

Annex D



This test report annex is electronically signed and valid without handwriting signature. For verification of the electronic signatures, the public keys can be requested at the testing laboratory.

Test report annex authorized:

Meheza Walla
Lab Manager
Radio Communications & EMC

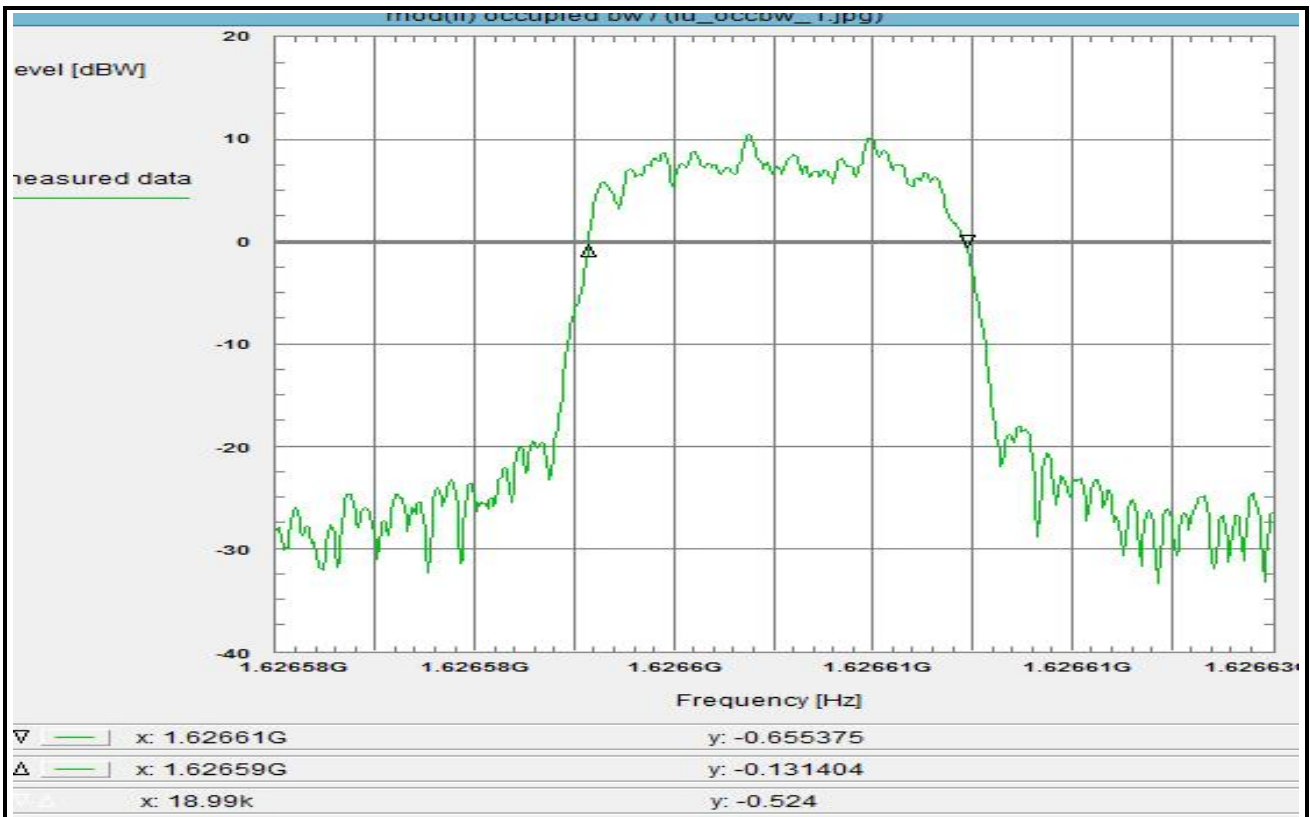
1 Table of contents

1	Table of contents	2
2	Measurement results, FCC Part 87 and FCC Part 25	3
3	Measurement results, Spurious emissions 30MHz - 18 GHz.....	54
4	Measurement results, FCC Part 15B	57
5	Document history	58

2 Measurement results, FCC Part 87 and FCC Part 25

This Chapter 2 consists of 51 pages including this page.

Plot No. 1 (50)



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

Limit:
The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 % of the total mean power radiated by a given emission. (see §2.1049).
This occupied bandwidth corresponds to the -20 dB-bandwidth.

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

Operating condition of DUT:
operating condition 1, see subclause 1.5.2
A200/A300/A350, ft, QPSK, 21 kHz

Test setup:
see section 8.1: 1.2hgl

Test equipment:
see annex 2: C218, R001, U005

Remark:

Test result: Determination of the 'occupied bandwidth'

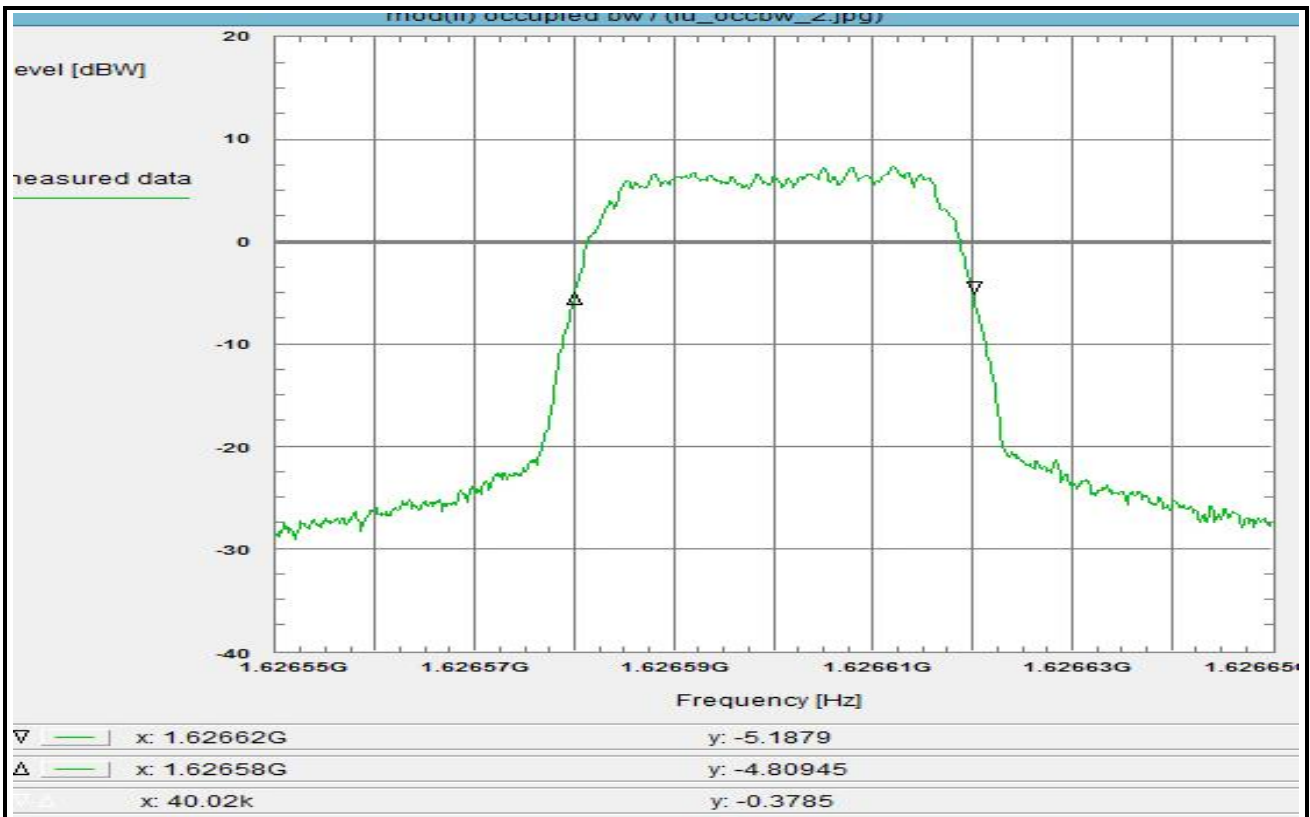
Environment condition:
Date & Time: Thu 09/Nov/2017 16:29:36
Location: CTC advanced GmbH, Laboratory RSC-Sat
Temperature: 22 °C
Humidity: 55 %
Voltage: 28 Vdc

Setup of measurement equipment:
Start frequency: 1.626575 GHz
Stop frequency: 1.626625 GHz
Center frequency: 1.6266 GHz
Frequency span: 50 kHz
Resolution-BW: 1 kHz
Video-BW: 3 kHz
Input attenuation: 5 dB
Trace-Mode: Max-Hold
Detector-Mode: Pos Peak

Correction:
Directional coupler + 0.0 dB
Coaxial cable (C218) + 0.8 dB
DUT-Antenna (on-axis) + 0.0 dBi
Test antenna + 0.0 dB
BW correction factor (1k -> 3k) + 4.8 dB
Atten. between HPA and feedhorn + 0.0 dB
(U005) + 29.8 dB
TOTAL CORRECTION: + 35.4 dB

Remarks:
Determination of the 'occupied bandwidth' at fu:
The measured value is about 19 kHz (delta marker)
Measurement with 3 kHz resolution filter and noise averaging.

Plot No. 2 (50)



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

Limit:
The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 % of the total mean power radiated by a given emission. (see §2.1049).
This occupied bandwidth corresponds to the -20 dB-bandwidth.

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

Operating condition of DUT:
operating condition 1, see subclause 1.5.2
A200/A300/A350, ft, QPSK, 42 kHz

Test setup:
see section 8.1: 1.2hgl

Test equipment:
see annex 2: C218, R001, U005

Remark:

Test result: Determination of the 'occupied bandwidth'

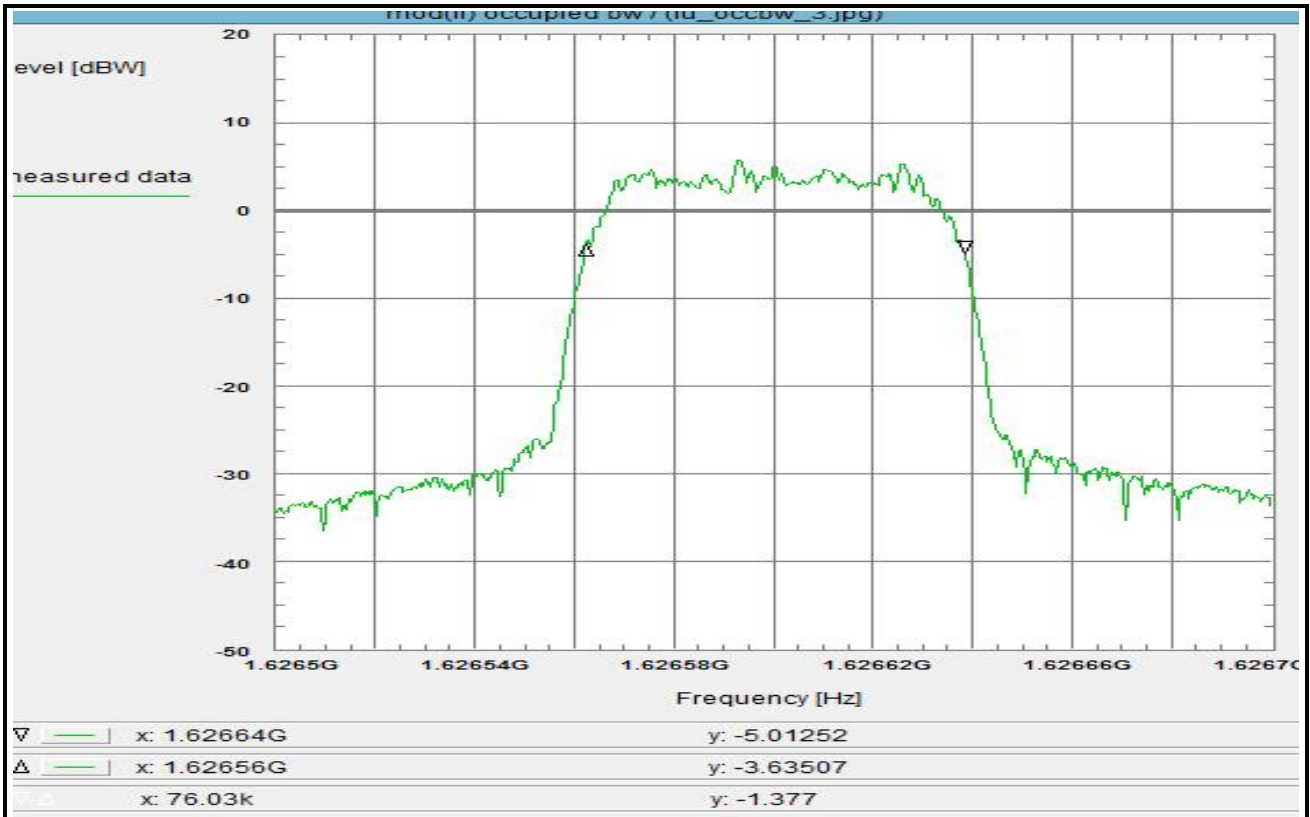
Environment condition:
Date & Time: Thu 09/Nov/2017 17:14:22
Location: CTC advanced GmbH, Laboratory RSC-Sat
Temperature: 22 °C
Humidity: 55 %
Voltage: 28 Vdc

Setup of measurement equipment:
Start frequency: 1.62655 GHz
Stop frequency: 1.62665 GHz
Center frequency: 1.6266 GHz
Frequency span: 100 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 (C218) + 0.8 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
(U005) + 29.8 dB
TOTAL CORRECTION: + 30.6 dB

Remarks:
Determination of the 'occupied bandwidth' at fu:
The measured value is about 40 kHz (delta marker)
Measurement with 3 kHz resolution filter and noise averaging.

Plot No. 3 (50)



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

Limit:
The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 % of the total mean power radiated by a given emission. (see §2.1049).
This occupied bandwidth corresponds to the -20 dB-bandwidth.

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

Operating condition of DUT:
operating condition 1, see subclause 1.5.2
A200/A300/A350, ft, QPSK, 84 kHz

Test setup:
see section 8.1: 1.2hgl

Test equipment:
see annex 2: C218, R001, U005

Remark:

Test result: Determination of the 'occupied bandwidth'

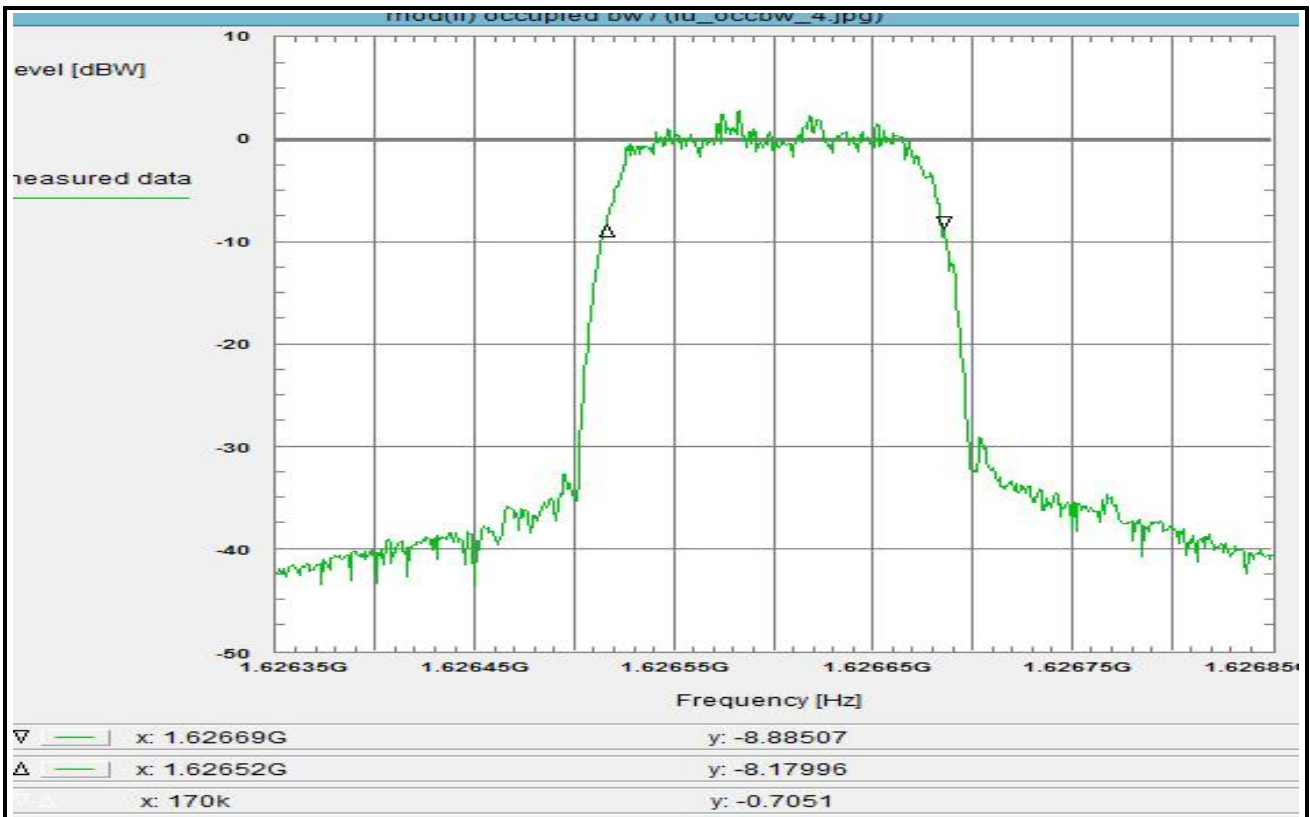
Environment condition:
Date & Time: Thu 09/Nov/2017 17:33:10
Location: CTC advanced GmbH, Laboratory RSC-Sat
Temperature: 22 °C
Humidity: 55 %
Voltage: 28 Vdc

Setup of measurement equipment:
Start frequency: 1.6265 GHz
Stop frequency: 1.6267 GHz
Center frequency: 1.6266 GHz
Frequency span: 200 kHz
Resolution-BW: 3 kHz
Video-BW: 10 kHz
Input attenuation: 5 dB
Trace-Mode: Max-Hold
Detector-Mode: Pos Peak

Correction:
Directional coupler + 0.0 dB
Coaxial cable (C218) + 0.8 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
(U005) + 29.8 dB
TOTAL CORRECTION: + 30.6 dB

Remarks:
Determination of the 'occupied bandwidth' at fu:
The measured value is about 76 kHz (delta marker)
Measurement with 3 kHz resolution filter and noise averaging.

Plot No. 4 (50)



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

Limit:
The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 % of the total mean power radiated by a given emission. (see §2.1049).
This occupied bandwidth corresponds to the -20 dB-bandwidth.

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

Operating condition of DUT:
operating condition 1, see subclause 1.5.2
A200/A300/A350, ft, QPSK, 189 kHz

Test setup:
see section 8.1: 1.2hgl

Test equipment:
see annex 2: C218, R001, U005

Remark:

Test result: Determination of the 'occupied bandwidth'

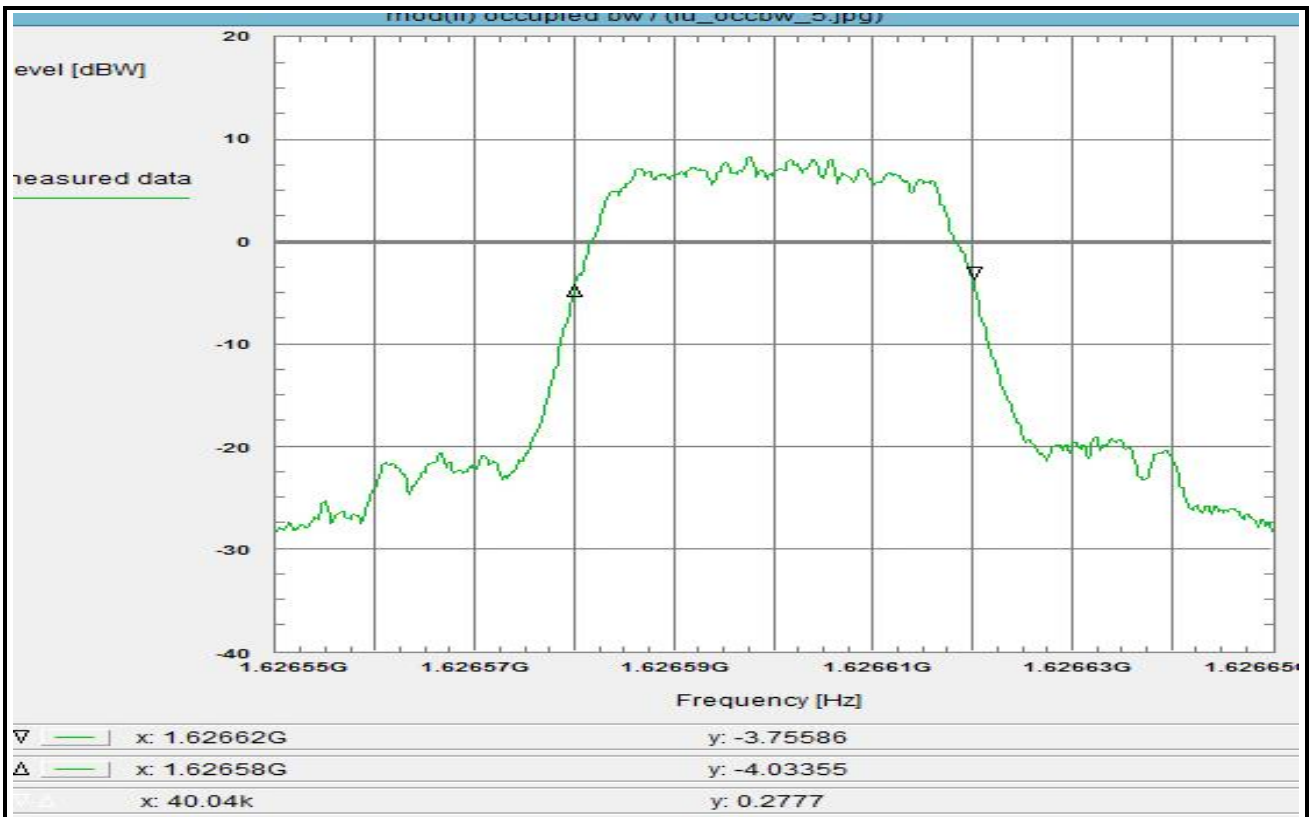
Environment condition:
Date & Time: Thu 09/Nov/2017 17:51:59
Location: CTC advanced GmbH, Laboratory RSC-Sat
Temperature: 22 °C
Humidity: 55 %
Voltage: 28 Vdc

Setup of measurement equipment:
Start frequency: 1.62635 GHz
Stop frequency: 1.62685 GHz
Center frequency: 1.6266 GHz
Frequency span: 500 kHz
Resolution-BW: 3 kHz
Video-BW: 10 kHz
Input attenuation: 5 dB
Trace-Mode: Max-Hold
Detector-Mode: Pos Peak

Correction:
Directional coupler + 0.0 dB
Coaxial cable (C218) + 0.8 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
(U005) + 29.8 dB
TOTAL CORRECTION: + 30.6 dB

Remarks:
Determination of the 'occupied bandwidth' at fu:
The measured value is about 170 kHz (delta marker)
Measurement with 3 kHz resolution filter and noise averaging.

Plot No. 5 (50)



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

Limit:
The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 % of the total mean power radiated by a given emission. (see §2.1049).
This occupied bandwidth corresponds to the -20 dB-bandwidth.

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

Operating condition of DUT:
operating condition 1, see subclause 1.5.2
A200/A300/A350, fl, 16QAM, 42 kHz

Test setup:
see section 8.1: 1.2hgl

Test equipment:
see annex 2: C218, R001, U005

Remark:

Test result: Determination of the 'occupied bandwidth'

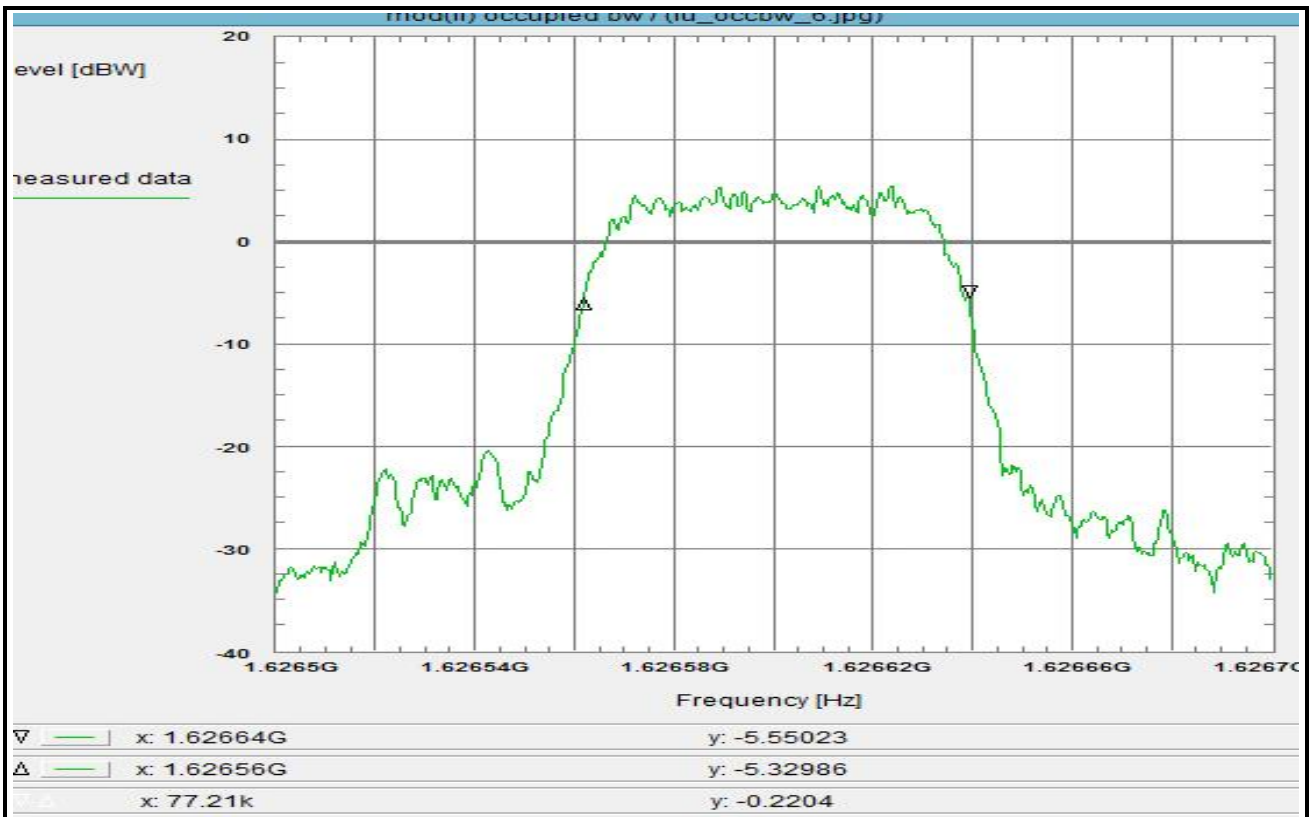
Environment condition:
Date & Time: Thu 09/Nov/2017 18:09:04
Location: CTC advanced GmbH, Laboratory RSC-Sat
Temperature: 22 °C
Humidity: 55 %
Voltage: 28 Vdc

Setup of measurement equipment:
Start frequency: 1.62655 GHz
Stop frequency: 1.62665 GHz
Center frequency: 1.6266 GHz
Frequency span: 100 kHz
Resolution-BW: 3 kHz
Video-BW: 10 kHz
Input attenuation: 5 dB
Trace-Mode: Max-Hold
Detector-Mode: Pos Peak

Correction:
Directional coupler + 0.0 dB
Coaxial cable (C218) + 0.8 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
(U005) + 29.8 dB
TOTAL CORRECTION: + 30.6 dB

Remarks:
Determination of the 'occupied bandwidth' at fu:
The measured value is about 40 kHz (delta marker)
Measurement with 3 kHz resolution filter and noise averaging.

Plot No. 6 (50)



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

Limit:
The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 % of the total mean power radiated by a given emission. (see §2.1049).
This occupied bandwidth corresponds to the -20 dB-bandwidth.

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

Operating condition of DUT:
operating condition 1, see subclause 1.5.2
A200/A300/A350, fl, 16QAM, 84 kHz

Test setup:
see section 8.1: 1.2hgl

Test equipment:
see annex 2: C218, R001, U005

Remark:

Test result: Determination of the 'occupied bandwidth'

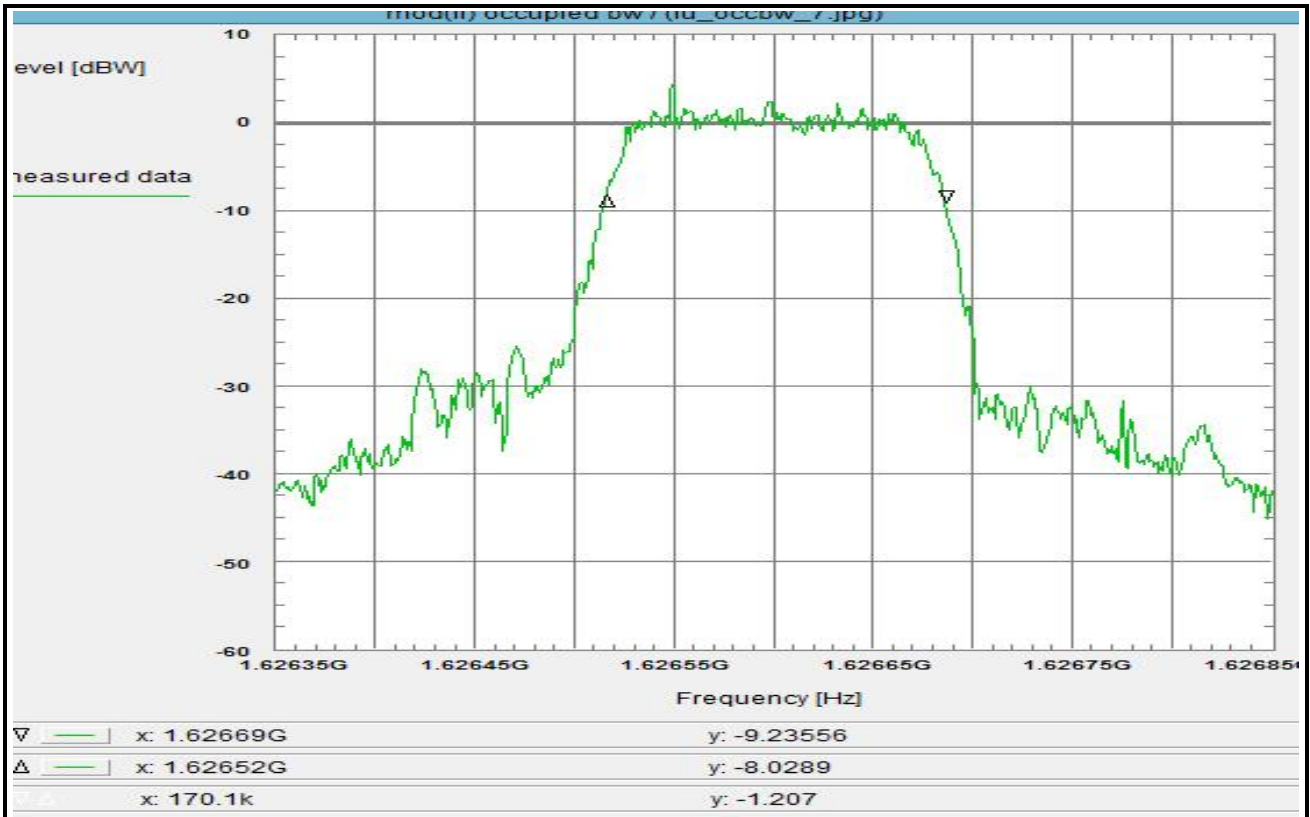
Environment condition:
Date & Time: Thu 09/Nov/2017 18:25:12
Location: CTC advanced GmbH, Laboratory RSC-Sat
Temperature: 22 °C
Humidity: 55 %
Voltage: 28 Vdc

Setup of measurement equipment:
Start frequency: 1.6265 GHz
Stop frequency: 1.6267 GHz
Center frequency: 1.6266 GHz
Frequency span: 200 kHz
Resolution-BW: 3 kHz
Video-BW: 10 kHz
Input attenuation: 5 dB
Trace-Mode: Max-Hold
Detector-Mode: Pos Peak

Correction:
Directional coupler + 0.0 dB
Coaxial cable (C218) + 0.8 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
(U005) + 29.8 dB
TOTAL CORRECTION: + 30.6 dB

Remarks:
Determination of the 'occupied bandwidth' at fu:
The measured value is about 77 kHz (delta marker)
Measurement with 3 kHz resolution filter and noise averaging.

Plot No. 7 (50)



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

Limit:
The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 % of the total mean power radiated by a given emission. (see §2.1049).
This occupied bandwidth corresponds to the -20 dB-bandwidth.

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

Operating condition of DUT:
operating condition 1, see subclause 1.5.2
A200/A300/A350, fl, 16QAM, 189 kHz

Test setup:
see section 8.1: 1.2hgl

Test equipment:
see annex 2: C218, R001, U005

Remark:

Test result: Determination of the 'occupied bandwidth'

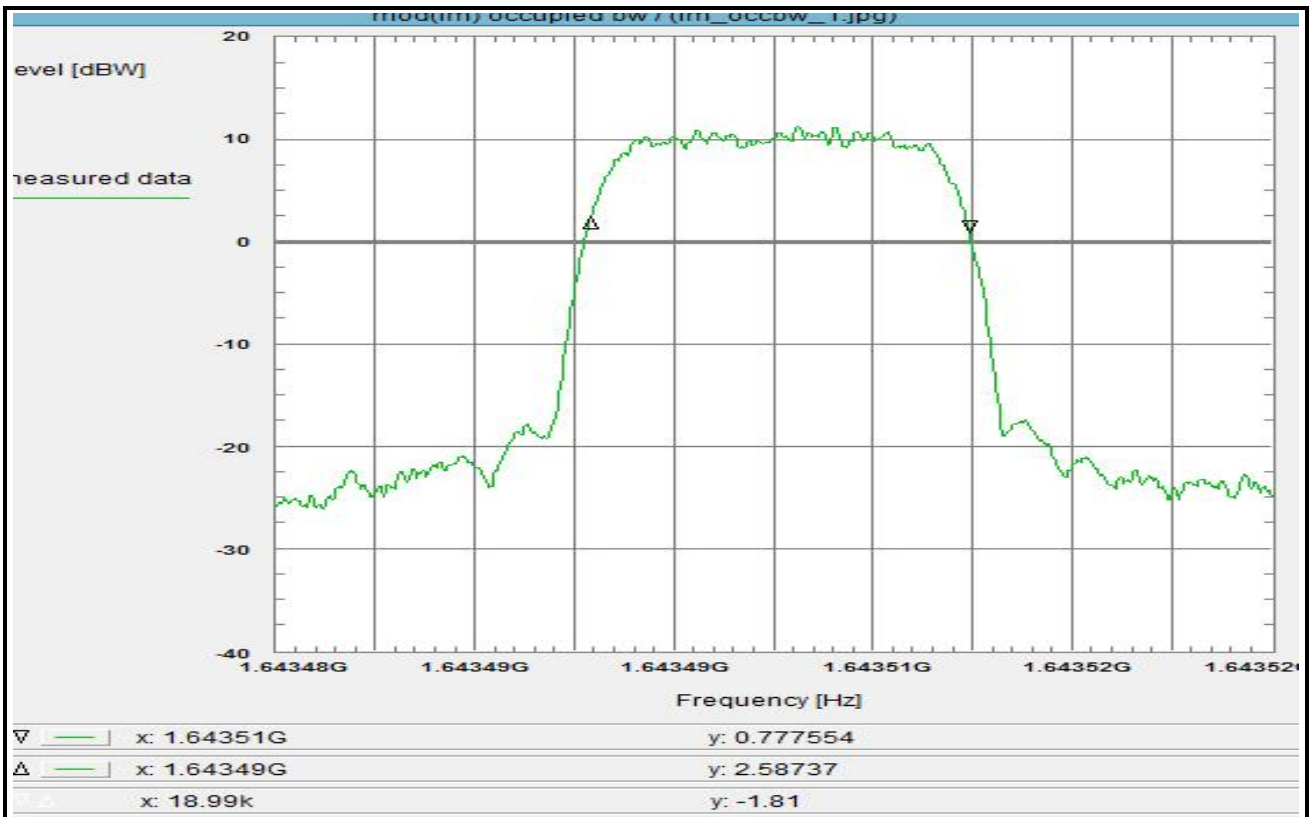
Environment condition:
Date & Time: Thu 09/Nov/2017 18:38:31
Location: CTC advanced GmbH, Laboratory RSC-Sat
Temperature: 22 °C
Humidity: 55 %
Voltage: 28 Vdc

Setup of measurement equipment:
Start frequency: 1.62635 GHz
Stop frequency: 1.62685 GHz
Center frequency: 1.6266 GHz
Frequency span: 500 kHz
Resolution-BW: 3 kHz
Video-BW: 10 kHz
Input attenuation: 5 dB
Trace-Mode: Max-Hold
Detector-Mode: Pos Peak

Correction:
Directional coupler + 0.0 dB
Coaxial cable (C218) + 0.8 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
(U005) + 29.8 dB
TOTAL CORRECTION: + 30.6 dB

Remarks:
Determination of the 'occupied bandwidth' at fu:
The measured value is about 170 kHz (delta marker)
Measurement with 3 kHz resolution filter and noise averaging.

Plot No. 8 (50)



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

Limit:
The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 % of the total mean power radiated by a given emission. (see §2.1049).
This occupied bandwidth corresponds to the -20 dB-bandwidth.

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

Operating condition of DUT:
operating condition 2, see subclause 1.5.2
A200/A300/A350, fm, QPSK, 21 kHz

Test setup:
see section 8.1: 1.2hgl

Test equipment:
see annex 2: C218, R001, U005

Remark:

Test result: Determination of the 'occupied bandwidth'

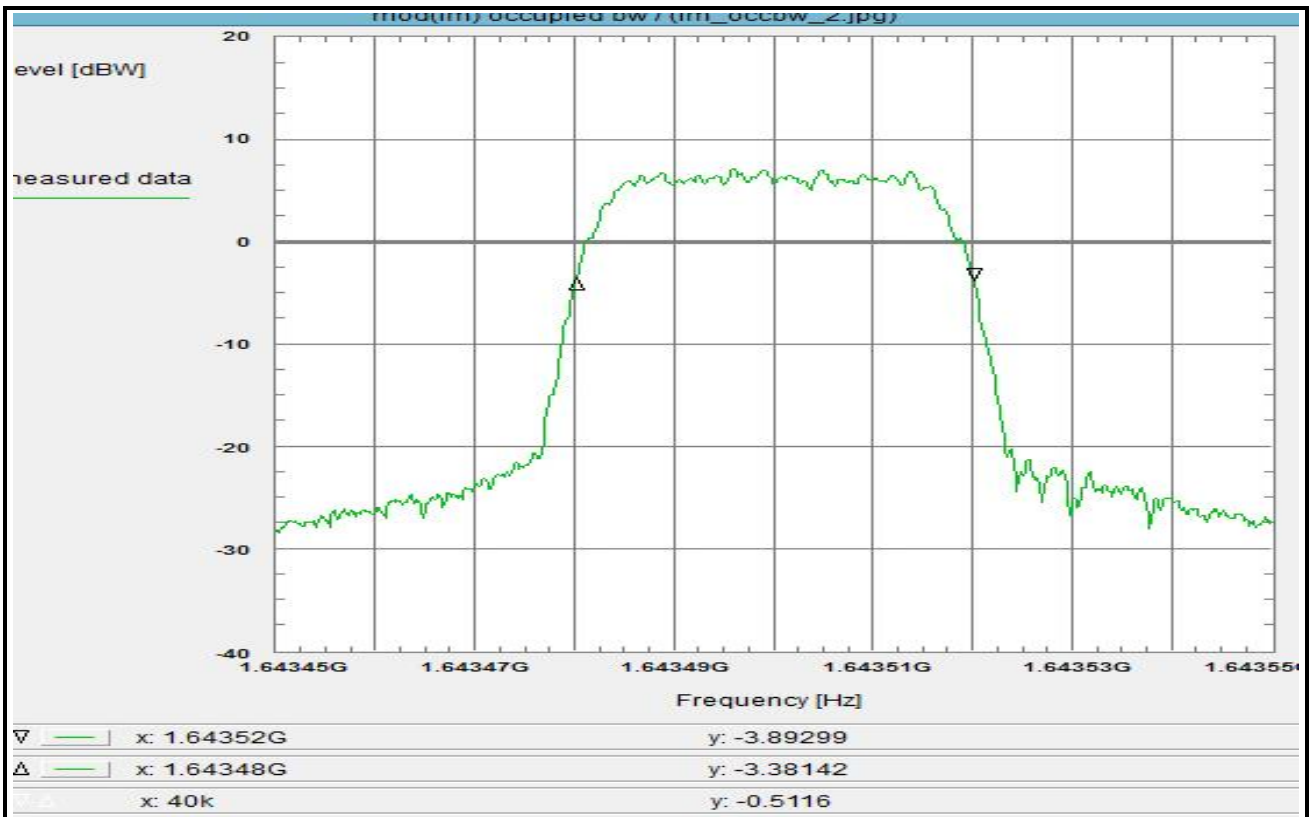
Environment condition:
Date & Time: Thu 09/Nov/2017 16:13:56
Location: CTC advanced GmbH, Laboratory RSC-Sat
Temperature: 22 °C
Humidity: 55 %
Voltage: 28 Vdc

Setup of measurement equipment:
Start frequency: 1.643475 GHz
Stop frequency: 1.643525 GHz
Center frequency: 1.6435 GHz
Frequency span: 50 kHz
Resolution-BW: 1 kHz
Video-BW: 3 kHz
Input attenuation: 5 dB
Trace-Mode: Max-Hold
Detector-Mode: Pos Peak

Correction:
Directional coupler + 0.0 dB
Coaxial cable (C218) + 0.8 dB
DUT-Antenna (on-axis) + 0.0 dBi
Test antenna + 0.0 dB
BW correction factor (1k -> 3k) + 4.8 dB
Atten. between HPA and feedhorn - 0.0 dB
(U005) + 29.8 dB
TOTAL CORRECTION: + 35.4 dB

Remarks:
Determination of the 'occupied bandwidth' at fm:
The measured value is about 19 kHz (delta marker)
Measurement with 1 kHz resolution filter and noise averaging.

Plot No. 9 (50)



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

Limit:
The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 % of the total mean power radiated by a given emission. (see §2.1049).
This occupied bandwidth corresponds to the -20 dB-bandwidth.

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

Operating condition of DUT:
operating condition 1, see subclause 1.5.2
A200/A300/A350, fm, QPSK, 42 kHz

Test setup:
see section 8.1: 1.2hgl

Test equipment:
see annex 2: C218, R001, U005

Remark:

Test result: Determination of the 'occupied bandwidth'

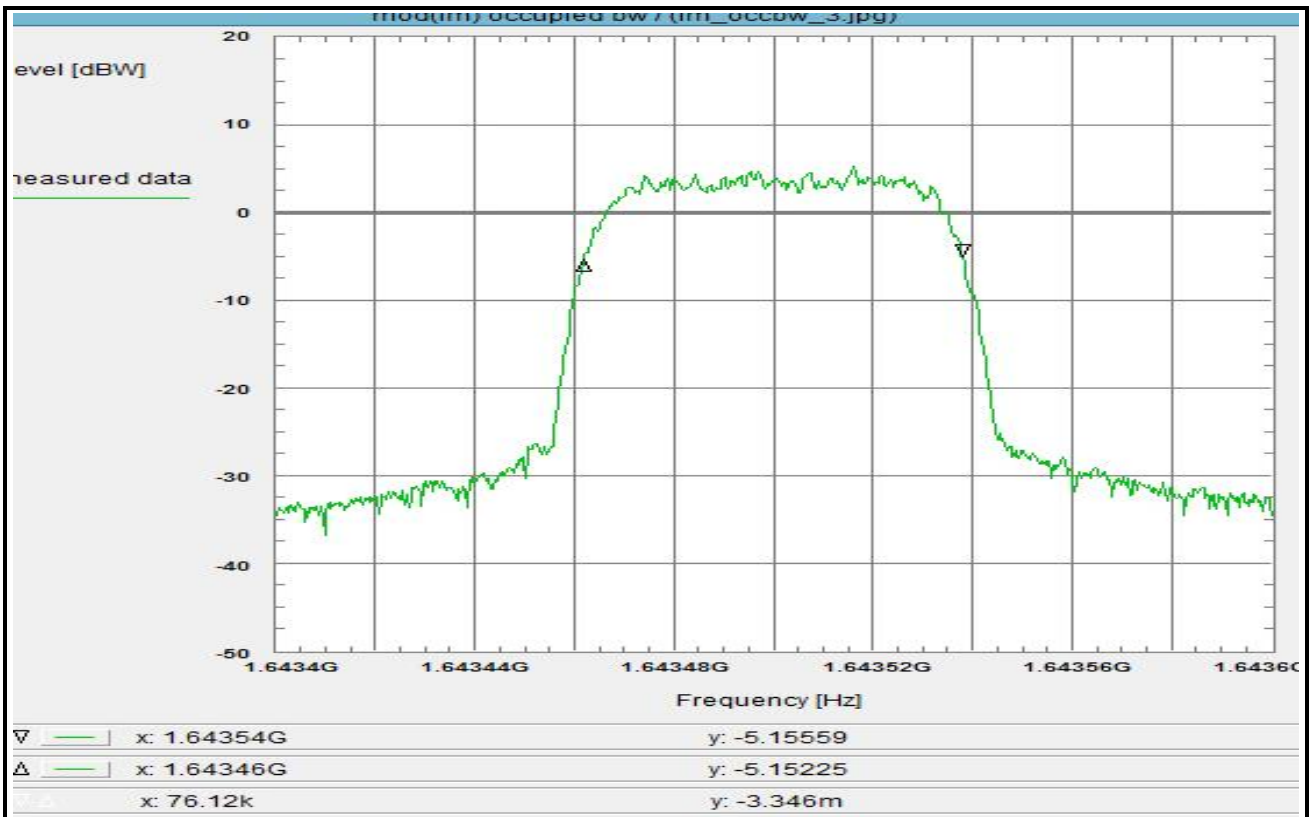
Environment condition:
Date & Time: Thu 09/Nov/2017 17:02:12
Location: CTC advanced GmbH, Laboratory RSC-Sat
Temperature: 22 °C
Humidity: 55 %
Voltage: 28 Vdc

Setup of measurement equipment:
Start frequency: 1.64345 GHz
Stop frequency: 1.64355 GHz
Center frequency: 1.6435 GHz
Frequency span: 100 kHz
Resolution-BW: 3 kHz
Video-BW: 10 kHz
Input attenuation: 5 dB
Trace-Mode: Max-Hold
Detector-Mode: Pos Peak

Correction:
Directional coupler + 0.0 dB
Coaxial cable (C218) + 0.8 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
(U005) + 29.8 dB
TOTAL CORRECTION: + 30.6 dB

Remarks:
Determination of the 'occupied bandwidth' at fm:
The measured value is about 40 kHz (delta marker)
Measurement with 3 kHz resolution filter and noise averaging.

Plot No. 10 (50)



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

Limit:
The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 % of the total mean power radiated by a given emission. (see §2.1049).
This occupied bandwidth corresponds to the -20 dB-bandwidth.

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

Operating condition of DUT:
operating condition 1, see subclause 1.5.2
A200/A300/A350, fm, QPSK, 42 kHz

Test setup:
see section 8.1: 1.2hgl

Test equipment:
see annex 2: C218, R001, U005

Remark:

Test result: Determination of the 'occupied bandwidth'

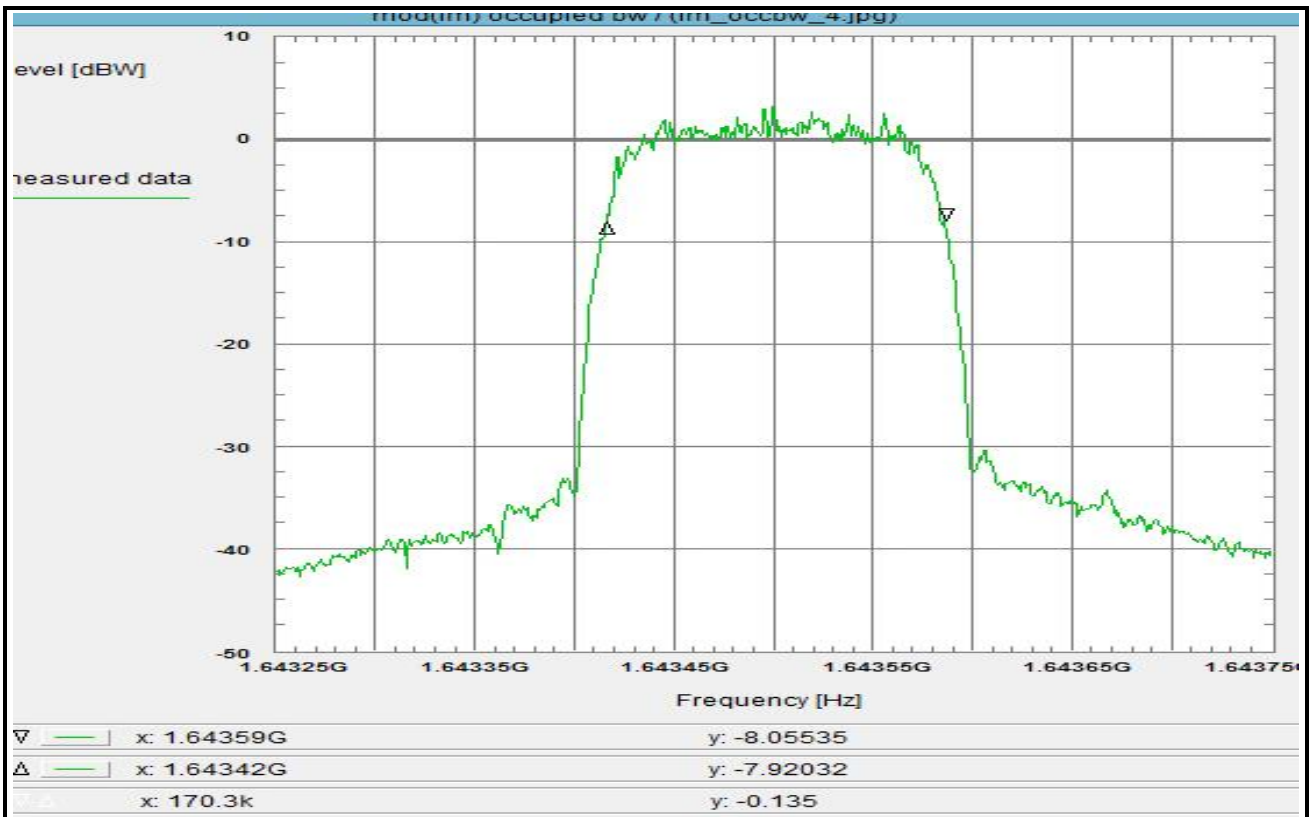
Environment condition:
Date & Time: Thu 09/Nov/2017 17:20:16
Location: CTC advanced GmbH, Laboratory RSC-Sat
Temperature: 22 °C
Humidity: 55 %
Voltage: 28 Vdc

Setup of measurement equipment:
Start frequency: 1.6434 GHz
Stop frequency: 1.6436 GHz
Center frequency: 1.6435 GHz
Frequency span: 200 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 (C218) + 0.8 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
(U005) + 29.8 dB
TOTAL CORRECTION: + 30.6 dB

Remarks:
Determination of the 'occupied bandwidth' at fm:
The measured value is about 76 kHz (delta marker)
Measurement with 3 kHz resolution filter and noise averaging.

Plot No. 11 (50)



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

Limit:
The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 % of the total mean power radiated by a given emission. (see §2.1049).
This occupied bandwidth corresponds to the -20 dB-bandwidth.

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

Operating condition of DUT:
operating condition 1, see subclause 1.5.2
A200/A300/A350, fm, QPSK, 189 kHz

Test setup:
see section 8.1: 1.2hgl

Test equipment:
see annex 2: C218, R001, U005

Remark:

Test result: Determination of the 'occupied bandwidth'

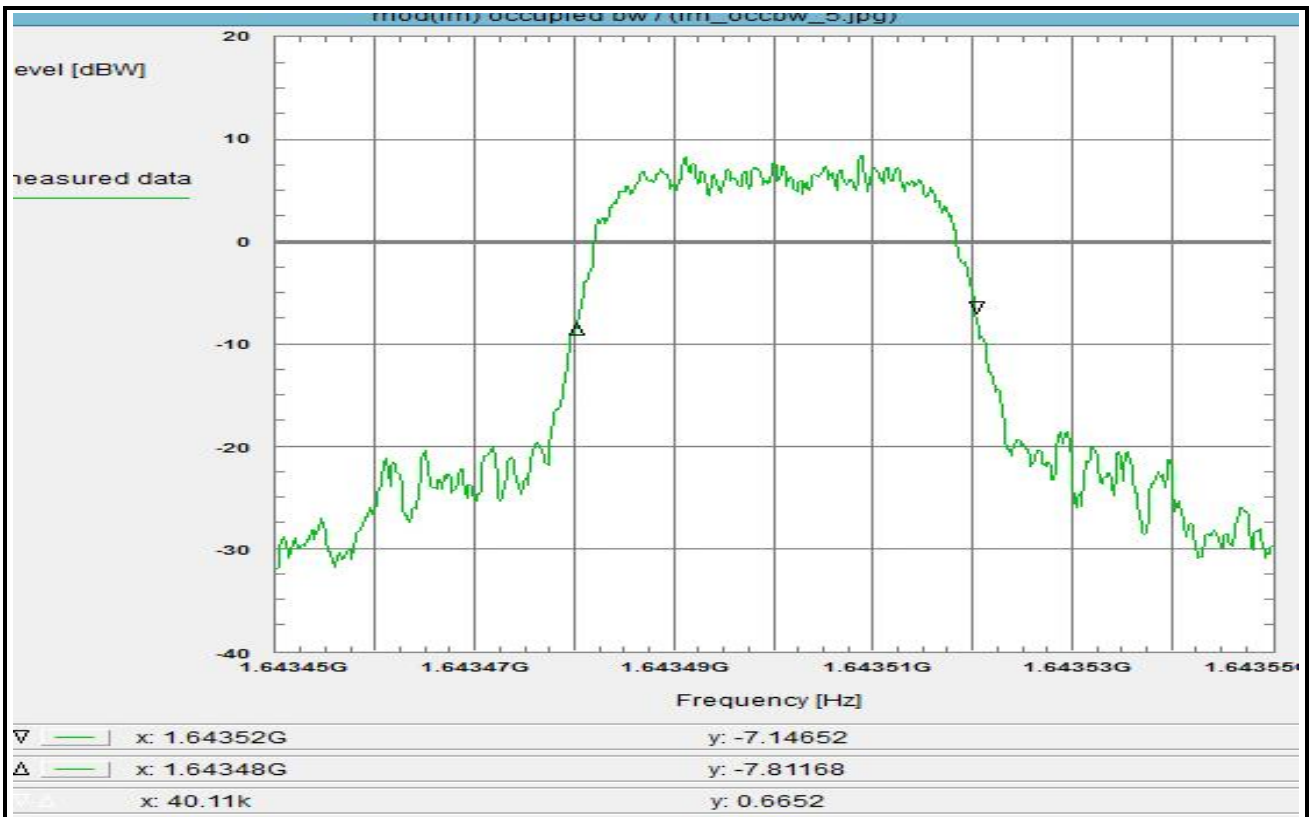
Environment condition:
Date & Time: Thu 09/Nov/2017 17:41:19
Location: CTC advanced GmbH, Laboratory RSC-Sat
Temperature: 22 °C
Humidity: 55 %
Voltage: 28 Vdc

Setup of measurement equipment:
Start frequency: 1.64325 GHz
Stop frequency: 1.64375 GHz
Center frequency: 1.6435 GHz
Frequency span: 500 kHz
Resolution-BW: 3 kHz
Video-BW: 10 kHz
Input attenuation: 5 dB
Trace-Mode: Max-Hold
Detector-Mode: Pos Peak

Correction:
Directional coupler + 0.0 dB
Coaxial cable (C218) + 0.8 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
(U005) + 29.8 dB
TOTAL CORRECTION: + 30.6 dB

Remarks:
Determination of the 'occupied bandwidth' at fm:
The measured value is about 170 kHz (delta marker)
Measurement with 3 kHz resolution filter and noise averaging.

Plot No. 12 (50)



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

Limit:
The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 % of the total mean power radiated by a given emission. (see §2.1049).
This occupied bandwidth corresponds to the -20 dB-bandwidth.

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

Operating condition of DUT:
operating condition 1, see subclause 1.5.2
A200/A300/A350, fm, 16QAM, 42 kHz

Test setup:
see section 8.1: 1.2hgl

Test equipment:
see annex 2: C218, R001, U005

Remark:

Test result: Determination of the 'occupied bandwidth'

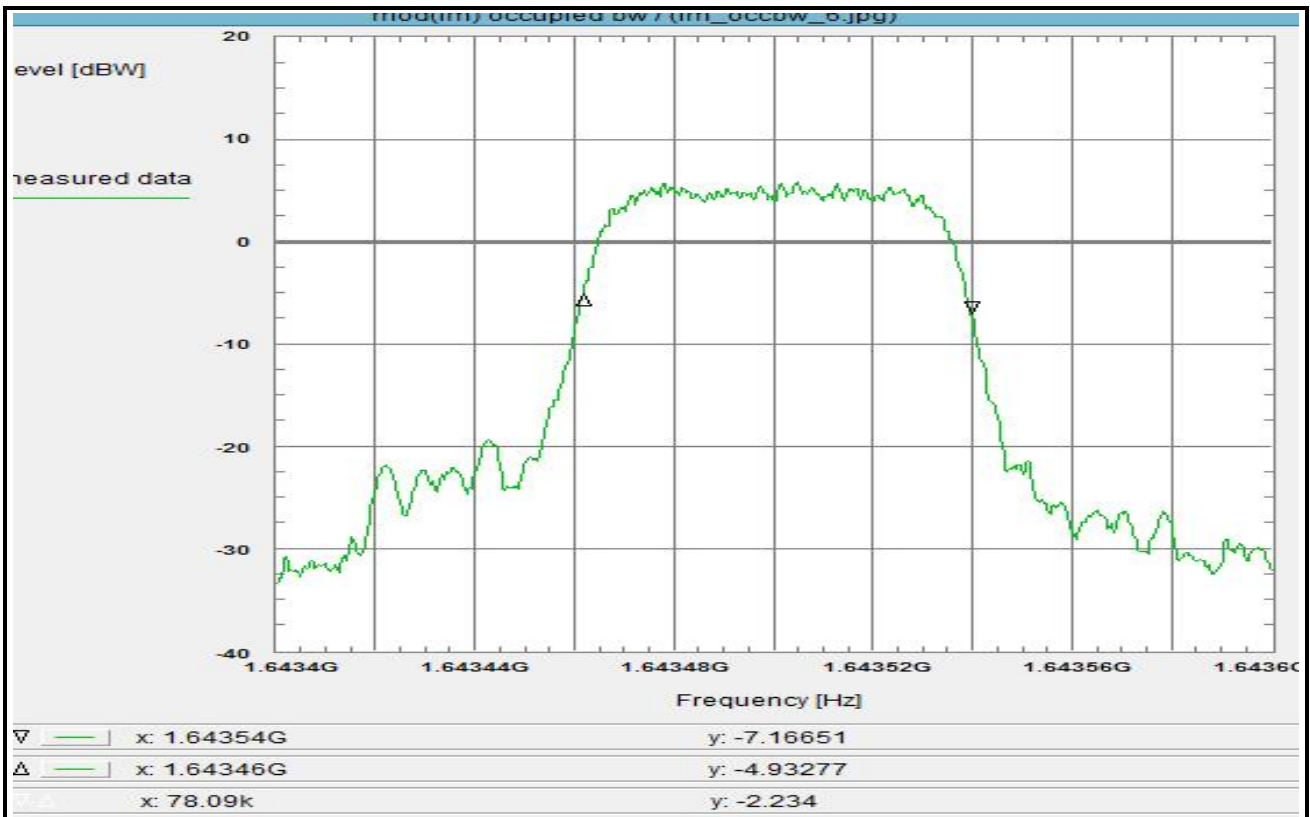
Environment condition:
Date & Time: Thu 09/Nov/2017 17:57:45
Location: CTC advanced GmbH, Laboratory RSC-Sat
Temperature: 22 °C
Humidity: 55 %
Voltage: 28 Vdc

Setup of measurement equipment:
Start frequency: 1.64345 GHz
Stop frequency: 1.64355 GHz
Center frequency: 1.6435 GHz
Frequency span: 100 kHz
Resolution-BW: 1 kHz
Video-BW: 3 kHz
Input attenuation: 5 dB
Trace-Mode: Max-Hold
Detector-Mode: Pos Peak

Correction:
Directional coupler + 0.0 dB
Coaxial cable (C218) + 0.8 dB
DUT-Antenna (on-axis) + 0.0 dBi
Test antenna + 0.0 dB
BW correction factor (1k -> 3k) + 4.8 dB
Atten. between HPA and feedhorn - 0.0 dB
(U005) + 29.8 dB
TOTAL CORRECTION: + 35.4 dB

Remarks:
Determination of the 'occupied bandwidth' at fm:
The measured value is about 40 kHz (delta marker)
Measurement with 1 kHz resolution filter and noise averaging.

Plot No. 13 (50)



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

Limit:
The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 % of the total mean power radiated by a given emission. (see §2.1049).
This occupied bandwidth corresponds to the -20 dB-bandwidth.

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

Operating condition of DUT:
operating condition 1, see subclause 1.5.2
A200/A300/A350, fm, 16QAM, 84 kHz

Test setup:
see section 8.1: 1.2hgl

Test equipment:
see annex 2: C218, R001, U005

Remark:

Test result: Determination of the 'occupied bandwidth'

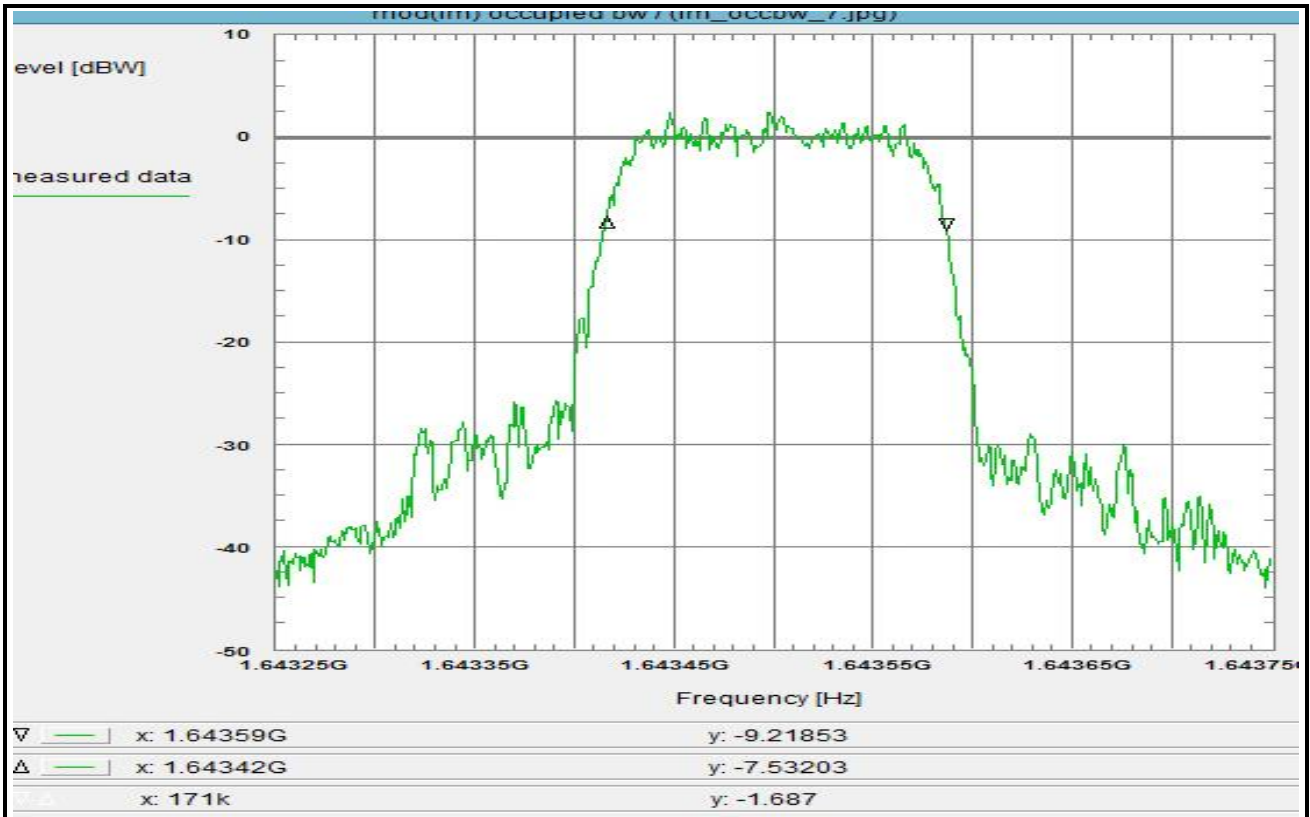
Environment condition:
Date & Time: Thu 09/Nov/2017 18:16:49
Location: CTC advanced GmbH, Laboratory RSC-Sat
Temperature: 22 °C
Humidity: 55 %
Voltage: 28 Vdc

Setup of measurement equipment:
Start frequency: 1.6434 GHz
Stop frequency: 1.6436 GHz
Center frequency: 1.6435 GHz
Frequency span: 200 kHz
Resolution-BW: 3 kHz
Video-BW: 10 kHz
Input attenuation: 5 dB
Trace-Mode: Max-Hold
Detector-Mode: Pos Peak

Correction:
Directional coupler + 0.0 dB
Coaxial cable (C218) + 0.8 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
(U005) + 29.8 dB
TOTAL CORRECTION: + 30.6 dB

Remarks:
Determination of the 'occupied bandwidth' at fm:
The measured value is about 78 kHz (delta marker)
Measurement with 3 kHz resolution filter and noise averaging.

Plot No. 14 (50)



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

Limit:
The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 % of the total mean power radiated by a given emission. (see §2.1049).
This occupied bandwidth corresponds to the -20 dB-bandwidth.

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

Operating condition of DUT:
operating condition 1, see subclause 1.5.2
A200/A300/A350, fm, 16QAM, 189 kHz

Test setup:
see section 8.1: 1.2hgl

Test equipment:
see annex 2: C218, R001, U005

Remark:

Test result: Determination of the 'occupied bandwidth'

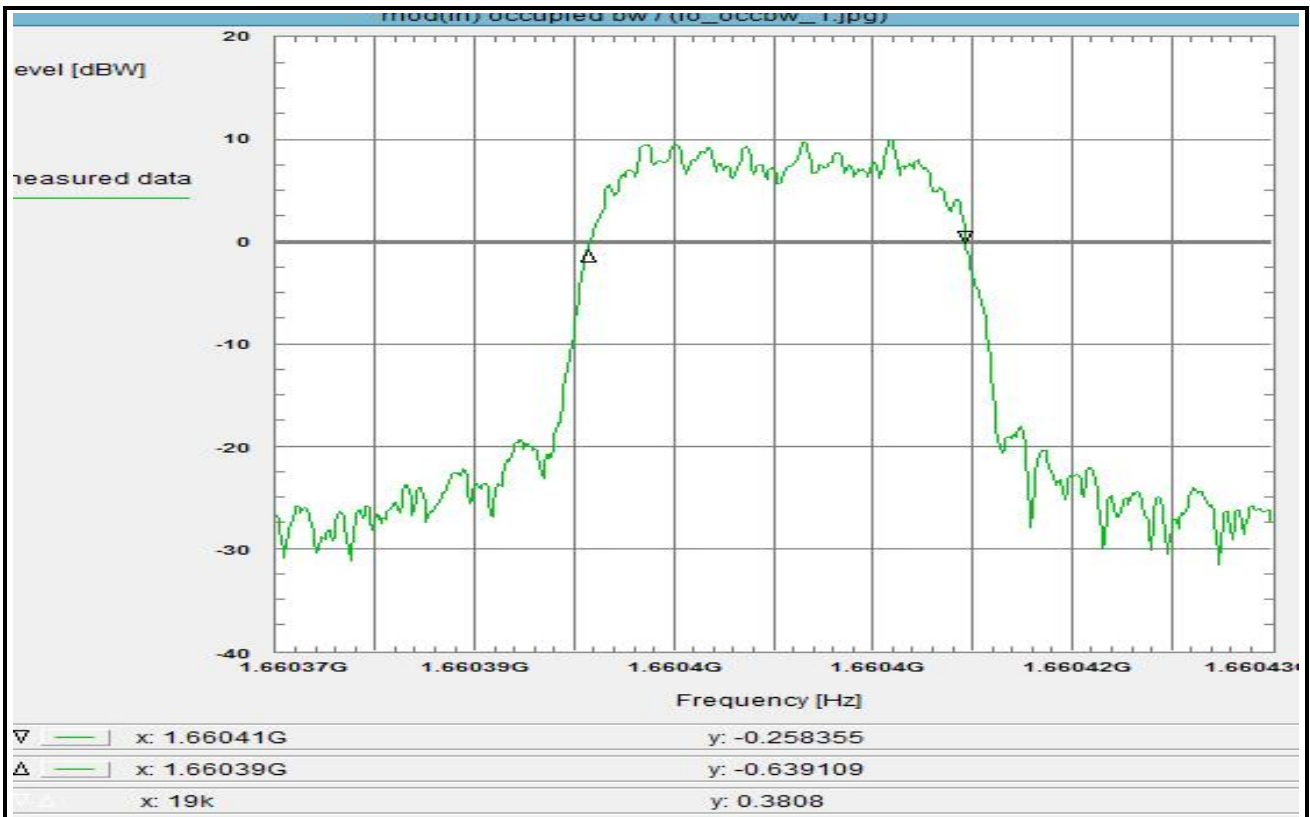
Environment condition:
Date & Time: Thu 09/Nov/2017 18:29:03
Location: CTC advanced GmbH, Laboratory RSC-Sat
Temperature: 22 °C
Humidity: 55 %
Voltage: 28 Vdc

Setup of measurement equipment:
Start frequency: 1.64325 GHz
Stop frequency: 1.64375 GHz
Center frequency: 1.6435 GHz
Frequency span: 500 kHz
Resolution-BW: 3 kHz
Video-BW: 10 kHz
Input attenuation: 5 dB
Trace-Mode: Max-Hold
Detector-Mode: Pos Peak

Correction:
Directional coupler + 0.0 dB
Coaxial cable (C218) + 0.8 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
(U005) + 29.8 dB
TOTAL CORRECTION: + 30.6 dB

Remarks:
Determination of the 'occupied bandwidth' at fm:
The measured value is about 170 kHz (delta marker)
Measurement with 3 kHz resolution filter and noise averaging.

Plot No. 15 (50)



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

Limit:
The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 % of the total mean power radiated by a given emission. (see §2.1049).
This occupied bandwidth corresponds to the -20 dB-bandwidth.

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

Operating condition of DUT:
operating condition 1, see subclause 1.5.2
A200/A300/A350, fh, QPSK, 21 kHz

Test setup:
see section 8.1: 1.2hgl

Test equipment:
see annex 2: C218, R001, U005

Remark:

Test result: Determination of the 'occupied bandwidth'

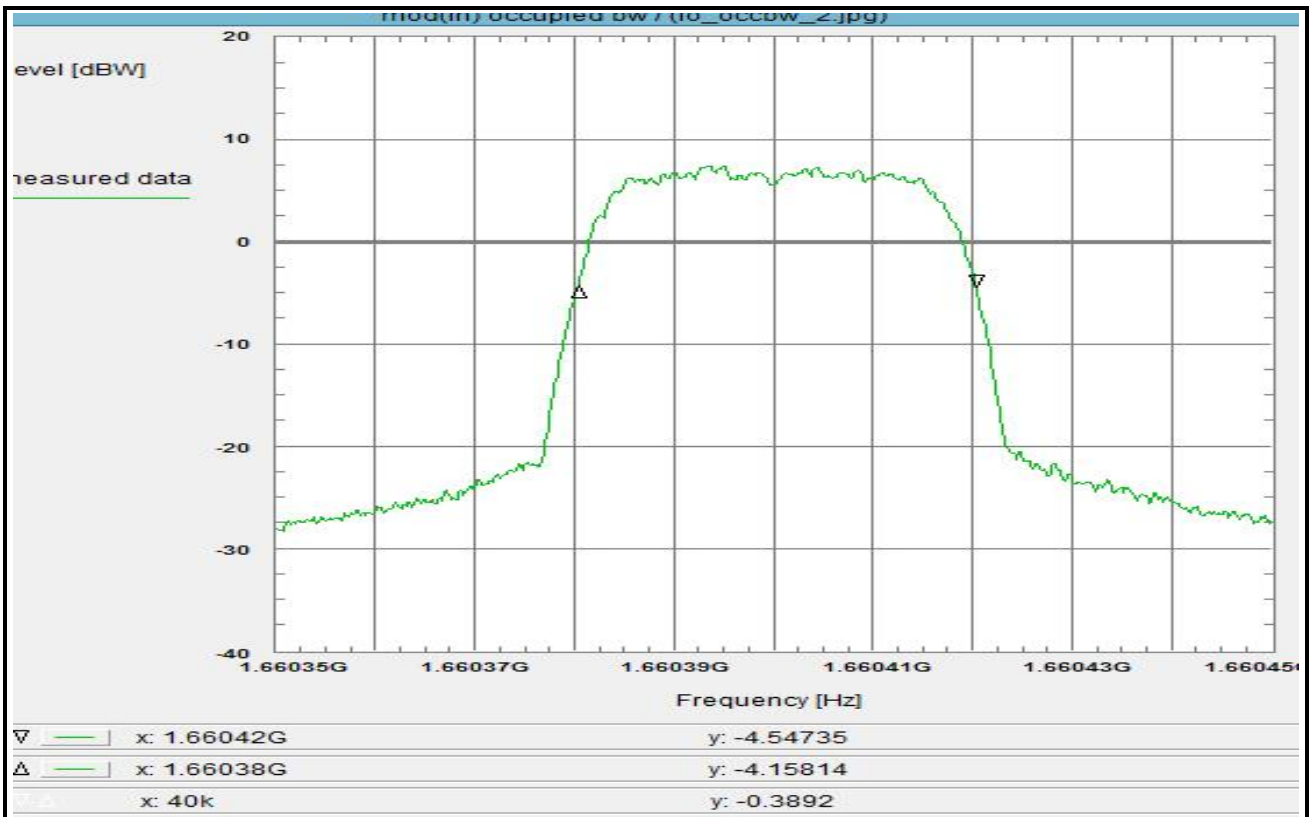
Environment condition:
Date & Time: Thu 09/Nov/2017 16:26:17
Location: CTC advanced GmbH, Laboratory RSC-Sat
Temperature: 22 °C
Humidity: 55 %
Voltage: 28 Vdc

Setup of measurement equipment:
Start frequency: 1.660375 GHz
Stop frequency: 1.660425 GHz
Center frequency: 1.6604 GHz
Frequency span: 50 kHz
Resolution-BW: 1 kHz
Video-BW: 3 kHz
Input attenuation: 5 dB
Trace-Mode: Max-Hold
Detector-Mode: Pos Peak

Correction:
Directional coupler + 0.0 dB
Coaxial cable (C218) + 0.8 dB
DUT-Antenna (on-axis) + 0.0 dBi
Test antenna + 0.0 dB
BW correction factor (1k -> 3k) + 4.8 dB
Atten. between HPA and feedhorn + 0.0 dB
(U005) + 29.8 dB
TOTAL CORRECTION: + 35.4 dB

Remarks:
Determination of the 'occupied bandwidth' at fo:
The measured value is about 19 kHz (delta marker)
Measurement with 3 kHz resolution filter and noise averaging.

Plot No. 16 (50)



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

Limit:
The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 % of the total mean power radiated by a given emission. (see §2.1049).
This occupied bandwidth corresponds to the -20 dB-bandwidth.

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

Operating condition of DUT:
operating condition 1, see subclause 1.5.2
A200/A300/A350, fh, QPSK, 42 kHz

Test setup:
see section 8.1: 1.2hgl

Test equipment:
see annex 2: C218, R001, U005

Remark:

Test result: Determination of the 'occupied bandwidth'

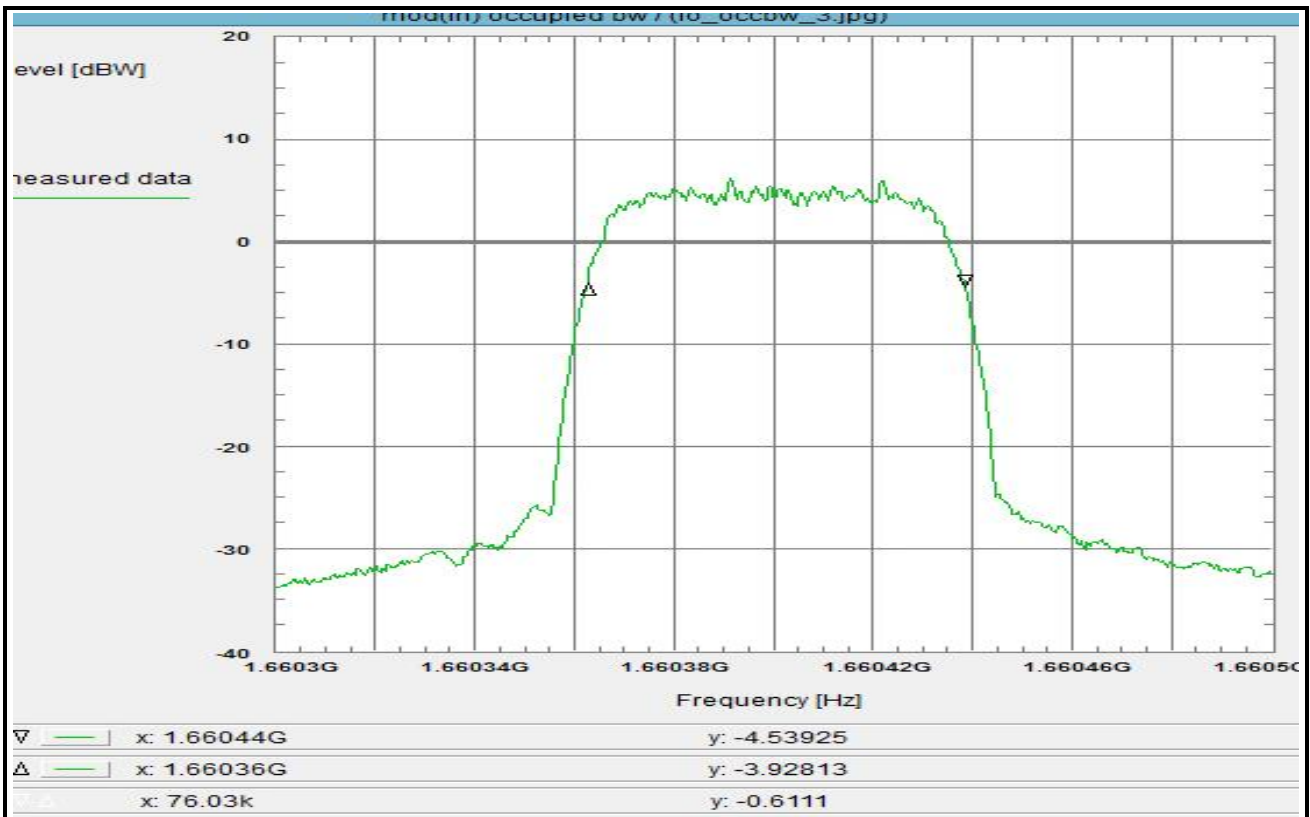
Environment condition:
Date & Time: Thu 09/Nov/2017 17:09:02
Location: CTC advanced GmbH, Laboratory RSC-Sat
Temperature: 22 °C
Humidity: 55 %
Voltage: 28 Vdc

Setup of measurement equipment:
Start frequency: 1.66035 GHz
Stop frequency: 1.66045 GHz
Center frequency: 1.6604 GHz
Frequency span: 100 kHz
Resolution-BW: 3 kHz
Video-BW: 10 kHz
Input attenuation: 5 dB
Trace-Mode: Max-Hold
Detector-Mode: Pos Peak

Correction:
Directional coupler + 0.0 dB
Coaxial cable (C218) + 0.8 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
(U005) + 29.8 dB
TOTAL CORRECTION: + 30.6 dB

Remarks:
Determination of the 'occupied bandwidth' at fh:
The measured value is about 40 kHz (delta marker)
Measurement with 3 kHz resolution filter and noise averaging.

Plot No. 17 (50)



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

Limit:
The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 % of the total mean power radiated by a given emission. (see §2.1049).
This occupied bandwidth corresponds to the -20 dB-bandwidth.

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

Operating condition of DUT:
operating condition 1, see subclause 1.5.2
A200/A300/A350, fh, QPSK, 84 kHz

Test setup:
see section 8.1: 1.2hgl

Test equipment:
see annex 2: C218, R001, U005

Remark:

Test result: Modulated rf-carrier at the upper edge of the band

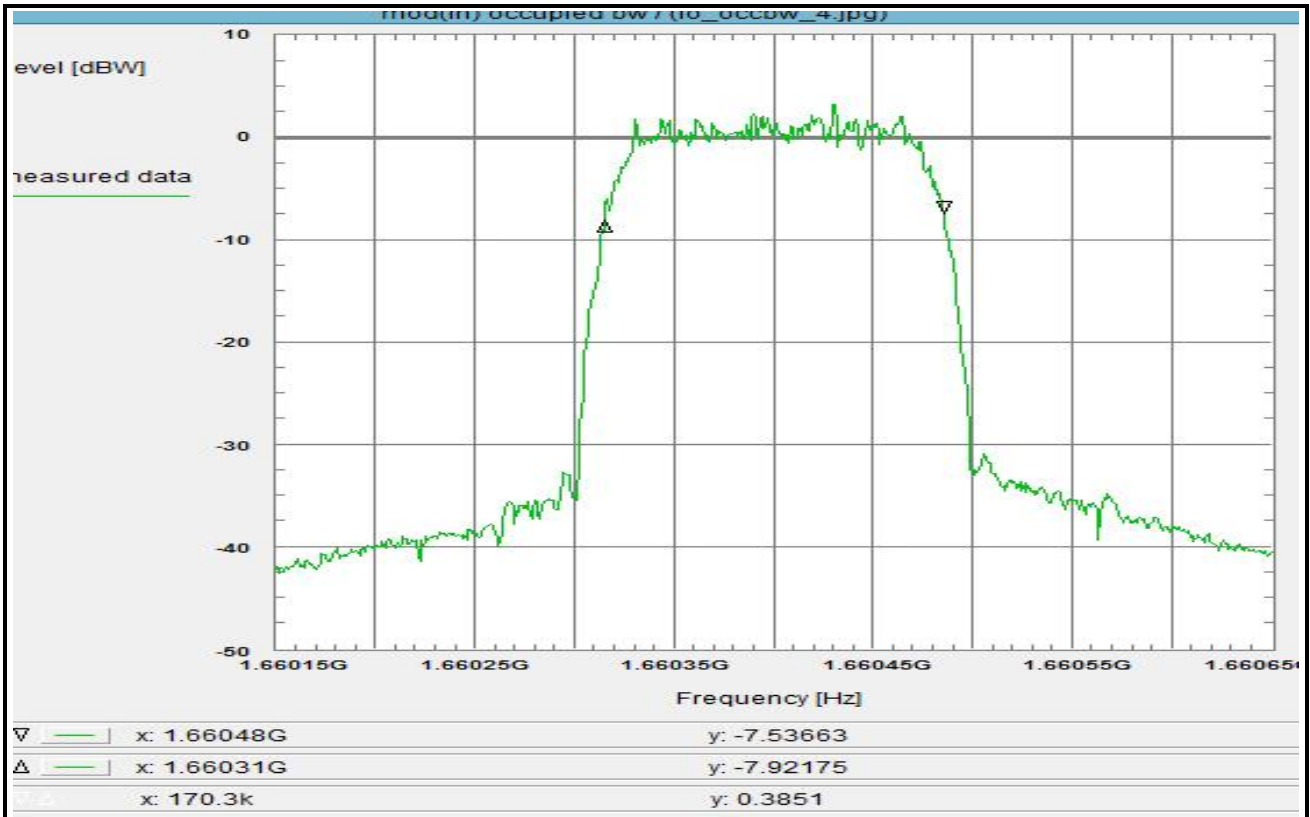
Environment condition:
Date & Time: Thu 09/Nov/2017 17:27:06
Location: CTC advanced GmbH, Laboratory RSC-Sat
Temperature: 22 °C
Humidity: 55 %
Voltage: 28 Vdc

Setup of measurement equipment:
Start frequency: 1.6603 GHz
Stop frequency: 1.6605 GHz
Center frequency: 1.6604 GHz
Frequency span: 200 kHz
Resolution-BW: 3 kHz
Video-BW: 10 kHz
Input attenuation: 5 dB
Trace-Mode: Max-Hold
Detector-Mode: Pos Peak

Correction:
Directional coupler + 0.0 dB
Coaxial cable (C218) + 0.8 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
(U005) + 29.8 dB
TOTAL CORRECTION: + 30.6 dB

Remarks:
Determination of the 'occupied bandwidth' at fh:
The measured value is about 76 kHz (delta marker)
Measurement with 3 kHz resolution filter and noise averaging.

Plot No. 18 (50)



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

Limit:
The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 % of the total mean power radiated by a given emission. (see §2.1049).
This occupied bandwidth corresponds to the -20 dB-bandwidth.

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

Operating condition of DUT:
operating condition 1, see subclause 1.5.2
A200/A300/A350, fh, QPSK, 189 kHz

Test setup:
see section 8.1: 1.2hgl

Test equipment:
see annex 2: C218, R001, U005

Remark:

Test result: Determination of the 'occupied bandwidth'

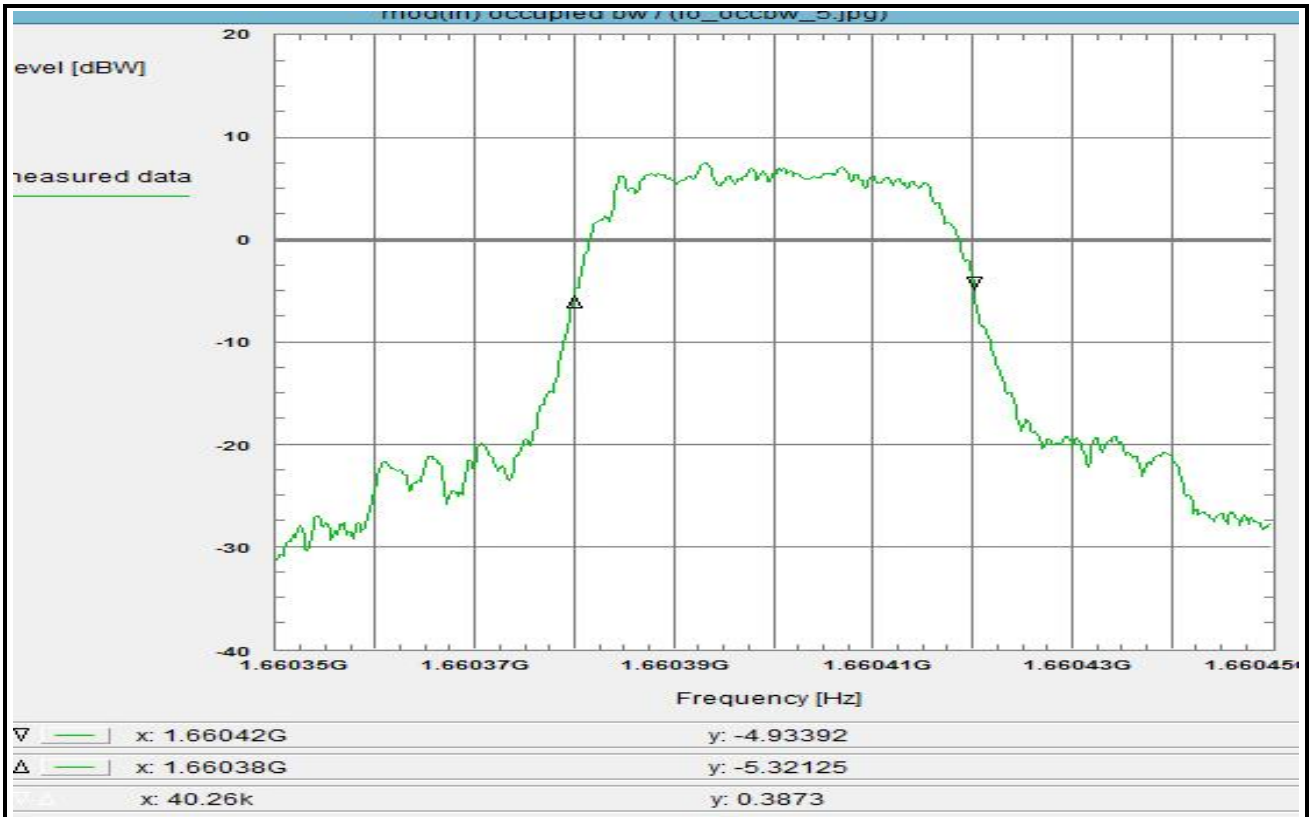
Environment condition:
Date & Time: Thu 09/Nov/2017 17:45:34
Location: CTC advanced GmbH, Laboratory RSC-Sat
Temperature: 22 °C
Humidity: 55 %
Voltage: 28 Vdc

Setup of measurement equipment:
Start frequency: 1.66015 GHz
Stop frequency: 1.66065 GHz
Center frequency: 1.6604 GHz
Frequency span: 500 kHz
Resolution-BW: 3 kHz
Video-BW: 10 kHz
Input attenuation: 5 dB
Trace-Mode: Max-Hold
Detector-Mode: Pos Peak

Correction:
Directional coupler + 0.0 dB
Coaxial cable (C218) + 0.8 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
(U005) + 29.8 dB
TOTAL CORRECTION: + 30.6 dB

Remarks:
Determination of the 'occupied bandwidth' at fo:
The measured value is about 170 kHz (delta marker)
Measurement with 3 kHz resolution filter and noise averaging.

Plot No. 19 (50)



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

Limit:
The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 % of the total mean power radiated by a given emission. (see §2.1049).
This occupied bandwidth corresponds to the -20 dB-bandwidth.

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

Operating condition of DUT:
operating condition 1, see subclause 1.5.2
A200/A300/A350, fh, 16QAM, 42 kHz

Test setup:
see section 8.1: 1.2hgl

Test equipment:
see annex 2: C218, R001, U005

Remark:

Test result: Determination of the 'occupied bandwidth'

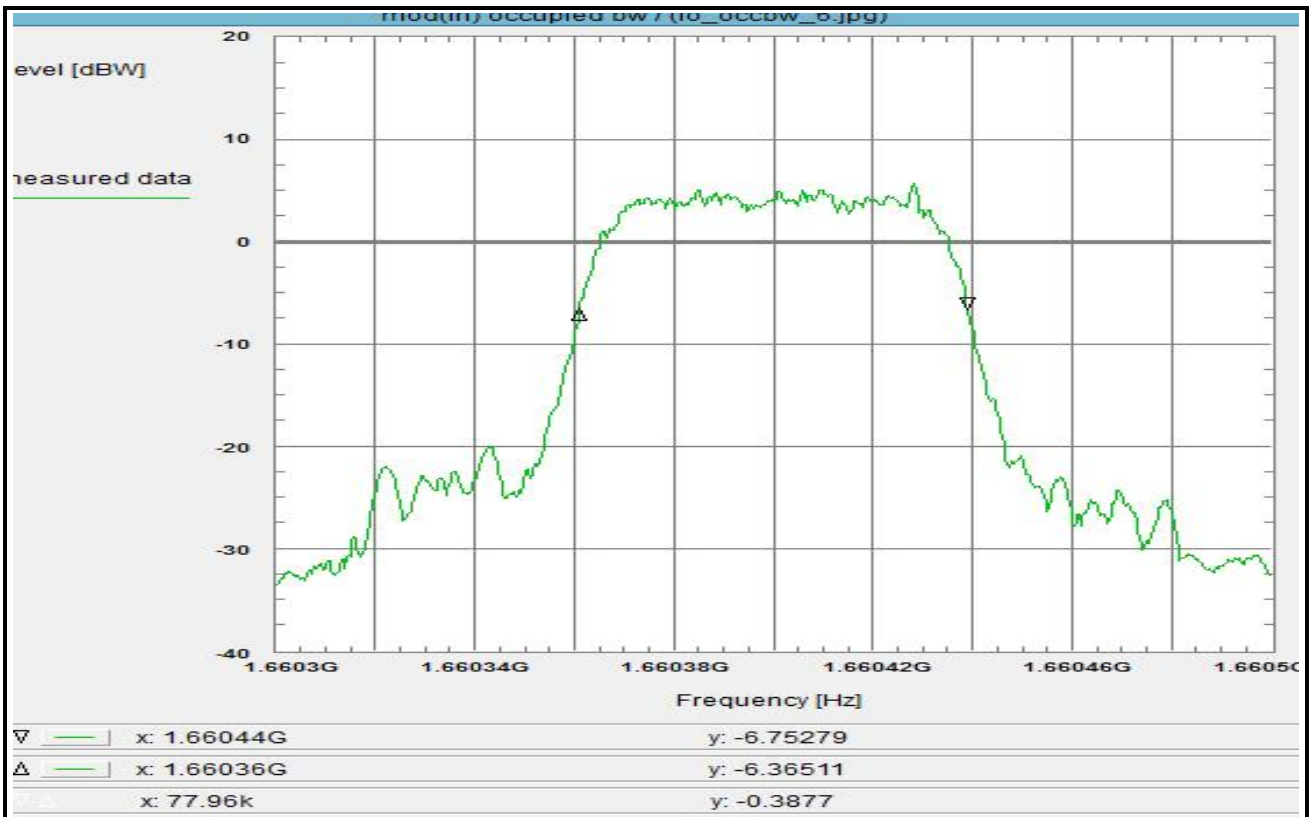
Environment condition:
Date & Time: Thu 09/Nov/2017 18:05:35
Location: CTC advanced GmbH, Laboratory RSC-Sat
Temperature: 22 °C
Humidity: 55 %
Voltage: 28 Vdc

Setup of measurement equipment:
Start frequency: 1.66035 GHz
Stop frequency: 1.66045 GHz
Center frequency: 1.6604 GHz
Frequency span: 100 kHz
Resolution-BW: 3 kHz
Video-BW: 10 kHz
Input attenuation: 5 dB
Trace-Mode: Max-Hold
Detector-Mode: Pos Peak

Correction:
Directional coupler + 0.0 dB
Coaxial cable (C218) + 0.8 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
(U005) + 29.8 dB
TOTAL CORRECTION: + 30.6 dB

Remarks:
Determination of the 'occupied bandwidth' at fo:
The measured value is about 40 kHz (delta marker)
Measurement with 3 kHz resolution filter and noise averaging.

Plot No. 20 (50)



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

Limit:
The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 % of the total mean power radiated by a given emission. (see §2.1049).
This occupied bandwidth corresponds to the -20 dB-bandwidth.

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

Operating condition of DUT:
operating condition 1, see subclause 1.5.2
A200/A300/A350, fh, 16QAM, 84 kHz

Test setup:
see section 8.1: 1.2hgl

Test equipment:
see annex 2: C218, R001, U005

Remark:

Test result: Determination of the 'occupied bandwidth'

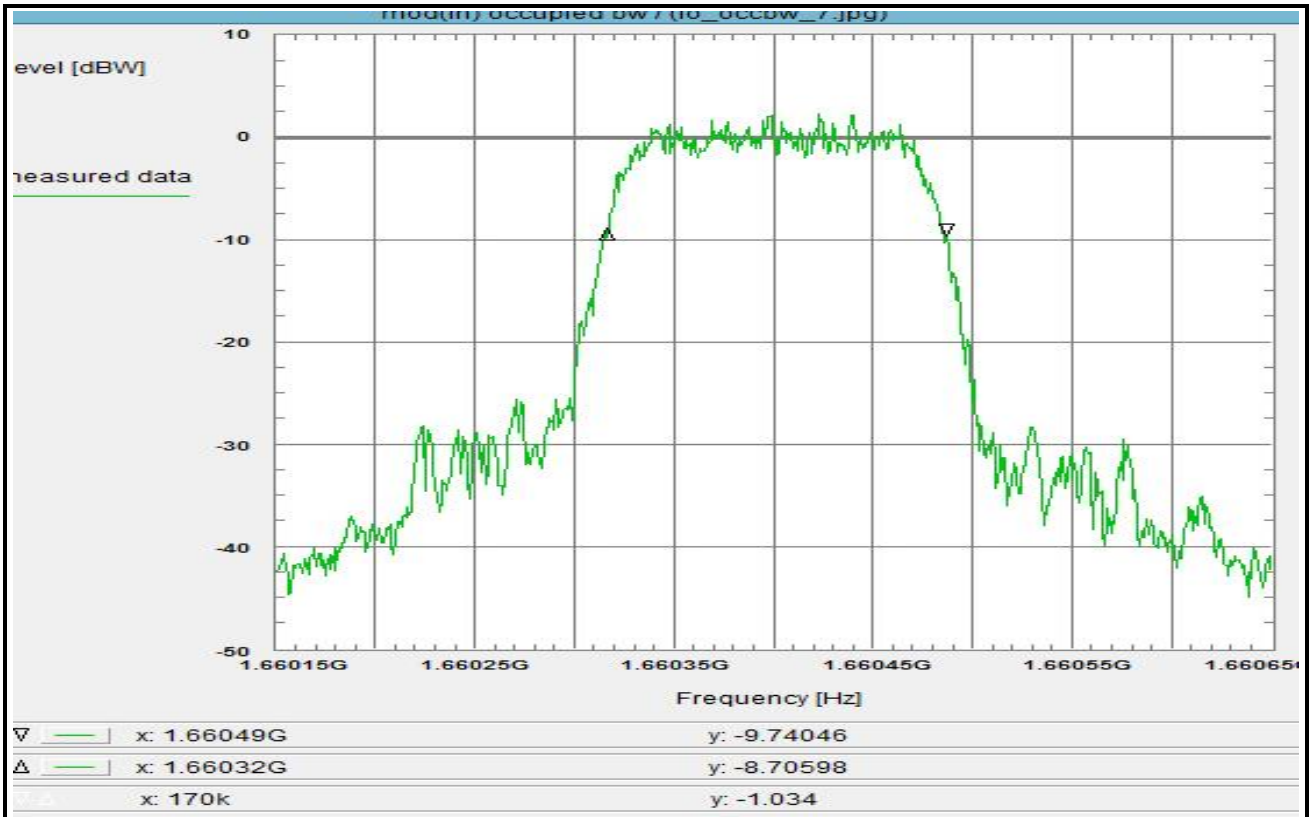
Environment condition:
Date & Time: Thu 09/Nov/2017 18:20:40
Location: CTC advanced GmbH, Laboratory RSC-Sat
Temperature: 22 °C
Humidity: 55 %
Voltage: 28 Vdc

Setup of measurement equipment:
Start frequency: 1.6603 GHz
Stop frequency: 1.6605 GHz
Center frequency: 1.6604 GHz
Frequency span: 200 kHz
Resolution-BW: 3 kHz
Video-BW: 10 kHz
Input attenuation: 5 dB
Trace-Mode: Max-Hold
Detector-Mode: Pos Peak

Correction:
Directional coupler + 0.0 dB
Coaxial cable (C218) + 0.8 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
(U005) + 29.8 dB
TOTAL CORRECTION: + 30.6 dB

Remarks:
Determination of the 'occupied bandwidth' at fo:
The measured value is about 78 kHz (delta marker)
Measurement with 3 kHz resolution filter and noise averaging.

Plot No. 21 (50)



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

Limit:
The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 % of the total mean power radiated by a given emission. (see §2.1049).
This occupied bandwidth corresponds to the -20 dB-bandwidth.

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

Operating condition of DUT:
operating condition 1, see subclause 1.5.2
A200/A300/A350, fh, 16QAM, 189 kHz

Test setup:
see section 8.1: 1.2hgl

Test equipment:
see annex 2: C218, R001, U005

Remark:

Test result: Determination of the 'occupied bandwidth'

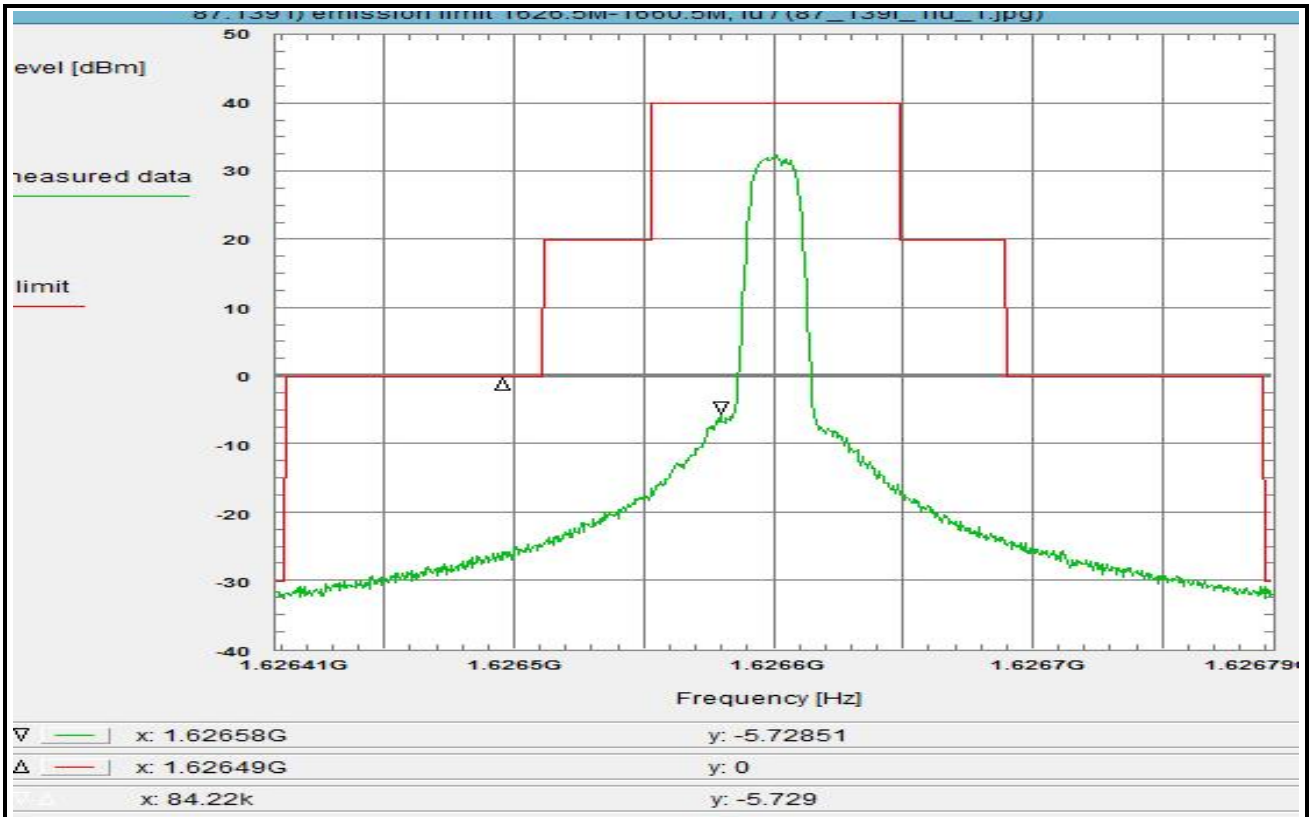
Environment condition:
Date & Time: Thu 09/Nov/2017 18:34:34
Location: CTC advanced GmbH, Laboratory RSC-Sat
Temperature: 22 °C
Humidity: 55 %
Voltage: 28 Vdc

Setup of measurement equipment:
Start frequency: 1.66015 GHz
Stop frequency: 1.66065 GHz
Center frequency: 1.6604 GHz
Frequency span: 500 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 (C218) + 0.8 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
(U005) + 29.8 dB
TOTAL CORRECTION: + 30.6 dB

Remarks:
Determination of the 'occupied bandwidth' at fh:
The measured value is about 170 kHz (delta marker)
Measurement with 3 kHz resolution filter and noise averaging.

Plot No. 22 (50)



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

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 subclause 1.5.2
A200/A300/A350, fi, QPSK, 21 kHz

Test setup:
see section 8.1: 1.2hgl

Test equipment:
see annex 2: C218, R001, U005

Remark:

Test result: Test passed

Environment condition:

Date & Time: Thu 09/Nov/2017 16:32:05
Location: CTC advanced GmbH, Laboratory RSC-Sat
Temperature: 22 °C
Humidity: 55 %
Voltage: 28 Vdc

Setup of measurement equipment:

Start frequency: 1.626408 GHz
Stop frequency: 1.626792 GHz
Center frequency: 1.6266 GHz
Frequency span: 384 kHz
Resolution-BW: 3 kHz
Video-BW: 10 kHz
Input attenuation: 5 dB
Trace-Mode: Average
Detector-Mode: AVG

Correction:

Directional coupler + 0.0 dB
Coaxial cable (C218) + 0.8 dB
DUT-Antenna (on-axis) + 0.0 dBi
Test antenna + 0.0 dB
BW correction factor (3k -> 4k) + 1.2 dB
Atten. between HPA and feedhorn (U005) - 0.0 dB
TOTAL CORRECTION: + 31.8 dB

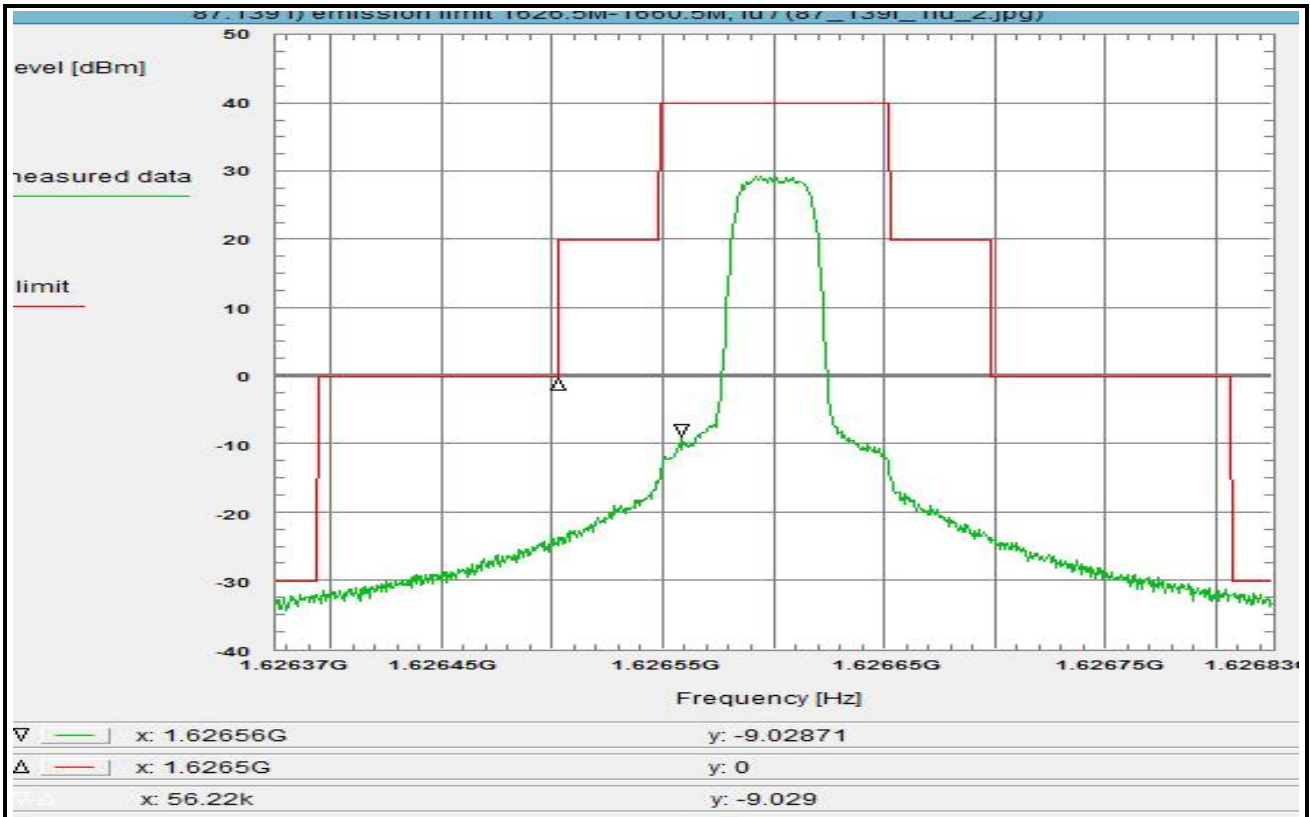
Remarks:

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

For EIRP calculation:

'worst-case' = maximum antenna gain

Plot No. 23 (50)



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 subclause 1.5.2
A200/A300/A350, fl, QPSK, 42 kHz

Test setup:

see section 8.1: 1.2hgl

Test equipment:

see annex 2: C218, R001, U005

Remark:

Test result: Test passed

Environment condition:

Date & Time: Thu 09/Nov/2017 17:11:57
Location: CTC advanced GmbH, Laboratory RSC-Sat
Temperature: 22 °C
Humidity: 55 %
Voltage: 28 Vdc

Setup of measurement equipment:

Start frequency: 1.626375 GHz
Stop frequency: 1.626825 GHz
Center frequency: 1.6266 GHz
Frequency span: 450 kHz
Resolution-BW: 3 kHz
Video-BW: 10 kHz
Input attenuation: 5 dB
Trace-Mode: Average
Detector-Mode: AVG

Correction:

Directional coupler + 0.0 dB
Coaxial cable (C218) + 0.8 dB
DUT-Antenna (on-axis) + 0.0 dBi
Test antenna + 0.0 dB
BW correction factor (3k -> 4k) + 1.2 dB
Atten. between HPA and feedhorn - 0.0 dB
(U005) + 29.8 dB
TOTAL CORRECTION: + 31.8 dB

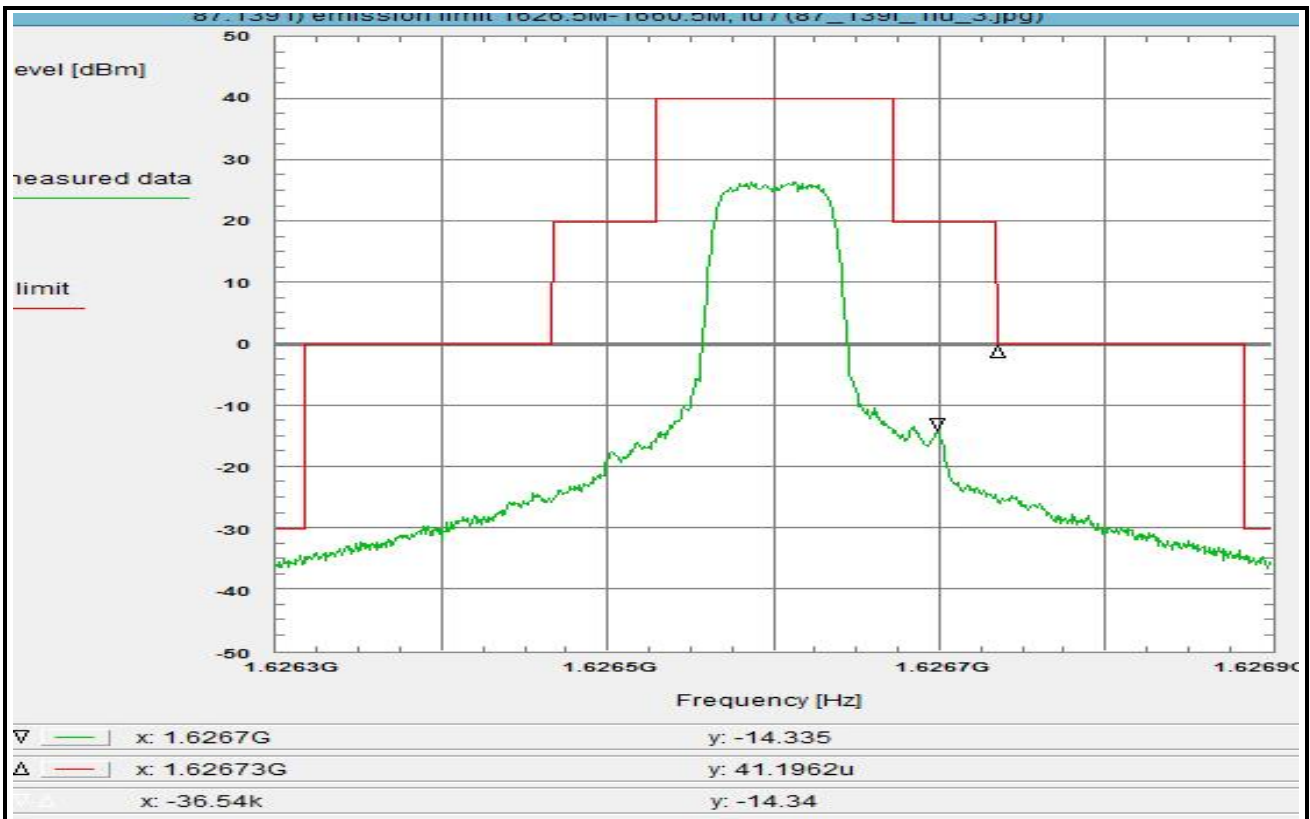
Remarks:

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

For EIRP calculation:

'worst-case' = maximum antenna gain

Plot No. 24 (50)



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

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 subclause 1.5.2
A200/A300/A350, fi, QPSK, 84 kHz

Test setup:
see section 8.1: 1.2hgl

Test equipment:
see annex 2: C218, R001, U005

Remark:

Test result: Test passed

Environment condition:

Date & Time: Thu 09/Nov/2017 17:34:49
Location: CTC advanced GmbH, Laboratory RSC-Sat
Temperature: 22 °C
Humidity: 55 %
Voltage: 28 Vdc

Setup of measurement equipment:

Start frequency: 1.6263 GHz
Stop frequency: 1.6269 GHz
Center frequency: 1.6266 GHz
Frequency span: 600 kHz
Resolution-BW: 3 kHz
Video-BW: 10 kHz
Input attenuation: 5 dB
Trace-Mode: Average
Detector-Mode: AVG

Correction:

Directional coupler + 0.0 dB
Coaxial cable (C218) + 0.8 dB
DUT-Antenna (on-axis) + 0.0 dBi
Test antenna + 0.0 dB
BW correction factor (3k -> 4k) + 1.2 dB
Atten. between HPA and feedhorn (U005) - 0.0 dB
TOTAL CORRECTION: + 31.8 dB

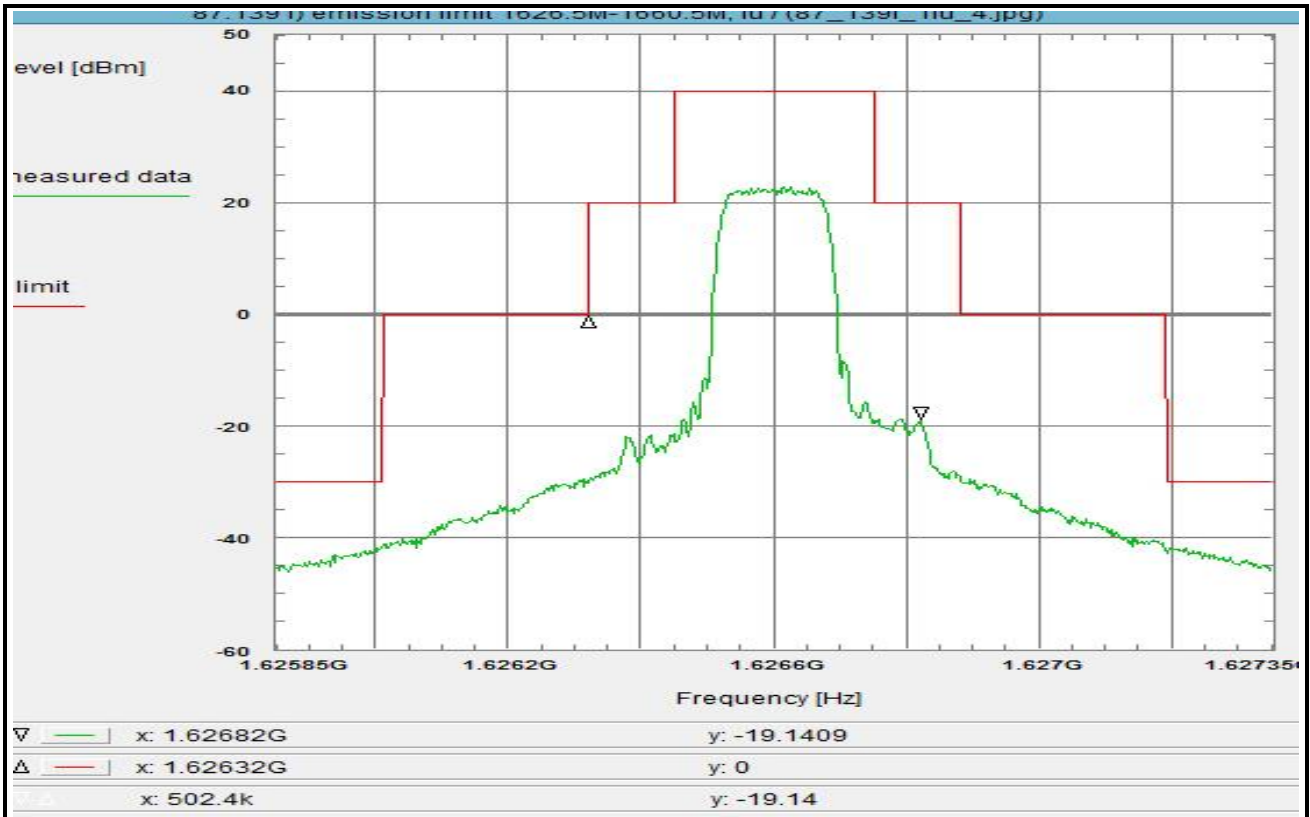
Remarks:

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

For EIRP calculation:

'worst-case' = maximum antenna gain

Plot No. 25 (50)



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

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 subclause 1.5.2
A200/A300/A350, fi, QPSK, 189 kHz

Test setup:
see section 8.1: 1.2hgl

Test equipment:
see annex 2: C218, R001, U005

Remark:

Test result: Test passed

Environment condition:

Date & Time: Thu 09/Nov/2017 17:49:57
Location: CTC advanced GmbH, Laboratory RSC-Sat
Temperature: 22 °C
Humidity: 55 %
Voltage: 28 Vdc

Setup of measurement equipment:

Start frequency: 1.62585 GHz
Stop frequency: 1.62735 GHz
Center frequency: 1.6266 GHz
Frequency span: 1.5 MHz
Resolution-BW: 3 kHz
Video-BW: 10 kHz
Input attenuation: 5 dB
Trace-Mode: Average
Detector-Mode: AVG

Correction:

Directional coupler + 0.0 dB
Coaxial cable (C218) + 0.8 dB
DUT-Antenna (on-axis) + 0.0 dBi
Test antenna + 0.0 dB
BW correction factor (3k -> 4k) + 1.2 dB
Atten. between HPA and feedhorn (U005) - 0.0 dB
TOTAL CORRECTION: + 31.8 dB

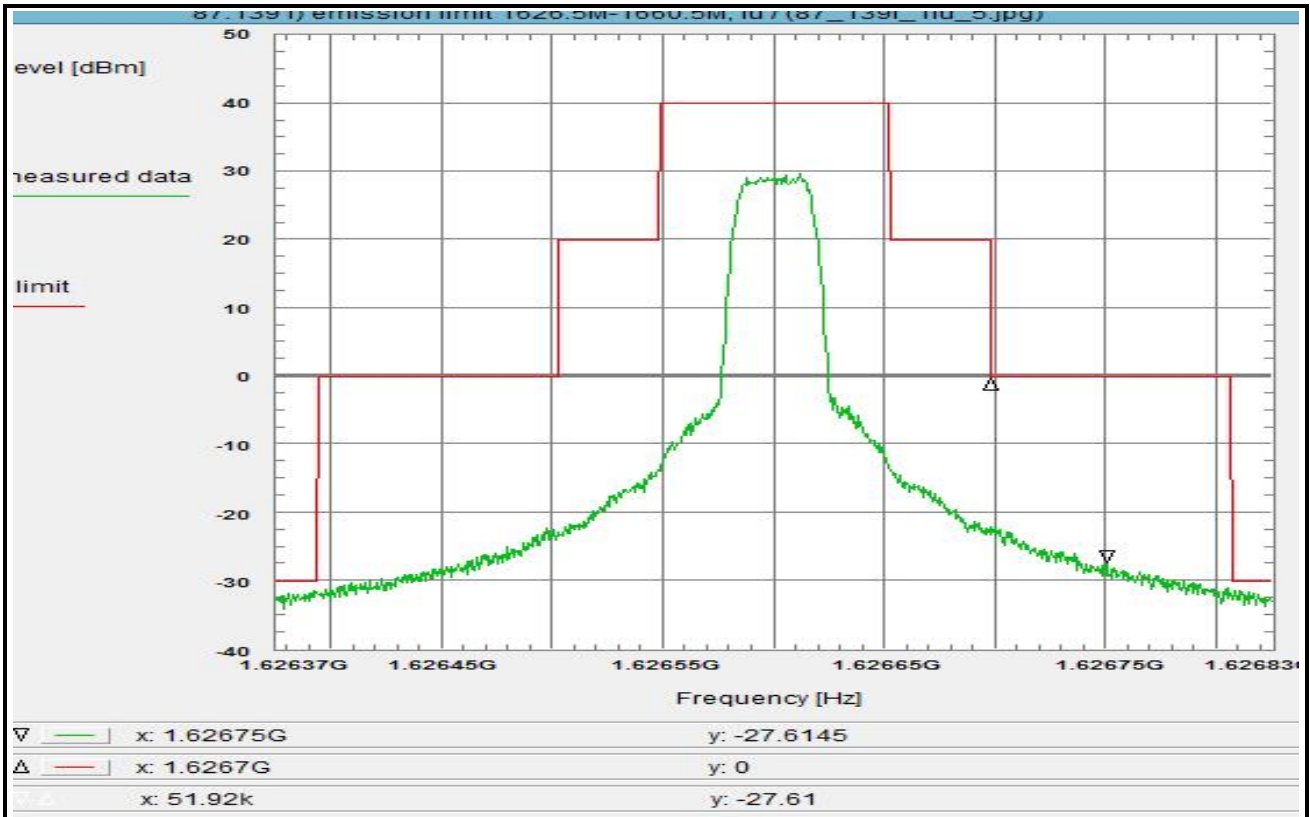
Remarks:

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

For EIRP calculation:

'worst-case' = maximum antenna gain

Plot No. 26 (50)



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

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 subclause 1.5.2
A200/A300/A350, fl, 16QAM, 42 kHz

Test setup:
see section 8.1: 1.2hgl

Test equipment:
see annex 2: C218, R001, U005

Remark:

Test result: Test passed

Environment condition:

Date & Time: Thu 09/Nov/2017 18:10:31
Location: CTC advanced GmbH, Laboratory RSC-Sat
Temperature: 22 °C
Humidity: 55 %
Voltage: 28 Vdc

Setup of measurement equipment:

Start frequency: 1.626375 GHz
Stop frequency: 1.626825 GHz
Center frequency: 1.6266 GHz
Frequency span: 450 kHz
Resolution-BW: 3 kHz
Video-BW: 10 kHz
Input attenuation: 5 dB
Trace-Mode: Average
Detector-Mode: AVG

Correction:

Directional coupler + 0.0 dB
Coaxial cable (C218) + 0.8 dB
DUT-Antenna (on-axis) + 0.0 dBi
Test antenna + 0.0 dB
BW correction factor (3k -> 4k) + 1.2 dB
Atten. between HPA and feedhorn (U005) - 0.0 dB
TOTAL CORRECTION: + 31.8 dB

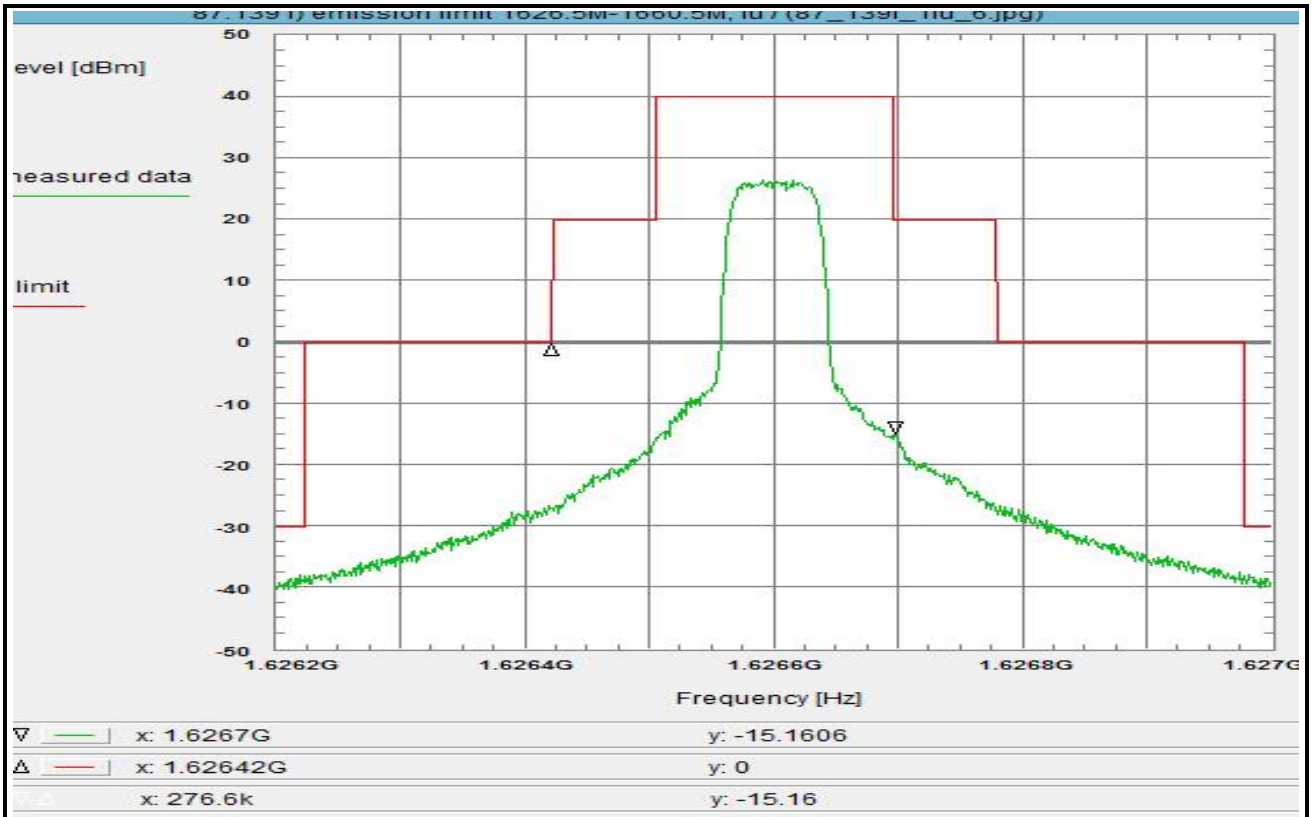
Remarks:

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

For EIRP calculation:

'worst-case' = maximum antenna gain

Plot No. 27 (50)



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

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 subclause 1.5.2
A200/A300/A350, fl, 16QAM, 84 kHz

Test setup:
see section 8.1: 1.2hgl

Test equipment:
see annex 2: C218, R001, U005

Remark:

Test result: Test passed

Environment condition:

Date & Time: Thu 09/Nov/2017 18:23:12
Location: CTC advanced GmbH, Laboratory RSC-Sat
Temperature: 22 °C
Humidity: 55 %
Voltage: 28 Vdc

Setup of measurement equipment:

Start frequency: 1.6262 GHz
Stop frequency: 1.627 GHz
Center frequency: 1.6266 GHz
Frequency span: 800 kHz
Resolution-BW: 3 kHz
Video-BW: 10 kHz
Input attenuation: 5 dB
Trace-Mode: Average
Detector-Mode: AVG

Correction:

Directional coupler + 0.0 dB
Coaxial cable (C218) + 0.8 dB
DUT-Antenna (on-axis) + 0.0 dBi
Test antenna + 0.0 dB
BW correction factor (3k -> 4k) + 1.2 dB
Atten. between HPA and feedhorn (U005) - 0.0 dB
TOTAL CORRECTION: + 31.8 dB

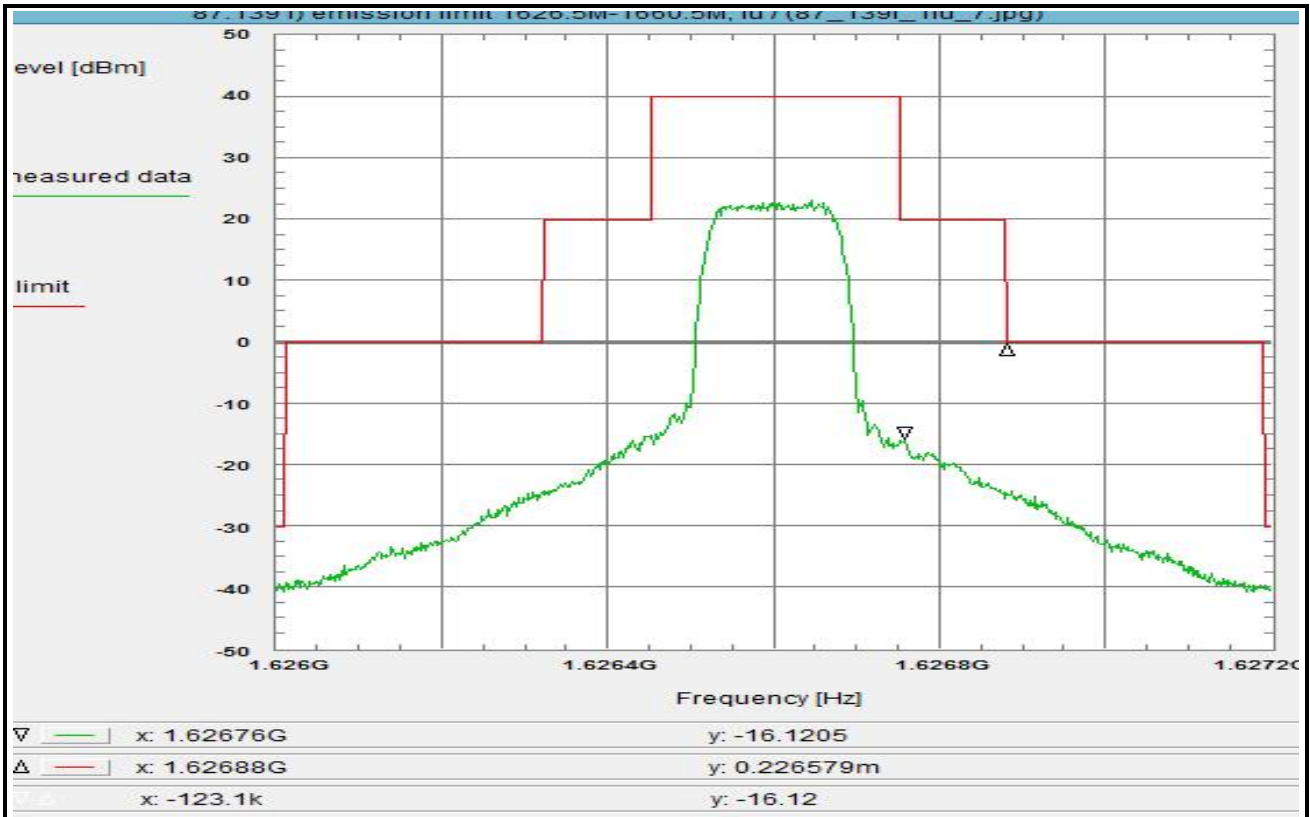
Remarks:

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

For EIRP calculation:

'worst-case' = maximum antenna gain

Plot No. 28 (50)



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

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 subclause 1.5.2
A200/A300/A350, fl, 16QAM, 189 kHz

Test setup:
see section 8.1: 1.2hgl

Test equipment:
see annex 2: C218, R001, U005

Remark:

Test result: Test passed

Environment condition:

Date & Time: Thu 09/Nov/2017 18:39:37
Location: CTC advanced GmbH, Laboratory RSC-Sat
Temperature: 22 °C
Humidity: 55 %
Voltage: 28 Vdc

Setup of measurement equipment:

Start frequency: 1.626 GHz
Stop frequency: 1.6272 GHz
Center frequency: 1.6266 GHz
Frequency span: 1.2 MHz
Resolution-BW: 3 kHz
Video-BW: 10 kHz
Input attenuation: 5 dB
Trace-Mode: Average
Detector-Mode: AVG

Correction:

Directional coupler + 0.0 dB
Coaxial cable (C218) + 0.8 dB
DUT-Antenna (on-axis) + 0.0 dBi
Test antenna + 0.0 dB
BW correction factor (3k -> 4k) + 1.2 dB
Atten. between HPA and feedhorn (U005) - 0.0 dB
TOTAL CORRECTION: + 31.8 dB

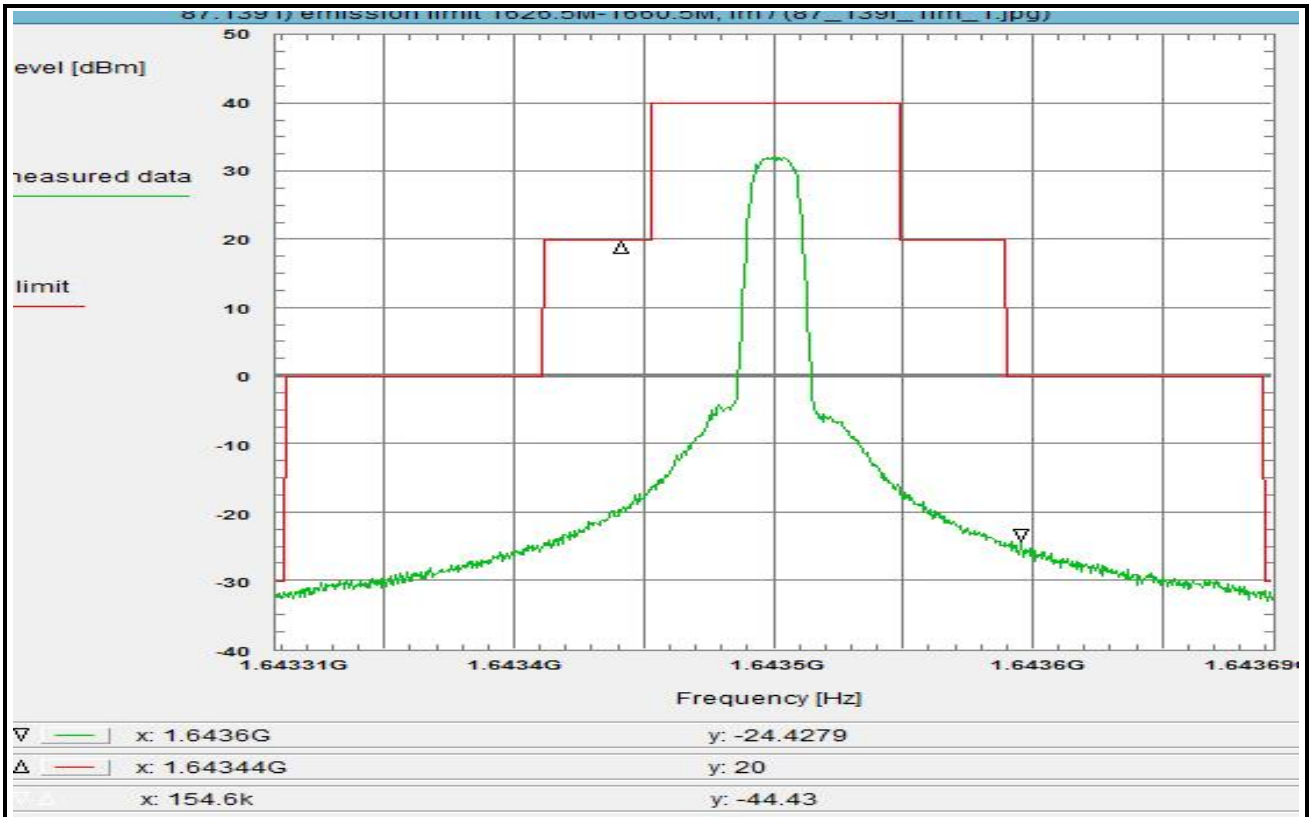
Remarks:

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

For EIRP calculation:

'worst-case' = maximum antenna gain

Plot No. 29 (50)



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 subclause 1.5.2
A200/A300/A350, fm, QPSK, 21 kHz

Test setup:
see section 8.1: 1.2hgl

Test equipment:
see annex 2: C218, R001, U005

Remark:

Test result: Test passed

Environment condition:

Date & Time: Thu 09/Nov/2017 16:21:10
Location: CTC advanced GmbH, Laboratory RSC-Sat
Temperature: 22 °C
Humidity: 55 %
Voltage: 28 Vdc

Setup of measurement equipment:

Start frequency: 1.643308 GHz
Stop frequency: 1.643692 GHz
Center frequency: 1.6435 GHz
Frequency span: 384 kHz
Resolution-BW: 3 kHz
Video-BW: 10 kHz
Input attenuation: 5 dB
Trace-Mode: Average
Detector-Mode: AVG

Correction:

Directional coupler + 0.0 dB
Coaxial cable (C218) + 0.8 dB
DUT-Antenna (on-axis) + 0.0 dBi
Test antenna + 0.0 dB
BW correction factor (3k -> 4k) + 1.2 dB
Atten. between HPA and feedhorn (U005) - 0.0 dB
TOTAL CORRECTION: + 31.8 dB

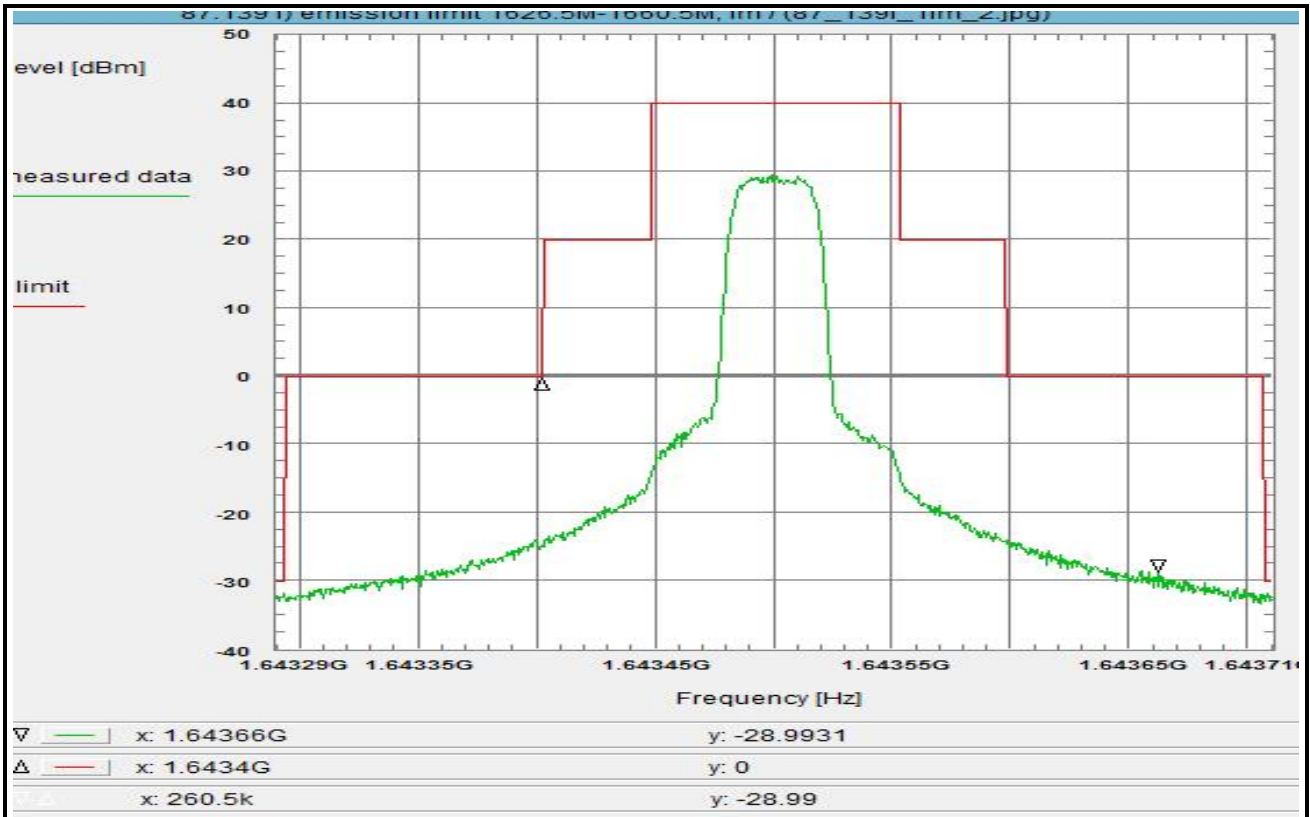
Remarks:

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

For EIRP calculation:

'worst-case' = maximum antenna gain

Plot No. 30 (50)



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 subclause 1.5.2
A200/A300/A350, fm, QPSK, 42 kHz

Test setup:
see section 8.1: 1.2hgl

Test equipment:
see annex 2: C218, R001, U005

Remark:

Test result: Test passed

Environment condition:

Date & Time: Thu 09/Nov/2017 16:59:21
Location: CTC advanced GmbH, Laboratory RSC-Sat
Temperature: 22 °C
Humidity: 55 %
Voltage: 28 Vdc

Setup of measurement equipment:

Start frequency: 1.64329 GHz
Stop frequency: 1.64371 GHz
Center frequency: 1.6435 GHz
Frequency span: 420 kHz
Resolution-BW: 3 kHz
Video-BW: 10 kHz
Input attenuation: 5 dB
Trace-Mode: Average
Detector-Mode: AVG

Correction:

Directional coupler + 0.0 dB
Coaxial cable (C218) + 0.8 dB
DUT-Antenna (on-axis) + 0.0 dBi
Test antenna + 0.0 dB
BW correction factor (3k -> 4k) + 1.2 dB
Atten. between HPA and feedhorn (U005) - 0.0 dB
TOTAL CORRECTION: + 31.8 dB

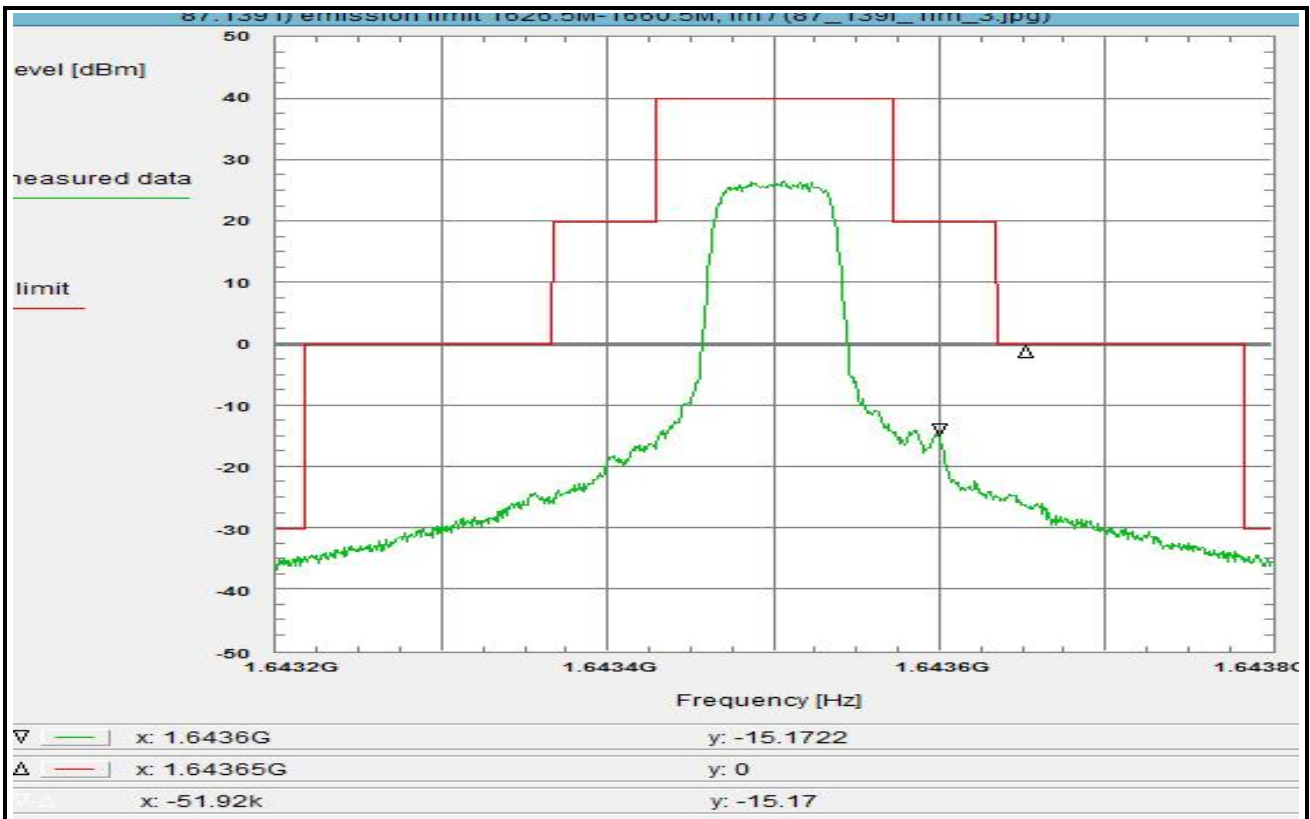
Remarks:

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

For EIRP calculation:

'worst-case' = maximum antenna gain

Plot No. 31 (50)



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 subclause 1.5.2
A200/A300/A350, fm, QPSK, 42 kHz

Test setup:
see section 8.1: 1.2hgl

Test equipment:
see annex 2: C218, R001, U005

Remark:

Test result: Test passed

Environment condition:

Date & Time: Thu 09/Nov/2017 17:22:27
Location: CTC advanced GmbH, Laboratory RSC-Sat
Temperature: 22 °C
Humidity: 55 %
Voltage: 28 Vdc

Setup of measurement equipment:

Start frequency: 1.6432 GHz
Stop frequency: 1.6438 GHz
Center frequency: 1.6435 GHz
Frequency span: 600 kHz
Resolution-BW: 3 kHz
Video-BW: 10 kHz
Input attenuation: 5 dB
Trace-Mode: Average
Detector-Mode: AVG

Correction:

Directional coupler + 0.0 dB
Coaxial cable (C218) + 0.8 dB
DUT-Antenna (on-axis) + 0.0 dBi
Test antenna + 0.0 dB
BW correction factor (3k -> 4k) + 1.2 dB
Atten. between HPA and feedhorn (U005) - 0.0 dB
TOTAL CORRECTION: + 31.8 dB

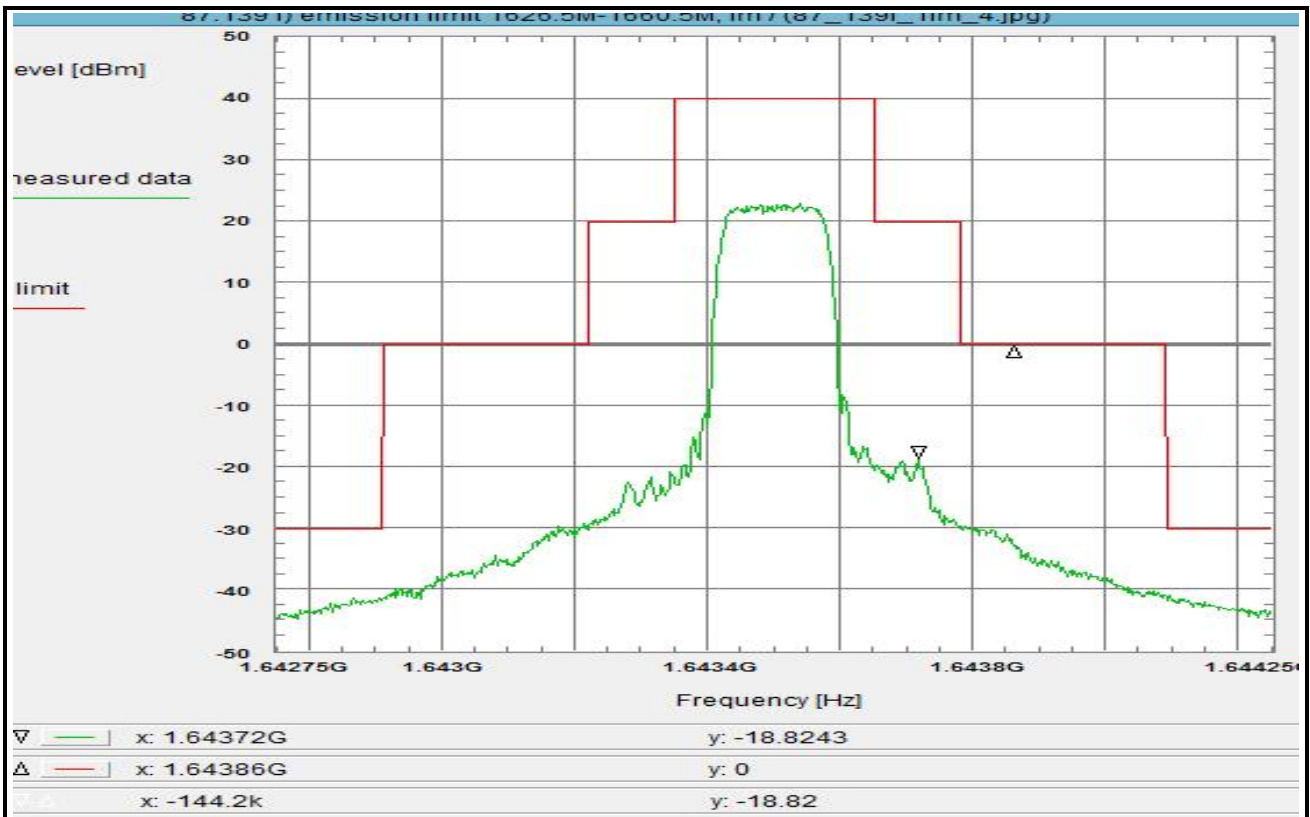
Remarks:

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

For EIRP calculation:

'worst-case' = maximum antenna gain

Plot No. 32 (50)



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 subclause 1.5.2
A200/A300/A350, fm, QPSK, 189 kHz

Test setup:

see section 8.1: 1.2hgl

Test equipment:

see annex 2: C218, R001, U005

Remark:

Test result: Test passed

Environment condition:

Date & Time: Thu 09/Nov/2017 17:38:02
Location: CTC advanced GmbH, Laboratory RSC-Sat
Temperature: 22 °C
Humidity: 55 %
Voltage: 28 Vdc

Setup of measurement equipment:

Start frequency: 1.64275 GHz
Stop frequency: 1.64425 GHz
Center frequency: 1.6435 GHz
Frequency span: 1.5 MHz
Resolution-BW: 3 kHz
Video-BW: 10 kHz
Input attenuation: 5 dB
Trace-Mode: Clear Write
Detector-Mode: AVG

Correction:

Directional coupler + 0.0 dB
Coaxial cable (C218) + 0.8 dB
DUT-Antenna (on-axis) + 0.0 dBi
Test antenna + 0.0 dB
BW correction factor (3k -> 4k) + 1.2 dB
Atten. between HPA and feedhorn (U005) - 0.0 dB
TOTAL CORRECTION: + 31.8 dB

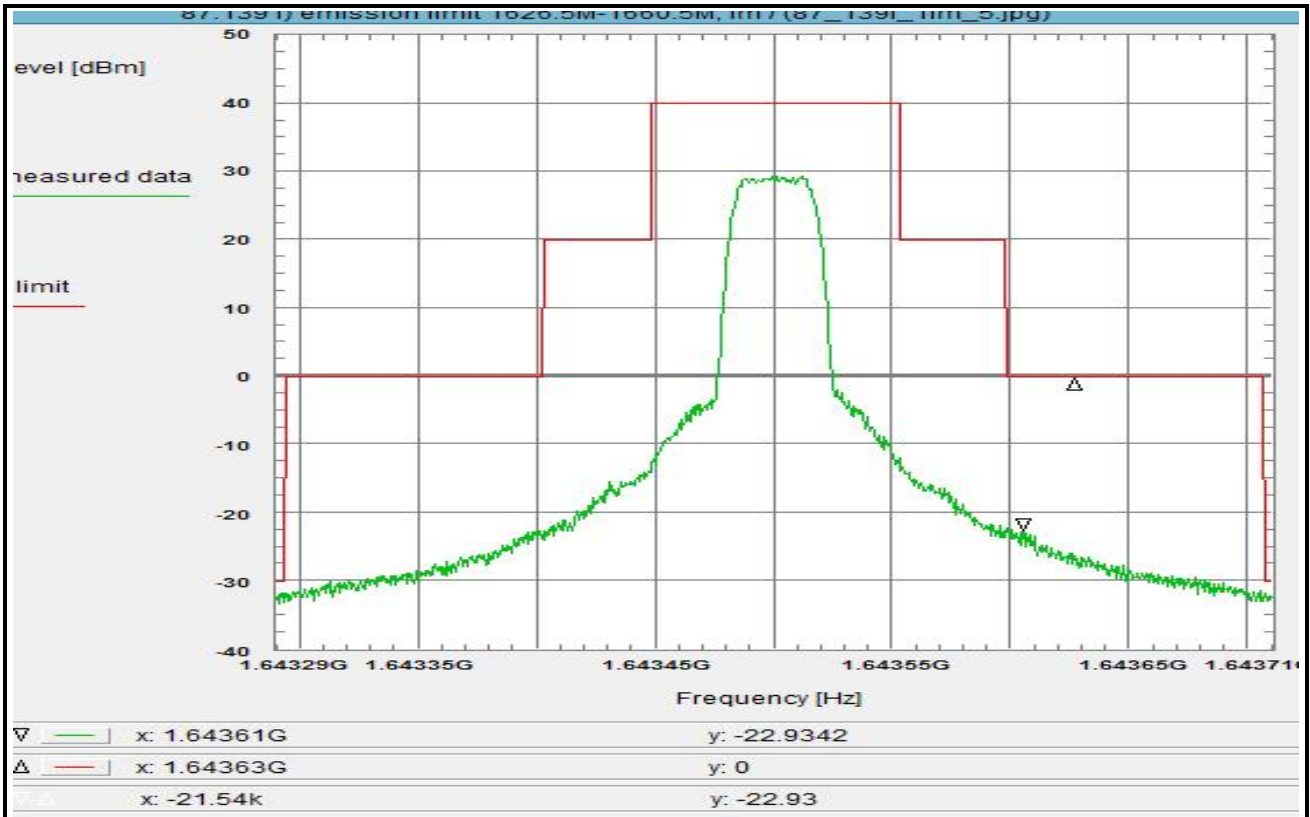
Remarks:

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

For EIRP calculation:

'worst-case' = maximum antenna gain

Plot No. 33 (50)



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 subclause 1.5.2
A200/A300/A350, fm, 16QAM, 42 kHz

Test setup:
see section 8.1: 1.2hgl

Test equipment:
see annex 2: R001

Remark:

Test result: Test passed

Environment condition:

Date & Time: Thu 09/Nov/2017 18:00:33
Location: CTC advanced GmbH, Laboratory RSC-Sat
Temperature: 22 °C
Humidity: 55 %
Voltage: 28 Vdc

Setup of measurement equipment:

Start frequency: 1.64329 GHz
Stop frequency: 1.64371 GHz
Center frequency: 1.6435 GHz
Frequency span: 420 kHz
Resolution-BW: 3 kHz
Video-BW: 10 kHz
Input attenuation: 5 dB
Trace-Mode: Average
Detector-Mode: AVG

Correction:

Directional coupler + 0.0 dB
Coaxial cable (C218) + 0.8 dB
DUT-Antenna (on-axis) + 0.0 dBi
Test antenna + 0.0 dB
BW correction factor (3k -> 4k) + 1.2 dB
Atten. between HPA and feedhorn - 0.0 dB
(U005) + 29.8 dB
TOTAL CORRECTION: + 31.8 dB

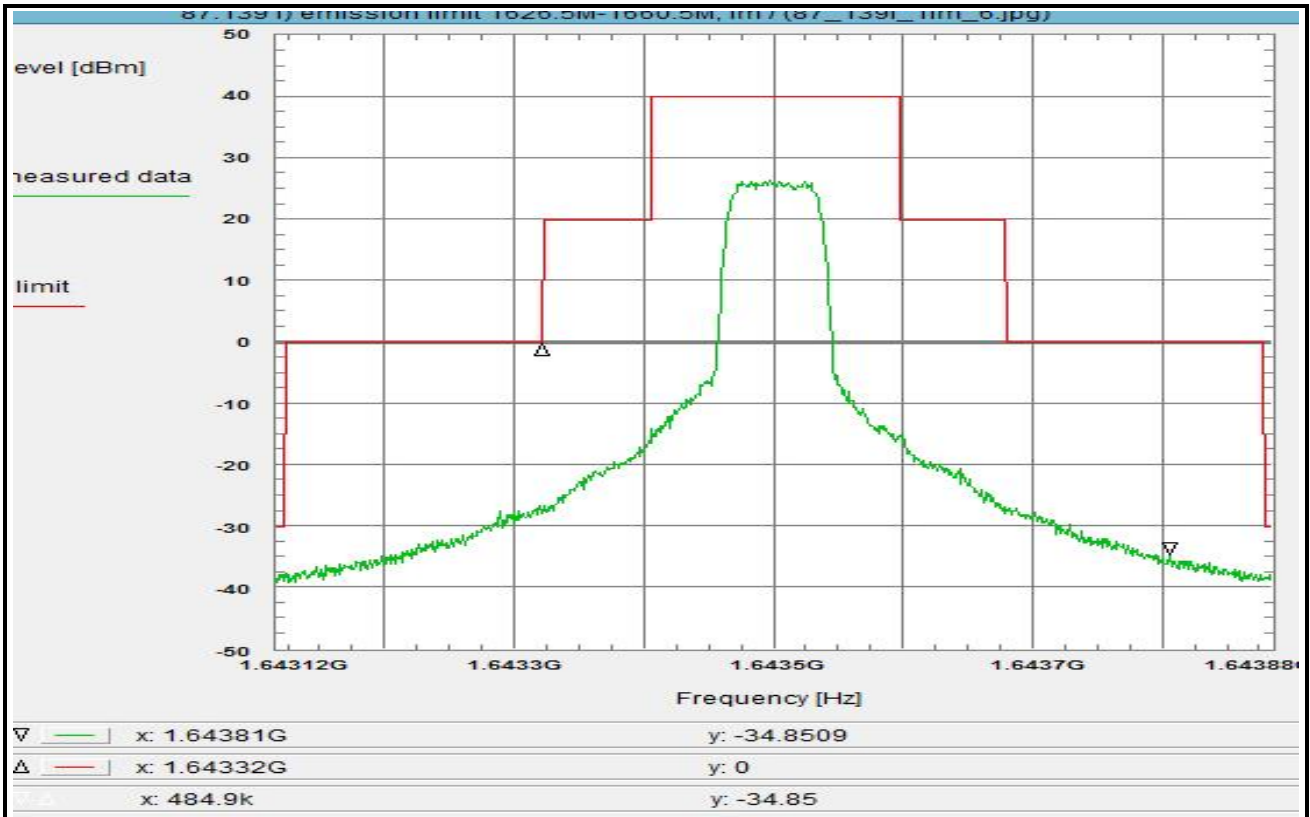
Remarks:

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

For EIRP calculation:

'worst-case' = maximum antenna gain

Plot No. 34 (50)



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 subclause 1.5.2
A200/A300/A350, fm, 16QAM, 84 kHz

Test setup:
see section 8.1: 1.2hgl

Test equipment:
see annex 2: C218, R001, U005

Remark:

Test result: Test passed

Environment condition:

Date & Time: Thu 09/Nov/2017 18:13:52
Location: CTC advanced GmbH, Laboratory RSC-Sat
Temperature: 22 °C
Humidity: 55 %
Voltage: 28 Vdc

Setup of measurement equipment:

Start frequency: 1.643116 GHz
Stop frequency: 1.643884 GHz
Center frequency: 1.6435 GHz
Frequency span: 768 kHz
Resolution-BW: 3 kHz
Video-BW: 10 kHz
Input attenuation: 5 dB
Trace-Mode: Clear Write
Detector-Mode: AVG

Correction:

Directional coupler + 0.0 dB
Coaxial cable (C218) + 0.8 dB
DUT-Antenna (on-axis) + 0.0 dBi
Test antenna + 0.0 dB
BW correction factor (3k -> 4k) + 1.2 dB
Atten. between HPA and feedhorn (U005) - 0.0 dB
TOTAL CORRECTION: + 31.8 dB

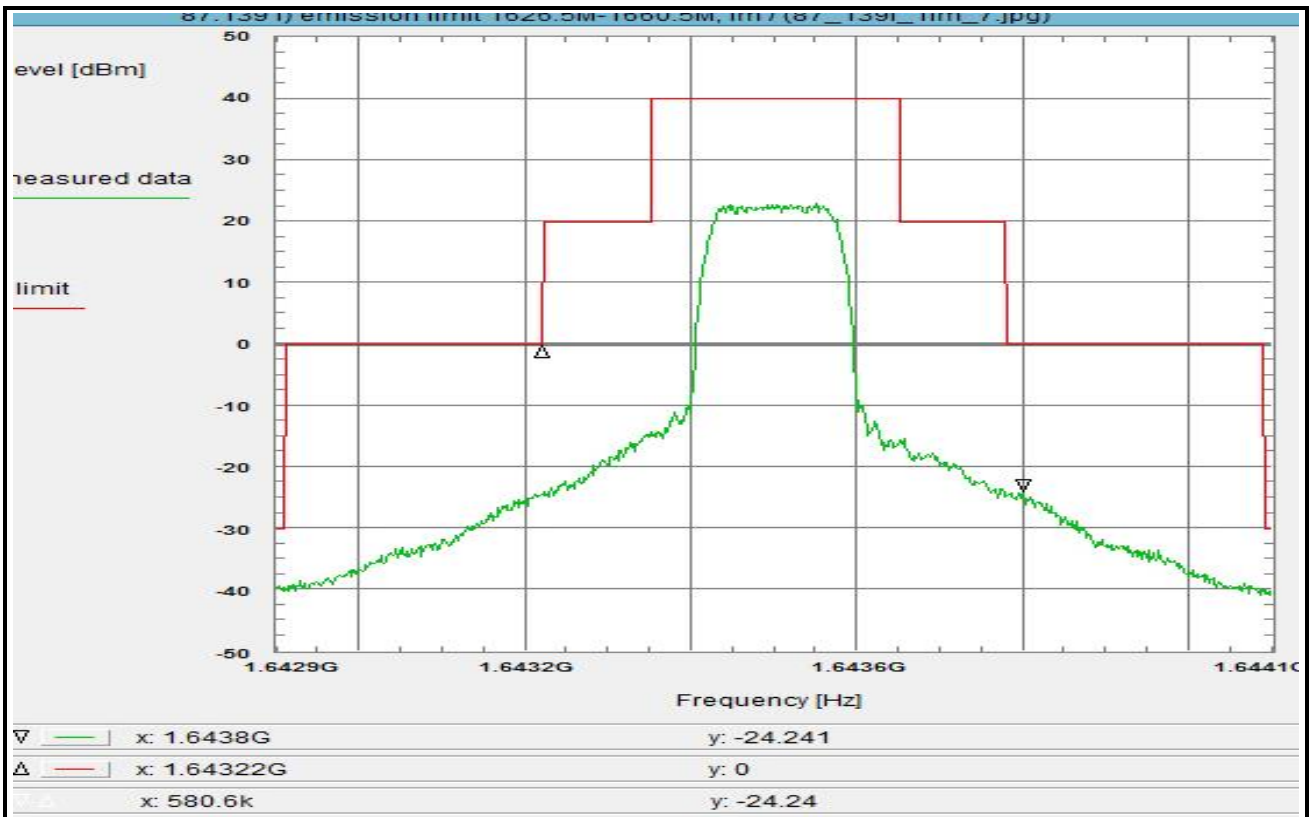
Remarks:

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

For EIRP calculation:

'worst-case' = maximum antenna gain

Plot No. 35 (50)



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 subclause 1.5.2
A200/A300/A350, fm, 16QAM, 189 kHz

Test setup:
see section 8.1: 1.2hgl

Test equipment:
see annex 2: C218, R001, U005

Remark:

Test result: Test passed

Environment condition:

Date & Time: Thu 09/Nov/2017 18:30:23
Location: CTC advanced GmbH, Laboratory RSC-Sat
Temperature: 22 °C
Humidity: 55 %
Voltage: 28 Vdc

Setup of measurement equipment:

Start frequency: 1.6429 GHz
Stop frequency: 1.6441 GHz
Center frequency: 1.6435 GHz
Frequency span: 1.2 MHz
Resolution-BW: 3 kHz
Video-BW: 10 kHz
Input attenuation: 5 dB
Trace-Mode: Average
Detector-Mode: AVG

Correction:

Directional coupler + 0.0 dB
Coaxial cable (C218) + 0.8 dB
DUT-Antenna (on-axis) + 0.0 dBi
Test antenna + 0.0 dB
BW correction factor (3k -> 4k) + 1.2 dB
Atten. between HPA and feedhorn (U005) - 0.0 dB
TOTAL CORRECTION: + 31.8 dB

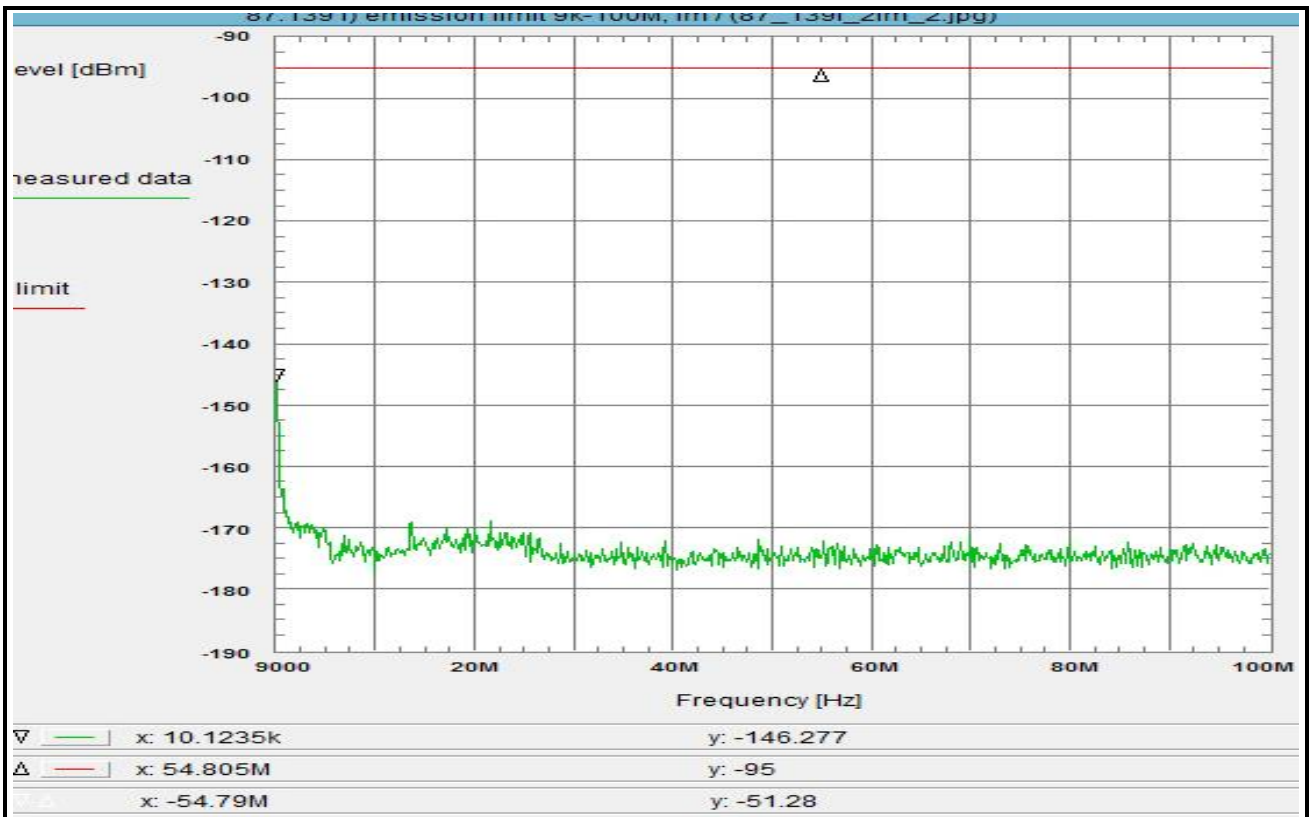
Remarks:

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

For EIRP calculation:

'worst-case' = maximum antenna gain

Plot No. 36 (50)



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 2, see subclause 1.5.2
A200/A300/A350, valid for all channels and modulations

Test setup:
see section 8.1: 1.2hgl

Test equipment:
see annex 2: C218, FCOB, R001, WDLN

Remark:

Test result: Test passed

Environment condition:

Date & Time: Fri 10/Nov/2017 10:42:29
Location: CTC advanced GmbH, Laboratory RSC-Sat
Temperature: 22 °C
Humidity: 55 %
Voltage: 28 Vdc

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: 5 dB
Trace-Mode: Clear Write
Detector-Mode: Pos Peak

Correction:

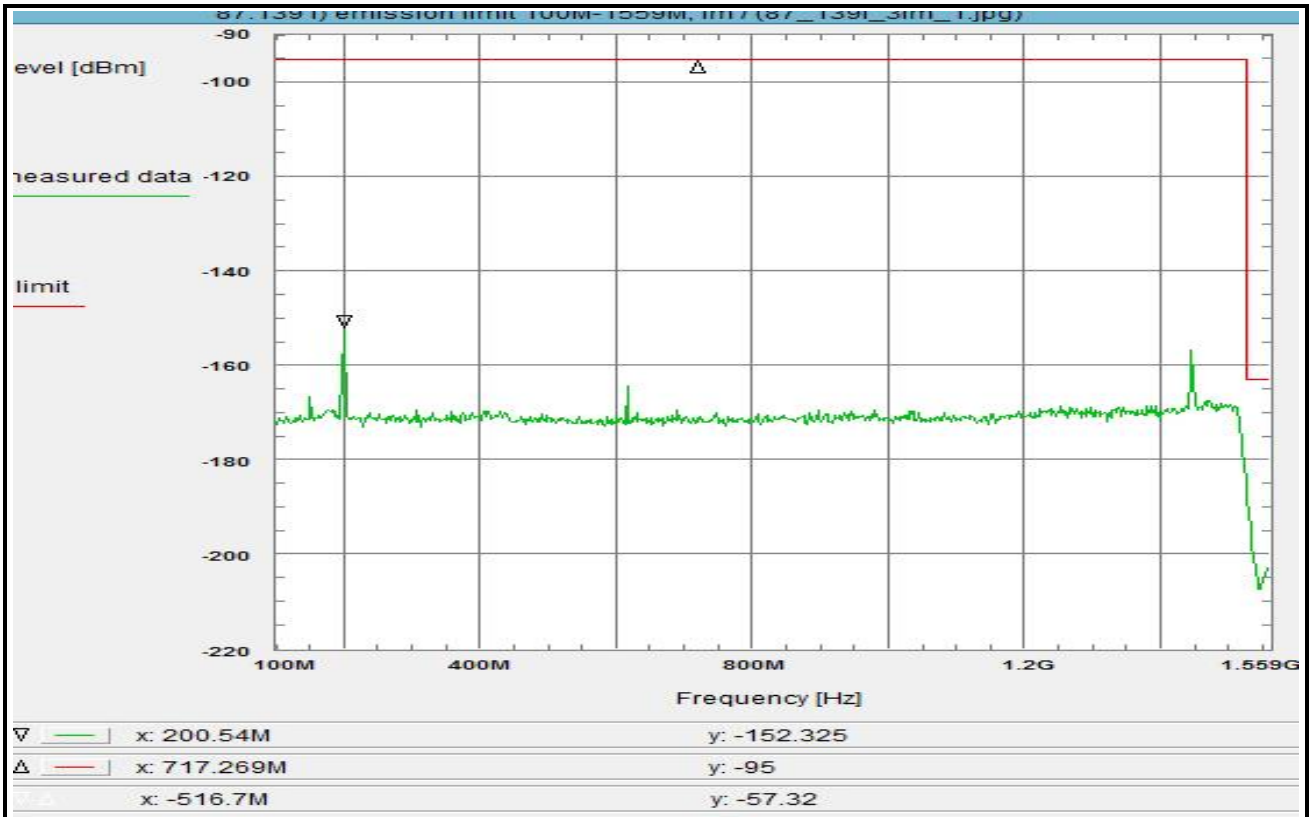
Directional coupler (WDLN) - 80.0 dB
Coaxial cable (C218) + 0.2 dB
DUT-Antenna + 0.0 dBi
Test antenna + 0.0 dB
BW correction factor (3k -> 4k) + 1.2 dB
Connector + 1.0 dB
(FCOB) + 8.6 dB
TOTAL CORRECTION: - -69.0 dB

Remarks:

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

Marker shows the zero line of the Spectrum Analyzer

Plot No. 37 (50)



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 2, see subclause 1.5.2
A200/A300/A350, valid for all channels and modulations

Test setup:
see section 8.1: 1.2hgl

Test equipment:
see annex 2: C218, FCOB, R001, WDLN

Remark:

Test result: Test passed

Environment condition:

Date & Time: Fri 10/Nov/2017 10:37:09
Location: CTC advanced GmbH, Laboratory RSC-Sat
Temperature: 22 °C
Humidity: 55 %
Voltage: 28 Vdc

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: 5 dB
Trace-Mode: Max-Hold
Detector-Mode: Pos Peak

Correction:

Directional coupler (WDLN) - 102.2 dB
Coaxial cable (C218) + 0.6 dB
DUT-Antenna + 0.0 dBi
Test antenna + 0.0 dB
BW correction factor (3k -> 4k) + 1.2 dB
Connector + 1.0 dB
(FCOB) + 8.8 dB
TOTAL CORRECTION: - 90.6 dB

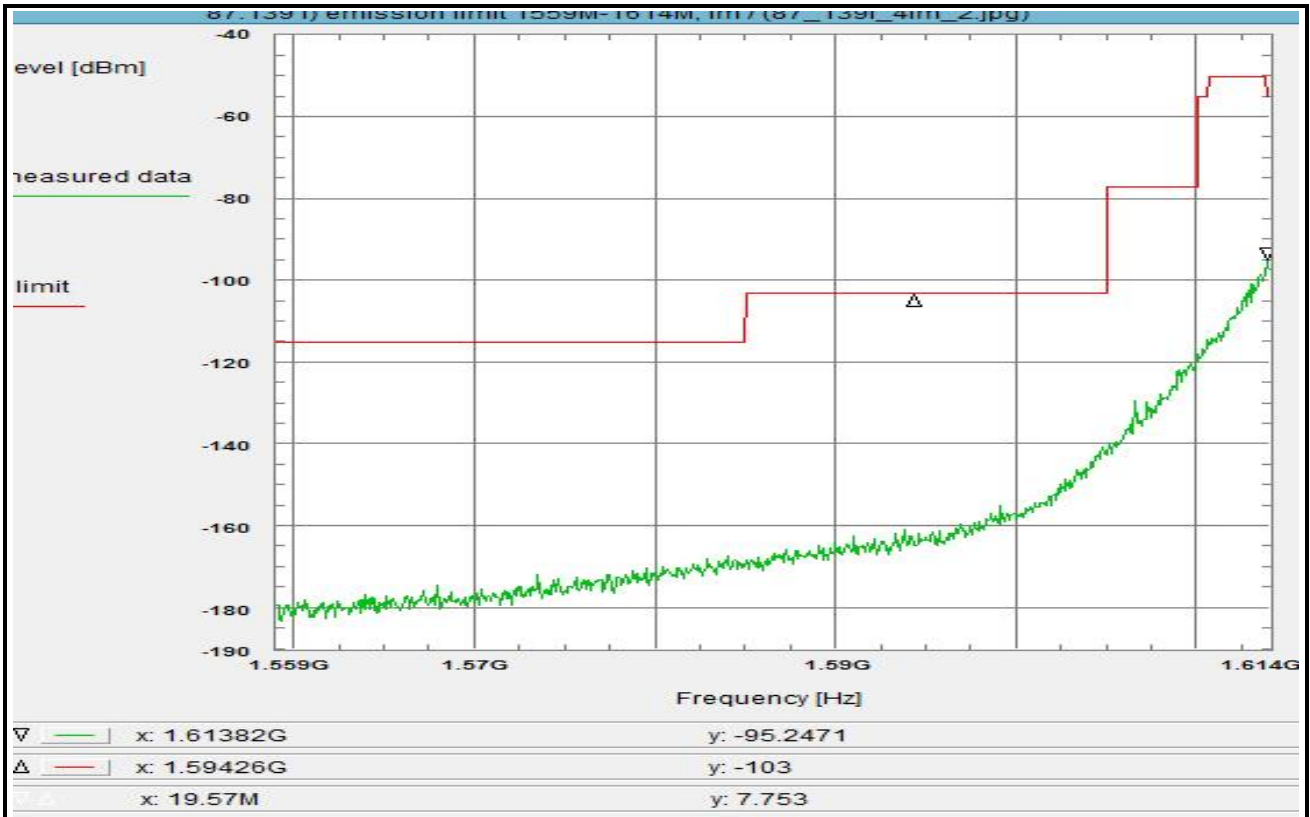
Remarks:

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

For EIRP calculation:

'worst-case' = maximum antenna gain

Plot No. 38 (50)



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 2, see subclause 1.5.2
A200/A300/A350, valid for all channels and modulations

Test setup:
see section 8.1: 1.2hgl

Test equipment:
see annex 2: C218, FCOB, R001, WDLN

Remark:

Test result: Test passed

Environment condition:

Date & Time: Fri 10/Nov/2017 10:43:44
Location: CTC advanced GmbH, Laboratory RSC-Sat
Temperature: 22 °C
Humidity: 55 %
Voltage: 28 Vdc

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: 5 dB
Trace-Mode: Clear Write
Detector-Mode: Pos Peak

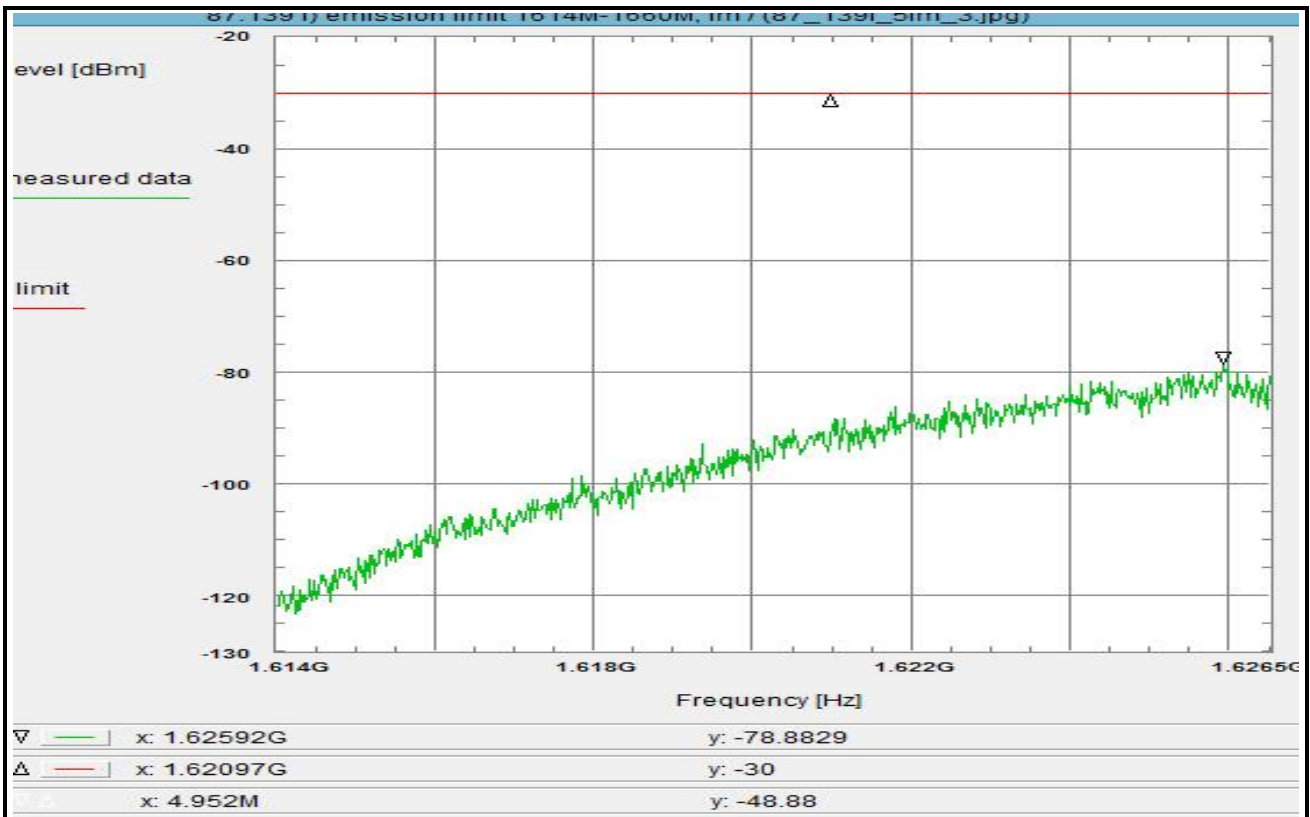
Correction:

Directional coupler (WDLN) - 77.0 dB
Coaxial cable (C218) + 0.8 dB
DUT-Antenna + 0.0 dBi
Test antenna + 0.0 dB
BW correction factor (3k -> 1M) + 25.2 dB
Connector + 1.0 dB
(FCOB) + 14.6 dB
TOTAL CORRECTION: - 35.4 dB

Remarks:

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

Plot No. 39 (50)



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 2, see subclause 1.5.2
A200/A300/A350, valid for all channels and modulations

Test setup:
see section 8.1: 1.2hgl

Test equipment:
see annex 2: C218, FCOB, R001, WDLN

Remark:

Test result: Test passed

Environment condition:

Date & Time: Fri 10/Nov/2017 10:45:28
Location: CTC advanced GmbH, Laboratory RSC-Sat
Temperature: 22 °C
Humidity: 55 %
Voltage: 28 Vdc

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: 10 kHz
Input attenuation: 5 dB
Trace-Mode: Clear Write
Detector-Mode: Pos Peak

Correction:

Directional coupler (WDLN) - 20.2 dB
Coaxial cable (C218) + 0.8 dB
DUT-Antenna + 0.0 dBi
Test antenna + 0.0 dB
BW correction factor (3k -> 4k) + 1.2 dB
Connector + 1.0 dB
(FCOB) + 75.4 dB
TOTAL CORRECTION: + 58.2 dB

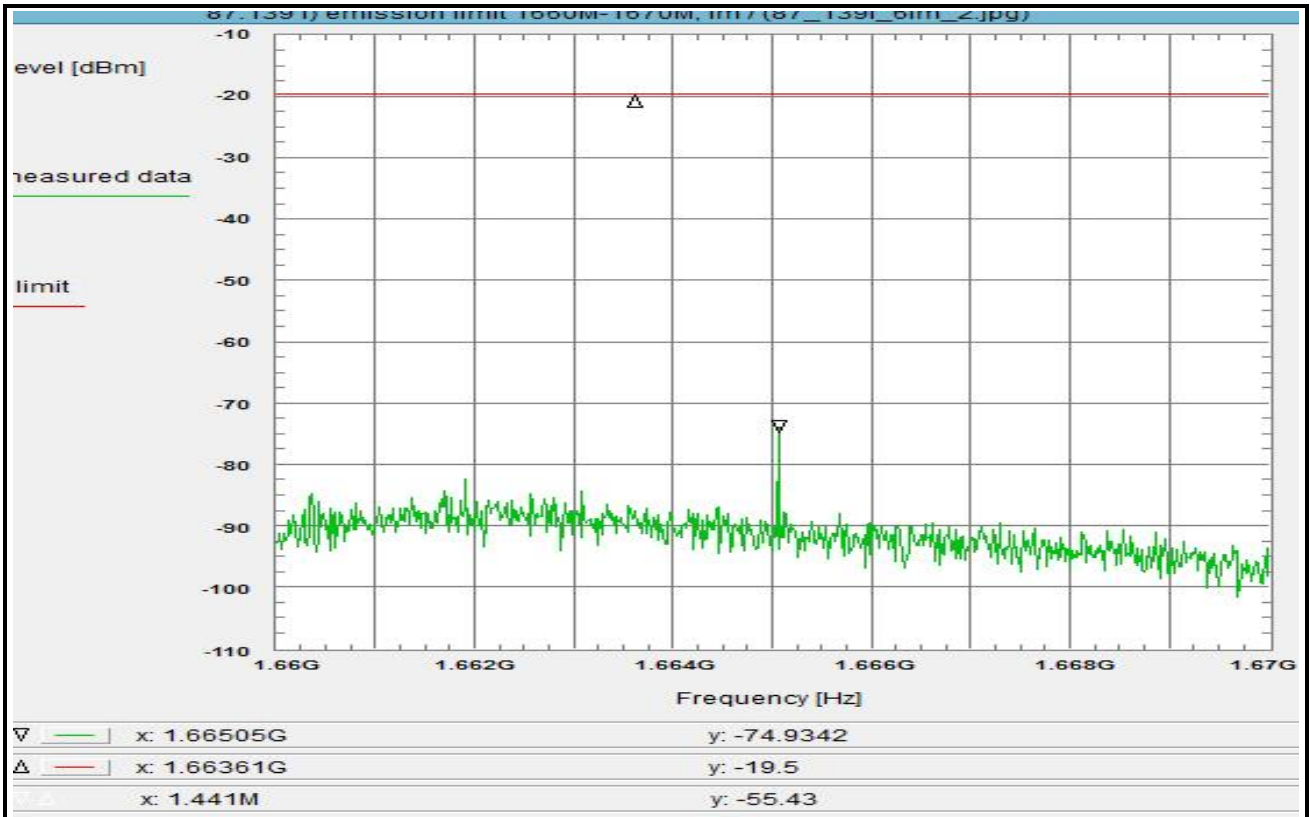
Remarks:

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

For EIRP calculation:

'worst-case' = maximum antenna gain

Plot No. 40 (50)



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 2, see subclause 1.5.2
A200/A300/A350, valid for all channels and modulations

Test setup:
see section 8.1: 1.2hgl

Test equipment:
see annex 2: C218, FCOB, R001, WDLN

Remark:

Test result: Test passed

Environment condition:

Date & Time: Fri 10/Nov/2017 10:46:21
Location: CTC advanced GmbH, Laboratory RSC-Sat
Temperature: 22 °C
Humidity: 55 %
Voltage: 28 Vdc

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: 10 kHz
Input attenuation: 5 dB
Trace-Mode: Clear Write
Detector-Mode: Pos Peak

Correction:

Directional coupler (WDLN) - 0.8 dB
Coaxial cable (C218) + 0.8 dB
DUT-Antenna + 0.0 dBi
Test antenna + 0.0 dB
BW correction factor (3k -> 20k) + 8.2 dB
Connector + 1.0 dB
(FCOB) + 24.1 dB
TOTAL CORRECTION: + 33.3 dB

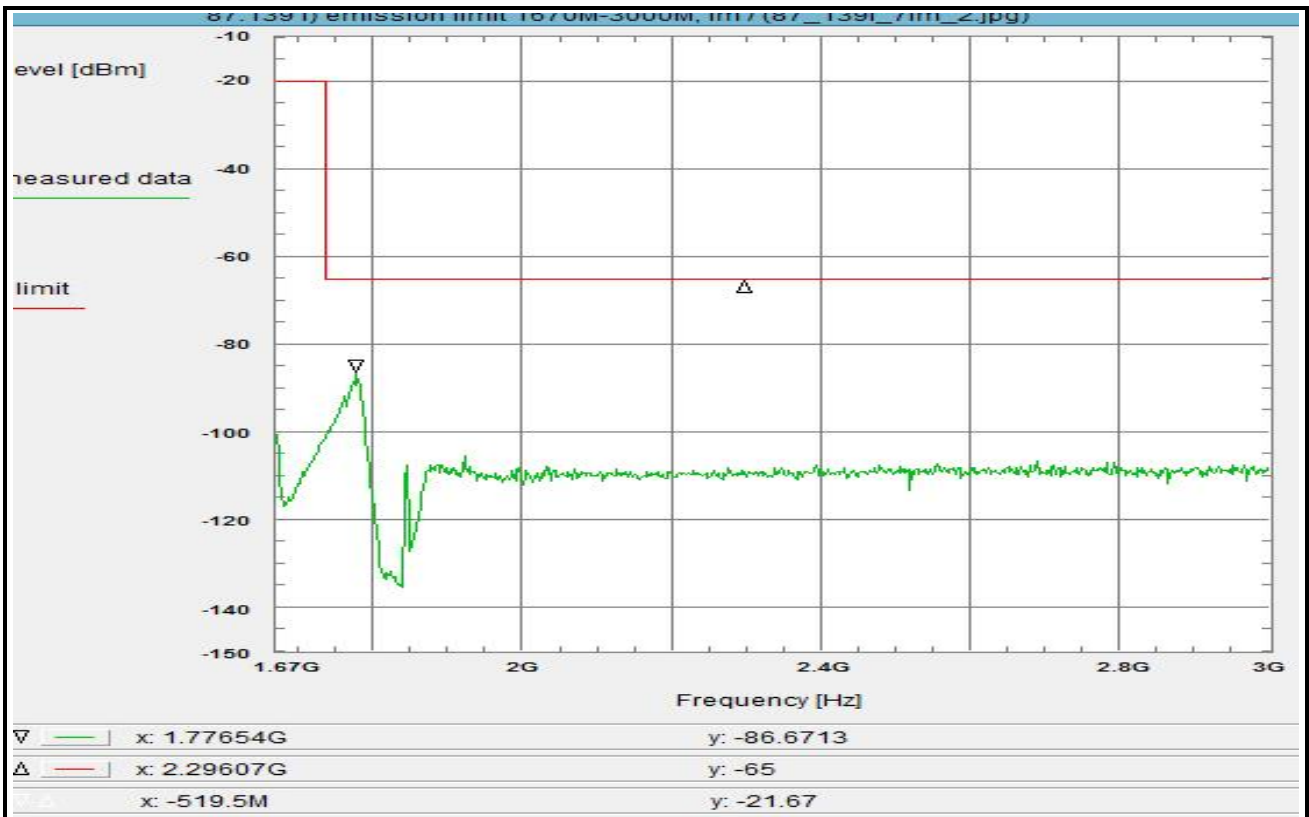
Remarks:

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

For EIRP calculation:

'worst-case' = maximum antenna gain

Plot No. 41 (50)



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 2, see subclause 1.5.2
A200/A300/A350, valid for all channels and modulations

Test setup:
see section 8.1: 1.2hgl

Test equipment:
see annex 2: C218, FCOB, R001, WDLN

Remark:

Test result: Test passed

Environment condition:

Date & Time: Fri 10/Nov/2017 10:50:26
Location: CTC advanced GmbH, Laboratory RSC-Sat
Temperature: 22 °C
Humidity: 55 %
Voltage: 28 Vdc

Setup of measurement equipment:

Start frequency: 1.67 GHz
Stop frequency: 3 GHz
Center frequency: 2.335 GHz
Frequency span: 1.33 GHz
Resolution-BW: 3 kHz
Video-BW: 10 kHz
Input attenuation: 5 dB
Trace-Mode: Clear Write
Detector-Mode: Pos Peak

Correction:

Directional coupler (WDLN) - 30.2 dB
Coaxial cable (C218) + 1.0 dB
DUT-Antenna + 0.0 dBi
Test antenna + 0.0 dB
BW correction factor (3k -> 4k) + 1.2 dB
Connector + 1.0 dB
(FCOB) + 9.1 dB
TOTAL CORRECTION: - 17.9 dB

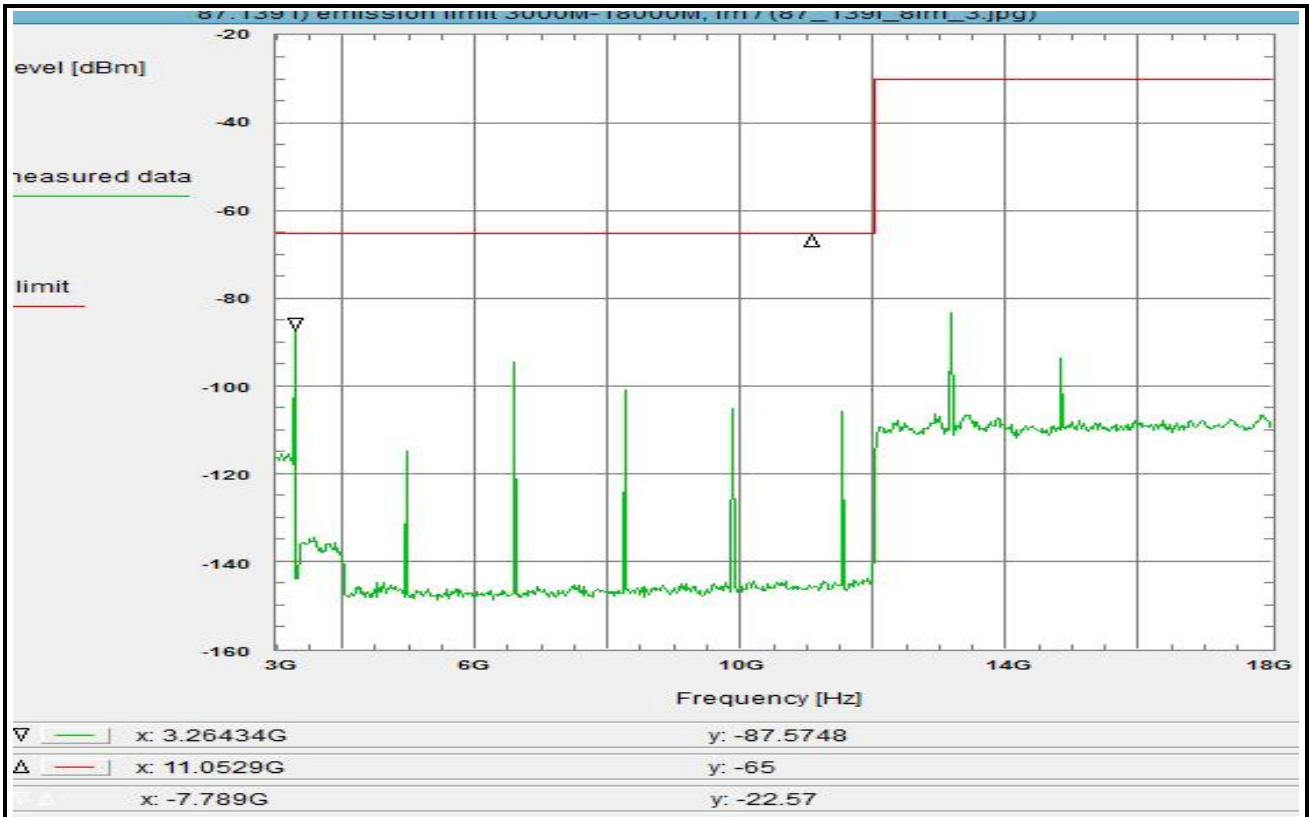
Remarks:

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

For EIRP calculation:

'worst-case' = maximum antenna gain

Plot No. 42 (50)



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 2, see subclause 1.5.2
A200/A300/A350, valid for all channels and modulations

Test setup:
see section 8.1: 1.2hgl

Test equipment:
see annex 2: C218, FHPF, R001, WDLN

Remark:

Test result: Test passed

Environment condition:

Date & Time: Fri 10/Nov/2017 10:56:14
Location: CTC advanced GmbH, Laboratory RSC-Sat
Temperature: 22 °C
Humidity: 55 %
Voltage: 28 Vdc

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: 5 dB
Trace-Mode: Clear Write
Detector-Mode: Pos Peak

Correction:

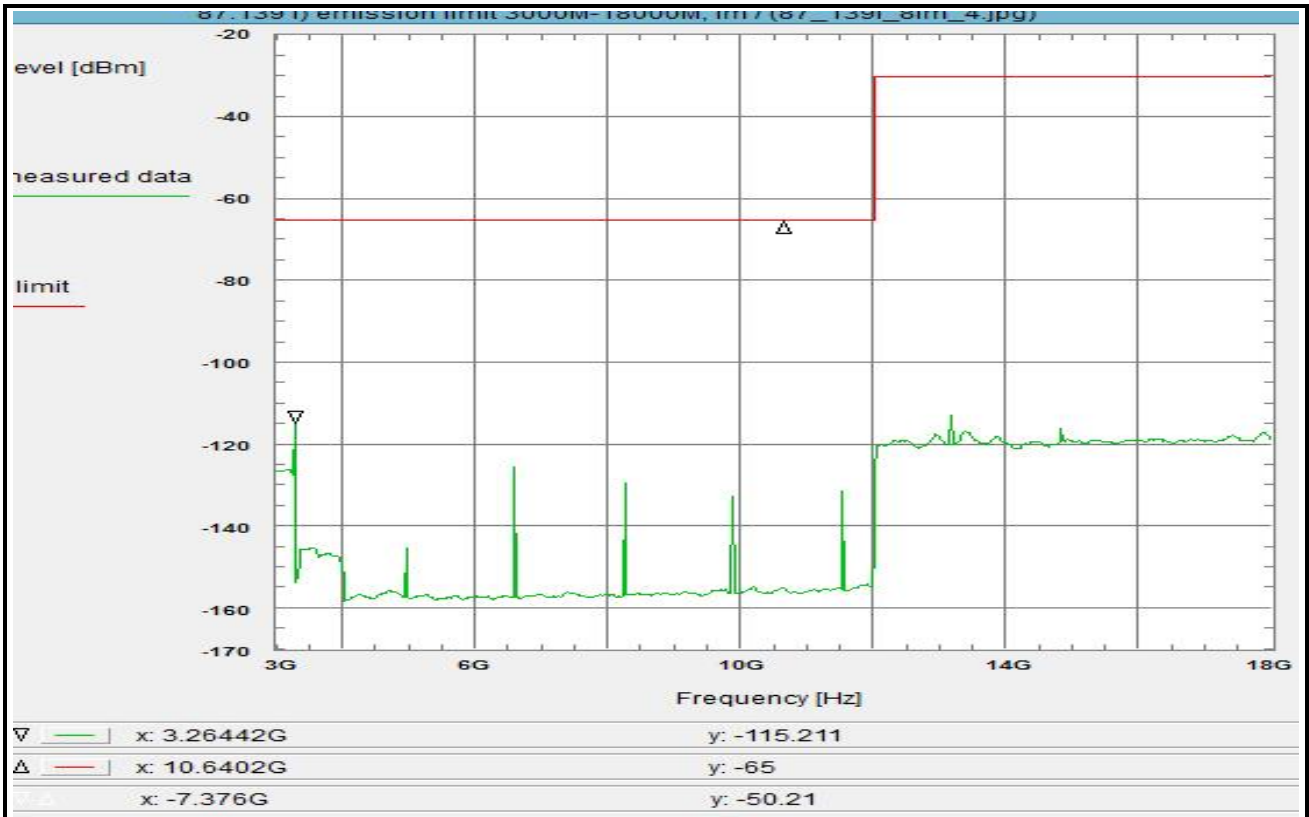
Directional coupler (WDLN) - 35.0 dB
Coaxial cable (C218) + 2.0 dB
DUT-Antenna + 0.0 dBi
Test antenna + 0.0 dB
BW correction factor (10k -> 4k) - 4.0 dB
Connector + 1.0 dB
(FHPF) + 0.7 dB
TOTAL CORRECTION: - 35.3 dB

Remarks:

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

PEAK Detector

Plot No. 43 (50)



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 2, see subclause 1.5.2
A200/A300/A350, valid for all channels and modulations

Test setup:
see section 8.1: 1.2hgl

Test equipment:
see annex 2: C218, FHPF, R001, WDLN

Remark:

Test result: Test passed

Environment condition:

Date & Time: Fri 10/Nov/2017 10:59:37
Location: CTC advanced GmbH, Laboratory RSC-Sat
Temperature: 22 °C
Humidity: 55 %
Voltage: 28 Vdc

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: 5 dB
Trace-Mode: Max-Hold
Detector-Mode: RMS

Correction:

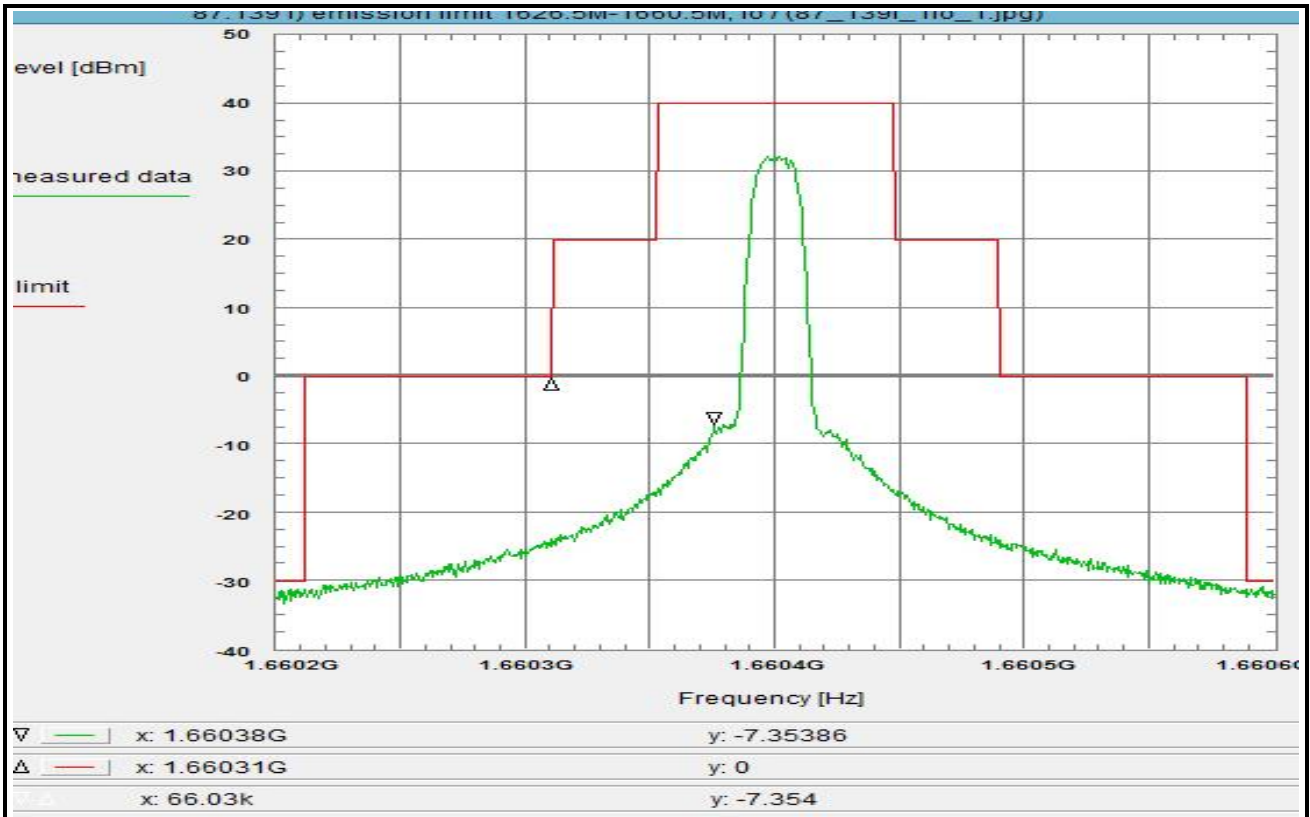
Directional coupler (WDLN) - 35.0 dB
Coaxial cable (C218) + 2.0 dB
DUT-Antenna + 0.0 dBi
Test antenna + 0.0 dB
BW correction factor (10k -> 4k) - 4.0 dB
Connector + 1.0 dB
(FHPF) + 0.7 dB
TOTAL CORRECTION: - 35.3 dB

Remarks:

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

RMS Detector

Plot No. 44 (50)



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 subclause 1.5.2
A200/A300/A350, fh, QPSK, 21 kHz

Test setup:

see section 8.1: 1.2hgl

Test equipment:

see annex 2: C218, R001, U005

Remark:

Test result: Test passed

Environment condition:

Date & Time: Thu 09/Nov/2017 16:23:00
Location: CTC advanced GmbH, Laboratory RSC-Sat
Temperature: 22 °C
Humidity: 55 %
Voltage: 28 Vdc

Setup of measurement equipment:

Start frequency: 1.6602 GHz
Stop frequency: 1.6606 GHz
Center frequency: 1.6604 GHz
Frequency span: 400 kHz
Resolution-BW: 3 kHz
Video-BW: 10 kHz
Input attenuation: 5 dB
Trace-Mode: Average
Detector-Mode: AVG

Correction:

Directional coupler	+ 0.0 dB
Coaxial cable (C218)	+ 0.8 dB
DUT-Antenna (on-axis)	+ 0.0 dBi
Test antenna	+ 0.0 dB
BW correction factor (3k -> 4k)	+ 1.2 dB
Atten. between HPA and feedhorn (U005)	- 0.0 dB
TOTAL CORRECTION:	+ 31.8 dB

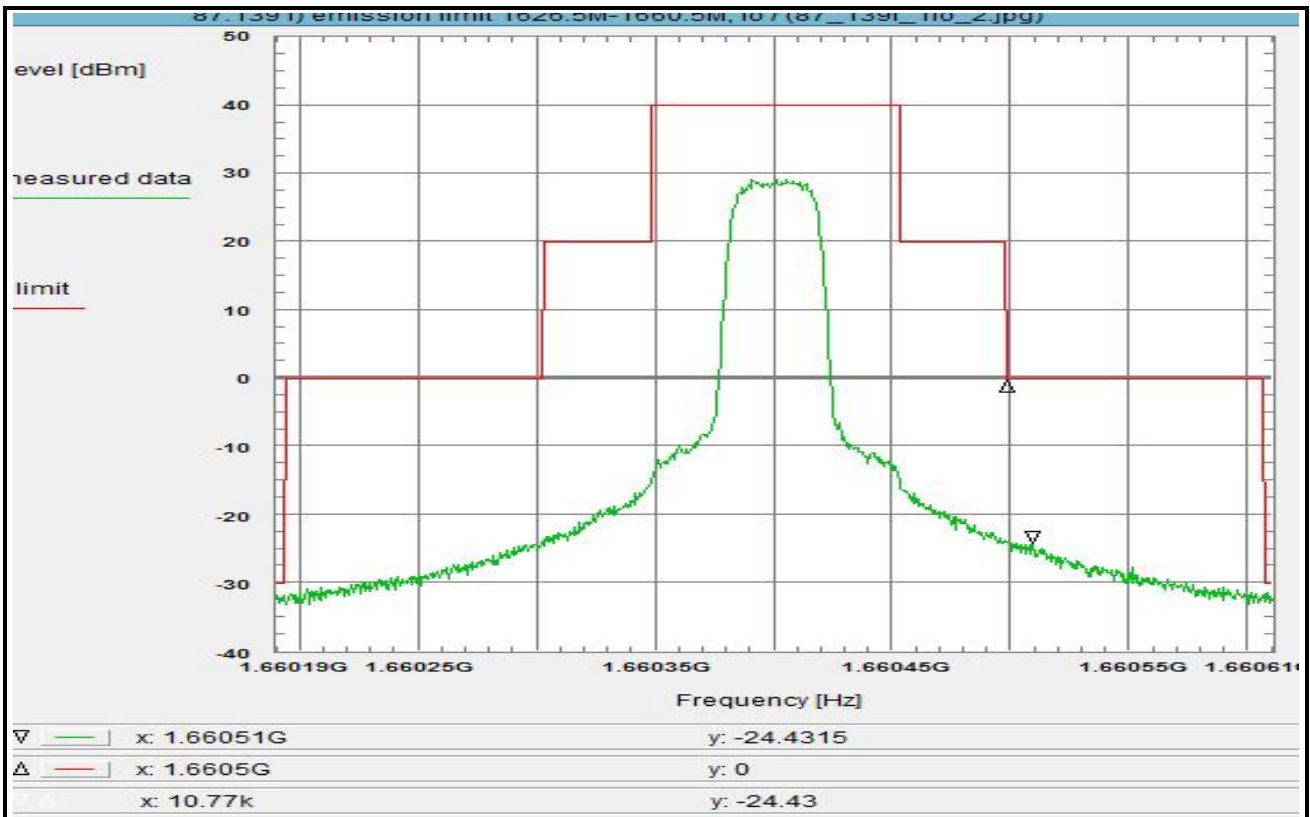
Remarks:

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

For EIRP calculation:

'worst-case' = maximum antenna gain

Plot No. 45 (50)



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 subclause 1.5.2
A200/A300/A350, fh, QPSK, 42 kHz

Test setup:

see section 8.1: 1.2hgl

Test equipment:

see annex 2: C218, R001, U005

Remark:

Test result: Test passed

Environment condition:

Date & Time: Thu 09/Nov/2017 17:10:27
Location: CTC advanced GmbH, Laboratory RSC-Sat
Temperature: 22 °C
Humidity: 55 %
Voltage: 28 Vdc

Setup of measurement equipment:

Start frequency: 1.66019 GHz
Stop frequency: 1.66061 GHz
Center frequency: 1.6604 GHz
Frequency span: 420 kHz
Resolution-BW: 3 kHz
Video-BW: 10 kHz
Input attenuation: 5 dB
Trace-Mode: Average
Detector-Mode: AVG

Correction:

Directional coupler	+ 0.0 dB
Coaxial cable (C218)	+ 0.8 dB
DUT-Antenna (on-axis)	+ 0.0 dBi
Test antenna	+ 0.0 dB
BW correction factor (3k -> 4k)	+ 1.2 dB
Atten. between HPA and feedhorn (U005)	- 0.0 dB
TOTAL CORRECTION:	+ 31.8 dB

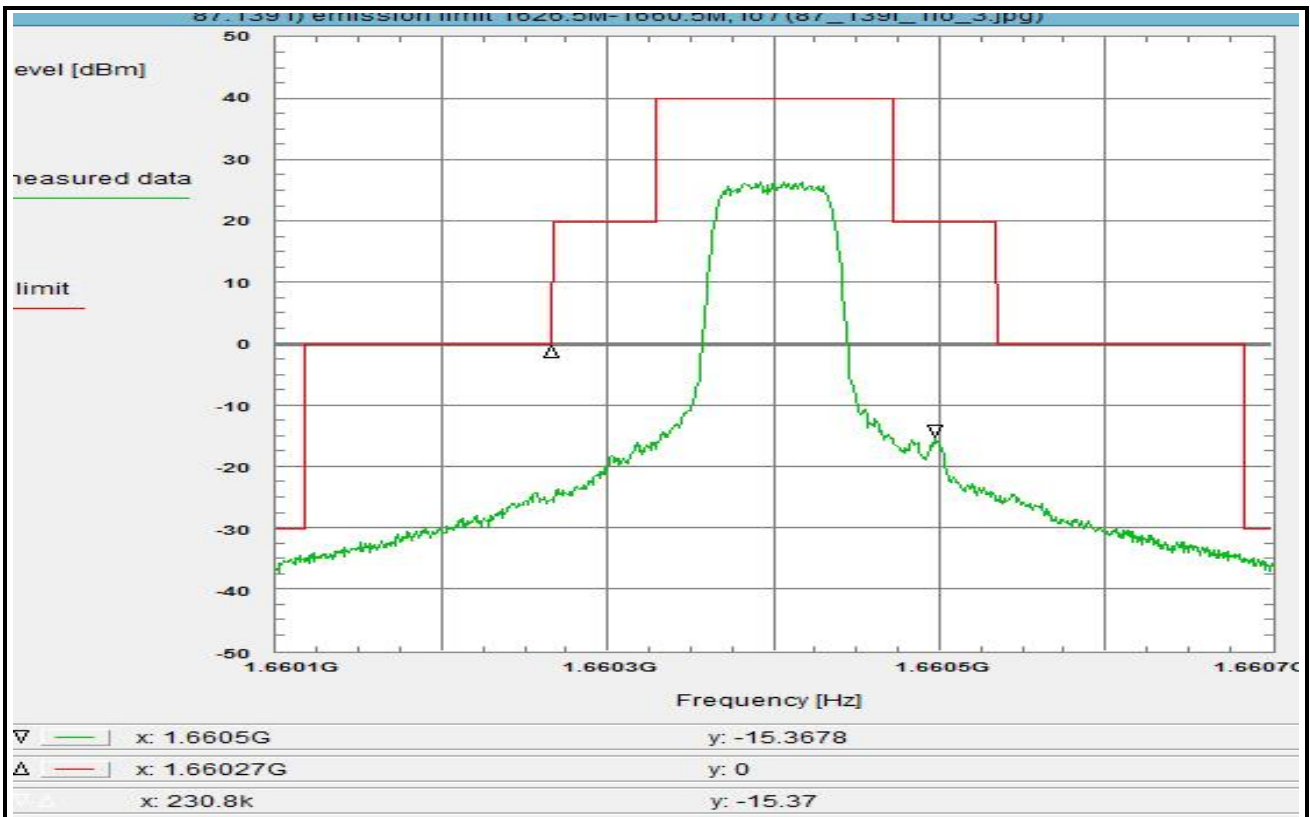
Remarks:

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

For EIRP calculation:

'worst-case' = maximum antenna gain

Plot No. 46 (50)



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 subclause 1.5.2
A200/A300/A350, fh, QPSK, 42 kHz

Test setup:
see section 8.1: 1.2hgl

Test equipment:
see annex 2: C218, R001, U005

Remark:

Test result: Test passed

Environment condition:

Date & Time: Thu 09/Nov/2017 17:24:07
Location: CTC advanced GmbH, Laboratory RSC-Sat
Temperature: 22 °C
Humidity: 55 %
Voltage: 28 Vdc

Setup of measurement equipment:

Start frequency: 1.6601 GHz
Stop frequency: 1.6607 GHz
Center frequency: 1.6604 GHz
Frequency span: 600 kHz
Resolution-BW: 3 kHz
Video-BW: 10 kHz
Input attenuation: 5 dB
Trace-Mode: Average
Detector-Mode: AVG

Correction:

Directional coupler + 0.0 dB
Coaxial cable (C218) + 0.8 dB
DUT-Antenna (on-axis) + 0.0 dBi
Test antenna + 0.0 dB
BW correction factor (3k -> 4k) + 1.2 dB
Atten. between HPA and feedhorn (U005) - 0.0 dB
TOTAL CORRECTION: + 31.8 dB

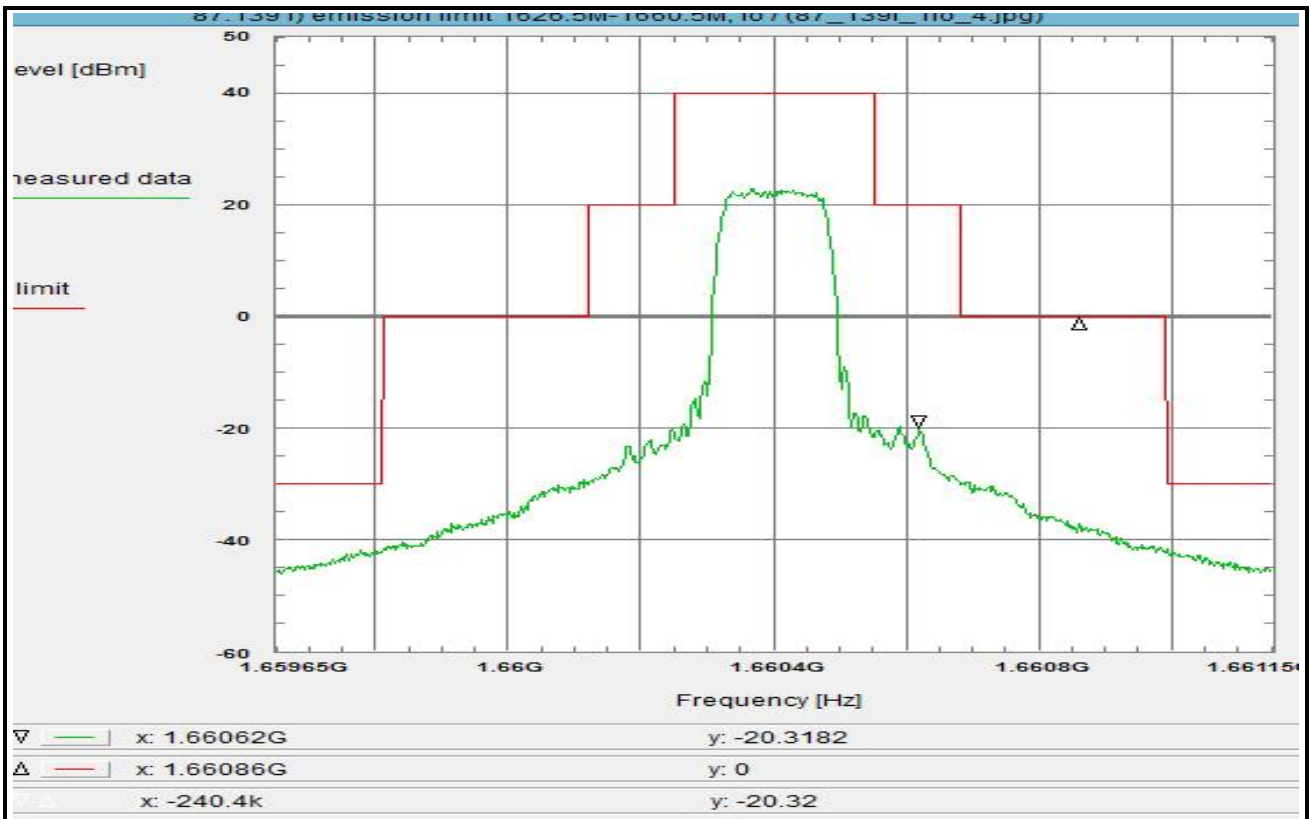
Remarks:

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

For EIRP calculation:

'worst-case' = maximum antenna gain

Plot No. 47 (50)



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 subclause 1.5.2
A200/A300/A350, fh, QPSK, 189 kHz

Test setup:
see section 8.1: 1.2hgl

Test equipment:
see annex 2: C218, R001, U005

Remark:

Test result: Test passed

Environment condition:

Date & Time: Thu 09/Nov/2017 17:47:27
Location: CTC advanced GmbH, Laboratory RSC-Sat
Temperature: 22 °C
Humidity: 55 %
Voltage: 28 Vdc

Setup of measurement equipment:

Start frequency: 1.65965 GHz
Stop frequency: 1.66115 GHz
Center frequency: 1.6604 GHz
Frequency span: 1.5 MHz
Resolution-BW: 3 kHz
Video-BW: 10 kHz
Input attenuation: 5 dB
Trace-Mode: Average
Detector-Mode: AVG

Correction:

Directional coupler + 0.0 dB
Coaxial cable (C218) + 0.8 dB
DUT-Antenna (on-axis) + 0.0 dBi
Test antenna + 0.0 dB
BW correction factor (3k -> 4k) + 1.2 dB
Atten. between HPA and feedhorn (U005) - 0.0 dB
TOTAL CORRECTION: + 31.8 dB

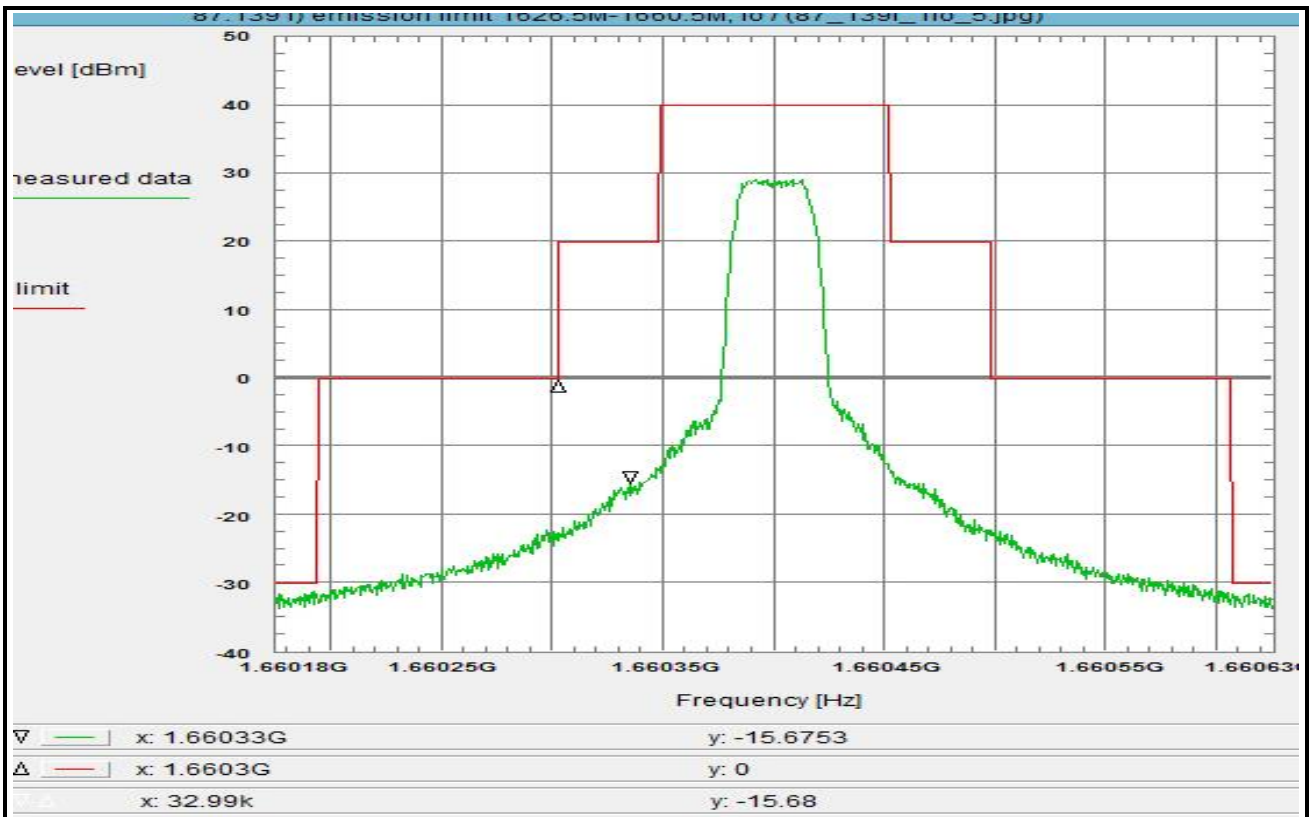
Remarks:

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

For EIRP calculation:

'worst-case' = maximum antenna gain

Plot No. 48 (50)



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 subclause 1.5.2
A200/A300/A350, fh, 16QAM, 42 kHz

Test setup:
see section 8.1: 1.2hgl

Test equipment:
see annex 2: C218, R001, U005

Remark:

Test result: Test passed

Environment condition:

Date & Time: Thu 09/Nov/2017 18:02:10
Location: CTC advanced GmbH, Laboratory RSC-Sat
Temperature: 22 °C
Humidity: 55 %
Voltage: 28 Vdc

Setup of measurement equipment:

Start frequency: 1.660175 GHz
Stop frequency: 1.660625 GHz
Center frequency: 1.6604 GHz
Frequency span: 450 kHz
Resolution-BW: 3 kHz
Video-BW: 10 kHz
Input attenuation: 5 dB
Trace-Mode: Average
Detector-Mode: AVG

Correction:

Directional coupler + 0.0 dB
Coaxial cable (C218) + 0.8 dB
DUT-Antenna (on-axis) + 0.0 dBi
Test antenna + 0.0 dB
BW correction factor (3k -> 4k) + 1.2 dB
Atten. between HPA and feedhorn (U005) - 0.0 dB
TOTAL CORRECTION: + 31.8 dB

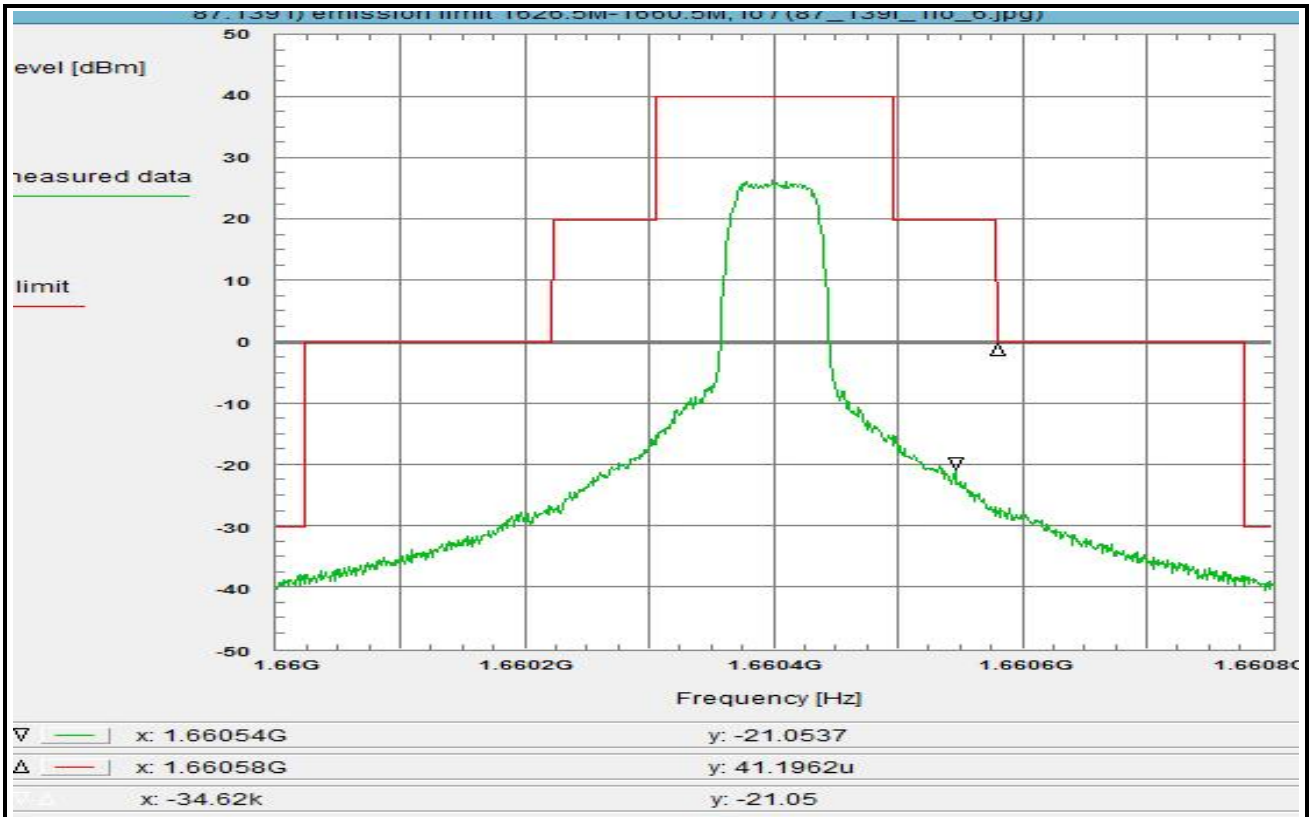
Remarks:

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

For EIRP calculation:

'worst-case' = maximum antenna gain

Plot No. 49 (50)



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 subclause 1.5.2
A200/A300/A350, fh, 16QAM, 84 kHz

Test setup:
see section 8.1: 1.2hgl

Test equipment:
see annex 2: C218, R001, U005

Remark:

Test result: Test passed

Environment condition:

Date & Time: Thu 09/Nov/2017 18:21:55
Location: CTC advanced GmbH, Laboratory RSC-Sat
Temperature: 22 °C
Humidity: 55 %
Voltage: 28 Vdc

Setup of measurement equipment:

Start frequency: 1.66 GHz
Stop frequency: 1.6608 GHz
Center frequency: 1.6604 GHz
Frequency span: 800 kHz
Resolution-BW: 3 kHz
Video-BW: 10 kHz
Input attenuation: 5 dB
Trace-Mode: Average
Detector-Mode: AVG

Correction:

Directional coupler + 0.0 dB
Coaxial cable (C218) + 0.8 dB
DUT-Antenna (on-axis) + 0.0 dBi
Test antenna + 0.0 dB
BW correction factor (3k -> 4k) + 1.2 dB
Atten. between HPA and feedhorn (U005) - 0.0 dB
TOTAL CORRECTION: + 31.8 dB

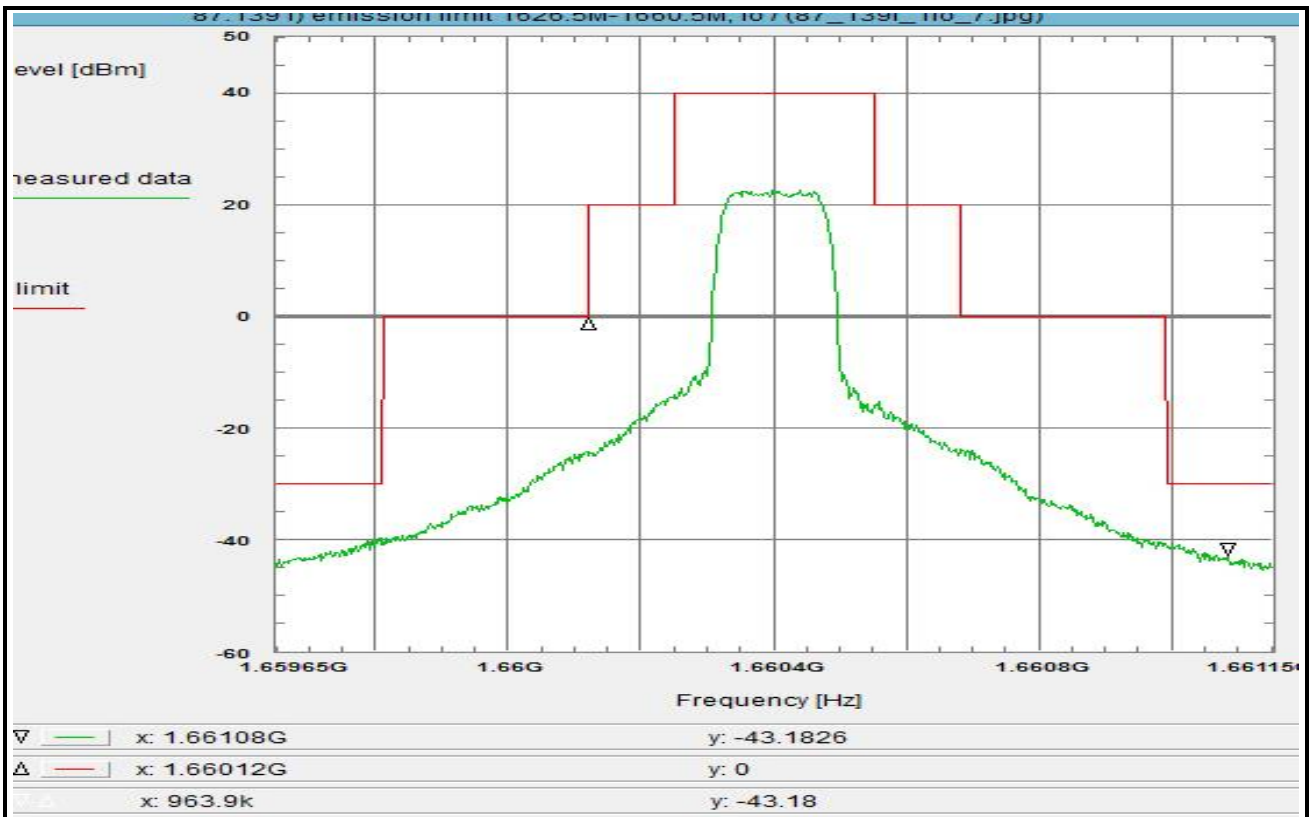
Remarks:

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

For EIRP calculation:

'worst-case' = maximum antenna gain

Plot No. 50 (50)



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 subclause 1.5.2
A200/A300/A350, fh, 16QAM, 189 kHz

Test setup:
see section 8.1: 1.2hgl

Test equipment:
see annex 2: C218, R001, U005

Remark:

Test result: Test passed

Environment condition:

Date & Time: Thu 09/Nov/2017 18:32:14
Location: CTC advanced GmbH, Laboratory RSC-Sat
Temperature: 22 °C
Humidity: 55 %
Voltage: 28 Vdc

Setup of measurement equipment:

Start frequency: 1.65965 GHz
Stop frequency: 1.66115 GHz
Center frequency: 1.6604 GHz
Frequency span: 1.5 MHz
Resolution-BW: 3 kHz
Video-BW: 10 kHz
Input attenuation: 5 dB
Trace-Mode: Average
Detector-Mode: AVG

Correction:

Directional coupler + 0.0 dB
Coaxial cable (C218) + 0.8 dB
DUT-Antenna (on-axis) + 0.0 dBi
Test antenna + 0.0 dB
BW correction factor (3k -> 4k) + 1.2 dB
Atten. between HPA and feedhorn (U005) - 0.0 dB
TOTAL CORRECTION: + 31.8 dB

Remarks:

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

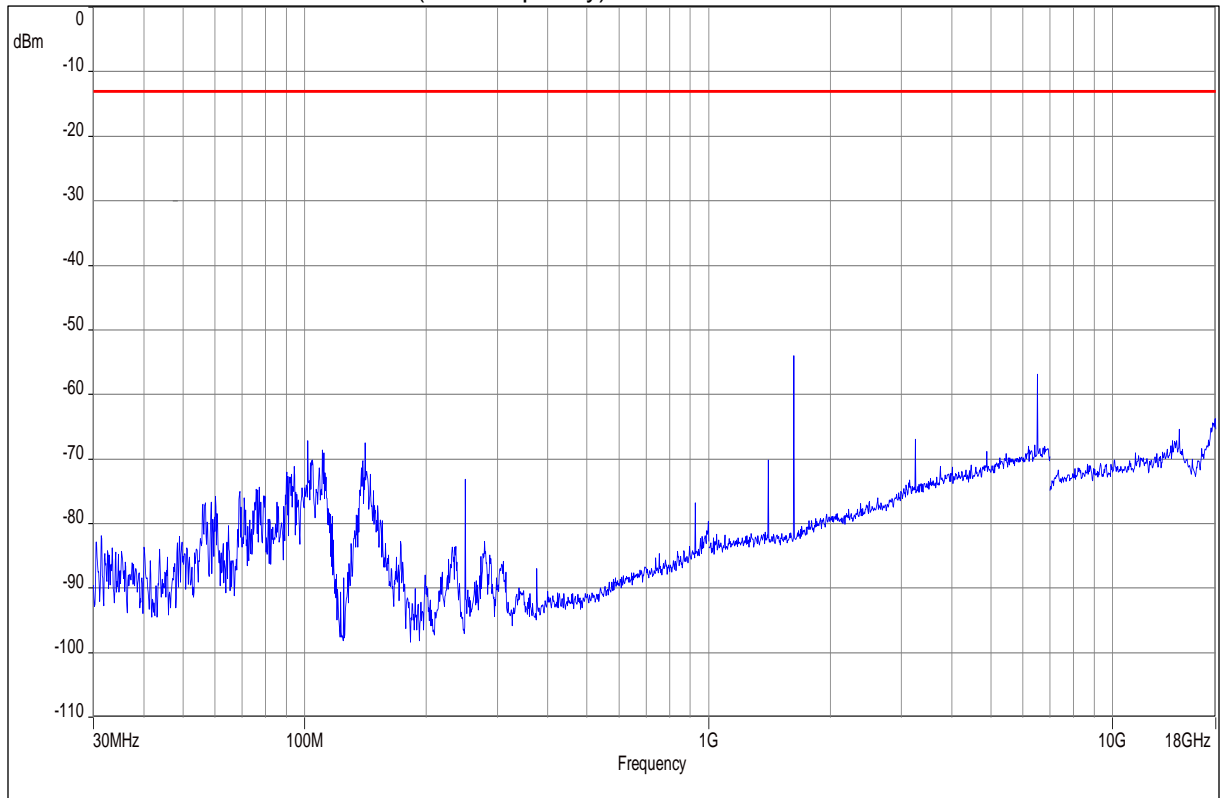
For EIRP calculation:

'worst-case' = maximum antenna gain

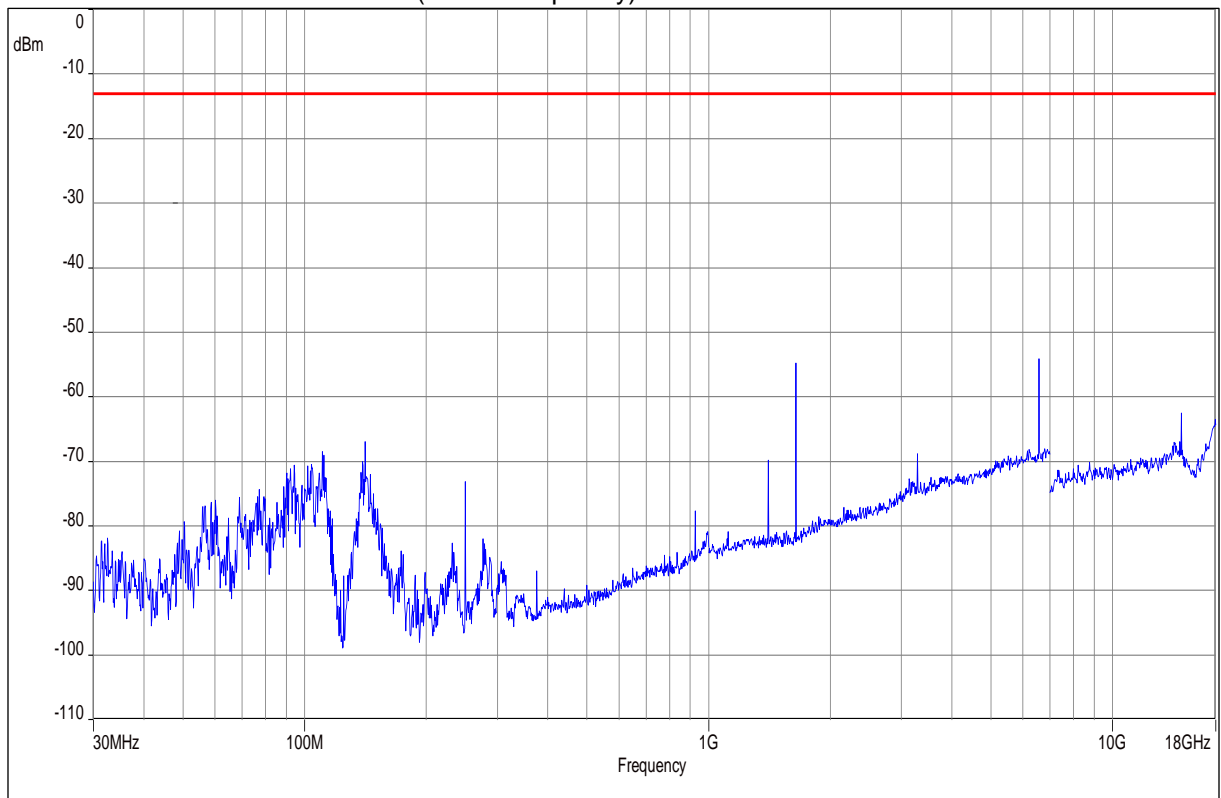
3 Measurement results, Spurious emissions 30MHz - 18 GHz

This Chapter 3 consists of 3 pages including this page.

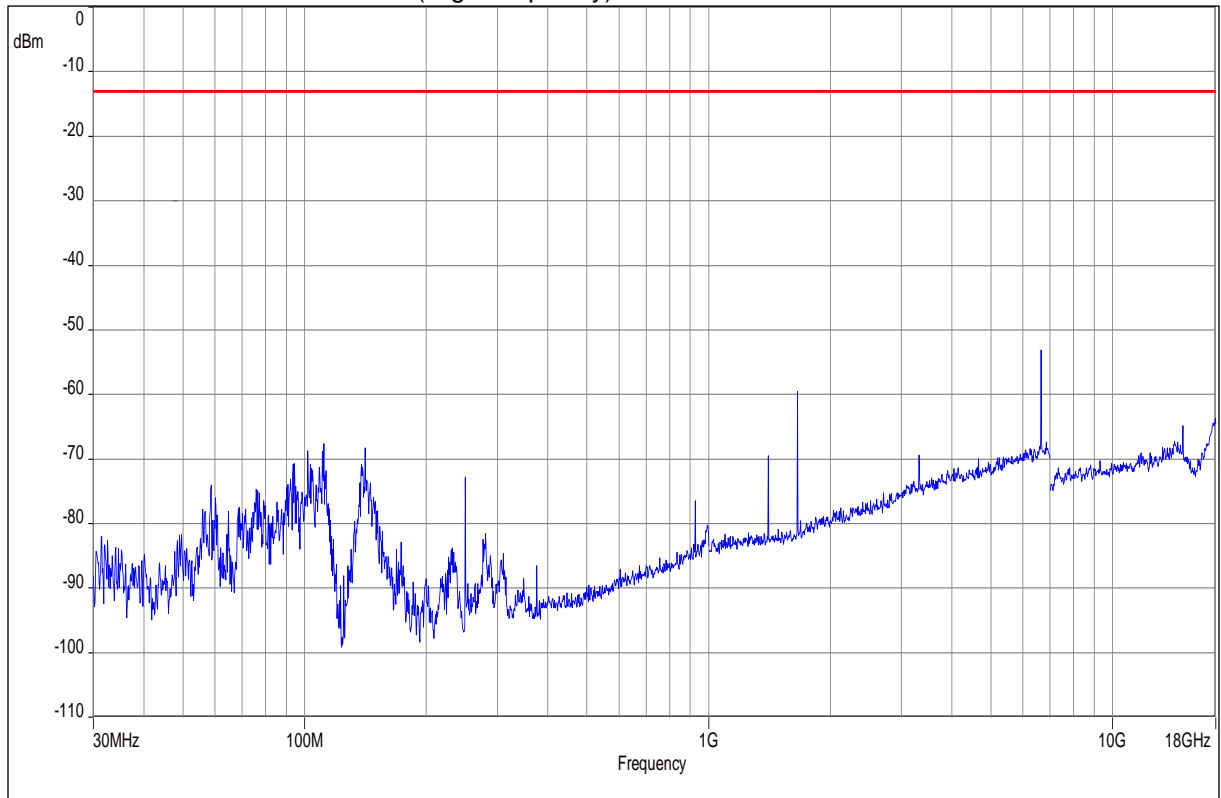
Plot No. 1: antenna vertical / horizontal (Low frequency)



Plot No. 2: antenna vertical / horizontal (Middle frequency)



Plot No. 3: antenna vertical / horizontal (High frequency)



4 Measurement results, FCC Part 15B

This Chapter 4 consists of 1 pages including this page.

Refer to test report 1-0716_15-01-05.pdf

5 Document history

Version	Applied changes	Date of release
	Initial release - DRAFT	2018-03-20-
	minor editorial changes	2018-06-22