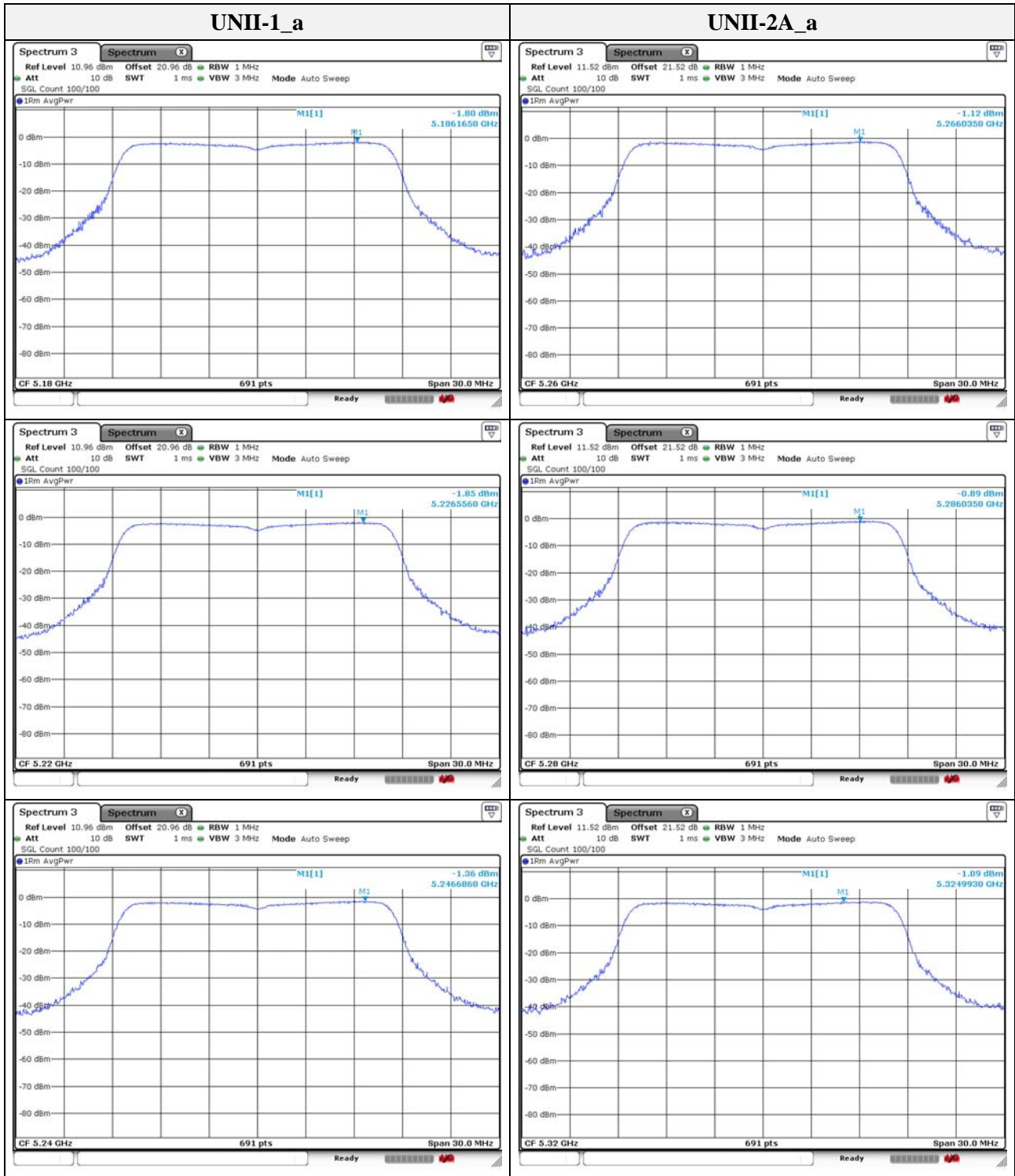
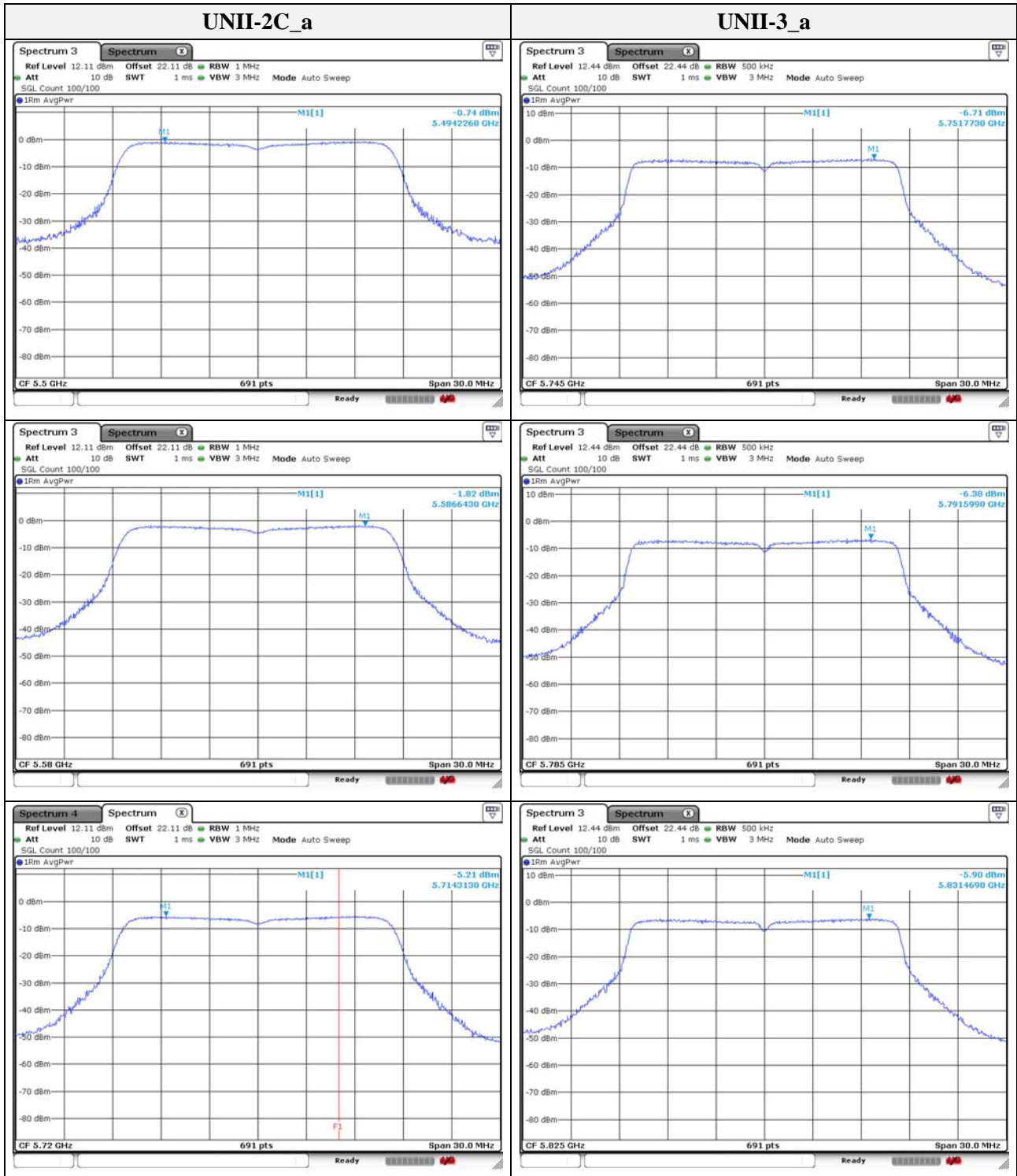


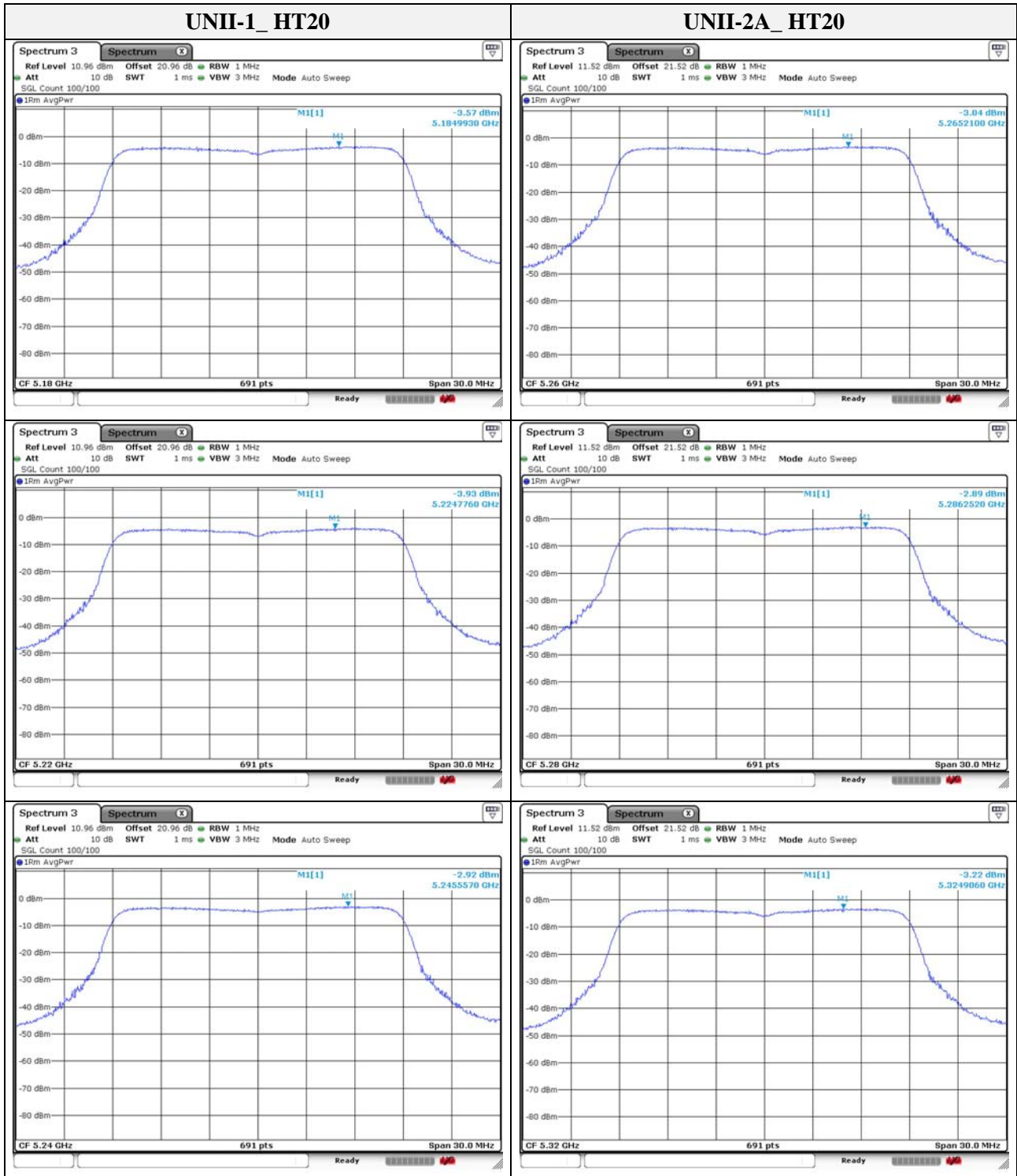
802.11a



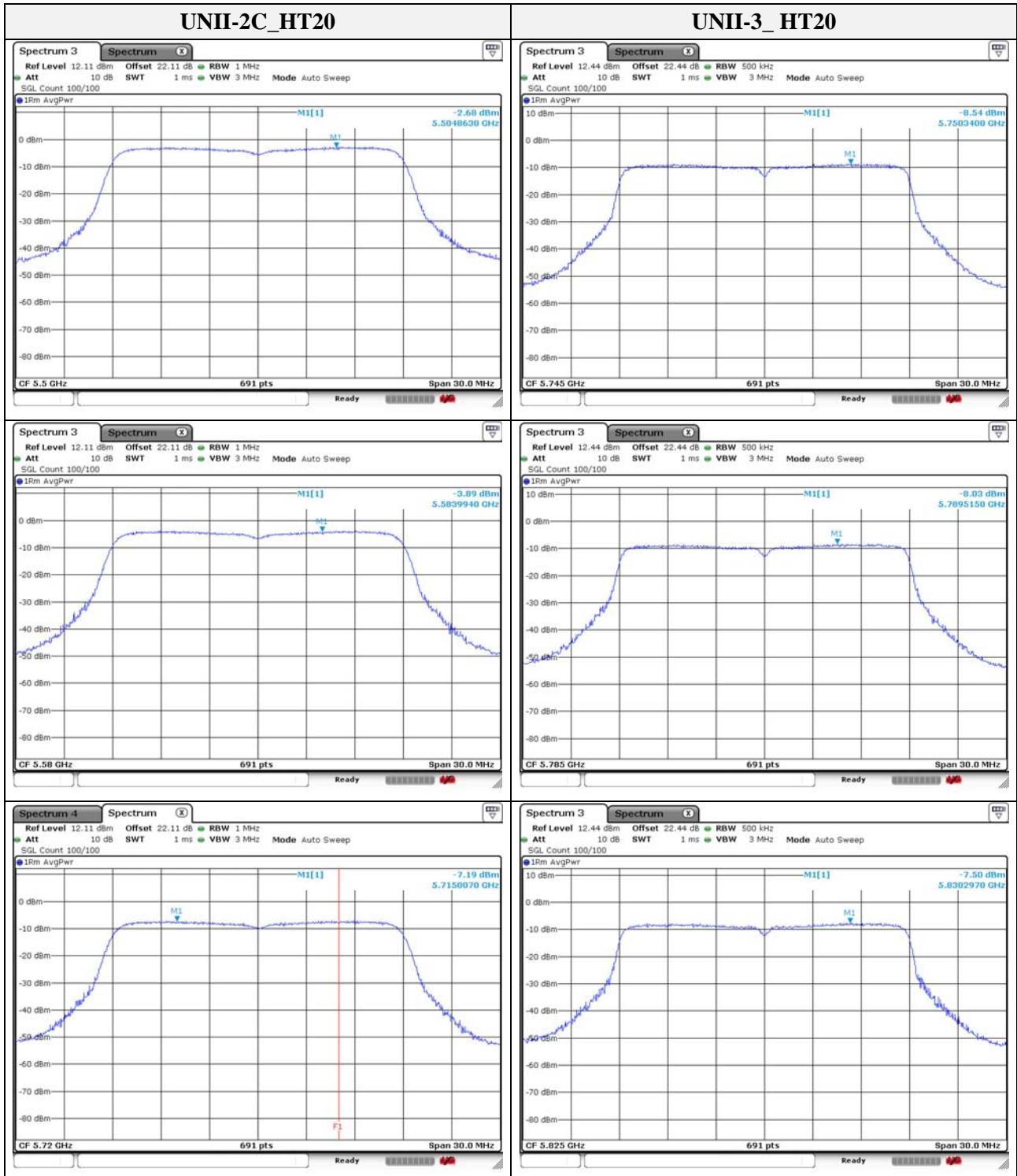
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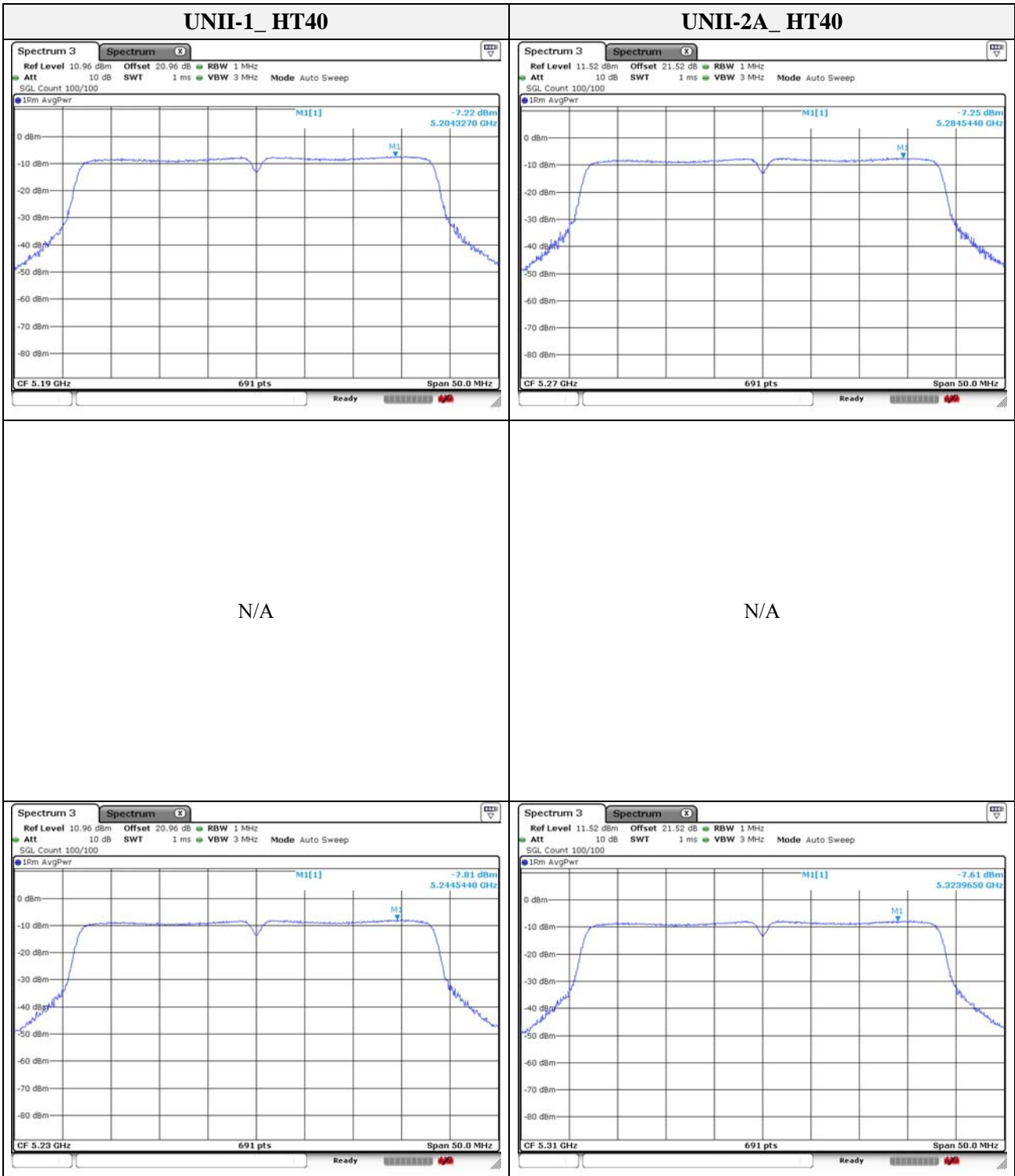
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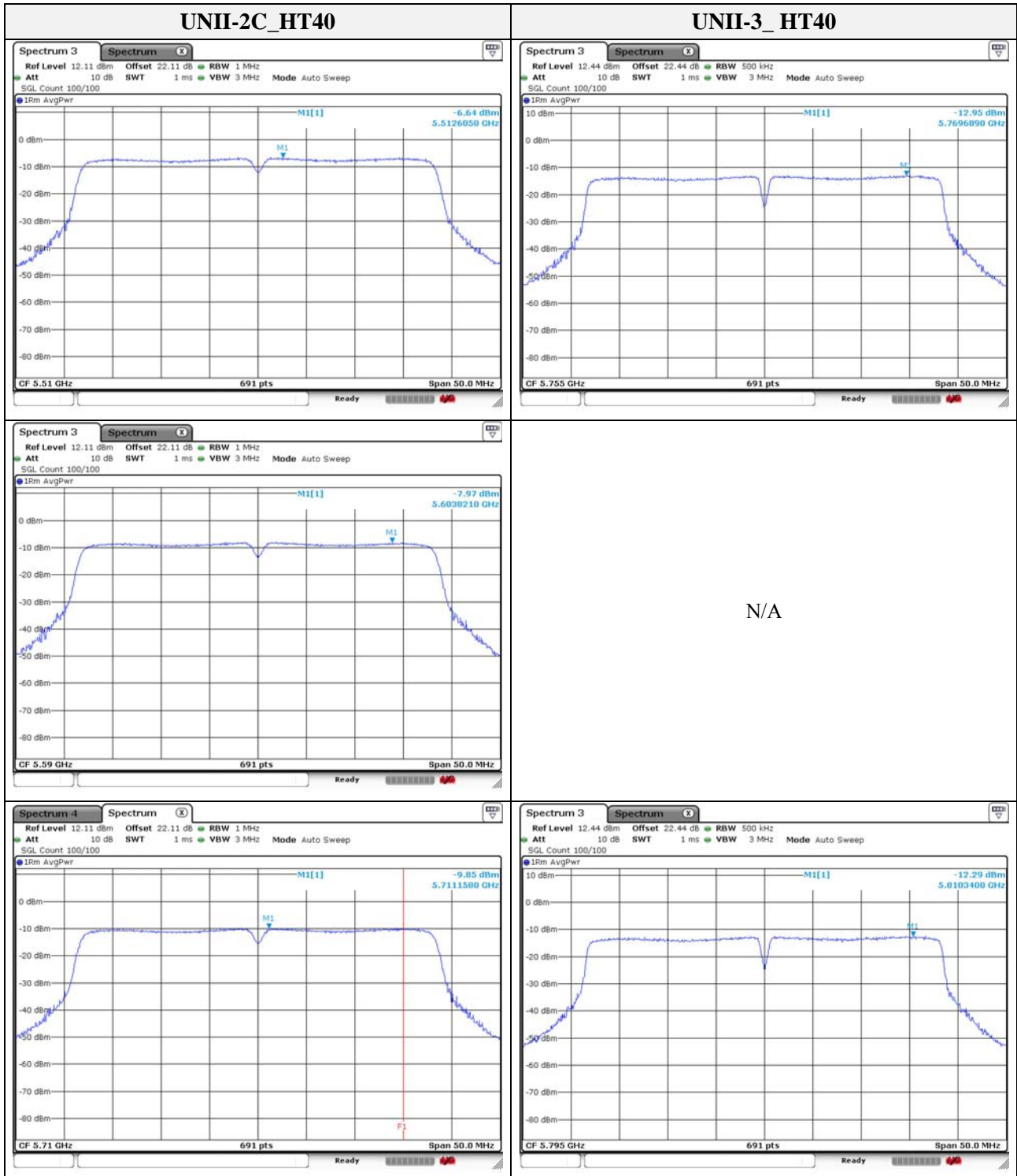


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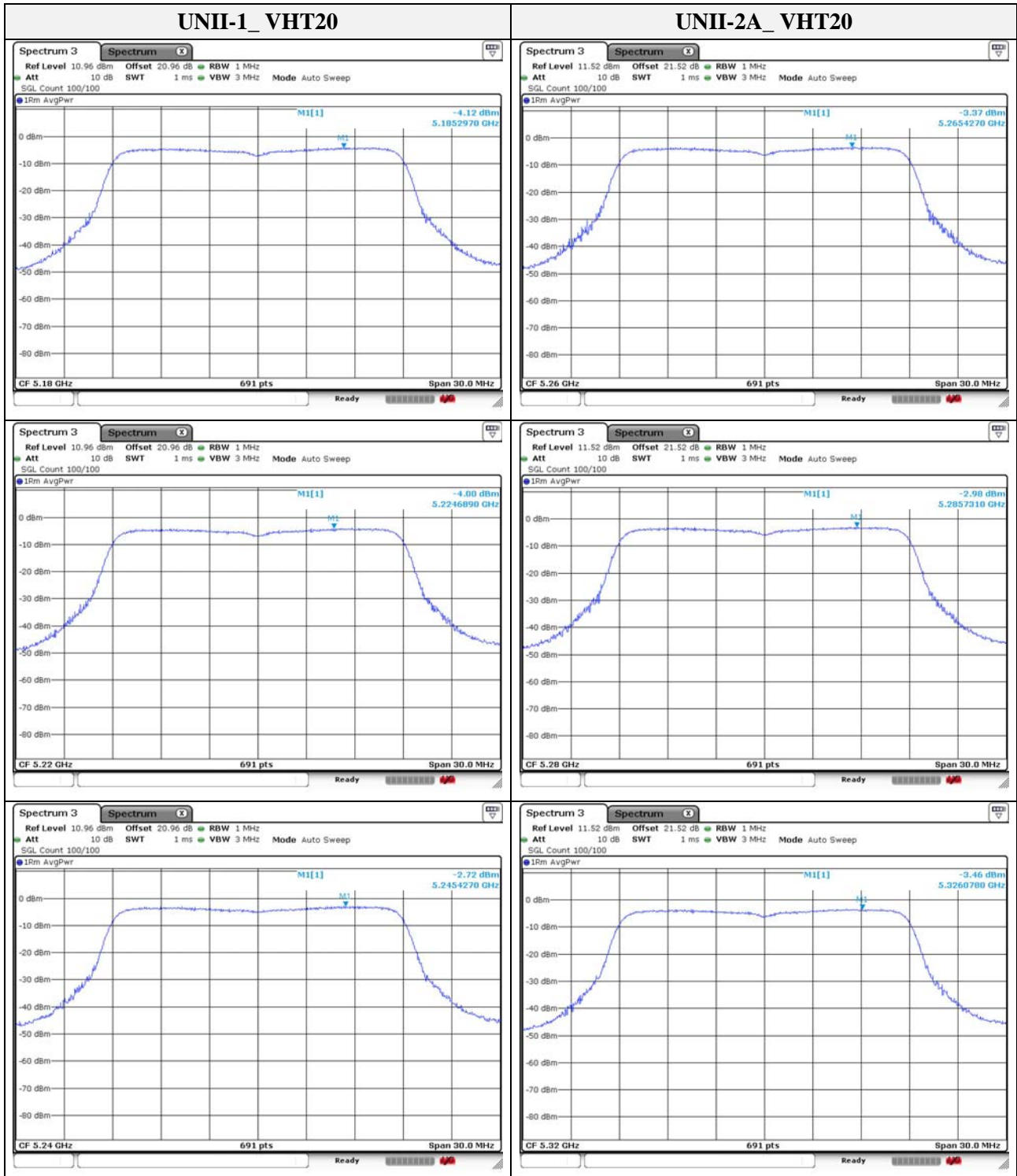


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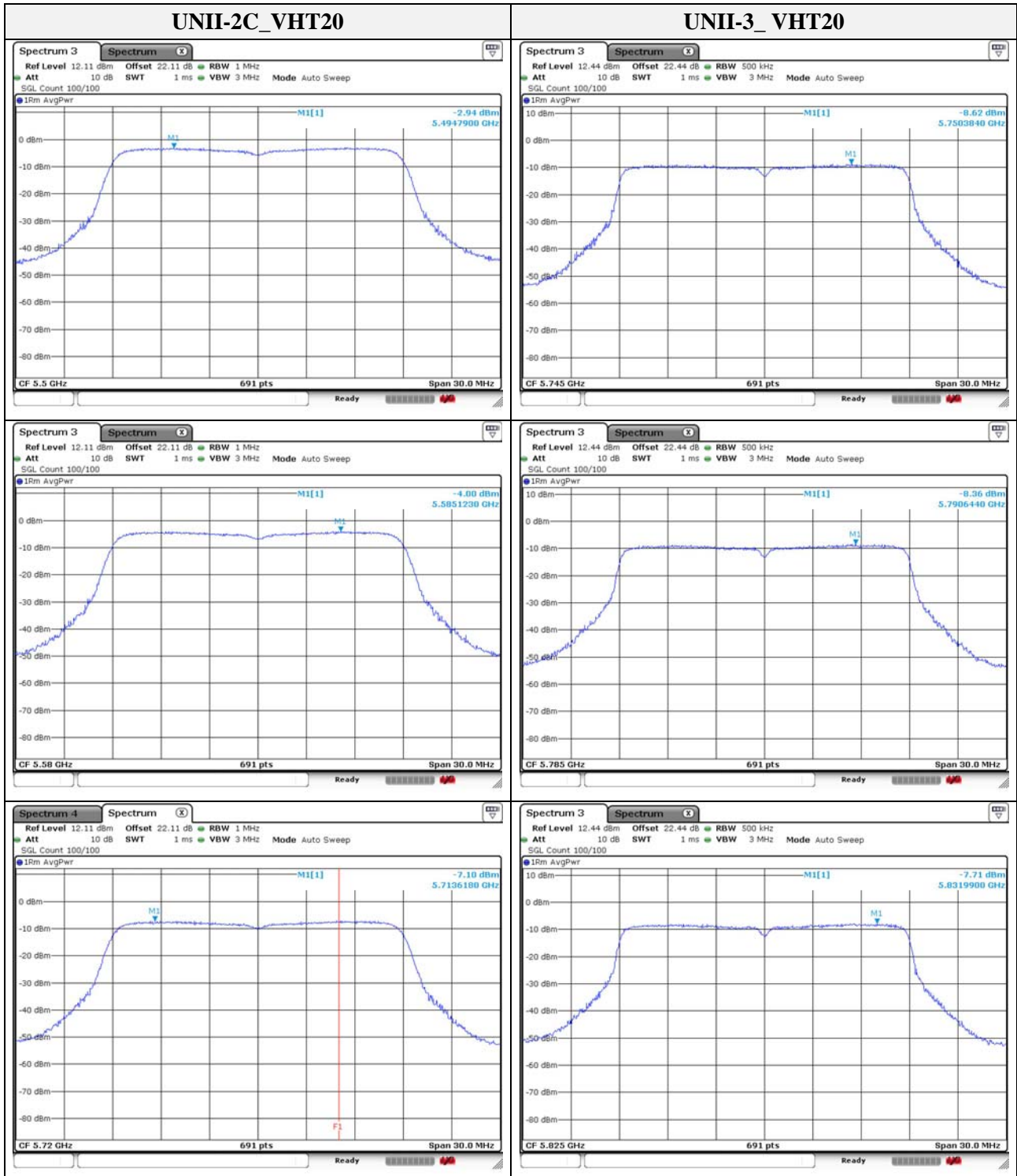




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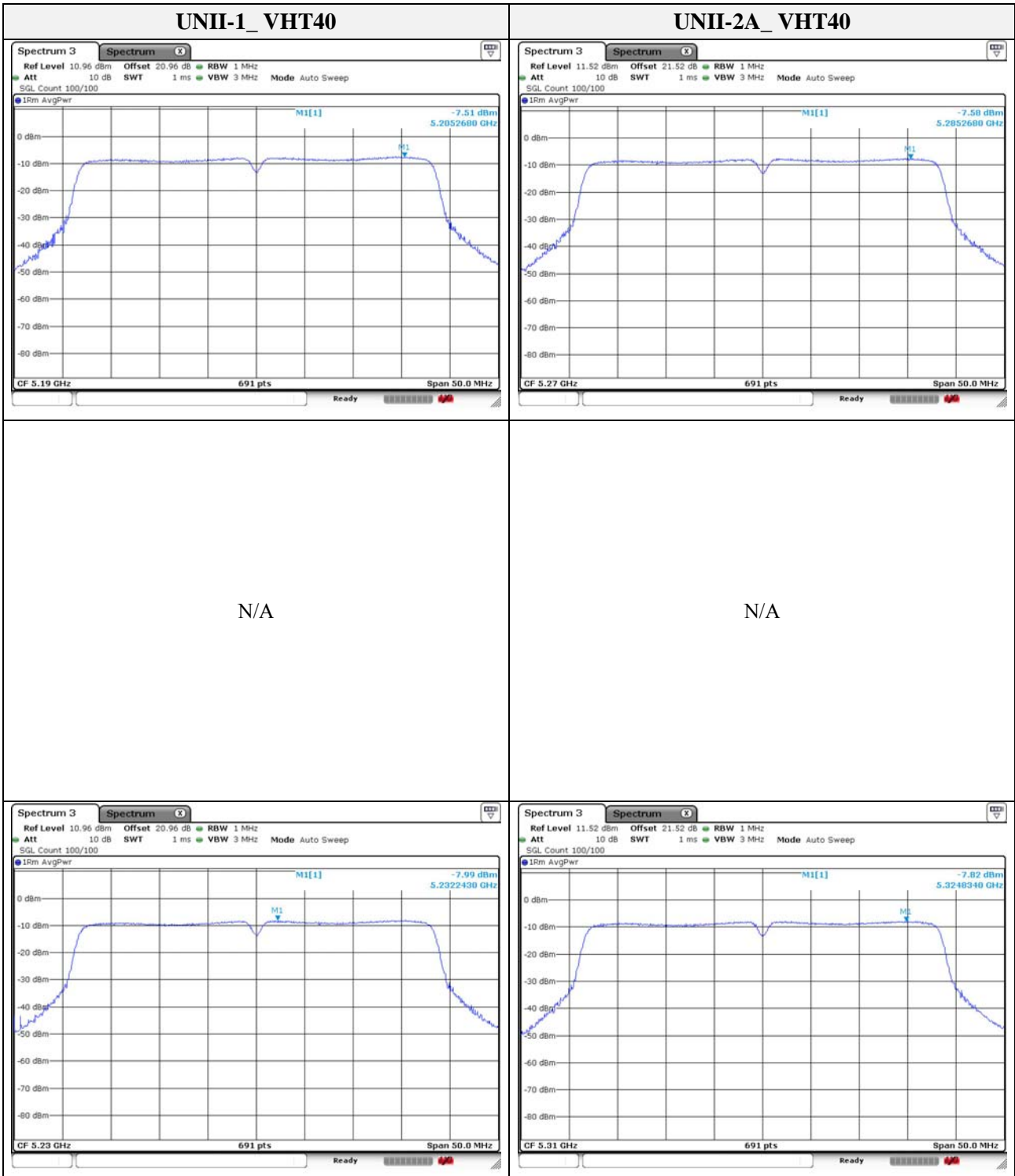


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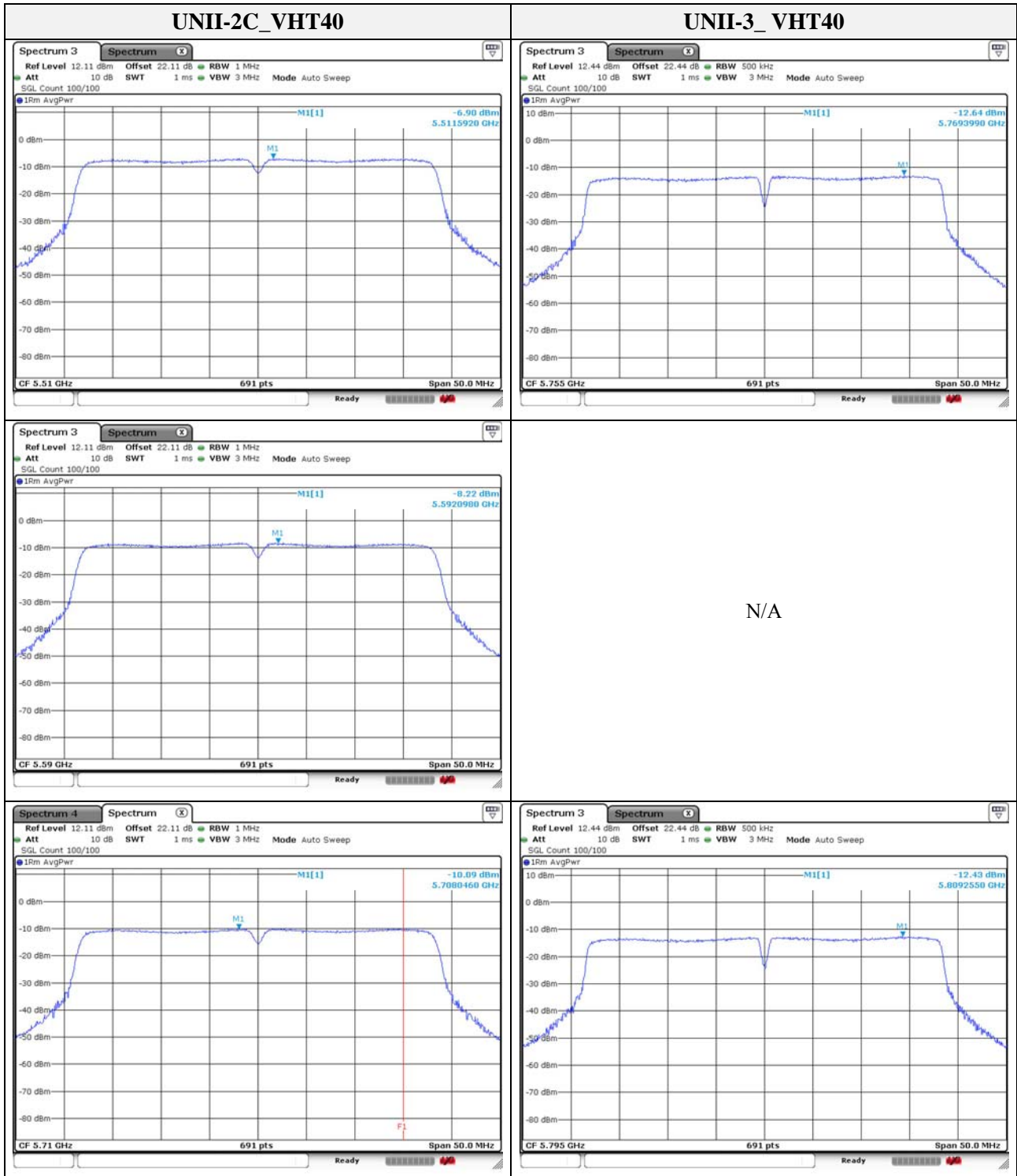


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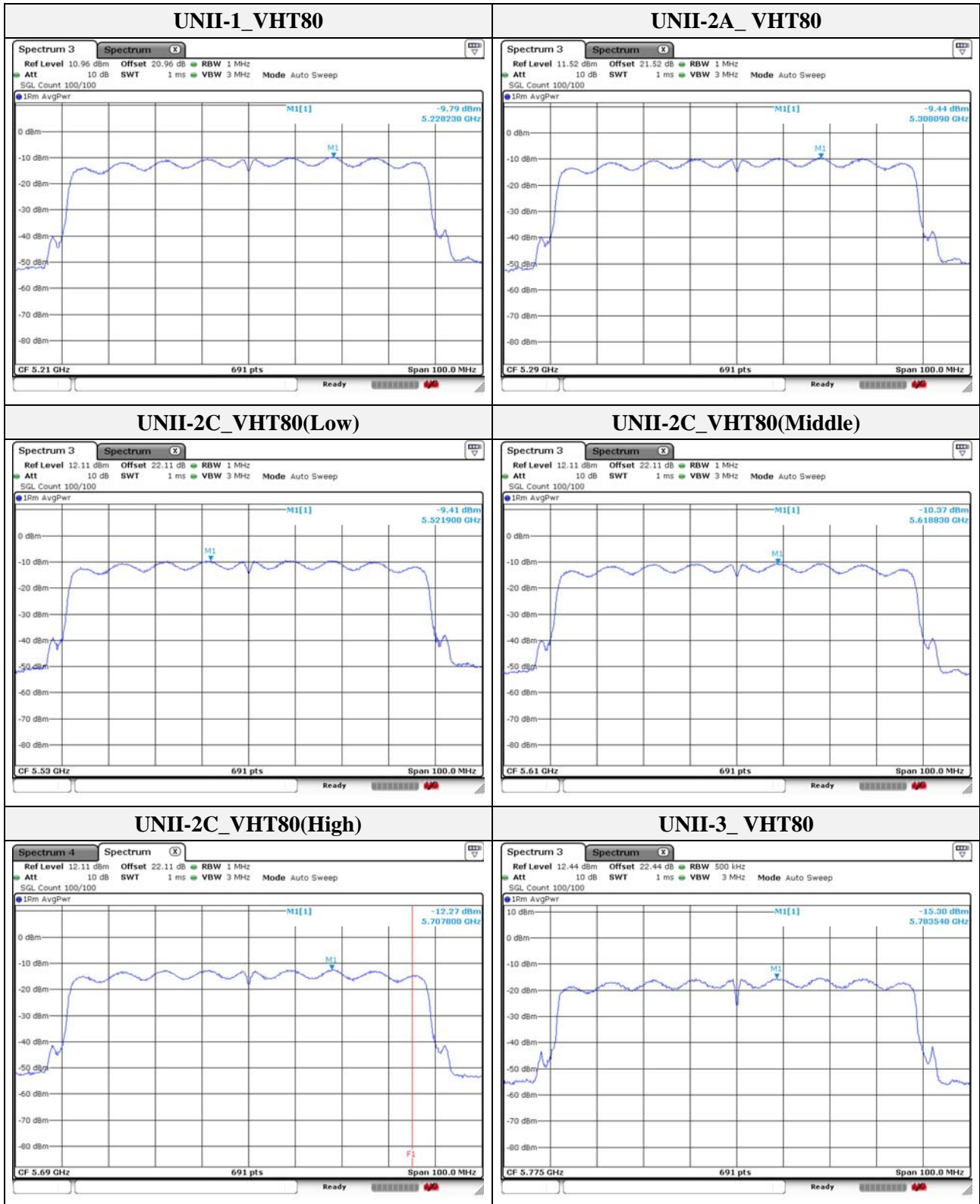




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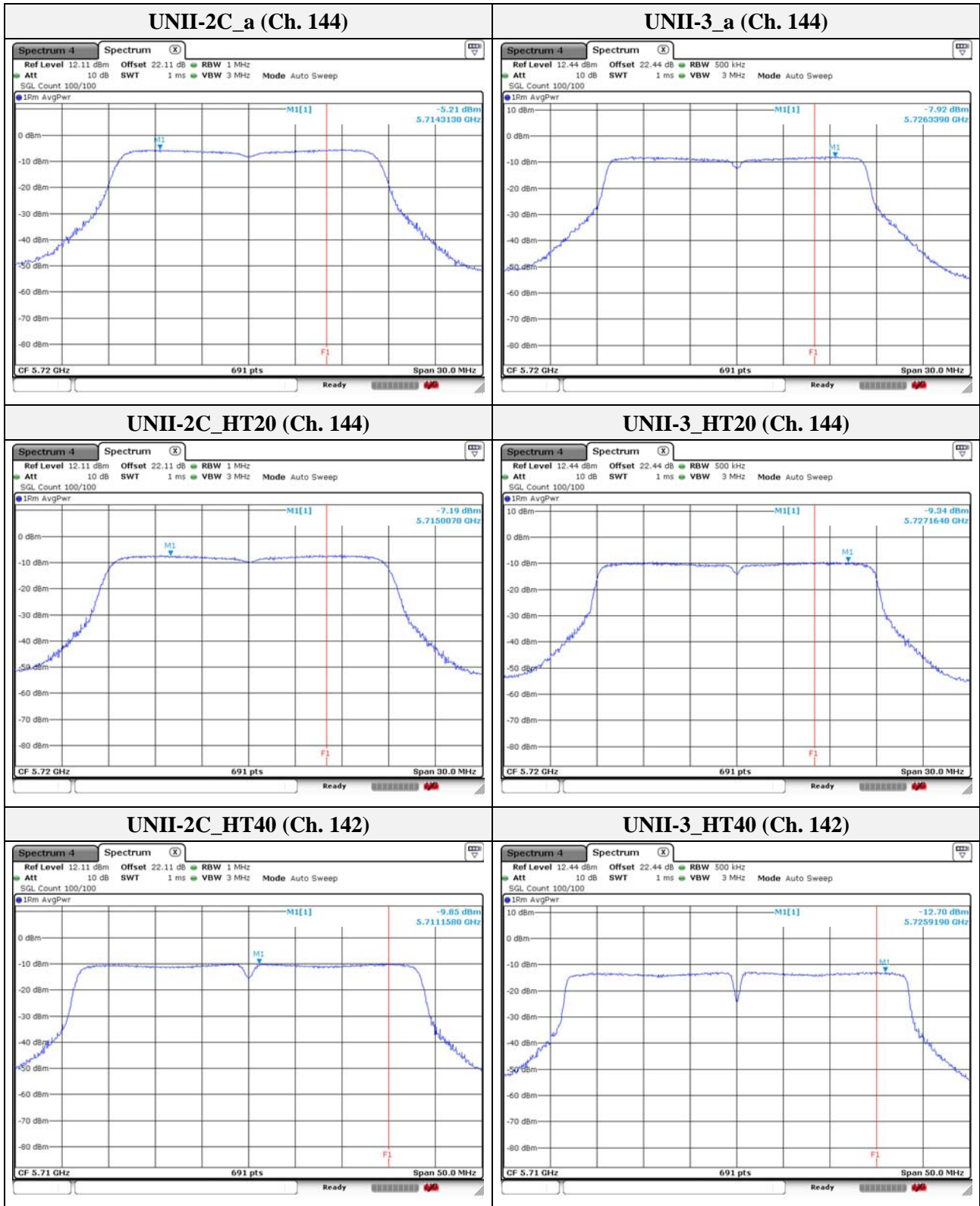


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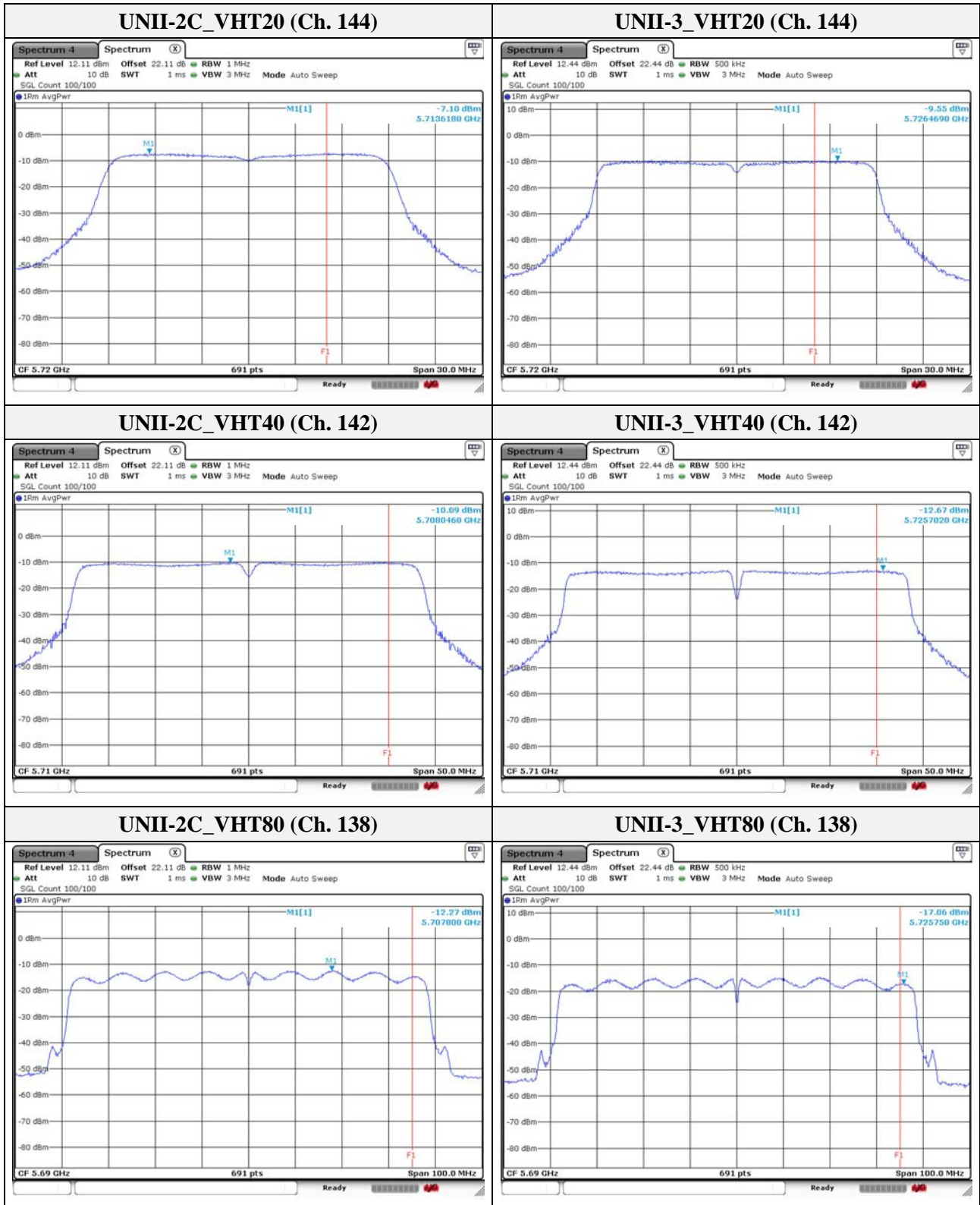


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**Band-crossing channels**



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### 3.5. Frequency Stability

#### Test procedure

ANSI C63.10-2013, clause 6.8.1

1. The EUT was placed inside the environmental test chamber and powered by nominal DC voltage.
2. Turn the EUT on and couple its output to a spectrum analyzer.
3. Turn the EUT off and set the chamber to the highest temperature specified.
4. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency.
5. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
6. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.
7. While maintaining a constant temperature inside the environmental chamber, turn the EUT on and record the operating frequency at startup, and at 2 minutes, 5 minutes, and 10 minutes after the EUT is energized. Four measurements in total are made.

#### Limit

N/A



**Test results**

Mode: UNII-1  
 Operating frequency: 5 180 MHz

Test voltage (%)	Test voltage (V)	Temperature (°C)	Maintaining time	Measure frequency (MHz)	Frequency deviation (Hz)	Deviation (%)
100 %	AC 120	-20	Startup	5 180.035 493	35493	0.000 685
			2 minutes	5 180.035 574	35574	0.000 687
			5 minutes	5 180.035 580	35580	0.000 687
			10 minutes	5 180.035 514	35514	0.000 686
100 %		-10	Startup	5 180.020 185	20185	0.000 390
			2 minutes	5 180.020 249	20249	0.000 391
			5 minutes	5 180.020 267	20267	0.000 391
			10 minutes	5 180.020 248	20248	0.000 391
100 %		0	Startup	5 180.003 511	3511	0.000 068
			2 minutes	5 180.003 566	3566	0.000 069
			5 minutes	5 180.003 610	3610	0.000 070
			10 minutes	5 180.003 551	3551	0.000 069
100 %		10	Startup	5 180.008 269	8269	0.000 160
			2 minutes	5 180.008 322	8322	0.000 161
			5 minutes	5 180.008 318	8318	0.000 161
			10 minutes	5 180.008 277	8277	0.000 160
100 %		20	Startup	5 180.003 112	3112	0.000 060
			2 minutes	5 180.003 204	3204	0.000 062
			5 minutes	5 180.003 172	3172	0.000 061
			10 minutes	5 180.003 153	3153	0.000 061
100 %	23	Startup	5 180.023 043	23043	0.000 445	
		2 minutes	5 180.023 095	23095	0.000 446	
		5 minutes	5 180.023 118	23118	0.000 446	
		10 minutes	5 180.023 076	23076	0.000 445	
100 %	30	Startup	5 180.020 971	20971	0.000 405	
		2 minutes	5 180.021 028	21028	0.000 406	
		5 minutes	5 180.020 976	20976	0.000 405	
		10 minutes	5 180.020 991	20991	0.000 405	
100 %	40	Startup	5 180.057 598	57598	0.001 112	
		2 minutes	5 180.057 646	57646	0.001 113	
		5 minutes	5 180.057 697	57697	0.001 114	
		10 minutes	5 180.057 647	57647	0.001 113	
100 %	50	Startup	5 180.072 636	72636	0.001 402	
		2 minutes	5 180.072 661	72661	0.001 403	
		5 minutes	5 180.072 657	72657	0.001 403	
		10 minutes	5 180.072 680	72680	0.001 403	
85 %	AC 102	23	Startup	5 180.036 827	36827	0.000 711
			2 minutes	5 180.036 869	36869	0.000 712
			5 minutes	5 180.036 888	36888	0.000 712
			10 minutes	5 180.036 891	36891	0.000 712
115 %	AC 138	23	Startup	5 180.040 743	40743	0.000 787
			2 minutes	5 180.040 843	40843	0.000 788
			5 minutes	5 180.040 793	40793	0.000 788
			10 minutes	5 180.040 774	40774	0.000 787

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Mode: UNII-2A  
 Operating frequency: 5 260 MHz

Test voltage (%)	Test voltage (V)	Temperature (°C)	Maintaining time	Measure frequency (MHz)	Frequency deviation (Hz)	Deviation (%)
100 %	AC 120	-20	Startup	5 260.027 682	27682	0.000 526
			2 minutes	5 260.027 763	27763	0.000 528
			5 minutes	5 260.027 727	27727	0.000 527
			10 minutes	5 260.027 720	27720	0.000 527
100 %		-10	Startup	5 260.019 139	19139	0.000 364
			2 minutes	5 260.019 151	19151	0.000 364
			5 minutes	5 260.019 163	19163	0.000 364
			10 minutes	5 260.019 227	19227	0.000 366
100 %		0	Startup	5 260.003 301	3301	0.000 063
			2 minutes	5 260.003 345	3345	0.000 064
			5 minutes	5 260.003 352	3352	0.000 064
			10 minutes	5 260.003 376	3376	0.000 064
100 %		10	Startup	5 260.007 830	7830	0.000 149
			2 minutes	5 260.007 923	7923	0.000 151
			5 minutes	5 260.007 874	7874	0.000 150
			10 minutes	5 260.007 918	7918	0.000 151
100 %	20	Startup	5 260.003 776	3776	0.000 072	
		2 minutes	5 260.003 795	3795	0.000 072	
		5 minutes	5 260.003 805	3805	0.000 072	
		10 minutes	5 260.003 815	3815	0.000 073	
100 %	23	Startup	5 260.034 359	34359	0.000 653	
		2 minutes	5 260.034 457	34457	0.000 655	
		5 minutes	5 260.034 403	34403	0.000 654	
		10 minutes	5 260.034 433	34433	0.000 655	
100 %	30	Startup	5 260.024 697	24697	0.000 470	
		2 minutes	5 260.024 702	24702	0.000 470	
		5 minutes	5 260.024 733	24733	0.000 470	
		10 minutes	5 260.024 723	24723	0.000 470	
100 %	40	Startup	5 260.057 657	57657	0.001 096	
		2 minutes	5 260.057 668	57668	0.001 096	
		5 minutes	5 260.057 754	57754	0.001 098	
		10 minutes	5 260.057 745	57745	0.001 098	
100 %	50	Startup	5 260.089 843	89843	0.001 708	
		2 minutes	5 260.089 878	89878	0.001 709	
		5 minutes	5 260.089 893	89893	0.001 709	
		10 minutes	5 260.089 893	89893	0.001 709	
85 %	AC 102	23	Startup	5 260.046 601	46601	0.000 886
			2 minutes	5 260.046 681	46681	0.000 887
			5 minutes	5 260.046 684	46684	0.000 888
			10 minutes	5 260.046 653	46653	0.000 887
115 %	AC 138	23	Startup	5 260.051 567	51567	0.000 980
			2 minutes	5 260.051 597	51597	0.000 981
			5 minutes	5 260.051 602	51602	0.000 981
			10 minutes	5 260.051 594	51594	0.000 981

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Mode: UNII-2C  
 Operating frequency: 5500 MHz

Test voltage (%)	Test voltage (V)	Temperature (°C)	Maintaining time	Measure frequency (MHz)	Frequency deviation (Hz)	Deviation (%)
100 %	AC 120	-20	Startup	5 500.026 522	26522	0.000 482
			2 minutes	5 500.026 596	26596	0.000 484
			5 minutes	5 500.026 608	26608	0.000 484
			10 minutes	5 500.026 550	26550	0.000 483
100 %		-10	Startup	5 500.015 758	15758	0.000 287
			2 minutes	5 500.015 826	15826	0.000 288
			5 minutes	5 500.015 807	15807	0.000 287
			10 minutes	5 500.015 850	15850	0.000 288
100 %		0	Startup	5 500.008 402	8402	0.000 153
			2 minutes	5 500.008 462	8462	0.000 154
			5 minutes	5 500.008 433	8433	0.000 153
			10 minutes	5 500.008 473	8473	0.000 154
100 %		10	Startup	5 500.012 851	12851	0.000 234
			2 minutes	5 500.012 927	12927	0.000 235
			5 minutes	5 500.012 948	12948	0.000 235
			10 minutes	5 500.012 900	12900	0.000 235
100 %	20	Startup	5 500.018 806	18806	0.000 342	
		2 minutes	5 500.018 866	18866	0.000 343	
		5 minutes	5 500.018 835	18835	0.000 342	
		10 minutes	5 500.018 900	18900	0.000 344	
100 %	23	Startup	5 500.029 196	29196	0.000 531	
		2 minutes	5 500.029 274	29274	0.000 532	
		5 minutes	5 500.029 252	29252	0.000 532	
		10 minutes	5 500.029 291	29291	0.000 533	
100 %	30	Startup	5 500.026 144	26144	0.000 475	
		2 minutes	5 500.026 244	26244	0.000 477	
		5 minutes	5 500.026 185	26185	0.000 476	
		10 minutes	5 500.026 202	26202	0.000 476	
100 %	40	Startup	5 500.066 290	66290	0.001 205	
		2 minutes	5 500.066 371	66371	0.001 207	
		5 minutes	5 500.066 378	66378	0.001 207	
		10 minutes	5 500.066 341	66341	0.001 206	
100 %	50	Startup	5 500.085 007	85007	0.001 546	
		2 minutes	5 500.085 080	85080	0.001 547	
		5 minutes	5 500.085 070	85070	0.001 547	
		10 minutes	5 500.085 092	85092	0.001 547	
85 %	AC 102	23	Startup	5 500.040 059	40059	0.000 728
			2 minutes	5 500.040 070	40070	0.000 729
			5 minutes	5 500.040 065	40065	0.000 728
			10 minutes	5 500.040 115	40115	0.000 729
115 %	AC 138	23	Startup	5 500.046 069	46069	0.000 838
			2 minutes	5 500.046 133	46133	0.000 839
			5 minutes	5 500.046 069	46069	0.000 838
			10 minutes	5 500.046 088	46088	0.000 838

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Mode: UNII-3  
 Operating frequency: 5 745 MHz

Test voltage (%)	Test voltage (V)	Temperature (°C)	Maintaining time	Measure frequency (MHz)	Frequency deviation (Hz)	Deviation (%)
100 %	AC 120	-20	Startup	5 745.027959	27959	0.000 487
			2 minutes	5 745.027976	27976	0.000 487
			5 minutes	5 745.027998	27998	0.000 487
			10 minutes	5 745.027999	27999	0.000 487
100 %		-10	Startup	5 745.015876	15876	0.000 276
			2 minutes	5 745.015916	15916	0.000 277
			5 minutes	5 745.015889	15889	0.000 277
			10 minutes	5 745.015944	15944	0.000 278
100 %		0	Startup	5 745.006431	6431	0.000 112
			2 minutes	5 745.006449	6449	0.000 112
			5 minutes	5 745.006464	6464	0.000 113
			10 minutes	5 745.006447	6447	0.000 112
100 %		10	Startup	5 745.017833	17833	0.000 310
			2 minutes	5 745.017917	17917	0.000 312
			5 minutes	5 745.017859	17859	0.000 311
			10 minutes	5 745.017891	17891	0.000 311
100 %	20	Startup	5 745.003640	3640	0.000 063	
		2 minutes	5 745.003728	3728	0.000 065	
		5 minutes	5 745.003722	3722	0.000 065	
		10 minutes	5 745.003709	3709	0.000 065	
100 %	23	Startup	5 745.017281	17281	0.000 301	
		2 minutes	5 745.017323	17323	0.000 302	
		5 minutes	5 745.017317	17317	0.000 301	
		10 minutes	5 745.017291	17291	0.000 301	
100 %	30	Startup	5 745.011233	11233	0.000 196	
		2 minutes	5 745.011316	11316	0.000 197	
		5 minutes	5 745.011285	11285	0.000 196	
		10 minutes	5 745.011274	11274	0.000 196	
100 %	40	Startup	5 745.064744	64744	0.001 127	
		2 minutes	5 745.064767	64767	0.001 127	
		5 minutes	5 745.064776	64776	0.001 128	
		10 minutes	5 745.064747	64747	0.001 127	
100 %	50	Startup	5 745.057590	57590	0.001 002	
		2 minutes	5 745.057613	57613	0.001 003	
		5 minutes	5 745.057630	57630	0.001 003	
		10 minutes	5 745.057641	57641	0.001 003	
85 %	AC 102	23	Startup	5 745.018010	18010	0.000 313
			2 minutes	5 745.018108	18108	0.000 315
			5 minutes	5 745.018101	18101	0.000 315
			10 minutes	5 745.018021	18021	0.000 314
115 %	AC 138	23	Startup	5 745.021959	21959	0.000 382
			2 minutes	5 745.021974	21974	0.000 382
			5 minutes	5 745.022000	22000	0.000 383
			10 minutes	5 745.022029	22029	0.000 383

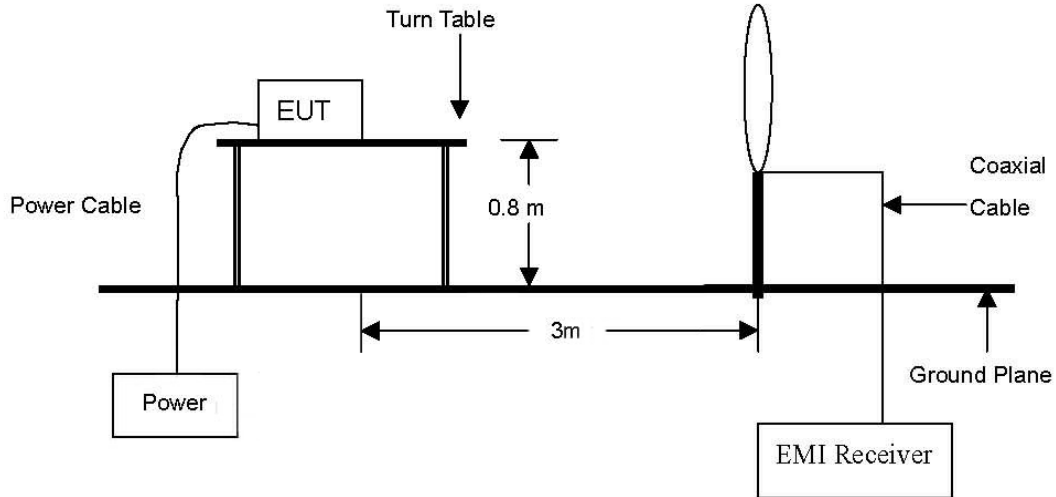
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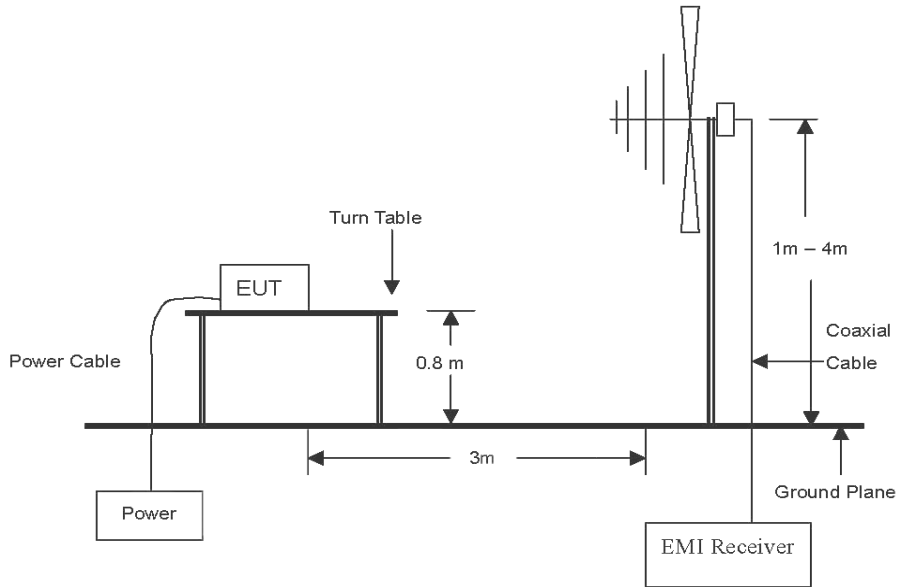
### 3.6. Radiated restricted band and emissions

#### Test setup

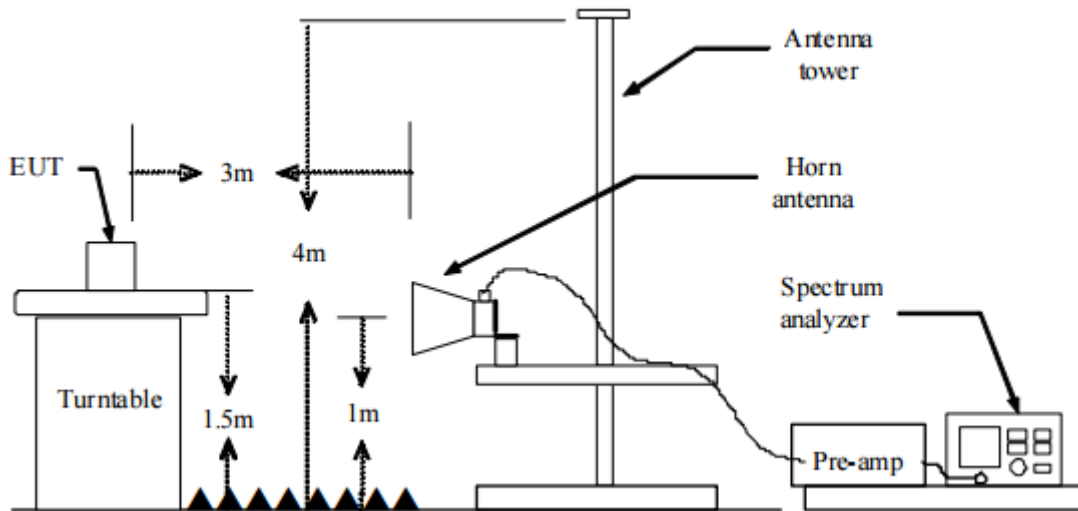
The diagram below shows the test setup that is utilized to make the measurements for emission from 9 kHz to 30 MHz Emissions.



The diagram below shows the test setup that is utilized to make the measurements for emission from 30 MHz to 1 GHz emissions.



The diagram below shows the test setup that is utilized to make the measurements for emission from 1 GHz to the tenth harmonic of the highest fundamental frequency or to 40 GHz emissions, whichever is lower.



#### Test procedure below 30 MHz

1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter anechoic chamber test site. The table was rotated 360 degrees to determine the position of the highest radiation.
2. Then antenna is a loop antenna is fixed at one meter above the ground to determine the maximum value of the field strength. Both parallel and perpendicular of the antenna are set to make the measurement.
3. For each suspected emission, the EUT was arranged to its worst case and then the table was turned from 0 degrees to 360 degrees to find the maximum reading.
4. The test-receiver system was set to average or quasi peak detect function and Specified Bandwidth with Maximum hold mode.

#### Test procedure above 30 MHz

1. Spectrum analyzer settings for  $f < 1$  GHz:
  - ① Span = wide enough to fully capture the emission being measured
  - ② RBW = 120 kHz
  - ③ VBW  $\geq$  RBW
  - ④ Detector = quasi peak
  - ⑤ Sweep time = auto
  - ⑥ Trace = max hold
2. Spectrum analyzer settings for  $f \geq 1$  GHz: Peak
  - ① Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
  - ② RBW = 1 MHz
  - ③ VBW = 3 MHz ( $\geq 3 \times$  RBW)
  - ④ Detector = peak
  - ⑤ Sweep time = auto
  - ⑥ Trace = max hold
  - ⑦ Trace was allowed to stabilize

3. Spectrum analyzer settings for  $f \geq 1$  GHz: Average

- ① Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
- ② RBW = 1 MHz
- ③ VBW  $\geq 3 \times$  RBW
- ④ Detector = RMS, if span/(# of points in sweep)  $\leq$  (RBW/2). Satisfying this condition may require increasing the number of points in the sweep or reducing the span. If this condition cannot be satisfied, then the detector mode shall be set to peak.
- ⑤ Averaging type = power(i.e., RMS)
  - 1) As an alternative, the detector and averaging type may be set for linear voltage averaging.
  - 2) Some instruments require linear display mode in order to use linear voltage averaging. Log or dB averaging shall not be used.
- ⑥ Sweep = auto
- ⑦ Trace = max hold
- ⑧ Perform a trace average of at least 100 traces.
- ⑨ A correction factor shall be added to the measurement results prior to comparing to the emission limit in order to compute the emission level that would have been measured had the test been performed at 100 percent duty cycle. The correction factor is computed as follows:
  - 1) If power averaging (RMS) mode was used in step ⑤, then the applicable correction factor is  $10 \log(1/x)$ , where x is the duty cycle.
  - 2) If linear voltage averaging mode was used in step ⑤, then the applicable correction factor is  $20 \log(1/x)$ , where x is the duty cycle.
  - 3) If a specific emission is demonstrated to be continuous ( $\geq 98$  percent duty cycle) rather than turning on and off with the transmit cycle, then no duty cycle correction is required for that emission.

**Note.**

1.  $f < 30$  MHz, extrapolation factor of 40 dB/decade of distance.  $F_d = 40 \log(D_m/D_s)$   
 $f \geq 30$  MHz, extrapolation factor of 20 dB/decade of distance.  $F_d = 20 \log(D_m/D_s)$   
Where:  
 $F_d$  = Distance factor in dB  
 $D_m$  = Measurement distance in meters  
 $D_s$  = Specification distance in meters
2. CF(Correction factors(dB)) = Antenna factor(dB/m) + Cable loss(dB) + or Amp. gain(dB) + or  $F_d$ (dB)
4. Field strength(dB $\mu$ V/m) = Level(dB $\mu$ V) + CF (dB) + or DCF(dB)
5. Margin(dB) = Limit(dB $\mu$ V/m) - Field strength(dB $\mu$ V/m)
6. Emissions below 18 GHz were measured at a 3 meter test distance while emissions above 18 GHz were measured at a 1 meter test distance with the application of a distance correction factor.
7. The fundamental of the EUT was investigated in three orthogonal orientations X, Y and Z, it was determined that **X orientation** was worst-case orientation; therefore, all final radiated testing was performed with the EUT in **X orientation**.
8. The worst-case emissions are reported however emissions whose levels were not within 20 dB of respective limits were not reported.
9. All channels, modes (e.g. 802.11a, 802.11n (20 MHz/40 MHz BW), 802.11ac (20 MHz/40 MHz /80 MHz)), and modulations/data rates were investigated among all UNII bands. Only the radiated emissions of the configuration that produced the worst case emissions are reported in this section.

### Limit

According to 15.209(a), for an intentional radiator devices, the general required of field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values :

Frequency (MHz)	Distance (Meters)	Radiated ( $\mu\text{V/m}$ )
0.009 ~ 0.490	300	2400/F(kHz)
0.490 ~ 1.705	30	24000/F(kHz)
1.705 ~ 30.0	30	30
30 ~ 88	3	100**
88 ~ 216	3	150**
216 ~ 960	3	200**
Above 960	3	500

\*\*Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54 ~ 72 MHz, 76 ~ 88 MHz, 174 ~ 216 MHz or 470 ~ 806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

According to 15.407(b), (b) Undesirable emission limits: Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

- (1) For transmitters operating in the 5.15–5.25 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an e.i.r.p. of  $-27$  dBm/MHz.
- (2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of  $-27$  dBm/MHz.
- (3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of  $-27$  dBm/MHz.
- (4) For transmitters operating in the 5.725-5.85 GHz band:
  - i) All emissions shall be limited to a level of  $-27$  dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.
  - ii) Devices certified before March 2, 2017 with antenna gain greater than 10 dBi may demonstrate compliance with the emission limits in §15.247(d), but manufacturing, marketing and importing of devices certified under this alternative must cease by March 2, 2018. Devices certified before March 2, 2018 with antenna gain of 10 dBi or less may demonstrate compliance with the emission limits in §15.247(d), but manufacturing, marketing and importing of devices certified under this alternative must cease before March 2, 2020.
- (5) The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.
- (6) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in § 15.209. Further, any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in § 15.207.
- (7) The provisions of §15.205 apply to intentional radiators operating under this section.
- (8) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the upper and lower frequency band edges as the design of the equipment permits.



**Duty cycle**

Regarding to KDB 558074 D01\_v03r05, 6.0, the maximum duty cycles of all modes were investigated and set the spectrum analyzer as below.

Set RBW  $\geq$  OBW if possible; otherwise, set RBW to the largest available value. Set detector = peak or average. The zero-span measurement method shall not be used unless both RBW and VBW are  $> 50/T$  and the number of sweep points across duration T exceeds 100.

For the band 5.15-5.25 GHz

Test mode	T <sub>on</sub> time (ms)	Period (ms)	Duty cycle (Linear)	Duty cycle (%)	Duty cycle correction factor (dB)
802.11a	10.00	10.00	1	100	0
802.11n_HT20	10.00	10.00	1	100	0
802.11n_HT40	10.00	10.00	1	100	0
802.11n_VHT20	10.00	10.00	1	100	0
802.11n_VHT40	10.00	10.00	1	100	0
802.11n_VHT80	10.00	10.00	1	100	0

For the band 5.250-5.350 GHz

Test mode	T <sub>on</sub> time (ms)	Period (ms)	Duty cycle (Linear)	Duty cycle (%)	Duty cycle correction factor (dB)
802.11a	10.00	10.00	1	100	0
802.11n_HT20	10.00	10.00	1	100	0
802.11n_HT40	10.00	10.00	1	100	0
802.11n_VHT20	10.00	10.00	1	100	0
802.11n_VHT40	10.00	10.00	1	100	0
802.11n_VHT80	10.00	10.00	1	100	0

For the band 5.470-5.725 GHz

Test mode	T <sub>on</sub> time (ms)	Period (ms)	Duty cycle (Linear)	Duty cycle (%)	Duty cycle correction factor (dB)
802.11a	10.00	10.00	1	100	0
802.11n_HT20	10.00	10.00	1	100	0
802.11n_HT40	10.00	10.00	1	100	0
802.11n_VHT20	10.00	10.00	1	100	0
802.11n_VHT40	10.00	10.00	1	100	0
802.11n_VHT80	10.00	10.00	1	100	0



For the band 5.725-5.85 GHz

Test mode	T <sub>on</sub> time (ms)	Period (ms)	Duty cycle (Linear)	Duty cycle (%)	Duty cycle correction factor (dB)
802.11a	10.00	10.00	1	100	0
802.11n_HT20	10.00	10.00	1	100	0
802.11n_HT40	10.00	10.00	1	100	0
802.11n_VHT20	10.00	10.00	1	100	0
802.11n_VHT40	10.00	10.00	1	100	0
802.11n_VHT80	10.00	10.00	1	100	0

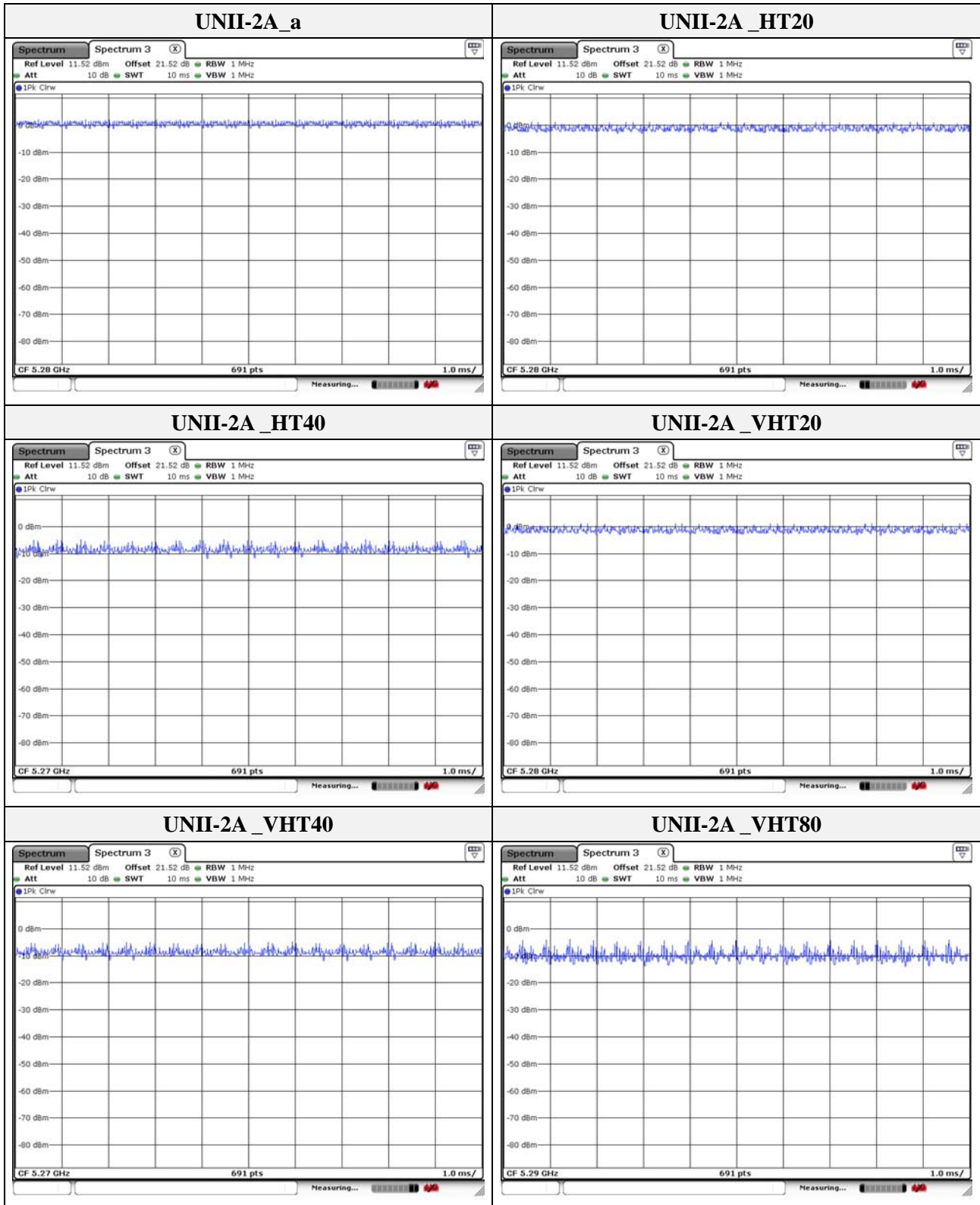
**Note:**

Duty cycle (Linear) = T<sub>on</sub> time/Period

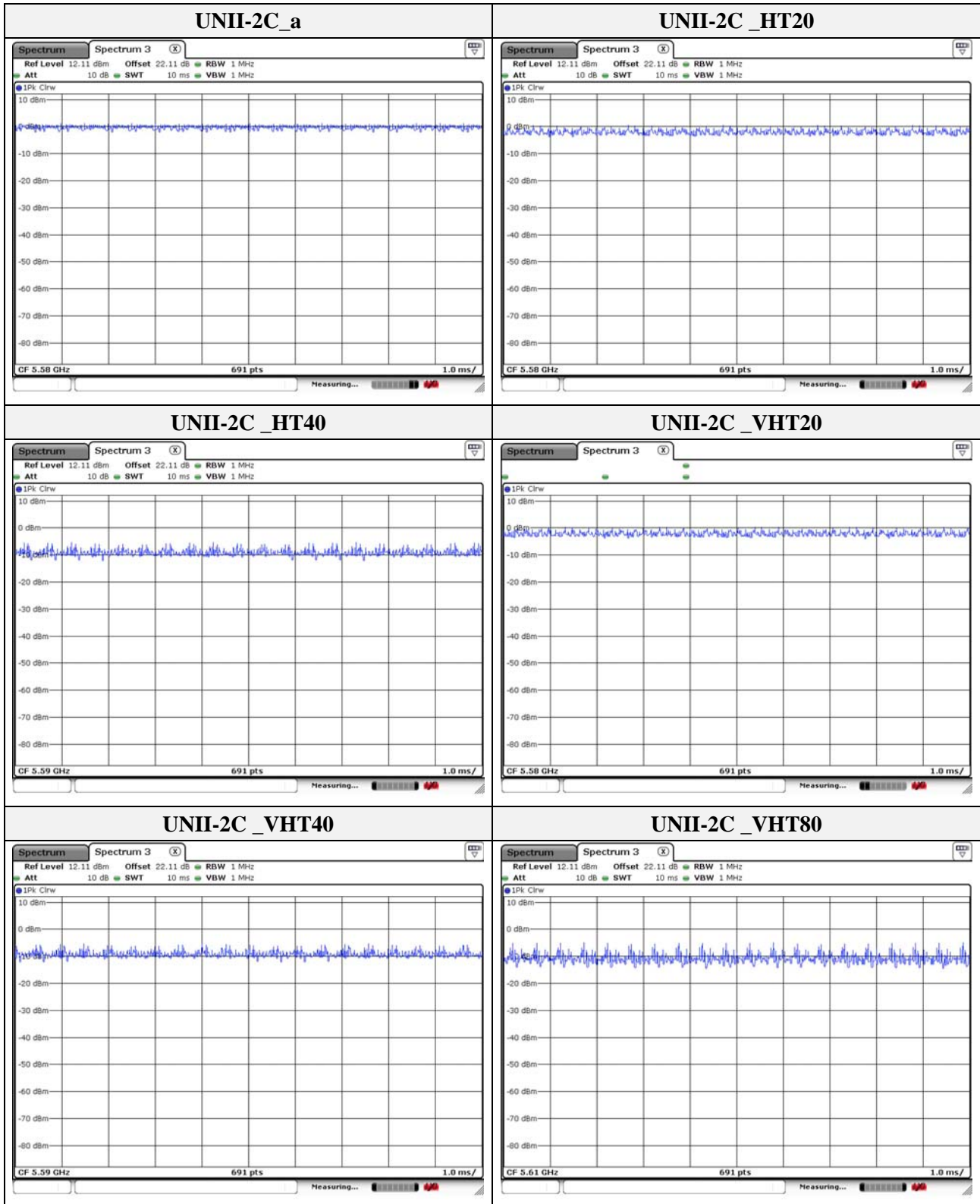
DCF(Duty cycle correction factor (dB)) = 10log(1/duty cycle)



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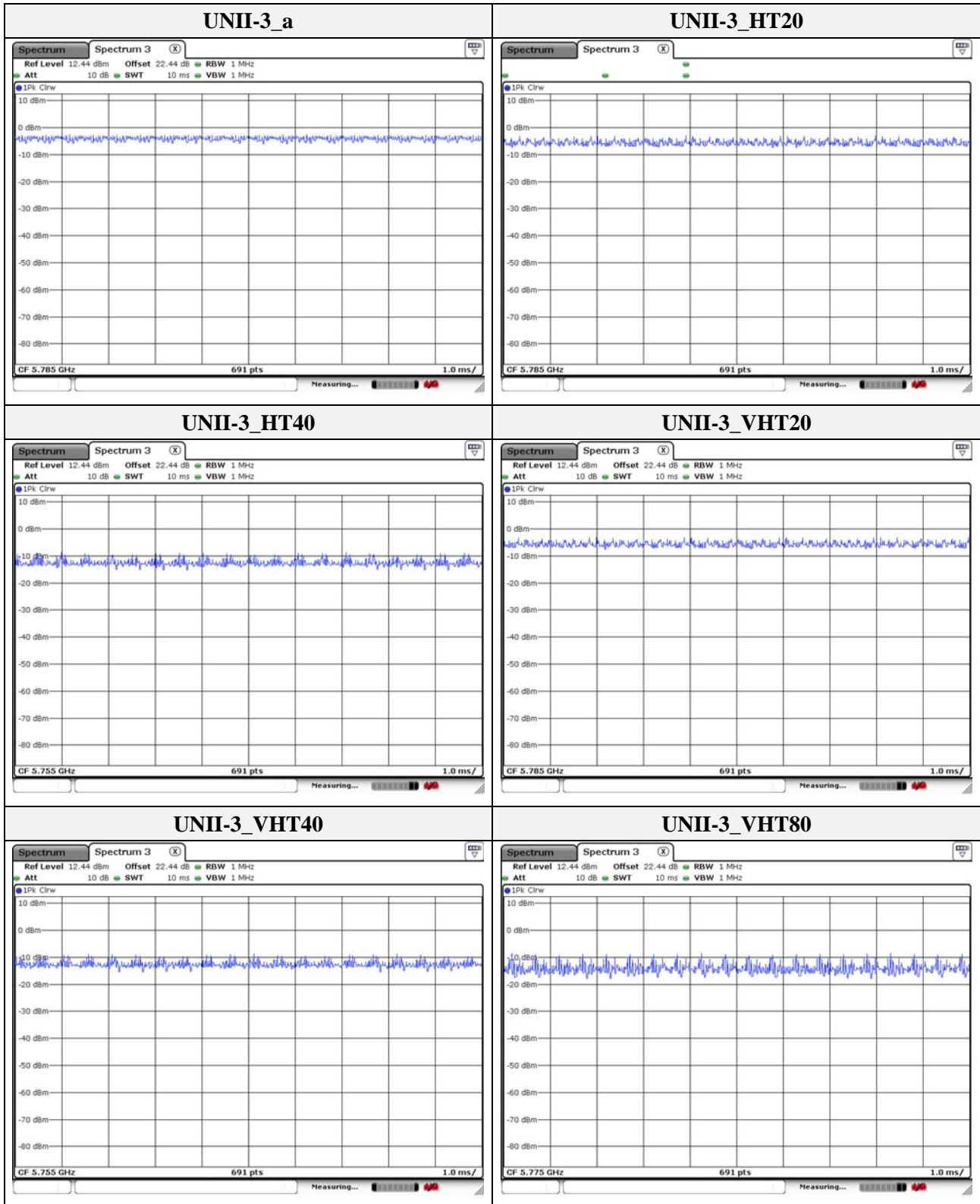


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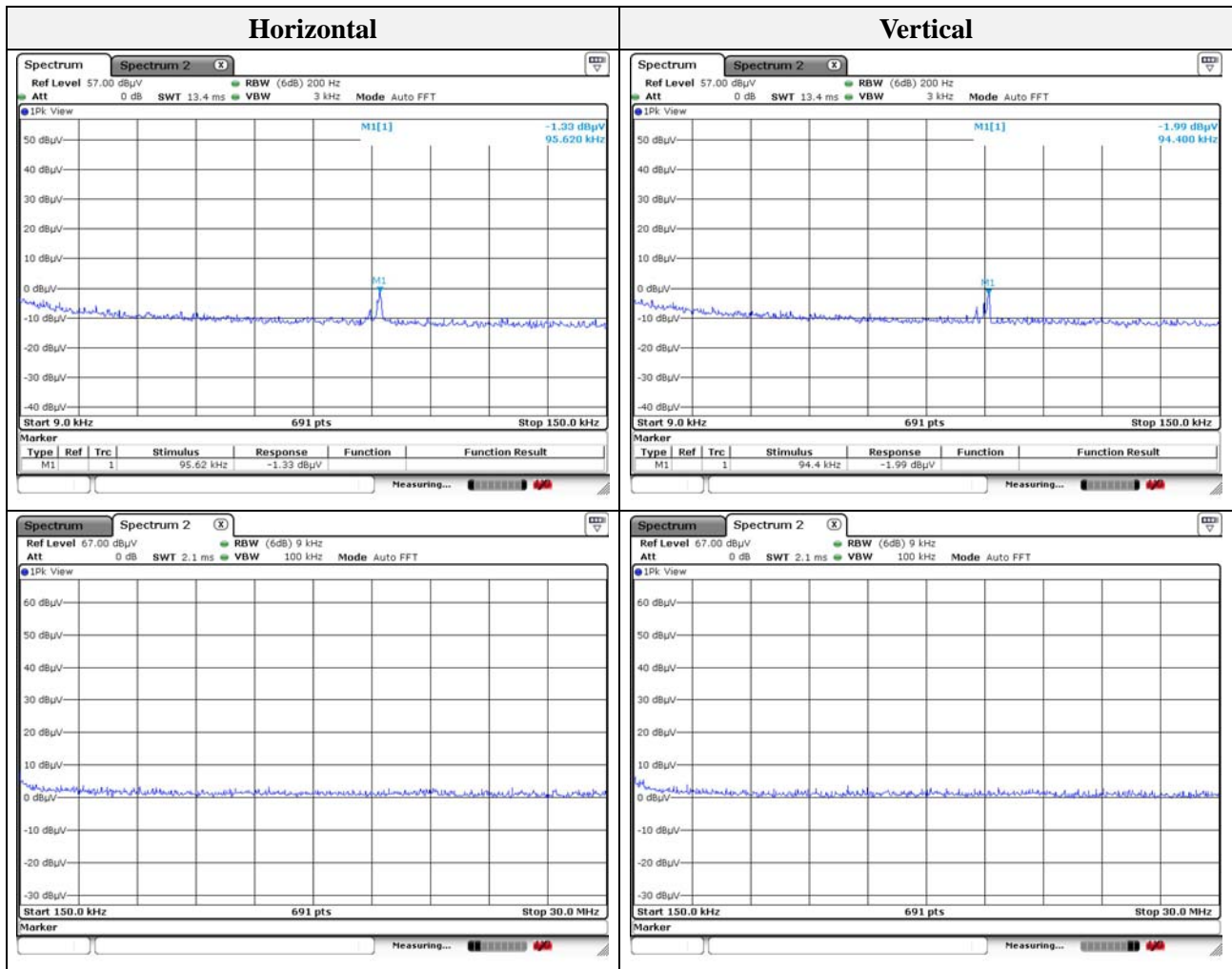


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**Test results (Below 30 MHz) – Worst case**

Mode: UNII-2C  
 Distance of measurement: 3 meter  
 Channel: 116

Frequency (MHz)	Level (dB $\mu$ V)	Ant. Pol. (H/V)	CF (dB)	F <sub>d</sub> (dB)	Field strength (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)
No spurious emissions were detected within 20 dB of the limit							

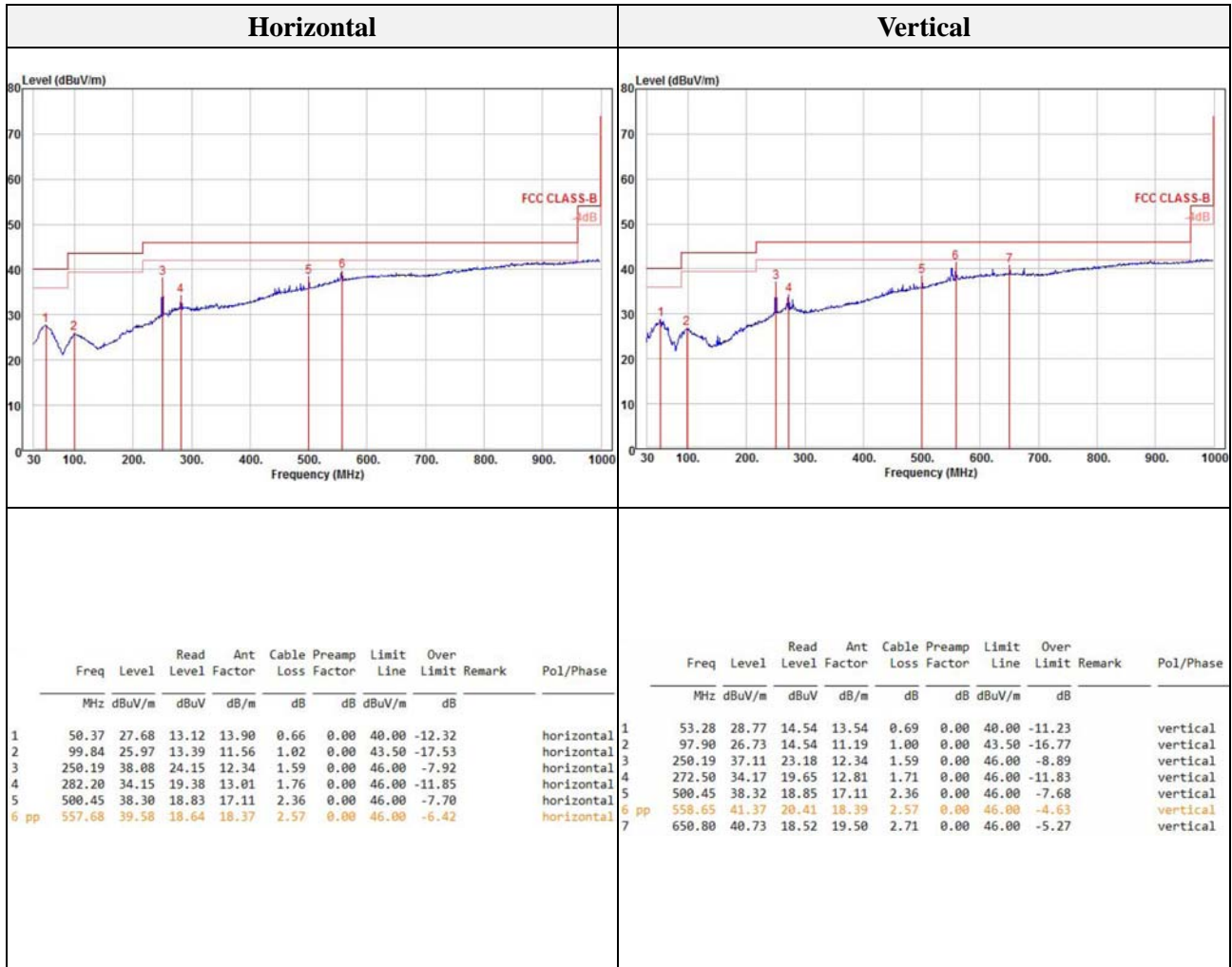


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**Test results (Below 1 000 MHz) – Worst case**

Mode: UNII-2C  
 Distance of measurement: 3 meter  
 Channel: 116



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**Test results (Above 1 000 MHz)**

Mode: UNII-1  
 Distance of measurement: 3 meter  
 Channel: 36

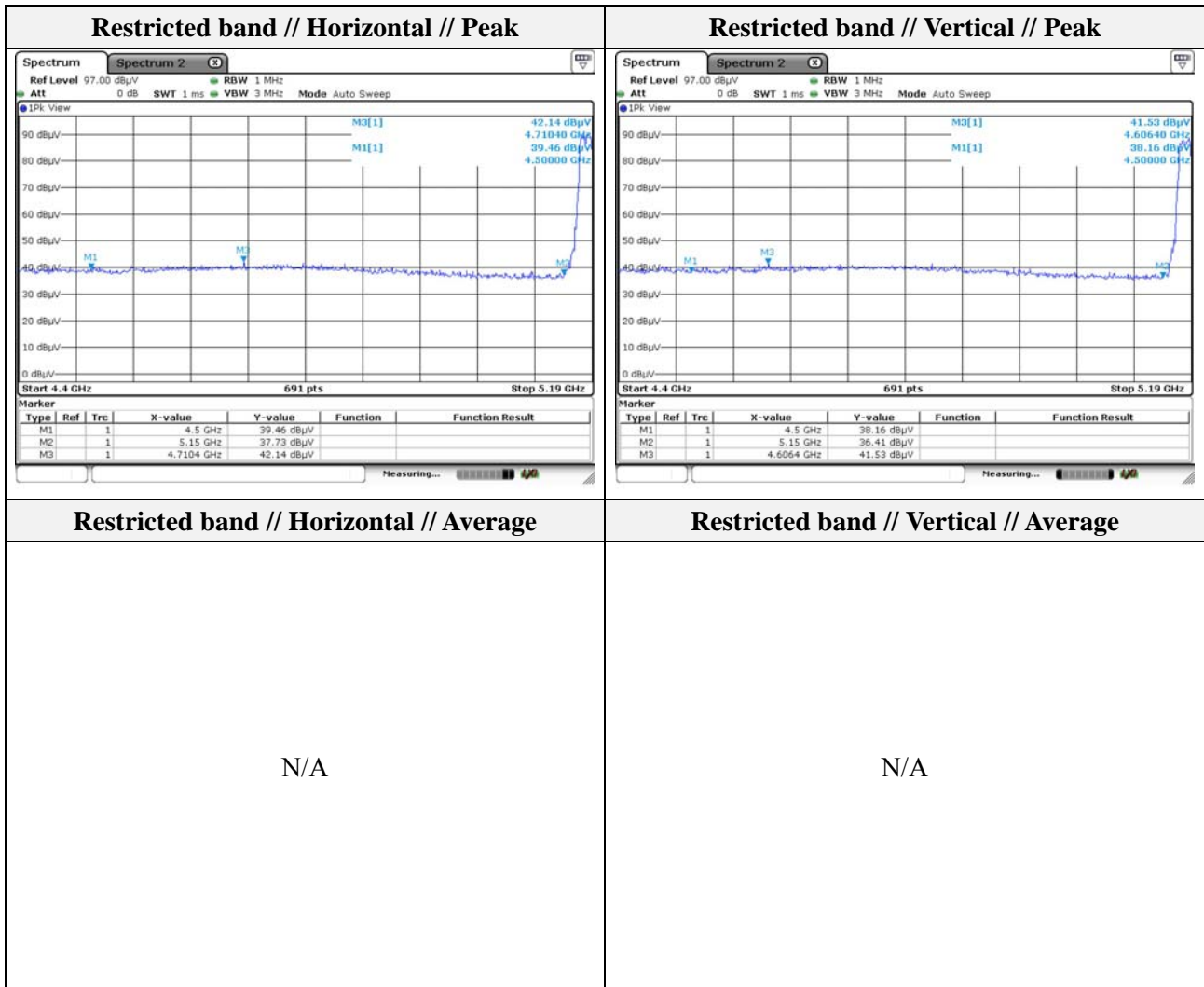
**- Spurious**

Frequency (MHz)	Level (dB $\mu$ V)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)
1835.70	49.56	Peak	H	-5.51	-	44.05	74.00	29.95
2349.50	45.42	Peak	H	-2.47	-	42.95	74.00	31.05
2168.60	45.13	Peak	V	-3.40	-	41.73	74.00	32.27
2429.10	45.42	Peak	V	-2.07	-	43.35	74.00	30.65

**- Band edge**

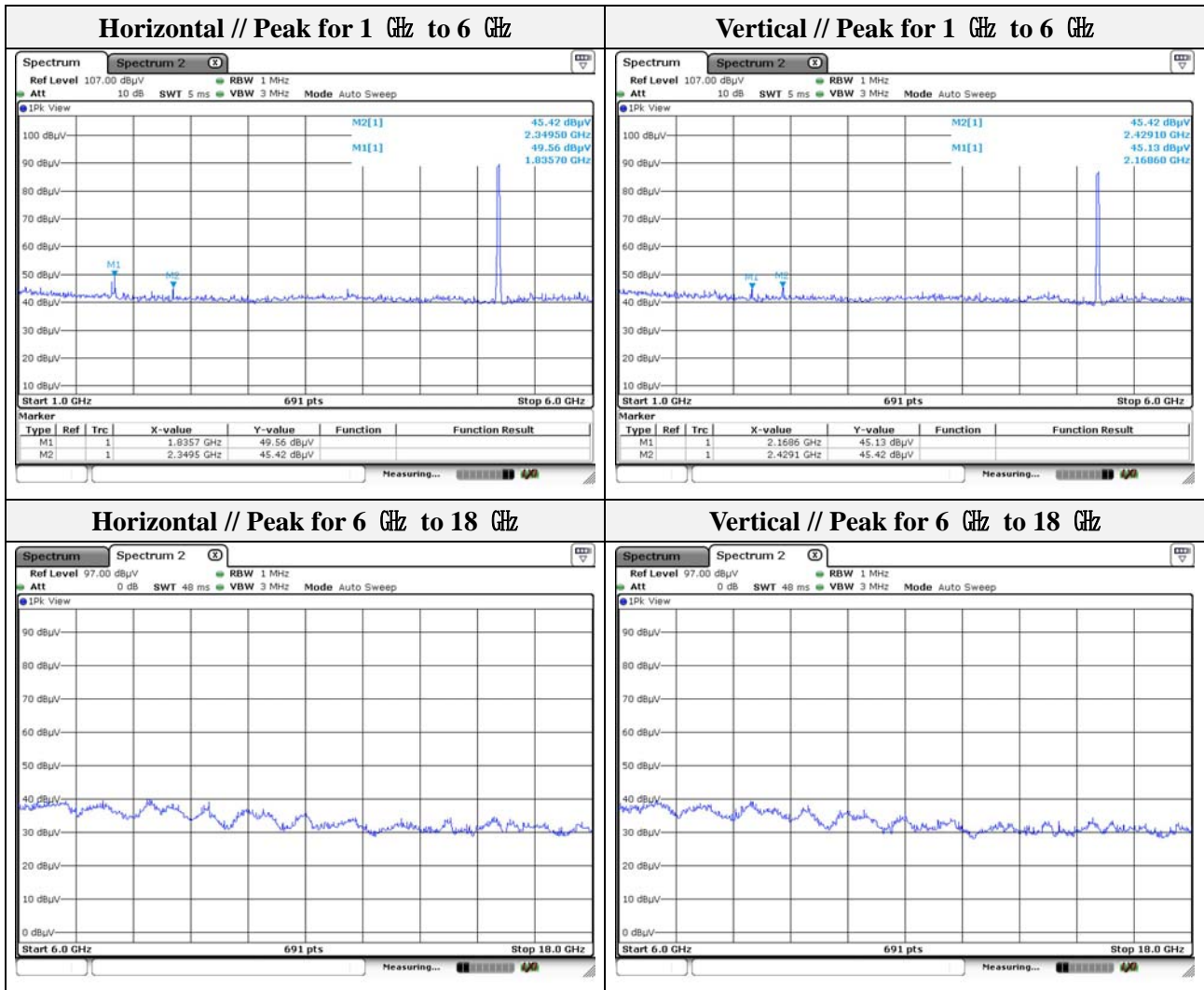
Frequency (MHz)	Level (dB $\mu$ V)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)
4710.40	42.14	Peak	H	3.25	-	45.39	74.00	28.61
4606.40	41.53	Peak	V	3.37	-	44.90	74.00	29.10

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Note.

1. Average test was not performed because peak result is lower than the average limit.



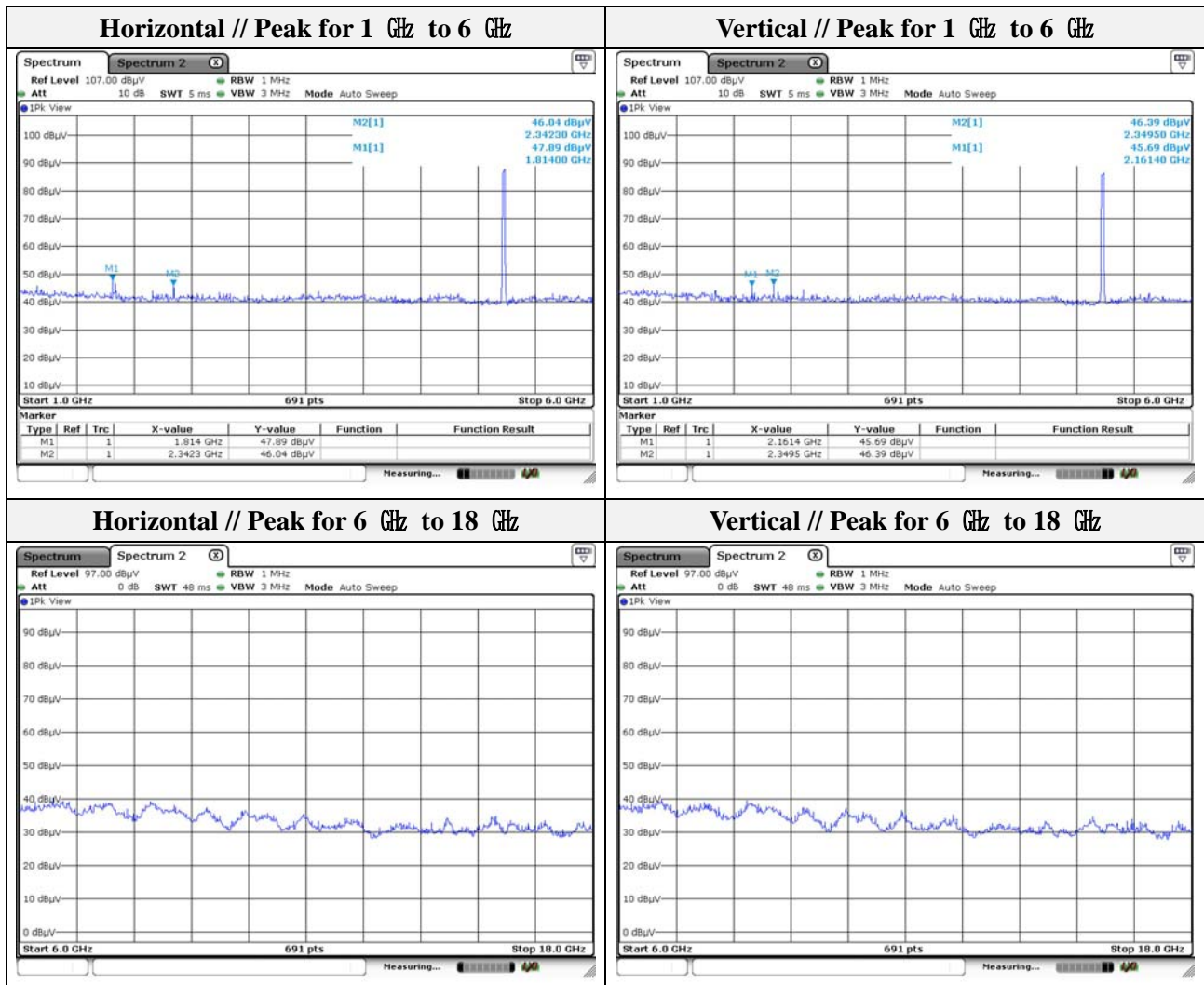
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Mode: UNII-1  
 Distance of measurement: 3 meter  
 Channel: 44

- **Spurious**

Frequency (MHz)	Level (dB $\mu$ V)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)
1814.00	47.89	Peak	H	-5.68	-	42.21	74.00	31.79
2342.30	46.04	Peak	H	-2.51	-	43.53	74.00	30.47
2161.40	45.69	Peak	V	-3.43	-	42.26	74.00	31.74
2349.50	46.39	Peak	V	-2.47	-	43.92	74.00	30.08

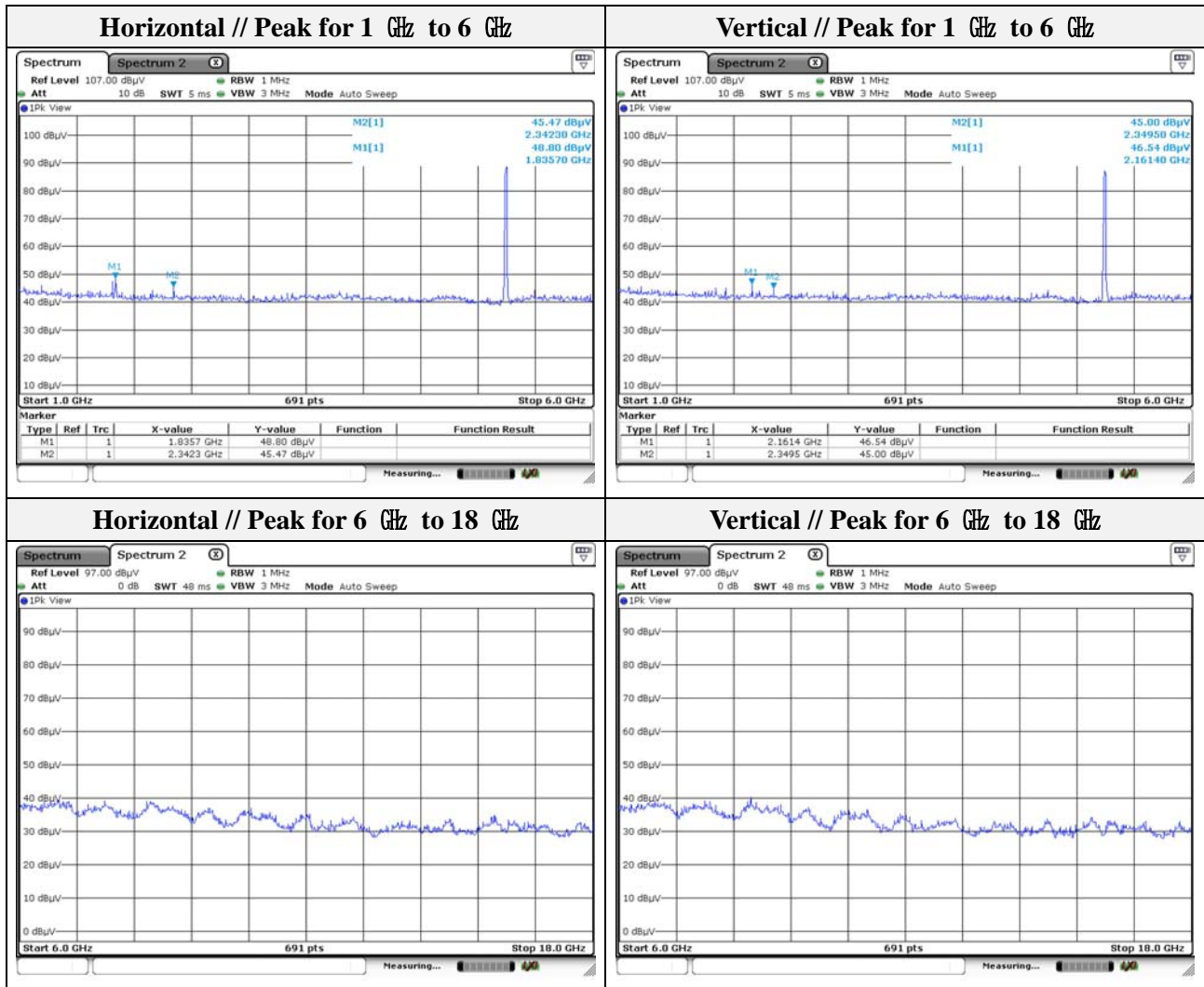


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Mode: UNII-1  
 Distance of measurement: 3 meter  
 Channel: 48

**- Spurious**

Frequency (MHz)	Level (dB $\mu$ V)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)
1835.70	48.80	Peak	H	-5.51	-	43.29	74.00	30.71
2342.30	45.47	Peak	H	-2.51	-	42.96	74.00	31.04
2161.40	46.54	Peak	V	-3.43	-	43.11	74.00	30.89
2349.50	45.00	Peak	V	-2.47	-	42.53	74.00	31.47



Note.

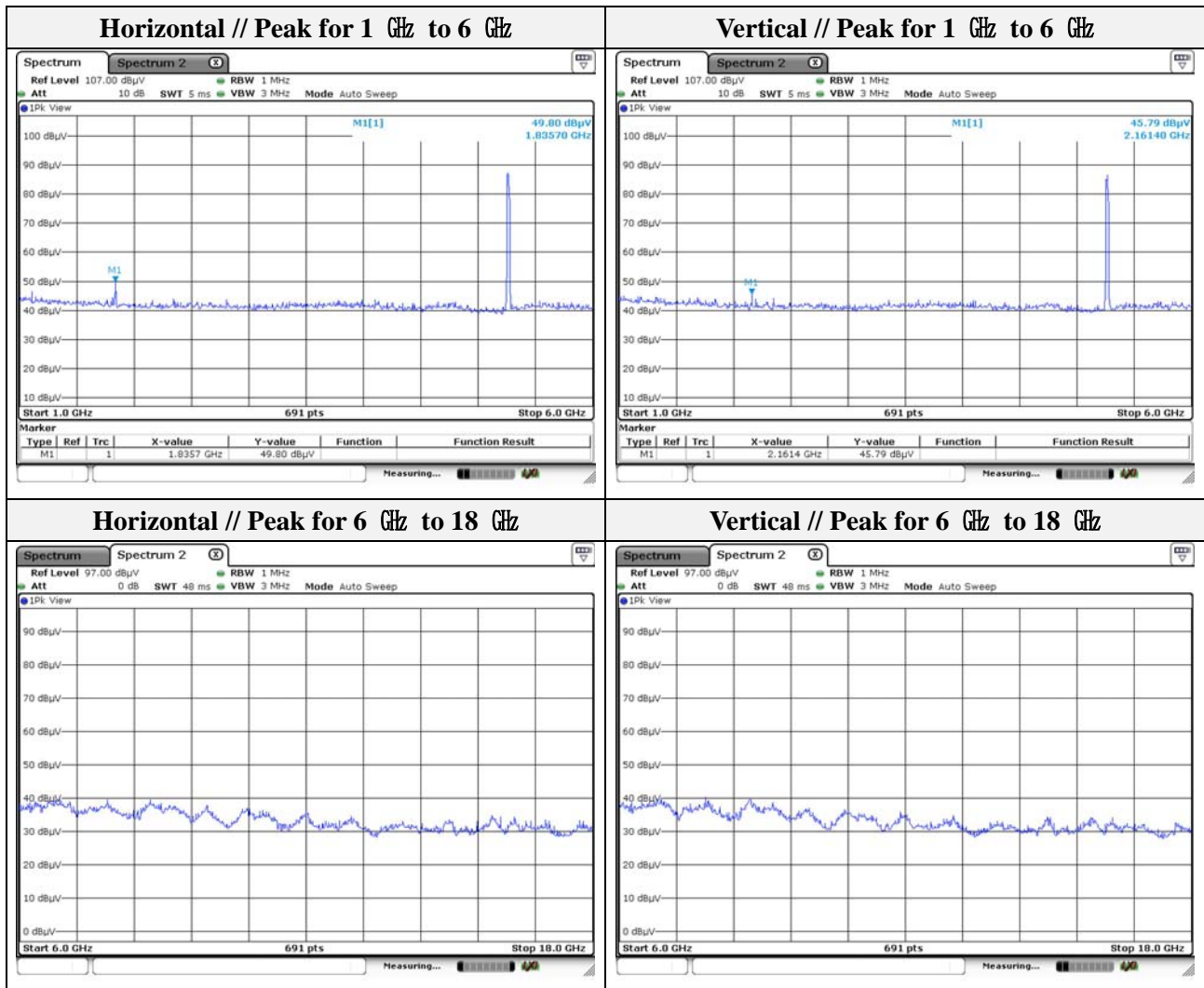
1. No spurious emission were detected above 6 GHz.

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Mode: UNII-2A  
 Distance of measurement: 3 meter  
 Channel: 52

**- Spurious**

Frequency (MHz)	Level (dBμV)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1835.70	49.80	Peak	H	-5.51	-	44.29	74.00	29.71
2161.40	45.79	Peak	V	-3.43	-	42.36	74.00	31.64

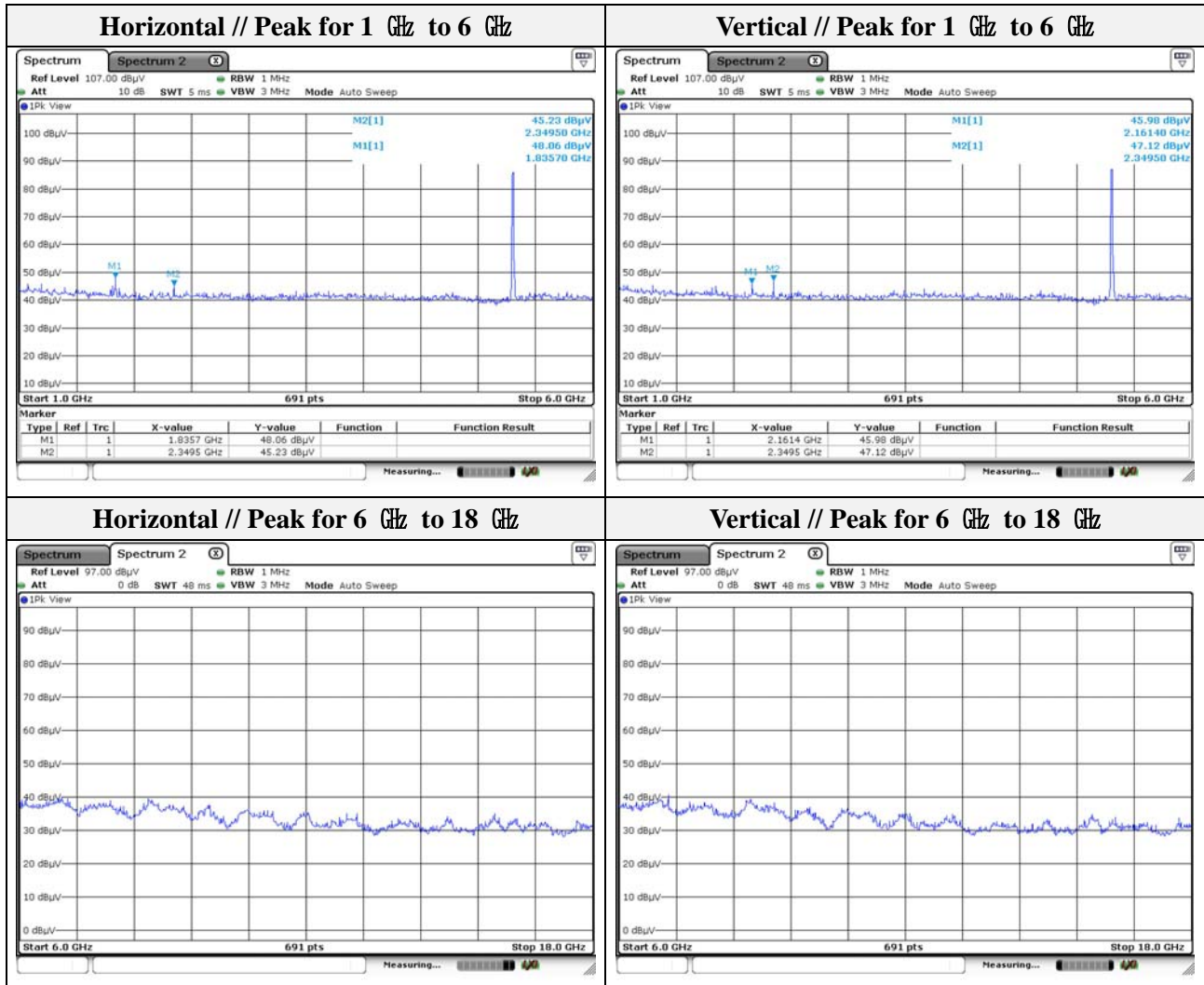


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Mode: UNII-2A  
 Distance of measurement: 3 meter  
 Channel: 56

**- Spurious**

Frequency (MHz)	Level (dBμV)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1835.70	48.06	Peak	H	-5.51	-	42.55	74.00	31.45
2349.50	45.23	Peak	H	-2.47	-	42.76	74.00	31.24
2161.40	45.98	Peak	V	-3.43	-	42.55	74.00	31.45
2349.50	47.12	Peak	V	-2.47	-	44.65	74.00	29.35



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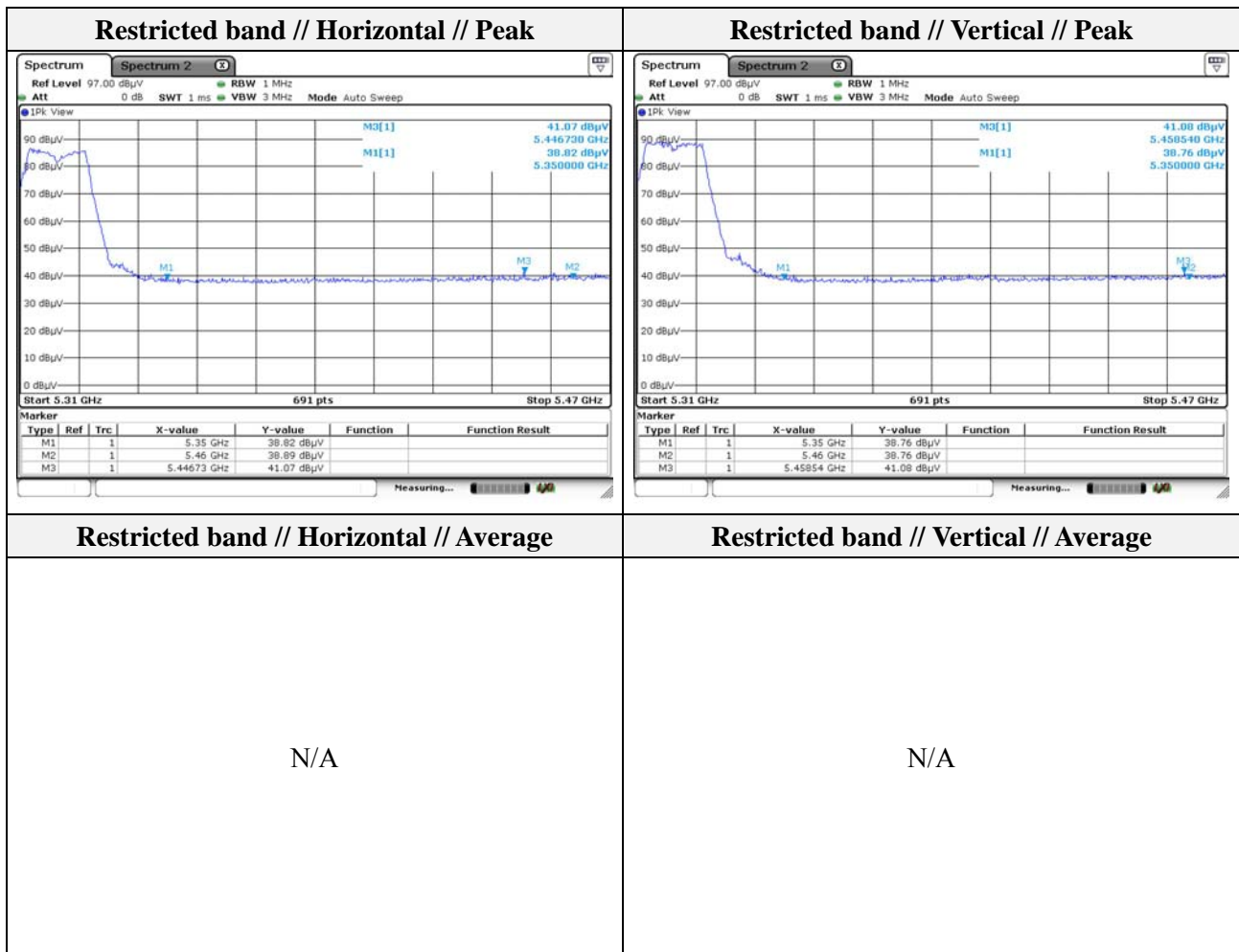
Mode: UNII-2A  
 Distance of measurement: 3 meter  
 Channel: 64

**- Spurious**

Frequency (MHz)	Level (dB $\mu$ V)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)
1835.70	48.48	Peak	H	-5.51	-	42.97	74.00	31.03
2161.40	46.37	Peak	V	-3.43	-	42.94	74.00	31.06
2349.50	45.44	Peak	V	-2.47	-	42.97	74.00	31.03

**- Band edge**

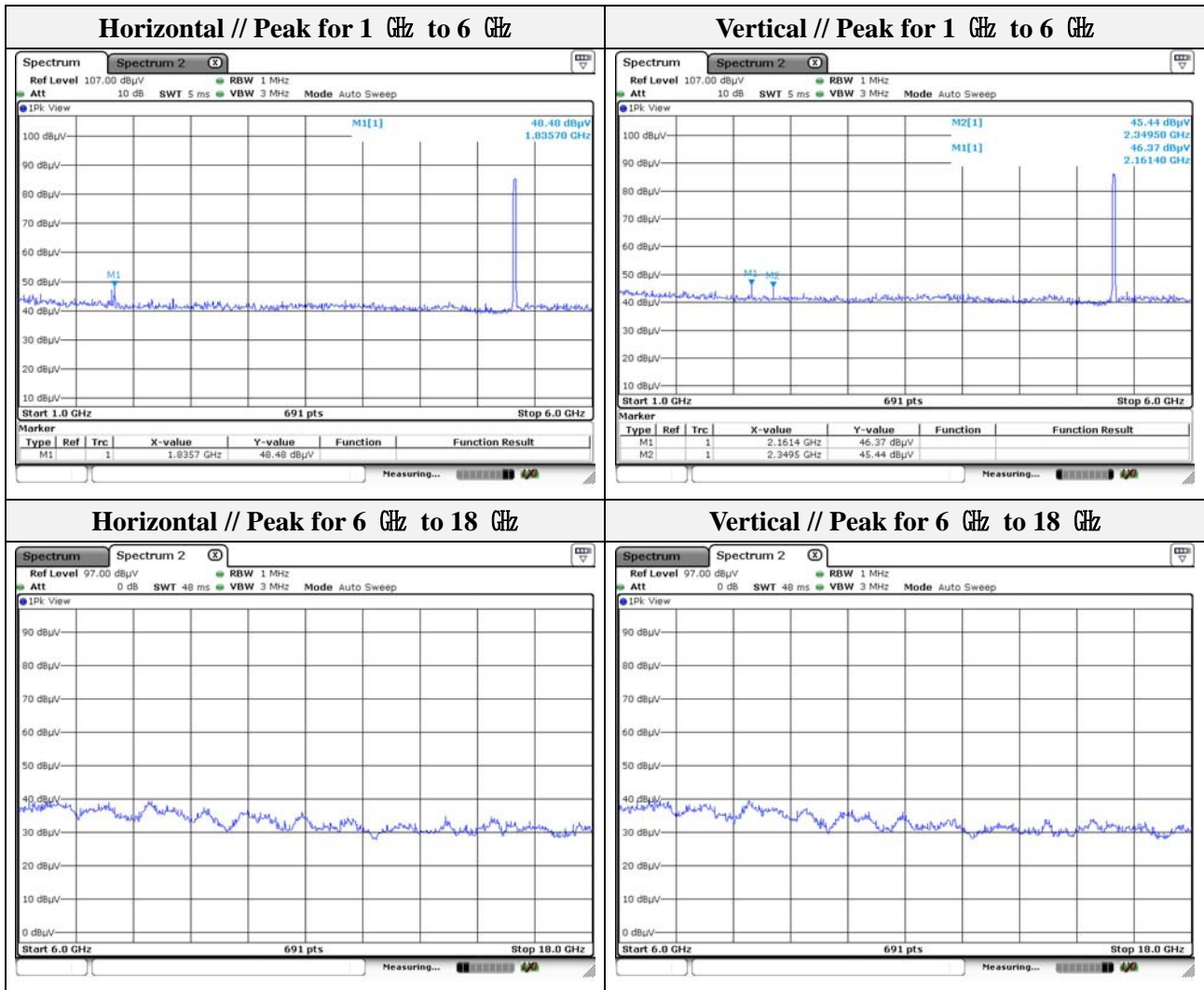
Frequency (MHz)	Level (dB $\mu$ V)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)
5446.73	41.07	Peak	H	3.28	-	44.35	74.00	29.65
5458.54	41.08	Peak	V	3.23	-	44.31	74.00	29.69



**Note.**

1. Average test was not performed because peak result is lower than the average limit.





Note.

1. No spurious emission were detected above 6 GHz.



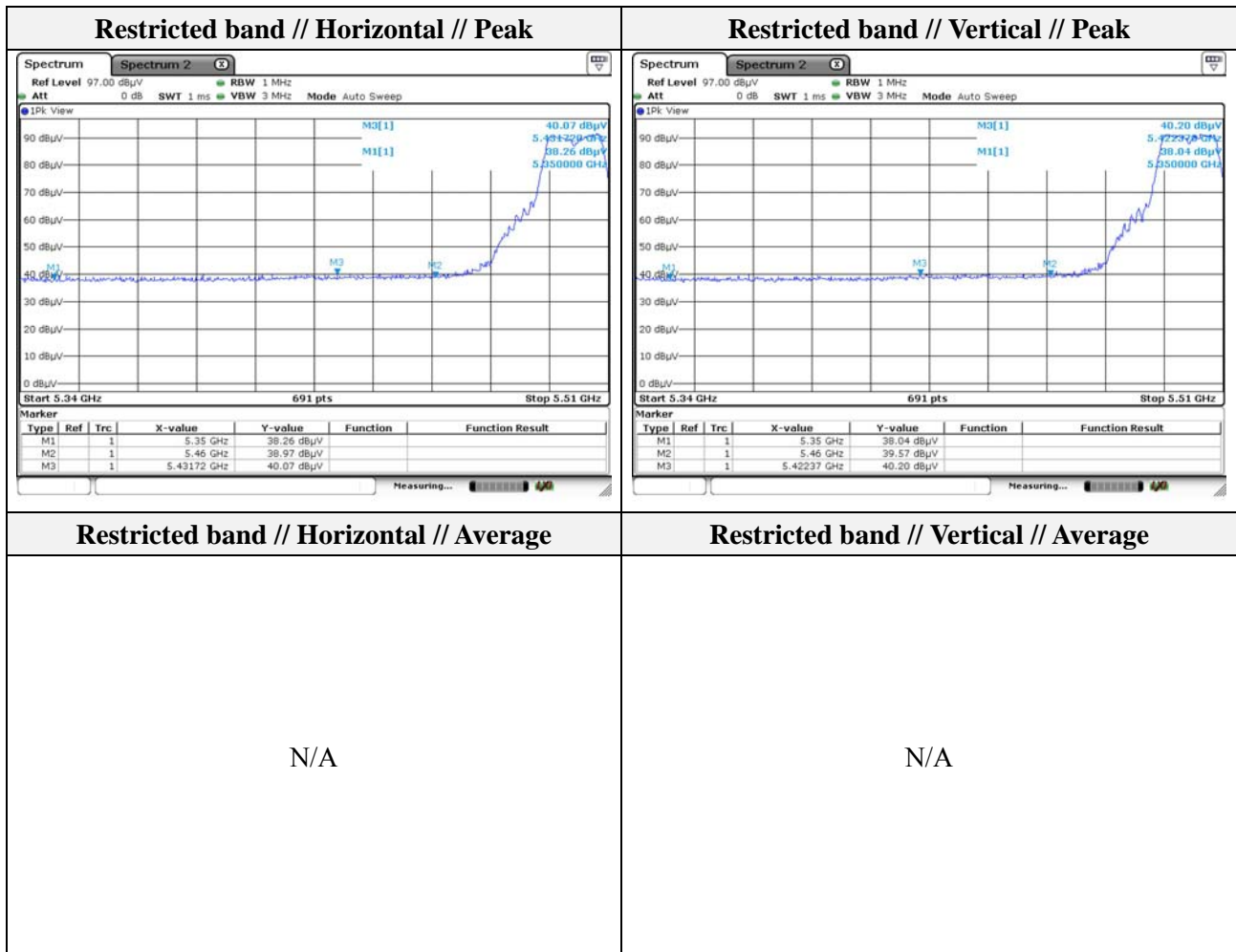
Mode: UNII-2C  
 Distance of measurement: 3 meter  
 Channel: 100

**- Spurious**

Frequency (MHz)	Level (dBμV)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1835.70	46.63	Peak	H	-5.51	-	41.12	74.00	32.88
2349.50	45.96	Peak	H	-2.47	-	43.49	74.00	30.51
2161.40	45.38	Peak	V	-3.43	-	41.95	74.00	32.05

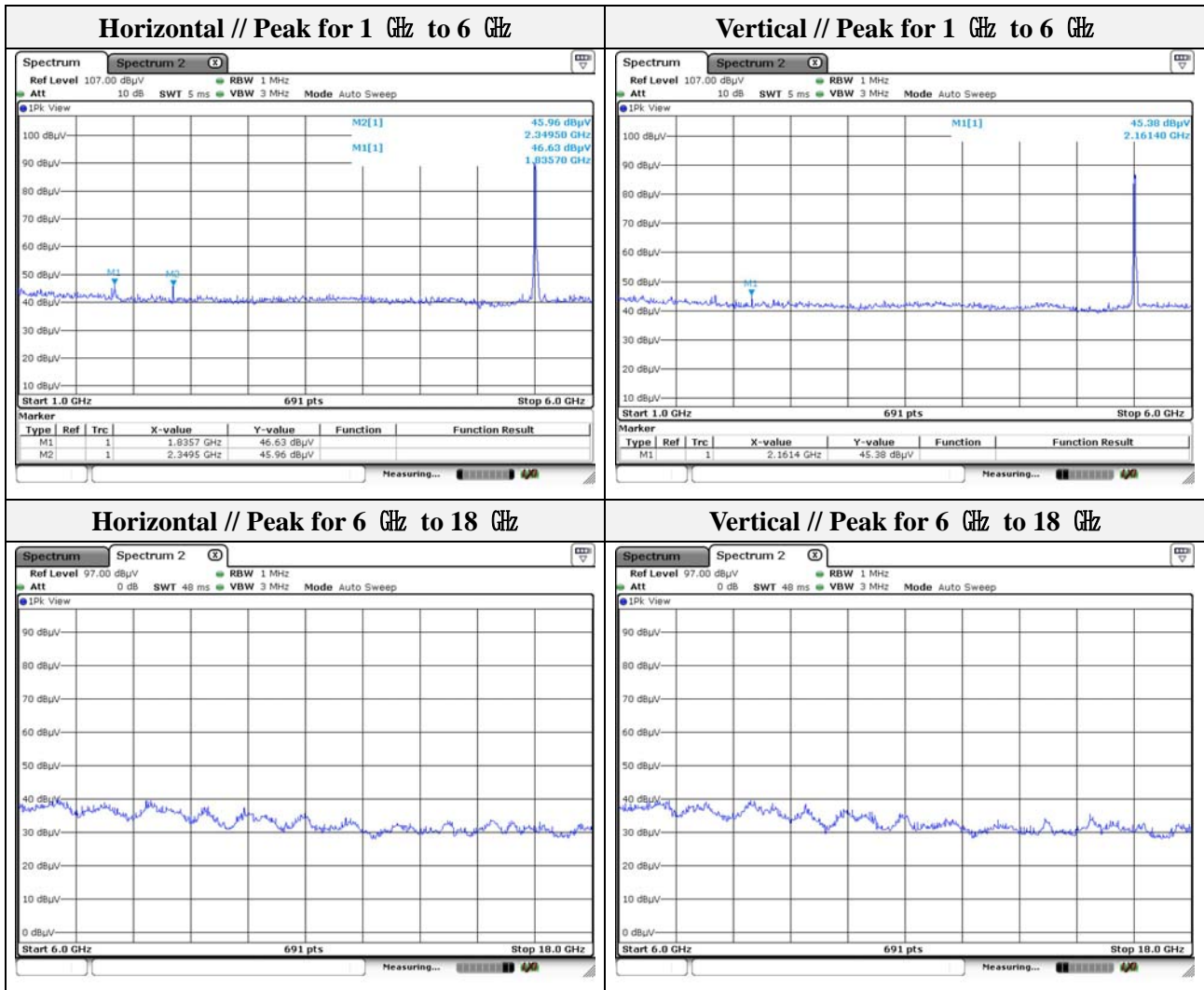
**- Band edge**

Frequency (MHz)	Level (dBμV)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
5431.72	40.07	Peak	H	3.34	-	43.41	74.00	30.59
5422.37	40.20	Peak	V	3.38	-	43.58	74.00	30.42



**Note.**

1. Average test was not performed because peak result is lower than the average limit.

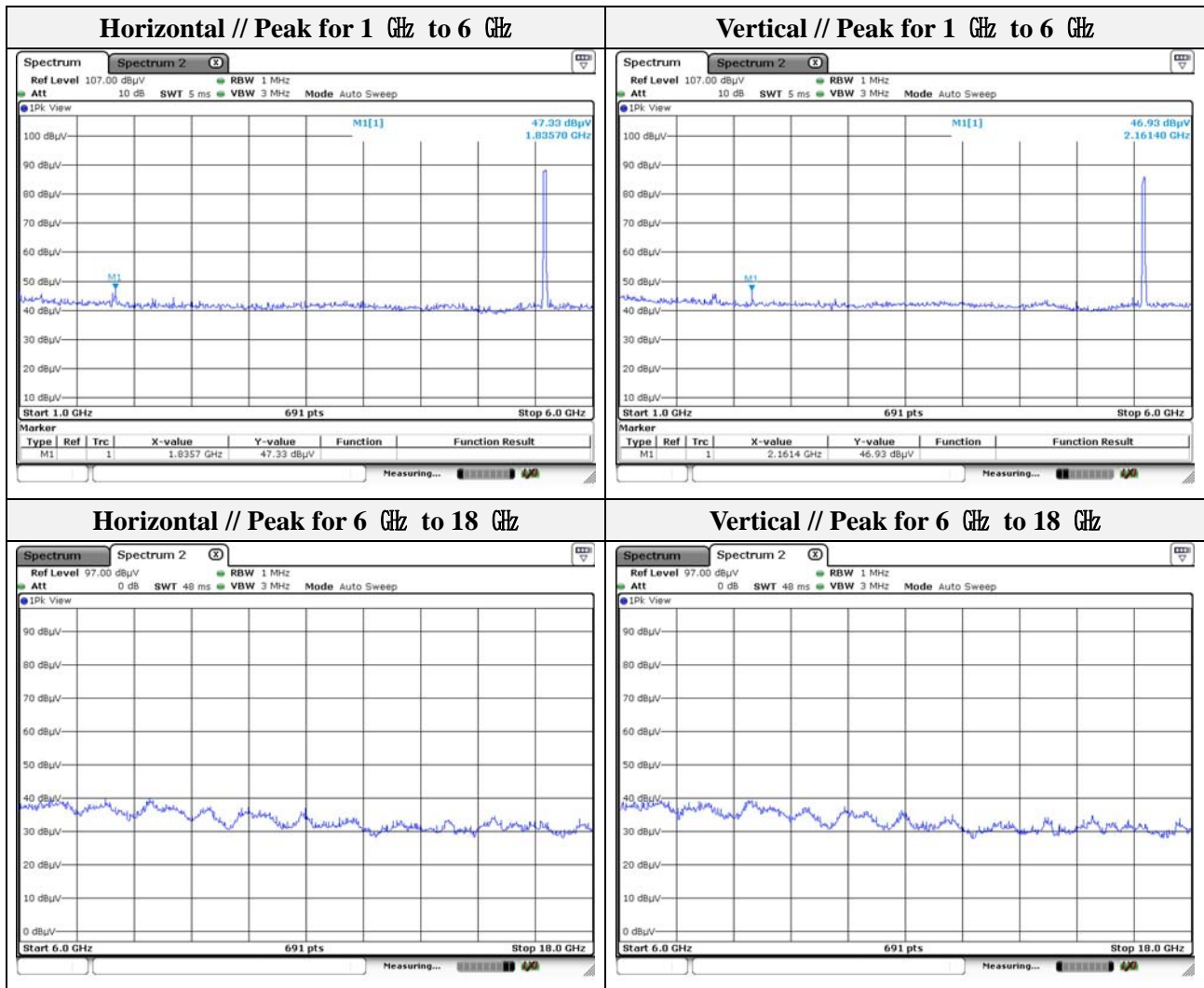


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Mode: UNII-2C  
 Distance of measurement: 3 meter  
 Channel: 116

**- Spurious**

Frequency (MHz)	Level (dB $\mu$ V)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)
1835.70	47.33	Peak	H	-5.51	-	41.82	74.00	32.18
2161.40	46.93	Peak	V	-3.43	-	43.50	74.00	30.50



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Mode: UNII-2C  
Distance of measurement: 3 meter  
Channel: 140

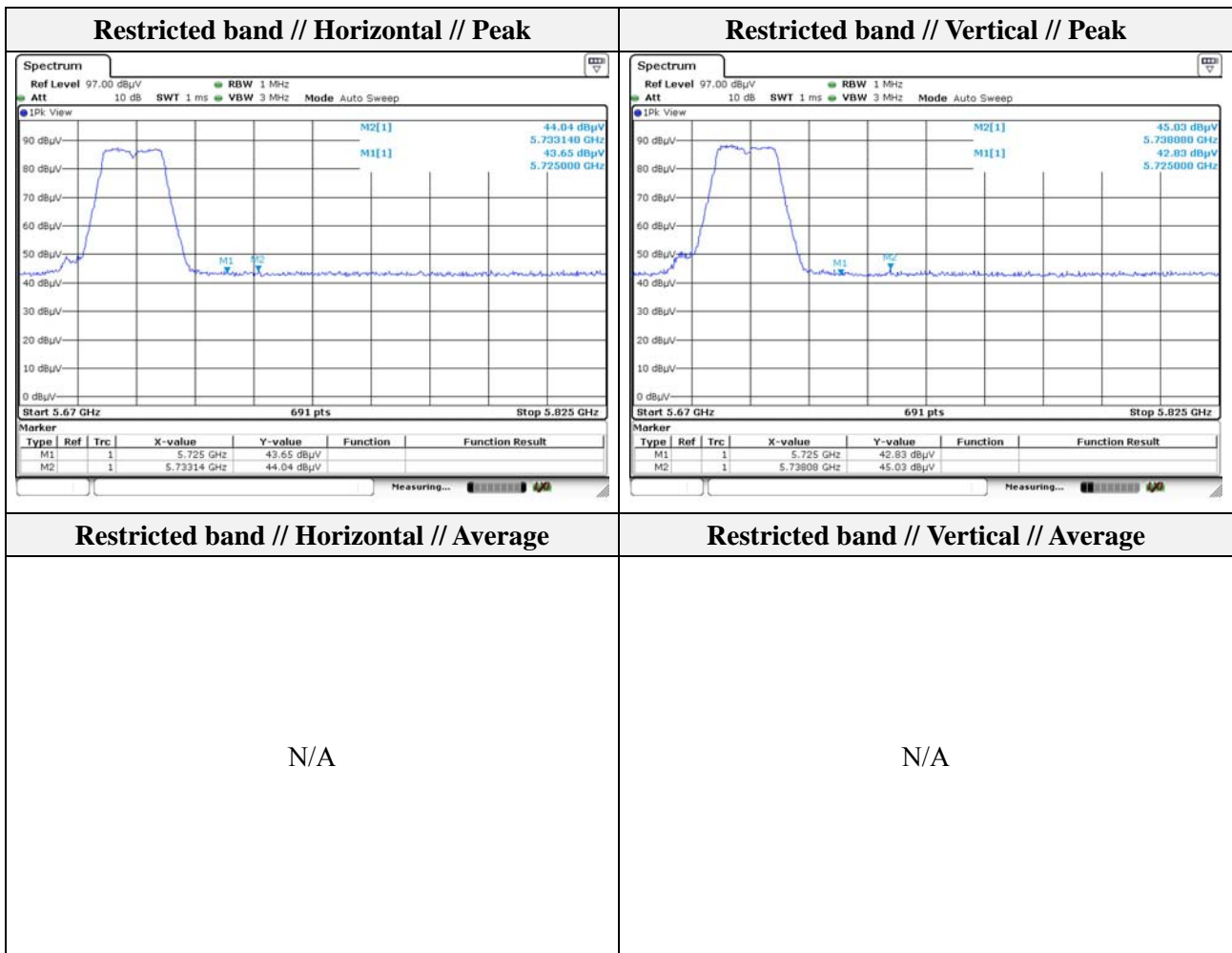
- **Spurious**

Frequency (MHz)	Level (dB $\mu$ V)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)
1835.70	48.55	Peak	H	-5.51	-	43.04	74.00	30.96
2342.30	46.45	Peak	H	-2.51	-	43.94	74.00	30.06
2161.40	46.67	Peak	V	-3.43	-	43.24	74.00	30.76
2349.50	45.58	Peak	V	-2.47	-	43.11	74.00	30.89

- **Band edge**

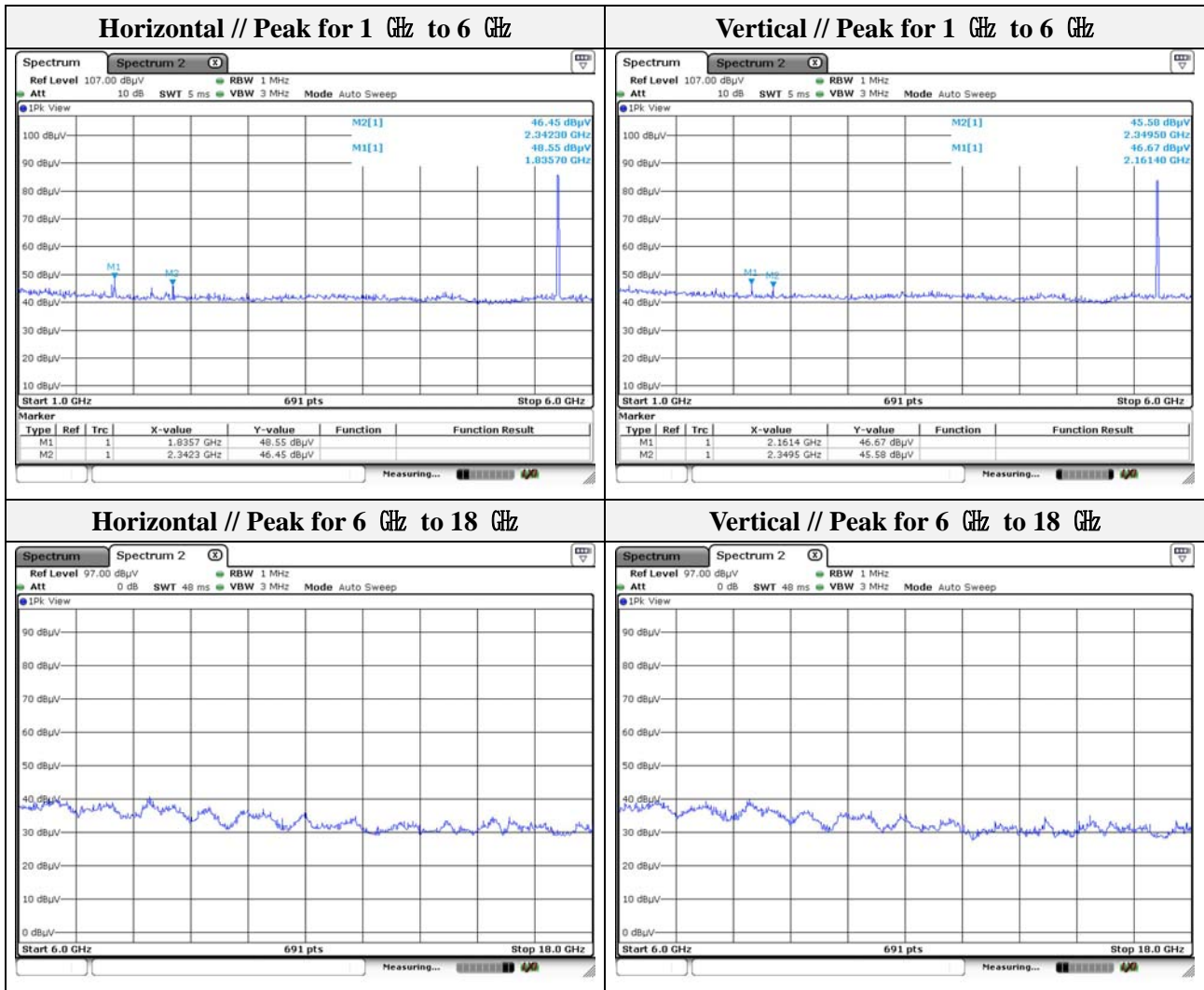
Frequency (MHz)	Level (dB $\mu$ V)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)
5733.14	44.04	Peak	H	2.10	-	46.14	68.20	22.06
5738.08	45.03	Peak	V	2.07	-	47.10	68.20	21.10

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Note.

1. Average test was not performed because peak result is lower than the average limit.



Note.

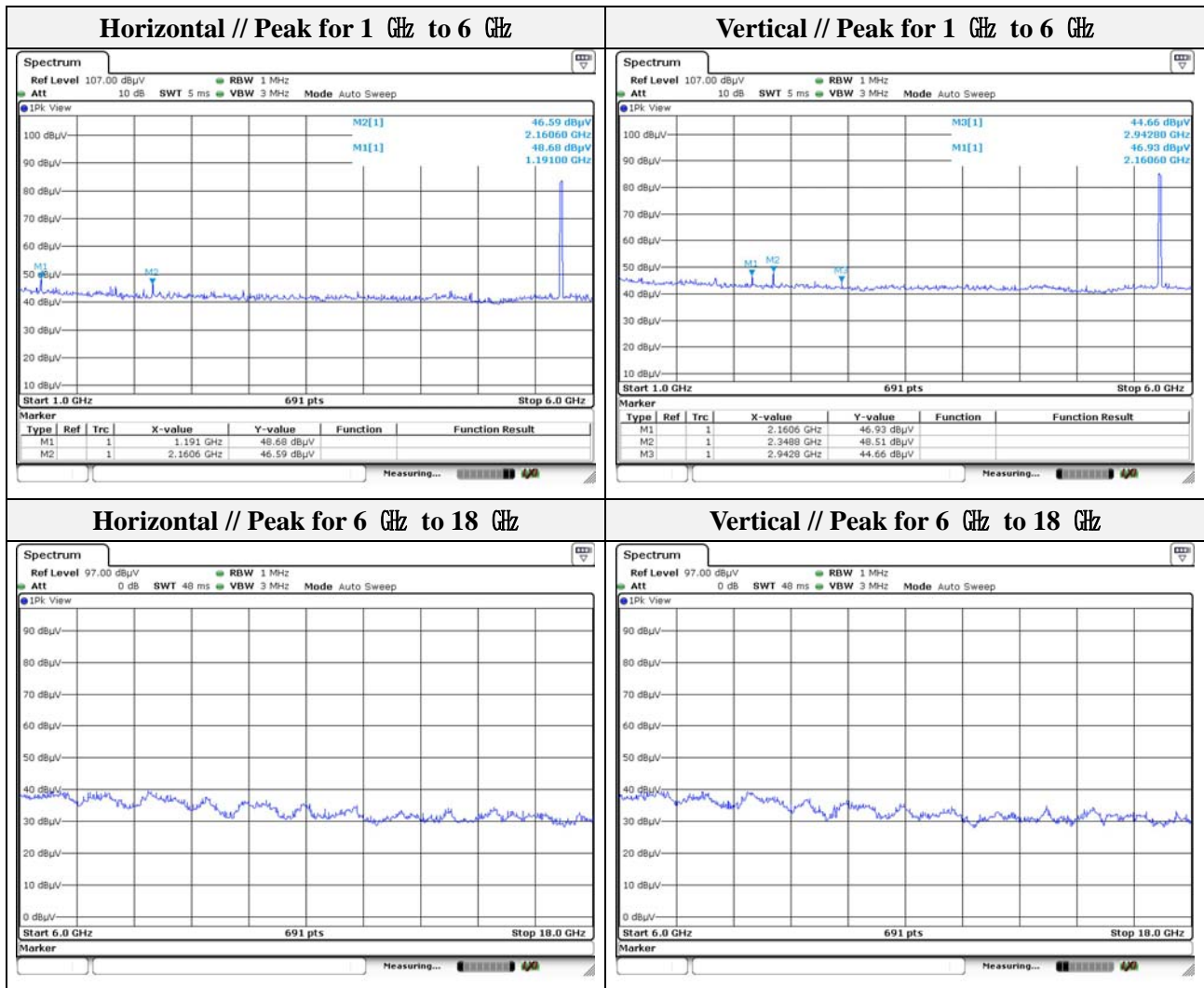
1. No spurious emission were detected above 6 GHz.



Mode: UNII-2C  
 Distance of measurement: 3 meter  
 Channel: 144

**- Spurious**

Frequency (MHz)	Level (dBμV)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1191.00	48.68	Peak	H	-8.90	-	39.78	74.00	34.22
2160.60	46.59	Peak	H	-3.44	-	43.15	74.00	30.85
2160.60	46.93	Peak	V	-3.44	-	43.49	74.00	30.51
2348.80	48.51	Peak	V	-2.47	-	46.04	74.00	27.96
2942.80	44.66	Peak	V	-0.23	-	44.43	74.00	29.57



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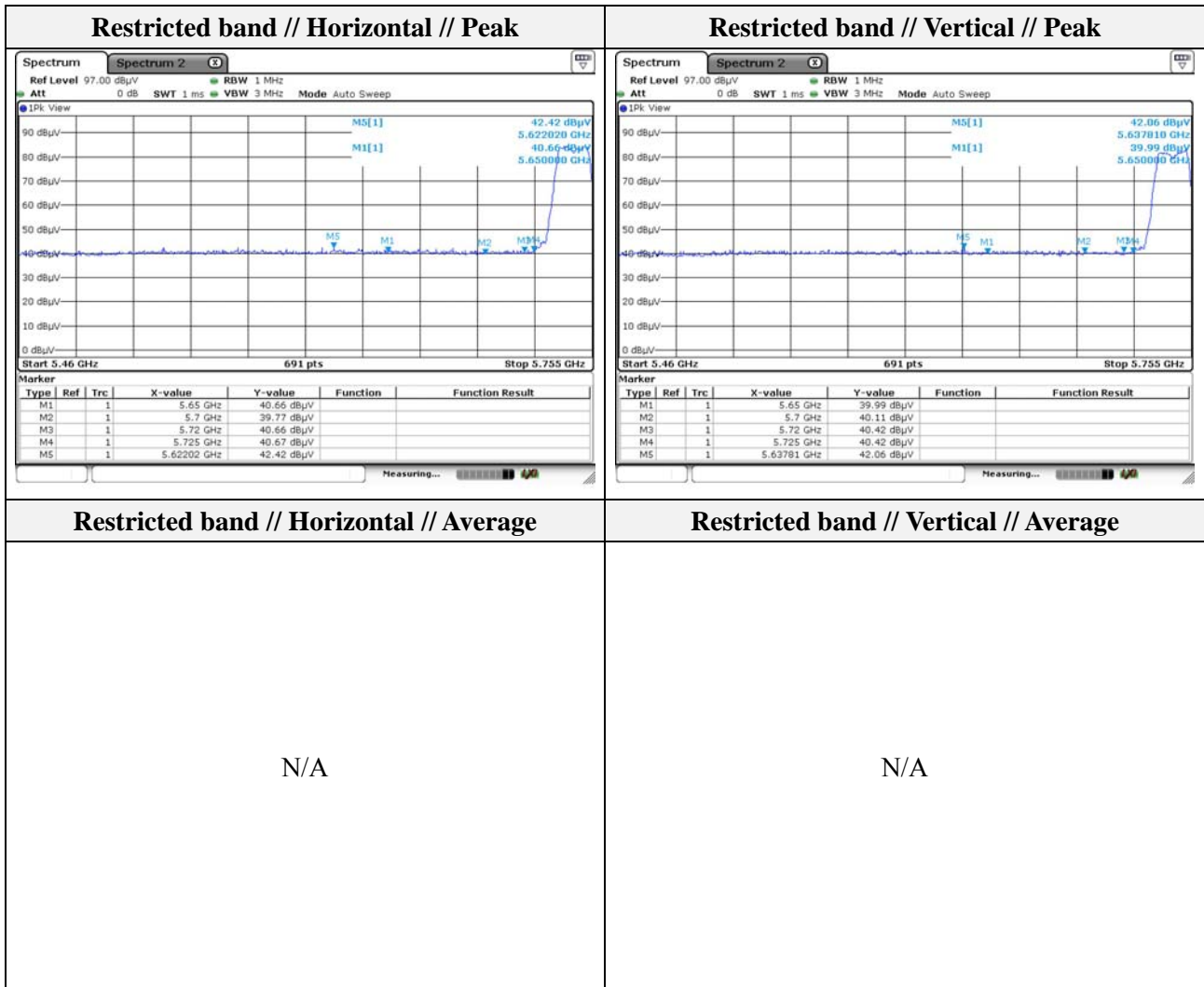
Mode: UNII-3  
Distance of measurement: 3 meter  
Channel: 149

- **Spurious**

Frequency (MHz)	Level (dB $\mu$ V)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)
1814.00	47.71	Peak	H	-5.68	-	42.03	74.00	31.97
2161.40	45.02	Peak	H	-3.43	-	41.59	74.00	32.41
1814.00	47.15	Peak	V	-5.68	-	41.47	74.00	32.53
2161.40	46.02	Peak	V	-3.43	-	42.59	74.00	31.41

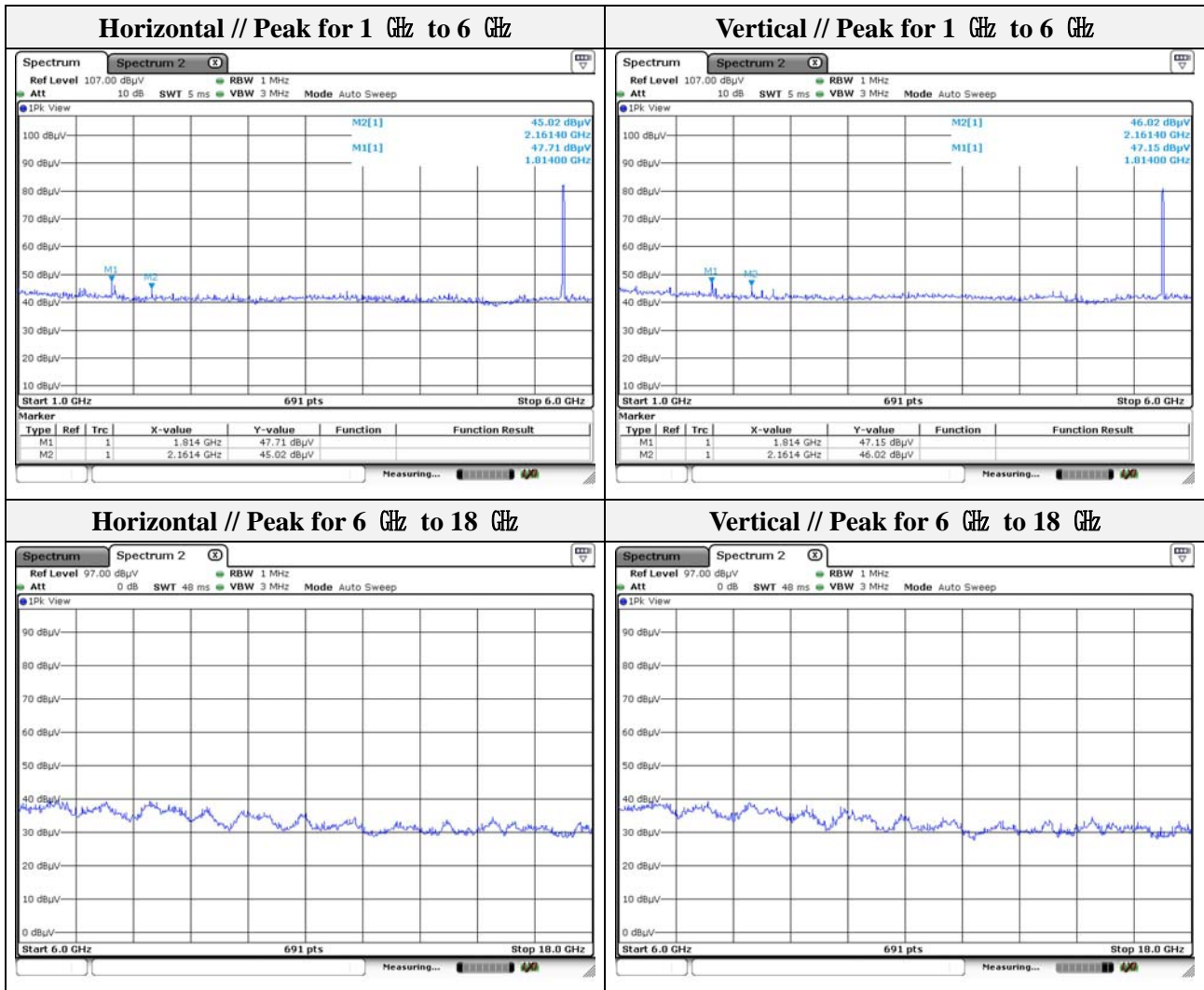
- **Band edge**

Frequency (MHz)	Level (dB $\mu$ V)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)
5725.00	40.67	Peak	H	2.14	-	42.81	122.20	79.39
5622.02	42.42	Peak	H	2.68	-	45.10	68.20	23.10
5725.00	40.42	Peak	V	2.14	-	42.56	122.20	79.64
5637.81	42.06	Peak	V	2.59	-	44.65	68.20	23.55



Note.

1. Average test was not performed because peak result is lower than the average limit.

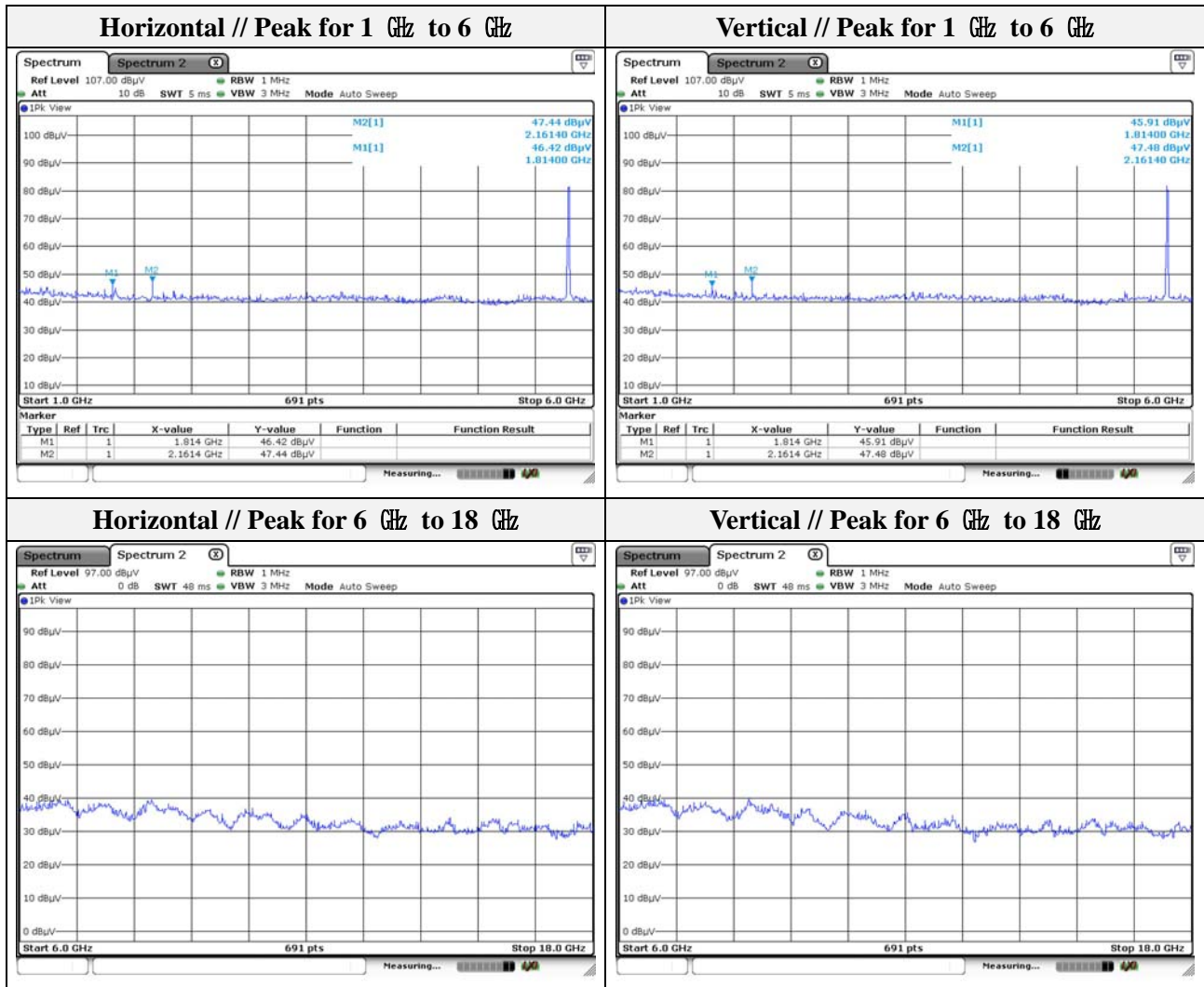


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Mode: UNII-3  
 Distance of measurement: 3 meter  
 Channel: 157

**- Spurious**

Frequency (MHz)	Level (dB $\mu$ V)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)
1814.00	46.42	Peak	H	-5.68	-	40.74	74.00	33.26
2161.40	47.44	Peak	H	-3.43	-	44.01	74.00	29.99
1814.00	45.91	Peak	V	-5.68	-	40.23	74.00	33.77
2161.40	47.48	Peak	V	-3.43	-	44.05	74.00	29.95



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Mode: UNII-3  
Distance of measurement: 3 meter  
Channel: 165

- **Spurious**

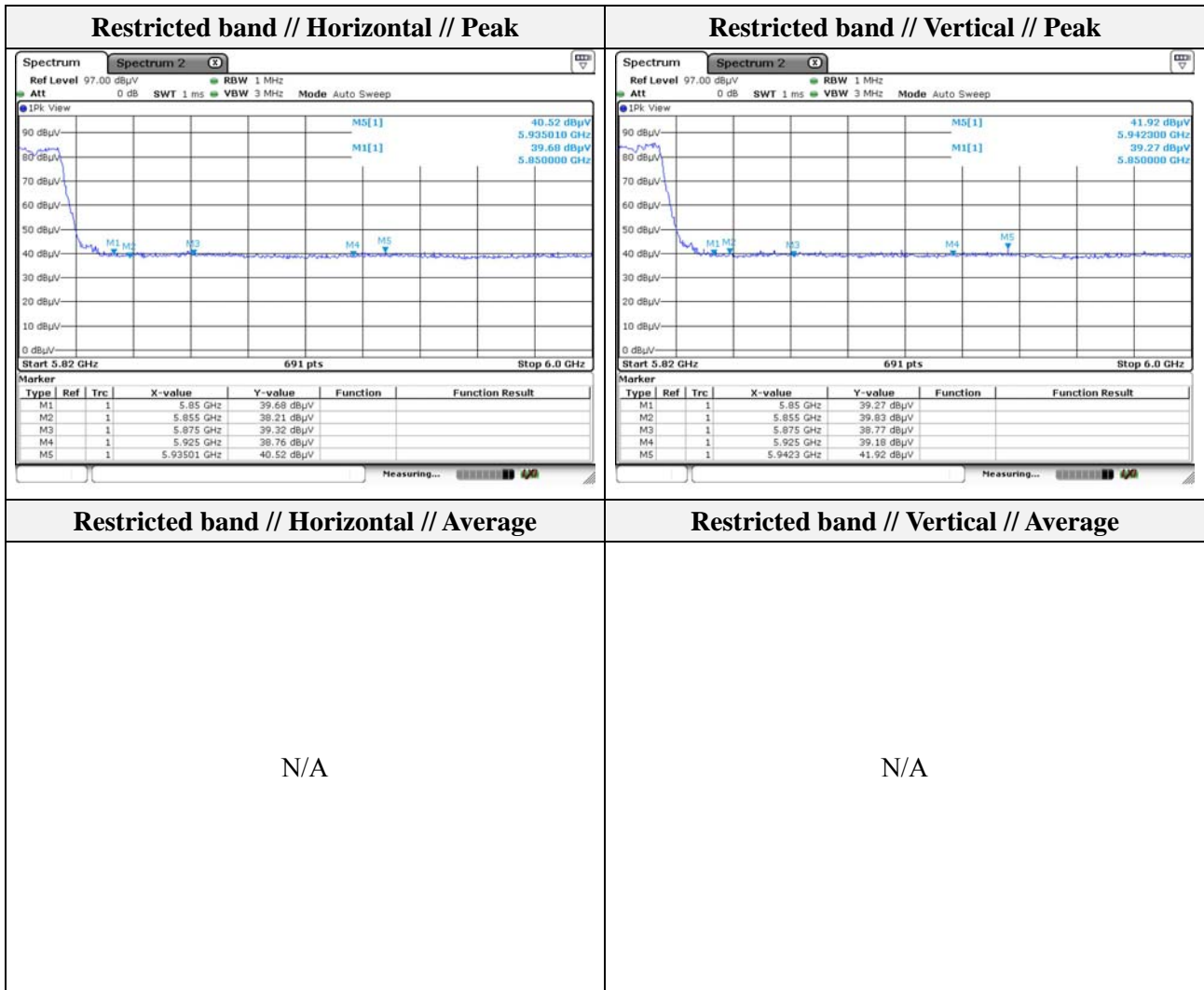
Frequency (MHz)	Level (dB $\mu$ V)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)
1835.70	47.52	Peak	H	-5.51	-	42.01	74.00	31.99
2161.40	44.66	Peak	H	-3.43	-	41.23	74.00	32.77
1821.30	46.41	Peak	V	-5.62	-	40.79	74.00	33.21
2349.50	46.78	Peak	V	-2.47	-	44.31	74.00	29.69

- **Band edge**

Frequency (MHz)	Level (dB $\mu$ V)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)
5850.00	39.68	Peak	H	1.70	-	41.39	122.20	80.82
5935.01	40.52	Peak	H	1.63	-	42.15	68.20	26.05
5850.00	39.27	Peak	V	1.70	-	40.98	122.20	81.23
5942.30	41.92	Peak	V	1.62	-	43.54	68.20	24.66

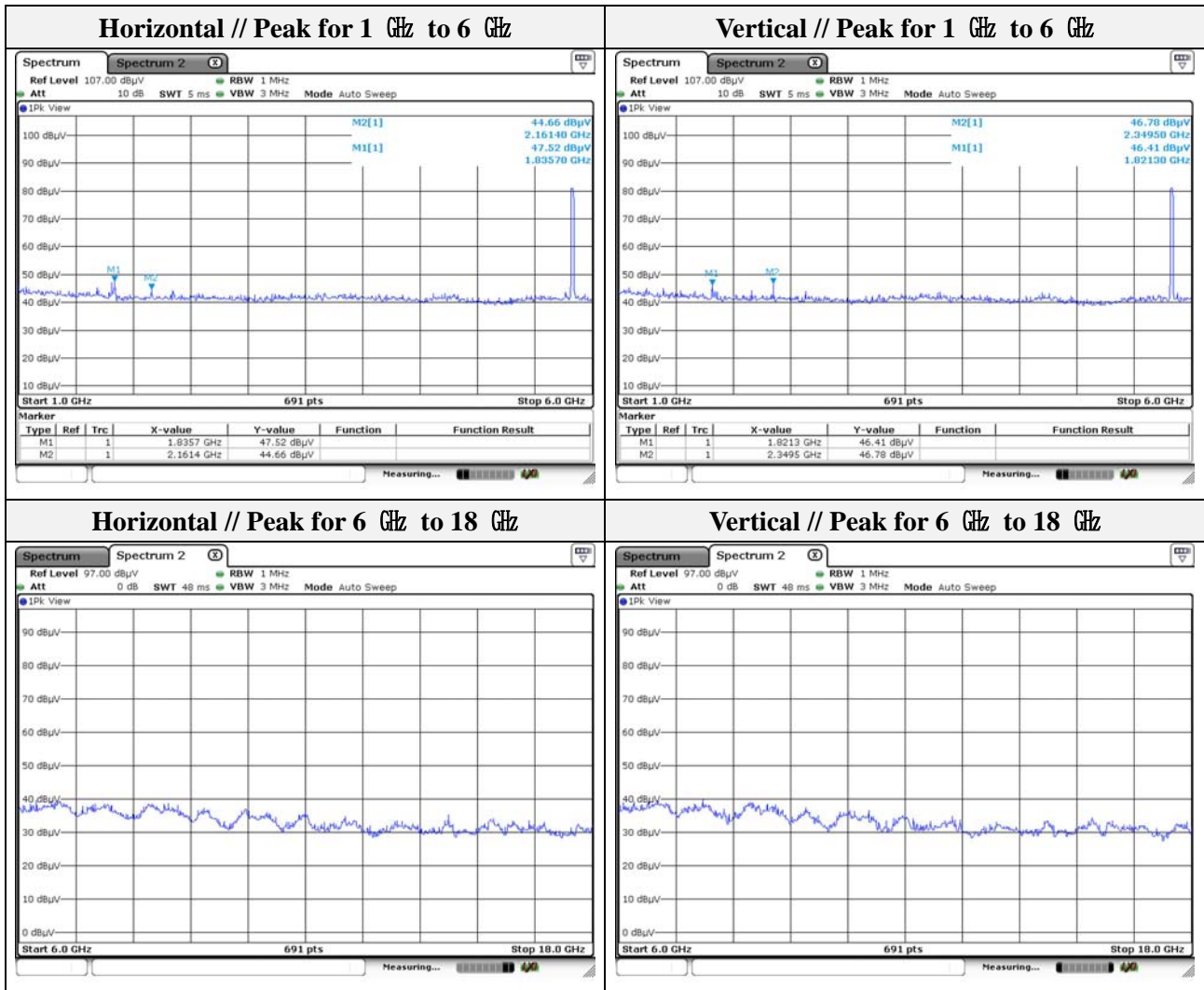
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Note.

1. Average test was not performed because peak result is lower than the average limit.



Note.

1. No spurious emission were detected above 6 GHz.

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Test report No.:  
KES-RF-17T0023-R1  
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Mode: UNII-1(HT20)  
Distance of measurement: 3 meter  
Channel: 36

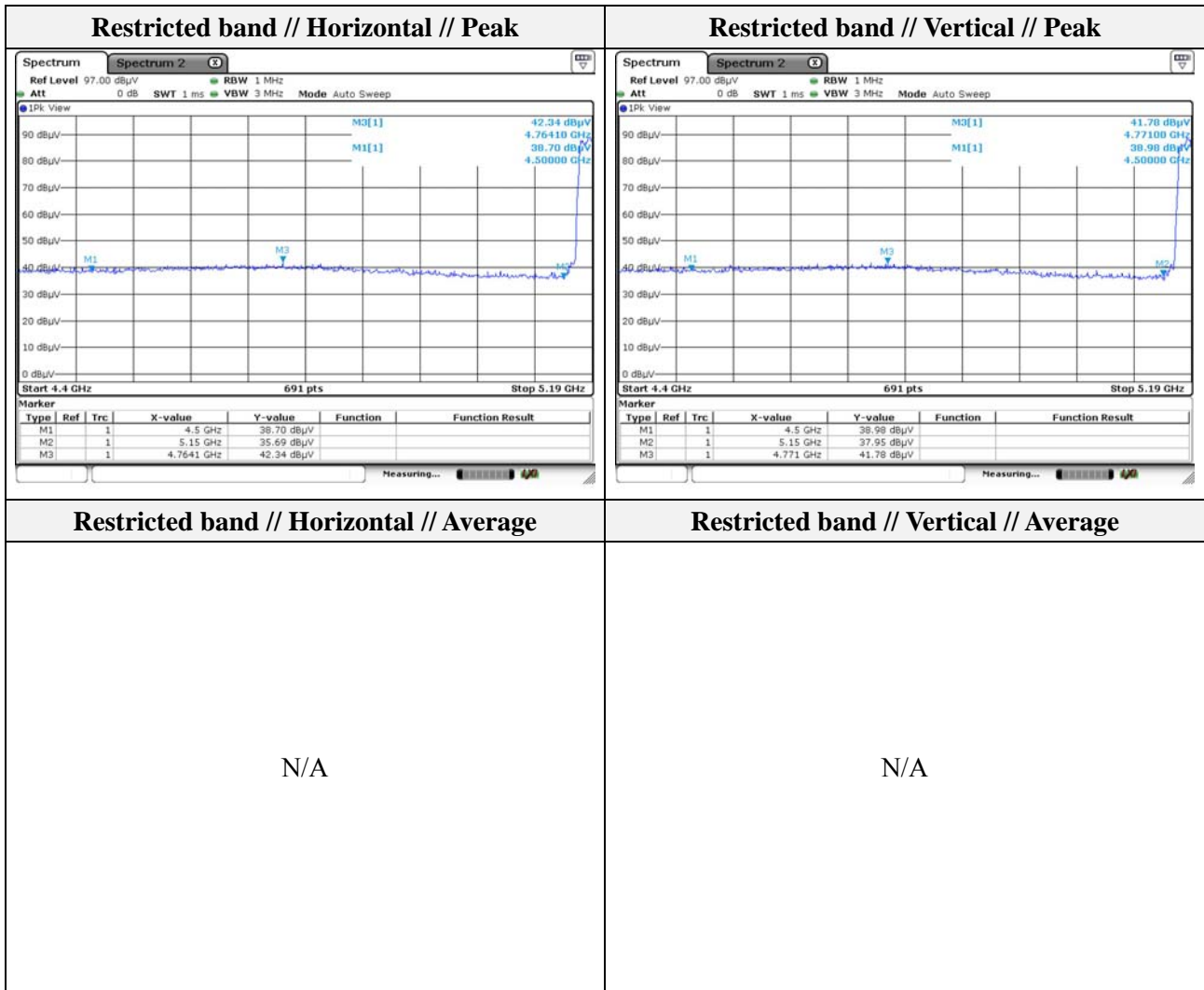
- **Spurious**

Frequency (MHz)	Level (dB $\mu$ V)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)
1734.40	46.81	Peak	H	-6.29	-	40.52	74.00	33.48
1835.70	47.98	Peak	H	-5.51	-	42.47	74.00	31.53
1748.90	47.35	Peak	V	-6.18	-	41.17	74.00	32.83
2349.50	44.75	Peak	V	-2.47	-	42.28	74.00	31.72

- **Band edge**

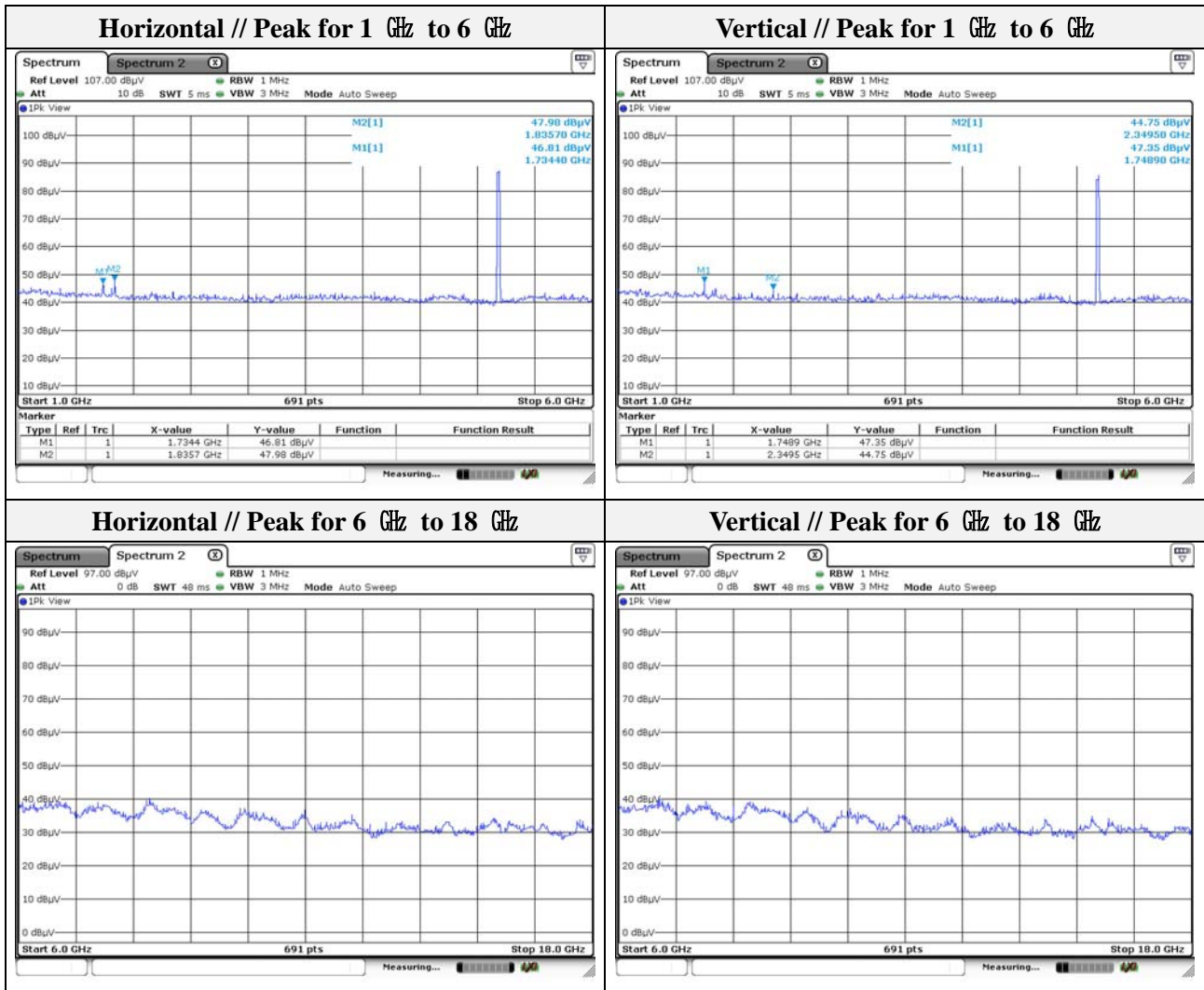
Frequency (MHz)	Level (dB $\mu$ V)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)
4764.10	42.34	Peak	H	3.19	-	45.53	74.00	28.47
4771.00	41.78	Peak	V	3.18	-	44.96	74.00	29.04

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Note.

1. Average test was not performed because peak result is lower than the average limit.

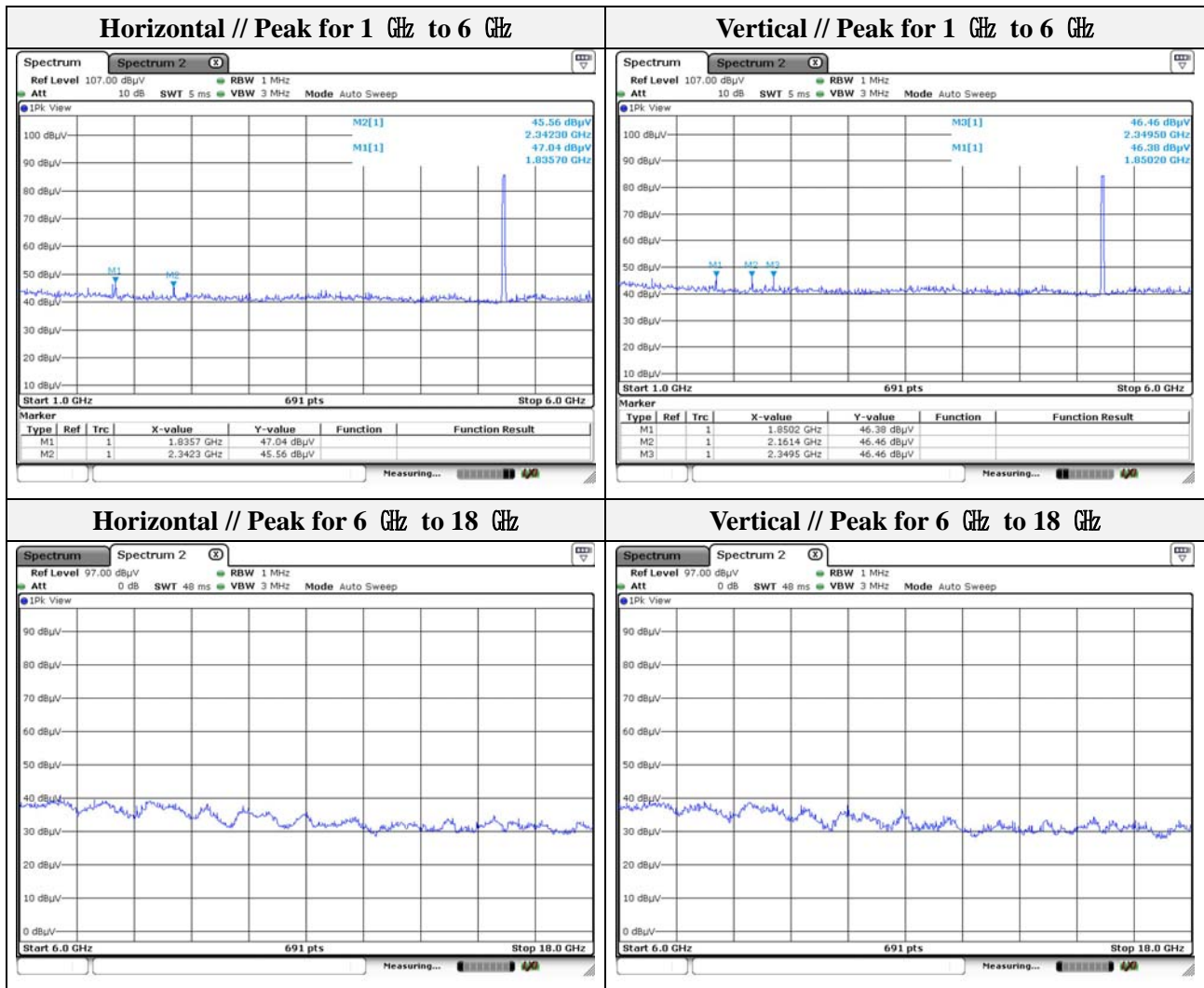


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Mode: UNII-1(HT20)  
 Distance of measurement: 3 meter  
 Channel: 44

**- Spurious**

Frequency (MHz)	Level (dBμV)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1835.70	47.04	Peak	H	-5.51	-	41.53	74.00	32.47
2342.30	45.56	Peak	H	-2.51	-	43.05	74.00	30.95
1850.20	46.38	Peak	V	-5.40	-	40.98	74.00	33.02
2161.40	46.46	Peak	V	-3.43	-	43.03	74.00	30.97
2349.50	46.46	Peak	V	-2.47	-	43.99	74.00	30.01



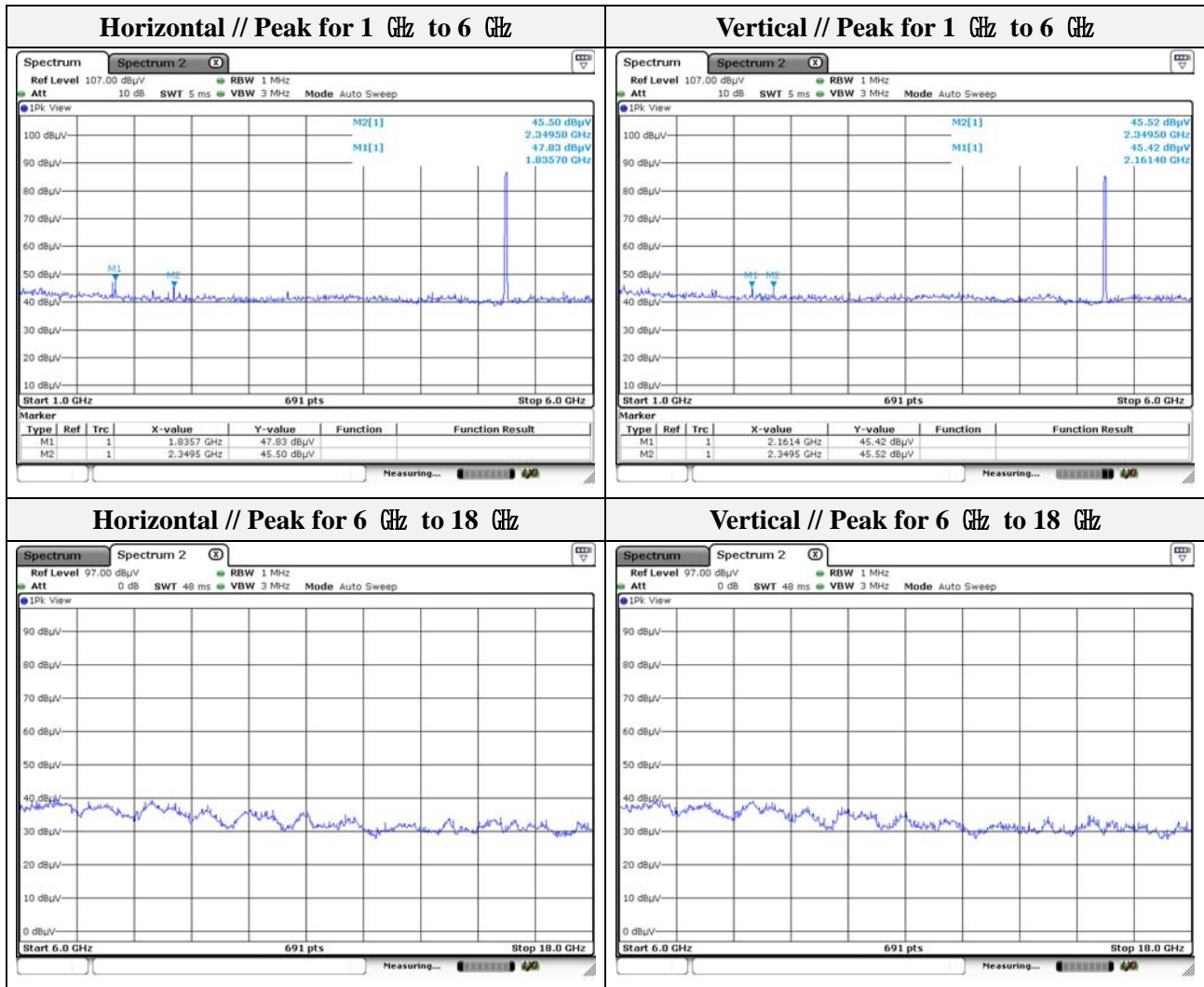
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Mode: UNII-1(HT20)  
 Distance of measurement: 3 meter  
 Channel: 48

**- Spurious**

Frequency (MHz)	Level (dB $\mu$ V)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)
1835.70	47.83	Peak	H	-5.51	-	42.32	74.00	31.68
2349.50	45.50	Peak	H	-2.47	-	43.03	74.00	30.97
2161.40	45.42	Peak	V	-3.43	-	41.99	74.00	32.01
2349.50	45.52	Peak	V	-2.47	-	43.05	74.00	30.95



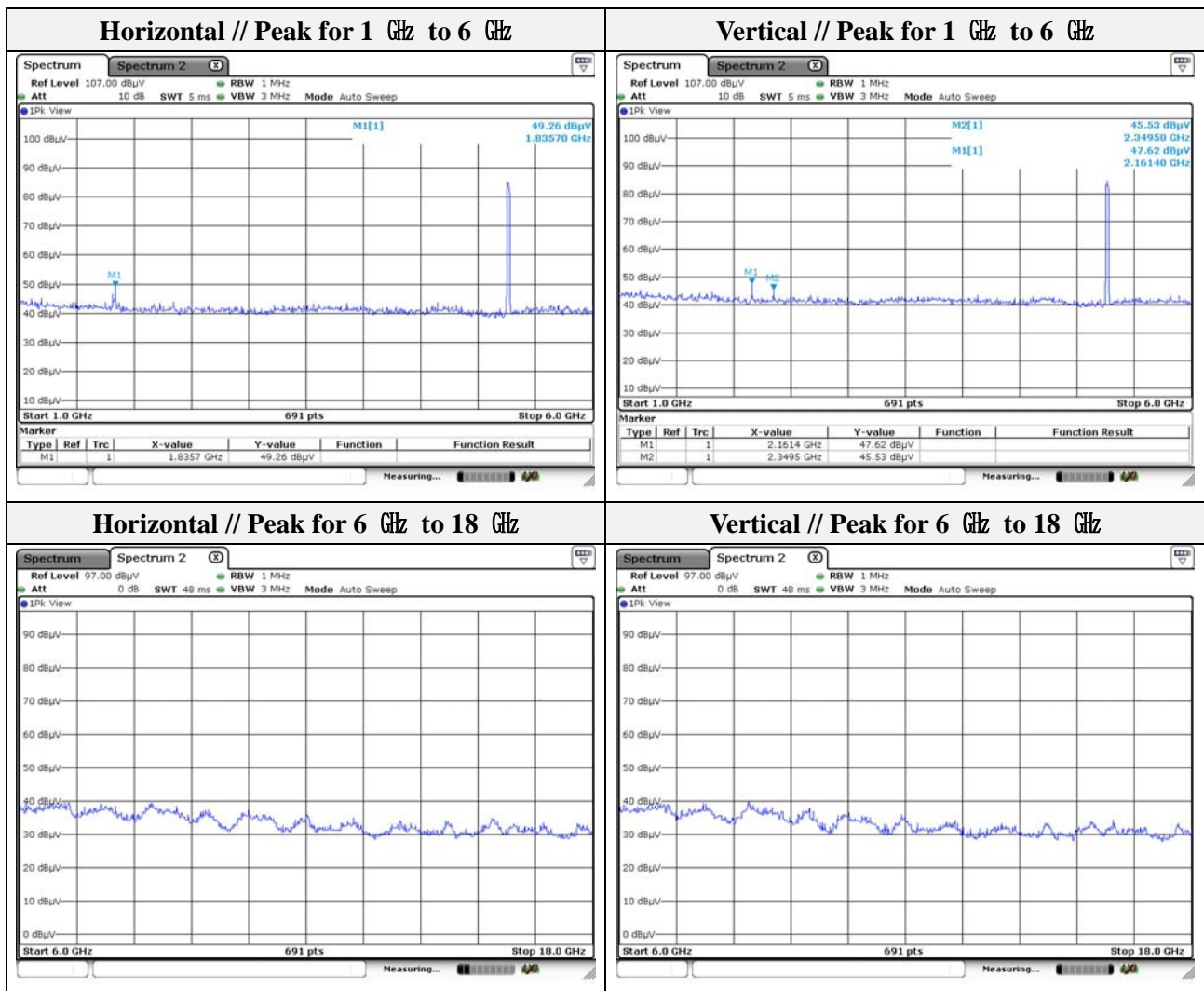
Note.

1. No spurious emission were detected above 6 GHz.

Mode: UNII-2A(HT20)  
 Distance of measurement: 3 meter  
 Channel: 52

**- Spurious**

Frequency (MHz)	Level (dBμV)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1835.70	49.26	Peak	H	-5.51	-	43.75	74.00	30.25
2161.40	47.62	Peak	V	-3.43	-	44.19	74.00	29.81
2349.50	45.53	Peak	V	-2.47	-	43.06	74.00	30.94

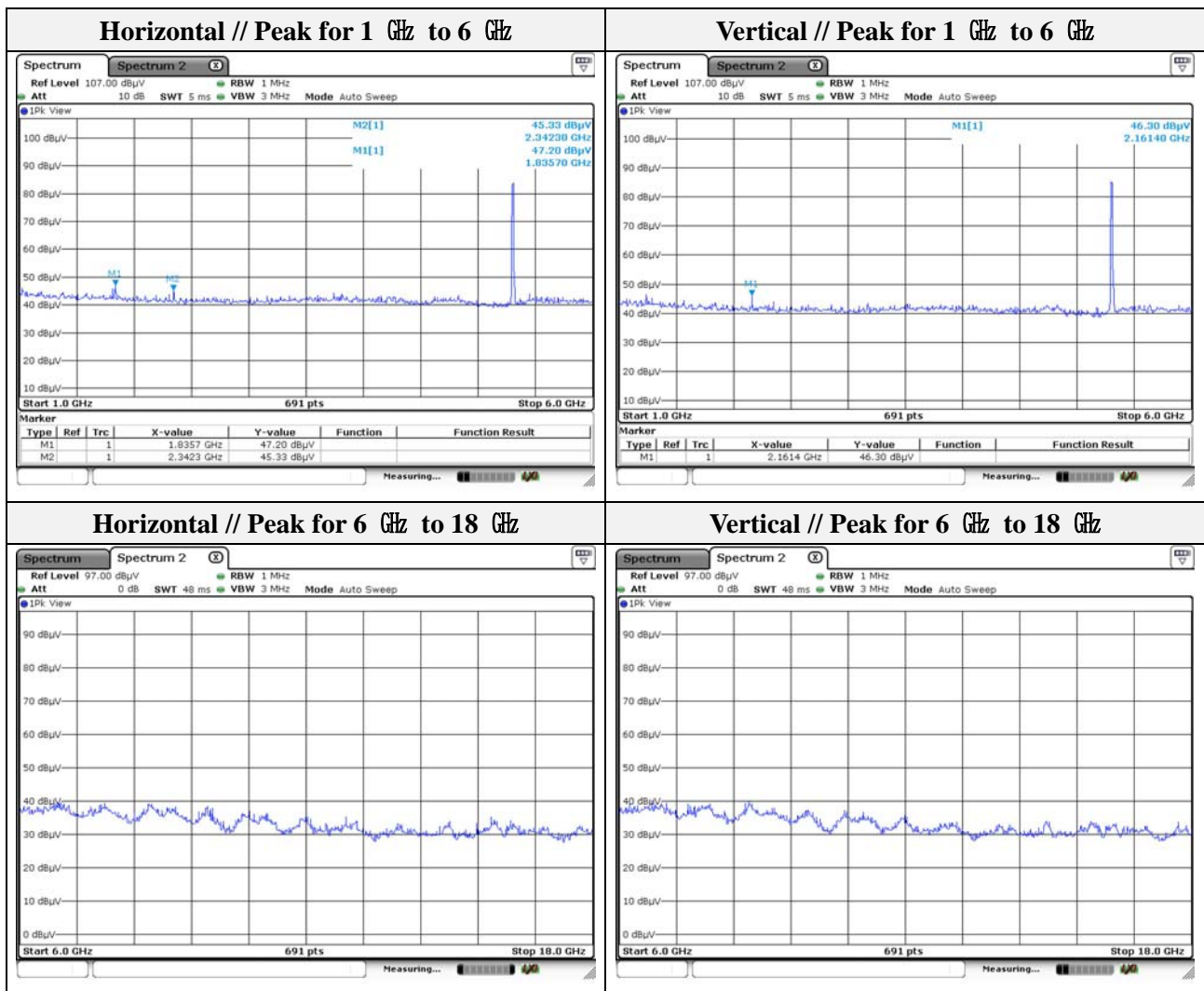


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Mode: UNII-2A(HT20)  
 Distance of measurement: 3 meter  
 Channel: 56

**- Spurious**

Frequency (MHz)	Level (dB $\mu$ V)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)
1835.70	47.20	Peak	H	-5.51	-	41.69	74.00	32.31
2342.30	45.33	Peak	H	-2.51	-	42.82	74.00	31.18
2161.40	46.30	Peak	V	-3.43	-	42.87	74.00	31.13



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