

Test data, continued

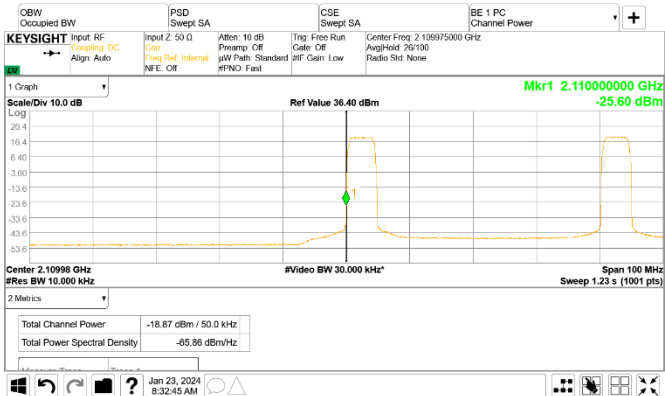


Figure 8.3-36: Conducted emission at the lower band edge

Frequency: 2110 MHz Mode: 2-carrier operation, noncontiguous  
Meas. BW: 1% of EBW Tech.: WCDMA  
Limit: -19 dBm/50 kHz Notes: Full span - overview

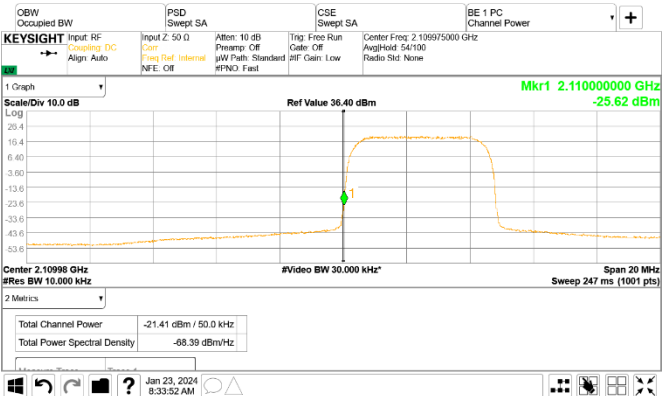


Figure 8.3-37: Conducted emission at the lower band edge

Frequency: 2110 MHz Mode: 2-carrier operation, noncontiguous  
Meas. BW: 1% of EBW Tech.: WCDMA  
Limit: -19 dBm/50 kHz Notes: Zoomed in view, final measurement

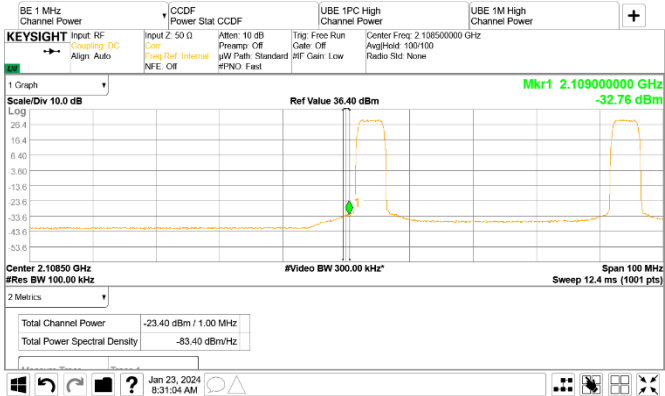


Figure 8.3-38: Conducted emission 1 MHz away from the lower band edge

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

Test data, continued

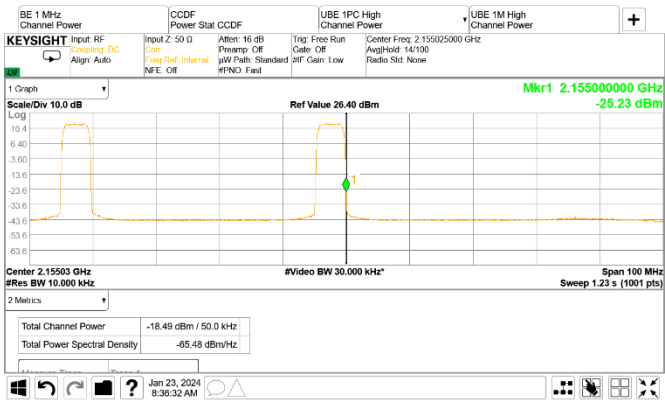


Figure 8.3-39: Conducted emission at the upper band edge

Frequency: 2155 MHz | Mode: 2-carrier operation, noncontiguous  
Meas. BW: 1% of EBW | Tech.: WCDMA  
Limit: -19 dBm/50 kHz | Notes: Full span - overview

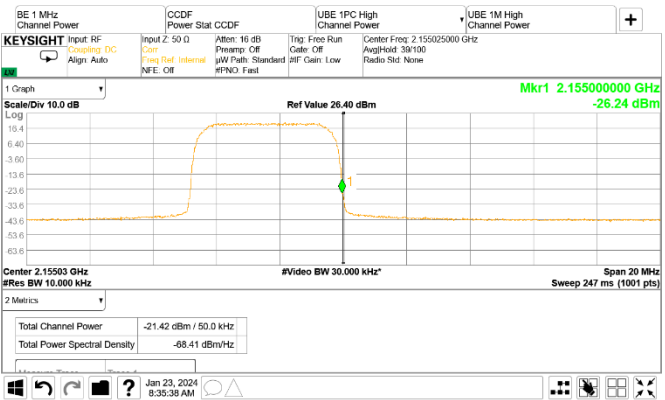


Figure 8.3-40: Conducted emission at the upper band edge

Frequency: 2155 MHz | Mode: 2-carrier operation, noncontiguous  
Meas. BW: 1% of EBW | Tech.: WCDMA  
Limit: -19 dBm/50 kHz | Notes: Zoomed in view, final measurement

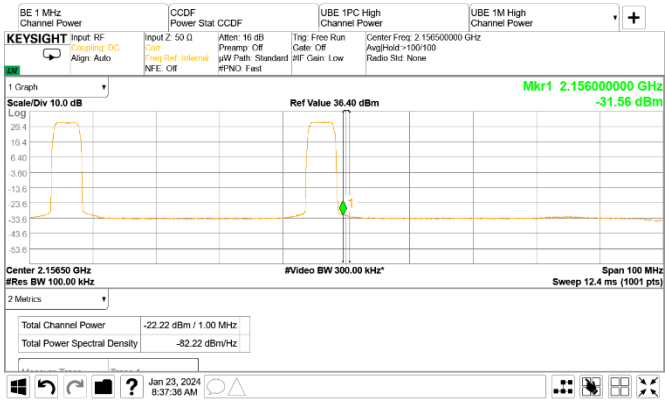


Figure 8.3-41: Conducted emission 1 MHz away from the upper band edge

Frequency: 2156 MHz | Mode: 2-carrier operation  
Meas. BW: 1 MHz | Tech.: WCDMA  
Limit: -19 dBm/MHz | Notes: None

Test data, continued

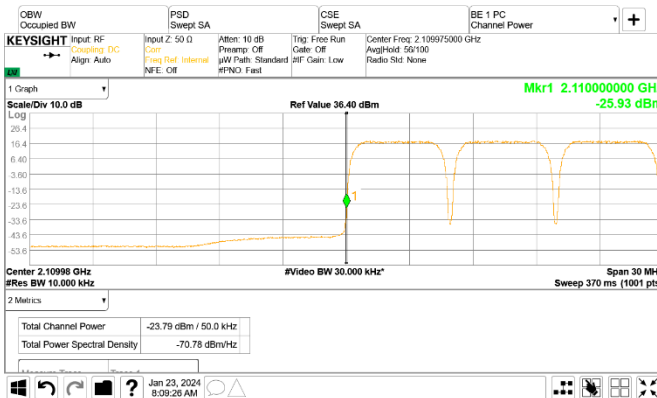


Figure 8.3-42: Conducted emission at the lower band edge

Frequency: 2110 MHz  
Meas. BW: 1% of EBW  
Limit: -19 dBm/50 kHz

Mode: 3-carrier operation  
Tech.: WCDMA  
Notes: None

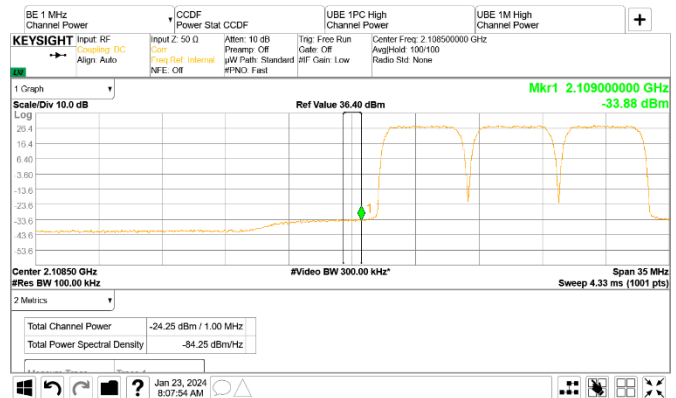


Figure 8.3-43: Conducted emission 1 MHz away from the lower band edge

Frequency: 2109 MHz  
Meas. BW: 1 MHz  
Limit: -19 dBm/MHz

Mode: 3-carrier operation  
Tech.: WCDMA  
Notes: None

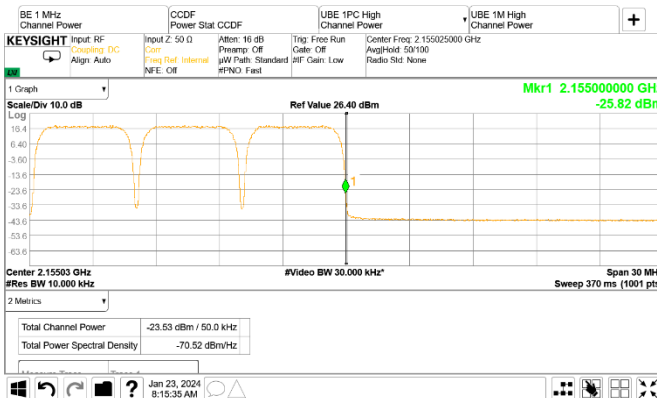


Figure 8.3-44: Conducted emission at the upper band edge

Frequency: 2155 MHz  
Meas. BW: 1% of EBW  
Limit: -19 dBm/50 kHz

Mode: 3-carrier operation  
Tech.: WCDMA  
Notes: None



Figure 8.3-45: Conducted emission 1 MHz away from the upper band edge

Frequency: 2156 MHz  
Meas. BW: 1 MHz  
Limit: -19 dBm/MHz

Mode: 3-carrier operation  
Tech.: WCDMA  
Notes: None

Test data, continued

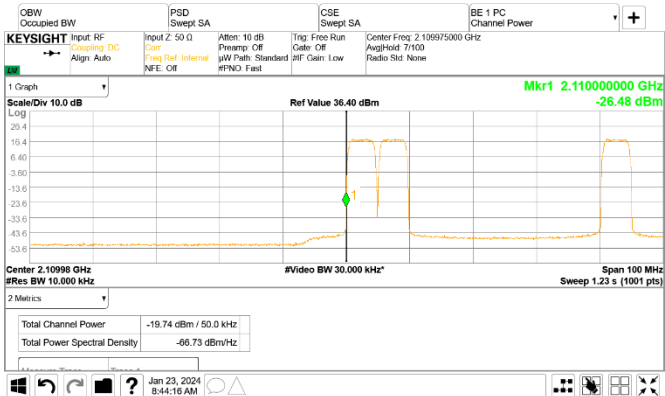


Figure 8.3-46: Conducted emission at the lower band edge

Frequency: 2110 MHz  
Meas. BW: 1% of EBW  
Limit: -19 dBm/50 kHz

Mode: 3-carrier operation, noncontiguous  
Tech.: WCDMA  
Notes: Full span - overview



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

Frequency: 2110 MHz  
Meas. BW: 1% of EBW  
Limit: -19 dBm/50 kHz

Mode: 3-carrier operation, noncontiguous  
Tech.: WCDMA  
Notes: Zoomed in view, final measurement

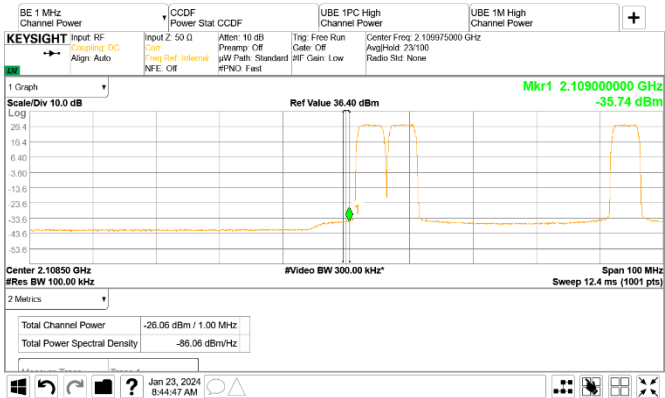


Figure 8.3-48: Conducted emission 1 MHz away from the lower band edge

Frequency: 2109 MHz  
Meas. BW: 1 MHz  
Limit: -19 dBm/MHz

Mode: 3-carrier operation  
Tech.: WCDMA  
Notes: None

Test data, continued

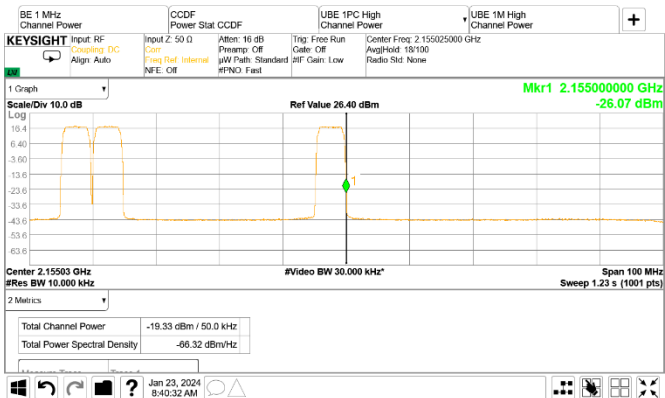


Figure 8.3-49: Conducted emission at the upper band edge

Frequency: 2155 MHz | Mode: 3-carrier operation, noncontiguous  
Meas. BW: 1% of EBW | Tech.: WCDMA  
Limit: -19 dBm/50 kHz | Notes: Full span - overview

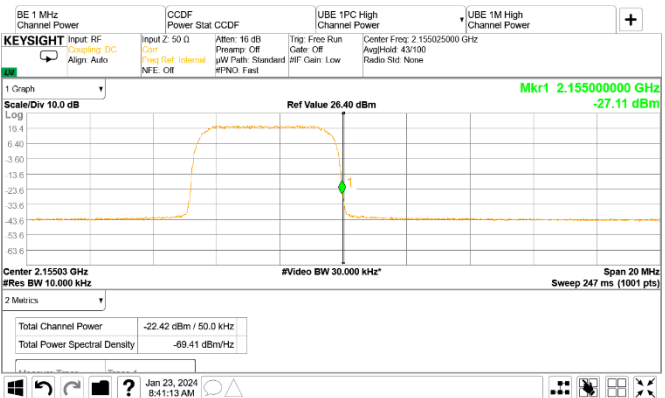


Figure 8.3-50: Conducted emission at the upper band edge

Frequency: 2155 MHz | Mode: 3-carrier operation, noncontiguous  
Meas. BW: 1% of EBW | Tech.: WCDMA  
Limit: -19 dBm/50 kHz | Notes: Zoomed in view, final measurement

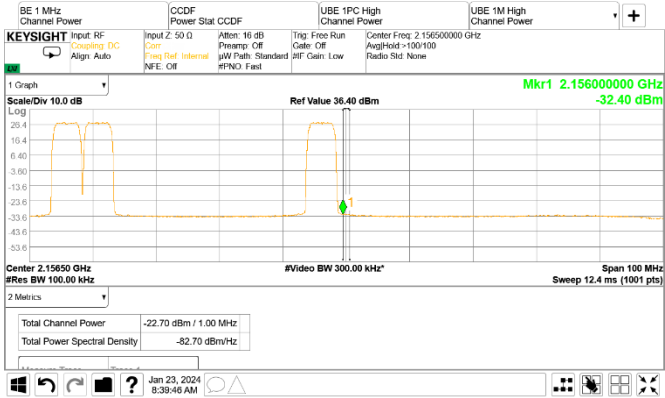


Figure 8.3-51: Conducted emission 1 MHz away from the upper band edge

Frequency: 2156 MHz | Mode: 3-carrier operation  
Meas. BW: 1 MHz | Tech.: WCDMA  
Limit: -19 dBm/MHz | Notes: None

Test data, continued



Figure 8.3-52: Conducted emission at the lower band edge

Frequency: 2110 MHz  
Meas. BW: 1% of EBW  
Limit: -19 dBm/50 kHz

Mode: 6-carrier operation  
Tech.: WCDMA  
Notes: None

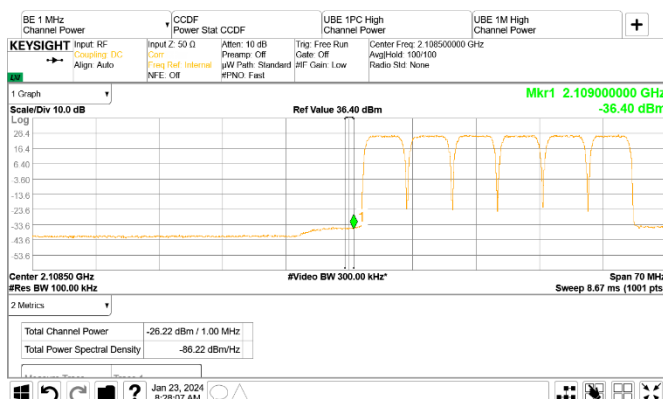


Figure 8.3-53: Conducted emission 1 MHz away from the lower band edge

Frequency: 2109 MHz  
Meas. BW: 1 MHz  
Limit: -19 dBm/MHz

Mode: 6-carrier operation  
Tech.: WCDMA  
Notes: None

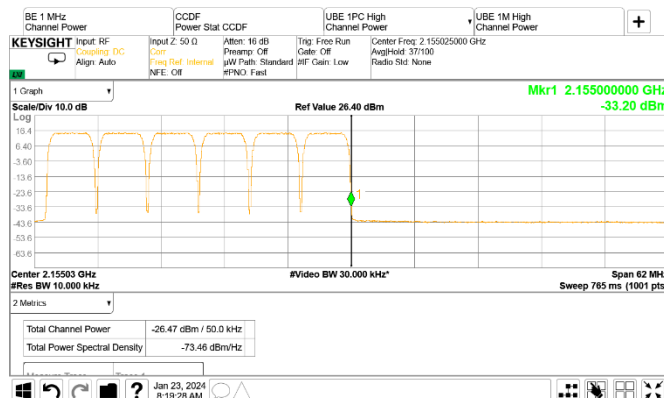


Figure 8.3-54: Conducted emission at the upper band edge

Frequency: 2155 MHz  
Meas. BW: 1% of EBW  
Limit: -19 dBm/50 kHz

Mode: 6-carrier operation  
Tech.: WCDMA  
Notes: None

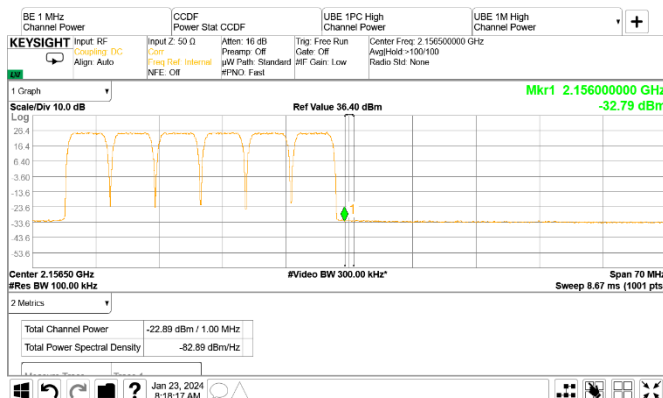


Figure 8.3-55: Conducted emission 1 MHz away from the upper band edge

Frequency: 2156 MHz  
Meas. BW: 1 MHz  
Limit: -19 dBm/MHz

Mode: 6-carrier operation  
Tech.: WCDMA  
Notes: None

Test data, continued

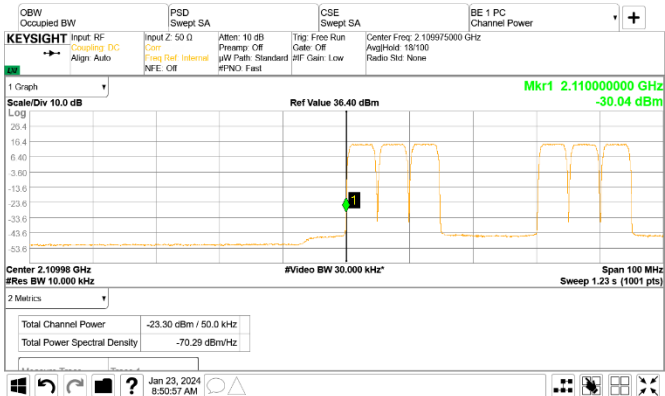


Figure 8.3-56: Conducted emission at the lower band edge

Frequency: 2110 MHz Mode: 6-carrier operation, noncontiguous  
Meas. BW: 1% of EBW Tech.: WCDMA  
Limit: -19 dBm/50 kHz Notes: Full span - overview

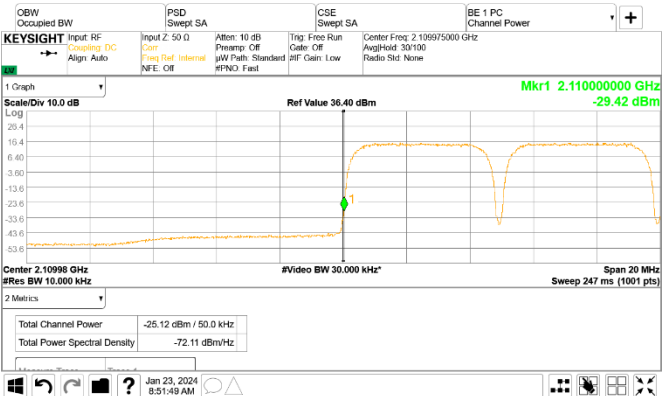


Figure 8.3-57: Conducted emission at the lower band edge

Frequency: 2110 MHz Mode: 6-carrier operation, noncontiguous  
Meas. BW: 1% of EBW Tech.: WCDMA  
Limit: -19 dBm/50 kHz Notes: Zoomed in view, final measurement

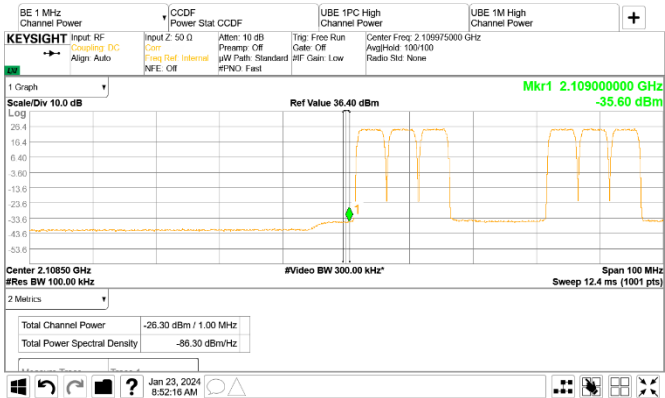


Figure 8.3-58: Conducted emission 1 MHz away from the lower band edge

Frequency: 2109 MHz Mode: 6-carrier operation  
Meas. BW: 1 MHz Tech.: WCDMA  
Limit: -19 dBm/MHz Notes: None

Test data, continued

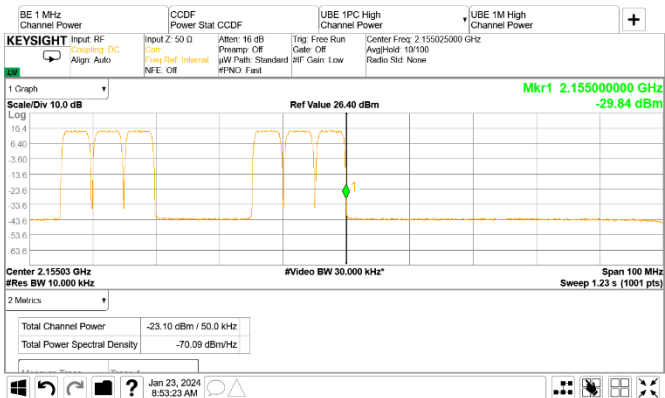


Figure 8.3-59: Conducted emission at the upper band edge

Frequency: 2155 MHz  
Meas. BW: 1% of EBW  
Limit: -19 dBm/50 kHz  
Mode: 6-carrier operation, noncontiguous  
Tech.: WCDMA  
Notes: Full span - overview

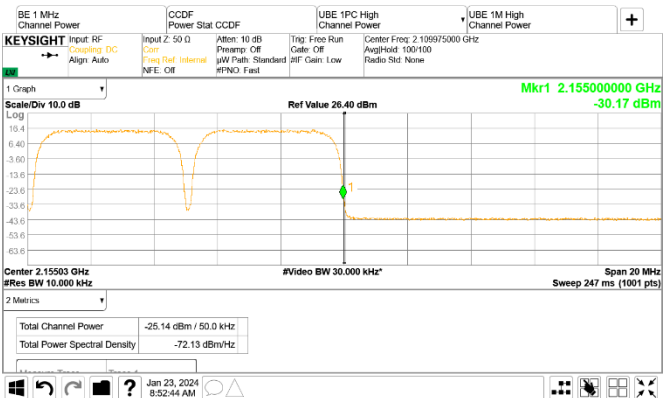


Figure 8.3-60: Conducted emission at the upper band edge

Frequency: 2155 MHz  
Meas. BW: 1% of EBW  
Limit: -19 dBm/50 kHz  
Mode: 6-carrier operation, noncontiguous  
Tech.: WCDMA  
Notes: Zoomed in view, final measurement

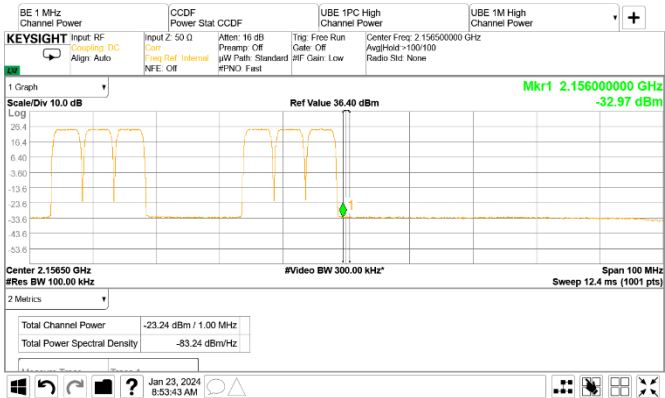


Figure 8.3-61: Conducted emission 1 MHz away from the upper band edge

Frequency: 2156 MHz  
Meas. BW: 1 MHz  
Limit: -19 dBm/MHz  
Mode: 6-carrier operation  
Tech.: WCDMA  
Notes: None

Test data, continued

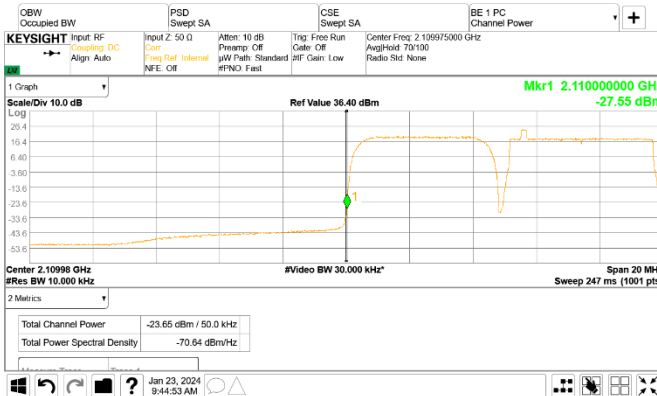


Figure 8.3-62: Conducted emission at the lower band edge

Frequency: 2110 MHz  
Meas. BW: 1% of EBW  
Limit: -19 dBm/50 kHz

Mode: 2-carrier operation, multi-RAT  
Tech.: WCDMA and LTE 5 MHz  
Notes: None

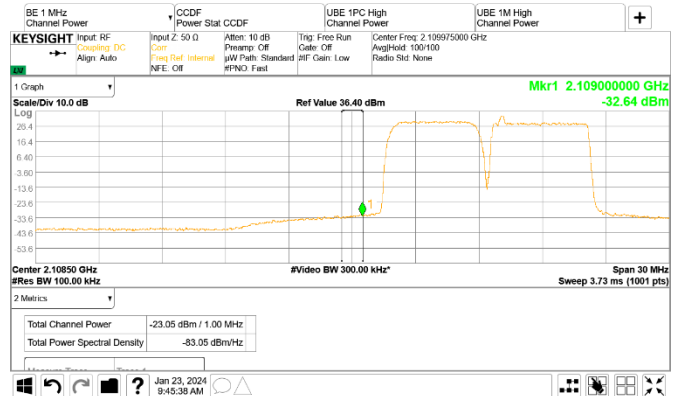


Figure 8.3-63: Conducted emission 1 MHz away from the lower band edge

Frequency: 2109 MHz  
Meas. BW: 1 MHz  
Limit: -19 dBm/MHz

Mode: 2-carrier operation, multi-RAT  
Tech.: WCDMA and LTE 5 MHz  
Notes: None

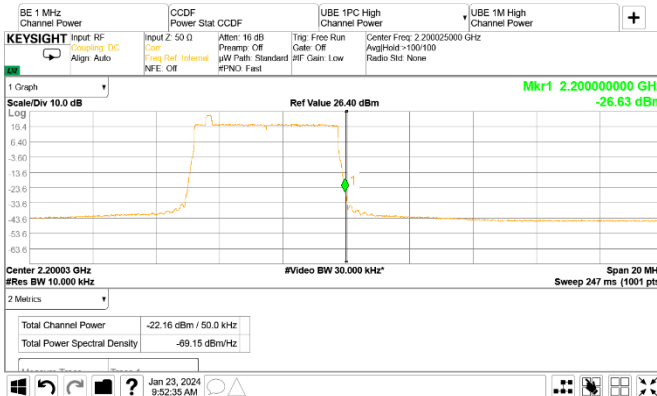


Figure 8.3-64: Conducted emission at the upper band edge

Frequency: 2200 MHz  
Meas. BW: 1% of EBW  
Limit: -19 dBm/50 kHz

Mode: 2-carrier operation, multi-RAT  
Tech.: WCDMA and LTE 5 MHz  
Notes: Zoomed in view, final measurement

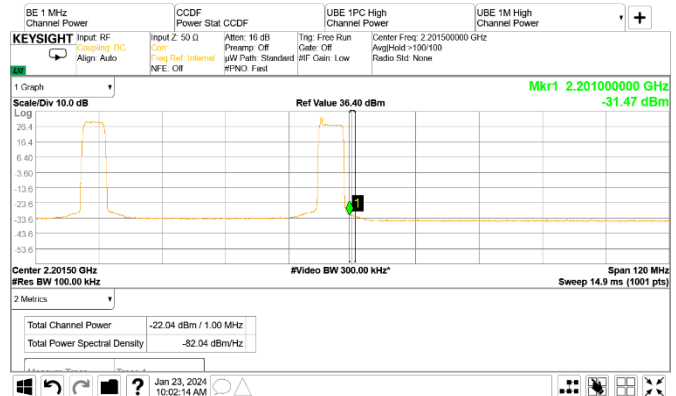


Figure 8.3-65: Conducted emission 1 MHz away from the upper band edge

Frequency: 2201 MHz  
Meas. BW: 1 MHz  
Limit: -19 dBm/MHz

Mode: 2-carrier operation, multi-RAT  
Tech.: WCDMA and LTE 5 MHz  
Notes: None

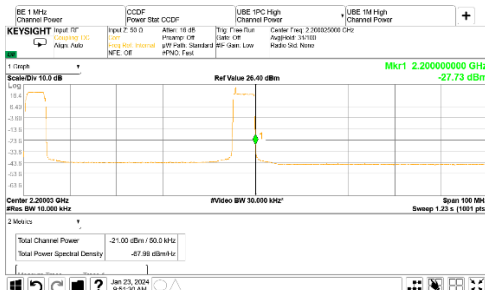


Figure 8.3-66: Conducted emission at the upper band edge

Frequency: 2200 MHz  
Meas. BW: 1% of EBW  
Limit: -19 dBm/50 kHz

Mode: 2-carrier operation, multi-RAT  
Tech.: WCDMA and LTE 5 MHz  
Notes: Full span - overview

Test data, continued

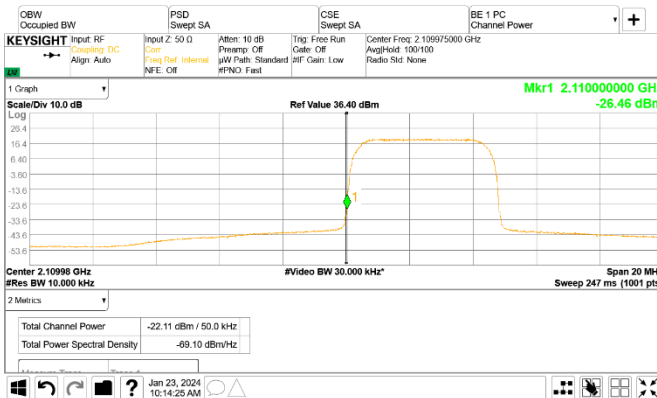


Figure 8.3-67: Conducted emission at the lower band edge

Frequency: 2110 MHz  
Meas. BW: 1% of EBW  
Limit: -19 dBm/50 kHz

Mode: 2-carrier operation, multi-RAT  
Tech.: WCDMA and LTE 5 MHz, noncontig.  
Notes: Zoomed in view, final measurement

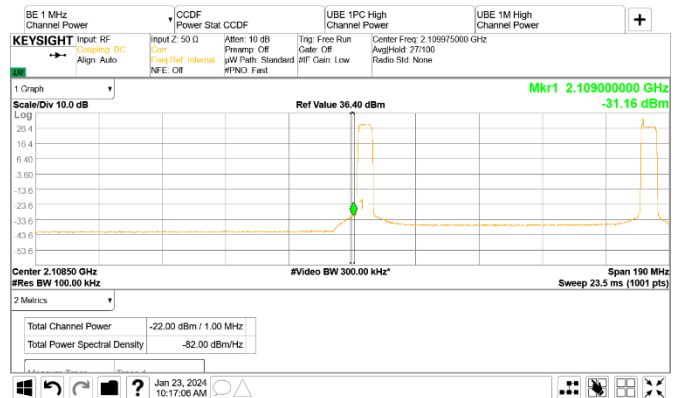


Figure 8.3-68: Conducted emission 1 MHz away from the lower band edge

Frequency: 2109 MHz  
Meas. BW: 1 MHz  
Limit: -19 dBm/MHz

Mode: 2-carrier operation, multi-RAT  
Tech.: WCDMA and LTE 5 MHz, noncontig.  
Notes: None

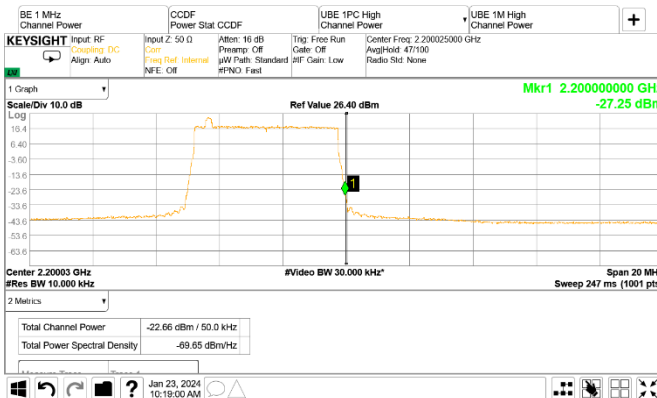


Figure 8.3-69: Conducted emission at the upper band edge

Frequency: 2200 MHz  
Meas. BW: 1% of EBW  
Limit: -19 dBm/50 kHz

Mode: 2-carrier operation, multi-RAT  
Tech.: WCDMA and LTE 5 MHz, noncontig.  
Notes: Zoomed in view, final measurement

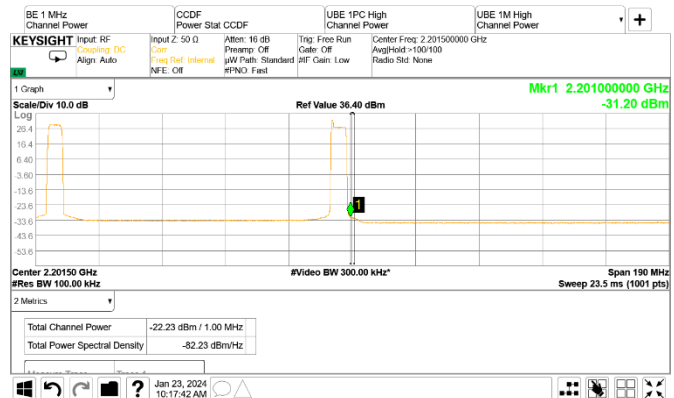


Figure 8.3-70: Conducted emission 1 MHz away from the upper band edge

Frequency: 2201 MHz  
Meas. BW: 1 MHz  
Limit: -19 dBm/MHz

Mode: 2-carrier operation, multi-RAT  
Tech.: WCDMA and LTE 5 MHz, noncontig.  
Notes: None

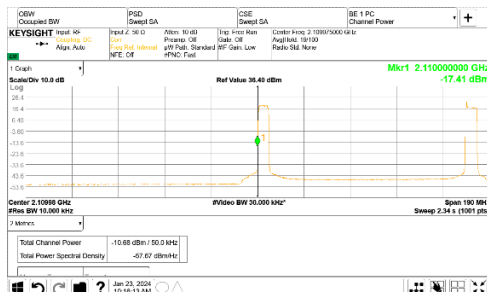


Figure 8.3-71: Conducted emission at the low band edge

Frequency: 2110 MHz  
Meas. BW: 1% of EBW  
Limit: -19 dBm/50 kHz

Mode: 2-carrier operation, multi-RAT  
Tech.: WCDMA and LTE 5 MHz, noncontig.  
Notes: Full span - overview

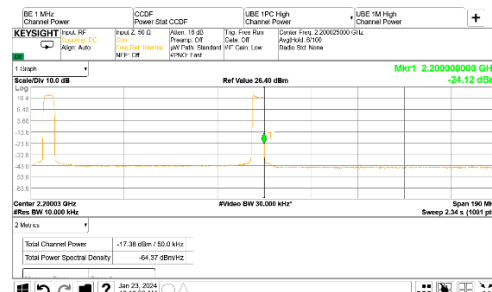


Figure 8.3-72: Conducted emission at the upper band edge

Frequency: 2200 MHz  
Meas. BW: 1% of EBW  
Limit: -19 dBm/50 kHz

Mode: 2-carrier operation, multi-RAT  
Tech.: WCDMA and LTE 5 MHz, noncontig.  
Notes: Full span - overview

Test data, continued

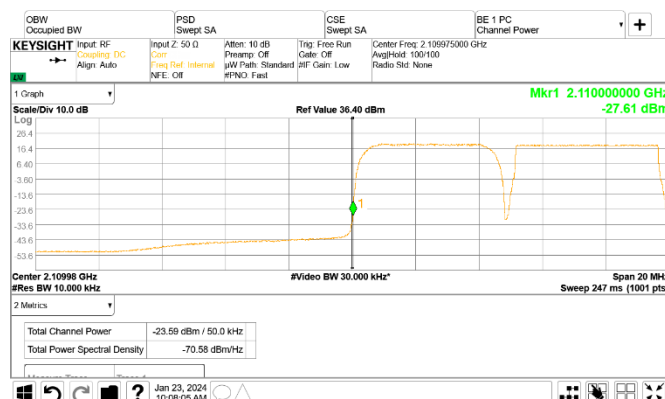


Figure 8.3-73: Conducted emission at the lower band edge

Frequency: 2110 MHz  
Meas. BW: 1% of EBW  
Limit: -19 dBm/50 kHz

Mode: 2-carrier operation, multi-RAT  
Tech.: WCDMA and NR 5 MHz  
Notes: None

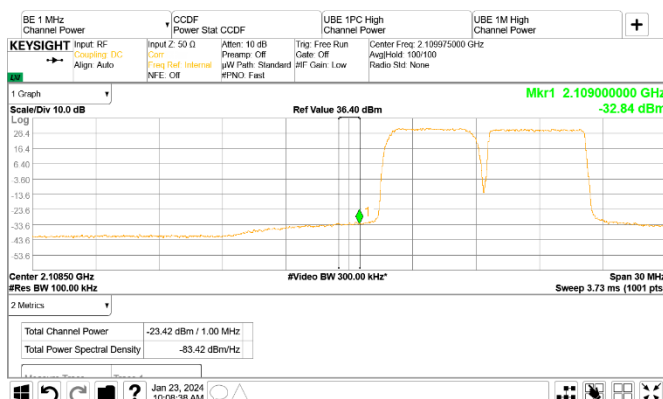


Figure 8.3-74: Conducted emission 1 MHz away from the lower band edge

Frequency: 2109 MHz  
Meas. BW: 1 MHz  
Limit: -19 dBm/MHz

Mode: 2-carrier operation, multi-RAT  
Tech.: WCDMA and NR 5 MHz  
Notes: None

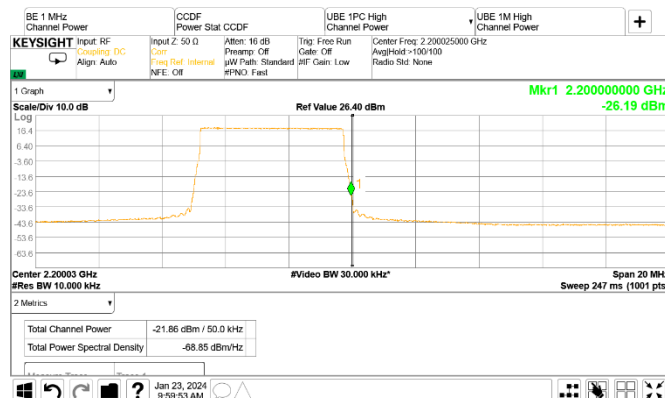


Figure 8.3-75: Conducted emission at the upper band edge

Frequency: 2200 MHz  
Meas. BW: 1% of EBW  
Limit: -19 dBm/50 kHz

Mode: 2-carrier operation, multi-RAT  
Tech.: WCDMA and NR 5 MHz  
Notes: Zoomed in view, final measurement

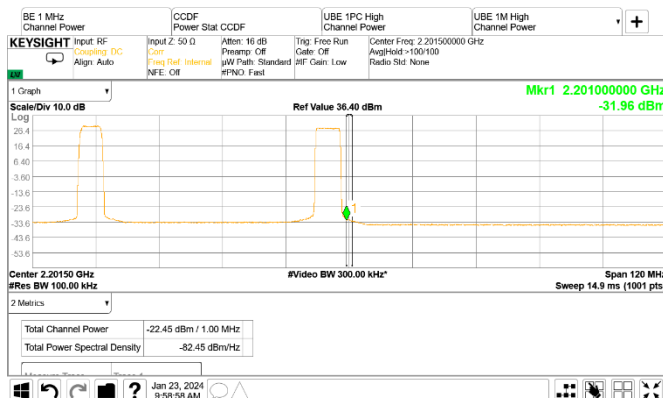


Figure 8.3-76: Conducted emission 1 MHz away from the upper band edge

Frequency: 2201 MHz  
Meas. BW: 1 MHz  
Limit: -19 dBm/MHz

Mode: 2-carrier operation, multi-RAT  
Tech.: WCDMA and NR 5 MHz  
Notes: None

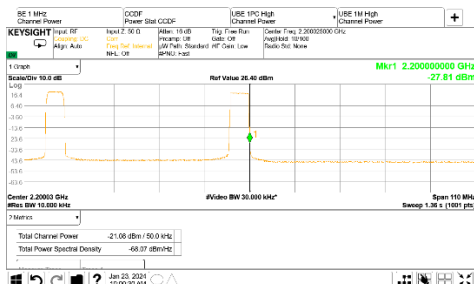


Figure 8.3-77: Conducted emission at the upper band edge

Frequency: 2200 MHz  
Meas. BW: 1% of EBW  
Limit: -19 dBm/50 kHz

Mode: 2-carrier operation, multi-RAT  
Tech.: WCDMA and NR 5 MHz  
Notes: Full span - overview

Test data, continued

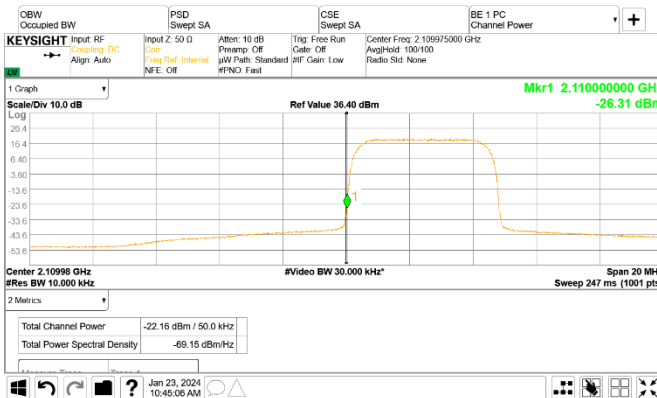


Figure 8.3-78: Conducted emission at the lower band edge

Frequency: 2110 MHz  
Meas. BW: 1% of EBW  
Limit: -19 dBm/50 kHz

Mode: 2-carrier operation, multi-RAT  
Tech.: WCDMA and NR 5 MHz, noncontig.  
Notes: Zoomed in view, final measurement

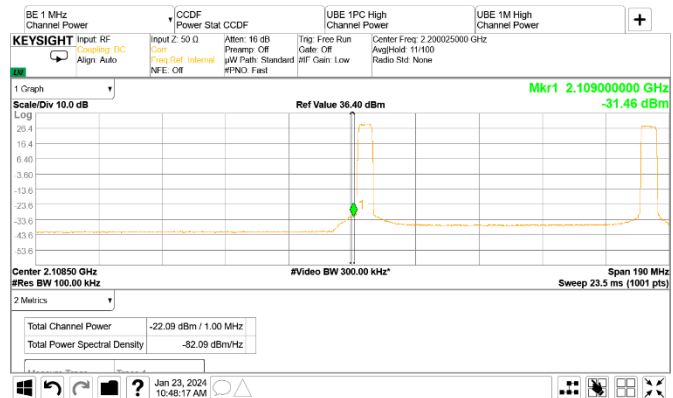


Figure 8.3-79: Conducted emission 1 MHz away from the lower band edge

Frequency: 2109 MHz  
Meas. BW: 1 MHz  
Limit: -19 dBm/MHz

Mode: 2-carrier operation, multi-RAT  
Tech.: WCDMA and NR 5 MHz, noncontig.  
Notes: None

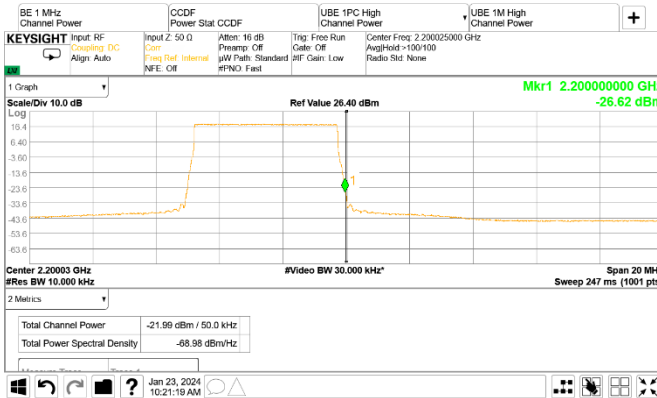


Figure 8.3-80: Conducted emission at the upper band edge

Frequency: 2200 MHz  
Meas. BW: 1% of EBW  
Limit: -19 dBm/50 kHz

Mode: 2-carrier operation, multi-RAT  
Tech.: WCDMA and NR 5 MHz, noncontig.  
Notes: Zoomed in view, final measurement

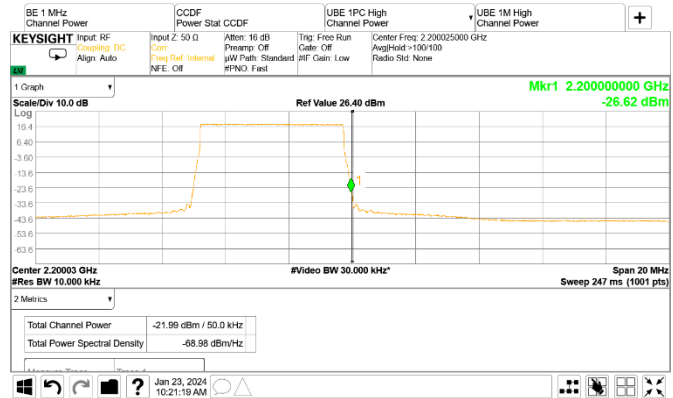


Figure 8.3-81: Conducted emission 1 MHz away from the upper band edge

Frequency: 2201 MHz  
Meas. BW: 1 MHz  
Limit: -19 dBm/MHz

Mode: 2-carrier operation, multi-RAT  
Tech.: WCDMA and NR 5 MHz, noncontig.  
Notes: None



Figure 8.3-82: Conducted emission at the low band edge

Frequency: 2110 MHz  
Meas. BW: 1% of EBW  
Limit: -19 dBm/50 kHz

Mode: 2-carrier operation, multi-RAT  
Tech.: WCDMA and NR 5 MHz, noncontig.  
Notes: Full span - overview

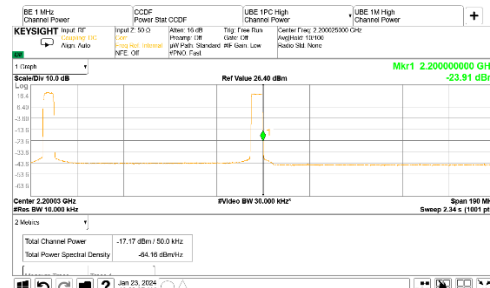


Figure 8.3-83: Conducted emission at the upper band edge

Frequency: 2200 MHz  
Meas. BW: 1% of EBW  
Limit: -19 dBm/50 kHz

Mode: 2-carrier operation, multi-RAT  
Tech.: WCDMA and NR 5 MHz, noncontig.  
Notes: Full span - overview

Test data, continued



Figure 8.3-84: Conducted emission at the lower band edge

Frequency: 2110 MHz  
Meas. BW: 1% of EBW  
Limit: -19 dBm/50 kHz

Mode: Multi-RAT operation  
Tech.: NR 5MHz, WCDMA, LTE 5 MHz  
Notes: Zoomed in view, final measurement

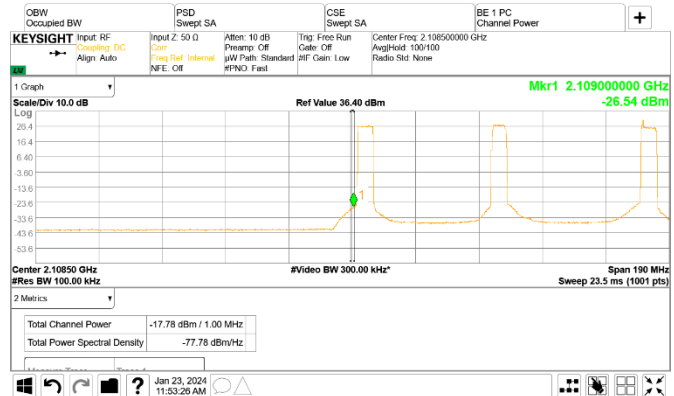


Figure 8.3-85: Conducted emission 1 MHz away from the lower band edge

Frequency: 2109 MHz  
Meas. BW: 1 MHz  
Limit: -19 dBm/MHz

Mode: Multi-RAT operation  
Tech.: NR 5MHz, WCDMA, LTE 5 MHz  
Notes: None

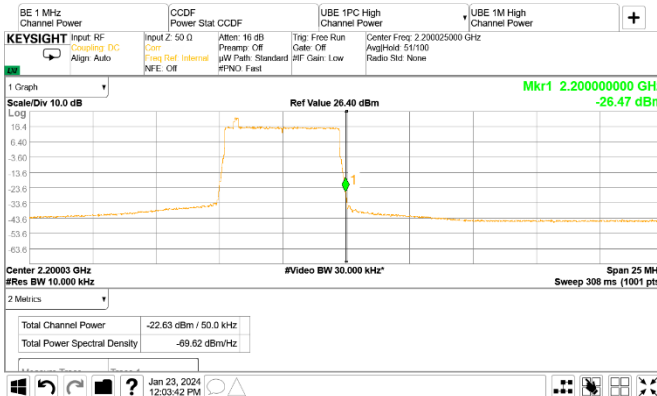


Figure 8.3-86: Conducted emission at the upper band edge

Frequency: 2200 MHz  
Meas. BW: 1% of EBW  
Limit: -19 dBm/50 kHz

Mode: Multi-RAT operation  
Tech.: WCDMA, NR 5MHz, LTE 5 MHz  
Notes: Zoomed in view, final measurement

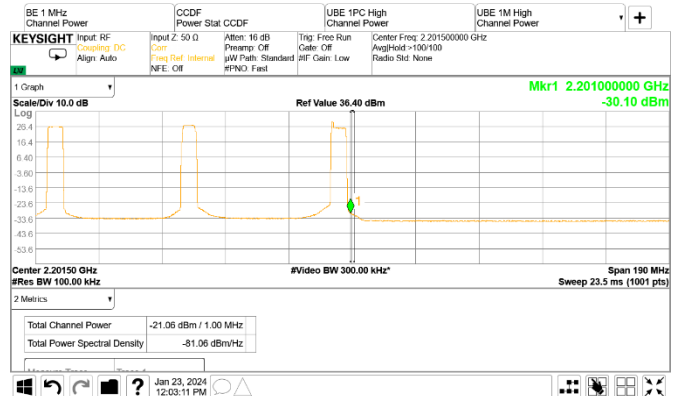


Figure 8.3-87: Conducted emission 1 MHz away from the upper band edge

Frequency: 2201 MHz  
Meas. BW: 1 MHz  
Limit: -19 dBm/MHz

Mode: Multi-RAT operation  
Tech.: WCDMA, NR 5MHz, LTE 5 MHz  
Notes: None

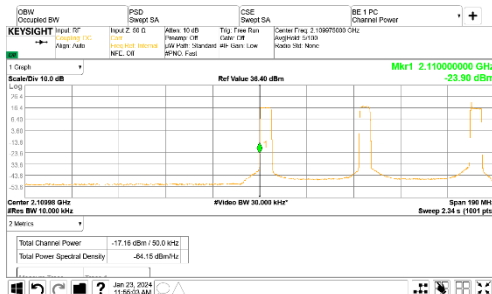


Figure 8.3-88: Conducted emission at the low band edge

Frequency: 2110 MHz  
Meas. BW: 1% of EBW  
Limit: -19 dBm/50 kHz

Mode: Multi-RAT operation  
Tech.: NR 5MHz, WCDMA, LTE 5 MHz  
Notes: Full span - overview

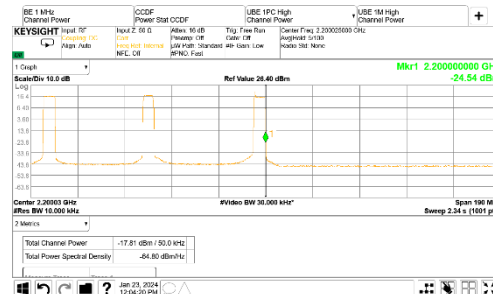


Figure 8.3-89: Conducted emission at the upper band edge

Frequency: 2200 MHz  
Meas. BW: 1% of EBW  
Limit: -19 dBm/50 kHz

Mode: Multi-RAT operation  
Tech.: NR 5MHz, WCDMA, LTE 5 MHz  
Notes: Full span - overview

Test data, continued



Figure 8.3-90: Conducted emission at the lower band edge

Frequency: 2110 MHz  
Meas. BW: 1% of EBW  
Limit: -19 dBm/50 kHz

Mode: Multi-RAT operation  
Tech.: 2x (NR 5MHz, WCDMA, LTE 5 MHz)  
Notes: Zoomed in view, final measurement

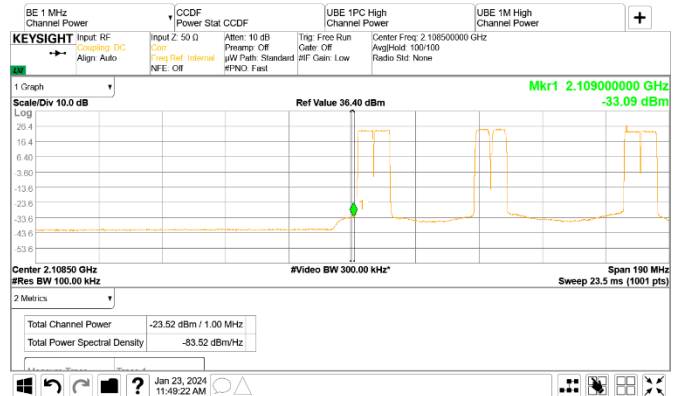


Figure 8.3-91: Conducted emission 1 MHz away from the lower band edge

Frequency: 2109 MHz  
Meas. BW: 1 MHz  
Limit: -19 dBm/MHz

Mode: Multi-RAT operation  
Tech.: 2x (NR 5MHz, WCDMA, LTE 5 MHz)  
Notes: None

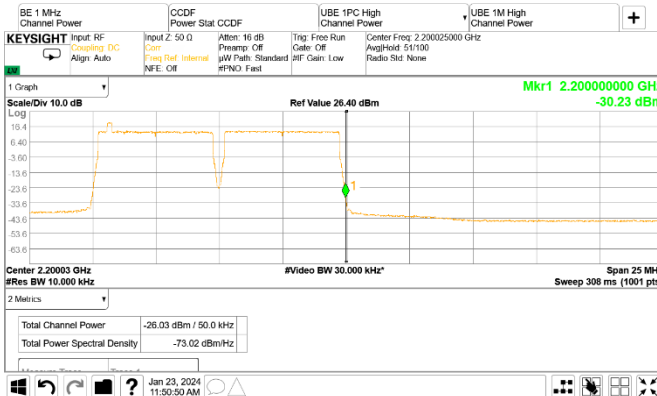


Figure 8.3-92: Conducted emission at the upper band edge

Frequency: 2200 MHz  
Meas. BW: 1% of EBW  
Limit: -19 dBm/50 kHz

Mode: Multi-RAT operation  
Tech.: 2x (NR 5MHz, WCDMA, LTE 5 MHz)  
Notes: Zoomed in view, final measurement

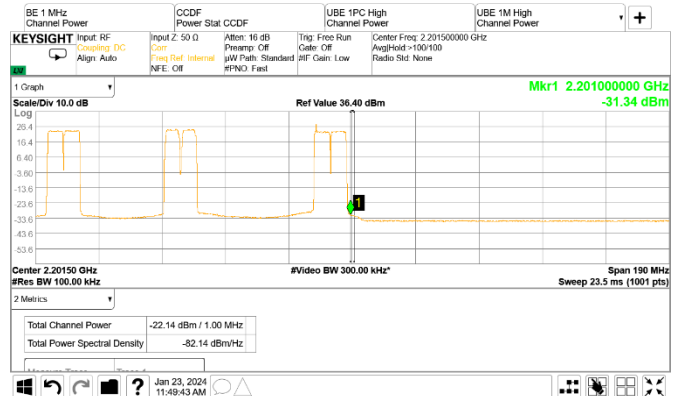


Figure 8.3-93: Conducted emission 1 MHz away from the upper band edge

Frequency: 2201 MHz  
Meas. BW: 1 MHz  
Limit: -19 dBm/MHz

Mode: Multi-RAT operation  
Tech.: 2x (NR 5MHz, WCDMA, LTE 5 MHz)  
Notes: None

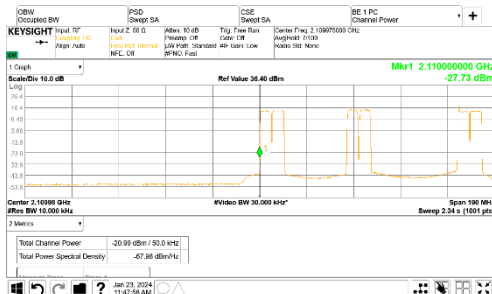


Figure 8.3-94: Conducted emission at the low band edge

Frequency: 2110 MHz  
Meas. BW: 1% of EBW  
Limit: -19 dBm/50 kHz

Mode: Multi-RAT operation  
Tech.: 2x (NR 5MHz, WCDMA, LTE 5 MHz)  
Notes: Full span - overview

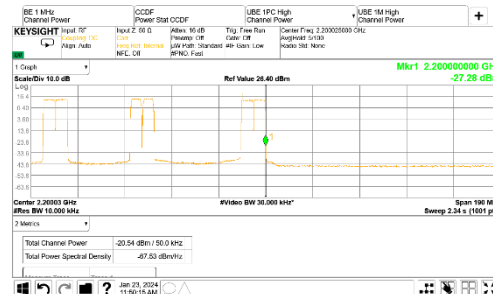


Figure 8.3-95: Conducted emission at the upper band edge

Frequency: 2200 MHz  
Meas. BW: 1% of EBW  
Limit: -19 dBm/50 kHz

Mode: Multi-RAT operation  
Tech.: 2x (NR 5MHz, WCDMA, LTE 5 MHz)  
Notes: Full span - overview

## 8.4 Radiated spurious emissions (Band 4/66 & 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 5.6:

Unwanted emissions shall be measured in terms of average values.

For all equipment, the TRP or total conducted power (sum of conducted power across all antenna connectors) of the unwanted emissions outside the frequency block or frequency block group shall not exceed the limits shown in table below:

**Table 8.4-1: Unwanted emissions limits**

Offset from the edge of the frequency block or frequency group	Unwanted emission limits
1 MHz	-13 dBm/(1% of OB*)
> 1 MHz	-13 dBm/MHz

Notes: \*OB is the occupied bandwidth

In addition to complying with the above limits, equipment operating in the band 2180–2200 MHz may require additional filtering (see SRSP-519).

#### RSS-133, Section 6.5.1:

Equipment shall comply with the limits in (i) and (ii) below:

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.

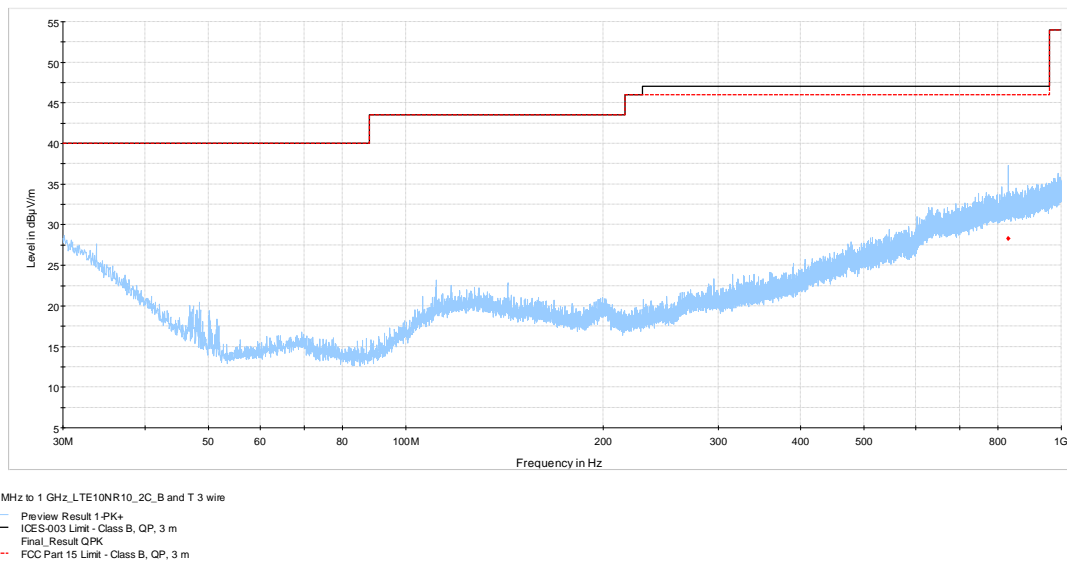
## 8.4.2 Test summary

Test date June 27, 2023

## 8.4.3 Observations, settings and special notes

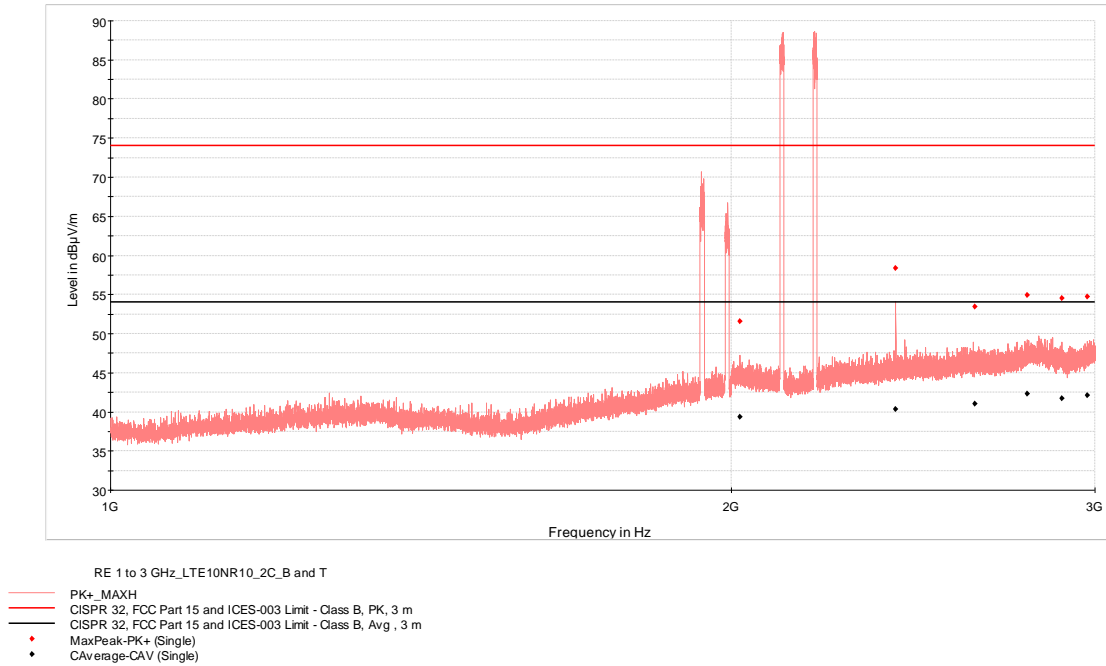
- The spectrum was searched from 30 MHz to the 10<sup>th</sup> harmonic per ANSI C63.26 Paragraph 5.5.3.2 method.
- RBW within 30–1000 MHz was 100 kHz and 1 MHz above 1 GHz. VBW was wider than RBW.
- Testing was performed with RF ports terminated with 50 Ohm load.
- **Testing was performed with dual band (Band 2/25 and Band 4/66) simultaneous transmission with 2 carriers each**

## 8.4.4 Test data

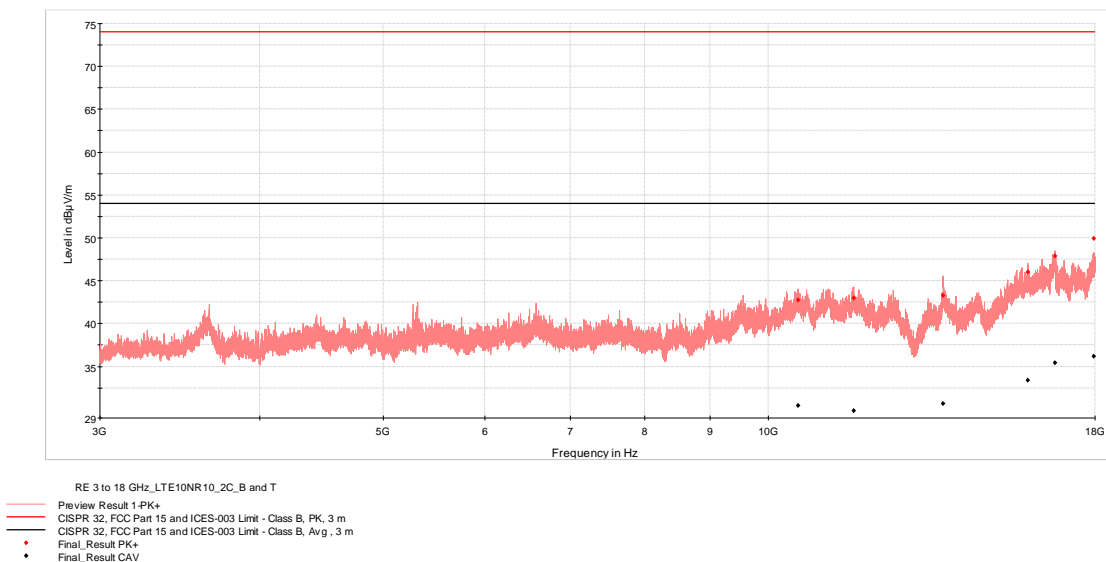


**Figure 8.4-1:** Radiated spurious emissions within 30–1000 MHz, dual band multi-RAT operation (limit at 82.23 dBμV/m)

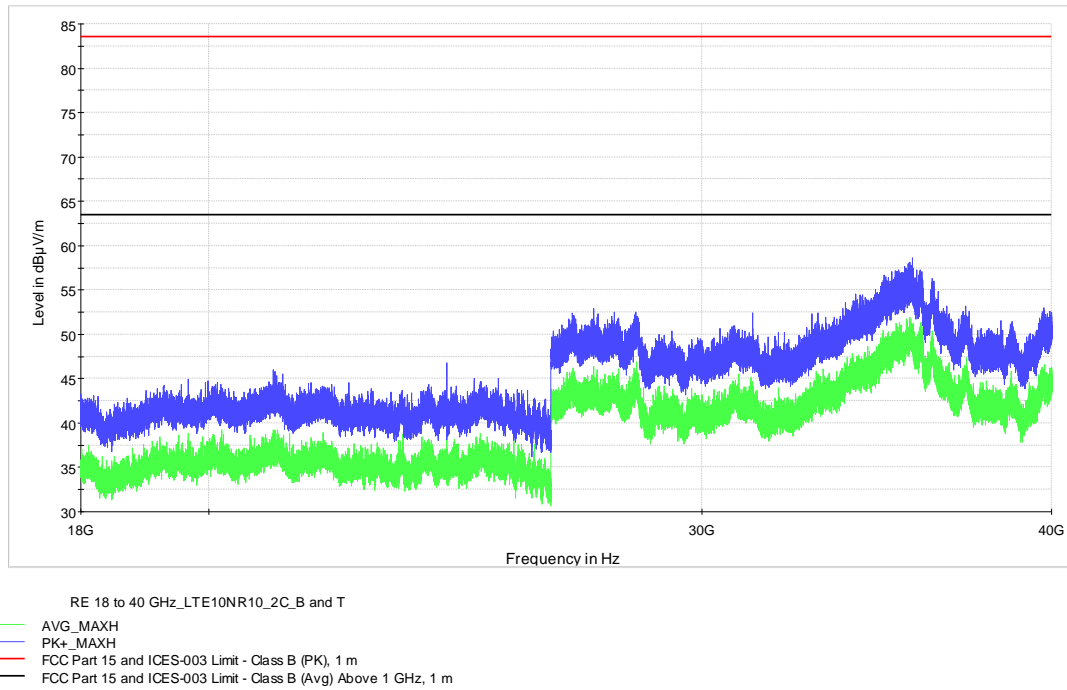
Test data, continued



**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 18–40 GHz, dual band multi-RAT operation (limit at 82.23 dBμV/m)

## 8.5 Spurious out-of-band emissions (Band 2/25)

### 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	June 28, 2023
Test engineer	Nimish Kapoor

### 8.5.3 Observations, settings and special notes

- The spectrum was searched from 30 MHz to the 10<sup>th</sup> 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 WCDMA low channel, single carrier operation



Figure 8.5-2: Conducted spurious emissions of WCDMA mid channel, single carrier operation

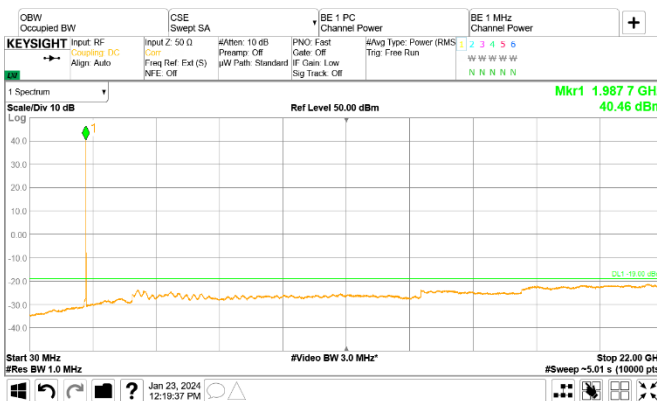


Figure 8.5-3: Conducted spurious emissions of WCDMA top channel, single carrier operation

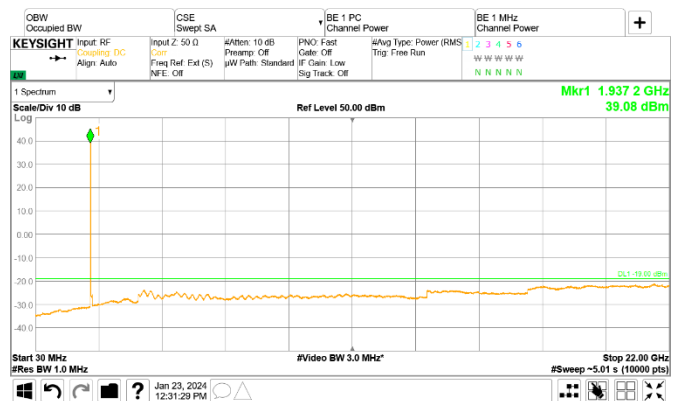


Figure 8.5-4: Conducted spurious emissions of WCDMA low channels, 2 carrier operation

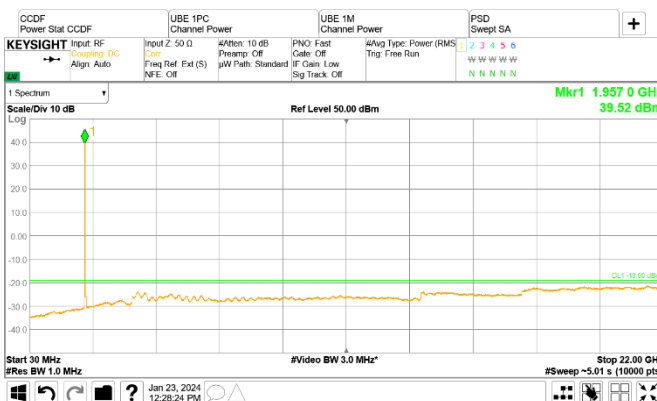


Figure 8.5-5: Conducted spurious emissions of WCDMA mid channels, 2 carrier operation

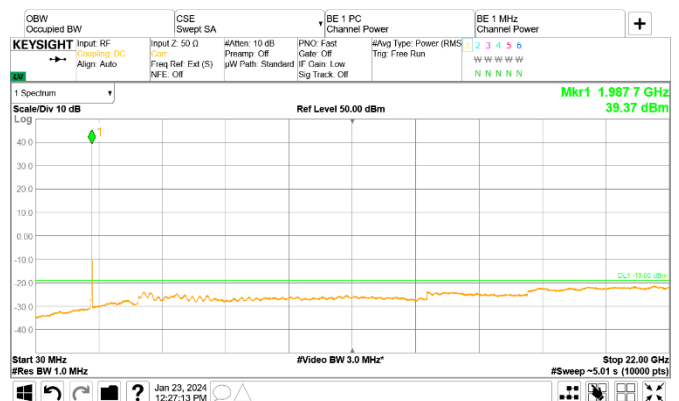


Figure 8.5-6: Conducted spurious emissions of WCDMA top channels, 2 carrier operation

Test data, continued

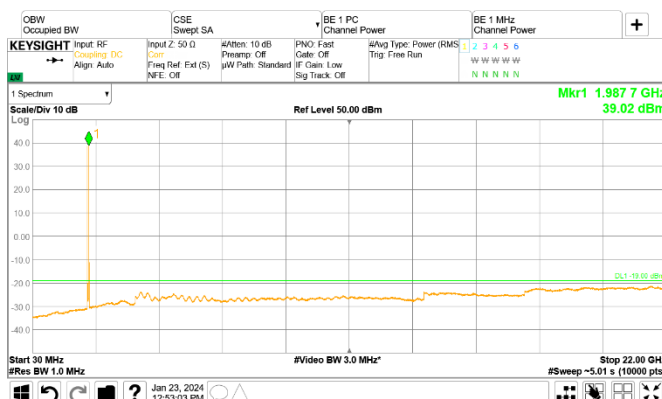


Figure 8.5-7: Conducted spurious emissions of WCDMA noncontiguous, 2 carrier operation

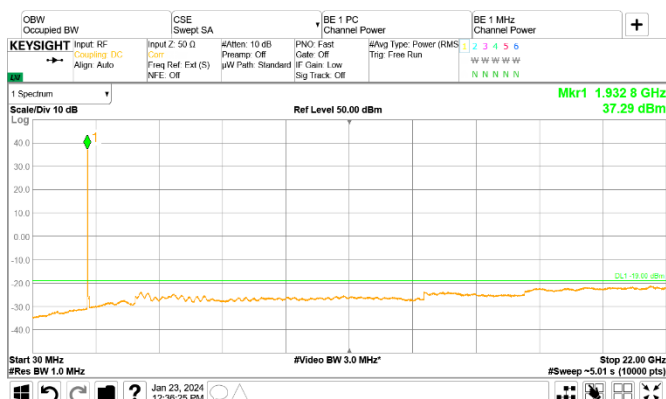


Figure 8.5-8: Conducted spurious emissions of WCDMA low channels, 3 carrier operation

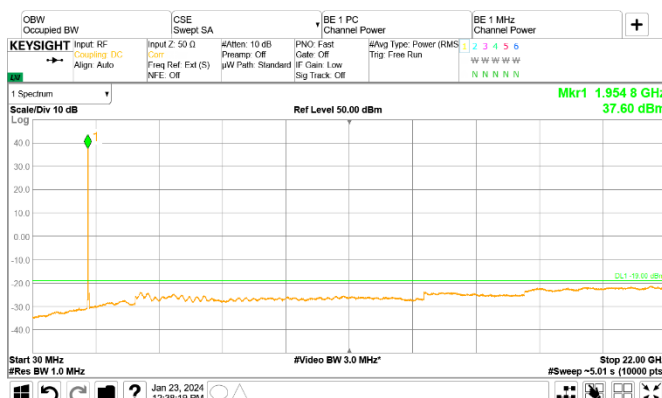


Figure 8.5-9: Conducted spurious emissions of WCDMA mid channels, 3 carrier operation

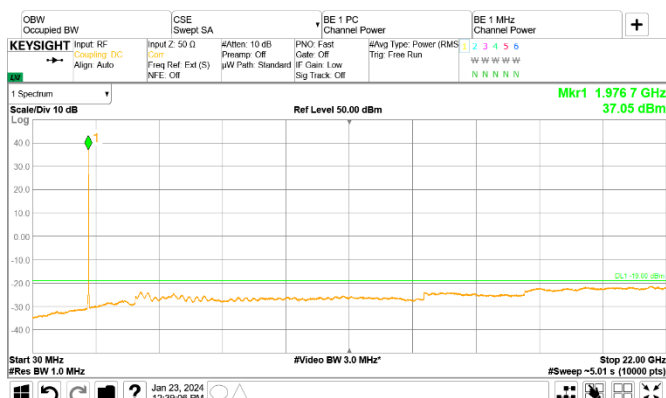


Figure 8.5-10: Conducted spurious emissions of WCDMA top channels, 3 carrier operation

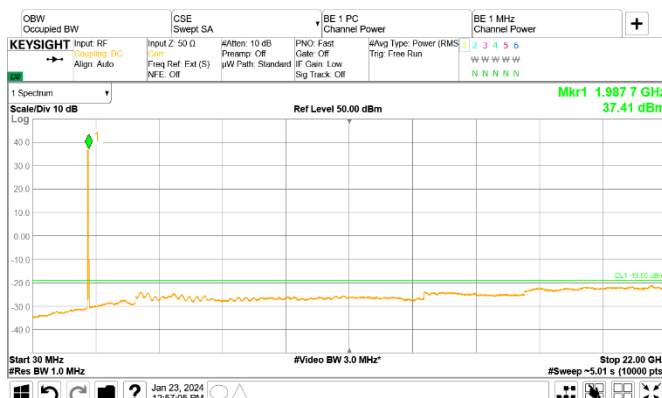


Figure 8.5-11: Conducted spurious emissions of WCDMA noncontiguous, 3 carrier operation

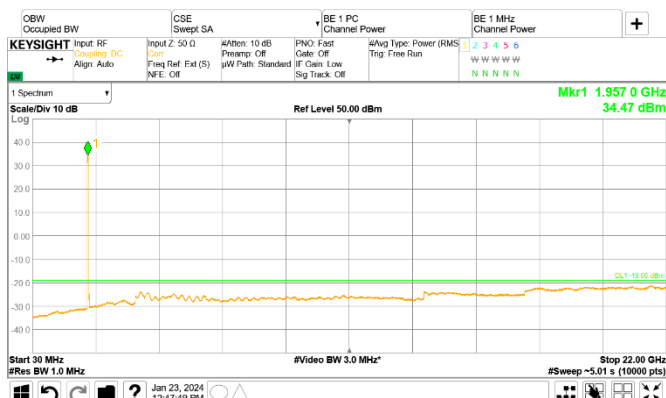


Figure 8.5-12: Conducted spurious emissions of WCDMA low channels, 6 carrier operation

Test data, continued

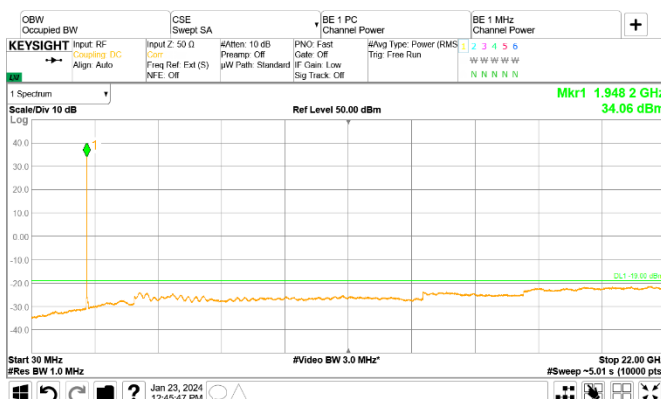


Figure 8.5-13: Conducted spurious emissions of WCDMA mid channels, 6 carrier operation

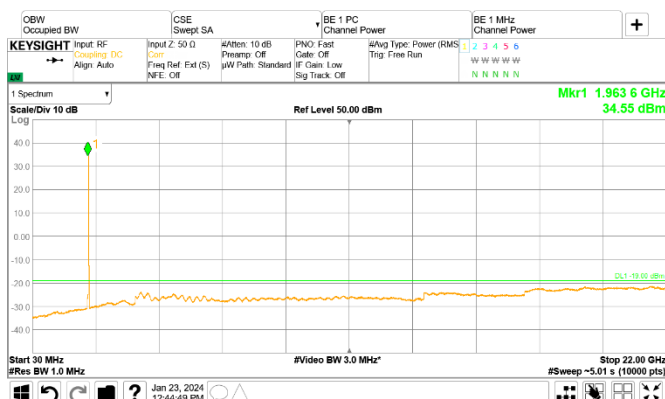


Figure 8.5-14: Conducted spurious emissions of WCDMA top channels, 6 carrier operation

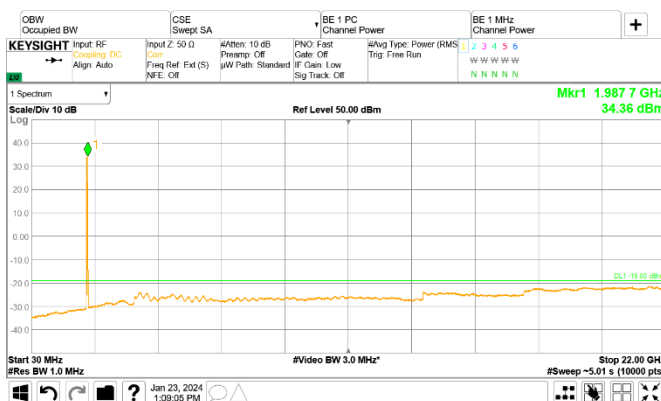


Figure 8.5-15: Conducted spurious emissions of WCDMA noncontiguous, 6 carrier operation

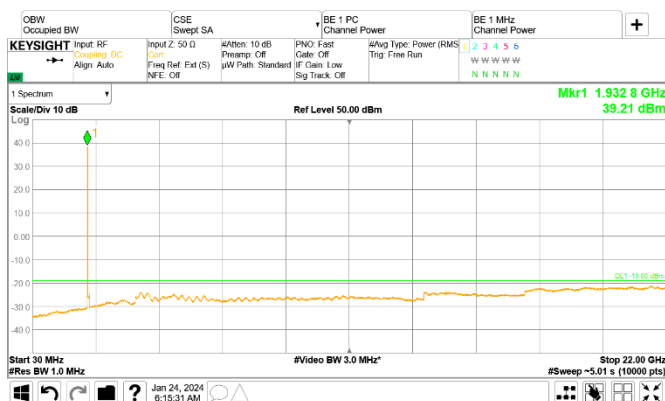


Figure 8.5-16: Conducted spurious emissions of WCDMA and LTE 5 MHz, low channels, 2 carrier operation

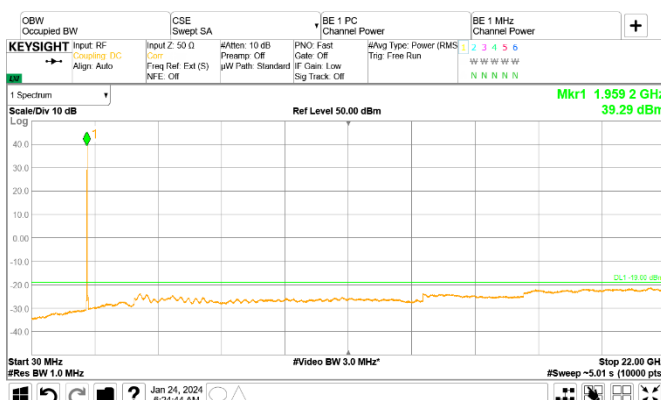


Figure 8.5-17: Conducted spurious emissions of WCDMA and LTE 5 MHz, mid channels, 2 carrier operation

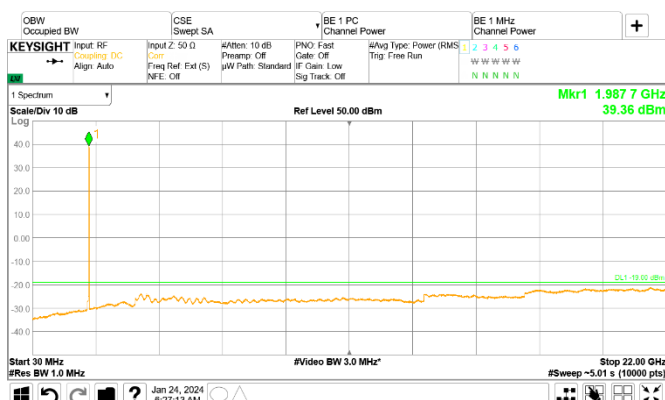


Figure 8.5-18: Conducted spurious emissions of WCDMA and LTE 5 MHz, top channels, 2 carrier operation

Test data, continued

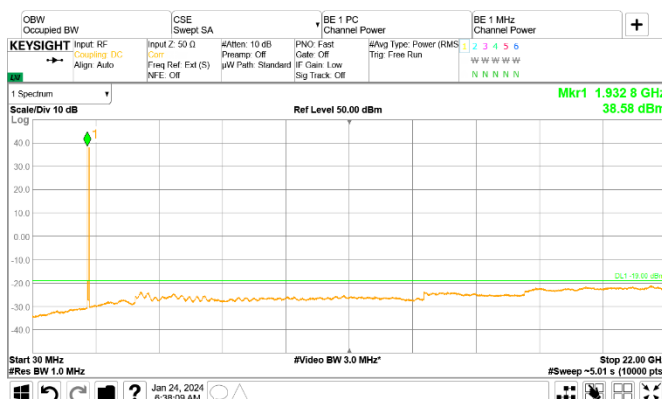


Figure 8.5-19: Conducted spurious emissions of WCDMA and LTE 5 MHz, noncontiguous, 2 carrier operation

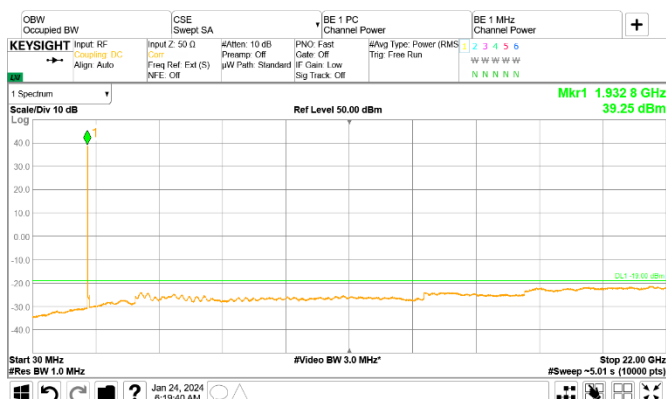


Figure 8.5-20: Conducted spurious emissions of WCDMA and NR 5 MHz, low channels, 2 carrier operation

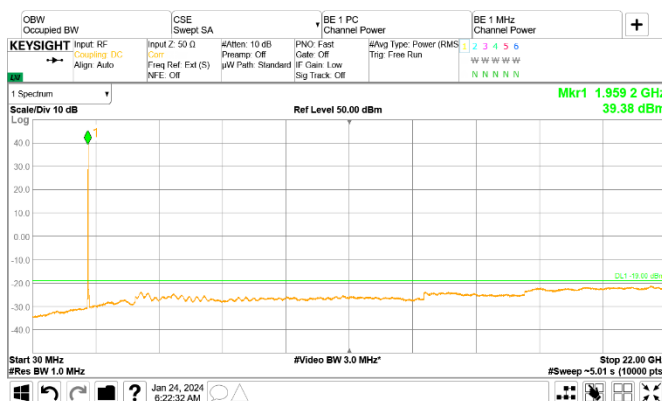


Figure 8.5-21: Conducted spurious emissions of WCDMA and NR 5 MHz, mid channels, 2 carrier operation

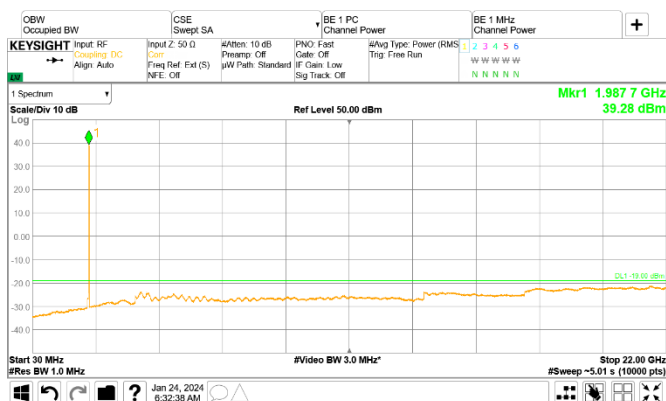


Figure 8.5-22: Conducted spurious emissions of WCDMA and NR 5 MHz, top channels, 2 carrier operation

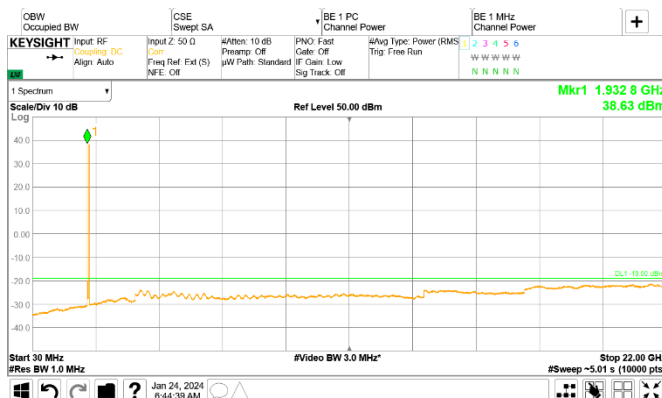


Figure 8.5-23: Conducted spurious emissions of WCDMA and NR 5 MHz, noncontiguous, 2 carrier operation

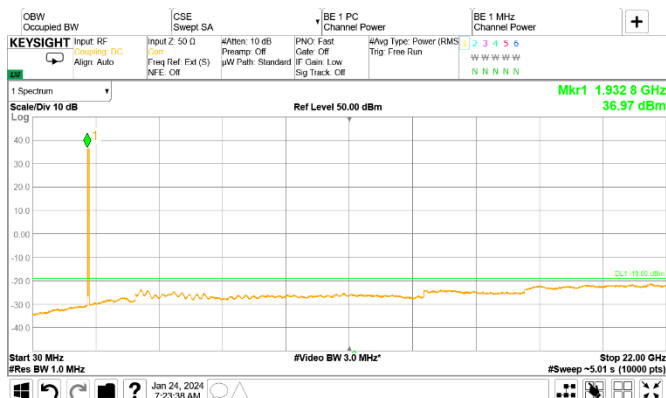


Figure 8.5-24: Conducted spurious emissions of WCDMA, NR 5 MHz and LTE 5 MHz, noncontiguous, 3 carrier operation

Test data, continued

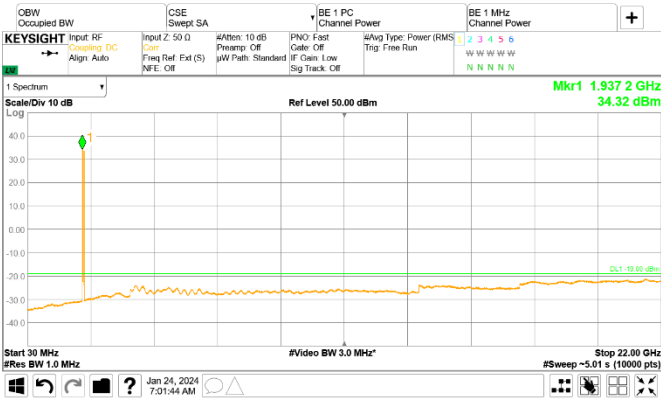


Figure 8.5-25: Conducted spurious emissions of WCDMA, NR 5 MHz and LTE 5 MHz, noncontiguous, 6 carrier operation

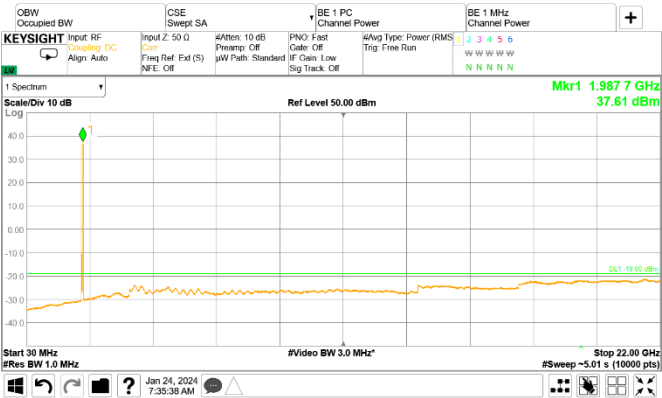


Figure 8.5-26: Conducted spurious emissions of NR 5 MHz, WCDMA and LTE 5 MHz, noncontiguous, 3 carrier operation

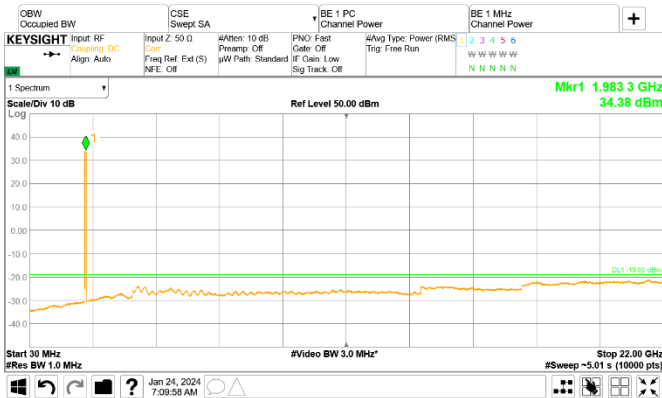


Figure 8.5-27: Conducted spurious emissions of NR 5 MHz, WCDMA and LTE 5 MHz, noncontiguous, 6 carrier operation

## Test data, continued

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

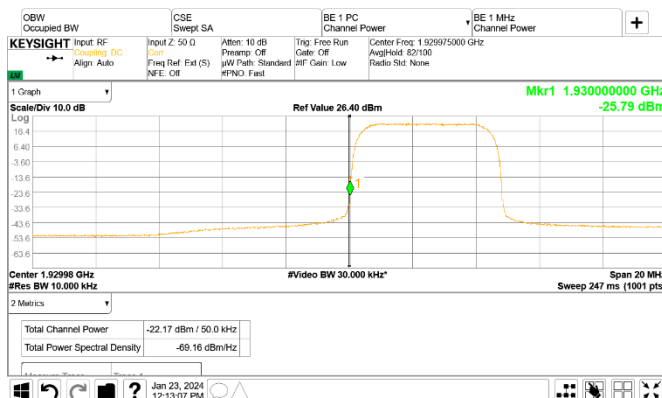


Figure 8.5-28: Conducted emission at the lower band edge

Frequency: 1930 MHz Mode: Single-carrier operation  
Meas. BW: 1% of EBW Tech.: WCDMA  
Limit:  $-19$  dBm/50 kHz Notes: None

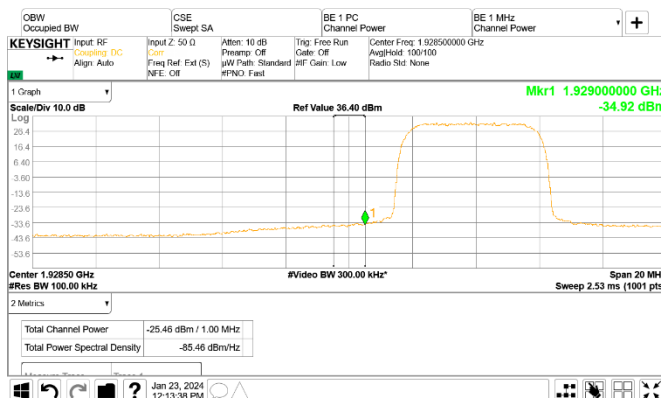


Figure 8.5-29: Conducted emission 1 MHz away from the lower band edge

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

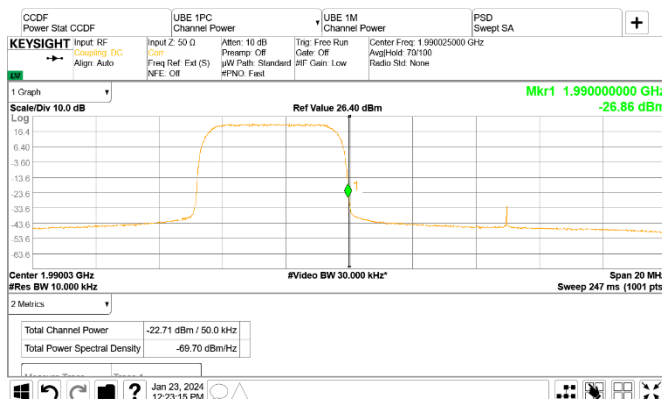


Figure 8.5-30: Conducted emission at the upper band edge

Frequency: 1990 MHz Mode: Single-carrier operation  
Meas. BW: 1% of EBW Tech.: WCDMA  
Limit:  $-19$  dBm/50 kHz Notes: None

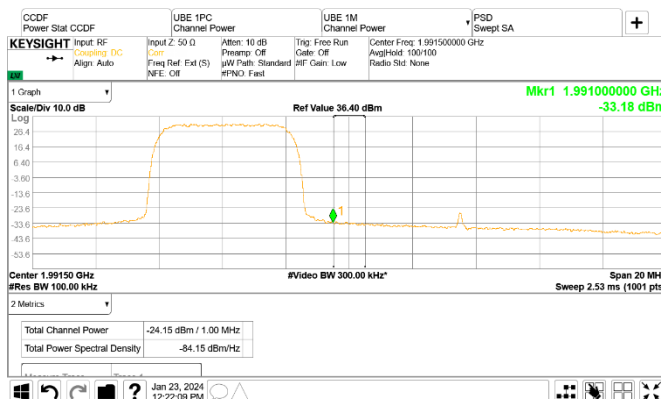


Figure 8.5-31: Conducted emission 1 MHz away from the upper band edge

Frequency: 1991 MHz Mode: Single-carrier operation  
Meas. BW: 1 MHz Tech.: WCDMA  
Limit:  $-19$  dBm/MHz Notes: None