Test data, continued

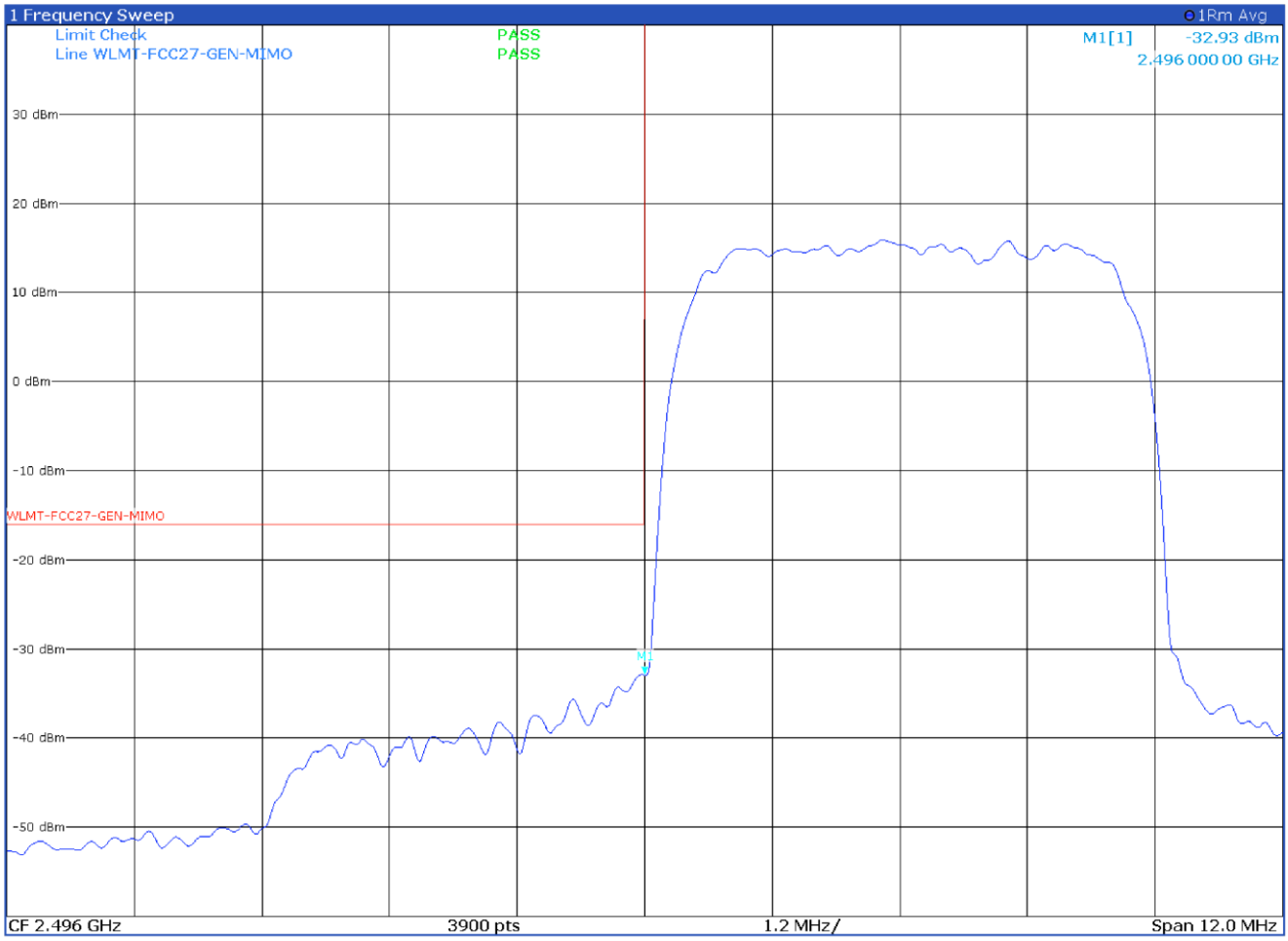


Figure 8.5-16: *Antenna port 2 single carrier lower block edge with input signal at AGC threshold +3 dB*

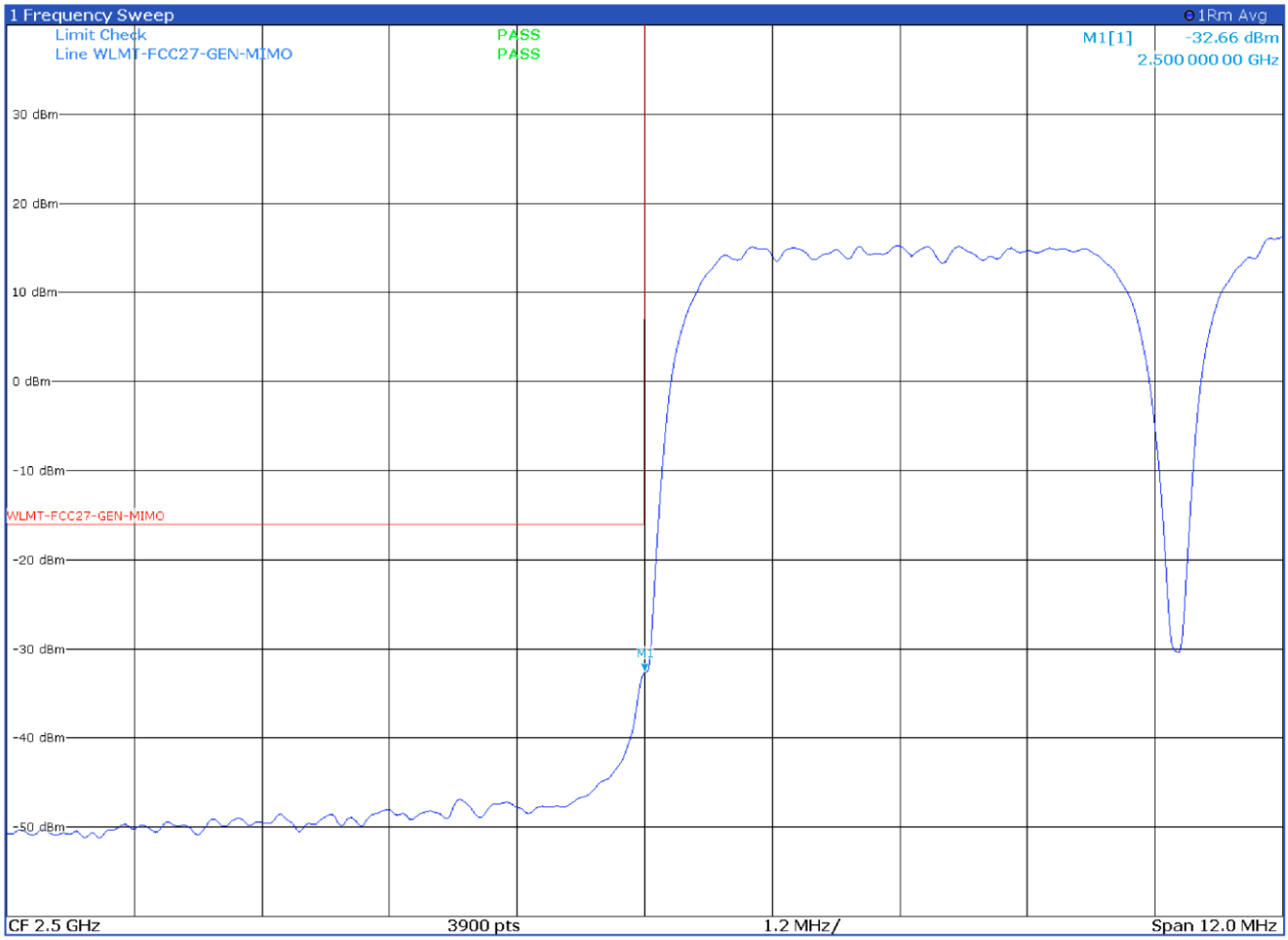


Figure 8.5-17: *Antenna port 1 lower block edge intermodulation products with input signal at AGC threshold (ISED)*

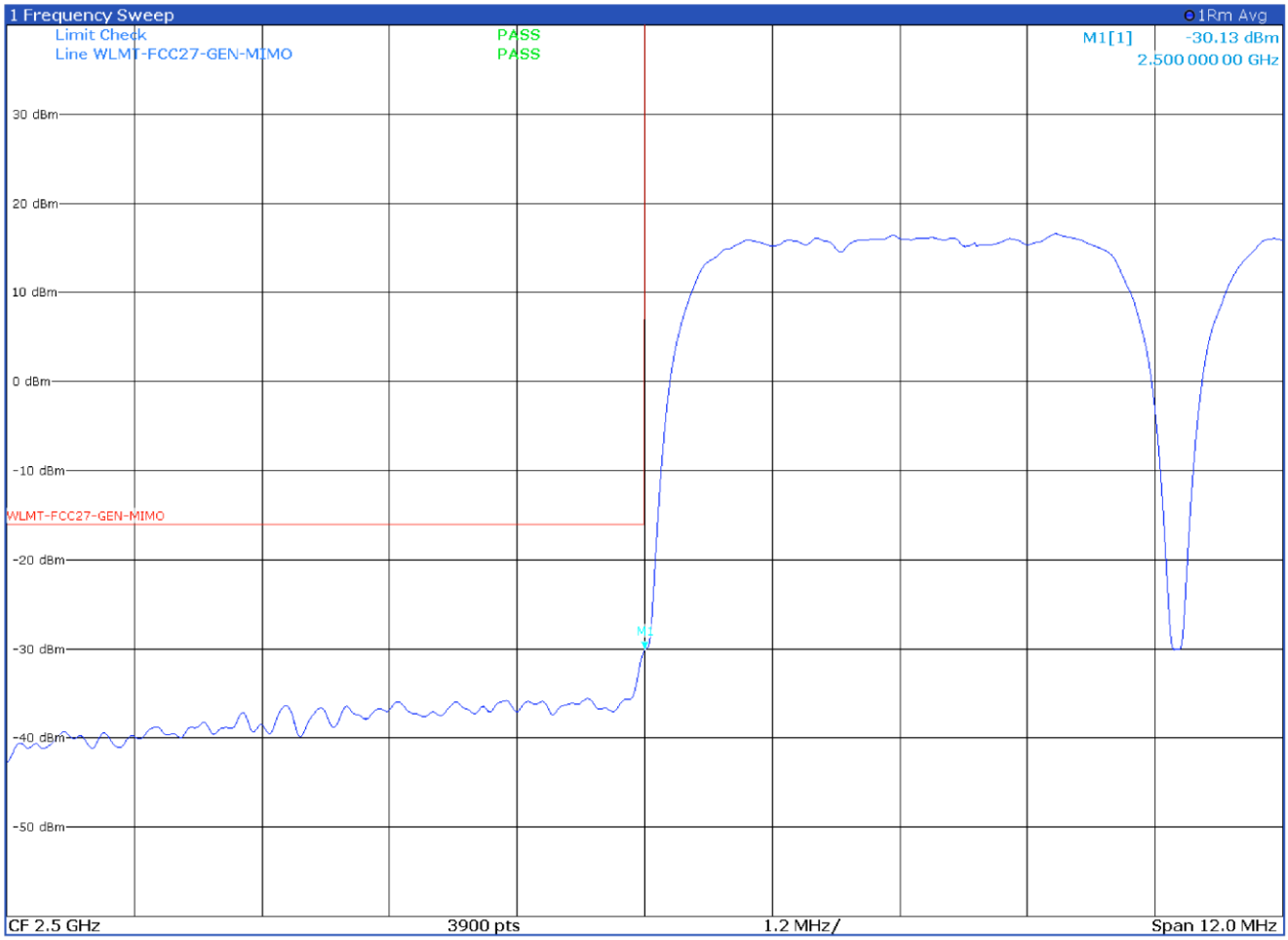


Figure 8.5-18: *Antenna port 1 lower block edge intermodulation products with input signal at AGC threshold +3 dB (ISED)*

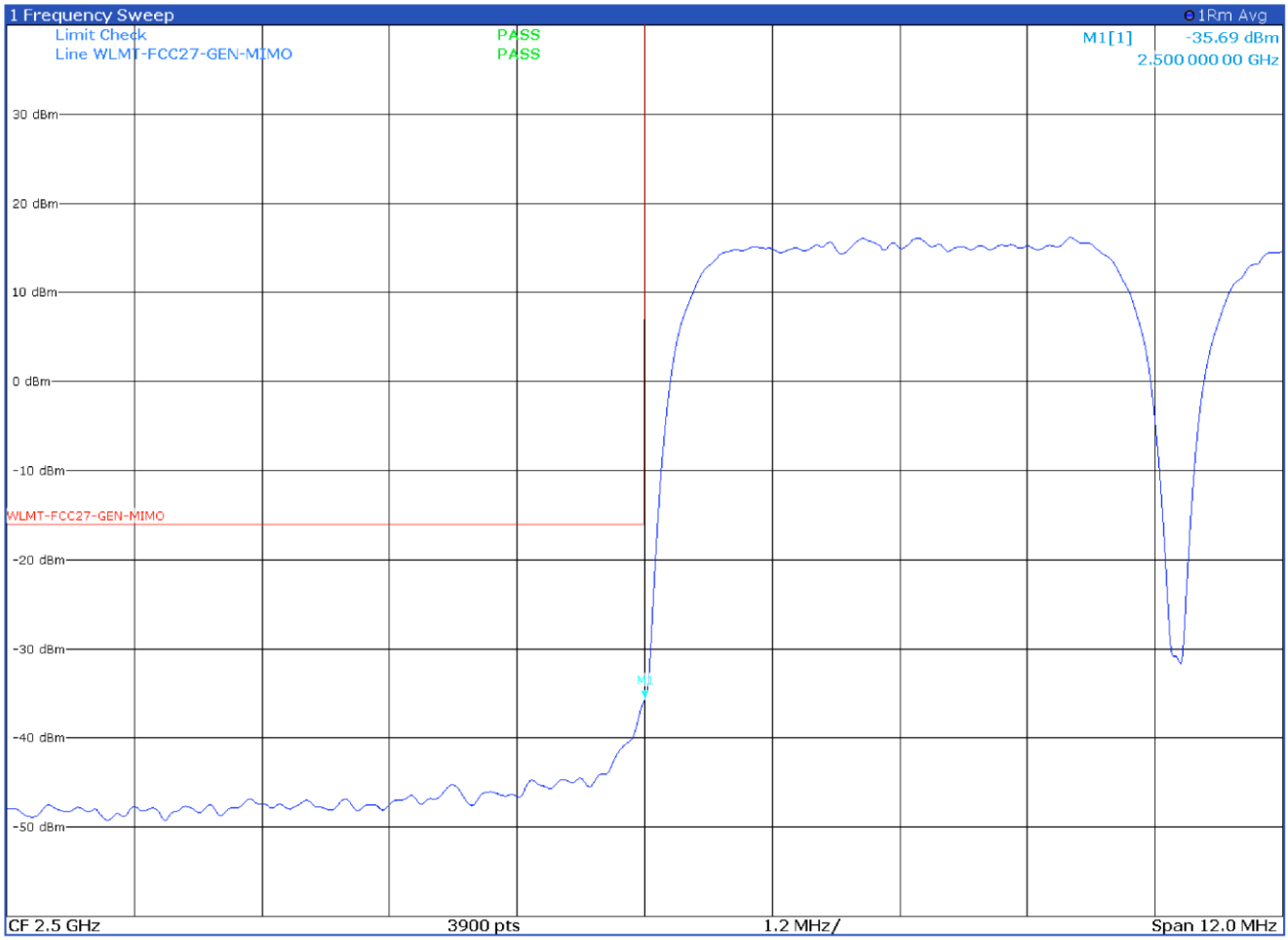


Figure 8.5-19: *Antenna port 2 lower block edge intermodulation products with input signal at AGC threshold (ISED)*

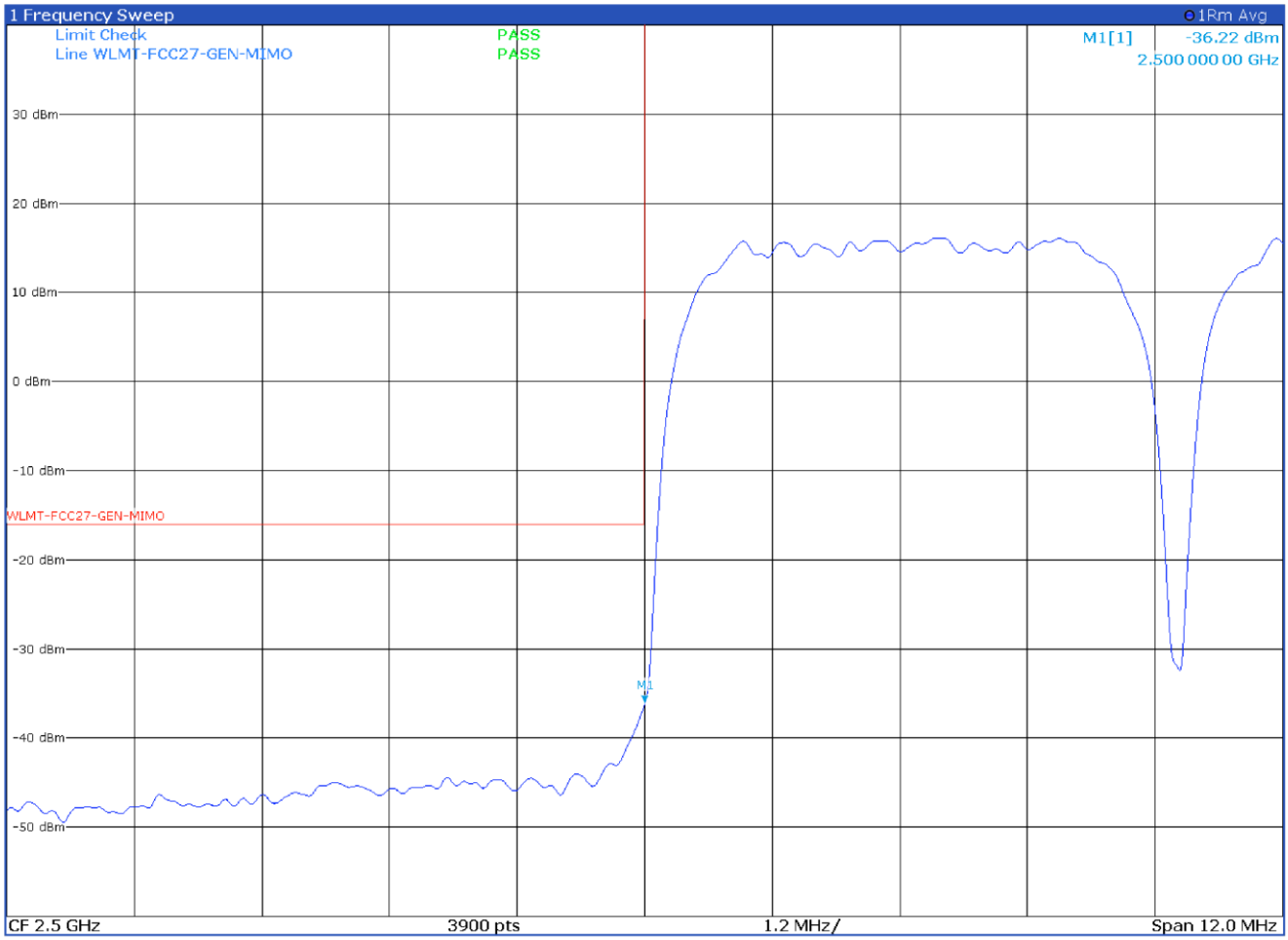


Figure 8.5-20: *Antenna port 2 lower block edge intermodulation products with input signal at AGC threshold (ISED)*

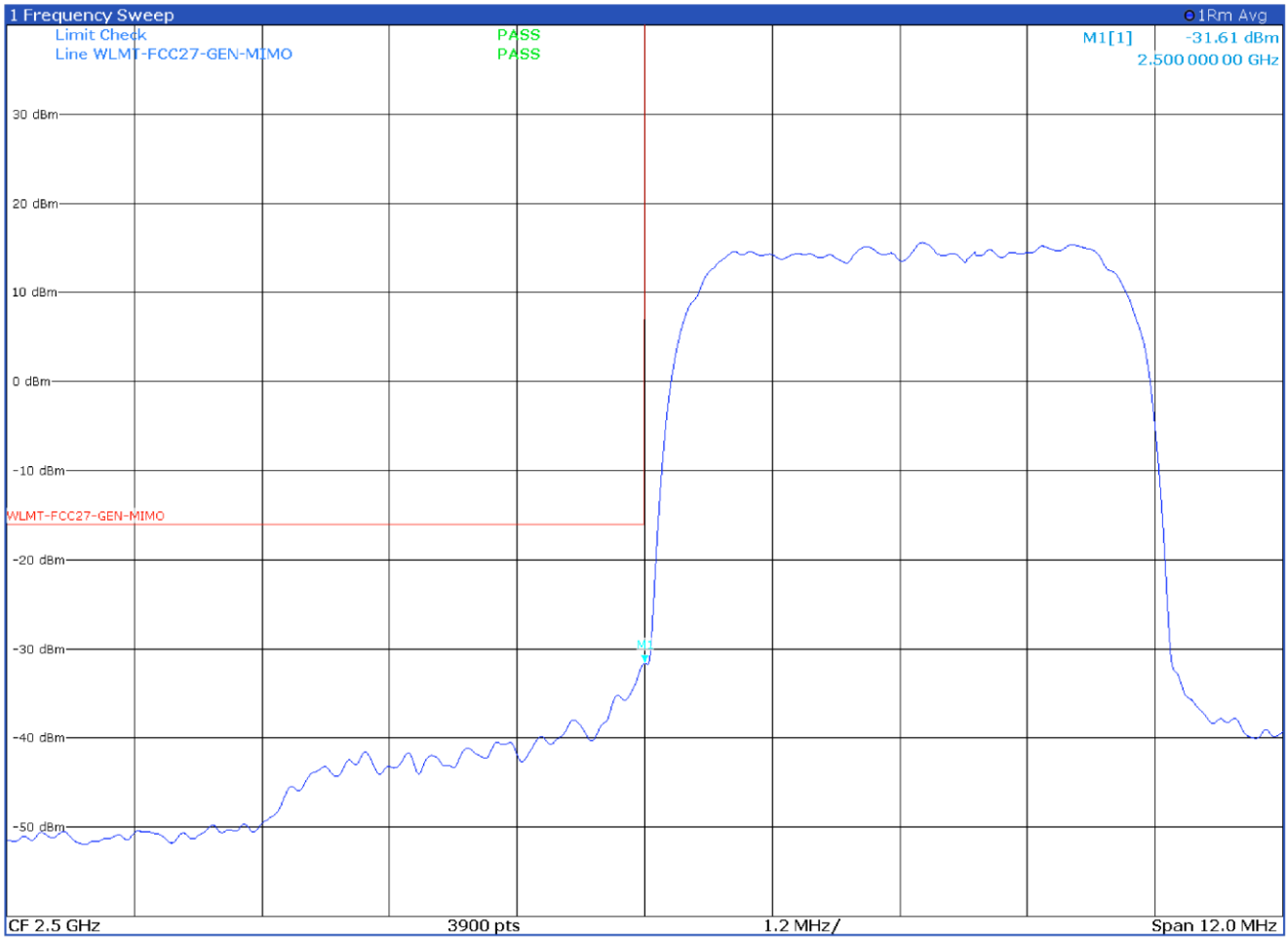


Figure 8.5-21: *Antenna port 1 single carrier lower block edge with input signal at AGC threshold (ISED)*

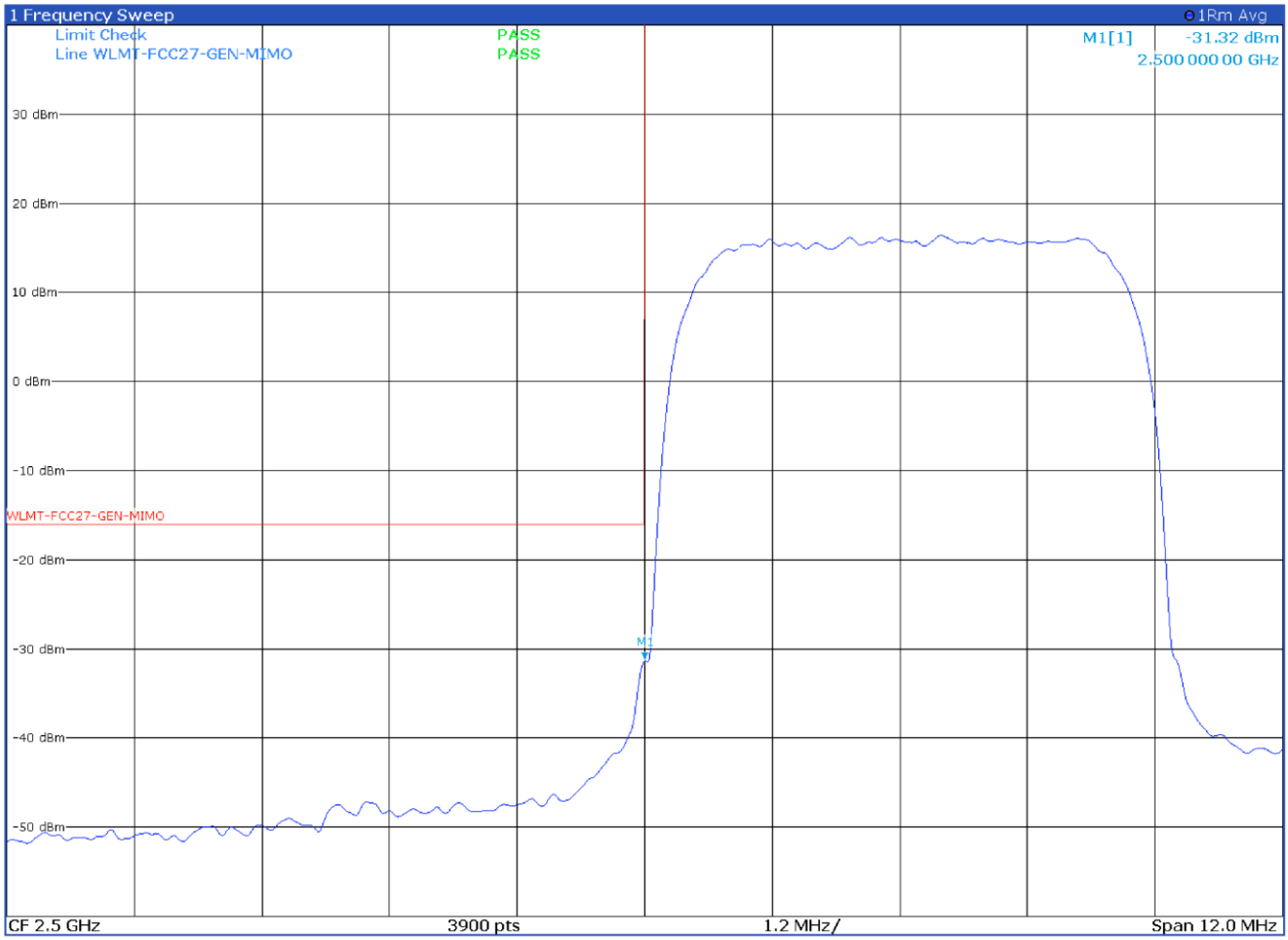


Figure 8.5-22: *Antenna port 1 single carrier lower block edge with input signal at AGC threshold +3 dB (ISED)*

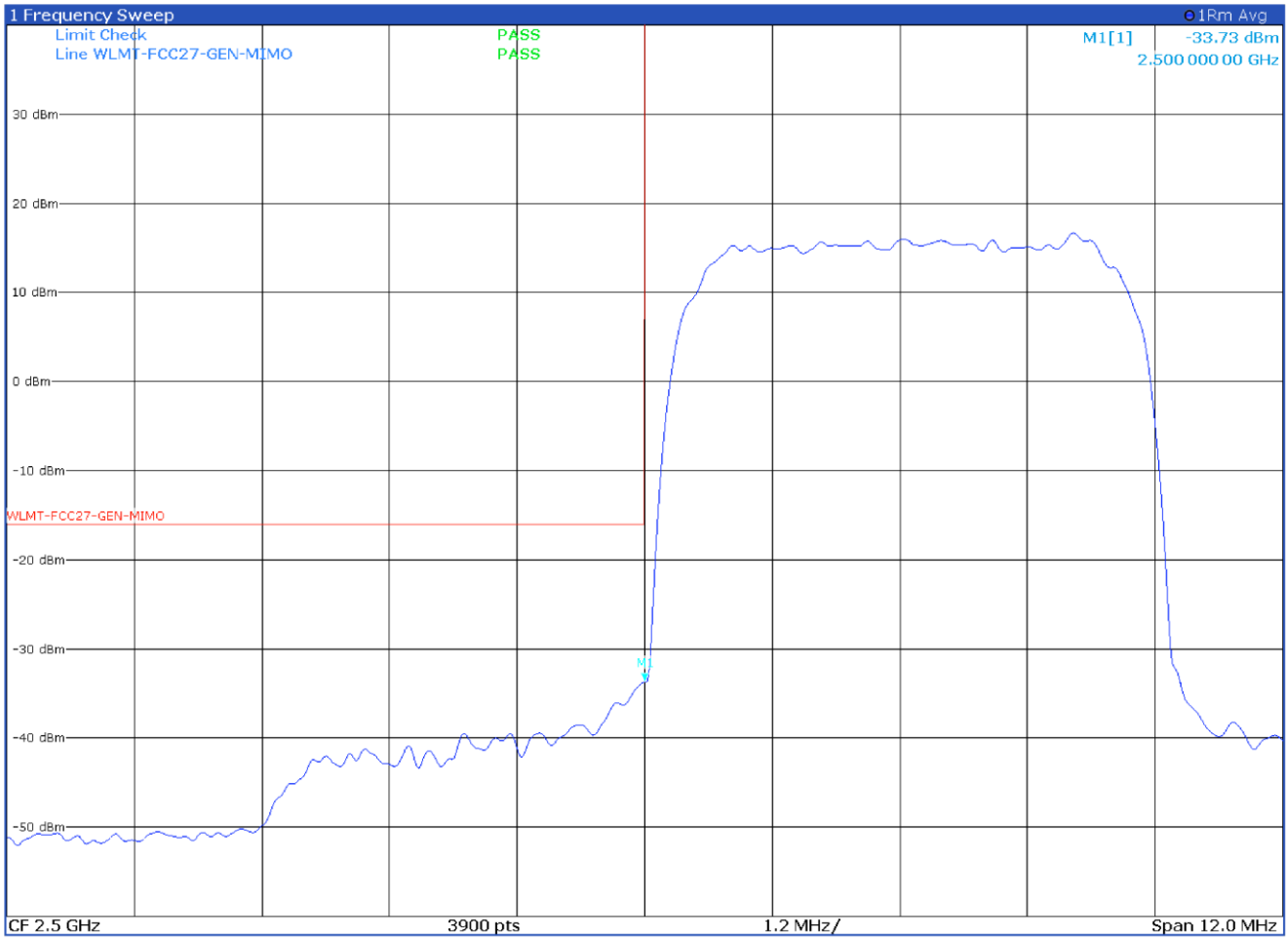


Figure 8.5-23: *Antenna port 2 single carrier lower block edge with input signal at AGC threshold (ISED)*

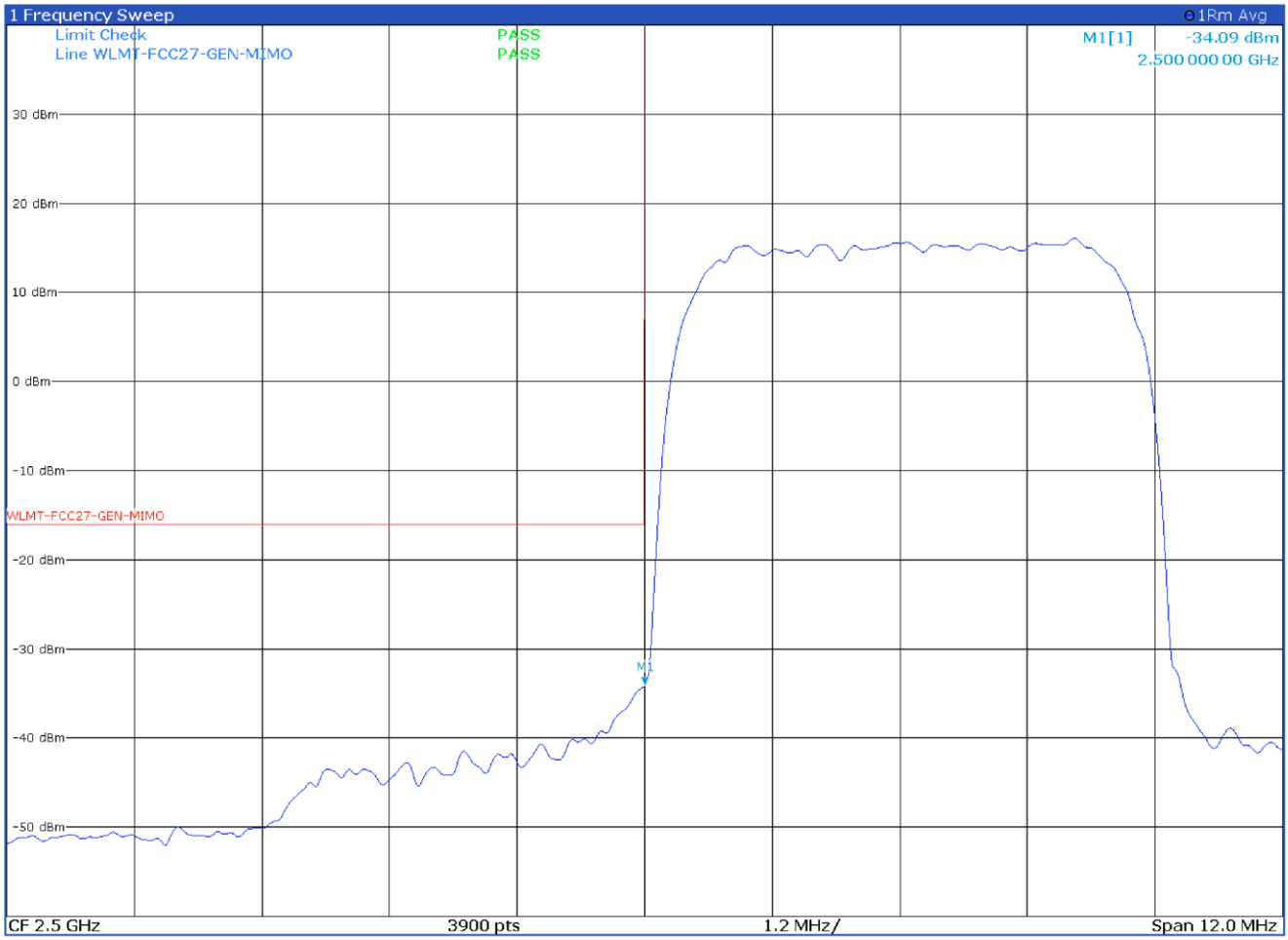


Figure 8.5-24: *Antenna port 2 single carrier lower block edge with input signal at AGC threshold +3 dB (ISED)*

8.6 Spurious emissions conducted measurements

8.6.1 References, definitions and limits

FCC §27.53(m)(2):

(m) For BRS and EBS stations, the power of any emissions outside the licensee's frequency bands of operation shall be attenuated below the transmitter power (P) measured in watts in accordance with the standards below. If a licensee has multiple contiguous channels, out-of-band emissions shall be measured from the upper and lower edges of the contiguous channels.

(2) For digital base stations, the attenuation shall be not less than 43 + 10 log (P) dB, unless a documented interference complaint is received from an adjacent channel licensee with an overlapping Geographic Service Area. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS No. 1 on the same terms and conditions as adjacent channel BRS or EBS licensees. Provided that a documented interference complaint cannot be mutually resolved between the parties prior to the applicable deadline, then the following additional attenuation requirements shall apply:

(i) If a pre-existing base station suffers harmful interference from emissions caused by a new or modified base station located 1.5 km or more away, within 24 hours of the receipt of a documented interference complaint the licensee of the new or modified base station must attenuate its emissions by at least 67 + 10 log (P) dB measured at 3 megahertz, above or below, from the channel edge of its frequency block and shall immediately notify the complaining licensee upon implementation of the additional attenuation. No later than 60 days after the implementation of such additional attenuation, the licensee of the complaining base station must attenuate its base station emissions by at least 67 + 10 log (P) dB measured at 3 megahertz, above or below, from the channel edge of its frequency block of the new or modified base station.

(ii) If a pre-existing base station suffers harmful interference from emissions caused by a new or modified base station located less than 1.5 km away, within 24 hours of receipt of a documented interference complaint the licensee of the new or modified base station must attenuate its emissions by at least 67 + 10 log (P)−20 log (Dkm/1.5) dB measured at 3 megahertz, above or below, from the channel edge of its frequency block of the complaining licensee, or if both base stations are co-located, limit its undesired signal level at the pre-existing base station receiver(s) to no more than −107 dBm measured in a 5.5 megahertz bandwidth and shall immediately notify the complaining licensee upon such reduction in the undesired signal level. No later than 60 days after such reduction in the undesired signal level, the complaining licensee must attenuate its base station emissions by at least 67 + 10 log (P) dB measured at 3 megahertz, above or below, from the channel edge of its frequency block of the new or modified base station.

(iii) If a new or modified base station suffers harmful interference from emissions caused by a pre-existing base station located 1.5 km or more away, within 60 days of receipt of a documented interference complaint the licensee of each base station must attenuate its base station emissions by at least 67 + 10 log (P) dB measured at 3 megahertz, above or below, from the channel edge of its frequency block of the other licensee.

(iv) If a new or modified base station suffers harmful interference from emissions caused by a pre-existing base station located less than 1.5 km away, within 60 days of receipt of a documented interference complaint: (a) The licensee of the new or modified base station must attenuate its OOBE by at least 67 + 10 log (P)−20 log (Dkm/1.5) measured 3 megahertz above or below, from the channel edge of its frequency block of the other licensee, or if the base stations are co-located, limit its undesired signal level at the other base station receiver(s) to no more than −107 dBm measured in a 5.5-megahertz bandwidth; and (b) the licensee causing the interference must attenuate its emissions by at least 67 + 10 log (P) dB measured at 3 megahertz, above or below, from the channel edge of its frequency block of the new or modified base station.

(v) For all fixed digital user stations, the attenuation factor shall be not less than 43 + 10 log (P) dB at the channel edge.

RSS-131, Clause 5.2

Industrial zone enhancers

Industrial Zone Enhancers, including DASs, shall employ a gain control feature and shall comply with all the requirements in the RSS which applies to the equipment with which the zone enhancer is to be used. In addition, the equipment shall comply with the requirements specified in this section.

References, definitions and limits, continued

RSS-199, Clause 4.5

In the 1 MHz band immediately outside and adjacent to the channel edge, the unwanted emission power shall be measured with a resolution bandwidth of at least 1% of the occupied bandwidth for base station and fixed subscriber equipment, and 2% for mobile subscriber equipment. Beyond the 1 MHz band, a resolution bandwidth of 1 MHz shall be used. A narrower resolution bandwidth can be used, provided that the measured power is integrated over the full required measurement bandwidth of 1 MHz, or 1% or 2% of the occupied bandwidth, as applicable.

Equipment shall comply with the following unwanted emission limits

(a) for base station and fixed subscriber equipment, the power of any unwanted emissions measured as above shall be attenuated (in dB) below the transmitter power, P (dBW), by at least 43 + 10 log10 p.

(b) for mobile subscriber equipment, the power of any unwanted emissions measured as above shall be attenuated (in dB) below the transmitter power, P (dBW), by at least:
(i) 40 + 10 log10 p from the channel edges to 5 MHz away
(ii) 43 + 10 log10 p between 5 MHz and X MHz from the channel edges, and
(iii) 55 + 10 log10 p at X MHz and beyond from the channel edges
In addition, the attenuation shall not be less than 43 + 10 log10 p on all frequencies between 2490.5 MHz and 2496 MHz, and 55 + 10 log10 p at or below 2490.5 MHz.

In (a) and (b), p is the transmitter power measured in watts and X is 6 MHz or the equipment occupied bandwidth, whichever is greater.

8.6.2 Test summary

Verdict	Pass		
Tested by	P. Barbieri	Test date	February 4, 2022

8.6.3 Observations, settings and special notes

The spectrum was searched from 9 kHz to the 10th harmonic.
All measurements were performed using peak detector according to note 4 of 935210 D05 Indus Booster Basic Meas v01r04 paragraph 3.6.3.
Limit line (43 + 10 $\log_{10}$ (P) or −13 dBm) was adjusted for MIMO operation by 3 dB*: −13 dBm – 3 dB = −16 dBm
*MIMO correction factor for 2 antenna ports: 10 × Log_{10}(2) = 3.01 dB

Spectrum analyser settings:

Resolution bandwidth:	Reference bandwidth in the applicable rule section for the supported frequency band
Video bandwidth:	VBW ≥ 3 × RBW
Detector mode:	Peak
Trace mode:	Max Hold

Input signal frequency

Low channel	2498.5 MHz
Low channel (ISED)	2502.5 MHz
Middle channel	2593.0 MHz
High channel	2687.5 MHz

8.6.4 Test equipment used

Equipment	Manufacturer	Model no.	Asset no.
Spectrum Analyzer	Rohde & Schwarz	FSW43	101767
RF Vector Signal Generator	Rohde & Schwarz	SMBV100A	263254
RF Vector Signal Generator	Rohde & Schwarz	SMBV100A	263397

Notes: NCR - no calibration required, VOU - verify on use

8.6.5 Test data

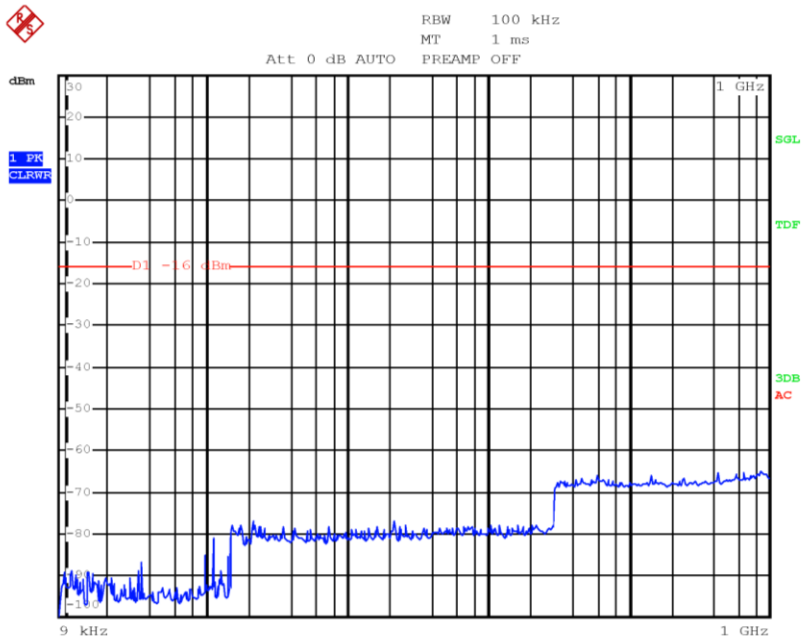


Figure 8.6-1: *Conducted spurious emissions of low channel, antenna port 1 – Range 9 kHz to 1000 MHz*

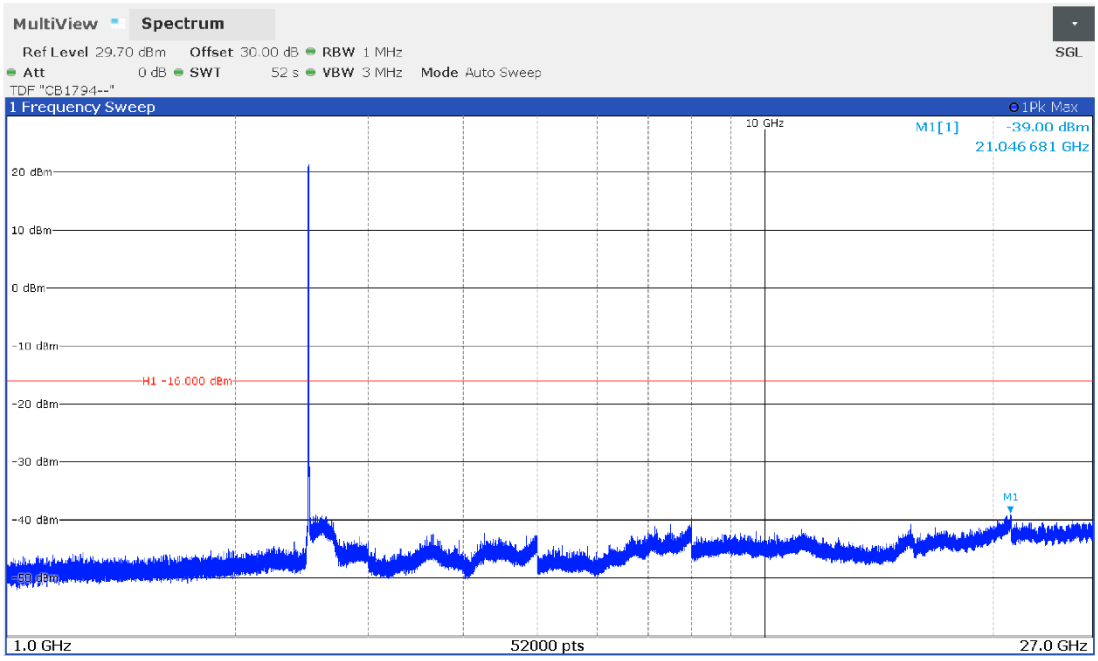


Figure 8.6-2: *Conducted spurious emissions of low channel, antenna port 1 – Range 1000 MHz to 10th harmonic*

Test data, continued

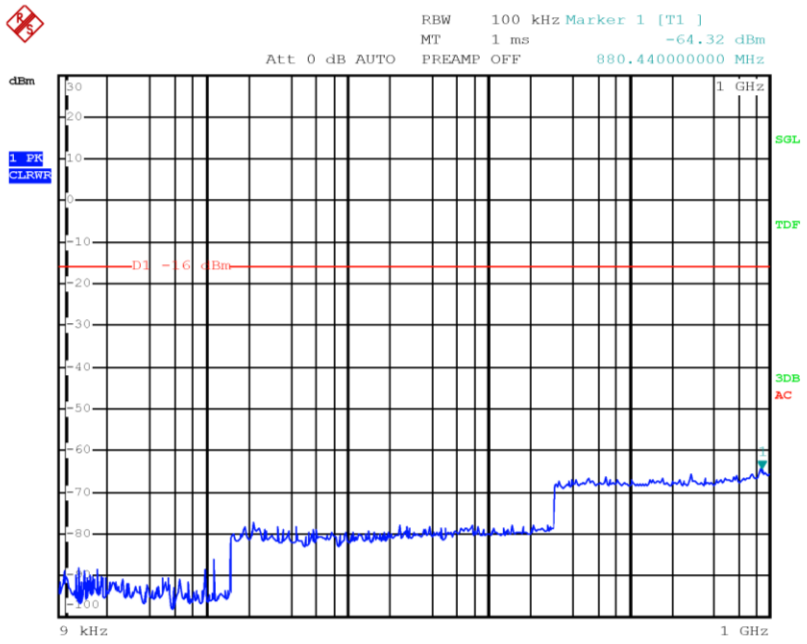


Figure 8.6-3: *Conducted spurious emissions of middle channel, antenna port 1 – Range 9 kHz to 1000 MHz*

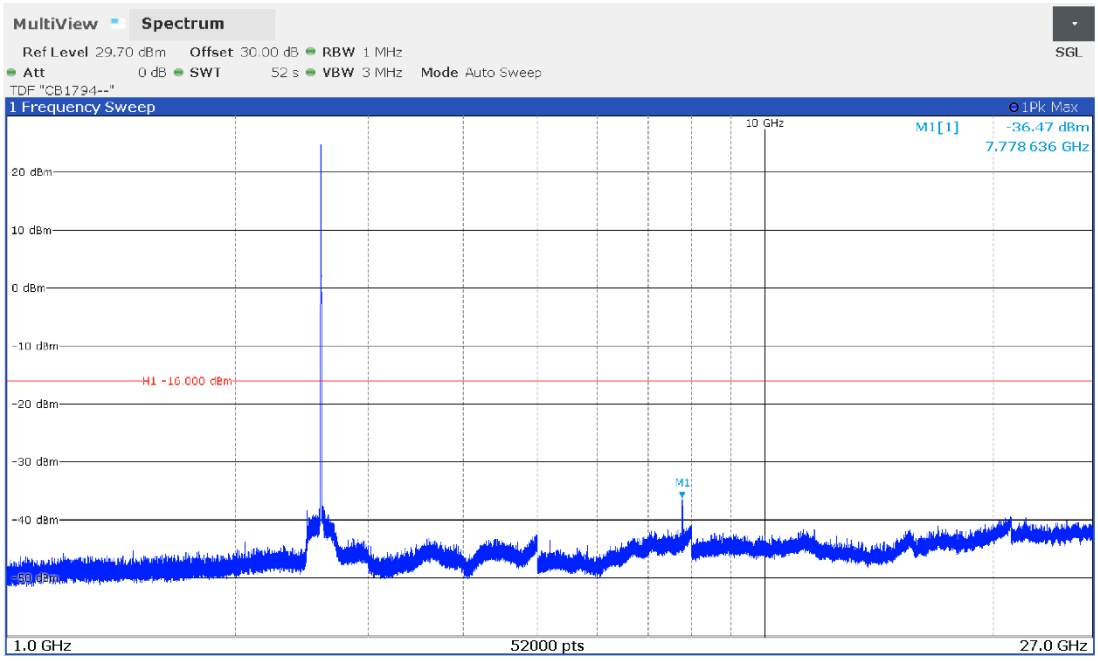


Figure 8.6-4: *Conducted spurious emissions of middle channel, antenna port 1 – Range 1000 MHz to 10th harmonic*

Test data, continued

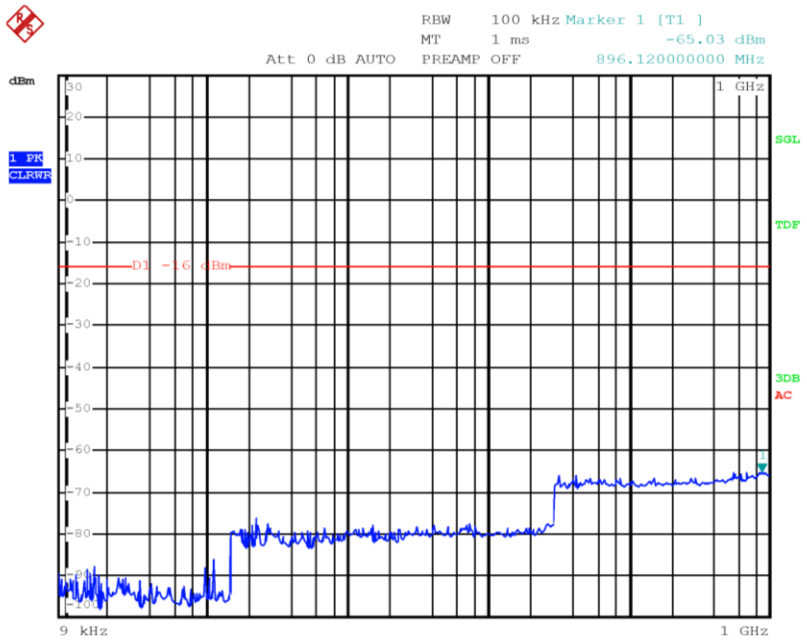


Figure 8.6-5: *Conducted spurious emissions of high channel, antenna port 1 – Range 9 kHz to 1000 MHz*

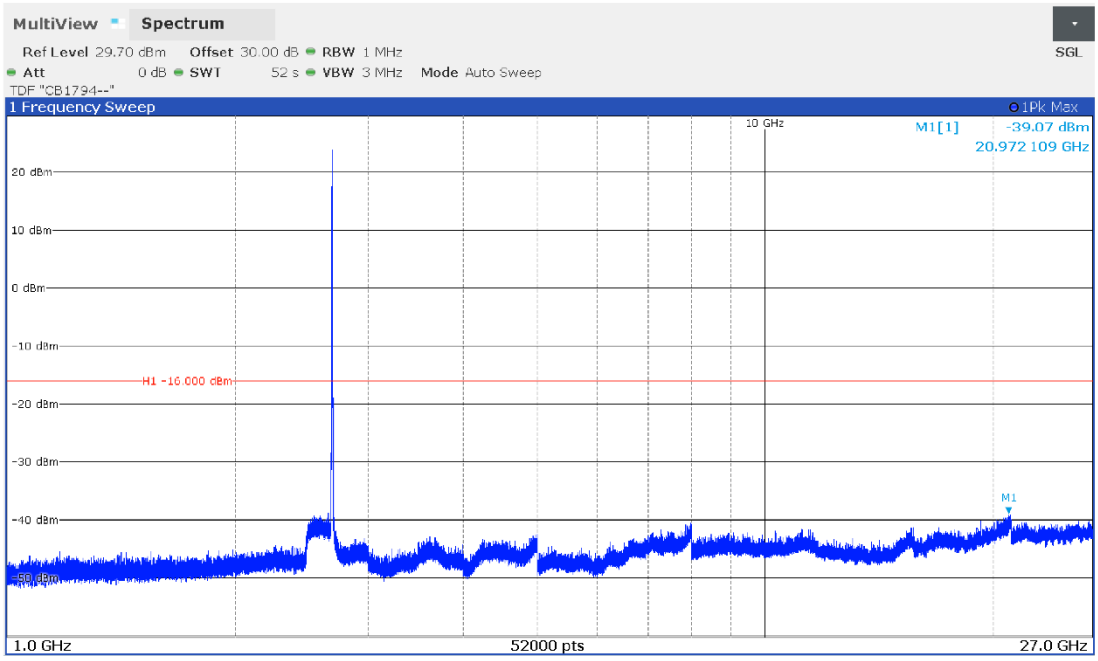


Figure 8.6-6: *Conducted spurious emissions of high channel, antenna port 1 – Range 1000 MHz to 10th harmonic*

8.6.1 Test data

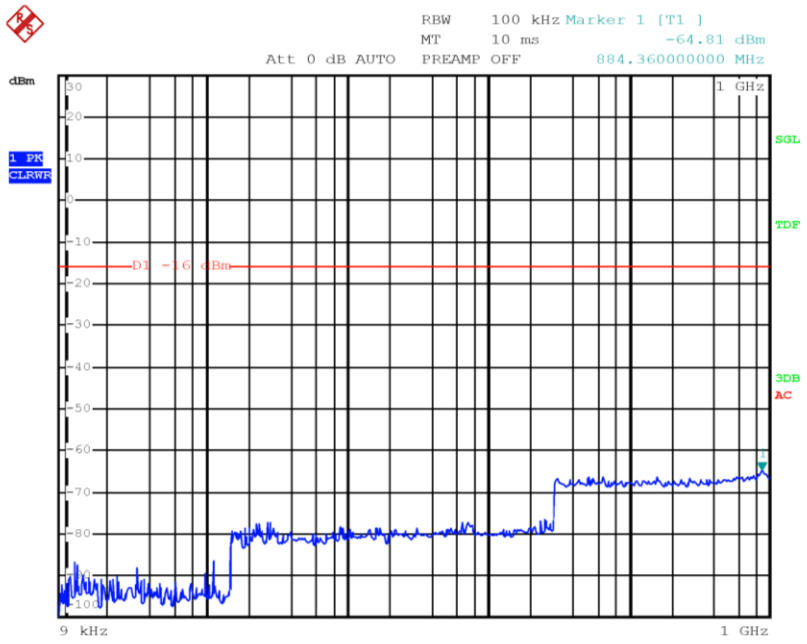


Figure 8.6-7: *Conducted spurious emissions of low channel, antenna port 2 – Range 9 kHz to 1000 MHz*

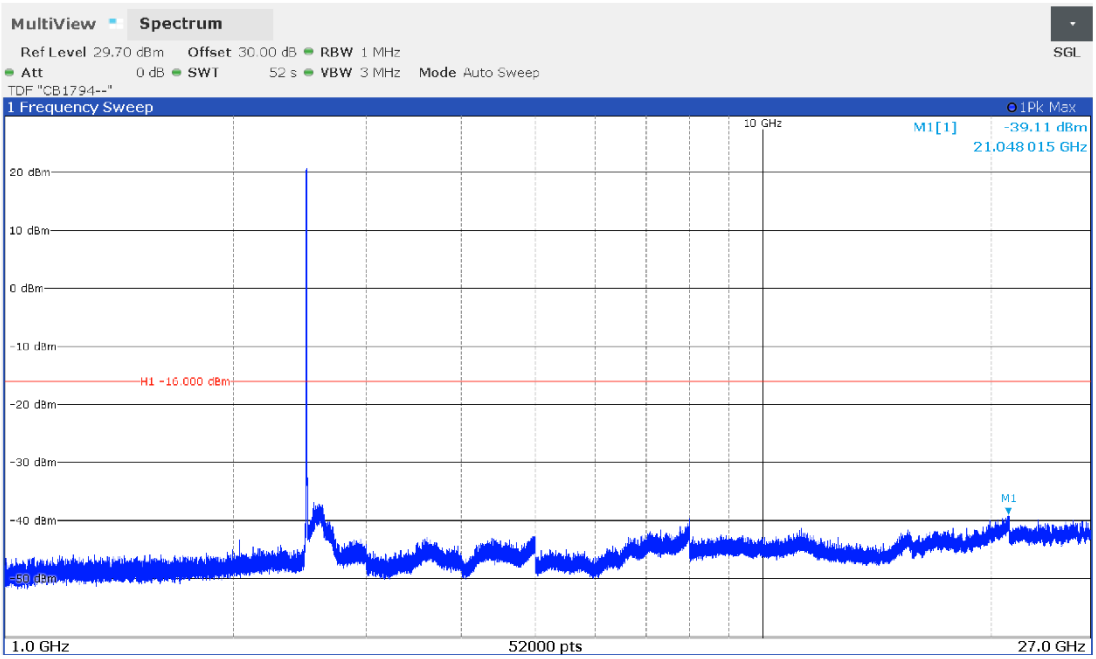


Figure 8.6-8: *Conducted spurious emissions of low channel, antenna port 2 – Range 1000 MHz to 10th harmonic*

Test data, continued

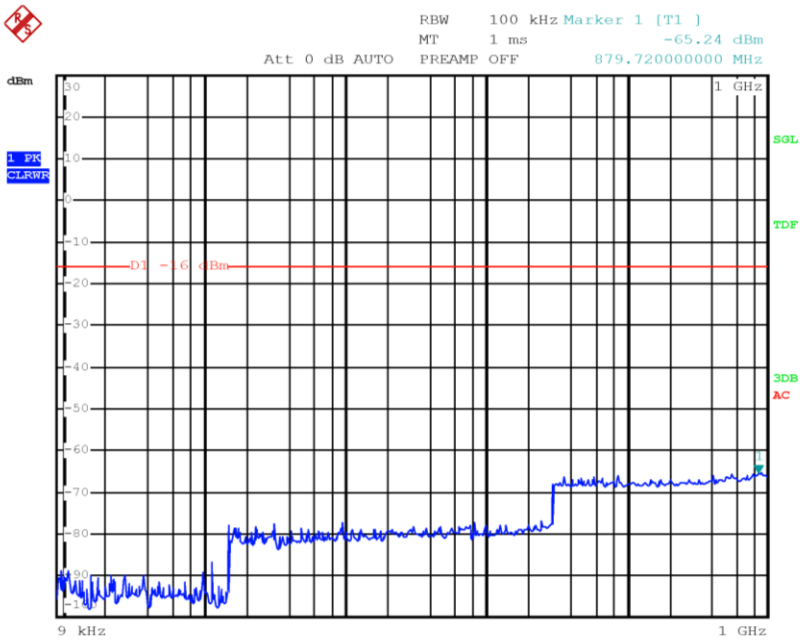


Figure 8.6-9: *Conducted spurious emissions of middle channel, antenna port 2 – Range 9 kHz to 1000 MHz*

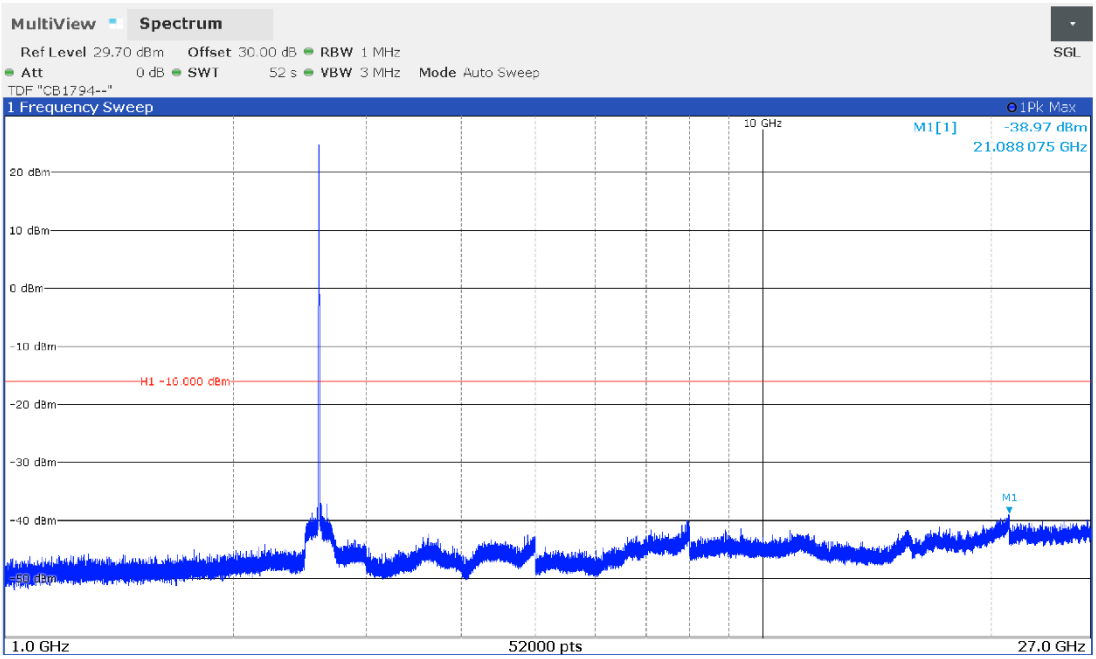


Figure 8.6-10: *Conducted spurious emissions of middle channel, antenna port 2 – Range 1000 MHz to 10th harmonic*

Test data, continued

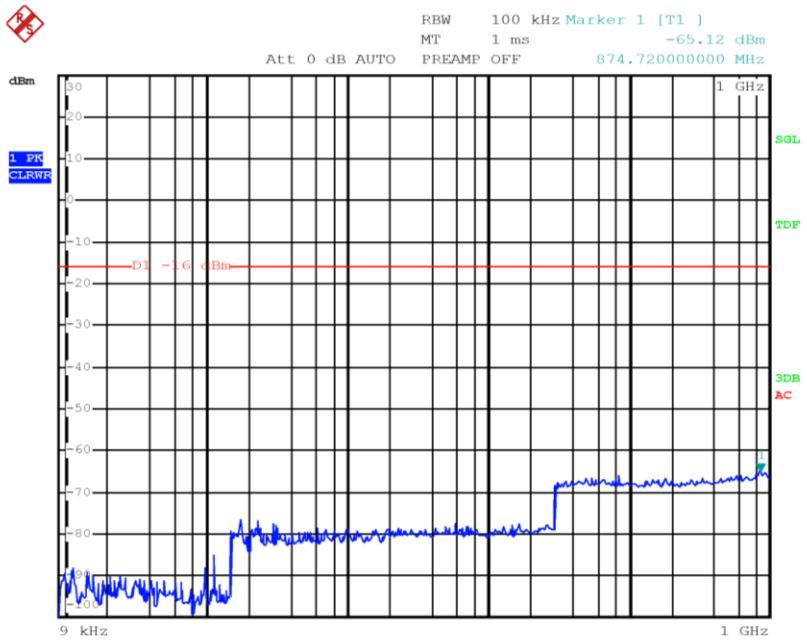


Figure 8.6-11: *Conducted spurious emissions of high channel, antenna port 2 – Range 9 kHz to 1000 MHz*

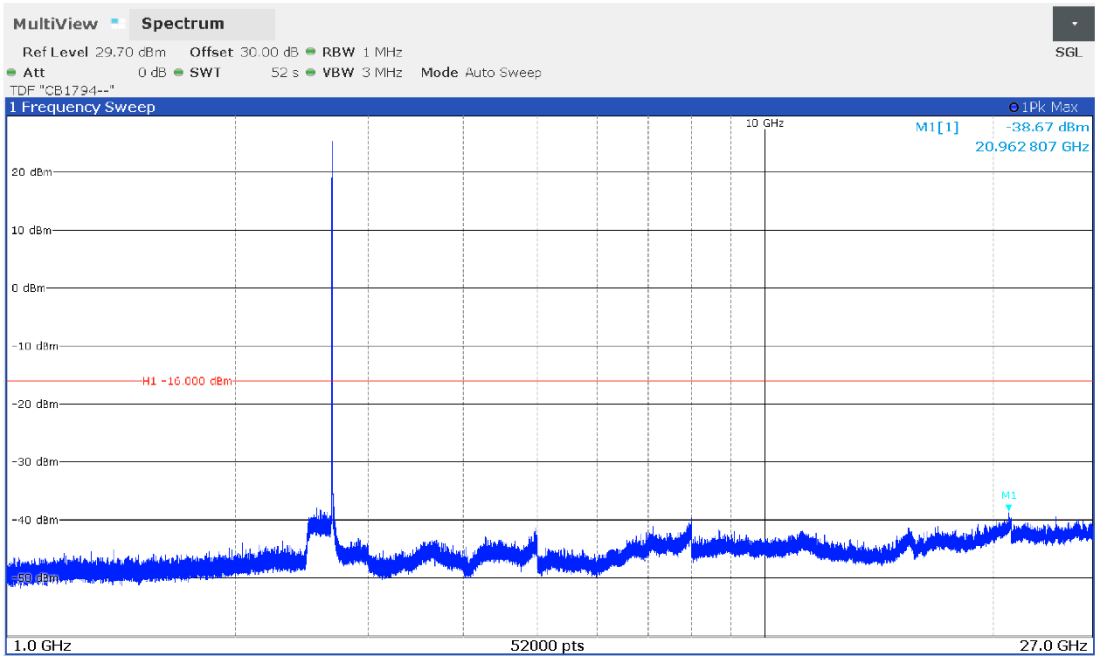


Figure 8.6-12: *Conducted spurious emissions of high channel, antenna port 2 – Range 1000 MHz to 10th harmonic*

Test data, continued

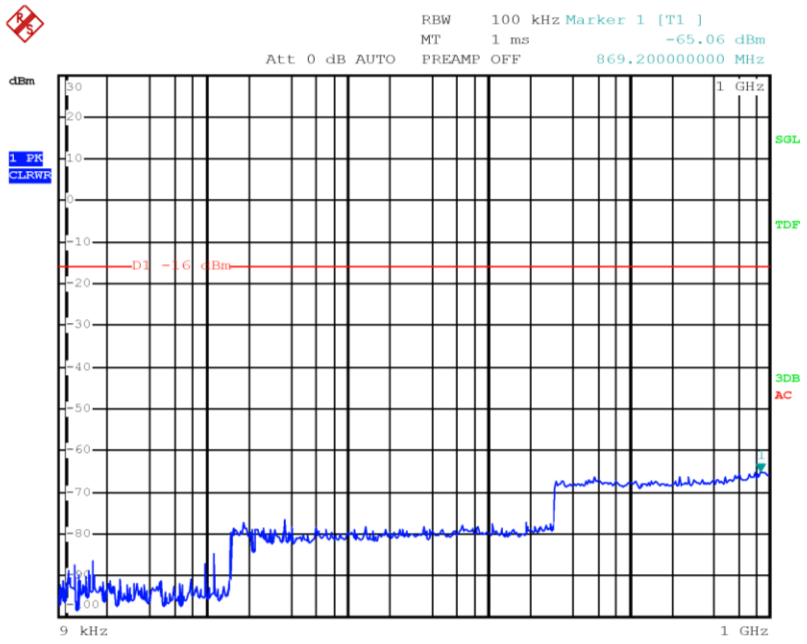


Figure 8.6-13: *Conducted spurious emissions of low channel for ISED, antenna port 1 – Range 9 kHz to 1000 MHz*

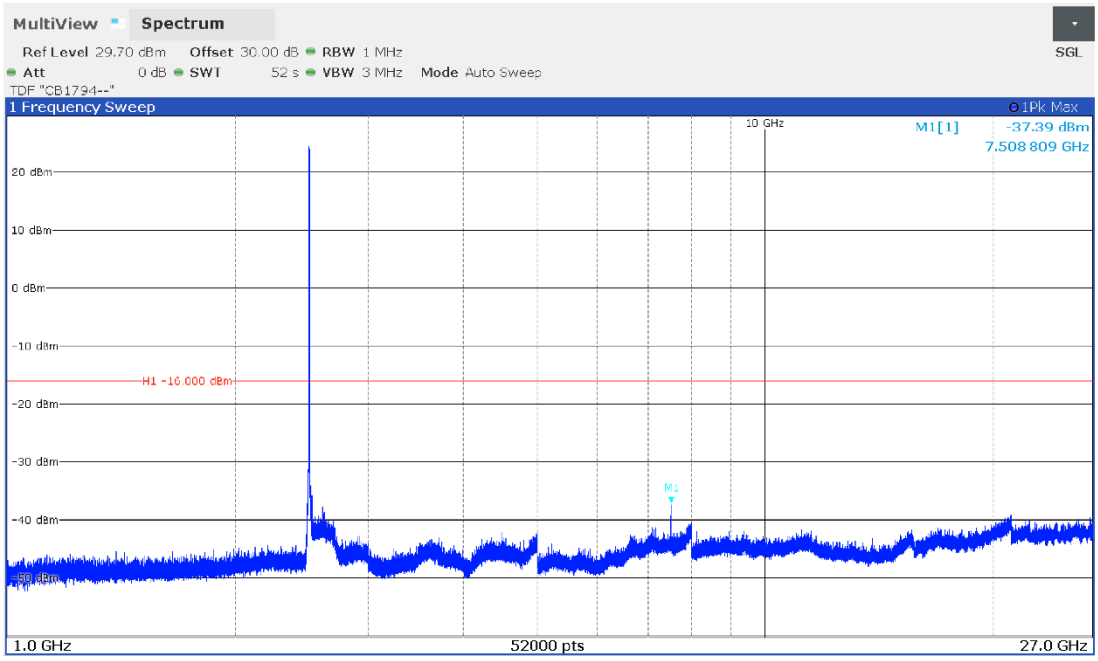


Figure 8.6-14: *Conducted spurious emissions of low channel for ISED, antenna port 1 – Range 1000 MHz to 10th harmonic*

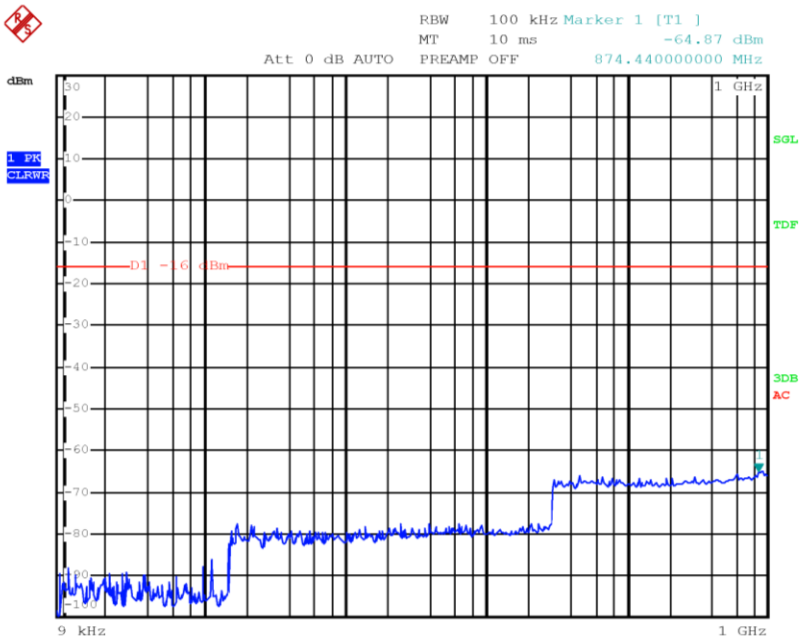


Figure 8.6-15: *Conducted spurious emissions of low channel for ISED, antenna port 2 – Range 9 kHz to 1000 MHz*

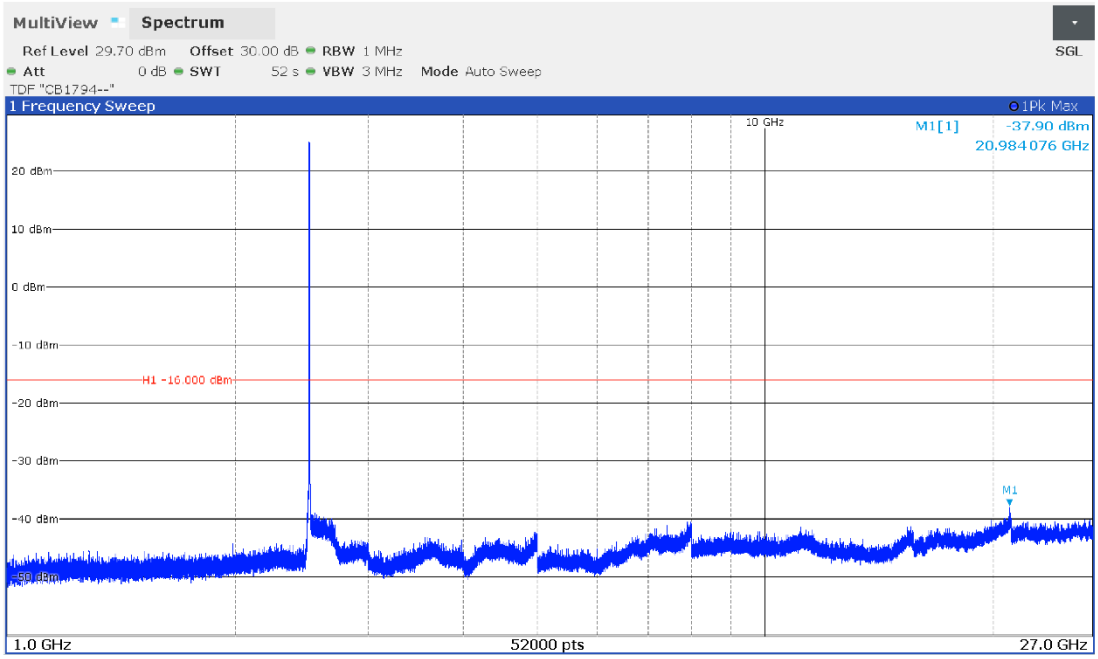


Figure 8.6-16: *Conducted spurious emissions of low channel for ISED, antenna port 2 – Range 1000 MHz to 10th harmonic*

8.7 Spurious emissions radiated measurements

8.7.1 References, definitions and limits

FCC §27.53(m)(2):

(m) For BRS and EBS stations, the power of any emissions outside the licensee's frequency bands of operation shall be attenuated below the transmitter power (P) measured in watts in accordance with the standards below. If a licensee has multiple contiguous channels, out-of-band emissions shall be measured from the upper and lower edges of the contiguous channels.

(2) For digital base stations, the attenuation shall be not less than 43 + 10 log (P) dB, unless a documented interference complaint is received from an adjacent channel licensee with an overlapping Geographic Service Area. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS No. 1 on the same terms and conditions as adjacent channel BRS or EBS licensees. Provided that a documented interference complaint cannot be mutually resolved between the parties prior to the applicable deadline, then the following additional attenuation requirements shall apply:

(i) If a pre-existing base station suffers harmful interference from emissions caused by a new or modified base station located 1.5 km or more away, within 24 hours of the receipt of a documented interference complaint the licensee of the new or modified base station must attenuate its emissions by at least 67 + 10 log (P) dB measured at 3 megahertz, above or below, from the channel edge of its frequency block and shall immediately notify the complaining licensee upon implementation of the additional attenuation. No later than 60 days after the implementation of such additional attenuation, the licensee of the complaining base station must attenuate its base station emissions by at least 67 + 10 log (P) dB measured at 3 megahertz, above or below, from the channel edge of its frequency block of the new or modified base station.

(ii) If a pre-existing base station suffers harmful interference from emissions caused by a new or modified base station located less than 1.5 km away, within 24 hours of receipt of a documented interference complaint the licensee of the new or modified base station must attenuate its emissions by at least 67 + 10 log (P)−20 log (Dkm/1.5) dB measured at 3 megahertz, above or below, from the channel edge of its frequency block of the complaining licensee, or if both base stations are co-located, limit its undesired signal level at the pre-existing base station receiver(s) to no more than −107 dBm measured in a 5.5 megahertz bandwidth and shall immediately notify the complaining licensee upon such reduction in the undesired signal level. No later than 60 days after such reduction in the undesired signal level, the complaining licensee must attenuate its base station emissions by at least 67 + 10 log (P) dB measured at 3 megahertz, above or below, from the channel edge of its frequency block of the new or modified base station.

(iii) If a new or modified base station suffers harmful interference from emissions caused by a pre-existing base station located 1.5 km or more away, within 60 days of receipt of a documented interference complaint the licensee of each base station must attenuate its base station emissions by at least 67 + 10 log (P) dB measured at 3 megahertz, above or below, from the channel edge of its frequency block of the other licensee.

(iv) If a new or modified base station suffers harmful interference from emissions caused by a pre-existing base station located less than 1.5 km away, within 60 days of receipt of a documented interference complaint: (a) The licensee of the new or modified base station must attenuate its OOBE by at least 67 + 10 log (P)−20 log (Dkm/1.5) measured 3 megahertz above or below, from the channel edge of its frequency block of the other licensee, or if the base stations are co-located, limit its undesired signal level at the other base station receiver(s) to no more than −107 dBm measured in a 5.5-megahertz bandwidth; and (b) the licensee causing the interference must attenuate its emissions by at least 67 + 10 log (P) dB measured at 3 megahertz, above or below, from the channel edge of its frequency block of the new or modified base station.

(v) For all fixed digital user stations, the attenuation factor shall be not less than 43 + 10 log (P) dB at the channel edge.

References, definitions and limits, continued

RSS-131, Clause 5.2

Industrial zone enhancers

Industrial Zone Enhancers, including DASs, shall employ a gain control feature and shall comply with all the requirements in the RSS which applies to the equipment with which the zone enhancer is to be used. In addition, the equipment shall comply with the requirements specified in this section.

RSS-199, Clause 4.5

In the 1 MHz band immediately outside and adjacent to the channel edge, the unwanted emission power shall be measured with a resolution bandwidth of at least 1% of the occupied bandwidth for base station and fixed subscriber equipment, and 2% for mobile subscriber equipment. Beyond the 1 MHz band, a resolution bandwidth of 1 MHz shall be used. A narrower resolution bandwidth can be used, provided that the measured power is integrated over the full required measurement bandwidth of 1 MHz, or 1% or 2% of the occupied bandwidth, as applicable.

Equipment shall comply with the following unwanted emission limits

(a) for base station and fixed subscriber equipment, the power of any unwanted emissions measured as above shall be attenuated (in dB) below the transmitter power, P (dBW), by at least 43 + 10 log10 p.

(b) for mobile subscriber equipment, the power of any unwanted emissions measured as above shall be attenuated (in dB) below the transmitter power, P (dBW), by at least:
(i) 40 + 10 log10 p from the channel edges to 5 MHz away
(ii) 43 + 10 log10 p between 5 MHz and X MHz from the channel edges, and
(iii) 55 + 10 log10 p at X MHz and beyond from the channel edges
In addition, the attenuation shall not be less than 43 + 10 log10 p on all frequencies between 2490.5 MHz and 2496 MHz, and 55 + 10 log10 p at or below 2490.5 MHz.

In (a) and (b), p is the transmitter power measured in watts and X is 6 MHz or the equipment occupied bandwidth, whichever is greater.

8.7.2 Test summary

Verdict	Pass		
Tested by	P. Barbieri	Test date	February 4, 2022

8.7.3 Observations, settings and special notes

The spectrum was searched from 30 MHz to the 10th harmonic.
All measurements were performed using peak detector according to note 4 of 935210 D05 Indus Booster Basic Meas v01r04 paragraph 3.6.3.
Testing was performed with RF ports terminated with 50 Ohm load.
In the graphics below, no radiated spurious emission found and the limit is exceeded only by the carrier.

Spectrum analyser settings:

Resolution bandwidth:	100 kHz and 1 MHz
Video bandwidth:	VBW ≥ 3 × RBW
Detector mode:	Peak
Trace mode:	Max Hold

Input signal frequency

Low channel	2498.5 MHz
Low channel (ISED)	2502.5 MHz
Middle channel	2593.0 MHz
High channel	2687.5 MHz

8.7.4 Test equipment used

Equipment	Manufacturer	Model no.	Asset no.
Spectrum Analyzer	Rohde & Schwarz	FSW43	101767
EMI Receiver	Rohde & Schwarz	ESW44	101620
RF Vector Signal Generator	Rohde & Schwarz	SMBV100A	263254
RF Vector Signal Generator	Rohde & Schwarz	SMBV100A	263397
Antenna Trilog 25MHz - 8GHz	Schwarzbeck Mess-Elektronik	VULB9162	9162-025
Antenna 1 - 18 GHz	Schwarzbeck Mess-Elektronik	STLP9148	STLP 9148-152
Double Ridge Horn Antenna	RFSpin	DRH40	061106A40
Broadband Amplifier	Schwarzbeck Mess-Elektronik	BBV9718C	00121
Broadband Bench Top Amplifier	Sage	STB-1834034030-KFKF-L1	18490-01
Controller	Maturo	FCU3.0	10041
Tilt antenna mast	Maturo	TAM4.0-E	10042
Turntable	Maturo	TT4.0-5T	2.527
Semi-anechoic chamber	Nemko S.p.a.	10m semi-anechoic chamber	530

Notes: NCR - no calibration required, VOU - verify on use

8.7.5 Test data

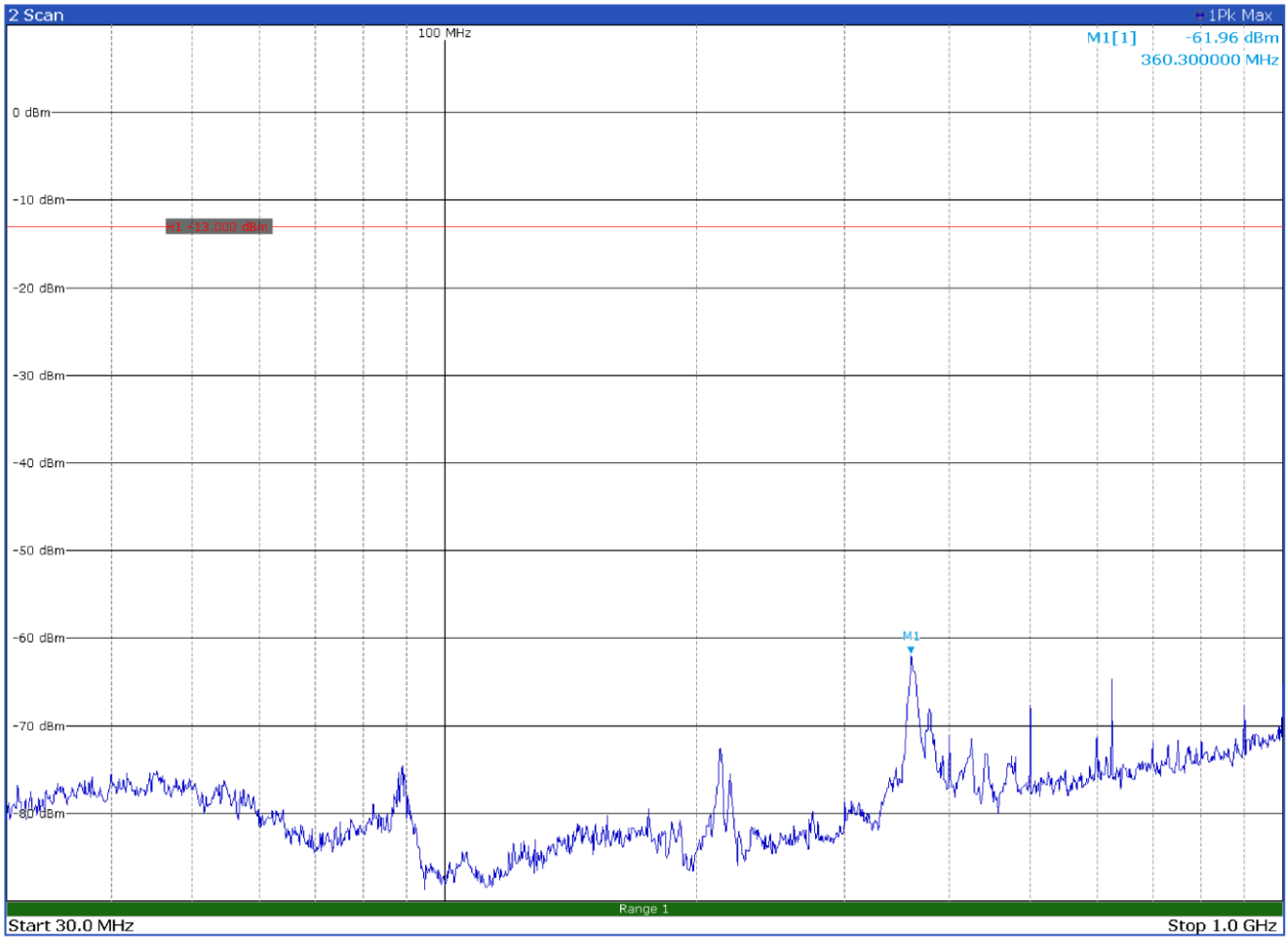


Figure 8.7-1: *Radiated spurious emissions below 1 GHz, low channel with antenna in horizontal polarization*

Test data, continued

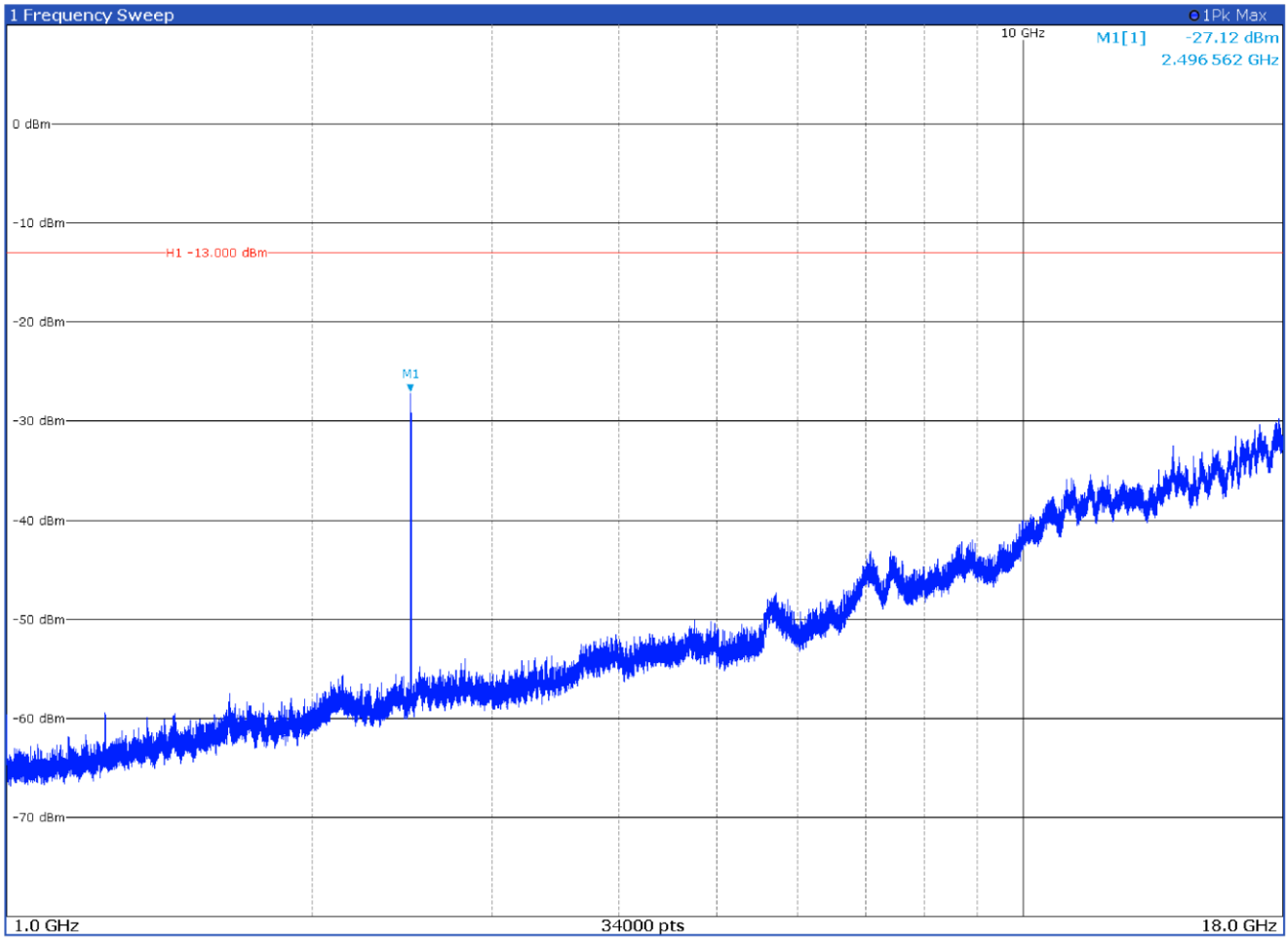


Figure 8.7-2: *Radiated spurious emissions from 1 GHz to 18 GHz, low channel with antenna in horizontal polarization*

Test data, continued

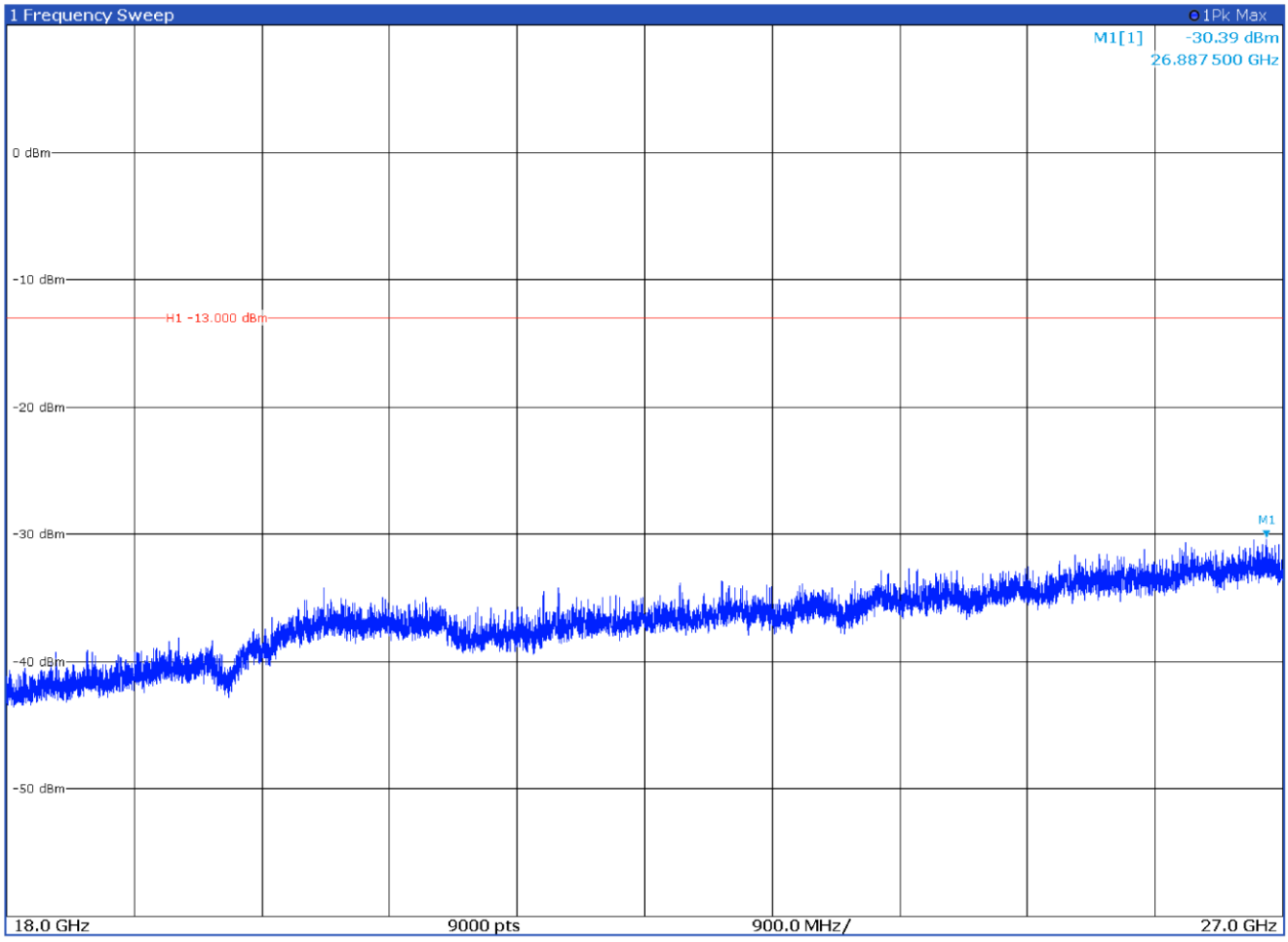


Figure 8.7-3: *Radiated spurious emissions from 18 GHz to to 10th harmonic, low channel with antenna in horizontal polarization*

Test data, continued

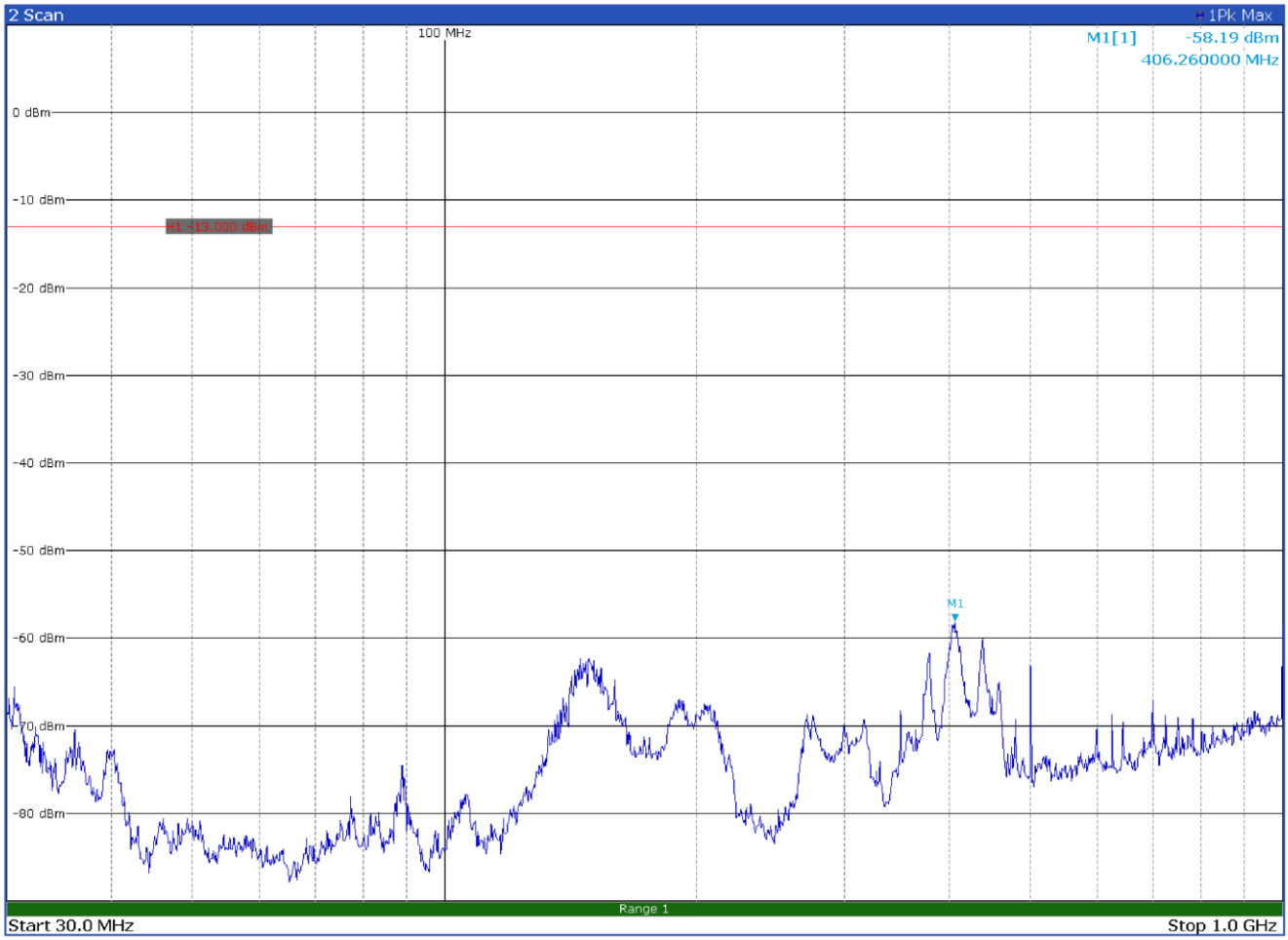


Figure 8.7-4: *Radiated spurious emissions below 1 GHz, low channel with antenna in vertical polarization*

Test data, continued

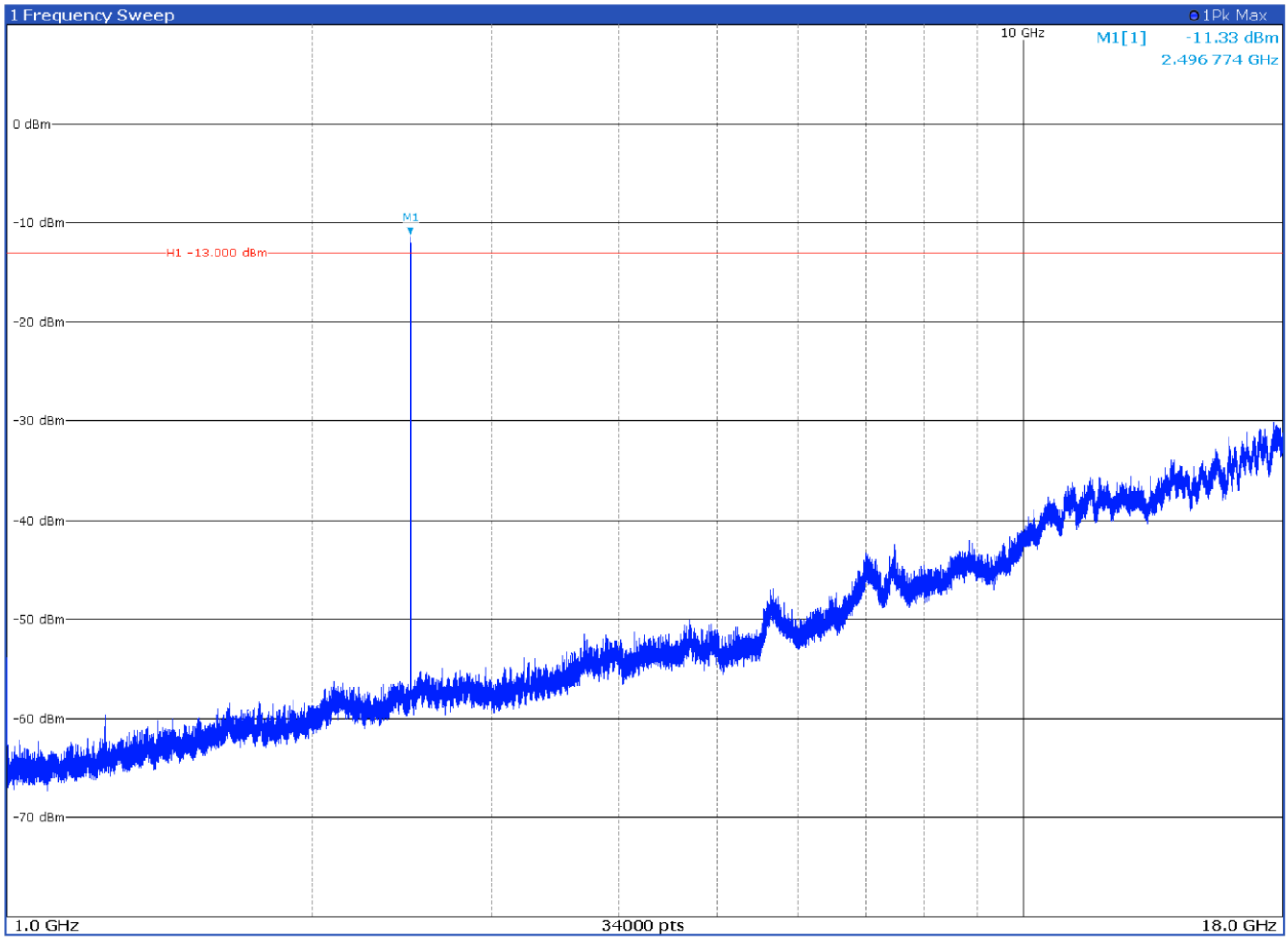


Figure 8.7-5: *Radiated spurious emissions from 1 GHz to 18 GHz, low channel with antenna in vertical polarization*

Test data, continued

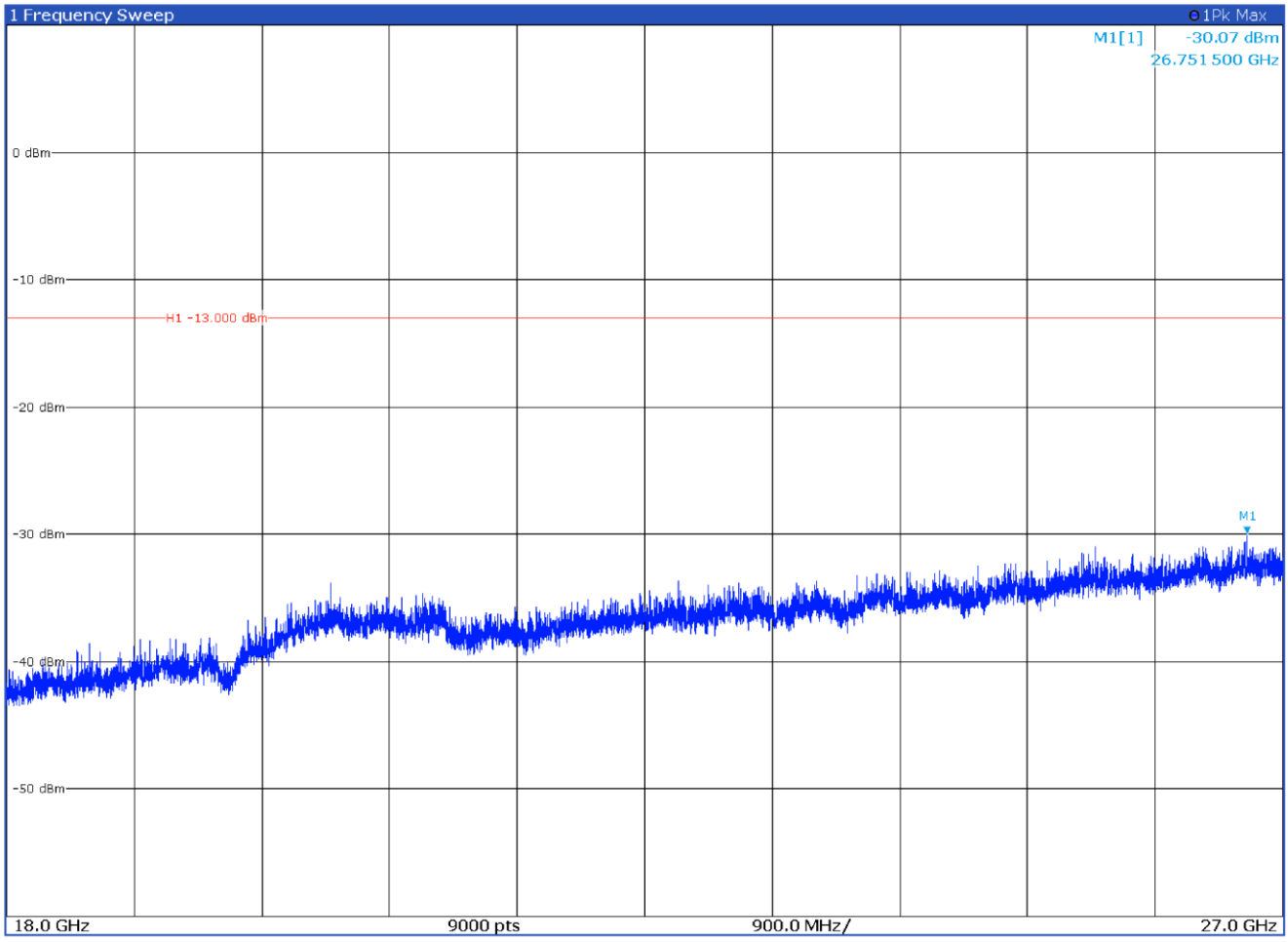


Figure 8.7-6: *Radiated spurious emissions from 18 GHz to to 10th harmonic, low channel with antenna in vertical polarization*

Test data, continued

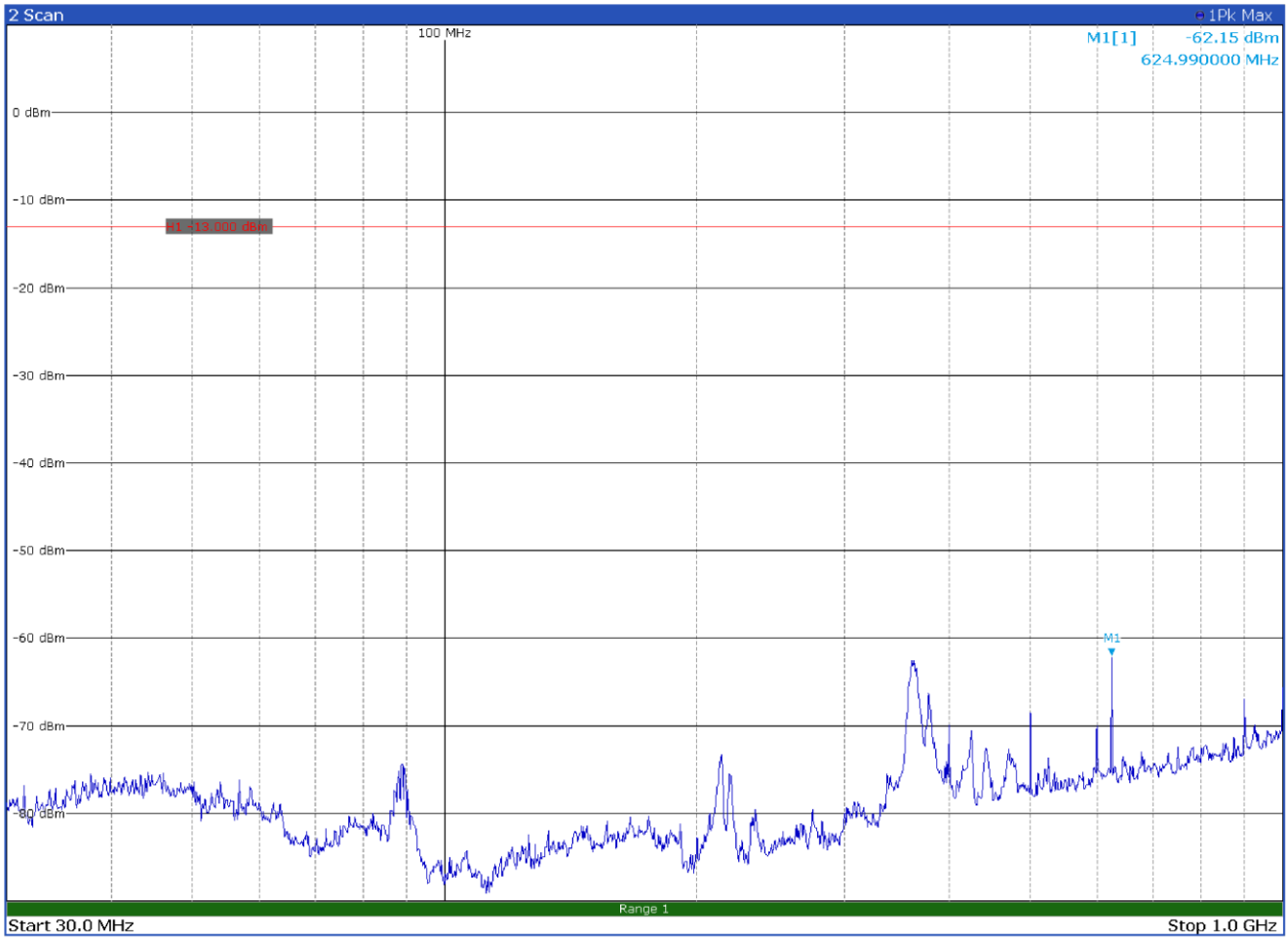


Figure 8.7-7: *Radiated spurious emissions below 1 GHz, middle channel with antenna in horizontal polarization*

Test data, continued

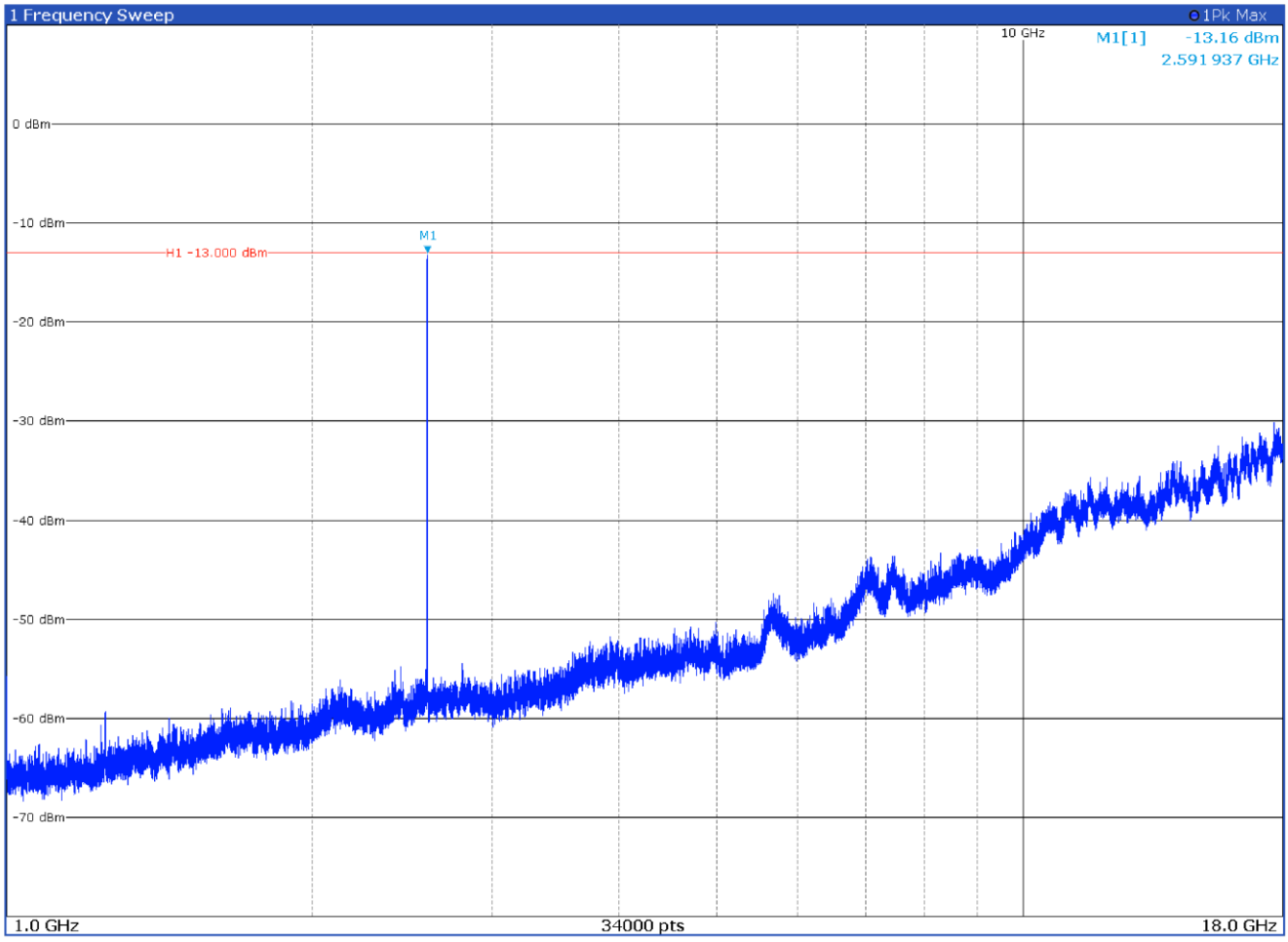


Figure 8.7-8: *Radiated spurious emissions from 1 GHz to 18 GHz, middle channel with antenna in horizontal polarization*

Test data, continued

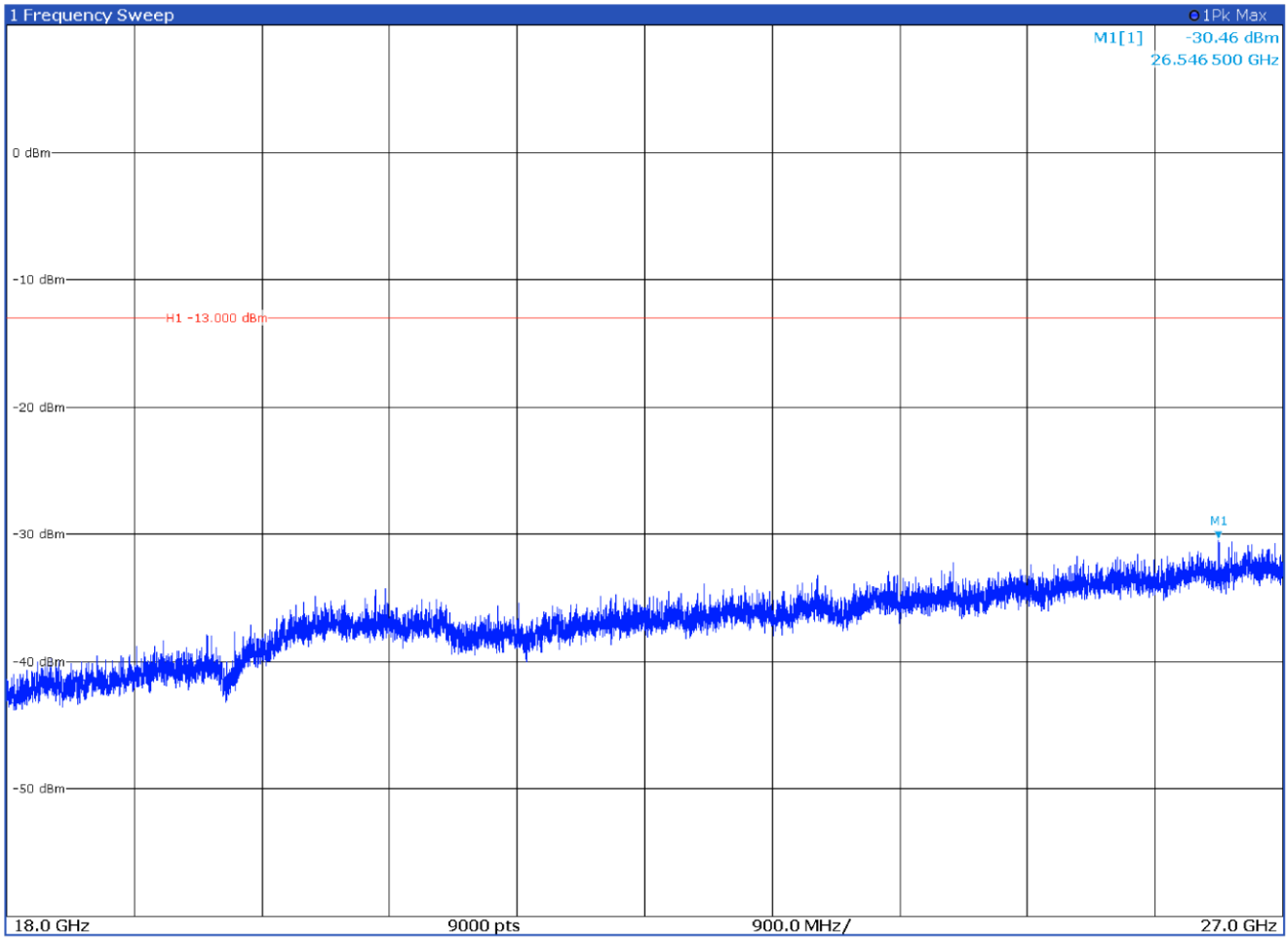


Figure 8.7-9: *Radiated spurious emissions from 18 GHz to 10th harmonic, middle channel with antenna in horizontal polarization*

Test data, continued

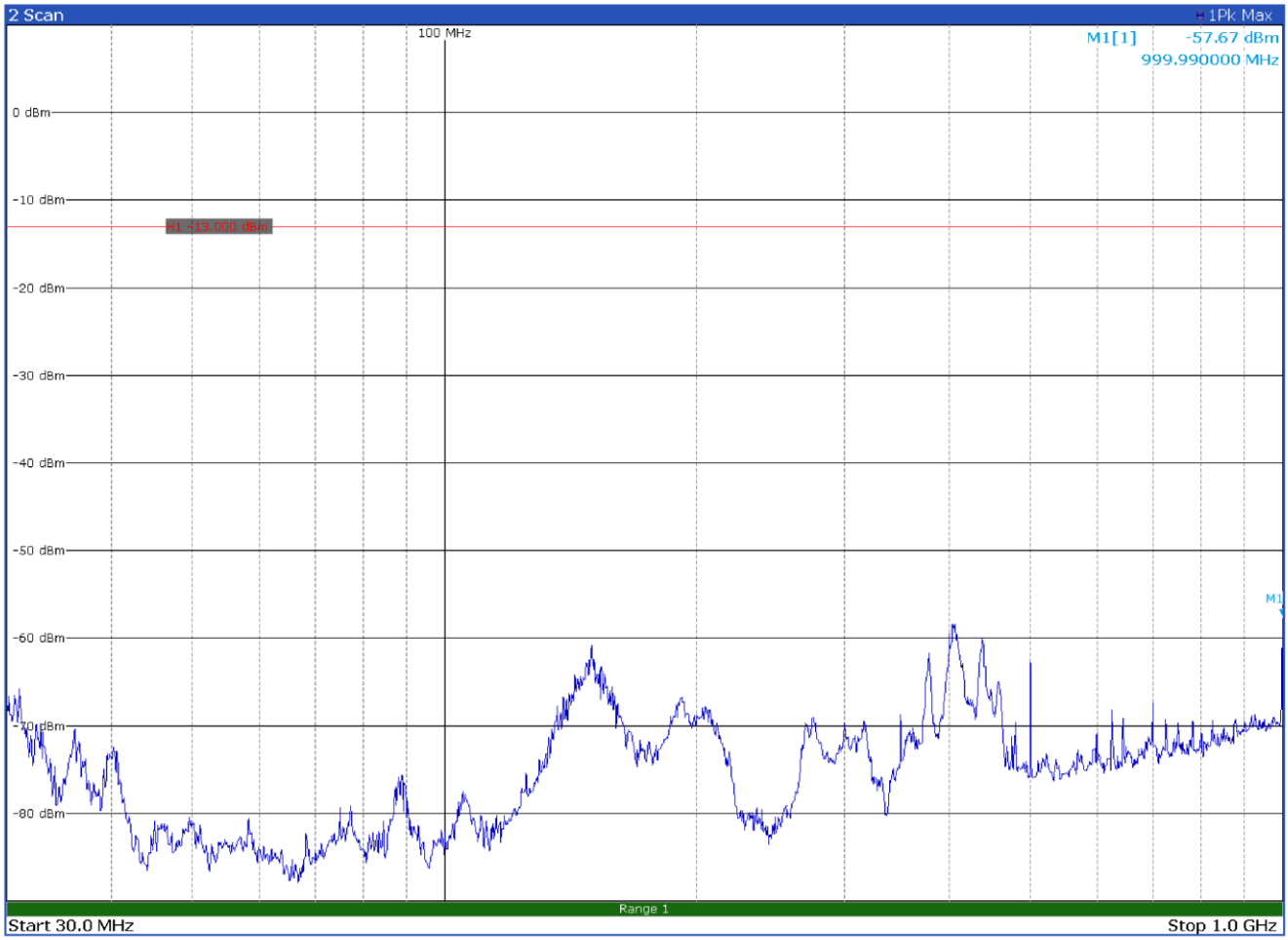


Figure 8.7-10: *Radiated spurious emissions below 1 GHz, middle channel with antenna in vertical polarization*

Test data, continued

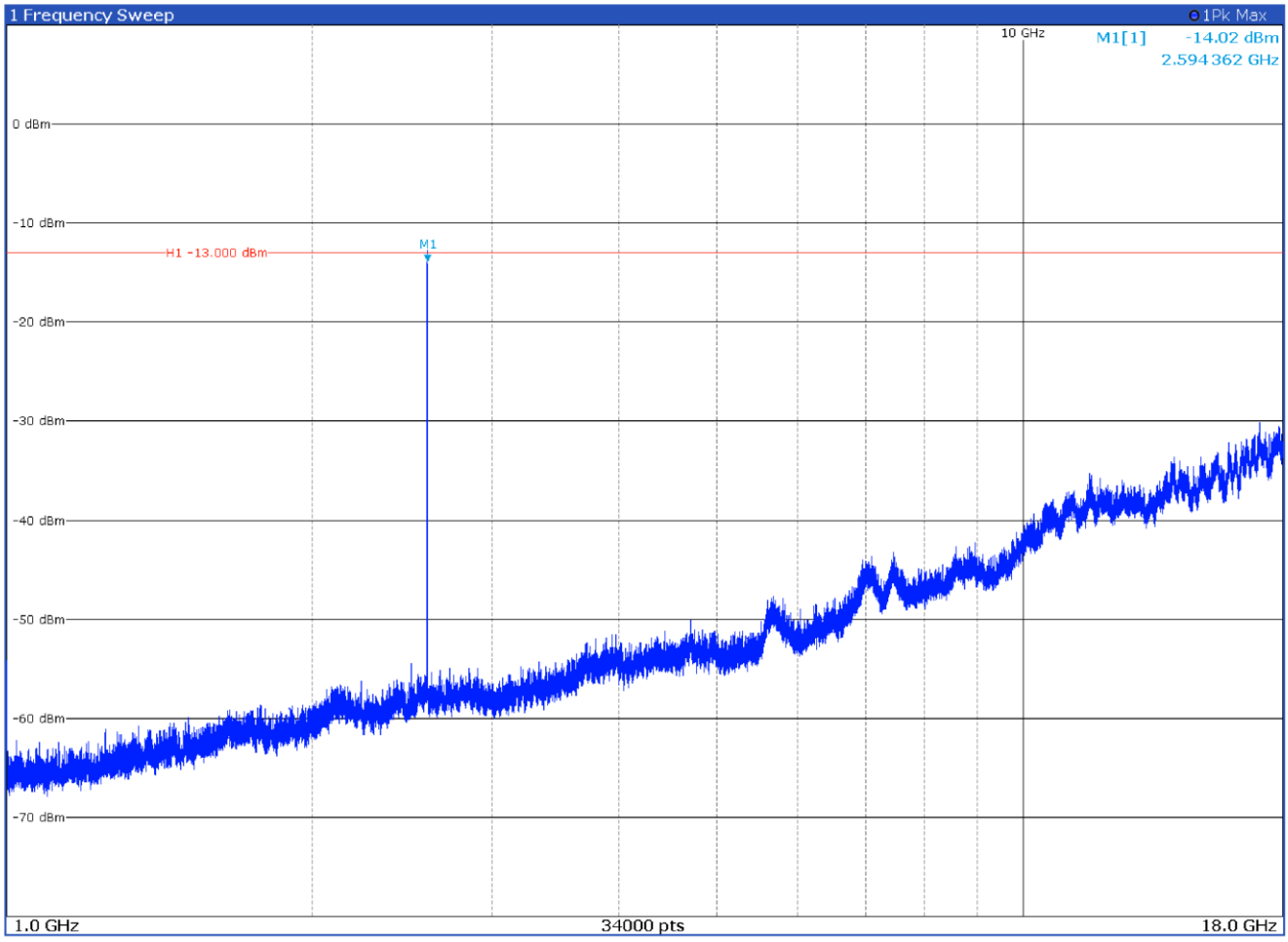


Figure 8.7-11: *Radiated spurious emissions from 1 GHz to 18 GHz, middle channel with antenna in vertical polarization*

Test data, continued

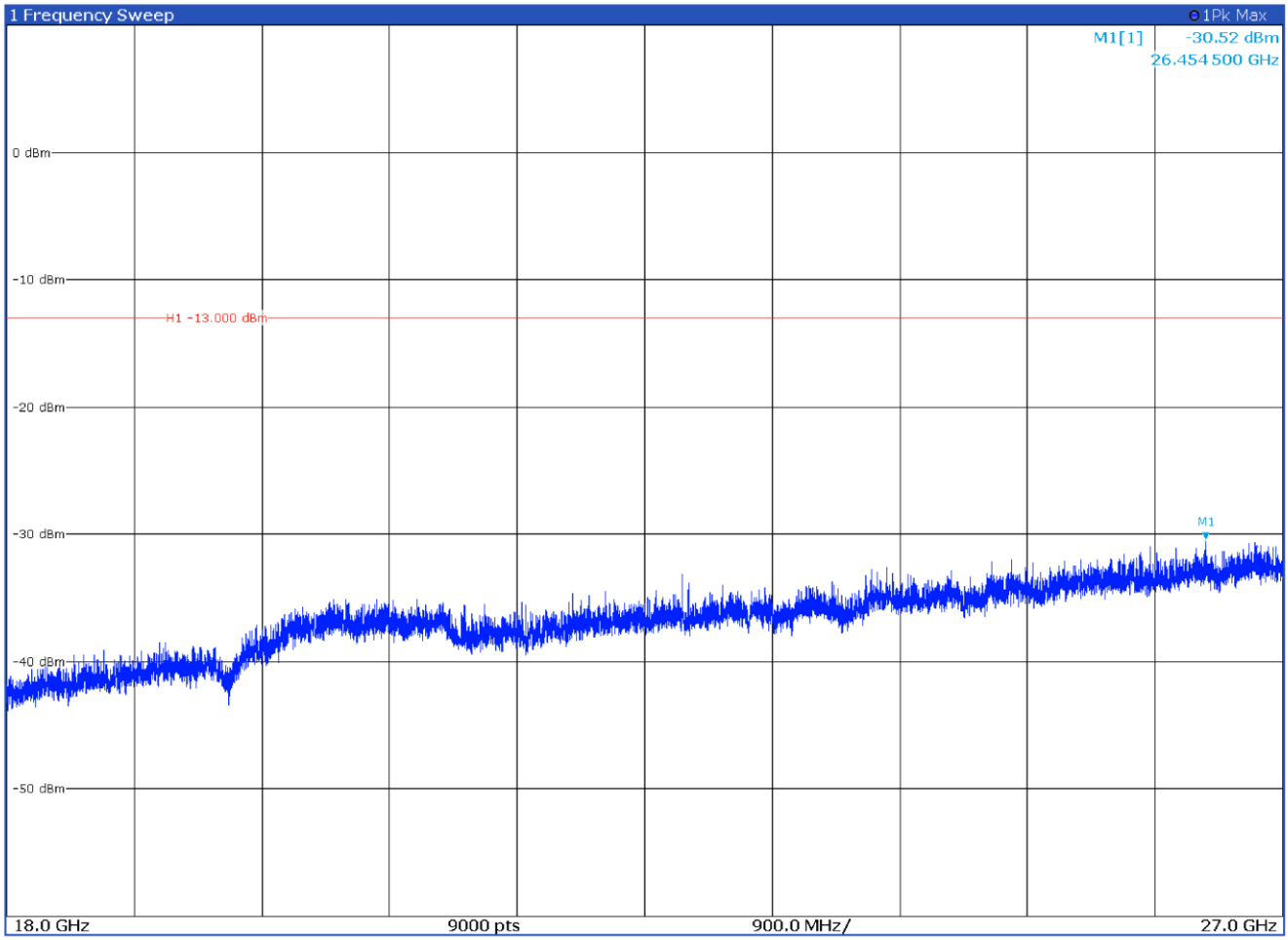


Figure 8.7-12: *Radiated spurious emissions from 18 GHz to 10th harmonic, middle channel with antenna in vertical polarization*

Test data, continued

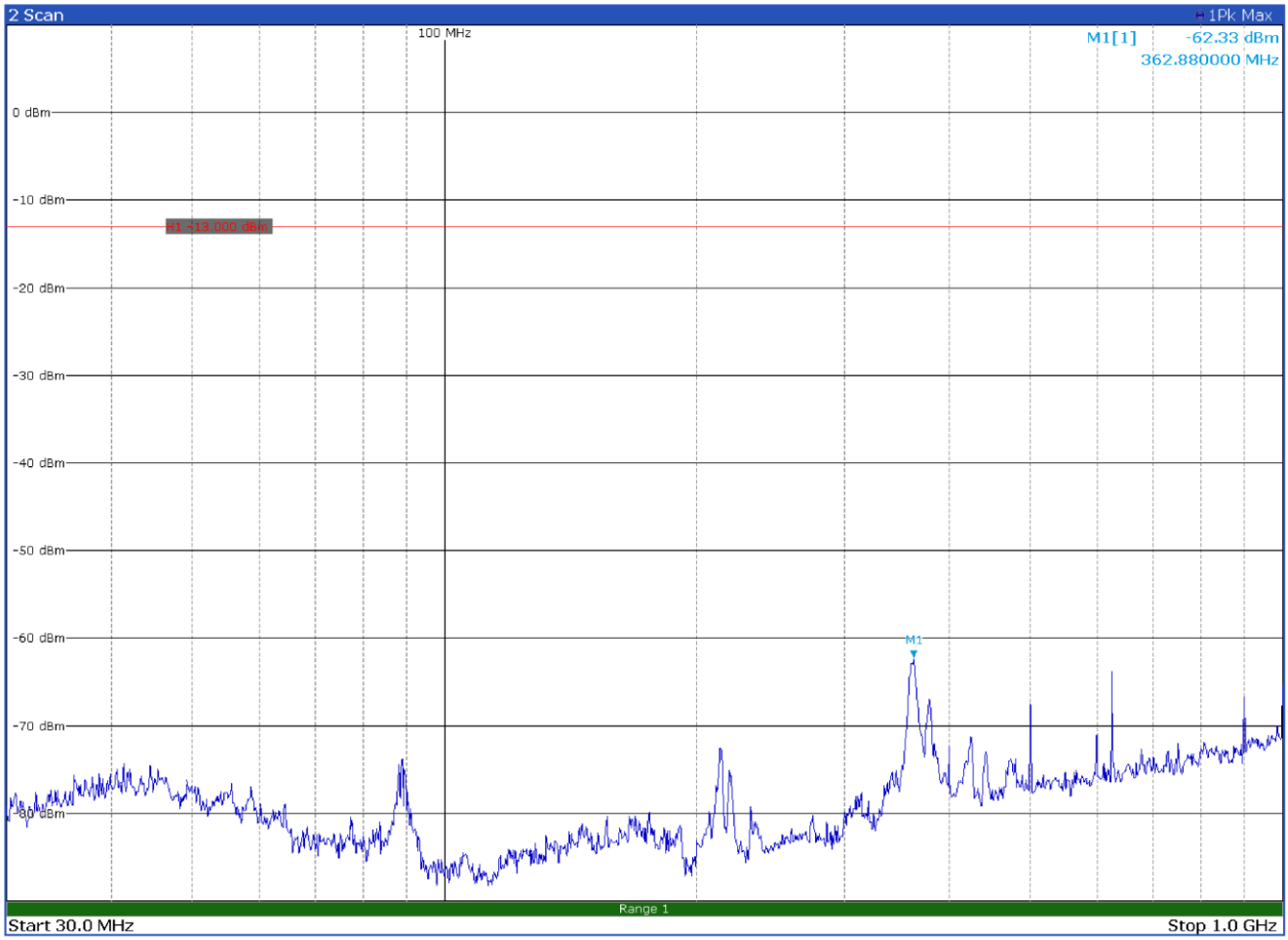


Figure 8.7-13: *Radiated spurious emissions below 1 GHz, high channel with antenna in horizontal polarization*

Test data, continued

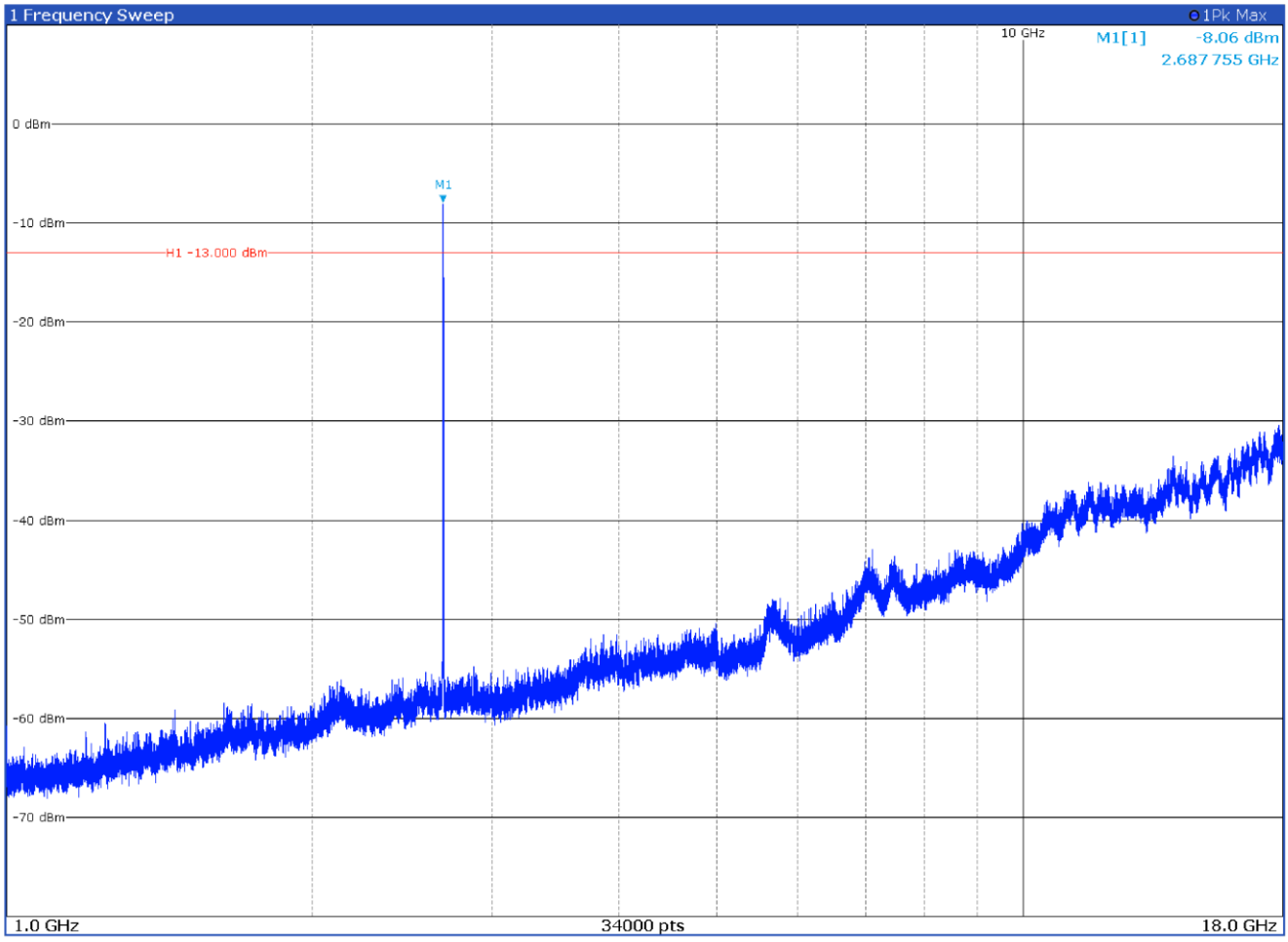


Figure 8.7-14: *Radiated spurious emissions from 1 GHz to 18 GHz, high channel with antenna in horizontal polarization*

Test data, continued

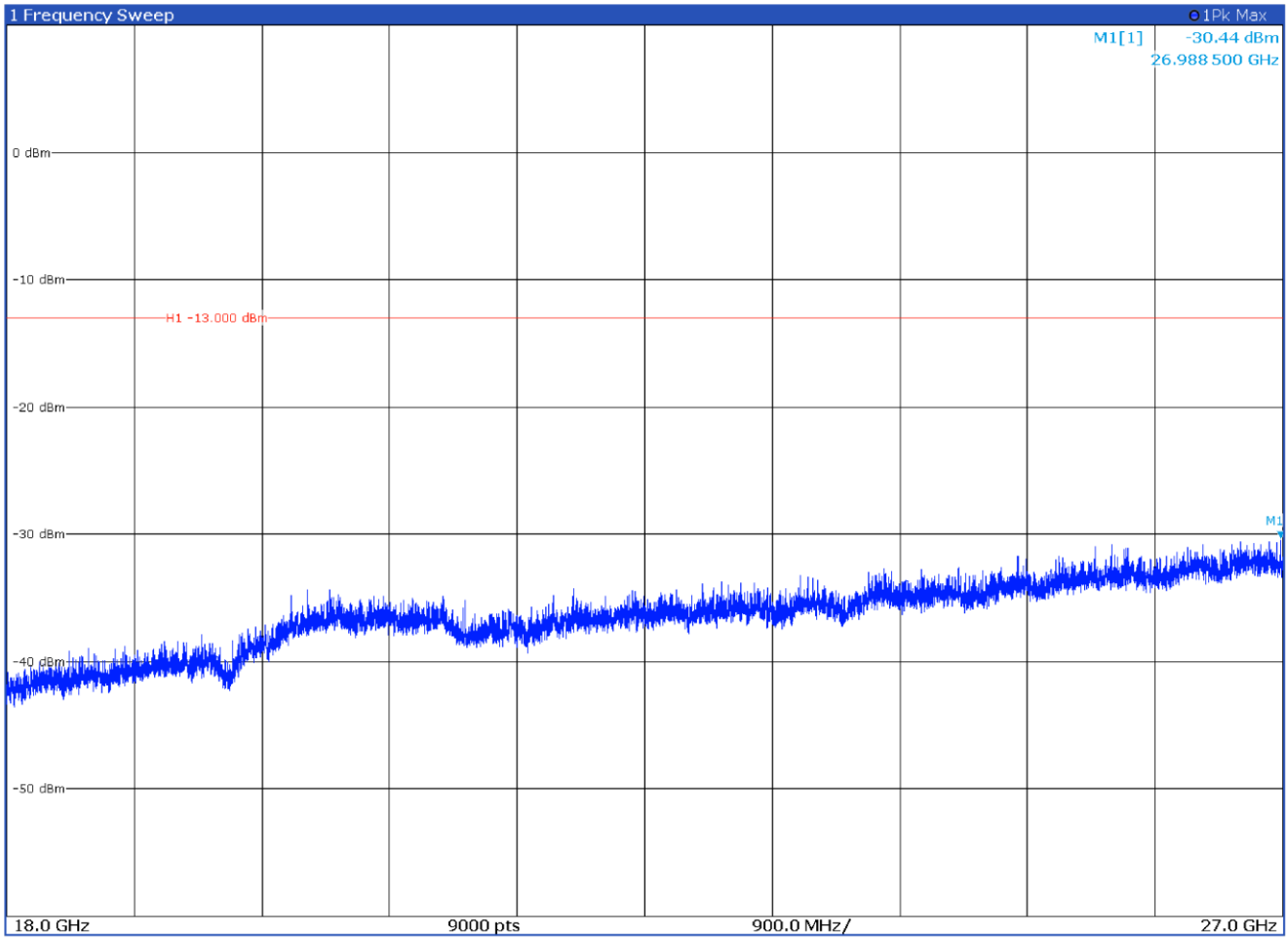


Figure 8.7-15: *Radiated spurious emissions from 18 GHz to to 10th harmonic, high channel with antenna in horizontal polarization*

Test data, continued

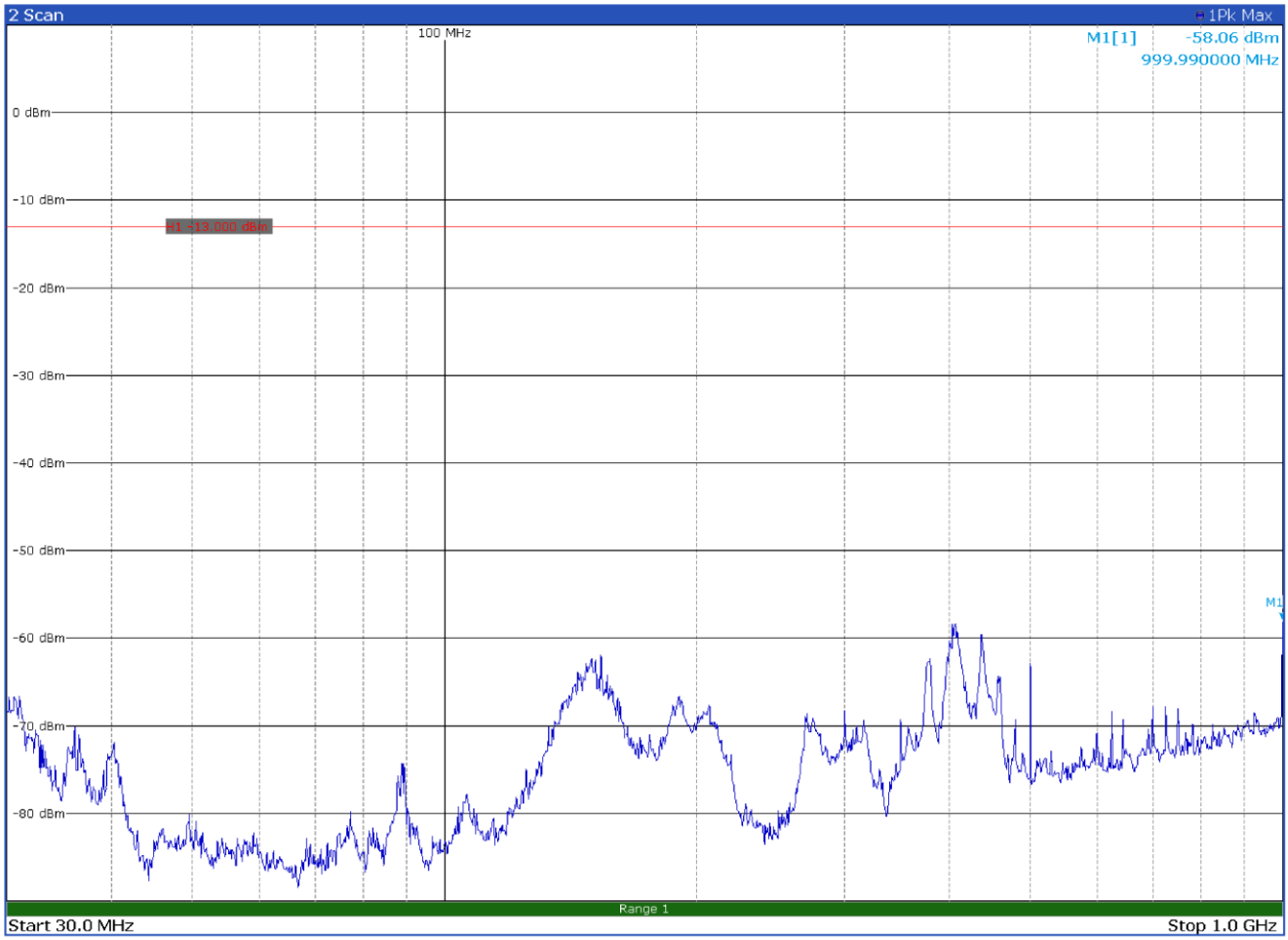


Figure 8.7-16: *Radiated spurious emissions below 1 GHz, high channel with antenna in vertical polarization*

Test data, continued

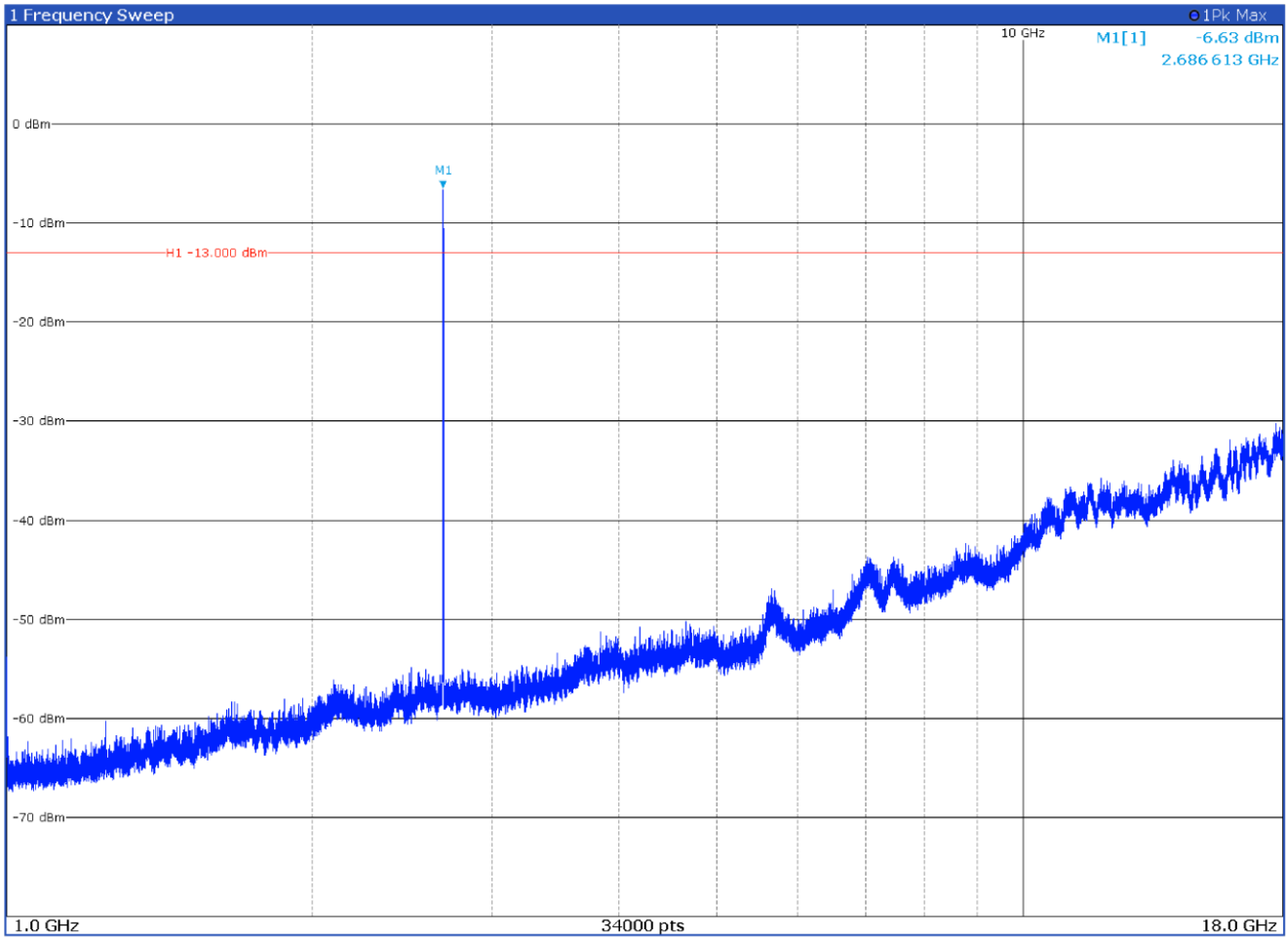


Figure 8.7-17: *Radiated spurious emissions from 1 GHz to 18 GHz, high channel with antenna in vertical polarization*

Test data, continued

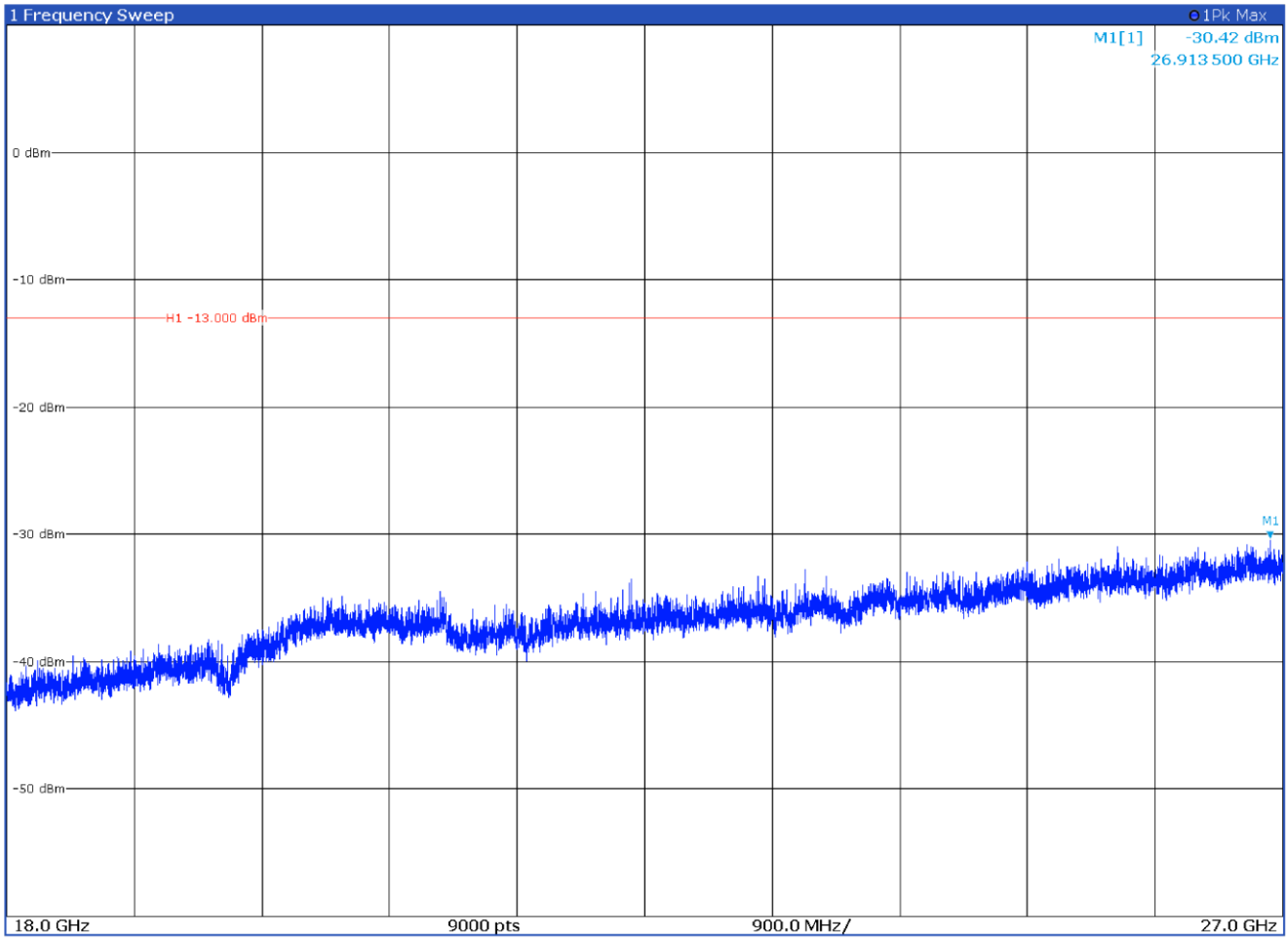


Figure 8.7-18: *Radiated spurious emissions from 18 GHz to 10th harmonic, high channel with antenna in vertical polarization*

Test data, continued

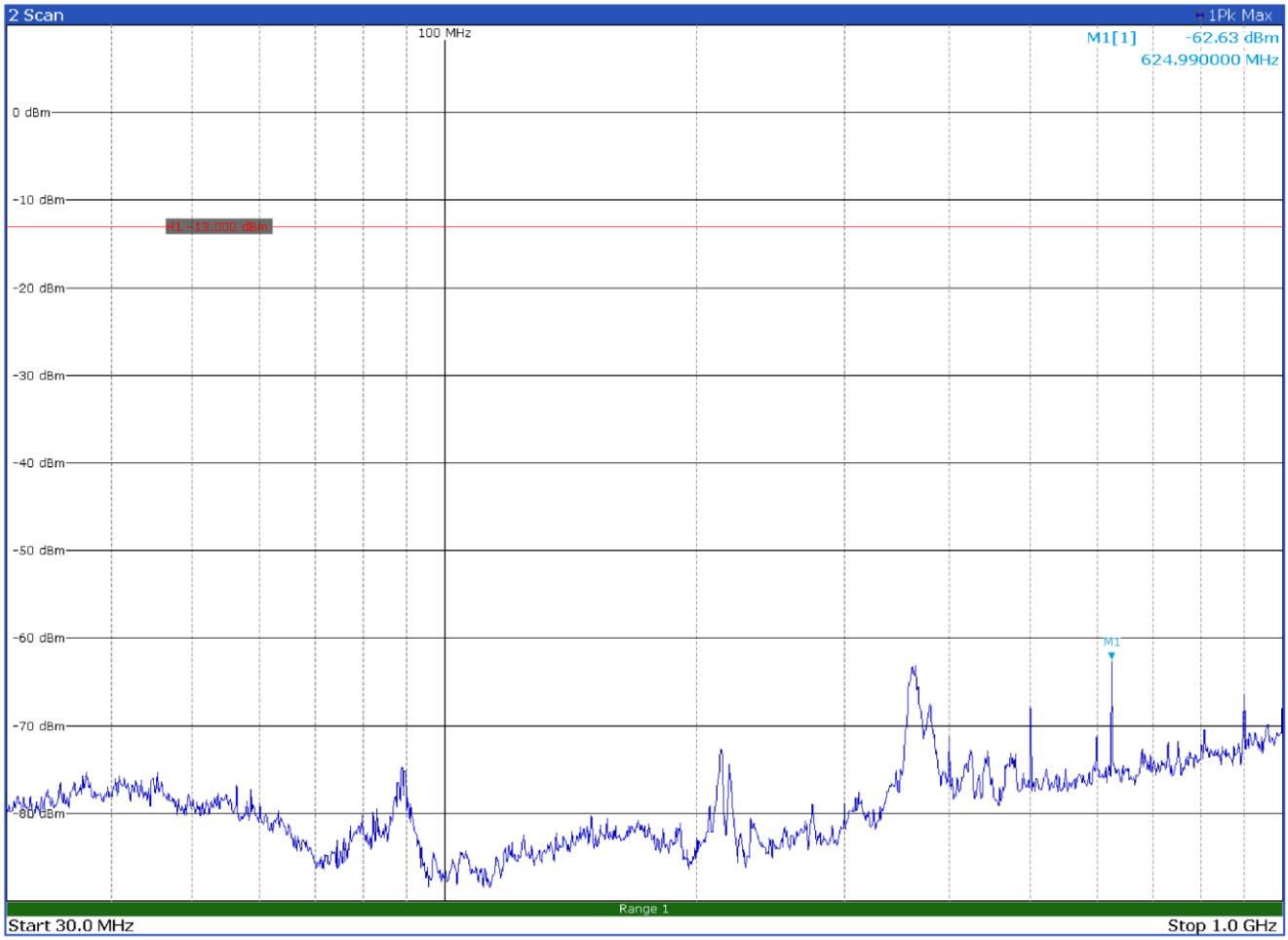


Figure 8.7-19: *Radiated spurious emissions below 1 GHz, low channel for ISED with antenna in horizontal polarization*

Test data, continued

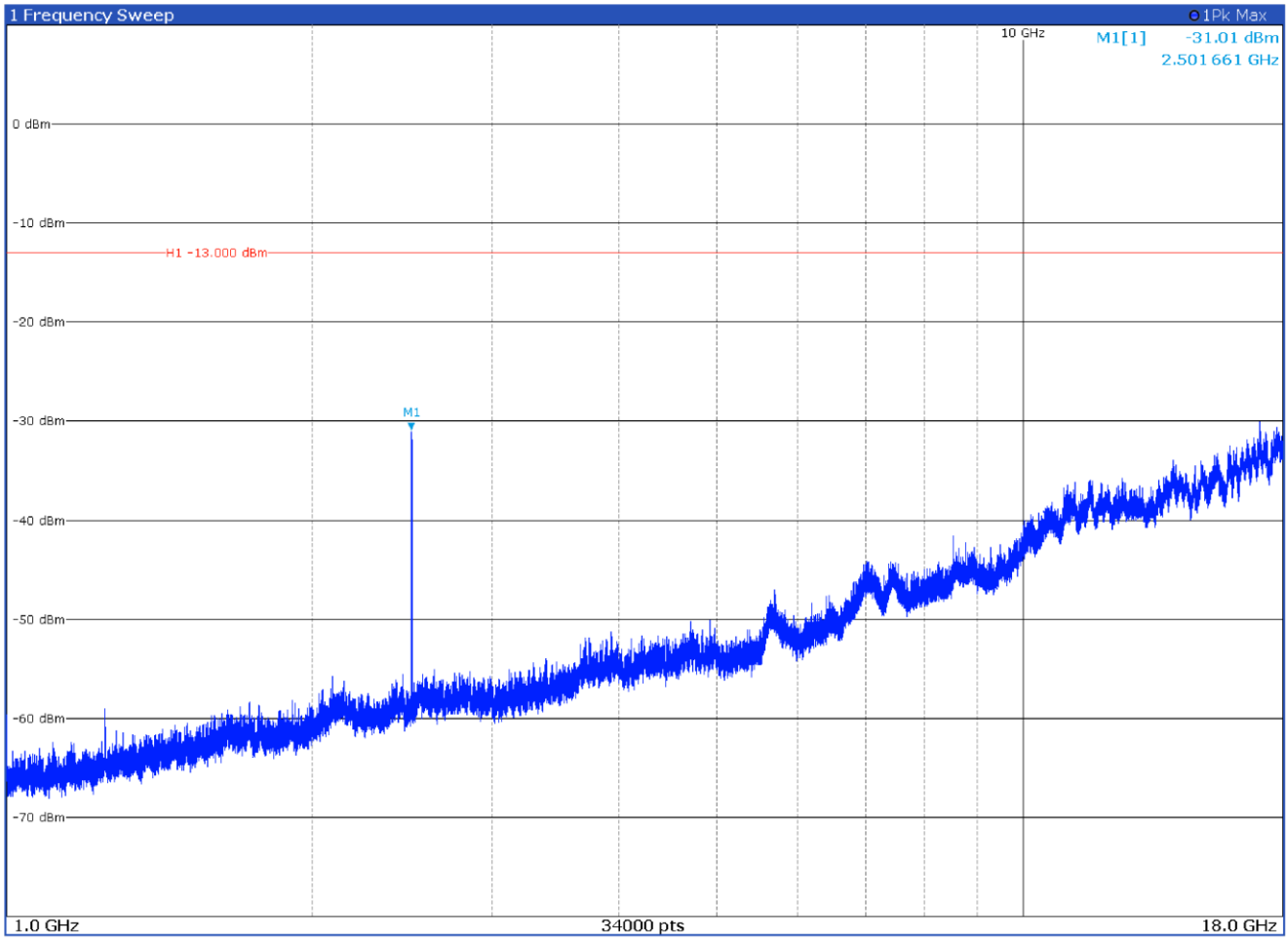


Figure 8.7-20: *Radiated spurious emissions from 1 GHz to 18 GHz, low channel for ISED with antenna in horizontal polarization*

Test data, continued

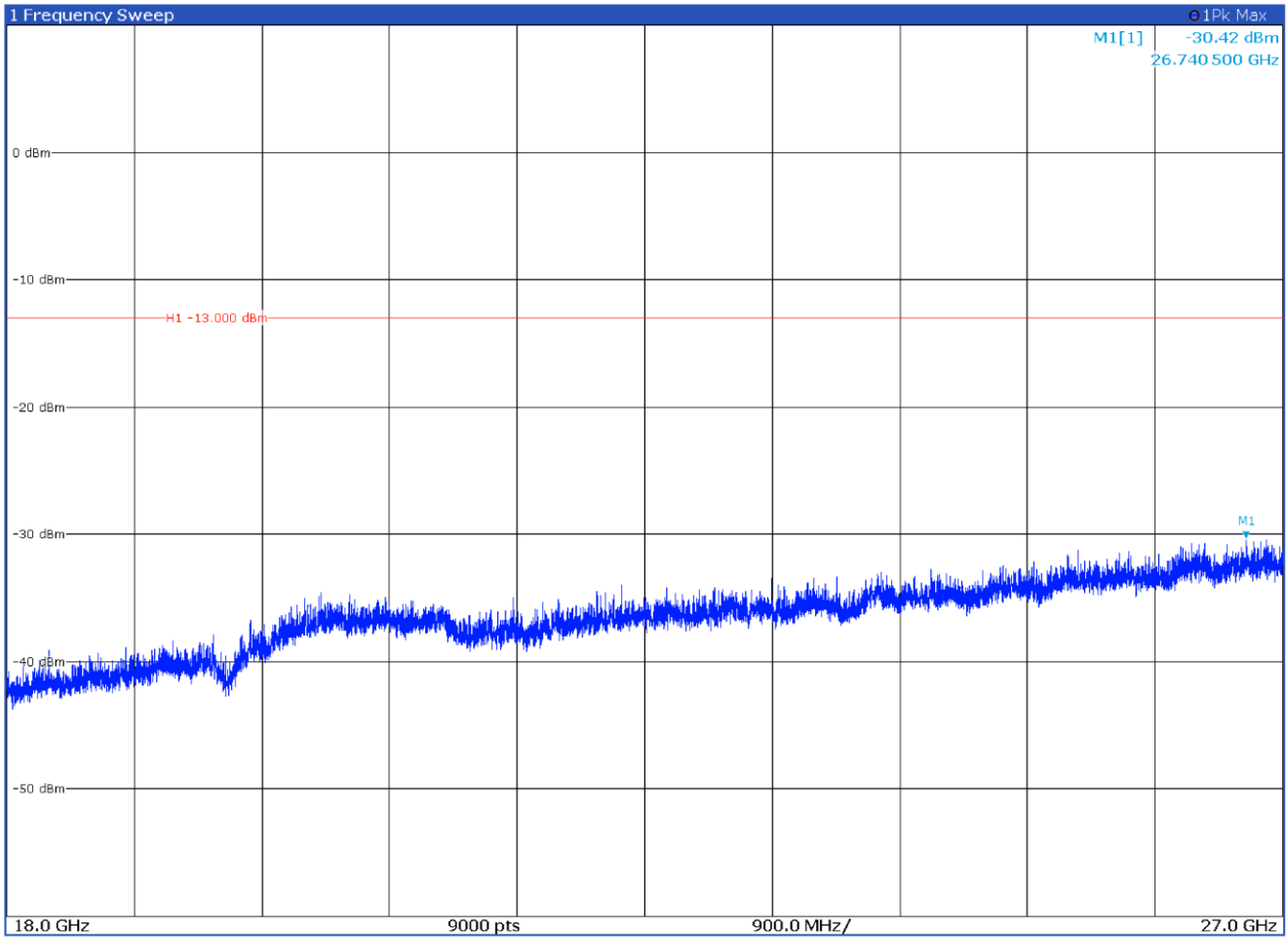


Figure 8.7-21: *Radiated spurious emissions from 18 GHz to to 10th harmonic, low channel for ISED with antenna in horizontal polarization*

Test data, continued

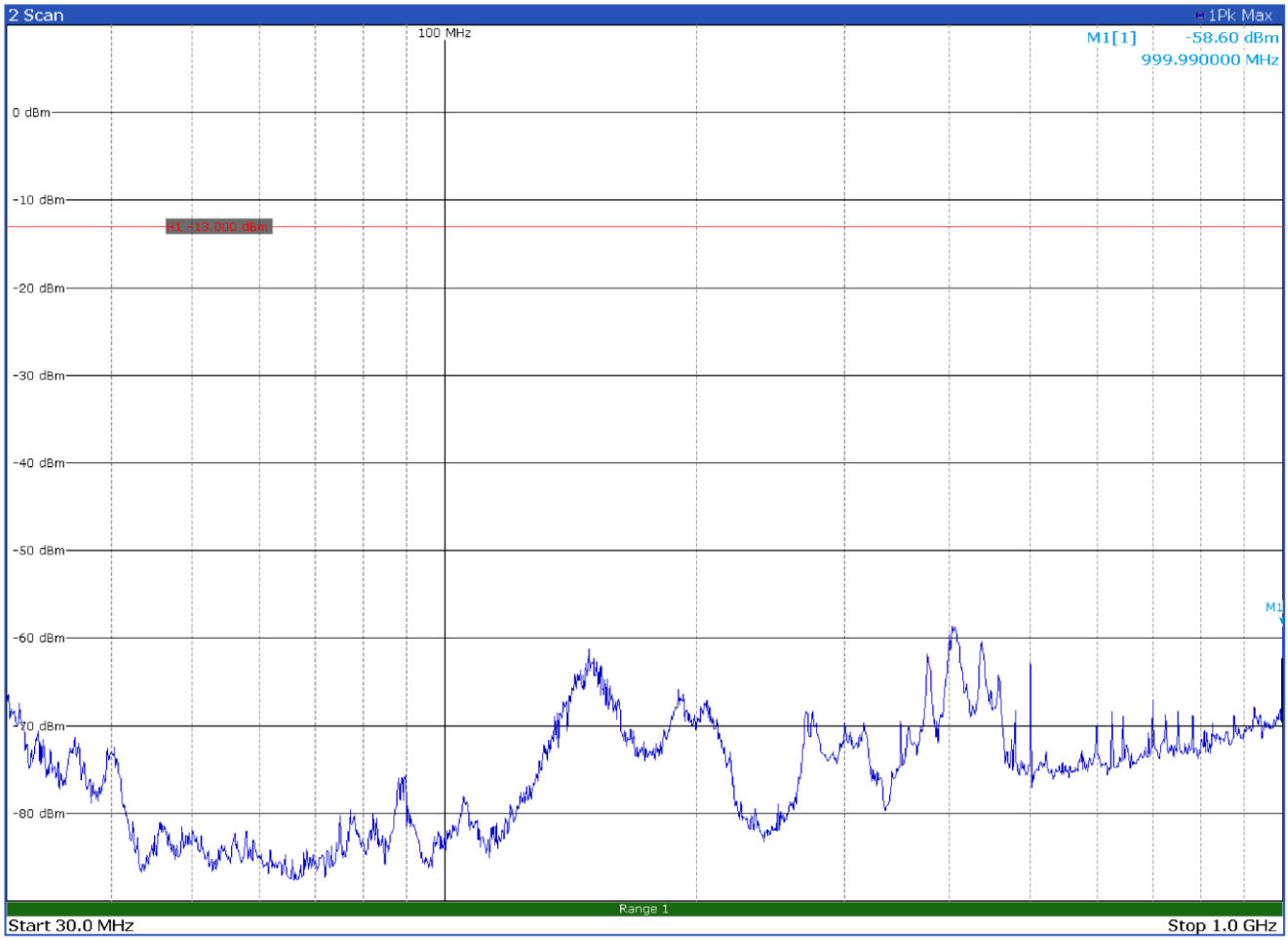


Figure 8.7-22: *Radiated spurious emissions below 1 GHz, low channel for ISED with antenna in vertical polarization*

Test data, continued

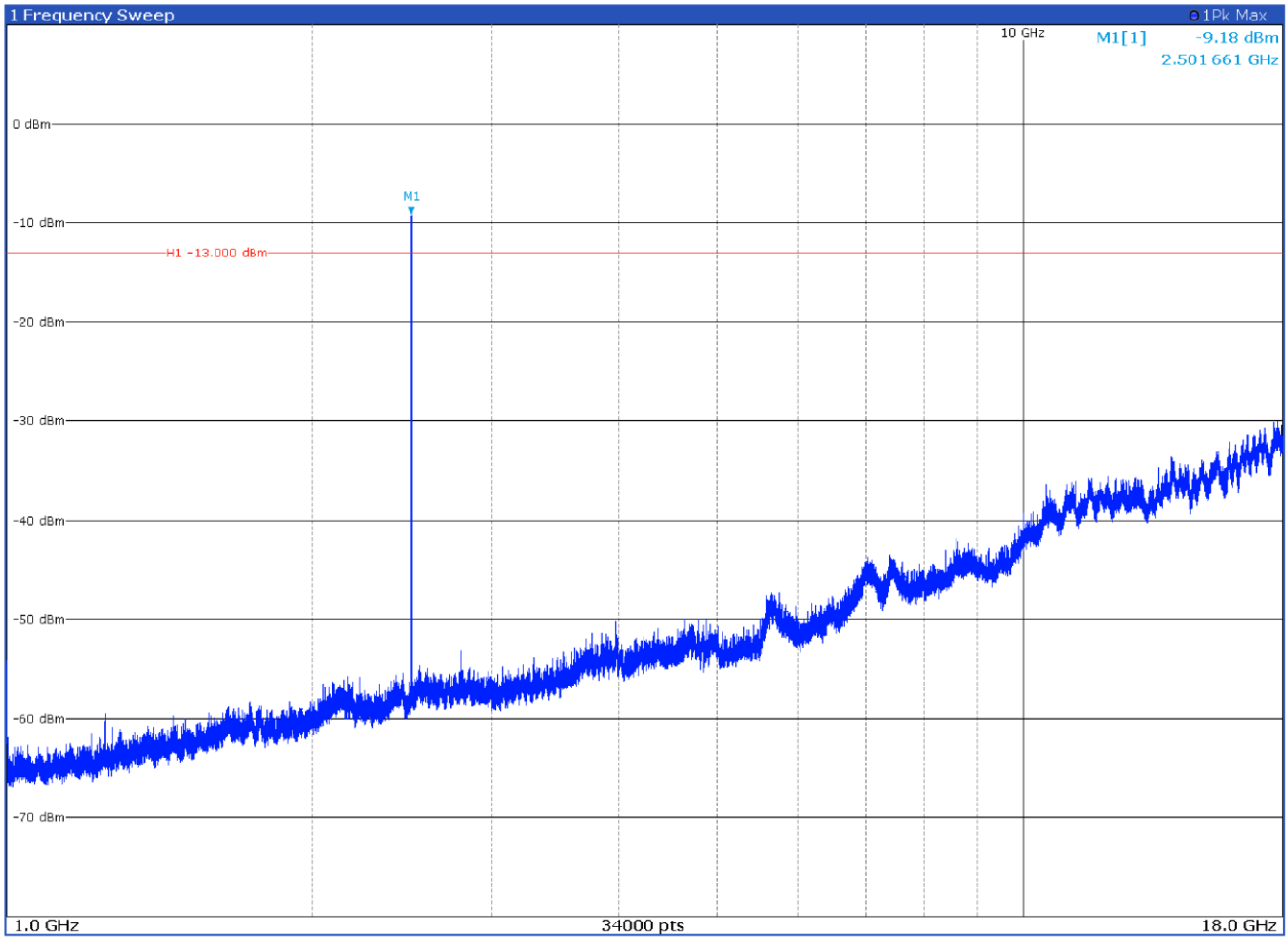


Figure 8.7-23: *Radiated spurious emissions from 1 GHz to 18 GHz, low channel for ISED with antenna in vertical polarization*

Test data, continued

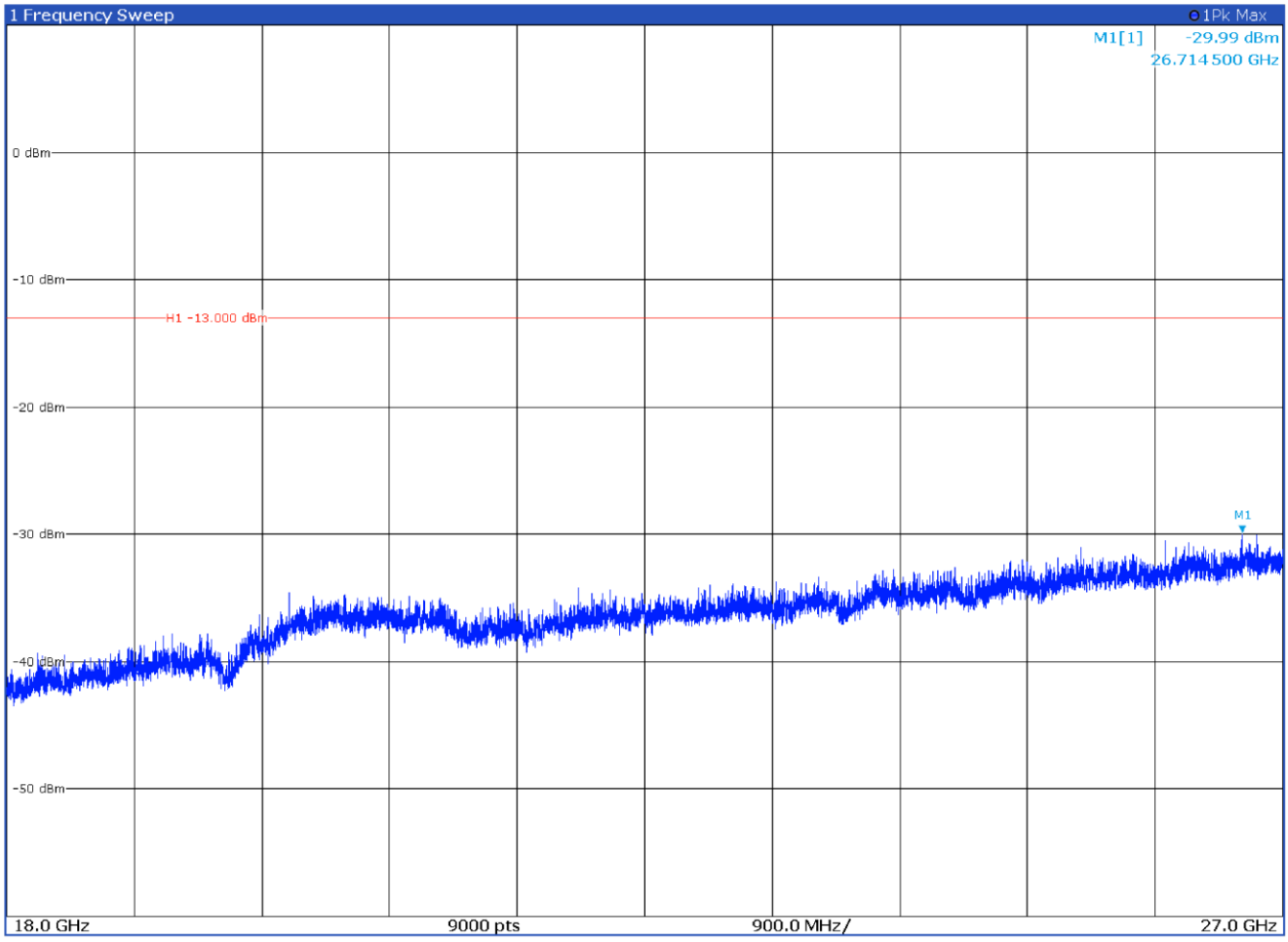


Figure 8.7-24: *Radiated spurious emissions from 18 GHz to to 10th harmonic, low channel for ISED with antenna in vertical polarization*

8.8 Frequency stability measurements

8.8.1 References, definitions and limits

FCC §27.54

The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

RSS-131, Clause 5.2.4

Industrial zone enhancers shall comply with the frequency stability given in the RSS that applies to the equipment with which the zone enhancer is to be used. In cases where the frequency stability limit is not given in the applicable RSS, the equipment shall comply with a frequency stability of ± 1.5 ppm.

For zone enhancers with no input signal processing capability, the frequency stability measurement in this section is not required.

RSS-199, Clause 4.3

The transmitter frequency stability limit shall be determined as follows:

(a) the frequency offset shall be measured according to the procedure described in RSS-Gen and recorded.

(b) using a resolution bandwidth equal to that permitted within the 1 MHz band immediately outside the channel edge, as found in section 4.5, reference points will be selected at the unwanted emission limits, which comply with the attenuation specified in section 4.5 for the type of device under test, on the emission mask of the lowest and highest channels. The frequency at these points shall be recorded as fL and fH respectively.

The applicant shall ensure compliance with frequency stability requirements by showing that fL minus the frequency offset and fH plus the frequency offset is within the frequency range in which the equipment is designed to operate.

RSS-Gen, Clause 6.11

Transmitter frequency stability

Frequency stability is a measure of frequency drift due to temperature and supply voltage variations, with reference to the frequency measured at an appropriate reference temperature and the rated supply voltage.

When the measurement method of transmitter frequency stability is not stated in the applicable RSS or reference standards, the following conditions apply:

a. The reference temperature for radio transmitters is +20°C (+68°F).

b. A hand-held device that is only capable of operating using internal batteries shall be tested at the battery's nominal voltage, and again at the battery's operating end-point voltage, which shall be specified by the equipment manufacturer. For this test, either a battery or an external power supply can be used.

c. The operating carrier frequency shall be set up in accordance with the manufacturer's published operation and instruction manual prior to the commencement of these tests. No adjustment of any frequency-determining circuit element shall be made subsequent to this initial set-up.

With the transmitter installed in an environmental test chamber, the unmodulated carrier frequency and frequency stability shall be measured under the conditions specified below for licensed and licence-exempt devices, unless specified otherwise in the applicable RSS. A sufficient stabilization period at each temperature shall be used prior to each frequency measurement.

For licensed devices, the following measurement conditions apply:

a. at the temperatures of -30°C (-22°F), +20°C (+68°F) and +50°C (+122°F), and at the manufacturer's rated supply voltage

b. at the temperature of +20°C (+68°F) and at ±15% of the manufacturer's rated supply voltage

8.8.2 Test summary

Verdict	Pass		
Tested by	P. Barbieri	Test date	February 8, 2022

8.8.3 Observations, settings and special notes

Testing was performed per ANSI C63.26 Paragraphs 5.6.3, 5.6.4 and 5.6.5 methods.

8.8.4 Test equipment used

Equipment	Manufacturer	Model no.	Asset no.
EMI Receiver	Rohde & Schwarz	ESU8	100202
RF Vector Signal Generator	Rohde & Schwarz	SMBV100A	263254
RF Vector Signal Generator	Rohde & Schwarz	SMBV100A	263397
Climatic Chamber	MSL	EC500DA	15022

Notes: NCR - no calibration required, VOU - verify on use

8.8.5 Test data

Table 8.8-1: *Transmitter frequency stability results for antenna port 1*

Test conditions	Frequency, Hz	Drift, Hz	Drift, ppm	Limit ±ppm	Margin, ±ppm
+50 °C, Nominal	2592999575.0	17.7	0.00683	1.5	1.49
+40 °C, Nominal	2592999573.6	16.3	0.00629	1.5	1.49
+30 °C, Nominal	2592999568.8	11.5	0.00444	1.5	1.50
+20 °C, -15% voltage	2592999557.0	-0.3	-0.00012	1.5	1.50
+20 °C, Nominal	2592999557.3	Reference	Reference	Reference	Reference
+20 °C, +15% voltage	2592999560.8	3.5	0.00135	1.5	1.50
+10 °C, Nominal	2592999538.0	-19.3	-0.00744	1.5	1.49
0 °C, Nominal	2592999526.8	-30.5	-0.01176	1.5	1.49
−10 °C, Nominal	2592999502.2	-55.1	-0.02125	1.5	1.48
−20 °C, Nominal	2592999499.0	-58.3	-0.02248	1.5	1.48
−30 °C, Nominal	2592999428.1	-129.2	-0.04983	1.5	1.45

Table 8.8-2: *Transmitter frequency stability results for antenna port 2*

Test conditions	Frequency, Hz	Drift, Hz	Drift, ppm	Limit ±ppm	Margin, ±ppm
+50 °C, Nominal	2592999571.2	18.5	0.00713	1.5	1.49
+40 °C, Nominal	2592999569.6	16.9	0.00652	1.5	1.49
+30 °C, Nominal	2592999564.6	11.9	0.00459	1.5	1.50
+20 °C, -15% voltage	2592999553.2	0.5	0.00019	1.5	1.50
+20 °C, Nominal	2592999552.7	Reference	Reference	Reference	Reference
+20 °C, +15% voltage	2592999556.6	3.9	0.00150	1.5	1.50
+10 °C, Nominal	2592999533.6	-19.1	-0.00737	1.5	1.49
0 °C, Nominal	2592999522.2	-30.5	-0.01176	1.5	1.49
−10 °C, Nominal	2592999495.6	-57.1	-0.02202	1.5	1.48
−20 °C, Nominal	2592999491.9	-60.8	-0.02345	1.5	1.48
−30 °C, Nominal	2592999427.4	-125.3	-0.04832	1.5	1.45

Section 9 EUT photos

9.1 Set-up photos

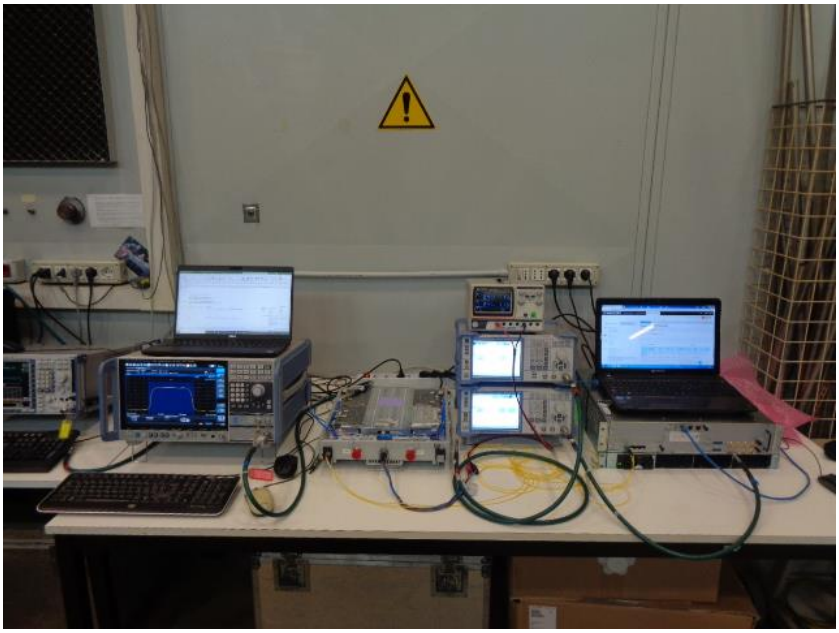


Figure 9.1-1: *Antenna port testing set-up*

Figure 9.1-2: *Antenna port testing set-up in climatic chamber*

Figure 9.1-3: *Radiated emissions set-up for frequencies below 1 GHz*

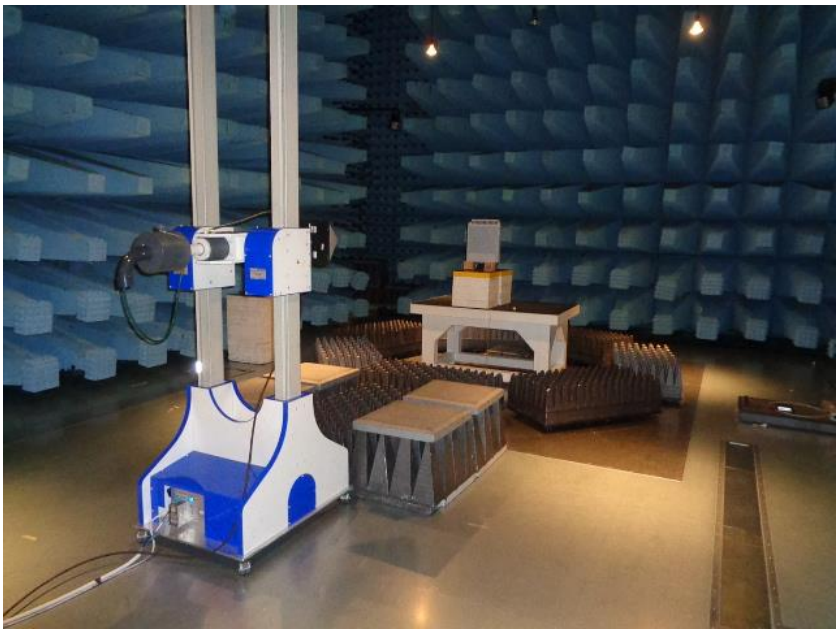


Figure 9.1-4: *Radiated emissions set-up for frequencies above 1 GHz*

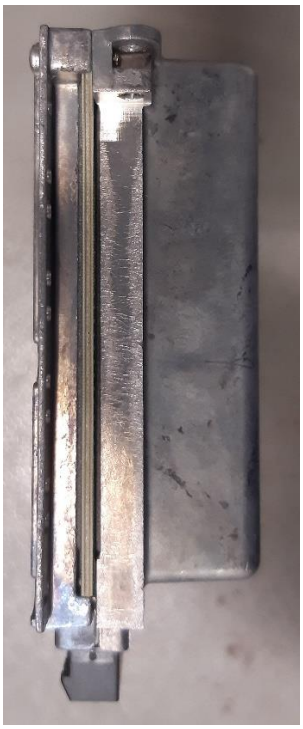
9.2 External photos

TOP View

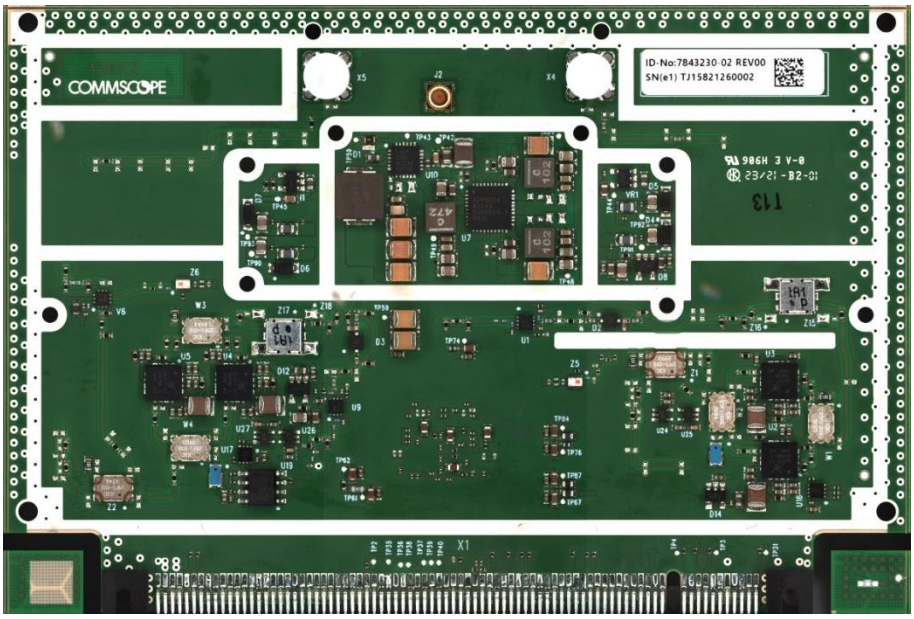
BOTTOM View

Connector side view

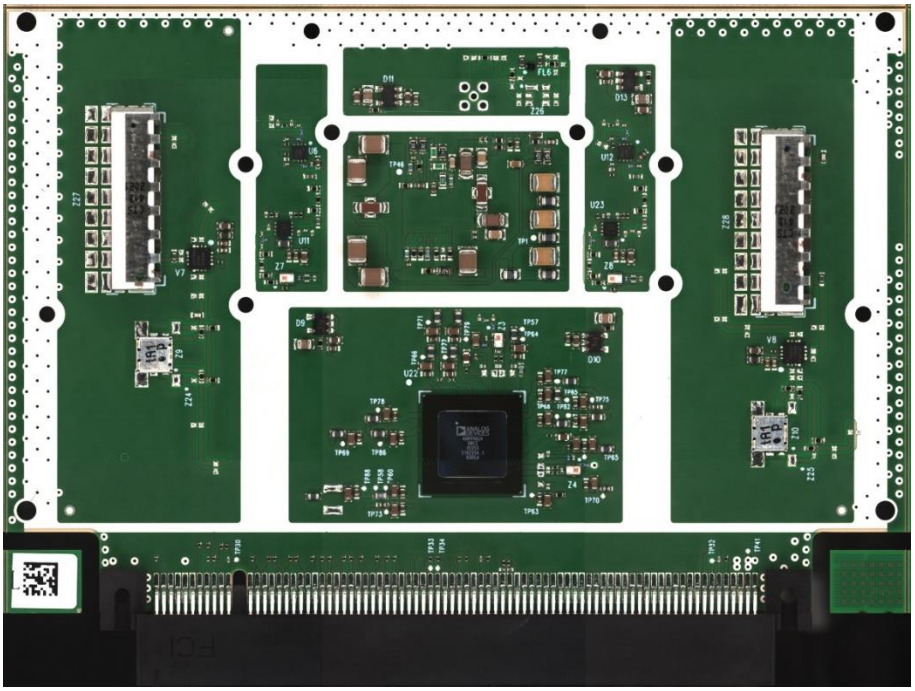
Rear side View



Left and Right side view



TOP View



BOTTOM View

End of the test report