

Annex E



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Test report annex authorized:

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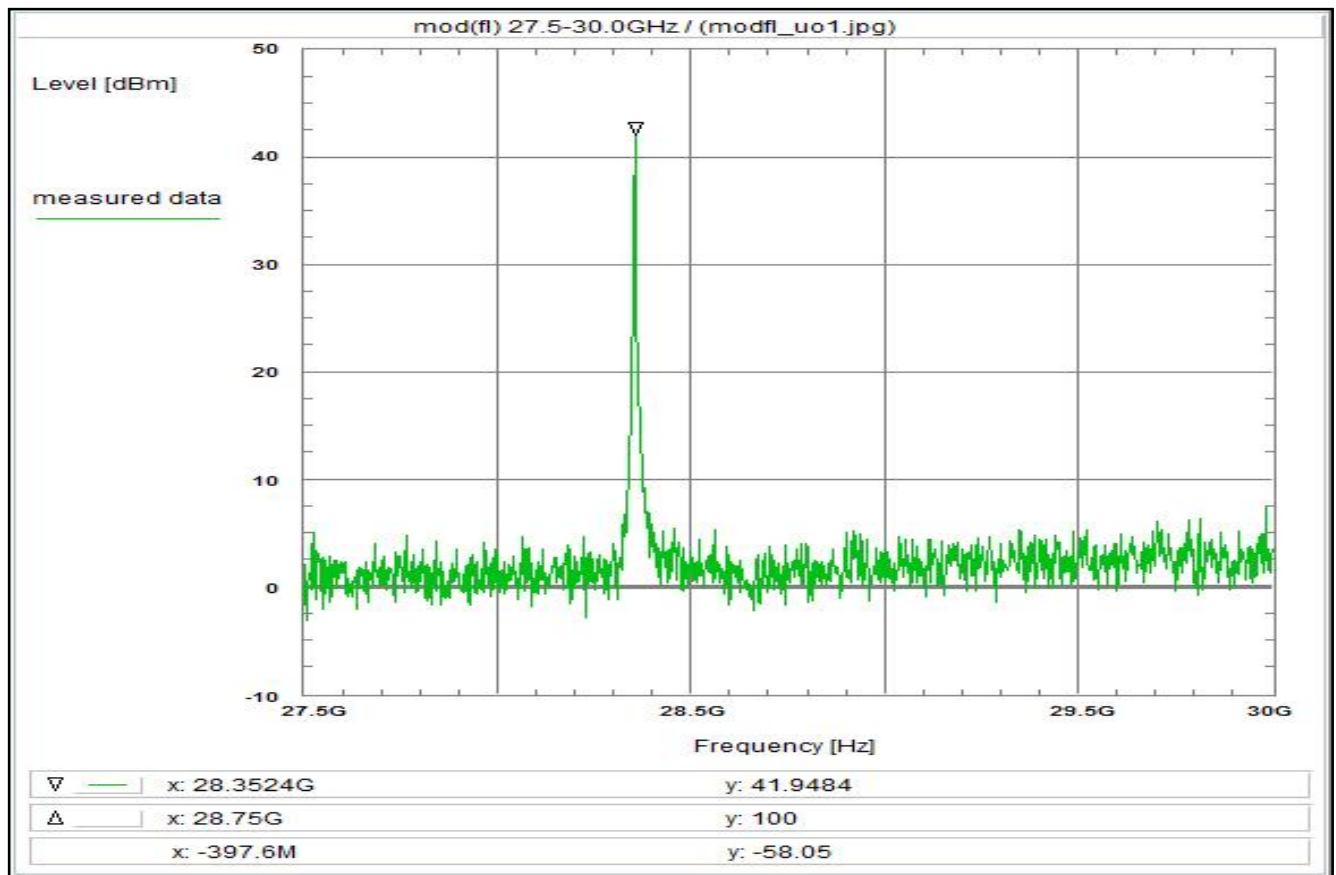
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2 Measurement results, FCC Part 25, SRSP-101

This chapter consists of 28 pages including this page.

Plot No. 1



Subclause: -/- Function test
 Modulated rf-carrier at the lower edge of the band (fl)
 Measurement within the band

Limit:
 no limits defined
 This test serves to verify the general function of the EUT and for orientation regarding to the spurious emissions which are expected within the band, furthermore for comparison of the actual power with the rated value at modulated carrier adjusted as close to the lower edge of the operating frequency band.

Test results:
 see plot (an explicit table was not generated)

Operating condition of DUT:
 operating condition 1, see test report chapter 6.4

Test setup:
 see test report chapter 7.2:

Test equipment:
 see test report chapter 7.2: A031, C107, R001

Remark:

Test result: Test passed

Environment condition:

Date & Time: Fri 29/May/2020 13:18:38
 Location: CTC advanced GmbH, Laboratory RC-SYS
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

Setup of measurement equipment:

Start frequency: 27.5 GHz
 Stop frequency: 30 GHz
 Center frequency: 28.75 GHz
 Frequency span: 2.5 GHz
 Resolution-BW: 100 kHz
 Video-BW: 300 kHz
 Input attenuation: 20 dB
 Trace-Mode: Clear Write
 Detector-Mode: Pos Peak

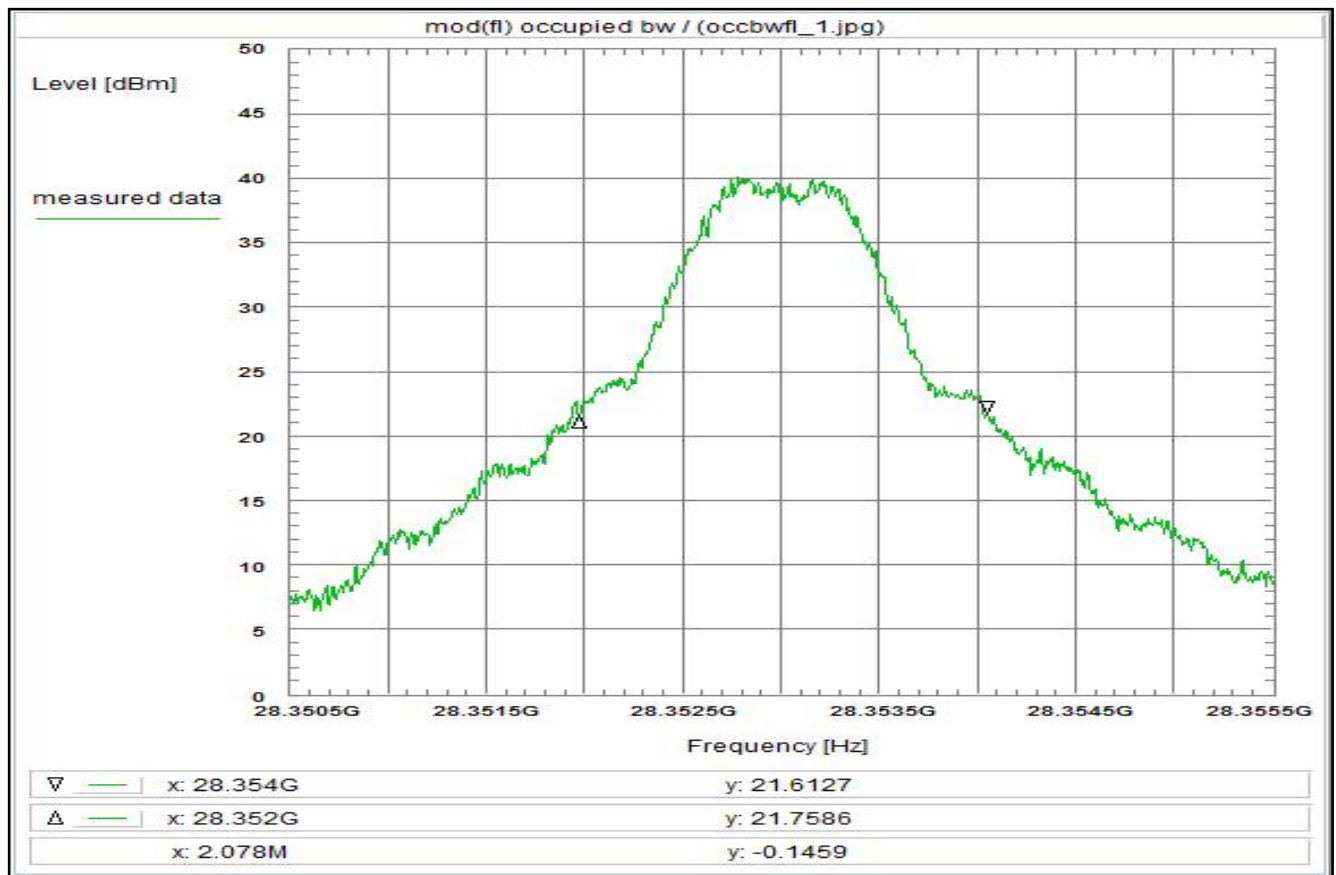
Correction:

Directional coupler	+ 0.0 dB
Coaxial cable (C107)	+ 5.8 dB
DUT-Antenna (on-axis)	+ 0.0 dBi
Test antenna (A031)	- 15.5 dB
BW correction factor	+ 0.0 dB
Atten. between HPA and feedhorn	+ 0.0 dB
Freefield attenuation (28.35GHz, 3.5m)	+ 72.4 dB
Additional attenuation	5.2 dB
TOTAL CORRECTION:	+ 67.9 dB

Remarks:

Test of general function and measurement for orientation

Plot No. 2



Subclause: -/- Function test
 Modulated rf-carrier at the lower edge of the band (f1)
 Determination of the occupied bandwidth

Limit:
 no limits defined

Test results:
 see plot (an explicit table was not generated)

Operating condition of DUT:
 operating condition 1, see test report chapter 6.4

Test setup:
 see test report chapter 7.2

Test equipment:
 see test report chapter 7.2: A031, C220, R001

Remark:

Test result: Test passed

Environment condition:

Date & Time: Wed 03/Jun/2020 17:46:14
 Location: CTC advanced GmbH, Laboratory RC-SYS
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

Setup of measurement equipment:

Start frequency: 28.3505 GHz
 Stop frequency: 28.3555 GHz
 Center frequency: 28.353 GHz
 Frequency span: 5 MHz
 Resolution-BW: 100 kHz
 Video-BW: 300 kHz
 Input attenuation: 6 dB
 Trace-Mode: Average
 Detector-Mode: Pos Peak

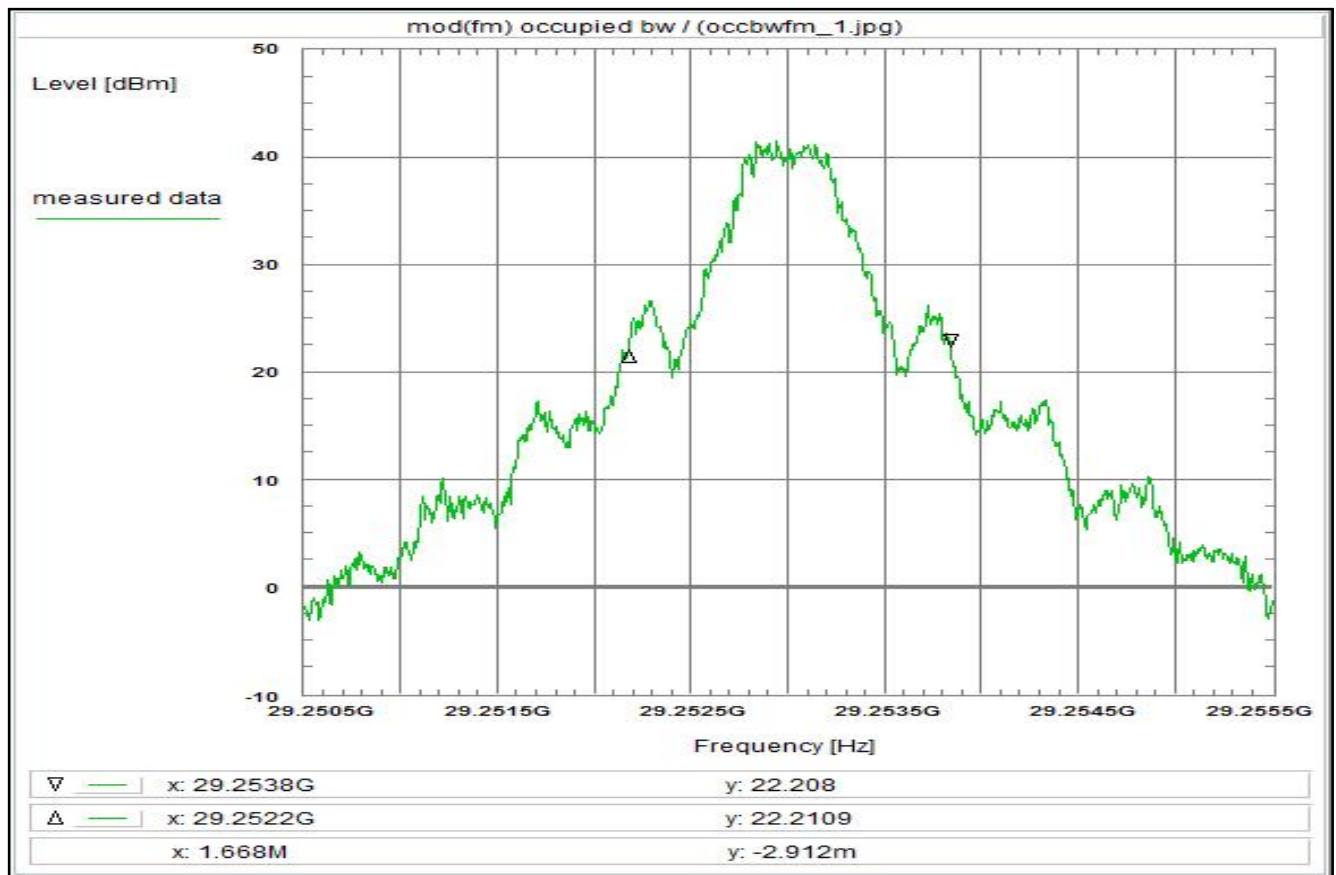
Correction:

Directional coupler	+ 0.0 dB
Coaxial cable (C220)	+ 3.9 dB
DUT-Antenna (on-axis)	+ 0.0 dBi
Test antenna (A031)	- 15.2 dB
BW correction factor	+ 0.0 dB
Atten. between HPA and feedhorn	+ 0.0 dB
Freefield attenuation (28.35GHz, 3m)	+ 71.0 dB
Additional attenuation	+ 5.4 dB
Circular Polarization	+ 3.0 dB
TOTAL CORRECTION:	+ 68.1 dB

Remarks:

Determination of the occupied bandwidth. Average measurement.
 The measured value is about 2 MHz (delta marker)
 (according to the definition: 99% of the total mean power)
 The internal function of the analyzer was used for determination.

Plot No. 3



Subclause: -/- Function test
 Modulated rf-carrier in the middle of the band (fm)
 Determination of the occupied bandwidth

Limit:
 no limits defined

Test results:
 see plot (an explicit table was not generated)

Operating condition of DUT:
 operating condition 1, see test report chapter 6.4

Test setup:
 see test report chapter 7.2

Test equipment:
 see test report chapter 7.2: A031, C220, R001

Remark:

Test result: Test passed

Environment condition:

Date & Time: Wed 03/Jun/2020 17:48:33
 Location: CTC advanced GmbH, Laboratory RC-SYS
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

Setup of measurement equipment:

Start frequency: 29.2505 GHz
 Stop frequency: 29.2555 GHz
 Center frequency: 29.253 GHz
 Frequency span: 5 MHz
 Resolution-BW: 100 kHz
 Video-BW: 300 kHz
 Input attenuation: 6 dB
 Trace-Mode: Average
 Detector-Mode: Pos Peak

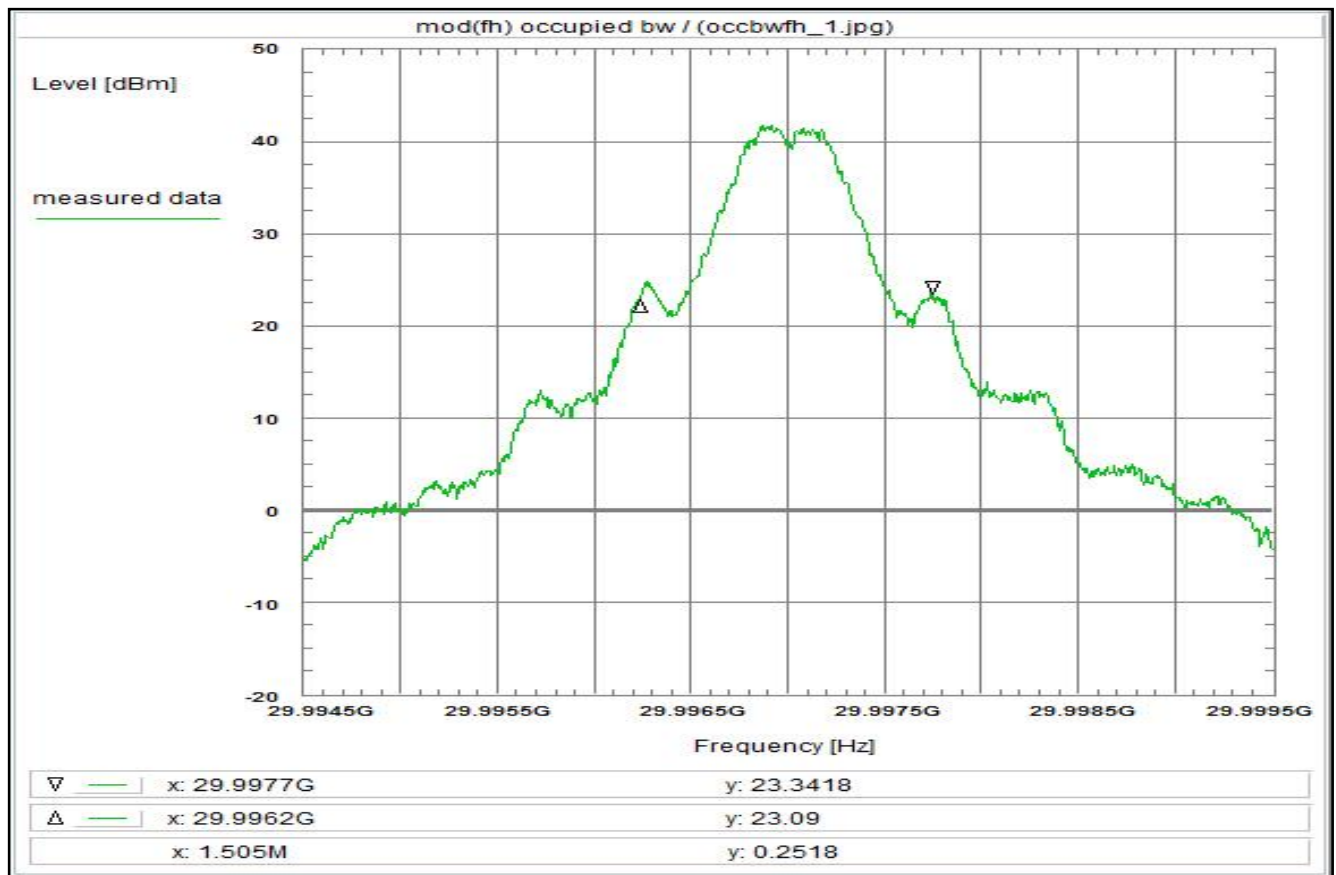
Correction:

Directional coupler	+ 0.0 dB
Coaxial cable (C220)	+ 4.0 dB
DUT-Antenna (on-axis)	+ 0.0 dBi
Test antenna (A031)	- 15.8 dB
BW correction factor	+ 0.0 dB
Atten. between HPA and feedhorn	+ 0.0 dB
Freefield attenuation (28.35GHz, 3m)	+ 71.0 dB
Additional attenuation	+ 5.4 dB
Circular Polarization	+ 3.0 dB
TOTAL CORRECTION:	+ 67.6 dB

Remarks:

Determination of the occupied bandwidth. Average measurement.
 The measured value is about 1.66 MHz (delta marker)
 (according to the definition: 99% of the total mean power)
 The internal function of the analyzer was used for determination.

Plot No. 4



Subclause: -/- Function test
 Modulated rf-carrier at the upper edge of the band (fh)
 Determination of the occupied bandwidth

Limit:
 no limits defined

Test results:
 see plot (an explicit table was not generated)

Operating condition of DUT:
 operating condition 1, see test report chapter 6.4

Test setup:
 see test report chapter 7.2

Test equipment:
 see test report chapter 7.2: A031, C220, R001

Remark:

Test result: Test passed

Environment condition:

Date & Time: Wed 03/Jun/2020 17:50:44
 Location: CTC advanced GmbH, Laboratory RC-SYS
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

Setup of measurement equipment:

Start frequency: 29.9945 GHz
 Stop frequency: 29.9995 GHz
 Center frequency: 29.997 GHz
 Frequency span: 5 MHz
 Resolution-BW: 100 kHz
 Video-BW: 300 kHz
 Input attenuation: 6 dB
 Trace-Mode: Average
 Detector-Mode: Pos Peak

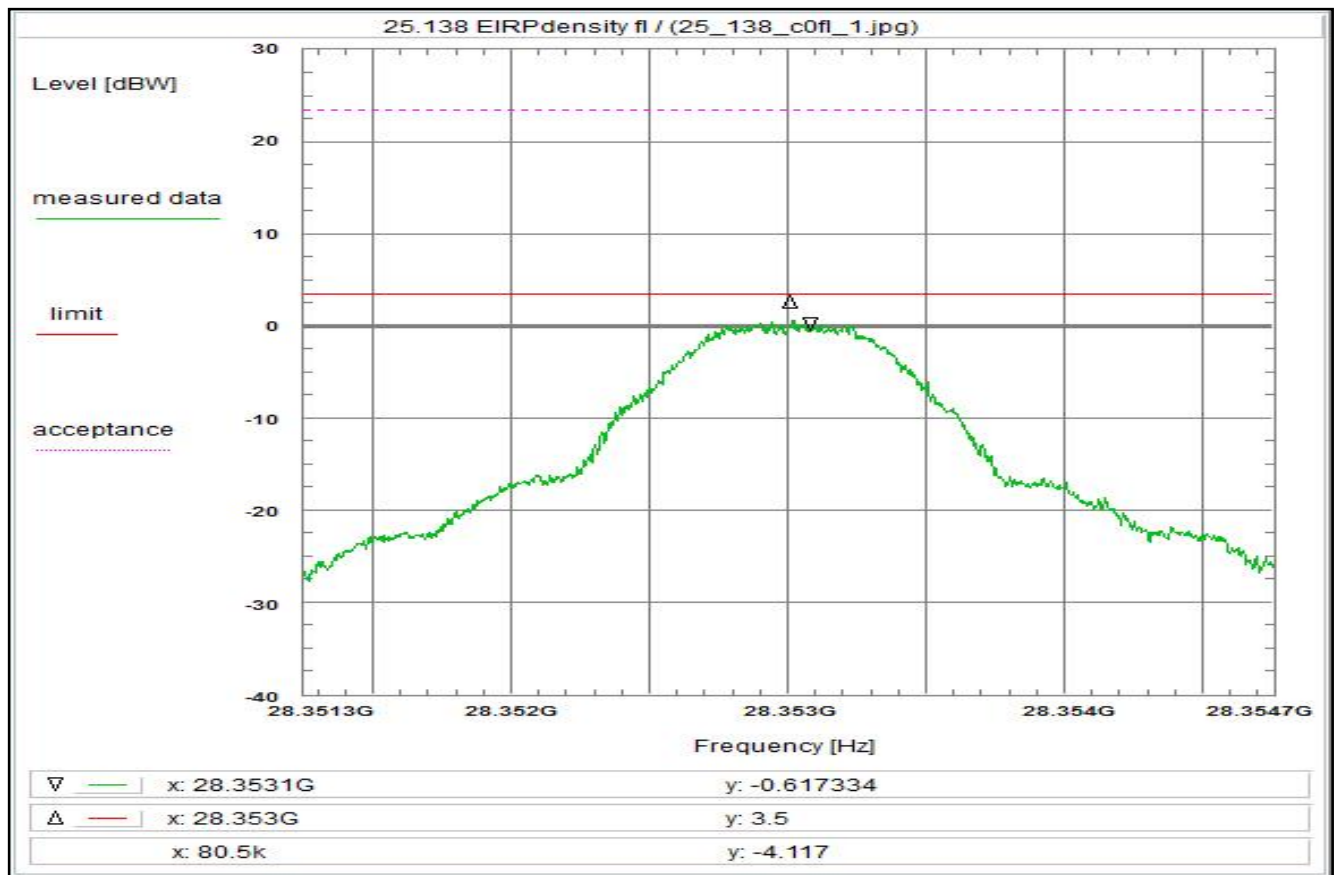
Correction:

Directional coupler	+ 0.0 dB
Coaxial cable (C220)	+ 4.1 dB
DUT-Antenna (on-axis)	+ 0.0 dBi
Test antenna (A031)	- 15.8 dB
BW correction factor	+ 0.0 dB
Atten. between HPA and feedhorn	+ 0.0 dB
Freefield attenuation (28.35GHz, 3m)	+ 71.0 dB
Additional attenuation	+ 5.4 dB
Circular Polarization	+ 3.0 dB
TOTAL CORRECTION:	+ 67.7 dB

Remarks:

Determination of the occupied bandwidth. Average measurement.
 The measured value is about 1.5 MHz (delta marker)
 (according to the definition: 99% of the total mean power)
 The internal function of the analyzer was used for determination.

Plot No. 5



Subclause: 25.218 Off-axis EIRP spectral density (co-, cross-polar) within the band
 Modulated rf-carrier at the lower edge of the band (fl)
 Measurement of the wanted signal within 5 * occupied bandwidth

Limit:

Limit acc. to §25.218: 32.5-25log2° dBW/MHz
 -ant.-pattern envelope: -(29-25log2° dBi)
 ==>: 3.5 dBW/MHz (copolar)
 resp.: 3.5 dBW/MHz (crosspolar)

The subtraction of the terms results in a constant limit.

The antenna gain is set to zero in the correction data for this calculation.

§25.204(e)(3) For stations employing uplink power control, the values in paragraphs (a)(1), (2), and (4) of §25.218 may be exceeded by up to 20 dB under conditions of uplink fading due to precipitation.

Test results:

see plot (an explicit table was not generated)

Operating condition of DUT:

operating condition 1, see test report chapter 6.4

Test setup:

see test report chapter 7.2

Test equipment:

see test report chapter 7.2: A031, C220, R001

Remark:

Test result: Test passed

Environment condition:

Date & Time: Wed 03/Jun/2020 17:01:47
 Location: CTC advanced GmbH, Laboratory RC-SYS
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

Setup of measurement equipment:

Start frequency: 28.35125 GHz
 Stop frequency: 28.35475 GHz
 Center frequency: 28.353 GHz
 Frequency span: 3.5 MHz
 Resolution-BW: 100 kHz
 Video-BW: 10 kHz
 Input attenuation: 6 dB
 Trace-Mode: Average
 Detector-Mode: AVG

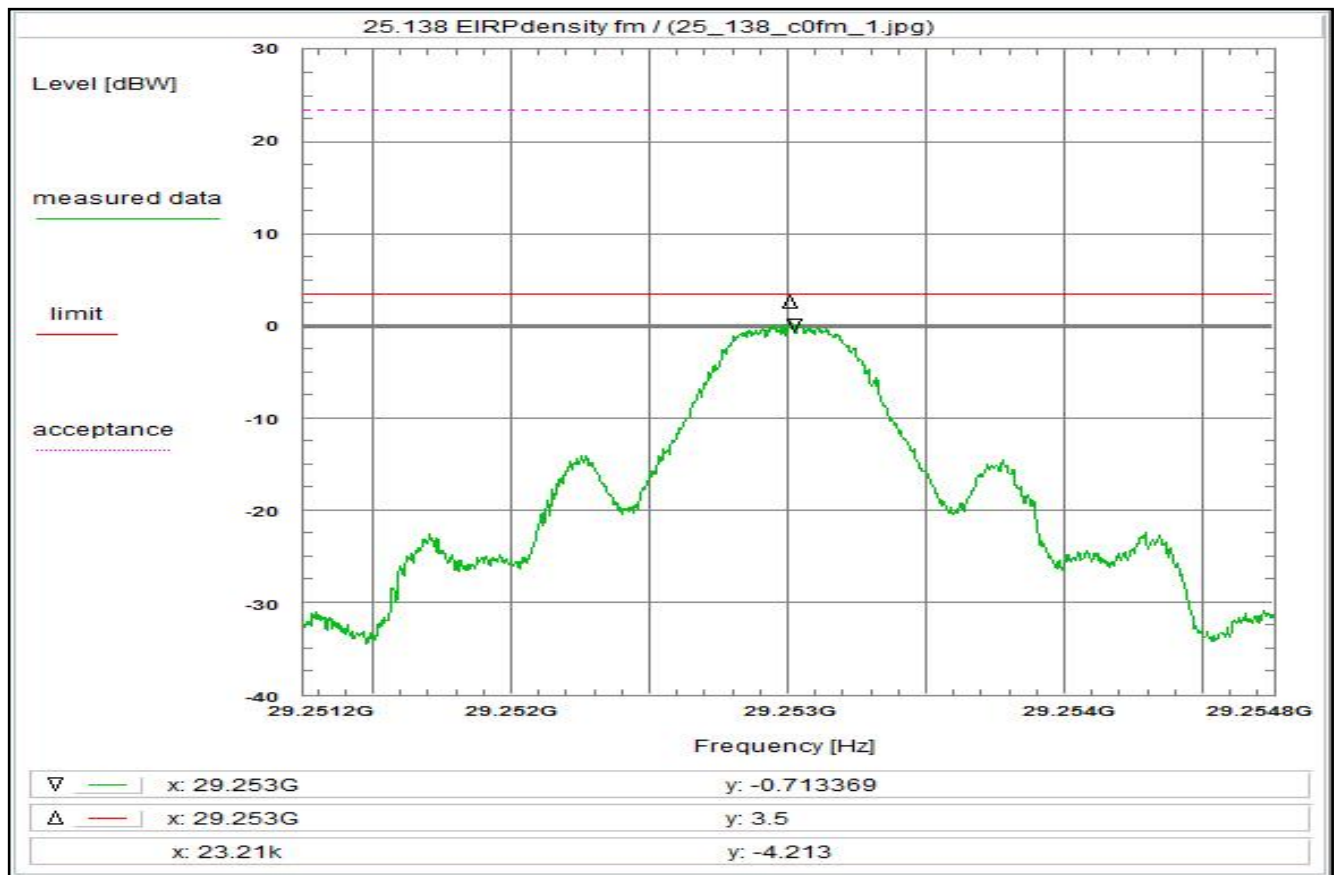
Correction:

Directional coupler	+ 0.0 dB
Coaxial cable (C220)	+ 3.9 dB
DUT-Antenna (see under limit)	- 21.0 dBi
Test antenna (A031)	- 15.2 dB
BW correction factor (100k -> 1M)	+ 10.0 dB
Atten. between HPA and feedhorn	- 0.0 dB
Freefield attenuation (28.35GHz, 3m)	+ 71.0 dB
Additional attenuation	+ 5.2 dB
Circular Polarization	+ 3.0 dB
TOTAL CORRECTION:	+ 56.9 dB

Remarks:

The envelope curves for the antenna patterns ('worst case') are used for this calculation - the actual antenna patterns have to fulfill these requirements (co- and crosspolar envelope curves).
 See the separate plot after the measurement plots, too.
 Measurement with 30 kHz resolution filter and noise averaging.

Plot No. 6



Subclause: 25.218 Off-axis EIRP spectral density (co-, cross-polar) within the band
 Modulated rf-carrier in the middle of the band (fm)
 Measurement of the wanted signal within 5 * occupied bandwidth

Limit:

Limit acc. to §25.218: 32.5-25log2° dBW/MHz
 -ant.-pattern envelope: -(29-25log2° dBi)
 ==>: 3.5 dBW/MHz (copolar)
 resp.: 3.5 dBW/MHz (crosspolar)

The subtraction of the terms results in a constant limit.

The antenna gain is set to zero in the correction data for this calculation.

§25.204(e)(3) For stations employing uplink power control, the values in paragraphs (a)(1), (2), and (4) of §25.218 may be exceeded by up to 20 dB under conditions of uplink fading due to precipitation.

Test results:

see plot (an explicit table was not generated)

Operating condition of DUT:

operating condition 1, see test report chapter 6.4

Test setup:

see test report chapter 7.2

Test equipment:

see test report chapter 7.2: A031, C220, R001

Remark:

Test result: Test passed

Environment condition:

Date & Time: Wed 03/Jun/2020 17:03:29
 Location: CTC advanced GmbH, Laboratory RC-SYS
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

Setup of measurement equipment:

Start frequency: 29.25125 GHz
 Stop frequency: 29.25475 GHz
 Center frequency: 29.253 GHz
 Frequency span: 3.5 MHz
 Resolution-BW: 100 kHz
 Video-BW: 10 kHz
 Input attenuation: 6 dB
 Trace-Mode: Average
 Detector-Mode: AVG

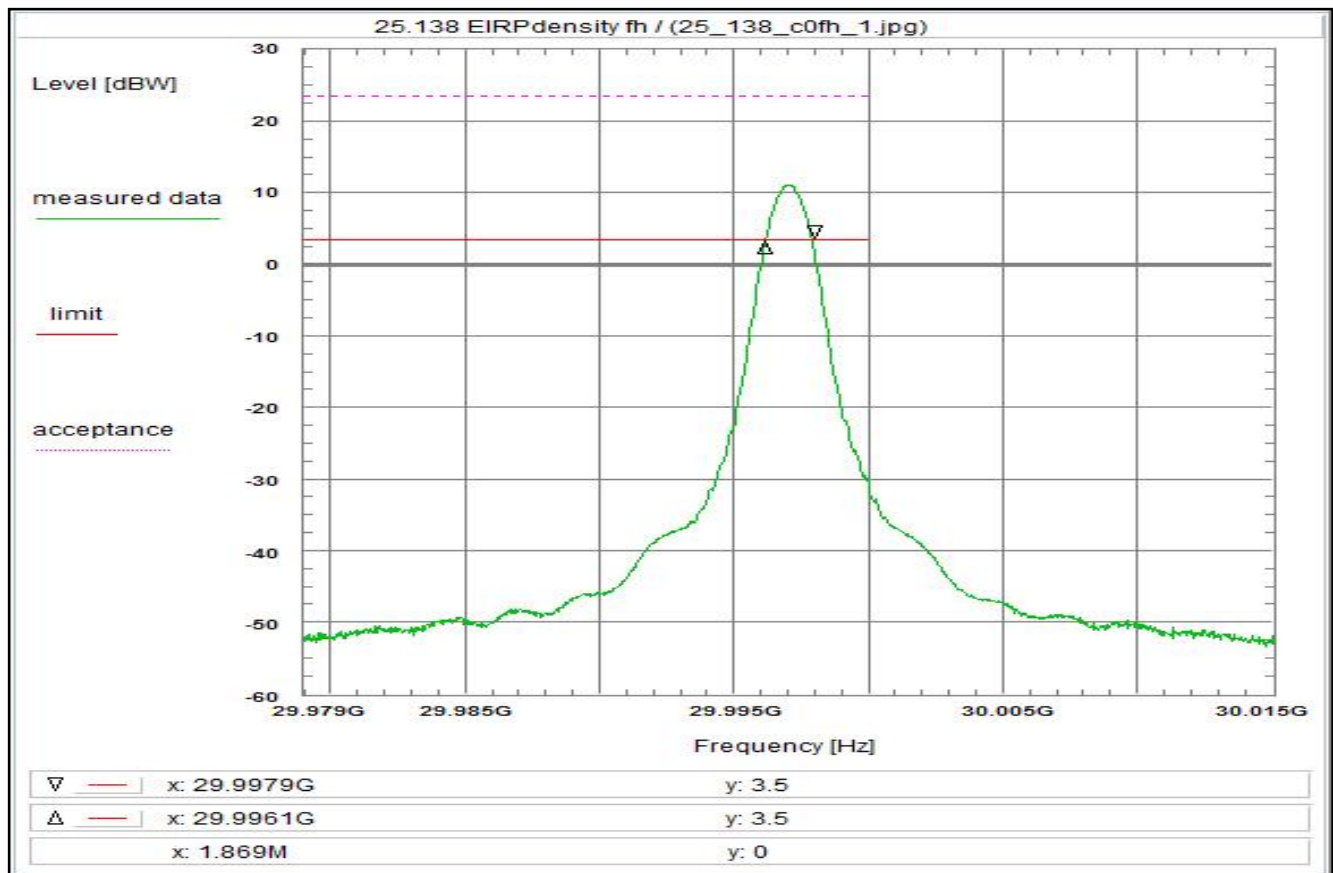
Correction:

Directional coupler	+ 0.0 dB
Coaxial cable (C220)	+ 4.0 dB
DUT-Antenna (see under limit)	- 21.0 dBi
Test antenna (A031)	- 15.8 dB
BW correction factor (100k -> 1M)	+ 10.0 dB
Atten. between HPA and feedhorn	- 0.0 dB
Freefield attenuation (28.35GHz, 3m)	+ 71.0 dB
Additional attenuation	+ 5.2 dB
Circular Polarization	+ 3.0 dB
TOTAL CORRECTION:	+ 56.4 dB

Remarks:

The envelope curves for the antenna patterns ('worst case') are used for this calculation - the actual antenna patterns have to fulfill these requirements (co- and crosspolar envelope curves).
 See the separate plot after the measurement plots, too.
 Measurement with 30 kHz resolution filter and noise averaging.

Plot No. 7



Subclause: 25.218 Off-axis EIRP spectral density (co-, cross-polar) within the band
 Modulated rf-carrier at the upper edge of the band (fh)
 Measurement of the wanted signal within 5° occupied bandwidth

Limit:

Limit acc. to §25.218: 32.5-25log2° dBW/MHz
 -ant.-pattern envelope: -(29-25log2° dBi)
 ==>: 3.5 dBW/MHz (copolar)
 resp.: 3.5 dBW/MHz (crosspolar)

The subtraction of the terms results in a constant limit.

The antenna gain is set to zero in the correction data for this calculation.

§25.204(e)(3) For stations employing uplink power control, the values in paragraphs (a)(1), (2), and (4) of §25.218 may be exceeded by up to 20 dB under conditions of uplink fading due to precipitation.

Test results:

see plot (an explicit table was not generated)

Operating condition of DUT:

operating condition 1, see test report chapter 6.4

Test setup:

see test report chapter 7.2

Test equipment:

see test report chapter 7.2: A031, C220, R001

Remark:

Test result: Test passed

Environment condition:

Date & Time: Wed 03/Jun/2020 16:45:02
 Location: CTC advanced GmbH, Laboratory RC-SYS
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

Setup of measurement equipment:

Start frequency: 29.979 GHz
 Stop frequency: 30.015 GHz
 Center frequency: 29.997 GHz
 Frequency span: 36 MHz
 Resolution-BW: 1 MHz
 Video-BW: 100 kHz
 Input attenuation: 6 dB
 Trace-Mode: Clear Write
 Detector-Mode: AVG

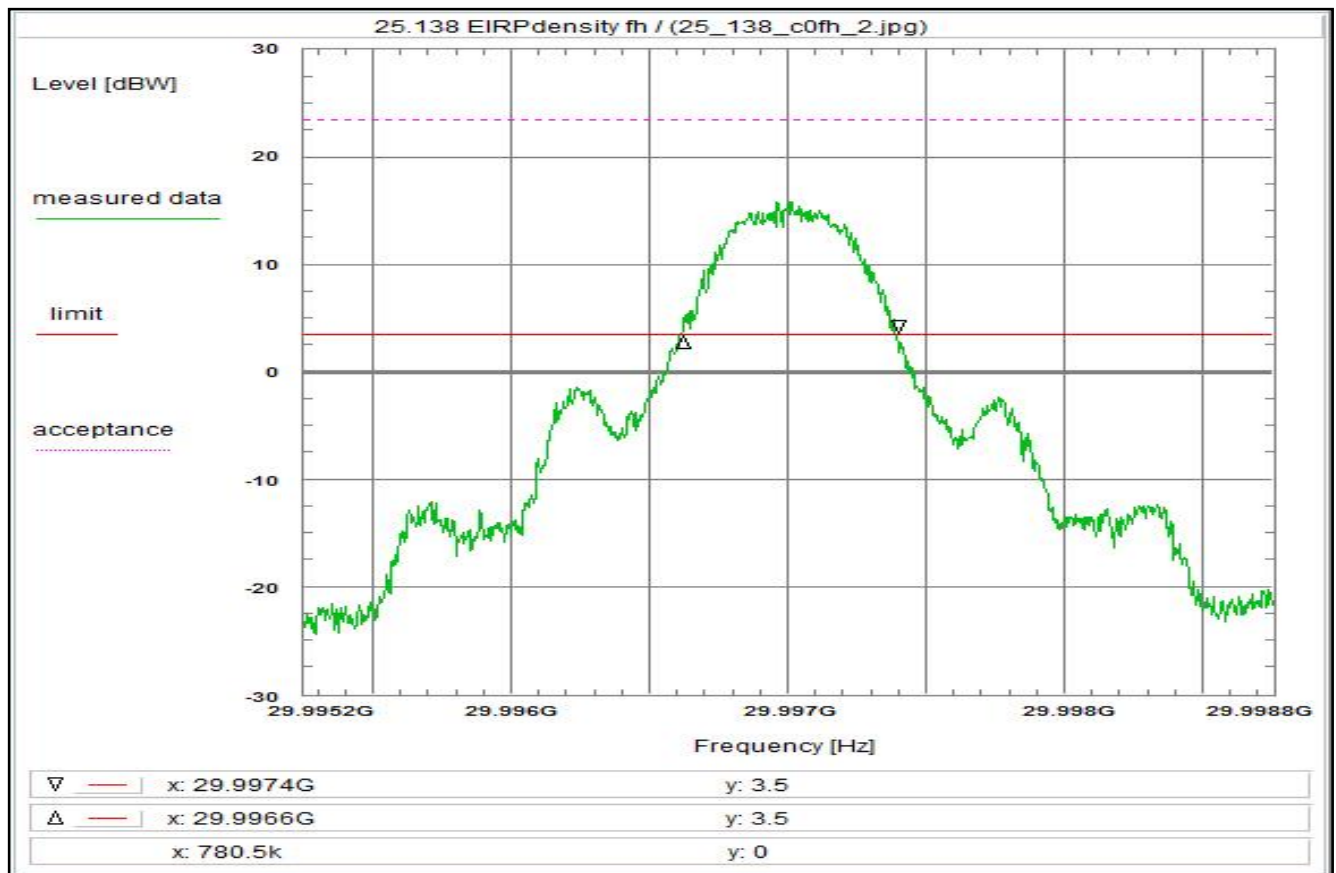
Correction:

Directional coupler	+ 0.0 dB
Coaxial cable (C220)	+ 4.1 dB
DUT-Antenna (see under limit)	+ 0.0 dBi
Test antenna (A031)	- 15.9 dB
BW correction factor	+ 0.0 dB
Atten. between HPA and feedhorn	- 0.0 dB
Freefield attenuation	+ 72.5 dB
TOTAL CORRECTION:	+ 60.7 dB

Remarks:

The envelope curves for the antenna patterns ('worst case') are used for this calculation - the actual antenna patterns have to fulfill these requirements (co- and crosspolar envelope curves).
 See the separate plot after the measurement plots, too.
 Measurement with 30 kHz resolution filter and noise averaging.

Plot No. 8



Subclause: 25.218 Off-axis EIRP spectral density (co-, cross-polar) within the band
 Modulated rf-carrier at the upper edge of the band (fh)
 Measurement of the wanted signal within 5° occupied bandwidth

Limit:

Limit acc. to §25.218: 32.5-25log2° dBW/MHz
 -ant.-pattern envelope: -(29-25log2° dBi)
 ==>: 3.5 dBW/MHz (copolar)
 resp.: 3.5 dBW/MHz (crosspolar)

The subtraction of the terms results in a constant limit.

The antenna gain is set to zero in the correction data for this calculation.

§25.204(e)(3) For stations employing uplink power control, the values in paragraphs (a)(1), (2), and (4) of §25.218 may be exceeded by up to 20 dB under conditions of uplink fading due to precipitation.

Test results:

see plot (an explicit table was not generated)

Operating condition of DUT:

operating condition 1, see test report chapter 6.4

Test setup:

see test report chapter 7.2

Test equipment:

see test report chapter 7.2: A031, C220, R001

Remark:

Test result: Test passed

Environment condition:

Date & Time: Wed 03/Jun/2020 16:54:22
 Location: CTC advanced GmbH, Laboratory RC-SYS
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

Setup of measurement equipment:

Start frequency: 29.99525 GHz
 Stop frequency: 29.99875 GHz
 Center frequency: 29.997 GHz
 Frequency span: 3.5 MHz
 Resolution-BW: 100 kHz
 Video-BW: 10 kHz
 Input attenuation: 6 dB
 Trace-Mode: Average
 Detector-Mode: AVG

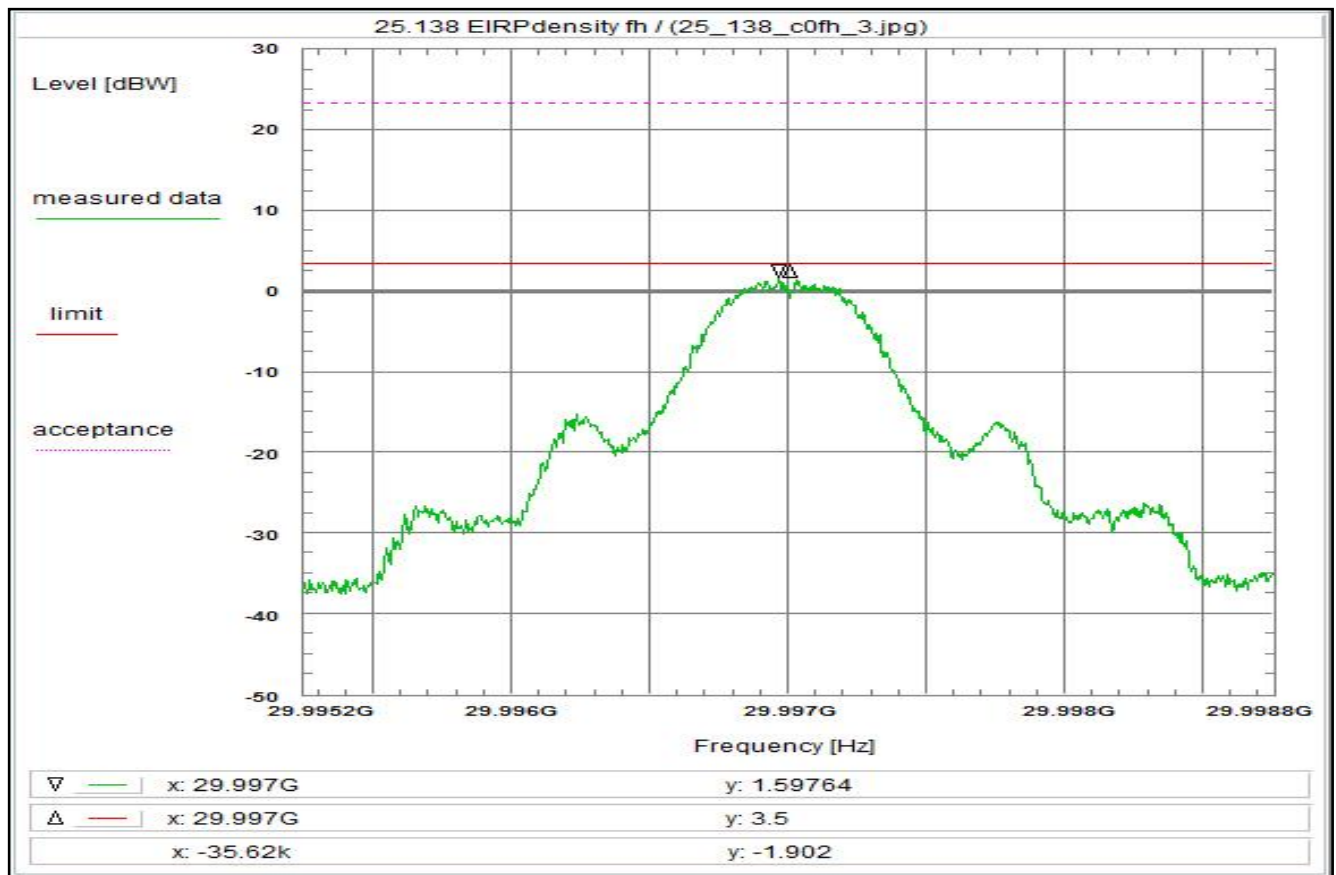
Correction:

Directional coupler	+ 0.0 dB
Coaxial cable (C220)	+ 4.1 dB
DUT-Antenna (see under limit)	+ 0.0 dBi
Test antenna (A031)	- 15.8 dB
BW correction factor (100k -> 1M)	+ 10.0 dB
Atten. between HPA and feedhorn	- 0.0 dB
Freefield attenuation	+ 72.5 dB
TOTAL CORRECTION:	+ 70.8 dB

Remarks:

The envelope curves for the antenna patterns ('worst case') are used for this calculation - the actual antenna patterns have to fulfill these requirements (co- and crosspolar envelope curves).
 See the separate plot after the measurement plots, too.
 Measurement with 30 kHz resolution filter and noise averaging.

Plot No. 9



Subclause: 25.218 Off-axis EIRP spectral density (co-, cross-polar) within the band
 Modulated rf-carrier at the upper edge of the band (fh)
 Measurement of the wanted signal within 5 * occupied bandwidth

Limit:

Limit acc. to §25.218: 32.5-25log2° dBW/MHz
 -ant.-pattern envelope: -(29-25log2° dBi)
 ==>: 3.5 dBW/MHz (copolar)
 resp.: 3.5 dBW/MHz (crosspolar)

The subtraction of the terms results in a constant limit.

The antenna gain is set to zero in the correction data for this calculation.

§25.204(e)(3) For stations employing uplink power control, the values in paragraphs (a)(1), (2), and (4) of §25.218 may be exceeded by up to 20 dB under conditions of uplink fading due to precipitation.

Test results:

see plot (an explicit table was not generated)

Operating condition of DUT:

operating condition 1, see test report chapter 6.4

Test setup:

see test report chapter 7.2

Test equipment:

see test report chapter 7.2: A031, C220, R001

Remark:

Test result: Test passed

Environment condition:

Date & Time: Wed 03/Jun/2020 17:05:33
 Location: CTC advanced GmbH, Laboratory RC-SYS
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

Setup of measurement equipment:

Start frequency: 29.99525 GHz
 Stop frequency: 29.99875 GHz
 Center frequency: 29.997 GHz
 Frequency span: 3.5 MHz
 Resolution-BW: 100 kHz
 Video-BW: 10 kHz
 Input attenuation: 6 dB
 Trace-Mode: Average
 Detector-Mode: AVG

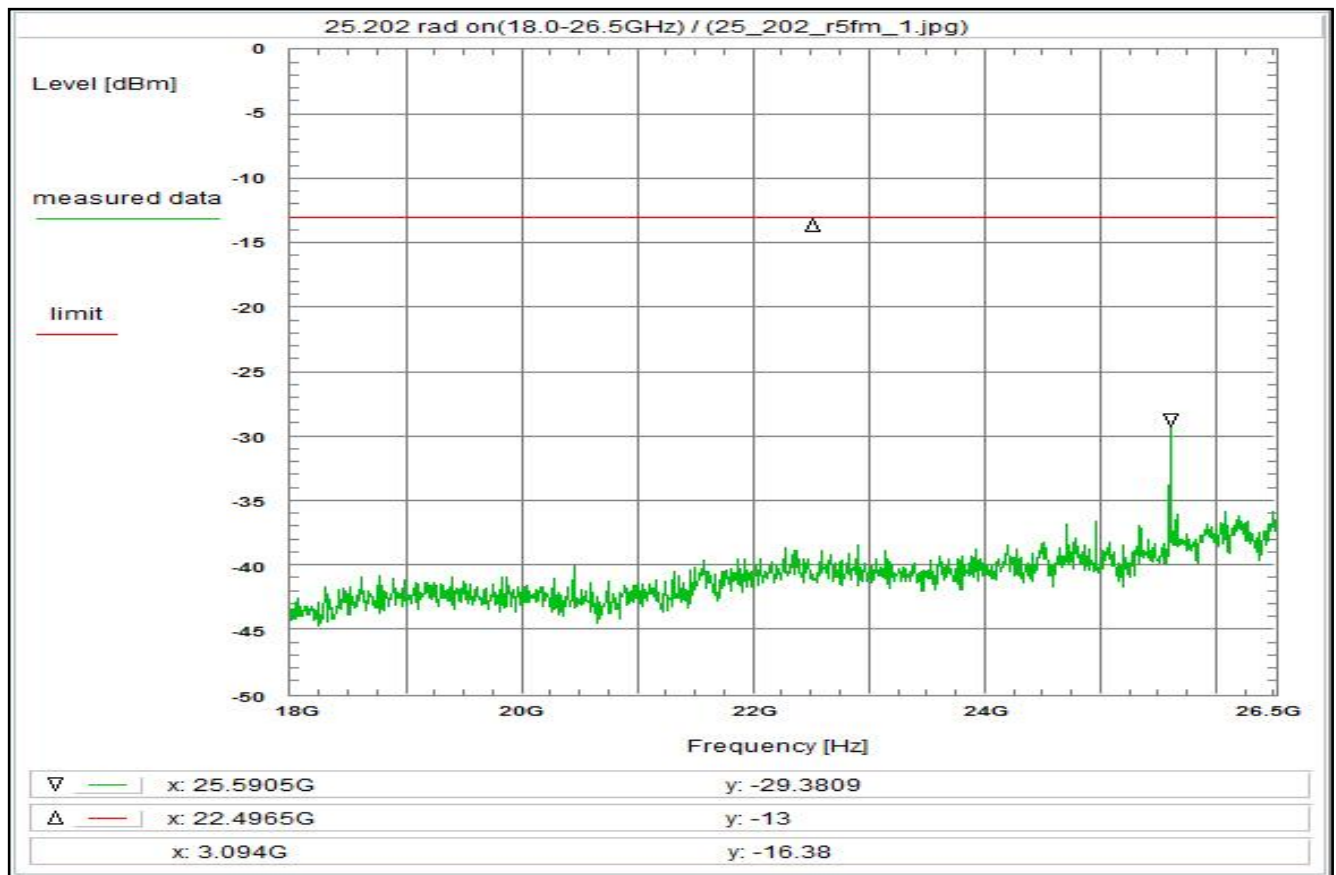
Correction:

Directional coupler	+ 0.0 dB
Coaxial cable (C220)	+ 4.1 dB
DUT-Antenna (see under limit)	- 21.0 dBi
Test antenna (A031)	- 15.8 dB
BW correction factor (100k -> 1M)	+ 10.0 dB
Atten. between HPA and feedhorn	- 0.0 dB
Freefield attenuation (28.35GHz, 3m)	+ 71.0 dB
Additional attenuation	+ 5.4 dB
Circular Polarization	+ 3.0 dB
TOTAL CORRECTION:	+ 56.7 dB

Remarks:

The envelope curves for the antenna patterns ('worst case') are used for this calculation - the actual antenna patterns have to fulfill these requirements (co- and crosspolar envelope curves).
 See the separate plot after the measurement plots, too.
 Measurement with 30 kHz resolution filter and noise averaging.

Plot No. 10



Subclause: 25.202 Emission limitations
 Modulated rf-carrier in the middle of the band (fm)
 Radiation coming out of DUT-cabinet(s): 18.0 GHz - 26.5 GHz

Limit:
 Limit acc. to §25.202): -13.0 dBm

Test results:
 see plot (an explicit table was not generated)

Operating condition of DUT:
 operating condition 1, see test report chapter 6.4

Test setup:
 see test report chapter 7.2:

Test equipment:
 see test report chapter 7.2: A019, C107, R001

Remark:

Test result: Test passed

Environment condition:

Date & Time: Fri 29/May/2020 15:25:26
 Location: CTC advanced GmbH, Laboratory RC-SYS
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

Setup of measurement equipment:

Start frequency: 18 GHz
 Stop frequency: 26.5 GHz
 Center frequency: 22.25 GHz
 Frequency span: 8.5 GHz
 Resolution-BW: 1 MHz
 Video-BW: 3 MHz
 Input attenuation: 10 dB
 Trace-Mode: Max-Hold
 Detector-Mode: AVG

Correction:

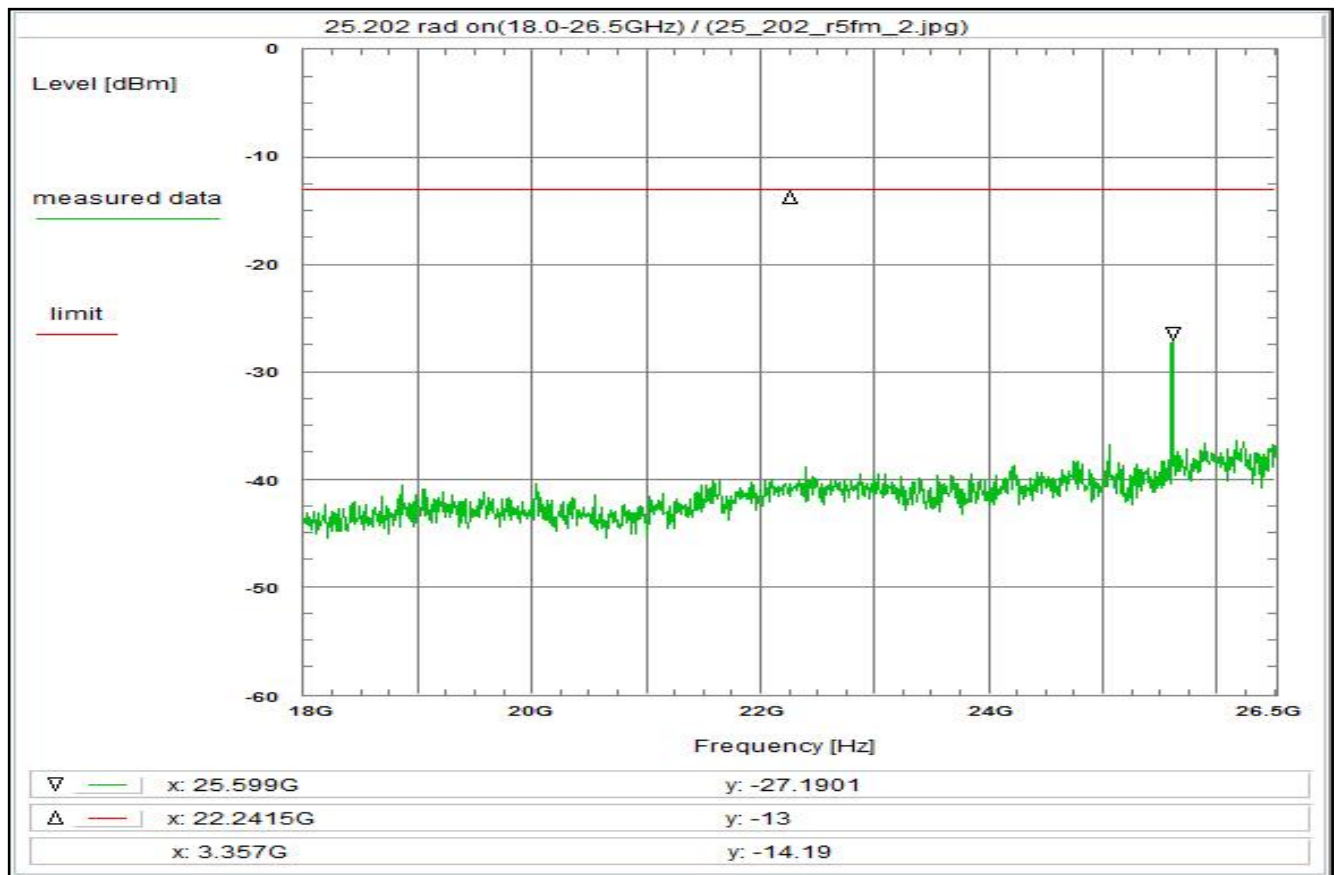
Directional coupler	+ 0.0 dB
Coaxial cable (C107)	+ 5.0 dB
DUT-Antenna (see under limit)	+ 0.0 dBi
Test antenna (A019)	- 19.3 dB
BW correction factor	+ 0.0 dB
Atten. between HPA and feedhorn	- 0.0 dB
Freefield attenuation (22.25GHz, 0.3m)	+ 48.9 dB
Additional attenuation	+ 0.0 dB
Circular Polarization	+ 0.0 dB
TOTAL CORRECTION:	+ 34.6 dB

Remarks:

Carrier-on state / Carrier in the middle of the band (fm)
 Measurement for orientation with a measuring antenna
 close to the DUT-cabinets (about 10.3 m distance).
 If any critical spurious radiations are detected a measurement
 in an exactly defined distance will be carried out.

Carrier frequency visible due to radiated measurement

Plot No. 11



Subclause: 25.202 Emission limitations
 Modulated rf-carrier in the middle of the band (fm)
 Radiation coming out of DUT-cabinet(s): 18.0 GHz - 26.5 GHz

Limit:
 Limit acc. to §25.202): -13.0 dBm

Test results:
 see plot (an explicit table was not generated)

Operating condition of DUT:
 operating condition 1, see test report chapter 6.4

Test setup:
 see test report chapter 7.2:

Test equipment:
 see test report chapter 7.2: R001, C107, A019

Remark:

Test result: Test passed

Environment condition:

Date & Time: Fri 29/May/2020 15:27:56
 Location: CTC advanced GmbH, Laboratory RC-SYS
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

Setup of measurement equipment:

Start frequency: 18 GHz
 Stop frequency: 26.5 GHz
 Center frequency: 22.25 GHz
 Frequency span: 8.5 GHz
 Resolution-BW: 1 MHz
 Video-BW: 3 MHz
 Input attenuation: 10 dB
 Trace-Mode: Max-Hold
 Detector-Mode: AVG

Correction:

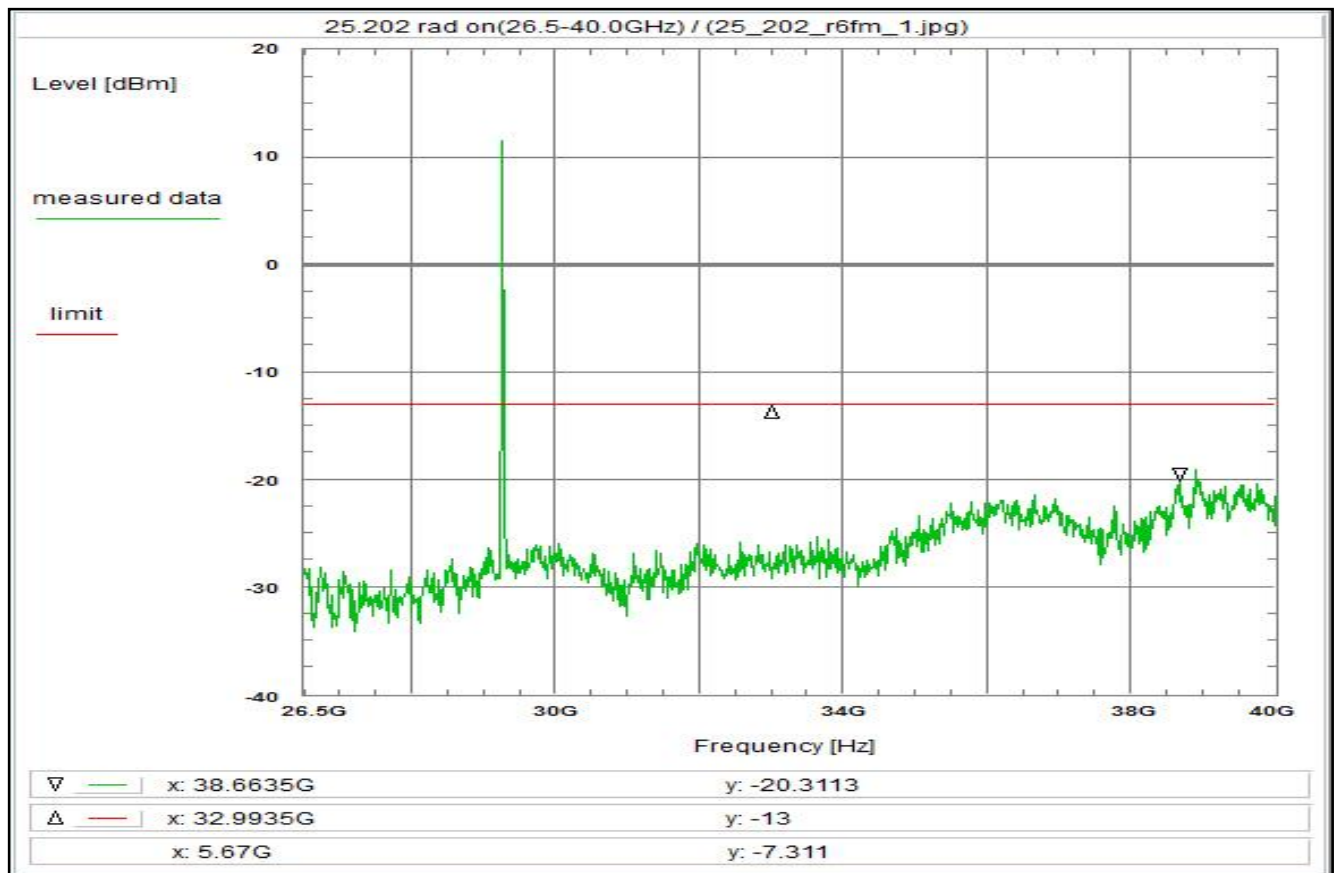
Directional coupler + 0.0 dB
 Coaxial cable (C107) + 5.0 dB
 DUT-Antenna (see under limit) + 0.0 dBi
 Test antenna (A019) - 19.3 dB
 BW correction factor + 0.0 dB
 Atten. between HPA and feedhorn - 0.0 dB
 Freefield attenuation (22.25GHz, 0.3m) + 48.9 dB
 Additional attenuation + 0.0 dB
 Circular Polarization + 0.0 dB
 TOTAL CORRECTION: + 34.6 dB

Remarks:

Carrier-on state / Carrier in the middle of the band (fm)
 Measurement for orientation with a measuring antenna close to the DUT-cabinets (about 1m distance).
 If any critical spurious radiations are detected a measurement in an exactly defined distance will be carried out.

Carrier frequency visible due to radiated measurement

Plot No. 12



Subclause: 25.202 Emission limitations
 Modulated rf-carrier in the middle of the band (fm)
 Radiation coming out of DUT-cabinet(s): 26.5 GHz - 40.0 GHz

Limit:
 Limit acc. to §25.202): -13.0 dBm

Test results:
 see plot (an explicit table was not generated)

Operating condition of DUT:
 operating condition 1, see test report chapter 6.4

Test setup:
 see test report chapter 7.2:

Test equipment:
 see test report chapter 7.2: A031, C107, R001

Remark:

Test result: Test passed

Environment condition:

Date & Time: Fri 29/May/2020 14:07:23
 Location: CTC advanced GmbH, Laboratory RC-SYS
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

Setup of measurement equipment:

Start frequency: 26.5 GHz
 Stop frequency: 40 GHz
 Center frequency: 33.25 GHz
 Frequency span: 13.5 GHz
 Resolution-BW: 1 MHz
 Video-BW: 3 MHz
 Input attenuation: 10 dB
 Trace-Mode: Max-Hold
 Detector-Mode: AVG

Correction:

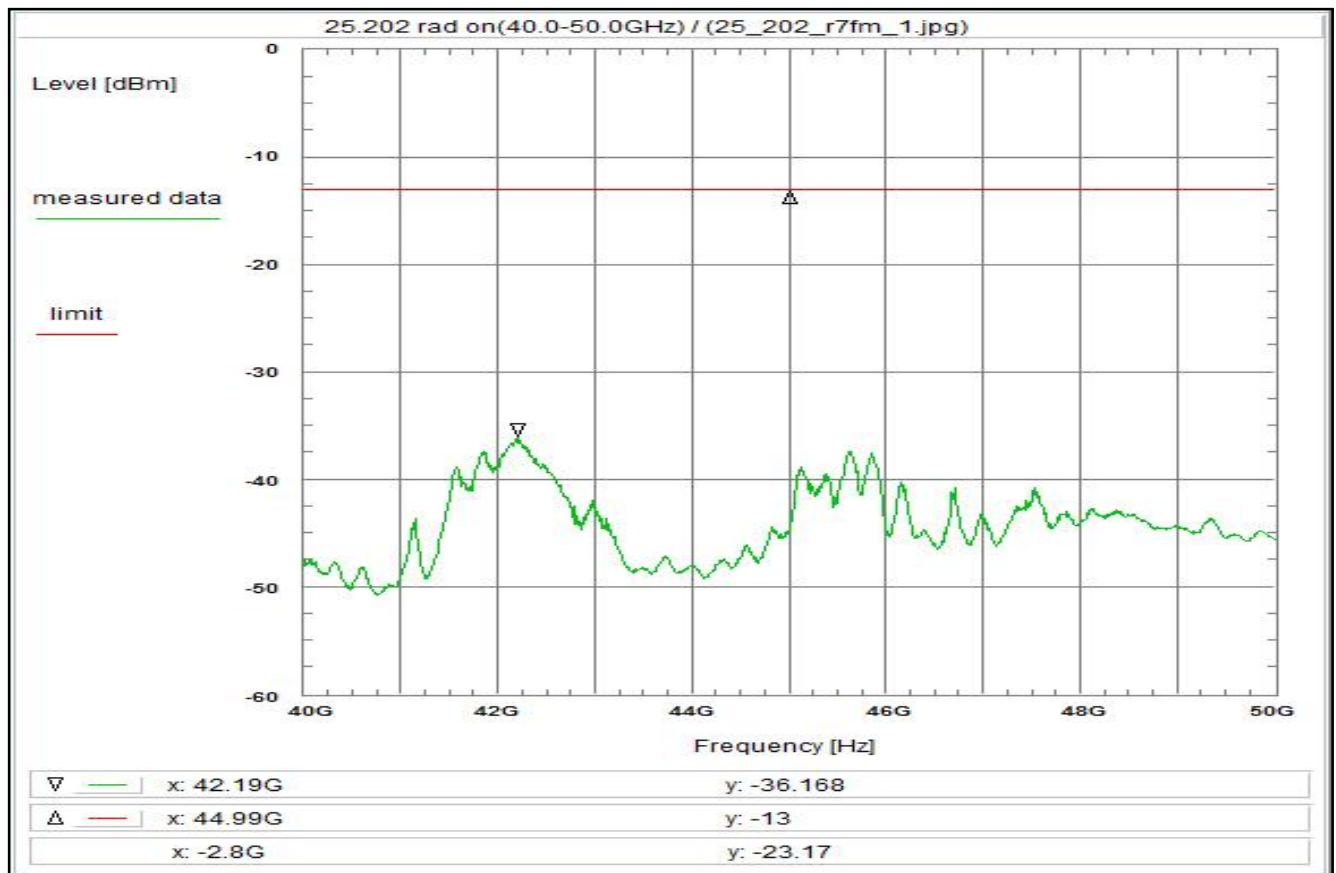
Directional coupler	+ 0.0 dB
Coaxial cable (C107)	+ 6.3 dB
DUT-Antenna (see under limit)	+ 0.0 dBi
Test antenna (A031)	- 16.2 dB
BW correction factor	+ 0.0 dB
Atten. between HPA and feedhorn	- 0.0 dB
Freefield attenuation (33.25GHz, 0.2m)	+ 48.9 dB
Additional attenuation	+ 5.2 dB
Circular Polarization	+ 3.0 dB
TOTAL CORRECTION:	+ 47.2 dB

Remarks:

Carrier-on state / Carrier in the middle of the band (fm)
 Measurement for orientation with a measuring antenna close to the DUT-cabinets (about 0.2 m distance).
 If any critical spurious radiations are detected a measurement in an exactly defined distance will be carried out.

Carrier frequency visible due to radiated measurement

Plot No. 13



Subclause: 25.202 Emission limitations
 Modulated rf-carrier in the middle of the band (fm)
 Radiation coming out of DUT-cabinet(s): 40.0 GHz - 50.0 GHz

Limit:
 Limit acc. to §25.202): -13.0 dBm

Test results:
 see plot (an explicit table was not generated)

Operating condition of DUT:
 operating condition 1, see test report chapter 6.4

Test setup:
 see test report chapter 7.2:

Test equipment:
 see test report chapter 7.2: A023, C107, R001

Remark:

Test result: Test passed

Environment condition:

Date & Time: Fri 29/May/2020 15:34:22
 Location: CTC advanced GmbH, Laboratory RC-SYS
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

Setup of measurement equipment:

Start frequency: 40 GHz
 Stop frequency: 50 GHz
 Center frequency: 45 GHz
 Frequency span: 10 GHz
 Resolution-BW: 1 MHz
 Video-BW: 3 MHz
 Input attenuation: 10 dB
 Trace-Mode: Max-Hold
 Detector-Mode: AVG

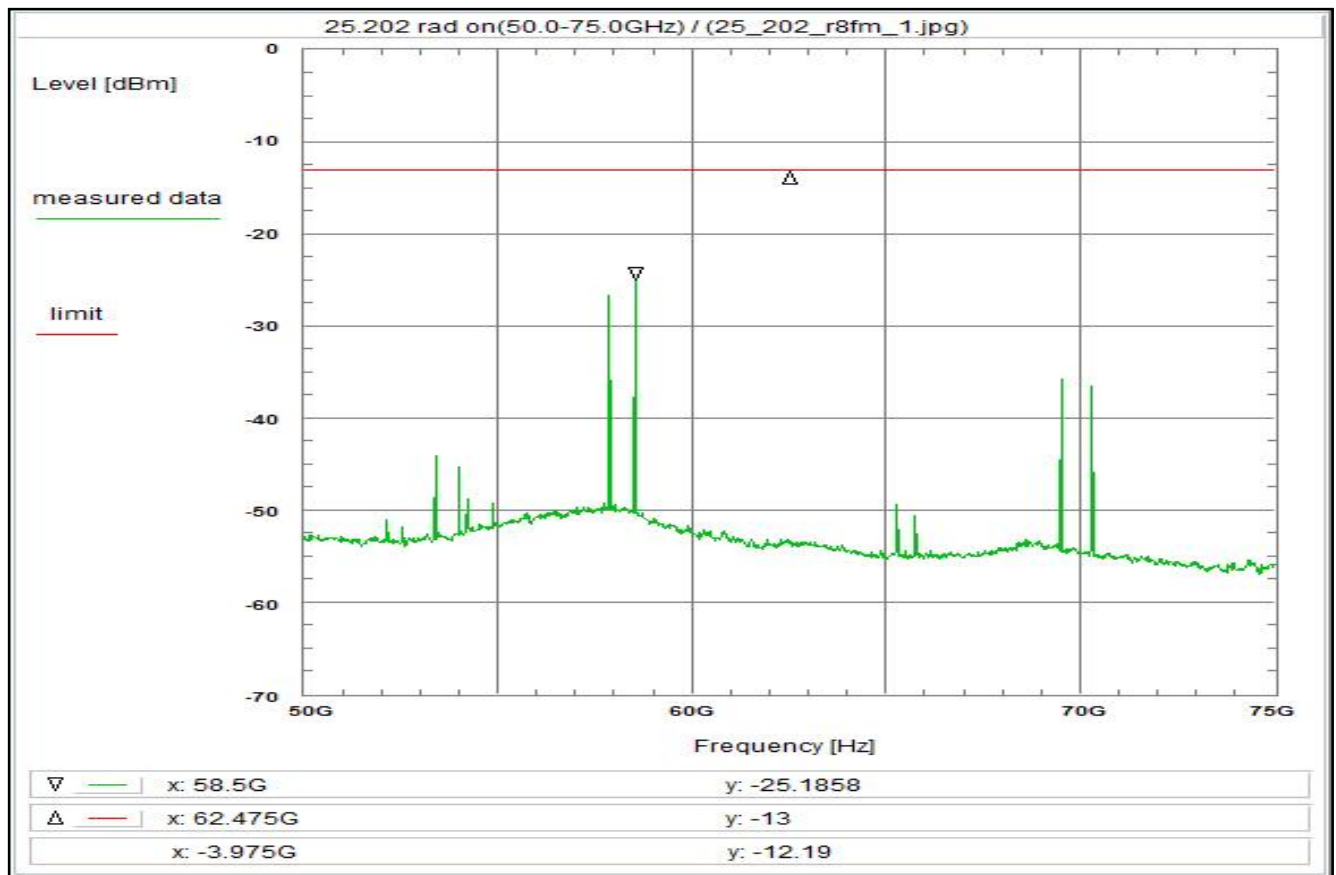
Correction:

Directional coupler + 0.0 dB
 Coaxial cable (C107) + 7.4 dB
 DUT-Antenna (see under limit) + 0.0 dBi
 Test antenna (A023) - 18.9 dB
 BW correction factor + 0.0 dB
 Atten. between HPA and feedhorn - 0.0 dB
 Freefield attenuation (45.00GHz, 0.1m) + 45.5 dB
 Additional attenuation + 0.0 dB
 Circular Polarization + 0.0 dB
 TOTAL CORRECTION: + 34.0 dB

Remarks:

Carrier-on state / Carrier in the middle of the band (fm)
 Measurement for orientation with a measuring antenna
 close to the DUT-cabinets (about 0.1m distance).
 If any critical spurious radiations are detected a measurement
 in an exactly defined distance will be carried out.

Plot No. 14



Subclause: 25.202 Emission limitations
 Modulated rf-carrier in the middle of the band (fm)
 Radiation coming out of DUT-cabinet(s): 50.0 GHz - 75.0 GHz

Limit:
 Limit acc. to §25.202): -13.0 dBm

Test results:
 see plot (an explicit table was not generated)

Operating condition of DUT:
 operating condition 1, see test report chapter 6.4

Test setup:
 see test report chapter 7.2:

Test equipment:
 see test report chapter 7.2: A025, C107, R001, R025

Remark:

Test result: Test passed

Environment condition:

Date & Time: Fri 29/May/2020 16:15:03
 Location: CTC advanced GmbH, Laboratory RC-SYS
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

Setup of measurement equipment:

Start frequency: 50 GHz
 Stop frequency: 75 GHz
 Center frequency: 62.5 GHz
 Frequency span: 25 GHz
 Resolution-BW: 1 MHz
 Video-BW: 3 MHz
 Input attenuation: 10 dB
 Trace-Mode: Max-Hold
 Detector-Mode: AVG

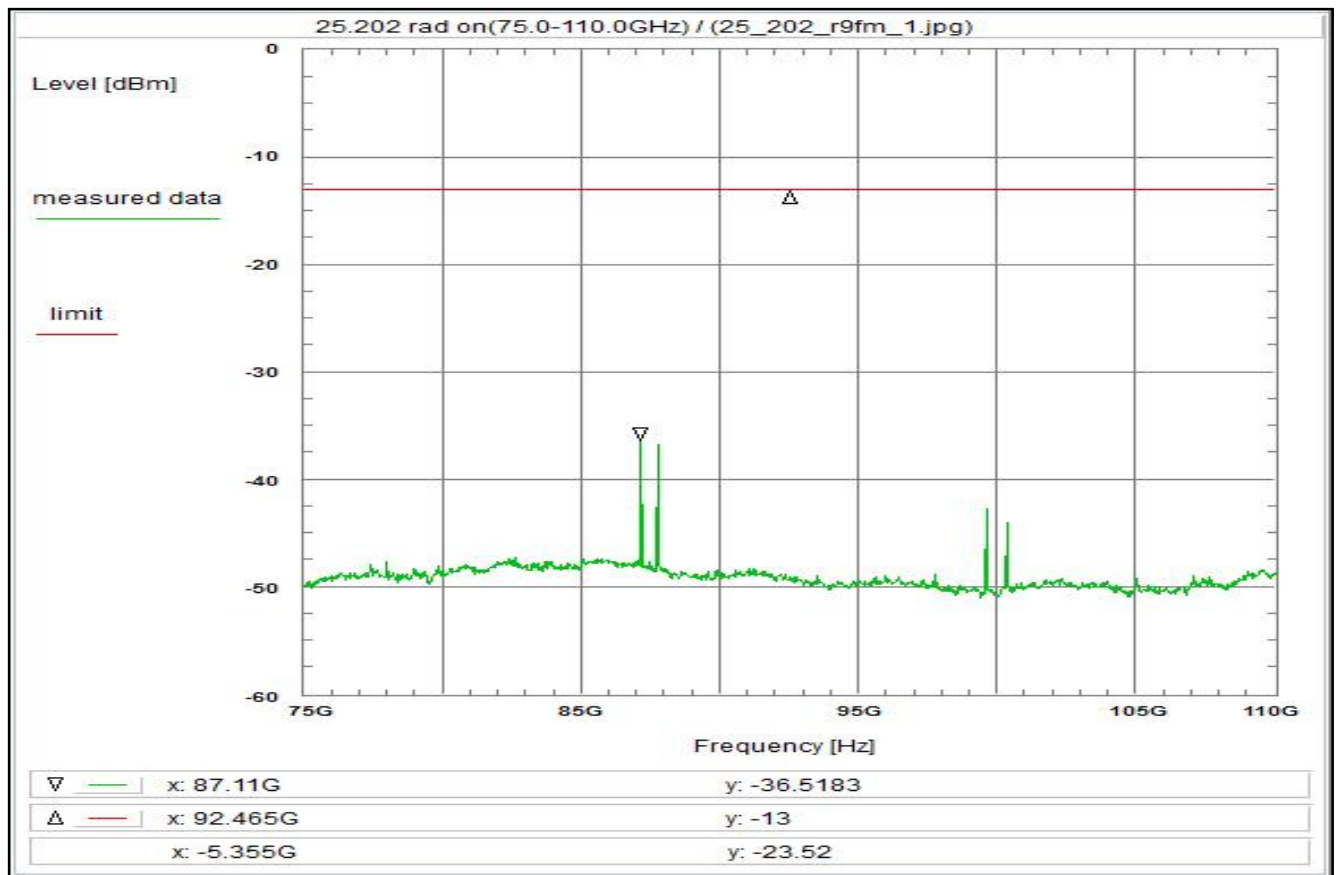
Correction:

Directional coupler + 0.0 dB
 Coaxial cable + 0.0 dB
 DUT-Antenna + 0.0 dBi
 Test antenna (A025) - 20.0 dB
 BW correction factor + 0.0 dB
 Atten. between HPA and feedhorn - 0.0 dB
 Freefield attenuation (62.50GHz, 0.1m) + 48.4 dB
 TOTAL CORRECTION: + 28.4 dB

Remarks:

Carrier-on state / Carrier in the middle of the band (fm)
 Measurement for orientation with a measuring antenna close to the DUT-cabinets (about 0.1m distance).
 If any critical spurious radiations are detected a measurement in an exactly defined distance will be carried out.

Plot No. 15



Subclause: 25.202 Emission limitations
 Modulated rf-carrier in the middle of the band (fm)
 Radiation coming out of DUT-cabinet(s): 75.0 GHz - 100.0 GHz

Limit:
 Limit acc. to §25.202): -13.0 dBm

Test results:
 see plot (an explicit table was not generated)

Operating condition of DUT:
 operating condition 1, see test report chapter 6.4

Test setup:
 see test report chapter 7.2:

Test equipment:
 see test report chapter 7.2: A028, R001, R029

Remark:

Test result: Test passed

Environment condition:

Date & Time: Fri 29/May/2020 16:20:19
 Location: CTC advanced GmbH, Laboratory RC-SYS
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

Setup of measurement equipment:

Start frequency: 75 GHz
 Stop frequency: 110 GHz
 Center frequency: 92.5 GHz
 Frequency span: 35 GHz
 Resolution-BW: 1 MHz
 Video-BW: 3 MHz
 Input attenuation: 10 dB
 Trace-Mode: Max-Hold
 Detector-Mode: AVG

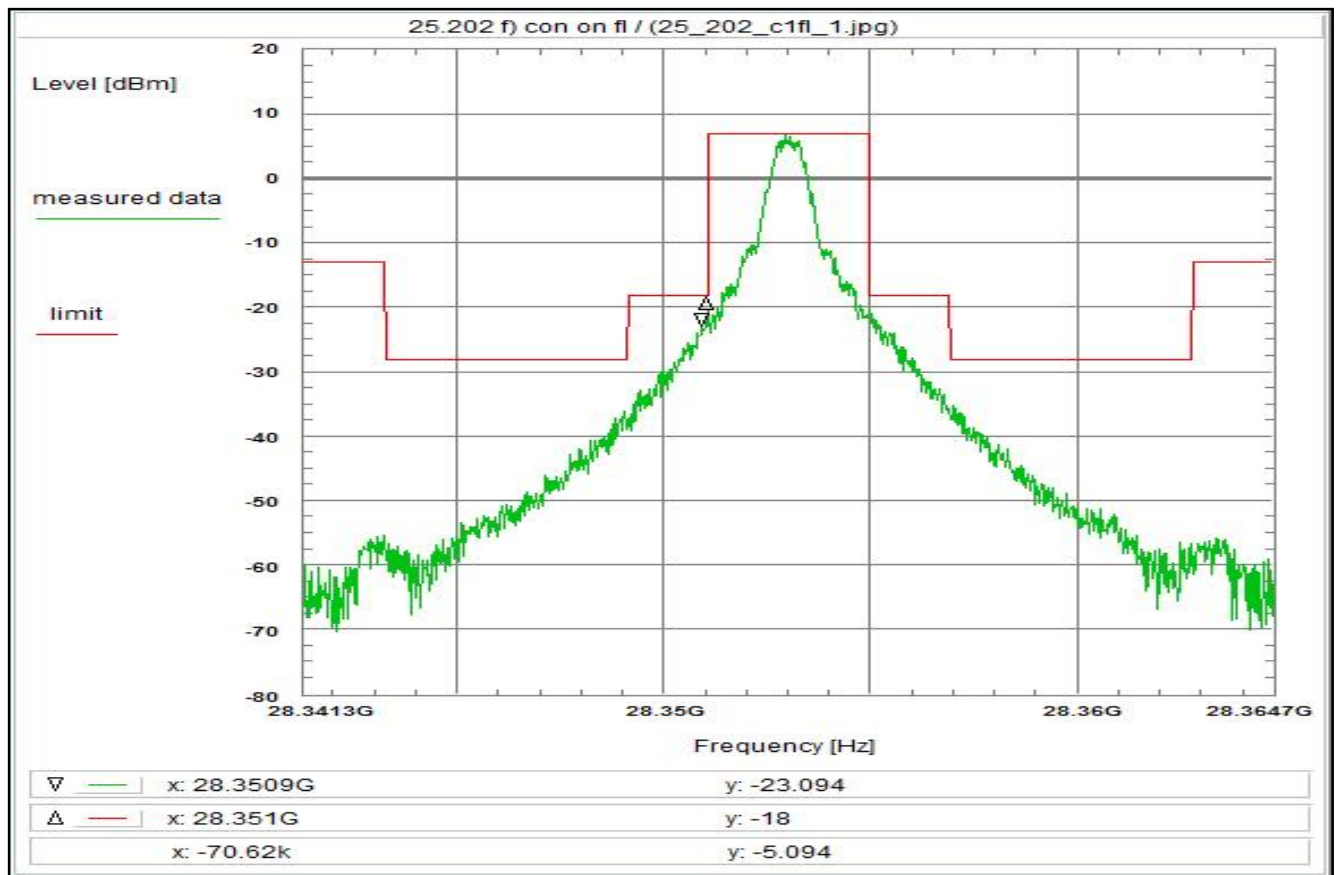
Correction:

Directional coupler + 0.0 dB
 Coaxial cable + 0.0 dB
 DUT-Antenna + 0.0 dBi
 Test antenna (A028) - 19.4 dB
 BW correction factor + 0.0 dB
 Atten. between HPA and feedhorn - 0.0 dB
 Freefield attenuation (92.50GHz, 0.1m) + 51.8 dB
 TOTAL CORRECTION: + 32.4 dB

Remarks:

Carrier-on state / Carrier in the middle of the band (fm)
 Measurement for orientation with a measuring antenna close to the DUT-cabinets (about 0.1m distance).
 If any critical spurious radiations are detected a measurement in an exactly defined distance will be carried out.

Plot No. 16



Subclause: 25.202 f) Frequencies, frequency tolerance and emission limitations
 Emission limitations
 Modulated rf-carrier at the lower edge of the band (fl)

Limit:

Limit acc. to §25.202 f):
 50-100% of assigned bw: -25 dBc/4 kHz
 100-250% of assigned bw: -35 dBc/4 kHz
 > 250% of assigned bw: -43+10log(Pmax) dBc/4 kHz

Test results:

see plot (an explicit table was not generated)

Operating condition of DUT:

operating condition 1, see test report chapter 6.4

Test setup:

see test report chapter 7.2

Test equipment:

see test report chapter 7.2: A031, C220, R001

Remark:

Test result: Test passed

Environment condition:

Date & Time: Wed 03/Jun/2020 17:26:40
 Location: CTC advanced GmbH, Laboratory RC-SYS
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

Setup of measurement equipment:

Start frequency: 28.3413 GHz
 Stop frequency: 28.3647 GHz
 Center frequency: 28.353 GHz
 Frequency span: 23.4 MHz
 Resolution-BW: 10 kHz
 Video-BW: 30 kHz
 Input attenuation: 6 dB
 Trace-Mode: Average
 Detector-Mode: AVG

Correction:

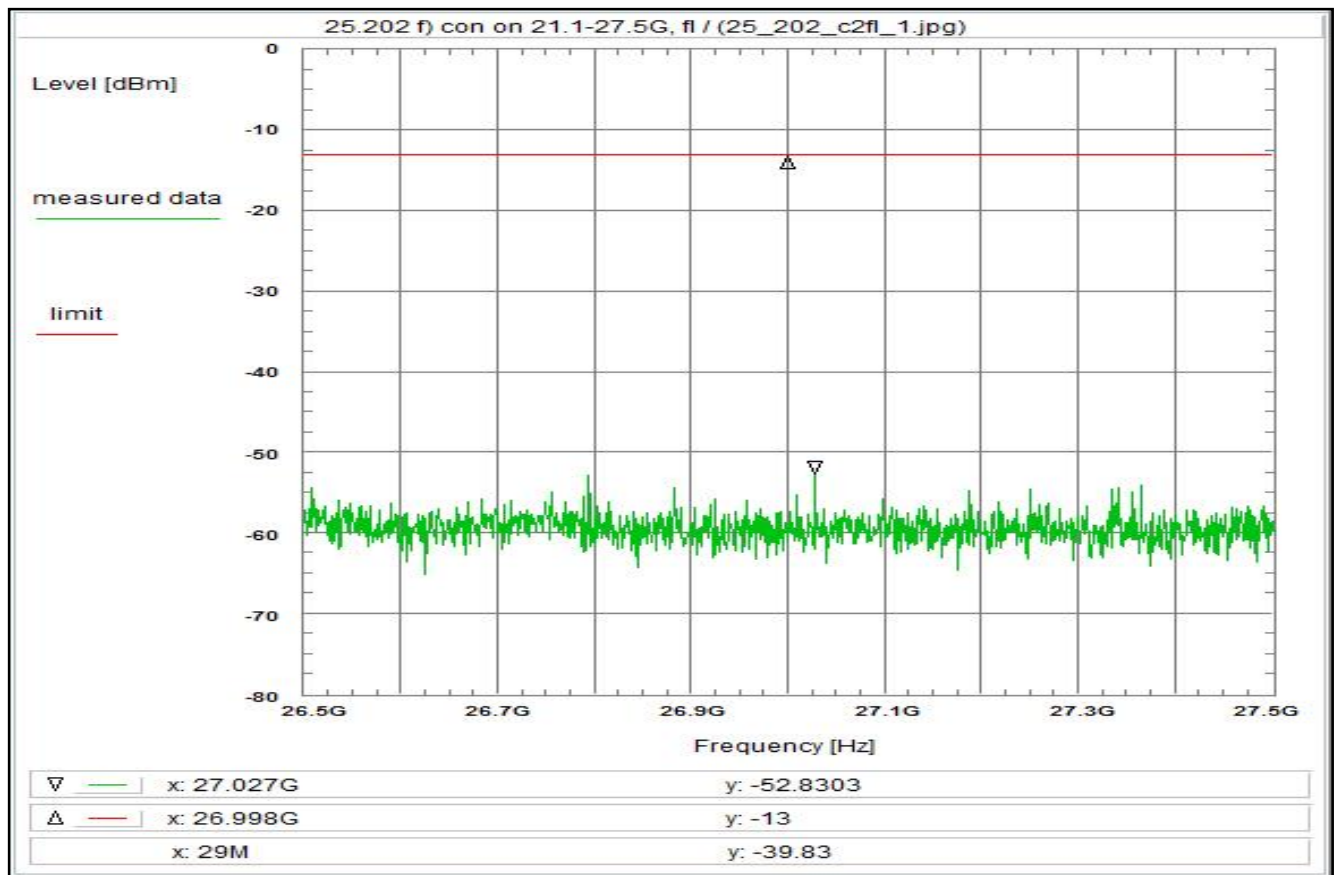
Directional coupler	+ 0.0 dB
Coaxial cable (C220)	+ 3.9 dB
DUT-Antenna (see under limit)	- 21.0 dBi
Test antenna (A031)	- 15.2 dB
BW correction factor (10k -> 4k)	- 4.0 dB
Atten. between HPA and feedhorn	- 0.0 dB
Freefield attenuation (28.35GHz, 3m)	+ 71.0 dB
Additional attenuation	+ 5.4 dB
Circular Polarization	+ 3.0 dB
TOTAL CORRECTION:	+ 43.1 dB

Remarks:

Carrier-on state / Carrier at the lower edge of the band (fl)

Note: This measurement is defined for conducted set-up.
 Therefore antenna gain has been subtracted.
 The limit is adjusted accordingly.

Plot No. 17



Subclause: 25.202 f) Frequencies, frequency tolerance and emission limitations
 Emission limitations
 Modulated rf-carrier at the lower edge of the band (fl)

Limit:Limit acc. to §25.202 f):

50-100% of assigned bw: -25 dBc/4 kHz

100-250% of assigned bw: -35 dBc/4 kHz

> 250% of assigned bw: -43+10log(Pmax) dBc/4 kHz

Test results:

see plot (an explicit table was not generated)

Operating condition of DUT:

operating condition 1, see test report chapter 6.4

Test setup:

see test report chapter 7.2

Test equipment:

see test report chapter 7.2: A031, C220, R001

Remark:

Test result: Test passedEnvironment condition:

Date & Time: Wed 03/Jun/2020 17:38:55
 Location: CTC advanced GmbH, Laboratory RC-SYS
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

Setup of measurement equipment:

Start frequency: 26.5 GHz
 Stop frequency: 27.5 GHz
 Center frequency: 27 GHz
 Frequency span: 1 GHz
 Resolution-BW: 100 kHz
 Video-BW: 300 kHz
 Input attenuation: 6 dB
 Trace-Mode: Clear Write
 Detector-Mode: AVG

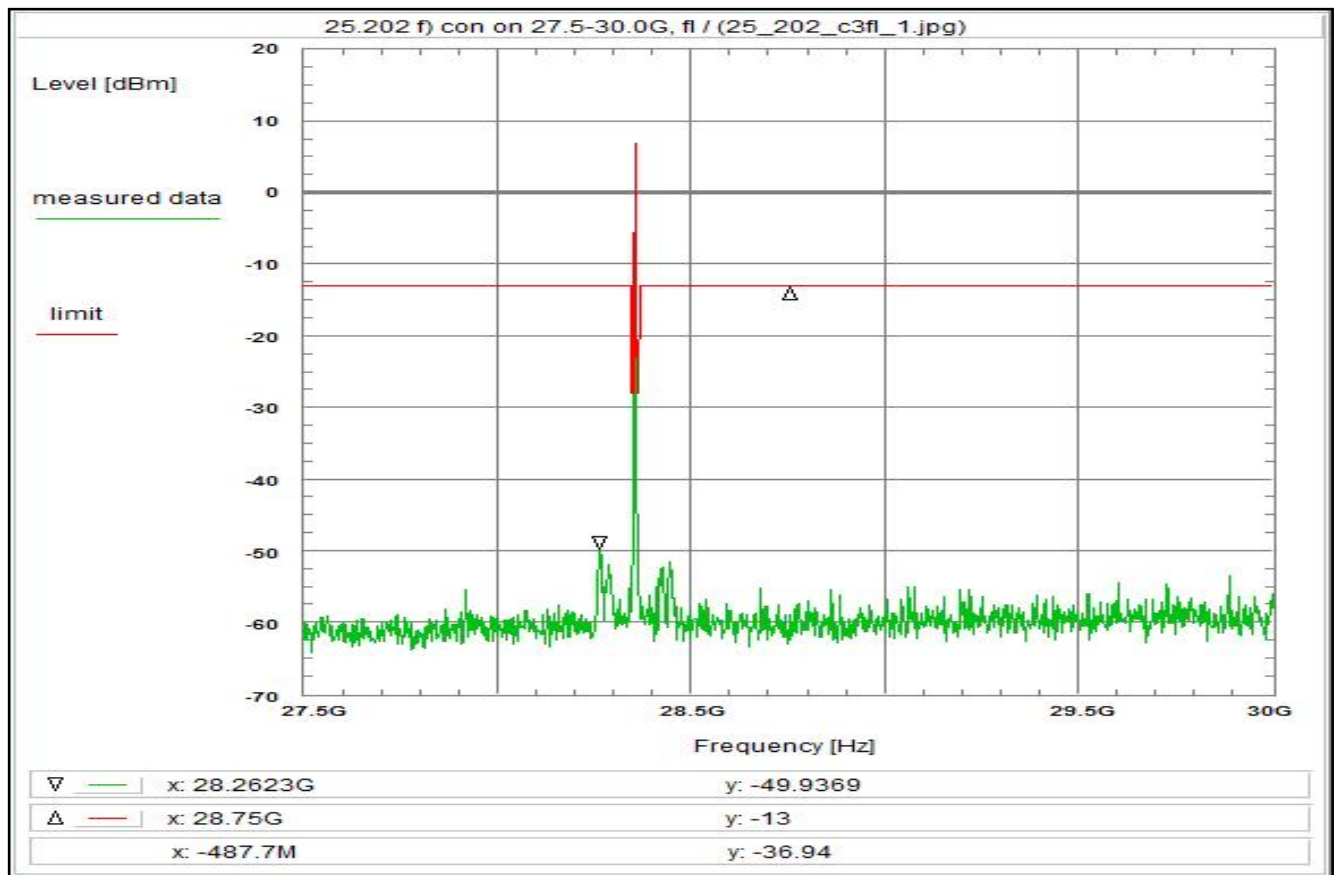
Correction:

Directional coupler	+ 0.0 dB
Coaxial cable (C220)	+ 3.9 dB
DUT-Antenna (see under limit)	- 21.0 dBi
Test antenna (A031)	- 15.0 dB
BW correction factor (100k -> 4k)	- 14.0 dB
Atten. between HPA and feedhorn	- 0.0 dB
Freefield attenuation (28.35GHz, 3m)	+ 71.0 dB
Additional attenuation	+ 5.4 dB
Circular Polarization	+ 3.0 dB
TOTAL CORRECTION:	+ 33.3 dB

Remarks:

Carrier-on state / Carrier at the lower edge of the band (fl)
 Rather left the plot shows the cut-off of the wave guide.

Plot No. 18



Subclause: 25.202 f) Frequencies, frequency tolerance and emission limitations
 Emission limitations
 Modulated rf-carrier at the lower edge of the band (fl)

Limit:

Limit acc. to §25.202 f):
 50-100% of assigned bw: -25 dBc/4 kHz
 100-250% of assigned bw: -35 dBc/4 kHz
 > 250% of assigned bw: -43+10log(Pmax) dBc/4 kHz

Test results:

see plot (an explicit table was not generated)

Operating condition of DUT:

operating condition 1, see test report chapter 6.4

Test setup:

see test report chapter 7.2

Test equipment:

see test report chapter 7.2: A031, C220, R001

Remark:

Test result: Test passed

Environment condition:

Date & Time: Wed 03/Jun/2020 17:24:20
 Location: CTC advanced GmbH, Laboratory RC-SYS
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

Setup of measurement equipment:

Start frequency: 27.5 GHz
 Stop frequency: 30 GHz
 Center frequency: 28.75 GHz
 Frequency span: 2.5 GHz
 Resolution-BW: 100 kHz
 Video-BW: 300 kHz
 Input attenuation: 6 dB
 Trace-Mode: Clear Write
 Detector-Mode: AVG

Correction:

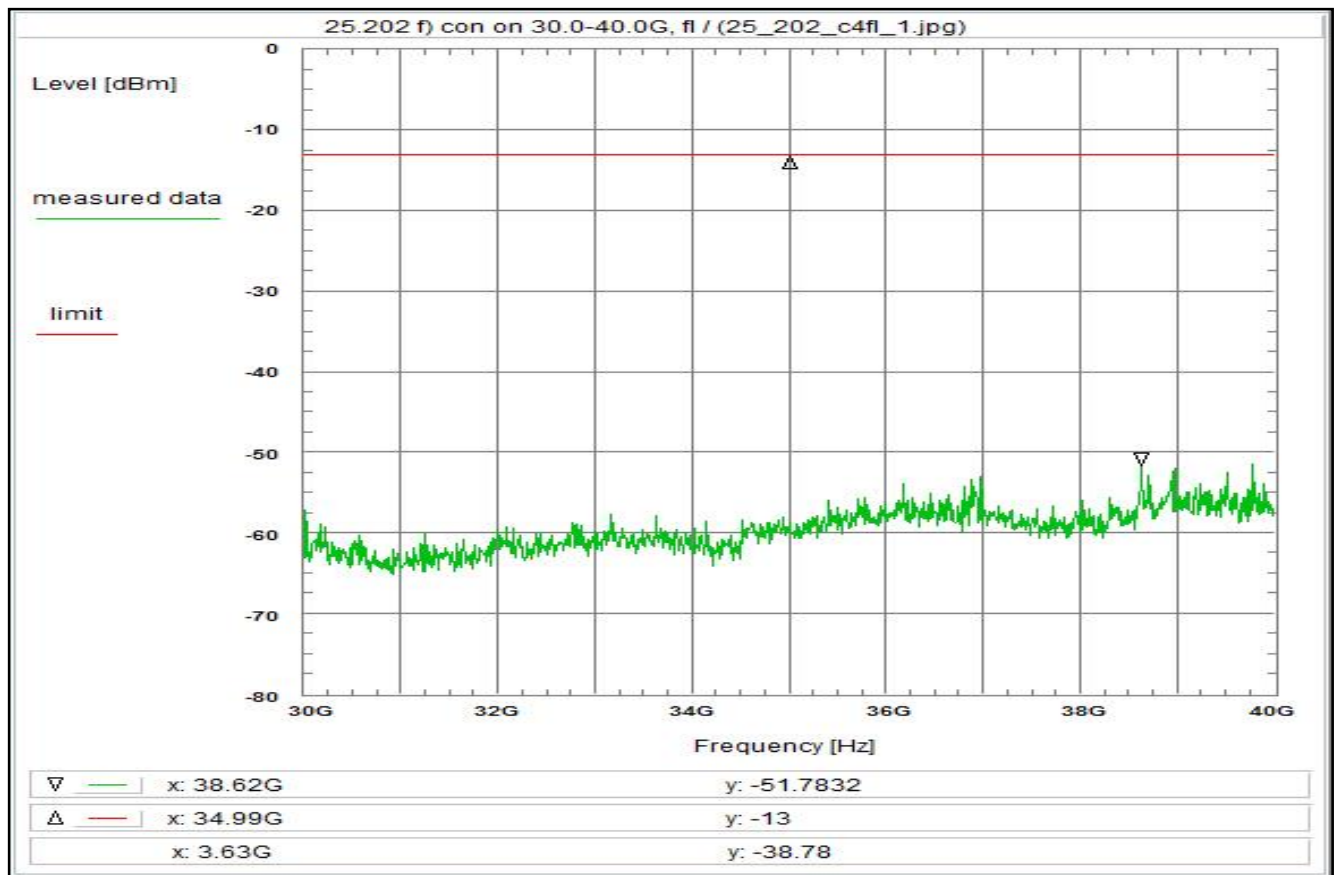
Directional coupler	+ 0.0 dB
Coaxial cable (C220)	+ 4.0 dB
DUT-Antenna (see under limit)	- 21.0 dBi
Test antenna (A031)	- 15.5 dB
BW correction factor (100k -> 4k)	- 14.0 dB
Atten. between HPA and feedhorn	- 0.0 dB
Freefield attenuation (28.35GHz, 3m)	+ 71.0 dB
Additional attenuation	+ 5.4 dB
Circular Polarization	+ 3.0 dB
TOTAL CORRECTION:	+ 32.9 dB

Remarks:

Carrier-on state / Carrier at the lower edge of the band (fl)

Note: This measurement is defined for conducted set-up.
 Therefore antenna gain has been subtracted.
 The limit is adjusted accordingly.

Plot No. 19



Subclause: 25.202 f) Frequencies, frequency tolerance and emission limitations
 Emission limitations
 Modulated rf-carrier at the lower edge of the band (fl)

Limit:

Limit acc. to §25.202 f):

50-100% of assigned bw: -25 dBc/4 kHz

100-250% of assigned bw: -35 dBc/4 kHz

> 250% of assigned bw: -43+10log(Pmax) dBc/4 kHz

Test results:

see plot (an explicit table was not generated)

Operating condition of DUT:

operating condition 1, see test report chapter 6.4

Test setup:

see test report chapter 7.2

Test equipment:

see test report chapter 7.2: A031, C220, R001

Remark:

Test result: Test passed

Environment condition:

Date & Time: Wed 03/Jun/2020 17:39:54
 Location: CTC advanced GmbH, Laboratory RC-SYS
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

Setup of measurement equipment:

Start frequency: 30 GHz
 Stop frequency: 40 GHz
 Center frequency: 35 GHz
 Frequency span: 10 GHz
 Resolution-BW: 100 kHz
 Video-BW: 300 kHz
 Input attenuation: 6 dB
 Trace-Mode: Clear Write
 Detector-Mode: AVG

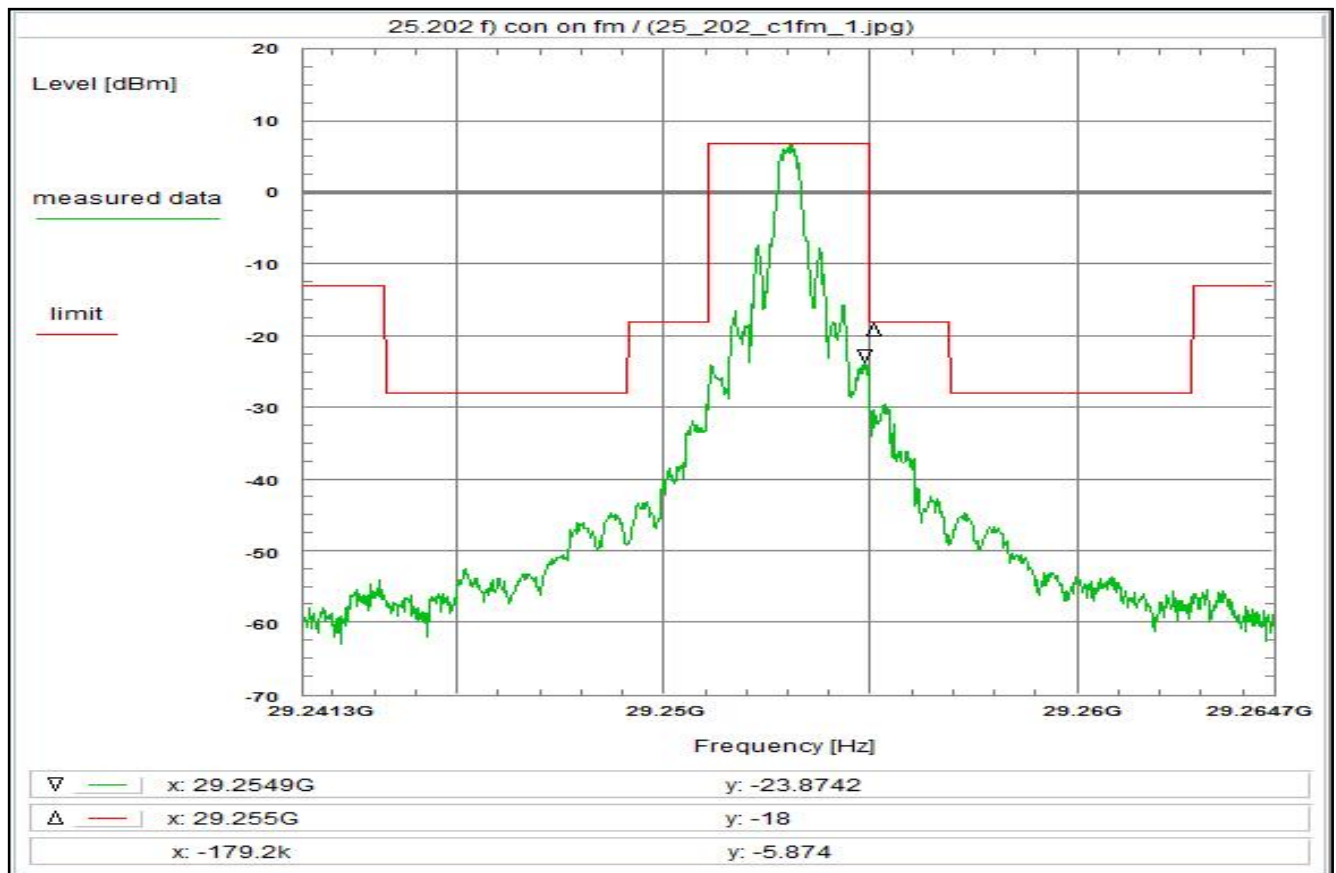
Correction:

Directional coupler + 0.0 dB
 Coaxial cable (C220) + 4.4 dB
 DUT-Antenna (see under limit) - 21.0 dBi
 Test antenna (A031) - 16.9 dB
 BW correction factor (100k -> 4k) - 14.0 dB
 Atten. between HPA and feedhorn - 0.0 dB
 Freefield attenuation (28.35GHz, 3m) + 71.0 dB
 Additional attenuation + 5.4 dB
 Circular Polarization + 3.0 dB
TOTAL CORRECTION: + 31.9 dB

Remarks:

Carrier-on state / Carrier at the lower edge of the band (fl)

Plot No. 20



Subclause: 25.202 f) Frequencies, frequency tolerance and emission limitations
 Emission limitations
 Modulated rf-carrier in the middle of the band (fm)

Limit:

Limit acc. to §25.202 f):

50-100% of assigned bw: -25 dBc/4 kHz

100-250% of assigned bw: -35 dBc/4 kHz

> 250% of assigned bw: -43+10log(Pmax) dBc/4 kHz

Test results:

see plot (an explicit table was not generated)

Operating condition of DUT:

operating condition 1, see test report chapter 6.4

Test setup:

see test report chapter 7.2

Test equipment:

see test report chapter 7.2: A031, C220, R001

Remark:

Test result: Test passed

Environment condition:

Date & Time: Wed 03/Jun/2020 17:20:54
 Location: CTC advanced GmbH, Laboratory RC-SYS
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

Setup of measurement equipment:

Start frequency: 29.2413 GHz
 Stop frequency: 29.2647 GHz
 Center frequency: 29.253 GHz
 Frequency span: 23.4 MHz
 Resolution-BW: 10 kHz
 Video-BW: 30 kHz
 Input attenuation: 6 dB
 Trace-Mode: Average
 Detector-Mode: AVG

Correction:

Directional coupler	+ 0.0 dB
Coaxial cable (C220)	+ 4.0 dB
DUT-Antenna (see under limit)	- 21.0 dBi
Test antenna (A031)	- 15.8 dB
BW correction factor (10k -> 4k)	- 4.0 dB
Atten. between HPA and feedhorn	- 0.0 dB
Freefield attenuation (28.35GHz, 3m)	+ 71.0 dB
Additional attenuation	+ 5.4 dB
Circular Polarization	+ 3.0 dB
TOTAL CORRECTION:	+ 42.6 dB

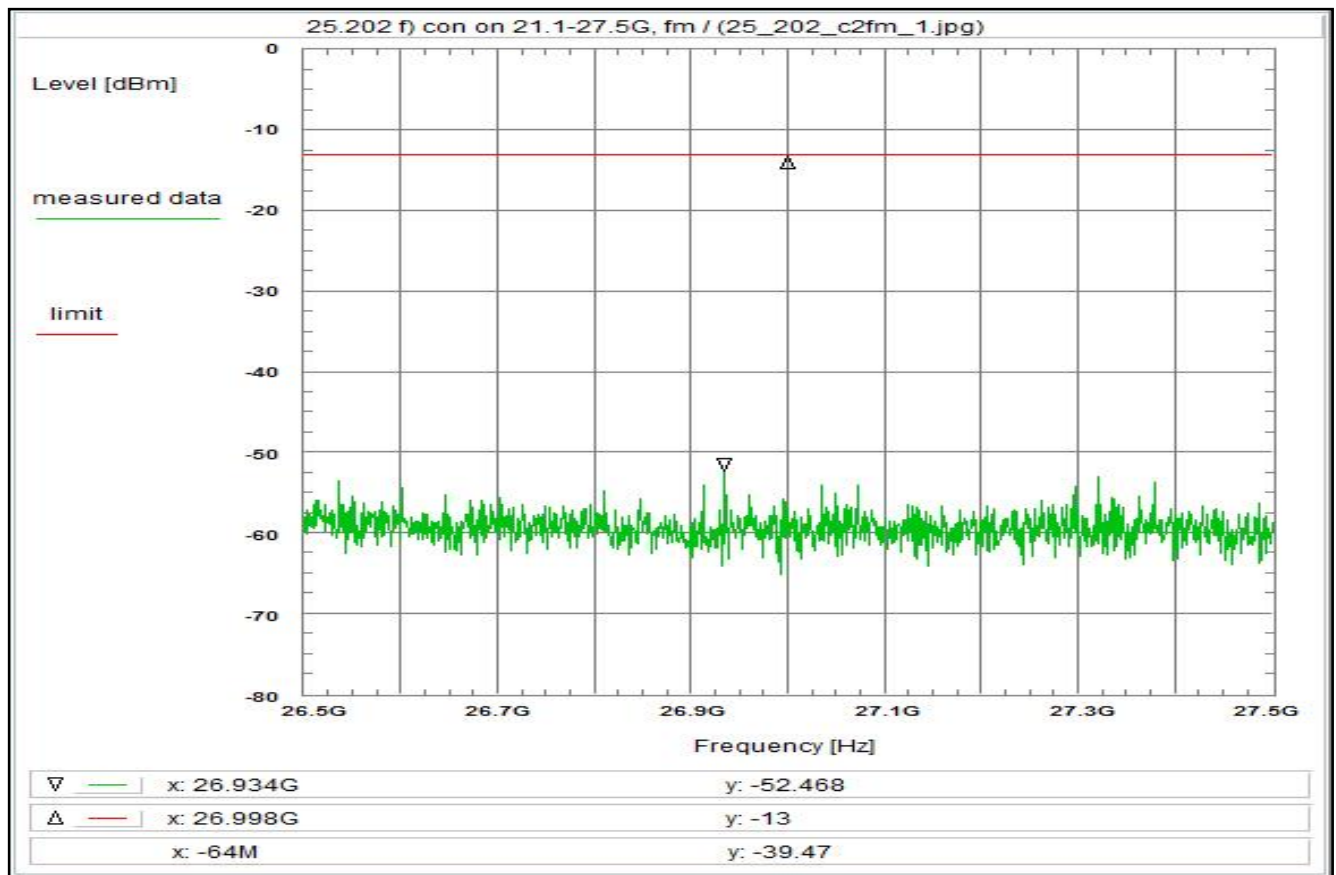
Remarks:

Carrier-on state / Carrier in the middle of the band (fm)

Note: This measurement is defined for conducted set-up.
 Therefore antenna gain has been subtracted

Note: This measurement is defined for conducted set-up.
 Therefore antenna gain has been subtracted.
 The limit is adjusted accordingly.

Plot No. 21



Subclause: 25.202 f) Frequencies, frequency tolerance and emission limitations
 Emission limitations
 Modulated rf-carrier in the middle of the band (fm)

Limit:

Limit acc. to §25.202 f):

50-100% of assigned bw: -25 dBc/4 kHz

100-250% of assigned bw: -35 dBc/4 kHz

> 250% of assigned bw: -43+10log(Pmax) dBc/4 kHz

Test results:

see plot (an explicit table was not generated)

Operating condition of DUT:

operating condition 1, see test report chapter 6.4

Test setup:

see test report chapter 7.2

Test equipment:

see test report chapter 7.2: A031, C220, R001

Remark:

Test result: Test passed

Environment condition:

Date & Time: Wed 03/Jun/2020 17:37:47
 Location: CTC advanced GmbH, Laboratory RC-SYS
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

Setup of measurement equipment:

Start frequency: 26.5 GHz
 Stop frequency: 27.5 GHz
 Center frequency: 27 GHz
 Frequency span: 1 GHz
 Resolution-BW: 100 kHz
 Video-BW: 300 kHz
 Input attenuation: 6 dB
 Trace-Mode: Clear Write
 Detector-Mode: AVG

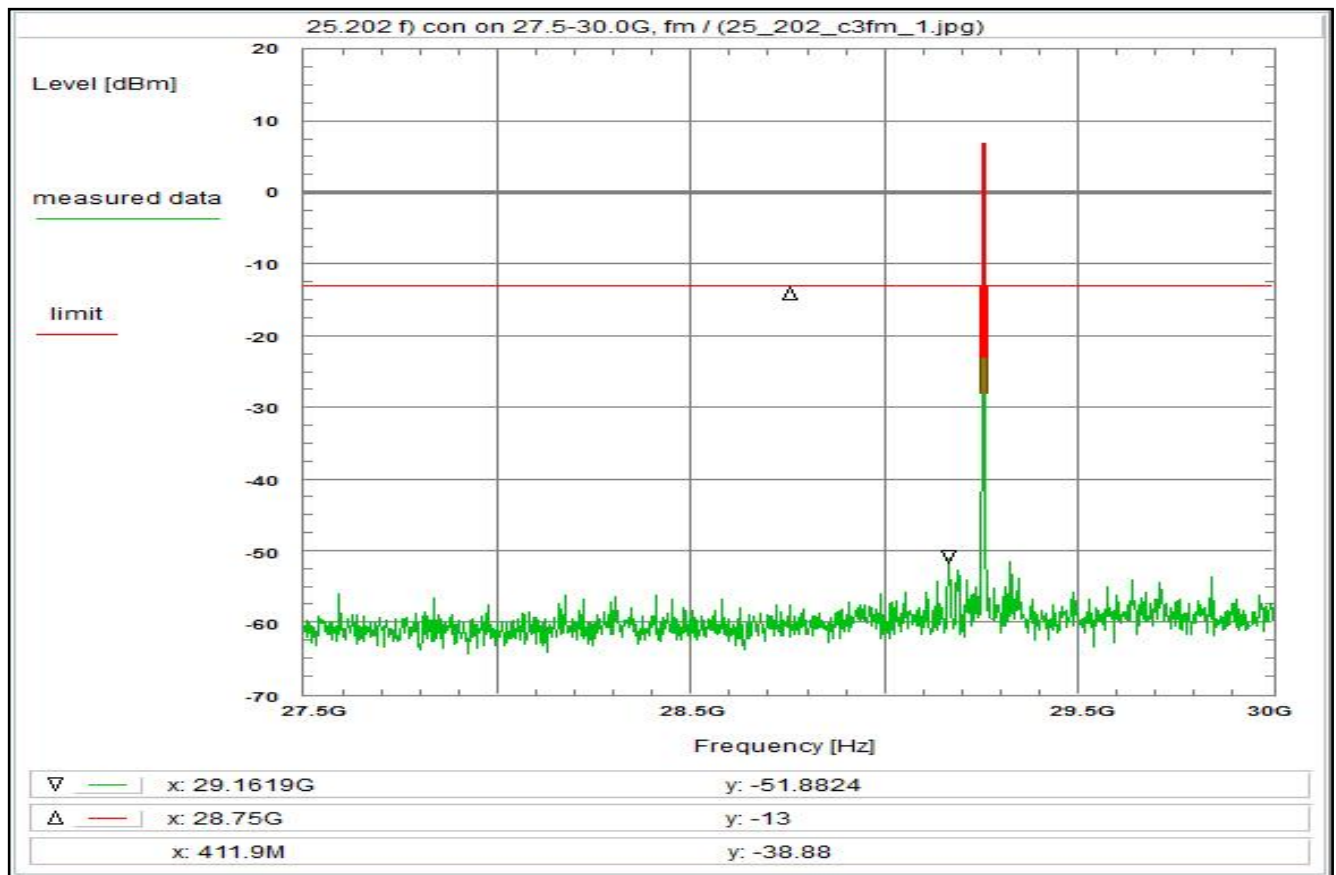
Correction:

Directional coupler	+ 0.0 dB
Coaxial cable (C220)	+ 3.9 dB
DUT-Antenna (see under limit)	- 21.0 dBi
Test antenna (A031)	- 15.0 dB
BW correction factor (100k -> 4k)	- 14.0 dB
Atten. between HPA and feedhorn	- 0.0 dB
Freefield attenuation (28.35GHz, 3m)	+ 71.0 dB
Additional attenuation	+ 5.4 dB
Circular Polarization	+ 3.0 dB
TOTAL CORRECTION:	+ 33.3 dB

Remarks:

Carrier-on state / Carrier in the middle of the band (fm)
 Rather left the plot shows the cut-off of the wave guide.

Plot No. 22



Subclause: 25.202 f) Frequencies, frequency tolerance and emission limitations
 Emission limitations
 Modulated rf-carrier in the middle of the band (fm)

Limit:

Limit acc. to §25.202 f):

50-100% of assigned bw: -25 dBc/4 kHz

100-250% of assigned bw: -35 dBc/4 kHz

> 250% of assigned bw: -43+10log(Pmax) dBc/4 kHz

Test results:

see plot (an explicit table was not generated)

Operating condition of DUT:

operating condition 1, see test report chapter 6.4

Test setup:

see test report chapter 7.2

Test equipment:

see test report chapter 7.2: A031, C220, R001

Remark:

Test result: Test passed

Environment condition:

Date & Time: Wed 03/Jun/2020 17:22:49
 Location: CTC advanced GmbH, Laboratory RC-SYS
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

Setup of measurement equipment:

Start frequency: 27.5 GHz
 Stop frequency: 30 GHz
 Center frequency: 28.75 GHz
 Frequency span: 2.5 GHz
 Resolution-BW: 100 kHz
 Video-BW: 300 kHz
 Input attenuation: 6 dB
 Trace-Mode: Clear Write
 Detector-Mode: AVG

Correction:

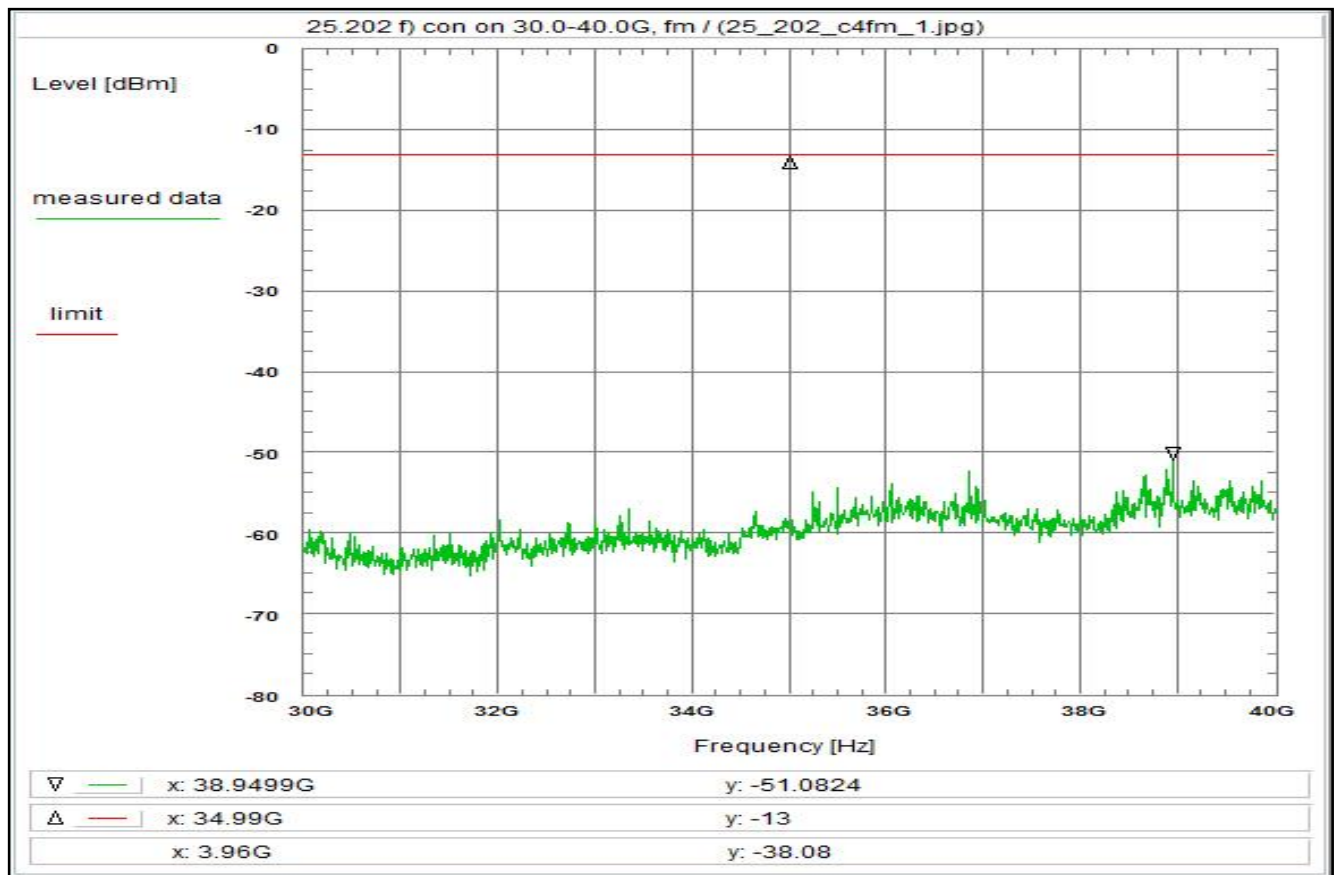
Directional coupler	+ 0.0 dB
Coaxial cable (C220)	+ 4.0 dB
DUT-Antenna (see under limit)	- 21.0 dBi
Test antenna (A031)	- 15.5 dB
BW correction factor (100k -> 4k)	- 14.0 dB
Atten. between HPA and feedhorn	- 0.0 dB
Freefield attenuation (28.35GHz, 3m)	+ 71.0 dB
Additional attenuation	+ 5.4 dB
Circular Polarization	+ 3.0 dB
TOTAL CORRECTION:	+ 32.9 dB

Remarks:

Carrier-on state / Carrier in the middle of the band (fm)

Note: This measurement is defined for conducted set-up.
 Therefore antenna gain has been subtracted.
 The limit is adjusted accordingly.

Plot No. 23



Subclause: 25.202 f) Frequencies, frequency tolerance and emission limitations
 Emission limitations
 Modulated rf-carrier in the middle of the band (fm)

Limit:

Limit acc. to §25.202 f):

50-100% of assigned bw: -25 dBc/4 kHz

100-250% of assigned bw: -35 dBc/4 kHz

> 250% of assigned bw: -43+10log(Pmax) dBc/4 kHz

Test results:

see plot (an explicit table was not generated)

Operating condition of DUT:

operating condition 1, see test report chapter 6.4

Test setup:

see test report chapter 7.2

Test equipment:

see test report chapter 7.2: R001, C220, A031

Remark:

Test result: Test passed

Environment condition:

Date & Time: Wed 03/Jun/2020 17:29:34
 Location: CTC advanced GmbH, Laboratory RC-SYS
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

Setup of measurement equipment:

Start frequency: 30 GHz
 Stop frequency: 40 GHz
 Center frequency: 35 GHz
 Frequency span: 10 GHz
 Resolution-BW: 100 kHz
 Video-BW: 300 kHz
 Input attenuation: 6 dB
 Trace-Mode: Clear Write
 Detector-Mode: AVG

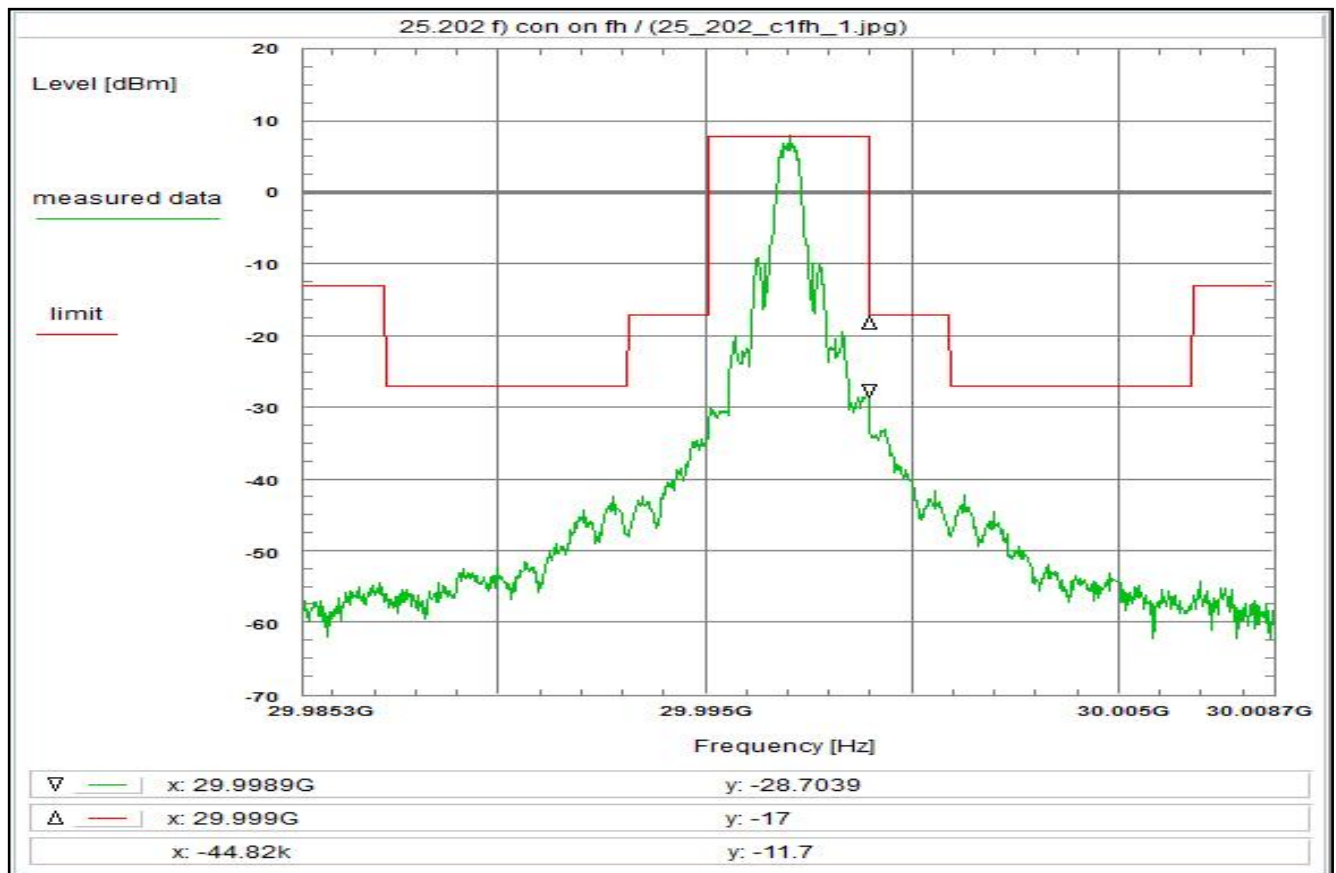
Correction:

Directional coupler + 0.0 dB
 Coaxial cable (C220) + 4.4 dB
 DUT-Antenna (see under limit) - 21.0 dBi
 Test antenna (A031) - 16.9 dB
 BW correction factor (100k -> 4k) - 14.0 dB
 Atten. between HPA and feedhorn - 0.0 dB
 Freefield attenuation (28.35GHz, 3m) + 71.0 dB
 Additional attenuation + 5.4 dB
 Circular Polarization + 3.0 dB
 TOTAL CORRECTION: + 31.9 dB

Remarks:

Carrier-on state / Carrier in the middle of the band (fm)

Plot No. 24



Subclause: 25.202 f) Frequencies, frequency tolerance and emission limitations
 Emission limitations
 Modulated rf-carrier at the upper edge of the band (fh)

Limit:

Limit acc. to §25.202 f):
 50-100% of assigned bw: -25 dBc/4 kHz
 100-250% of assigned bw: -35 dBc/4 kHz
 > 250% of assigned bw: -43+10log(Pmax) dBc/4 kHz

Test results:

see plot (an explicit table was not generated)

Operating condition of DUT:

operating condition 1, see test report chapter 6.4

Test setup:

see test report chapter 7.2

Test equipment:

see test report chapter 7.2: A031, C220, R001

Remark:

Test result: Test passed

Environment condition:

Date & Time: Wed 03/Jun/2020 17:16:33
 Location: CTC advanced GmbH, Laboratory RC-SYS
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

Setup of measurement equipment:

Start frequency: 29.9853 GHz
 Stop frequency: 30.0087 GHz
 Center frequency: 29.997 GHz
 Frequency span: 23.4 MHz
 Resolution-BW: 10 kHz
 Video-BW: 30 kHz
 Input attenuation: 6 dB
 Trace-Mode: Average
 Detector-Mode: AVG

Correction:

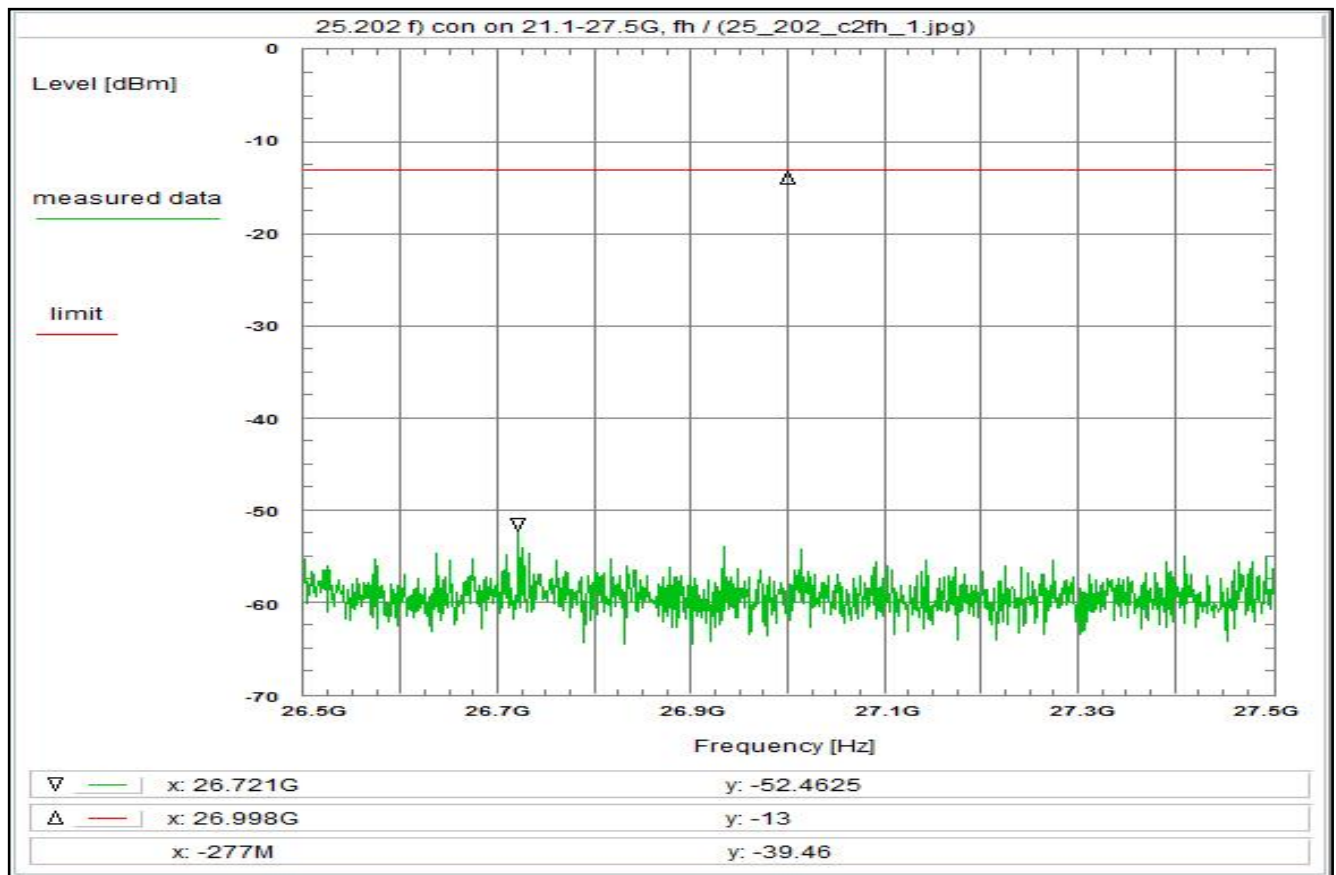
Directional coupler	+ 0.0 dB
Coaxial cable (C220)	+ 4.1 dB
DUT-Antenna (see under limit)	- 21.0 dBi
Test antenna (A031)	- 15.9 dB
BW correction factor (10k -> 4k)	- 4.0 dB
Atten. between HPA and feedhorn	- 0.0 dB
Freefield attenuation (28.35GHz, 3m)	+ 71.0 dB
Additional attenuation	+ 5.4 dB
Circular Polarization	+ 3.0 dB
TOTAL CORRECTION:	+ 42.6 dB

Remarks:

Carrier-on state / Carrier at the upper edge of the band (fh)

Note: This measurement is defined for conducted set-up.
 Therefore antenna gain has been subtracted.
 The limit is adjusted accordingly.

Plot No. 25



Subclause: 25.202 f) Frequencies, frequency tolerance and emission limitations
 Emission limitations
 Modulated rf-carrier at the upper edge of the band (fh)

Limit:

Limit acc. to §25.202 f):

50-100% of assigned bw: -25 dBc/4 kHz

100-250% of assigned bw: -35 dBc/4 kHz

> 250% of assigned bw: -43+10log(Pmax) dBc/4 kHz

Test results:

see plot (an explicit table was not generated)

Operating condition of DUT:

operating condition 1, see test report chapter 6.4

Test setup:

see test report chapter 7.2

Test equipment:

see test report chapter 7.2: A031, C220, R001

Remark:

Test result: Test passed

Environment condition:

Date & Time: Wed 03/Jun/2020 17:35:14
 Location: CTC advanced GmbH, Laboratory RC-SYS
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

Setup of measurement equipment:

Start frequency: 26.5 GHz
 Stop frequency: 27.5 GHz
 Center frequency: 27 GHz
 Frequency span: 1 GHz
 Resolution-BW: 100 kHz
 Video-BW: 300 kHz
 Input attenuation: 6 dB
 Trace-Mode: Clear Write
 Detector-Mode: AVG

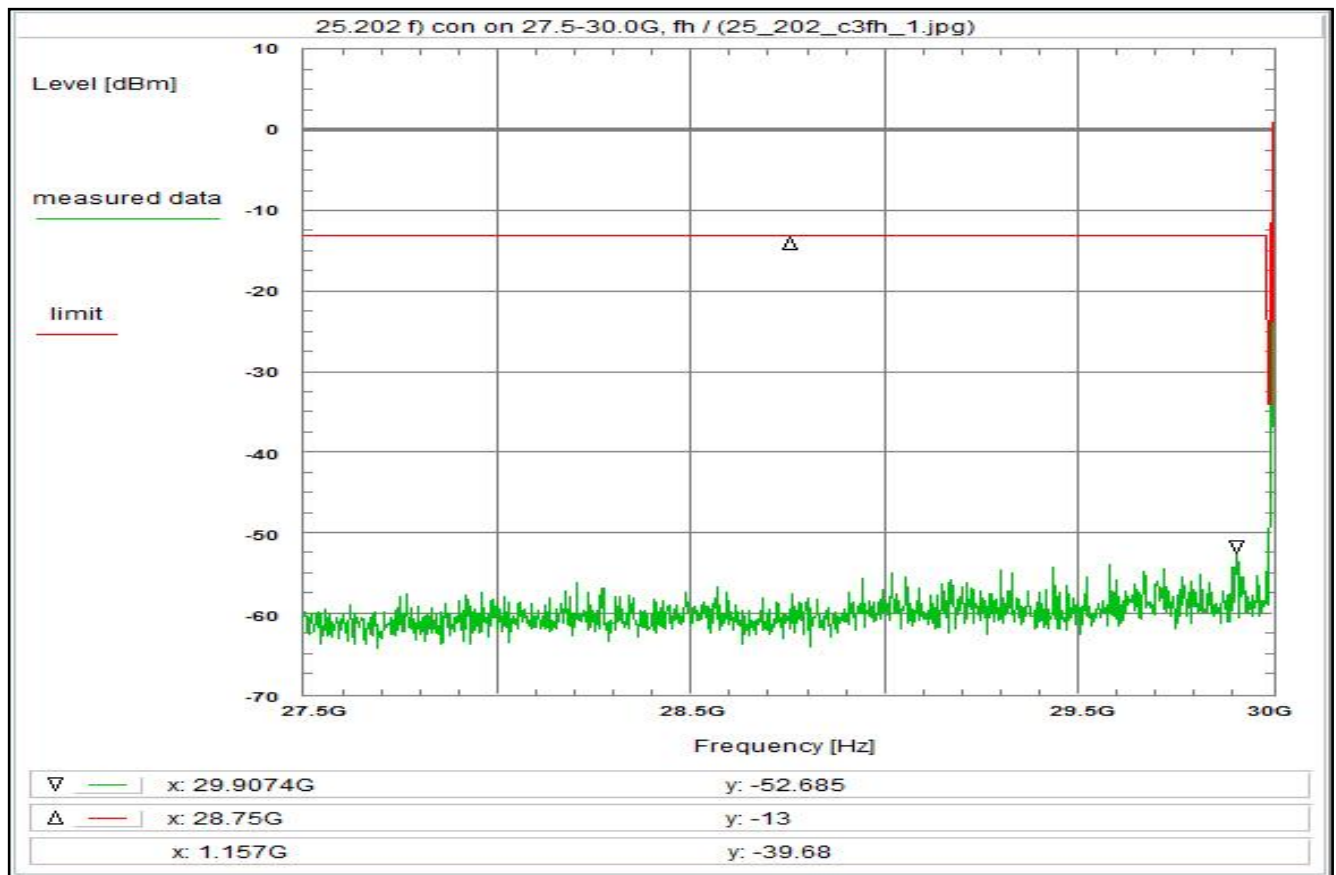
Correction:

Directional coupler + 0.0 dB
 Coaxial cable (C220) + 3.9 dB
 DUT-Antenna (see under limit) - 21.0 dBi
 Test antenna (A031) - 15.0 dB
 BW correction factor (100k -> 4k) - 14.0 dB
 Atten. between HPA and feedhorn - 0.0 dB
 Freefield attenuation (28.35GHz, 3m) + 71.0 dB
 Additional attenuation + 5.4 dB
 Circular Polarization + 3.0 dB
 TOTAL CORRECTION: + 33.3 dB

Remarks:

Carrier-on state / Carrier at the upper edge of the band (fh)
 Rather left the plot shows the cut-off of the wave guide.

Plot No. 26



Subclause: 25.202 f) Frequencies, frequency tolerance and emission limitations
 Emission limitations
 Modulated rf-carrier at the upper edge of the band (fh)

Limit:Limit acc. to §25.202 f):

50-100% of assigned bw: -25 dBc/4 kHz

100-250% of assigned bw: -35 dBc/4 kHz

> 250% of assigned bw: -43+10log(Pmax) dBc/4 kHz

Test results:

see plot (an explicit table was not generated)

Operating condition of DUT:

operating condition 1, see test report chapter 6.4

Test setup:

see test report chapter 7.2

Test equipment:

see test report chapter 7.2: A031, C220, R001

Remark:

Test result: Test passedEnvironment condition:

Date & Time: Wed 03/Jun/2020 17:09:50
 Location: CTC advanced GmbH, Laboratory RC-SYS
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

Setup of measurement equipment:

Start frequency: 27.5 GHz
 Stop frequency: 30 GHz
 Center frequency: 28.75 GHz
 Frequency span: 2.5 GHz
 Resolution-BW: 100 kHz
 Video-BW: 300 kHz
 Input attenuation: 6 dB
 Trace-Mode: Clear Write
 Detector-Mode: AVG

Correction:

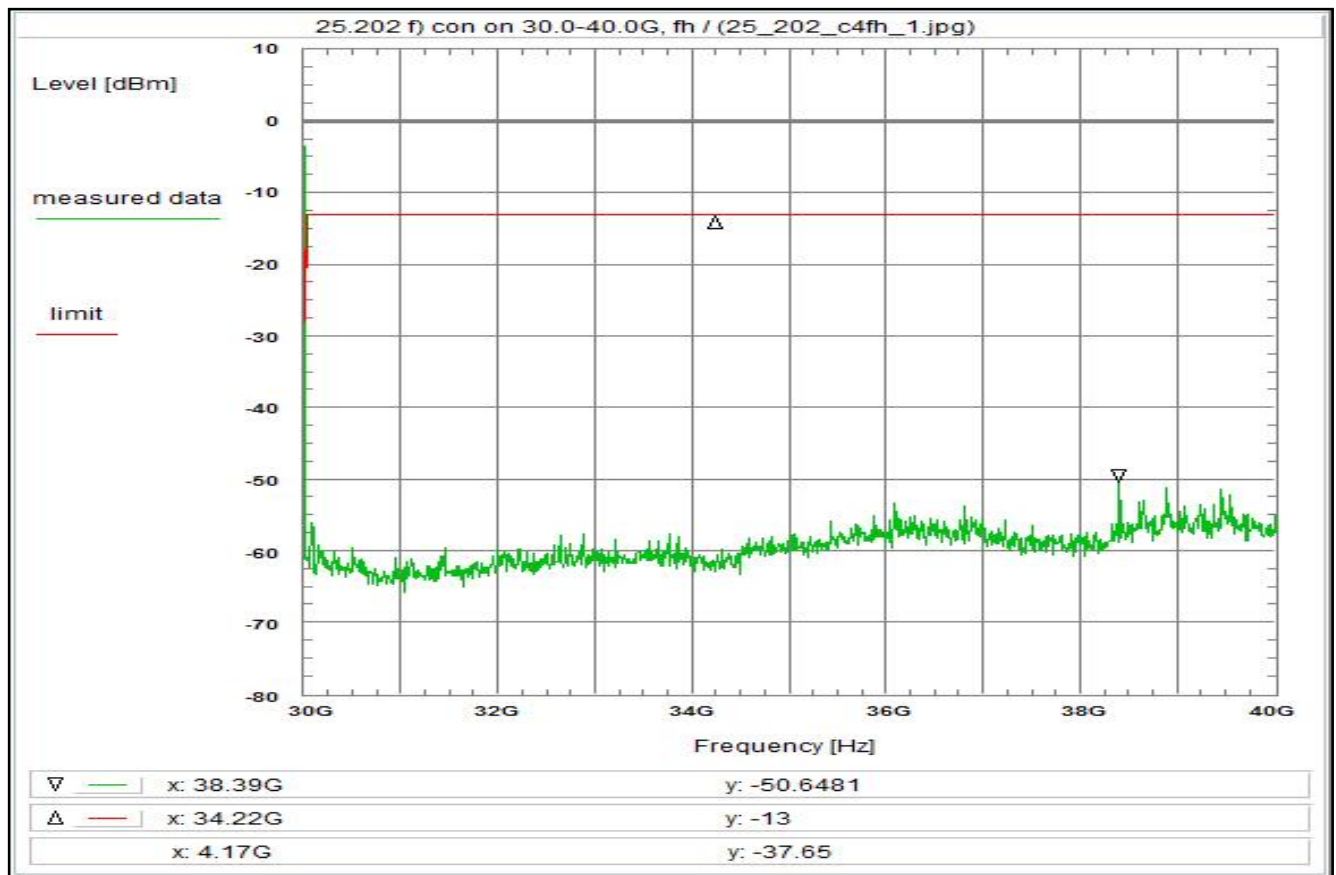
Directional coupler	+ 0.0 dB
Coaxial cable (C220)	+ 4.0 dB
DUT-Antenna (see under limit)	- 21.0 dBi
Test antenna (A031)	- 15.5 dB
BW correction factor (100k -> 4k)	- 14.0 dB
Atten. between HPA and feedhorn	- 0.0 dB
Freefield attenuation (28.35GHz, 3m)	+ 71.0 dB
Additional attenuation	+ 5.4 dB
Circular Polarization	+ 3.0 dB
TOTAL CORRECTION:	+ 32.9 dB

Remarks:

Carrier-on state / Carrier at the upper edge of the band (fh)

Note: This measurement is defined for conducted set-up.
 Therefore antenna gain has been subtracted.
 The limit is adjusted accordingly.

Plot No. 27



Subclause: 25.202 f) Frequencies, frequency tolerance and emission limitations
 Emission limitations
 Modulated rf-carrier at the upper edge of the band (fh)

Limit:

Limit acc. to §25.202 f):

50-100% of assigned bw: -25 dBc/4 kHz

100-250% of assigned bw: -35 dBc/4 kHz

> 250% of assigned bw: -43+10log(Pmax) dBc/4 kHz

Test results:

see plot (an explicit table was not generated)

Operating condition of DUT:

operating condition 1, see test report chapter 6.4

Test setup:

see test report chapter 7.2

Test equipment:

see test report chapter 7.2: A031, C220, R001

Remark:

Test result: Test passed

Environment condition:

Date & Time: Wed 03/Jun/2020 17:32:30
 Location: CTC advanced GmbH, Laboratory RC-SYS
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

Setup of measurement equipment:

Start frequency: 30 GHz
 Stop frequency: 40 GHz
 Center frequency: 35 GHz
 Frequency span: 10 GHz
 Resolution-BW: 100 kHz
 Video-BW: 300 kHz
 Input attenuation: 6 dB
 Trace-Mode: Clear Write
 Detector-Mode: AVG

Correction:

Directional coupler + 0.0 dB
 Coaxial cable (C220) + 4.4 dB
 DUT-Antenna (see under limit) - 21.0 dBi
 Test antenna (A031) - 16.9 dB
 BW correction factor (100k -> 4k) - 14.0 dB
 Atten. between HPA and feedhorn - 0.0 dB
 Freefield attenuation (28.35GHz, 3m) + 71.0 dB
 Additional attenuation + 5.4 dB
 Circular Polarization + 3.0 dB
 TOTAL CORRECTION: + 31.9 dB

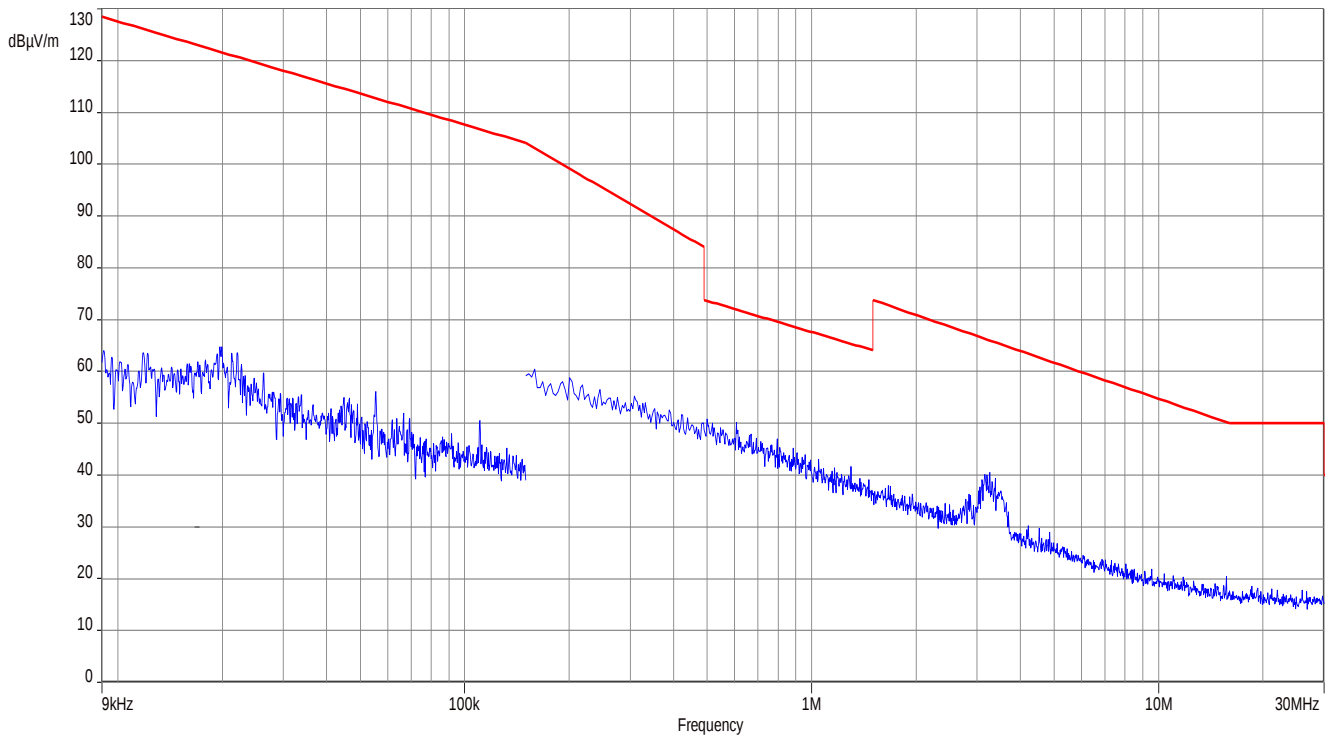
Remarks:

Carrier-on state / Carrier at the upper edge of the band (fh)

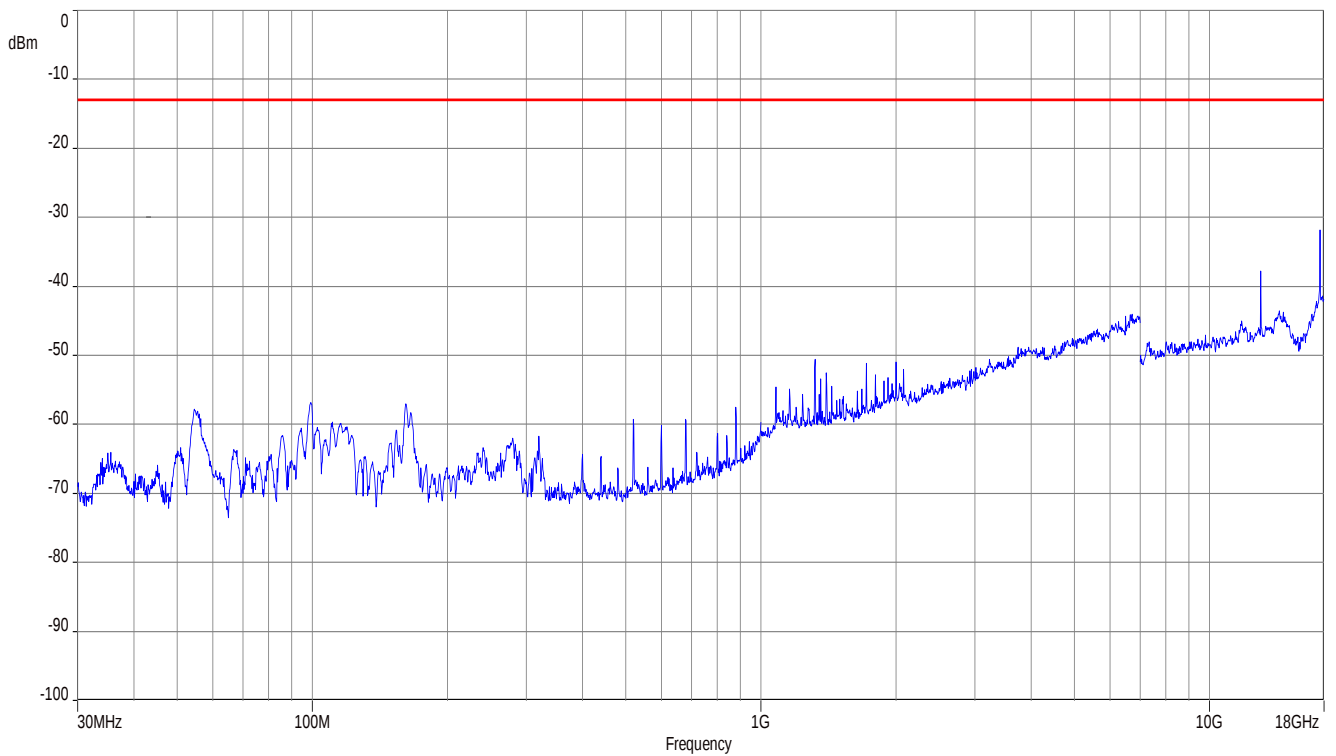
3 Measurement results, Spurious emissions 30MHz - 18 GHz

This Chapter 3 consists of 3 pages including this page.

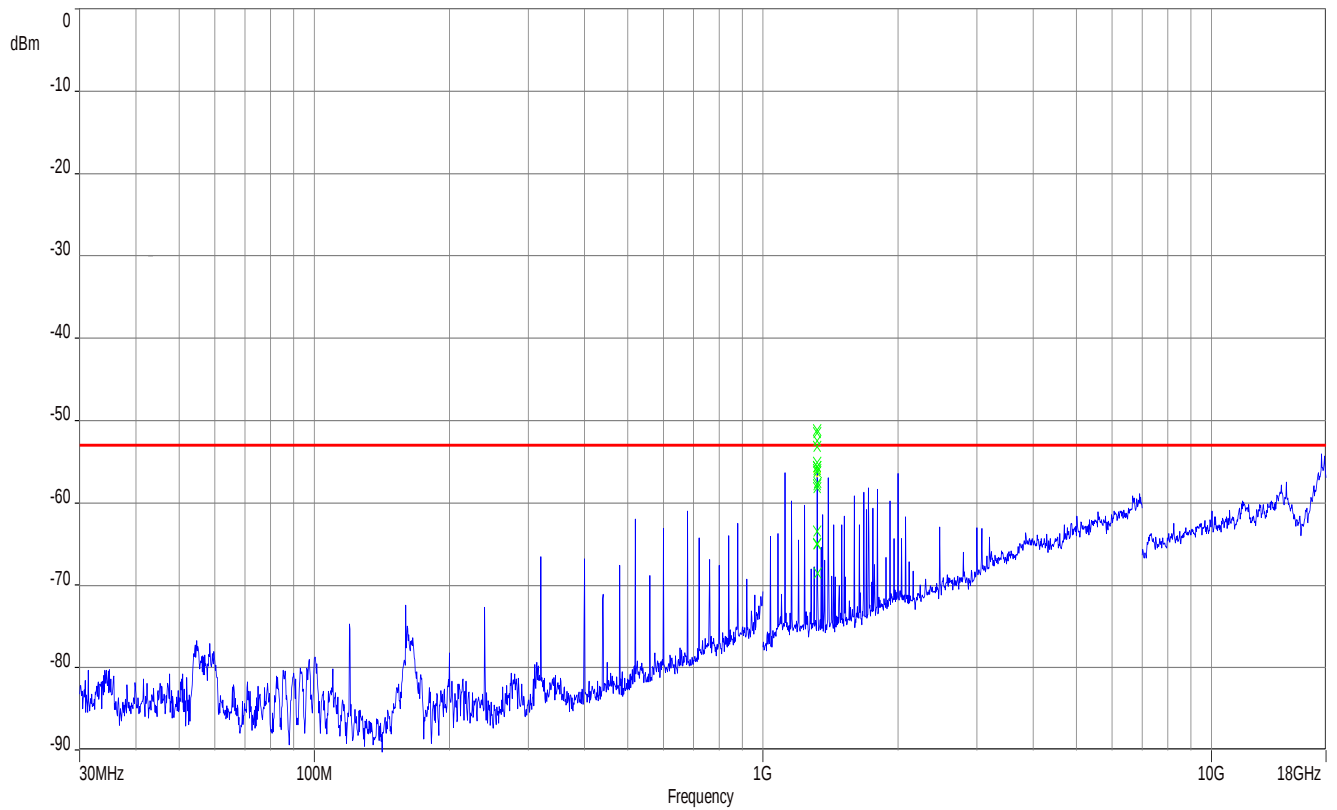
Plot No. 1: 150 kHz – 30 MHz, antenna vertical / horizontal Tx/Rx



Plot No. 2: 30 MHz – 18 GHz, antenna vertical / horizontal Tx



Plot No. 3: 30 MHz – 18 GHz, antenna vertical / horizontal Rx RSP-101



4 Measurement results, FCC Part 15B

This Chapter 3 consists of 1 pages including this page.

Refer to test report 1-0037_20-02-08.pdf

5 Document history

Version	Applied changes	Date of release
	Initial release - DRAFT	2021-05-07
	Initial release	2022-01-19