Appendix

2.4G WLAN

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1 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	2019/2/11	2020/2/10
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

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)

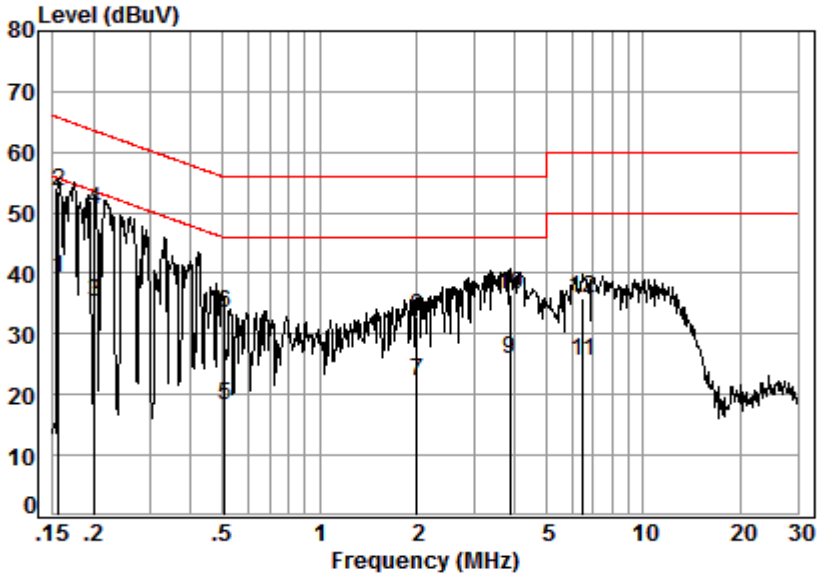
3 AC Power Line Conducted Emissions

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.

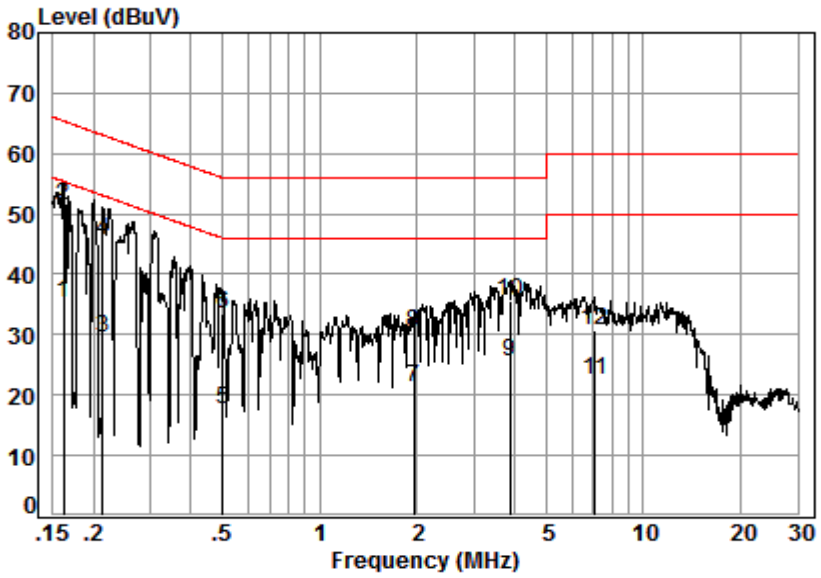
Live Line:



Site : Shielding Room
Condition: Line
Job No. : 10012
Test mode: d

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.16	0.01	9.66	29.45	39.12	55.65	-16.53	Average
2	0.16	0.01	9.66	43.88	53.55	65.65	-12.10	QP
3	0.20	0.02	9.66	25.60	35.28	53.54	-18.26	Average
4	0.20	0.02	9.66	40.72	50.40	63.54	-13.14	QP
5	0.51	0.06	9.67	8.39	18.12	46.00	-27.88	Average
6	0.51	0.06	9.67	23.59	33.32	56.00	-22.68	QP
7	1.99	0.16	9.72	12.32	22.20	46.00	-23.80	Average
8	1.99	0.16	9.72	22.95	32.83	56.00	-23.17	QP
9	3.88	0.16	9.72	16.07	25.95	46.00	-20.05	Average
10	3.88	0.16	9.72	26.50	36.38	56.00	-19.62	QP
11	6.52	0.17	9.77	15.58	25.52	50.00	-24.48	Average
12	6.52	0.17	9.77	26.10	36.04	60.00	-23.96	QP

Neutral Line:



Site : Shielding Room
Condition: Neutral
Job No. : 10012
Test mode: d

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.16	0.01	9.64	25.64	35.29	55.38	-20.09	Average
2	0.16	0.01	9.64	41.70	51.35	65.38	-14.03	QP
3	0.21	0.02	9.64	19.78	29.44	53.05	-23.61	Average
4	0.21	0.02	9.64	36.12	45.78	63.05	-17.27	QP
5	0.50	0.06	9.64	7.93	17.63	46.00	-28.37	Average
6	0.50	0.06	9.64	23.80	33.50	56.00	-22.50	QP
7	1.96	0.16	9.69	11.32	21.17	46.00	-24.83	Average
8	1.96	0.16	9.69	20.46	30.31	56.00	-25.69	QP
9	3.88	0.16	9.69	15.65	25.50	46.00	-20.50	Average
10	3.88	0.16	9.69	25.87	35.72	56.00	-20.28	QP
11	7.10	0.17	9.76	12.62	22.55	50.00	-27.45	Average
12	7.10	0.17	9.76	20.78	30.71	60.00	-29.29	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

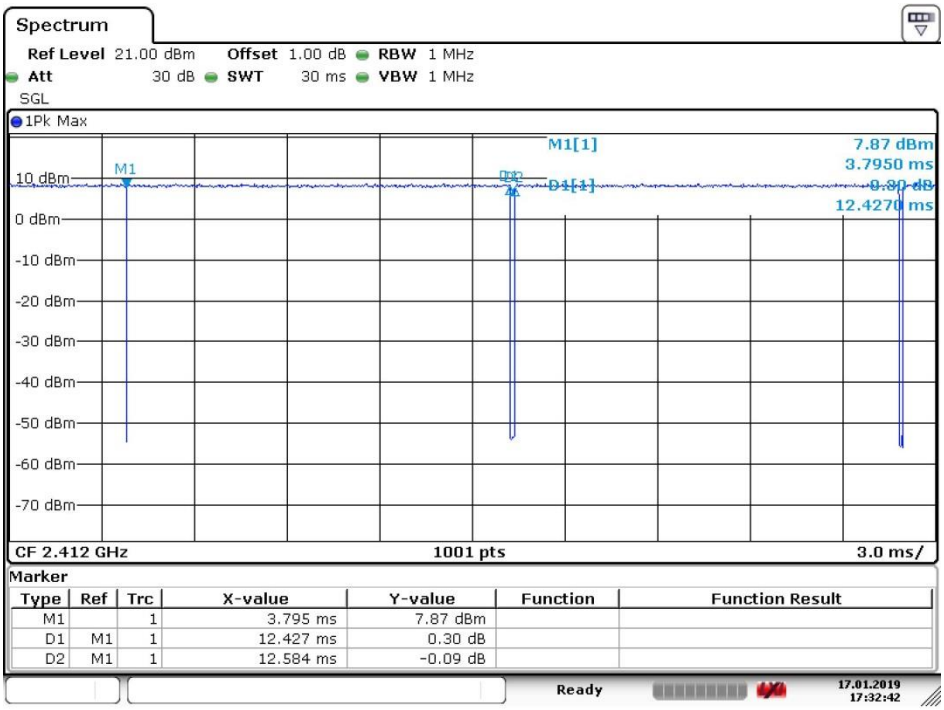
4.1 Test Results

Test Mode	TX Freq. [MHz]	Duty cycle [%]
11B	Ant 1: CH1	98.75
11G	Ant 1: CH1	95.48
11N20	Ant 1: CH1	91.09
11N40	Ant 1: CH3	83.75

4.2 Test Plots

ANT1

11B



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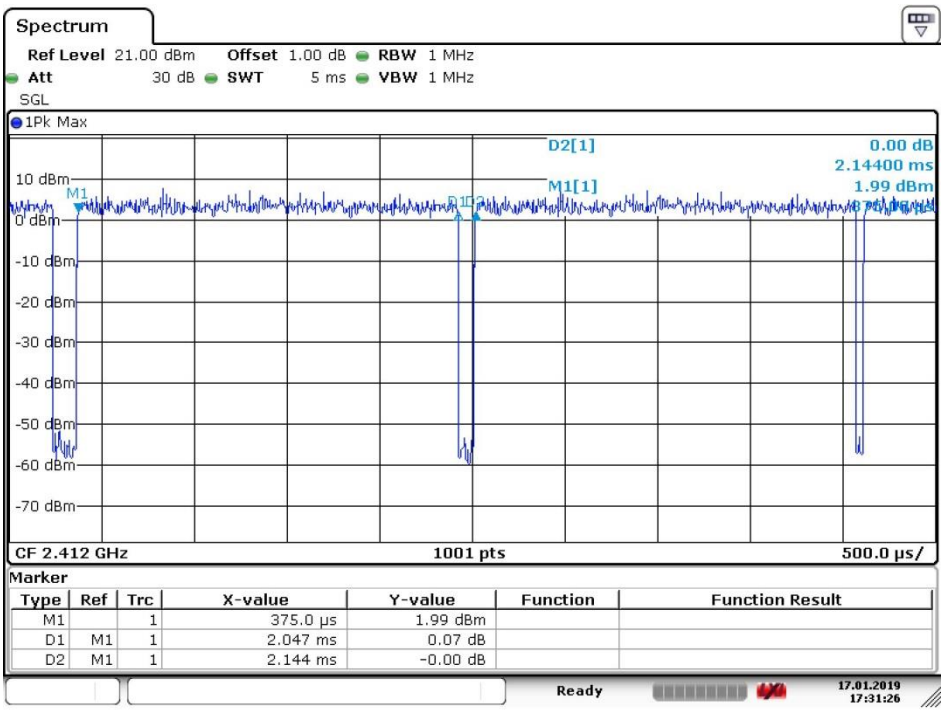

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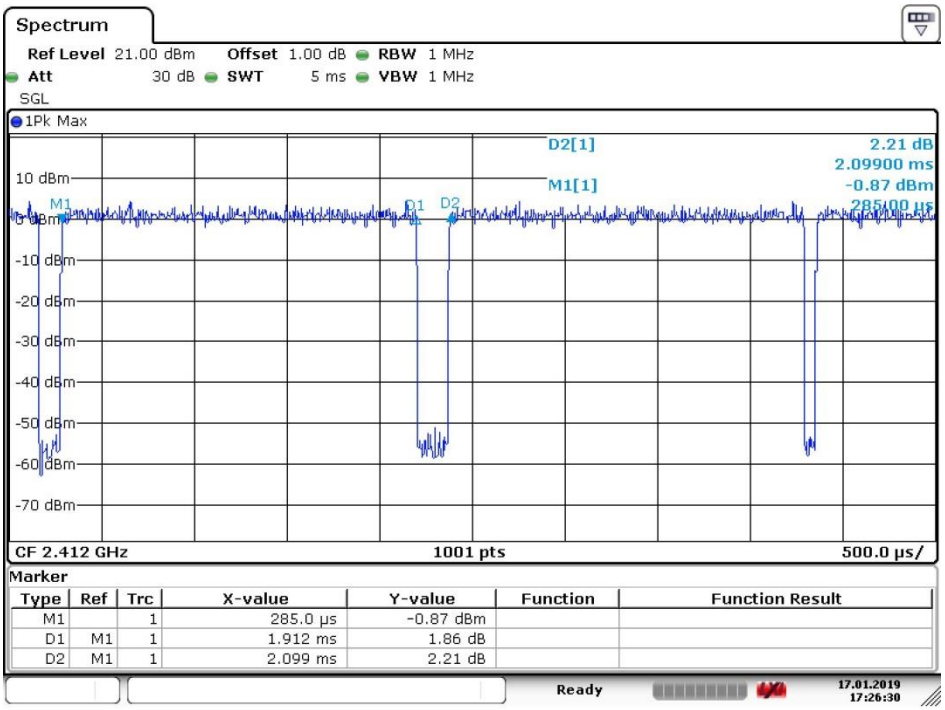
11N20



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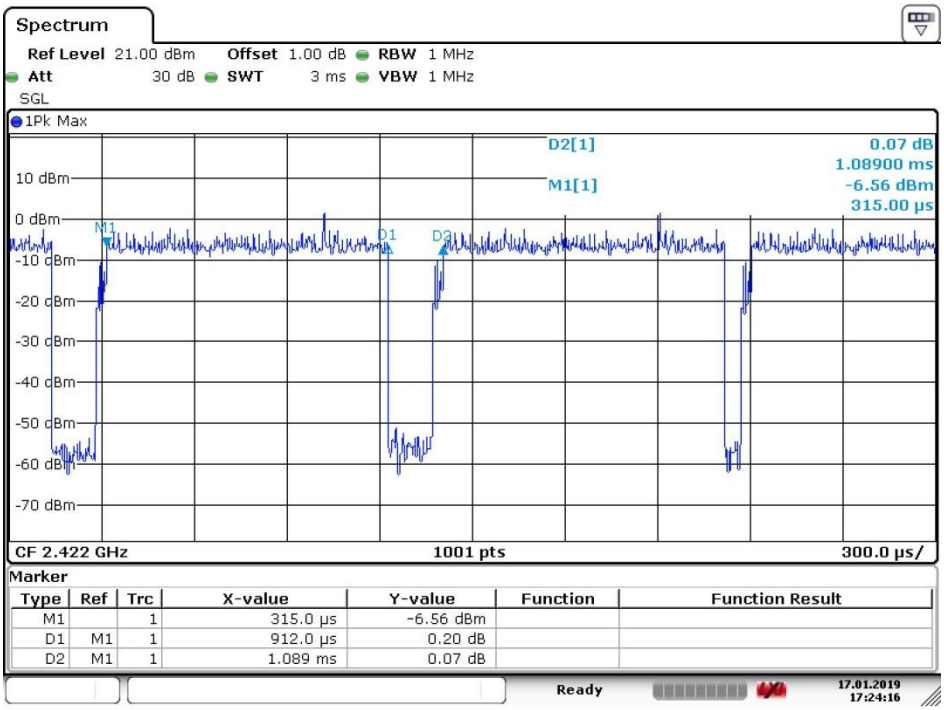
11N40



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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	17.95	30.00	Pass
	Middle	17.34	30.00	Pass
	Highest	17.68	30.00	Pass
802.11G	Lowest	18.69	30.00	Pass
	Middle	18.37	30.00	Pass
	Highest	19.09	30.00	Pass
802.11N20	Lowest	17.86	30.00	Pass
	Middle	18.58	30.00	Pass
	Highest	18.19	30.00	Pass
802.11N40	Lowest	18.37	30.00	Pass
	Middle	18.84	30.00	Pass
	Highest	18.28	30.00	Pass

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

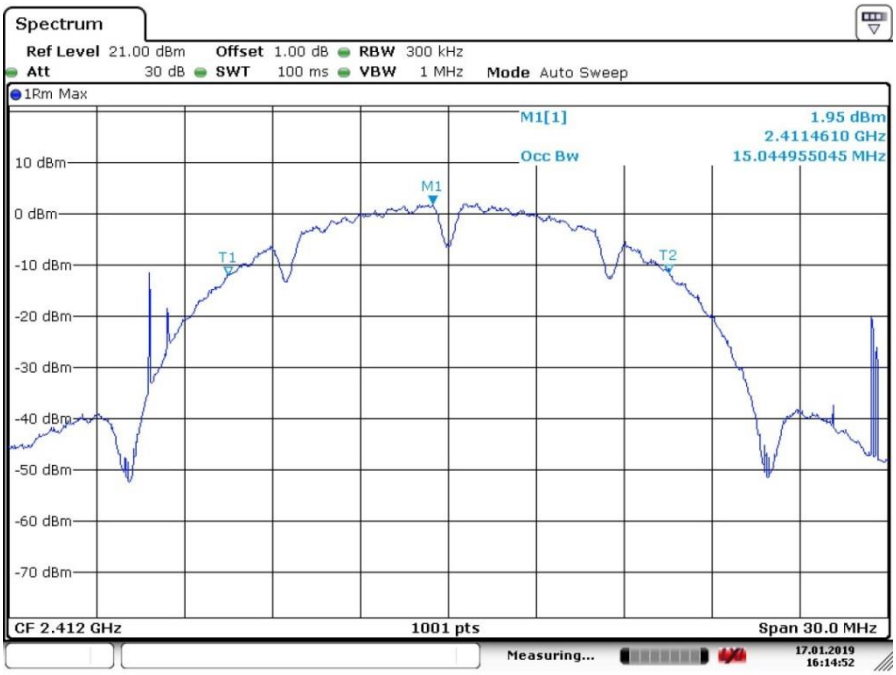
6.1 Test Results

Mode	Test Channel	Occupied Bandwidth (MHz)	6dB Emission Bandwidth (MHz)	Limit (kHz)	Result
802.11B	Lowest	15.04	10.07	≥500	Pass
	Middle	14.99	10.04	≥500	Pass
	Highest	14.93	10.04	≥500	Pass
802.11G	Lowest	16.69	16.30	≥500	Pass
	Middle	16.57	16.39	≥500	Pass
	Highest	16.54	16.18	≥500	Pass
802.11N20	Lowest	17.77	17.35	≥500	Pass
	Middle	17.71	17.32	≥500	Pass
	Highest	17.71	17.32	≥500	Pass
802.11N40	Lowest	36.14	35.37	≥500	Pass
	Middle	36.14	35.25	≥500	Pass
	Highest	36.20	35.25	≥500	Pass

6.2 Test plots

ANT1

802.11B_Lowest Channel



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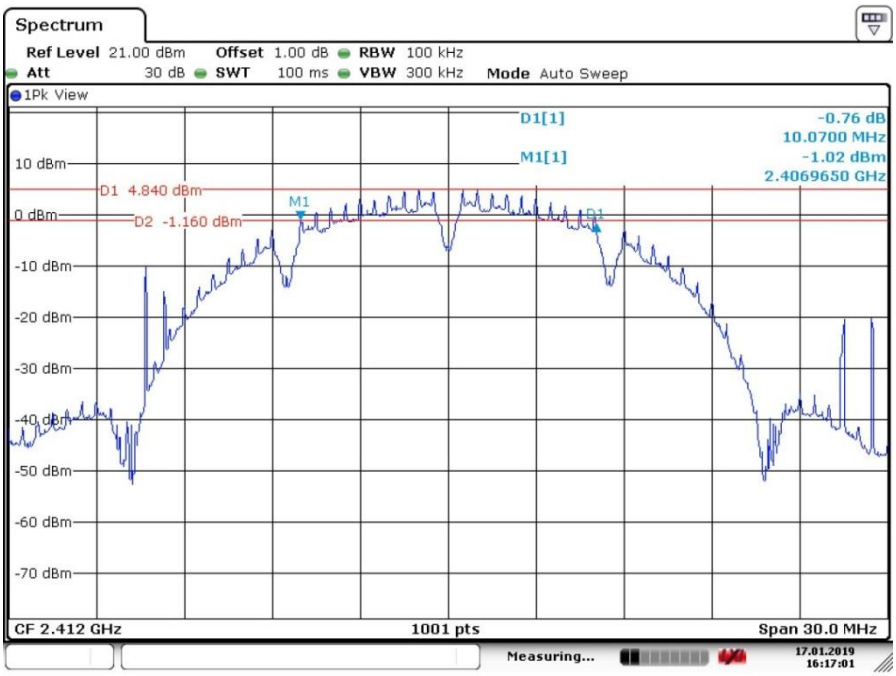

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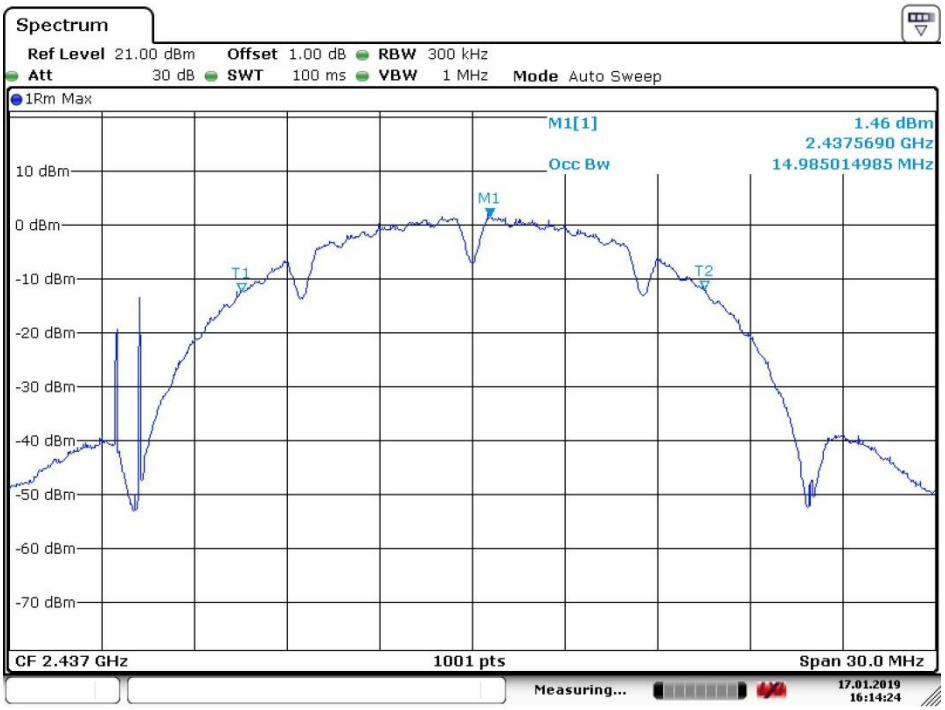
802.11B_ Middle Channel



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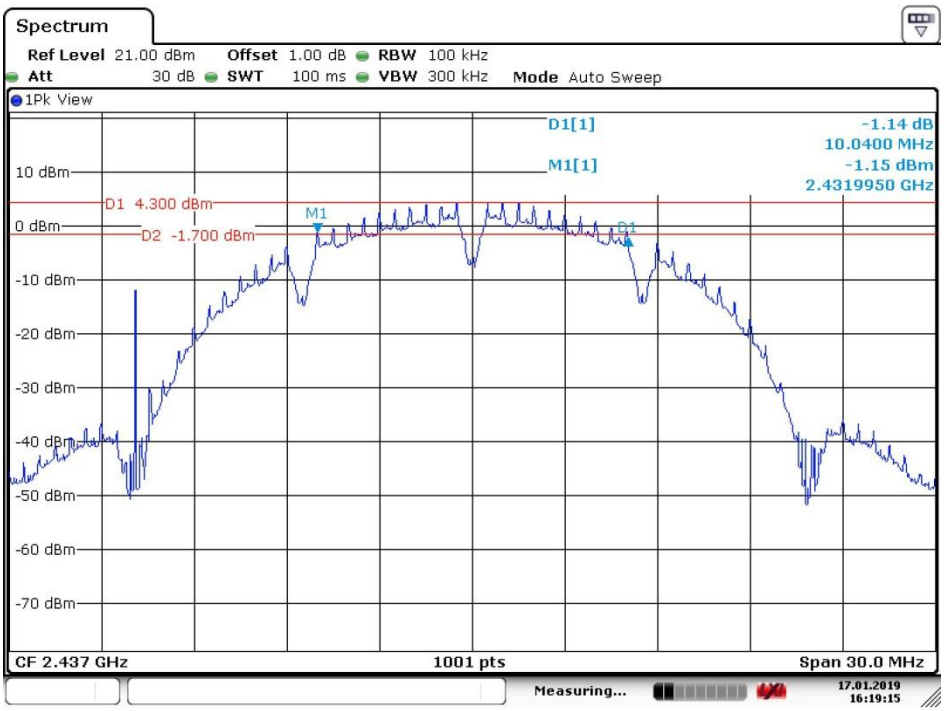

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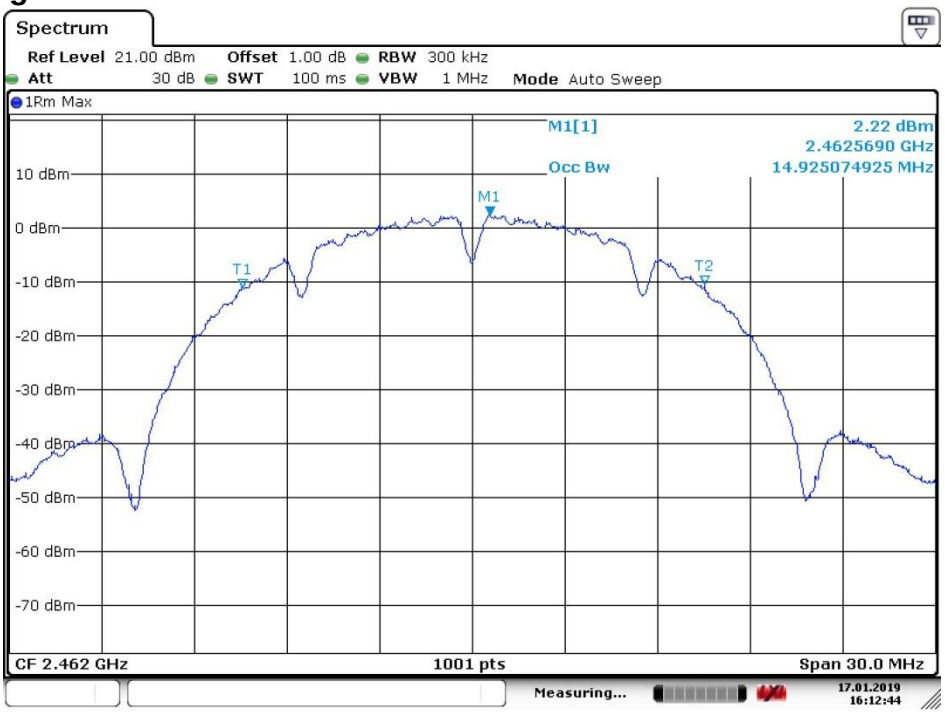
802.11B_ Highest Channel



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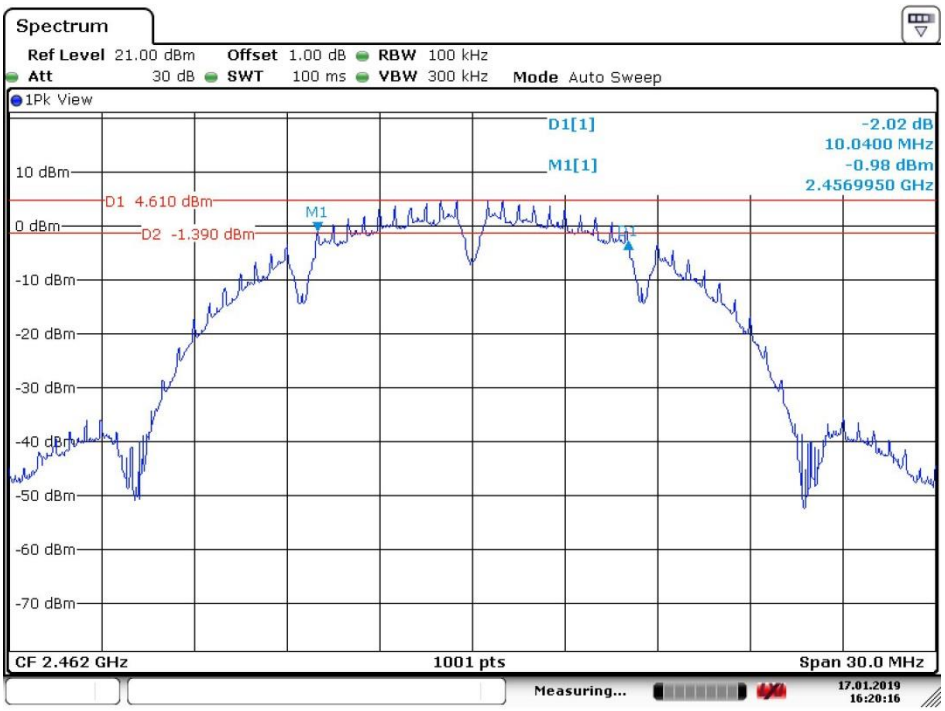

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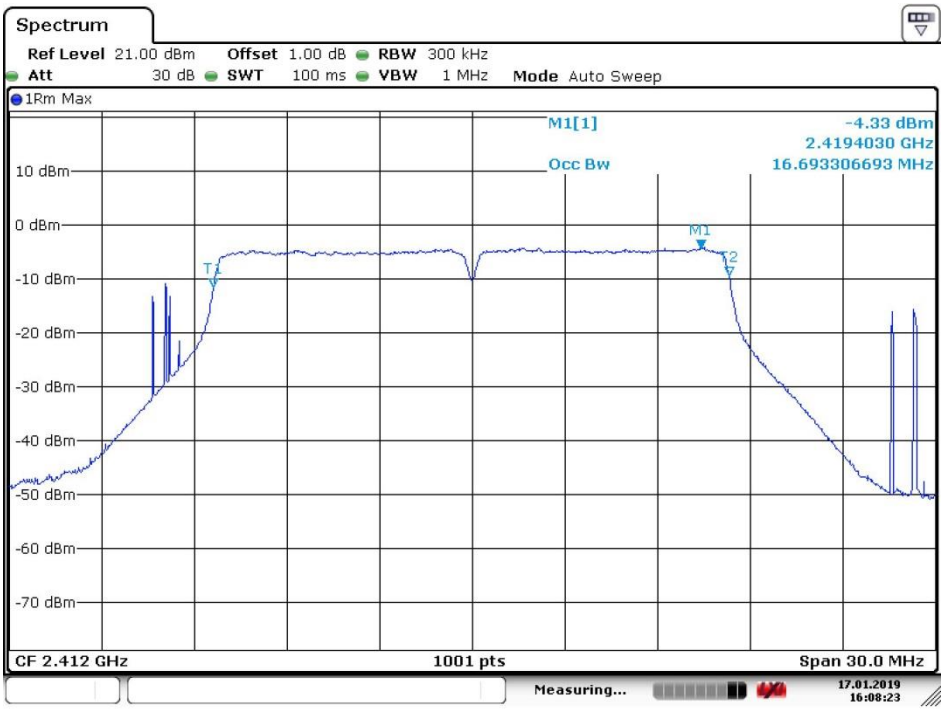
802.11G_Lowest Channel



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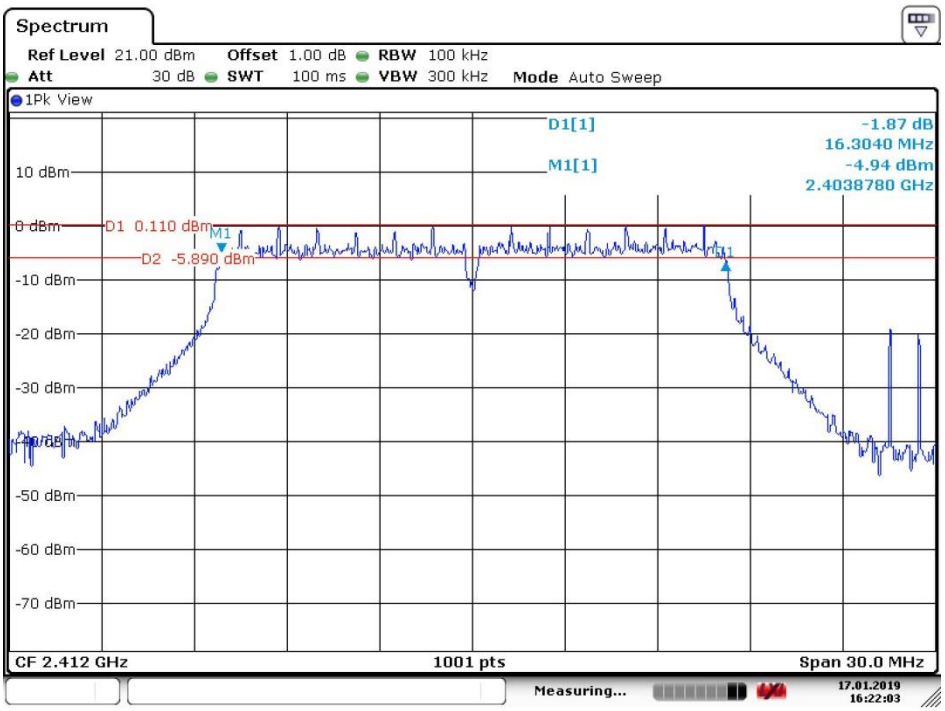

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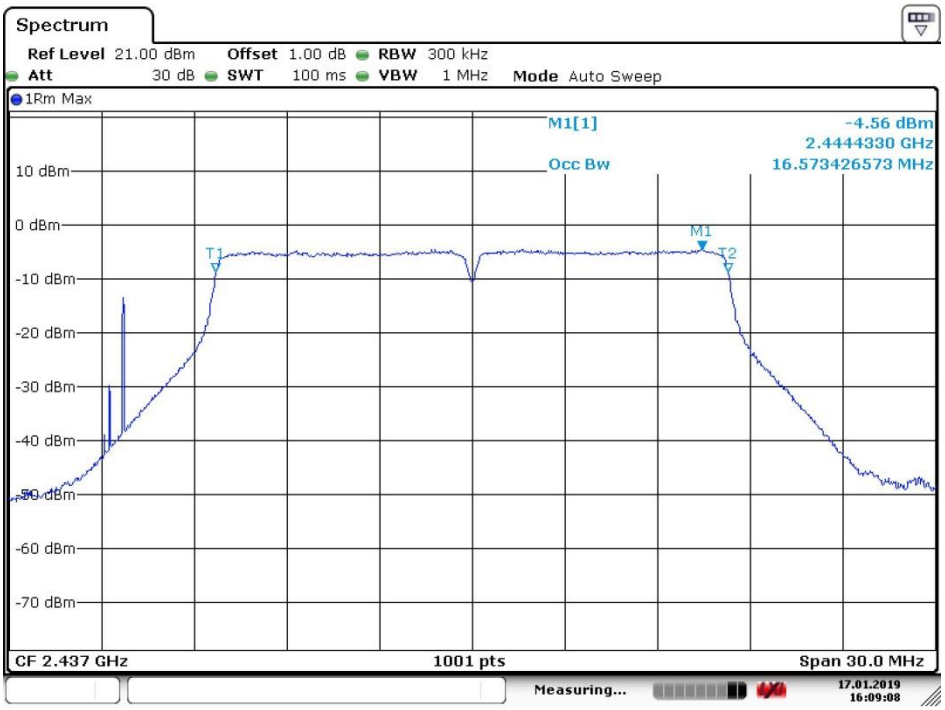
802.11G_ Middle Channel



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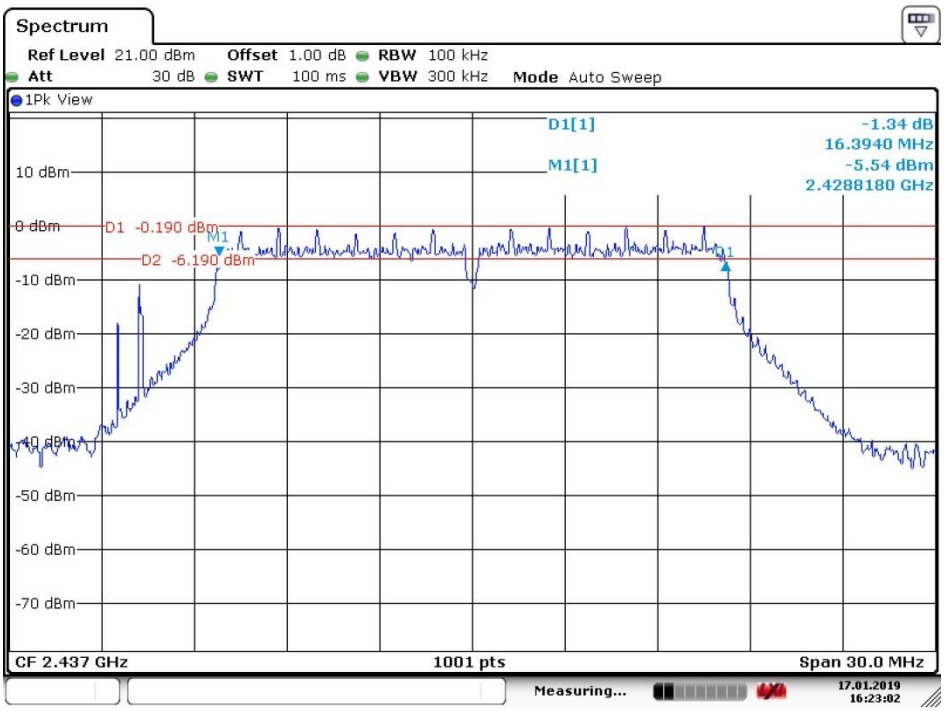

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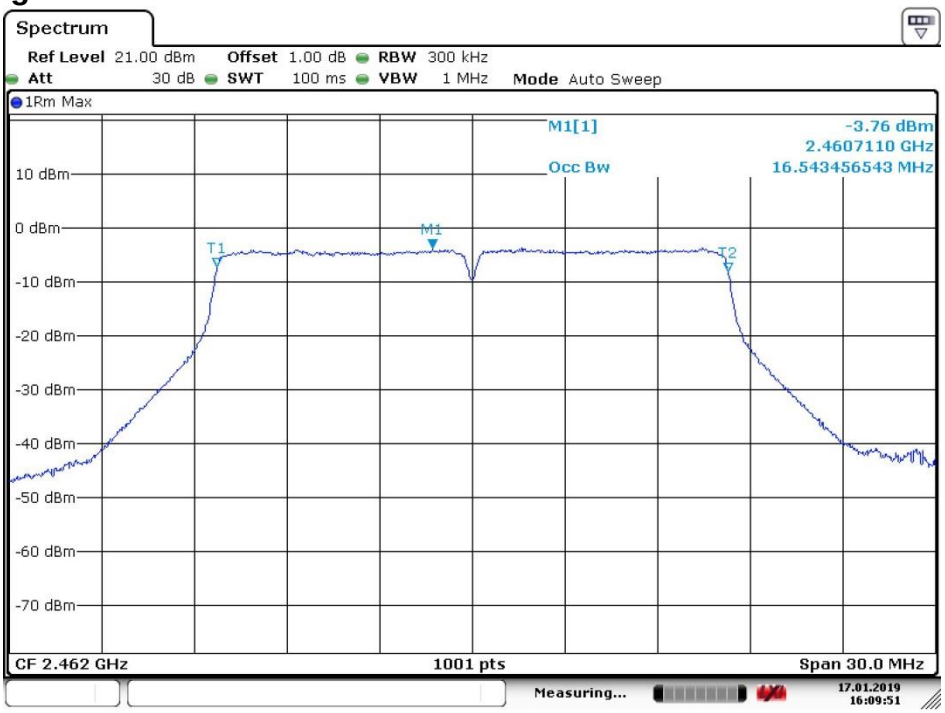
802.11G_ Highest Channel



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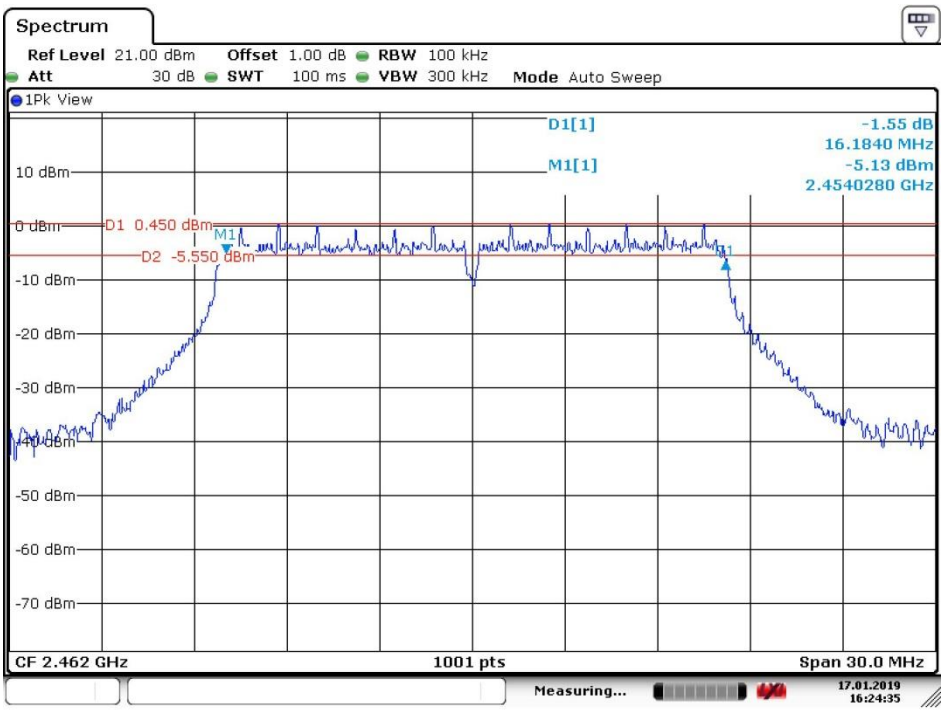

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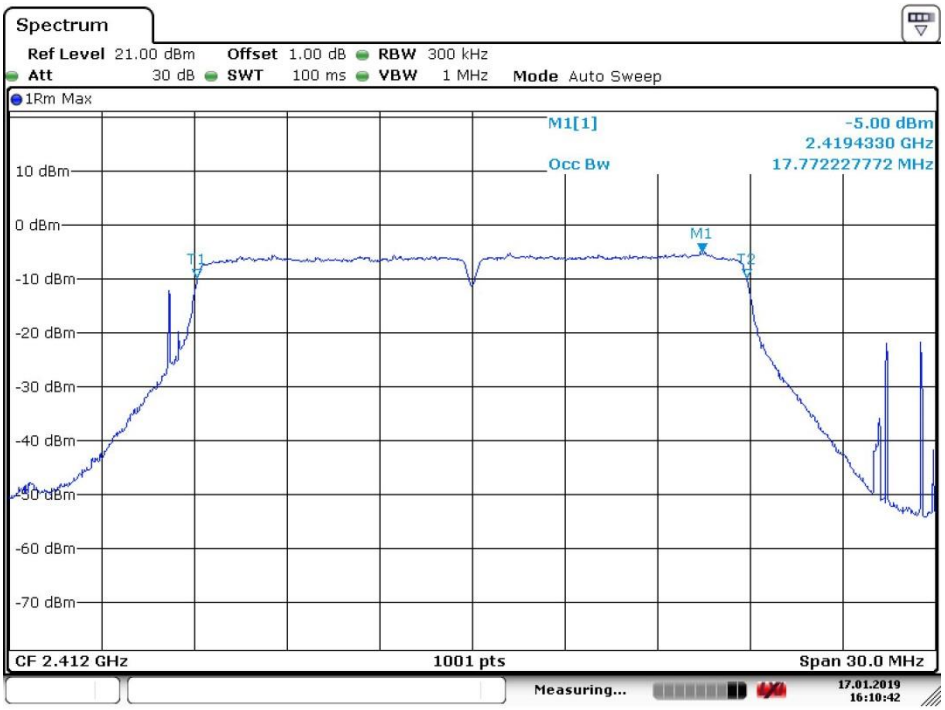
802.11N20_Lowest Channel



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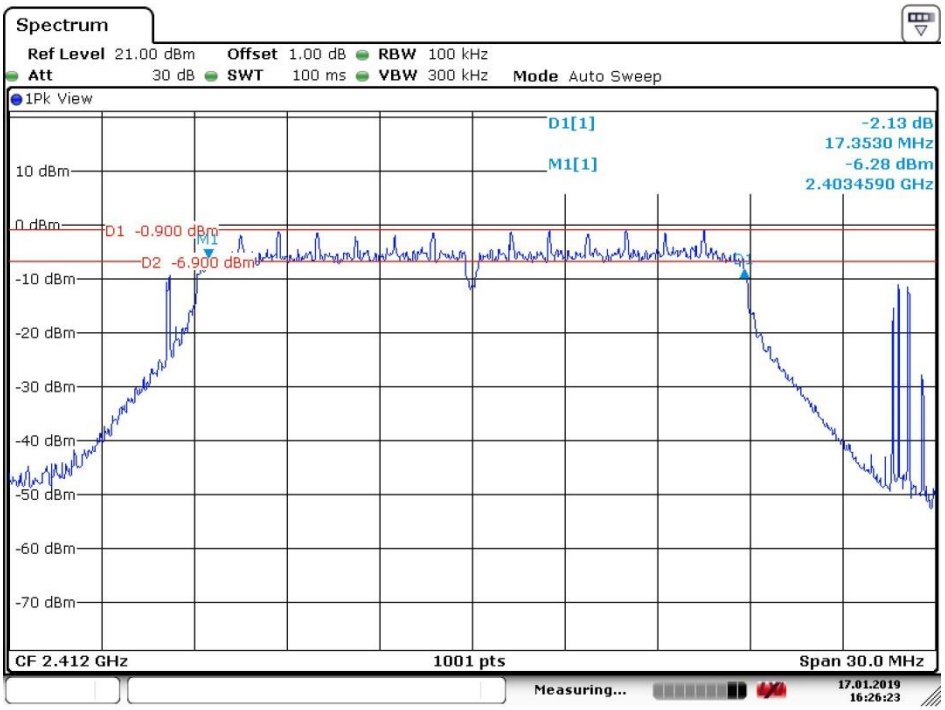

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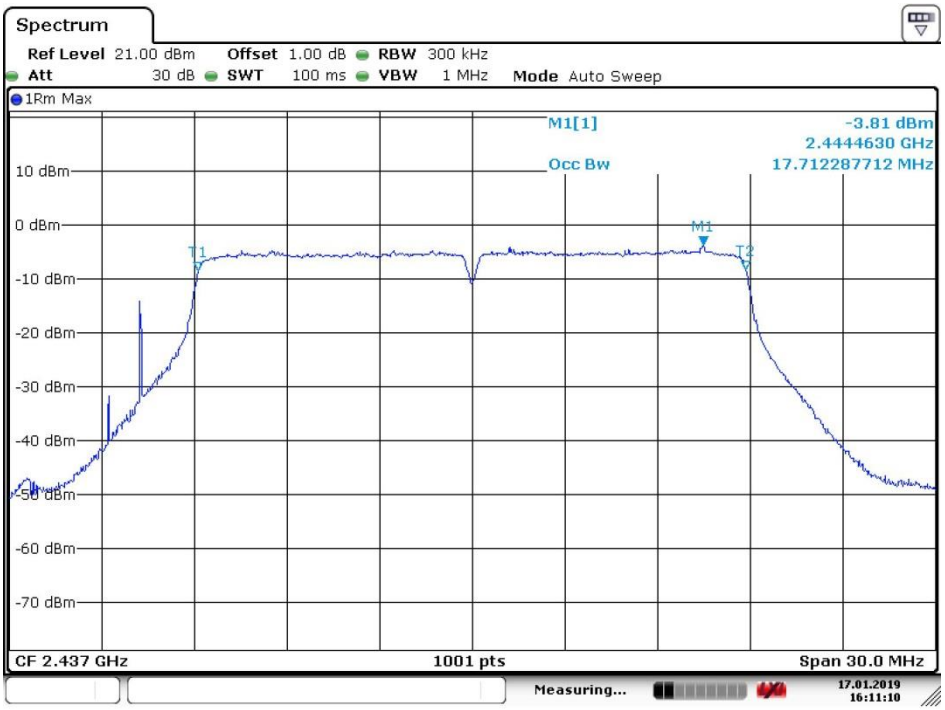
802.11 N20_ Middle Channel



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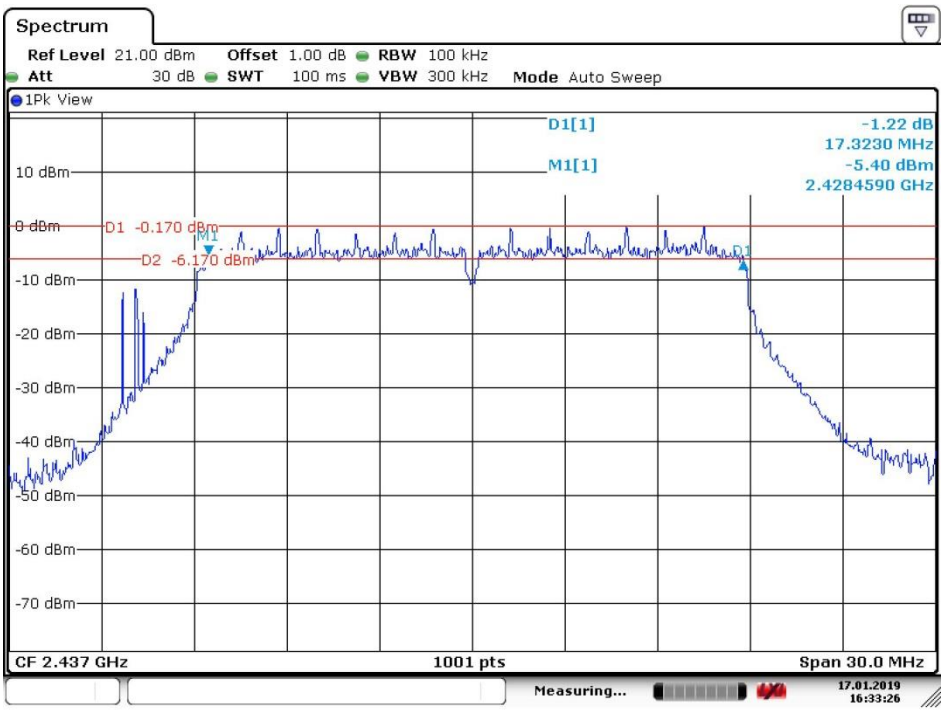

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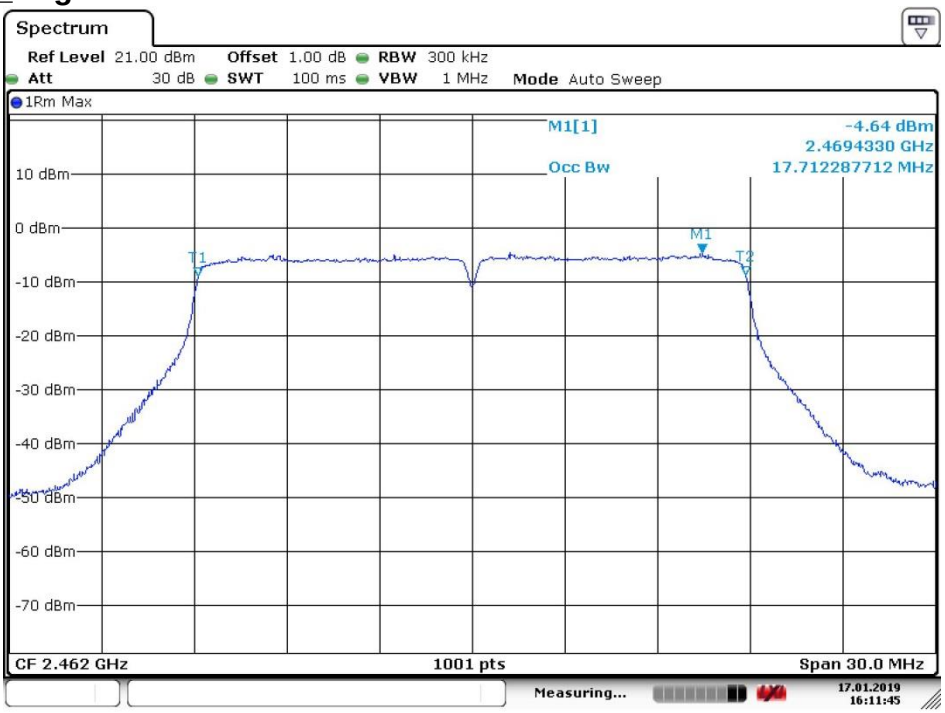
802.11 N20_ Highest Channel



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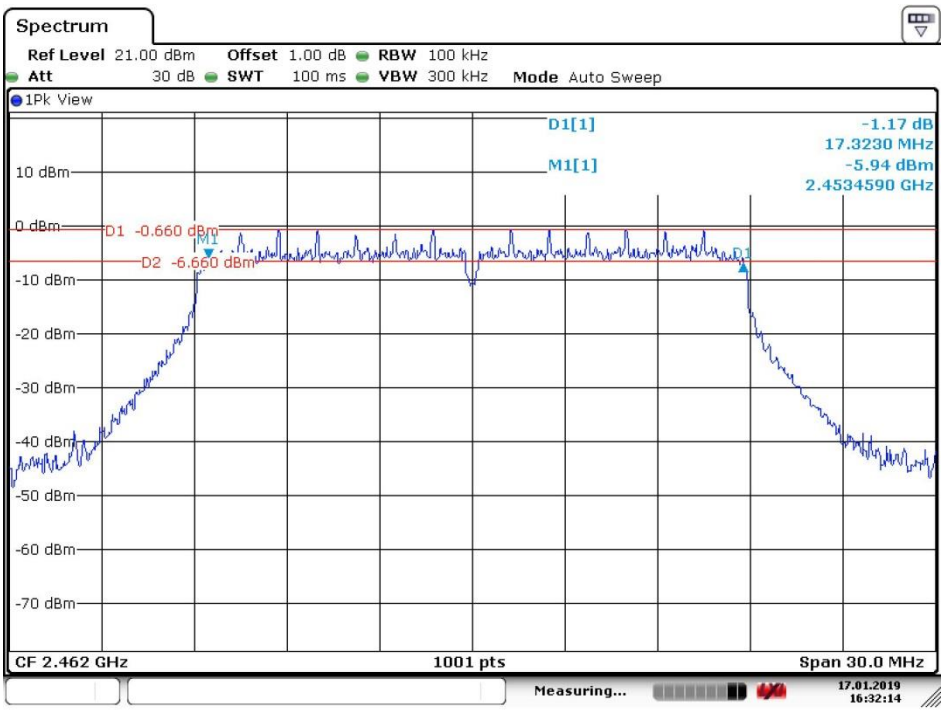

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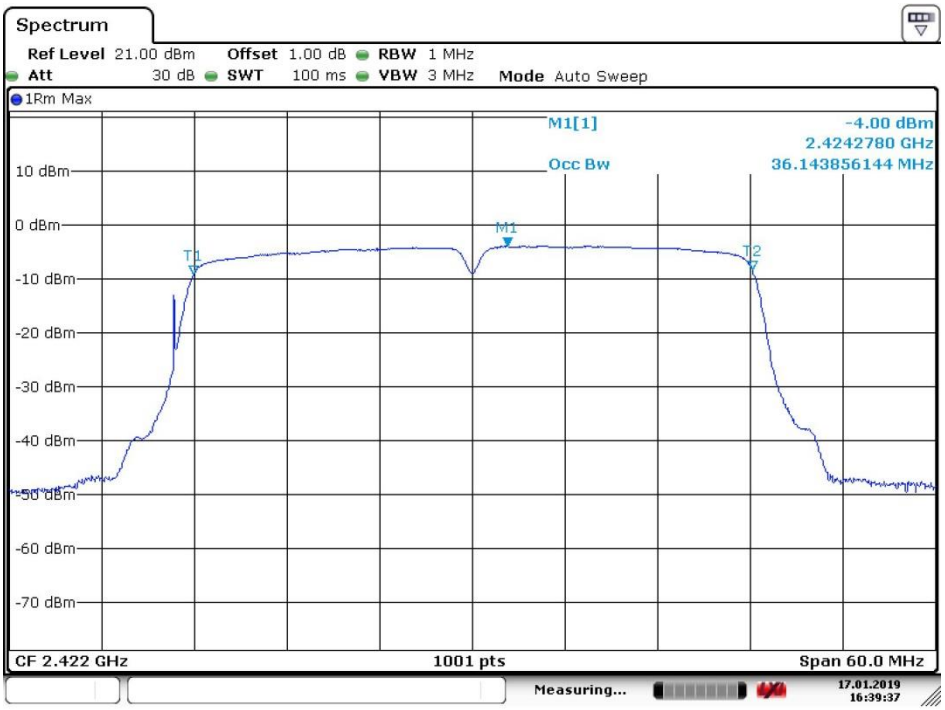
802.11N40_Lowest Channel



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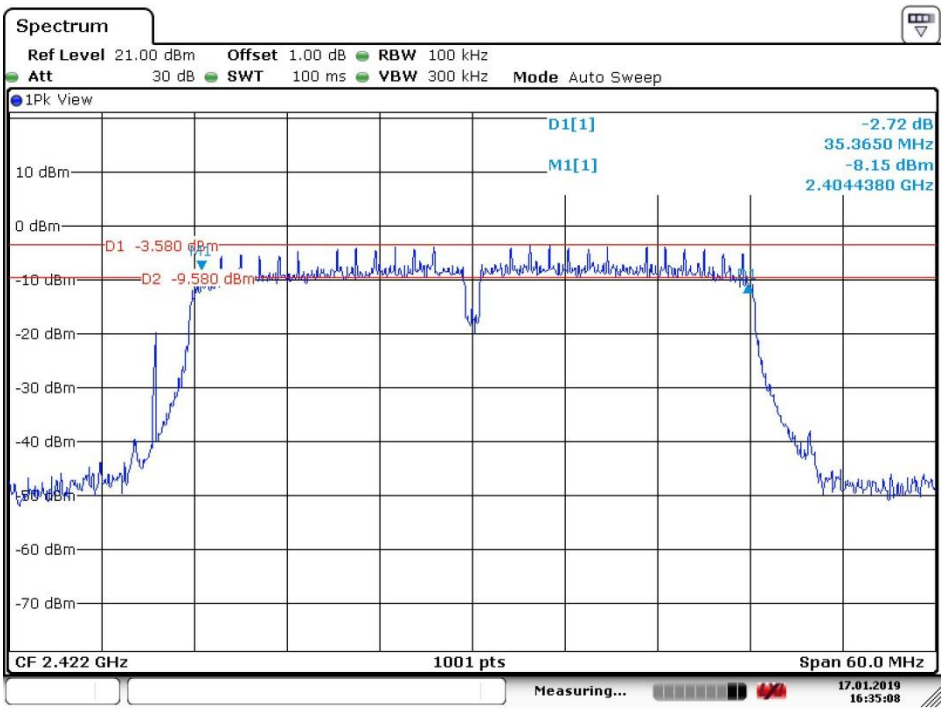

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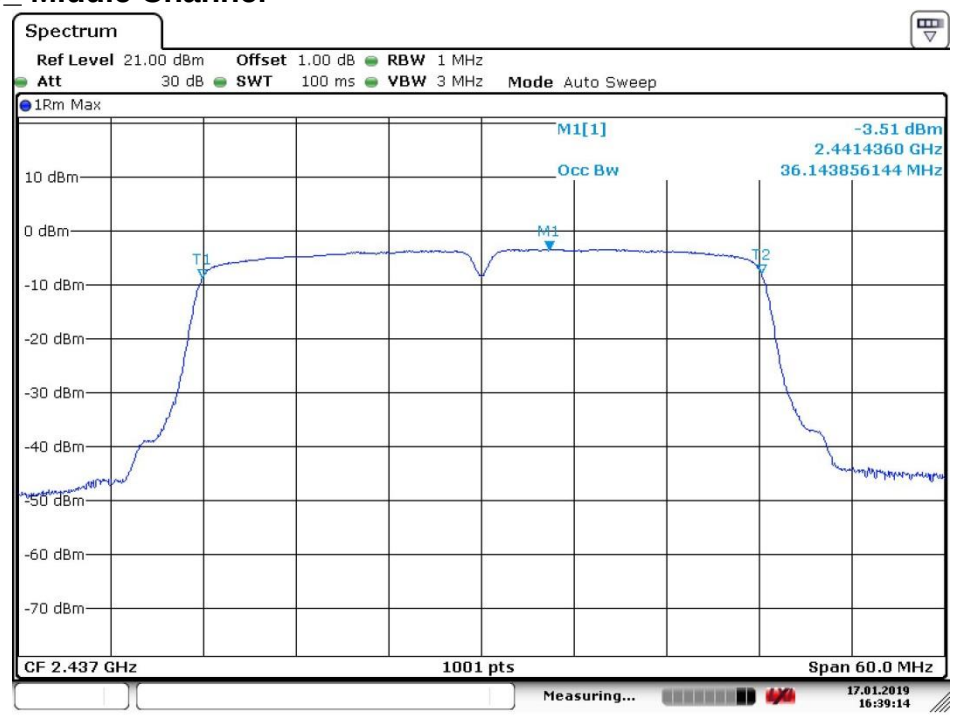

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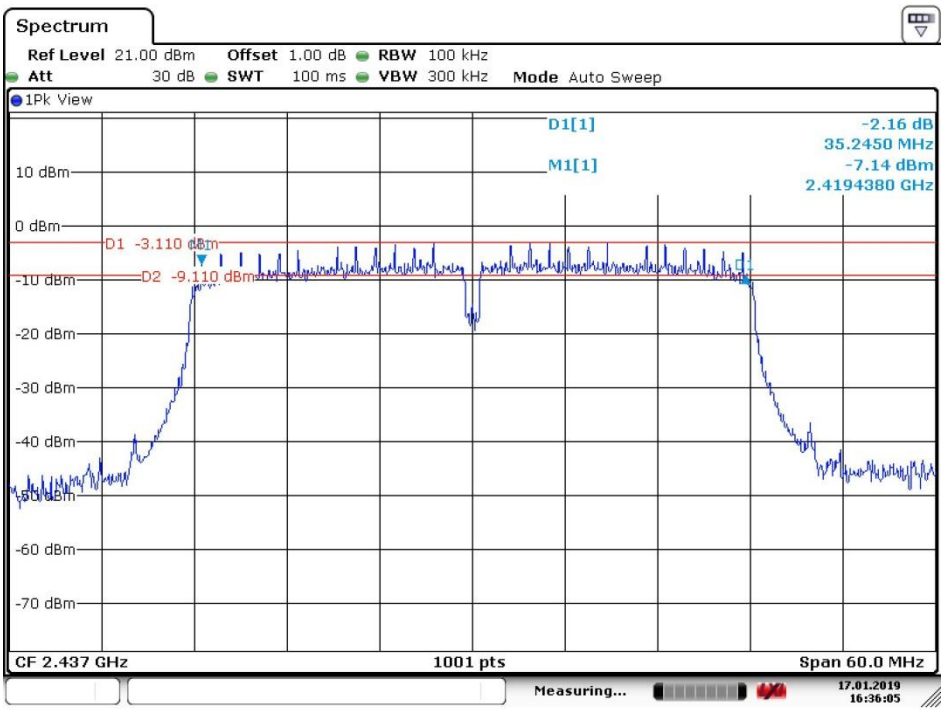

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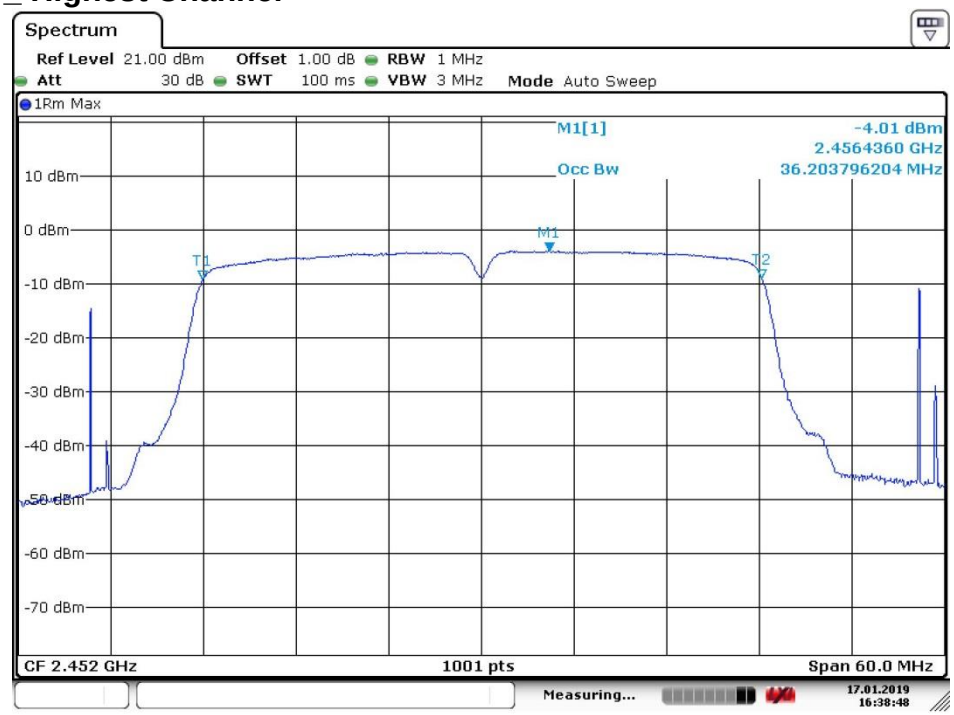
802.11 N40_ Highest Channel



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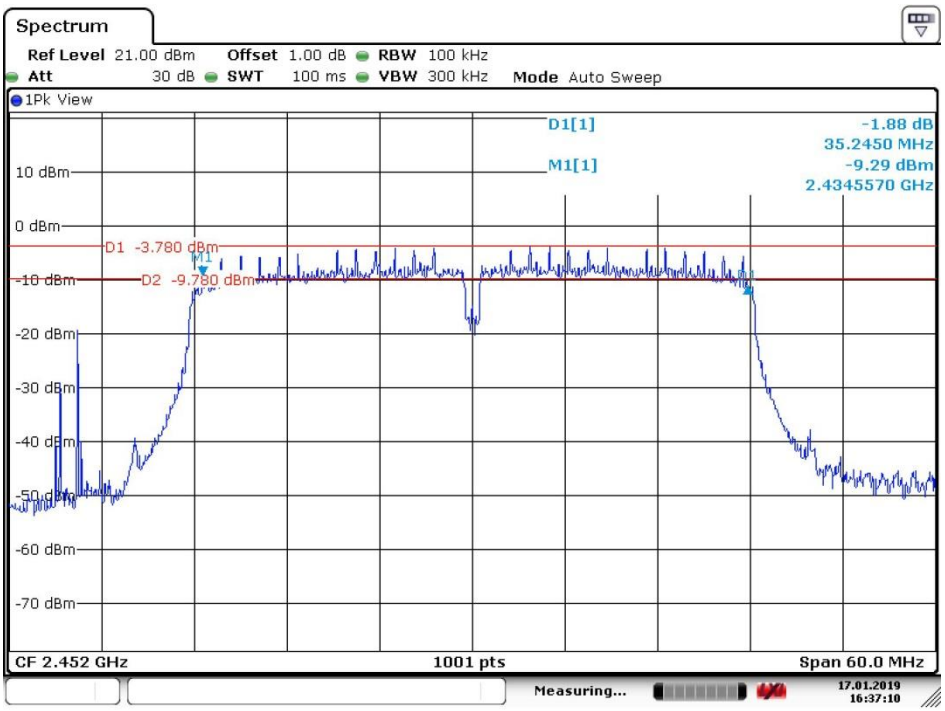

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