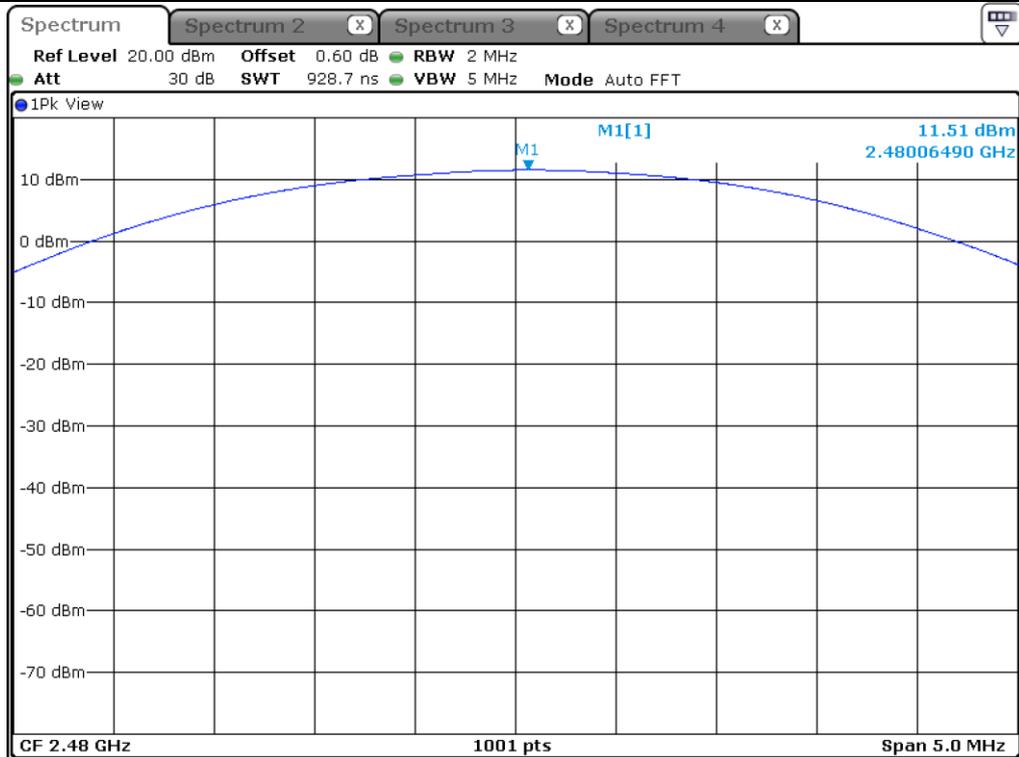


Middle Channel



High Channel

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12. 100 kHz BANDWIDTH OUTSIDE THE FREQUENCY BAND

12.1 Operating environment

Temperature : 23 °C
 Relative humidity : 46 % R.H.

12.2 Test set-up for conducted measurement

The antenna output of the EUT was connected to the spectrum analyzer. The resolution and video bandwidth is set to 100 kHz, and peak detection was used.



12.3 Test set-up for radiated measurement

The radiated emissions measurements were performed on the 3 m semi anechoic chamber. The EUT was placed on turntable approximately 1.5 m above the ground plane.

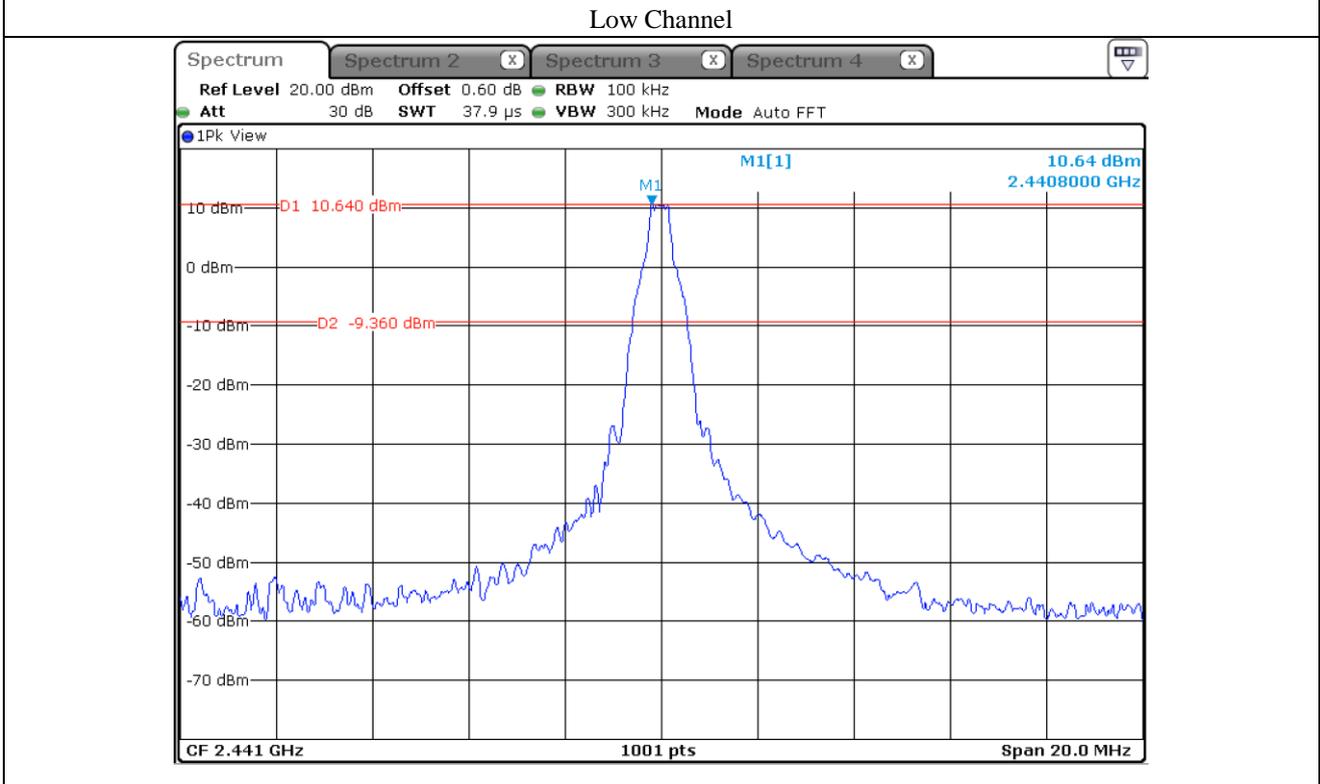
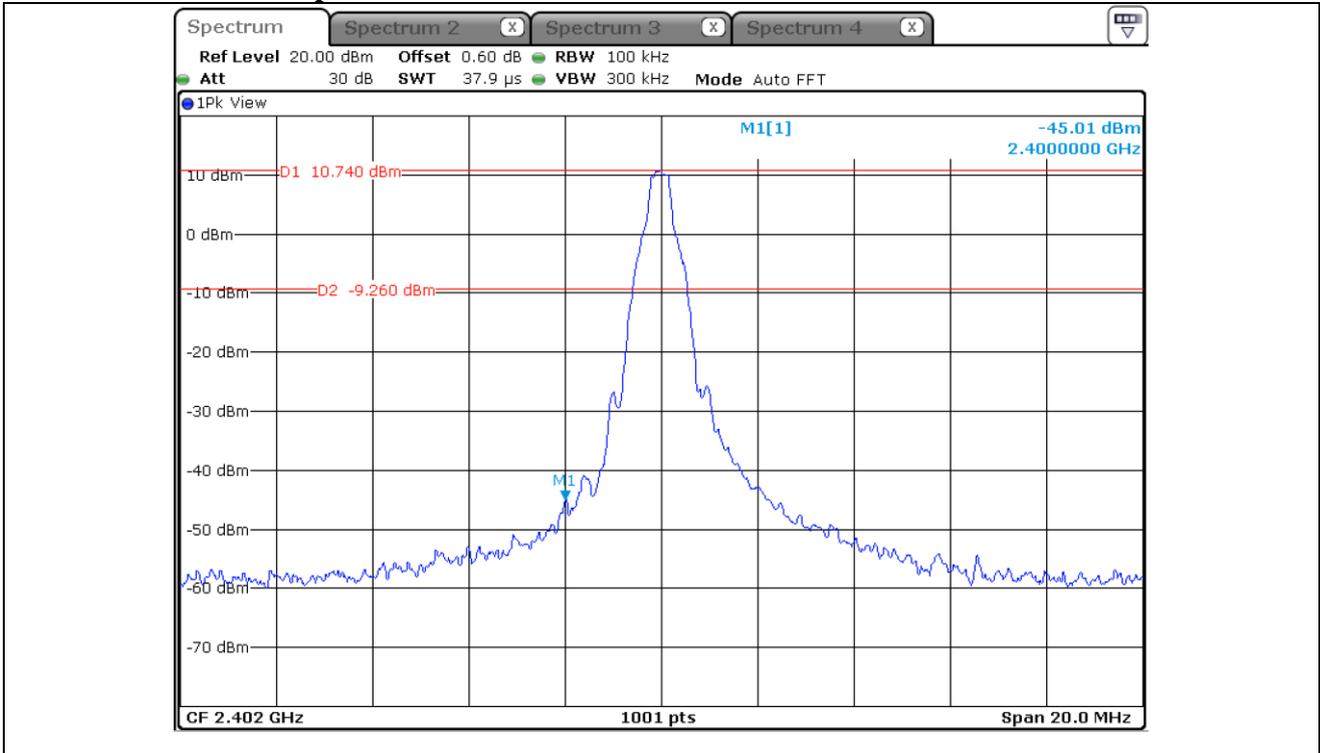
The frequency spectrum from 30 MHz to 26.5 GHz was scanned and maximum emission levels at each frequency recorded. The system was rotated 360°, and the antenna was varied in the height between 1.0 m and 4.0 m in order to determine the maximum emission levels. This procedure was performed for horizontal and vertical polarization of the receiving antenna.

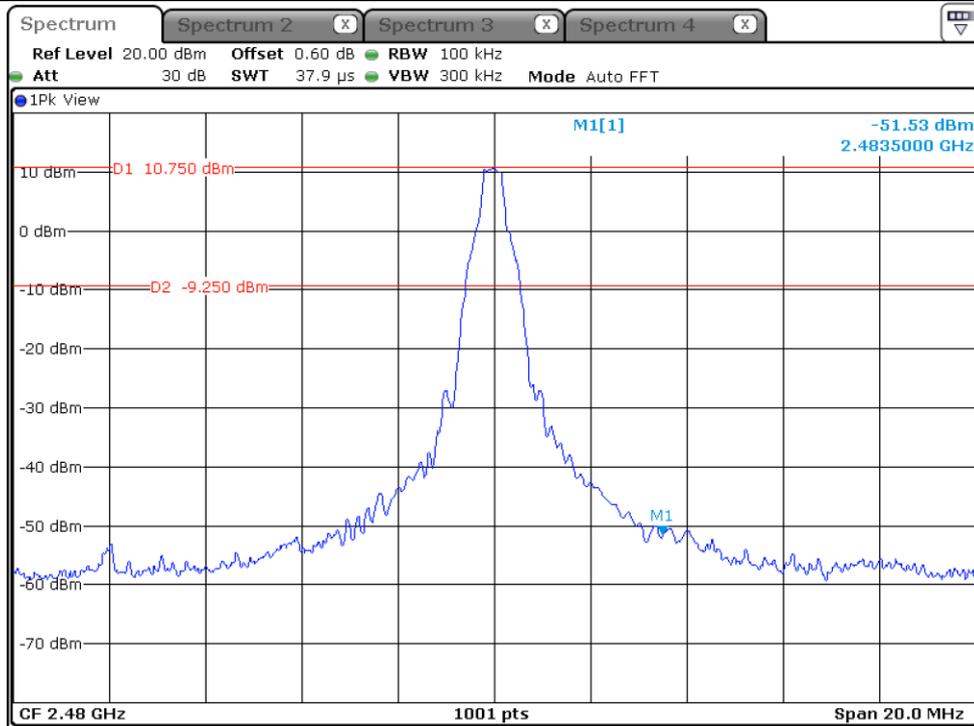
12.4 Test Date

September 09, 2021 ~ September 17, 2021

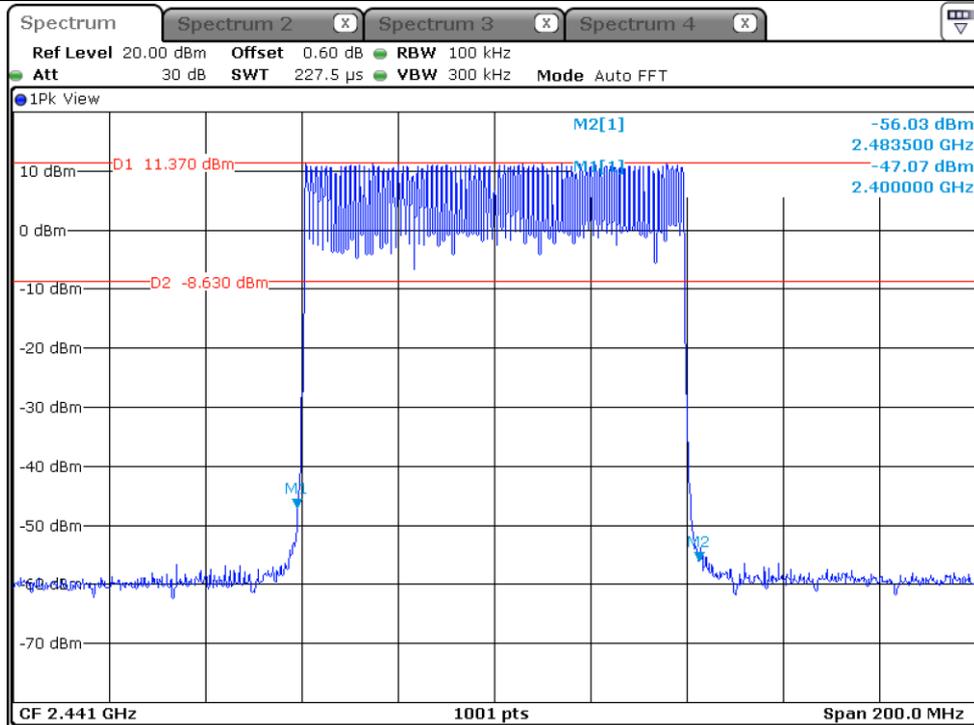
12.5 Test data for conducted emission (Left Earbud)

12.5.1 Test data for 1 Mbps





High Channel

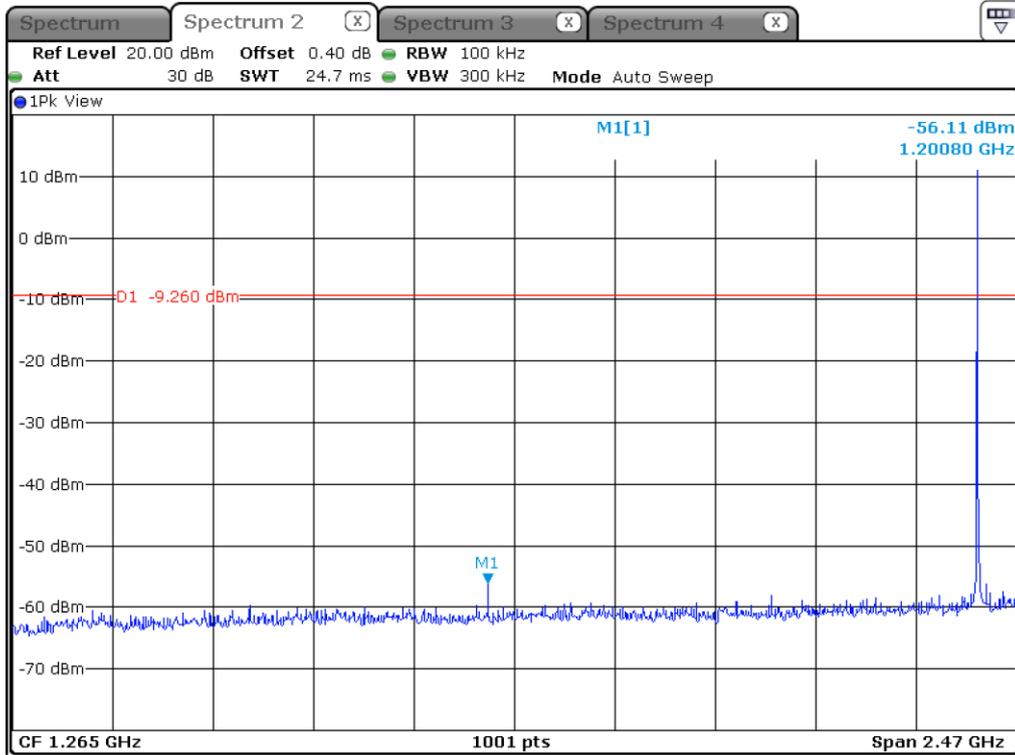


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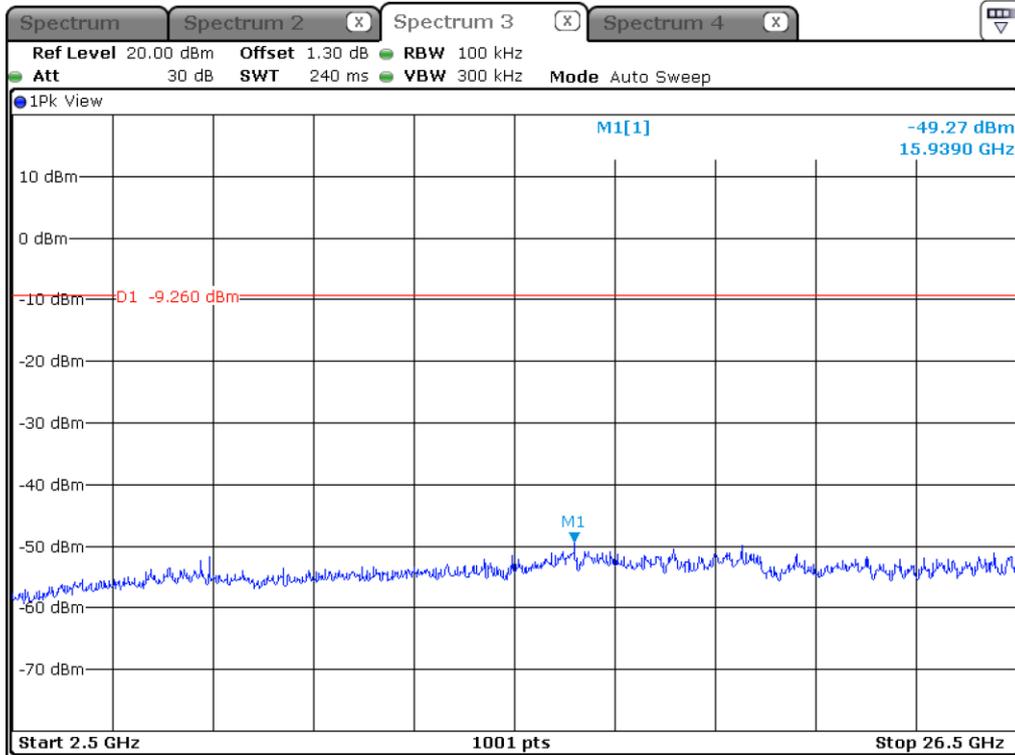
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Low Channel

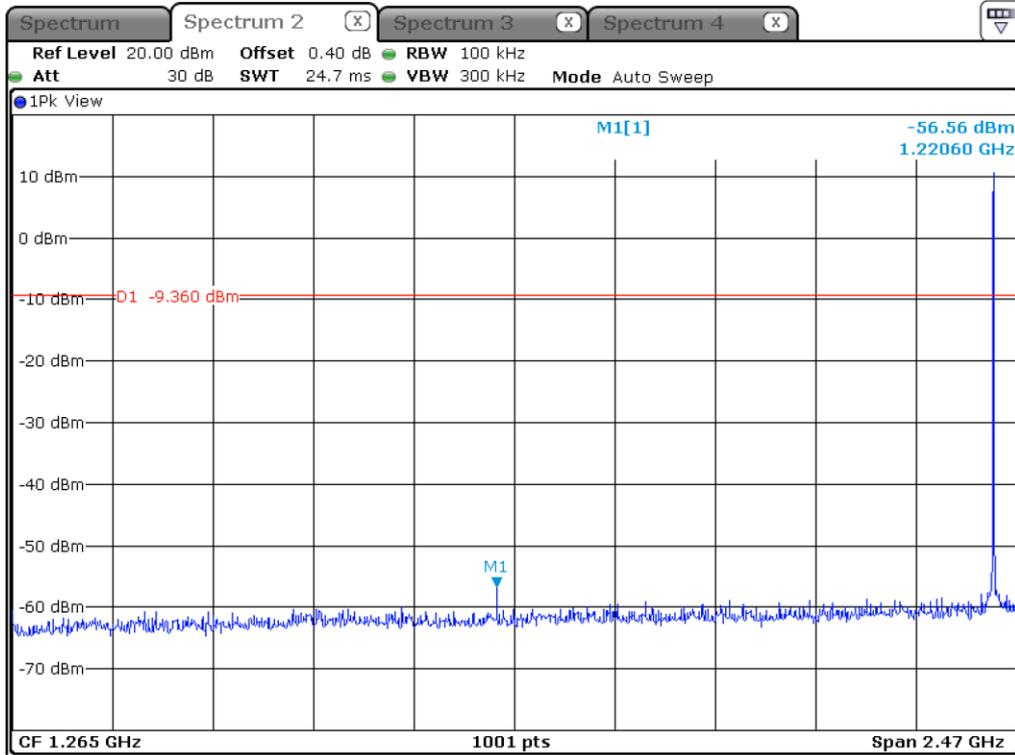


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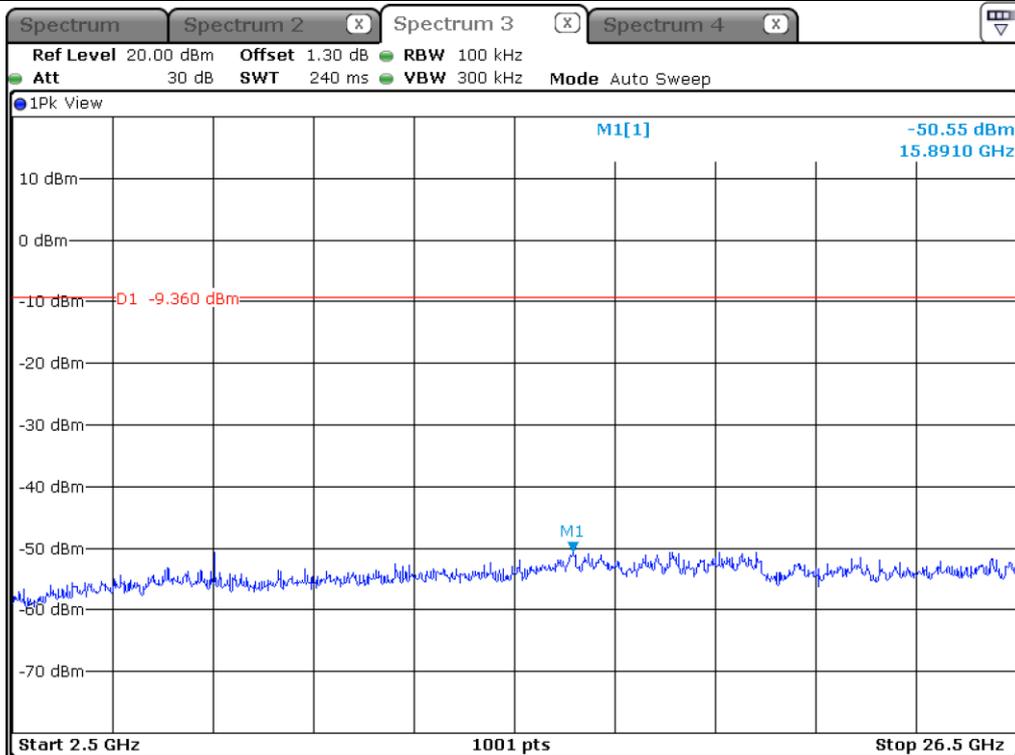
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Middle Channel

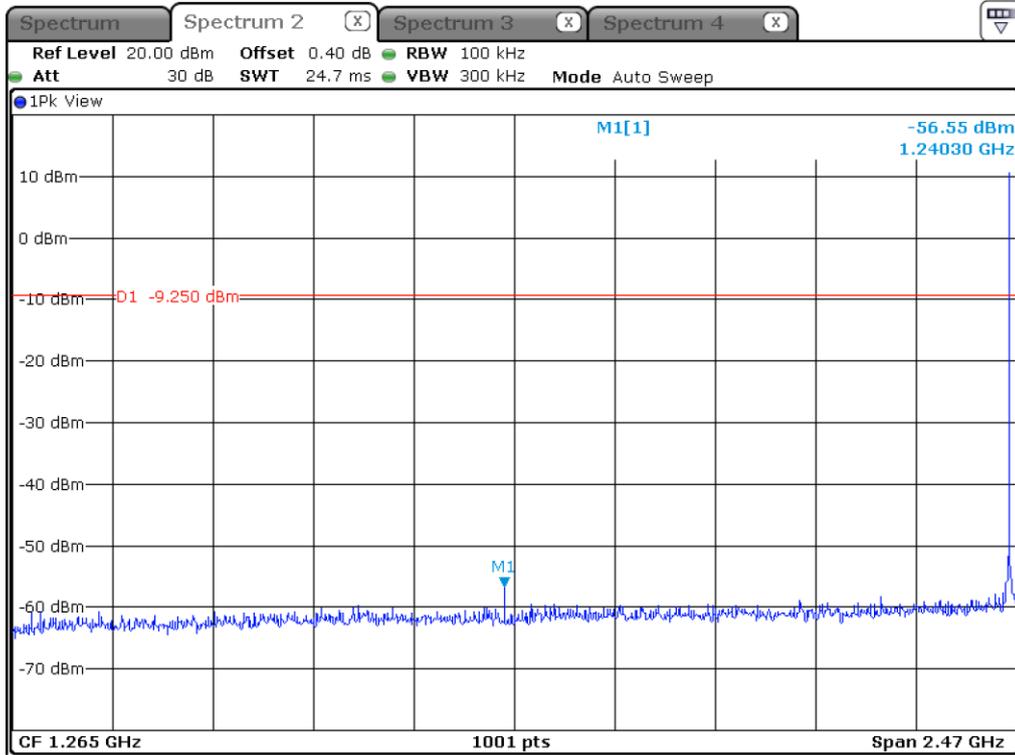


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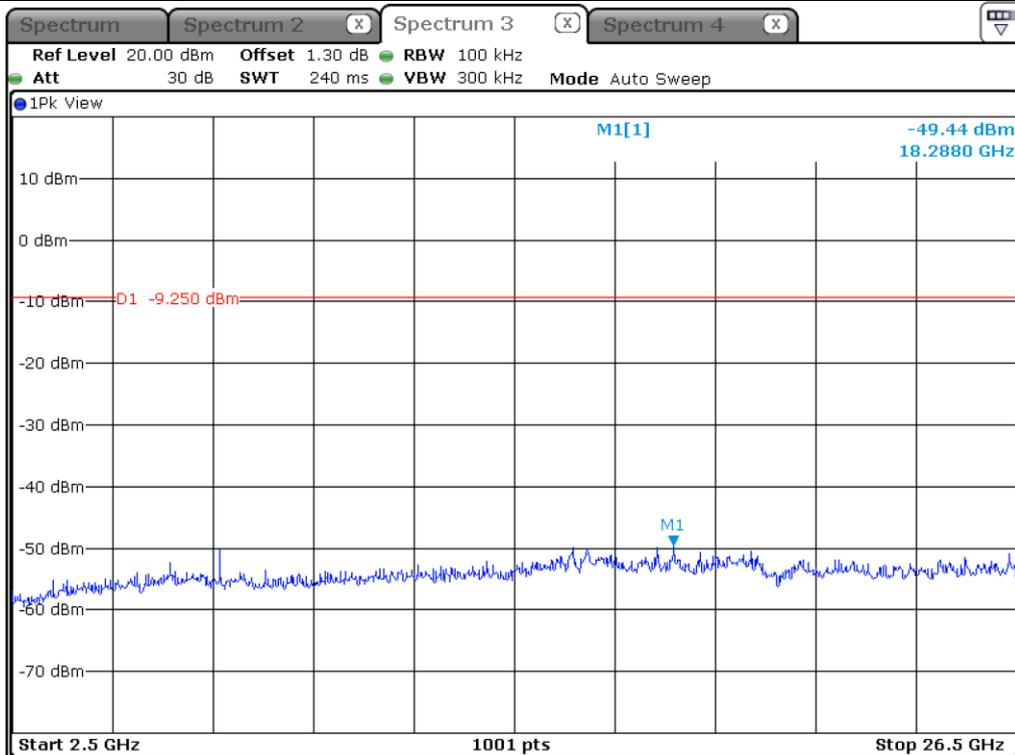
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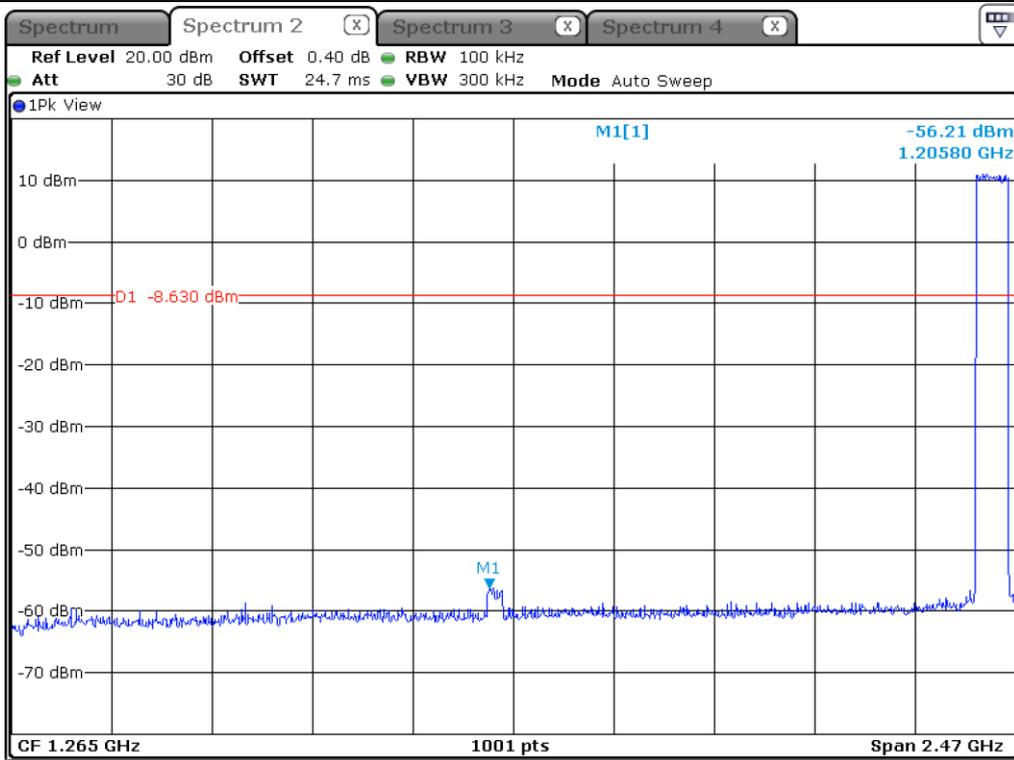


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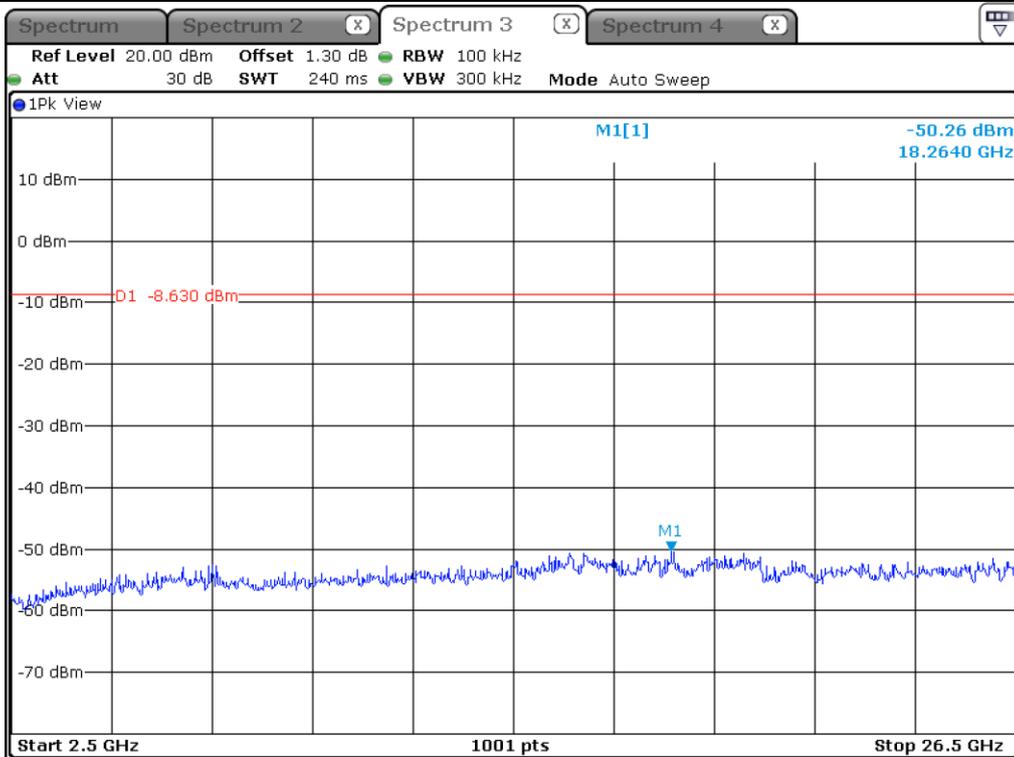
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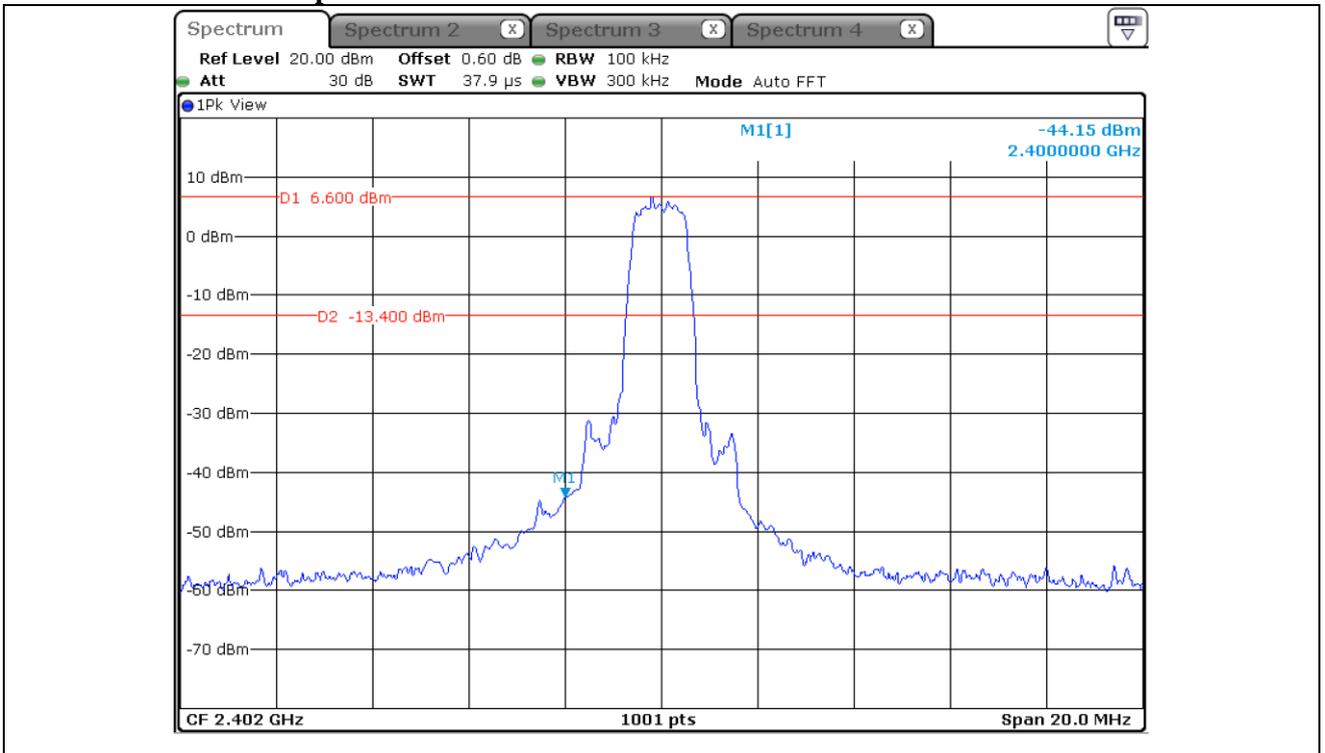
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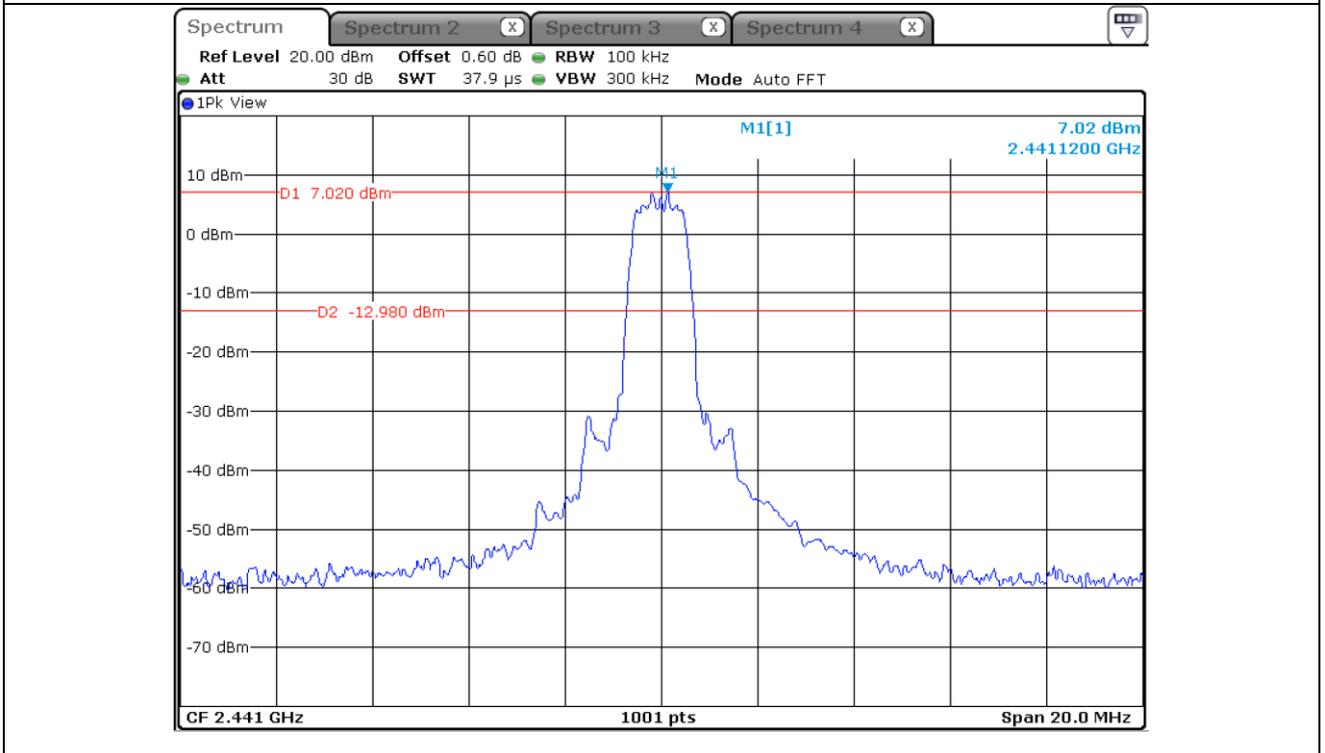
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12.5.2 Test data for 2 Mbps



Low Channel

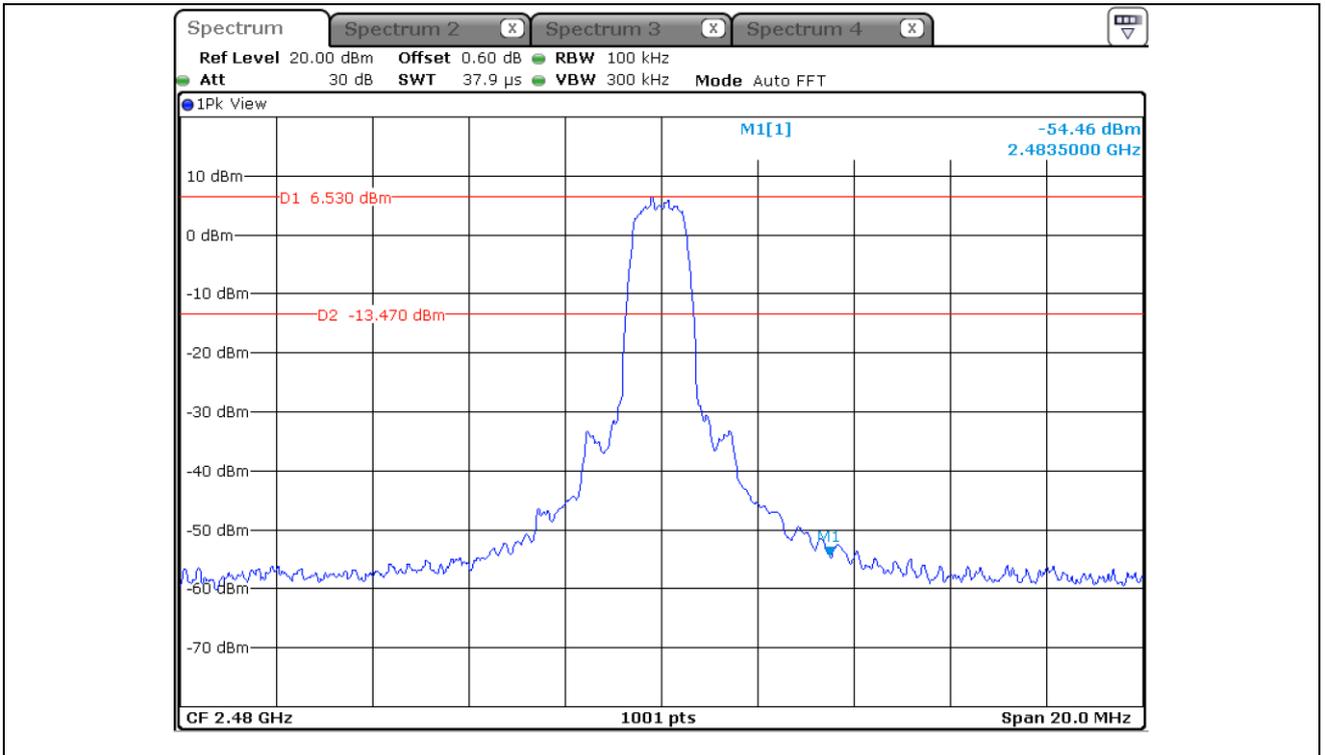


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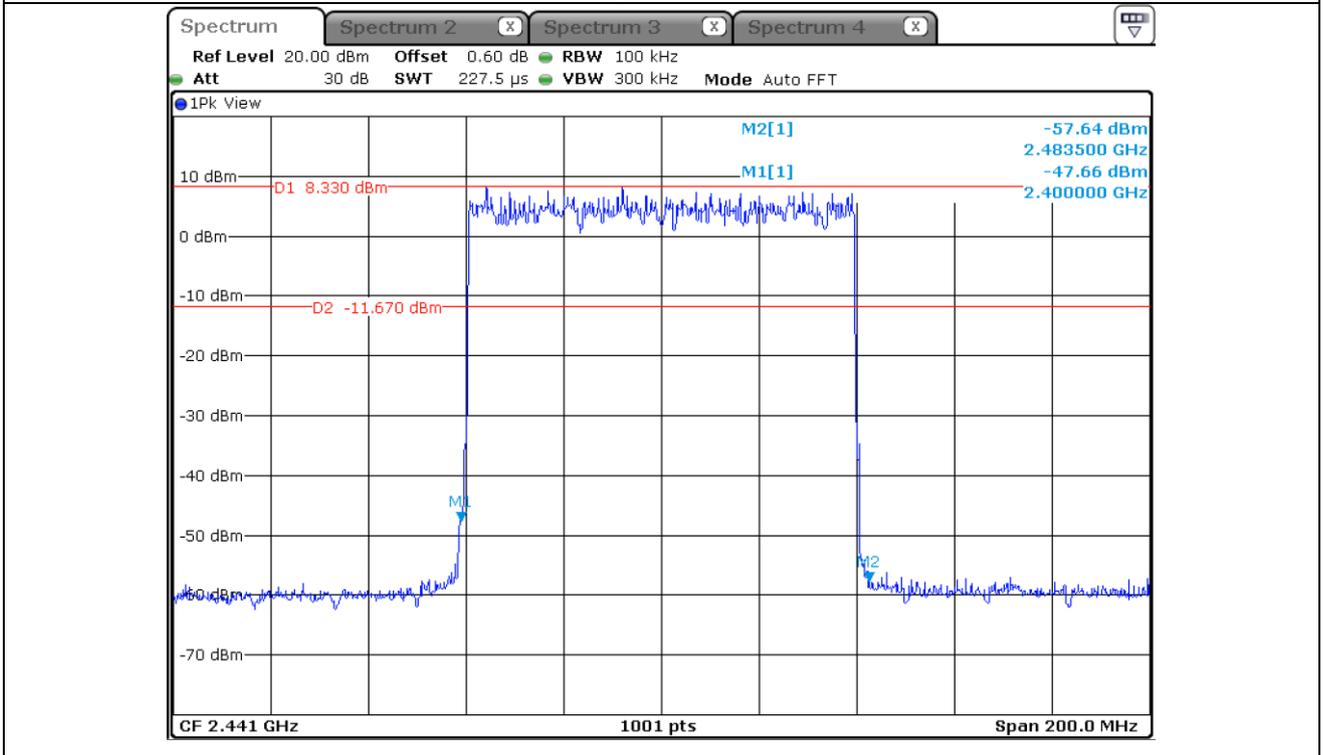
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High Channel

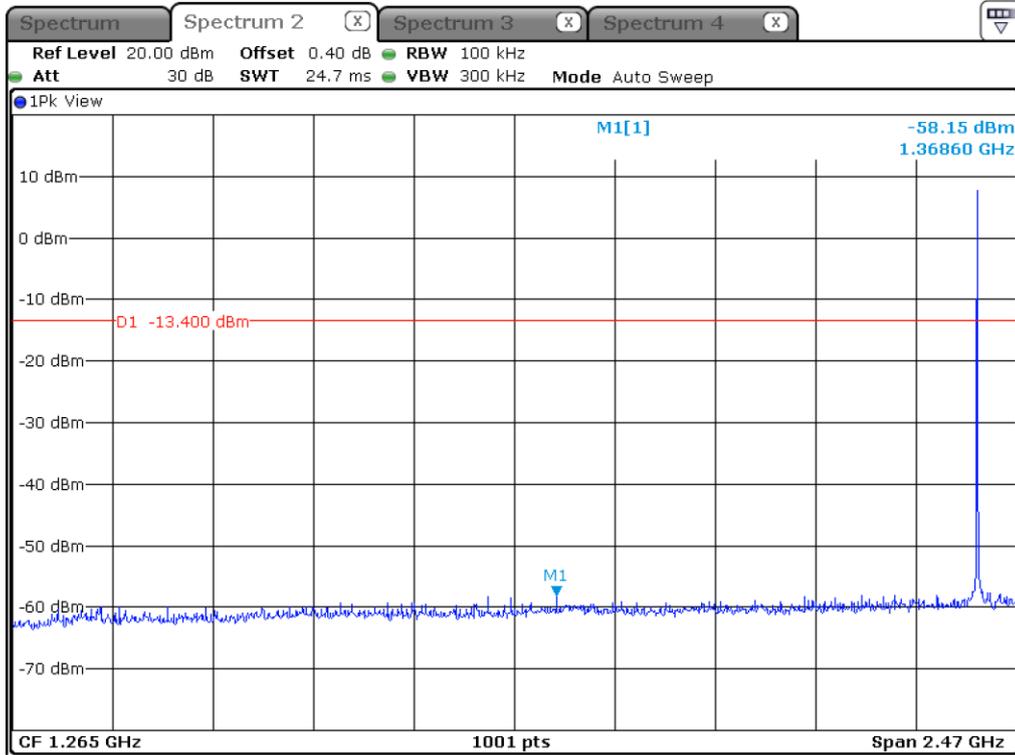


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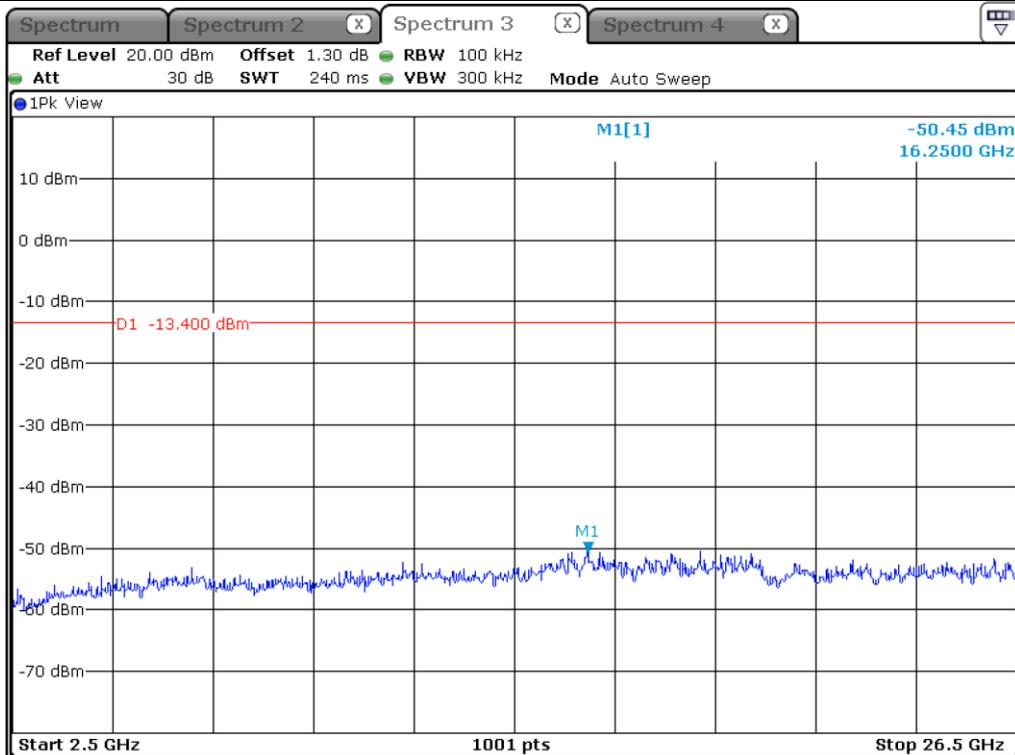
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Low Channel

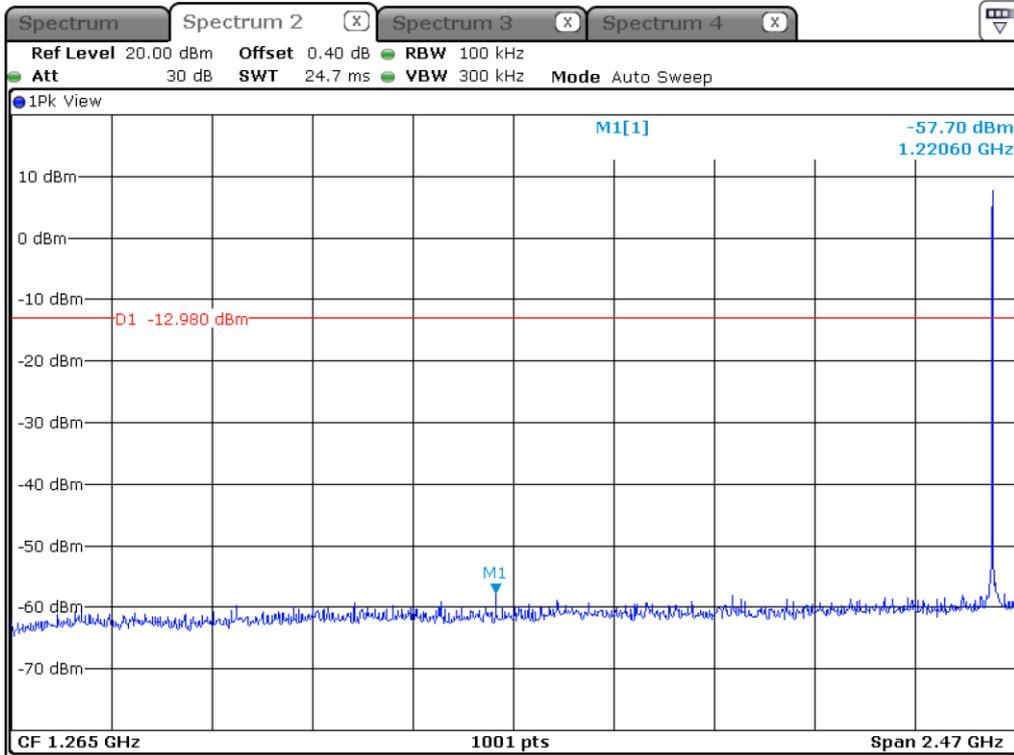


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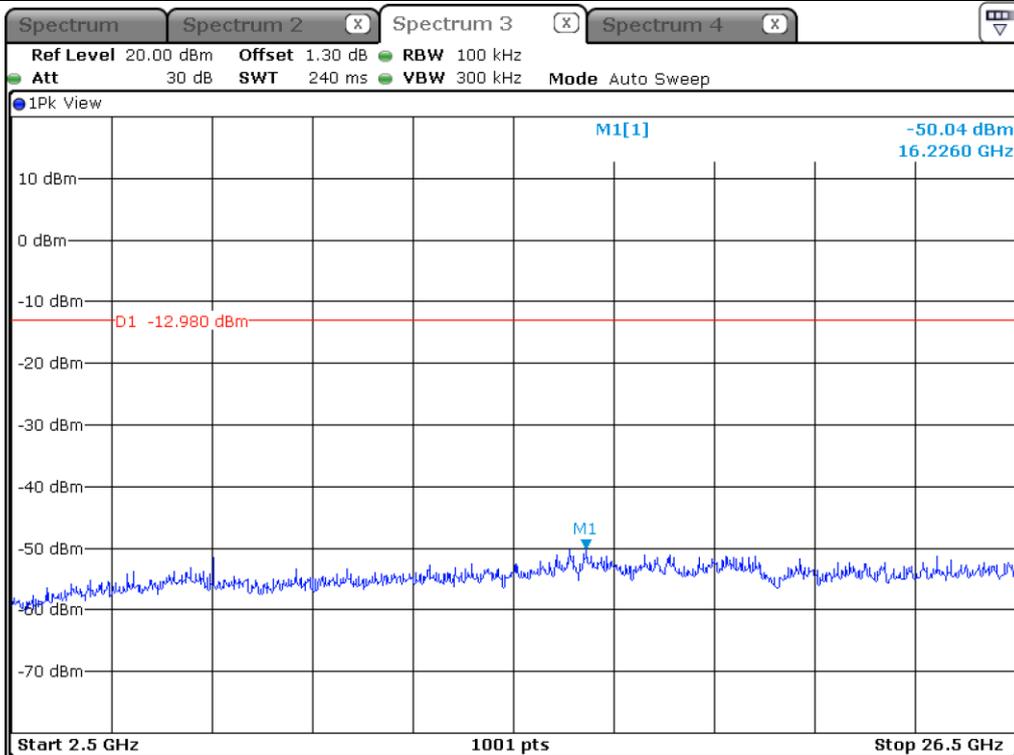
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Middle Channel

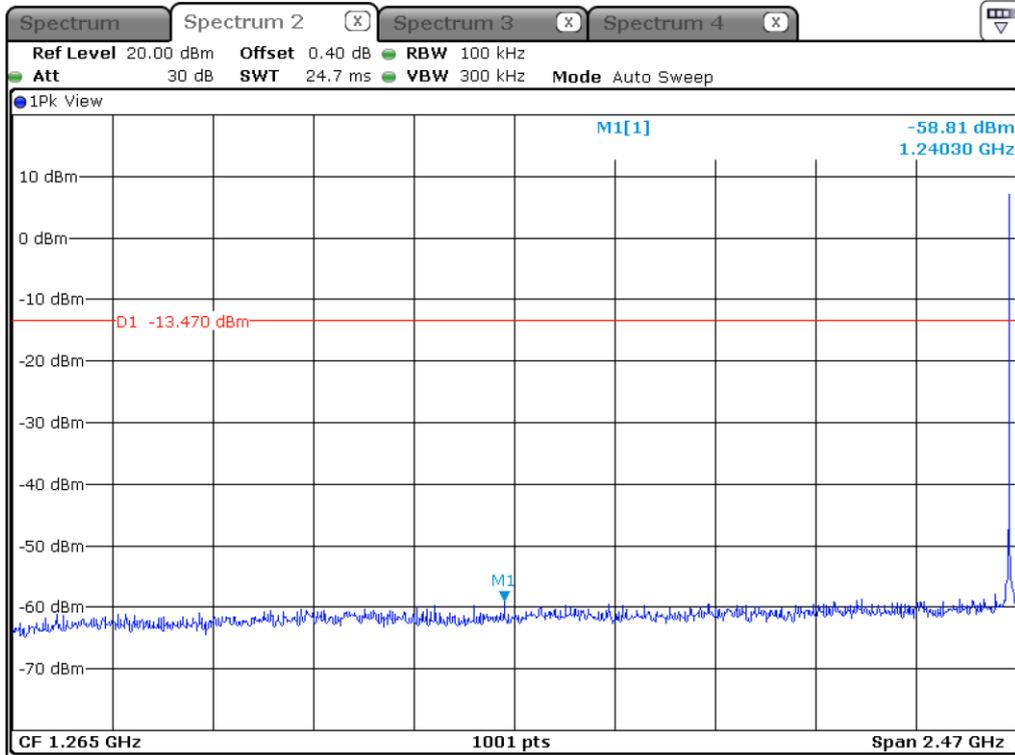


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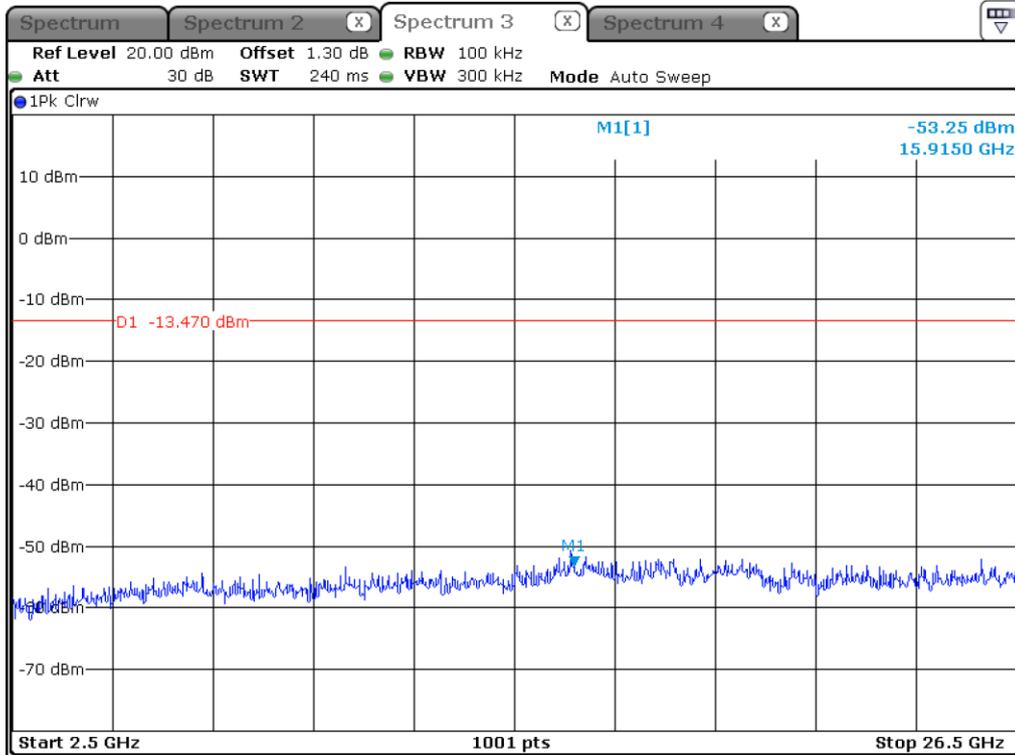
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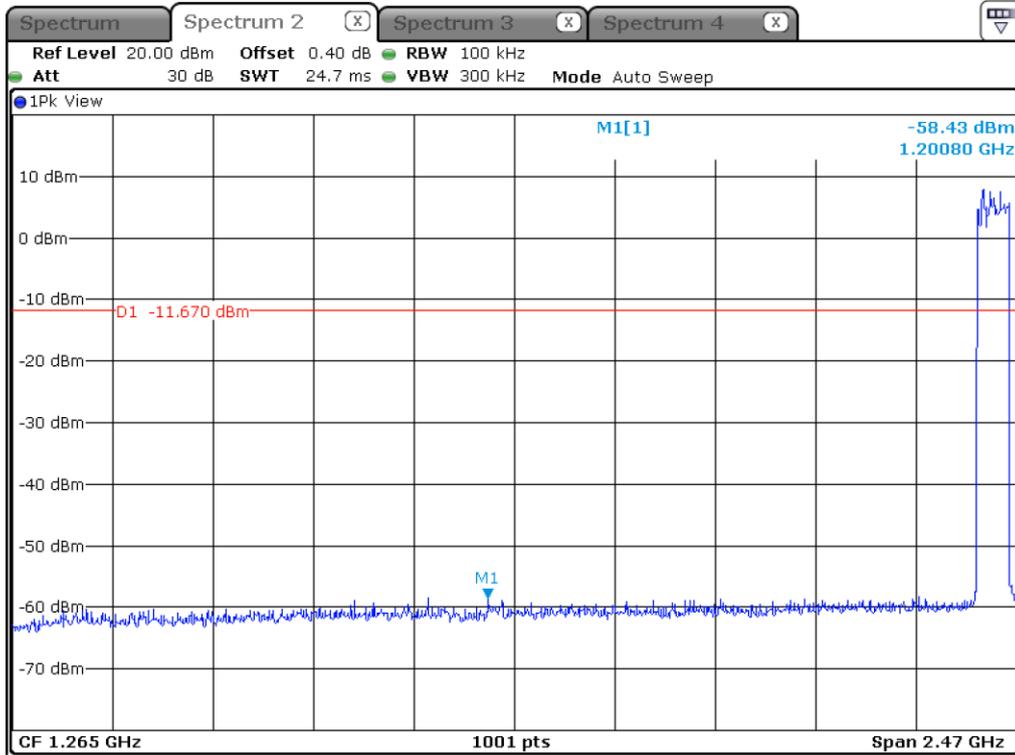


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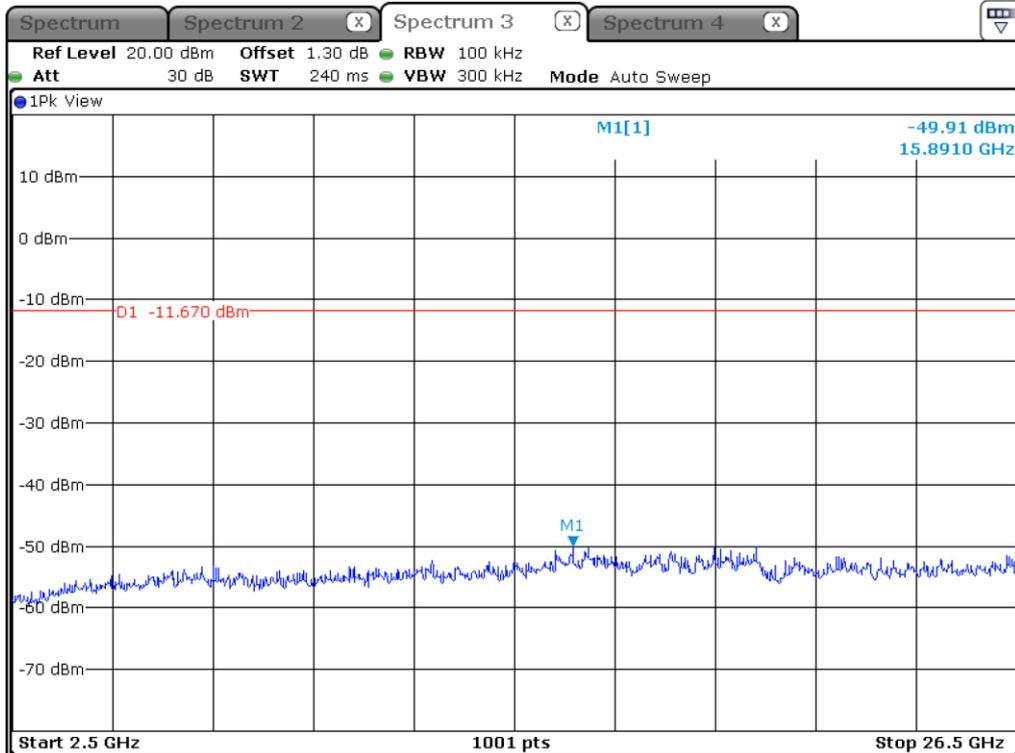
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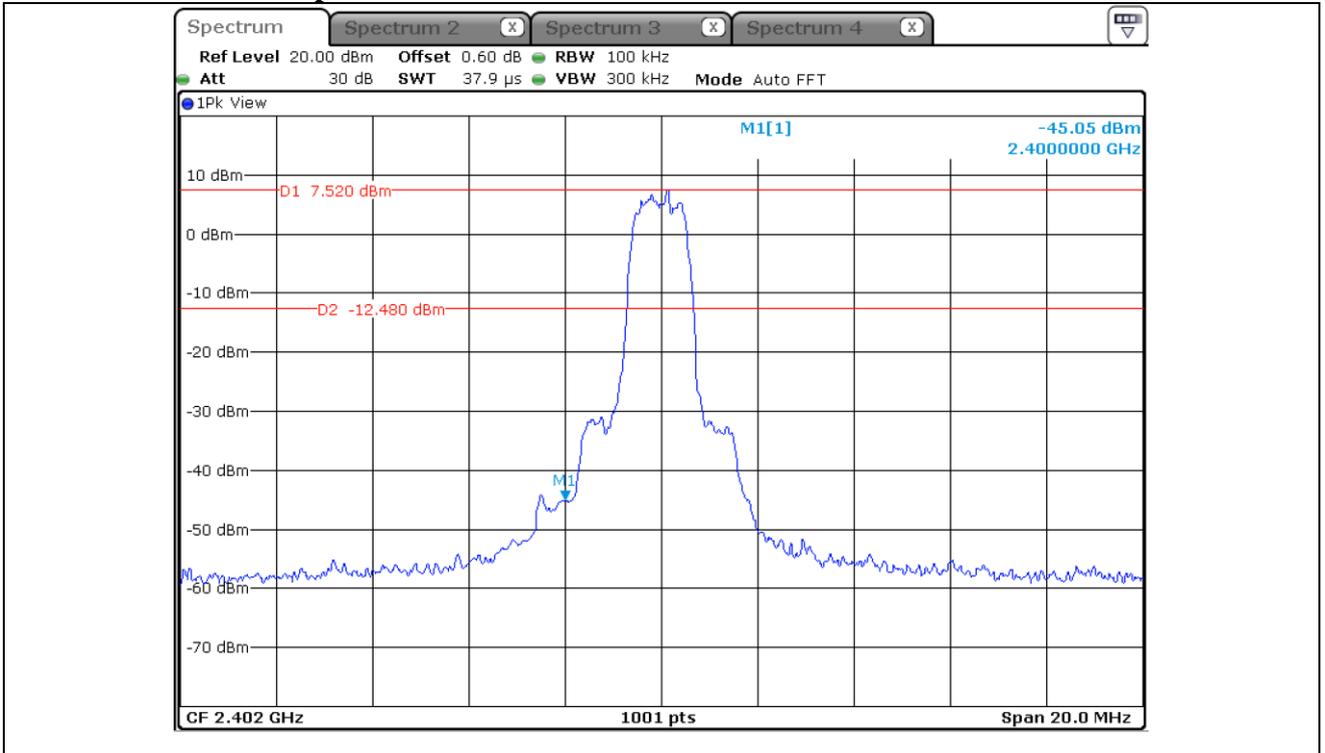
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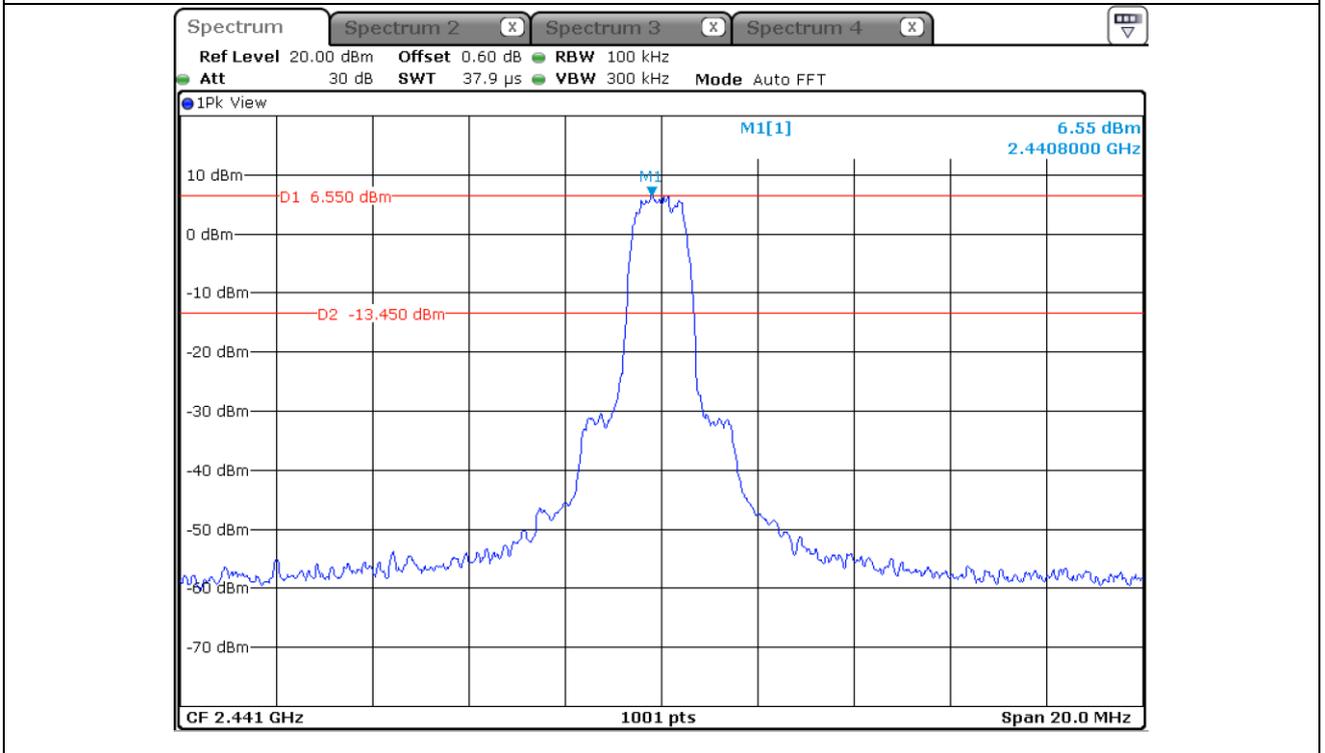
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12.5.3 Test data for 3 Mbps



Low Channel

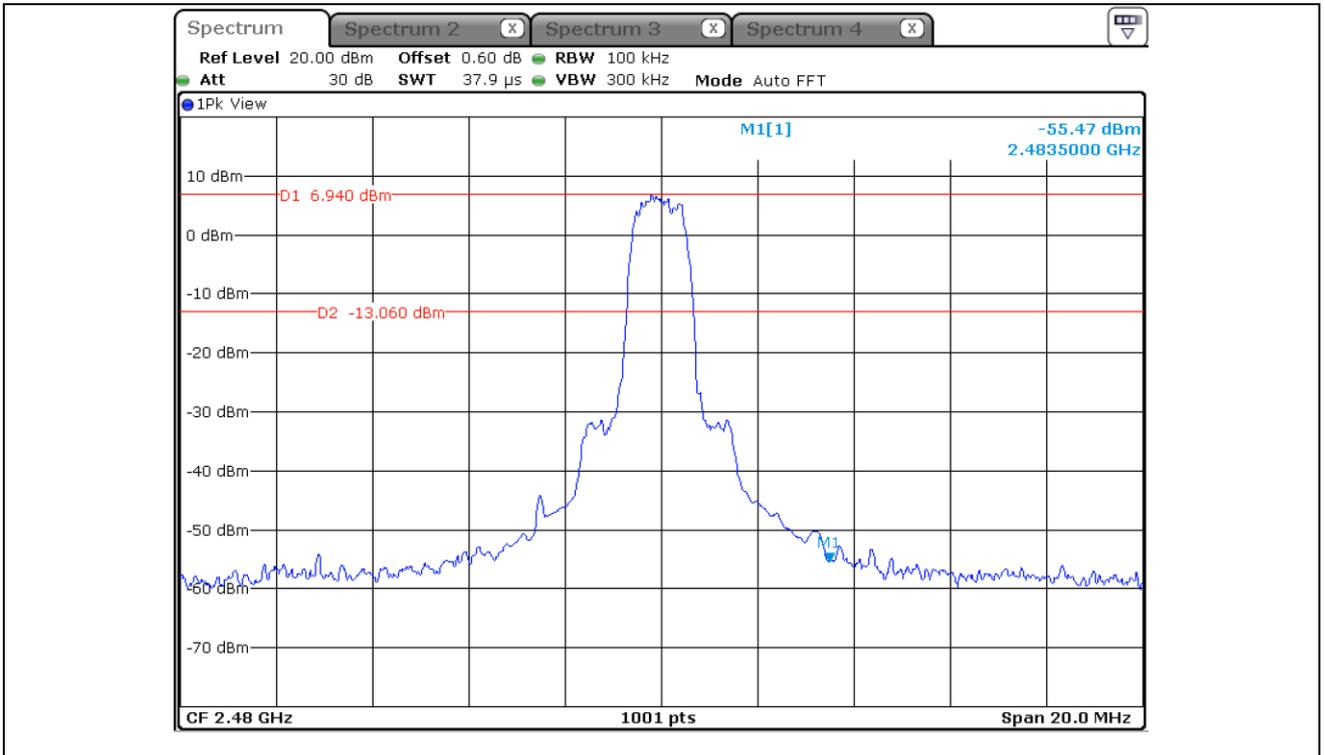


Middle Channel

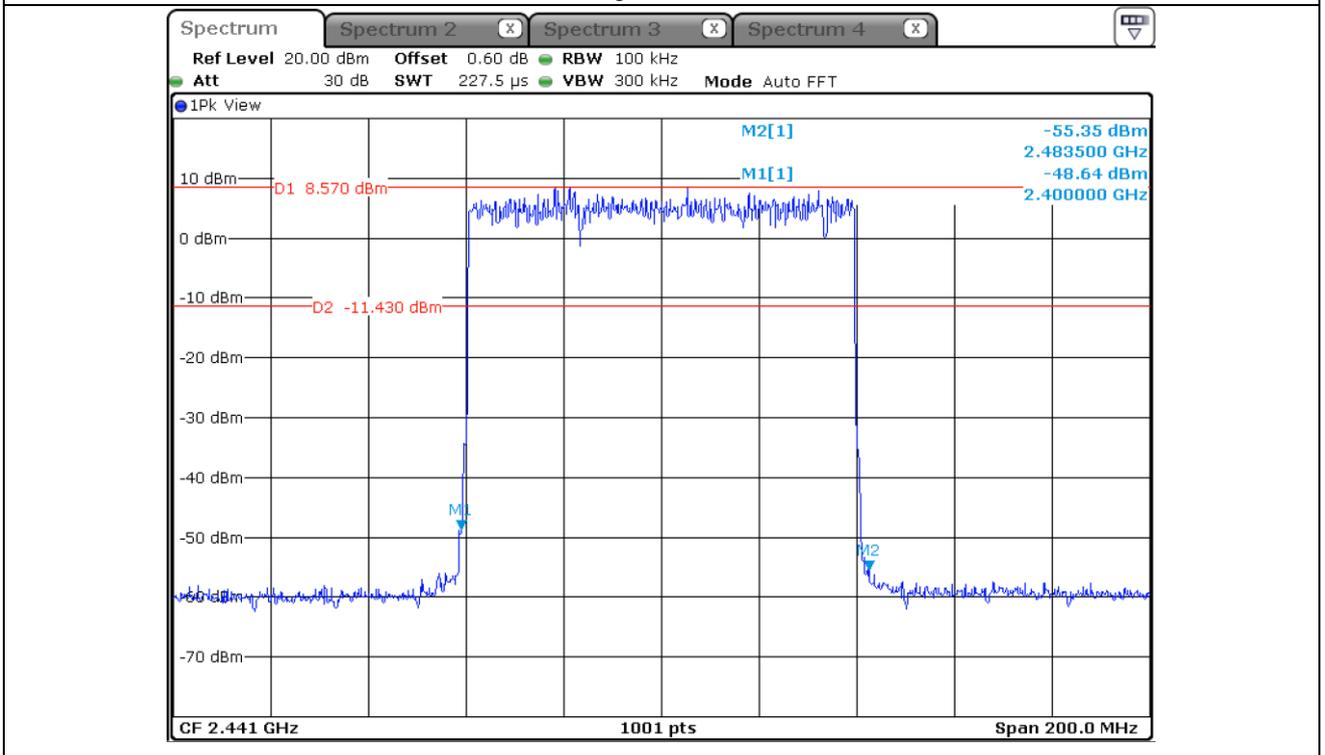
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High Channel

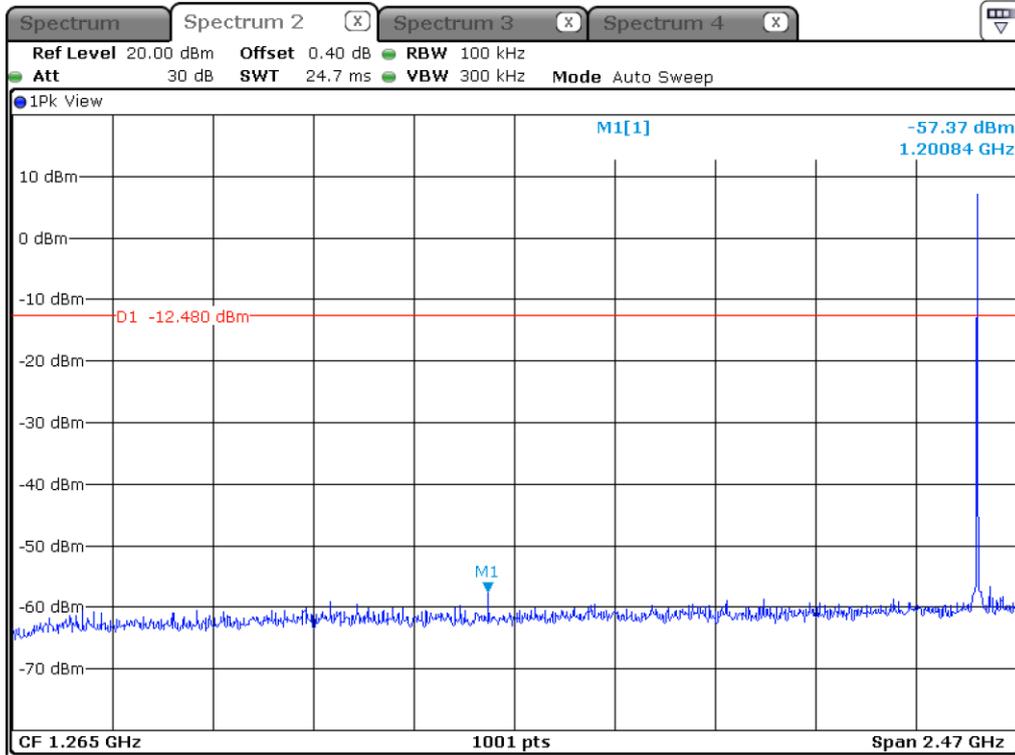


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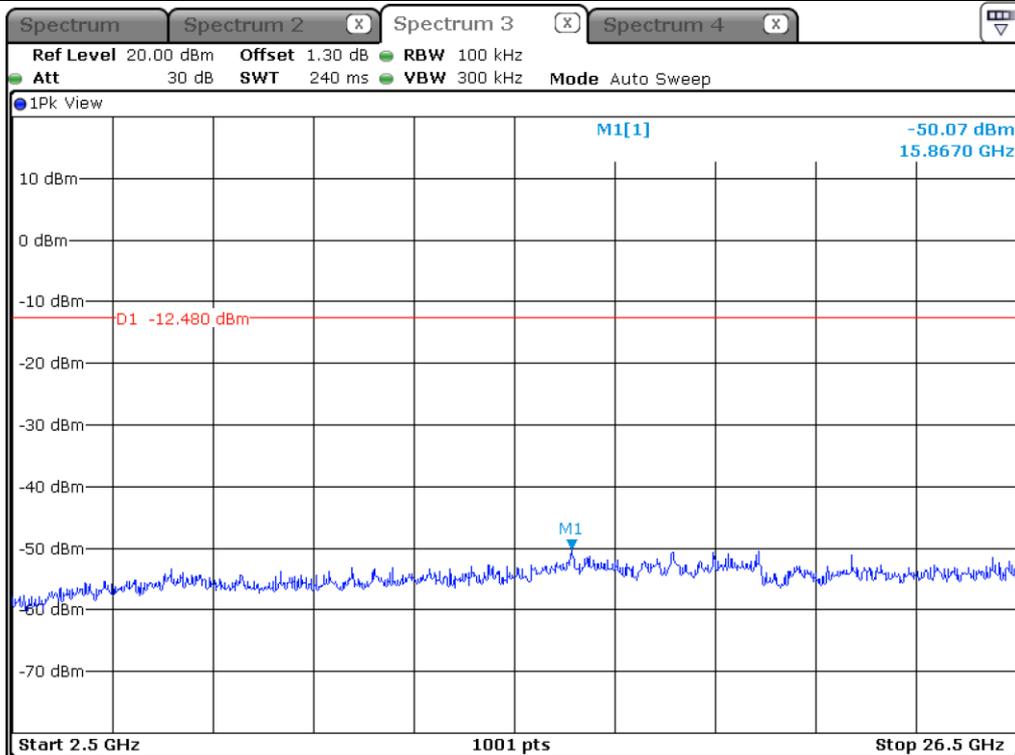
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Low Channel

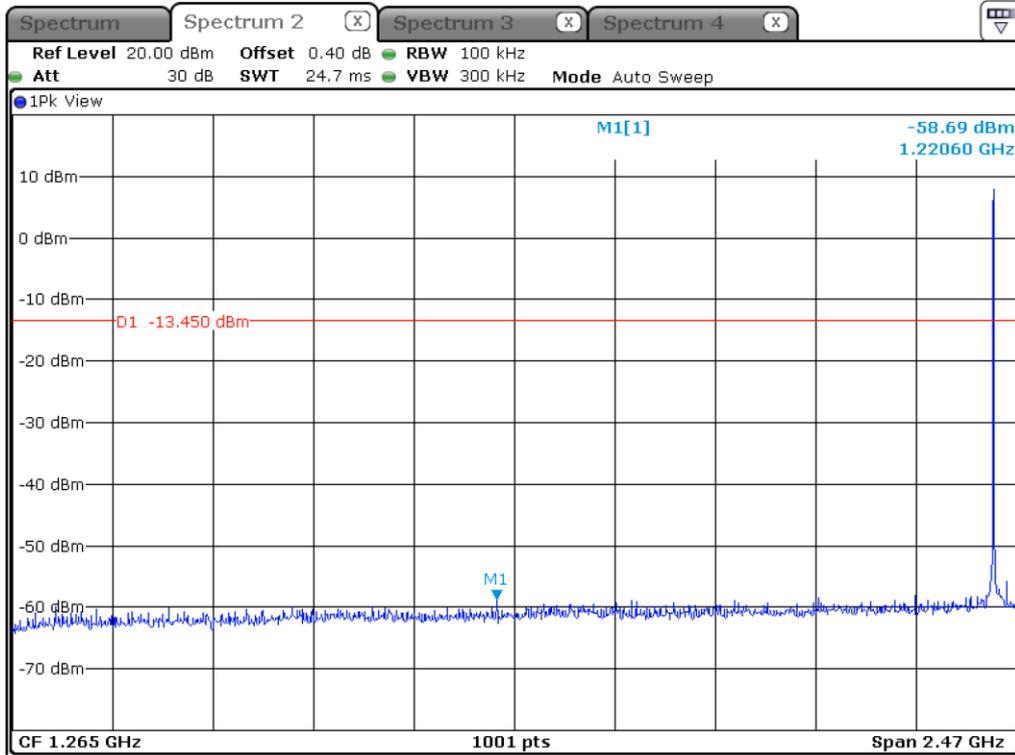


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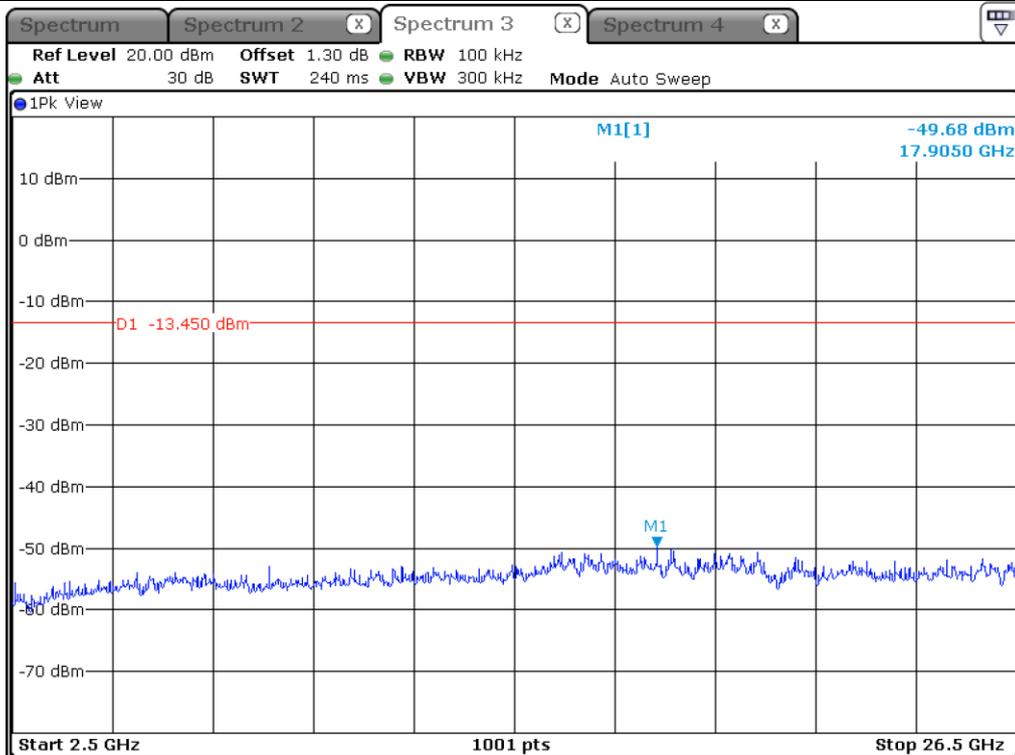
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Middle Channel

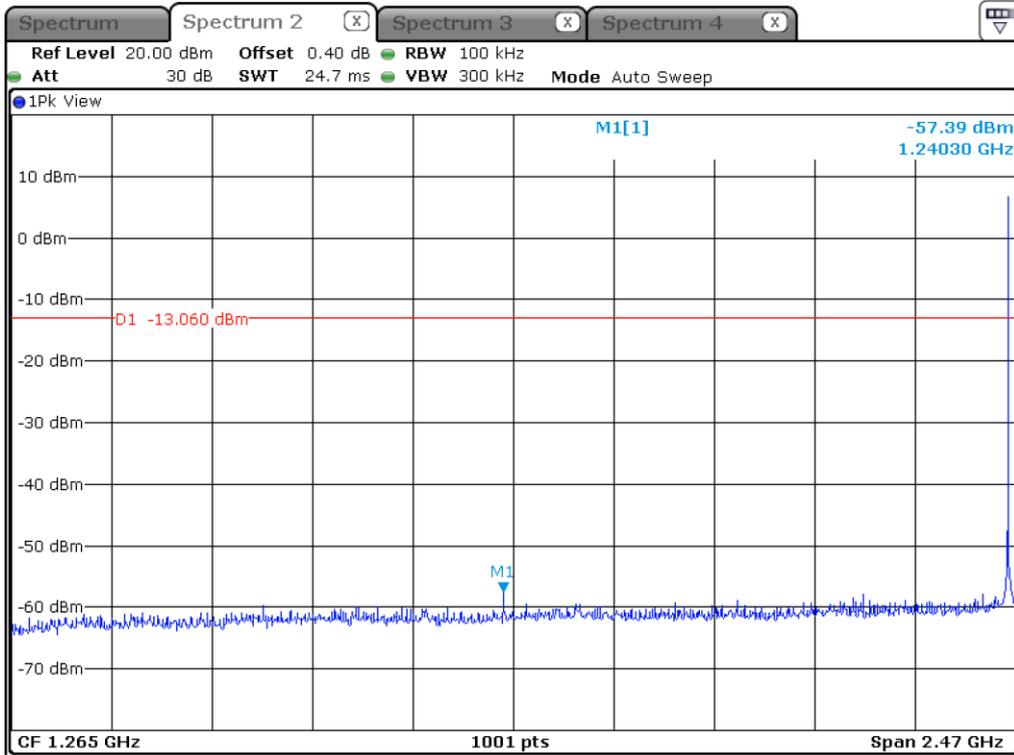


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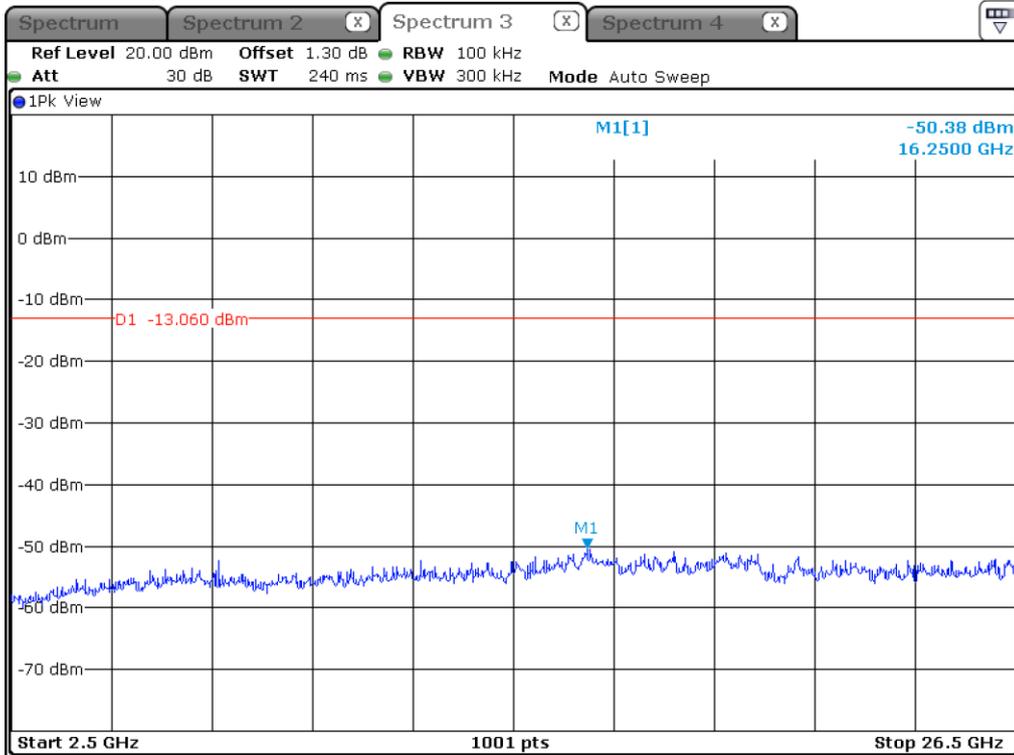
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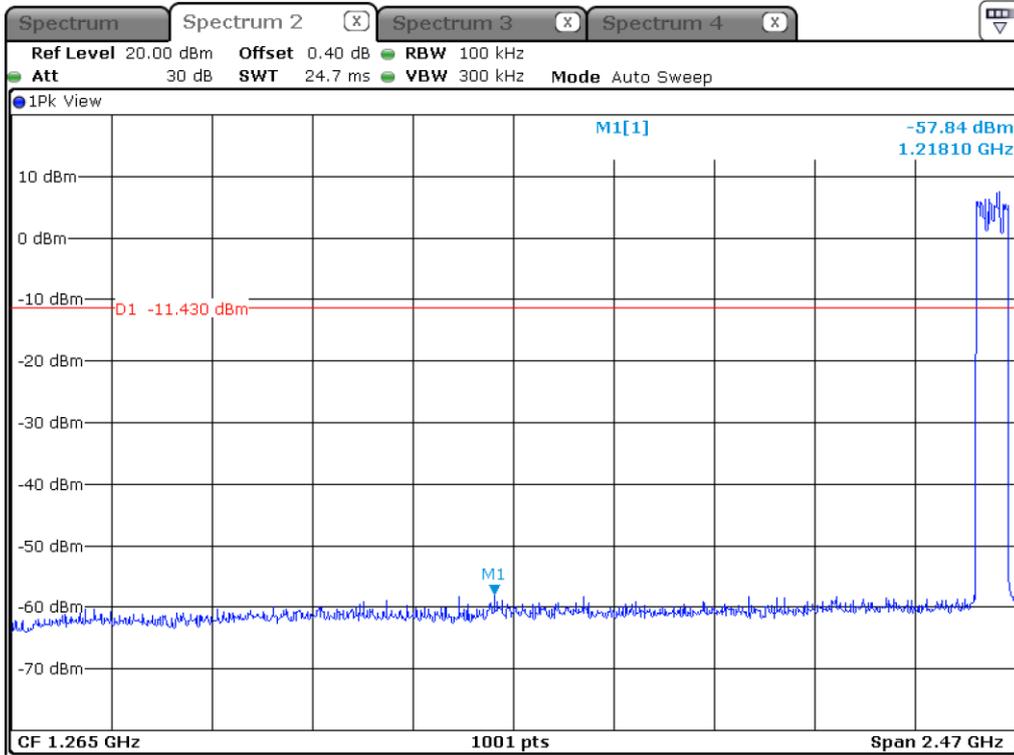


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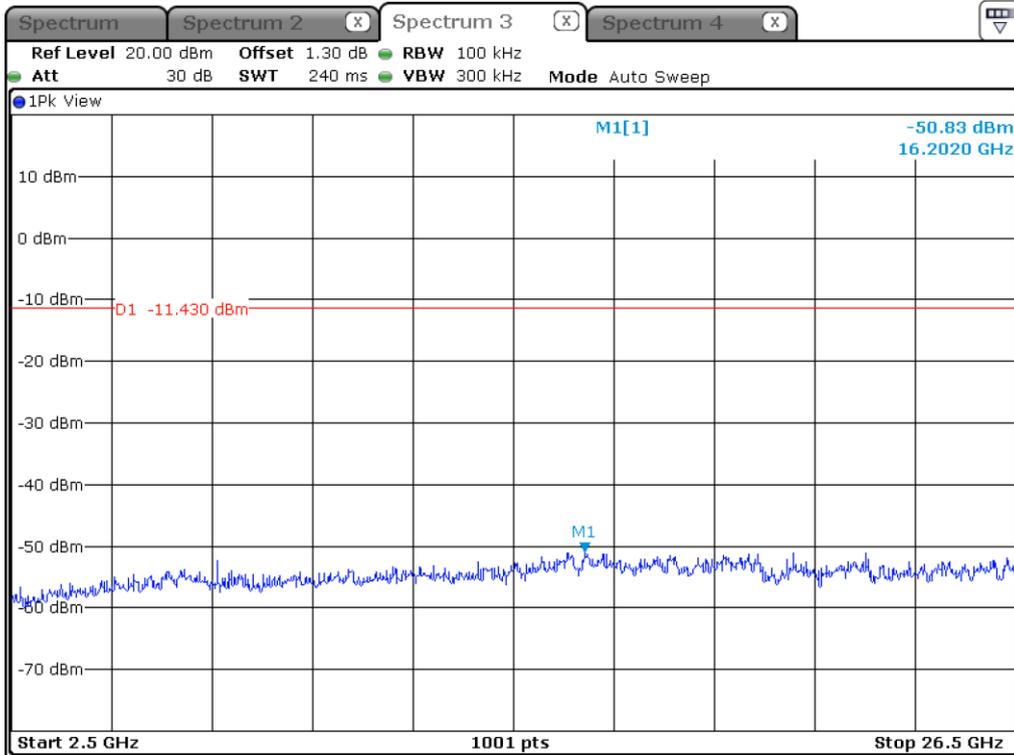
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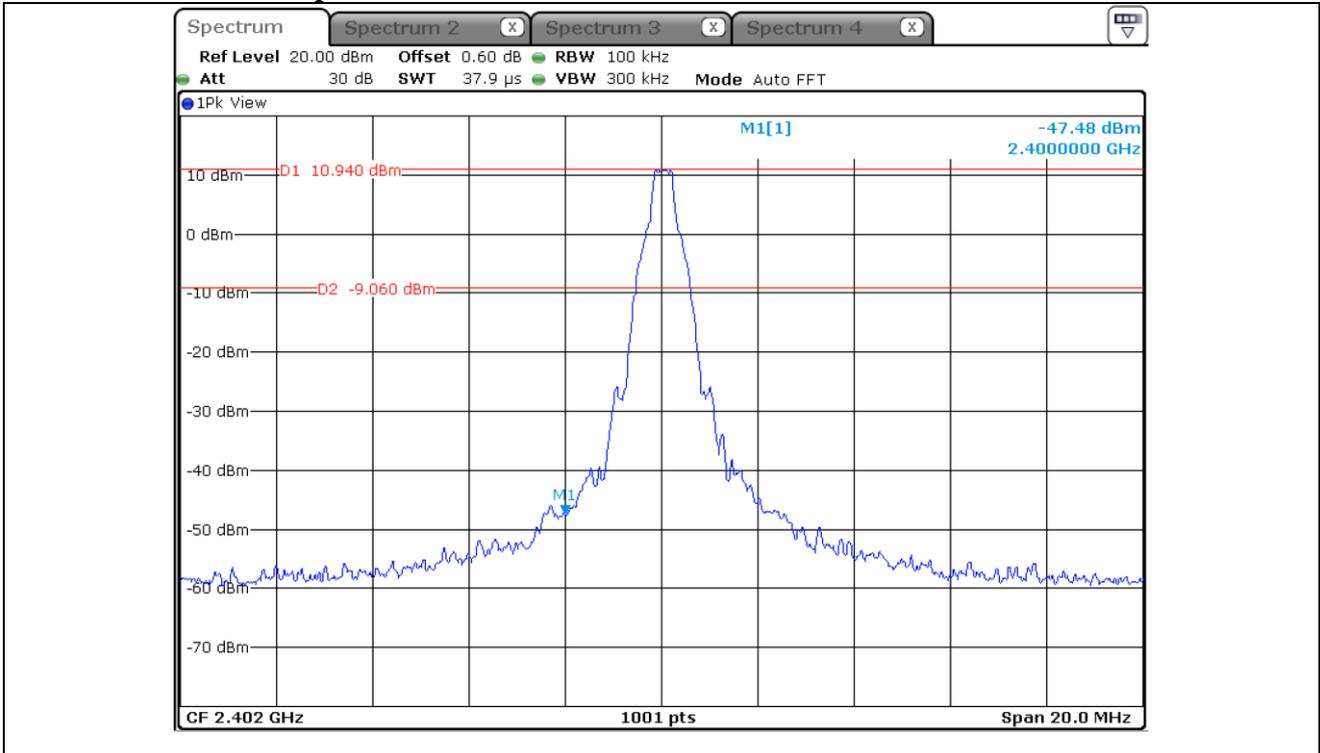
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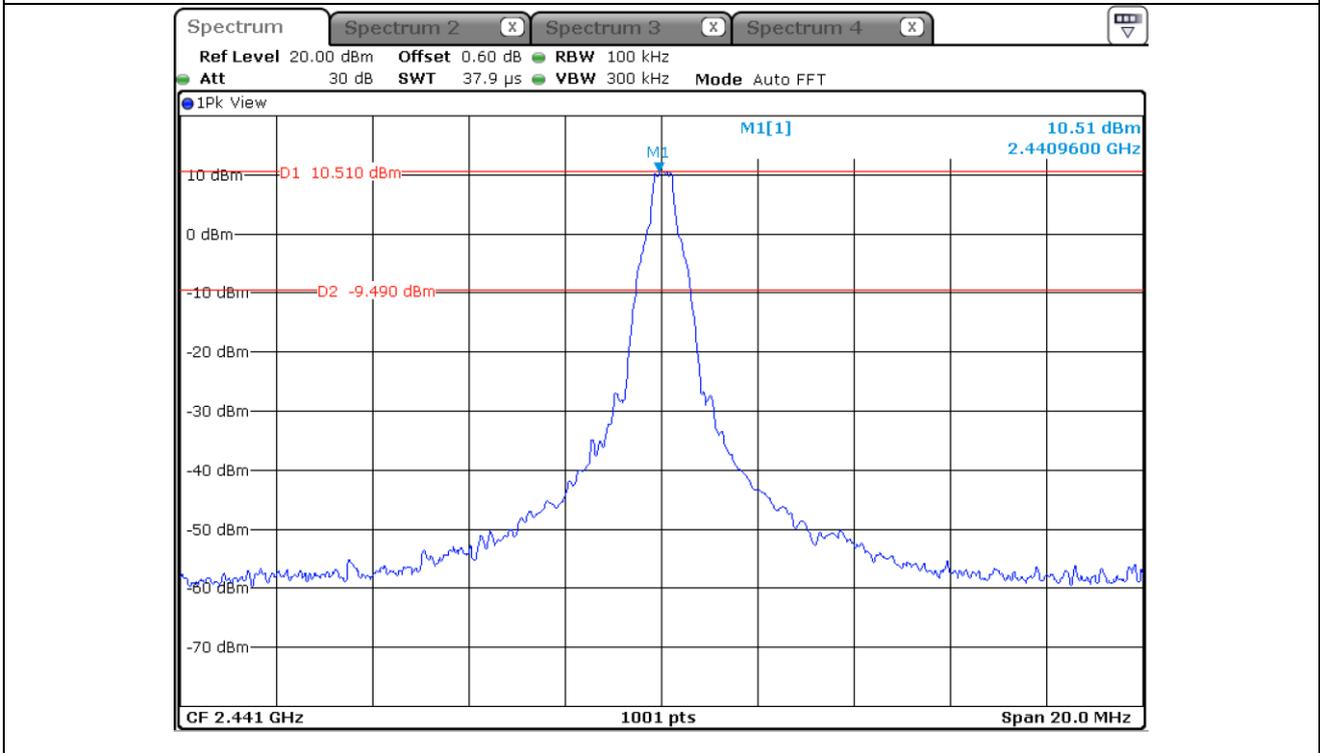
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12.6 Test data for conducted emission (Right Earbud)

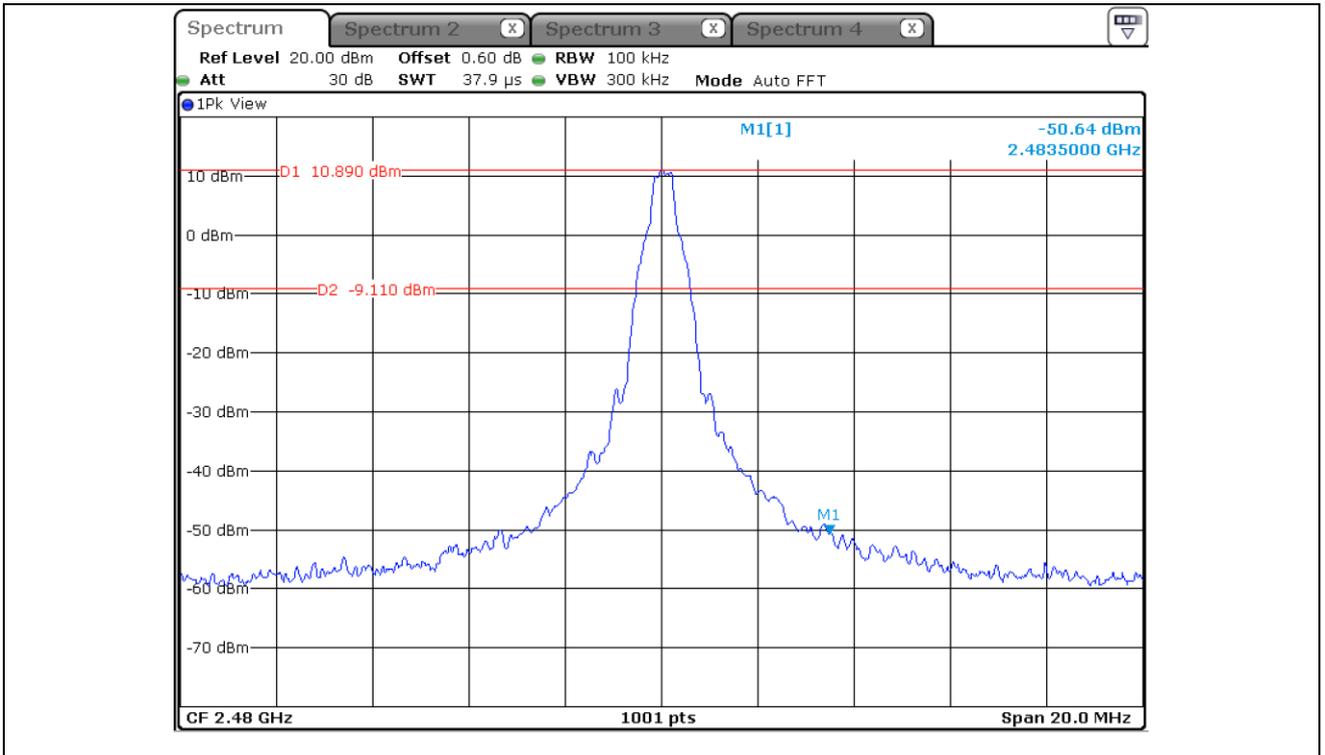
12.6.1 Test data for 1 Mbps



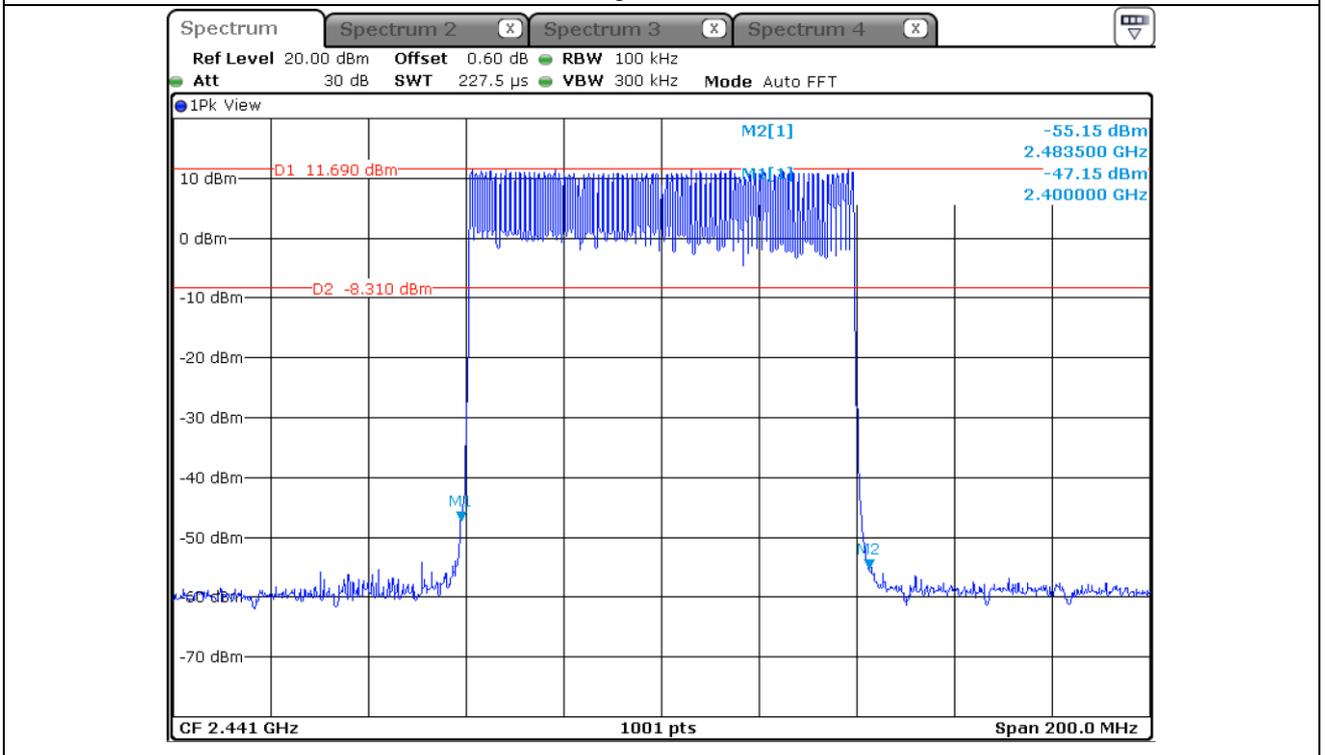
Low Channel



Middle Channel



High Channel

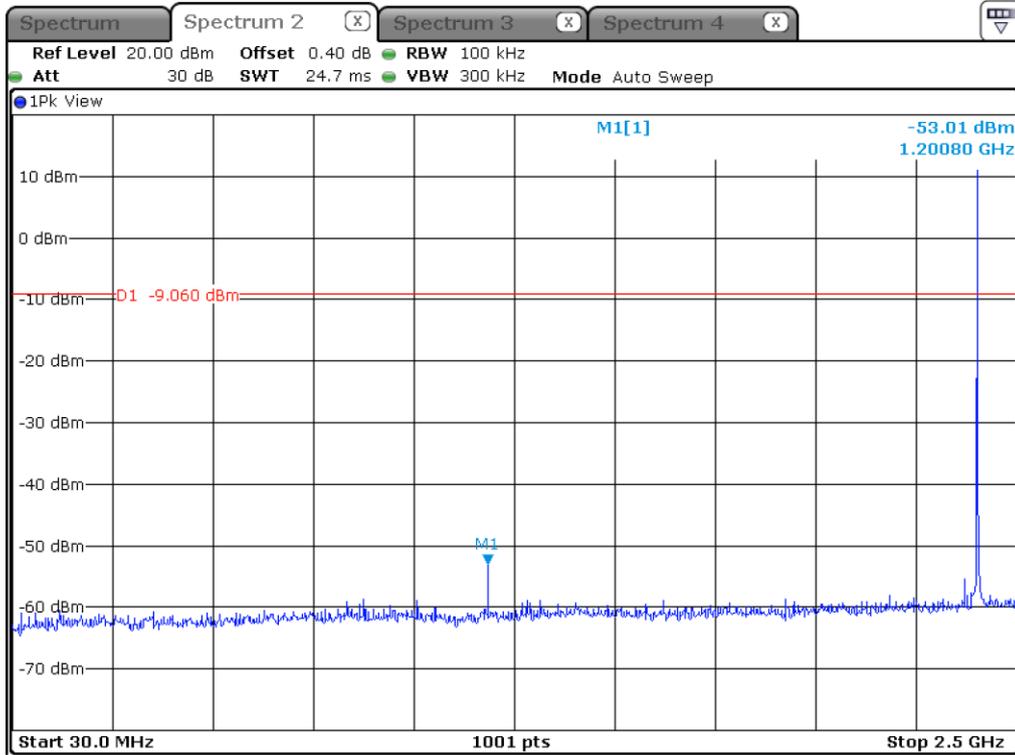


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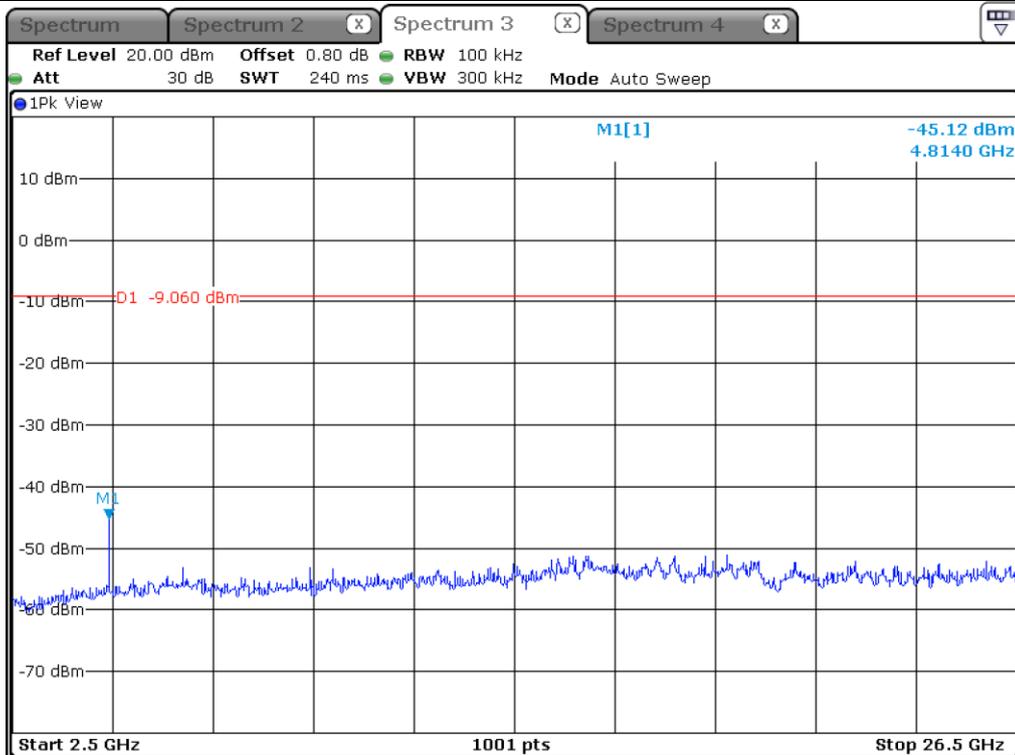
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Low Channel

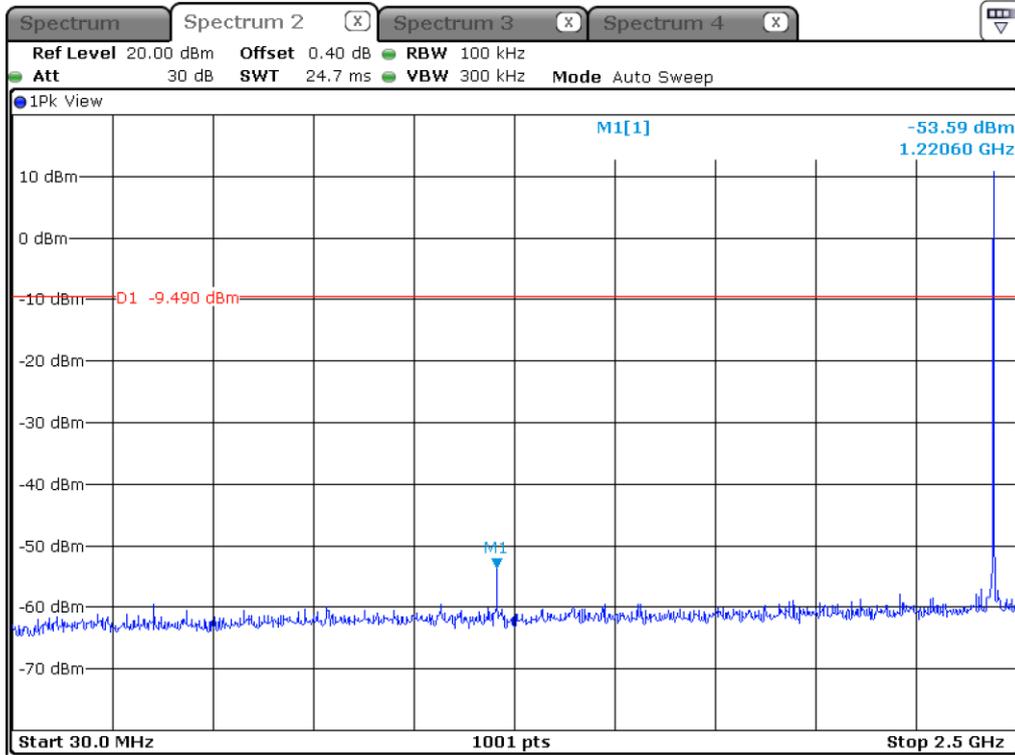


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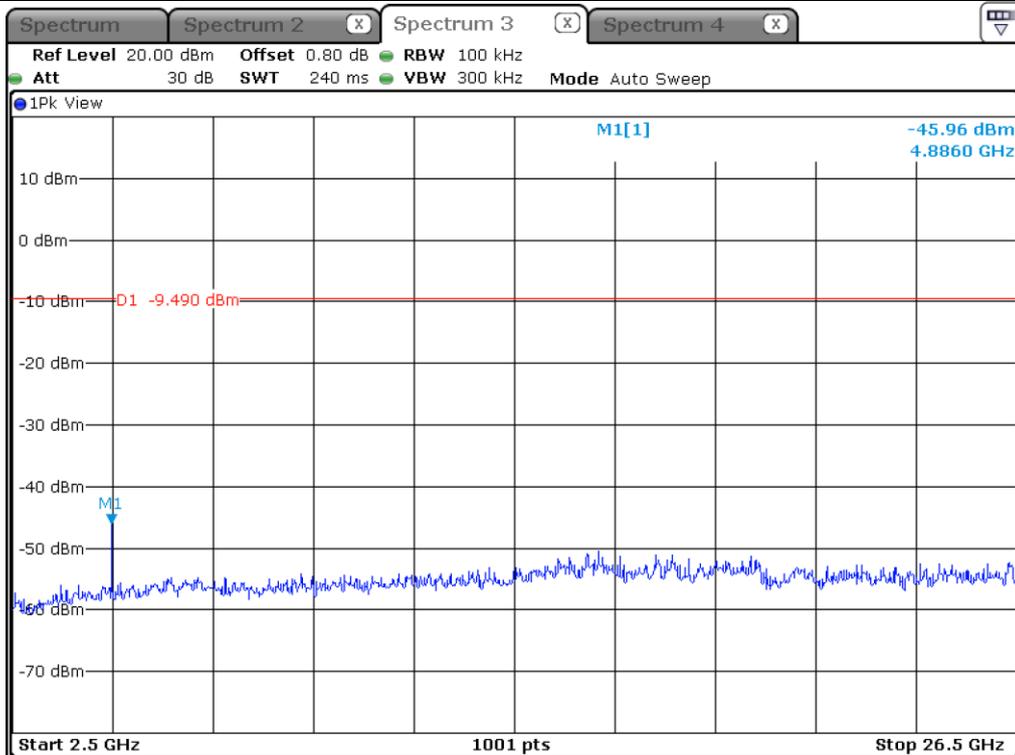
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Middle Channel

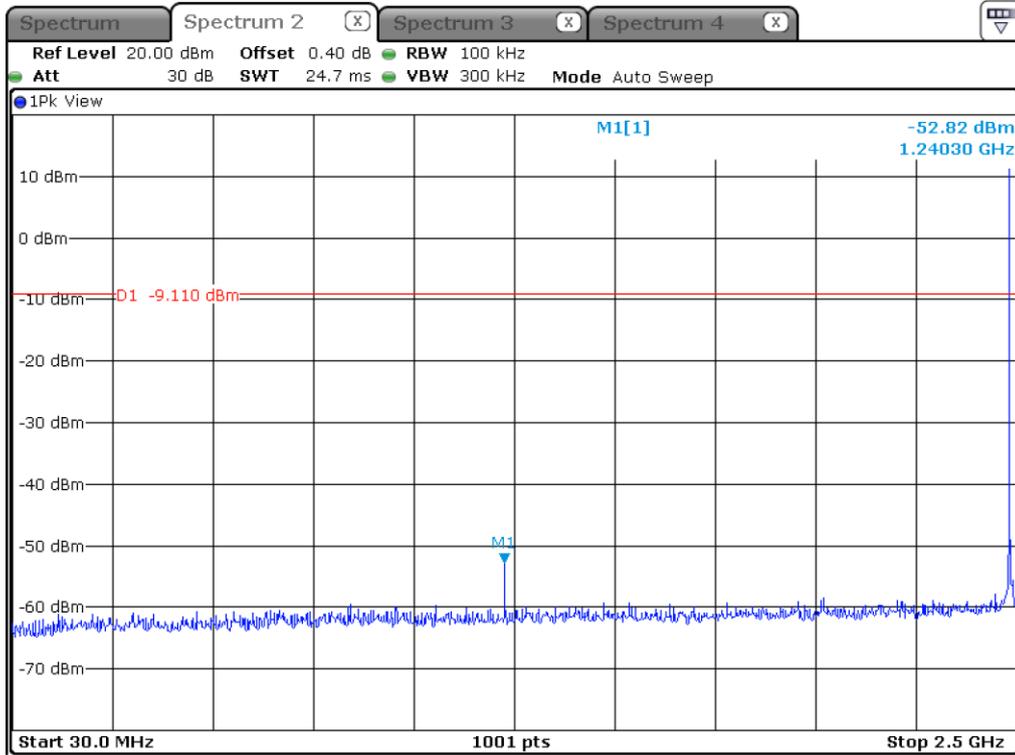


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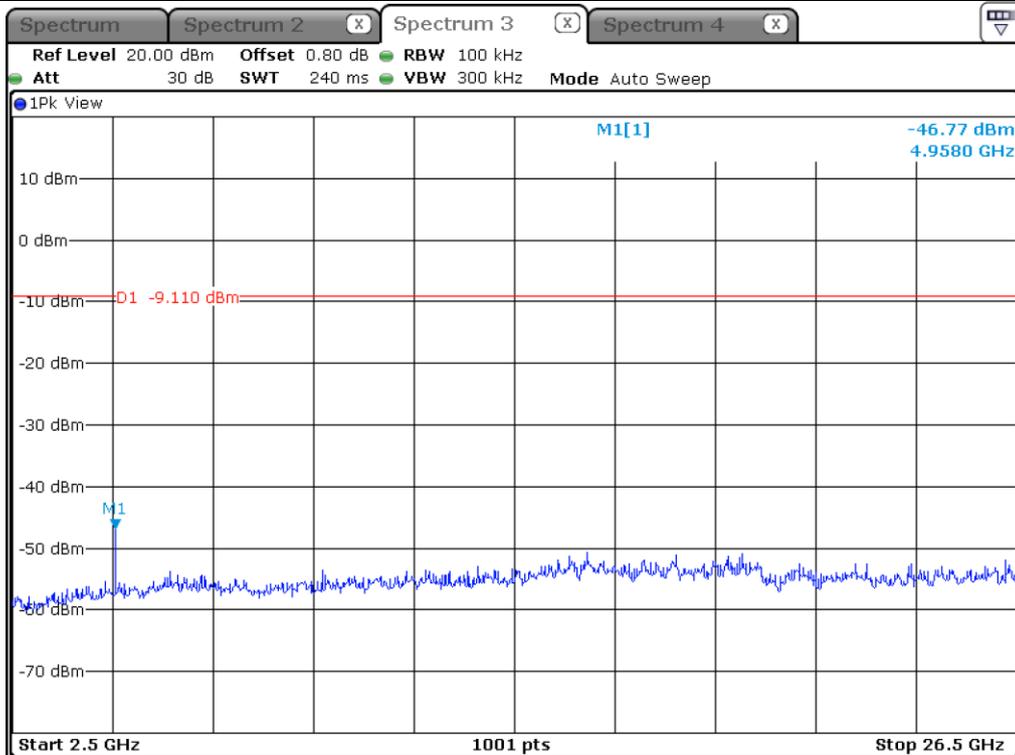
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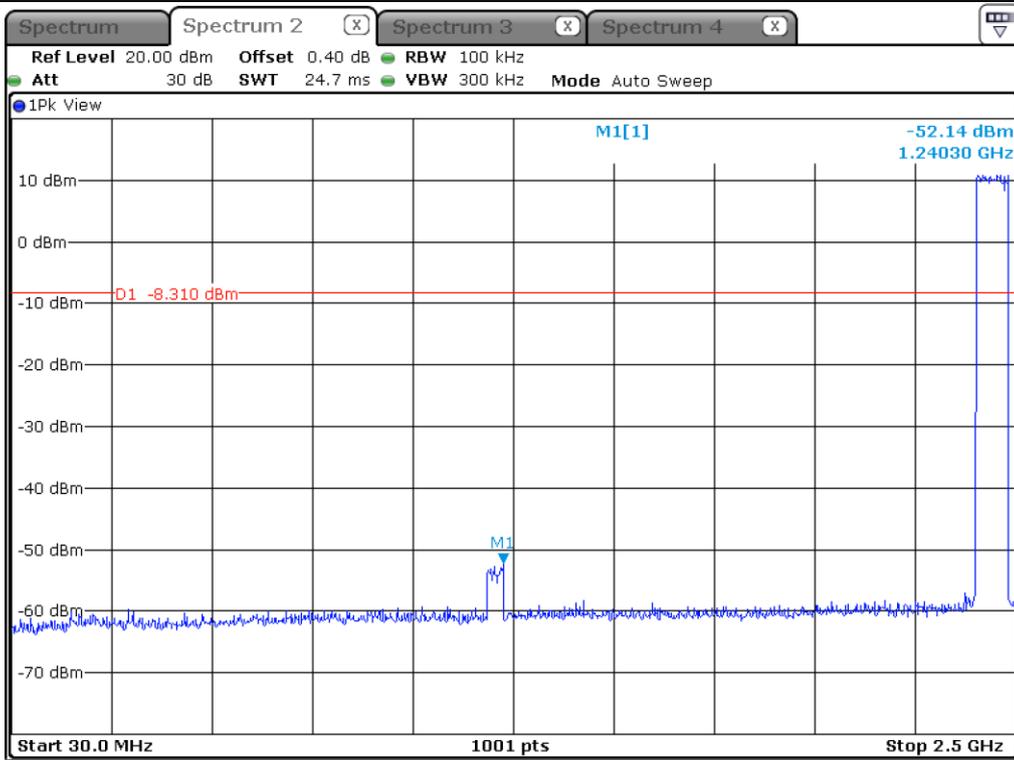


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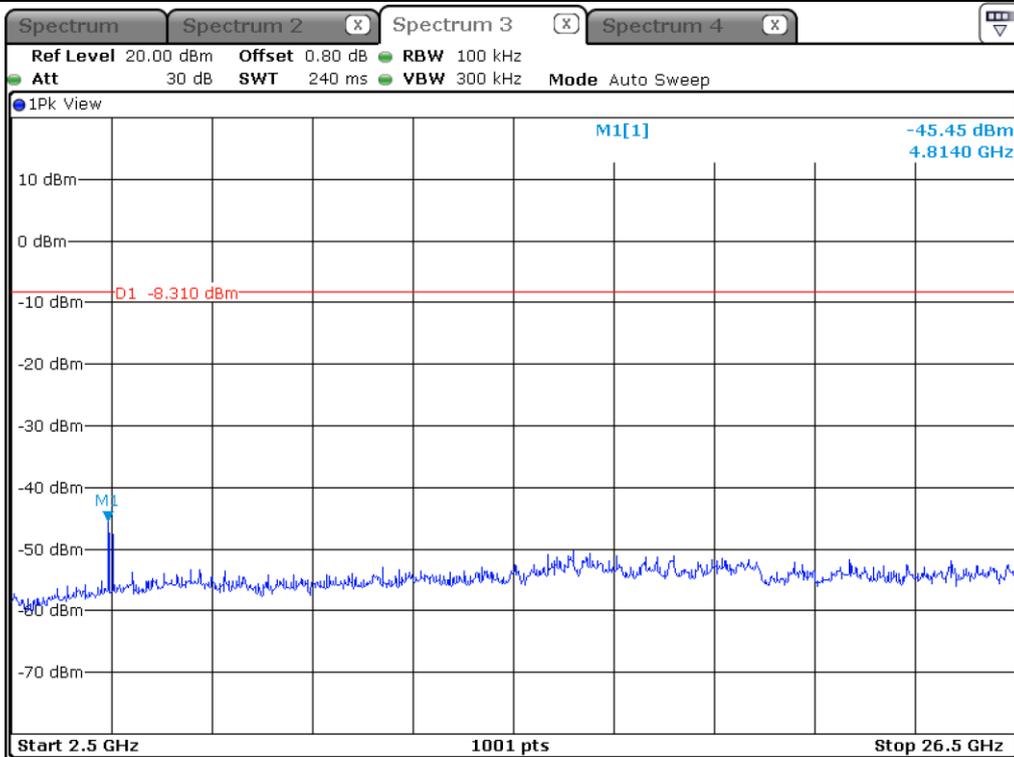
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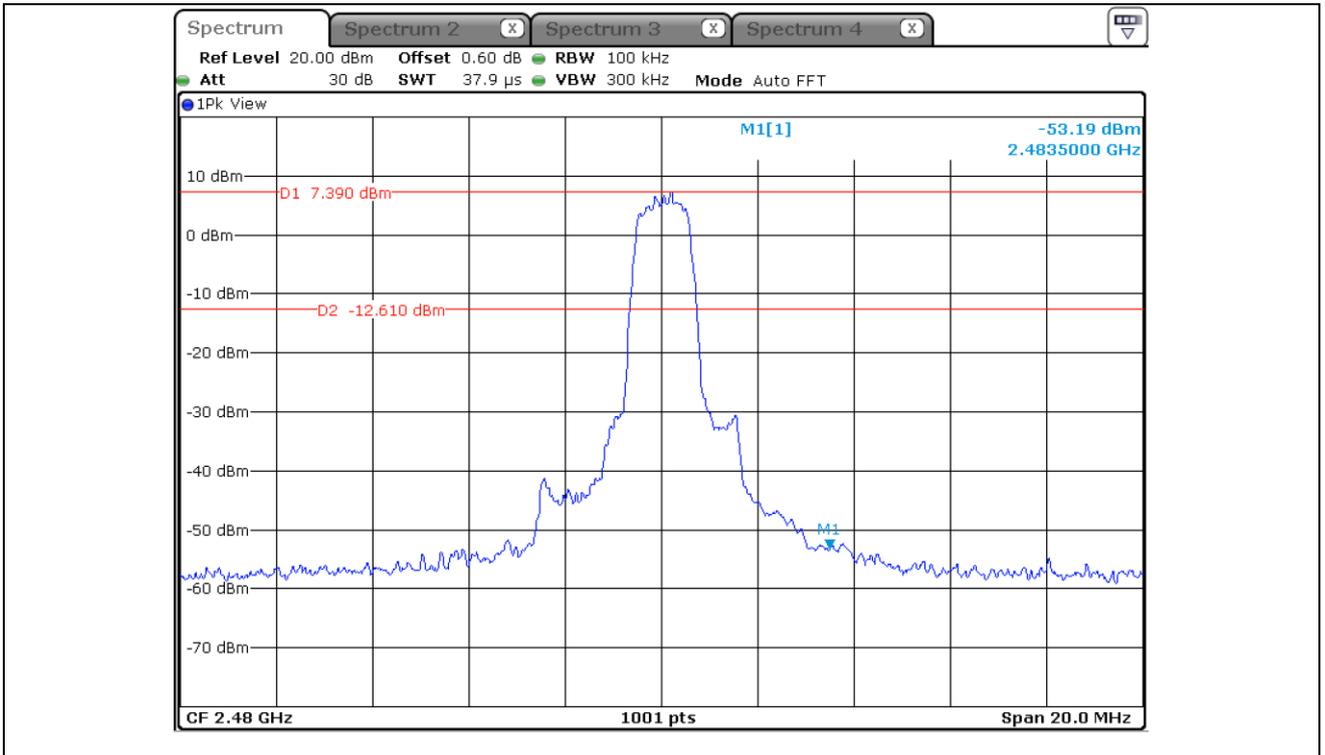


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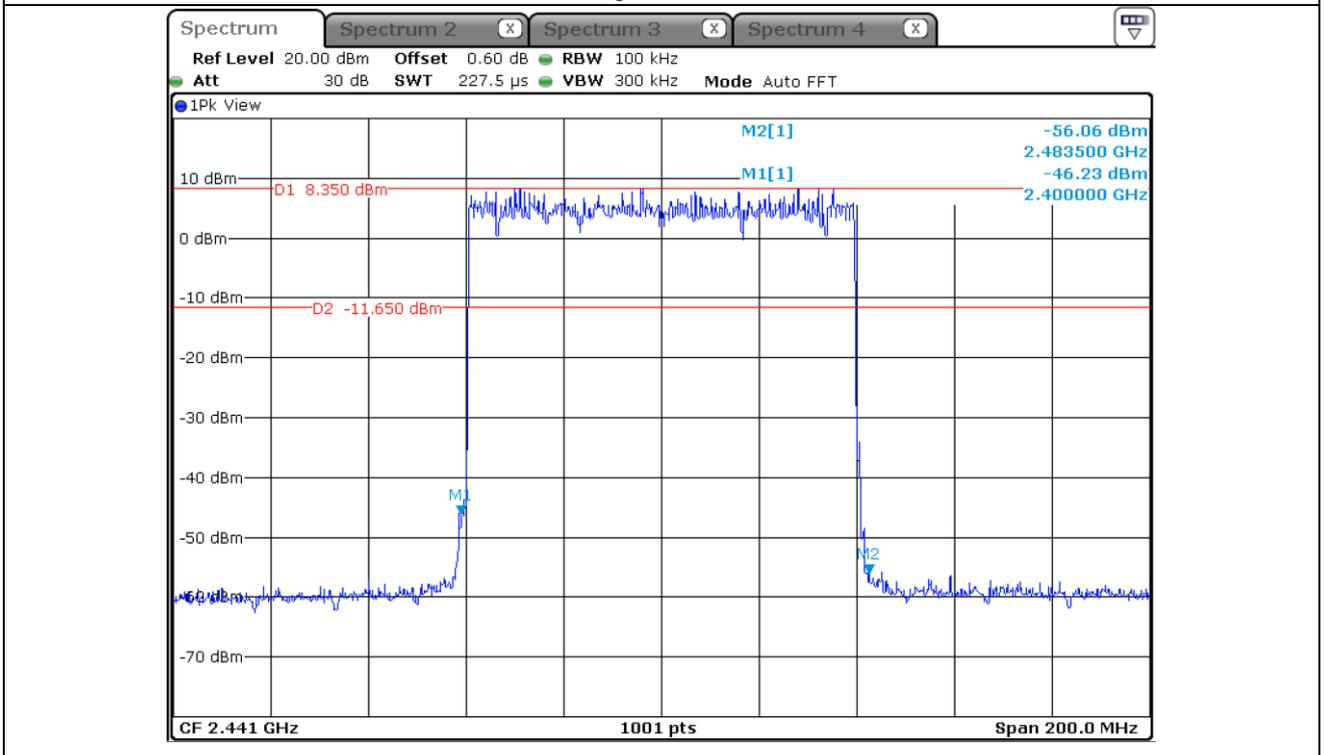
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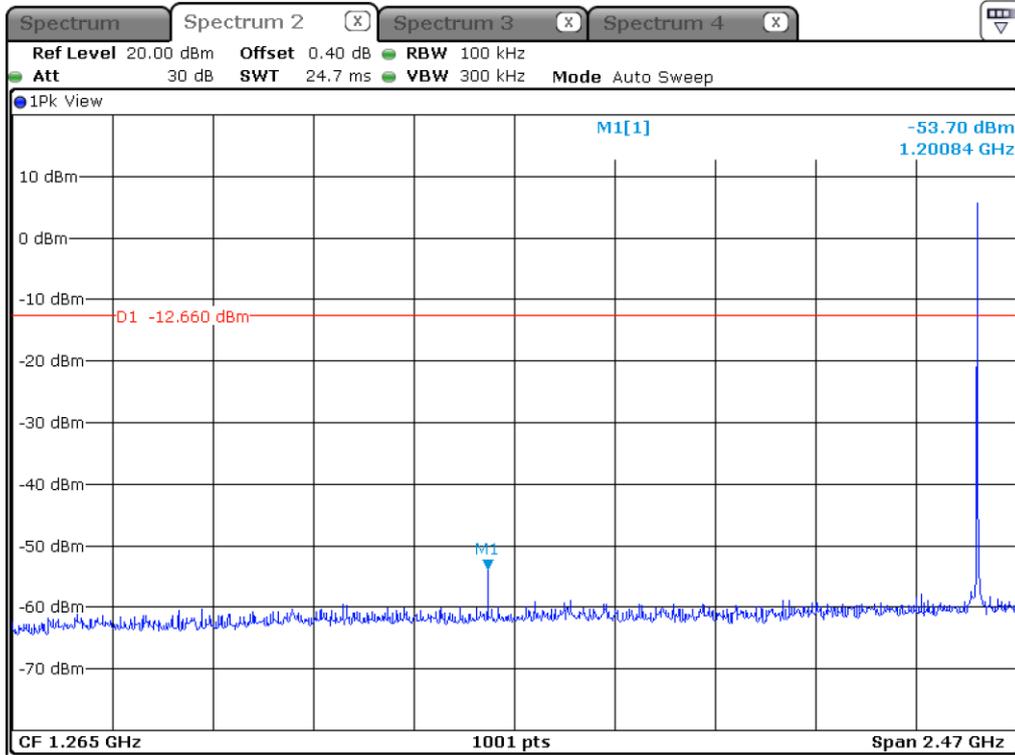


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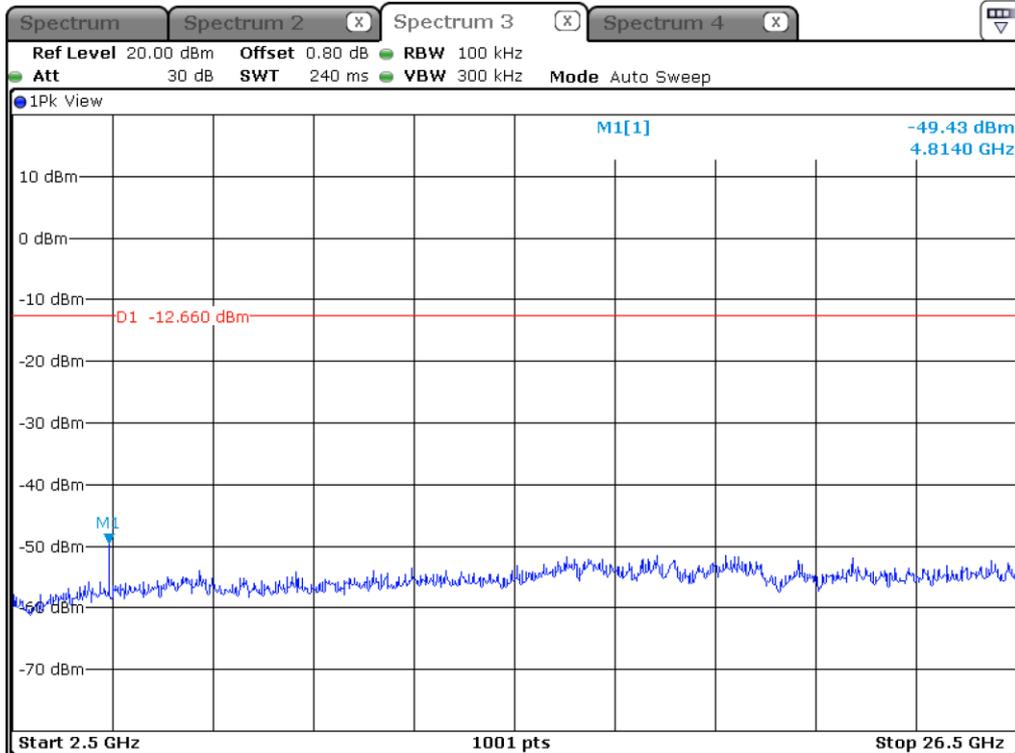
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Low Channel

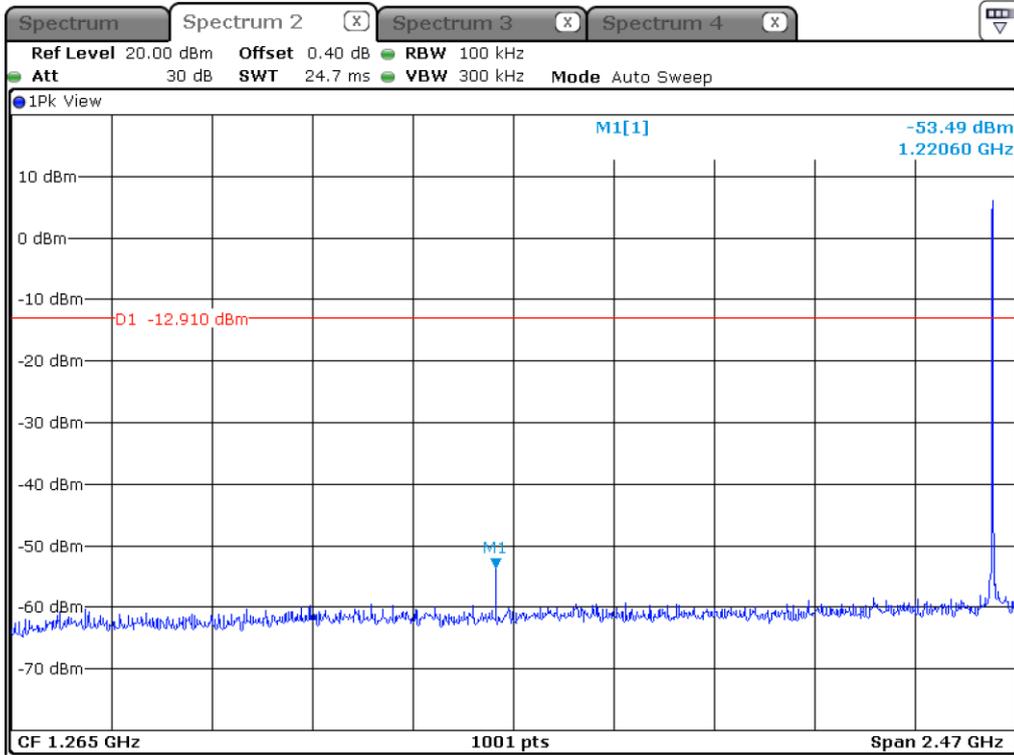


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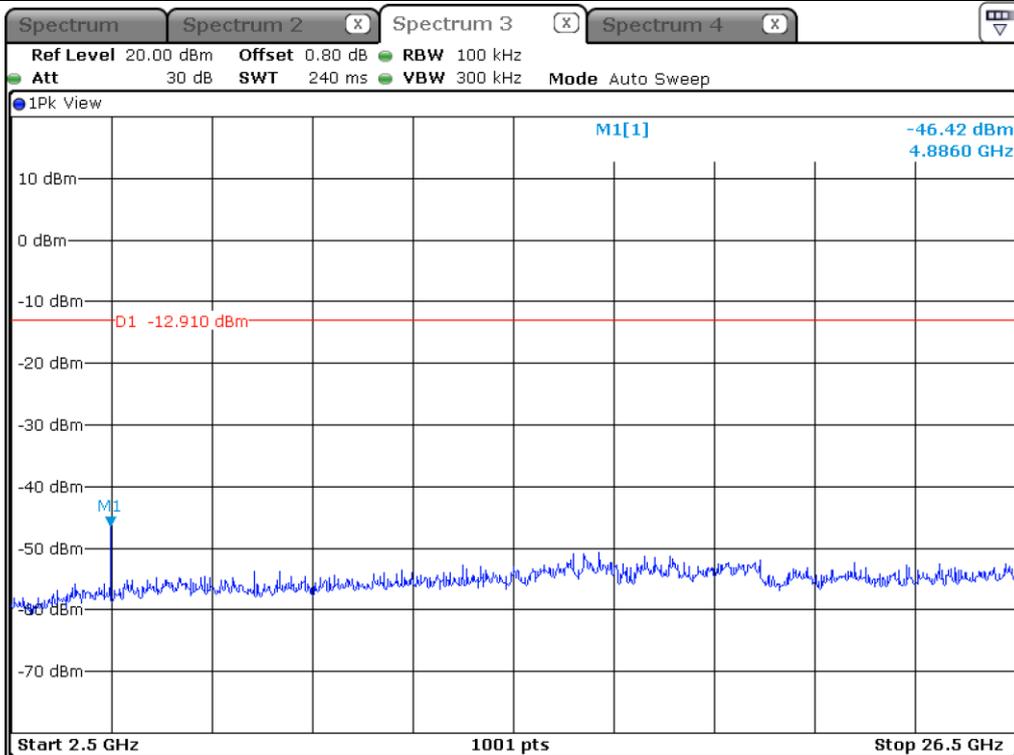
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Middle Channel

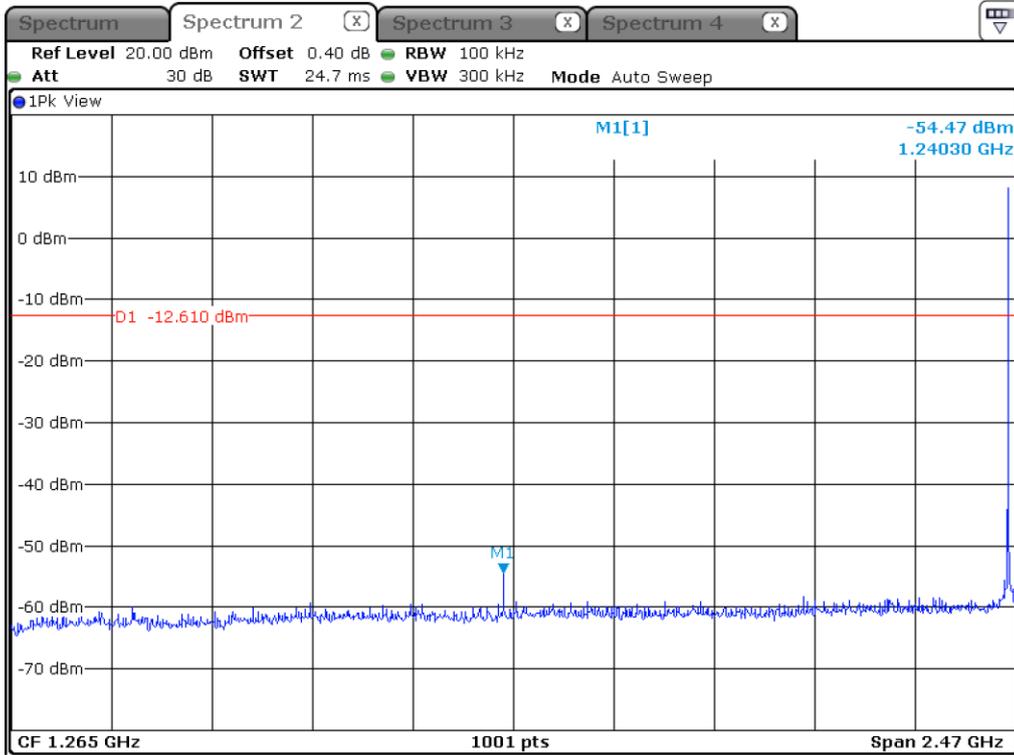


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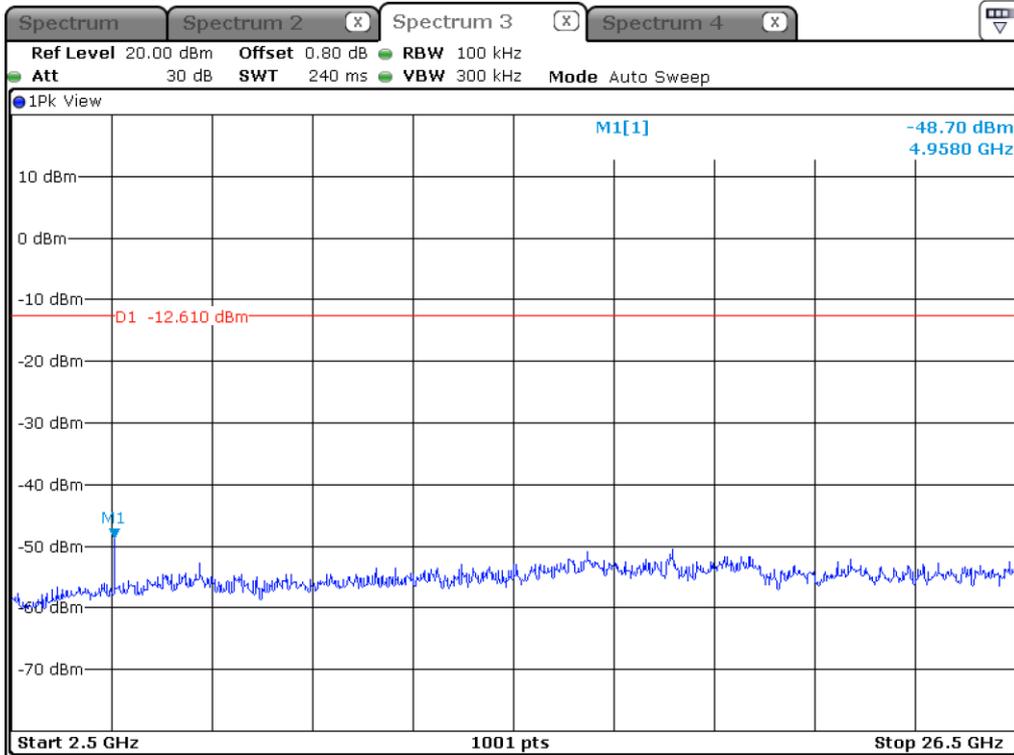
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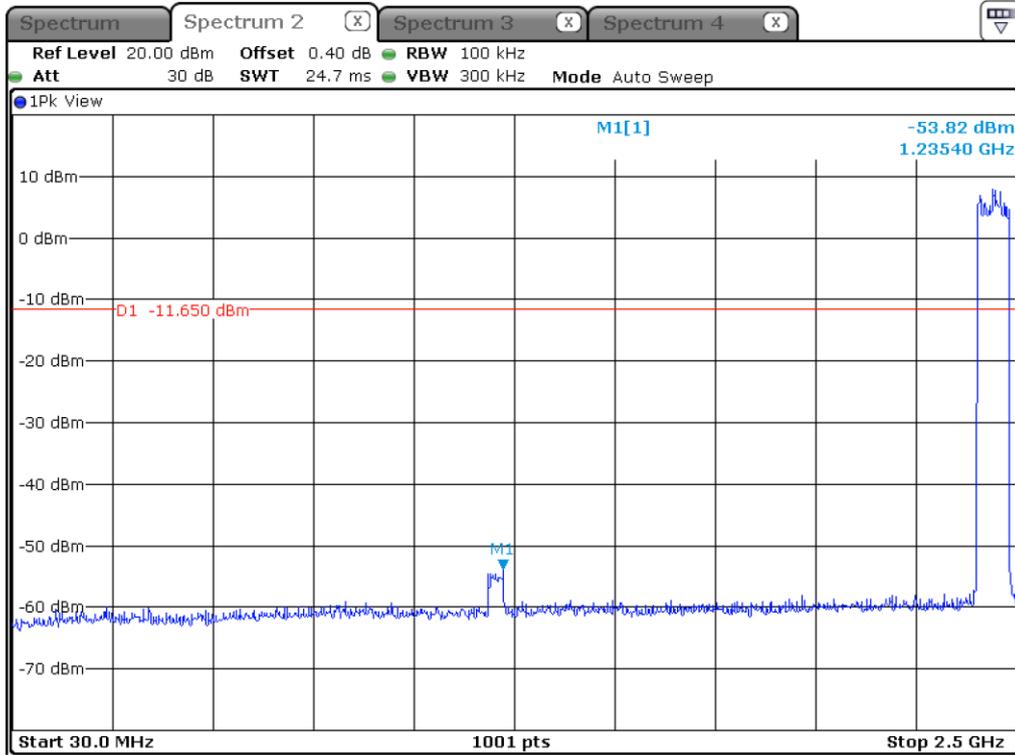


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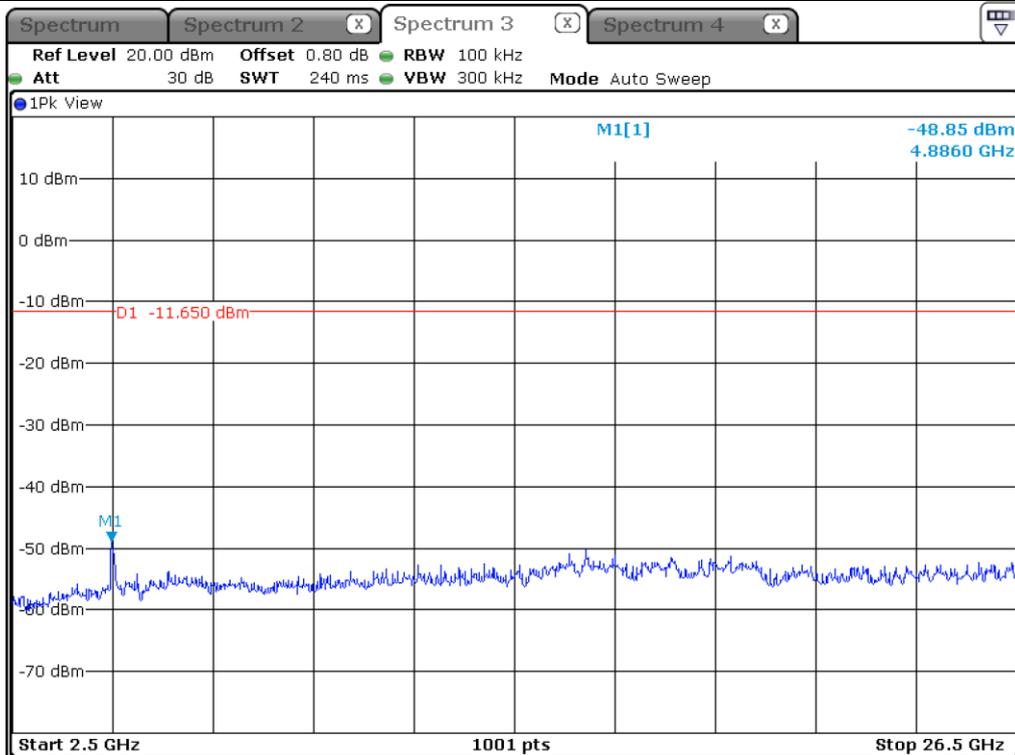
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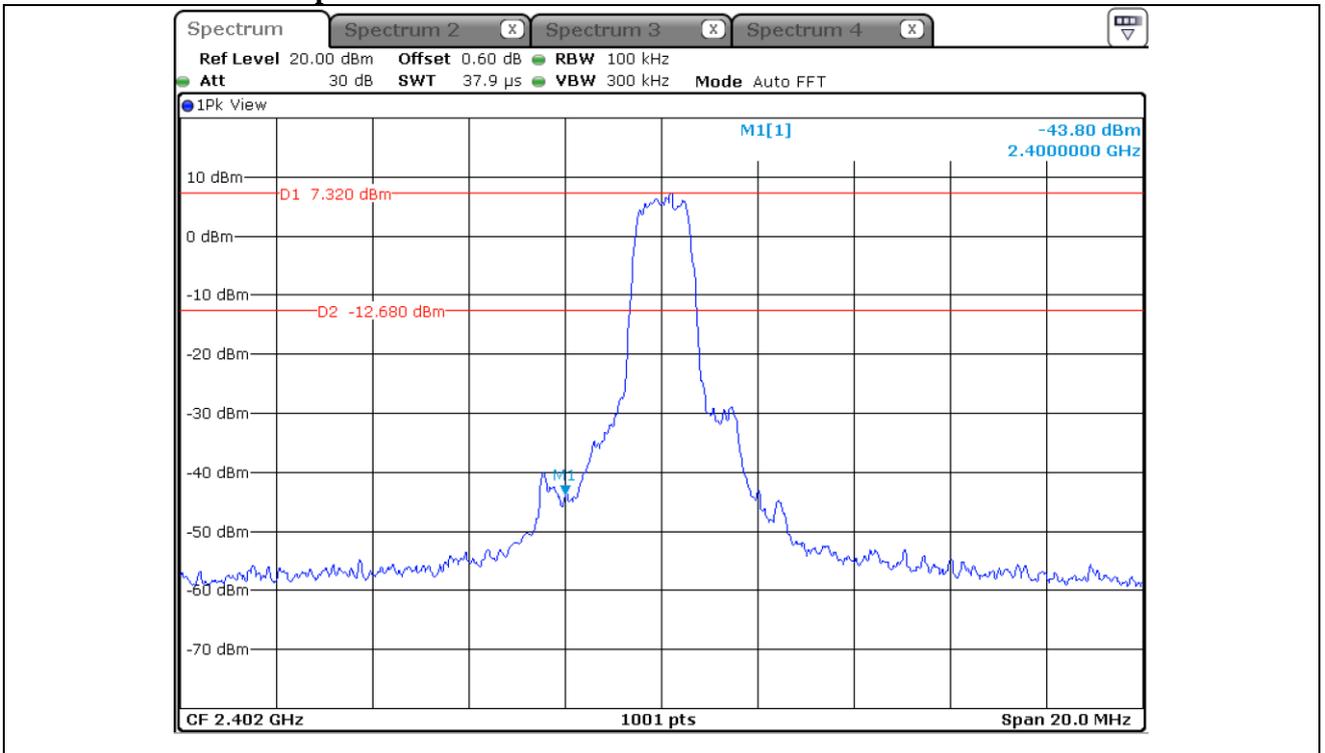
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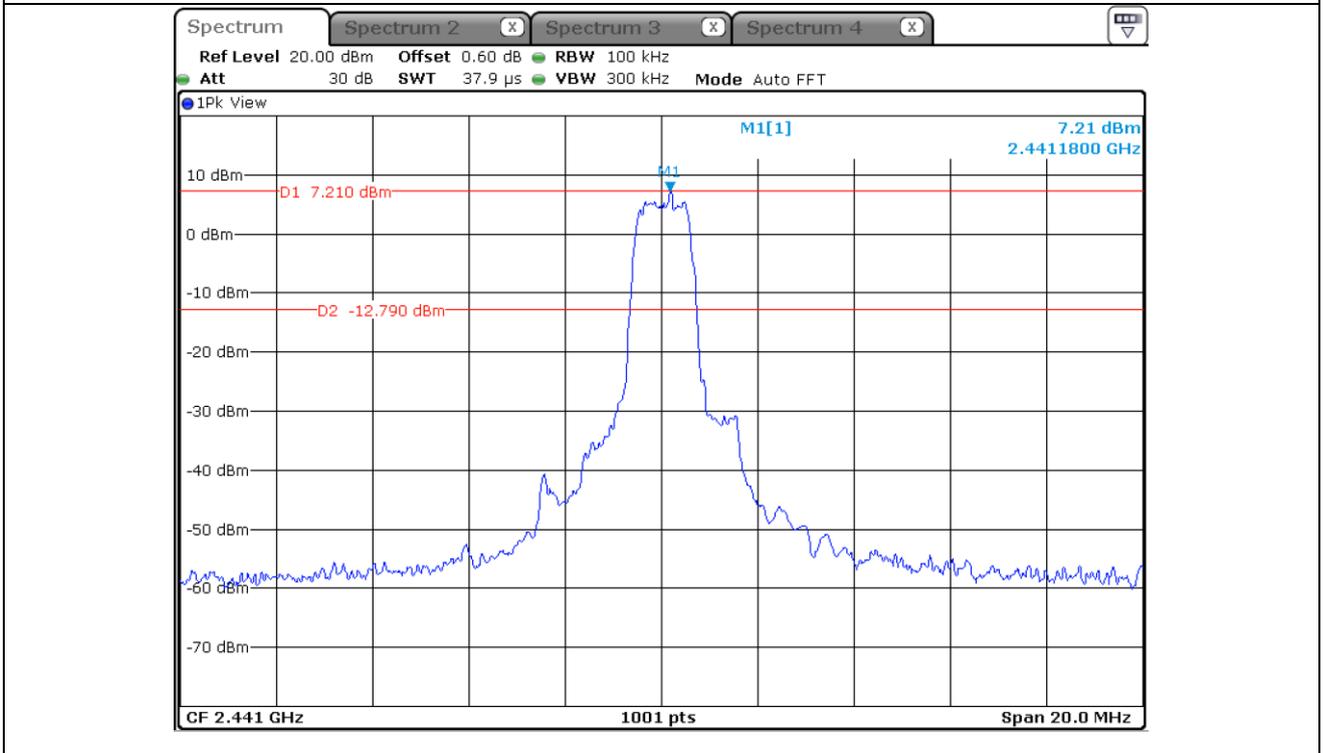
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12.6.3 Test data for 3 Mbps



Low Channel

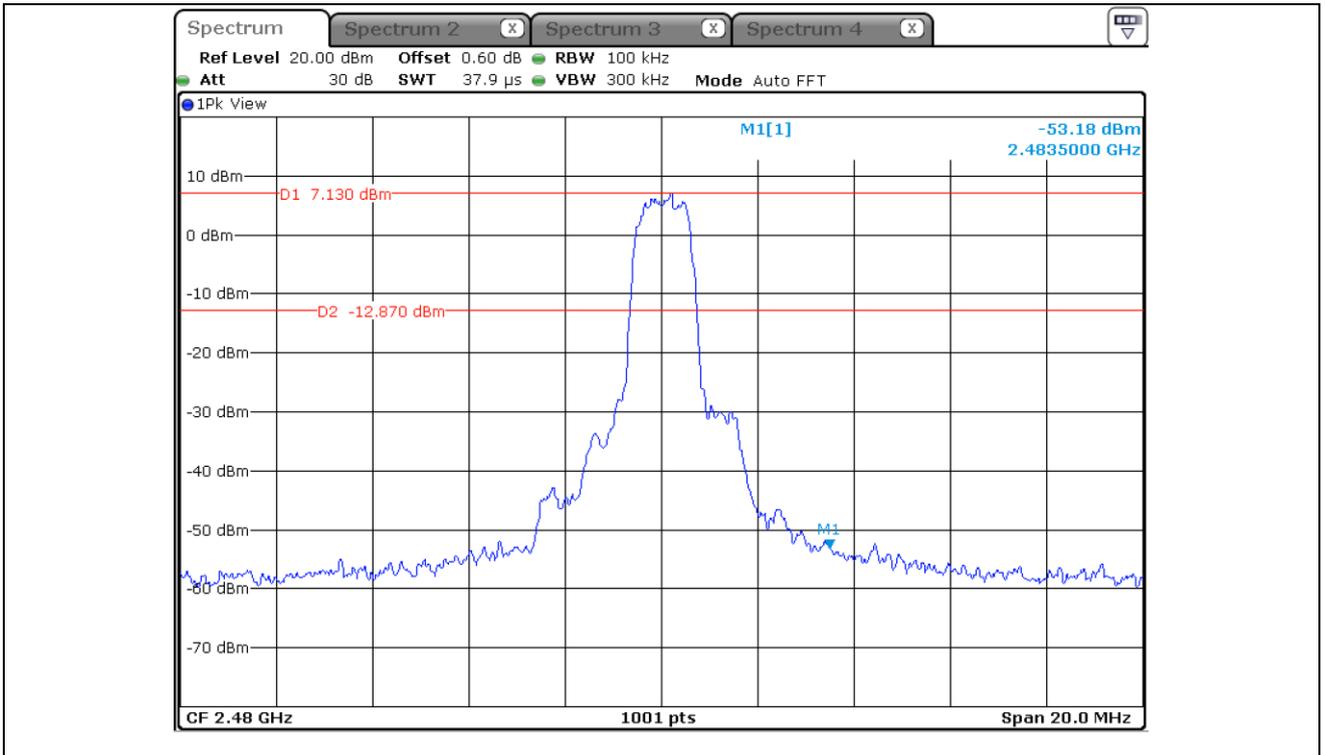


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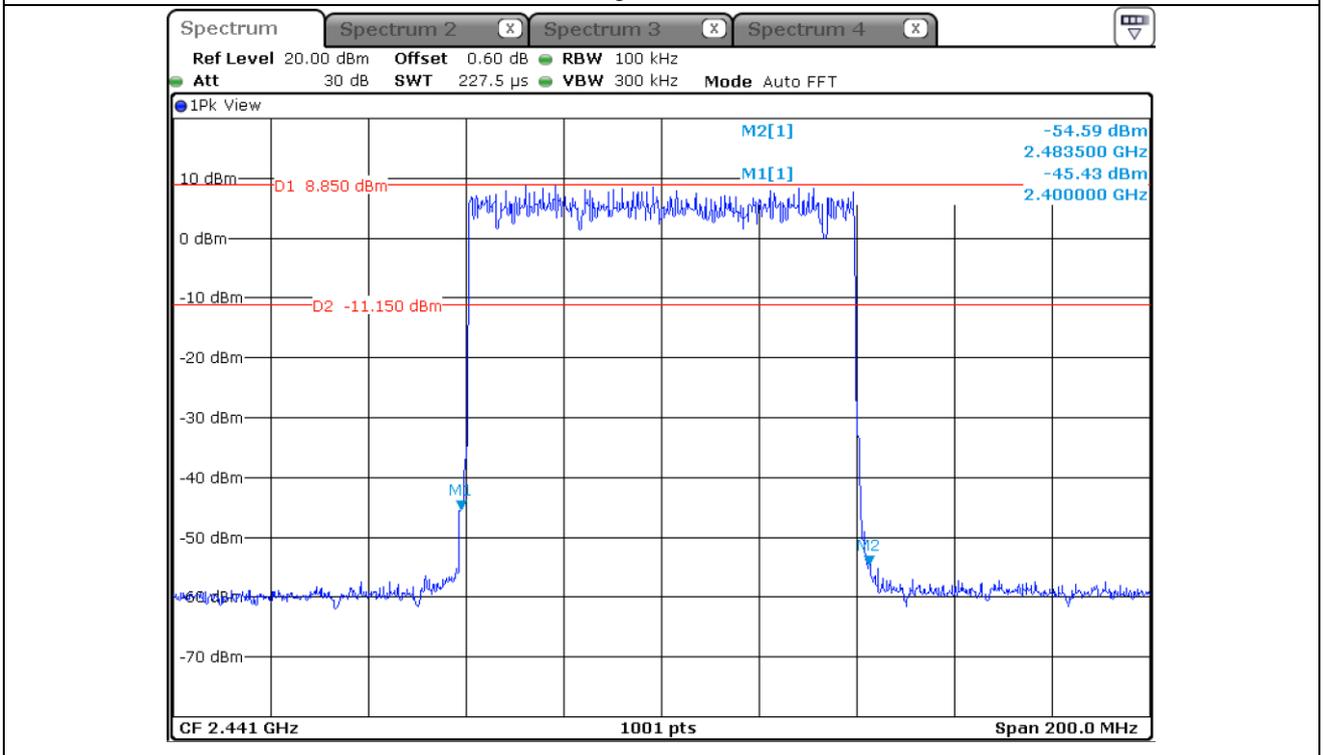
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High Channel

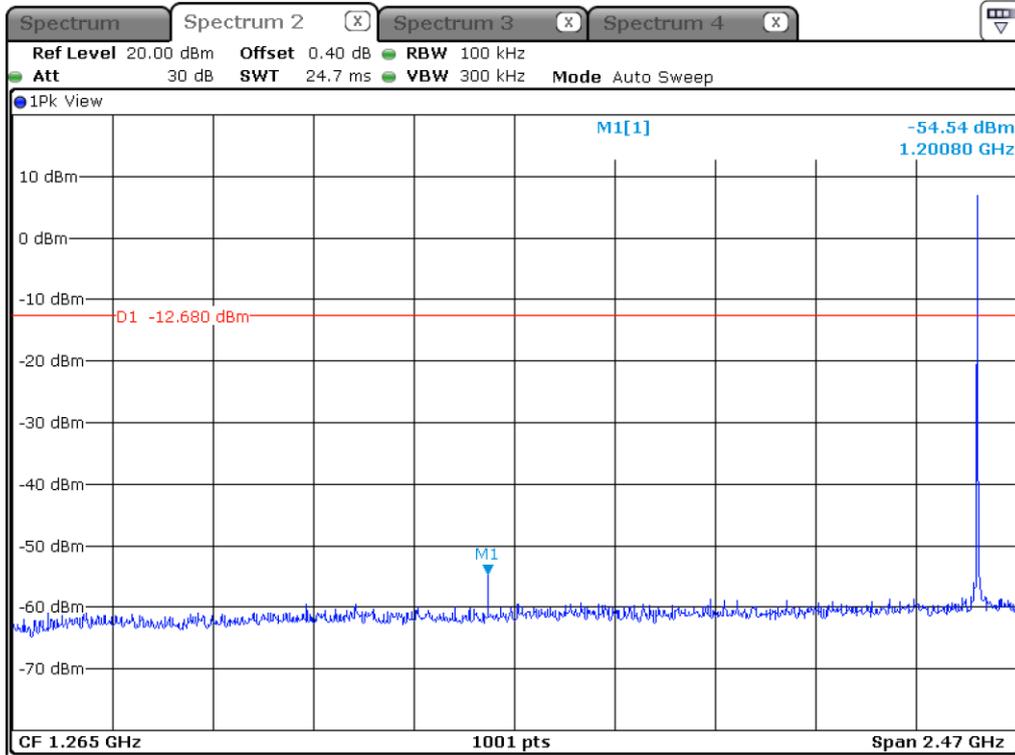


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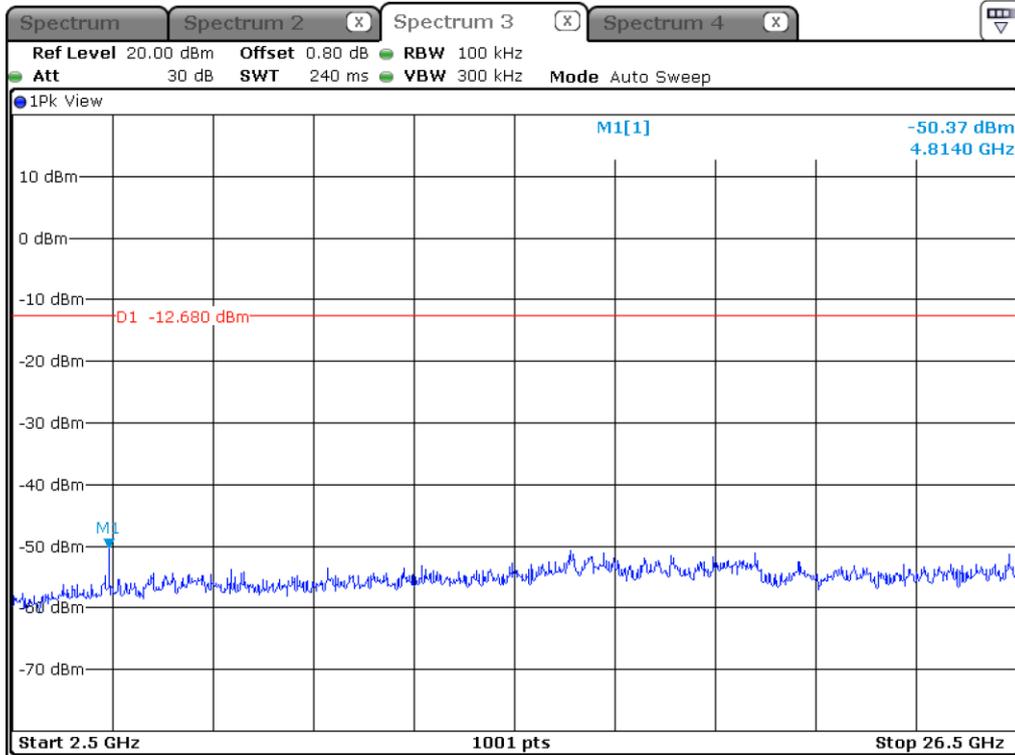
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Low Channel

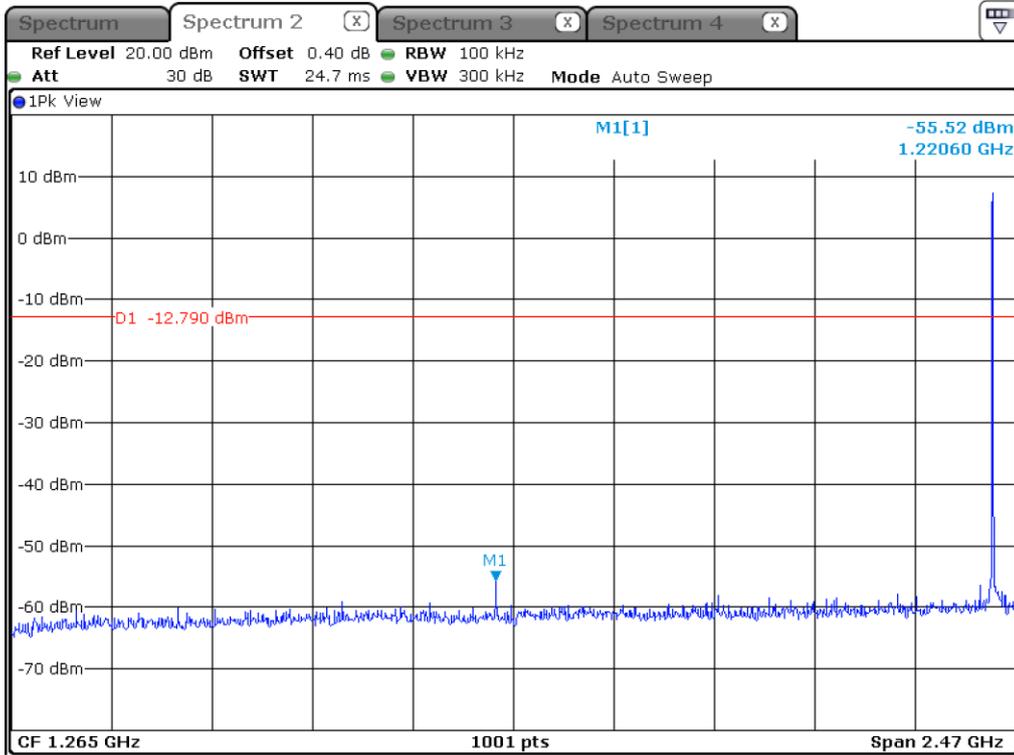


Low Channel

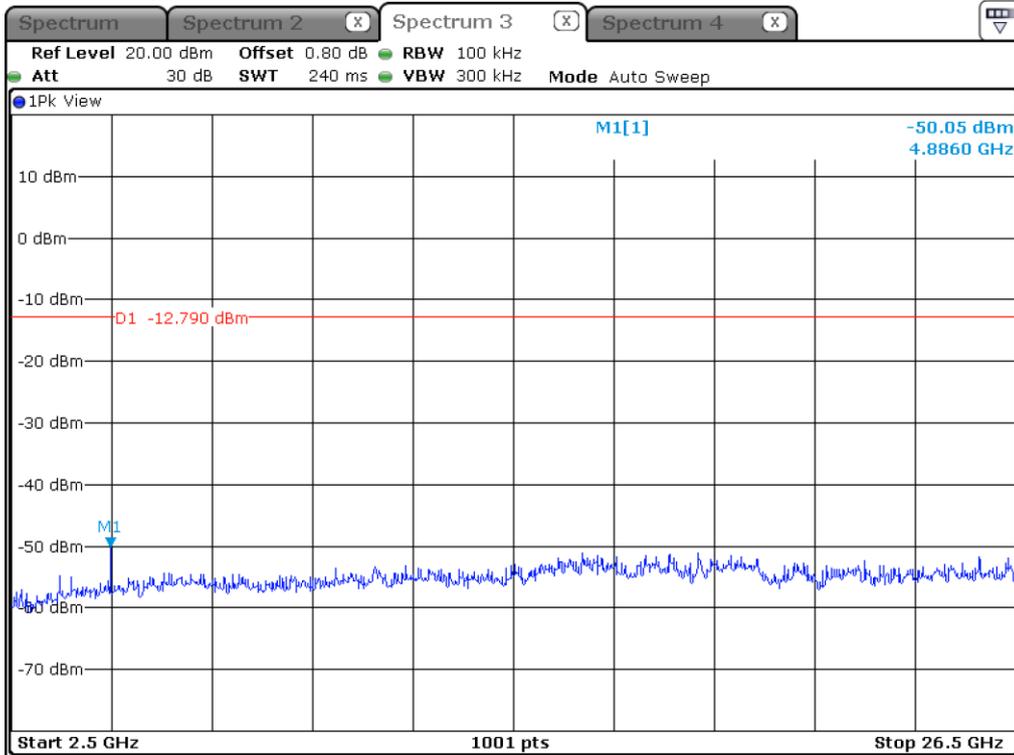
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Middle Channel

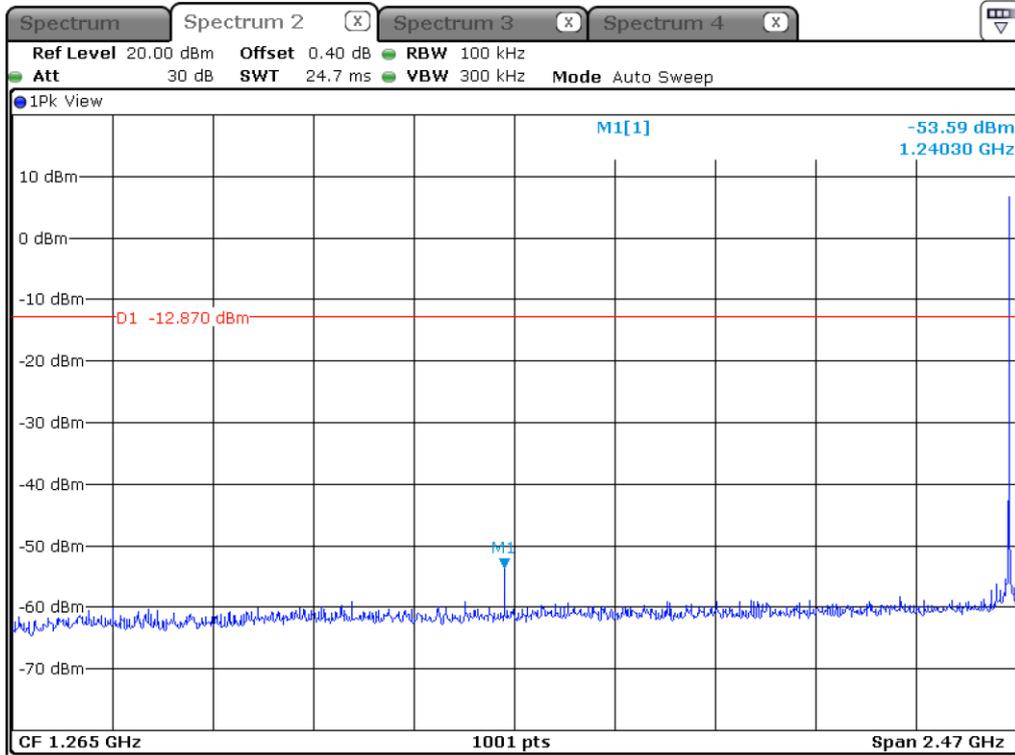


Middle Channel

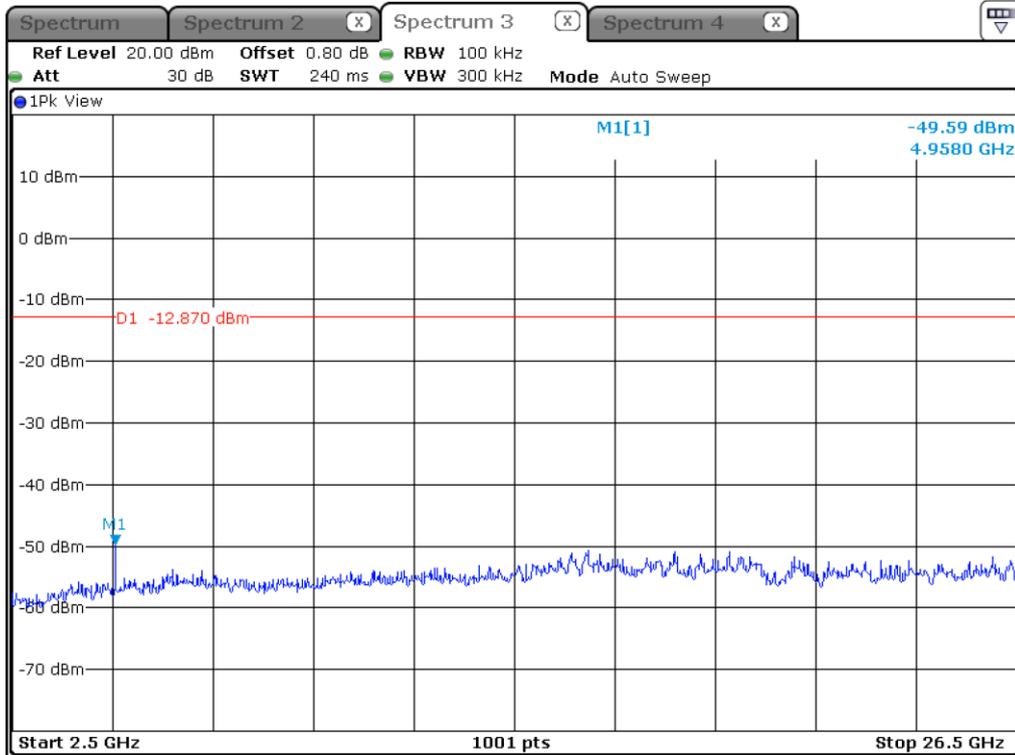
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High Channel

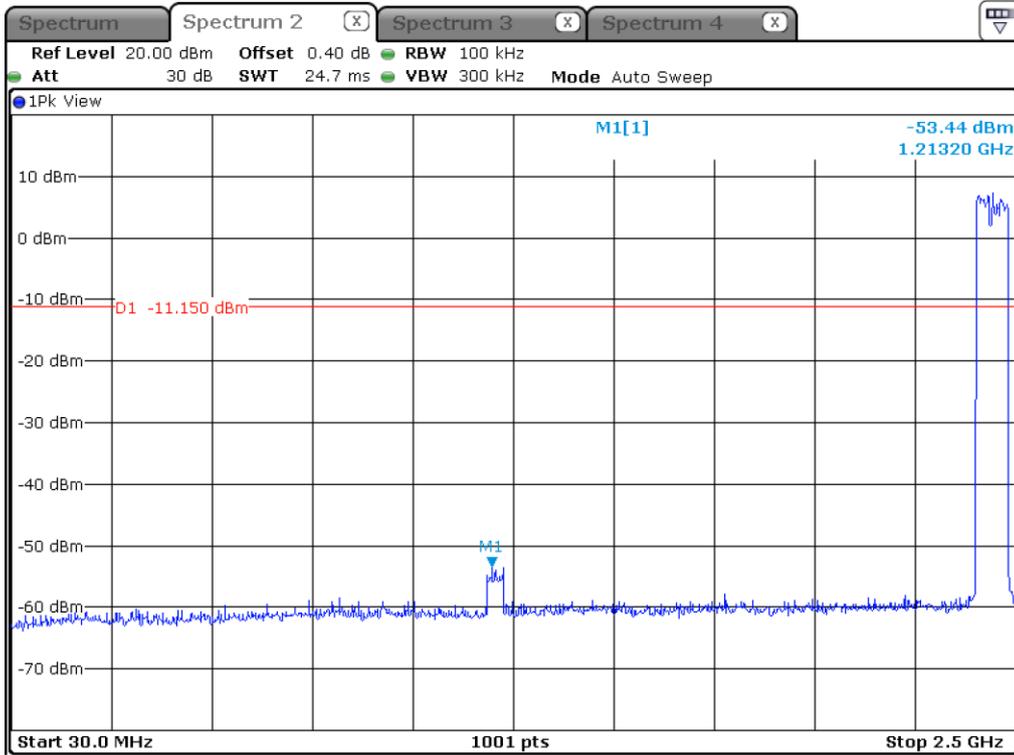


High Channel

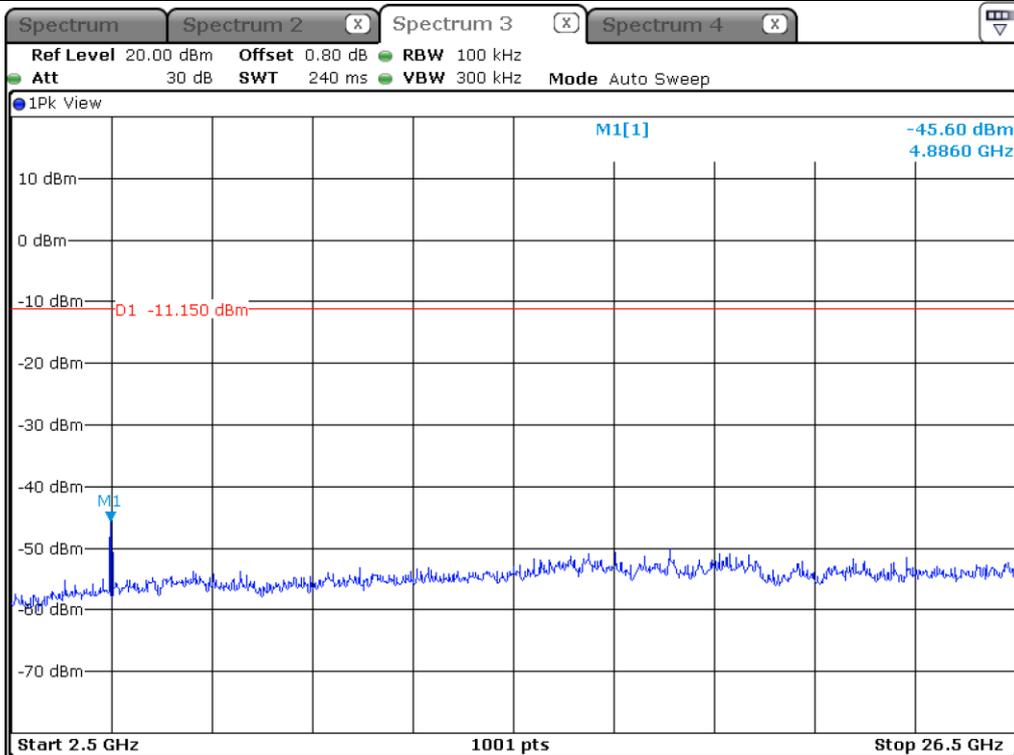
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Hopping Mode



Hopping Mode

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OTC-TRF-RF-001(0)

12.7 Test data for Transmitting mode radiated emission

12.7.1 Radiated Emission which fall in the Restricted Band (Left Earbud)

12.7.1.1 Test data for 1 Mbps

- Resolution bandwidth : 1 MHz and Peak Detector for Peak Mode
1 MHz and RMS Detector for Average Mode
- Video bandwidth : 3 MHz for Peak and Average Mode
- Measurement distance : 3 m
- Duty Cycle : 76.91 %
- Result : PASSED

Frequency (MHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Duty Factor (dB)	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
Test Data for Low Channel										
2 374.85	55.16	Peak	H	28.30	5.39	45.66	-	43.19	74.00	30.81
2 390.00	45.62	Average	H	28.30	5.39	45.66	1.14	34.79	54.00	19.21
2 390.00	55.05	Peak	V	28.30	5.39	45.66	-	43.08	74.00	30.92
2 390.00	45.25	Average	V	28.30	5.39	45.66	1.14	34.42	54.00	19.58
Test Data for High Channel										
2 483.50	61.19	Peak	H	27.70	5.46	45.79	-	48.56	74.00	25.44
2 483.50	50.07	Average	H	27.70	5.46	45.79	1.14	38.58	54.00	15.42
2 483.50	60.78	Peak	V	27.70	5.46	45.79	-	48.15	74.00	25.85
2 483.50	49.89	Average	V	27.70	5.46	45.79	1.14	38.40	54.00	15.60

Tabulated test data for Restricted Band

Remark: “H”: Horizontal, “V”: Vertical

$$\text{Margin (dB)} = \text{Limits (dB}\mu\text{V/m)} - \text{Total Level (dB}\mu\text{V/m)}$$

$$\text{Total Level} = \text{Reading} + \text{Antenna Factor} + \text{Cable Loss} - \text{Amp Gain} + \text{Duty Factor}$$

12.7.1.2 Test data for 2 Mbps

- Resolution bandwidth : 1 MHz and Peak Detector for Peak Mode
1 MHz and RMS Detector for Average Mode
- Video bandwidth : 3 MHz for Peak and Average Mode
- Measurement distance : 3 m
- Duty Cycle : 76.91 %
- Result : PASSED

Frequency (MHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Duty Factor (dB)	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
Test Data for Low Channel										
2 390.00	55.34	Peak	H	28.30	5.39	45.66	-	43.37	74.00	30.63
2 390.00	45.14	Average	H	28.30	5.39	45.66	1.14	34.31	54.00	19.69
2 390.00	55.30	Peak	V	28.30	5.39	45.66	-	43.33	74.00	30.67
2 390.00	45.25	Average	V	28.30	5.39	45.66	1.14	34.42	54.00	19.58
Test Data for High Channel										
2 483.50	61.32	Peak	H	27.70	5.46	45.79	-	48.69	74.00	25.31
2 483.50	50.17	Average	H	27.70	5.46	45.79	1.14	38.68	54.00	15.32
2 483.50	60.77	Peak	V	27.70	5.46	45.79	-	48.14	74.00	25.86
2 483.50	50.11	Average	V	27.70	5.46	45.79	1.14	38.62	54.00	15.38

Tabulated test data for Restricted Band

Remark: “H”: Horizontal, “V”: Vertical

$$\text{Margin (dB)} = \text{Limits (dB}\mu\text{V/m)} - \text{Total Level (dB}\mu\text{V/m)}$$

$$\text{Total Level} = \text{Reading} + \text{Antenna Factor} + \text{Cable Loss} - \text{Amp Gain} + \text{Duty Factor}$$

12.7.1.3 Test data for 3 Mbps

- . Resolution bandwidth : 1 MHz and Peak Detector for Peak Mode
1 MHz and RMS Detector for Average Mode
- . Video bandwidth : 3 MHz for Peak and Average Mode
- . Measurement distance : 3 m
- . Duty Cycle : 76.91 %
- . Result : PASSED

Frequency (MHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Duty Factor (dB)	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
Test Data for Low Channel										
2 390.00	55.25	Peak	H	28.30	5.39	45.66	-	43.28	74.00	30.72
2 390.00	45.03	Average	H	28.30	5.39	45.66	1.14	34.20	54.00	19.80
2 369.83	55.04	Peak	V	28.30	5.39	45.66	-	43.07	74.00	30.93
2 390.00	45.33	Average	V	28.30	5.39	45.66	1.14	34.50	54.00	19.50
Test Data for High Channel										
2 483.50	61.48	Peak	H	27.70	5.46	45.79	-	48.85	74.00	25.15
2 483.50	49.90	Average	H	27.70	5.46	45.79	1.14	38.41	54.00	15.59
2 483.50	61.31	Peak	V	27.70	5.46	45.79	-	48.68	74.00	25.32
2 483.50	49.88	Average	V	27.70	5.46	45.79	1.14	38.39	54.00	15.61

Tabulated test data for Restricted Band

Remark: “H”: Horizontal, “V”: Vertical

$$\text{Margin (dB)} = \text{Limits (dB}\mu\text{V/m)} - \text{Total Level (dB}\mu\text{V/m)}$$

$$\text{Total Level} = \text{Reading} + \text{Antenna Factor} + \text{Cable Loss} - \text{Amp Gain} + \text{Duty Factor}$$

12.7.2 Radiated Emission which fall in the Restricted Band (Right Earbud)

12.7.2.1 Test data for 1 Mbps

- Resolution bandwidth : 1 MHz and Peak Detector for Peak Mode
1 MHz and RMS Detector for Average Mode
- Video bandwidth : 3 MHz for Peak and Average Mode
- Measurement distance : 3 m
- Duty Cycle : 76.72 %
- Result : PASSED

Frequency (MHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Duty Factor (dB)	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
Test Data for Low Channel										
2 390.00	54.57	Peak	H	28.30	5.39	45.66	-	42.60	74.00	31.40
2 390.00	45.31	Average	H	28.30	5.39	45.66	1.15	34.49	54.00	19.51
2 387.85	54.59	Peak	V	28.30	5.39	45.66	-	42.62	74.00	31.38
2 390.00	45.25	Average	V	28.30	5.39	45.66	1.15	34.43	54.00	19.57
Test Data for High Channel										
2 483.50	65.19	Peak	H	27.70	5.46	45.79	-	52.56	74.00	21.44
2 483.50	54.10	Average	H	27.70	5.46	45.79	1.15	42.62	54.00	11.38
2 483.50	65.28	Peak	V	27.70	5.46	45.79	-	52.65	74.00	21.35
2 483.50	53.93	Average	V	27.70	5.46	45.79	1.15	42.45	54.00	11.55

Tabulated test data for Restricted Band

Remark: “H”: Horizontal, “V”: Vertical

$$\text{Margin (dB)} = \text{Limits (dB}\mu\text{V/m)} - \text{Total Level (dB}\mu\text{V/m)}$$

$$\text{Total Level} = \text{Reading} + \text{Antenna Factor} + \text{Cable Loss} - \text{Amp Gain} + \text{Duty Factor}$$

12.7.2.2 Test data for 2 Mbps

- . Resolution bandwidth : 1 MHz and Peak Detector for Peak Mode
1 MHz and RMS Detector for Average Mode
- . Video bandwidth : 3 MHz for Peak and Average Mode
- . Measurement distance : 3 m
- . Duty Cycle : 76.72 %
- . Result : PASSED

Frequency (MHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Duty Factor (dB)	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
Test Data for Low Channel										
2 389.53	53.84	Peak	H	28.30	5.39	45.66	-	41.87	74.00	32.13
2 390.00	45.13	Average	H	28.30	5.39	45.66	1.15	34.31	54.00	19.69
2 366.96	53.70	Peak	V	28.30	5.39	45.66	-	41.73	74.00	32.27
2 390.00	45.25	Average	V	28.30	5.39	45.66	1.15	34.43	54.00	19.57
Test Data for High Channel										
2 483.50	65.43	Peak	H	27.70	5.46	45.79	-	52.80	74.00	21.20
2 483.50	53.70	Average	H	27.70	5.46	45.79	1.15	42.22	54.00	11.78
2 483.50	65.27	Peak	V	27.70	5.46	45.79	-	52.64	74.00	21.36
2 483.50	53.11	Average	V	27.70	5.46	45.79	1.15	41.63	54.00	12.37

Tabulated test data for Restricted Band

Remark: “H”: Horizontal, “V”: Vertical

$$\text{Margin (dB)} = \text{Limits (dB}\mu\text{V/m)} - \text{Total Level (dB}\mu\text{V/m)}$$

$$\text{Total Level} = \text{Reading} + \text{Antenna Factor} + \text{Cable Loss} - \text{Amp Gain} + \text{Duty Factor}$$

12.7.2.3 Test data for 3 Mbps

- . Resolution bandwidth : 1 MHz and Peak Detector for Peak Mode
1 MHz and RMS Detector for Average Mode
- . Video bandwidth : 3 MHz for Peak and Average Mode
- . Measurement distance : 3 m
- . Duty Cycle : 76.72 %
- . Result : PASSED

Frequency (MHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Duty Factor (dB)	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
Test Data for Low Channel										
2 315.87	54.25	Peak	H	28.30	5.39	45.66	-	42.28	74.00	31.72
2 390.00	45.03	Average	H	28.30	5.39	45.66	1.15	34.21	54.00	19.79
2 390.00	54.05	Peak	V	28.30	5.39	45.66	-	42.08	74.00	31.92
2 388.56	45.33	Average	V	28.30	5.39	45.66	1.15	34.51	54.00	19.49
Test Data for High Channel										
2 483.50	64.84	Peak	H	27.70	5.46	45.79	-	52.21	74.00	21.79
2 483.50	52.90	Average	H	27.70	5.46	45.79	1.15	41.42	54.00	12.58
2 483.50	64.31	Peak	V	27.70	5.46	45.79	-	51.68	74.00	22.32
2 483.50	52.88	Average	V	27.70	5.46	45.79	1.15	41.40	54.00	12.60

Tabulated test data for Restricted Band

Remark: “H”: Horizontal, “V”: Vertical

$$\text{Margin (dB)} = \text{Limits (dB}\mu\text{V/m)} - \text{Total Level (dB}\mu\text{V/m)}$$

$$\text{Total Level} = \text{Reading} + \text{Antenna Factor} + \text{Cable Loss} - \text{Amp Gain} + \text{Duty Factor}$$

12.7.3 Spurious & Harmonic Radiated Emission above 1 GHz (Left Earbud)

12.7.3.1 Test data for 1 Mbps

- Resolution bandwidth : 1 MHz and Peak Detector for Peak Mode for the emissions fall in restricted band,
1 MHz and RMS Detector for Average Mode for the emissions fall in restricted band
100 kHz for Peak Mode for the emissions outside restricted band
- Video bandwidth : 3 MHz for Peak and Average Mode
- Frequency range : 1 GHz ~ 26.5 GHz
- Measurement distance : 3 m
- Duty Cycle : 76.91 %
- Result : PASSED

Frequency (MHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Duty Factor (dB)	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
Test Data for Low Channel										
4 804.00	57.73	Peak	H	31.30	7.77	45.06	-	51.74	74.00	22.26
4 804.00	49.16	Average	H	31.30	7.77	45.06	1.14	44.31	54.00	9.69
4 804.00	57.90	Peak	V	31.30	7.77	45.06	-	51.91	74.00	22.09
4 804.00	49.00	Average	V	31.30	7.77	45.06	1.14	44.15	54.00	9.85
Test Data for Middle Channel										
4 882.00	58.13	Peak	H	31.10	7.85	45.04	-	52.04	74.00	21.96
4 882.00	49.06	Average	H	31.10	7.85	45.04	1.14	44.11	54.00	9.89
4 882.00	57.84	Peak	V	31.10	7.85	45.04	-	51.75	74.00	22.25
4 882.00	48.73	Average	V	31.10	7.85	45.04	1.14	43.78	54.00	10.22
Test Data for High Channel										
4 960.00	57.46	Peak	H	31.50	7.94	45.03	-	51.87	74.00	22.13
4 960.00	48.36	Average	H	31.50	7.94	45.03	1.14	43.91	54.00	10.09
4 960.00	57.18	Peak	V	31.50	7.94	45.03	-	51.59	74.00	22.41
4 960.00	48.28	Average	V	31.50	7.94	45.03	1.14	43.83	54.00	10.17

Remark: "H": Horizontal, "V": Vertical

$$\text{Margin (dB)} = \text{Limits (dB}\mu\text{V/m)} - \text{Total Level (dB}\mu\text{V/m)}$$

$$\text{Total Level} = \text{Reading} + \text{Antenna Factor} + \text{Cable Loss} - \text{Amp Gain} + \text{Duty Factor}$$

12.7.3.2 Test data for 2 Mbps

- Resolution bandwidth : 1 MHz and Peak Detector for Peak Mode for the emissions fall in restricted band,
1 MHz and RMS Detector for Average Mode for the emissions fall in restricted band
100 kHz for Peak Mode for the emissions outside restricted band
- Video bandwidth : 3 MHz for Peak and Average Mode
- Frequency range : 1 GHz ~ 26.5 GHz
- Measurement distance : 3 m
- Duty Cycle : 76.91 %
- Result : PASSED

Frequency (MHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Duty Factor (dB)	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
Test Data for Low Channel										
4 804.00	57.12	Peak	H	31.30	7.77	45.06	-	51.13	74.00	22.87
4 804.00	48.15	Average	H	31.30	7.77	45.06	1.14	43.30	54.00	10.70
4 804.00	56.87	Peak	V	31.30	7.77	45.06	-	50.88	74.00	23.12
4 804.00	48.22	Average	V	31.30	7.77	45.06	1.14	43.37	54.00	10.63
Test Data for Middle Channel										
4 882.00	57.24	Peak	H	31.10	7.85	45.04	-	51.15	74.00	22.85
4 882.00	47.95	Average	H	31.10	7.85	45.04	1.14	43.00	54.00	11.00
4 882.00	57.52	Peak	V	31.10	7.85	45.04	-	51.43	74.00	22.57
4 882.00	48.03	Average	V	31.10	7.85	45.04	1.14	43.08	54.00	10.92
Test Data for High Channel										
4 960.00	57.11	Peak	H	31.50	7.94	45.03	-	51.52	74.00	22.48
4 960.00	47.25	Average	H	31.50	7.94	45.03	1.14	42.80	54.00	11.20
4 960.00	57.43	Peak	V	31.50	7.94	45.03	-	51.84	74.00	22.16
4 960.00	47.39	Average	V	31.50	7.94	45.03	1.14	42.94	54.00	11.06

Remark: "H": Horizontal, "V": Vertical

$$\text{Margin (dB)} = \text{Limits (dB}\mu\text{V/m)} - \text{Total Level (dB}\mu\text{V/m)}$$

$$\text{Total Level} = \text{Reading} + \text{Antenna Factor} + \text{Cable Loss} - \text{Amp Gain} + \text{Duty Factor}$$

12.7.3.3 Test data for 3 Mbps

- Resolution bandwidth : 1 MHz and Peak Detector for Peak Mode for the emissions fall in restricted band,
1 MHz and RMS Detector for Average Mode for the emissions fall in restricted band
100 kHz for Peak Mode for the emissions outside restricted band
- Video bandwidth : 3 MHz for Peak and Average Mode
- Frequency range : 1 GHz ~ 26.5 GHz
- Measurement distance : 3 m
- Duty Cycle : 76.91 %
- Result : PASSED

Frequency (MHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Duty Factor (dB)	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
Test Data for Low Channel										
4 804.00	57.38	Peak	H	31.30	7.77	45.06	-	51.39	74.00	22.61
4 804.00	48.23	Average	H	31.30	7.77	45.06	1.14	43.38	54.00	10.62
4 804.00	56.98	Peak	V	31.30	7.77	45.06	-	50.99	74.00	23.01
4 804.00	48.40	Average	V	31.30	7.77	45.06	1.14	43.55	54.00	10.45
Test Data for Middle Channel										
4 882.00	57.43	Peak	H	31.10	7.85	45.04	-	51.34	74.00	22.66
4 882.00	48.16	Average	H	31.10	7.85	45.04	1.14	43.21	54.00	10.79
4 882.00	57.29	Peak	V	31.10	7.85	45.04	-	51.20	74.00	22.80
4 882.00	47.77	Average	V	31.10	7.85	45.04	1.14	42.82	54.00	11.18
Test Data for High Channel										
4 960.00	57.04	Peak	H	31.50	7.94	45.03	-	51.45	74.00	22.55
4 960.00	47.46	Average	H	31.50	7.94	45.03	1.14	43.01	54.00	10.99
4 960.00	57.29	Peak	V	31.50	7.94	45.03	-	51.70	74.00	22.30
4 960.00	47.59	Average	V	31.50	7.94	45.03	1.14	43.14	54.00	10.86

Remark: "H": Horizontal, "V": Vertical

$$\text{Margin (dB)} = \text{Limits (dB}\mu\text{V/m)} - \text{Total Level (dB}\mu\text{V/m)}$$

$$\text{Total Level} = \text{Reading} + \text{Antenna Factor} + \text{Cable Loss} - \text{Amp Gain} + \text{Duty Factor}$$

12.7.4 Spurious & Harmonic Radiated Emission above 1 GHz (Right Earbud)

12.7.4.1 Test data for 1 Mbps

- Resolution bandwidth : 1 MHz and Peak Detector for Peak Mode for the emissions fall in restricted band,
1 MHz and RMS Detector for Average Mode for the emissions fall in restricted band
100 kHz for Peak Mode for the emissions outside restricted band
- Video bandwidth : 3 MHz for Peak and Average Mode
- Frequency range : 1 GHz ~ 26.5 GHz
- Measurement distance : 3 m
- Duty Cycle : 76.72 %
- Result : PASSED

Frequency (MHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Duty Factor (dB)	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
Test Data for Low Channel										
4 804.00	59.73	Peak	H	31.30	7.77	45.06	-	53.74	74.00	20.26
4 804.00	54.16	Average	H	31.30	7.77	45.06	1.15	49.32	54.00	4.68
4 804.00	59.09	Peak	V	31.30	7.77	45.06	-	53.10	74.00	20.90
4 804.00	53.00	Average	V	31.30	7.77	45.06	1.15	48.16	54.00	5.84
Test Data for Middle Channel										
4 882.00	58.03	Peak	H	31.10	7.85	45.04	-	51.94	74.00	22.06
4 882.00	52.16	Average	H	31.10	7.85	45.04	1.15	47.22	54.00	6.78
4 882.00	57.44	Peak	V	31.10	7.85	45.04	-	51.35	74.00	22.65
4 882.00	51.76	Average	V	31.10	7.85	45.04	1.15	46.82	54.00	7.18
Test Data for High Channel										
4 960.00	57.46	Peak	H	31.50	7.94	45.03	-	51.87	74.00	22.13
4 960.00	51.59	Average	H	31.50	7.94	45.03	1.15	47.15	54.00	6.85
4 960.00	56.80	Peak	V	31.50	7.94	45.03	-	51.21	74.00	22.79
4 960.00	51.28	Average	V	31.50	7.94	45.03	1.15	46.84	54.00	7.16

Remark: "H": Horizontal, "V": Vertical

$$\text{Margin (dB)} = \text{Limits (dB}\mu\text{V/m)} - \text{Total Level (dB}\mu\text{V/m)}$$

$$\text{Total Level} = \text{Reading} + \text{Antenna Factor} + \text{Cable Loss} - \text{Amp Gain} + \text{Duty Factor}$$

12.7.4.2 Test data for 2 Mbps

- Resolution bandwidth : 1 MHz and Peak Detector for Peak Mode for the emissions fall in restricted band,
1 MHz and RMS Detector for Average Mode for the emissions fall in restricted band
100 kHz for Peak Mode for the emissions outside restricted band
- Video bandwidth : 3 MHz for Peak and Average Mode
- Frequency range : 1 GHz ~ 26.5 GHz
- Measurement distance : 3 m
- Duty Cycle : 76.72 %
- Result : PASSED

Frequency (MHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Duty Factor (dB)	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
Test Data for Low Channel										
4 804.00	58.15	Peak	H	31.30	7.77	45.06	-	52.16	74.00	21.84
4 804.00	52.08	Average	H	31.30	7.77	45.06	1.15	47.24	54.00	6.76
4 804.00	58.78	Peak	V	31.30	7.77	45.06	-	52.79	74.00	21.21
4 804.00	51.22	Average	V	31.30	7.77	45.06	1.15	46.38	54.00	7.62
Test Data for Middle Channel										
4 882.00	58.42	Peak	H	31.10	7.85	45.04	-	52.33	74.00	21.67
4 882.00	51.75	Average	H	31.10	7.85	45.04	1.15	46.81	54.00	7.19
4 882.00	57.56	Peak	V	31.10	7.85	45.04	-	51.47	74.00	22.53
4 882.00	50.10	Average	V	31.10	7.85	45.04	1.15	45.16	54.00	8.84
Test Data for High Channel										
4 960.00	57.11	Peak	H	31.50	7.94	45.03	-	51.52	74.00	22.48
4 960.00	50.25	Average	H	31.50	7.94	45.03	1.15	45.81	54.00	8.19
4 960.00	56.43	Peak	V	31.50	7.94	45.03	-	50.84	74.00	23.16
4 960.00	49.38	Average	V	31.50	7.94	45.03	1.15	44.94	54.00	9.06

Remark: "H": Horizontal, "V": Vertical

$$\text{Margin (dB)} = \text{Limits (dB}\mu\text{V/m)} - \text{Total Level (dB}\mu\text{V/m)}$$

$$\text{Total Level} = \text{Reading} + \text{Antenna Factor} + \text{Cable Loss} - \text{Amp Gain} + \text{Duty Factor}$$

12.7.4.3 Test data for 3 Mbps

- Resolution bandwidth : 1 MHz and Peak Detector for Peak Mode for the emissions fall in restricted band,
1 MHz and RMS Detector for Average Mode for the emissions fall in restricted band
100 kHz for Peak Mode for the emissions outside restricted band
- Video bandwidth : 3 MHz for Peak and Average Mode
- Frequency range : 1 GHz ~ 26.5 GHz
- Measurement distance : 3 m
- Duty Cycle : 76.72 %
- Result : PASSED

Frequency (MHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Duty Factor (dB)	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
Test Data for Low Channel										
4 804.00	58.26	Peak	H	31.30	7.77	45.06	-	52.27	74.00	21.73
4 804.00	52.13	Average	H	31.30	7.77	45.06	1.15	47.29	54.00	6.71
4 804.00	57.98	Peak	V	31.30	7.77	45.06	-	51.99	74.00	22.01
4 804.00	51.40	Average	V	31.30	7.77	45.06	1.15	46.56	54.00	7.44
Test Data for Middle Channel										
4 882.00	57.83	Peak	H	31.10	7.85	45.04	-	51.74	74.00	22.26
4 882.00	51.10	Average	H	31.10	7.85	45.04	1.15	46.16	54.00	7.84
4 882.00	57.29	Peak	V	31.10	7.85	45.04	-	51.20	74.00	22.80
4 882.00	50.77	Average	V	31.10	7.85	45.04	1.15	45.83	54.00	8.17
Test Data for High Channel										
4 960.00	56.00	Peak	H	31.50	7.94	45.03	-	50.41	74.00	23.59
4 960.00	50.46	Average	H	31.50	7.94	45.03	1.15	46.02	54.00	7.98
4 960.00	55.92	Peak	V	31.50	7.94	45.03	-	50.33	74.00	23.67
4 960.00	49.19	Average	V	31.50	7.94	45.03	1.15	44.75	54.00	9.25

Remark: "H": Horizontal, "V": Vertical

$$\text{Margin (dB)} = \text{Limits (dB}\mu\text{V/m)} - \text{Total Level (dB}\mu\text{V/m)}$$

$$\text{Total Level} = \text{Reading} + \text{Antenna Factor} + \text{Cable Loss} - \text{Amp Gain} + \text{Duty Factor}$$

13. RADIATED EMISSION TEST

13.1 Operating environment

Temperature : 23 °C
Relative humidity : 46 % R.H.

13.2 Test set-up

The radiated emissions measurements were on the 3 m semi anechoic chamber. The EUT and other support equipment were placed on a non-conductive turntable above the ground plane. The interconnecting cables from outside test site were inserted into ferrite clamps at the point where the cables reach the turntable.

The frequency spectrum from 30 MHz to 26.5 GHz was scanned and emission levels maximized at each frequency recorded. The system was rotated 360°, and the antenna was varied in height between 1.0 m and 4.0 m in order to determine the maximum emission levels. This procedure was performed for both horizontal and vertical polarization of the receiving antenna.

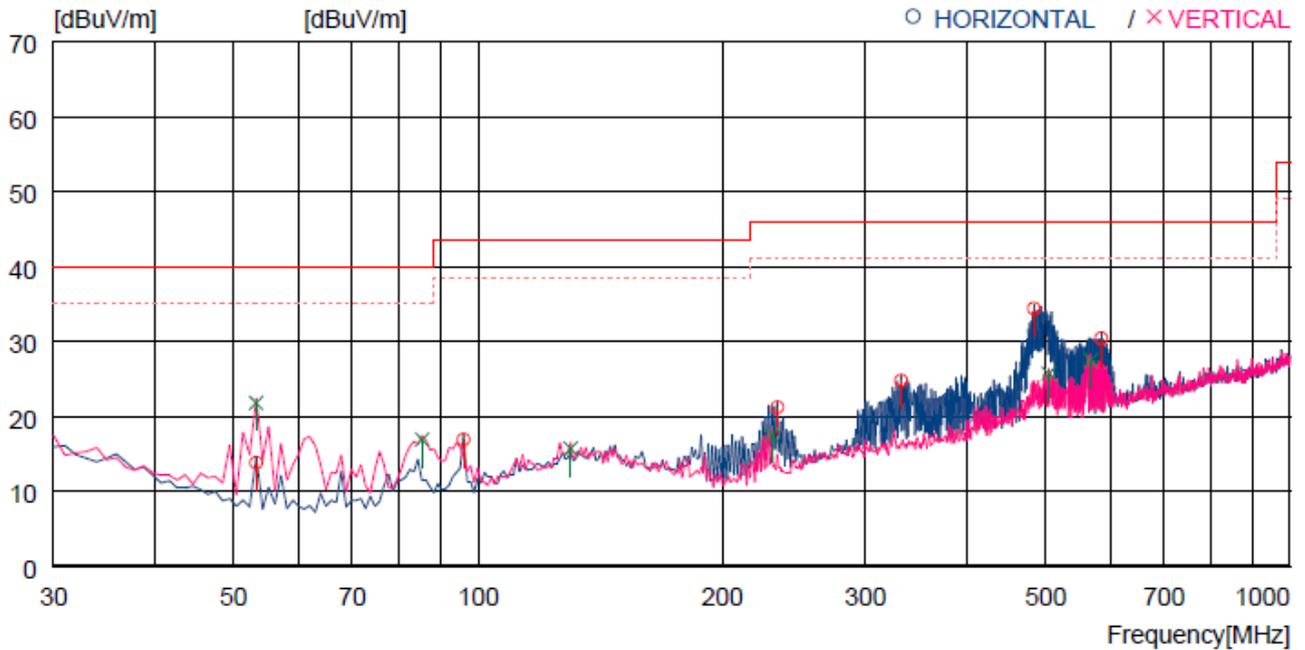
13.3 Test Date

September 09, 2021 ~ September 17, 2021

13.4 Test data for Left Earbud

13.4.1 Test data for 30 MHz ~ 1000 MHz

- . Resolution bandwidth : 120 kHz
- . Frequency range : 30 MHz ~ 1 000 MHz
- . Measurement distance : 3 m



No.	FREQ [MHz]	READING [dBuV]	ANT [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal -----										
1	53.280	33.2	12.4	1.3	33.1	13.8	40.0	26.2	300	0
2	95.960	33.6	14.5	1.9	33.1	16.9	43.5	26.6	300	296
3	233.700	34.9	16.4	2.9	33.0	21.2	46.0	24.8	200	359
4	331.670	34.5	19.7	3.6	33.0	24.8	46.0	21.2	100	0
5	483.961	40.1	23.1	4.3	33.1	34.4	46.0	11.6	100	0
6	585.808	34.8	24.1	4.8	33.3	30.4	46.0	15.6	100	0
----- Vertical -----										
7	53.280	41.2	12.4	1.3	33.1	21.8	40.0	18.2	100	2
8	85.290	35.2	13.0	1.8	33.1	16.9	40.0	23.1	100	359
9	129.910	27.2	19.3	2.2	33.0	15.7	43.5	27.8	100	359
10	229.820	31.5	16.1	2.9	33.0	17.5	46.0	28.5	100	359
11	504.331	31.1	23.2	4.5	33.1	25.7	46.0	20.3	100	359
12	568.349	32.0	24.0	4.8	33.3	27.5	46.0	18.5	100	359

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OTC-TRF-RF-001(0)

13.4.2 Test data for Below 30 MHz

- . Resolution bandwidth : 200 Hz (from 9 kHz to 0.15 MHz), 9 kHz (from 0.15 MHz to 30 MHz)
- . Frequency range : 9 kHz ~ 30 MHz
- . Measurement distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dB μ V/m)	Limits (dB μ V/m)	Margin (dB)
Emission from the EUT more than 20 dB below the limit in each frequency range.								

13.4.3 Test data for above 1 GHz

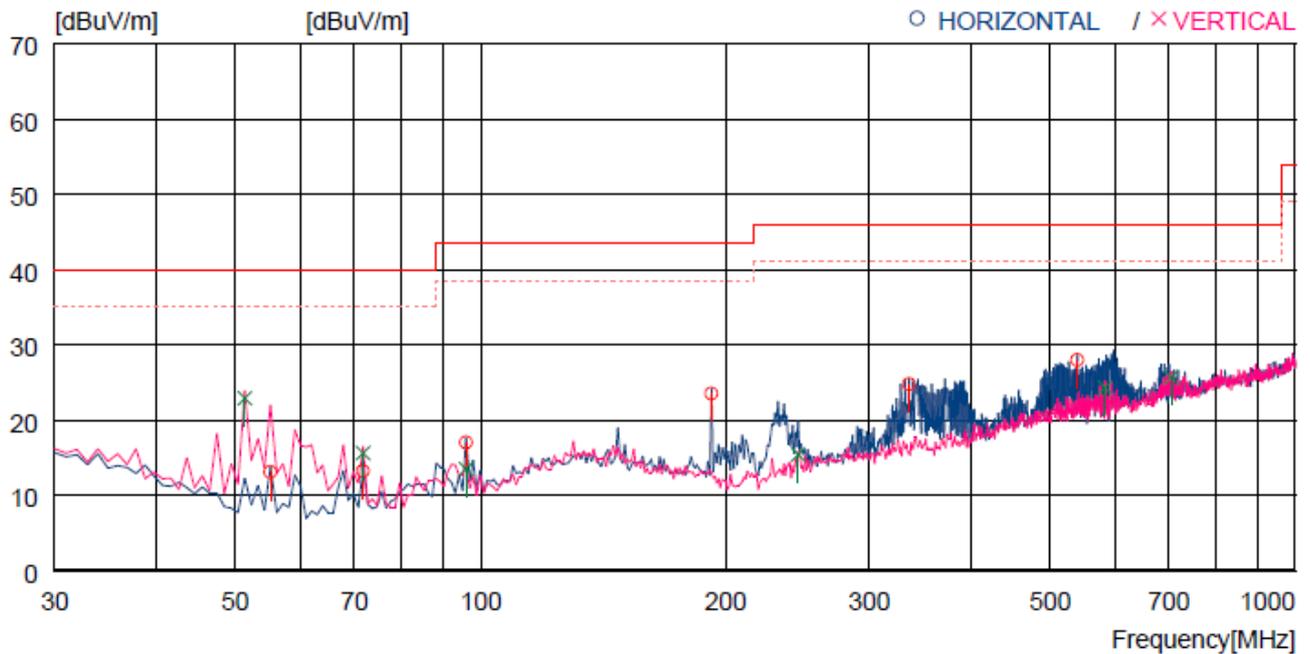
- . Resolution bandwidth : 1 MHz for Peak and Average Mode
- . Video bandwidth : 3 MHz for Peak and Average Mode
- . Frequency range : 1 GHz ~ 26.5 GHz
- . Measurement distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dB μ V/m)	Limits (dB μ V/m)	Margin (dB)
Emission from the EUT more than 20 dB below the limit in each frequency range.								

13.5 Test data for Right Earbud

13.5.1 Test data for 30 MHz ~ 1000 MHz

- . Resolution bandwidth : 120 kHz
- . Frequency range : 30 MHz ~ 1 000 MHz
- . Measurement distance : 3 m



No.	FREQ [MHz]	READING [dBuV]	ANT [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
---- Horizontal ----										
1	55.220	32.8	12.1	1.3	33.1	13.1	40.0	26.9	400	352
2	71.710	31.8	12.9	1.6	33.1	13.2	40.0	26.8	400	359
3	95.960	33.7	14.5	1.9	33.1	17.0	43.5	26.5	400	359
4	191.990	38.2	15.7	2.6	33.0	23.5	43.5	20.0	100	0
5	335.550	34.4	19.8	3.6	33.0	24.8	46.0	21.2	100	0
6	540.220	32.9	23.6	4.7	33.2	28.0	46.0	18.0	100	0
---- Vertical ----										
7	51.340	42.0	12.8	1.2	33.1	22.9	40.0	17.1	100	57
8	71.710	34.2	12.9	1.6	33.1	15.6	40.0	24.4	100	6
9	95.960	30.2	14.5	1.9	33.1	13.5	43.5	30.0	100	64
10	245.340	28.2	17.1	3.1	33.0	15.4	46.0	30.6	100	359
11	583.868	28.7	24.1	4.8	33.3	24.3	46.0	21.7	100	359
12	704.145	28.1	25.7	5.2	33.3	25.7	46.0	20.3	100	359

13.5.2 Test data for Below 30 MHz

- Resolution bandwidth : 200 Hz (from 9 kHz to 0.15 MHz), 9 kHz (from 0.15 MHz to 30 MHz)
- Frequency range : 9 kHz ~ 30 MHz
- Measurement distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dB μ V/m)	Limits (dB μ V/m)	Margin (dB)
Emission from the EUT more than 20 dB below the limit in each frequency range.								

13.5.3 Test data for above 1 GHz

- Resolution bandwidth : 1 MHz for Peak and Average Mode
- Video bandwidth : 3 MHz for Peak and Average Mode
- Frequency range : 1 GHz ~ 26.5 GHz
- Measurement distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dB μ V/m)	Limits (dB μ V/m)	Margin (dB)
Emission from the EUT more than 20 dB below the limit in each frequency range.								

14. LIST OF TEST EQUIPMENT

Model Number	Manufacturer	Description	Serial Number	Last Cal.(Interval)
FSV40-N	Rohde & Schwarz	Signal Analyzer	101457	Apr. 16, 2021 (1Y)
ESU	Rohde & Schwarz	EMI Test Receiver	100261	Mar. 15, 2021 (1Y)
310N	Sonoma Instrument	AMPLIFIER	312544	Mar. 16, 2021 (1Y)
PAM-840A	Com-Power	Pre-Amplifer	461339	Oct. 16, 2020 (1Y)
SCU18	Rohde & Schwarz	Pre-Amplifier	102266	Jul. 14, 2021 (1Y)
HLP-2008	TDK RF Solutions	Hybrid Antenna	131316	Feb. 27, 2020 (2Y)
BBHA9170	Schwarzbeck	Horn Antenna	BBHA9170178	Jan. 07, 2021(1Y)
AH-118	Com-Power	Horn Antenna	10050061	Oct. 15, 2020 (1Y)
FMZB 1513	Schwarzbeck	Loop Antenna	1513-235	Mar. 24, 2020(2Y)
HPF 3GHz	Rohde & Schwarz	High Pass Filter (1-3 GHz)	N/A	Feb. 08, 2021 (1Y)
GP-4303D	LG Precision Co.,Ltd	DC POWER SUPPLY	5071069	Jan. 06, 2021 (1Y)
DT2000-2t	Innco Systems GmbH	Turn Table	N/A	N/A
CO3000	Innco Systems GmbH	Controller	1026/40960617/P	N/A
MA-4640-XPET	Innco Systems GmbH	Antenna Master	MA4640/652/43100318/P	N/A