Appendix C: Test Results of Wi-Fi 802.11 b/g/n

Appendix C.1: Measurement Equipment List

TÜVRheinland®
Precisely Right.

Measurement Equipment List

Testing Start Date	10.07.2019
Testing end date	01.08.2019
Project Manager	Storm Shu
Cost Center	144
Test Report Number	50279852 001
Order Item Number	0170109244A00210
Customer	Alllike
Comment	

Old ID	Equip.	Description	Model	Manufacturer	Inte. (mon)	Due Date DD.MM.YYYY
1.887	1813944	EMI Test Receiver	ESCI	Rohde & Schwarz	12	15.03.2020
1.886	1813943	Two-Line V-Network	ENV216	Rohde & Schwarz	12	24.05.2020
1.807	1813832	EMI Test Receiver	ESCI	Rohde & Schwarz	12	14.03.2020
1.805	1813829	FSP30 Spectrum Analyzer	FSP30	Rohde & Schwarz	12	15.08.2020
1.921B	1814142	Trilog Broadband Antenna	VULB9168(6dB)	SCHWARZBECK	24	20.09.2019
1.822	1813850	Loop Antenna	HFH2-Z2	Rohde & Schwarz	24	15.03.2021
1.889C	1814199	Double-Ridged Horn Antenna	HF907(3##	Rohde & Schwarz	24	23.10.2020
1.808	1813833	Horn Antenna	3160-09	EMCO	60	19.01.2024
1.819C	1814068	Pre-Amplifier	A44-00101800-25-10P-	MITEQ	12	08.05.2020
1.819A	1813846	Band Reject Filter	BRM50702	Micro-Tronics	24	04.07.2020
1.808A	1813834	Pre-Amplifier	A33-18002650-30-8P-4	MITEQ	24	29.07.2021
1.666	1813697	SAC	N/A	Albatross Project	36	27.11.2021
1.913	1814012	Shielding Room	9x4x3.4	Changzhou Yuanping	60	06.12.2020
3.769	1814017	Regulated power supply	APS-33045TT	APS	12	15.07.2020
3.765	1814004	Frequency Invertor	APW-1100N	APE	12	15.07.2020
3.770	1814018	Regulated power supply	APS-11020	APS	12	15.07.2020
3.647	1822646	Stable Power Supply	APS-11010GG	APS	12	15.07.2020
1.844	1813877	Automatic Voltage Regulator	AFR-345	Allpower	12	26.04.2020
3.648	1822647	Frequency Invertor	CIF-5000A	IDRC	12	15.07.2020
1.803C	1822648	Artificial Mains Network	LT32C/10	AFJ	12	30.07.2020
1.923B	1825388	EMI Test Receiver	ESR7	Rohde & Schwarz	12	08.04.2020
1.657N	1825384	Power Meter	NRX	Rohde & Schwarz	12	08.04.2020
1.657O	1825385	Average Power Sensor	NRP6A	Rohde & Schwarz	12	08.04.2020
1.657P	1825386	Average Power Sensor	NRP6A	Rohde & Schwarz	12	08.04.2020

Appendix C.2: Conducted Power Spectral Density

Wi-Fi 802.11 b mode

Low Channel

Middle Channel

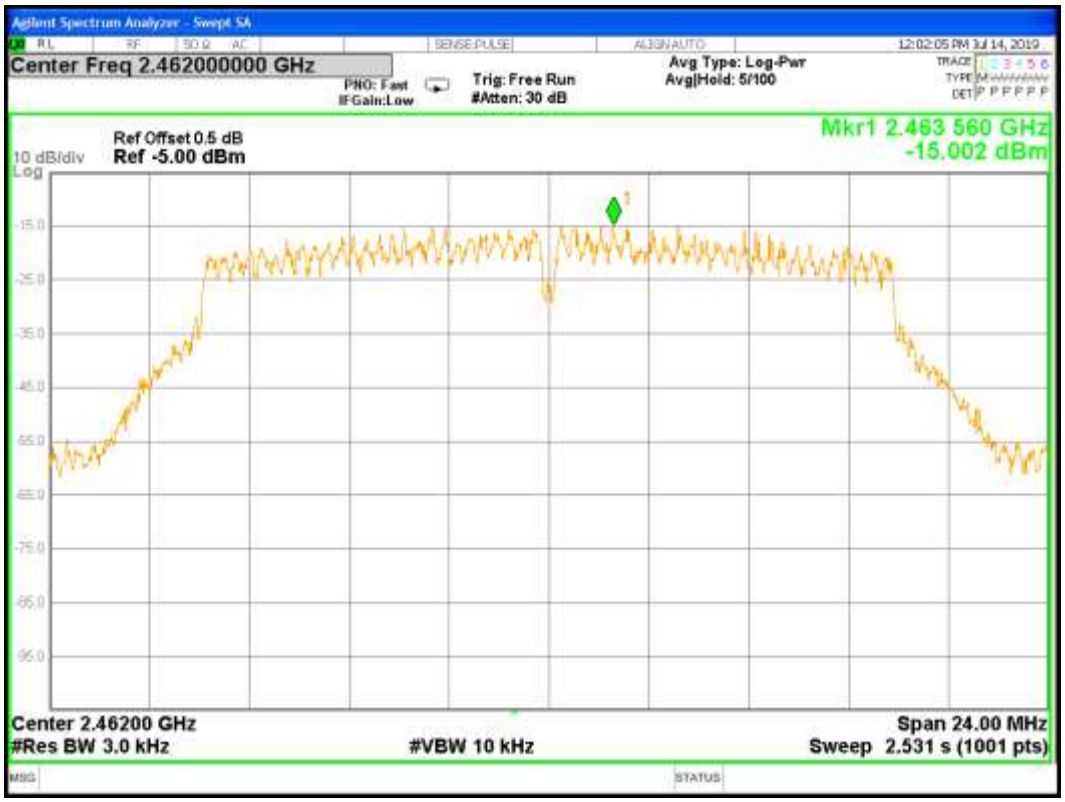
High Channel

Wi-Fi 802.11 g mode

Low Channel

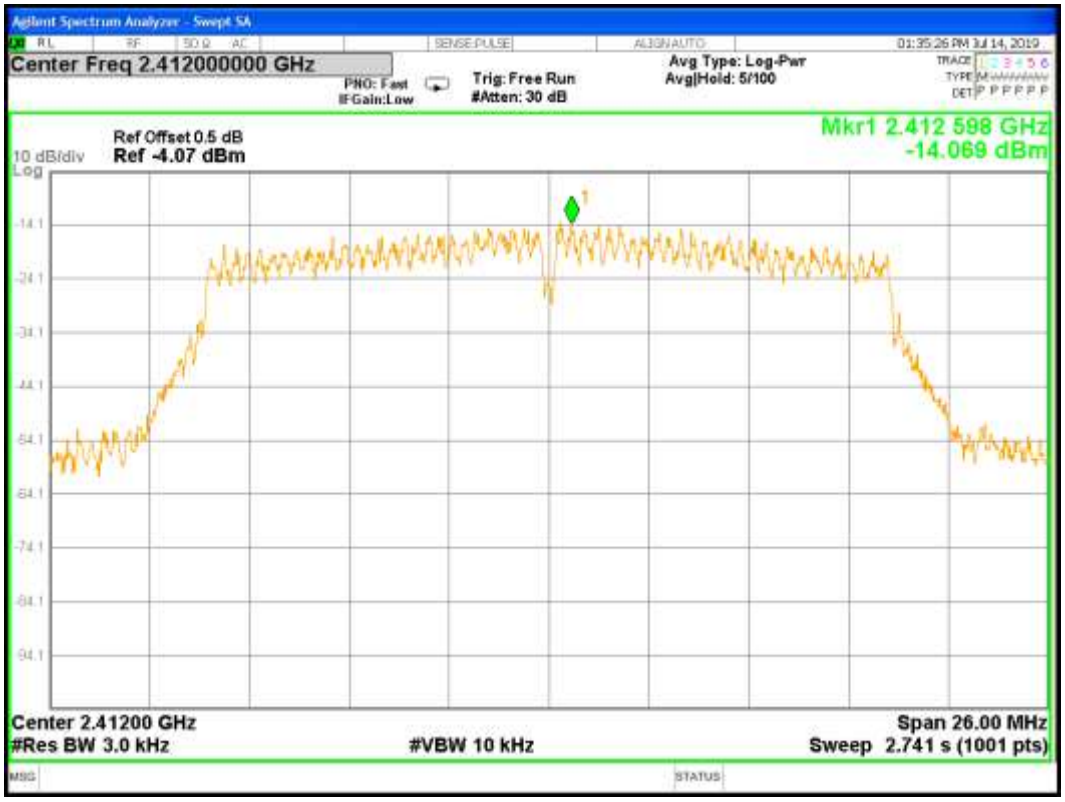
Middle Channel

High Channel

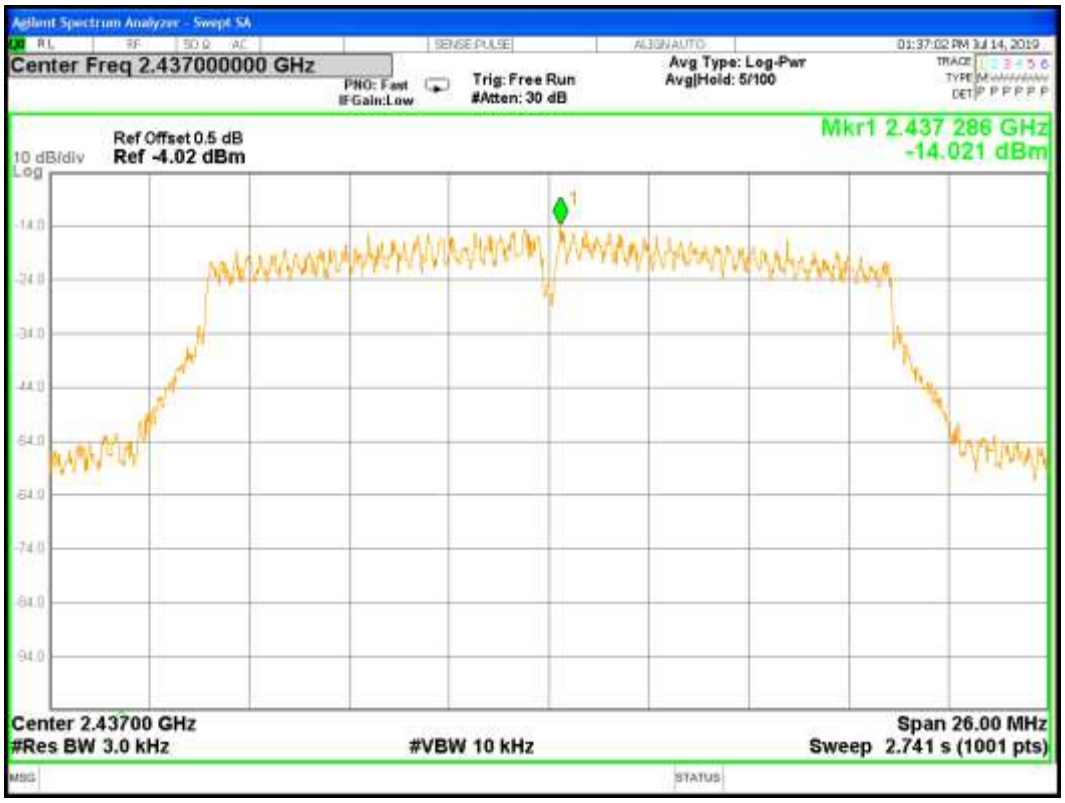


Wi-Fi 802.11 n(HT20) mode

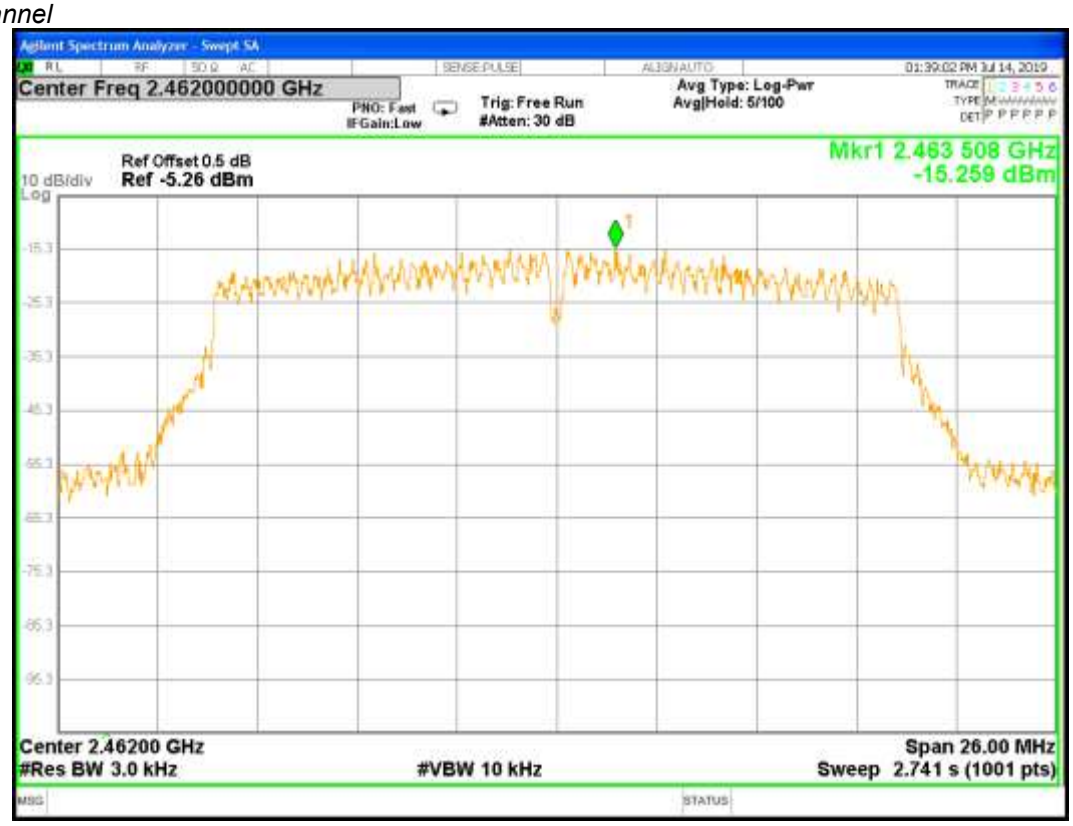
Low Channel



Middle Channel



High Channel



Wi-Fi 802.11 n(HT40) mode, MCS0
Low Channel

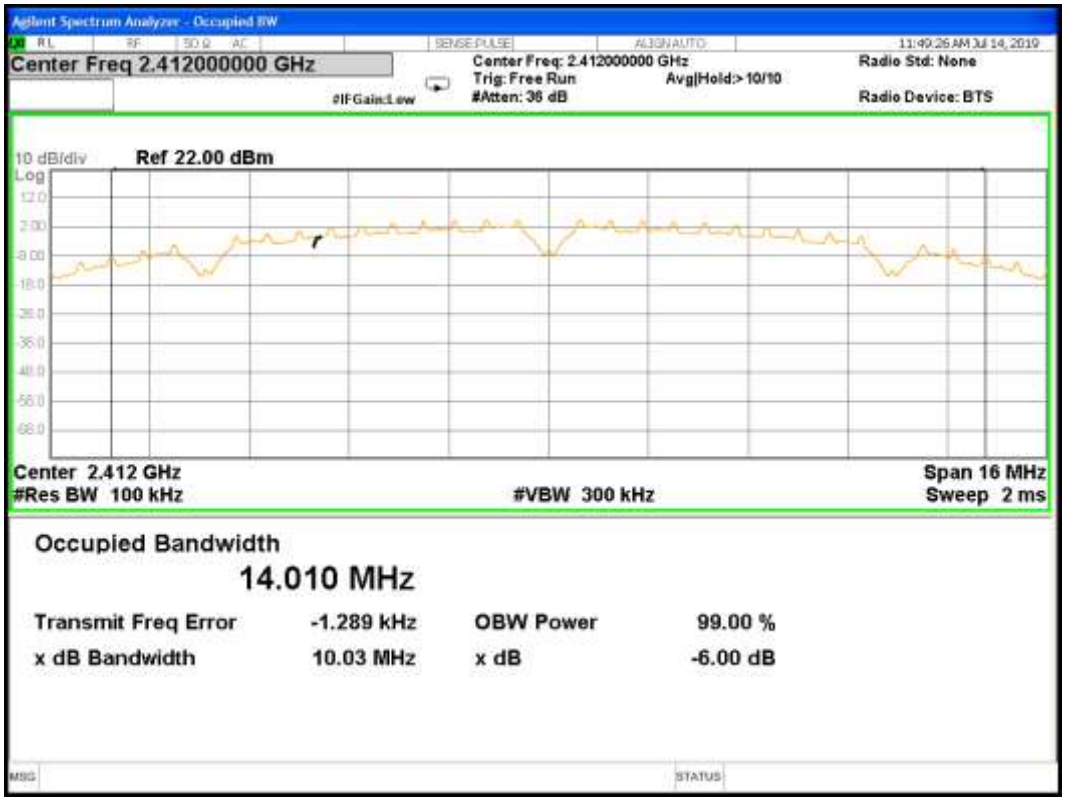
Middle Channel

High Channel

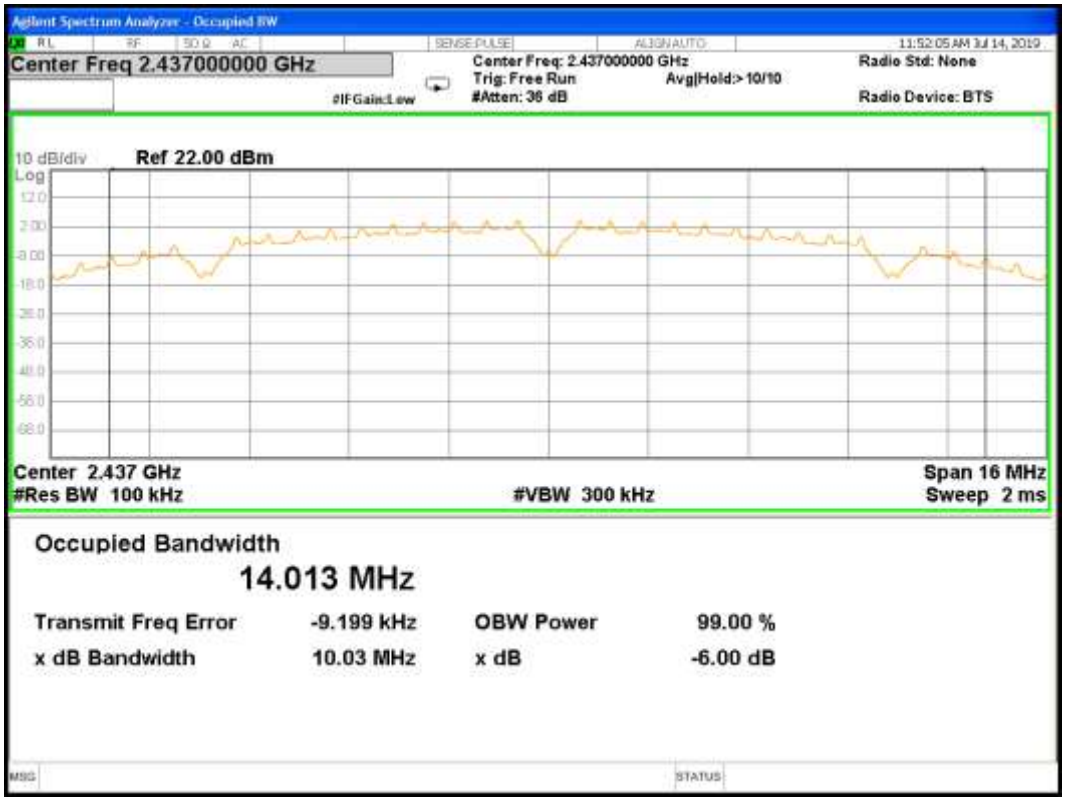
Appendix C.3: 6dB Bandwidth

Wi-Fi 802.11 b mode

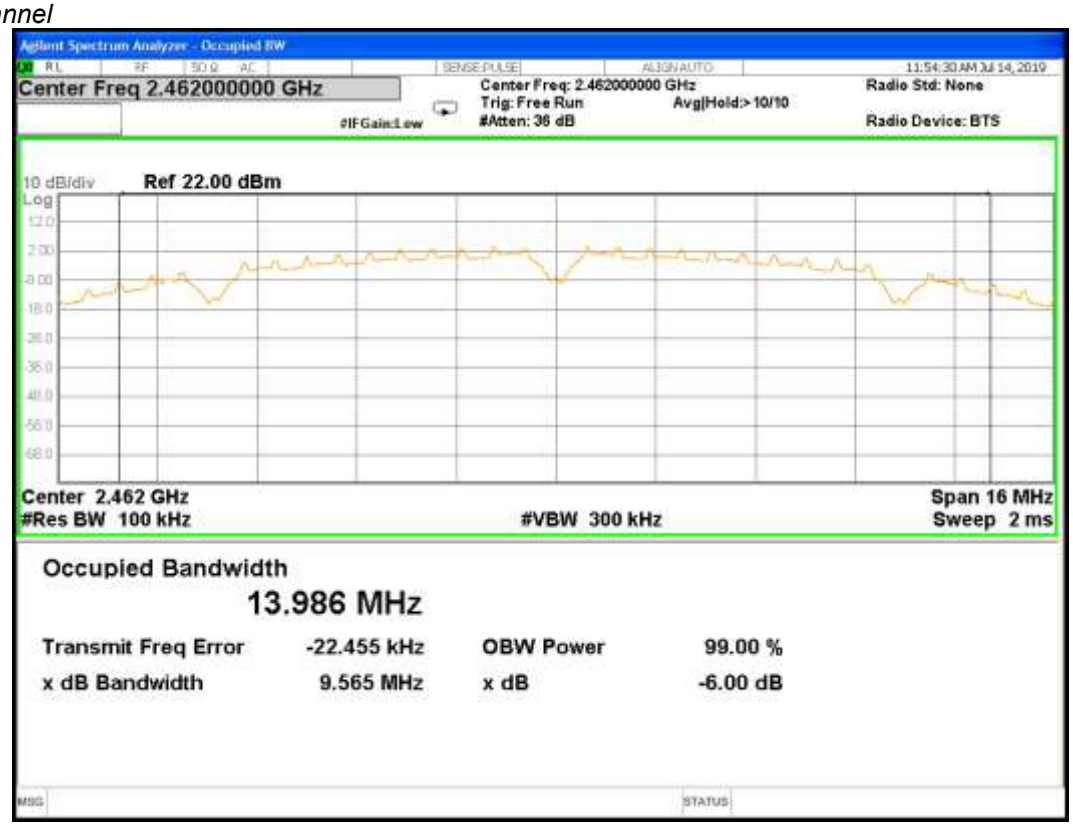
Low Channel



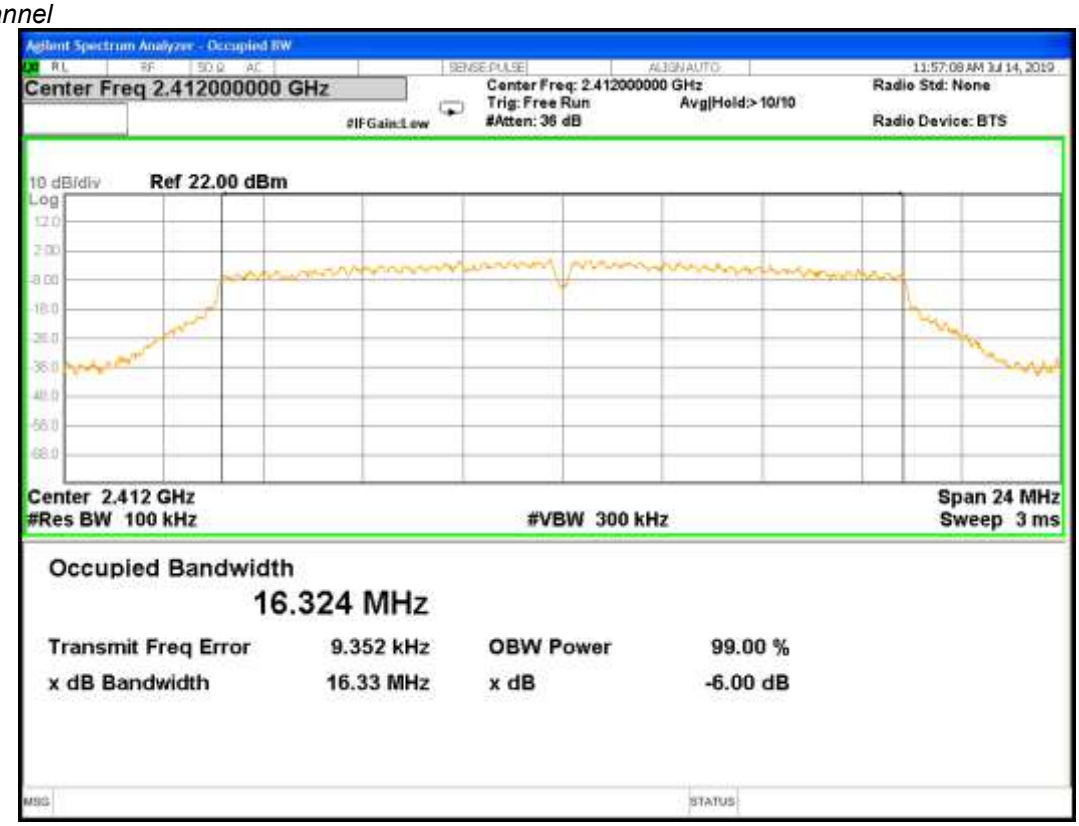
Middle Channel



High Channel



Wi-Fi 802.11 g mode
Low Channel

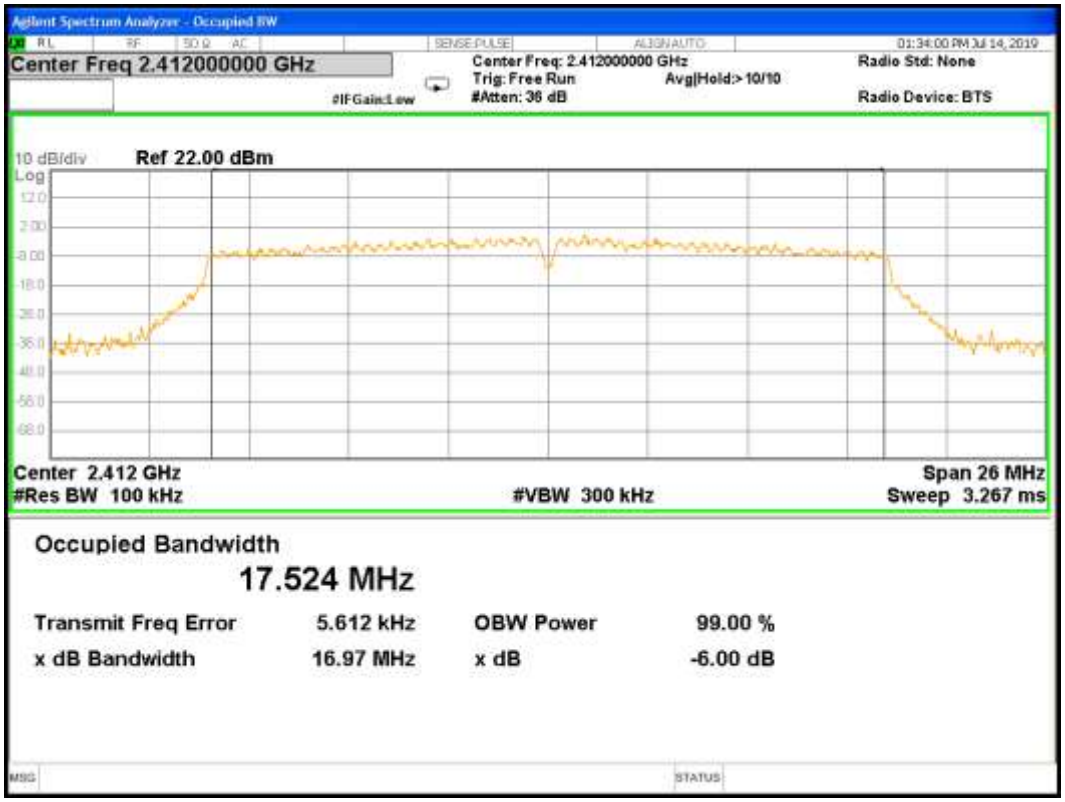


Middle Channel

High Channel

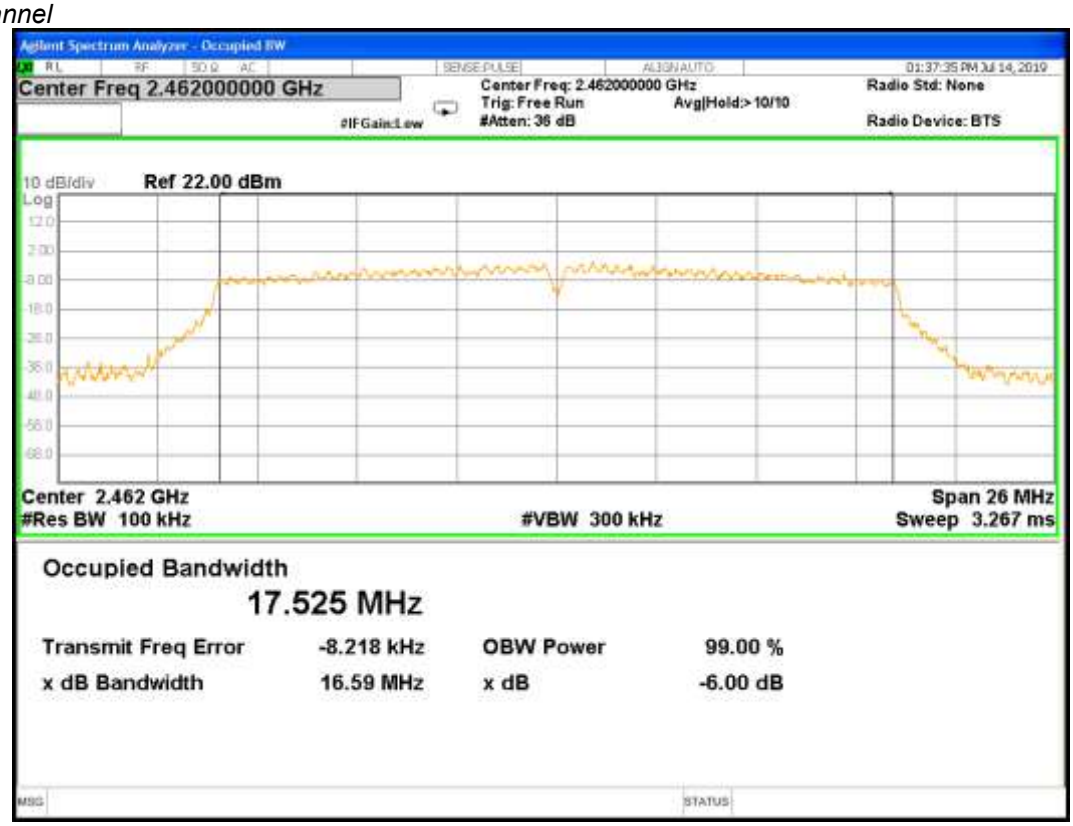
Wi-Fi 802.11 n(HT20) mode

Low Channel



Middle Channel

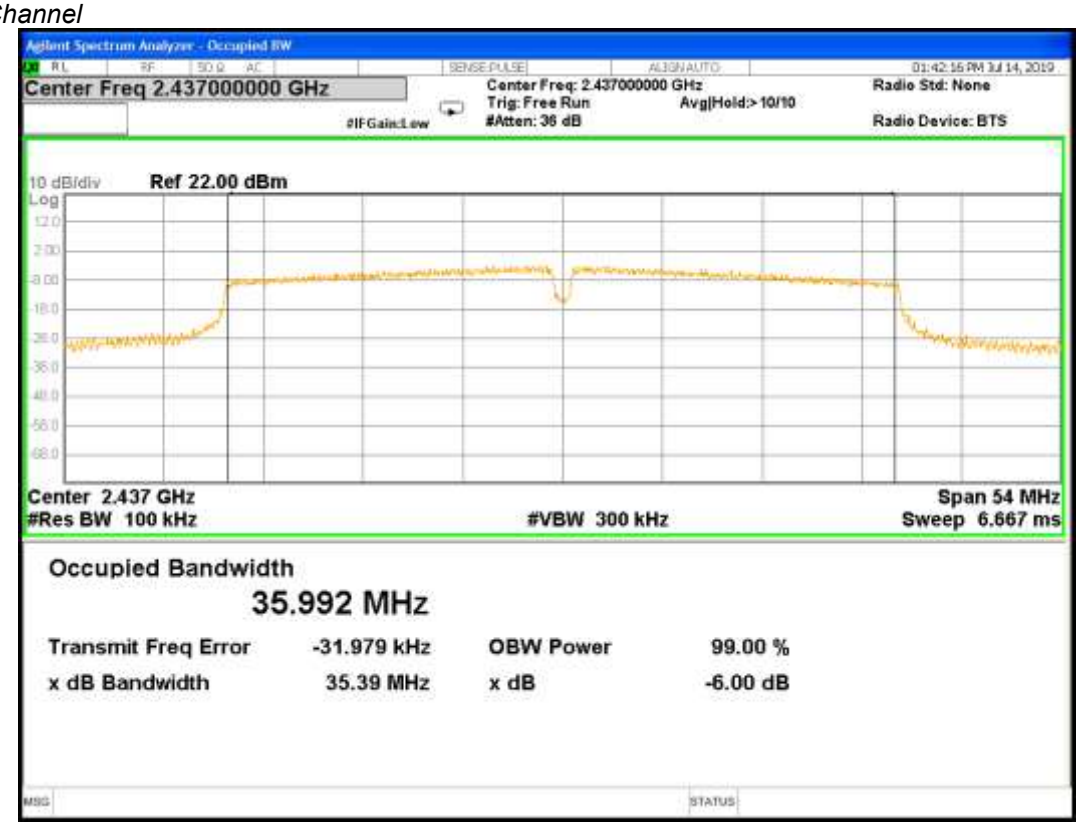
High Channel



Wi-Fi 802.11 n(HT40) mode, MCS0

Low Channel

Middle Channel

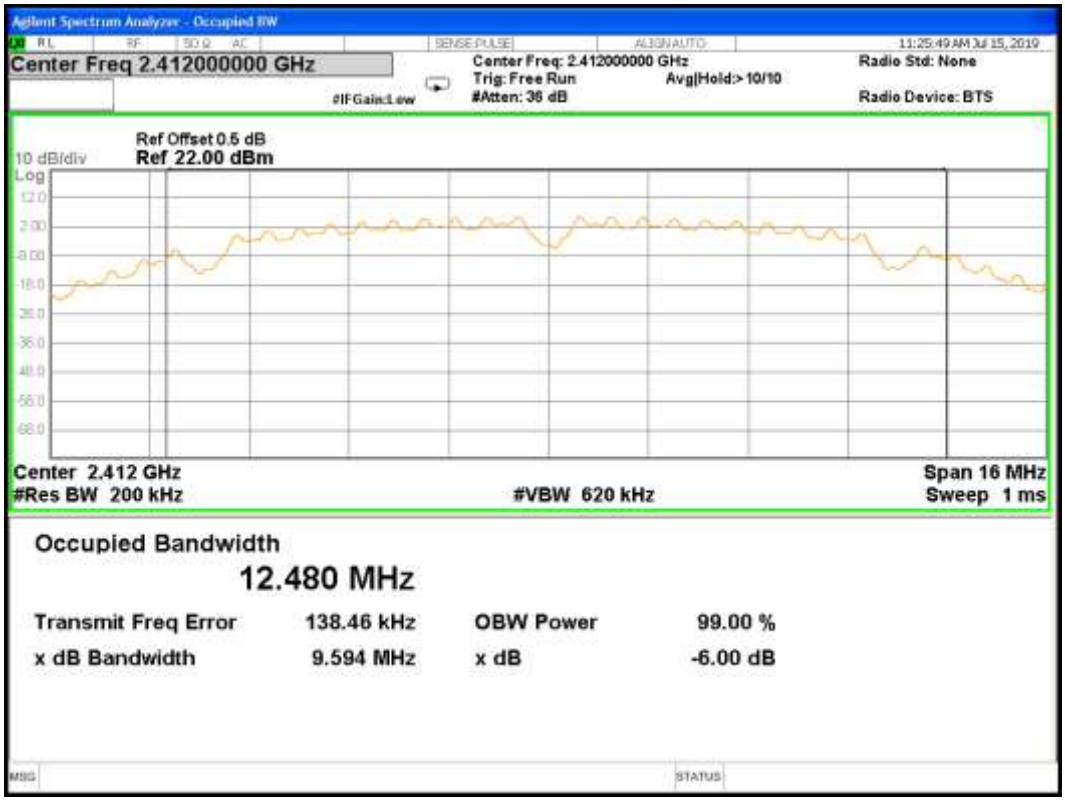


High Channel

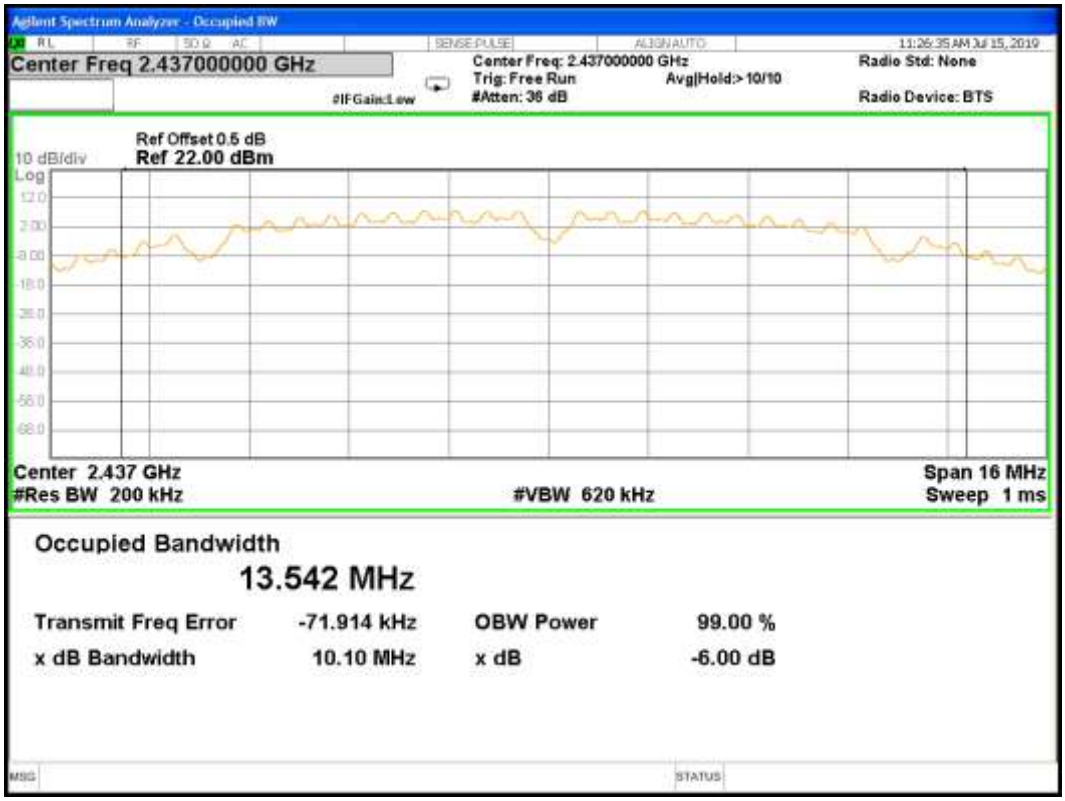
Appendix C.4: 99% Bandwidth

Wi-Fi 802.11 b mode

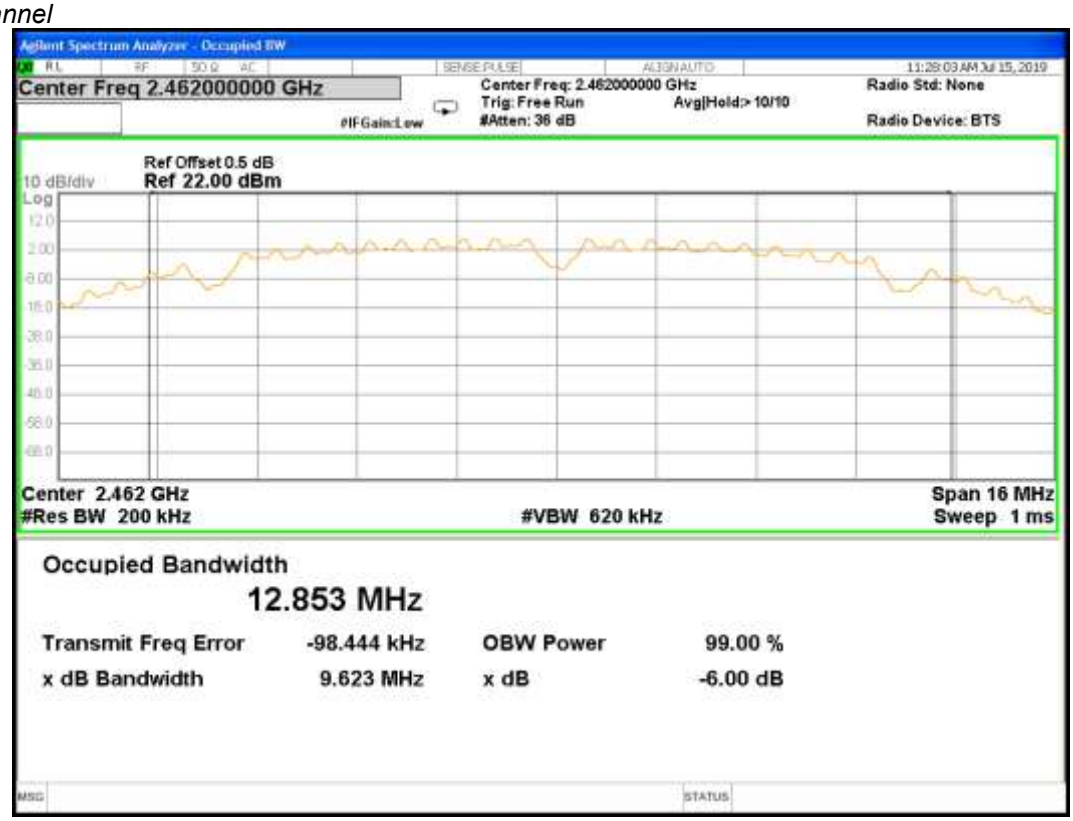
Low Channel



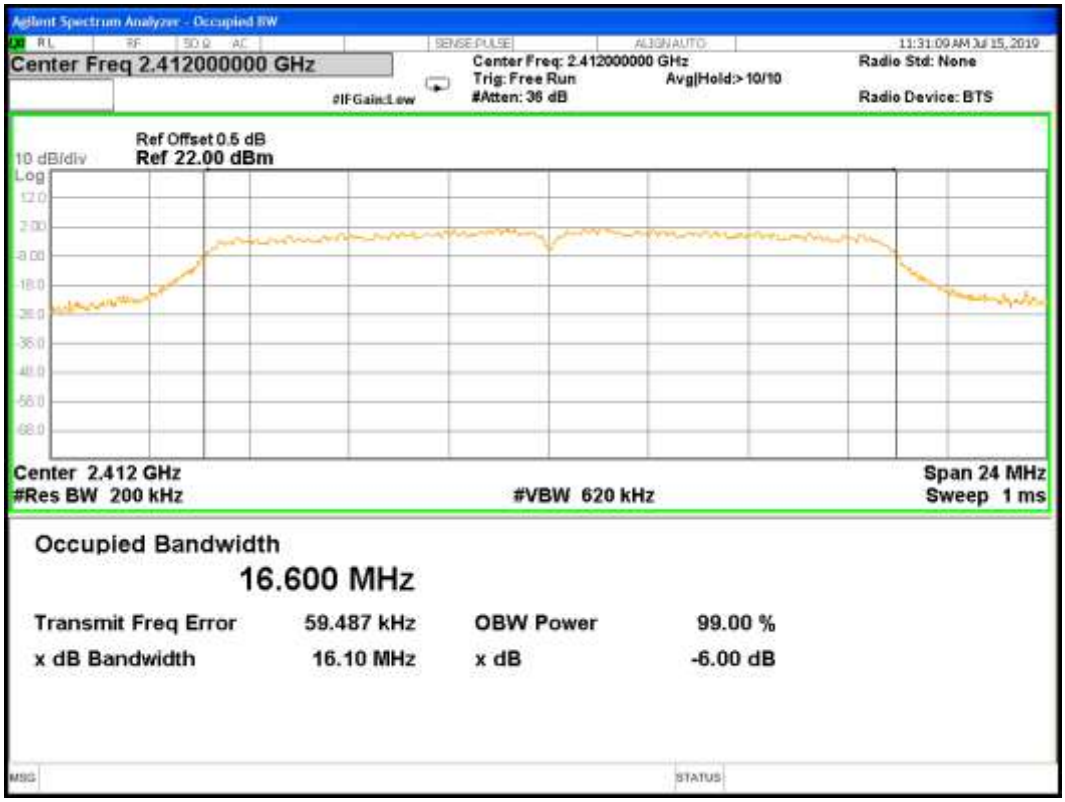
Middle Channel



High Channel



Wi-Fi 802.11 g mode
Low Channel

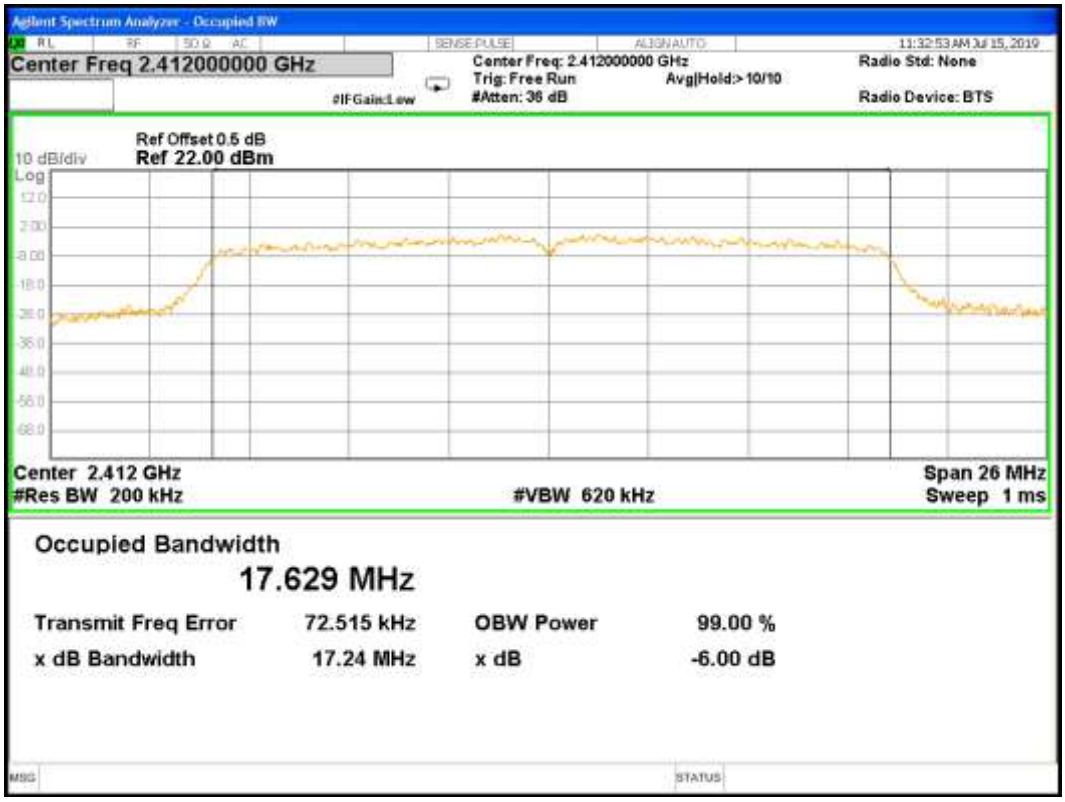


Middle Channel

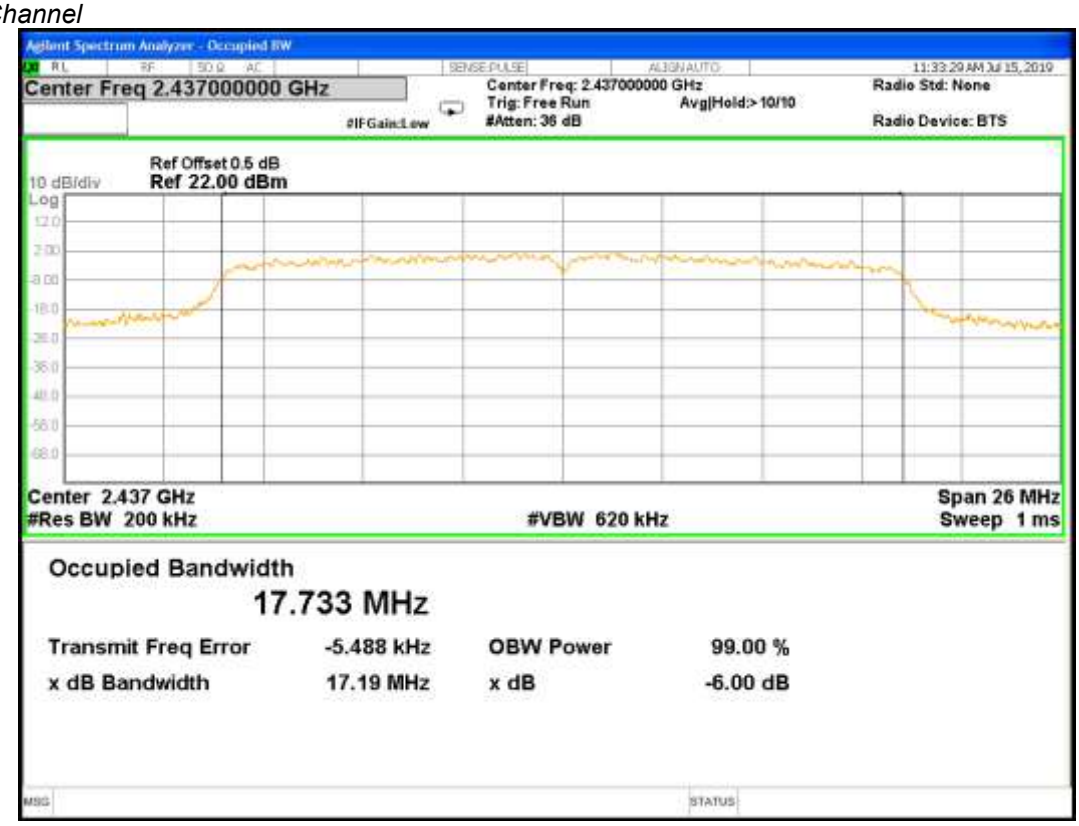
High Channel

Wi-Fi 802.11 n(HT20) mode

Low Channel



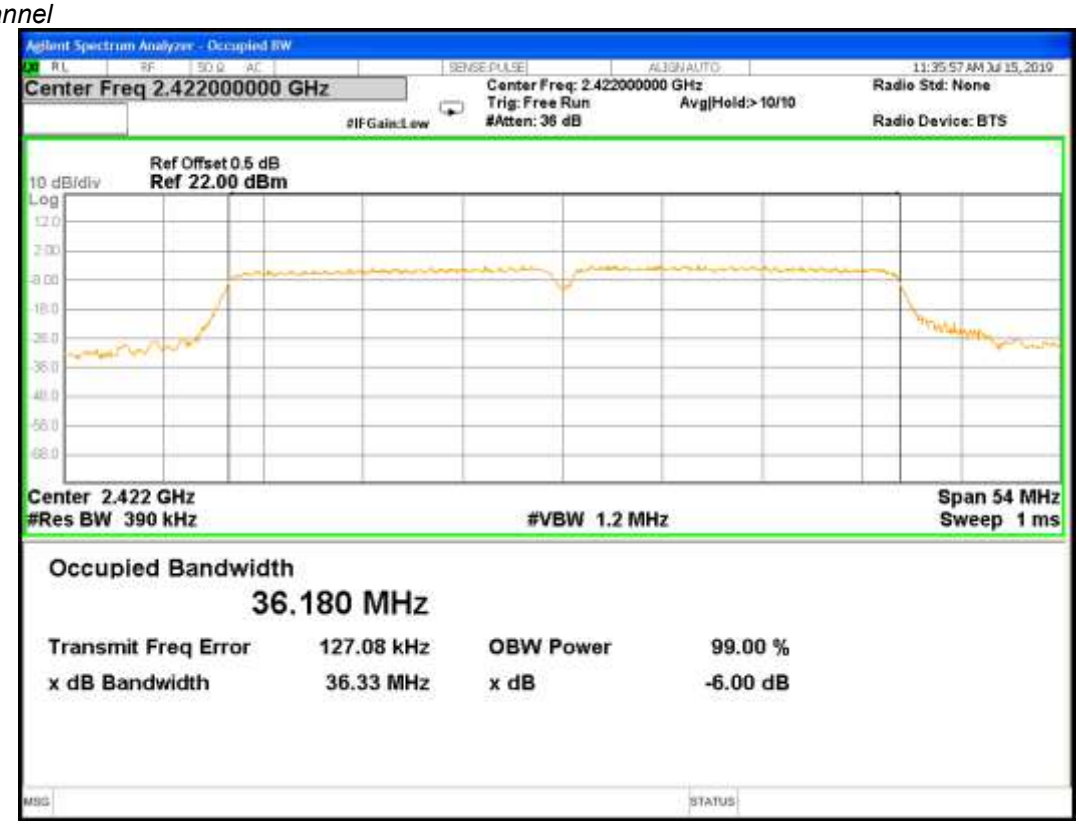
Middle Channel



High Channel

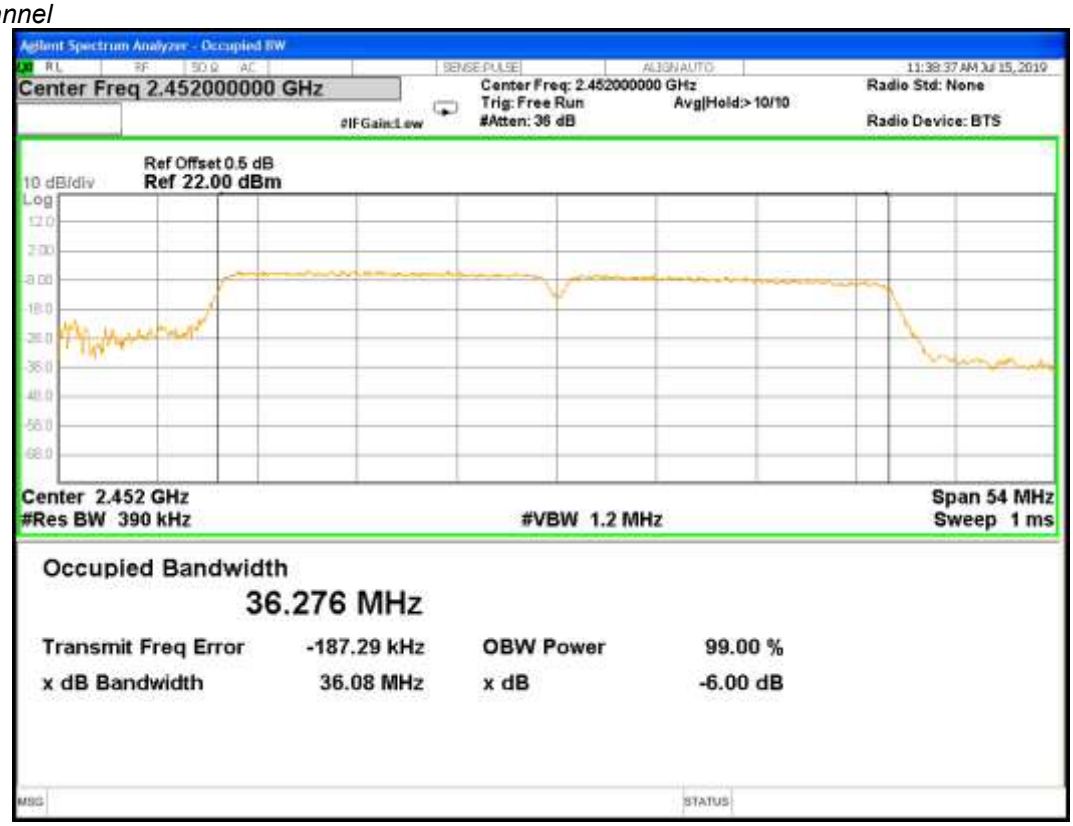
Wi-Fi 802.11 n(HT40) mode, MCS0

Low Channel



Middle Channel

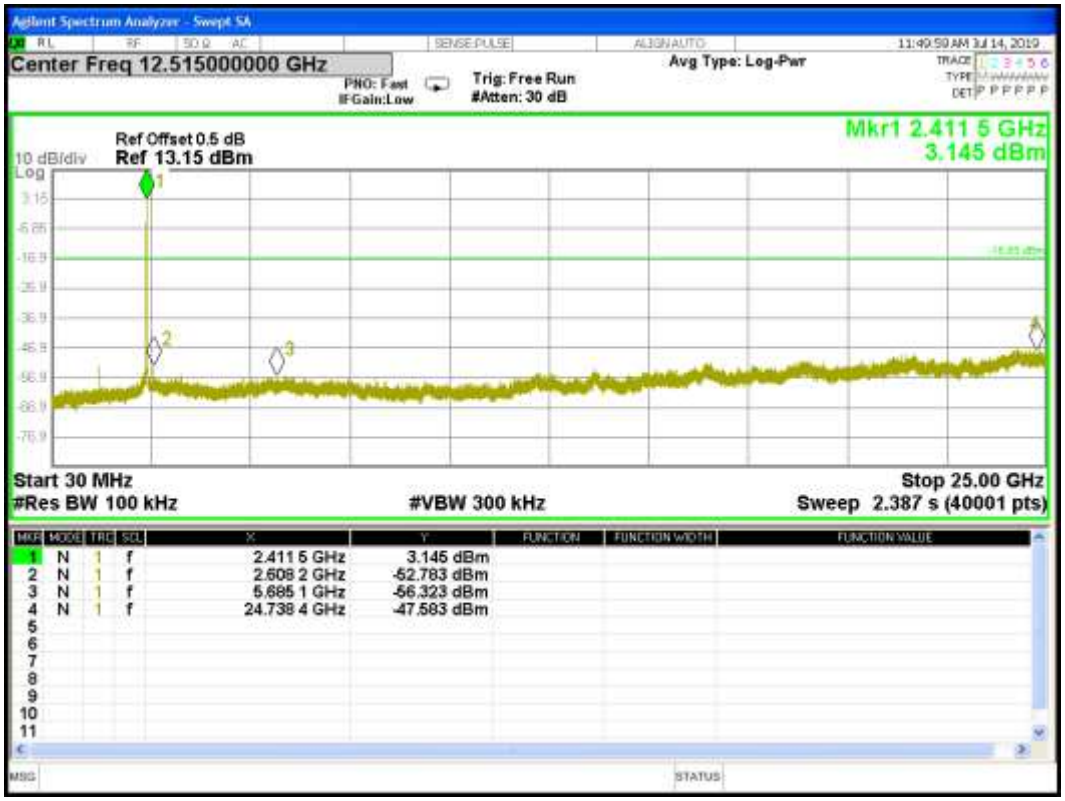
High Channel



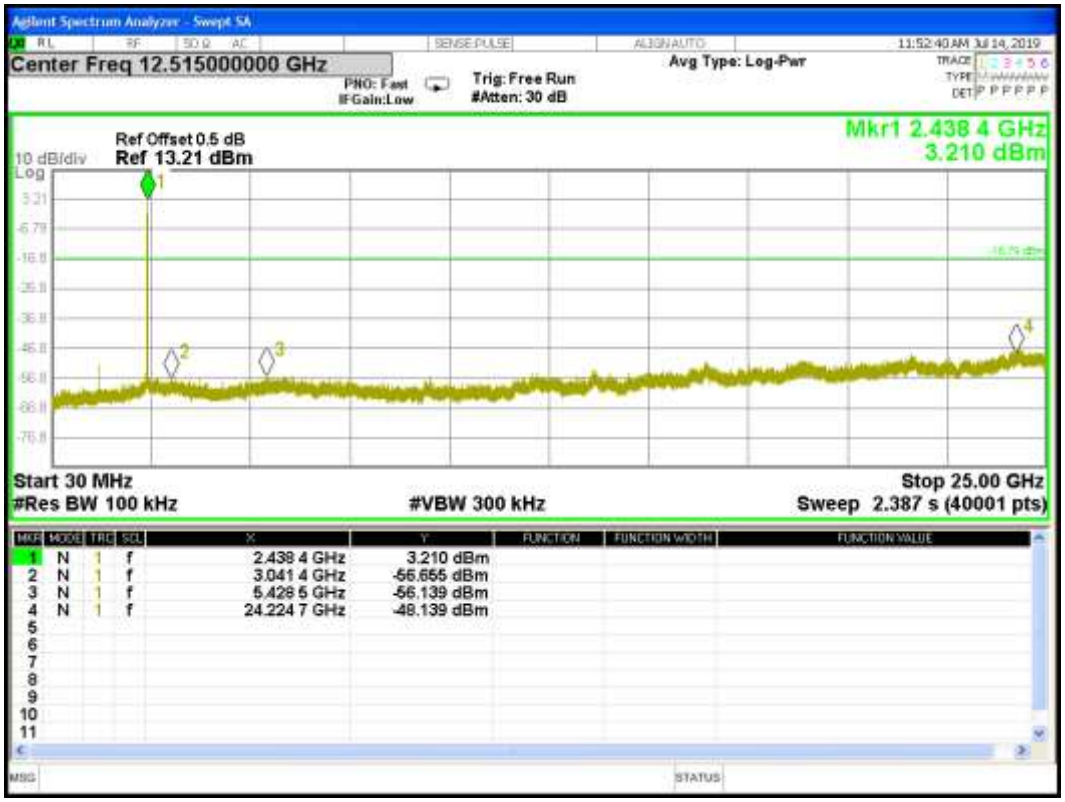
Appendix C.5: Conducted Spurious Emissions Measured in 100 kHz Bandwidth

Wi-Fi 802.11 b mode

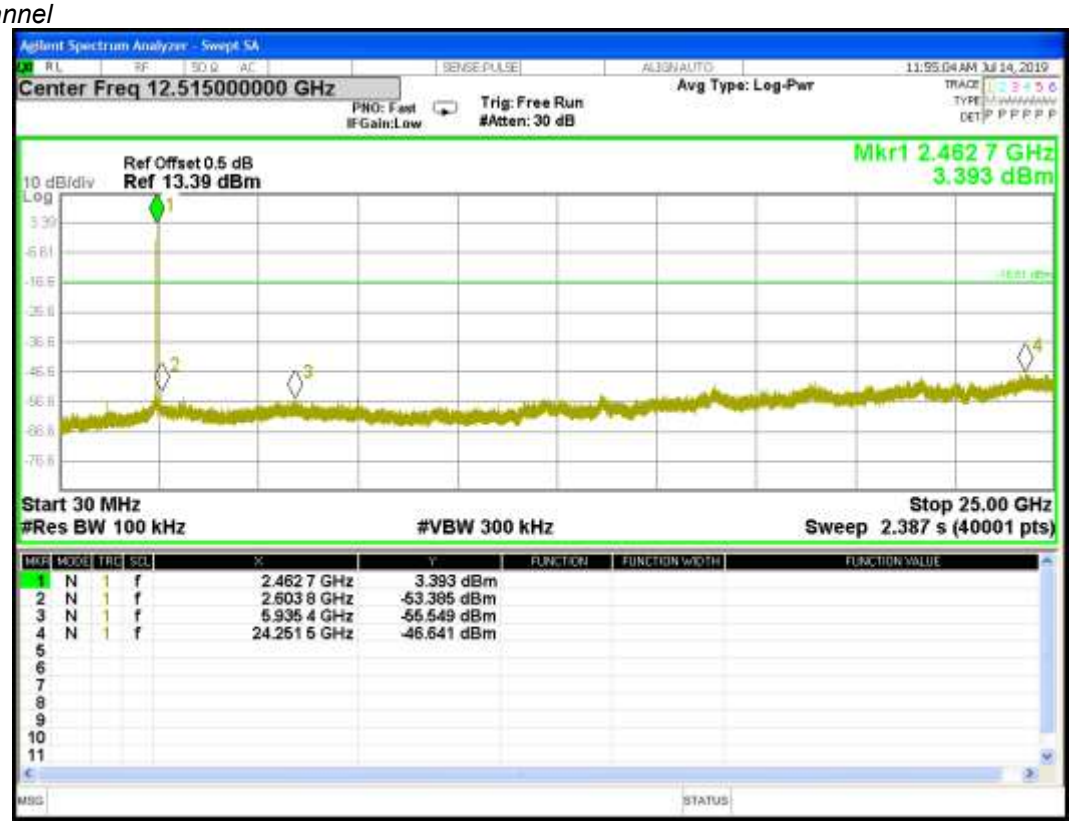
Low Channel



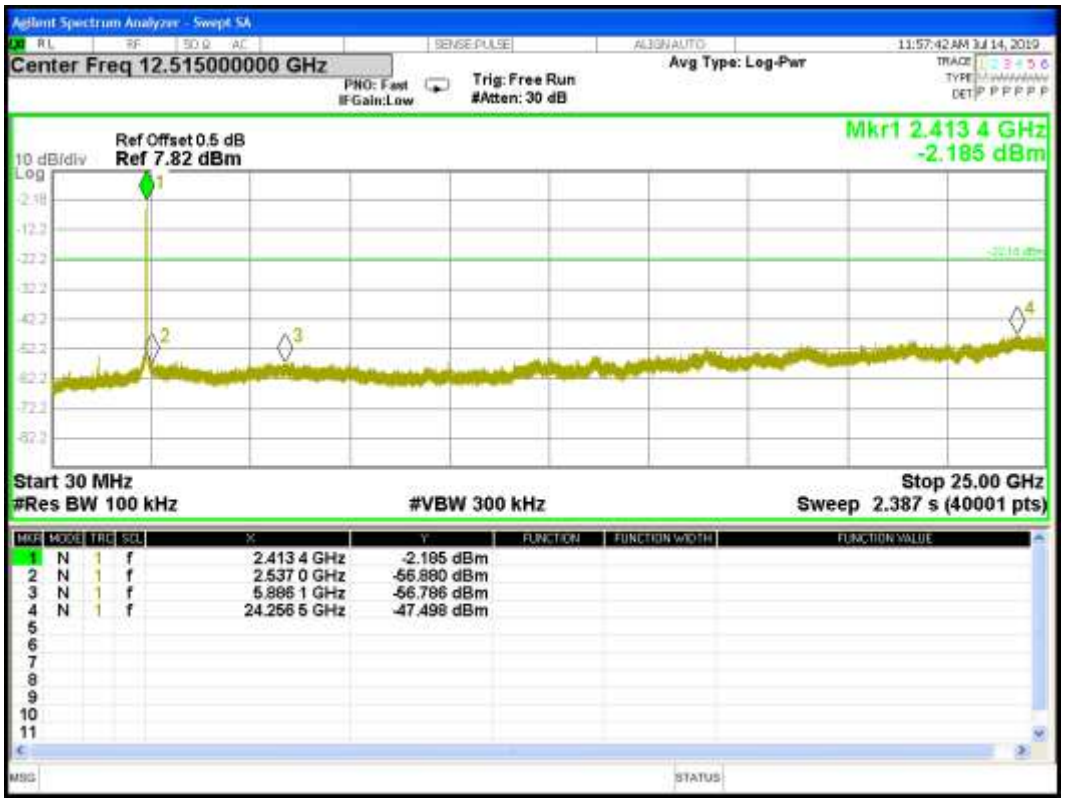
Middle Channel



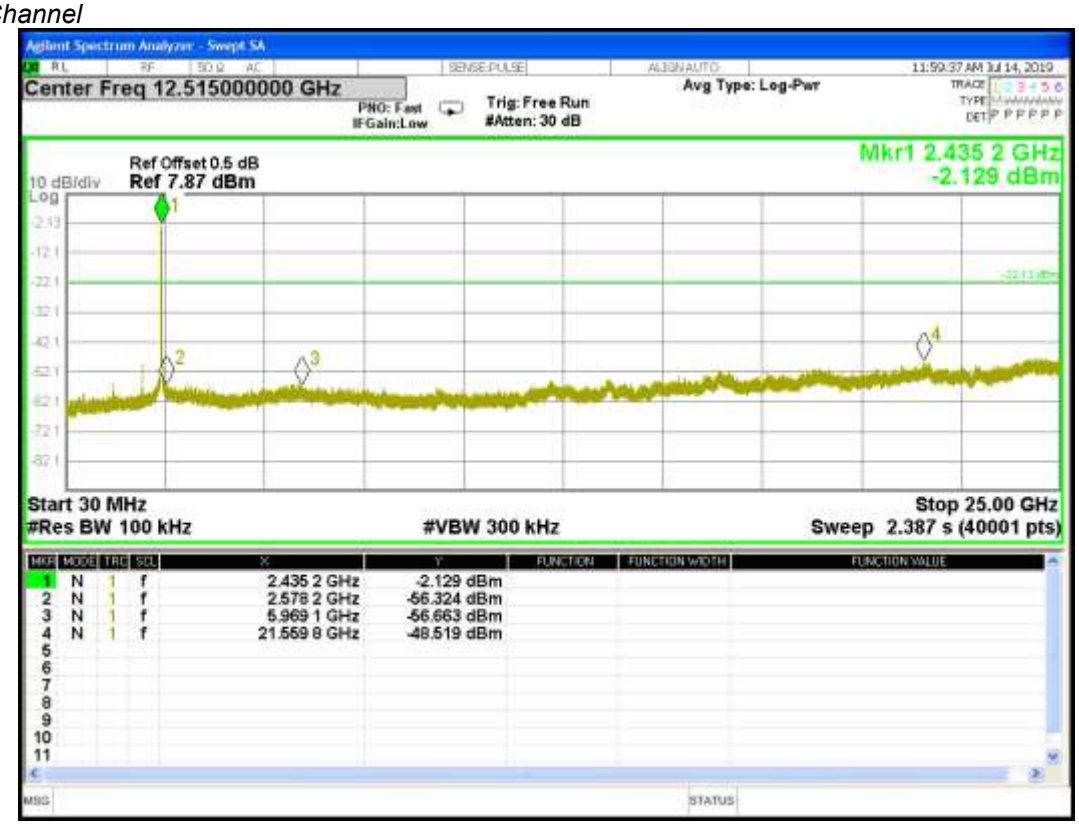
High Channel



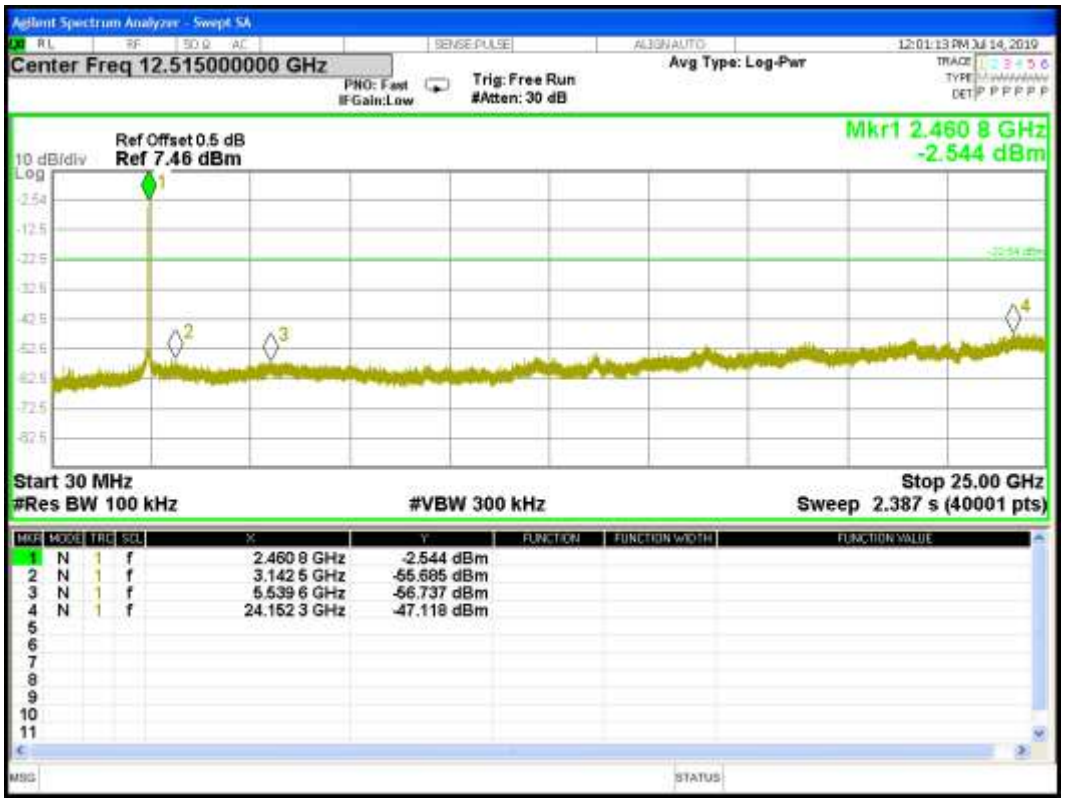
Wi-Fi 802.11 g mode
Low Channel



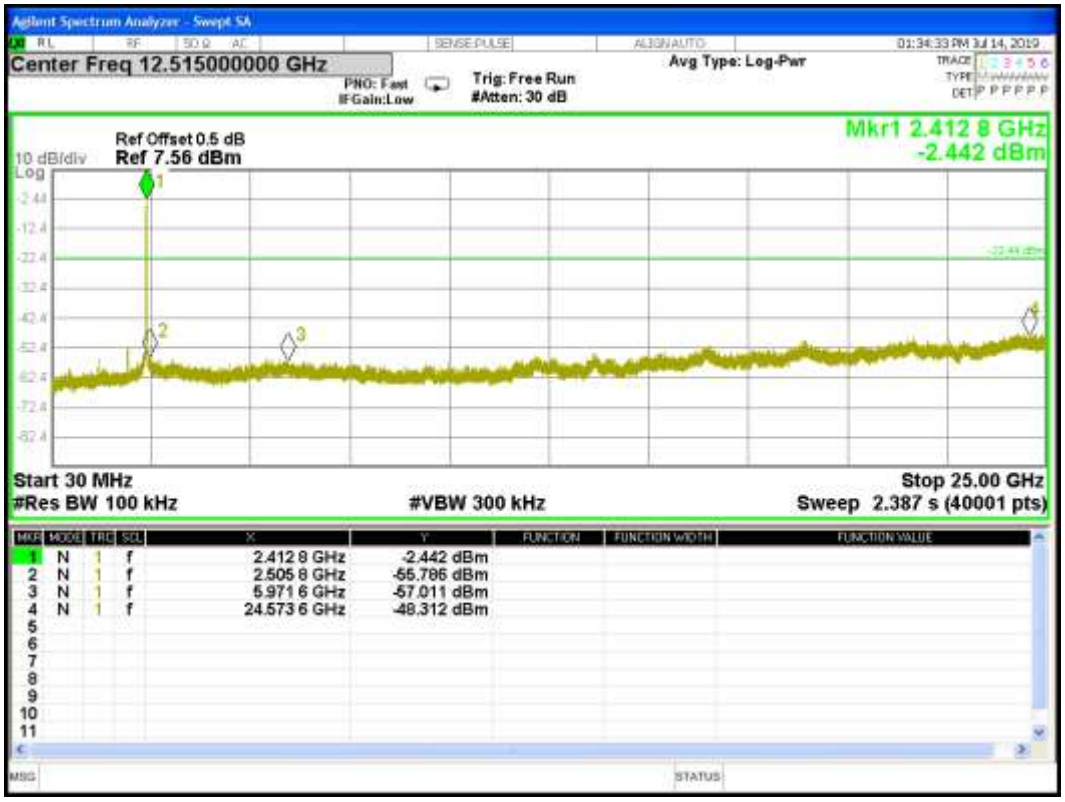
Middle Channel



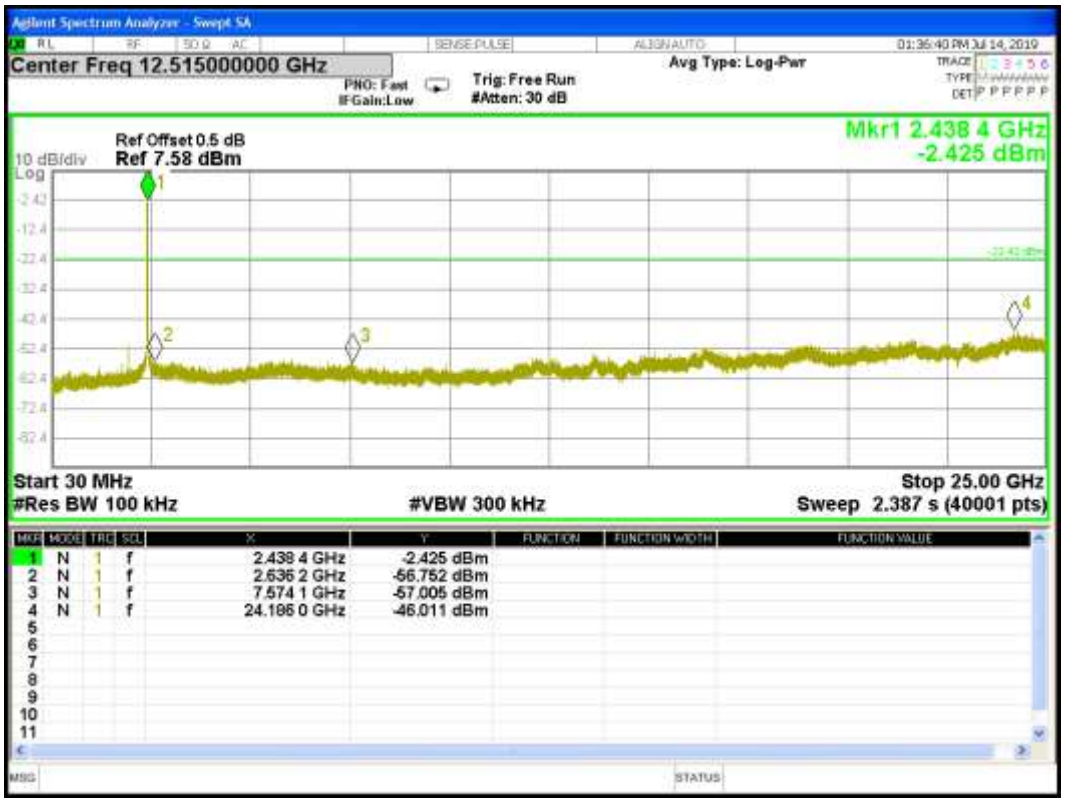
High Channel



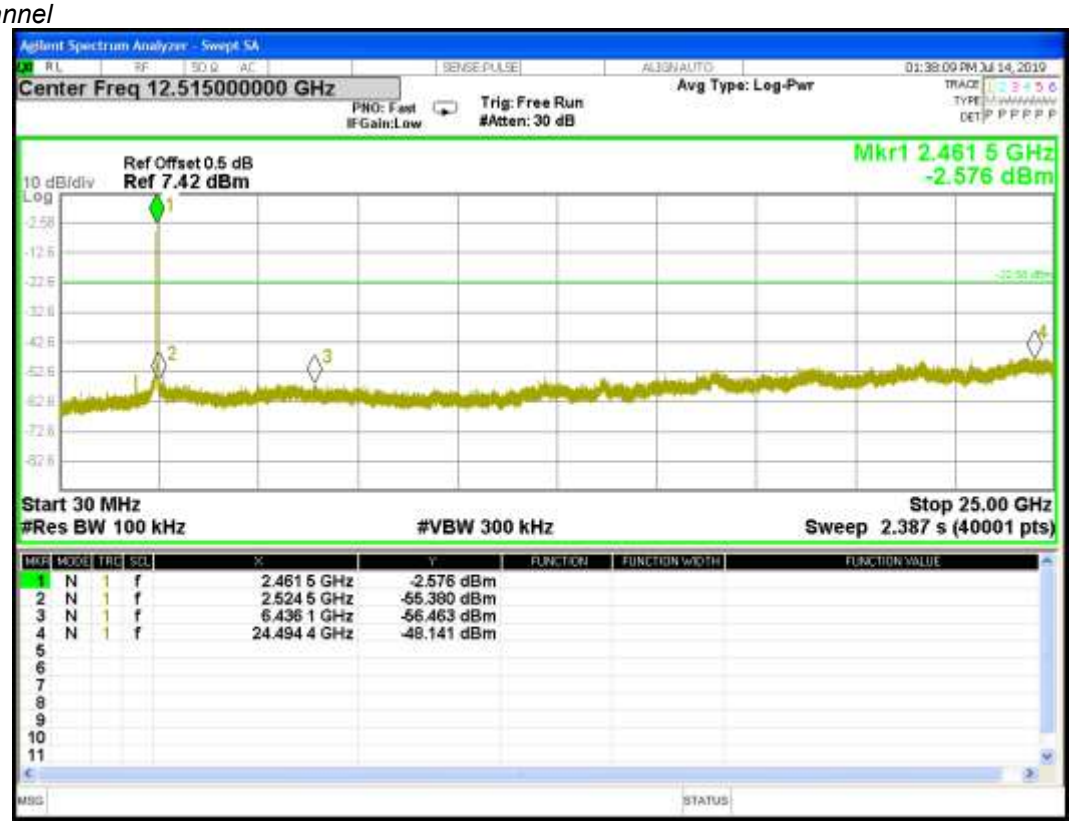
Wi-Fi 802.11 n(HT20) mode
Low Channel



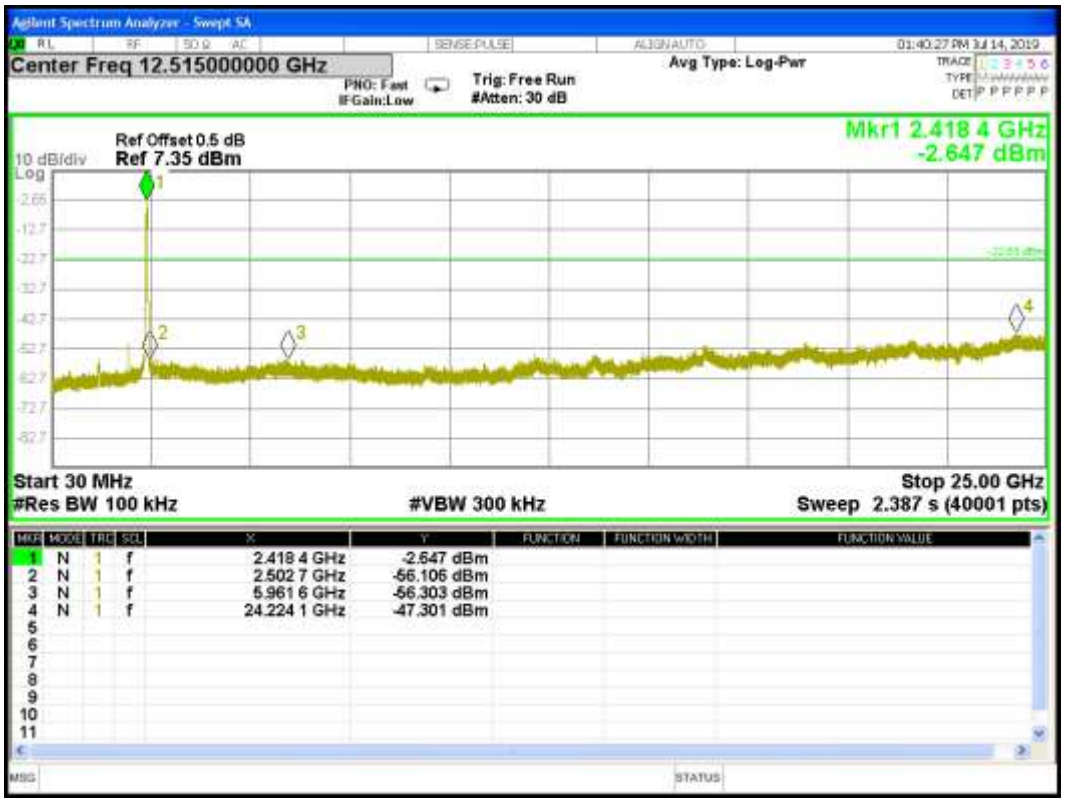
Middle Channel



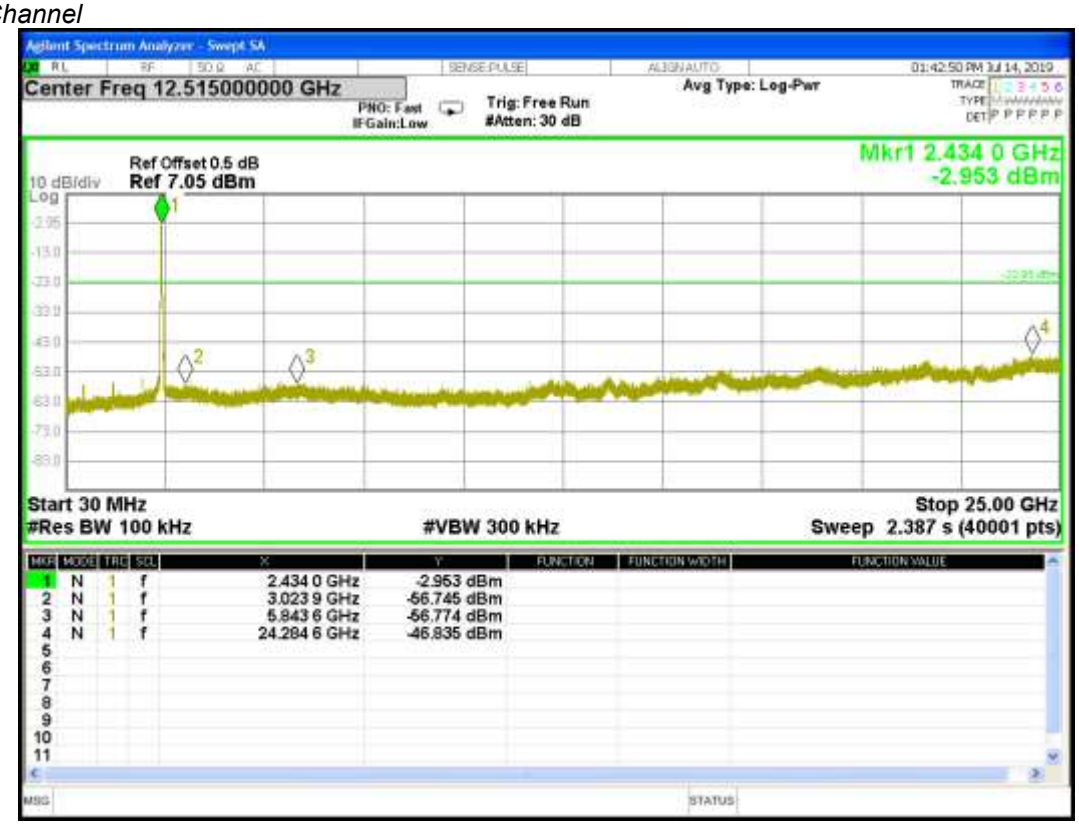
High Channel



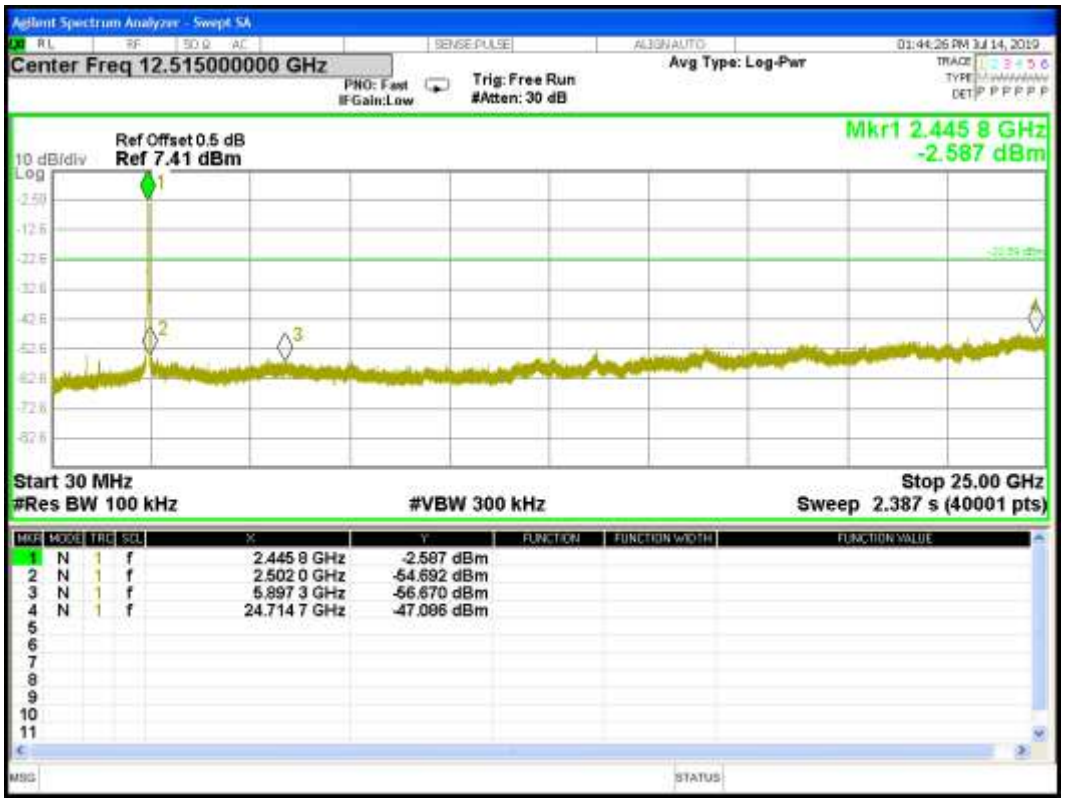
Wi-Fi 802.11 n(HT40) mode
Low Channel



Middle Channel

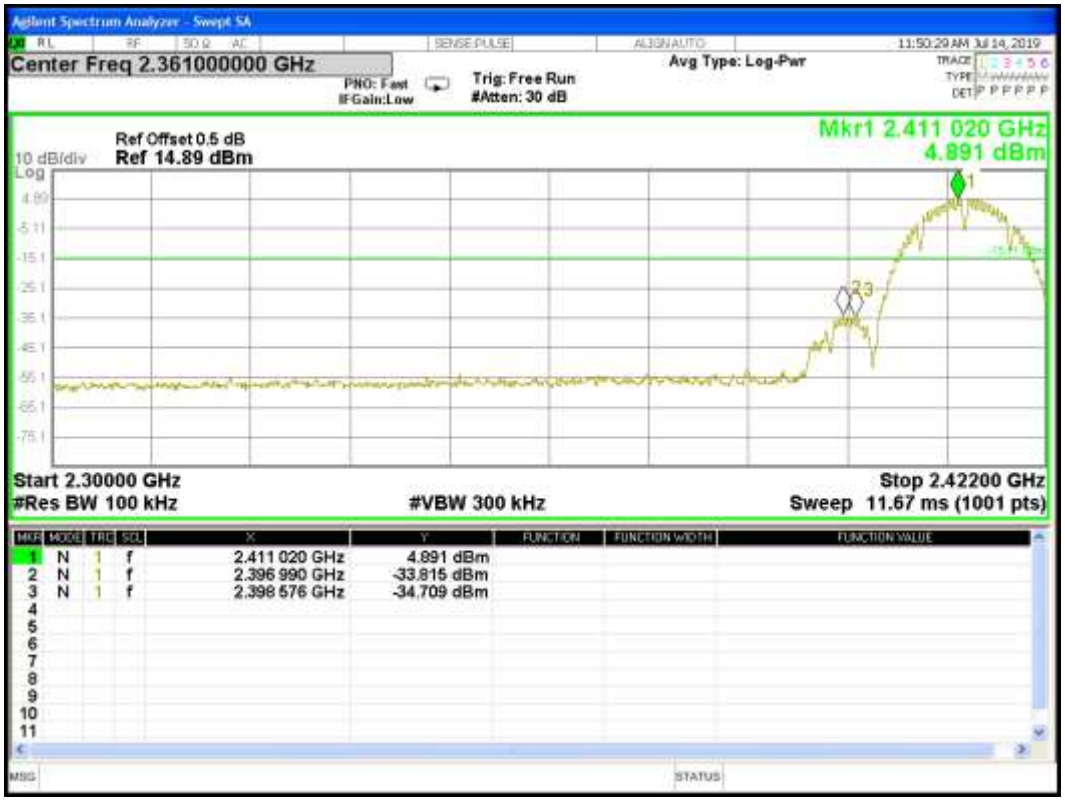


High Channel

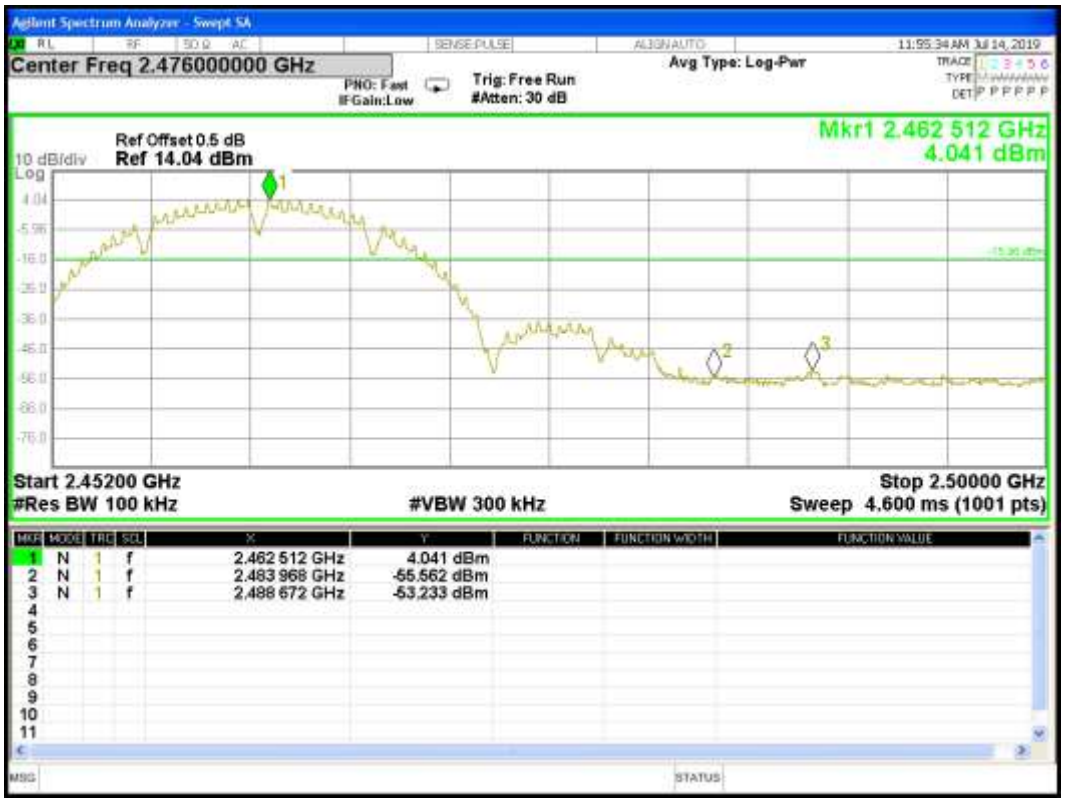


Wi-Fi 802.11 b mode, Band Edge

Low Channel

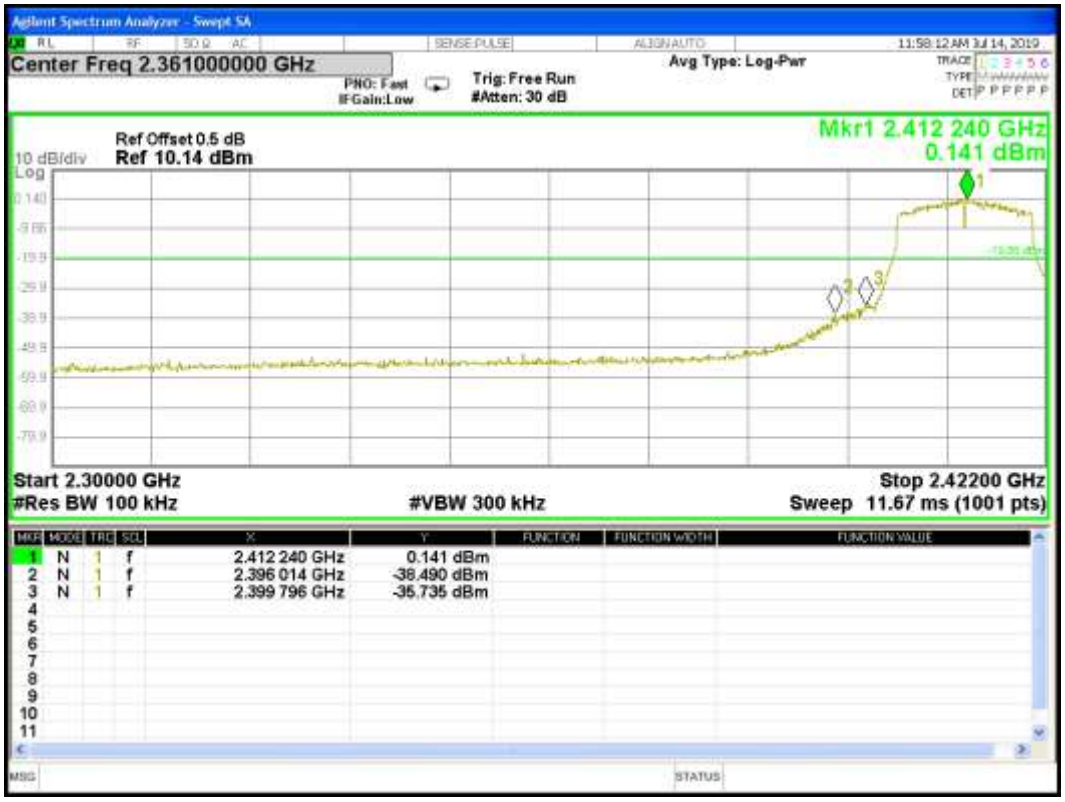


High Channel



Wi-Fi 802.11 g mode, Band Edge

Low Channel



High Channel

Wi-Fi 802.11 n(HT20) mode, Band Edge

Low Channel

High Channel

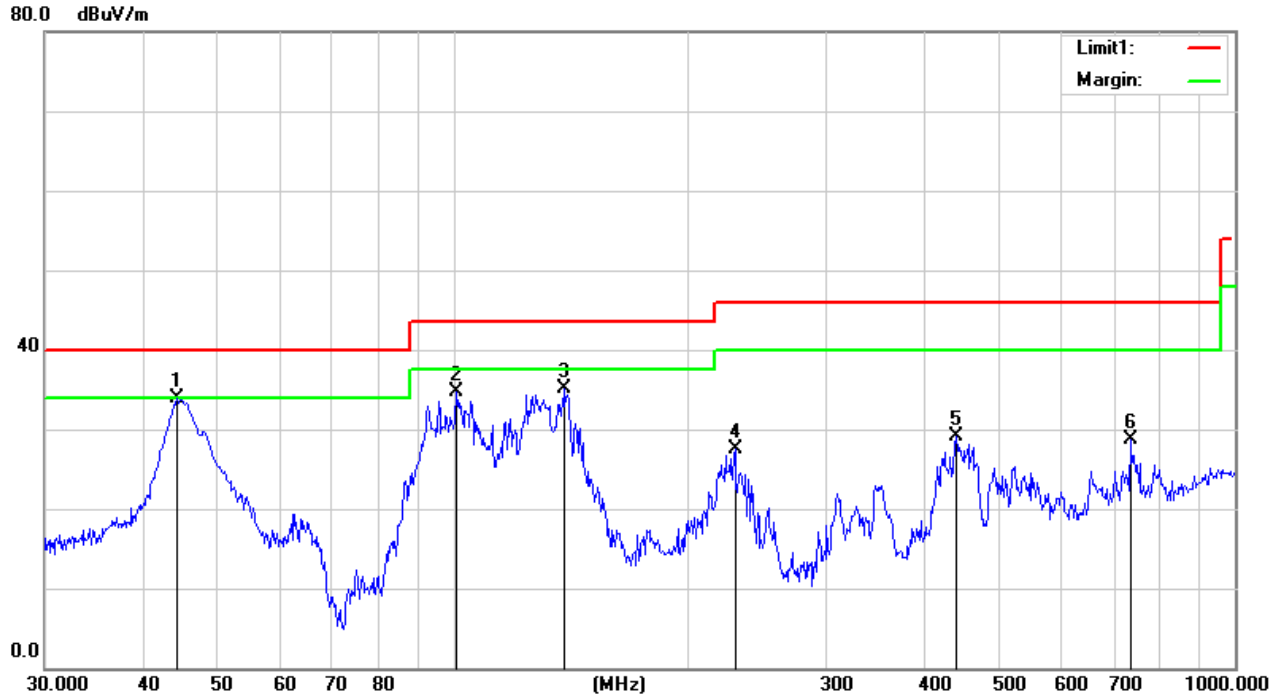
Wi-Fi 802.11 n(HT40) mode, Band Edge
Low Channel

High Channel

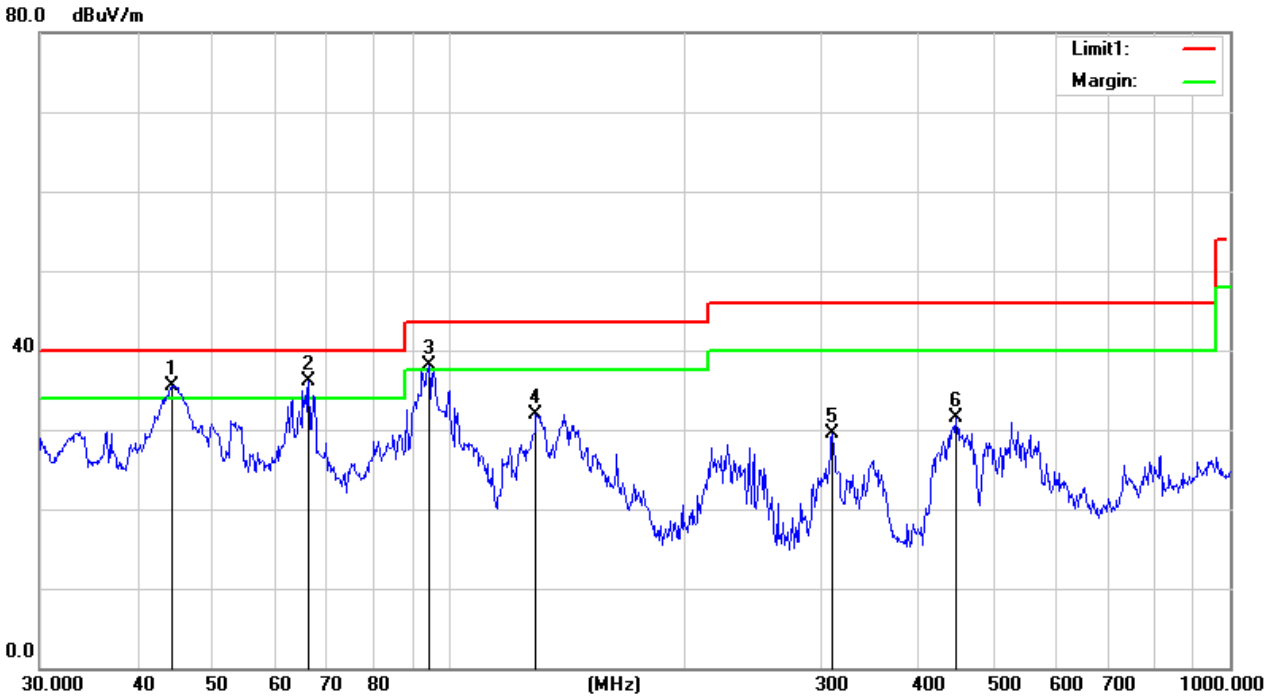
Note: Testing was carried out within frequency range 9kHz to the tenth harmonics. The measurement results below 30MHz and 18GHz -26.5GHz were greater than 20dB below the limit, so only the radiated spurious emissions from 30MHz to 18GHz were reported.

Appendix C.6: Test Results of Radiated Spurious Emissions

30MHz - 1GHz
Wi-Fi 802.11 b mode
Low channel

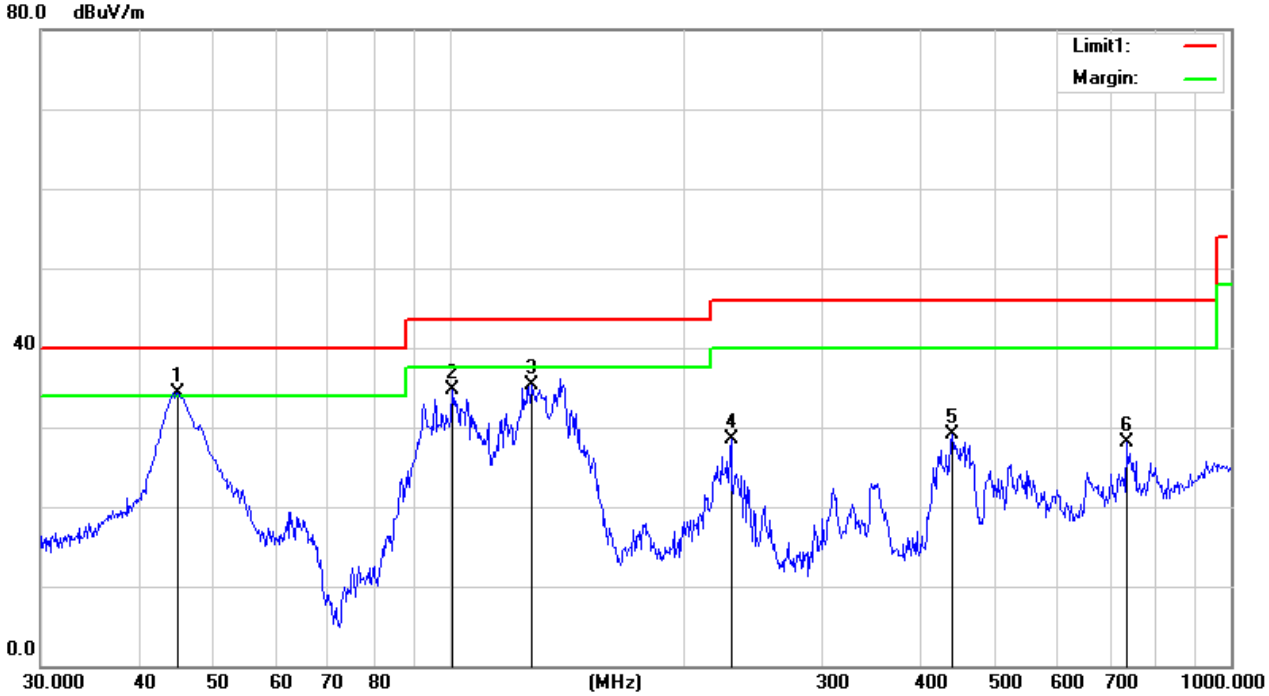


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	44.2751	52.68	-18.86	33.82	40.00	-6.18	QP
2	100.9340	54.90	-20.13	34.77	43.50	-8.73	QP
3	138.8735	54.13	-18.93	35.20	43.50	-8.30	QP
4	229.2931	46.94	-19.38	27.56	46.00	-18.44	QP
5	440.1963	42.72	-13.57	29.15	46.00	-16.85	QP
6	734.4913	34.41	-5.74	28.67	46.00	-17.33	QP

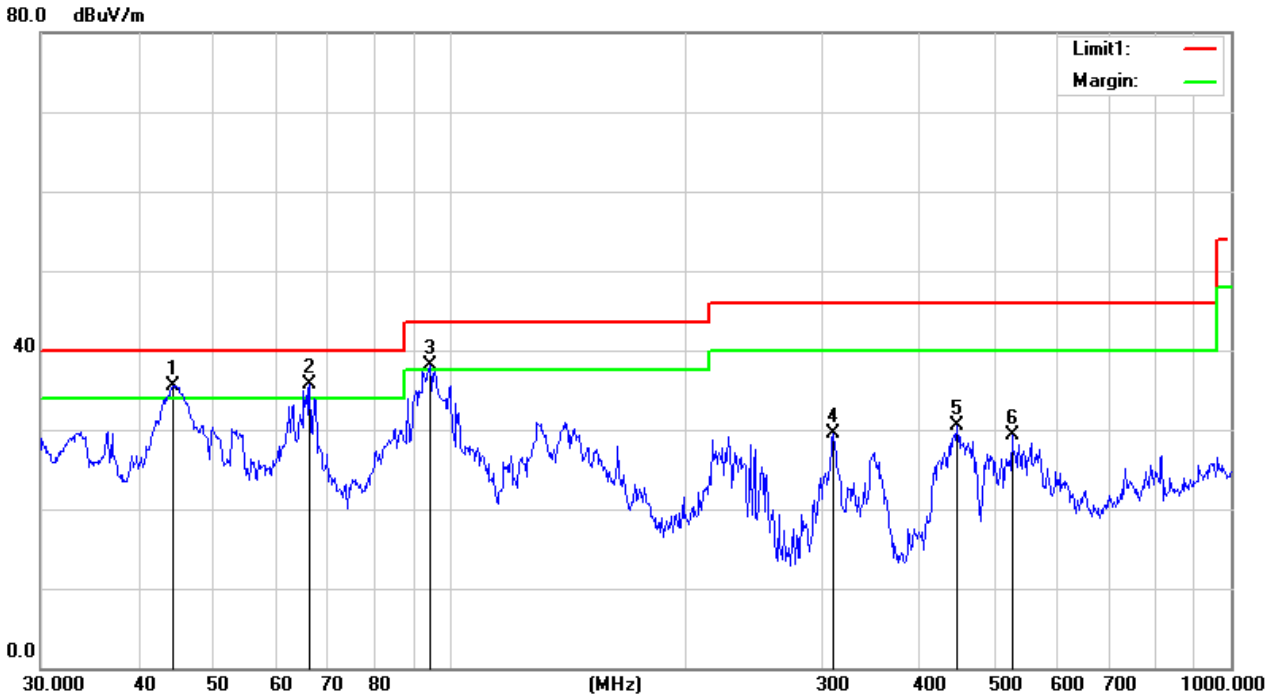


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	44.2751	55.25	-19.76	35.49	40.00	-4.51	QP
2	66.2660	61.45	-25.33	36.12	40.00	-3.88	QP
3	94.4282	59.46	-21.33	38.13	43.50	-5.37	QP
4	129.4677	51.25	-19.26	31.99	43.50	-11.51	QP
5	309.9977	46.03	-16.59	29.44	46.00	-16.56	QP
6	446.4141	44.63	-13.05	31.58	46.00	-14.42	QP

Wi-Fi 802.11 b mode
Middle channel

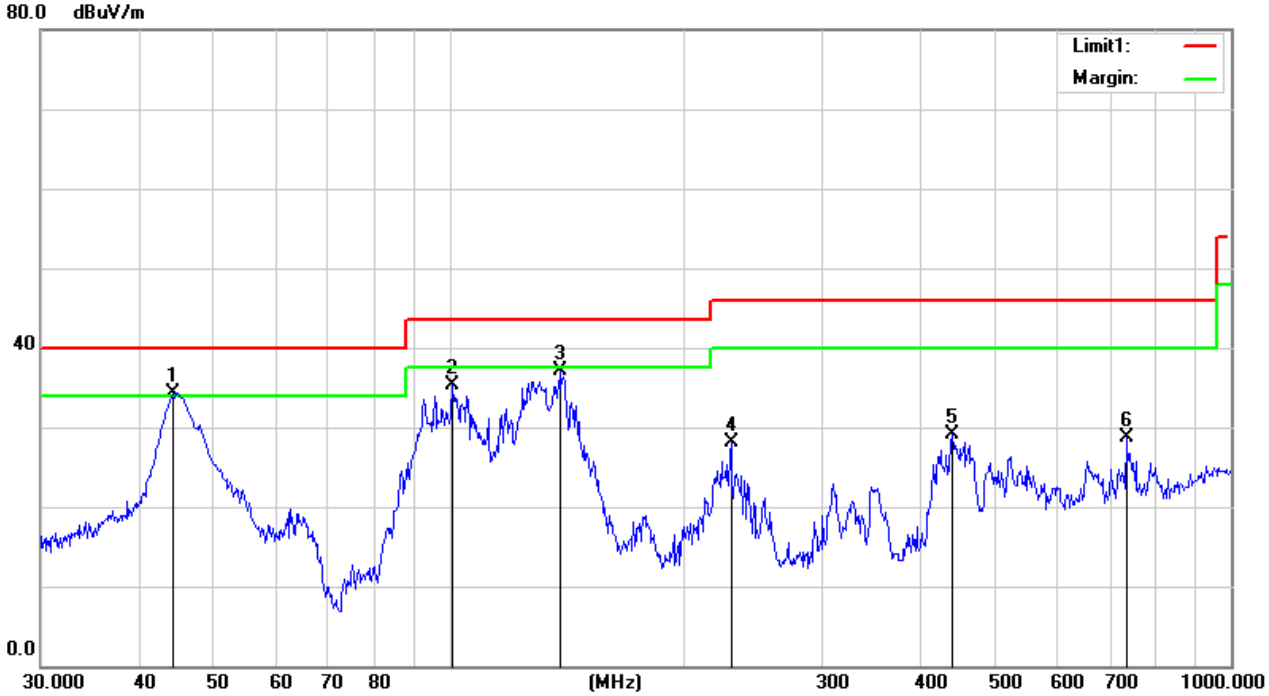


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	44.9004	53.49	-19.19	34.30	40.00	-5.70	QP
2	100.9340	54.90	-20.13	34.77	43.50	-8.73	QP
3	127.2176	53.56	-18.33	35.23	43.50	-8.27	QP
4	229.2931	47.94	-19.38	28.56	46.00	-17.44	QP
5	440.1963	42.72	-13.57	29.15	46.00	-16.85	QP
6	734.4913	33.91	-5.74	28.17	46.00	-17.83	QP

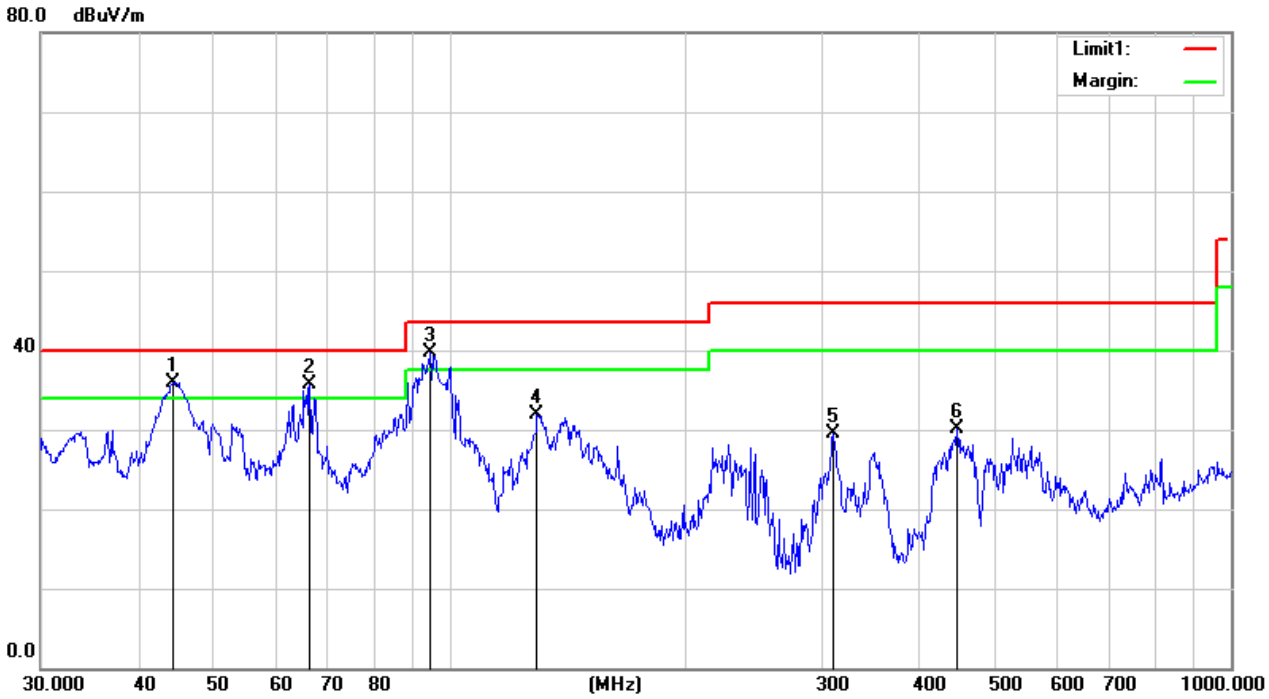


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	44.2751	55.25	-19.76	35.49	40.00	-4.51	QP
2	66.2660	60.95	-25.33	35.62	40.00	-4.38	QP
3	94.4282	59.46	-21.33	38.13	43.50	-5.37	QP
4	309.9977	46.03	-16.59	29.44	46.00	-16.56	QP
5	446.4141	43.63	-13.05	30.58	46.00	-15.42	QP
6	524.5540	40.33	-10.94	29.39	46.00	-16.61	QP

Wi-Fi 802.11 b mode
High channel

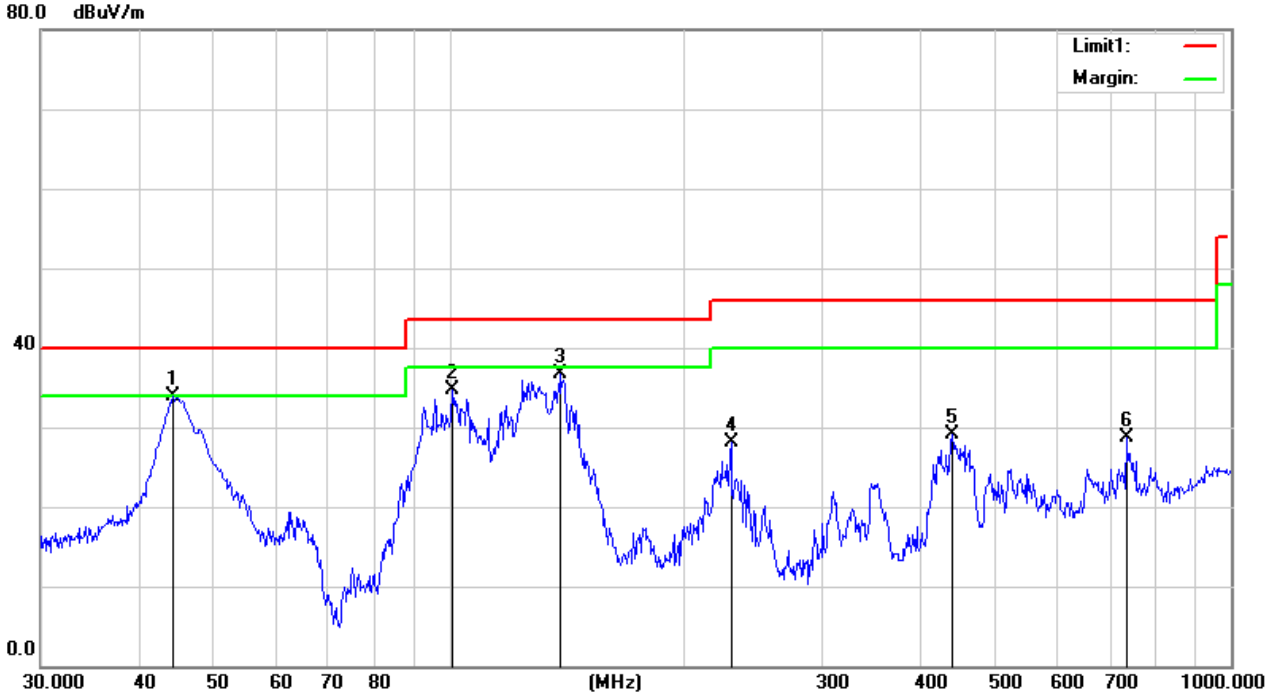


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	44.2751	53.18	-18.86	34.32	40.00	-5.68	QP
2	100.9340	55.40	-20.13	35.27	43.50	-8.23	QP
3	138.8735	56.13	-18.93	37.20	43.50	-6.30	QP
4	229.2931	47.44	-19.38	28.06	46.00	-17.94	QP
5	440.1963	42.72	-13.57	29.15	46.00	-16.85	QP
6	734.4913	34.41	-5.74	28.67	46.00	-17.33	QP

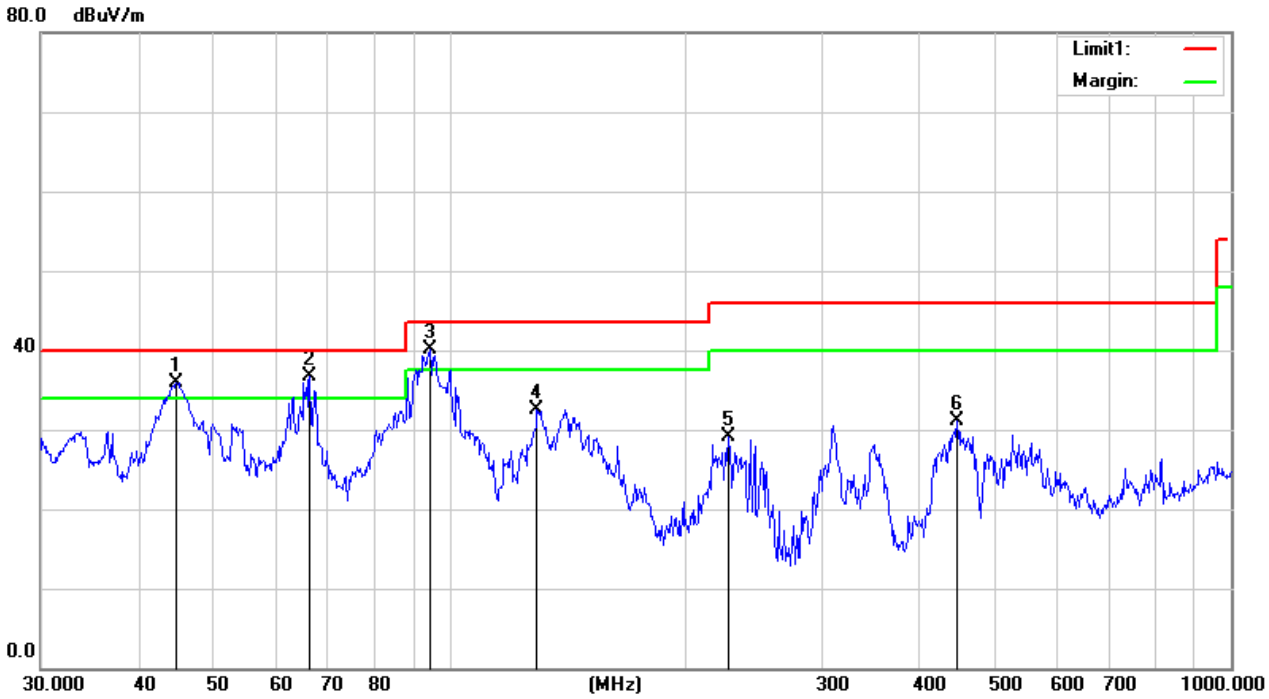


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	44.2751	55.75	-19.76	35.99	40.00	-4.01	QP
2	66.2660	60.95	-25.33	35.62	40.00	-4.38	QP
3	94.4282	60.96	-21.33	39.63	43.50	-3.87	QP
4	129.4677	51.25	-19.26	31.99	43.50	-11.51	QP
5	309.9977	46.03	-16.59	29.44	46.00	-16.56	QP
6	446.4141	43.13	-13.05	30.08	46.00	-15.92	QP

Wi-Fi 802.11 g mode
Low channel

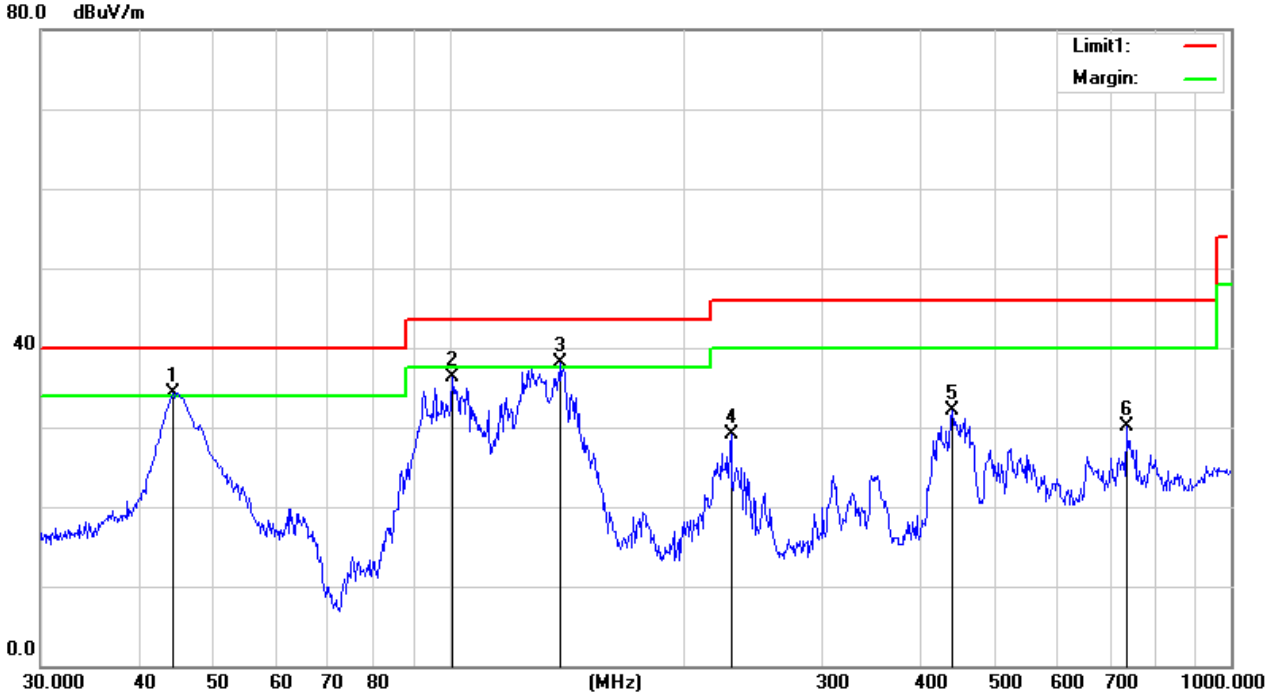


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	44.2751	52.68	-18.86	33.82	40.00	-6.18	QP
2	100.9340	54.90	-20.13	34.77	43.50	-8.73	QP
3	138.8735	55.63	-18.93	36.70	43.50	-6.80	QP
4	229.2931	47.44	-19.38	28.06	46.00	-17.94	QP
5	440.1963	42.72	-13.57	29.15	46.00	-16.85	QP
6	734.4913	34.41	-5.74	28.67	46.00	-17.33	QP

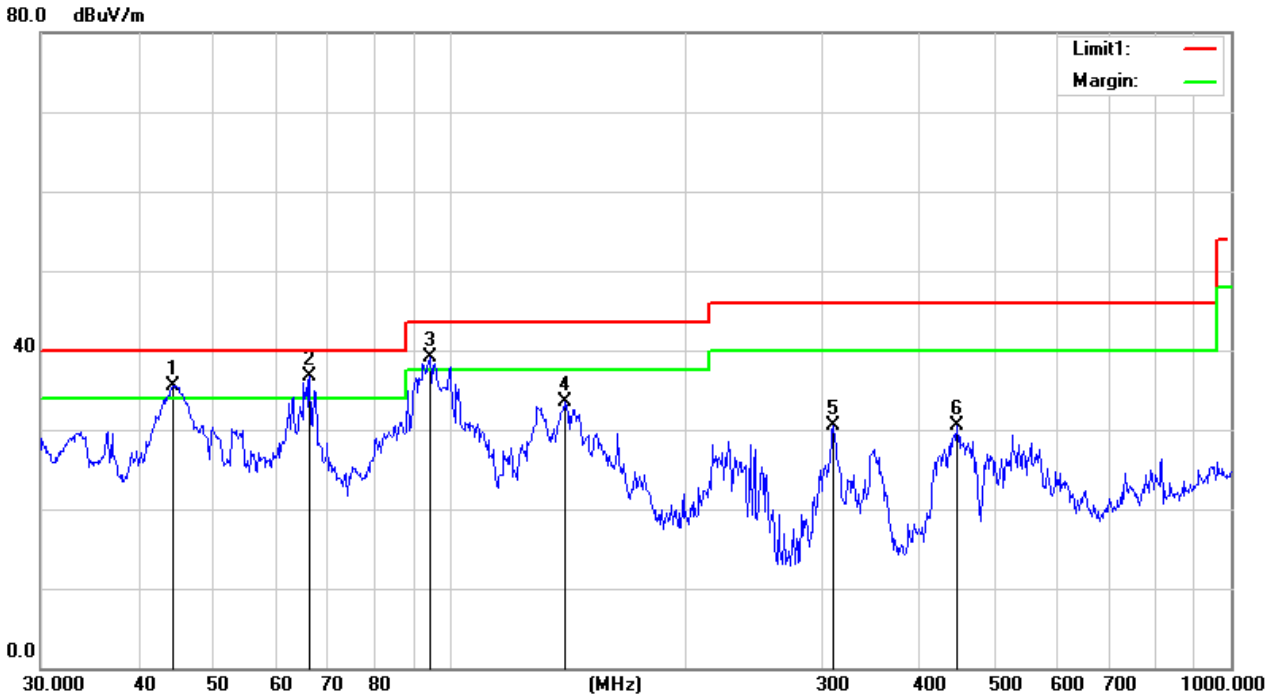


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	44.7433	55.99	-20.01	35.98	40.00	-4.02	QP
2	66.2660	61.95	-25.33	36.62	40.00	-3.38	QP
3	94.4282	61.46	-21.33	40.13	43.50	-3.37	QP
4	129.4677	51.75	-19.26	32.49	43.50	-11.01	QP
5	227.6904	49.50	-20.47	29.03	46.00	-16.97	QP
6	446.4141	44.13	-13.05	31.08	46.00	-14.92	QP

Wi-Fi 802.11 g mode
Middle channel

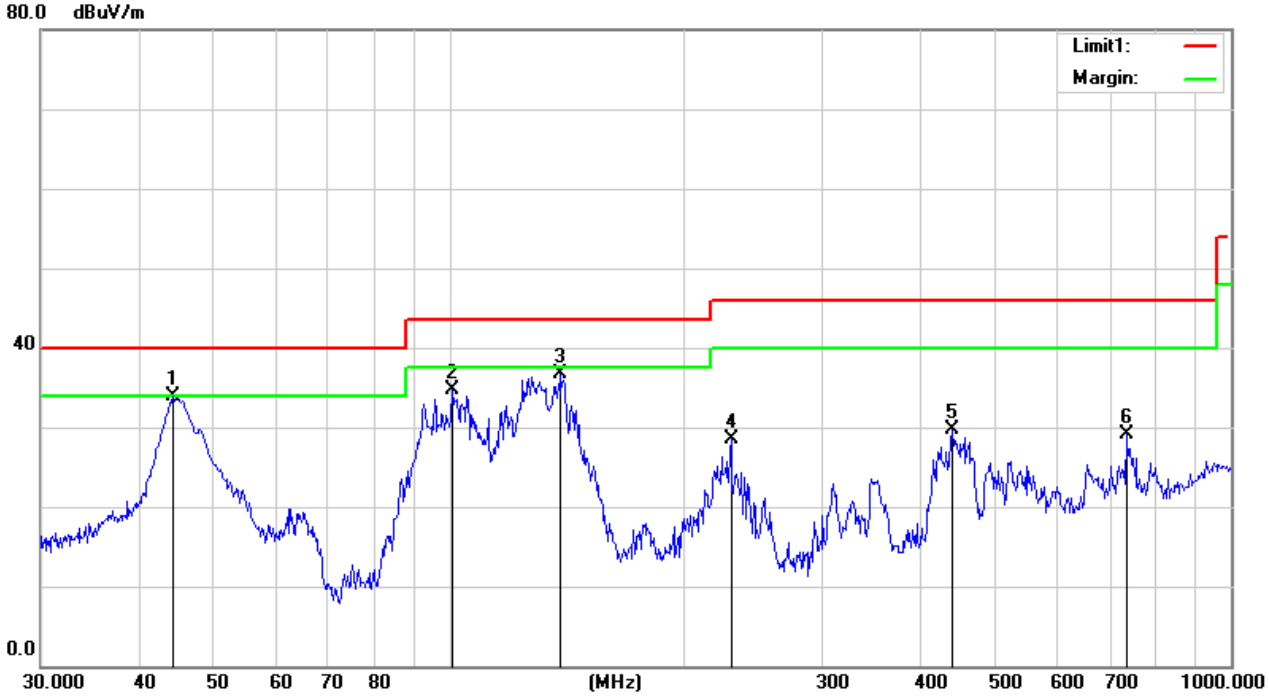


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	44.2751	53.18	-18.86	34.32	40.00	-5.68	QP
2	100.9340	56.40	-20.13	36.27	43.50	-7.23	QP
3	138.8735	57.13	-18.93	38.20	43.50	-5.30	QP
4	229.2931	48.44	-19.38	29.06	46.00	-16.94	QP
5	440.1963	45.72	-13.57	32.15	46.00	-13.85	QP
6	734.4913	35.91	-5.74	30.17	46.00	-15.83	QP

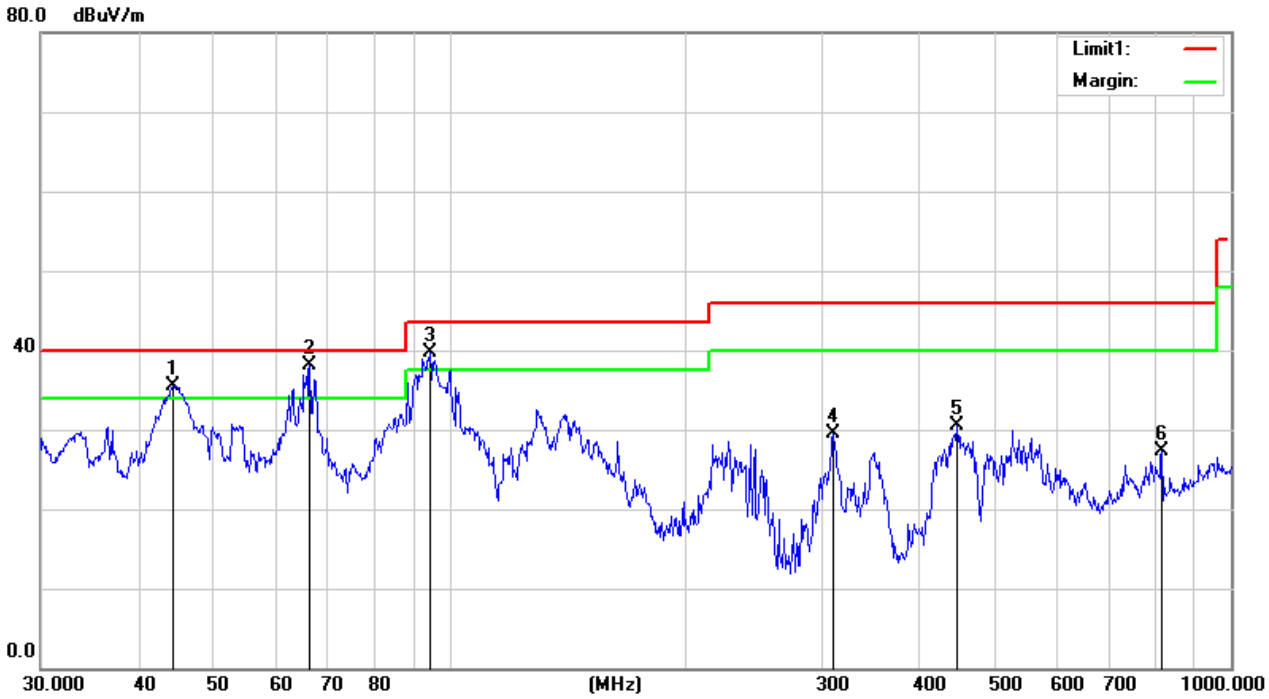


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	44.2751	55.25	-19.76	35.49	40.00	-4.51	QP
2	66.2660	61.95	-25.33	36.62	40.00	-3.38	QP
3	94.4282	60.46	-21.33	39.13	43.50	-4.37	QP
4	140.3420	52.68	-19.23	33.45	43.50	-10.05	QP
5	309.9977	47.03	-16.59	30.44	46.00	-15.56	QP
6	446.4141	43.63	-13.05	30.58	46.00	-15.42	QP

Wi-Fi 802.11 g mode
High channel



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	44.2751	52.68	-18.86	33.82	40.00	-6.18	QP
2	100.9340	54.90	-20.13	34.77	43.50	-8.73	QP
3	138.8735	55.63	-18.93	36.70	43.50	-6.80	QP
4	229.2931	47.94	-19.38	28.56	46.00	-17.44	QP
5	440.1963	43.22	-13.57	29.65	46.00	-16.35	QP
6	734.4913	34.91	-5.74	29.17	46.00	-16.83	QP



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	44.2751	55.25	-19.76	35.49	40.00	-4.51	QP
2	66.2660	63.45	-25.33	38.12	40.00	-1.88	QP
3	94.4282	60.96	-21.33	39.63	43.50	-3.87	QP
4	309.9977	46.03	-16.59	29.44	46.00	-16.56	QP
5	446.4141	43.63	-13.05	30.58	46.00	-15.42	QP
6	815.9678	34.02	-6.76	27.26	46.00	-18.74	QP