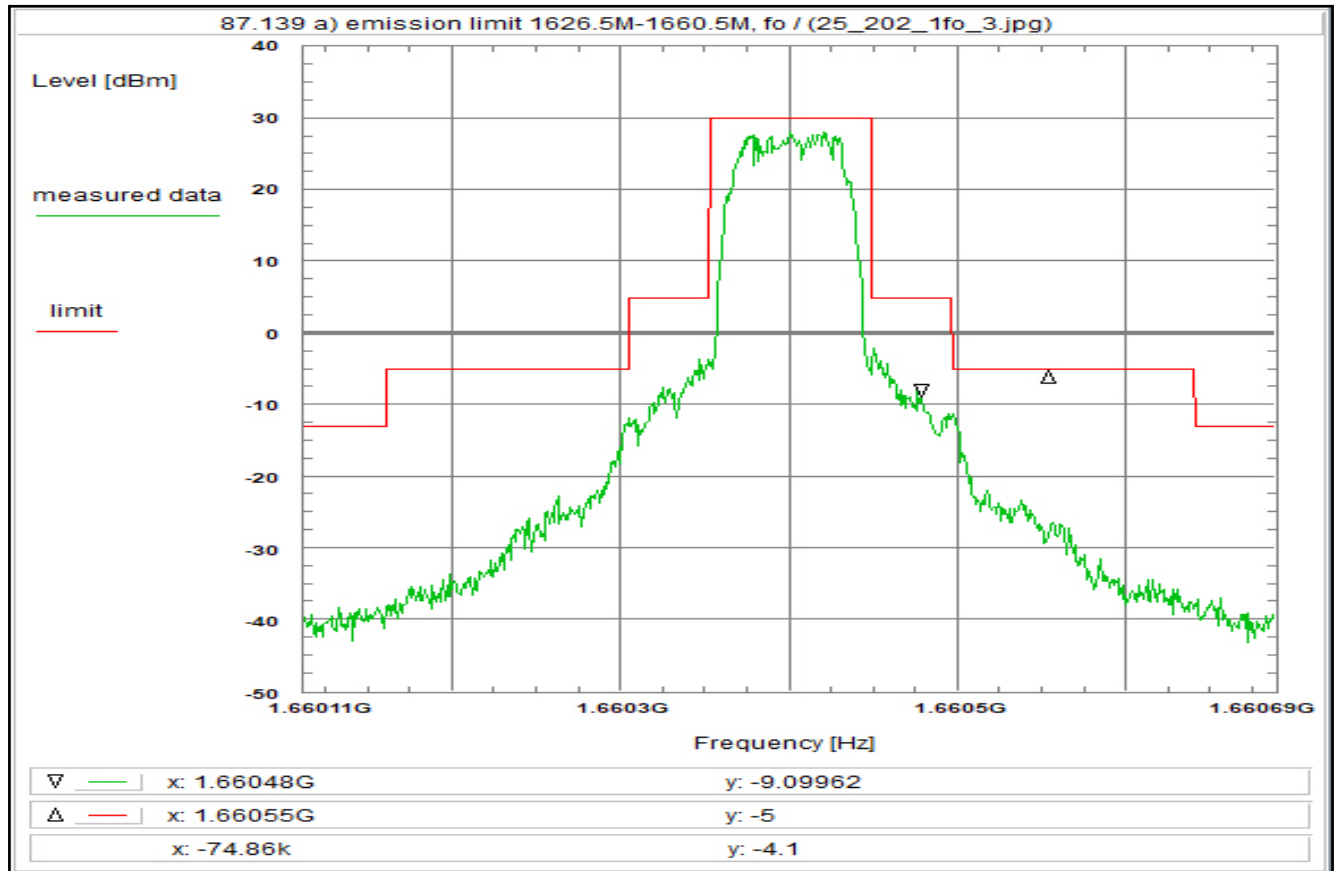


Plot No. 105



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

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, 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 15:48:33

Location: CTC advanced GmbH, Laboratory RC-SYS

Temperature: 22 °C

Humidity: 55 %

Voltage: 28 V DC

Setup of measurement equipment:

Start frequency: 1.660112 GHz

Stop frequency: 1.660688 GHz

Center frequency: 1.6604 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

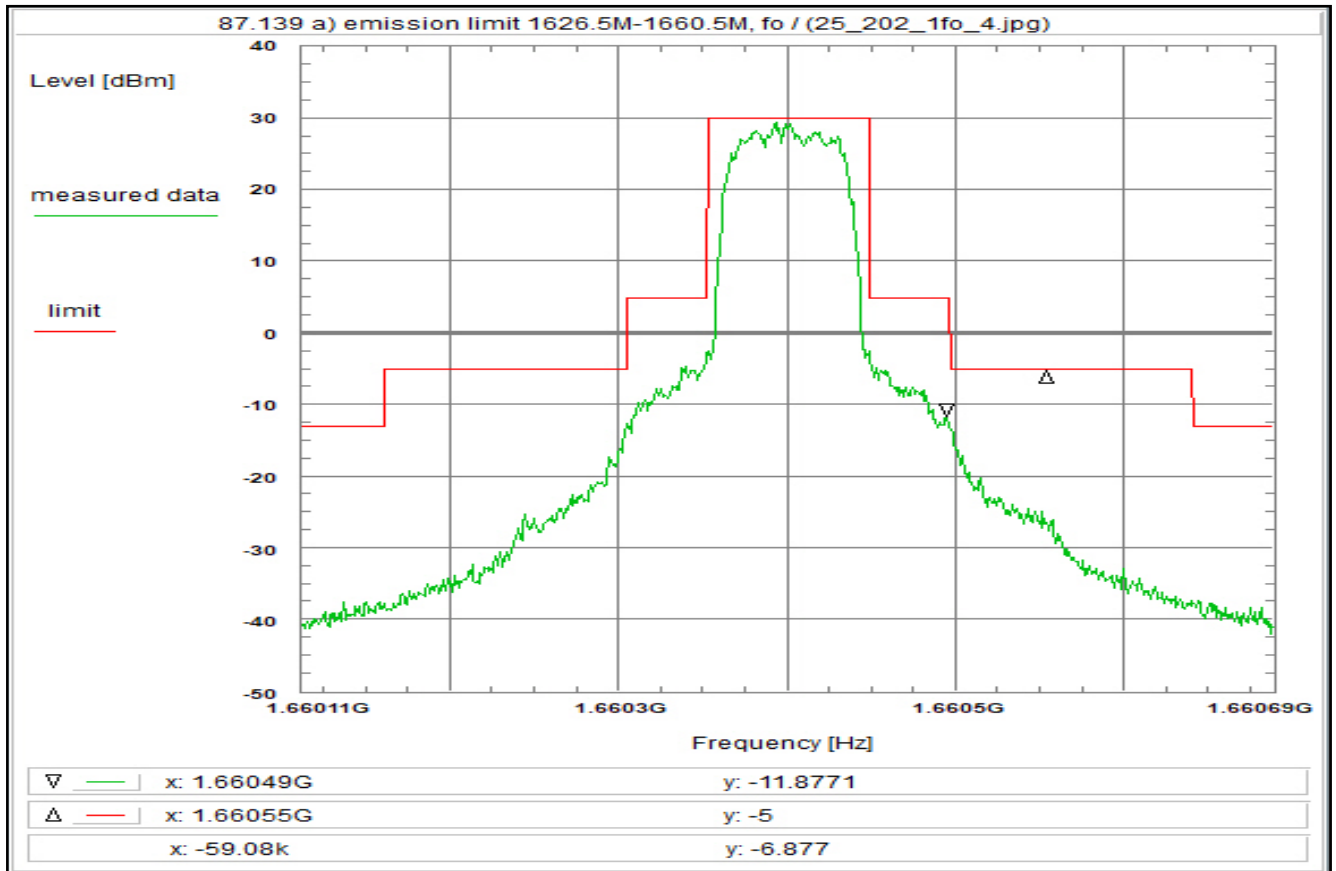
(U330) + 31.9 dB

TOTAL CORRECTION: + 34.0 dB

Remarks:

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

Plot No. 106



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, 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 15:50:13

Location: CTC advanced GmbH, Laboratory RC-SYS

Temperature: 22 °C

Humidity: 55 %

Voltage: 28 V DC

Setup of measurement equipment:

Start frequency: 1.660112 GHz

Stop frequency: 1.660688 GHz

Center frequency: 1.6604 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

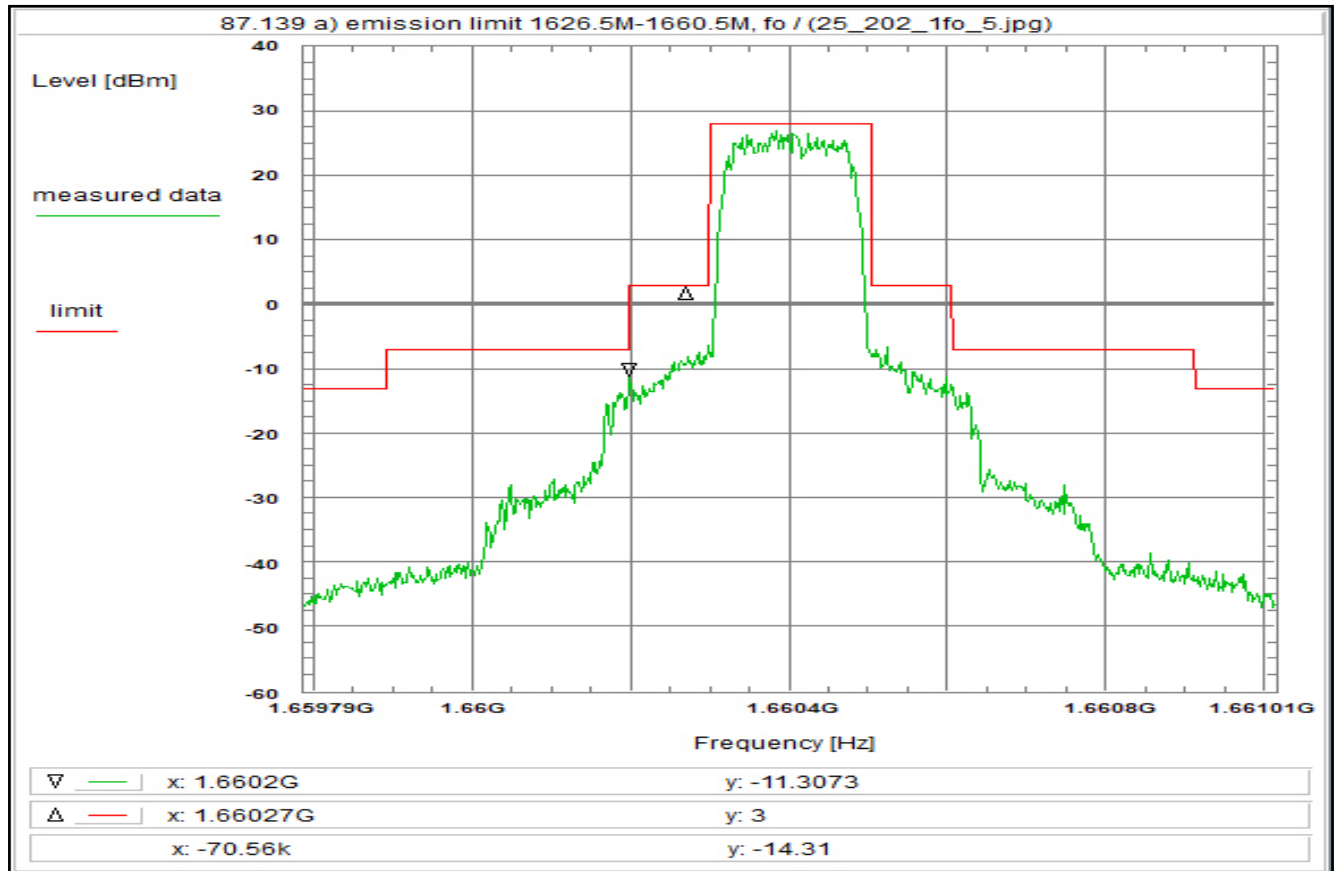
(U330) + 31.9 dB

TOTAL CORRECTION: + 34.0 dB

Remarks:

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

Plot No. 107



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

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, 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 15:53:21

Location: CTC advanced GmbH, Laboratory RC-SYS

Temperature: 22 °C

Humidity: 55 %

Voltage: 28 V DC

Setup of measurement equipment:

Start frequency: 1.659788 GHz

Stop frequency: 1.661012 GHz

Center frequency: 1.6604 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

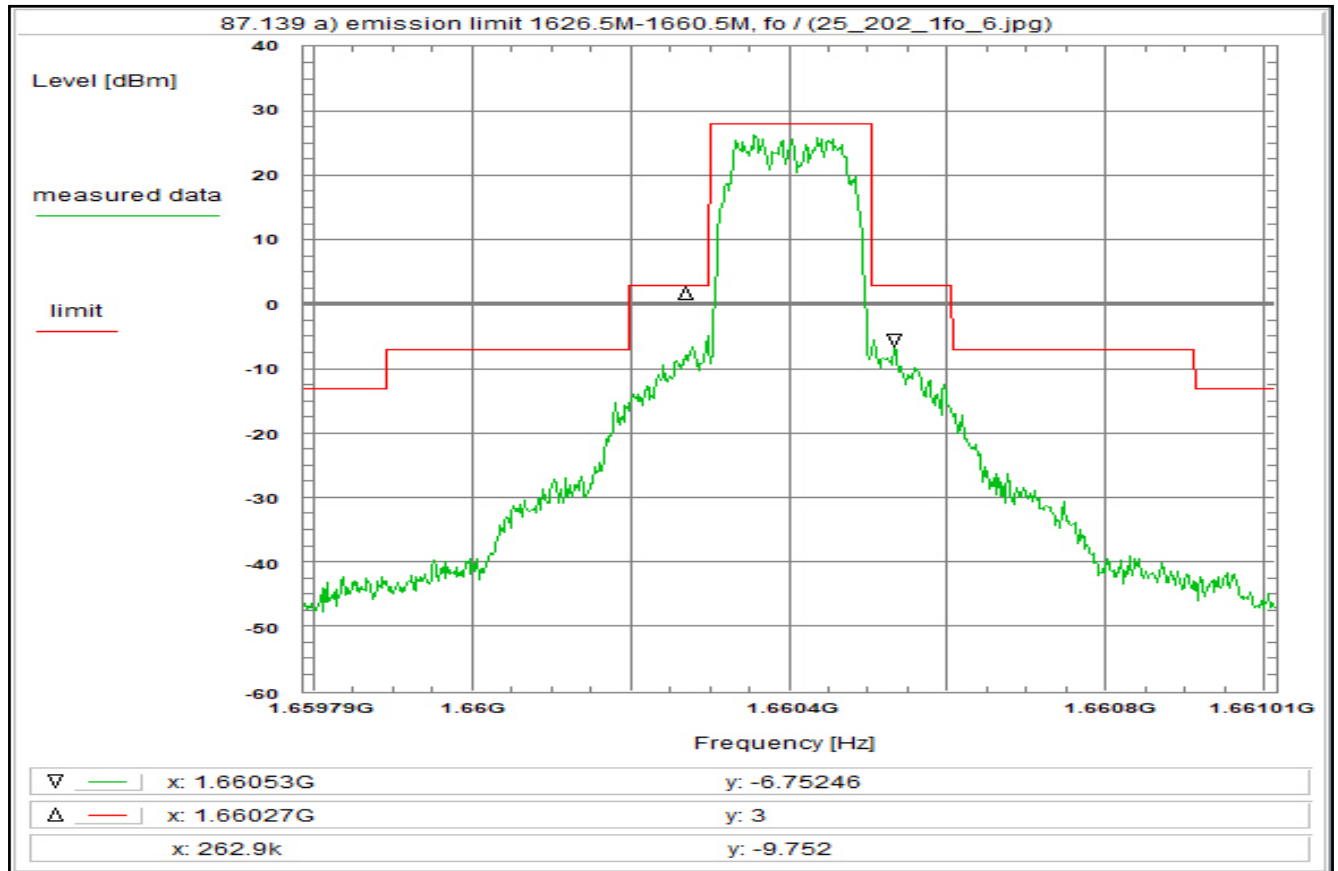
(U330) + 31.9 dB

TOTAL CORRECTION: + 34.0 dB

Remarks:

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

Plot No. 108



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: $-43 + 10 \log(P_{max})$ 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, 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 15:55:20

Location: CTC advanced GmbH, Laboratory RC-SYS

Temperature: 22 °C

Humidity: 55 %

Voltage: 28 V DC

Setup of measurement equipment:

Start frequency: 1.659788 GHz

Stop frequency: 1.661012 GHz

Center frequency: 1.6604 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

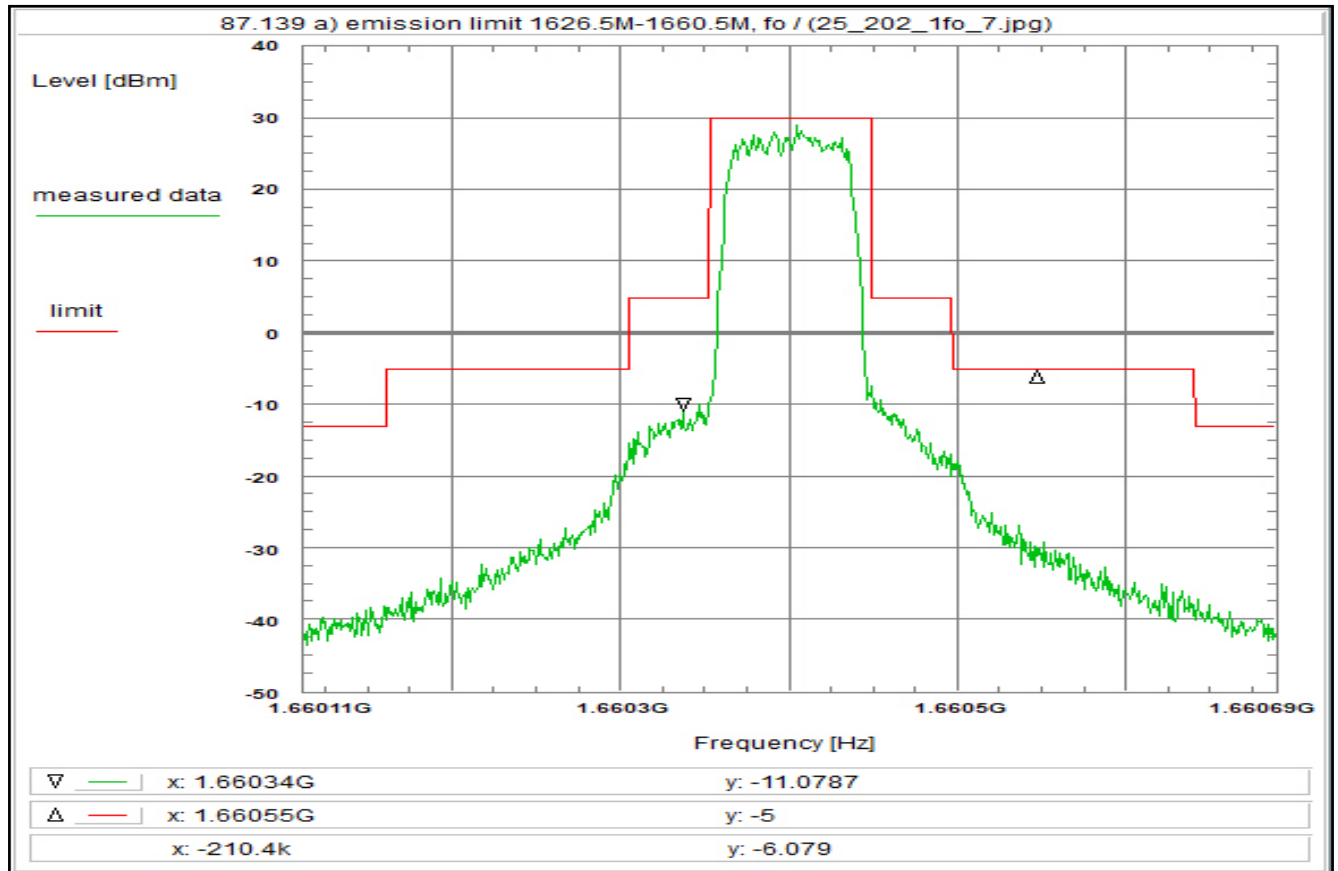
(U330) + 31.9 dB

TOTAL CORRECTION: + 34.0 dB

Remarks:

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

Plot No. 109



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

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, 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 15:58:56

Location: CTC advanced GmbH, Laboratory RC-SYS

Temperature: 22 °C

Humidity: 55 %

Voltage: 28 V DC

Setup of measurement equipment:

Start frequency: 1.660112 GHz

Stop frequency: 1.660688 GHz

Center frequency: 1.6604 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

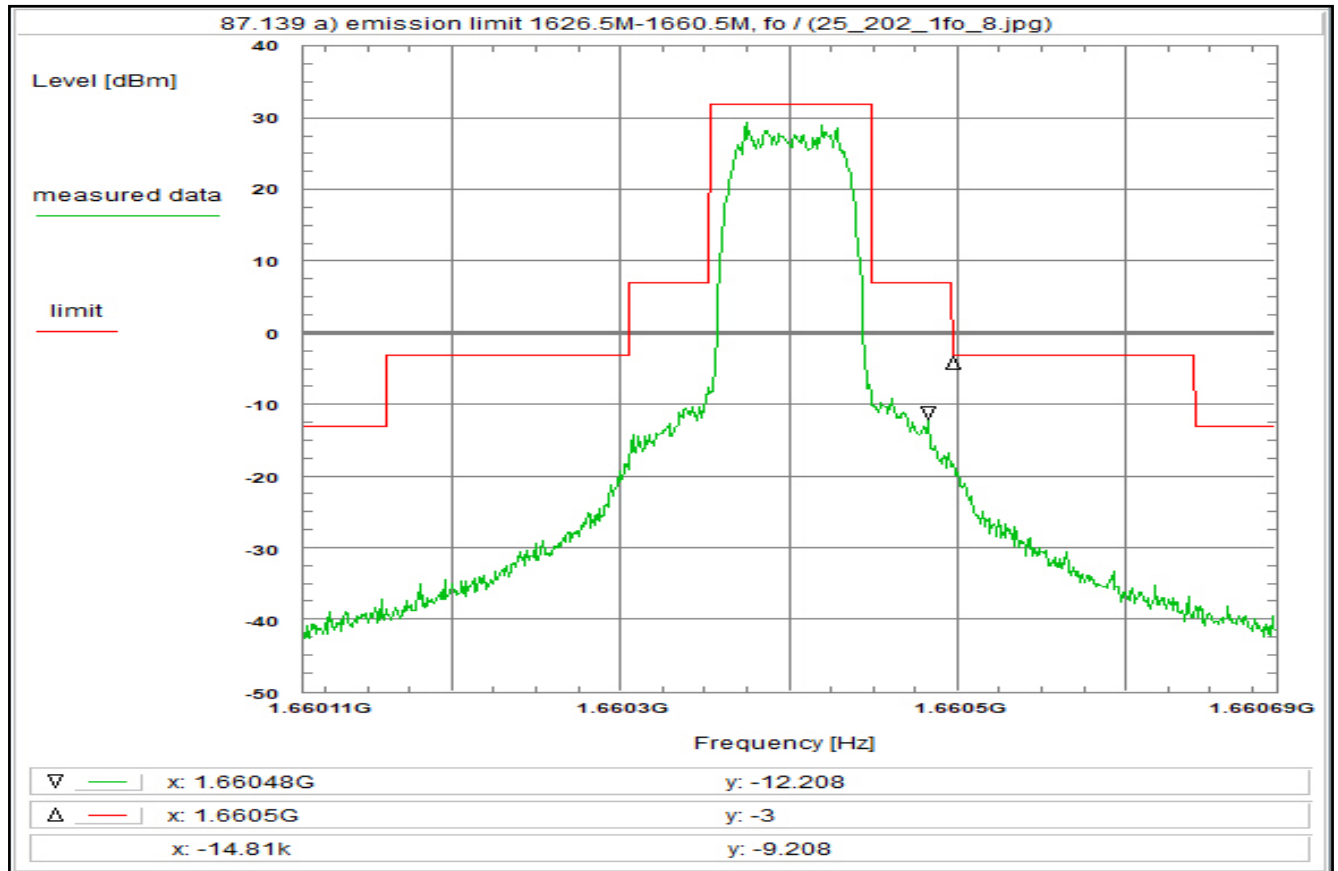
(U330) + 31.9 dB

TOTAL CORRECTION: + 34.0 dB

Remarks:

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

Plot No. 110



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

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, R20T2QD

Test setup:

see test report chapter 8.2

Test equipment:

see test report chapter 8.1-8.2: R001

Remark:

Test result: Test passed

Environment condition:

Date & Time: Tue 27/Oct/2020 16:01:04

Location: CTC advanced GmbH, Laboratory RC-SYS

Temperature: 22 °C

Humidity: 55 %

Voltage: 28 V DC

Setup of measurement equipment:

Start frequency: 1.660112 GHz

Stop frequency: 1.660688 GHz

Center frequency: 1.6604 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

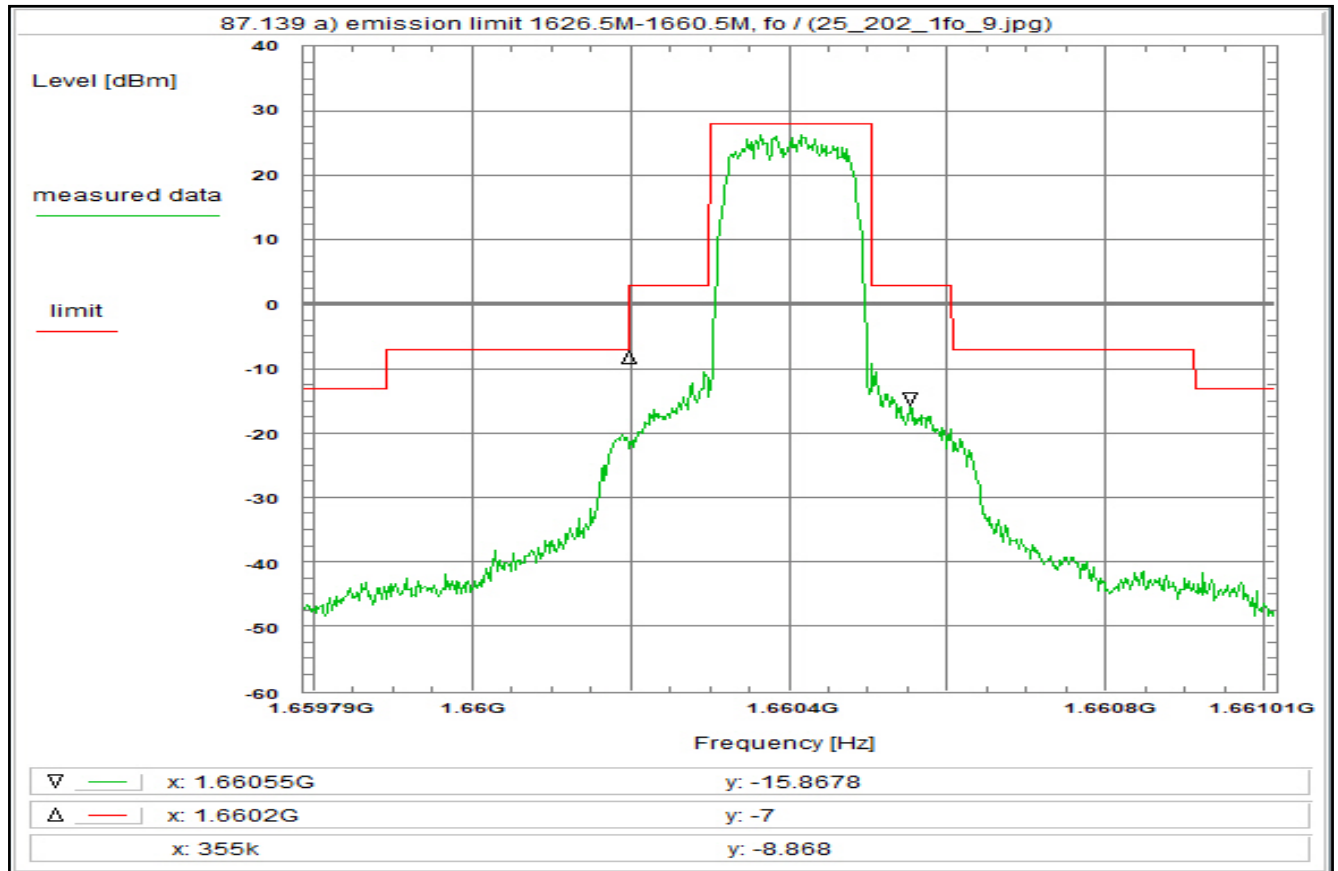
(U330) + 31.9 dB

TOTAL CORRECTION: + 34.0 dB

Remarks:

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

Plot No. 111



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

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, 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 16:03:58

Location: CTC advanced GmbH, Laboratory RC-SYS

Temperature: 22 °C

Humidity: 55 %

Voltage: 28 V DC

Setup of measurement equipment:

Start frequency: 1.659788 GHz

Stop frequency: 1.661012 GHz

Center frequency: 1.6604 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

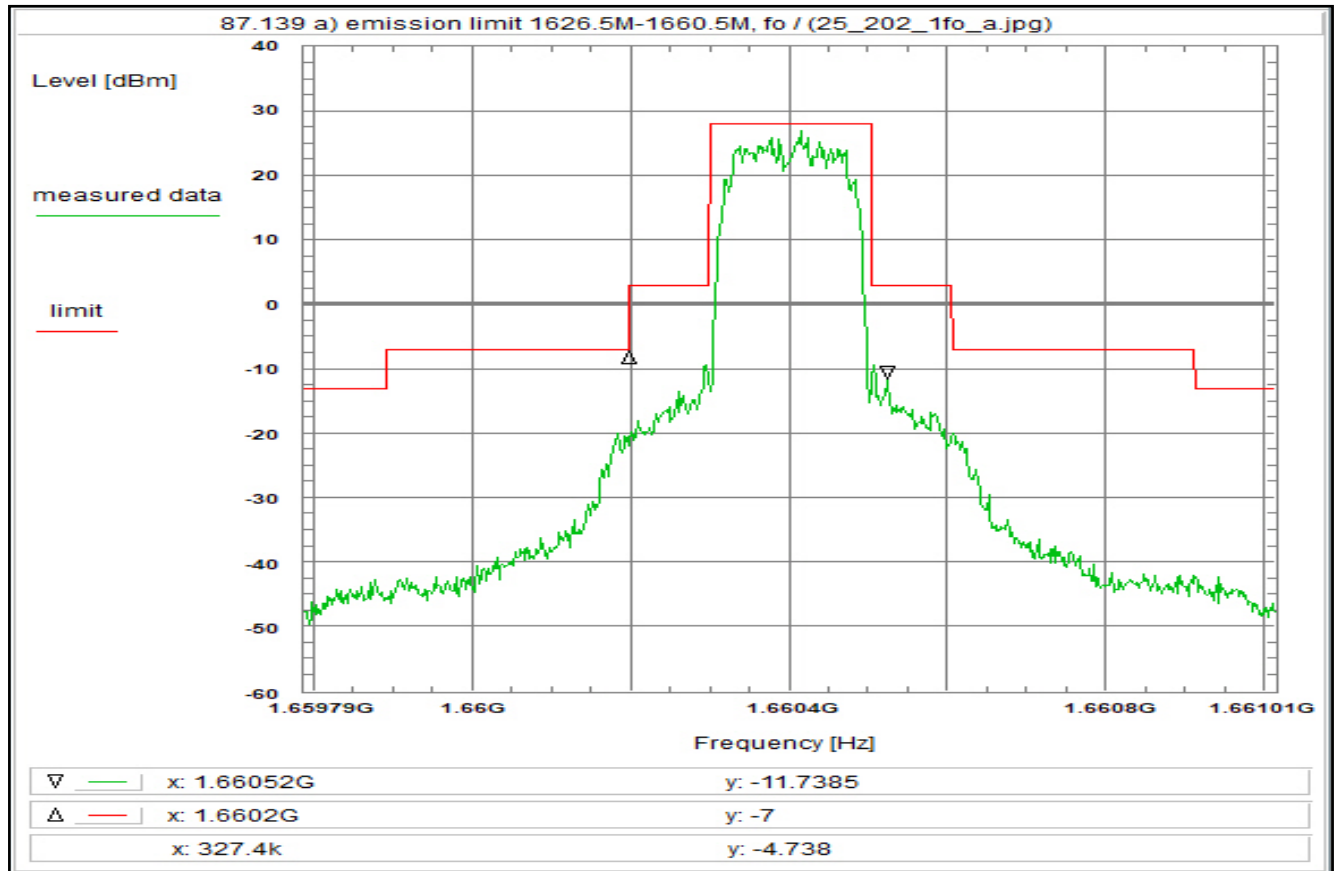
(U330) + 31.9 dB

TOTAL CORRECTION: + 34.0 dB

Remarks:

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

Plot No. 112



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

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, 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 16:06:19

Location: CTC advanced GmbH, Laboratory RC-SYS

Temperature: 22 °C

Humidity: 55 %

Voltage: 28 V DC

Setup of measurement equipment:

Start frequency: 1.659788 GHz

Stop frequency: 1.661012 GHz

Center frequency: 1.6604 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

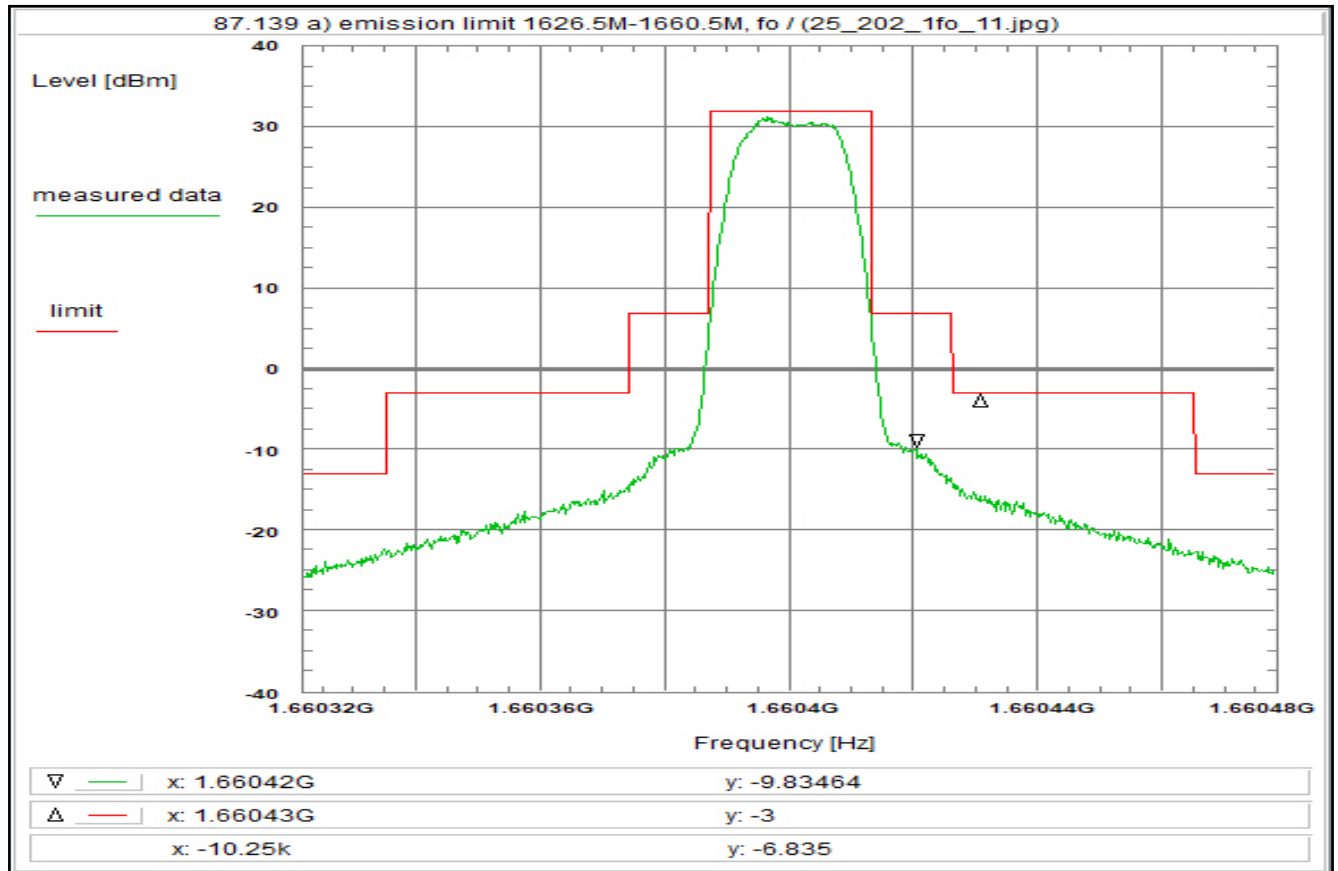
(U330) + 31.9 dB

TOTAL CORRECTION: + 34.0 dB

Remarks:

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

Plot No. 113



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, 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 16:10:40

Location: CTC advanced GmbH, Laboratory RC-SYS

Temperature: 22 °C

Humidity: 55 %

Voltage: 28 V DC

Setup of measurement equipment:

Start frequency: 1.660322 GHz

Stop frequency: 1.660478 GHz

Center frequency: 1.6604 GHz

Frequency span: 156 kHz

Resolution-BW: 3 kHz

Video-BW: 10 kHz

Input attenuation: 20 dB

Trace-Mode: Clear Write

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

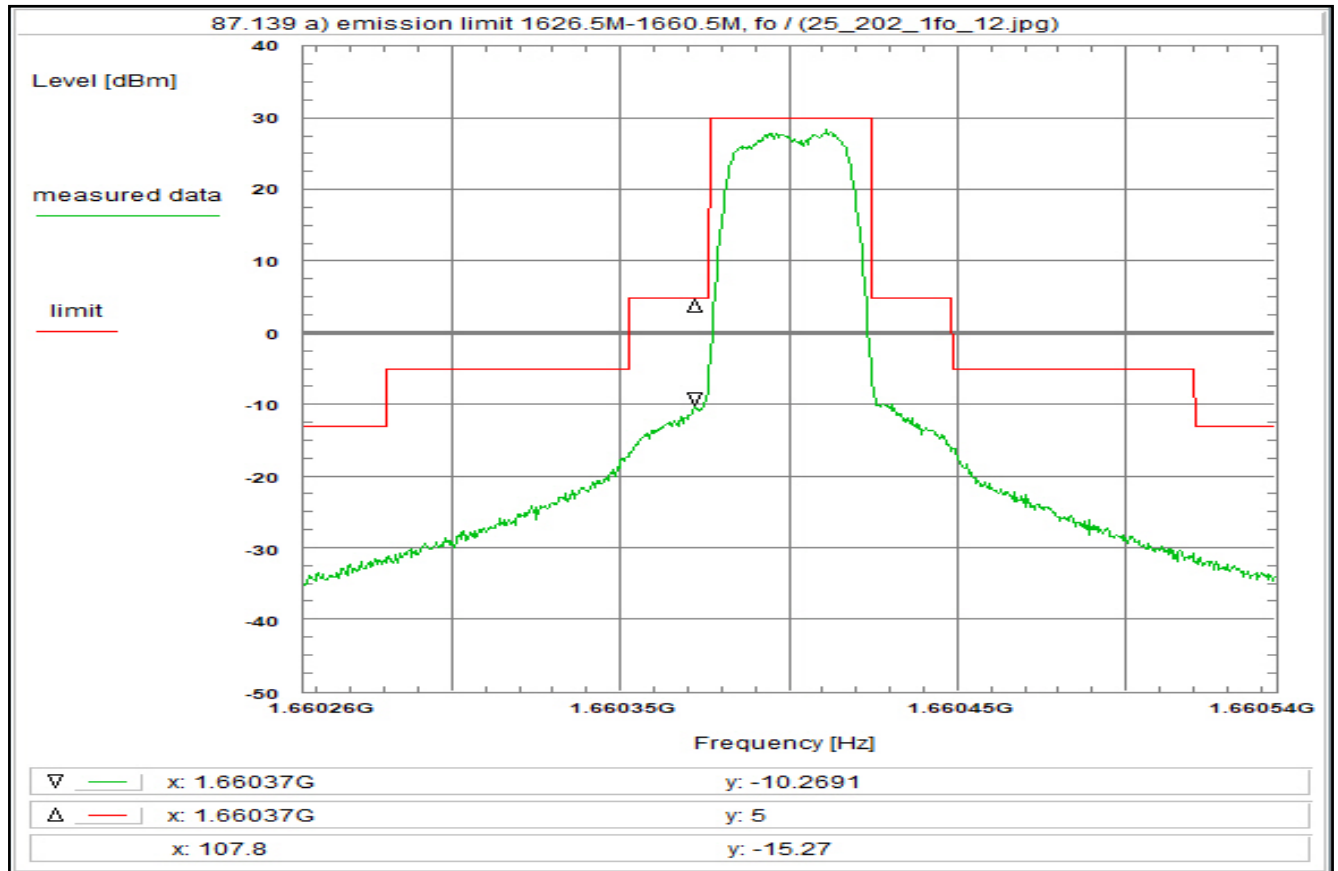
(U330) + 31.9 dB

TOTAL CORRECTION: + 34.0 dB

Remarks:

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

Plot No. 114



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

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, 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 16:12:43

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 - 0.0 dB

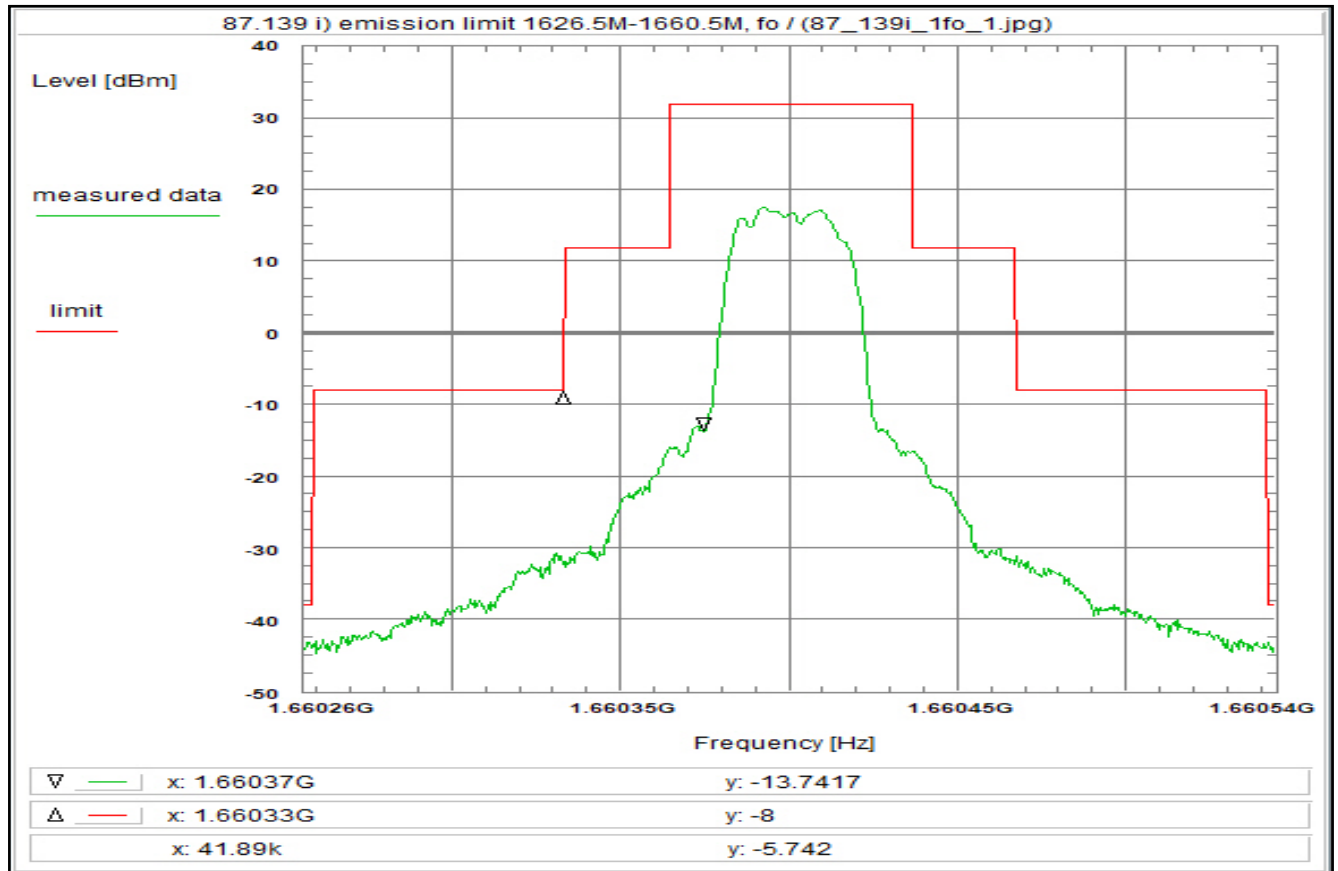
(U330) + 31.9 dB

TOTAL CORRECTION: + 34.0 dB

Remarks:

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

Plot No. 115



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

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
 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: Wed 28/Oct/2020 12:59:50
 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: 5 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

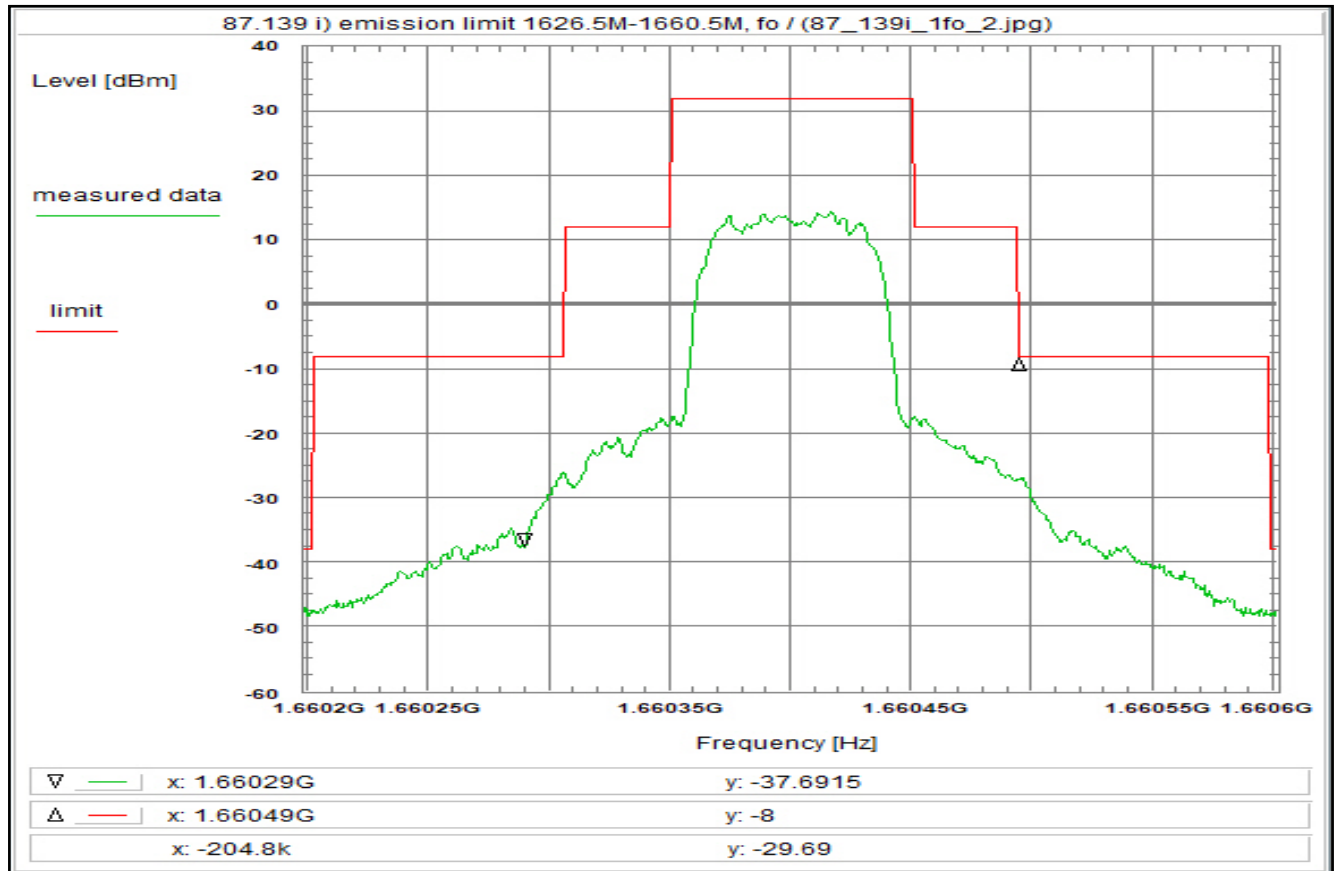
Remarks:

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

For EIRP calculation:

'worst-case' = maximum antenna gain

Plot No. 116



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

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
 fh, 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 13:20:20
 Location: CTC advanced GmbH, Laboratory RC-SYS
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 28 V DC

Setup of measurement equipment:

Start frequency: 1.6601984 GHz
 Stop frequency: 1.6606016 GHz
 Center frequency: 1.6604 GHz
 Frequency span: 403.2 kHz
 Resolution-BW: 3 kHz
 Video-BW: 10 kHz
 Input attenuation: 5 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

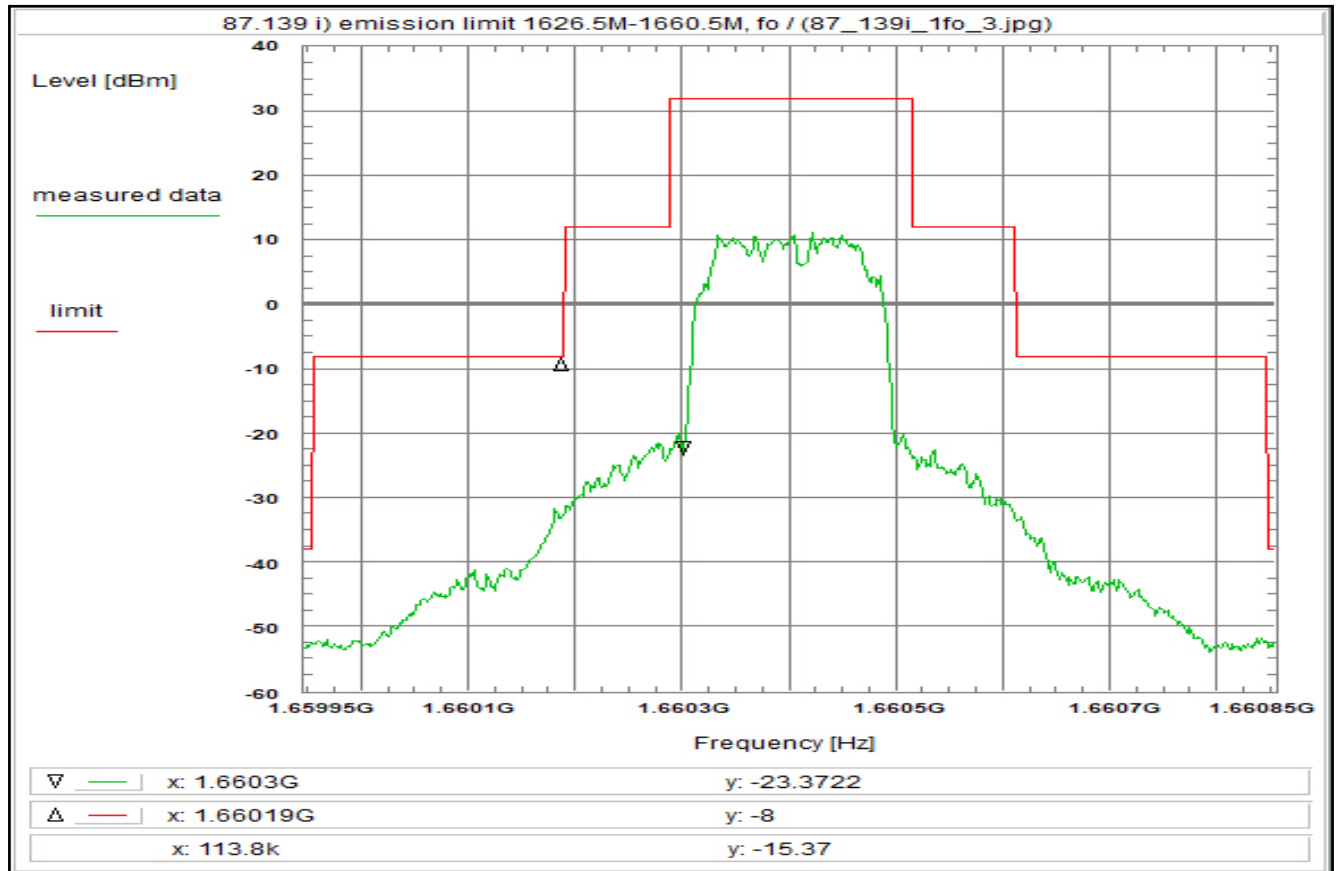
Remarks:

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

For EIRP calculation:

'worst-case' = maximum antenna gain

Plot No. 117



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

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
 fh, 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 13:24:14
 Location: CTC advanced GmbH, Laboratory RC-SYS
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 28 V DC

Setup of measurement equipment:

Start frequency: 1.6599464 GHz
 Stop frequency: 1.6608536 GHz
 Center frequency: 1.6604 GHz
 Frequency span: 907.2 kHz
 Resolution-BW: 3 kHz
 Video-BW: 10 kHz
 Input attenuation: 5 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

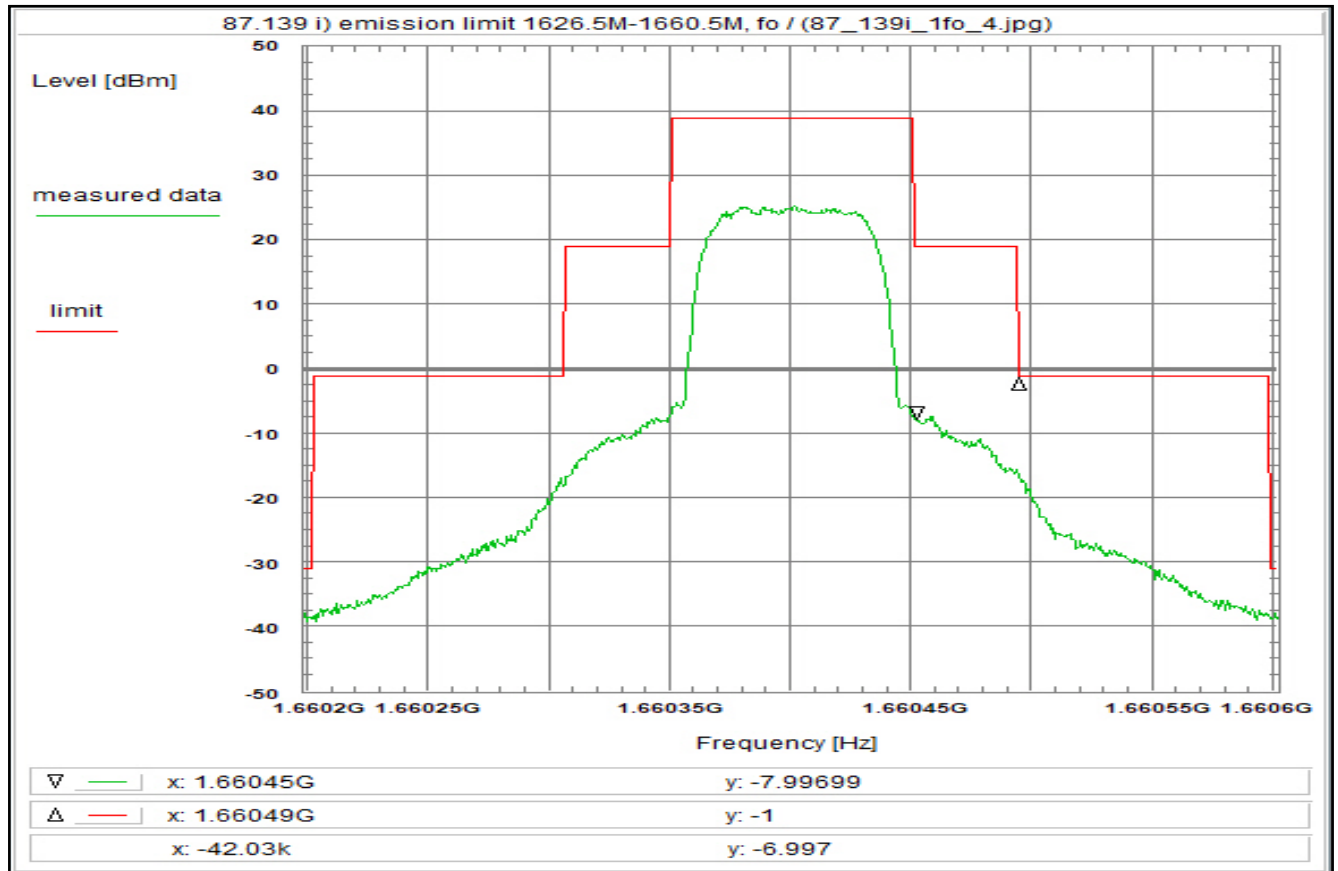
Remarks:

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

For EIRP calculation:

'worst-case' = maximum antenna gain

Plot No. 118



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

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
 fh, R20T2XD

Test setup:

see test report chapter 8.2

Test equipment:

see test report chapter 8.1-8.2: R001

Remark:

Test result: Test passed

Environment condition:

Date & Time: Wed 28/Oct/2020 13:41:31
 Location: CTC advanced GmbH, Laboratory RC-SYS
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 28 V DC

Setup of measurement equipment:

Start frequency: 1.6601984 GHz
 Stop frequency: 1.6606016 GHz
 Center frequency: 1.6604 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

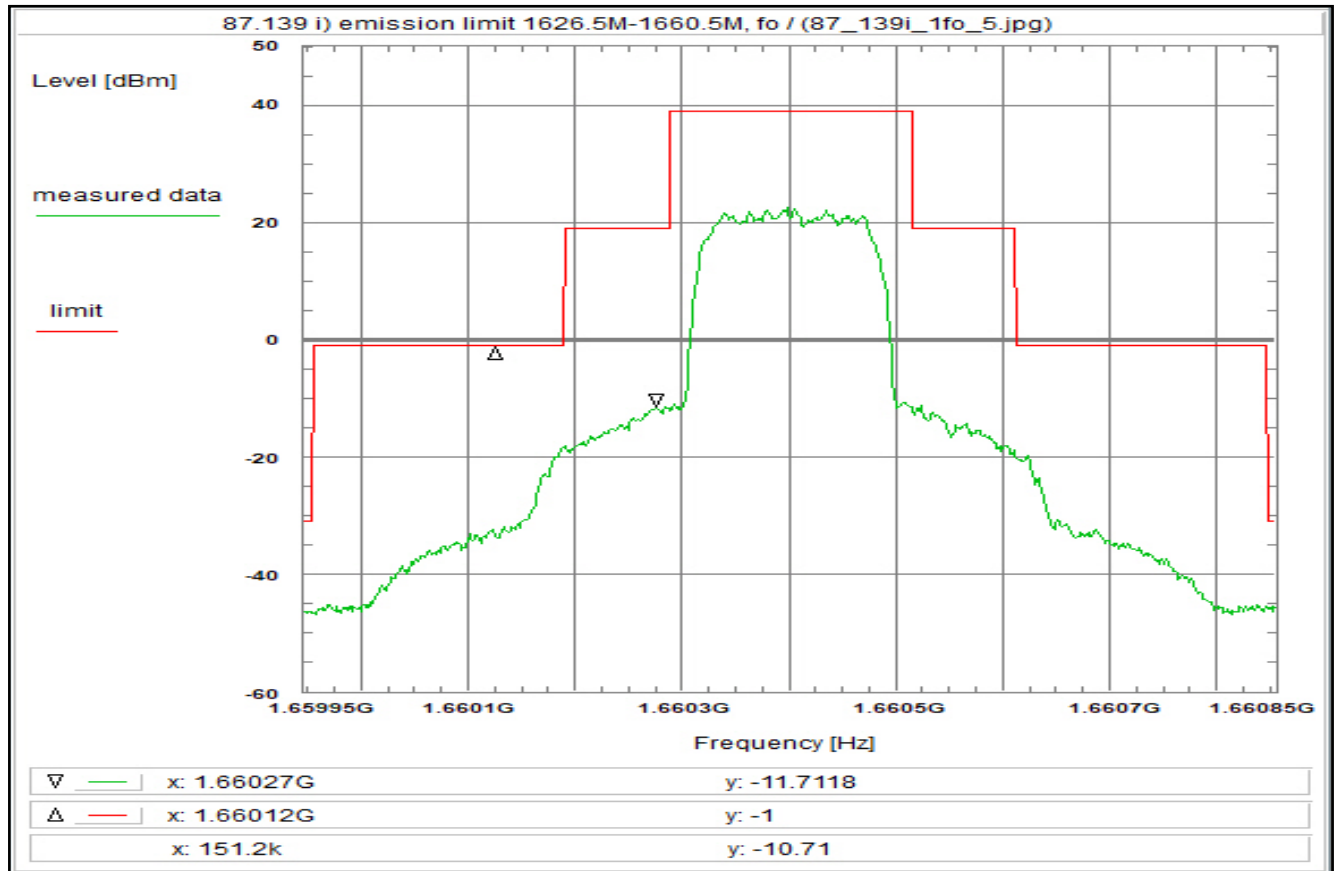
Remarks:

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

For EIRP calculation:

'worst-case' = maximum antenna gain

Plot No. 119



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

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
 fh, 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 13:47:00
 Location: CTC advanced GmbH, Laboratory RC-SYS
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 28 V DC

Setup of measurement equipment:

Start frequency: 1.6599464 GHz
 Stop frequency: 1.6608536 GHz
 Center frequency: 1.6604 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

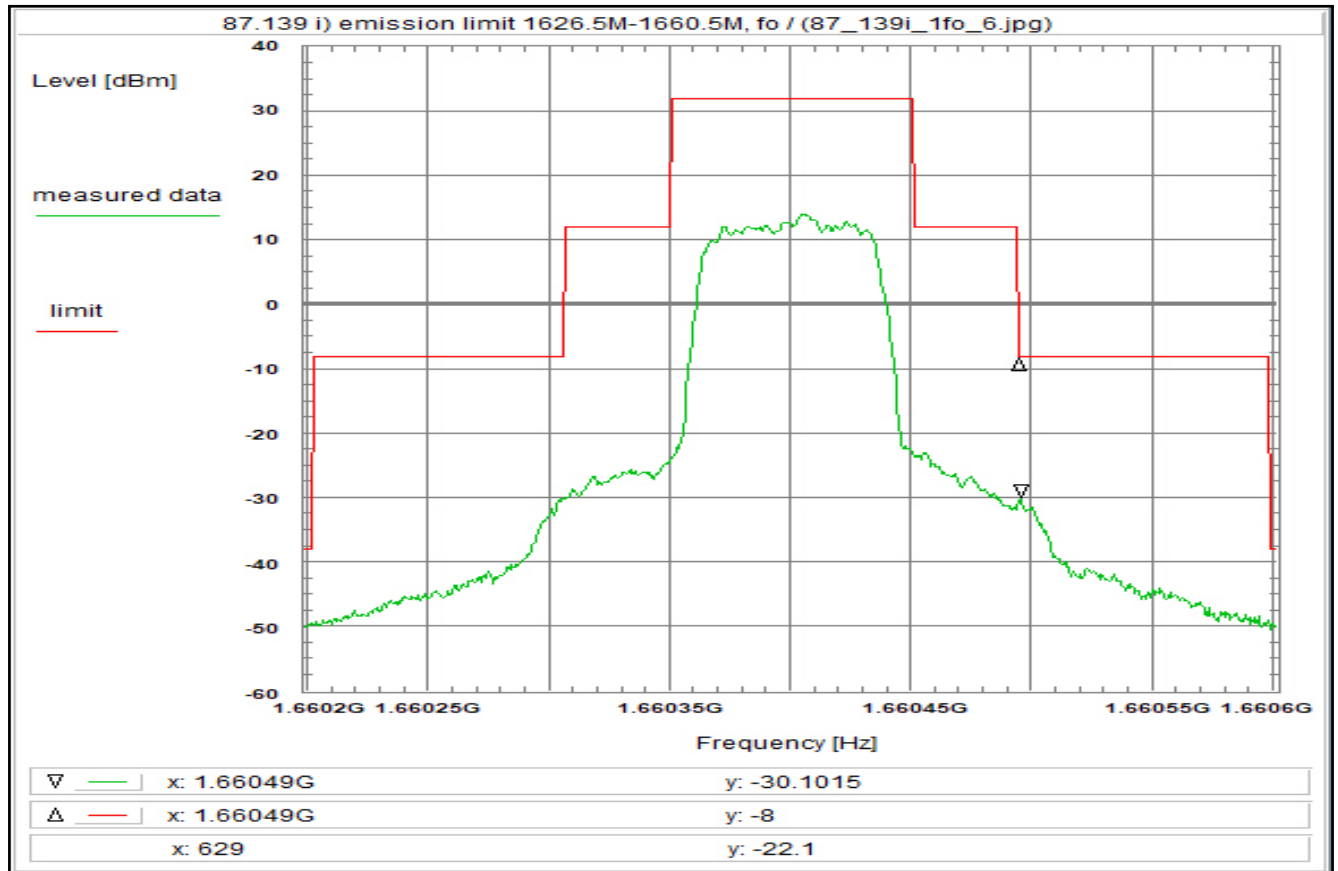
Remarks:

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

For EIRP calculation:

'worst-case' = maximum antenna gain

Plot No. 120



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

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
 fh, 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 13:50:36
 Location: CTC advanced GmbH, Laboratory RC-SYS
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 28 V DC

Setup of measurement equipment:

Start frequency: 1.6601984 GHz
 Stop frequency: 1.6606016 GHz
 Center frequency: 1.6604 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

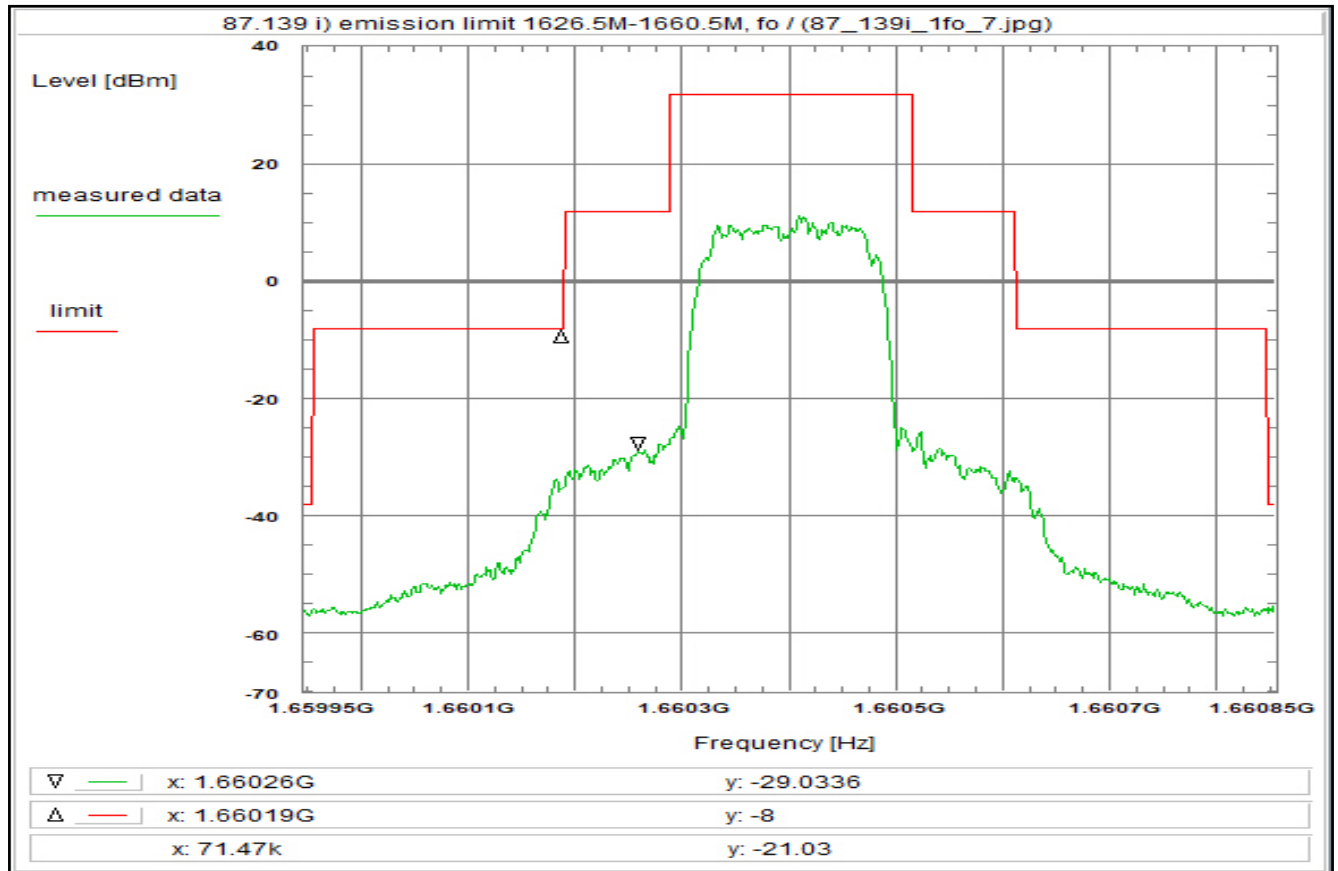
Remarks:

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

For EIRP calculation:

'worst-case' = maximum antenna gain

Plot No. 121



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

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
 fh, 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 13:55:42
 Location: CTC advanced GmbH, Laboratory RC-SYS
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 28 V DC

Setup of measurement equipment:

Start frequency: 1.6599464 GHz
 Stop frequency: 1.6608536 GHz
 Center frequency: 1.6604 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

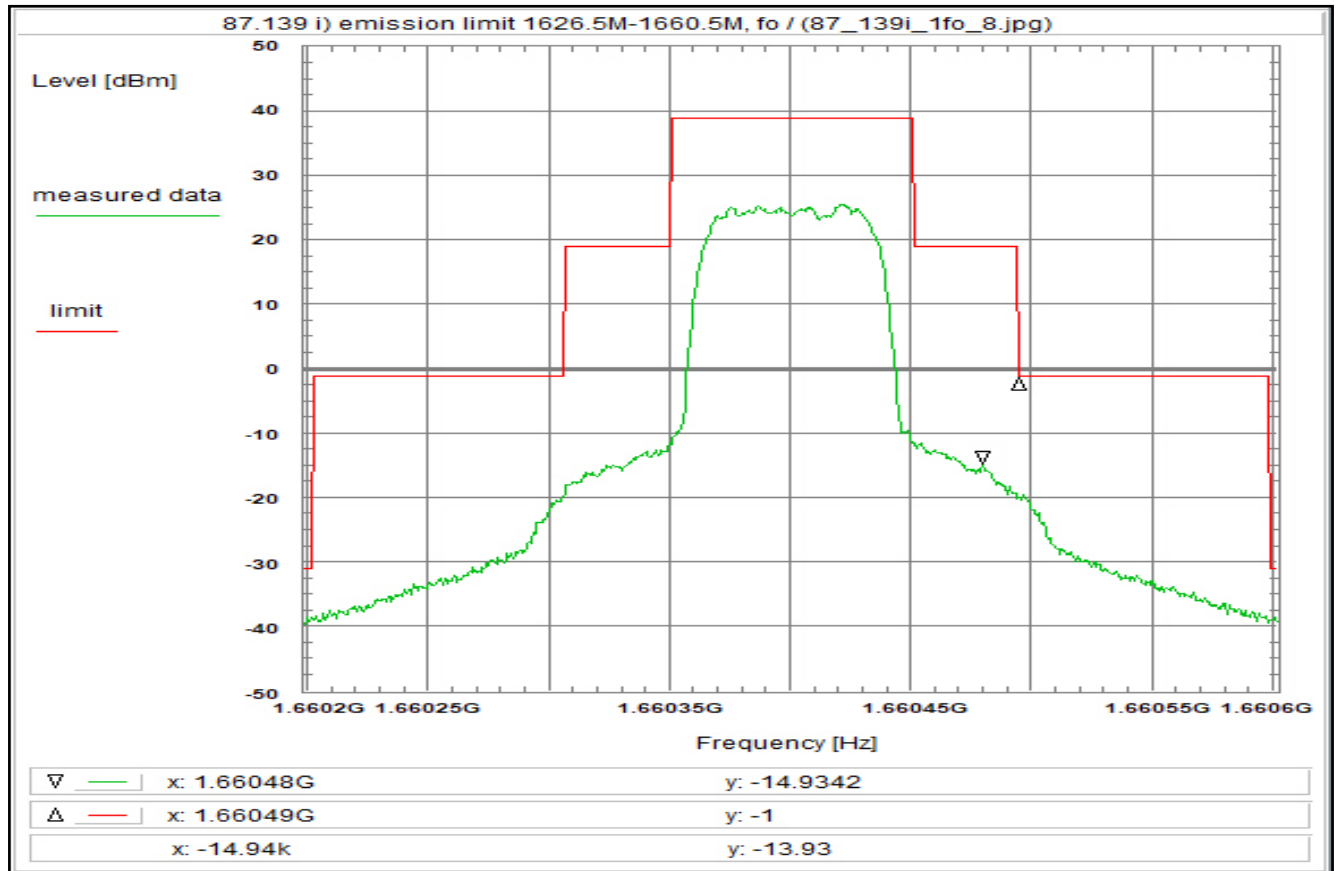
Remarks:

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

For EIRP calculation:

'worst-case' = maximum antenna gain

Plot No. 122



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

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
 fh, 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: Wed 28/Oct/2020 14:02:44
 Location: CTC advanced GmbH, Laboratory RC-SYS
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 28 V DC

Setup of measurement equipment:

Start frequency: 1.6601984 GHz
 Stop frequency: 1.6606016 GHz
 Center frequency: 1.6604 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

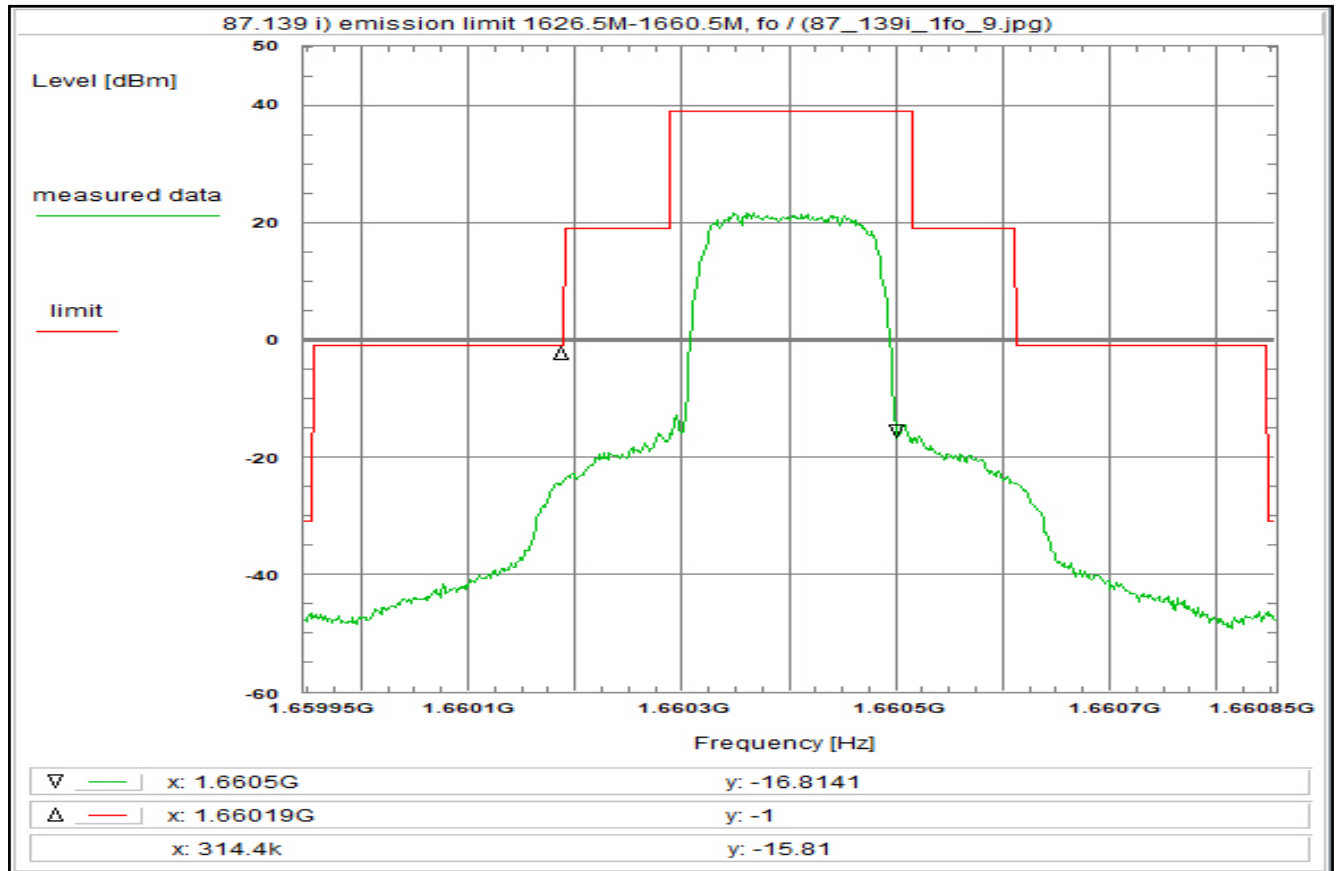
Remarks:

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

For EIRP calculation:

'worst-case' = maximum antenna gain

Plot No. 123



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

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
 fh, 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 14:06:12
 Location: CTC advanced GmbH, Laboratory RC-SYS
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 28 V DC

Setup of measurement equipment:

Start frequency: 1.6599464 GHz
 Stop frequency: 1.6608536 GHz
 Center frequency: 1.6604 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

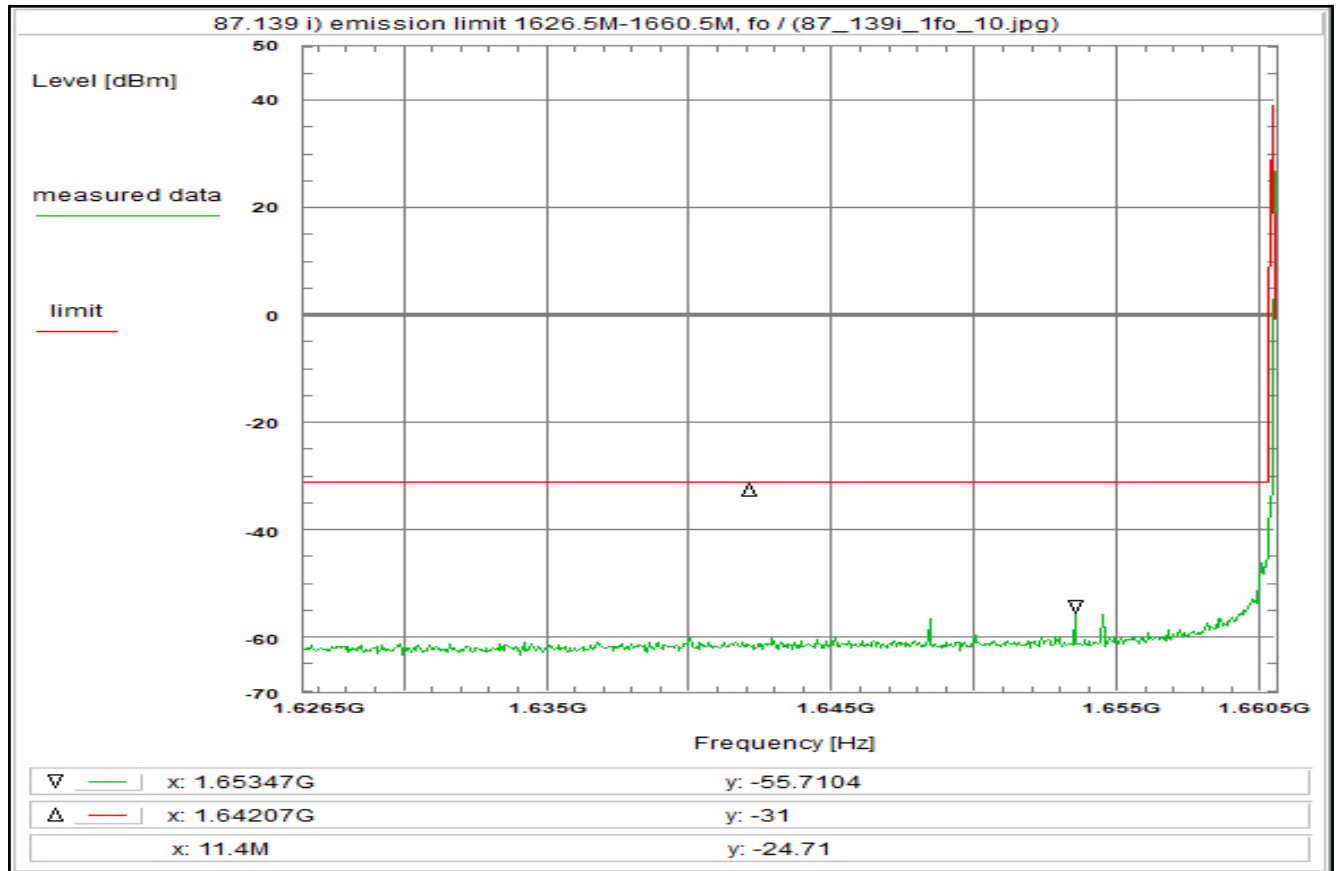
Remarks:

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

For EIRP calculation:

'worst-case' = maximum antenna gain

Plot No. 124



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

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
 fh, 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: Thu 05/Nov/2020 09:39:12
 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: 10 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

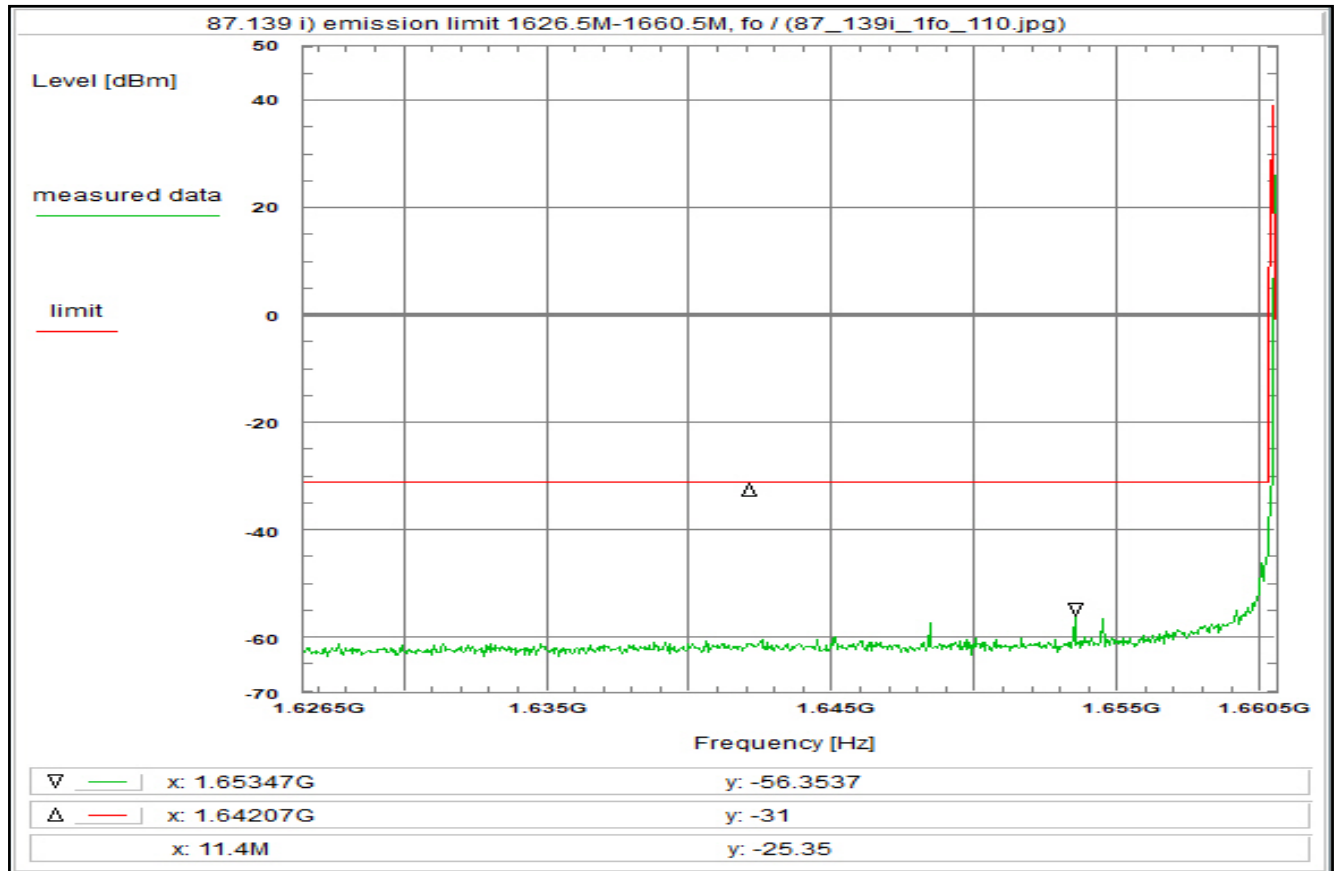
Remarks:

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

For EIRP calculation:

'worst-case' = maximum antenna gain

Plot No. 125



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

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
 fh, 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 09:40:18
 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: 10 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

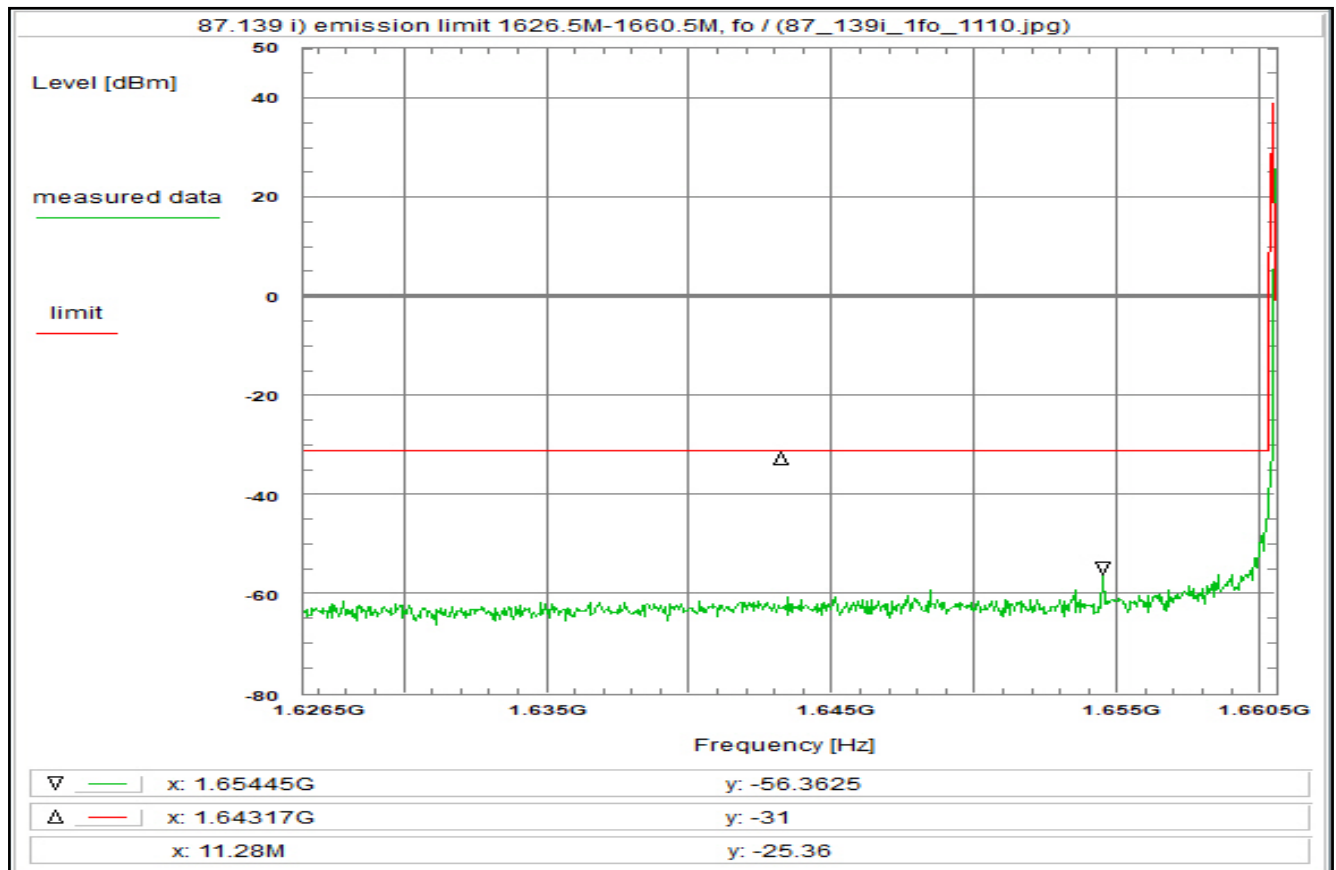
Remarks:

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

For EIRP calculation:

'worst-case' = maximum antenna gain

Plot No. 126



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

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
 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: Thu 05/Nov/2020 09:51:31
 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: 10 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

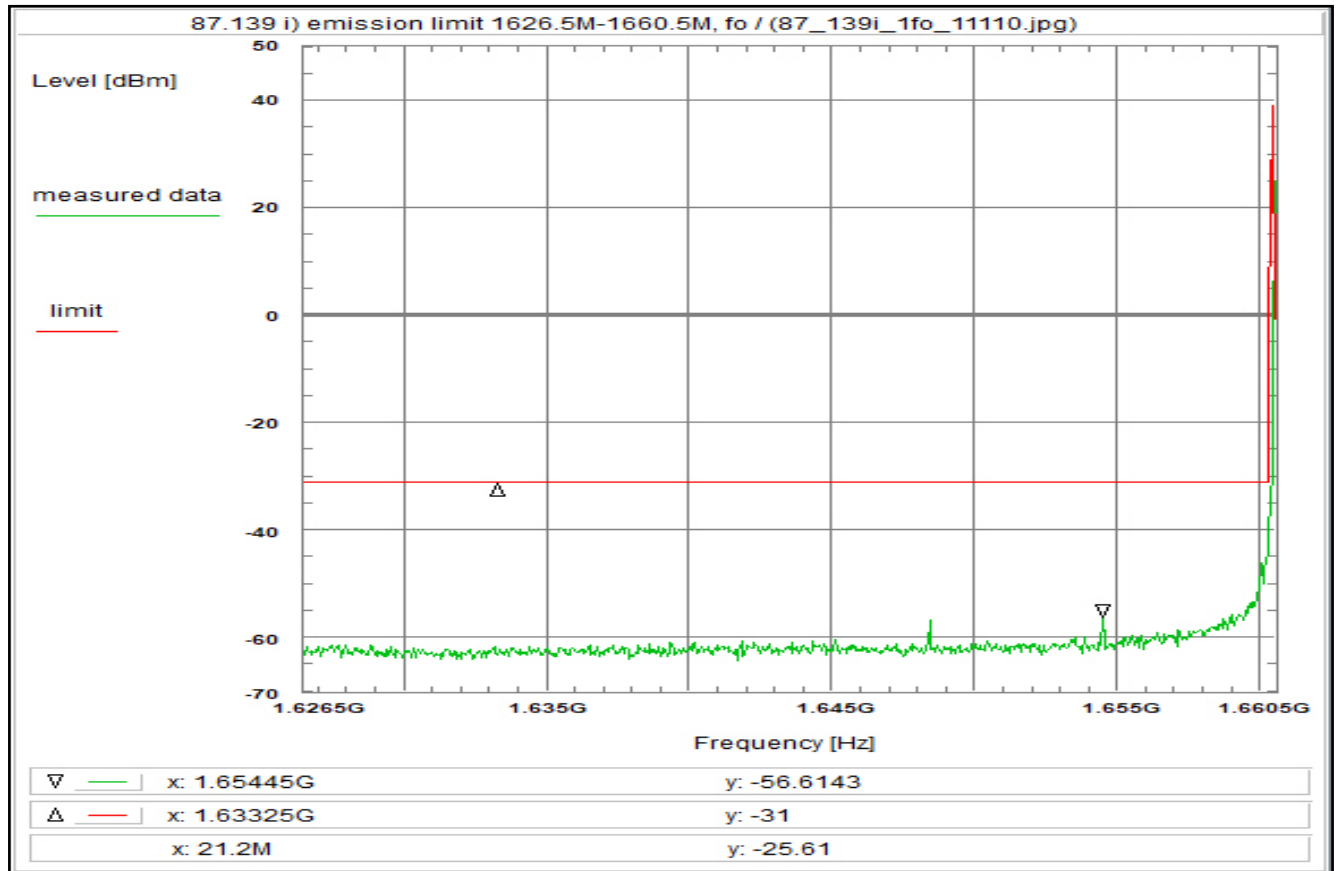
Remarks:

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

For EIRP calculation:

'worst-case' = maximum antenna gain

Plot No. 127



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

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
 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: Thu 05/Nov/2020 09:52:30
 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: 10 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

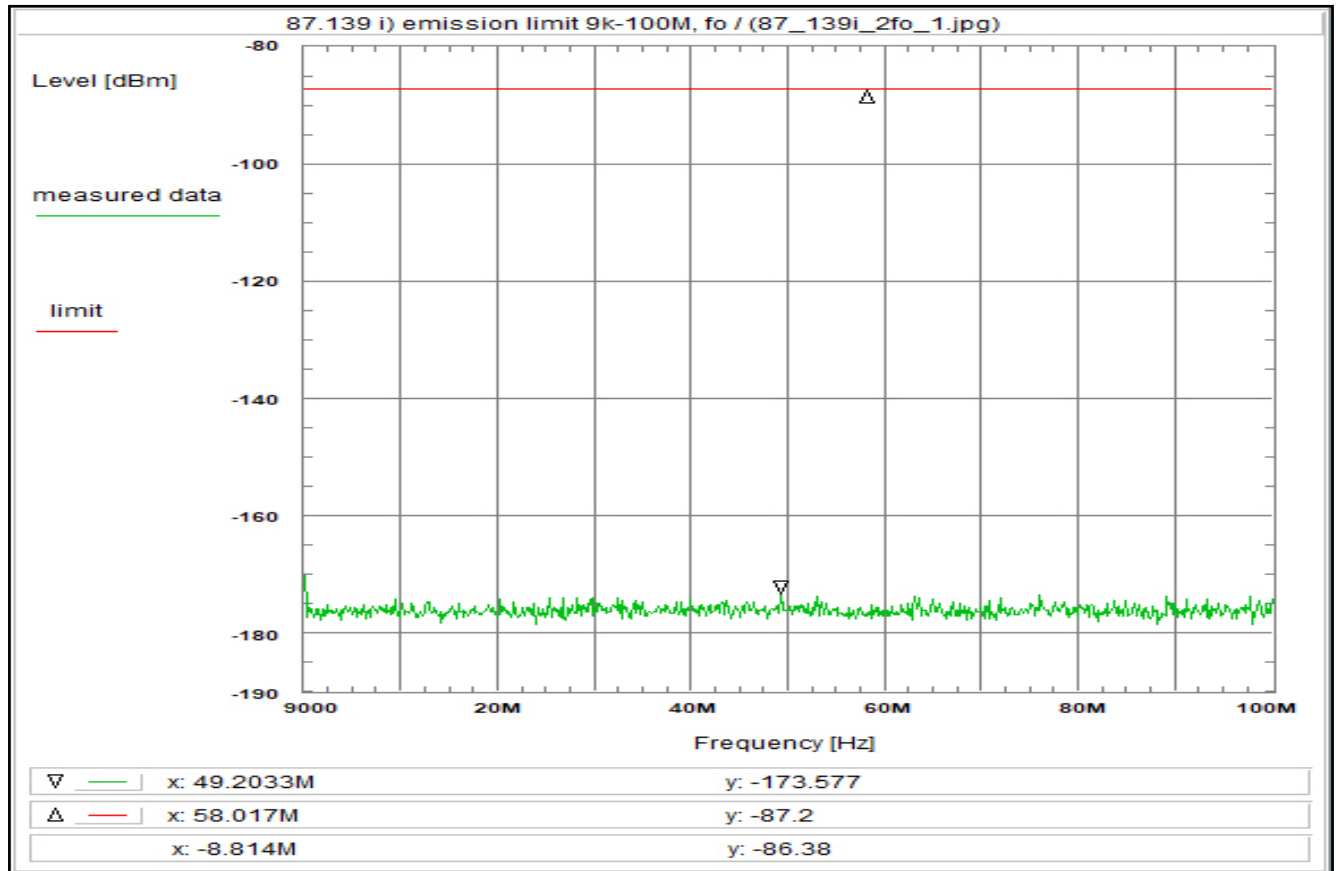
Remarks:

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

For EIRP calculation:

'worst-case' = maximum antenna gain

Plot No. 128



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

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
 fh, 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 15:15:19
 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

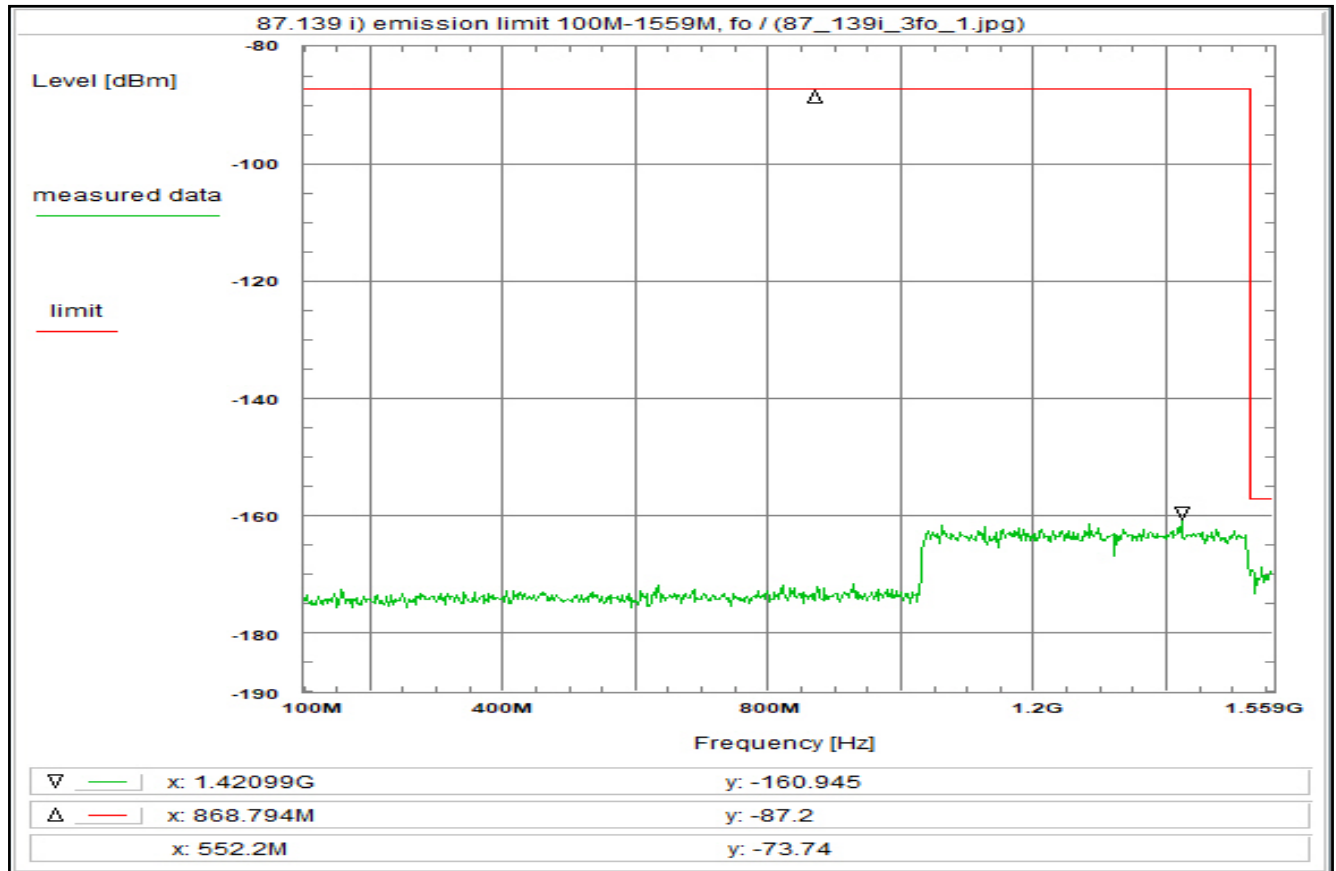
Remarks:

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

For EIRP calculation:

'worst-case' = maximum antenna gain

Plot No. 129



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

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
 fh, 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 15:21:19
 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: 1.559 GHz
 Center frequency: 829.5 MHz
 Frequency span: 1.459 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) + 31.9 dB
 TOTAL CORRECTION: - 82.0 dB

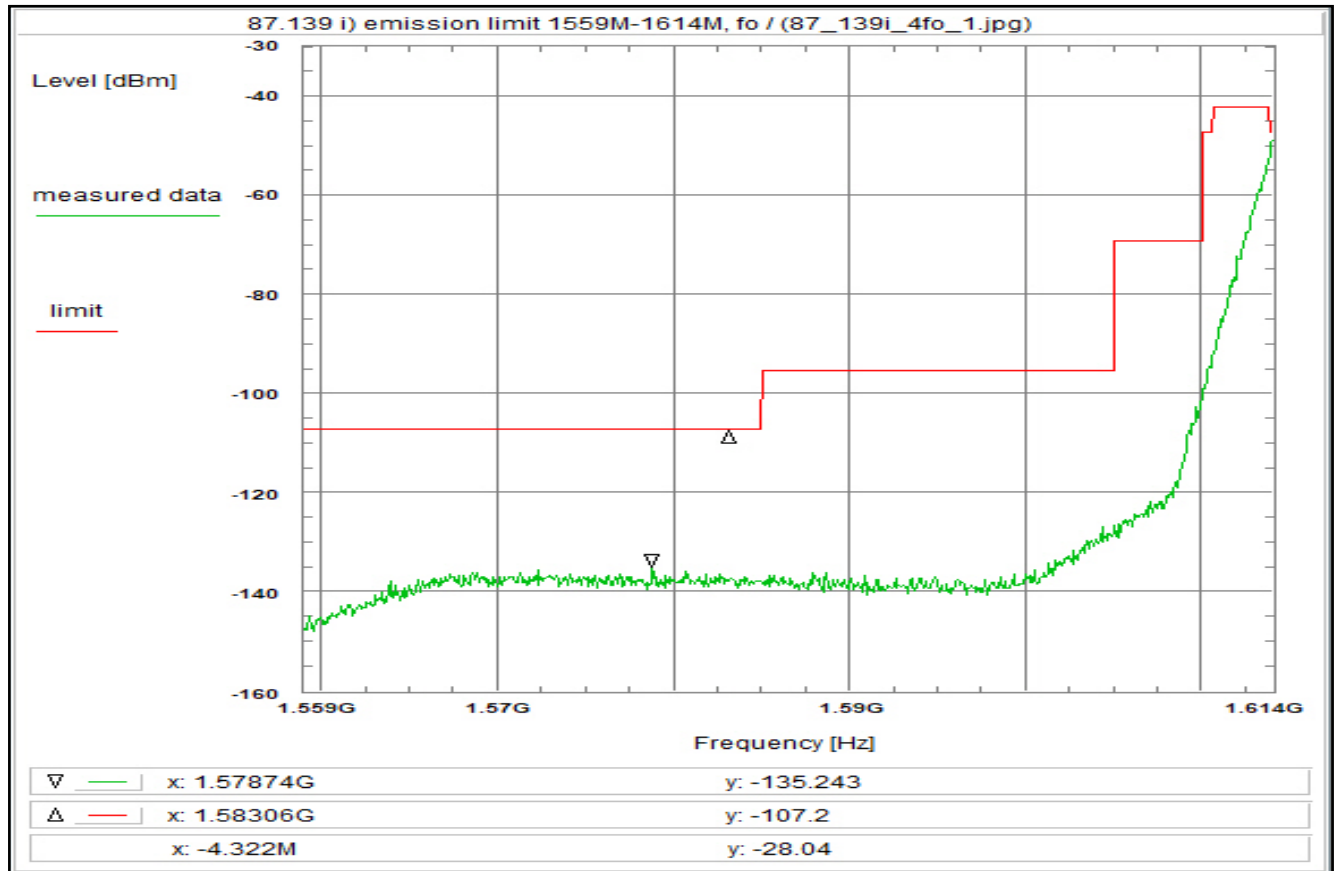
Remarks:

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

For EIRP calculation:

'worst-case' = maximum antenna gain

Plot No. 130



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

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
 fh, 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 15:22:08
 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

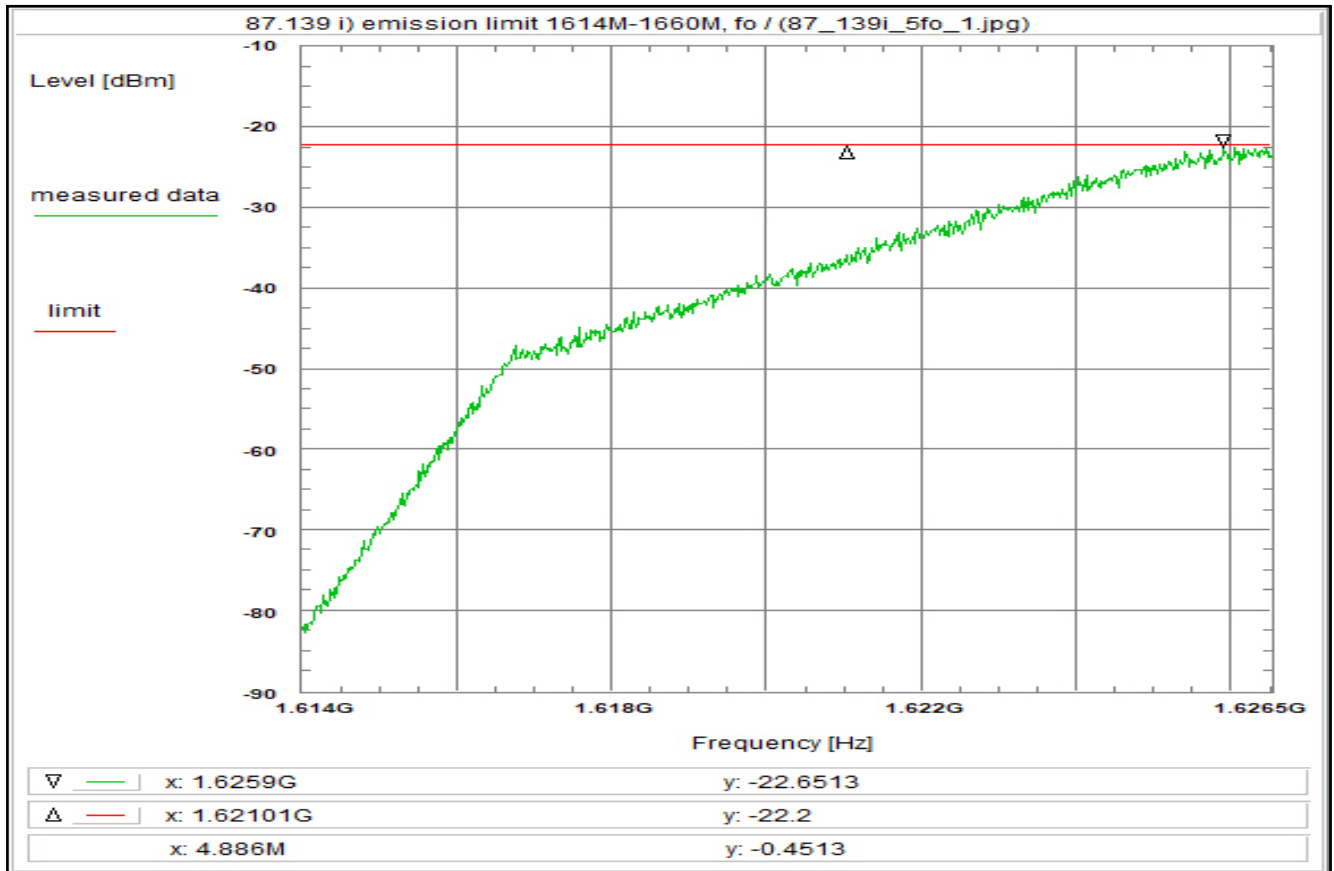
Remarks:

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

For EIRP calculation:

'worst-case' = maximum antenna gain

Plot No. 131



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

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
 fh, valid for all modulations

Test setup:

see test report chapter 8.2

Test equipment:

see test report chapter 8.1-8.2: R001

Remark:

Test result: Test passed

Environment condition:

Date & Time: Thu 29/Oct/2020 15:24:31
 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

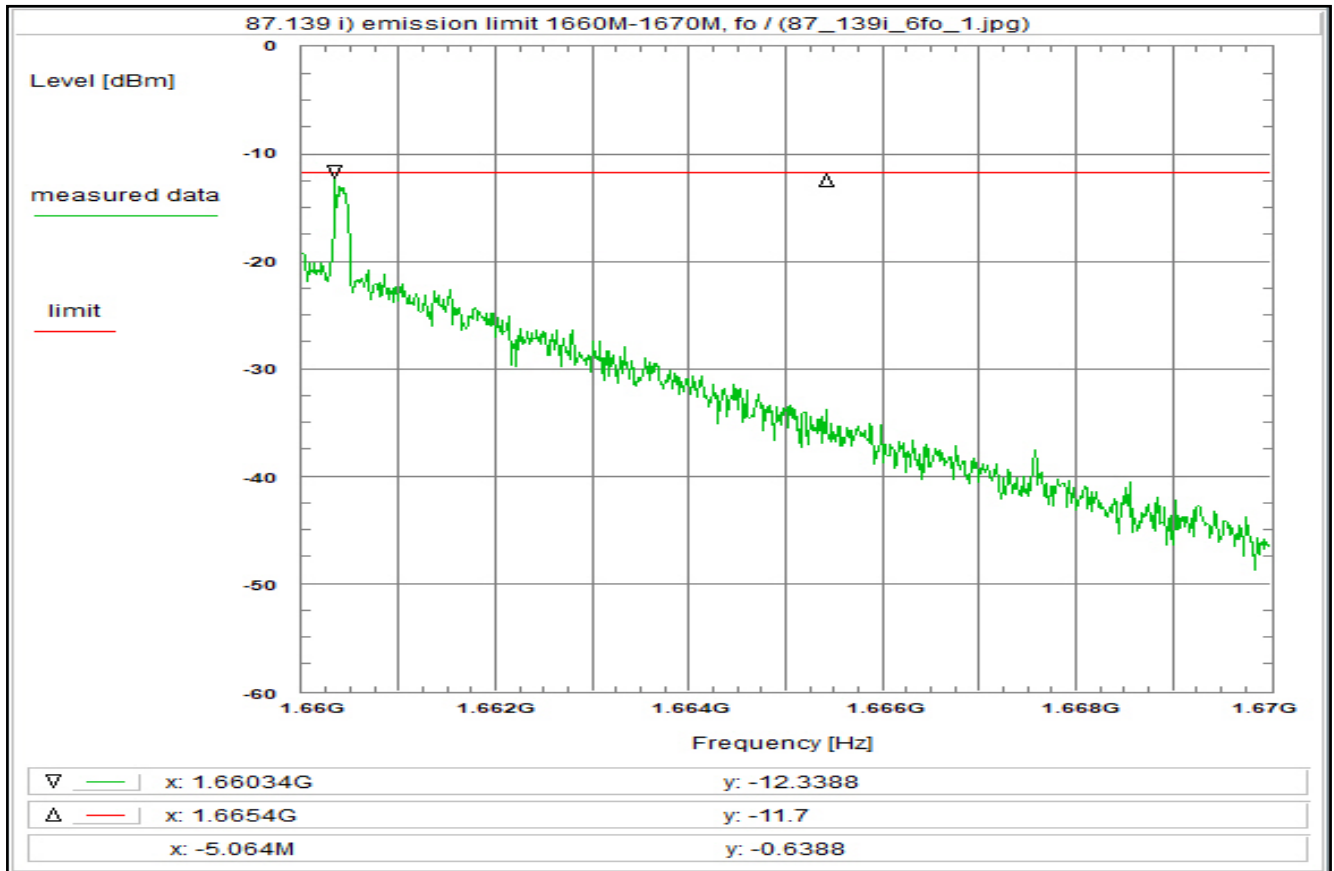
Remarks:

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

For EIRP calculation:

'worst-case' = maximum antenna gain

Plot No. 132



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

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
 fh, 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 15:32:16
 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: 1 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

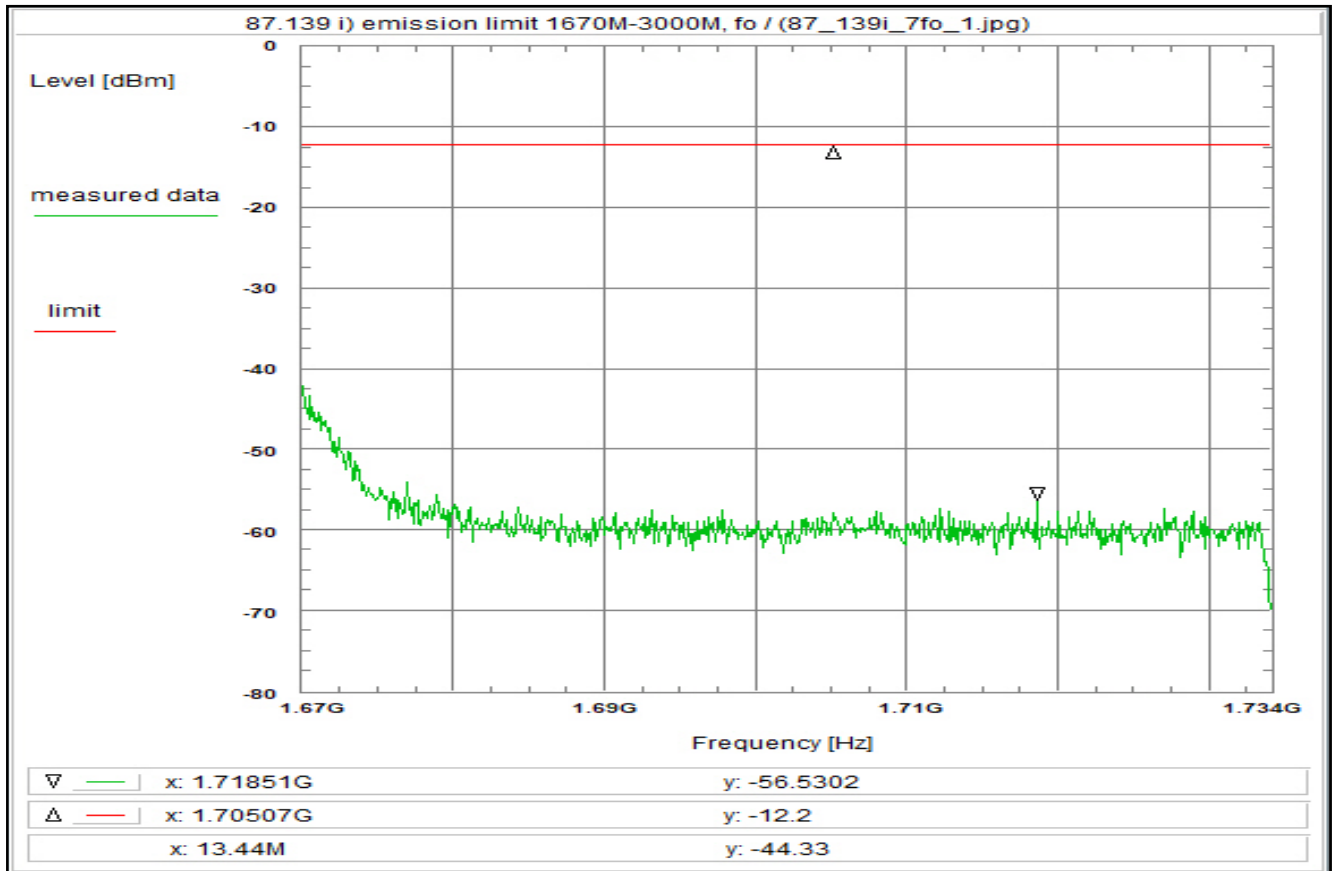
Remarks:

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

For EIRP calculation:

'worst-case' = maximum antenna gain

Plot No. 133



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

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
 fh, 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 15:33:47
 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: Max-Hold
 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

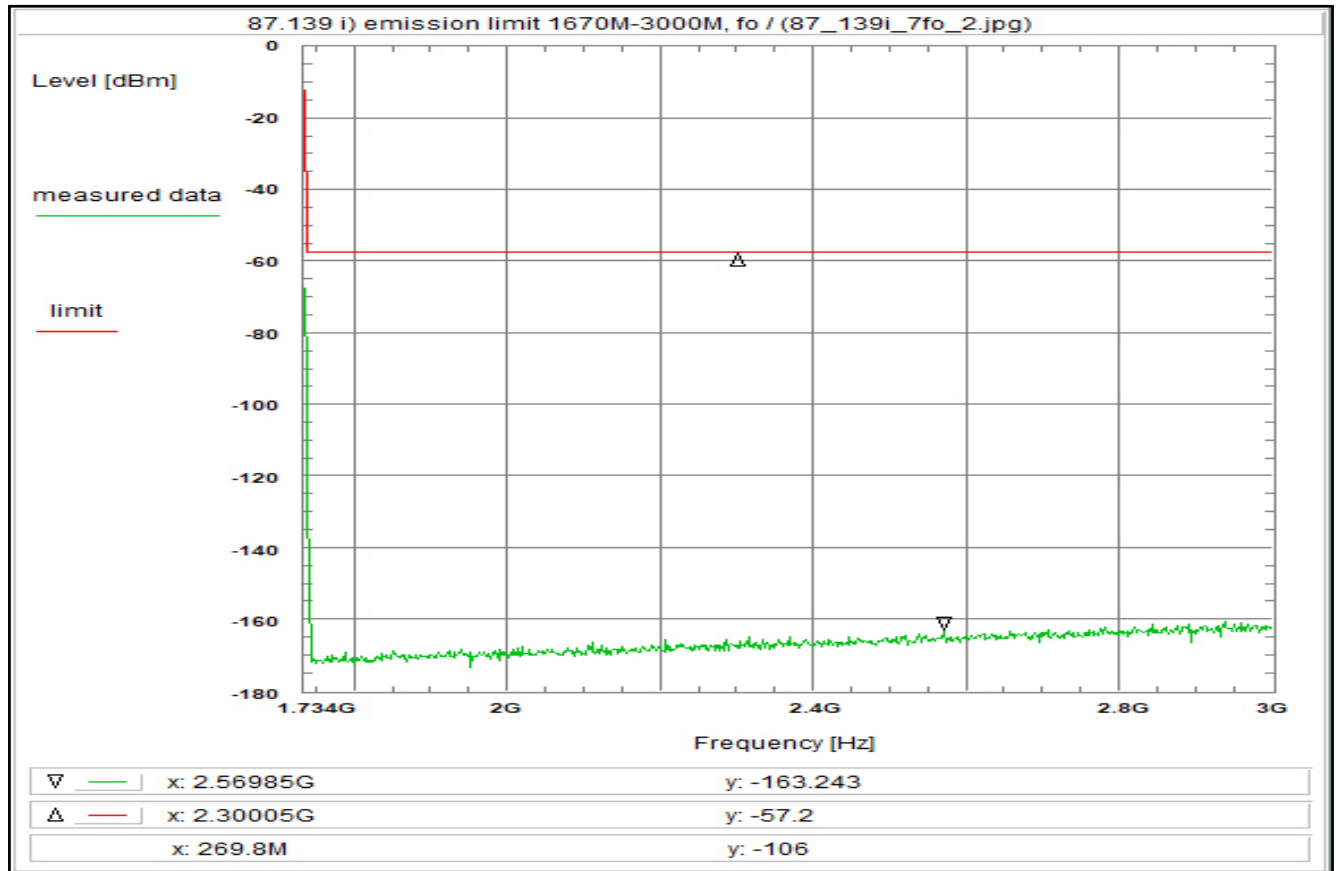
Remarks:

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

For EIRP calculation:

'worst-case' = maximum antenna gain

Plot No. 134



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

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
 fh, 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 15:37:31
 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

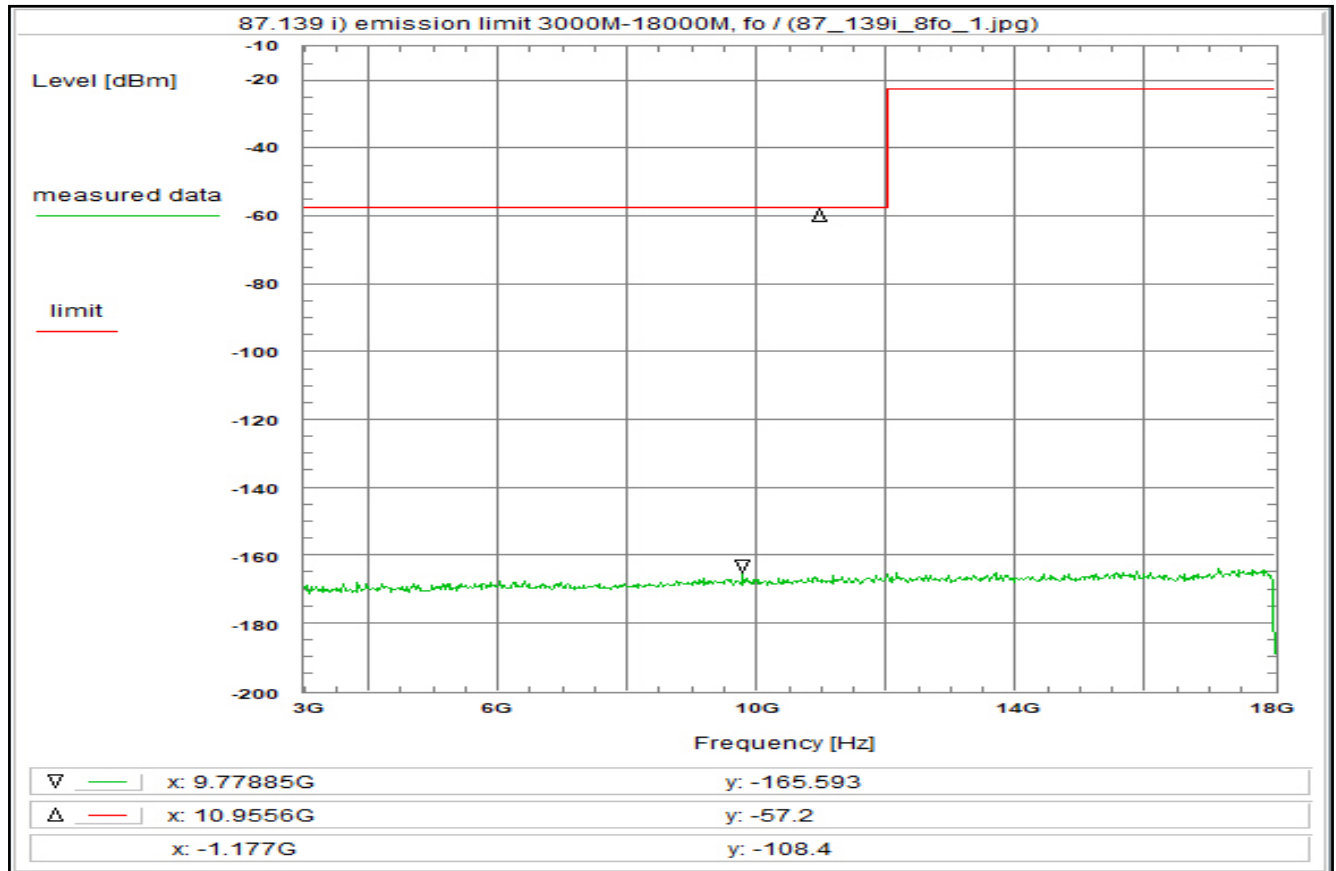
Remarks:

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

For EIRP calculation:

'worst-case' = maximum antenna gain

Plot No. 135



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

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
 fh, 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 16:19:03
 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)	+ 34.0 dB
TOTAL CORRECTION:	- 85.7 dB

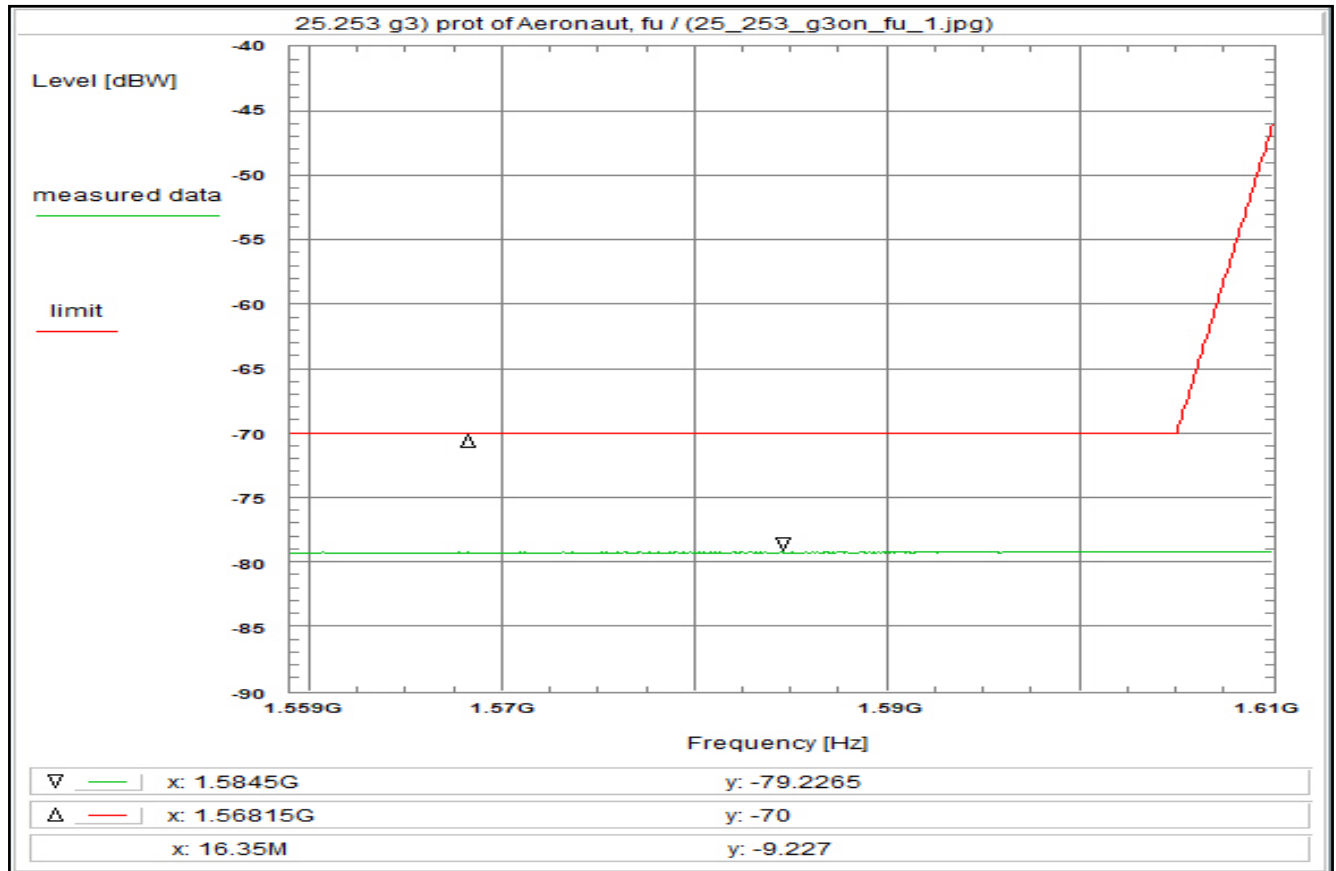
Remarks:

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

For EIRP calculation:

'worst-case' = maximum antenna gain

Plot No. 136



Subclause: 25.253 g3) Special requirements for ancillary terrestrial components operating in the 1626.5-1660.5 MHz / 1525-1559 MHz bands
 Carrier-on state, modulated carrier at the lower edge of the band (fl)
 Conducted measurement at the antenna-connector

Limit:Limit according to 25.253 g3):

1559.0 - 1605.0MHz: -70dBW/1MHz

1605.0 - 1610MHz: -70 to -46dBW/1MHz (linear interpolated)

The EIRP, averaged over any two-millisecond active transmission interval from the MESS in the carrier-on state shall not exceed the limits above.

Test results:

see plot (an explicit table was not generated)

Operating condition of DUT:

Operating condition 1, see test report chapter 6.4
 fh, valid for all modulations

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 10:47:47
 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: 1.61 GHz
 Center frequency: 1.5845 GHz
 Frequency span: 51 MHz
 Resolution-BW: 1 MHz
 Video-BW: 10 MHz
 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 (on-axis) + 0.0 dBi
 Test antenna + 0.0 dB
 BW correction factor + 0.0 dB
 Atten. between HPA and feedhorn + 0.0 dB
 (U330) + 31.9 dB
 TOTAL CORRECTION: + 32.8 dB

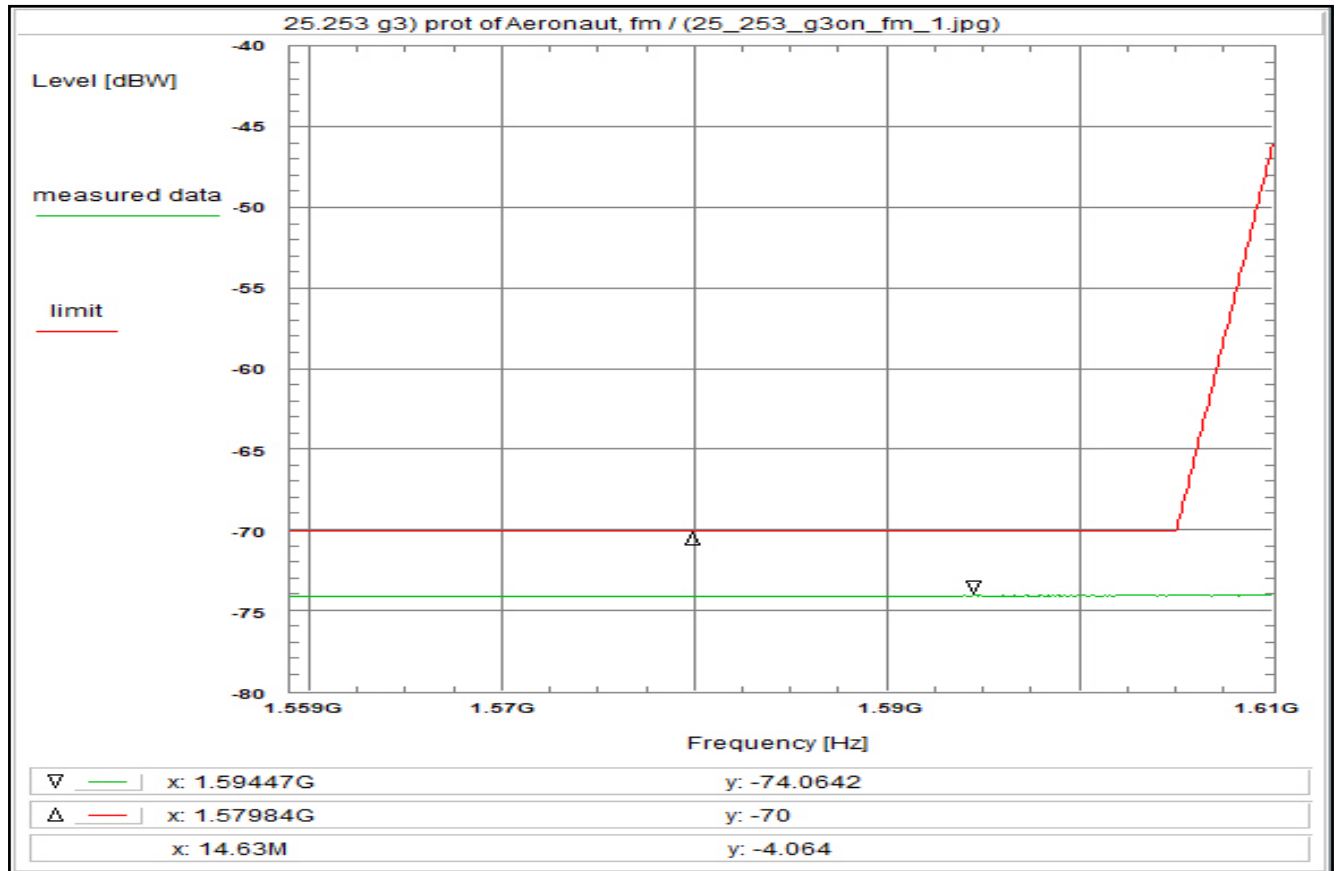
Remarks:

Carrier-on state / Carrier at the lower edge of the band (fl)
 Measurement with 1 MHz resolution/video filter and noise averaging.

For EIRP calculation:

'worst-case' = maximum antenna gain

Plot No. 137



Subclause: 25.253 g3) Special requirements for ancillary terrestrial components operating in the 1626.5-1660.5 MHz / 1525-1559 MHz bands
 Carrier-on state, modulated carrier in the middle of the band (fm)
 Conducted measurement at the antenna-connector

Limit:

Limit according to 25.253 g3):

1559.0 - 1605.0MHz: -70dBW/1MHz

1605.0 - 1610MHz: -70 to -46dBW/1MHz (linear interpolated)

The EIRP, averaged over any two-millisecond active transmission interval from the MESS in the carrier-on state shall not exceed the limits above.

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, U330

Remark:

Test result: Test passed

Environment condition:

Date & Time: Wed 28/Oct/2020 10:41:53
 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: 1.61 GHz
 Center frequency: 1.5845 GHz
 Frequency span: 51 MHz
 Resolution-BW: 1 MHz
 Video-BW: 3 MHz
 Input attenuation: 10 dB
 Trace-Mode: Clear Write
 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	+ 0.0 dB
Atten. between HPA and feedhorn (U330)	- 0.0 dB
TOTAL CORRECTION:	+ 32.8 dB

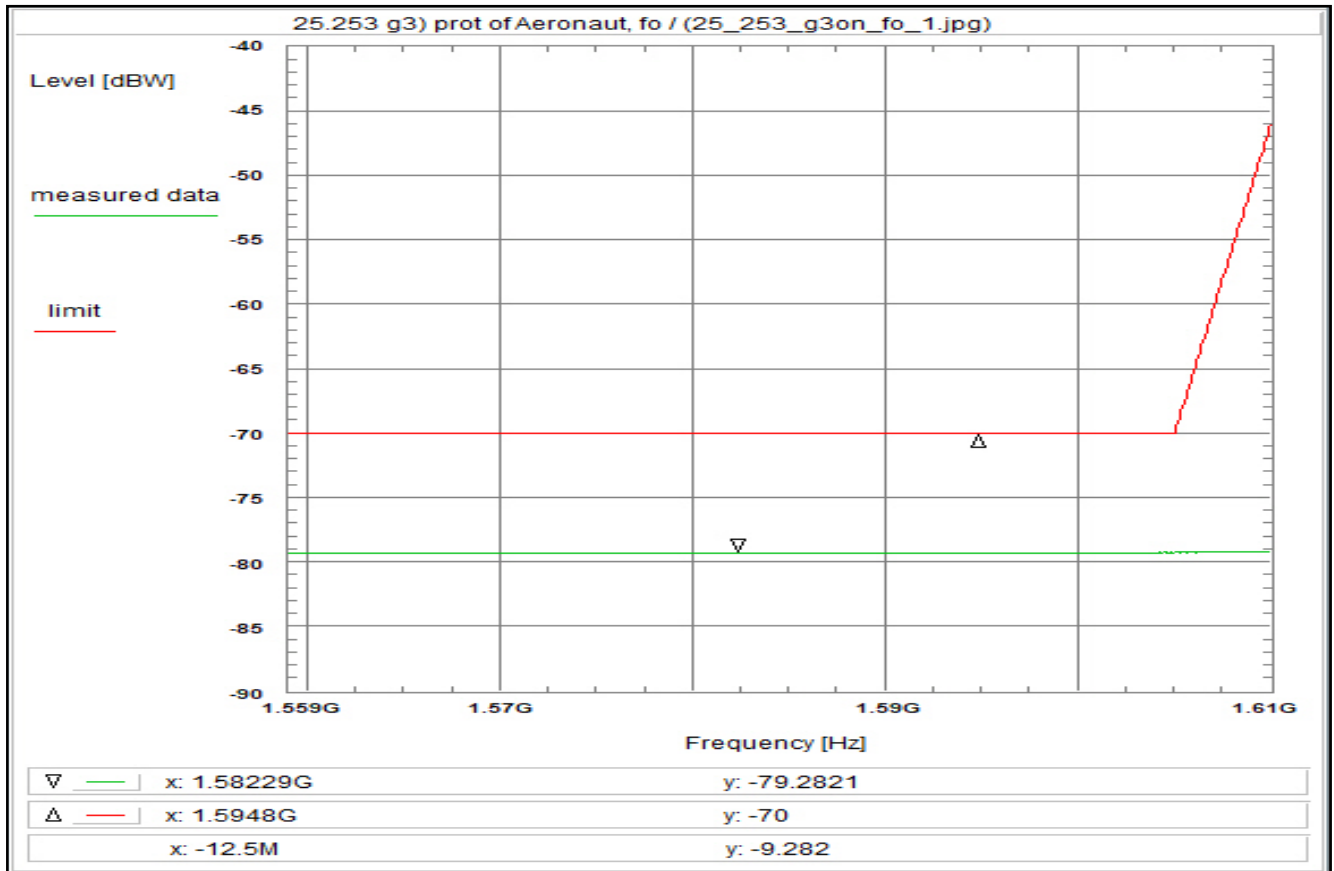
Remarks:

Carrier-on state / Carrier in the middle of the band (fm)
 Measurement with 1 MHz resolution/video filter and noise averaging.

For EIRP calculation:

'worst-case' = maximum antenna gain

Plot No. 138



Subclause: 25.253 g3) Special requirements for ancillary terrestrial components operating in the 1626.5-1660.5 MHz / 1525-1559 MHz bands
 Carrier-on state, modulated carrier at the upper edge of the band (fh)
 Conducted measurement at the antenna-connector

Limit:Limit according to 25.253 g3):

1559.0 - 1605.0MHz: -70dBW/1MHz

1605.0 - 1610MHz: -70 to -46dBW/1MHz (linear interpolated)

The EIRP, averaged over any two-millisecond active transmission interval from the MESS in the carrier-on state shall not exceed the limits above.

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 modulationsTest setup:

see test report chapter 8.2

Test equipment:

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

Remark:

Test result: Test passedEnvironment condition:

Date & Time: Wed 28/Oct/2020 10:46:22
 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: 1.61 GHz
 Center frequency: 1.5845 GHz
 Frequency span: 51 MHz
 Resolution-BW: 1 MHz
 Video-BW: 3 MHz
 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 (on-axis) + 0.0 dBi
 Test antenna + 0.0 dB
 BW correction factor + 0.0 dB
 Atten. between HPA and feedhorn + 0.0 dB
 (U330) + 31.9 dB
 TOTAL CORRECTION: + 32.8 dB

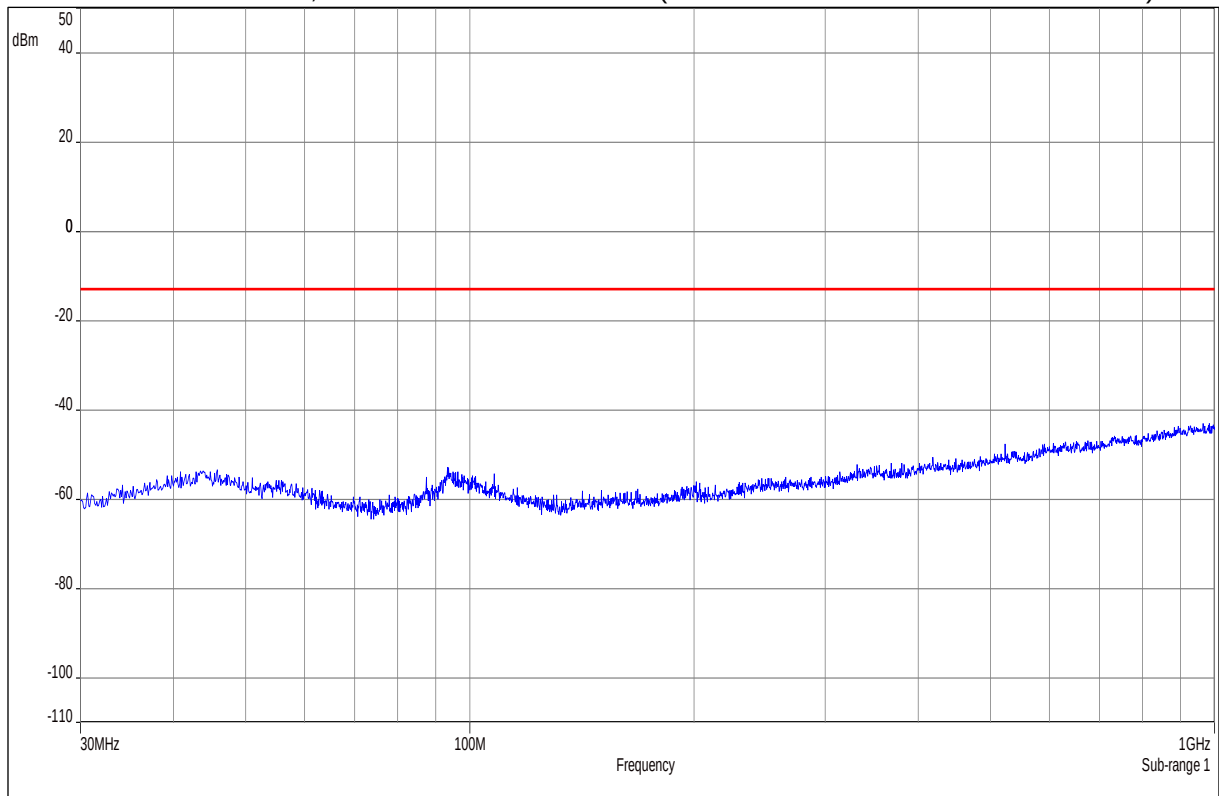
Remarks:Carrier-on state / Carrier at the upper edge of the band (fh)
 Measurement with 1 MHz resolution/video filter and noise averaging.For EIRP calculation:

'worst-case' = maximum antenna gain

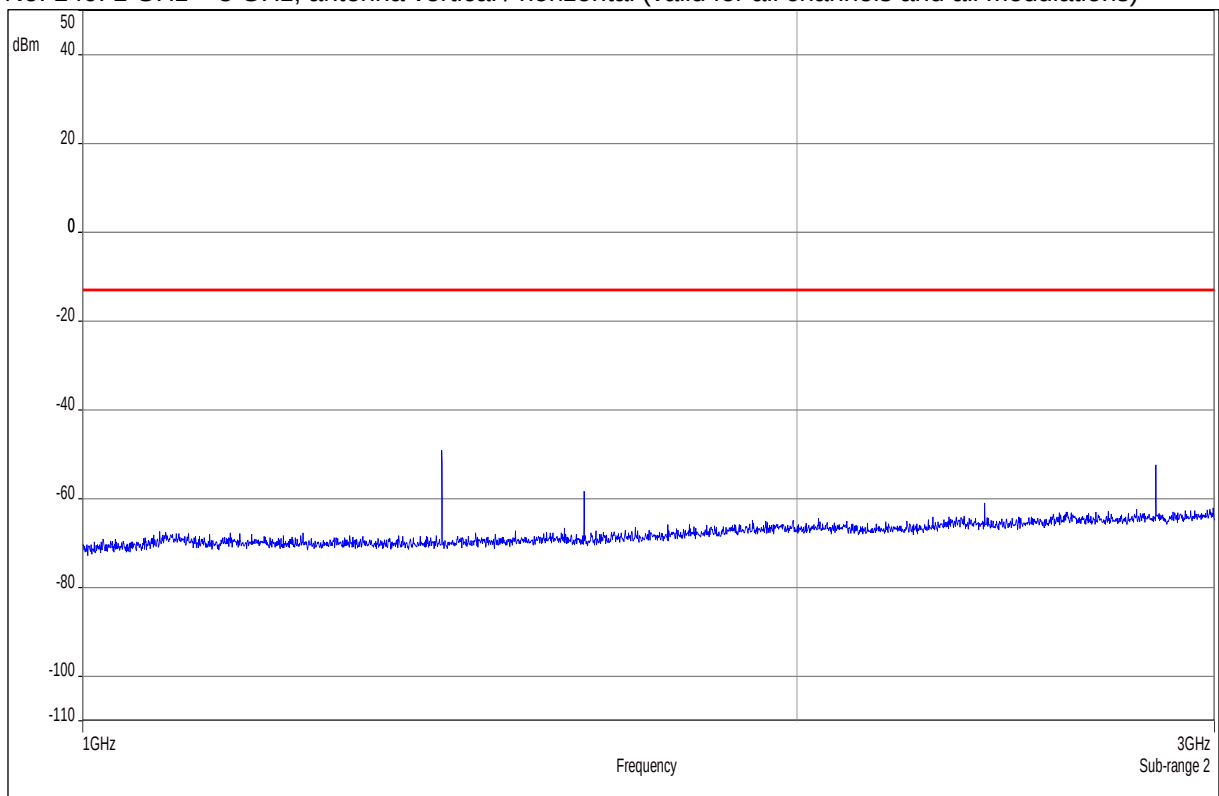
3 Measurement results, Spurious emissions 30MHz - 18 GHz

This Chapter 3 consists of 4 pages including this page.

Plot No. 139: 30 MHz – 1 GHz, antenna vertical / horizontal (valid for all channels and all modulations)

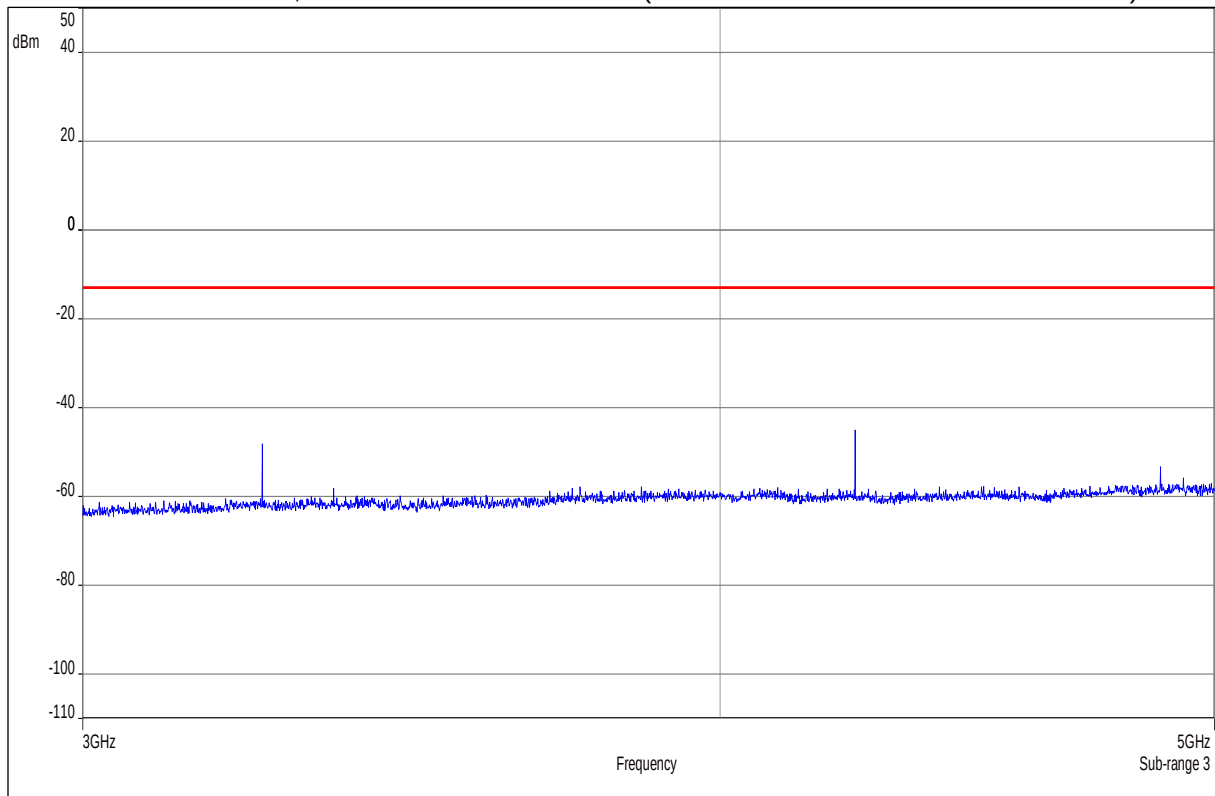


Plot No. 140: 1 GHz – 3 GHz, antenna vertical / horizontal (valid for all channels and all modulations)



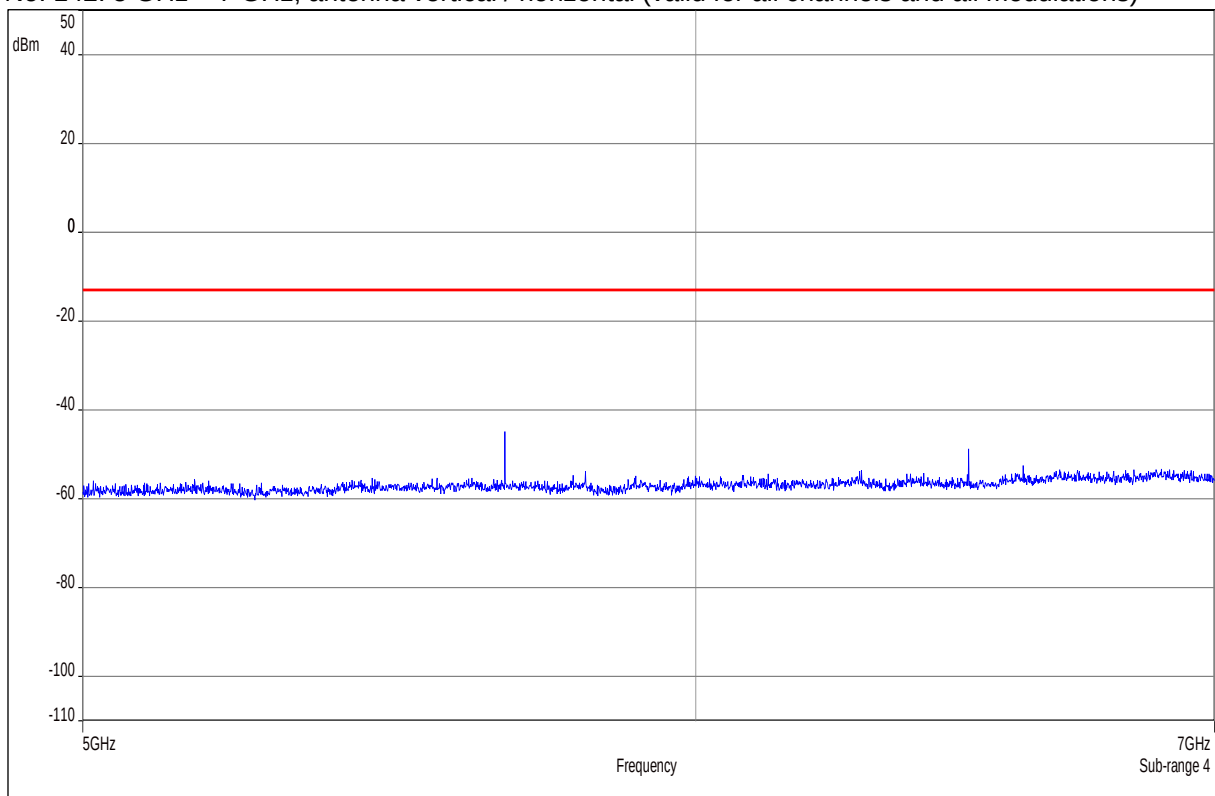
Wanted signal notched with WRCGV14-1616-1626-1661-1671-70SS Band Reject Filter

Plot No. 141: 3 GHz – 5 GHz, antenna vertical / horizontal (valid for all channels and all modulations)



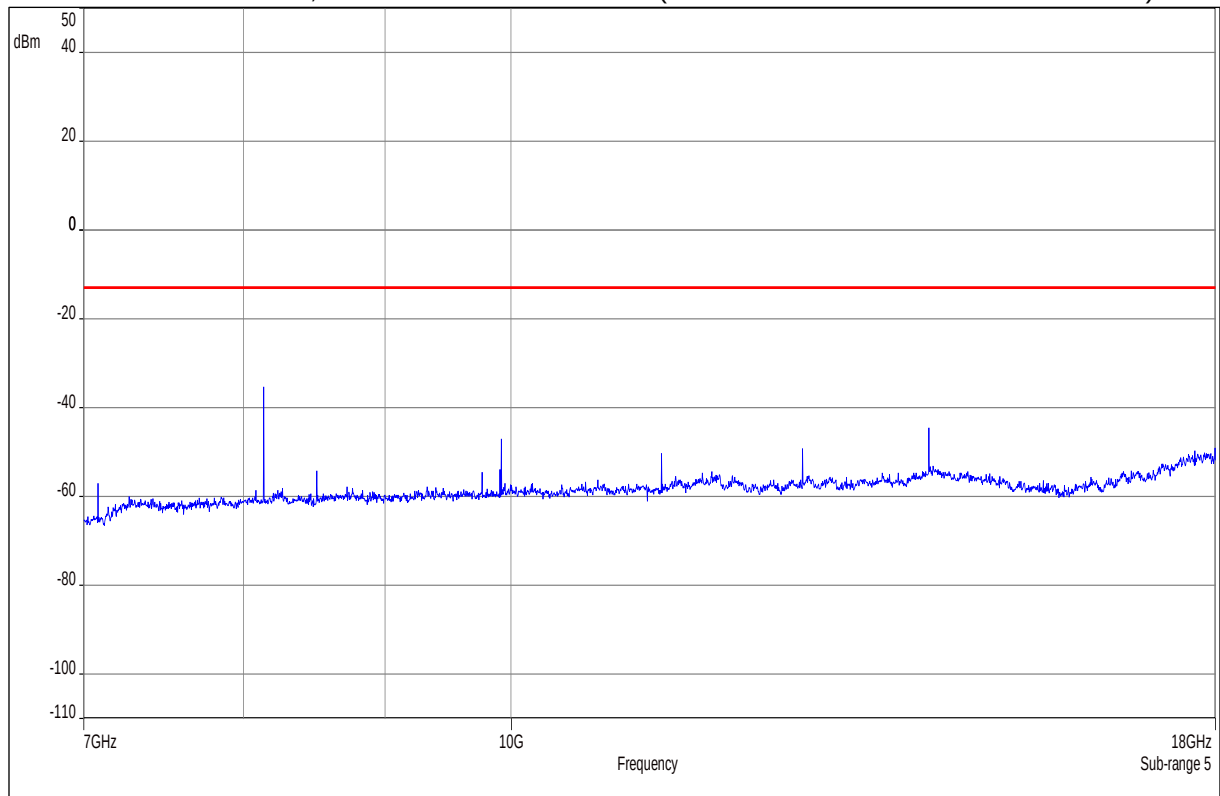
Measurement with the wanted signal notched with WRCGV14-1616-1626-1661-1671-70SS Band Reject Filter

Plot No. 142: 5 GHz – 7 GHz, antenna vertical / horizontal (valid for all channels and all modulations)



Measurement with a SHC2600/12750-1.5-KK HP filter

Plot No. 143: 7 GHz – 18 GHz, antenna vertical / horizontal (valid for all channels and all modulations)



Measurement with a SHC2600/12750-1.5-KK HP filter

4 Document history

Version	Applied changes	Date of release
	Initial release – DRAFT	2020-11-10
	Without changes	2020-11-18