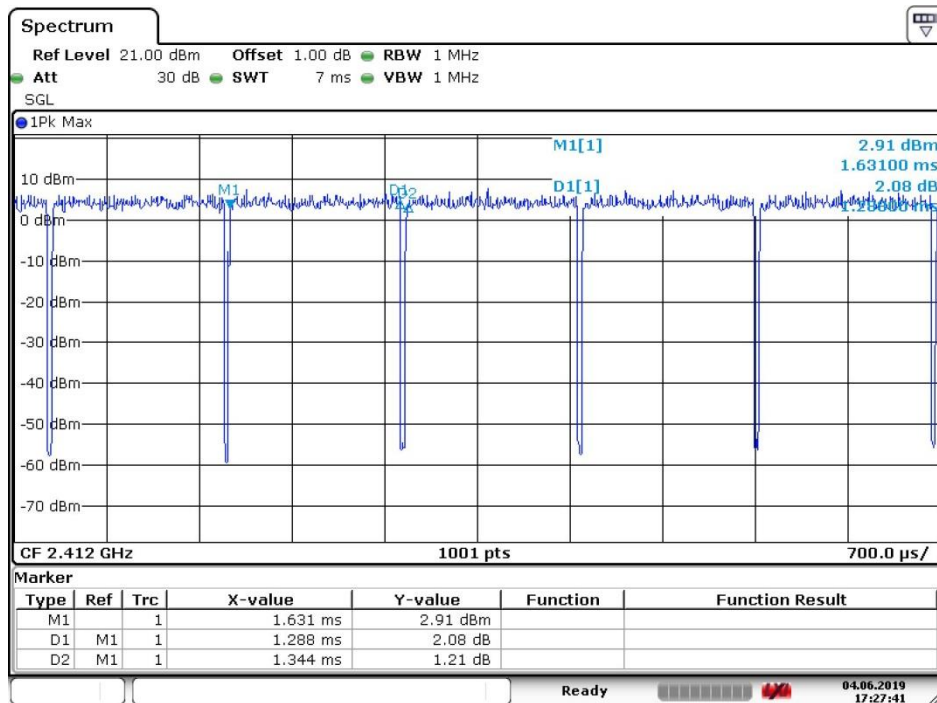
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11G



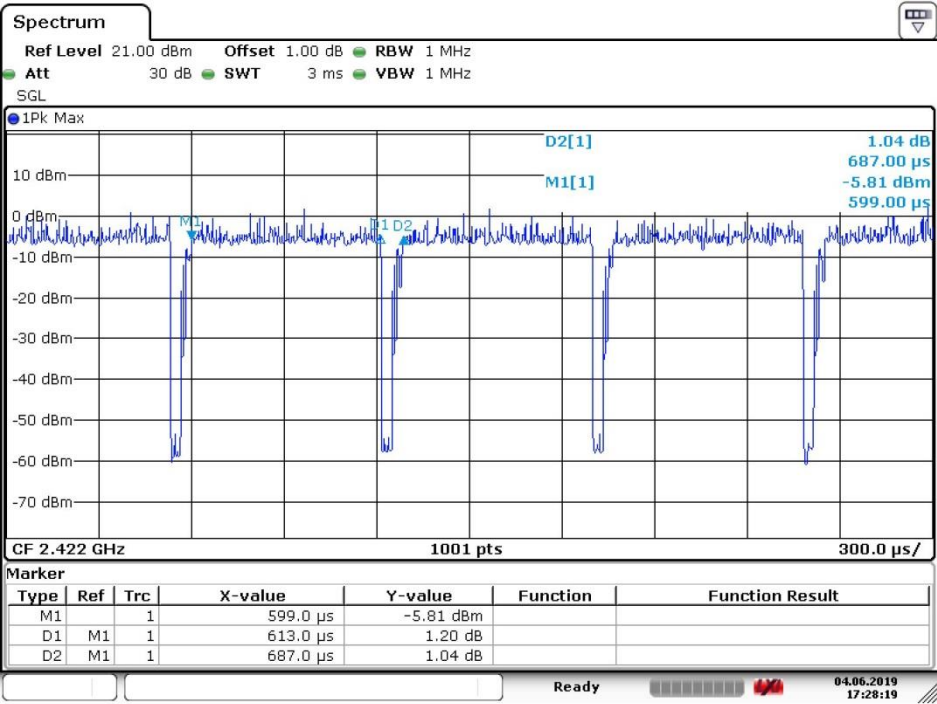
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11N20



Date: 4.JUN.2019 17:27:42

11N40



Date: 4.JUN.2019 17:28:19

5. Conducted Output Power

5.1. Test Results

Measurement Data of Peak Power:

Mode	Test Channel	Peak Output Power (dBm)	Limit (dBm)	Result
802.11B	Lowest	20.66	30.00	Pass
	Middle	20.90	30.00	Pass
	Highest	20.94	30.00	Pass
802.11G	Lowest	21.75	30.00	Pass
	Middle	21.93	30.00	Pass
	Highest	21.42	30.00	Pass
802.11N20	Lowest	20.74	30.00	Pass
	Middle	20.75	30.00	Pass
	Highest	20.82	30.00	Pass
802.11N40	Lowest	19.25	30.00	Pass
	Middle	19.41	30.00	Pass
	Highest	18.54	30.00	Pass

6. DTS (6 dB) Bandwidth & 99% Occupied Bandwidth

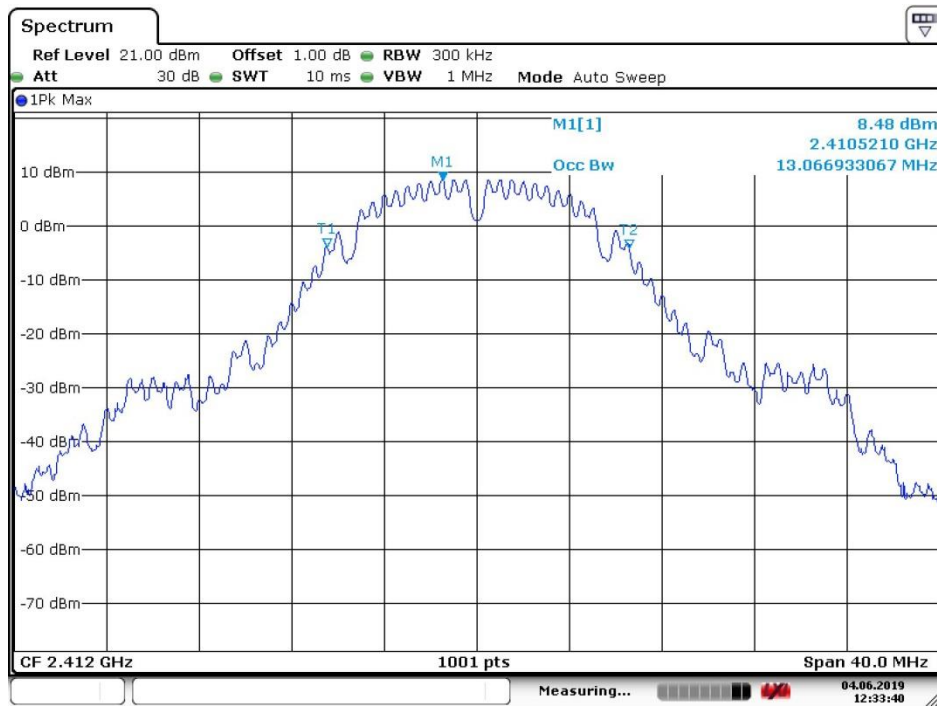
6.1. Test Results

Mode	Test Channel	Occupied Bandwidth (MHz)	6dB Emission Bandwidth (MHz)	Limit (kHz)	Result
802.11B	Lowest	13.07	9.59	≥500	Pass
	Middle	13.27	10.11	≥500	Pass
	Highest	13.59	10.07	≥500	Pass
802.11G	Lowest	16.94	15.19	≥500	Pass
	Middle	17.18	15.15	≥500	Pass
	Highest	17.06	15.15	≥500	Pass
802.11N20	Lowest	17.78	15.15	≥500	Pass
	Middle	17.94	15.15	≥500	Pass
	Highest	17.86	15.35	≥500	Pass
802.11N40	Lowest	36.12	35.41	≥500	Pass
	Middle	36.20	35.25	≥500	Pass
	Highest	36.20	35.25	≥500	Pass

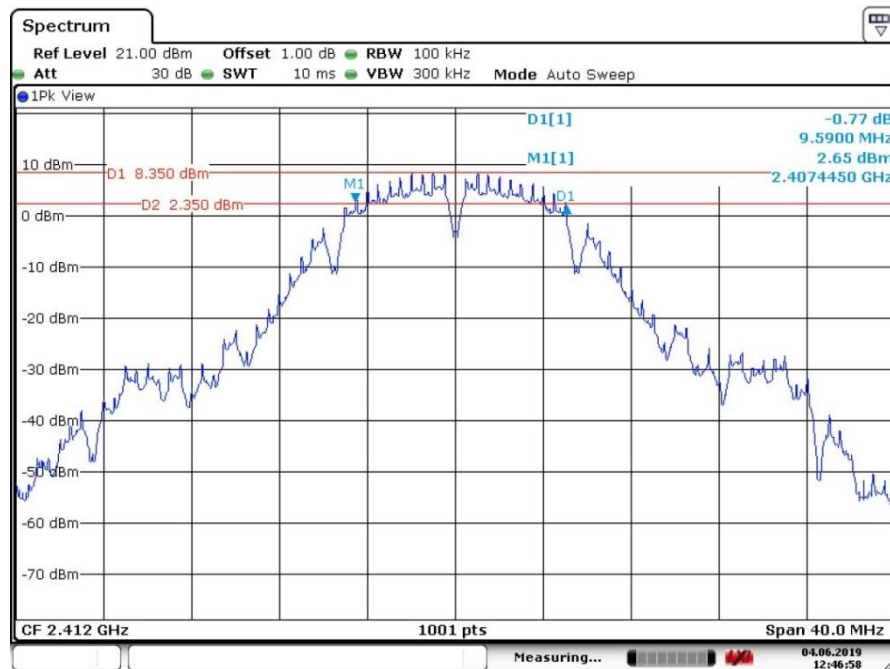
6.2. Test plots

ANT1

802.11B_Lowest Channel

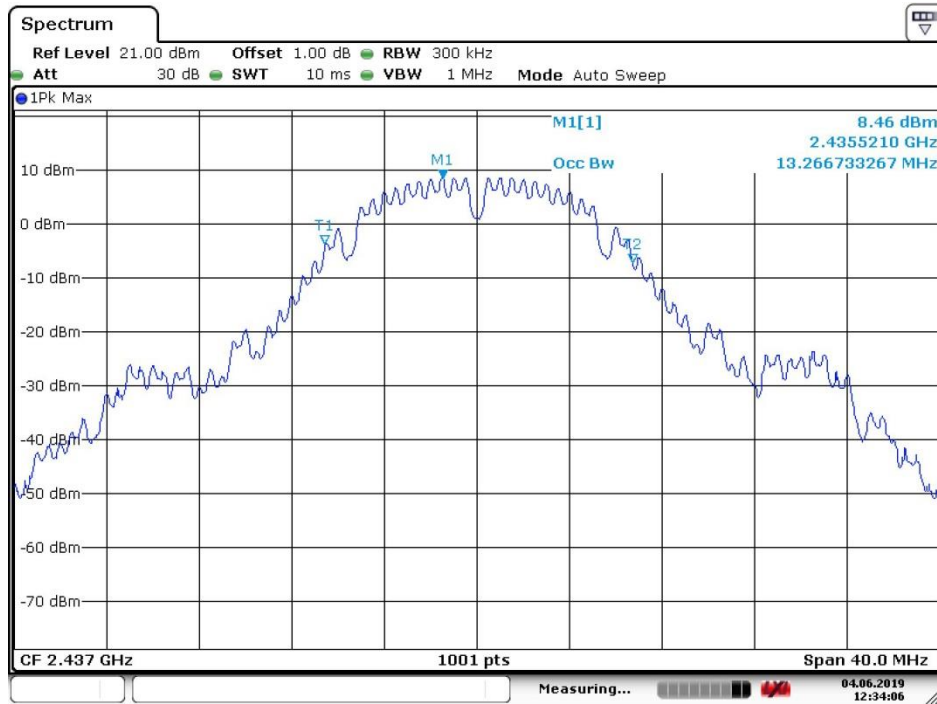


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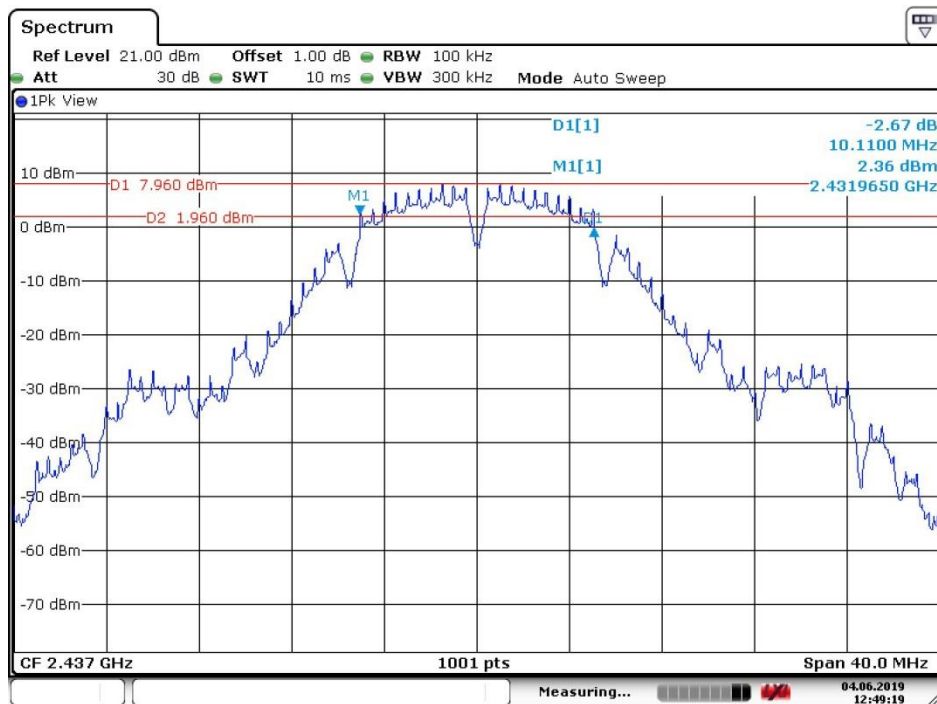


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802.11B_Middle Channel

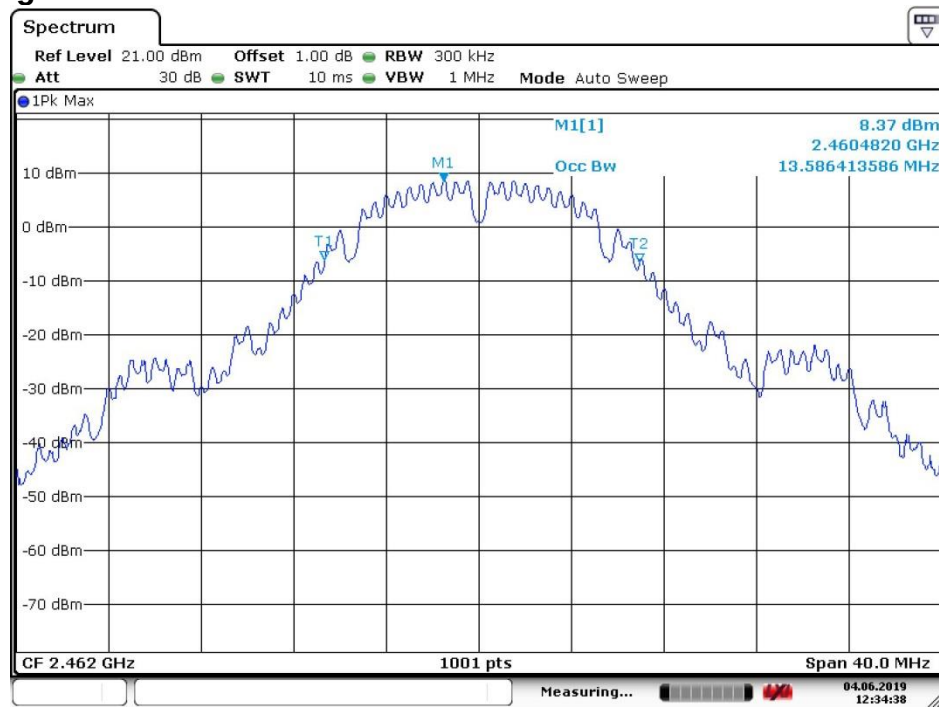


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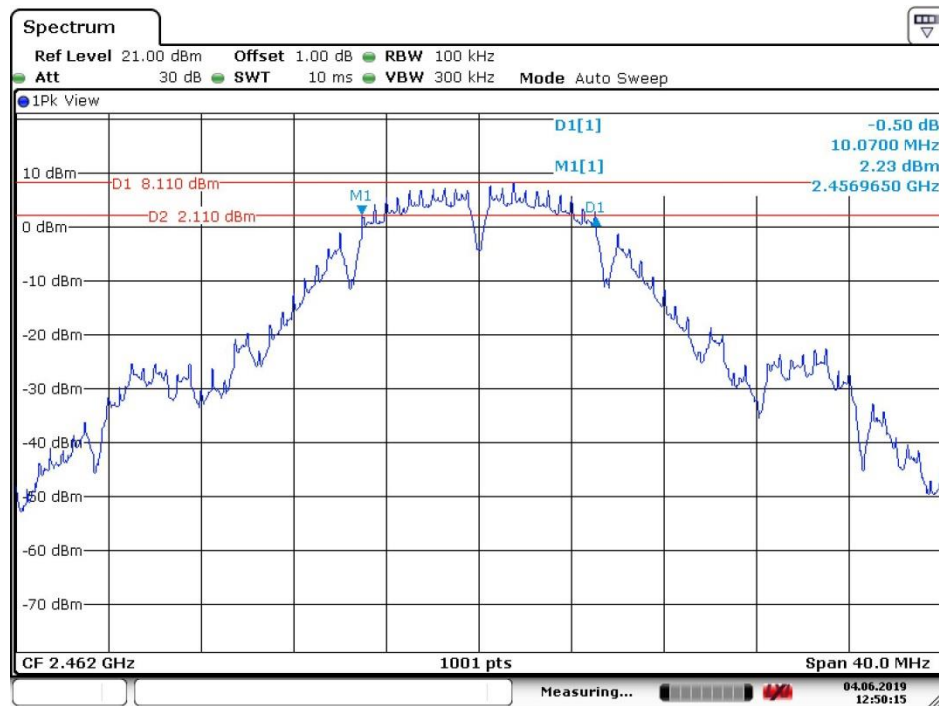


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802.11B_Highest Channel

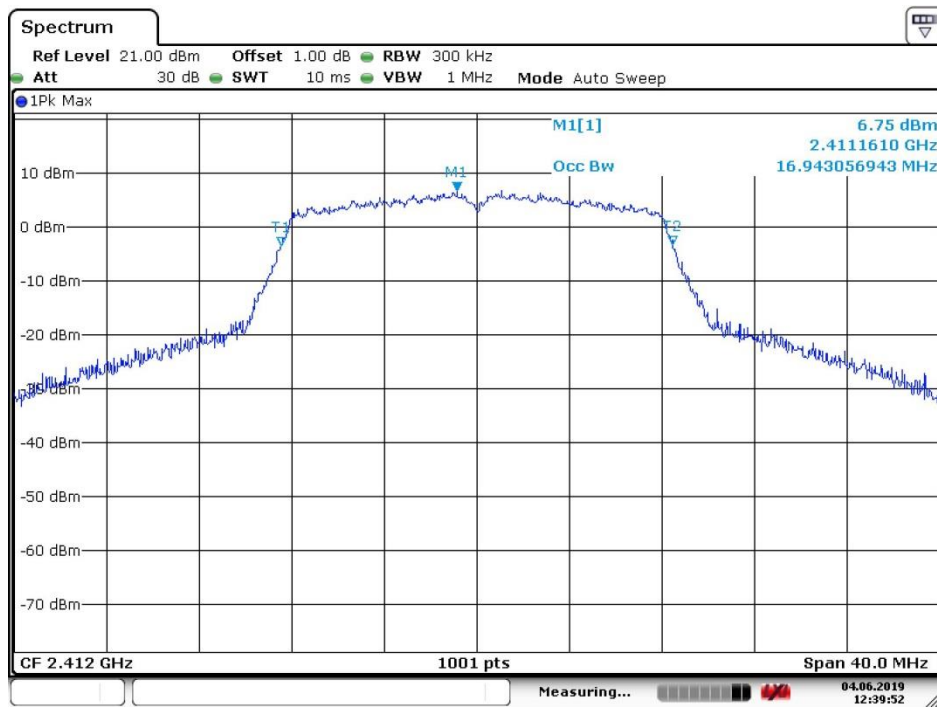


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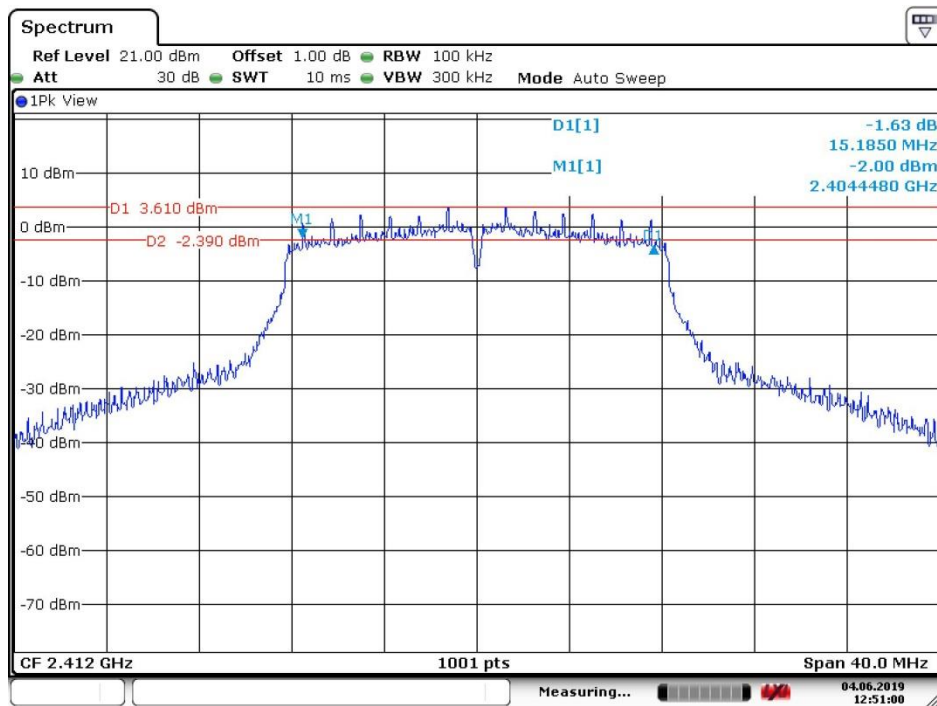


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802.11G_Lowest Channel

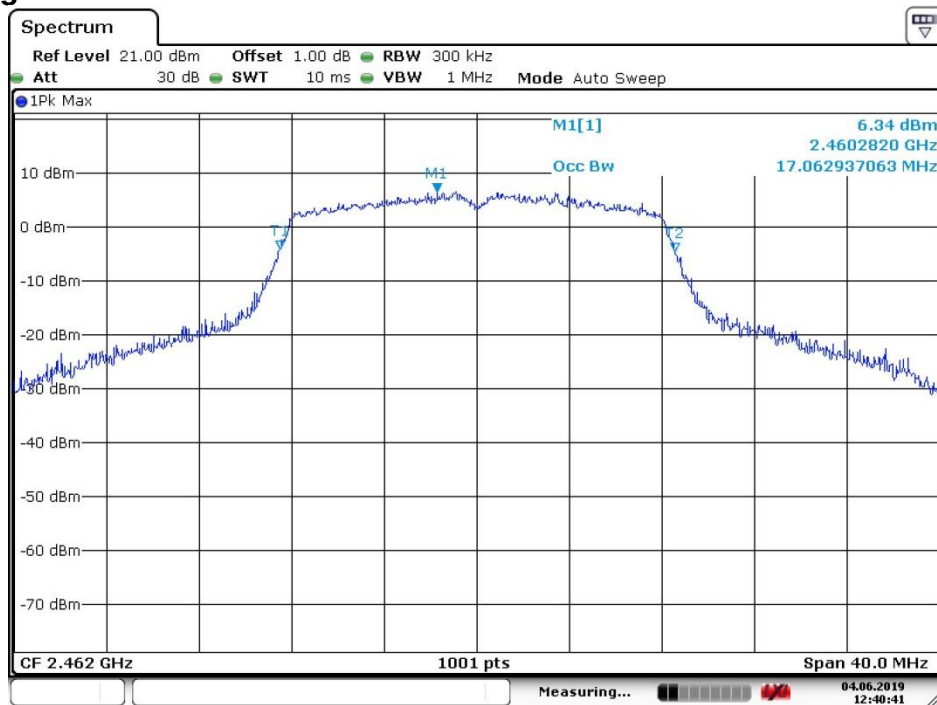


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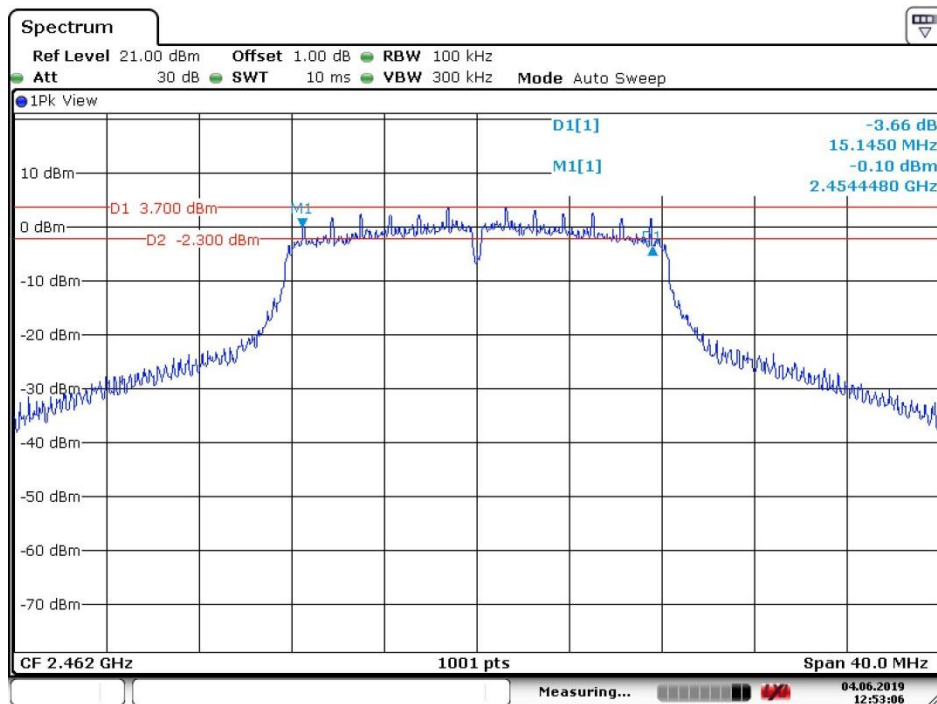


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802.11G_Highest Channel

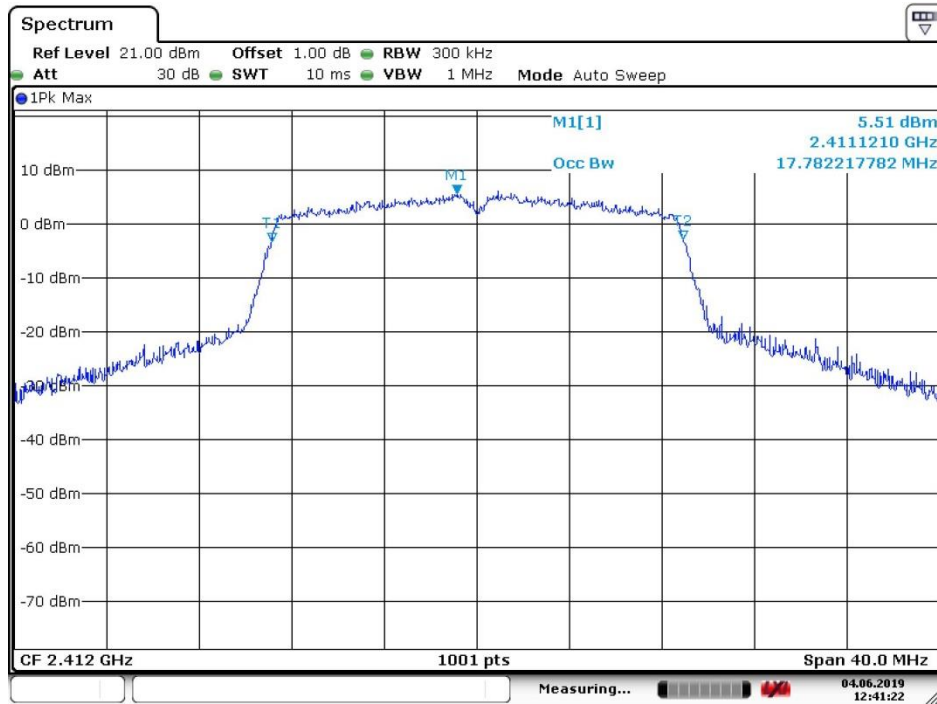


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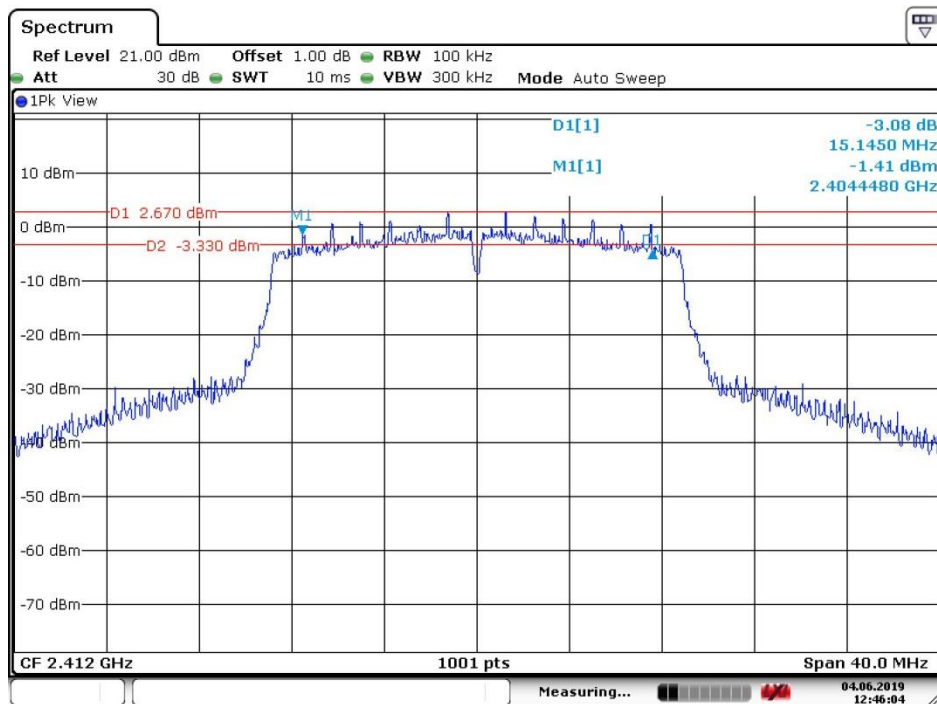


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802.11N20_Lowest Channel

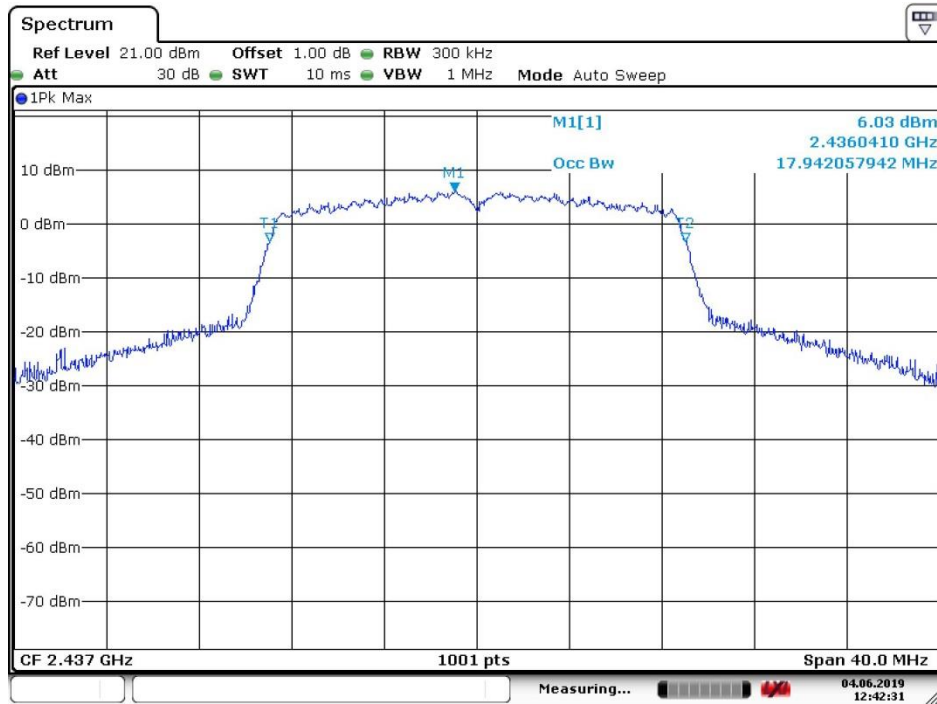


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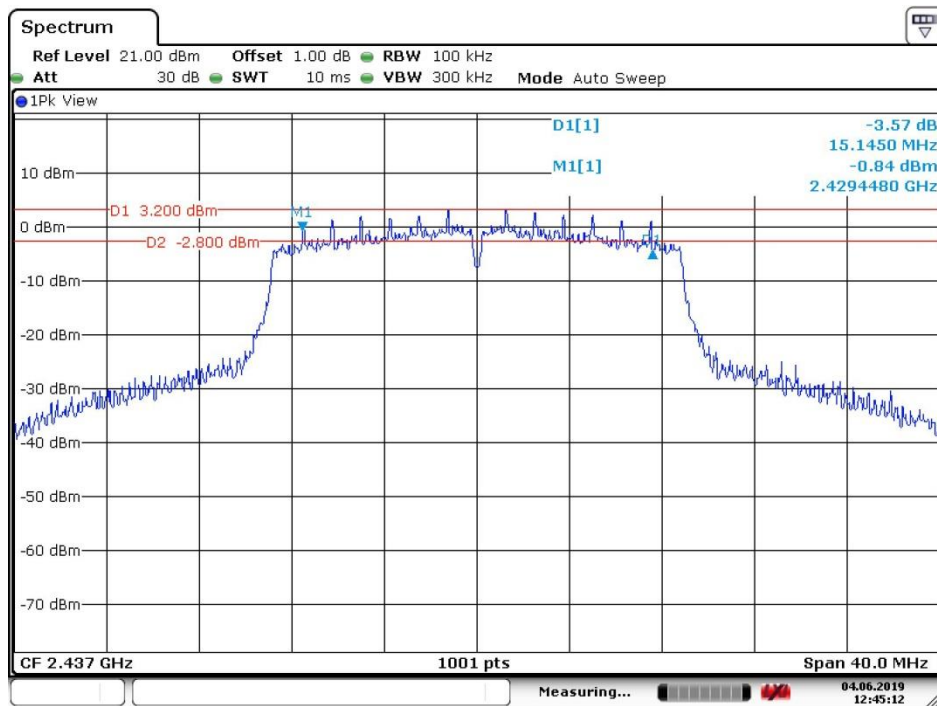


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802.11 N20_ Middle Channel

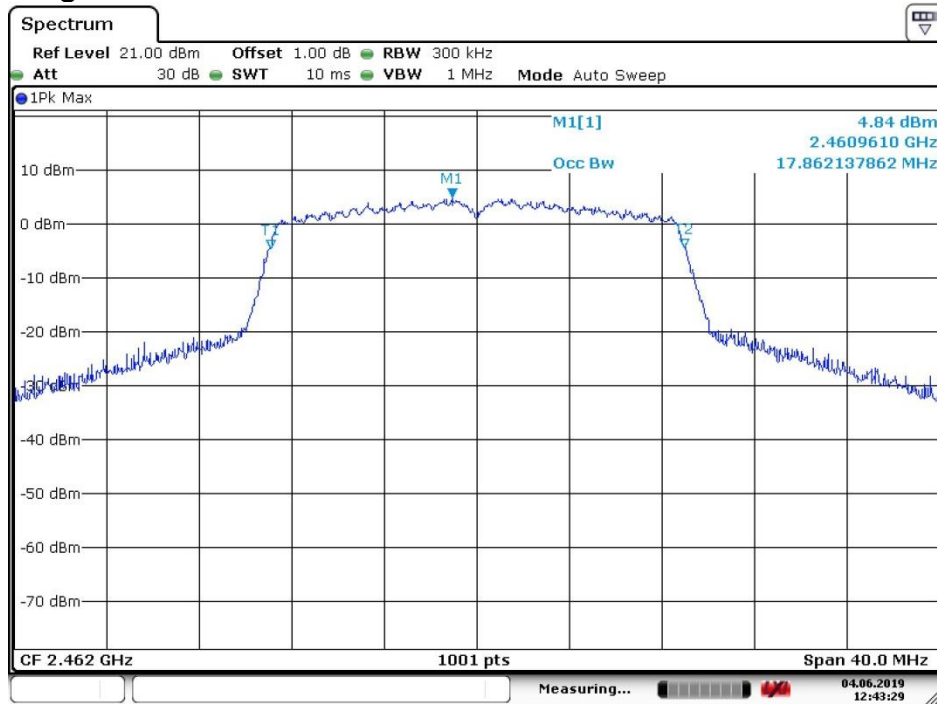


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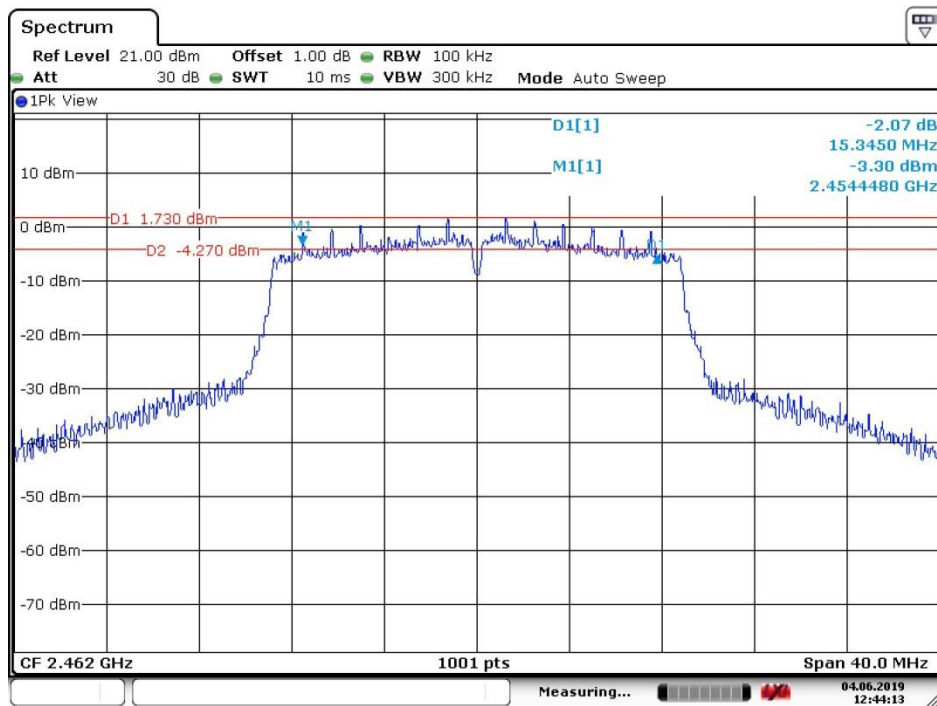


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802.11 N20_Highest Channel

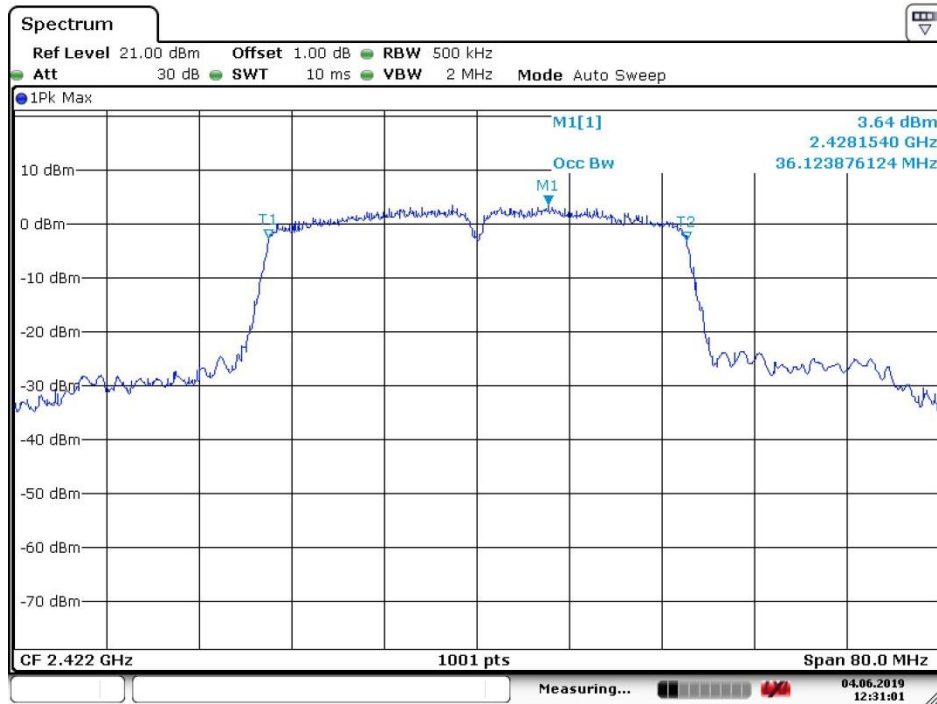


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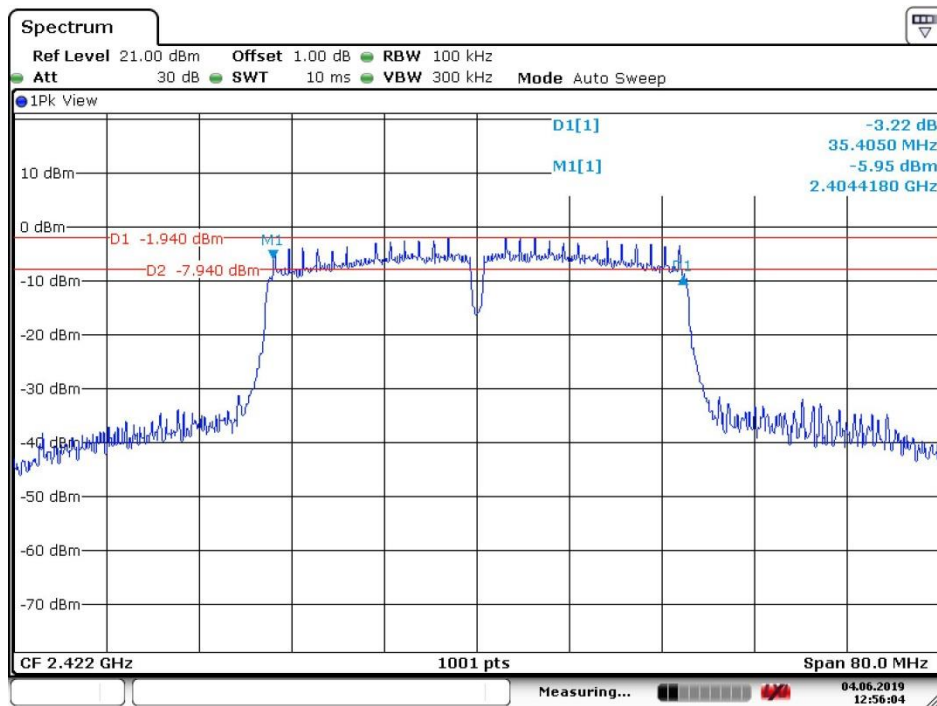


Date: 4.JUN.2019 12:44:14

802.11N40_Lowest Channel

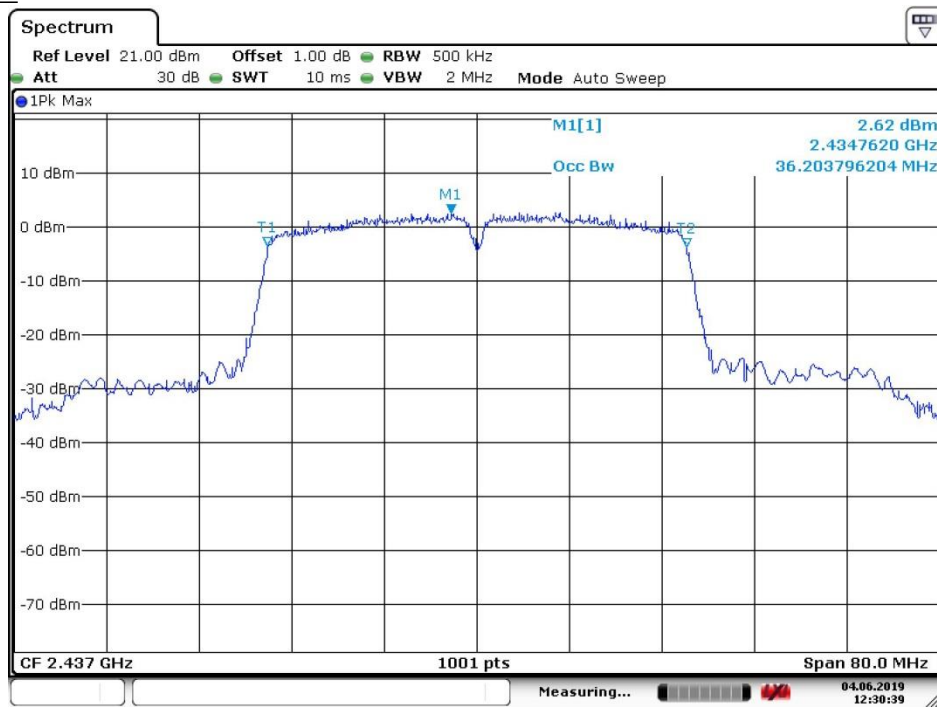


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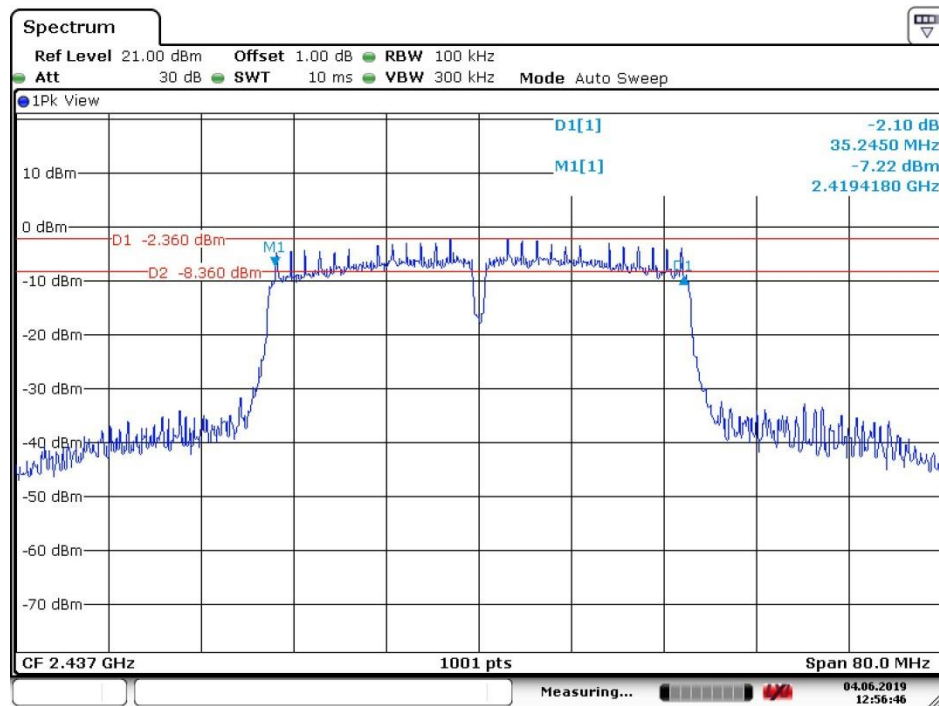


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802.11 N40_ Middle Channel

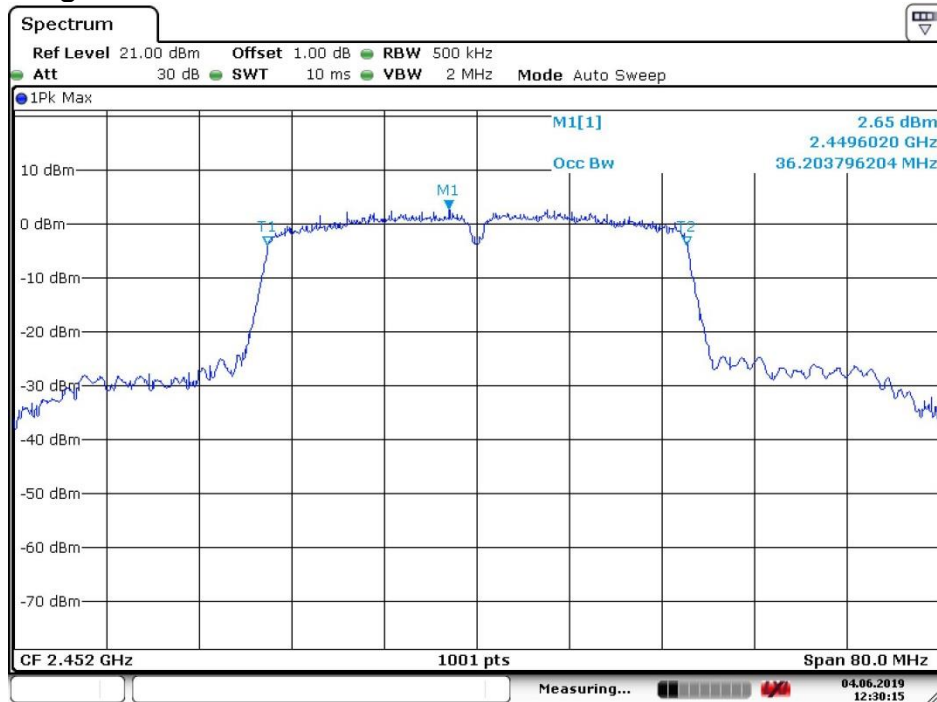


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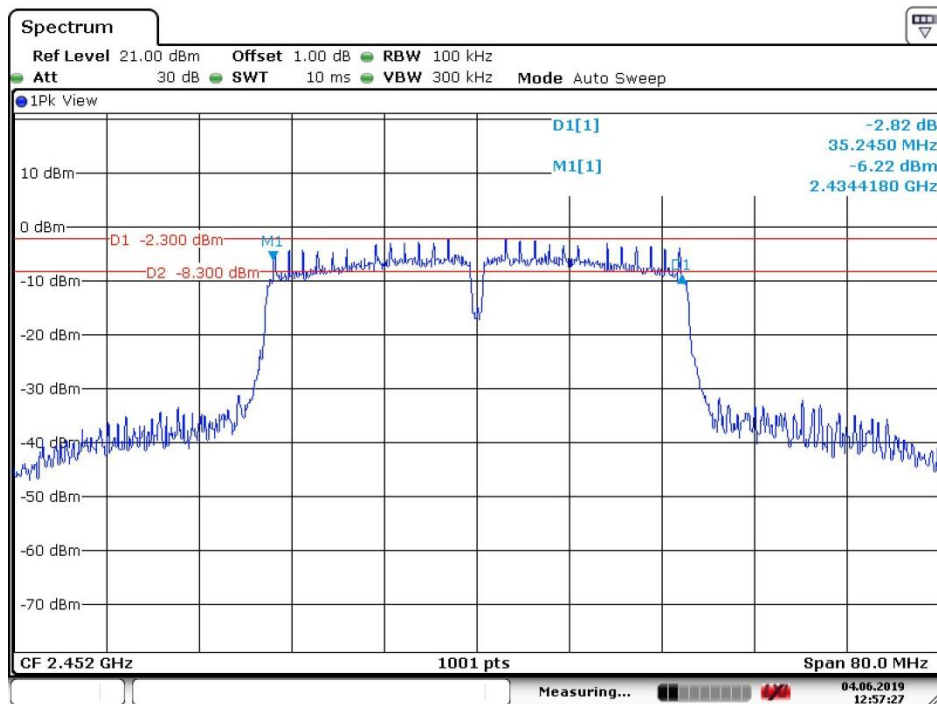


Date: 4. JUN. 2019 12:56:47

802.11 N40_Highest Channel



Date: 4.JUN.2019 12:30:15



Date: 4.JUN.2019 12:57:27