

Test data, continued

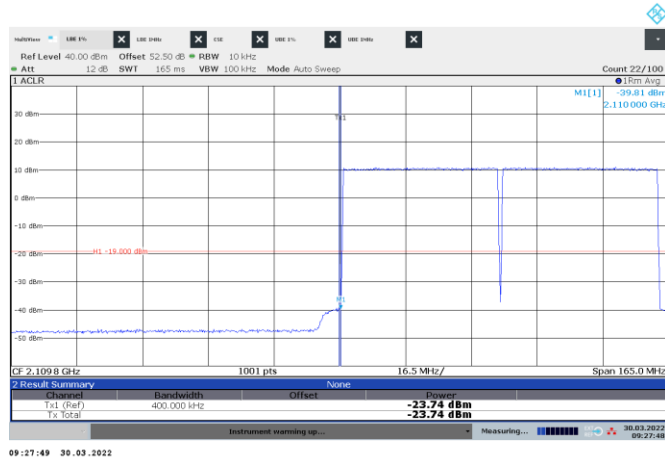


Figure 8.3-47: Conducted emission at the lower band edge

Frequency: 2110 MHz Mode: Multi-carrier operation
 Meas. BW: 1% of EBW Tech.: 2 x NR 40 MHz
 Limit: -19 dBm/400 kHz Notes: None

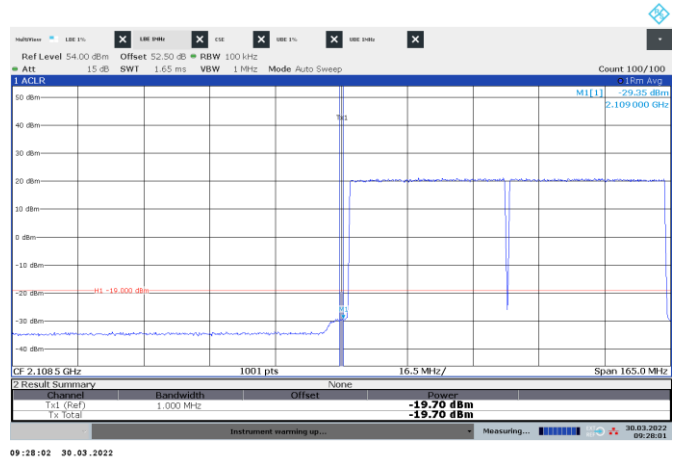


Figure 8.3-48: Conducted emission 1 MHz away from the lower band edge

Frequency: 2109 MHz Mode: Multi-carrier operation
 Meas. BW: 1 MHz Tech.: 2 x NR 40 MHz
 Limit: -19 dBm/MHz Notes: None

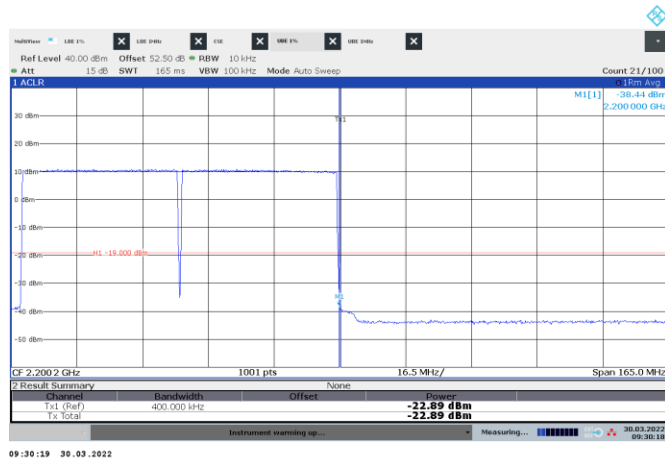


Figure 8.3-49: Conducted emission at the upper band edge

Frequency: 2200 MHz Mode: Multi-carrier operation
 Meas. BW: 1% of EBW Tech.: 2 x NR 40 MHz
 Limit: -19 dBm/400 kHz Notes: None

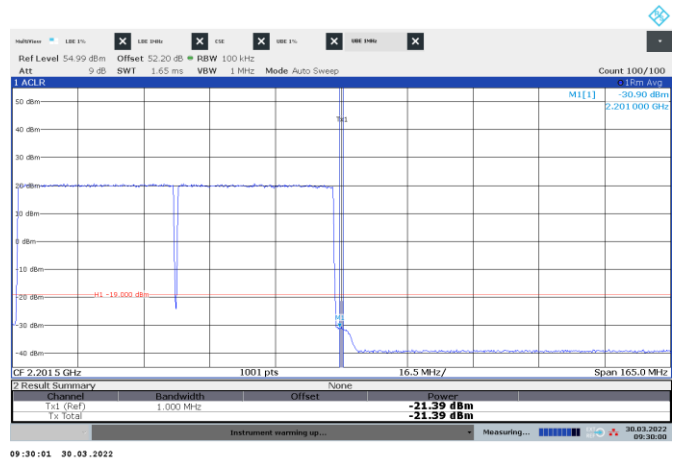


Figure 8.3-50: Conducted emission 1 MHz away from the upper band edge

Frequency: 2201 MHz Mode: Multi-carrier operation
 Meas. BW: 1 MHz Tech.: 2 x NR 40 MHz
 Limit: -19 dBm/MHz Notes: None

Test data, continued

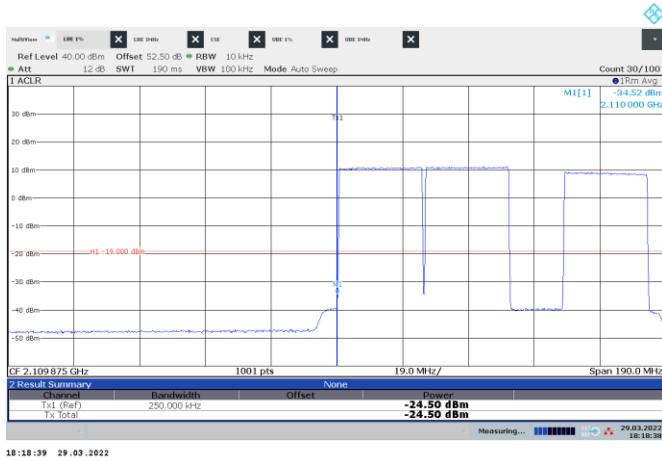


Figure 8.3-51: Conducted emission at the lower band edge

Frequency: 2110 MHz Mode: Multi-carrier operation
 Meas. BW: 1% of EBW Tech.: 3 × NR 25 MHz
 Limit: -19 dBm/250 kHz Notes: None

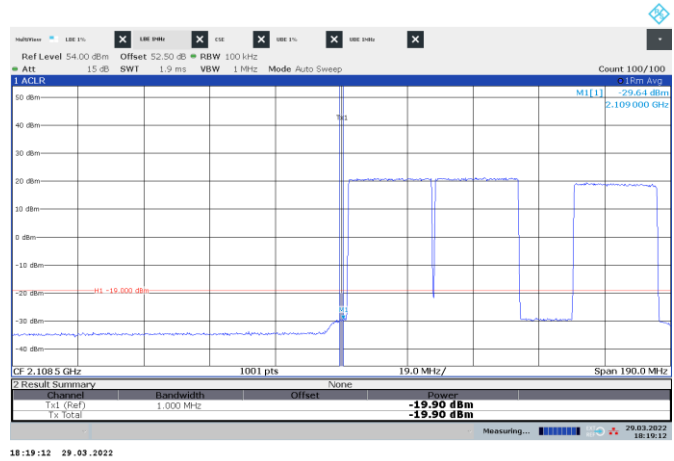


Figure 8.3-52: Conducted emission 1 MHz away from the lower band edge

Frequency: 2109 MHz Mode: Multi-carrier operation
 Meas. BW: 1 MHz Tech.: 3 × NR 25 MHz
 Limit: -19 dBm/MHz Notes: None

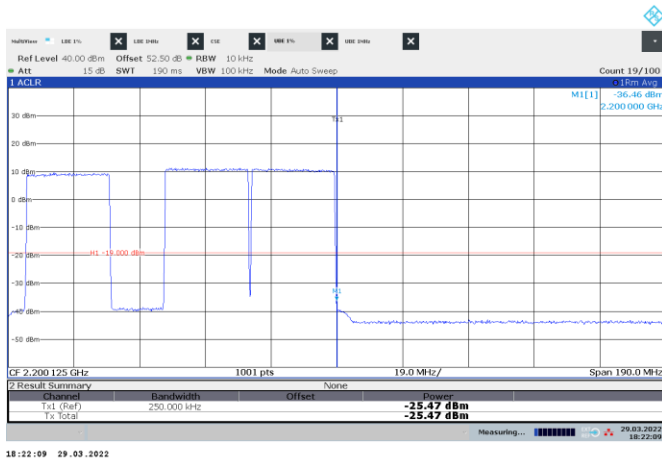


Figure 8.3-53: Conducted emission at the upper band edge

Frequency: 2200 MHz Mode: Multi-carrier operation
 Meas. BW: 1% of EBW Tech.: 3 × NR 25 MHz
 Limit: -19 dBm/250 kHz Notes: None

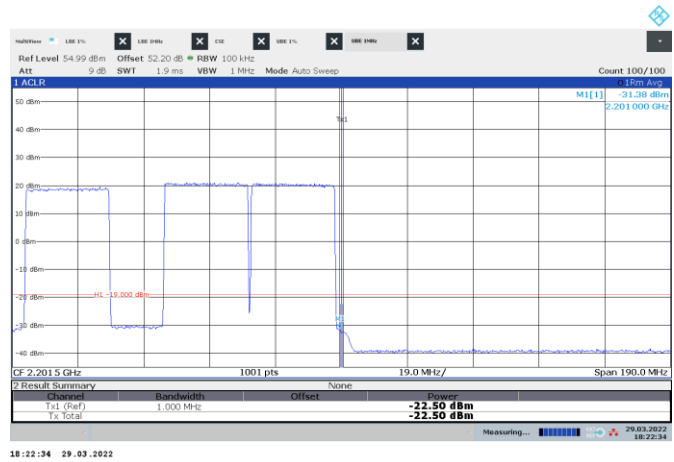


Figure 8.3-54: Conducted emission 1 MHz away from the upper band edge

Frequency: 2201 MHz Mode: Multi-carrier operation
 Meas. BW: 1 MHz Tech.: 3 × NR 25 MHz
 Limit: -19 dBm/MHz Notes: None

Test data, continued

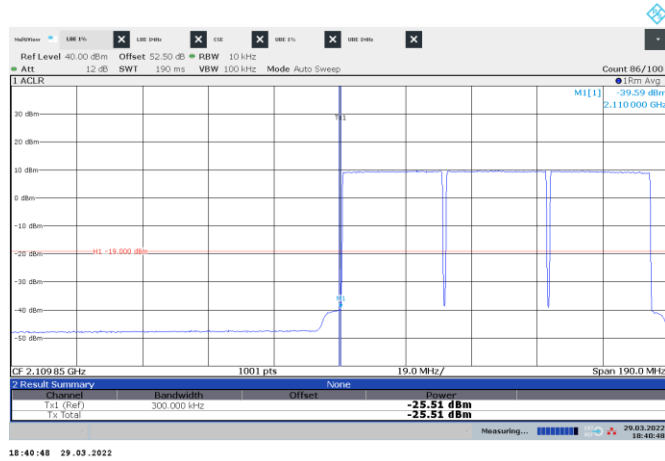


Figure 8.3-55: Conducted emission at the lower band edge

Frequency: 2110 MHz Mode: Multi-carrier operation
 Meas. BW: 1% of EBW Tech.: 3 × NR 30 MHz
 Limit: -19 dBm/300 kHz Notes: None



Figure 8.3-56: Conducted emission 1 MHz away from the lower band edge

Frequency: 2109 MHz Mode: Multi-carrier operation
 Meas. BW: 1 MHz Tech.: 3 × NR 30 MHz
 Limit: -19 dBm/MHz Notes: None

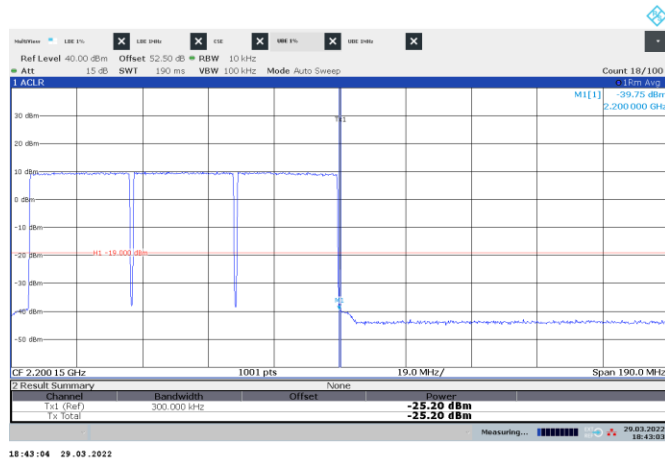


Figure 8.3-57: Conducted emission at the upper band edge

Frequency: 2200 MHz Mode: Multi-carrier operation
 Meas. BW: 1% of EBW Tech.: 3 × NR 30 MHz
 Limit: -19 dBm/300 kHz Notes: None

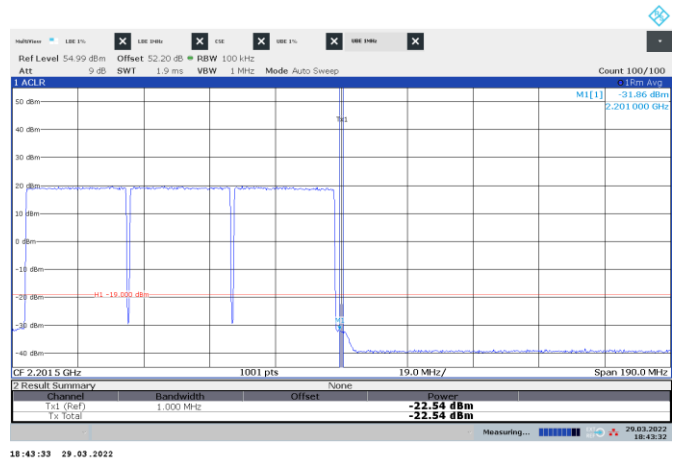


Figure 8.3-58: Conducted emission 1 MHz away from the upper band edge

Frequency: 2201 MHz Mode: Multi-carrier operation
 Meas. BW: 1 MHz Tech.: 3 × NR 30 MHz
 Limit: -19 dBm/MHz Notes: None

Test data, continued

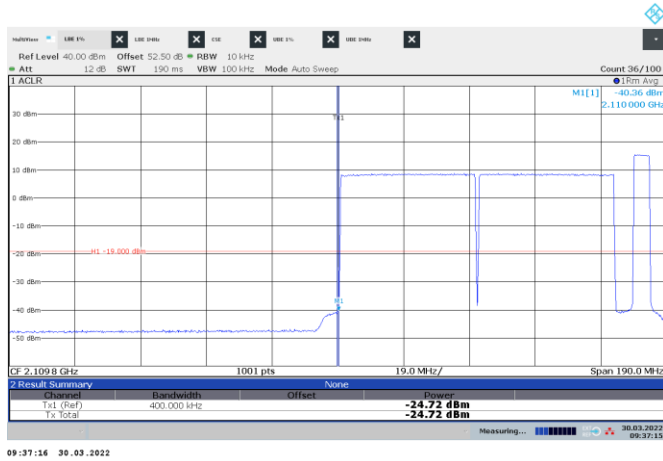


Figure 8.3-59: Conducted emission at the lower band edge

Frequency: 2110 MHz Mode: Multi-carrier operation
 Meas. BW: 1% of EBW Tech.: 2 × NR 40 MHz+ 1 × NR 5 MHz
 Limit: -19 dBm/400 kHz Notes: None

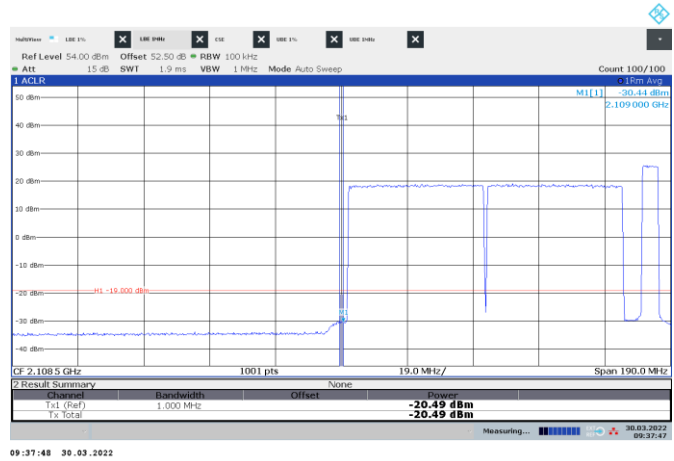


Figure 8.3-60: Conducted emission 1 MHz away from the lower band edge

Frequency: 2109 MHz Mode: Multi-carrier operation
 Meas. BW: 1 MHz Tech.: 2 × NR 40 MHz+ 1 × NR 5 MHz
 Limit: -19 dBm/MHz Notes: None

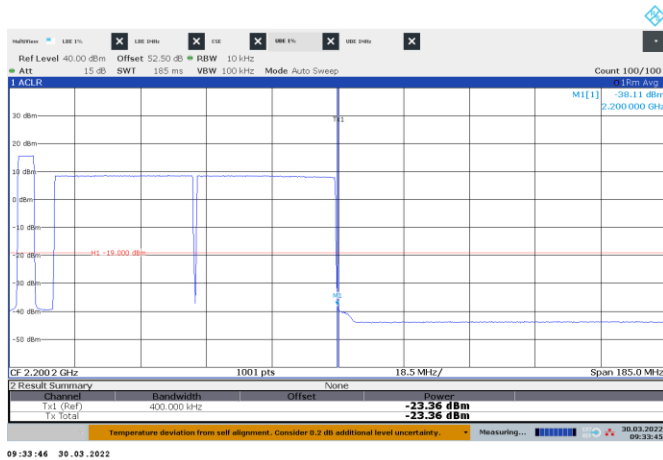


Figure 8.3-61: Conducted emission at the upper band edge

Frequency: 2200 MHz Mode: Multi-carrier operation
 Meas. BW: 1% of EBW Tech.: 2 × NR 40 MHz+ 1 × NR 5 MHz
 Limit: -19 dBm/400 kHz Notes: None

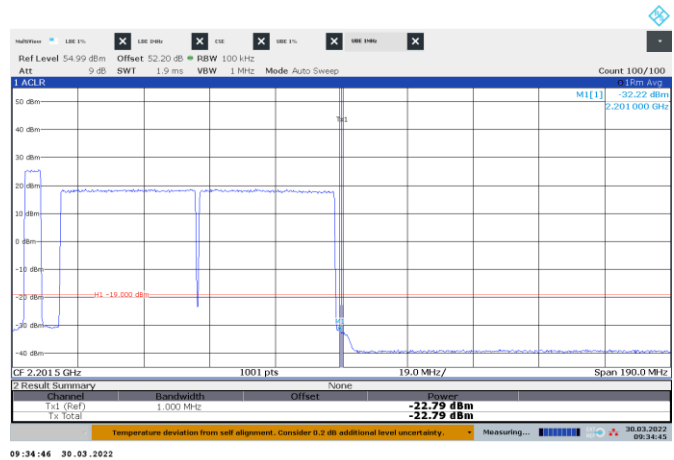


Figure 8.3-62: Conducted emission 1 MHz away from the upper band edge

Frequency: 2201 MHz Mode: Multi-carrier operation
 Meas. BW: 1 MHz Tech.: 2 × NR 40 MHz+ 1 × NR 5 MHz
 Limit: -19 dBm/MHz Notes: None

Test data, continued

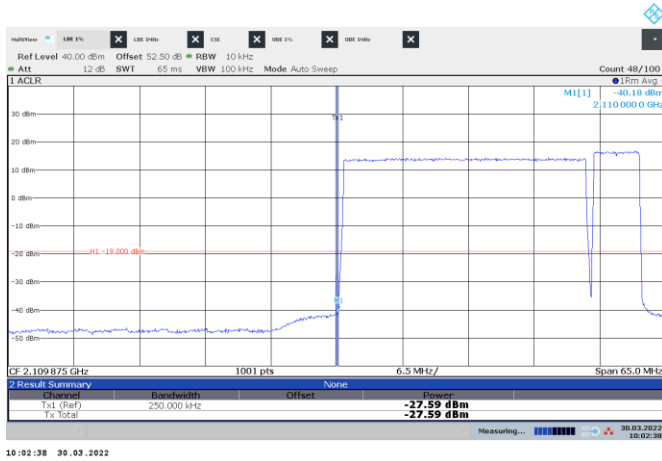


Figure 8.3-63: Conducted emission at the lower band edge

Frequency: 2110 MHz Mode: Multi-RAT operation
 Meas. BW: 1% of EBW Tech.: LTE 5 MHz + NR 25 MHz
 Limit: -19 dBm/250 kHz Notes: None

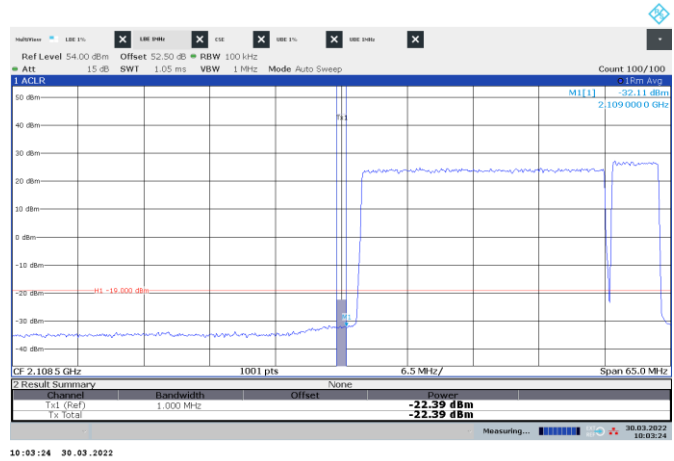


Figure 8.3-64: Conducted emission 1 MHz away from the lower band edge

Frequency: 2109 MHz Mode: Multi-RAT operation
 Meas. BW: 1 MHz Tech.: LTE 5 MHz + NR 25 MHz
 Limit: -19 dBm/MHz Notes: None

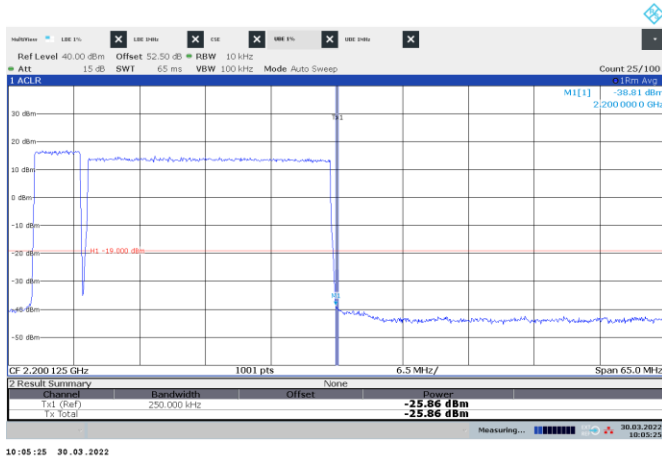


Figure 8.3-65: Conducted emission at the upper band edge

Frequency: 2200 MHz Mode: Multi-RAT operation
 Meas. BW: 1% of EBW Tech.: LTE 5 MHz + NR 25 MHz
 Limit: -19 dBm/250 kHz Notes: None

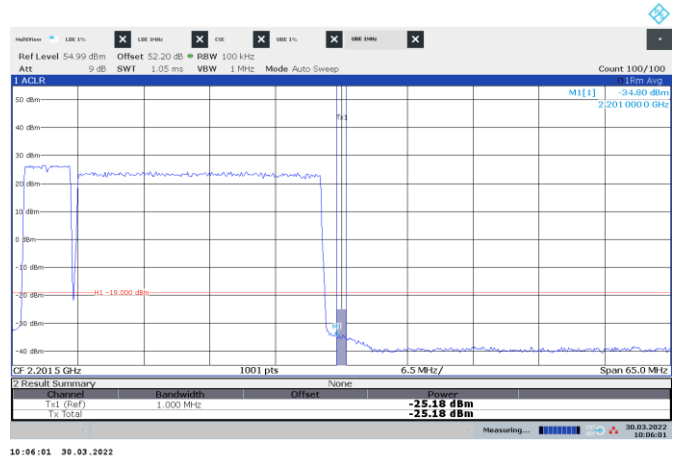


Figure 8.3-66: Conducted emission 1 MHz away from the upper band edge

Frequency: 2201 MHz Mode: Multi-RAT operation
 Meas. BW: 1 MHz Tech.: LTE 5 MHz + NR 25 MHz
 Limit: -19 dBm/MHz Notes: None

Test data, continued

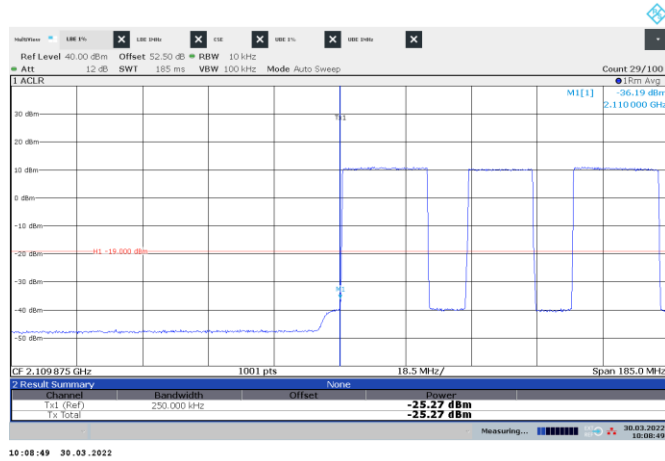


Figure 8.3-67: Conducted emission at the lower band edge

Frequency: 2110 MHz Mode: Multi-RAT operation
 Meas. BW: 1% of EBW Tech.: LTE 20 MHz + 2* NR 25 MHz
 Limit: -19 dBm/250 kHz Notes: None

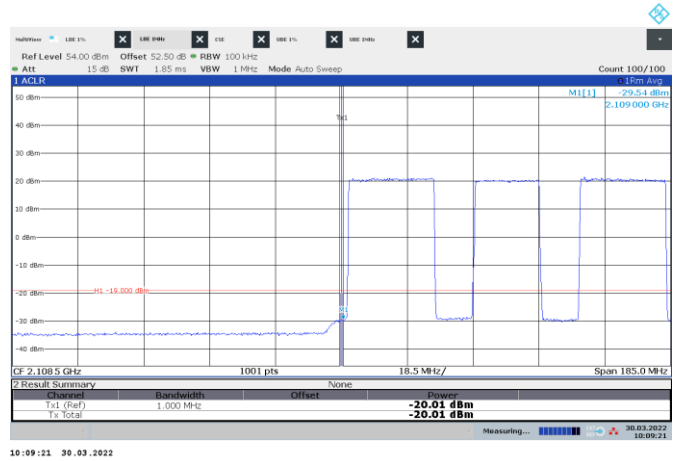


Figure 8.3-68: Conducted emission 1 MHz away from the lower band edge

Frequency: 2109 MHz Mode: Multi-RAT operation
 Meas. BW: 1 MHz Tech.: LTE 20 MHz + 2* NR 25 MHz
 Limit: -19 dBm/MHz Notes: None

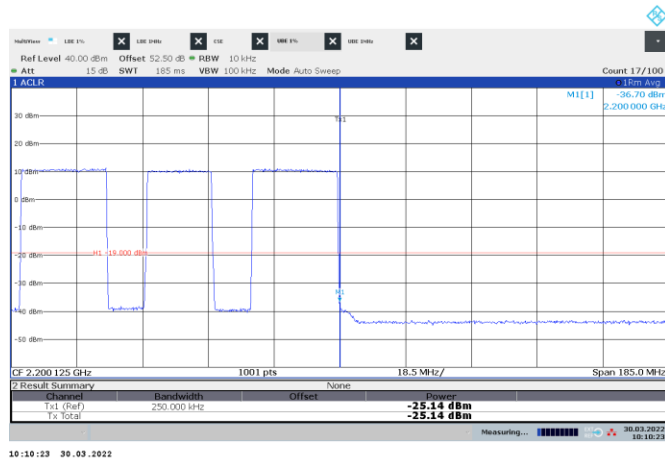


Figure 8.3-69: Conducted emission at the upper band edge

Frequency: 2200 MHz Mode: Multi-RAT operation
 Meas. BW: 1% of EBW Tech.: LTE 20 MHz + 2* NR 25 MHz
 Limit: -19 dBm/250 kHz Notes: None

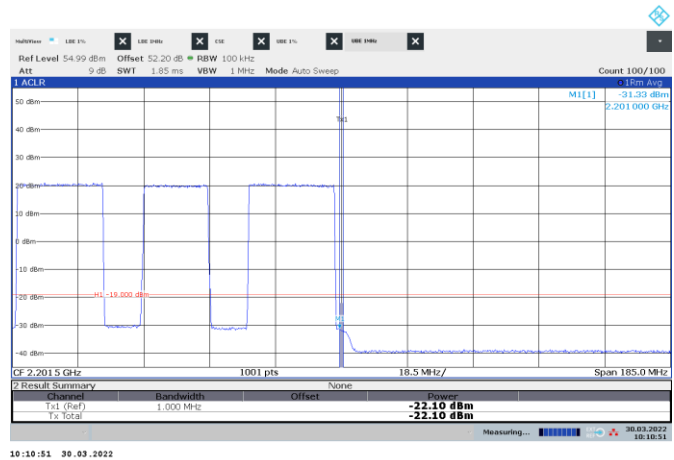


Figure 8.3-70: Conducted emission 1 MHz away from the upper band edge

Frequency: 2201 MHz Mode: Multi-RAT operation
 Meas. BW: 1 MHz Tech.: LTE 20 MHz + 2* NR 25 MHz
 Limit: -19 dBm/MHz Notes: None

8.4 Radiated spurious emissions (Band 66 & 2/25)

8.4.1 Definitions and limits

FCC §27.53:

(h) AWS emission limits

(1) General protection levels. Except as otherwise specified below, for operations in the 1695–1710 MHz, 1710–1755 MHz, 1755–1780 MHz, 1915–1920 MHz, 1995–2000 MHz, 2000–2020 MHz, 2110–2155 MHz, 2155–2180 MHz, and 2180–2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ dB.

(3) Measurement procedure.

(i) Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1-megahertz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

(ii) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the licensee's frequency block edges, both upper and lower, as the design permits.

(iii) The measurements of emission power can be expressed in peak or average values, provided they are expressed in the same parameters as the transmitter power.

FCC §24.238(a):

Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

(b) Measurement procedure. Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 1 MHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

RSS-139, Section 6.6:

i. In the first 1.0 MHz bands immediately outside and adjacent to the equipment's smallest operating frequency block, which can contain the equipment's occupied bandwidth, the emission power per any 1% of the emission bandwidth shall be attenuated below the transmitter output power P (in dBW) by at least $43 + 10 \log_{10} p$ (watts) dB.

ii. After the first 1.0 MHz outside the equipment's smallest operating frequency block, which can contain the equipment's occupied bandwidth, the emission power in any 1 MHz bandwidth shall be attenuated below the transmitter output power P (in dBW) by at least $43 + 10 \log_{10} p$ (watts) dB.

RSS-170, Section 5.4:

The transmitter unwanted emissions shall be measured for all channel bandwidths with the carrier frequency set at both the highest and lowest channels in which the equipment is designed to operate.

The e.i.r.p. density of unwanted and carrier-off state emissions outlined in this section (Section 5.4) shall be averaged over any 2-ms active transmission using an RMS detector with a resolution bandwidth of 1 MHz for broadband emissions and a resolution bandwidth of 1 kHz for discrete emissions, unless stated otherwise.

For ATC equipment operating in the bands 2000-2020 MHz and 2180-2200 MHz, the unwanted emission limits shall be determined using a measurement bandwidth of 1 MHz or greater. However, in the 1 MHz band immediately outside and adjacent to the equipment's operating frequency block, a resolution bandwidth of at least 1% of the occupied bandwidth may be employed.

5.4.1.2 ATC Base Station Equipment operating in bands 2000-2020 MHz and 2180-2200 MHz

he unwanted emissions of ATC base station equipment transmitting in the bands 2000–2020 MHz and 2180–2200 MHz shall comply with the following:

(1) The power of any unwanted emissions at frequencies outside the equipment's operating frequency block shall be attenuated below the transmitter power P (dBW), by $43 + 10 \log p$ (watts), dB.

(2) *For equipment operating in the band 2180–2200 MHz, in addition to (1), the power of any emissions on all frequencies between 2200 MHz and 2290 MHz shall not exceed an e.i.r.p. of -100.6 dBW/4 kHz (-70.6 dBm/4 kHz).

*** This requirement is for implementation and is enforced at the time of licensing. Therefore, results are not included in this report.**

Requirement number 2 above is amended as detailed in the following ISED document...

<https://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf11536.html>

Definitions and limits, continued

RSS-133, Section 6.5.1:

- i. In the first 1.0 MHz bands immediately outside and adjacent to the equipment’s operating frequency block, the emission power per any 1% of the emission bandwidth shall be attenuated below the transmitter output power P (in dBW) by at least $43 + 10 \log_{10} p$ (watts) dB.
- ii. After the first 1.0 MHz, the emission power in any 1 MHz bandwidth shall be attenuated below the transmitter output power P (in dBW) by at least $43 + 10 \log_{10} p$ (watts) dB. If the measurement is performed using 1% of the emission bandwidth, power integration over 1.0 MHz is required.

8.4.2 Test summary

Test date	December 7, 2021
Test engineer	Predrag Golic

8.4.3 Observations, settings and special notes

- The spectrum was searched from 30 MHz to the 10th harmonic per ANSI C63.26 Paragraph 5.5.3.2 method.
- RBW within 30–1000 MHz was 100 kHz and 1 MHz above 1 GHz. VBW was wider than RBW.
- Testing was performed with RF ports terminated with 50 Ohm load.
- **Testing was performed with dual band (Band 2/25 and Band 66) simultaneous transmission.**

8.4.4 Test data

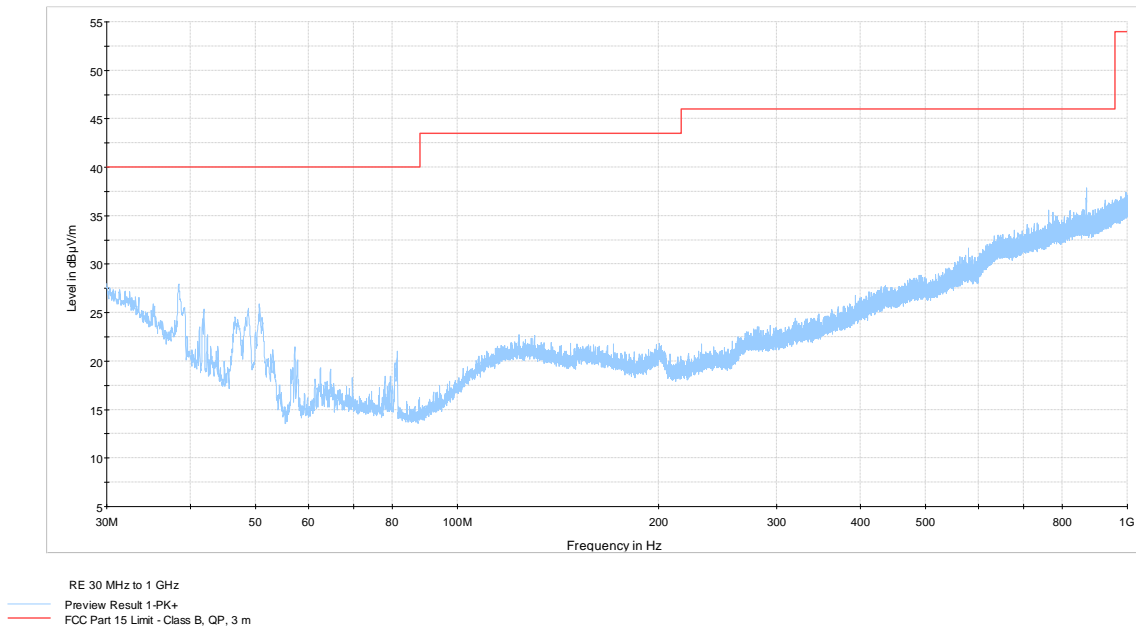


Figure 8.4-1: Radiated spurious emissions within 30–1000 MHz, dual band multi-RAT operation (limit at 82.23 dBµV/m)

Test data, continued

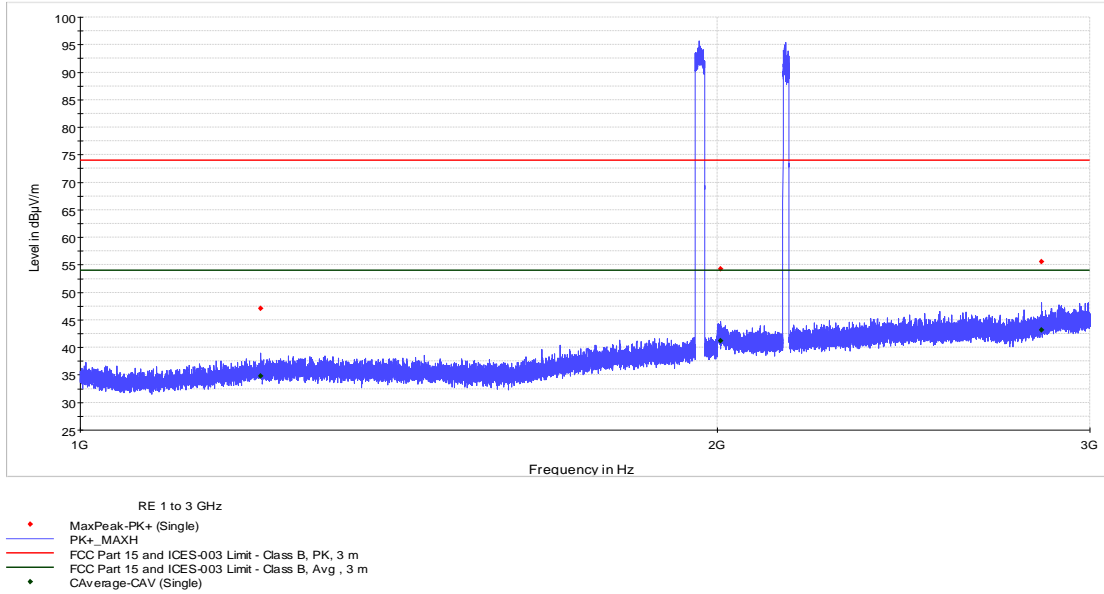


Figure 8.4-2: Radiated spurious emissions within 1–3 GHz, dual band multi-RAT operation (limit at 82.23 dBµV/m)

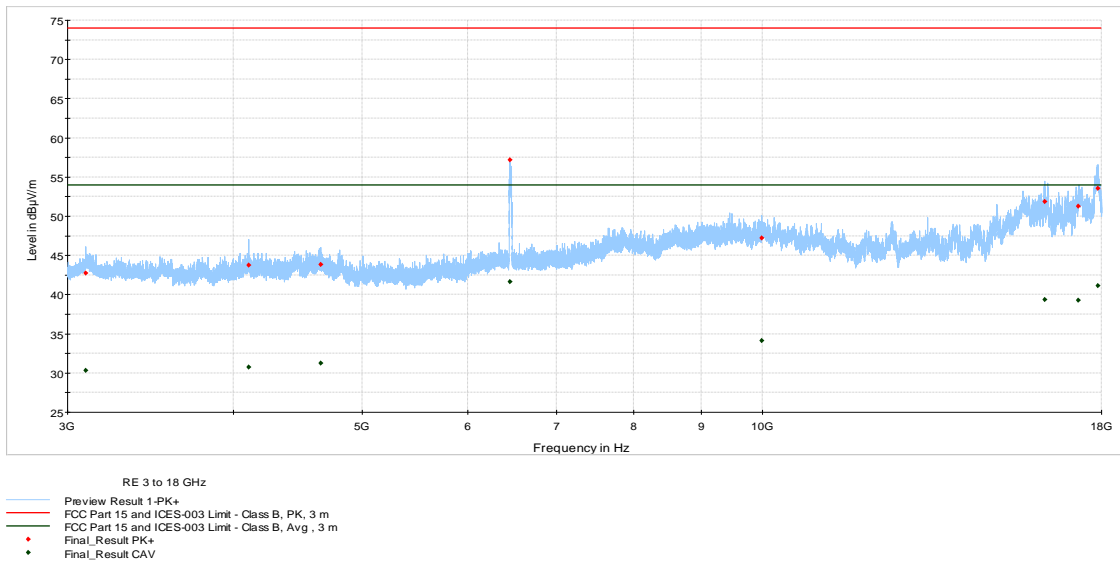


Figure 8.4-3: Radiated spurious emissions within 3–18 GHz, dual band multi-RAT operation (limit at 82.23 dBµV/m)

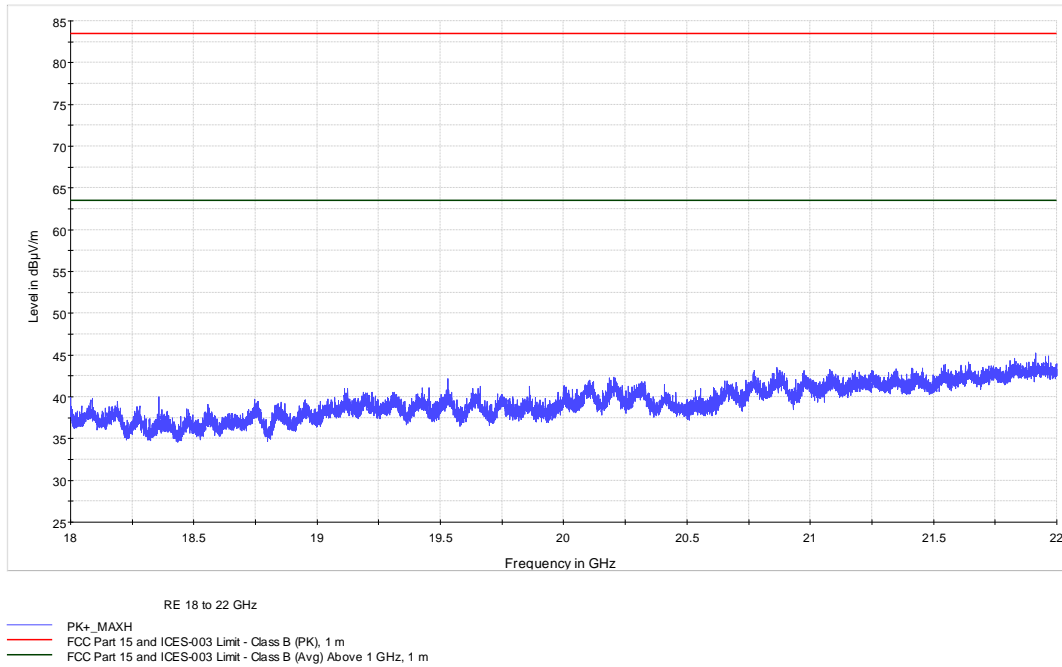


Figure 8.4-4: Radiated spurious emissions within 18–22 GHz, dual band multi-RAT operation (limit at 82.23 dBµV/m)

8.5 Spurious out-of-band emissions (Band 25)

8.5.1 Definitions and limits

FCC §24.238(a):

Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

(b) Measurement procedure. Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 1 MHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

RSS-133, Section 6.5.1:

- i. In the first 1.0 MHz bands immediately outside and adjacent to the equipment's operating frequency block, the emission power per any 1% of the emission bandwidth shall be attenuated below the transmitter output power P (in dBW) by at least $43 + 10 \log_{10} p$ (watts) dB.
- ii. After the first 1.0 MHz, the emission power in any 1 MHz bandwidth shall be attenuated below the transmitter output power P (in dBW) by at least $43 + 10 \log_{10} p$ (watts) dB. If the measurement is performed using 1% of the emission bandwidth, power integration over 1.0 MHz is required.

8.5.2 Test summary

Test date	March 30, 2022
Test engineer	Moustapha Salah Toubeh

8.5.3 Observations, settings and special notes

- The spectrum was searched from 30 MHz to the 10th harmonic.
- All measurements were performed using an average (RMS) detector per ANSI C63.26 Paragraph 5.7.2 method.
- Limit line ($43 + 10 \log_{10}(P)$ or -13 dBm) was adjusted for MIMO operation by 6 dB*: -13 dBm - 6 dB = -19 dBm
*MIMO correction factor for 4 antenna ports: $10 \times \log_{10}(4) = 6$ dB
- RBW 1 MHz, VBW was wider than RBW.

8.5.4 Test data

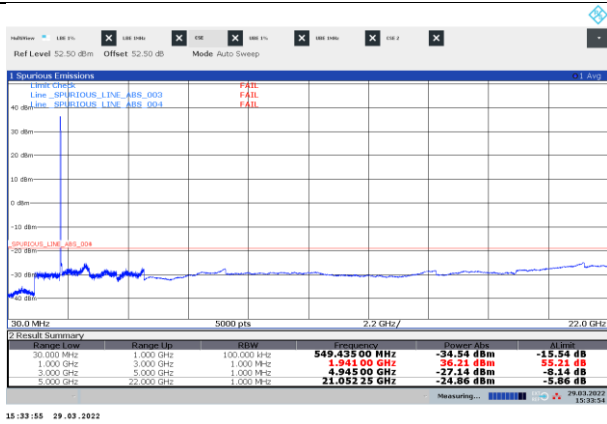


Figure 8.5-1: Conducted spurious emissions of NR 25 MHz bottom channel, single carrier operation

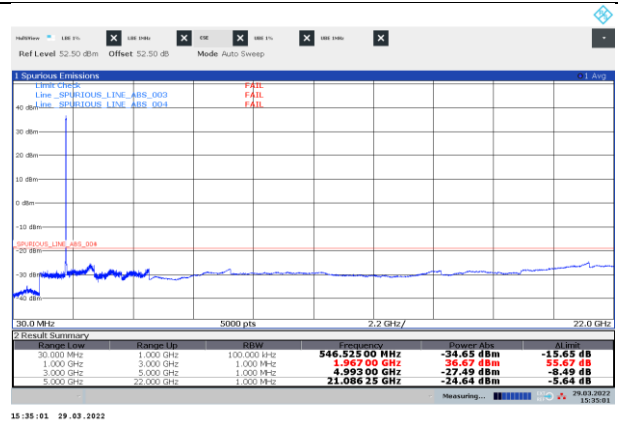


Figure 8.5-2: Conducted spurious emissions of NR 25 MHz mid channel, single carrier operation

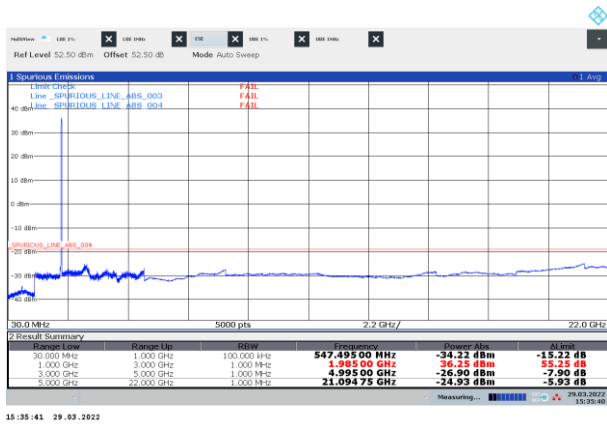


Figure 8.5-3: Conducted spurious emissions of NR 25 MHz top channel, single carrier operation

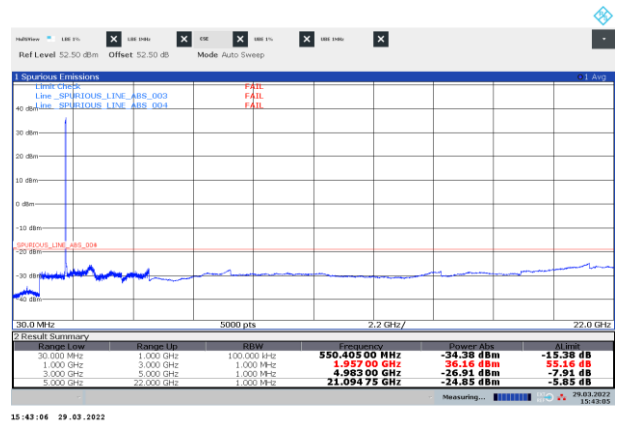


Figure 8.5-4: Conducted spurious emissions of NR 30 MHz bottom channel, single carrier operation

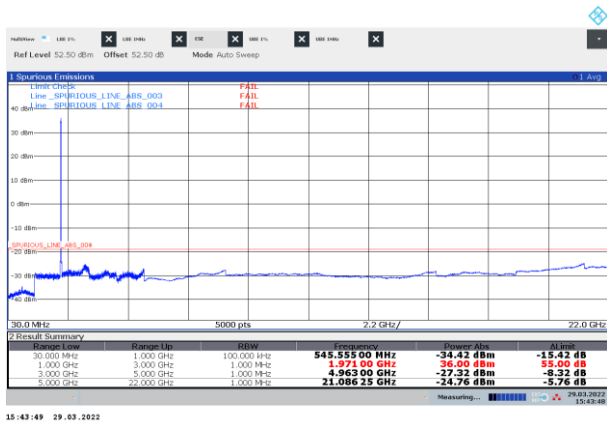


Figure 8.5-5: Conducted spurious emissions of NR 30 MHz mid channel, single carrier operation



Figure 8.5-6: Conducted spurious emissions of NR 30 MHz top channel, single carrier operation

Test data, continued

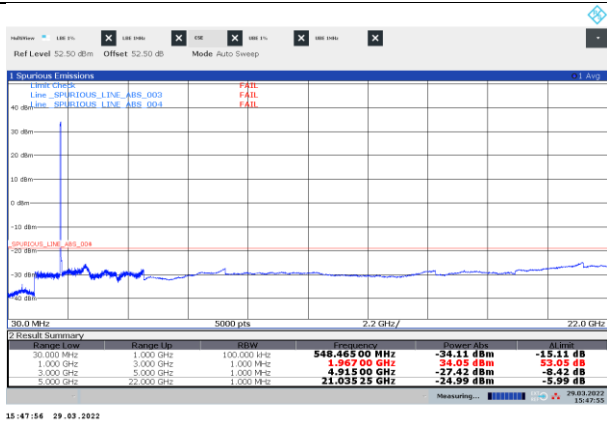


Figure 8.5-7: Conducted spurious emissions of NR 40 MHz bottom channel, single carrier operation

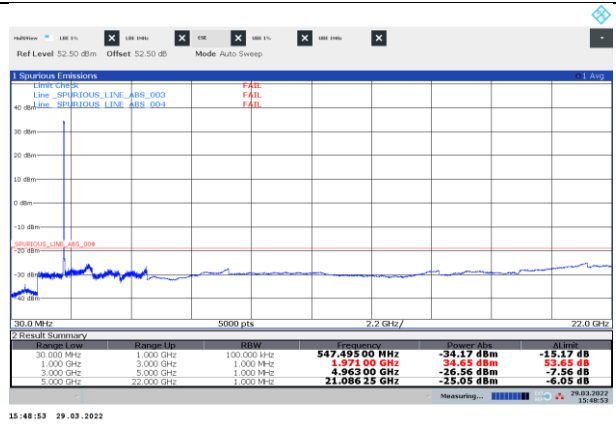


Figure 8.5-8: Conducted spurious emissions of NR 40 MHz mid channel, single carrier operation

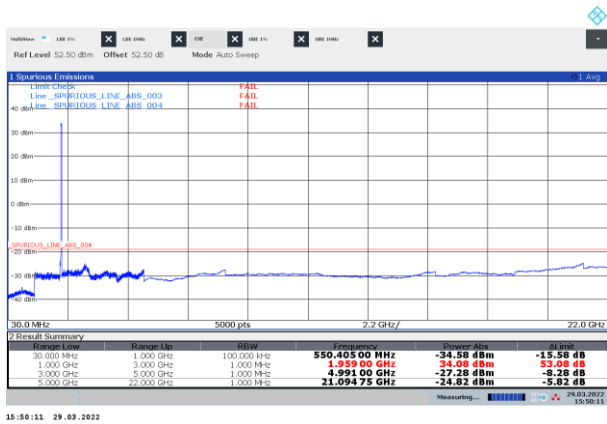


Figure 8.5-9: Conducted spurious emissions of NR 40 MHz top channel, single carrier operation

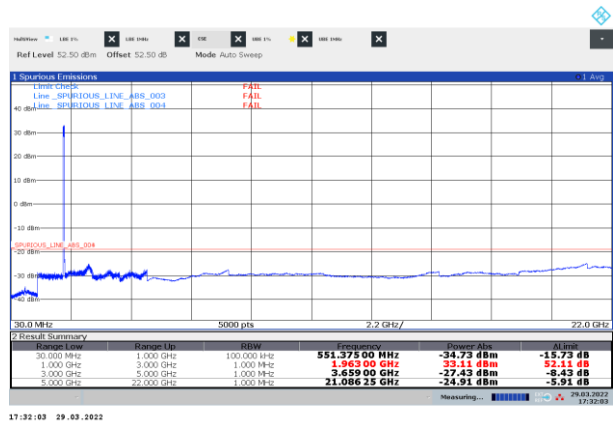


Figure 8.5-10: Conducted spurious emissions of NR 25 MHz two-carrier operation, bottom

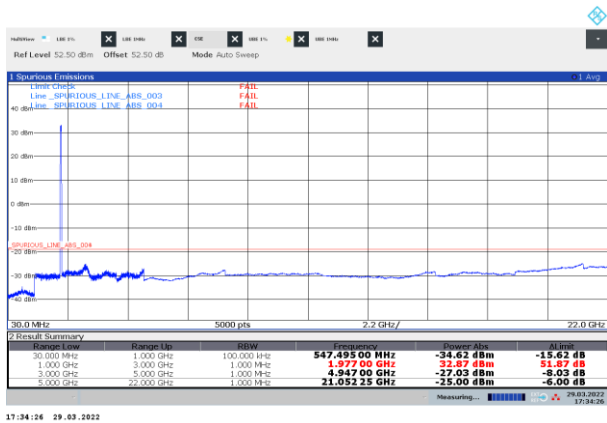


Figure 8.5-11: Conducted spurious emissions of NR 25 MHz two-carrier operation, middle

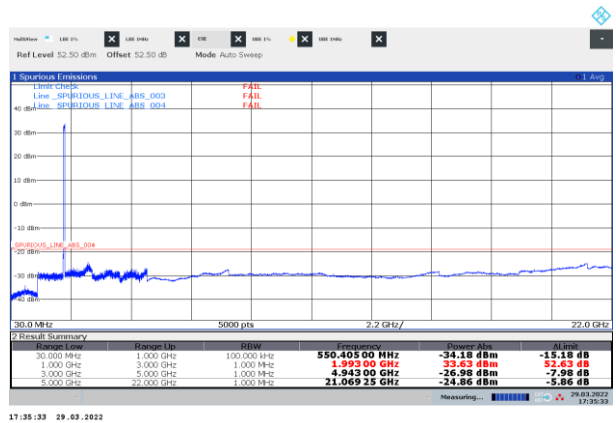


Figure 8.5-12: Conducted spurious emissions of NR 25 MHz two-carrier operation, top

Test data, continued



Figure 8.5-13: Conducted spurious emissions of NR 30 MHz two-carrier operation, bottom

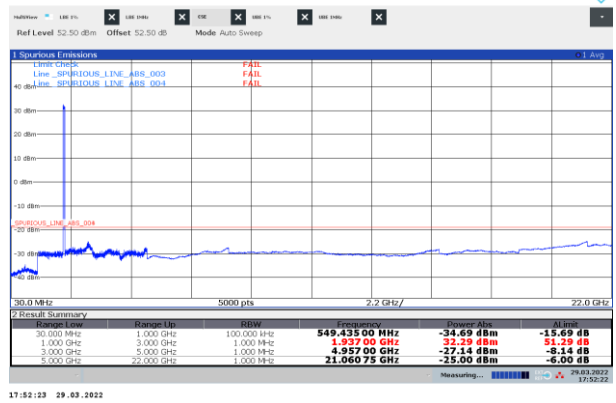


Figure 8.5-14: Conducted spurious emissions of NR 30 MHz two-carrier operation, top

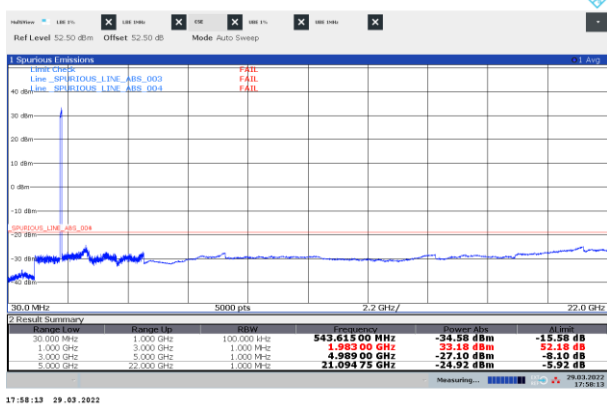


Figure 8.5-15: Conducted spurious emissions of NR 40 MHz two-carrier operation (1 x NR 40 MHz + 1 x NR 25 MHz), bottom



Figure 8.5-16: Conducted spurious emissions of NR 40 MHz two-carrier operation (1 x NR 40 MHz + 1 x NR 25 MHz), top

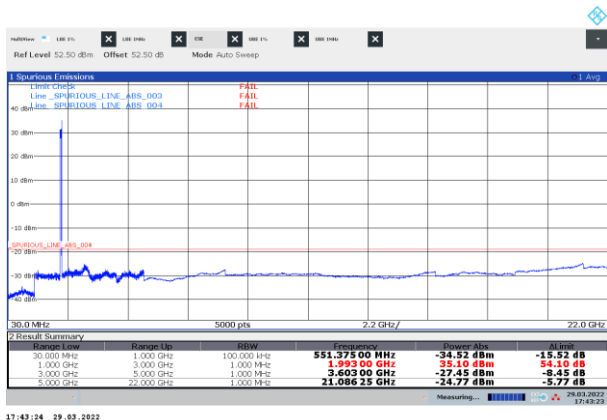


Figure 8.5-17: Conducted spurious emissions of NR 25 MHz three-carrier operation (2 x NR 25 MHz + 1 x NR 5 MHz), bottom

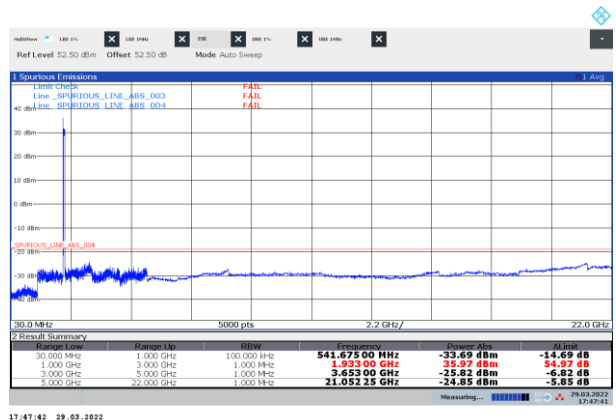


Figure 8.5-18: Conducted spurious emissions of NR 25 MHz three-carrier operation (2 x NR 25 MHz + 1 x NR 5 MHz), top

Test data, continued

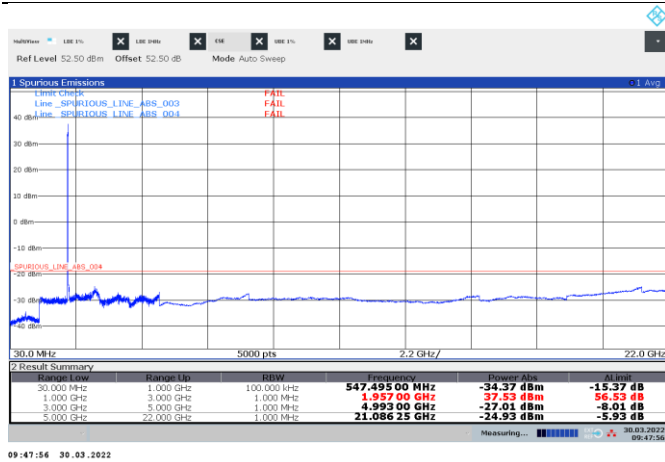


Figure 8.5-19: Conducted spurious emissions of multi-RAT operation, LTE 5 MHz + 1 * NR 25 MHz, bottom

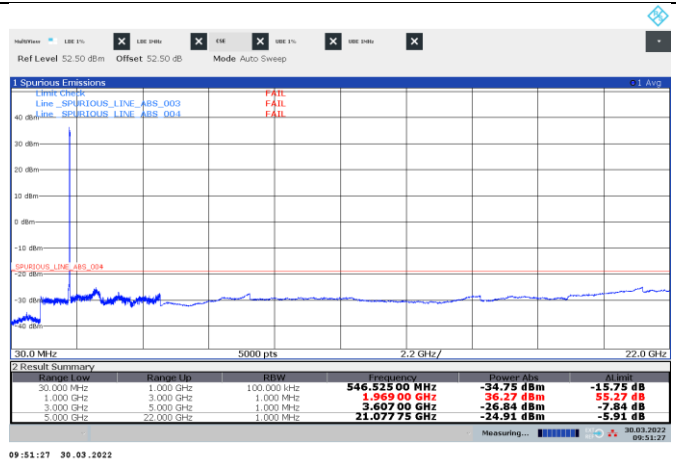


Figure 8.5-20: Conducted spurious emissions of multi-RAT operation, LTE 5 MHz + 1 * NR 25 MHz, top

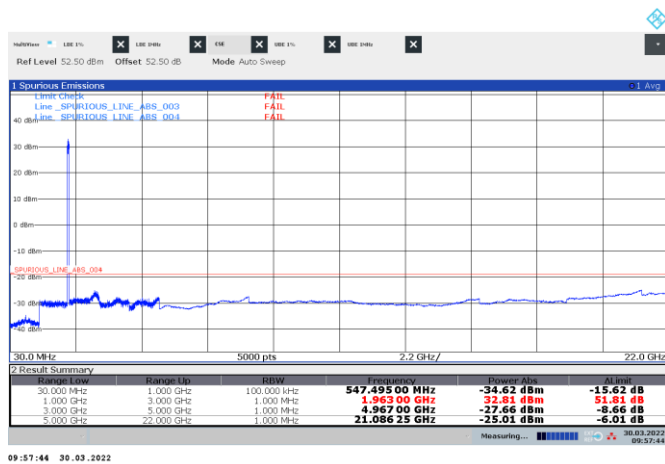


Figure 8.5-21: Conducted spurious emissions of multi-RAT operation, LTE 15 MHz + 2 * NR 25 MHz, bottom

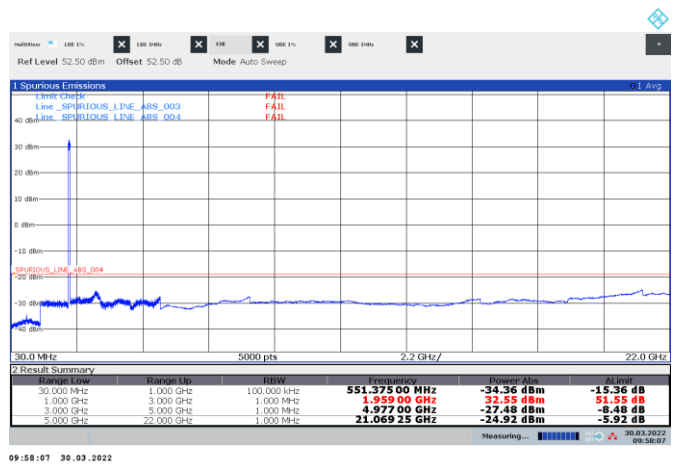


Figure 8.5-22: Conducted spurious emissions of multi-RAT operation, LTE 15 MHz + 2 * NR 25 MHz, top

Test data, continued

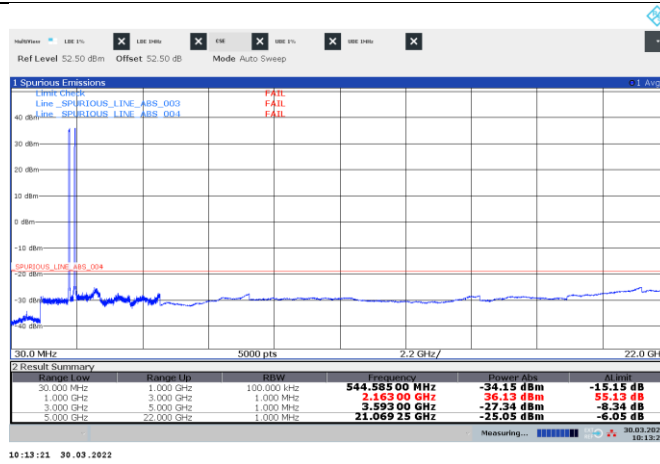


Figure 8.5-23: Conducted spurious emissions of NR 40 MHz two-carrier operation (1x 25 MHz band 25 + 1x 25 MHz band 66), top channel band 25 and bottom channel band 66

Test data, continued

On the plots below the measured value in the “Total Channel Power” column must be -19 dBm and lower.

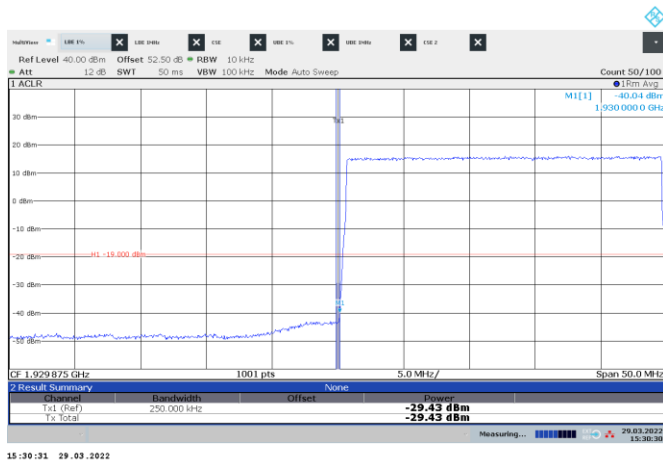


Figure 8.5-24: Conducted emission at the lower band edge

Frequency: 1930 MHz Mode: Single-carrier operation
 Meas. BW: 1% of EBW Tech.: NR 25 MHz
 Limit: -19 dBm/250 kHz Notes: None

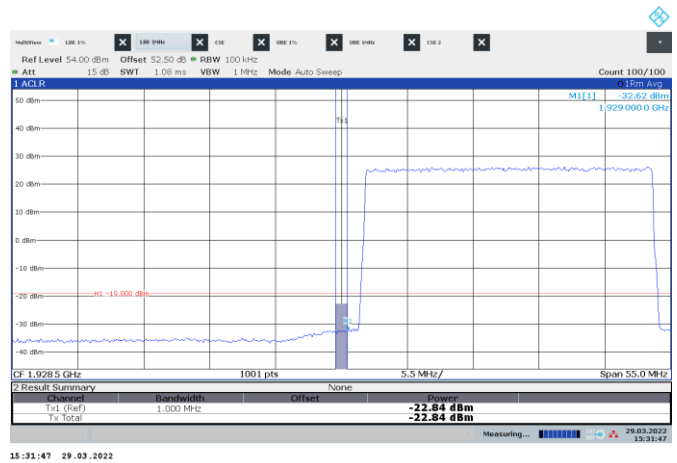


Figure 8.5-25: Conducted emission 1 MHz away from the lower band edge

Frequency: 1929 MHz Mode: Single-carrier operation
 Meas. BW: 1 MHz Tech.: NR 25 MHz
 Limit: -19 dBm/MHz Notes: None

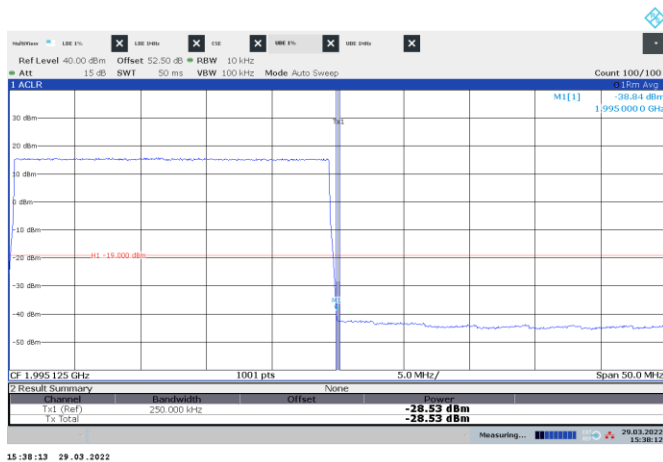


Figure 8.5-26: Conducted emission at the upper band edge

Frequency: 1995 MHz Mode: Single-carrier operation
 Meas. BW: 1% of EBW Tech.: NR 25 MHz
 Limit: -19 dBm/250 kHz Notes: None

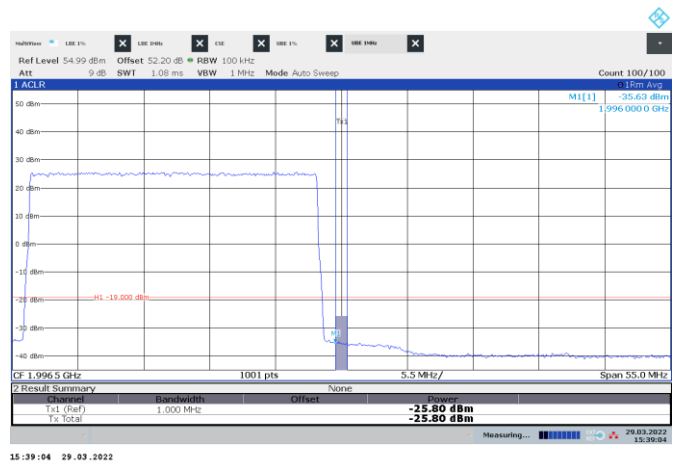


Figure 8.5-27: Conducted emission 1 MHz away from the upper band edge

Frequency: 1996 MHz Mode: Single-carrier operation
 Meas. BW: 1 MHz Tech.: NR 25 MHz
 Limit: -19 dBm/MHz Notes: None

Test data, continued

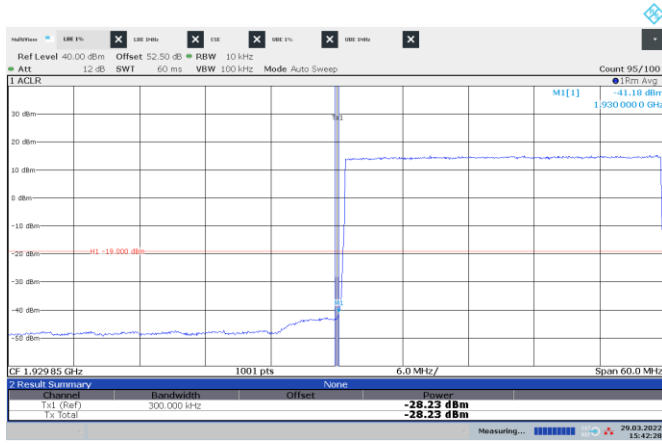


Figure 8.5-28: Conducted emission at the lower band edge

Frequency: 1930 MHz Mode: Single-carrier operation
 Meas. BW: 1% of EBW Tech.: NR 30 MHz
 Limit: -19 dBm/300 kHz Notes: None

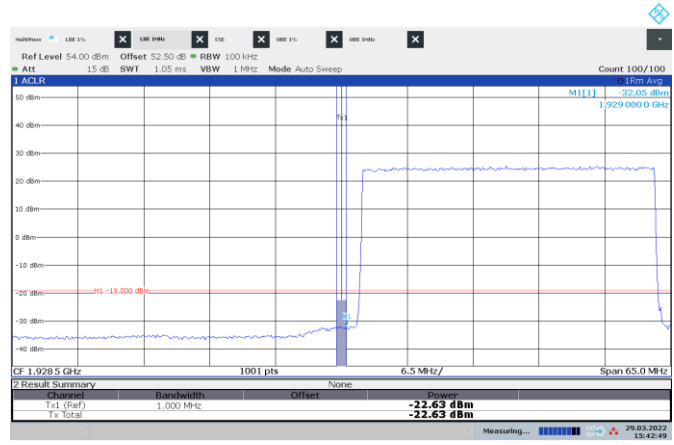


Figure 8.5-29: Conducted emission 1 MHz away from the lower band edge

Frequency: 1929 MHz Mode: Single-carrier operation
 Meas. BW: 1 MHz Tech.: NR 30 MHz
 Limit: -19 dBm/MHz Notes: None

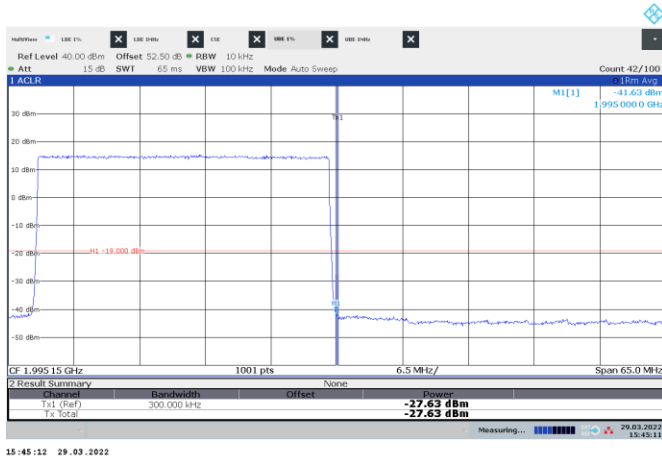


Figure 8.5-30: Conducted emission at the upper band edge

Frequency: 1995 MHz Mode: Single-carrier operation
 Meas. BW: 1% of EBW Tech.: NR 30 MHz
 Limit: -19 dBm/300 kHz Notes: None

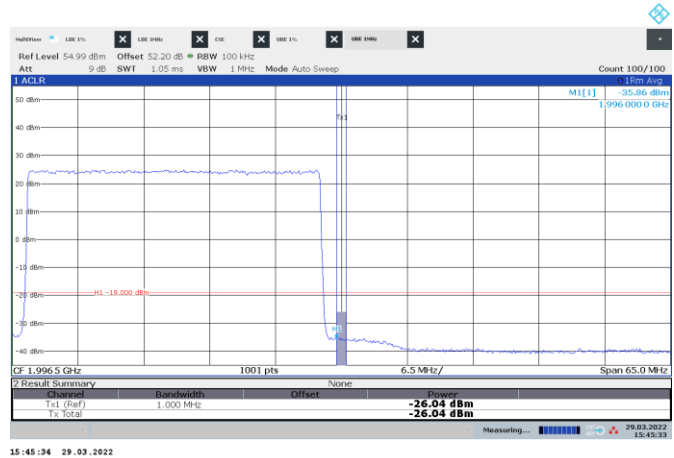


Figure 8.5-31: Conducted emission 1 MHz away from the upper band edge

Frequency: 1996 MHz Mode: Single-carrier operation
 Meas. BW: 1 MHz Tech.: NR 30 MHz
 Limit: -19 dBm/MHz Notes: None

Test data, continued

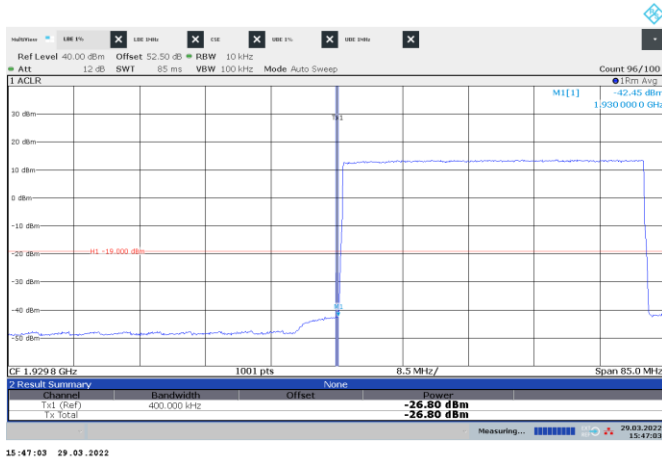


Figure 8.5-32: Conducted emission at the lower band edge

Frequency: 1930 MHz Mode: Single-carrier operation
 Meas. BW: 1% of EBW Tech.: NR 40 MHz
 Limit: -19 dBm/400 kHz Notes: None

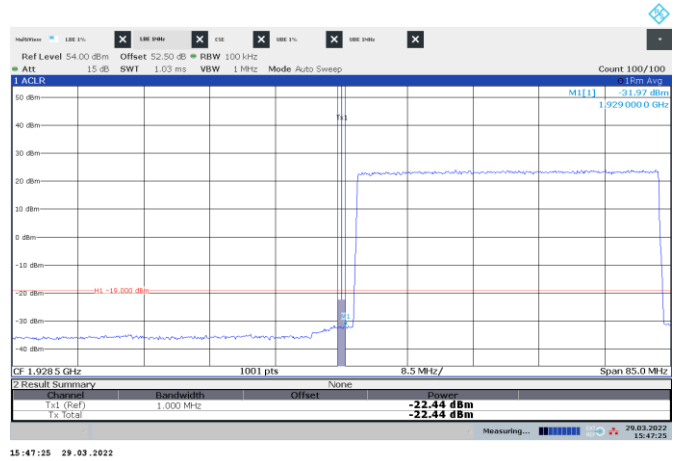


Figure 8.5-33: Conducted emission 1 MHz away from the lower band edge

Frequency: 1929 MHz Mode: Single-carrier operation
 Meas. BW: 1 MHz Tech.: NR 40 MHz
 Limit: -19 dBm/MHz Notes: None

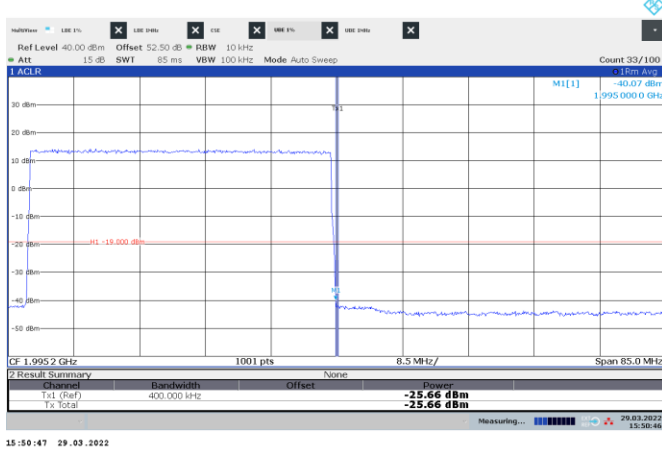


Figure 8.5-34: Conducted emission at the upper band edge

Frequency: 1995 MHz Mode: Single-carrier operation
 Meas. BW: 1% of EBW Tech.: NR 40 MHz
 Limit: -19 dBm/400 kHz Notes: None

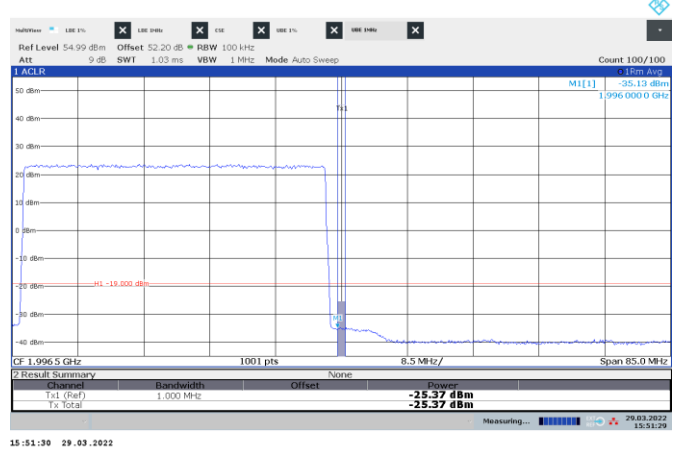


Figure 8.5-35: Conducted emission 1 MHz away from the upper band edge

Frequency: 1996 MHz Mode: Single-carrier operation
 Meas. BW: 1 MHz Tech.: NR 40 MHz
 Limit: -19 dBm/MHz Notes: None

Test data, continued

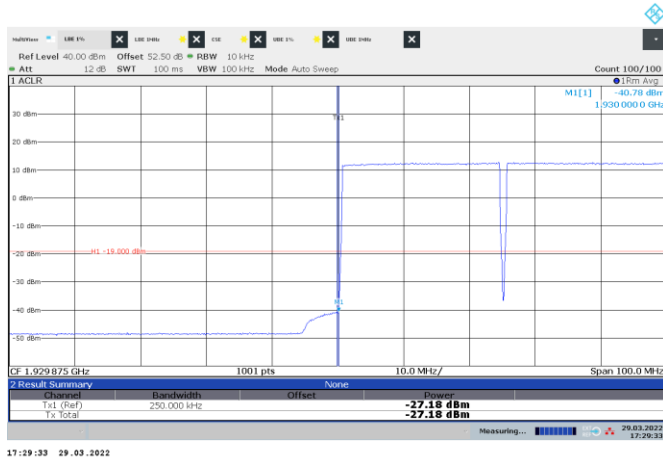


Figure 8.5-36: Conducted emission at the lower band edge

Frequency: 1930 MHz Mode: Multi-carrier operation
 Meas. BW: 1% of EBW Tech.: 2 × NR 25 MHz
 Limit: -19 dBm/250 kHz Notes: None

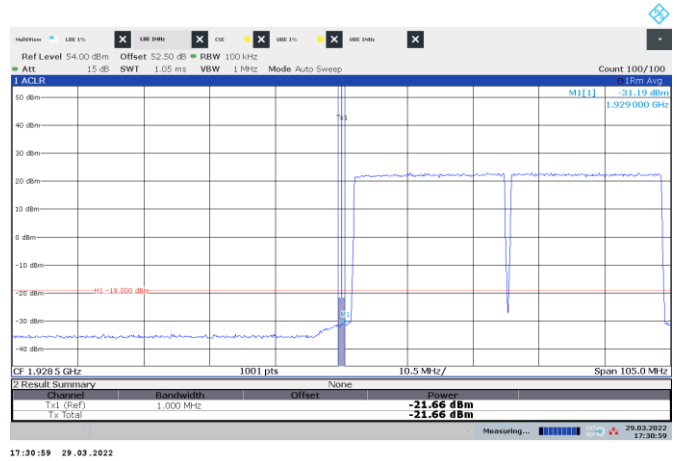


Figure 8.5-37: Conducted emission 1 MHz away from the lower band edge

Frequency: 1929 MHz Mode: Multi-carrier operation
 Meas. BW: 1 MHz Tech.: 2 × NR 25 MHz
 Limit: -19 dBm/MHz Notes: None

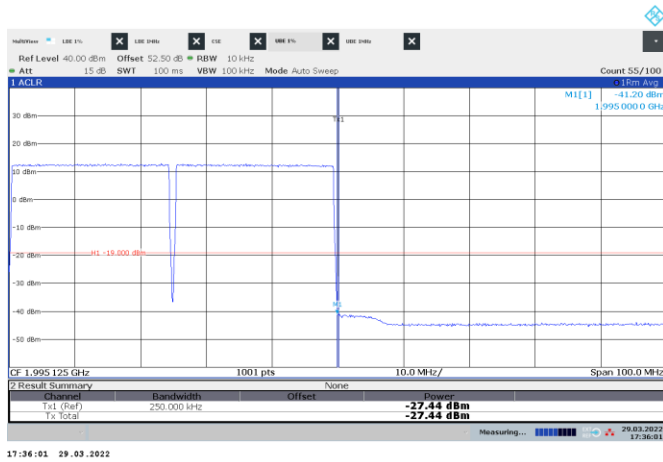


Figure 8.5-38: Conducted emission at the upper band edge

Frequency: 1995 MHz Mode: Multi-carrier operation
 Meas. BW: 1% of EBW Tech.: 2 × NR 25 MHz
 Limit: -19 dBm/250 kHz Notes: None

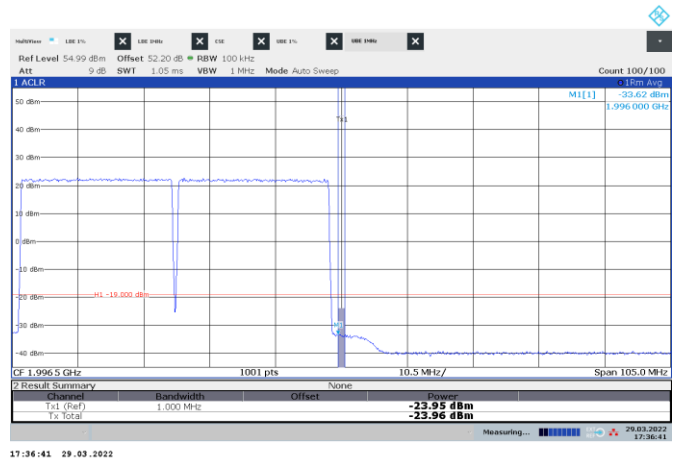


Figure 8.5-39: Conducted emission 1 MHz away from the upper band edge

Frequency: 1996 MHz Mode: Multi-carrier operation
 Meas. BW: 1 MHz Tech.: 2 × NR 25 MHz
 Limit: -19 dBm/MHz Notes: None

Test data, continued

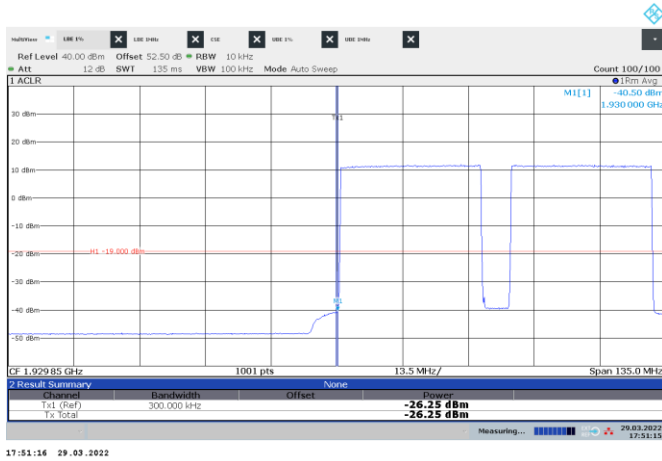


Figure 8.5-40: Conducted emission at the lower band edge

Frequency: 1930 MHz Mode: Multi-carrier operation
 Meas. BW: 1% of EBW Tech.: 2 × NR 30 MHz
 Limit: -19 dBm/300 kHz Notes: None



Figure 8.5-41: Conducted emission 1 MHz away from the lower band edge

Frequency: 1929 MHz Mode: Multi-carrier operation
 Meas. BW: 1 MHz Tech.: 2 × NR 30 MHz
 Limit: -19 dBm/MHz Notes: None

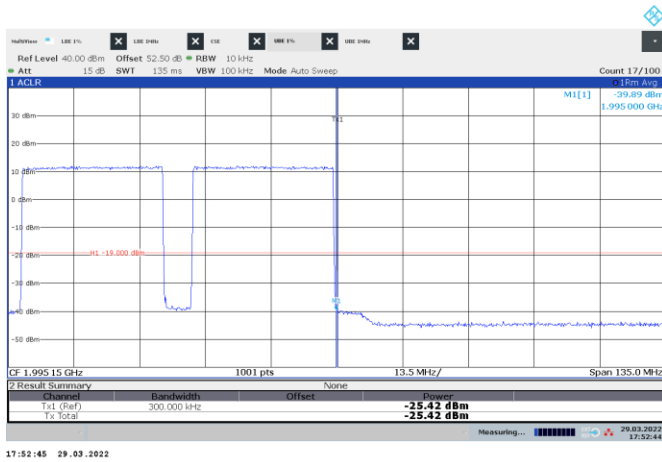


Figure 8.5-42: Conducted emission at the upper band edge

Frequency: 1995 MHz Mode: Multi-carrier operation
 Meas. BW: 1% of EBW Tech.: 2 × NR 30 MHz
 Limit: -19 dBm/300 kHz Notes: None



Figure 8.5-43: Conducted emission 1 MHz away from the upper band edge

Frequency: 1996 MHz Mode: Multi-carrier operation
 Meas. BW: 1 MHz Tech.: 2 × NR 30 MHz
 Limit: -19 dBm/MHz Notes: None

Test data, continued

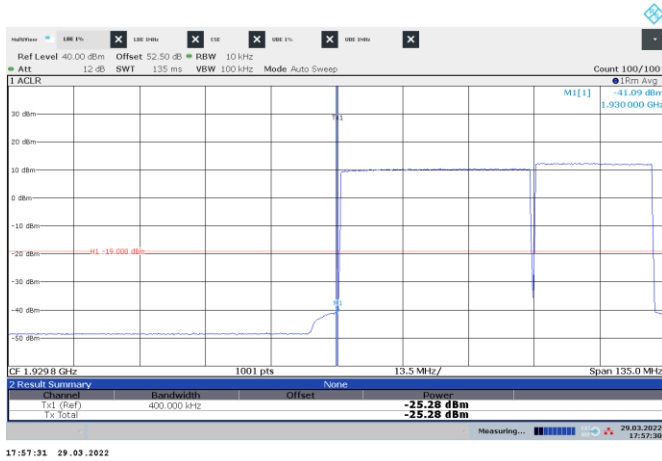


Figure 8.5-44: Conducted emission at the lower band edge

Frequency: 1930 MHz Mode: Multi-carrier operation
 Meas. BW: 1% of EBW Tech.: 1 × NR 40 MHz + 1 × NR 25 MHz
 Limit: -19 dBm/400 kHz Notes: None



Figure 8.5-45: Conducted emission 1 MHz away from the lower band edge

Frequency: 1929 MHz Mode: Multi-carrier operation
 Meas. BW: 1 MHz Tech.: 1 × NR 40 MHz + 1 × NR 25 MHz
 Limit: -19 dBm/MHz Notes: None

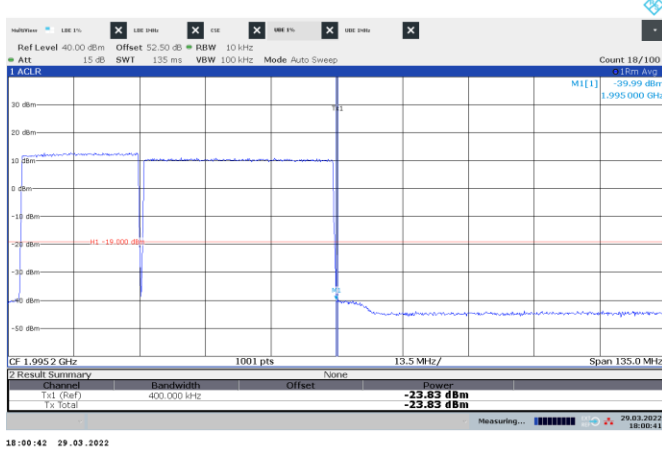


Figure 8.5-46: Conducted emission at the upper band edge

Frequency: 1995 MHz Mode: Multi-carrier operation
 Meas. BW: 1% of EBW Tech.: 1 × NR 40 MHz + 1 × NR 25 MHz
 Limit: -19 dBm/400 kHz Notes: None

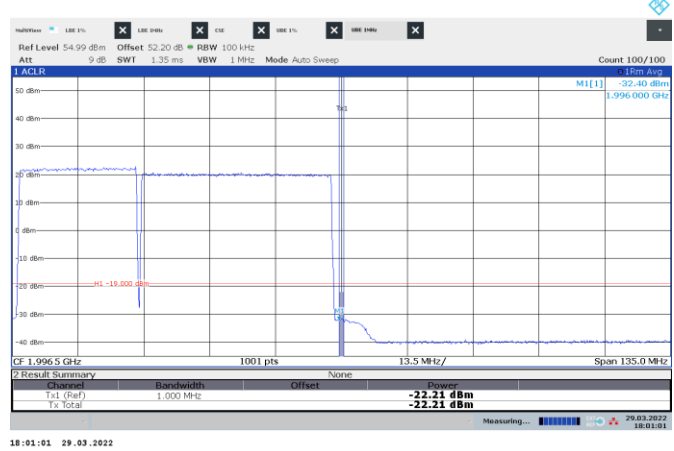


Figure 8.5-47: Conducted emission 1 MHz away from the upper band edge

Frequency: 1996 MHz Mode: Multi-carrier operation
 Meas. BW: 1 MHz Tech.: 1 × NR 40 MHz + 1 × NR 25 MHz
 Limit: -19 dBm/MHz Notes: None

Test data, continued

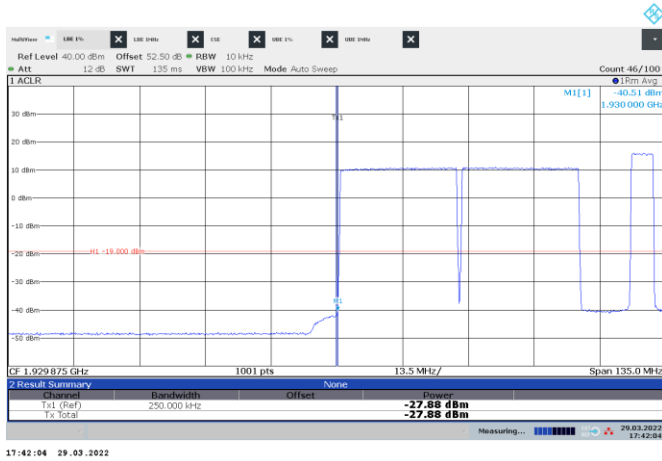


Figure 8.5-48: Conducted emission at the lower band edge

Frequency: 1930 MHz Mode: Multi-carrier operation
 Meas. BW: 1% of EBW Tech.: 2 × NR 25 MHz + 1 × NR 5 MHz
 Limit: -19 dBm/250 kHz Notes: None

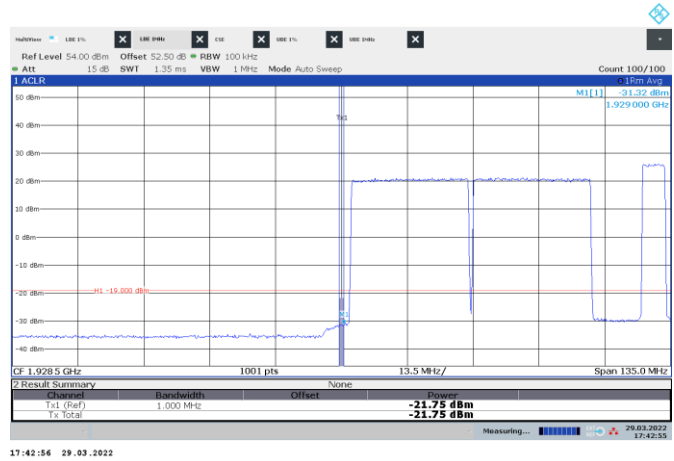


Figure 8.5-49: Conducted emission 1 MHz away from the lower band edge

Frequency: 1929 MHz Mode: Multi-carrier operation
 Meas. BW: 1 MHz Tech.: 2 × NR 25 MHz + 1 × NR 5 MHz
 Limit: -19 dBm/MHz Notes: None

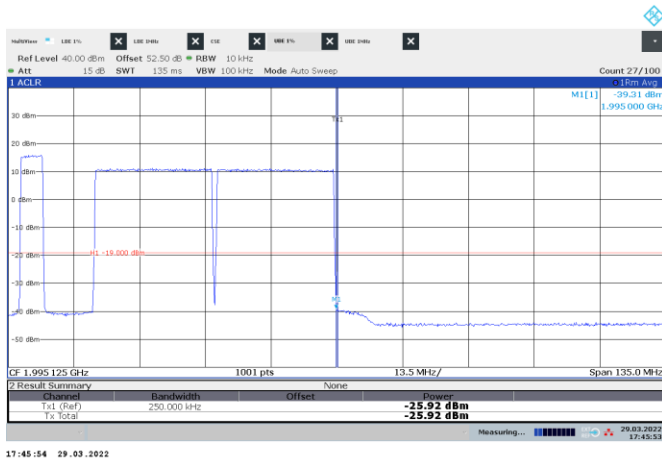


Figure 8.5-50: Conducted emission at the upper band edge

Frequency: 1995 MHz Mode: Multi-carrier operation
 Meas. BW: 1% of EBW Tech.: 2 × NR 25 MHz + 1 × NR 5 MHz
 Limit: -19 dBm/250 kHz Notes: None

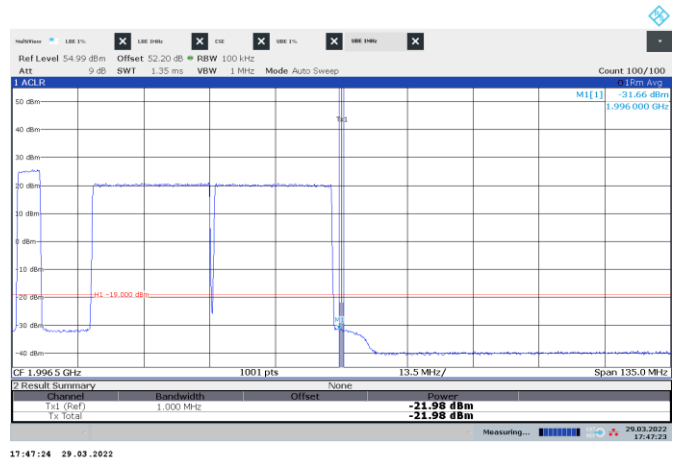


Figure 8.5-51: Conducted emission 1 MHz away from the upper band edge

Frequency: 1996 MHz Mode: Multi-carrier operation
 Meas. BW: 1 MHz Tech.: 2 × NR 25 MHz + 1 × NR 5 MHz
 Limit: -19 dBm/MHz Notes: None

Test data, continued

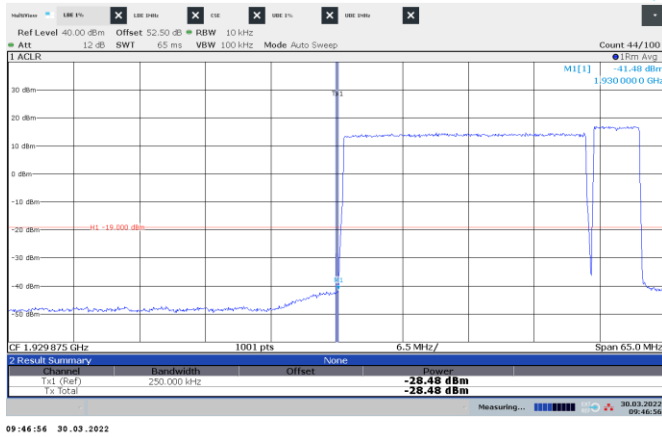


Figure 8.5-52: Conducted emission at the lower band edge

Frequency: 1930 MHz Mode: Multi-RAT operation
 Meas. BW: 1% of EBW Tech.: LTE 5 MHz + 1* NR 25 MHz
 Limit: -19 dBm/250 kHz Notes: None

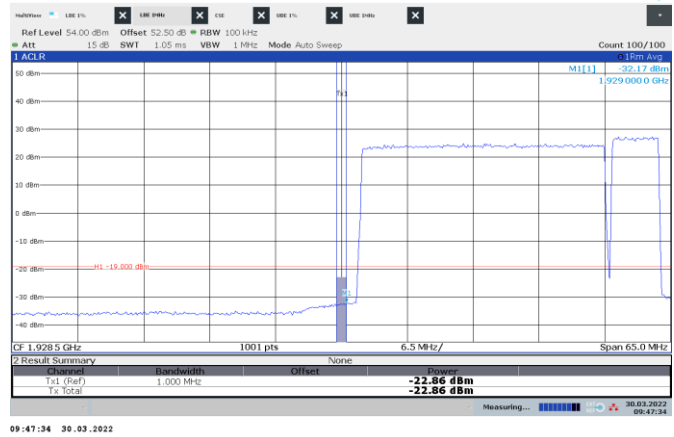


Figure 8.5-53: Conducted emission 1 MHz away from the lower band edge

Frequency: 1929 MHz Mode: Multi-RAT operation
 Meas. BW: 1 MHz Tech.: LTE 5 MHz + 1* NR 25 MHz
 Limit: -19 dBm/MHz Notes: None

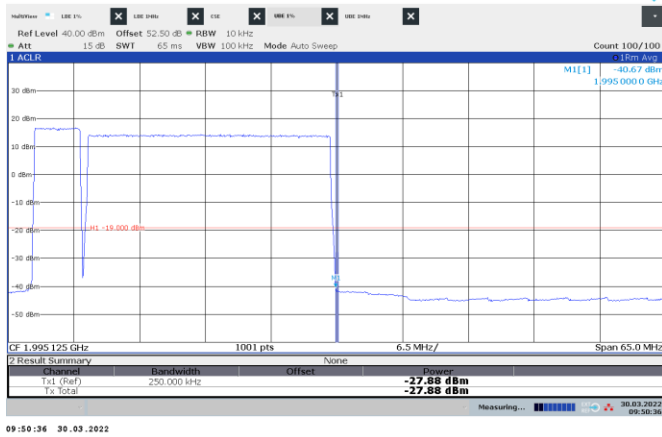


Figure 8.5-54: Conducted emission at the upper band edge

Frequency: 1995 MHz Mode: Multi-RAT operation
 Meas. BW: 1% of EBW Tech.: LTE 5 MHz + 1* NR 25 MHz
 Limit: -19 dBm/250 kHz Notes: None

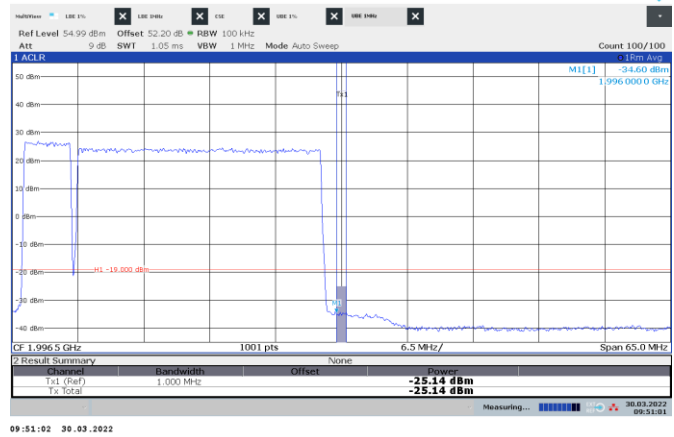


Figure 8.5-55: Conducted emission 1 MHz away from the upper band edge

Frequency: 1996 MHz Mode: Multi-RAT operation
 Meas. BW: 1 MHz Tech.: LTE 5 MHz + 1* NR 25 MHz
 Limit: -19 dBm/MHz Notes: None

Test data, continued

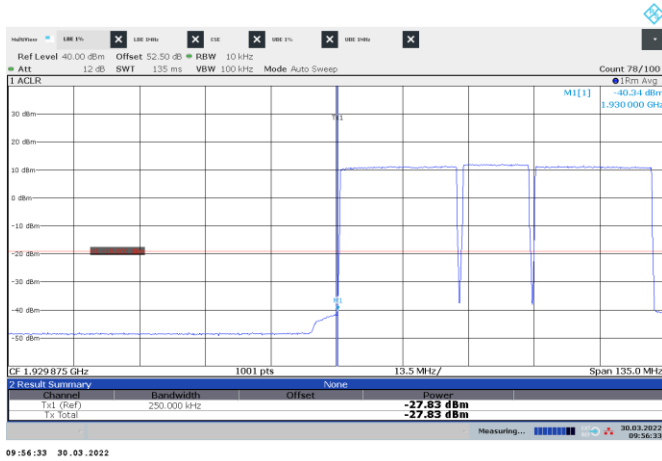


Figure 8.5-56: Conducted emission at the lower band edge

Frequency: 1930 MHz Mode: Multi-RAT operation
 Meas. BW: 1% of EBW Tech.: LTE 15 MHz + 2* NR 25 MHz
 Limit: -19 dBm/250 kHz Notes: None

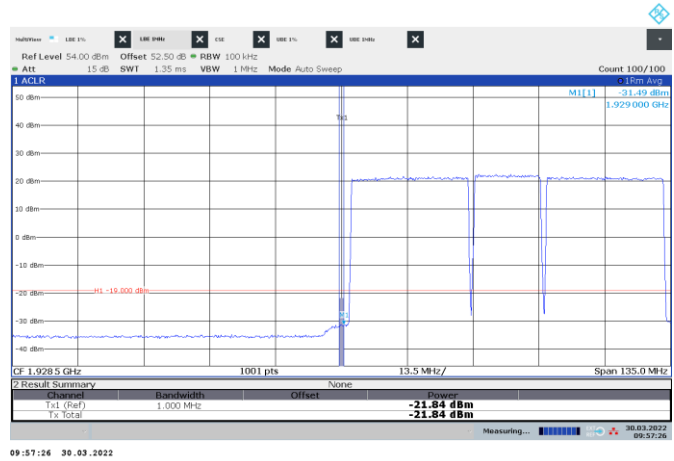


Figure 8.5-57: Conducted emission 1 MHz away from the lower band edge

Frequency: 1929 MHz Mode: Multi-RAT operation
 Meas. BW: 1 MHz Tech.: LTE 15 MHz + 2* NR 25 MHz
 Limit: -19 dBm/MHz Notes: None

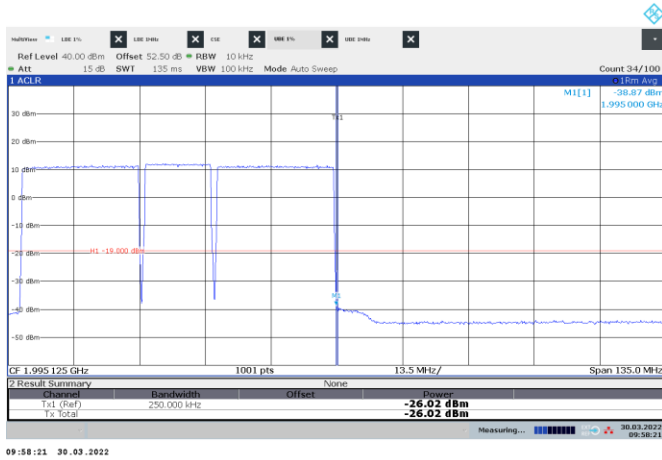


Figure 8.5-58: Conducted emission at the upper band edge

Frequency: 1995 MHz Mode: Multi-RAT operation
 Meas. BW: 1% of EBW Tech.: LTE 15 MHz + 2* NR 25 MHz
 Limit: -19 dBm/250 kHz Notes: None

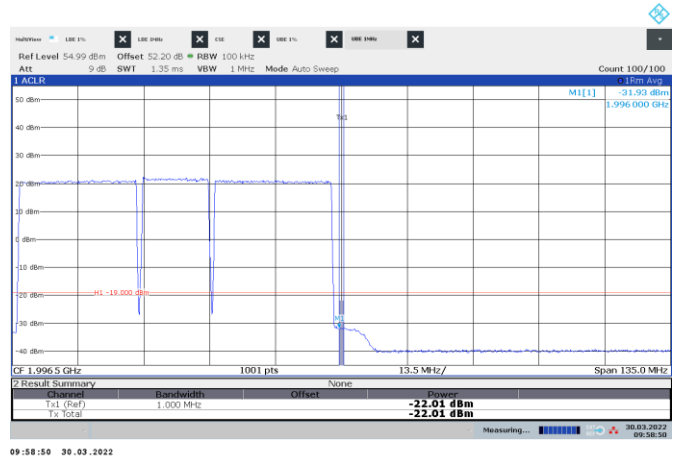


Figure 8.5-59: Conducted emission 1 MHz away from the upper band edge

Frequency: 1996 MHz Mode: Multi-RAT operation
 Meas. BW: 1 MHz Tech.: LTE 15 MHz + 2* NR 25 MHz
 Limit: -19 dBm/MHz Notes: None

8.6 Occupied bandwidth (Band 66)

8.6.1 Definitions and limits

FCC §2.1049:

The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

RSS-Gen, 6.7

The occupied bandwidth or the “99% emission bandwidth” is defined as the frequency range between two points, one above and the other below the carrier frequency, within which 99% of the total transmitted power of the fundamental transmitted emission is contained. The occupied bandwidth shall be reported for all equipment in addition to the specified bandwidth required in the applicable RSSs.

8.6.2 Test summary

Test date	December 29, 2021
Test engineer	Moustapha Salah Toubeh

8.6.3 Observations, settings and special notes

Testing was performed per ANSI C63.26 Paragraphs 5.4.3 and 5.4.4 methods.

Spectrum analyzer settings:

Detector mode	Peak
Resolution bandwidth	≥1 % of EBW
Video bandwidth	RBW × 3
Trace mode	Max Hold

8.6.4 Test data

Table 8.6-1: Occupied bandwidth results for NR 25 MHz channel

Remarks	Frequency, MHz	26 dB BW, MHz	99% OBW, MHz
25 MHz, Bottom channel	2122.5	24.43	23.73
25 MHz, Mid channel	2155.0	24.48	23.72
25 MHz, Top channel	2187.5	24.43	23.72

Table 8.6-2: Occupied bandwidth results for NR 30 MHz channel

Remarks	Frequency, MHz	26 dB BW, MHz	99% OBW, MHz
30 MHz, Bottom channel	2125.0	29.12	28.52
30 MHz, Mid channel	2155.0	29.17	28.51
30 MHz, Top channel	2185.0	29.12	28.51

Table 8.6-3: Occupied bandwidth results for NR 40 MHz channel

Remarks	Frequency, MHz	26 dB BW, MHz	99% OBW, MHz
40 MHz, Bottom channel	2130.0	39.51	38.51
40 MHz, Mid channel	2155.0	39.51	38.52
40 MHz, Top channel	2180.0	39.46	38.51

Test data, continued



Figure 8.6-1: 26 dB Occupied bandwidth sample plot for NR 25 MHz channel

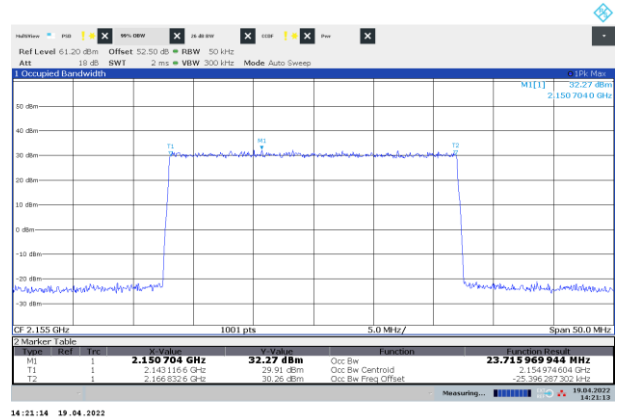


Figure 8.6-2: 99% Occupied bandwidth sample plot for NR 25 MHz channel



Figure 8.6-3: 26 dB Occupied bandwidth sample plot for NR 30 MHz channel

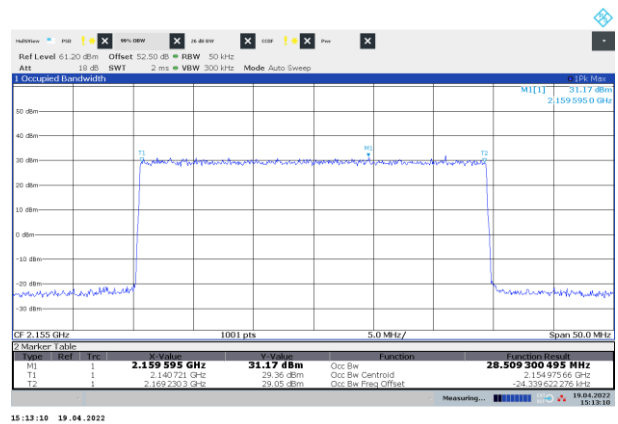


Figure 8.6-4: 99% Occupied bandwidth sample plot for NR 30 MHz channel



Figure 8.6-5: 26 dB Occupied bandwidth sample plot for NR 40 MHz channel



Figure 8.6-6: 99% Occupied bandwidth sample plot for NR 40 MHz channel

8.7 Occupied bandwidth (Band 25)

8.7.1 Definitions and limits

FCC §2.1049:

The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

RSS-Gen, 6.7

The occupied bandwidth or the “99% emission bandwidth” is defined as the frequency range between two points, one above and the other below the carrier frequency, within which 99% of the total transmitted power of the fundamental transmitted emission is contained. The occupied bandwidth shall be reported for all equipment in addition to the specified bandwidth required in the applicable RSSs.

8.7.2 Test summary

Test date	March 29, 2022
Test engineer	Moustapha Salah Toubeh

8.7.3 Observations, settings and special notes

Testing was performed per ANSI C63.26 Paragraphs 5.4.3 and 5.4.4 methods.

Spectrum analyzer settings:

Detector mode	Peak
Resolution bandwidth	≥1 % of EBW
Video bandwidth	RBW × 3
Trace mode	Max Hold

8.7.4 Test data

Table 8.7-1: Occupied bandwidth results for NR 25 MHz channel

Remarks	Frequency, MHz	26 dB BW, MHz	99% OBW, MHz
25 MHz, Bottom channel	1942.5	24.48	23.70
25 MHz, Mid channel	1962.5	24.38	23.72
25 MHz, Top channel	1982.5	24.48	23.72

Table 8.7-2: Occupied bandwidth results for NR 30 MHz channel

Remarks	Frequency, MHz	26 dB BW, MHz	99% OBW, MHz
30 MHz, Bottom channel	1945.0	29.17	28.50
30 MHz, Mid channel	1962.5	29.17	28.52
30 MHz, Top channel	1980.0	29.12	28.52

Table 8.7-3: Occupied bandwidth results for NR 40 MHz channel

Remarks	Frequency, MHz	26 dB BW, MHz	99% OBW, MHz
40 MHz, Bottom channel	1950.0	39.51	38.48
40 MHz, Mid channel	1962.5	39.41	38.53
40 MHz, Top channel	1975.0	39.51	38.53

Test data, continued

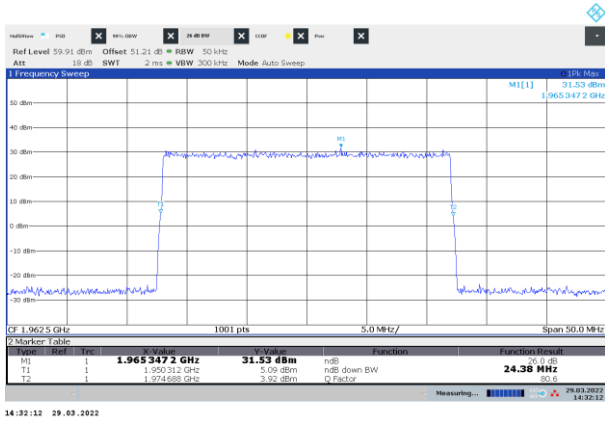


Figure 8.7-1: 26 dB Occupied bandwidth sample plot for NR 25 MHz channel

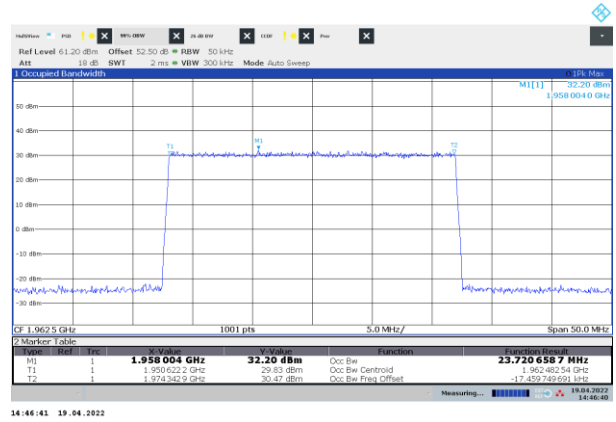


Figure 8.7-2: 99% Occupied bandwidth sample plot for NR 25 MHz channel

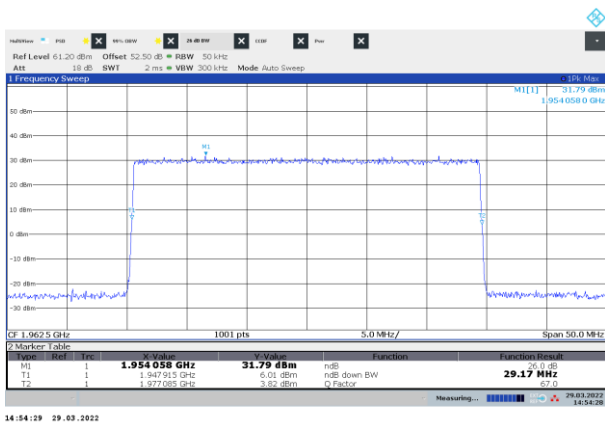


Figure 8.7-3: 26 dB Occupied bandwidth sample plot for NR 30 MHz channel



Figure 8.7-4: 99% Occupied bandwidth sample plot for NR 30 MHz channel

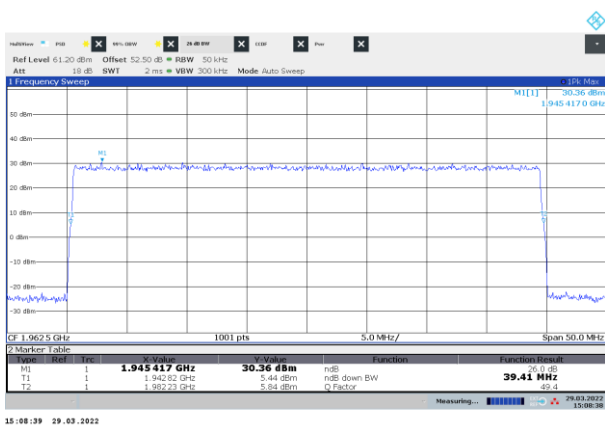


Figure 8.7-5: 26 dB Occupied bandwidth sample plot for NR 40 MHz channel

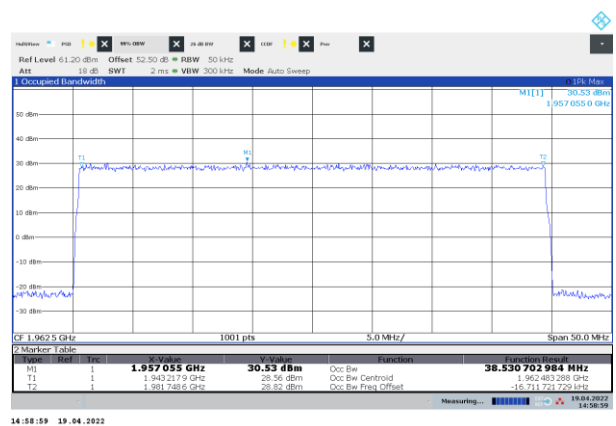
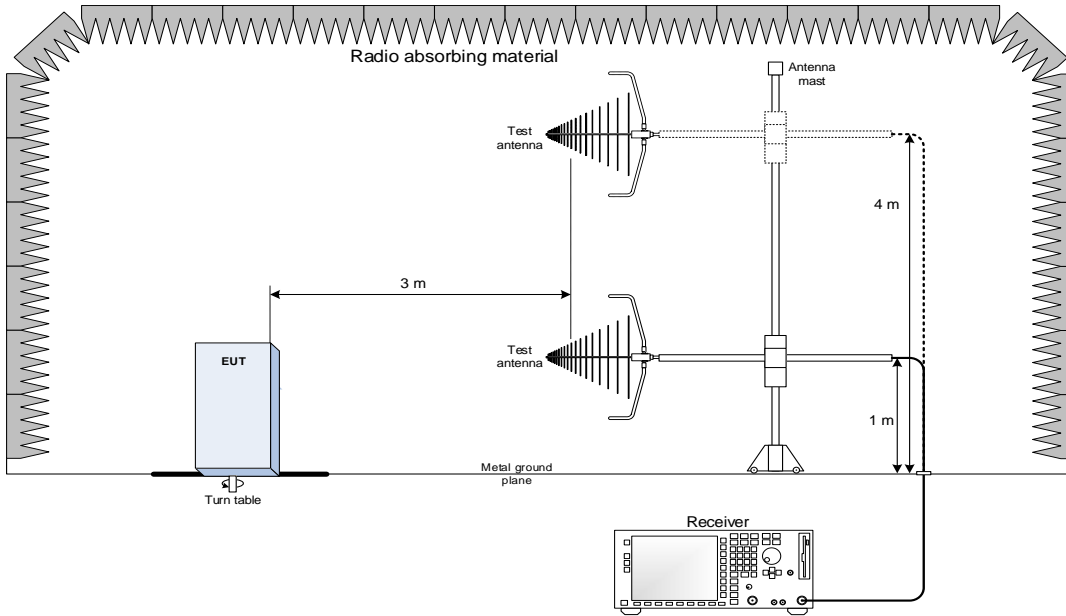


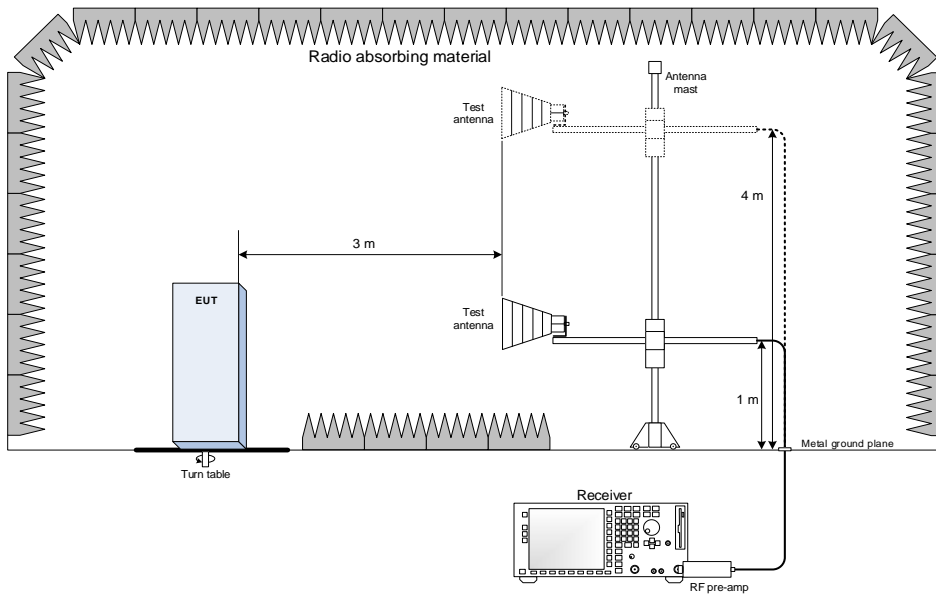
Figure 8.7-6: 99% Occupied bandwidth sample plot for NR 40 MHz channel

Section 9. Block diagrams of test setups

9.1 Radiated emissions set-up for frequencies below 1 GHz



9.2 Radiated emissions set-up for frequencies above 1 GHz



9.3 Conducted emissions set-up

