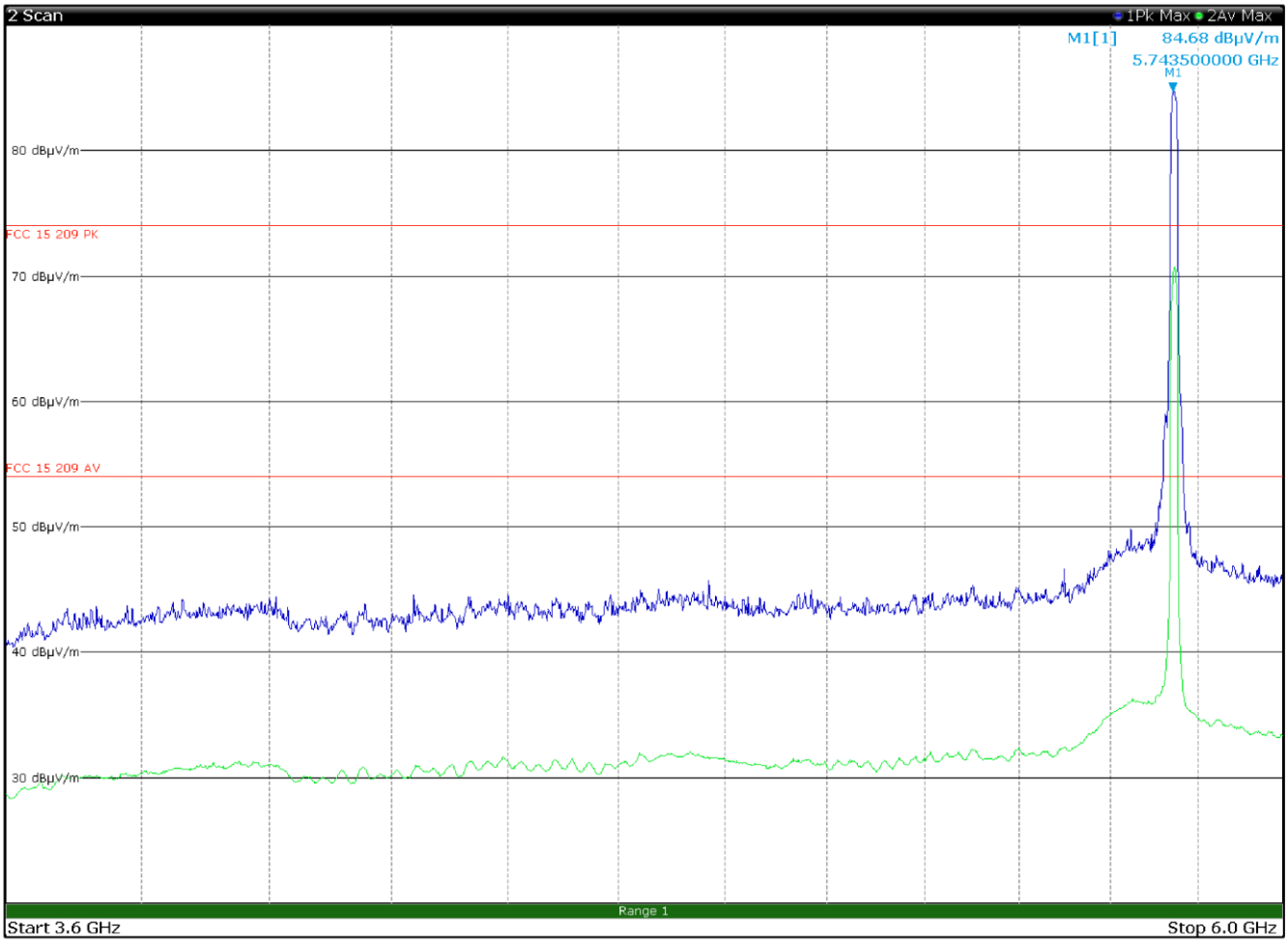


Figure 8.4-38: *Radiated spurious emissions 3.6 to 6 GHz, Low channel with antenna in vertical polarization*

Limit exceeded by the carrier

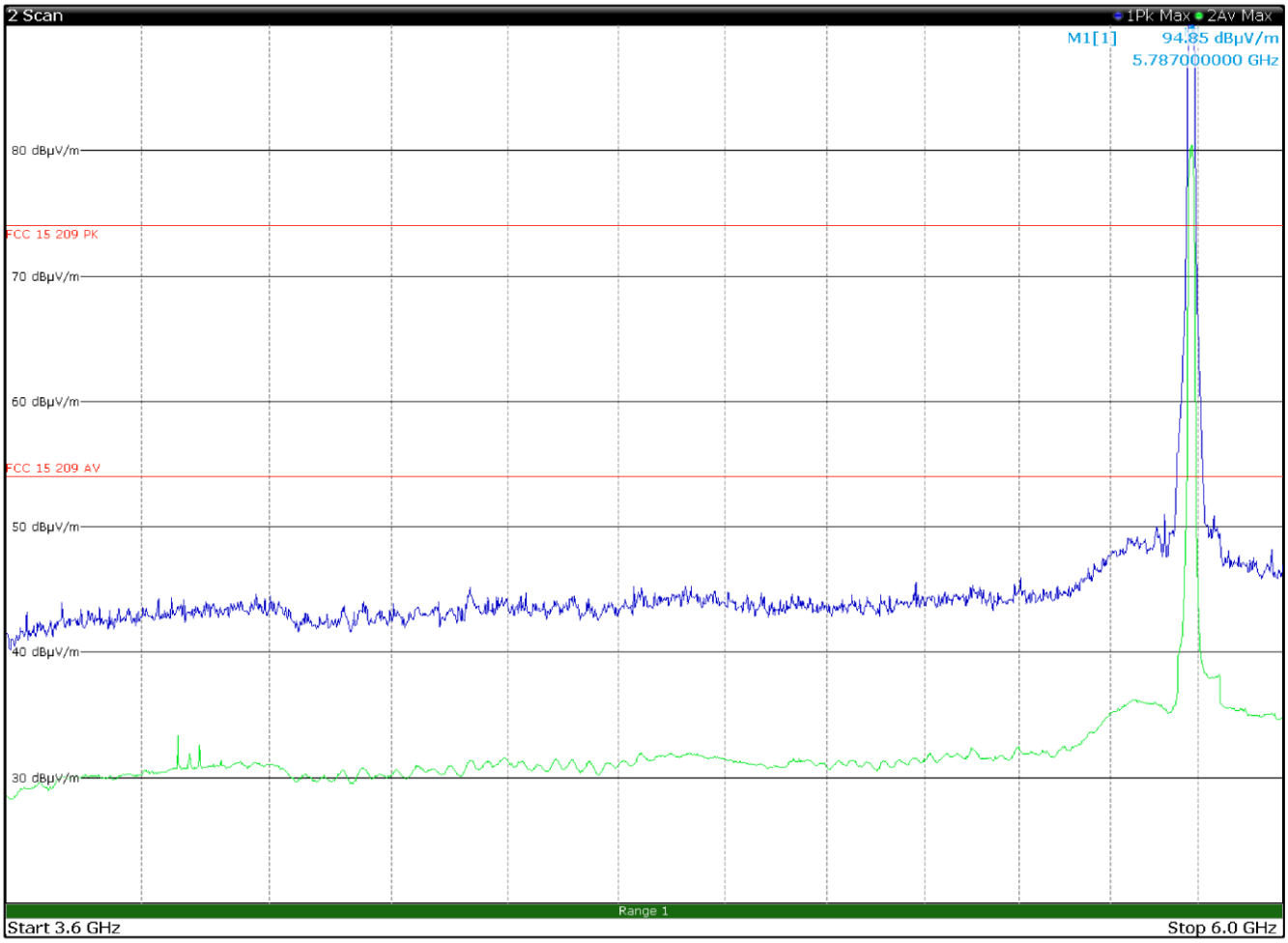


Figure 8.4-39: *Radiated spurious emissions 3.6 to 6 GHz, mid channel with antenna in horizontal polarization*

Limit exceeded by the carrier

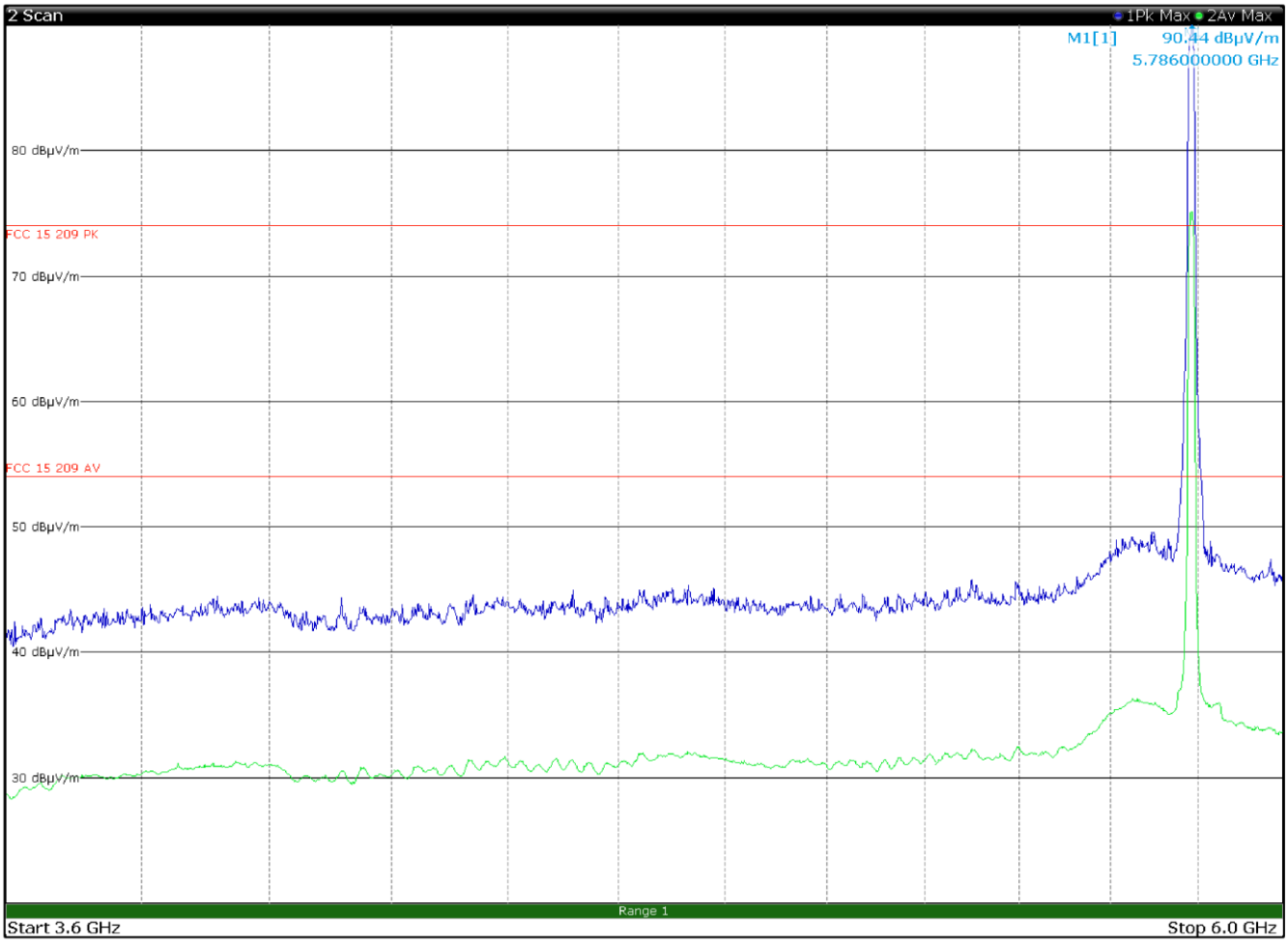


Figure 8.4-40: *Radiated spurious emissions 3.6 to 6 GHz, mid channel with antenna in vertical polarization*

Limit exceeded by the carrier

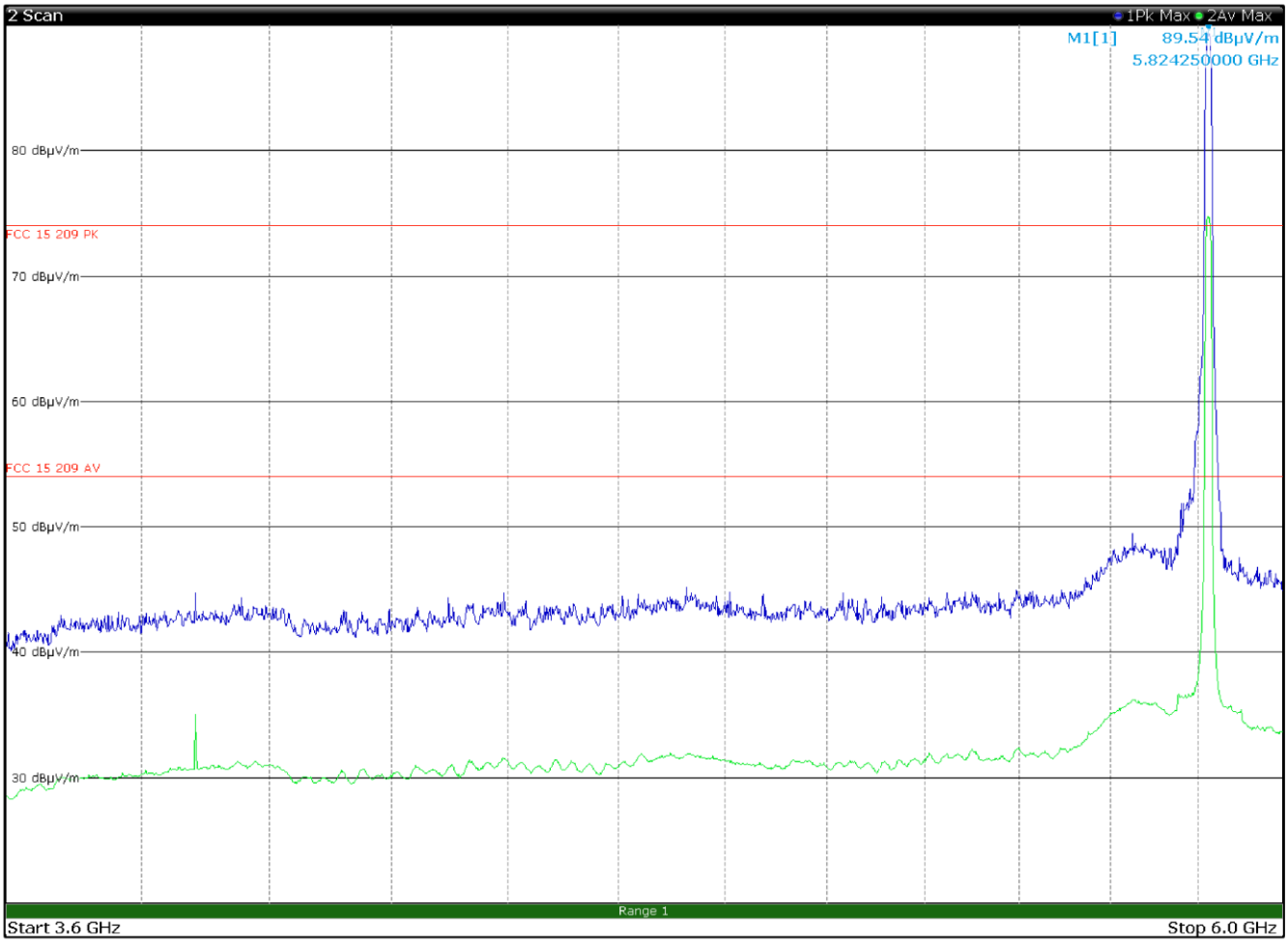


Figure 8.4-41: *Radiated spurious emissions 3.6 to 6 GHz, high channel with antenna in horizontal polarization*

Limit exceeded by the carrier

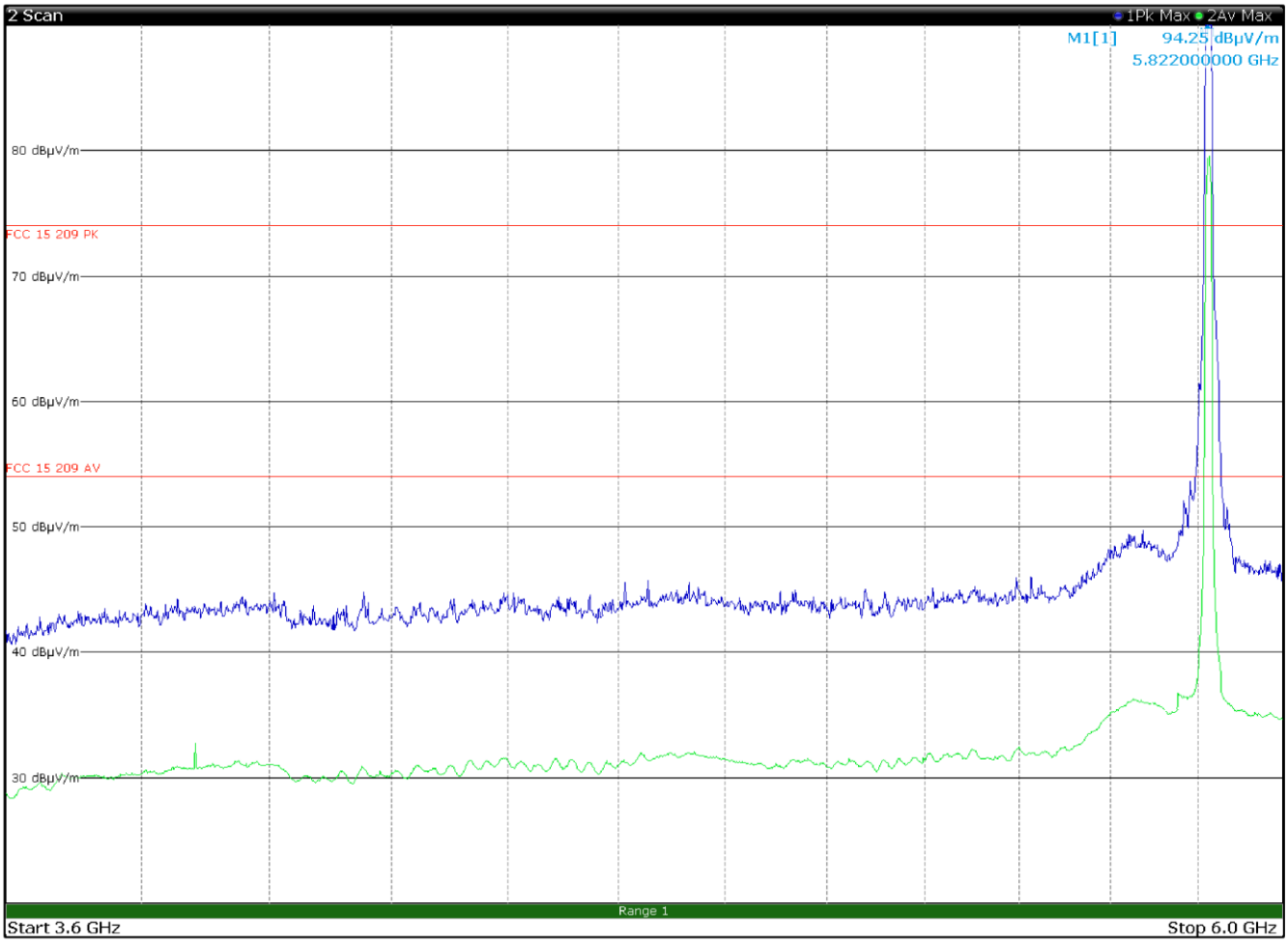


Figure 8.4-42: *Radiated spurious emissions 3.6 to 6 GHz, high channel with antenna in vertical polarization*

Limit exceeded by the carrier

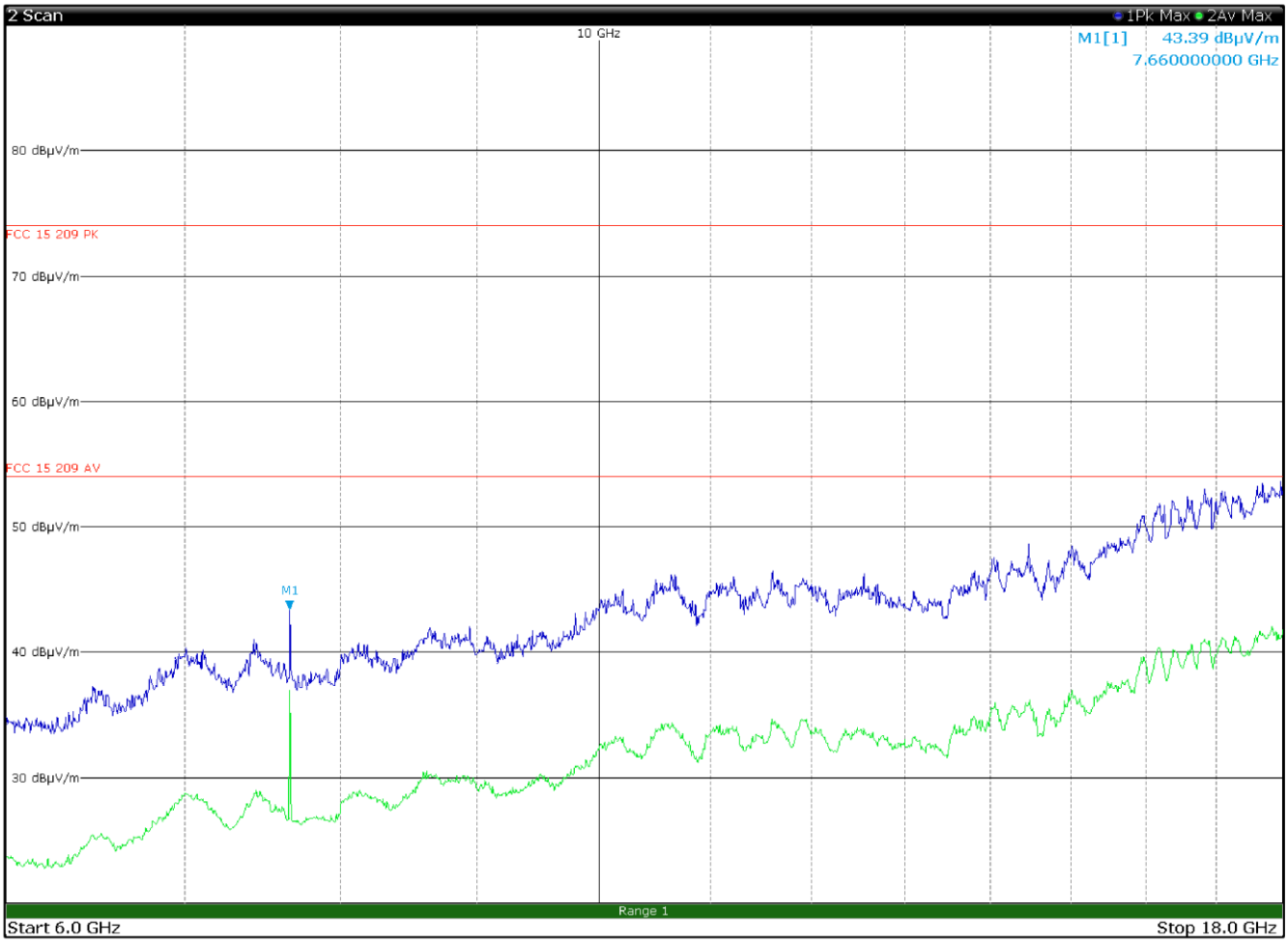


Figure 8.4-43: *Radiated spurious emissions 6 to 18 GHz, Low channel with antenna in horizontal polarization*

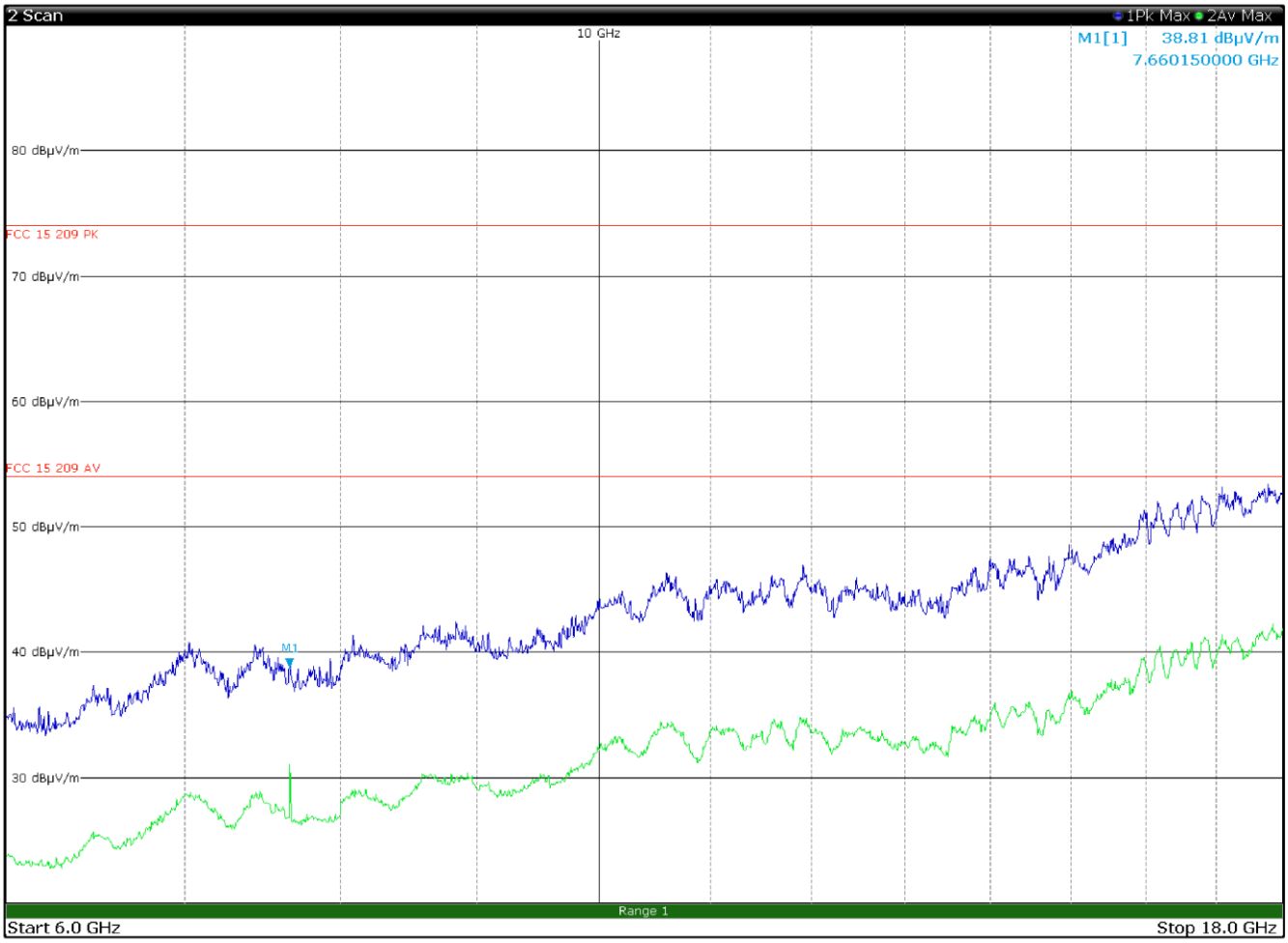


Figure 8.4-44: *Radiated spurious emissions 6 to 18 GHz, Low channel with antenna in vertical polarization*

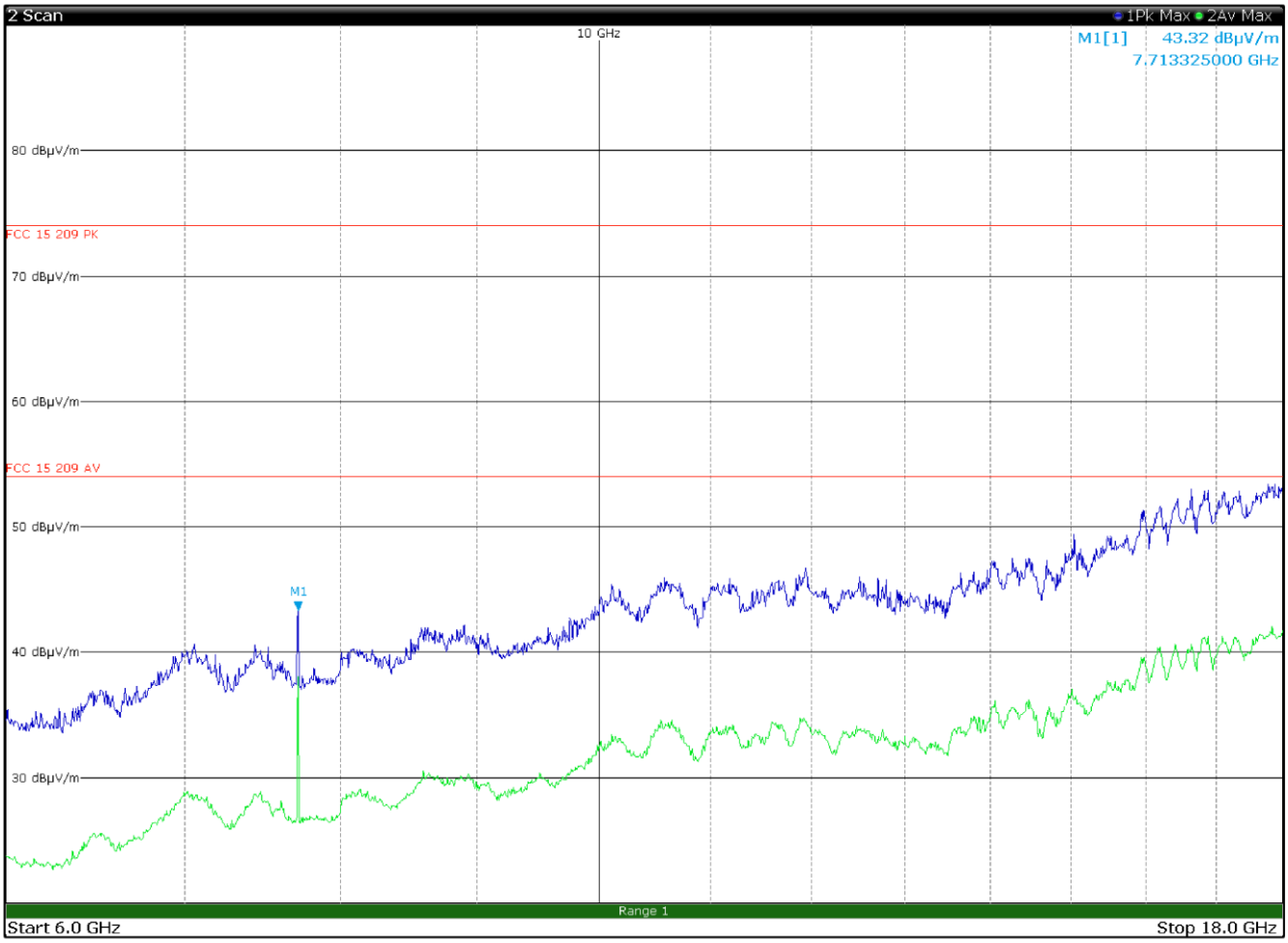


Figure 8.4-45: *Radiated spurious emissions 6 to 18 GHz, mid channel with antenna in horizontal polarization*

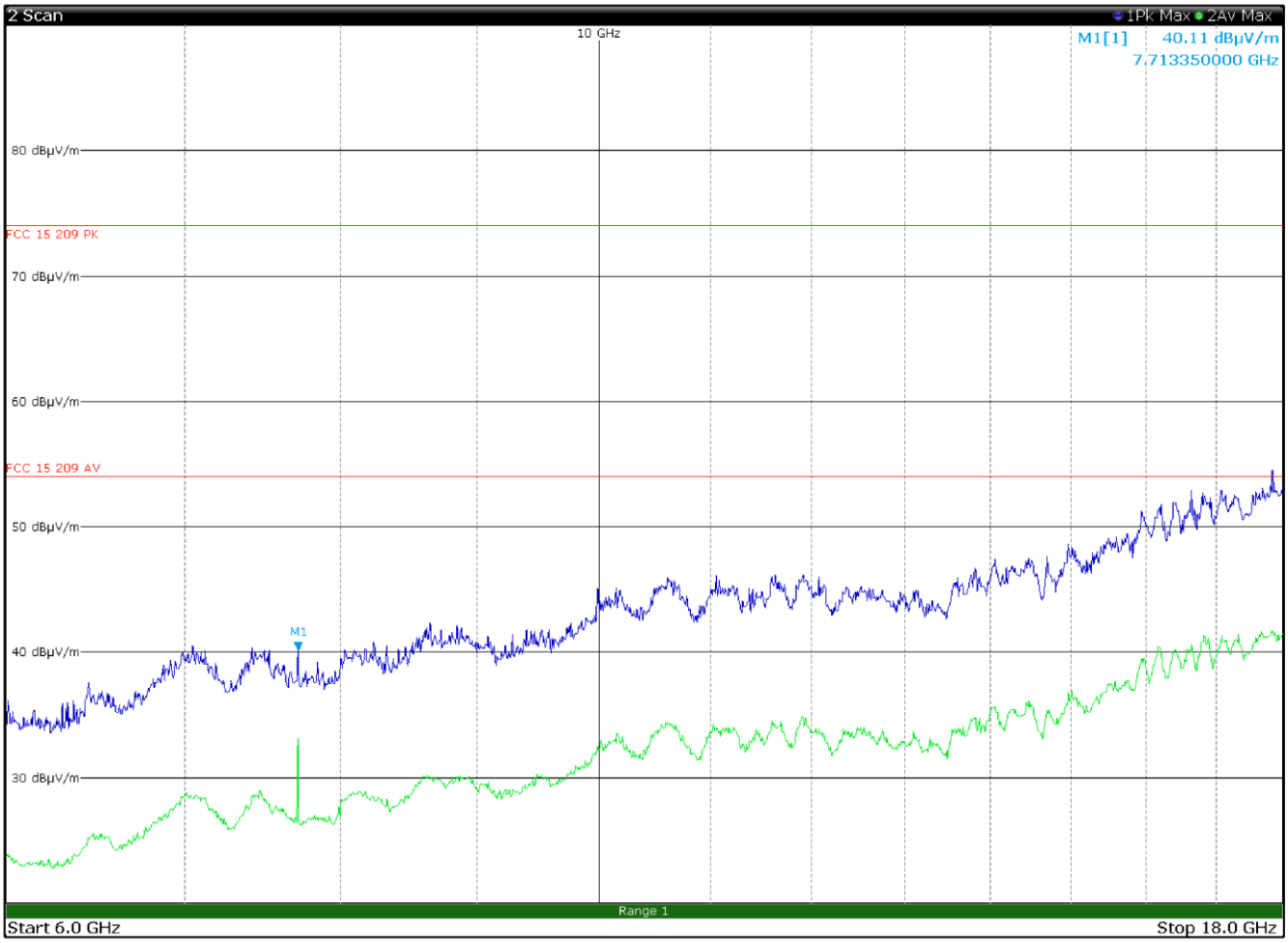


Figure 8.4-46: *Radiated spurious emissions 6 to 18 GHz, mid channel with antenna in vertical polarization*

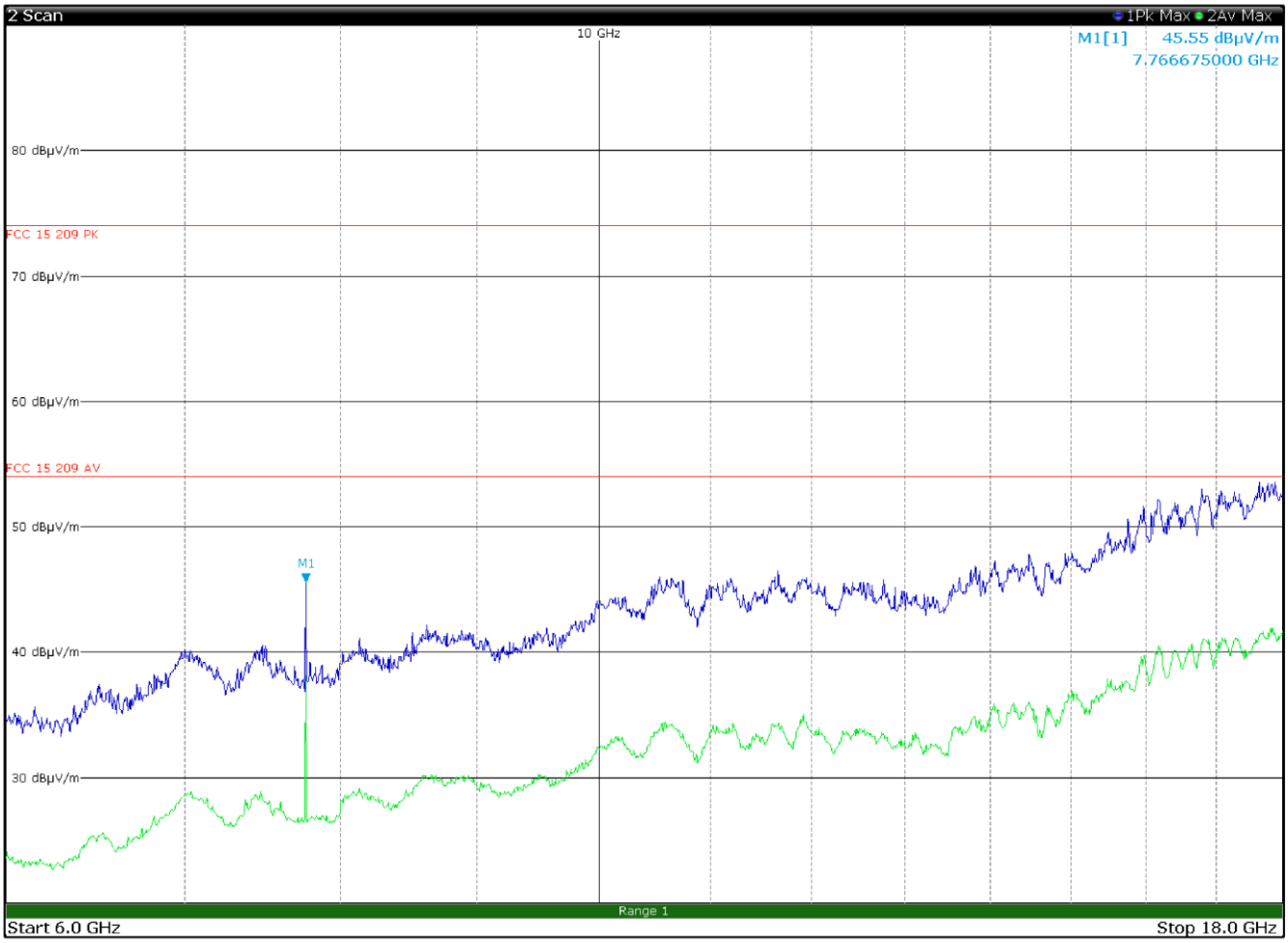


Figure 8.4-47: *Radiated spurious emissions 6 to 18 GHz, high channel with antenna in horizontal polarization*

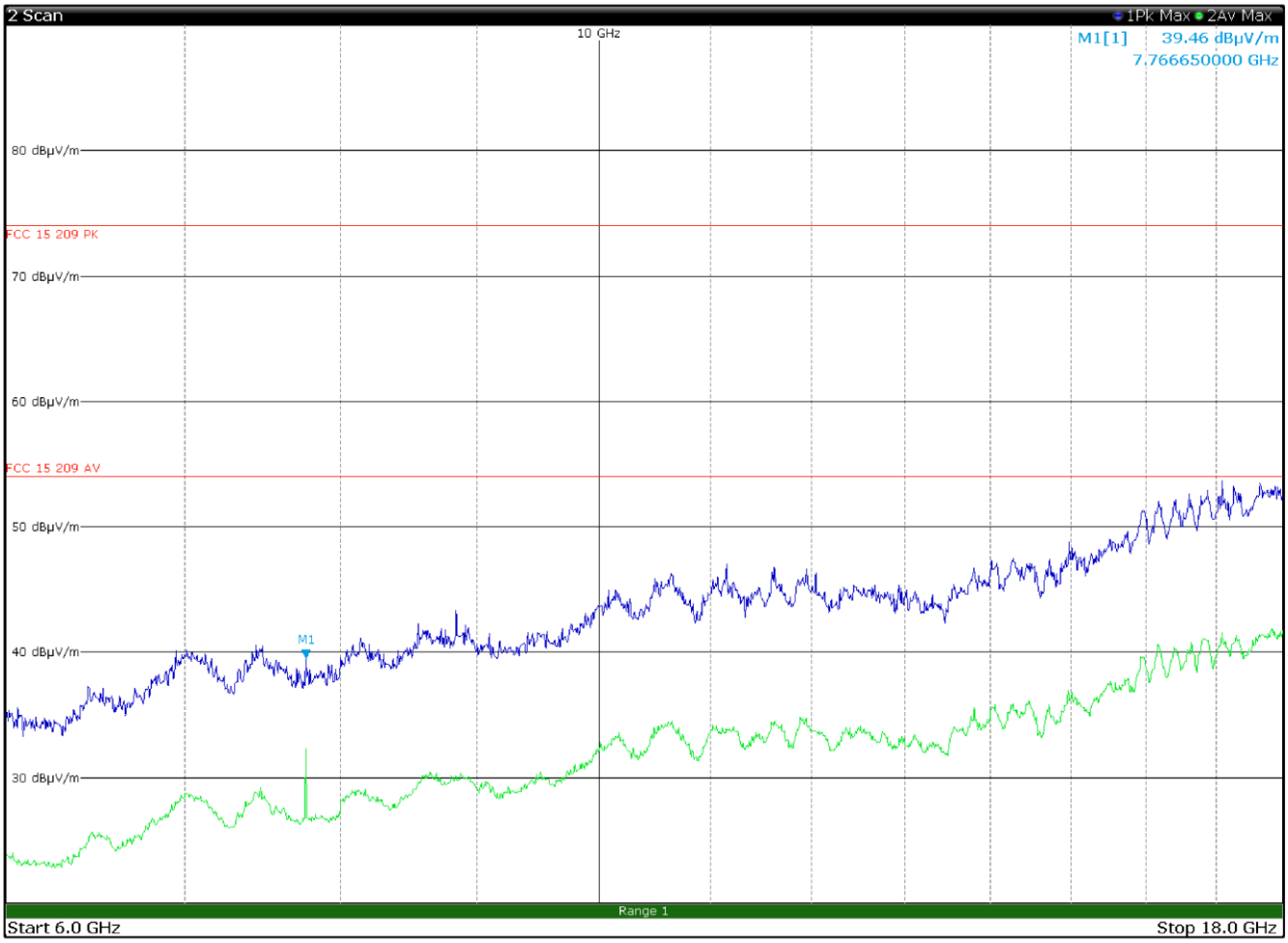


Figure 8.4-48: *Radiated spurious emissions 6 to 18 GHz, high channel with antenna in vertical polarization*

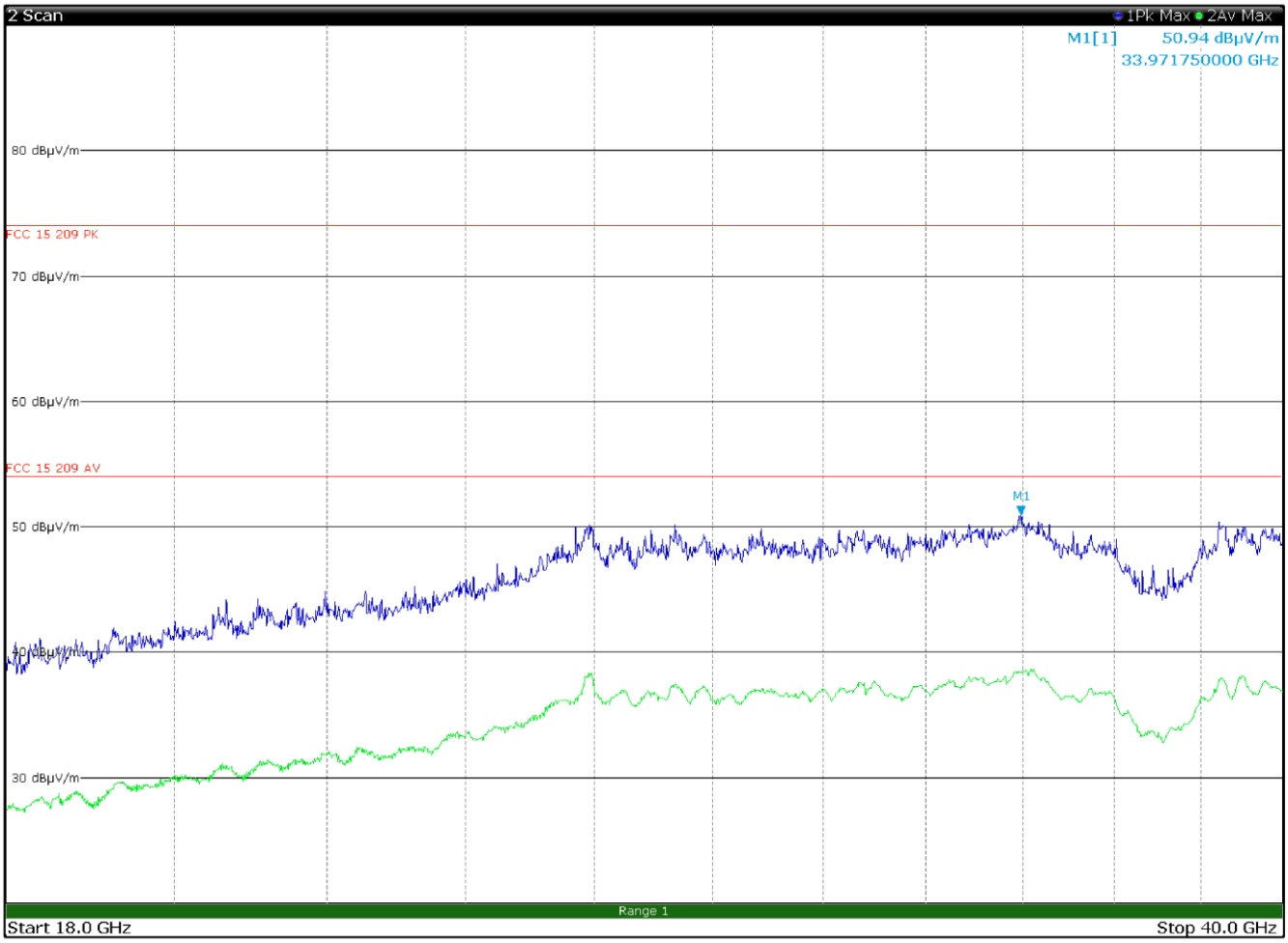


Figure 8.4-49: *Radiated spurious emissions 18 to 40 GHz, Low channel with antenna in horizontal polarization*

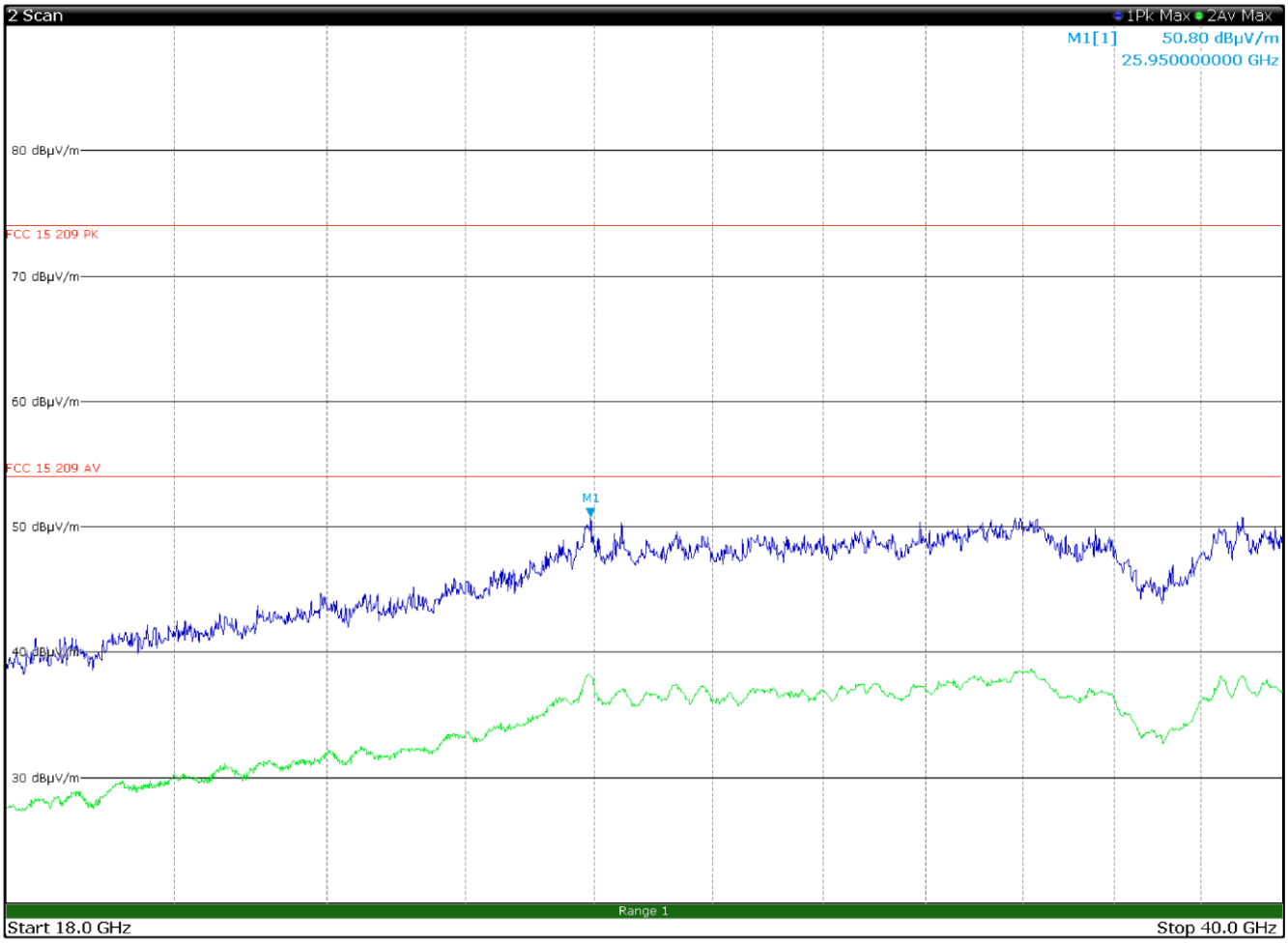


Figure 8.4-50: *Radiated spurious emissions 18 to 40 GHz, Low channel with antenna in vertical polarization*

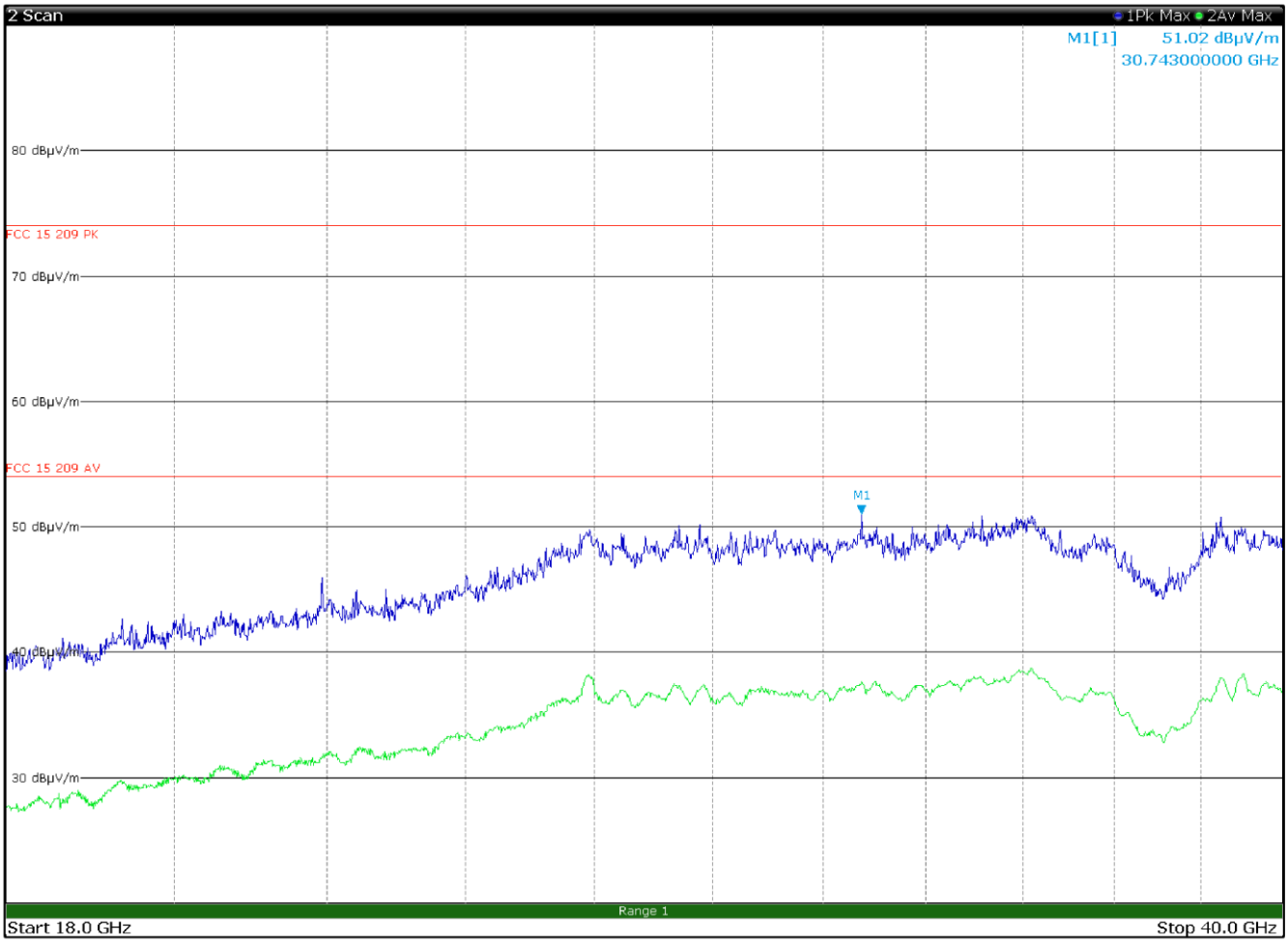


Figure 8.4-51: *Radiated spurious emissions 18 to 40 GHz, mid channel with antenna in horizontal polarization*

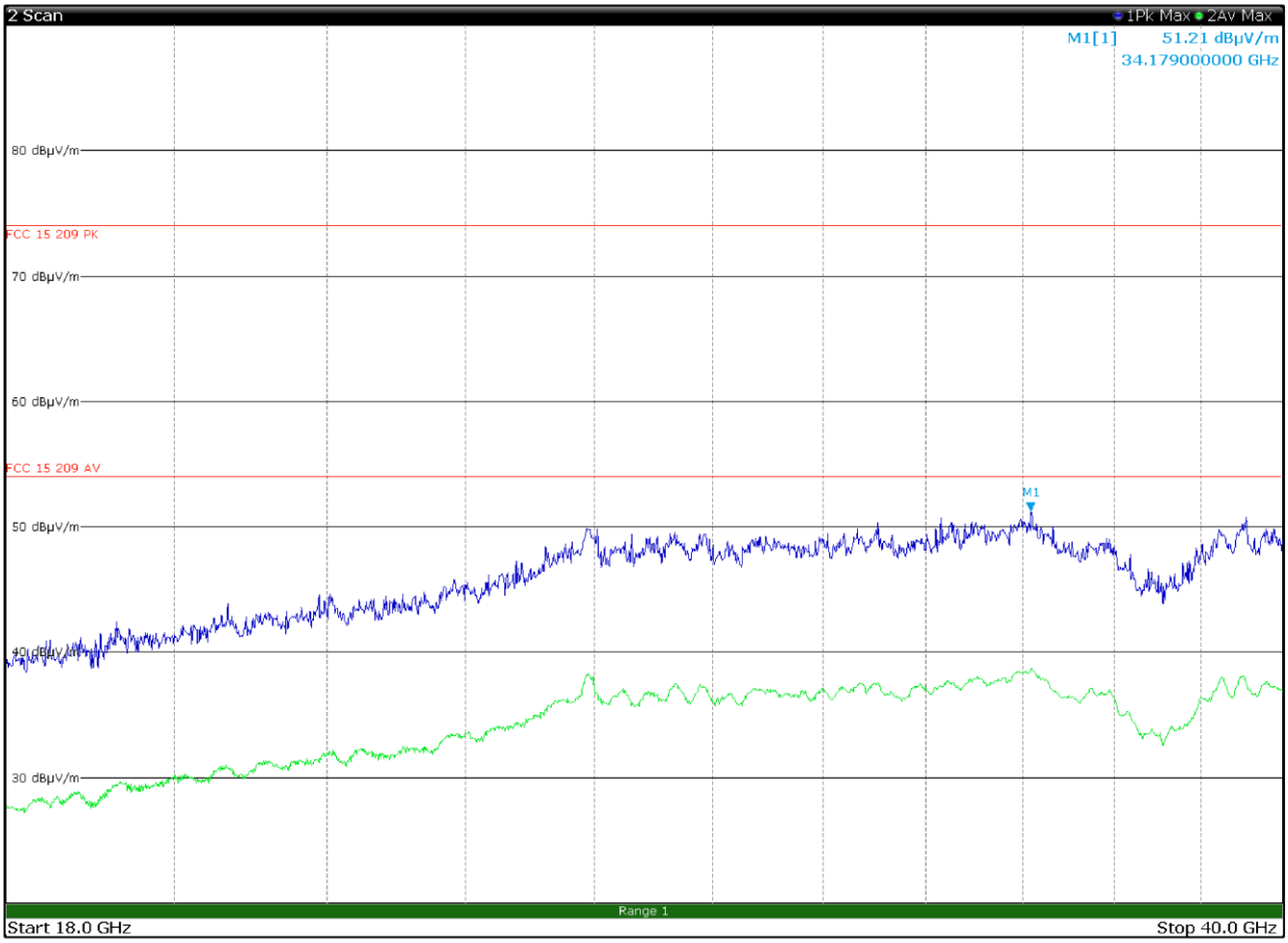


Figure 8.4-52: *Radiated spurious emissions 18 to 40 GHz, mid channel with antenna in vertical polarization*

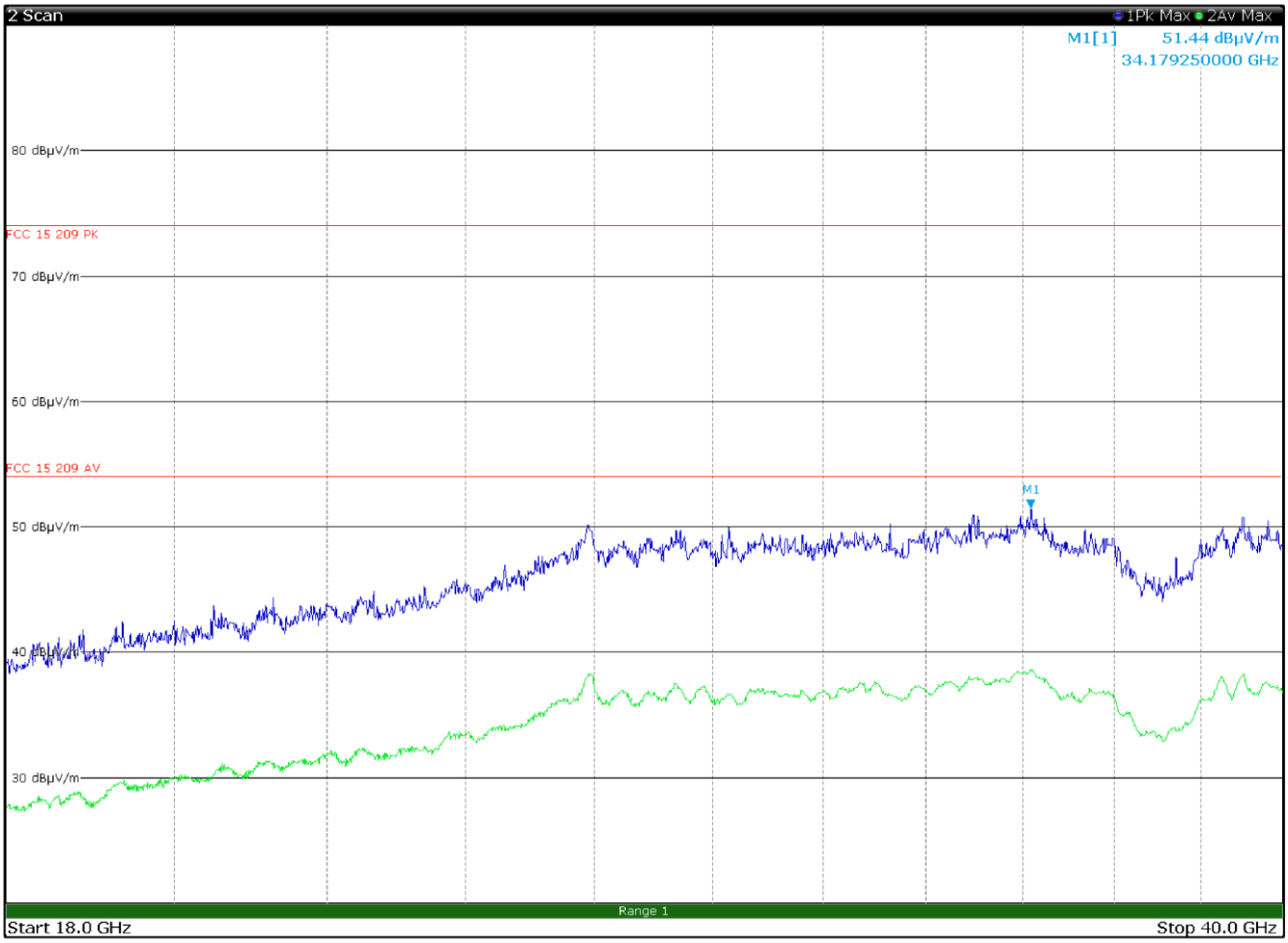


Figure 8.4-53: *Radiated spurious emissions 18 to 40 GHz, high channel with antenna in horizontal polarization*

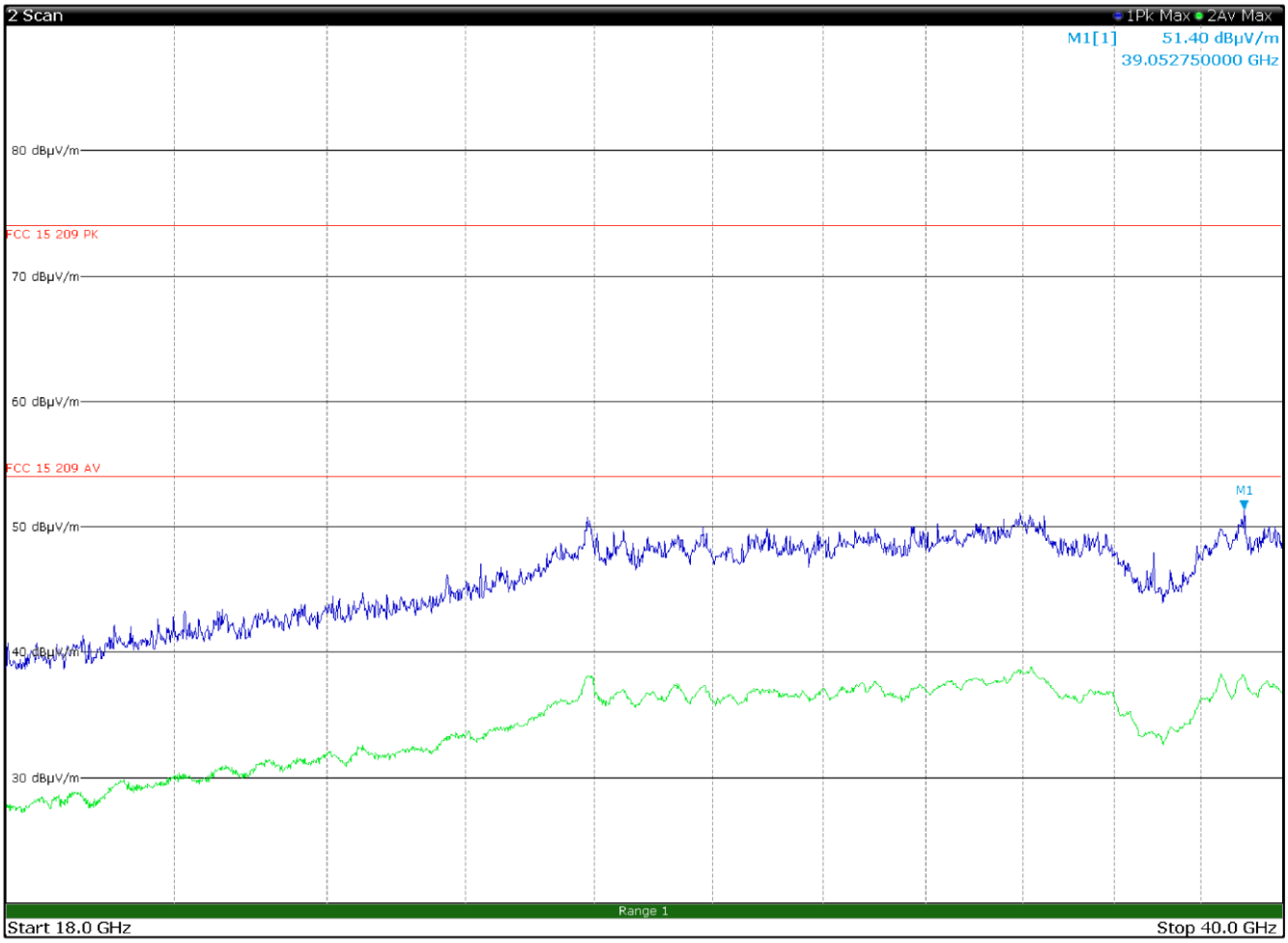


Figure 8.4-54: *Radiated spurious emissions 18 to 40 GHz, high channel with antenna in vertical polarization*

8.5 FCC 15.207(a) AC power line conducted emissions limits

8.5.1 Definitions and limits

FCC §15.407(6)(b):

Any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in §15.207

FCC §15.207(a):
Except as shown in paragraphs (b) and (c) of this section, 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 µH/50 Ω line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

ISED:
A radio apparatus that is designed to be connected to the public utility (AC) power line shall ensure that the radio frequency voltage, which 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 table below.

Unless the requirements applicable to a given device state otherwise, for any radio apparatus equipped to operate from the public utility AC power supply either directly or indirectly (such as with a battery charger), the radio frequency voltage of emissions conducted back onto the AC power lines in the frequency range of 0.15 MHz to 30 MHz shall not exceed the limits shown in table below. The more stringent limit applies at the frequency range boundaries.

Table 8.5-1: *Conducted emissions limit*

Frequency of emission (MHz)	Conducted limit (dBµV)	
	Quasi-peak	Average**
0.15–0.5	66 to 56*	56 to 46*
0.5–5	56	46
5–30	60	50

Note: * - The level decreases linearly with the logarithm of the frequency.
** - A linear average detector is required.

8.5.2 Test summary

Test start date:	April 15, 2020

8.5.3 Observations, settings and special notes

The EUT was set up as tabletop configuration.

The spectral scan has been corrected with transducer factors (i.e. cable loss, LISN factors, and attenuators) for determination of compliance.

A preview measurement was generated with the receiver in continuous scan mode. Emissions detected within 6 dB or above limit were re-measured with the appropriate detector against the correlating limit and recorded as the final measurement.

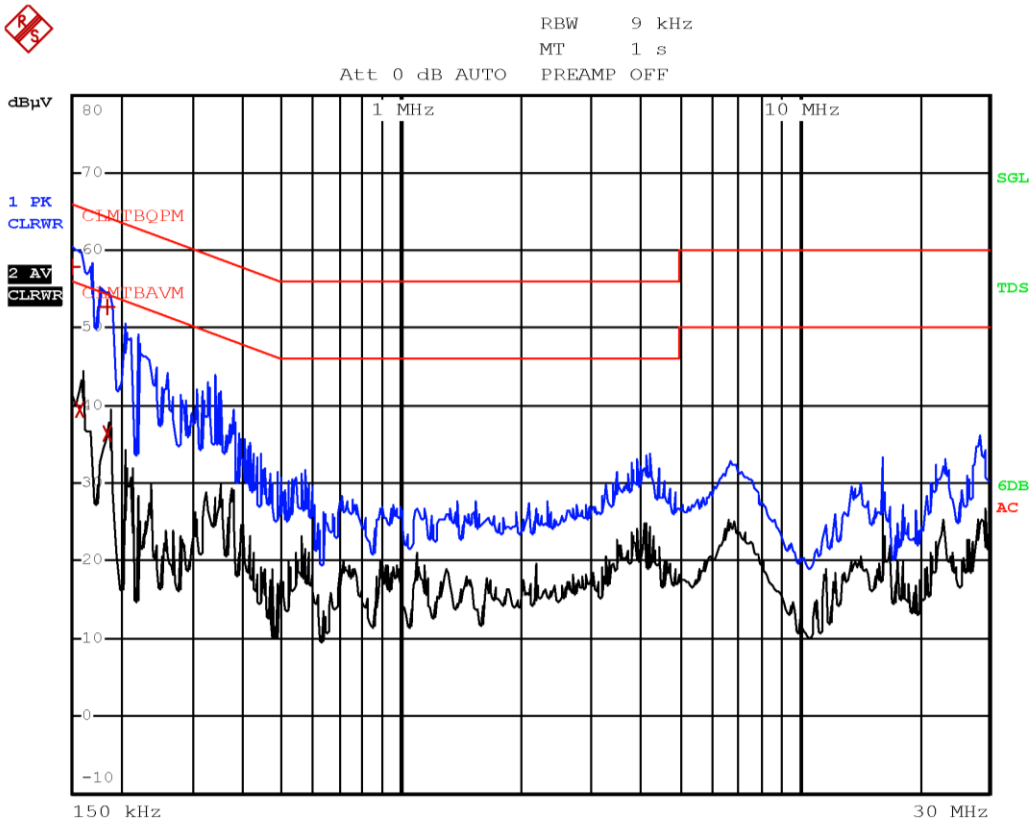
Receiver settings for preview measurements:

Resolution bandwidth	9 kHz
Video bandwidth	30 kHz
Detector mode	Peak and Average
Trace mode	Max Hold
Measurement time	100 ms

Receiver settings for final measurements:

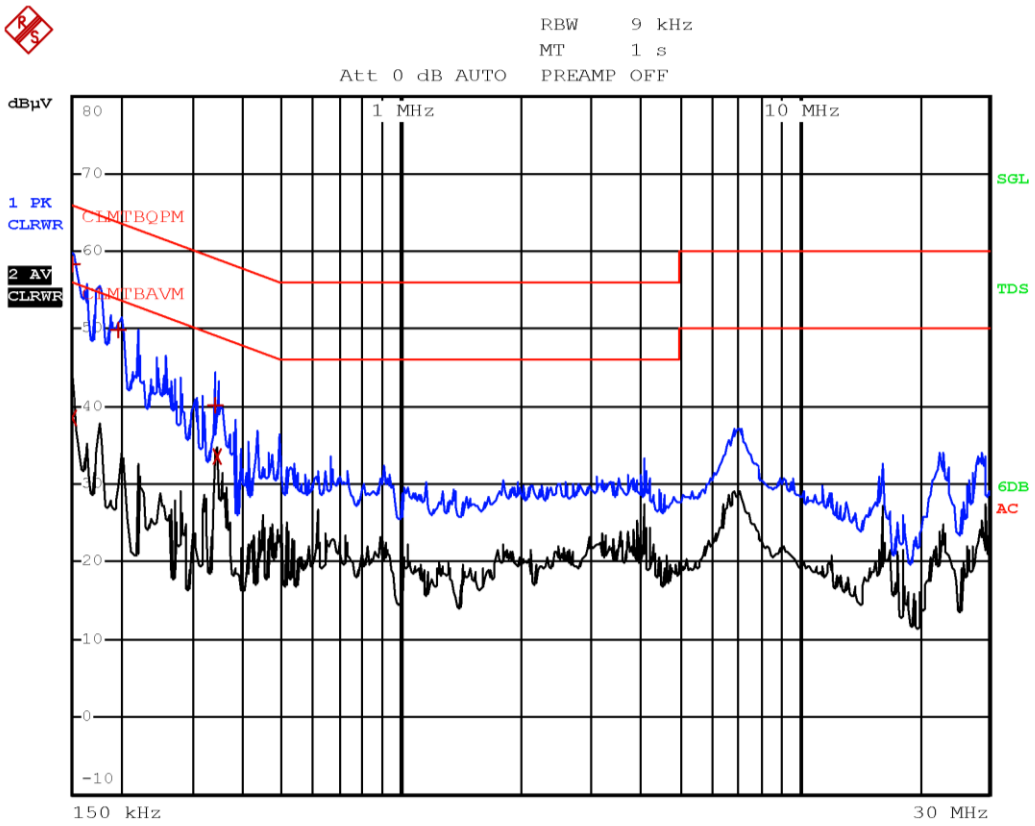
Resolution bandwidth	9 kHz
Video bandwidth	30 kHz
Detector mode	Quasi-Peak and Average
Trace mode	Max Hold
Measurement time	100 ms

8.5.4 Test data



Plot 8.5-1: *Conducted emissions on phase line*

Frequency (MHz)	Level (dBµV)	Limit (dBµV)	Margin (dB)	Detector
0.1500	58.0	66.0	-8.0	QP
0.1580	39.6	55.6	-16.0	Av
0.1860	52.7	64.2	-11.5	QP
0.1860	36.4	54.2	-17.8	Av



Plot 8.5-2: *Conducted emissions on neutral line*

Frequency (MHz)	Level (dBµV)	Limit (dBµV)	Margin (dB)	Detector
0.1500	58.4	66.0	-7.6	QP
0.1500	38.7	56.0	-17.3	Av
0.1980	49.9	63.7	-13.8	QP
0.3380	40.2	59.3	-19.1	QP
0.3420	33.5	49.2	-15.6	Av

8.6 FCC 15.407(g) and RSS-Gen 8.11 Frequency stability

8.6.1 Definitions and limits

Manufacturers of U-NII (IC: LE-LAN) devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

8.6.2 Test summary

Test start date:	April 15, 2020

8.6.1 Observations, settings and special notes

As per EUT's document provided by client, EUT's Operating Temperature is -40 °C to +70 °C(REGATE-10-12) and -40 °C to +85 °C (DYGATE-10-12), Nominal AC input voltage is 120 V.

Spectrum analyzer settings:

Resolution bandwidth:	10 Hz
Video bandwidth:	10 Hz
Detector mode:	Peak
Trace mode:	Max Hold

8.6.2 Test data

Table 8.6-1: *Frequency drift measurement*

Test conditions Temperature, Voltage	Nominal frequency, GHz	Frequency, GHz	Drift, Hz
+85 °C, Nominal	5.785	5.7851036850	106218
+70 °C, Nominal	5.785	5.7850130120	15545
+23 °C, +15 %	5.785	5.7849974670	0
+23 °C, Nominal	5.785	5.7849974670	reference
+23 °C, −15 %	5.785	5.7849974670	0
-40 °C, Nominal	5.785	5.7849965990	-868

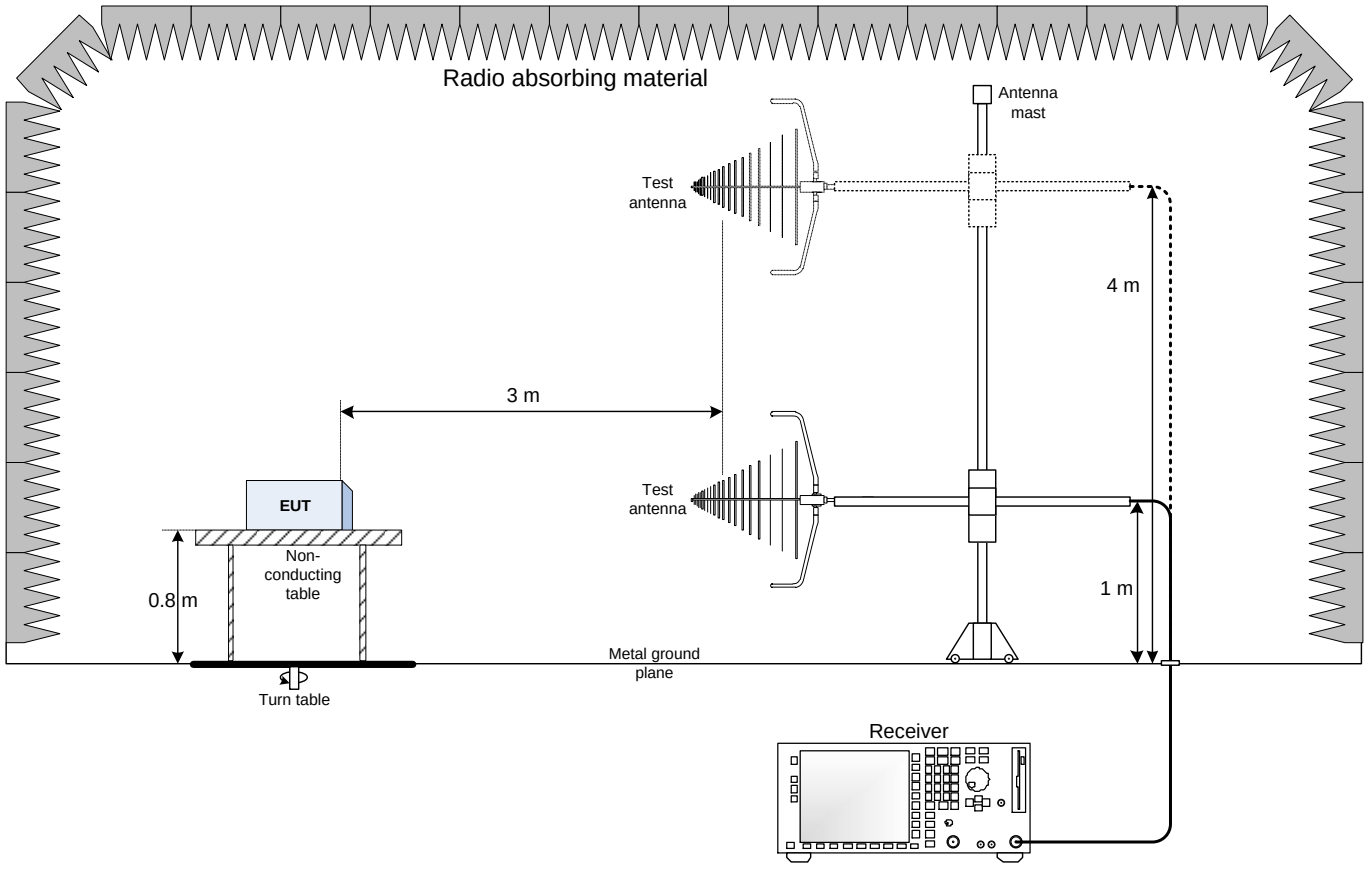
Minimum lower band edge margin is more than 1 kHz

Minimum upper band edge margin is more than 107 kHz

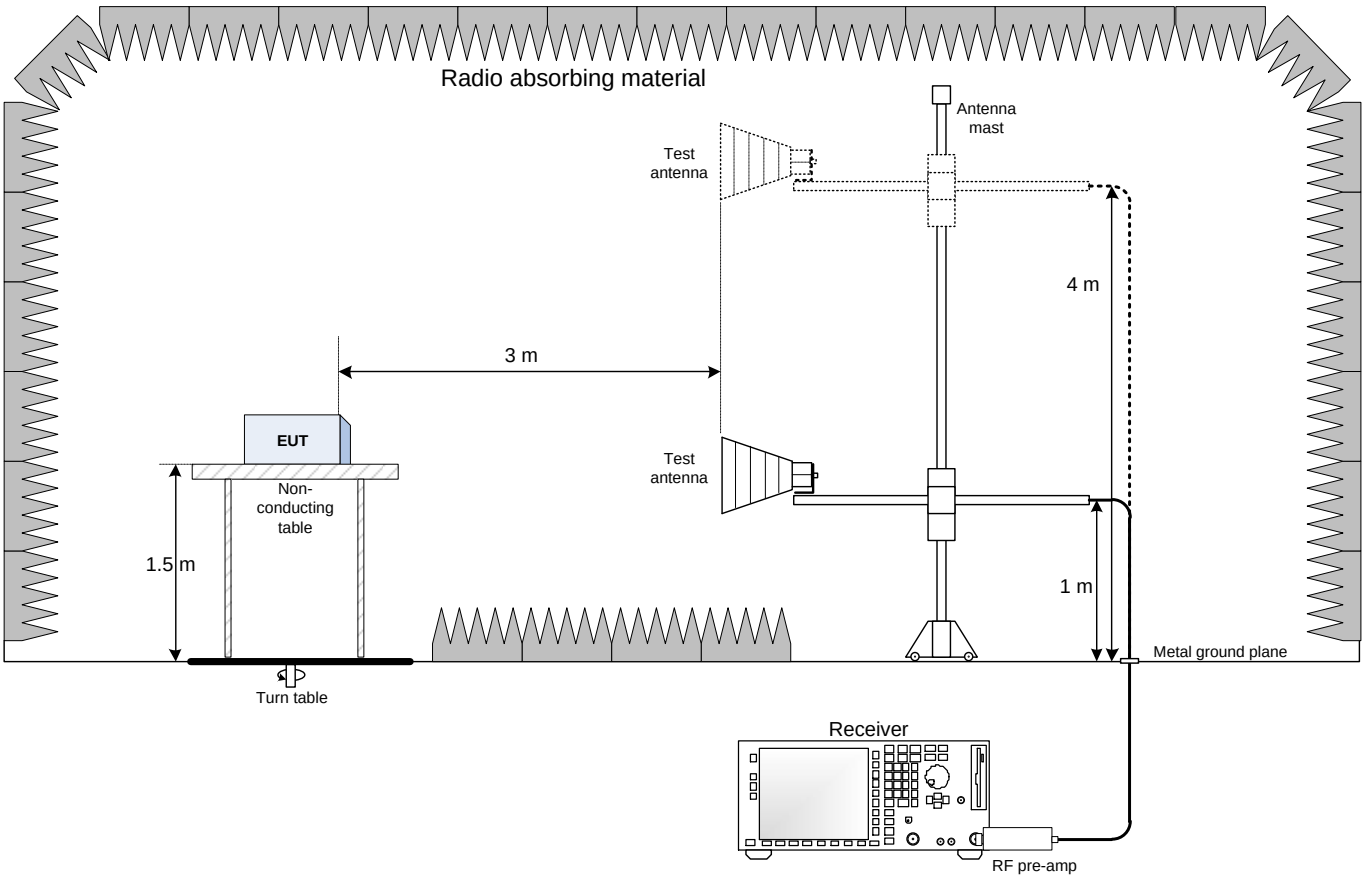
The frequency drifts in above table are within these minimum margins, the emissions are deemed to maintain within the band of operation.

Section 9. Block diagrams of test set-ups

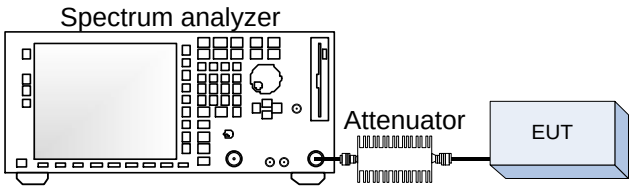
9.1 Radiated emissions set-up for frequencies below 1 GHz



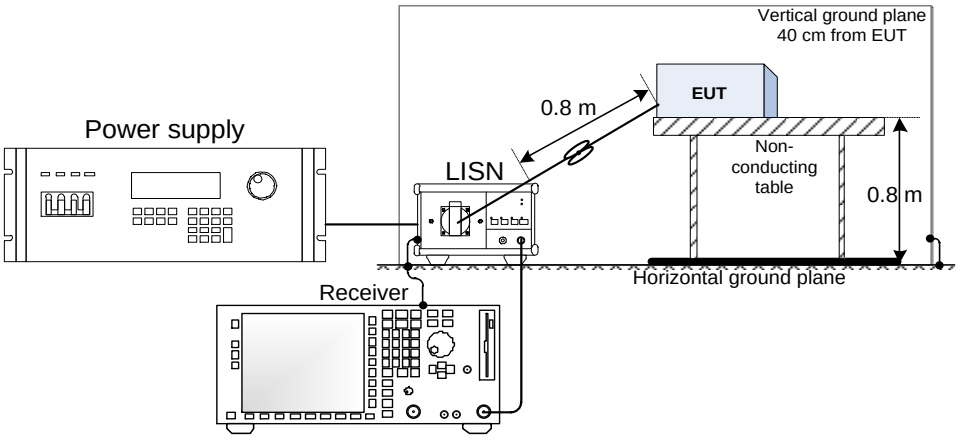
9.2 Radiated emissions set-up for frequencies above 1 GHz



9.3 Antenna port conducted measurements set-up

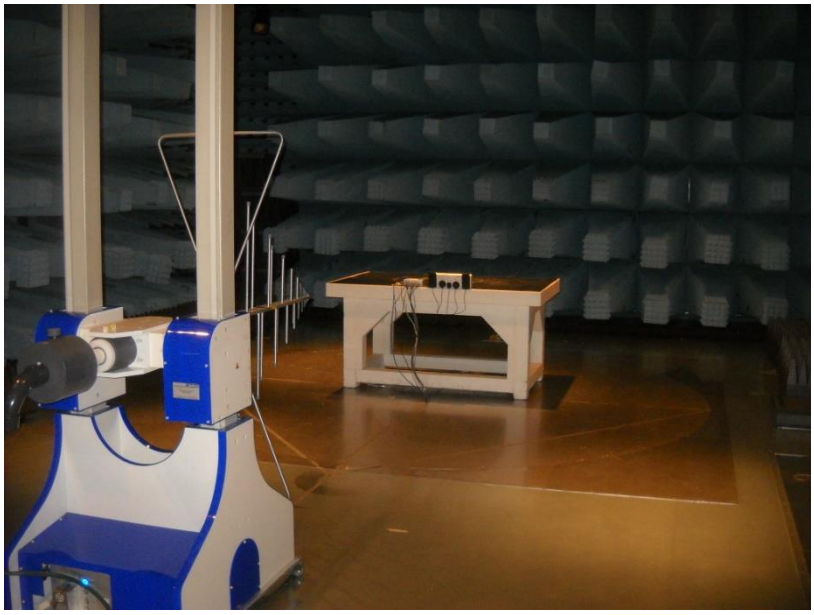


9.4 Conducted emissions on AC line set-up

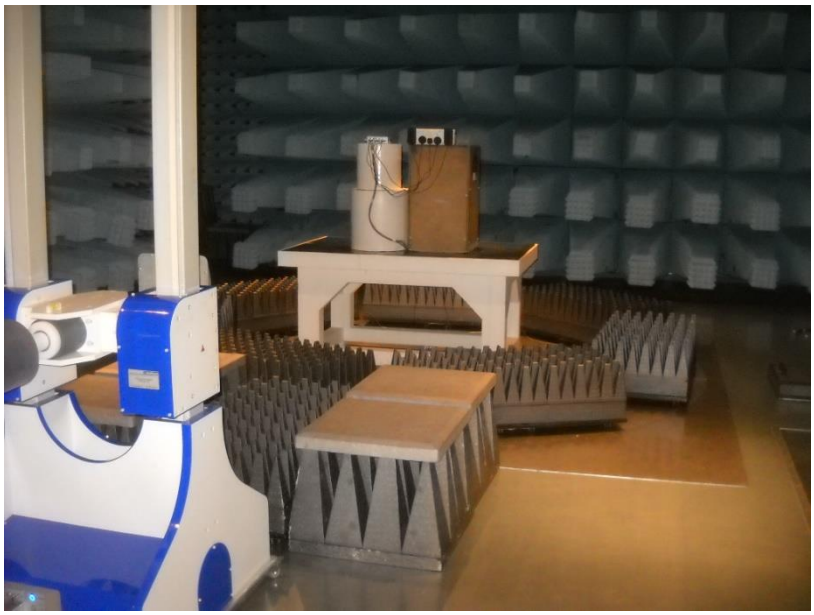


Section 10. Photos

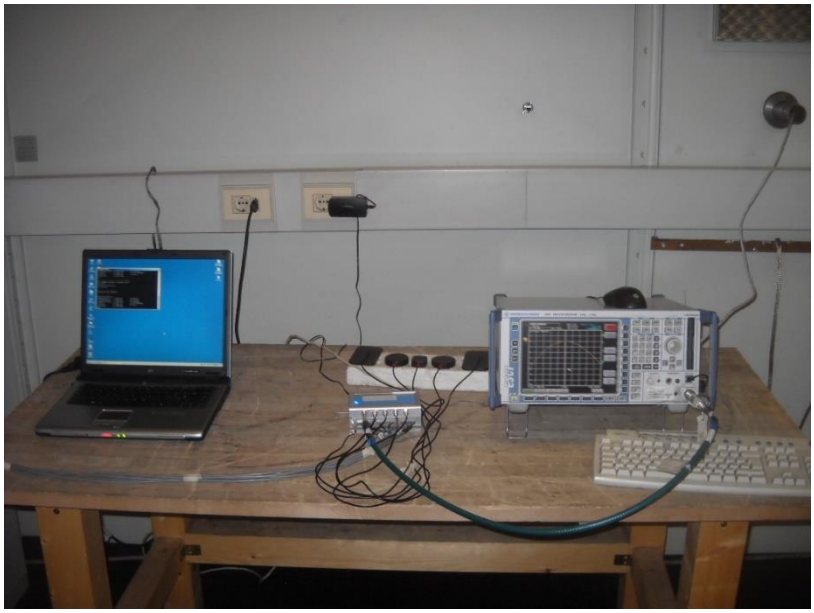
10.1 Photos of the test set-up



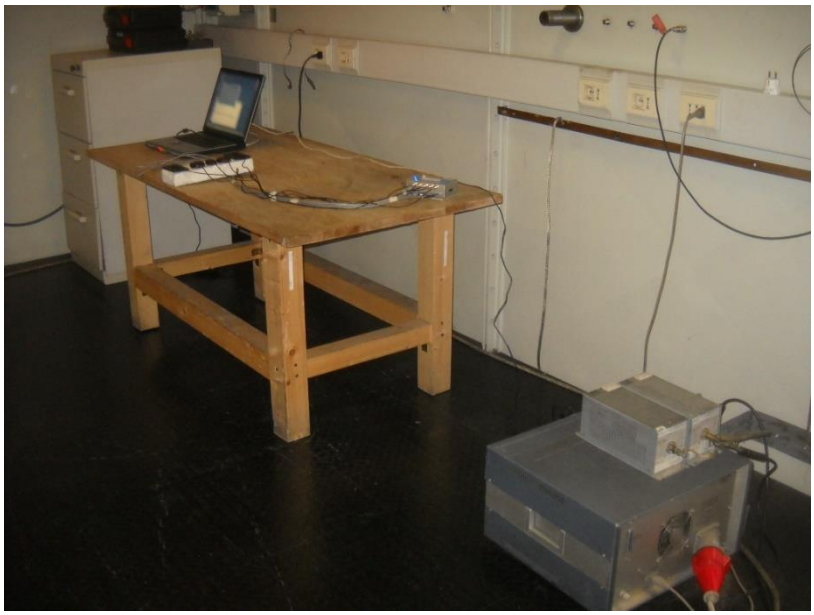
Radiated emission below 1 GHz



Radiated emission above 1 GHz



Conducted emission on the antenna port



Conducted emission on the AC Mains

10.2 Photos of the EUT

REGATE-10-12-GS04

REGATE-10-12-GS04

DYGATE-10-12-GS04

DYGATE-10-12-GS04

(End of report)