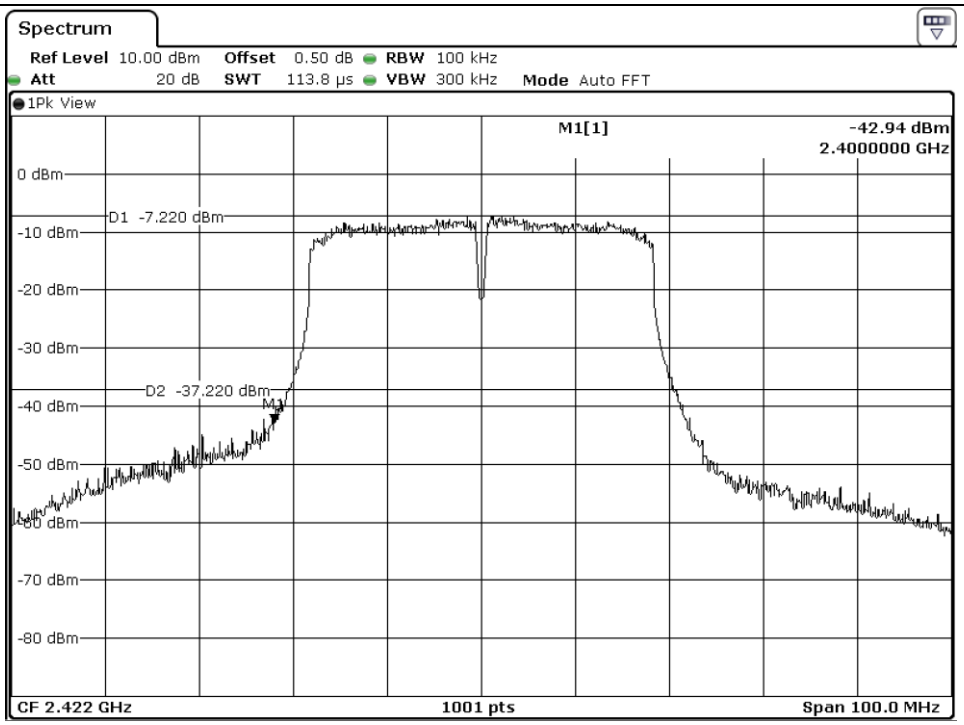
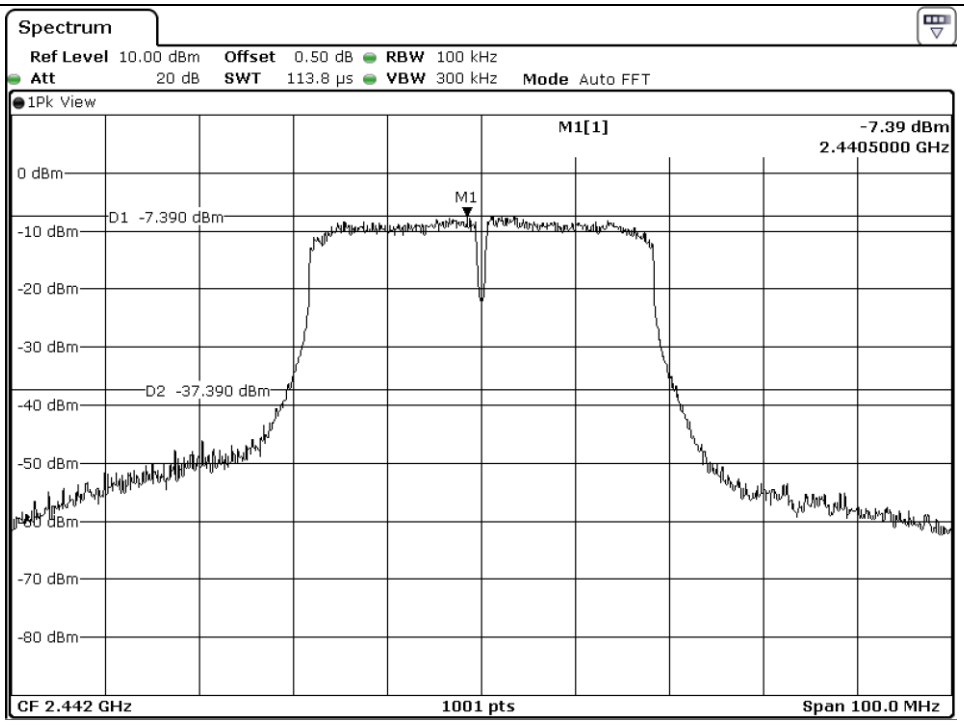
9.5.4.2 Test data for Antenna 1



Low Channel



Middle Channel

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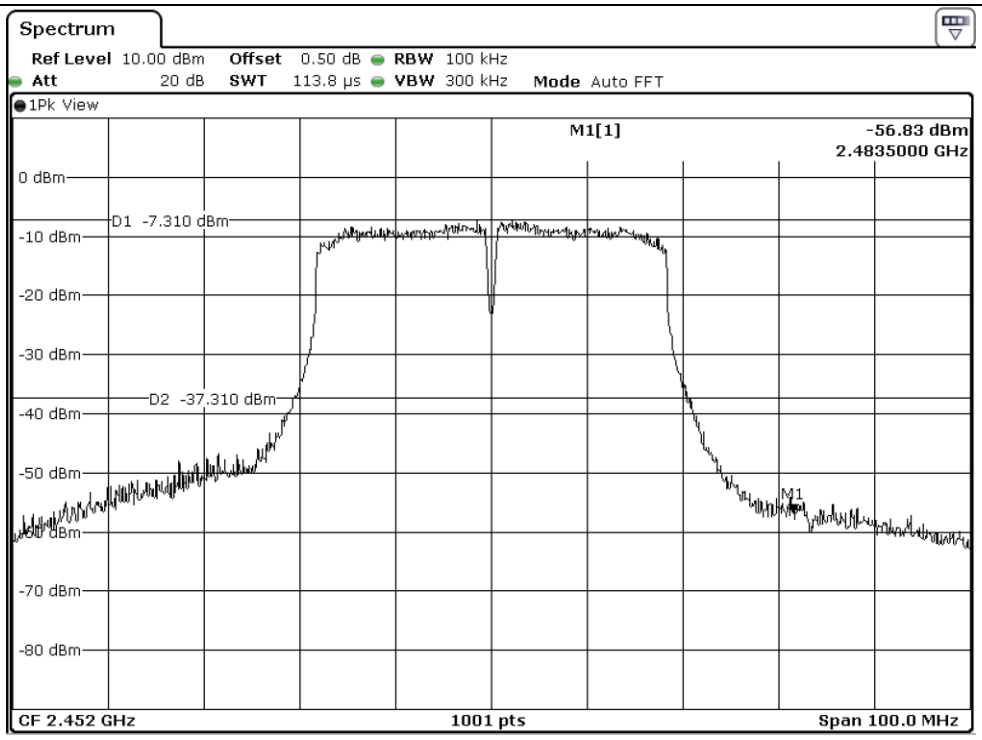
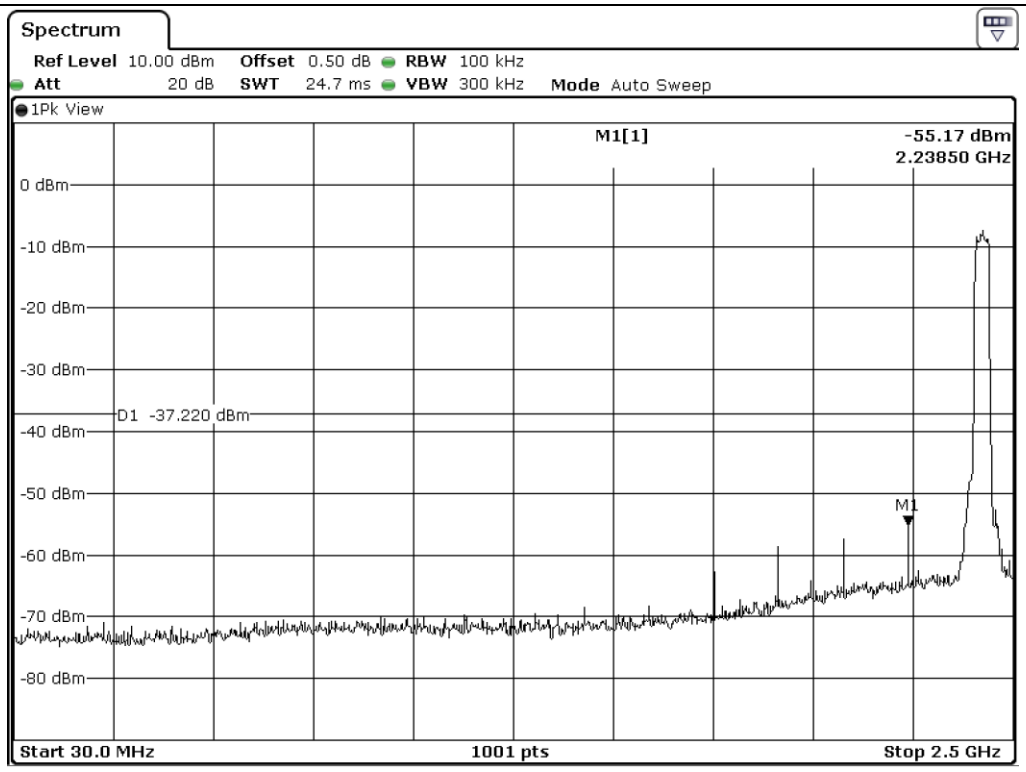
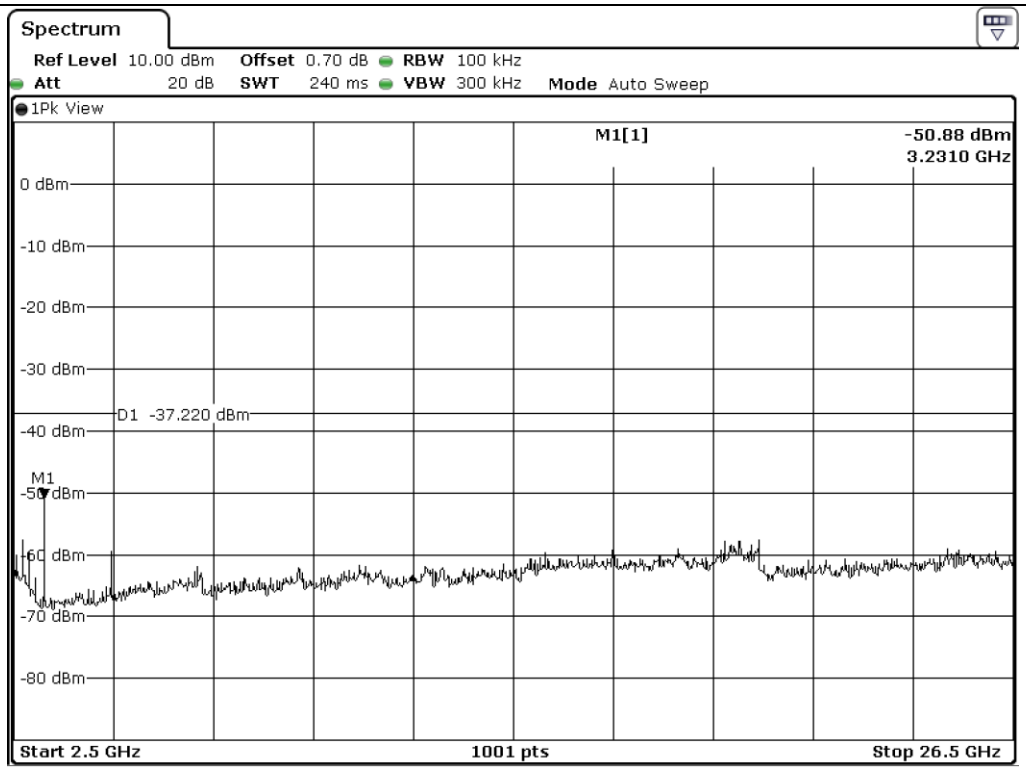


High Channel

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



Low Channel

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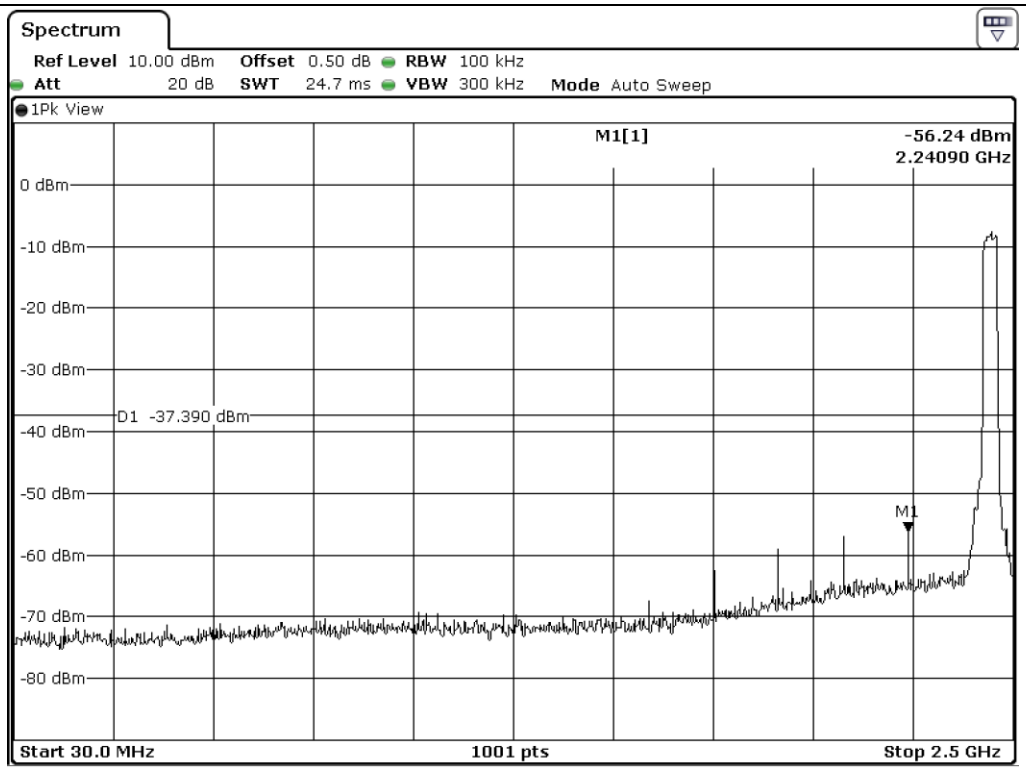
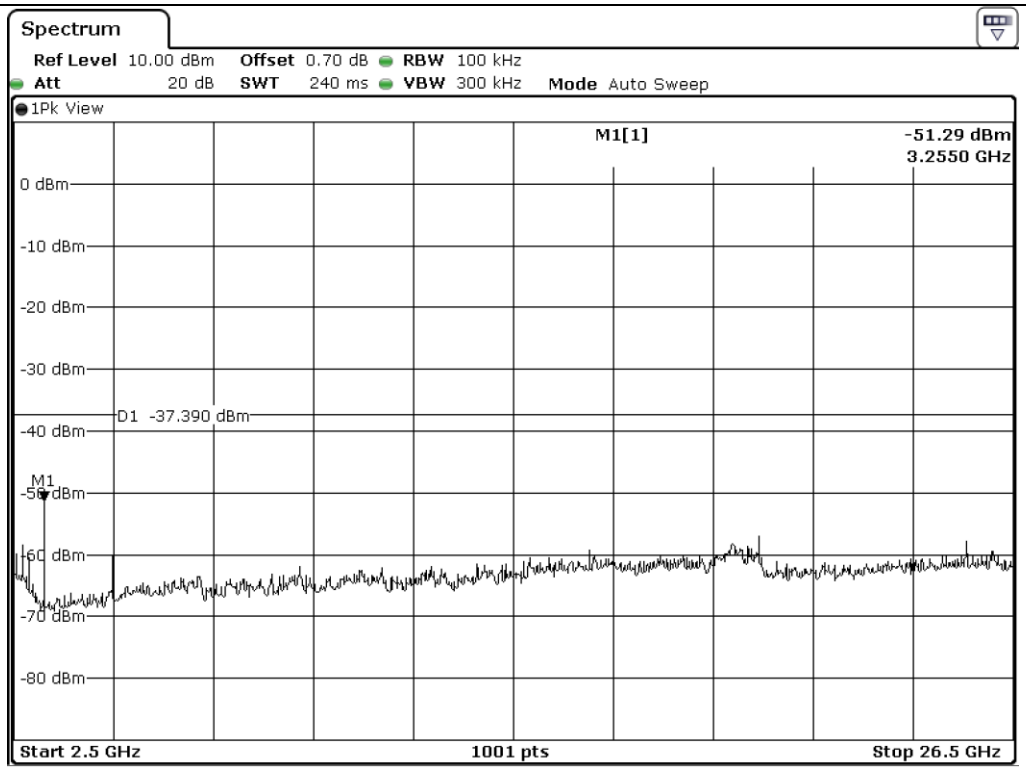


Middle Channel



Middle Channel

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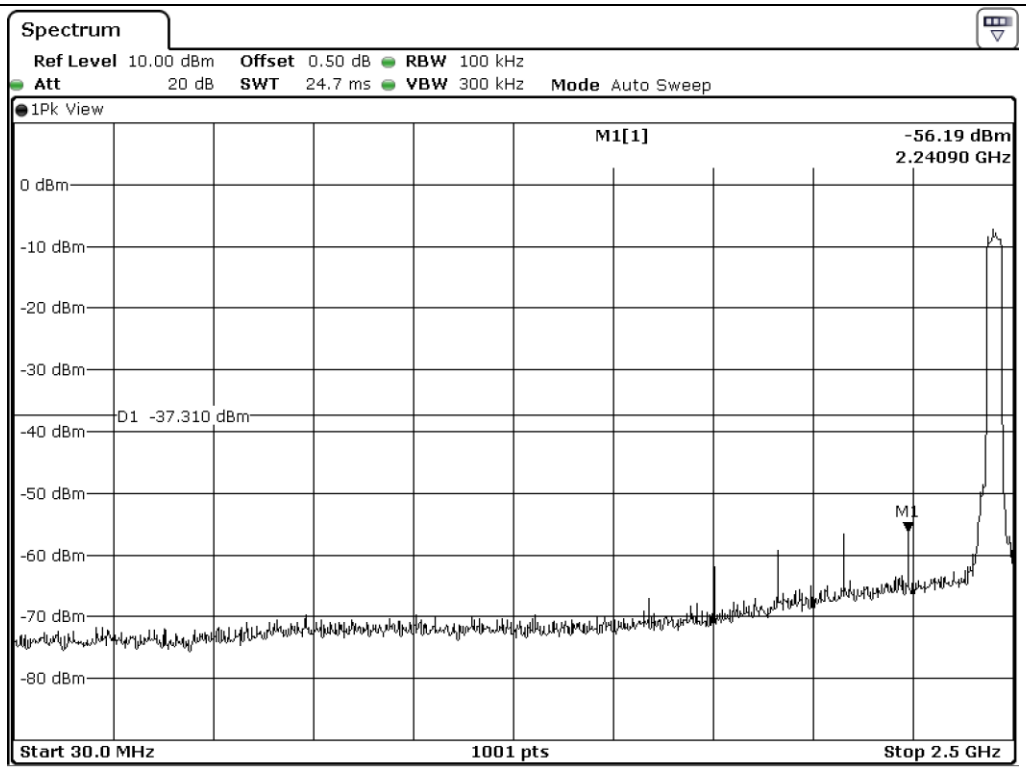
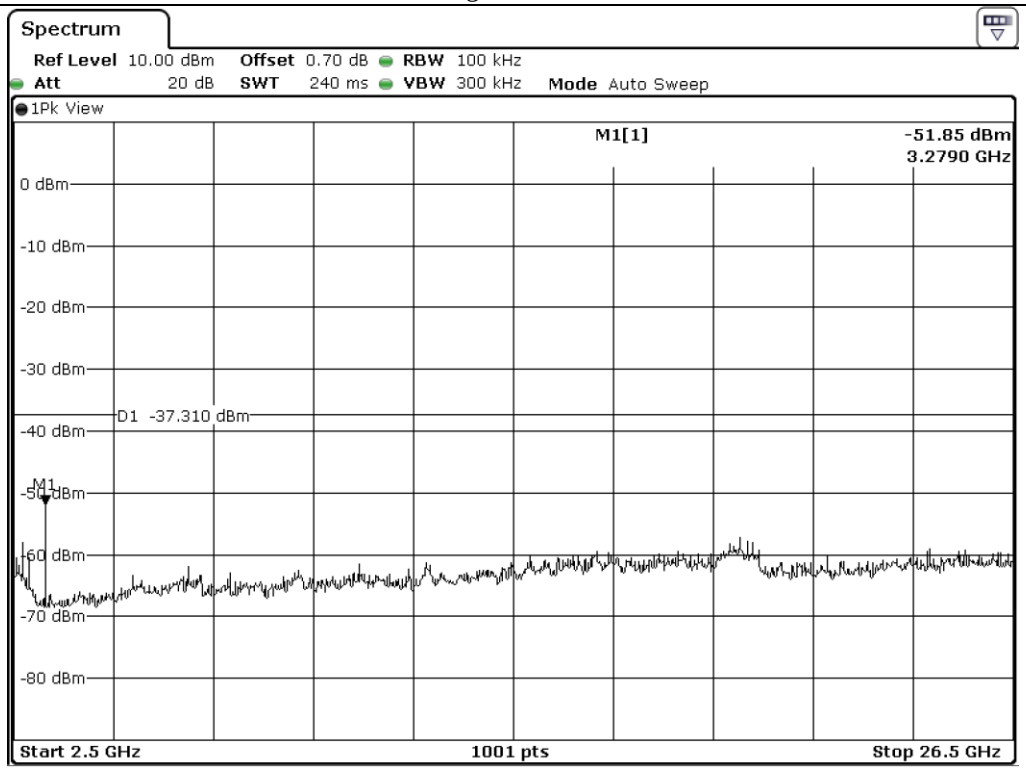


High Channel



High Channel

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9.6 Test data for radiated emission

9.6.1 Radiated Emission which fall in the Restricted Band

9.6.1.1 Test data for 802.11b WLAN Mode

9.6.1.1.1 Test data for Antenna 0 (UANZZZWHA002)

-. Test Date : February 05, 2018 ~ February 09, 2018

-. 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 : > 98 %

-. 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									
2 380.87	46.67	Peak	H	26.94	9.20	34.76	48.05	74.00	25.95
2 384.89	36.10	Average	H				37.48	54.00	16.52
2 374.53	46.51	Peak	V				47.89	74.00	26.11
2 386.66	36.06	Average	V				37.44	54.00	16.56
Test Data for High Channel									
2 498.57	47.71	Peak	H	27.47	9.49	35.51	49.16	74.00	24.84
2 484.29	36.15	Average	H				37.60	54.00	16.40
2 485.93	46.86	Peak	V				48.31	74.00	25.69
2 484.99	35.52	Average	V				36.97	54.00	17.03

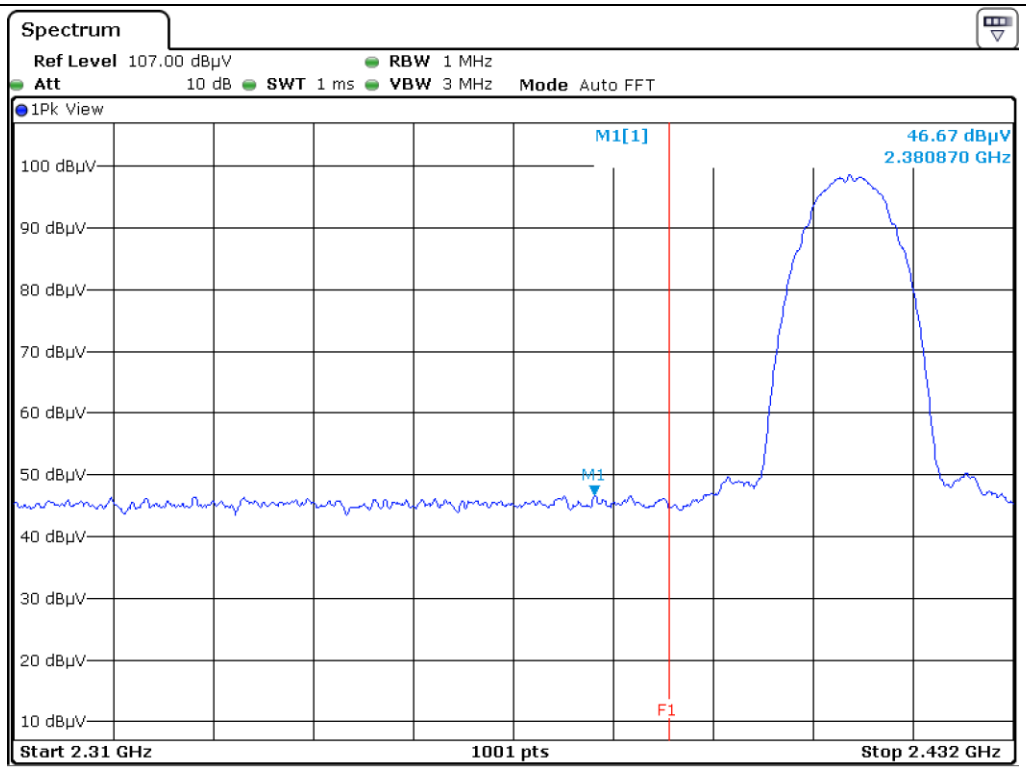
Tabulated test data for Restricted Band

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

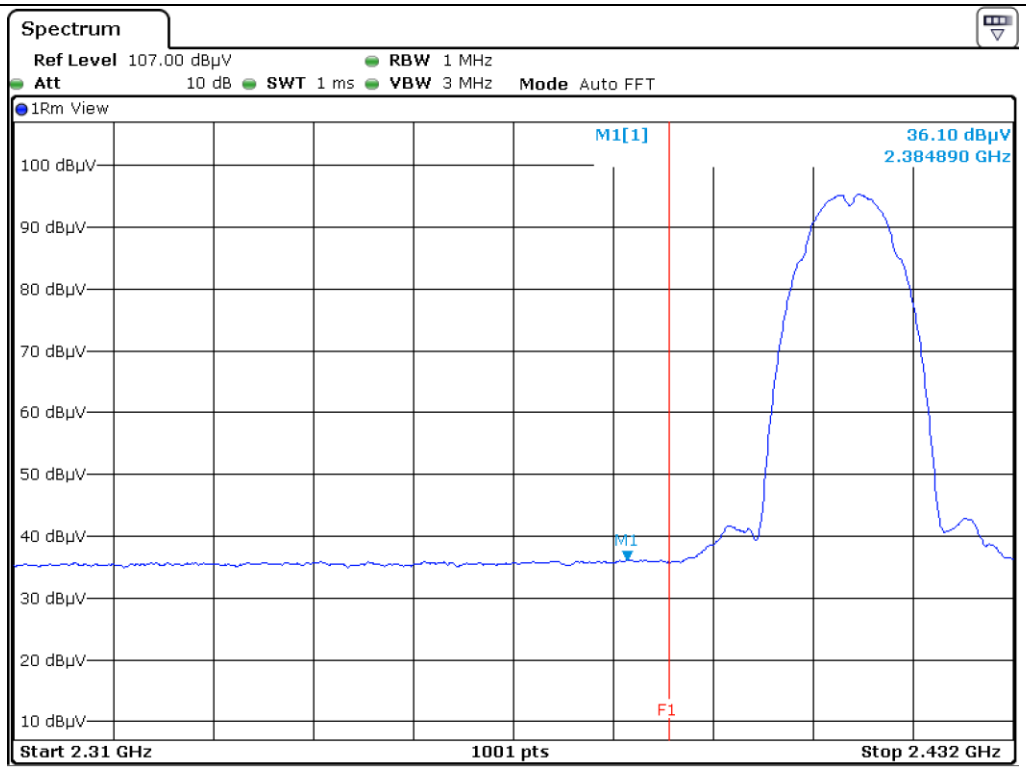
Margin (dB) = Limits (dBµV/m) - Total Level (dBµV/m)

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

Tested by: Hyung-Kwon, Oh / Assistant Manager



Low Channel_Peak_H



Low Channel_Average_H

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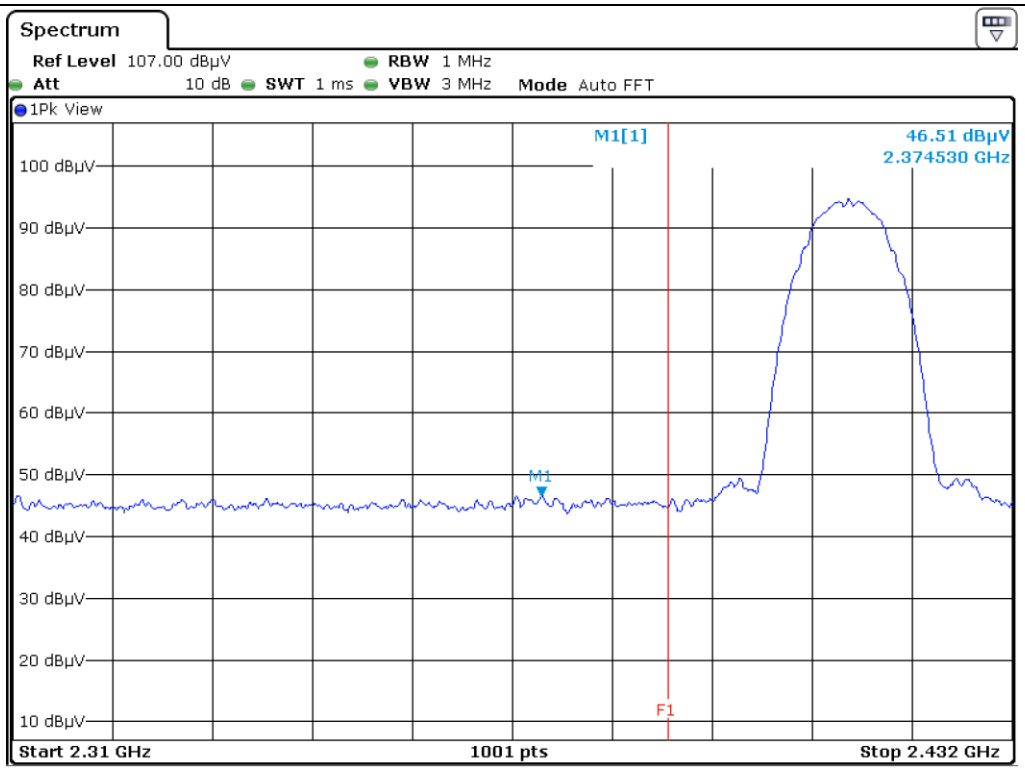
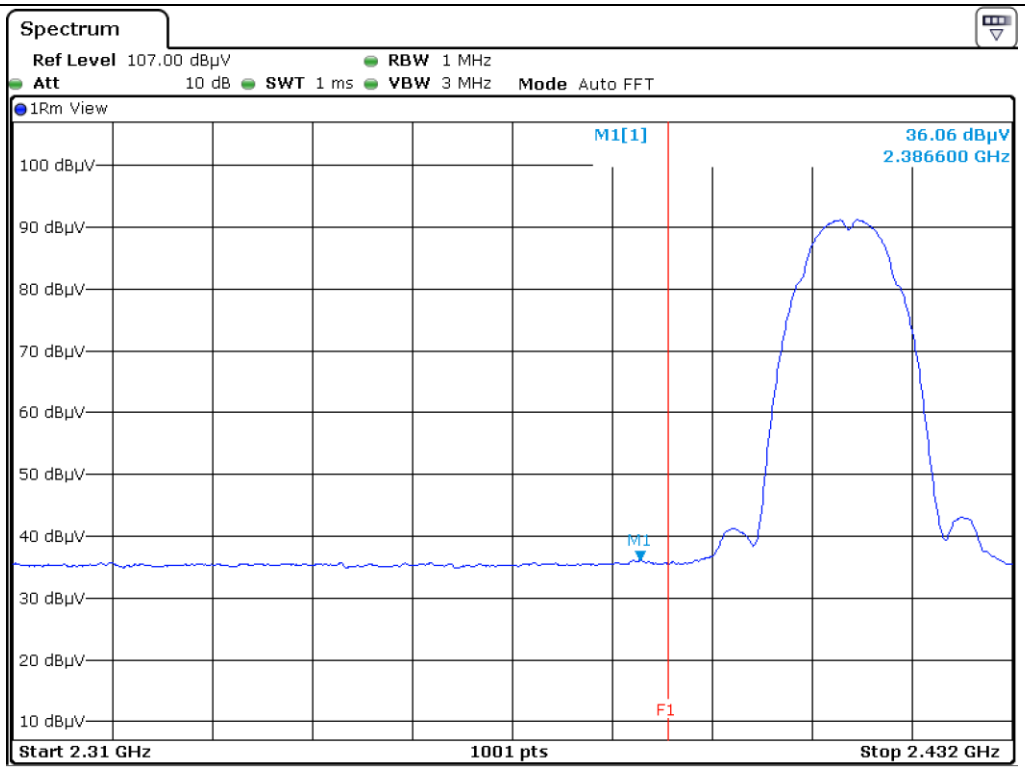
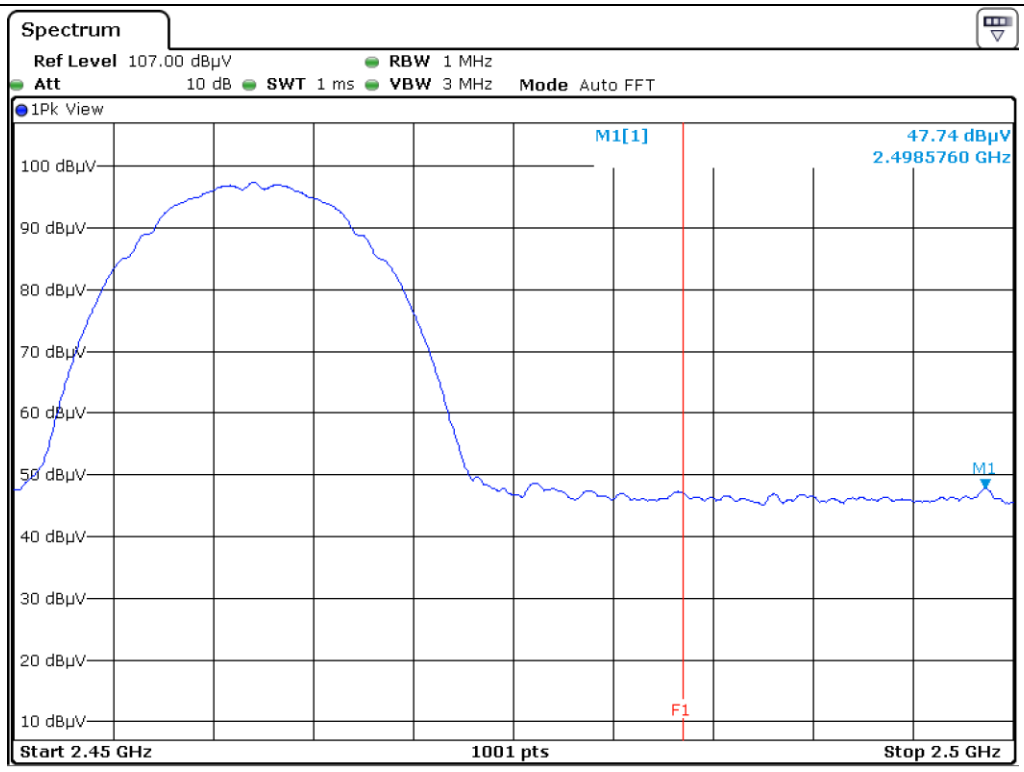


Low Channel_Peak_V

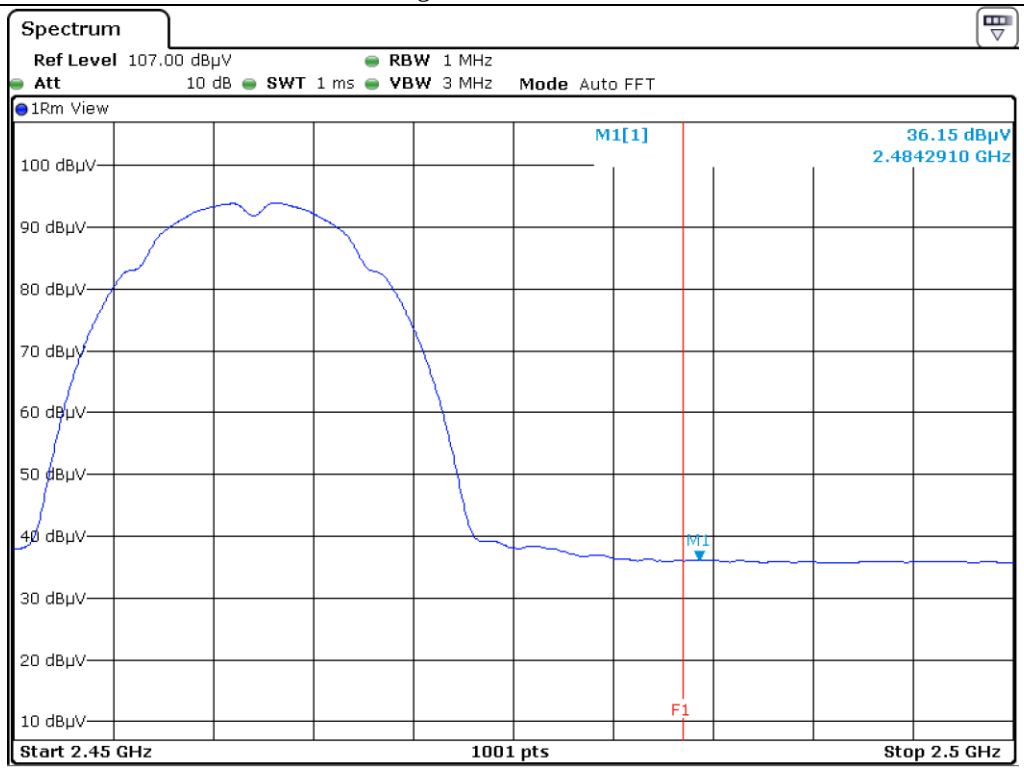


Low Channel_Average_V

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_Peak_H



High Channel_Average_H

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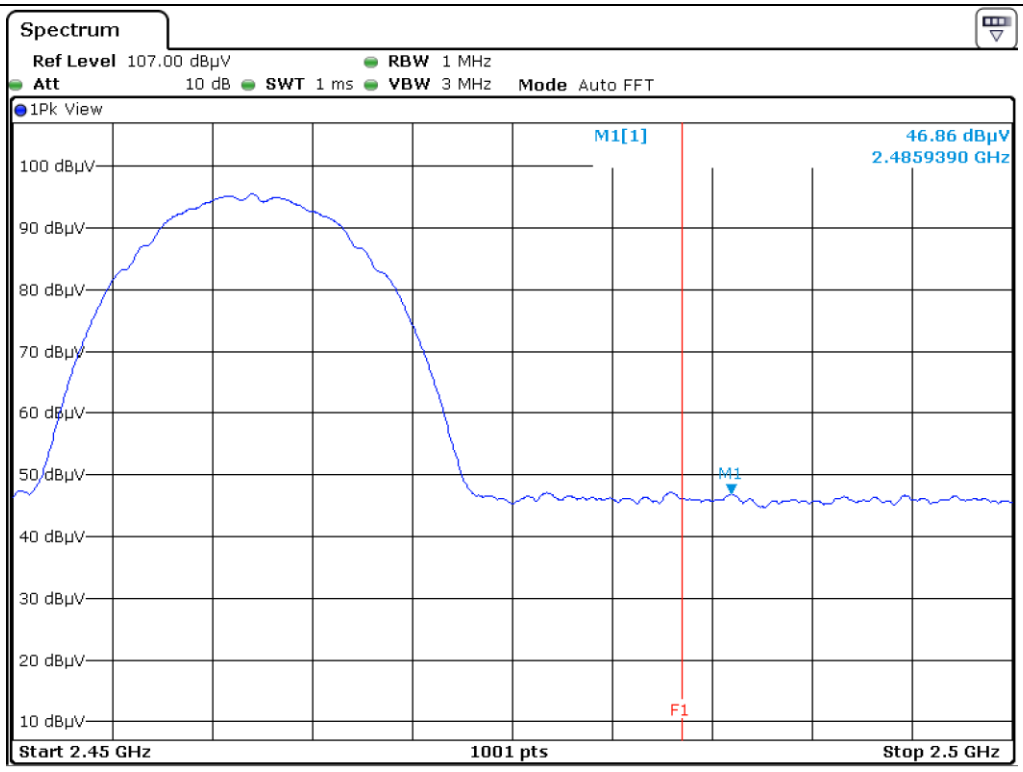
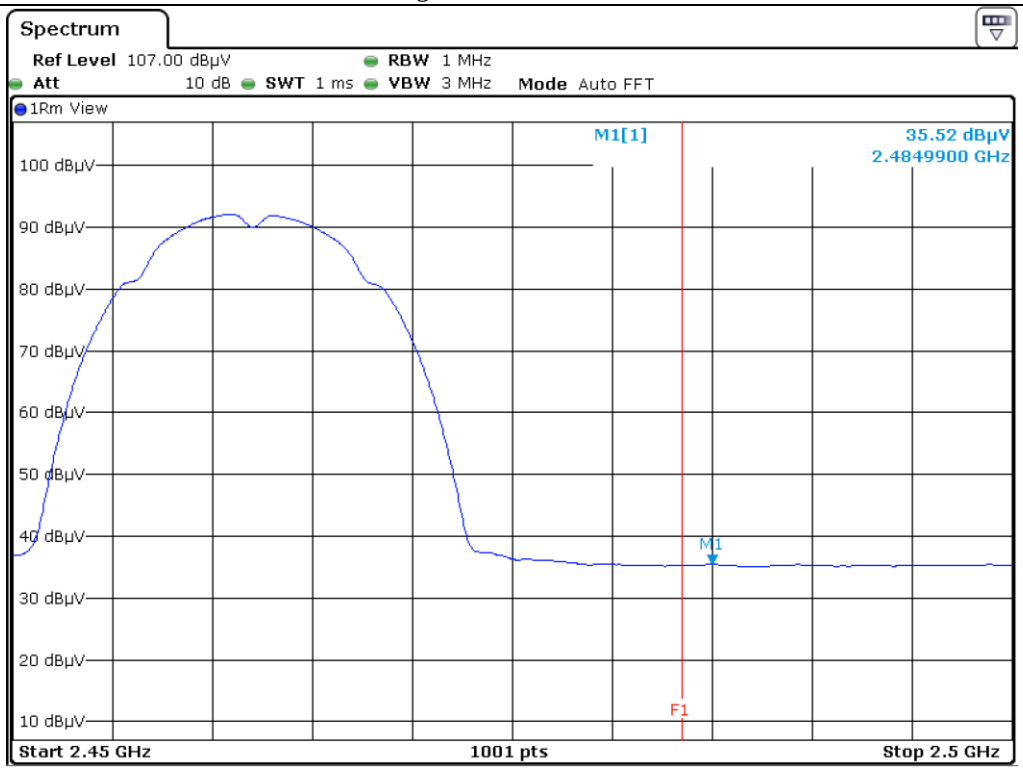


High Channel_Peak_V



High Channel_Average_V

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9.6.1.1.2 Test data for Antenna 0 (UANZZZWHA003)

-. Test Date : February 05, 2018 ~ February 09, 2018

-. 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 : > 98 %

-. 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									
2 374.93	46.84	Peak	H	26.94	9.20	34.76	48.22	74.00	25.78
2 386.68	35.58	Average	H				36.96	54.00	17.04
2 367.66	46.71	Peak	V				48.09	74.00	25.91
2 387.16	35.85	Average	V				37.23	54.00	16.77
Test Data for High Channel									
2 483.50	46.51	Peak	H	27.47	9.49	35.51	47.96	74.00	26.04
2 483.50	34.65	Average	H				36.10	54.00	17.90
2 483.50	45.12	Peak	V				46.57	74.00	27.43
2 483.50	34.68	Average	V				36.13	54.00	17.87

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

Tested by: Hyung-Kwon, Oh / Assistant Manager

9.6.1.2 Test data for 802.11g WLAN Mode

9.6.1.2.1 Test data for Antenna 0 (UANZZZWHA002)

-. Test Date : February 05, 2018 ~ February 09, 2018

-. 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 : > 98 %

-. 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									
2 389.96	47.83	Peak	H	26.94	9.20	34.76	49.21	74.00	24.79
2 389.96	36.46	Average	H				37.84	54.00	16.16
2 389.88	47.35	Peak	V				48.73	74.00	25.27
2 389.96	36.38	Average	V				37.76	54.00	16.24
Test Data for High Channel									
2 485.56	48.13	Peak	H	27.47	9.49	35.51	49.58	74.00	24.42
2 484.77	37.74	Average	H				39.19	54.00	14.81
2 483.85	47.32	Peak	V				48.77	74.00	25.23
2 483.50	35.93	Average	V				37.38	54.00	16.62

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

Tested by: Hyung-Kwon, Oh / Assistant Manager

9.6.1.2.2 Test data for Antenna 0 (UANZZZWHA003)

-. Test Date : February 05, 2018 ~ February 09, 2018

-. 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 : > 98 %

-. 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									
2 390.00	48.52	Peak	H	26.94	9.20	34.76	49.90	74.00	24.10
2 390.00	35.33	Average	H				36.71	54.00	17.29
2 390.00	46.63	Peak	V				48.01	74.00	25.99
2 390.00	35.19	Average	V				36.57	54.00	17.43
Test Data for High Channel									
2 483.50	47.19	Peak	H	27.47	9.49	35.51	48.64	74.00	25.36
2 483.50	36.18	Average	H				37.63	54.00	16.37
2 483.50	46.22	Peak	V				47.67	74.00	26.33
2 483.50	34.15	Average	V				35.60	54.00	18.40

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

Tested by: Hyung-Kwon, Oh / Assistant Manager

9.6.1.3 Test data for 802.11n_HT20 WLAN Mode

9.6.1.3.1 Test data for Antenna 0 (UANZZZWHA002)

-. Test Date : February 05, 2018 ~ February 09, 2018

-. 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 : > 98 %

-. 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									
2 389.96	48.82	Peak	H	26.94	9.20	34.76	50.20	74.00	23.80
2 389.96	37.06	Average	H				38.44	54.00	15.56
2 389.96	50.93	Peak	V				52.31	74.00	21.69
2 389.96	37.11	Average	V				38.49	54.00	15.51
Test Data for High Channel									
2 484.82	50.69	Peak	H	27.47	9.49	35.51	52.14	74.00	21.86
2 484.56	37.23	Average	H				38.68	54.00	15.32
2 483.50	47.10	Peak	V				48.55	74.00	25.45
2 483.50	35.28	Average	V				36.73	54.00	17.27

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

Tested by: Hyung-Kwon, Oh / Assistant Manager

9.6.1.3.2 Test data for Antenna 0 (UANZZZWHA003)

-. Test Date : February 05, 2018 ~ February 09, 2018

-. 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 : > 98 %

-. 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									
2 390.00	49.61	Peak	H	26.94	9.20	34.76	50.99	74.00	23.01
2 390.00	36.14	Average	H				37.52	54.00	16.48
2 390.00	51.35	Peak	V				52.73	74.00	21.27
2 390.00	36.63	Average	V				38.01	54.00	15.99
Test Data for High Channel									
2 483.50	51.26	Peak	H	27.47	9.49	35.51	52.71	74.00	21.29
2 483.50	38.42	Average	H				39.87	54.00	14.13
2 483.50	48.91	Peak	V				50.36	74.00	23.64
2 483.50	34.25	Average	V				35.70	54.00	18.30

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

Tested by: Hyung-Kwon, Oh / Assistant Manager

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9.6.1.4 Test data for 802.11n_HT40 WLAN Mode

9.6.1.4.1 Test data for Antenna 0 (UANZZZWHA002)

-. Test Date : February 05, 2018 ~ February 09, 2018

-. 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 : > 98 %

-. 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									
2 386.28	48.01	Peak	H	26.94	9.20	34.76	49.39	74.00	24.61
2 389.56	36.47	Average	H				37.85	54.00	16.15
2 388.52	48.49	Peak	V				49.87	74.00	24.13
2 389.56	37.61	Average	V				38.99	54.00	15.01
Test Data for High Channel									
2 487.84	51.14	Peak	H	27.47	9.49	35.51	52.59	74.00	21.41
2 487.82	39.01	Average	H				40.46	54.00	13.54
2 483.50	49.96	Peak	V				51.41	74.00	22.59
2 483.50	37.74	Average	V				39.19	54.00	14.81

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

Tested by: Hyung-Kwon, Oh / Assistant Manager

9.6.1.4.2 Test data for Antenna 0 (UANZZZWHA003)

-. Test Date : February 05, 2018 ~ February 09, 2018

-. 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 : > 98 %

-. 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									
2 390.00	49.14	Peak	H	26.94	9.20	34.76	50.52	74.00	23.48
2 390.00	35.82	Average	H				37.20	54.00	16.80
2 390.00	48.95	Peak	V				50.33	74.00	23.67
2 390.00	34.68	Average	V				36.06	54.00	17.94
Test Data for High Channel									
2 483.50	48.39	Peak	H	27.47	9.49	35.51	49.84	74.00	24.16
2 483.50	40.62	Average	H				42.07	54.00	11.93
2 483.50	47.72	Peak	V				49.17	74.00	24.83
2 483.50	36.04	Average	V				37.49	54.00	16.51

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

Tested by: Hyung-Kwon, Oh / Assistant Manager

9.6.2 Radiated Emission which fall in the Band Edge

9.6.2.1 Test data for 802.11b WLAN Mode

9.6.2.1.1 Test data for Antenna 0 (UANZZZWHA002)

-. Test Date : February 05, 2018 ~ February 09, 2018

-. Resolution bandwidth : 100 kHz and Peak Detector for Peak Mode
100 kHz and RMS Detector for Average Mode

-. Video bandwidth : 300 kHz for Peak and Average Mode

-. Measurement distance : 3 m

-. Duty Cycle : > 98 %

-. 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)
2 400.00	43.03	Peak	H	27.20	9.35	34.81	44.77	74.00	29.23
	34.93	Average	H				36.67	54.00	17.33
	42.86	Peak	V				44.60	74.00	29.40
	34.76	Average	V				36.50	54.00	17.50

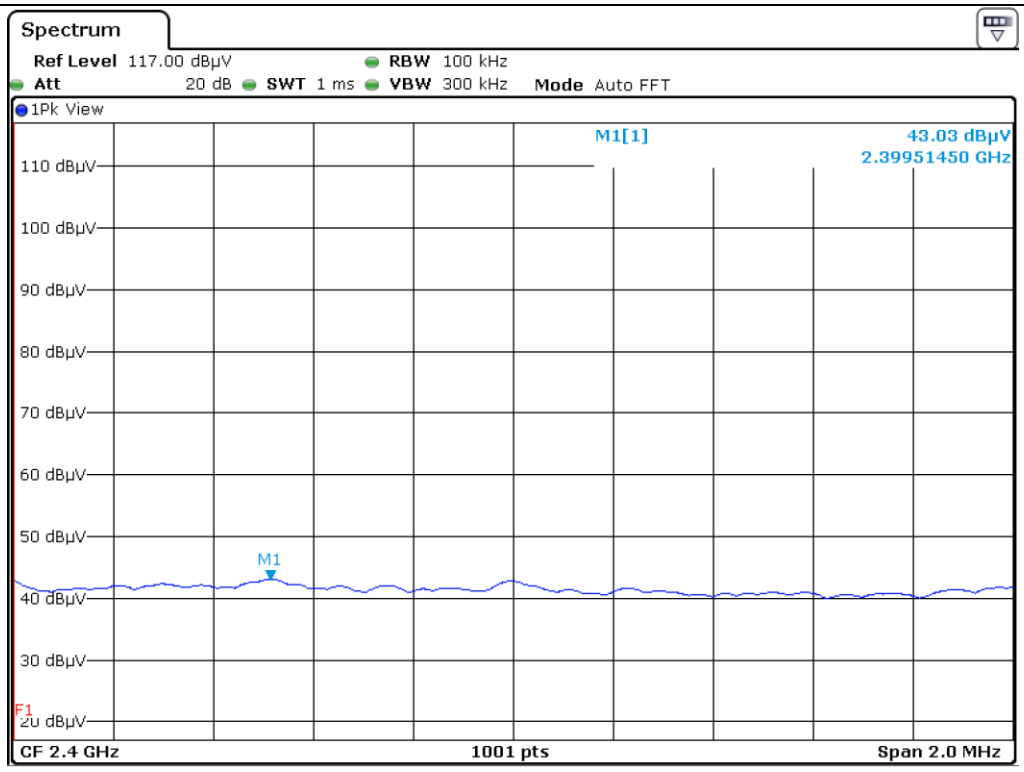
Tabulated test data for Restricted Band

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

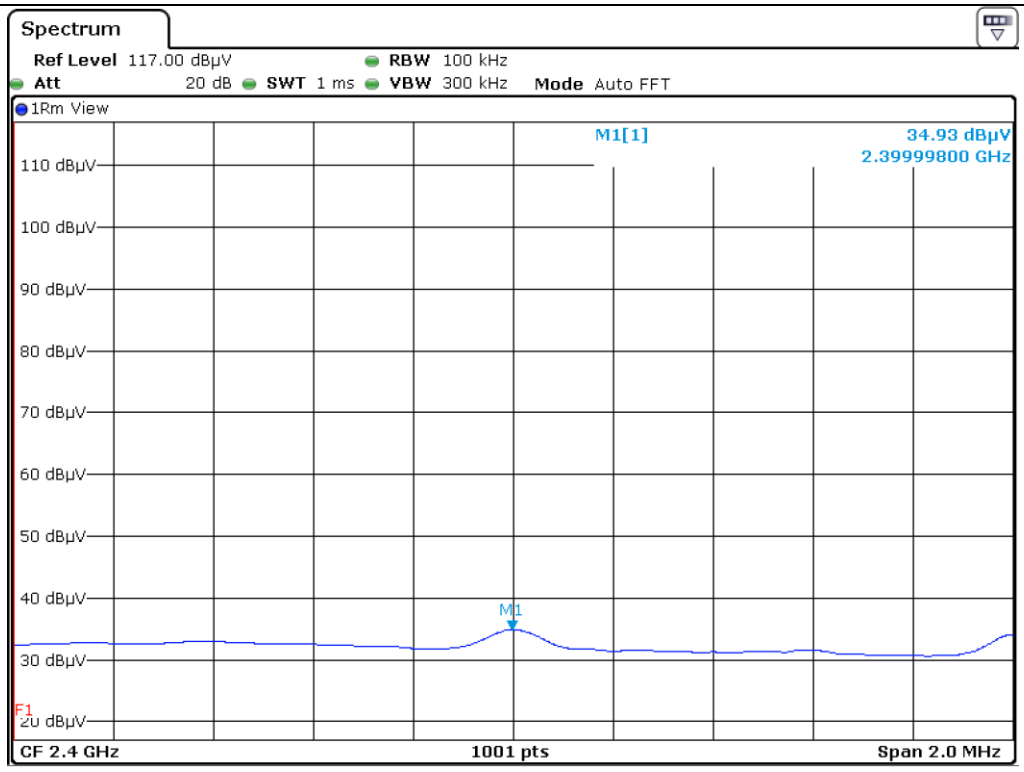
Margin (dB) = Limits (dBµV/m) - Total Level (dBµV/m)

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

Tested by: Hyung-Kwon, Oh / Assistant Manager

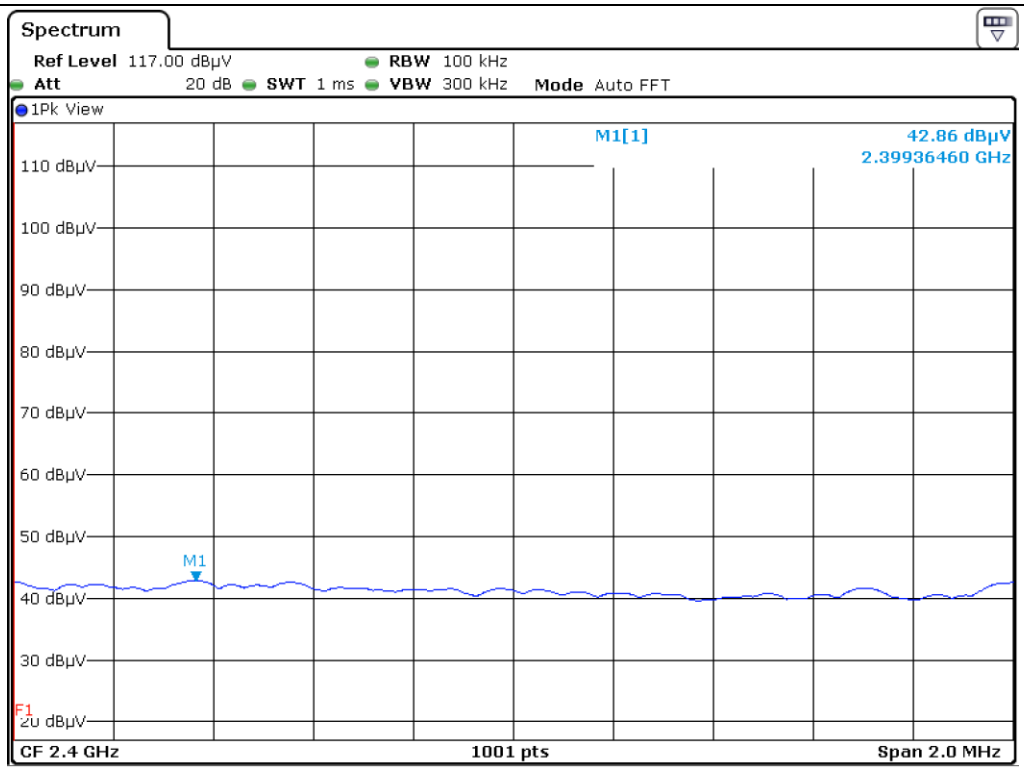


Low Channel_Peak_H

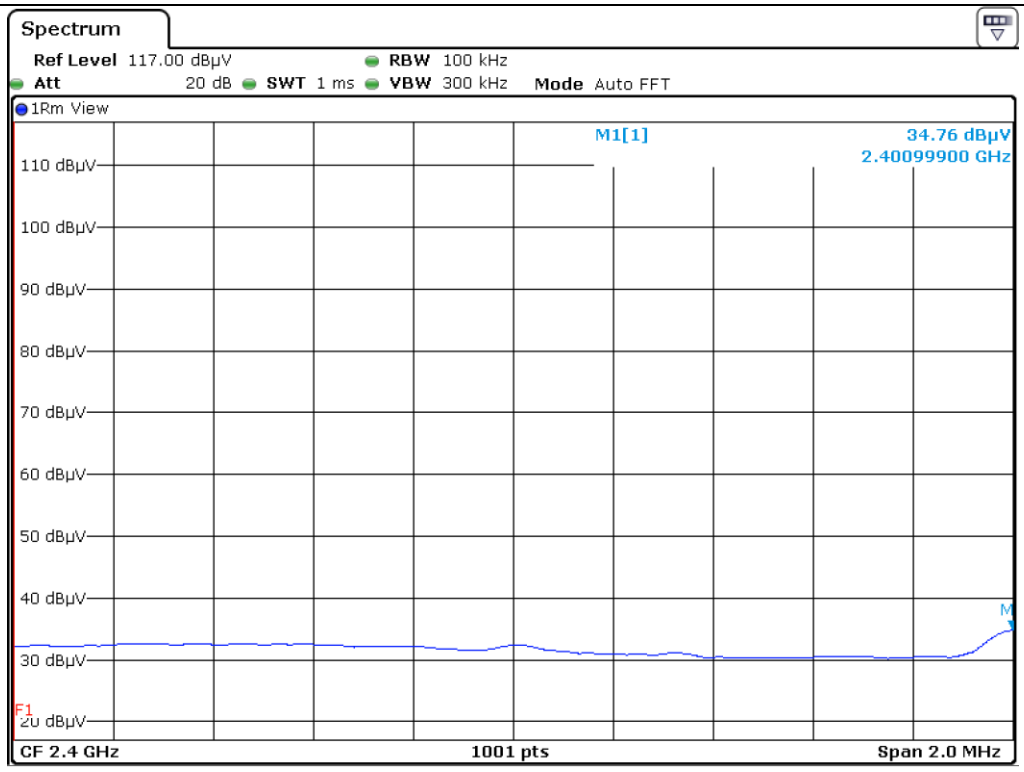


Low Channel_Average_H

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_Peak_V



Low Channel_Average_V

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

9.6.2.1.2 Test data for Antenna 0 (UANZZZWHA003)

-. Test Date : February 05, 2018 ~ February 09, 2018

-. Resolution bandwidth : 100 kHz and Peak Detector for Peak Mode
100 kHz and RMS Detector for Average Mode

-. Video bandwidth : 300 kHz for Peak and Average Mode

-. Measurement distance : 3 m

-. Duty Cycle : > 98 %

-. 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)
2 400.00	44.24	Peak	H	27.20	9.35	34.81	45.98	74.00	28.02
	35.66	Average	H				37.40	54.00	16.60
	41.56	Peak	V				43.30	74.00	30.70
	35.97	Average	V				37.71	54.00	16.29

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

Tested by: Hyung-Kwon, Oh / Assistant Manager

9.6.2.2 Test data for 802.11g WLAN Mode

9.6.2.2.1 Test data for Antenna 0 (UANZZZWHA002)

-. Test Date : February 05, 2018 ~ February 09, 2018

-. Resolution bandwidth : 100 kHz and Peak Detector for Peak Mode
100 kHz and RMS Detector for Average Mode

-. Video bandwidth : 300 kHz for Peak and Average Mode

-. Measurement distance : 3 m

-. Duty Cycle : > 98 %

-. 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)
2 400.00	47.78	Peak	H	27.20	9.35	34.81	49.52	74.00	24.48
	39.31	Average	H				41.05	54.00	12.95
	44.49	Peak	V				46.23	74.00	27.77
	35.84	Average	V				37.58	54.00	16.42

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

Tested by: Hyung-Kwon, Oh / Assistant 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)

9.6.2.2.2 Test data for Antenna 0 (UANZZZWHA003)

-. Test Date : February 05, 2018 ~ February 09, 2018

-. Resolution bandwidth : 100 kHz and Peak Detector for Peak Mode
100 kHz and RMS Detector for Average Mode

-. Video bandwidth : 300 kHz for Peak and Average Mode

-. Measurement distance : 3 m

-. Duty Cycle : > 98 %

-. 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)
2 400.00	46.64	Peak	H	27.20	9.35	34.81	48.38	74.00	25.62
	38.95	Average	H				40.69	54.00	13.31
	45.51	Peak	V				47.25	74.00	26.75
	36.06	Average	V				37.80	54.00	16.20

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

Tested by: Hyung-Kwon, Oh / Assistant Manager

9.6.2.3 Test data for 802.11n_HT20 WLAN Mode

9.6.2.3.1 Test data for Antenna 0 (UANZZZWHA002)

-. Test Date : February 05, 2018 ~ February 09, 2018

-. Resolution bandwidth : 100 kHz and Peak Detector for Peak Mode
100 kHz and RMS Detector for Average Mode

-. Video bandwidth : 300 kHz for Peak and Average Mode

-. Measurement distance : 3 m

-. Duty Cycle : > 98 %

-. 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)
2 400.00	47.37	Peak	H	27.20	9.35	34.81	49.11	74.00	24.89
	41.76	Average	H				43.50	54.00	10.50
	48.12	Peak	V				49.86	74.00	24.14
	41.66	Average	V				43.40	54.00	10.60

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

Tested by: Hyung-Kwon, Oh / Assistant Manager

9.6.2.3.2 Test data for Antenna 0 (UANZZZWHA003)

-. Test Date : February 05, 2018 ~ February 09, 2018

-. Resolution bandwidth : 100 kHz and Peak Detector for Peak Mode
100 kHz and RMS Detector for Average Mode

-. Video bandwidth : 300 kHz for Peak and Average Mode

-. Measurement distance : 3 m

-. Duty Cycle : > 98 %

-. 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)
2 400.00	48.71	Peak	H	27.20	9.35	34.81	50.45	74.00	23.55
	40.62	Average	H				42.36	54.00	11.64
	47.65	Peak	V				49.39	74.00	24.61
	40.08	Average	V				41.82	54.00	12.18

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

Tested by: Hyung-Kwon, Oh / Assistant Manager

9.6.2.4 Test data for 802.11n_HT40 WLAN Mode

9.6.2.4.1 Test data for Antenna 0 (UANZZZWHA002)

-. Test Date : February 05, 2018 ~ February 09, 2018

-. Resolution bandwidth : 100 kHz and Peak Detector for Peak Mode
100 kHz and RMS Detector for Average Mode

-. Video bandwidth : 300 kHz for Peak and Average Mode

-. Measurement distance : 3 m

-. Duty Cycle : > 98 %

-. 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)
2 400.00	47.23	Peak	H	27.20	9.35	34.81	48.97	74.00	25.03
	38.91	Average	H				40.65	54.00	13.35
	44.29	Peak	V				46.03	74.00	27.97
	36.41	Average	V				38.15	54.00	15.85

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

Tested by: Hyung-Kwon, Oh / Assistant Manager

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9.6.2.4.2 Test data for Antenna 0 (UANZZZWHA003)

-. Test Date : February 05, 2018 ~ February 09, 2018

-. Resolution bandwidth : 100 kHz and Peak Detector for Peak Mode
100 kHz and RMS Detector for Average Mode

-. Video bandwidth : 300 kHz for Peak and Average Mode

-. Measurement distance : 3 m

-. Duty Cycle : > 98 %

-. 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)
2 400.00	46.16	Peak	H	27.20	9.35	34.81	47.90	74.00	26.10
	36.69	Average	H				38.43	54.00	15.57
	45.74	Peak	V				47.48	74.00	26.52
	35.54	Average	V				37.28	54.00	16.72

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

Tested by: Hyung-Kwon, Oh / Assistant Manager

9.6.3 Spurious & Harmonic Radiated Emission

9.6.3.1 Test data for 802.11b WLAN Mode

9.6.3.1.1 Test data for Antenna 0 (UANZZZWHA002)

-. Test Date : February 05, 2018 ~ February 09, 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 : 3 MHz for Peak and Average Mode

-. Frequency range : 1 GHz ~ 26.5 GHz

-. Measurement distance : 3 m

-. Duty Cycle : > 98 %

-. Result : PASSED

Frequency (GHz)	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									
4 824.00	45.82	Peak	H	30.84	12.31	35.74	53.23	74.00	20.77
	35.47	Average	H				42.88	54.00	11.12
	45.67	Peak	V				53.08	74.00	20.92
	35.83	Average	V				43.24	54.00	10.76
Test Data for Middle Channel									
4 884.00	46.12	Peak	H	30.01	12.43	35.80	52.76	74.00	21.24
	34.74	Average	H				41.38	54.00	12.62
	45.37	Peak	V				52.01	74.00	21.99
	34.95	Average	V				41.59	54.00	12.41
Test Data for High Channel									
4 924.00	46.68	Peak	H	31.15	12.81	35.96	54.68	74.00	19.32
	34.76	Average	H				42.76	54.00	11.24
	46.00	Peak	V				54.00	74.00	20.00
	34.94	Average	V				42.94	54.00	11.06

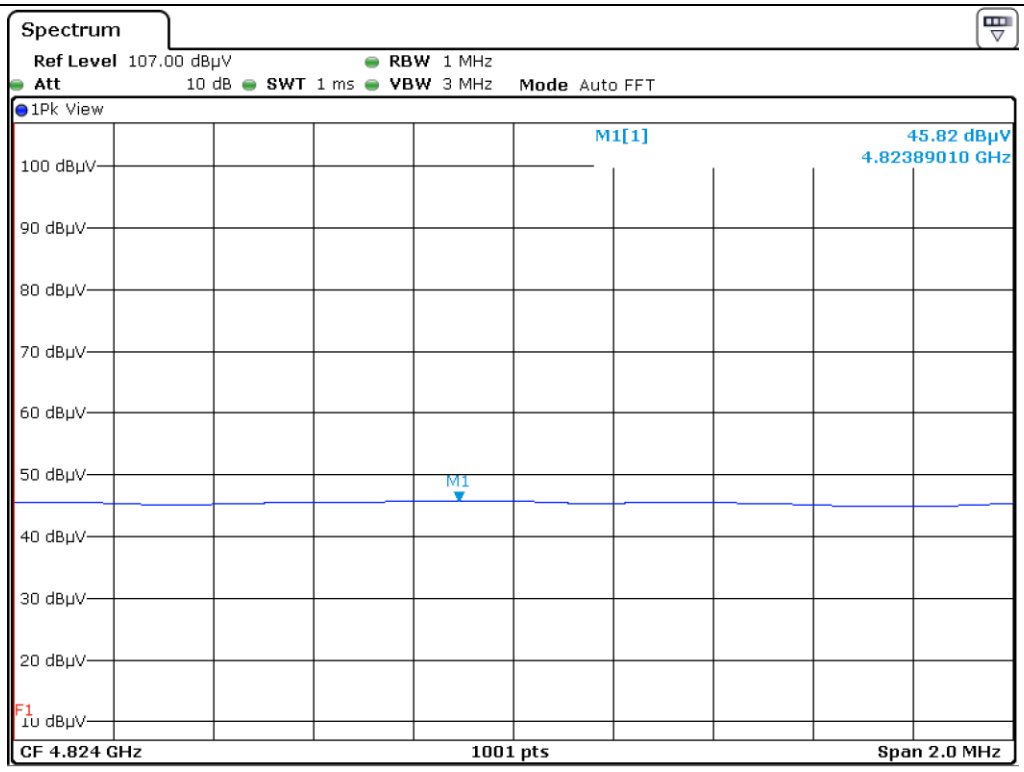
Tabulated test data for Restricted Band

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

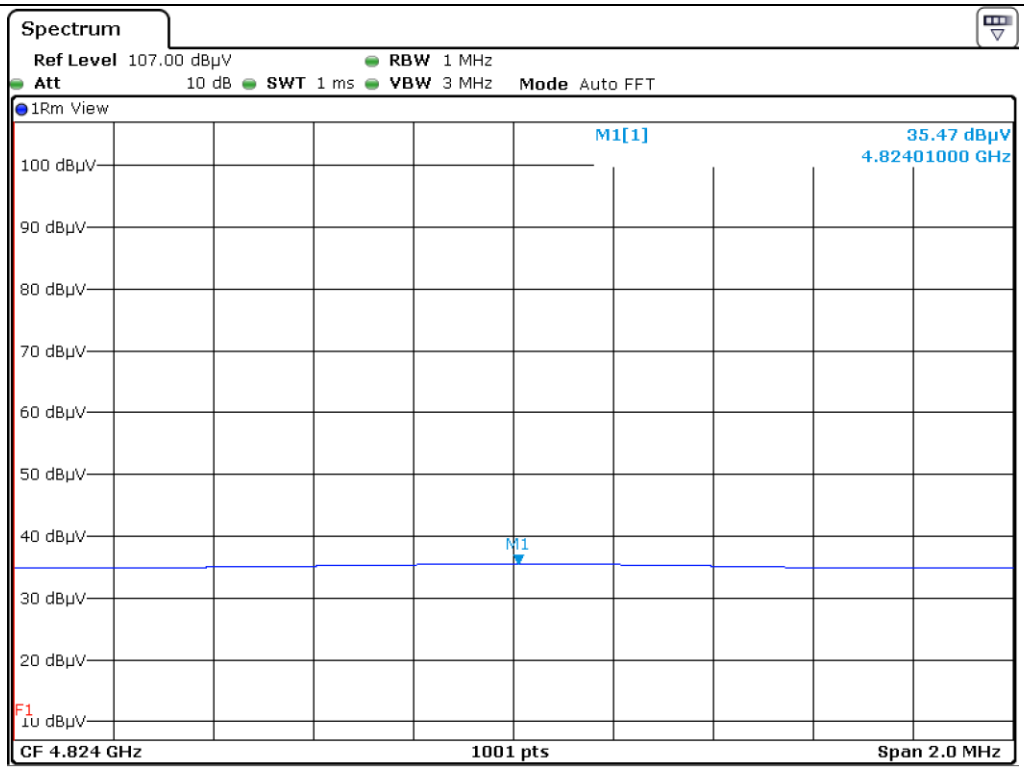
Margin (dB) = Limits (dBµV/m) - Total Level (dBµV/m)

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

Tested by: Hyung-Kwon, Oh / Assistant Manager



Low Channel_Peak_H



Low Channel_Average_H

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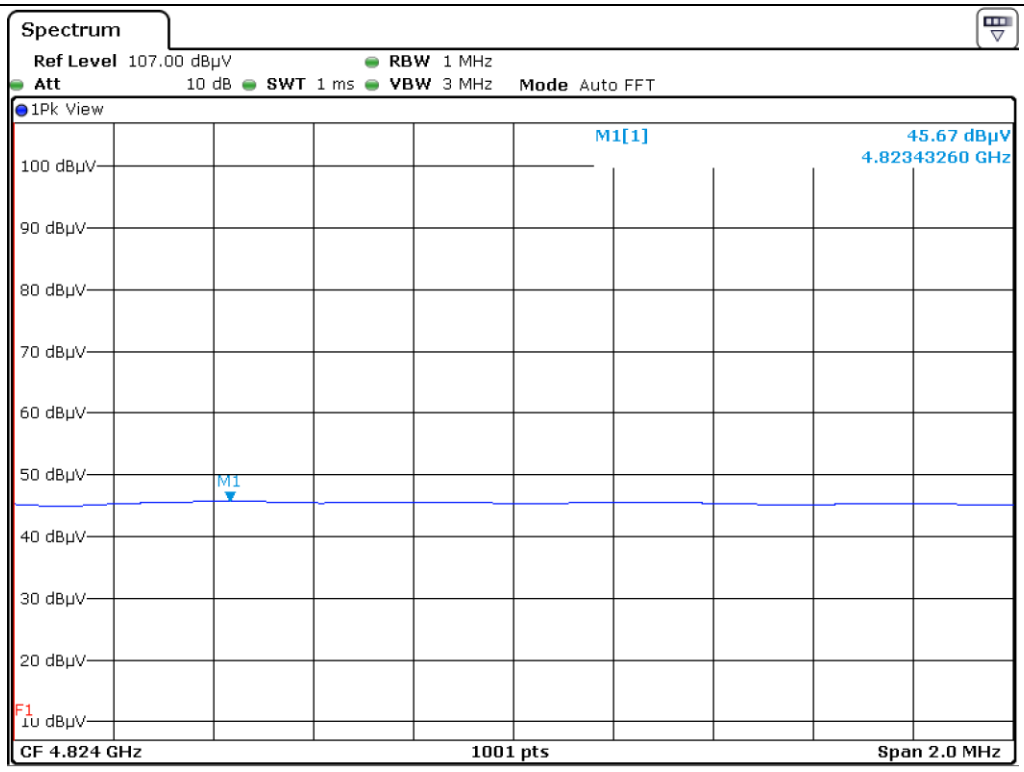
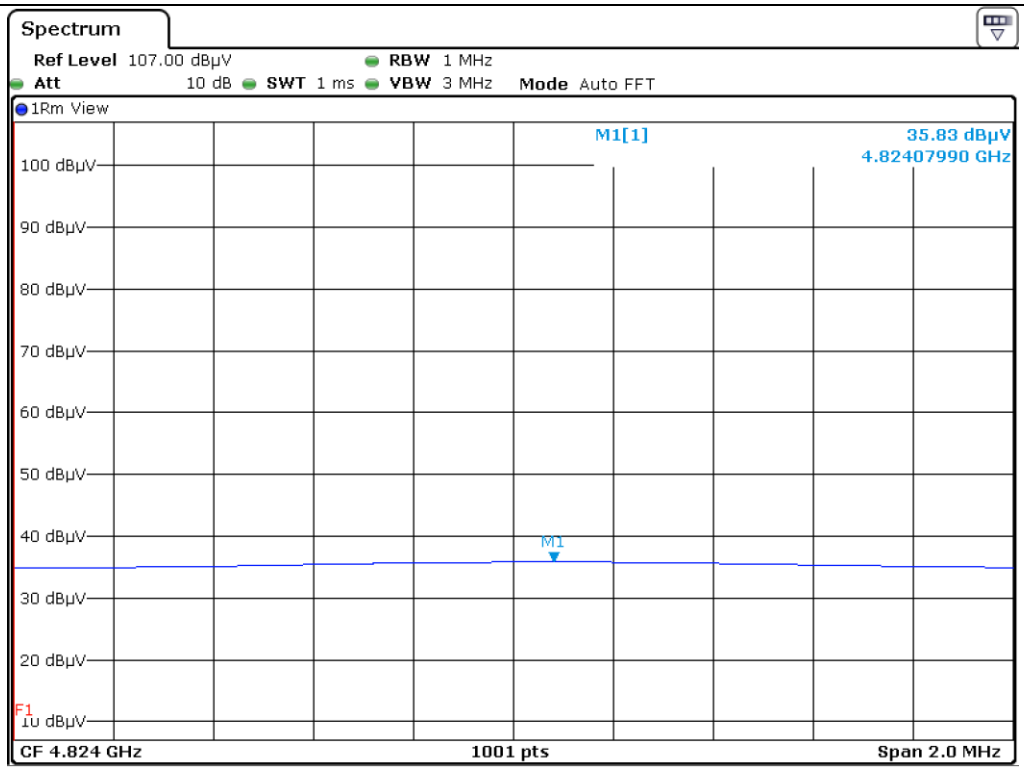
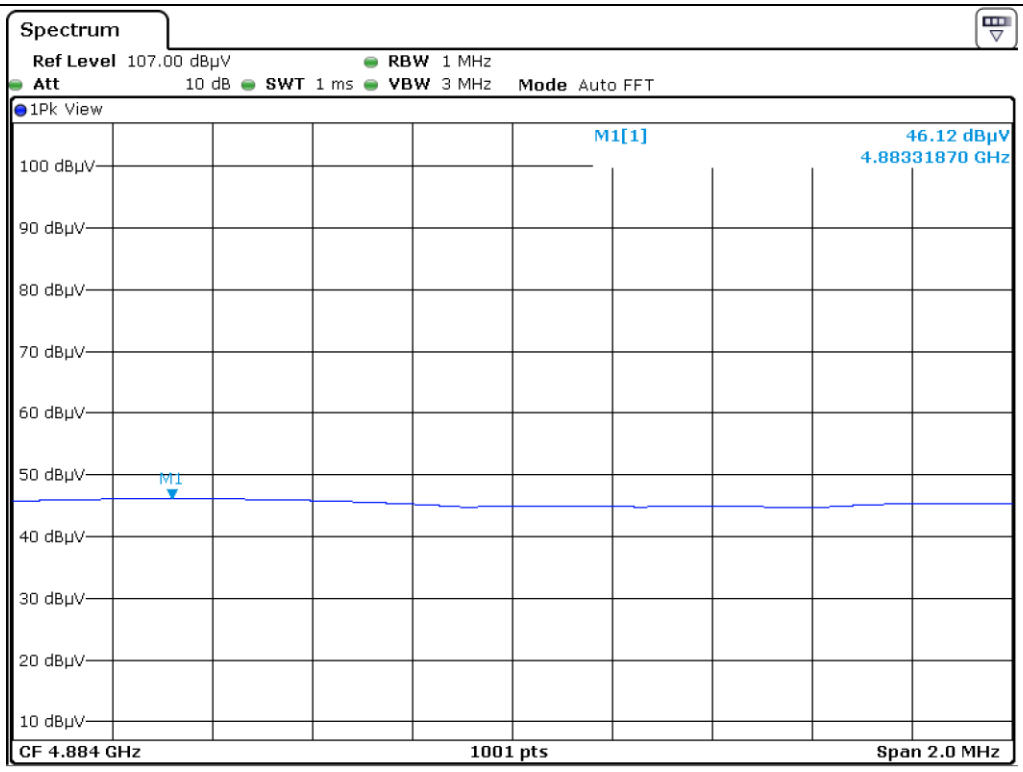


Low Channel_Peak_V

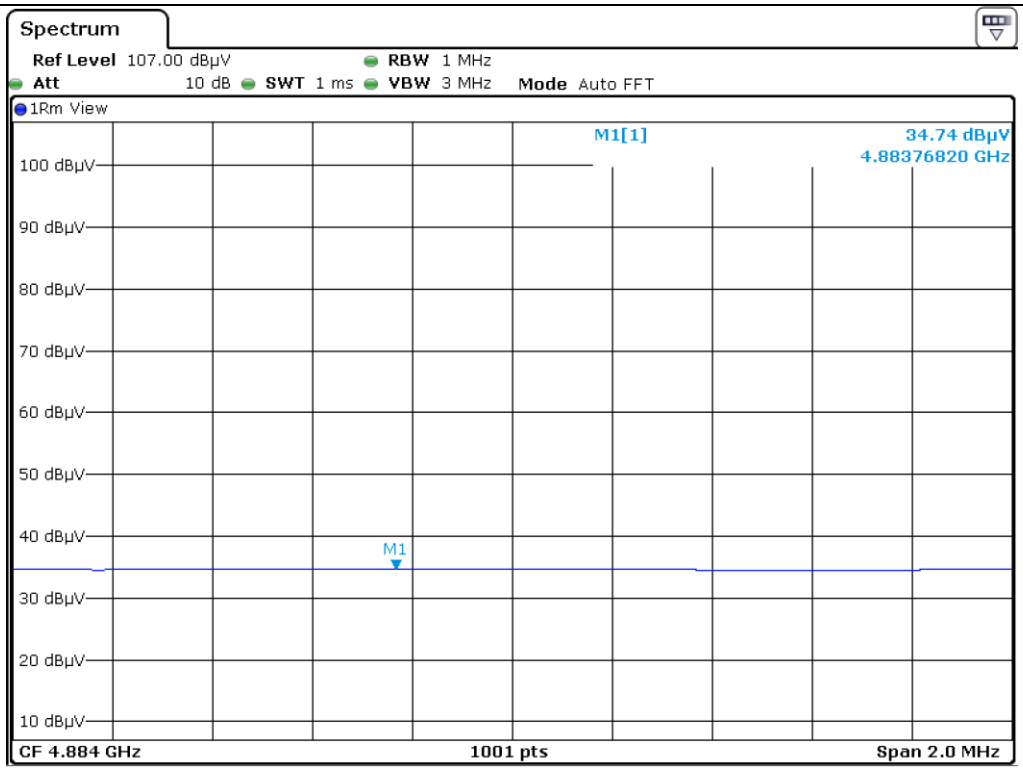


Low Channel_Average_V

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

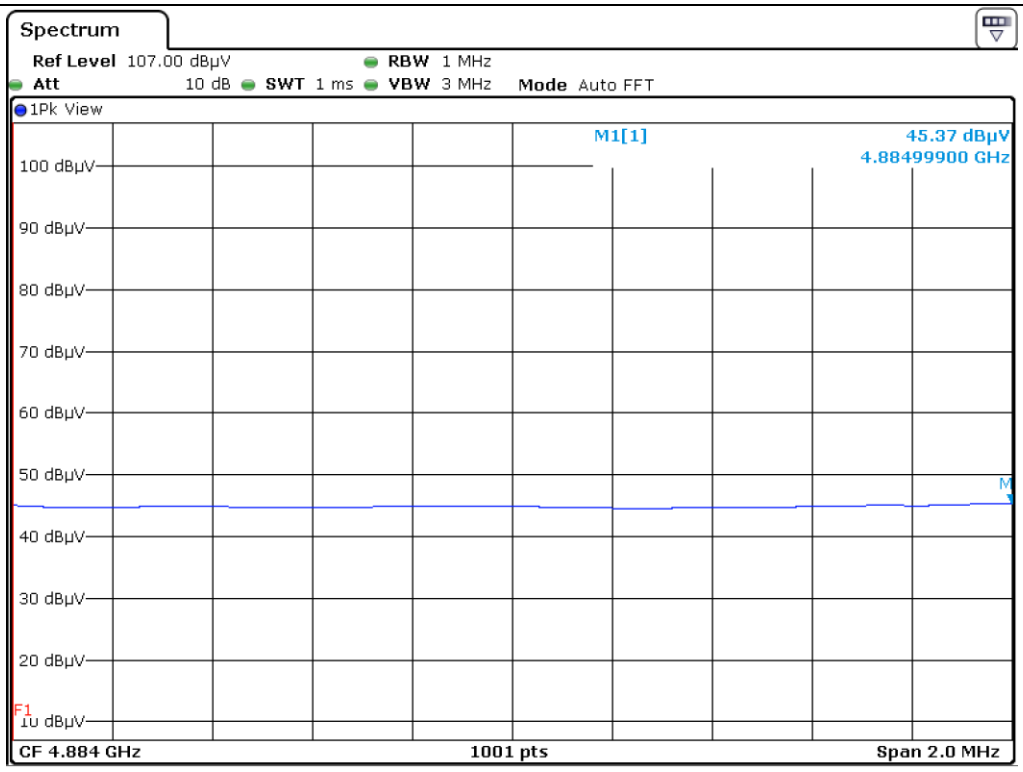


Middle Channel_Peak_H

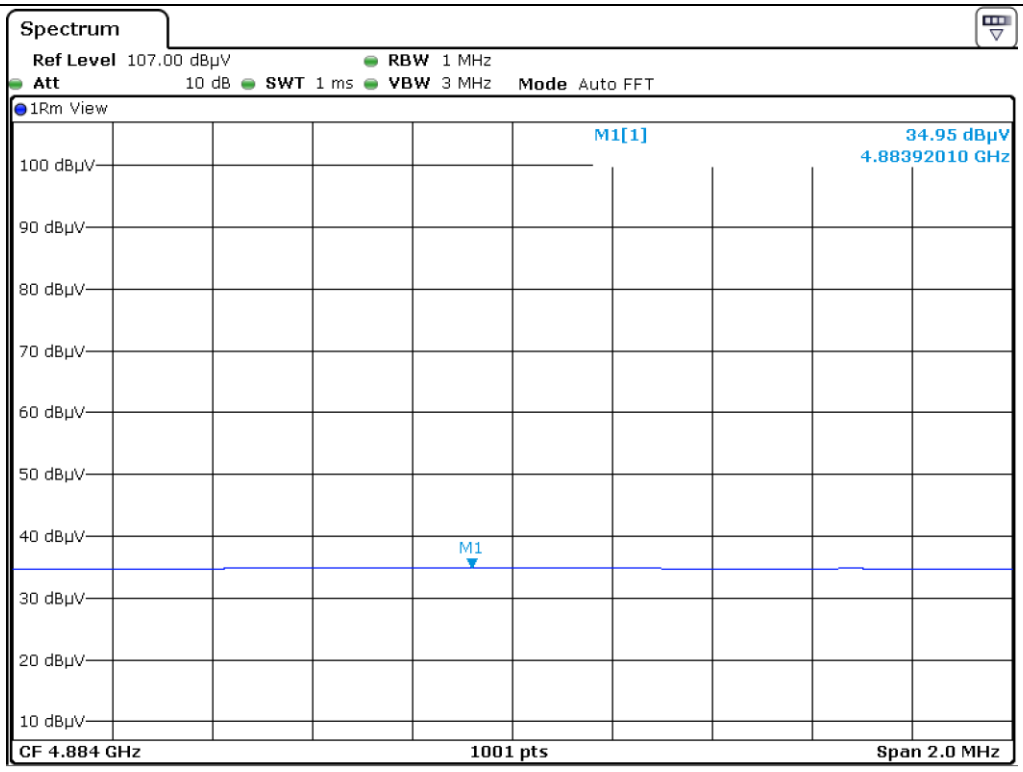


Middle Channel_Average_H

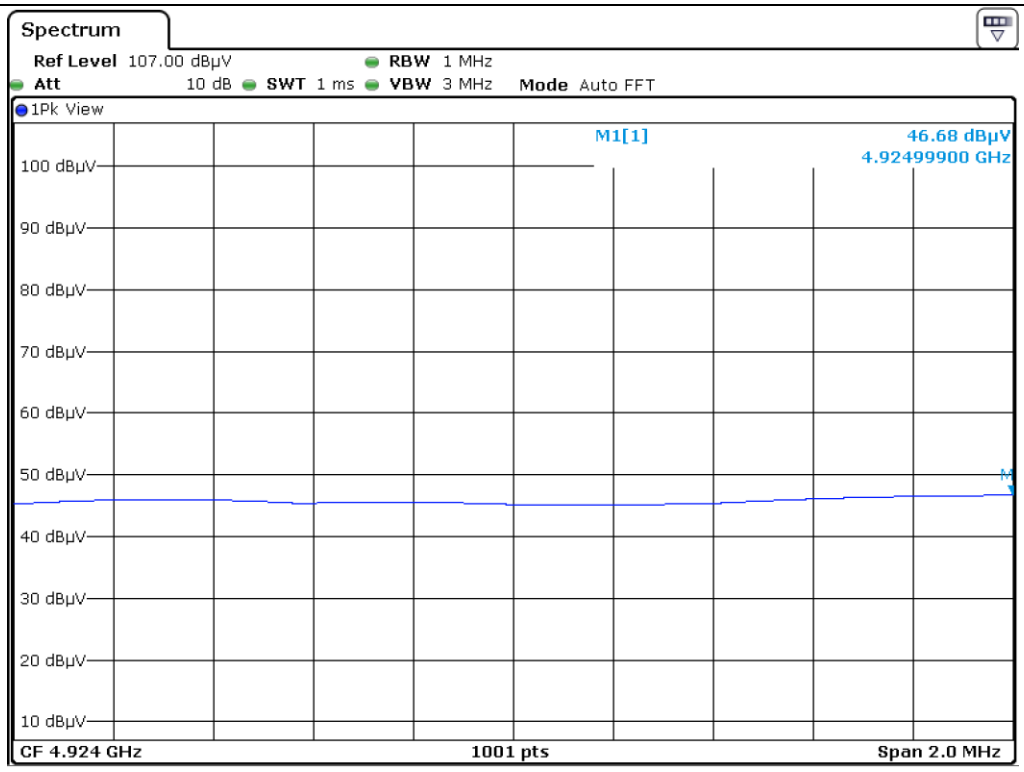
ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)



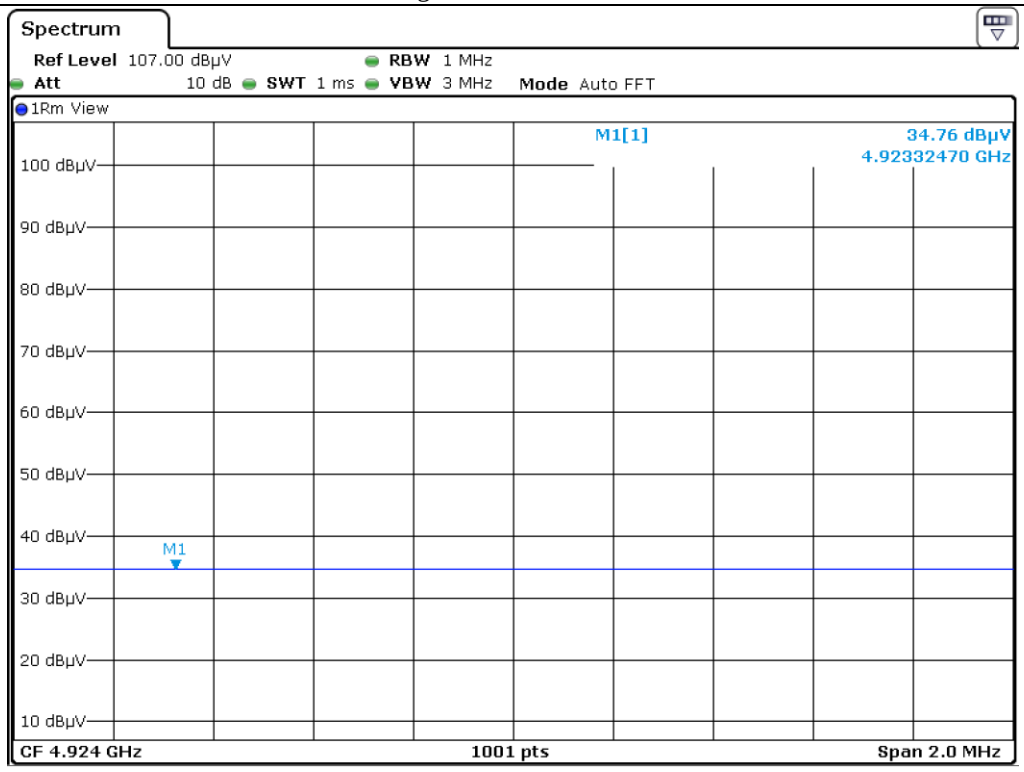
Middle Channel_Peak_V



Middle Channel_Average_V

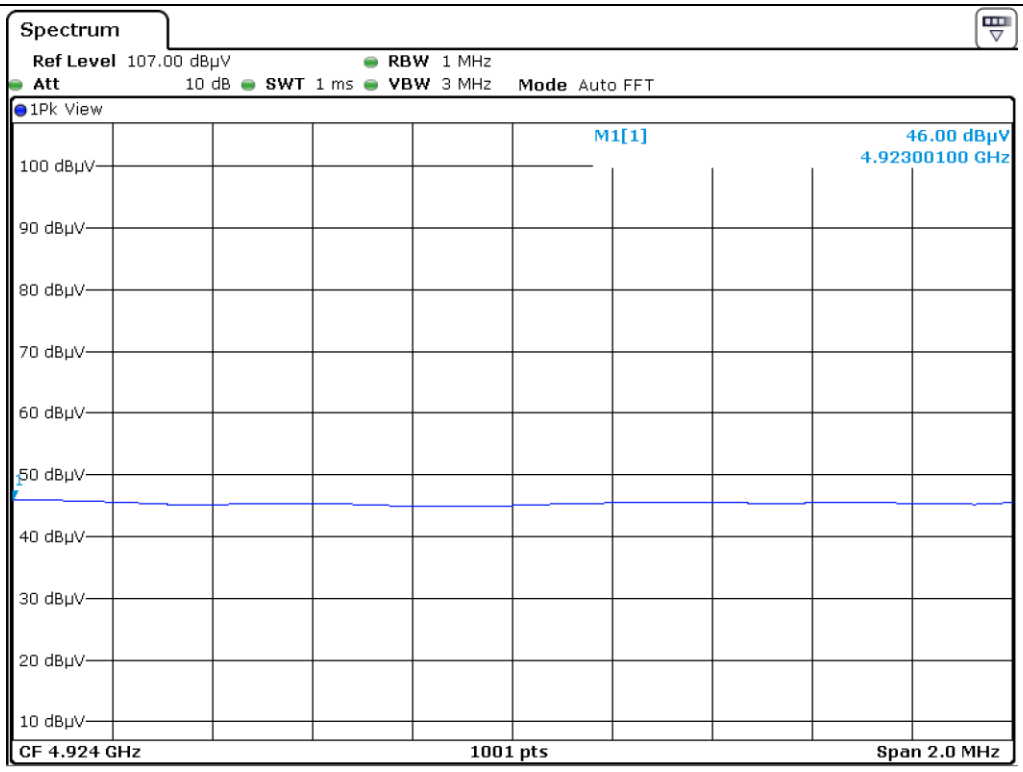


High Channel_Peak_H

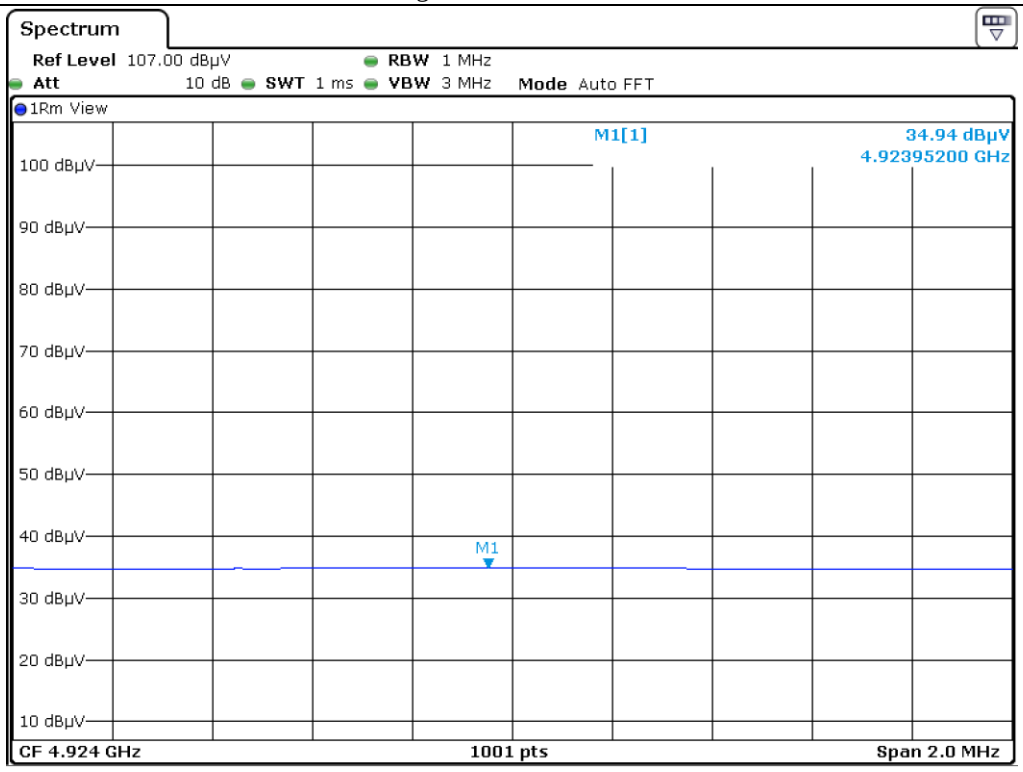


High Channel_Average_H

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_Peak_V



High Channel_Average_V

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

9.6.3.1.2 Test data for Antenna 0 (UANZZZWHA003)

-. Test Date : February 05, 2018 ~ February 09, 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 : 3 MHz for Peak and Average Mode

-. Frequency range : 1 GHz ~ 26.5 GHz

-. Measurement distance : 3 m

-. Duty Cycle : > 98 %

-. Result : PASSED

Frequency (GHz)	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									
4 824.00	46.52	Peak	H	30.84	12.31	35.74	53.93	74.00	20.07
	36.22	Average	H				43.63	54.00	10.37
	43.95	Peak	V				51.36	74.00	22.64
	34.84	Average	V				42.25	54.00	11.75
Test Data for Middle Channel									
4 884.00	47.32	Peak	H	30.01	12.43	35.80	53.96	74.00	20.04
	35.45	Average	H				42.09	54.00	11.91
	46.92	Peak	V				53.56	74.00	20.44
	35.46	Average	V				42.10	54.00	11.90
Test Data for High Channel									
4 924.00	47.32	Peak	H	31.15	12.81	35.96	55.32	74.00	18.68
	35.95	Average	H				43.95	54.00	10.05
	45.53	Peak	V				53.53	74.00	20.47
	35.62	Average	V				43.62	54.00	10.38

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

Tested by: Hyung-Kwon, Oh / Assistant Manager

9.6.3.2 Test data for 802.11g WLAN Mode

9.6.3.2.1 Test data for Antenna 0 (UANZZZWHA002)

-. Test Date : February 05, 2018 ~ February 09, 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 : 3 MHz for Peak and Average Mode

-. Frequency range : 1 GHz ~ 26.5 GHz

-. Measurement distance : 3 m

-. Duty Cycle : > 98 %

-. Result : PASSED

Frequency (GHz)	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									
4 824.00	46.43	Peak	H	30.84	12.31	35.74	53.84	74.00	20.16
	40.22	Average	H				47.63	54.00	6.37
	46.48	Peak	V				53.89	74.00	20.11
	39.84	Average	V				47.25	54.00	6.75
Test Data for Middle Channel									
4 884.00	46.62	Peak	H	30.01	12.43	35.80	53.26	74.00	20.74
	40.43	Average	H				47.07	54.00	6.93
	46.55	Peak	V				53.19	74.00	20.81
	39.48	Average	V				46.12	54.00	7.88
Test Data for High Channel									
4 924.00	46.64	Peak	H	31.15	12.81	35.96	54.64	74.00	19.36
	40.88	Average	H				48.88	54.00	5.12
	46.14	Peak	V				54.14	74.00	19.86
	39.26	Average	V				47.26	54.00	6.74

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

Tested by: Hyung-Kwon, Oh / Assistant Manager

9.6.3.2.2 Test data for Antenna 0 (UANZZZWHA003)

-. Test Date : February 05, 2018 ~ February 09, 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 : 3 MHz for Peak and Average Mode

-. Frequency range : 1 GHz ~ 26.5 GHz

-. Measurement distance : 3 m

-. Duty Cycle : > 98 %

-. Result : PASSED

Frequency (GHz)	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									
4 824.00	46.52	Peak	H	30.84	12.31	35.74	53.93	74.00	20.07
	39.42	Average	H				46.83	54.00	7.17
	46.73	Peak	V				54.14	74.00	19.86
	36.95	Average	V				44.36	54.00	9.64
Test Data for Middle Channel									
4 884.00	43.67	Peak	H	30.01	12.43	35.80	50.31	74.00	23.69
	40.48	Average	H				47.12	54.00	6.88
	47.25	Peak	V				53.89	74.00	20.11
	37.53	Average	V				44.17	54.00	9.83
Test Data for High Channel									
4 924.00	43.66	Peak	H	31.15	12.81	35.96	51.66	74.00	22.34
	38.48	Average	H				46.48	54.00	7.52
	43.25	Peak	V				51.25	74.00	22.75
	39.37	Average	V				47.37	54.00	6.63

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

Tested by: Hyung-Kwon, Oh / Assistant Manager

9.6.3.3 Test data for 802.11n_HT20 WLAN Mode

9.6.3.3.1 Test data for Antenna 0 (UANZZZWHA002)

-. Test Date : February 05, 2018 ~ February 09, 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 : 3 MHz for Peak and Average Mode

-. Frequency range : 1 GHz ~ 26.5 GHz

-. Measurement distance : 3 m

-. Duty Cycle : > 98 %

-. Result : PASSED

Frequency (GHz)	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									
4 824.00	45.62	Peak	H	30.84	12.31	35.74	53.03	74.00	20.97
	38.54	Average	H				45.95	54.00	8.05
	44.88	Peak	V				52.29	74.00	21.71
	38.01	Average	V				45.42	54.00	8.58
Test Data for Middle Channel									
4 884.00	45.33	Peak	H	30.01	12.43	35.80	51.97	74.00	22.03
	38.62	Average	H				45.26	54.00	8.74
	45.84	Peak	V				52.48	74.00	21.52
	38.65	Average	V				45.29	54.00	8.71
Test Data for High Channel									
4 924.00	44.35	Peak	H	31.15	12.81	35.96	52.35	74.00	21.65
	38.38	Average	H				46.38	54.00	7.62
	44.73	Peak	V				52.73	74.00	21.27
	38.57	Average	V				46.57	54.00	7.43

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

Tested by: Hyung-Kwon, Oh / Assistant Manager

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9.6.3.3.2 Test data for Antenna 0 (UANZZZWHA003)

-. Test Date : February 05, 2018 ~ February 09, 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 : 3 MHz for Peak and Average Mode

-. Frequency range : 1 GHz ~ 26.5 GHz

-. Measurement distance : 3 m

-. Duty Cycle : > 98 %

-. Result : PASSED

Frequency (GHz)	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									
4 824.00	44.34	Peak	H	30.84	12.31	35.74	51.75	74.00	22.25
	37.64	Average	H				45.05	54.00	8.95
	44.20	Peak	V				51.61	74.00	22.39
	39.41	Average	V				46.82	54.00	7.18
Test Data for Middle Channel									
4 884.00	44.54	Peak	H	30.01	12.43	35.80	51.18	74.00	22.82
	37.95	Average	H				44.59	54.00	9.41
	44.15	Peak	V				50.79	74.00	23.21
	37.33	Average	V				43.97	54.00	10.03
Test Data for High Channel									
4 924.00	43.94	Peak	H	31.15	12.81	35.96	51.94	74.00	22.06
	39.47	Average	H				47.47	54.00	6.53
	43.67	Peak	V				51.67	74.00	22.33
	37.44	Average	V				45.44	54.00	8.56

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

Tested by: Hyung-Kwon, Oh / Assistant Manager

9.6.3.4 Test data for 802.11n_HT40 WLAN Mode

9.6.3.4.1 Test data for Antenna 0 (UANZZZWHA002)

-. Test Date : February 05, 2018 ~ February 09, 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 : 3 MHz for Peak and Average Mode

-. Frequency range : 1 GHz ~ 26.5 GHz

-. Measurement distance : 3 m

-. Duty Cycle : > 98 %

-. Result : PASSED

Frequency (GHz)	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									
4 844.00	45.53	Peak	H	30.84	12.31	35.76	52.92	74.00	21.08
	38.95	Average	H				46.34	54.00	7.66
	44.11	Peak	V				51.50	74.00	22.50
	38.95	Average	V				46.34	54.00	7.66
Test Data for Middle Channel									
4 884.00	45.03	Peak	H	30.01	12.43	35.80	51.67	74.00	22.33
	38.44	Average	H				45.08	54.00	8.92
	44.84	Peak	V				51.48	74.00	22.52
	38.28	Average	V				44.92	54.00	9.08
Test Data for High Channel									
4 904.00	44.67	Peak	H	31.15	12.81	35.94	52.69	74.00	21.31
	38.55	Average	H				46.57	54.00	7.43
	44.62	Peak	V				52.64	74.00	21.36
	38.74	Average	V				46.76	54.00	7.24

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

Tested by: Hyung-Kwon, Oh / Assistant Manager

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9.6.3.4.2 Test data for Antenna 0 (UANZZZWHA003)

-. Test Date : February 05, 2018 ~ February 09, 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 : 3 MHz for Peak and Average Mode

-. Frequency range : 1 GHz ~ 26.5 GHz

-. Measurement distance : 3 m

-. Duty Cycle : > 98 %

-. Result : PASSED

Frequency (GHz)	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									
4 844.00	46.95	Peak	H	30.84	12.31	35.76	54.34	74.00	19.66
	37.11	Average	H				44.50	54.00	9.50
	45.95	Peak	V				53.34	74.00	20.66
	39.88	Average	V				47.27	54.00	6.73
Test Data for Middle Channel									
4 884.00	44.15	Peak	H	30.01	12.43	35.80	50.79	74.00	23.21
	40.04	Average	H				46.68	54.00	7.32
	45.27	Peak	V				51.91	74.00	22.09
	37.95	Average	V				44.59	54.00	9.41
Test Data for High Channel									
4 904.00	43.48	Peak	H	31.15	12.81	35.94	51.50	74.00	22.50
	39.63	Average	H				47.65	54.00	6.35
	45.84	Peak	V				53.86	74.00	20.14
	37.19	Average	V				45.21	54.00	8.79

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

Tested by: Hyung-Kwon, Oh / Assistant Manager

10. PEAK POWER SPECTRUL DENSITY

10.1 Operating environment

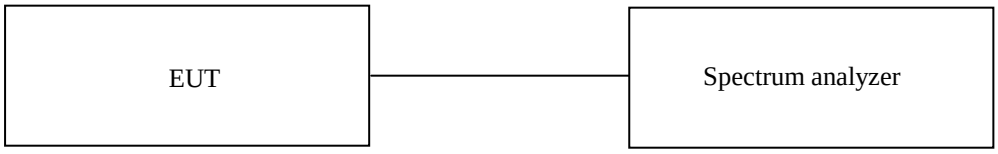
Temperature : 23 ℃

Relative humidity : 41 % R.H.

10.2 Test set-up

The antenna output of the EUT was connected to the spectrum analyzer.

The resolution bandwidth is set to 3 kHz ≤ RBW ≤100 kHz , the video bandwidth is set to 3 times the resolution bandwidth.



10.3 Test equipment used

	Model Number	Manufacturer	Description	Serial Number	Last Cal.
■ -	FSV40	Rohde & Schwarz	Signal Analyzer	101009	Apr. 05, 2017 (1Y)

All test equipment used is calibrated on a regular basis.

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10.4 Test data for 802.11b WLAN Mode

10.4.1 Test data for Antenna 0

-. Test Date : February 05, 2018 ~ February 09, 2018

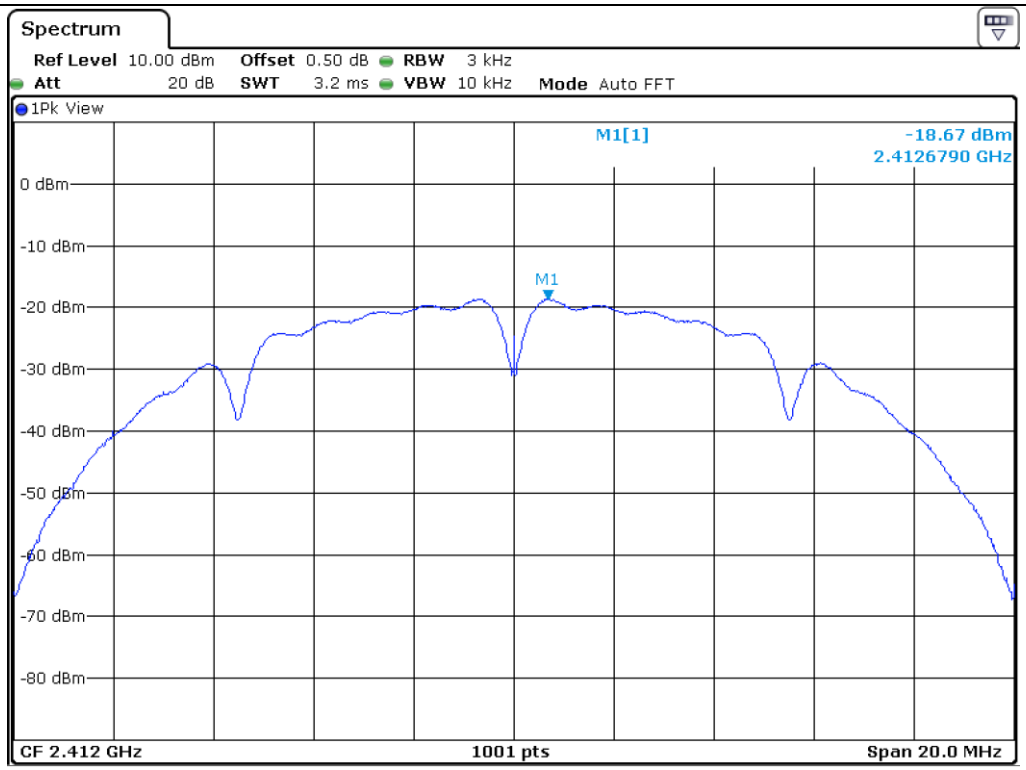
-. Test Result : Pass

-. Operating Condition : Continuous transmitting mode

CHANNEL	FREQUENCY(MHz)	MEASURED VLAUE (dBm)	LIMIT (dBm)	MARGIN (dB)
Low	2 412.00	-18.67	8.00	26.67
Middle	2 442.00	-19.77	8.00	27.77
High	2 462.00	-19.69	8.00	27.69

Remark. Margin = Limit – Measured value

Tested by: Hyung-Kwon, Oh / Assistant Manager



Low Channel

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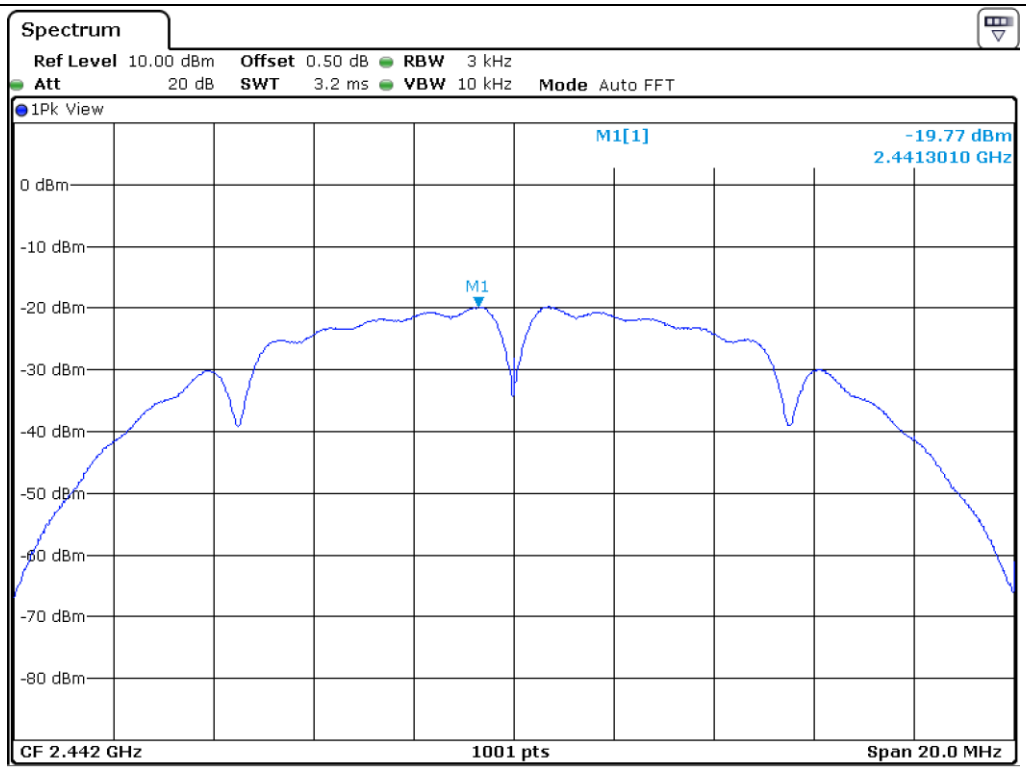
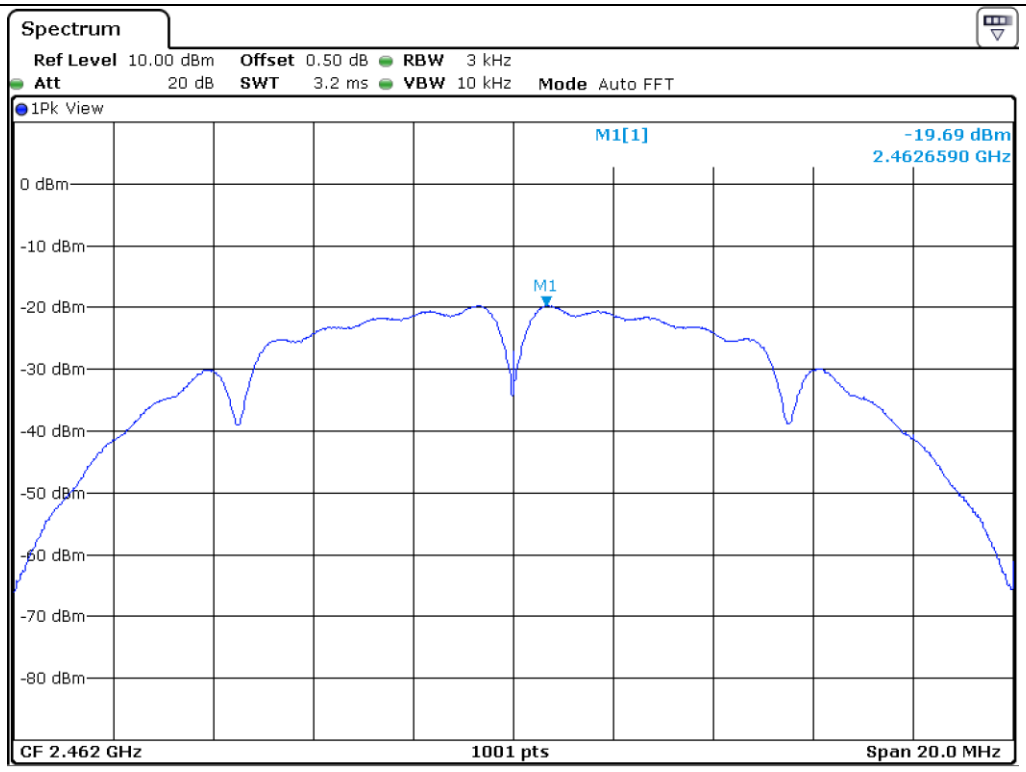


Middle Channel



High Channel

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10.4.2 Test data for Antenna 1

-. Test Date : July 17, 2017

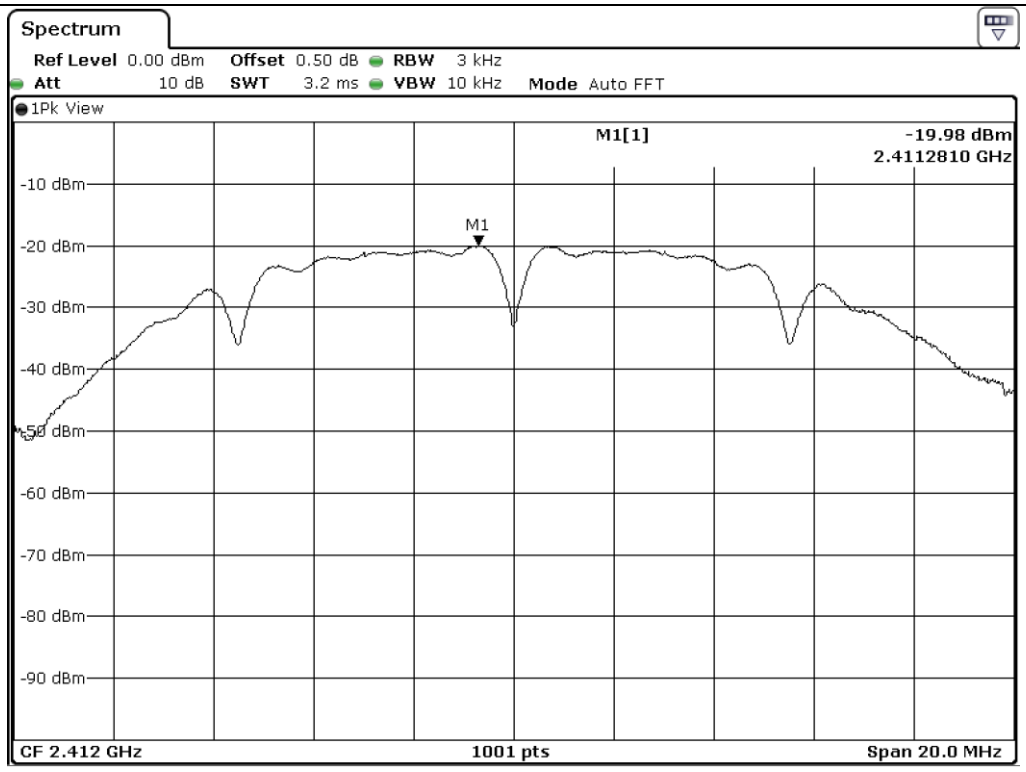
-. Test Result : Pass

-. Operating Condition : Continuous transmitting mode

CHANNEL	FREQUENCY(MHz)	MEASURED VLAUE (dBm)	LIMIT (dBm)	MARGIN (dB)
Low	2 412.00	-19.98	8.00	27.98
Middle	2 442.00	-19.80	8.00	27.80
High	2 462.00	-19.70	8.00	27.70

Remark. Margin = Limit – Measured value

Tested by: Hyung-Kwon, Oh / Assistant Manager



Low Channel

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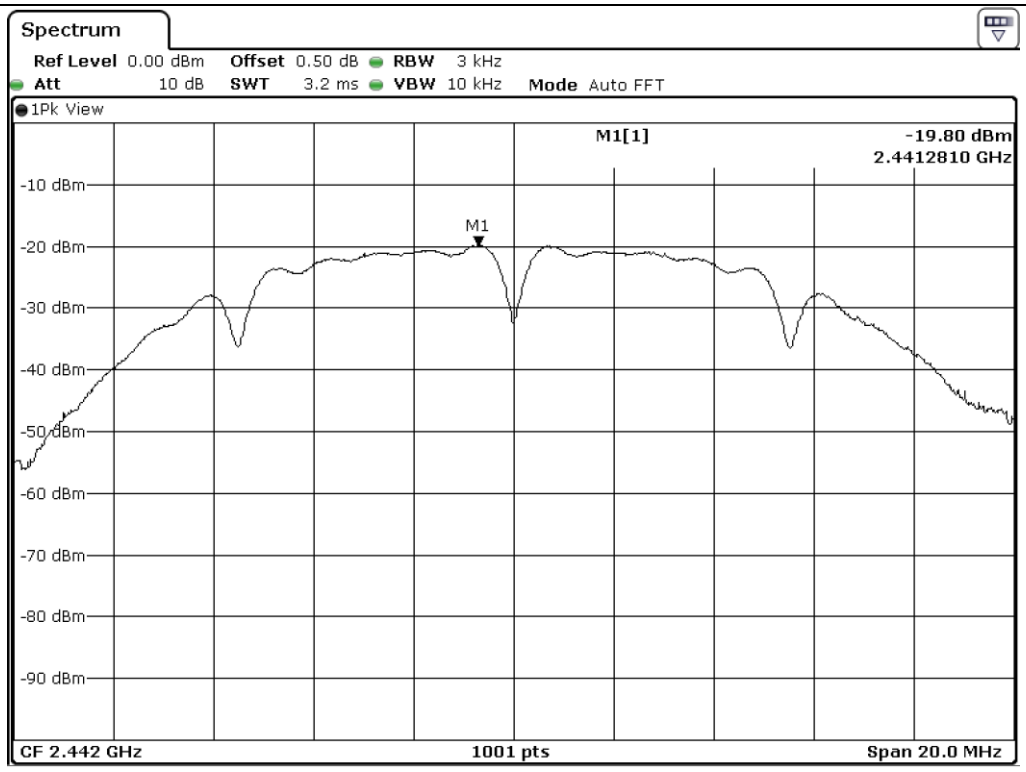
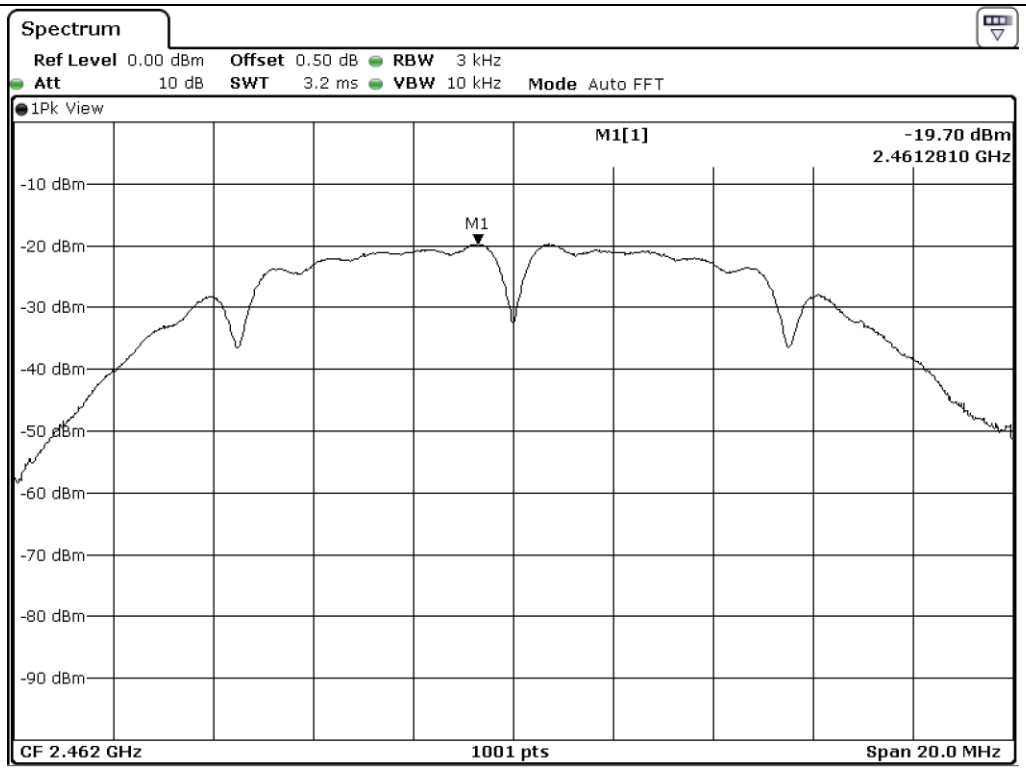


Middle Channel



High Channel

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10.4.3 Test data for Multiple Antenna

-. Test Date : February 05, 2018 ~ February 09, 2018

-. Test Result : Pass

-. Operating Condition : Continuous transmitting mode

CHANNEL	FREQUENCY(MHz)	MEASURED VLAUE (dBm)	LIMIT (dBm)	MARGIN (dB)
Low	2 412.00	-16.27	8.00	24.27
Middle	2 442.00	-16.77	8.00	24.77
High	2 462.00	-16.68	8.00	24.68

Remark 1 : Margin = Limit – Measured value

Remark 2 : Calculated Power Density = $10\log(10^{(\text{Antenna 0 Power Density}/10)}+10^{(\text{Antenna 1 Power Density}/10)})$

Tested by: Hyung-Kwon, Oh / Assistant Manager

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10.5 Test data for 802.11g WLAN Mode

10.5.1 Test data for Antenna 0

-. Test Date : February 05, 2018 ~ February 09, 2018

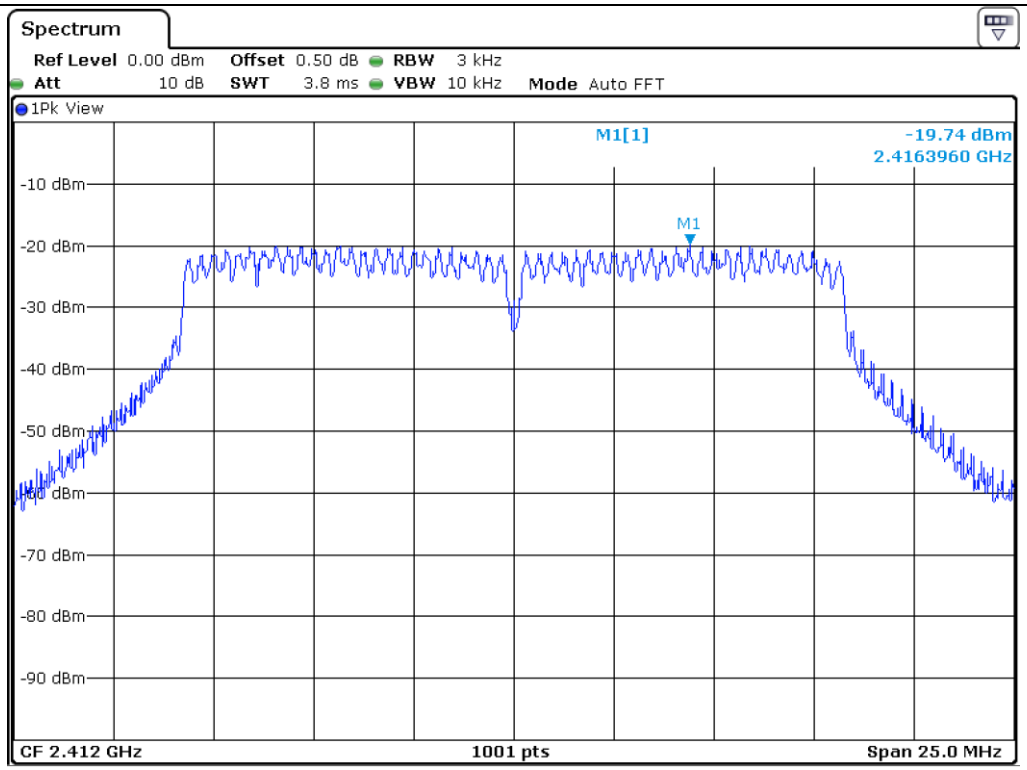
-. Test Result : Pass

-. Operating Condition : Continuous transmitting mode

CHANNEL	FREQUENCY(MHz)	MEASURED VLAUE (dBm)	LIMIT (dBm)	MARGIN (dB)
Low	2 412.00	-19.74	8.00	27.74
Middle	2 442.00	-19.89	8.00	27.89
High	2 462.00	-19.37	8.00	27.37

Remark. Margin = Limit – Measured value

Tested by: Hyung-Kwon, Oh / Assistant Manager



Low Channel

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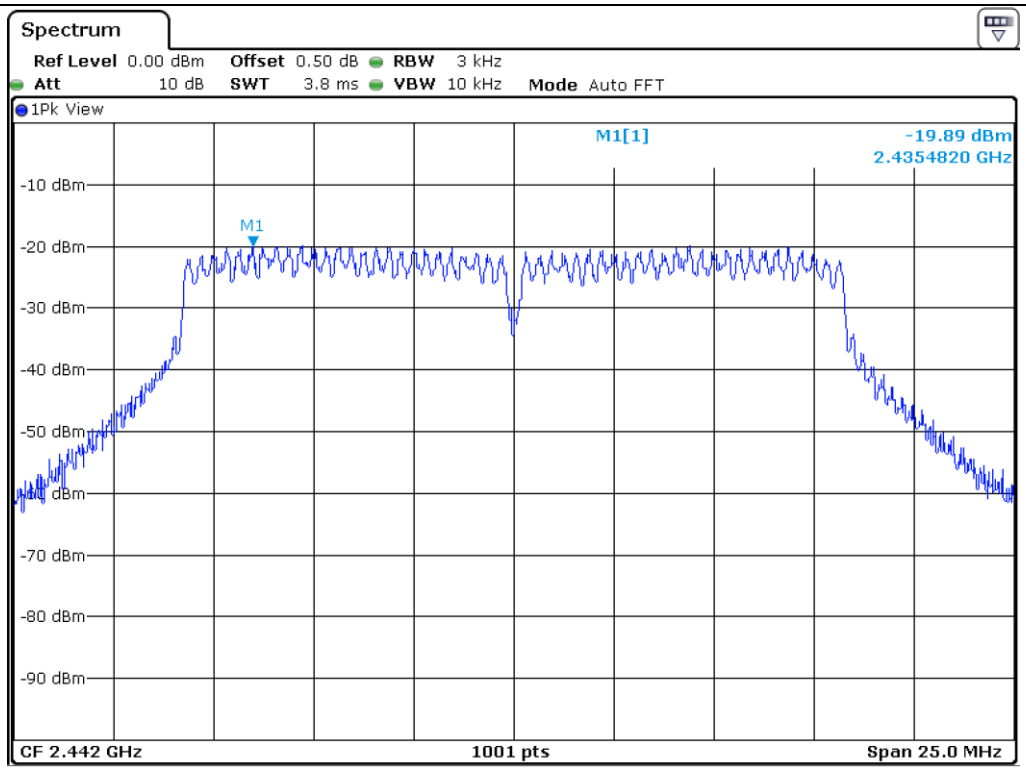
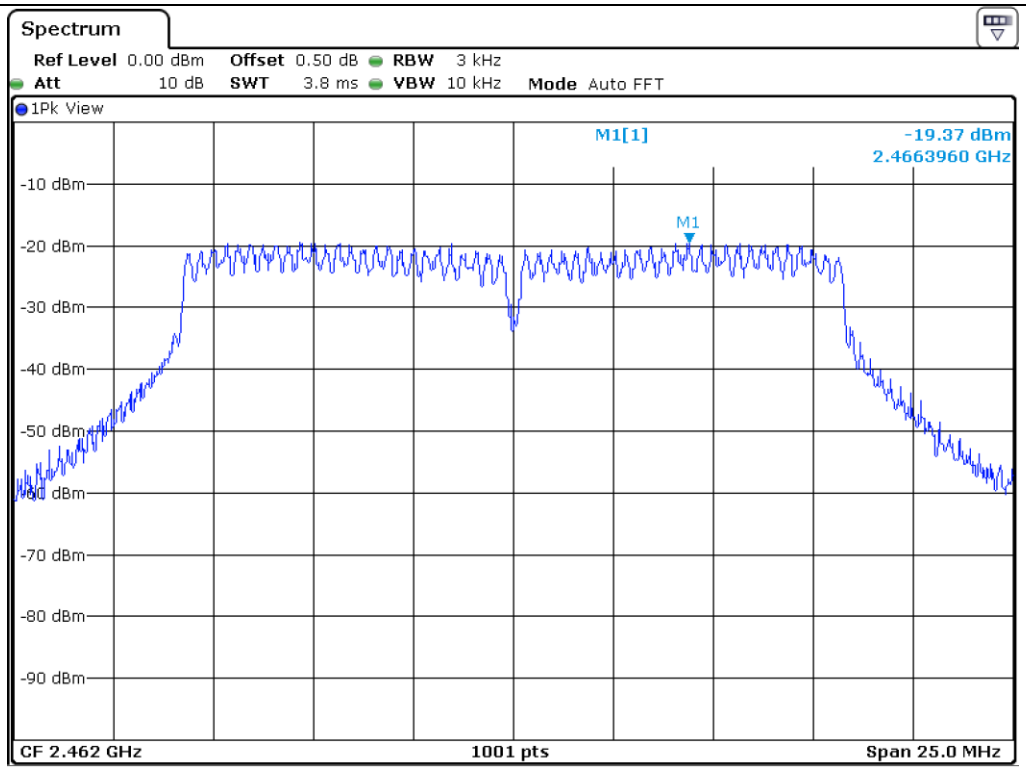


Middle Channel



High Channel

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10.5.2 Test data for Antenna 1

-. Test Date : July 17, 2017

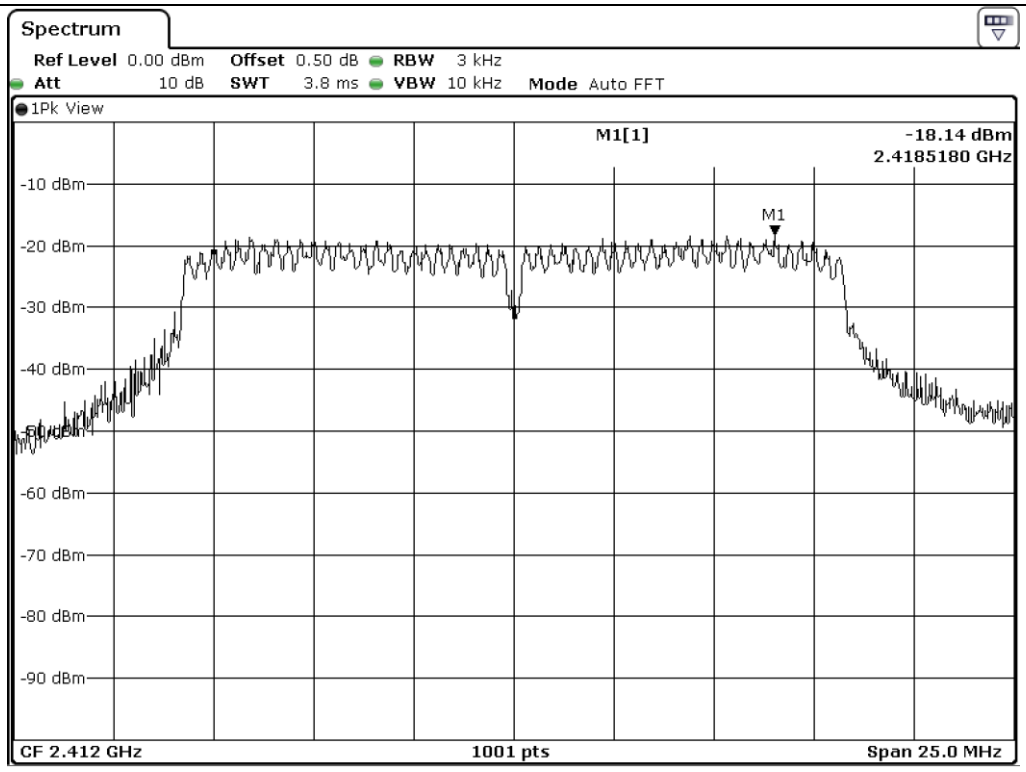
-. Test Result : Pass

-. Operating Condition : Continuous transmitting mode

CHANNEL	FREQUENCY(MHz)	MEASURED VLAUE (dBm)	LIMIT (dBm)	MARGIN (dB)
Low	2 412.00	-18.14	8.00	26.14
Middle	2 442.00	-18.27	8.00	26.27
High	2 462.00	-18.15	8.00	26.15

Remark. Margin = Limit – Measured value

Tested by: Hyung-Kwon, Oh / Assistant Manager



Low Channel

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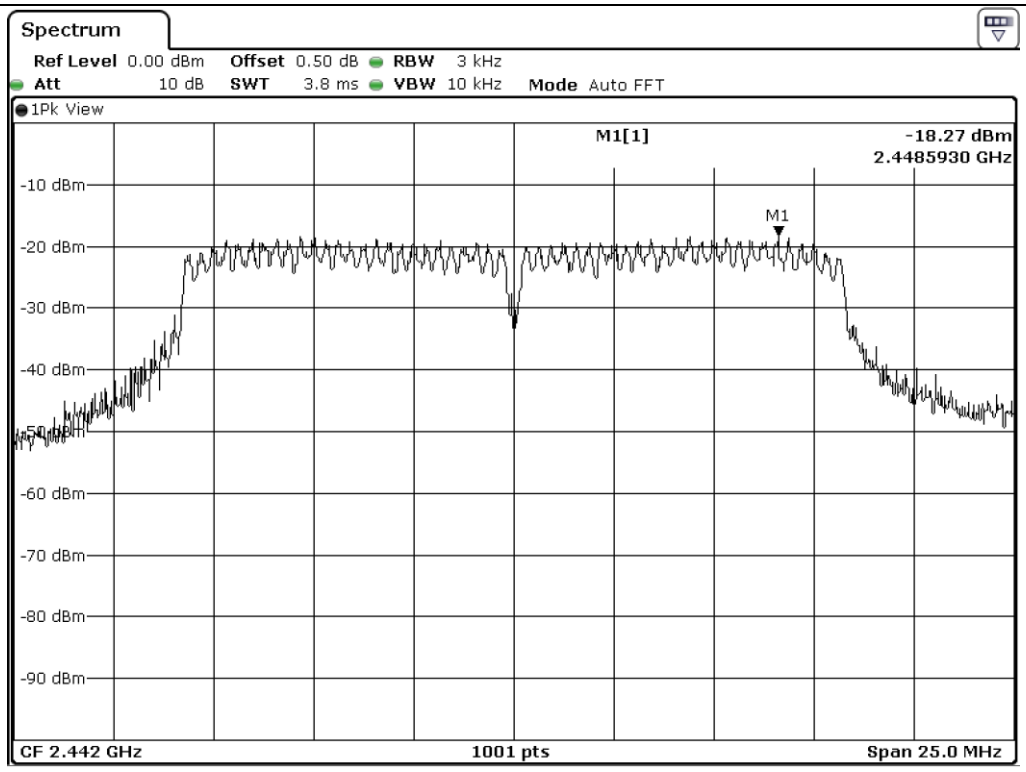
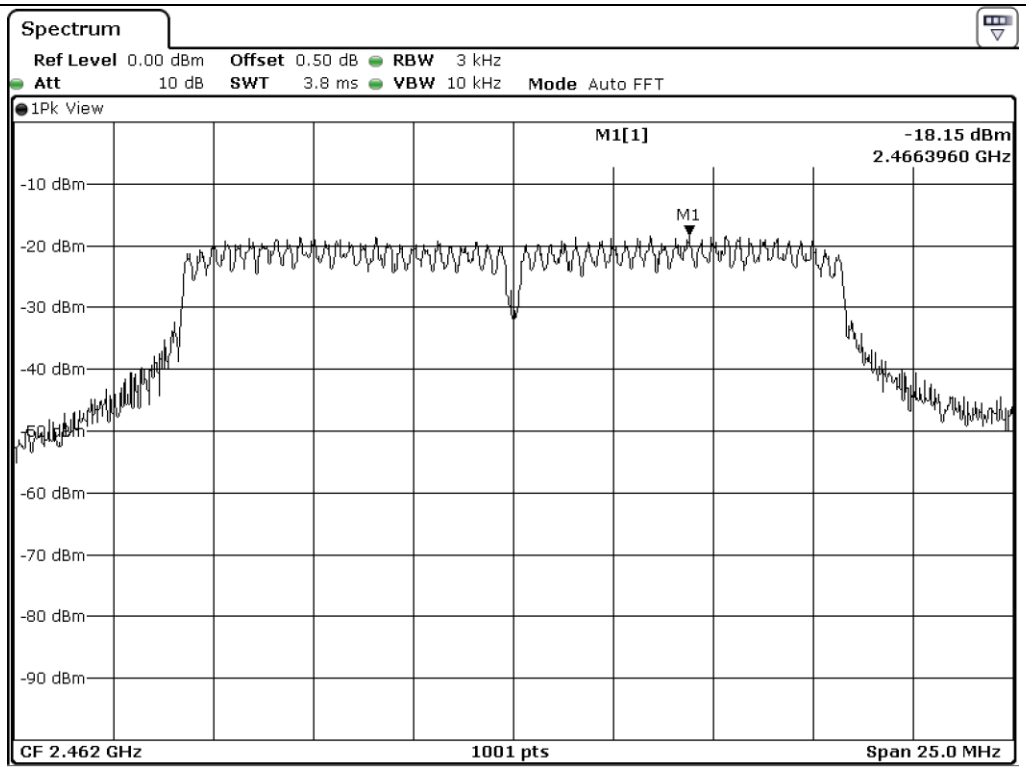


Middle Channel



High Channel

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10.5.3 Test data for Multiple Antenna

-. Test Date : February 05, 2018 ~ February 09, 2018

-. Test Result : Pass

-. Operating Condition : Continuous transmitting mode

CHANNEL	FREQUENCY(MHz)	MEASURED VLAUE (dBm)	LIMIT (dBm)	MARGIN (dB)
Low	2 412.00	-15.86	8.00	23.86
Middle	2 442.00	-15.99	8.00	23.99
High	2 462.00	-15.71	8.00	23.71

Remark 1 : Margin = Limit – Measured value

Remark 2 : Calculated Power Density = $10\log(10^{(\text{Antenna 0 Power Density}/10)}+10^{(\text{Antenna 1 Power Density}/10)})$

Tested by: Hyung-Kwon, Oh / Assistant Manager

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10.6 Test data for 802.11n_HT20 WLAN Mode

10.6.1 Test data for Antenna 0

-. Test Date : February 05, 2018 ~ February 09, 2018

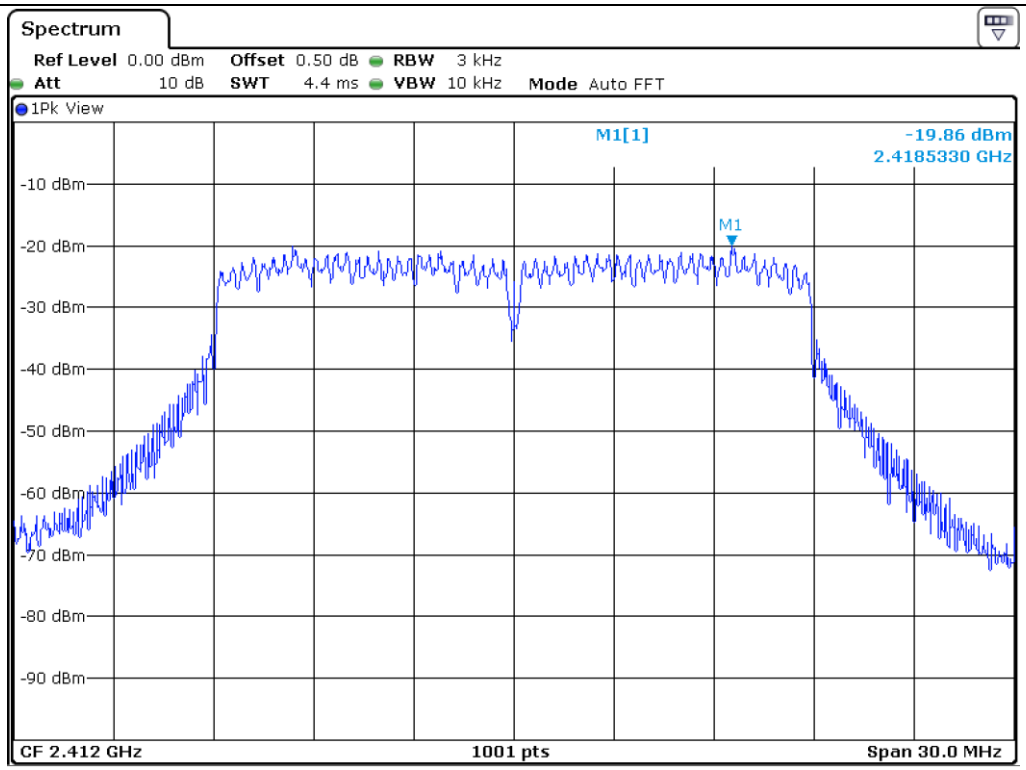
-. Test Result : Pass

-. Operating Condition : Continuous transmitting mode

CHANNEL	FREQUENCY(MHz)	MEASURED VLAUE (dBm)	LIMIT (dBm)	MARGIN (dB)
Low	2 412.00	-19.86	8.00	27.86
Middle	2 442.00	-20.11	8.00	28.11
High	2 462.00	-19.53	8.00	27.53

Remark. Margin = Limit – Measured value

Tested by: Hyung-Kwon, Oh / Assistant Manager



Low Channel

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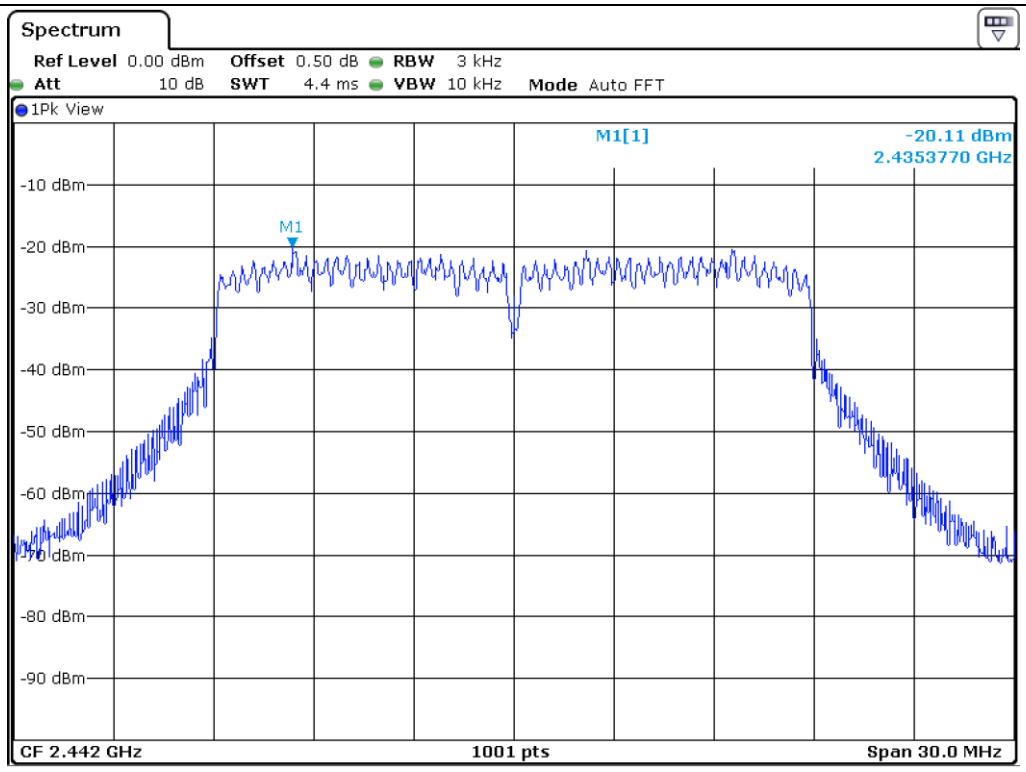
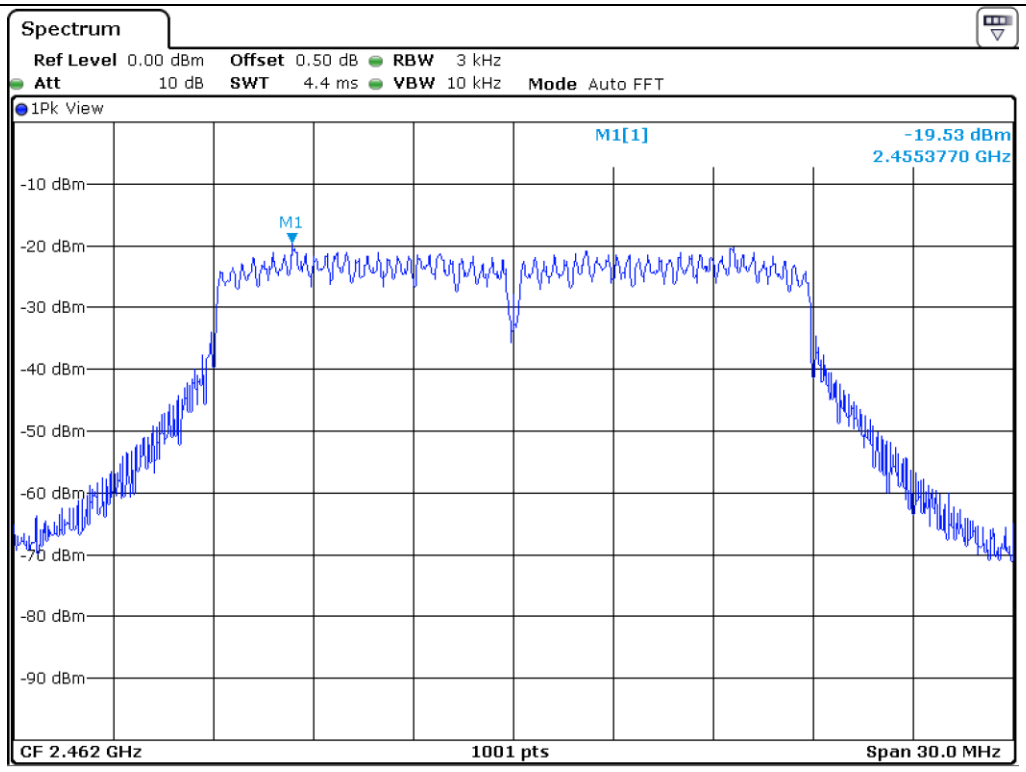


Middle Channel



High Channel

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10.6.2 Test data for Antenna 1

-. Test Date : July 17, 2017

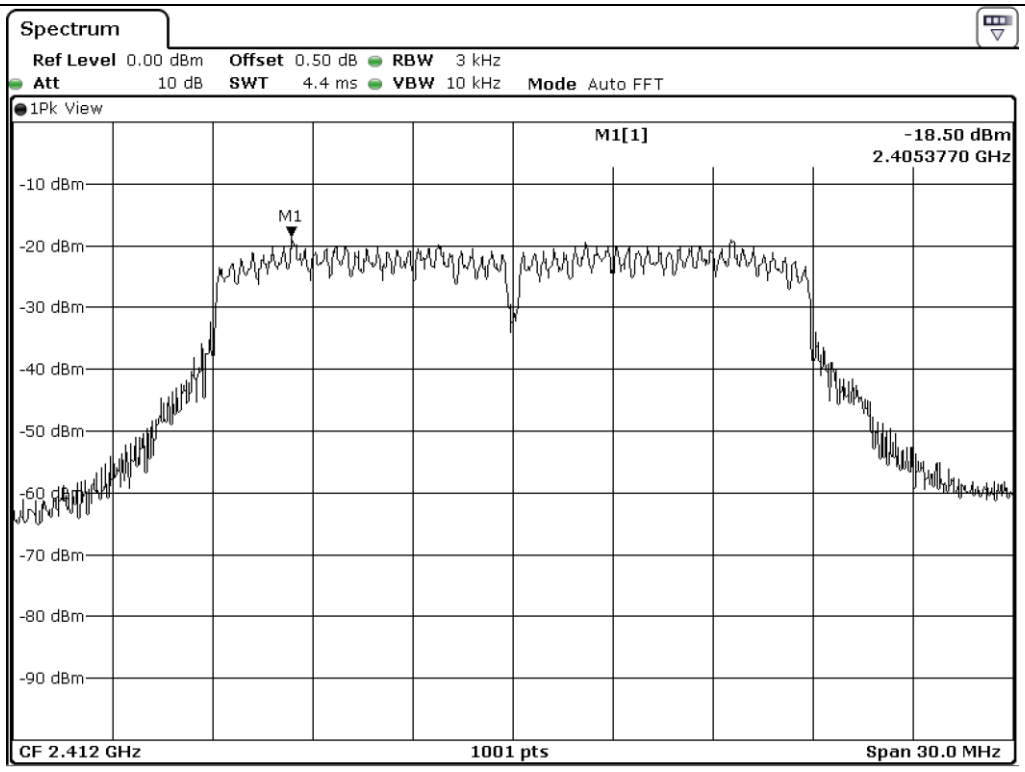
-. Test Result : Pass

-. Operating Condition : Continuous transmitting mode

CHANNEL	FREQUENCY(MHz)	MEASURED VLAUE (dBm)	LIMIT (dBm)	MARGIN (dB)
Low	2 412.00	-18.50	8.00	26.50
Middle	2 442.00	-17.94	8.00	25.94
High	2 462.00	-18.85	8.00	26.85

Remark. Margin = Limit – Measured value

Tested by: Hyung-Kwon, Oh / Assistant Manager



Low Channel

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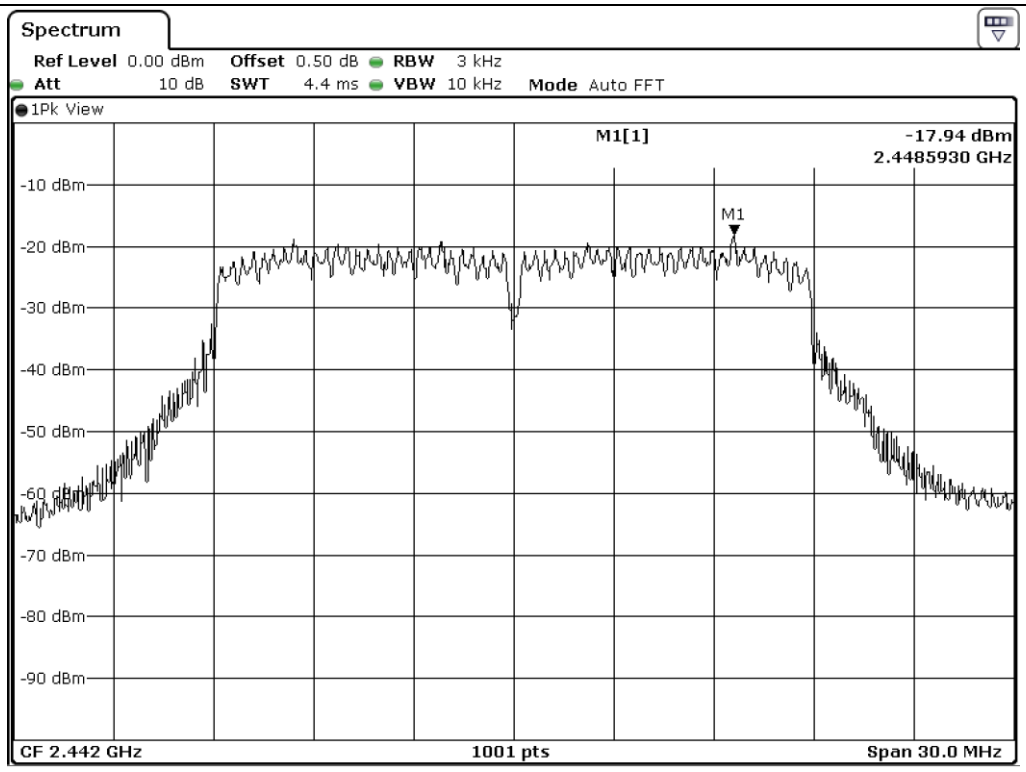
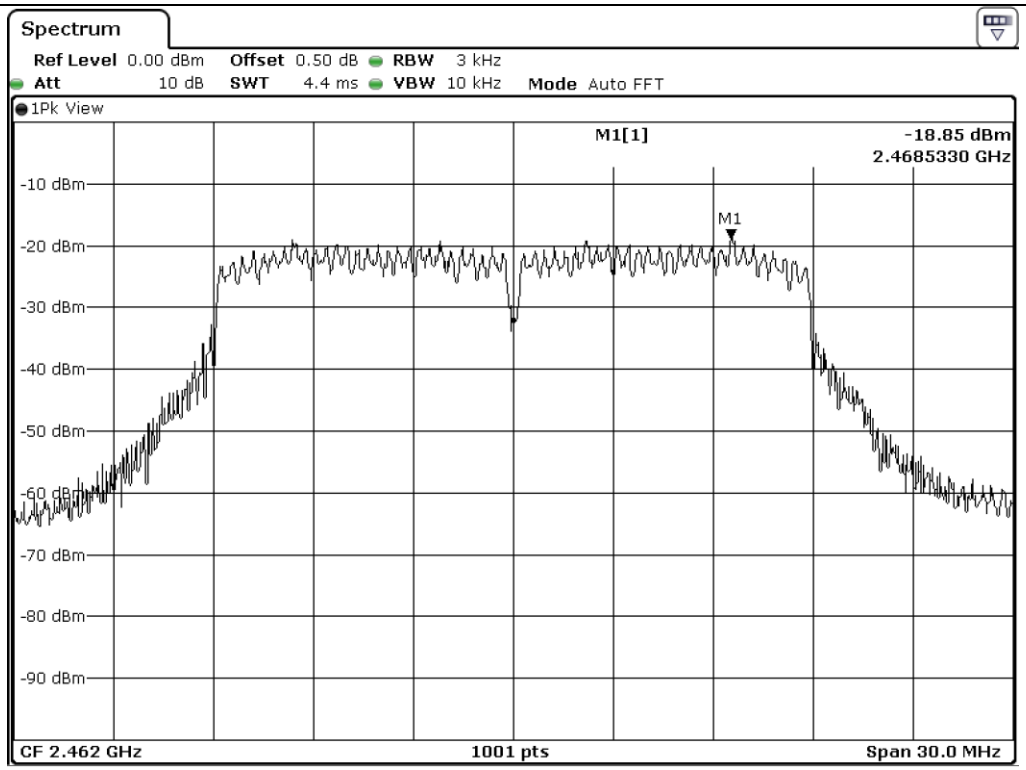


Middle Channel



High Channel

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10.6.3 Test data for Multiple Antenna

-. Test Date : February 05, 2018 ~ February 09, 2018

-. Test Result : Pass

-. Operating Condition : Continuous transmitting mode

CHANNEL	FREQUENCY(MHz)	MEASURED VLAUE (dBm)	LIMIT (dBm)	MARGIN (dB)
Low	2 412.00	-16.12	8.00	24.12
Middle	2 442.00	-15.88	8.00	23.88
High	2 462.00	-16.17	8.00	24.17

Remark 1 : Margin = Limit – Measured value

Remark 2 : Calculated Power Density = $10\log(10^{(\text{Antenna 0 Power Density}/10)}+10^{(\text{Antenna 1 Power Density}/10)})$

Tested by: Hyung-Kwon, Oh / Assistant Manager

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10.7 Test data for 802.11n_HT40 WLAN Mode

10.7.1 Test data for Antenna 0

-. Test Date : February 05, 2018 ~ February 09, 2018

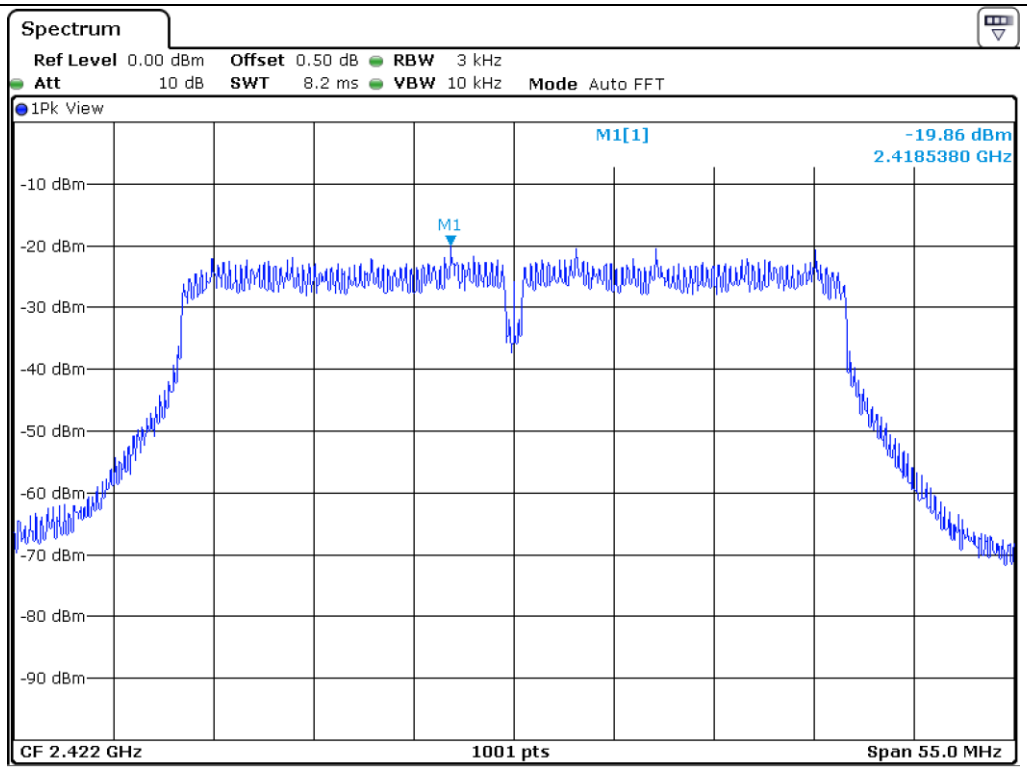
-. Test Result : Pass

-. Operating Condition : Continuous transmitting mode

CHANNEL	FREQUENCY(MHz)	MEASURED VLAUE (dBm)	LIMIT (dBm)	MARGIN (dB)
Low	2 422.00	-19.86	8.00	27.86
Middle	2 442.00	-20.49	8.00	28.49
High	2 452.00	-20.07	8.00	28.07

Remark. Margin = Limit – Measured value

Tested by: Hyung-Kwon, Oh / Assistant Manager



Low Channel

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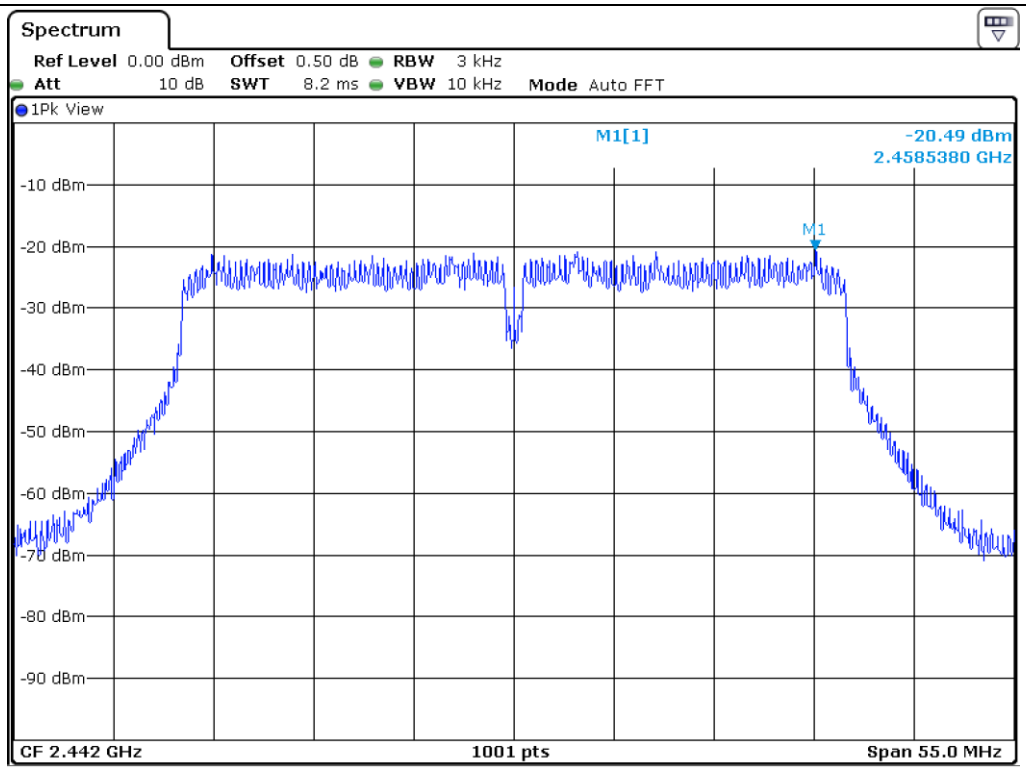
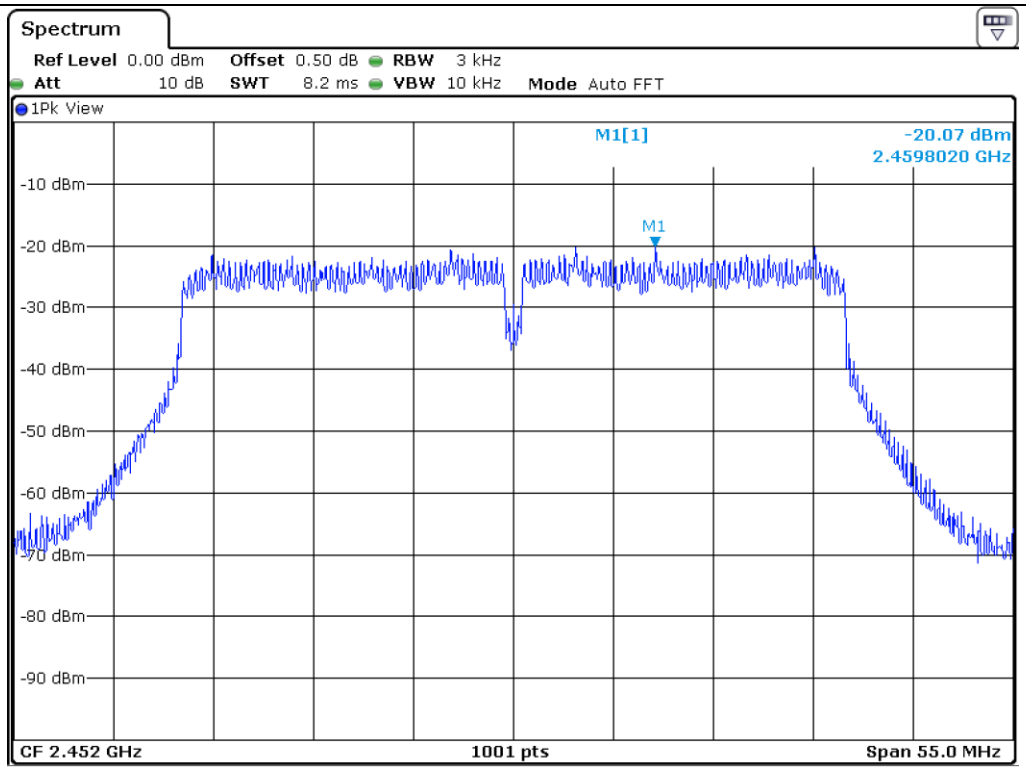


Middle Channel



High Channel

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10.7.2 Test data for Antenna 1

-. Test Date : July 17, 2017

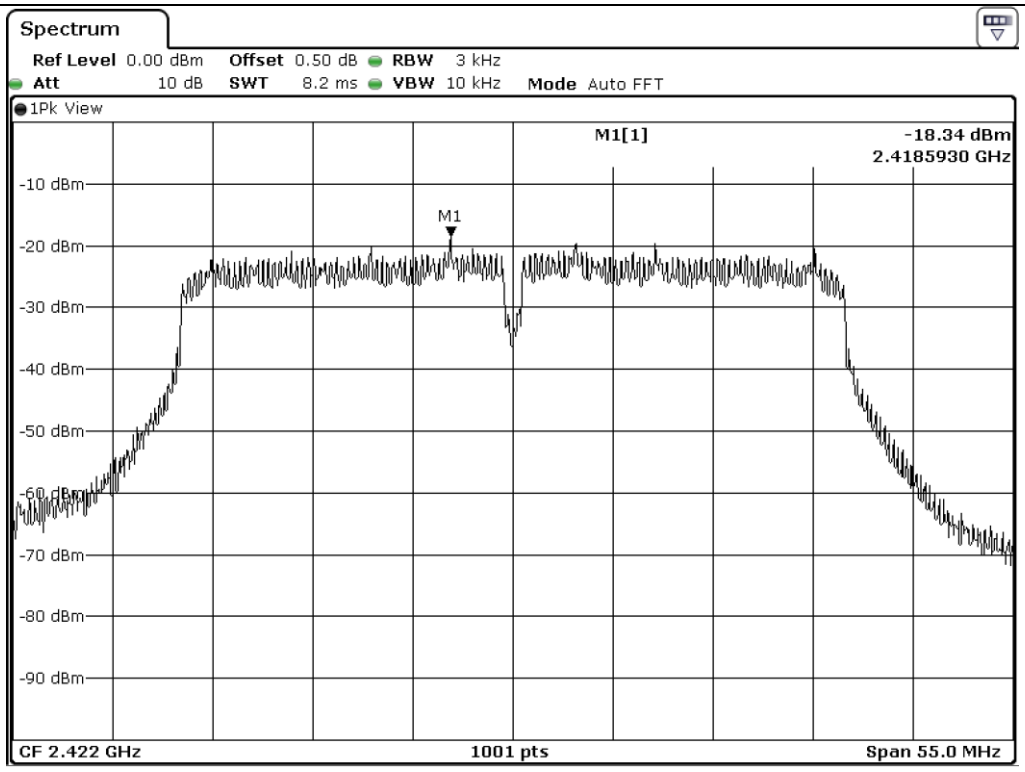
-. Test Result : Pass

-. Operating Condition : Continuous transmitting mode

CHANNEL	FREQUENCY(MHz)	MEASURED VLAUE (dBm)	LIMIT (dBm)	MARGIN (dB)
Low	2 422.00	-18.34	8.00	26.34
Middle	2 442.00	-18.55	8.00	26.55
High	2 452.00	-18.68	8.00	26.68

Remark. Margin = Limit – Measured value

Tested by: Hyung-Kwon, Oh / Assistant Manager



Low Channel

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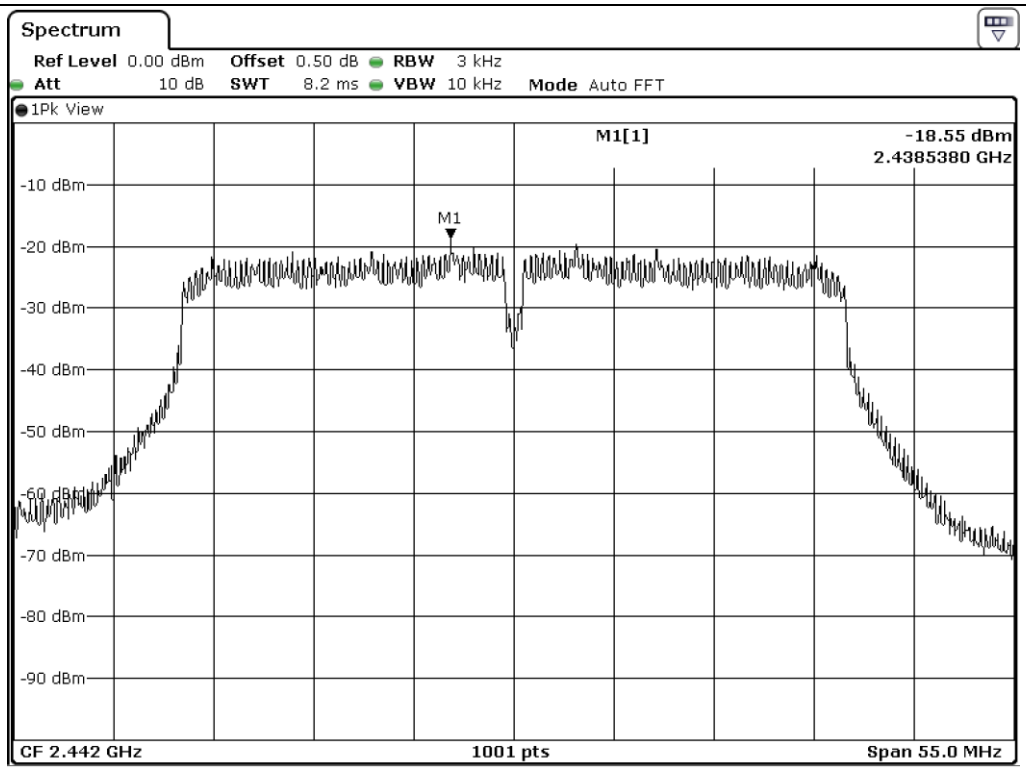
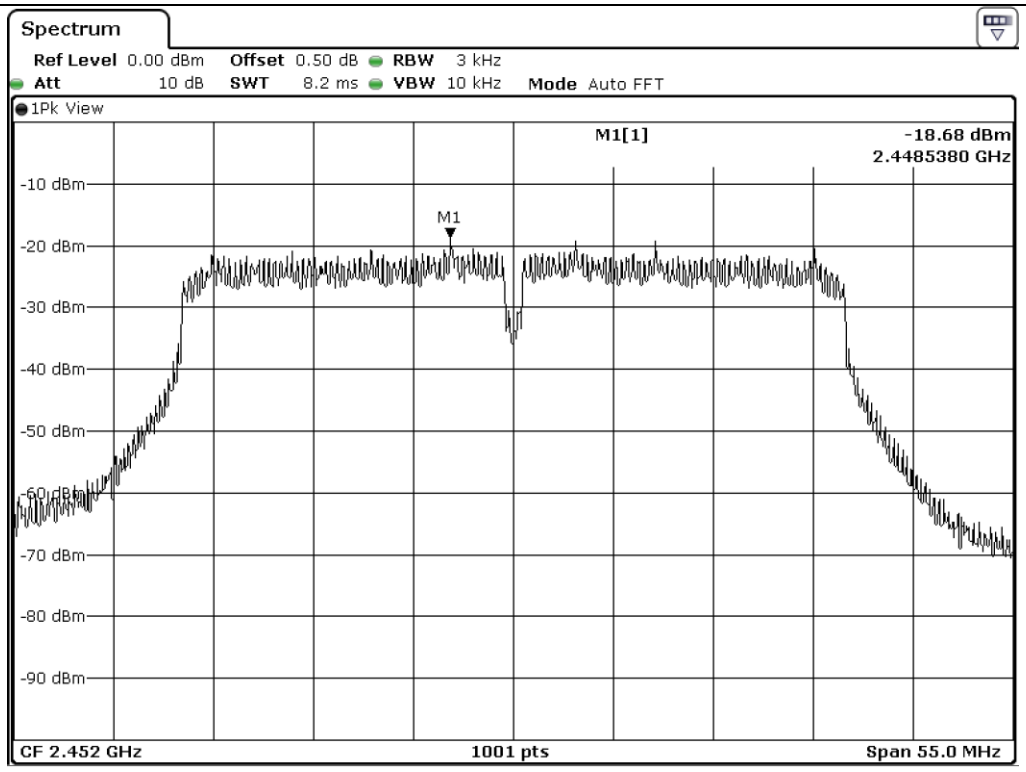


Middle Channel



High Channel

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10.7.3 Test data for Multiple Antenna

-. Test Date : February 05, 2018 ~ February 09, 2018

-. Test Result : Pass

-. Operating Condition : Continuous transmitting mode

CHANNEL	FREQUENCY(MHz)	MEASURED VLAUE (dBm)	LIMIT (dBm)	MARGIN (dB)
Low	2 422.00	-16.02	8.00	24.02
Middle	2 442.00	-16.40	8.00	24.40
High	2 452.00	-16.31	8.00	24.31

Remark 1 : Margin = Limit – Measured value

Remark 2 : Calculated Power Density = $10\log(10^{(\text{Antenna 0 Power Density}/10)}+10^{(\text{Antenna 1 Power Density}/10)})$

Tested by: Hyung-Kwon, Oh / Assistant Manager

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11. RADIATED EMISSION TEST

11.1 Operating environment

Temperature : 25 ℃

Relative humidity : 44 % R.H.

11.2 Test set-up

The radiated emissions measurements were on the 3 m semi anechoic chamber. The EUT and other support equipment were placed on 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.

11.3 Test equipment used

	Model Number	Manufacturer	Description	Serial Number	Last Cal.(Interval)
■ -	FSV40	Rohde & Schwarz	Signal Analyzer	101009	Apr. 05, 2017 (1Y)
■ -	ESCI	Rohde & Schwarz	Test Receiver	101012	Oct. 27, 2017 (1Y)
■ -	310N	Sonoma Instrument	Pre-Amplifier	312544	Apr. 05, 2017 (1Y)
■ -	BBV9718	Schwarzbeck	Amplifier	310	Sep. 01, 2017 (1Y)
■ -	DT3000	Innco System	Turn Table	930611	N/A
■ -	MA4000-EP	Innco System	Antenna Master	3320611	N/A
■ -	VULB9163	Schwarzbeck	TRILOG Broadband Antenna	9163-421	Apr. 15, 2016 (2Y)
■ -	BBHA9120D	Schwarzbeck	Horn Antenna	BBHA9120D295	May 26, 2017 (2Y)
■ -	BBHA9170	Schwarzbeck	Horn Antenna	BBHA9170178	Dec. 04, 2017 (2Y)

All test equipment used is calibrated on a regular basis.

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11.4 Test data for Antenna 0 (UANZZZWHA002)

11.4.1 Test data for 30 MHz ~ 1 000 MHz

Humidity Level : 44 % R.H. Temperature: 25 ℃

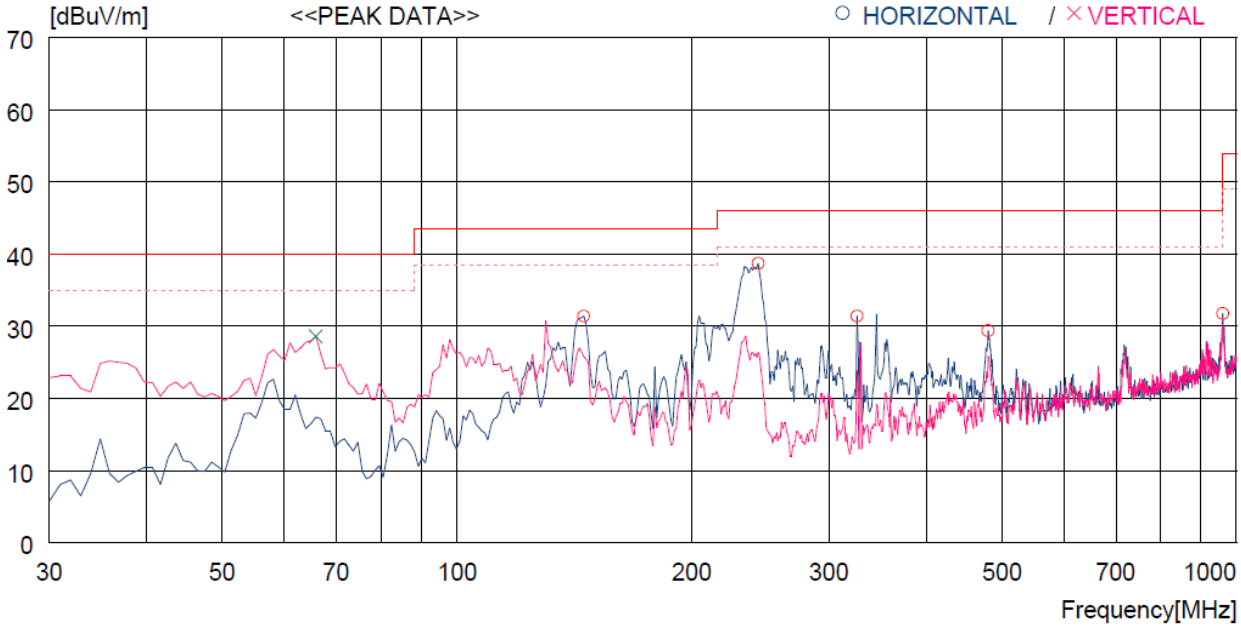
Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.247

Result : PASSED

EUT EUT : 802.11 a/b/g/n/ac WiFi Module Date: February 05, 2018 ~ February 09, 2018

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

-.Antenna 0, Antenna 1 and Multiple transmit tested, but the worst data were recorded.



No.	FREQ [MHz]	READING PEAK [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal ------										
1	145.430	53.6	7.8	2.9	32.9	31.4	43.5	12.1	100	184
2	243.400	56.0	12.2	3.6	33.1	38.7	46.0	7.3	100	184
3	325.850	46.4	13.9	4.2	33.1	31.4	46.0	14.6	100	184
4	480.081	40.8	16.8	5.1	33.3	29.4	46.0	16.6	100	265
5	960.217	34.6	22.0	7.2	32.0	31.8	54.0	22.2	100	200
----- Vertical ------										
6	65.890	48.6	11.2	1.9	33.1	28.6	40.0	11.4	100	289

Tested by: Hyung-Kwon, Oh / Assistant Manager

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11.4.2 Test data for Below 30 MHz

-. Test Date : February 05, 2018 ~ February 09, 2018

-. 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

-.Operating mode : Transmitting mode

Frequency (MHz)	Reading (dBµV)	Ant. Pol. (H/V)	Ant. Height (m)	Angle (°)	Ant. Factor (dB/m)	Cable Loss	Emission Level(dBµV/m)	Limits (dBµV/m)	Margin (dB)
It was not observed any emissions from the EUT.									

11.4.3 Test data for above 1 GHz

-. Test Date : February 05, 2018 ~ February 09, 2018

-. Resolution bandwidth : 1 MHz for Peak and Average Mode

-. Video bandwidth : 1 MHz for Peak Mode, 10 Hz for Average Mode

-. Frequency range : 1 GHz ~ 26.5 GHz

-. Measurement distance : 3 m

-.Operating mode : Transmitting mode

Frequency (MHz)	Reading (dBµV)	Ant. Pol. (H/V)	Ant. Height (m)	Angle (°)	Ant. Factor (dB/m)	Cable Loss	Emission Level(dBµV/m)	Limits (dBµV/m)	Margin (dB)
It was not observed any emissions from the EUT.									

Tested by: Hyung-Kwon, Oh / Assistant Manager

11.5 Test data for Antenna 0 (UANZZZWHA003)

11.5.1 Test data for 30 MHz ~ 1 000 MHz

Humidity Level : 44 % R.H. Temperature: 25 ℃

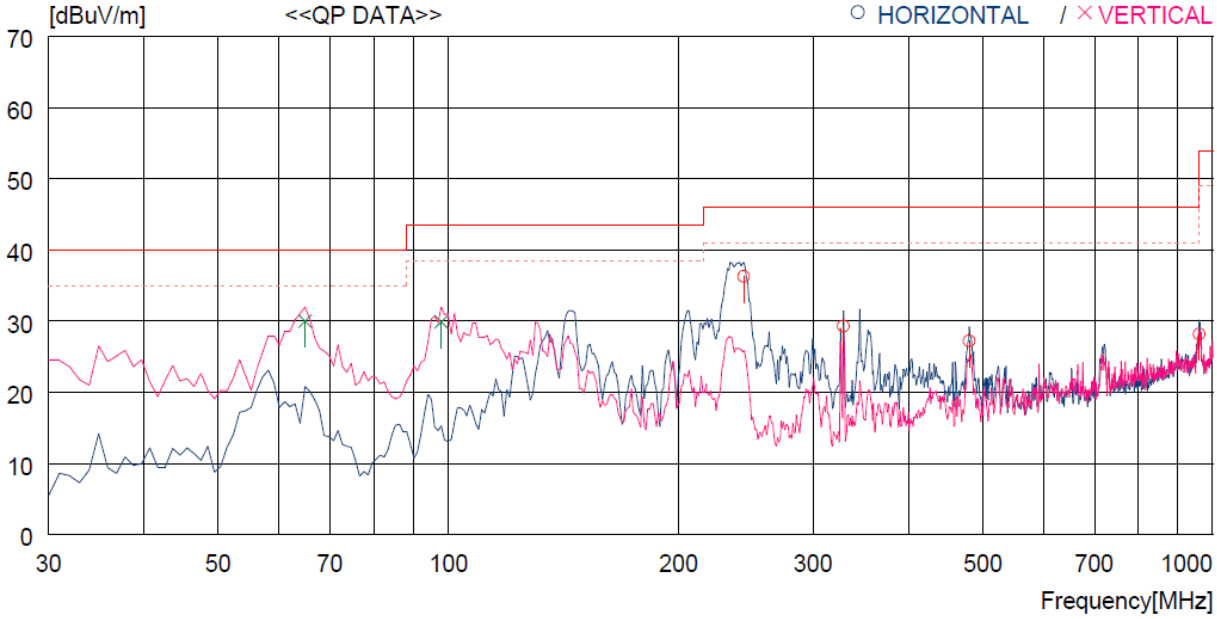
Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.247

Result : PASSED

EUT EUT : 802.11 a/b/g/n/ac WiFi Module Date: February 05, 2018 ~ February 09, 2018

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

-.Antenna 0, Antenna 1 and Multiple transmit tested, but the worst data were recorded.



No.	FREQ [MHz]	READING QP [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal ------										
1	243.400	53.6	12.2	3.6	33.1	36.3	46.0	9.7	100	183
2	328.760	44.2	14.0	4.2	33.1	29.3	46.0	16.7	100	183
3	480.081	38.6	16.8	5.1	33.3	27.2	46.0	18.8	100	183
4	960.217	31.0	22.0	7.2	32.0	28.2	54.0	25.8	100	192
----- Vertical ------										
5	64.920	49.7	11.5	1.9	33.1	30.0	40.0	10.0	100	162
6	97.900	49.0	11.5	2.4	33.0	29.9	43.5	13.6	100	331

Tested by: Hyung-Kwon, Oh / Assistant Manager

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11.5.2 Test data for Below 30 MHz

-. Test Date : February 05, 2018 ~ February 09, 2018

-. 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

-.Operating mode : Transmitting mode

Frequency (MHz)	Reading (dBµV)	Ant. Pol. (H/V)	Ant. Height (m)	Angle (°)	Ant. Factor (dB/m)	Cable Loss	Emission Level(dBµV/m)	Limits (dBµV/m)	Margin (dB)
It was not observed any emissions from the EUT.									

11.5.3 Test data for above 1 GHz

-. Test Date : February 05, 2018 ~ February 09, 2018

-. Resolution bandwidth : 1 MHz for Peak and Average Mode

-. Video bandwidth : 1 MHz for Peak Mode, 10 Hz for Average Mode

-. Frequency range : 1 GHz ~ 26.5 GHz

-. Measurement distance : 3 m

-.Operating mode : Transmitting mode

Frequency (MHz)	Reading (dBµV)	Ant. Pol. (H/V)	Ant. Height (m)	Angle (°)	Ant. Factor (dB/m)	Cable Loss	Emission Level(dBµV/m)	Limits (dBµV/m)	Margin (dB)
It was not observed any emissions from the EUT.									

Tested by: Hyung-Kwon, Oh / Assistant Manager

12. CONDUCTED EMISSION TEST

12.1 Operating environment

Temperature : (25 ~ 26) ℃

Relative humidity : (44 ~ 45) % R.H.

12.2 Test set-up

The EUT was placed on a wooden table, 0.8 m height above the floor. Power was fed to the EUT through a 50 Ω / 50 μH + 5 Ω Artificial Mains Network (AMN). The ground plane was electrically bonded to the reference ground system and all power lines were filtered from ambient.

12.3 Test equipment used

	Model Number	Manufacturer	Description	Serial Number	Last Cal. (Interval)
■ -	ESPI	Rohde & Schwarz	Test Receiver	101012	Oct. 27, 2017 (1Y)
□ -	ESHS10	Rohde & Schwarz	Test Receiver	834467/007	Apr. 05, 2017 (1Y)
□ -	NSLK8128	Schwarzbeck	AMN	8128-216	Apr. 06, 2017 (1Y)
■ -	NSLK8126	Schwarzbeck	AMN	8126-404	Apr. 05, 2017 (1Y)
□ -	3825/2	EMCO	AMN	9109-1869	Apr. 06, 2017 (1Y)
■ -	3825/2	EMCO	AMN	9109-1867	Apr. 06, 2017 (1Y)

All test equipment used is calibrated on a regular basis.

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12.4 Test data

-. Test Date : July 20, 2017

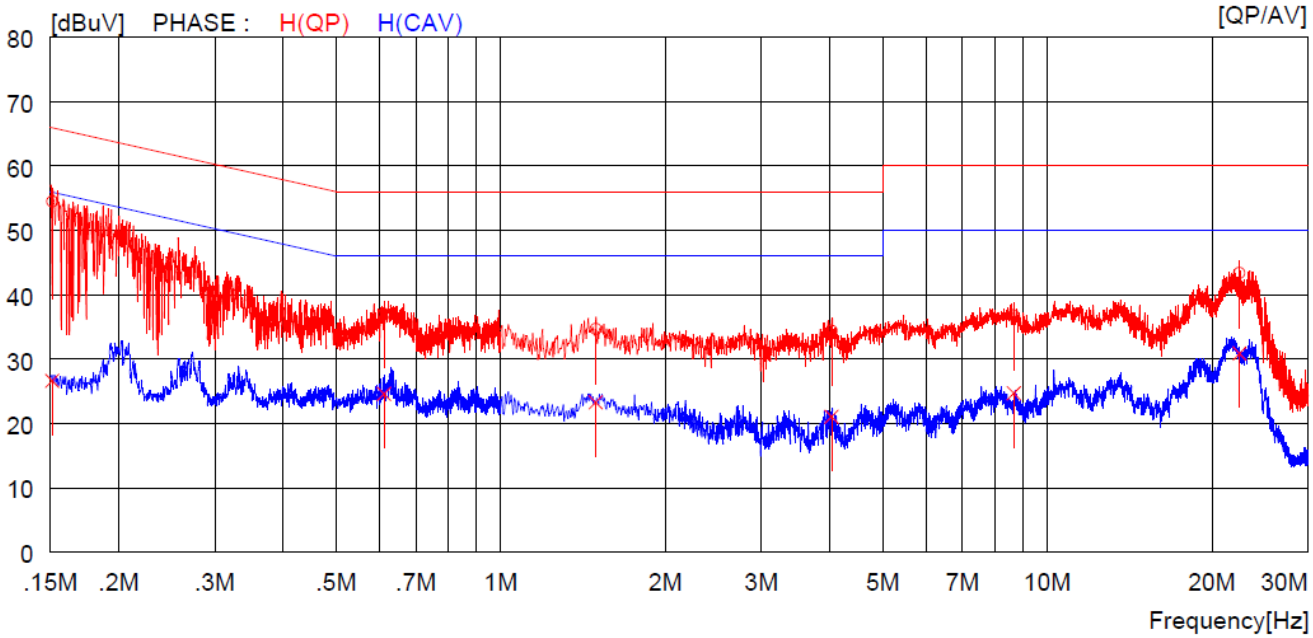
-. Resolution bandwidth : 9 kHz

-. Frequency range : 0.15 MHz ~ 30 MHz

-. Tested Line : HOT LINE

-. Antenna 0 (UANZZZWHA002, UANZZZWHA003), Antenna 1 and Multiple transmit tested,

but the worst data were recorded.



NO	FREQ [MHz]	READING QP [dBuV]	READING AV [dBuV]	C.FACTOR [dB]	RESULT QP [dBuV]	RESULT AV [dBuV]	LIMIT QP [dBuV]	LIMIT AV [dBuV]	MARGIN QP [dBuV]	MARGIN AV [dBuV]	PHASE
1	0.15100	44.5	----	10.0	54.5	----	65.9	----	11.4	----	H(QP)
2	0.61200	26.9	----	10.1	37.0	----	56.0	----	19.0	----	H(QP)
3	1.49200	24.5	----	10.1	34.6	----	56.0	----	21.4	----	H(QP)
4	4.03200	24.2	----	10.2	34.4	----	56.0	----	21.6	----	H(QP)
5	8.67500	26.4	----	10.4	36.8	----	60.0	----	23.2	----	H(QP)
6	22.47000	32.5	----	10.8	43.3	----	60.0	----	16.7	----	H(QP)
7	0.15100	----	16.6	10.0	----	26.6	----	55.9	----	29.3	H(CAV)
8	0.61200	----	14.5	10.1	----	24.6	----	46.0	----	21.4	H(CAV)
9	1.49200	----	13.2	10.1	----	23.3	----	46.0	----	22.7	H(CAV)
10	4.03200	----	10.9	10.2	----	21.1	----	46.0	----	24.9	H(CAV)
11	8.67500	----	14.3	10.4	----	24.7	----	50.0	----	25.3	H(CAV)
12	22.47000	----	20.1	10.8	----	30.9	----	50.0	----	19.1	H(CAV)

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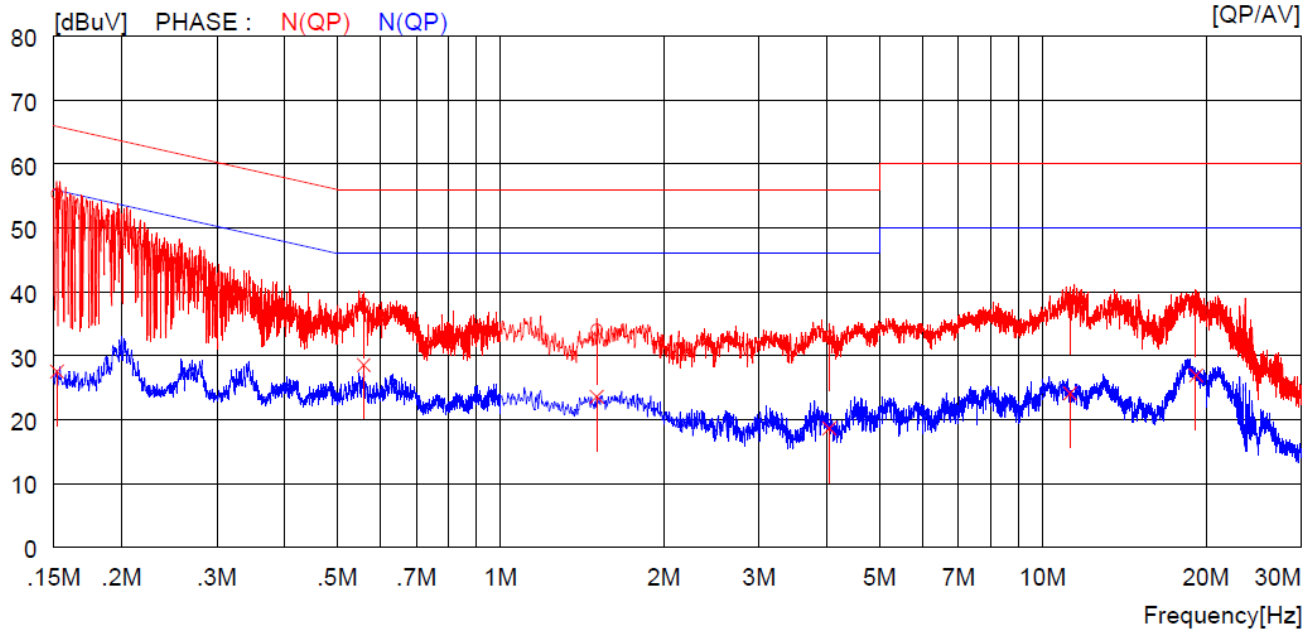
-. Tested Line : NEUTRAL LINE



NO	FREQ [MHz]	READING QP [dBuV]	READING AV [dBuV]	C.FACTOR [dB]	RESULT QP [dBuV]	RESULT AV [dBuV]	LIMIT QP [dBuV]	LIMIT AV [dBuV]	MARGIN QP [dBuV]	MARGIN AV [dBuV]	PHASE
1	0.15200	45.3	----	10.0	55.3	----	65.9	----	10.6	----	N(QP)
2	0.55900	28.0	----	10.1	38.1	----	56.0	----	17.9	----	N(QP)
3	1.50400	23.9	----	10.1	34.0	----	56.0	----	22.0	----	N(QP)
4	4.04000	22.7	----	10.2	32.9	----	56.0	----	23.1	----	N(QP)
5	11.23000	28.2	----	10.4	38.6	----	60.0	----	21.4	----	N(QP)
6	19.17000	27.5	----	10.7	38.2	----	60.0	----	21.8	----	N(QP)
7	0.15200	----	17.5	10.0	----	27.5	----	55.9	----	28.4	N(CAV)
8	0.55900	----	18.4	10.1	----	28.5	----	46.0	----	17.5	N(CAV)
9	1.50400	----	13.5	10.1	----	23.6	----	46.0	----	22.4	N(CAV)
10	4.04000	----	8.4	10.2	----	18.6	----	46.0	----	27.4	N(CAV)
11	11.23000	----	13.7	10.4	----	24.1	----	50.0	----	25.9	N(CAV)
12	19.17000	----	16.2	10.7	----	26.9	----	50.0	----	23.1	N(CAV)

Remark: Margin (dB) = Limit – Level (Result)

The emission level in above table is included the transducer factor that means insertion loss (LISN), cable loss and attenuator.

Tested by: Hyung-Kwon, Oh / Assistant Manager

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