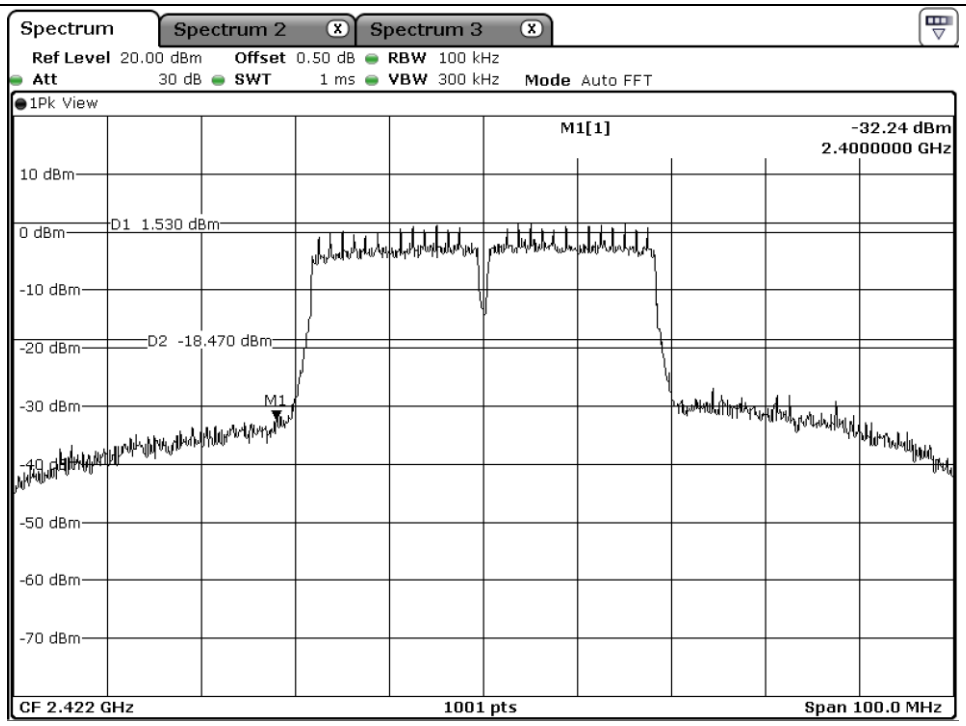
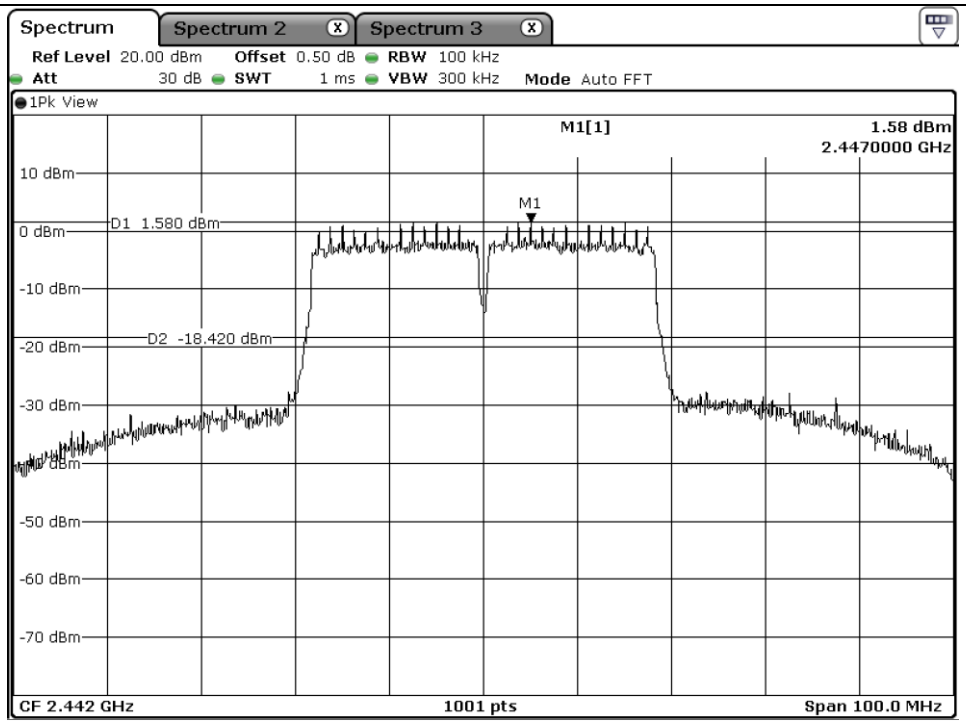
9.5.4 Test data for 802.11n_HT40 WLAN Mode

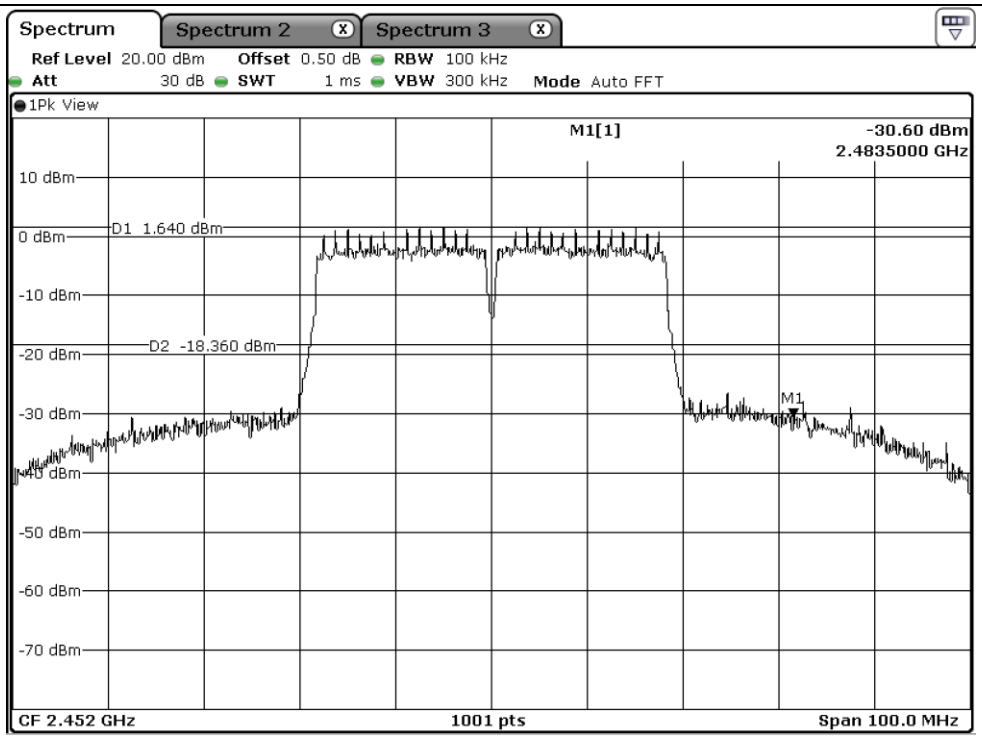
9.5.4.1 Test data for Antenna 0



Low Channel

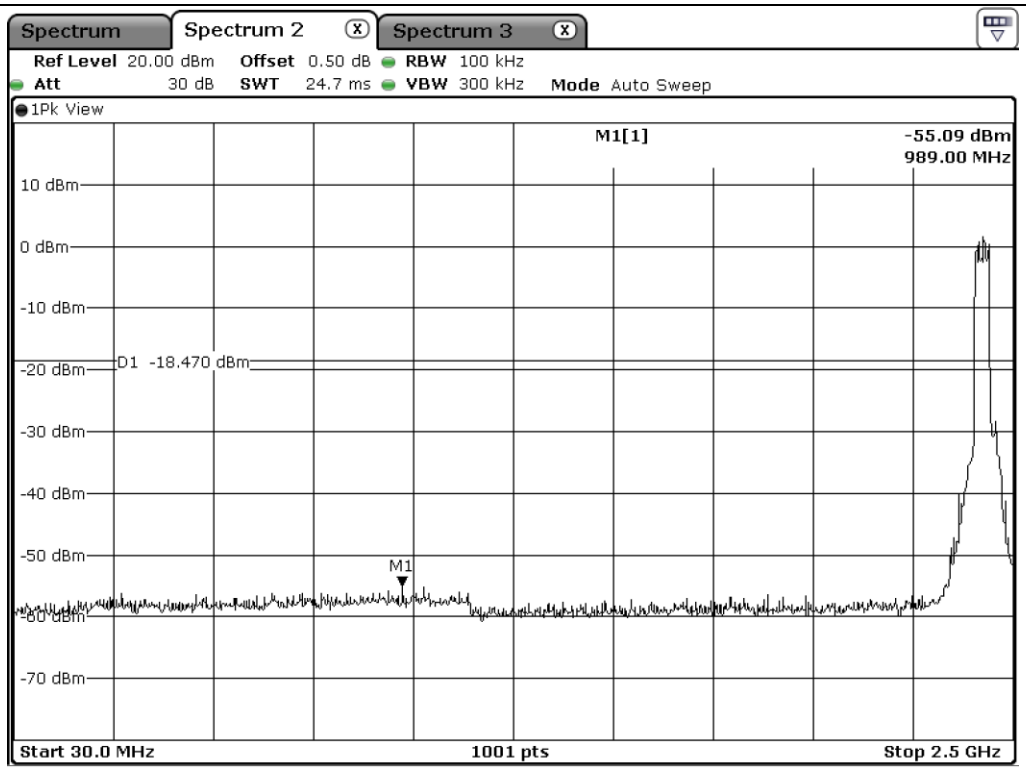


Middle Channel

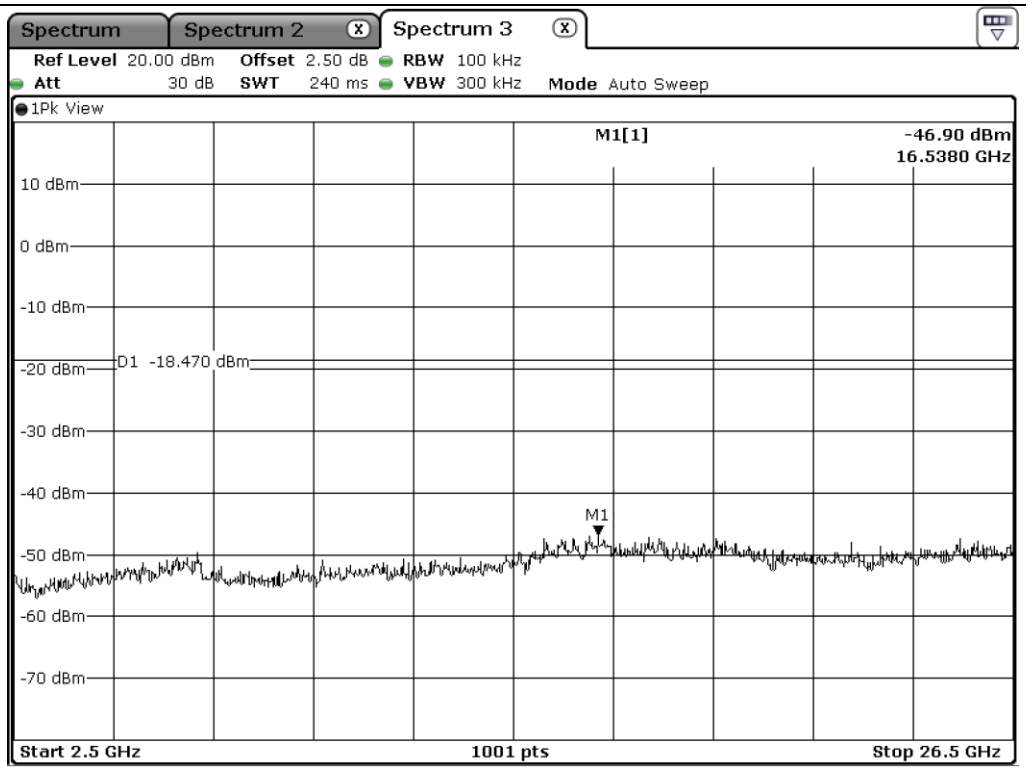


High Channel

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

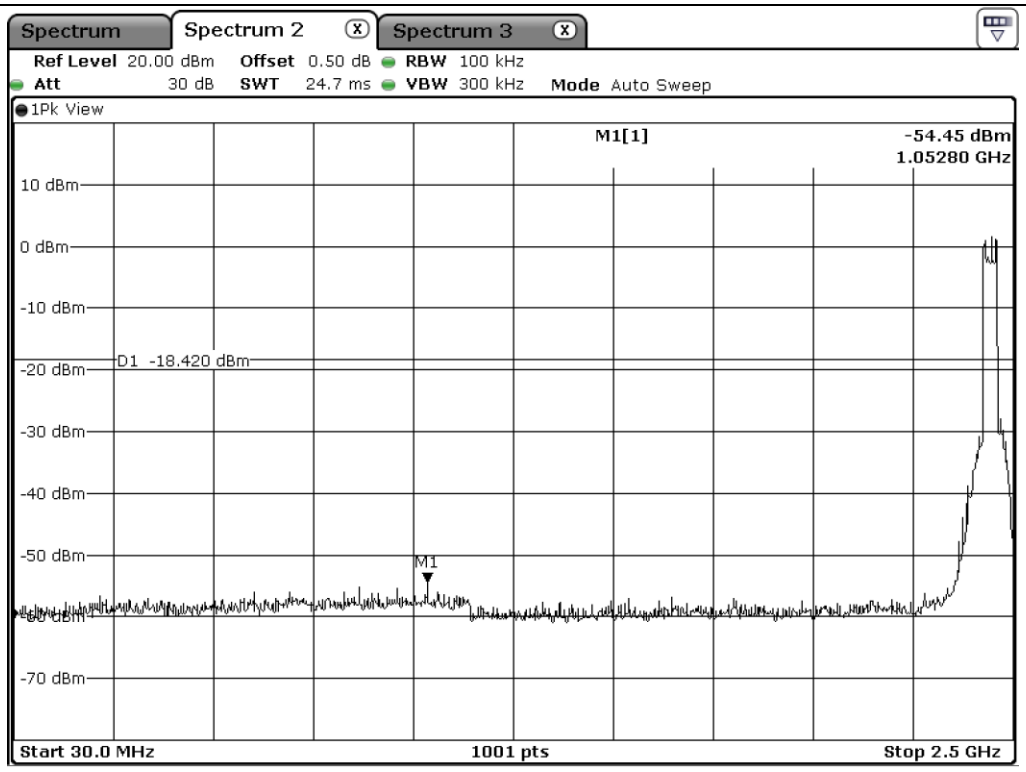


Low Channel

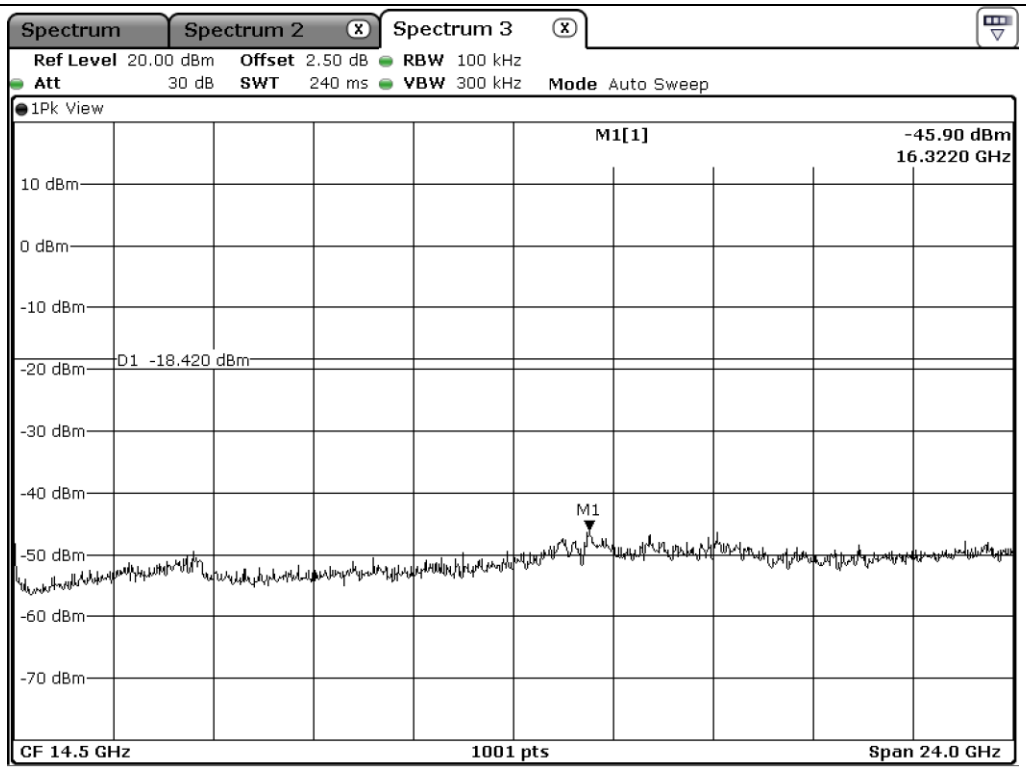


Low Channel

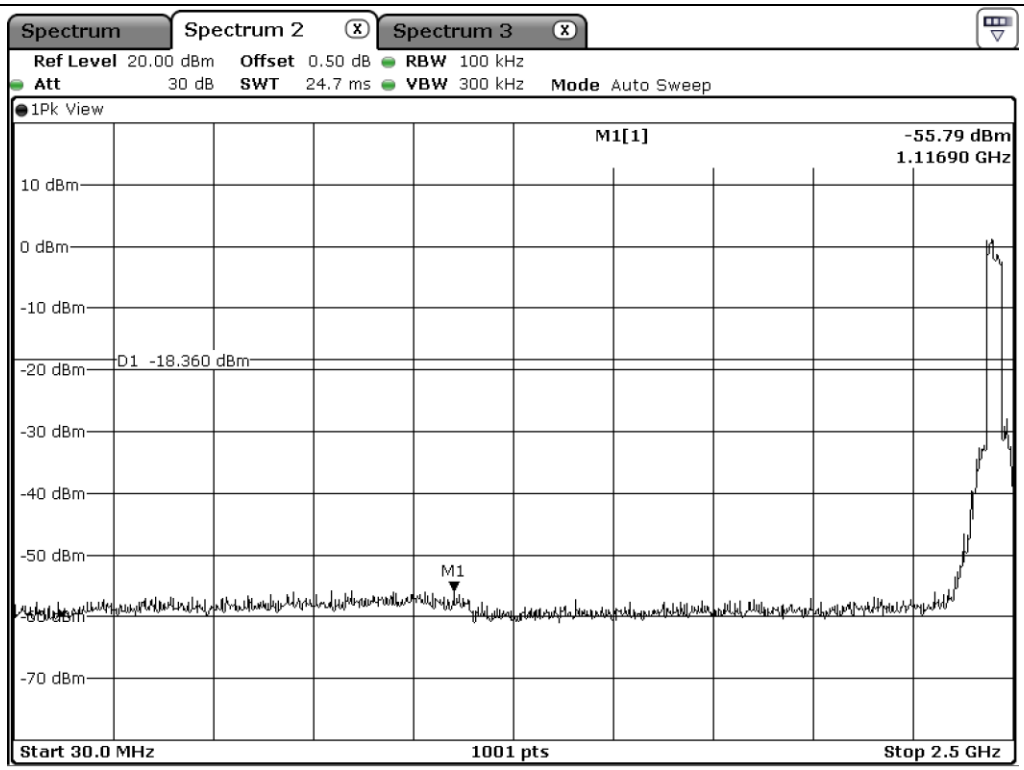
ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)



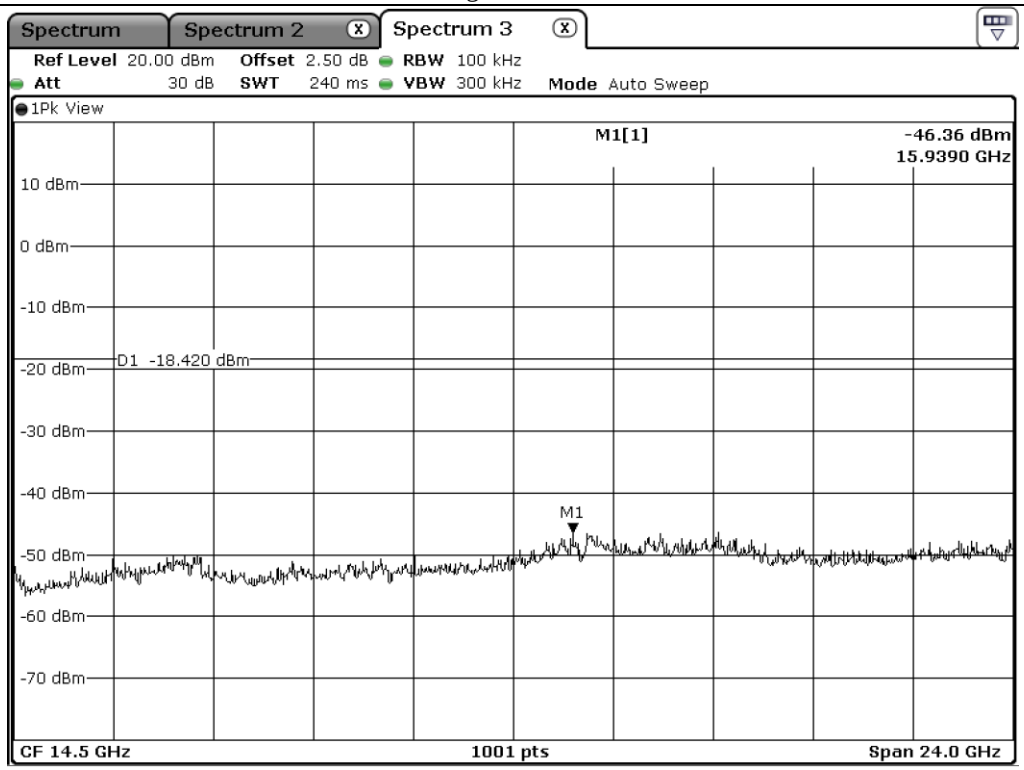
Middle Channel



Middle Channel

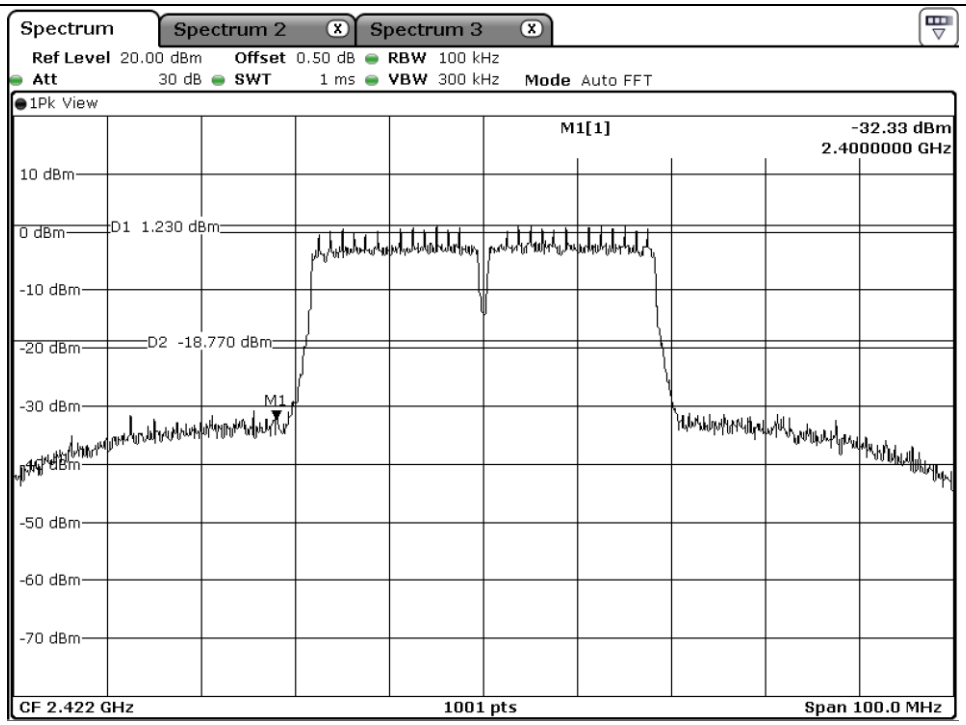


High Channel



High Channel

9.5.4.2 Test data for Antenna 1



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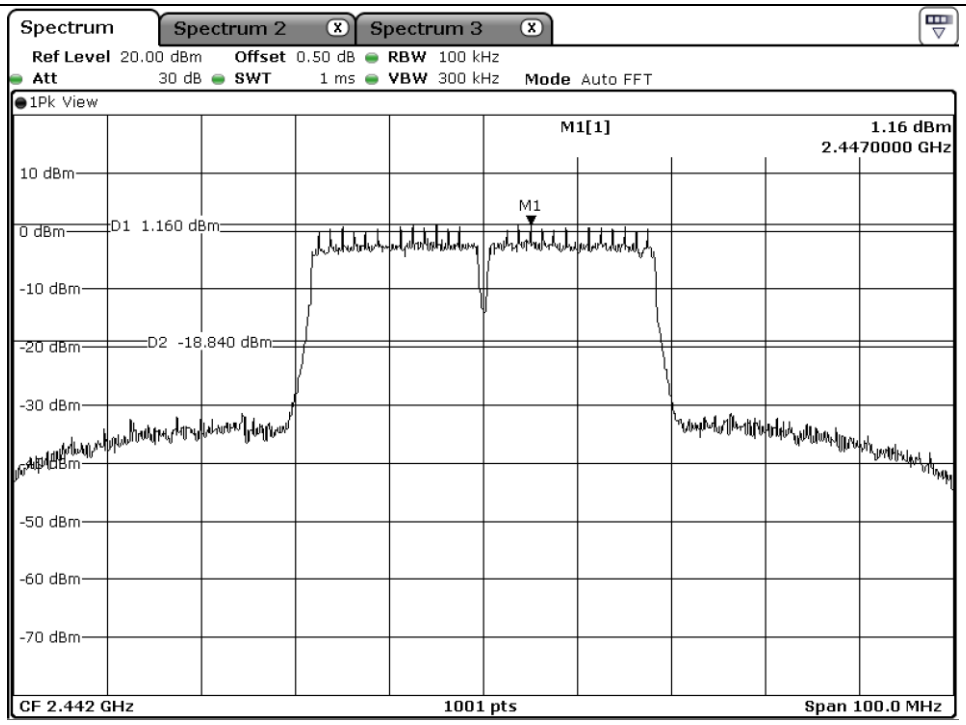
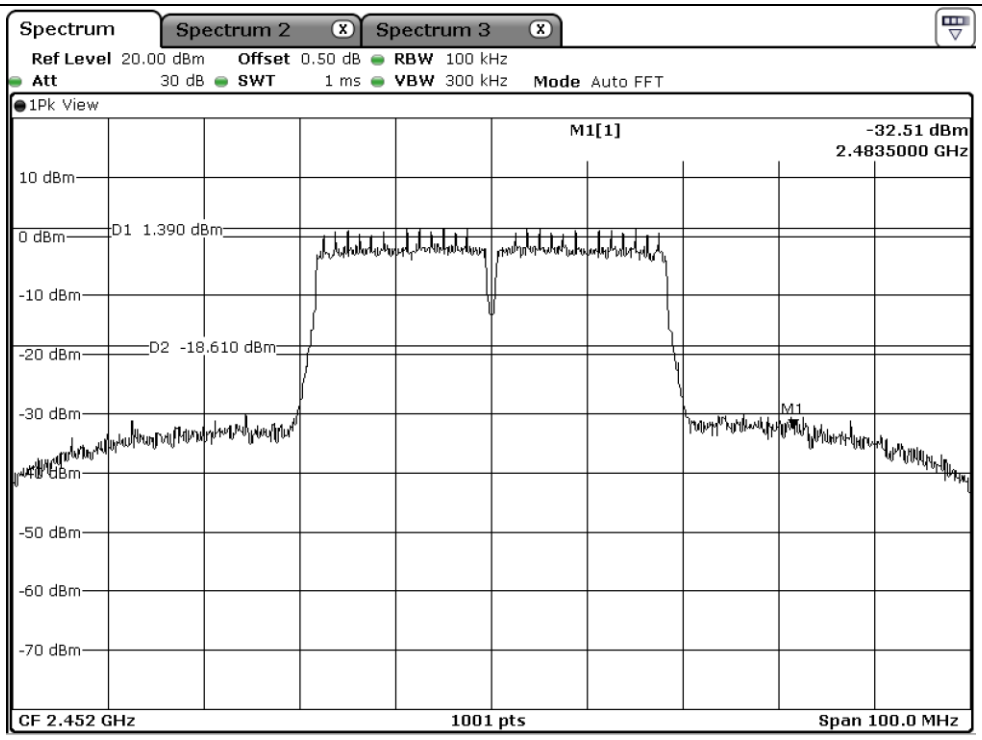
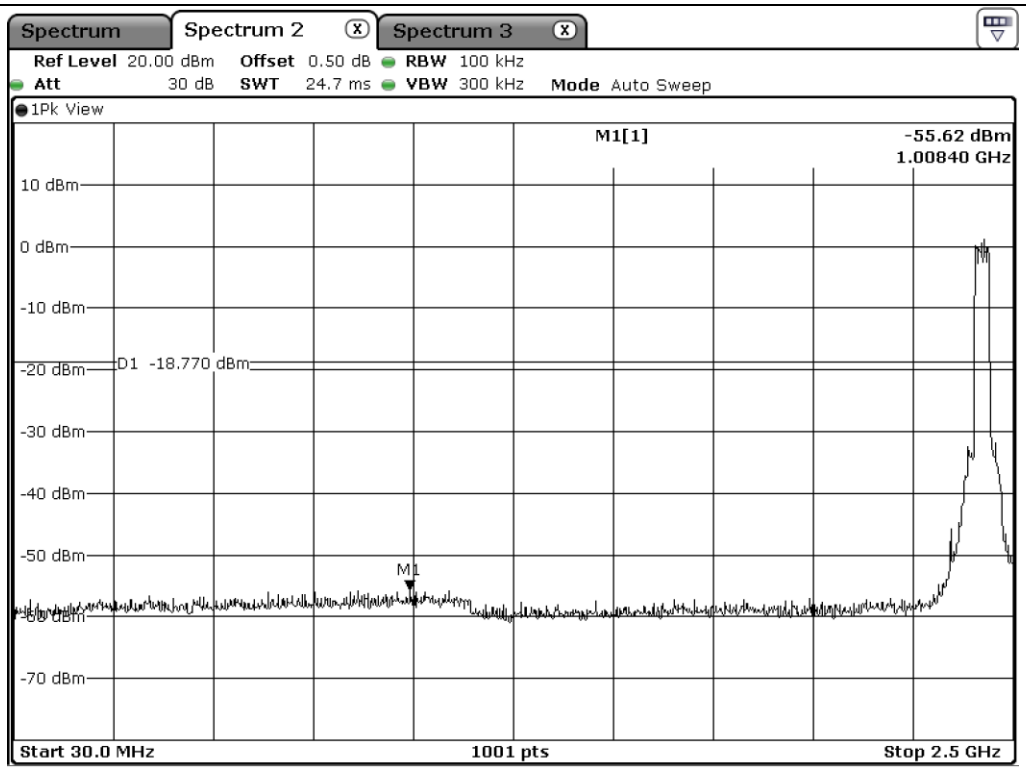


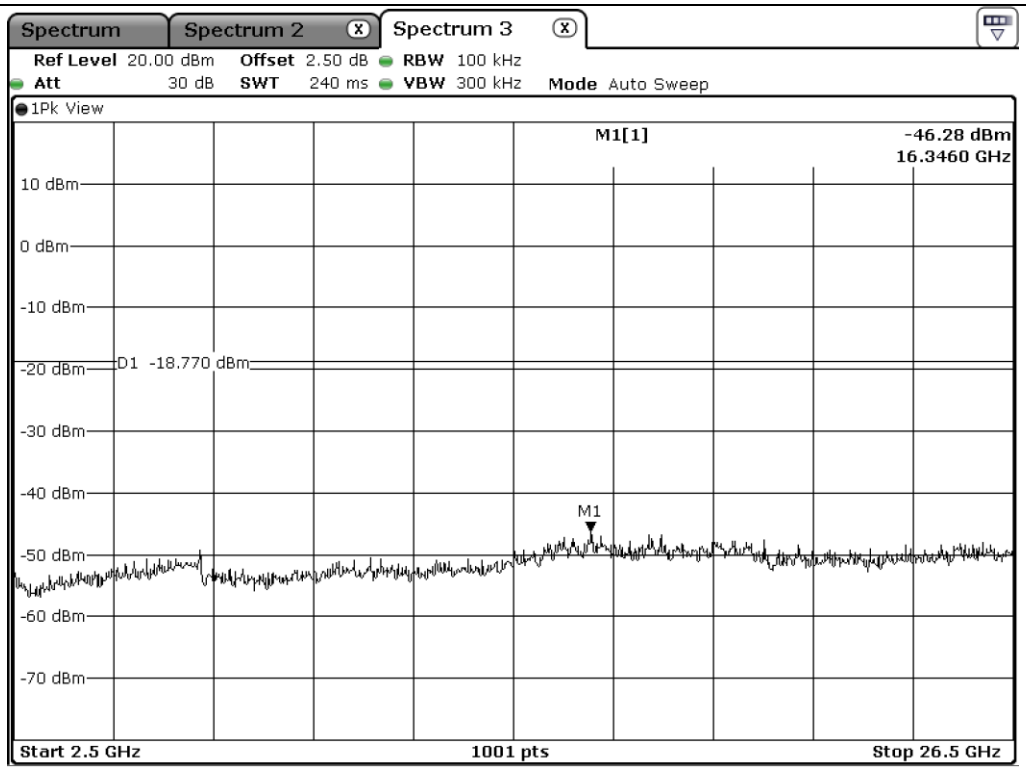
Middle Channel



High Channel

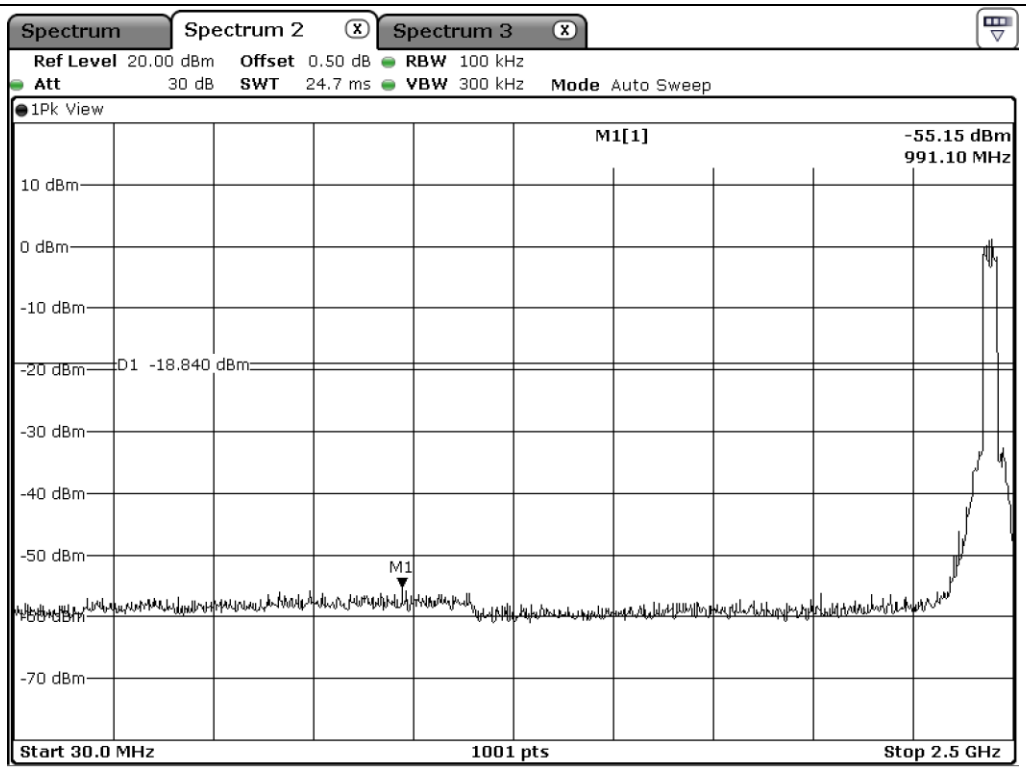


Low Channel

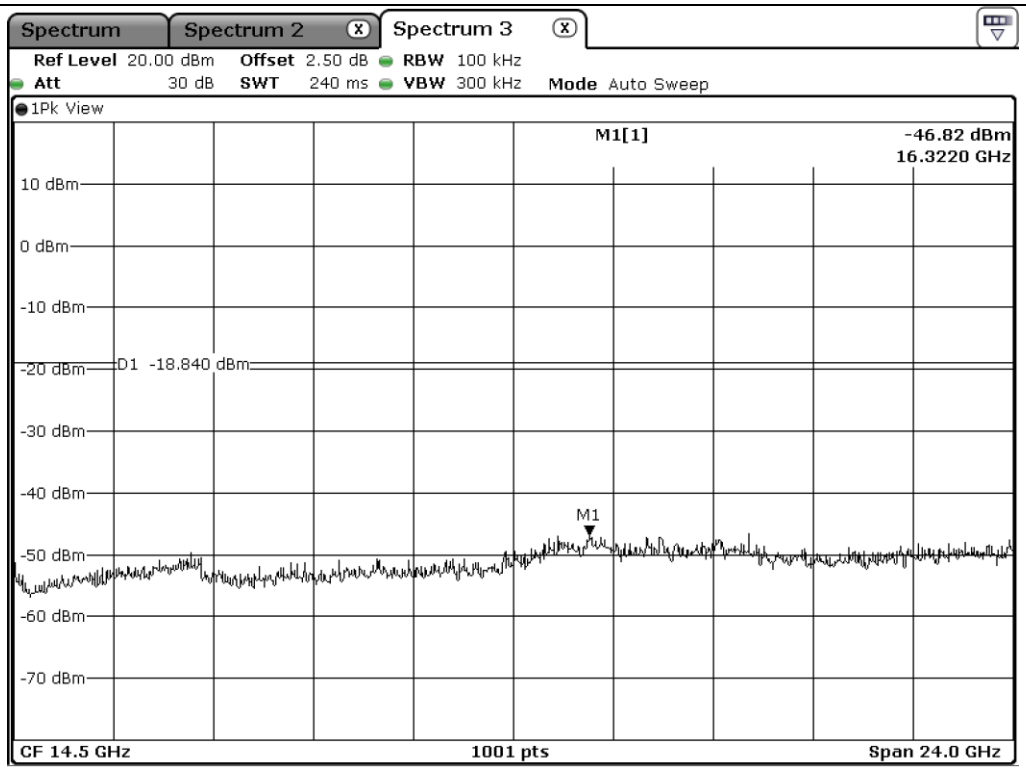


Low Channel

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

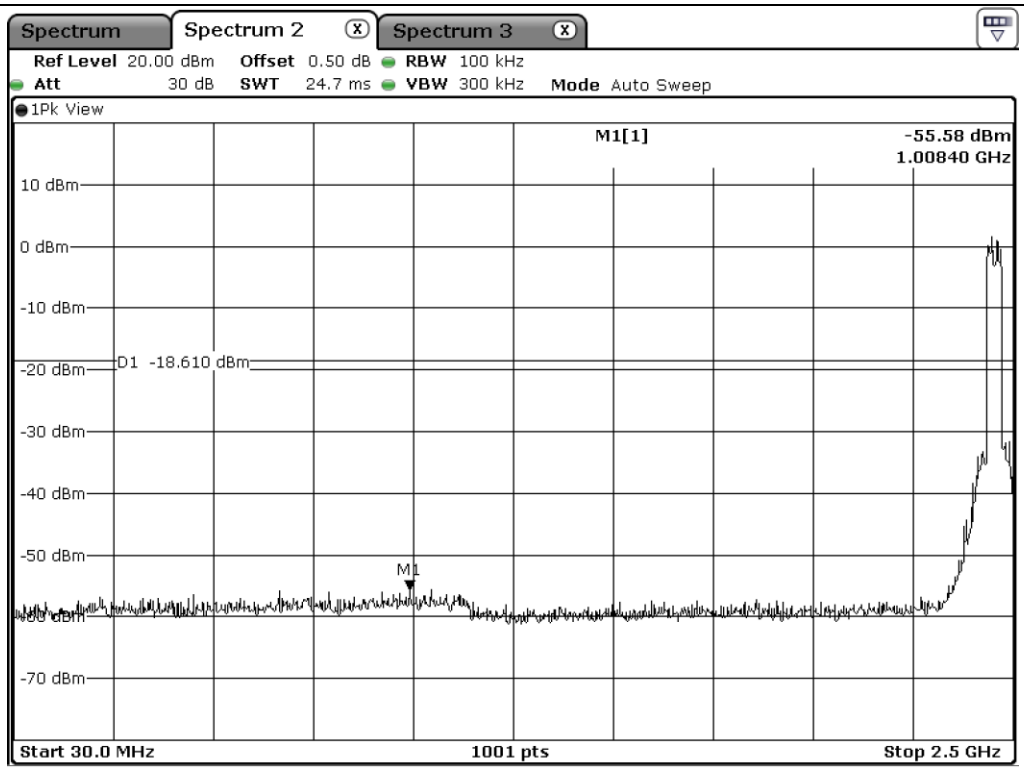


Middle Channel

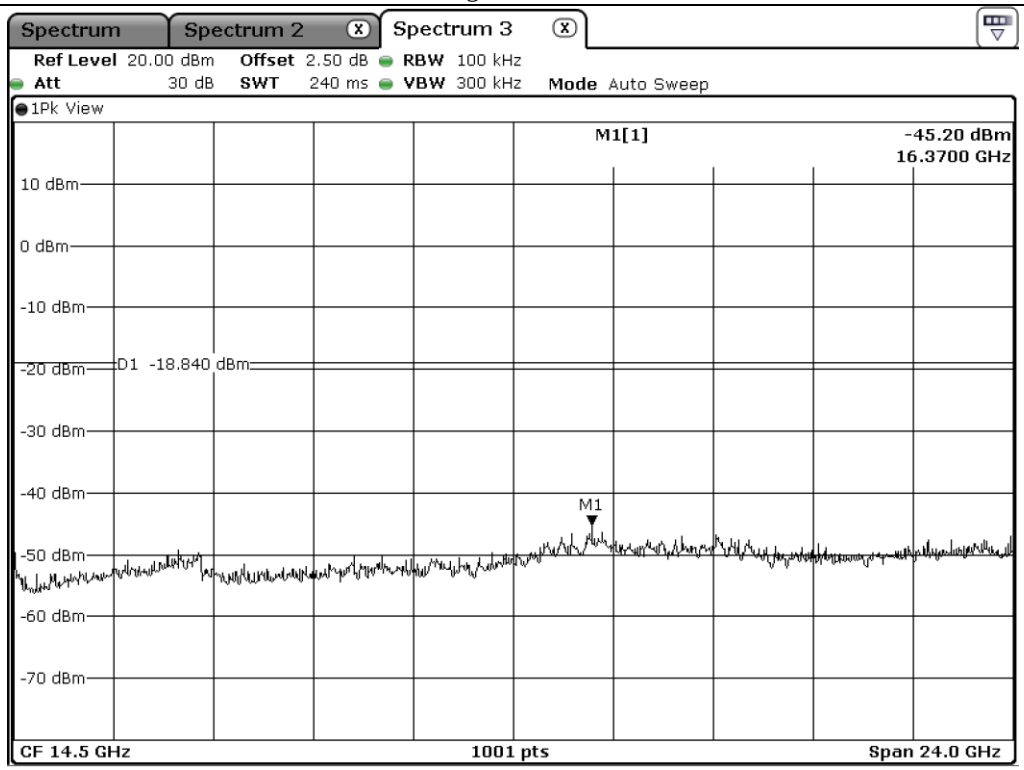


Middle Channel

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



High Channel



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)

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

-. Test Date : August 16, 2018 ~ August 28, 2018

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

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

-. Measurement distance : 3 m

-. Duty Cycle : 100 %

-. Result : PASSED

Frequency (MHz)	Reading (dBµV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Duty Cycle (dB)	Total (dBµV/m)	Limits (dBµV/m)	Margin (dB)
Test Data for Low Channel										
2 383.087	46.08	Peak	H	26.94	9.20	34.76	-	47.46	74.00	26.54
2 386.923	35.71	Average	H	26.94	9.20	34.76	-	37.09	54.00	16.91
2 387.323	47.28	Peak	V	26.94	9.20	34.76	-	48.66	74.00	25.34
2 389.960	37.39	Average	V	26.94	9.20	34.76	-	38.77	54.00	15.23
Test Data for High Channel										
2 487.151	45.46	Peak	H	27.47	9.49	35.51	-	46.91	74.00	27.09
2 483.508	36.12	Average	H	27.47	9.49	35.51	-	37.57	54.00	16.43
2 488.223	45.70	Peak	V	27.47	9.49	35.51	-	47.15	74.00	26.85
2 483.508	37.00	Average	V	27.47	9.49	35.51	-	38.45	54.00	15.55

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: 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)

9.6.1.1.2 Test data for Antenna 1

-. Test Date : August 16, 2018 ~ August 28, 2018

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

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

-. Measurement distance : 3 m

-. Duty Cycle : 100 %

-. Result : PASSED

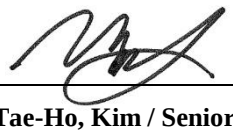
Frequency (MHz)	Reading (dBµV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Duty Cycle (dB)	Total (dBµV/m)	Limits (dBµV/m)	Margin (dB)
Test Data for Low Channel										
2 389.960	48.37	Peak	H	26.94	9.20	34.76	-	49.75	74.00	24.25
2 387.083	40.46	Average	H	26.94	9.20	34.76	-	41.84	54.00	12.16
2 389.800	46.66	Peak	V	26.94	9.20	34.76	-	48.04	74.00	25.96
2 386.763	38.15	Average	V	26.94	9.20	34.76	-	39.53	54.00	14.47
Test Data for High Channel										
2 483.624	47.15	Peak	H	27.47	9.49	35.51	-	48.60	74.00	25.40
2 483.508	41.23	Average	H	27.47	9.49	35.51	-	42.68	54.00	11.32
2 483.591	46.09	Peak	V	27.47	9.49	35.51	-	47.54	74.00	26.46
2 483.508	42.86	Average	V	27.47	9.49	35.51	-	44.31	54.00	9.69

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: 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)

9.6.1.2 Test data for 802.11g WLAN Mode

9.6.1.2.1 Test data for Antenna 0

-. Test Date : August 16, 2018 ~ August 28, 2018

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

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

-. Measurement distance : 3 m

-. Duty Cycle : 94 %

-. Result : PASSED

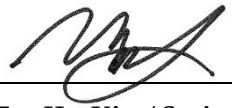
Frequency (MHz)	Reading (dBµV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Duty Cycle (dB)	Total (dBµV/m)	Limits (dBµV/m)	Margin (dB)
Test Data for Low Channel										
2 389.720	53.12	Peak	H	26.94	9.20	34.76	-	54.50	74.00	19.50
2 389.960	45.41	Average	H	26.94	9.20	34.76	0.27	47.06	54.00	6.94
2 389.960	57.76	Peak	V	26.94	9.20	34.76	-	59.14	74.00	14.86
2 389.960	46.16	Average	V	26.94	9.20	34.76	0.27	47.81	54.00	6.19
Test Data for High Channel										
2 483.508	56.36	Peak	H	27.47	9.49	35.51	-	57.81	74.00	16.19
2 483.508	43.18	Average	H	27.47	9.49	35.51	0.27	44.90	54.00	9.10
2 483.508	57.33	Peak	V	27.47	9.49	35.51	-	58.78	74.00	15.22
2 483.508	44.23	Average	V	27.47	9.49	35.51	0.27	45.95	54.00	8.05

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: 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)

9.6.1.2.2 Test data for Antenna 1

-. Test Date : August 16, 2018 ~ August 28, 2018

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

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

-. Measurement distance : 3 m

-. Duty Cycle : 94 %

-. Result : PASSED

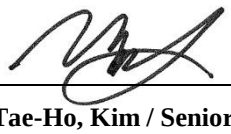
Frequency (MHz)	Reading (dBµV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Duty Cycle (dB)	Total (dBµV/m)	Limits (dBµV/m)	Margin (dB)
Test Data for Low Channel										
2 389.481	56.58	Peak	H	26.94	9.20	34.76		57.96	74.00	16.04
2 389.960	46.94	Average	H	26.94	9.20	34.76	0.27	48.59	54.00	5.41
2 387.243	55.64	Peak	V	26.94	9.20	34.76		57.02	74.00	16.98
2 389.960	45.71	Average	V	26.94	9.20	34.76	0.27	47.36	54.00	6.64
Test Data for High Channel										
2 483.508	54.87	Peak	H	27.47	9.49	35.51		56.32	74.00	17.68
2 483.508	45.64	Average	H	27.47	9.49	35.51	0.27	47.36	54.00	6.64
2 483.508	55.34	Peak	V	27.47	9.49	35.51		56.79	74.00	17.21
2 483.508	43.66	Average	V	27.47	9.49	35.51	0.27	45.38	54.00	8.62

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: 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)

9.6.1.3 Test data for 802.11n_HT20 WLAN Mode

9.6.1.3.1 Test data for Antenna 0

-. Test Date : August 16, 2018 ~ August 28, 2018

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

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

-. Measurement distance : 3 m

-. Duty Cycle : 93 %

-. Result : PASSED

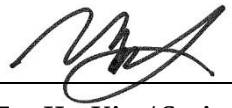
Frequency (MHz)	Reading (dBµV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Duty Cycle (dB)	Total (dBµV/m)	Limits (dBµV/m)	Margin (dB)
Test Data for Low Channel										
2 389.960	59.47	Peak	H	26.94	9.20	34.76	-	60.85	74.00	13.15
2 389.960	49.77	Average	H	26.94	9.20	34.76	0.32	51.47	54.00	2.53
2 389.900	58.47	Peak	V	26.94	9.20	34.76	-	59.85	74.00	14.15
2 389.960	48.76	Average	V	26.94	9.20	34.76	0.32	50.46	54.00	3.54
Test Data for High Channel										
2 483.500	60.39	Peak	H	27.47	9.49	35.51	-	61.84	74.00	12.16
2 483.508	49.32	Average	H	27.47	9.49	35.51	0.32	51.09	54.00	2.91
2 483.508	60.08	Peak	V	27.47	9.49	35.51	-	61.53	74.00	12.47
2 483.508	49.38	Average	V	27.47	9.49	35.51	0.32	51.15	54.00	2.85

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: Tae-Ho, Kim / Senior Manager

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9.6.1.3.2 Test data for Antenna 1

-. Test Date : August 16, 2018 ~ August 28, 2018

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

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

-. Measurement distance : 3 m

-. Duty Cycle : 93 %

-. Result : PASSED

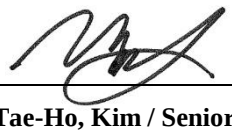
Frequency (MHz)	Reading (dBµV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Duty Cycle (dB)	Total (dBµV/m)	Limits (dBµV/m)	Margin (dB)
Test Data for Low Channel										
2 389.960	60.48	Peak	H	26.94	9.20	34.76	-	61.86	74.00	12.14
2 389.960	49.87	Average	H	26.94	9.20	34.76	0.32	51.57	54.00	2.43
2 389.980	59.37	Peak	V	26.94	9.20	34.76	-	60.75	74.00	13.25
2 389.960	48.86	Average	V	26.94	9.20	34.76	0.32	50.56	54.00	3.44
Test Data for High Channel										
2 483.508	60.57	Peak	H	27.47	9.49	35.51	-	62.02	74.00	11.98
2 483.508	49.68	Average	H	27.47	9.49	35.51	0.32	51.45	54.00	2.55
2 483.508	61.11	Peak	V	27.47	9.49	35.51	-	62.56	74.00	11.44
2 483.508	49.62	Average	V	27.47	9.49	35.51	0.32	51.39	54.00	2.61

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: 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)

9.6.1.3.3 Test data for Multiple Transmit

-. Test Date : August 16, 2018 ~ August 28, 2018

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

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

-. Measurement distance : 3 m

-. Duty Cycle : 93 %

-. Result : PASSED

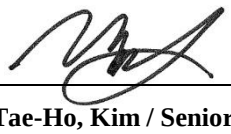
Frequency (MHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Duty Cycle (dB)	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
Test Data for Low Channel										
2 389.960	57.29	Peak	H	26.94	9.20	34.76	-	58.67	74.00	15.33
2 389.960	45.80	Average	H	26.94	9.20	34.76	0.32	47.50	54.00	6.50
2 389.960	57.81	Peak	V	26.94	9.20	34.76	-	59.19	74.00	14.81
2 389.960	44.12	Average	V	26.94	9.20	34.76	0.32	45.82	54.00	8.18
Test Data for High Channel										
2 483.508	58.01	Peak	H	27.47	9.49	35.51	-	59.46	74.00	14.54
2 483.508	46.01	Average	H	27.47	9.49	35.51	0.32	47.78	54.00	6.22
2 483.508	58.13	Peak	V	27.47	9.49	35.51	-	59.58	74.00	14.42
2 483.508	46.34	Average	V	27.47	9.49	35.51	0.32	48.11	54.00	5.89

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: 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)

9.6.1.4 Test data for 802.11n_HT40 WLAN Mode

9.6.1.4.1 Test data for Antenna 0

-. Test Date : August 16, 2018 ~ August 28, 2018

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

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

-. Measurement distance : 3 m

-. Duty Cycle : 87 %

-. Result : PASSED

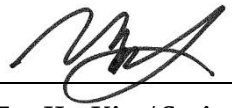
Frequency (MHz)	Reading (dBµV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Duty Cycle (dB)	Total (dBµV/m)	Limits (dBµV/m)	Margin (dB)
Test Data for Low Channel										
2 389.964	59.24	Peak	H	26.94	9.20	34.76	-	60.62	74.00	13.38
2 389.960	46.76	Average	H	26.94	9.20	34.76	0.60	48.74	54.00	5.26
2 389.960	59.17	Peak	V	26.94	9.20	34.76	-	60.55	74.00	13.45
2 389.960	46.80	Average	V	26.94	9.20	34.76	0.60	48.78	54.00	5.22
Test Data for High Channel										
2 483.500	61.59	Peak	H	27.47	9.49	35.51	-	63.04	74.00	10.96
2 483.508	48.17	Average	H	27.47	9.49	35.51	0.60	50.22	54.00	3.78
2 483.508	61.73	Peak	V	27.47	9.49	35.51	-	63.18	74.00	10.82
2 483.508	48.10	Average	V	27.47	9.49	35.51	0.60	50.15	54.00	3.85

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: 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)

9.6.1.4.2 Test data for Antenna 1

-. Test Date : August 16, 2018 ~ August 28, 2018

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

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

-. Measurement distance : 3 m

-. Duty Cycle : 87 %

-. Result : PASSED

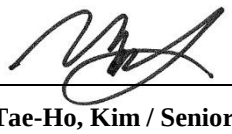
Frequency (MHz)	Reading (dBµV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Duty Cycle (dB)	Total (dBµV/m)	Limits (dBµV/m)	Margin (dB)
Test Data for Low Channel										
2 389.960	59.17	Peak	H	26.94	9.20	34.76	-	60.55	74.00	13.45
2 389.964	46.80	Average	H	26.94	9.20	34.76	0.60	48.78	54.00	5.22
2 389.960	59.34	Peak	V	26.94	9.20	34.76	-	60.72	74.00	13.28
2 389.960	46.70	Average	V	26.94	9.20	34.76	0.60	48.68	54.00	5.32
Test Data for High Channel										
2 483.508	61.61	Peak	H	27.47	9.49	35.51	-	63.06	74.00	10.94
2 483.508	48.24	Average	H	27.47	9.49	35.51	0.60	50.29	54.00	3.71
2 483.508	61.70	Peak	V	27.47	9.49	35.51	-	63.15	74.00	10.85
2 483.508	48.11	Average	V	27.47	9.49	35.51	0.60	50.16	54.00	3.84

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



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)

9.6.1.4.3 Test data for Multiple Transmit

-. Test Date : August 16, 2018 ~ August 28, 2018

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

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

-. Measurement distance : 3 m

-. Duty Cycle : 87 %

-. Result : PASSED

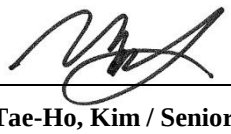
Frequency (MHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Duty Cycle (dB)	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
Test Data for Low Channel										
2 389.960	56.78	Peak	H	26.94	9.20	34.76	-	58.16	74.00	15.84
2 389.960	45.77	Average	H	26.94	9.20	34.76	0.60	47.75	54.00	6.25
2 389.964	57.03	Peak	V	26.94	9.20	34.76	-	58.41	74.00	15.59
2 389.960	46.07	Average	V	26.94	9.20	34.76	0.60	48.05	54.00	5.95
Test Data for High Channel										
2 483.500	58.74	Peak	H	27.47	9.49	35.51	-	60.19	74.00	13.81
2 483.500	44.28	Average	H	27.47	9.49	35.51	0.60	46.33	54.00	7.67
2 483.500	58.96	Peak	V	27.47	9.49	35.51	-	60.41	74.00	13.59
2 483.500	44.68	Average	V	27.47	9.49	35.51	0.60	46.73	54.00	7.27

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: 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)

9.6.2 Spurious & Harmonic Radiated Emission

9.6.2.1 Test data for 802.11b WLAN Mode

9.6.2.1.1 Test data for Antenna 0

-. Test Date : August 16, 2018 ~ August 28, 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 : 99 %

-. Result : PASSED

Frequency (GHz)	Reading (dBµV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Duty Cycle (dB)	Total (dBµV/m)	Limits (dBµV/m)	Margin (dB)
Test Data for Low Channel										
4 824.00	42.64	Peak	H	30.84	12.31	35.74	-	50.05	74.00	23.95
	33.99	Average	H				-	41.40	54.00	12.60
	44.13	Peak	V				-	51.54	74.00	22.46
	37.42	Average	V				-	44.83	54.00	9.17
Test Data for Middle Channel										
4 884.00	41.41	Peak	H	30.01	12.43	35.80	-	48.05	74.00	25.95
	34.57	Average	H				-	41.21	54.00	12.79
	42.15	Peak	V				-	48.79	74.00	25.21
	37.18	Average	V				-	43.82	54.00	10.18
Test Data for High Channel										
4 924.00	42.34	Peak	H	31.15	12.81	35.96	-	50.34	74.00	23.66
	34.84	Average	H				-	42.84	54.00	11.16
	42.68	Peak	V				-	50.68	74.00	23.32
	38.55	Average	V				-	46.55	54.00	7.45

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: 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)

9.6.2.1.2 Test data for Antenna 1

-. Test Date : August 16, 2018 ~ August 28, 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 : 99 %

-. Result : PASSED

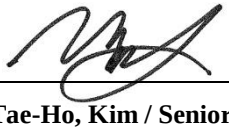
Frequency (GHz)	Reading (dBµV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Duty Cycle (dB)	Total (dBµV/m)	Limits (dBµV/m)	Margin (dB)
Test Data for Low Channel										
4 824.00	41.44	Peak	H	30.84	12.31	35.74	-	48.85	74.00	25.15
	33.58	Average	H				-	40.99	54.00	13.01
	43.51	Peak	V				-	50.92	74.00	23.08
	36.58	Average	V				-	43.99	54.00	10.01
Test Data for Middle Channel										
4 884.00	41.68	Peak	H	30.01	12.43	35.80	-	48.32	74.00	25.68
	34.81	Average	H				-	41.45	54.00	12.55
	40.28	Peak	V				-	46.92	74.00	27.08
	35.16	Average	V				-	41.80	54.00	12.20
Test Data for High Channel										
4 924.00	42.18	Peak	H	31.15	12.81	35.96	-	50.18	74.00	23.82
	33.58	Average	H				-	41.58	54.00	12.42
	41.67	Peak	V				-	49.67	74.00	24.33
	36.87	Average	V				-	44.87	54.00	9.13

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: 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)

9.6.2.2 Test data for 802.11g WLAN Mode

9.6.2.2.1 Test data for Antenna 0

-. Test Date : August 16, 2018 ~ August 28, 2018

-. Resolution bandwidth : 1 MHz for Peak and Average Mode for the emissions fall in restricted band,
100 kHz for Peak Mode for the emissions outside restricted band

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

-. Frequency range : 1 GHz ~ 26.5 GHz

-. Measurement distance : 3 m

-. Duty Cycle : 94 %

-. Result : PASSED

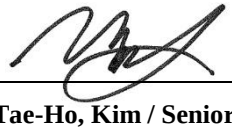
Frequency (GHz)	Reading (dBµV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Duty Cycle (dB)	Total (dBµV/m)	Limits (dBµV/m)	Margin (dB)
Test Data for Low Channel										
4 824.00	42.16	Peak	H	30.84	12.31	35.74	-	49.57	74.00	24.43
	33.62	Average	H				0.27	41.30	54.00	12.70
	41.88	Peak	V				-	49.29	74.00	24.71
	36.54	Average	V				0.27	44.22	54.00	9.78
Test Data for Middle Channel										
4 884.00	41.96	Peak	H	30.01	12.43	35.80	-	48.60	74.00	25.40
	32.57	Average	H				0.27	39.48	54.00	14.52
	41.57	Peak	V				-	48.21	74.00	25.79
	35.80	Average	V				0.27	42.71	54.00	11.29
Test Data for High Channel										
4 924.00	42.81	Peak	H	31.15	12.81	35.96	-	50.81	74.00	23.19
	32.16	Average	H				0.27	40.43	54.00	13.57
	40.89	Peak	V				-	48.89	74.00	25.11
	35.47	Average	V				0.27	43.74	54.00	10.26

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: Tae-Ho, Kim / Senior Manager

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9.6.2.2.2 Test data for Antenna 1

-. Test Date : August 16, 2018 ~ August 28, 2018

-. Resolution bandwidth : 1 MHz for Peak and Average Mode for the emissions fall in restricted band,
100 kHz for Peak Mode for the emissions outside restricted band

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

-. Frequency range : 1 GHz ~ 26.5 GHz

-. Measurement distance : 3 m

-. Duty Cycle : 94 %

-. Result : PASSED

Frequency (GHz)	Reading (dBµV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Duty Cycle (dB)	Total (dBµV/m)	Limits (dBµV/m)	Margin (dB)
Test Data for Low Channel										
4 824.00	42.65	Peak	H	30.84	12.31	35.74	-	50.06	74.00	23.94
	33.12	Average	H				0.27	40.80	54.00	13.20
	41.62	Peak	V				-	49.03	74.00	24.97
	36.85	Average	V				0.27	44.53	54.00	9.47
Test Data for Middle Channel										
4 884.00	41.72	Peak	H	30.01	12.43	35.80	-	48.36	74.00	25.64
	33.28	Average	H				0.27	40.19	54.00	13.81
	42.58	Peak	V				-	49.22	74.00	24.78
	36.84	Average	V				0.27	43.75	54.00	10.25
Test Data for High Channel										
4 924.00	41.66	Peak	H	31.15	12.81	35.96	-	49.66	74.00	24.34
	32.89	Average	H				0.27	41.16	54.00	12.84
	41.62	Peak	V				-	49.62	74.00	24.38
	35.48	Average	V				0.27	43.75	54.00	10.25

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: 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)

9.6.2.3 Test data for 802.11n_HT20 WLAN Mode

9.6.2.3.1 Test data for Antenna 0

-. Test Date : August 16, 2018 ~ August 28, 2018

-. Resolution bandwidth : 1 MHz for Peak and Average Mode for the emissions fall in restricted band,
100 kHz for Peak Mode for the emissions outside restricted band

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

-. Frequency range : 1 GHz ~ 26.5 GHz

-. Measurement distance : 3 m

-. Duty Cycle : 93 %

-. Result : PASSED

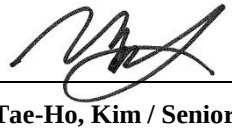
Frequency (GHz)	Reading (dBµV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Duty Cycle (dB)	Total (dBµV/m)	Limits (dBµV/m)	Margin (dB)
Test Data for Low Channel										
4 824.00	40.30	Peak	H	30.84	12.31	35.74	-	47.71	74.00	26.29
	34.90	Average	H				0.32	42.63	54.00	11.37
	44.60	Peak	V				-	52.01	74.00	21.99
	37.50	Average	V				0.32	45.23	54.00	8.77
Test Data for Middle Channel										
4 884.00	39.30	Peak	H	30.01	12.43	35.80	-	45.94	74.00	28.06
	35.00	Average	H				0.32	41.96	54.00	12.04
	40.60	Peak	V				-	47.24	74.00	26.76
	36.20	Average	V				0.32	43.16	54.00	10.84
Test Data for High Channel										
4 924.00	41.90	Peak	H	31.15	12.81	35.96	-	49.90	74.00	24.10
	33.20	Average	H				0.32	41.52	54.00	12.48
	43.90	Peak	V				-	51.90	74.00	22.10
	37.90	Average	V				0.32	46.22	54.00	7.78

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



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9.6.2.3.2 Test data for Antenna 1

-. Test Date : August 16, 2018 ~ August 28, 2018

-. Resolution bandwidth : 1 MHz for Peak and Average Mode for the emissions fall in restricted band,
100 kHz for Peak Mode for the emissions outside restricted band

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

-. Frequency range : 1 GHz ~ 26.5 GHz

-. Measurement distance : 3 m

-. Duty Cycle : 93 %

-. Result : PASSED

Frequency (GHz)	Reading (dBµV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Duty Cycle (dB)	Total (dBµV/m)	Limits (dBµV/m)	Margin (dB)
Test Data for Low Channel										
4 824.00	41.00	Peak	H	30.84	12.31	35.74	-	48.41	74.00	25.59
	33.00	Average	H				0.32	40.73	54.00	13.27
	41.30	Peak	V				-	48.71	74.00	25.29
	37.70	Average	V				0.32	45.43	54.00	8.57
Test Data for Middle Channel										
4 884.00	40.40	Peak	H	30.01	12.43	35.80	-	47.04	74.00	26.96
	33.60	Average	H				0.32	40.56	54.00	13.44
	42.20	Peak	V				-	48.84	74.00	25.16
	33.90	Average	V				0.32	40.86	54.00	13.14
Test Data for High Channel										
4 924.00	42.50	Peak	H	31.15	12.81	35.96	-	50.50	74.00	23.50
	35.20	Average	H				0.32	43.52	54.00	10.48
	40.50	Peak	V				-	48.50	74.00	25.50
	35.20	Average	V				0.32	43.52	54.00	10.48

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: Tae-Ho, Kim / Senior Manager

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9.6.2.3.3 Test data for Multiple Transmit

-. Test Date : August 16, 2018 ~ August 28, 2018

-. Resolution bandwidth : 1 MHz for Peak and Average Mode for the emissions fall in restricted band,
100 kHz for Peak Mode for the emissions outside restricted band

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

-. Frequency range : 1 GHz ~ 26.5 GHz

-. Measurement distance : 3 m

-. Duty Cycle : 93 %

-. Result : PASSED

Frequency (GHz)	Reading (dBµV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Duty Cycle (dB)	Total (dBµV/m)	Limits (dBµV/m)	Margin (dB)
Test Data for Low Channel										
4 824.00	40.10	Peak	H	30.84	12.31	35.74	-	47.51	74.00	26.49
	32.20	Average	H				0.32	39.93	54.00	14.07
	39.10	Peak	V				-	46.51	74.00	27.49
	34.10	Average	V				0.32	41.83	54.00	12.17
Test Data for Middle Channel										
4 884.00	39.90	Peak	H	30.01	12.43	35.80	-	46.54	74.00	27.46
	34.00	Average	H				0.32	40.96	54.00	13.04
	44.30	Peak	V				-	50.94	74.00	23.06
	34.70	Average	V				0.32	41.66	54.00	12.34
Test Data for High Channel										
4 924.00	39.50	Peak	H	31.15	12.81	35.96	-	47.50	74.00	26.50
	30.20	Average	H				0.32	38.52	54.00	15.48
	41.20	Peak	V				-	49.20	74.00	24.80
	35.60	Average	V				0.32	43.92	54.00	10.08

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: 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)

9.6.2.4 Test data for 802.11n_HT40 WLAN Mode

9.6.2.4.1 Test data for Antenna 0

-. Test Date : August 16, 2018 ~ August 28, 2018

-. Resolution bandwidth : 1 MHz for Peak and Average Mode for the emissions fall in restricted band,
100 kHz for Peak Mode for the emissions outside restricted band

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

-. Frequency range : 1 GHz ~ 26.5 GHz

-. Measurement distance : 3 m

-. Duty Cycle : 87 %

-. Result : PASSED

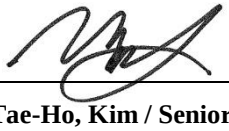
Frequency (GHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Duty Cycle (dB)	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
Test Data for Low Channel										
4 844.00	40.10	Peak	H	30.84	12.31	35.76	-	47.49	74.00	26.51
	35.90	Average	H				0.60	43.89	54.00	10.11
	43.70	Peak	V				-	51.09	74.00	22.91
	34.00	Average	V				0.60	41.99	54.00	12.01
Test Data for Middle Channel										
4 884.00	40.90	Peak	H	30.01	12.43	35.80	-	47.54	74.00	26.46
	32.60	Average	H				0.60	39.84	54.00	14.16
	41.70	Peak	V				-	48.34	74.00	25.66
	35.30	Average	V				0.60	42.54	54.00	11.46
Test Data for High Channel										
4 904.00	41.90	Peak	H	31.15	12.81	35.94	-	49.92	74.00	24.08
	32.00	Average	H				0.60	40.62	54.00	13.38
	40.90	Peak	V				-	48.92	74.00	25.08
	36.90	Average	V				0.60	45.52	54.00	8.48

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: 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)

9.6.2.4.2 Test data for Antenna 1

-. Test Date : August 16, 2018 ~ August 28, 2018

-. Resolution bandwidth : 1 MHz for Peak and Average Mode for the emissions fall in restricted band,
100 kHz for Peak Mode for the emissions outside restricted band

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

-. Frequency range : 1 GHz ~ 26.5 GHz

-. Measurement distance : 3 m

-. Duty Cycle : 87 %

-. Result : PASSED

Frequency (GHz)	Reading (dBµV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Duty Cycle (dB)	Total (dBµV/m)	Limits (dBµV/m)	Margin (dB)
Test Data for Low Channel										
4 844.00	44.70	Peak	H	30.84	12.31	35.76	-	52.09	74.00	21.91
	33.50	Average	H				0.60	41.49	54.00	12.51
	43.30	Peak	V				-	50.69	74.00	23.31
	36.90	Average	V				0.60	44.89	54.00	9.11
Test Data for Middle Channel										
4 884.00	44.60	Peak	H	30.01	12.43	35.80	-	51.24	74.00	22.76
	35.40	Average	H				0.60	42.64	54.00	11.36
	43.20	Peak	V				-	49.84	74.00	24.16
	34.70	Average	V				0.60	41.94	54.00	12.06
Test Data for High Channel										
4 904.00	44.10	Peak	H	31.15	12.81	35.94	-	52.12	74.00	21.88
	33.10	Average	H				0.60	41.72	54.00	12.28
	42.80	Peak	V				-	50.82	74.00	23.18
	34.20	Average	V				0.60	42.82	54.00	11.18

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: 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)

9.6.2.4.3 Test data for Multiple Transmit

-. Test Date : August 16, 2018 ~ August 28, 2018

-. Resolution bandwidth : 1 MHz for Peak and Average Mode for the emissions fall in restricted band,
100 kHz for Peak Mode for the emissions outside restricted band

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

-. Frequency range : 1 GHz ~ 26.5 GHz

-. Measurement distance : 3 m

-. Duty Cycle : 87 %

-. Result : PASSED

Frequency (GHz)	Reading (dBµV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Duty Cycle (dB)	Total (dBµV/m)	Limits (dBµV/m)	Margin (dB)
Test Data for Low Channel										
4 844.00	40.50	Peak	H	30.84	12.31	35.76	-	47.89	74.00	26.11
	35.50	Average	H				0.60	43.49	54.00	10.51
	43.70	Peak	V				-	51.09	74.00	22.91
	39.20	Average	V				0.60	47.19	54.00	6.81
Test Data for Middle Channel										
4 884.00	40.00	Peak	H	30.01	12.43	35.80	-	46.64	74.00	27.36
	34.50	Average	H				0.60	41.74	54.00	12.26
	41.70	Peak	V				-	48.34	74.00	25.66
	37.30	Average	V				0.60	44.54	54.00	9.46
Test Data for High Channel										
4 904.00	41.40	Peak	H	31.15	12.81	35.94	-	49.42	74.00	24.58
	30.50	Average	H				0.60	39.12	54.00	14.88
	41.70	Peak	V				-	49.72	74.00	24.28
	36.90	Average	V				0.60	45.52	54.00	8.48

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: 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)

10. PEAK POWER SPECTRUL DENSITY

10.1 Operating environment

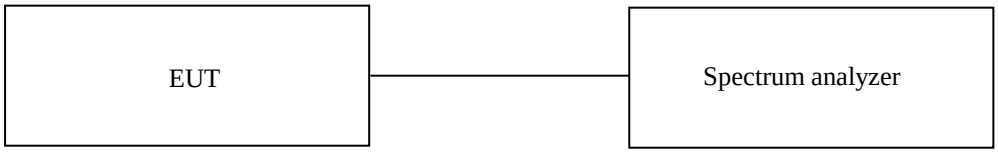
Temperature : 24.3 ℃

Relative humidity : 43.9 % 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	Mar. 14, 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)

10.4 Test data for 802.11b WLAN Mode

10.4.1 Test data for Antenna 0

-. Test Date : August 16, 2018 ~ August 28, 2018

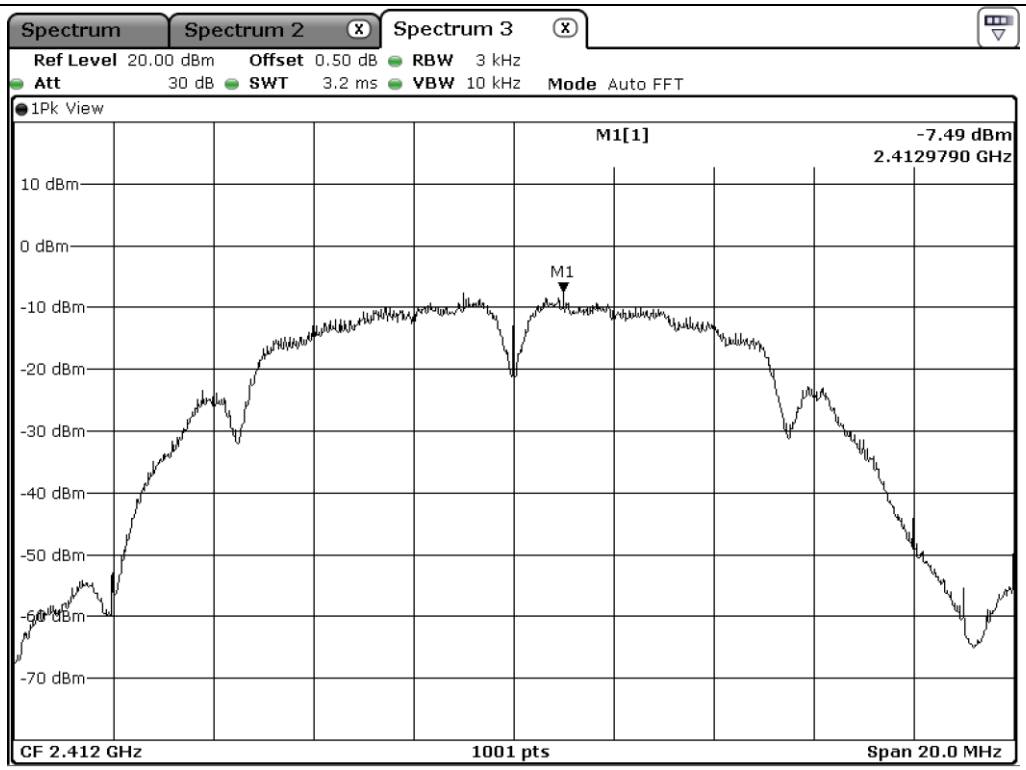
-. Test Result : Pass

-. Duty Cycle : 100 %

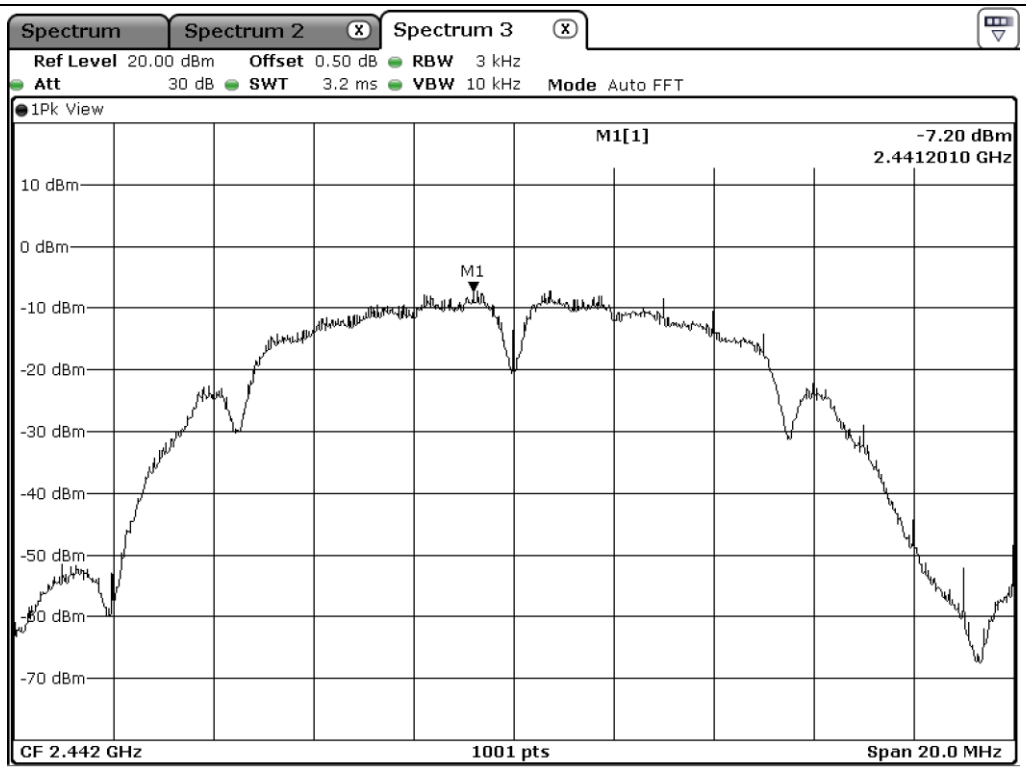
CHANNEL	FREQUENCY (MHz)	MEASURED VALUE (dBm)	Duty Cycle Factor (dB)	Result (dBm)	LIMIT (dBm)	MARGIN (dB)
Low	2 412.00	-7.49	0.00	-7.49	8.00	15.49
Middle	2 442.00	-7.20	0.00	-7.20	8.00	15.20
High	2 462.00	-7.41	0.00	-7.41	8.00	15.41

Remark : Result = MEASURED VALUE (dBm) + Duty Cycle Factor(dB)

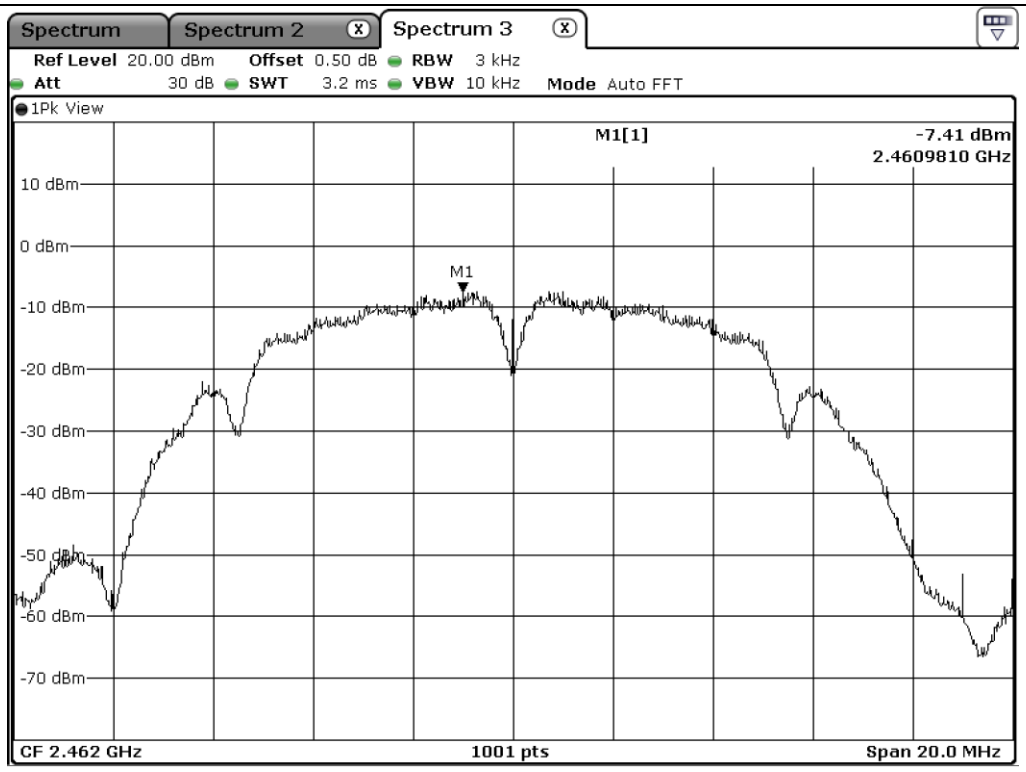
Tested by: Tae-Ho, Kim / Senior Manager



Low Channel



Middle Channel



High Channel

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10.4.2 Test data for Antenna 1

-. Test Date : August 16, 2018 ~ August 28, 2018

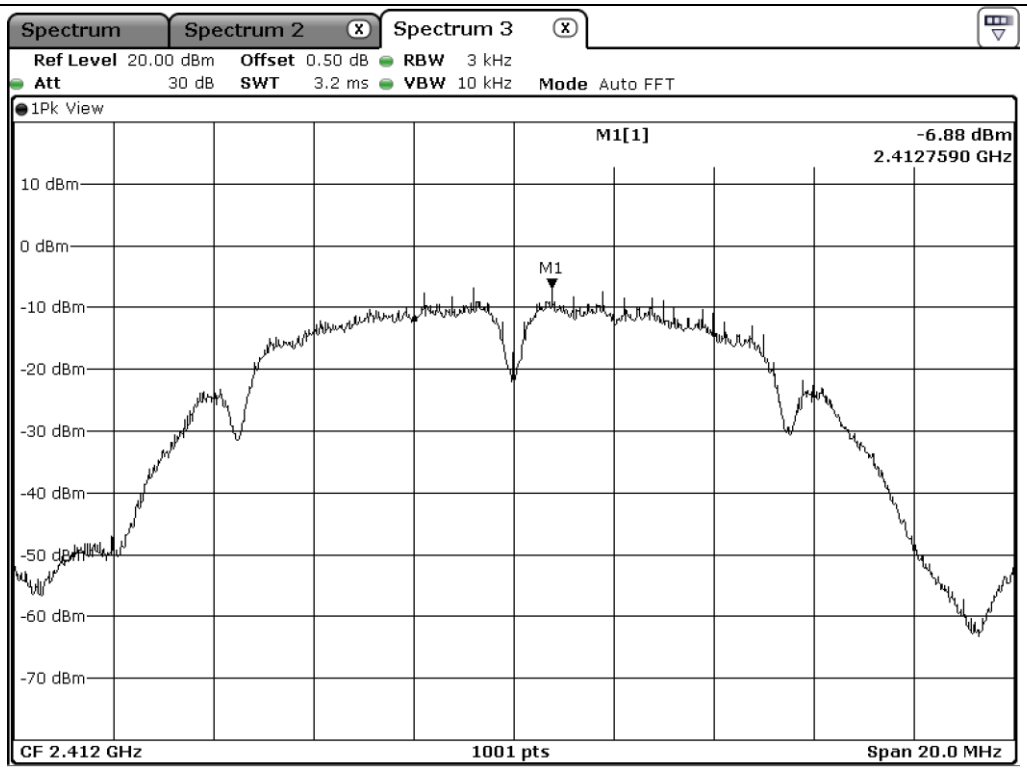
-. Test Result : Pass

-. Duty Cycle : 100 %

CHANNEL	FREQUENCY (MHz)	MEASURED VALUE (dBm)	Duty Cycle Factor (dB)	Result (dBm)	LIMIT (dBm)	MARGIN (dB)
Low	2 412.00	-6.88	0.00	-6.88	8.00	14.88
Middle	2 442.00	-7.91	0.00	-7.91	8.00	15.91
High	2 462.00	-6.49	0.00	-6.49	8.00	14.49

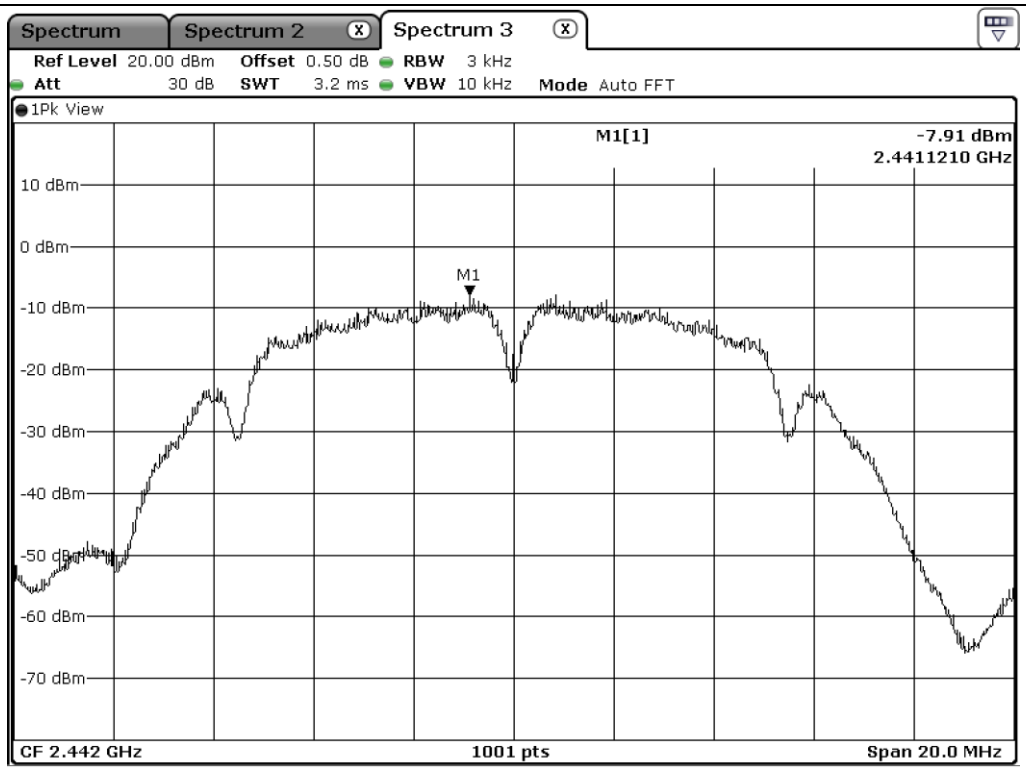
Remark : Result = MEASURED VALUE (dBm) + Duty Cycle Factor(dB)

Tested by: Tae-Ho, Kim / Senior Manager

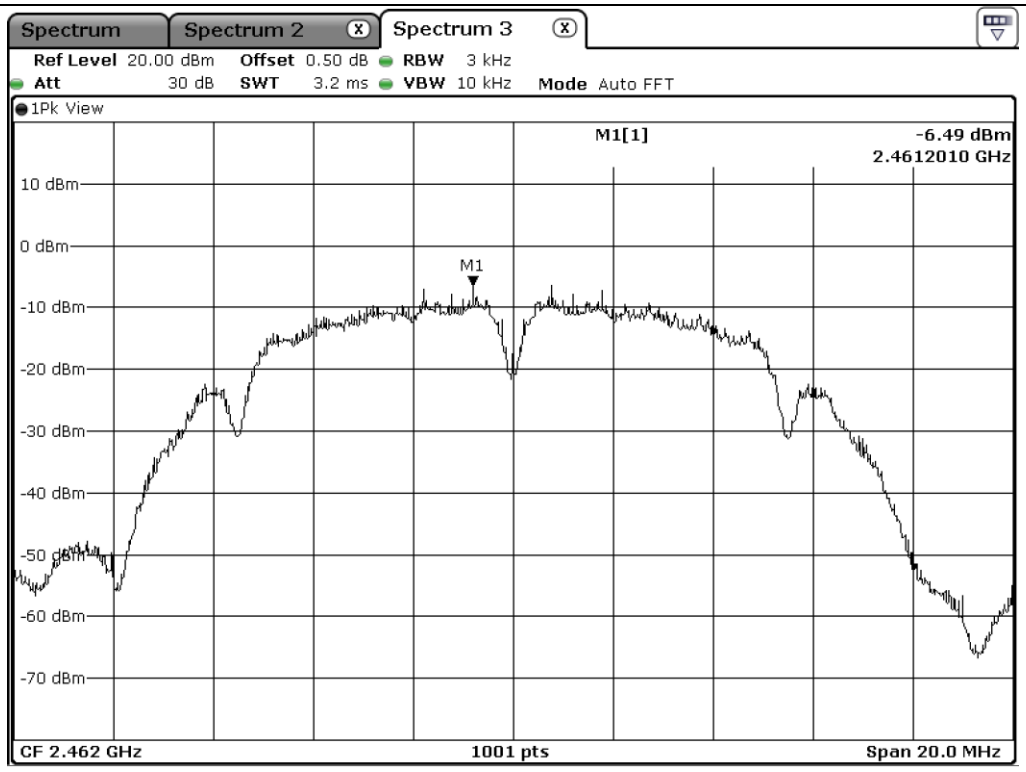


Low Channel

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



Middle Channel



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)

10.5 Test data for 802.11g WLAN Mode

10.5.1 Test data for Antenna 0

-. Test Date : August 16, 2018 ~ August 28, 2018

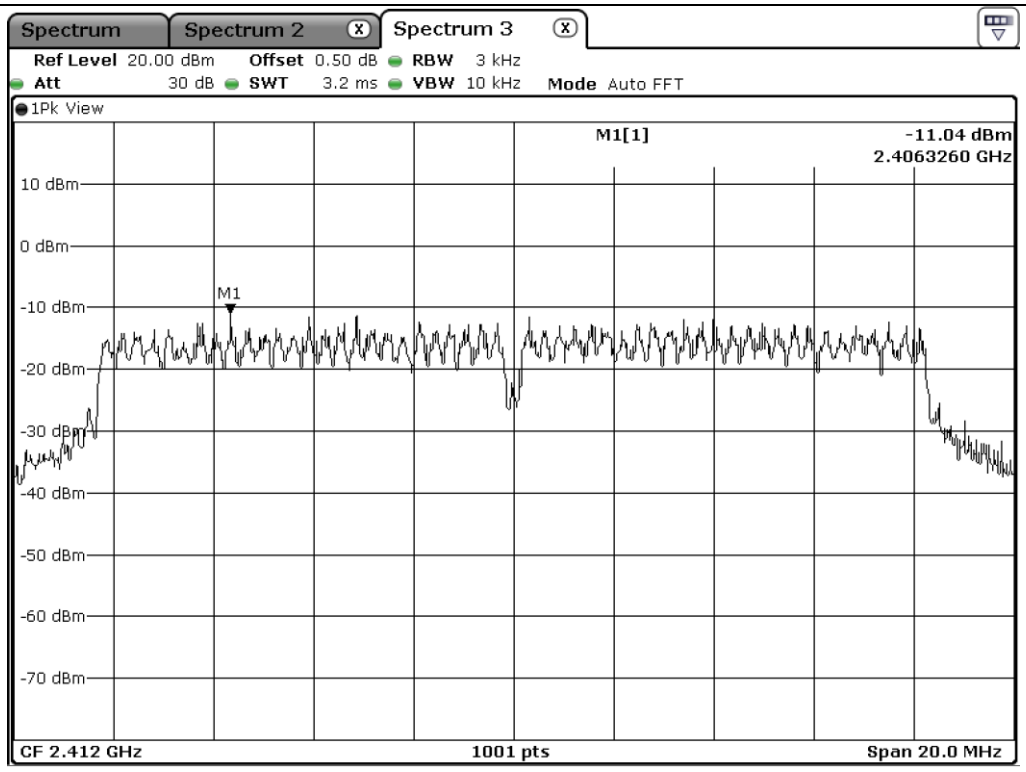
-. Test Result : Pass

-. Duty Cycle : 94 %

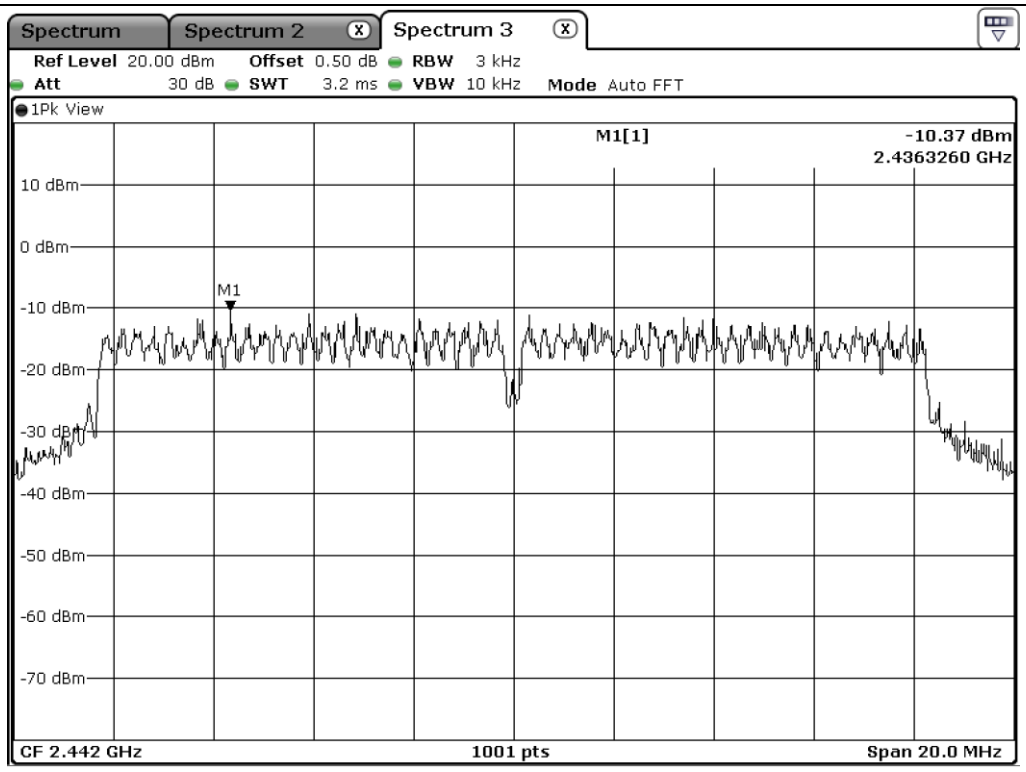
CHANNEL	FREQUENCY (MHz)	MEASURED VALUE (dBm)	Duty Cycle Factor (dB)	Result (dBm)	LIMIT (dBm)	MARGIN (dB)
Low	2 412.00	-11.04	0.27	-10.77	8.00	18.77
Middle	2 442.00	-10.37	0.27	-10.10	8.00	18.10
High	2 462.00	-10.19	0.27	-9.92	8.00	17.92

Remark : Result = MEASURED VALUE (dBm) + Duty Cycle Factor(dB)

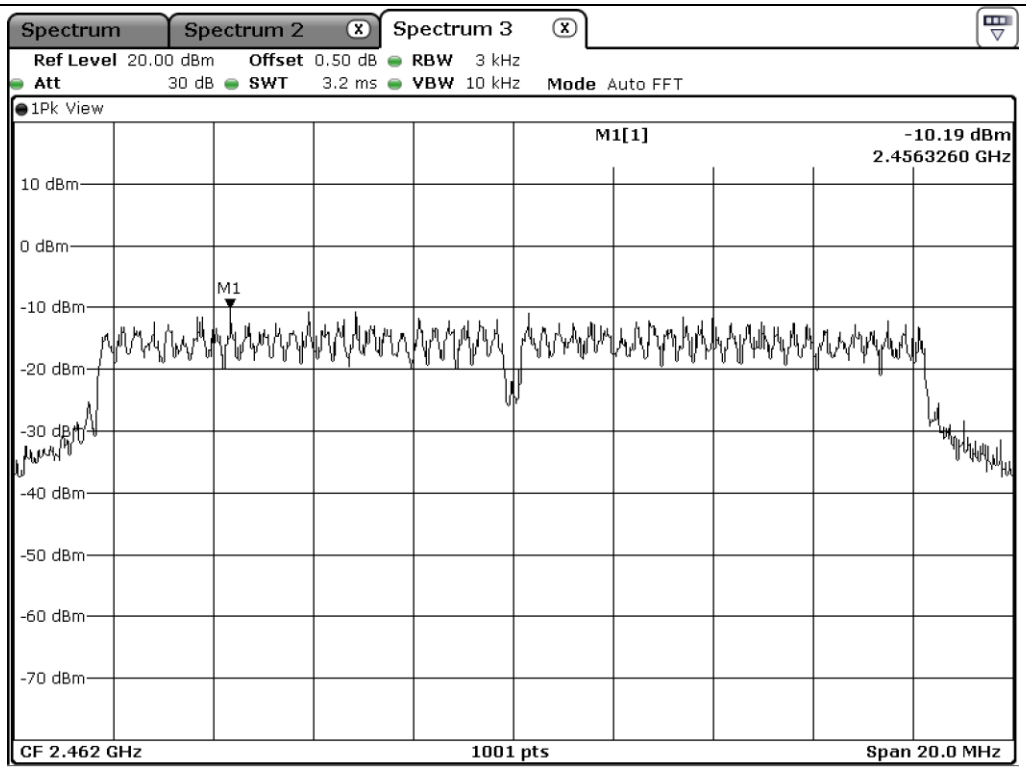
Tested by: Tae-Ho, Kim / Senior Manager



Low Channel



Middle Channel



High Channel

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10.5.2 Test data for Antenna 1

-. Test Date : August 16, 2018 ~ August 28, 2018

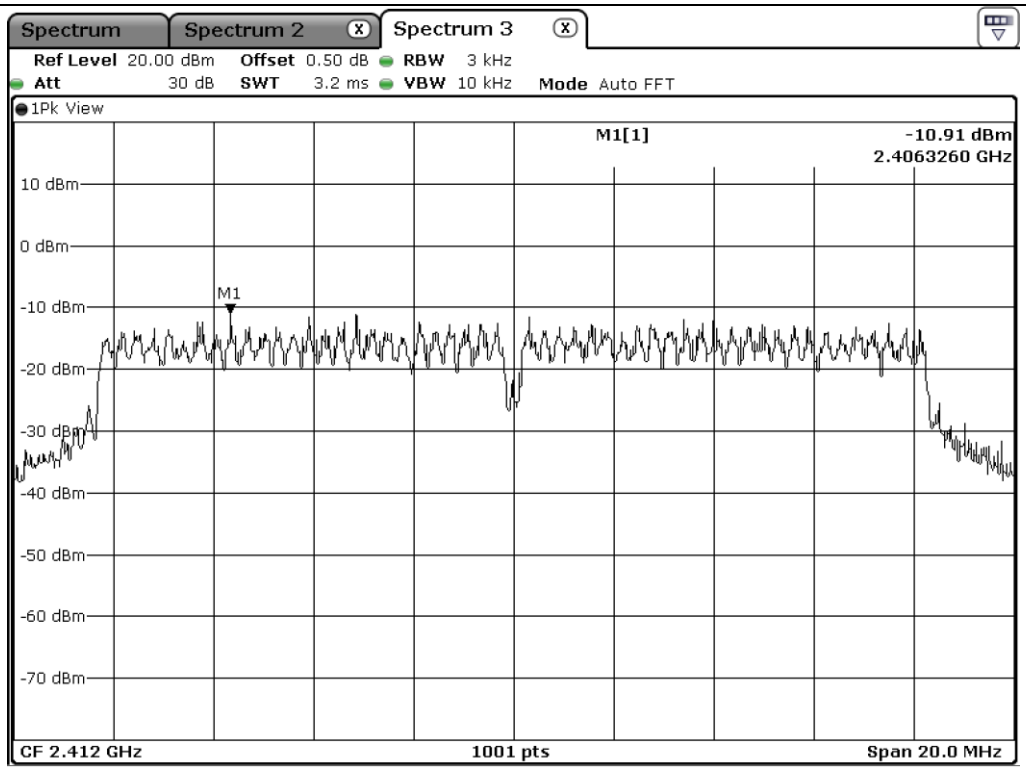
-. Test Result : Pass

-. Duty Cycle : 94 %

CHANNEL	FREQUENCY (MHz)	MEASURED VALUE (dBm)	Duty Cycle Factor (dB)	Result (dBm)	LIMIT (dBm)	MARGIN (dB)
Low	2 412.00	-10.91	0.27	-10.64	8.00	18.64
Middle	2 442.00	-10.54	0.27	-10.27	8.00	18.27
High	2 462.00	-10.41	0.27	-10.14	8.00	18.14

Remark : Result = MEASURED VALUE (dBm) + Duty Cycle Factor(dB)

Tested by: Tae-Ho, Kim / Senior Manager



Low Channel

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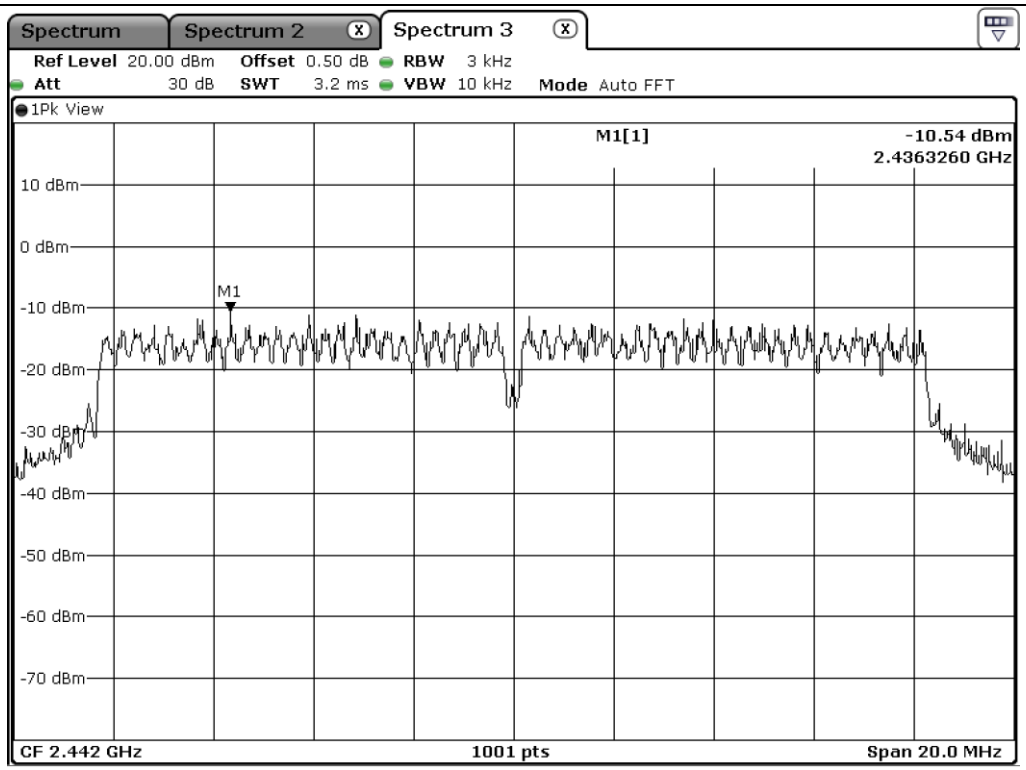
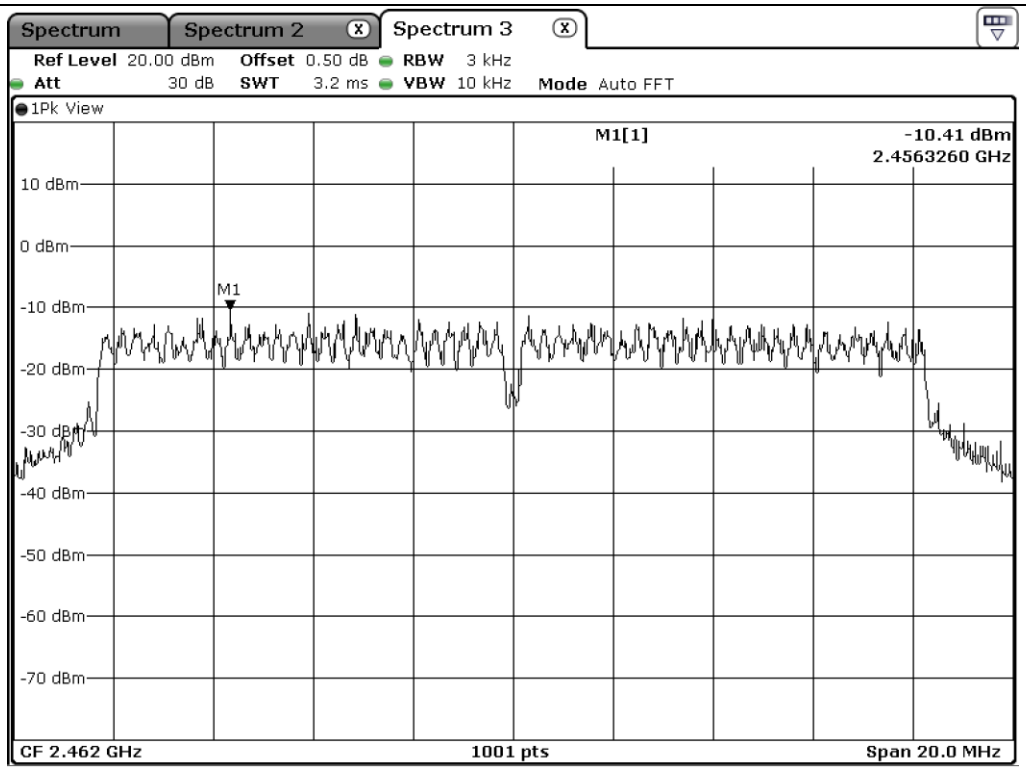


Middle Channel



High Channel

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10.6 Test data for 802.11n_HT20 WLAN Mode

10.6.1 Test data for Antenna 0

-. Test Date : August 16, 2018 ~ August 28, 2018

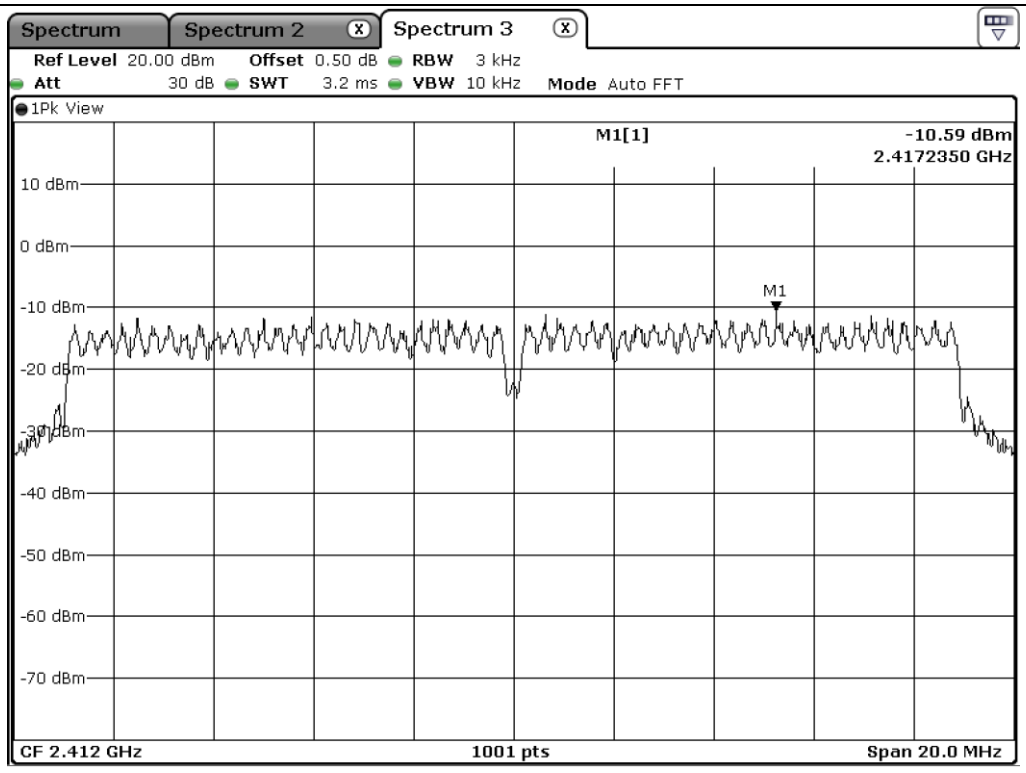
-. Test Result : Pass

-. Duty Cycle : 93 %

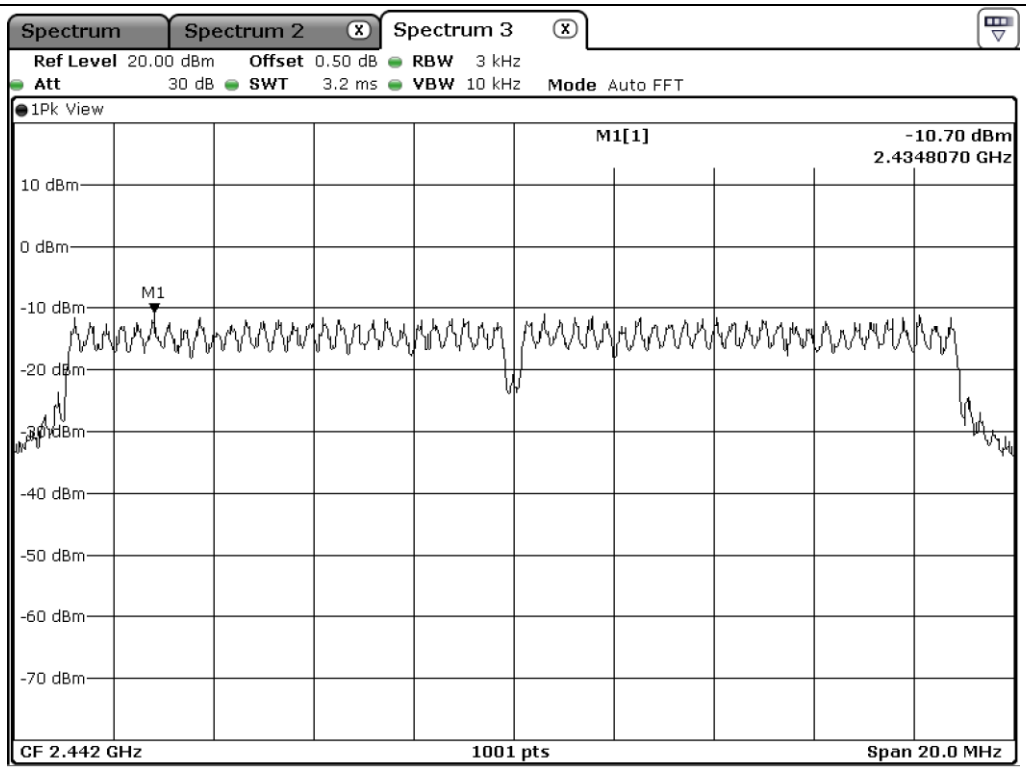
CHANNEL	FREQUENCY (MHz)	MEASURED VALUE (dBm)	Duty Cycle Factor (dB)	Result (dBm)	LIMIT (dBm)	MARGIN (dB)
Low	2 412.00	-10.59	0.32	-10.27	8.00	18.27
Middle	2 442.00	-10.70	0.32	-10.38	8.00	18.38
High	2 462.00	-10.29	0.32	-9.97	8.00	17.97

Remark : Result = MEASURED VALUE (dBm) + Duty Cycle Factor(dB)

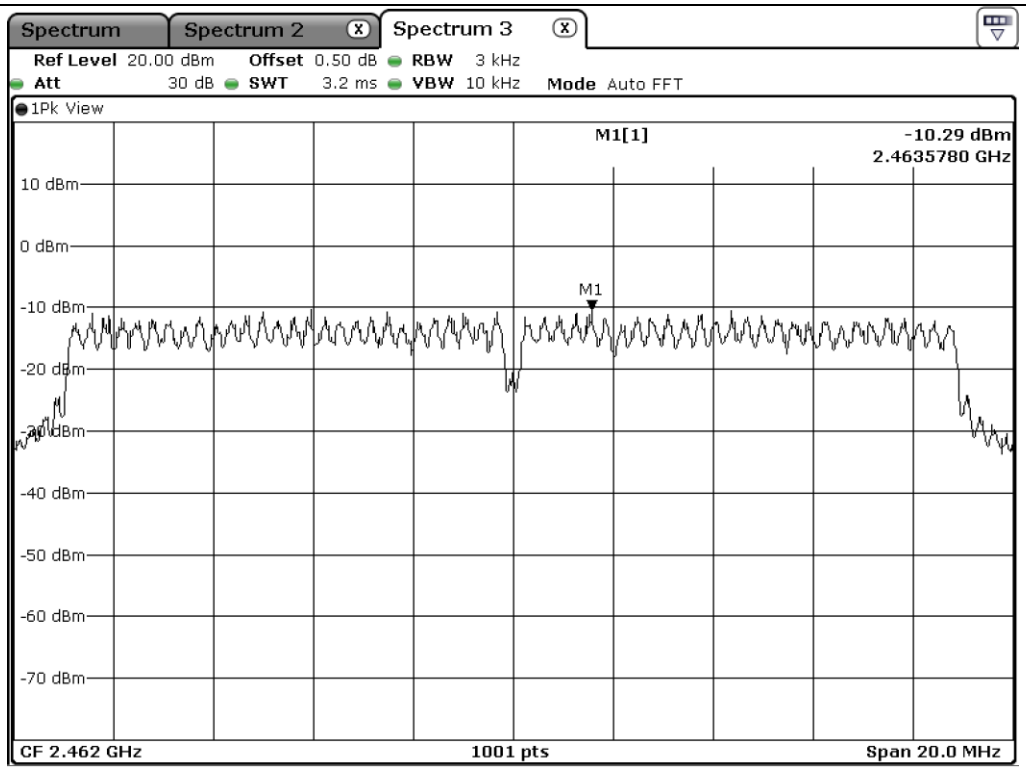
Tested by: Tae-Ho, Kim / Senior Manager



Low Channel



Middle Channel



High Channel

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10.6.2 Test data for Antenna 1

-. Test Date : August 16, 2018 ~ August 28, 2018

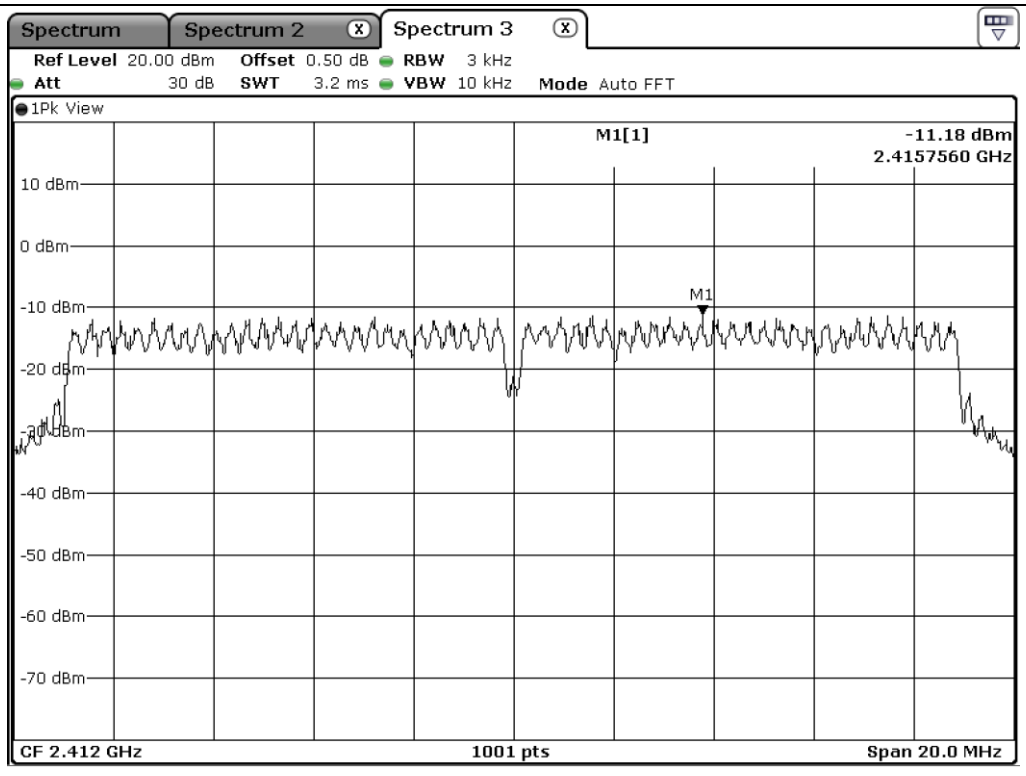
-. Test Result : Pass

-. Duty Cycle : 93 %

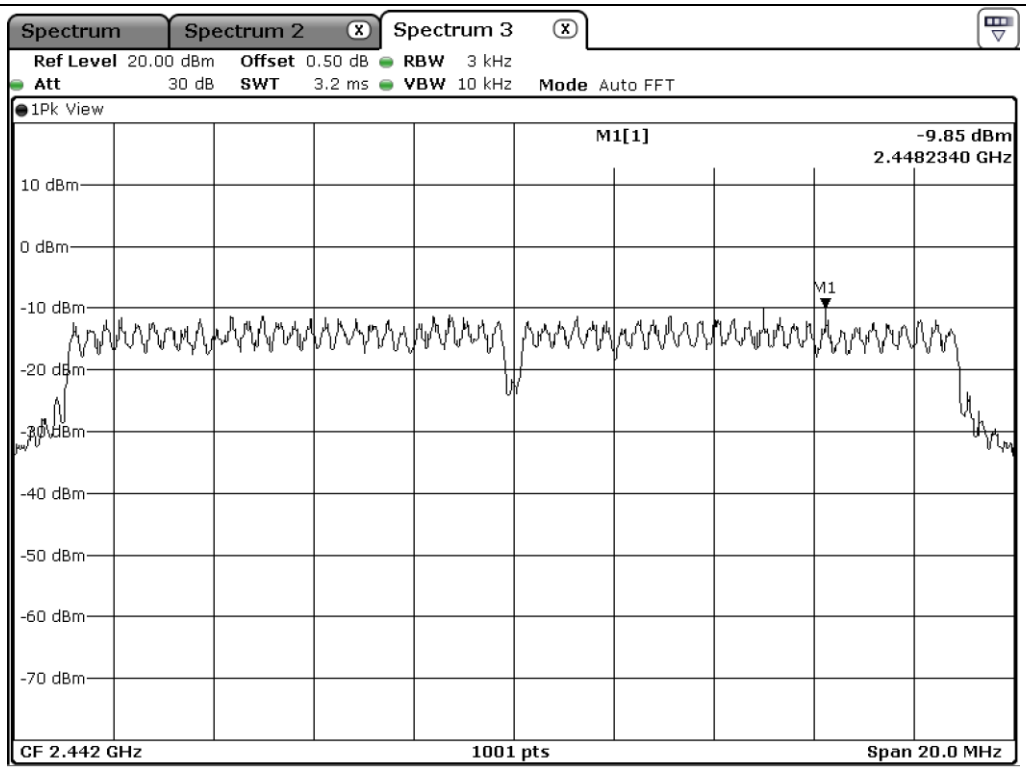
CHANNEL	FREQUENCY (MHz)	MEASURED VALUE (dBm)	Duty Cycle Factor (dB)	Result (dBm)	LIMIT (dBm)	MARGIN (dB)
Low	2 412.00	-11.18	0.32	-10.86	8.00	18.86
Middle	2 442.00	-9.85	0.32	-9.53	8.00	17.53
High	2 462.00	-10.18	0.32	-9.86	8.00	17.86

Remark : Result = MEASURED VALUE (dBm) + Duty Cycle Factor(dB)

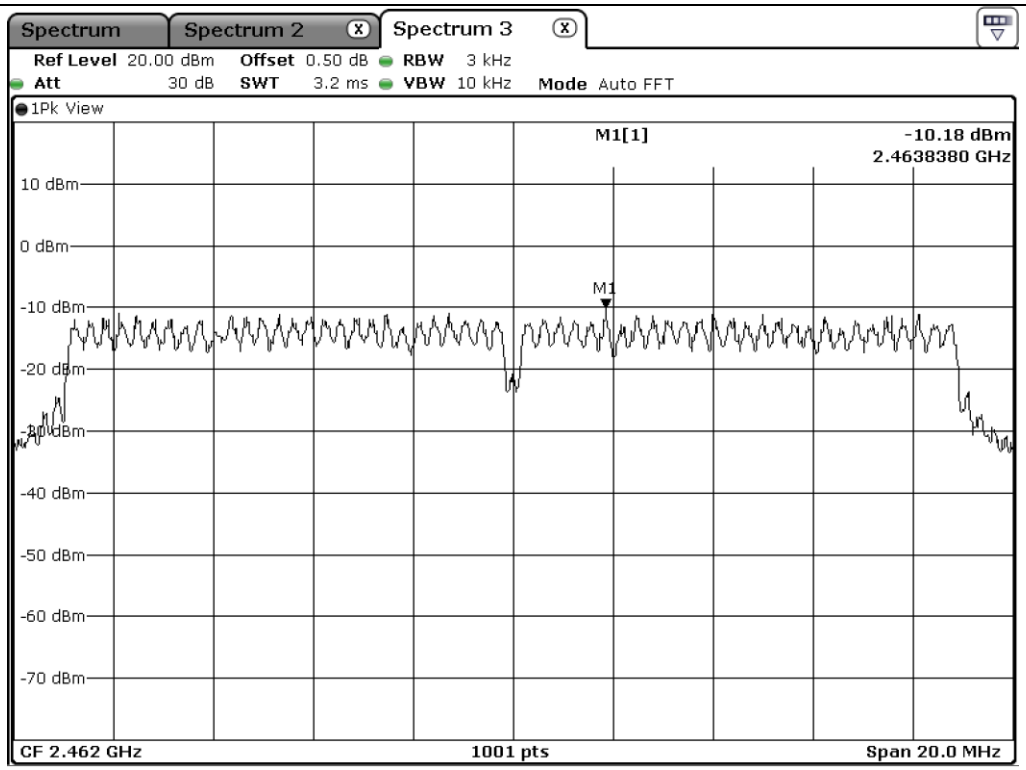
Tested by: Tae-Ho, Kim / Senior Manager



Low Channel



Middle Channel



High Channel

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10.6.3 Test data for Multiple Transmit

-. Test Date : August 16, 2018 ~ August 28, 2018

-. Test Result : Pass

CHANNEL	FREQUENCY (MHz)	Antenna 0 MEASURED VLAUE (dBm)	Antenna 1 MEASURED VLAUE (dBm)	COMBINED VLAUE (dBm)	LIMIT (dBm)	MARGIN (dB)
Low	2 412.00	-10.17	-11.38	-7.40	5.44	12.84
Middle	2 442.00	-11.16	-11.09	-7.79	5.44	13.23
High	2 462.00	-11.03	-11.21	-7.79	5.44	13.23

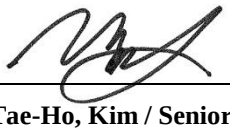
Remark 1 : Margin = Limit – Combined value

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

Remark 3 : Directional gain = $10*\log[(10^{G0/20}+10^{G1/20})^2/N]$ dBi

Remark 4 : Limit = 8 dBm – Exceeds Antenna gain

Remark 5 : Exceeds Antenna gain = Above the limits is calculated according to antenna gain.
Because antenna gain is higher than 6 dBi.



Tested by: Tae-Ho, Kim / Senior 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 : August 16, 2018 ~ August 28, 2018

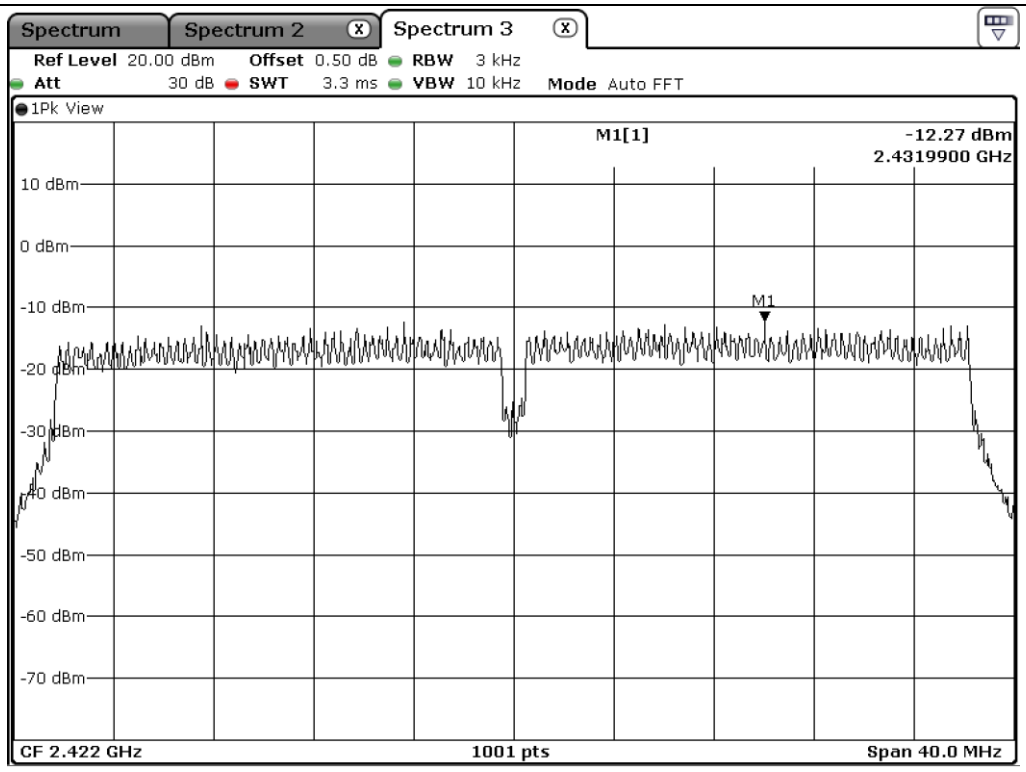
-. Test Result : Pass

-. Duty Cycle : 87 %

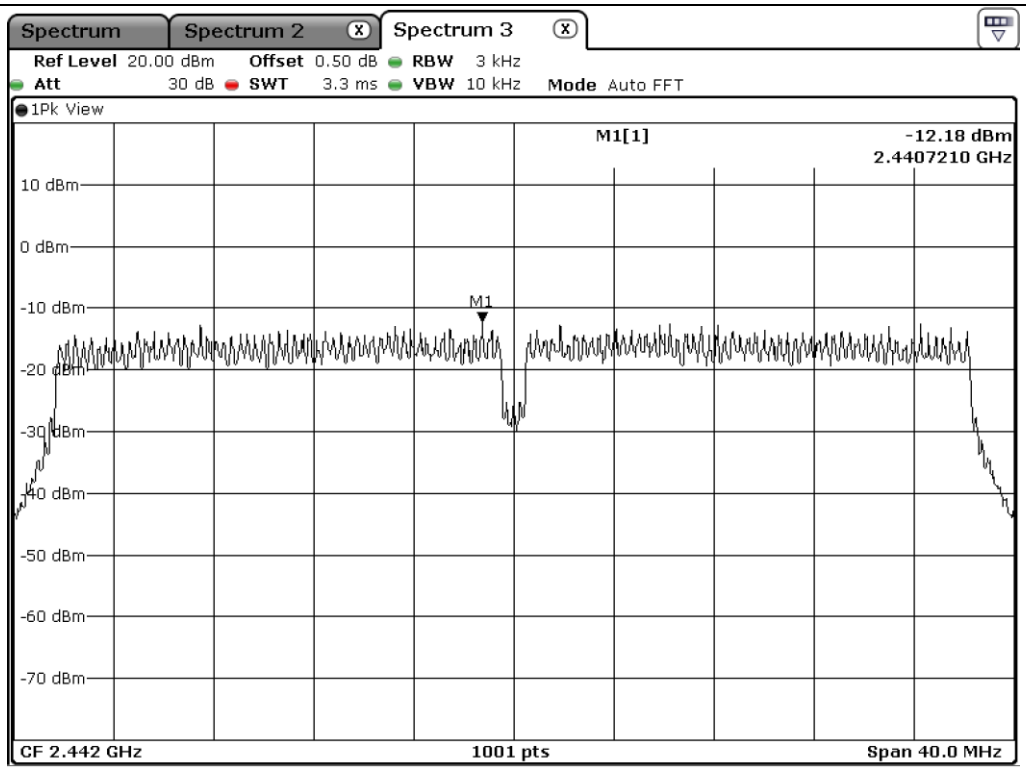
CHANNEL	FREQUENCY (MHz)	MEASURED VALUE (dBm)	Duty Cycle Factor (dB)	Result (dBm)	LIMIT (dBm)	MARGIN (dB)
Low	2 422.00	-12.27	0.60	-11.67	8.00	19.67
Middle	2 442.00	-12.18	0.60	-11.58	8.00	19.58
High	2 452.00	-12.33	0.60	-11.73	8.00	19.73

Remark : Result = MEASURED VALUE (dBm) + Duty Cycle Factor(dB)

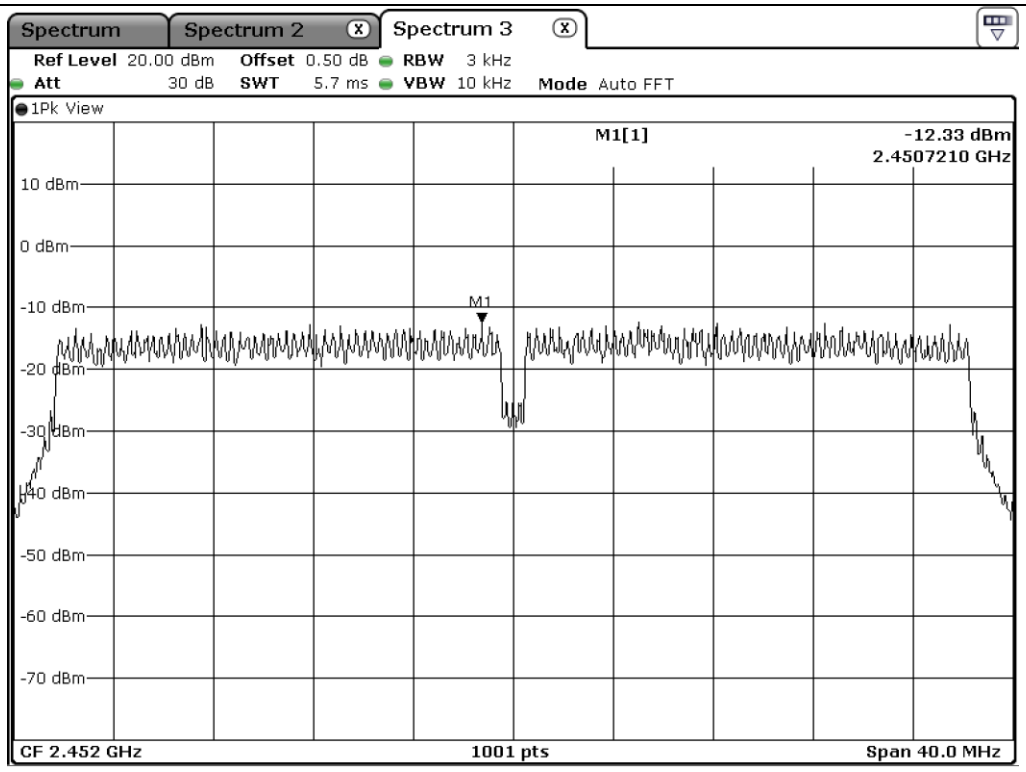
Tested by: Tae-Ho, Kim / Senior Manager



Low Channel



Middle Channel



High Channel

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10.7.2 Test data for Antenna 1

-. Test Date : August 16, 2018 ~ August 28, 2018

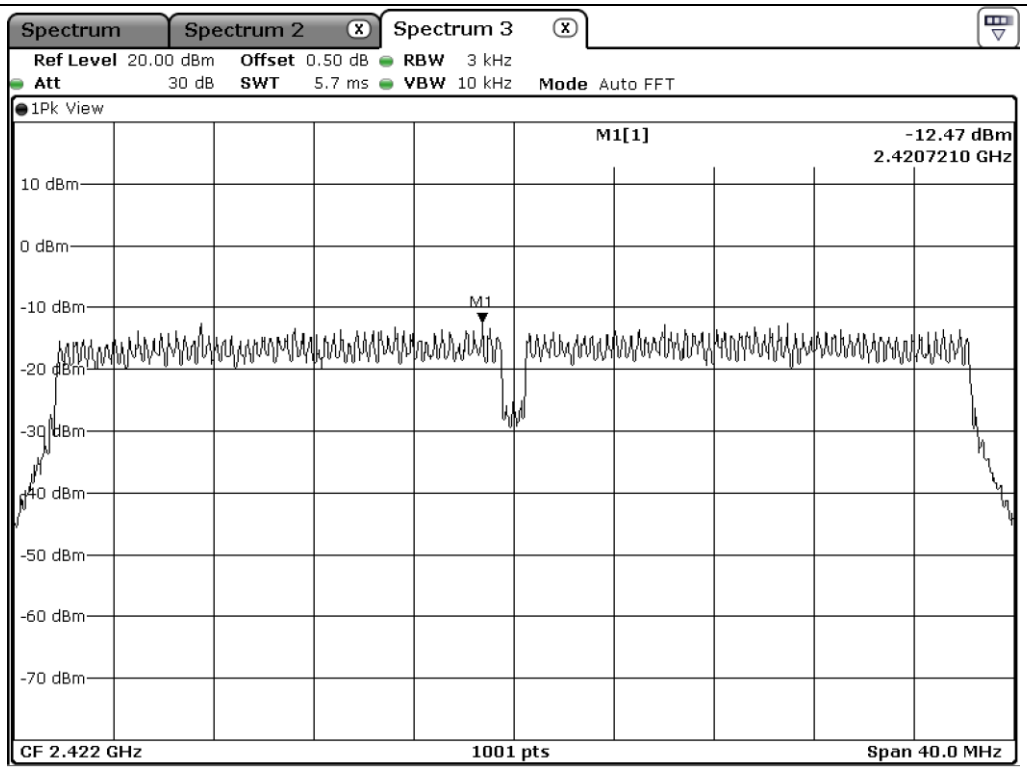
-. Test Result : Pass

-. Duty Cycle : 87 %

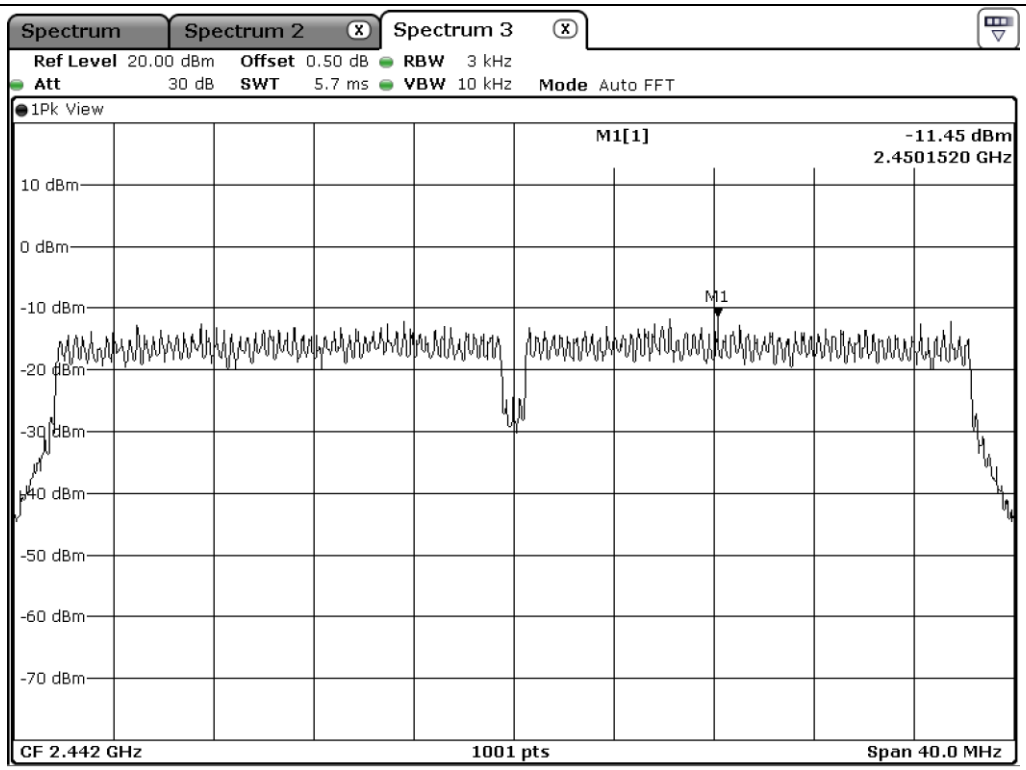
CHANNEL	FREQUENCY (MHz)	MEASURED VALUE (dBm)	Duty Cycle Factor (dB)	Result (dBm)	LIMIT (dBm)	MARGIN (dB)
Low	2 422.00	-12.47	0.60	-11.87	8.00	19.87
Middle	2 442.00	-11.45	0.60	-10.85	8.00	18.85
High	2 452.00	-11.99	0.60	-11.39	8.00	19.39

Remark : Result = MEASURED VALUE (dBm) + Duty Cycle Factor(dB)

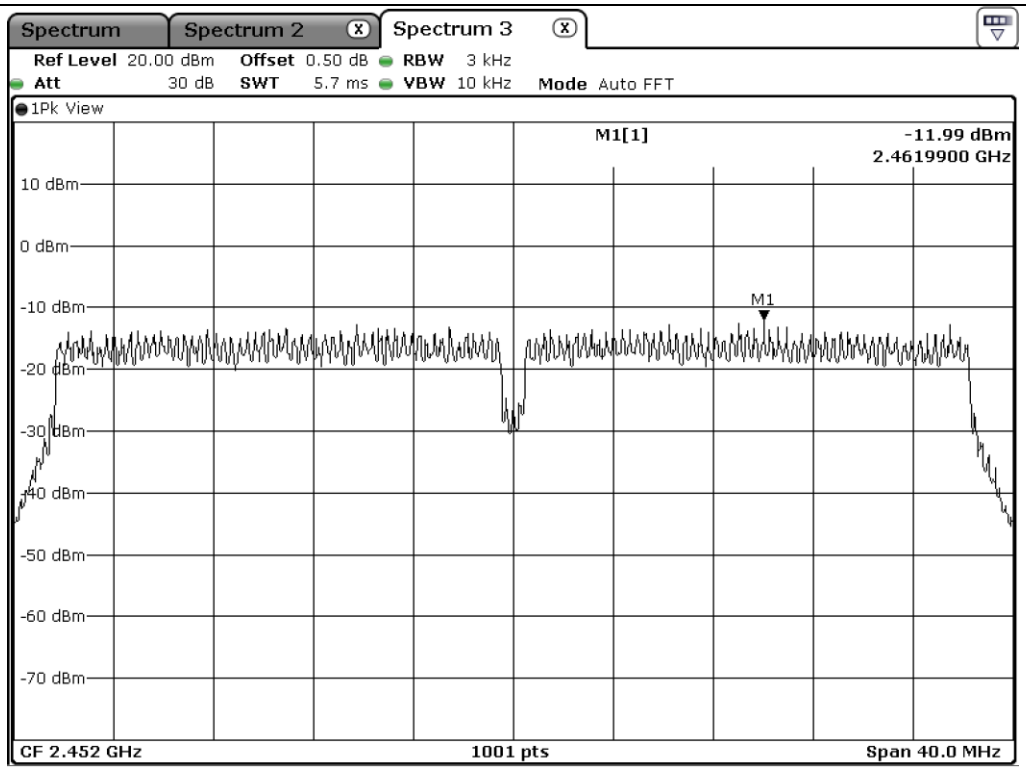
Tested by: Tae-Ho, Kim / Senior Manager



Low Channel



Middle Channel



High Channel

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10.7.3 Test data for Multiple Transmit

-. Test Date : August 16, 2018 ~ August 28, 2018

-. Test Result : Pass

CHANNEL	FREQUENCY (MHz)	Antenna 0 MEASURED VLAUE (dBm)	Antenna 1 MEASURED VLAUE (dBm)	COMBINED VLAUE (dBm)	LIMIT (dBm)	MARGIN (dB)
Low	2 412.00	-13.53	-13.52	-9.91	5.44	15.35
Middle	2 442.00	-12.58	-13.63	-9.46	5.44	14.90
High	2 462.00	-13.18	-13.08	-9.52	5.44	14.96

Remark 1 : Margin = Limit – Combined value

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

Remark 3 : Directional gain = $10*\log[(10^{G0/20}+10^{G1/20})^2/N]$ dBi

Remark 4 : Limit = 8 dBm – Exceeds Antenna gain

Remark 5 : Exceeds Antenna gain = Above the limits is calculated according to antenna gain.
Because antenna gain is higher than 6 dBi.

Tested by: Tae-Ho, Kim / Senior Manager

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11. RADIATED EMISSION TEST

11.1 Operating environment

Temperature : 24.3 ℃

Relative humidity : 43.9 % 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	Mar. 14, 2018 (1Y)
■ -	ESU	Rohde & Schwarz	EMI Test Receiver	100261	Mar. 29, 2018 (1Y)
■ -	310N	Sonoma Instrument	Pre-Amplifier	312544	Mar. 28, 2018 (1Y)
■ -	BBV9718	Schwarzbeck	Amplifier	310	Mar. 30, 2018 (1Y)
■ -	DT3000-3t	Innco System	Turn Table	DT3000/093	N/A
■ -	MA-4000XPET	Innco System	Antenna Master	MA4000/509	N/A
■ -	VULB9163	Schwarzbeck	TRILOG Broadband Antenna	777	Apr. 13, 2018 (2Y)
■ -	BBHA9120D	Schwarzbeck	Horn Antenna	BBHA9120D295	Aug. 16, 2017 (2Y)
■ -	BBHA9170	Schwarzbeck	Horn Antenna	BBHA9170179	Jul. 28, 2017 (2Y)

All test equipment used is calibrated on a regular basis.

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11.4 Test data

11.4.1 Test data for 30 MHz ~ 1 000 MHz

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

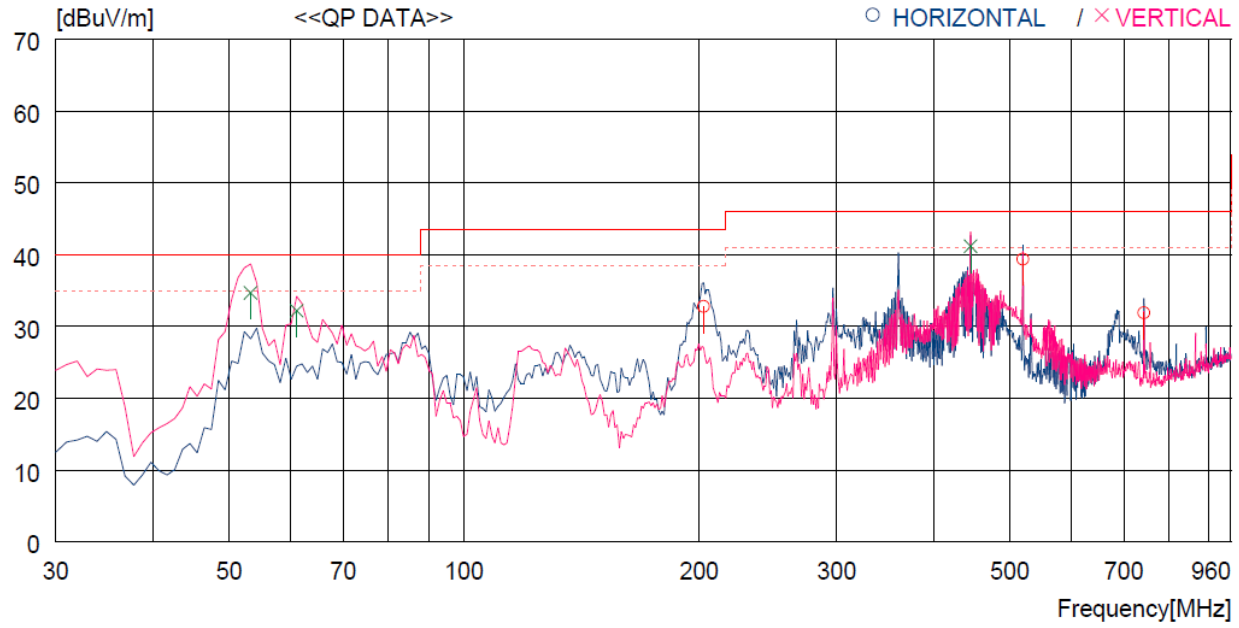
Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.247

Result : PASSED

EUT : Beam Projector Date: August 16, 2018 ~ August 28, 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	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	202.660	52.1	10.6	3.3	33.2	32.8	43.5	10.7	100	0
2	519.850	50.0	17.5	5.2	33.3	39.4	46.0	6.6	200	359
3	742.944	38.6	20.4	6.3	33.4	31.9	46.0	14.1	100	210
----- Vertical ------										
4	53.280	52.2	13.8	1.8	33.1	34.7	40.0	5.3	100	19
5	61.040	50.5	12.9	1.9	33.1	32.2	40.0	7.8	100	359
6	445.161	53.1	16.5	4.8	33.2	41.2	46.0	4.8	100	158

Tested by: Tae-Ho, Kim / Senior Manager

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11.4.2 Test data for Below 30 MHz

-. Test Date : August 16, 2018 ~ August 28, 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 : August 16, 2018 ~ August 28, 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: Tae-Ho, Kim / Senior Manager

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12. CONDUCTED EMISSION TEST

12.1 Operating environment

Temperature : 24.3 ℃

Relative humidity : 43.9 % 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	Mar. 29, 2018 (1Y)
☐ -	NSLK8128	Schwarzbeck	AMN	8128-216	Mar. 29, 2018 (1Y)
■ -	NSLK8126	Schwarzbeck	AMN	8126-404	Apr. 04, 2018 (1Y)
☐ -	3825/2	EMCO	AMN	9109-1869	Apr. 11, 2018 (1Y)
■ -	3825/2	EMCO	AMN	9109-1867	Mar. 28, 2018 (1Y)

All test equipment used is calibrated on a regular basis.

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12.4 Test data

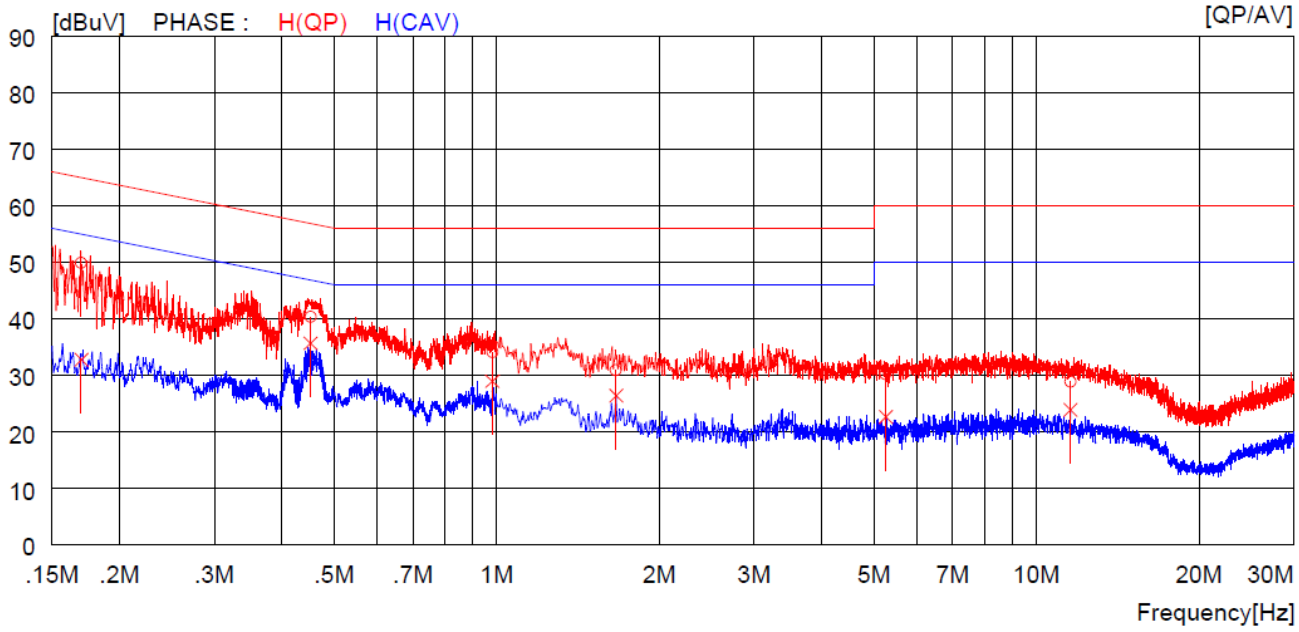
-. Test Date : August 16, 2018 ~ August 28, 2018

-. Resolution bandwidth : 9 kHz

-. Frequency range : 0.15 MHz ~ 30 MHz

-. Tested Line : HOT LINE

-.Antenna 0, 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	0.17000	40.0	----	9.9	49.9	----	65.0	----	15.1	----	H(QP)
2	0.45200	30.5	----	9.9	40.4	----	56.8	----	16.4	----	H(QP)
3	0.98200	24.2	----	9.9	34.1	----	56.0	----	21.9	----	H(QP)
4	1.66400	21.0	----	9.9	30.9	----	56.0	----	25.1	----	H(QP)
5	5.25500	20.1	----	10.1	30.2	----	60.0	----	29.8	----	H(QP)
6	11.56000	18.7	----	10.2	28.9	----	60.0	----	31.1	----	H(QP)
7	0.17000	----	22.9	9.9	----	32.8	----	55.0	----	22.2	H(CAV)
8	0.45200	----	25.8	9.9	----	35.7	----	46.8	----	11.1	H(CAV)
9	0.98200	----	19.1	9.9	----	29.0	----	46.0	----	17.0	H(CAV)
10	1.66400	----	16.5	9.9	----	26.4	----	46.0	----	19.6	H(CAV)
11	5.25500	----	12.6	10.1	----	22.7	----	50.0	----	27.3	H(CAV)
12	11.56000	----	13.7	10.2	----	23.9	----	50.0	----	26.1	H(CAV)

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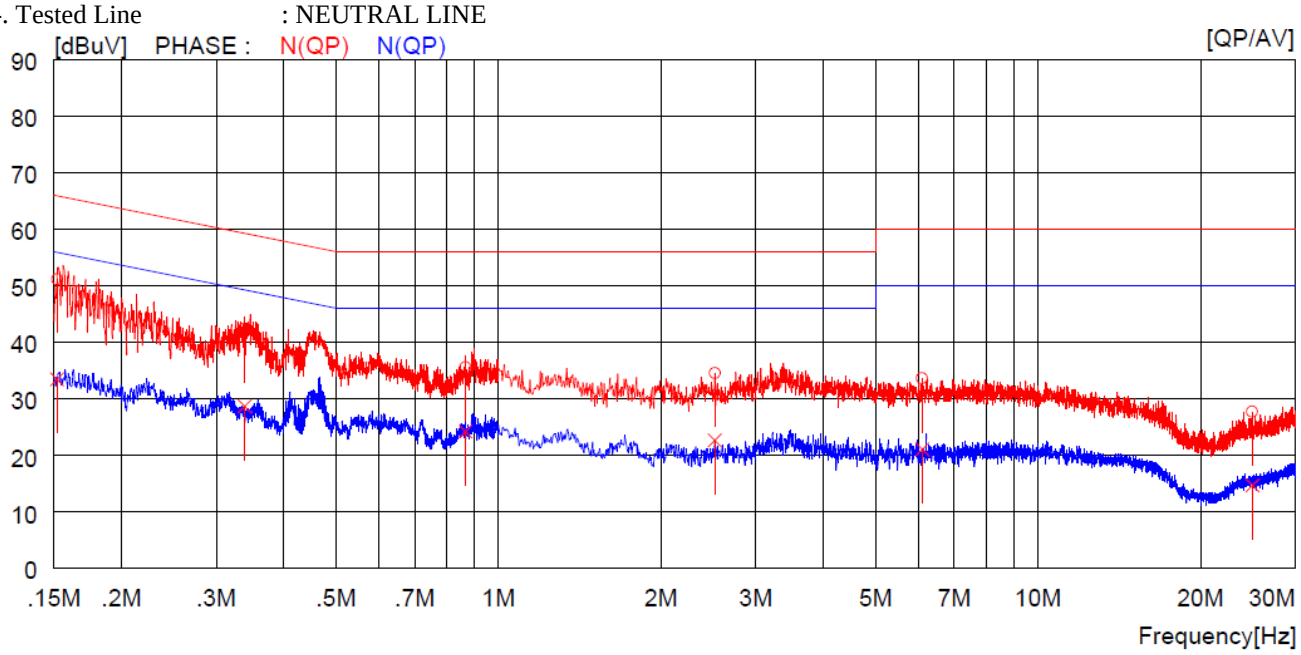
-. Tested Line : NEUTRAL LINE



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	41.4	----	9.8	51.2	----	65.9	----	14.7	----	N(QP)
2	0.33800	32.5	----	9.9	42.4	----	59.3	----	16.9	----	N(QP)
3	0.86800	25.7	----	9.9	35.6	----	56.0	----	20.4	----	N(QP)
4	2.51600	24.7	----	9.9	34.6	----	56.0	----	21.4	----	N(QP)
5	6.10000	23.4	----	10.2	33.6	----	60.0	----	26.4	----	N(QP)
6	24.95000	17.0	----	10.7	27.7	----	60.0	----	32.3	----	N(QP)
7	0.15200	----	23.7	9.8	----	33.5	----	55.9	----	22.4	N(CAV)
8	0.33800	----	18.8	9.9	----	28.7	----	49.3	----	20.6	N(CAV)
9	0.86800	----	14.3	9.9	----	24.2	----	46.0	----	21.8	N(CAV)
10	2.51600	----	12.8	9.9	----	22.7	----	46.0	----	23.3	N(CAV)
11	6.10000	----	10.9	10.2	----	21.1	----	50.0	----	28.9	N(CAV)
12	24.95000	----	4.0	10.7	----	14.7	----	50.0	----	35.3	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: Tae-Ho, Kim / Senior Manager

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