

Annex D



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Test report annex authorized:



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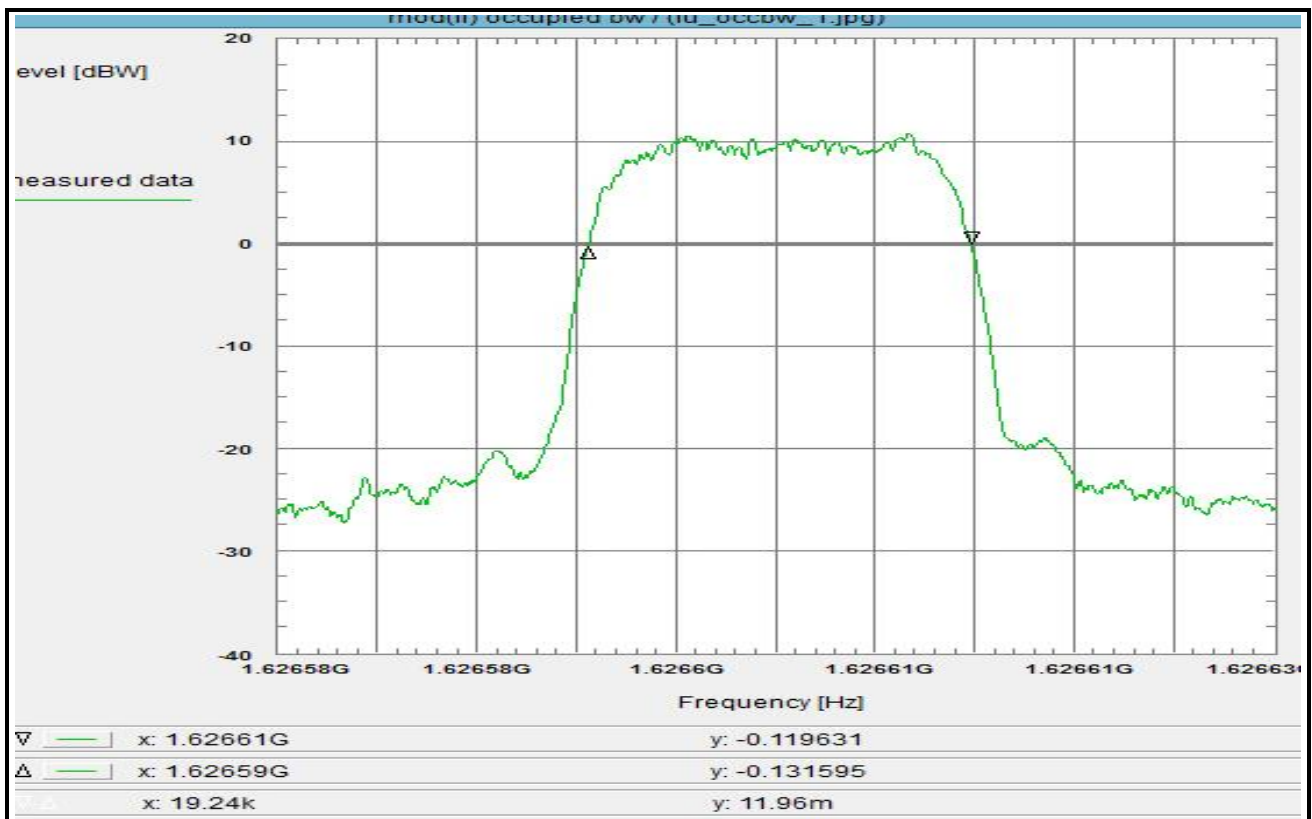
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2 Measurement results, FCC Part 87 and FCC Part 25

This part 2 consists of 36 pages including this page.

Plot No. 1 (35)



Subclause: -/- Function test
 Modulated rf-carrier at the lower edge of the band (fl)
 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
 SBU 405040A, fl, QPSK, 21 kHz

Test setup:
 see section 8.1: 1.2hgj

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

Remark:

Test result: Determination of the occupied bandwidth'

Environment condition:

Date & Time: Wed 08/Nov/2017 09:47:26
 Location: CTC advanced GmbH, Laboratory RSC-Sat
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

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

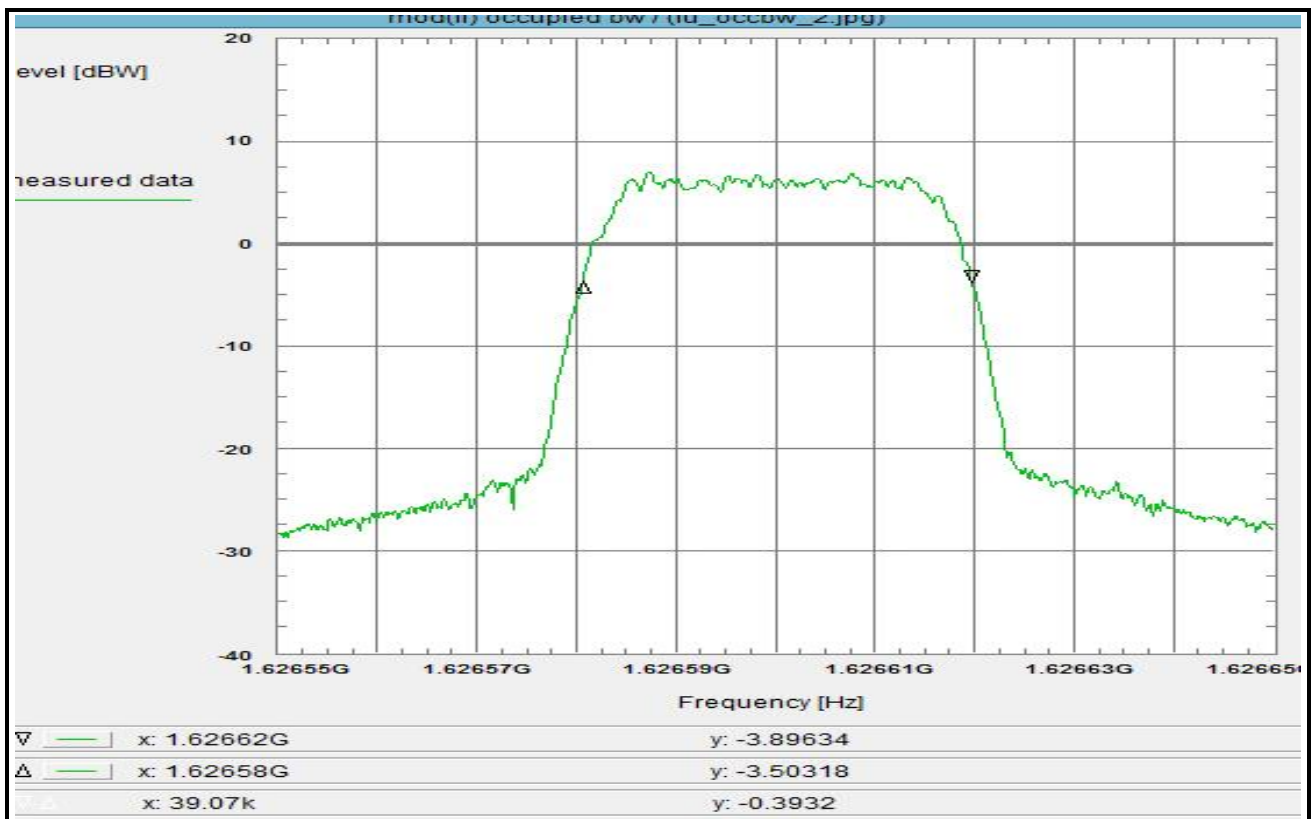
Correction:

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
 Freefield attenuation (U005) + 29.8 dB
 TOTAL CORRECTION: + 35.4 dB

Remarks:

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

Plot No. 2 (35)



Subclause: -/- Function test
 Modulated rf-carrier at the lower edge of the band (fl)
 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
 SBU 405040A, fl, QPSK, 42 kHz

Test setup:
 see section 8.1: 1.2hgj

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

Remark:

Test result: Determination of the occupied bandwidth'

Environment condition:

Date & Time: Wed 08/Nov/2017 10:33:25
 Location: CTC advanced GmbH, Laboratory RSC-Sat
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

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

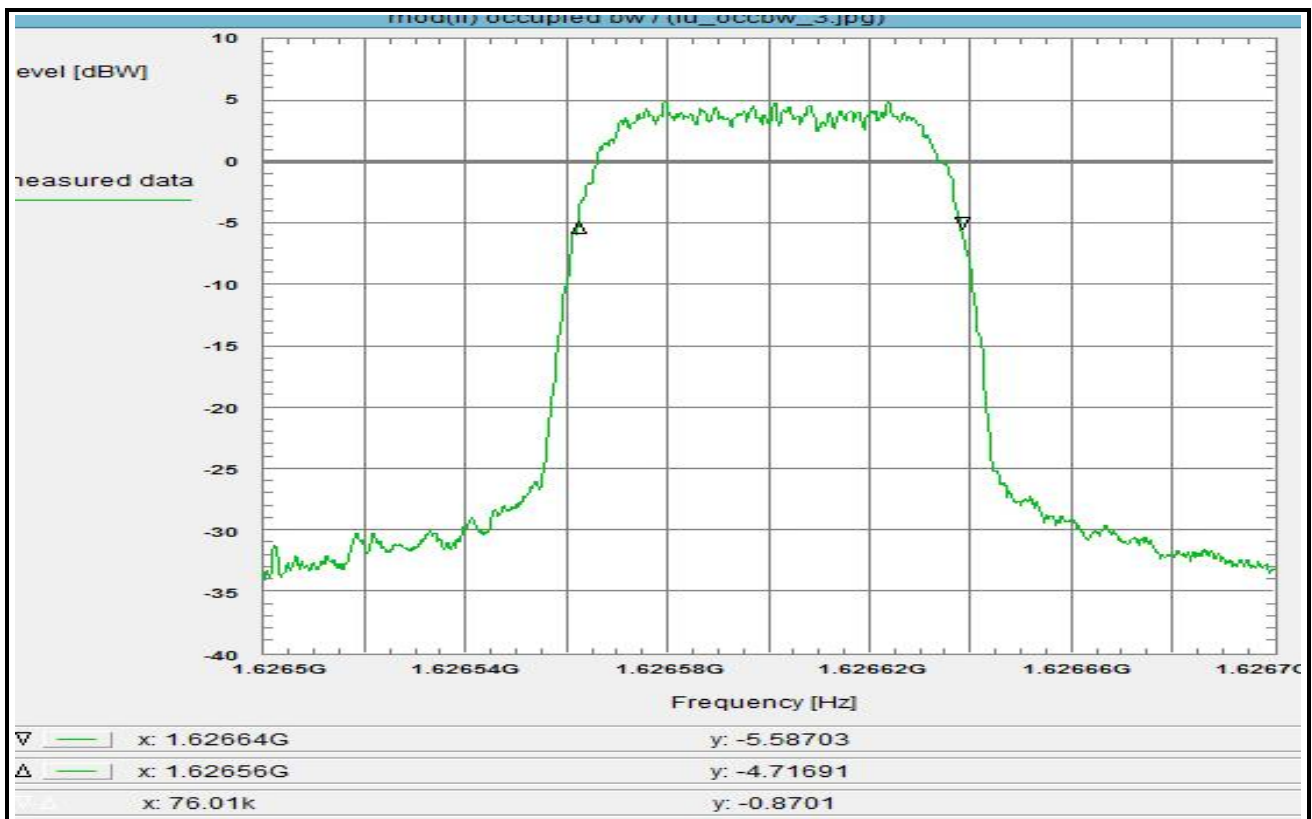
Correction:

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
Attenuation (U005)	+ 29.8 dB
TOTAL CORRECTION:	+ 30.6 dB

Remarks:

Determination of the 'occupied bandwidth' at fu:
 The measured value is about 39 kHz (delta marker)
 Measurement with 3 kHz resolution filter and noise averaging.

Plot No. 3 (35)



Subclause: -/- Function test
 Modulated rf-carrier at the lower edge of the band (fl)
 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
 SBU 405040A, fl, QPSK, 84 kHz

Test setup:
 see section 8.1: 1.2hgj

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

Remark:

Test result: Determination of the occupied bandwidth'

Environment condition:

Date & Time: Wed 08/Nov/2017 11:14:58
 Location: CTC advanced GmbH, Laboratory RSC-Sat
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

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

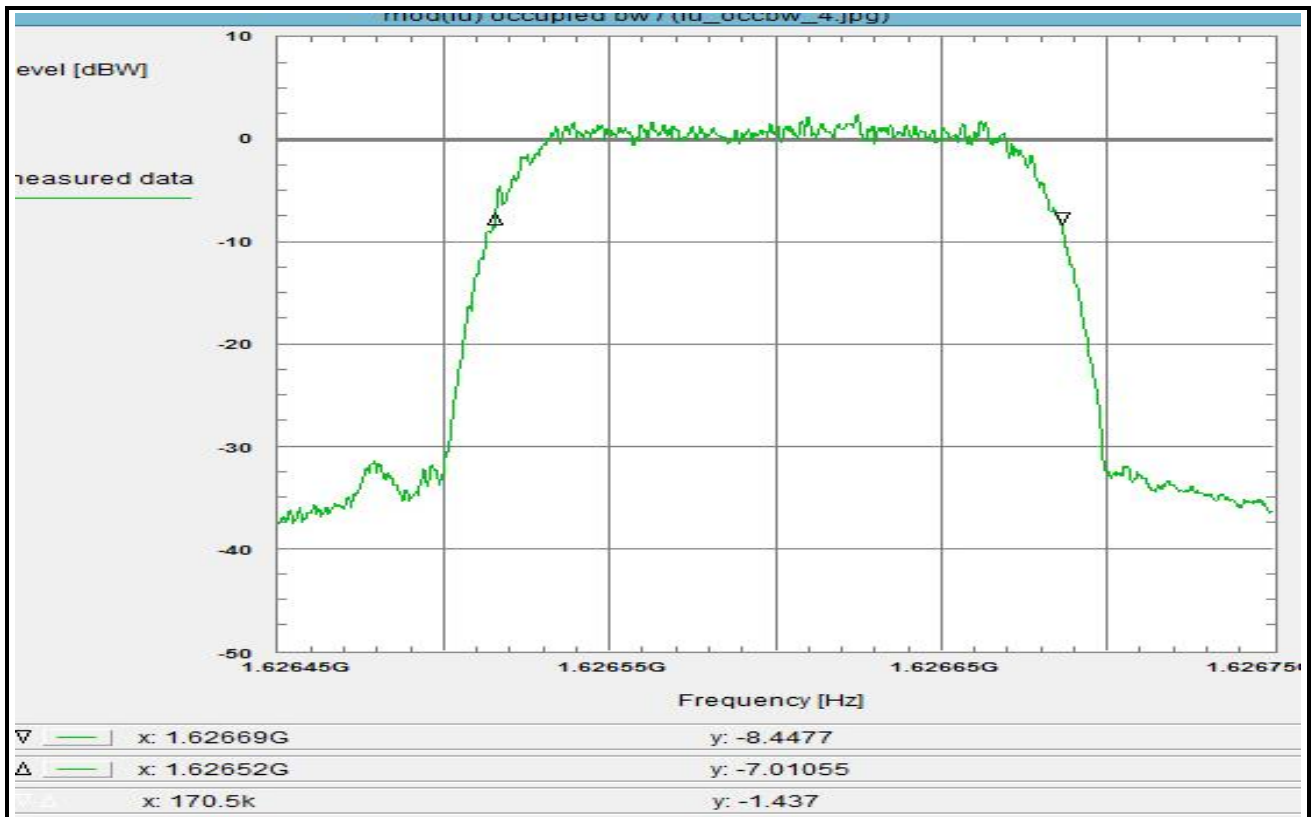
Correction:

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
Attenuation (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 (35)



Subclause: -/- Function test
 Modulated rf-carrier at the lower edge of the band (fl)
 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
 SBU 405040A, fl, QPSK, 189 kHz

Test setup:
 see section 8.1: 1.2hgj

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

Remark:

Test result: Determination of the occupied bandwidth'

Environment condition:

Date & Time: Wed 08/Nov/2017 11:35:38
 Location: CTC advanced GmbH, Laboratory RSC-Sat
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

Setup of measurement equipment:

Start frequency: 1.62645 GHz
 Stop frequency: 1.62675 GHz
 Center frequency: 1.6266 GHz
 Frequency span: 300 kHz
 Resolution-BW: 3 kHz
 Video-BW: 10 kHz
 Input attenuation: 10 dB
 Trace-Mode: Max-Hold
 Detector-Mode: Pos Peak

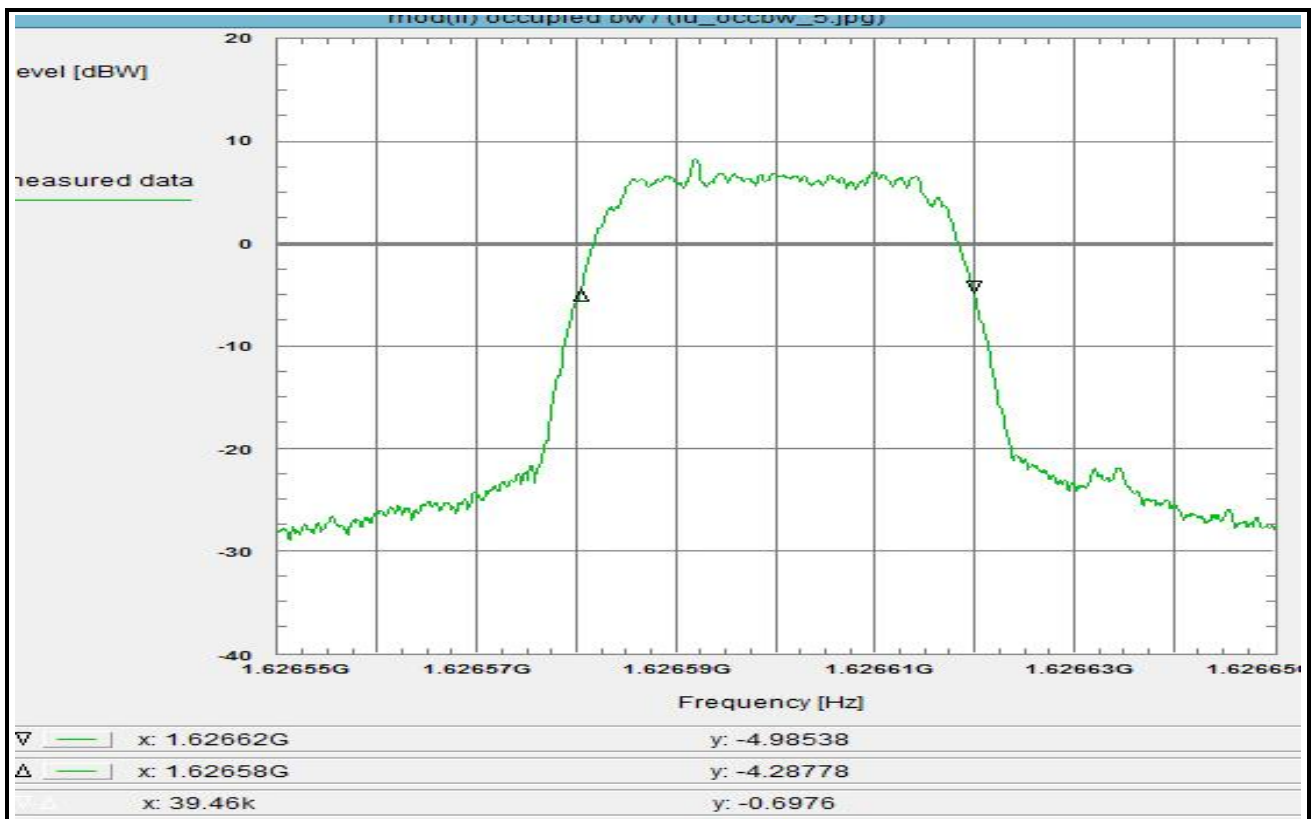
Correction:

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
Attenuation (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 (35)



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
 SBU 405040A, fm, 16QAM, 42 kHz

Test setup:
 see section 8.1: 1.2hgj

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

Remark:

Test result: Determination of the occupied bandwidth'

Environment condition:

Date & Time: Wed 08/Nov/2017 13:26:45
 Location: CTC advanced GmbH, Laboratory RSC-Sat
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

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

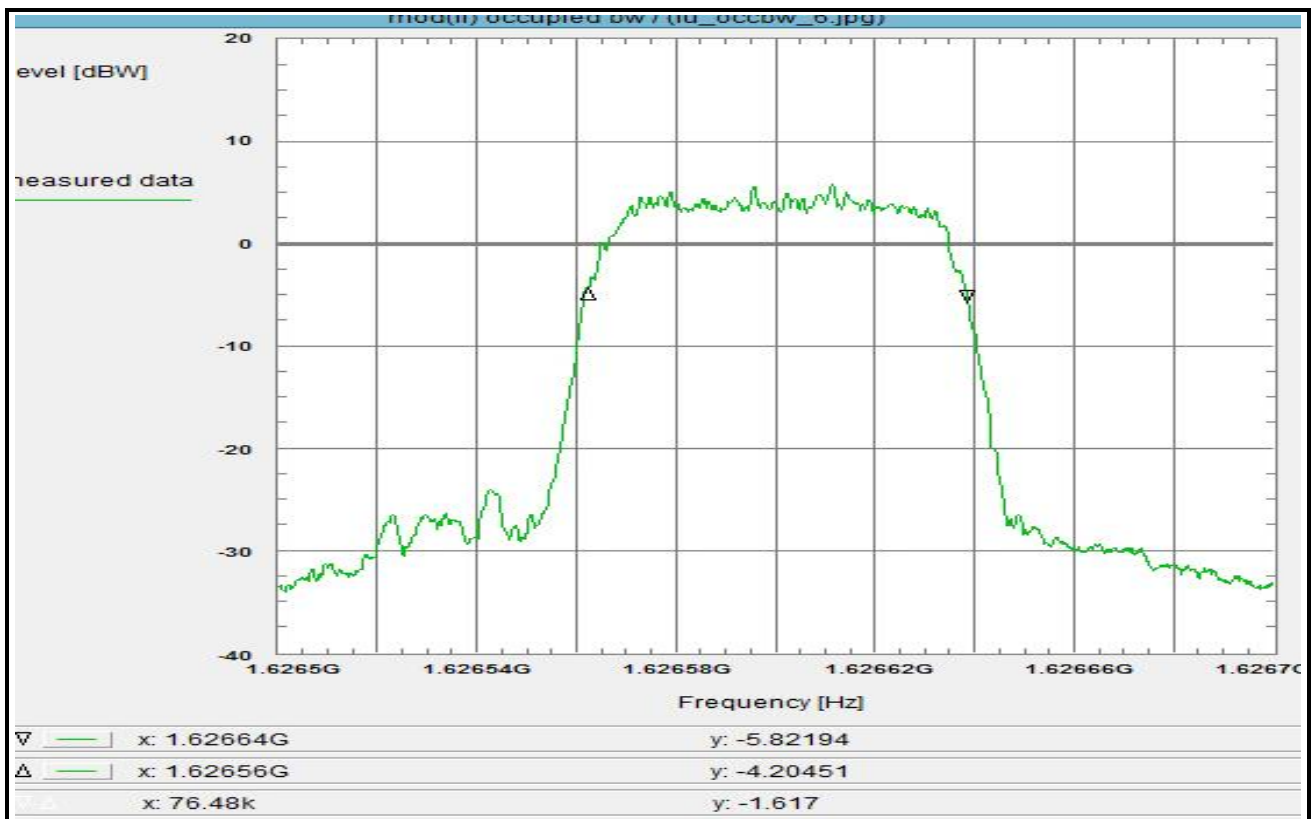
Correction:

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
Attenuation (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 (35)



Subclause: -/- Function test
 Modulated rf-carrier at the lower edge of the band (fl)
 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
 SBU 405040A, fl, 16QAM, 84 kHz

Test setup:
 see section 8.1: 1.2hgj

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

Remark:

Test result: Determination of the occupied bandwidth'

Environment condition:

Date & Time: Wed 08/Nov/2017 14:05:42
 Location: CTC advanced GmbH, Laboratory RSC-Sat
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

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

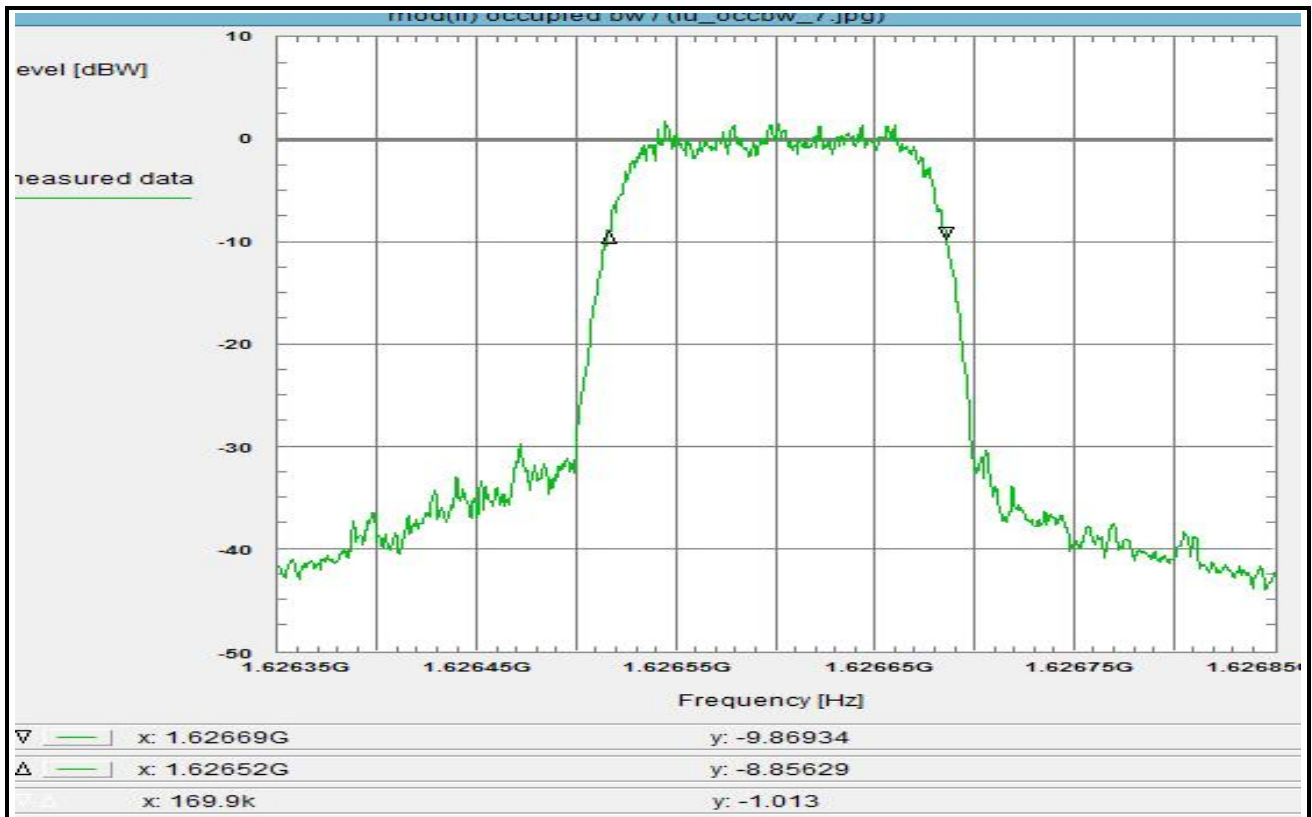
Correction:

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
Attenuation (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. 7 (35)



Subclause: -/- Function test
 Modulated rf-carrier at the lower edge of the band (fl)
 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
 SBU 405040A, fl, 16QAM, 189 kHz

Test setup:
 see section 8.1: 1.2hgj

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

Remark:

Test result: Determination of the occupied bandwidth'

Environment condition:

Date & Time: Wed 08/Nov/2017 14:54:20
 Location: CTC advanced GmbH, Laboratory RSC-Sat
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

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
Attenuation (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 (35)



Subclause: -/- Function test
 Modulated rf-carrier at the lower edge of the band (fl)
 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
 SDU 405035A, C2, fl

Test setup:
 see section 8.1: 1.2hgj

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

Remark:

Test result: Determination of the occupied bandwidth'

Environment condition:

Date & Time: Wed 08/Nov/2017 16:42:04
 Location: CTC advanced GmbH, Laboratory RSC-Sat
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

Setup of measurement equipment:

Start frequency: 1.6315975 GHz
 Stop frequency: 1.6316025 GHz
 Center frequency: 1.6316 GHz
 Frequency span: 5 kHz
 Resolution-BW: 100 Hz
 Video-BW: 300 Hz
 Input attenuation: 5 dB
 Trace-Mode: Max-Hold
 Detector-Mode: Pos Peak

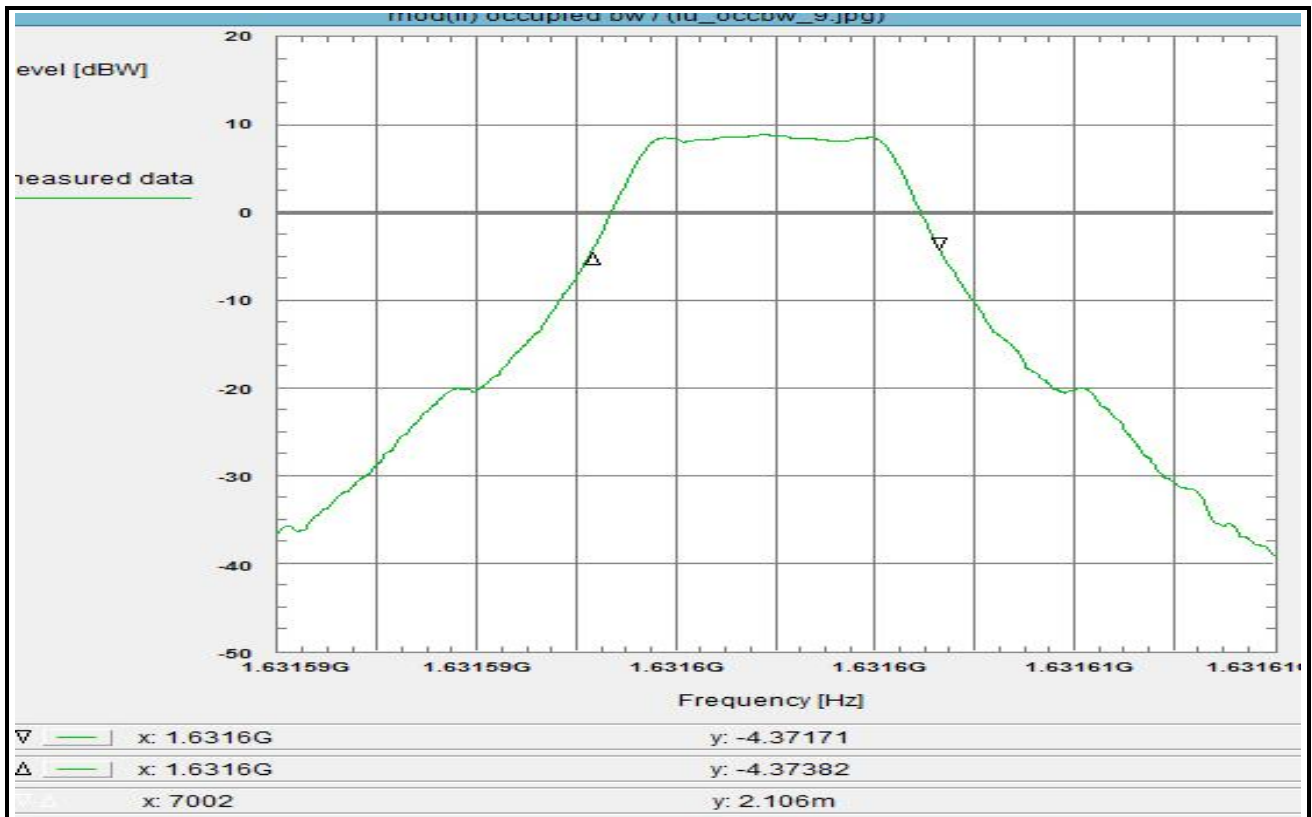
Correction:

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 (100 -> 3k) + 14.8 dB
 Atten. between HPA and feedhorn + 0.0 dB
 Attenuation (U005) + 29.8 dB
 TOTAL CORRECTION: + 45.4 dB

Remarks:

Determination of the 'occupied bandwidth' at fu:
 The measured value is about 1 kHz (delta marker)
 Measurement with 100 Hz resolution filter and noise averaging.

Plot No. 9 (35)



Subclause: -/- Function test
 Modulated rf-carrier at the lower edge of the band (fl)
 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
 SDU 405035A, C1, fl

Test setup:
 see section 8.1: 1.2hgj

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

Remark:

Test result: Determination of the occupied bandwidth'

Environment condition:

Date & Time: Wed 08/Nov/2017 16:22:01
 Location: CTC advanced GmbH, Laboratory RSC-Sat
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

Setup of measurement equipment:

Start frequency: 1.63159 GHz
 Stop frequency: 1.63161 GHz
 Center frequency: 1.6316 GHz
 Frequency span: 20 kHz
 Resolution-BW: 1 kHz
 Video-BW: 3 kHz
 Input attenuation: 5 dB
 Trace-Mode: Max-Hold
 Detector-Mode: Pos Peak

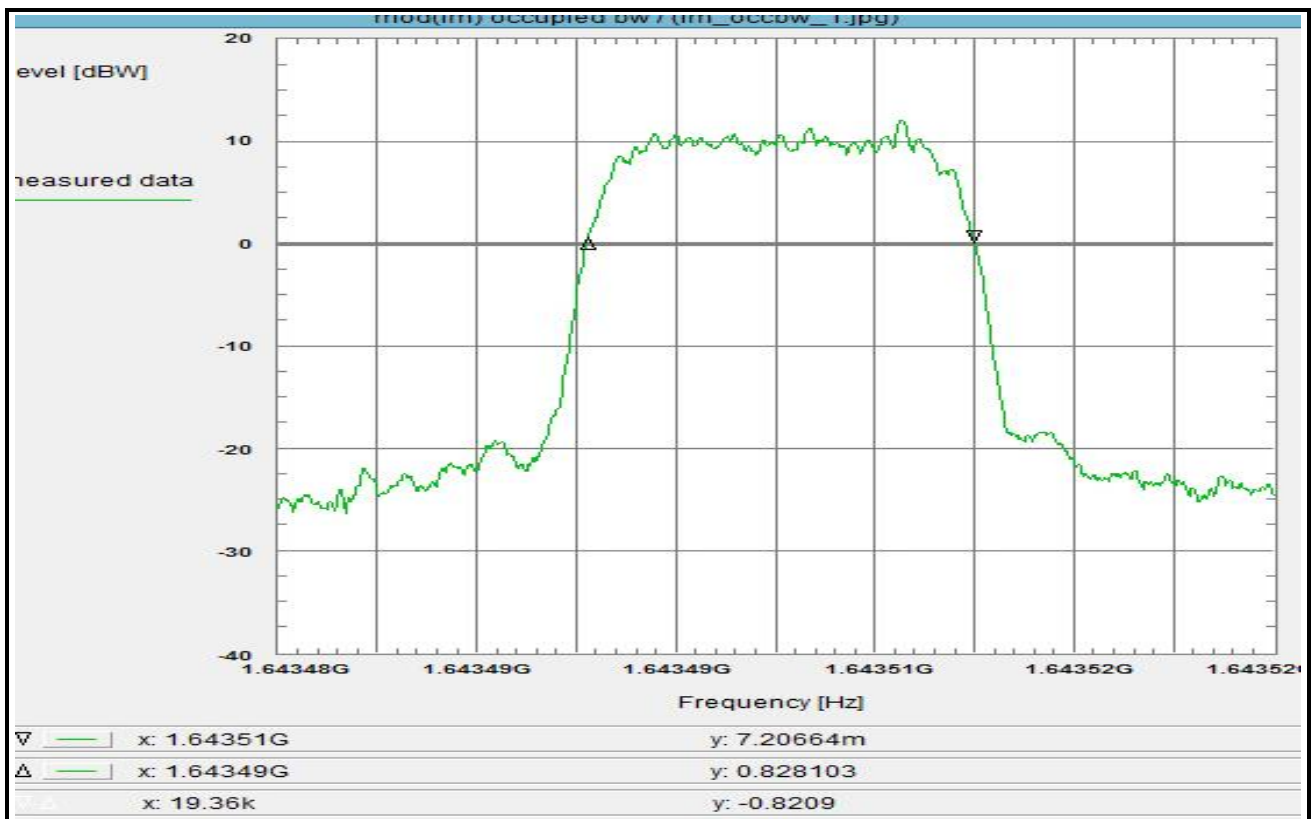
Correction:

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
 Attenuation (U005) + 29.8 dB
 TOTAL CORRECTION: + 35.4 dB

Remarks:

Determination of the 'occupied bandwidth' at fu:
 The measured value is about 7 kHz (delta marker)
 Measurement with 1 kHz resolution filter and noise averaging.

Plot No. 10 (35)



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
 SBU 405040A, fm, QPSK, 21 kHz

Test setup:
 see section 8.1: 1.2hgj

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

Remark:

Test result: Determination of the occupied bandwidth'

Environment condition:

Date & Time: Wed 08/Nov/2017 09:42:17
 Location: CTC advanced GmbH, Laboratory RSC-Sat
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

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

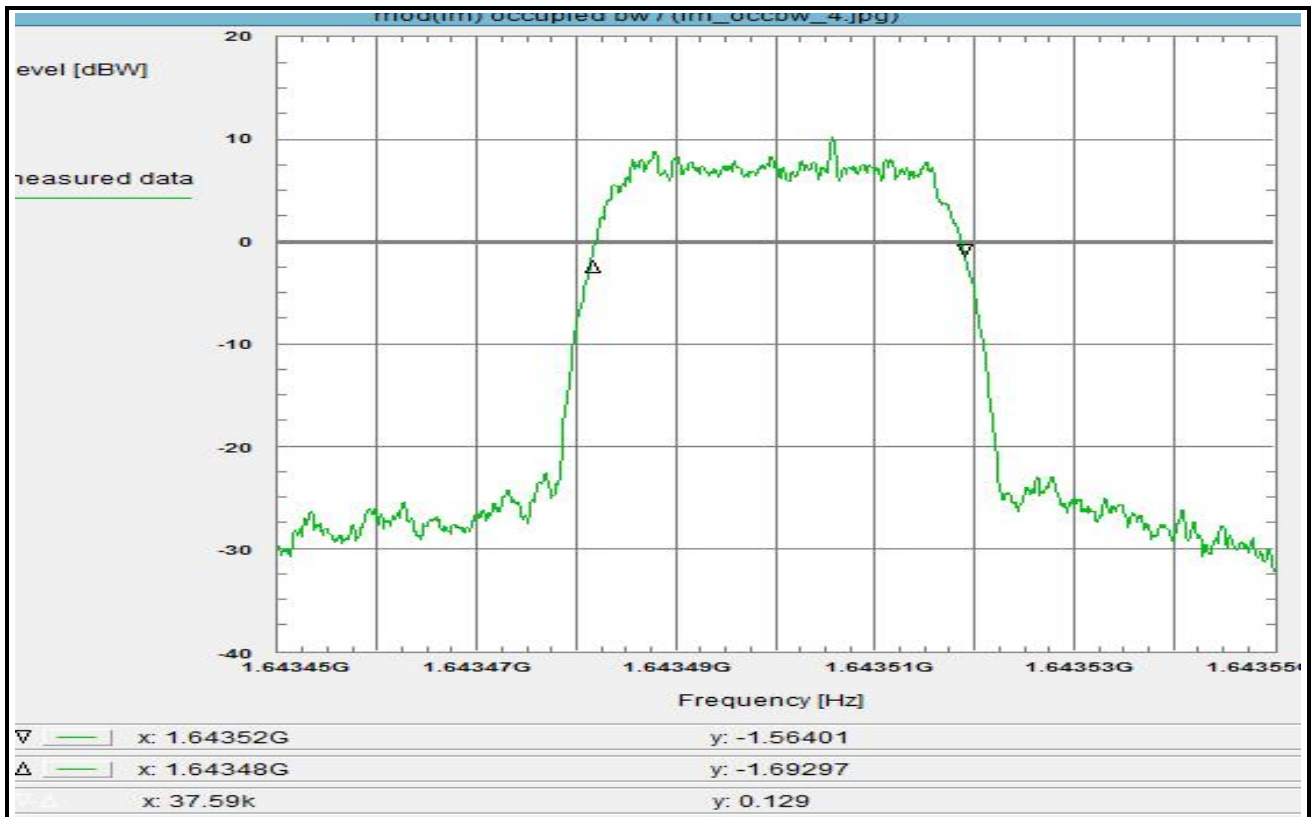
Correction:

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
 Freefield attenuation (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 3 kHz resolution filter and noise averaging.

Plot No. 11 (35)



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
 SBU 405040A, fm, QPSK, 42 kHz

Test setup:
 see section 8.1: 1.2hgj

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

Remark:

Test result: Determination of the occupied bandwidth'

Environment condition:

Date & Time: Wed 08/Nov/2017 10:05:36
 Location: CTC advanced GmbH, Laboratory RSC-Sat
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

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

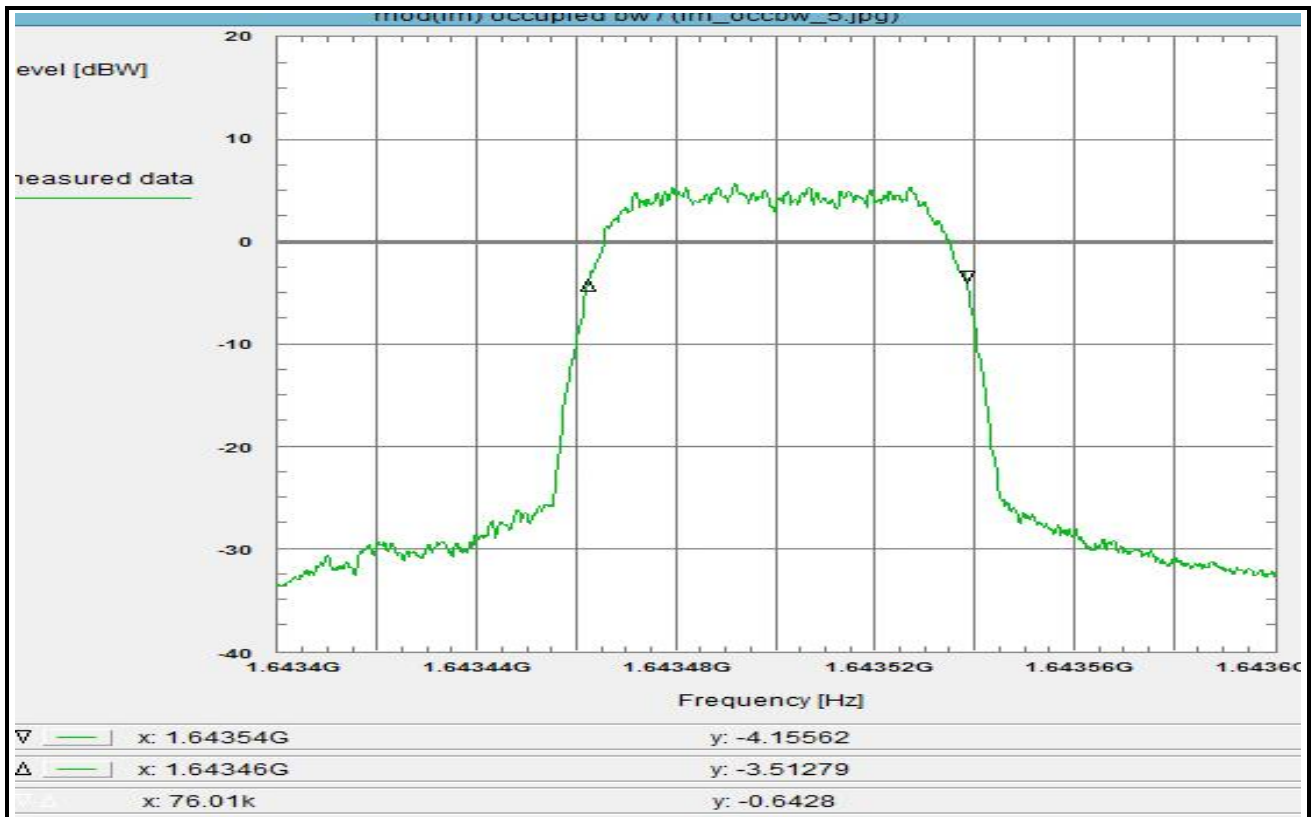
Correction:

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
Freefield attenuation (U005)	+ 29.8 dB
TOTAL CORRECTION:	+ 35.4 dB

Remarks:

Determination of the 'occupied bandwidth' at fm:
 The measured value is about 38 kHz (delta marker)
 Measurement with 1 kHz resolution filter and noise averaging.

Plot No. 12 (35)



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
 SBU 405040A, fm, QPSK, 84 kHz

Test setup:
 see section 8.1: 1.2hgj

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

Remark:

Test result: Determination of the occupied bandwidth'

Environment condition:

Date & Time: Wed 08/Nov/2017 10:49:20
 Location: CTC advanced GmbH, Laboratory RSC-Sat
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

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

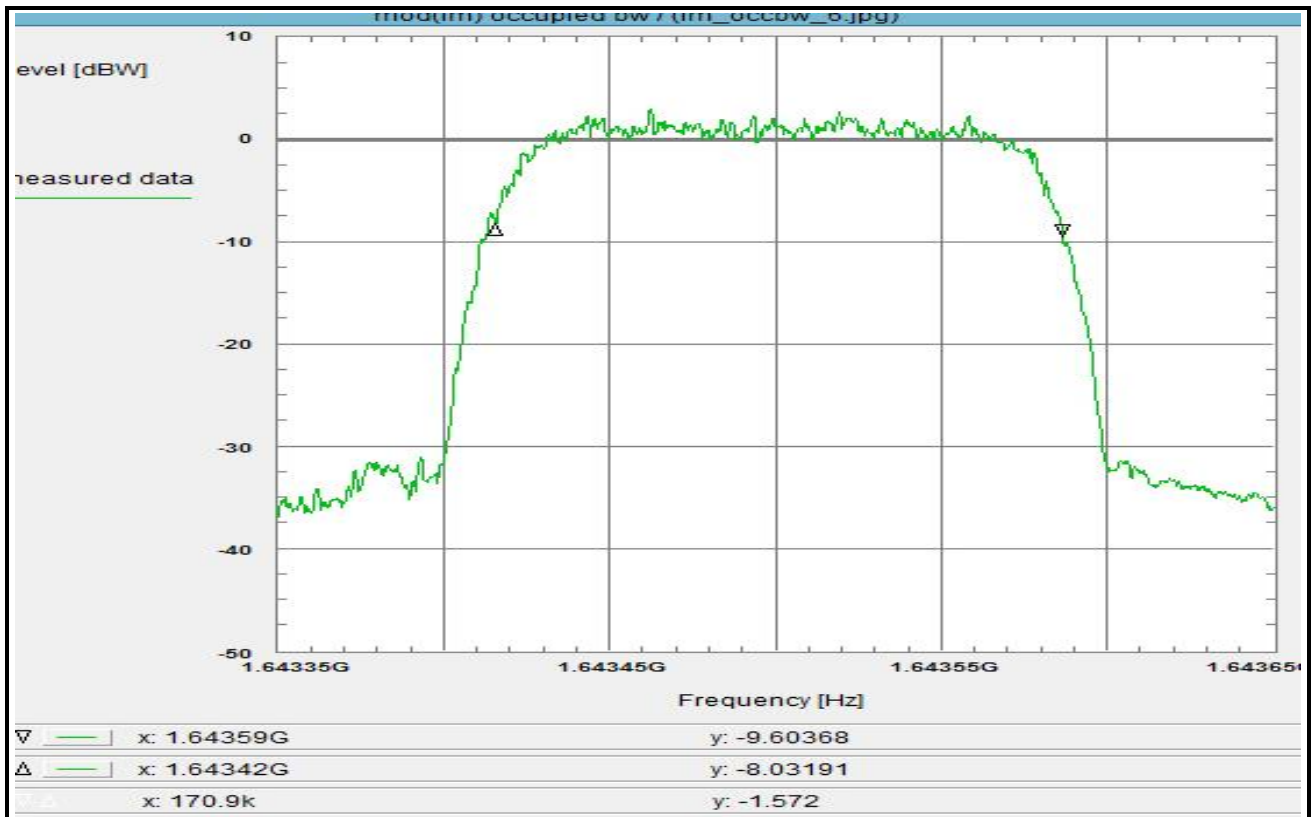
Correction:

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
Attenuation (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. 13 (35)



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
 SBU 405040A, fm, QPSK, 189 kHz

Test setup:
 see section 8.1: 1.2hgj

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

Remark:

Test result: Determination of the occupied bandwidth'

Environment condition:

Date & Time: Wed 08/Nov/2017 11:26:09
 Location: CTC advanced GmbH, Laboratory RSC-Sat
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

Setup of measurement equipment:

Start frequency: 1.64335 GHz
 Stop frequency: 1.64365 GHz
 Center frequency: 1.6435 GHz
 Frequency span: 300 kHz
 Resolution-BW: 3 kHz
 Video-BW: 10 kHz
 Input attenuation: 10 dB
 Trace-Mode: Max-Hold
 Detector-Mode: Pos Peak

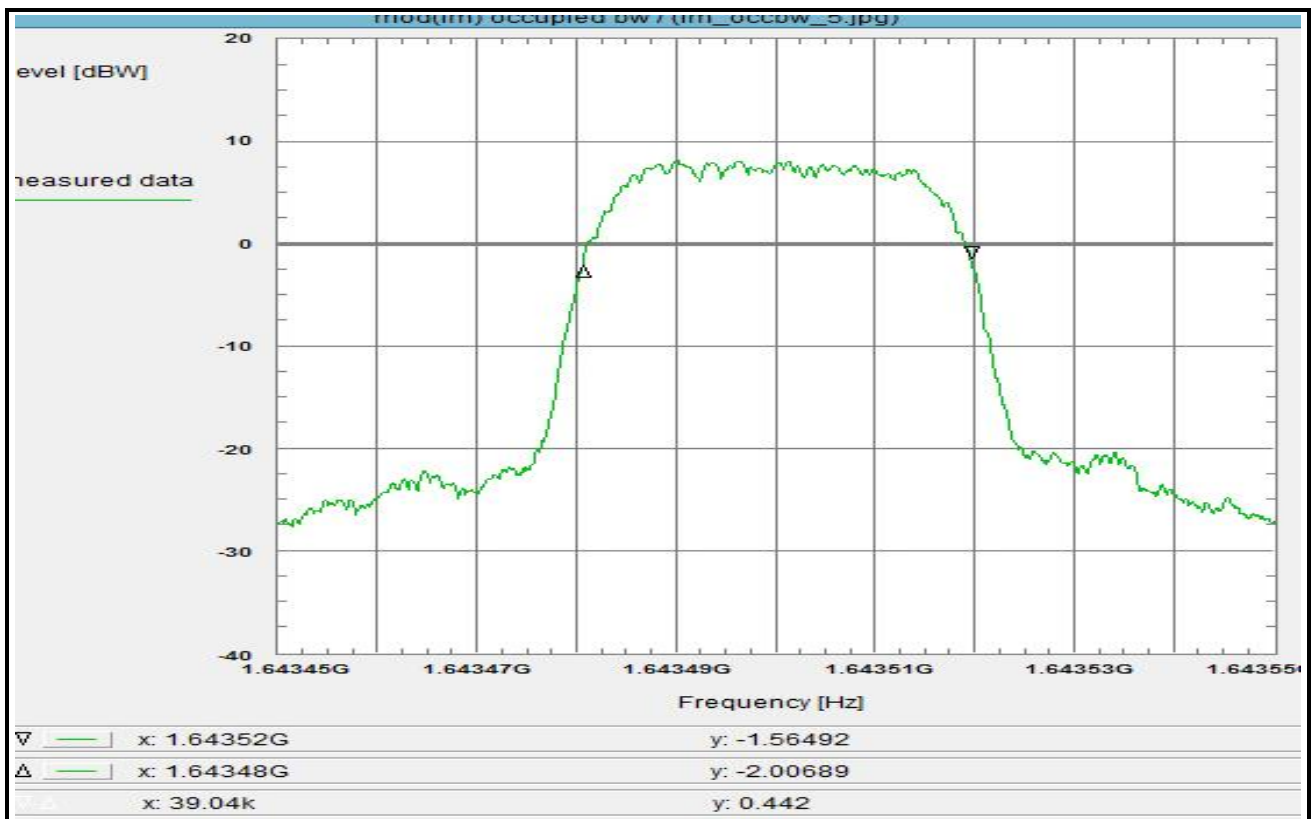
Correction:

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
Attenuation (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. 14 (35)



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
 SBU 405040A, fm, 16QAM, 42 kHz

Test setup:
 see section 8.1: 1.2hgj

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

Remark:

Test result: Determination of the occupied bandwidth'

Environment condition:

Date & Time: Wed 08/Nov/2017 13:17:43
 Location: CTC advanced GmbH, Laboratory RSC-Sat
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

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

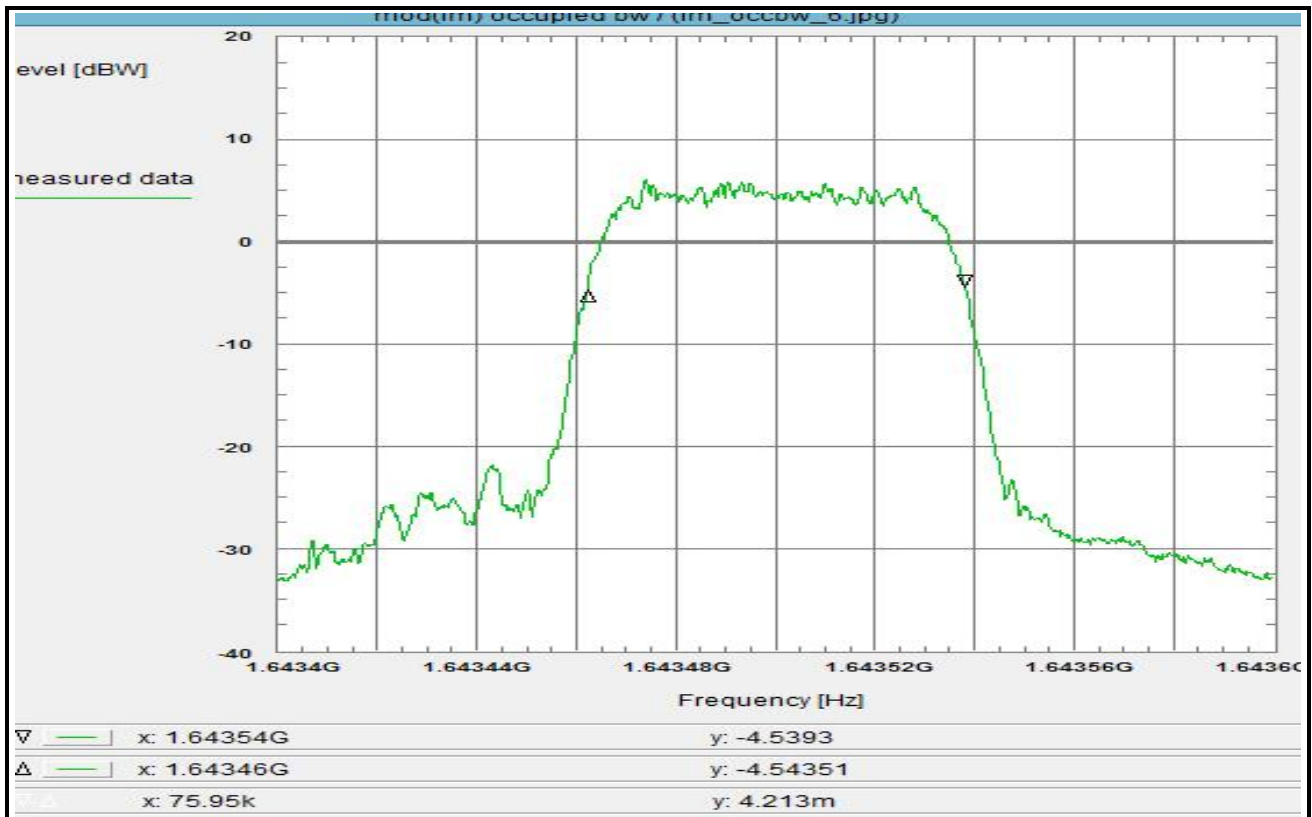
Correction:

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
Attenuation (U005)	+ 29.8 dB
TOTAL CORRECTION:	+ 30.6 dB

Remarks:

Determination of the 'occupied bandwidth' at fm:
 The measured value is about 39 kHz (delta marker)
 Measurement with 3 kHz resolution filter and noise averaging.

Plot No. 15 (35)



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
 SBU 405040A, fm, 16QAM, 84 kHz

Test setup:
 see section 8.1: 1.2hgj

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

Remark:

Test result: Determination of the occupied bandwidth'

Environment condition:

Date & Time: Wed 08/Nov/2017 13:52:28
 Location: CTC advanced GmbH, Laboratory RSC-Sat
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

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

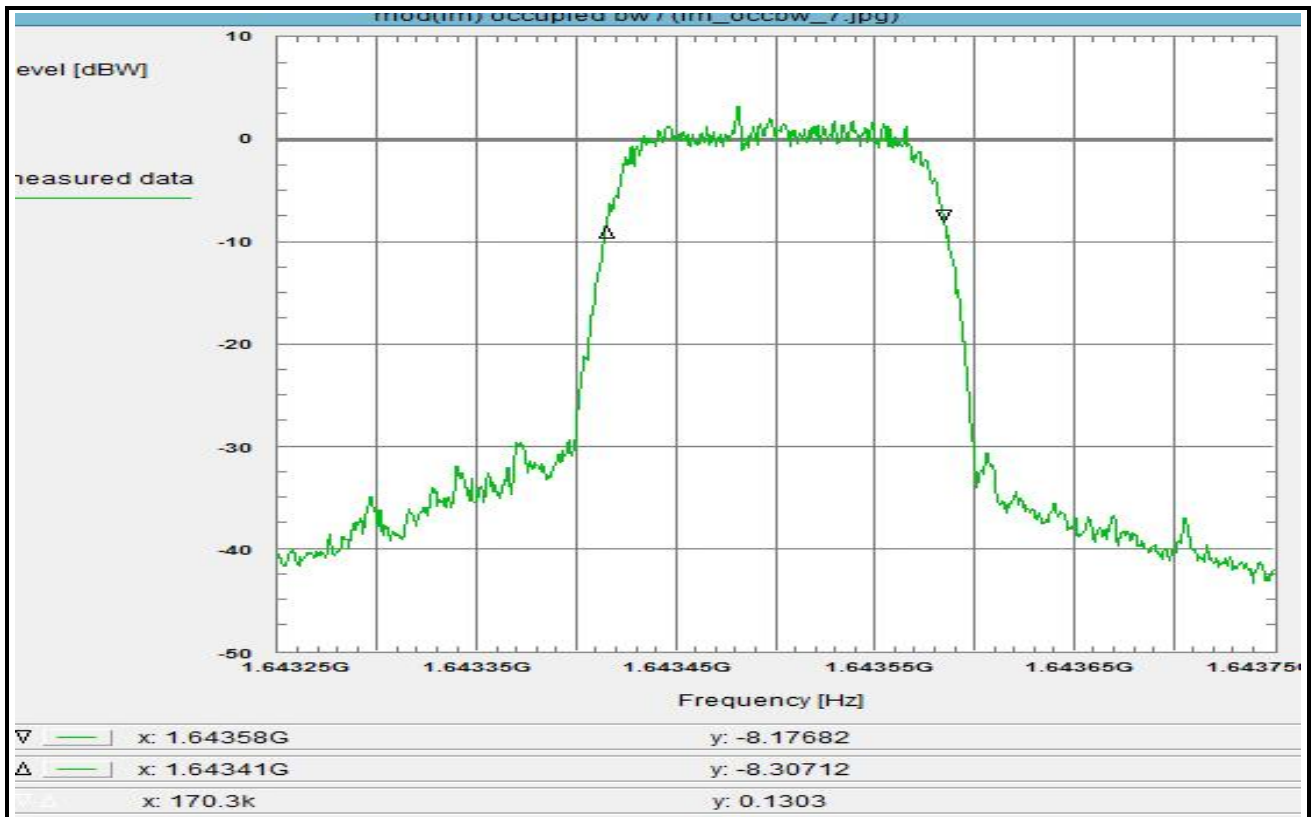
Correction:

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
 Attenuation (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. 16 (35)



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
 SBU 405040A, fm, 16QAM, 189 kHz

Test setup:
 see section 8.1: 1.2hgj

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

Remark:

Test result: Determination of the occupied bandwidth'

Environment condition:

Date & Time: Wed 08/Nov/2017 14:49:51
 Location: CTC advanced GmbH, Laboratory RSC-Sat
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

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

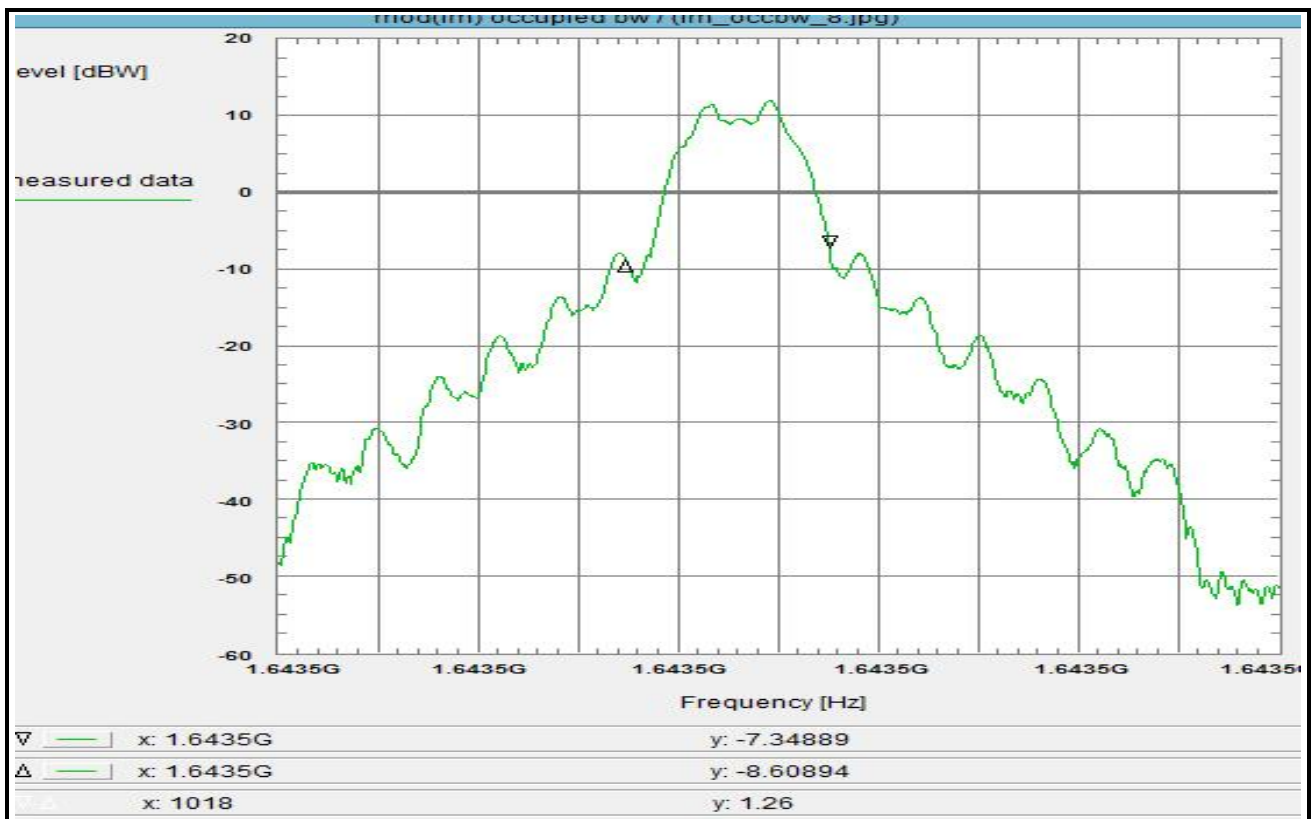
Correction:

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
Attenuation (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. 17 (35)



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
 SDU 405035A, RT, fm

Test setup:
 see section 8.1: 1.2hgj

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

Remark:

Test result: Determination of the occupied bandwidth'

Environment condition:

Date & Time: Wed 08/Nov/2017 15:42:43
 Location: CTC advanced GmbH, Laboratory RSC-Sat
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

Setup of measurement equipment:

Start frequency: 1.6434975 GHz
 Stop frequency: 1.6435025 GHz
 Center frequency: 1.6435 GHz
 Frequency span: 5 kHz
 Resolution-BW: 100 Hz
 Video-BW: 300 Hz
 Input attenuation: 5 dB
 Trace-Mode: Max-Hold
 Detector-Mode: Pos Peak

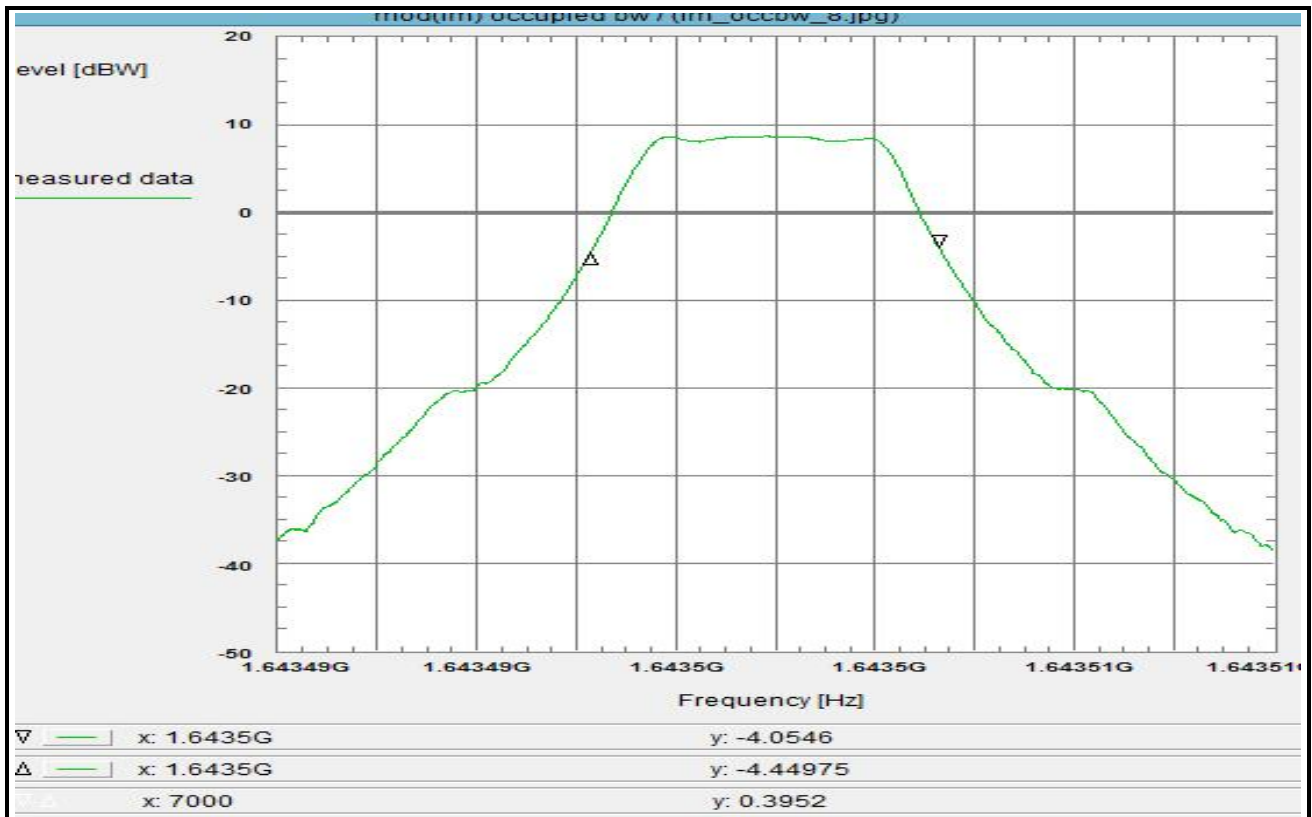
Correction:

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 (100 -> 3k) + 14.8 dB
 Atten. between HPA and feedhorn + 0.0 dB
 Attenuation (U005) + 29.8 dB
 TOTAL CORRECTION: + 45.4 dB

Remarks:

Determination of the 'occupied bandwidth' at fm:
 The measured value is about 1 kHz (delta marker)
 Measurement with 100 Hz resolution filter and noise averaging.

Plot No. 18 (35)



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
 SDU 405035A, C1, fm

Test setup:
 see section 8.1: 1.2hgj

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

Remark:

Test result: Determination of the occupied bandwidth'

Environment condition:

Date & Time: Wed 08/Nov/2017 15:15:47
 Location: CTC advanced GmbH, Laboratory RSC-Sat
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

Setup of measurement equipment:

Start frequency: 1.64349 GHz
 Stop frequency: 1.64351 GHz
 Center frequency: 1.6435 GHz
 Frequency span: 20 kHz
 Resolution-BW: 1 kHz
 Video-BW: 3 kHz
 Input attenuation: 5 dB
 Trace-Mode: Max-Hold
 Detector-Mode: Pos Peak

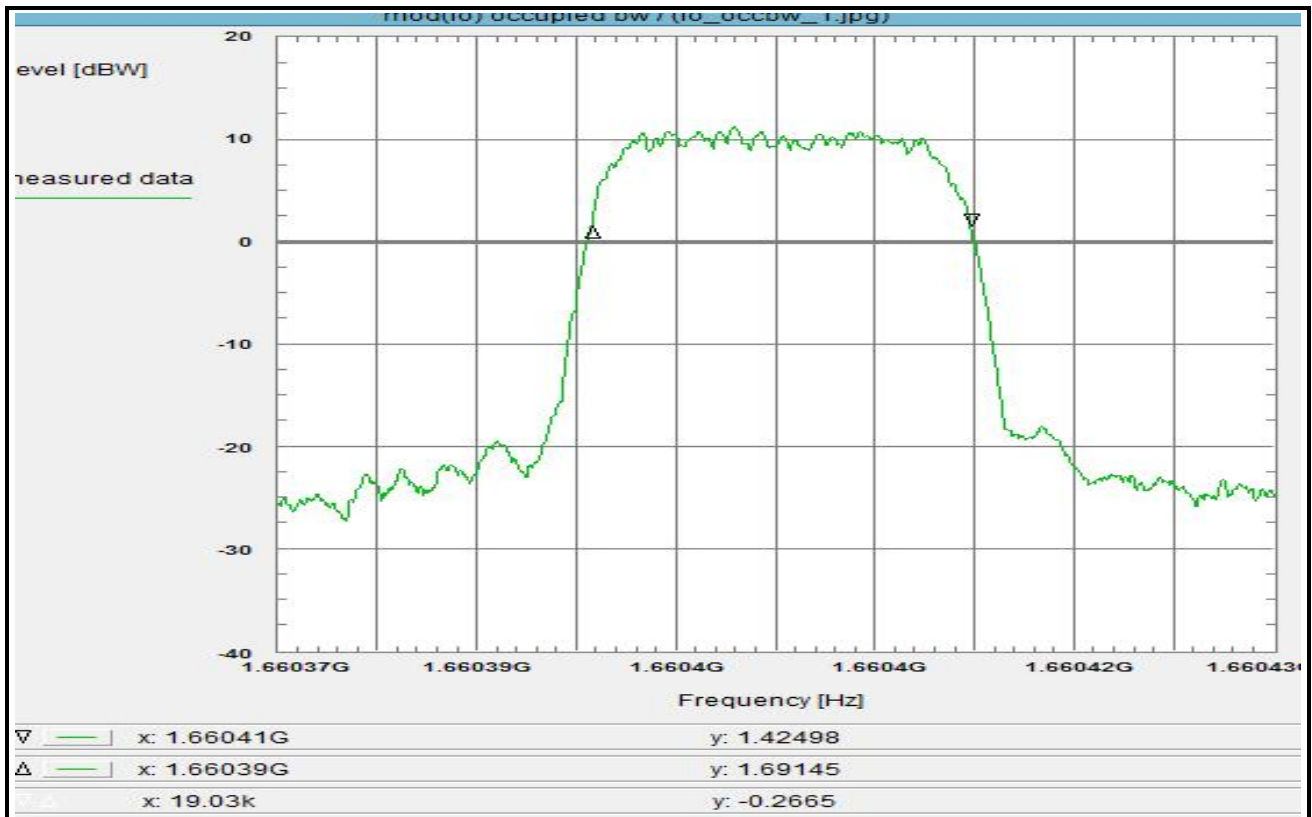
Correction:

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
Attenuation (U005)	+ 29.8 dB
TOTAL CORRECTION:	+ 35.4 dB

Remarks:

Determination of the 'occupied bandwidth' at fm:
 The measured value is about 7 kHz (delta marker)
 Measurement with 3 kHz resolution filter and noise averaging.

Plot No. 19 (35)



Subclause: -/- Function test
 Modulated rf-carrier at the upper edge of the band (fo)
 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
 SBU 405040A, fh, QPSK, 21 kHz

Test setup:
 see section 8.1: 1.2hgj

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

Remark:

Test result: Determination of the occupied bandwidth'

Environment condition:

Date & Time: Wed 08/Nov/2017 09:58:43
 Location: CTC advanced GmbH, Laboratory RSC-Sat
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

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

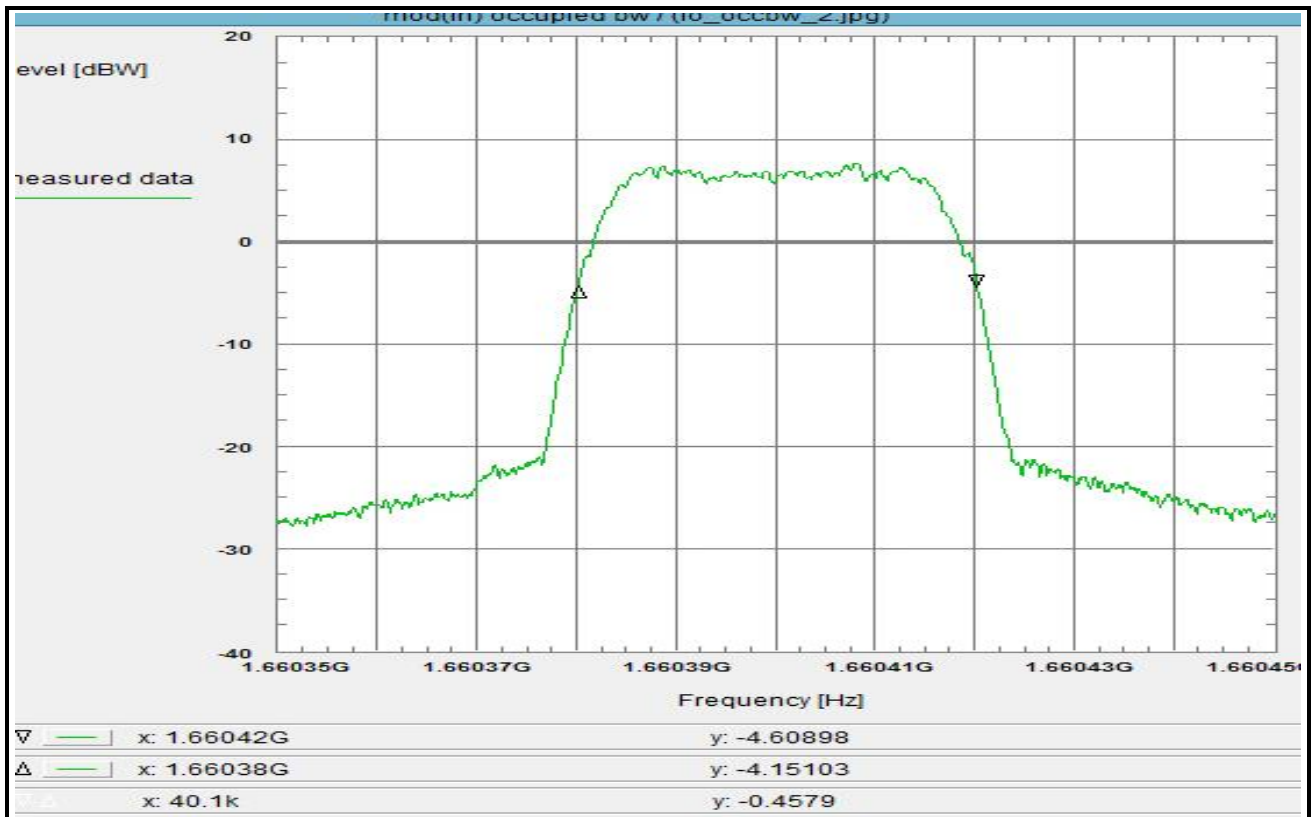
Correction:

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
 Freefield attenuation (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. 20 (35)



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
 SBU 405040A, fh, QPSK, 42 kHz

Test setup:
 see section 8.1: 1.2hgj

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

Remark:

Test result: Determination of the occupied bandwidth'

Environment condition:

Date & Time: Wed 08/Nov/2017 10:35:47
 Location: CTC advanced GmbH, Laboratory RSC-Sat
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

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

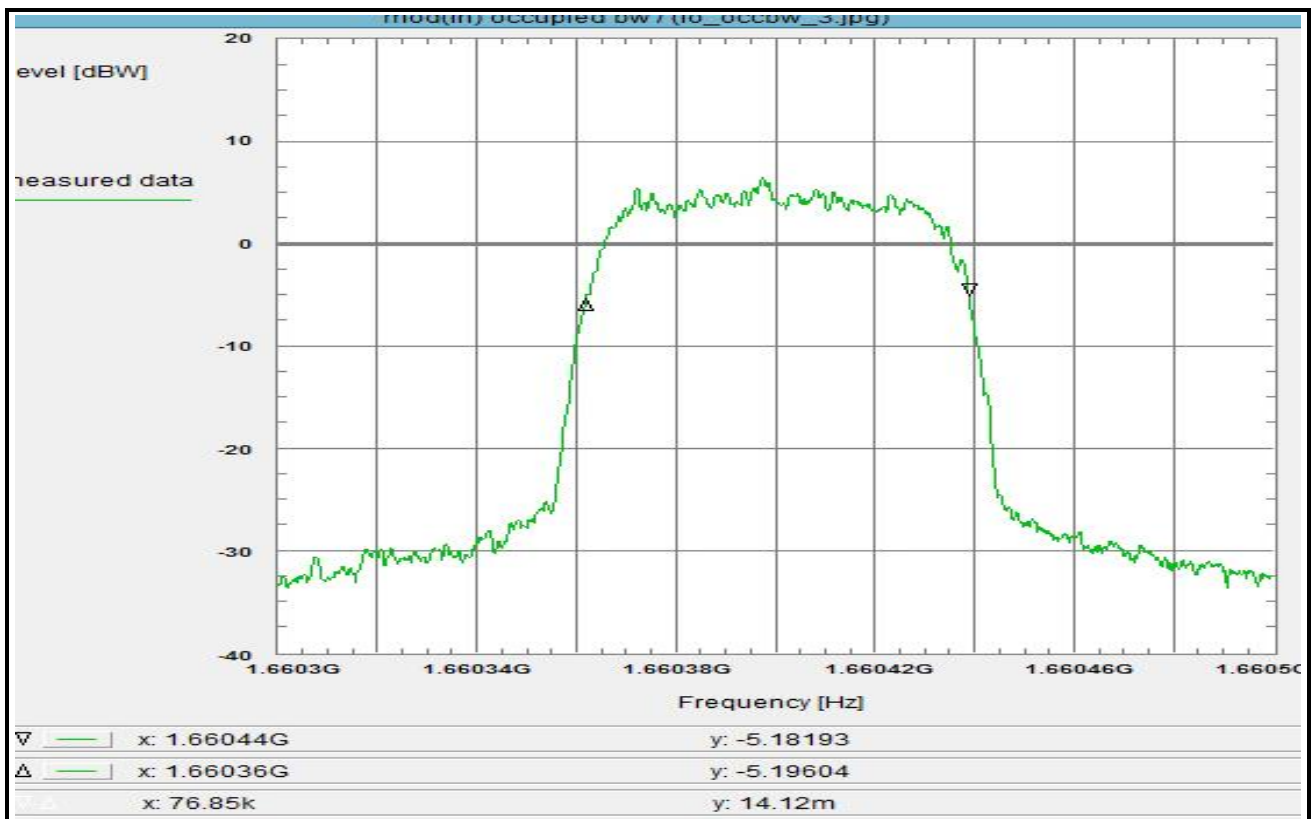
Correction:

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
Attenuation (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. 21 (35)



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
 SBU 405040A, fh, QPSK, 84 kHz

Test setup:
 see section 8.1: 1.2hgj

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

Remark:

Test result: Determination of the occupied bandwidth'

Environment condition:

Date & Time: Wed 08/Nov/2017 11:17:53
 Location: CTC advanced GmbH, Laboratory RSC-Sat
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

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

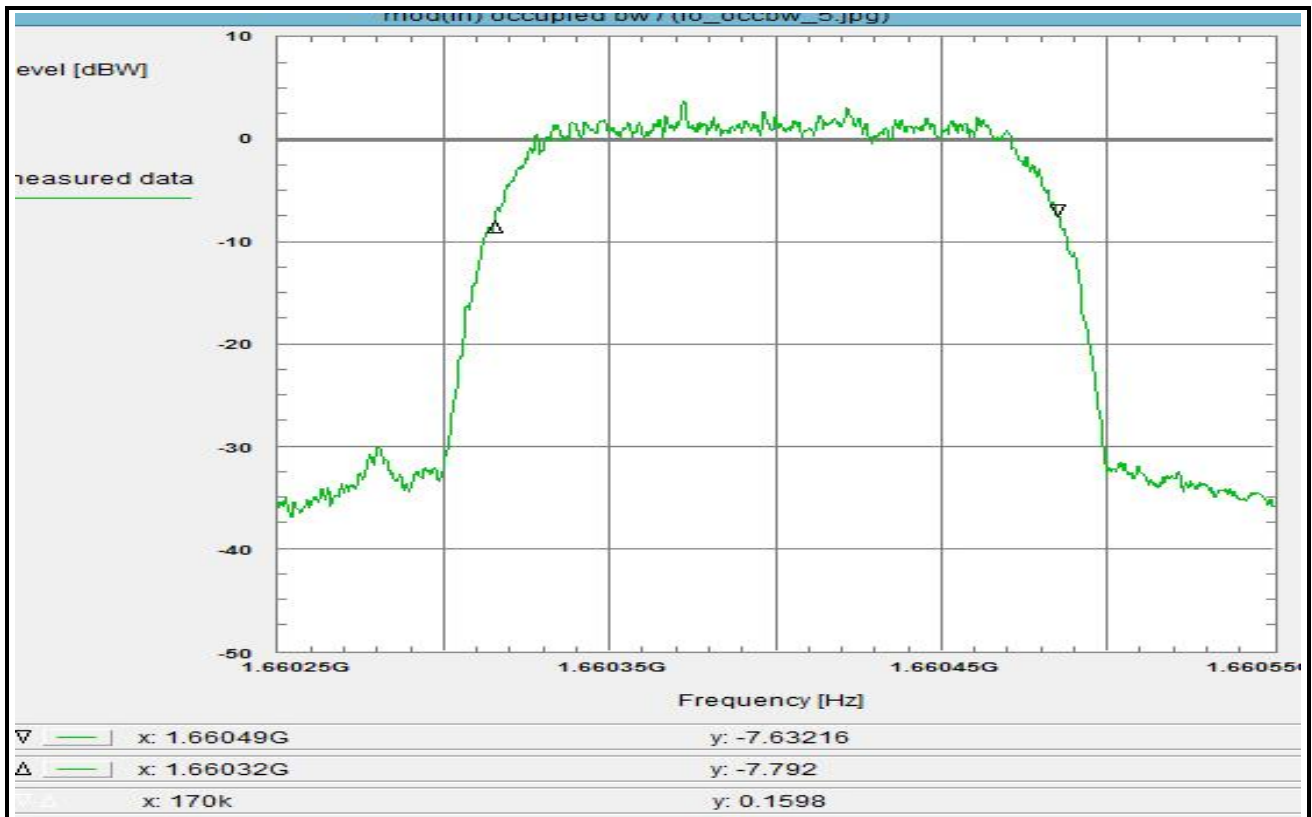
Correction:

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
Attenuation (U005)	+ 29.8 dB
TOTAL CORRECTION:	+ 30.6 dB

Remarks:

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

Plot No. 22 (35)



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
 SBU 405040A, fh, QPSK, 189 kHz

Test setup:
 see section 8.1: 1.2hgj

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

Remark:

Test result: Determination of the occupied bandwidth'

Environment condition:

Date & Time: Wed 08/Nov/2017 12:03:09
 Location: CTC advanced GmbH, Laboratory RSC-Sat
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

Setup of measurement equipment:

Start frequency: 1.66025 GHz
 Stop frequency: 1.66055 GHz
 Center frequency: 1.6604 GHz
 Frequency span: 300 kHz
 Resolution-BW: 3 kHz
 Video-BW: 10 kHz
 Input attenuation: 10 dB
 Trace-Mode: Max-Hold
 Detector-Mode: Pos Peak

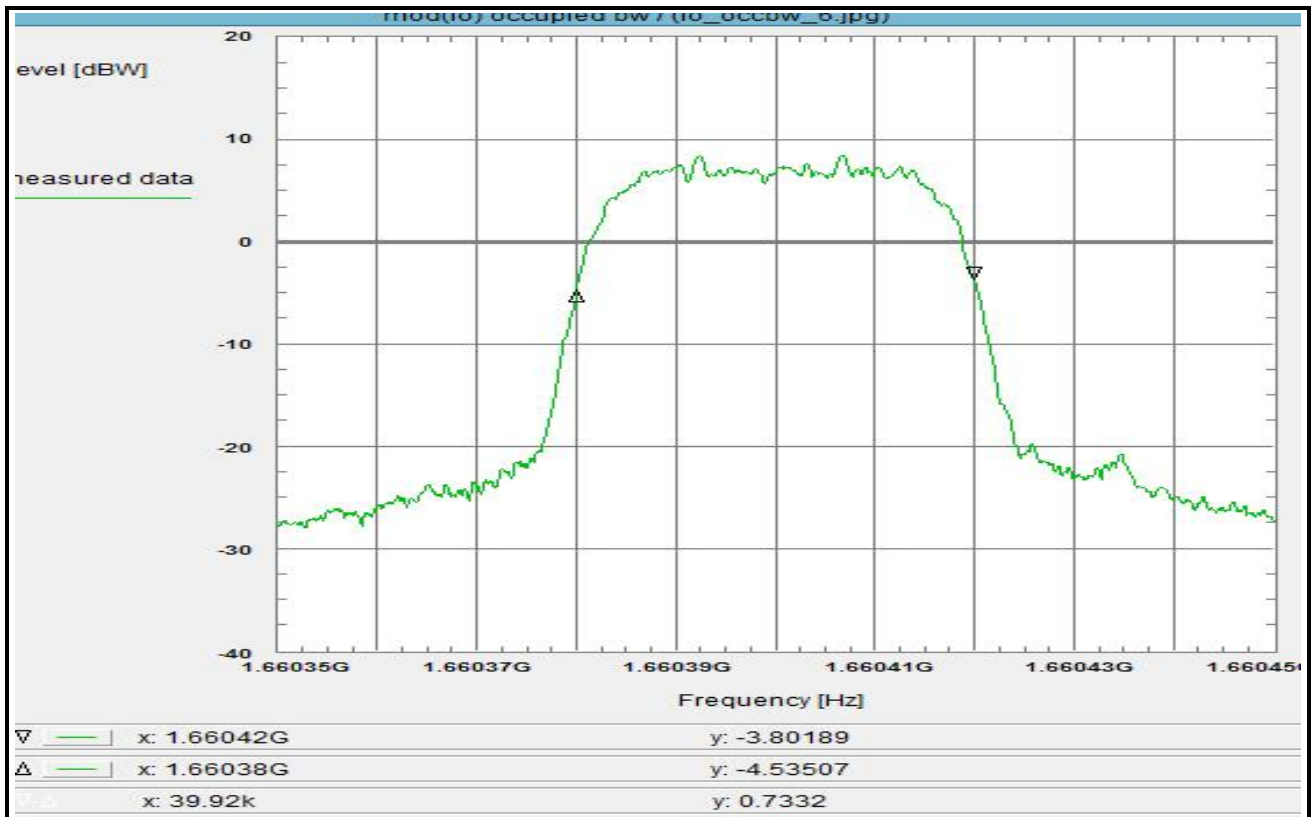
Correction:

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
Attenuation (U005)	+ 29.8 dB
TOTAL CORRECTION:	+ 30.6 dB

Remarks:

Determination of the 'occupied bandwidth' at fo:
 The measured value is about 169 kHz (delta marker)
 Measurement with 3 kHz resolution filter and noise averaging.

Plot No. 23 (35)



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
 SBU 405040A, fh, 16QAM, 42 kHz

Test setup:
 see section 8.1: 1.2hgj

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

Remark:

Test result: Determination of the occupied bandwidth'

Environment condition:

Date & Time: Wed 08/Nov/2017 13:29:27
 Location: CTC advanced GmbH, Laboratory RSC-Sat
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

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

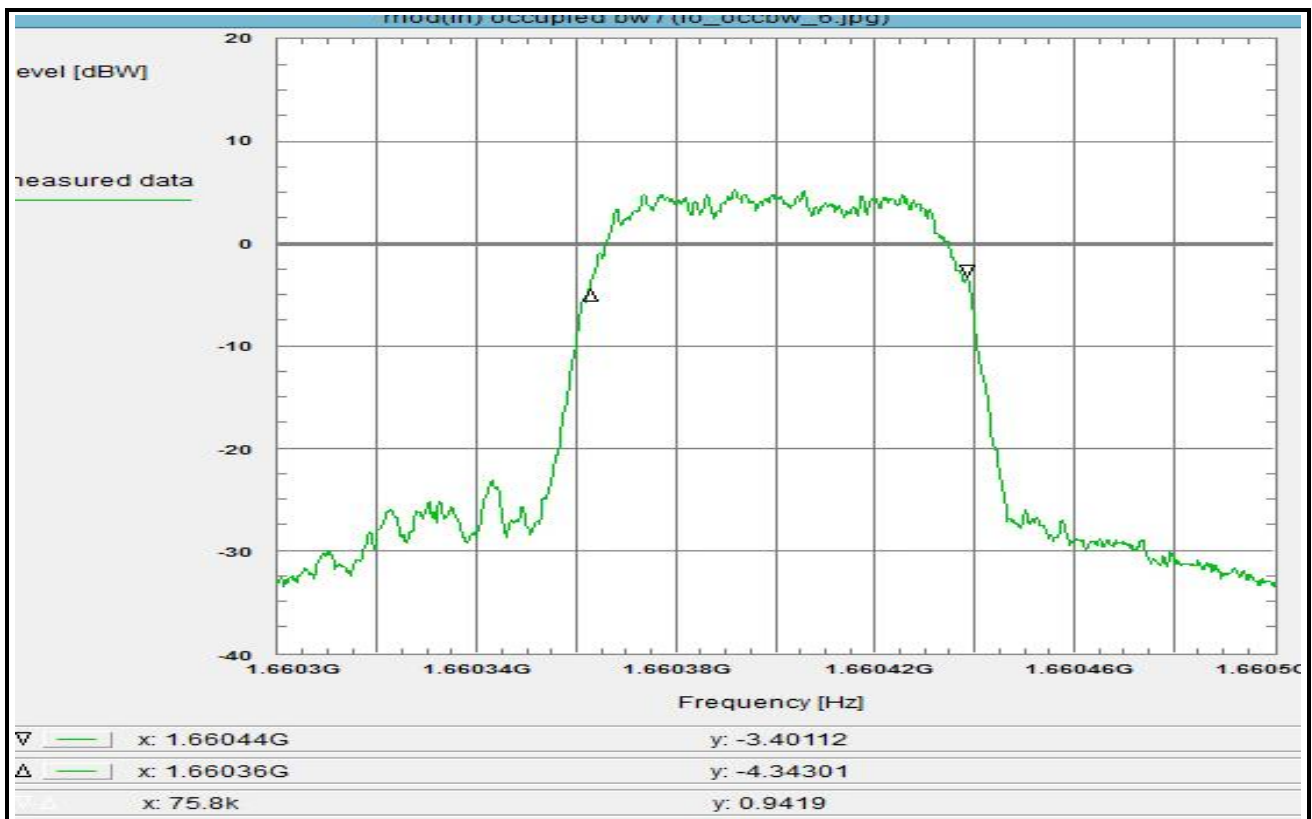
Correction:

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
 Attenuation (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. 24 (35)



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
SBU 405040A, fh, 16QAM, 84 kHz

Test setup:
see section 8.1: 1.2hgj

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

Remark:

Test result: Determination of the occupied bandwidth'

Environment condition:

Date & Time: Wed 08/Nov/2017 14:08:11
Location: CTC advanced GmbH, Laboratory RSC-Sat
Temperature: 22 °C
Humidity: 55 %
Voltage: 230 Vac

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

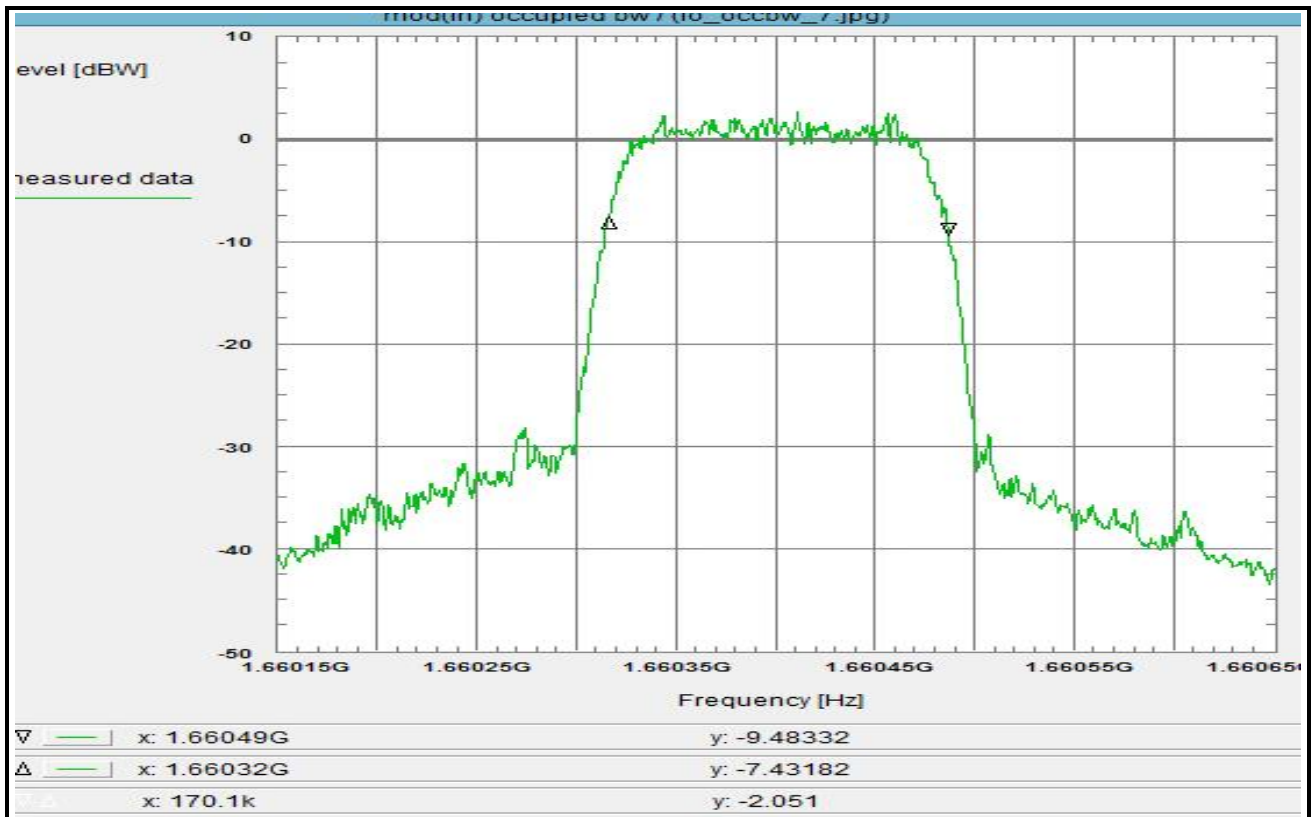
Correction:

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
Attenuation (U005)	+ 29.8 dB
TOTAL CORRECTION:	+ 30.6 dB

Remarks:

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

Plot No. 25 (35)



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
 SBU 405040A, fh, 16QAM, 189 kHz

Test setup:
 see section 8.1: 1.2hgj

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

Remark:

Test result: Determination of the occupied bandwidth'

Environment condition:

Date & Time: Wed 08/Nov/2017 15:02:58
 Location: CTC advanced GmbH, Laboratory RSC-Sat
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

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

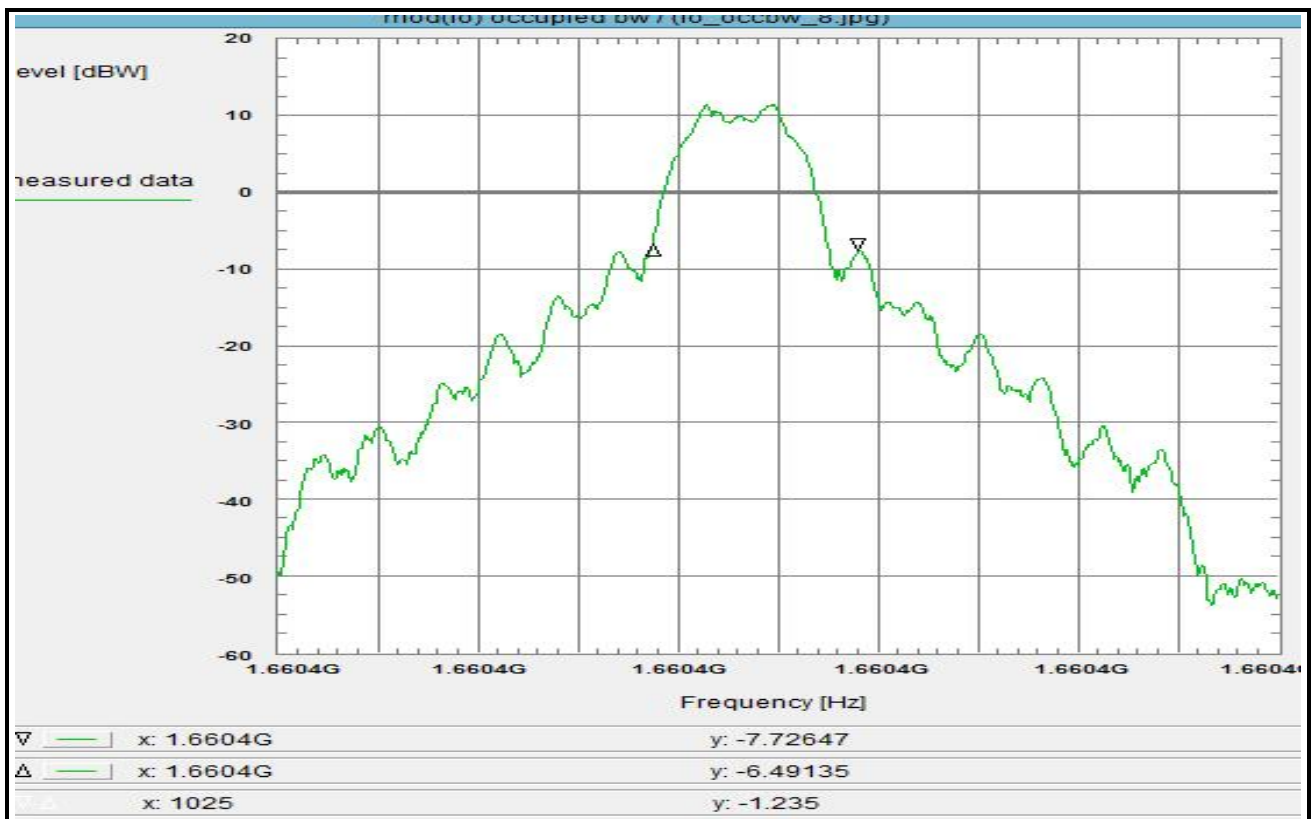
Correction:

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
Attenuation (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. 26 (35)



Subclause: -/- Function test
 Modulated rf-carrier at the upper edge of the band (fo)
 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
 SDU 405035A, RT, fh

Test setup:
 see section 8.1: 1.2hgj

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

Remark:

Test result: Determination of the occupied bandwidth'

Environment condition:

Date & Time: Wed 08/Nov/2017 16:12:29
 Location: CTC advanced GmbH, Laboratory RSC-Sat
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

Setup of measurement equipment:

Start frequency: 1.6603975 GHz
 Stop frequency: 1.6604025 GHz
 Center frequency: 1.6604 GHz
 Frequency span: 5 kHz
 Resolution-BW: 100 Hz
 Video-BW: 300 Hz
 Input attenuation: 5 dB
 Trace-Mode: Max-Hold
 Detector-Mode: AVG

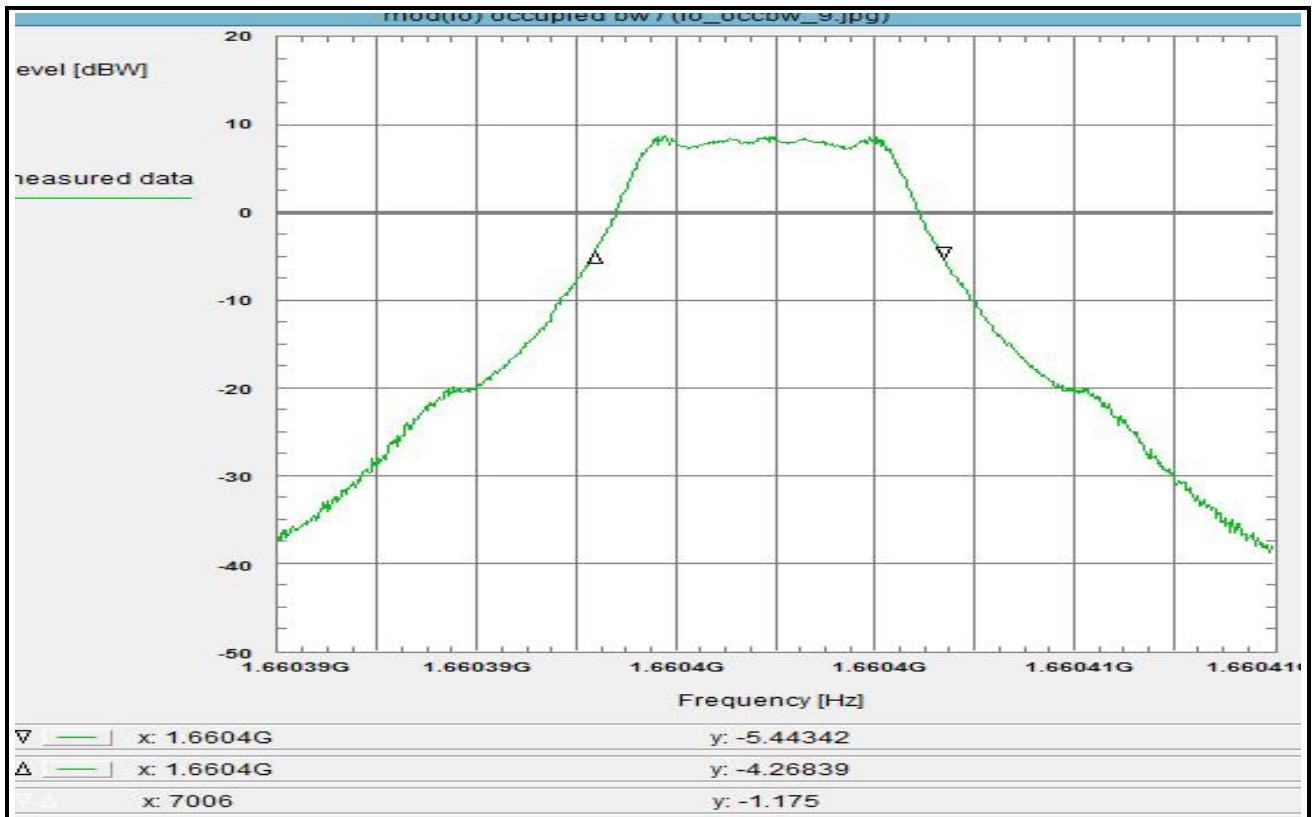
Correction:

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 (100 -> 3k) + 14.8 dB
 Atten. between HPA and feedhorn + 0.0 dB
 Attenuation (U005) + 29.8 dB
 TOTAL CORRECTION: + 45.4 dB

Remarks:

Determination of the 'occupied bandwidth' at fo:
 The measured value is about 1 kHz (delta marker)
 Measurement with 100 Hz resolution filter and noise averaging.

Plot No. 27 (35)



Subclause: -/- Function test
 Modulated rf-carrier at the upper edge of the band (fo)
 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
 SDU 405035A, C1, fh

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 15:00:52
 Location: CTC advanced GmbH, Laboratory RSC-Sat
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

Setup of measurement equipment:

Start frequency: 1.66039 GHz
 Stop frequency: 1.66041 GHz
 Center frequency: 1.6604 GHz
 Frequency span: 20 kHz
 Resolution-BW: 1 kHz
 Video-BW: 3 kHz
 Input attenuation: 5 dB
 Trace-Mode: Max-Hold
 Detector-Mode: Pos Peak

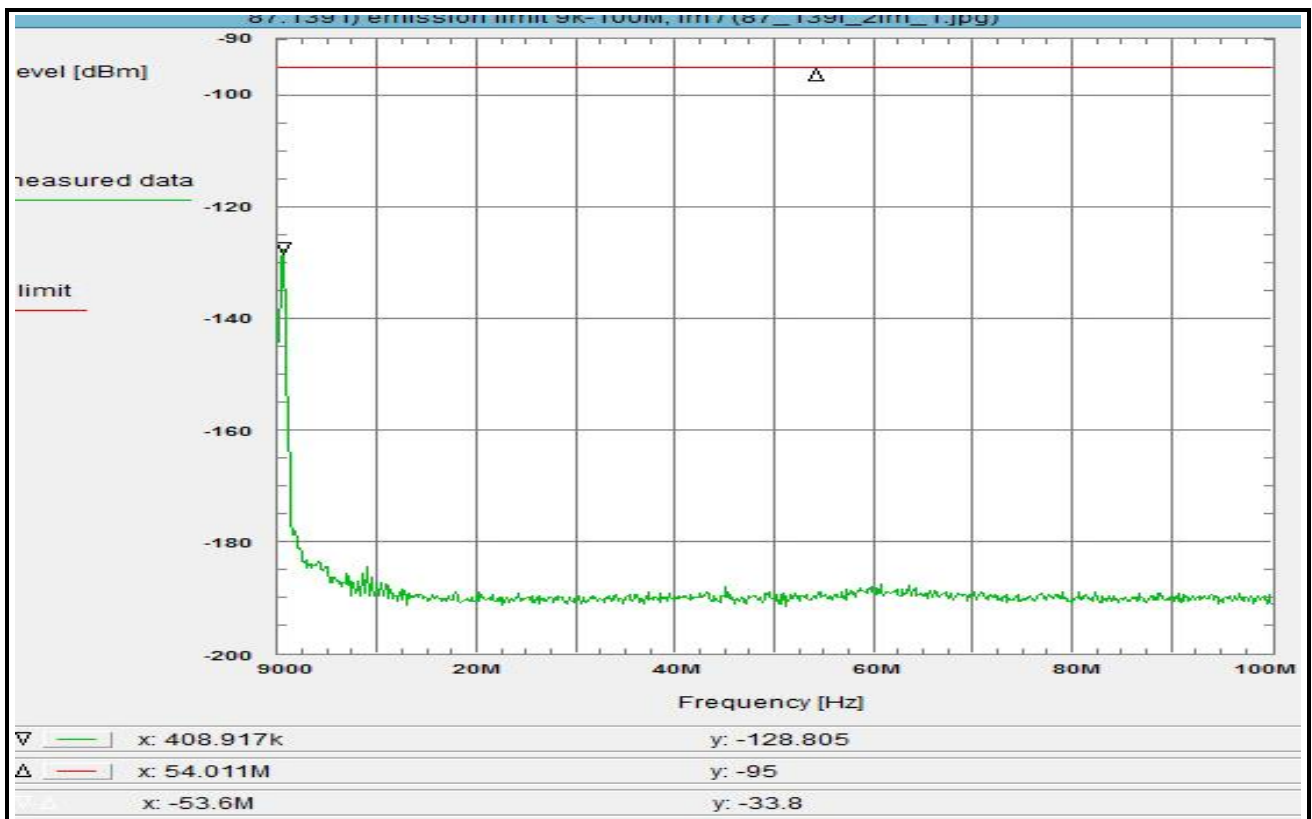
Correction:

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 7 kHz (delta marker)
 Measurement with 1 kHz resolution filter and noise averaging.

Plot No. 28 (35)



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
 A700, All modems active

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: Thu 09/Nov/2017 11:58:26
 Location: CTC advanced GmbH, Laboratory RSC-Sat
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

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: 30 kHz
 Input attenuation: 0 dB
 Trace-Mode: Clear Write
 Detector-Mode: RMS

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
Atten. between HPA and feedhorn	- 0.0 dB
Notch Filter & 10 dB Att (FCOB)	+ 8.6 dB
TOTAL CORRECTION:	- -70.0 dB

Remarks:

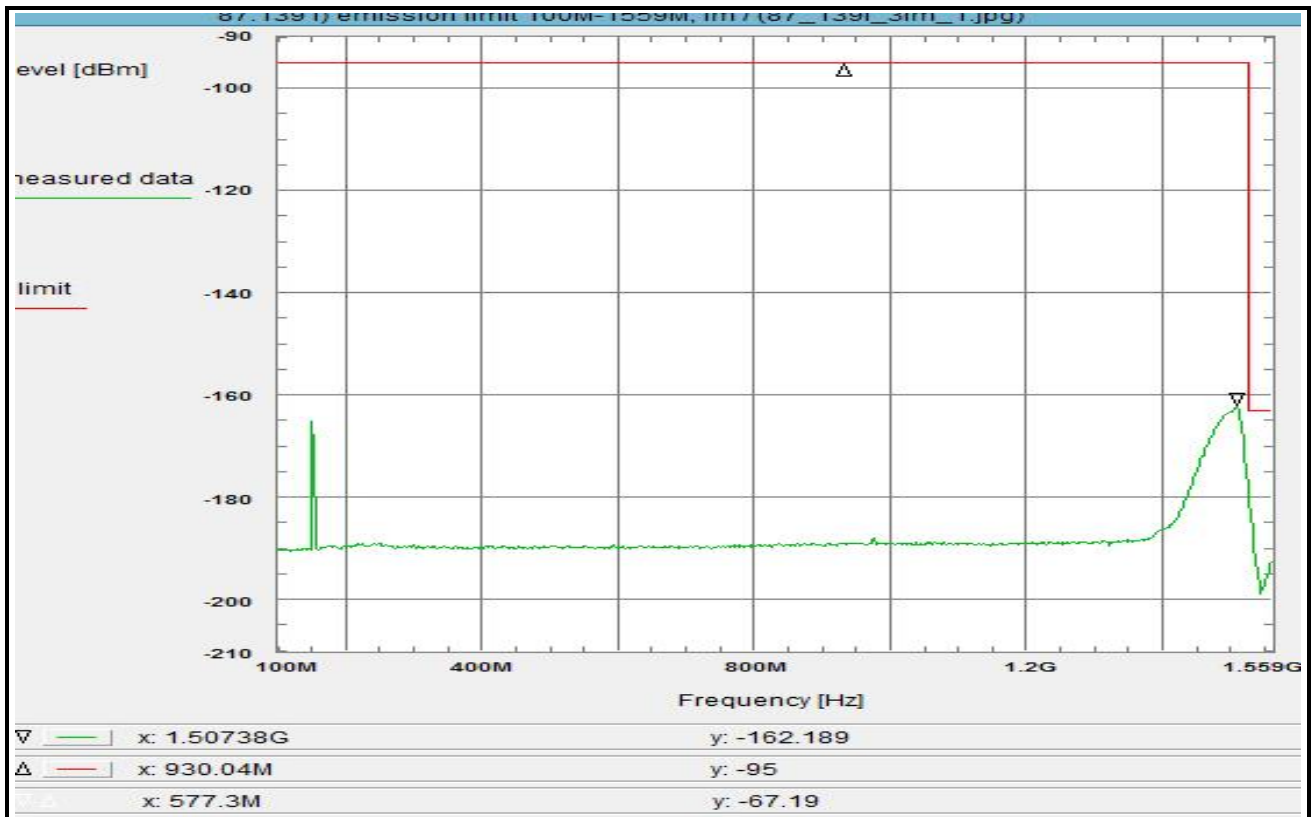
Carrier-on state / Carrier in the middle of the band (fm)

For EIRP calculation:

'worst-case' = maximum antenna gain

Marker shows the zero line of the Spectrum Analyzer

Plot No. 29 (35)



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
 A700, All modems active

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: Thu 09/Nov/2017 12:02:45
 Location: CTC advanced GmbH, Laboratory RSC-Sat
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

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: 30 kHz
 Input attenuation: 0 dB
 Trace-Mode: Clear Write
 Detector-Mode: RMS

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
 Atten. between HPA and feedhorn - 0.0 dB
 (FCOB) + 8.8 dB
 TOTAL CORRECTION: - 91.6 dB

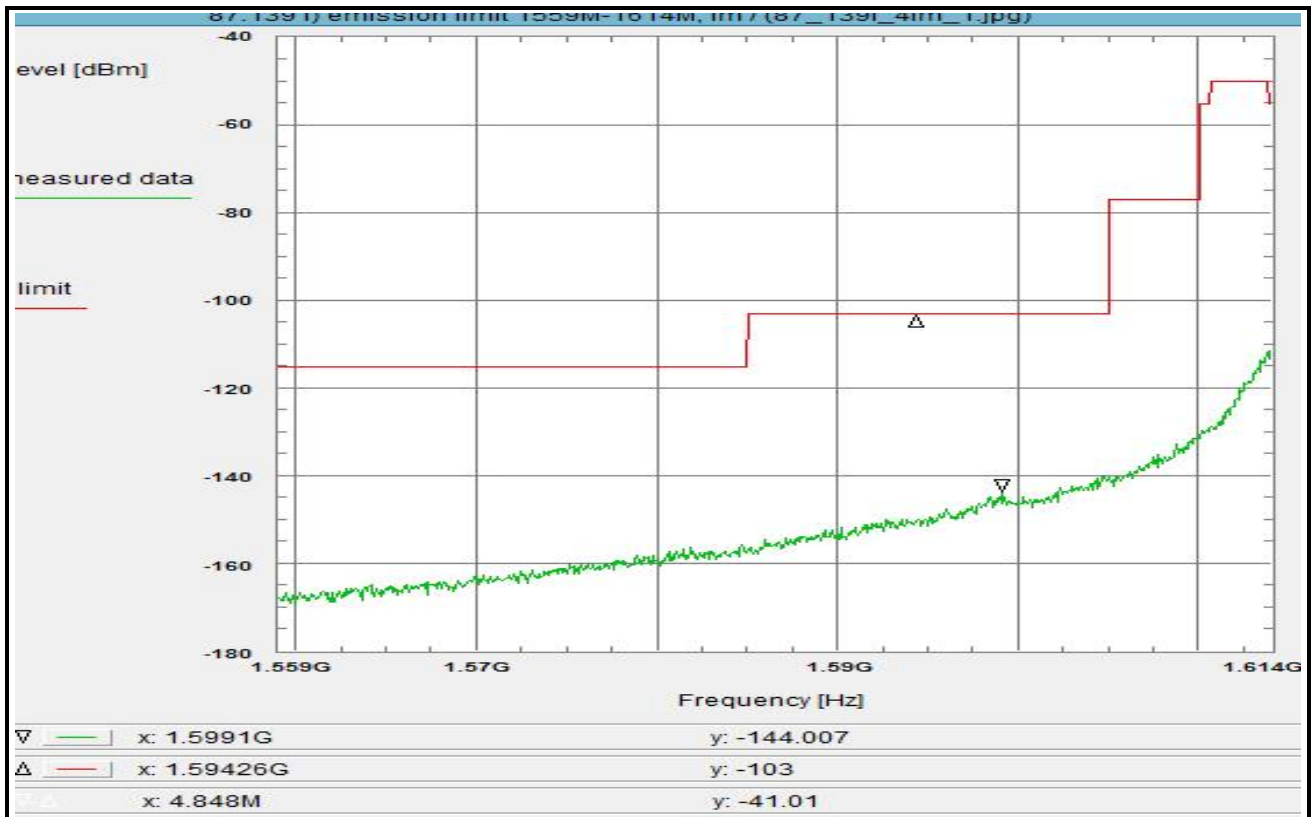
Remarks:

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

For EIRP calculation:

'worst-case' = maximum antenna gain

Plot No. 30 (35)



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
 A700, All modems active

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: Thu 09/Nov/2017 12:04:03
 Location: CTC advanced GmbH, Laboratory RSC-Sat
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

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: 30 kHz
 Input attenuation: 0 dB
 Trace-Mode: Clear Write
 Detector-Mode: RMS

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
 Atten. between HPA and feedhorn - 0.0 dB
 (FCOB) + 14.6 dB
 TOTAL CORRECTION: - 36.4 dB

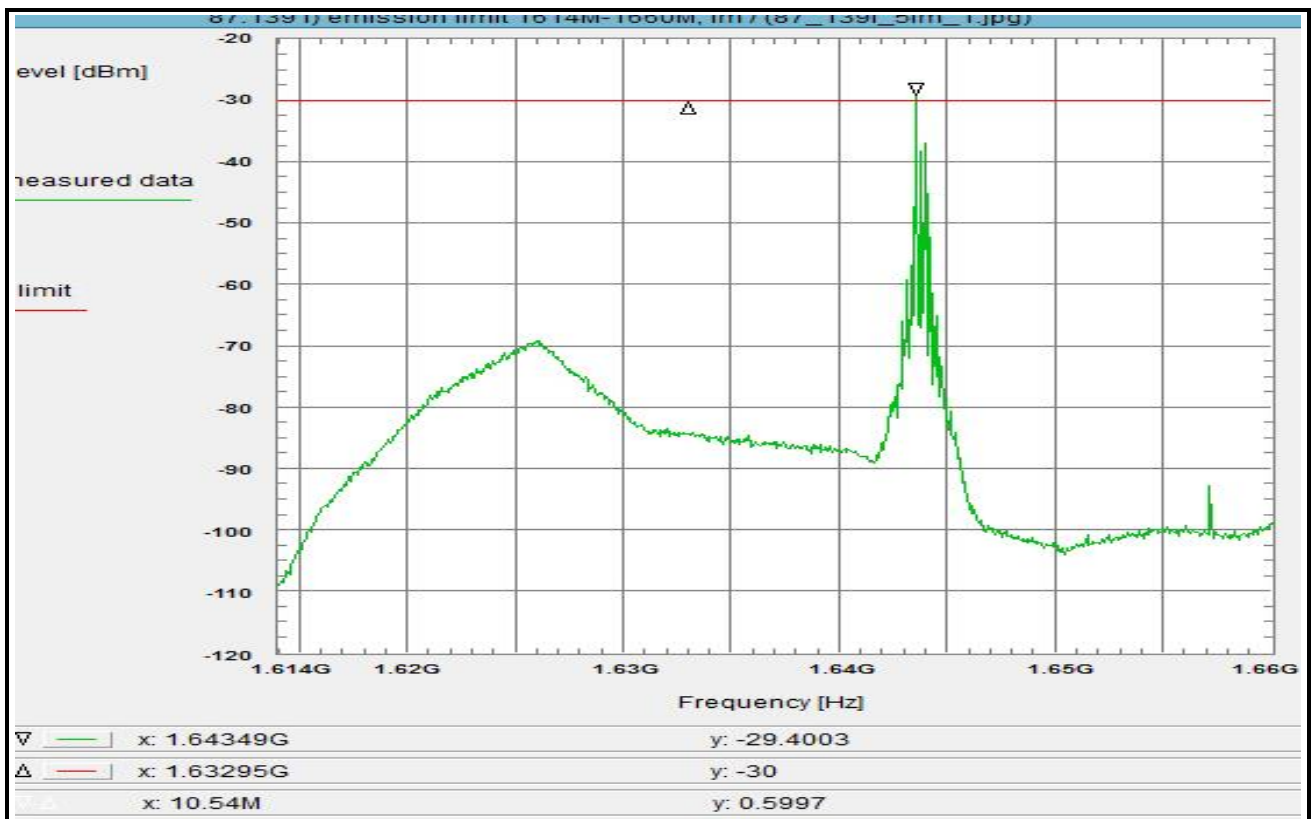
Remarks:

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

For EIRP calculation:

'worst-case' = maximum antenna gain

Plot No. 31 (35)



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
 A700, All modems active

Test setup:

see section 8.1: 1.2hgl

Test equipment:

see annex 2: C218, FCOB, R001, WDLN

Remark:

Test result: Test passed (Wanted signal)

Environment condition:

Date & Time: Thu 09/Nov/2017 13:09:33
 Location: CTC advanced GmbH, Laboratory RSC-Sat
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

Setup of measurement equipment:

Start frequency: 1.614 GHz
 Stop frequency: 1.66 GHz
 Center frequency: 1.637 GHz
 Frequency span: 46 MHz
 Resolution-BW: 3 kHz
 Video-BW: 10 kHz
 Input attenuation: 25 dB
 Trace-Mode: Clear Write
 Detector-Mode: AVG

Correction:

Directional coupler (WDLN) - 16.3 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
 Atten. between HPA and feedhorn - 0.0 dB
 (FCOB) + 58.3 dB
 TOTAL CORRECTION: + 44.0 dB

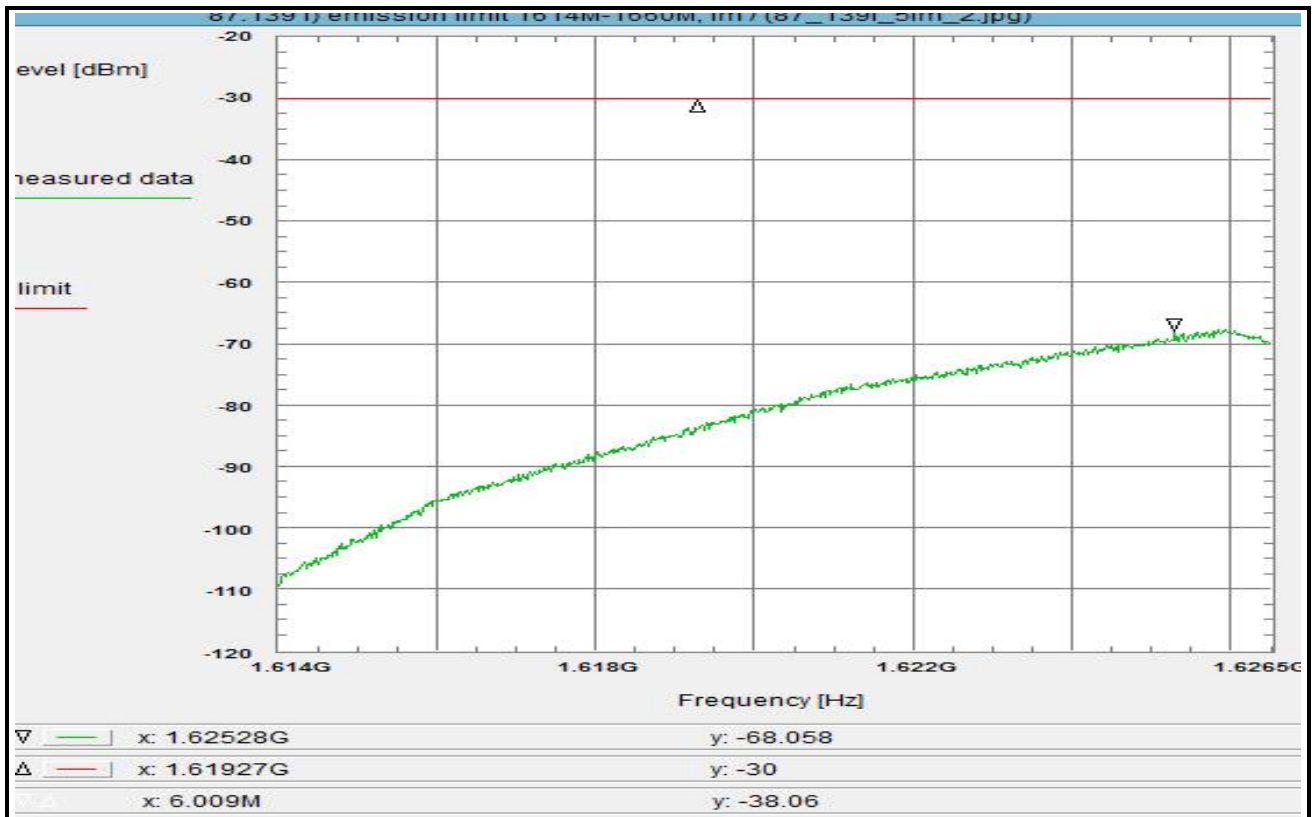
Remarks:

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

For EIRP calculation:

'worst-case' = maximum antenna gain

Plot No. 32 (35)



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
 A700, All modems active

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: Thu 09/Nov/2017 13:11:36
 Location: CTC advanced GmbH, Laboratory RSC-Sat
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

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: 25 dB
 Trace-Mode: Clear Write
 Detector-Mode: RMS

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
 Atten. between HPA and feedhorn - 0.0 dB
 (FCOB) + 75.4 dB
 TOTAL CORRECTION: + 57.2 dB

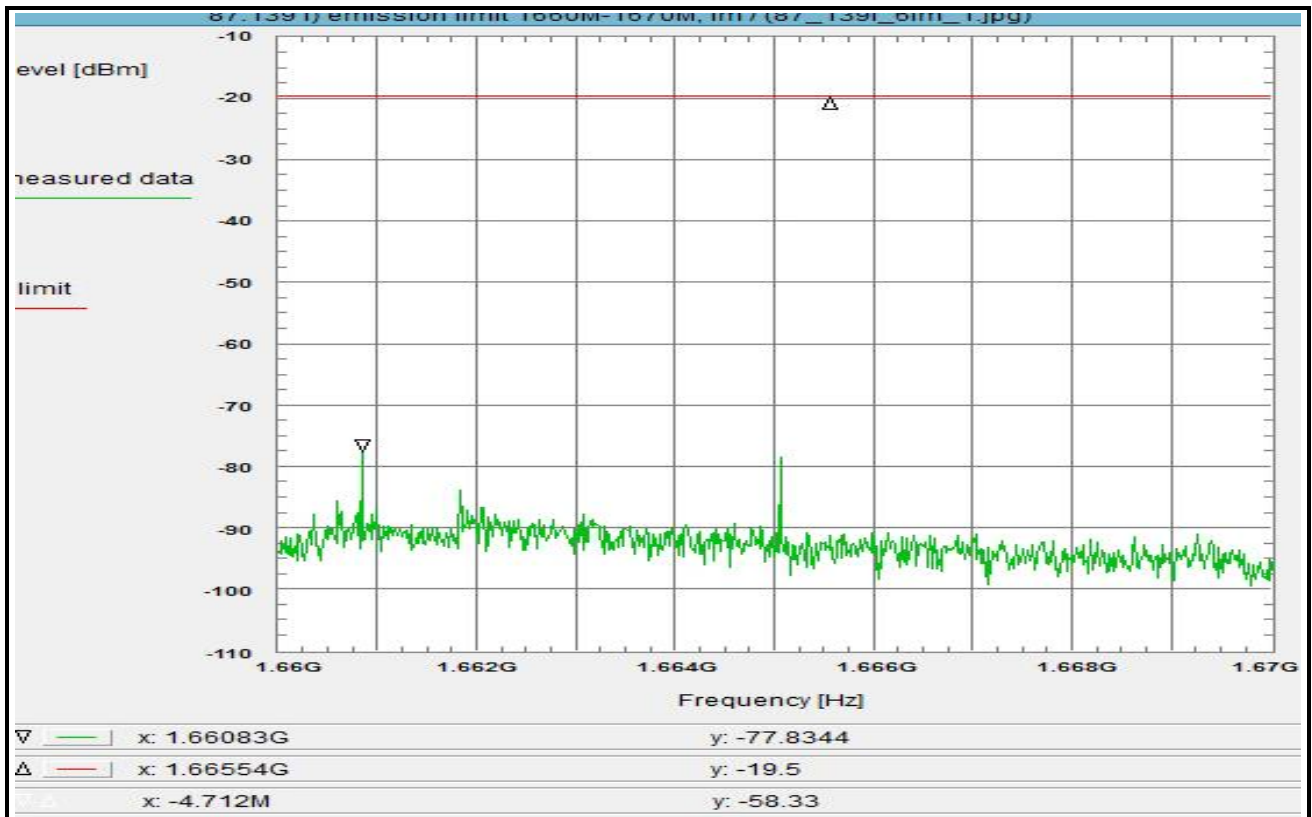
Remarks:

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

For EIRP calculation:

'worst-case' = maximum antenna gain

Plot No. 33 (35)



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
 A700, All modems active

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: Thu 09/Nov/2017 12:08:43
 Location: CTC advanced GmbH, Laboratory RSC-Sat
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

Setup of measurement equipment:

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

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
Atten. between HPA and feedhorn	- 0.0 dB
(FCOB)	+ 24.1 dB
TOTAL CORRECTION:	+ 32.3 dB

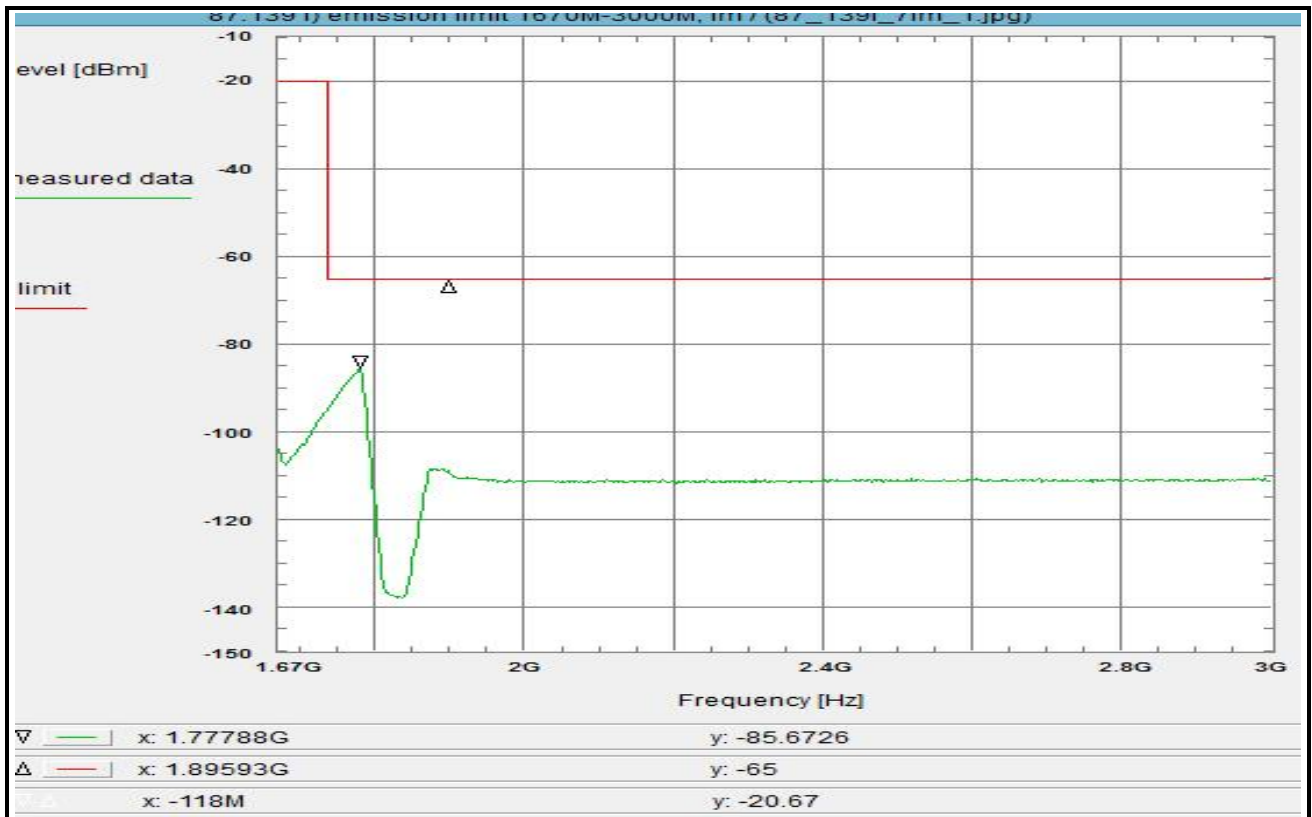
Remarks:

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

For EIRP calculation:

'worst-case' = maximum antenna gain

Plot No. 34 (35)



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
 A700, All modems active

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: Thu 09/Nov/2017 12:11:51
 Location: CTC advanced GmbH, Laboratory RSC-Sat
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

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: 30 kHz
 Input attenuation: 0 dB
 Trace-Mode: Clear Write
 Detector-Mode: RMS

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
 Atten. between HPA and feedhorn - 0.0 dB
 (FCOB) + 9.1 dB
 TOTAL CORRECTION: - 18.9 dB

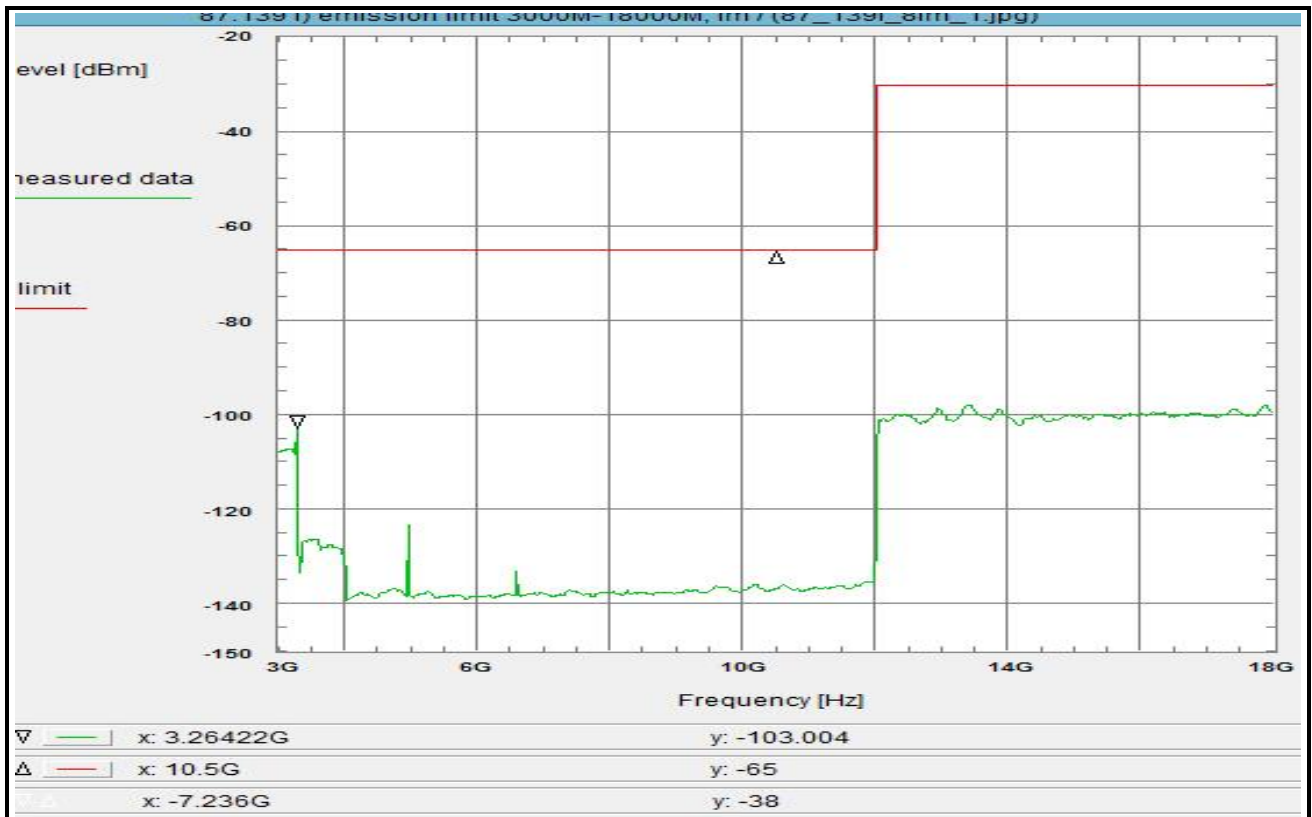
Remarks:

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

For EIRP calculation:

'worst-case' = maximum antenna gain

Plot No. 35 (35)



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
 A700, All modems active

Test setup:

see section 8.1: 1.2hgl

Test equipment:

see annex 2: C218, FCOB, FHPF, R001, U214, WDLN

Remark:

Test result: Test passed

Environment condition:

Date & Time: Thu 09/Nov/2017 14:26:20
 Location: CTC advanced GmbH, Laboratory RSC-Sat
 Temperature: 22 °C
 Humidity: 55 %
 Voltage: 230 Vac

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: 100 kHz
 Input attenuation: 25 dB
 Trace-Mode: Clear Write
 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
 Atten. between HPA and feedhorn - 0.0 dB
 (FHPF) + 0.7 dB
 TOTAL CORRECTION: - 36.3 dB

Remarks:

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

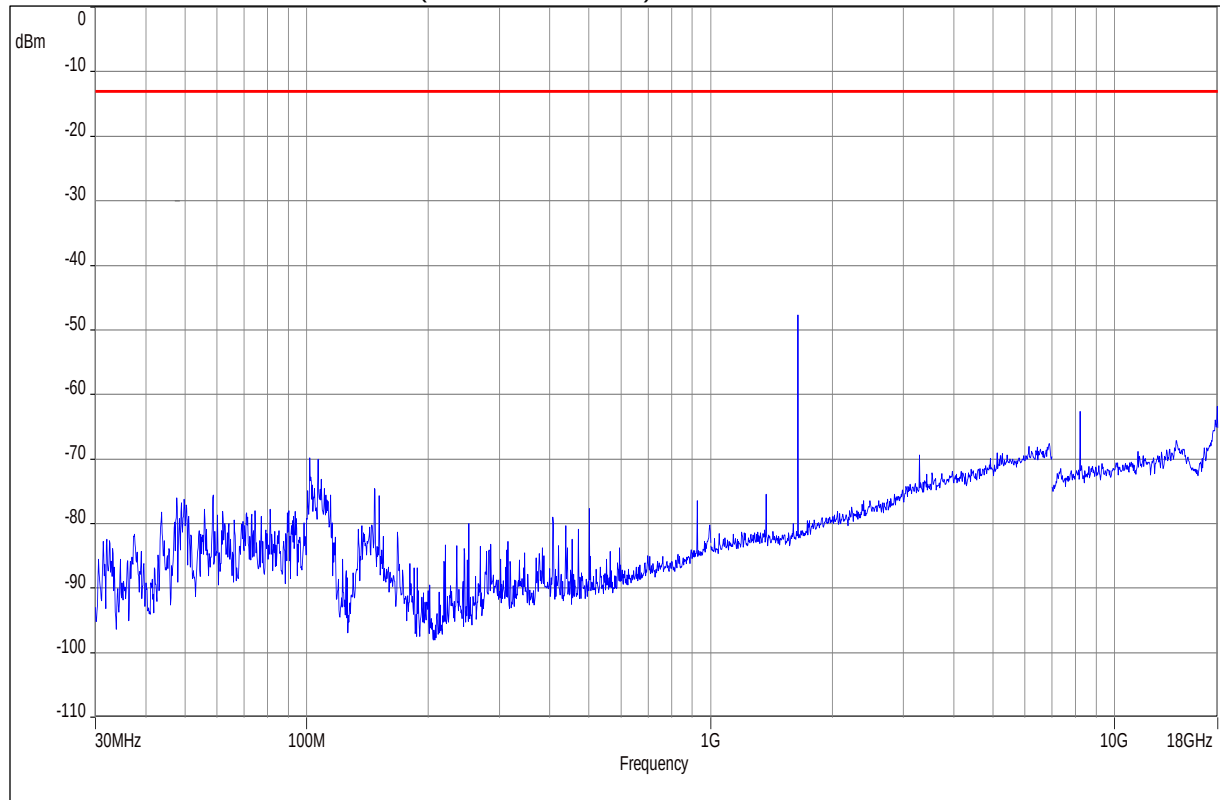
For EIRP calculation:

'worst-case' = maximum antenna gain

3 Measurement results, Spurious emissions 30MHz - 18 GHz

This part 3 consists of 2 pages including this page.

Plot No. 1: antenna vertical / horizontal (All modems active)



4 Measurement results, FCC Part 15B

This part 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	2018-06-21