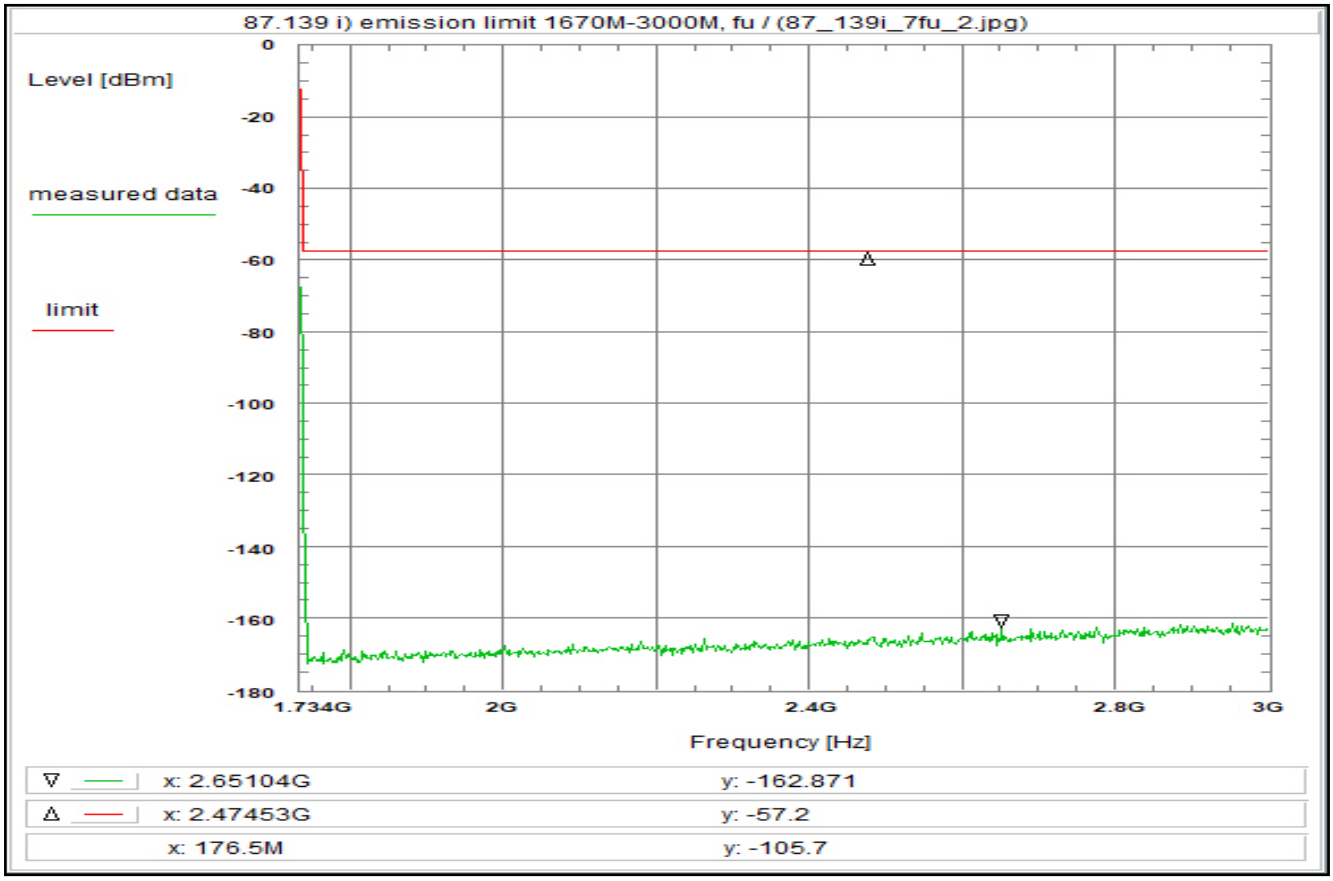
Plot No. 68



Subclause: 87.139 i) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier at the lower edge of the band (fl)

Limit:
Limit according to 87.139(i)(1)
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with 87.139(i)(1).

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

Operating condition of DUT:
Operating condition 1, see test report chapter 6.4
fl, valid for all modulations

Test setup:
see test report chapter 8.2

Test equipment:
see test report chapter 8.1-8.2: C220, R001, U331, W_RE

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Thu 29/Oct/2020 14:19:56	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	28	V DC

Setup of measurement equipment:

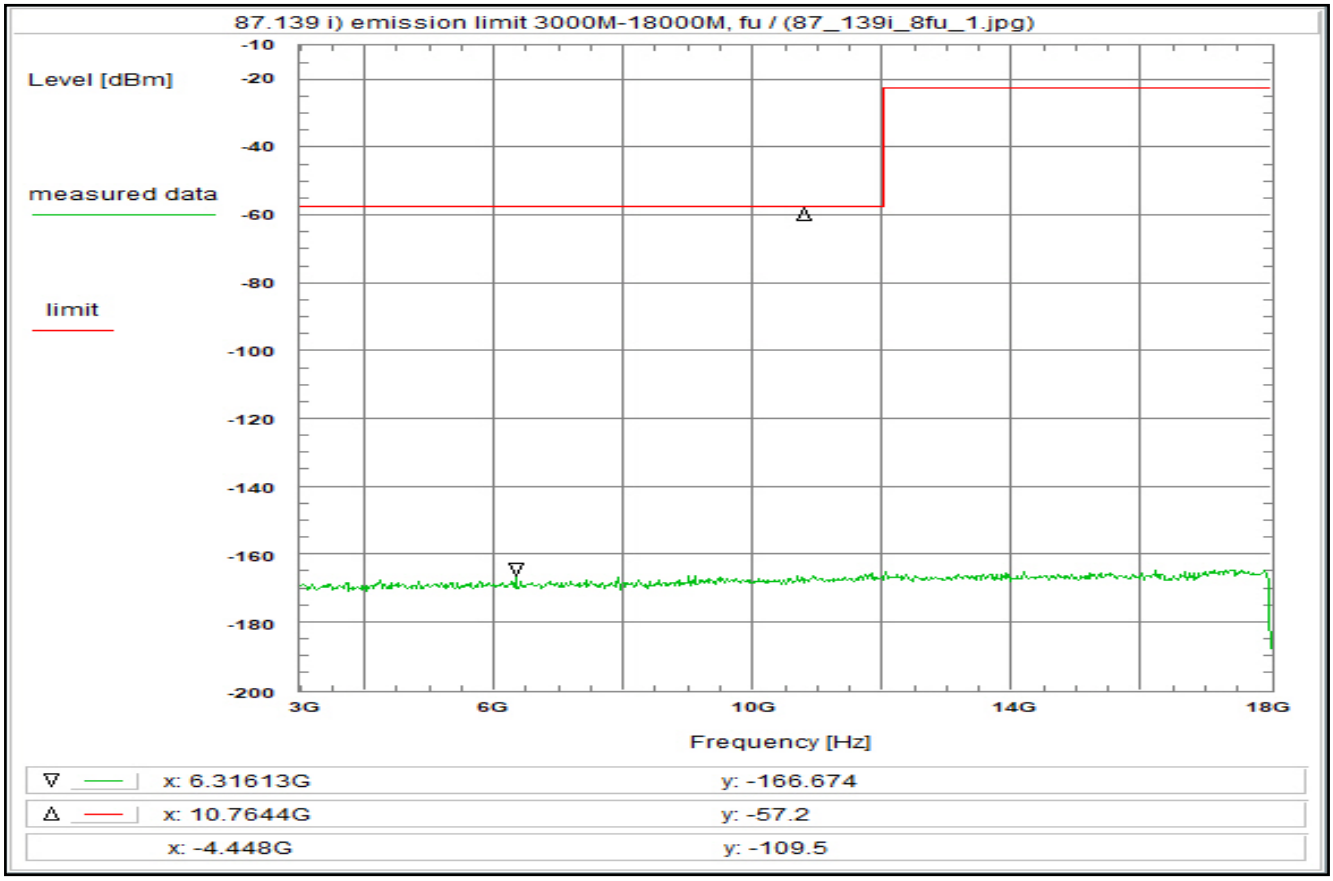
Start frequency:	1.734	GHz
Stop frequency:	3	GHz
Center frequency:	2.367	GHz
Frequency span:	1.266	GHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	0	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	Pos Peak	

Correction:

W_RE	42.3	dB	
Coaxial cable (C220)	+	1.1	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U331)	+	32.3	dB
TOTAL CORRECTION:	-	-7.7	dB

Remarks:
Carrier-on state / Carrier at the lower edge of the band (fl)
For EIRP calculation:
´worst-case´ = maximum antenna gain

Plot No. 69



Subclause: 87.139 i) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier at the lower edge of the band (fl)

Limit:
Limit according to 87.139(i)(1)
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with 87.139(i)(1).

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

Operating condition of DUT:
Operating condition 1, see test report chapter 6.4
fl, valid for all modulations

Test setup:
see test report chapter 8.2

Test equipment:
see test report chapter 8.1-8.2: C220, R001, U331, U332, W_RE

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Thu 29/Oct/2020 15:54:11	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	28	V DC

Setup of measurement equipment:

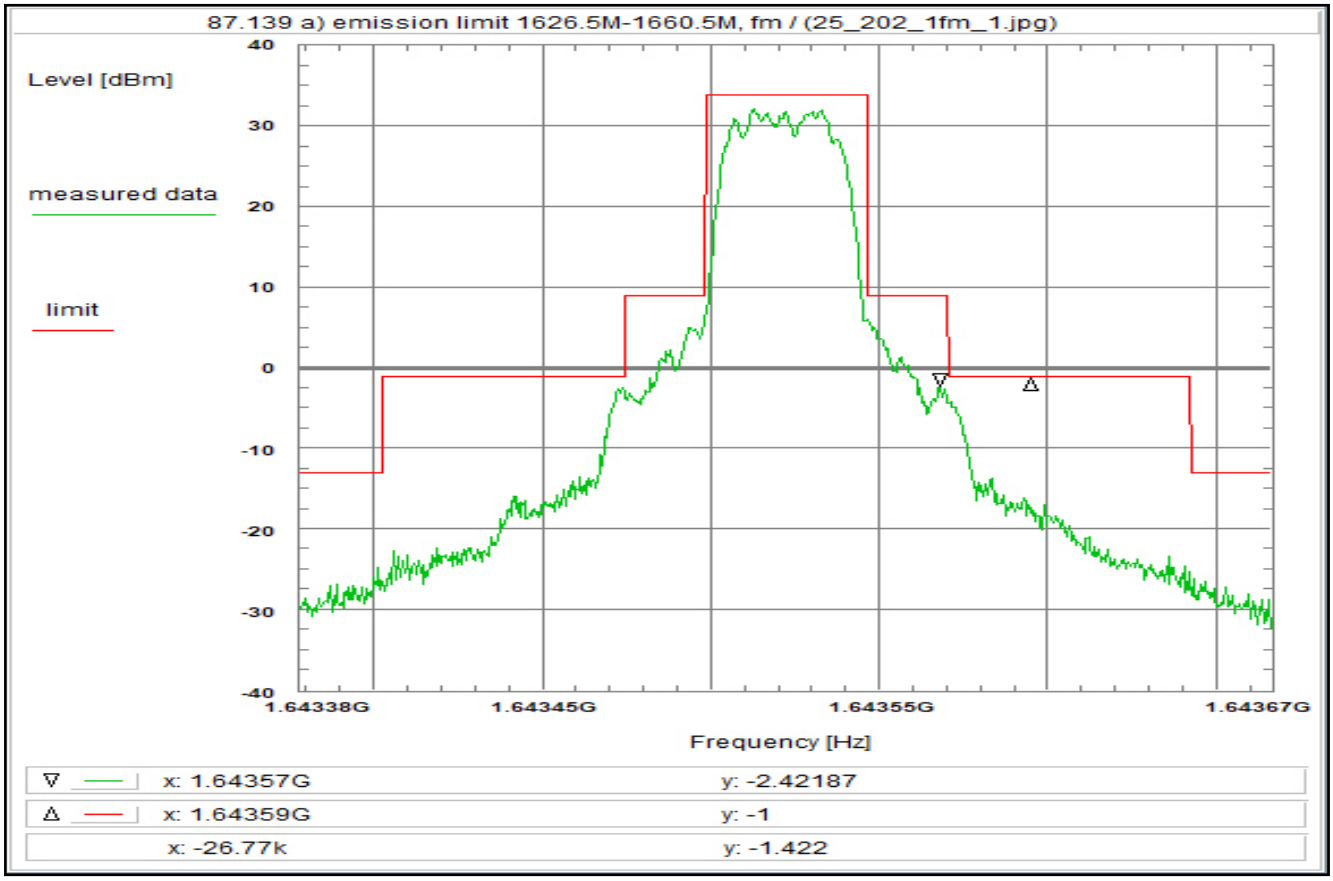
Start frequency:	3	GHz
Stop frequency:	18	GHz
Center frequency:	10.5	GHz
Frequency span:	15	GHz
Resolution-BW:	10	kHz
Video-BW:	30	kHz
Input attenuation:	0	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	Pos Peak	

Correction:

W_RE	118.0	dB	
Coaxial cable (C220)	+	2.3	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (10k -> 4k)	-	4.0	dB
Atten. between HPA and feedhorn (U332)	-	0.0	dB
	+	34.0	dB
TOTAL CORRECTION:	-	-85.7	dB

Remarks:
Carrier-on state / Carrier at the lower edge of the band (fl)
For EIRP calculation:
´worst-case´ = maximum antenna gain

Plot No. 70



Subclause: 87.139 a) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 87.139 a):
50-100% of assigned bw: -25dBc/4kHz
100-250% of assigned bw: -35dBc/4kHz
> 250% of assigned bw: -43+10log(Pmax)dBc/4kHz = -43 dBW
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with the above schedule.

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

Operating condition of DUT:
Operating condition 1, see test report chapter 6.4
fm, R5T1XD

Test setup:
see test report chapter 8.2

Test equipment:
see test report chapter 8.1-8.2: C220, R001, U330

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Tue 27/Oct/2020 16:17:07	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	28	V DC

Setup of measurement equipment:

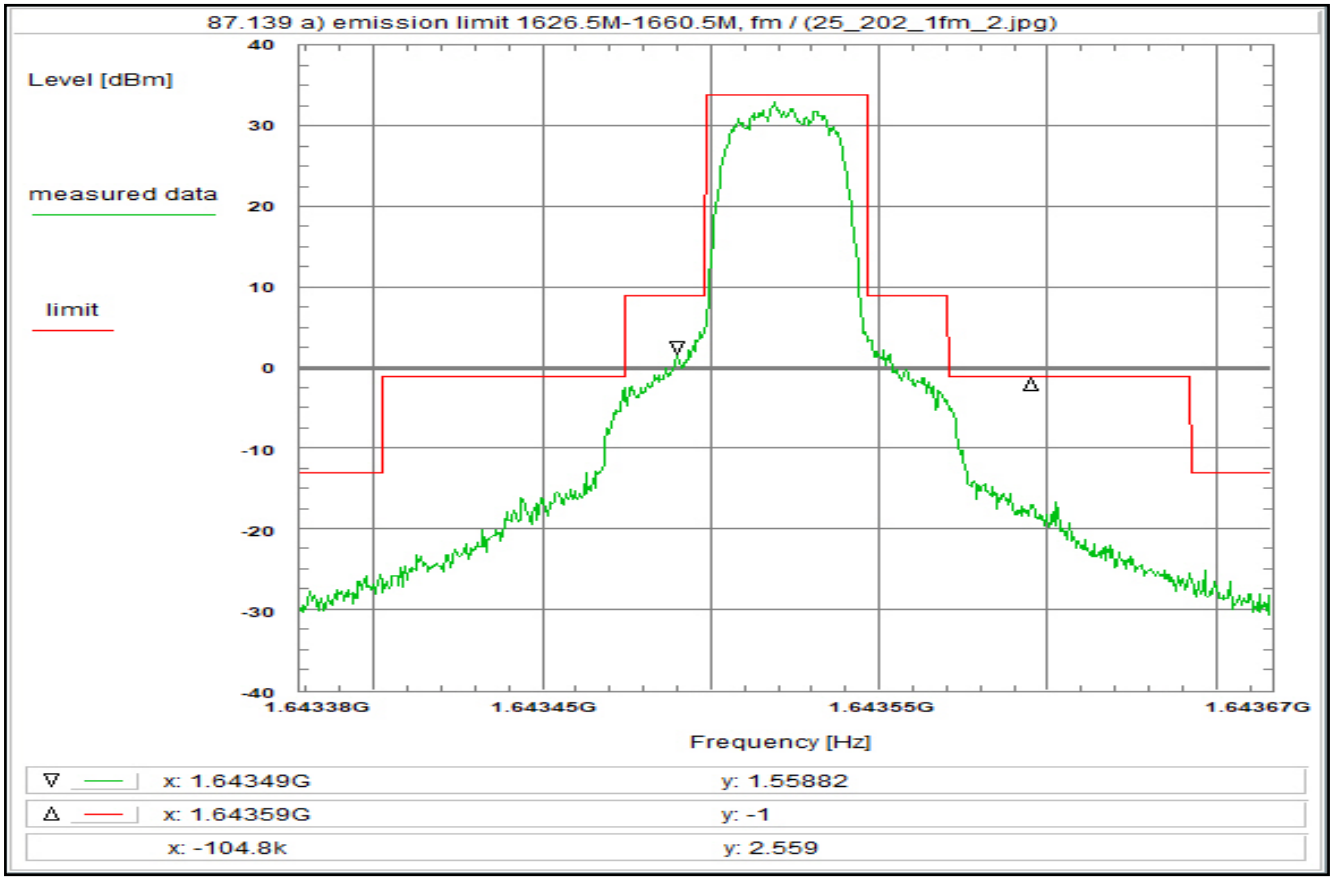
Start frequency:	1.643378	GHz
Stop frequency:	1.643666	GHz
Center frequency:	1.643522	GHz
Frequency span:	288	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	20	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U330)	+	31.9	dB
TOTAL CORRECTION:	+	34.0	dB

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

Plot No. 71



Subclause: 87.139 a) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 87.139 a):
50-100% of assigned bw: -25dBc/4kHz
100-250% of assigned bw: -35dBc/4kHz
> 250% of assigned bw: -43+10log(Pmax)dBc/4kHz = -43 dBW
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with the above schedule.

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

Operating condition of DUT:
Operating condition 1, see test report chapter 6.4
fm, R20T1XD

Test setup:
see test report chapter 8.2

Test equipment:
see test report chapter 8.1-8.2: C220, R001, U330

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Tue 27/Oct/2020 16:18:57	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	28	V DC

Setup of measurement equipment:

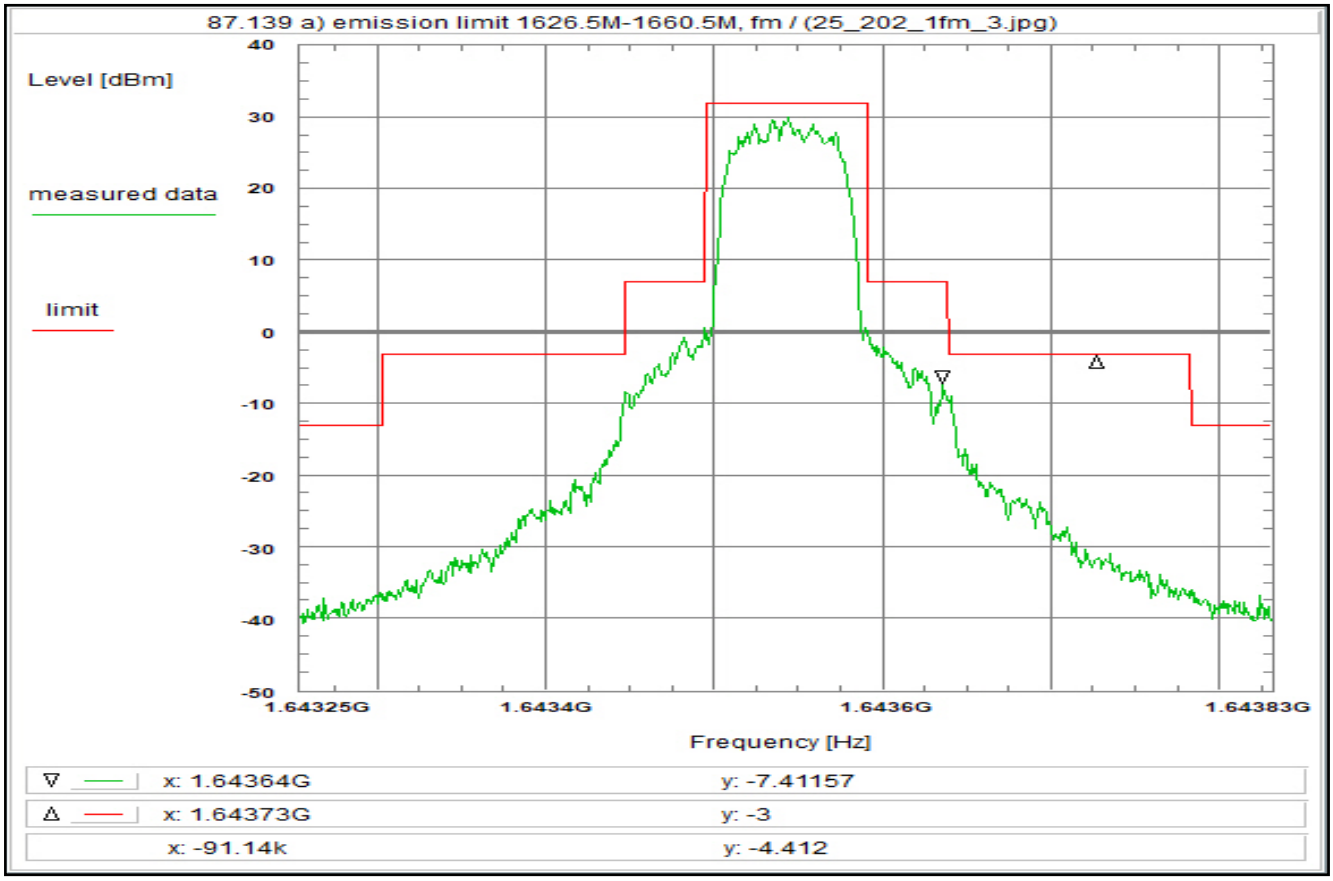
Start frequency:	1.643378	GHz
Stop frequency:	1.643666	GHz
Center frequency:	1.643522	GHz
Frequency span:	288	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	20	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U330)	+	31.9	dB
TOTAL CORRECTION:	+	34.0	dB

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

Plot No. 72



Subclause: 87.139 a) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 87.139 a):
50-100% of assigned bw: -25dBc/4kHz
100-250% of assigned bw: -35dBc/4kHz
> 250% of assigned bw: -43+10log(Pmax)dBc/4kHz = -43 dBW
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with the above schedule.

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

Operating condition of DUT:
Operating condition 1, see test report chapter 6.4
fm, R20T2XD

Test setup:
see test report chapter 8.2

Test equipment:
see test report chapter 8.1-8.2: C220, R001, U330

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Tue 27/Oct/2020 16:21:23	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	28	V DC

Setup of measurement equipment:

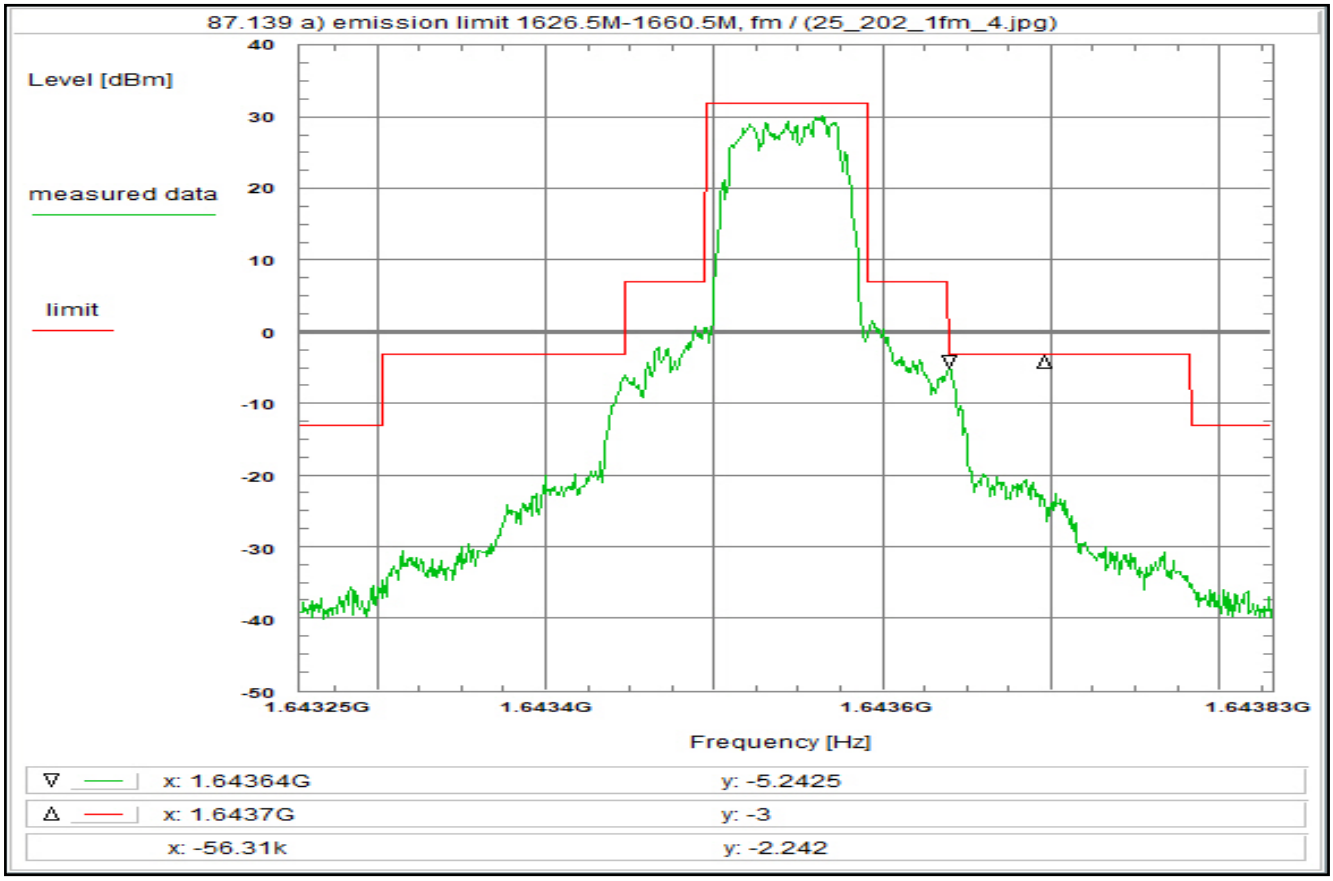
Start frequency:	1.643254	GHz
Stop frequency:	1.64383	GHz
Center frequency:	1.643542	GHz
Frequency span:	576	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	20	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn (U330)	-	0.0	dB
	+	31.9	dB
TOTAL CORRECTION:	+	34.0	dB

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

Plot No. 73



Subclause: 87.139 a) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 87.139 a):
50-100% of assigned bw: -25dBc/4kHz
100-250% of assigned bw: -35dBc/4kHz
> 250% of assigned bw: -43+10log(Pmax)dBc/4kHz = -43 dBW
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with the above schedule.

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

Operating condition of DUT:
Operating condition 1, see test report chapter 6.4
fm, R5T2XD

Test setup:
see test report chapter 8.2

Test equipment:
see test report chapter 8.1-8.2: C220, R001, U330

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Tue 27/Oct/2020 16:26:07	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	28	V DC

Setup of measurement equipment:

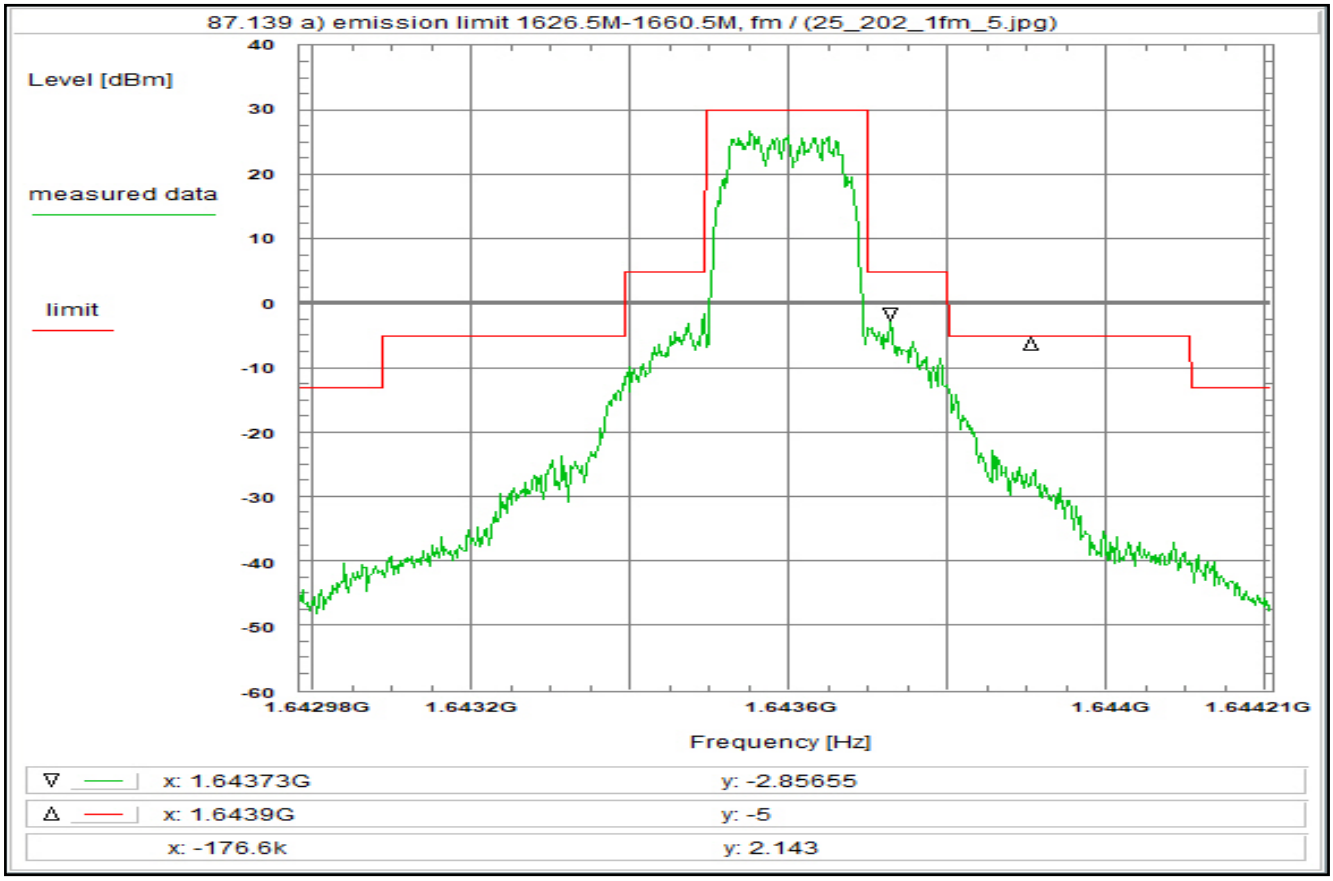
Start frequency:	1.643254	GHz
Stop frequency:	1.64383	GHz
Center frequency:	1.643542	GHz
Frequency span:	576	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	20	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U330)	+	31.9	dB
TOTAL CORRECTION:	+	34.0	dB

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

Plot No. 74



Subclause: 87.139 a) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 87.139 a):
50-100% of assigned bw: -25dBc/4kHz
100-250% of assigned bw: -35dBc/4kHz
> 250% of assigned bw: -43+10log(Pmax)dBc/4kHz = -43 dBW
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with the above schedule.

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

Operating condition of DUT:
Operating condition 1, see test report chapter 6.4
fm, R5T45XD

Test setup:
see test report chapter 8.2

Test equipment:
see test report chapter 8.1-8.2: C220, R001, U330

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Tue 27/Oct/2020 16:28:46	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	28	V DC

Setup of measurement equipment:

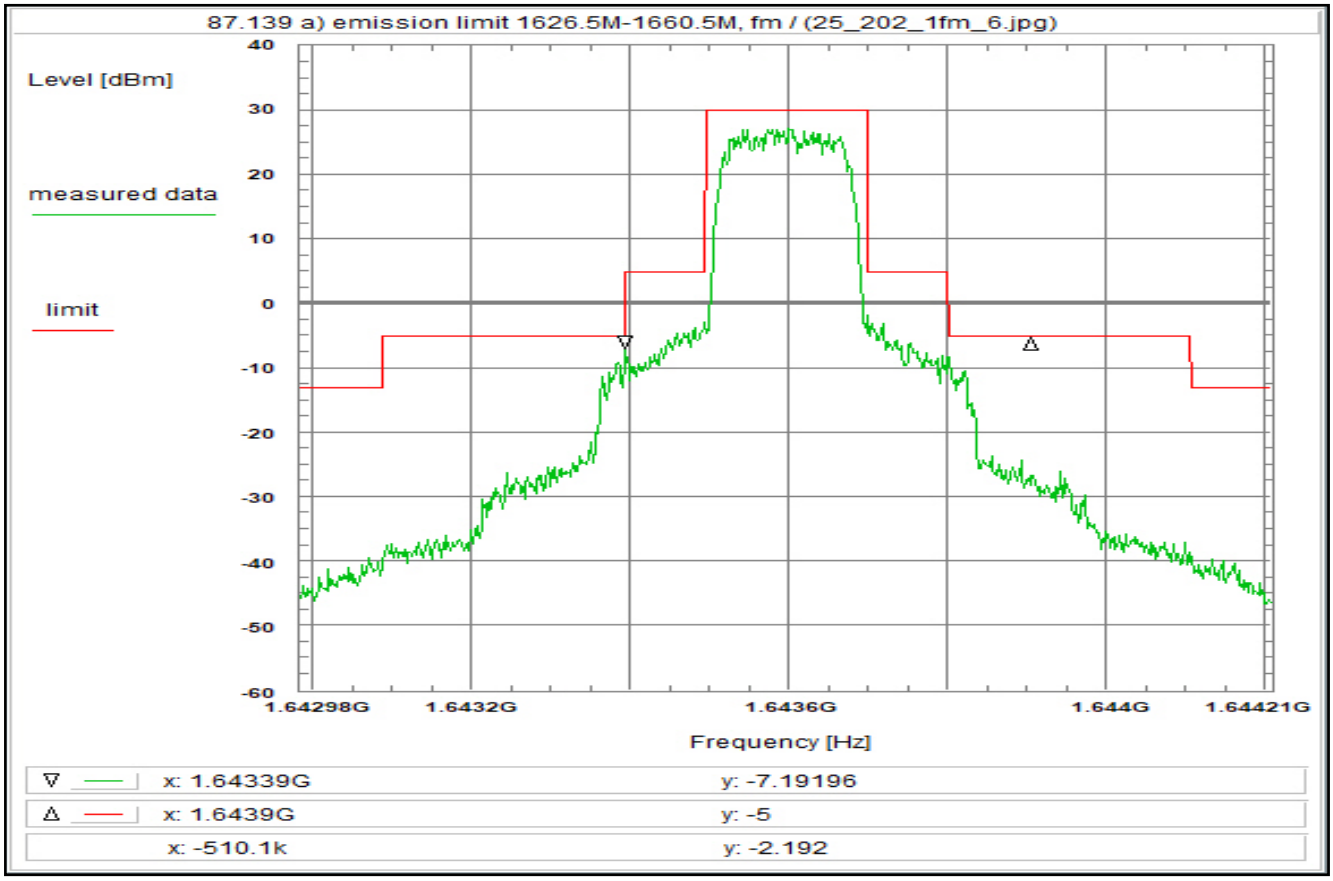
Start frequency:	1.642983	GHz
Stop frequency:	1.644207	GHz
Center frequency:	1.643595	GHz
Frequency span:	1.224	MHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	20	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U330)	+	31.9	dB
TOTAL CORRECTION:	+	34.0	dB

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

Plot No. 75



Subclause: 87.139 a) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 87.139 a):
50-100% of assigned bw: -25dBc/4kHz
100-250% of assigned bw: -35dBc/4kHz
> 250% of assigned bw: -43+10log(Pmax)dBc/4kHz = -43 dBW
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with the above schedule.

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

Operating condition of DUT:
Operating condition 1, see test report chapter 6.4
fm, R20T45XD

Test setup:
see test report chapter 8.2

Test equipment:
see test report chapter 8.1-8.2: C220, R001, U330

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Tue 27/Oct/2020 16:30:17	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	28	V DC

Setup of measurement equipment:

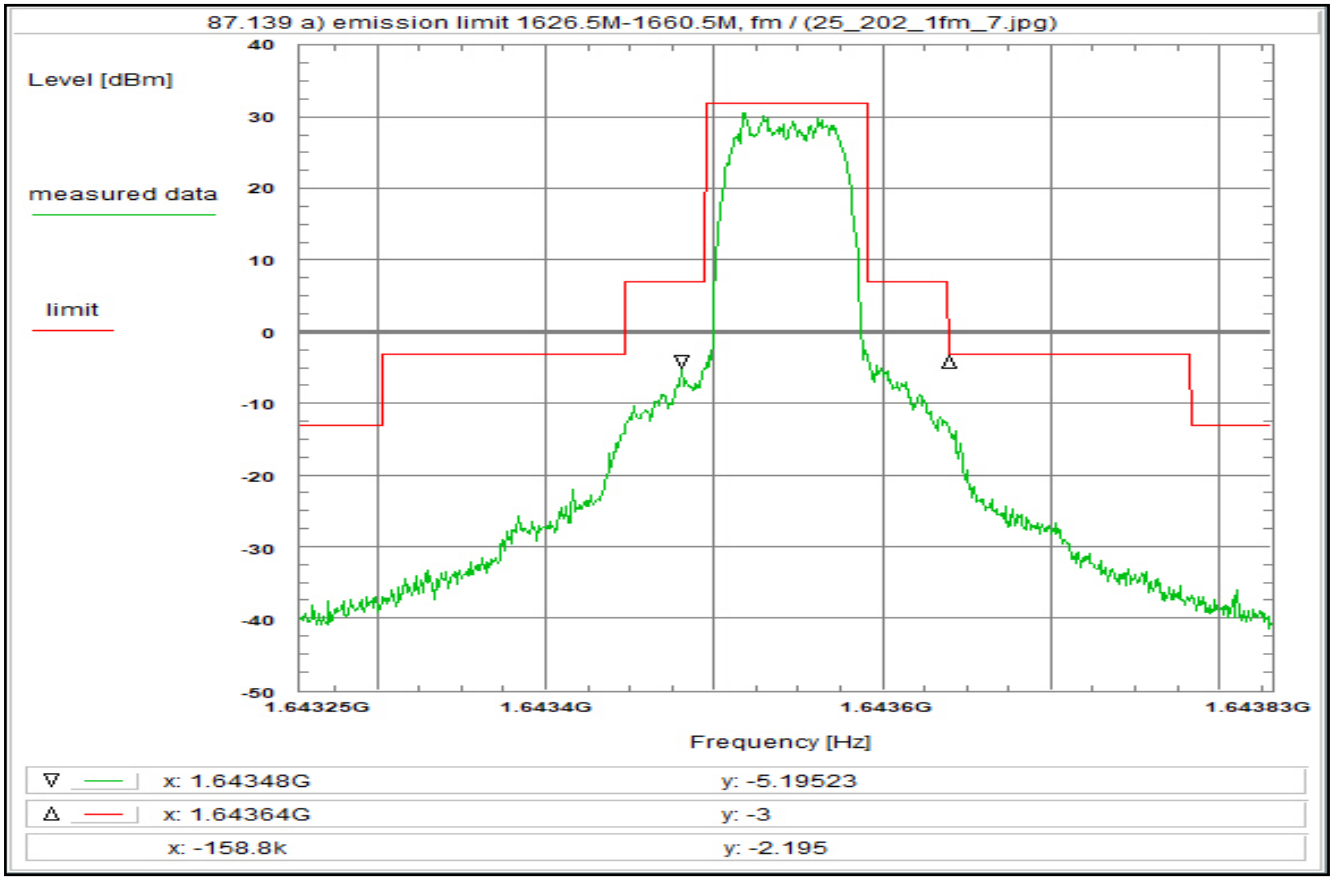
Start frequency:	1.642983	GHz
Stop frequency:	1.644207	GHz
Center frequency:	1.643595	GHz
Frequency span:	1.224	MHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	20	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn (U330)	-	0.0	dB
	+	31.9	dB
TOTAL CORRECTION:	+	34.0	dB

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

Plot No. 76



Subclause: 87.139 a) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 87.139 a):
50-100% of assigned bw: -25dBc/4kHz
100-250% of assigned bw: -35dBc/4kHz
> 250% of assigned bw: -43+10log(Pmax)dBc/4kHz = -43 dBW
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with the above schedule.

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

Operating condition of DUT:
Operating condition 1, see test report chapter 6.4
fm, R20T2QD

Test setup:
see test report chapter 8.2

Test equipment:
see test report chapter 8.1-8.2: C220, R001, U330

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Tue 27/Oct/2020 16:33:38	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	28	V DC

Setup of measurement equipment:

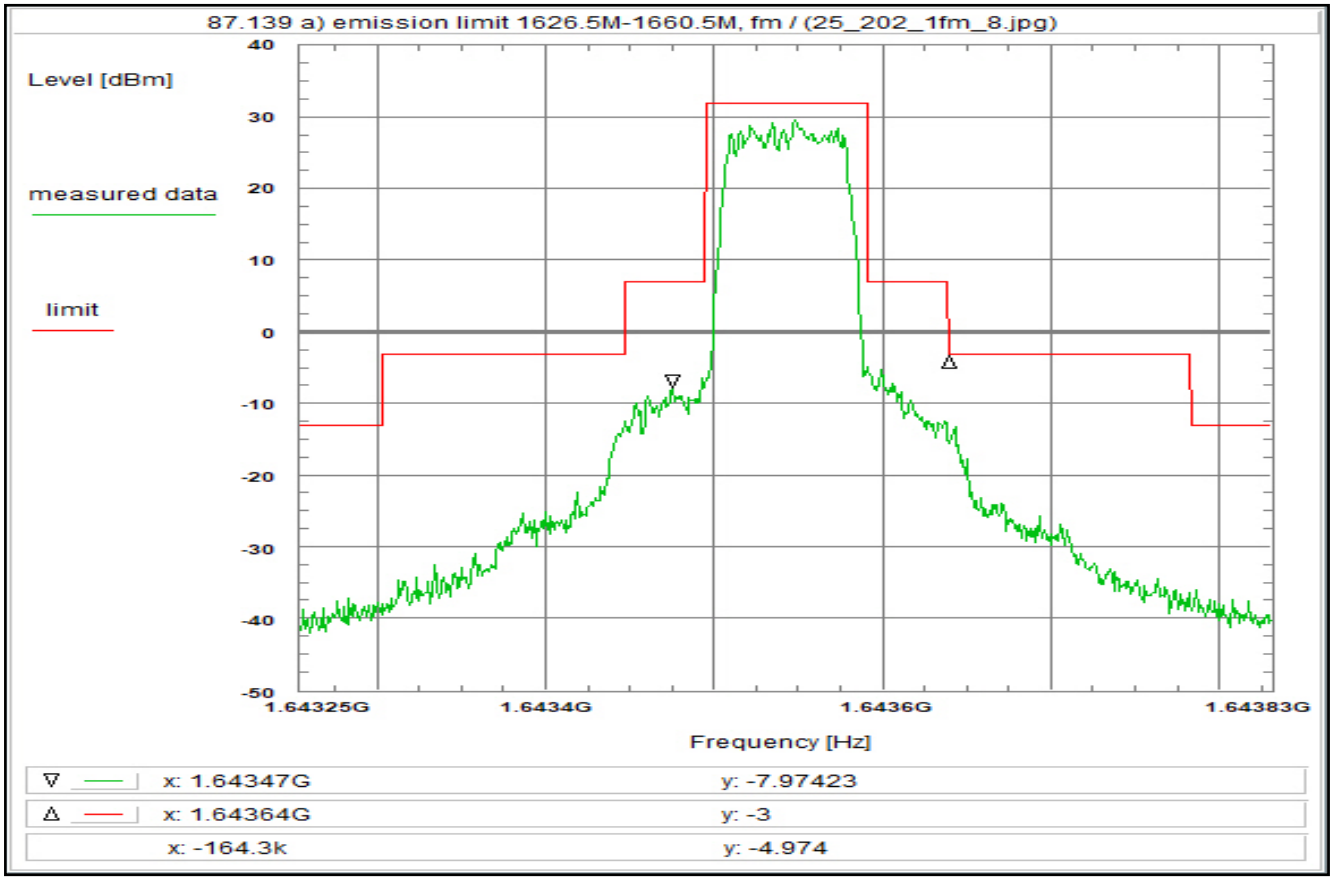
Start frequency:	1.643254	GHz
Stop frequency:	1.64383	GHz
Center frequency:	1.643542	GHz
Frequency span:	576	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	20	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U330)	+	31.9	dB
TOTAL CORRECTION:	+	34.0	dB

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

Plot No. 77



Subclause: 87.139 a) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 87.139 a):
50-100% of assigned bw: -25dBc/4kHz
100-250% of assigned bw: -35dBc/4kHz
> 250% of assigned bw: -43+10log(Pmax)dBc/4kHz = -43 dBW
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with the above schedule.

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

Operating condition of DUT:
Operating condition 1, see test report chapter 6.4
fm, R5T2QD

Test setup:
see test report chapter 8.2

Test equipment:
see test report chapter 8.1-8.2: C220, R001, U330

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Tue 27/Oct/2020 16:35:13	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	28	V DC

Setup of measurement equipment:

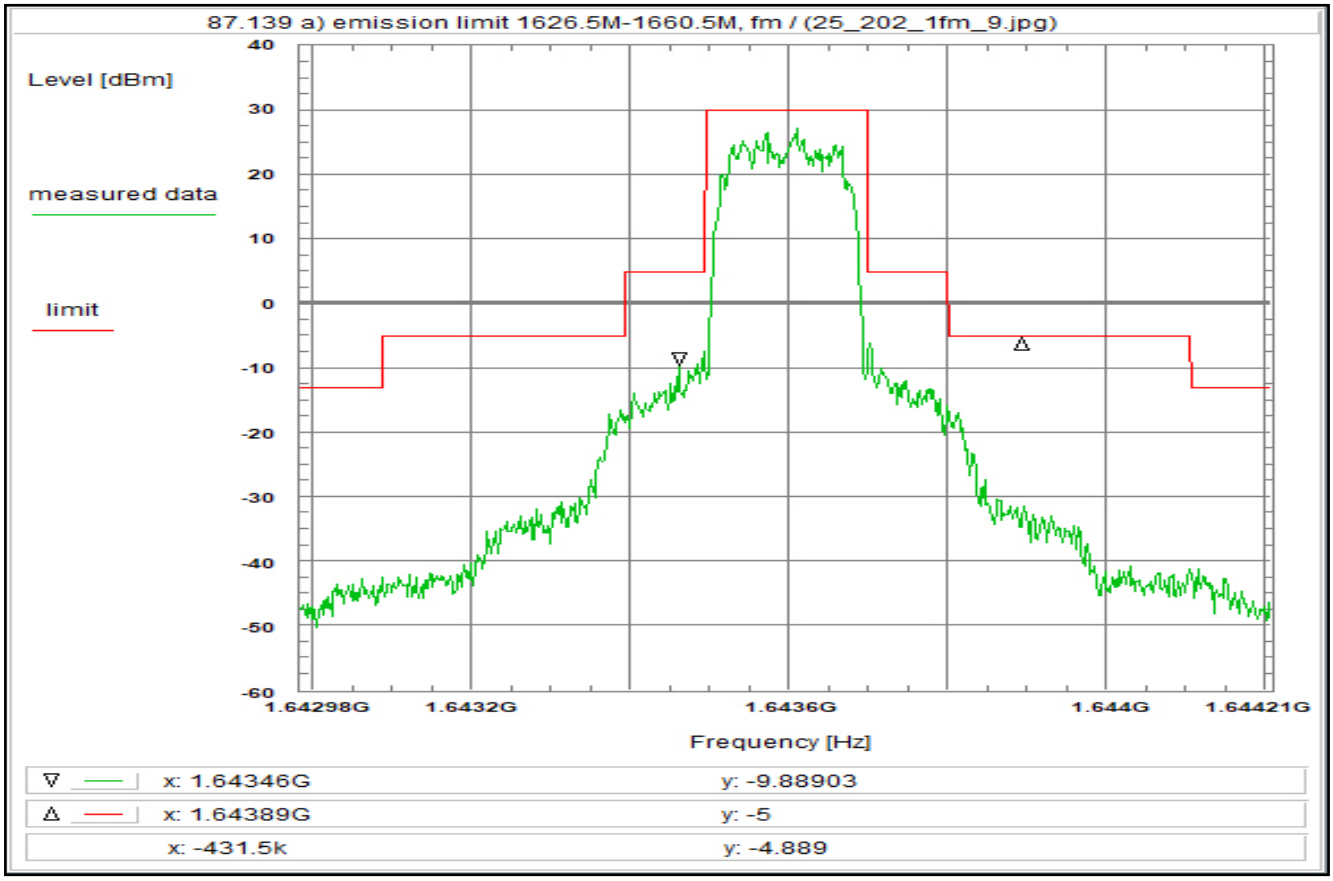
Start frequency:	1.643254	GHz
Stop frequency:	1.64383	GHz
Center frequency:	1.643542	GHz
Frequency span:	576	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	20	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U330)	+	31.9	dB
TOTAL CORRECTION:	+	34.0	dB

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

Plot No. 78



Subclause: 87.139 a) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 87.139 a):
50-100% of assigned bw: -25dBc/4kHz
100-250% of assigned bw: -35dBc/4kHz
> 250% of assigned bw: -43+10log(Pmax)dBc/4kHz = -43 dBW
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with the above schedule.

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

Operating condition of DUT:
Operating condition 1, see test report chapter 6.4
fm, R5T45QD

Test setup:
see test report chapter 8.2

Test equipment:
see test report chapter 8.1-8.2: C220, R001, U330

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Tue 27/Oct/2020 16:38:39	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	28	V DC

Setup of measurement equipment:

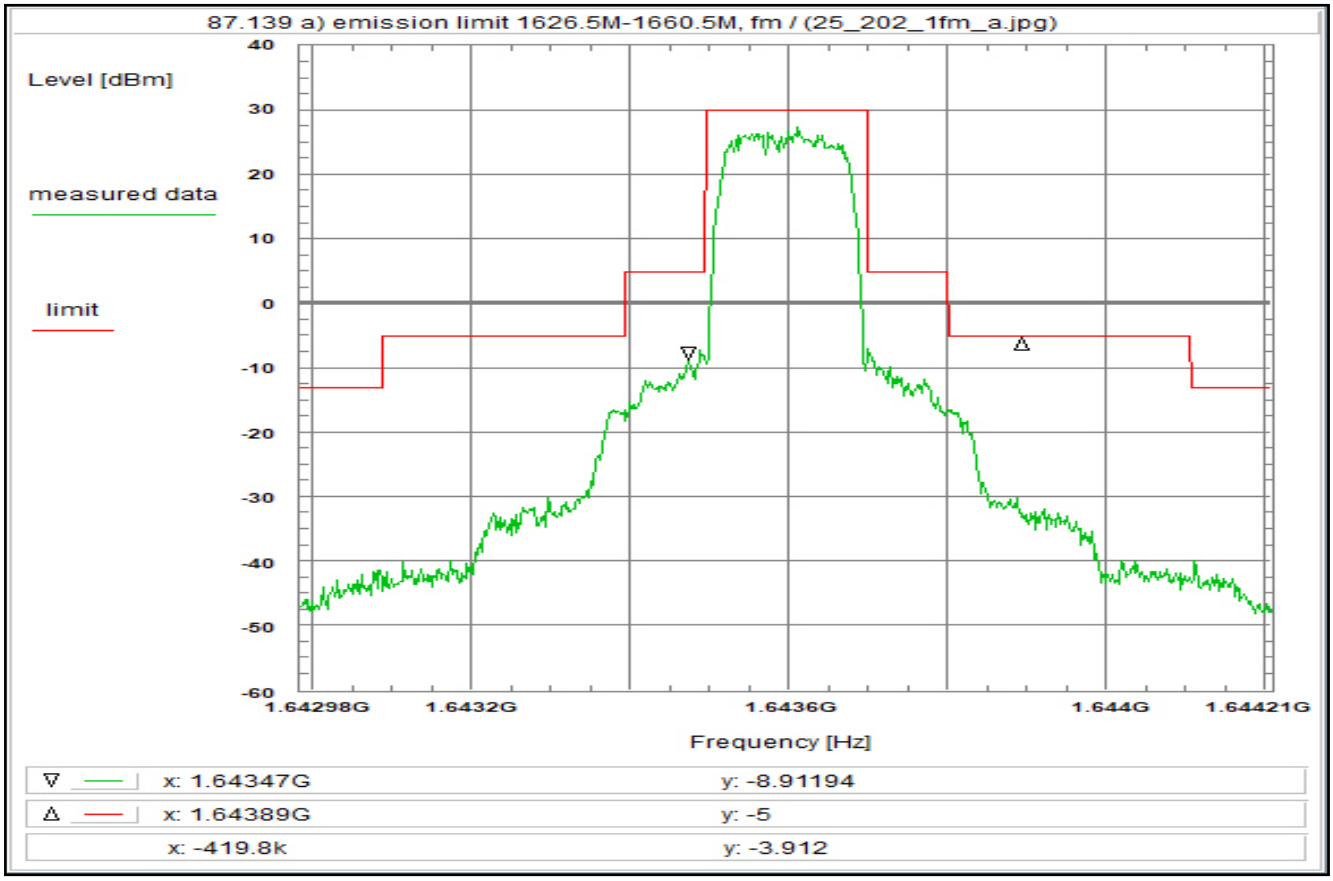
Start frequency:	1.642983	GHz
Stop frequency:	1.644207	GHz
Center frequency:	1.643595	GHz
Frequency span:	1.224	MHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	20	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U330)	+	31.9	dB
TOTAL CORRECTION:	+	34.0	dB

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

Plot No. 79



Subclause: 87.139 a) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 87.139 a):
50-100% of assigned bw: -25dBc/4kHz
100-250% of assigned bw: -35dBc/4kHz
> 250% of assigned bw: -43+10log(Pmax)dBc/4kHz = -43 dBW
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with the above schedule.

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

Operating condition of DUT:
Operating condition 1, see test report chapter 6.4
fm, R20T45QD

Test setup:
see test report chapter 8.2

Test equipment:
see test report chapter 8.1-8.2: C220, R001, U330

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Tue 27/Oct/2020 16:39:47	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	28	V DC

Setup of measurement equipment:

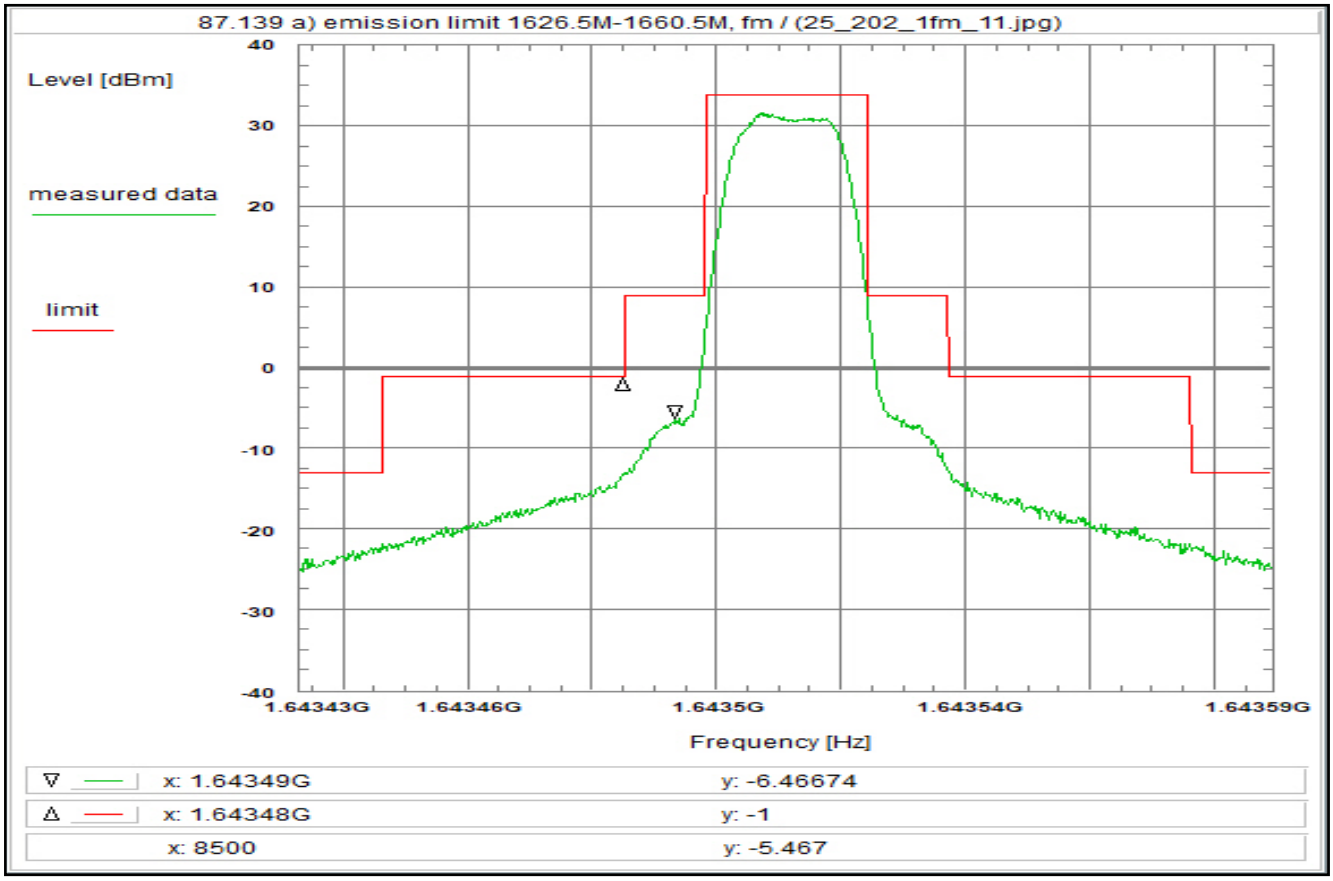
Start frequency:	1.642983	GHz
Stop frequency:	1.644207	GHz
Center frequency:	1.643595	GHz
Frequency span:	1.224	MHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	20	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U330)	+	31.9	dB
TOTAL CORRECTION:	+	34.0	dB

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

Plot No. 80



Subclause: 87.139 a) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 87.139 a):
50-100% of assigned bw: -25dBc/4kHz
100-250% of assigned bw: -35dBc/4kHz
> 250% of assigned bw: -43+10log(Pmax)dBc/4kHz = -43 dBW
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with the above schedule.

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

Operating condition of DUT:
Operating condition 1, see test report chapter 6.4
fm, R20T05QD

Test setup:
see test report chapter 8.2

Test equipment:
see test report chapter 8.1-8.2: C220, R001, U330

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Tue 27/Oct/2020 16:43:22	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	28	V DC

Setup of measurement equipment:

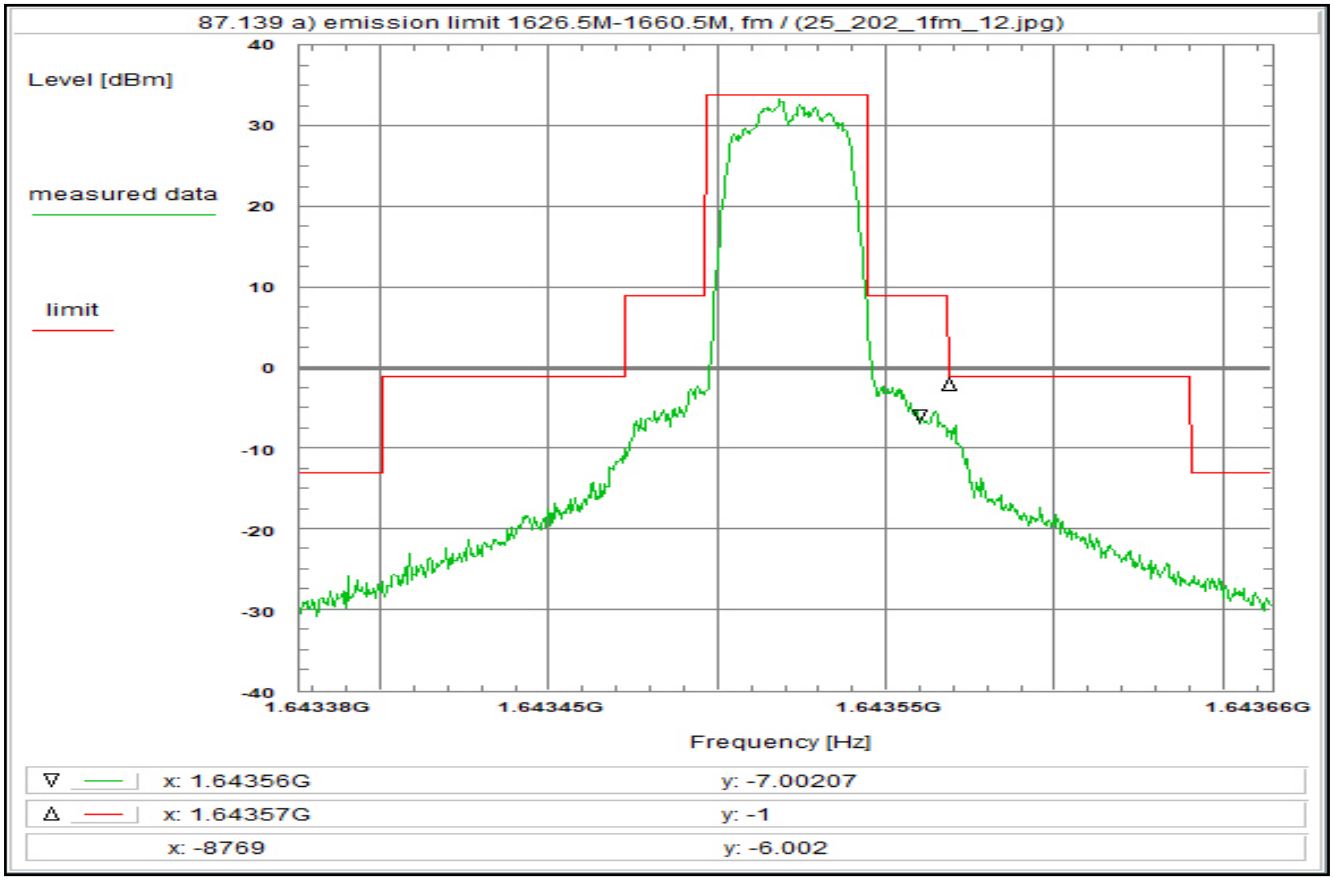
Start frequency:	1.643433	GHz
Stop frequency:	1.643589	GHz
Center frequency:	1.643511	GHz
Frequency span:	156	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	20	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U330)	+	31.9	dB
TOTAL CORRECTION:	+	34.0	dB

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

Plot No. 81



Subclause: 87.139 a) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 87.139 a):
50-100% of assigned bw: -25dBc/4kHz
100-250% of assigned bw: -35dBc/4kHz
> 250% of assigned bw: -43+10log(Pmax)dBc/4kHz = -43 dBW
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with the above schedule.

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

Operating condition of DUT:
Operating condition 1, see test report chapter 6.4
fm, R20T1QD

Test setup:
see test report chapter 8.2

Test equipment:
see test report chapter 8.1-8.2: C220, R001, U330

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Tue 27/Oct/2020 16:46:52	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	28	V DC

Setup of measurement equipment:

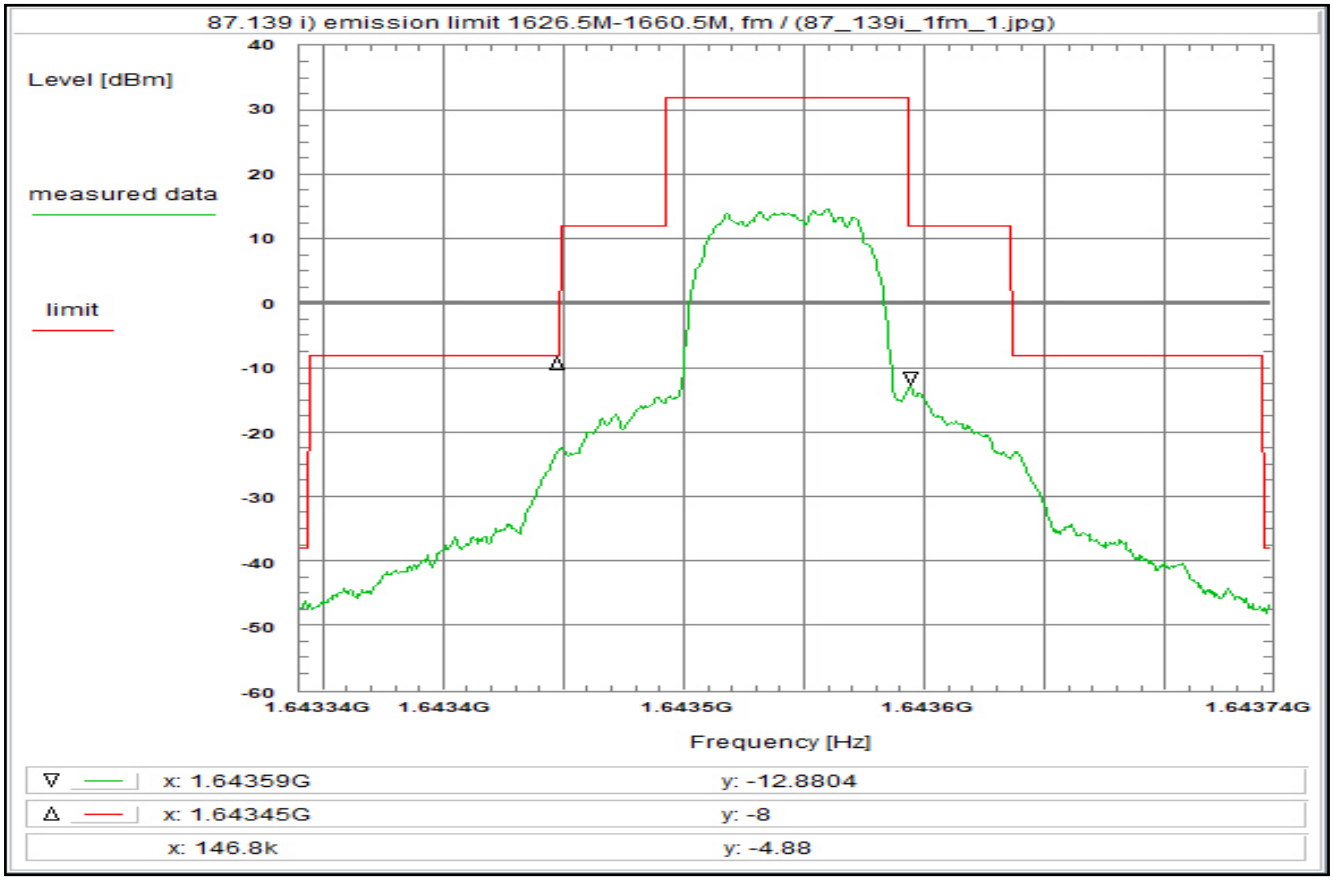
Start frequency:	1.643376	GHz
Stop frequency:	1.643664	GHz
Center frequency:	1.64352	GHz
Frequency span:	288	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	20	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U330)	+	31.9	dB
TOTAL CORRECTION:	+	34.0	dB

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

Plot No. 82



Subclause: 87.139 i) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 87.139(i)(1)
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with 87.139(i)(1).

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

Operating condition of DUT:
Operating condition 1, see test report chapter 6.4
fm, R5T2XD

Test setup:
see test report chapter 8.2

Test equipment:
see test report chapter 8.1-8.2: C220, R001, U330

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Wed 28/Oct/2020 14:49:49	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	28	V DC

Setup of measurement equipment:

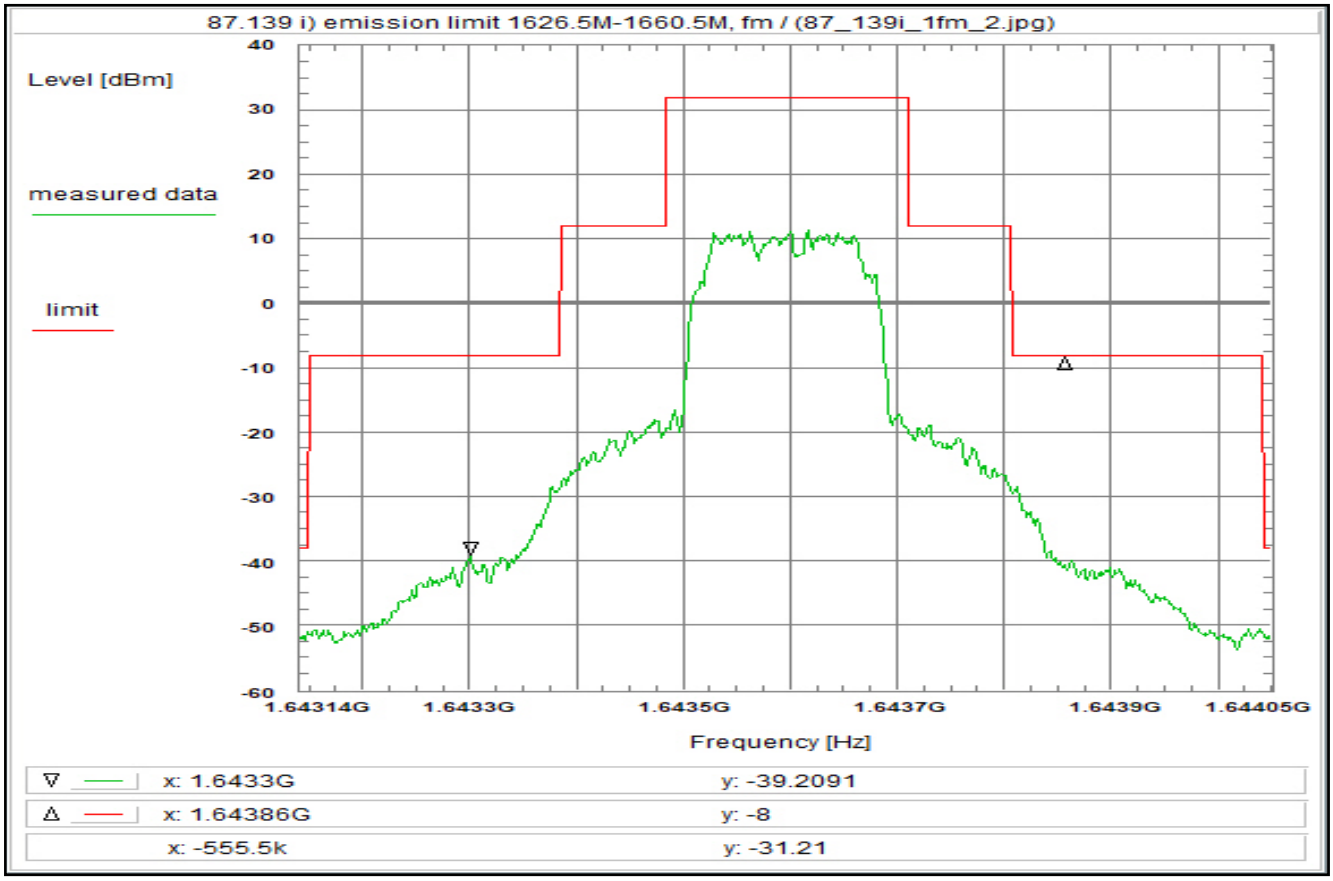
Start frequency:	1.6433404	GHz
Stop frequency:	1.6437436	GHz
Center frequency:	1.643542	GHz
Frequency span:	403.2	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	0	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation (U330)	+	31.9	dB
TOTAL CORRECTION:	+	34.0	dB

Remarks:
Carrier-on state / Carrier in the middle of the band (fm)
For EIRP calculation:
´worst-case´ = maximum antenna gain

Plot No. 83



Subclause: 87.139 i) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 87.139(i)(1)
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with 87.139(i)(1).

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

Operating condition of DUT:
Operating condition 1, see test report chapter 6.4
fm, R5T45XD

Test setup:
see test report chapter 8.2

Test equipment:
see test report chapter 8.1-8.2: C220, R001, U330

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Wed 28/Oct/2020 15:10:03	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	28	V DC

Setup of measurement equipment:

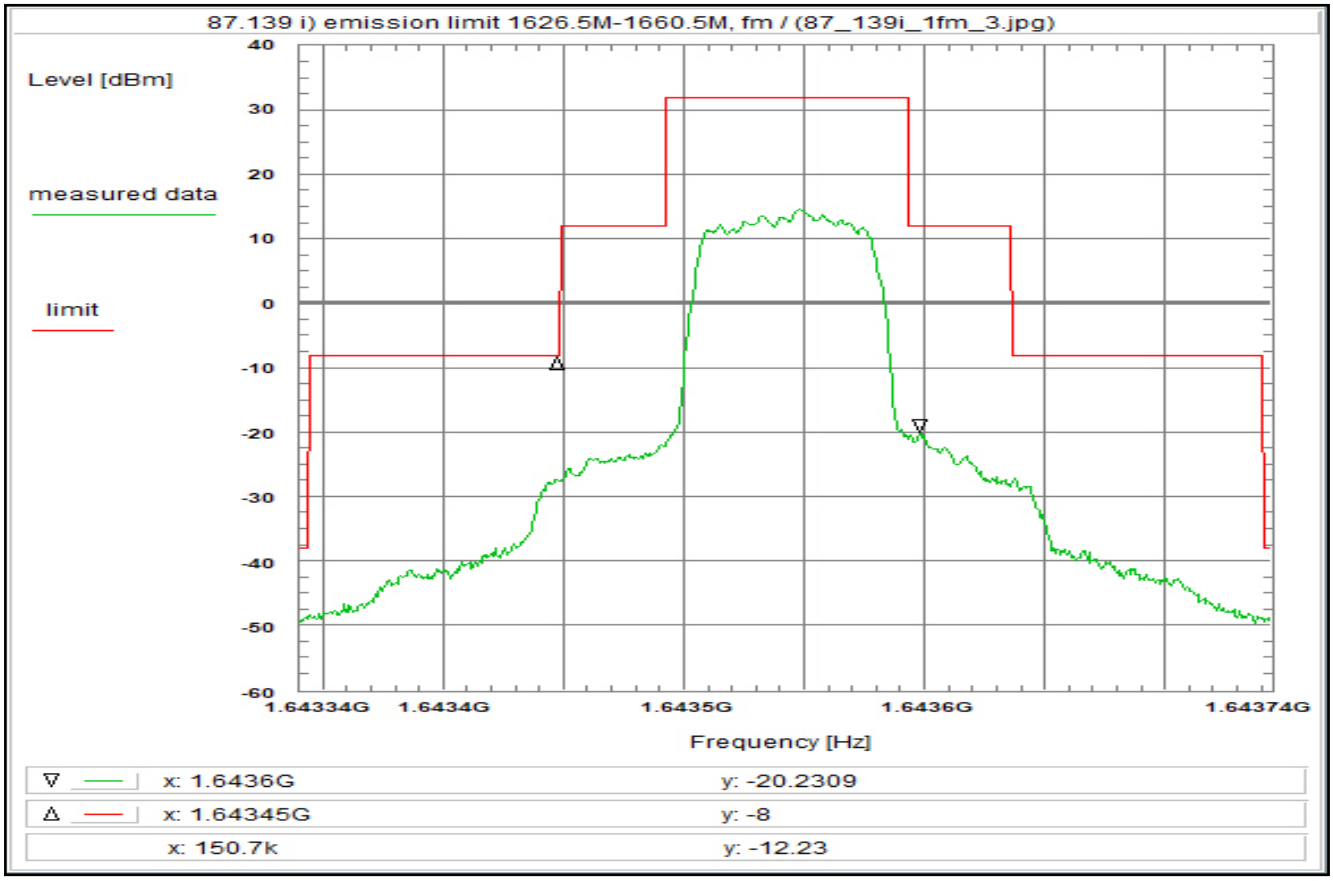
Start frequency:	1.6431414	GHz
Stop frequency:	1.6440486	GHz
Center frequency:	1.643595	GHz
Frequency span:	907.2	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	0	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation (U330)	+	31.9	dB
TOTAL CORRECTION:	+	34.0	dB

Remarks:
Carrier-on state / Carrier in the middle of the band (fm)
For EIRP calculation:
´worst-case´ = maximum antenna gain

Plot No. 84



Subclause: 87.139 i) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 87.139(i)(1)
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with 87.139(i)(1).

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

Operating condition of DUT:
Operating condition 1, see test report chapter 6.4
fm, R5T2QD

Test setup:
see test report chapter 8.2

Test equipment:
see test report chapter 8.1-8.2: C220, R001, U330

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Wed 28/Oct/2020 15:14:07	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	28	V DC

Setup of measurement equipment:

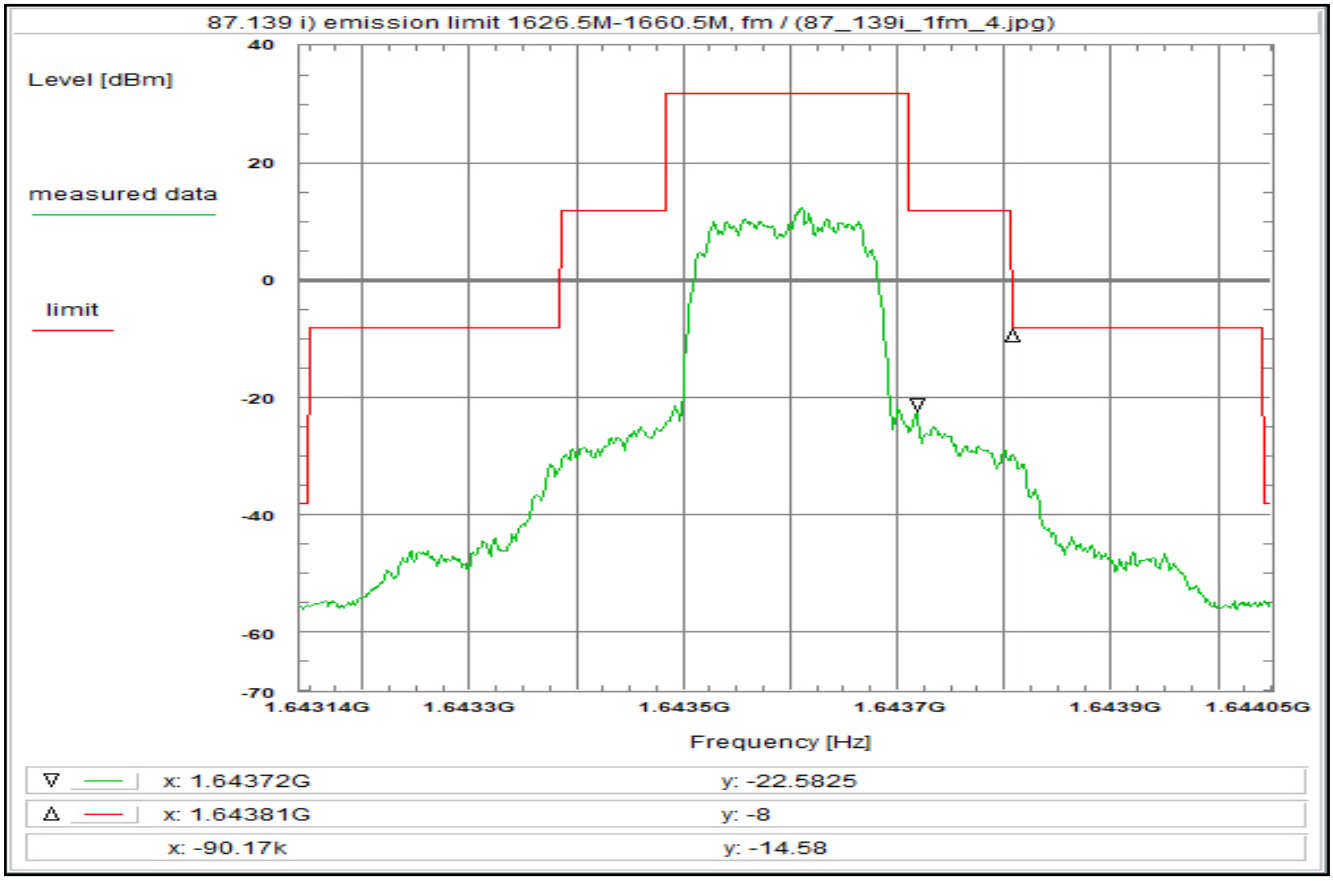
Start frequency:	1.6433404	GHz
Stop frequency:	1.6437436	GHz
Center frequency:	1.643542	GHz
Frequency span:	403.2	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	0	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation (U330)	+	31.9	dB
TOTAL CORRECTION:	+	34.0	dB

Remarks:
Carrier-on state / Carrier in the middle of the band (fm)
For EIRP calculation:
´worst-case´ = maximum antenna gain

Plot No. 85



Subclause: 87.139 i) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 87.139(i)(1)
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with 87.139(i)(1).

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

Operating condition of DUT:
Operating condition 1, see test report chapter 6.4
fm, R5T45QD

Test setup:
see test report chapter 8.2

Test equipment:
see test report chapter 8.1-8.2: C220, R001, U330

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Wed 28/Oct/2020 15:17:32	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	28	V DC

Setup of measurement equipment:

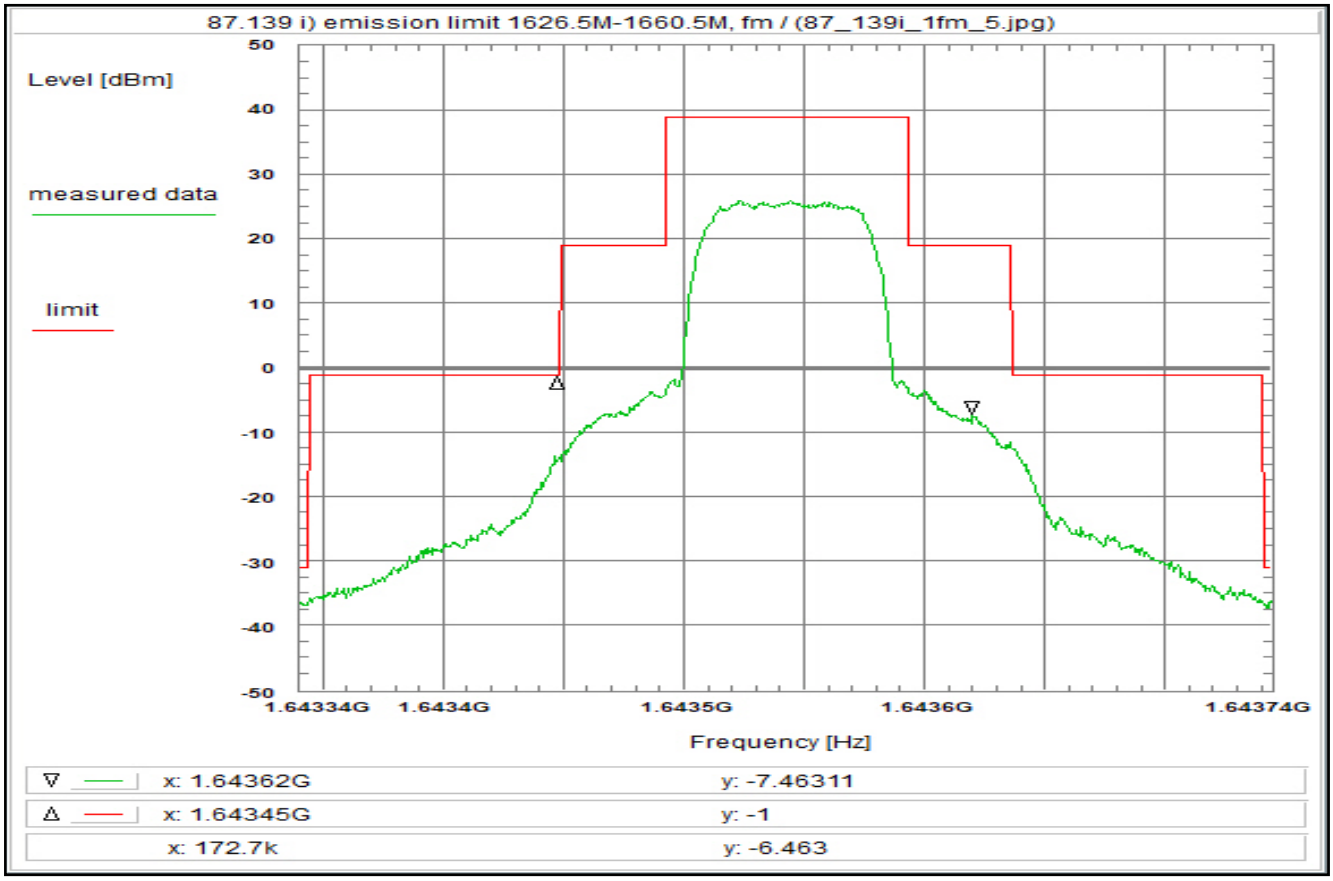
Start frequency:	1.6431414	GHz
Stop frequency:	1.6440486	GHz
Center frequency:	1.643595	GHz
Frequency span:	907.2	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	0	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation (U330)	+	31.9	dB
TOTAL CORRECTION:	+	34.0	dB

Remarks:
Carrier-on state / Carrier in the middle of the band (fm)
For EIRP calculation:
´worst-case´ = maximum antenna gain

Plot No. 86



Subclause: 87.139 i) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 87.139(i)(1)
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with 87.139(i)(1).

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

Operating condition of DUT:
Operating condition 1, see test report chapter 6.4
fm, R20T2XD

Test setup:
see test report chapter 8.2

Test equipment:
see test report chapter 8.1-8.2: C220, R001, U330

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Wed 28/Oct/2020 15:20:09	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	28	V DC

Setup of measurement equipment:

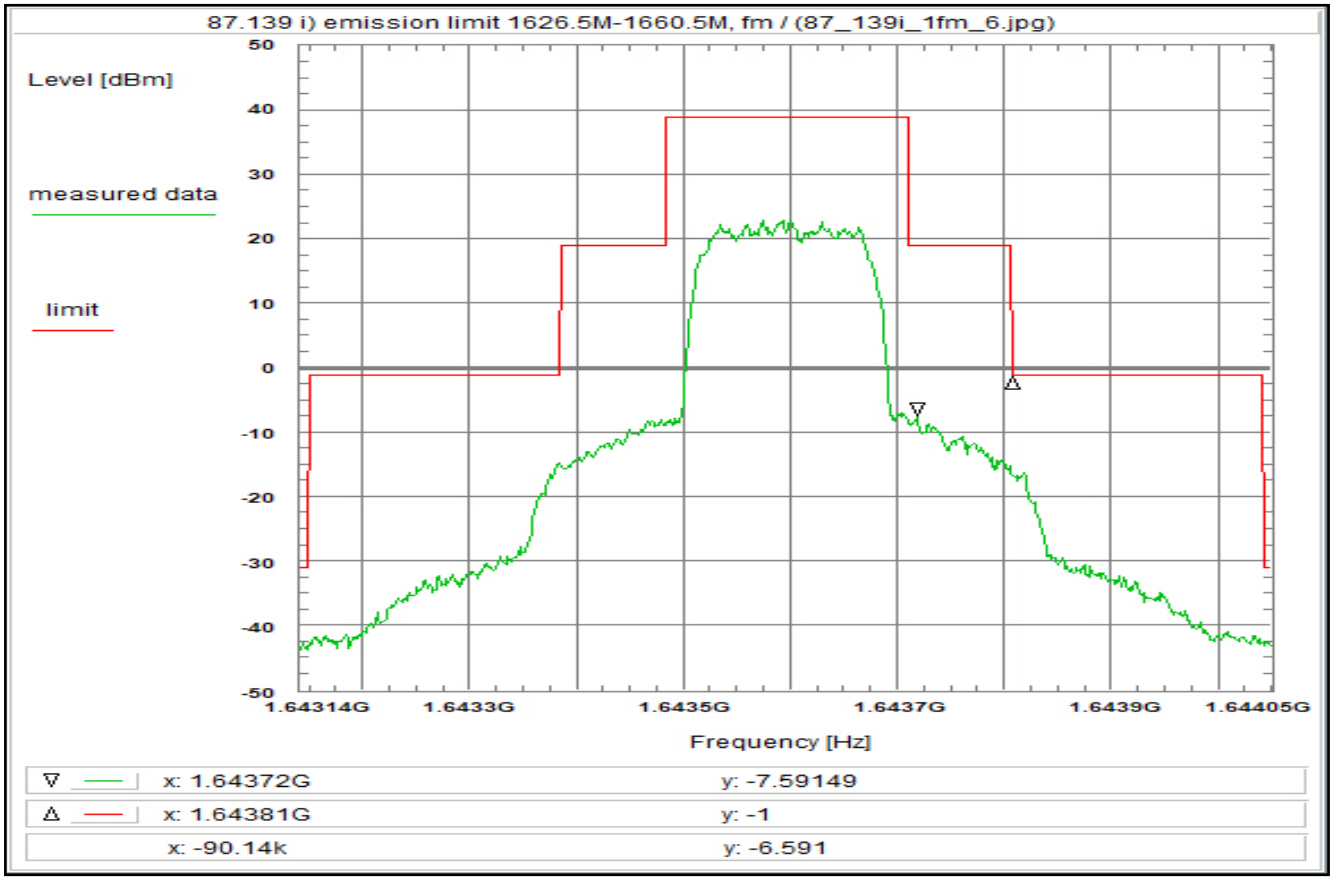
Start frequency:	1.6433404	GHz
Stop frequency:	1.6437436	GHz
Center frequency:	1.643542	GHz
Frequency span:	403.2	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	0	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation (U330)	+	31.9	dB
TOTAL CORRECTION:	+	34.0	dB

Remarks:
Carrier-on state / Carrier in the middle of the band (fm)
For EIRP calculation:
´worst-case´ = maximum antenna gain

Plot No. 87



Subclause: 87.139 i) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 87.139(i)(1)
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with 87.139(i)(1).

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

Operating condition of DUT:
Operating condition 1, see test report chapter 6.4
fm, R20T45XD

Test setup:
see test report chapter 8.2

Test equipment:
see test report chapter 8.1-8.2: C220, R001, U330

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Wed 28/Oct/2020 15:21:55	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	28	V DC

Setup of measurement equipment:

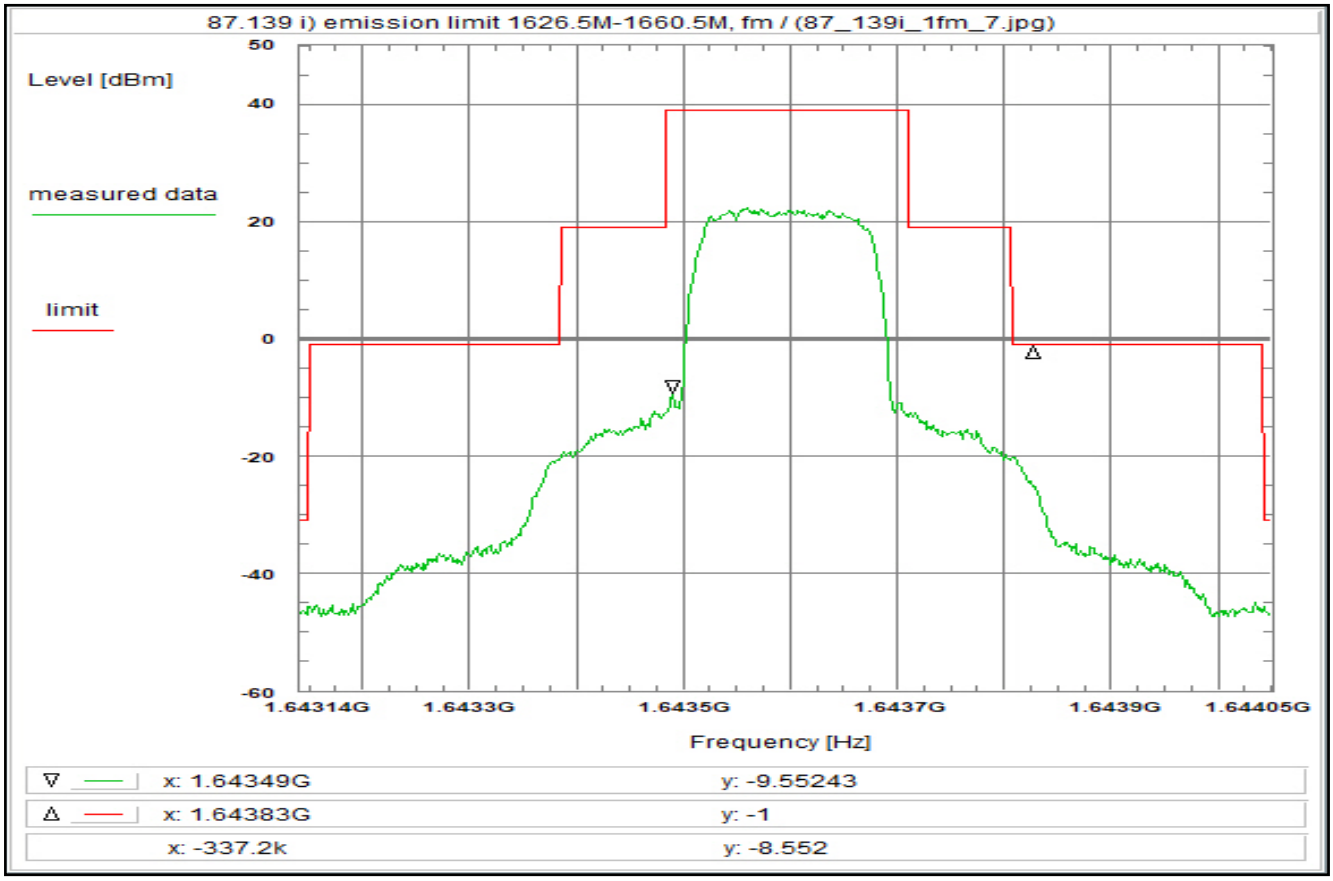
Start frequency:	1.6431414	GHz
Stop frequency:	1.6440486	GHz
Center frequency:	1.643595	GHz
Frequency span:	907.2	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	0	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation (U330)	+	31.9	dB
TOTAL CORRECTION:	+	34.0	dB

Remarks:
Carrier-on state / Carrier in the middle of the band (fm)
For EIRP calculation:
´worst-case´ = maximum antenna gain

Plot No. 88



Subclause: 87.139 i) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 87.139(i)(1)
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with 87.139(i)(1).

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

Operating condition of DUT:
Operating condition 1, see test report chapter 6.4
fm, R20T45QD

Test setup:
see test report chapter 8.2

Test equipment:
see test report chapter 8.1-8.2: C220, R001, U330

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Wed 28/Oct/2020 15:23:34	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	28	V DC

Setup of measurement equipment:

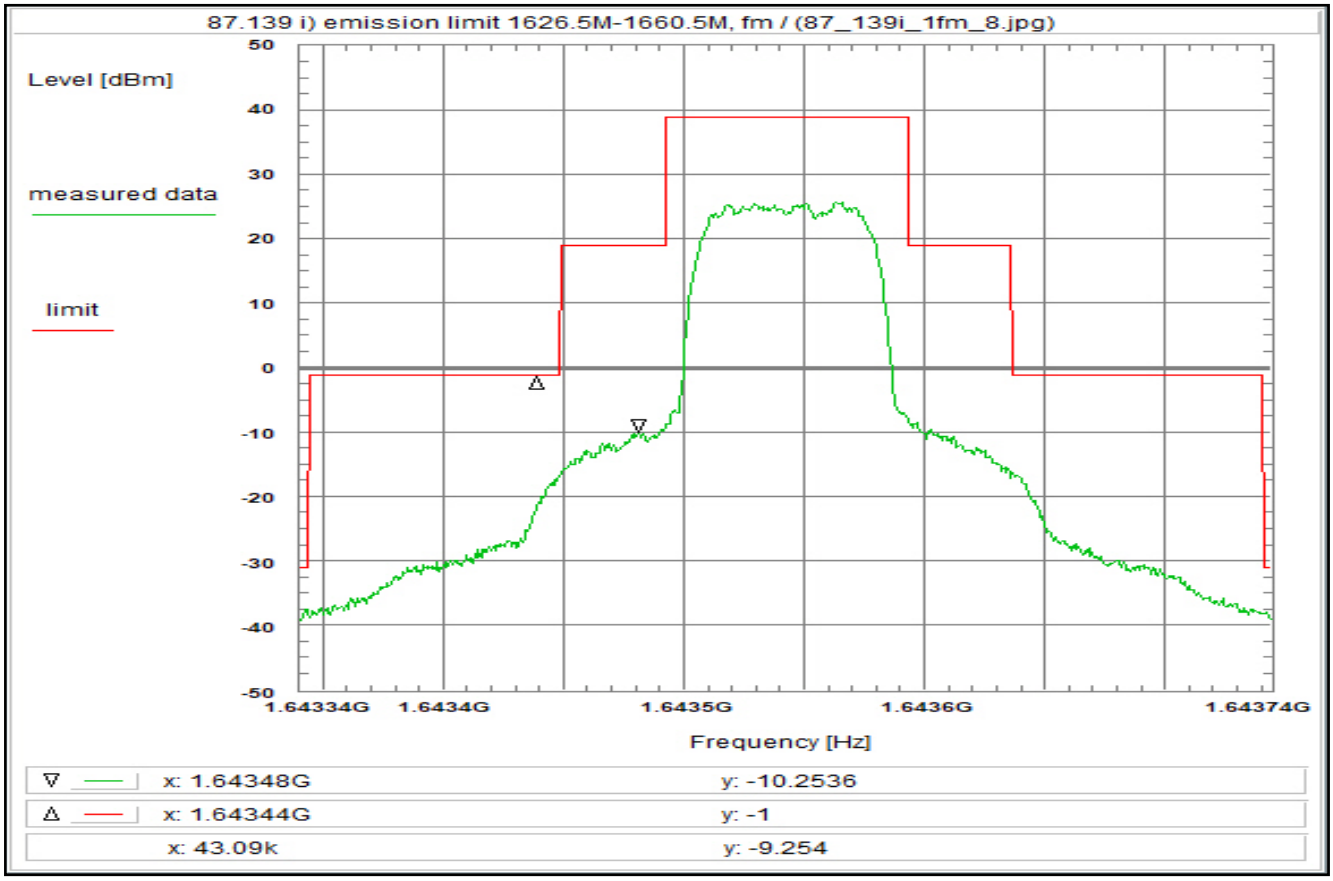
Start frequency:	1.6431414	GHz
Stop frequency:	1.6440486	GHz
Center frequency:	1.643595	GHz
Frequency span:	907.2	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	0	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation (U330)	+	31.9	dB
TOTAL CORRECTION:	+	34.0	dB

Remarks:
Carrier-on state / Carrier in the middle of the band (fm)
For EIRP calculation:
´worst-case´ = maximum antenna gain

Plot No. 89



Subclause: 87.139 i) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 87.139(i)(1)
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with 87.139(i)(1).

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

Operating condition of DUT:
Operating condition 1, see test report chapter 6.4
fm, R20T2QD

Test setup:
s see test report chapter 8.2

Test equipment:
see test report chapter 8.1-8.2: C220, R001, U330

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Wed 28/Oct/2020 15:25:30	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	28	V DC

Setup of measurement equipment:

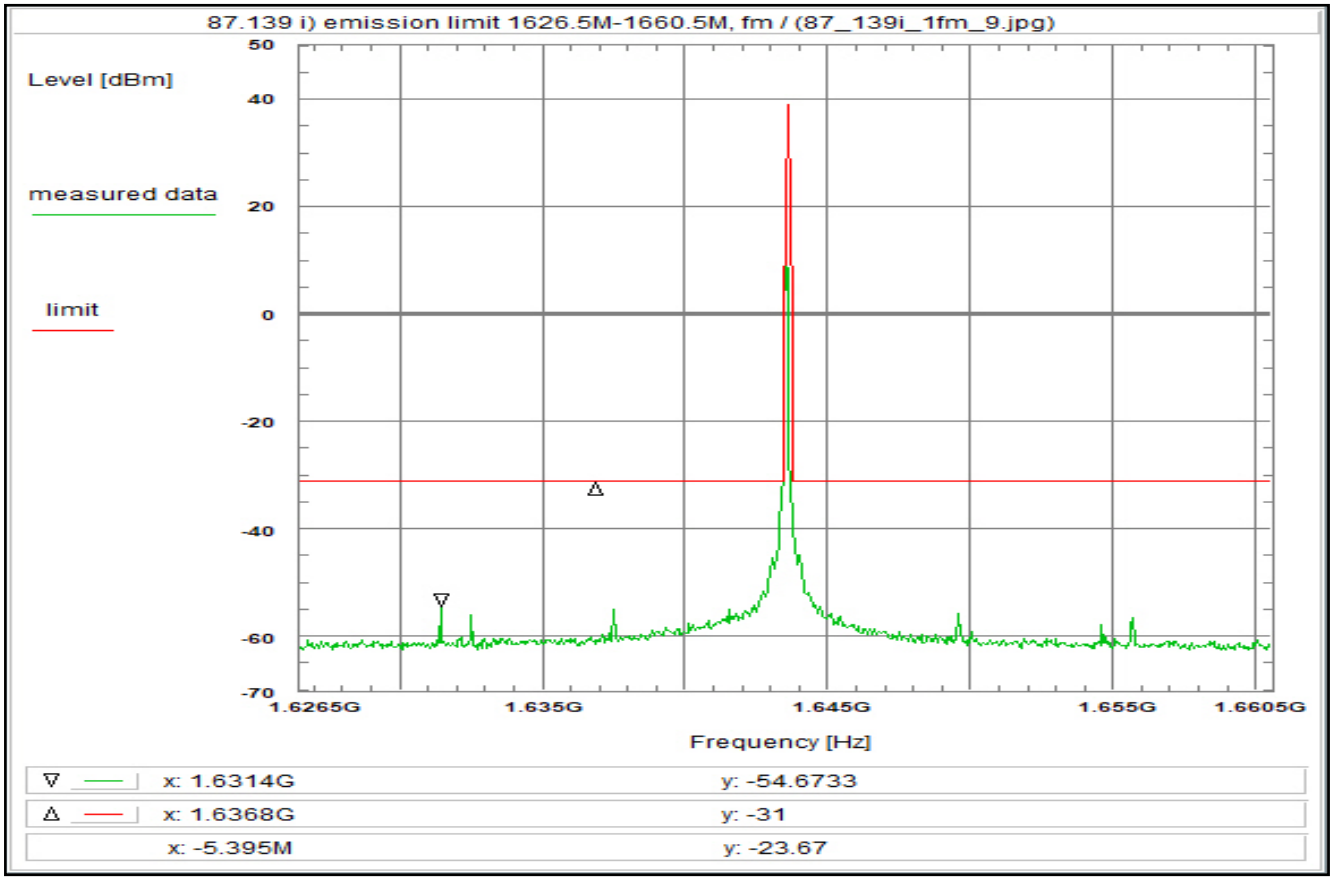
Start frequency:	1.6433404	GHz
Stop frequency:	1.6437436	GHz
Center frequency:	1.643542	GHz
Frequency span:	403.2	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	0	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation (U330)	+	31.9	dB
TOTAL CORRECTION:	+	34.0	dB

Remarks:
Carrier-on state / Carrier in the middle of the band (fm)
For EIRP calculation:
´worst-case´ = maximum antenna gain

Plot No. 90



Subclause: 87.139 i) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 87.139(i)(1)
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with 87.139(i)(1).

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

Operating condition of DUT:
Operating condition 1, see test report chapter 6.4
fm, R5T1XD

Test setup:
see test report chapter 8.2

Test equipment:
see test report chapter 8.1-8.2: C220, R001, U330

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Thu 05/Nov/2020 09:27:48	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	28	V DC

Setup of measurement equipment:

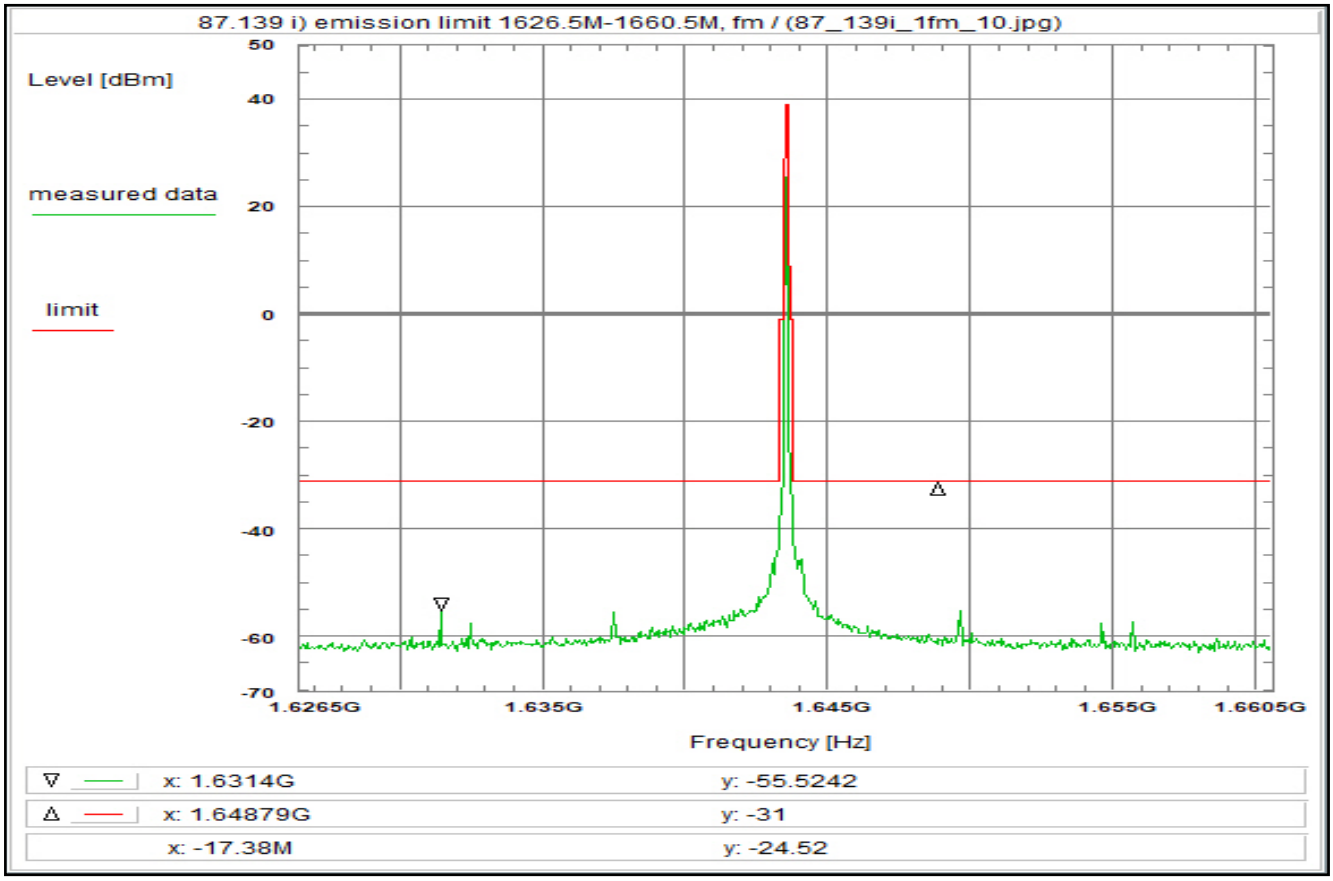
Start frequency:	1.6265	GHz
Stop frequency:	1.6605	GHz
Center frequency:	1.6435	GHz
Frequency span:	34	MHz
Resolution-BW:	3	kHz
Video-BW:	30	kHz
Input attenuation:	0	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	RMS	

Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U330)	+	31.9	dB
TOTAL CORRECTION:	+	34.0	dB

Remarks:
Carrier-on state / Carrier in the middle of the band (fm)
For EIRP calculation:
´worst-case´ = maximum antenna gain

Plot No. 91



Subclause: 87.139 i) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 87.139(i)(1)
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with 87.139(i)(1).

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

Operating condition of DUT:
Operating condition 1, see test report chapter 6.4
fm, R20T1XD

Test setup:
see test report chapter 8.2

Test equipment:
see test report chapter 8.1-8.2: C220, R001, U330

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Thu 05/Nov/2020 09:30:21	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	28	V DC

Setup of measurement equipment:

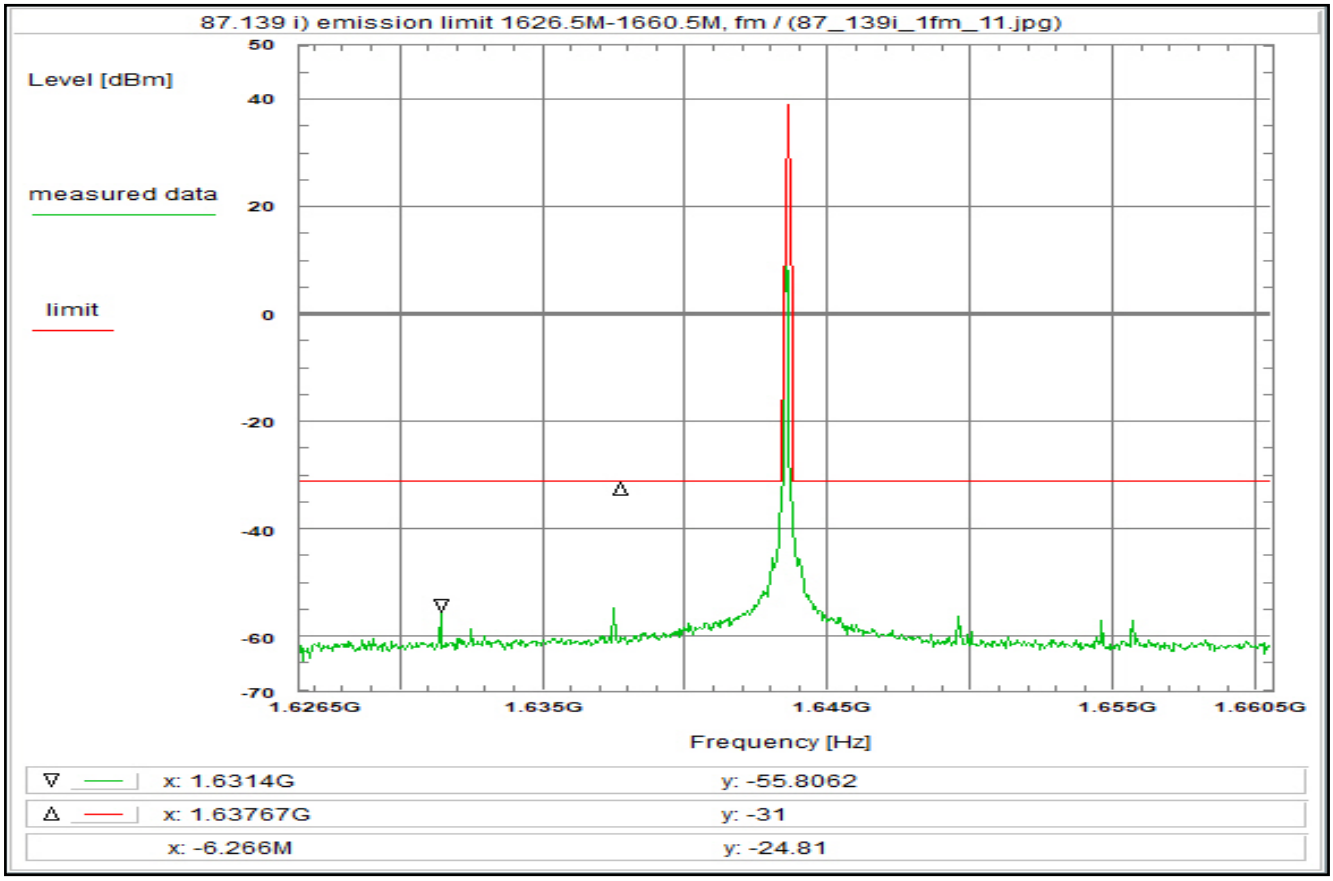
Start frequency:	1.6265	GHz
Stop frequency:	1.6605	GHz
Center frequency:	1.6435	GHz
Frequency span:	34	MHz
Resolution-BW:	3	kHz
Video-BW:	30	kHz
Input attenuation:	0	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	RMS	

Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U330)	+	31.9	dB
TOTAL CORRECTION:	+	34.0	dB

Remarks:
Carrier-on state / Carrier in the middle of the band (fm)
For EIRP calculation:
´worst-case´ = maximum antenna gain

Plot No. 92



Subclause: 87.139 i) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 87.139(i)(1)
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with 87.139(i)(1).

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

Operating condition of DUT:
Operating condition 1, see test report chapter 6.4
fm, R20T0.5QD

Test setup:
see test report chapter 8.2

Test equipment:
see test report chapter 8.1-8.2: C220, R001, U330

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Thu 05/Nov/2020 09:34:18	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	28	V DC

Setup of measurement equipment:

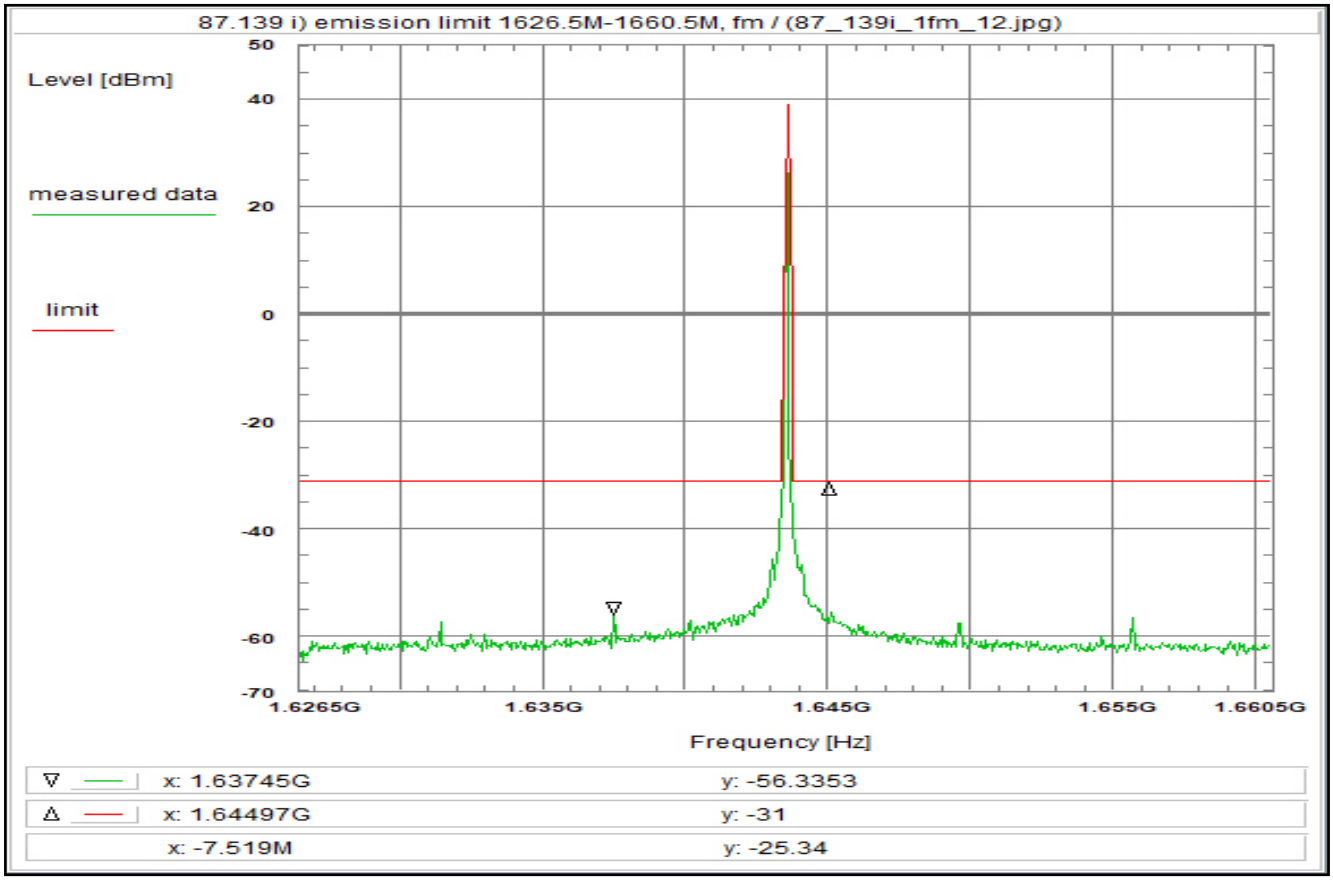
Start frequency:	1.6265	GHz
Stop frequency:	1.6605	GHz
Center frequency:	1.6435	GHz
Frequency span:	34	MHz
Resolution-BW:	3	kHz
Video-BW:	30	kHz
Input attenuation:	0	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	RMS	

Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U330)	+	31.9	dB
TOTAL CORRECTION:	+	34.0	dB

Remarks:
Carrier-on state / Carrier in the middle of the band (fm)
For EIRP calculation:
´worst-case´ = maximum antenna gain

Plot No. 93



Subclause: 87.139 i) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 87.139(i)(1)
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with 87.139(i)(1).

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

Operating condition of DUT:
Operating condition 1, see test report chapter 6.4
fm, R20T1QD

Test setup:
see test report chapter 8.2

Test equipment:
see test report chapter 8.1-8.2: C220, R001, U330

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Thu 05/Nov/2020 09:36:03	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	28	V DC

Setup of measurement equipment:

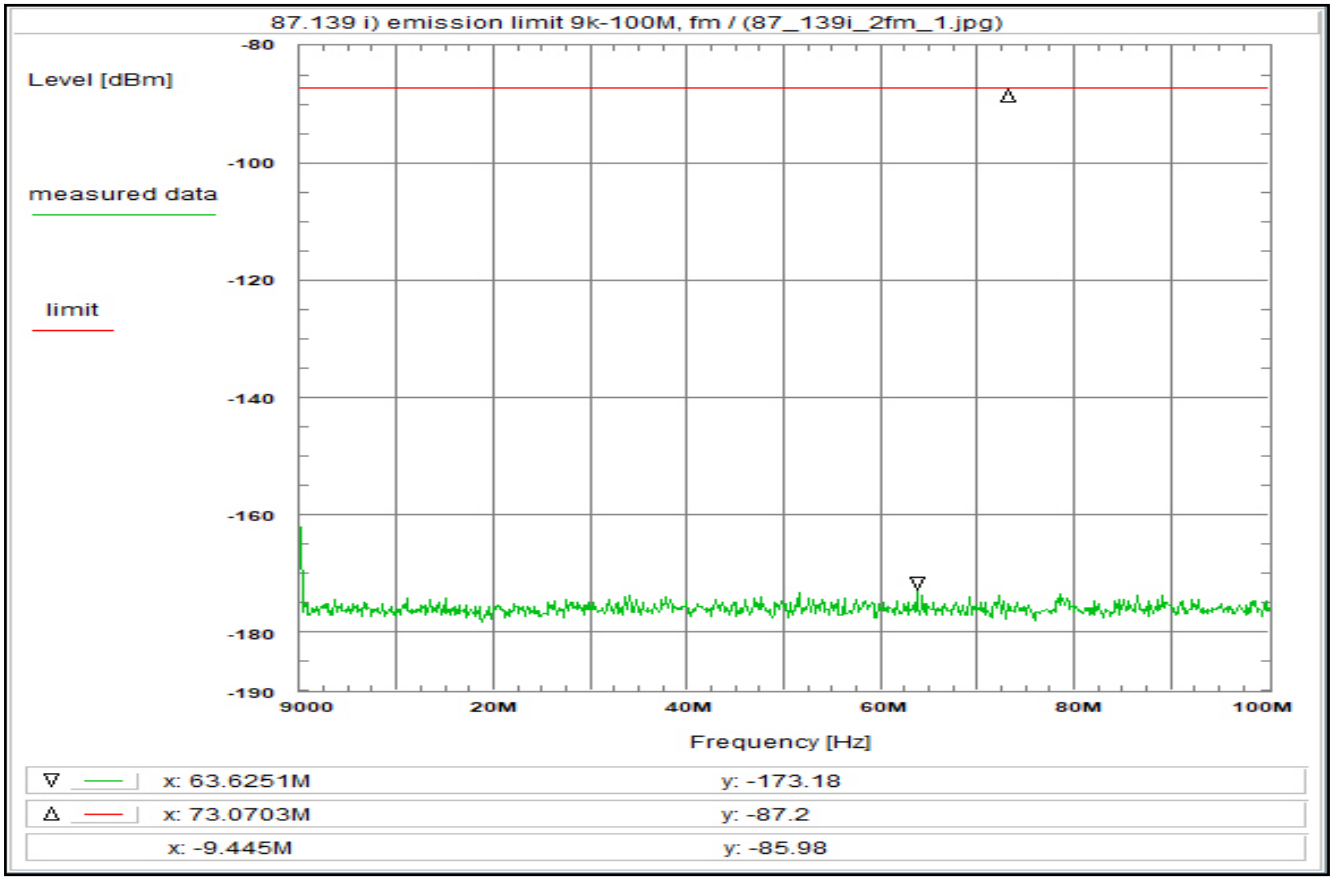
Start frequency:	1.6265	GHz
Stop frequency:	1.6605	GHz
Center frequency:	1.6435	GHz
Frequency span:	34	MHz
Resolution-BW:	3	kHz
Video-BW:	30	kHz
Input attenuation:	0	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	RMS	

Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U330)	+	31.9	dB
TOTAL CORRECTION:	+	34.0	dB

Remarks:
Carrier-on state / Carrier in the middle of the band (fm)
For EIRP calculation:
´worst-case´ = maximum antenna gain

Plot No. 94



Subclause: 87.139 i) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 87.139(i)(1)
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with 87.139(i)(1).

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

Operating condition of DUT:
Operating condition 1, see test report chapter 6.4
fm, valid for all modulations

Test setup:
see test report chapter 8.2

Test equipment:
see test report chapter 8.1-8.2: C220, R001, U331, W_RE

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Thu 29/Oct/2020 14:22:09	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	28	V DC

Setup of measurement equipment:

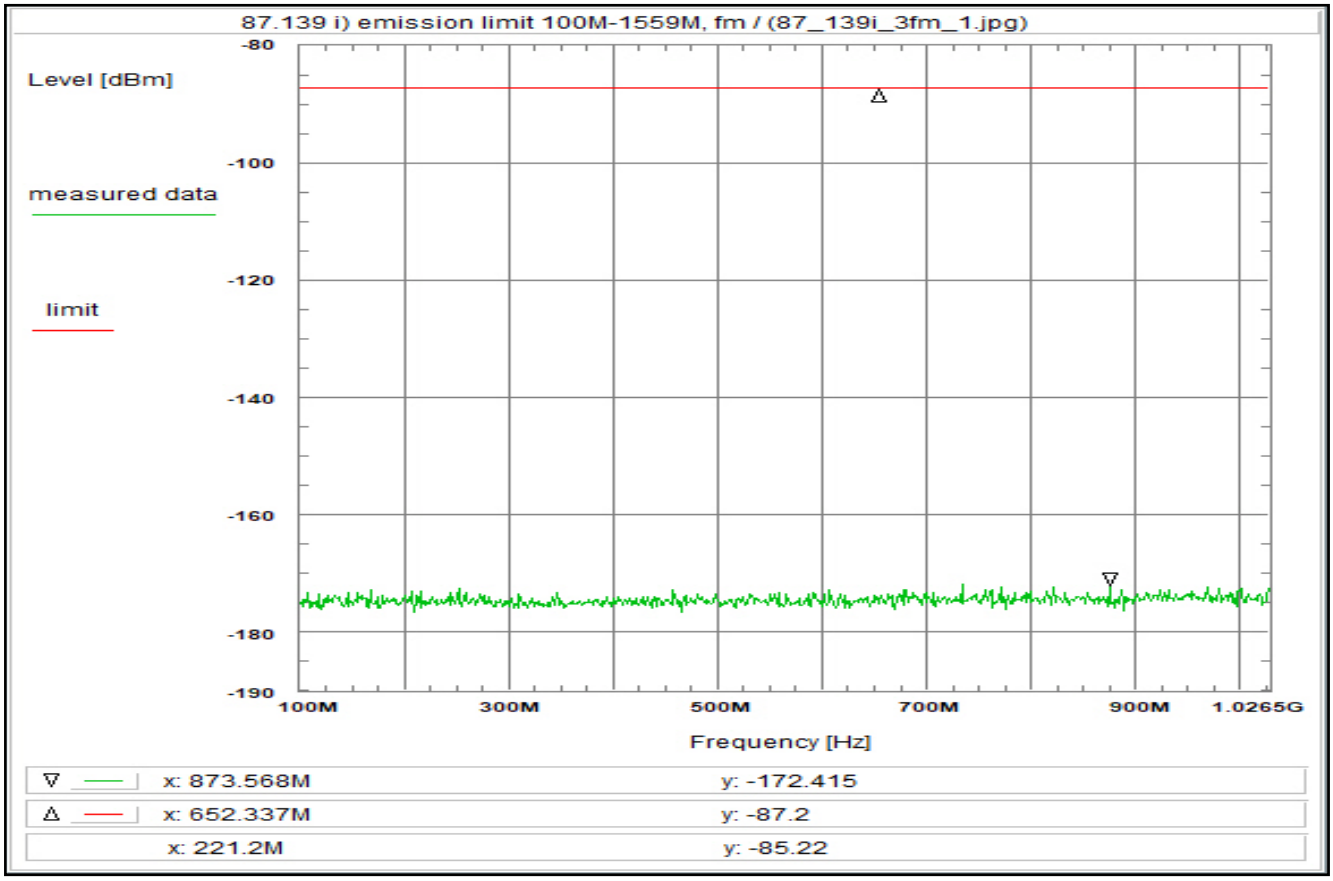
Start frequency:	9	kHz
Stop frequency:	100	MHz
Center frequency:	50.0045	MHz
Frequency span:	99.991	MHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	0	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	Pos Peak	

Correction:

W_RE	120.0	dB	
Coaxial cable (C220)	+	0.2	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U331)	+	31.4	dB
TOTAL CORRECTION:	-	-87.2	dB

Remarks:
Carrier-on state / Carrier in the middle of the band (fm)
For EIRP calculation:
´worst-case´ = maximum antenna gain

Plot No. 95



Subclause: 87.139 i) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 87.139(i)(1)
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with 87.139(i)(1).

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

Operating condition of DUT:
Operating condition 1, see test report chapter 6.4
fm, valid for all modulations

Test setup:
see test report chapter 8.2

Test equipment:
see test report chapter 8.1-8.2: C220, R001, U331, W_RE

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Thu 29/Oct/2020 14:25:05	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	28	V DC

Setup of measurement equipment:

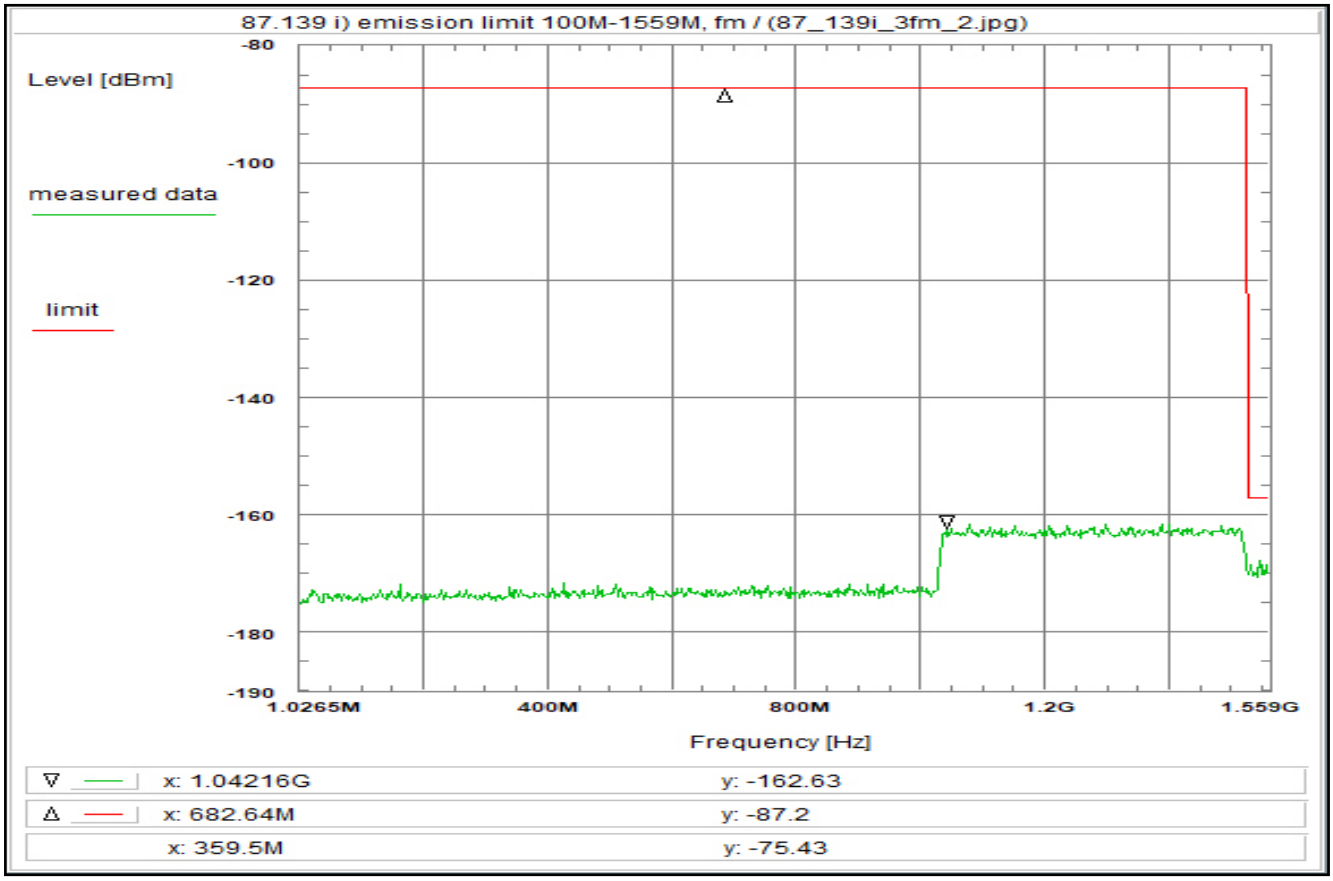
Start frequency:	100	MHz
Stop frequency:	1.0265	GHz
Center frequency:	563.25	MHz
Frequency span:	926.5	MHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	0	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	Pos Peak	

Correction:

W_RE	120.0	dB	
Coaxial cable (C220)	+	0.5	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U331)	+	31.7	dB
TOTAL CORRECTION:	-	-86.6	dB

Remarks:
Carrier-on state / Carrier in the middle of the band (fm)
For EIRP calculation:
´worst-case´ = maximum antenna gain

Plot No. 96



Subclause: 87.139 i) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 87.139(i)(1)
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with 87.139(i)(1).

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

Operating condition of DUT:
Operating condition 1, see test report chapter 6.4
fm, valid for all modulations

Test setup:
see test report chapter 8.2

Test equipment:
see test report chapter 8.1-8.2: C220, R001, U331, W_RE

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Thu 29/Oct/2020 15:03:15	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	28	V DC

Setup of measurement equipment:

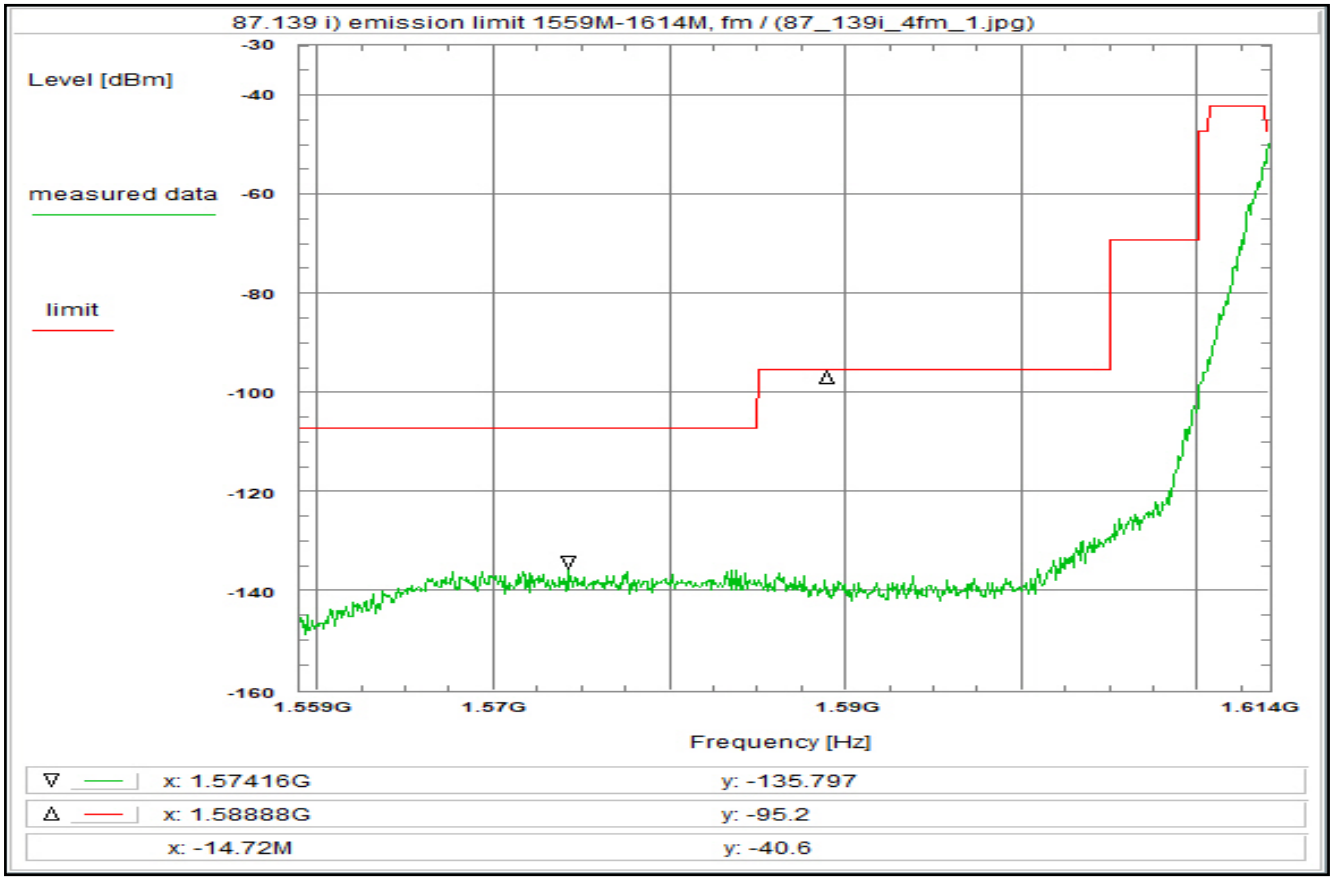
Start frequency:	1.0265	MHz
Stop frequency:	1.559	GHz
Center frequency:	780.01325	MHz
Frequency span:	1.5579735	GHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	0	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	Pos Peak	

Correction:

W_RE	115.7	dB	
Coaxial cable (C220)	+	0.6	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U331)	+	31.8	dB
TOTAL CORRECTION:	-	-82.1	dB

Remarks:
Carrier-on state / Carrier in the middle of the band (fm)
For EIRP calculation:
´worst-case´ = maximum antenna gain

Plot No. 97



Subclause: 87.139 i) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 87.139(i)(1)
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with 87.139(i)(1).

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

Operating condition of DUT:
Operating condition 1, see test report chapter 6.4
fm, valid for all modulations

Test setup:
see test report chapter 8.2

Test equipment:
see test report chapter 8.1-8.2: C220, R001, U331, W_RE

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Thu 29/Oct/2020 15:04:02	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	28	V DC

Setup of measurement equipment:

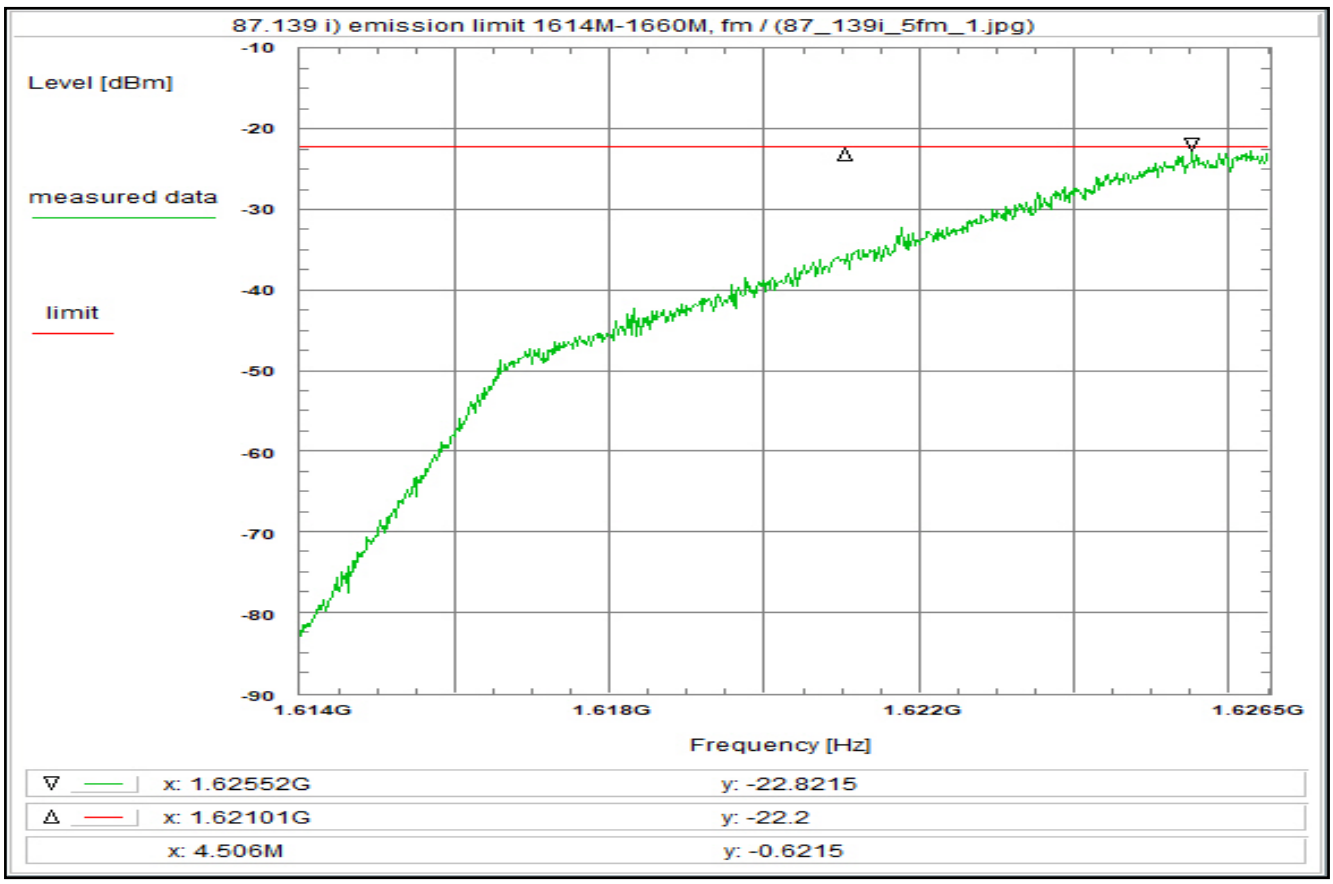
Start frequency:	1.559	GHz
Stop frequency:	1.614	GHz
Center frequency:	1.5865	GHz
Frequency span:	55	MHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	0	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	Pos Peak	

Correction:

W_RE	104.1	dB	
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 1M)	+	25.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U331)	+	32.6	dB
TOTAL CORRECTION:	-	-45.4	dB

Remarks:
Carrier-on state / Carrier in the middle of the band (fm)
For EIRP calculation:
´worst-case´ = maximum antenna gain

Plot No. 98



Subclause: 87.139 i) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 87.139(i)(1)
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with 87.139(i)(1).

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

Operating condition of DUT:
Operating condition 1, see test report chapter 6.4
fm, valid for all modulations

Test setup:
see test report chapter 8.2

Test equipment:
see test report chapter 8.1-8.2: C220, R001, U331, W_RE

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Thu 29/Oct/2020 15:06:05	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	28	V DC

Setup of measurement equipment:

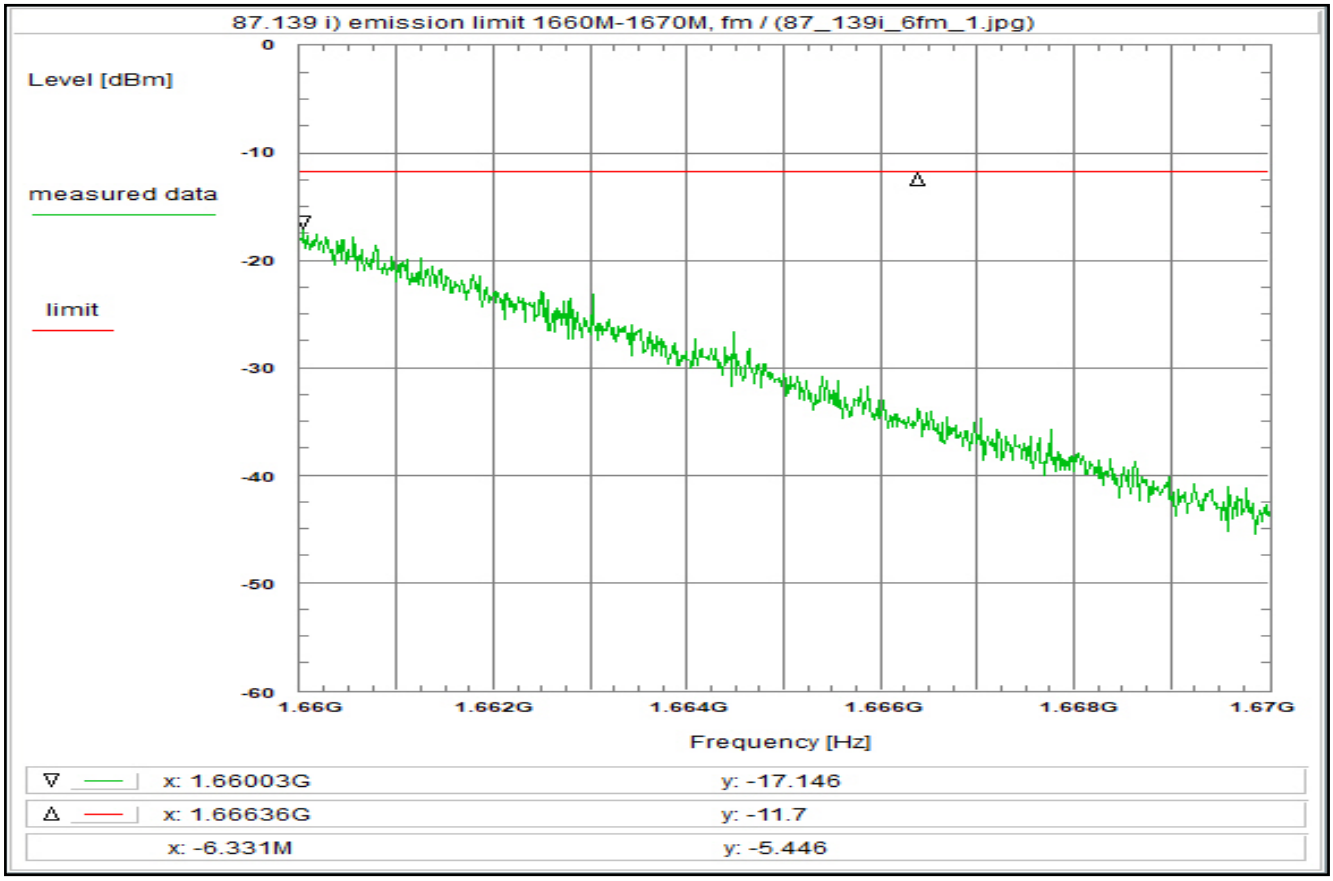
Start frequency:	1.614	GHz
Stop frequency:	1.6265	GHz
Center frequency:	1.62025	GHz
Frequency span:	12.5	MHz
Resolution-BW:	3	kHz
Video-BW:	1	kHz
Input attenuation:	0	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

W_RE	47.8	dB	
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U331)	+	56.6	dB
TOTAL CORRECTION:	+	10.9	dB

Remarks:
Carrier-on state / Carrier in the middle of the band (fm)
For EIRP calculation:
´worst-case´ = maximum antenna gain

Plot No. 99



Subclause: 87.139 i) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 87.139(i)(1)
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with 87.139(i)(1).

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

Operating condition of DUT:
Operating condition 1, see test report chapter 6.4
fm, valid for all modulations

Test setup:
see test report chapter 8.2

Test equipment:
see test report chapter 8.1-8.2: C220, R001, U331, W_RE

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Thu 29/Oct/2020 15:06:50	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	28	V DC

Setup of measurement equipment:

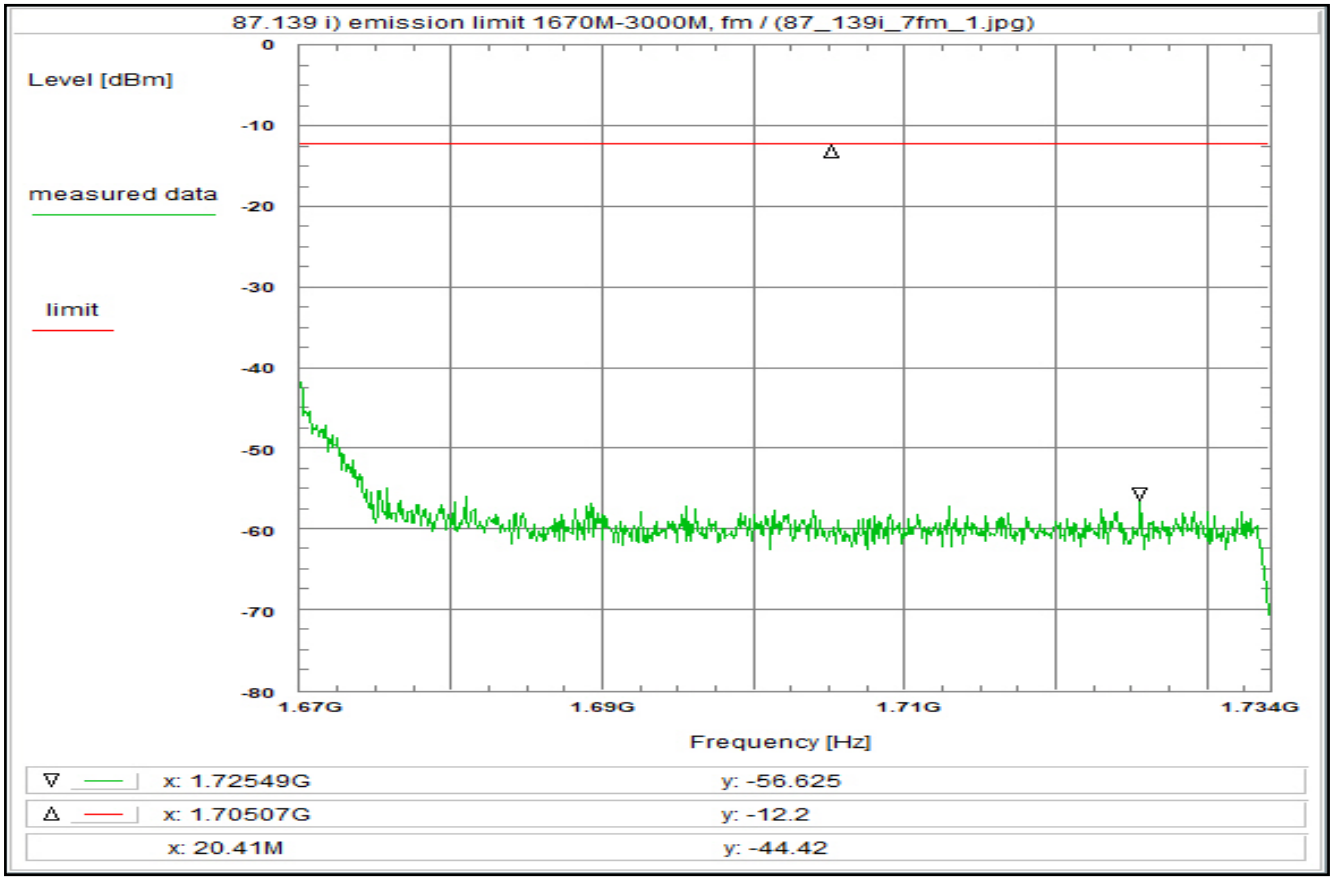
Start frequency:	1.66	GHz
Stop frequency:	1.67	GHz
Center frequency:	1.665	GHz
Frequency span:	10	MHz
Resolution-BW:	3	kHz
Video-BW:	30	kHz
Input attenuation:	0	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

W_RE		4.5	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 20k)	+	8.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U331)	+	72.8	dB
TOTAL CORRECTION:	+	77.4	dB

Remarks:
Carrier-on state / Carrier in the middle of the band (fm)
For EIRP calculation:
´worst-case´ = maximum antenna gain

Plot No. 100



Subclause: 87.139 i) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 87.139(i)(1)
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with 87.139(i)(1).

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

Operating condition of DUT:
Operating condition 1, see test report chapter 6.4
fm, valid for all modulations

Test setup:
see test report chapter 8.2

Test equipment:
see test report chapter 8.1-8.2: C220, R001, U331, W_RE

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Thu 29/Oct/2020 15:08:14	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	28	V DC

Setup of measurement equipment:

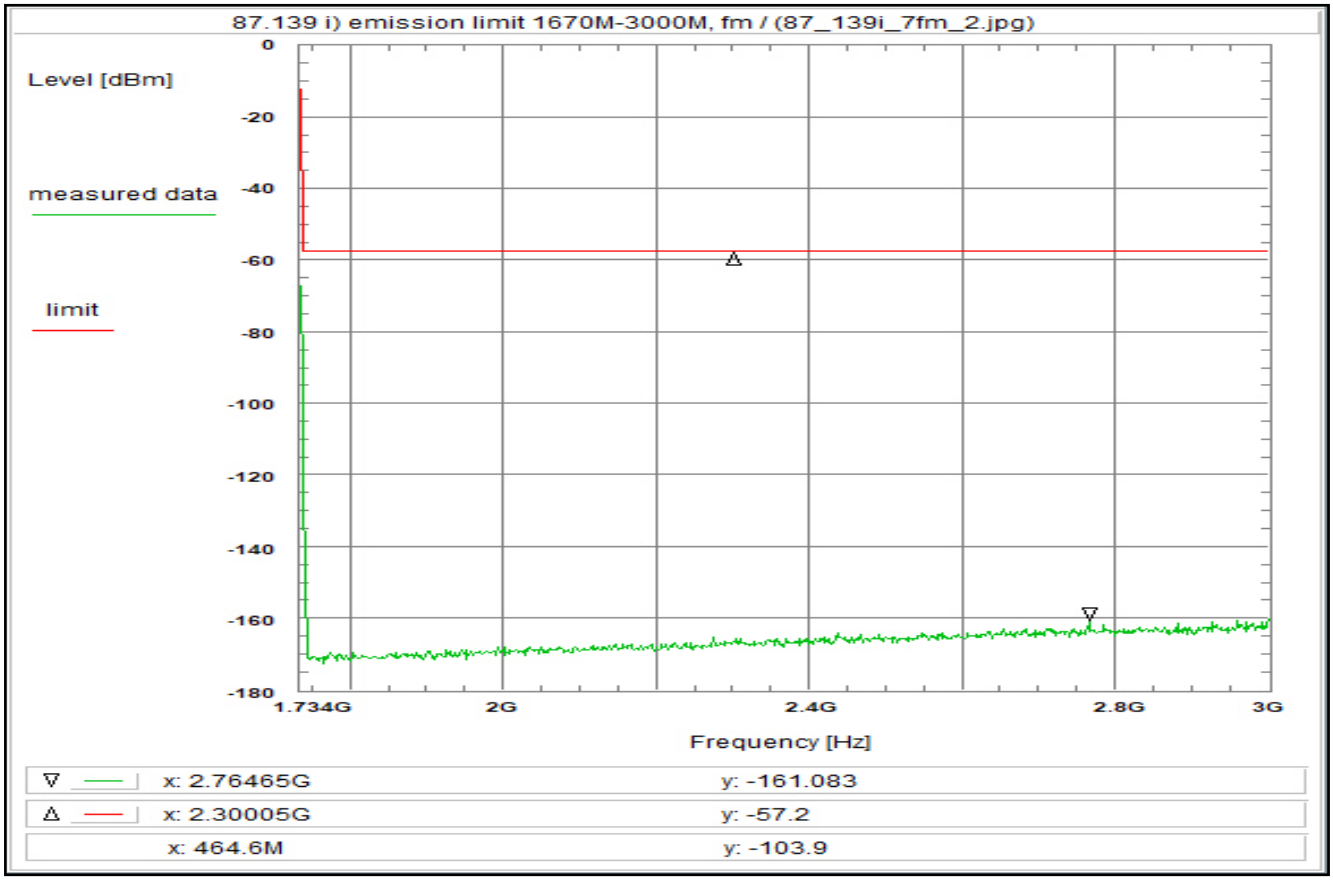
Start frequency:	1.67	GHz
Stop frequency:	1.734	GHz
Center frequency:	1.702	GHz
Frequency span:	64	MHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	0	dB
Trace-Mode:	Clear Write	
Detector-Mode:	Pos Peak	

Correction:

W_RE	4.5	dB	
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U331)	+	35.5	dB
TOTAL CORRECTION:	+	33.1	dB

Remarks:
Carrier-on state / Carrier in the middle of the band (fm)
For EIRP calculation:
´worst-case´ = maximum antenna gain

Plot No. 101



Subclause: 87.139 i) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 87.139(i)(1)
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with 87.139(i)(1).

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

Operating condition of DUT:
Operating condition 1, see test report chapter 6.4
fm, valid for all modulations

Test setup:
see test report chapter 8.2

Test equipment:
see test report chapter 8.1-8.2: C220, R001, U331, W_RE

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Thu 29/Oct/2020 15:13:41	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	28	V DC

Setup of measurement equipment:

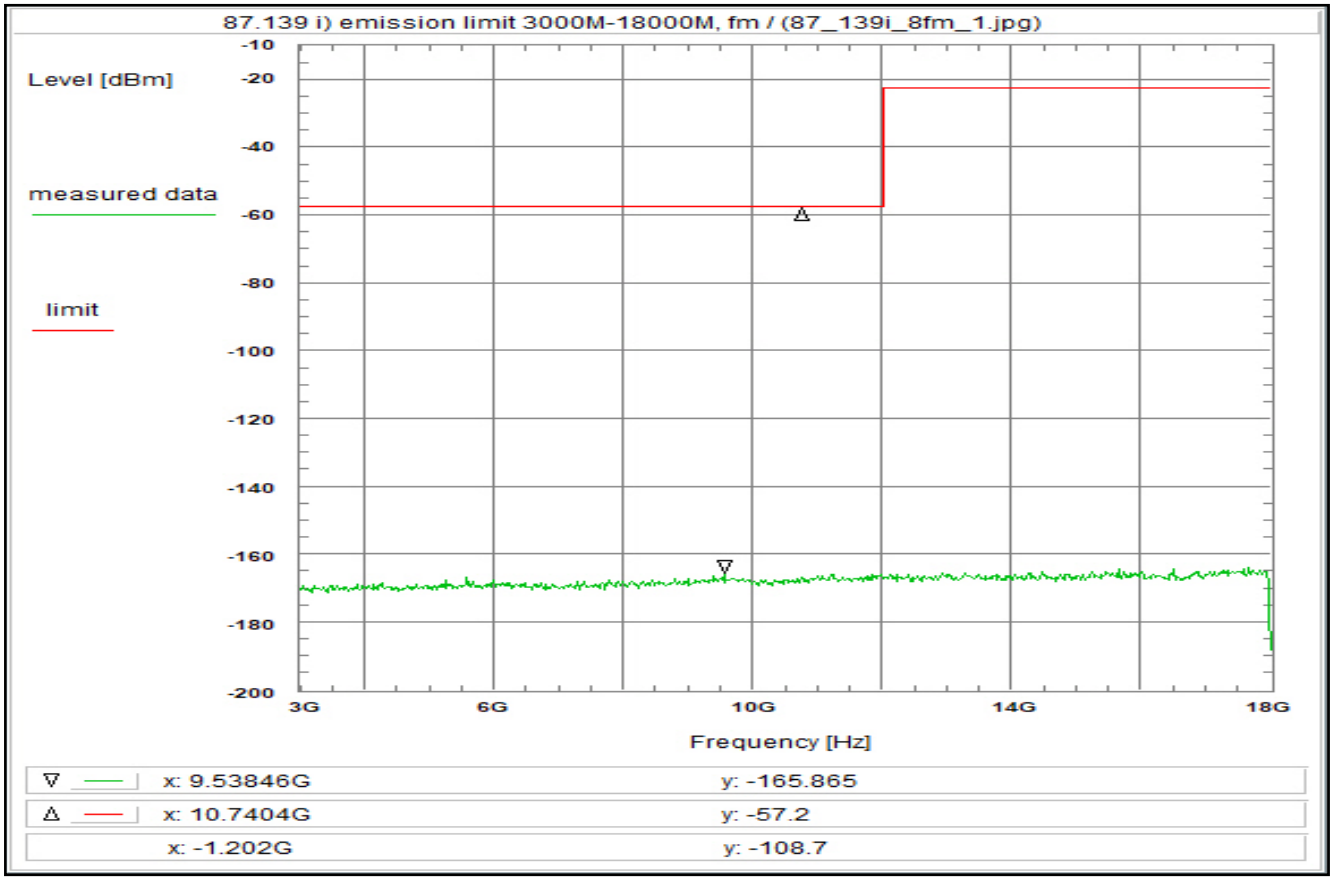
Start frequency:	1.734	GHz
Stop frequency:	3	GHz
Center frequency:	2.367	GHz
Frequency span:	1.266	GHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	0	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	Pos Peak	

Correction:

W_RE	42.3	dB	
Coaxial cable (C220)	+	1.1	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U331)	+	32.3	dB
TOTAL CORRECTION:	-	-7.7	dB

Remarks:
Carrier-on state / Carrier in the middle of the band (fm)
For EIRP calculation:
´worst-case´ = maximum antenna gain

Plot No. 102



Subclause: 87.139 i) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 87.139(i)(1)
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with 87.139(i)(1).

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

Operating condition of DUT:
Operating condition 1, see test report chapter 6.4
fm, valid for all modulations

Test setup:
see test report chapter 8.2

Test equipment:
see test report chapter 8.1-8.2: C220, R001, U332, W_RE

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Thu 29/Oct/2020 16:16:20	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	28	V DC

Setup of measurement equipment:

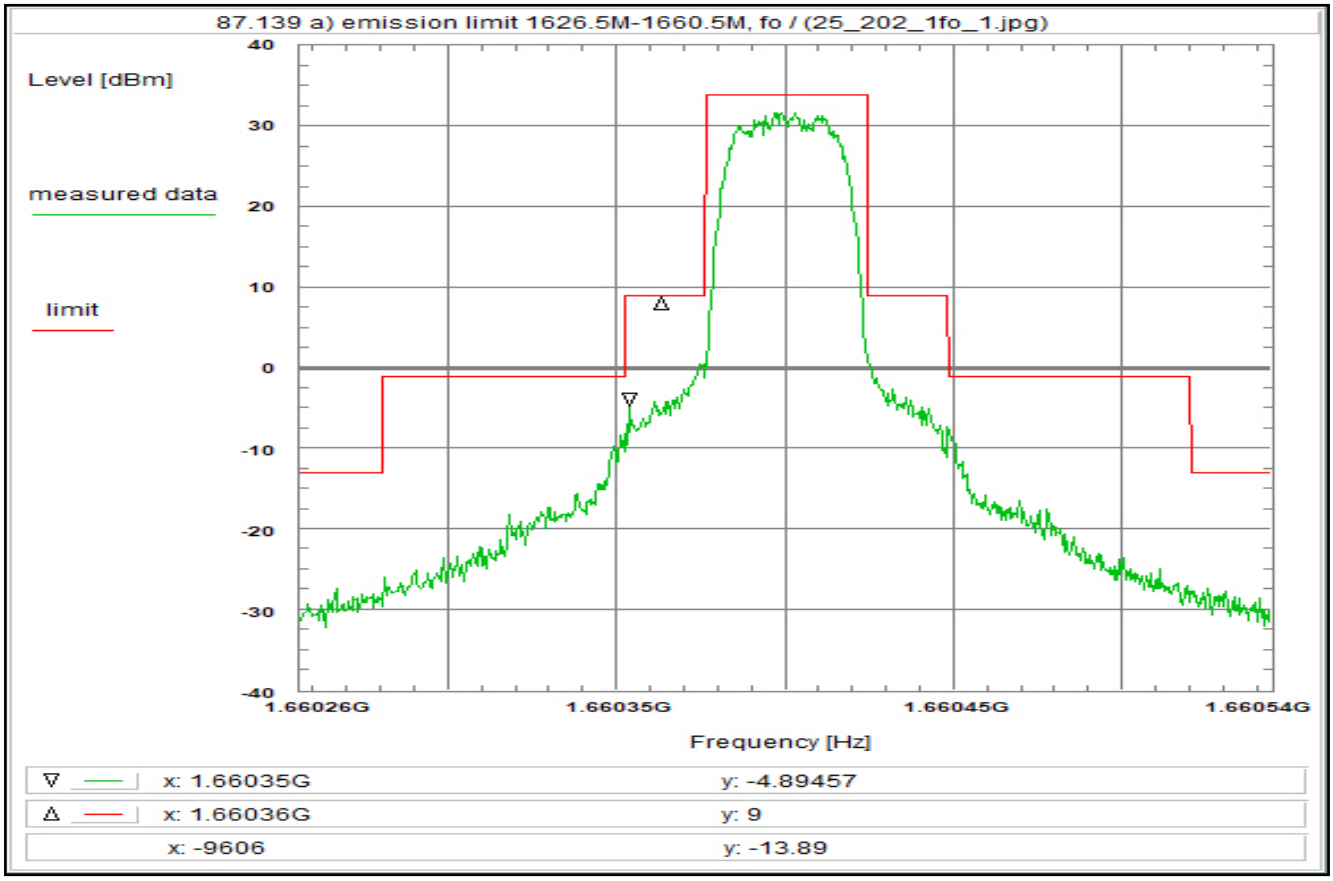
Start frequency:	3	GHz
Stop frequency:	18	GHz
Center frequency:	10.5	GHz
Frequency span:	15	GHz
Resolution-BW:	10	kHz
Video-BW:	30	kHz
Input attenuation:	0	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	Pos Peak	

Correction:

W_RE	118.0	dB	
Coaxial cable (C220)	+	2.3	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
(U332)	+	34.0	dB
TOTAL CORRECTION:	-	-85.7	dB

Remarks:
Carrier-on state / Carrier in the middle of the band (fm)
For EIRP calculation:
´worst-case´ = maximum antenna gain

Plot No. 103



Subclause: 87.139 a) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fh)

Limit:
Limit according to 87.139 a):
50-100% of assigned bw: -25dBc/4kHz
100-250% of assigned bw: -35dBc/4kHz
> 250% of assigned bw: -43+10log(Pmax)dBc/4kHz = -43 dBW
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with the above schedule.

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

Operating condition of DUT:
Operating condition 1, see test report chapter 6.4
fh, R20T1XD

Test setup:
see test report chapter 8.2

Test equipment:
see test report chapter 8.1-8.2: C220, R001, U330

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Tue 27/Oct/2020 15:43:46	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	28	V DC

Setup of measurement equipment:

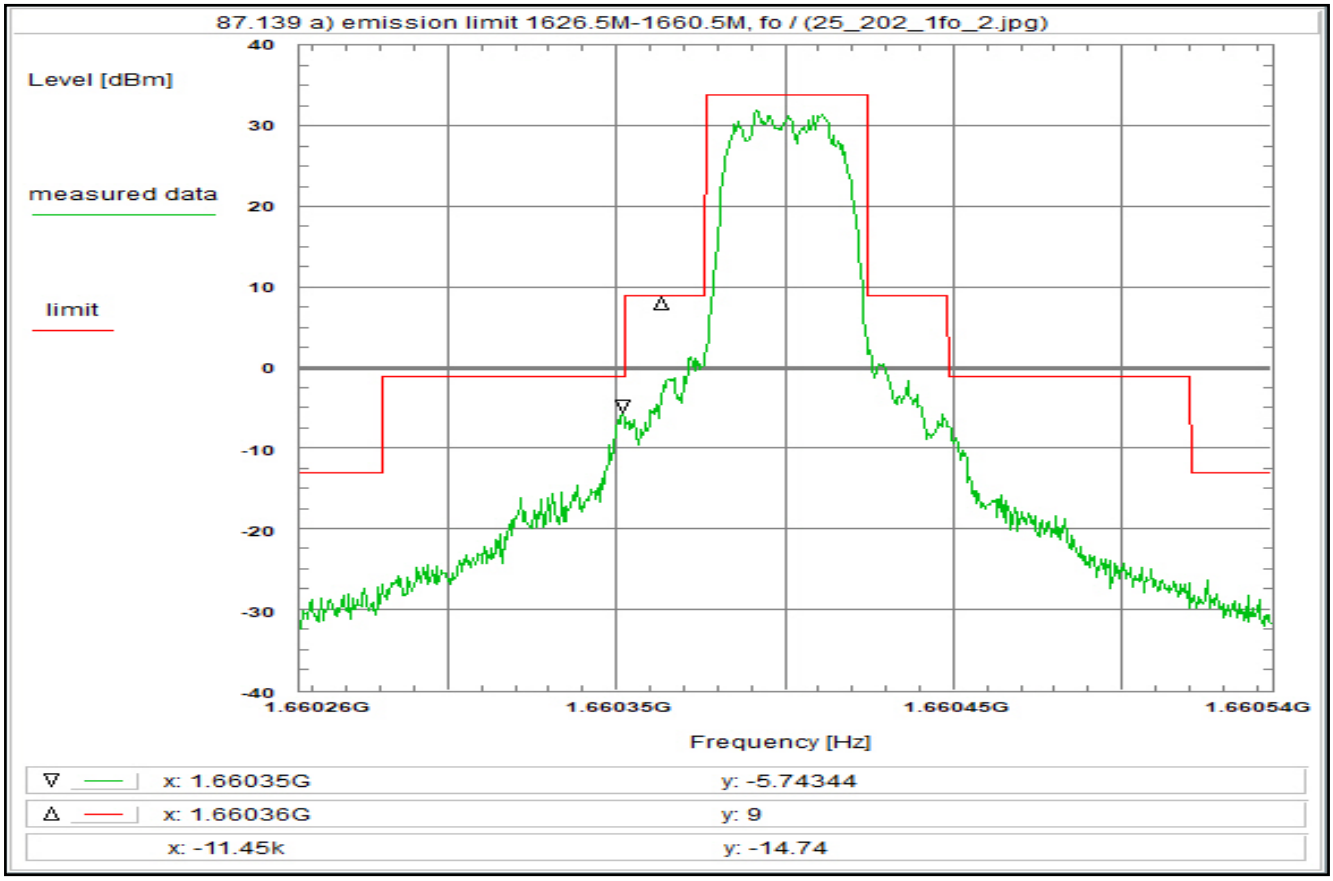
Start frequency:	1.660256	GHz
Stop frequency:	1.660544	GHz
Center frequency:	1.6604	GHz
Frequency span:	288	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	20	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U330)	+	31.9	dB
TOTAL CORRECTION:	+	34.0	dB

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

Plot No. 104



Subclause: 87.139 a) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fh)

Limit:
Limit according to 87.139 a):
50-100% of assigned bw: -25dBc/4kHz
100-250% of assigned bw: -35dBc/4kHz
> 250% of assigned bw: -43+10log(Pmax)dBc/4kHz = -43 dBW
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with the above schedule.

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

Operating condition of DUT:
Operating condition 1, see test report chapter 6.4
fh, R5T1XD

Test setup:
see test report chapter 8.2

Test equipment:
see test report chapter 8.1-8.2: C220, R001, U330

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Tue 27/Oct/2020 15:45:43	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	28	V DC

Setup of measurement equipment:

Start frequency:	1.660256	GHz
Stop frequency:	1.660544	GHz
Center frequency:	1.6604	GHz
Frequency span:	288	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	20	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn (U330)	-	0.0	dB
	+	31.9	dB
TOTAL CORRECTION:	+	34.0	dB

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