Annex D

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Test report annex authorized:

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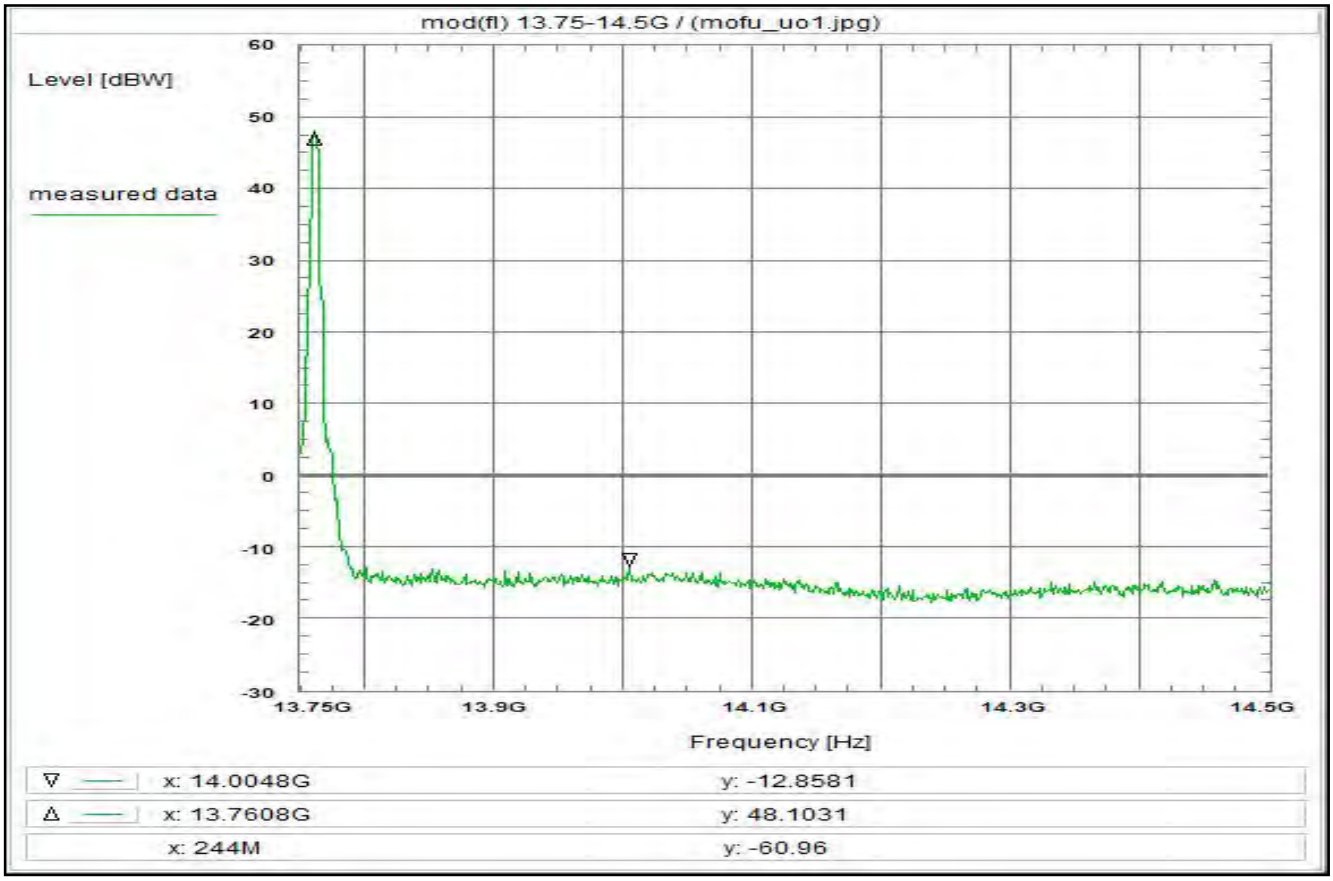
2 Measurement results, FCC Part 25

This chapter consists of 91 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
QPSK single carrier

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C220, R001, W009, W019, W053

Remark:

Test result: Measurement for orientation

Environment condition:

Date & Time:	Mon 21/Dec/2020 13:38:56	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

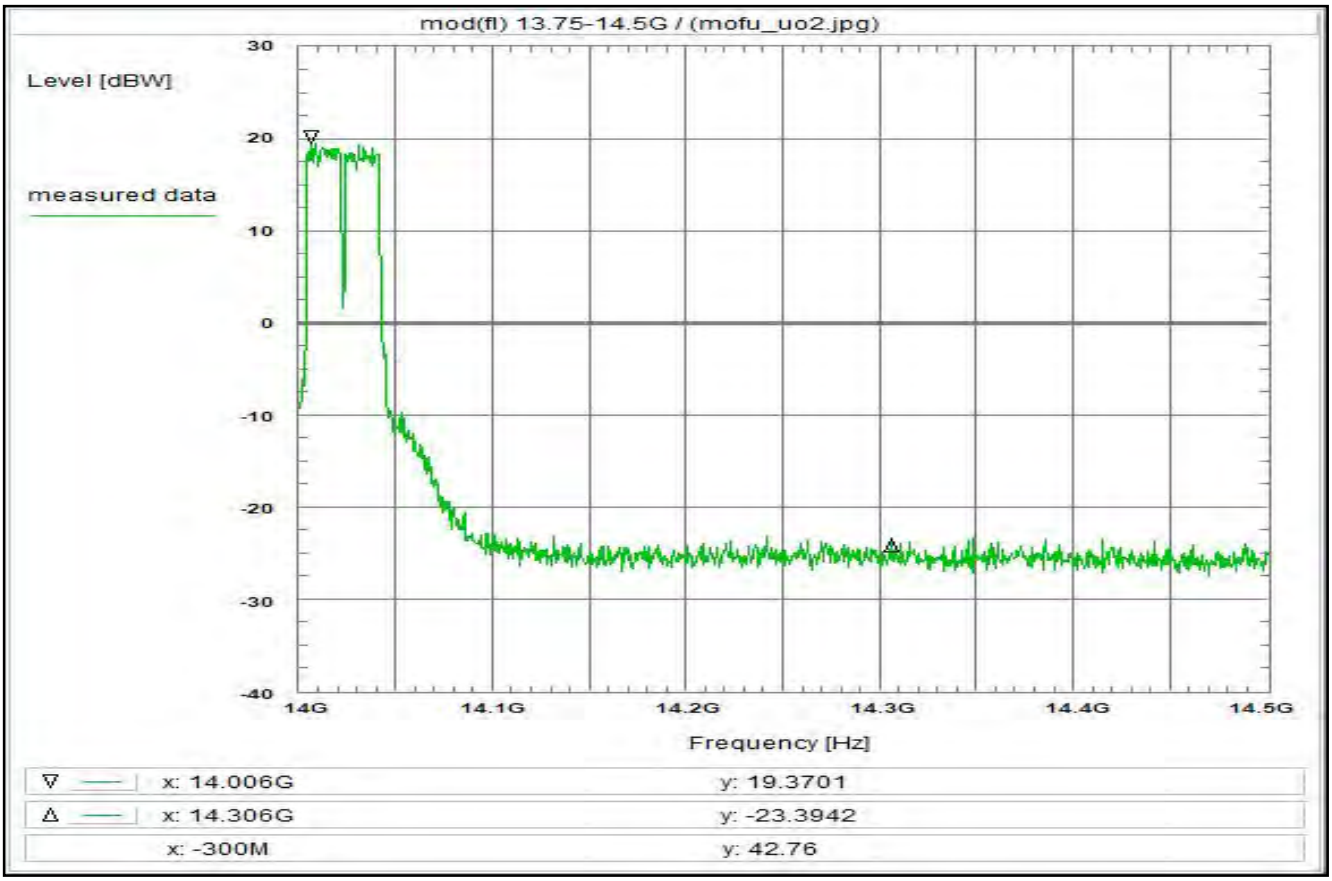
Start frequency:	13.75	GHz
Stop frequency:	14.5	GHz
Center frequency:	14.125	GHz
Frequency span:	750	MHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	0	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	Pos Peak	

Correction:

Directional coupler (W009)	+	39.5	dB
Coaxial cable (C220)	+	2.7	dB
DUT-Antenna (on-axis)	+	40.0	dBi
Test antenna	+	0.0	dB
BW correction factor	+	0.0	dB
Atten. between HPA and feedhorn	+	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	82.2	dB

Remarks:
Test of general function of the EUT and measurement for orientation

Plot No. 2



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 4, see test report chapter 6.4
QPSK dual carrier

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W053

Remark:

Test result: measurement for orientation

Environment condition:

Date & Time:	Wed 19/May/2021 13:35:13	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

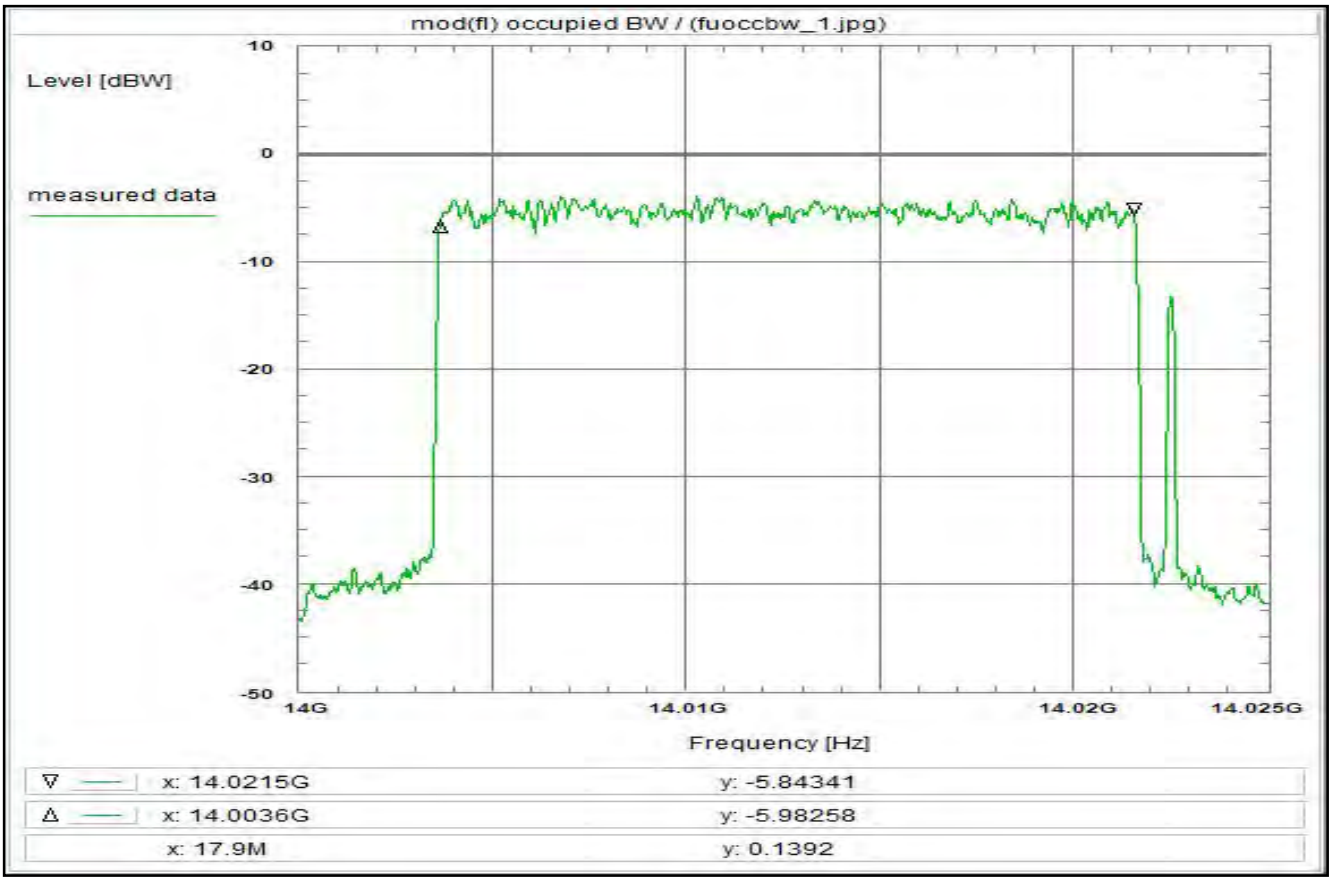
Start frequency:	14	GHz
Stop frequency:	14.5	GHz
Center frequency:	14.25	GHz
Frequency span:	500	MHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	10	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	Pos Peak	

Correction:

Directional coupler (W009)	+	39.5	dB
Coaxial cable (C107)	+	4.0	dB
DUT-Antenna (on-axis)	+	38.2	dBi
Test antenna	+	0.0	dB
BW correction factor	+	0.0	dB
Atten. between HPA and feedhorn	+	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	81.7	dB

Remarks:
Test of general function of the EUT and measurement for orientation

Plot No. 3



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

Limit:
no limits defined

The frequency range in the plot is about 3 times the expected occupied bandwidth.

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

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

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W053

Remark:

Test result: determination of the occupied bandwidth

Environment condition:

Date & Time:	Wed 19/May/2021 13:58:35	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

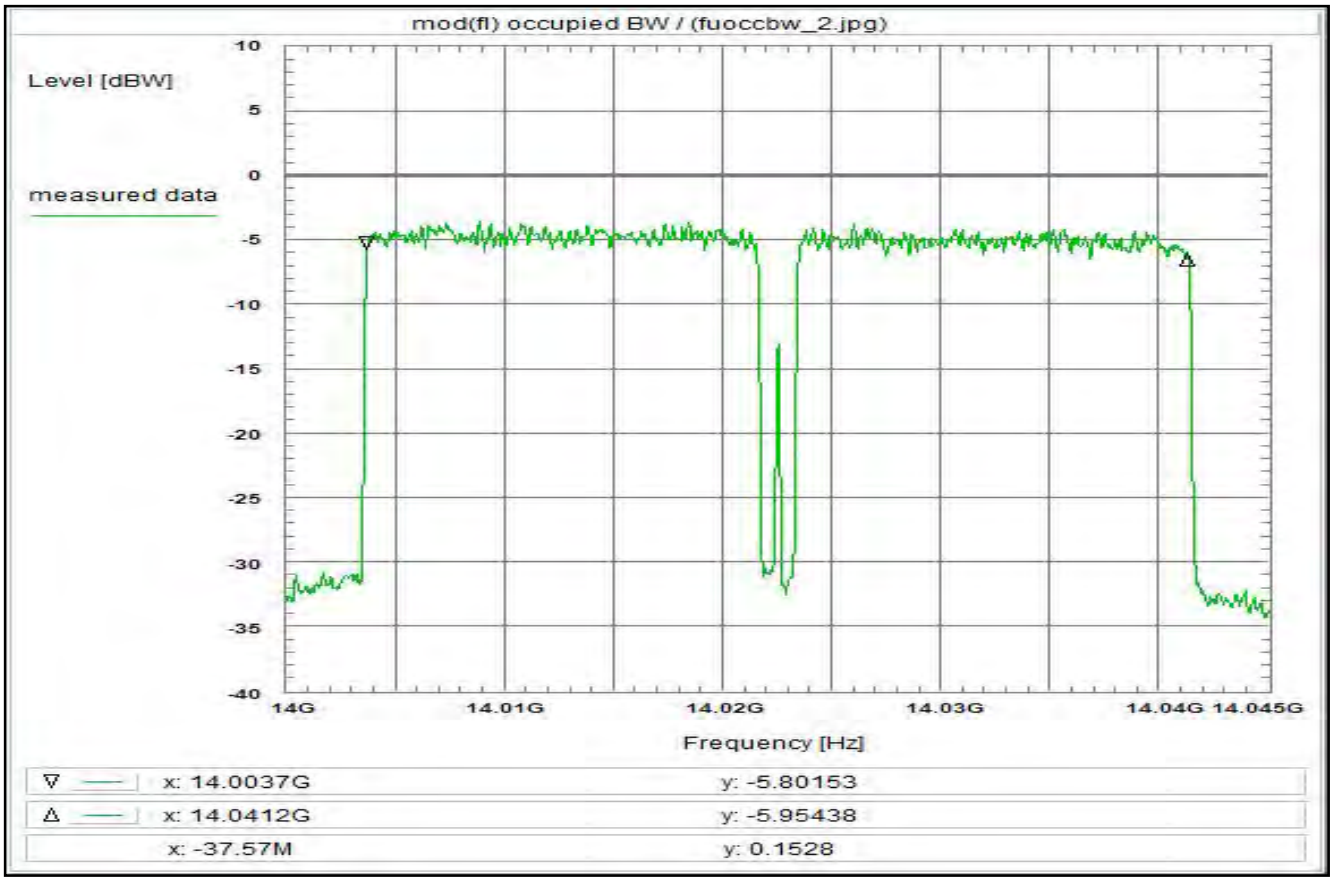
Start frequency:	14	GHz
Stop frequency:	14.025	GHz
Center frequency:	14.0125	GHz
Frequency span:	25	MHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	10	dB
Trace-Mode:	Average	
Detector-Mode:	Pos Peak	

Correction:

Directional coupler (W009)	+	39.6	dB
Coaxial cable (C107)	+	4.0	dB
DUT-Antenna (on-axis)	+	38.2	dBi
Test antenna	+	0.0	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	+	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	67.8	dB

Remarks:
Determination of the occupied bandwidth.
The measured value is about 17.9 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 lower edge of the band (fl)
Determination of the occupied bandwidth

Limit:
no limits defined

The frequency range in the plot is about 3 times the expected occupied bandwidth.

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

Operating condition of DUT:
operating condition 4, see test report chapter 6.4
QPSK dual carrier

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W053

Remark:
determination of the occupied bandwidth

Test result: determination of the occupied bandwidth

Environment condition:

Date & Time:	Wed 19/May/2021 14:23:32	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

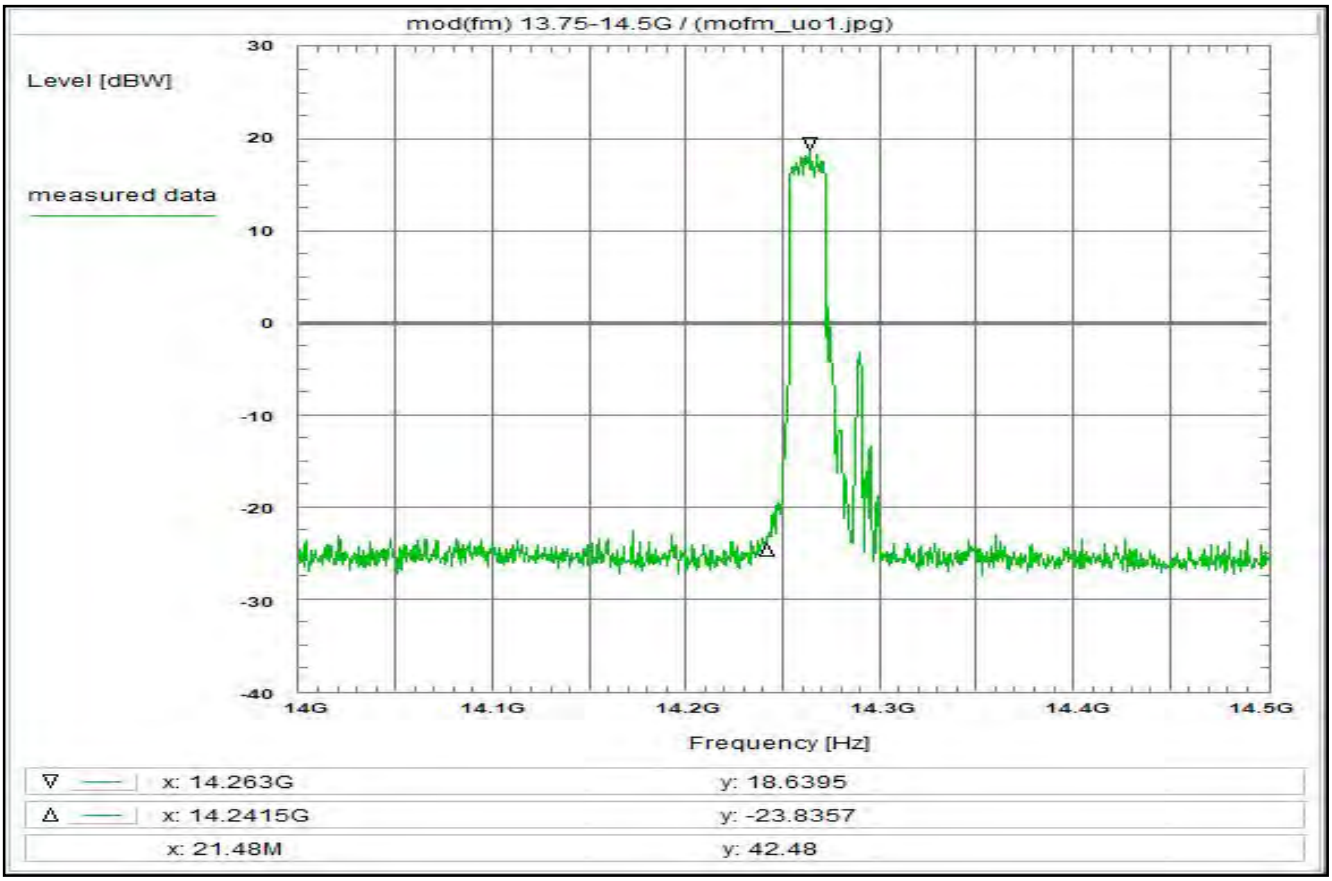
Start frequency:	14	GHz
Stop frequency:	14.045	GHz
Center frequency:	14.0225	GHz
Frequency span:	45	MHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	10	dB
Trace-Mode:	Average	
Detector-Mode:	Pos Peak	

Correction:

Directional coupler (W009)	+	39.6	dB
Coaxial cable (C107)	+	4.0	dB
DUT-Antenna (on-axis)	+	38.2	dBi
Test antenna	+	0.0	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	+	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	67.8	dB

Remarks:
Determination of the occupied bandwidth.
The measured value is about 37.5 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: -/- Function test
Modulated rf-carrier in the middle of the band (fm)
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 in the middle of the band (EIRP).

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

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

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W053

Remark:

Test result: measurement for orientation

Environment condition:

Date & Time:	Wed 19/May/2021 13:28:24	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

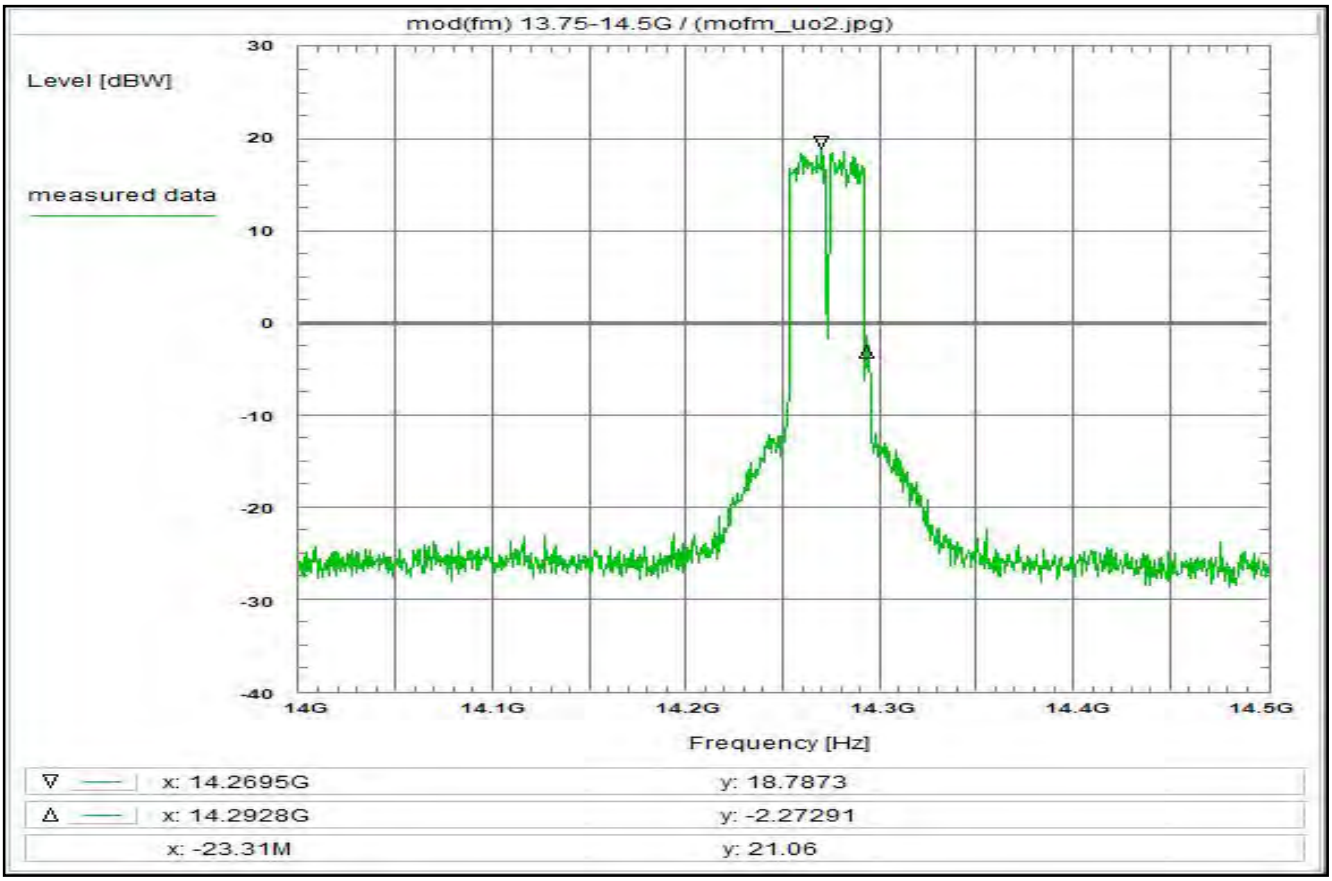
Start frequency:	14	GHz
Stop frequency:	14.5	GHz
Center frequency:	14.25	GHz
Frequency span:	500	MHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	10	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	Pos Peak	

Correction:

Directional coupler (W009)	+	39.5	dB
Coaxial cable (C107)	+	4.0	dB
DUT-Antenna (on-axis)	+	38.5	dBi
Test antenna	+	0.0	dB
BW correction factor	+	0.0	dB
Atten. between HPA and feedhorn	+	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	82.0	dB

Remarks:
Test of general function of the EUT and measurement for orientation

Plot No. 6



Subclause: -/- Function test
Modulated rf-carrier in the middle of the band (fm)
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 in the middle of the band (EIRP).

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

Operating condition of DUT:
operating condition 4, see test report chapter 6.4
QPSK dual carrier

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W053

Remark:

Test result: measurement for orientation

Environment condition:

Date & Time:	Wed 19/May/2021 13:33:35	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

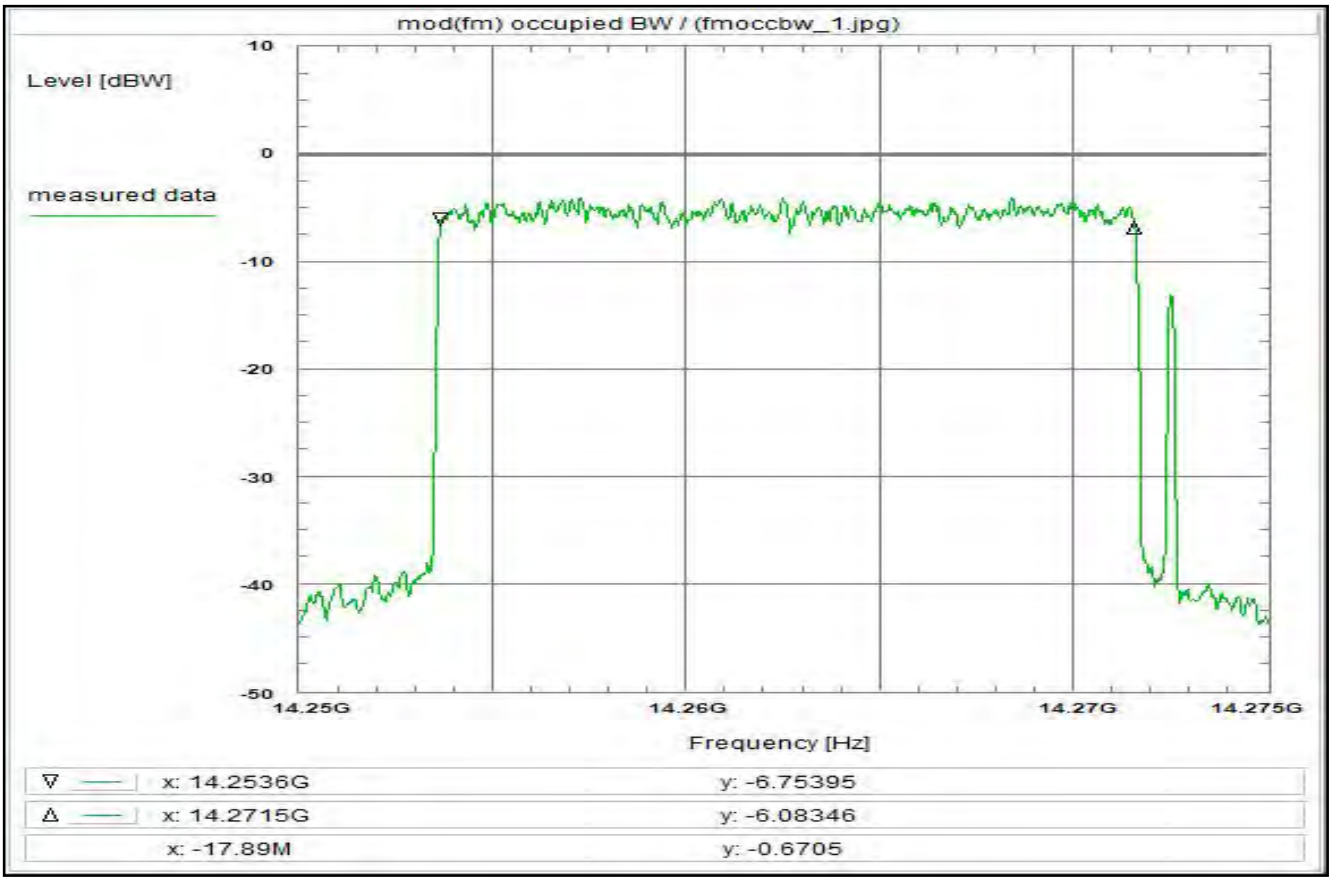
Start frequency:	14	GHz
Stop frequency:	14.5	GHz
Center frequency:	14.25	GHz
Frequency span:	500	MHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	10	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	Pos Peak	

Correction:

Directional coupler (W009)	+	39.5	dB
Coaxial cable (C107)	+	4.0	dB
DUT-Antenna (on-axis)	+	38.5	dBi
Test antenna	+	0.0	dB
BW correction factor	+	0.0	dB
Atten. between HPA and feedhorn	+	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	82.0	dB

Remarks:
Test of general function of the EUT and measurement for orientation

Plot No. 7



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

Limit:
no limits defined

The frequency range in the plot is about 3 times the expected occupied bandwidth.

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

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

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W053

Remark:

Test result: determination of the occupied bandwidth

Environment condition:

Date & Time:	Wed 19/May/2021 13:48:23	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

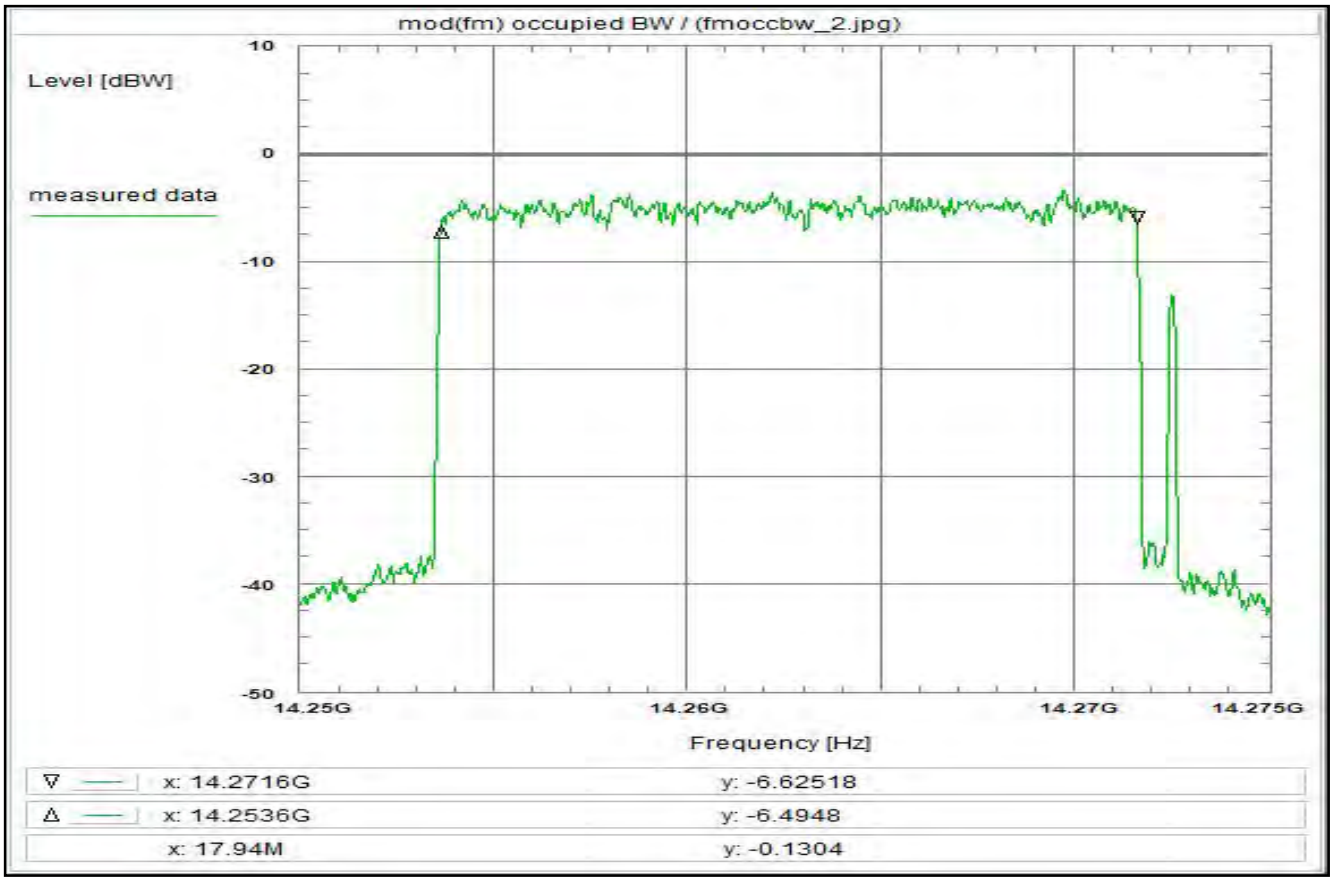
Start frequency:	14.25	GHz
Stop frequency:	14.275	GHz
Center frequency:	14.2625	GHz
Frequency span:	25	MHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	10	dB
Trace-Mode:	Average	
Detector-Mode:	Pos Peak	

Correction:

Directional coupler (W009)	+	39.5	dB
Coaxial cable (C107)	+	4.0	dB
DUT-Antenna (on-axis)	+	38.5	dBi
Test antenna	+	0.0	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	+	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	68.0	dB

Remarks:
Determination of the occupied bandwidth.
The measured value is about 17.9 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. 8



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

Limit:
no limits defined

The frequency range in the plot is about 3 times the expected occupied bandwidth.

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

Operating condition of DUT:
operating condition 2, see test report chapter 6.4
8PSK single carrier

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W053

Remark:
determination of the occupied bandwidth

Test result: determination of the occupied bandwidth

Environment condition:

Date & Time:	Wed 19/May/2021 13:51:04	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

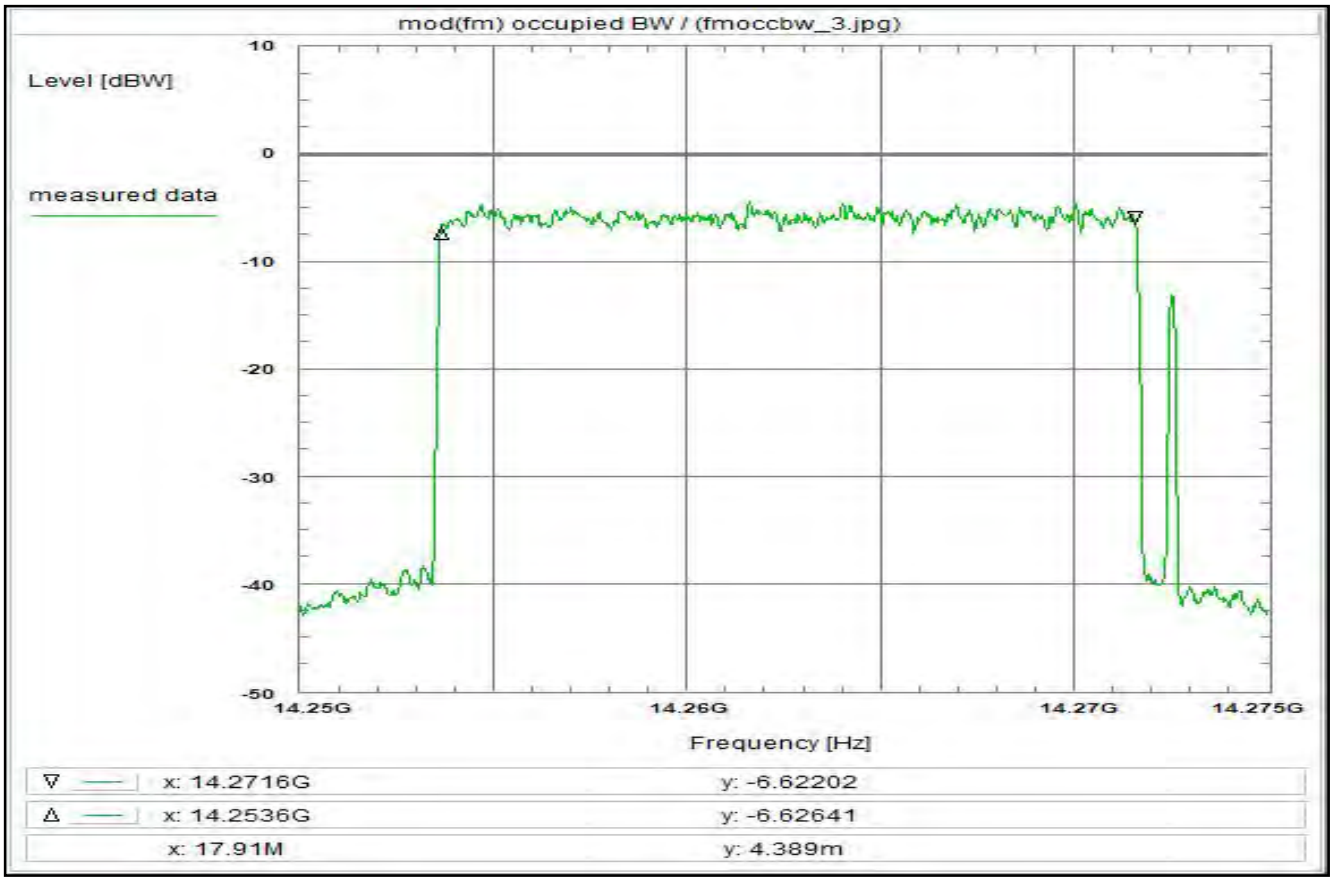
Start frequency:	14.25	GHz
Stop frequency:	14.275	GHz
Center frequency:	14.2625	GHz
Frequency span:	25	MHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	10	dB
Trace-Mode:	Average	
Detector-Mode:	Pos Peak	

Correction:

Directional coupler (W009)	+	39.5	dB
Coaxial cable (C107)	+	4.0	dB
DUT-Antenna (on-axis)	+	38.5	dBi
Test antenna	+	0.0	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	+	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	68.0	dB

Remarks:
Determination of the occupied bandwidth.
The measured value is about 17.9 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. 9



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

Limit:
no limits defined

The frequency range in the plot is about 3 times the expected occupied bandwidth.

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

Operating condition of DUT:
operating condition 3, see test report chapter 6.4
16QAM single carrier

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W053

Remark:

Test result: determination of the occupied bandwidth

Environment condition:

Date & Time:	Wed 19/May/2021 13:53:18	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

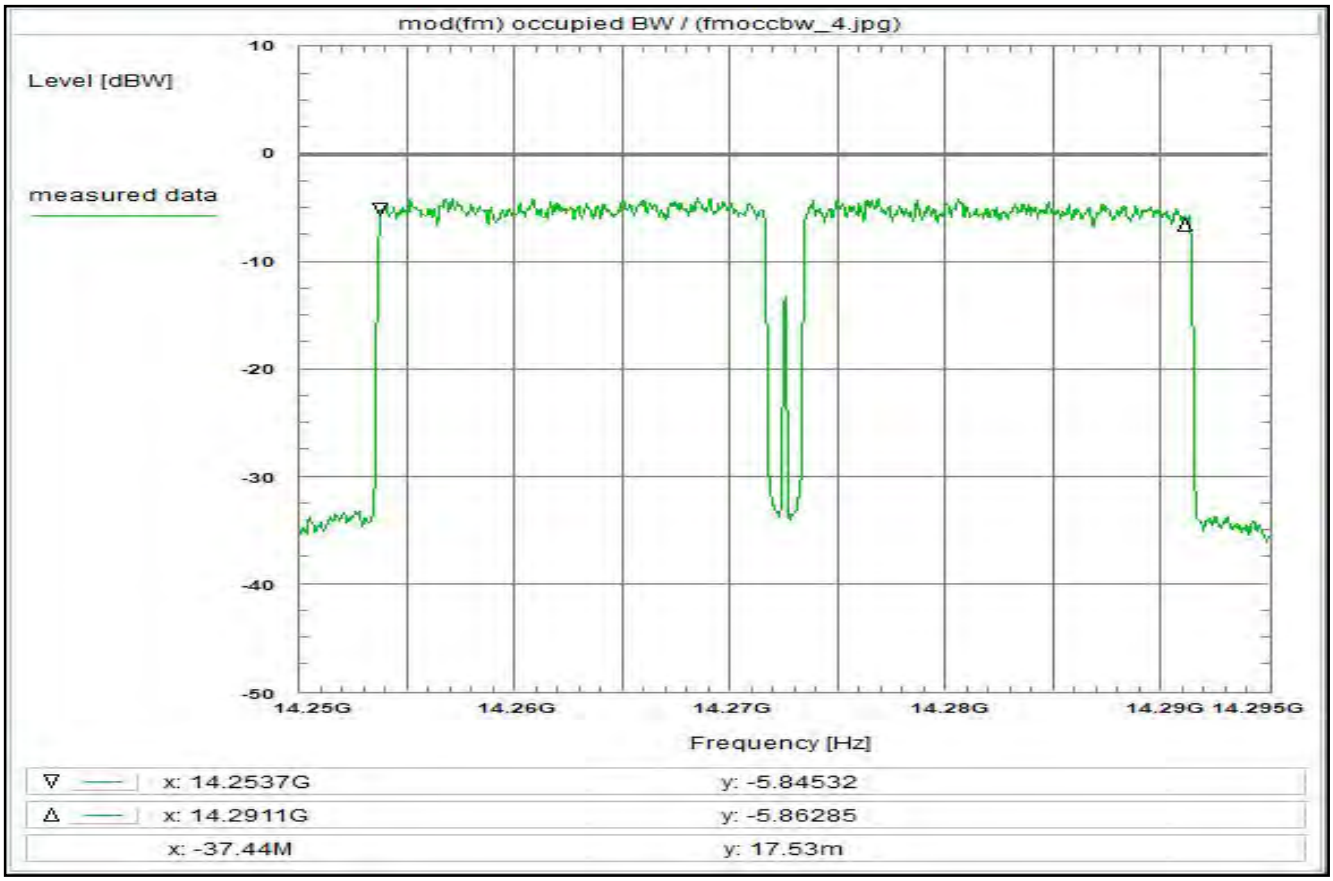
Start frequency:	14.25	GHz
Stop frequency:	14.275	GHz
Center frequency:	14.2625	GHz
Frequency span:	25	MHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	10	dB
Trace-Mode:	Average	
Detector-Mode:	Pos Peak	

Correction:

Directional coupler (W009)	+	39.5	dB
Coaxial cable (C107)	+	4.0	dB
DUT-Antenna (on-axis)	+	38.5	dBi
Test antenna	+	0.0	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	+	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	68.0	dB

Remarks:
Determination of the occupied bandwidth.
The measured value is about 17.9 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. 10



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

Limit:
no limits defined

The frequency range in the plot is about 3 times the expected occupied bandwidth.

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

Operating condition of DUT:
operating condition 4, see test report chapter 6.4
QPSK dual carrier

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W053

Remark:
determination of the occupied bandwidth

Test result: determination of the occupied bandwidth

Environment condition:

Date & Time:	Wed 19/May/2021 14:12:55	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

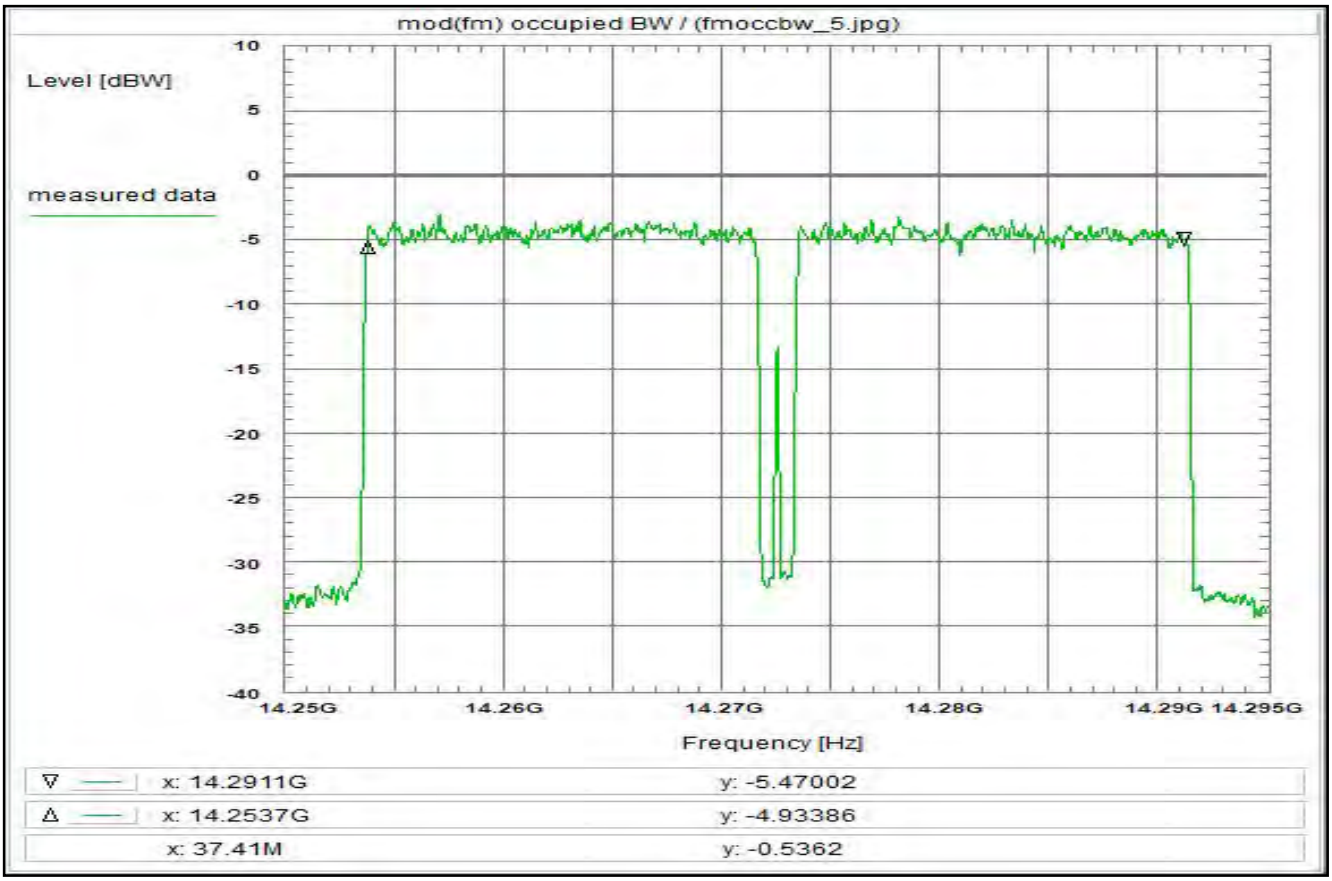
Start frequency:	14.25	GHz
Stop frequency:	14.295	GHz
Center frequency:	14.2725	GHz
Frequency span:	45	MHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	10	dB
Trace-Mode:	Average	
Detector-Mode:	Pos Peak	

Correction:

Directional coupler (W009)	+	39.5	dB
Coaxial cable (C107)	+	4.0	dB
DUT-Antenna (on-axis)	+	38.5	dBi
Test antenna	+	0.0	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	+	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	68.0	dB

Remarks:
Determination of the occupied bandwidth.
The measured value is about 37.5 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. 11



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

Limit:
no limits defined

The frequency range in the plot is about 3 times the expected occupied bandwidth.

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

Operating condition of DUT:
operating condition 5, see test report chapter 6.4
8PSK dual carrier

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W053

Remark:

Test result: determination of the occupied bandwidth

Environment condition:

Date & Time:	Wed 19/May/2021 14:16:14	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

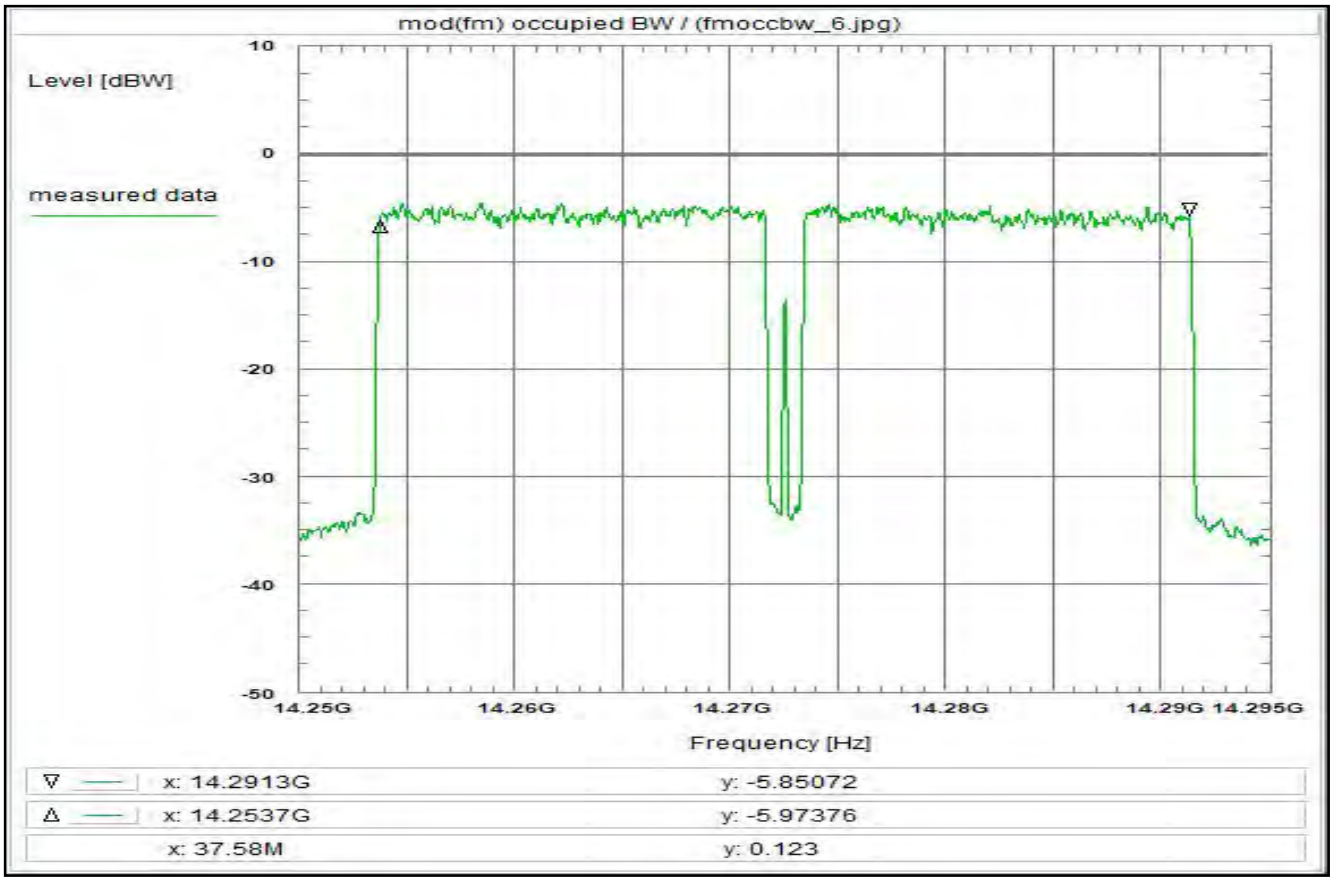
Start frequency:	14.25	GHz
Stop frequency:	14.295	GHz
Center frequency:	14.2725	GHz
Frequency span:	45	MHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	10	dB
Trace-Mode:	Average	
Detector-Mode:	Pos Peak	

Correction:

Directional coupler (W009)	+	39.5	dB
Coaxial cable (C107)	+	4.0	dB
DUT-Antenna (on-axis)	+	38.5	dBi
Test antenna	+	0.0	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	+	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	68.0	dB

Remarks:
Determination of the occupied bandwidth.
The measured value is about 37.5 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. 12



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

Limit:
no limits defined

The frequency range in the plot is about 3 times the expected occupied bandwidth.

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

Operating condition of DUT:
operating condition 6, see test report chapter 6.4
16QAM dual carrier

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W053

Remark:
determination of the occupied bandwidth

Test result: determination of the occupied bandwidth

Environment condition:

Date & Time:	Wed 19/May/2021 14:20:55	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

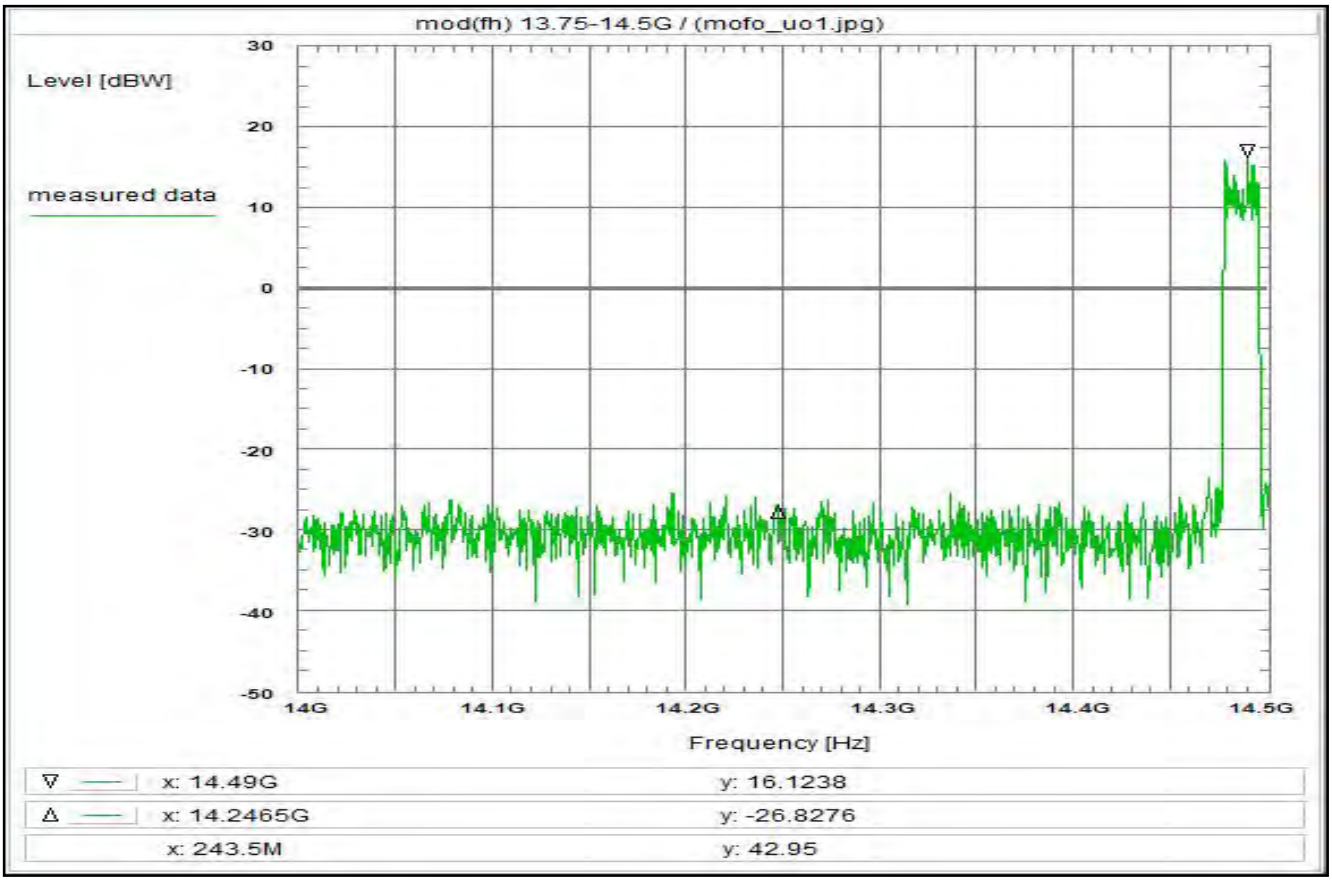
Start frequency:	14.25	GHz
Stop frequency:	14.295	GHz
Center frequency:	14.2725	GHz
Frequency span:	45	MHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	10	dB
Trace-Mode:	Average	
Detector-Mode:	Pos Peak	

Correction:

Directional coupler (W009)	+	39.5	dB
Coaxial cable (C107)	+	4.0	dB
DUT-Antenna (on-axis)	+	38.5	dBi
Test antenna	+	0.0	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	+	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	68.0	dB

Remarks:
Determination of the occupied bandwidth.
The measured value is about 37.5 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. 13



Subclause: -/- Function test
Modulated rf-carrier at the upper edge of the band (fh)
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 upper 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
QPSK single carrier

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W053

Remark:

Test result: measurement for orientation

Environment condition:

Date & Time:	Wed 19/May/2021 13:31:07	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

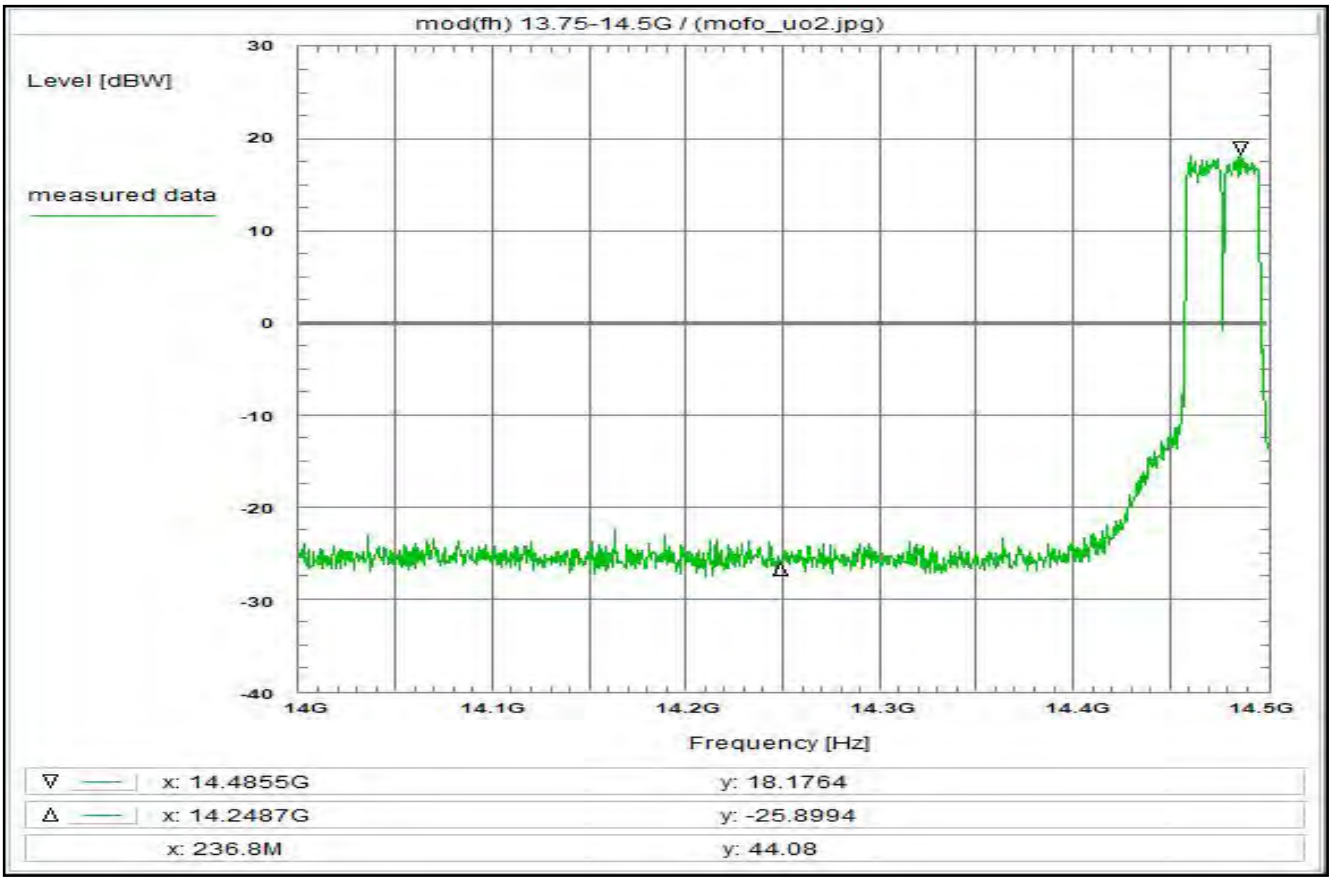
Start frequency:	14	GHz
Stop frequency:	14.5	GHz
Center frequency:	14.25	GHz
Frequency span:	500	MHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	10	dB
Trace-Mode:	Clear Write	
Detector-Mode:	Pos Peak	

Correction:

Directional coupler (W009)	+	39.5	dB
Coaxial cable (C107)	+	4.0	dB
DUT-Antenna (on-axis)	+	38.3	dBi
Test antenna	+	0.0	dB
BW correction factor	+	0.0	dB
Atten. between HPA and feedhorn	+	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	81.8	dB

Remarks:
Test of general function of the EUT and measurement for orientation

Plot No. 14



Subclause: -/- Function test
Modulated rf-carrier at the upper edge of the band (fh)
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 upper edge of the operating frequency band.

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

Operating condition of DUT:
operating condition 4, see test report chapter 6.4
QPSK dual carrier

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W053

Remark:

Test result: measurement for orientation

Environment condition:

Date & Time:	Wed 19/May/2021 13:32:20	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

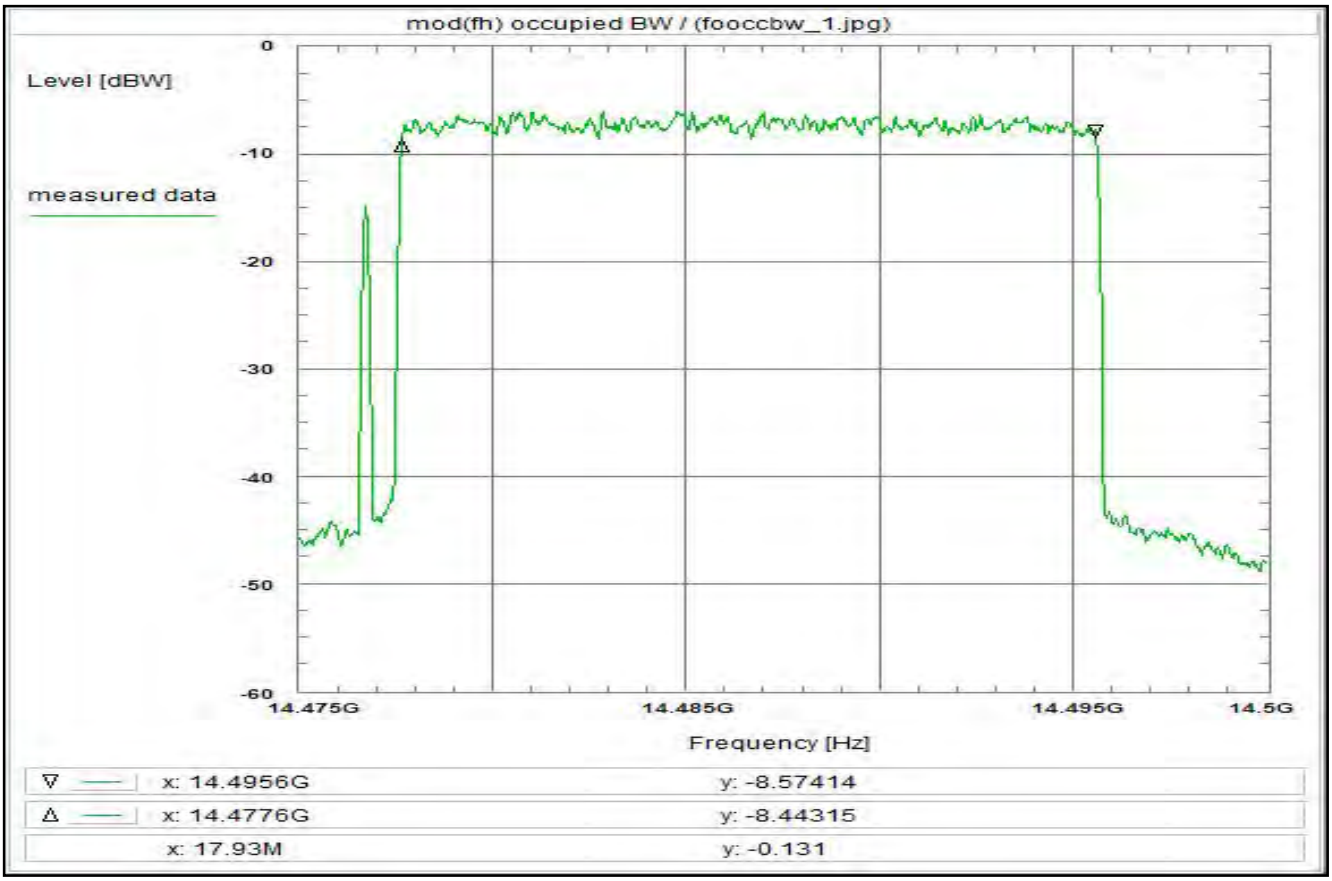
Start frequency:	14	GHz
Stop frequency:	14.5	GHz
Center frequency:	14.25	GHz
Frequency span:	500	MHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	10	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	Pos Peak	

Correction:

Directional coupler (W009)	+	39.5	dB
Coaxial cable (C107)	+	4.0	dB
DUT-Antenna (on-axis)	+	38.3	dBi
Test antenna	+	0.0	dB
BW correction factor	+	0.0	dB
Atten. between HPA and feedhorn	+	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	81.8	dB

Remarks:
Test of general function of the EUT and measurement for orientation

Plot No. 15



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

Limit:
no limits defined

The frequency range in the plot is about 3 times the expected occupied bandwidth.

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

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

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W053

Remark:
determination of the occupied bandwidth

Test result: determination of the occupied bandwidth

Environment condition:

Date & Time:	Wed 19/May/2021 14:06:28	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

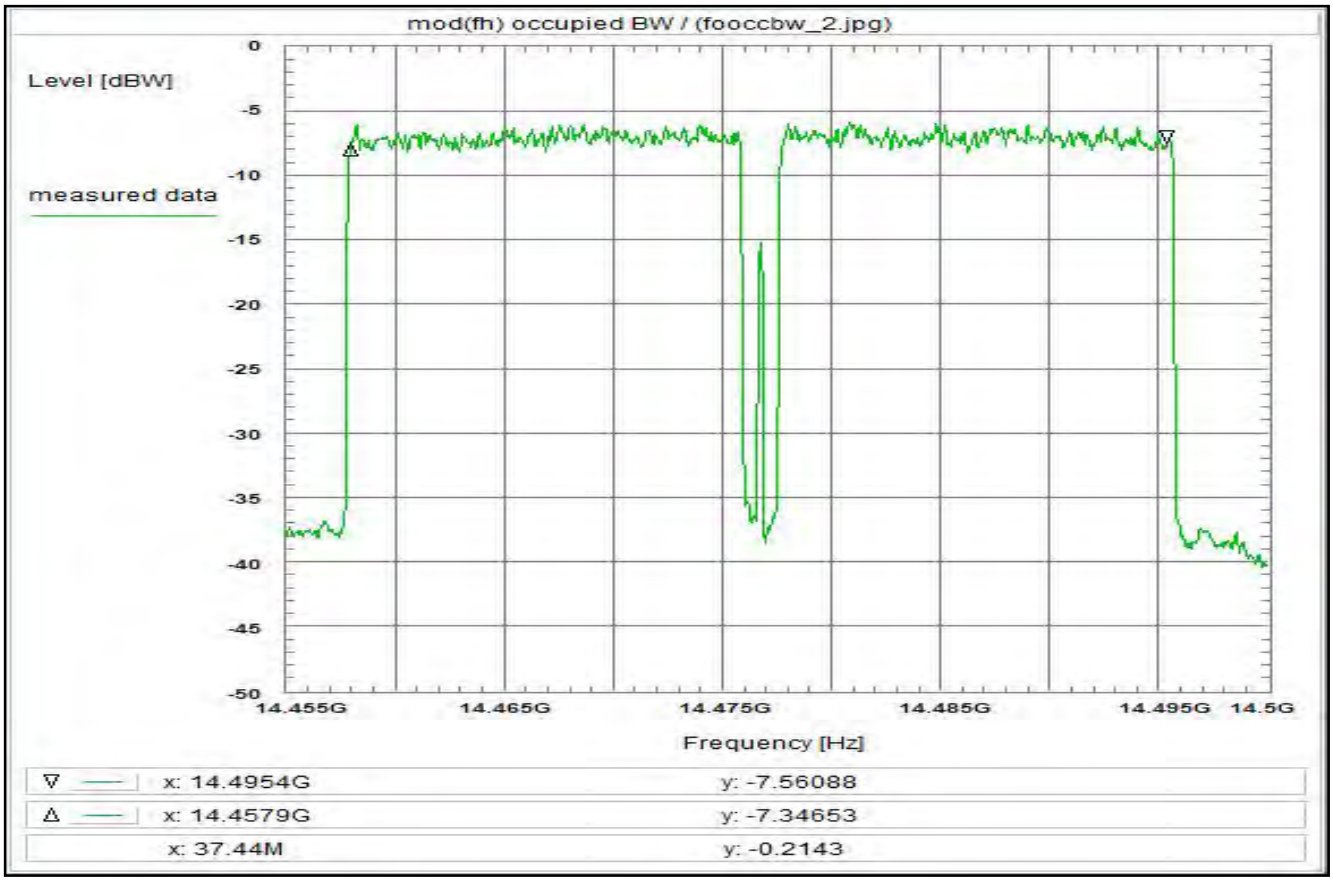
Start frequency:	14.475	GHz
Stop frequency:	14.5	GHz
Center frequency:	14.4875	GHz
Frequency span:	25	MHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	10	dB
Trace-Mode:	Average	
Detector-Mode:	Pos Peak	

Correction:

Directional coupler (W009)	+	39.4	dB
Coaxial cable (C107)	+	4.0	dB
DUT-Antenna (on-axis)	+	38.3	dBi
Test antenna	+	0.0	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	+	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	67.7	dB

Remarks:
Determination of the occupied bandwidth.
The measured value is about 17.9 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. 16



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

Limit:
no limits defined

The frequency range in the plot is about 3 times the expected occupied bandwidth.

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

Operating condition of DUT:
operating condition 4, see test report chapter 6.4
QPSK dual carrier

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W053

Remark:
determination of the occupied bandwidth

Test result: determination of the occupied bandwidth

Environment condition:

Date & Time:	Wed 19/May/2021 14:26:43	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

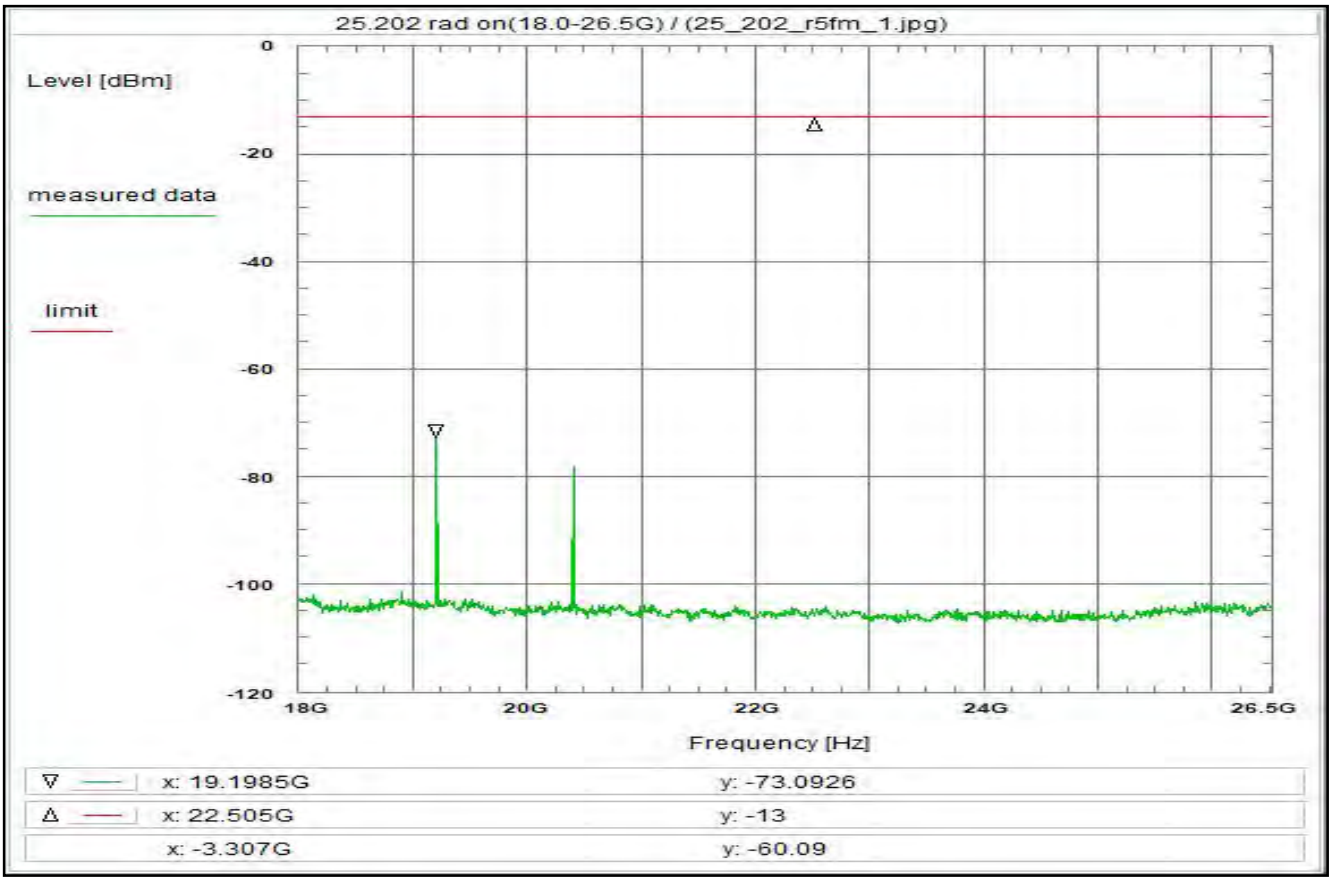
Start frequency:	14.455	GHz
Stop frequency:	14.5	GHz
Center frequency:	14.4775	GHz
Frequency span:	45	MHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	10	dB
Trace-Mode:	Average	
Detector-Mode:	Pos Peak	

Correction:

Directional coupler (W009)	+	39.4	dB
Coaxial cable (C107)	+	4.0	dB
DUT-Antenna (on-axis)	+	38.3	dBi
Test antenna	+	0.0	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	+	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	67.7	dB

Remarks:
Determination of the occupied bandwidth.
The measured value is about 37.5 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. 17



Subclause: 25.202) Emission limitations
Modulated rf-carrier within the band (fl/fm/fh)
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
QPSK single carrier , valid for all frequencies and modulations

Test setup:
see test report chapter 7.2

Test equipment:
see test report chapter 7.x: A019, BCBL, C107, R001, W065, W073, W074

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Fri 21/May/2021 14:07:59	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

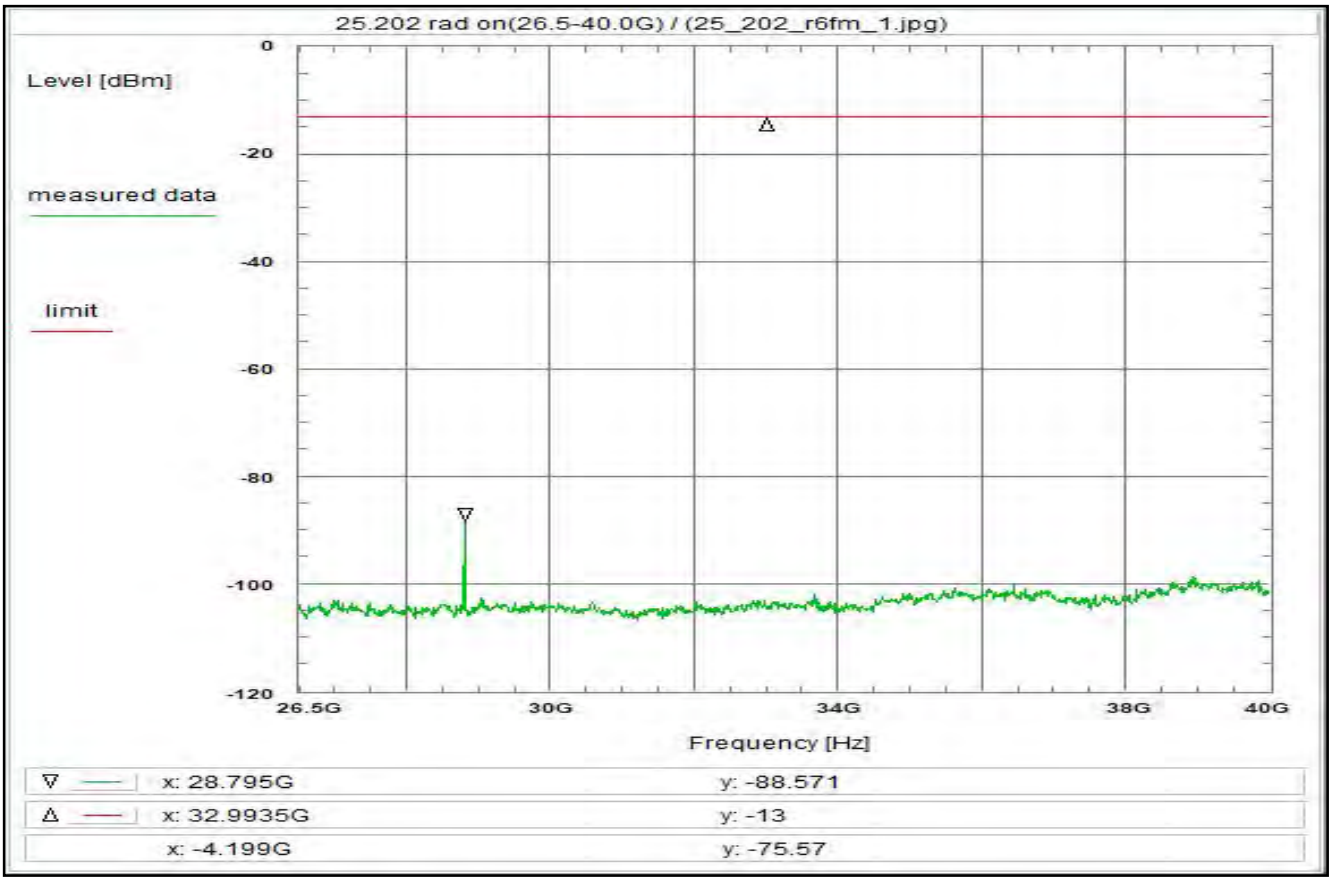
Start frequency:	18	GHz
Stop frequency:	26.5	GHz
Center frequency:	22.25	GHz
Frequency span:	8.5	GHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	0	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	Pos Peak	

Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C107)	+	5.0	dB
DUT-Antenna	+	0.0	dBi
Test antenna (A019)	-	19.3	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation (22.25GHz, 0.3m)	+	48.9	dB
(BCBL)	-	46.0	dB
TOTAL CORRECTION:	-	-25.4	dB

Remarks:
Carrier-on state / Carrier within the the band (fl/fm/fh)
Measurement for orientation with a measuring antenna close to the DUT-cabinets.
If any critical spurious radiations are detected a measurement
in an exactly defined distance will be carried out.

Plot No. 18



Subclause: 25.202) Emission limitations
Modulated rf-carrier within the band (fl/fm/fh)
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
QPSK single carrier , valid for all frequencies and modulations

Test setup:
see test report chapter 7.2

Test equipment:
see test report chapter 7.x: A021, BCBL, C107, R001, W065, W073, W074

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Fri 21/May/2021 14:14:09	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

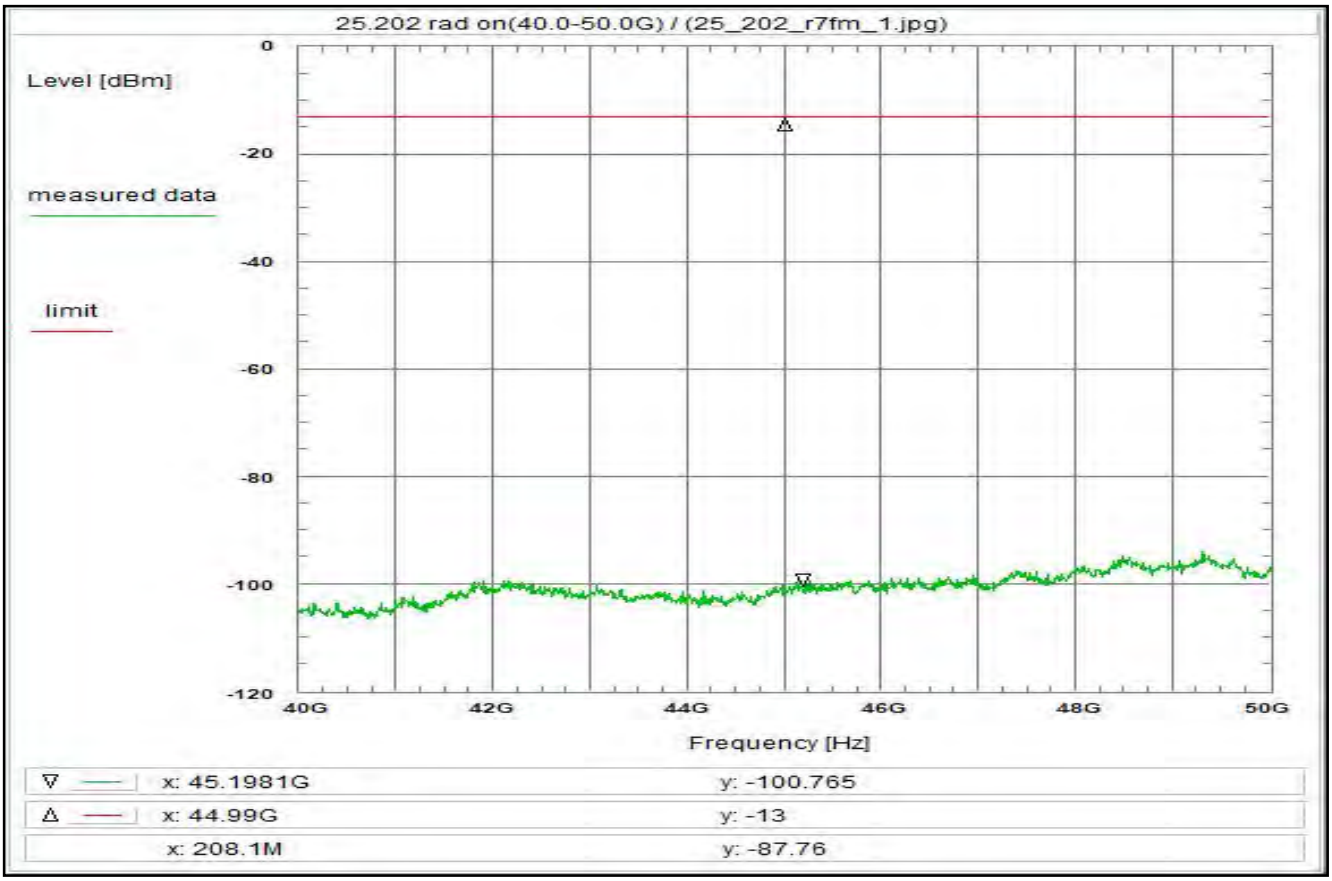
Start frequency:	26.5	GHz
Stop frequency:	40	GHz
Center frequency:	33.25	GHz
Frequency span:	13.5	GHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	0	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	Pos Peak	

Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C107)	+	6.3	dB
DUT-Antenna	+	0.0	dBi
Test antenna (A021)	-	19.6	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation (33.25GHz, 0.2m)	+	48.9	dB
(BCBL)	-	47.7	dB
TOTAL CORRECTION:	-	-26.1	dB

Remarks:
Carrier-on state / Carrier within the the band (fl/fm/fh)
Measurement for orientation with a measuring antenna close to the DUT-cabinets.
If any critical spurious radiations are detected a measurement
in an exactly defined distance will be carried out.

Plot No. 19



Subclause: 25.202) Emission limitations
Modulated rf-carrier within the band (fl/fm/fh)
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
QPSK single carrier , valid for all frequencies and modulations

Test setup:
see test report chapter 7.2

Test equipment:
see test report chapter 7.x: A023, BCBL, C107, R001, W022, W074, W077

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Fri 21/May/2021 14:17:25	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

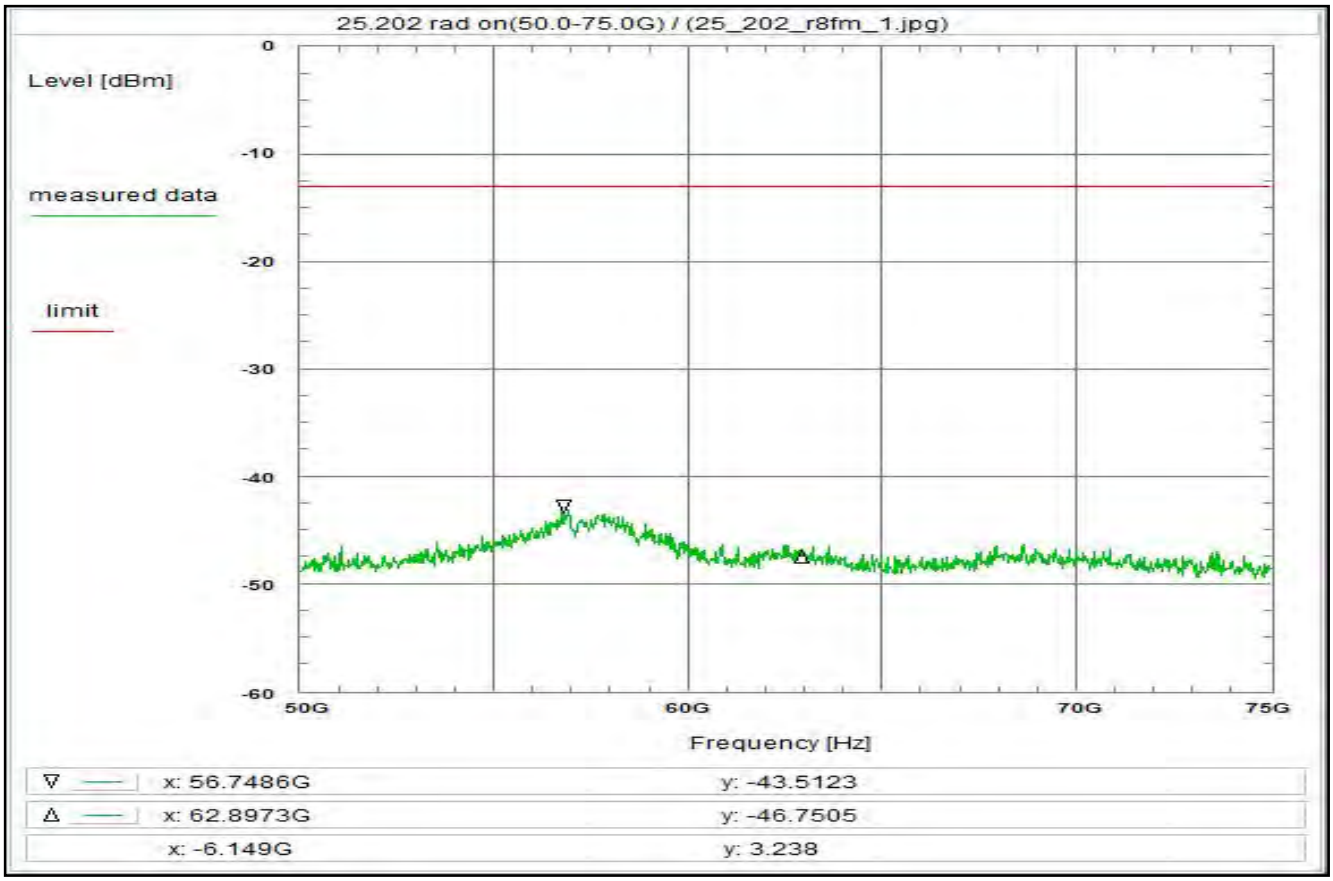
Start frequency:	40	GHz
Stop frequency:	50	GHz
Center frequency:	45	GHz
Frequency span:	10	GHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	0	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	Pos Peak	

Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C107)	+	7.4	dB
DUT-Antenna	+	0.0	dBi
Test antenna (A023)	-	18.9	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation (45.00GHz, 0.1m)	+	45.5	dB
(BCBL)	-	46.8	dB
TOTAL CORRECTION:	-	-26.8	dB

Remarks:
Carrier-on state / Carrier within the the band (fl/fm/fh)
Measurement for orientation with a measuring antenna close to the DUT-cabinets.
If any critical spurious radiations are detected a measurement
in an exactly defined distance will be carried out.

Plot No. 20



Subclause: 25.202) Emission limitations
Modulated rf-carrier within the band (fl/fm/fh)
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
QPSK single carrier, valid for all frequencies and modulations

Test setup:
see test report chapter 7.4

Test equipment:
see test report chapter 6.x: R001, R025, W022, W074, W077

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Fri 21/May/2021 14:24:09	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

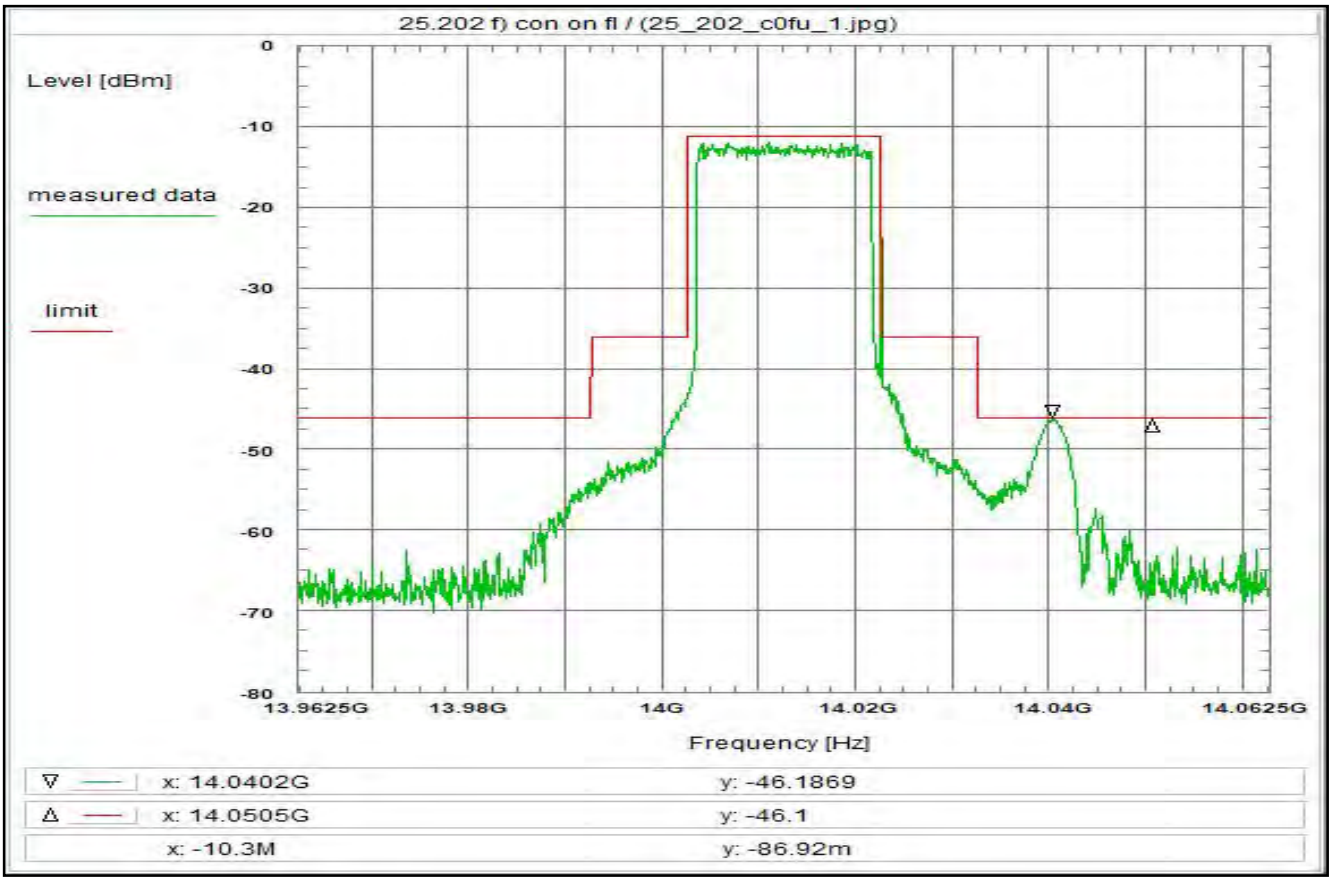
Start frequency:	50	GHz
Stop frequency:	75	GHz
Center frequency:	62.5	GHz
Frequency span:	25	GHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	0	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	Pos Peak	

Correction:

Directional coupler	+	0.0	dB
Coaxial cable	+	0.0	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation (62.50GHz, 0.1m)	+	48.4	dB
TOTAL CORRECTION:	+	34.4	dB

Remarks:
Carrier-on state / Carrier within the the band (fl/fm/fh)
Measurement for orientation with a measuring antenna close to the DUT-cabinets.
If any critical spurious radiations are detected a measurement
in an exactly defined distance will be carried out.

Plot No. 21



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
QPSK single carrier

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W053

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Wed 19/May/2021 16:53:56	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

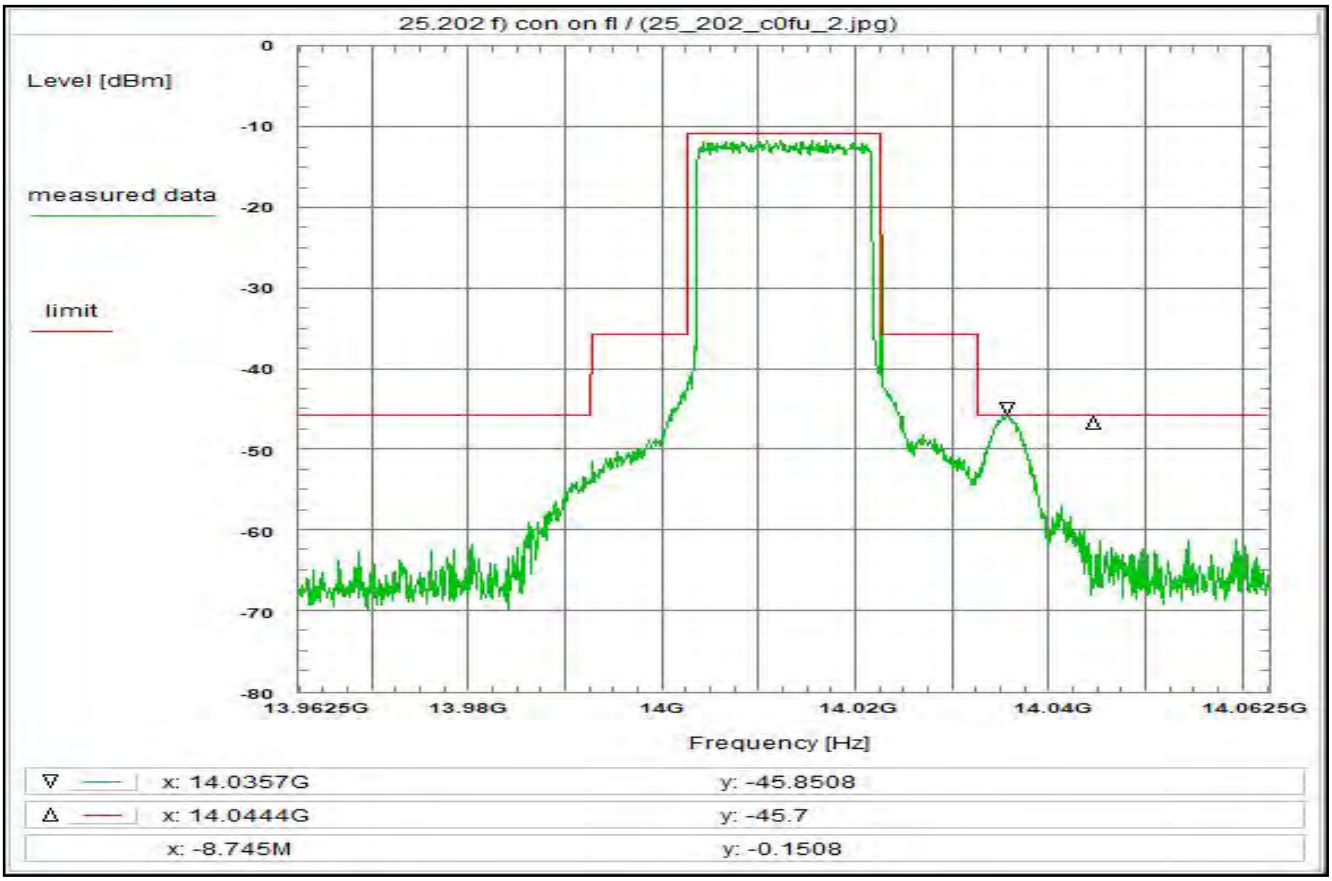
Start frequency:	13.9625	GHz
Stop frequency:	14.0625	GHz
Center frequency:	14.0125	GHz
Frequency span:	100	MHz
Resolution-BW:	10	kHz
Video-BW:	30	kHz
Input attenuation:	10	dB
Trace-Mode:	Clear Write	
Detector-Mode:	AVG	

Correction:

Directional coupler (W009)	+	39.6	dB
Coaxial cable (C107)	+	4.0	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (10k -> 4k)	-	4.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	39.6	dB

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

Plot No. 22



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 2, see test report chapter 6.4
8PSK single carrier

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W053

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Wed 19/May/2021 17:00:03	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

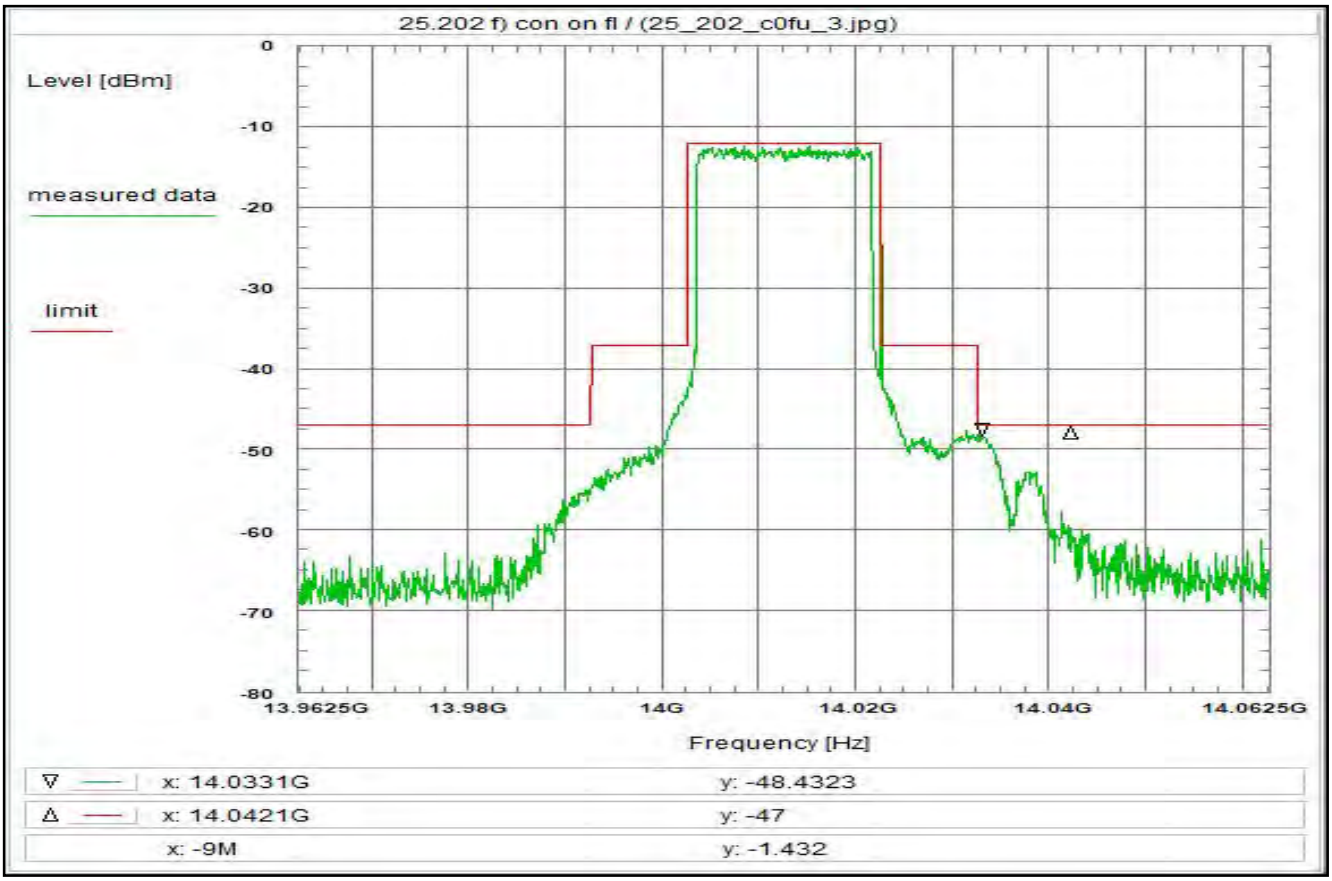
Start frequency:	13.9625	GHz
Stop frequency:	14.0625	GHz
Center frequency:	14.0125	GHz
Frequency span:	100	MHz
Resolution-BW:	10	kHz
Video-BW:	30	kHz
Input attenuation:	10	dB
Trace-Mode:	Clear Write	
Detector-Mode:	AVG	

Correction:

Directional coupler (W009)	+	39.6	dB
Coaxial cable (C107)	+	4.0	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (10k -> 4k)	-	4.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	39.6	dB

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

Plot No. 23



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 3, see test report chapter 6.4
16QAM single carrier

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W053

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Wed 19/May/2021 17:02:52	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

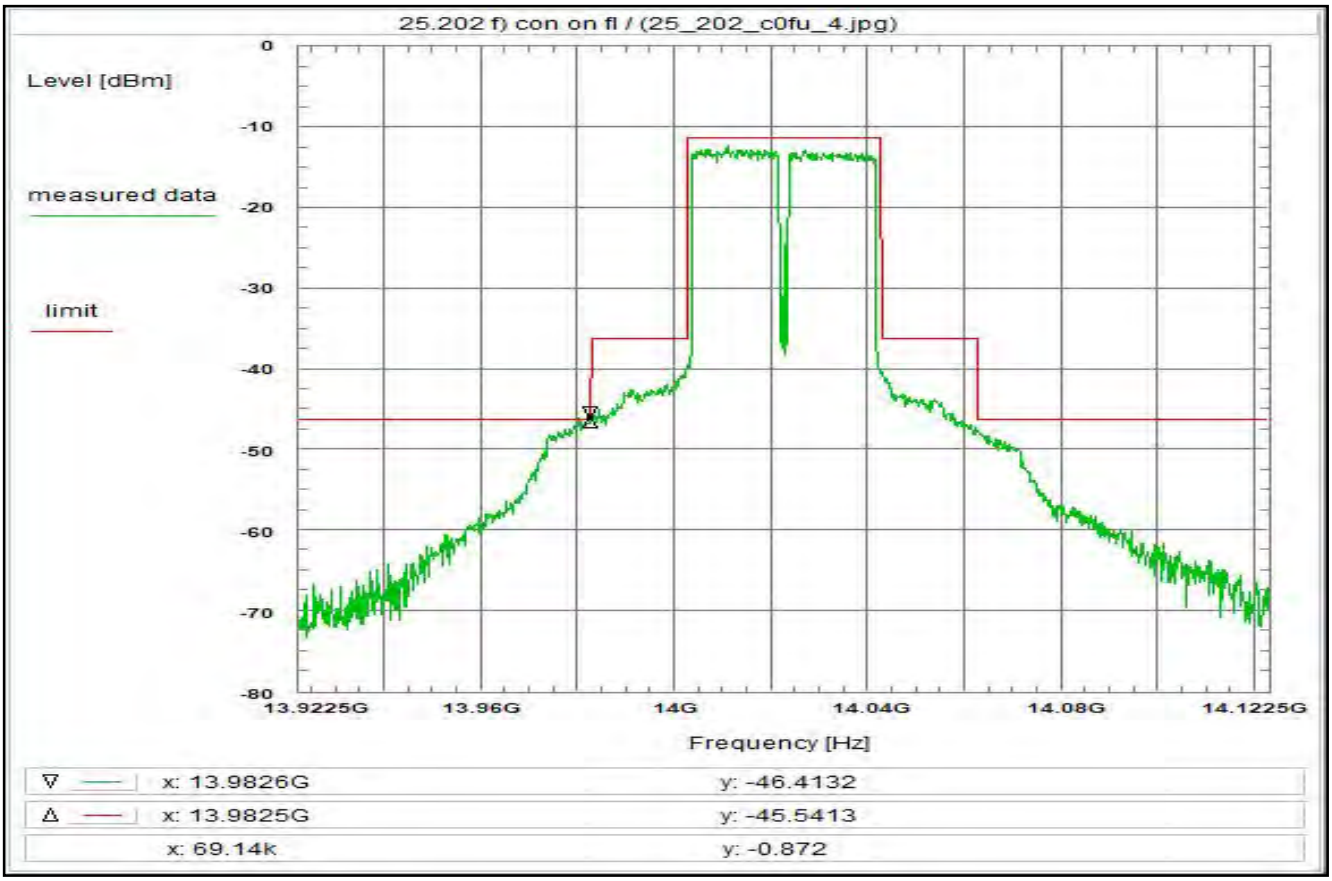
Start frequency:	13.9625	GHz
Stop frequency:	14.0625	GHz
Center frequency:	14.0125	GHz
Frequency span:	100	MHz
Resolution-BW:	10	kHz
Video-BW:	30	kHz
Input attenuation:	10	dB
Trace-Mode:	Clear Write	
Detector-Mode:	AVG	

Correction:

Directional coupler (W009)	+	39.6	dB
Coaxial cable (C107)	+	4.0	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (10k -> 4k)	-	4.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	39.6	dB

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

Plot No. 24



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 4, see test report chapter 6.4
QPSK dual carrier

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W053

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Thu 20/May/2021 14:44:56	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

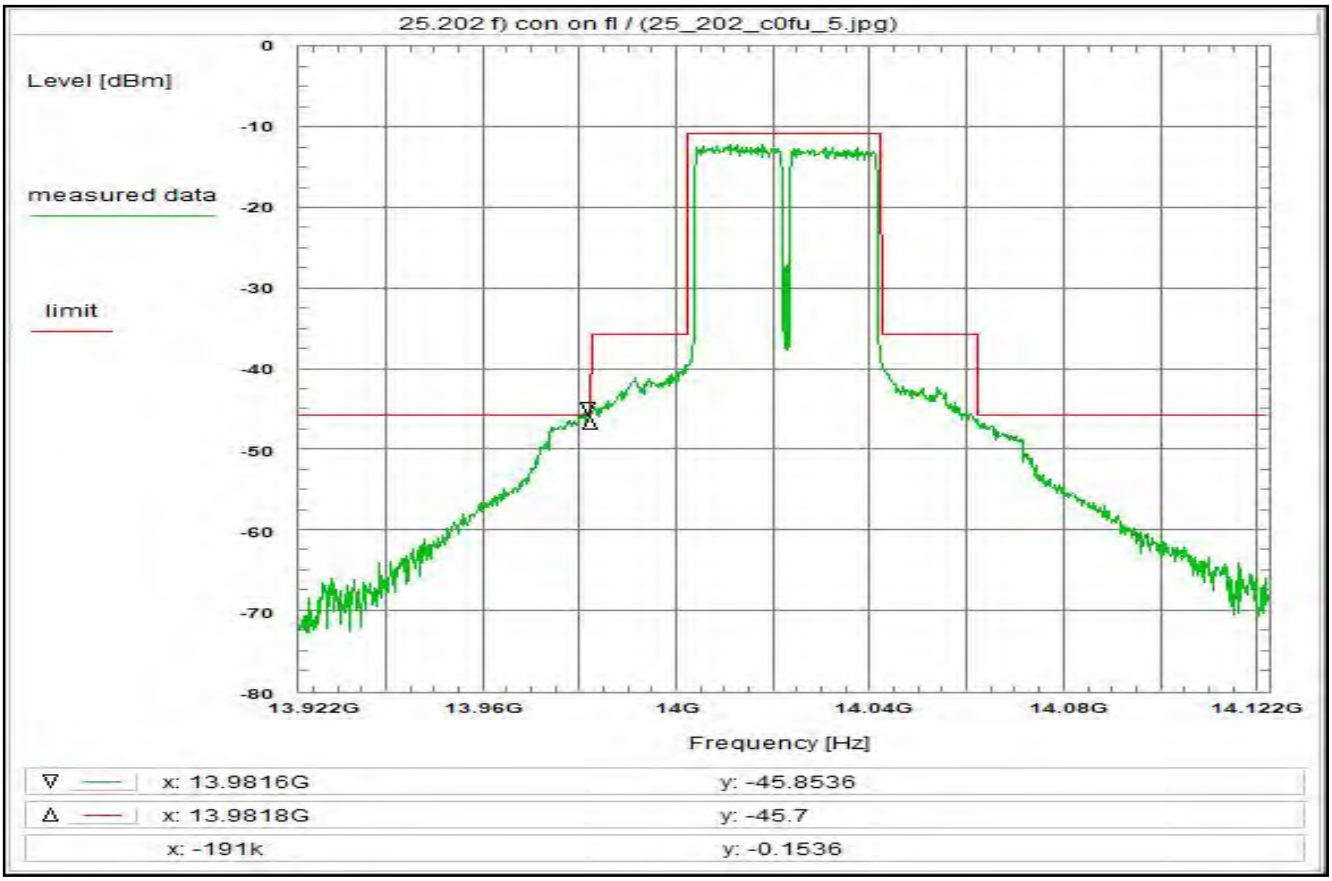
Start frequency:	13.9225	GHz
Stop frequency:	14.1225	GHz
Center frequency:	14.0225	GHz
Frequency span:	200	MHz
Resolution-BW:	10	kHz
Video-BW:	30	kHz
Input attenuation:	6	dB
Trace-Mode:	Clear Write	
Detector-Mode:	AVG	

Correction:

Directional coupler (W009)	+	39.6	dB
Coaxial cable (C107)	+	4.0	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (10k -> 4k)	-	4.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	39.6	dB

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

Plot No. 25



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 5, see test report chapter 6.4
8PSK dual carrier

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W053

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Thu 20/May/2021 16:04:27	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

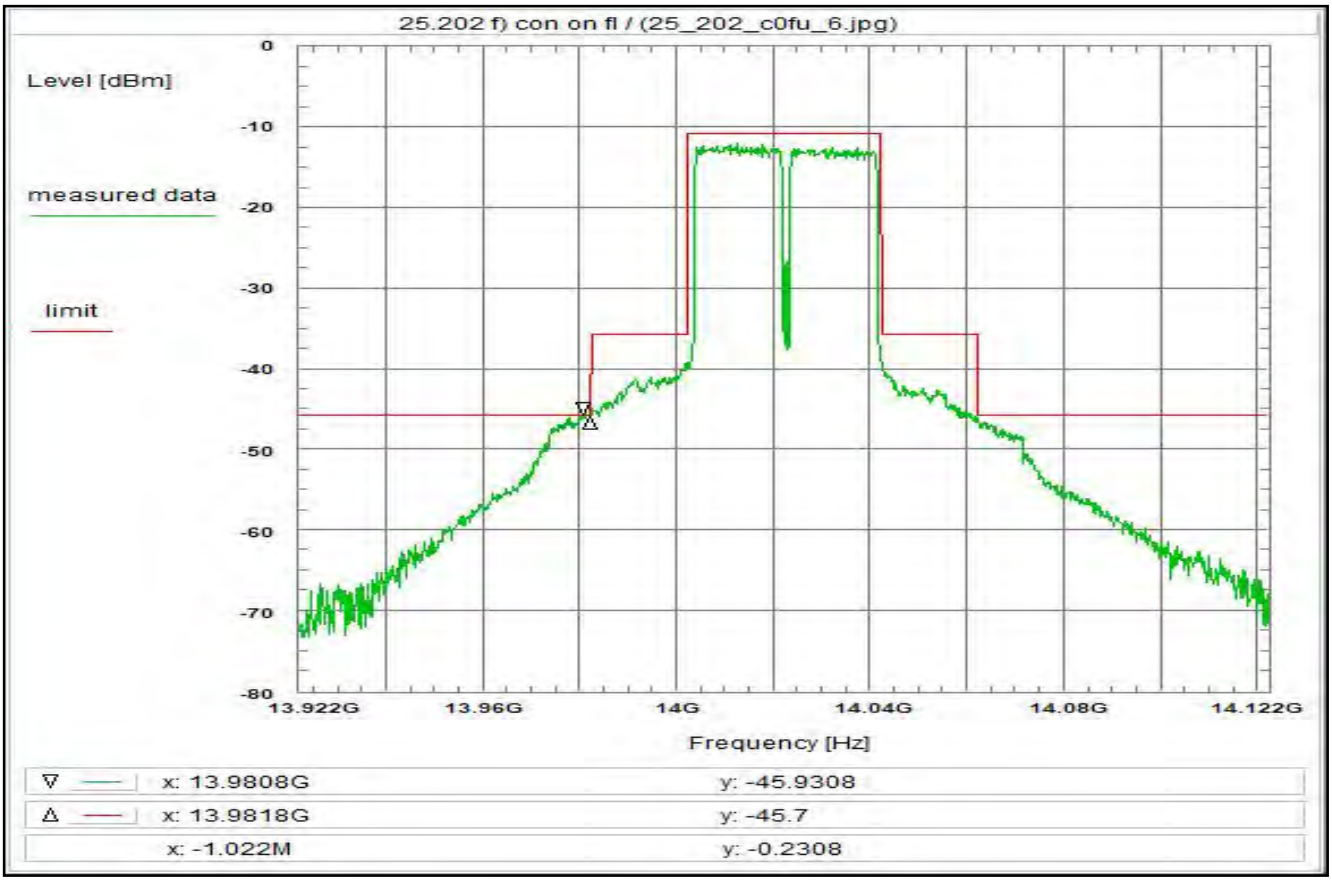
Start frequency:	13.922	GHz
Stop frequency:	14.122	GHz
Center frequency:	14.022	GHz
Frequency span:	200	MHz
Resolution-BW:	10	kHz
Video-BW:	30	kHz
Input attenuation:	6	dB
Trace-Mode:	Clear Write	
Detector-Mode:	AVG	

Correction:

Directional coupler (W009)	+	39.6	dB
Coaxial cable (C107)	+	4.0	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (10k -> 4k)	-	4.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	39.6	dB

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

Plot No. 26



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 6, see test report chapter 6.4
16QAM dual carrier

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W053

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Thu 20/May/2021 16:06:32	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

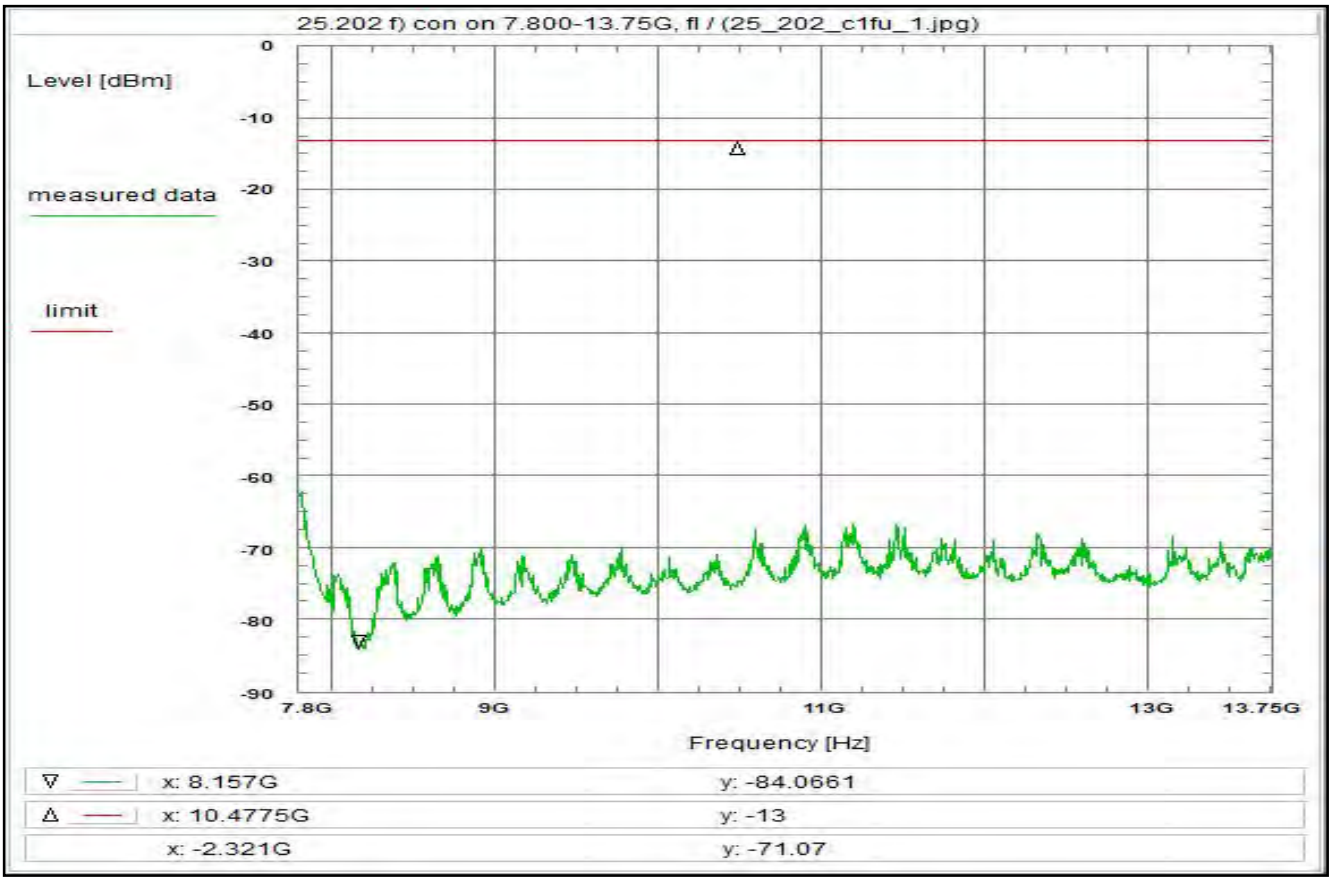
Start frequency:	13.922	GHz
Stop frequency:	14.122	GHz
Center frequency:	14.022	GHz
Frequency span:	200	MHz
Resolution-BW:	10	kHz
Video-BW:	30	kHz
Input attenuation:	6	dB
Trace-Mode:	Clear Write	
Detector-Mode:	AVG	

Correction:

Directional coupler (W009)	+	39.6	dB
Coaxial cable (C107)	+	4.0	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (10k -> 4k)	-	4.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	39.6	dB

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

Plot No. 27



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): -43+10log(Pmax) dBc
This corresponds to a limit of -13 dBm.

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
QPSK single carrier, valid for all modulations

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W053

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Wed 19/May/2021 17:05:46	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

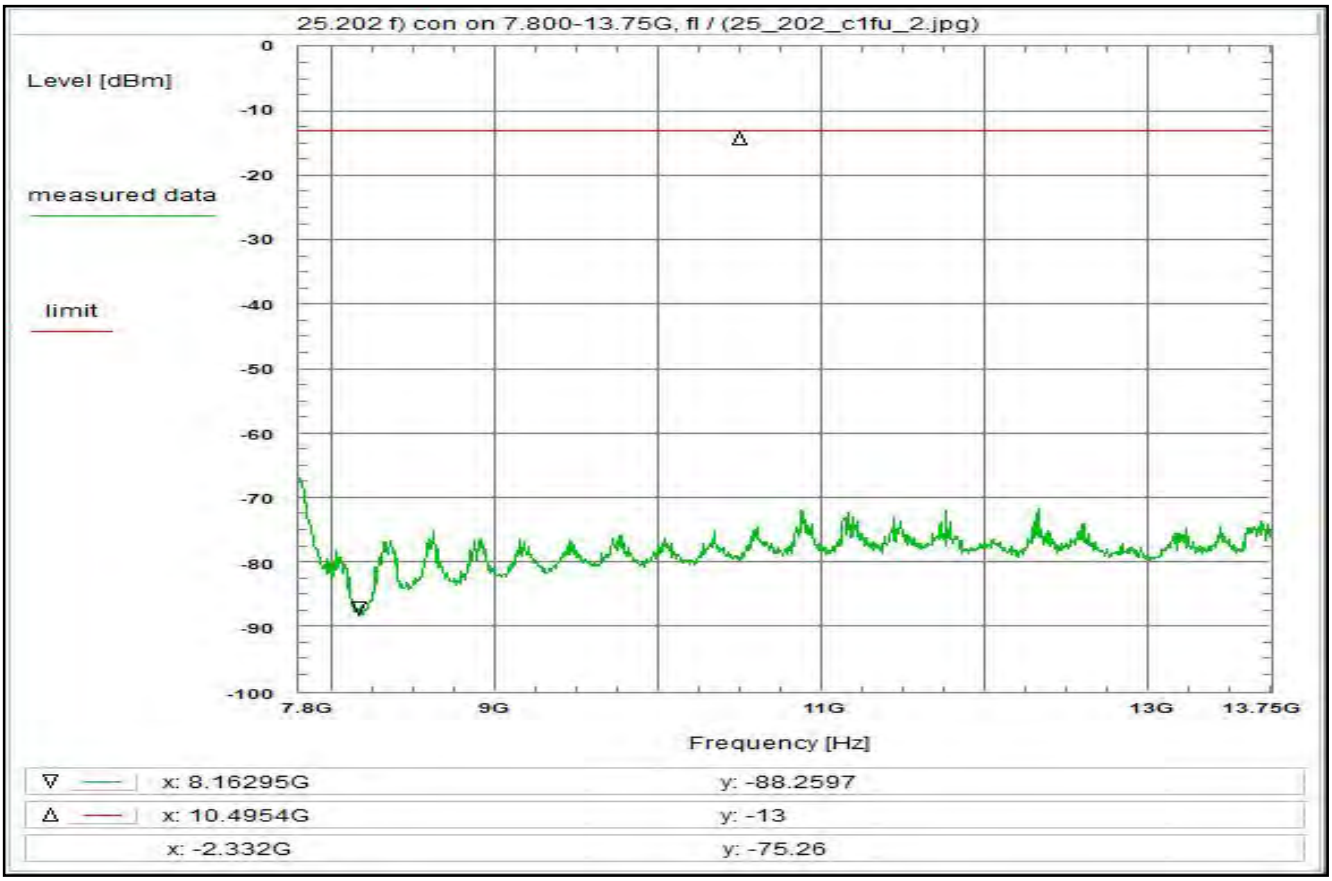
Start frequency:	7.8	GHz
Stop frequency:	13.75	GHz
Center frequency:	10.775	GHz
Frequency span:	5.95	GHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	10	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler (W009)	+	38.6	dB
Coaxial cable (C107)	+	3.5	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	28.1	dB

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

Plot No. 28



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): -43+10log(Pmax) dBc
This corresponds to a limit of -13 dBm.

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

Operating condition of DUT:
operating condition 4, see test report chapter 6.4
QPSK dual carrier, valid for all modulations

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W053

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Thu 20/May/2021 15:19:31	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

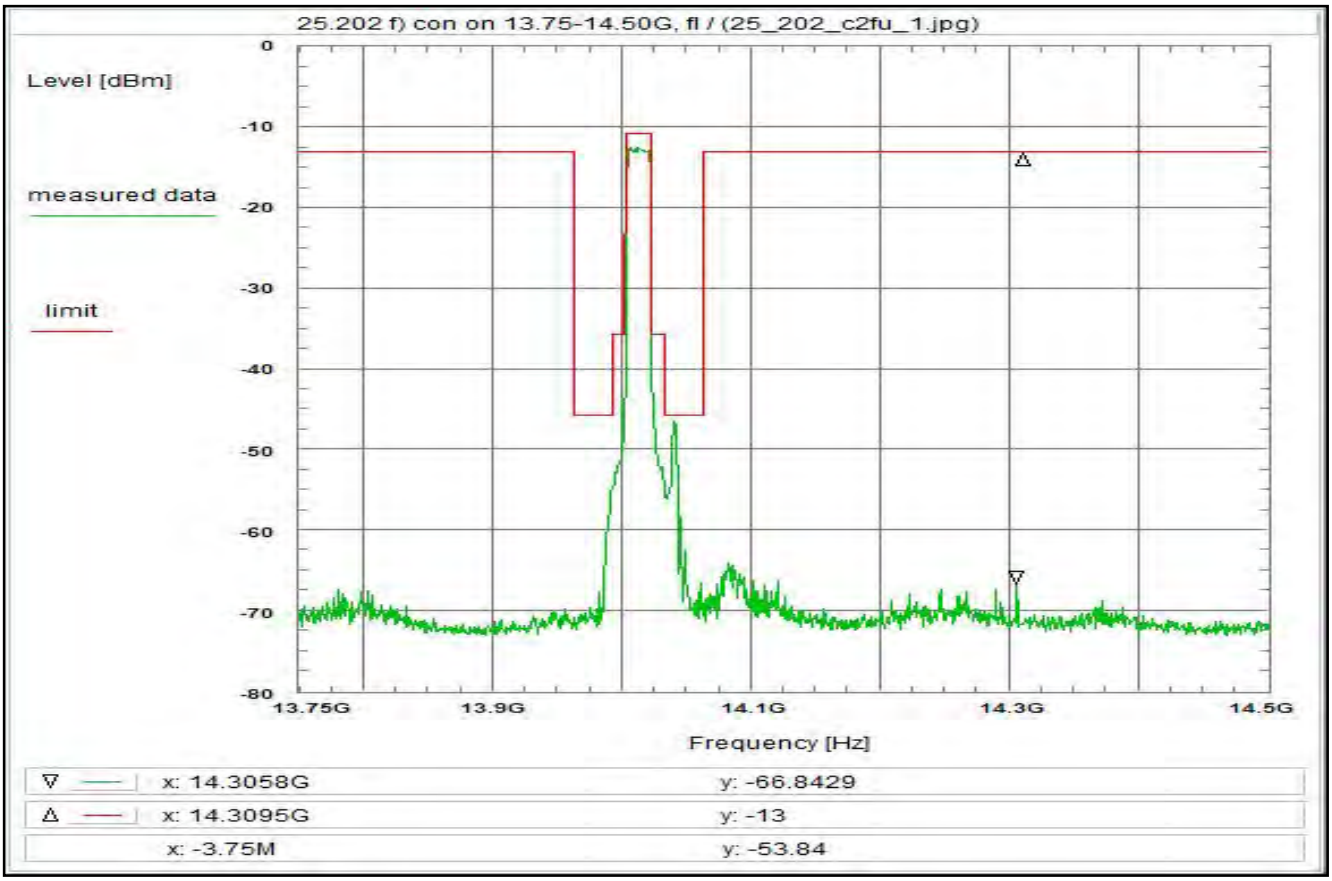
Start frequency:	7.8	GHz
Stop frequency:	13.75	GHz
Center frequency:	10.775	GHz
Frequency span:	5.95	GHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	6	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler (W009)	+	38.6	dB
Coaxial cable (C107)	+	3.5	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	28.1	dB

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

Plot No. 29



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): -43+10log(Pmax) dBc
This corresponds to a limit of -13 dBm.

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
QPSK single carrier, valid for all modulations

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: R001, W019, W053

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Wed 19/May/2021 17:08:13	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

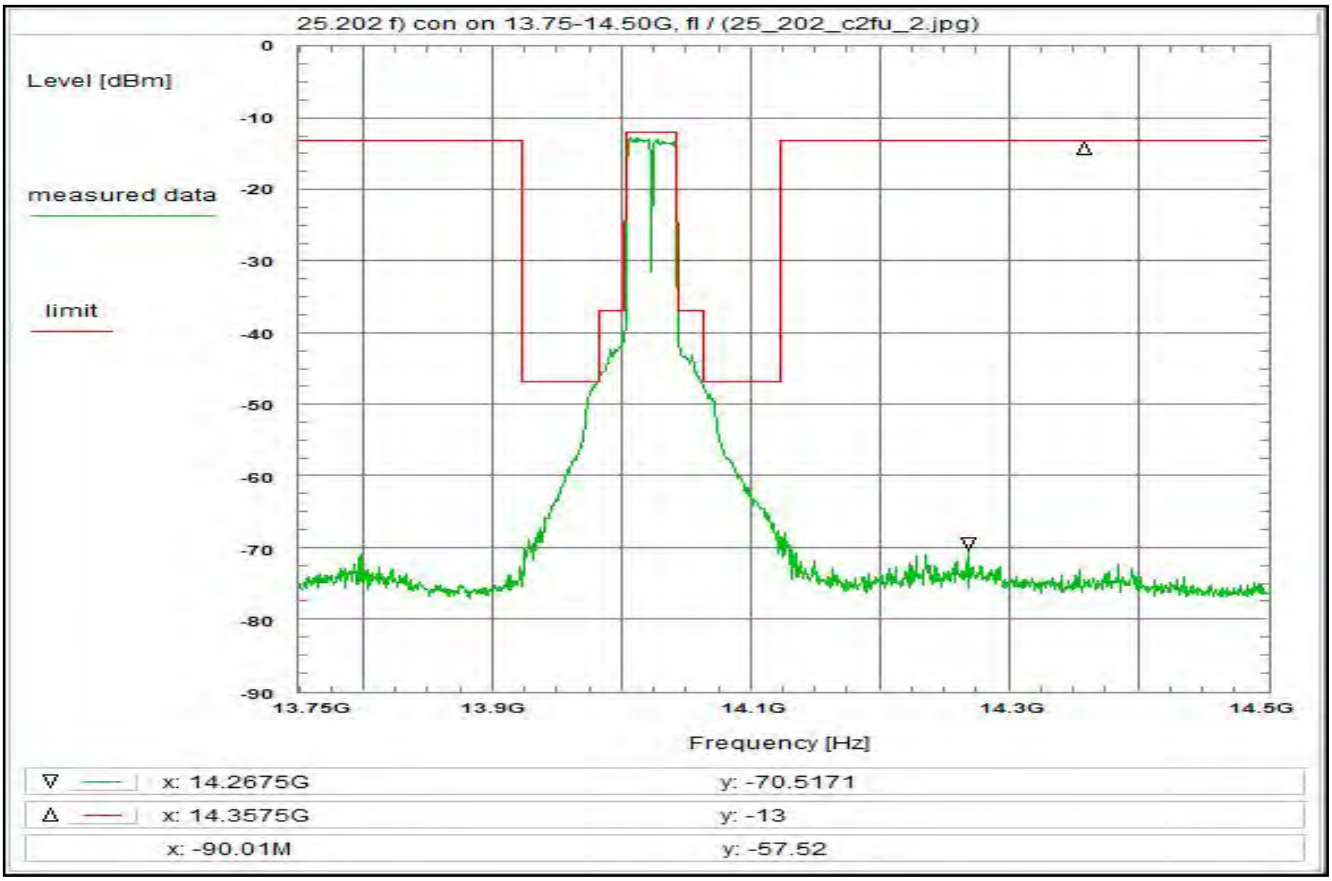
Start frequency:	13.75	GHz
Stop frequency:	14.5	GHz
Center frequency:	14.125	GHz
Frequency span:	750	MHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	10	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler (W009)	+	39.5	dB
Coaxial cable (C107)	+	4.0	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	29.5	dB

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

Plot No. 30



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): -43+10log(Pmax) dBc
This corresponds to a limit of -13 dBm.

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

Operating condition of DUT:
operating condition 4, see test report chapter 6.4
QPSK dual carrier, valid for all modulations

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W053

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Thu 20/May/2021 15:20:19	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

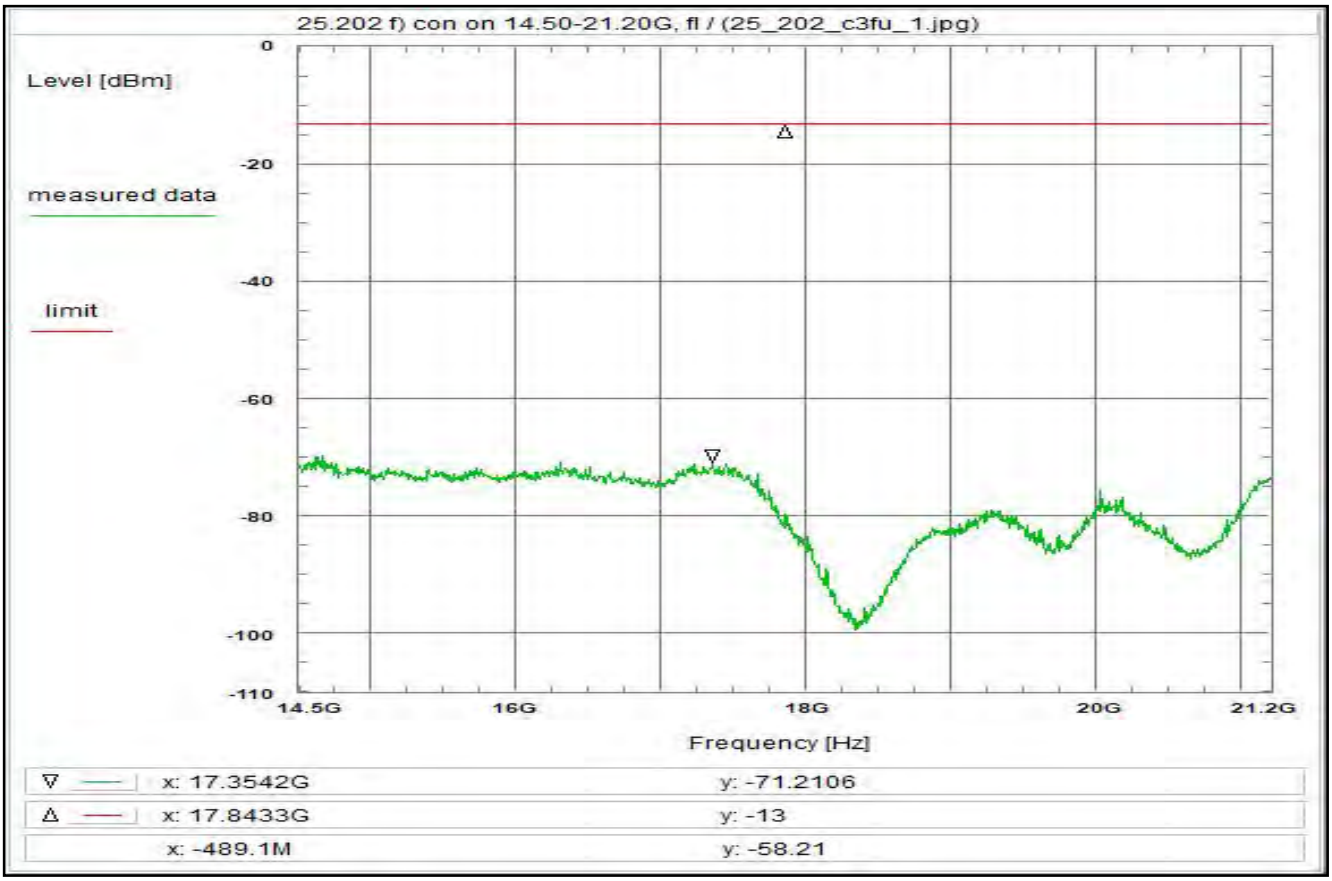
Start frequency:	13.75	GHz
Stop frequency:	14.5	GHz
Center frequency:	14.125	GHz
Frequency span:	750	MHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	6	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler (W009)	+	39.5	dB
Coaxial cable (C107)	+	4.0	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	29.5	dB

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

Plot No. 31



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): -43+10log(Pmax) dBc
This corresponds to a limit of -13 dBm.

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
QPSK single carrier, valid for all modulations

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: R001, W019, W053

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Wed 19/May/2021 17:09:35	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

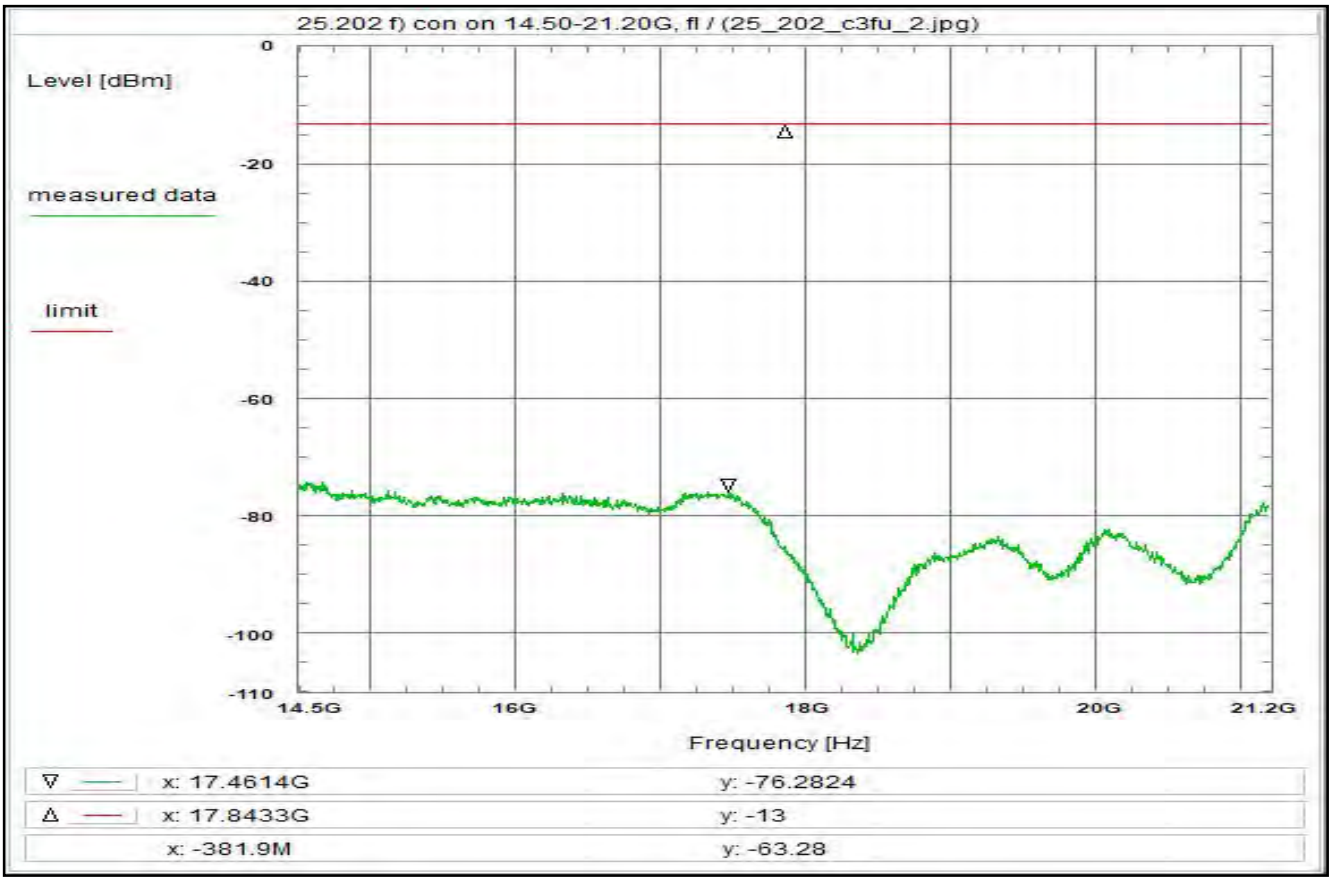
Start frequency:	14.5	GHz
Stop frequency:	21.2	GHz
Center frequency:	17.85	GHz
Frequency span:	6.7	GHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	10	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler (W009)	+	31.5	dB
Coaxial cable (C107)	+	4.5	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	22.0	dB

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

Plot No. 32



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): -43+10log(Pmax) dBc
This corresponds to a limit of -13 dBm.

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

Operating condition of DUT:
operating condition 4, see test report chapter 6.4
QPSK dual carrier, valid for all modulations

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W053

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Thu 20/May/2021 15:21:26	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

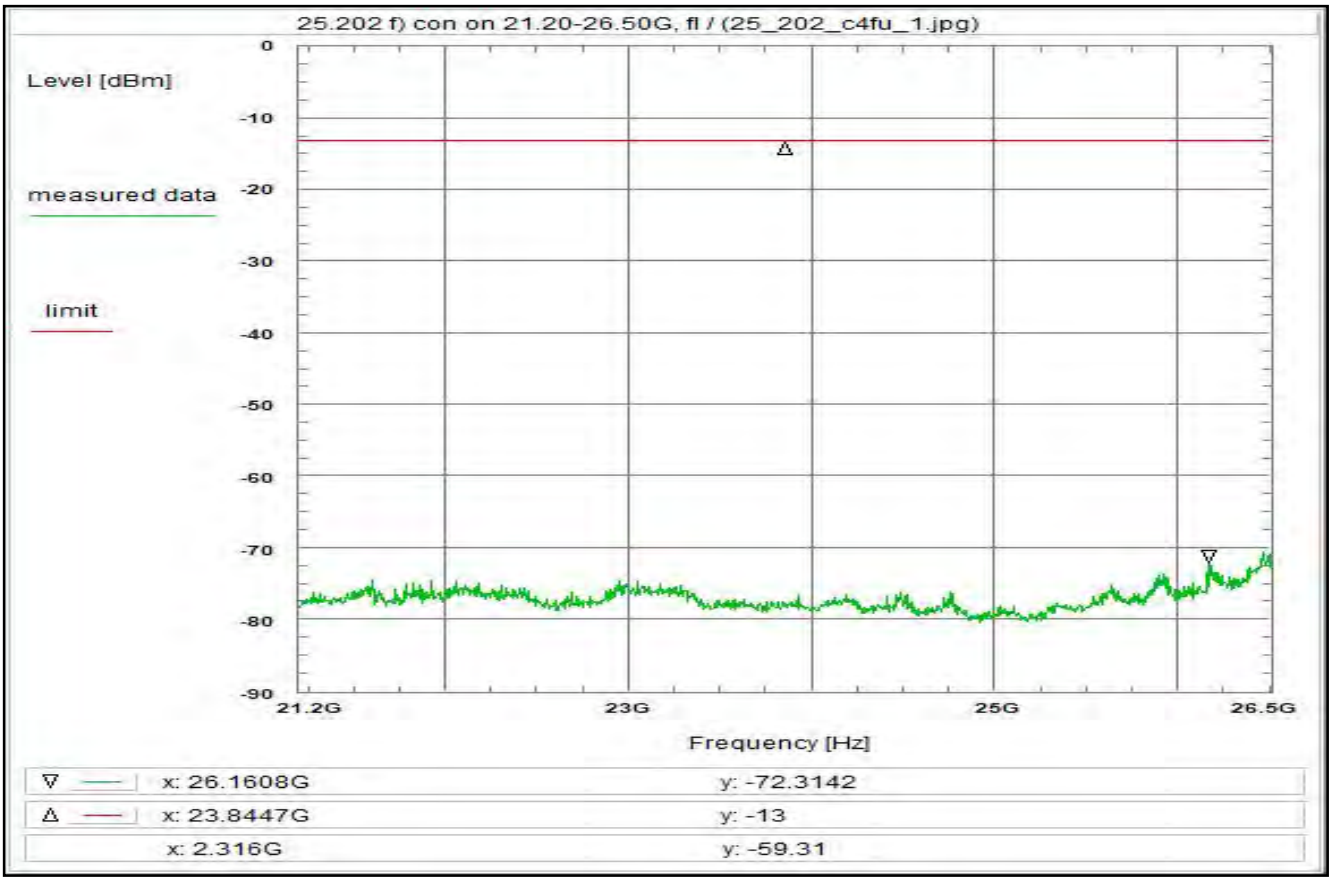
Start frequency:	14.5	GHz
Stop frequency:	21.2	GHz
Center frequency:	17.85	GHz
Frequency span:	6.7	GHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	6	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler (W009)	+	31.5	dB
Coaxial cable (C107)	+	4.5	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	22.0	dB

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

Plot No. 33



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): -43+10log(Pmax) dBc
This corresponds to a limit of -13 dBm.

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
QPSK single carrier, valid for all modulations

Test setup:
see test report chapter 7.3: cegj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W022, W063

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Thu 20/May/2021 16:16:38	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

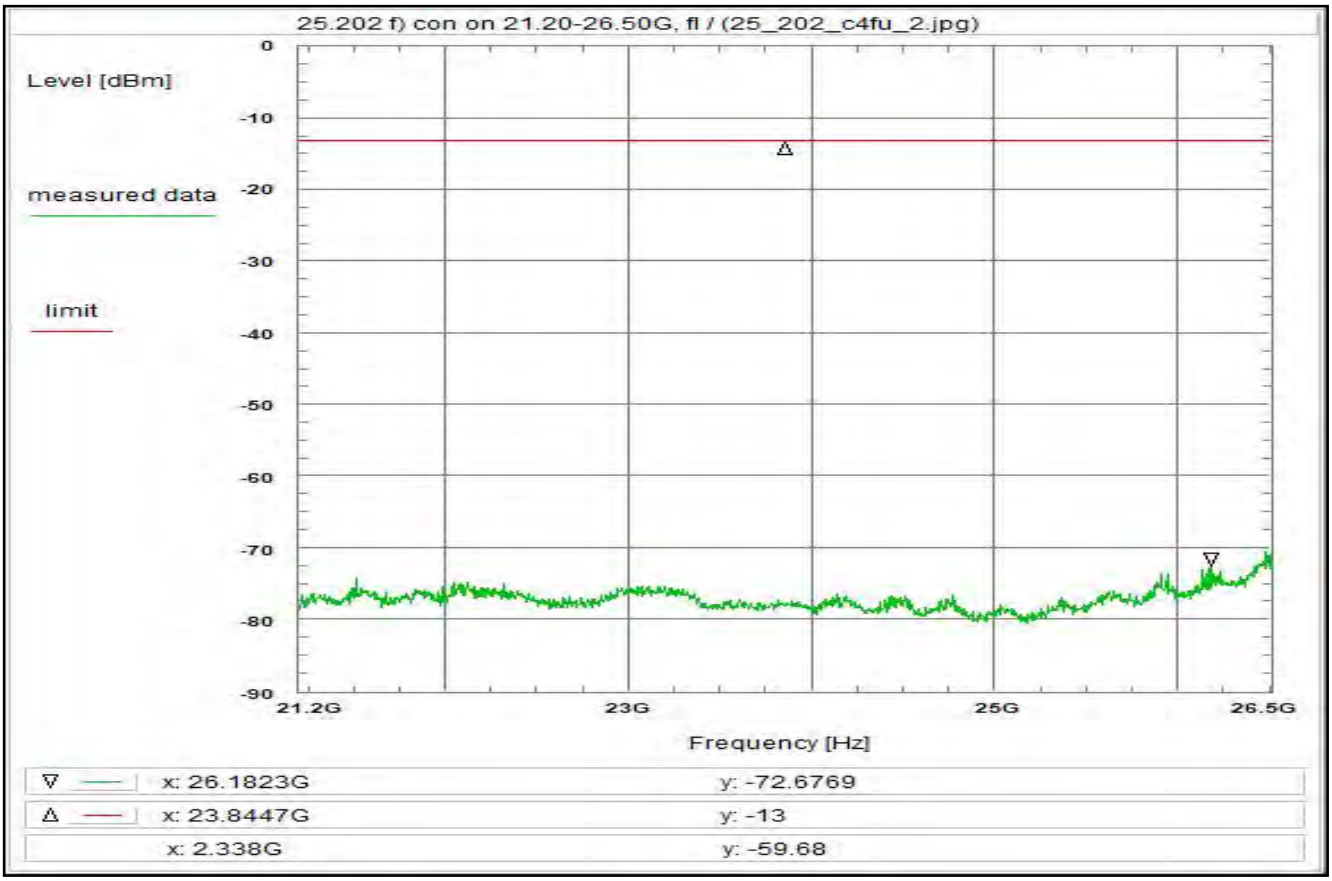
Start frequency:	21.2	GHz
Stop frequency:	26.5	GHz
Center frequency:	23.85	GHz
Frequency span:	5.3	GHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	6	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler (W009)	+	34.2	dB
Coaxial cable (C107)	+	5.2	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	25.4	dB

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

Plot No. 34



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): -43+10log(Pmax) dBc
This corresponds to a limit of -13 dBm.

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

Operating condition of DUT:
operating condition 4, see test report chapter 6.4
QPSK dual carrier, valid for all modulations

Test setup:
see test report chapter 7.3: cegj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W022, W063

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Thu 20/May/2021 16:17:33	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

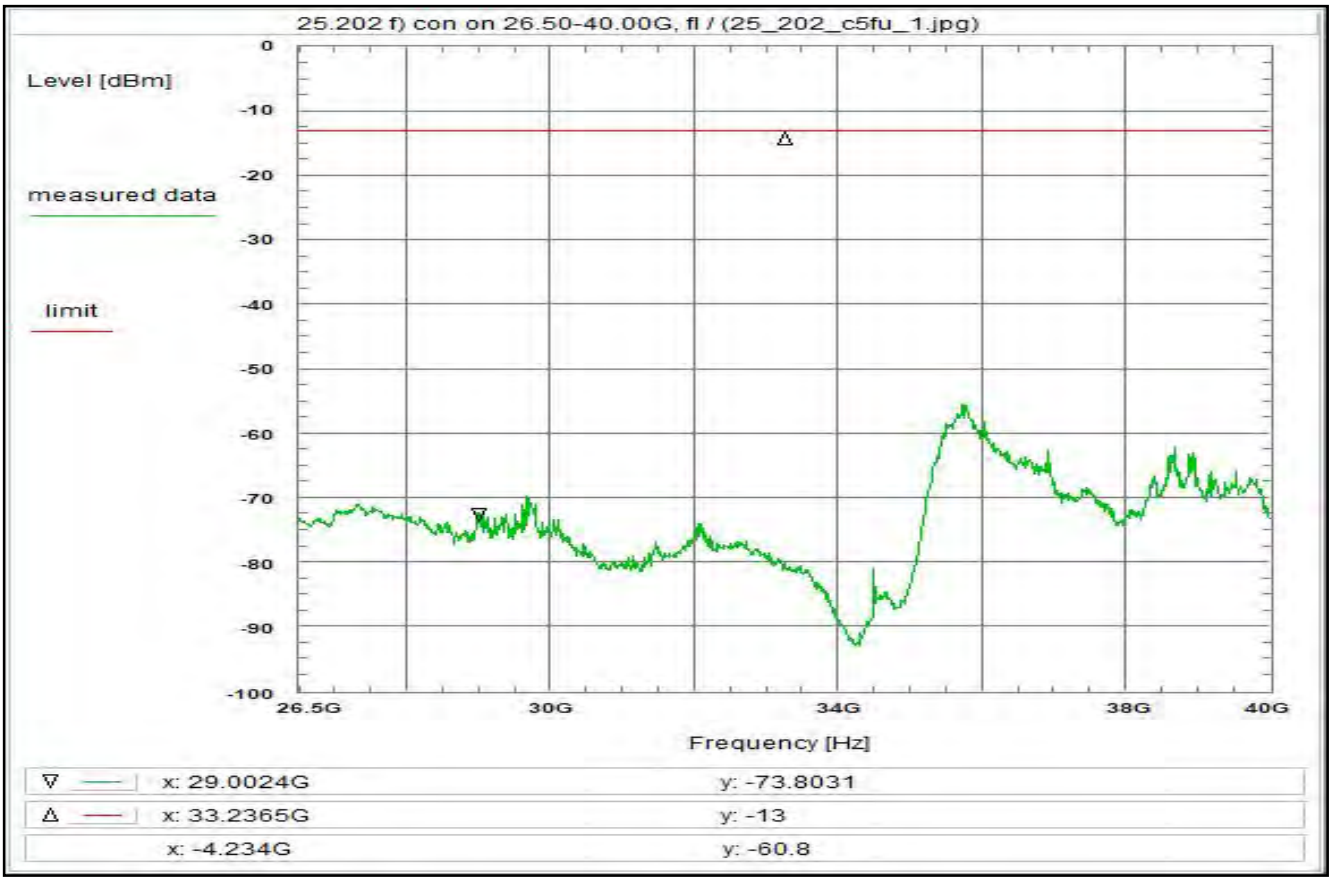
Start frequency:	21.2	GHz
Stop frequency:	26.5	GHz
Center frequency:	23.85	GHz
Frequency span:	5.3	GHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	6	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler (W009)	+	34.2	dB
Coaxial cable (C107)	+	5.2	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	25.4	dB

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

Plot No. 35



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): -43+10log(Pmax) dBc
This corresponds to a limit of -13 dBm.

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
QPSK single carrier, valid for all modulations

Test setup:
see test report chapter 7.3: cegj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W022, W065

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Thu 20/May/2021 16:26:34	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

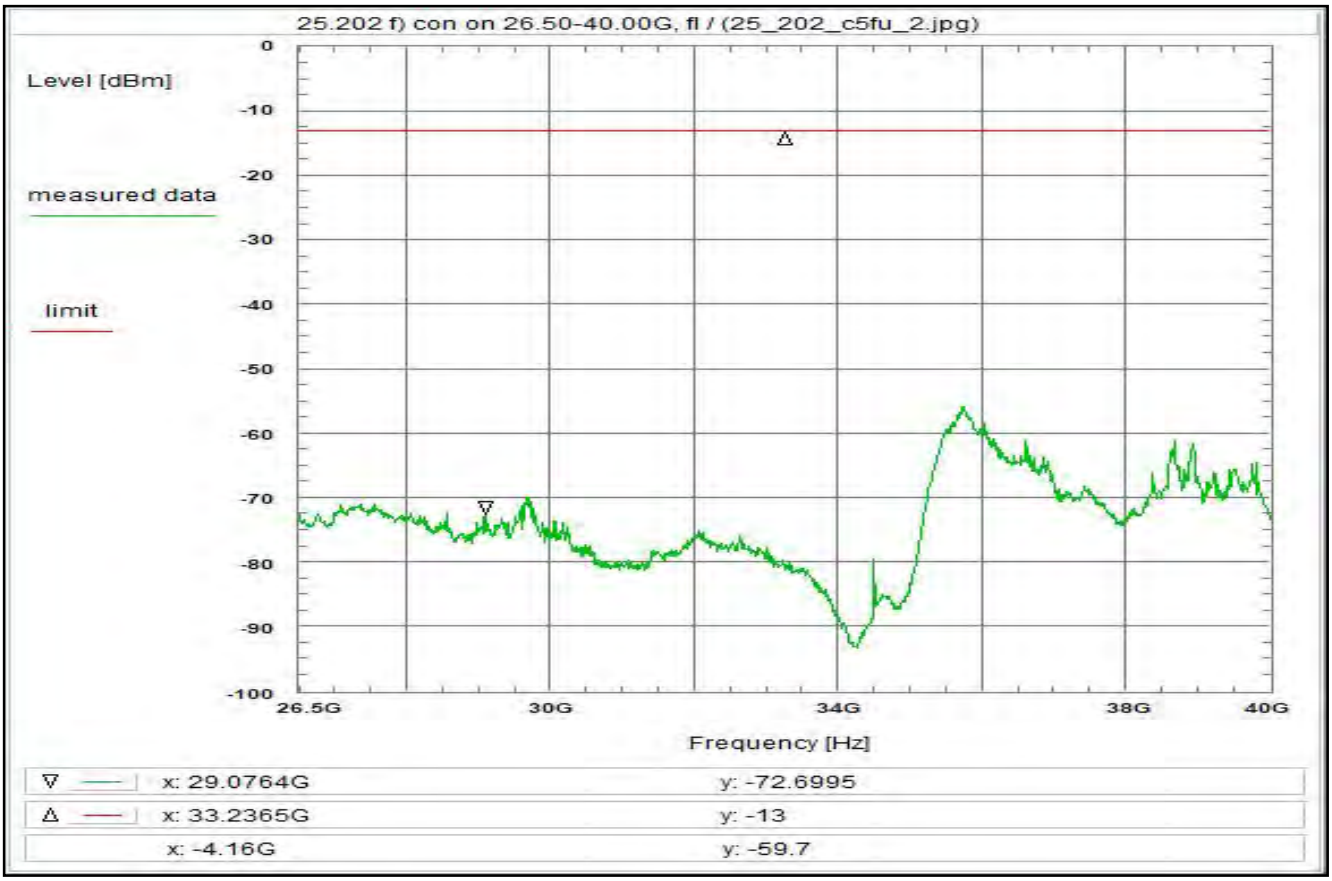
Start frequency:	26.5	GHz
Stop frequency:	40	GHz
Center frequency:	33.25	GHz
Frequency span:	13.5	GHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	6	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler (W009)	+	33.2	dB
Coaxial cable (C107)	+	6.3	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	25.5	dB

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

Plot No. 36



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): -43+10log(Pmax) dBc
This corresponds to a limit of -13 dBm.

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

Operating condition of DUT:
operating condition 4, see test report chapter 6.4
QPSK dual carrier, valid for all modulations

Test setup:
see test report chapter 7.3: cegj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W022, W065

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Thu 20/May/2021 16:28:11	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

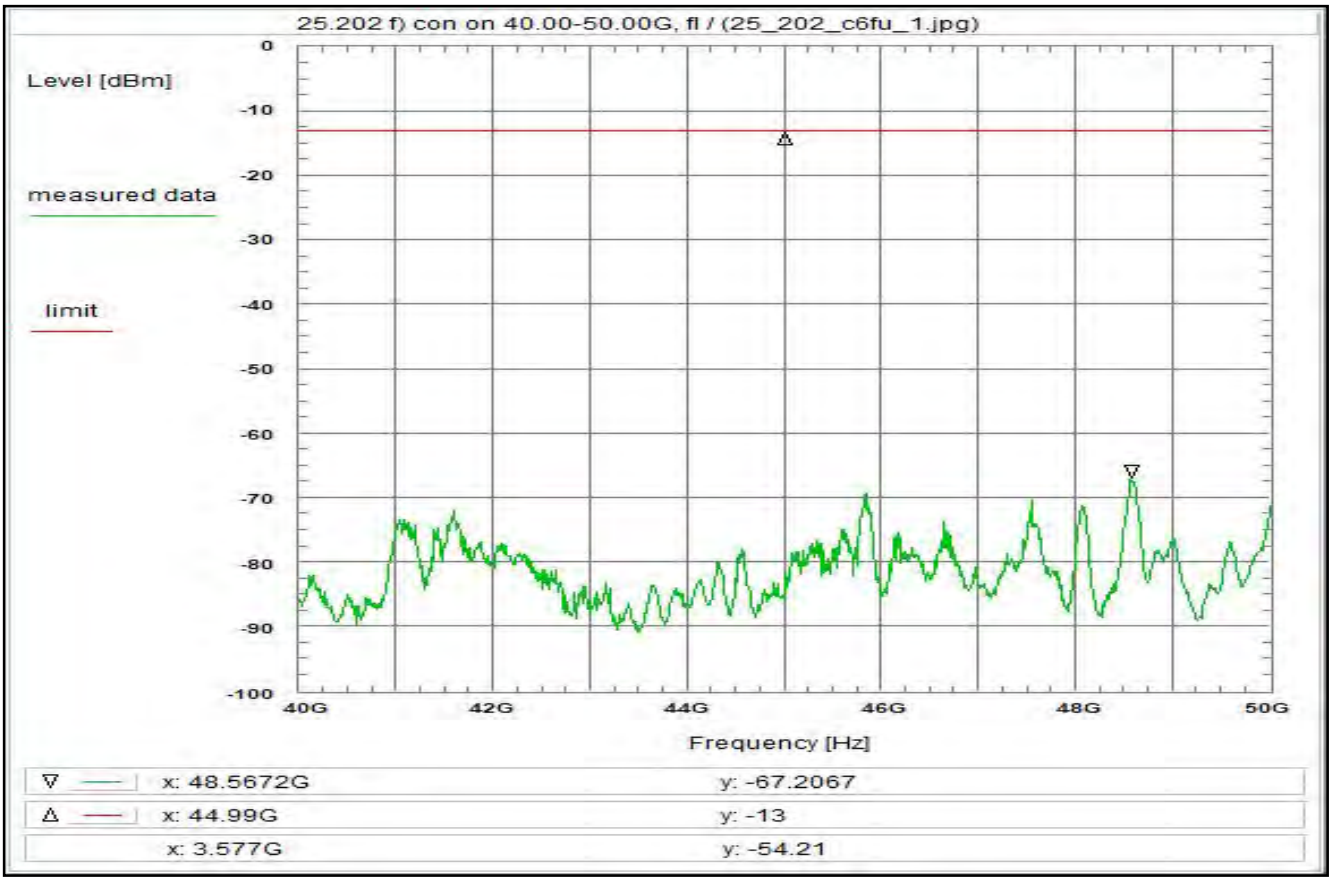
Start frequency:	26.5	GHz
Stop frequency:	40	GHz
Center frequency:	33.25	GHz
Frequency span:	13.5	GHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	6	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler (W009)	+	33.2	dB
Coaxial cable (C107)	+	6.3	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	25.5	dB

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

Plot No. 37



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): -43+10log(Pmax) dBc
This corresponds to a limit of -13 dBm.

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
QPSK single carrier, valid for all modulations

Test setup:
see test report chapter 7.3: cegj

Test equipment:
see test report chapter 7.x: C107, R001, W006, W019, W022, W0xx

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Fri 21/May/2021 12:23:41	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

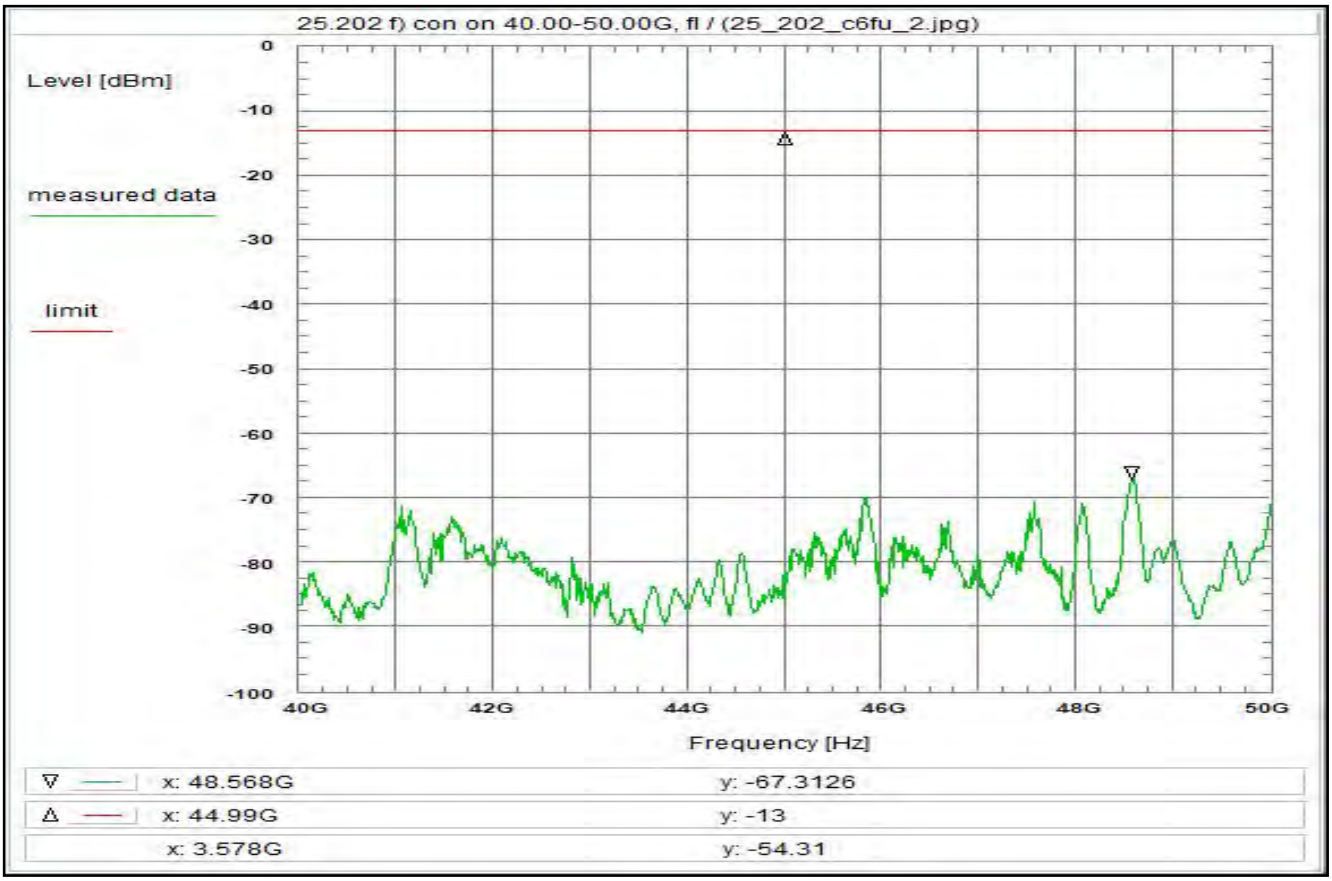
Start frequency:	40	GHz
Stop frequency:	50	GHz
Center frequency:	45	GHz
Frequency span:	10	GHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	10	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler (W006)	+	13.6	dB
Coaxial cable (C107)	+	7.4	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	7.0	dB

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

Plot No. 38



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): -43+10log(Pmax) dBc
This corresponds to a limit of -13 dBm.

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

Operating condition of DUT:
operating condition 4, see test report chapter 6.4
QPSK dual carrier, valid for all modulations

Test setup:
see test report chapter 7.3: 1cegj

Test equipment:
see test report chapter 7.x: C107, R001, W006, W019, W022, W0xx

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Fri 21/May/2021 12:40:53	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

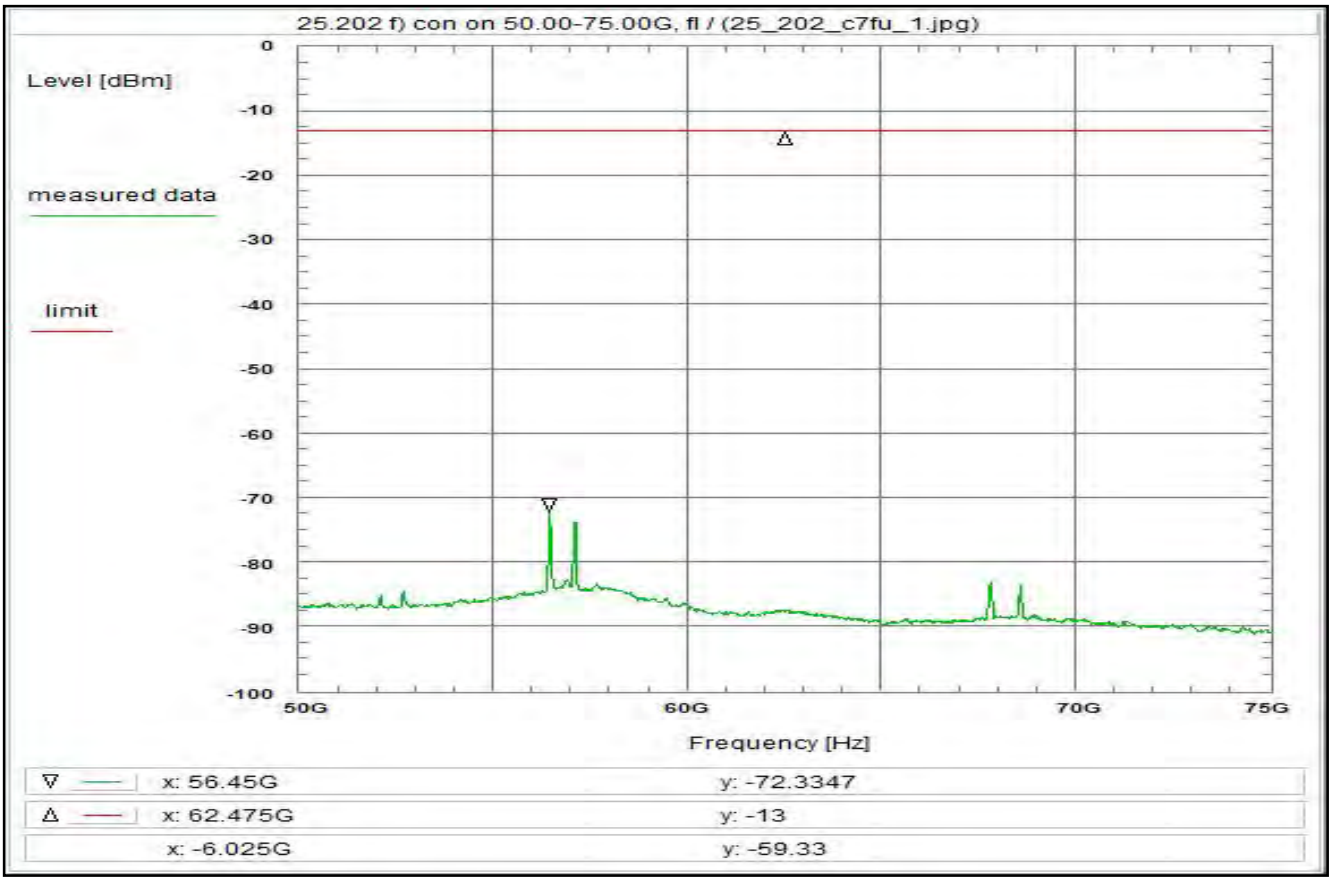
Start frequency:	40	GHz
Stop frequency:	50	GHz
Center frequency:	45	GHz
Frequency span:	10	GHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	10	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler (W006)	+	13.6	dB
Coaxial cable (C107)	+	7.4	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	7.0	dB

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

Plot No. 39



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): -43+10log(Pmax) dBc
This corresponds to a limit of -13 dBm.

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

Operating condition of DUT:
operating condition 4, see test report chapter 6.4
QPSK dual carrier, valid for all modulations

Test setup:
see test report chapter 7.3: cfgj

Test equipment:
see test report chapter 7.x: C107, R001, W006, W019, W022, W0xx

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Fri 21/May/2021 12:58:56	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

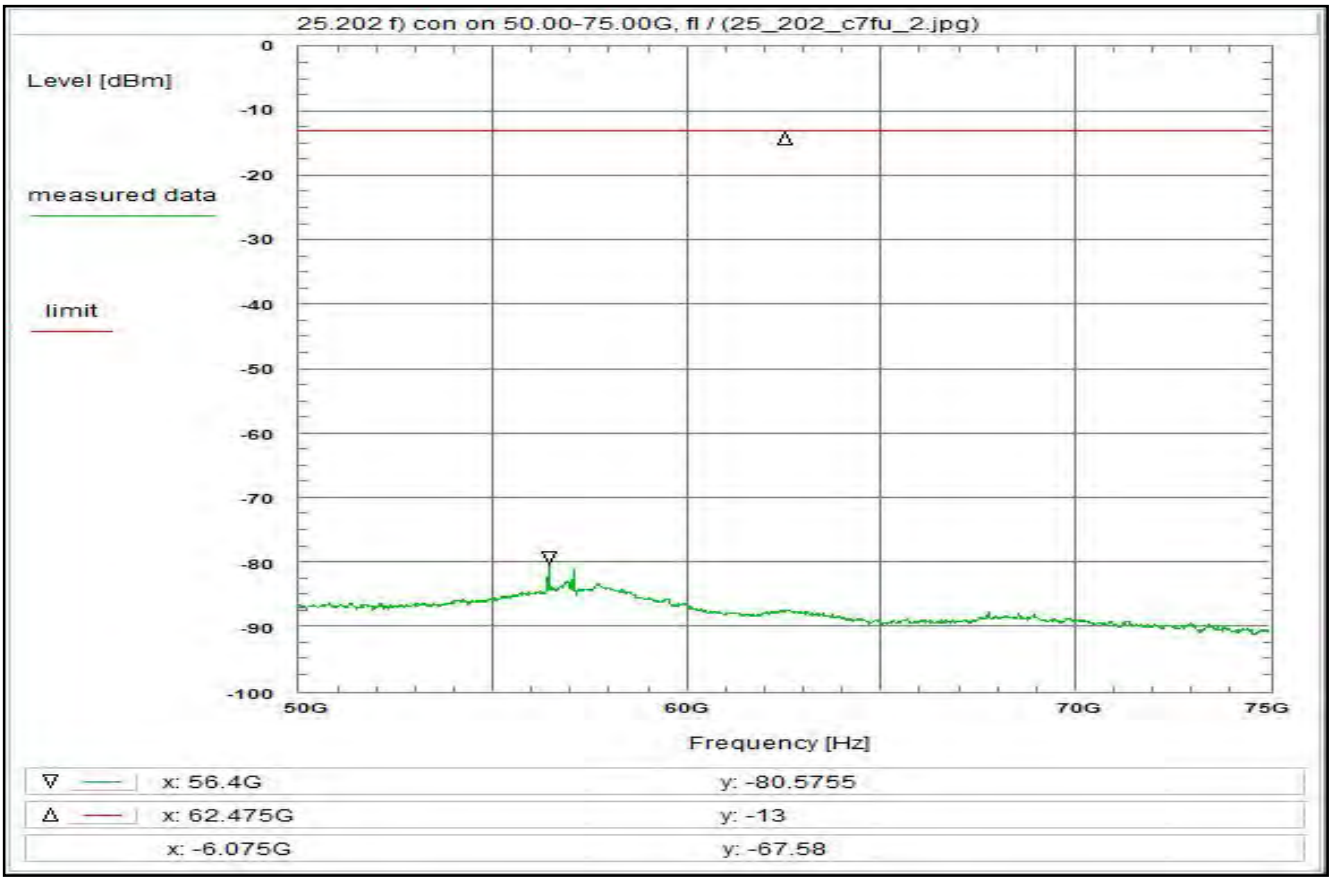
Start frequency:	50	GHz
Stop frequency:	75	GHz
Center frequency:	62.5	GHz
Frequency span:	25	GHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	10	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler (W006)	+	19.4	dB
Coaxial cable (C107)	+	0.0	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	5.4	dB

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

Plot No. 40



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): -43+10log(Pmax) dBc
This corresponds to a limit of -13 dBm.

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
QPSK single carrier, valid for all modulations

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C107, R001, W006, W019, W022, W0xx

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Fri 21/May/2021 13:00:22	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

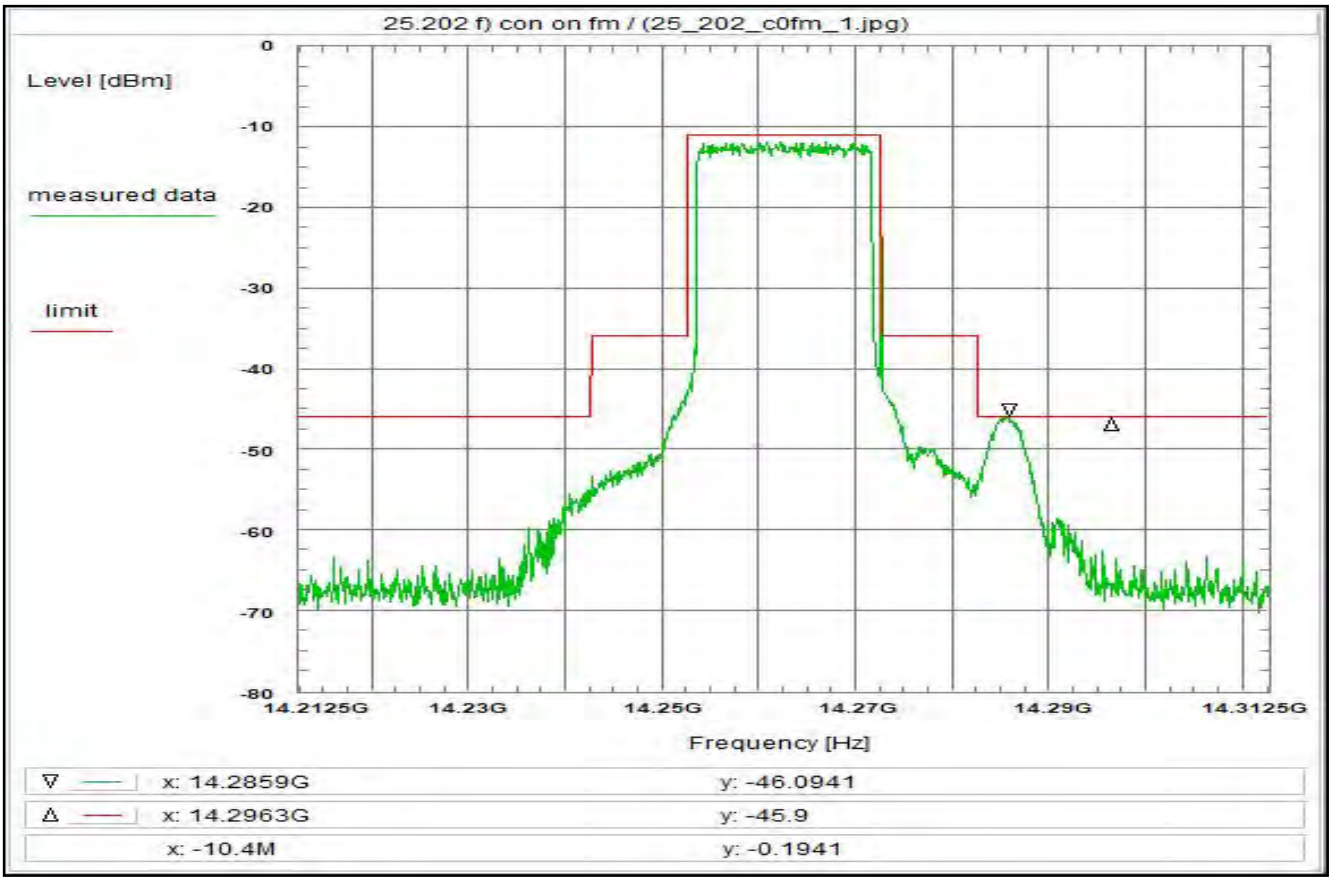
Start frequency:	50	GHz
Stop frequency:	75	GHz
Center frequency:	62.5	GHz
Frequency span:	25	GHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	10	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler (W006)	+	19.4	dB
Coaxial cable (C107)	+	0.0	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	5.4	dB

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

Plot No. 41



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
QPSK single carrier

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W053

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Wed 19/May/2021 16:23:45	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

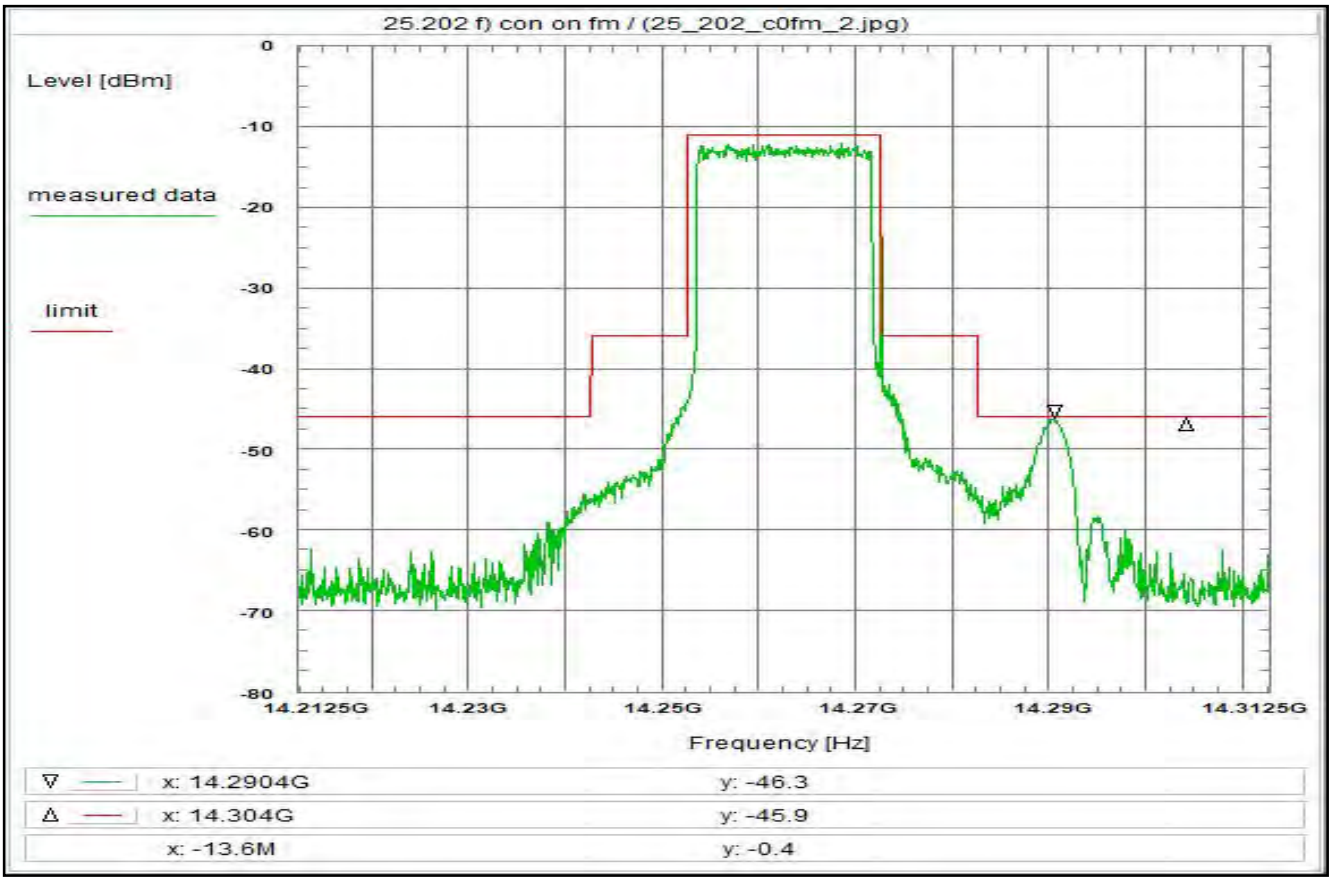
Start frequency:	14.2125	GHz
Stop frequency:	14.3125	GHz
Center frequency:	14.2625	GHz
Frequency span:	100	MHz
Resolution-BW:	10	kHz
Video-BW:	30	kHz
Input attenuation:	10	dB
Trace-Mode:	Clear Write	
Detector-Mode:	AVG	

Correction:

Directional coupler (W009)	+	39.5	dB
Coaxial cable (C107)	+	4.0	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (10k -> 4k)	-	4.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	39.5	dB

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

Plot No. 42



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 2, see test report chapter 6.4
8PSK single carrier

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W053

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Wed 19/May/2021 16:42:32	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

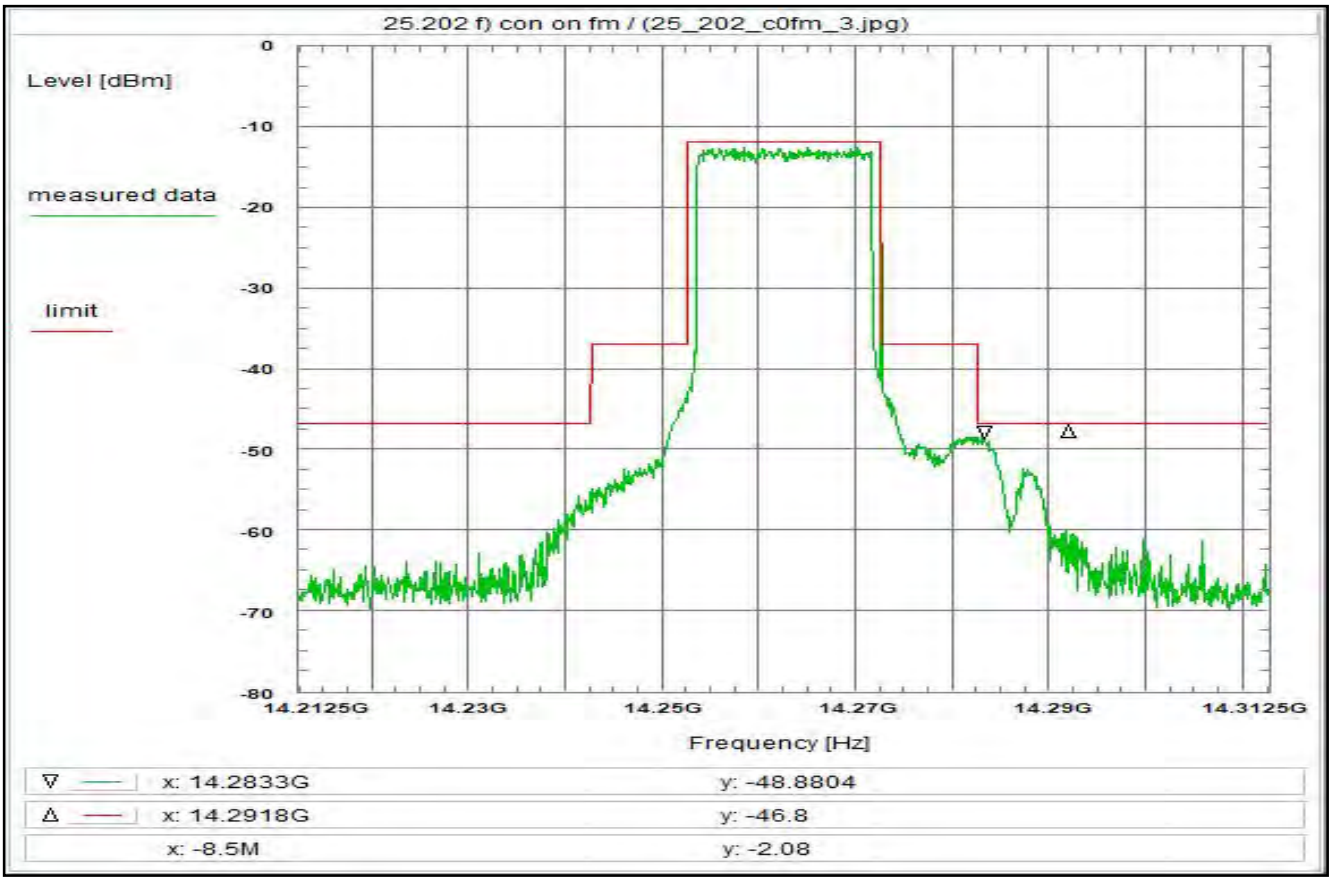
Start frequency:	14.2125	GHz
Stop frequency:	14.3125	GHz
Center frequency:	14.2625	GHz
Frequency span:	100	MHz
Resolution-BW:	10	kHz
Video-BW:	30	kHz
Input attenuation:	10	dB
Trace-Mode:	Clear Write	
Detector-Mode:	AVG	

Correction:

Directional coupler (W009)	+	39.5	dB
Coaxial cable (C107)	+	4.0	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (10k -> 4k)	-	4.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	39.5	dB

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

Plot No. 43



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 3, see test report chapter 6.4
16QAM single carrier

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: R001, W019, W053

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Wed 19/May/2021 16:37:35	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

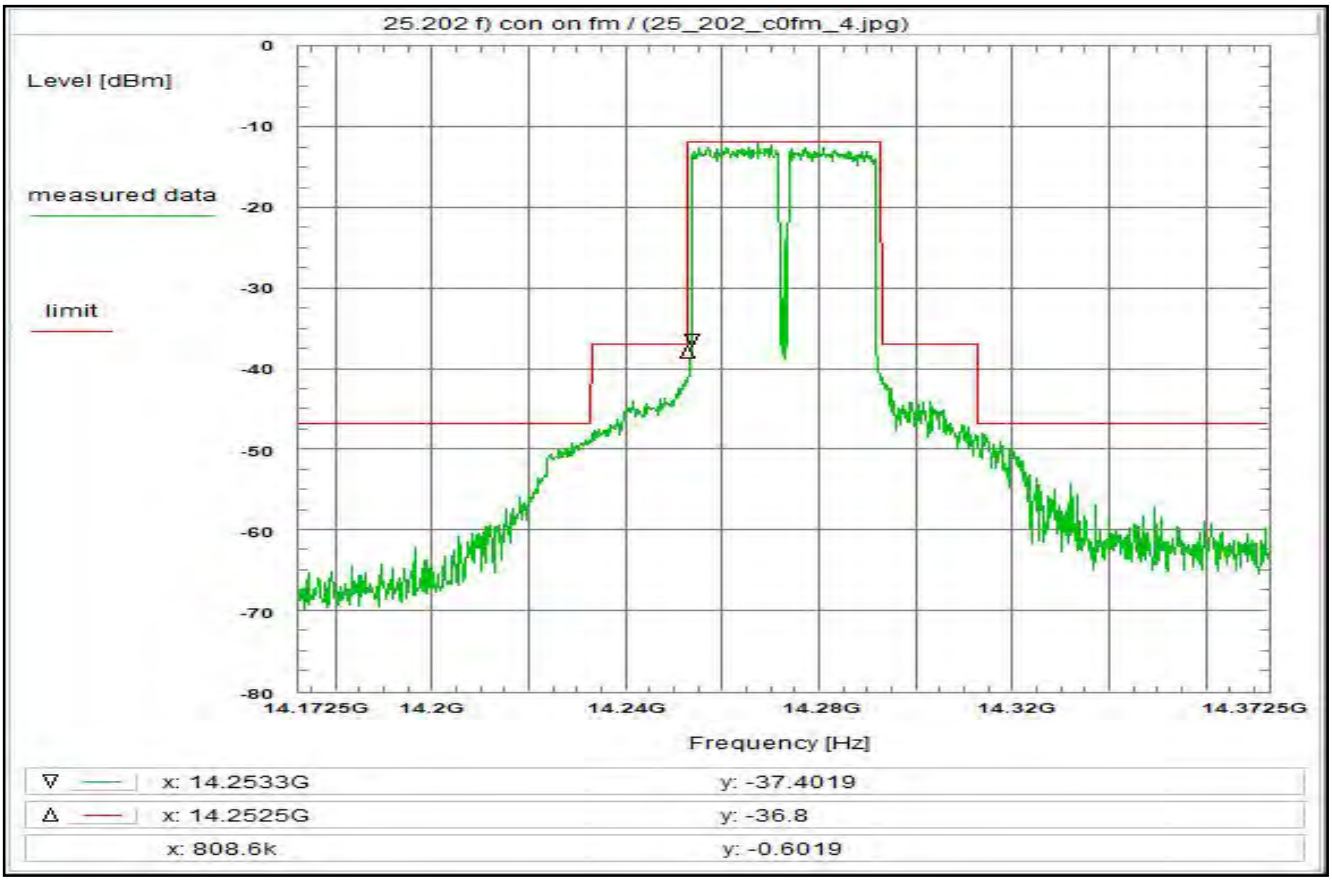
Start frequency:	14.2125	GHz
Stop frequency:	14.3125	GHz
Center frequency:	14.2625	GHz
Frequency span:	100	MHz
Resolution-BW:	10	kHz
Video-BW:	30	kHz
Input attenuation:	10	dB
Trace-Mode:	Clear Write	
Detector-Mode:	AVG	

Correction:

Directional coupler (W009)	+	39.5	dB
Coaxial cable (C107)	+	4.0	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (10k -> 4k)	-	4.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	39.5	dB

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

Plot No. 44



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 4, see test report chapter 6.4
QPSK dual carrier

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W053

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Thu 20/May/2021 14:29:53	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

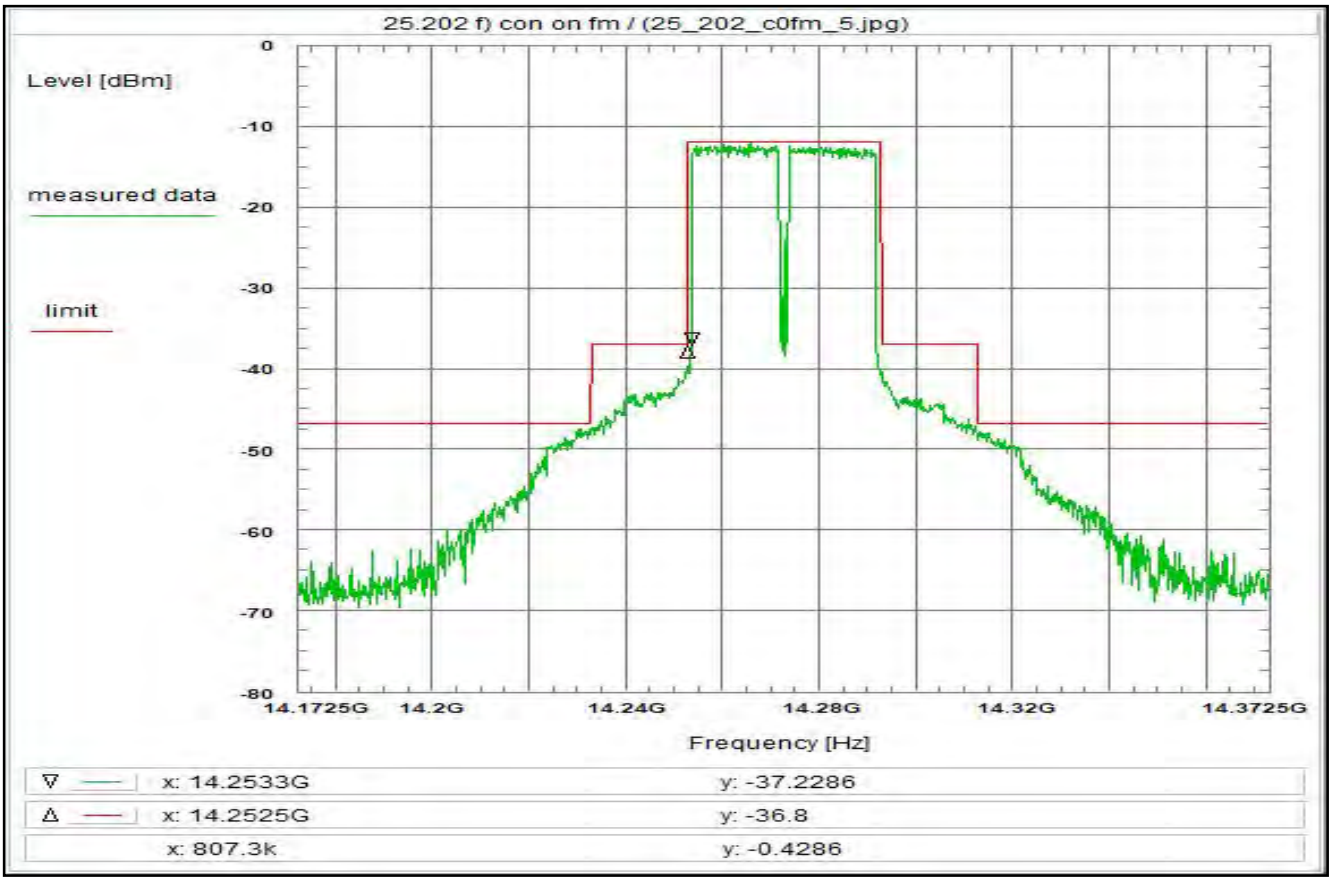
Start frequency:	14.1725	GHz
Stop frequency:	14.3725	GHz
Center frequency:	14.2725	GHz
Frequency span:	200	MHz
Resolution-BW:	10	kHz
Video-BW:	30	kHz
Input attenuation:	10	dB
Trace-Mode:	Clear Write	
Detector-Mode:	AVG	

Correction:

Directional coupler (W009)	+	39.5	dB
Coaxial cable (C107)	+	4.0	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (10k -> 4k)	-	4.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	39.5	dB

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

Plot No. 45



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 5, see test report chapter 6.4
8PSK dual carrier

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W053

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Thu 20/May/2021 14:31:30	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

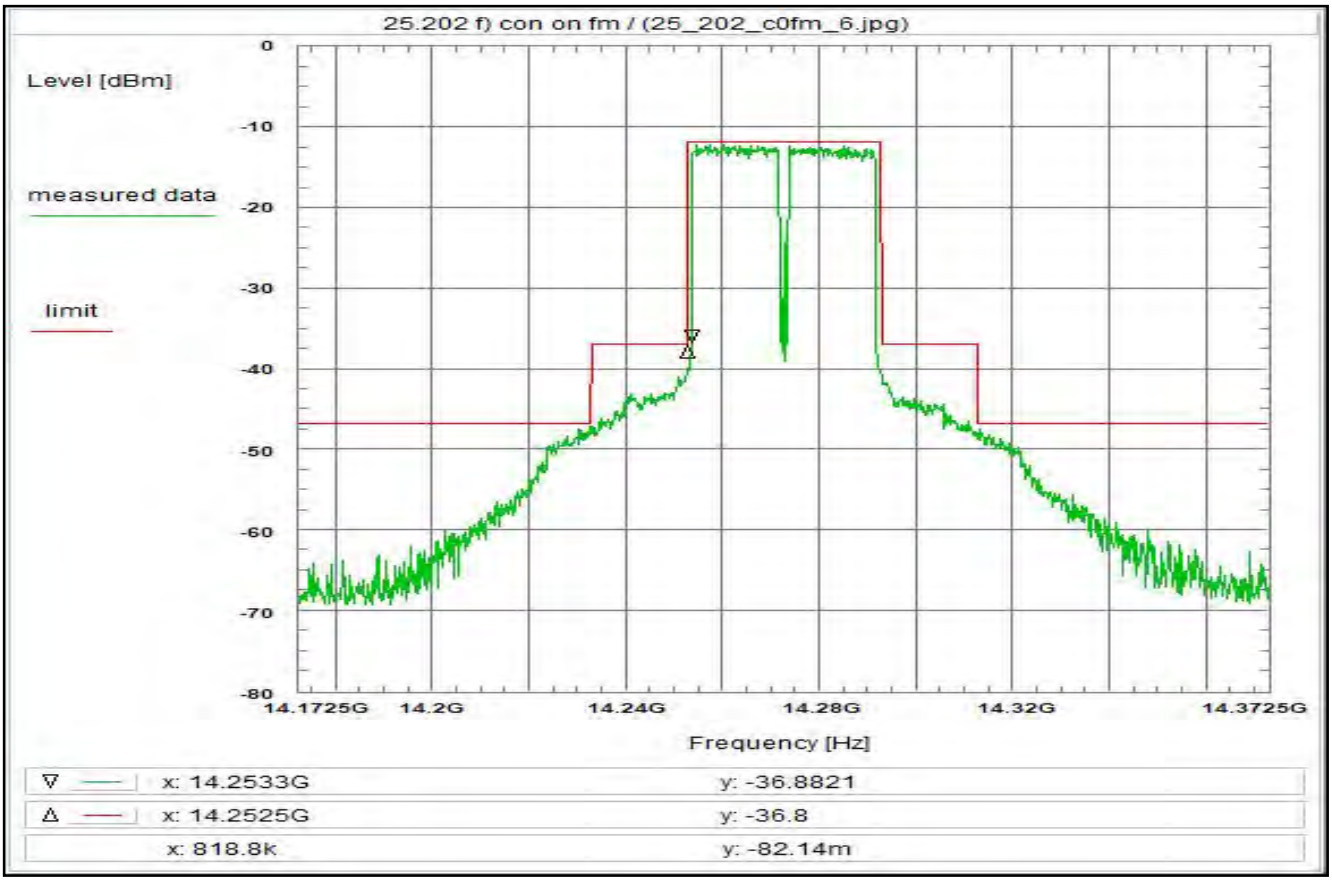
Start frequency:	14.1725	GHz
Stop frequency:	14.3725	GHz
Center frequency:	14.2725	GHz
Frequency span:	200	MHz
Resolution-BW:	10	kHz
Video-BW:	30	kHz
Input attenuation:	10	dB
Trace-Mode:	Clear Write	
Detector-Mode:	AVG	

Correction:

Directional coupler (W009)	+	39.5	dB
Coaxial cable (C107)	+	4.0	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (10k -> 4k)	-	4.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	39.5	dB

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

Plot No. 46



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 6, see test report chapter 6.4
16APSK dual carrier

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W053

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Thu 20/May/2021 14:33:07	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

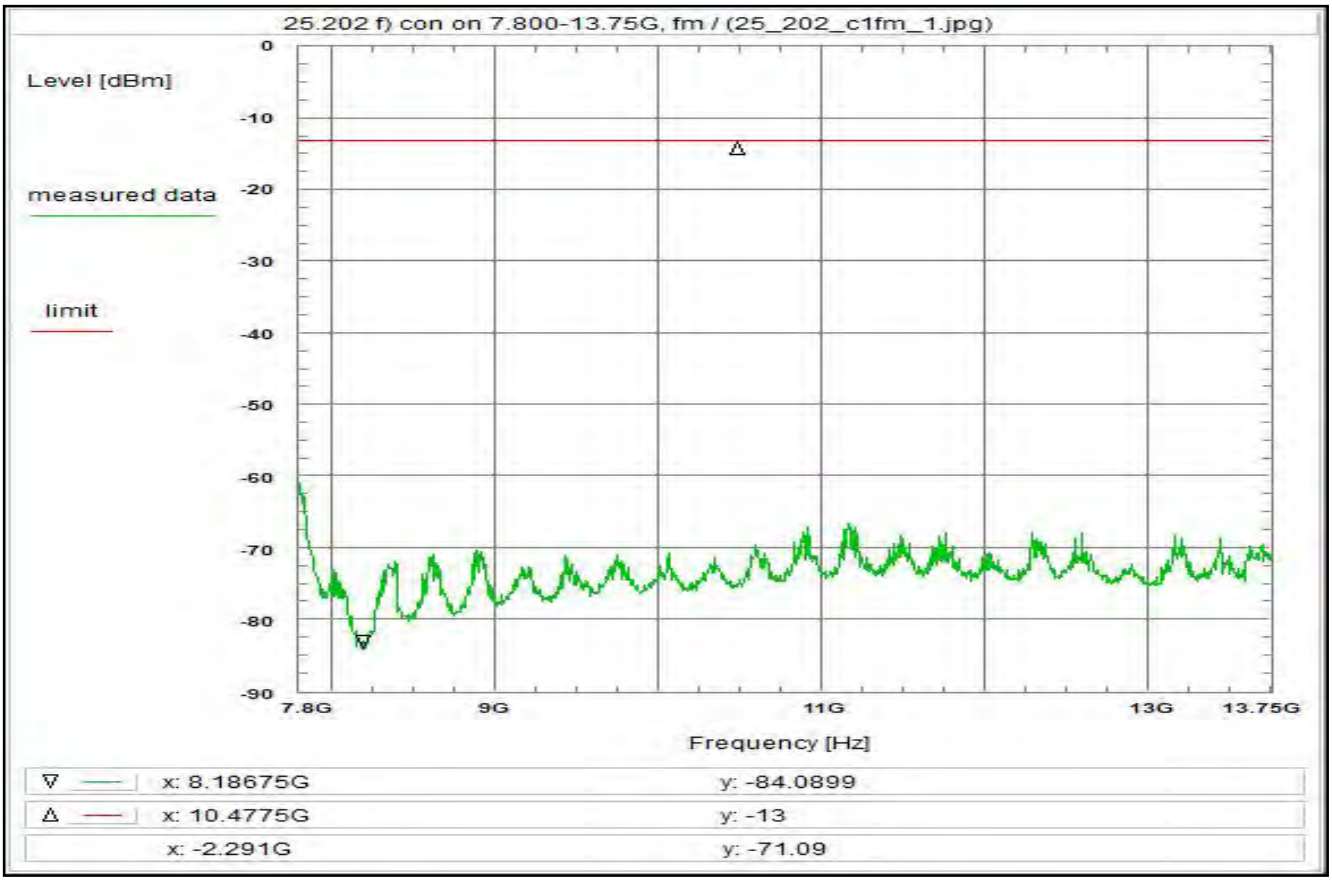
Start frequency:	14.1725	GHz
Stop frequency:	14.3725	GHz
Center frequency:	14.2725	GHz
Frequency span:	200	MHz
Resolution-BW:	10	kHz
Video-BW:	30	kHz
Input attenuation:	10	dB
Trace-Mode:	Clear Write	
Detector-Mode:	AVG	

Correction:

Directional coupler (W009)	+	39.5	dB
Coaxial cable (C107)	+	4.0	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (10k -> 4k)	-	4.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	39.5	dB

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

Plot No. 47



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): -43+10log(Pmax) dBc
This corresponds to a limit of -13 dBm.

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
QPSK single carrier, valid for all modulations

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W053

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Wed 19/May/2021 16:47:29	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

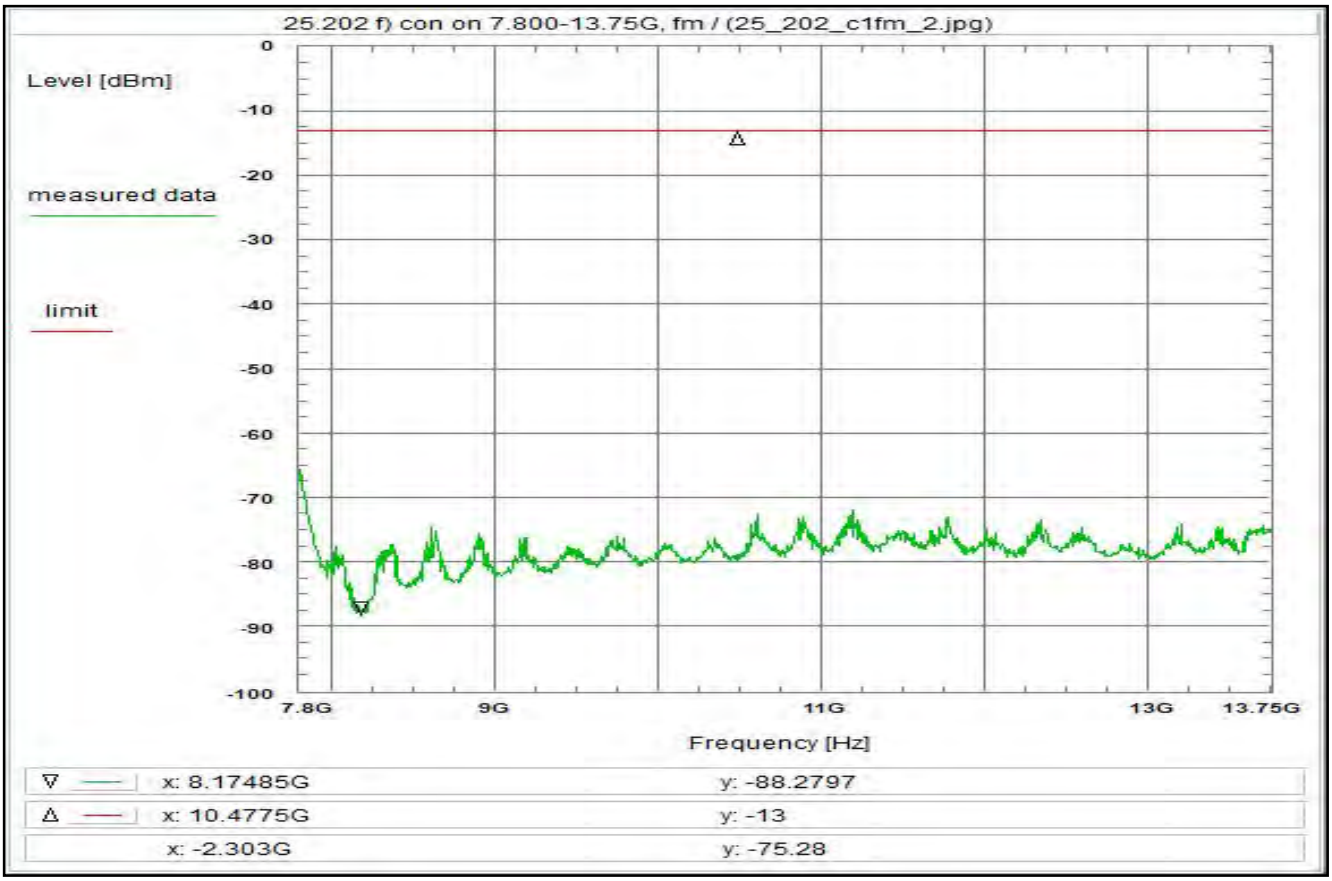
Start frequency:	7.8	GHz
Stop frequency:	13.75	GHz
Center frequency:	10.775	GHz
Frequency span:	5.95	GHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	10	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler (W009)	+	38.6	dB
Coaxial cable (C107)	+	3.5	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	28.1	dB

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

Plot No. 48



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): -43+10log(Pmax) dBc
This corresponds to a limit of -13 dBm.

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

Operating condition of DUT:
operating condition 4, see test report chapter 6.4
QPSK dual carrier, valid for all modulations

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W053

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Thu 20/May/2021 15:15:49	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

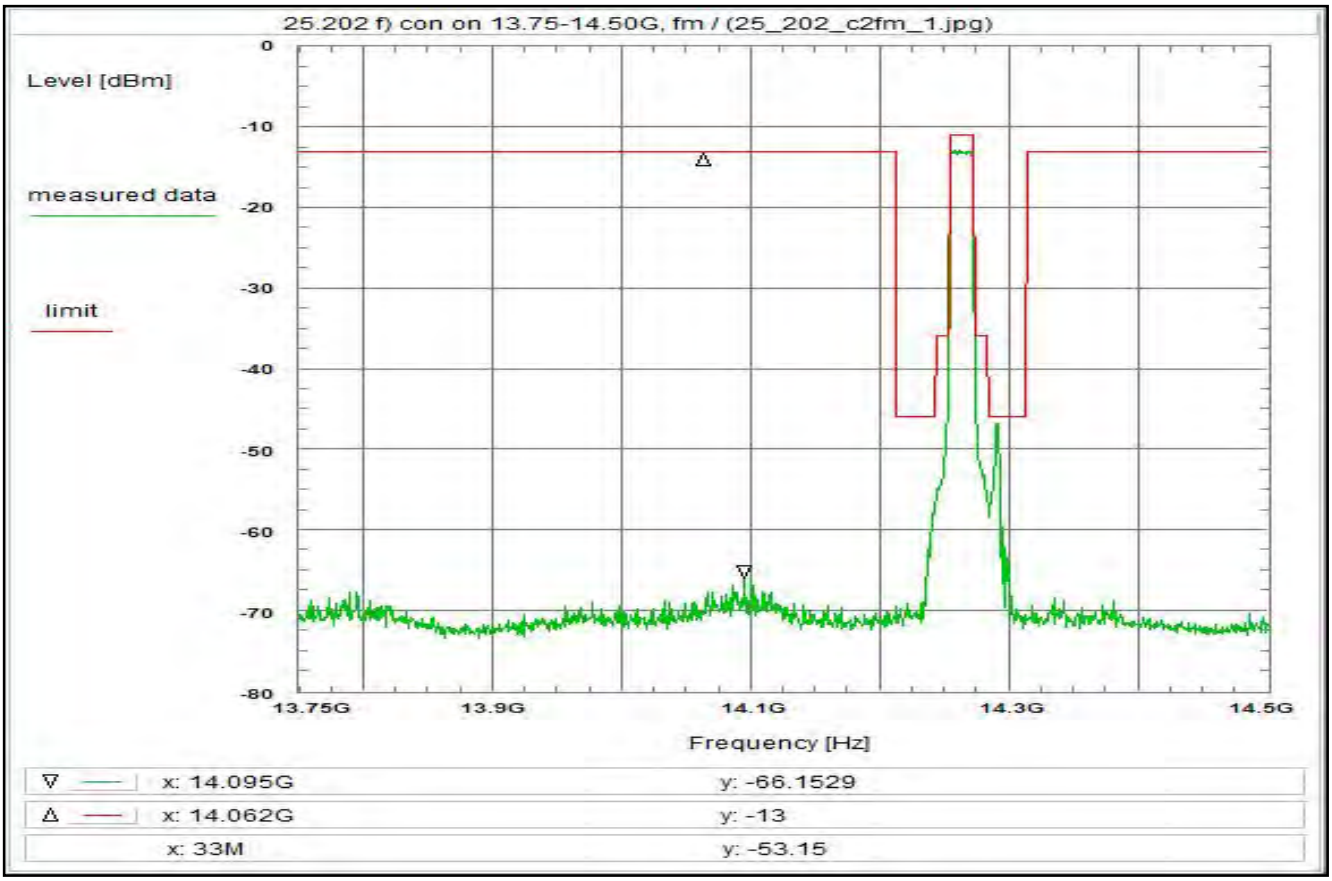
Start frequency:	7.8	GHz
Stop frequency:	13.75	GHz
Center frequency:	10.775	GHz
Frequency span:	5.95	GHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	6	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler (W009)	+	38.6	dB
Coaxial cable (C107)	+	3.5	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	28.1	dB

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

Plot No. 49



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): -43+10log(Pmax) dBc
This corresponds to a limit of -13 dBm.

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
QPSK single carrier, valid for all modulations

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W053

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Wed 19/May/2021 16:48:22	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

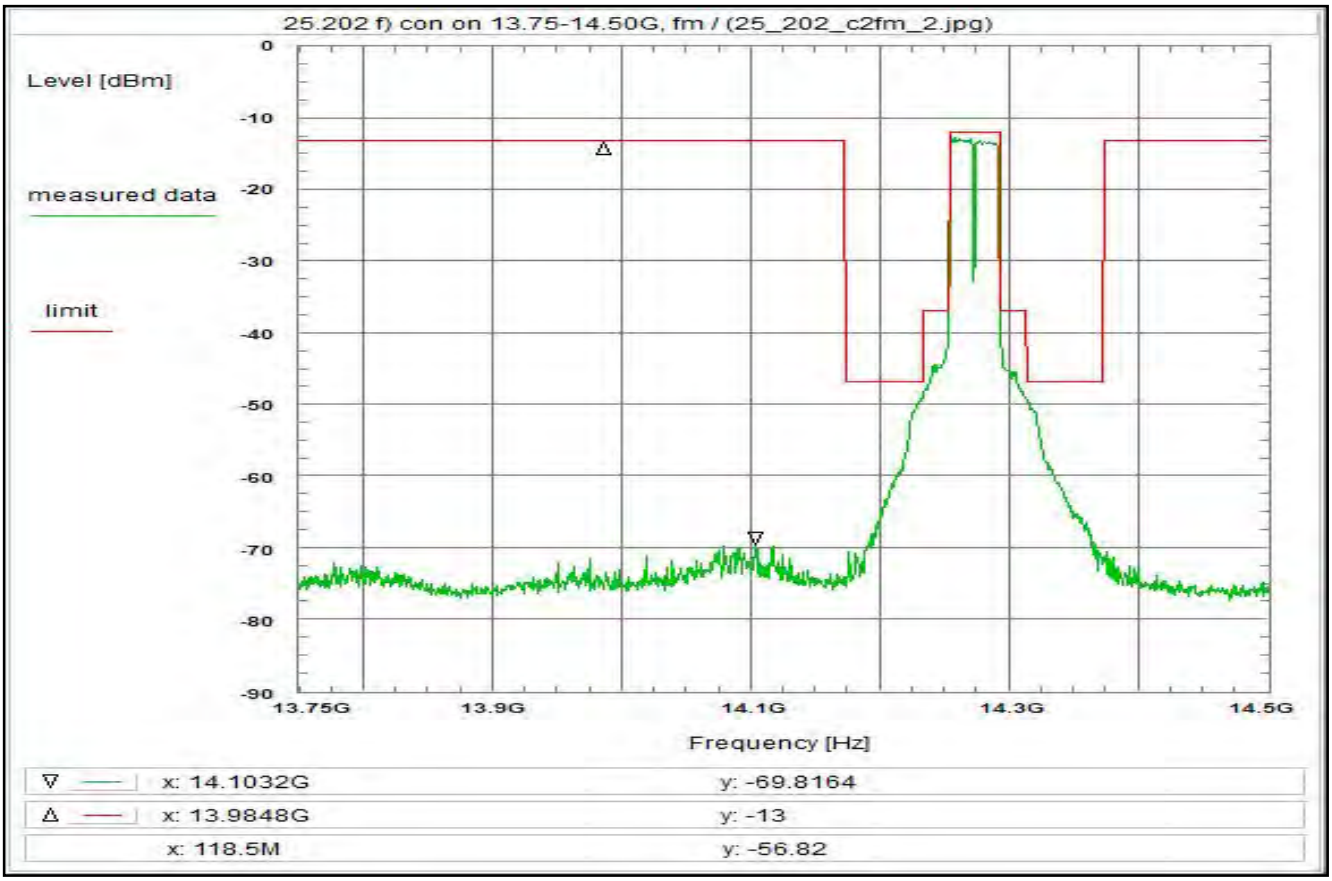
Start frequency:	13.75	GHz
Stop frequency:	14.5	GHz
Center frequency:	14.125	GHz
Frequency span:	750	MHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	10	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler (W009)	+	39.5	dB
Coaxial cable (C107)	+	4.0	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	29.5	dB

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

Plot No. 50



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): -43+10log(Pmax) dBc
This corresponds to a limit of -13 dBm.

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

Operating condition of DUT:
operating condition 4, see test report chapter 6.4
QPSK dual carrier, valid for all modulations

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W053

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Thu 20/May/2021 15:17:52	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

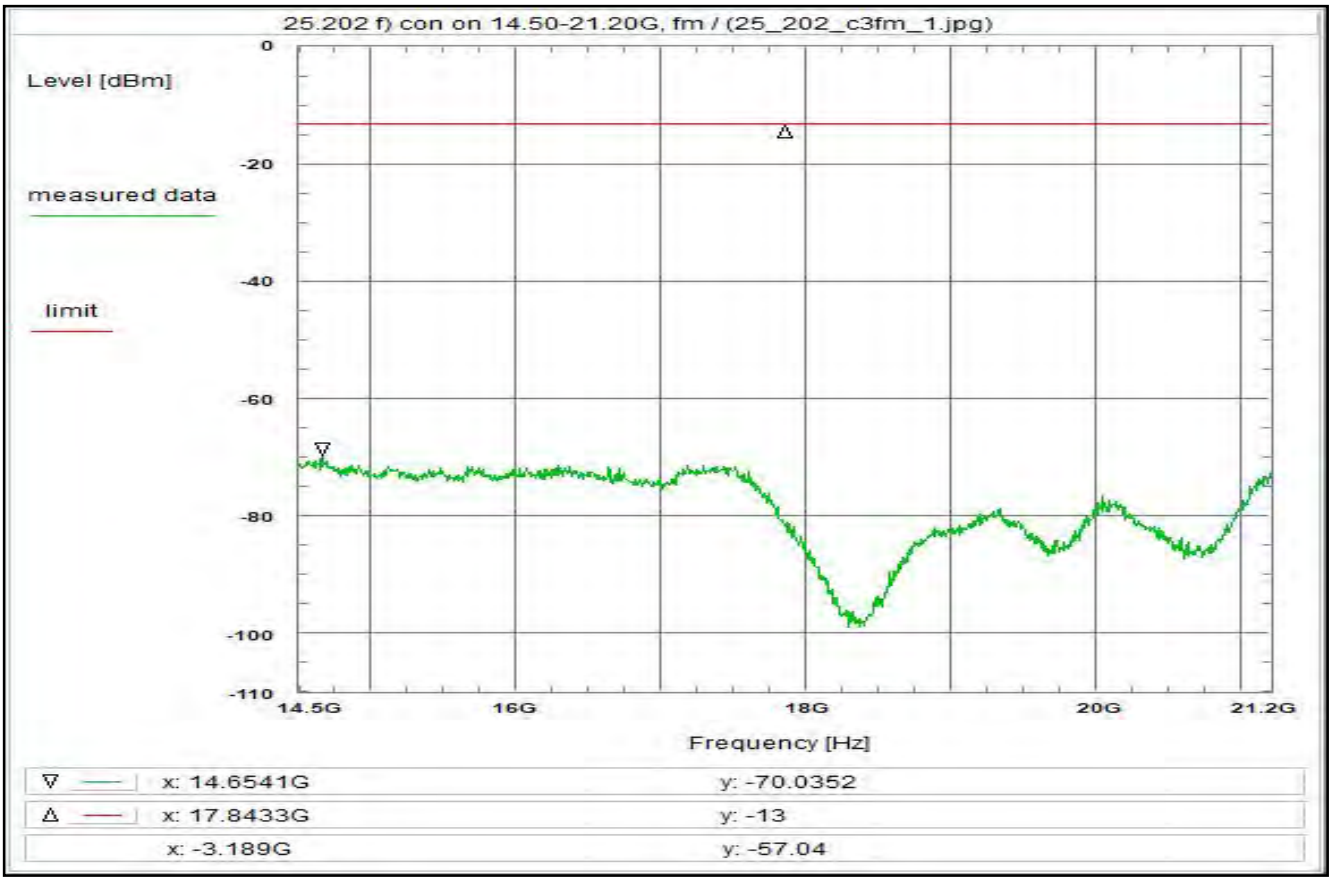
Start frequency:	13.75	GHz
Stop frequency:	14.5	GHz
Center frequency:	14.125	GHz
Frequency span:	750	MHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	6	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler (W009)	+	39.5	dB
Coaxial cable (C107)	+	4.0	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	29.5	dB

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

Plot No. 51



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): -43+10log(Pmax) dBc
This corresponds to a limit of -13 dBm.

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
QPSK single carrier, valid for all modulations

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W053

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Wed 19/May/2021 16:48:57	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

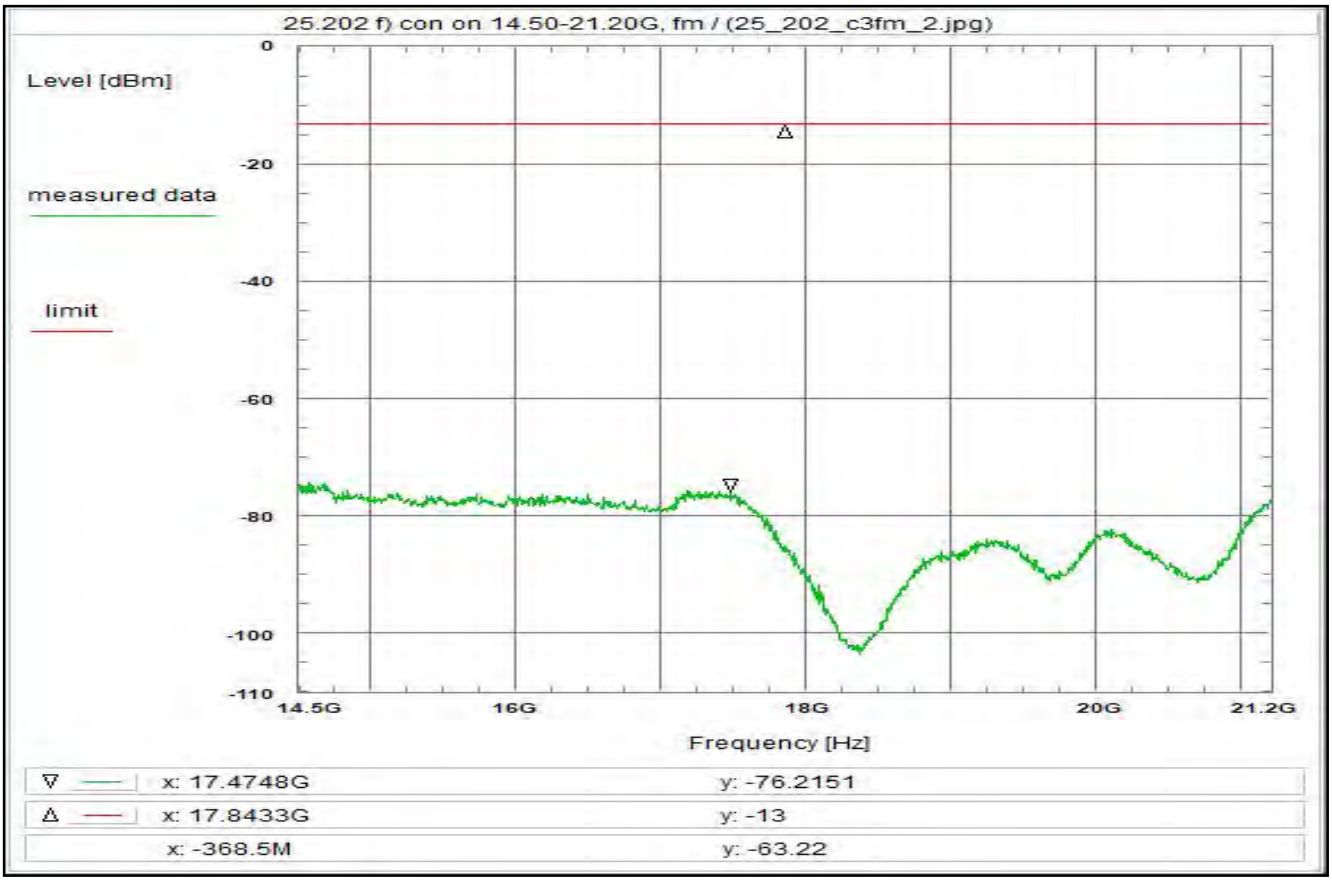
Start frequency:	14.5	GHz
Stop frequency:	21.2	GHz
Center frequency:	17.85	GHz
Frequency span:	6.7	GHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	10	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler (W009)	+	31.5	dB
Coaxial cable (C107)	+	4.5	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	22.0	dB

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

Plot No. 52



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): -43+10log(Pmax) dBc
This corresponds to a limit of -13 dBm.

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

Operating condition of DUT:
operating condition 4, see test report chapter 6.4
QPSK dual carrier, valid for all modulations

Test setup:
see test report chapter 7.3: cegj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W053

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Thu 20/May/2021 15:18:24	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

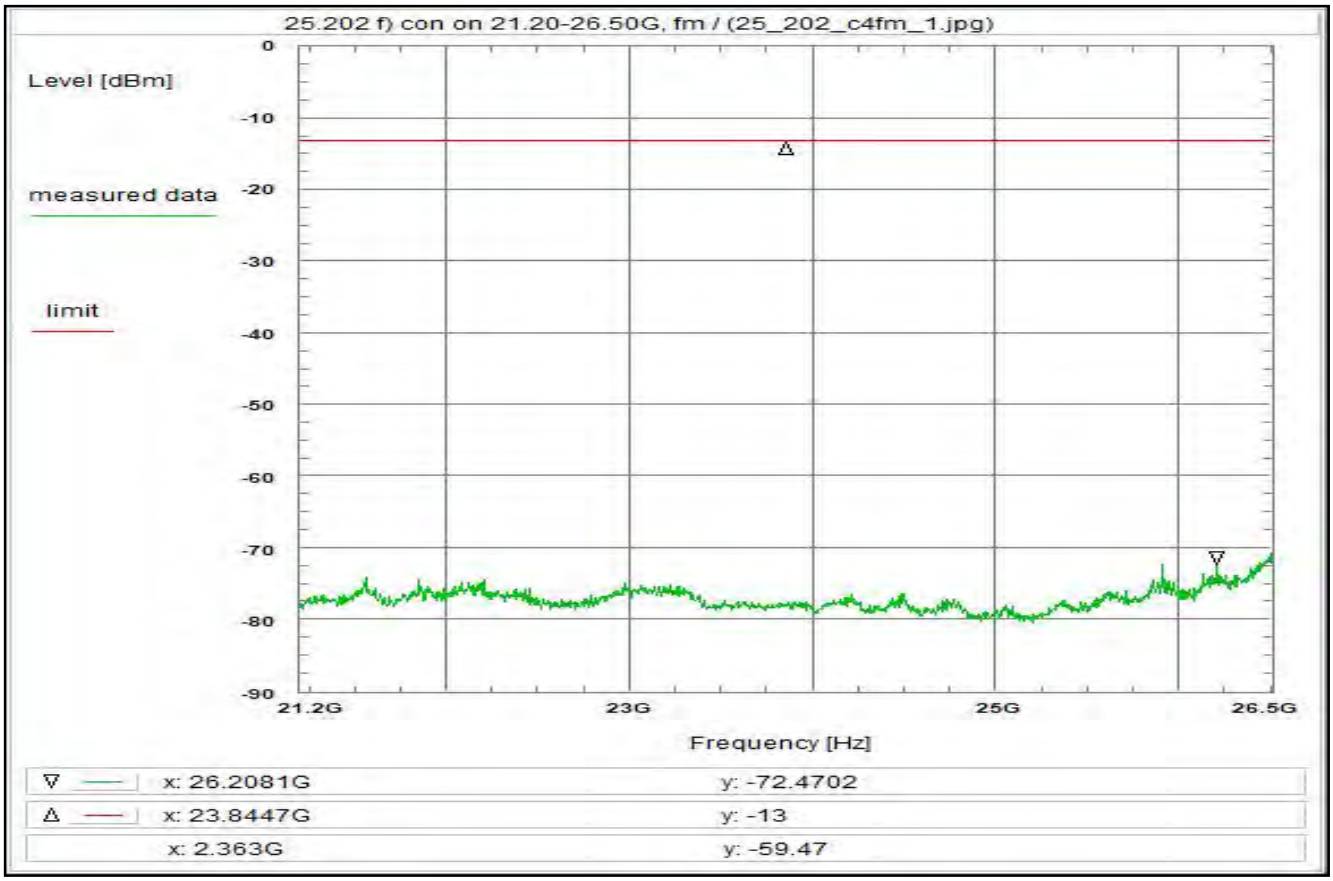
Start frequency:	14.5	GHz
Stop frequency:	21.2	GHz
Center frequency:	17.85	GHz
Frequency span:	6.7	GHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	6	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler (W009)	+	31.5	dB
Coaxial cable (C107)	+	4.5	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	22.0	dB

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

Plot No. 53



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): -43+10log(Pmax) dBc
This corresponds to a limit of -13 dBm.

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
QPSK single carrier, valid for all modulations

Test setup:
see test report chapter 7.3: cegj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W022, W063

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Thu 20/May/2021 16:15:54	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

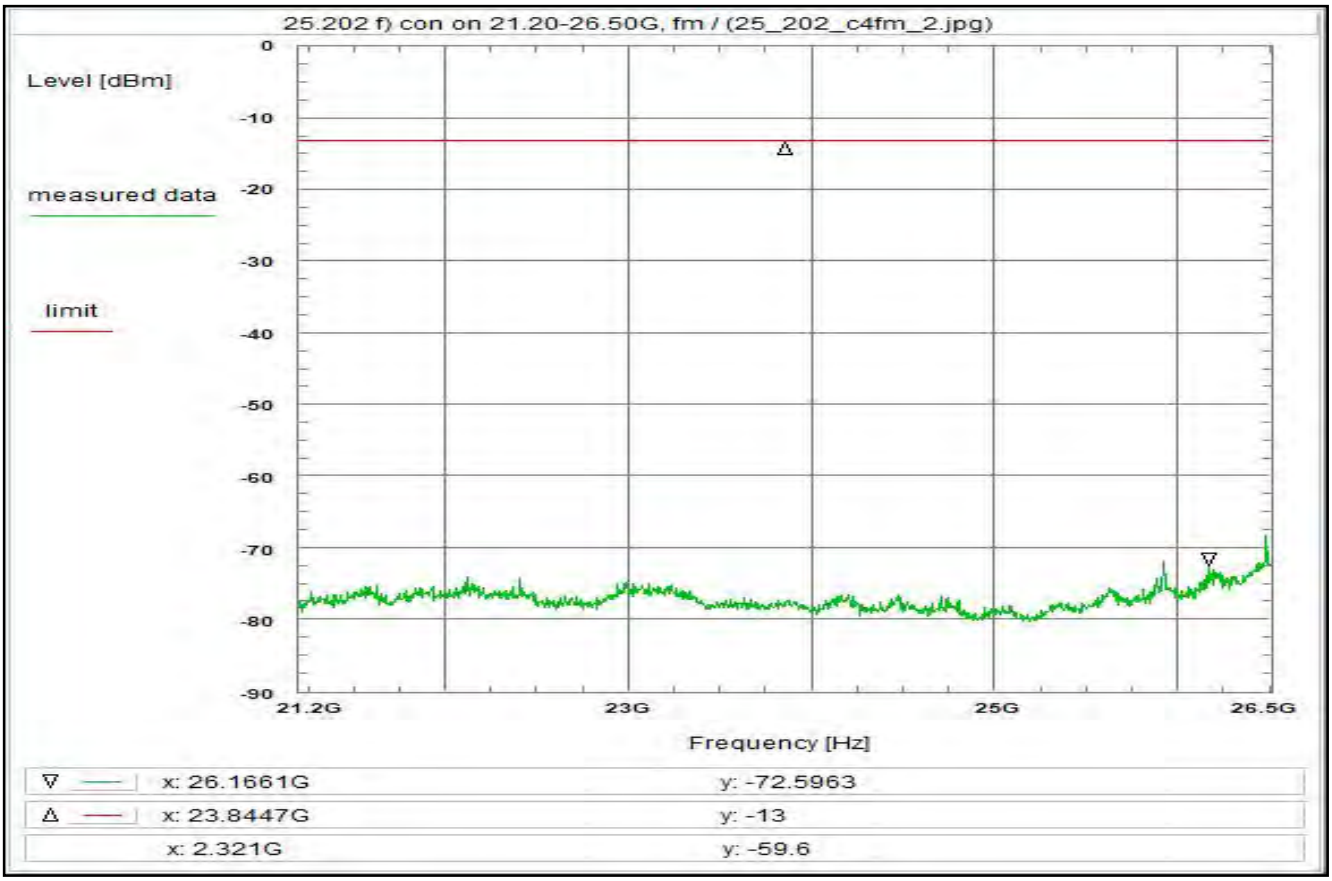
Start frequency:	21.2	GHz
Stop frequency:	26.5	GHz
Center frequency:	23.85	GHz
Frequency span:	5.3	GHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	6	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler (W009)	+	34.2	dB
Coaxial cable (C107)	+	5.2	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	25.4	dB

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

Plot No. 54



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): -43+10log(Pmax) dBc
This corresponds to a limit of -13 dBm.

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

Operating condition of DUT:
operating condition 4, see test report chapter 6.4
QPSK dual carrier, valid for all modulations

Test setup:
see test report chapter 7.3: cegj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W022, W063

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Thu 20/May/2021 16:19:50	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

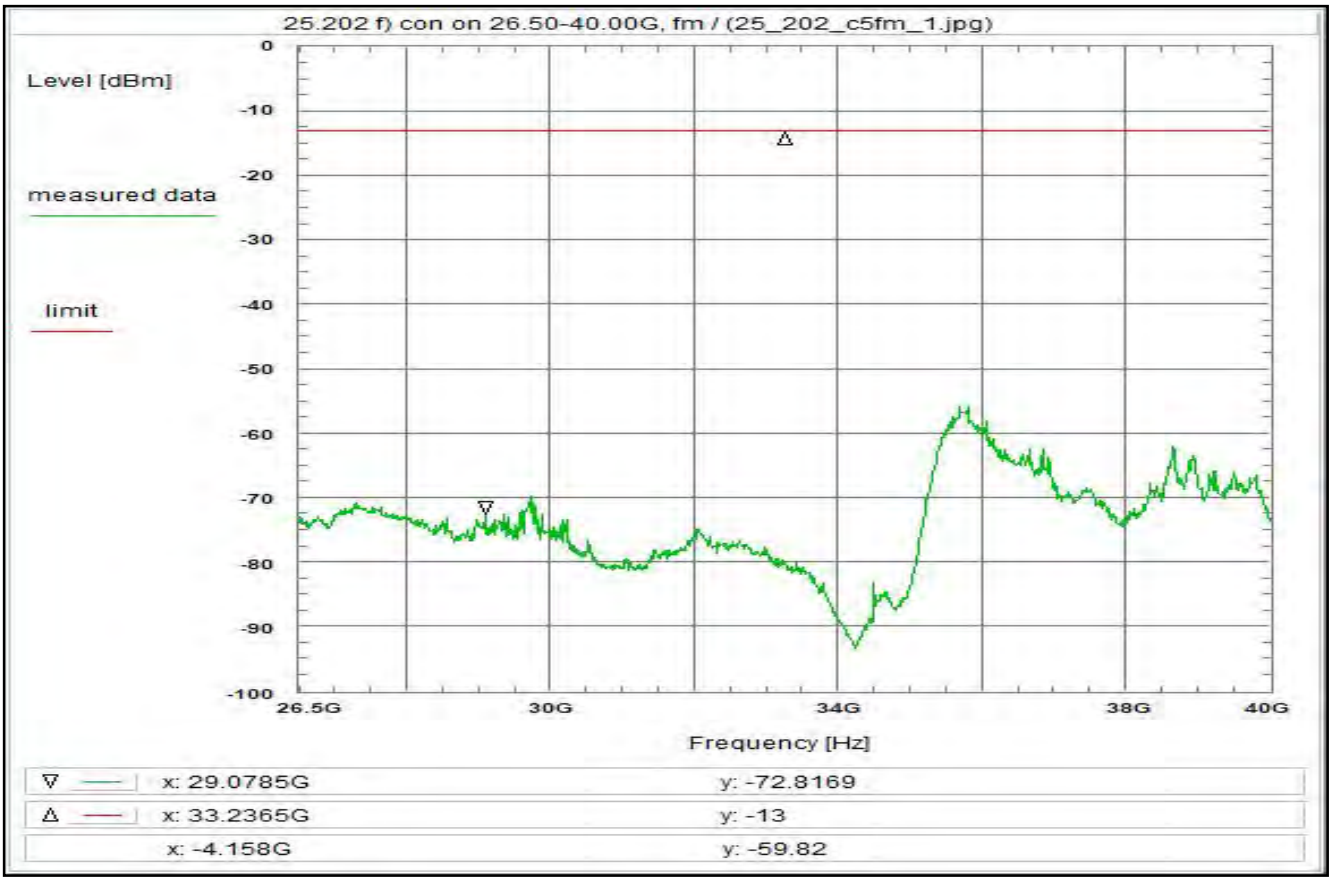
Start frequency:	21.2	GHz
Stop frequency:	26.5	GHz
Center frequency:	23.85	GHz
Frequency span:	5.3	GHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	6	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler (W009)	+	34.2	dB
Coaxial cable (C107)	+	5.2	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	25.4	dB

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

Plot No. 55



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): -43+10log(Pmax) dBc
This corresponds to a limit of -13 dBm.

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
QPSK single carrier, valid for all modulations

Test setup:
see test report chapter 7.3: cegj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W022, W065

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Thu 20/May/2021 16:25:31	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

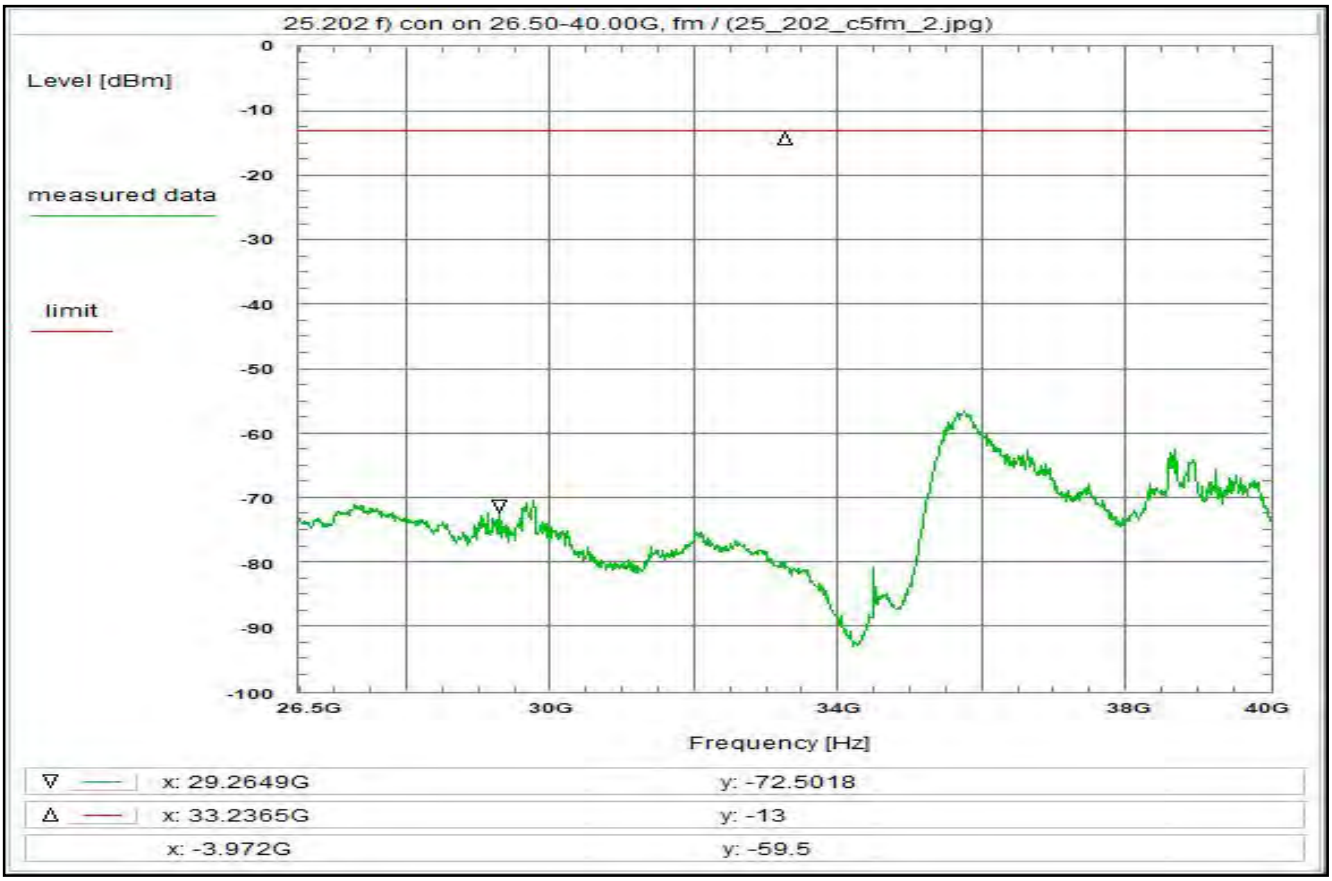
Start frequency:	26.5	GHz
Stop frequency:	40	GHz
Center frequency:	33.25	GHz
Frequency span:	13.5	GHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	6	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler (W009)	+	33.2	dB
Coaxial cable (C107)	+	6.3	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	25.5	dB

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

Plot No. 56



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): -43+10log(Pmax) dBc
This corresponds to a limit of -13 dBm.

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

Operating condition of DUT:
operating condition 4, see test report chapter 6.4
QPSK dual carrier, valid for all modulations

Test setup:
see test report chapter 7.3: cegj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W022, W065

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Thu 20/May/2021 16:29:02	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

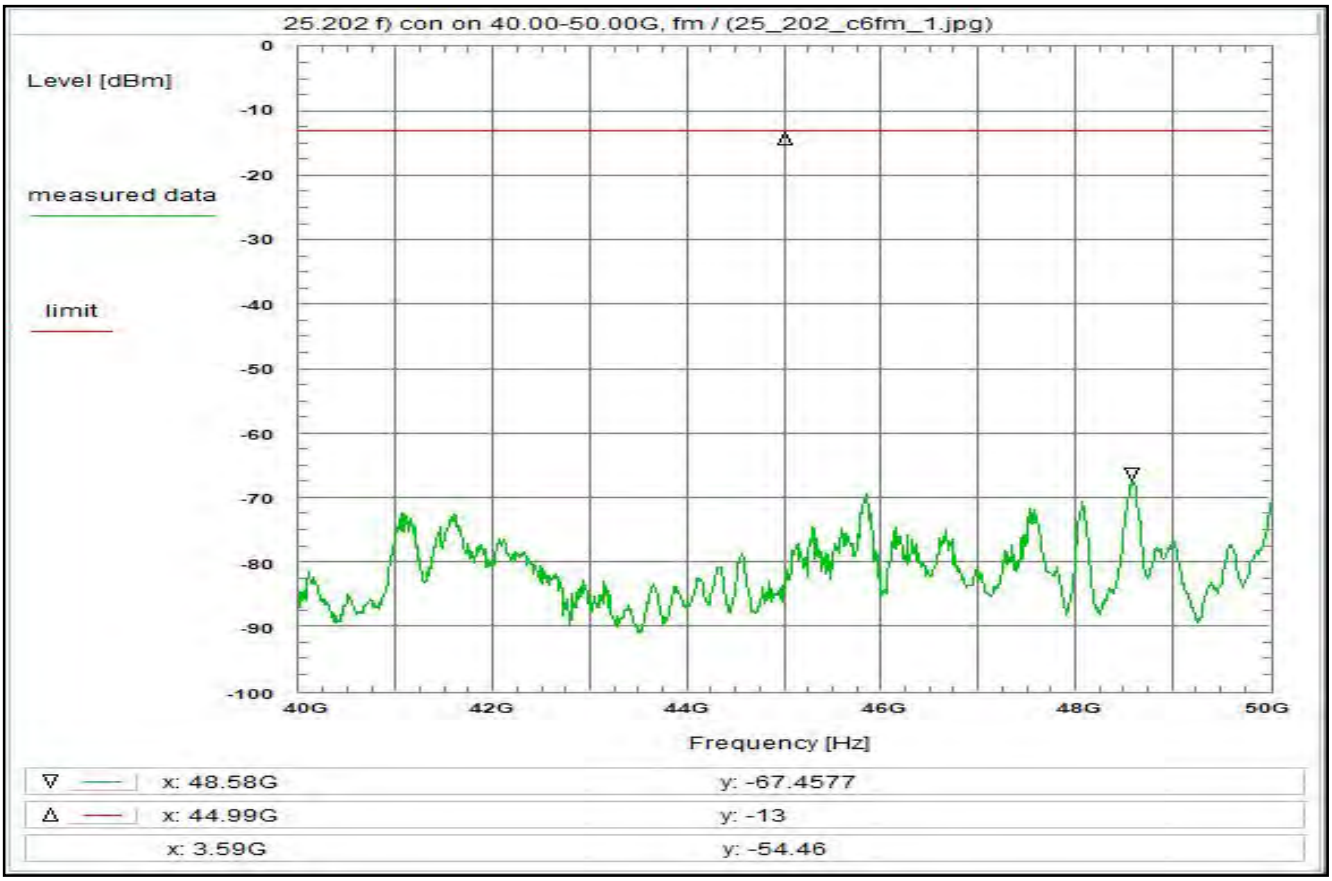
Start frequency:	26.5	GHz
Stop frequency:	40	GHz
Center frequency:	33.25	GHz
Frequency span:	13.5	GHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	6	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler (W009)	+	33.2	dB
Coaxial cable (C107)	+	6.3	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	25.5	dB

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

Plot No. 57



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): -43+10log(Pmax) dBc
This corresponds to a limit of -13 dBm.

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
QPSK single carrier, valid for all modulations

Test setup:
see test report chapter 7.3: cegj

Test equipment:
see test report chapter 7.x: C107, R001, W006, W019, W022, W0xx

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Fri 21/May/2021 12:25:54	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

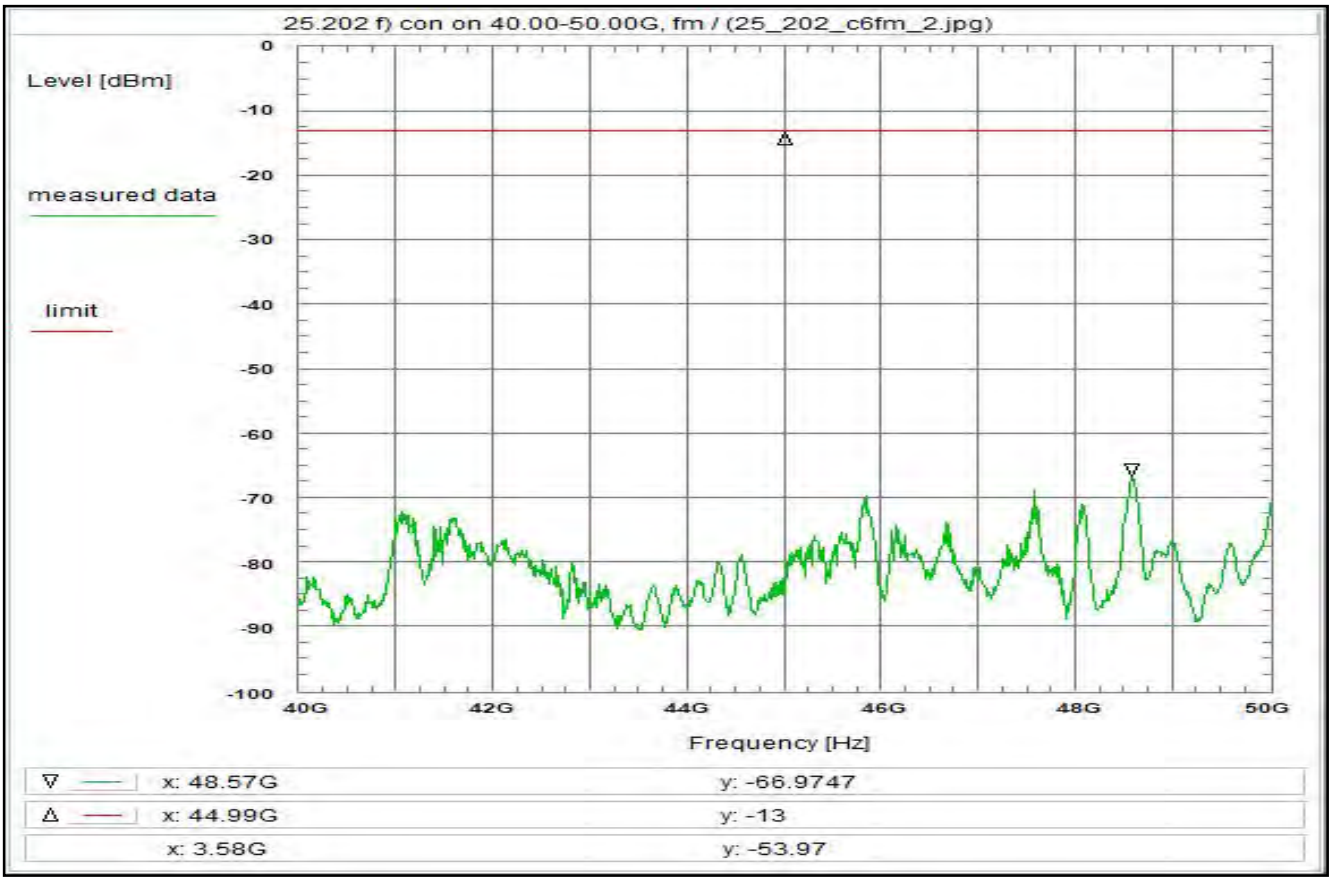
Start frequency:	40	GHz
Stop frequency:	50	GHz
Center frequency:	45	GHz
Frequency span:	10	GHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	10	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler (W006)	+	13.6	dB
Coaxial cable (C107)	+	7.4	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	7.0	dB

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

Plot No. 58



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): -43+10log(Pmax) dBc
This corresponds to a limit of -13 dBm.

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

Operating condition of DUT:
operating condition 4, see test report chapter 6.4
QPSK dual carrier, valid for all modulations

Test setup:
see test report chapter 7.3: cegj

Test equipment:
see test report chapter 7.x: C107, R001, W006, W019, W022, W0xx

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Fri 21/May/2021 12:31:55	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

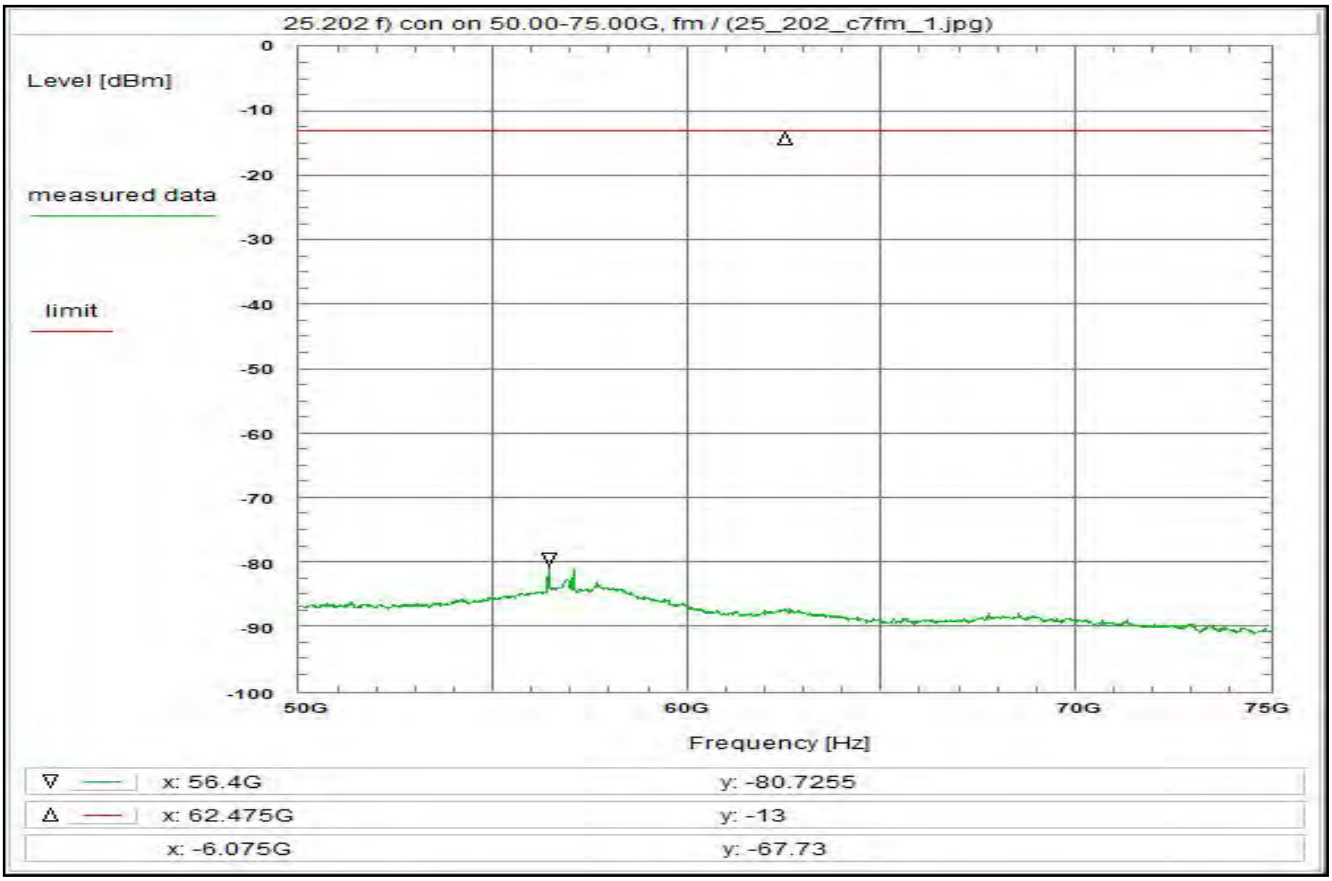
Start frequency:	40	GHz
Stop frequency:	50	GHz
Center frequency:	45	GHz
Frequency span:	10	GHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	10	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler (W006)	+	13.6	dB
Coaxial cable (C107)	+	7.4	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	7.0	dB

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

Plot No. 59



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): -43+10log(Pmax) dBc
This corresponds to a limit of -13 dBm.

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
QPSK single carrier, valid for all modulations

Test setup:
see test report chapter 7.3: cfgj

Test equipment:
see test report chapter 7.x: C107, R001, W006, W019, W022, W0xx

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Fri 21/May/2021 13:01:35	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

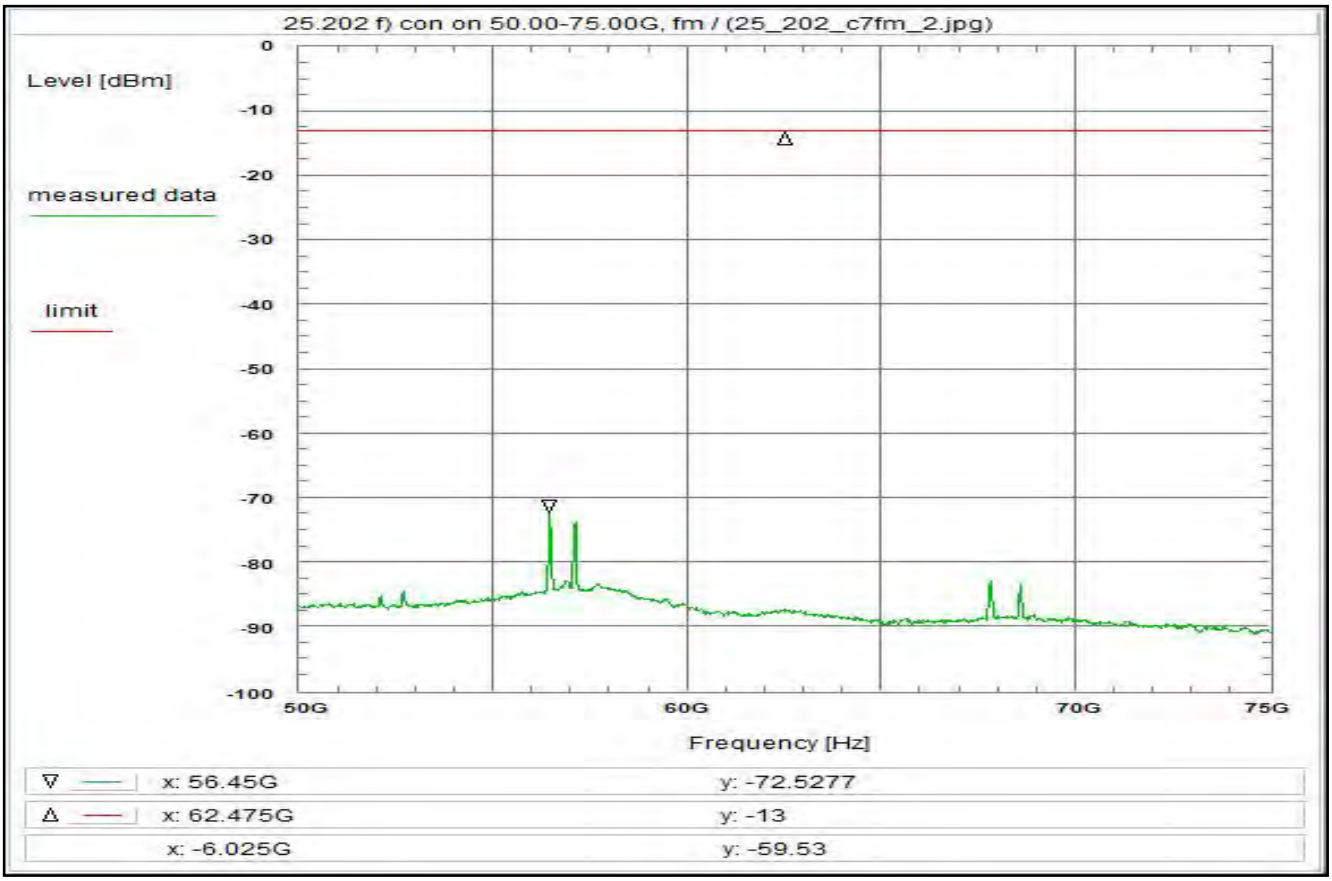
Start frequency:	50	GHz
Stop frequency:	75	GHz
Center frequency:	62.5	GHz
Frequency span:	25	GHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	10	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler (W006)	+	19.4	dB
Coaxial cable (C107)	+	0.0	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	5.4	dB

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

Plot No. 60



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): -43+10log(Pmax) dBc
This corresponds to a limit of -13 dBm.

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

Operating condition of DUT:
operating condition 4, see test report chapter 6.4
QPSK dual carrier, valid for all modulations

Test setup:
see test report chapter 7.3: cfgj

Test equipment:
see test report chapter 7.x: C107, R001, W006, W019, W022, W0xx

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Fri 21/May/2021 13:02:32	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

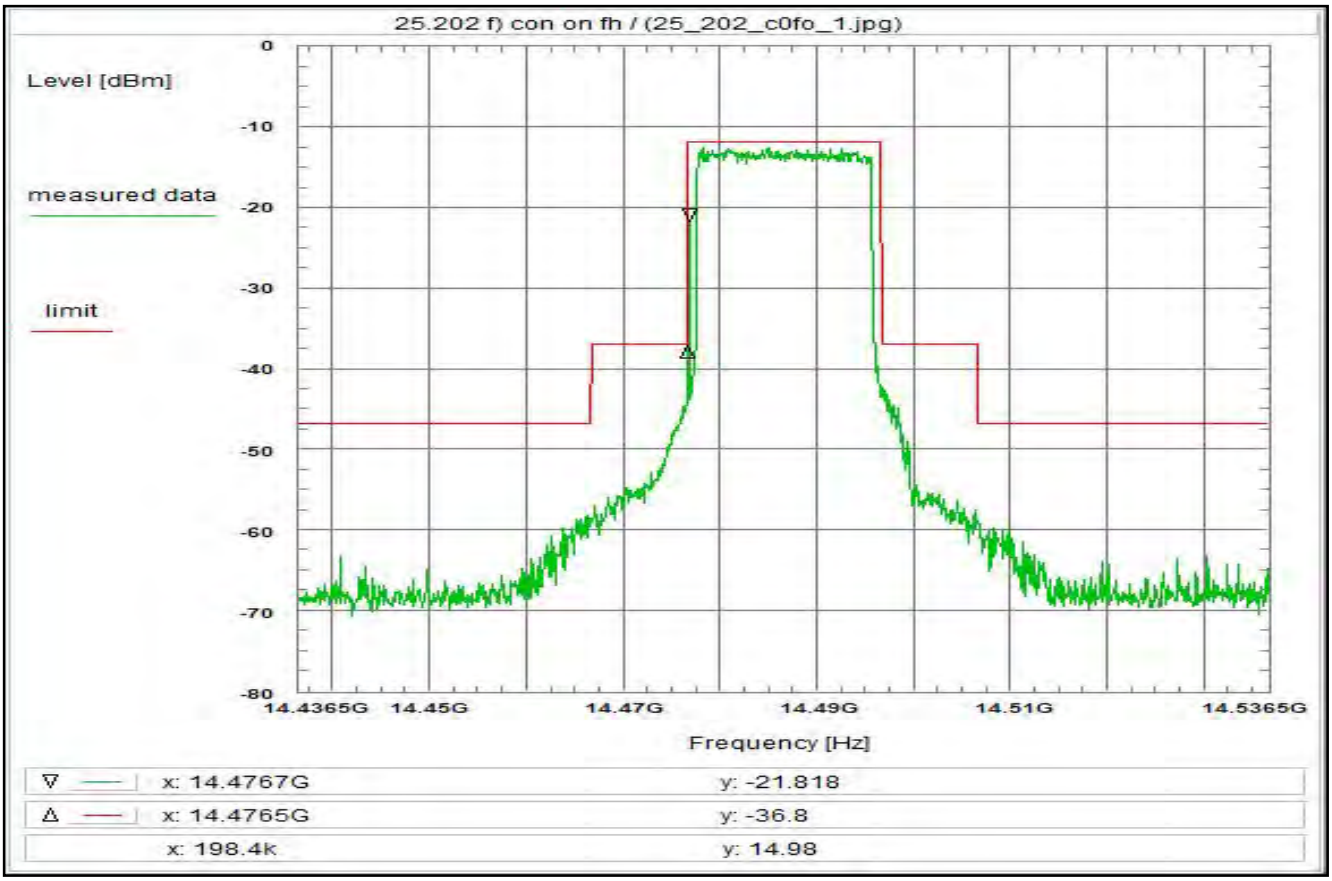
Start frequency:	50	GHz
Stop frequency:	75	GHz
Center frequency:	62.5	GHz
Frequency span:	25	GHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	10	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler (W006)	+	19.4	dB
Coaxial cable (C107)	+	0.0	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	5.4	dB

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

Plot No. 61



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
QPSK single carrier

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W053

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Wed 19/May/2021 17:22:16	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

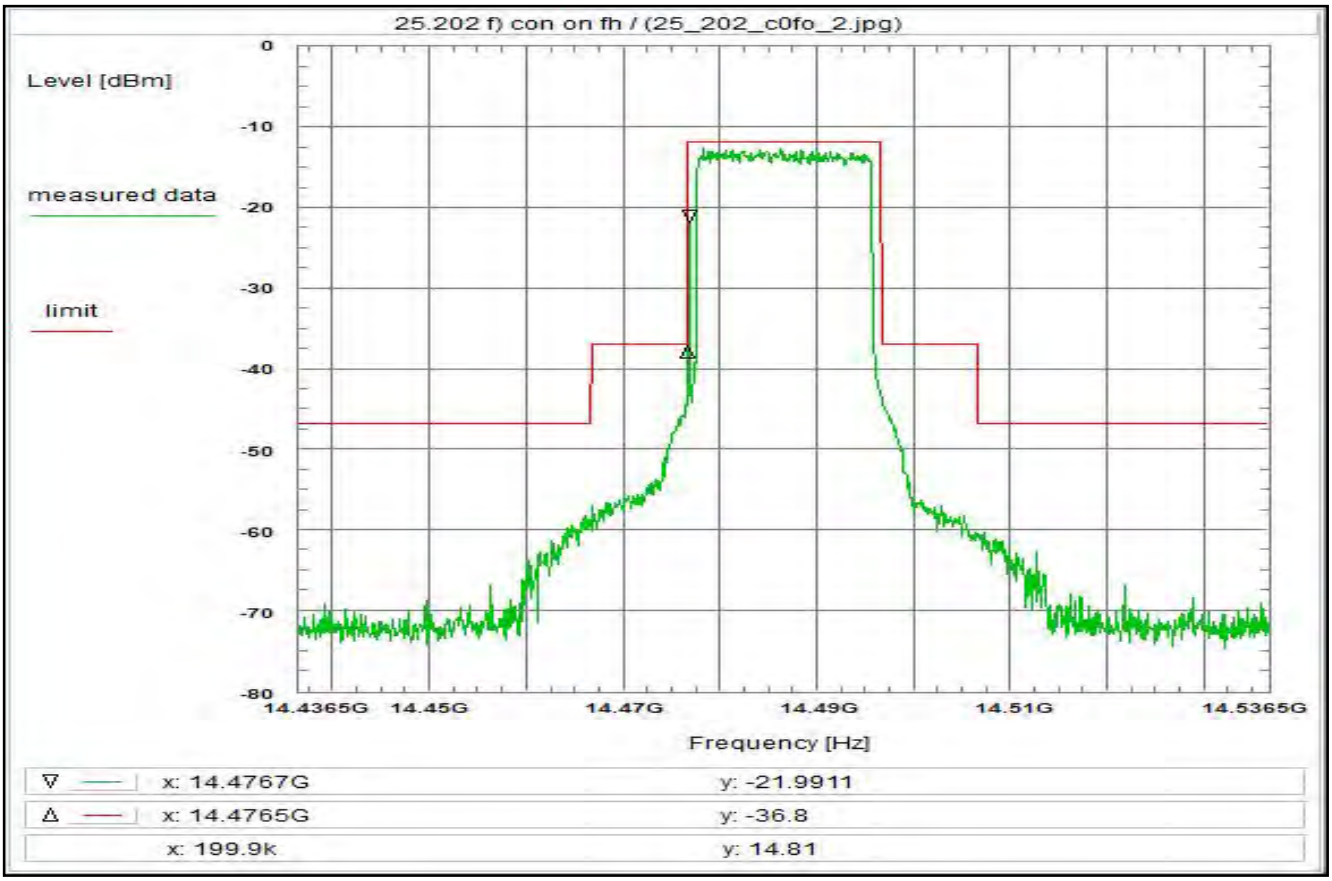
Start frequency:	14.4365	GHz
Stop frequency:	14.5365	GHz
Center frequency:	14.4865	GHz
Frequency span:	100	MHz
Resolution-BW:	10	kHz
Video-BW:	30	kHz
Input attenuation:	10	dB
Trace-Mode:	Clear Write	
Detector-Mode:	AVG	

Correction:

Directional coupler (W009)	+	39.4	dB
Coaxial cable (C107)	+	4.0	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (10k -> 4k)	-	4.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	39.4	dB

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

Plot No. 62



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 2, see test report chapter 6.4
8PSK single carrier

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W053

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Thu 20/May/2021 15:12:52	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

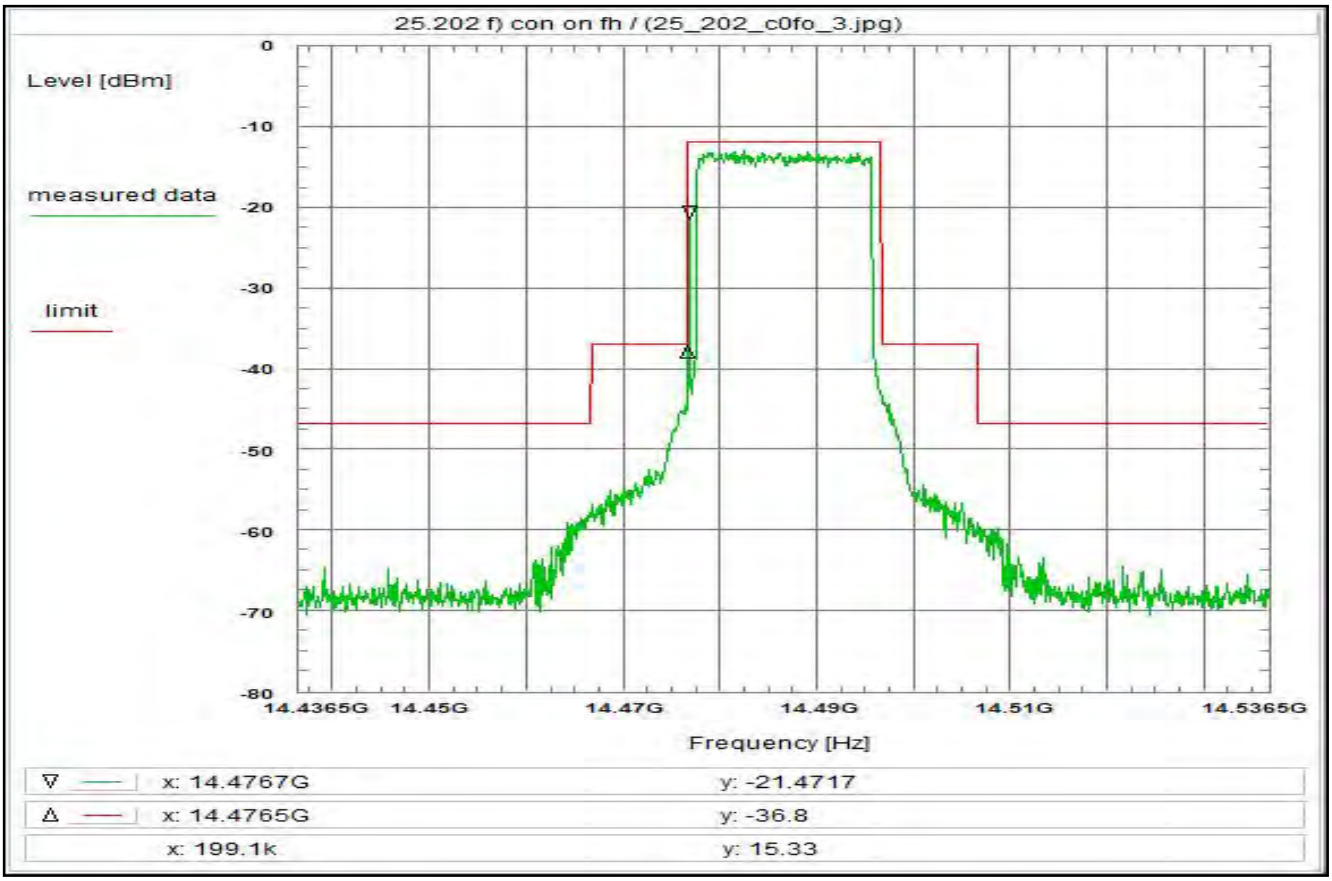
Start frequency:	14.4365	GHz
Stop frequency:	14.5365	GHz
Center frequency:	14.4865	GHz
Frequency span:	100	MHz
Resolution-BW:	10	kHz
Video-BW:	30	kHz
Input attenuation:	6	dB
Trace-Mode:	Clear Write	
Detector-Mode:	AVG	

Correction:

Directional coupler (W009)	+	39.4	dB
Coaxial cable (C107)	+	4.0	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (10k -> 4k)	-	4.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	39.4	dB

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

Plot No. 63



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 3, see test report chapter 6.4
16QAM single carrier

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W053

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Wed 19/May/2021 17:30:56	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

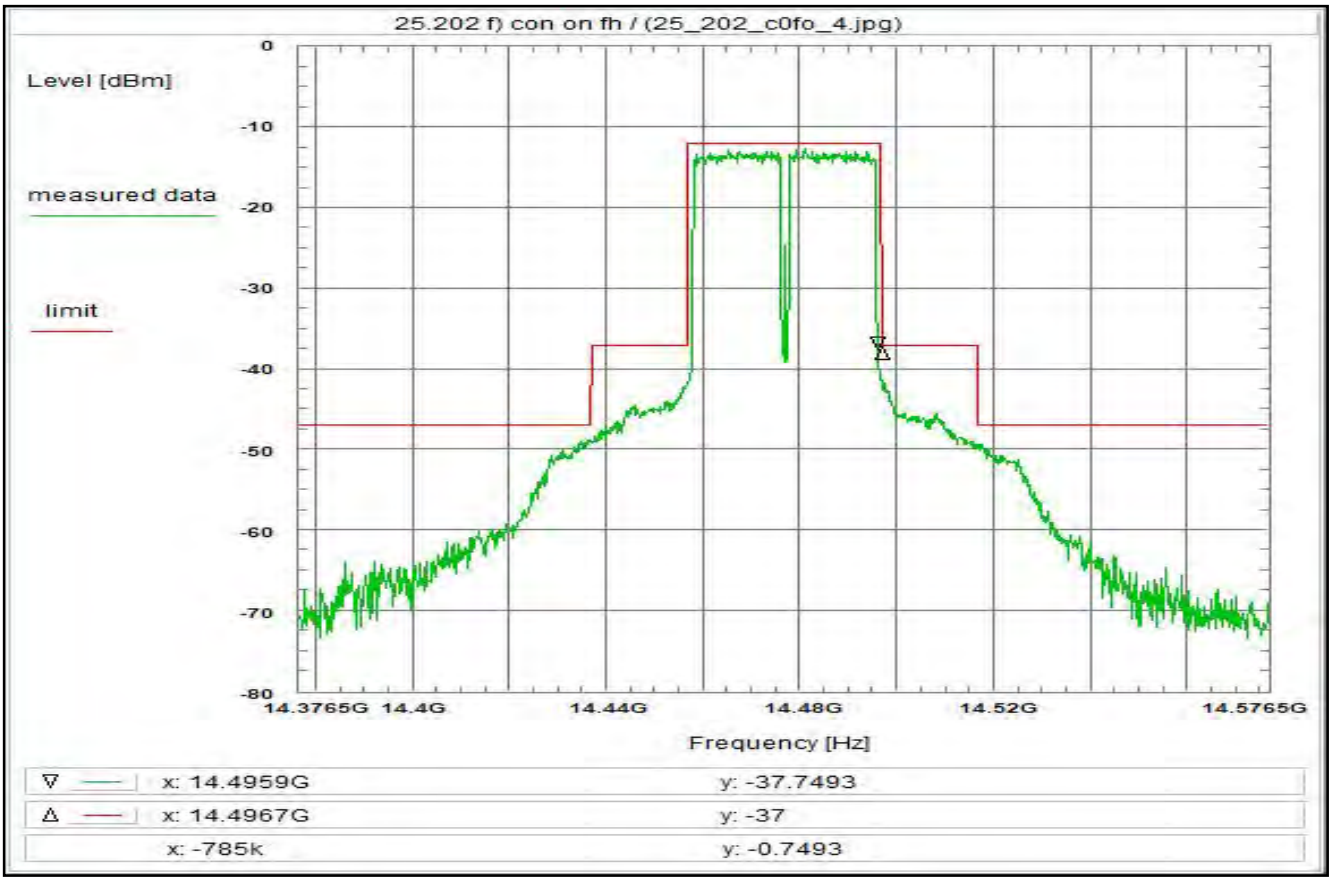
Start frequency:	14.4365	GHz
Stop frequency:	14.5365	GHz
Center frequency:	14.4865	GHz
Frequency span:	100	MHz
Resolution-BW:	10	kHz
Video-BW:	30	kHz
Input attenuation:	10	dB
Trace-Mode:	Clear Write	
Detector-Mode:	AVG	

Correction:

Directional coupler (W009)	+	39.4	dB
Coaxial cable (C107)	+	4.0	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (10k -> 4k)	-	4.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	39.4	dB

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

Plot No. 64



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 4, see test report chapter 6.4
QPSK dual carrier

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: R001, W019, W053

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Thu 20/May/2021 16:10:34	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

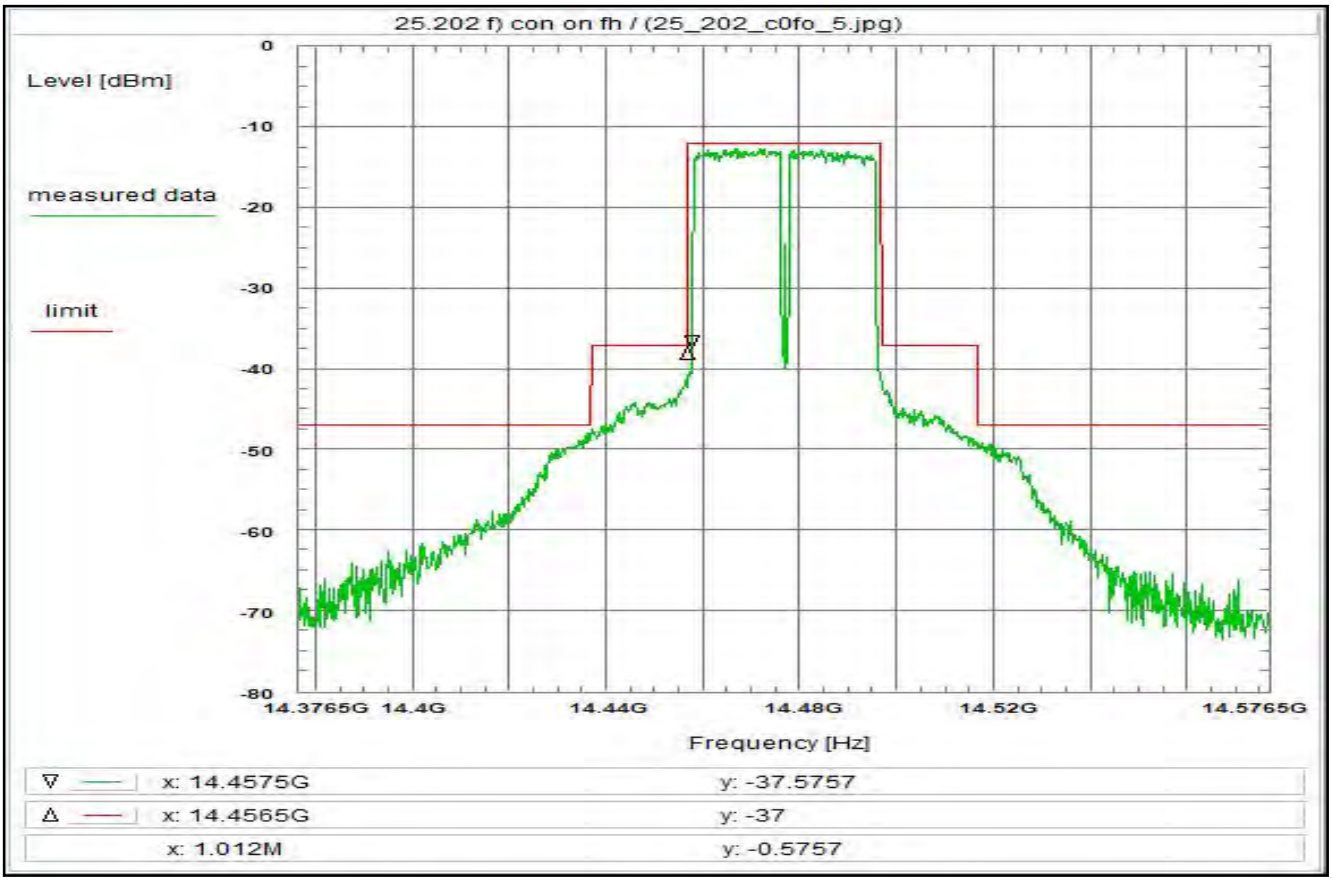
Start frequency:	14.3765	GHz
Stop frequency:	14.5765	GHz
Center frequency:	14.4765	GHz
Frequency span:	200	MHz
Resolution-BW:	10	kHz
Video-BW:	30	kHz
Input attenuation:	6	dB
Trace-Mode:	Clear Write	
Detector-Mode:	AVG	

Correction:

Directional coupler (W009)	+	39.4	dB
Coaxial cable (C107)	+	4.0	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (10k -> 4k)	-	4.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	39.4	dB

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

Plot No. 65



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 5, see test report chapter 6.4
8PSK dual carrier

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W053

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Thu 20/May/2021 14:57:18	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

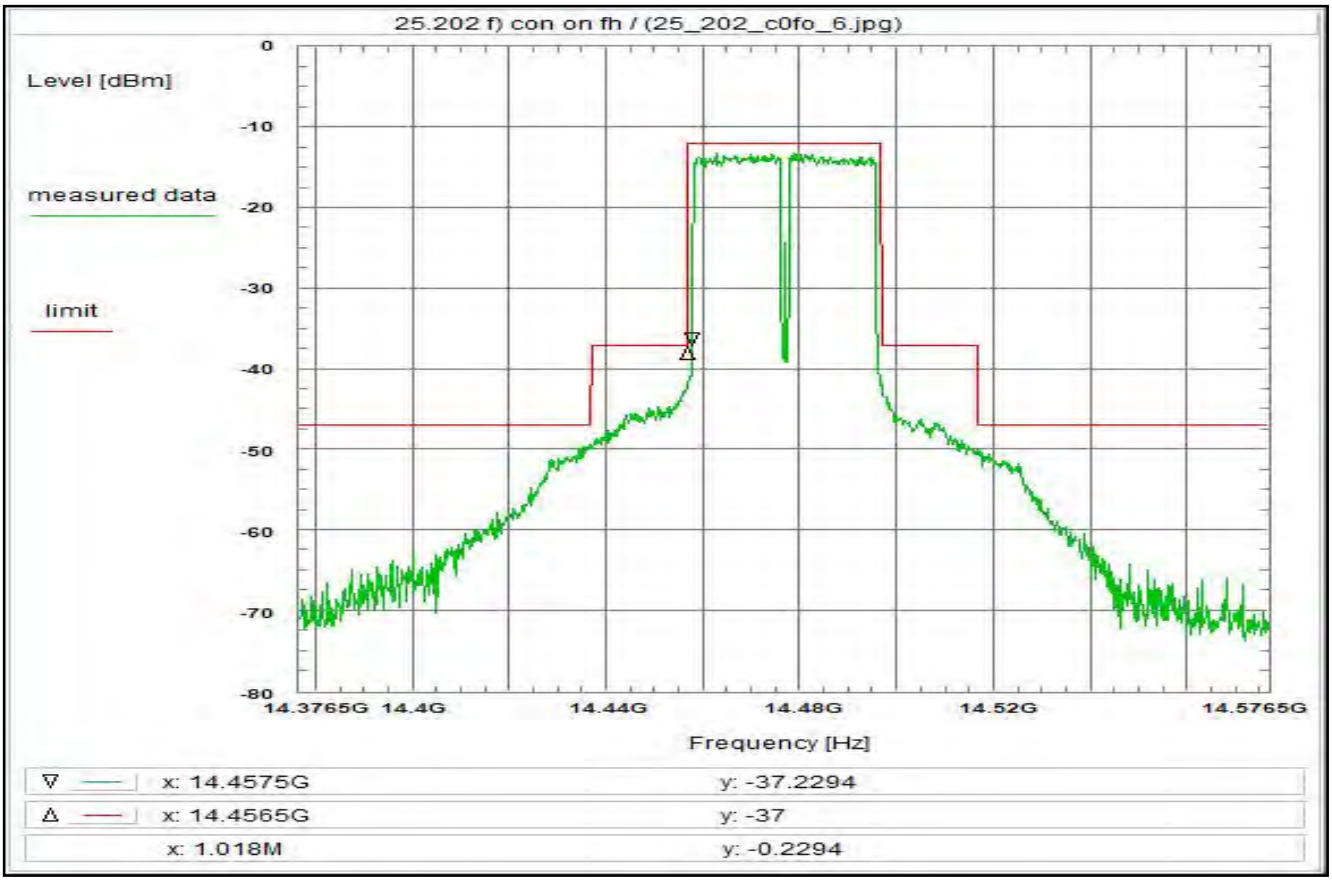
Start frequency:	14.3765	GHz
Stop frequency:	14.5765	GHz
Center frequency:	14.4765	GHz
Frequency span:	200	MHz
Resolution-BW:	10	kHz
Video-BW:	30	kHz
Input attenuation:	6	dB
Trace-Mode:	Clear Write	
Detector-Mode:	AVG	

Correction:

Directional coupler (W009)	+	39.4	dB
Coaxial cable (C107)	+	4.0	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (10k -> 4k)	-	4.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	39.4	dB

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

Plot No. 66



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 6, see test report chapter 6.4
16QAM dual carrier

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W053

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Thu 20/May/2021 14:59:40	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

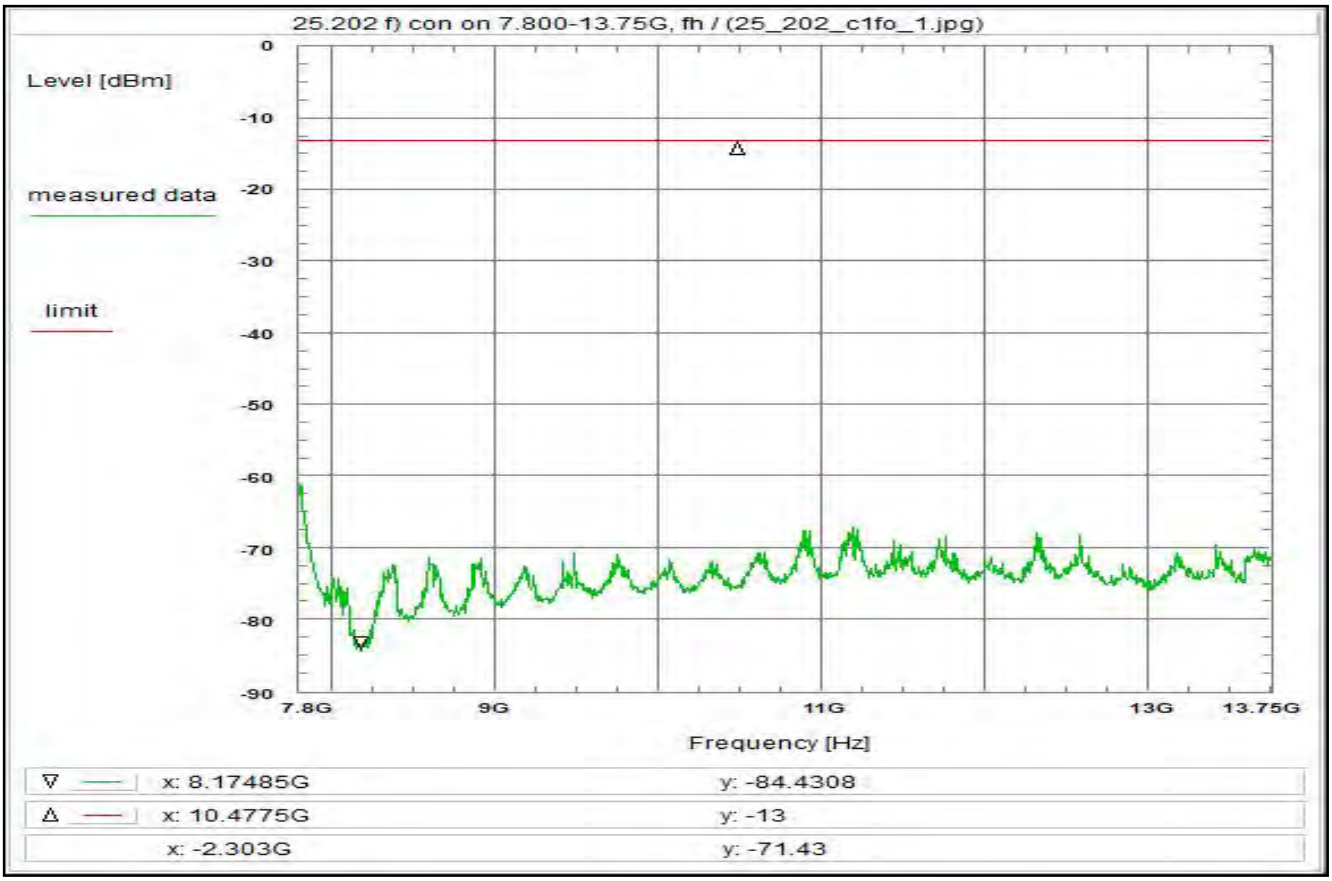
Start frequency:	14.3765	GHz
Stop frequency:	14.5765	GHz
Center frequency:	14.4765	GHz
Frequency span:	200	MHz
Resolution-BW:	10	kHz
Video-BW:	30	kHz
Input attenuation:	6	dB
Trace-Mode:	Clear Write	
Detector-Mode:	AVG	

Correction:

Directional coupler (W009)	+	39.4	dB
Coaxial cable (C107)	+	4.0	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (10k -> 4k)	-	4.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	39.4	dB

Remarks:
Carrier-on state / Carrier at the upper edge of the band (fh)
1

Plot No. 67



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): -43+10log(Pmax) dBc
This corresponds to a limit of -13 dBm.

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
QPSK single carrier, valid for all modulations

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W053

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Wed 19/May/2021 17:34:40	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

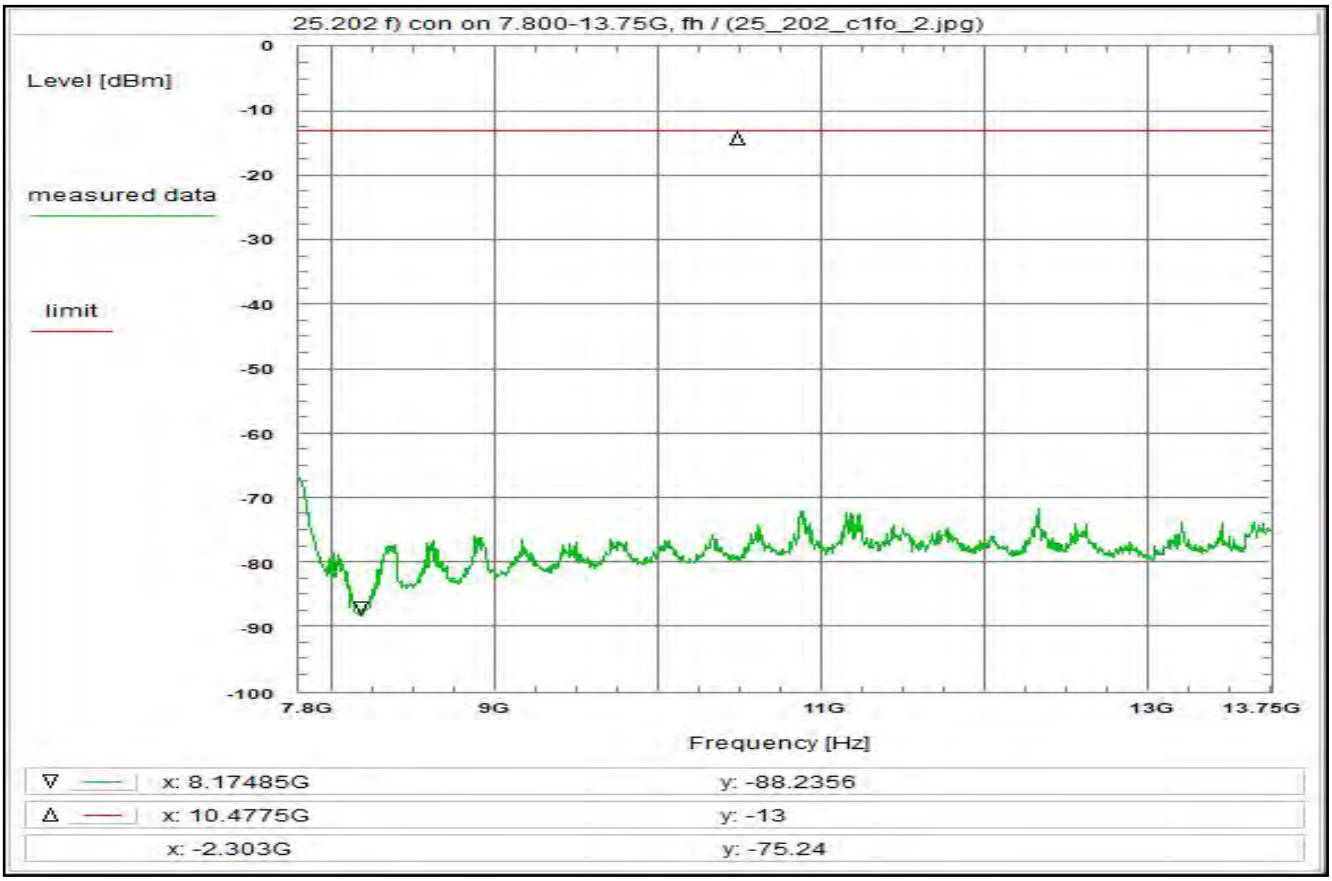
Start frequency:	7.8	GHz
Stop frequency:	13.75	GHz
Center frequency:	10.775	GHz
Frequency span:	5.95	GHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	10	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler (W009)	+	38.6	dB
Coaxial cable (C107)	+	3.5	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	28.1	dB

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

Plot No. 68



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): -43+10log(Pmax) dBc
This corresponds to a limit of -13 dBm.

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

Operating condition of DUT:
operating condition 4, see test report chapter 6.4
1QPSK dual carrier, valid for all modulations

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W053

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Thu 20/May/2021 15:02:14	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

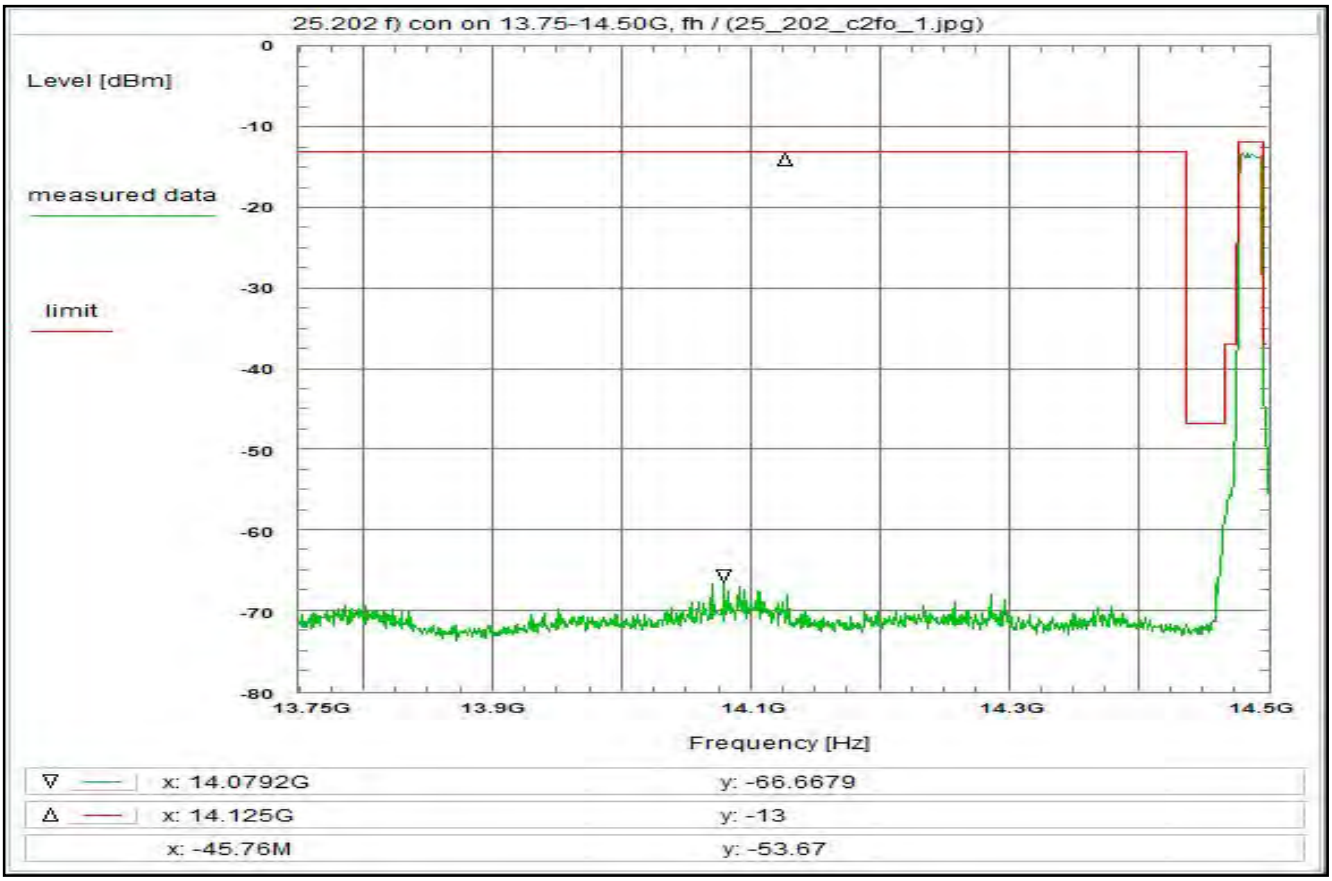
Start frequency:	7.8	GHz
Stop frequency:	13.75	GHz
Center frequency:	10.775	GHz
Frequency span:	5.95	GHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	6	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler (W009)	+	38.6	dB
Coaxial cable (C107)	+	3.5	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	28.1	dB

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

Plot No. 69



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): -43+10log(Pmax) dBc
This corresponds to a limit of -13 dBm.

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
QPSK single carrier, valid for all modulations

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W053

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Wed 19/May/2021 17:35:38	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

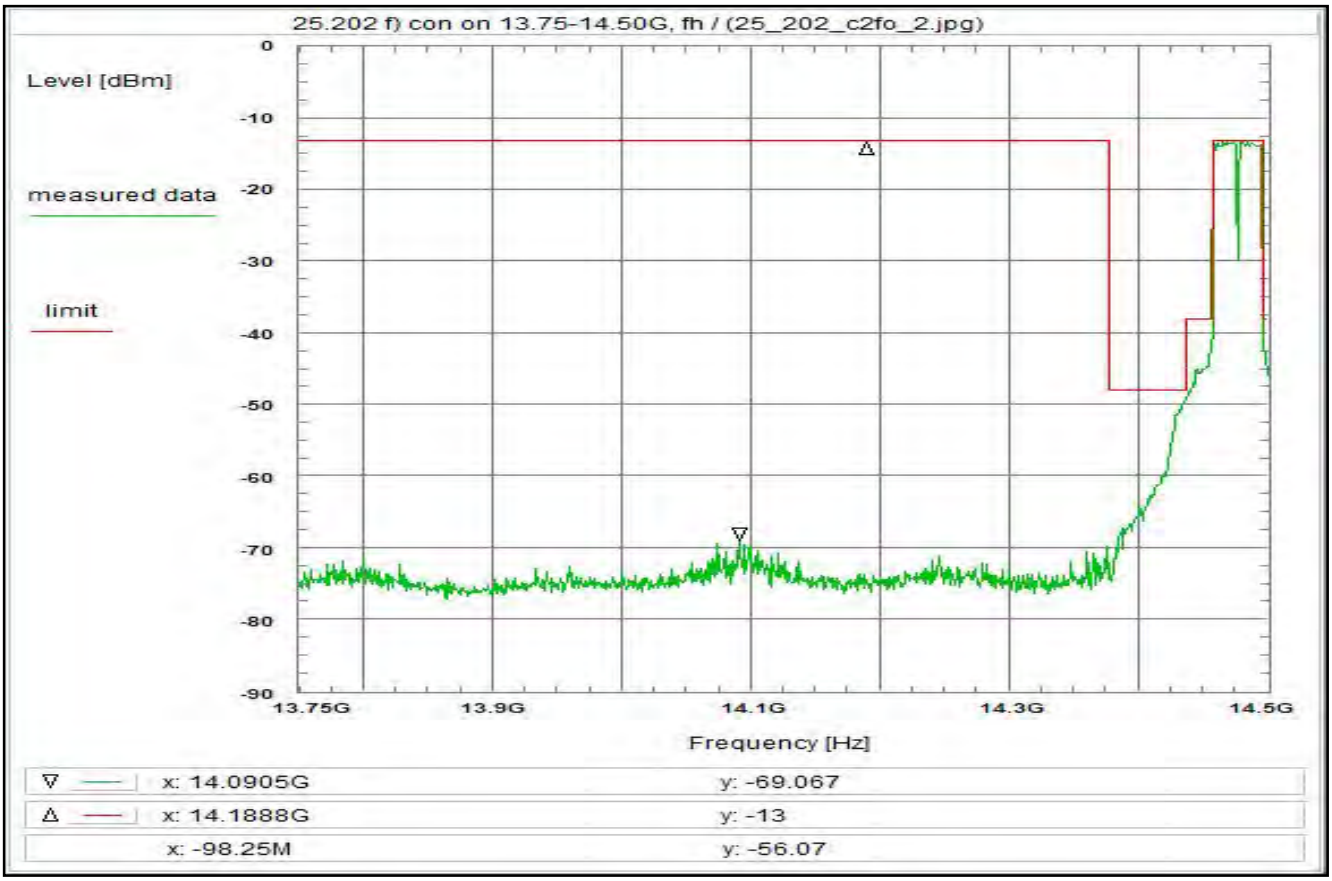
Start frequency:	13.75	GHz
Stop frequency:	14.5	GHz
Center frequency:	14.125	GHz
Frequency span:	750	MHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	10	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler (W009)	+	39.5	dB
Coaxial cable (C107)	+	4.0	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	29.5	dB

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

Plot No. 70



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): -43+10log(Pmax) dBc
This corresponds to a limit of -13 dBm.

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

Operating condition of DUT:
operating condition 4, see test report chapter 6.4
QPSK dual carrier, valid for all modulations

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W053

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Thu 20/May/2021 15:03:02	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

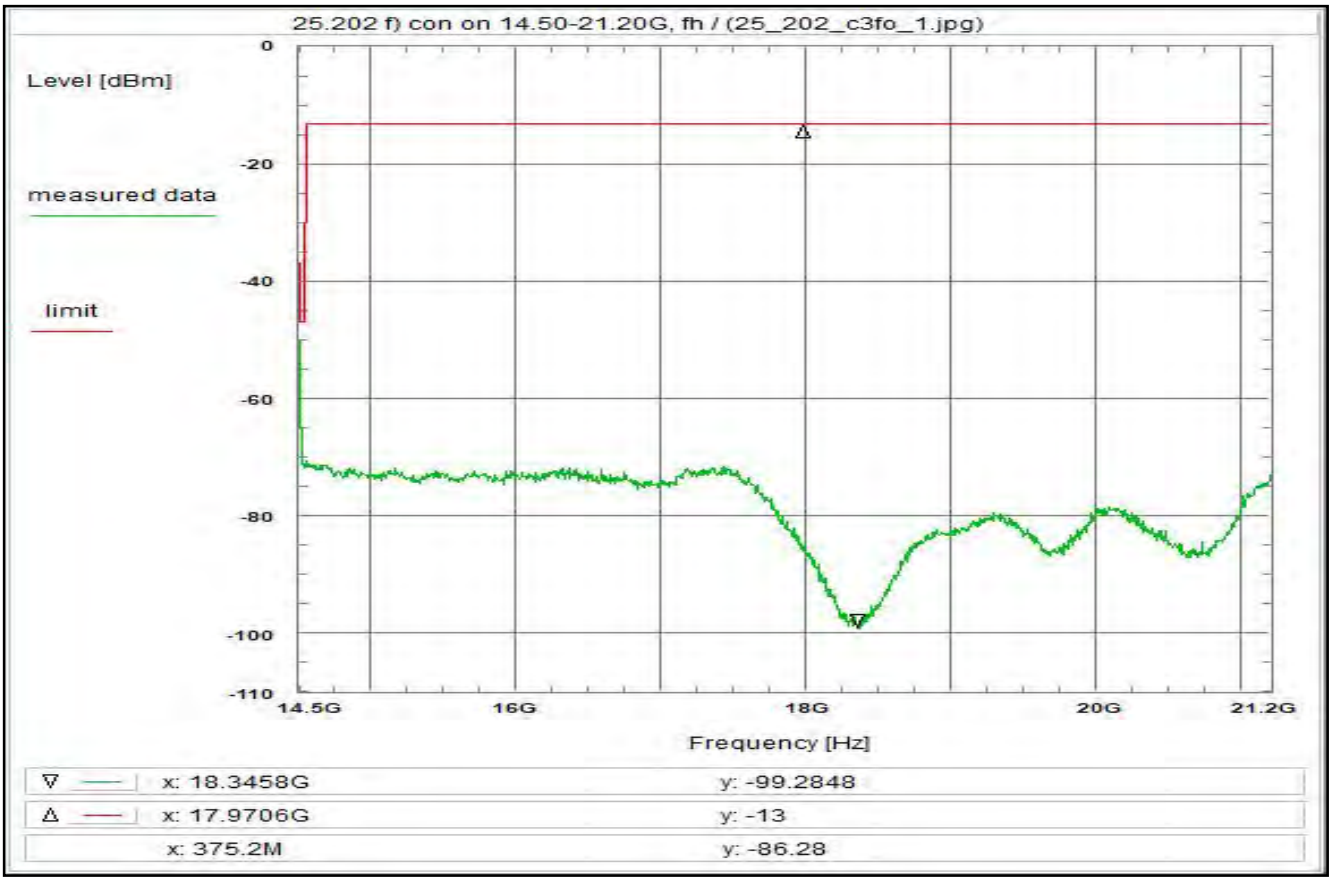
Start frequency:	13.75	GHz
Stop frequency:	14.5	GHz
Center frequency:	14.125	GHz
Frequency span:	750	MHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	6	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler (W009)	+	39.5	dB
Coaxial cable (C107)	+	4.0	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	29.5	dB

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

Plot No. 71



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): -43+10log(Pmax) dBc
This corresponds to a limit of -13 dBm.

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
QPSK single carrier, valid for all modulations

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W053

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Wed 19/May/2021 17:37:19	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

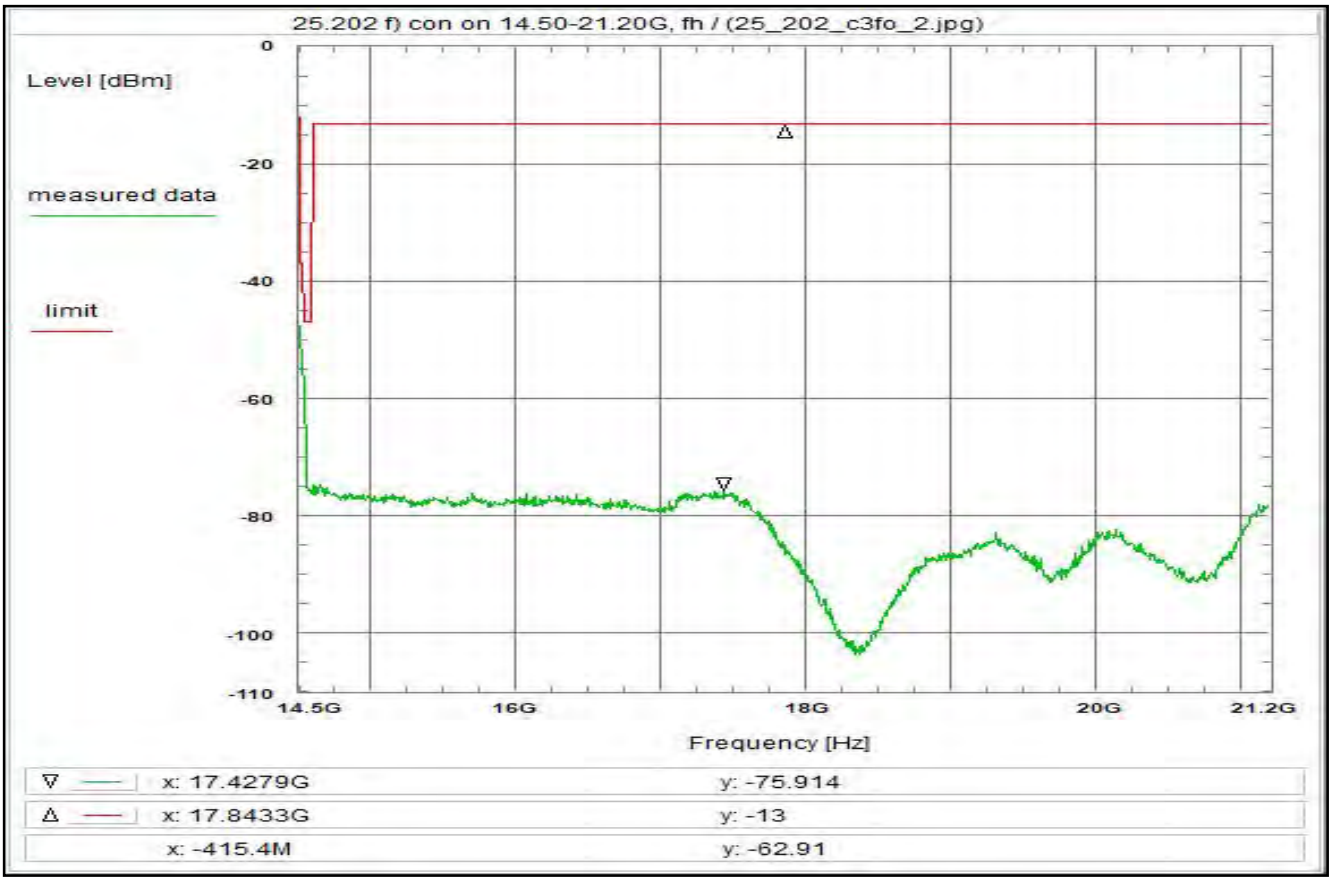
Start frequency:	14.5	GHz
Stop frequency:	21.2	GHz
Center frequency:	17.85	GHz
Frequency span:	6.7	GHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	10	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler (W009)	+	31.5	dB
Coaxial cable (C107)	+	4.5	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	22.0	dB

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

Plot No. 72



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): -43+10log(Pmax) dBc
This corresponds to a limit of -13 dBm.

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

Operating condition of DUT:
operating condition 4, see test report chapter 6.4
QPSK dual carrier, valid for all modulations

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W053

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Thu 20/May/2021 15:39:49	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

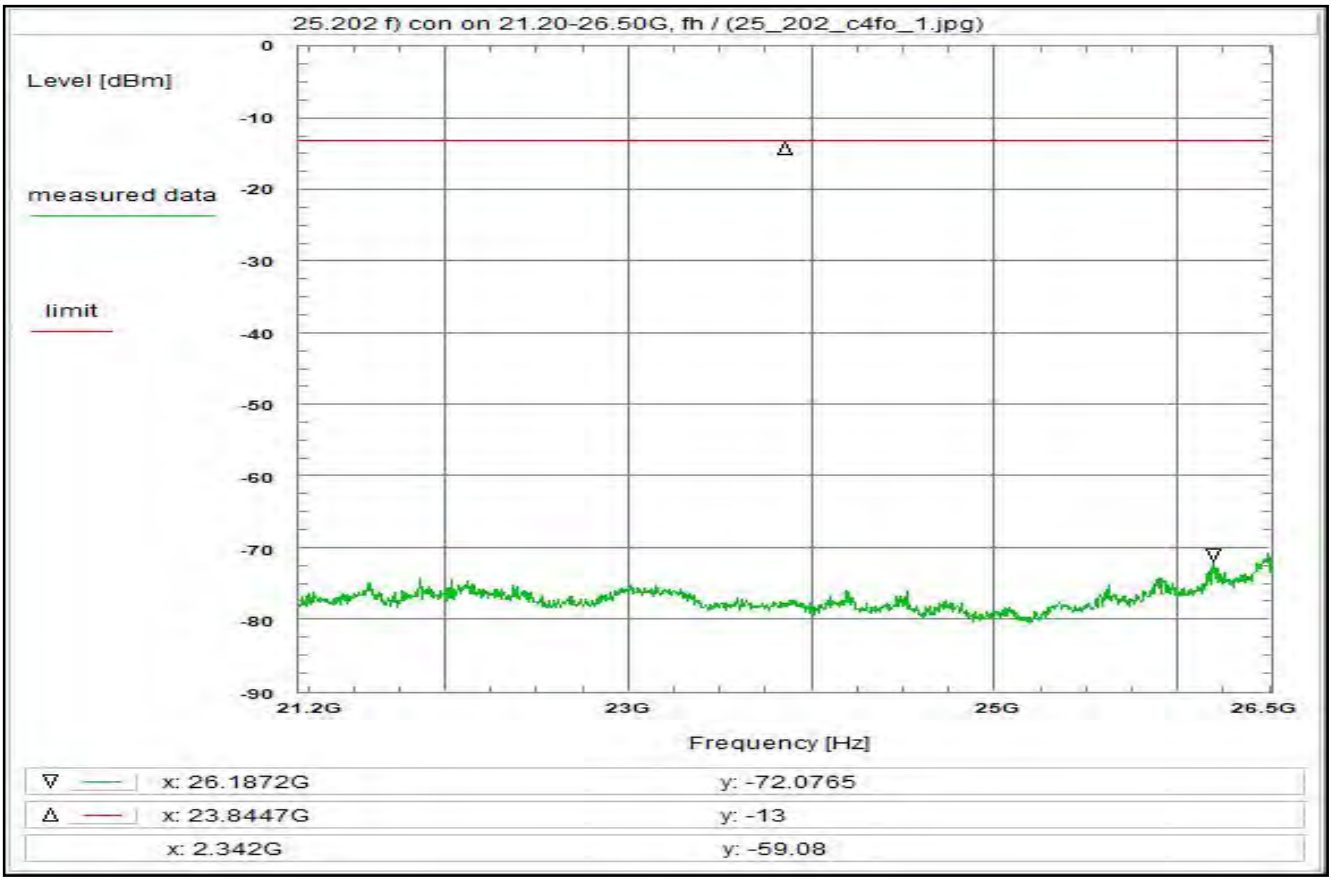
Start frequency:	14.5	GHz
Stop frequency:	21.2	GHz
Center frequency:	17.85	GHz
Frequency span:	6.7	GHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	6	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler (W009)	+	31.5	dB
Coaxial cable (C107)	+	4.5	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	22.0	dB

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

Plot No. 73



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): -43+10log(Pmax) dBc
This corresponds to a limit of -13 dBm.

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
QPSK single carrier, valid for all modulations

Test setup:
see test report chapter 7.3: cegj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W022, W063

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Thu 20/May/2021 16:14:28	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

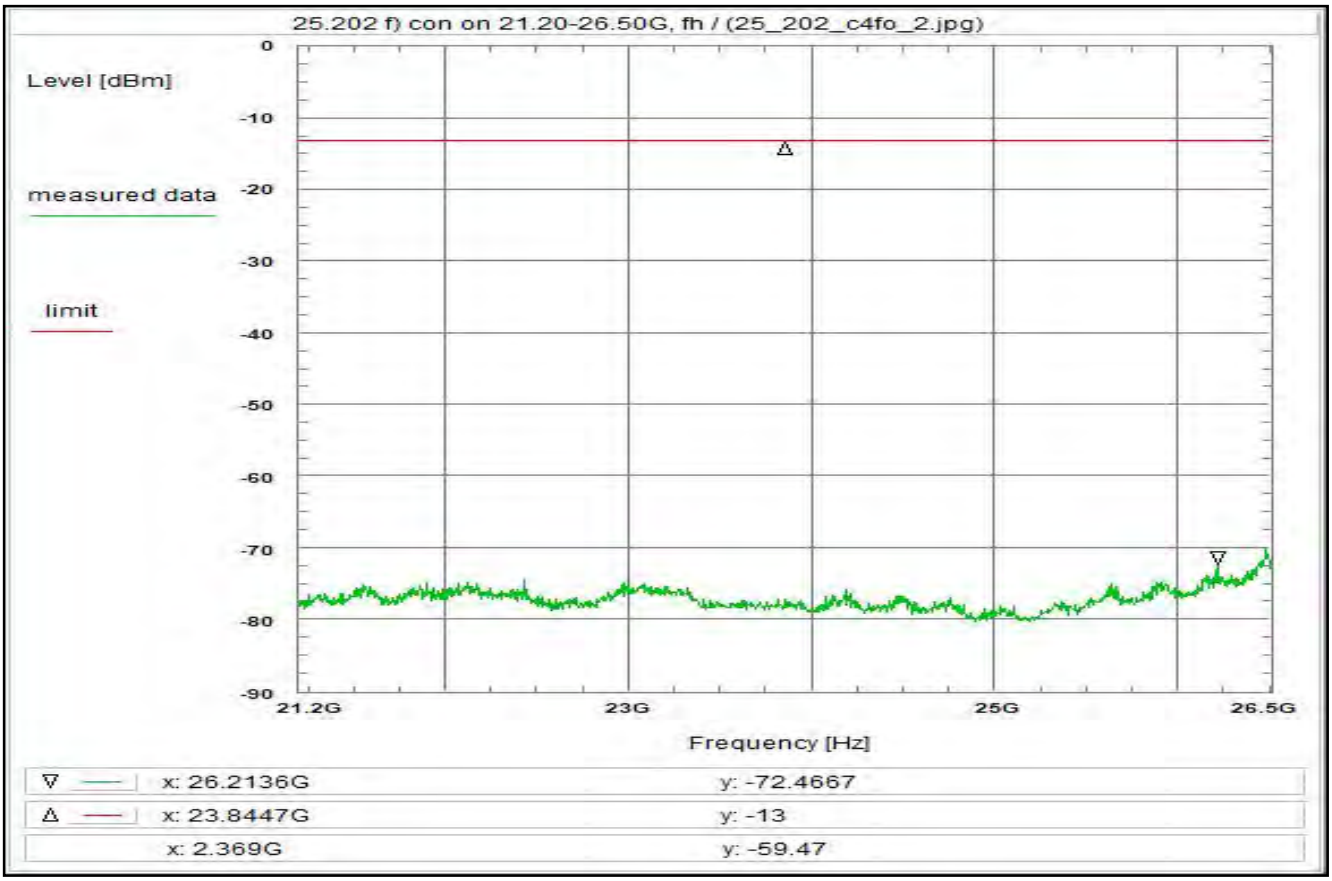
Start frequency:	21.2	GHz
Stop frequency:	26.5	GHz
Center frequency:	23.85	GHz
Frequency span:	5.3	GHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	6	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler (W009)	+	34.2	dB
Coaxial cable (C107)	+	5.2	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	25.4	dB

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

Plot No. 74



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): -43+10log(Pmax) dBc
This corresponds to a limit of -13 dBm.

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

Operating condition of DUT:
operating condition 4, see test report chapter 6.4
QPSK dual carrier, valid for all modulations

Test setup:
see test report chapter 7.3: cegj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W022, W063

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Thu 20/May/2021 16:21:07	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

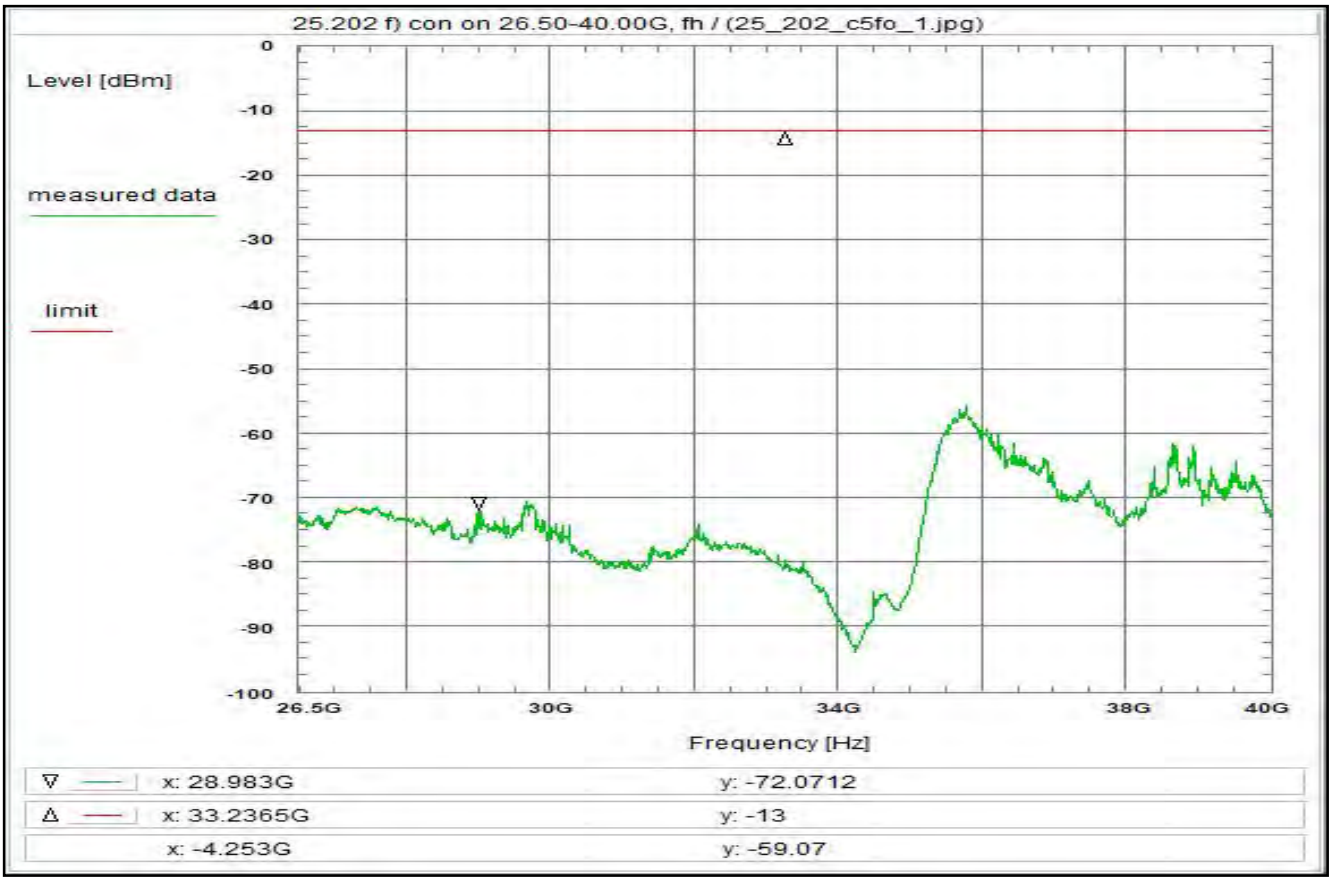
Start frequency:	21.2	GHz
Stop frequency:	26.5	GHz
Center frequency:	23.85	GHz
Frequency span:	5.3	GHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	6	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler (W009)	+	34.2	dB
Coaxial cable (C107)	+	5.2	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	25.4	dB

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

Plot No. 75



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): -43+10log(Pmax) dBc
This corresponds to a limit of -13 dBm.

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
QPSK single carrier, valid for all modulations

Test setup:
see test report chapter 7.3: cegj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W022, W065

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Thu 20/May/2021 16:24:47	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

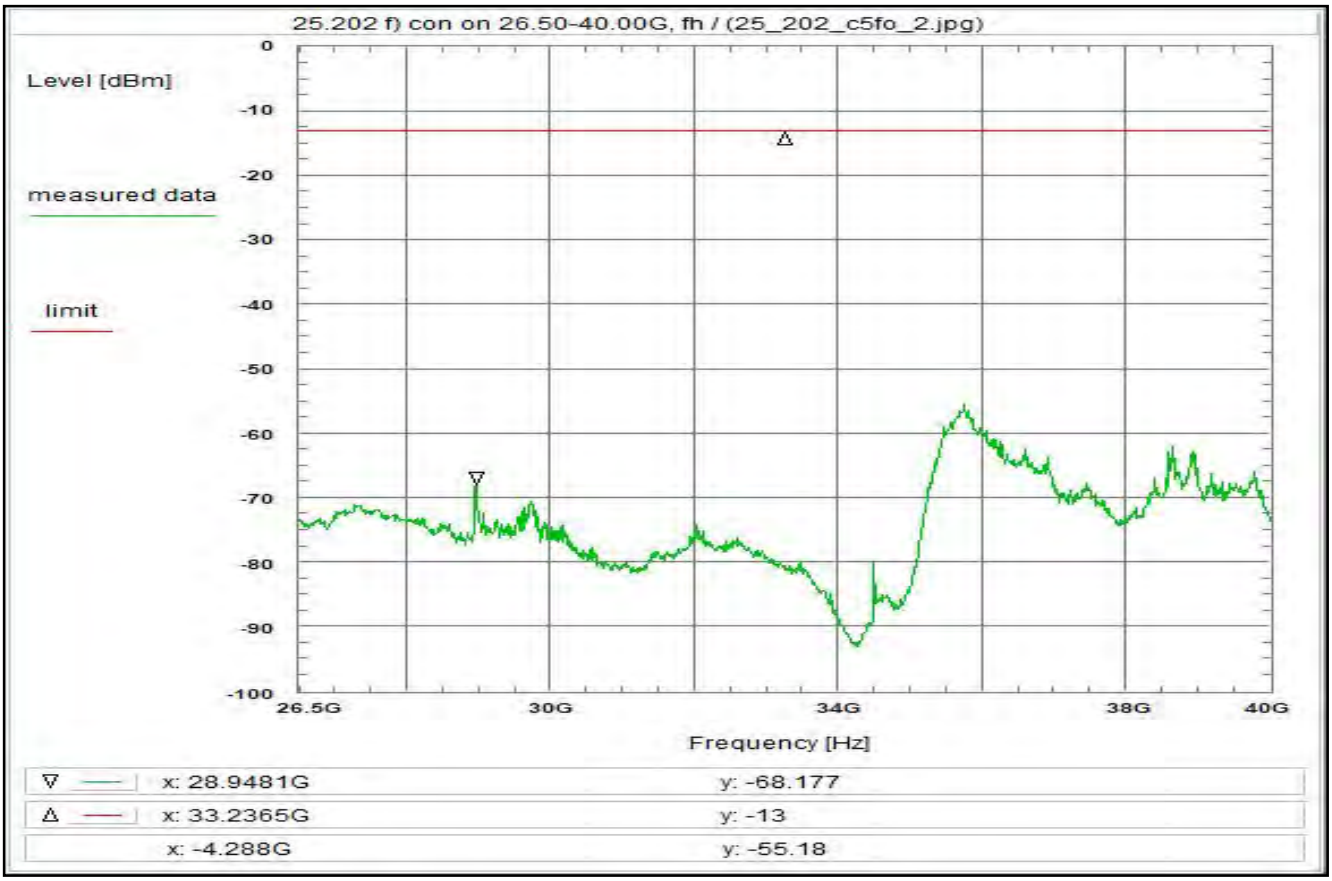
Start frequency:	26.5	GHz
Stop frequency:	40	GHz
Center frequency:	33.25	GHz
Frequency span:	13.5	GHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	6	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler (W009)	+	33.2	dB
Coaxial cable (C107)	+	6.3	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	25.5	dB

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

Plot No. 76



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): -43+10log(Pmax) dBc
This corresponds to a limit of -13 dBm.

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

Operating condition of DUT:
operating condition 4, see test report chapter 6.4
QPSK dual carrier, valid for all modulations

Test setup:
see test report chapter 7.3: cegj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W019, W022, W065

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Thu 20/May/2021 16:30:12	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

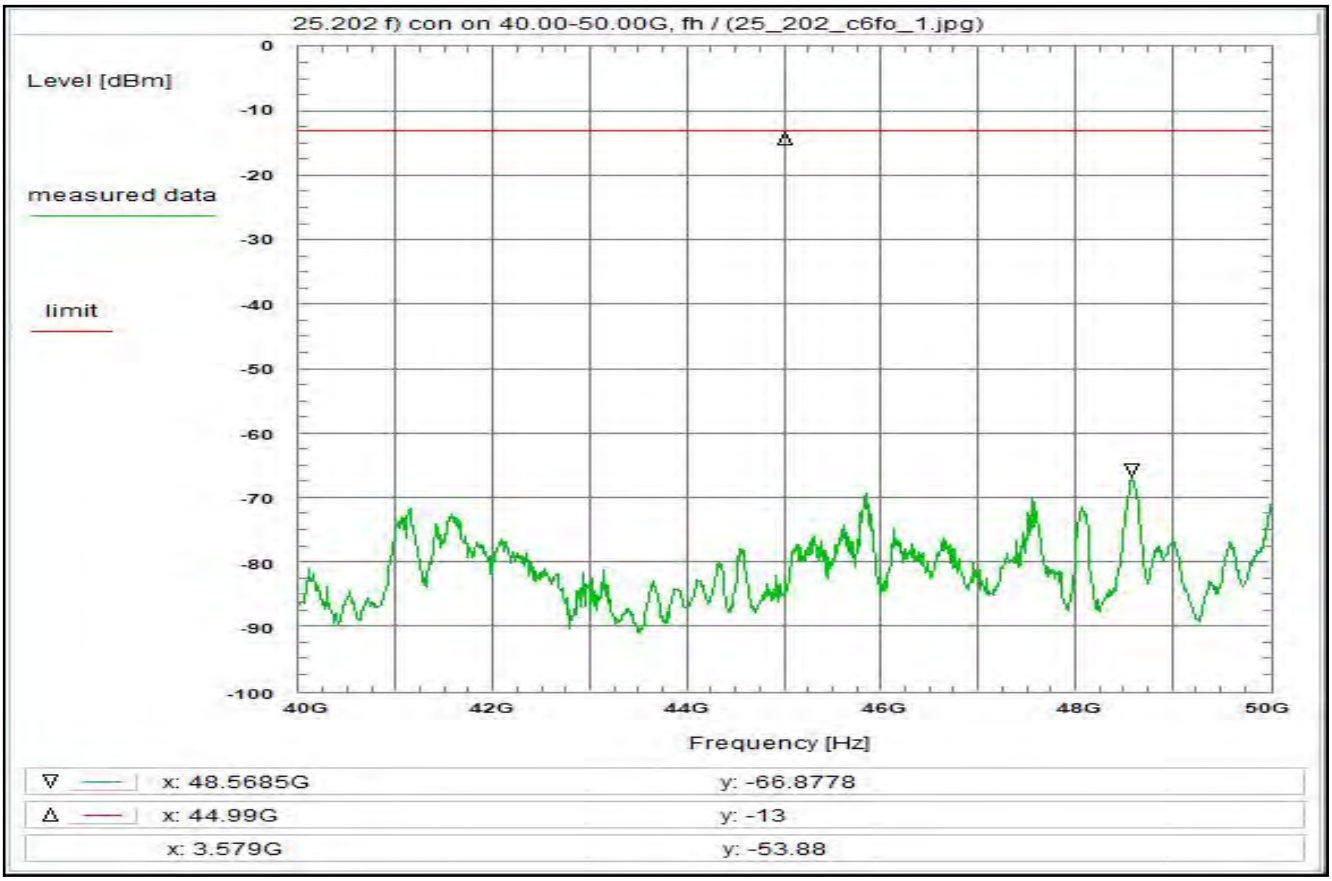
Start frequency:	26.5	GHz
Stop frequency:	40	GHz
Center frequency:	33.25	GHz
Frequency span:	13.5	GHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	6	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler (W009)	+	33.2	dB
Coaxial cable (C107)	+	6.3	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	25.5	dB

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

Plot No. 77



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): -43+10log(Pmax) dBc
This corresponds to a limit of -13 dBm.

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
QPSK single carrier, valid for all modulations

Test setup:
see test report chapter 7.3: cegj

Test equipment:
see test report chapter 7.x: C107, R001, W006, W019, W022, W0xx

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Fri 21/May/2021 12:28:31	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

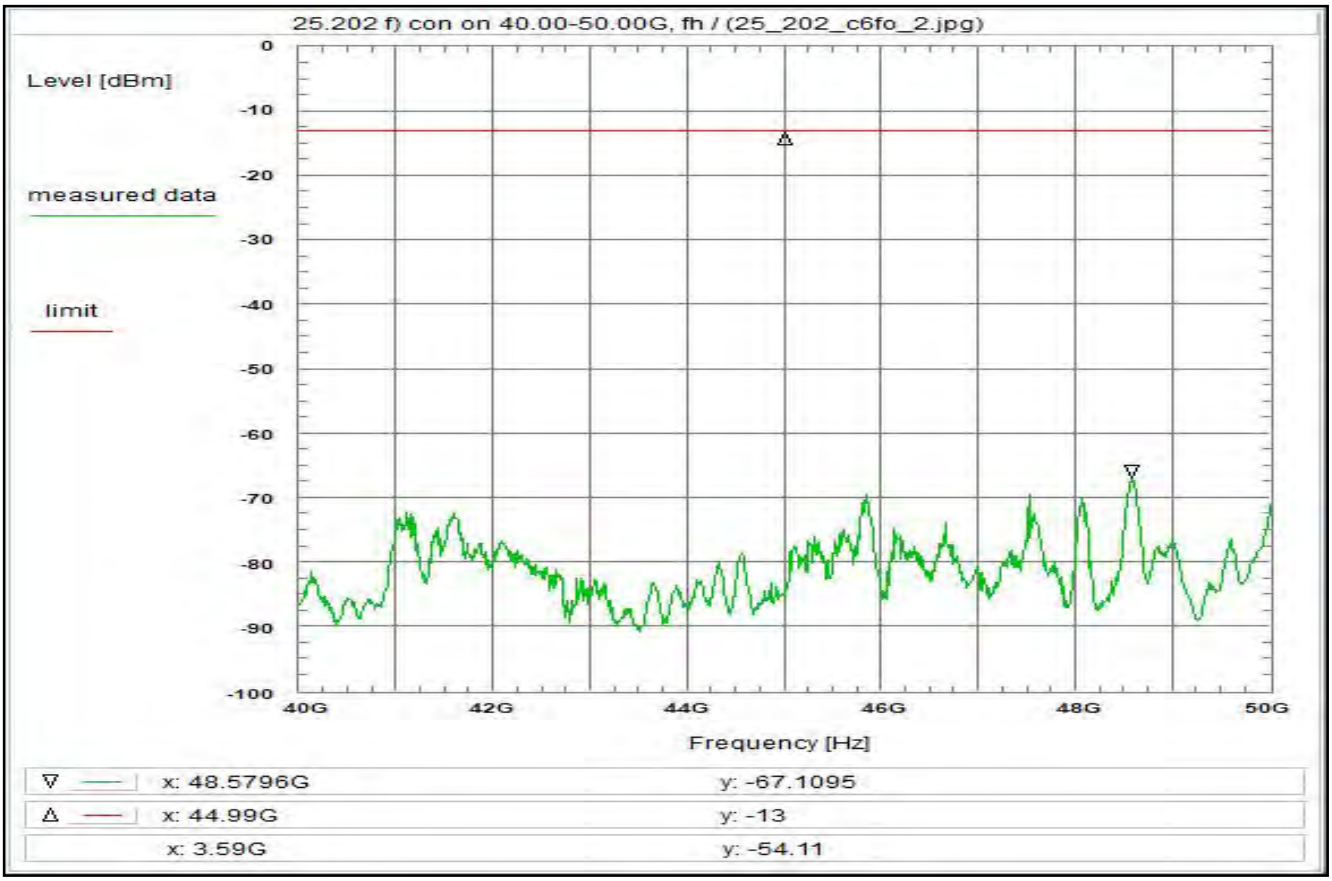
Start frequency:	40	GHz
Stop frequency:	50	GHz
Center frequency:	45	GHz
Frequency span:	10	GHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	10	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler (W006)	+	13.6	dB
Coaxial cable (C107)	+	7.4	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	7.0	dB

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

Plot No. 78



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): -43+10log(Pmax) dBc
This corresponds to a limit of -13 dBm.

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

Operating condition of DUT:
operating condition 4, see test report chapter 6.4
QPSK dual carrier, valid for all modulations

Test setup:
see test report chapter 7.3: cegj

Test equipment:
see test report chapter 7.x: C107, R001, W006, W019, W022, W0xx

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Fri 21/May/2021 12:29:52	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

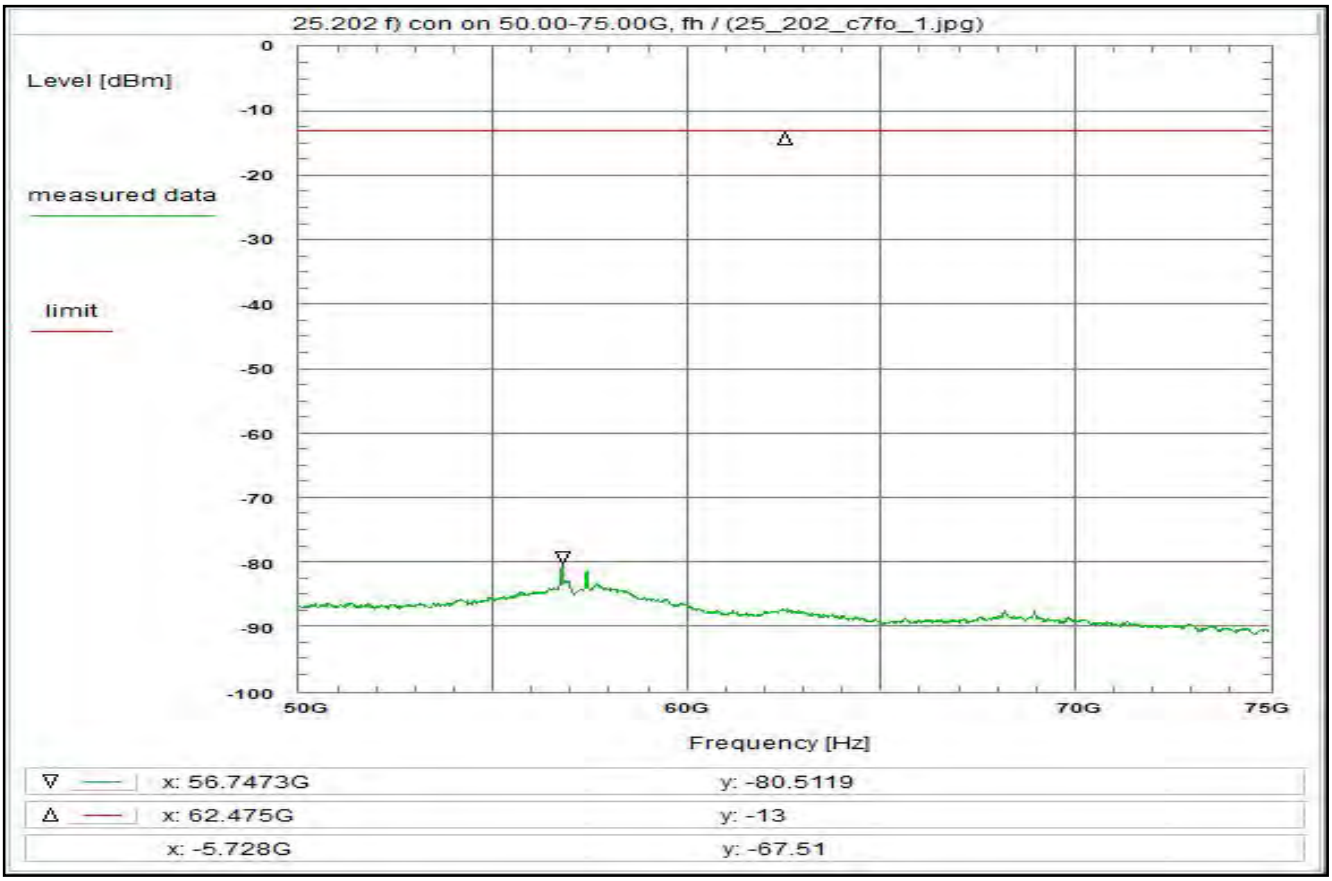
Start frequency:	40	GHz
Stop frequency:	50	GHz
Center frequency:	45	GHz
Frequency span:	10	GHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	10	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler (W006)	+	13.6	dB
Coaxial cable (C107)	+	7.4	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	7.0	dB

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

Plot No. 79



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): -43+10log(Pmax) dBc
This corresponds to a limit of -13 dBm.

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

Operating condition of DUT:
operating condition 4, see test report chapter 6.4
QPSK dual carrier, valid for all modulations

Test setup:
see test report chapter 7.3: cfgj

Test equipment:
see test report chapter 7.x: C107, R001, W006, W019, W022, W0xx

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Fri 21/May/2021 13:03:31	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

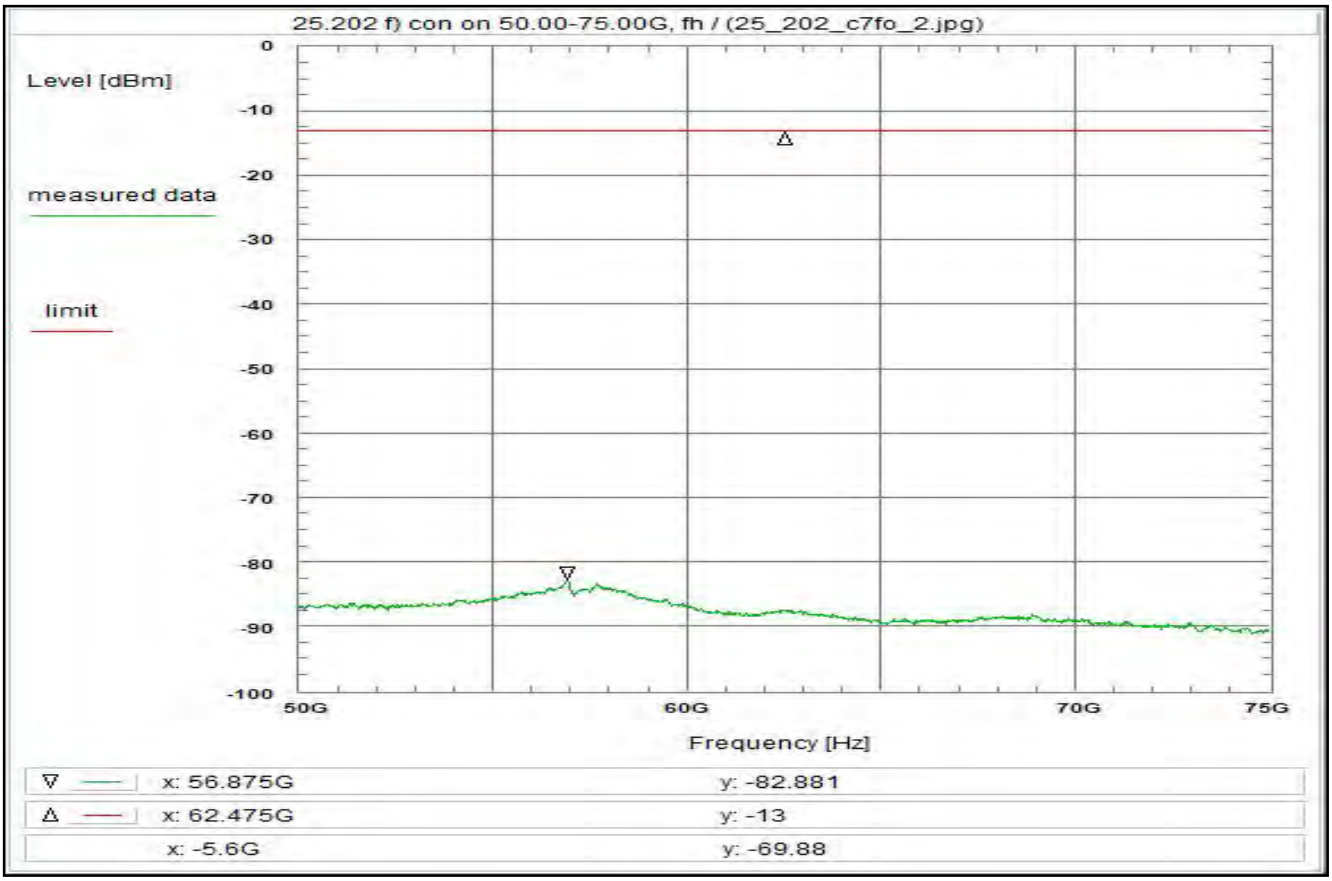
Start frequency:	50	GHz
Stop frequency:	75	GHz
Center frequency:	62.5	GHz
Frequency span:	25	GHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	10	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler (W006)	+	19.4	dB
Coaxial cable (C107)	+	0.0	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	5.4	dB

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

Plot No. 80



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): -43+10log(Pmax) dBc
This corresponds to a limit of -13 dBm.

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
QPSK single carrier, valid for all modulations

Test setup:
see test report chapter 7.3: cfgj

Test equipment:
see test report chapter 7.x: C107, R001, W006, W019, W022, W0xx

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Fri 21/May/2021 13:04:31	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

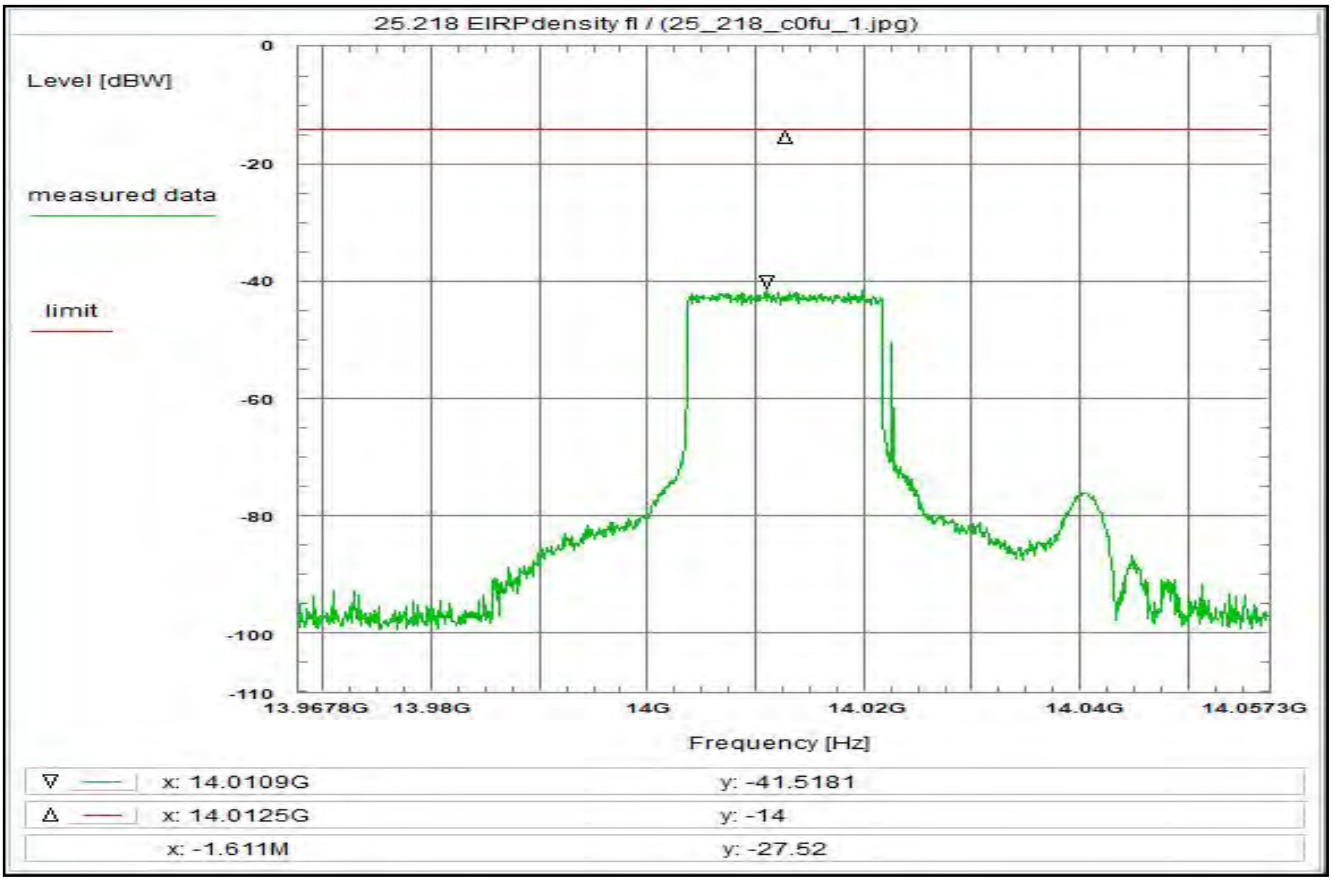
Start frequency:	50	GHz
Stop frequency:	75	GHz
Center frequency:	62.5	GHz
Frequency span:	25	GHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Input attenuation:	10	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler (W006)	+	19.4	dB
Coaxial cable (C107)	+	0.0	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	5.4	dB

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

Plot No. 81



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: 15-25log2° dBW;4kHz
-ant.-pattern envelope: -(29-25log2° dBi)
==>: -14 dBW;4kHz (copolar)
(-10*log N for N>1: consideration in correction data)
The subtraction of the terms results in a constant limit.
The antenna gain is set to zero in the correction data for this calculation.

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

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

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W065, W074

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Wed 19/May/2021 15:06:41	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

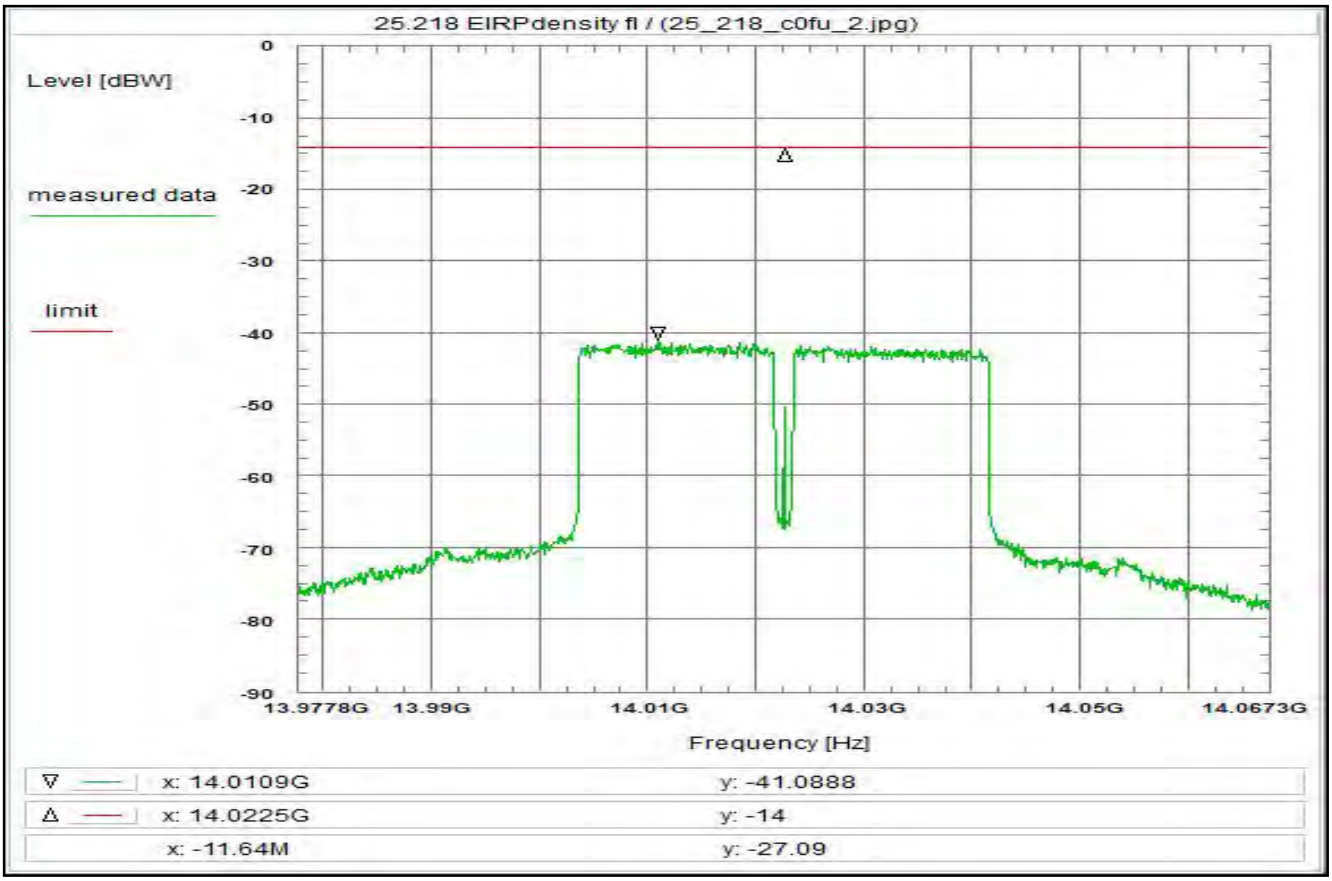
Start frequency:	13.96775	GHz
Stop frequency:	14.05725	GHz
Center frequency:	14.0125	GHz
Frequency span:	89.5	MHz
Resolution-BW:	10	kHz
Video-BW:	30	kHz
Input attenuation:	10	dB
Trace-Mode:	Clear Write	
Detector-Mode:	AVG	

Correction:

Directional coupler (W009)	+	39.6	dB
Coaxial cable (C107)	+	4.0	dB
DUT-Antenna (see under limit)	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (10k -> 4k)	-	4.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	39.6	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. 82



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: 15-25log2° dBW;4kHz
-ant.-pattern envelope: -(29-25log2° dBi)
==>: -14 dBW;4kHz (copolar)
(-10*log N for N>1: consideration in correction data)
The subtraction of the terms results in a constant limit.
The antenna gain is set to zero in the correction data for this calculation.

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

Operating condition of DUT:
operating condition 4, see test report chapter 6.4
QPSK dual carrier

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W065, W074

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Wed 19/May/2021 15:36:47	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

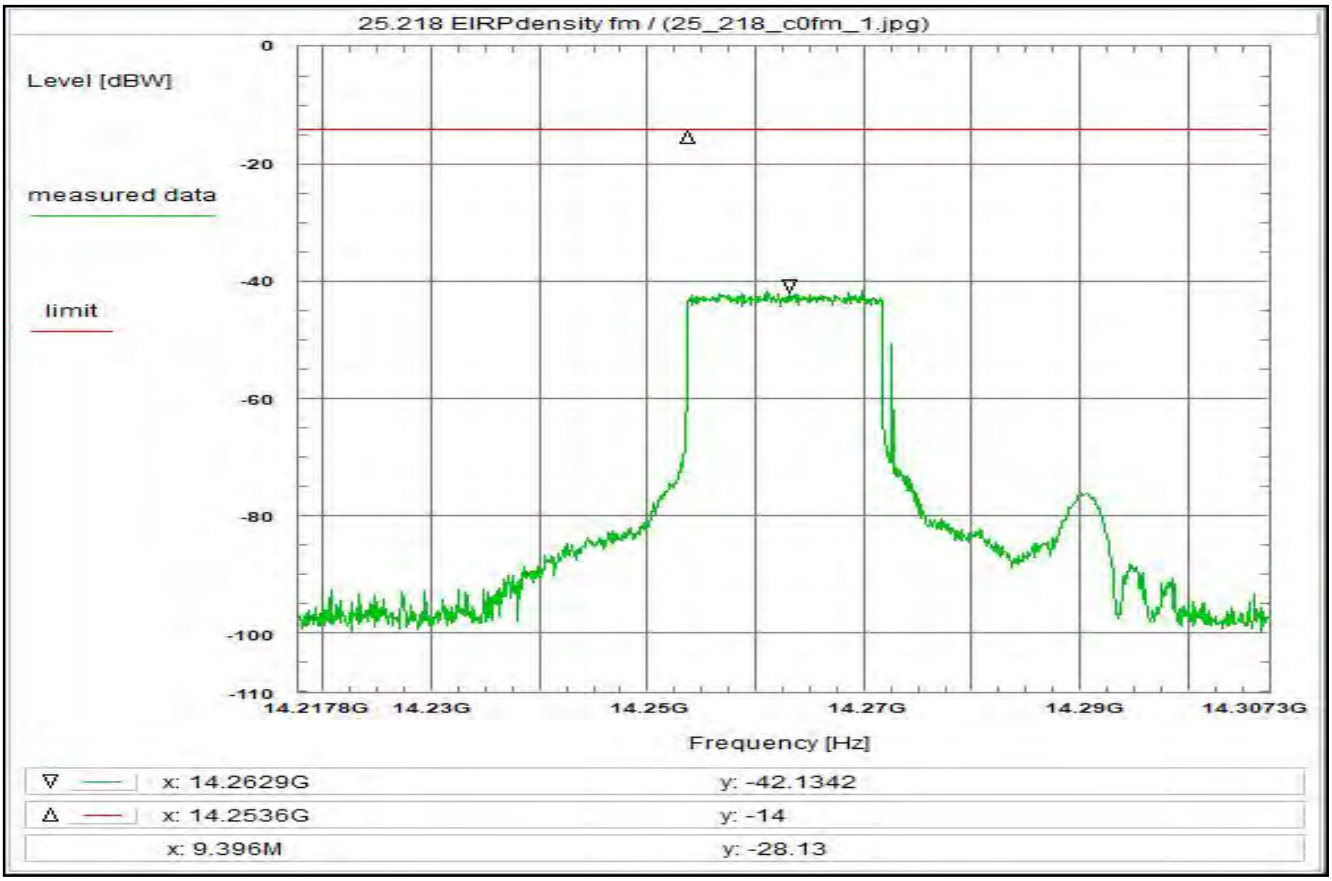
Start frequency:	13.97775	GHz
Stop frequency:	14.06725	GHz
Center frequency:	14.0225	GHz
Frequency span:	89.5	MHz
Resolution-BW:	10	kHz
Video-BW:	30	kHz
Input attenuation:	10	dB
Trace-Mode:	Clear Write	
Detector-Mode:	AVG	

Correction:

Directional coupler (W009)	+	39.6	dB
Coaxial cable (C107)	+	4.0	dB
DUT-Antenna (see under limit)	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (10k -> 4k)	-	4.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	39.6	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. 83



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: 15-25log2° dBW;4kHz
-ant.-pattern envelope: -(29-25log2° dBi)
==>: -14 dBW;4kHz (copolar)
(-10*log N for N>1: consideration in correction data)
The subtraction of the terms results in a constant limit.
The antenna gain is set to zero in the correction data for this calculation.

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

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

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W065, W074

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Wed 19/May/2021 14:55:37	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

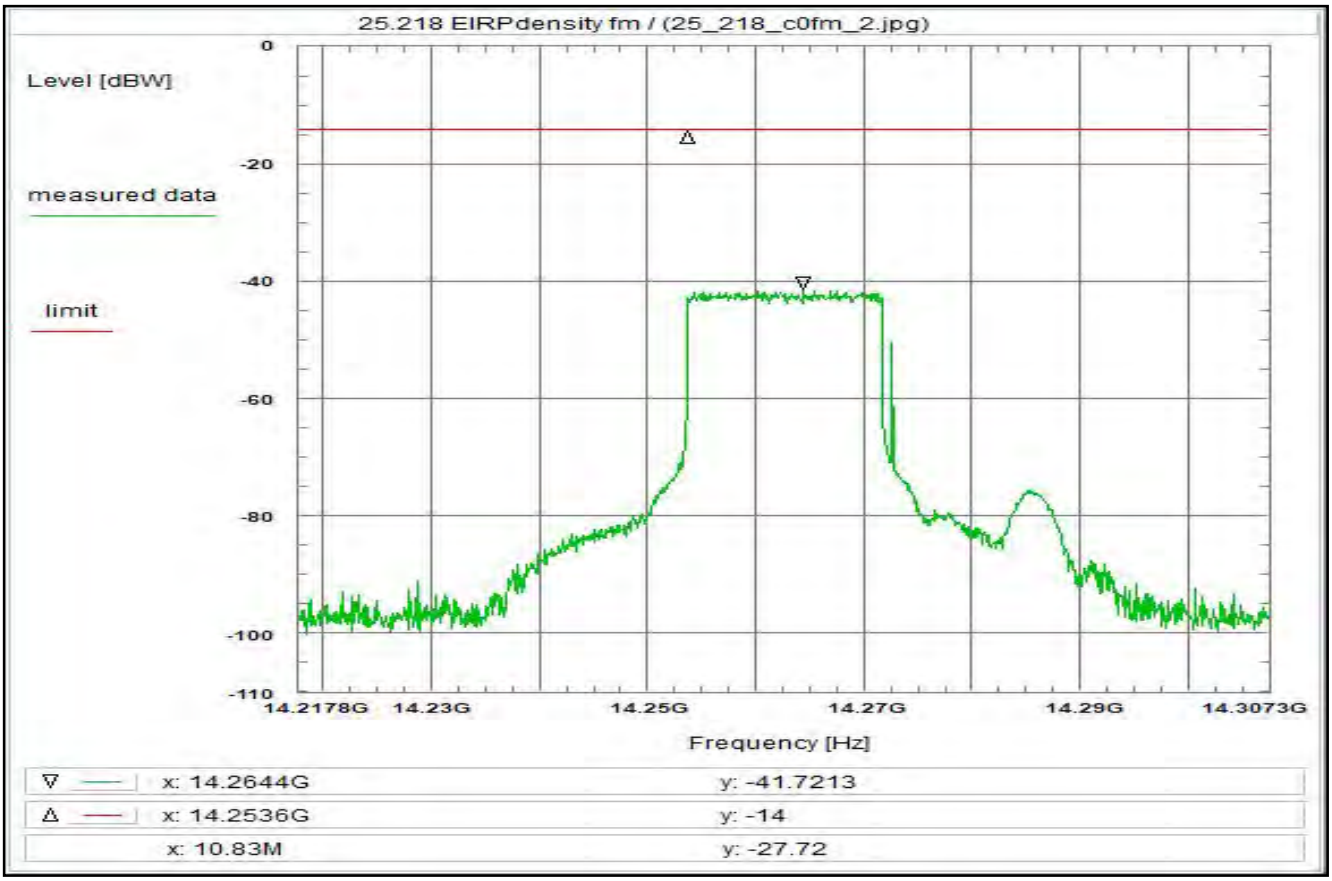
Start frequency:	14.21775	GHz
Stop frequency:	14.30725	GHz
Center frequency:	14.2625	GHz
Frequency span:	89.5	MHz
Resolution-BW:	10	kHz
Video-BW:	30	kHz
Input attenuation:	10	dB
Trace-Mode:	Clear Write	
Detector-Mode:	AVG	

Correction:

Directional coupler (W009)	+	39.5	dB
Coaxial cable (C107)	+	4.0	dB
DUT-Antenna (see under limit)	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (10k -> 4k)	-	4.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	39.5	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. 84



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: 15-25log2° dBW;4kHz
-ant.-pattern envelope: -(29-25log2° dBi)
==>: -14 dBW;4kHz (copolar)
(-10*log N for N>1: consideration in correction data)
The subtraction of the terms results in a constant limit.
The antenna gain is set to zero in the correction data for this calculation.

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

Operating condition of DUT:
operating condition 2, see test report chapter 6.4
8PSK single carrier

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W065, W074

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Wed 19/May/2021 14:57:05	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

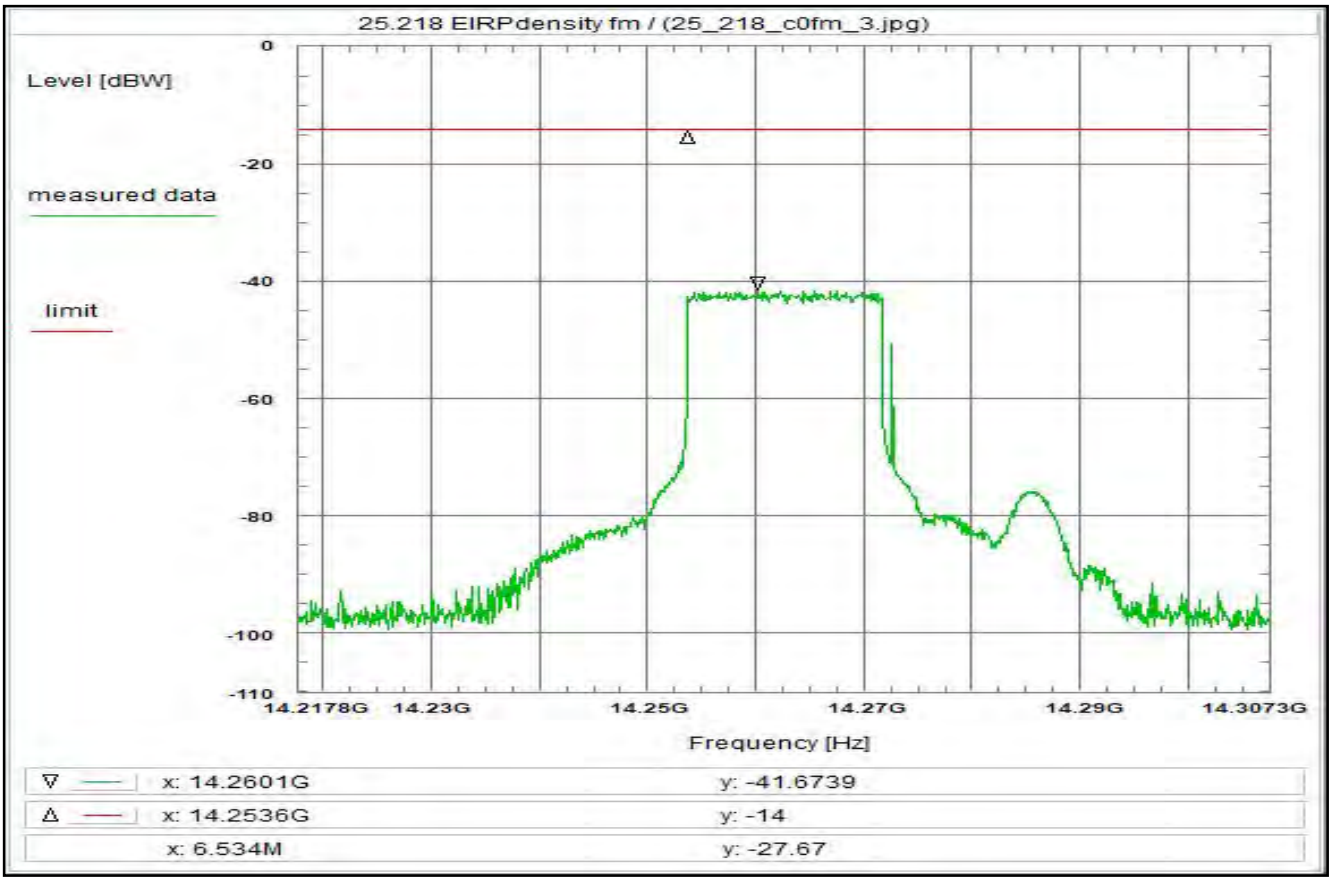
Start frequency:	14.21775	GHz
Stop frequency:	14.30725	GHz
Center frequency:	14.2625	GHz
Frequency span:	89.5	MHz
Resolution-BW:	10	kHz
Video-BW:	30	kHz
Input attenuation:	10	dB
Trace-Mode:	Clear Write	
Detector-Mode:	AVG	

Correction:

Directional coupler (W009)	+	39.5	dB
Coaxial cable (C107)	+	4.0	dB
DUT-Antenna (see under limit)	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (10k -> 4k)	-	4.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	39.5	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. 85



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: 15-25log2° dBW;4kHz
-ant.-pattern envelope: -(29-25log2° dBi)
==>: -14 dBW;4kHz (copolar)
(-10*log N for N>1: consideration in correction data)
The subtraction of the terms results in a constant limit.
The antenna gain is set to zero in the correction data for this calculation.

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

Operating condition of DUT:
operating condition 3, see test report chapter 6.4
16QAM single carrier

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W065, W074

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Wed 19/May/2021 15:00:17	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

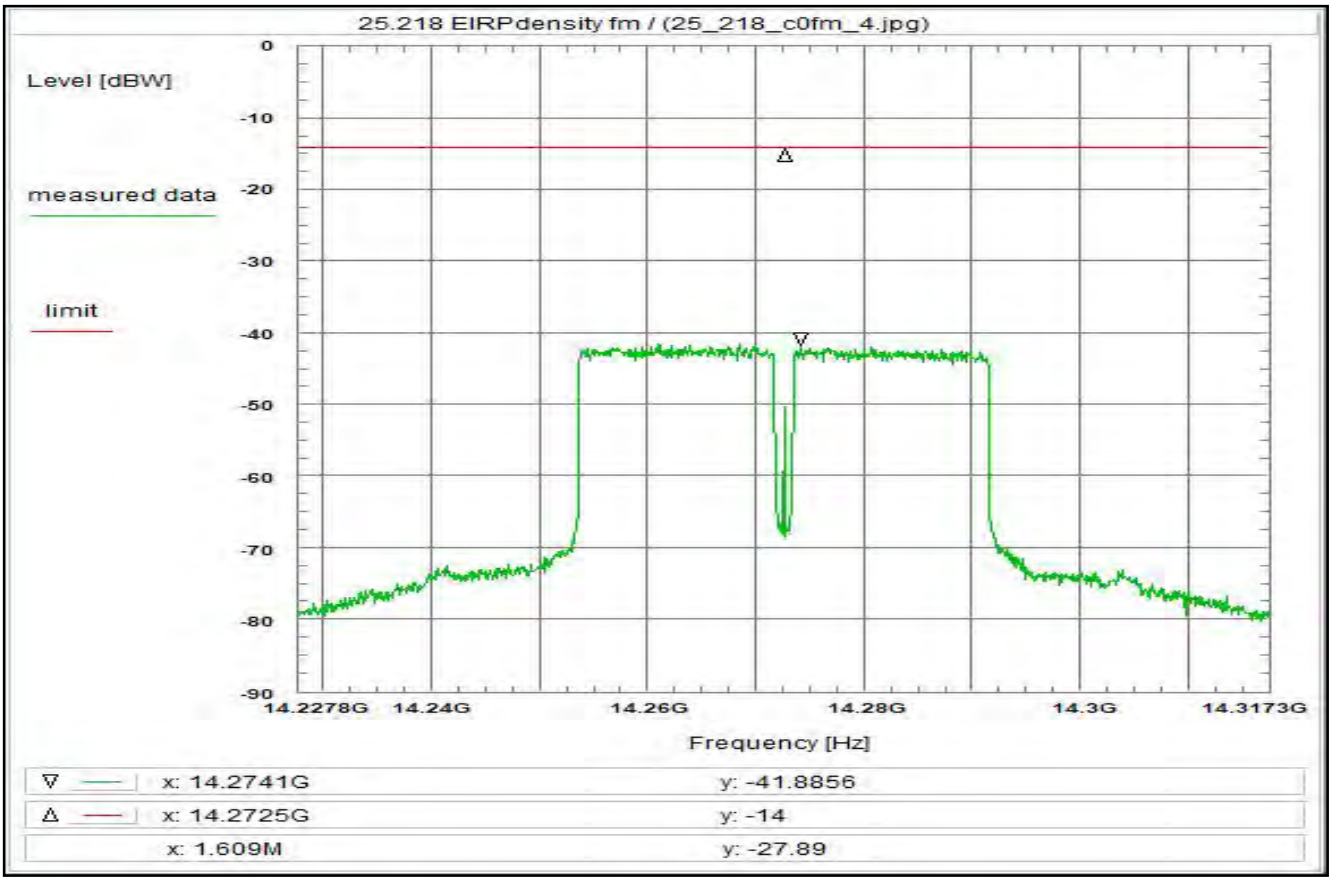
Start frequency:	14.21775	GHz
Stop frequency:	14.30725	GHz
Center frequency:	14.2625	GHz
Frequency span:	89.5	MHz
Resolution-BW:	10	kHz
Video-BW:	30	kHz
Input attenuation:	10	dB
Trace-Mode:	Clear Write	
Detector-Mode:	AVG	

Correction:

Directional coupler (W009)	+	39.5	dB
Coaxial cable (C107)	+	4.0	dB
DUT-Antenna (see under limit)	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (10k -> 4k)	-	4.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	39.5	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. 86



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: 15-25log2° dBW;4kHz
-ant.-pattern envelope: -(29-25log2° dBi)
==>: -14 dBW;4kHz (copolar)
(-10*log N for N>1: consideration in correction data)
The subtraction of the terms results in a constant limit.
The antenna gain is set to zero in the correction data for this calculation.

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

Operating condition of DUT:
operating condition 4, see test report chapter 6.4
QPSK dual carrier

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W065, W074

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Wed 19/May/2021 15:37:38	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

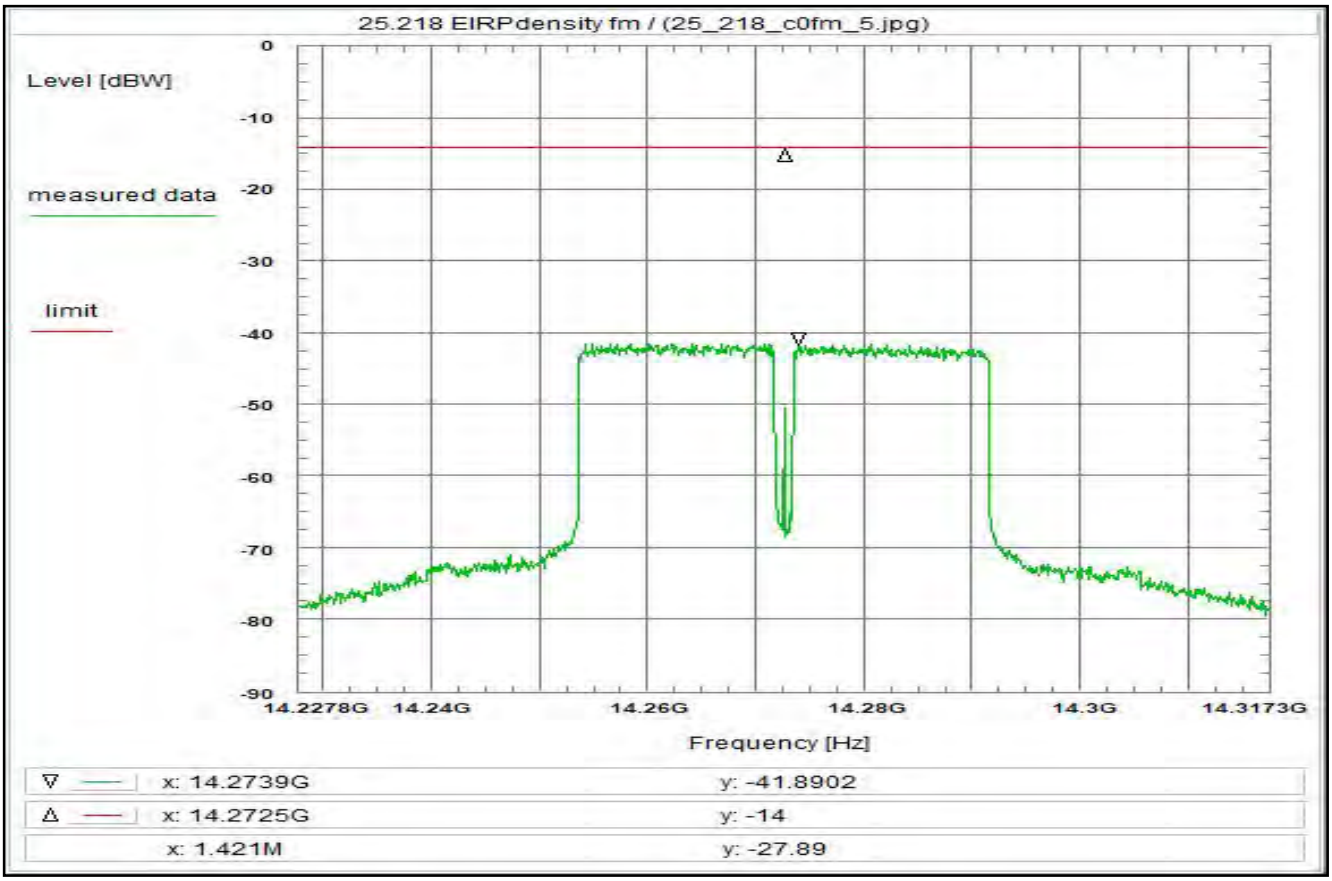
Start frequency:	14.22775	GHz
Stop frequency:	14.31725	GHz
Center frequency:	14.2725	GHz
Frequency span:	89.5	MHz
Resolution-BW:	10	kHz
Video-BW:	30	kHz
Input attenuation:	10	dB
Trace-Mode:	Clear Write	
Detector-Mode:	AVG	

Correction:

Directional coupler (W009)	+	39.5	dB
Coaxial cable (C107)	+	4.0	dB
DUT-Antenna (see under limit)	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (10k -> 4k)	-	4.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	39.5	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. 87



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: 15-25log2° dBW;4kHz
-ant.-pattern envelope: -(29-25log2° dBi)
==>: -14 dBW;4kHz (copolar)
(-10*log N for N>1: consideration in correction data)
The subtraction of the terms results in a constant limit.
The antenna gain is set to zero in the correction data for this calculation.

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

Operating condition of DUT:
operating condition 5, see test report chapter 6.4
8PSK dual carrier

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W065, W074

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Wed 19/May/2021 15:39:22	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

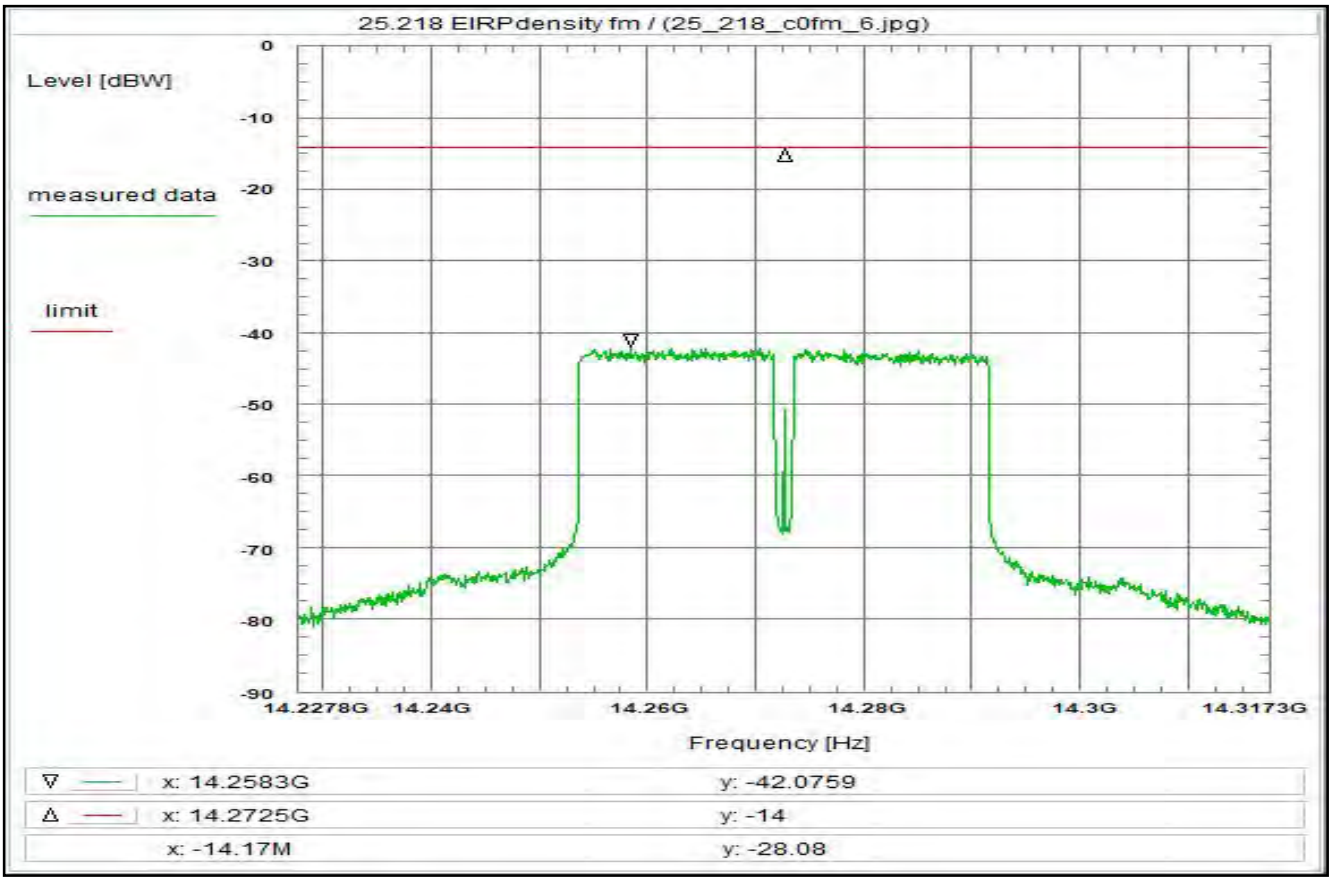
Start frequency:	14.22775	GHz
Stop frequency:	14.31725	GHz
Center frequency:	14.2725	GHz
Frequency span:	89.5	MHz
Resolution-BW:	10	kHz
Video-BW:	30	kHz
Input attenuation:	10	dB
Trace-Mode:	Clear Write	
Detector-Mode:	AVG	

Correction:

Directional coupler (W009)	+	39.5	dB
Coaxial cable (C107)	+	4.0	dB
DUT-Antenna (see under limit)	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (10k -> 4k)	-	4.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	39.5	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. 88



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: 15-25log2° dBW;4kHz
-ant.-pattern envelope: -(29-25log2° dBi)
==>: -14 dBW;4kHz (copolar)
(-10*log N for N>1: consideration in correction data)
The subtraction of the terms results in a constant limit.
The antenna gain is set to zero in the correction data for this calculation.

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

Operating condition of DUT:
operating condition 6, see test report chapter 6.4
16QAM dual carrier

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W065, W074

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Wed 19/May/2021 15:40:45	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

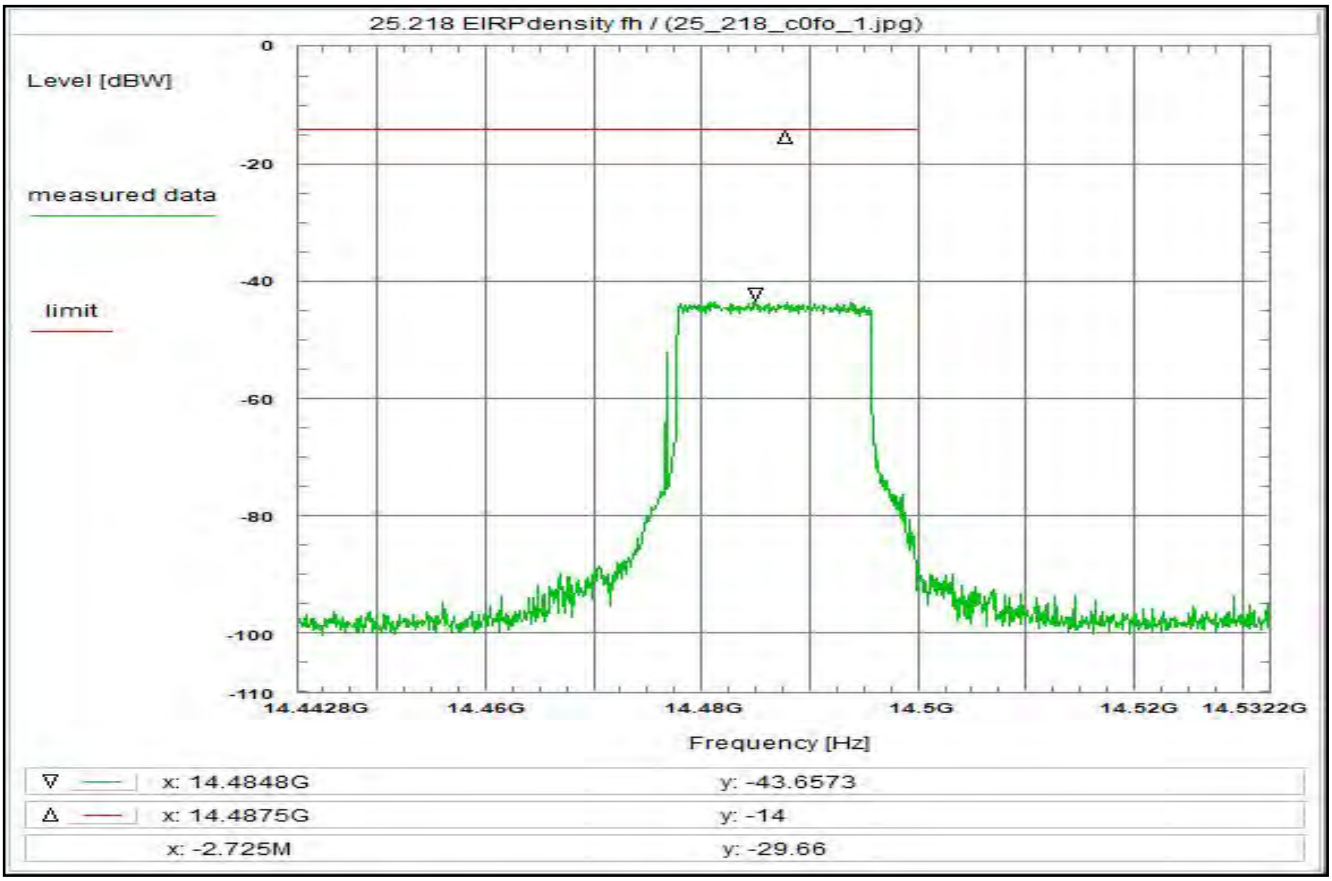
Start frequency:	14.22775	GHz
Stop frequency:	14.31725	GHz
Center frequency:	14.2725	GHz
Frequency span:	89.5	MHz
Resolution-BW:	10	kHz
Video-BW:	30	kHz
Input attenuation:	10	dB
Trace-Mode:	Clear Write	
Detector-Mode:	AVG	

Correction:

Directional coupler (W009)	+	39.5	dB
Coaxial cable (C107)	+	4.0	dB
DUT-Antenna (see under limit)	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (10k -> 4k)	-	4.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	39.5	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. 89



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: 15-25log2° dBW;4kHz
-ant.-pattern envelope: -(29-25log2° dBi)
==>: -14 dBW;4kHz (copolar)
(-10*log N for N>1: consideration in correction data)
The subtraction of the terms results in a constant limit.
The antenna gain is set to zero in the correction data for this calculation.

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

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

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W065, W074

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Wed 19/May/2021 15:34:22	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

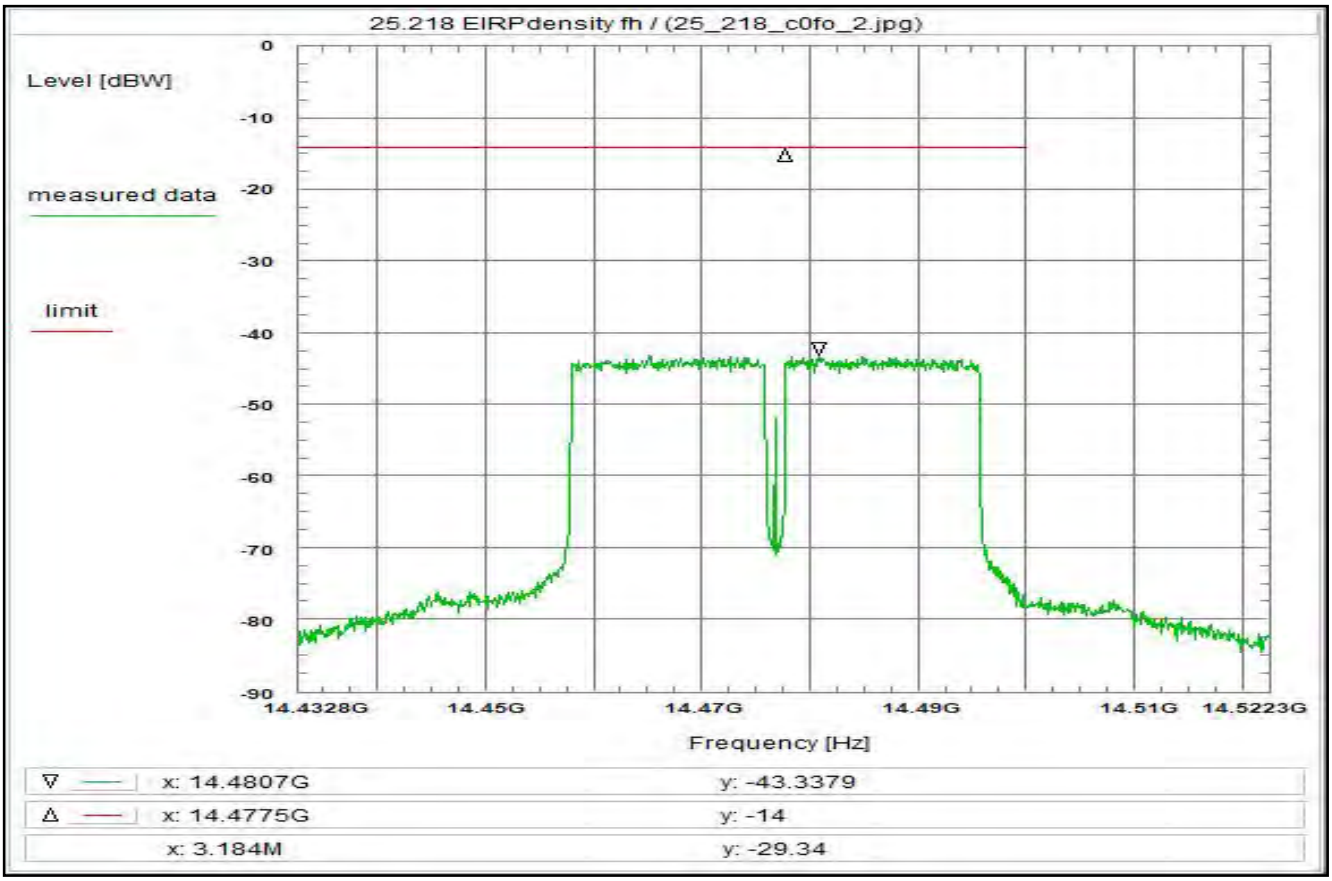
Start frequency:	14.44275	GHz
Stop frequency:	14.53225	GHz
Center frequency:	14.4875	GHz
Frequency span:	89.5	MHz
Resolution-BW:	10	kHz
Video-BW:	30	kHz
Input attenuation:	10	dB
Trace-Mode:	Clear Write	
Detector-Mode:	AVG	

Correction:

Directional coupler (W009)	+	39.4	dB
Coaxial cable (C107)	+	4.0	dB
DUT-Antenna (see under limit)	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (10k -> 4k)	-	4.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	39.4	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. 90



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: 15-25log2° dBW;4kHz
-ant.-pattern envelope: -(29-25log2° dBi)
==>: -14 dBW;4kHz (copolar)
(-10*log N for N>1: consideration in correction data)
The subtraction of the terms results in a constant limit.
The antenna gain is set to zero in the correction data for this calculation.

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

Operating condition of DUT:
operating condition 4, see test report chapter 6.4
QPSK dual carrier

Test setup:
see test report chapter 7.3: cdgj

Test equipment:
see test report chapter 7.x: C107, R001, W009, W065, W074

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Wed 19/May/2021 15:35:29	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	120	Vac

Setup of measurement equipment:

Start frequency:	14.43275	GHz
Stop frequency:	14.52225	GHz
Center frequency:	14.4775	GHz
Frequency span:	89.5	MHz
Resolution-BW:	10	kHz
Video-BW:	30	kHz
Input attenuation:	10	dB
Trace-Mode:	Clear Write	
Detector-Mode:	AVG	

Correction:

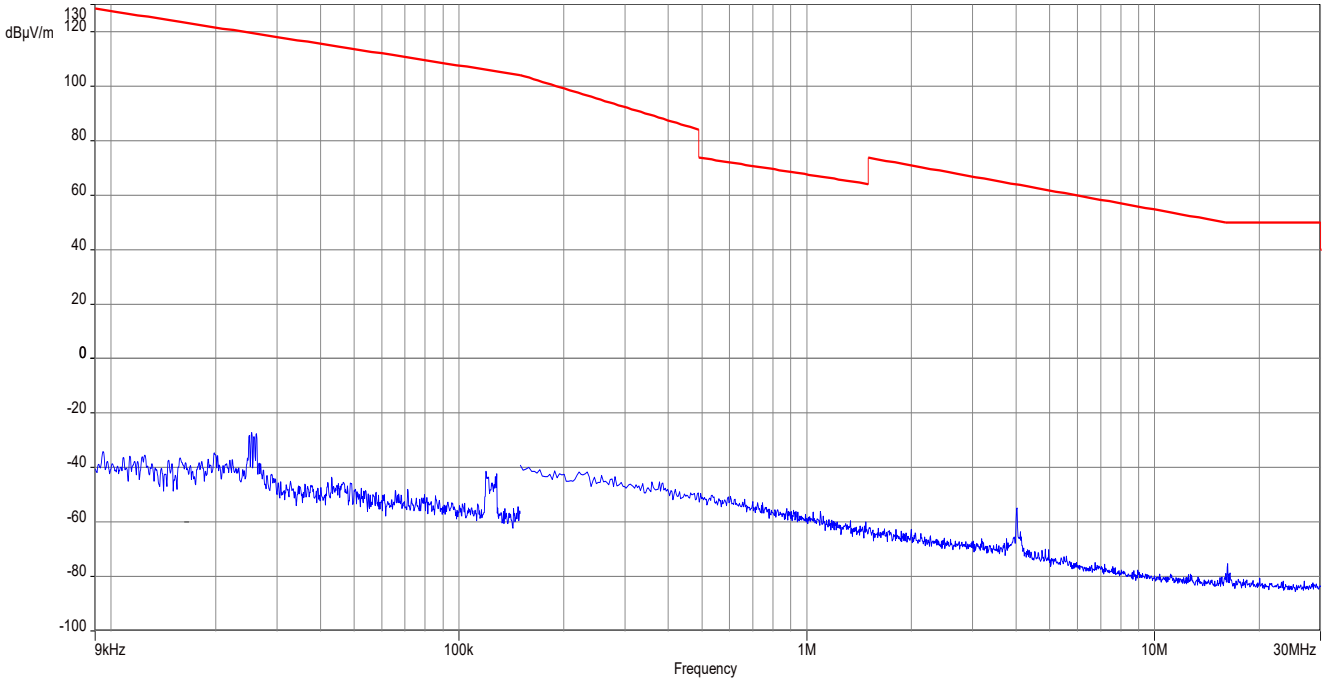
Directional coupler (W009)	+	39.4	dB
Coaxial cable (C107)	+	4.0	dB
DUT-Antenna (see under limit)	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (10k -> 4k)	-	4.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation	+	0.0	dB
TOTAL CORRECTION:	+	39.4	dB

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.

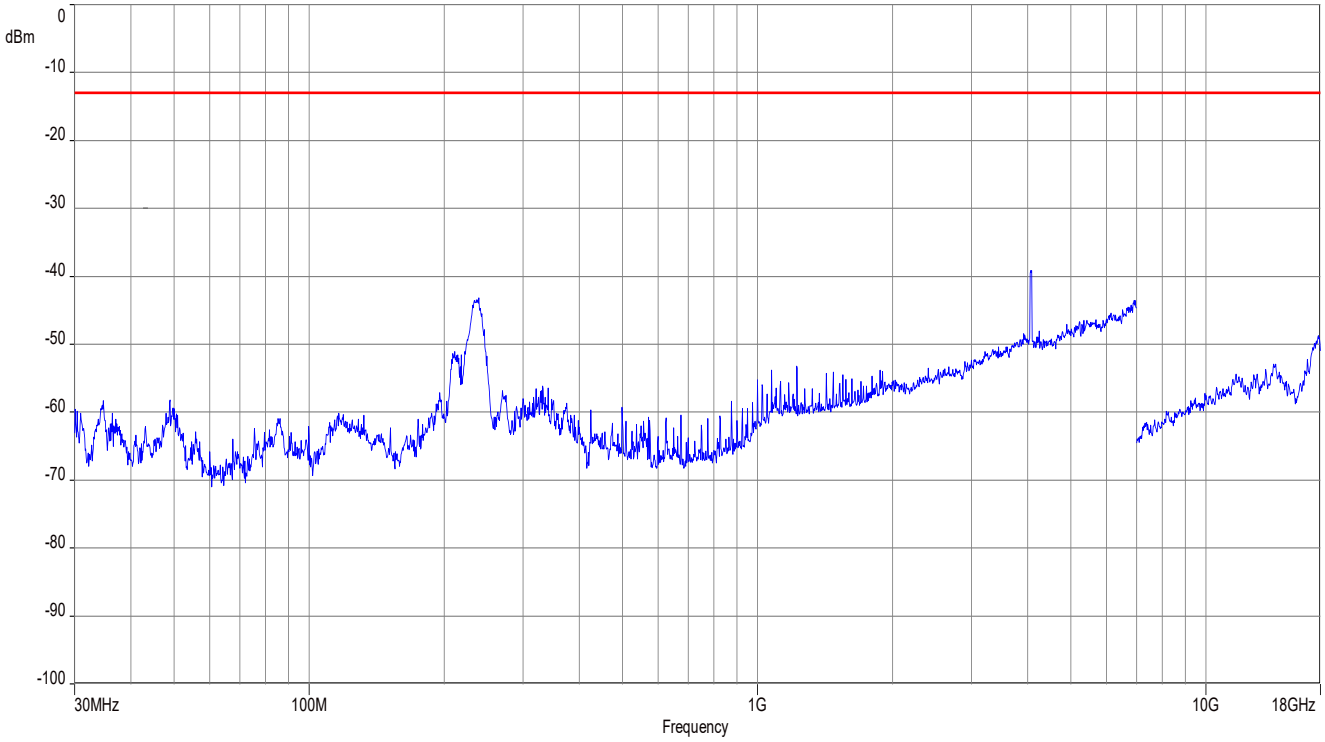
3 Measurement results, Spurious emissions 30MHz - 18 GHz

This Chapter 3 consists of 2 pages including this page.

Plot No. 1: 30 MHz – 18 GHz, antenna vertical / horizontal Tx



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



4 Document history

Version	Applied changes	Date of release
	Initial release - DRAFT	2021-03-05