



Report No. : KES-RF-23T0159

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Duty cycle

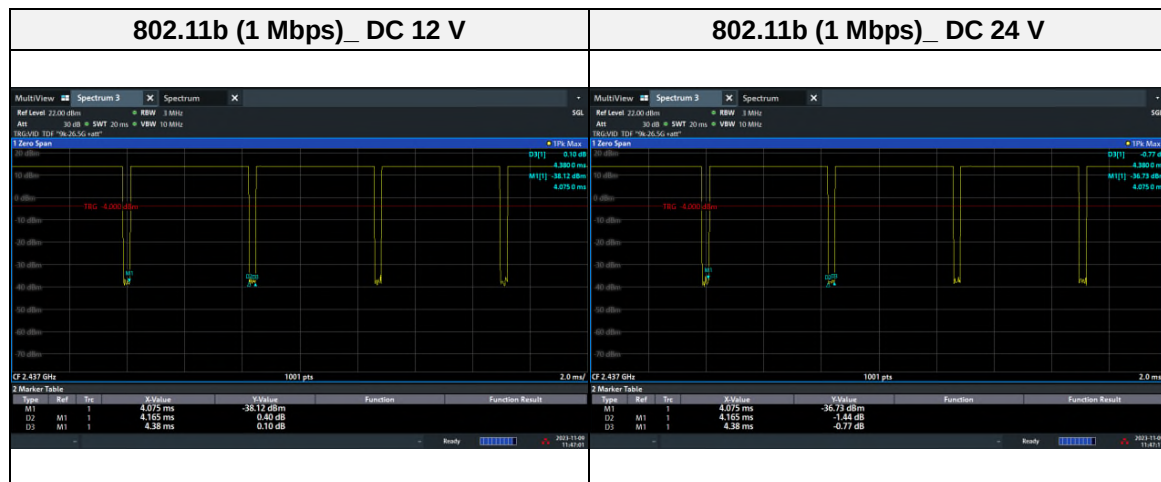
Regarding to KDB 558074 D01_v05 r02, 6. Measurements of duty cycle and transmission duration shall be performed using one of the following techniques:

- A diode detector and an oscilloscope that together have sufficiently short response time to permit accurate measurements of the on- and off-times of the transmitted signal.
- The zero-span mode on a spectrum analyzer or EMI receiver if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the on- and off-times of the transmitted signal.

Mode	T _{on} time (ms)	Period (ms)	Duty cycle (Linear)	Duty cycle (%)	Duty cycle correction factor (dB)
802.11b DC 12 V	4.17	4.38	0.95	95.21	0.22
802.11b DC 24 V	4.17	4.38	0.95	95.21	0.22
802.11g DC 12 V	0.71	0.97	0.73	73.20	1.37
802.11g DC 24 V	0.71	0.97	0.73	73.20	1.37
802.11n_HT20 DC 12 V	0.68	0.92	0.74	73.91	1.31
802.11n_HT20 DC 24 V	0.68	0.92	0.74	73.91	1.31

Duty cycle (Linear) = T_{on} time/Period

DCF(Duty cycle correction factor (dB)) = 10log(1/duty cycle)

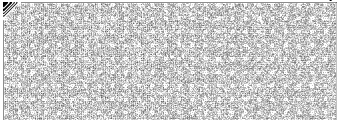
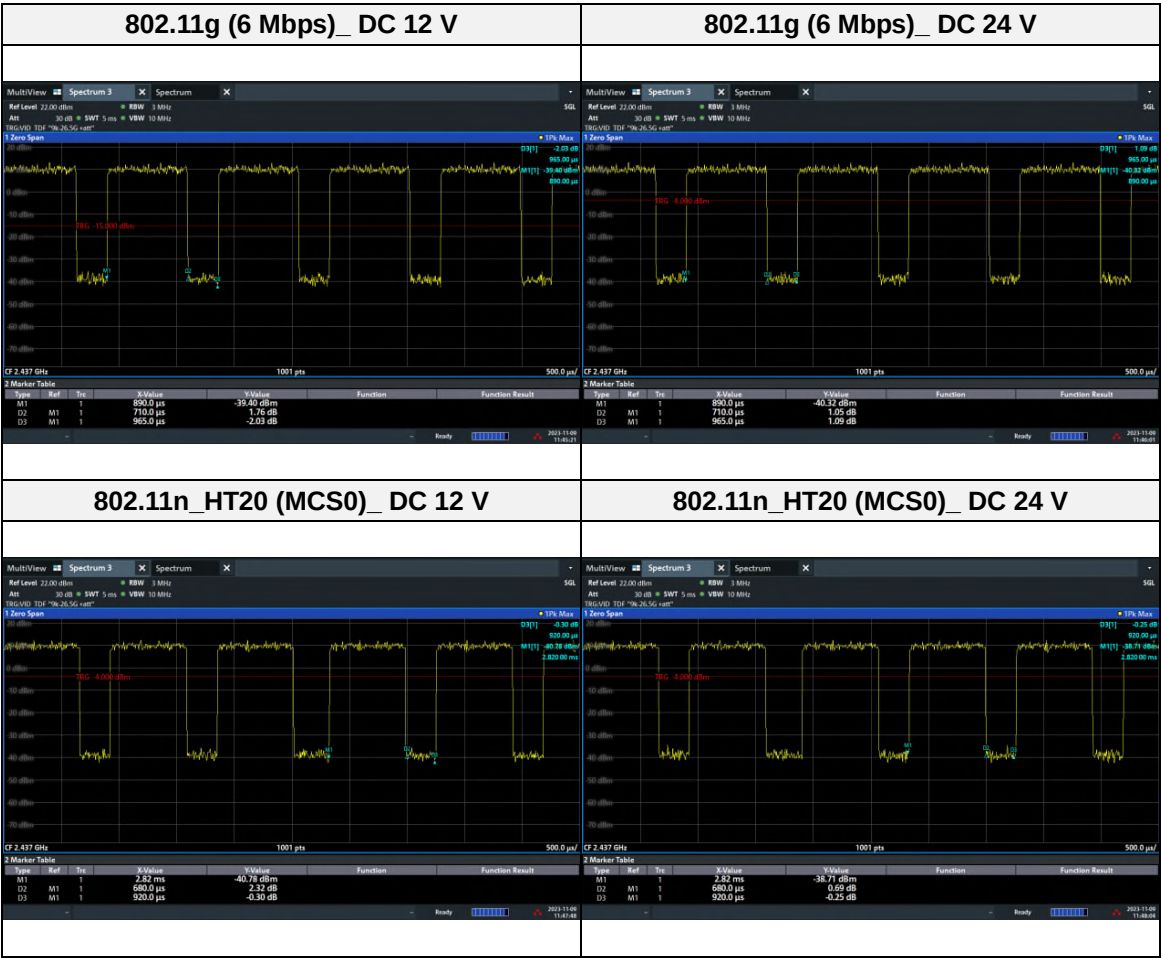


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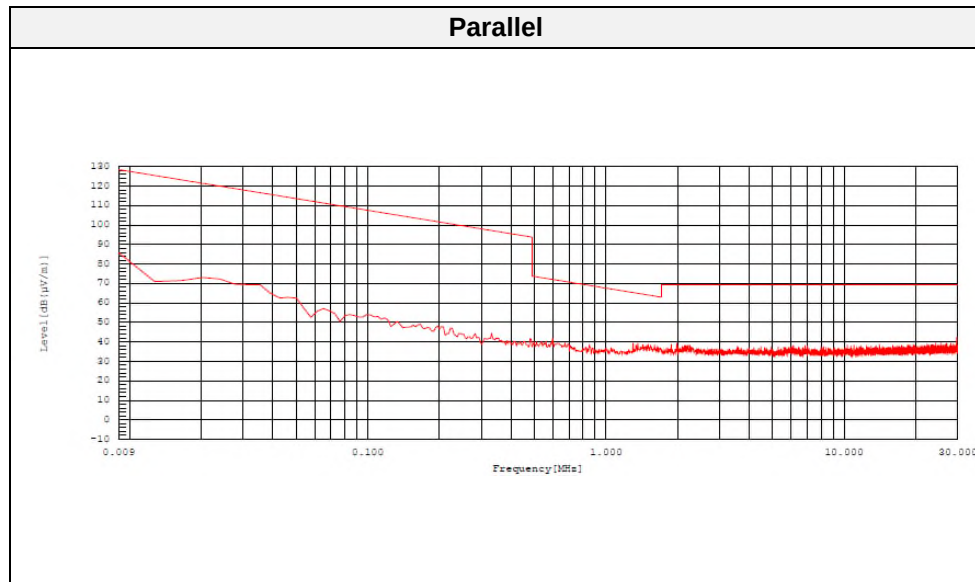
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Test results (Below 30 MHz)

Mode: 802.11g (6 Mbps)_12 V

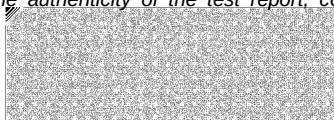
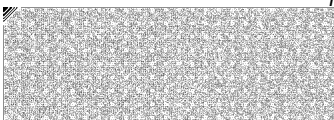
Distance of measurement: 3 meter

Channel: 1 (Worst case)



Note.

1. No spurious emission were detected under 30 MHz..



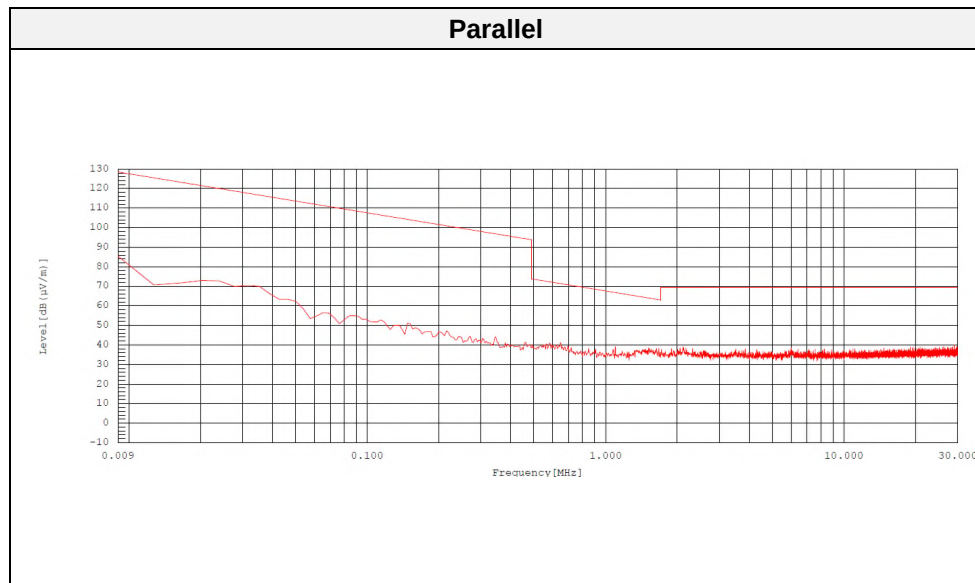
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Mode: 802.11g (6 Mbps)_24 V

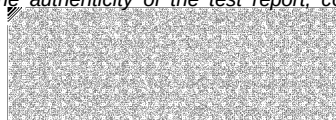
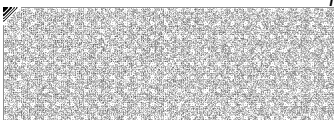
Distance of measurement: 3 meter

Channel: 6 (Worst case)



Note.

1. No spurious emission were detected under 30 MHz.



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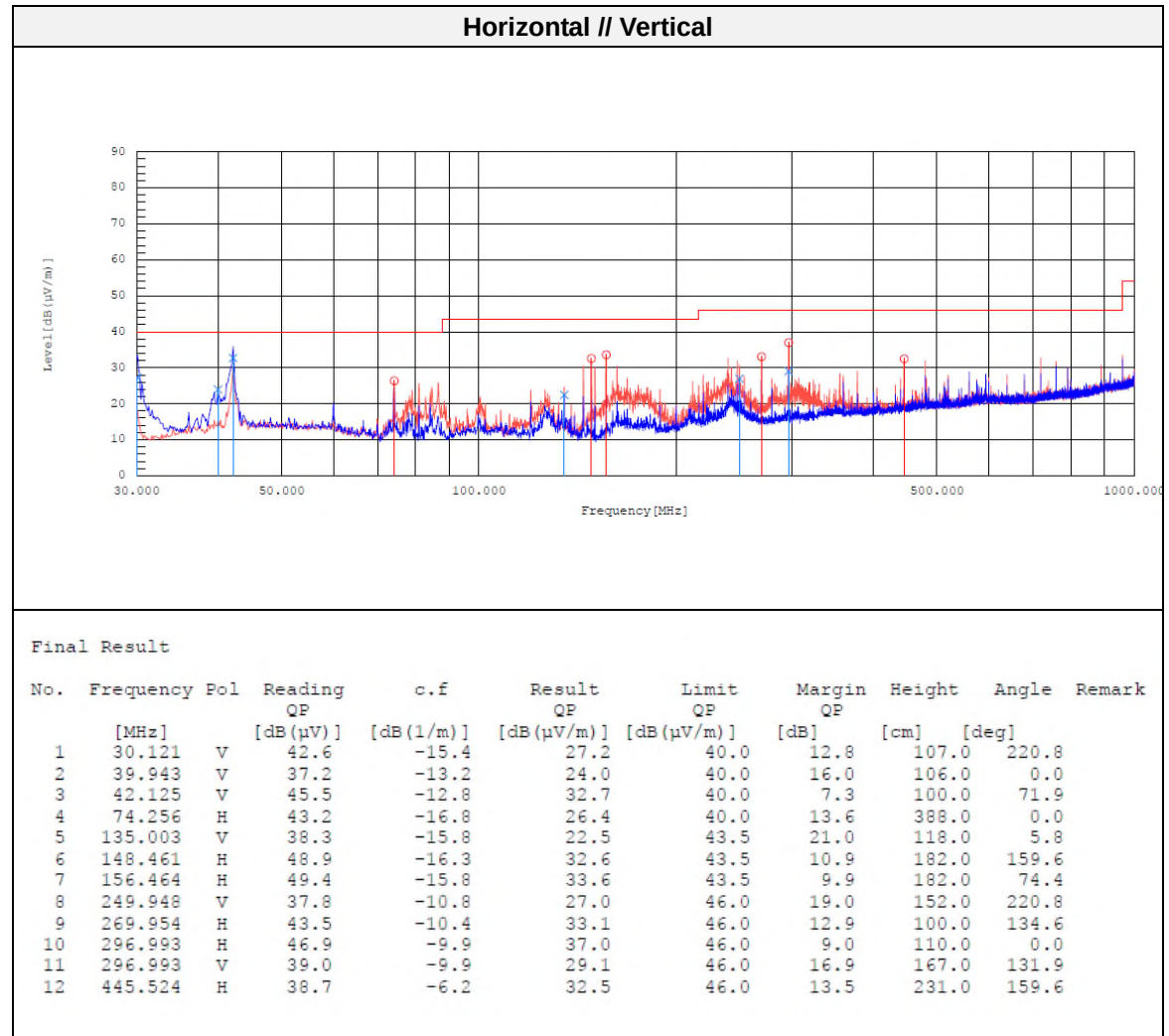
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Test results (Below 1 000 MHz)

Mode: 802.11g (6 Mbps)_12 V

Distance of measurement: 3 meter

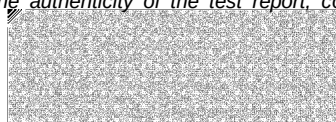
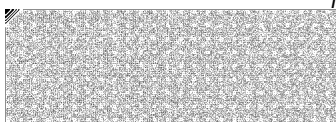
Channel: 1 (Worst case)



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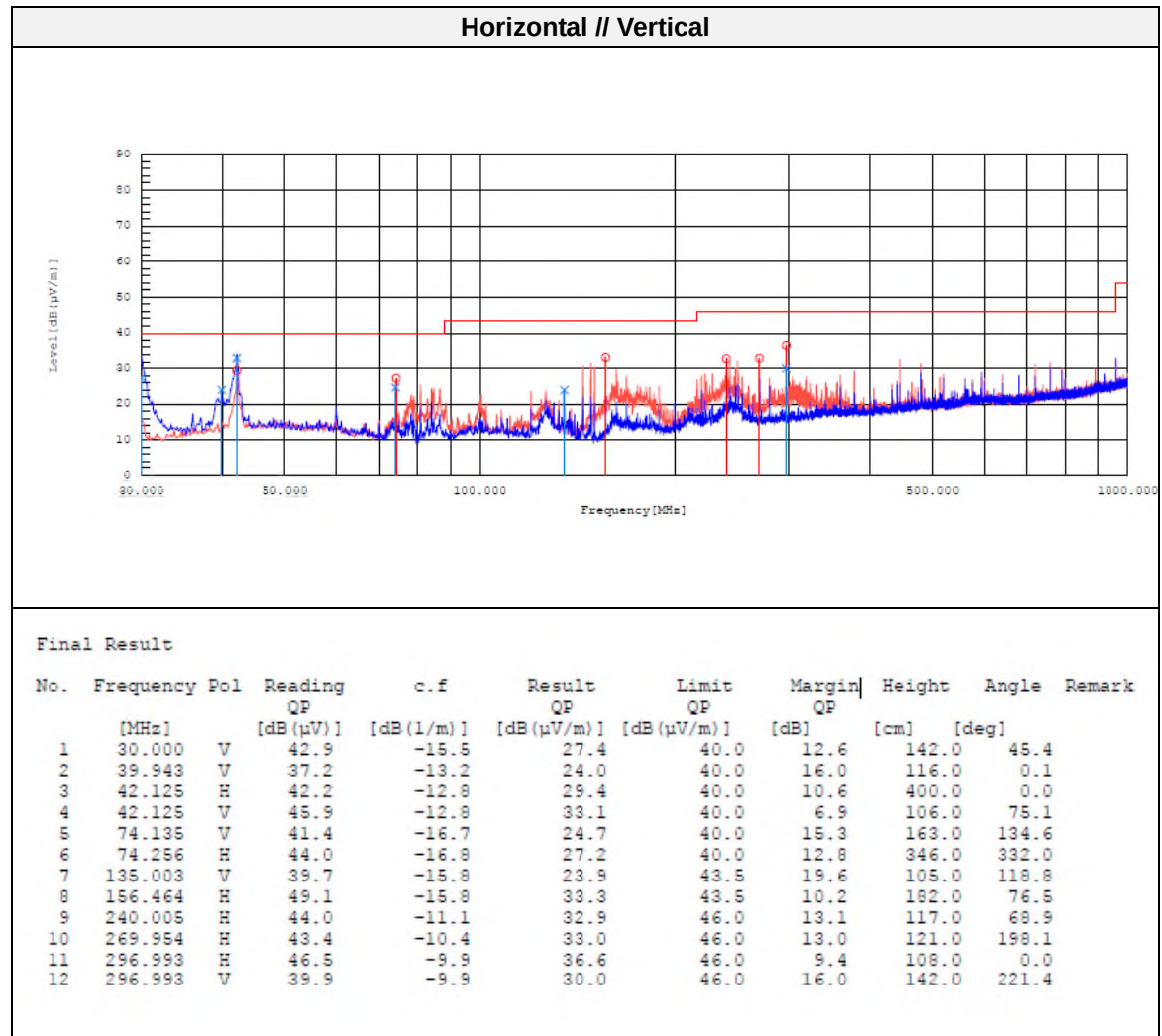
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Mode: 802.11g (6 Mbps)_24 V

Distance of measurement: 3 meter

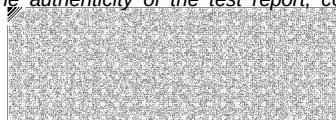
Channel: 6 (Worst case)



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Test results (Above 1 000 MHz)

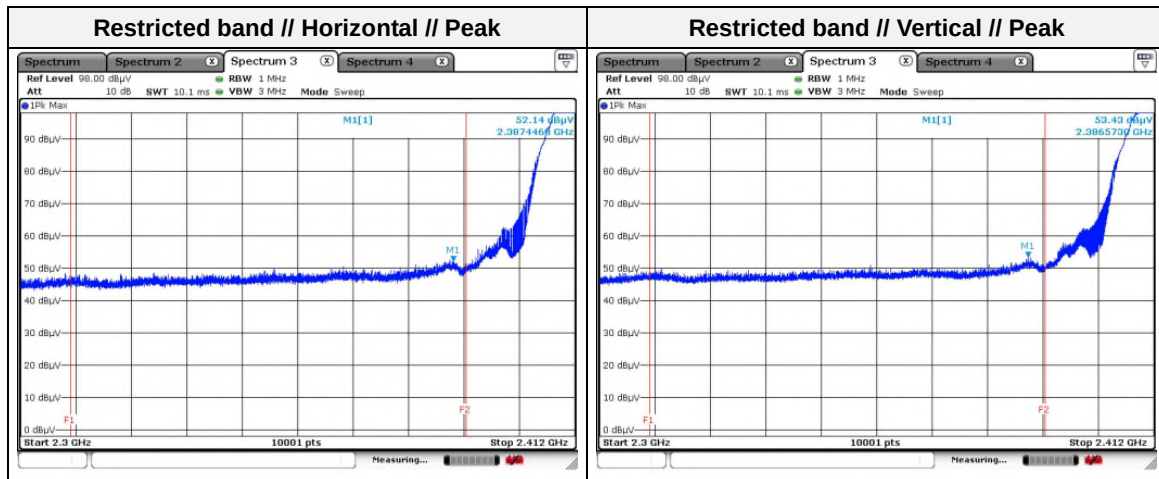
Mode: 802.11b (1 Mbps)_DC 12 V
 Distance of measurement: 3 meter
 Channel: 1

- Spurious

Frequency (MHz)	Level (dB μ V)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
1 173.08	46.43	Peak	H	-8.40	-	38.03	74.00	35.97
1 231.88	46.75	Peak	V	-7.99	-	38.76	74.00	35.24
4 824.60	49.89	Peak	H	6.68	-	56.57	74.00	17.43
4 824.60	44.11	Average	H	6.68	0.22	51.01	54.00	2.99
4 824.60	47.38	Peak	V	6.68	-	54.06	74.00	19.94
4 824.60	42.58	Average	V	6.68	0.22	49.48	54.00	4.52

- Band edge

Frequency (MHz)	Level (dB μ V)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
2 386.57	53.43	Peak	V	-0.73	-	52.70	74.00	21.30
2 387.45	52.14	Peak	H	-0.73	-	51.41	74.00	22.59

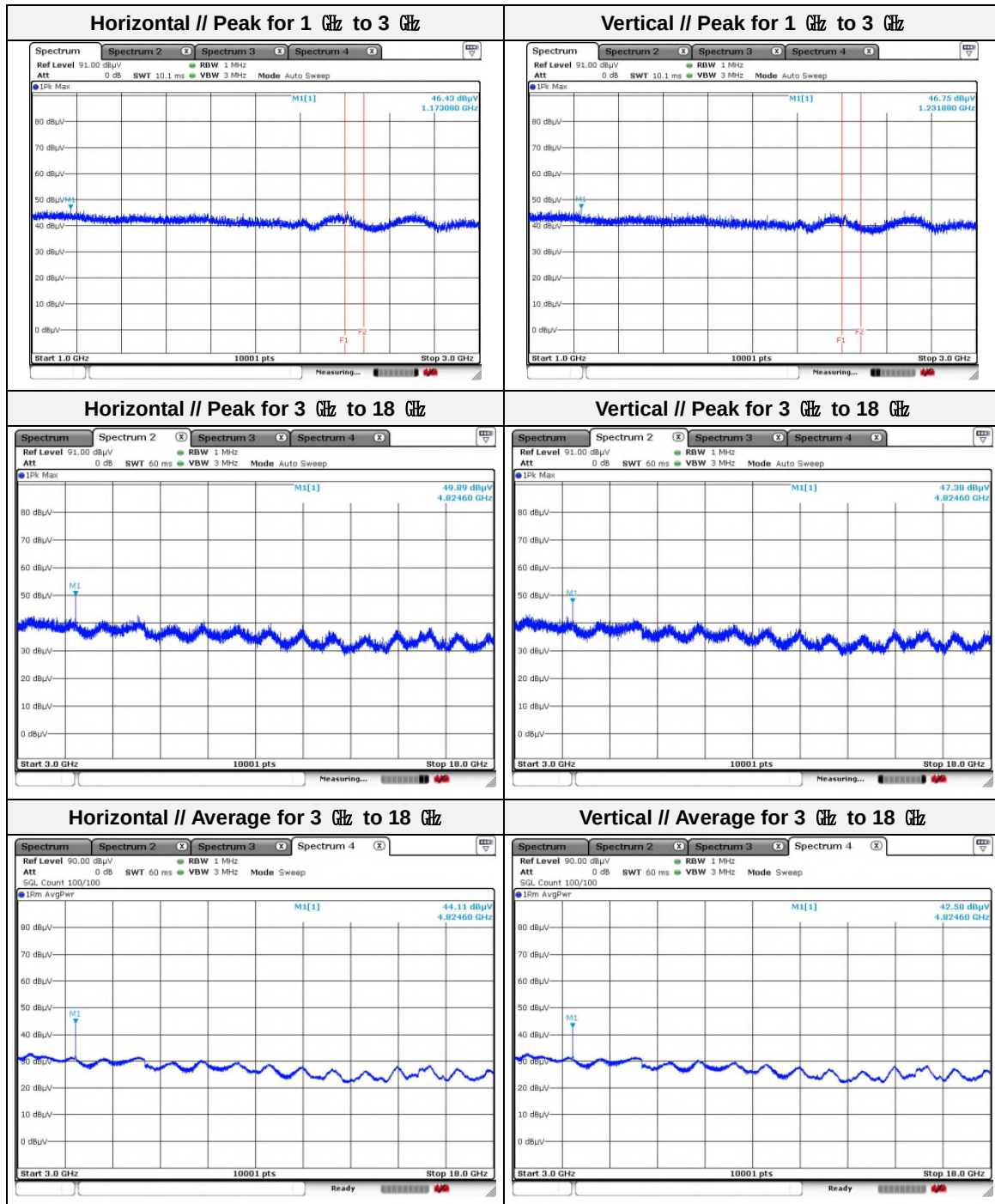


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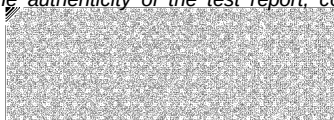
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Note.

1. Average test would be performed if the peak result were greater than the average limit.



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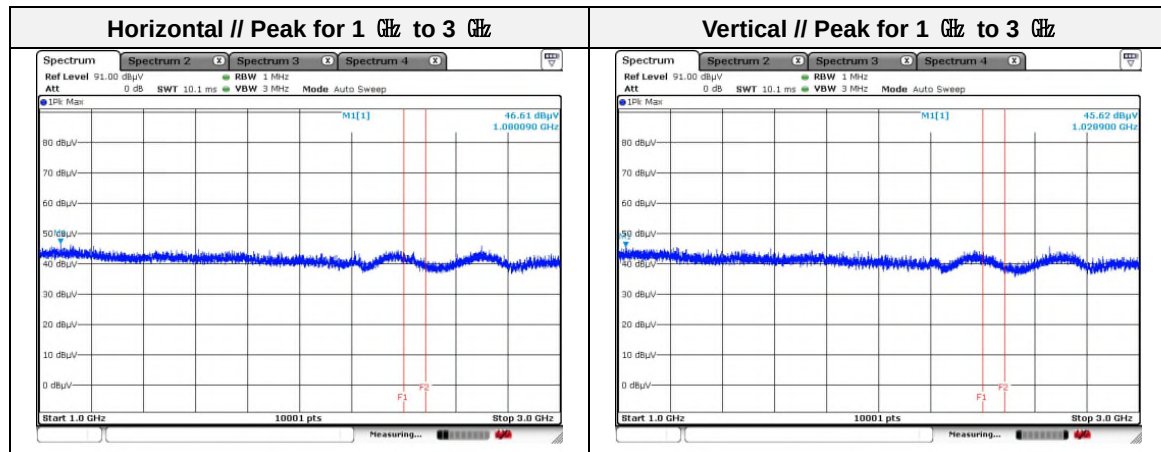
Mode: 802.11b (1 Mbps)_DC 12 V

Distance of measurement: 3 meter

Channel: 6

- Spurious

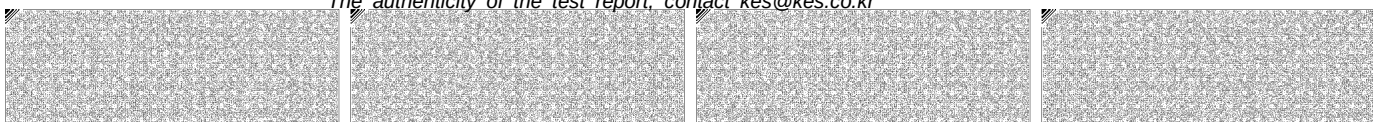
Frequency (MHz)	Level (dB μ V)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
1 028.90	45.62	Peak	V	-9.40	-	36.22	74.00	37.78
1 080.09	46.61	Peak	H	-9.04	-	37.57	74.00	36.43
4 874.10	48.04	Peak	H	7.03	-	55.07	74.00	18.93
4 874.10	44.13	Average	H	7.03	0.22	51.38	54.00	2.62
4 874.10	45.04	Peak	V	7.03	-	52.07	74.00	21.93

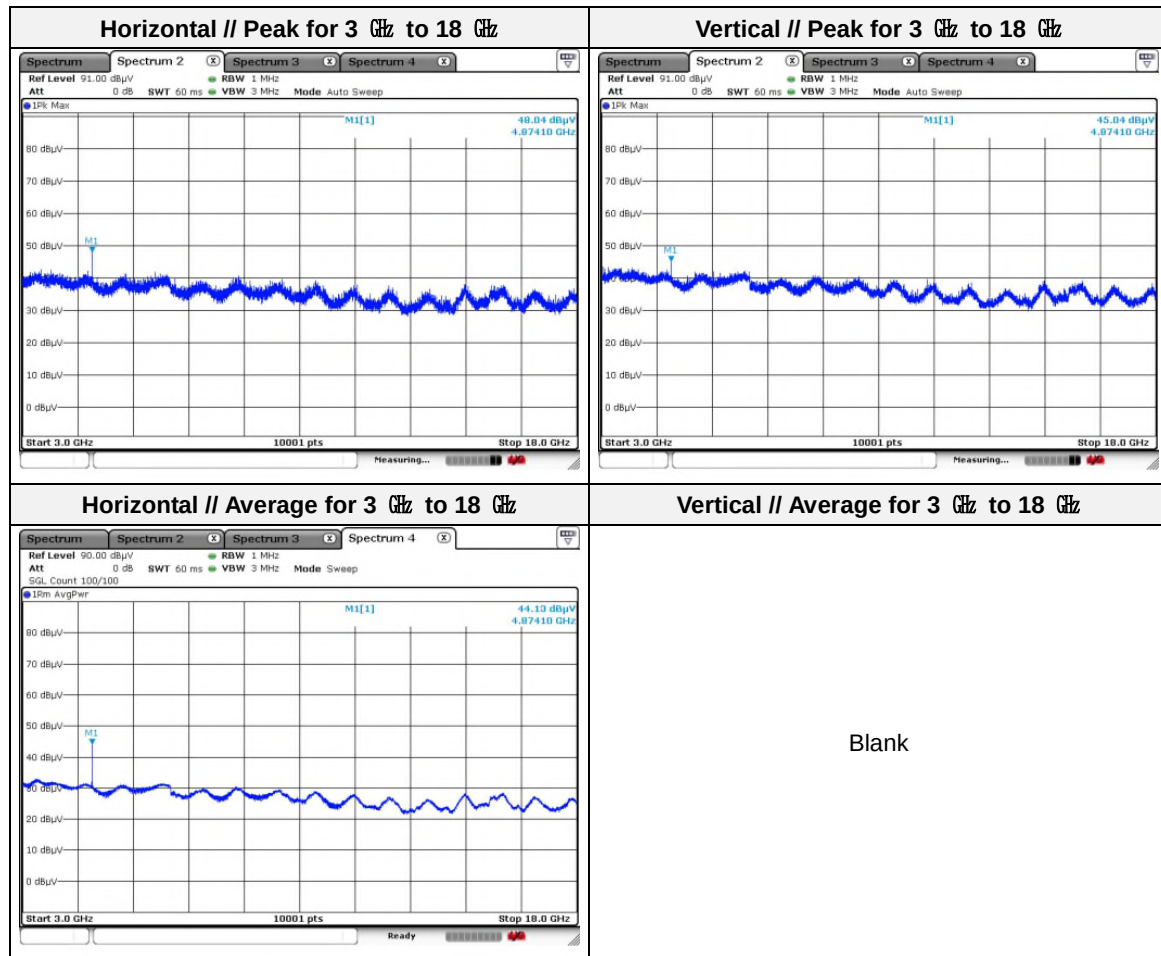


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Note.

1. Average test would be performed if the peak result were greater than the average limit.



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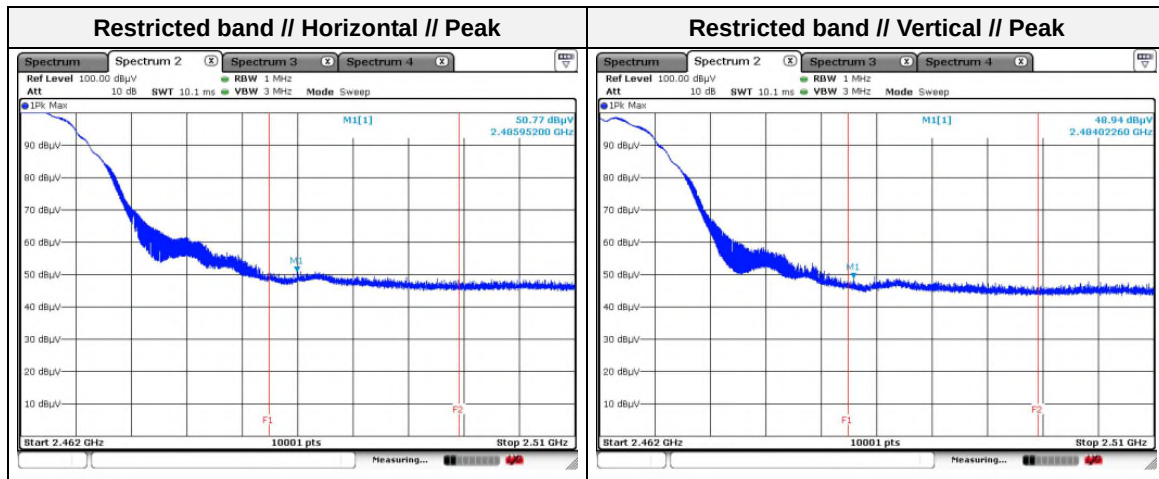
Mode: 802.11b (1 Mbps)_DC 12 V
 Distance of measurement: 3 meter
 Channel: 11

- Spurious

Frequency (MHz)	Level (dBμV)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1 081.29	46.94	Peak	V	-9.04	-	37.90	74.00	36.10
1 158.88	45.88	Peak	H	-8.50	-	37.38	74.00	36.62
4 923.60	43.97	Peak	H	7.38	-	51.35	74.00	22.65
4 923.60	46.28	Peak	V	7.38	-	53.66	74.00	20.34

- Band edge

Frequency (MHz)	Level (dBμV)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
2 484.02	48.94	Peak	V	-0.57	-	48.37	74.00	25.63
2 485.95	50.77	Peak	H	-0.57	-	50.20	74.00	23.80

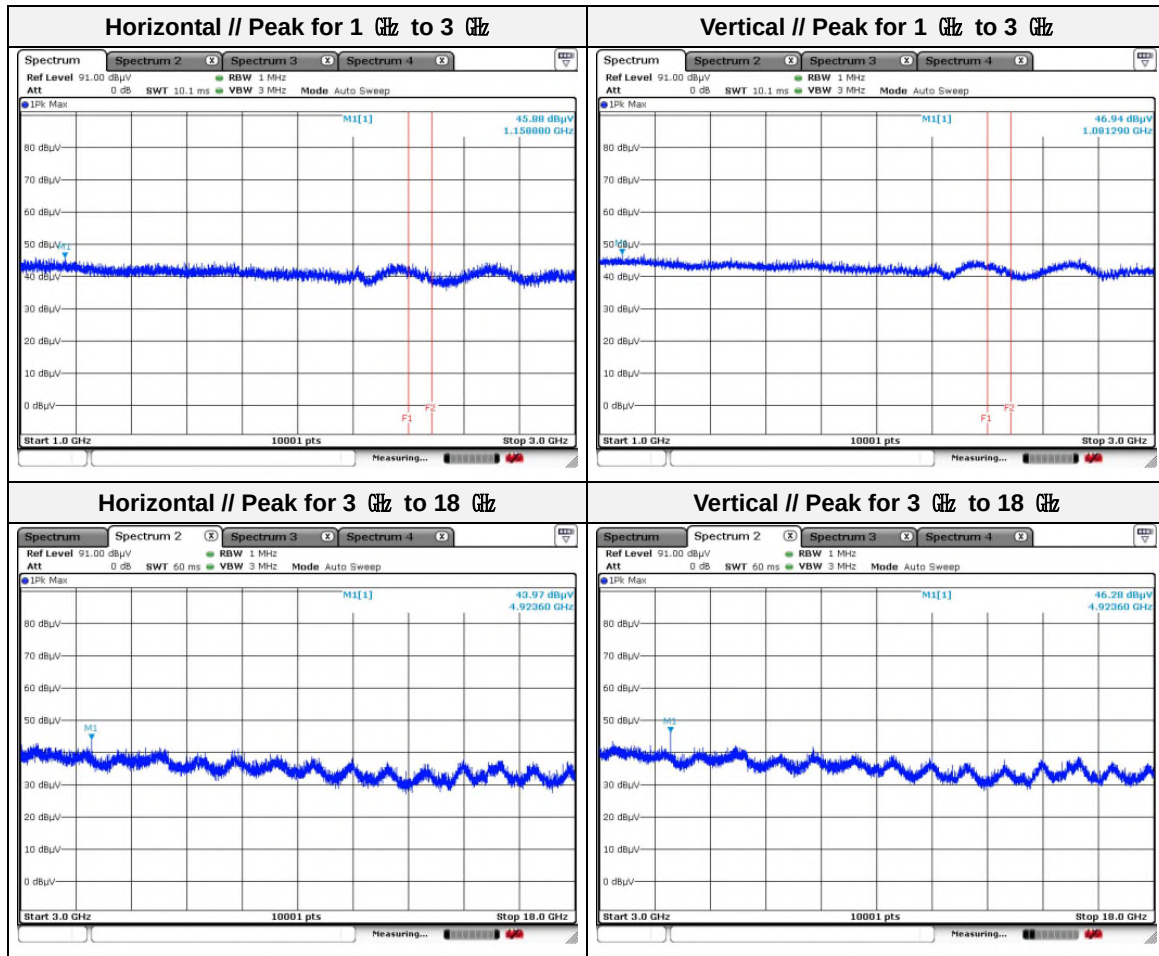


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Note.

1. Average test would be performed if the peak result were greater than the average limit.



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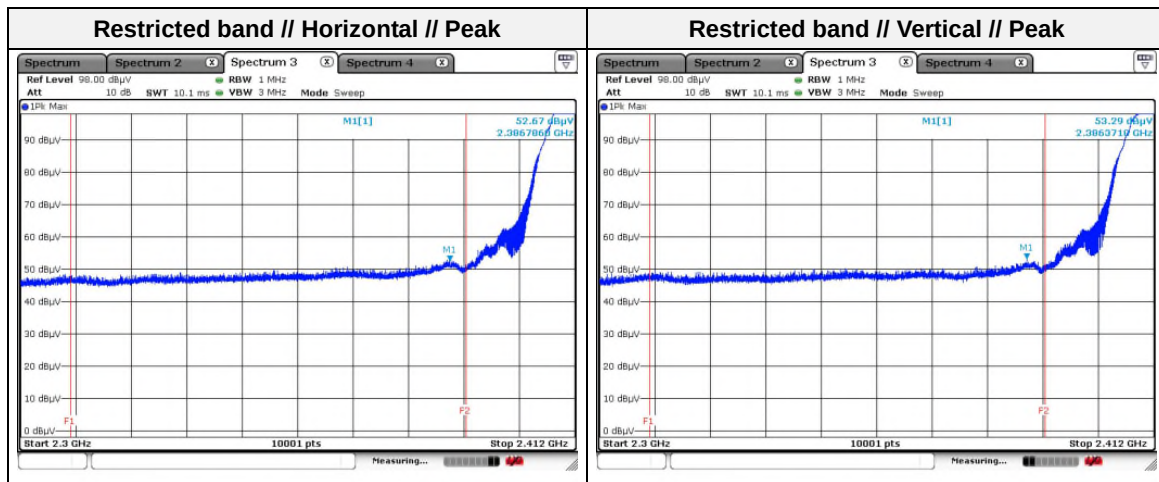
Mode: 802.11b (1 Mbps)_DC 24 V
 Distance of measurement: 3 meter
 Channel: 1

- Spurious

Frequency (MHz)	Level (dB μ V)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
1 039.50	46.08	Peak	H	-9.33	-	36.75	74.00	37.25
1 173.68	46.42	Peak	V	-8.39	-	38.03	74.00	35.97
4 824.60	49.54	Peak	H	6.68	-	56.22	74.00	17.78
4 824.60	44.18	Average	H	6.68	0.22	51.08	54.00	2.92
4 824.60	47.18	Peak	V	6.68	-	53.86	74.00	20.14

- Band edge

Frequency (MHz)	Level (dB μ V)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
2 386.37	53.29	Peak	V	-0.73	-	52.56	74.00	21.44
2 386.79	52.67	Peak	H	-0.73	-	51.94	74.00	22.06

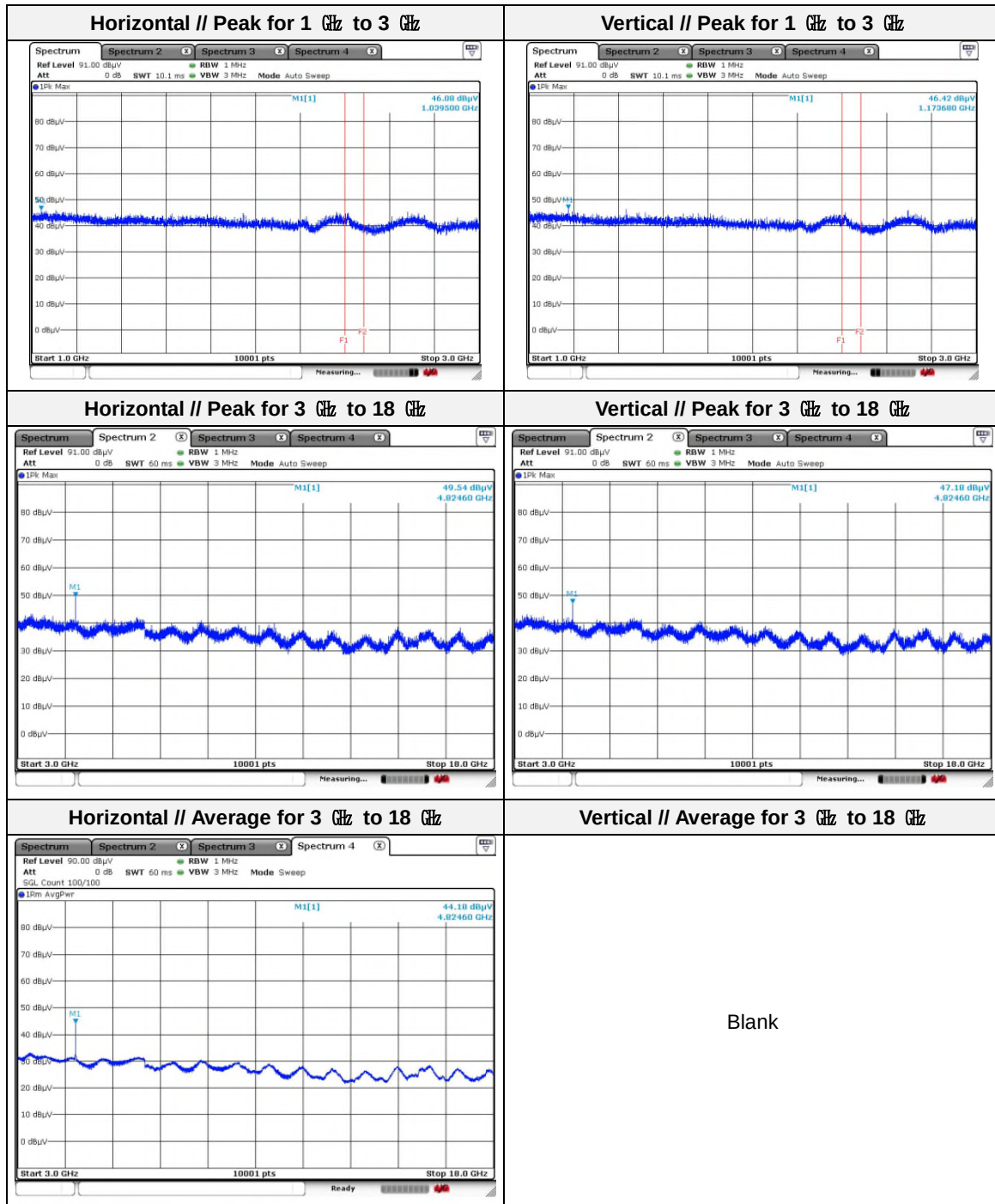


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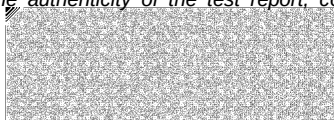
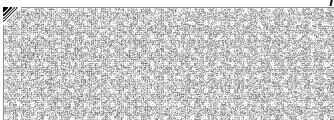
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Note.

1. Average test would be performed if the peak result were greater than the average limit.



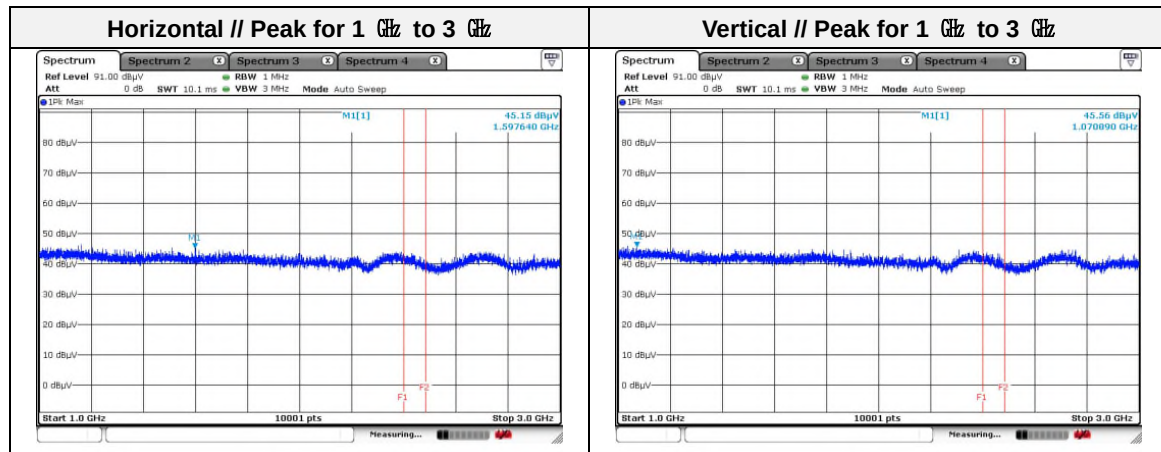
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Mode: 802.11b (1 Mbps)_DC 24 V
 Distance of measurement: 3 meter
 Channel: 6

- Spurious

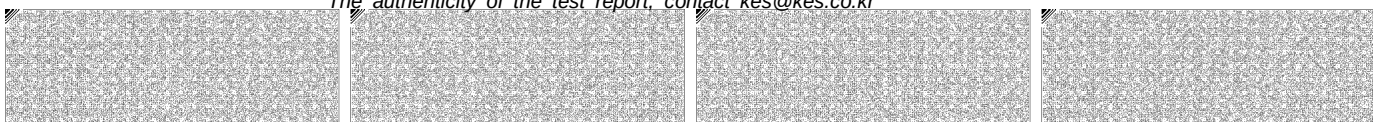
Frequency (MHz)	Level (dB μ V)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
1 070.89	45.56	Peak	V	-9.11	-	36.45	74.00	37.55
1 597.64	45.15	Peak	H	-5.26	-	39.89	74.00	34.11
4 874.10	47.77	Peak	H	7.03	-	54.80	74.00	19.20
4 874.10	43.95	Average	H	7.03	0.22	51.20	54.00	2.80
4 874.10	44.50	Peak	V	7.03	-	51.53	74.00	22.47



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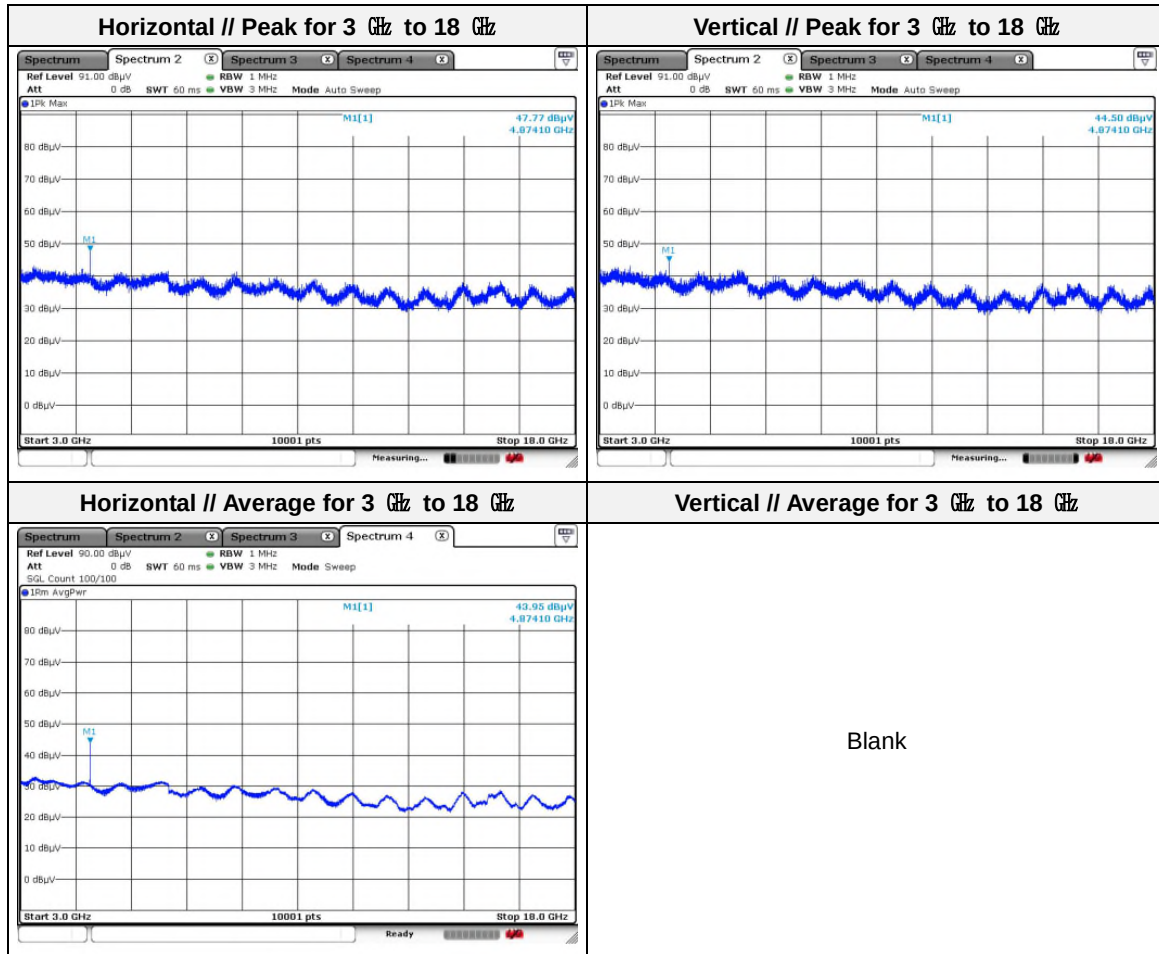
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Note.

1. Average test would be performed if the peak result were greater than the average limit.



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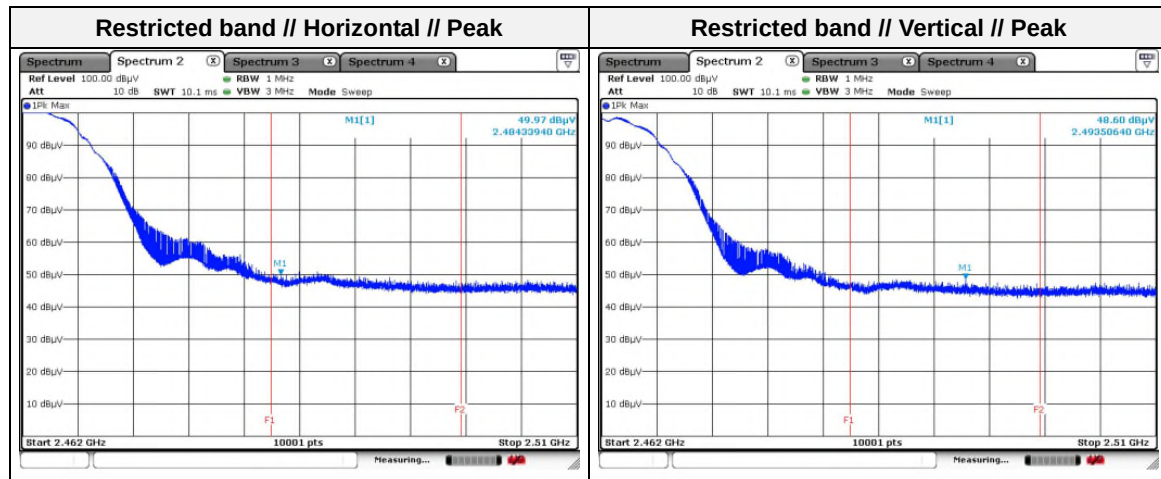
Mode: 802.11b (1 Mbps)_DC 24 V
 Distance of measurement: 3 meter
 Channel: 11

- Spurious

Frequency (MHz)	Level (dB μ V)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
1 057.69	45.97	Peak	H	-9.20	-	36.77	74.00	37.23
1 147.29	45.58	Peak	V	-8.58	-	37.00	74.00	37.00
4 923.60	45.21	Peak	H	7.38	-	52.59	74.00	21.41
4 923.60	43.59	Peak	V	7.38	-	50.97	74.00	23.03

- Band edge

Frequency (MHz)	Level (dB μ V)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
2 484.34	49.97	Peak	H	-0.57	-	49.40	74.00	24.60
2 493.51	48.60	Peak	V	-0.56	-	48.04	74.00	25.96

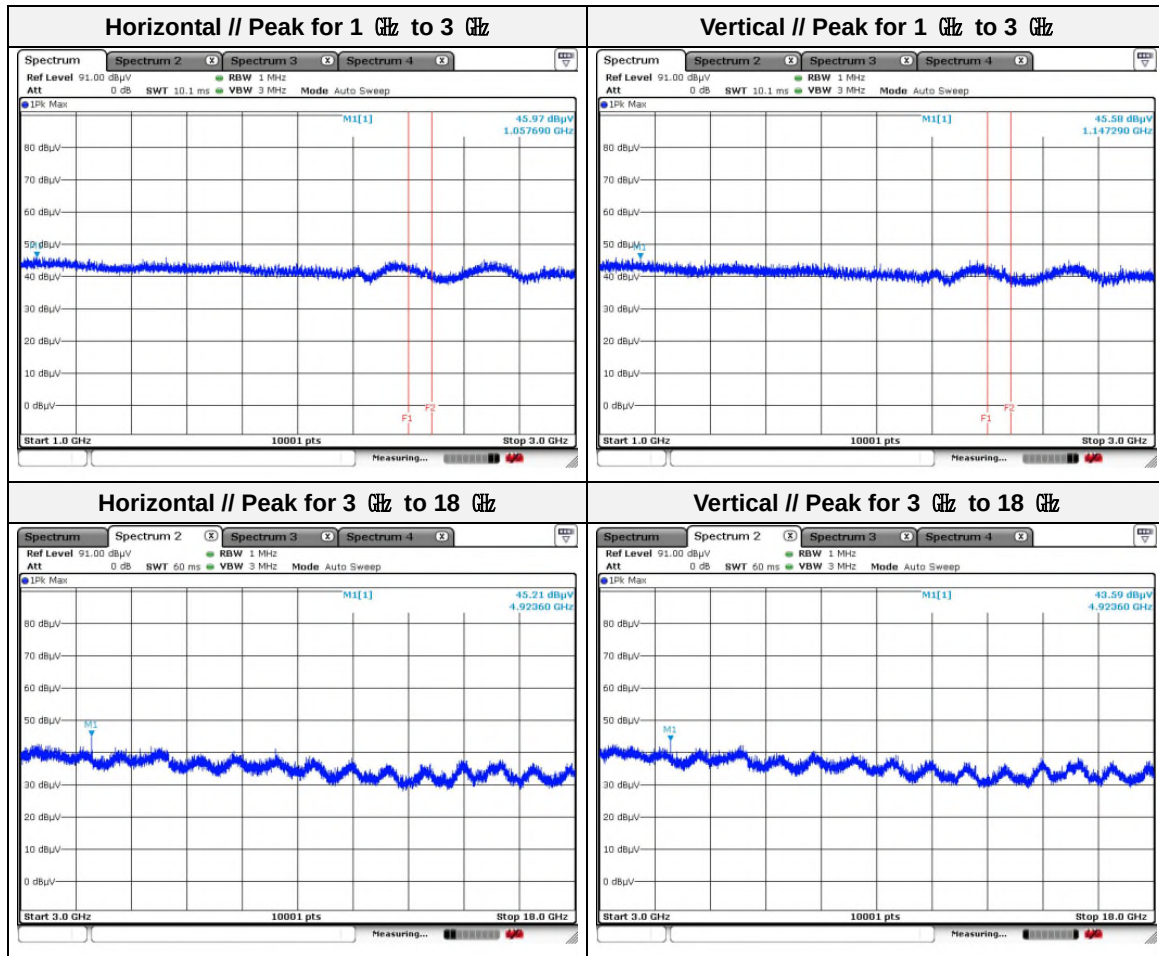


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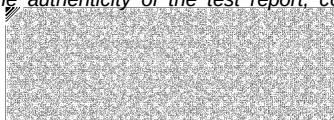
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Note.

1. Average test would be performed if the peak result were greater than the average limit.



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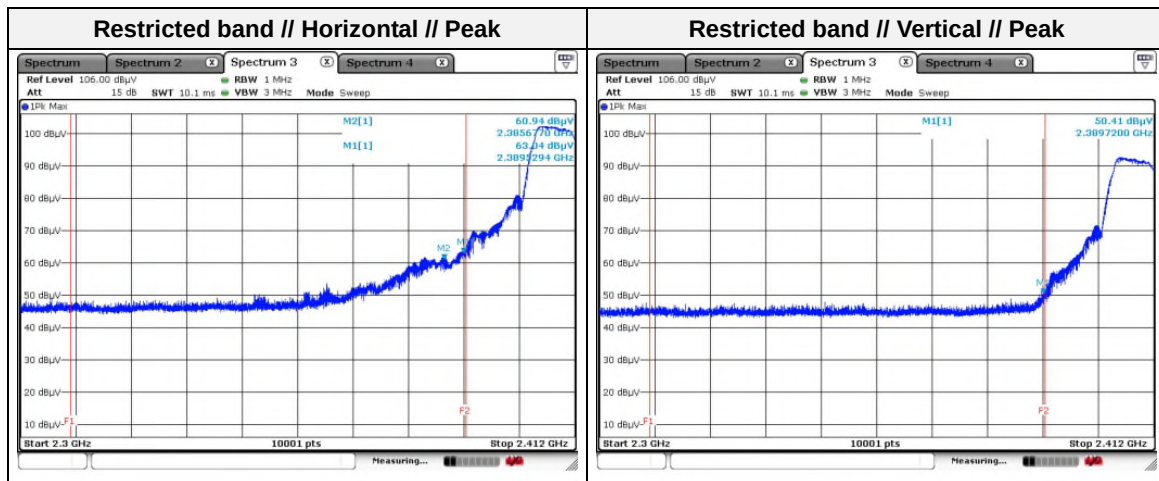
Mode: 802.11g (6 Mbps)_DC 12 V
 Distance of measurement: 3 meter
 Channel: 1

- Spurious

Frequency (MHz)	Level (dB μ V)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
1 126.69	45.99	Peak	H	-8.72	-	37.27	74.00	36.73
1 136.29	46.33	Peak	V	-8.65	-	37.68	74.00	36.32
4 824.60	51.45	Peak	H	6.68	-	58.13	74.00	15.87
4 824.60	39.86	Average	H	6.68	1.37	47.91	54.00	6.09
4 814.10	45.76	Peak	V	6.60	-	52.36	74.00	21.64

- Band edge

Frequency (MHz)	Level (dB μ V)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
2 385.68	60.94	Peak	H	-0.73	-	60.21	74.00	13.79
2 385.68	46.88	Average	H	-0.73	1.37	47.52	54.00	6.48
2 389.53	63.04	Peak	H	-0.73	-	62.31	74.00	11.69
2 389.53	50.35	Average	H	-0.73	1.37	50.99	54.00	3.01
2 389.72	50.41	Peak	V	-0.73	-	49.68	74.00	24.32

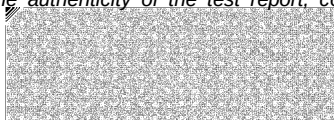
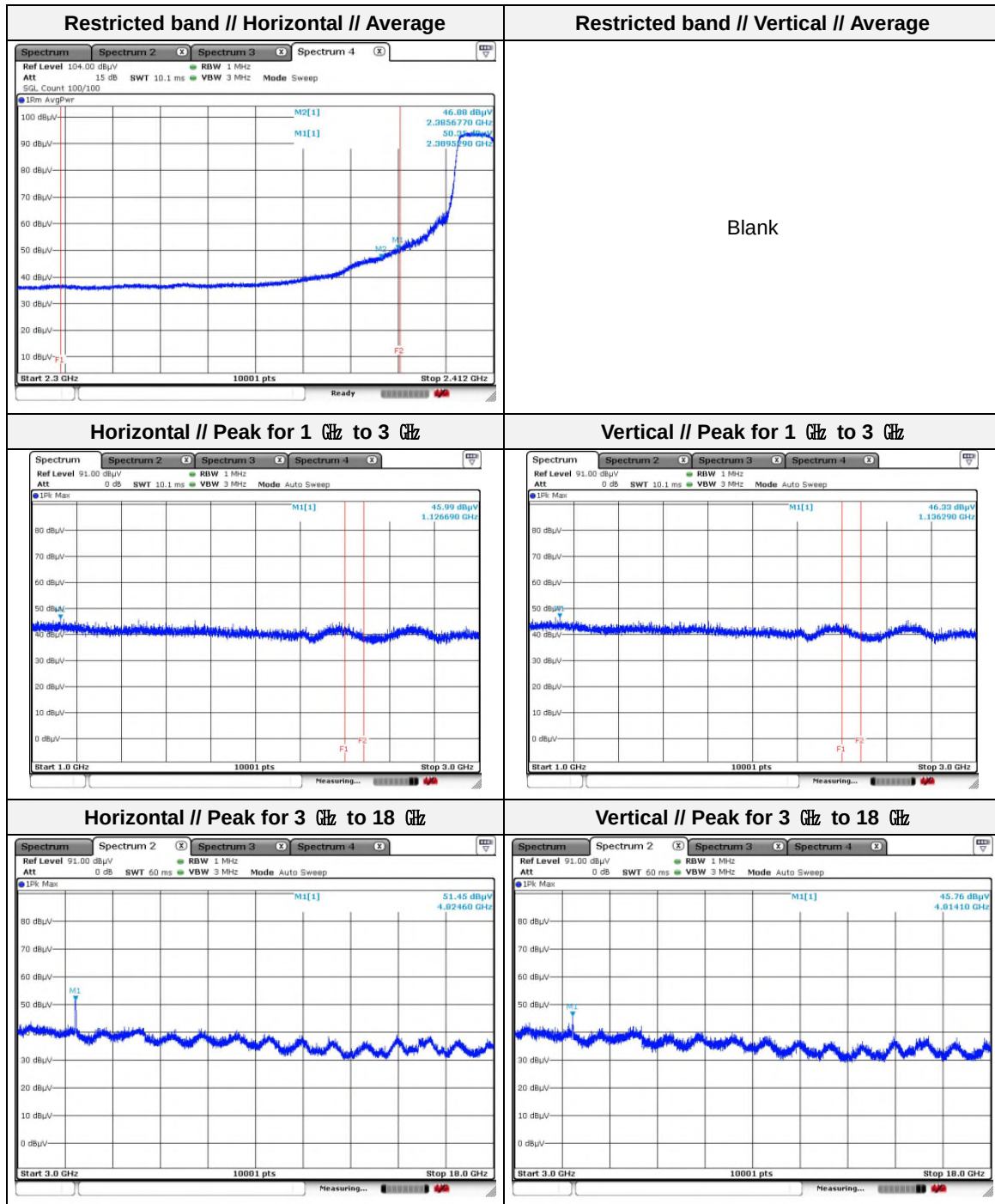


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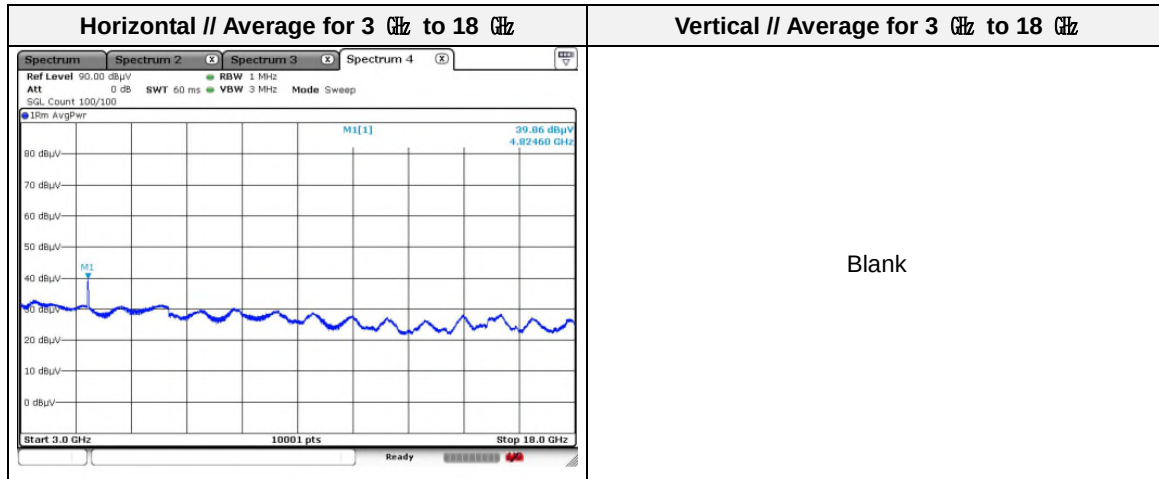
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Note.

1. Average test would be performed if the peak result were greater than the average limit.



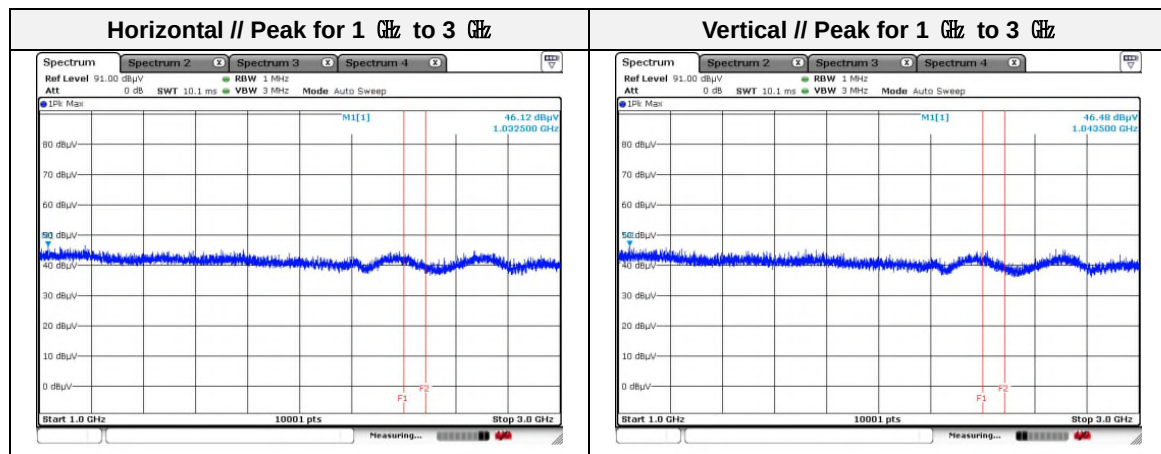
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Mode: 802.11g (6 Mbps)_DC 12 V
 Distance of measurement: 3 meter
 Channel: 6

- Spurious

Frequency (MHz)	Level (dB μ V)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
1 032.50	46.12	Peak	H	-9.37	-	36.75	74.00	37.25
1 043.50	46.48	Peak	H	-9.30	-	37.18	74.00	36.82
4 868.10	48.58	Peak	H	6.99	-	55.57	74.00	18.43
4 868.10	36.25	Average	H	6.99	1.37	44.61	54.00	9.39
4 872.60	45.61	Peak	V	7.02	-	52.63	74.00	21.37

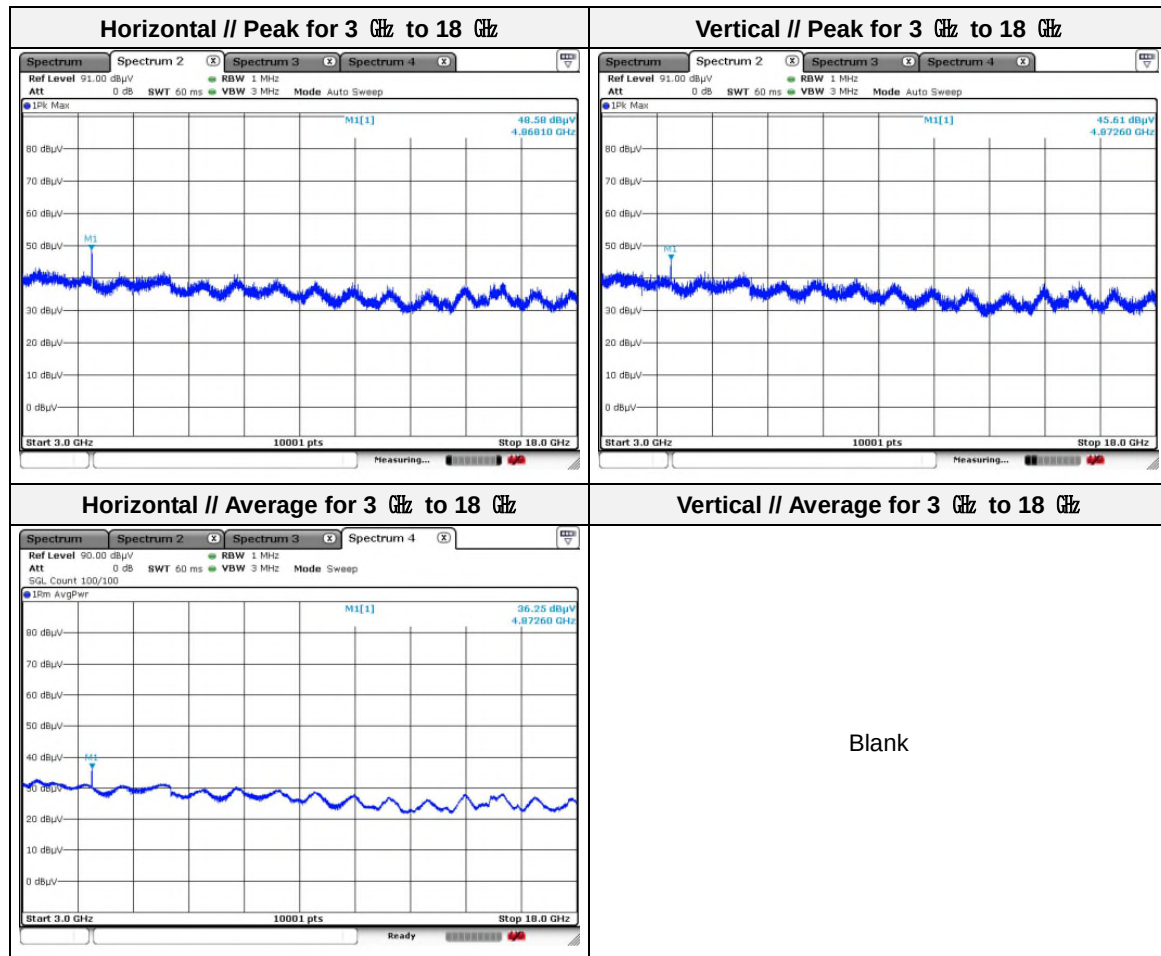


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Note.

1. Average test would be performed if the peak result were greater than the average limit.



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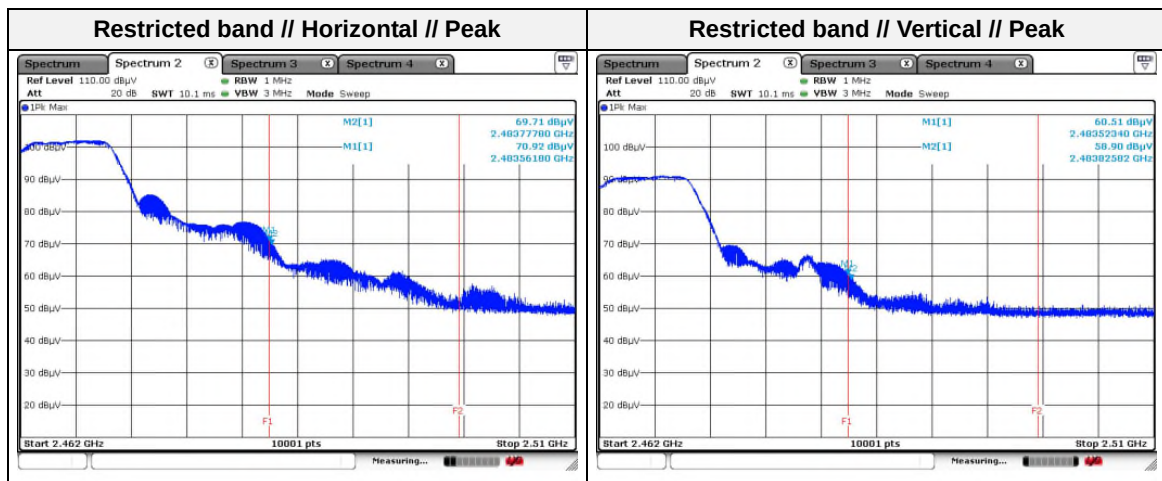
Mode: 802.11g (6 Mbps)_DC 12 V
 Distance of measurement: 3 meter
 Channel: 11

- Spurious

Frequency (MHz)	Level (dBμV)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1 081.29	46.94	Peak	V	-9.04	-	37.90	74.00	36.10
1 158.88	45.88	Peak	H	-8.50	-	37.38	74.00	36.62
4 923.60	43.97	Peak	H	7.38	-	51.35	74.00	22.65
4 923.60	46.28	Peak	V	7.38	-	53.66	74.00	20.34

- Band edge

Frequency (MHz)	Level (dBμV)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
2 483.52	60.51	Peak	V	-0.57	-	59.94	74.00	14.06
2 483.52	40.35	Average	V	-0.57	1.37	41.15	54.00	12.85
2 483.56	70.92	Peak	H	-0.57	-	70.35	74.00	3.65
2 483.56	47.70	Average	H	-0.57	1.37	48.50	54.00	5.50
2 483.78	69.71	Peak	H	-0.57	-	69.14	74.00	4.86
2 483.78	48.72	Average	H	-0.57	1.37	49.52	54.00	4.48
2 483.82	58.90	Peak	V	-0.57	-	58.33	74.00	15.67
2 483.82	40.95	Average	V	-0.57	1.37	41.75	54.00	12.25

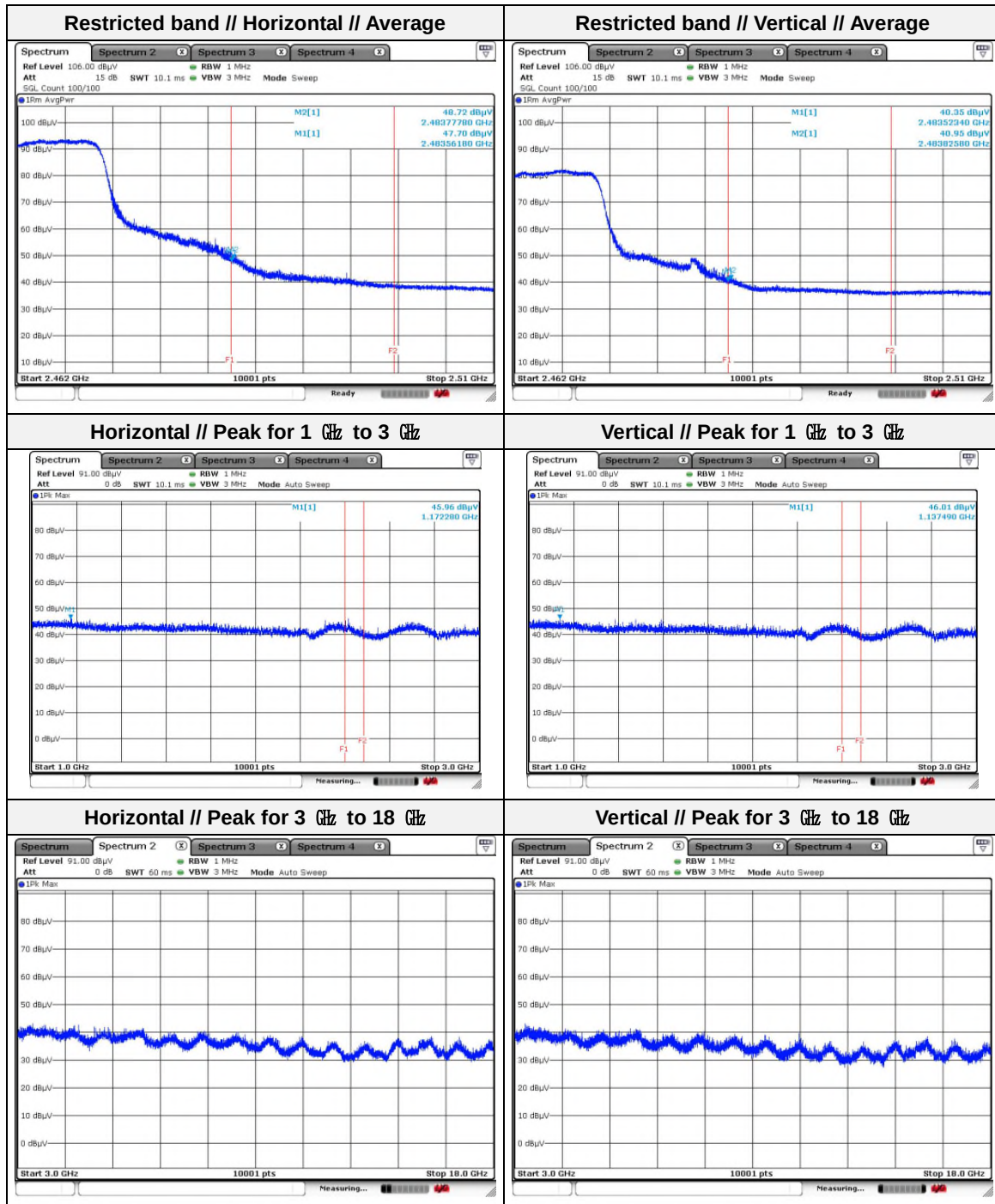


KES-QP16-F01(00-23-01-01)

KES Co., Ltd.

The authenticity of the test report, contact kes@kes.co.kr





Note.

1. Average test would be performed if the peak result were greater than the average limit.

