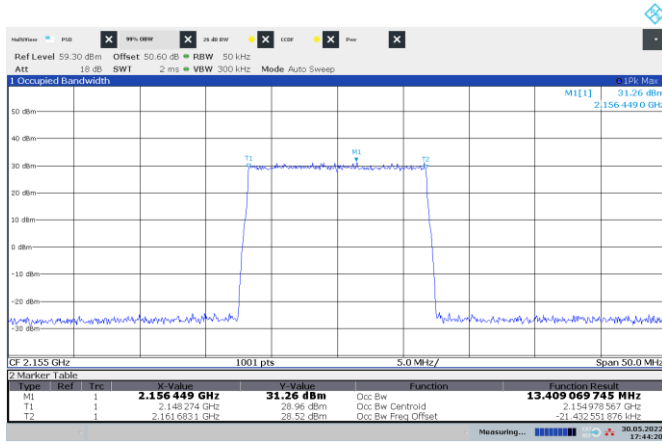
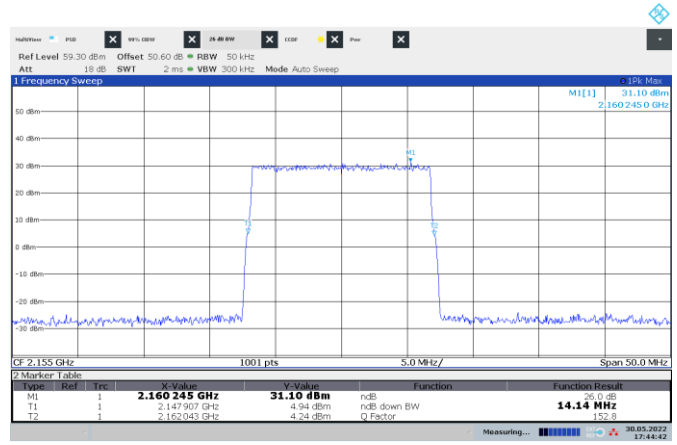


Test data, continued



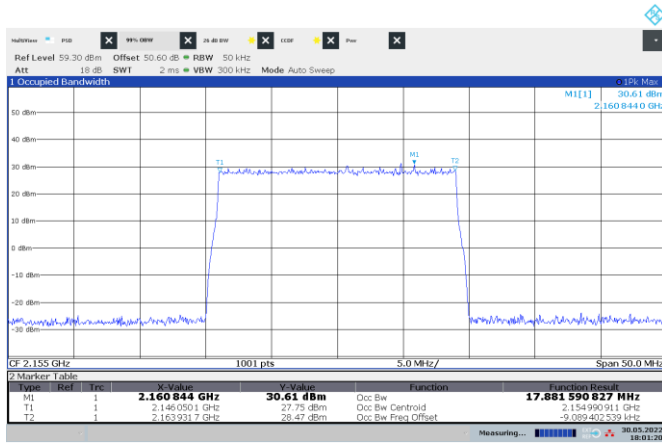
17:44:20 30.05.2022

Figure 8.11-5: 99% Occupied bandwidth sample plot for LTE 15 MHz channel



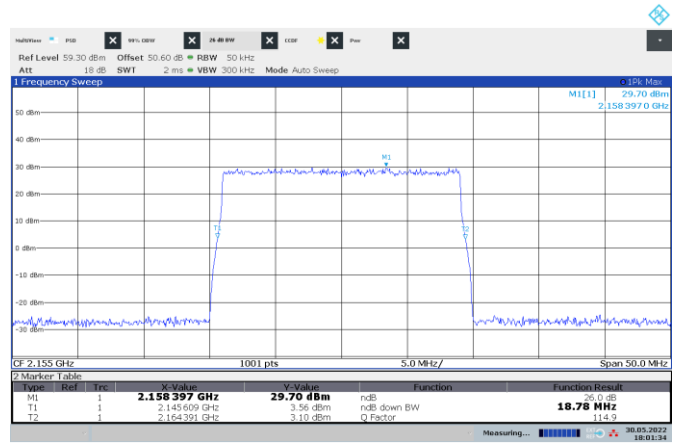
17:44:42 30.05.2022

Figure 8.11-6: 26 dB bandwidth sample plot for LTE 15 MHz channel



18:01:21 30.05.2022

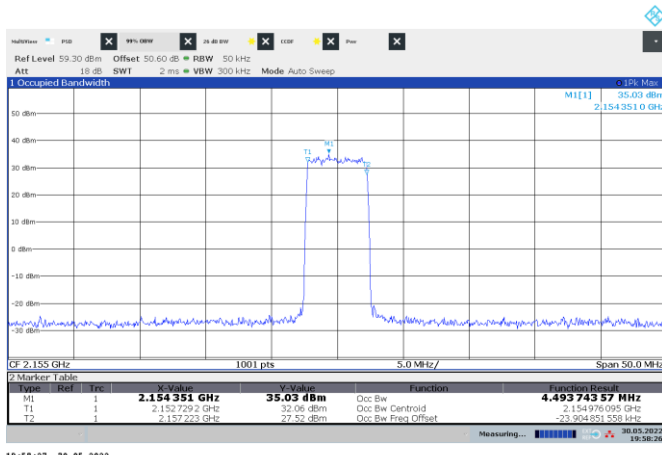
Figure 8.11-7: 99% Occupied bandwidth sample plot for LTE 20 MHz channel



18:01:35 30.05.2022

Figure 8.11-8: 26 dB bandwidth sample plot for LTE 20 MHz channel

Test data, continued



19:58:27 30.05.2022

Figure 8.11-9: 99% Occupied bandwidth sample plot for NR 5 MHz channel



19:58:41 30.05.2022

Figure 8.11-10: 26 dB bandwidth sample plot for NR 5 MHz channel



20:04:40 30.05.2022

Figure 8.11-11: 99% Occupied bandwidth sample plot for NR 10 MHz channel



20:04:55 30.05.2022

Figure 8.11-12: 26 dB bandwidth sample plot for NR 10 MHz channel

Test data, continued

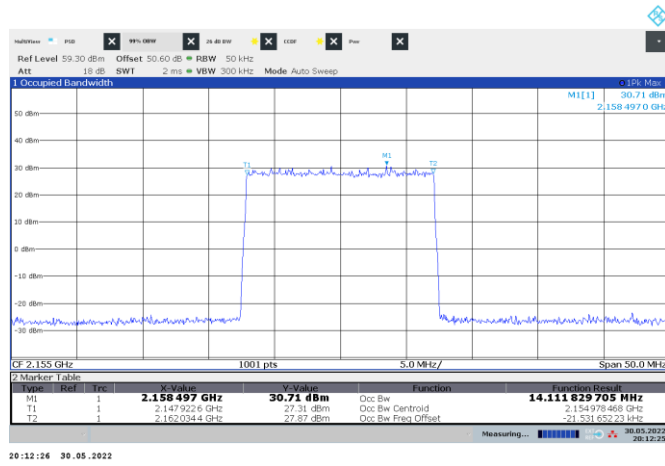


Figure 8.11-13: 99% Occupied bandwidth sample plot for NR 15 MHz channel

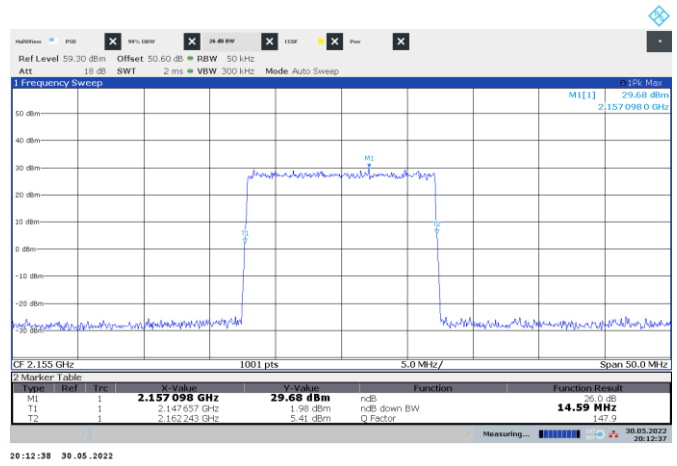


Figure 8.11-14: 26 dB bandwidth sample plot for NR 15 MHz channel

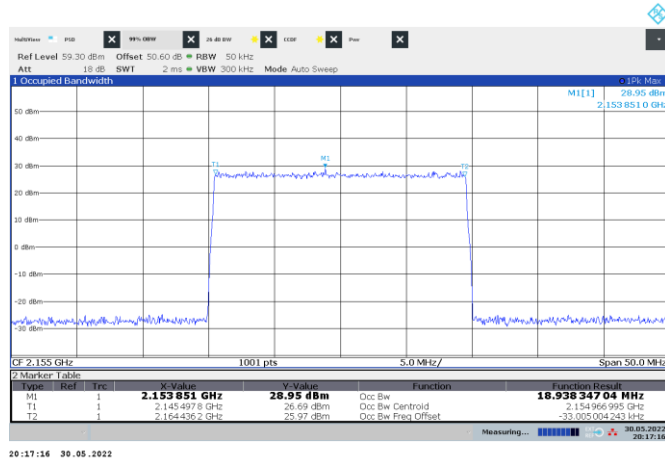


Figure 8.11-15: 99% Occupied bandwidth sample plot for NR 20 MHz channel

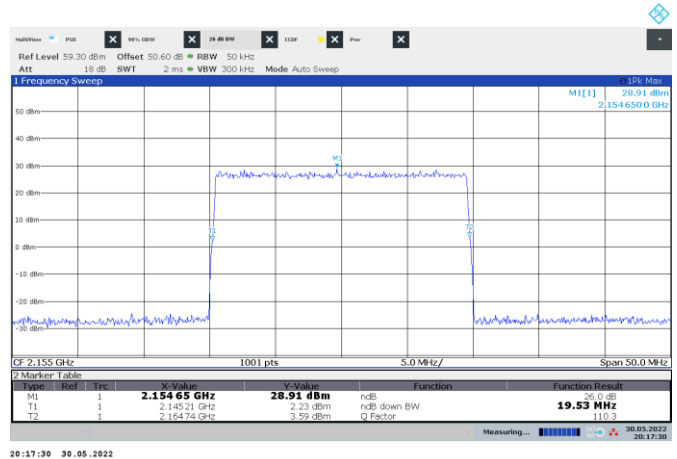


Figure 8.11-16: 26 dB bandwidth sample plot for NR 20 MHz channel

## 8.12 Occupied bandwidth (Band 70)

### 8.12.1 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.

### 8.12.2 Test summary

Test date	May 31, 2022
Test engineer	Moustapha Salah Toubeh

### 8.12.3 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

### 8.12.4 Test data

**Table 8.12-1:** Occupied bandwidth results for LTE 5 MHz channel

Remarks	Frequency, MHz	26 dB BW, MHz	99% OBW, MHz
5 MHz, Low channel	1997.5	4.790	4.488
5 MHz, Mid channel	2007.5	4.820	4.486
5 MHz, Top channel	2017.5	4.820	4.487
5 MHz with IB-IoT1, Low channel	1997.5	4.740	4.475
5 MHz with IB-IoT1, Mid channel	2007.5	4.710	4.477
5 MHz with IB-IoT1, Top channel	2017.5	4.740	4.468
5 MHz with IB-IoT2, Low channel	1997.5	4.780	4.475
5 MHz with IB-IoT2, Mid channel	2007.5	4.750	4.475
5 MHz with IB-IoT2, Top channel	2017.5	4.750	4.479

**Table 8.12-2:** Occupied bandwidth results for LTE 10 MHz channel

Remarks	Frequency, MHz	26 dB BW, MHz	99% OBW, MHz
10 MHz, Low channel	2000.0	9.470	8.939
10 MHz, Mid channel	2007.5	9.490	8.951
10 MHz, Top channel	2015.0	9.570	8.949
10 MHz with IoT, Low channel	2000.0	9.710	9.380
10 MHz with IoT, Mid channel	2007.5	9.690	9.381
10 MHz with IoT, Top channel	2015.0	9.690	9.377

Test data, continued

**Table 8.12-3:** Occupied bandwidth results for LTE 15 MHz channel

Remarks	Frequency, MHz	26 dB BW, MHz	99% OBW, MHz
15 MHz, Low channel	2002.0	14.150	13.397
15 MHz, Mid channel	2007.5	14.270	13.406
15 MHz, Top channel	2012.5	14.150	13.389
15 MHz with IoT, Low channel	2002.0	14.430	13.952
15 MHz with IoT, Mid channel	2007.5	14.430	13.962
15 MHz with IoT, Top channel	2012.5	14.350	13.951

**Table 8.12-4:** Occupied bandwidth results for LTE 20 MHz channel

Remarks	Frequency, MHz	26 dB BW, MHz	99% OBW, MHz
20 MHz, Low channel	2005.0	18.820	17.831
20 MHz, Mid channel	2007.5	18.740	17.856
20 MHz, Top channel	2010.0	18.780	17.850
20 MHz with IoT, Low channel	2005.0	19.060	18.356
20 MHz with IoT, Mid channel	2007.5	19.020	18.344
20 MHz with IoT, Top channel	2010.0	18.980	18.349

**Table 8.12-5:** Occupied bandwidth results for NR 5 MHz channel

Remarks	Frequency, MHz	26 dB BW, MHz	99% OBW, MHz
5 MHz, Low channel	1997.5	4.840	4.521
5 MHz, Mid channel	2007.5	4.840	4.486
5 MHz, Top channel	2017.5	4.840	4.500

**Table 8.12-6:** Occupied bandwidth results for NR 10 MHz channel

Remarks	Frequency, MHz	26 dB BW, MHz	99% OBW, MHz
10 MHz, Low channel	2000.0	9.740	9.295
10 MHz, Mid channel	2007.5	9.740	9.305
10 MHz, Top channel	2015.0	9.740	9.281

**Table 8.12-7:** Occupied bandwidth results for NR 15 MHz channel

Remarks	Frequency, MHz	26 dB BW, MHz	99% OBW, MHz
15 MHz, Low channel	2002.0	14.630	14.093
15 MHz, Mid channel	2007.5	14.690	14.105
15 MHz, Top channel	2012.5	14.630	14.106

**Table 8.12-8:** Occupied bandwidth results for NR 20 MHz channel

Remarks	Frequency, MHz	26 dB BW, MHz	99% OBW, MHz
20 MHz, Low channel	2005.0	19.580	18.915
20 MHz, Mid channel	2007.5	19.530	18.905
20 MHz, Top channel	2010.0	19.530	18.918

Test data, continued

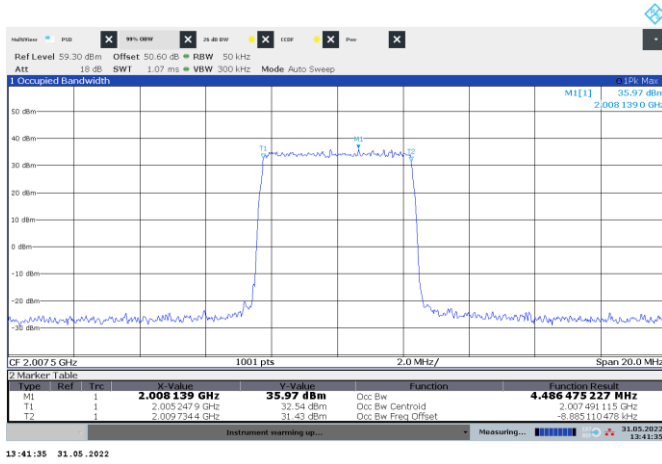


Figure 8.12-1: 99% Occupied bandwidth sample plot for LTE 5 MHz channel

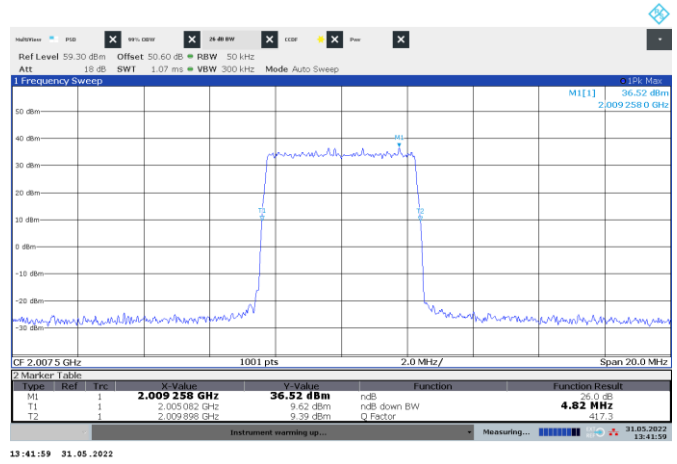


Figure 8.12-2: 26 dB bandwidth sample plot for LTE 5 MHz channel

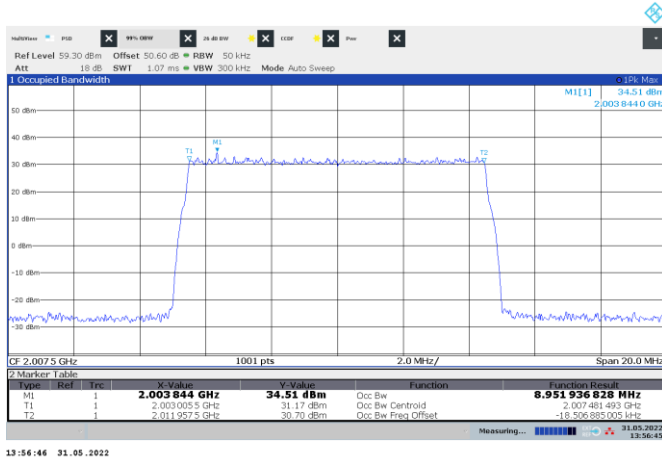


Figure 8.12-3: 99% Occupied bandwidth sample plot for LTE 10 MHz channel

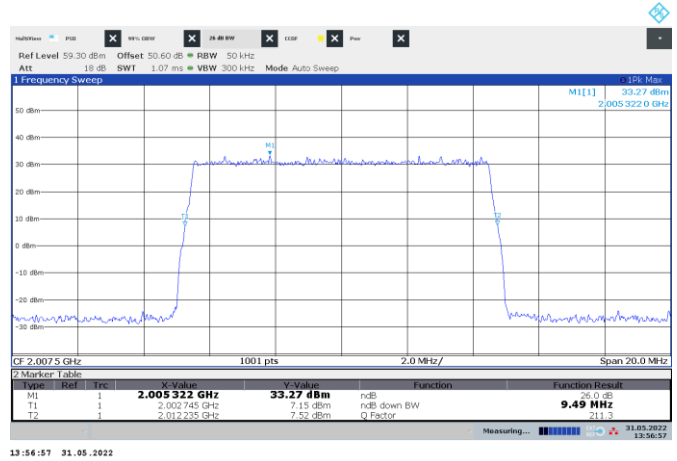
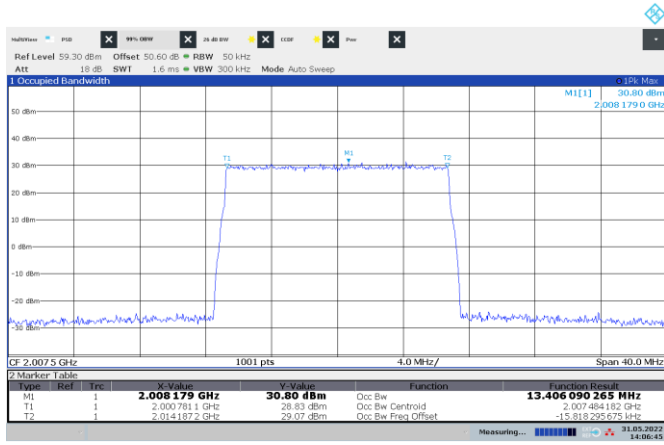


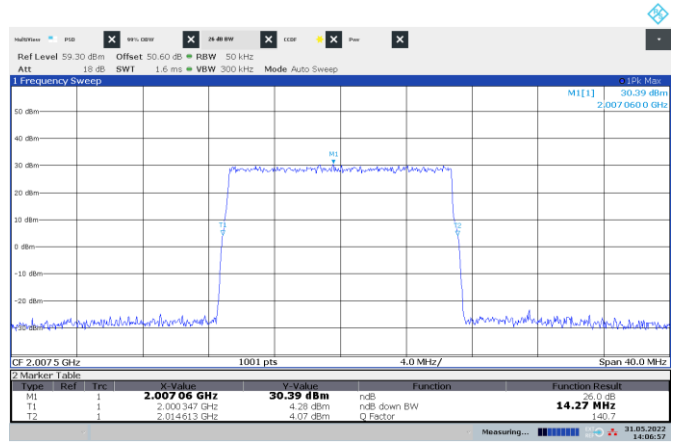
Figure 8.12-4: 26 dB bandwidth sample plot for LTE 10 MHz channel

Test data, continued



14:06:46 31.05.2022

Figure 8.12-5: 99% Occupied bandwidth sample plot for LTE 15 MHz channel



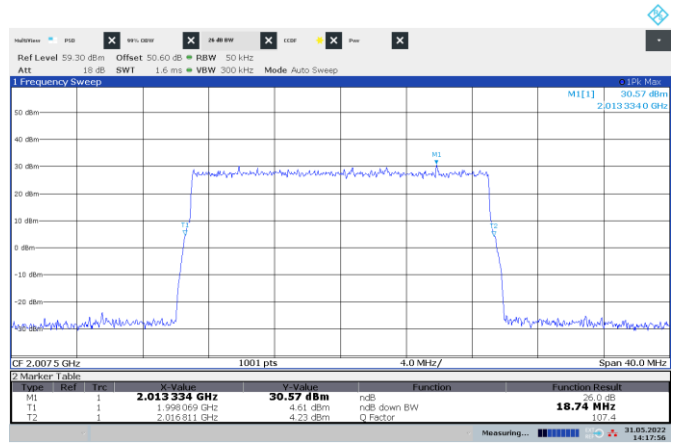
14:06:58 31.05.2022

Figure 8.12-6: 26 dB bandwidth sample plot for LTE 15 MHz channel



14:17:46 31.05.2022

Figure 8.12-7: 99% Occupied bandwidth sample plot for LTE 20 MHz channel



14:17:54 31.05.2022

Figure 8.12-8: 26 dB bandwidth sample plot for LTE 20 MHz channel

Test data, continued

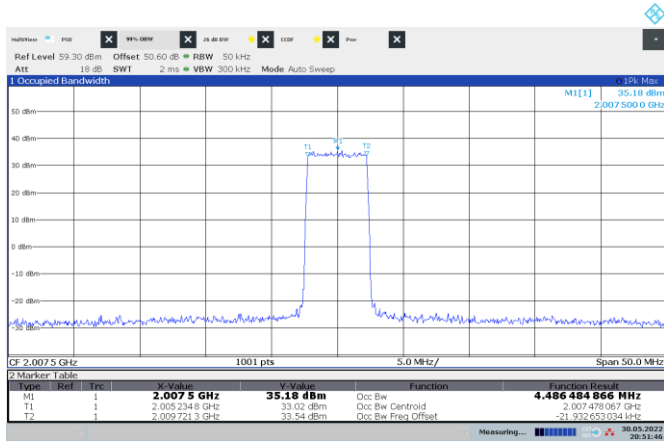


Figure 8.12-9: 99% Occupied bandwidth sample plot for NR 5 MHz channel

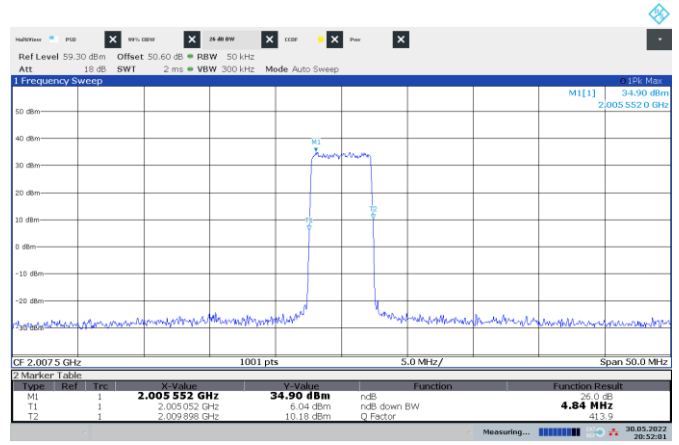


Figure 8.12-10: 26 dB bandwidth sample plot for NR 5 MHz channel

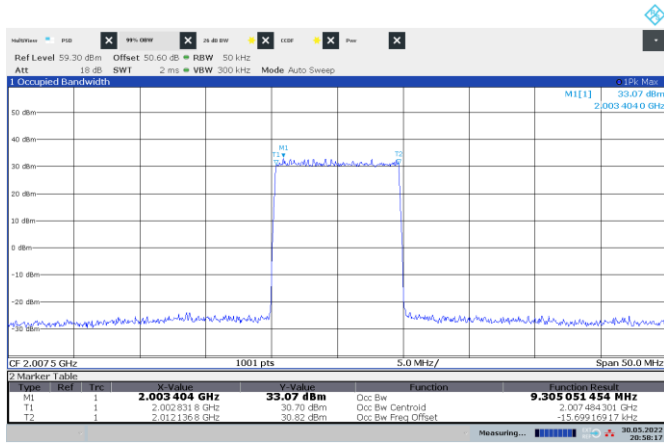


Figure 8.12-11: 99% Occupied bandwidth sample plot for NR 10 MHz channel

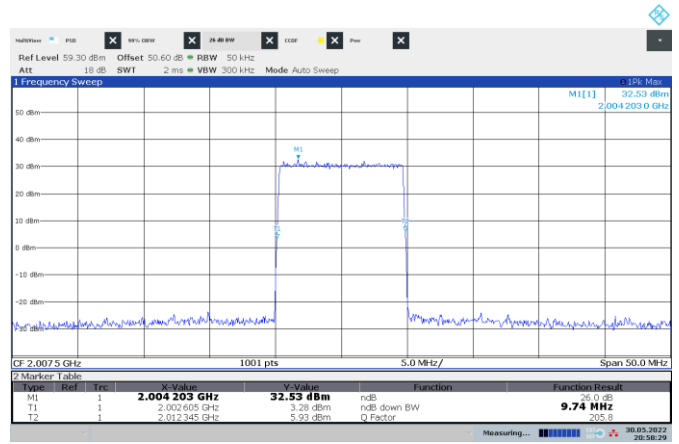


Figure 8.12-12: 26 dB bandwidth sample plot for NR 10 MHz channel



Test data, continued

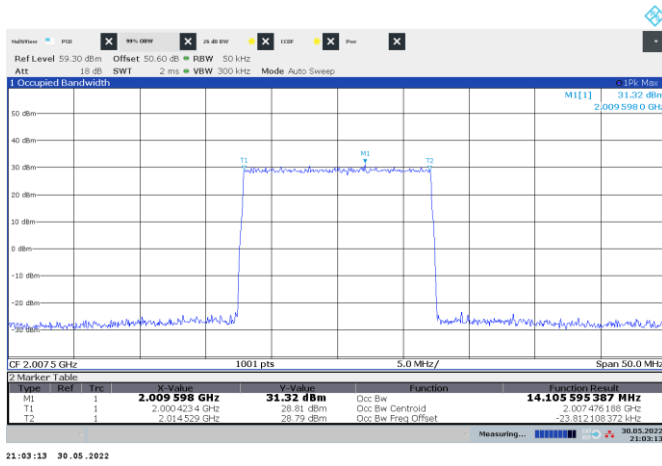


Figure 8.12-13: 99% Occupied bandwidth sample plot for NR 15 MHz channel

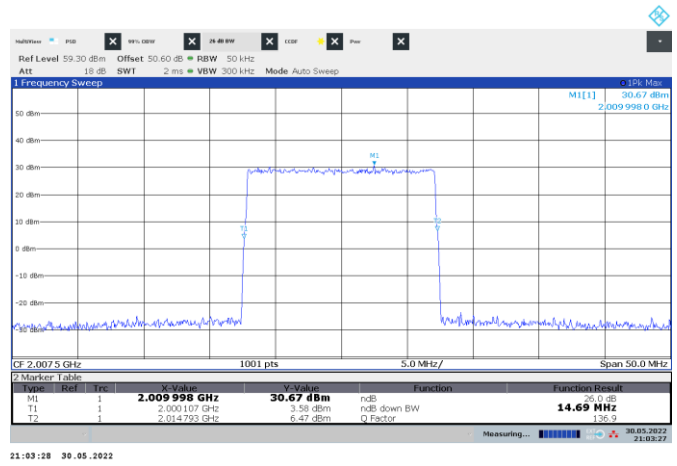


Figure 8.12-14: 26 dB bandwidth sample plot for NR 15 MHz channel

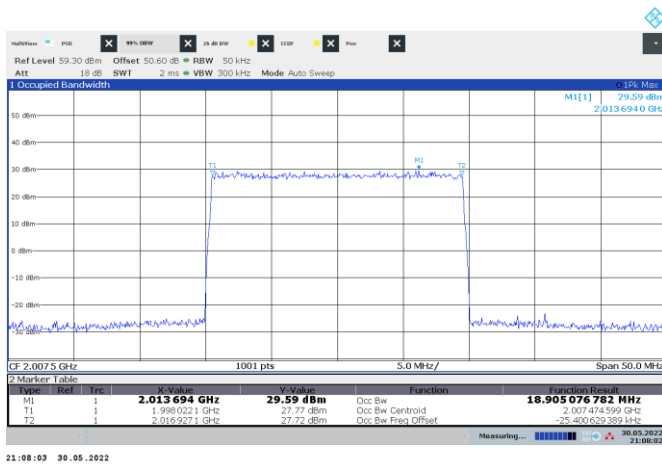


Figure 8.12-15: 99% Occupied bandwidth sample plot for NR 20 MHz channel



Figure 8.12-16: 26 dB bandwidth sample plot for NR 20 MHz channel

## 8.13 Occupied bandwidth (Band 70A)

### 8.13.1 Definitions and limits

#### 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.

### 8.13.2 Test summary

Test date	May 31, 2022
Test engineer	Moustapha Salah Toubeh

### 8.13.3 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

### 8.13.4 Test data

**Table 8.13-1:** Occupied bandwidth results for LTE 5 MHz channel

Remarks	Frequency, MHz	26 dB BW, MHz	99% OBW, MHz
5 MHz, Low channel	2002.5	4.820	4.482
5 MHz, Mid channel	2010.0	4.820	4.483
5 MHz, Top channel	2017.5	4.820	4.487
5 MHz with IB-IoT1, Low channel	2002.5	4.710	4.477
5 MHz with IB-IoT1, Mid channel	2010.0	4.740	4.470
5 MHz with IB-IoT1, Top channel	2017.5	4.740	4.468
5 MHz with IB-IoT2, Low channel	2002.5	4.750	4.493
5 MHz with IB-IoT2, Mid channel	2010.0	4.780	4.482
5 MHz with IB-IoT2, Top channel	2017.5	4.750	4.479

**Table 8.13-2:** Occupied bandwidth results for LTE 10 MHz channel

Remarks	Frequency, MHz	26 dB BW, MHz	99% OBW, MHz
10 MHz, Low channel	2005.0	9.530	8.946
10 MHz, Mid channel	2010.0	9.550	8.941
10 MHz, Top channel	2015.0	9.570	8.949
10 MHz with IoT, Low channel	2005.0	9.690	9.371
10 MHz with IoT, Mid channel	2010.0	9.710	9.377
10 MHz with IoT, Top channel	2015.0	9.690	9.377

Test data, continued

**Table 8.13-3:** Occupied bandwidth results for LTE 15 MHz channel

Remarks	Frequency, MHz	26 dB BW, MHz	99% OBW, MHz
15 MHz, Low channel	2007.5	14.150	13.402
15 MHz, Mid channel	2010.0	14.230	13.399
15 MHz, Top channel	2012.5	14.150	13.389
15 MHz with IoT, Low channel	2007.5	14.430	13.955
15 MHz with IoT, Mid channel	2010.0	14.350	13.970
15 MHz with IoT, Top channel	2012.5	14.350	13.951

**Table 8.13-4:** Occupied bandwidth results for LTE 20 MHz channel

Remarks	Frequency, MHz	26 dB BW, MHz	99% OBW, MHz
20 MHz, Mid channel	2010.0	18.820	17.856
20 MHz with IoT, Mid channel	2010.0	19.020	18.947

**Table 8.13-5:** Occupied bandwidth results for NR 5 MHz channel

Remarks	Frequency, MHz	26 dB BW, MHz	99% OBW, MHz
5 MHz, Low channel	2002.5	4.790	4.497
5 MHz, Mid channel	2010.0	4.840	4.484
5 MHz, Top channel	2017.5	4.840	4.500

**Table 8.13-6:** Occupied bandwidth results for NR 10 MHz channel

Remarks	Frequency, MHz	26 dB BW, MHz	99% OBW, MHz
10 MHz, Low channel	2005.0	9.740	9.285
10 MHz, Mid channel	2010.0	9.690	9.303
10 MHz, Top channel	2015.0	9.740	9.281

**Table 8.13-7:** Occupied bandwidth results for NR 15 MHz channel

Remarks	Frequency, MHz	26 dB BW, MHz	99% OBW, MHz
15 MHz, Low channel	2007.5	14.630	14.096
15 MHz, Mid channel	2010.0	14.730	14.101
15 MHz, Top channel	2012.5	14.630	14.106

**Table 8.13-8:** Occupied bandwidth results for NR 20 MHz channel

Remarks	Frequency, MHz	26 dB BW, MHz	99% OBW, MHz
20 MHz, Mid channel	2010.0	19.530	18.937

Test data, continued

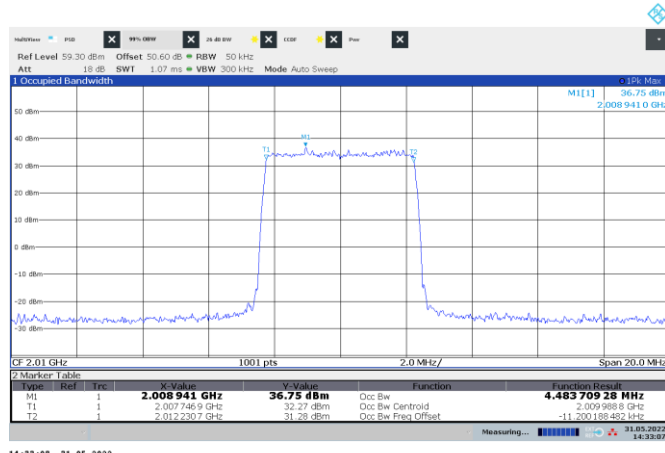


Figure 8.13-1: 99% Occupied bandwidth sample plot for LTE 5 MHz channel

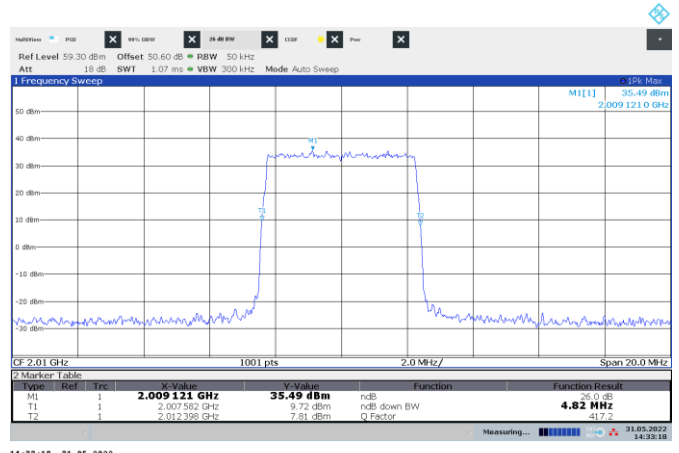


Figure 8.13-2: 26 dB bandwidth sample plot for LTE 5 MHz channel

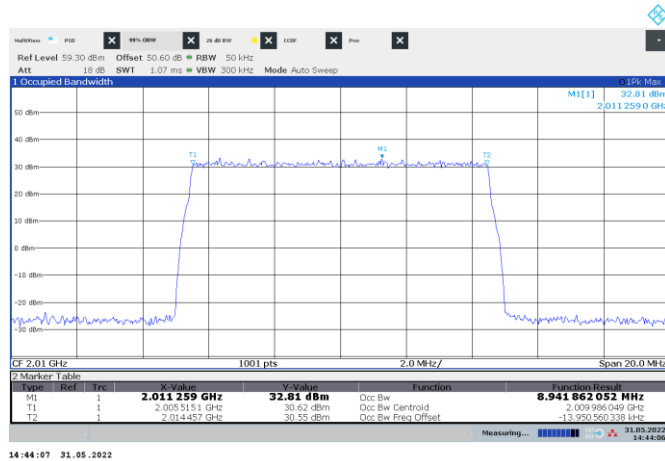


Figure 8.13-3: 99% Occupied bandwidth sample plot for LTE 10 MHz channel

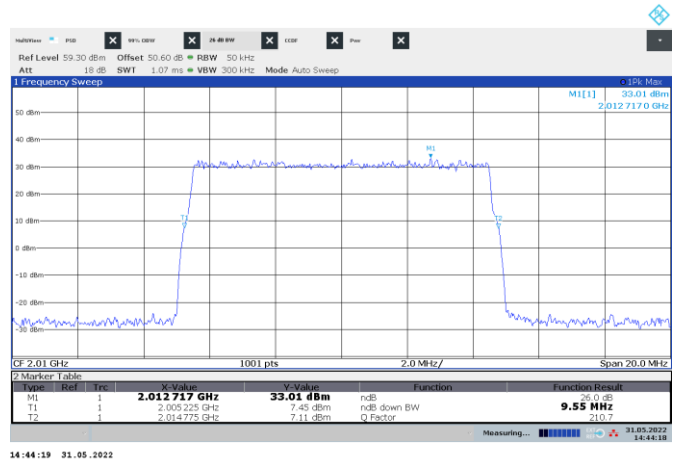


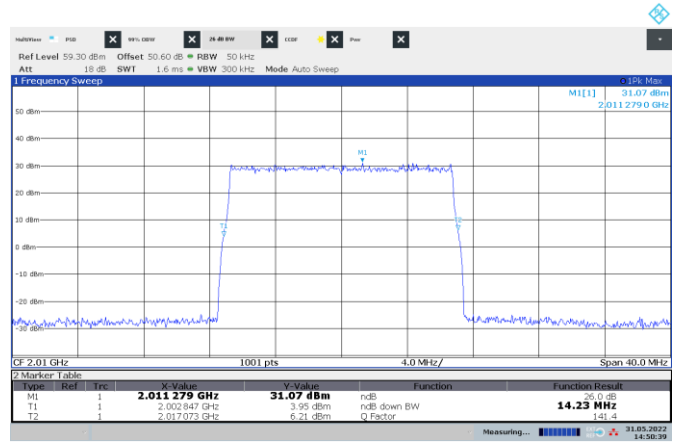
Figure 8.13-4: 26 dB bandwidth sample plot for LTE 10 MHz channel

Test data, continued



14:50:24 31.05.2022

Figure 8.13-5: 99% Occupied bandwidth sample plot for LTE 15 MHz channel



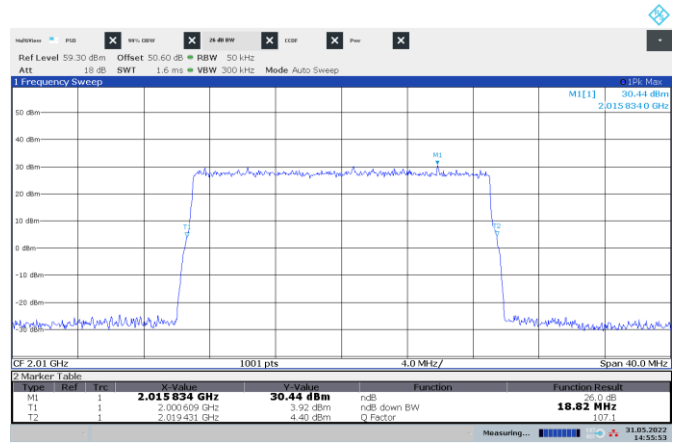
14:50:40 31.05.2022

Figure 8.13-6: 26 dB bandwidth sample plot for LTE 15 MHz channel



14:55:41 31.05.2022

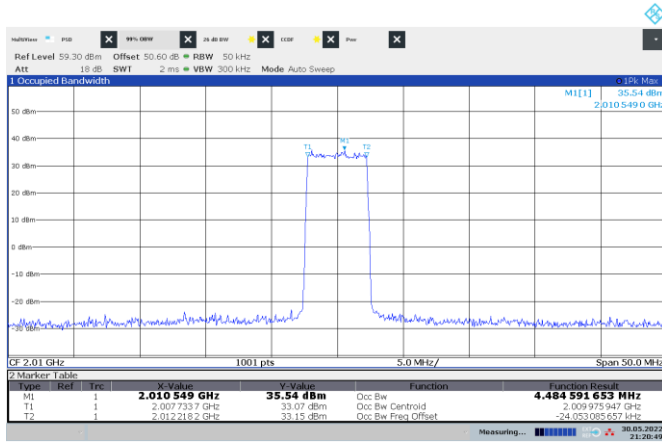
Figure 8.13-7: 99% Occupied bandwidth sample plot for LTE 20 MHz channel



14:55:53 31.05.2022

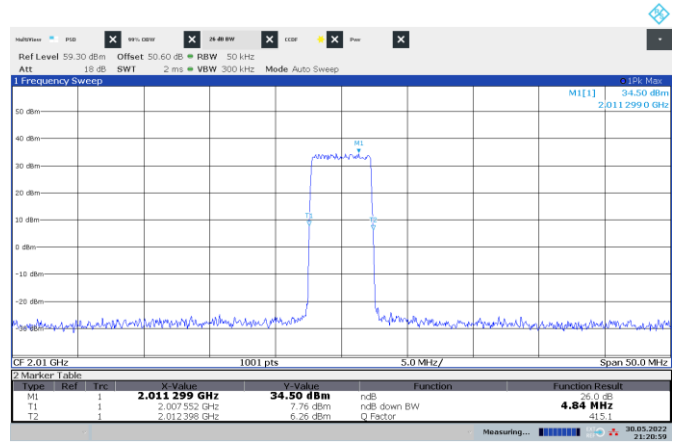
Figure 8.13-8: 26 dB bandwidth sample plot for LTE 20 MHz channel

Test data, continued



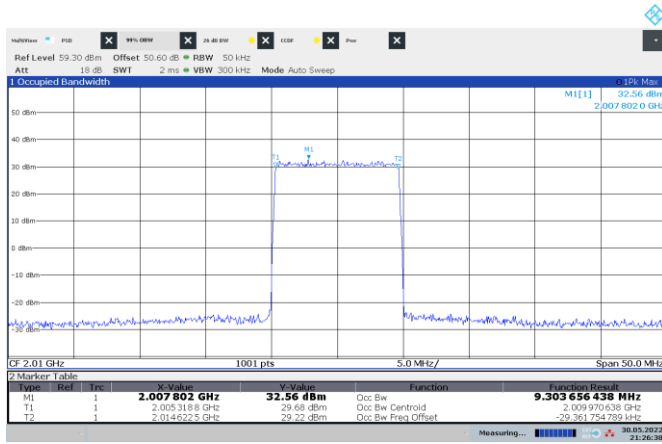
21:10:50 30.05.2022

Figure 8.13-9: 99% Occupied bandwidth sample plot for NR 5 MHz channel



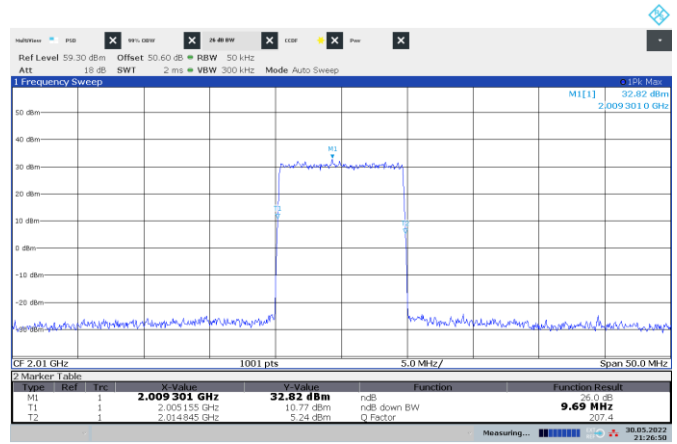
21:11:00 30.05.2022

Figure 8.13-10: 26 dB bandwidth sample plot for NR 5 MHz channel



21:16:38 30.05.2022

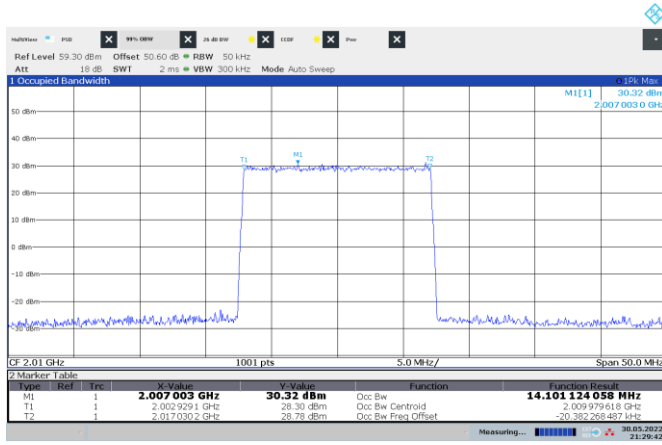
Figure 8.13-11: 99% Occupied bandwidth sample plot for NR 10 MHz channel



21:16:50 30.05.2022

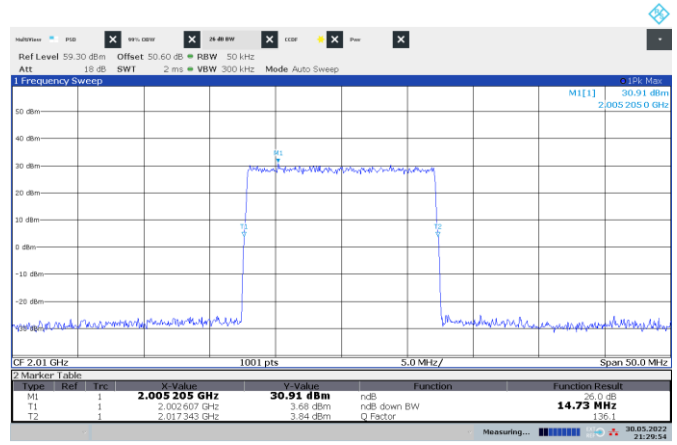
Figure 8.13-12: 26 dB bandwidth sample plot for NR 10 MHz channel

Test data, continued



21:19:42 30.05.2022

Figure 8.13-13: 99% Occupied bandwidth sample plot for NR 15 MHz channel



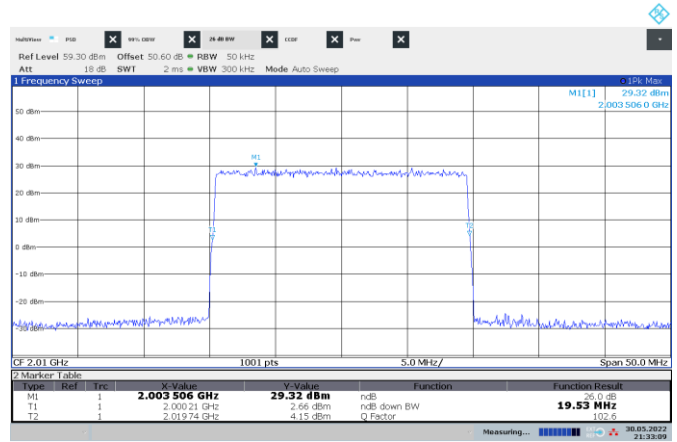
21:19:54 30.05.2022

Figure 8.13-14: 26 dB bandwidth sample plot for NR 15 MHz channel



21:13:52 30.05.2022

Figure 8.13-15: 99% Occupied bandwidth sample plot for NR 20 MHz channel

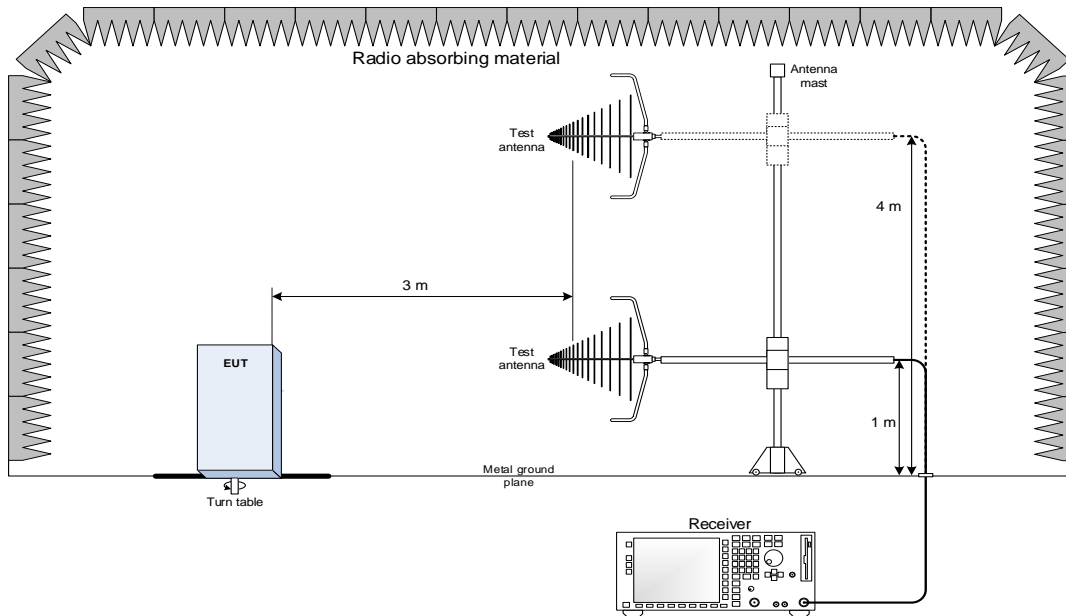


21:13:09 30.05.2022

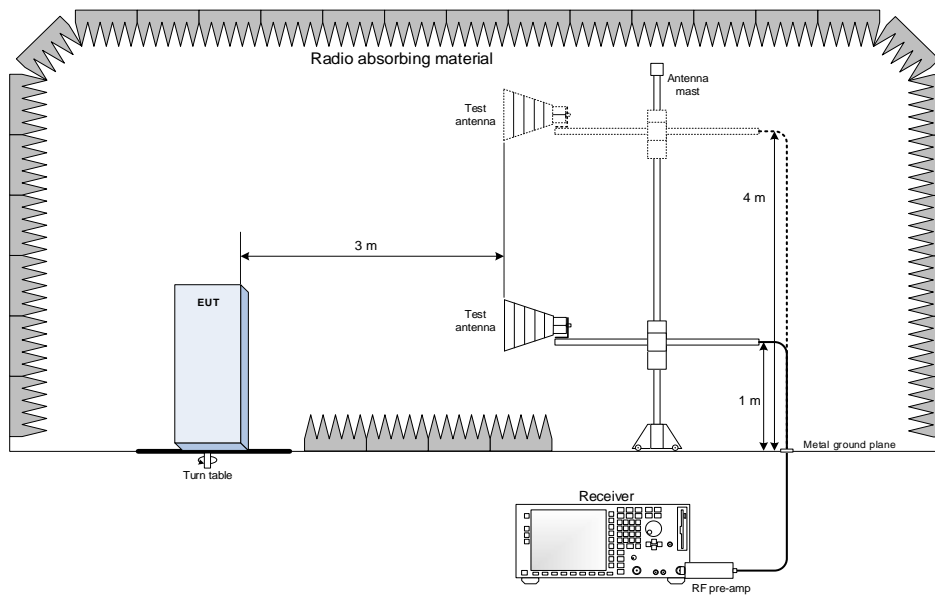
Figure 8.13-16: 26 dB bandwidth sample plot for NR 20 MHz channel

## 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 Antenna port measurements set-up

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