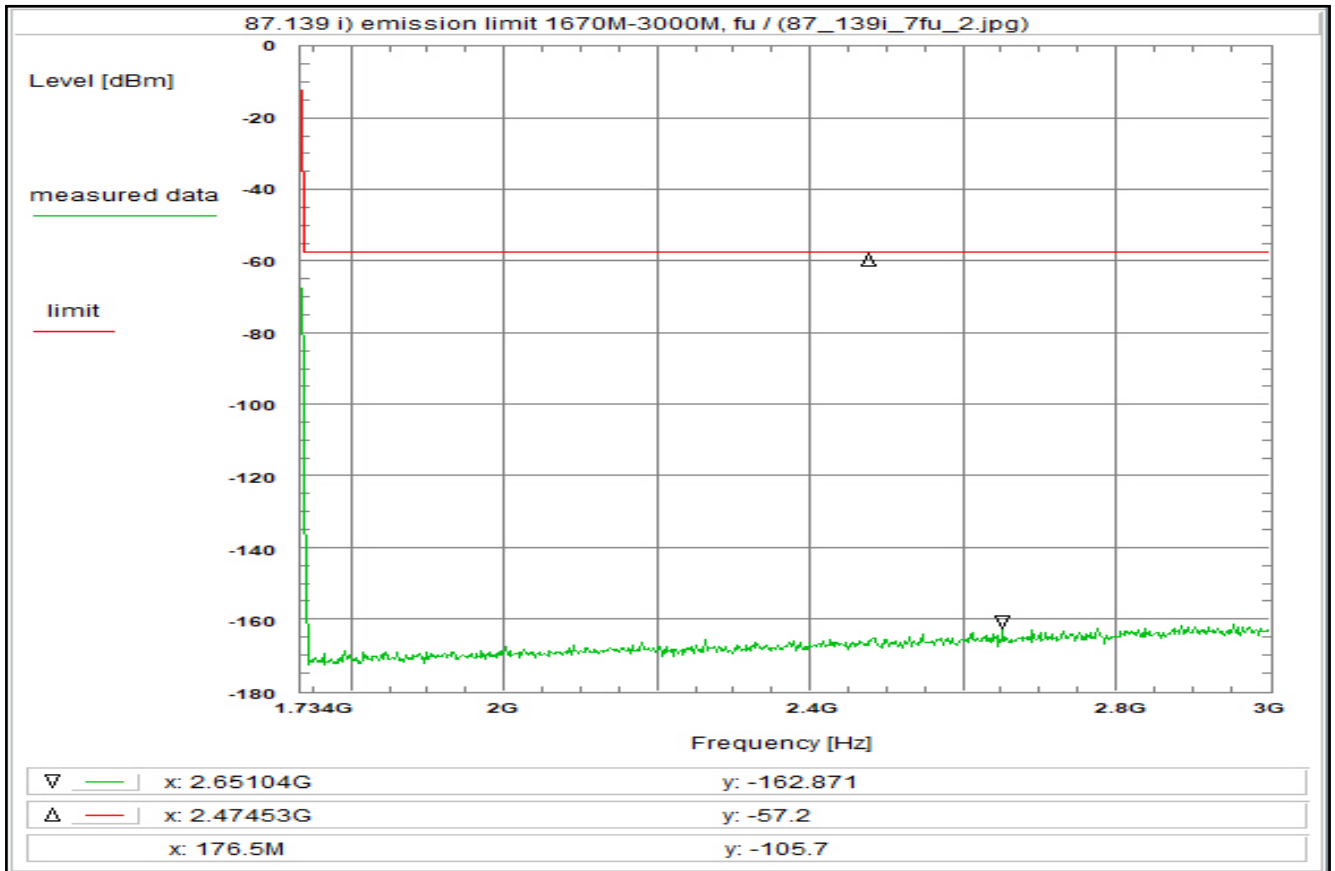


Plot No. 68



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

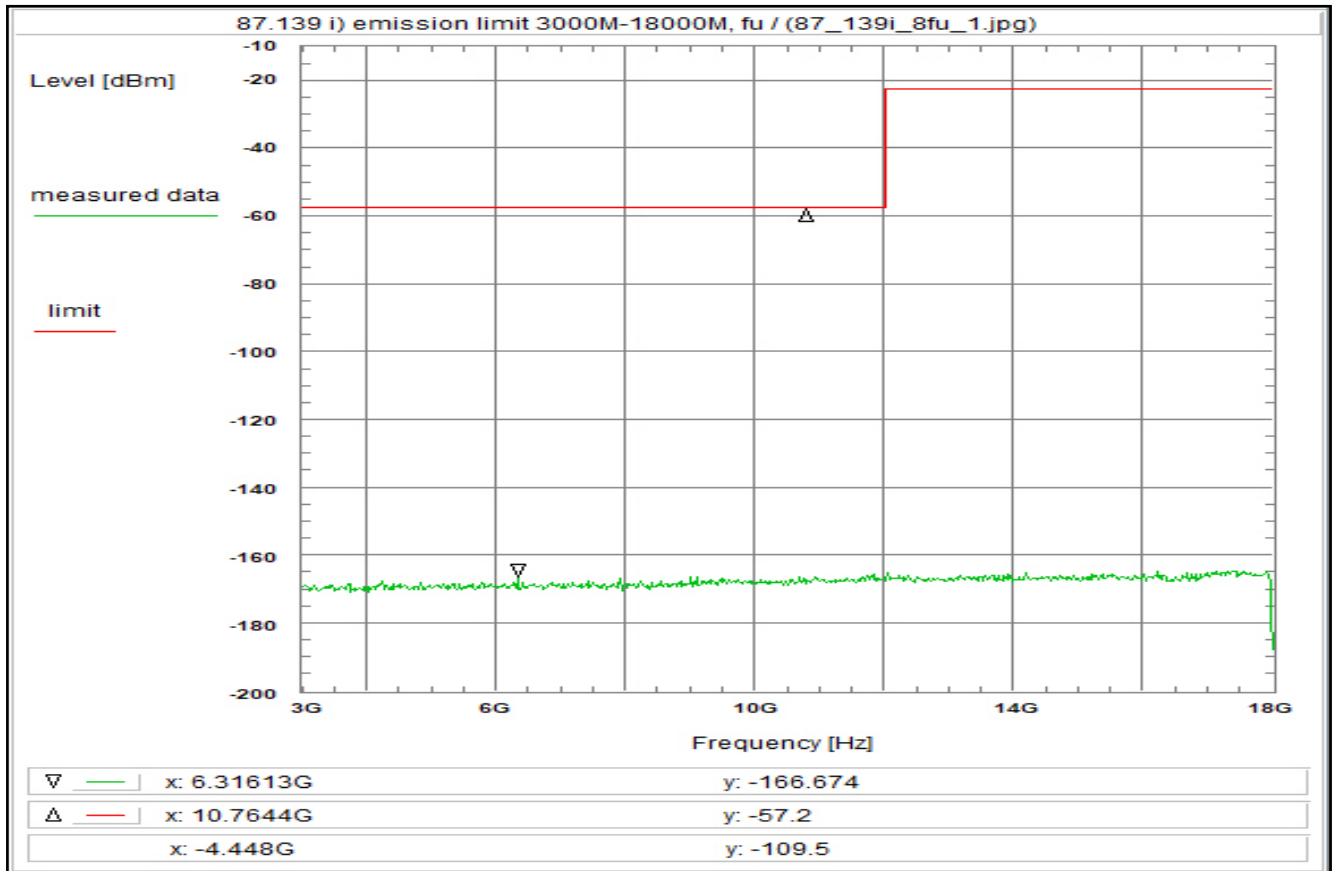
Correction:

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

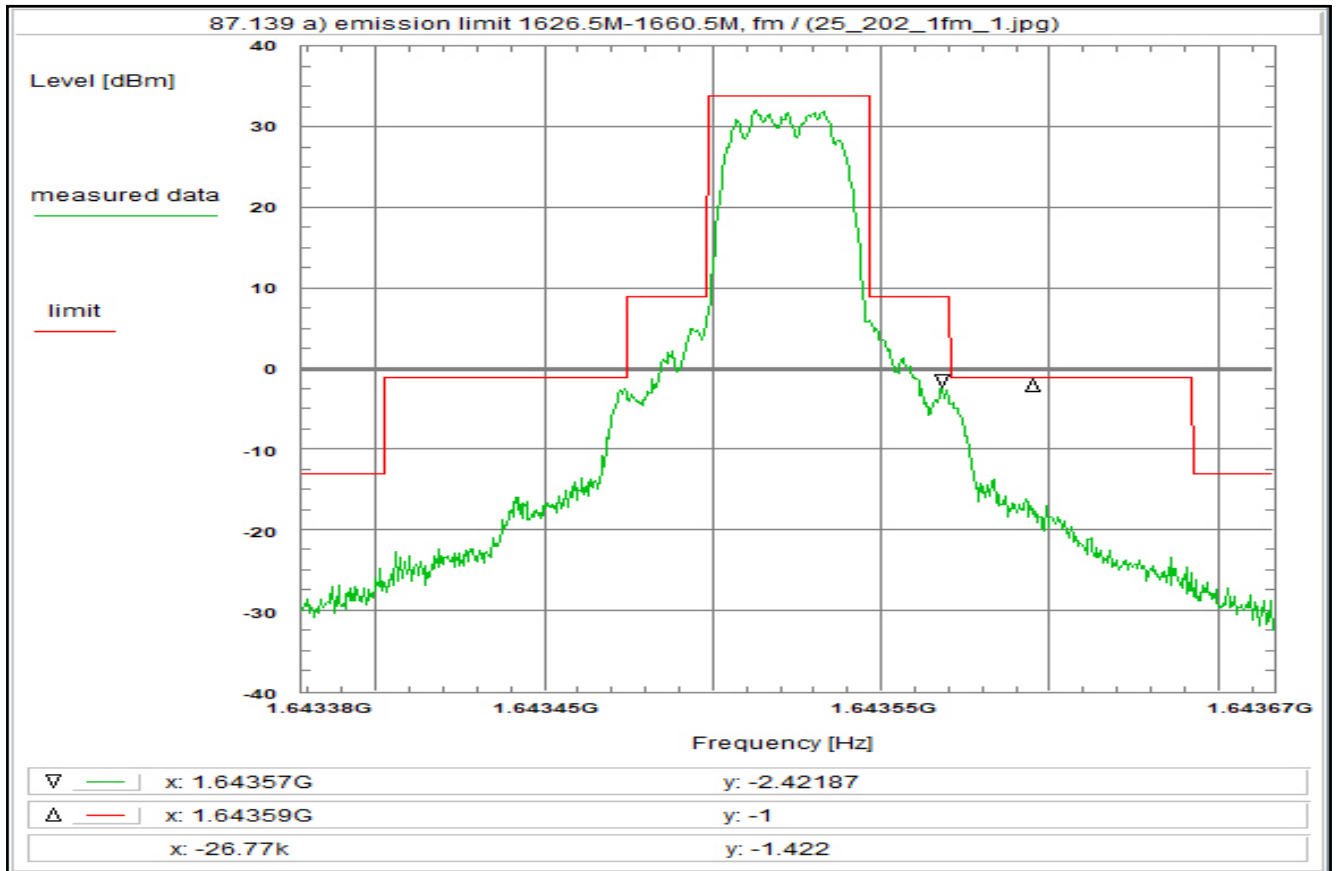
Environment condition:  
Date & Time: Thu 29/Oct/2020 15:54:11  
Location: CTC advanced GmbH, Laboratory RC-SYS  
Temperature: 22 °C  
Humidity: 55 %  
Voltage: 28 V DC

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:  $-43+10\log(P_{max})\text{dBc}/4\text{kHz} = -43\text{ dBW}$   
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

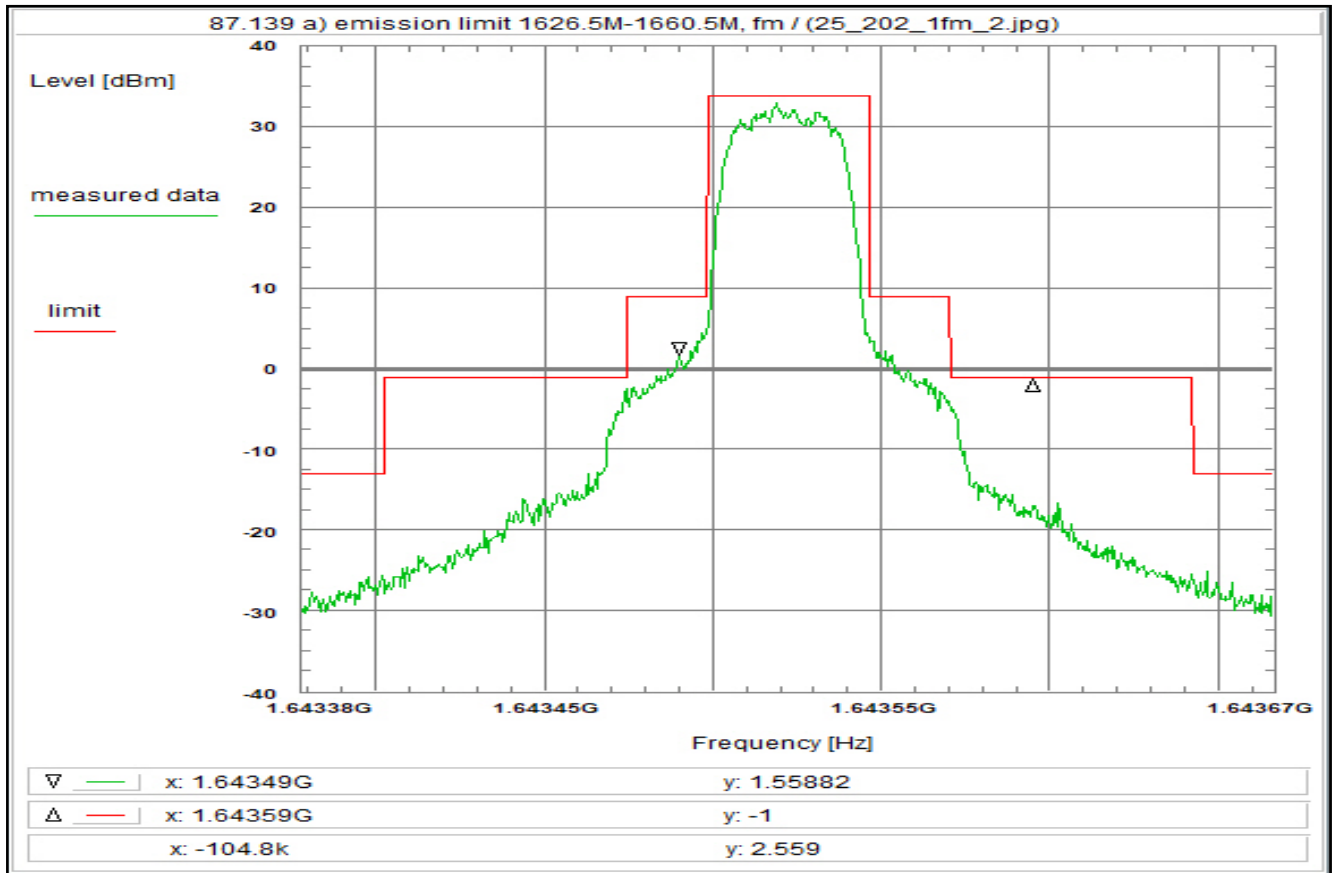
Correction:

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 (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. 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

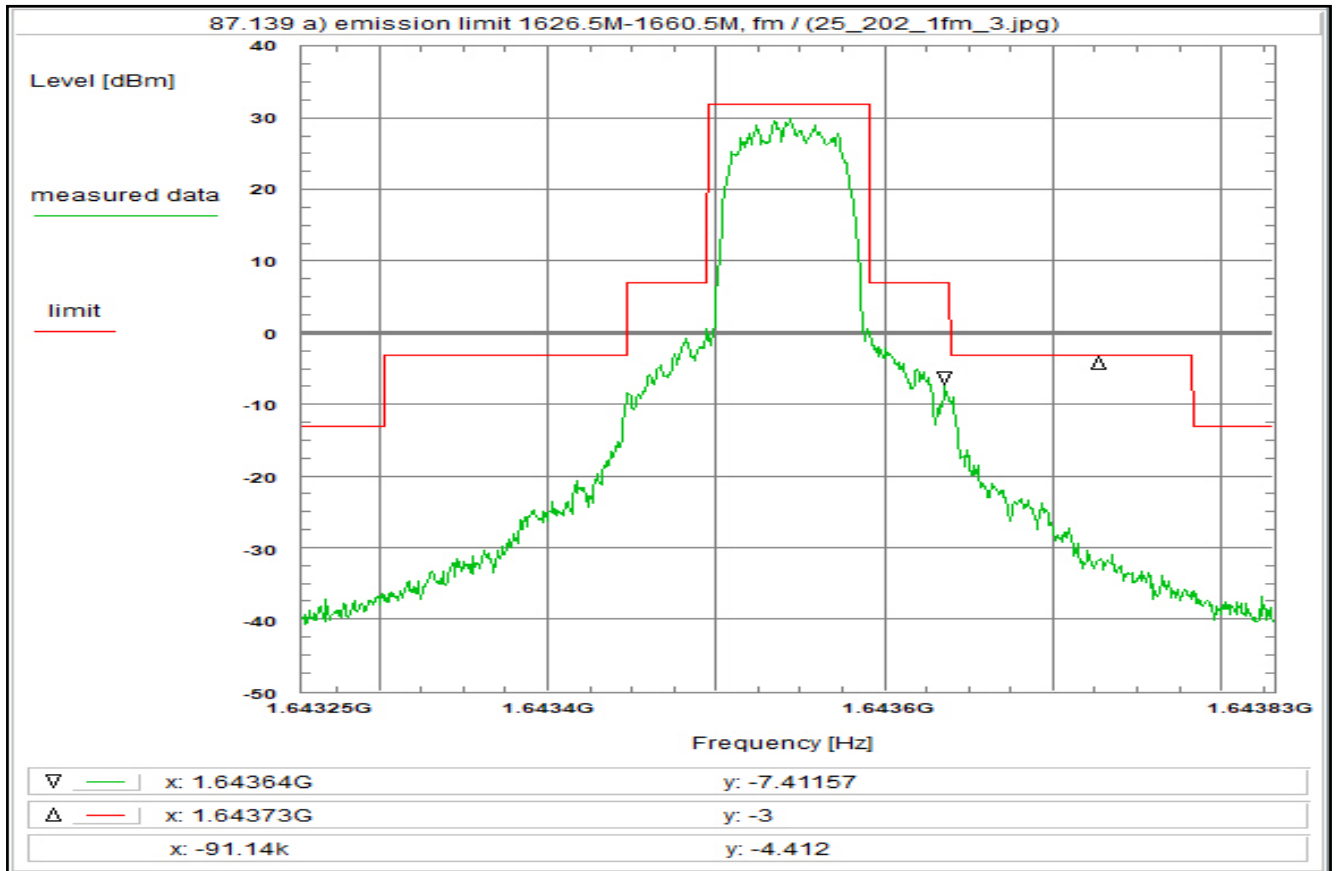
Correction:

Directional coupler + 0.0 dB  
Coaxial cable (C220) + 0.9 dB  
DUT-Antenna + 0.0 dB  
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. 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

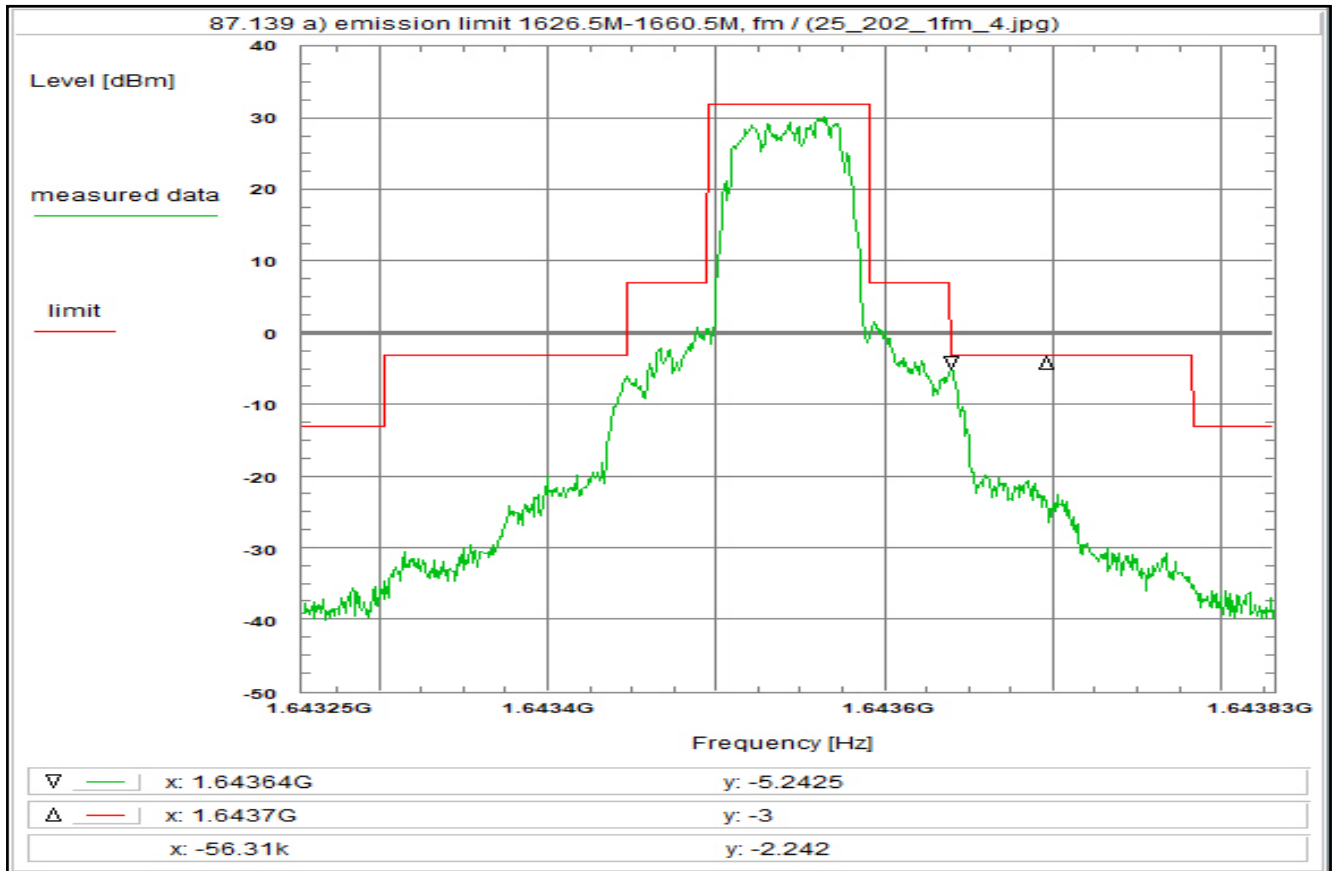
Correction:

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 - 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. 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:  $-43+10\log(P_{max})\text{dBc}/4\text{kHz} = -43\text{ dBW}$

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

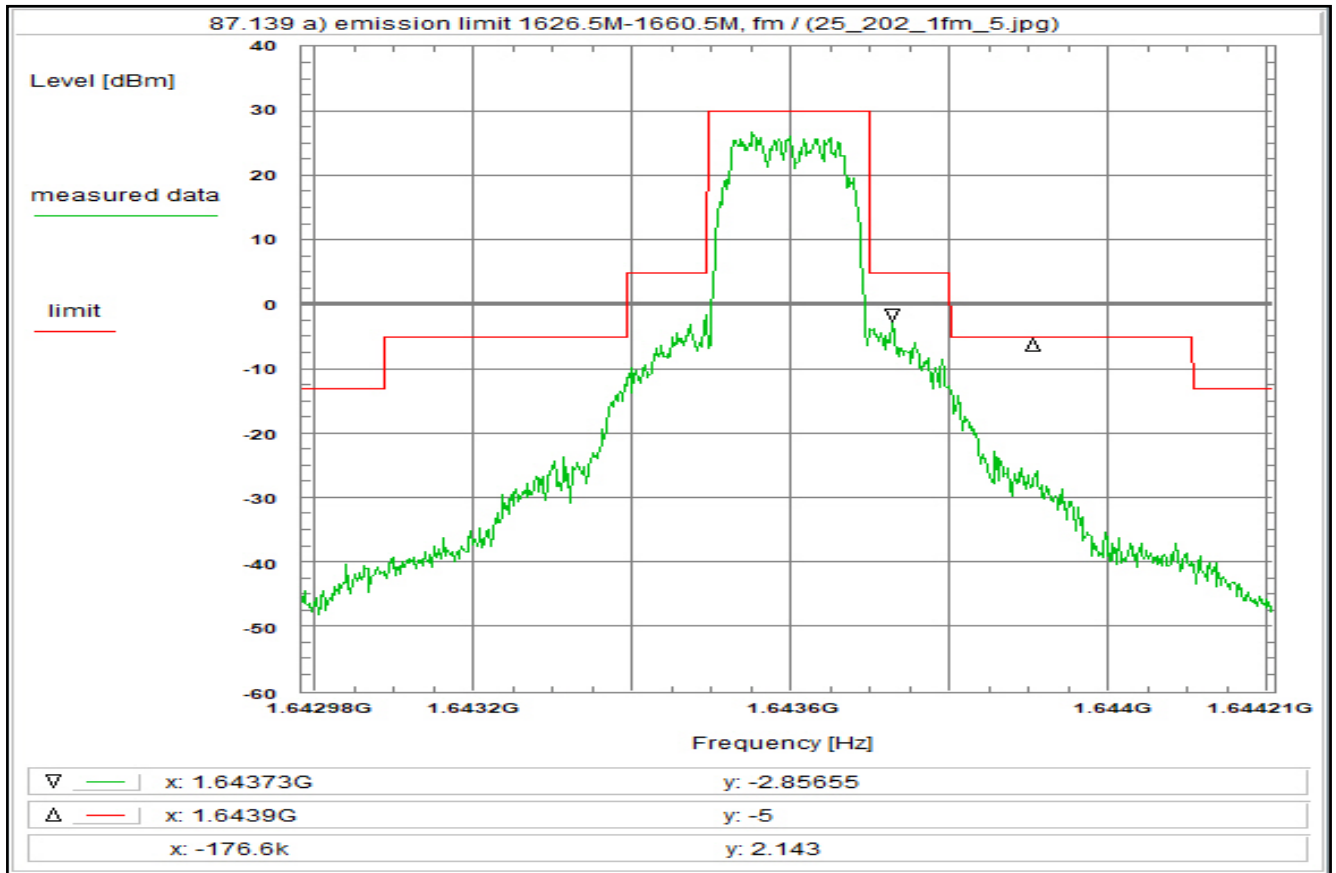
(U330) + 31.9 dB

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

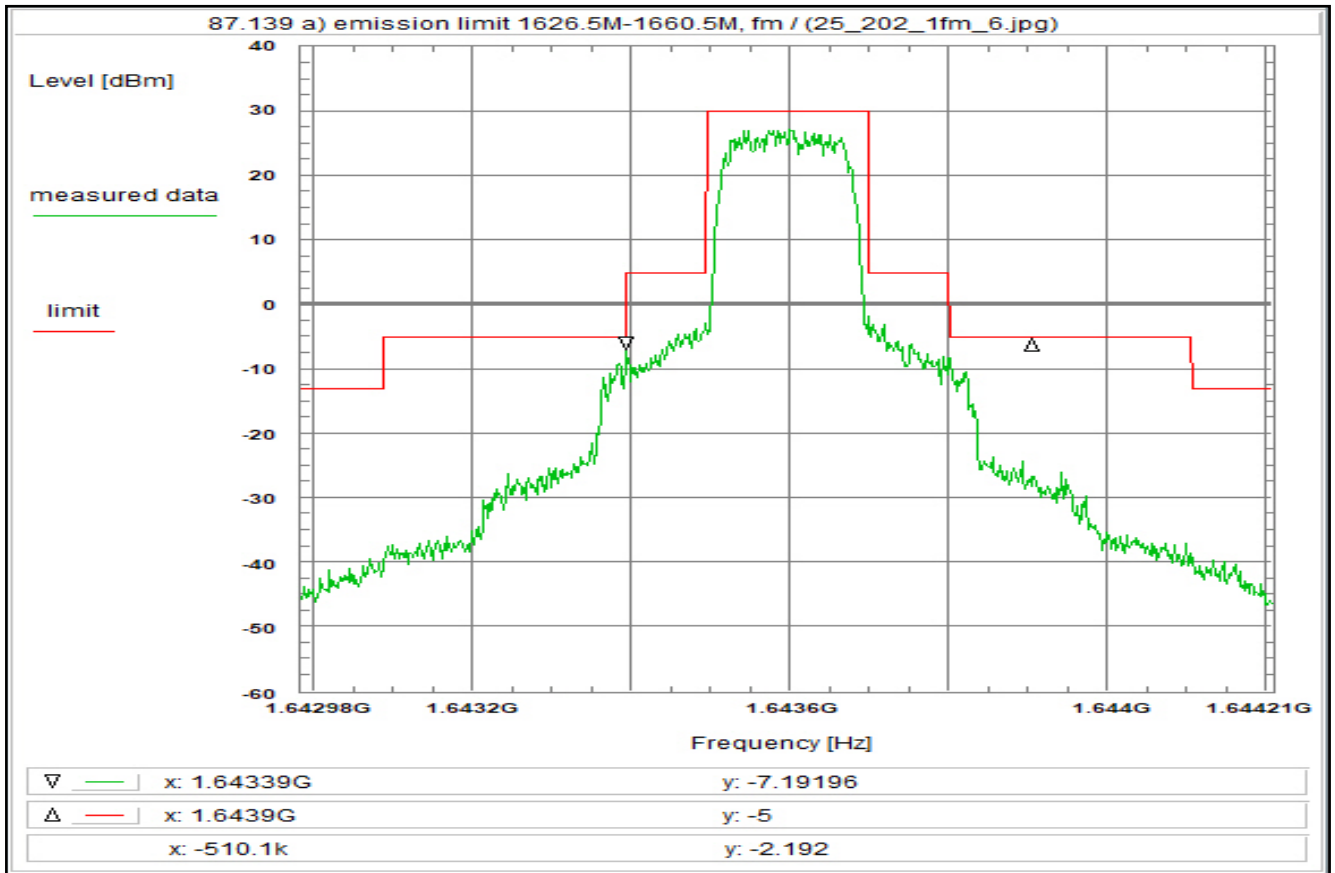
(U330) + 31.9 dB

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:

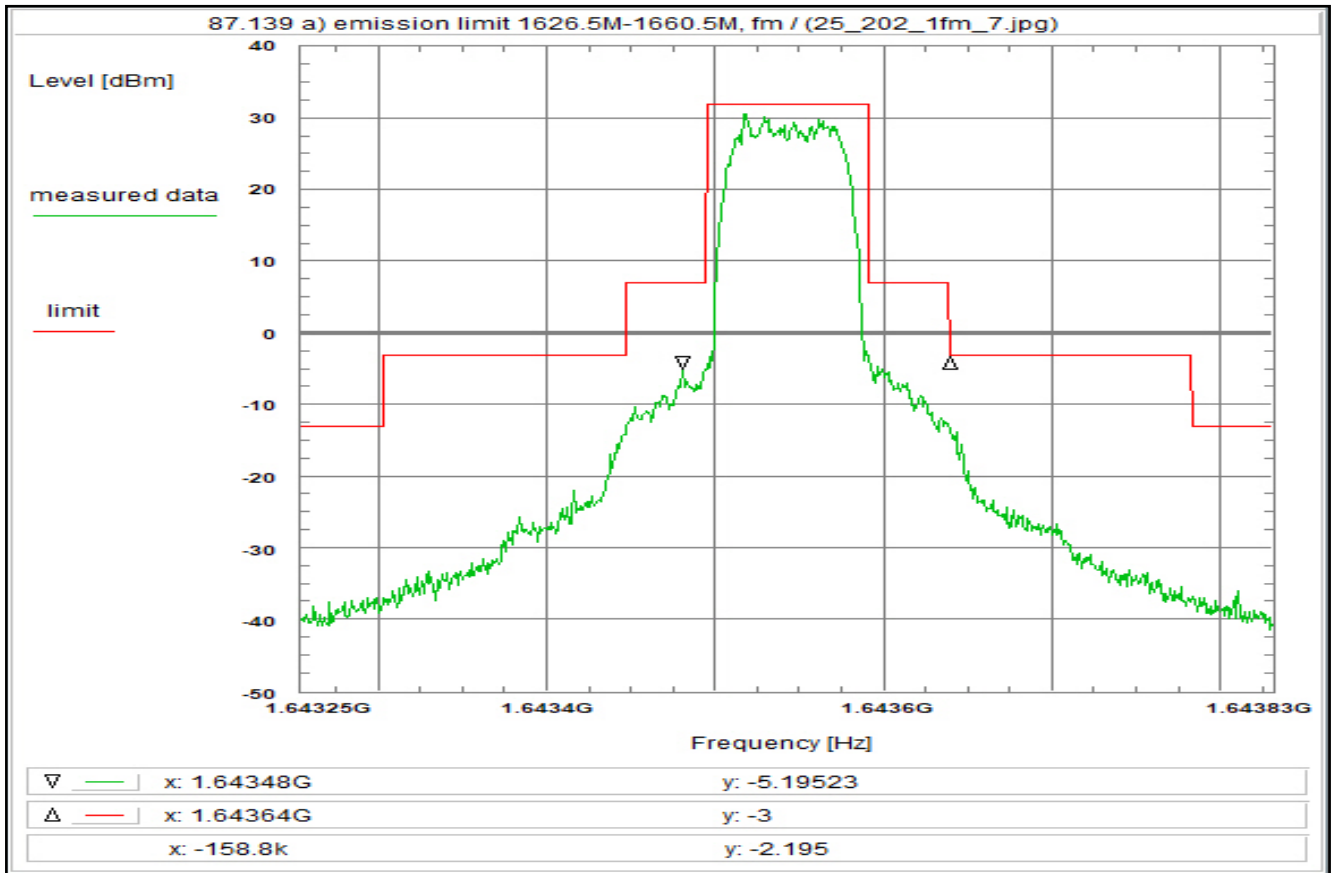
Directional coupler + 0.0 dB  
Coaxial cable (C220) + 0.9 dB  
DUT-Antenna + 0.0 dBi  
Test antenna + 0.0 dB  
BW correction factor (3k -> 4k) + 1.2 dB  
Atten. between HPA and feedhorn (U330) - 0.0 dB  
+ 31.9 dB  
TOTAL CORRECTION: + 34.0 dB

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, R20T2OD

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

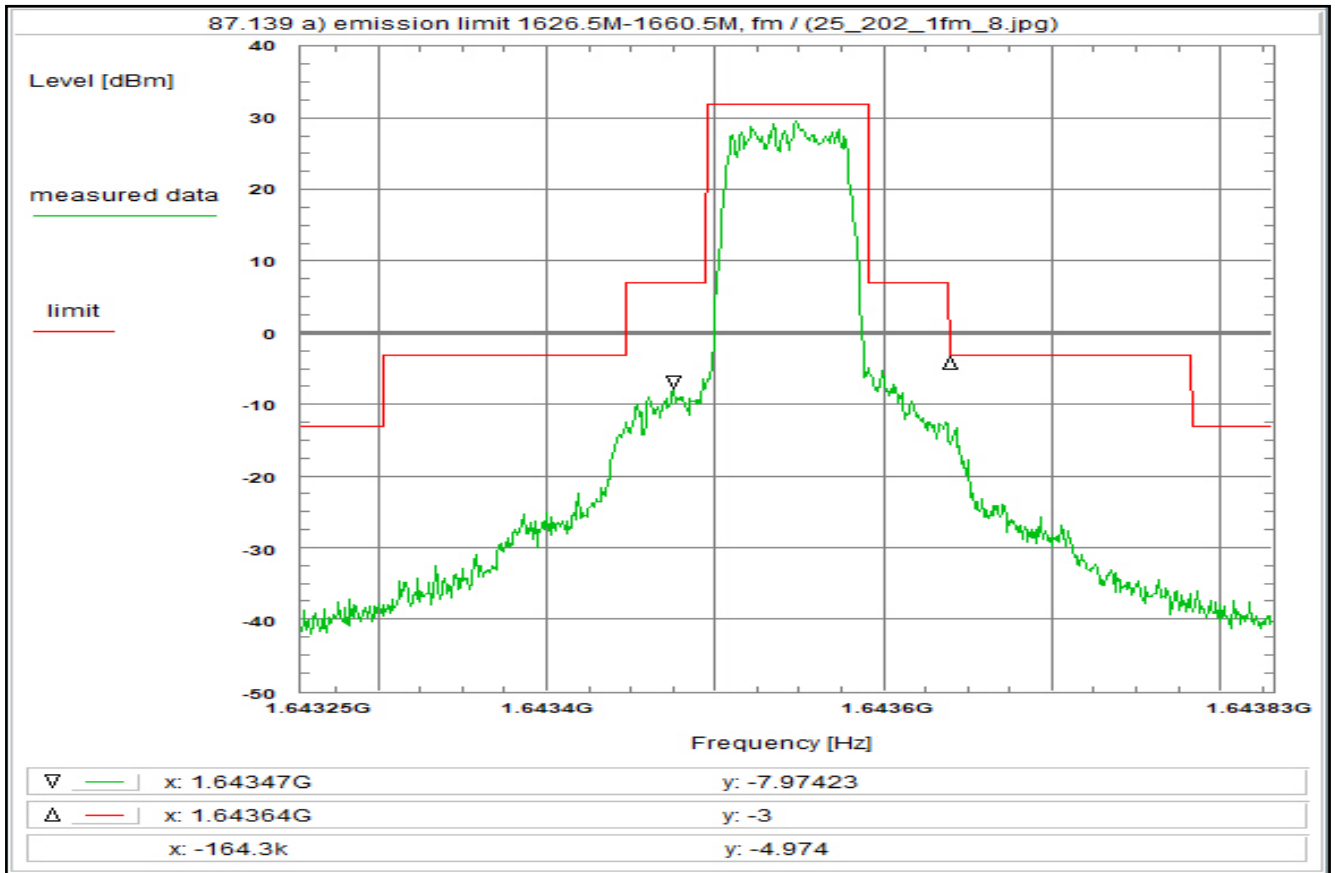
Correction:

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 (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. 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

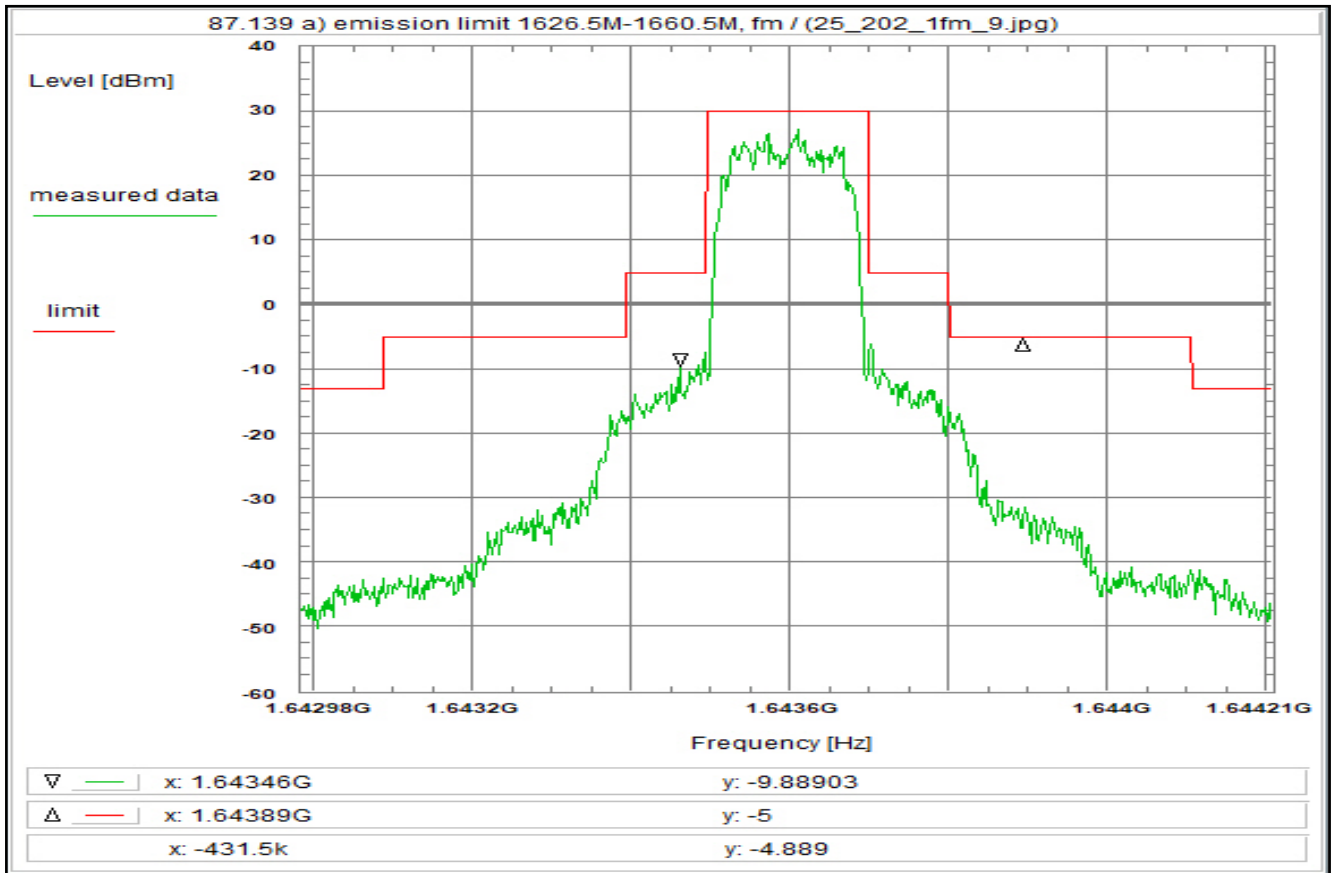
Correction:

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 (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. 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, R5T45OD

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

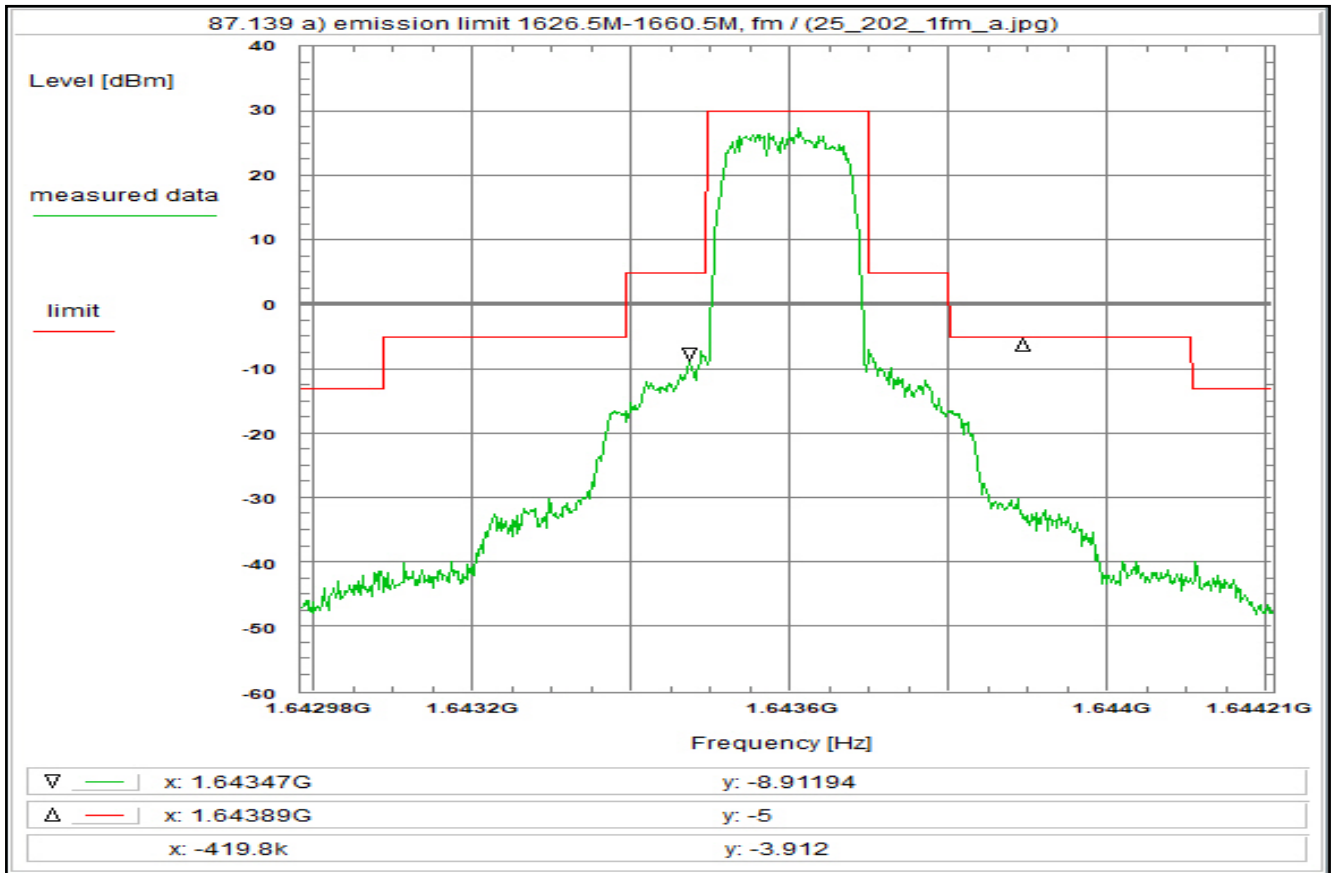
Correction:

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 (U330) - 0.0 dB  
TOTAL CORRECTION: + 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

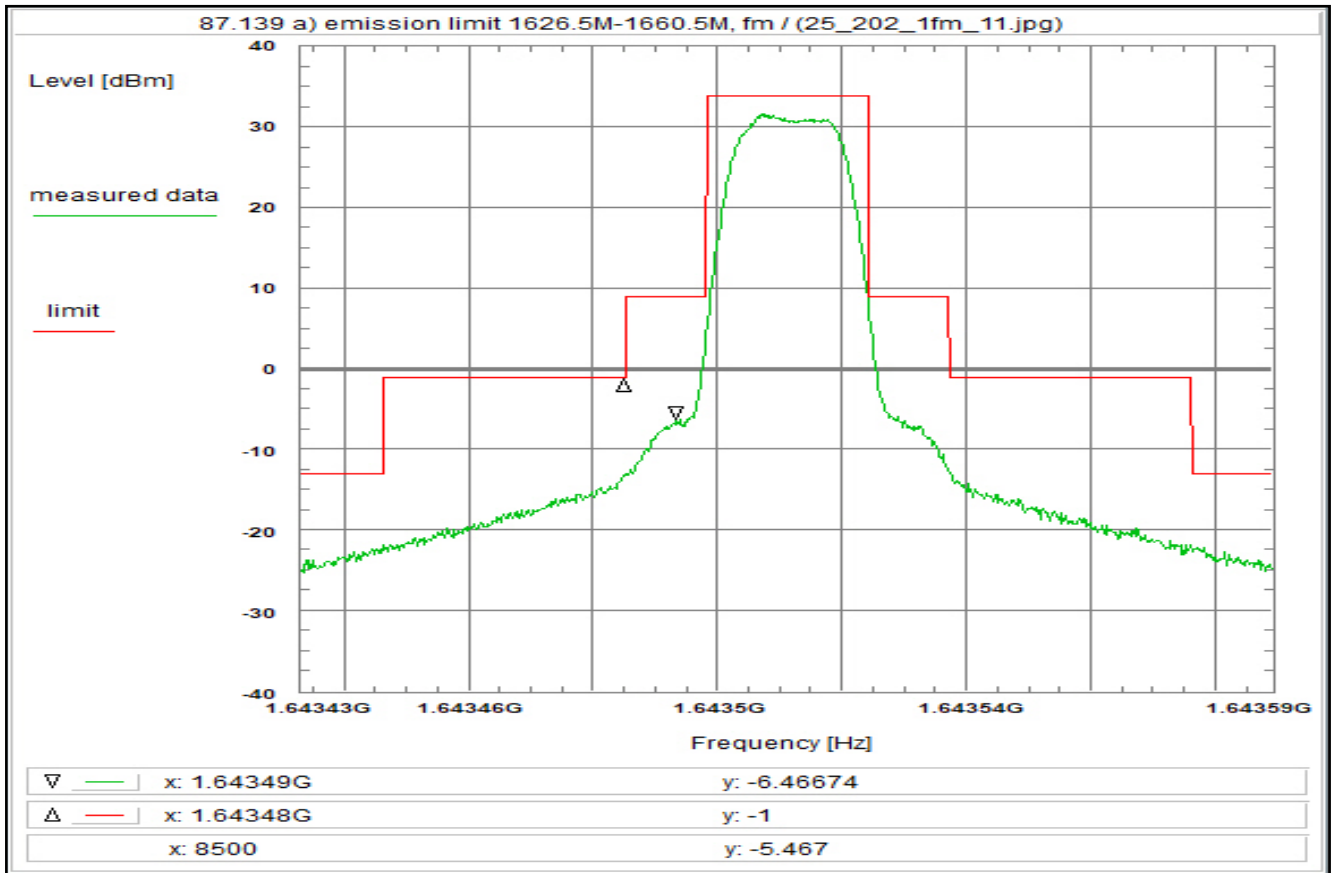
(U330) + 31.9 dB

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:  $-43+10\log(P_{max})\text{dBc}/4\text{kHz} = -43\text{ dBW}$   
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

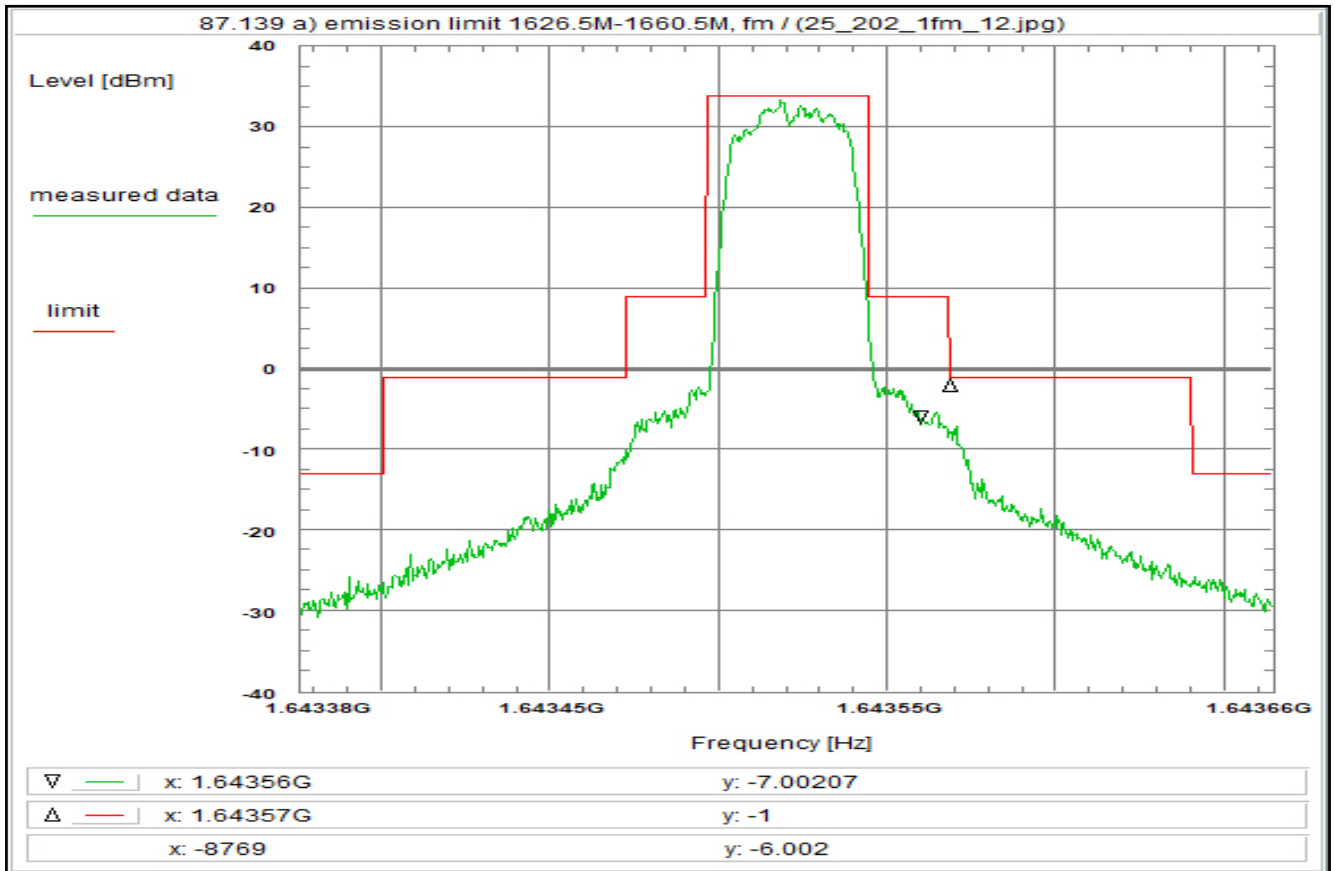
Correction:

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 (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. 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, R20T1OD

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

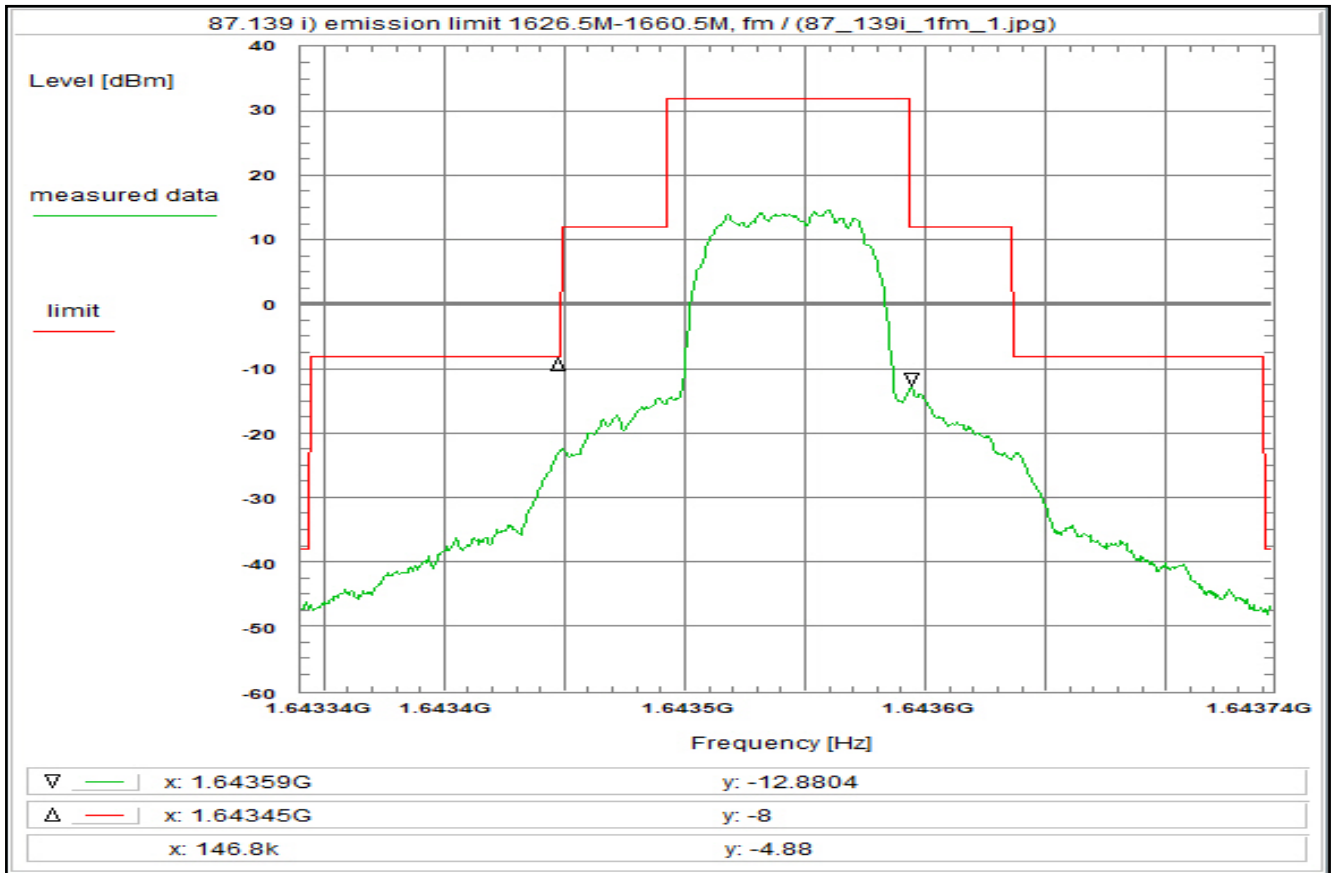
Correction:

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 (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. 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

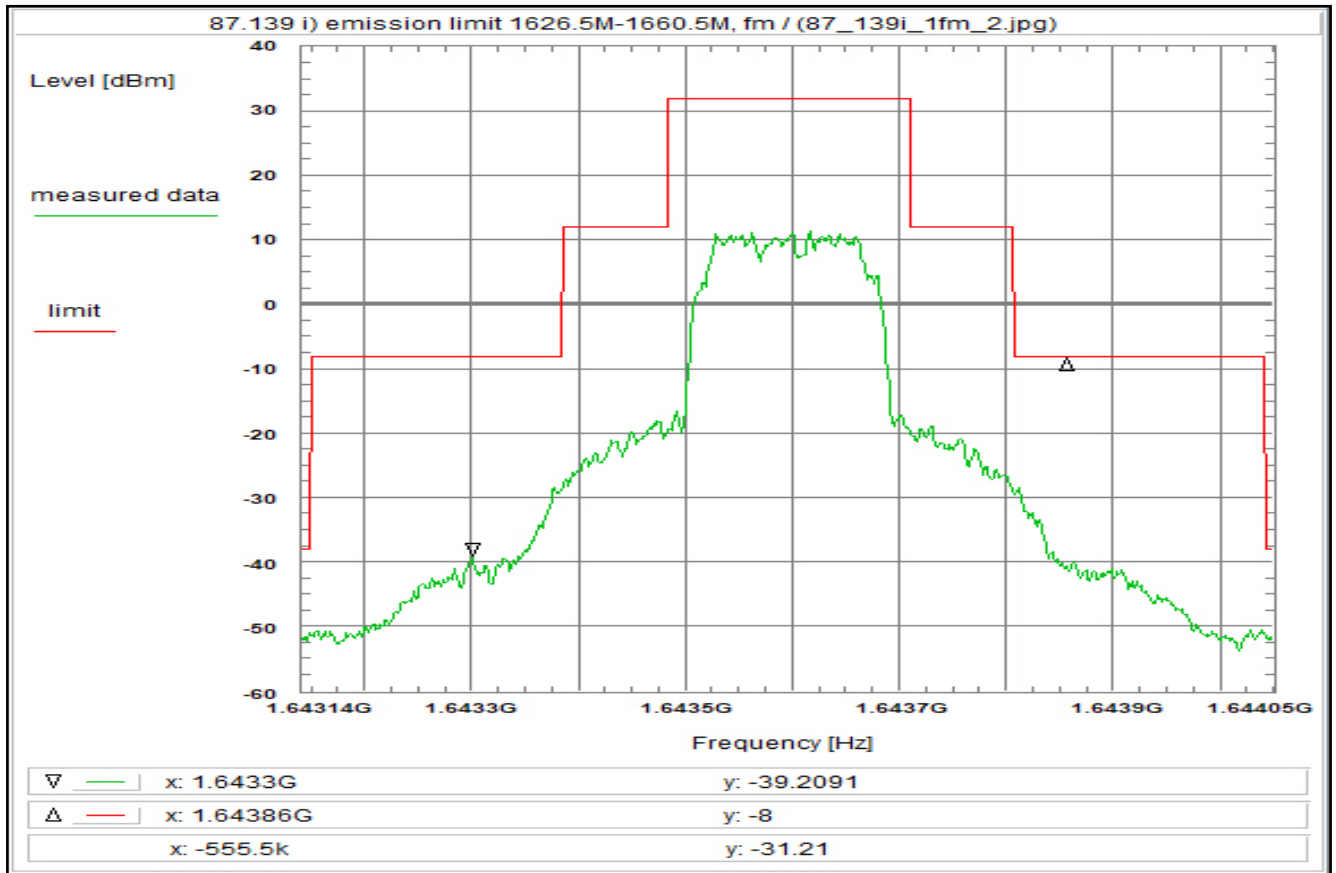
Correction:

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:

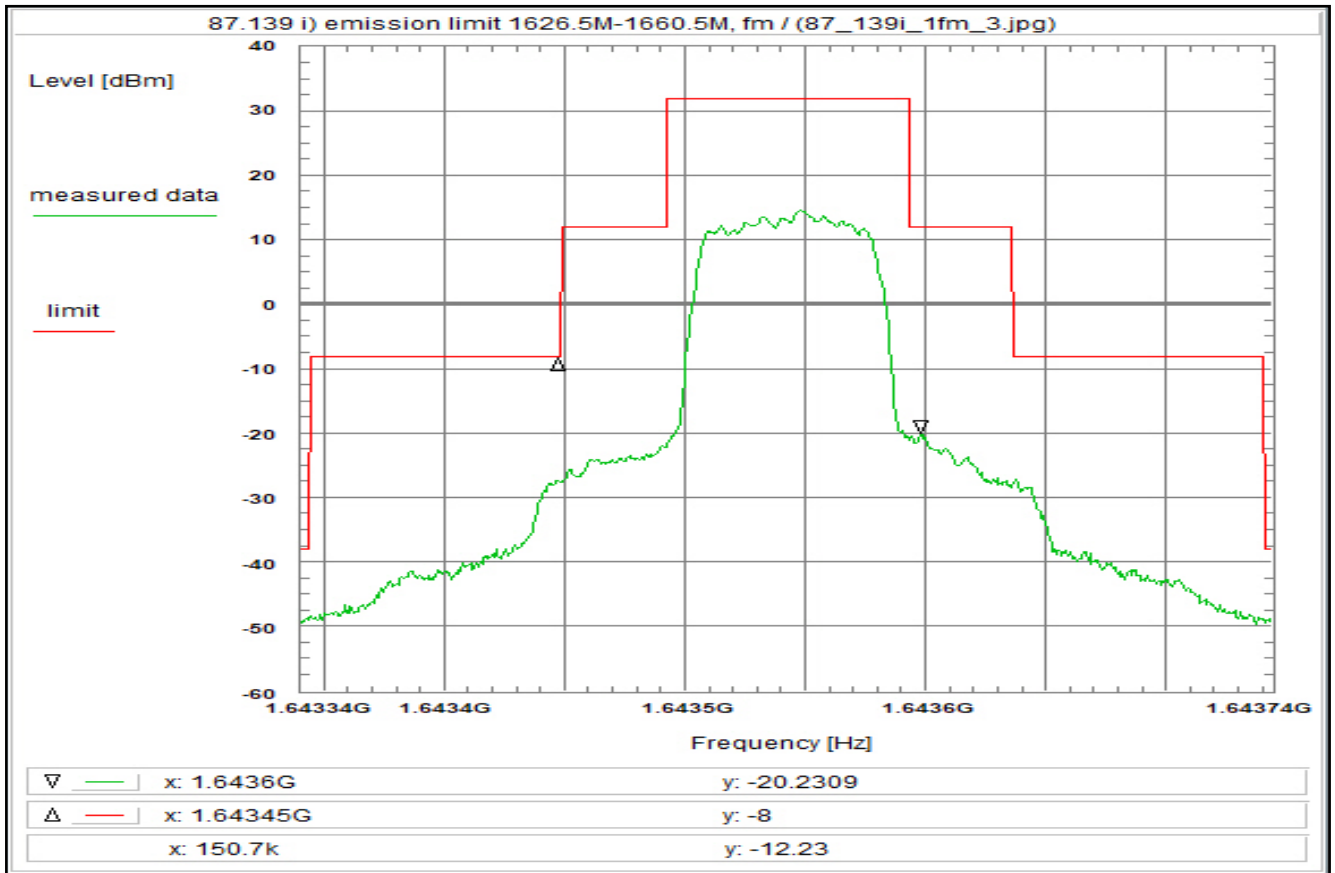
Directional coupler + 0.0 dB  
Coaxial cable (C220) + 0.9 dB  
DUT-Antenna + 0.0 dBi  
Test antenna + 0.0 dB  
BW correction factor (3k -> 4k) + 1.2 dB  
Atten. between HPA and feedhorn - 0.0 dB  
Freefield attenuation (U330) + 31.9 dB  
TOTAL CORRECTION: + 34.0 dB

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

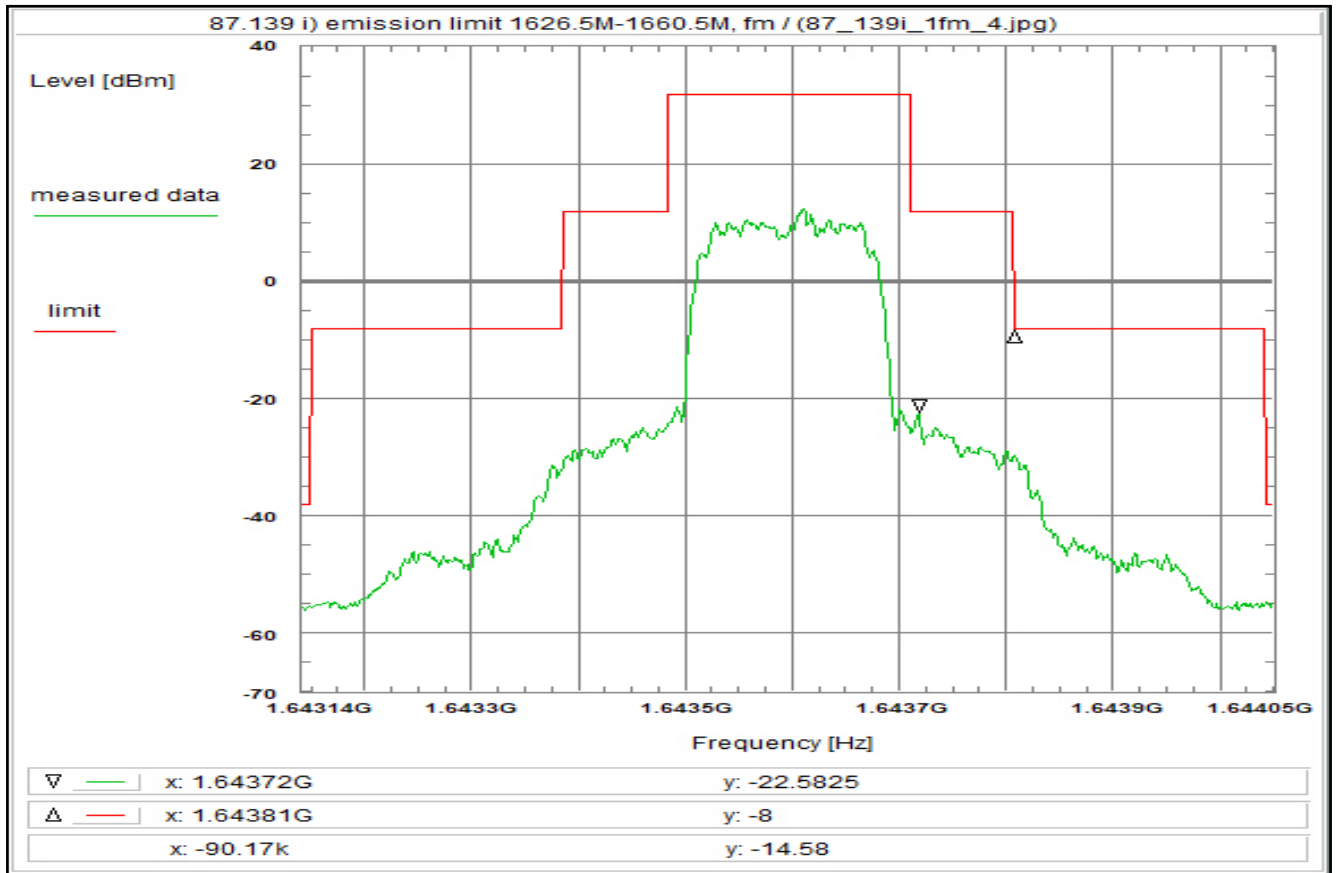
Correction:

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, R5T45OD

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

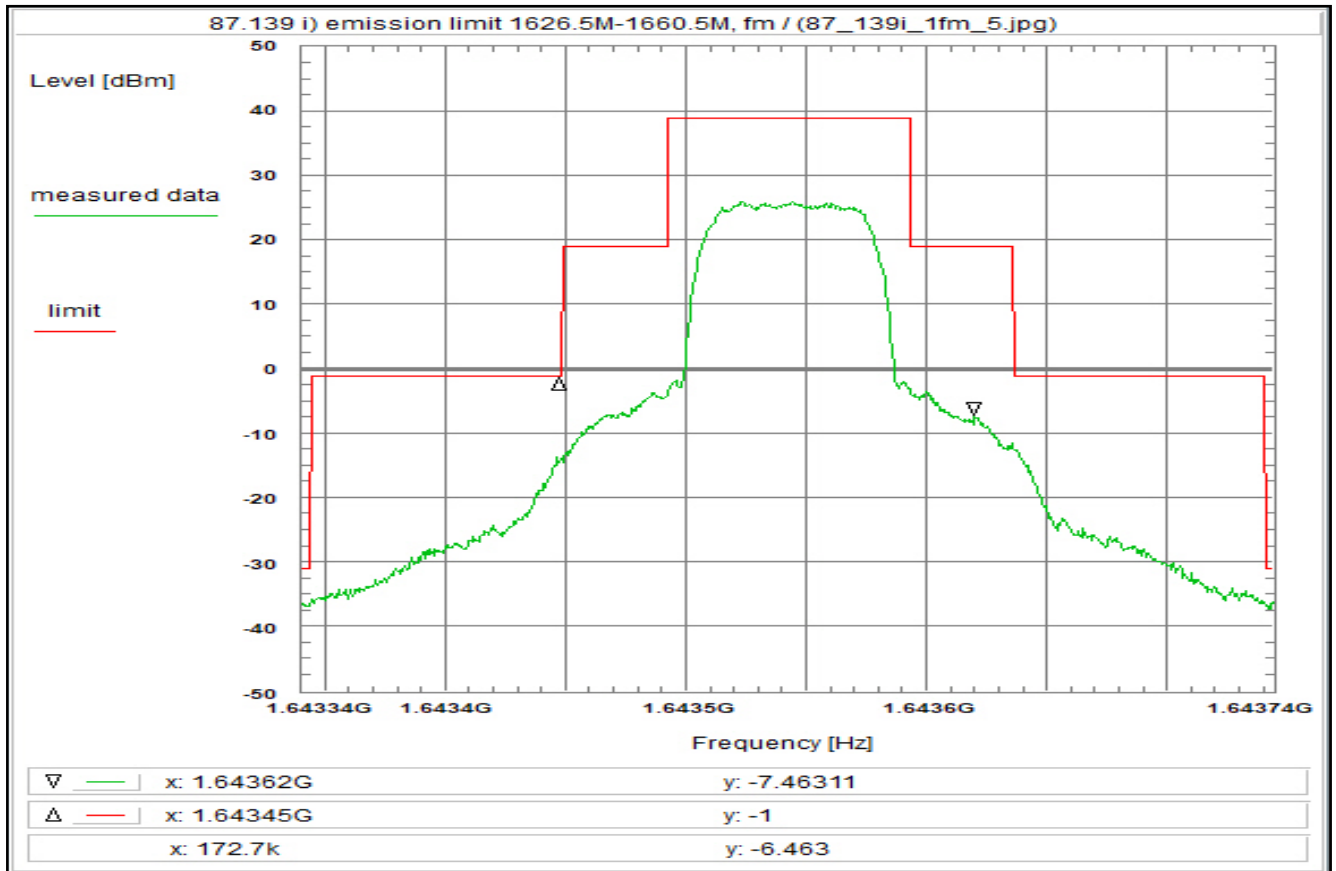
Correction:

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

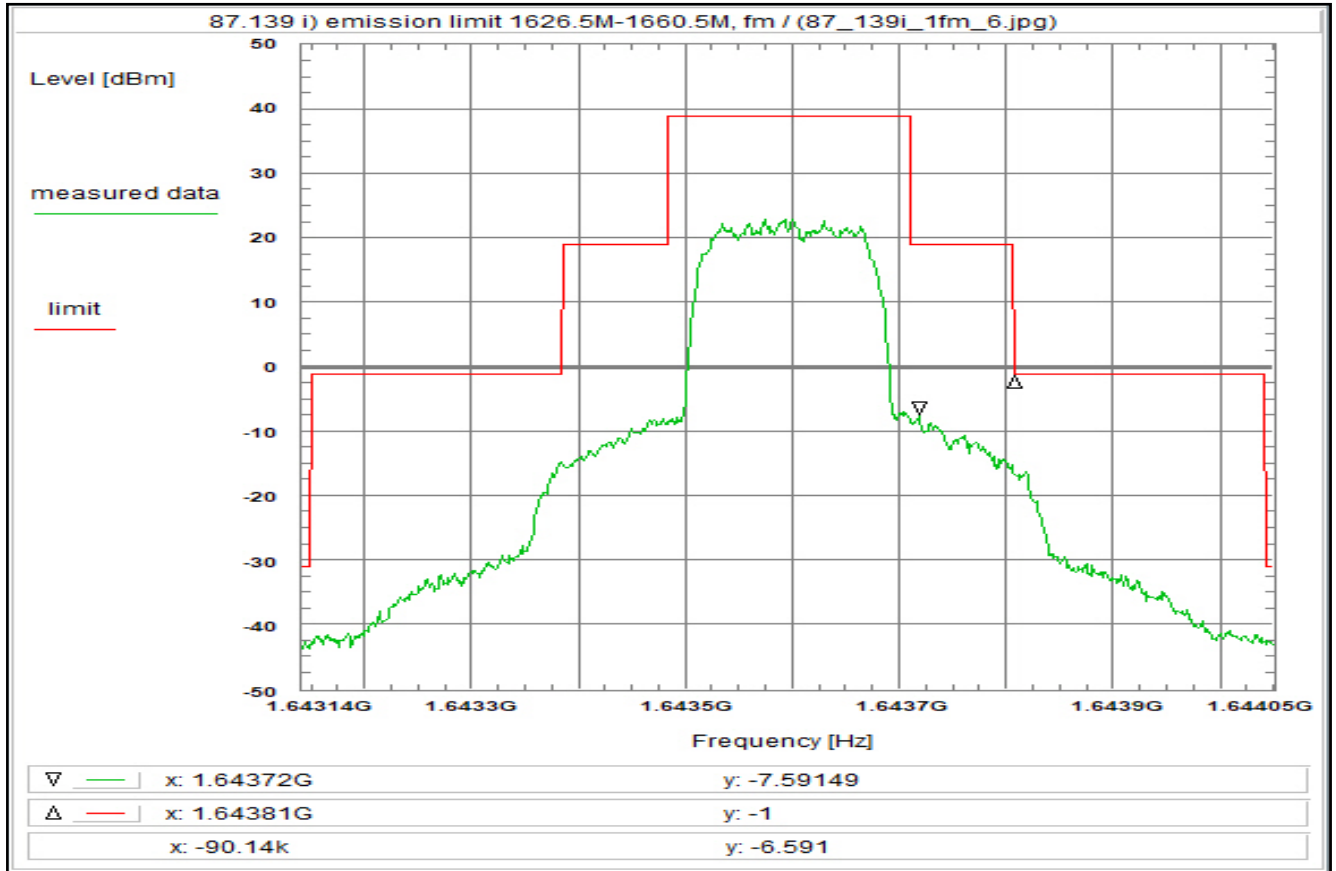
Correction:

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

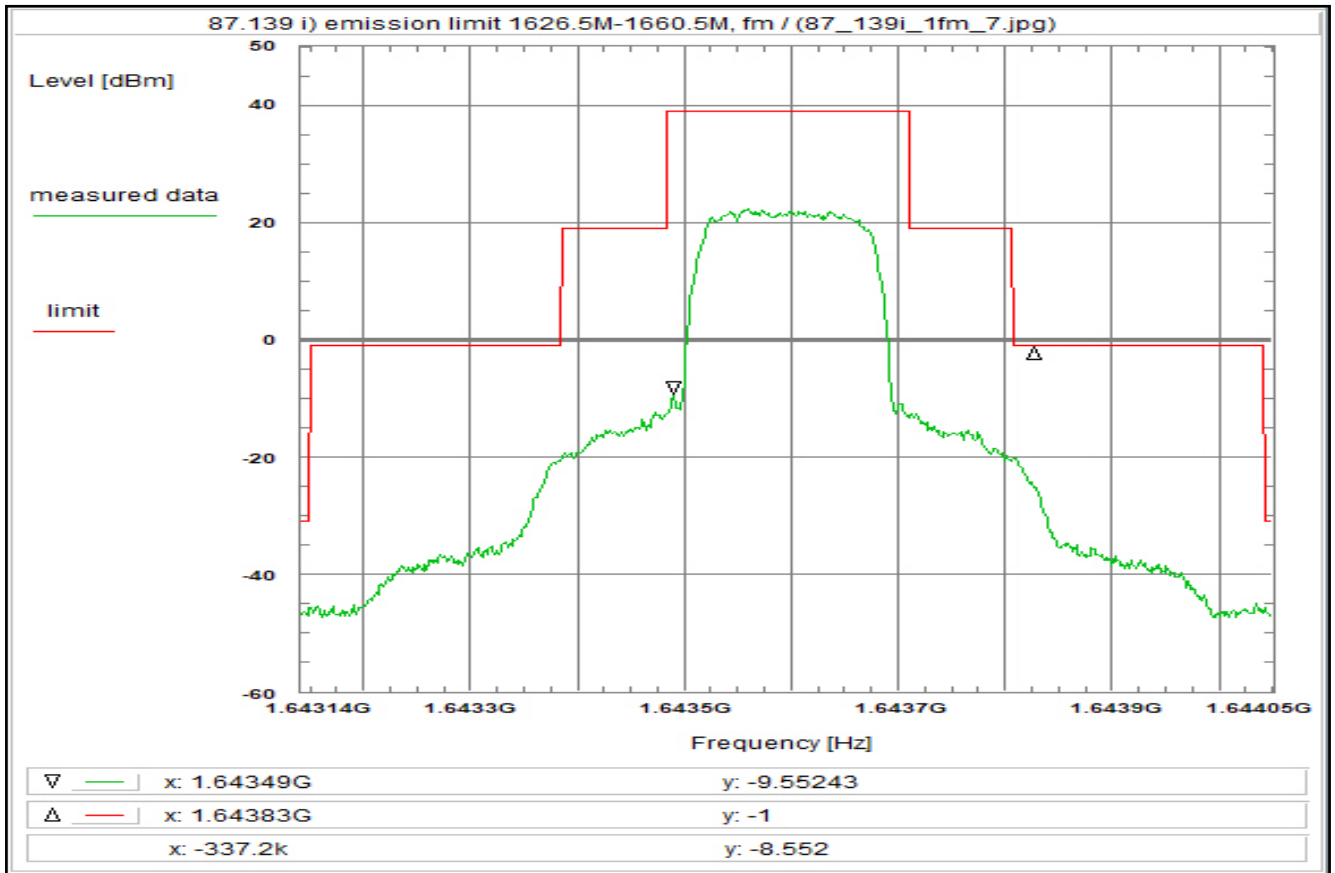
Correction:

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

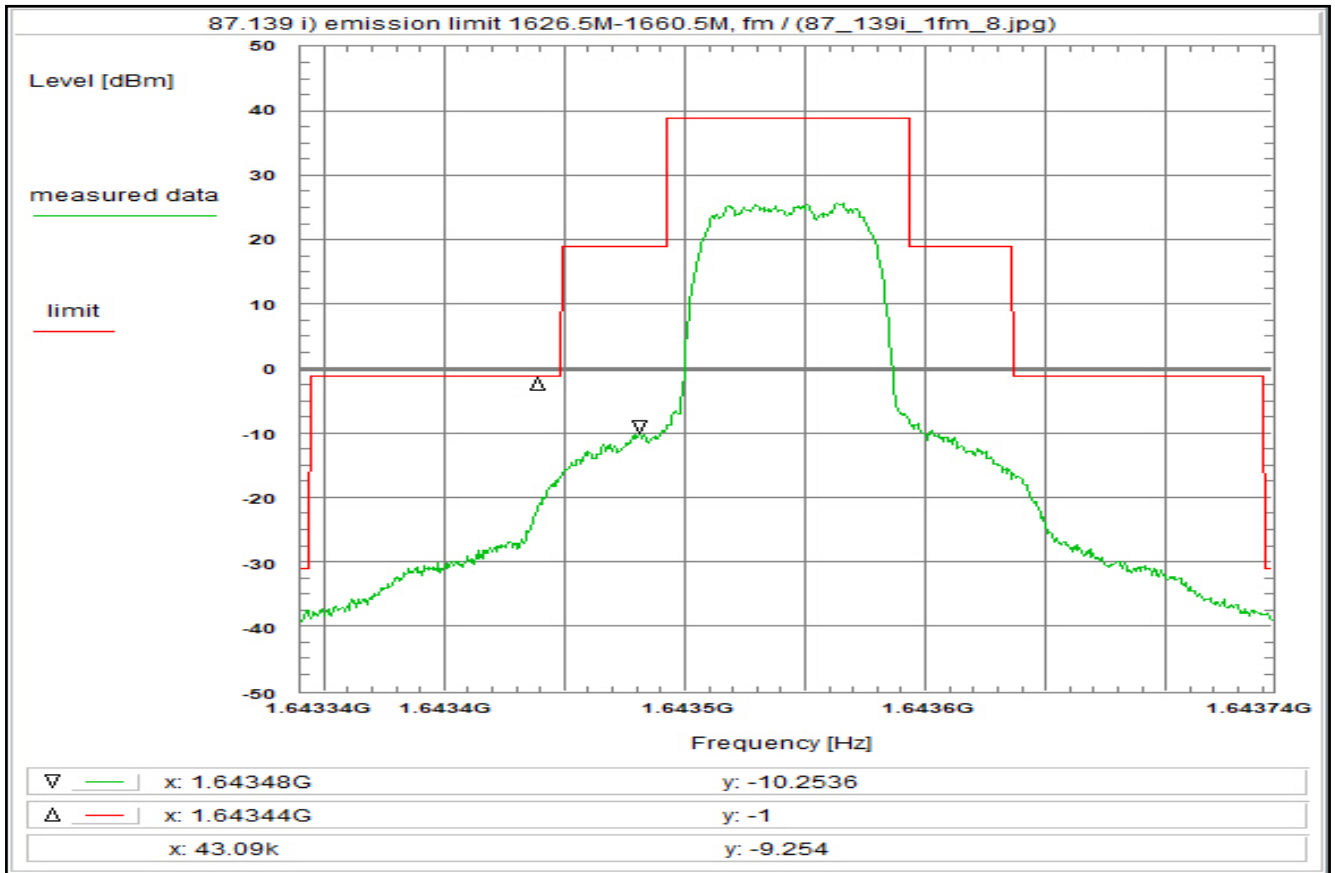
Correction:

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, R20T2OD

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

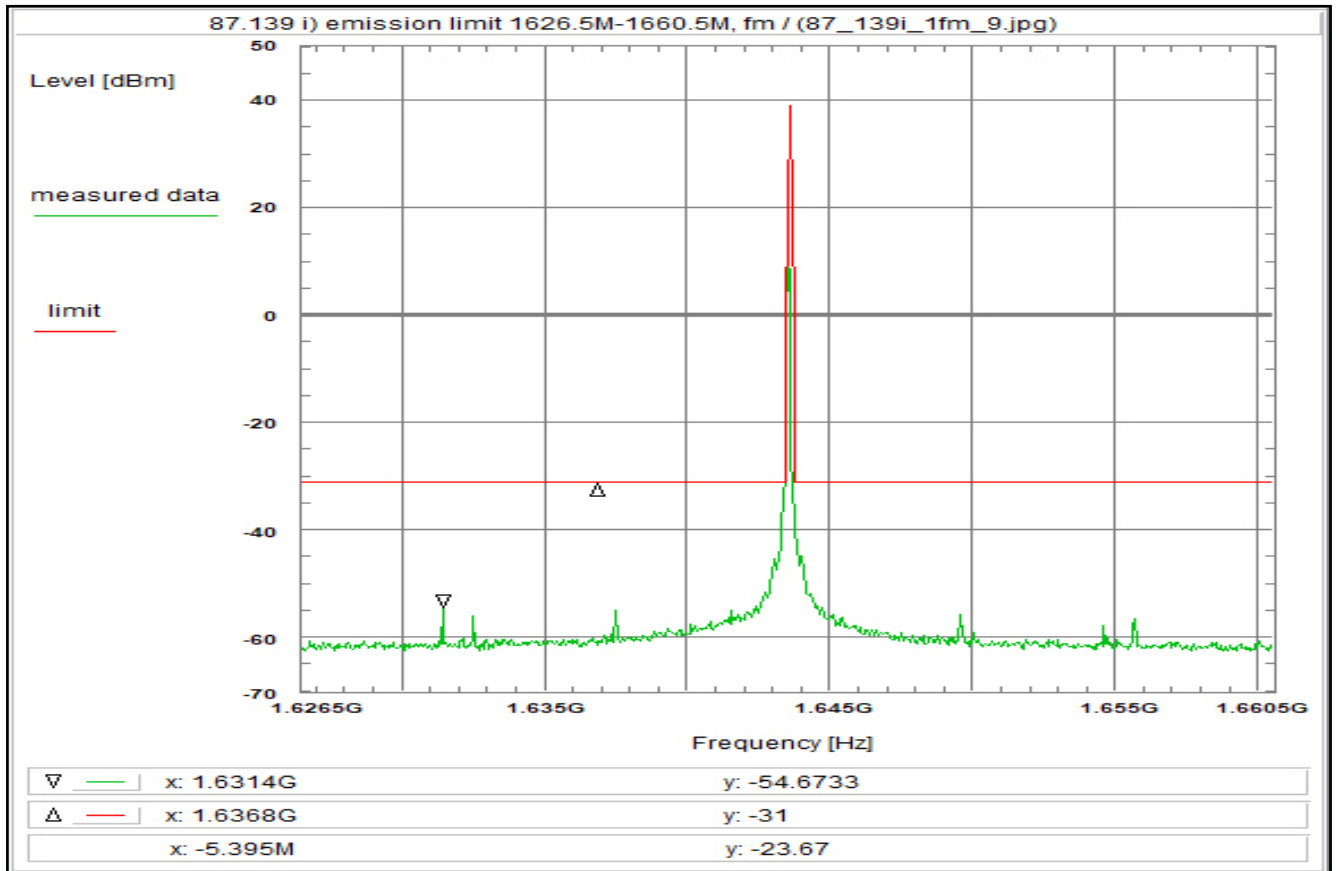
Correction:

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

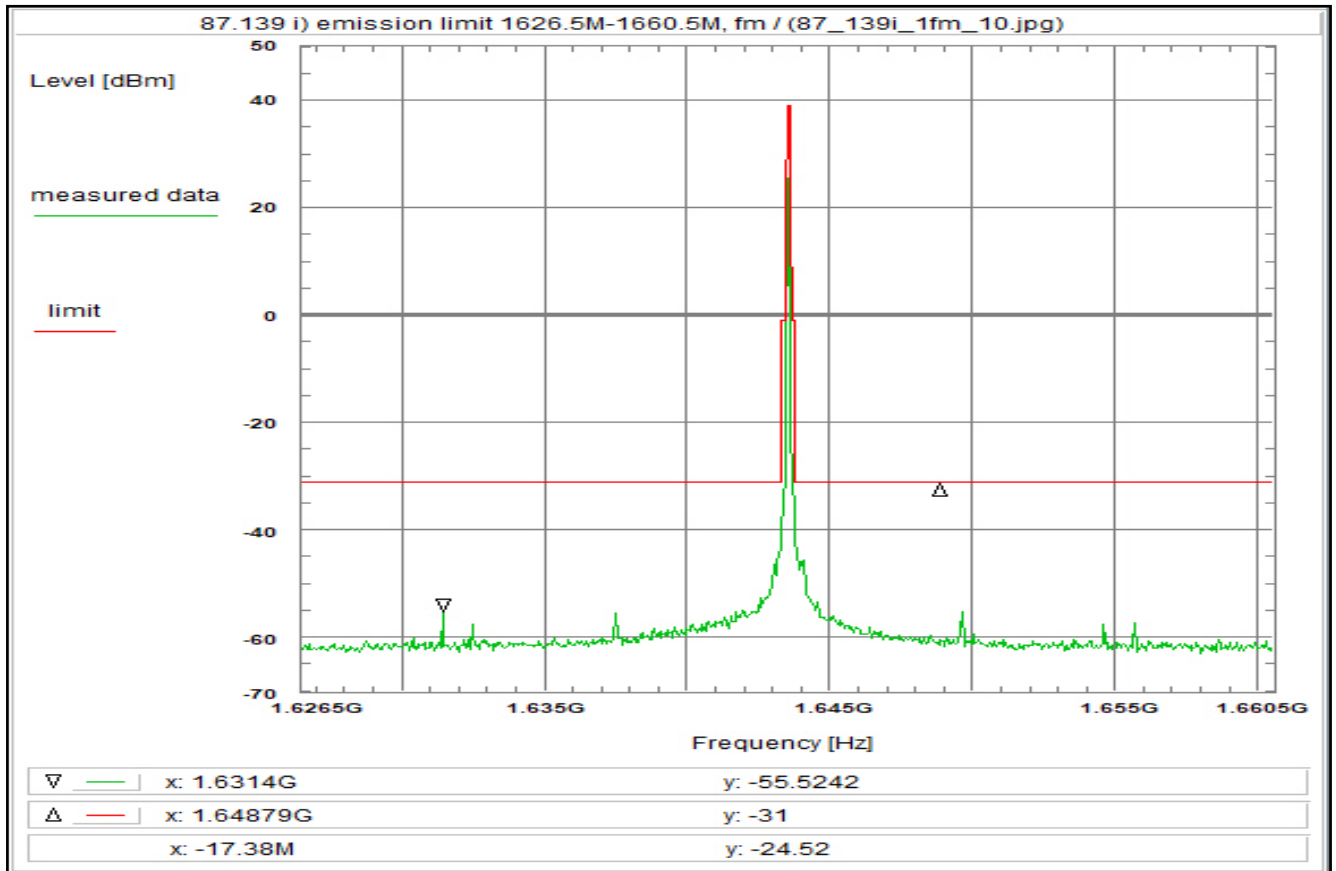
Correction:

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 (U330) - 0.0 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:

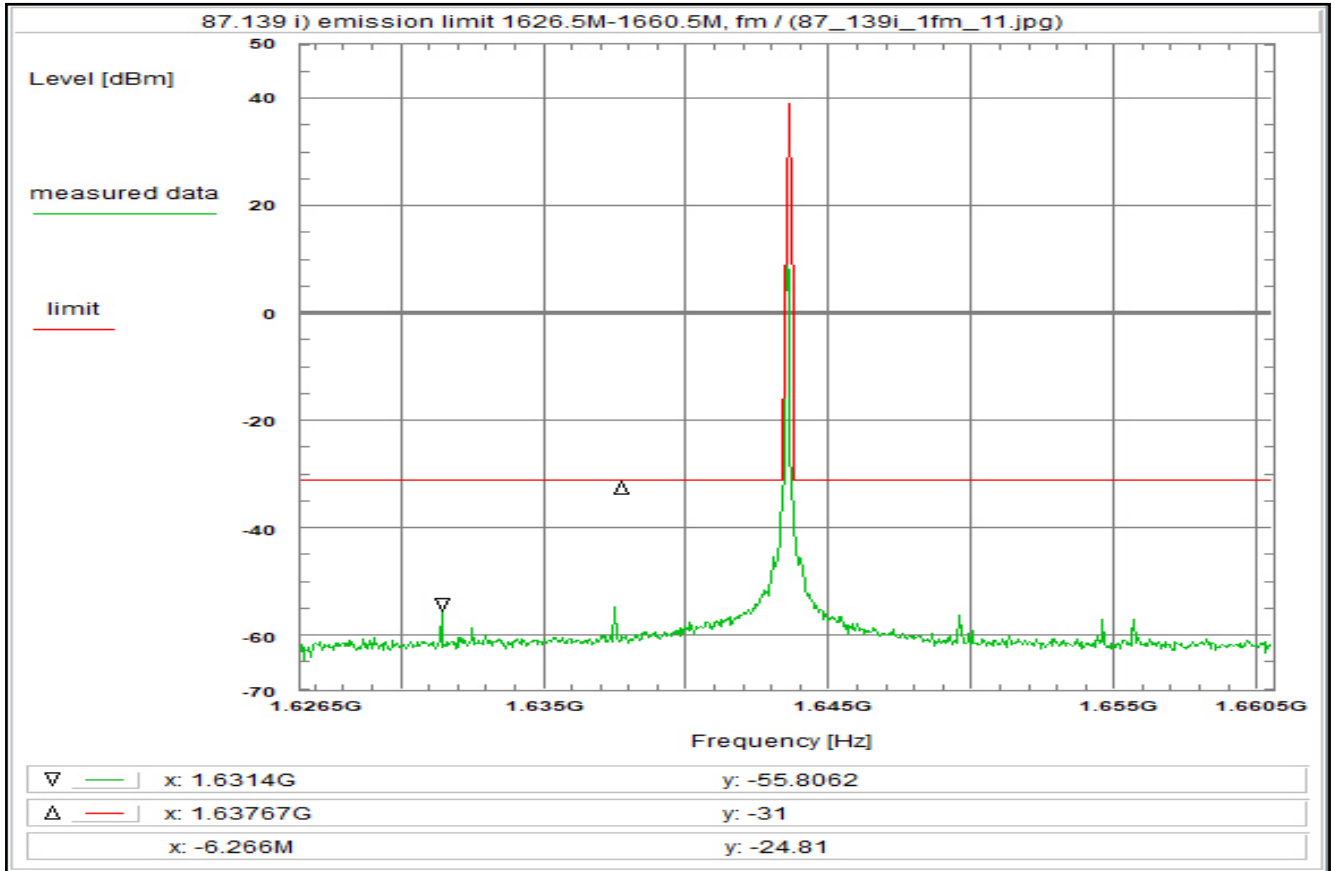
Directional coupler + 0.0 dB  
Coaxial cable (C220) + 0.9 dB  
DUT-Antenna + 0.0 dBi  
Test antenna + 0.0 dB  
BW correction factor (3k -> 4k) + 1.2 dB  
Atten. between HPA and feedhorn (U330) - 0.0 dB  
TOTAL CORRECTION: + 34.0 dB

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

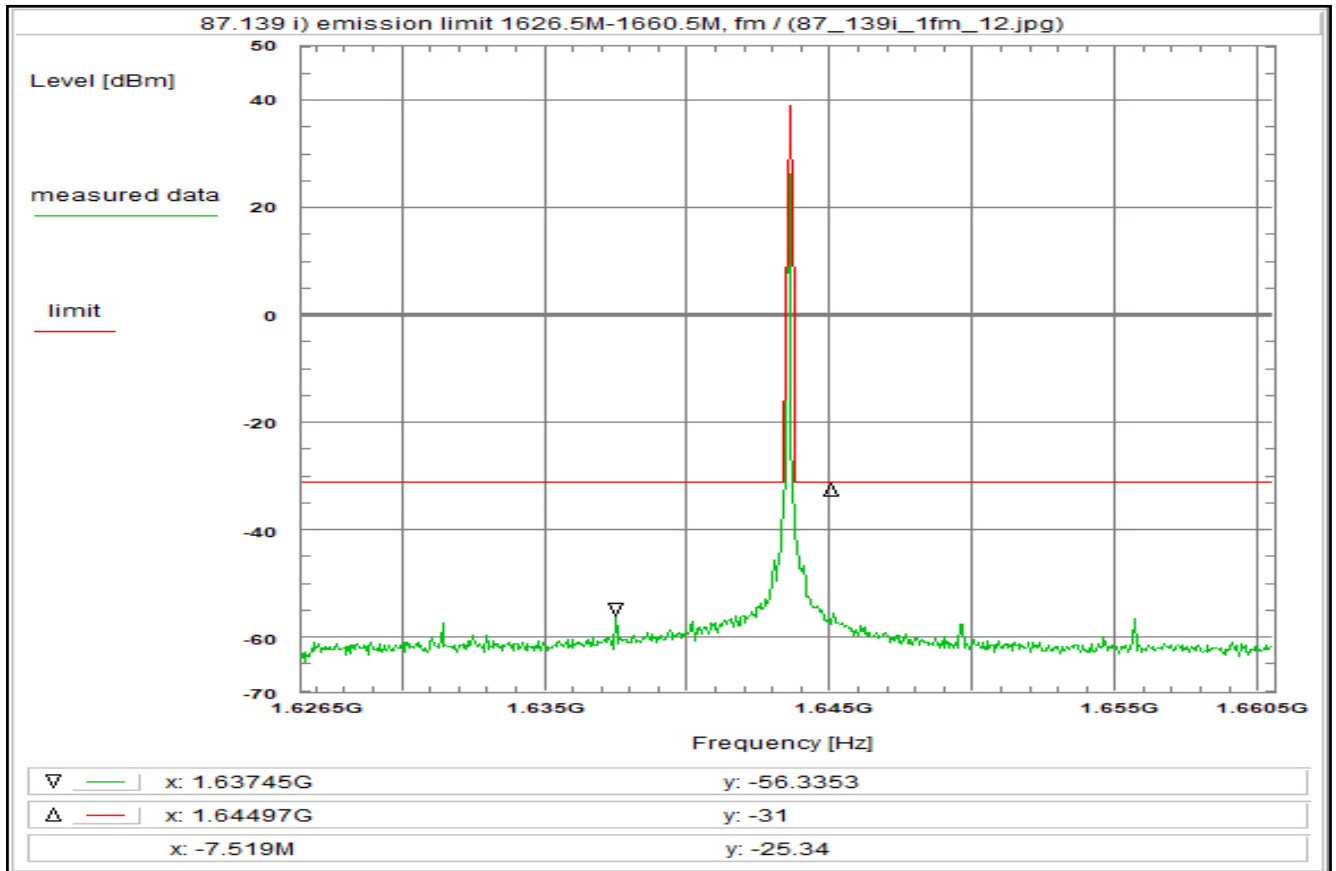
Correction:

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 (U330) - 0.0 dB  
+ 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, R20T10D

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

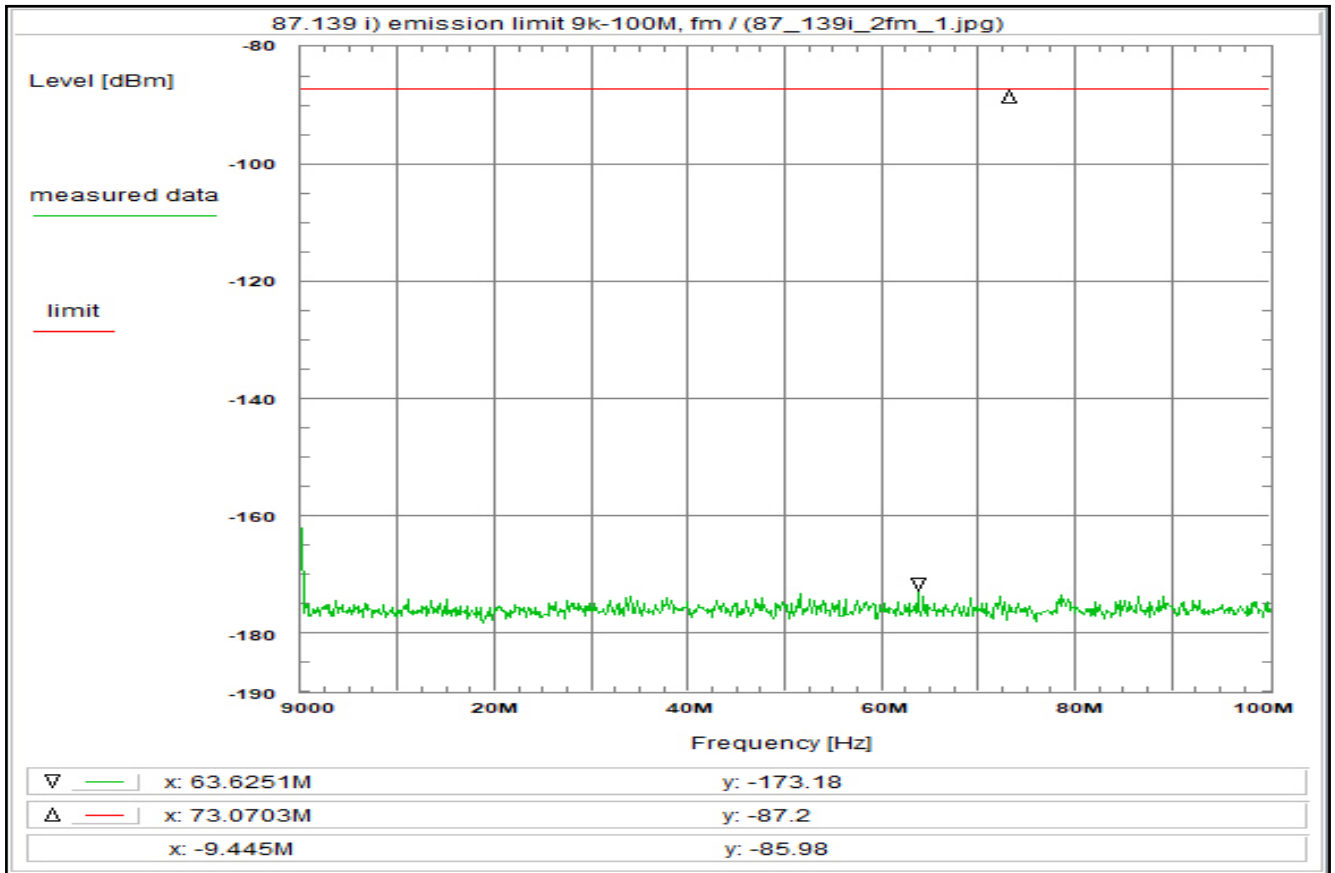
Correction:

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

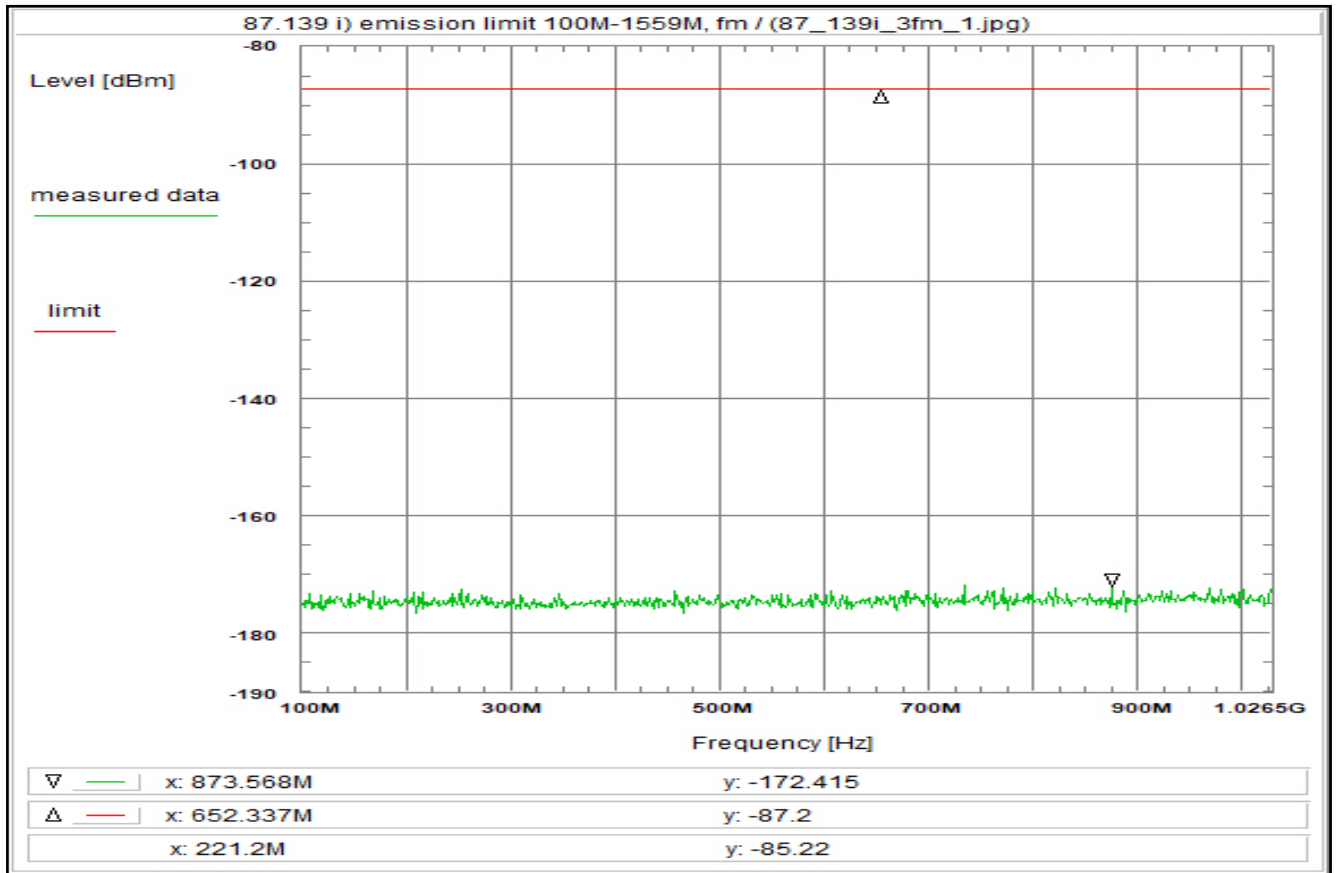
Correction:

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 (U331) - 0.0 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

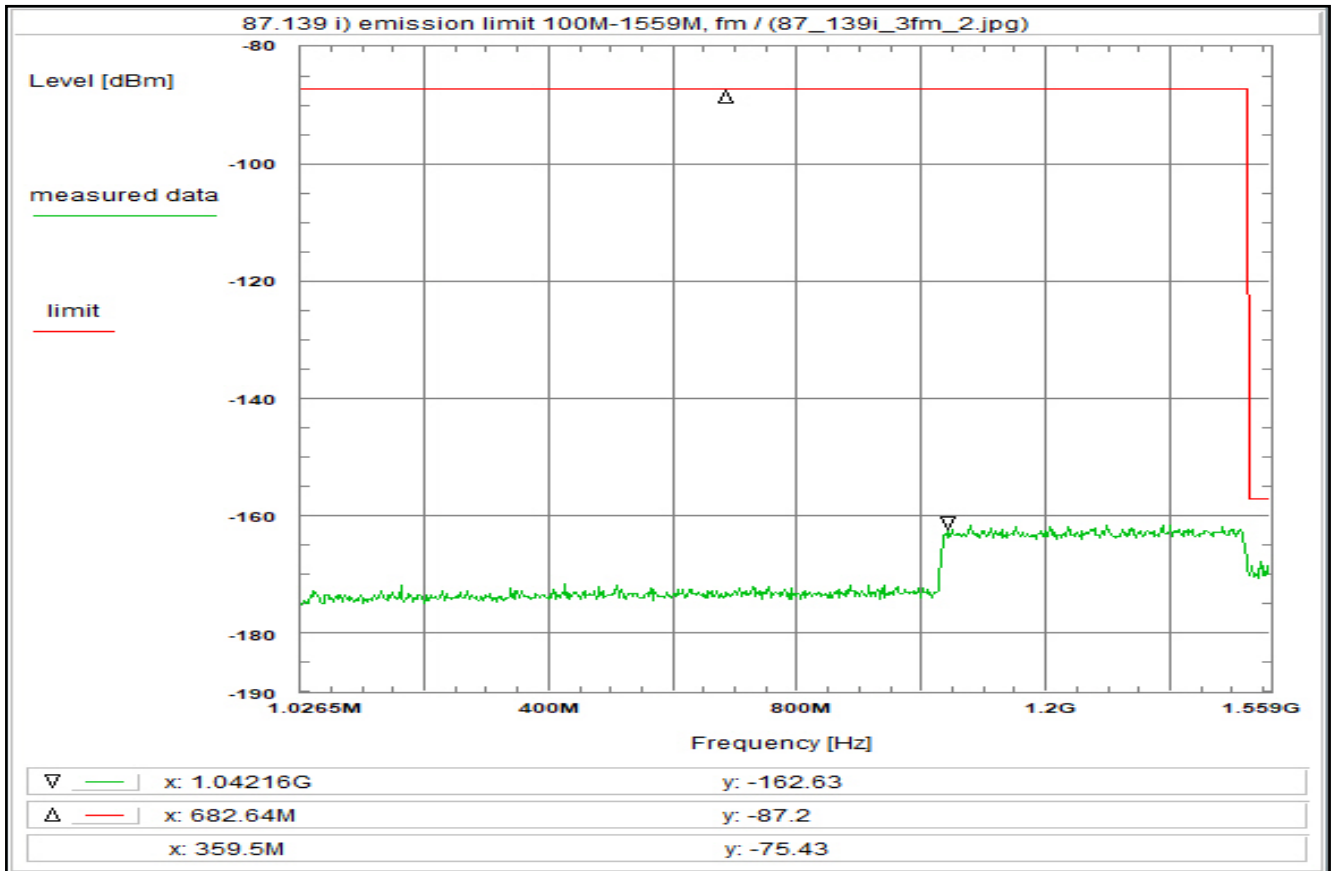
Correction:

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 (U331) - 0.0 dB  
+ 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

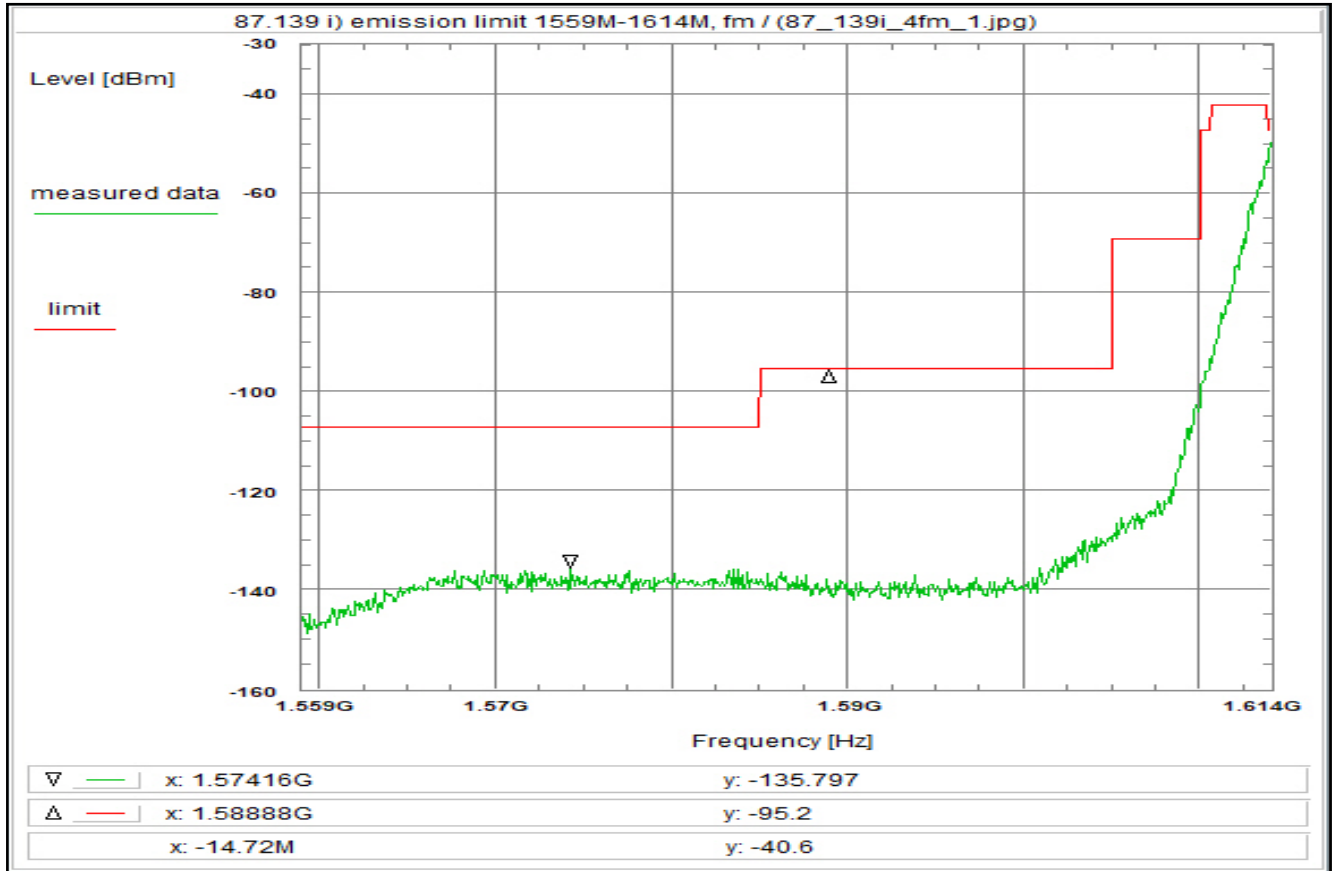
Correction:

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 (U331) - 0.0 dB  
+ 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

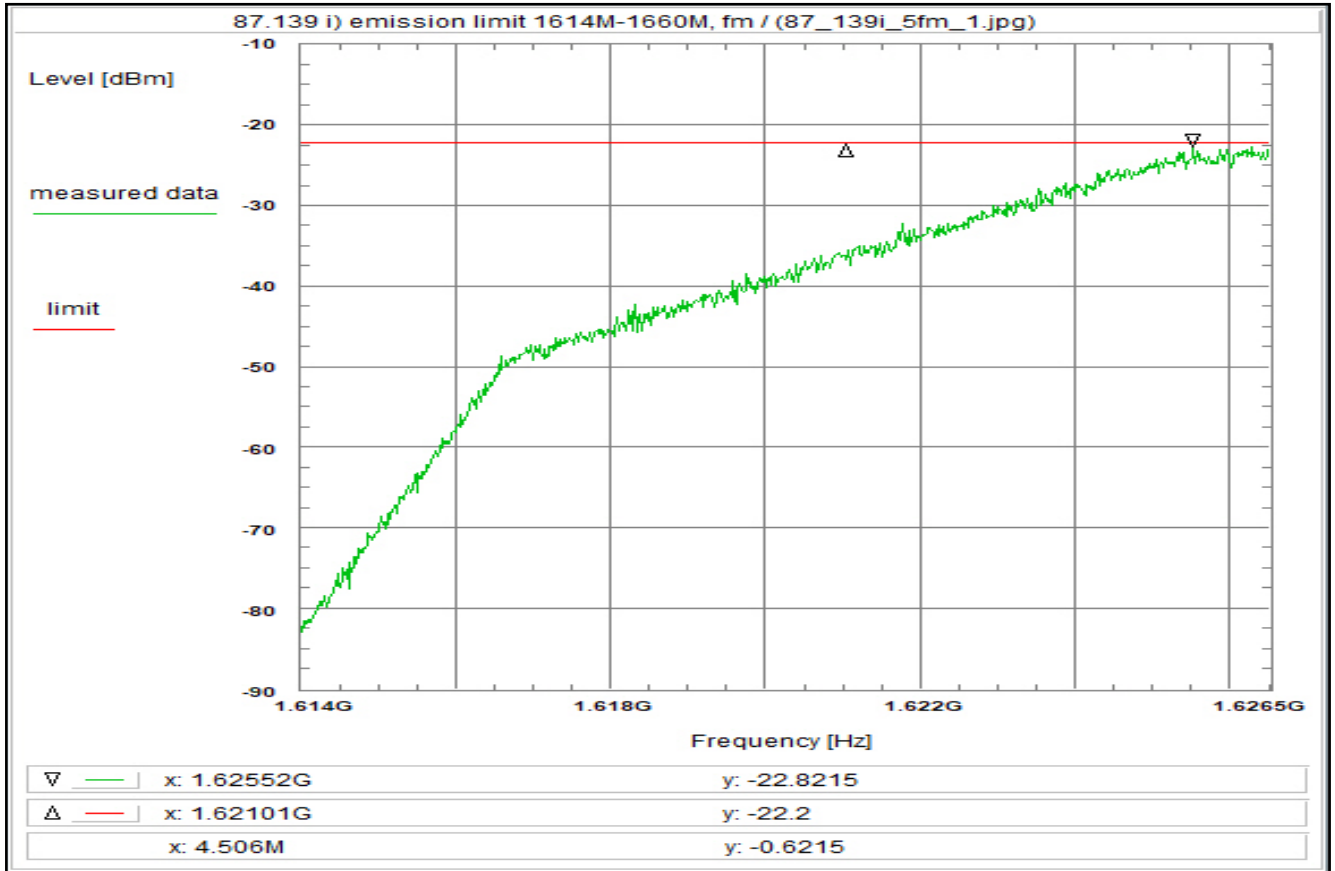
Correction:

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 (U331) - 0.0 dB  
+ 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

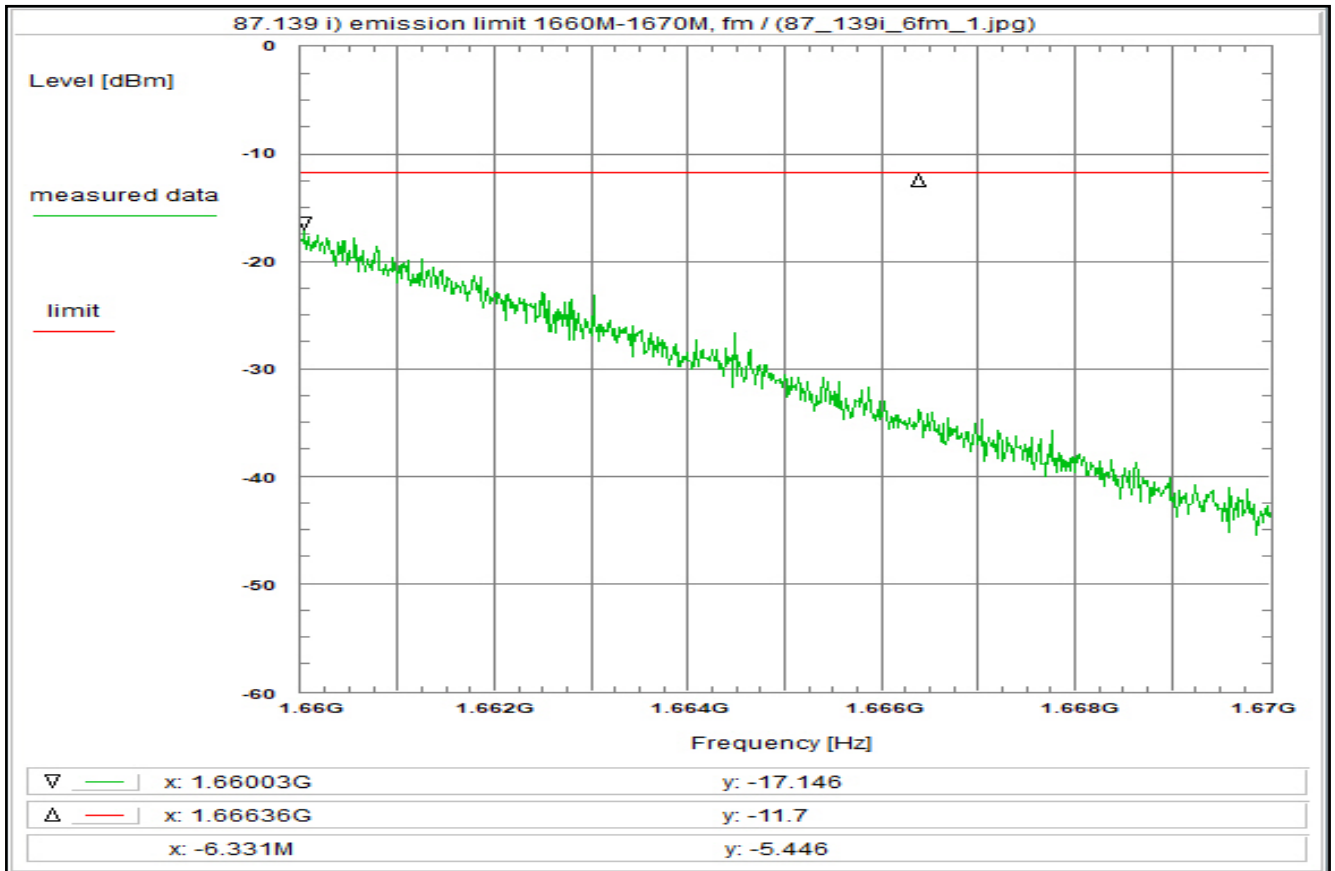
Correction:

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 (U331) - 0.0 dB  
TOTAL CORRECTION: + 56.6 dB  
+ 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:**

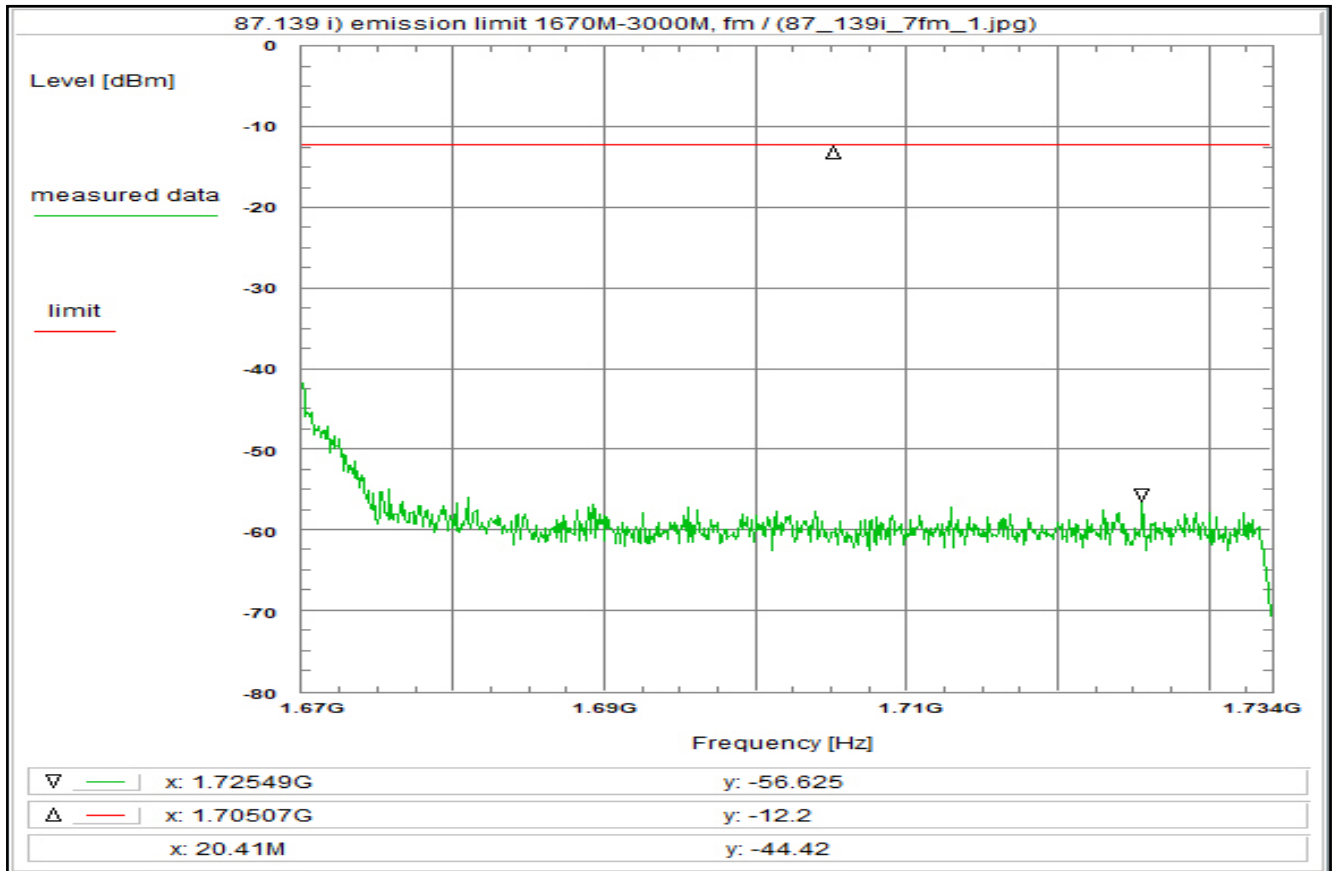
W\_RE 4.5 dB  
Coaxial cable (C220) + 0.9 dB  
DUT-Antenna + 0.0 dBi  
Test antenna + 0.0 dB  
BW correction factor (3k -> 20k) + 8.2 dB  
Atten. between HPA and feedhorn - 0.0 dB  
(U331) + 72.8 dB  
TOTAL CORRECTION: + 77.4 dB

**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

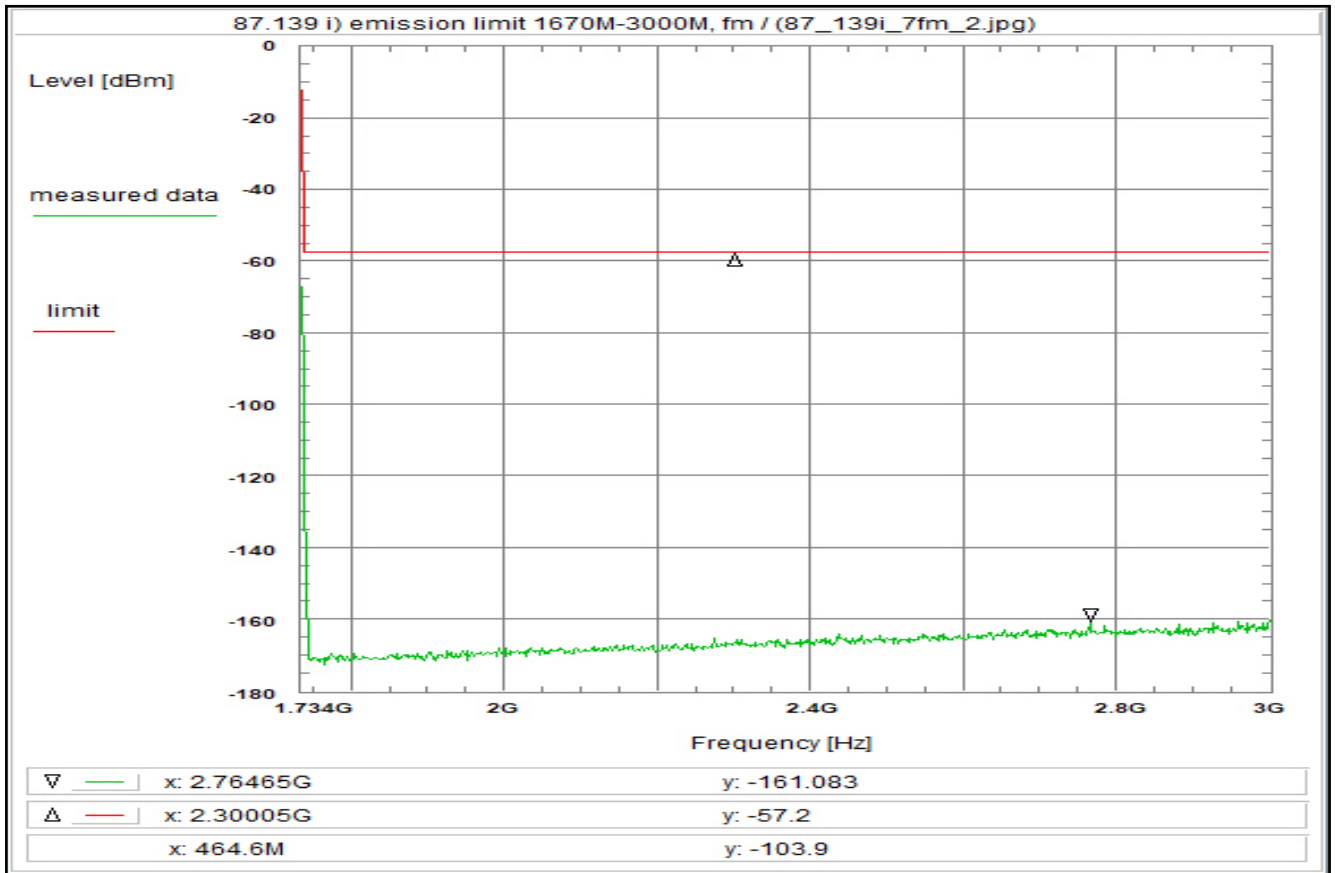
Correction:

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 (U331) - 0.0 dB  
+ 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

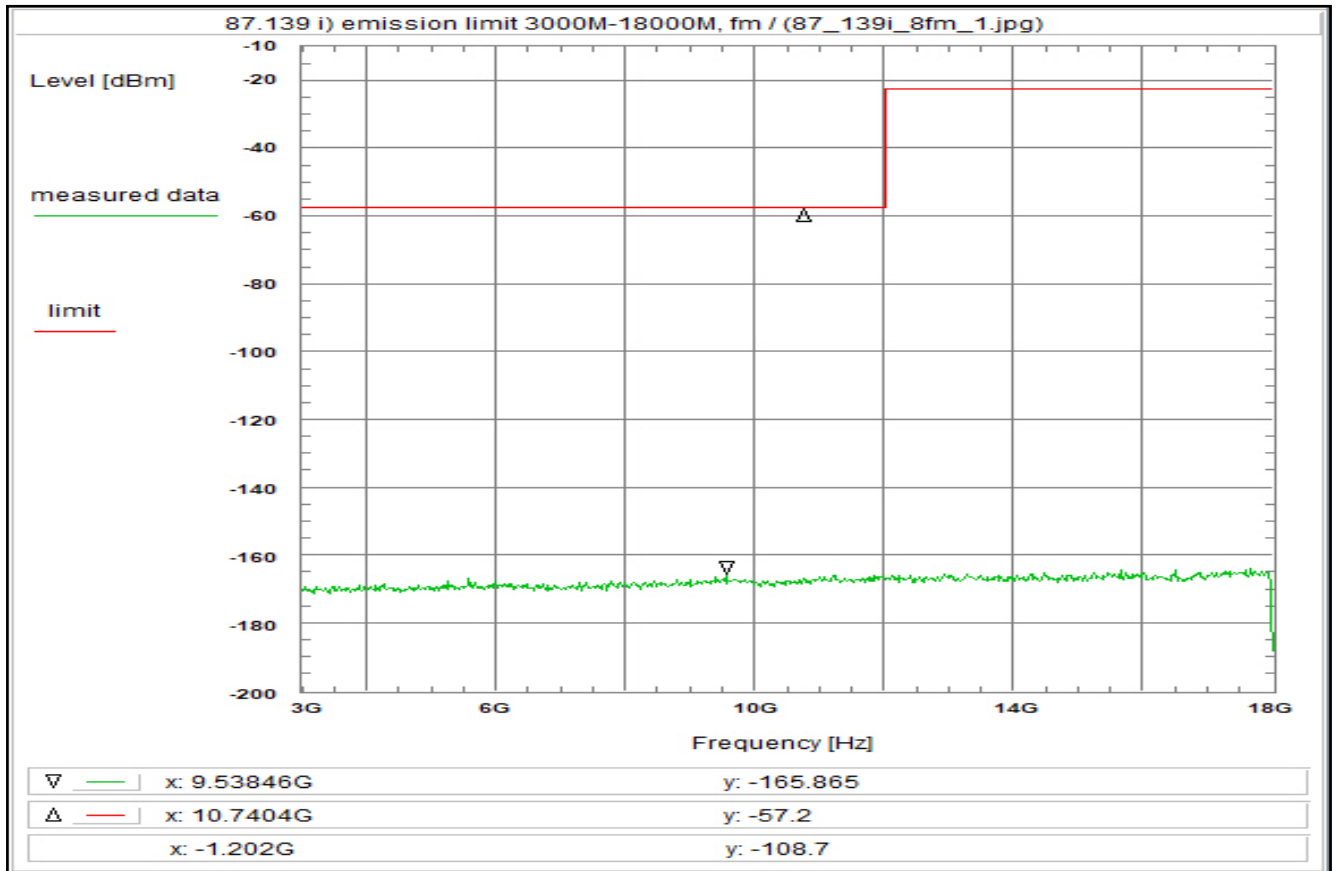
Correction:

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 (U331) - 0.0 dB  
+ 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

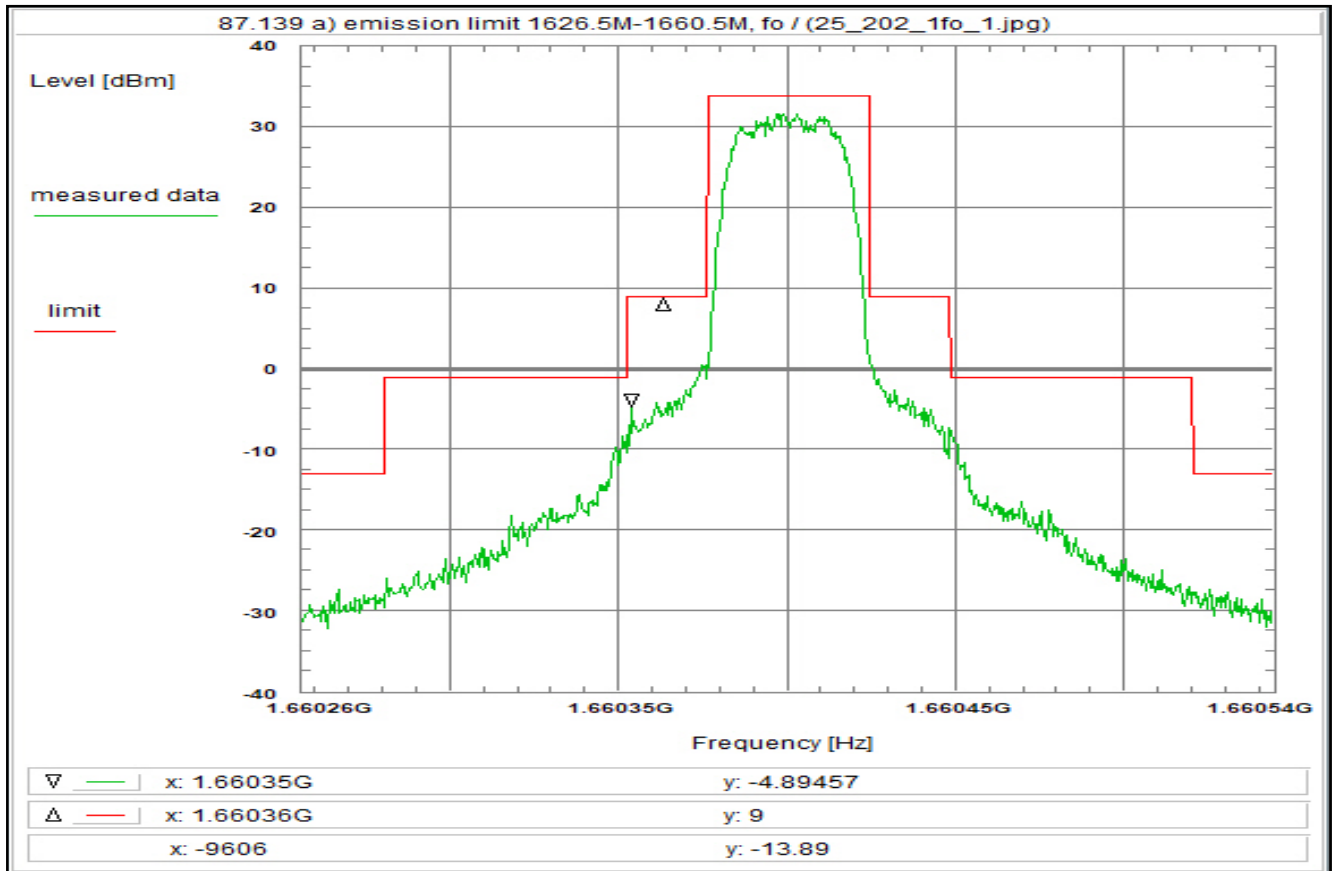
Environment condition:  
Date & Time: Thu 29/Oct/2020 16:16:20  
Location: CTC advanced GmbH, Laboratory RC-SYS  
Temperature: 22 °C  
Humidity: 55 %  
Voltage: 28 V DC

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 (U332) - 0.0 dB  
+ 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:  $-43+10\log(P_{max})\text{dBc}/4\text{kHz} = -43\text{ dBW}$   
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

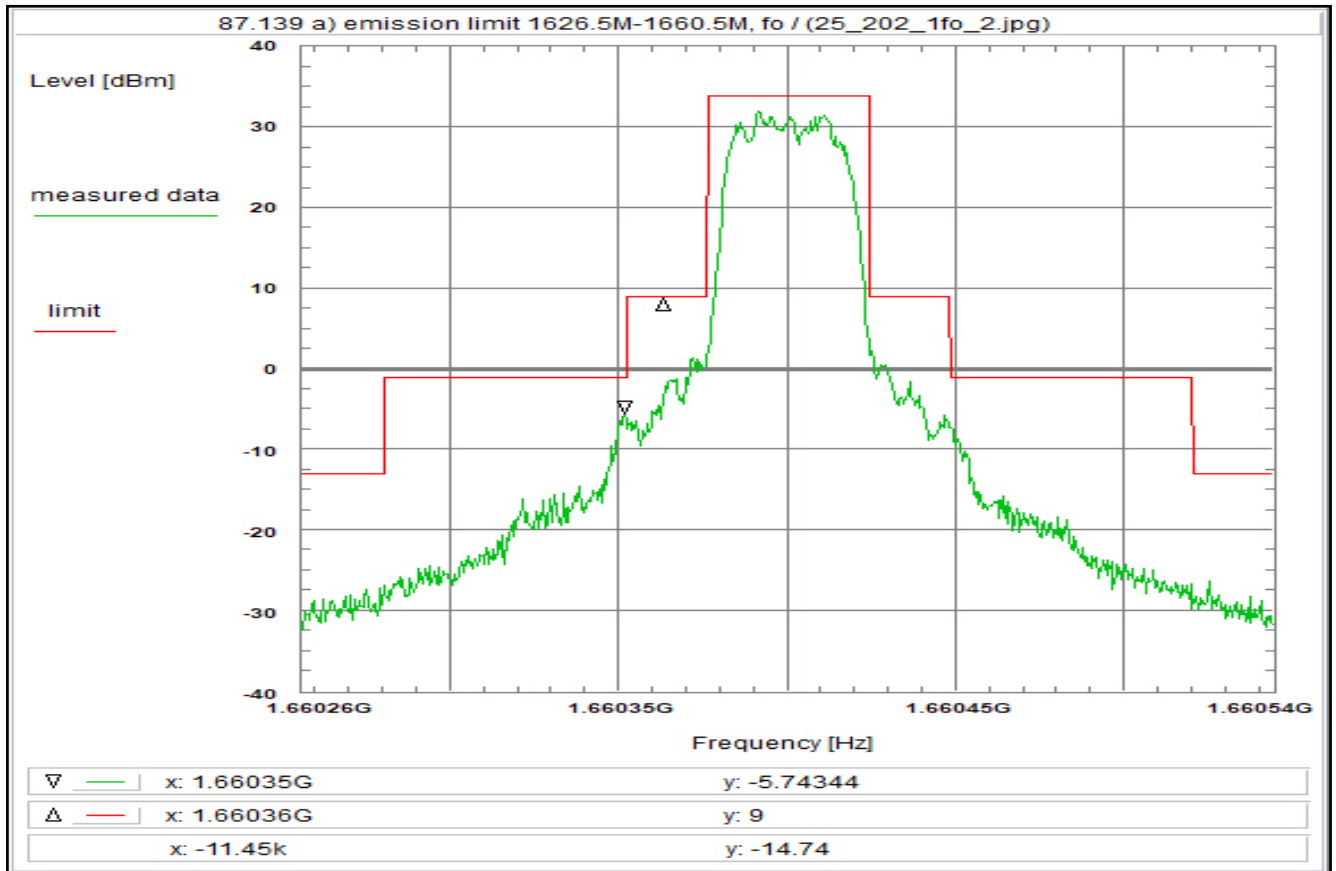
Correction:

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 (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)

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)