5.4.5.3 Test Data for 802.11n40

-. Test Date : September 12, 2018 ~ September 21, 2018

-. 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 : 30 kHz for Peak and Average Mode

-. Frequency range : 1 GHz ~ 40 GHz

-. Measurement distance : 3 m

-. Result : PASSED

Frequency (MHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
Test Data for Low Channel									
15 570.00	33.09	Peak	H	39.93	14.38	31.54	55.86	74.00	18.14
15 570.00	28.39	Avg	H	39.93	14.38	31.54	51.16	54.00	2.84
15 570.00	32.70	Peak	V	39.93	14.38	31.54	55.47	74.00	18.53
15 570.00	28.31	Avg	V	39.93	14.38	31.54	51.08	54.00	2.92
Test Data for High Channel									
15 690.00	32.45	Peak	H	40.02	14.55	31.46	55.56	74.00	18.44
15 690.00	27.96	Avg	H	40.02	14.55	31.46	51.07	54.00	2.93
15 690.00	32.69	Peak	V	40.02	14.55	31.46	55.80	74.00	18.20
15 690.00	28.03	Avg	V	40.02	14.55	31.46	51.14	54.00	2.86

Tabulated test data for Restricted Band

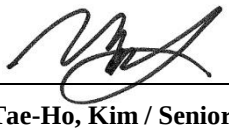
Remark: “H”: Horizontal, “V”: Vertical

Margin (dB) = Limits (dBμV/m) - Total Level (dBμV/m)

Total Level = Reading + Antenna Factor + Cable Loss – Pre-Amplifier Gain

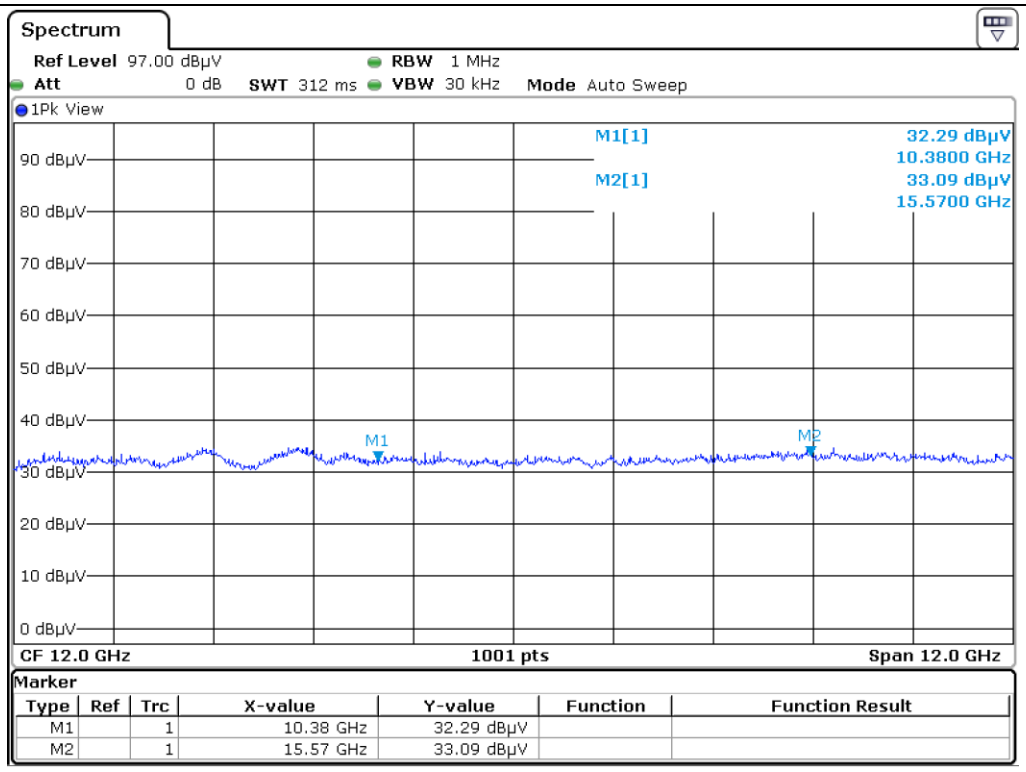
Remark: Emission was pre-scanned from 26.5 GHz ~ 40 GHz; No emissions were detected which was at least 20 dB Below the specification limit (consider distance correction factor)

Per FCC part 15.31(o), test results were not reported.

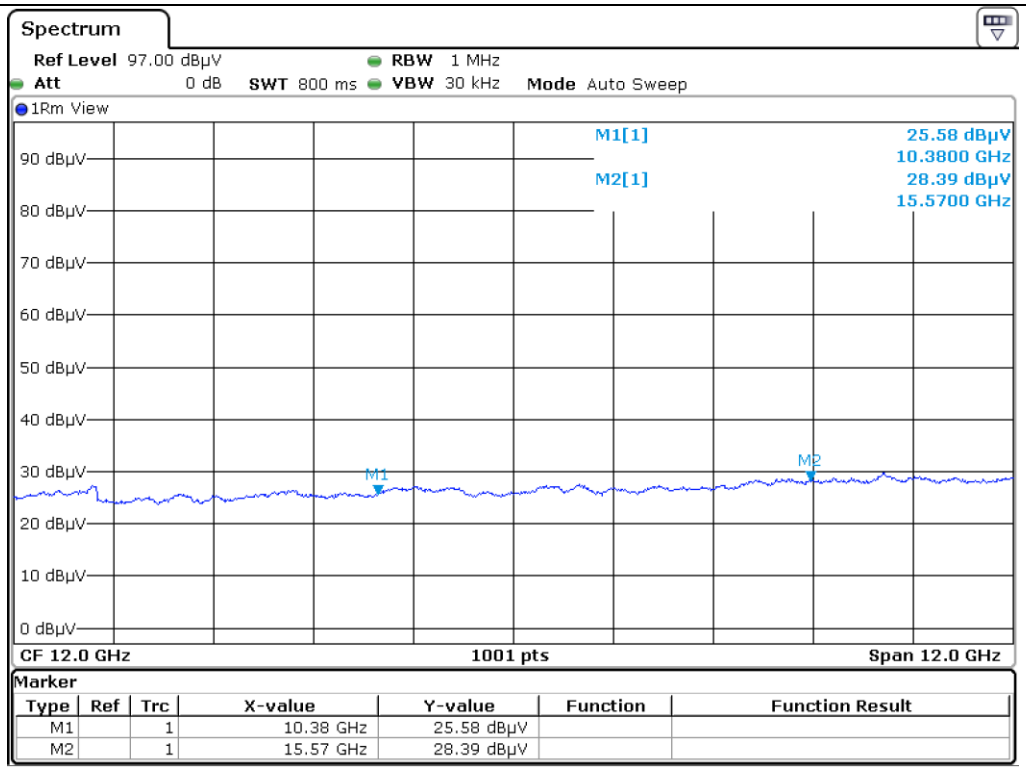


Tested by: Tae-Ho, Kim / Senior Manager

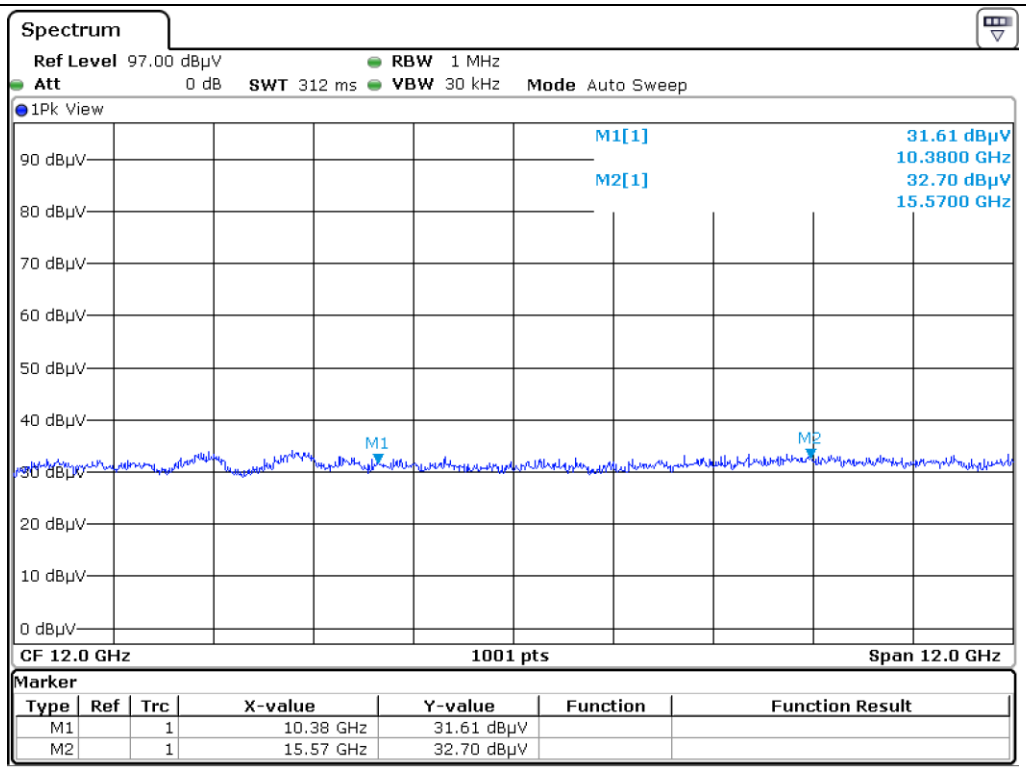
ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)



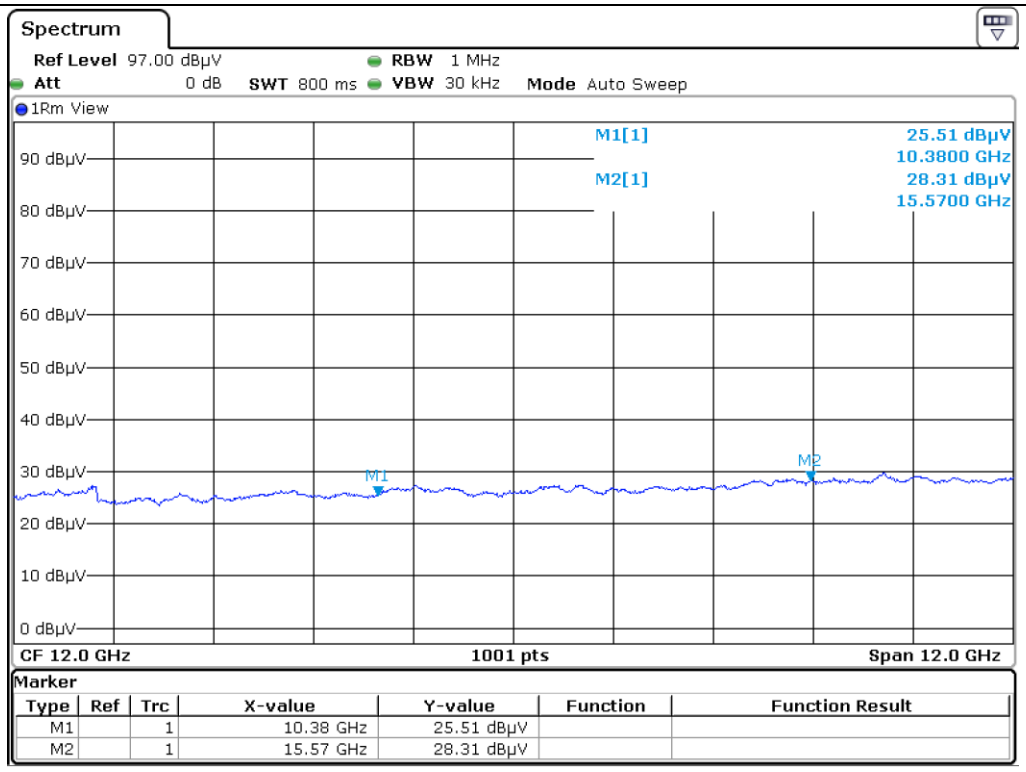
Low Channel_Horizontal_Peak



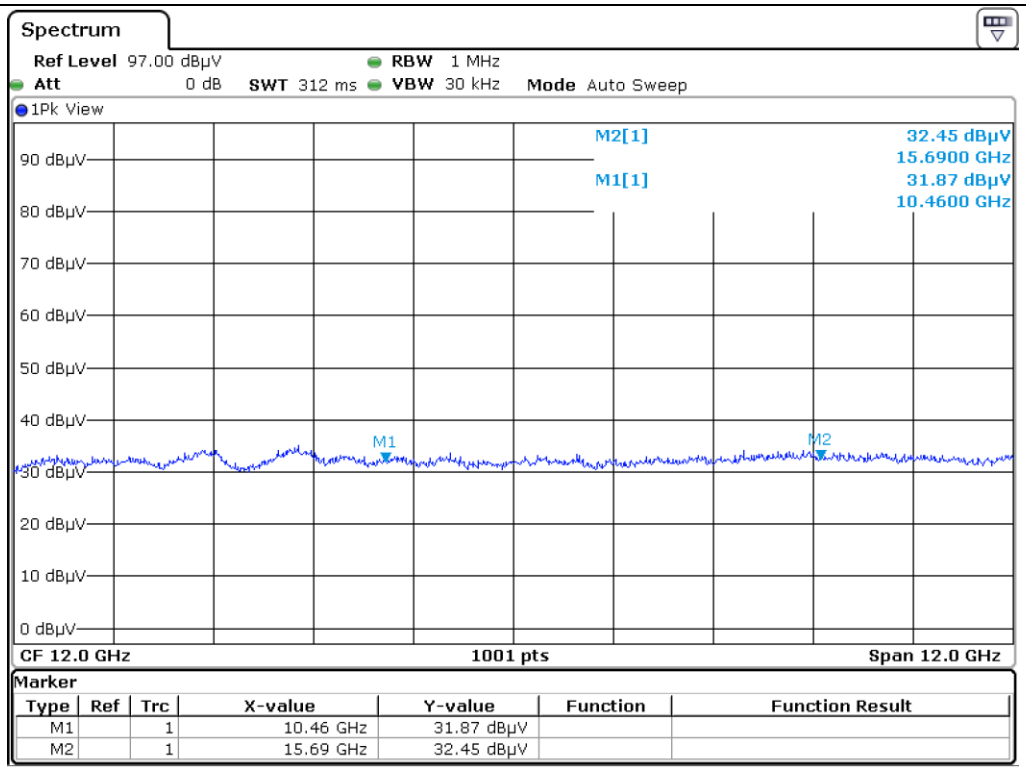
Low Channel_Horizontal_Average



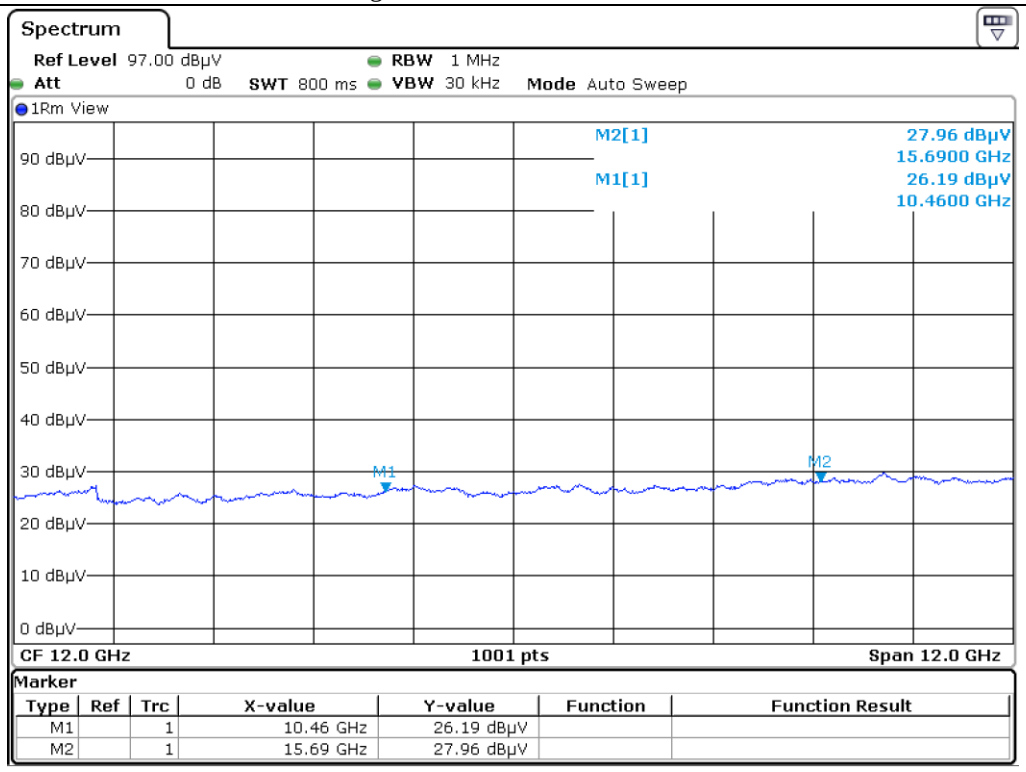
Low Channel_Vertical_Peak



Low Channel_Vertical_Average

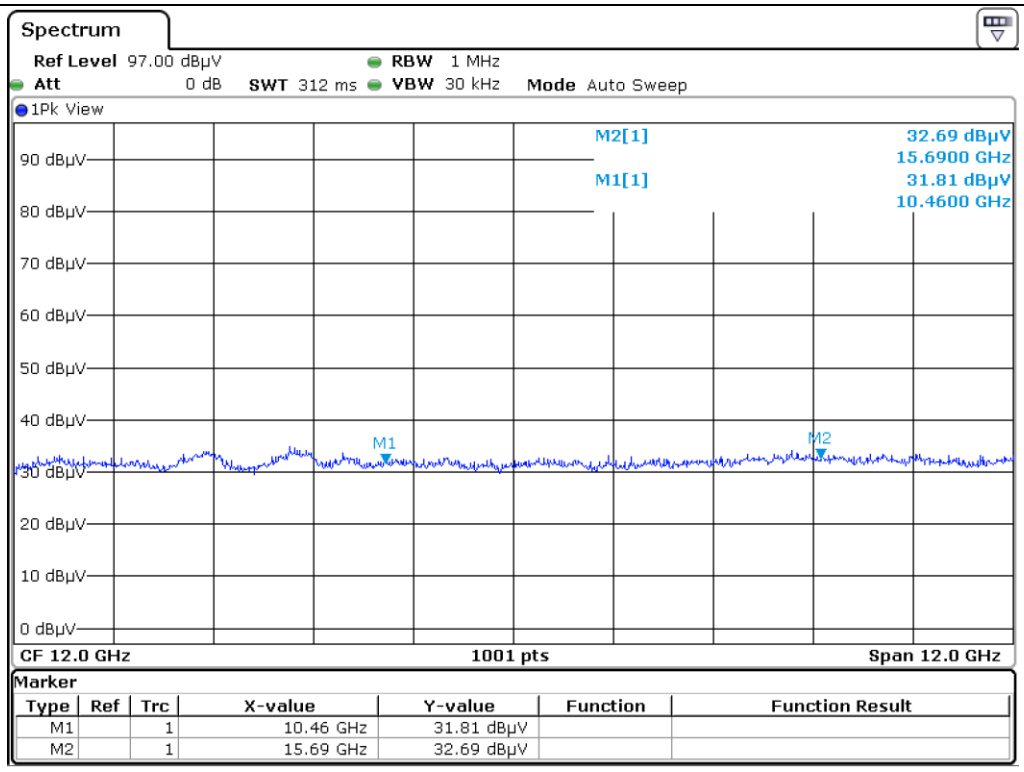


High Channel_Horizontal_Peak

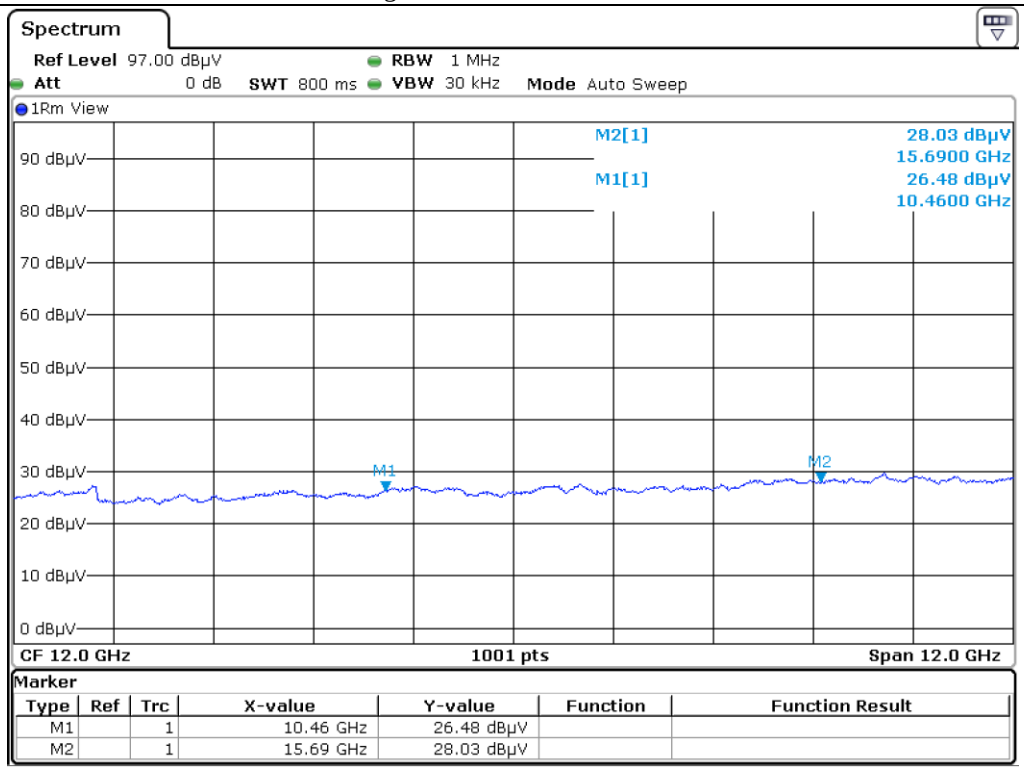


High Channel_Horizontal_Average

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)



High Channel_Vertical_Peak



High Channel_Vertical_Average

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

5.4.6 Spurious & Harmonic Radiated Emission (U-NII 2A)

5.4.6.1 Test Data for 802.11a

-. Test Date : September 12, 2018 ~ September 21, 2018

-. 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 : 30 kHz for Peak and Average Mode

-. Frequency range : 1 GHz ~ 40 GHz

-. Measurement distance : 3 m

-. Result : PASSED

Frequency (MHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
Test Data for Low Channel									
15 780.00	41.07	Peak	H	40.02	14.54	31.43	64.20	74.00	9.80
15 780.00	28.34	Avg	H	40.02	14.54	31.43	51.47	54.00	2.53
15 780.00	41.04	Peak	V	40.02	14.54	31.43	64.17	74.00	9.83
15 780.00	28.17	Avg	V	40.02	14.54	31.43	51.30	54.00	2.70
Test Data for Middle Channel									
15 900.00	33.27	Peak	H	40.11	14.71	31.15	56.94	74.00	17.06
15 900.00	28.27	Average	H	40.11	14.71	31.15	51.94	54.00	2.06
15 900.00	32.79	Peak	V	40.11	14.71	31.15	56.46	74.00	17.54
15 900.00	28.17	Average	V	40.11	14.71	31.15	51.84	54.00	2.16

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Test Data for High Channel									
15 960.00	40.47	Peak	H	40.30	14.87	31.06	64.58	74.00	9.42
15 960.00	28.15	Average	H	40.30	14.87	31.06	52.26	54.00	1.74
15 960.00	39.30	Peak	V	40.30	14.87	31.06	63.41	74.00	10.59
15 960.00	28.24	Average	V	40.30	14.87	31.06	52.35	54.00	1.65

Tabulated test data for Restricted Band

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

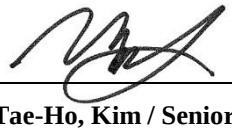
Margin (dB) = Limits (dBμV/m) - Total Level (dBμV/m)

Total Level = Reading + Antenna Factor + Cable Loss – Pre-Amplifier Gain

Remark: Emission was pre-scanned from 26.5 GHz ~ 40 GHz; No emissions were detected which was at least 20 dB

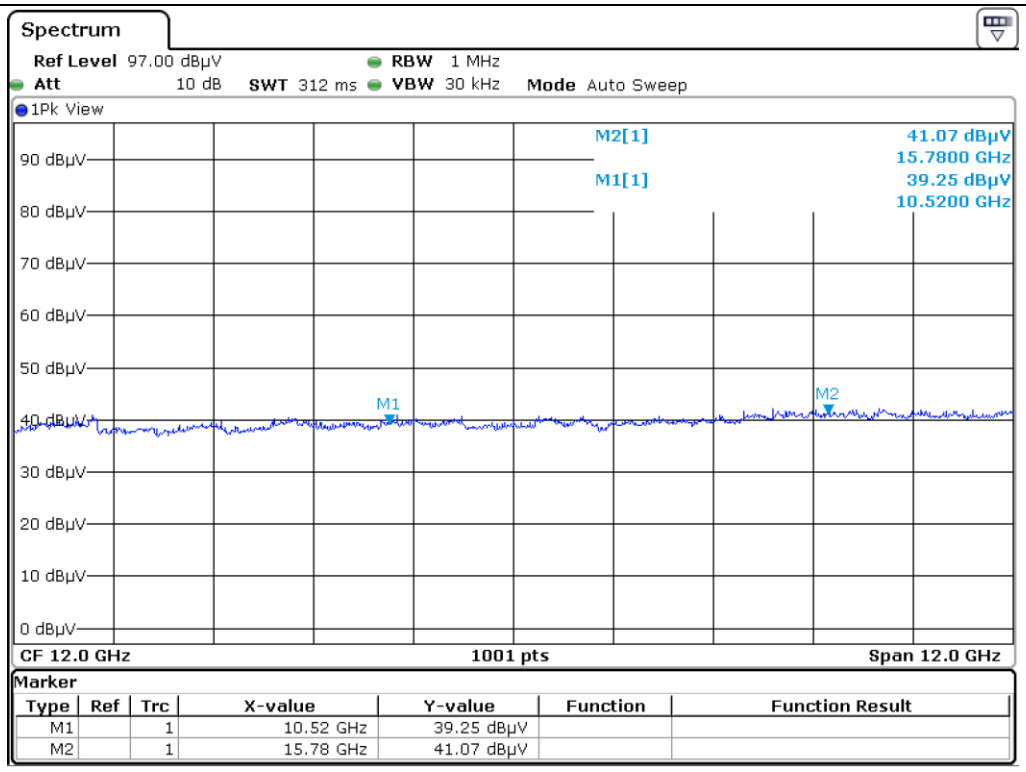
Below the specification limit (consider distance correction factor)

Per FCC part 15.31(o), test results were not reported.

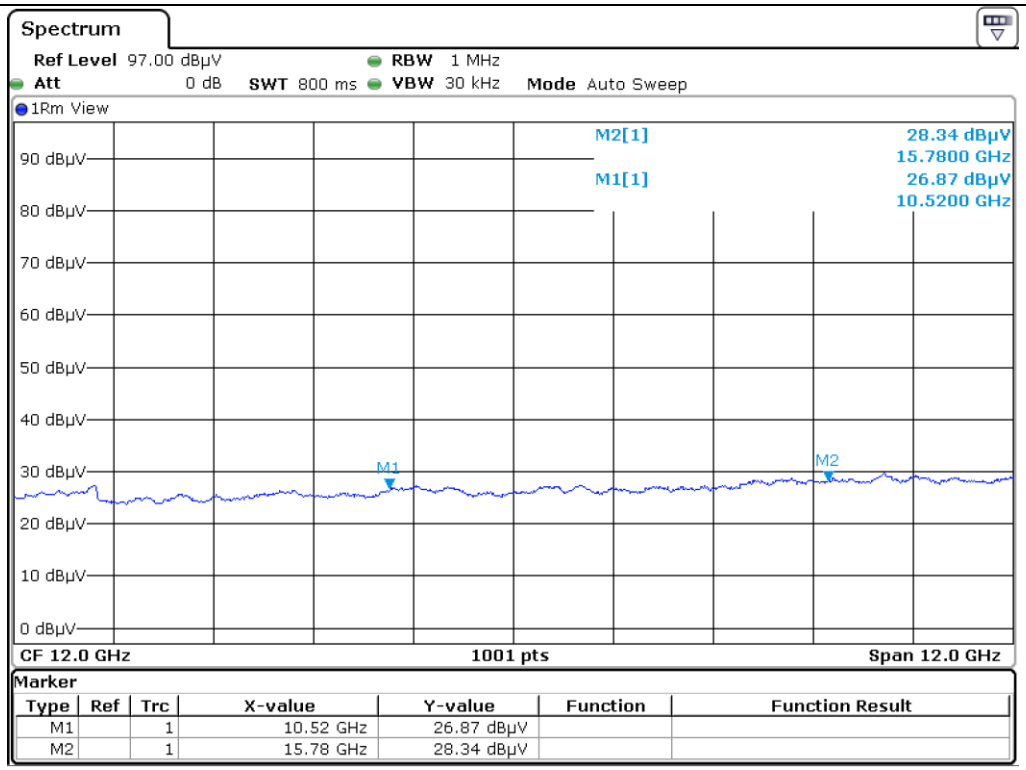


Tested by: Tae-Ho, Kim / Senior Manager

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)



Low Channel_Horizontal_Peak



Low Channel_Horizontal_Average

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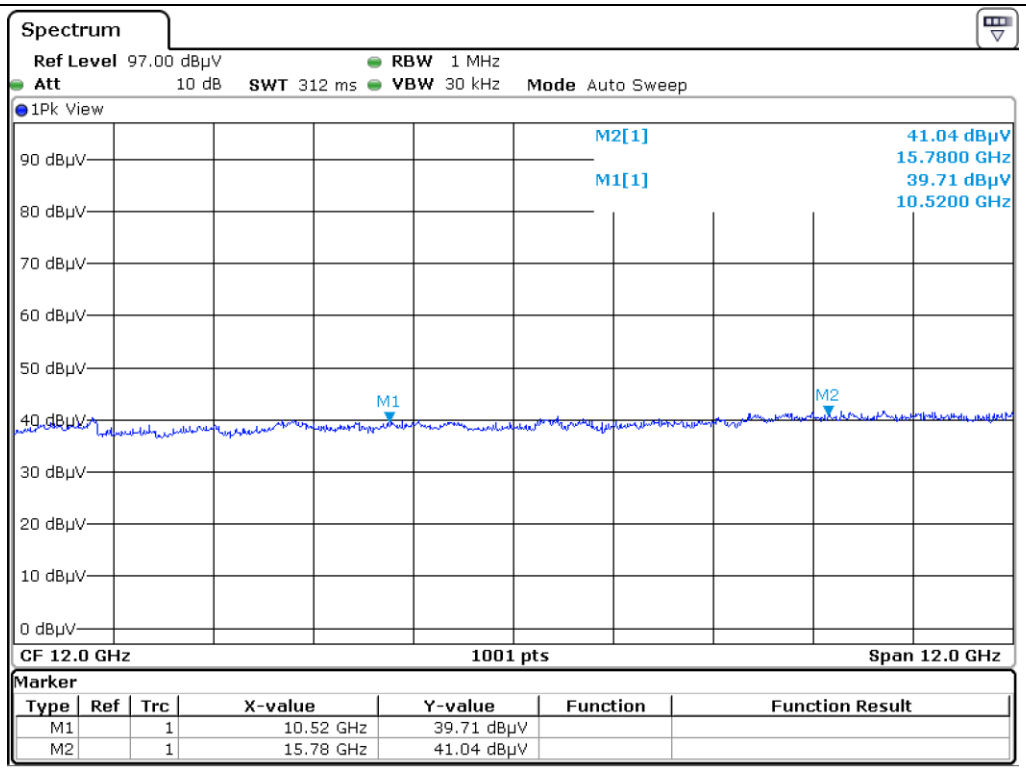
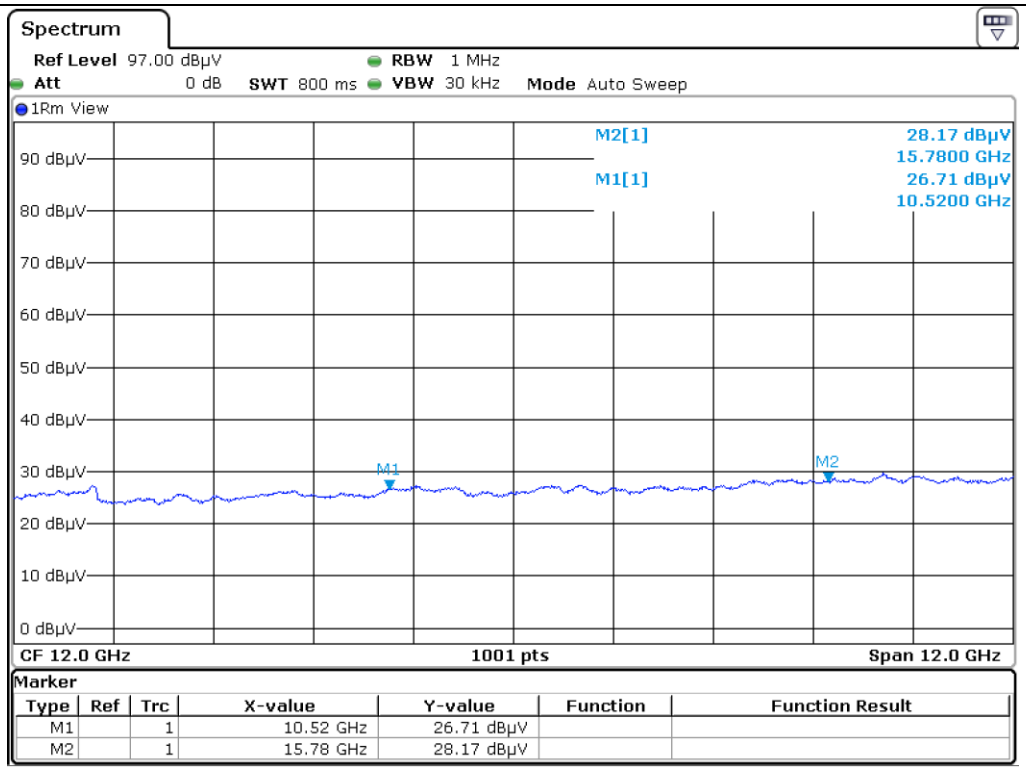
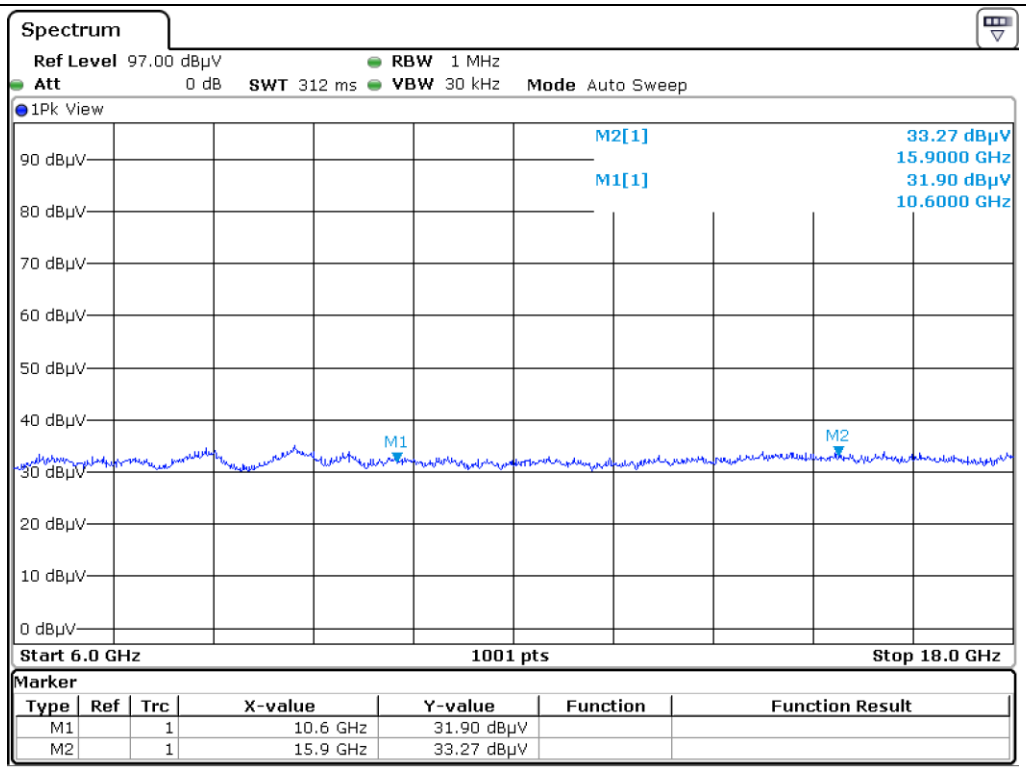


Low Channel_Vertical_Peak

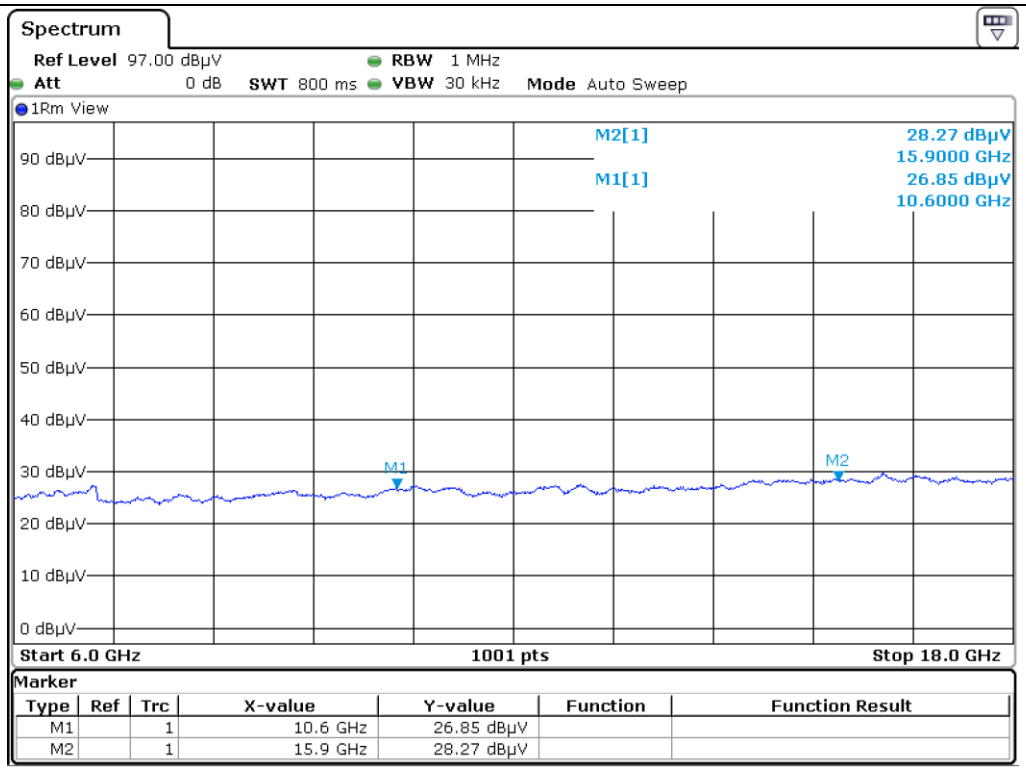


Low Channel_Vertical_Average

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

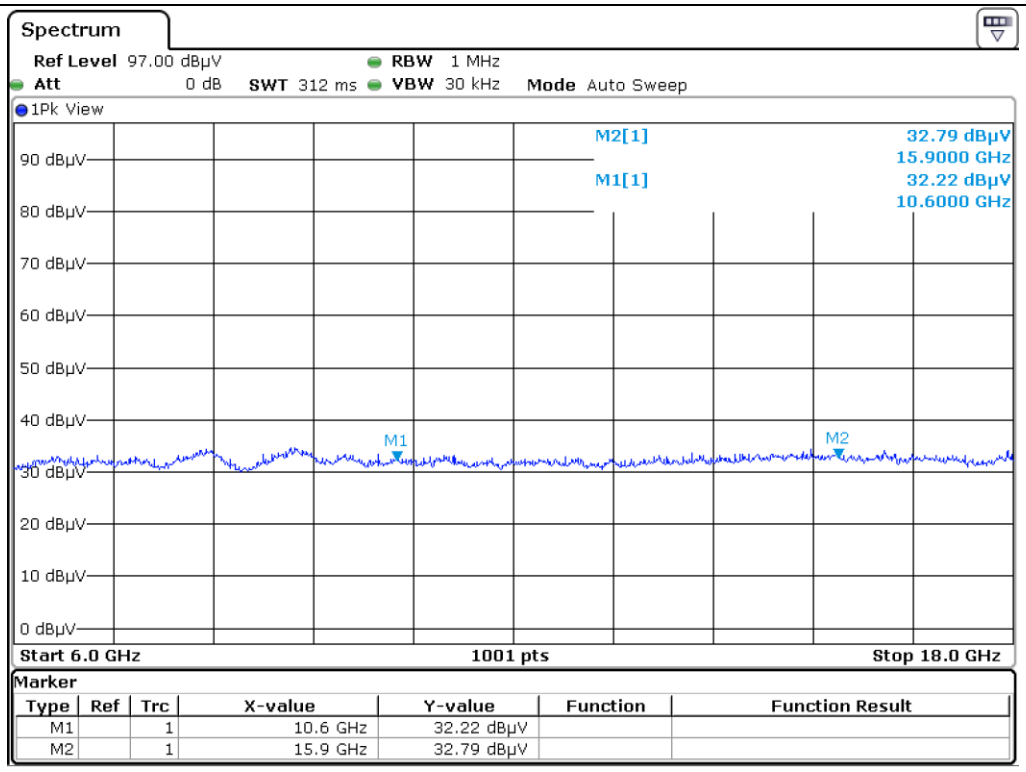


Middle Channel_Horizontal_Peak

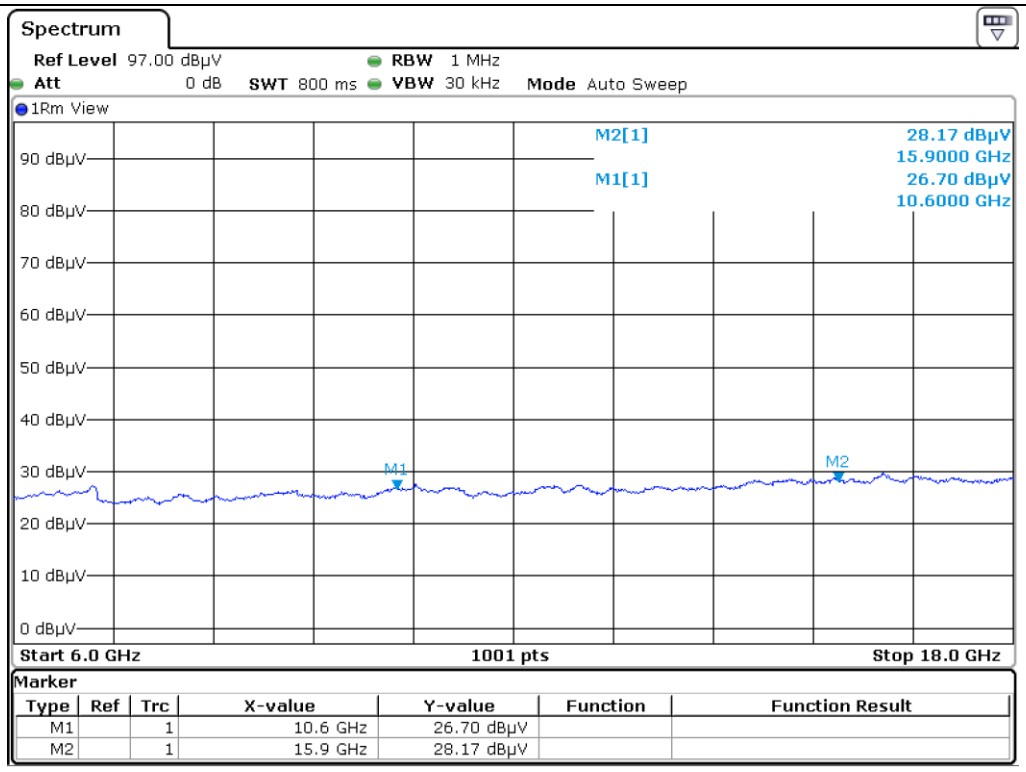


Middle Channel_Horizontal_Average

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

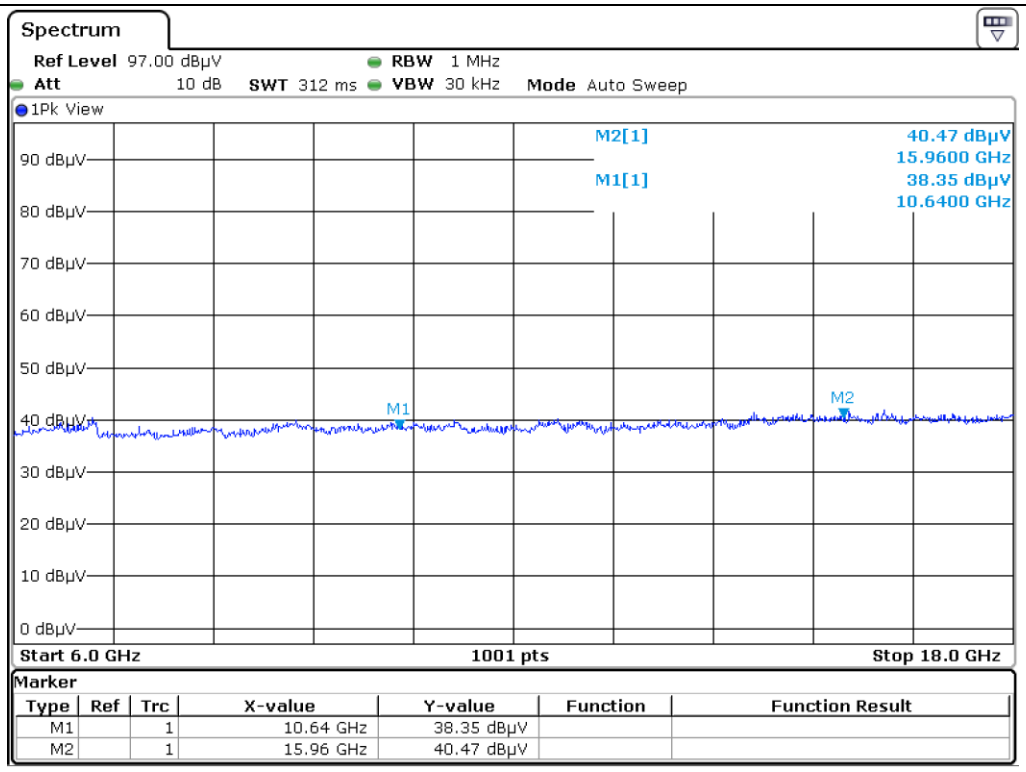


Middle Channel_Vertical_Peak

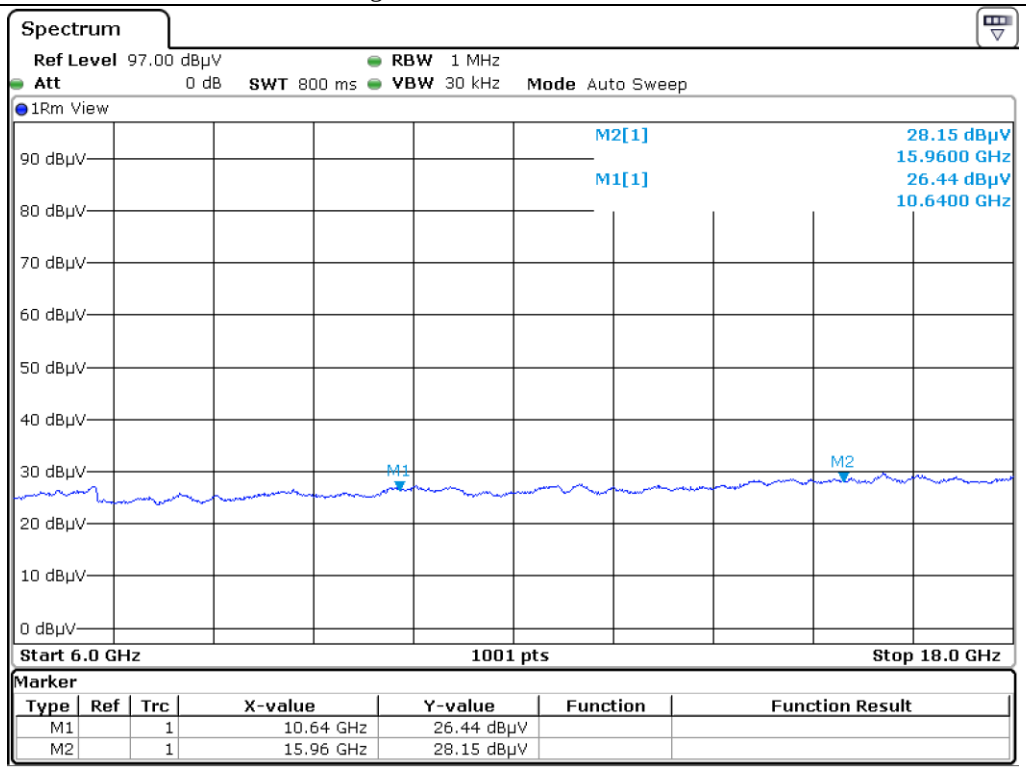


Middle Channel_Vertical_Average

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

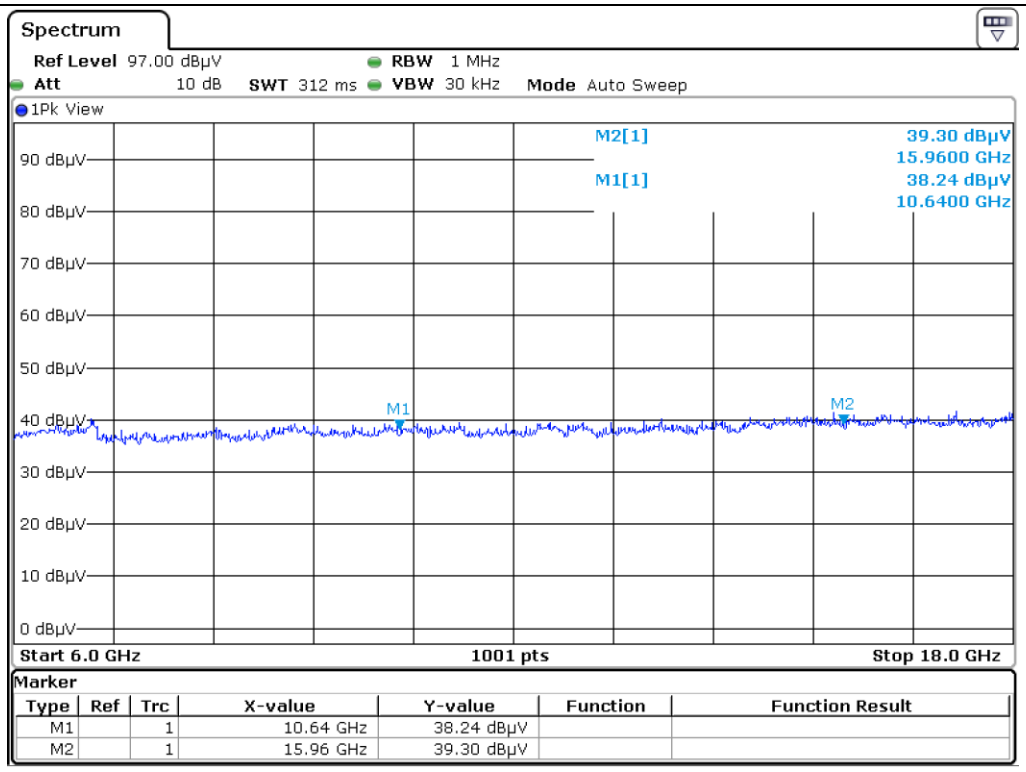


High Channel_Horizontal_Peak

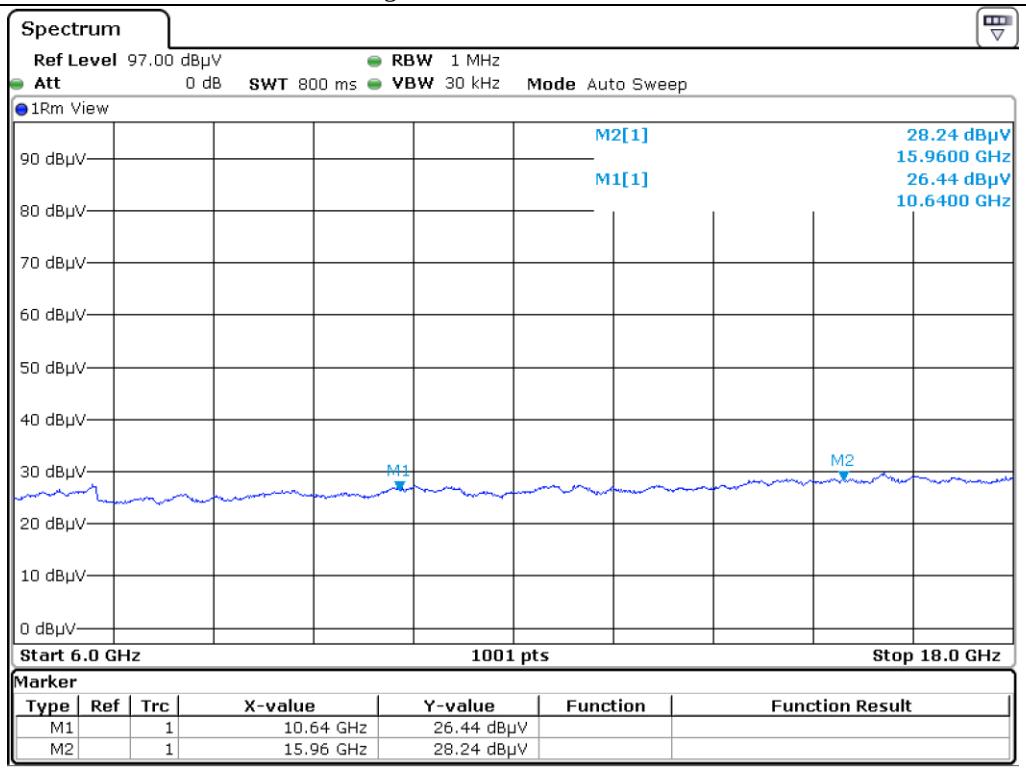


High Channel_Horizontal_Average

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)



High Channel_Vertical_Peak



High Channel_Vertical_Average

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

5.4.6.2 Test Data for 802.11n20

-. Test Date : September 12, 2018 ~ September 21, 2018

-. 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 : 30 kHz for Peak and Average Mode

-. Frequency range : 1 GHz ~ 40 GHz

-. Measurement distance : 3 m

-. Result : PASSED

Frequency (MHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
Test Data for Low Channel									
15 780.00	38.72	Peak	H	40.02	14.54	31.43	61.85	74.00	12.15
15 780.00	28.24	Avg	H	40.02	14.54	31.43	51.37	54.00	2.63
15 780.00	39.06	Peak	V	40.02	14.54	31.43	62.19	74.00	11.81
15 780.00	28.24	Avg	V	40.02	14.54	31.43	51.37	54.00	2.63
Test Data for Middle Channel									
15 900.00	40.93	Peak	H	40.11	14.71	31.15	64.60	74.00	9.40
15 900.00	28.36	Average	H	40.11	14.71	31.15	52.03	54.00	1.97
15 900.00	39.81	Peak	V	40.11	14.71	31.15	63.48	74.00	10.52
15 900.00	28.15	Average	V	40.11	14.71	31.15	51.82	54.00	2.18

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Test Data for High Channel									
15 960.00	40.68	Peak	H	40.30	14.87	31.06	64.79	74.00	9.21
15 960.00	28.24	Average	H	40.30	14.87	31.06	52.35	54.00	1.65
15 960.00	40.09	Peak	V	40.30	14.87	31.06	64.20	74.00	9.80
15 960.00	28.12	Average	V	40.30	14.87	31.06	52.23	54.00	1.77

Tabulated test data for Restricted Band

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

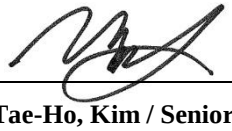
Margin (dB) = Limits (dBμV/m) - Total Level (dBμV/m)

Total Level = Reading + Antenna Factor + Cable Loss – Pre-Amplifier Gain

Remark: Emission was pre-scanned from 26.5 GHz ~ 40 GHz; No emissions were detected which was at least 20 dB

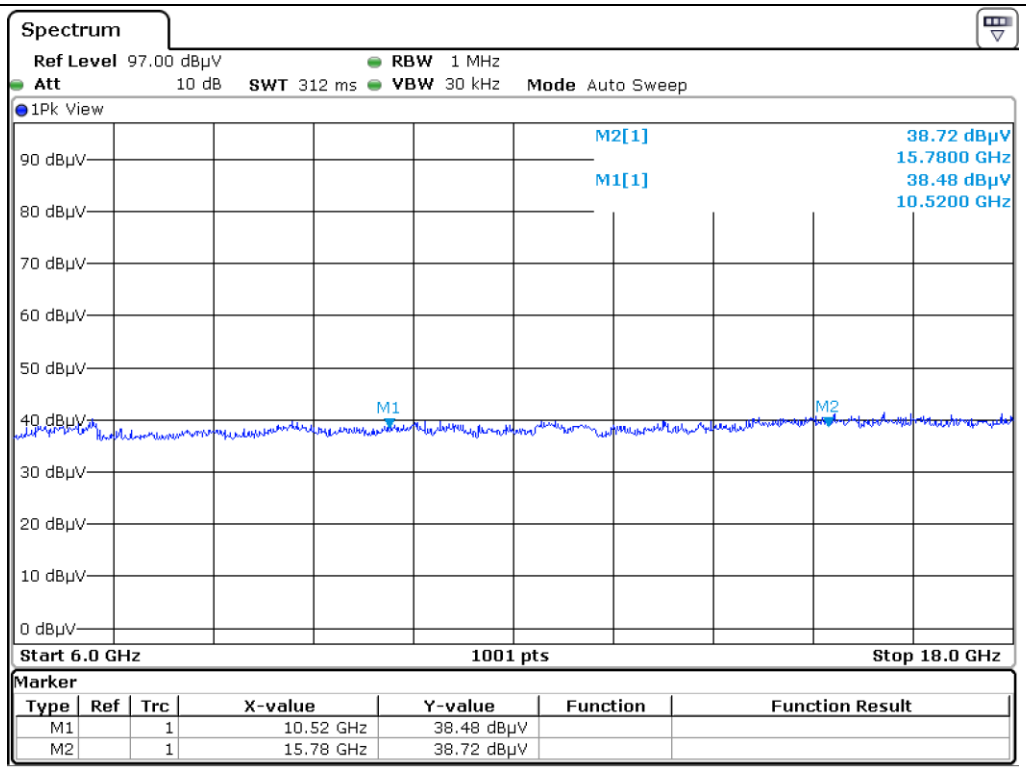
Below the specification limit (consider distance correction factor)

Per FCC part 15.31(o), test results were not reported.

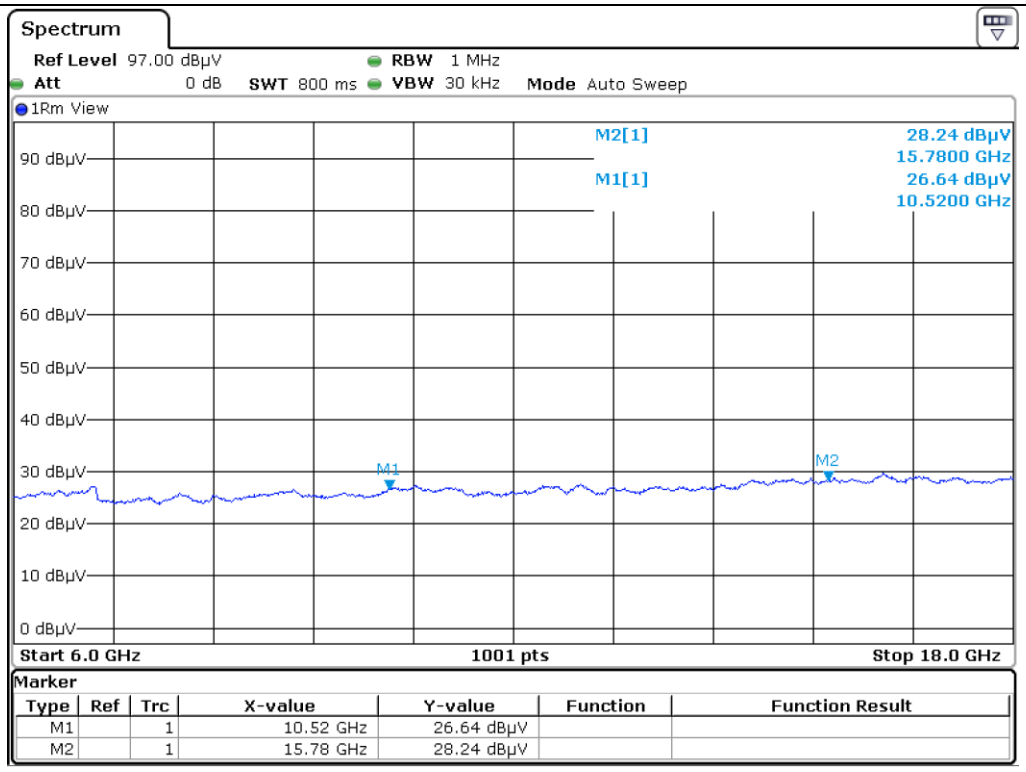


Tested by: Tae-Ho, Kim / Senior Manager

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

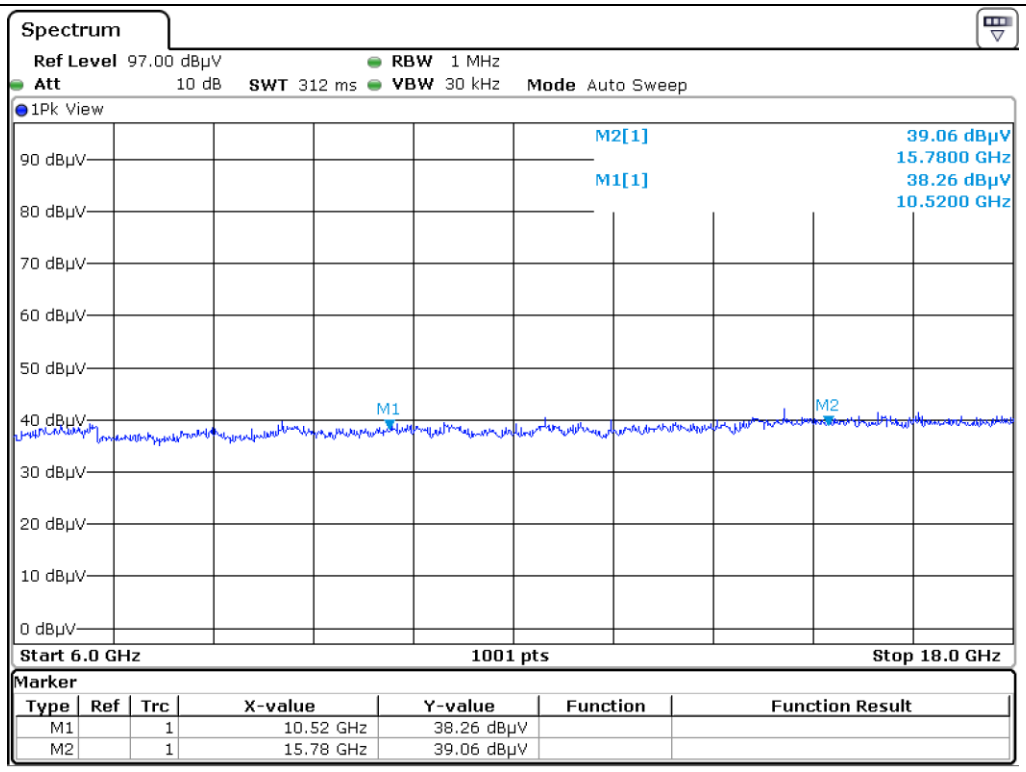


Low Channel_Horizontal_Peak

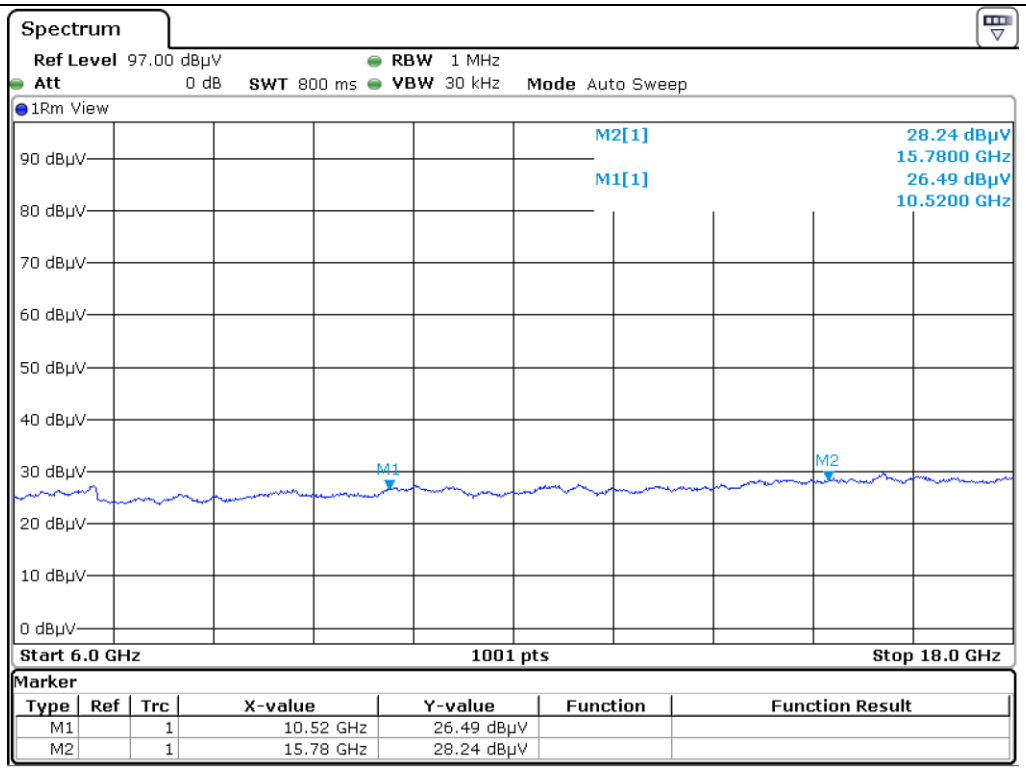


Low Channel_Horizontal_Average

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

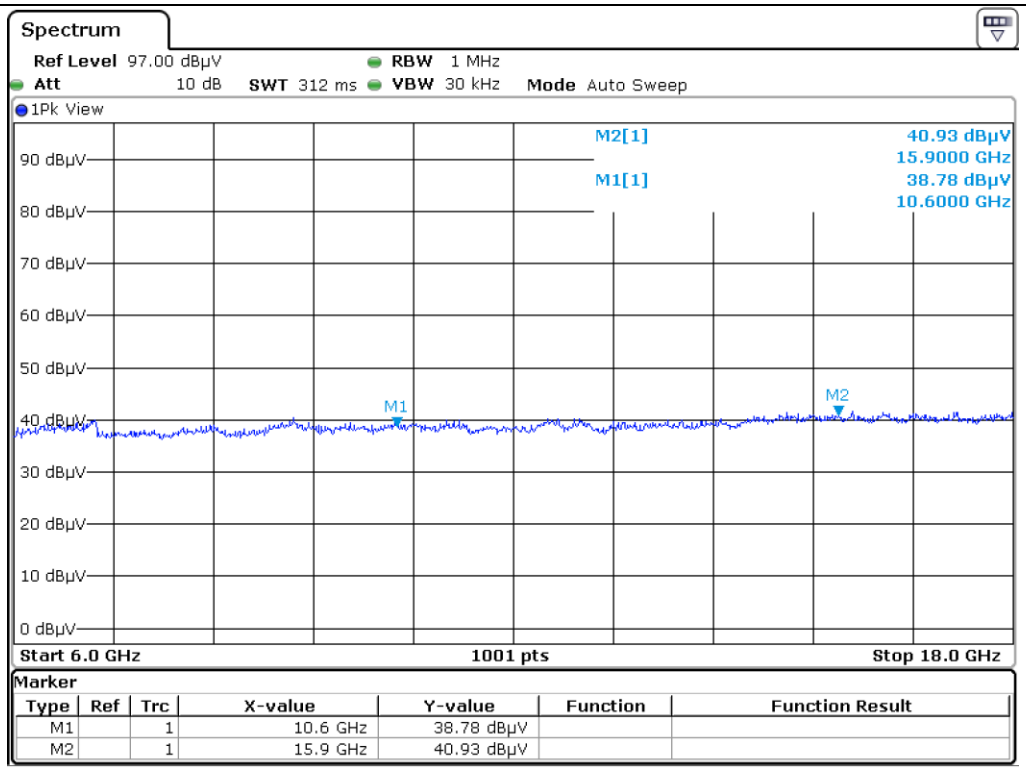


Low Channel_Vertical_Peak

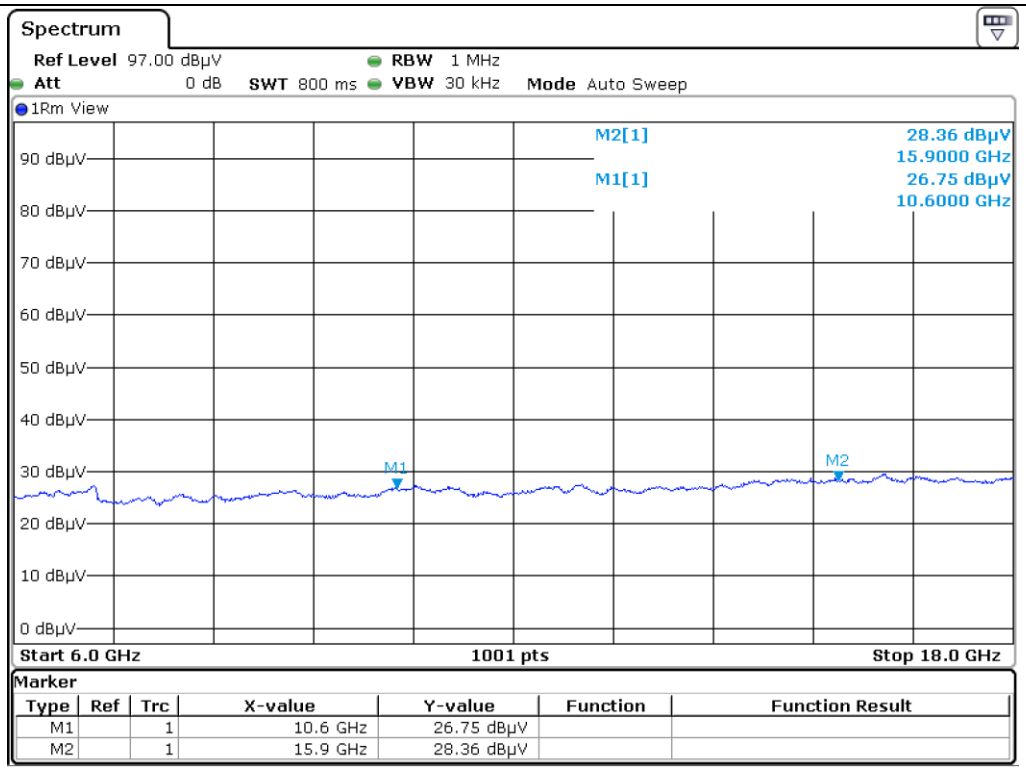


Low Channel_Vertical_Average

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

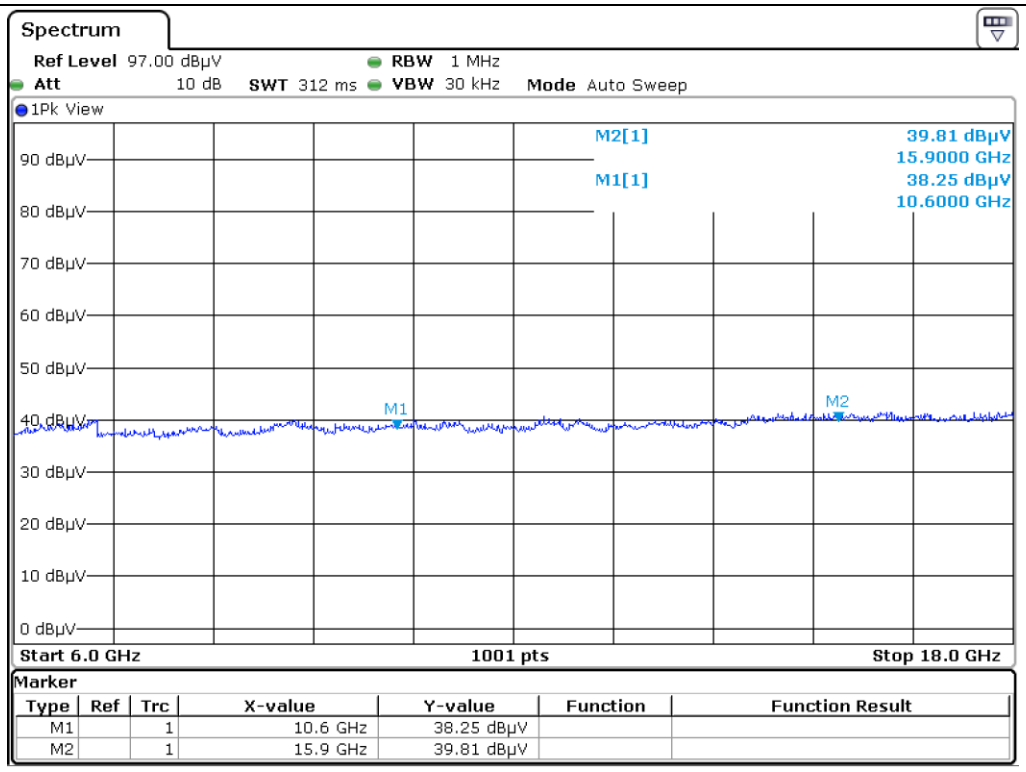


Middle Channel_Horizontal_Peak

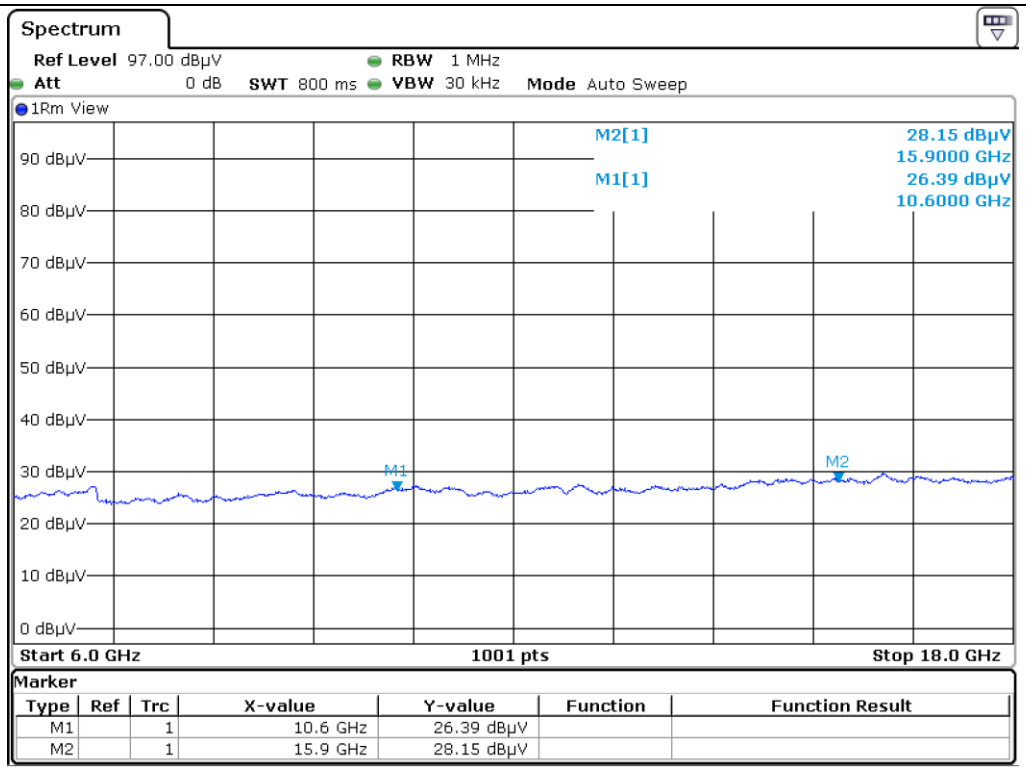


Middle Channel_Horizontal_Average

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

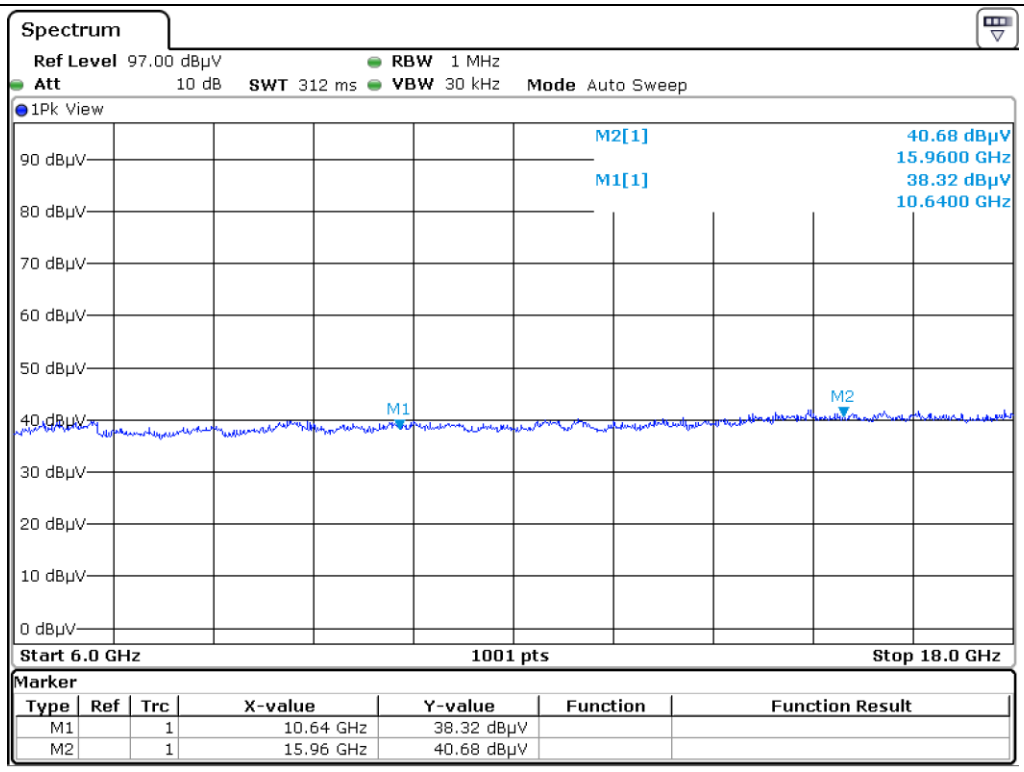


Middle Channel_Vertical_Peak

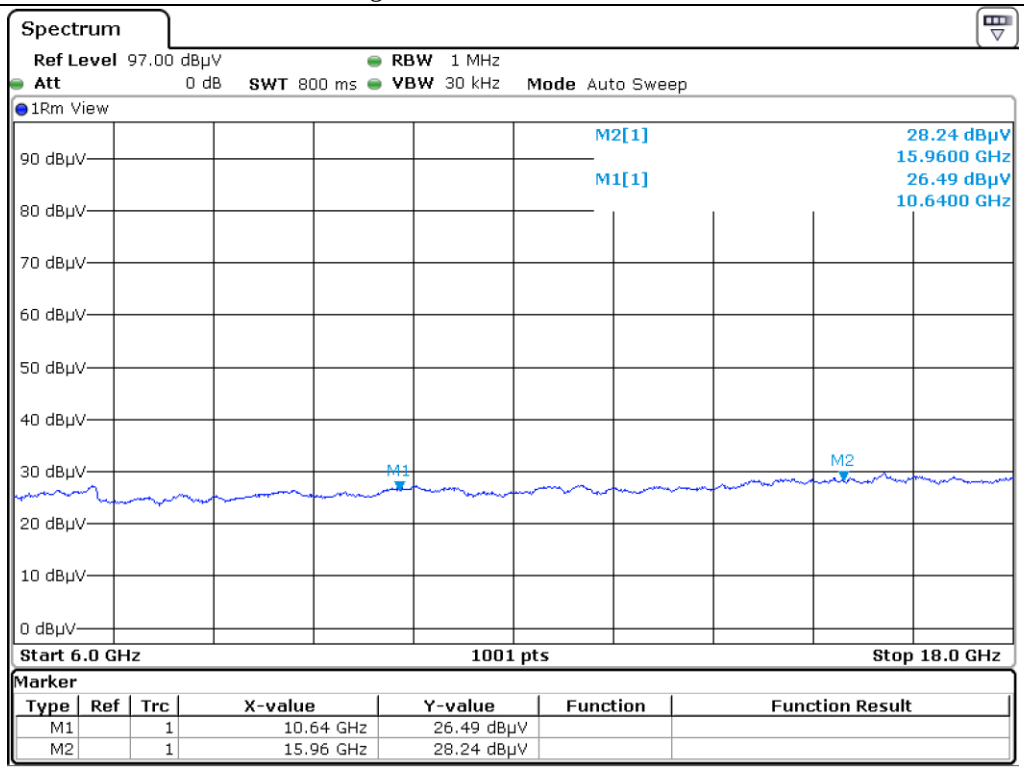


Middle Channel_Vertical_Average

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

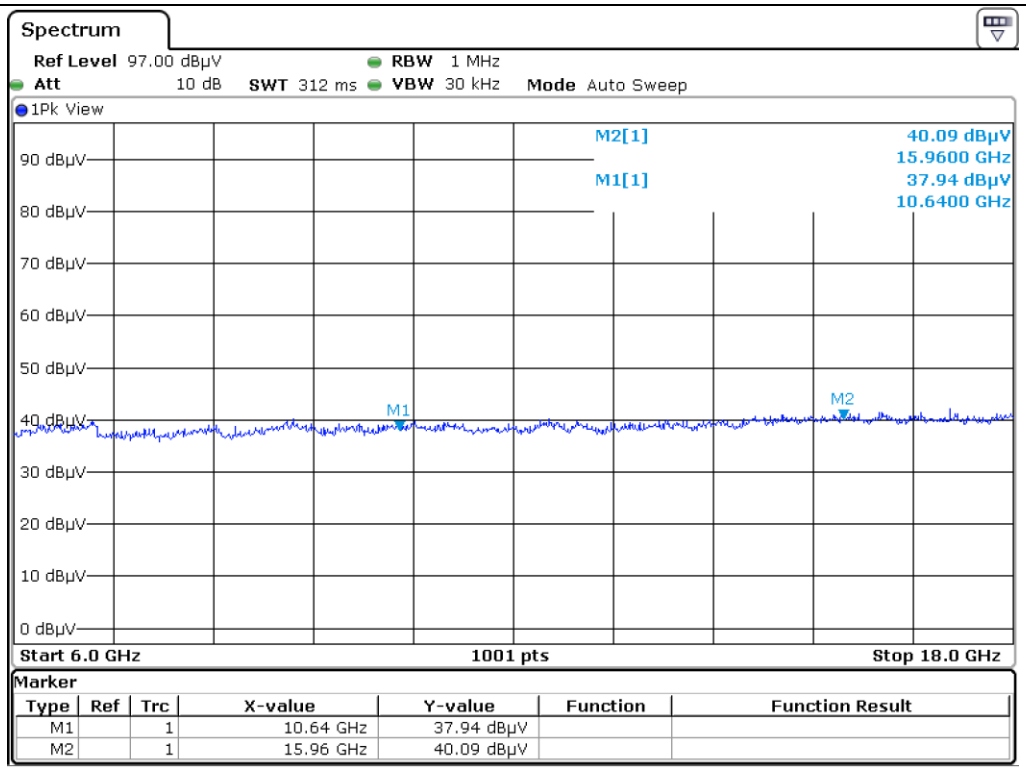


High Channel_Horizontal_Peak

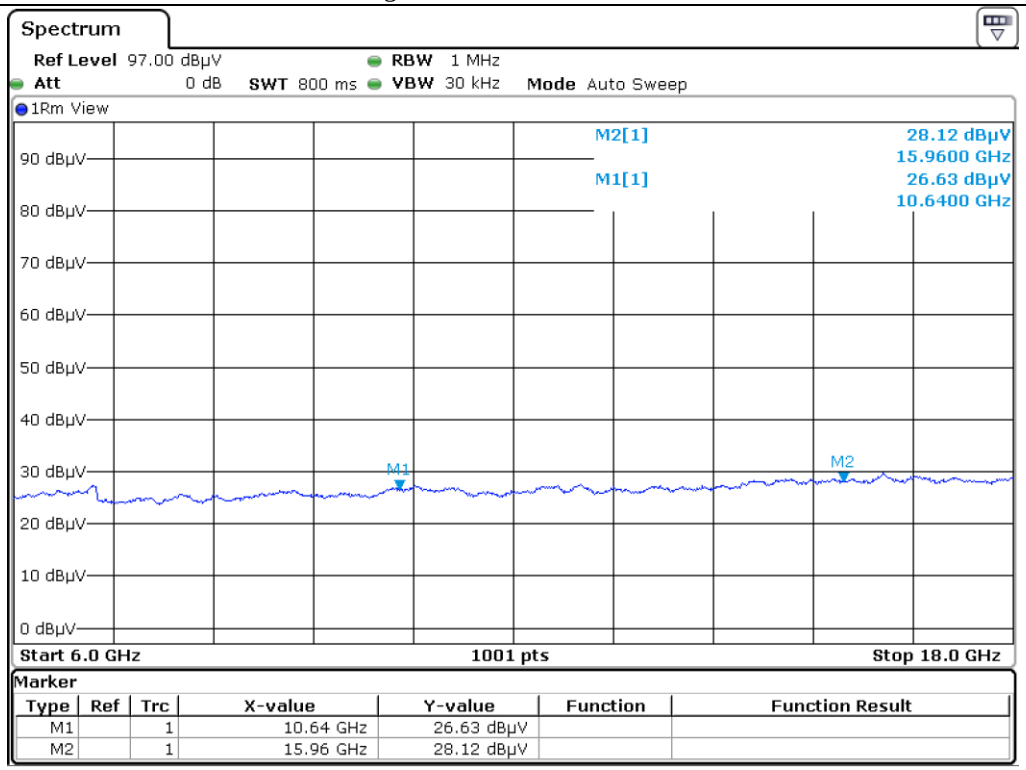


High Channel_Horizontal_Average

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)



High Channel_Vertical_Peak



High Channel_Vertical_Average

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

5.4.6.3 Test Data for 802.11n40

-. Test Date : September 12, 2018 ~ September 21, 2018

-. 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 : 30 kHz for Peak and Average Mode

-. Frequency range : 1 GHz ~ 40 GHz

-. Measurement distance : 3 m

-. Result : PASSED

Frequency (MHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
Test Data for Low Channel									
15 810.00	33.03	Peak	H	40.02	14.54	31.36	56.23	74.00	17.77
15 810.00	28.13	Avg	H	40.02	14.54	31.36	51.33	54.00	2.67
15 810.00	33.32	Peak	V	40.02	14.54	31.36	56.52	74.00	17.48
15 810.00	28.36	Avg	V	40.02	14.54	31.36	51.56	54.00	2.44
Test Data for High Channel									
15 930.00	40.93	Peak	H	40.16	14.70	31.15	64.64	74.00	9.36
15 930.00	28.47	Average	H	40.16	14.70	31.15	52.18	54.00	1.82
15 930.00	39.93	Peak	V	40.16	14.70	31.15	63.64	74.00	10.36
15 930.00	28.26	Average	V	40.16	14.70	31.15	51.97	54.00	2.03

Tabulated test data for Restricted Band

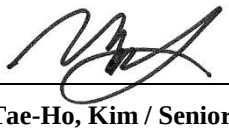
Remark: “H”: Horizontal, “V”: Vertical

Margin (dB) = Limits (dBμV/m) - Total Level (dBμV/m)

Total Level = Reading + Antenna Factor + Cable Loss – Pre-Amplifier Gain

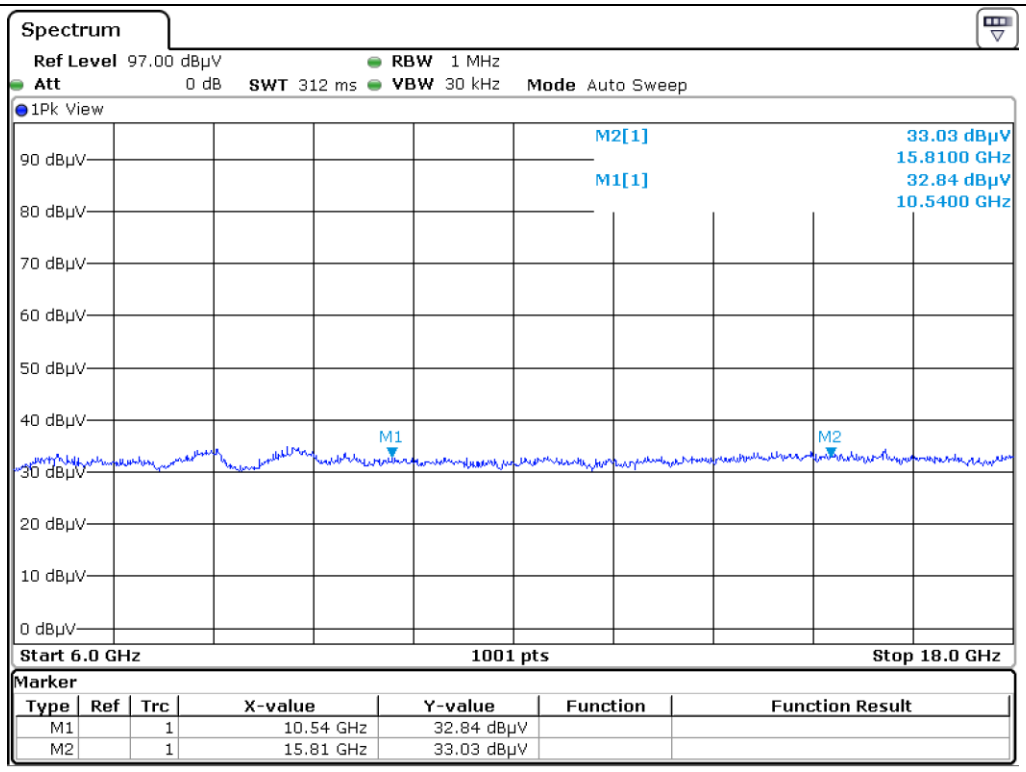
Remark: Emission was pre-scanned from 26.5 GHz ~ 40 GHz; No emissions were detected which was at least 20 dB Below the specification limit (consider distance correction factor)

Per FCC part 15.31(o), test results were not reported.

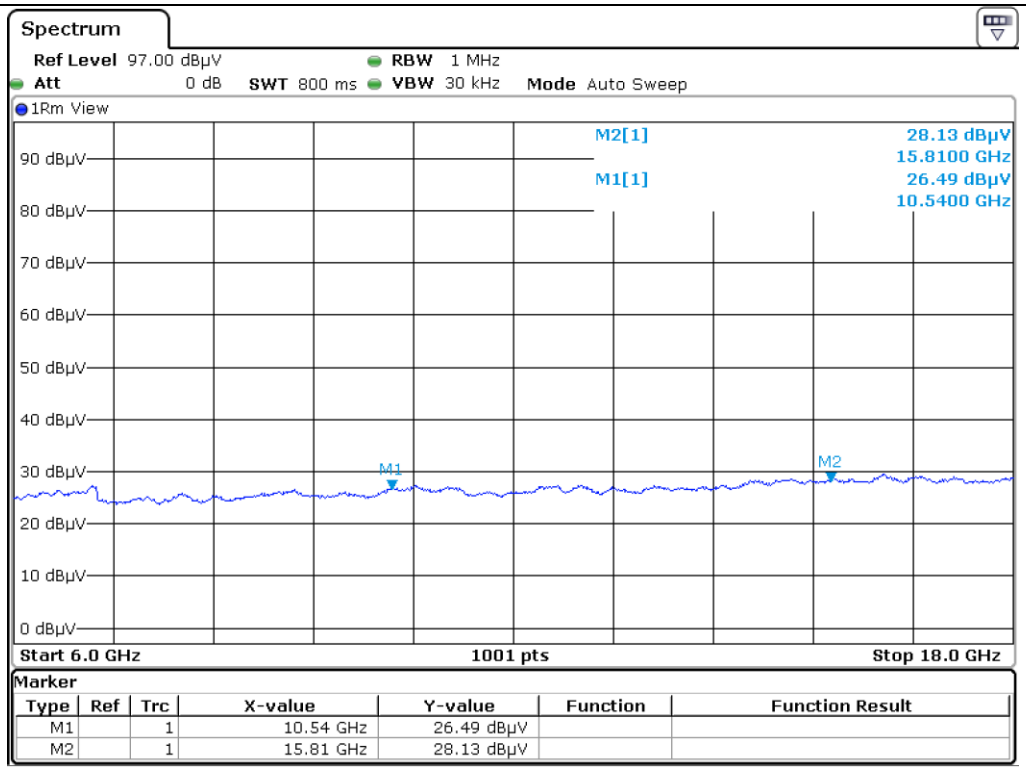


Tested by: Tae-Ho, Kim / Senior Manager

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

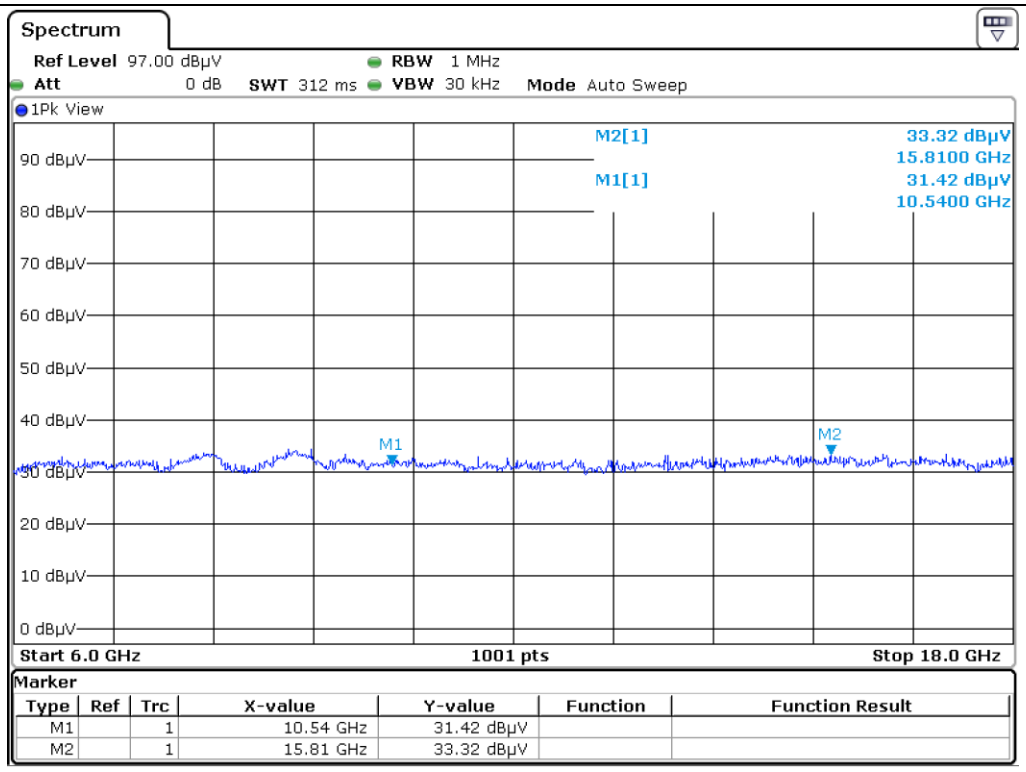


Low Channel_Horizontal_Peak

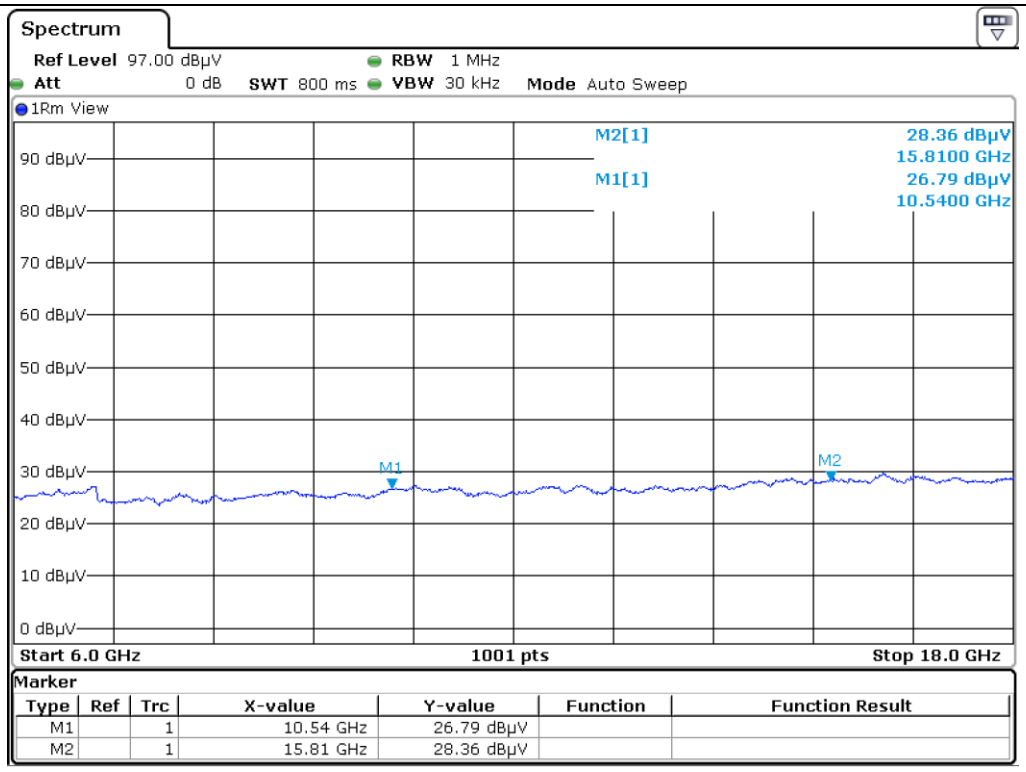


Low Channel_Horizontal_Average

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

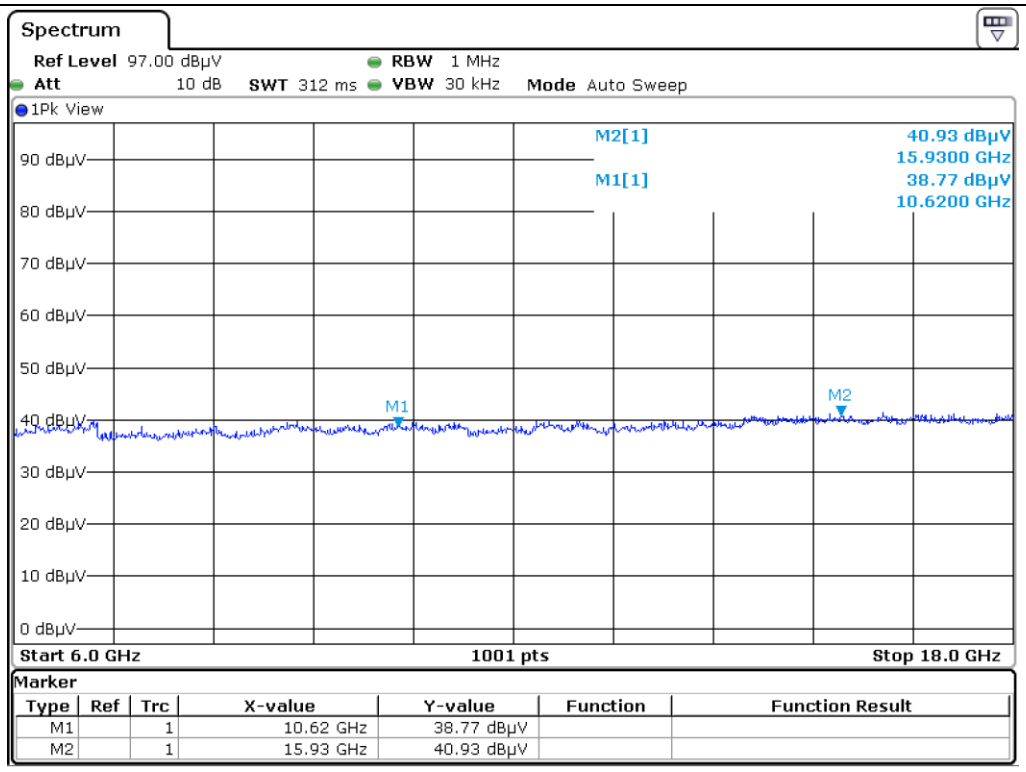


Low Channel_Vertical_Peak

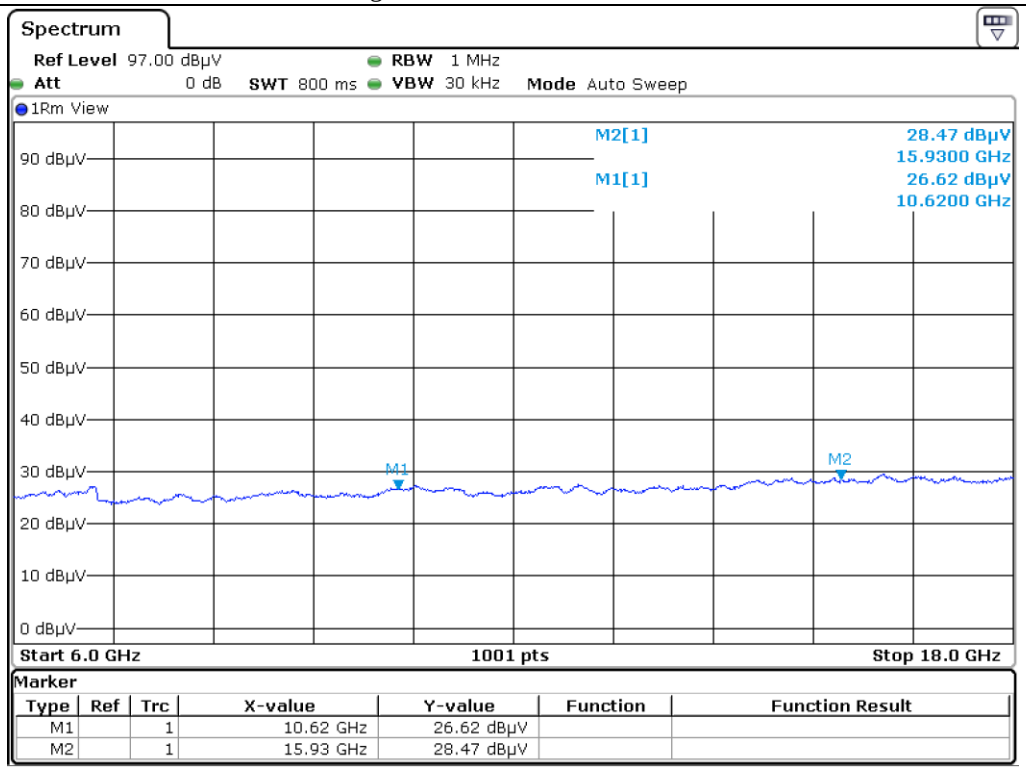


Low Channel_Vertical_Average

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

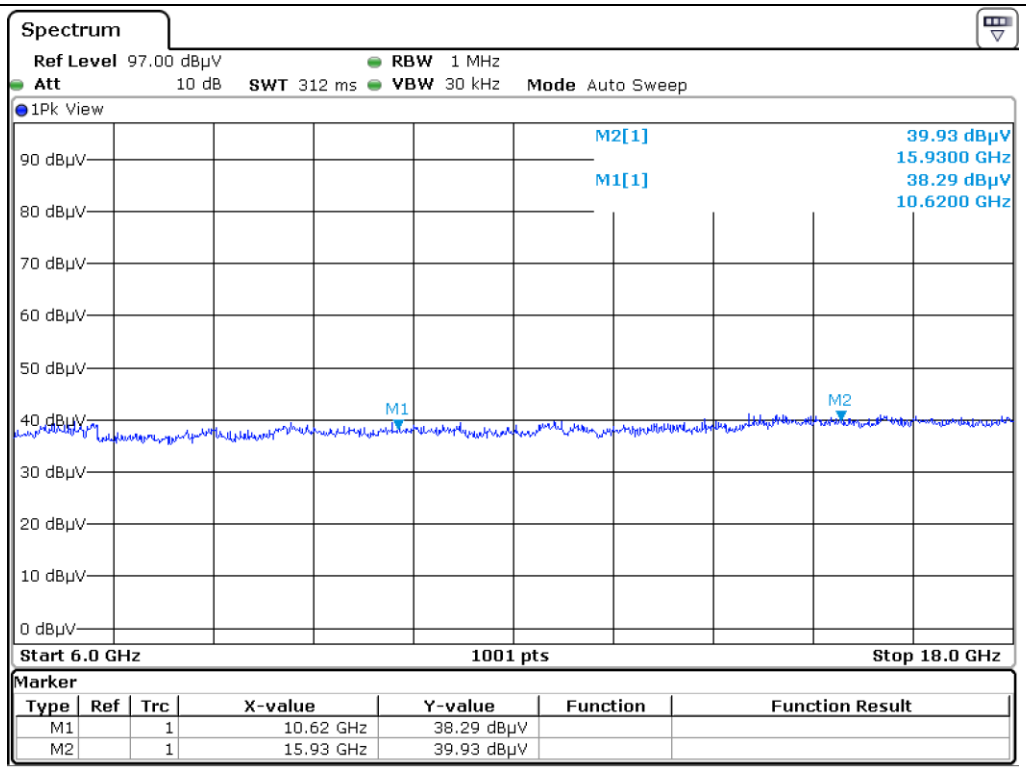


High Channel_Horizontal_Peak

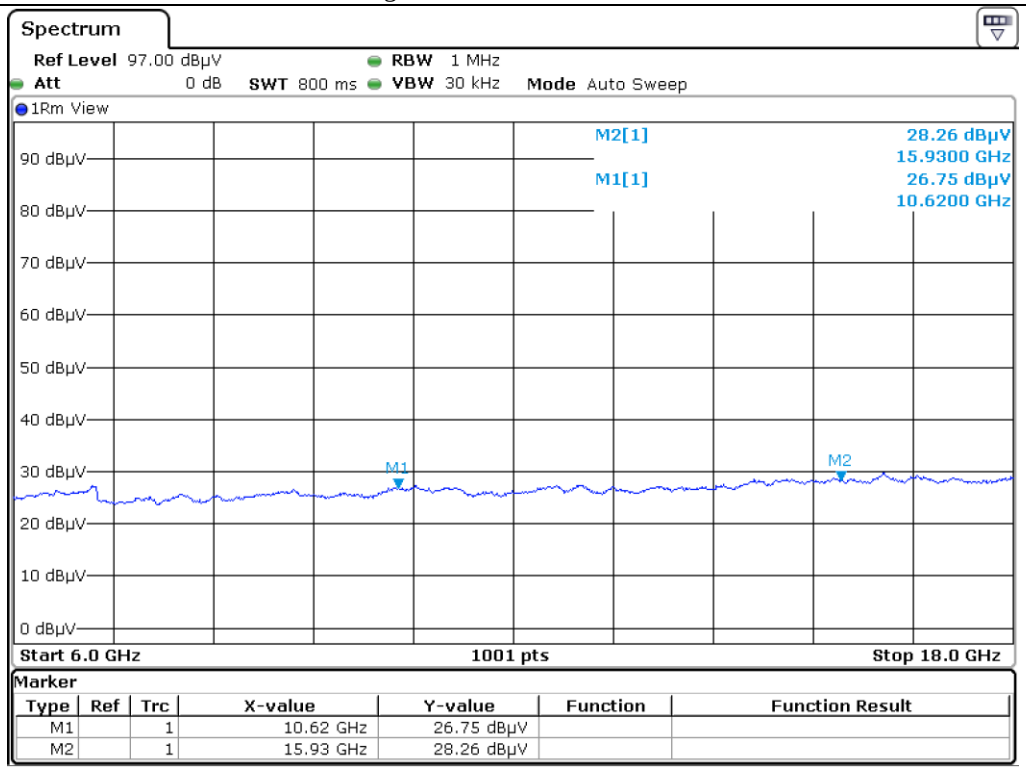


High Channel_Horizontal_Average

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)



High Channel_Vertical_Peak



High Channel_Vertical_Average

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

5.4.7 Spurious & Harmonic Radiated Emission (U-NII 2C)

5.4.7.1 Test Data for 802.11a

-. Test Date : September 12, 2018 ~ September 21, 2018

-. 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 : 30 kHz for Peak and Average Mode

-. Frequency range : 1 GHz ~ 40 GHz

-. Measurement distance : 3 m

-. Result : PASSED

Frequency (MHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
Test Data for Low Channel									
16 500.00	41.61	Peak	H	40.37	15.20	31.39	65.79	68.20	2.41
16 500.00	40.62	Peak	V	40.37	15.20	31.39	64.80	68.20	3.40
Test Data for Middle Channel									
11 160.00	32.93	Peak	H	40.07	15.82	32.24	56.58	74.00	17.42
11 160.00	31.77	Peak	V	40.07	15.82	31.24	56.42	74.00	17.58
Test Data for High Channel									
11 400.00	33.57	Peak	H	39.78	16.44	32.30	57.49	74.00	16.51
17 100.00	34.36	Peak	V	39.78	16.44	30.28	60.30	74.00	13.70

Tabulated test data for Restricted Band

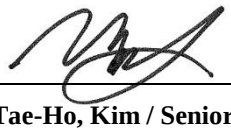
Remark: “H”: Horizontal, “V”: Vertical

Margin (dB) = Limits (dBμV/m) - Total Level (dBμV/m)

Total Level = Reading + Antenna Factor + Cable Loss – Pre-Amplifier Gain

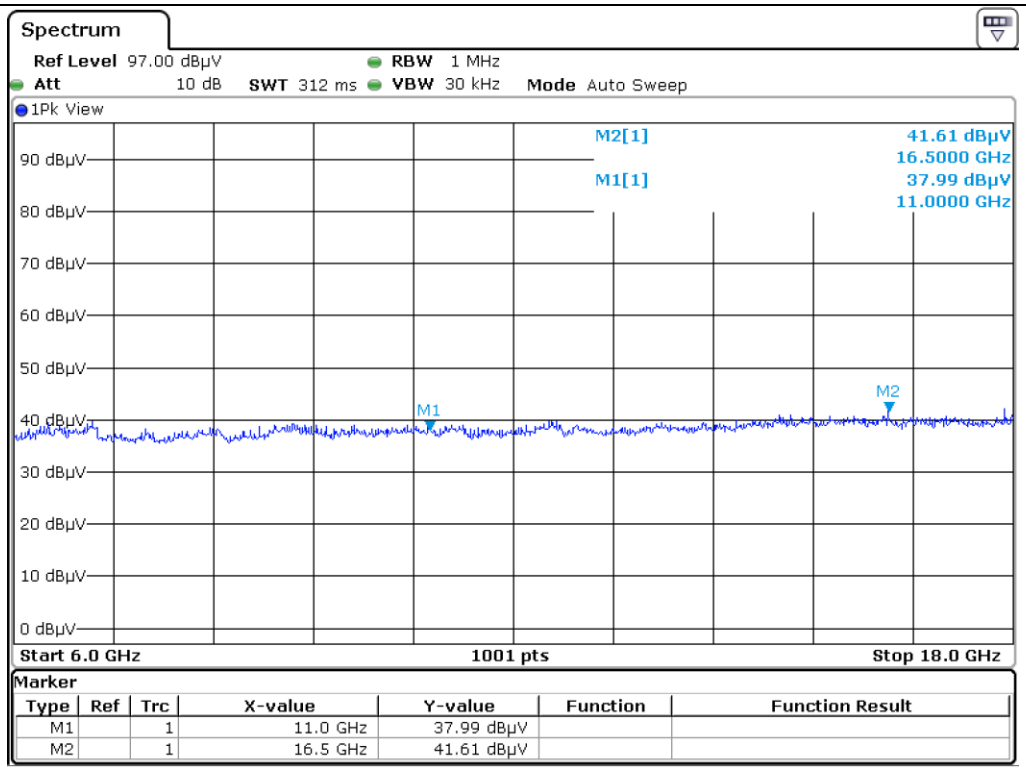
Remark: Emission was pre-scanned from 26.5 GHz ~ 40 GHz; No emissions were detected which was at least 20 dB Below the specification limit (consider distance correction factor)

Per FCC part 15.31(o), test results were not reported.

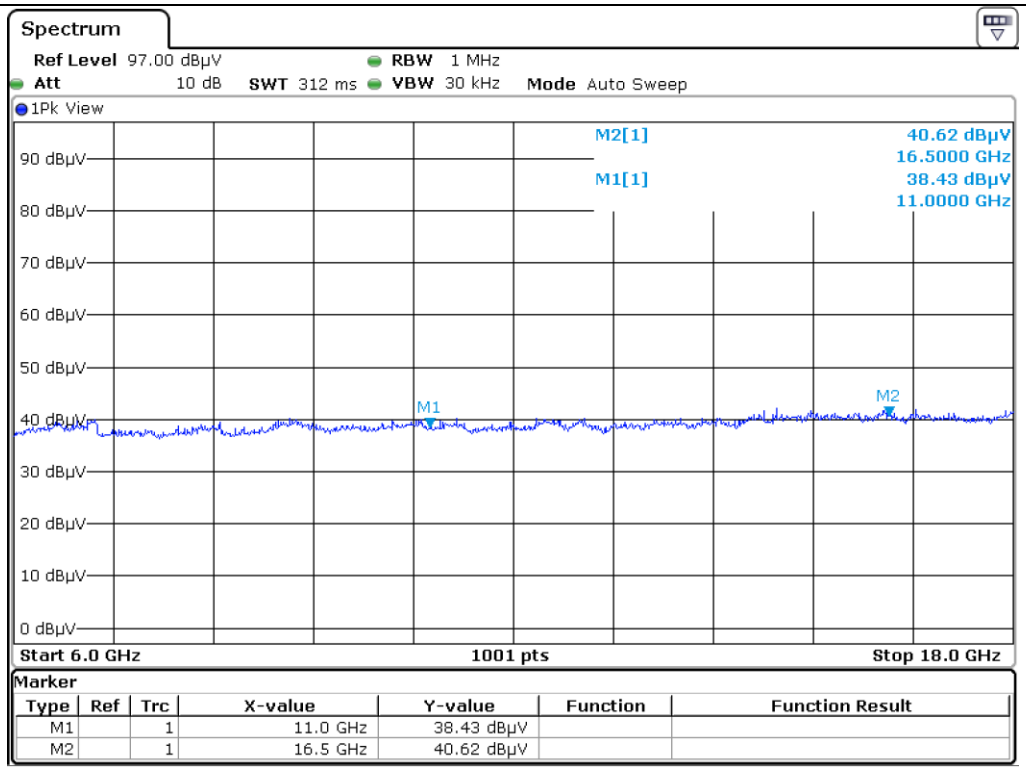


Tested by: Tae-Ho, Kim / Senior Manager

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

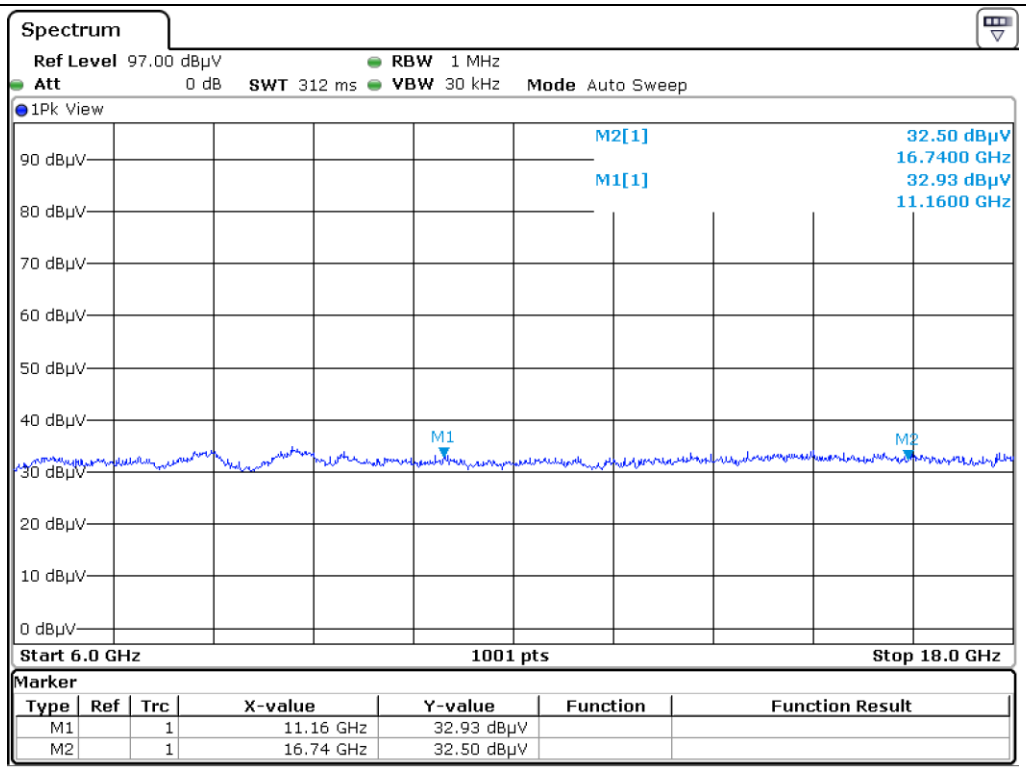


Low Channel_Horizontal_Peak

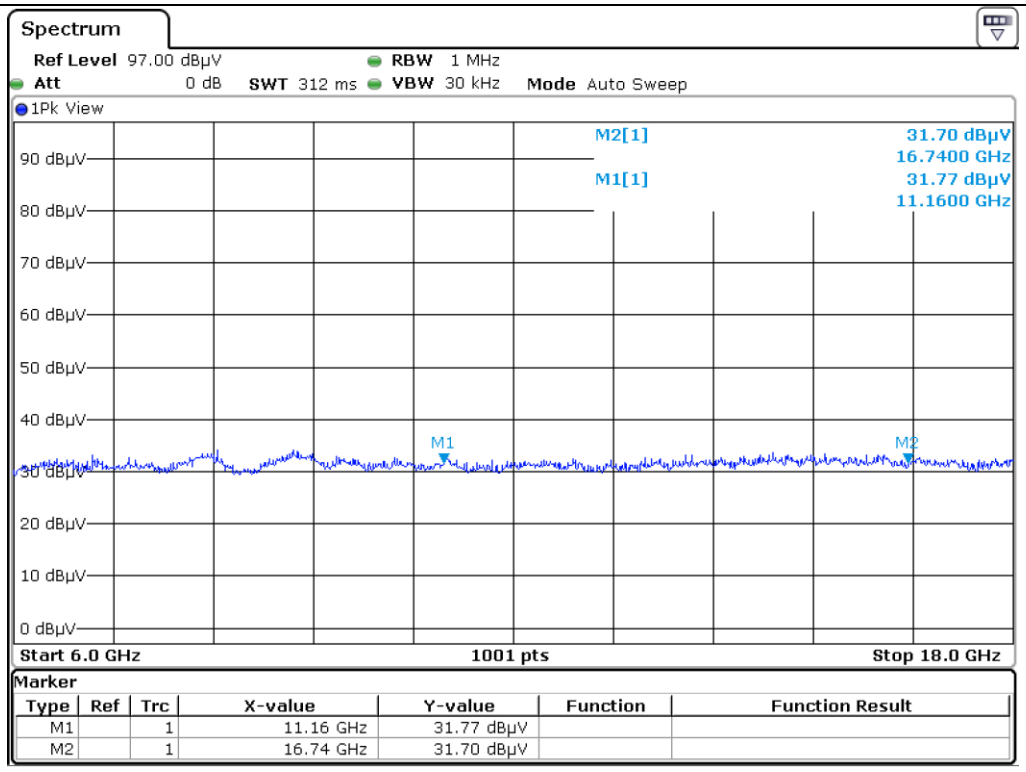


Low Channel_Vertical_Peak

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

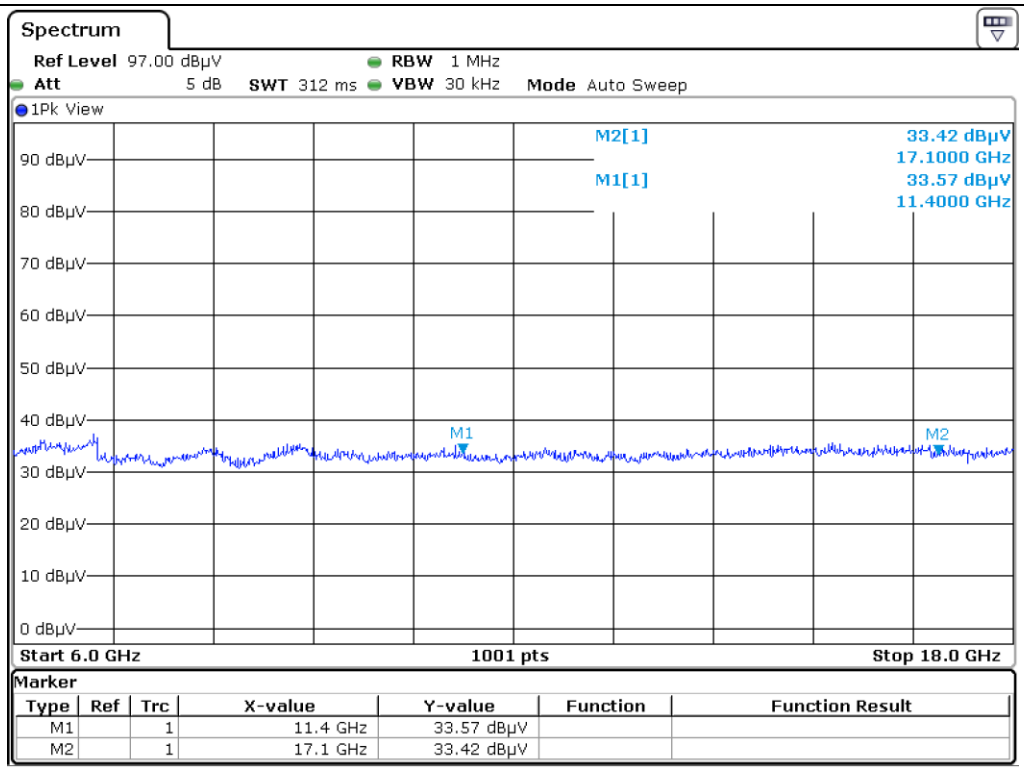


Middle Channel_Horizontal_Peak

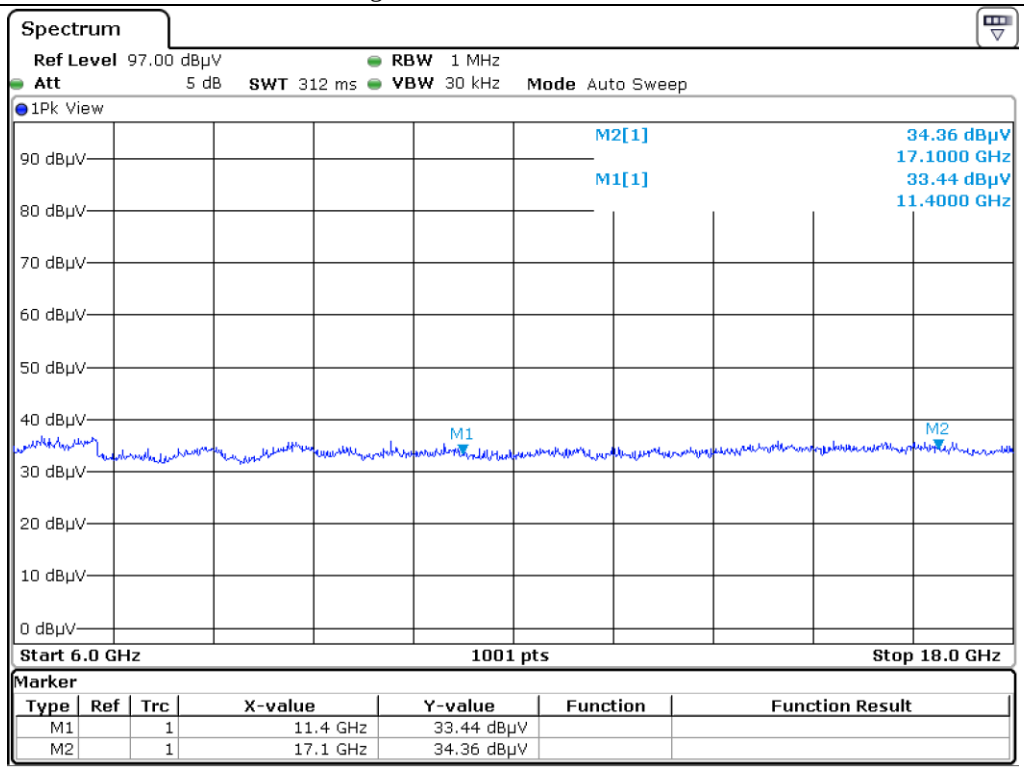


Middle Channel_Vertical_Peak

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)



High Channel_Horizontal_Peak



High Channel_Vertical_Peak

5.4.7.2 Test Data for 802.11n20

-. Test Date : September 12, 2018 ~ September 21, 2018

-. 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 : 30 kHz for Peak and Average Mode

-. Frequency range : 1 GHz ~ 40 GHz

-. Measurement distance : 3 m

-. Result : PASSED

Frequency (MHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
Test Data for Low Channel									
16 500.00	34.87	Peak	H	40.37	15.20	31.39	59.05	68.20	9.15
16 500.00	34.28	Peak	V	40.37	15.20	31.39	58.46	68.20	9.74
Test Data for Middle Channel									
16 740.00	40.47	Peak	H	40.07	15.82	30.76	65.60	68.20	2.60
16 740.00	39.47	Peak	V	40.07	15.82	30.76	64.60	68.20	3.60
Test Data for High Channel									
17 100.00	39.04	Peak	H	39.78	16.44	30.28	64.98	68.20	3.22
17 100.00	39.51	Peak	V	39.78	16.44	30.28	65.45	68.20	2.75

Tabulated test data for Restricted Band

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

Margin (dB) = Limits (dBμV/m) - Total Level (dBμV/m)

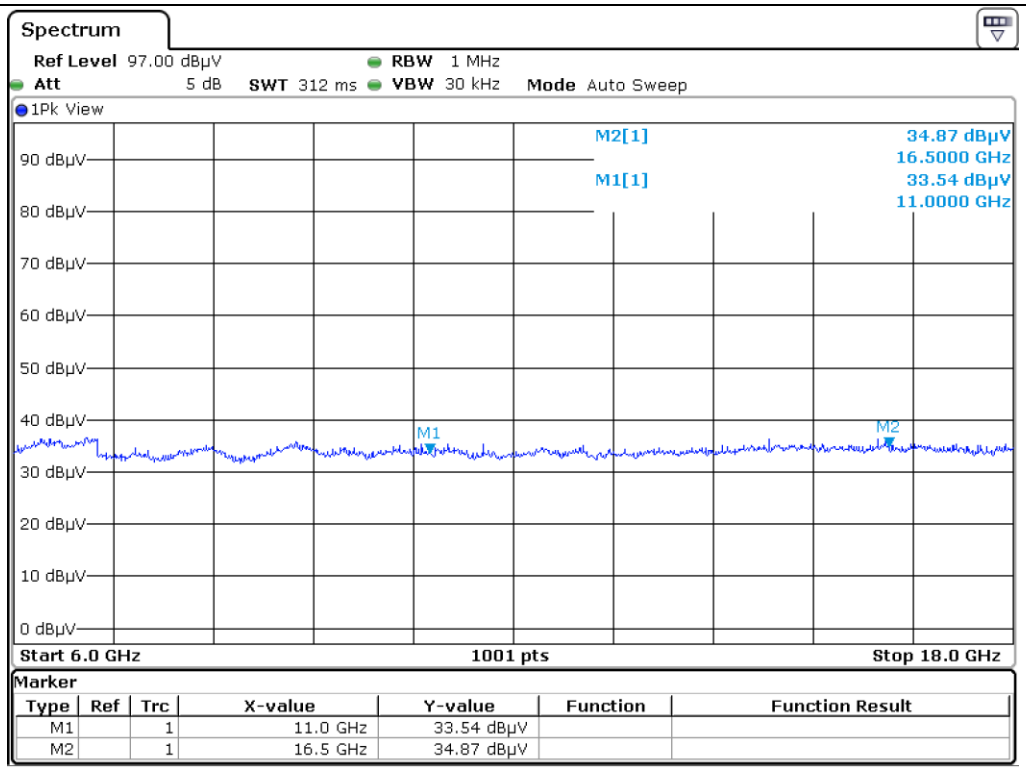
Total Level = Reading + Antenna Factor + Cable Loss – Pre-Amplifier Gain

Remark: Emission was pre-scanned from 26.5 GHz ~ 40 GHz; No emissions were detected which was at least 20 dB Below the specification limit (consider distance correction factor)

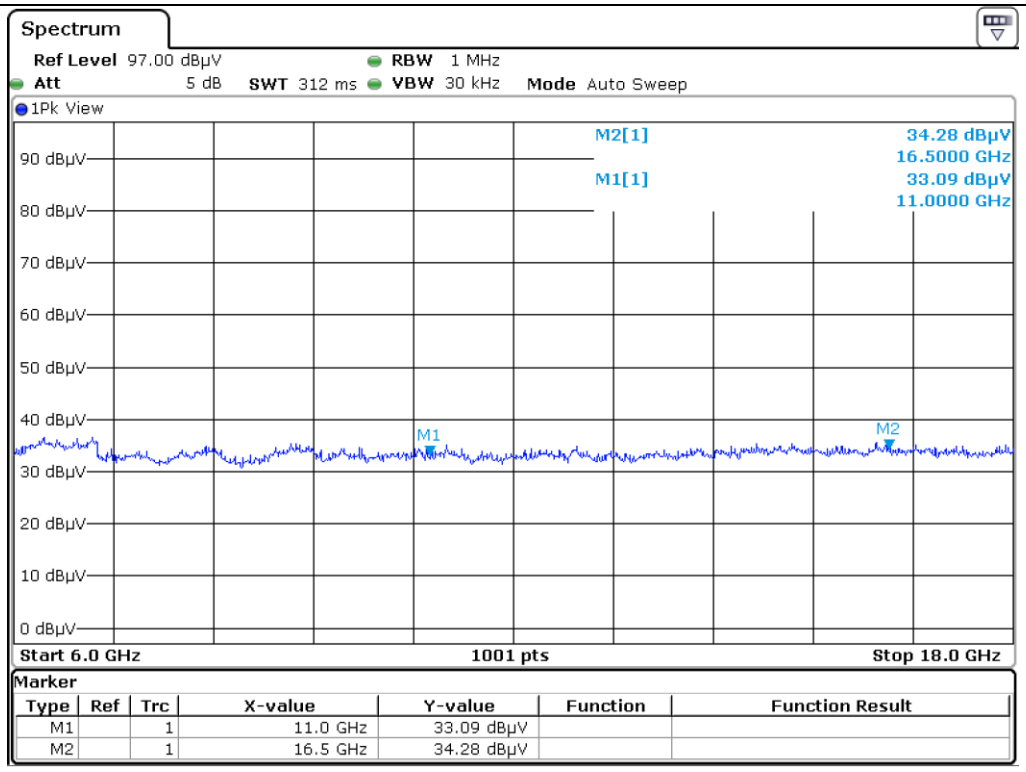
Per FCC part 15.31(o), test results were not reported.

Tested by: Tae-Ho, Kim / Senior Manager

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

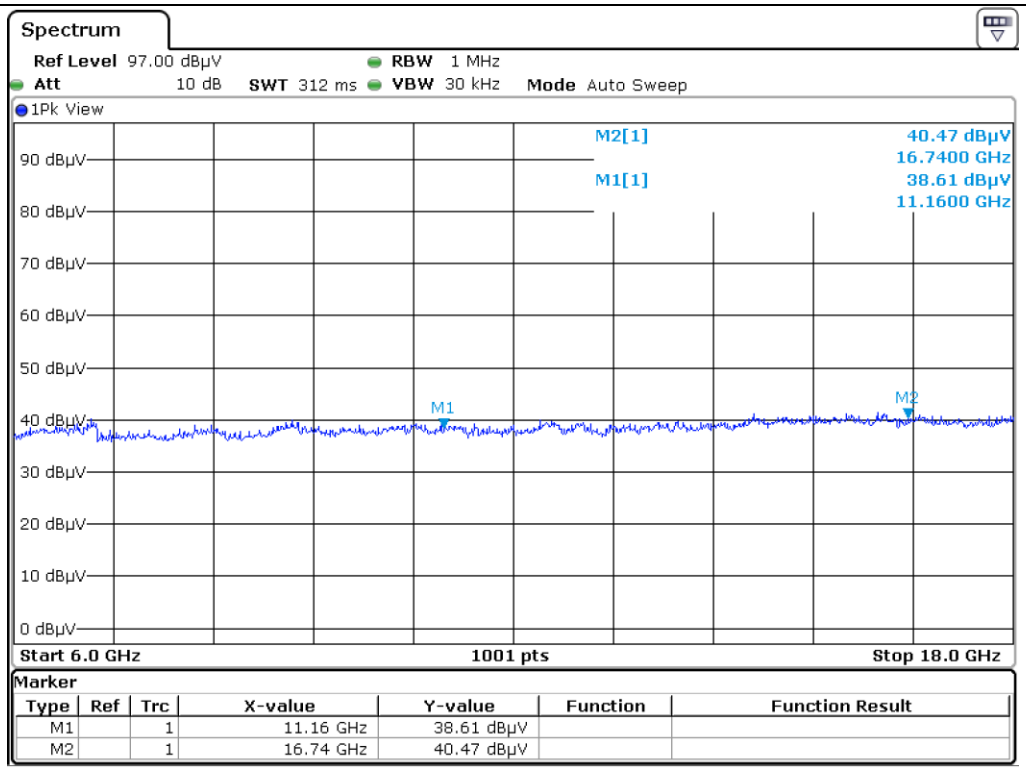


Low Channel_Horizontal_Peak

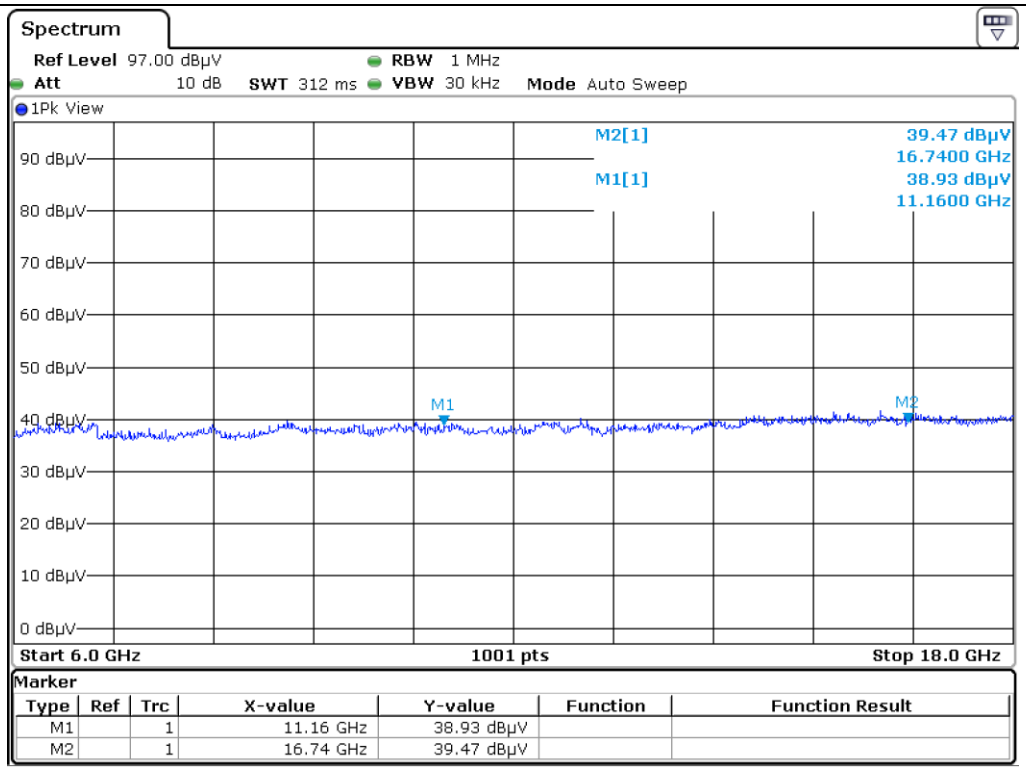


Low Channel_Vertical_Peak

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

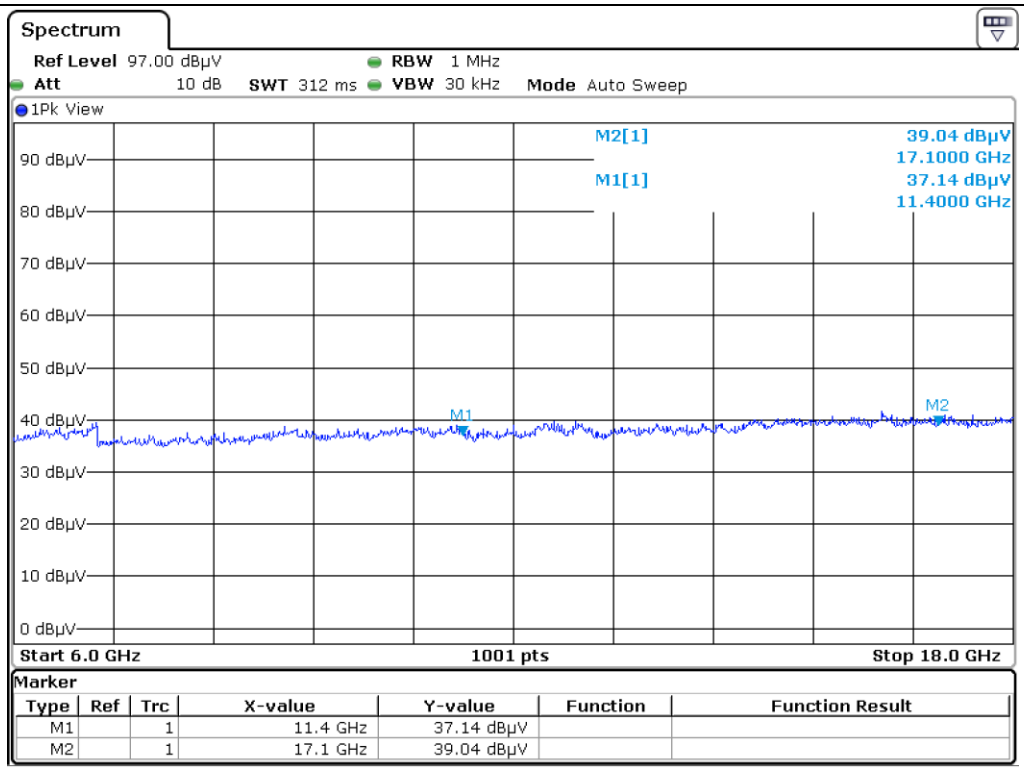


Middle Channel_Horizontal_Peak

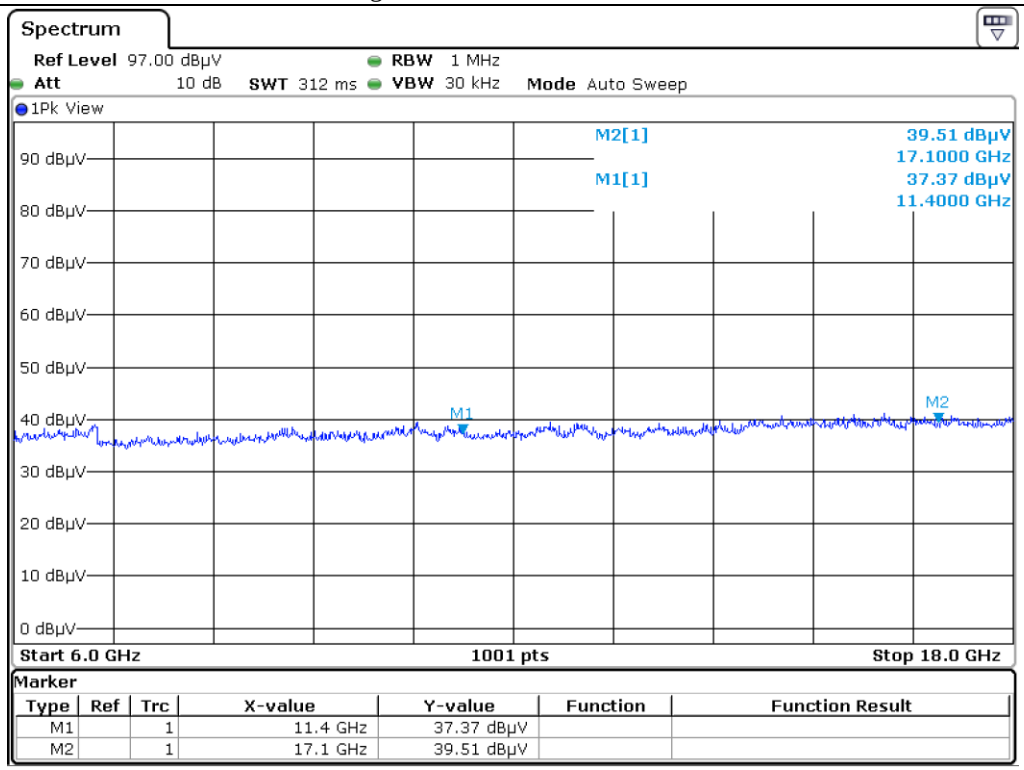


Middle Channel_Vertical_Peak

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)



High Channel_Horizontal_Peak



High Channel_Vertical_Peak

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

5.4.7.3 Test Data for 802.11n40

-. Test Date : September 12, 2018 ~ September 21, 2018

-. 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 : 30 kHz for Peak and Average Mode

-. Frequency range : 1 GHz ~ 40 GHz

-. Measurement distance : 3 m

-. Result : PASSED

Frequency (MHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
Test Data for Low Channel									
16 530.00	39.28	Peak	H	40.37	15.20	31.30	63.55	68.20	4.65
16 530.00	40.44	Peak	V	40.37	15.20	31.30	64.71	68.20	3.49
Test Data for Middle Channel									
16 770.00	39.39	Peak	H	40.25	15.45	30.76	64.33	68.20	3.87
16 770.00	39.78	Peak	V	40.25	15.45	30.76	64.72	68.20	3.48
Test Data for High Channel									
17 010.00	40.14	Peak	H	39.78	16.44	30.38	65.98	68.20	2.22
17 010.00	39.52	Peak	V	39.78	16.44	30.38	65.36	68.20	2.84

Tabulated test data for Restricted Band

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

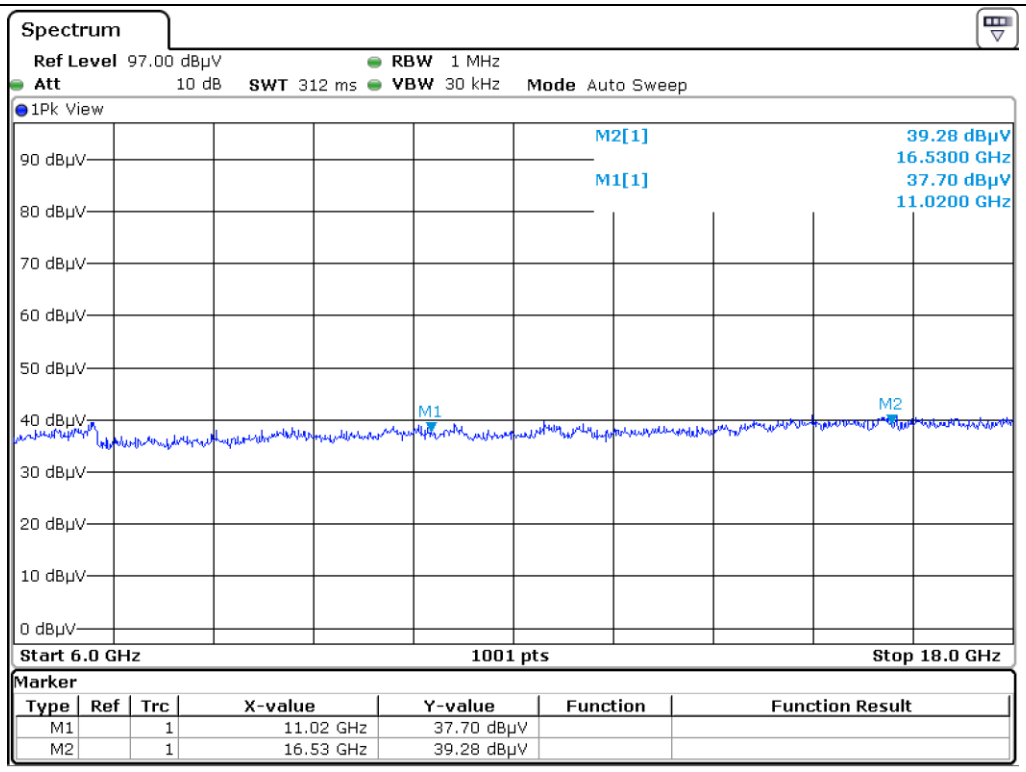
Margin (dB) = Limits (dBμV/m) - Total Level (dBμV/m)

Total Level = Reading + Antenna Factor + Cable Loss – Pre-Amplifier Gain

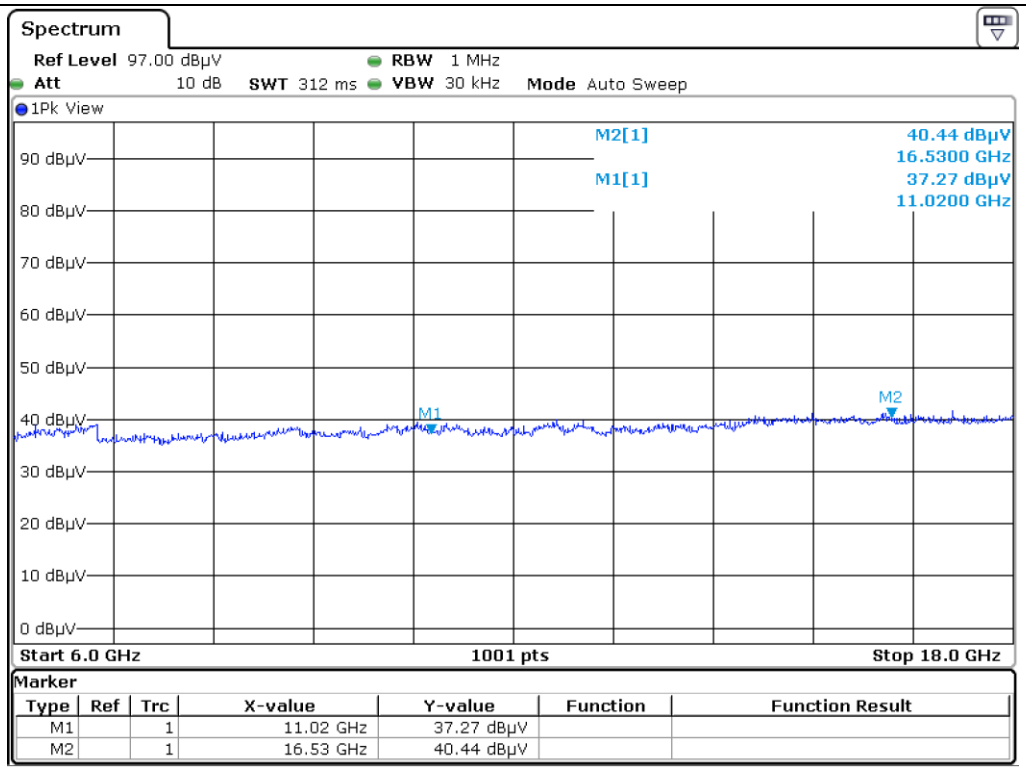
Remark: Emission was pre-scanned from 26.5 GHz ~ 40 GHz; No emissions were detected which was at least 20 dB Below the specification limit (consider distance correction factor) Per FCC part 15.31(o), test results were not reported.

Tested by: Tae-Ho, Kim / Senior Manager

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

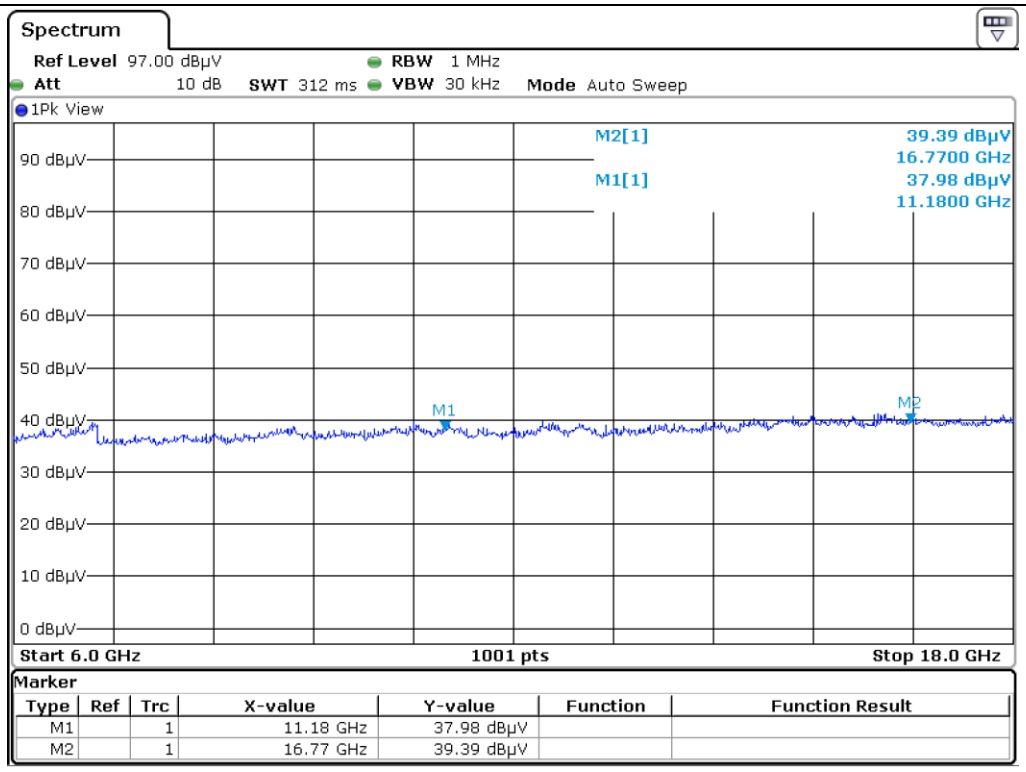


Low Channel_Horizontal_Peak

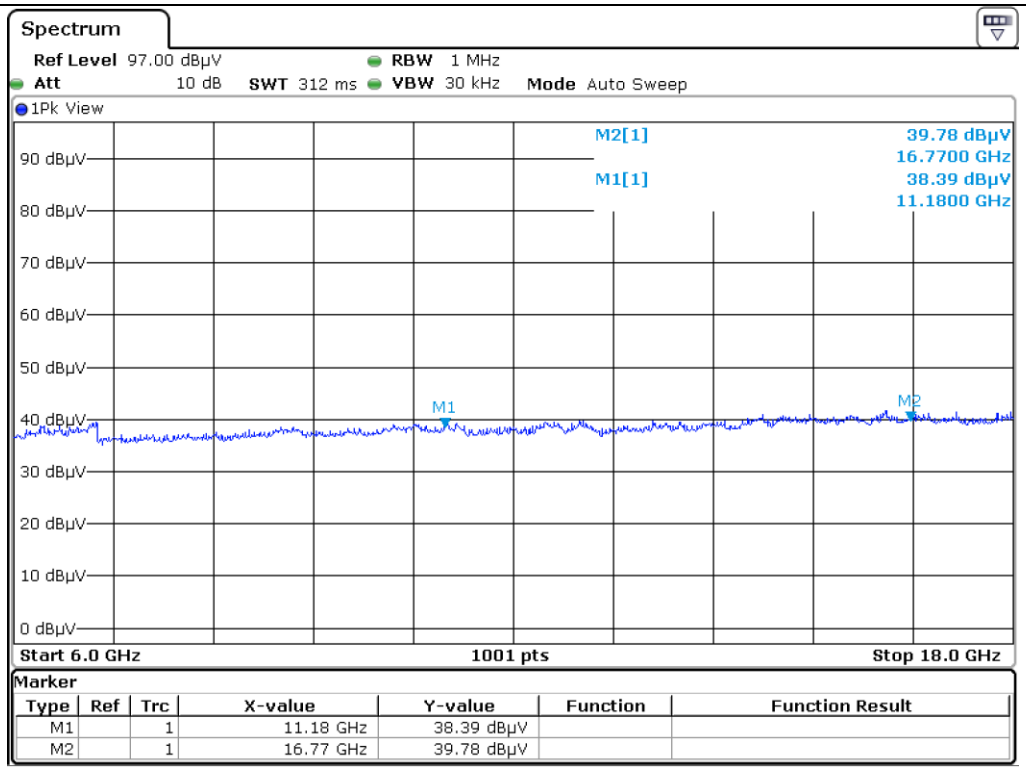


Low Channel_Vertical_Peak

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

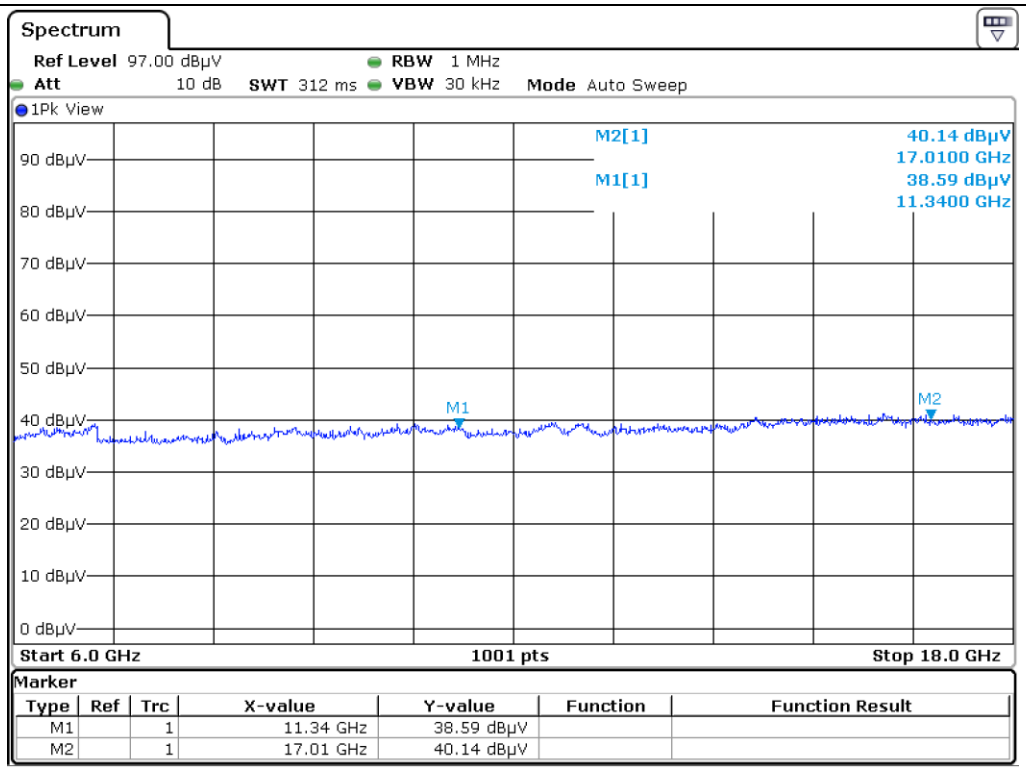


Middle Channel_Horizontal_Peak

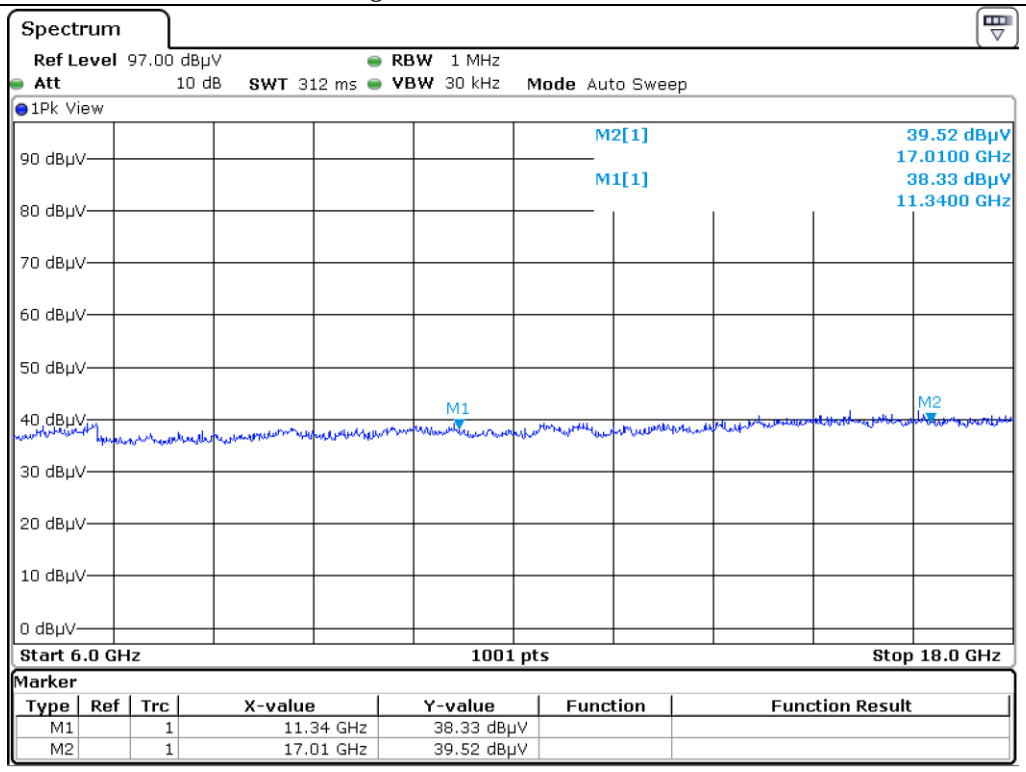


Middle Channel_Vertical_Peak

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)



High Channel_Horizontal_Peak



High Channel_Vertical_Peak

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

5.4.8 Spurious & Harmonic Radiated Emission (U-NII 3)

5.4.8.1 Test Data for 802.11a

-. Test Date : September 12, 2018 ~ September 21, 2018

-. 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 : 30 kHz for Peak and Average Mode

-. Frequency range : 1 GHz ~ 40 GHz

-. Measurement distance : 3 m

-. Result : PASSED

Frequency (MHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
Test Data for Low Channel									
17 235.00	30.57	Peak	H	40.07	15.82	30.17	56.29	68.20	11.91
17 235.00	30.55	Peak	V	40.07	15.82	30.17	56.27	68.20	11.93
Test Data for Middle Channel									
17 355.00	33.89	Peak	H	39.78	16.44	29.99	60.12	68.20	8.08
17 355.00	32.94	Peak	V	39.78	16.44	29.99	59.17	68.20	9.03
Test Data for High Channel									
17 475.00	32.88	Peak	H	39.49	17.06	29.91	59.52	68.20	8.68
17 475.00	32.40	Peak	V	39.49	17.06	29.91	59.04	68.20	9.16

Tabulated test data for Restricted Band

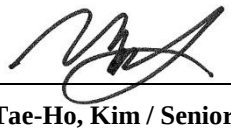
Remark: “H”: Horizontal, “V”: Vertical

Margin (dB) = Limits (dBμV/m) - Total Level (dBμV/m)

Total Level = Reading + Antenna Factor + Cable Loss – Pre-Amplifier Gain

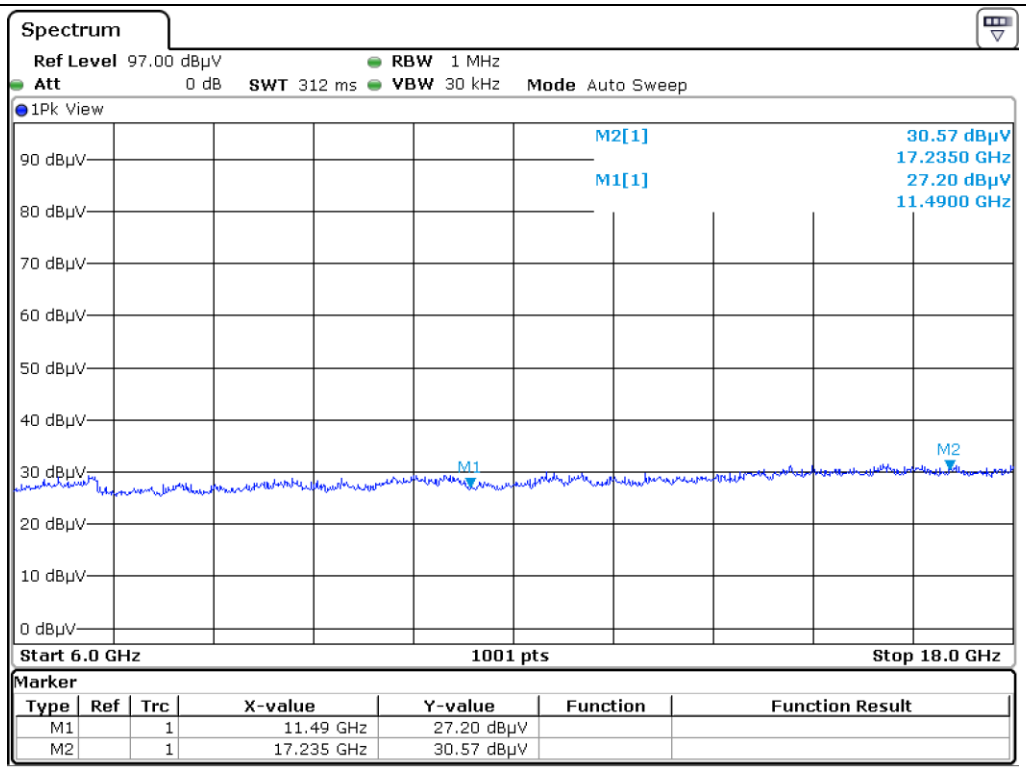
Remark: Emission was pre-scanned from 26.5 GHz ~ 40 GHz; No emissions were detected which was at least 20 dB Below the specification limit (consider distance correction factor)

Per FCC part 15.31(o), test results were not reported.

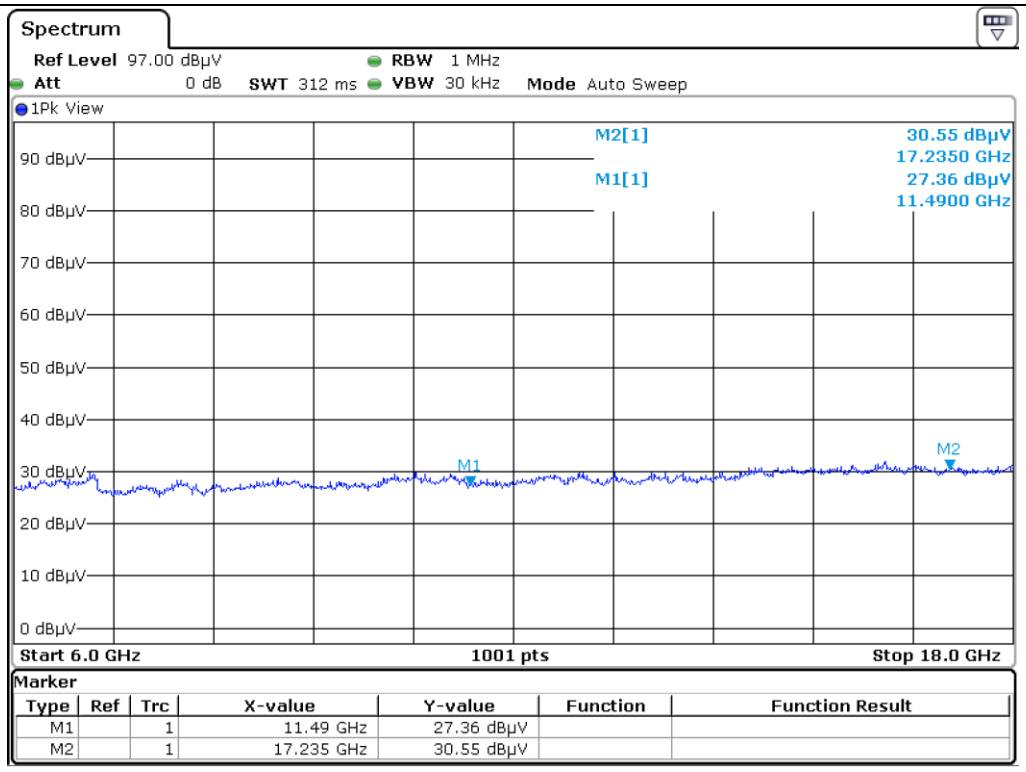


Tested by: Tae-Ho, Kim / Senior Manager

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

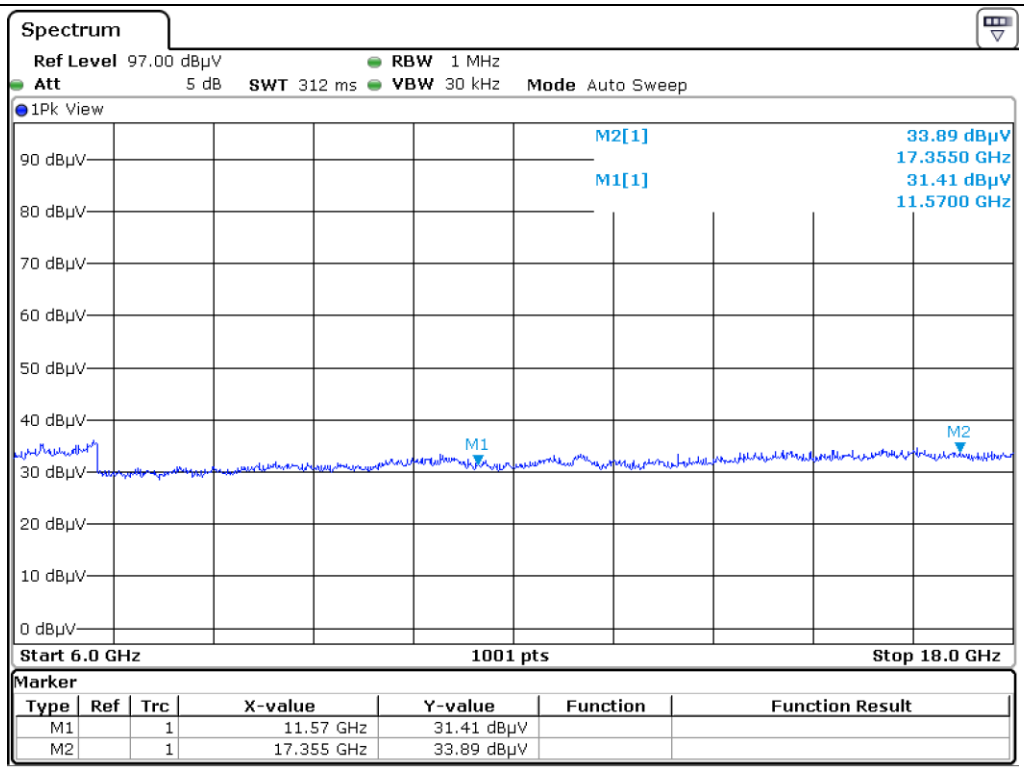


Low Channel_Horizontal_Peak

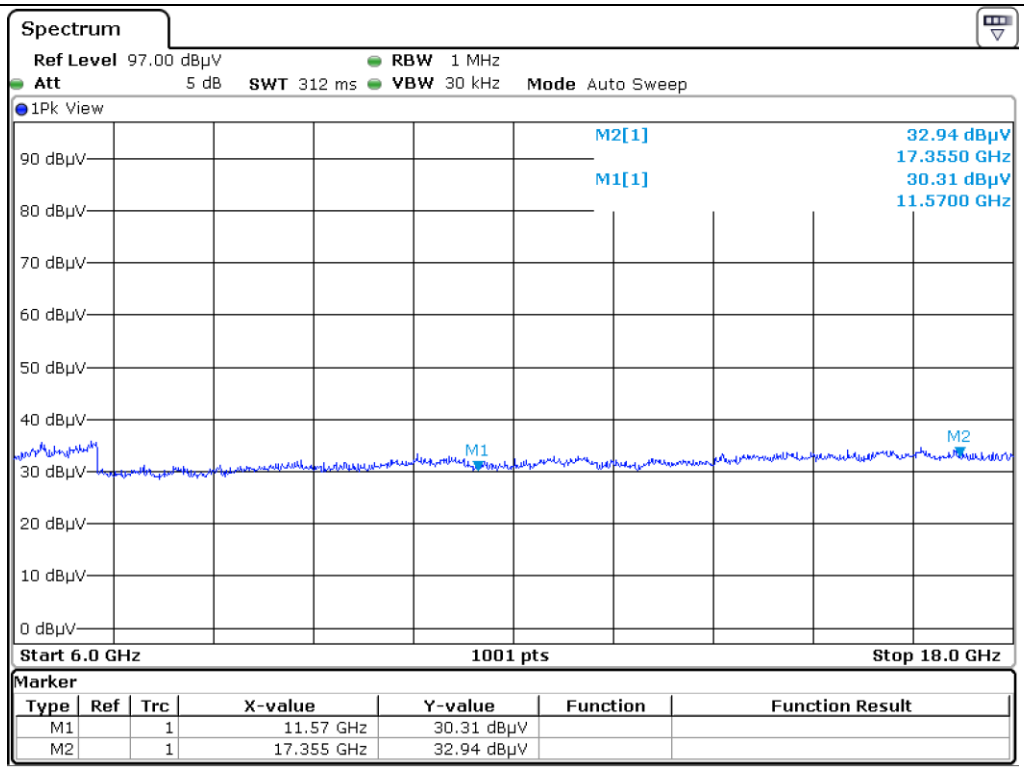


Low Channel_Vertical_Peak

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

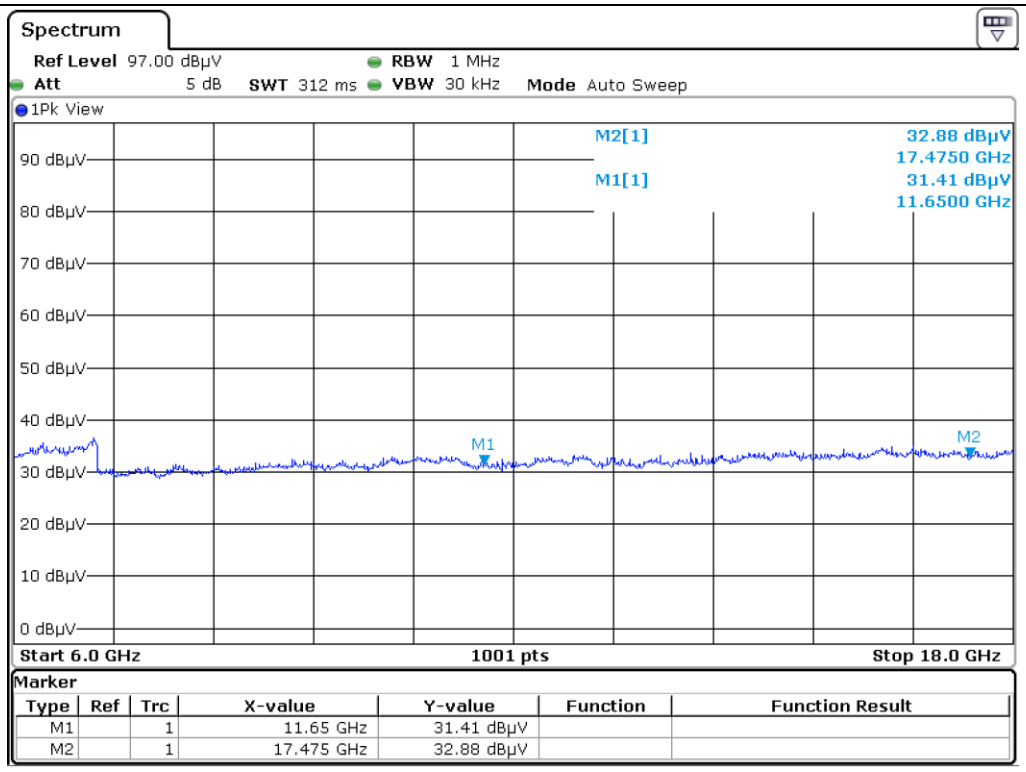


Middle Channel_Horizontal_Peak

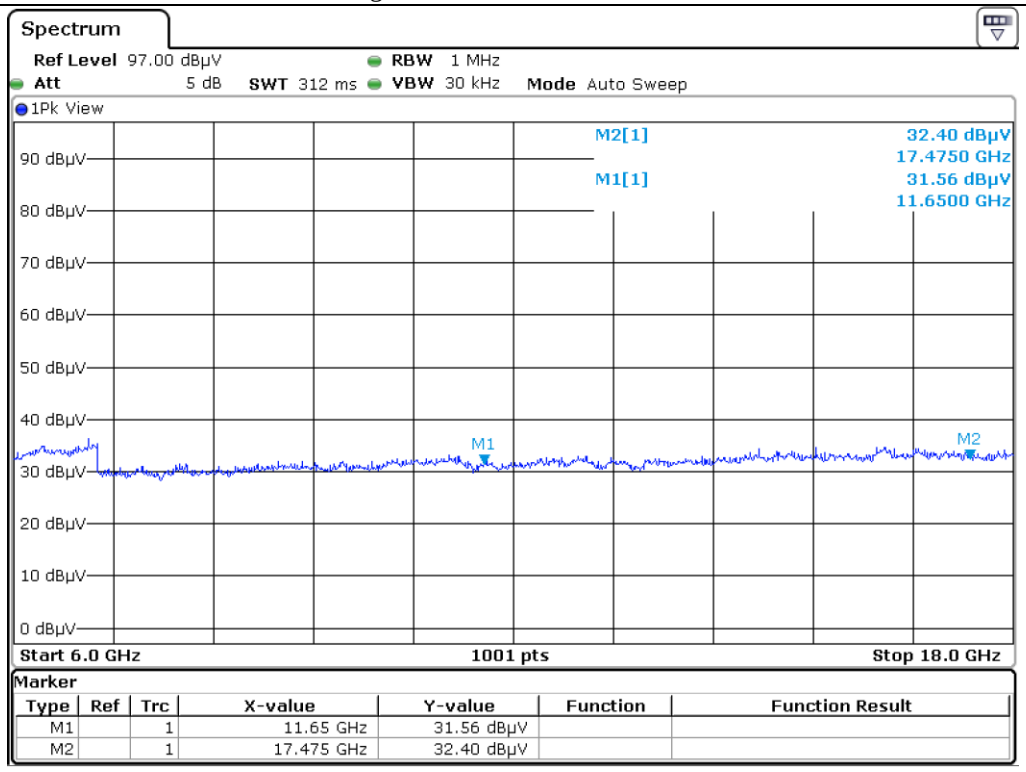


Middle Channel_Vertical_Peak

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)



High Channel_Horizontal_Peak



High Channel_Vertical_Peak

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

5.4.8.2 Test Data for 802.11n20

-. Test Date : September 12, 2018 ~ September 21, 2018

-. 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 : 30 kHz for Peak and Average Mode

-. Frequency range : 1 GHz ~ 40 GHz

-. Measurement distance : 3 m

-. Result : PASSED

Frequency (MHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
Test Data for Low Channel									
17 235.00	33.93	Peak	H	40.07	15.82	30.17	59.65	68.20	8.55
17 235.00	33.14	Peak	V	40.07	15.82	30.17	58.86	68.20	9.34
Test Data for Middle Channel									
17 355.00	33.52	Peak	H	39.78	16.44	29.99	59.75	68.20	8.45
17 355.00	32.63	Peak	V	39.78	16.44	29.99	58.86	68.20	9.34
Test Data for High Channel									
17 475.00	32.37	Peak	H	39.49	17.06	29.91	59.01	68.20	9.19
17 475.00	32.75	Peak	V	39.49	17.06	29.91	59.39	68.20	8.81

Tabulated test data for Restricted Band

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

Margin (dB) = Limits (dBμV/m) - Total Level (dBμV/m)

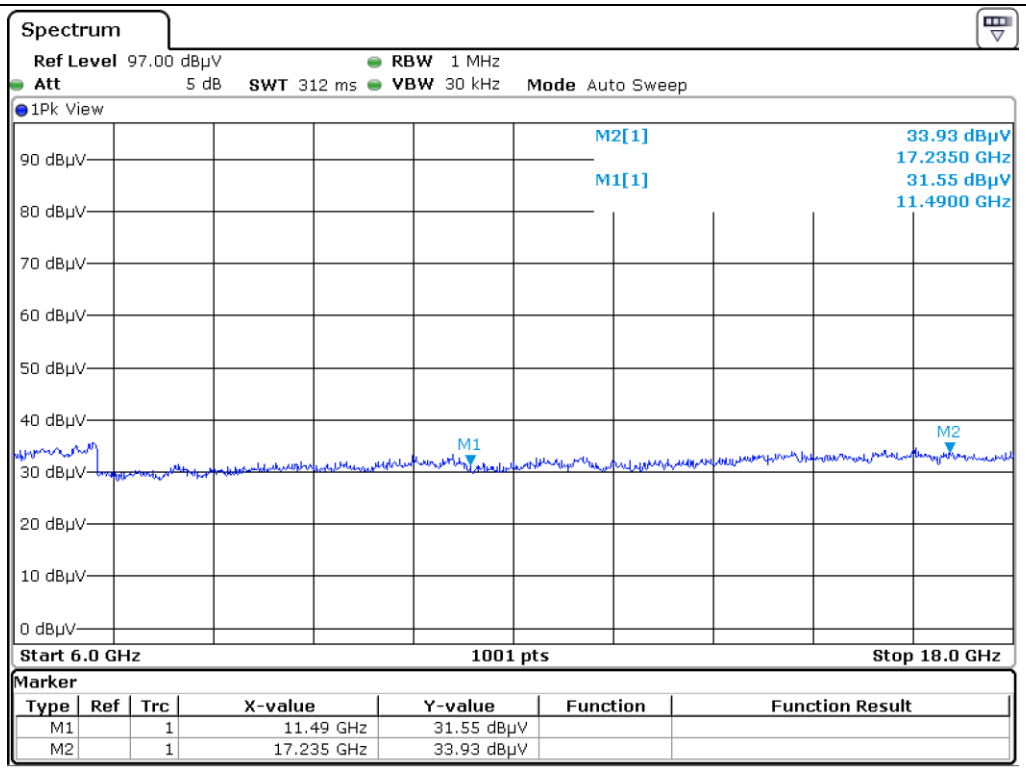
Total Level = Reading + Antenna Factor + Cable Loss – Pre-Amplifier Gain

Remark: Emission was pre-scanned from 26.5 GHz ~ 40 GHz; No emissions were detected which was at least 20 dB Below the specification limit (consider distance correction factor)

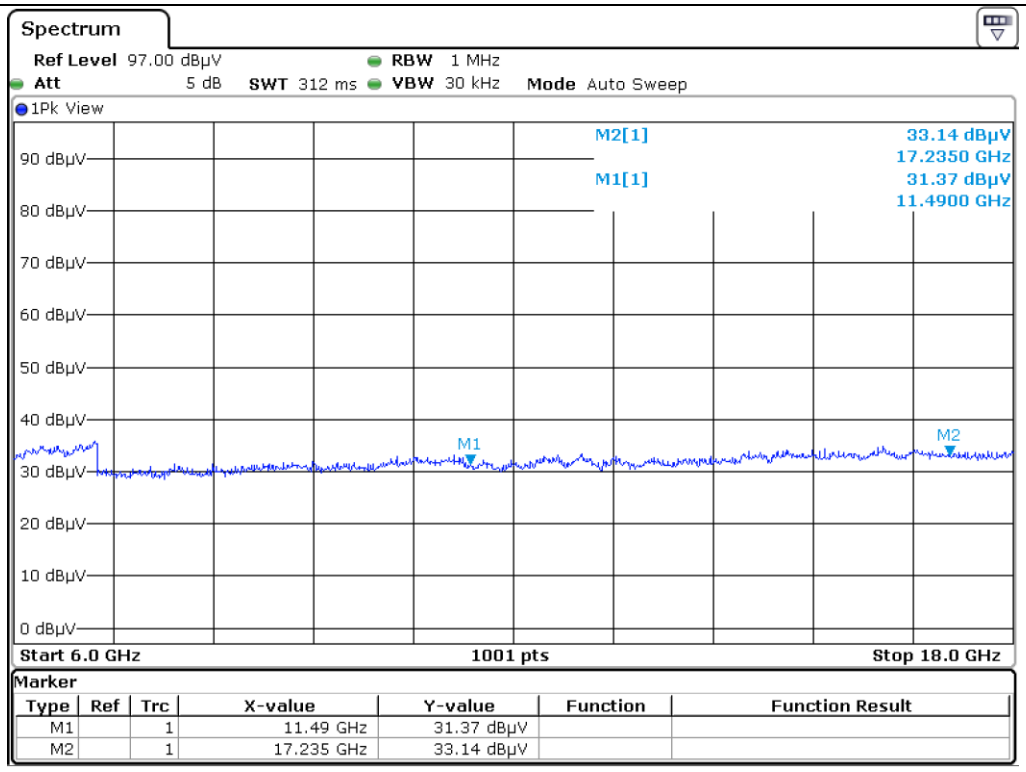
Per FCC part 15.31(o), test results were not reported.

Tested by: Tae-Ho, Kim / Senior Manager

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

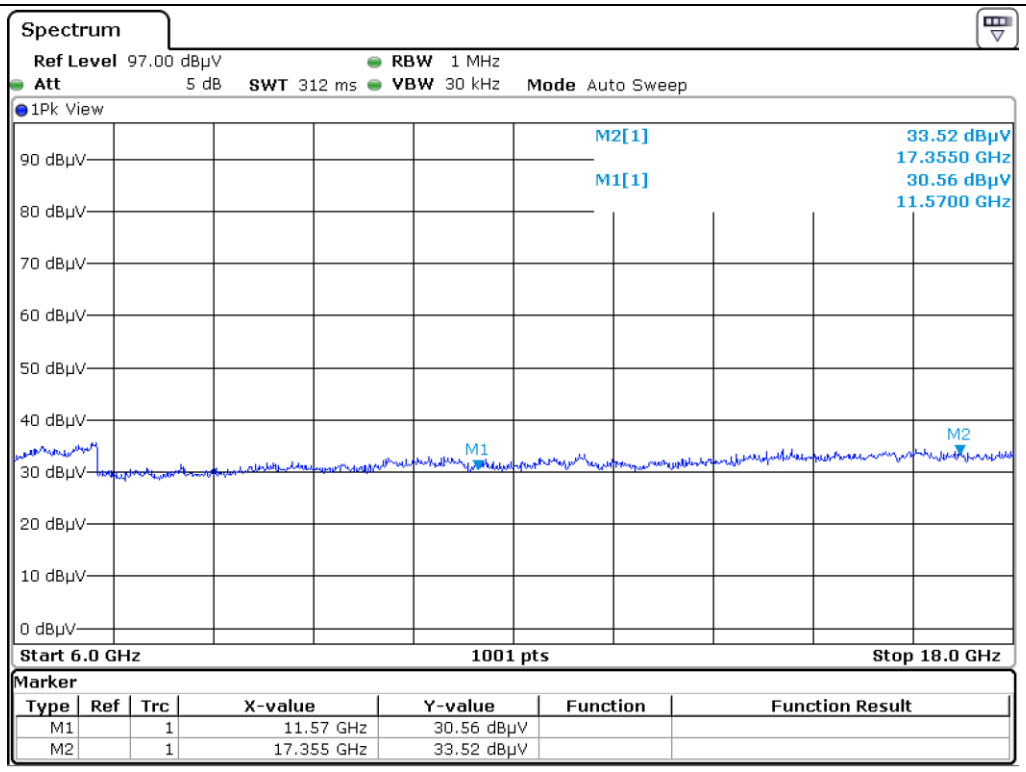


Low Channel_Horizontal_Peak

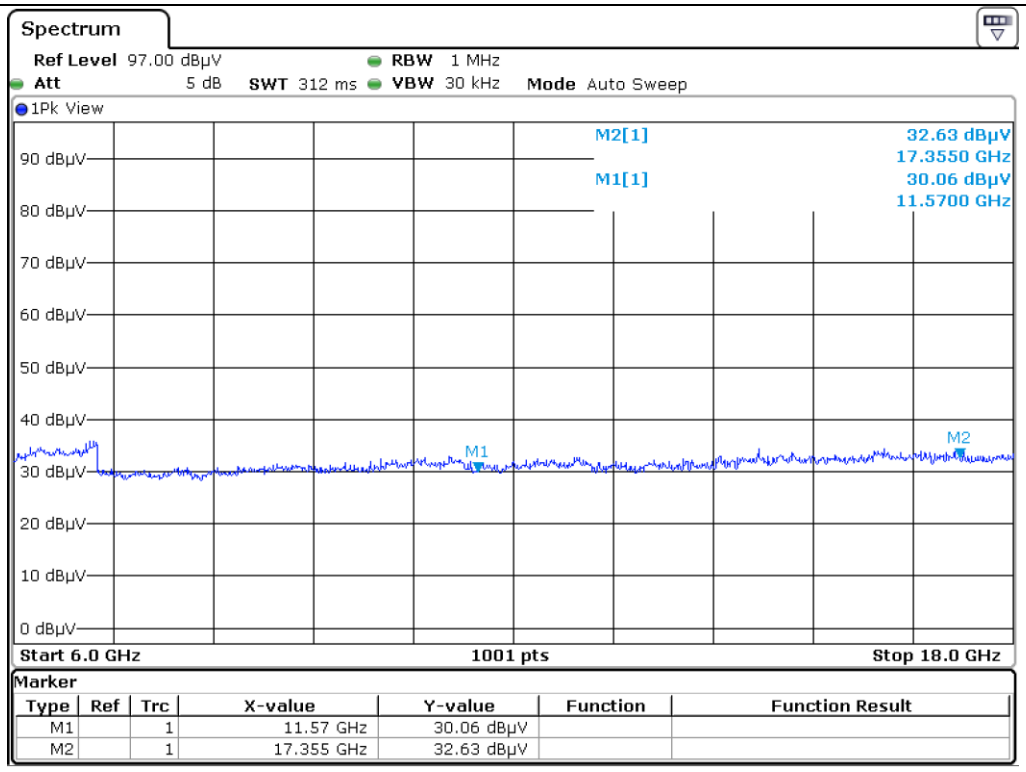


Low Channel_Vertical_Peak

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

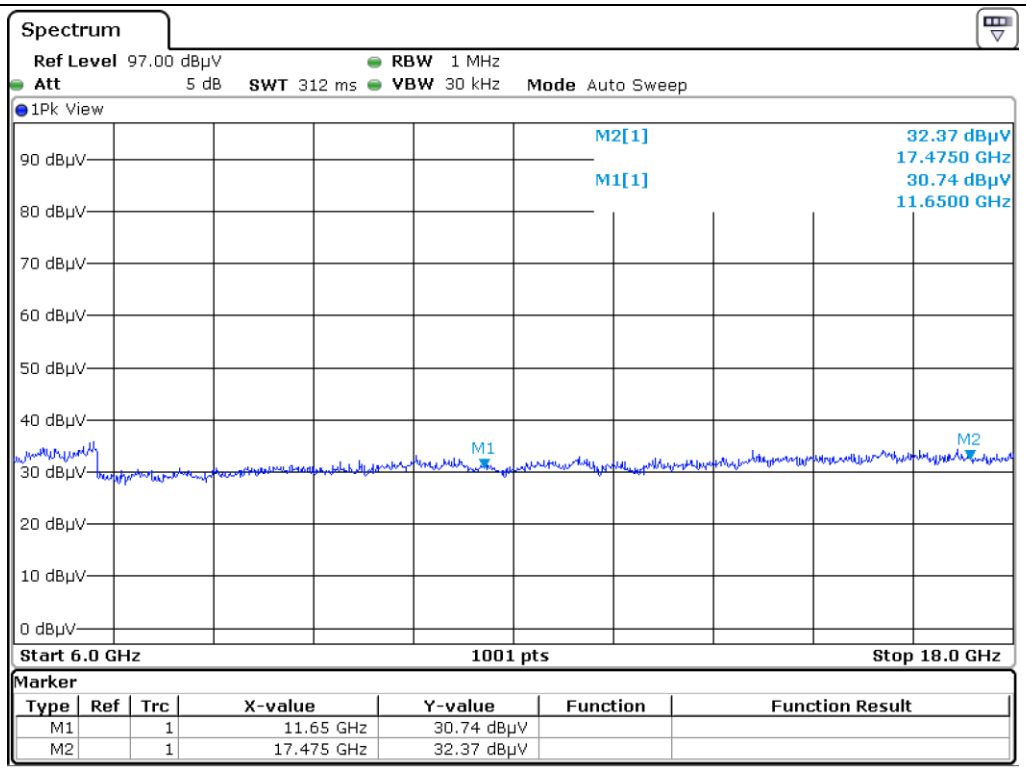


Middle Channel_Horizontal_Peak

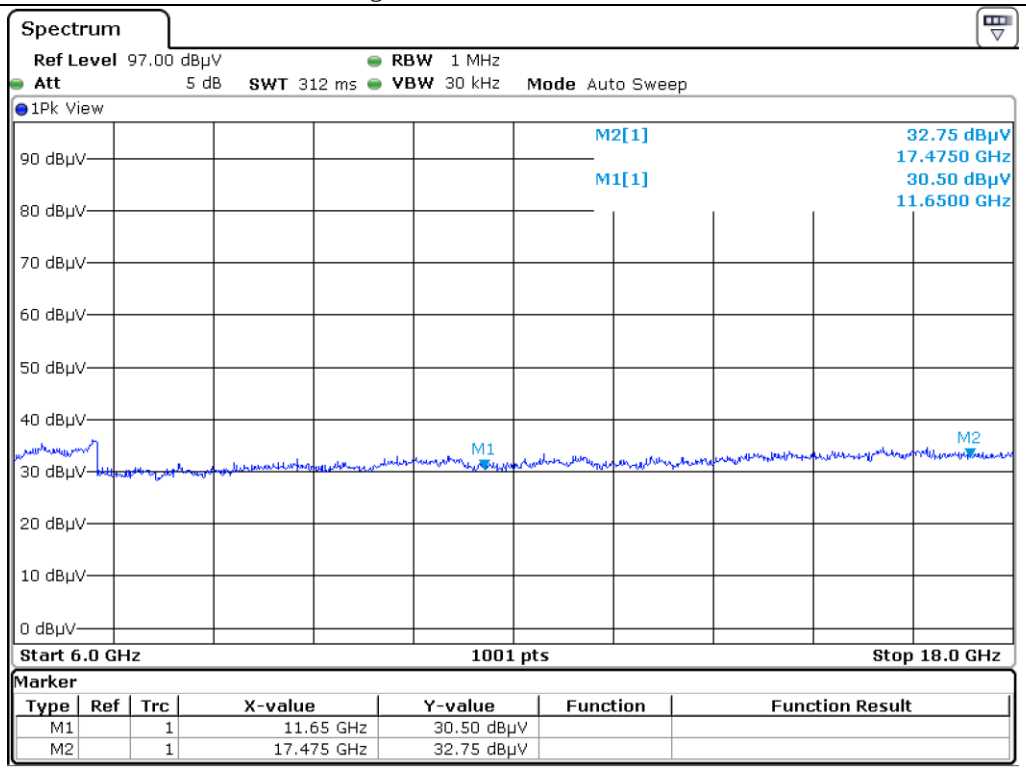


Middle Channel_Vertical_Peak

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)



High Channel_Horizontal_Peak



High Channel_Vertical_Peak

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

5.4.8.3 Test Data for 802.11n40

-. Test Date : September 12, 2018 ~ September 21, 2018

-. 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 : 30 kHz for Peak and Average Mode

-. Frequency range : 1 GHz ~ 40 GHz

-. Measurement distance : 3 m

-. Result : PASSED

Frequency (MHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
Test Data for Low Channel									
17 265.00	30.74	Peak	H	39.78	16.44	30.17	56.79	68.20	11.41
17 265.00	29.36	Peak	V	39.78	16.44	30.17	55.41	68.20	12.79
Test Data for High Channel									
17 385.00	30.36	Peak	H	39.66	16.69	29.99	56.72	68.20	11.48
17 385.00	30.18	Peak	V	39.66	16.69	29.99	56.54	68.20	11.66

Tabulated test data for Restricted Band

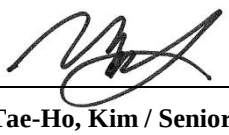
Remark: “H”: Horizontal, “V”: Vertical

Margin (dB) = Limits (dBμV/m) - Total Level (dBμV/m)

Total Level = Reading + Antenna Factor + Cable Loss – Pre-Amplifier Gain

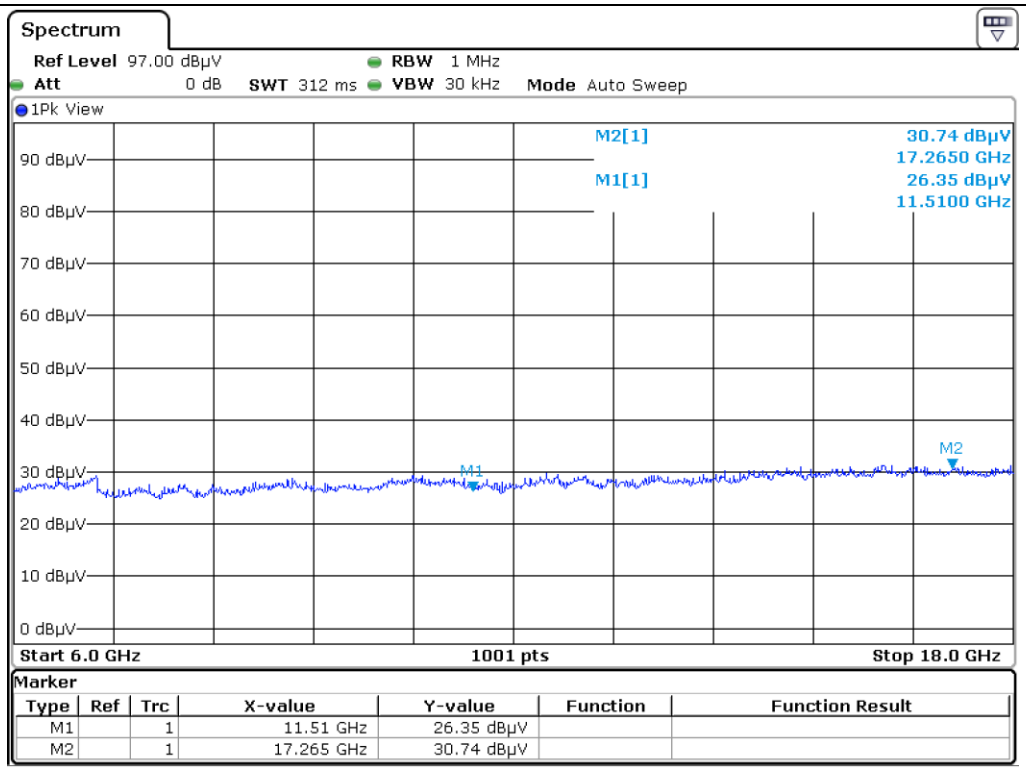
Remark: Emission was pre-scanned from 26.5 GHz ~ 40 GHz; No emissions were detected which was at least 20 dB Below the specification limit (consider distance correction factor)

Per FCC part 15.31(o), test results were not reported.

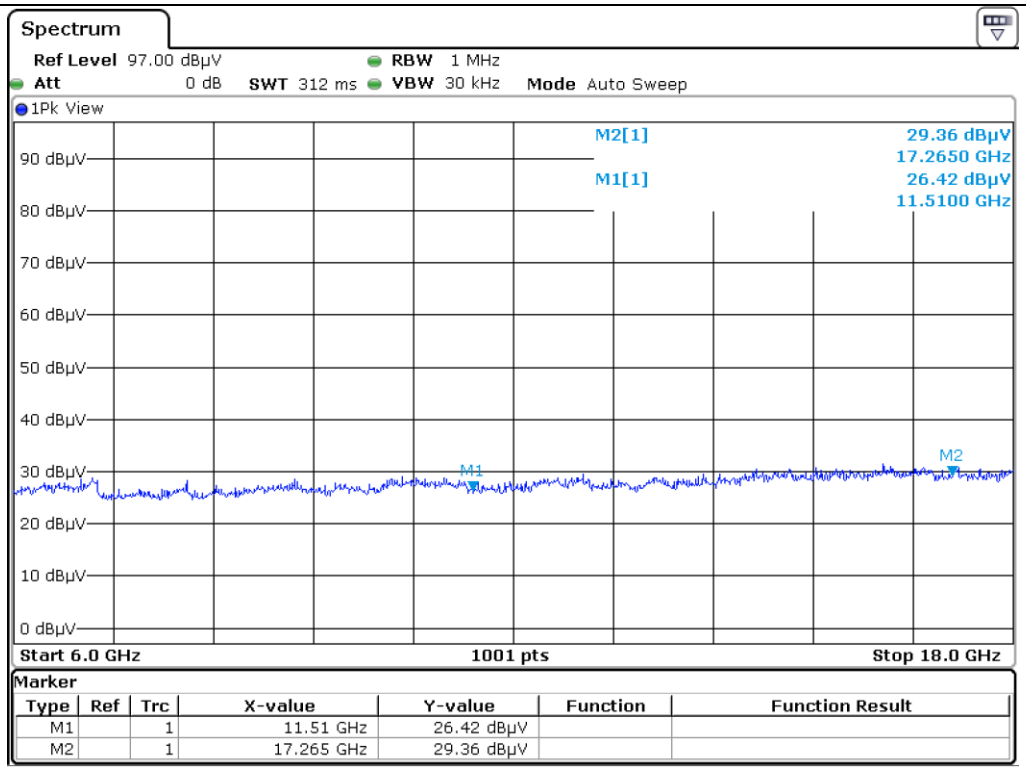


Tested by: Tae-Ho, Kim / Senior Manager

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

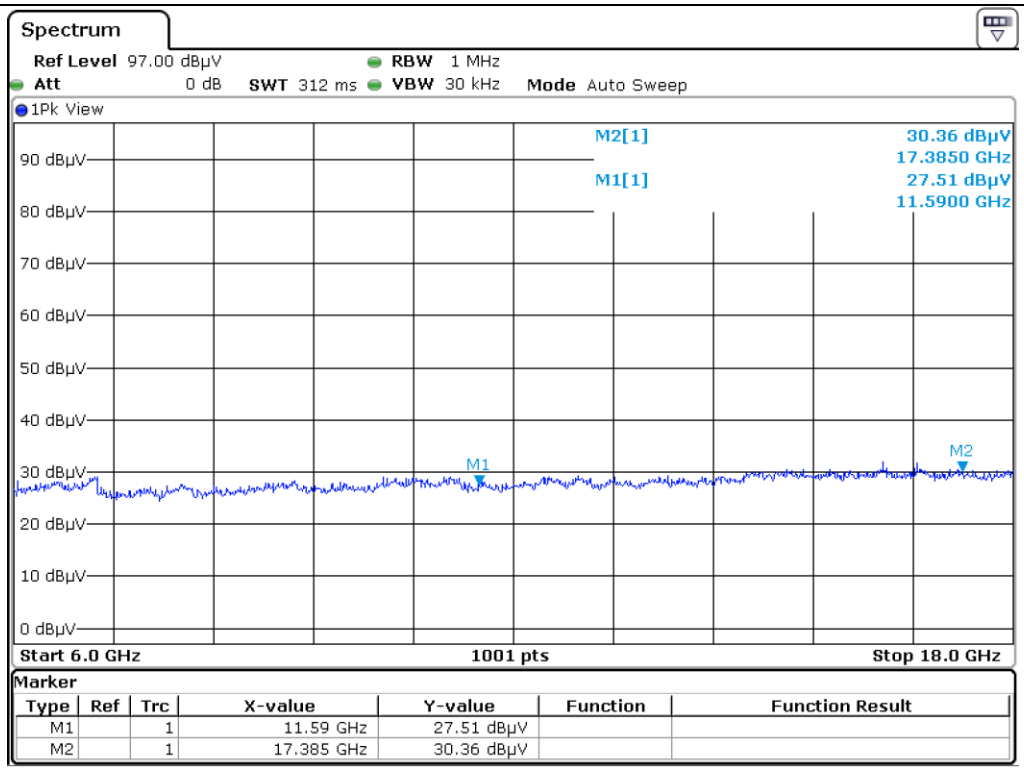


Low Channel_Horizontal_Peak

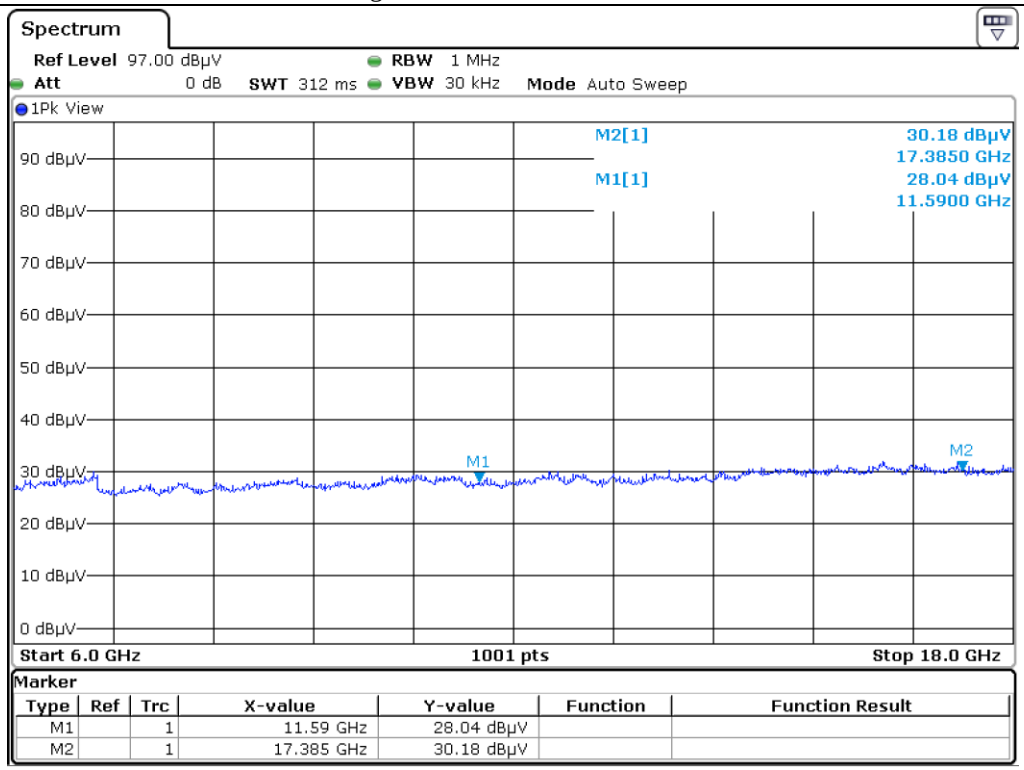


Low Channel_Vertical_Peak

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)



High Channel_Horizontal_Peak



High Channel_Vertical_Peak

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

5.4.9 Test data FCC for below 1 000 MHz

Humidity Level : 43.9 % R.H. Temperature: 24.3 ℃

Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.247

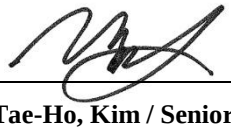
Result : PASSED

EUT : ARTIK-0530 Date: September 12, 2018 ~ September 21, 2018

Detector : CISPR Quasi-Peak (6 dB Bandwidth: 120 kHz)

The frequency spectrum from 9 kHz to 1 000 MHz was investigated.

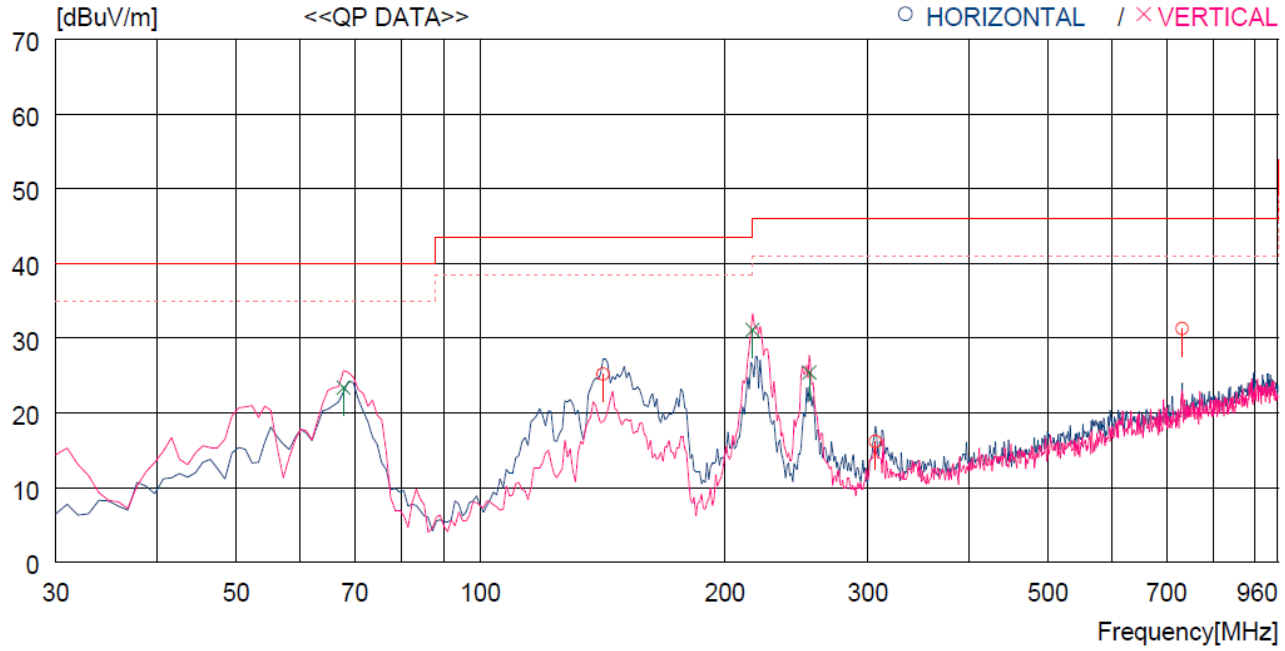
Frequency [MHz]	Reading [dBuV]	Ant Pol.	Ant Factor [dB]	Cable Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]
67.830	44.1	V	10.4	2.0	33.1	23.4	40.0	16.6
141.550	47.2	H	8.3	2.7	33.0	25.2	43.5	18.3
216.240	49.5	V	11.2	3.4	33.0	31.1	46.0	14.9
254.070	42.1	V	12.5	3.7	32.9	25.4	46.0	20.6
306.450	31.6	H	13.6	4.0	33.0	16.2	46.0	29.8
731.304	37.9	H	20.3	6.3	33.2	31.3	46.0	14.7



Tested by: Tae-Ho, Kim / Senior Manager

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

- Result Plot



No.	FREQ	READING QP	ANT FACTOR	LOSS	GAIN	RESULT	LIMIT	MARGIN	ANTENNA	TABLE
	[MHz]	[dBuV]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	[cm]	[DEG]
----- Horizontal ------										
1	141.550	47.2	8.3	2.7	33.0	25.2	43.5	18.3	400	0
2	306.450	31.6	13.6	4.0	33.0	16.2	46.0	29.8	400	131
3	731.304	37.9	20.3	6.3	33.2	31.3	46.0	14.7	400	175
----- Vertical ------										
4	67.830	44.1	10.4	2.0	33.1	23.4	40.0	16.6	400	7
5	216.240	49.5	11.2	3.4	33.0	31.1	46.0	14.9	400	58
6	254.070	42.1	12.5	3.7	32.9	25.4	46.0	20.6	400	58

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

5.4.10 Test data IC for below 1 000 MHz

Humidity Level : 43.9 % R.H. Temperature: 24.3 ℃

Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.247

Result : PASSED

EUT : ARTIK-0530 Date: September 12, 2018 ~ September 21, 2018

Detector : CISPR Quasi-Peak (6 dB Bandwidth: 120 kHz)

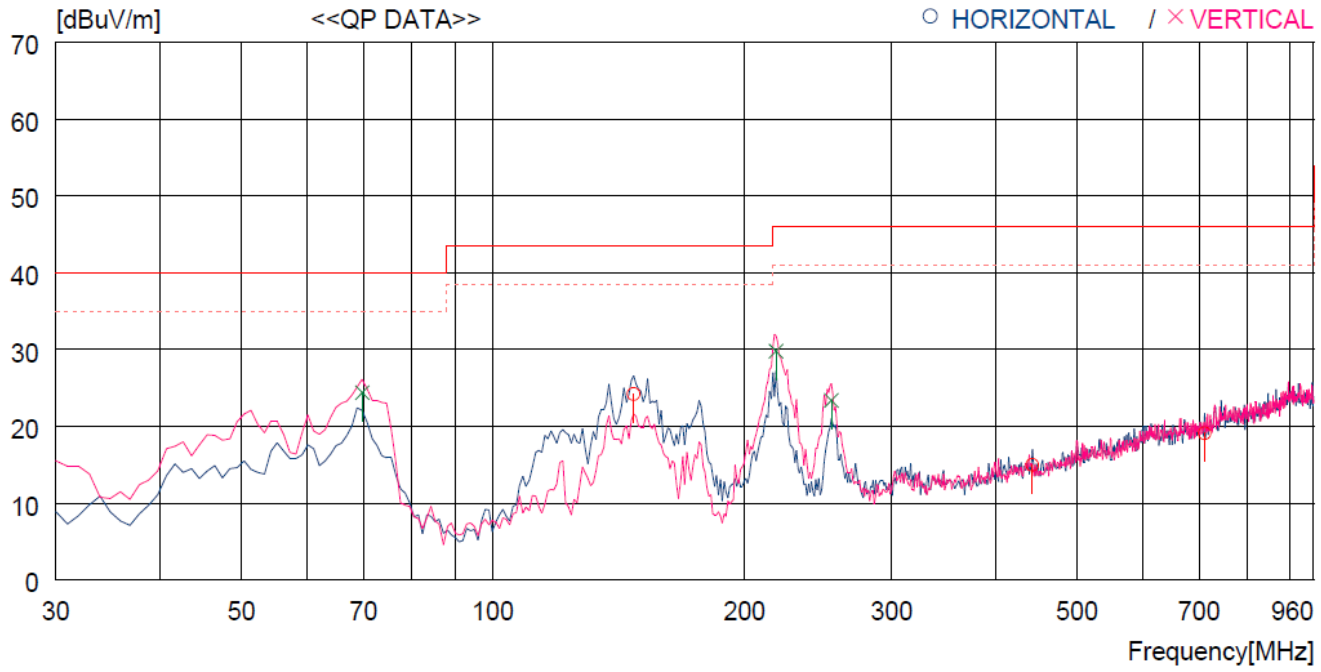
The frequency spectrum from 9 kHz to 1 000 MHz was investigated.

Frequency [MHz]	Reading [dBuV]	Ant Pol.	Ant Factor [dB]	Cable Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]
69.770	45.8	V	9.7	2.0	33.1	24.4	40.0	15.6
147.370	46.2	H	8.2	2.8	33.0	24.2	43.5	19.3
218.180	48.0	V	11.3	3.4	32.9	29.8	46.0	16.2
254.070	40.1	V	12.5	3.7	32.9	23.4	46.0	22.6
442.251	27.0	H	16.3	4.8	33.1	15.0	46.0	31.0
710.935	26.5	H	19.7	6.2	33.3	19.1	46.0	29.6

Tested by: Tae-Ho, Kim / Senior Manager

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

- Result Plot



No.	FREQ	READING QP	ANT FACTOR	LOSS	GAIN	RESULT	LIMIT	MARGIN	ANTENNA	TABLE
	[MHz]	[dBuV]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	[cm]	[DEG]
----- Horizontal ------										
1	147.370	46.2	8.2	2.8	33.0	24.2	43.5	19.3	400	351
2	442.251	27.0	16.3	4.8	33.1	15.0	46.0	31.0	400	351
3	710.935	26.5	19.7	6.2	33.3	19.1	46.0	26.9	400	178
----- Vertical ------										
4	69.770	45.8	9.7	2.0	33.1	24.4	40.0	15.6	400	212
5	218.180	48.0	11.3	3.4	32.9	29.8	46.0	16.2	400	0
6	254.070	40.1	12.5	3.7	32.9	23.4	46.0	22.6	400	0

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6. Maximum Peak Conducted Output Power

6.1 Operating environment

Temperature : 24.3 ℃

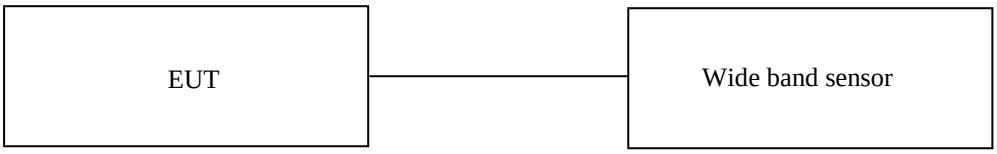
Relative humidity : 43.9 % R.H.

6.2 Test set-up

The maximum peak output power was measured with the wide band sensor connected to the antenna output of the EUT.

The Wide Band Sensor is measured when the EUT is transmitting at the appropriate center frequency its maximum power control level as described in Section 9.2.3(KDB 558074 D01 DTS Meas Guidance V04).

Since this measurement is made only during the ON time of the transmitter, no duty cycle correction is required.



6.3 Test equipment used

	Model Number	Manufacturer	Description	Serial Number	Last Cal.
■ -	NRP-Z81	Rohde & Schwarz	Wide band Sensor	101975	Mar. 15, 2018 (1Y)

All test equipment used is calibrated on a regular basis.

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

6.4 TEST Result(802.11 a_6 Mbps)

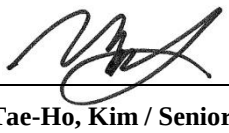
-. Test Date : September 12, 2018 ~ September 21, 2018

-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	MEASURED VLAUE (dBm)	LIMIT (dBm)	MARGIN (dB)
5 150 ~ 5 250	Low	5 180.00	12.36	23.98	11.62
	Middle	5 200.00	12.51	23.98	11.47
	High	5 240.00	12.87	23.98	11.11
5 250 ~ 5 350	Low	5 260.00	12.76	23.98	11.22
	Middle	5 300.00	12.84	23.98	11.14
	High	5 320.00	13.07	23.98	10.91
5 470 ~ 5 725	Low	5 500.00	12.07	23.98	11.91
	Middle	5 580.00	11.96	23.98	12.02
	High	5 700.00	12.73	23.98	11.25
5 725 ~ 5 850	Low	5 745.00	9.69	30.00	20.31
	Middle	5 785.00	9.53	30.00	20.47
	High	5 825.00	9.60	30.00	20.40

Remark 1:Measured Value = Average Power(dBm) + Duty Correction Factor(dB)

Remark 2: Margin = Limit – Measured Value (=Power Sensor Reading - Cable Loss)



Tested by: Tae-Ho, Kim / Senior Manager

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

6.5 TEST Result(802.11 n_HT20_MCS 0)

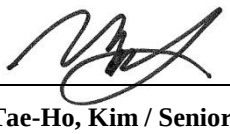
-. Test Date : September 12, 2018 ~ September 21, 2018

-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	MEASURED VLAUE (dBm)	LIMIT (dBm)	MARGIN (dB)
5 150 ~ 5 250	Low	5 180.00	12.56	23.98	11.42
	Middle	5 200.00	12.68	23.98	11.30
	High	5 240.00	12.80	23.98	11.18
5 250 ~ 5 350	Low	5 260.00	13.07	23.98	10.91
	Middle	5 300.00	13.10	23.98	10.88
	High	5 320.00	13.26	23.98	10.72
5 470 ~ 5 725	Low	5 500.00	12.26	23.98	11.72
	Middle	5 580.00	12.14	23.98	11.84
	High	5 700.00	12.86	23.98	11.12
5 725 ~ 5 850	Low	5 745.00	9.64	30.00	20.36
	Middle	5 785.00	9.62	30.00	20.38
	High	5 825.00	9.73	30.00	20.27

Remark 1:Measured Value = Average Power(dBm) + Duty Correction Factor(dB)

Remark 2: Margin = Limit – Measured Value (=Power Sensor Reading - Cable Loss)



Tested by: Tae-Ho, Kim / Senior Manager

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

6.6 TEST Result(802.11 n_HT40_MCS 0)

-. Test Date : September 12, 2018 ~ September 21, 2018

-. Test Result : Pass

FREQUENCY RANGE (MHz)	CHANNEL	FREQUENCY (MHz)	MEASURED VLAUE (dBm)	LIMIT (dBm)	MARGIN (dB)
5 150 ~ 5 250	Low	5 190.00	11.60	23.98	12.38
	High	5 230.00	12.76	23.98	11.22
5 250 ~ 5 350	Low	5 270.00	13.04	23.98	10.94
	High	5 310.00	13.11	23.98	10.87
5 470 ~ 5 725	Low	5 510.00	13.19	23.98	10.79
	Middle	5 550.00	13.05	23.98	10.93
	High	5 670.00	12.97	23.98	11.01
5 725 ~ 5 850	Low	5 755.00	9.76	30.00	20.24
	High	5 795.00	9.64	30.00	20.36

Remark 1:Measured Value = Average Power(dBm) + Duty Correction Factor(dB)

Remark 2: Margin = Limit – Measured Value (=Power Sensor Reading - Cable Loss)

Tested by: Tae-Ho, Kim / Senior Manager

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)