

Test results (Above 1 000 MHz)

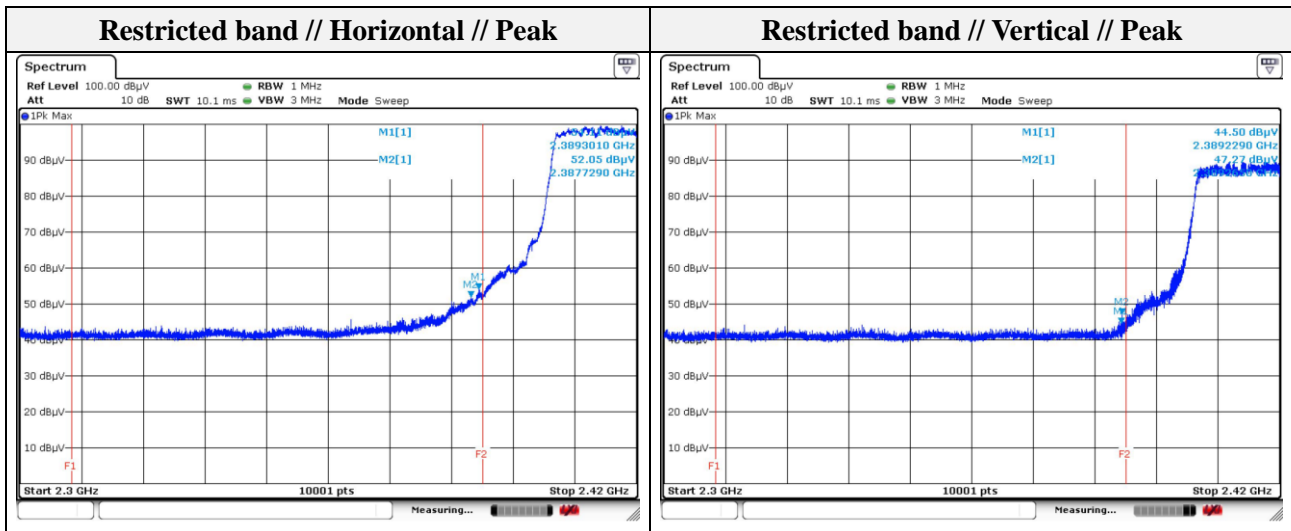
Mode:	802.11g
Transfer rate:	6 Mbps
Distance of measurement:	3 meter
Channel:	01

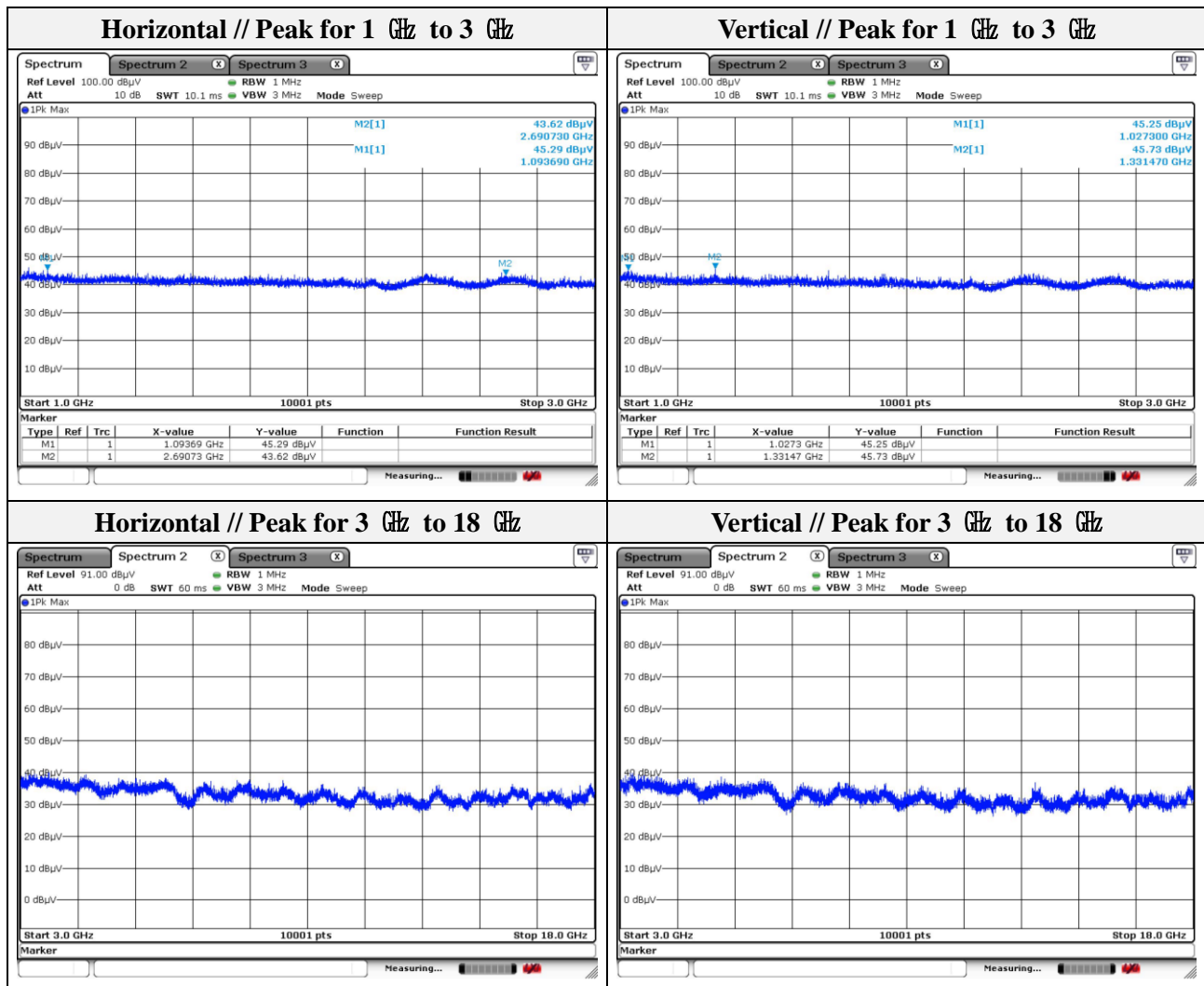
- Spurious

Frequency (MHz)	Level (dBμV)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1 027.30	45.25	Peak	V	-11.02	-	34.23	74.00	39.77
1 093.69	45.29	Peak	H	-10.66	-	34.63	74.00	39.37
1 331.47	45.73	Peak	V	-9.39	-	36.34	74.00	37.66
2 690.73	43.62	Peak	H	-1.77	-	41.85	74.00	32.15

- 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)
2 387.73	52.05	Peak	H	-2.78	-	49.27	74.00	24.73
2 389.23	44.50	Peak	V	-2.77	-	41.73	74.00	32.27
2 389.27	47.27	Peak	V	-2.77	-	44.50	74.00	29.50
2 389.30	54.11	Peak	H	-2.77	-	51.34	74.00	22.66





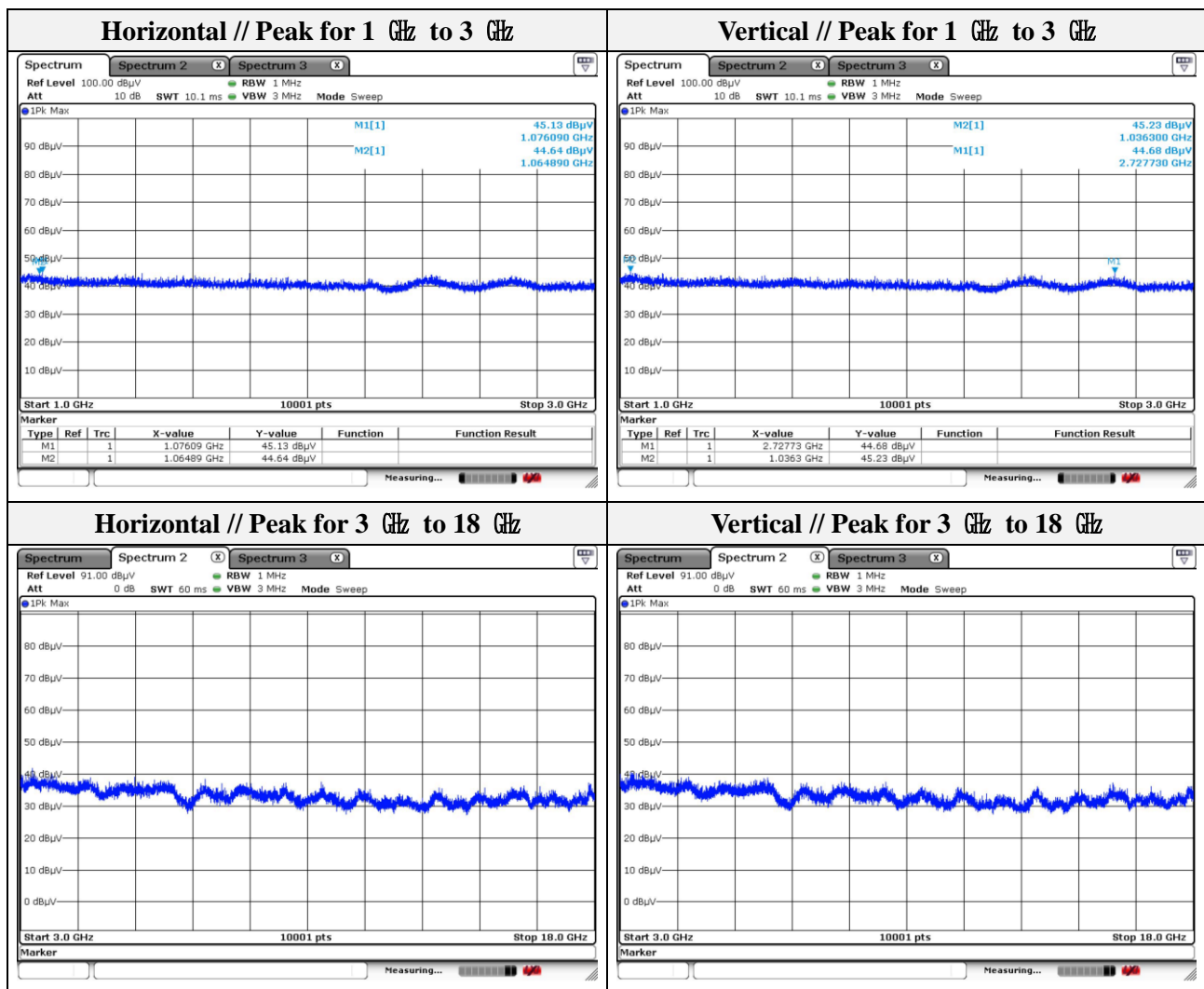
Note.

1. No spurious emission were detected above 3 GHz.
2. Average test would be performed if the peak result were greater than the average limit.

Mode: 802.11g
Transfer rate: 6 Mbps
Distance of measurement: 3 meter
Channel: 06

- Spurious

Frequency (MHz)	Level (dBμV)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1 036.30	45.23	Peak	V	-10.97	-	34.26	74.00	39.74
1 064.89	44.64	Peak	H	-10.82	-	33.82	74.00	40.18
1 076.09	45.13	Peak	H	-10.76	-	34.37	74.00	39.63
2 727.73	44.68	Peak	V	-1.65	-	43.03	74.00	30.97



Note.

1. No spurious emission were detected above 3 GHz.
2. Average test would be performed if the peak result were greater than the average limit.



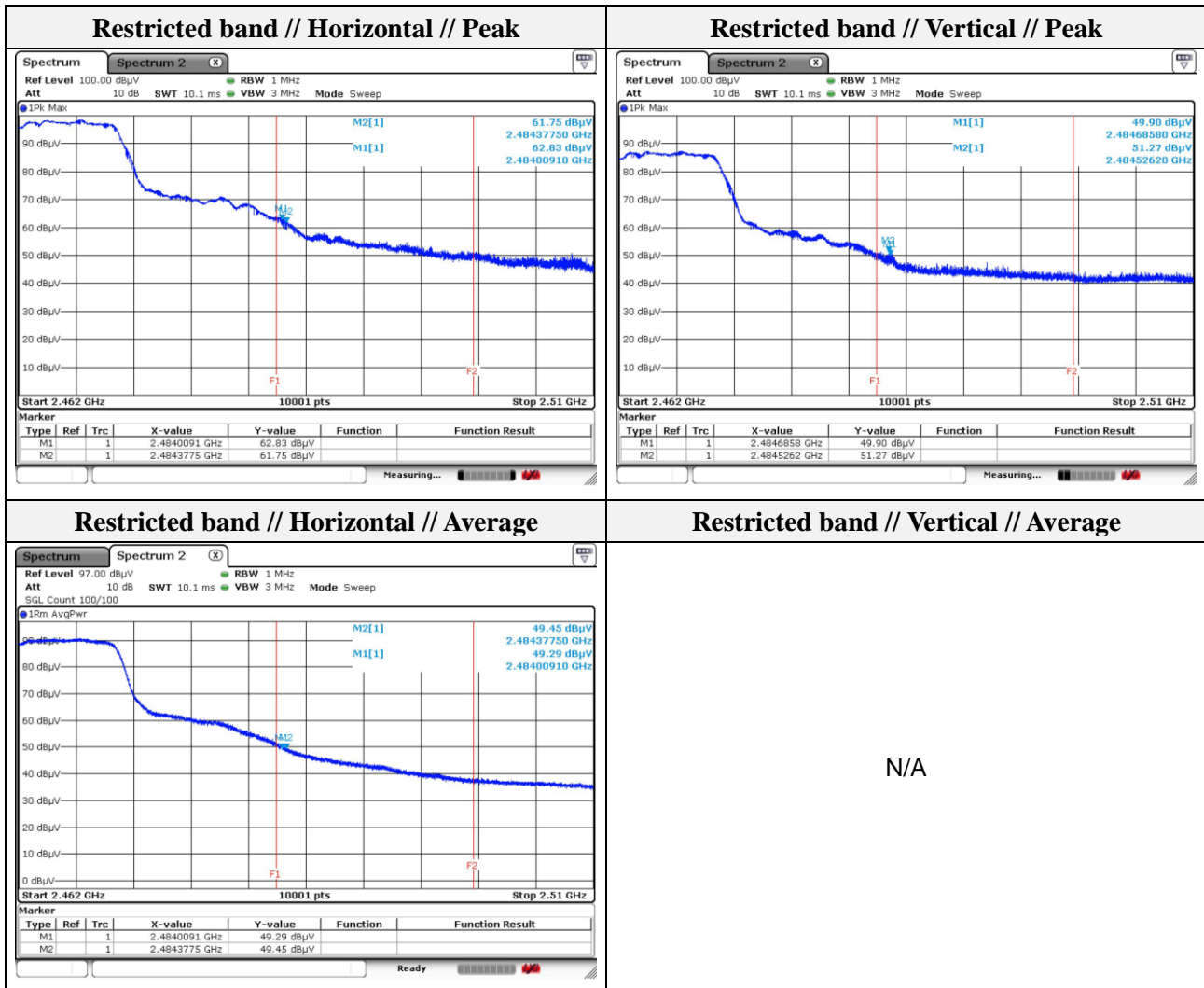
Mode: 802.11g
Transfer rate: 6 Mbps
Distance of measurement: 3 meter
Channel: 11

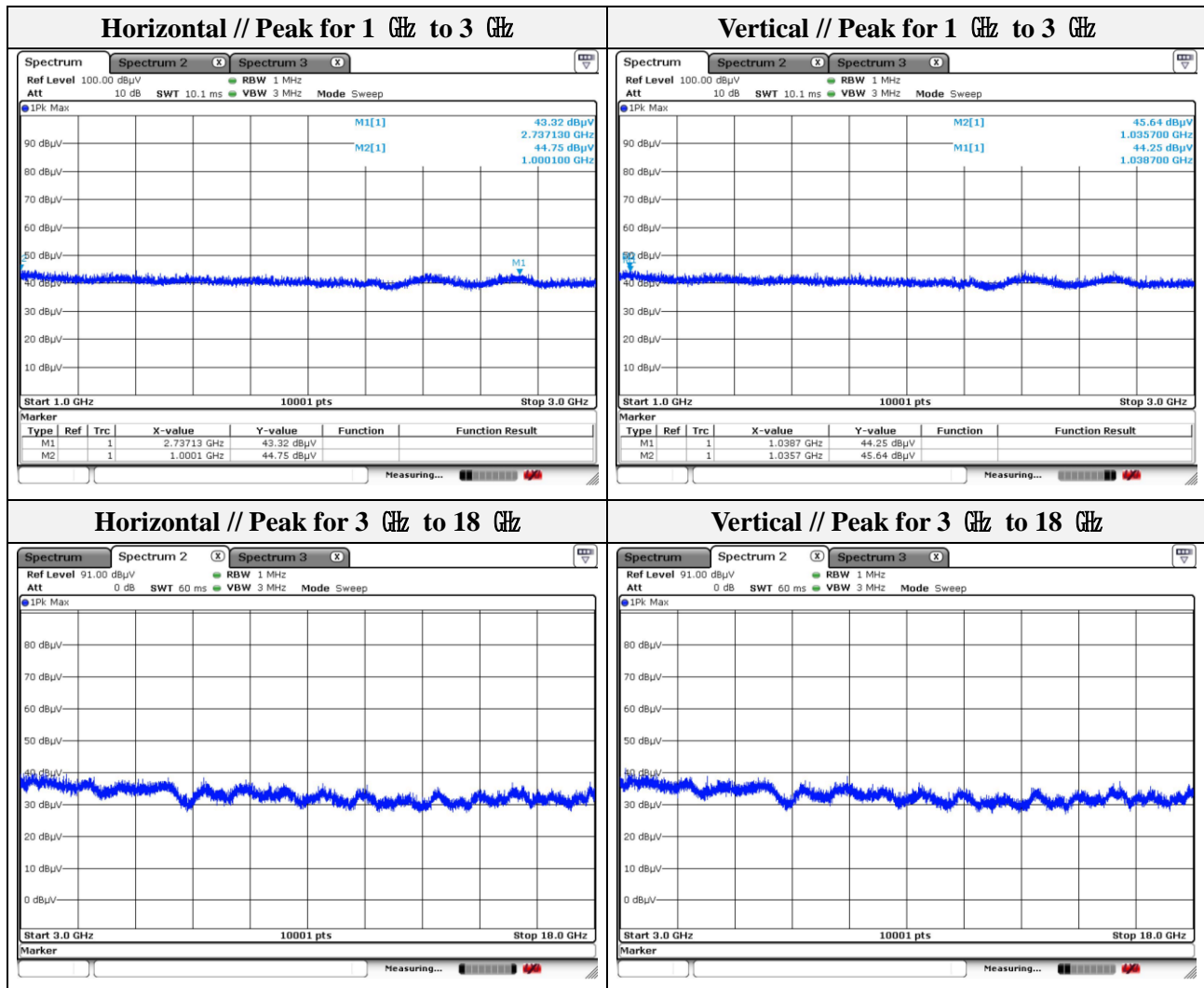
- **Spurious**

Frequency (MHz)	Level (dBμV)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1 000.10	44.75	Peak	H	-11.16	-	33.59	74.00	40.41
1 035.70	45.64	Peak	V	-10.97	-	34.67	74.00	39.33
1 038.70	44.25	Peak	V	-10.95	-	33.30	74.00	40.70
2 737.13	43.32	Peak	H	-1.62	-	41.70	74.00	32.30

- **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)
2 484.01	62.83	Peak	H	-2.40	-	60.43	74.00	13.57
2 484.01	49.29	Average	H	-2.40	-	46.89	54.00	7.11
2 484.38	61.75	Peak	H	-2.40	-	59.35	74.00	14.65
2 484.38	49.45	Average	H	-2.40	-	47.05	54.00	6.95
2 484.53	51.27	Peak	V	-2.39		48.88	74.00	25.12
2 484.69	49.90	Peak	V	-2.39	-	47.51	74.00	26.49





Note.

1. No spurious emission were detected above 3 GHz.
2. Average test would be performed if the peak result were greater than the average limit.



Test results (Above 1 000 MHz)

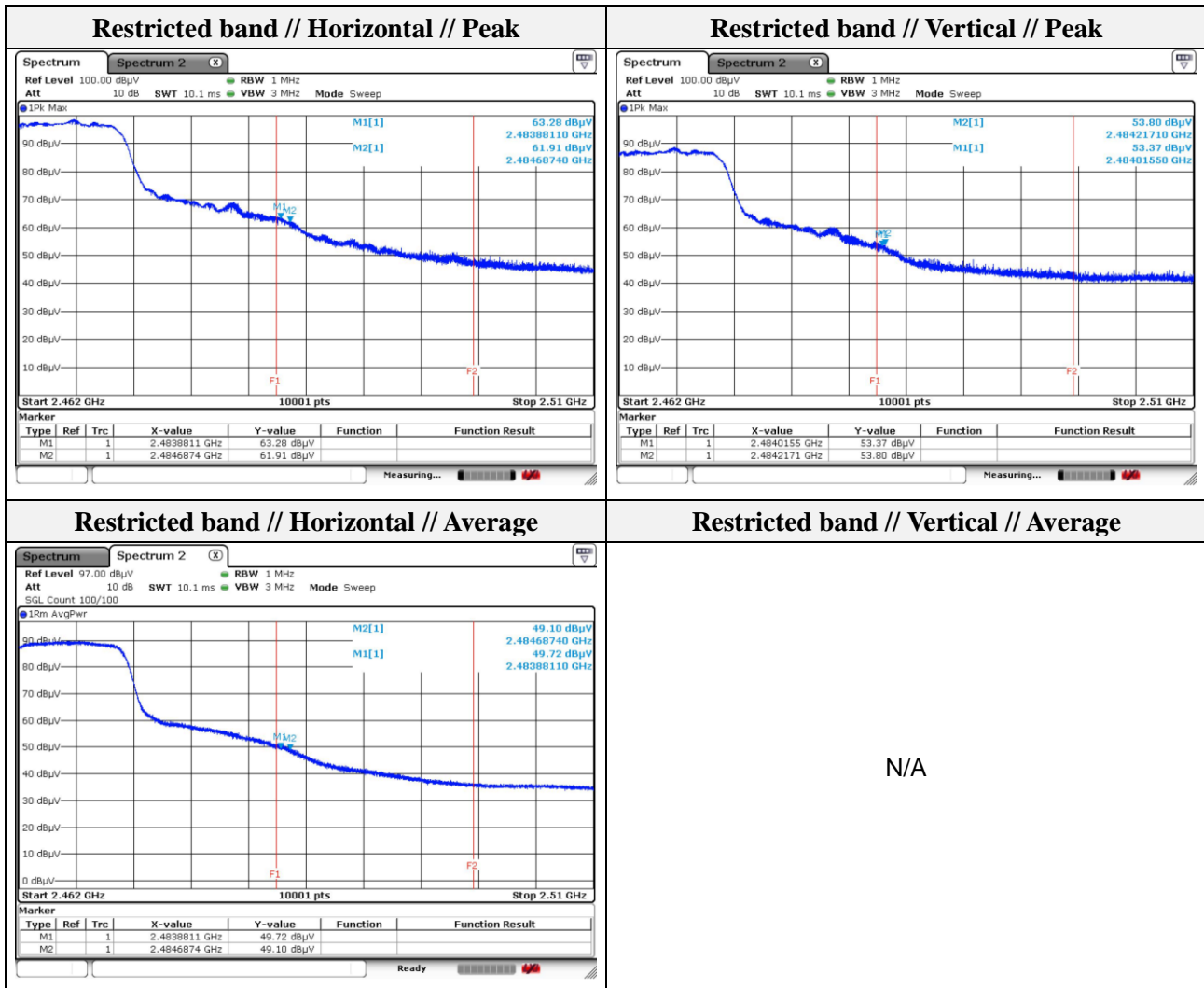
Mode: 802.11n(HT20)
Transfer rate: MCS0
Distance of measurement: 3 meter
Channel: 01

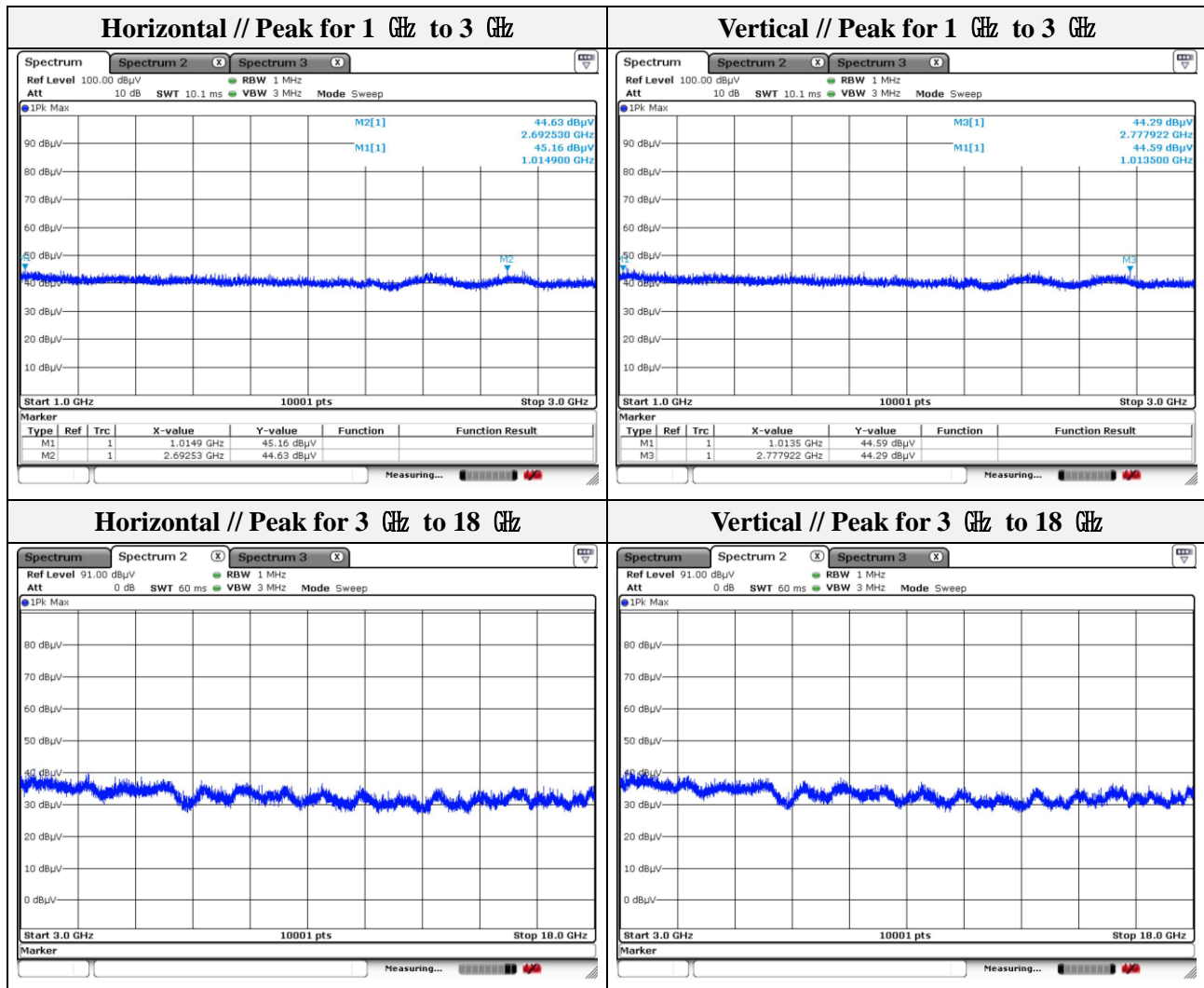
- Spurious

Frequency (MHz)	Level (dBμV)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1 013.50	44.59	Peak	V	-11.09	-	33.50	74.00	40.50
1 014.90	45.16	Peak	H	-11.08	-	34.08	74.00	39.92
2 692.53	44.63	Peak	H	-1.77	-	42.86	74.00	31.14
2 777.92	44.29	Peak	V	-1.49	-	42.80	74.00	31.20

- 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)
2 377.19	47.51	Peak	V	-2.82	-	44.69	74.00	29.31
2 383.82	50.77	Peak	V	-2.79	-	47.98	74.00	26.02
2 389.05	56.12	Peak	H	-2.77	-	53.35	74.00	20.65
2 389.71	57.56	Peak	H	-2.77	-	54.79	74.00	19.21
2 389.71	41.41	Average	H	-2.77		38.64	54.00	15.36





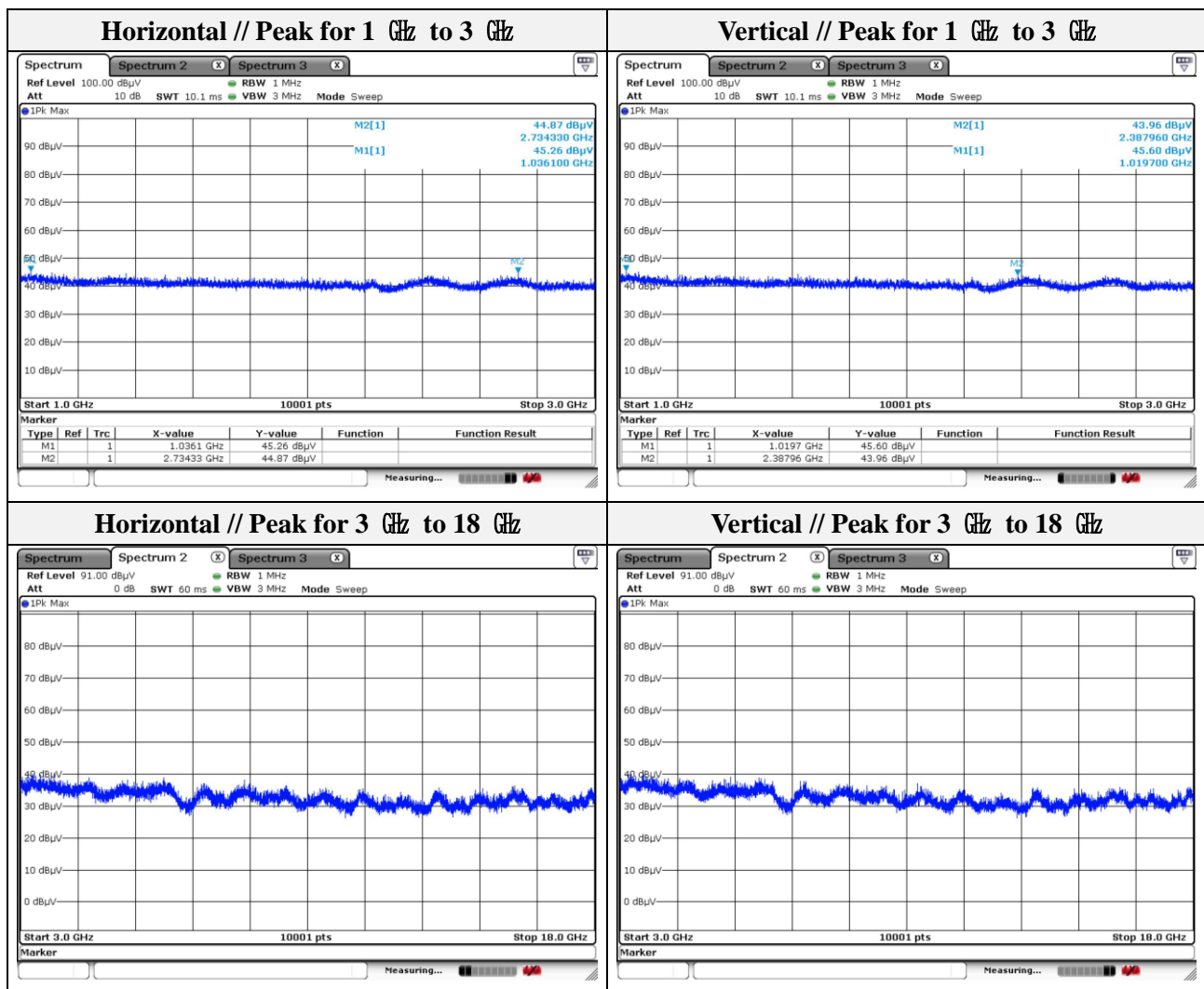
Note.

1. No spurious emission were detected above 3 GHz.
2. Average test would be performed if the peak result were greater than the average limit.

Mode: 802.11n(HT20)
Transfer rate: MCS0
Distance of measurement: 3 meter
Channel: 06

- Spurious

Frequency (MHz)	Level (dBμV)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1 019.70	45.60	Peak	V	-11.06	-	34.54	74.00	39.46
1 036.10	45.26	Peak	H	-10.97	-	34.29	74.00	39.71
2 387.96	43.96	Peak	V	-2.77	-	41.19	74.00	32.81
2 734.33	44.87	Peak	H	-1.63	-	43.24	74.00	30.76



Note.

1. No spurious emission were detected above 3 GHz.
2. Average test would be performed if the peak result were greater than the average limit.



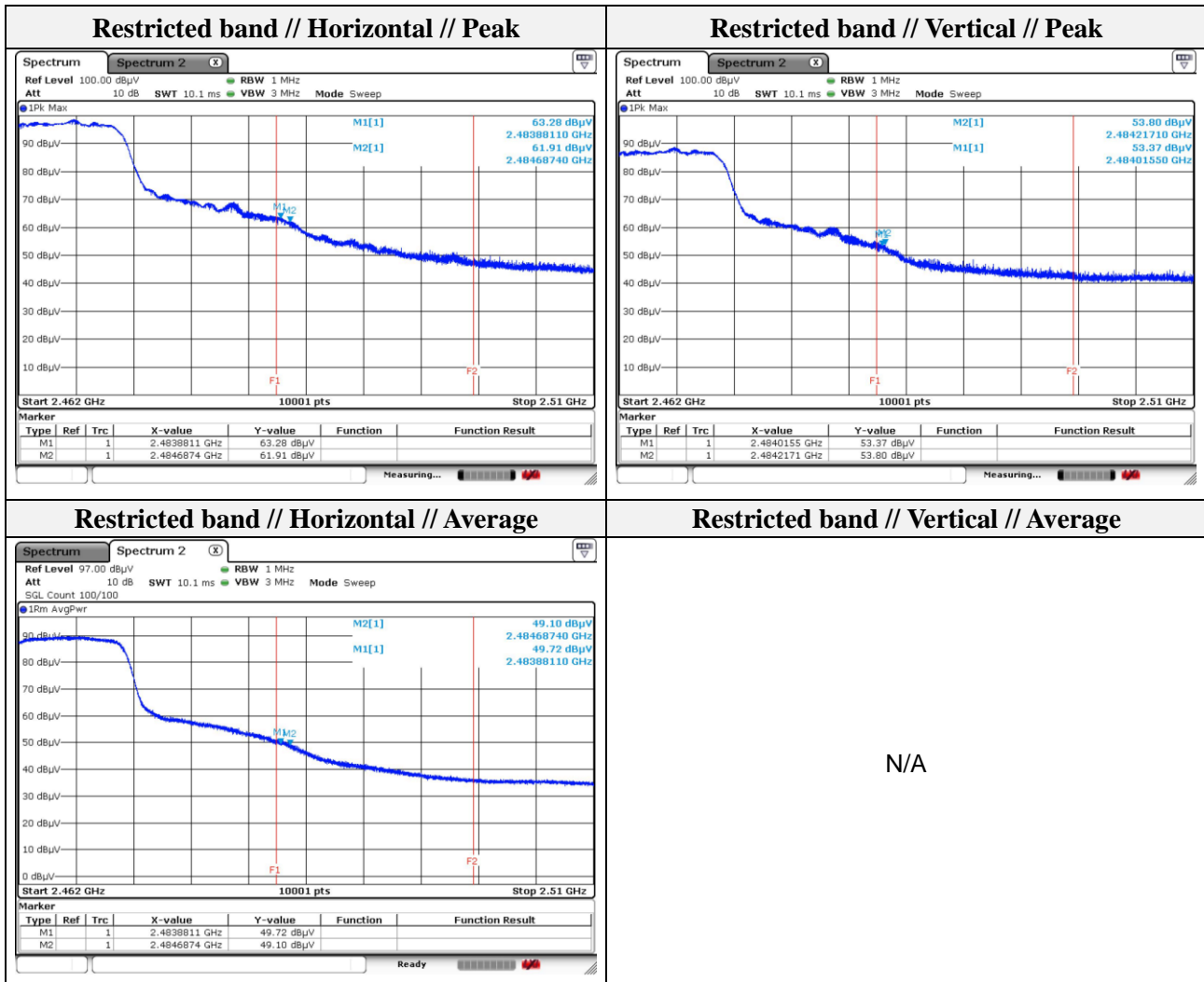
Mode: 802.11n(HT20)
Transfer rate: MCS0
Distance of measurement: 3 meter
Channel: 11

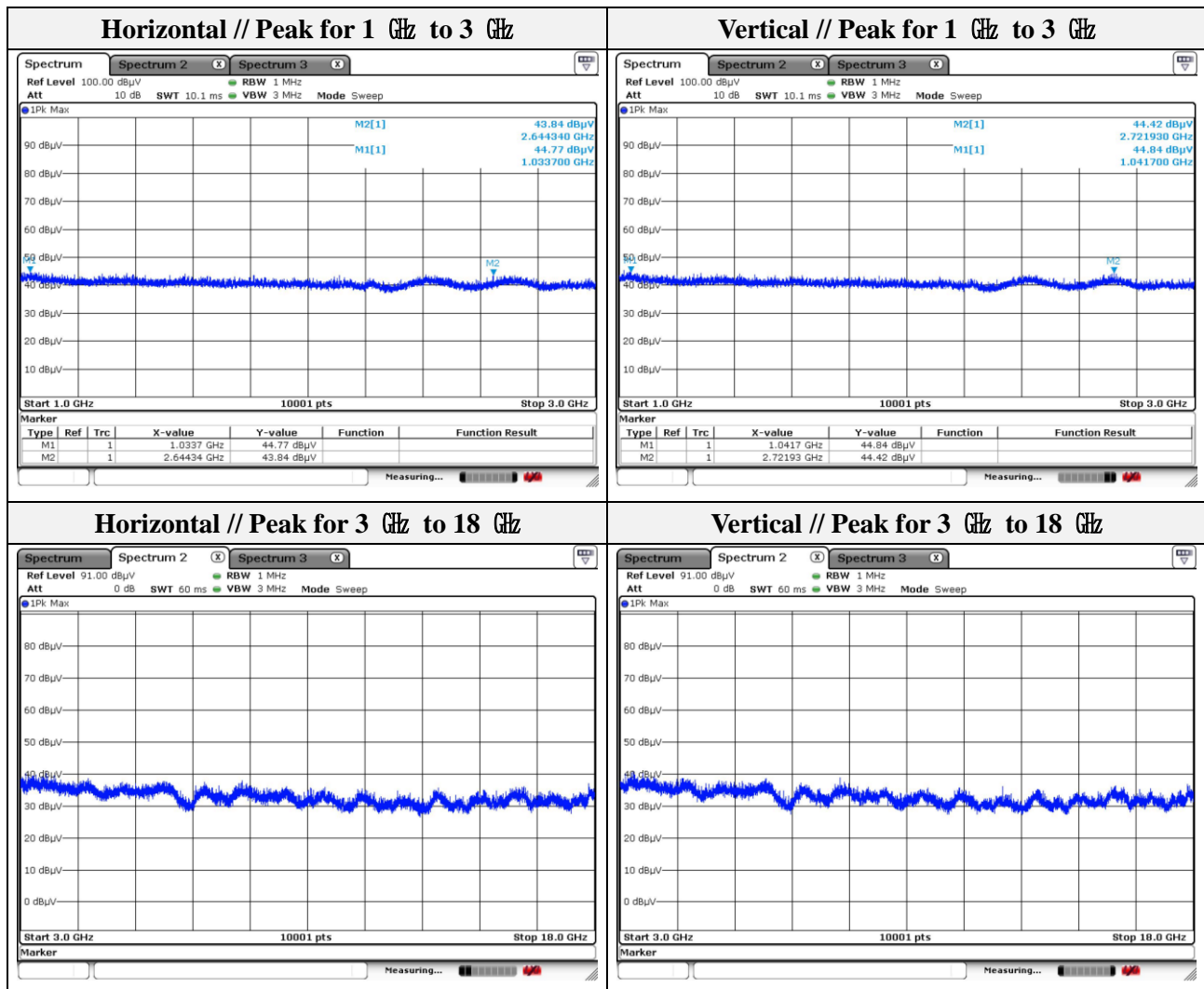
- **Spurious**

Frequency (MHz)	Level (dBμV)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1 033.70	44.77	Peak	H	-10.98	-	33.79	74.00	40.21
1 041.70	44.84	Peak	V	-10.94	-	33.90	74.00	40.10
2 721.93	44.42	Peak	V	-1.67	-	42.75	74.00	31.25
2 644.34	43.84	Peak	H	-1.92	-	41.92	74.00	32.08

- **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)
2 483.88	63.28	Peak	H	2483.88	-	60.88	74.00	13.12
2 483.88	49.72	Average	H	2483.88	-	47.32	54.00	6.68
2 484.02	53.37	Peak	V	2484.02	-	50.97	74.00	23.03
2 484.22	53.80	Peak	V	2484.22	-	51.40	74.00	22.60
2 484.69	61.91	Peak	H	2484.69		59.52	74.00	14.48
2 484.69	49.10	Average	H	2484.69		46.71	54.00	7.29





Note.

1. No spurious emission were detected above 3 GHz.
2. Average test would be performed if the peak result were greater than the average limit.

Test results (Above 1 000 MHz)

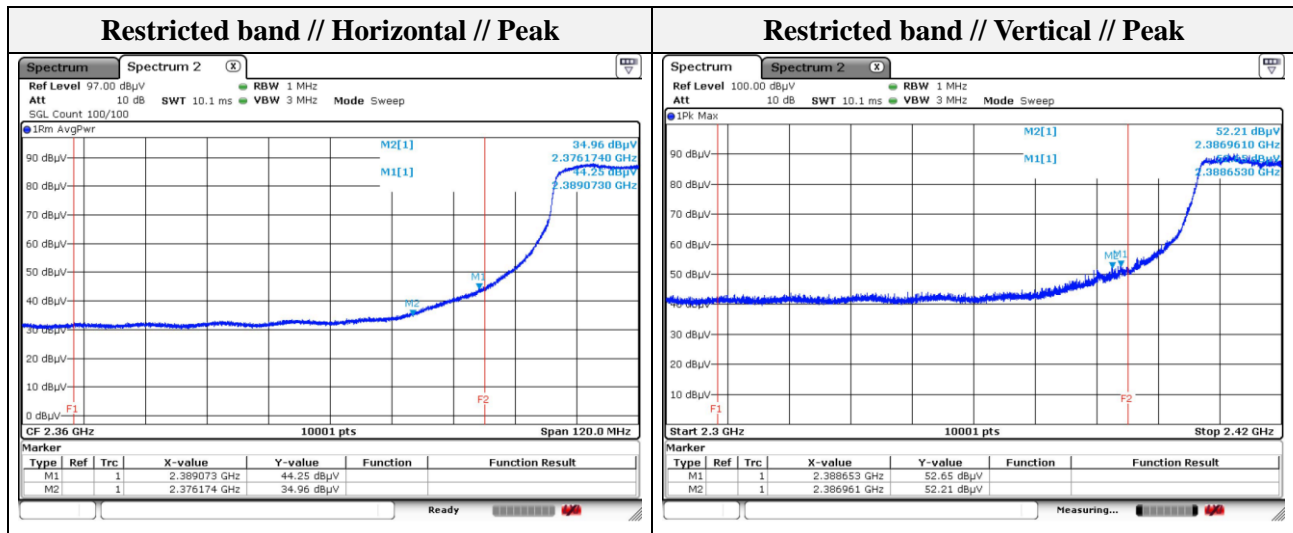
Mode: 802.11n(HT40)
Transfer rate: MCS0
Distance of measurement: 3 meter
Channel: 03

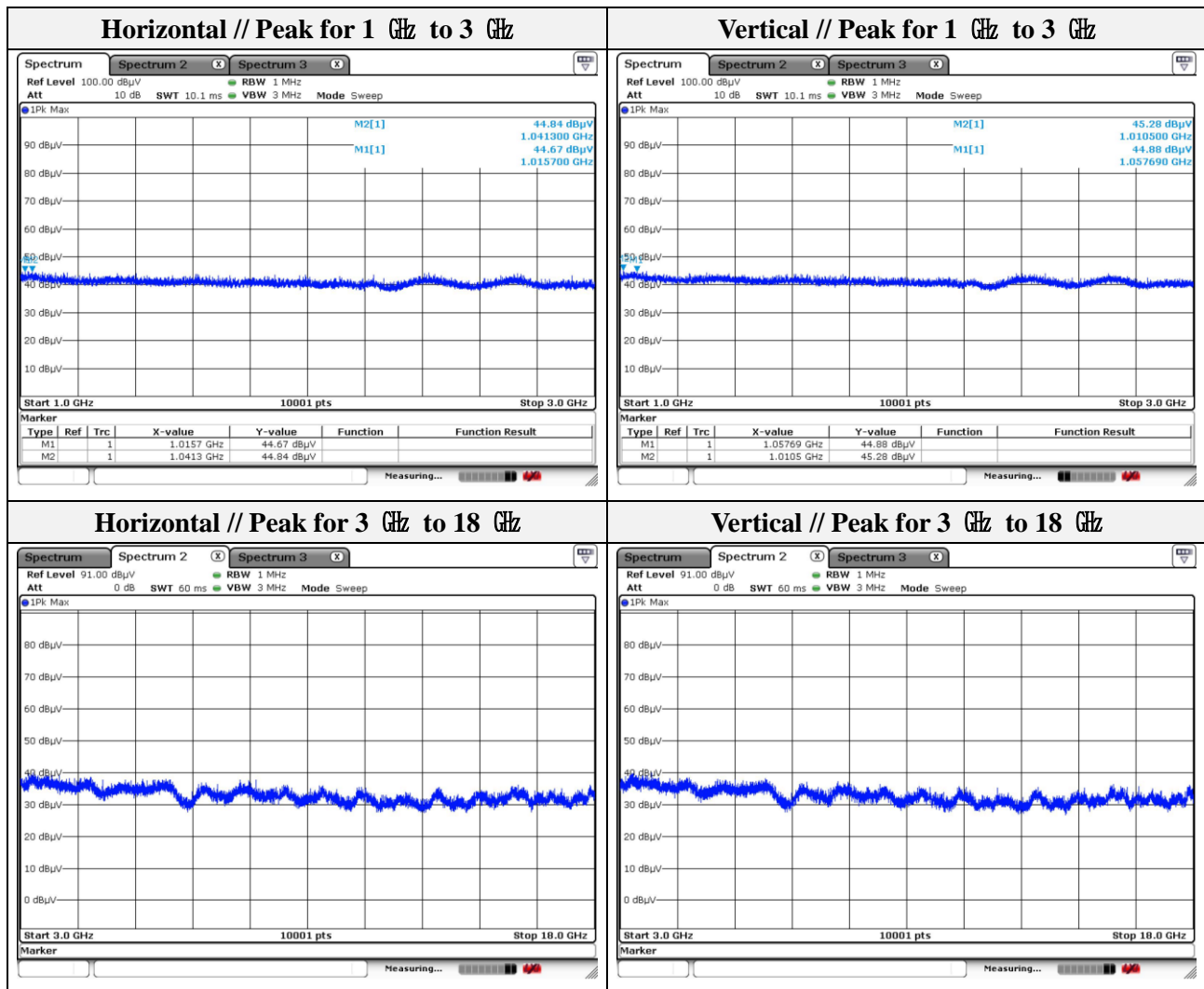
- Spurious

Frequency (MHz)	Level (dBμV)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1 010.50	45.28	Peak	V	-11.10	-	34.18	74.00	39.82
1 015.70	44.67	Peak	H	-11.08	-	33.59	74.00	40.41
1 041.30	44.84	Peak	H	-10.94	-	33.90	74.00	40.10
1 057.69	44.88	Peak	V	-10.85	-	34.03	74.00	39.97

- 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)
2 376.17	52.51	Peak	H	-2.82	-	49.69	74.00	24.31
2 386.96	52.21	Peak	V	-2.78	-	49.43	74.00	24.57
2 388.65	52.65	Peak	V	-2.77	-	49.88	74.00	24.12
2 389.07	55.17	Peak	H	-2.77	-	52.40	74.00	21.60





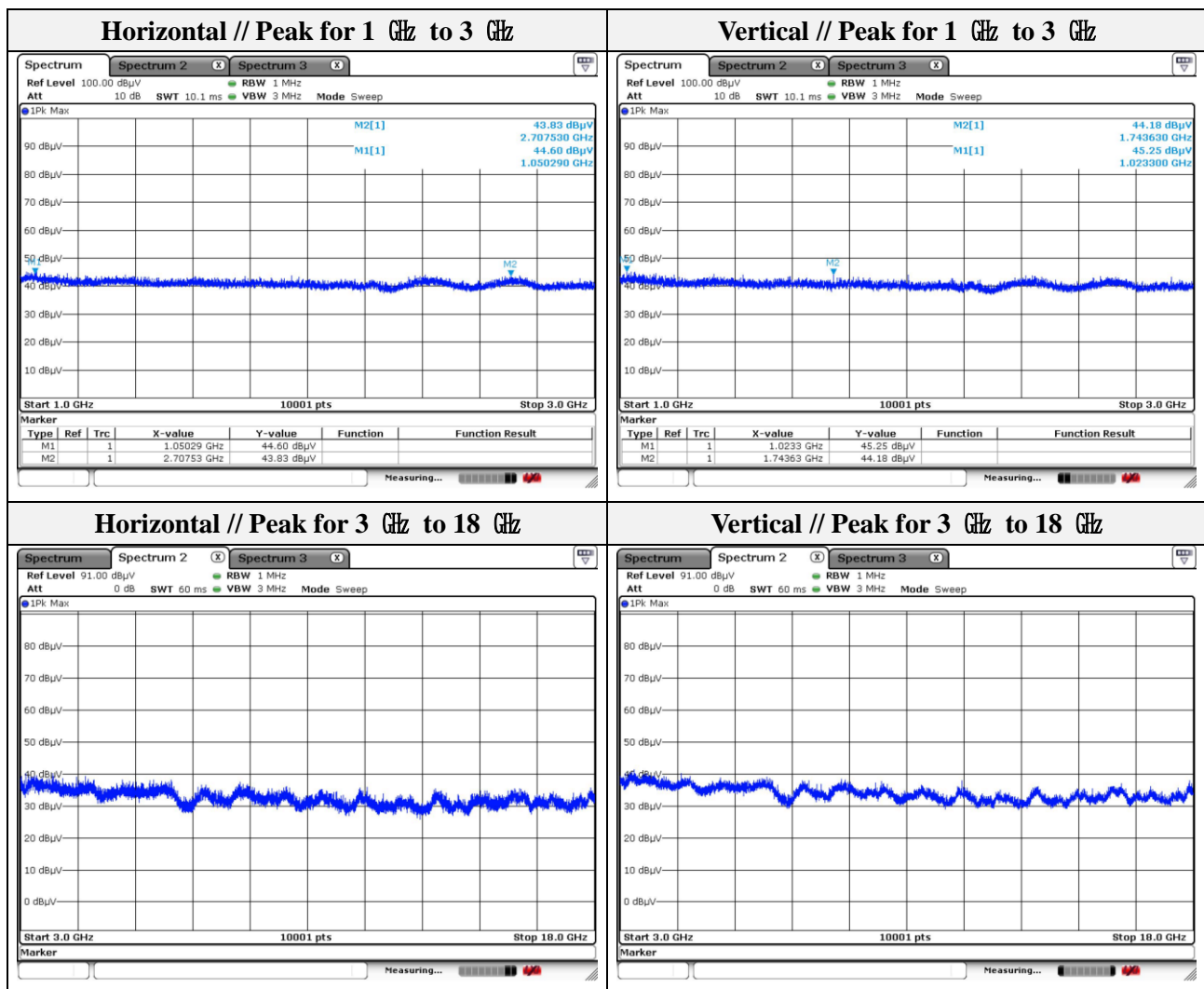
Note.

1. No spurious emission were detected above 3 GHz.
2. Average test would be performed if the peak result were greater than the average limit.

Mode: 802.11n(HT40)
Transfer rate: MCS0
Distance of measurement: 3 meter
Channel: 06

- Spurious

Frequency (MHz)	Level (dBμV)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1 023.30	45.25	Peak	V	-11.04	-	34.21	74.00	39.79
1 050.29	44.60	Peak	H	-10.89	-	33.71	74.00	40.29
1 743.63	44.18	Peak	V	-6.53	-	37.65	74.00	36.35
2 707.53	43.83	Peak	H	-1.72	-	42.11	74.00	31.89



Note.

1. No spurious emission were detected above 3 GHz.
2. Average test would be performed if the peak result were greater than the average limit.



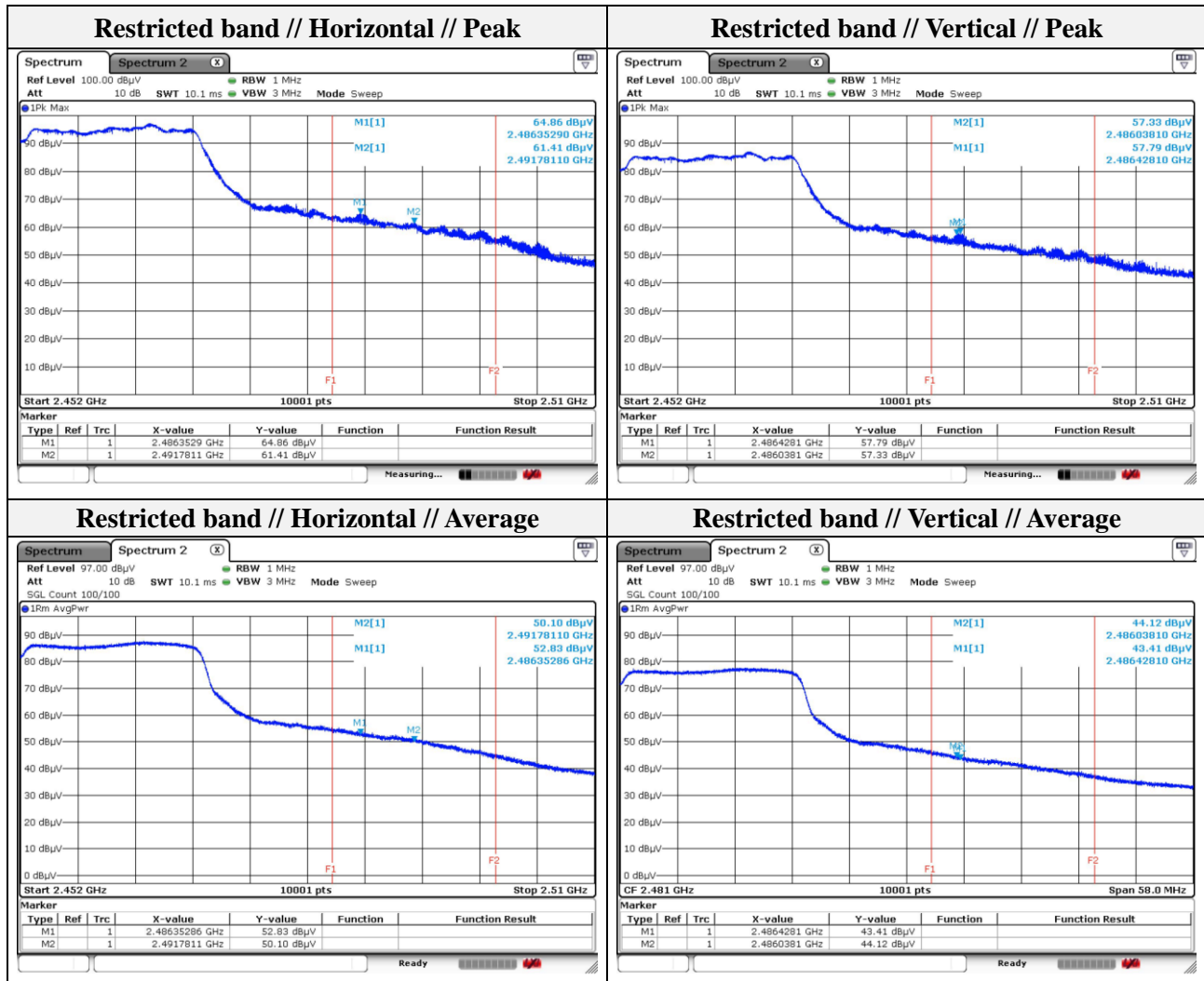
Mode: 802.11n(HT40)
Transfer rate: MCS0
Distance of measurement: 3 meter
Channel: 09

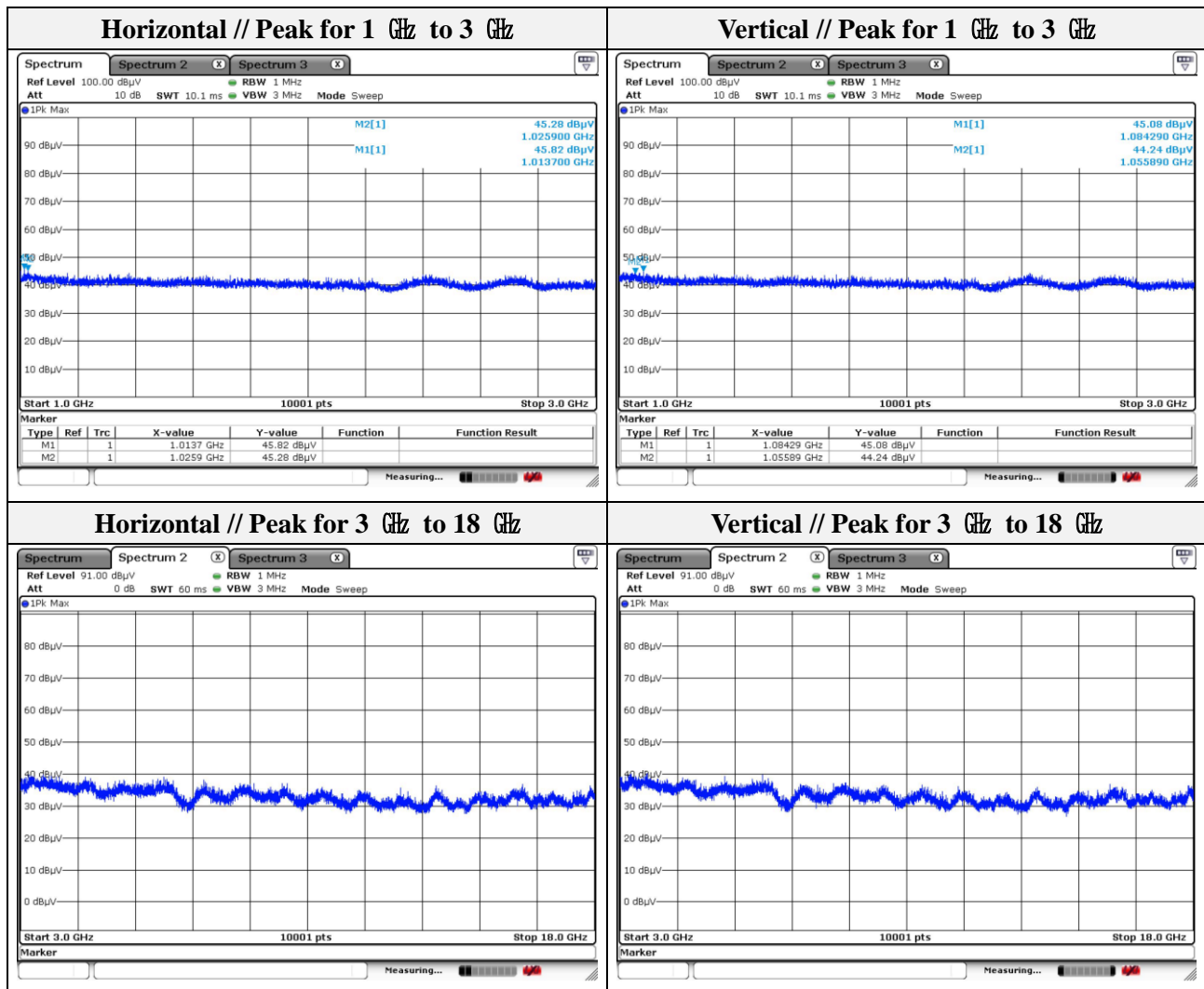
- **Spurious**

Frequency (MHz)	Level (dBμV)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1 013.70	45.82	Peak	H	-11.09	-	34.73	74.00	39.27
1 025.90	45.28	Peak	H	-11.02	-	34.26	74.00	39.74
1 055.89	44.24	Peak	V	-10.86	-	33.38	74.00	40.62
1 084.29	45.08	Peak	V	-10.71	-	34.37	74.00	39.63

- **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)
2 486.04	57.33	Peak	V	-2.39	-	54.94	74.00	19.06
2 486.04	44.12	Average	V	-2.39	-	41.73	54.00	12.27
2 486.35	64.86	Peak	H	-2.39	-	62.47	74.00	11.53
2 486.35	52.83	Average	H	-2.39	-	50.44	54.00	3.56
2 486.43	57.79	Peak	V	-2.39	-	55.40	74.00	18.60
2 486.43	43.41	Average	V	-2.39	-	41.02	54.00	12.98
2 491.78	61.41	Peak	H	-2.37		59.04	74.00	14.96
2 491.78	50.10	Average	H	-2.37		47.73	54.00	6.27





Note.

1. No spurious emission were detected above 3 GHz.
2. Average test would be performed if the peak result were greater than the average limit.

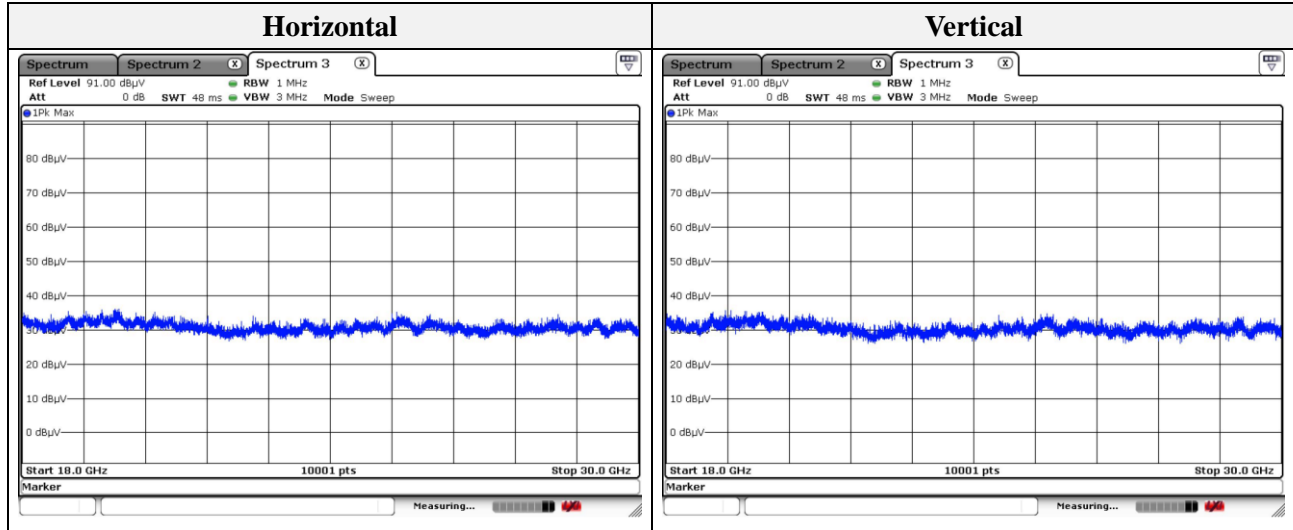
Test results (18 GHz to 30 GHz)

Mode: 802.11b(Worst case)

Transfer rate: 1 Mbps

Distance of measurement: 3 meter

Channel: 06(Worst case)



Note.

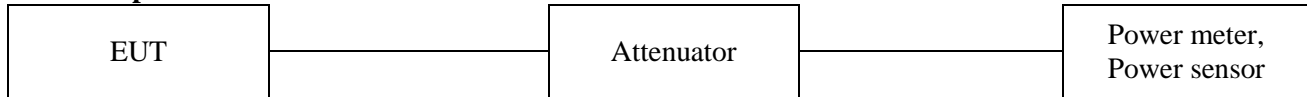
1. No spurious emission were detected above 18 GHz.

3.2. Output power

Test procedure

ANSI C63.10-2013 - Section 11.9.1.3 and 11.9.2.3.2

Test setup



ANSI C63.10-2013 - Section 11.9.1.3

The maximum peak conducted output power may be measured using a broadband peak RF power meter. The power meter shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall use a fast-responding diode detector.

ANSI C63.10-2013 - Section 11.9.2.3.2

Alternatively, measurements may be performed using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Because the measurement is made only during the ON time of the transmitter, no duty cycle correction is required.

Limit

According to §15.247(b)(3), For systems using digital modulation in the 902~928 MHz, 2 400~2 483.5 MHz, and 5 725~5 850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted out-put power. Maximum Conducted Out-put Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

Test results

Mode	2 402 MHz		2 442 MHz		2 480 MHz	
	Average (dBm)	Peak (dBm)	Average (dBm)	Peak (dBm)	Average (dBm)	Peak (dBm)
LE 1 Mbps	0.73	3.28	0.89	3.52	0.96	3.79

Mode	2 412 MHz		2 437 MHz		2 462 MHz	
	Average (dBm)	Peak (dBm)	Average (dBm)	Peak (dBm)	Average (dBm)	Peak (dBm)
802.11b	9.91	12.50	9.95	12.57	9.96	12.57

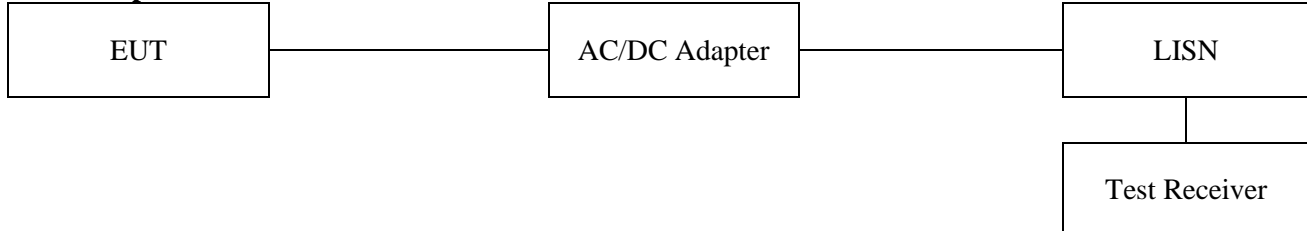
Mode	2 412 MHz		2 437 MHz		2 462 MHz	
	Average (dBm)	Peak (dBm)	Average (dBm)	Peak (dBm)	Average (dBm)	Peak (dBm)
802.11g	6.32	11.35	6.57	11.65	6.28	11.21

Mode	2 412 MHz		2 437 MHz		2 462 MHz	
	Average (dBm)	Peak (dBm)	Average (dBm)	Peak (dBm)	Average (dBm)	Peak (dBm)
802.11n_HT20	5.75	11.24	5.79	11.36	5.70	11.20

Mode	2 422 MHz		2 437 MHz		2 452 MHz	
	Average (dBm)	Peak (dBm)	Average (dBm)	Peak (dBm)	Average (dBm)	Peak (dBm)
802.11n_HT40	6.15	11.42	6.31	11.85	6.25	11.65

3.3. AC conducted emissions

Test setup



Limit

According to 15.207(a), for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohm line impedance stabilization network (LISN). Compliance with the provision of this paragraph shall on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower applies at the boundary between the frequencies ranges.

Frequency of Emission (MHz)	Conducted limit (dB μ V/m)	
	Quasi-peak	Average
0.15 – 0.50	66 - 56*	56 - 46*
0.50 – 5.00	56	46
5.00 – 30.0	60	50

Note:

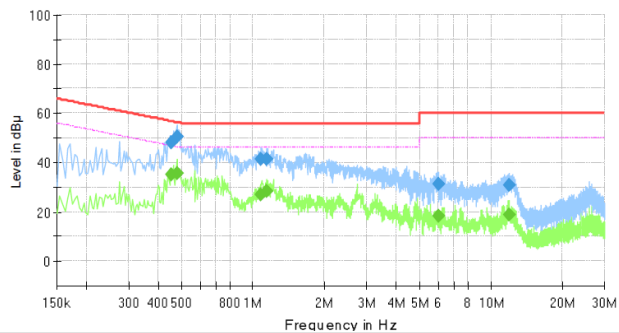
1. All AC line conducted spurious emission are measured with a receiver connected to a grounded LISN while the EUT is operating at its maximum duty cycle, at maximum power, and the appropriate frequencies. All data rates and modes were investigated for conducted spurious emission. Only the conducted emissions of the configuration that produced the worst case emissions are reported in this section.
3. Both Cable loss and LISN factor are included in measurement level(QP Level or AV Level).



Test results

Mode: LE
Transfer rate: 1 Mbps
Distance of measurement: 3 meter
Channel: 20(Worst case)

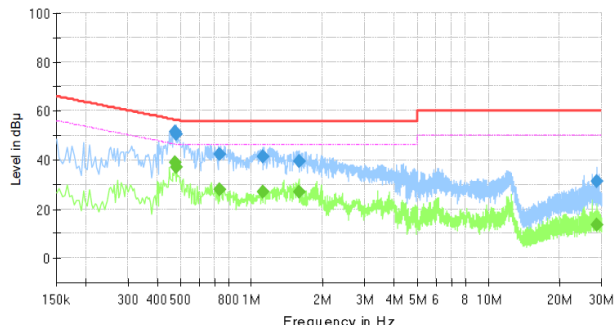
Hot Line



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.454000	47.98	---	56.80	8.82	1000.0	9.000	L1	20.0
0.454000	---	35.31	46.80	11.49	1000.0	9.000	L1	20.0
0.478000	---	35.77	46.37	10.60	1000.0	9.000	L1	20.0
0.478000	50.50	---	56.37	5.87	1000.0	9.000	L1	20.0
1.078000	---	27.12	46.00	18.88	1000.0	9.000	L1	20.4
1.078000	41.52	---	56.00	14.48	1000.0	9.000	L1	20.4
1.138000	---	28.46	46.00	17.54	1000.0	9.000	L1	20.4
1.138000	41.58	---	56.00	14.42	1000.0	9.000	L1	20.4
6.026000	---	18.47	50.00	31.53	1000.0	9.000	L1	20.0
6.026000	31.14	---	60.00	28.86	1000.0	9.000	L1	20.0
11.910000	---	18.90	50.00	31.10	1000.0	9.000	L1	20.6
11.910000	30.83	---	60.00	29.17	1000.0	9.000	L1	20.6

Neutral Line



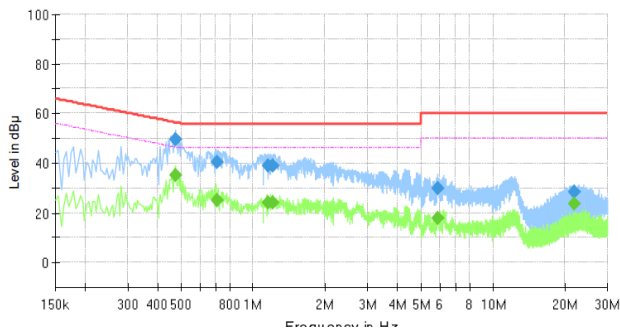
Final Result

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.474000	51.45	---	56.44	4.99	1000.0	9.000	N	20.0
0.474000	---	39.07	46.44	7.37	1000.0	9.000	N	20.0
0.482000	50.47	---	56.30	5.83	1000.0	9.000	N	20.0
0.482000	---	37.01	46.30	9.29	1000.0	9.000	N	20.0
0.734000	42.32	---	56.00	13.68	1000.0	9.000	N	20.2
0.734000	---	27.85	46.00	18.15	1000.0	9.000	N	20.2
1.110000	---	27.09	46.00	18.91	1000.0	9.000	N	20.4
1.110000	41.52	---	56.00	14.48	1000.0	9.000	N	20.4
1.578000	---	27.19	46.00	18.81	1000.0	9.000	N	20.5
1.578000	39.39	---	56.00	16.61	1000.0	9.000	N	20.5
28.790000	---	13.55	50.00	36.45	1000.0	9.000	N	21.4
28.790000	31.08	---	60.00	28.92	1000.0	9.000	N	21.4

Test results

Mode: 802.11b
Transfer rate: 1 Mbps
Distance of measurement: 3 meter
Channel: 06(Worst case)

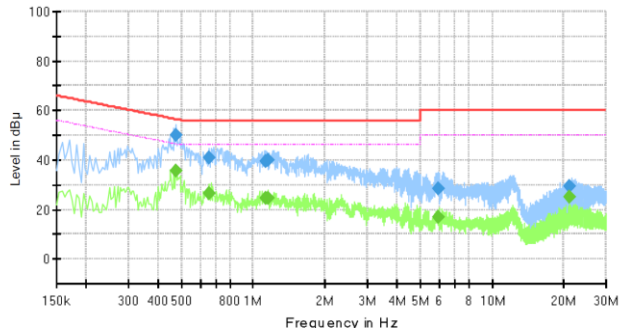
Hot Line



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.474000	49.72	---	56.44	6.72	1000.0	9.000	L1	20.0
0.474000	---	35.20	46.44	11.24	1000.0	9.000	L1	20.0
0.710000	---	25.19	46.00	20.81	1000.0	9.000	L1	20.2
0.710000	40.21	---	56.00	15.79	1000.0	9.000	L1	20.2
1.158000	---	24.26	46.00	21.74	1000.0	9.000	L1	20.4
1.158000	39.21	---	56.00	16.79	1000.0	9.000	L1	20.4
1.210000	---	24.34	46.00	21.66	1000.0	9.000	L1	20.4
1.210000	38.92	---	56.00	17.08	1000.0	9.000	L1	20.4
5.902000	---	17.65	50.00	32.35	1000.0	9.000	L1	20.0
5.902000	30.08	---	60.00	29.92	1000.0	9.000	L1	20.0
21.858000	---	23.63	50.00	26.37	1000.0	9.000	L1	21.0
21.858000	28.40	---	60.00	31.60	1000.0	9.000	L1	21.0

Neutral Line



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.474000	50.04	---	56.44	6.40	1000.0	9.000	N	20.0
0.474000	---	35.50	46.44	10.94	1000.0	9.000	N	20.0
0.654000	---	26.67	46.00	19.33	1000.0	9.000	N	20.2
0.654000	40.89	---	56.00	15.11	1000.0	9.000	N	20.2
1.122000	---	24.53	46.00	21.47	1000.0	9.000	N	20.4
1.122000	39.30	---	56.00	16.70	1000.0	9.000	N	20.4
1.150000	---	24.65	46.00	21.35	1000.0	9.000	N	20.4
1.150000	40.07	---	56.00	15.93	1000.0	9.000	N	20.4
5.950000	---	16.76	50.00	33.24	1000.0	9.000	N	20.0
5.950000	28.57	---	60.00	31.43	1000.0	9.000	N	20.0
21.190000	---	24.91	50.00	25.09	1000.0	9.000	N	21.0
21.190000	29.48	---	60.00	30.52	1000.0	9.000	N	21.0

Appendix A. Measurement equipment

Equipment	Manufacturer	Model	Serial No.	Calibration interval	Calibration due.
Spectrum Analyzer	R&S	FSV40-N	102194	1 year	2022.06.18
8360B Series Swept Signal Generator	HP	83630B	3844A00786	1 year	2022.01.15
SIGNAL GENERATOR	KEYSIGHT	N5182B	MY59100115	1 year	2022.04.29
Power Meter	Anritsu	ML2495A	2010001	1 year	2022.04.29
Pulse Power Sensor	Anritsu	MA2411B	1911111	1 year	2022.04.29
Attenuator	Mini-Circuits	BW-S10-2W263+	1	1 year	2022.01.18
Attenuator	HUBER+SUHNER	6806.17.A	-	1 year	2021.11.03
Loop Antenna	Schwarzbeck	FMZB1513	225	2 years	2023.01.18
BILOG ANTENNA	Schwarzbeck	VULB 9168	9168-461	2 years	2022.12.22
Horn Antenna	SCHWARZBECK	BBHA 9120D	9120D-1802	1 year	2021.12.14
Horn Antenna	SCHWARZBECK	BBHA9170	BBHA 9170550	1 year	2022.01.18
Amplifier	SONOMA INSTRUMENT	310N	401123	1 year	2022.06.07
PREAMPLIFIER	HP	8449B	3008A00538	1 year	2022.06.21
BROADBAND AMPLIFIER	SCHWARZBECK	BBV9721	PS9721-003	1 year	2022.01.19
EMI Test Receiver	R&S	ESU26	100552	1 year	2022.04.01
BAND REJECT FILTER	MICRO-TRONICS	BRM50702	G272	1 year	2022.01.15
AC POWER SOURCE/ ANALYZER	HP	6813A	3729A00754	1 year	2022.01.15
LISN	ENV216	R & S	101787	1 year	2021.12.29
EMI TEST RECEIVER	ESR3	R & S	101783	1 year	2022.01.15
PULSE LIMITER	ESH3-Z2	R & S	101915	1 year	2021.12.29

Peripheral devices

Device	Manufacturer	Model No.	Serial No.
Notebook computer	LG Electronics Inc.,	15UD590	904QCSF564006
Jig board	-	-	-