Annex D

CTC advanced member of RWTÜV group

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Test report annex authorized:

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Lab Manager
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2 Measurement results, FCC Part 87 and FCC Part 25

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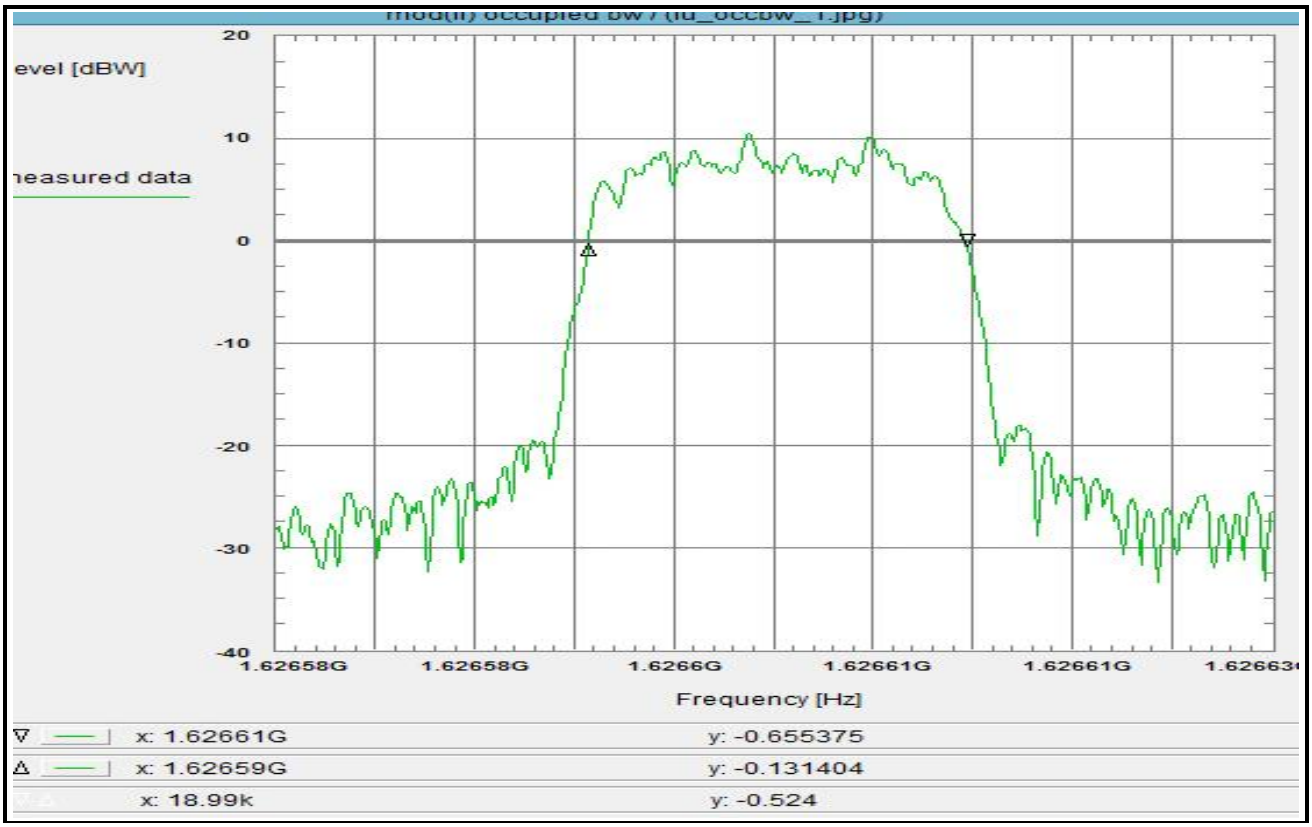
Plot No. 1 (50)



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
A200/A300/A350, fl, 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:

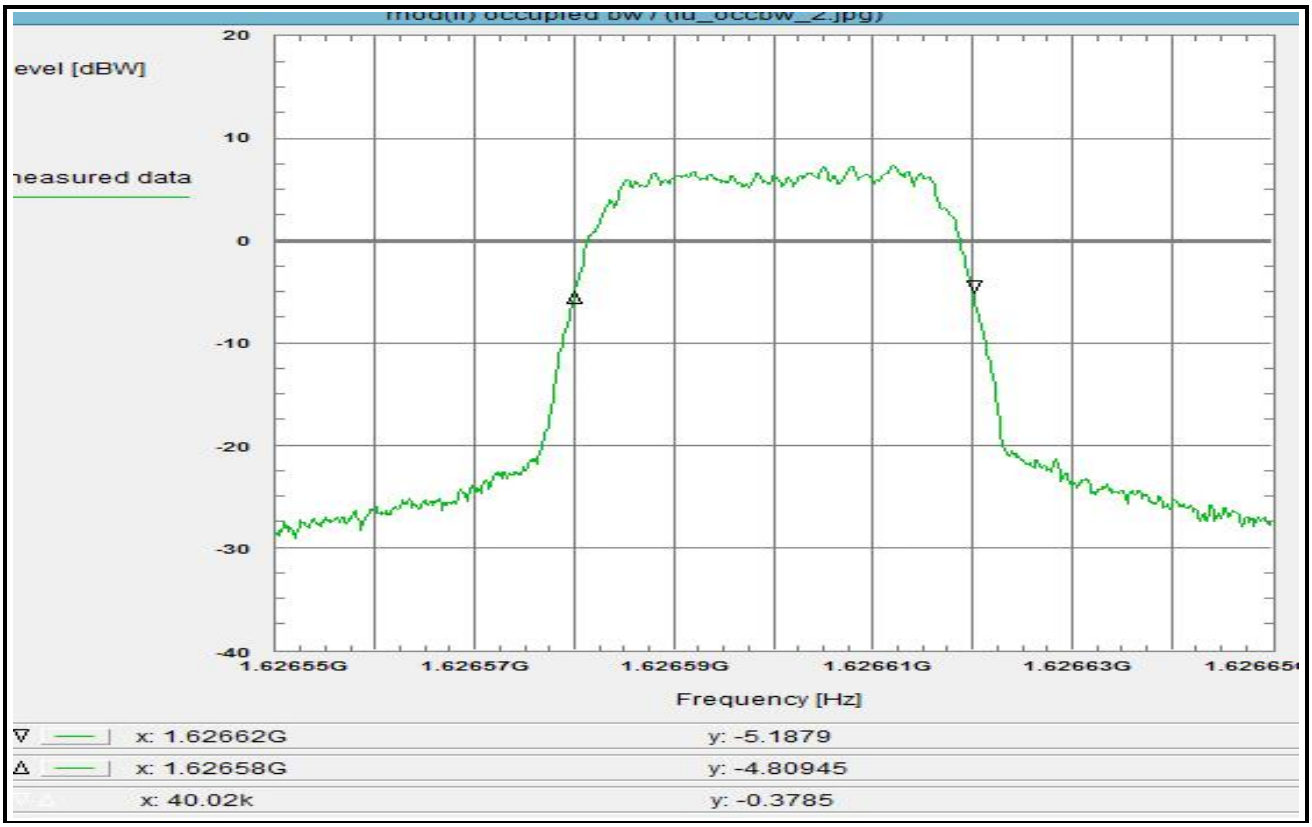
Start frequency:	1.626575	GHz
Stop frequency:	1.626625	GHz
Center frequency:	1.6266	GHz
Frequency span:	50	kHz
Resolution-BW:	1	kHz
Video-BW:	3	kHz
Input attenuation:	5	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	Pos Peak	

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 (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
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: **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:

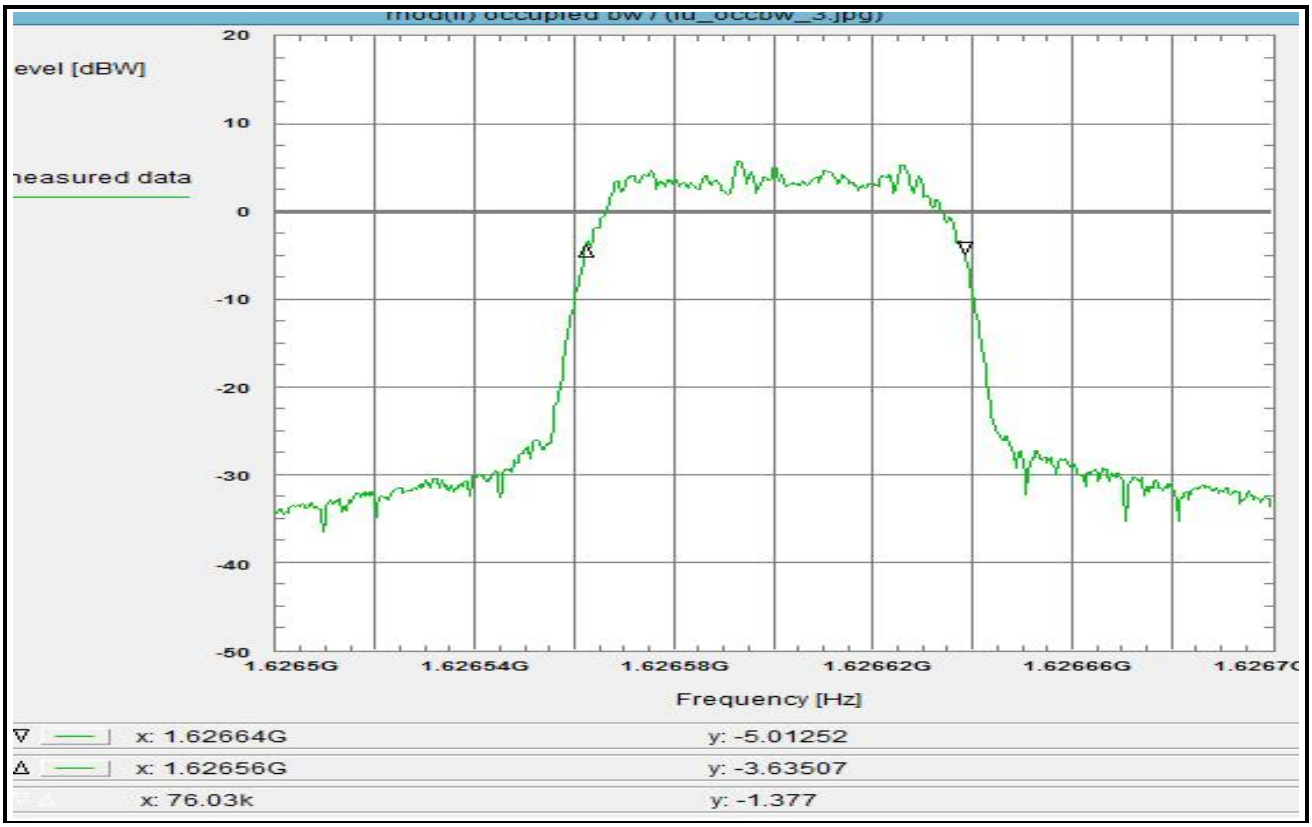
Start frequency:	1.62655	GHz
Stop frequency:	1.62665	GHz
Center frequency:	1.6266	GHz
Frequency span:	100	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	5	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

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 (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
A200/A300/A350, fl, 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:

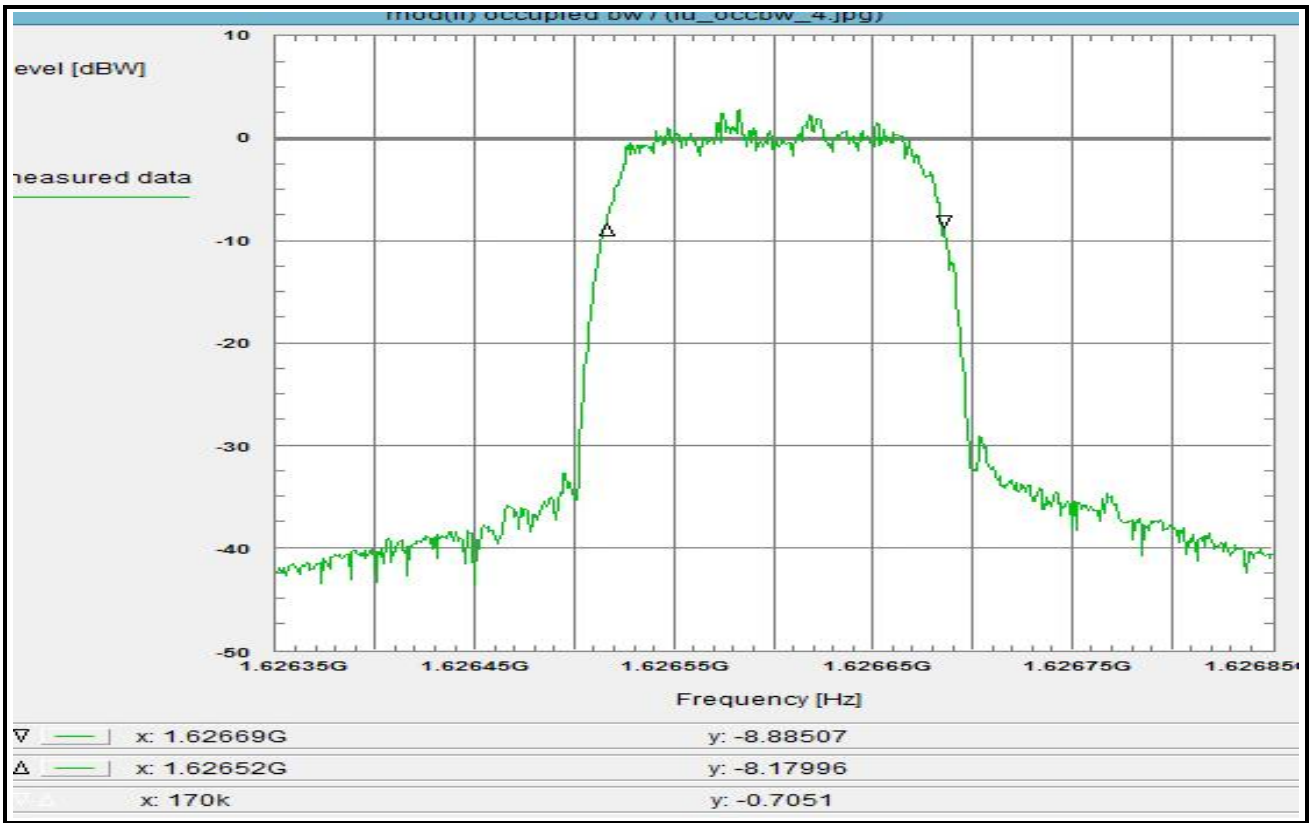
Start frequency:	1.6265	GHz
Stop frequency:	1.6267	GHz
Center frequency:	1.6266	GHz
Frequency span:	200	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	5	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	Pos Peak	

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 (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
A200/A300/A350, fl, 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:

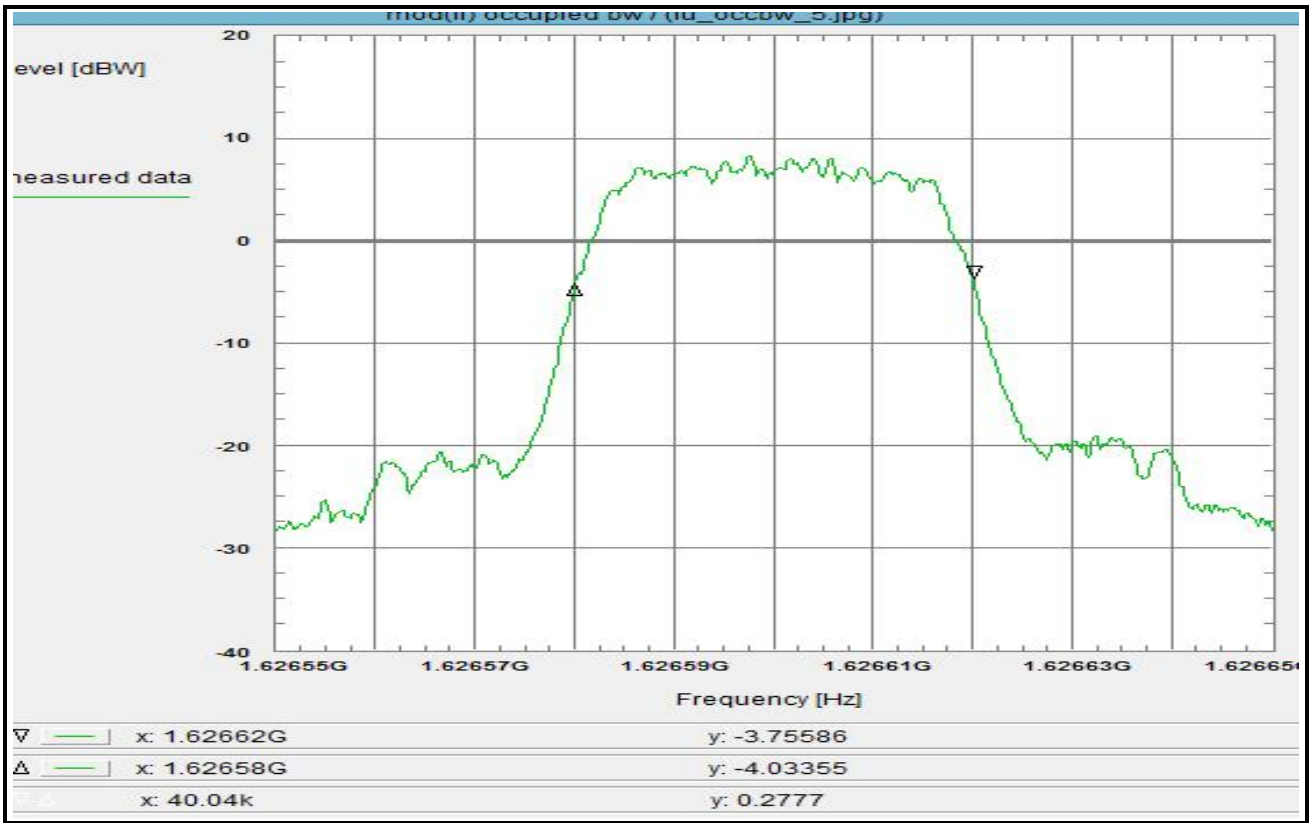
Start frequency:	1.62635	GHz
Stop frequency:	1.62685	GHz
Center frequency:	1.6266	GHz
Frequency span:	500	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	5	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	Pos Peak	

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 (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
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:

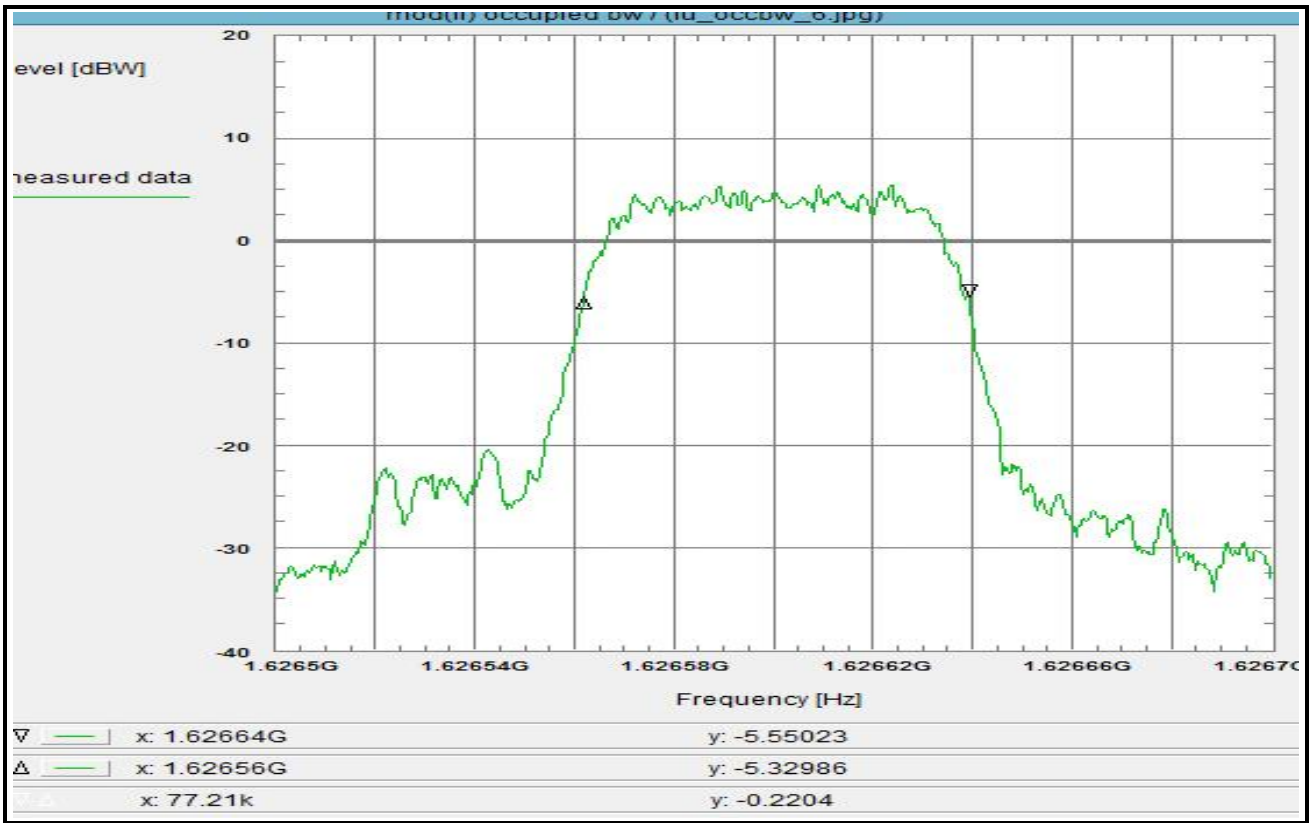
Start frequency:	1.62655	GHz
Stop frequency:	1.62665	GHz
Center frequency:	1.6266	GHz
Frequency span:	100	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	5	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	Pos Peak	

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 (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
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:

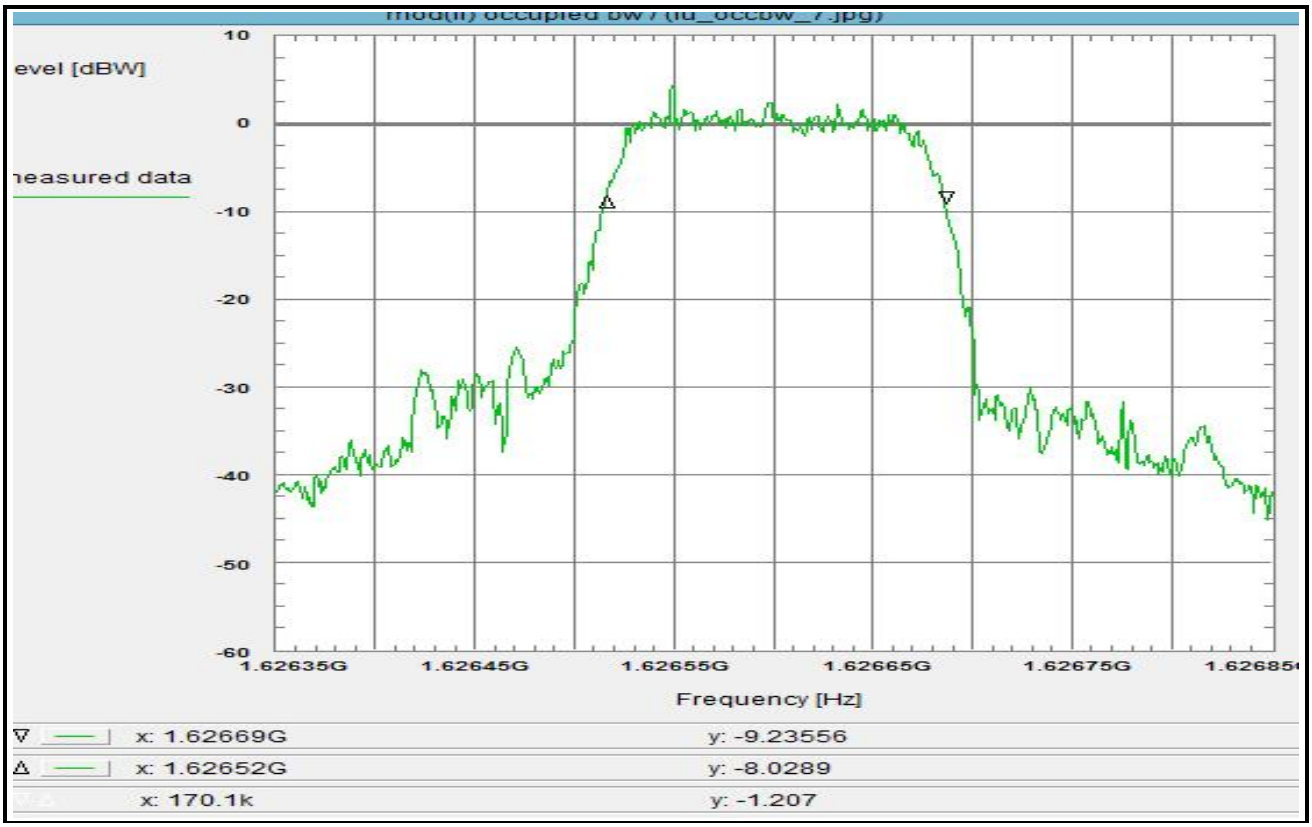
Start frequency:	1.6265	GHz
Stop frequency:	1.6267	GHz
Center frequency:	1.6266	GHz
Frequency span:	200	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	5	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	Pos Peak	

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 (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
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:

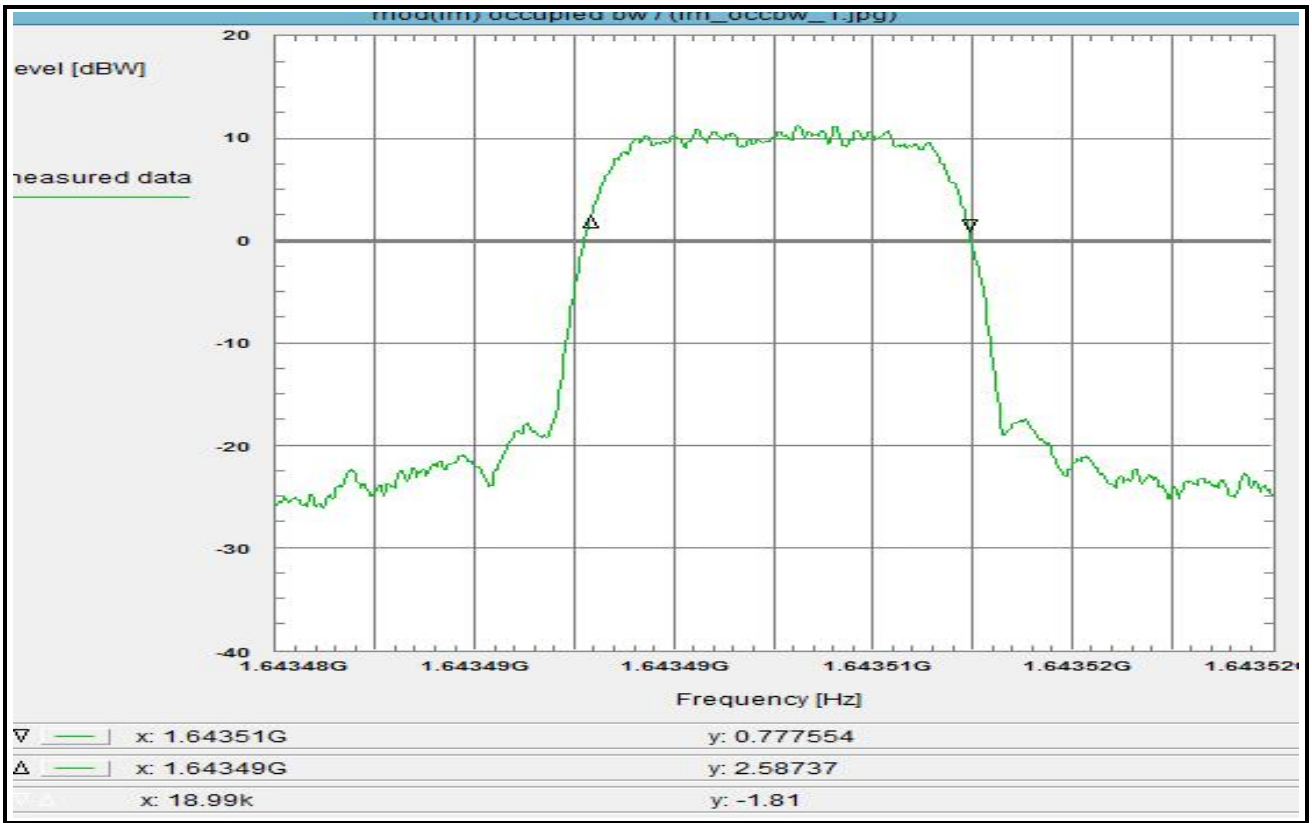
Start frequency:	1.62635	GHz
Stop frequency:	1.62685	GHz
Center frequency:	1.6266	GHz
Frequency span:	500	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	5	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	Pos Peak	

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:

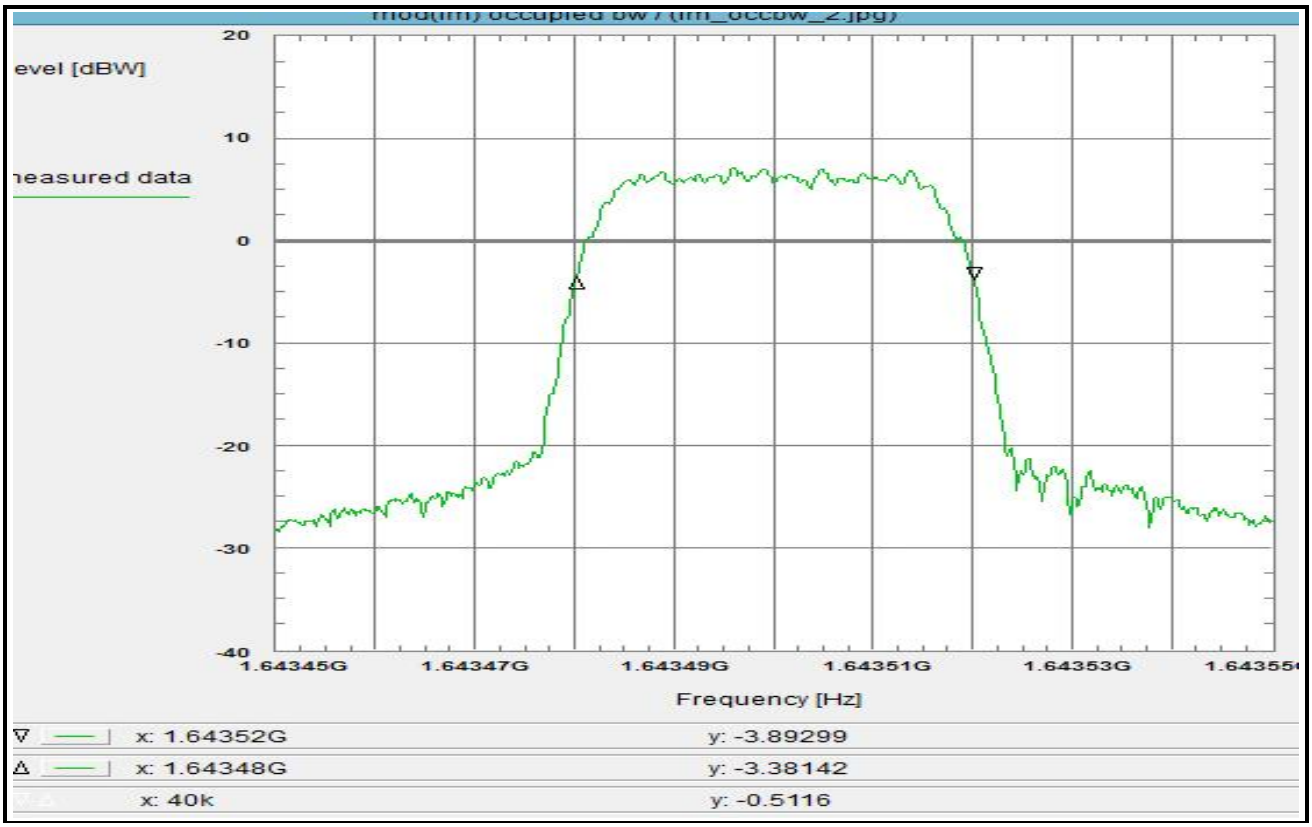
Start frequency:	1.643475	GHz
Stop frequency:	1.643525	GHz
Center frequency:	1.6435	GHz
Frequency span:	50	kHz
Resolution-BW:	1	kHz
Video-BW:	3	kHz
Input attenuation:	5	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	Pos Peak	

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:

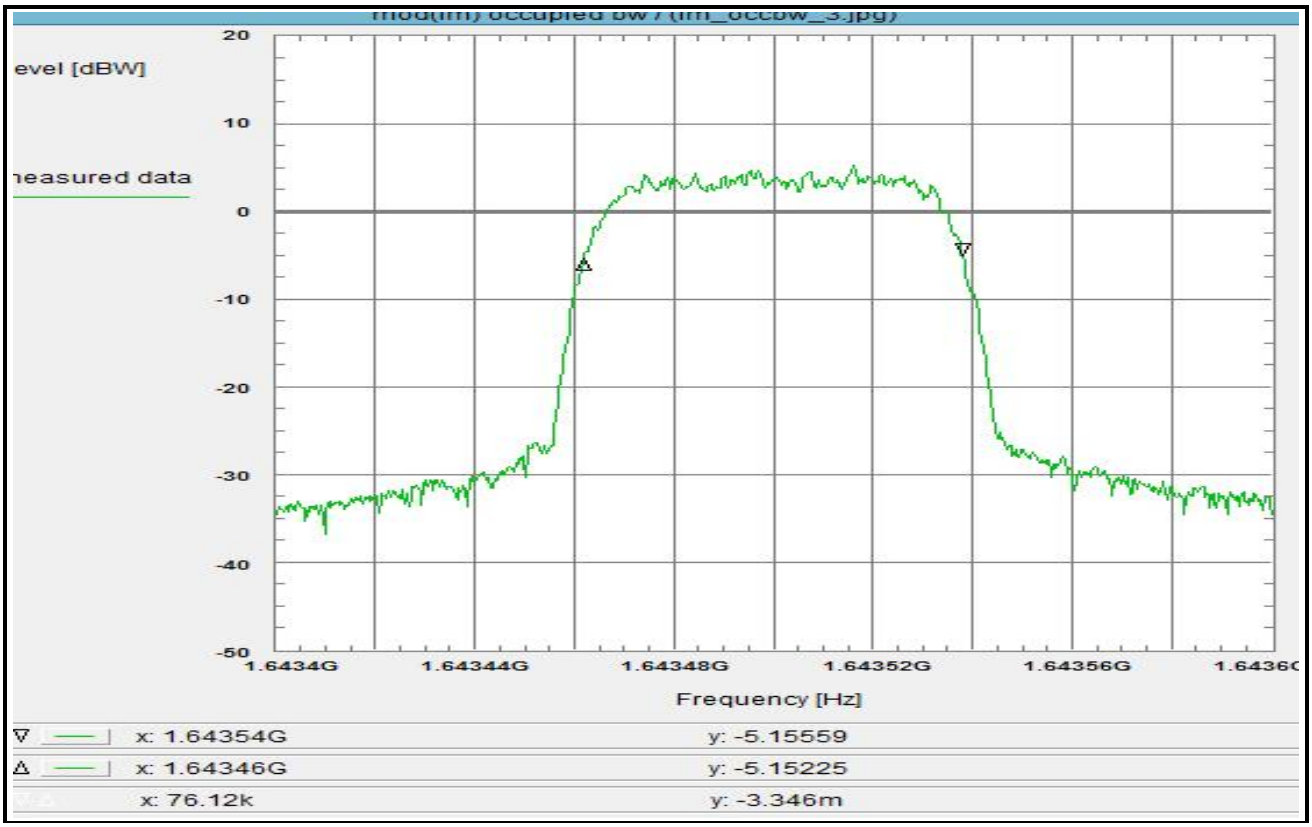
Start frequency:	1.64345	GHz
Stop frequency:	1.64355	GHz
Center frequency:	1.6435	GHz
Frequency span:	100	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	5	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	Pos Peak	

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:

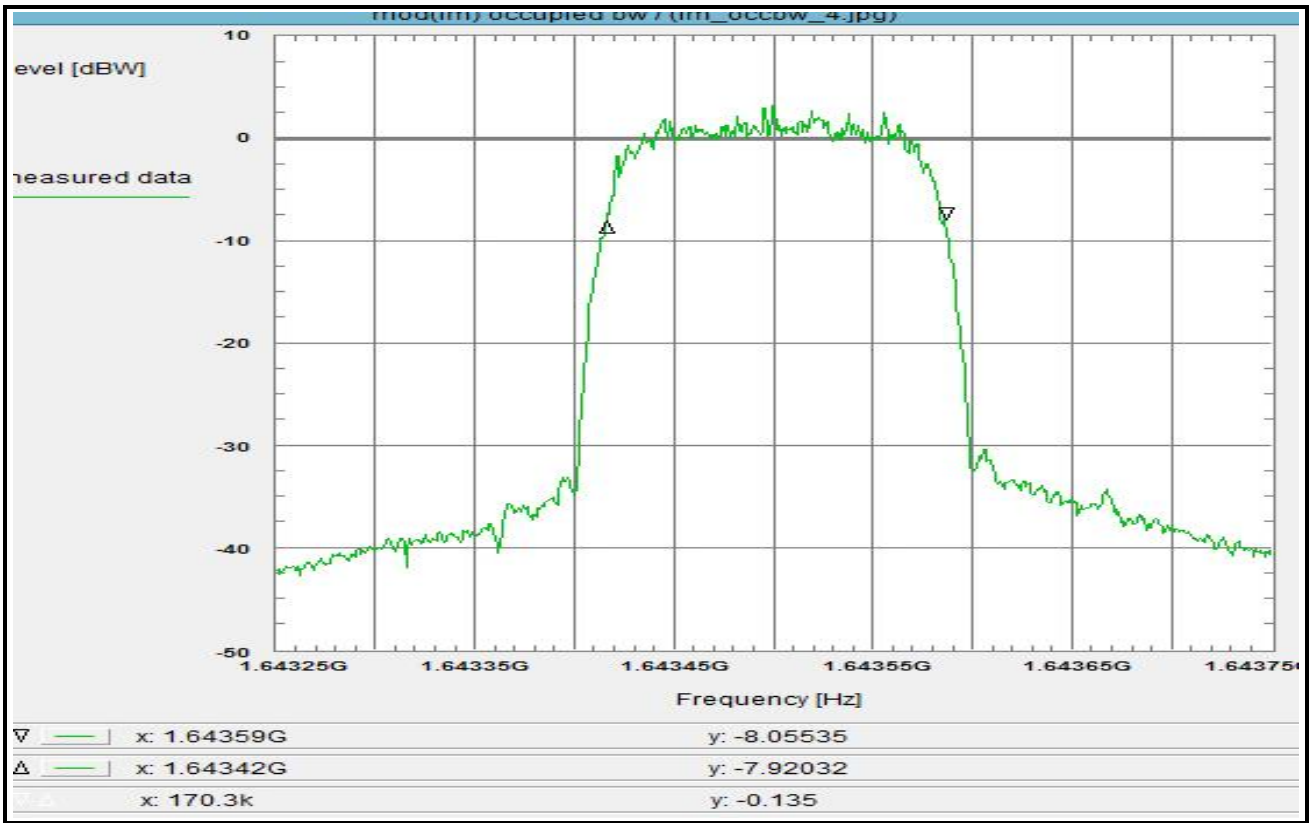
Start frequency:	1.6434	GHz
Stop frequency:	1.6436	GHz
Center frequency:	1.6435	GHz
Frequency span:	200	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	5	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

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:

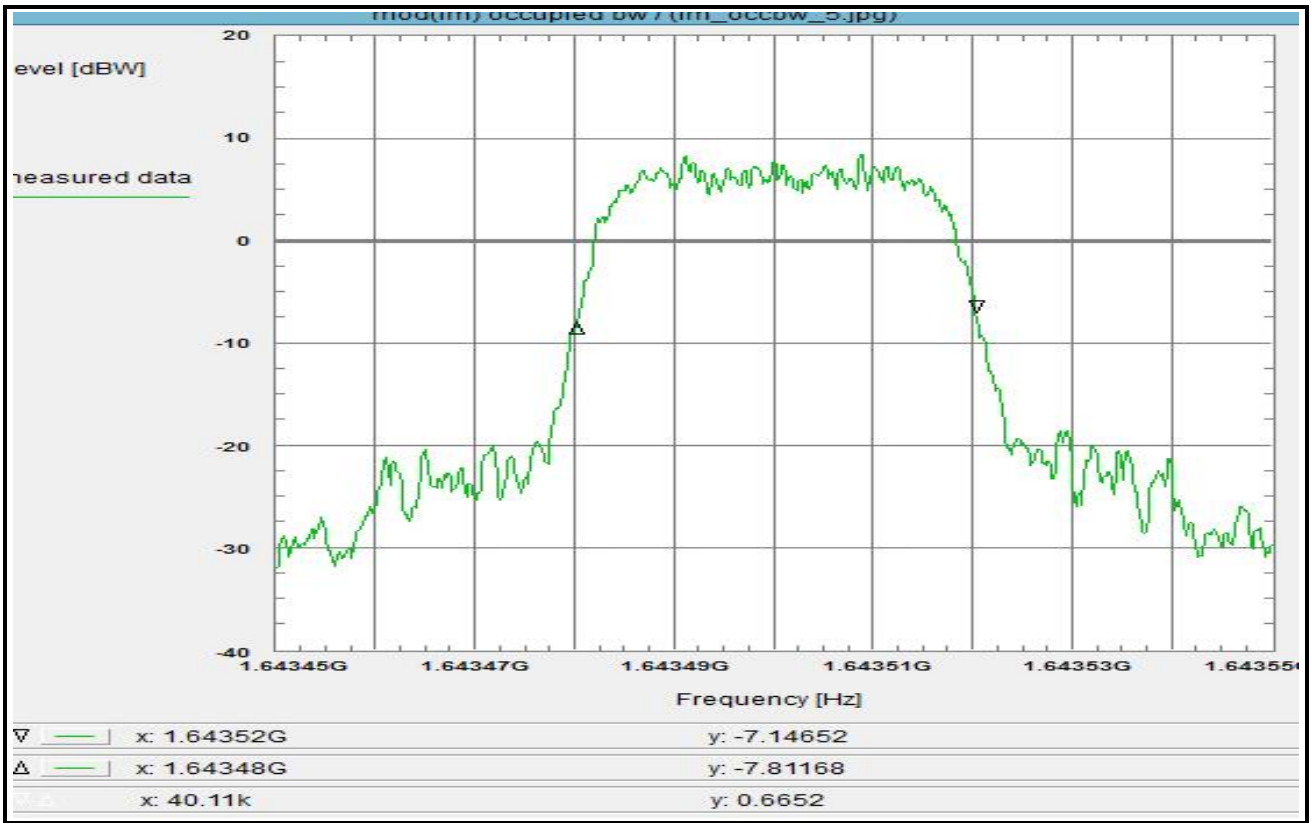
Start frequency:	1.64325	GHz
Stop frequency:	1.64375	GHz
Center frequency:	1.6435	GHz
Frequency span:	500	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	5	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	Pos Peak	

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:

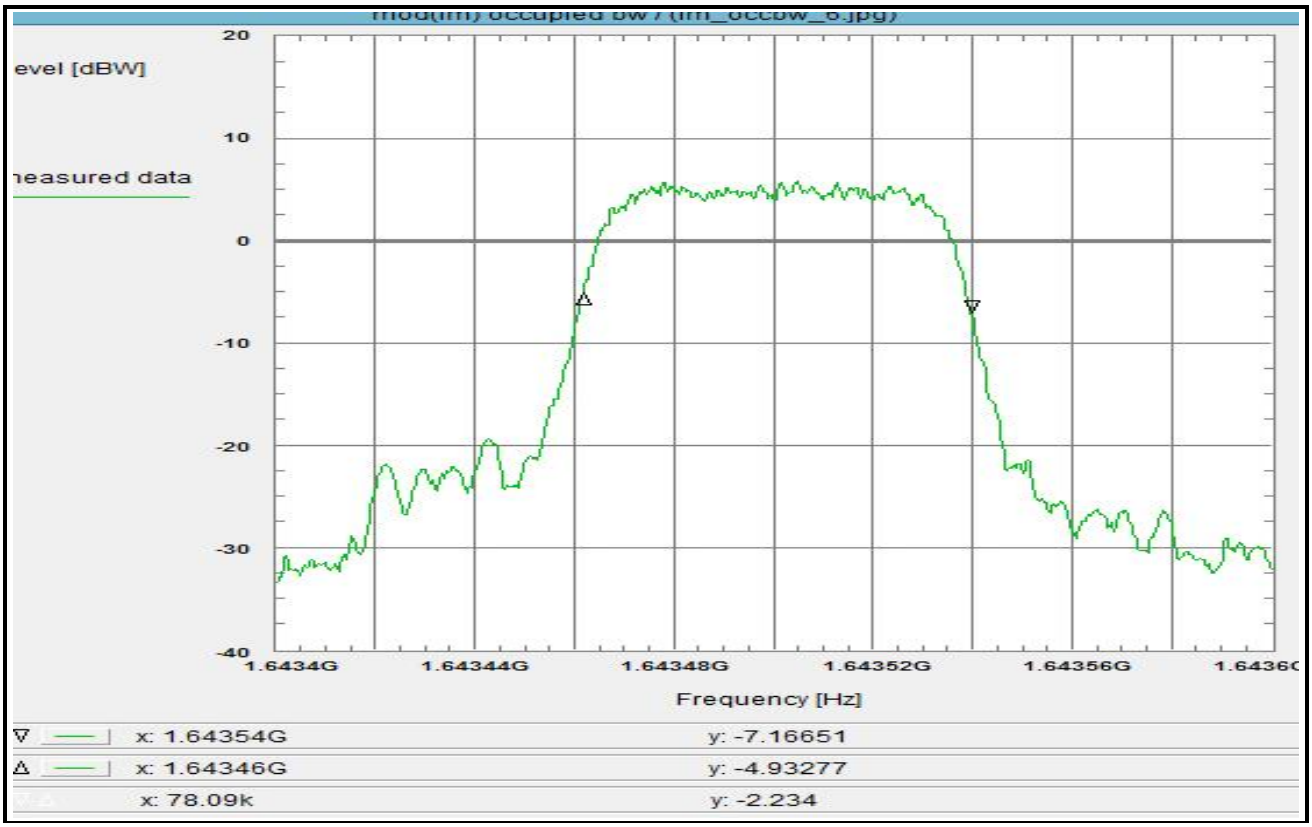
Start frequency:	1.64345	GHz
Stop frequency:	1.64355	GHz
Center frequency:	1.6435	GHz
Frequency span:	100	kHz
Resolution-BW:	1	kHz
Video-BW:	3	kHz
Input attenuation:	5	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	Pos Peak	

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:

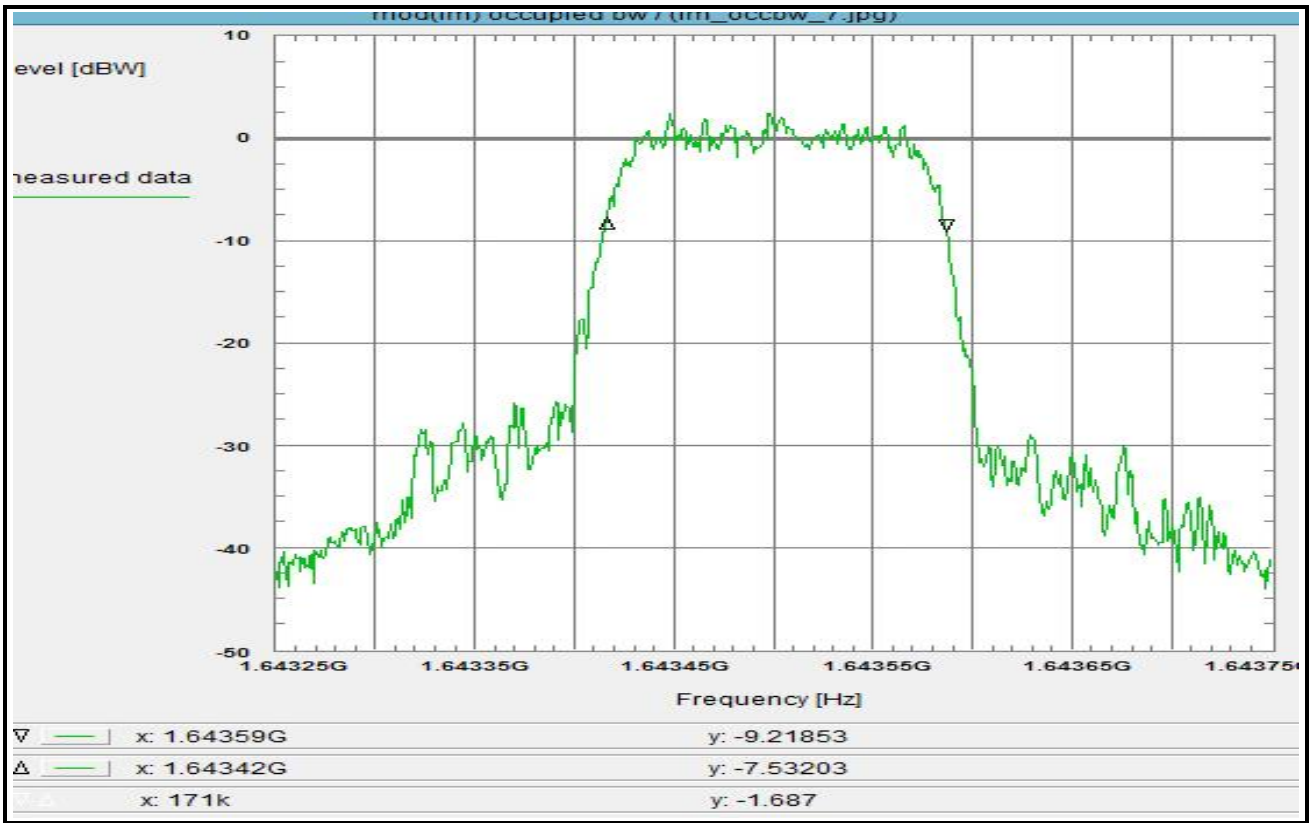
Start frequency:	1.6434	GHz
Stop frequency:	1.6436	GHz
Center frequency:	1.6435	GHz
Frequency span:	200	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	5	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	Pos Peak	

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:

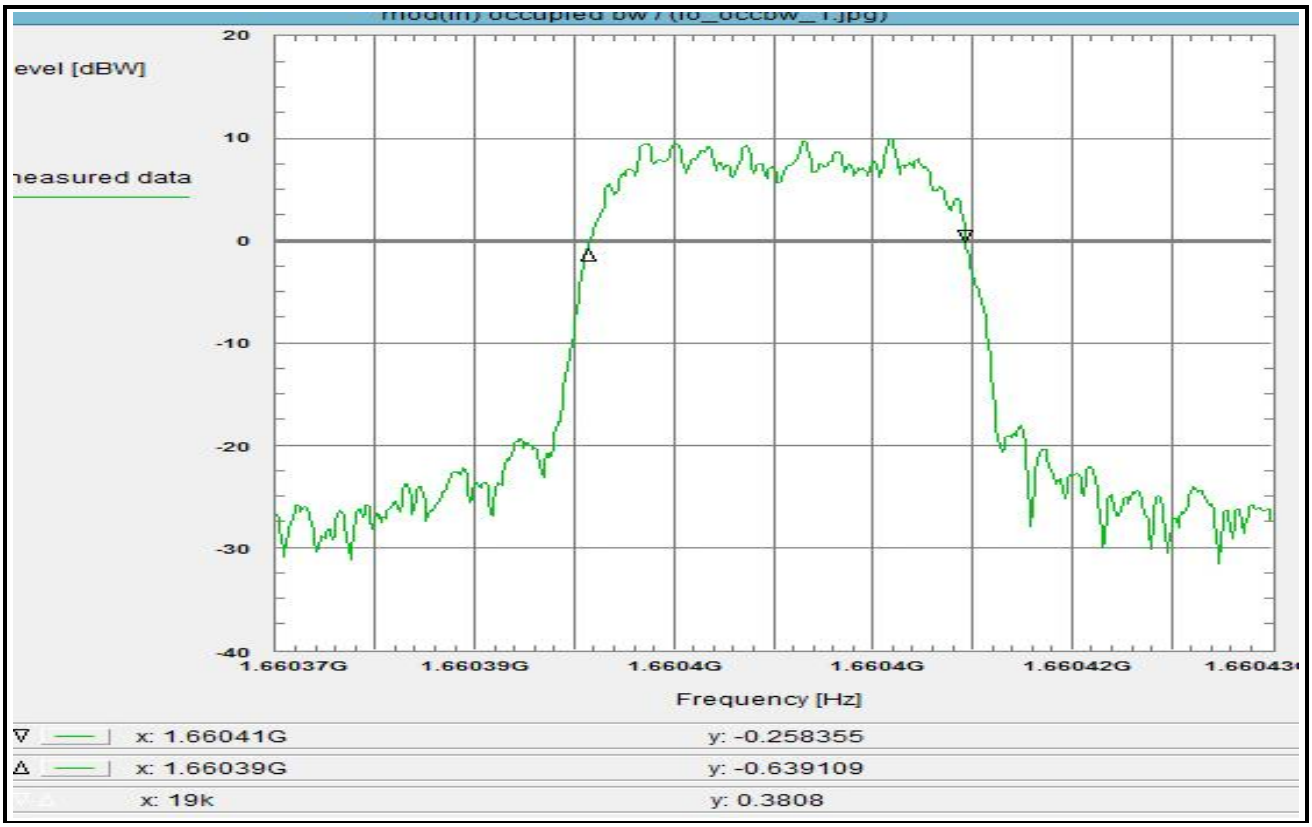
Start frequency:	1.64325	GHz
Stop frequency:	1.64375	GHz
Center frequency:	1.6435	GHz
Frequency span:	500	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	5	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	Pos Peak	

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:

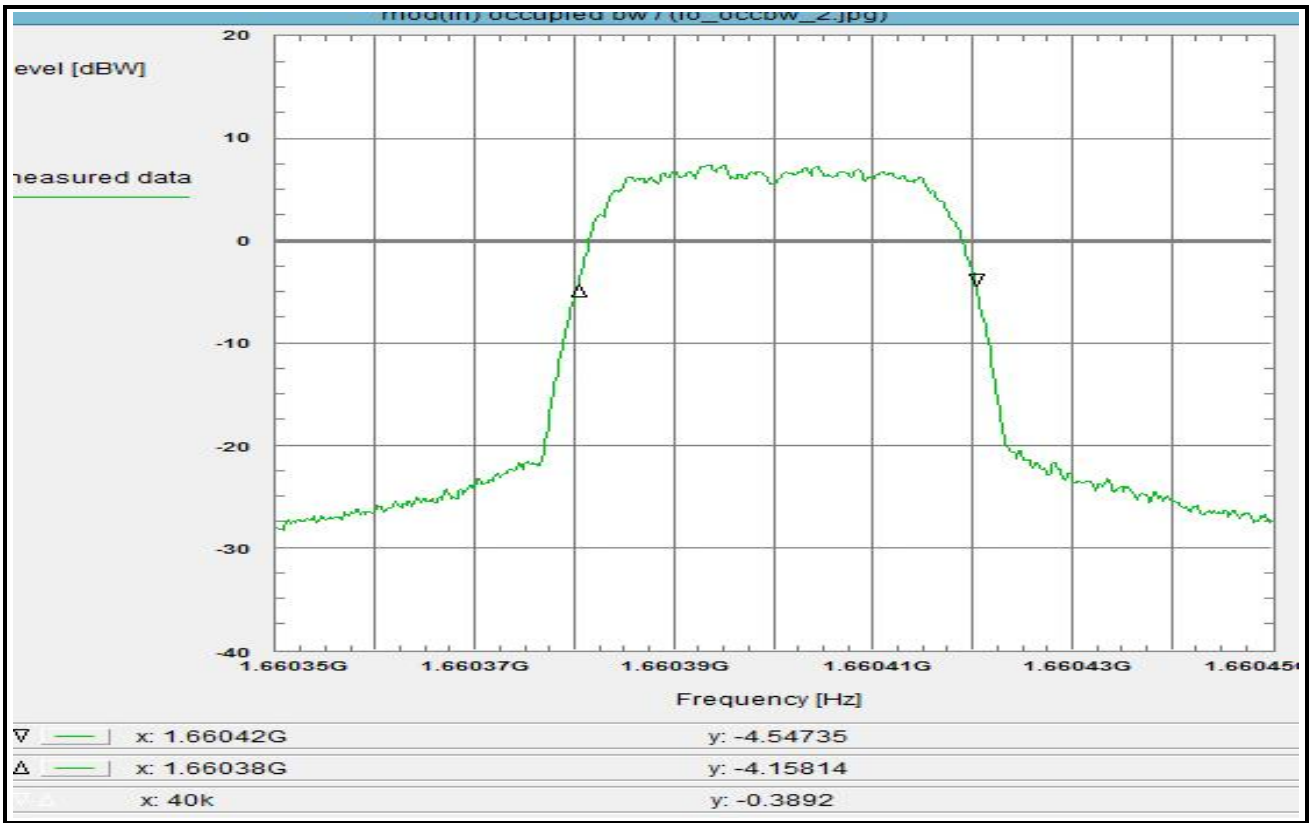
Start frequency:	1.660375	GHz
Stop frequency:	1.660425	GHz
Center frequency:	1.6604	GHz
Frequency span:	50	kHz
Resolution-BW:	1	kHz
Video-BW:	3	kHz
Input attenuation:	5	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	Pos Peak	

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:

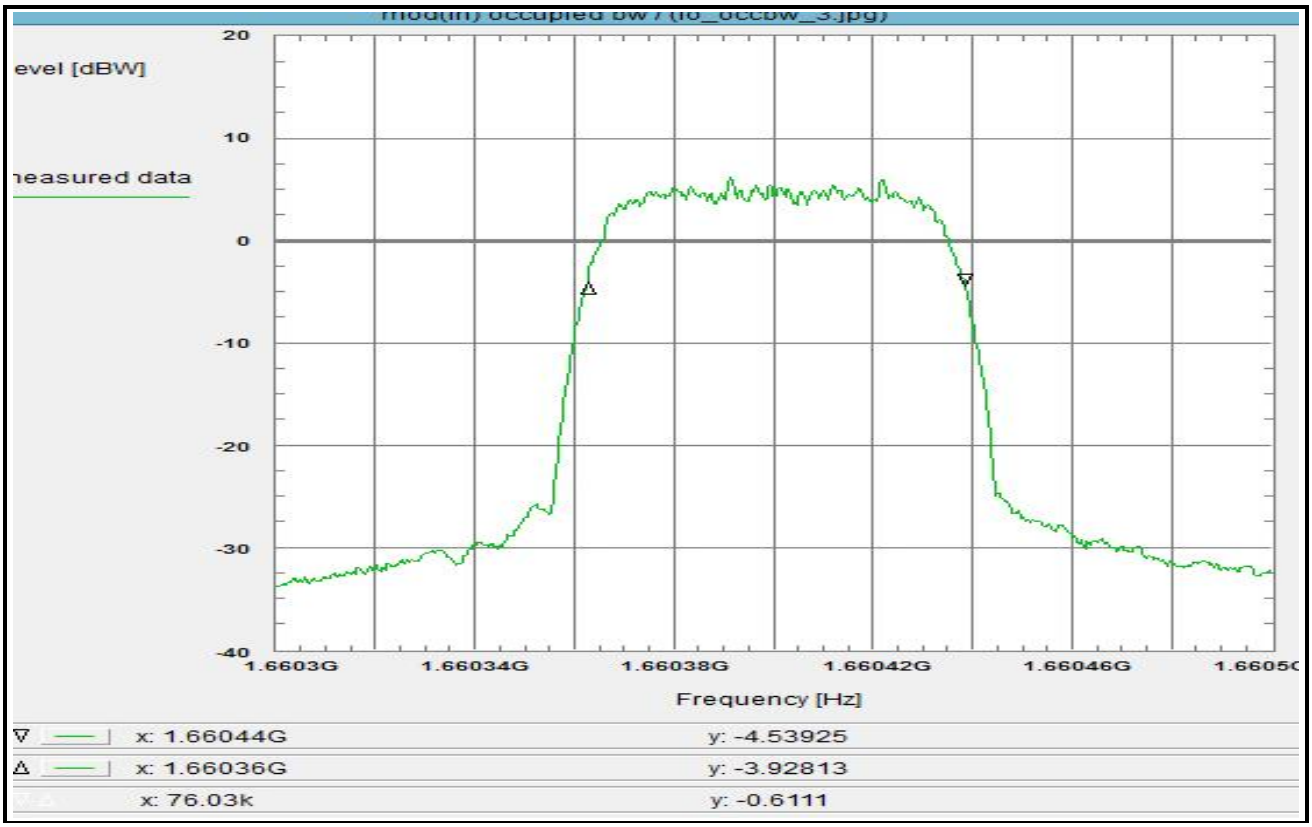
Start frequency:	1.66035	GHz
Stop frequency:	1.66045	GHz
Center frequency:	1.6604	GHz
Frequency span:	100	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	5	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	Pos Peak	

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:

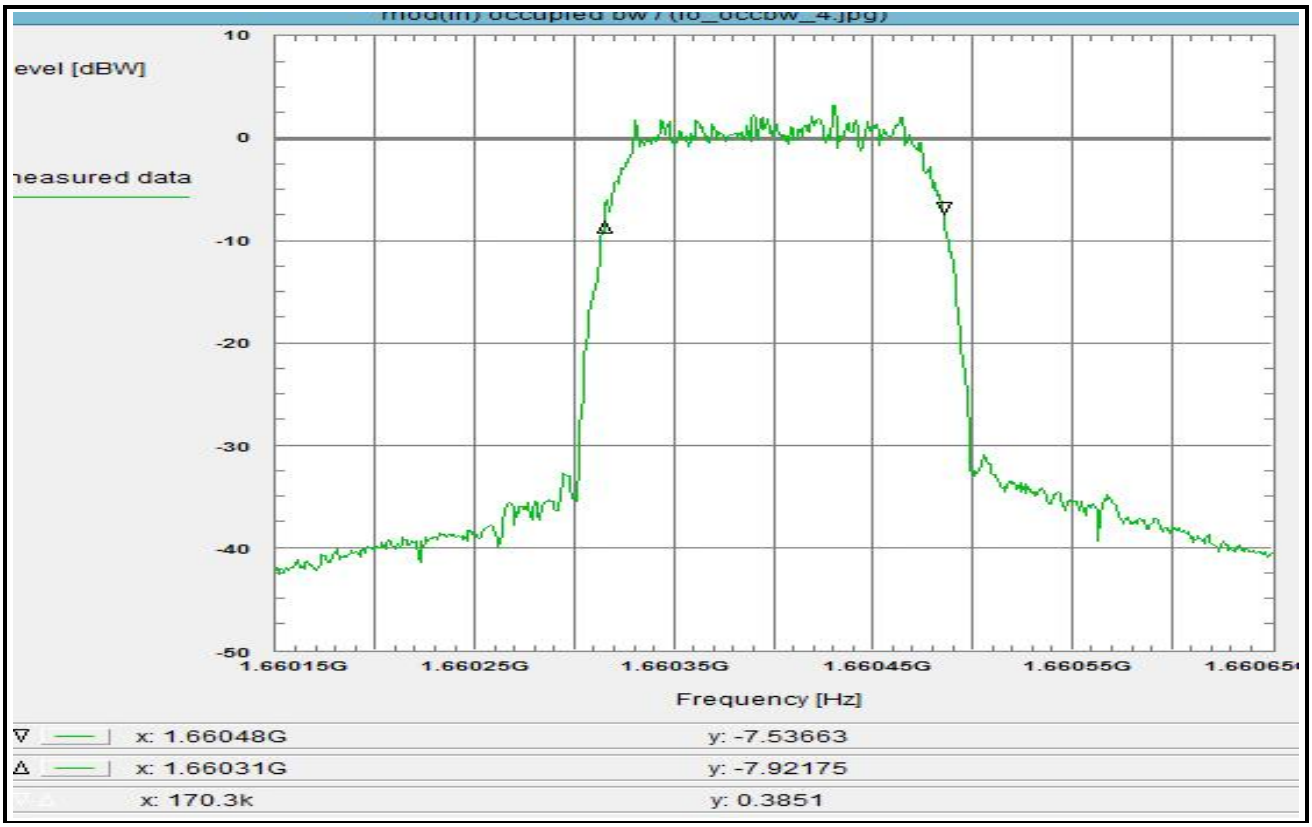
Start frequency:	1.6603	GHz
Stop frequency:	1.6605	GHz
Center frequency:	1.6604	GHz
Frequency span:	200	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	5	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	Pos Peak	

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:

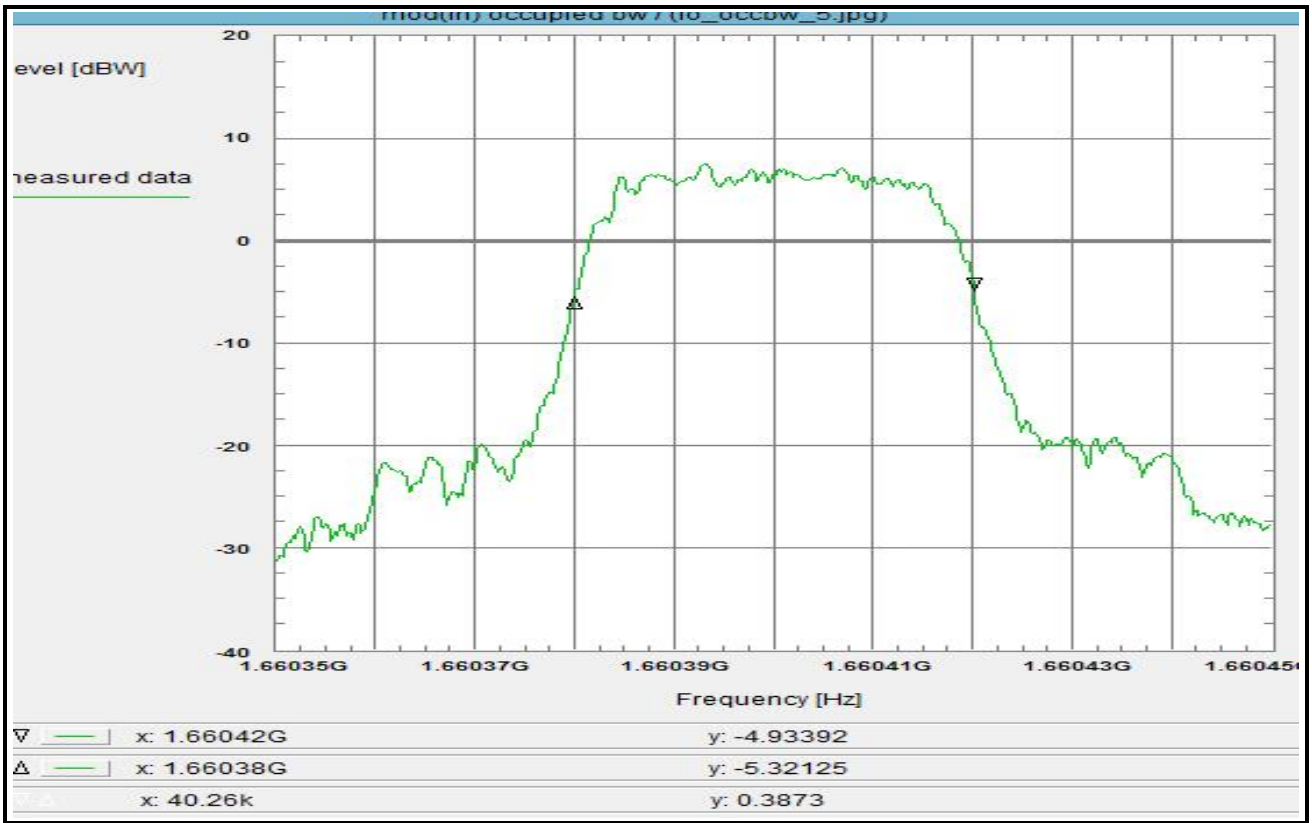
Start frequency:	1.66015	GHz
Stop frequency:	1.66065	GHz
Center frequency:	1.6604	GHz
Frequency span:	500	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	5	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	Pos Peak	

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:

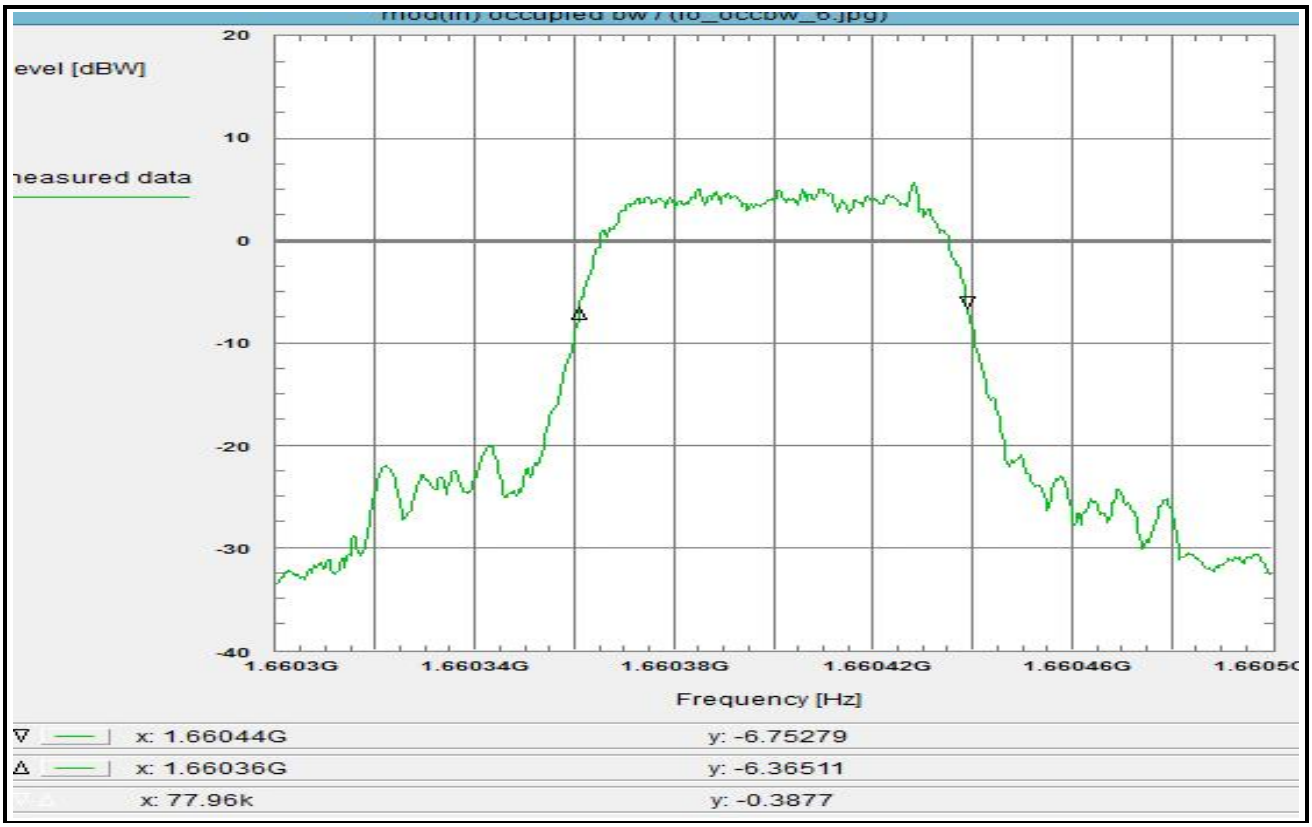
Start frequency:	1.66035	GHz
Stop frequency:	1.66045	GHz
Center frequency:	1.6604	GHz
Frequency span:	100	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	5	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	Pos Peak	

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:

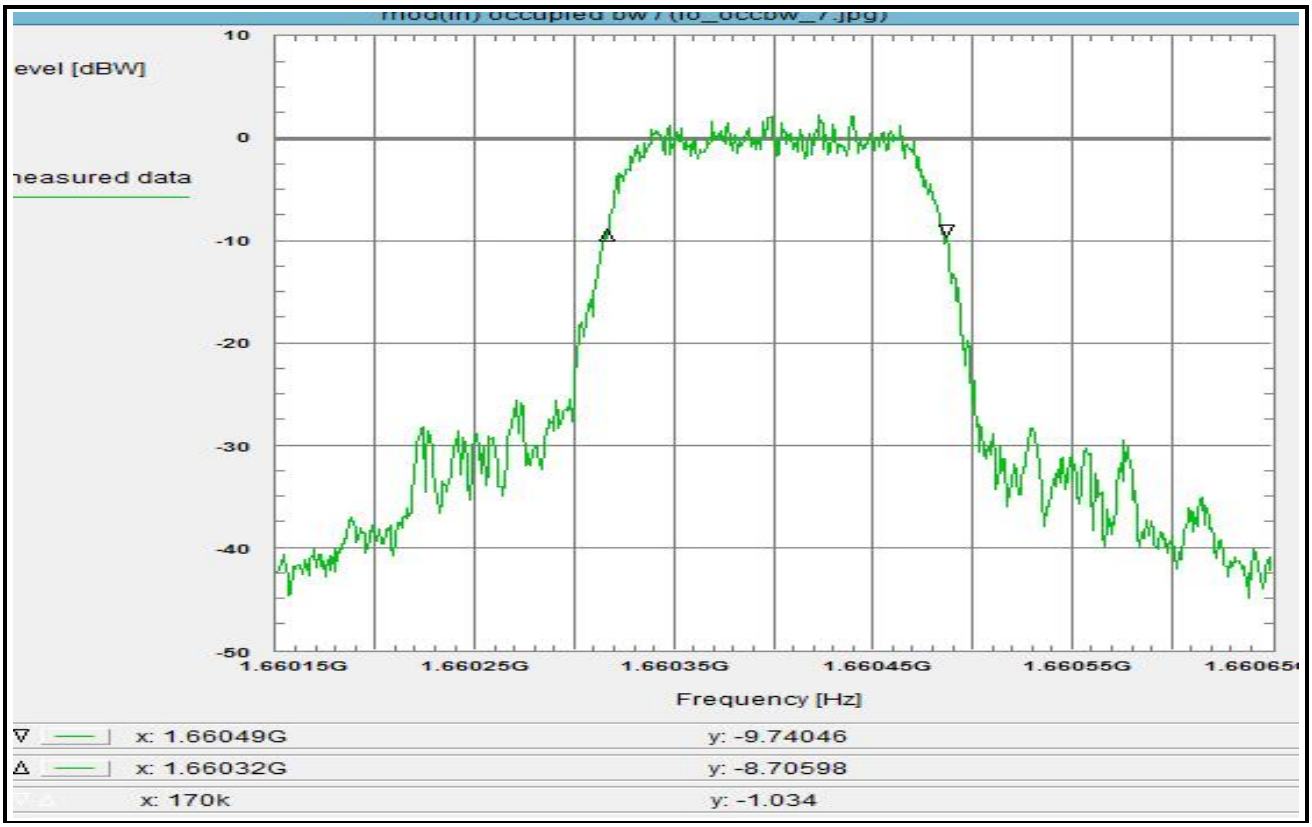
Start frequency:	1.6603	GHz
Stop frequency:	1.6605	GHz
Center frequency:	1.6604	GHz
Frequency span:	200	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	5	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	Pos Peak	

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:

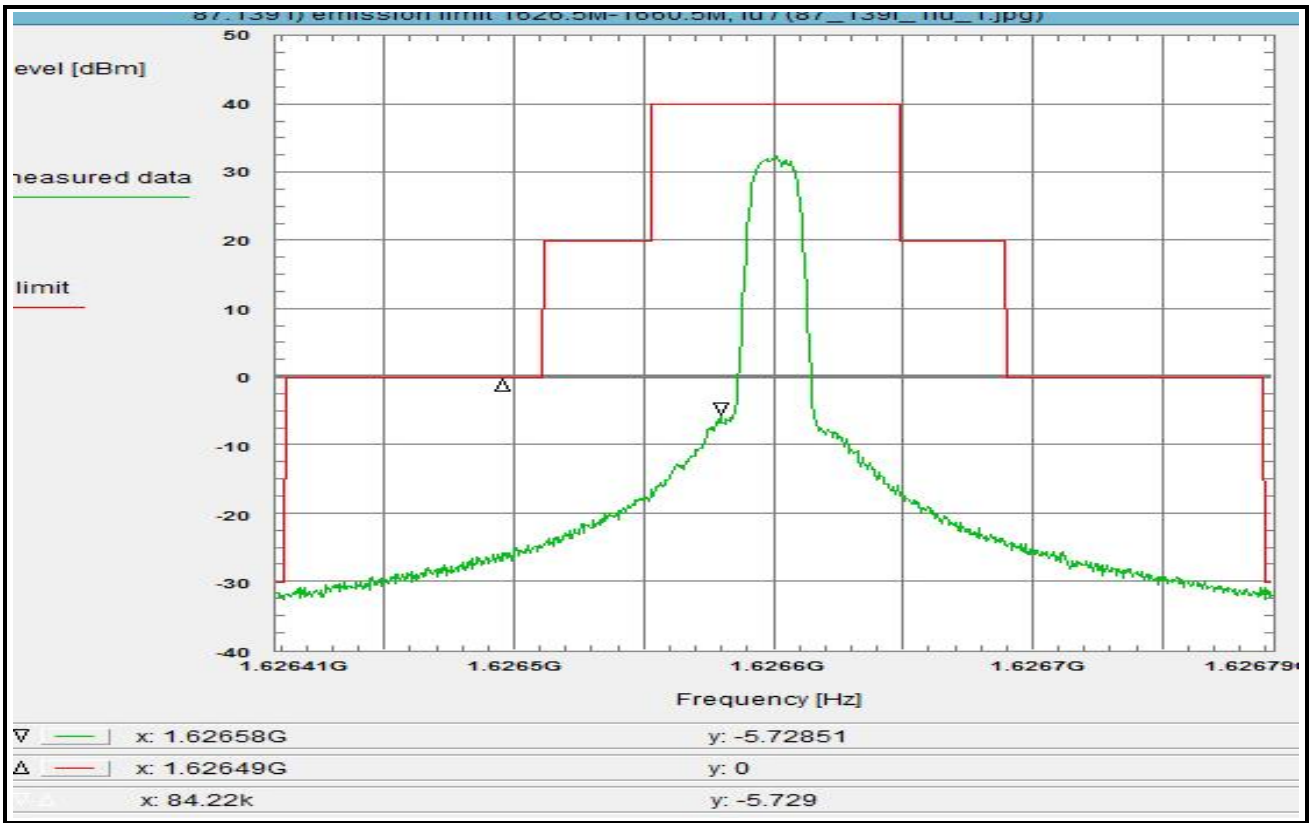
Start frequency:	1.66015	GHz
Stop frequency:	1.66065	GHz
Center frequency:	1.6604	GHz
Frequency span:	500	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	5	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

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 (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, 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:

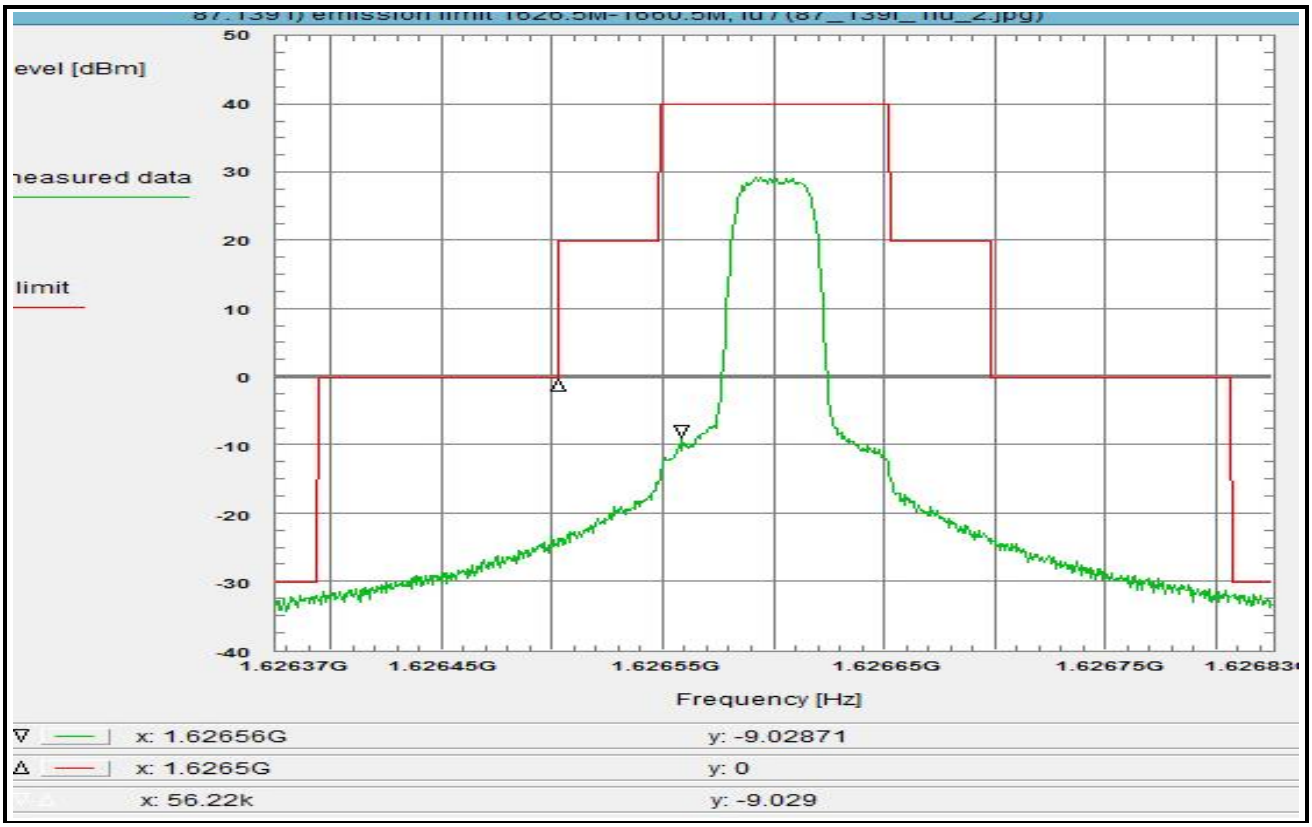
Start frequency:	1.626408	GHz
Stop frequency:	1.626792	GHz
Center frequency:	1.6266	GHz
Frequency span:	384	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	5	dB
Trace-Mode:	Average	
Detector-Mode:	AVG	

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	-	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. 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:

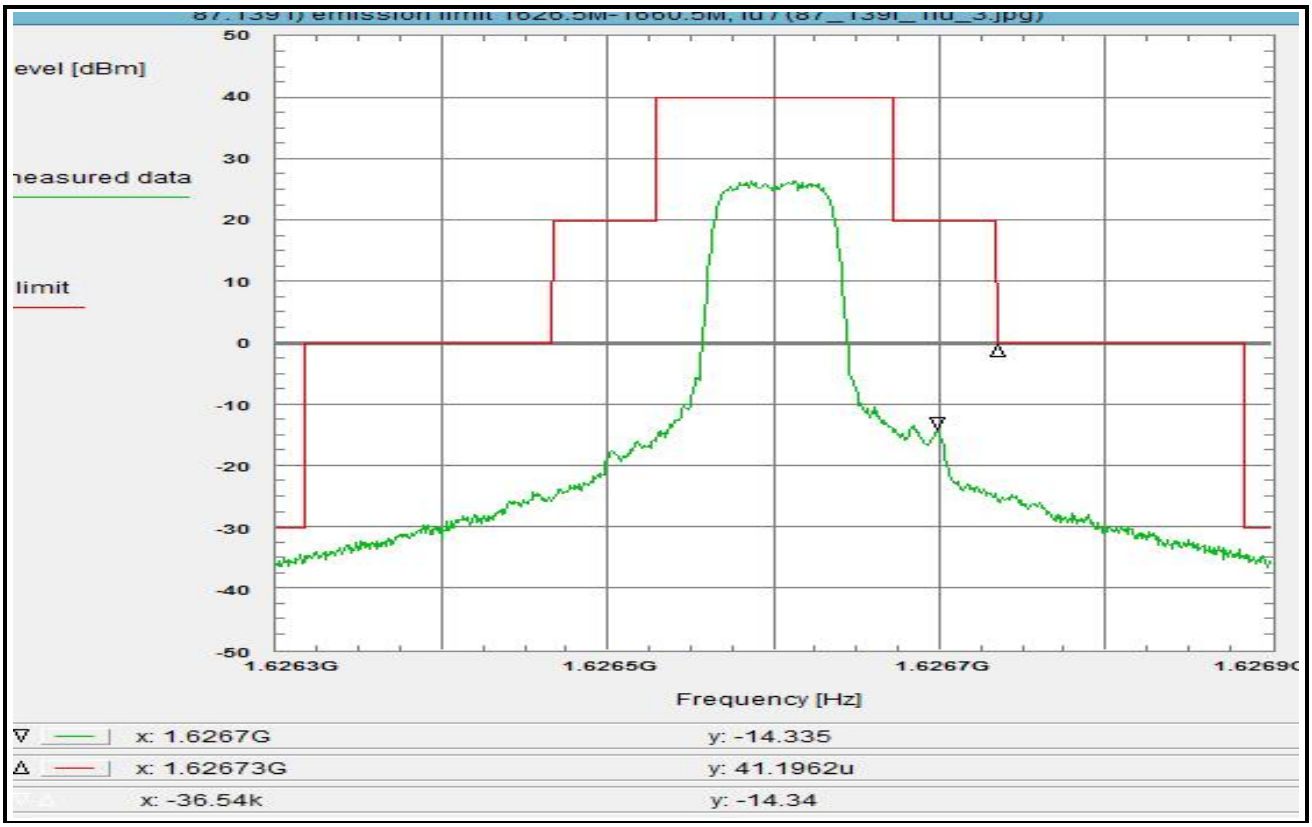
Start frequency:	1.626375	GHz
Stop frequency:	1.626825	GHz
Center frequency:	1.6266	GHz
Frequency span:	450	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	5	dB
Trace-Mode:	Average	
Detector-Mode:	AVG	

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 (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, 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:

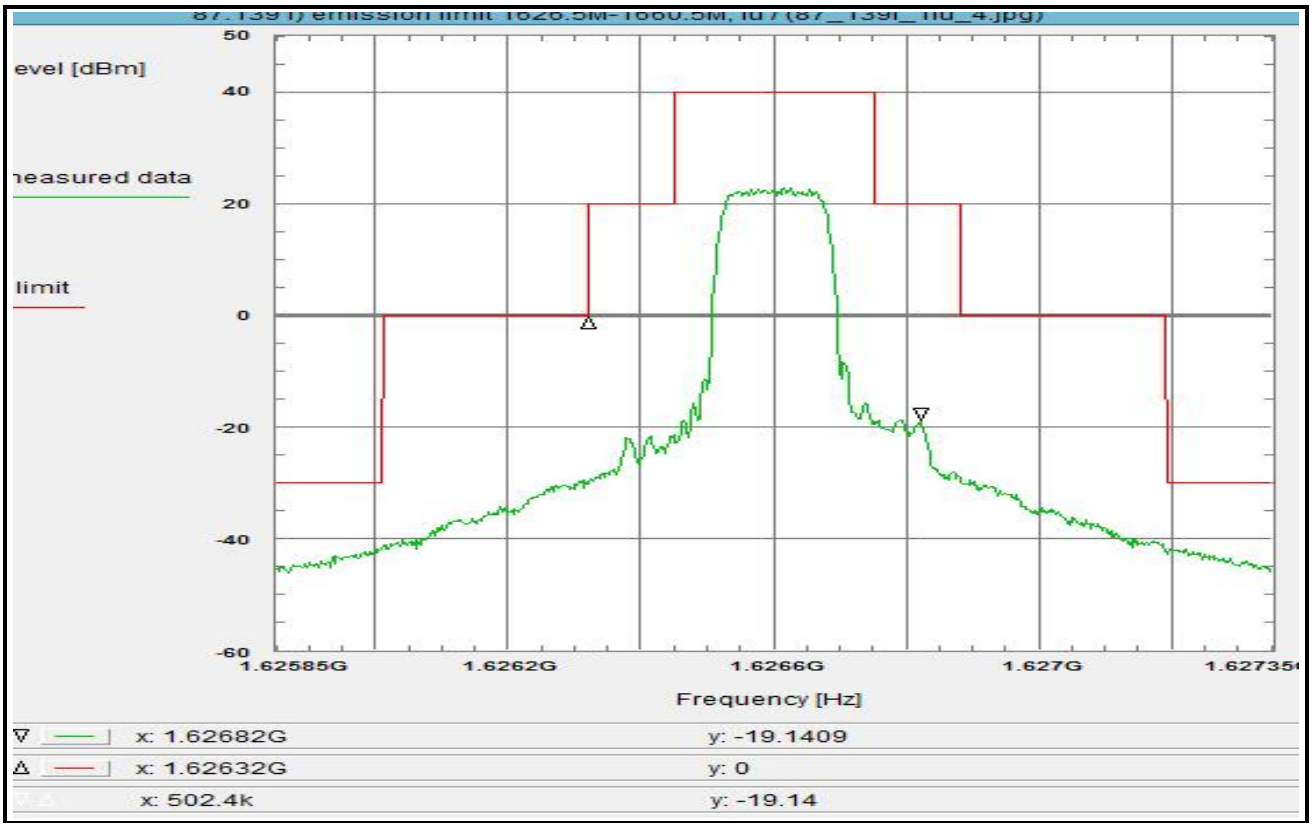
Start frequency:	1.6263	GHz
Stop frequency:	1.6269	GHz
Center frequency:	1.6266	GHz
Frequency span:	600	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	5	dB
Trace-Mode:	Average	
Detector-Mode:	AVG	

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	-	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. 25 (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, 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:

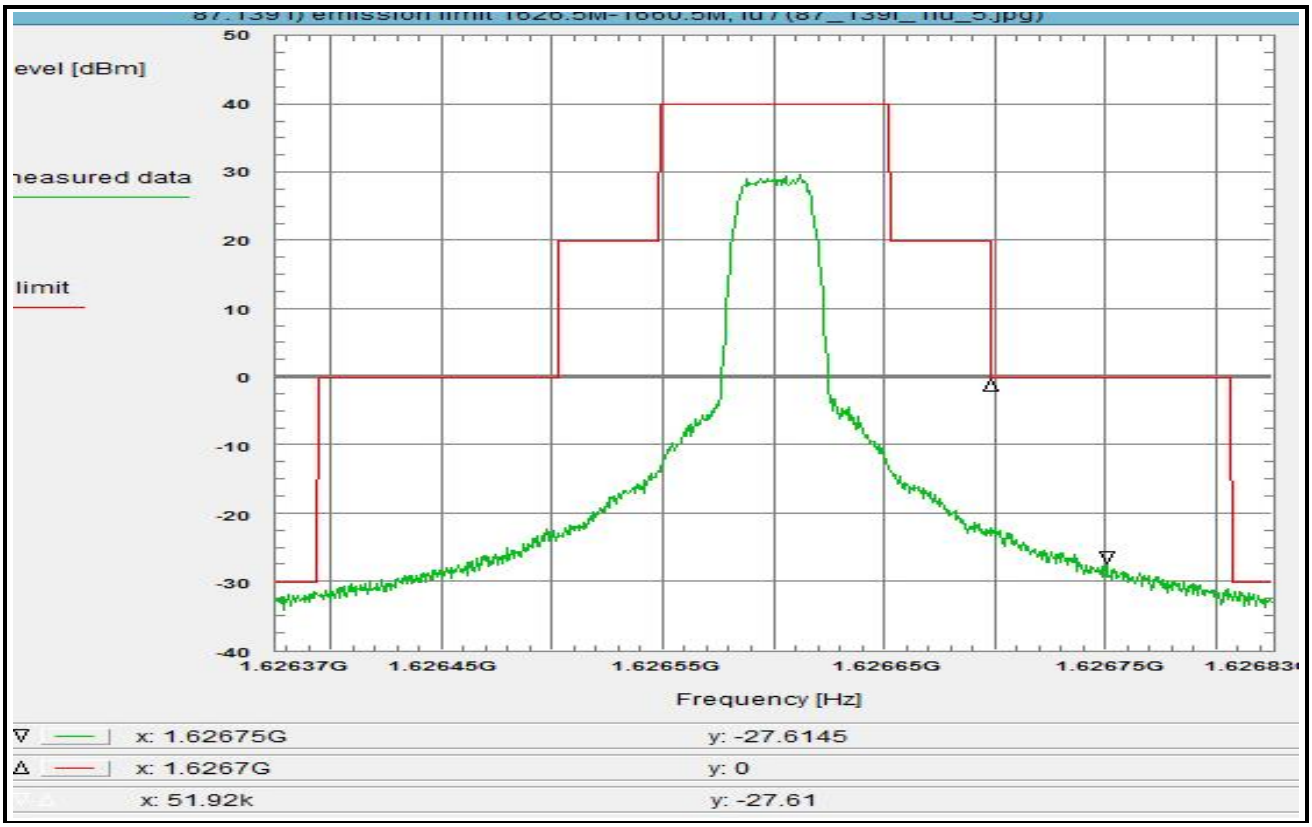
Start frequency:	1.62585	GHz
Stop frequency:	1.62735	GHz
Center frequency:	1.6266	GHz
Frequency span:	1.5	MHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	5	dB
Trace-Mode:	Average	
Detector-Mode:	AVG	

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	-	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. 26 (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, 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:

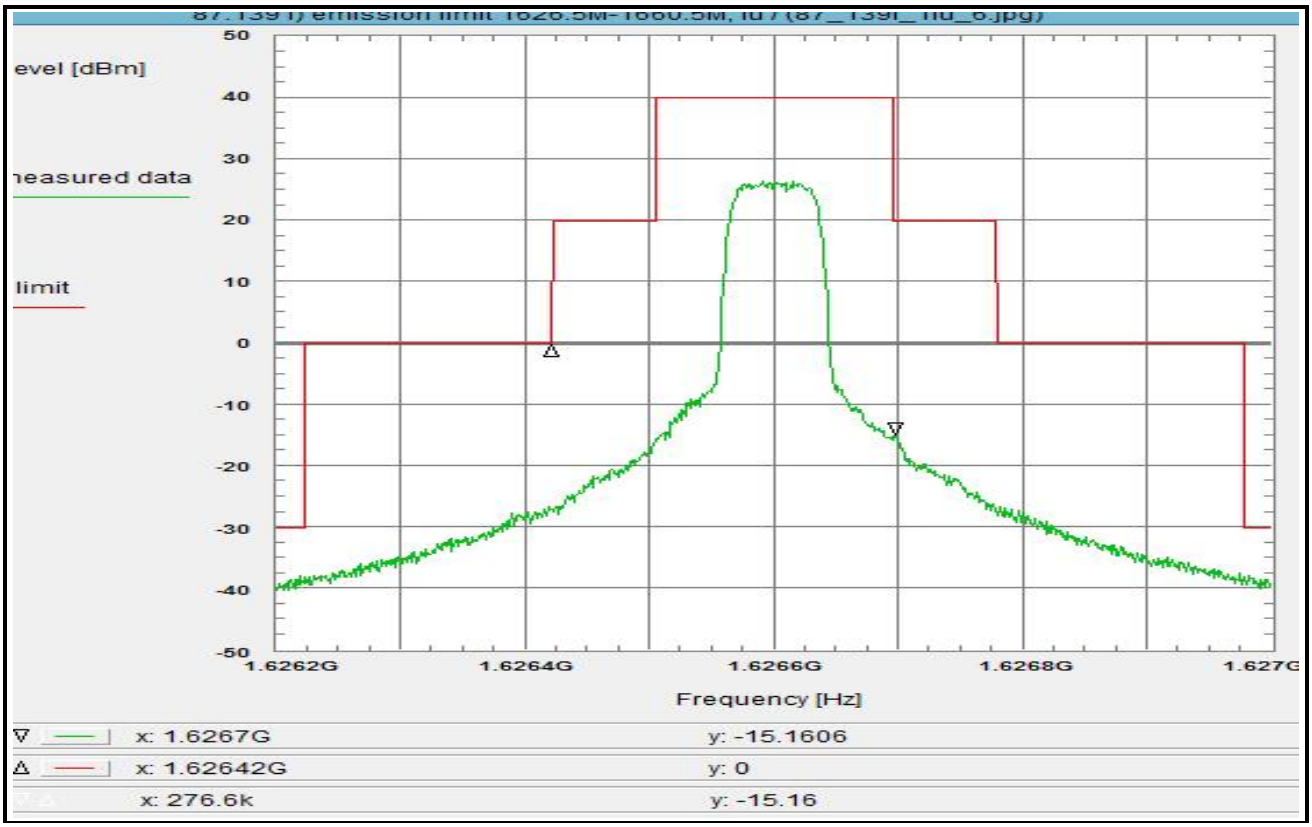
Start frequency:	1.626375	GHz
Stop frequency:	1.626825	GHz
Center frequency:	1.6266	GHz
Frequency span:	450	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	5	dB
Trace-Mode:	Average	
Detector-Mode:	AVG	

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	-	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. 27 (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, 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:

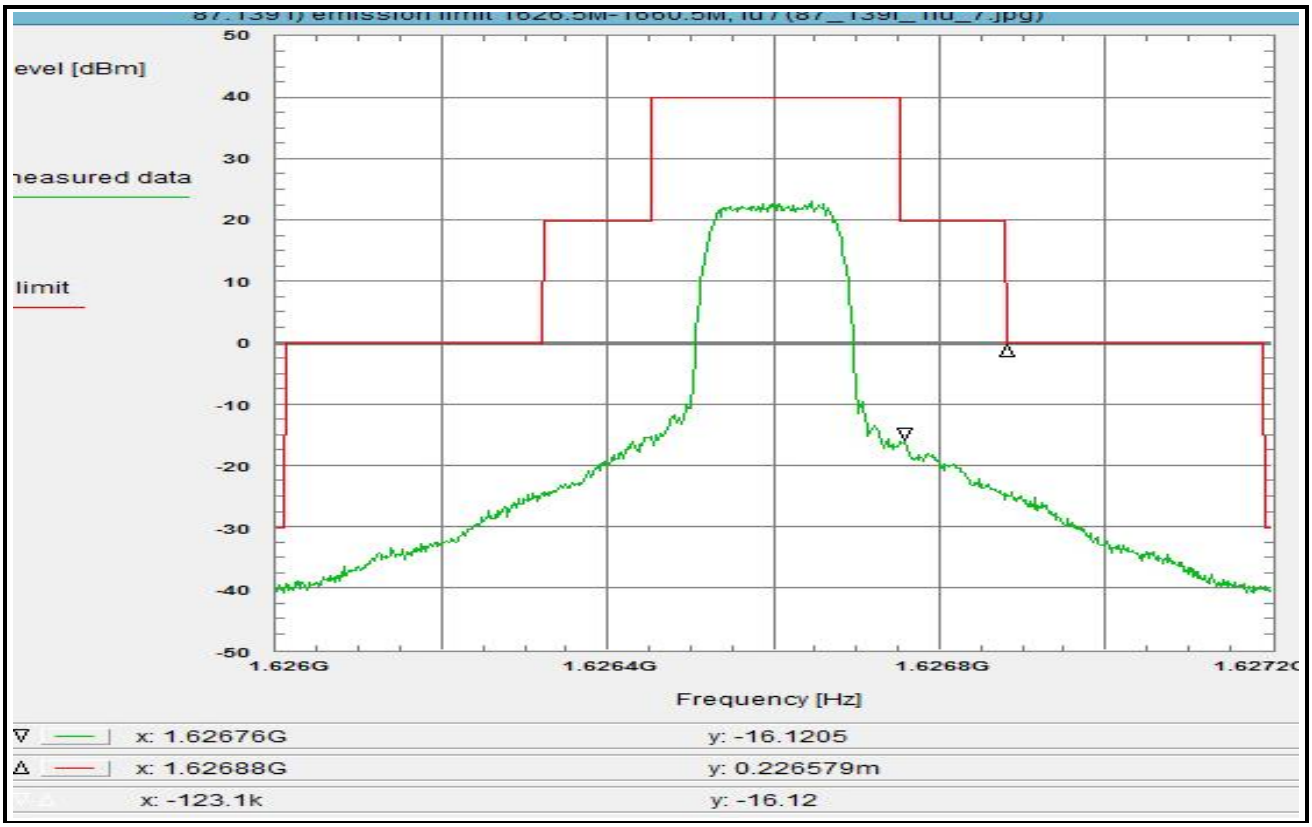
Start frequency:	1.6262	GHz
Stop frequency:	1.627	GHz
Center frequency:	1.6266	GHz
Frequency span:	800	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	5	dB
Trace-Mode:	Average	
Detector-Mode:	AVG	

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	-	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. 28 (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, 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:

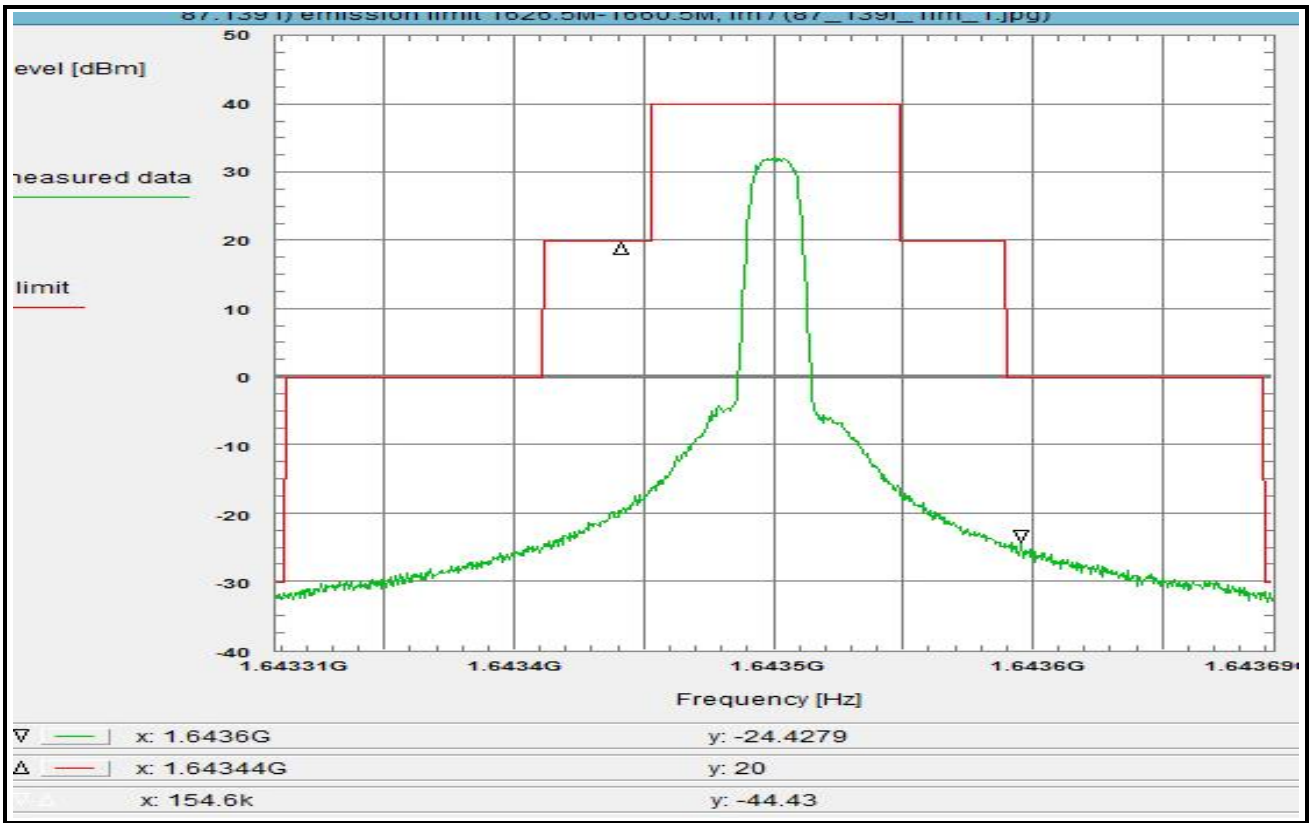
Start frequency:	1.626	GHz
Stop frequency:	1.6272	GHz
Center frequency:	1.6266	GHz
Frequency span:	1.2	MHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	5	dB
Trace-Mode:	Average	
Detector-Mode:	AVG	

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	-	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. 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:

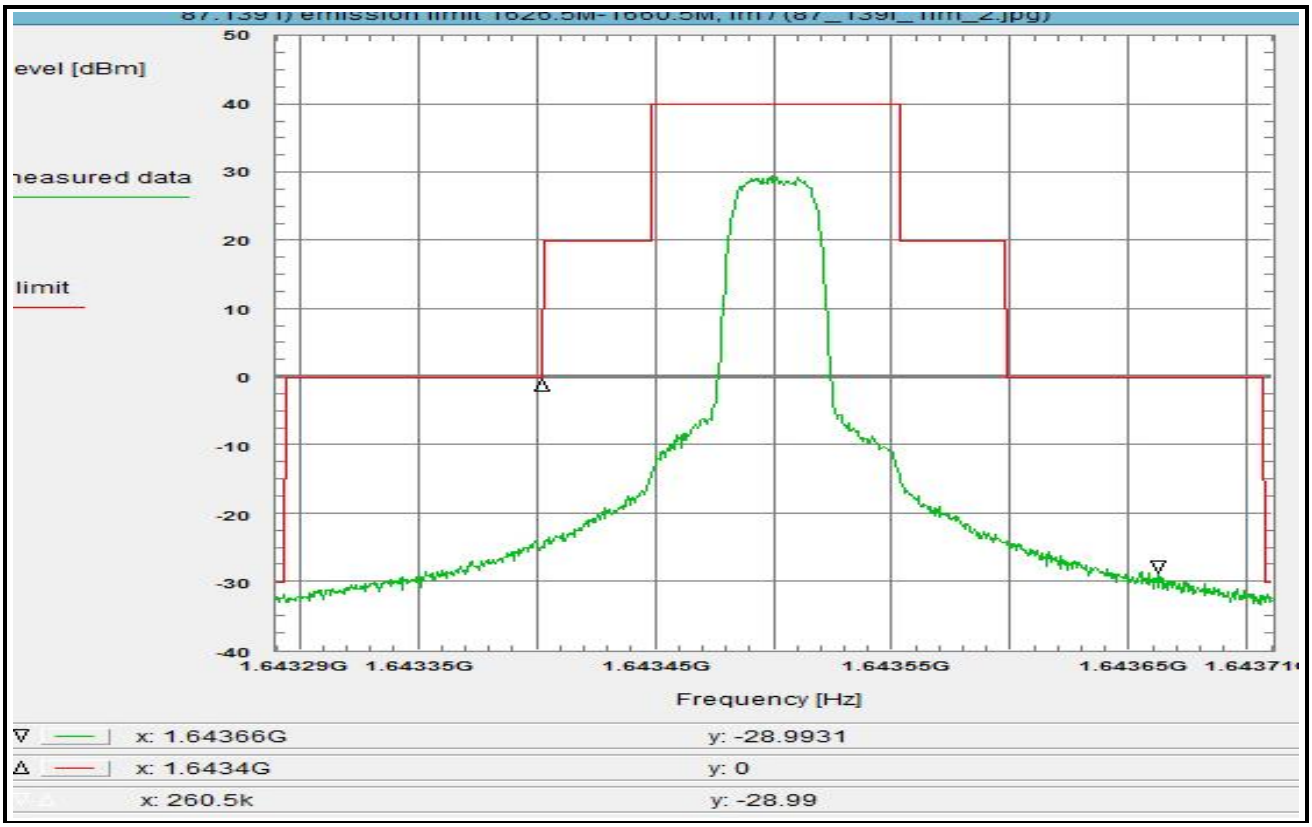
Start frequency:	1.643308	GHz
Stop frequency:	1.643692	GHz
Center frequency:	1.6435	GHz
Frequency span:	384	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	5	dB
Trace-Mode:	Average	
Detector-Mode:	AVG	

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	-	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. 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:

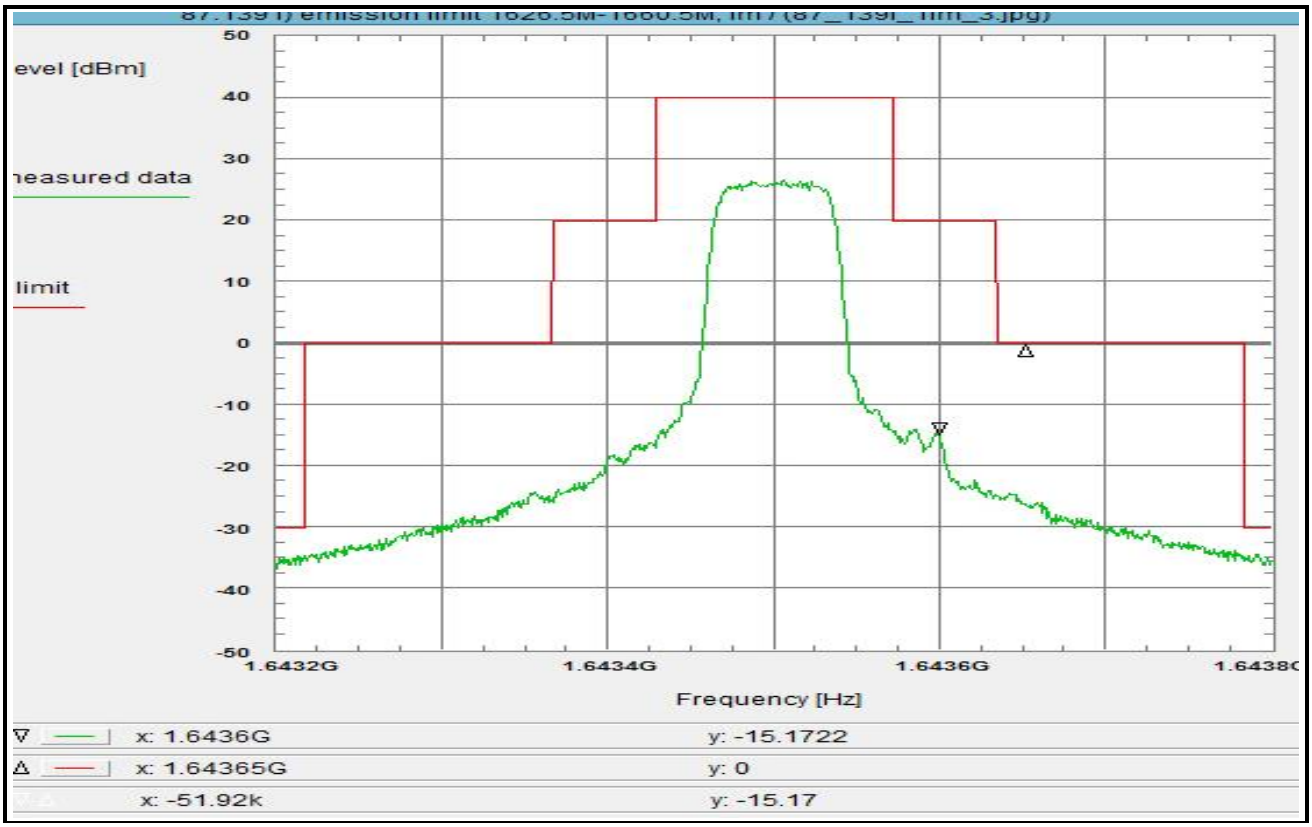
Start frequency:	1.64329	GHz
Stop frequency:	1.64371	GHz
Center frequency:	1.6435	GHz
Frequency span:	420	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	5	dB
Trace-Mode:	Average	
Detector-Mode:	AVG	

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	-	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. 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:

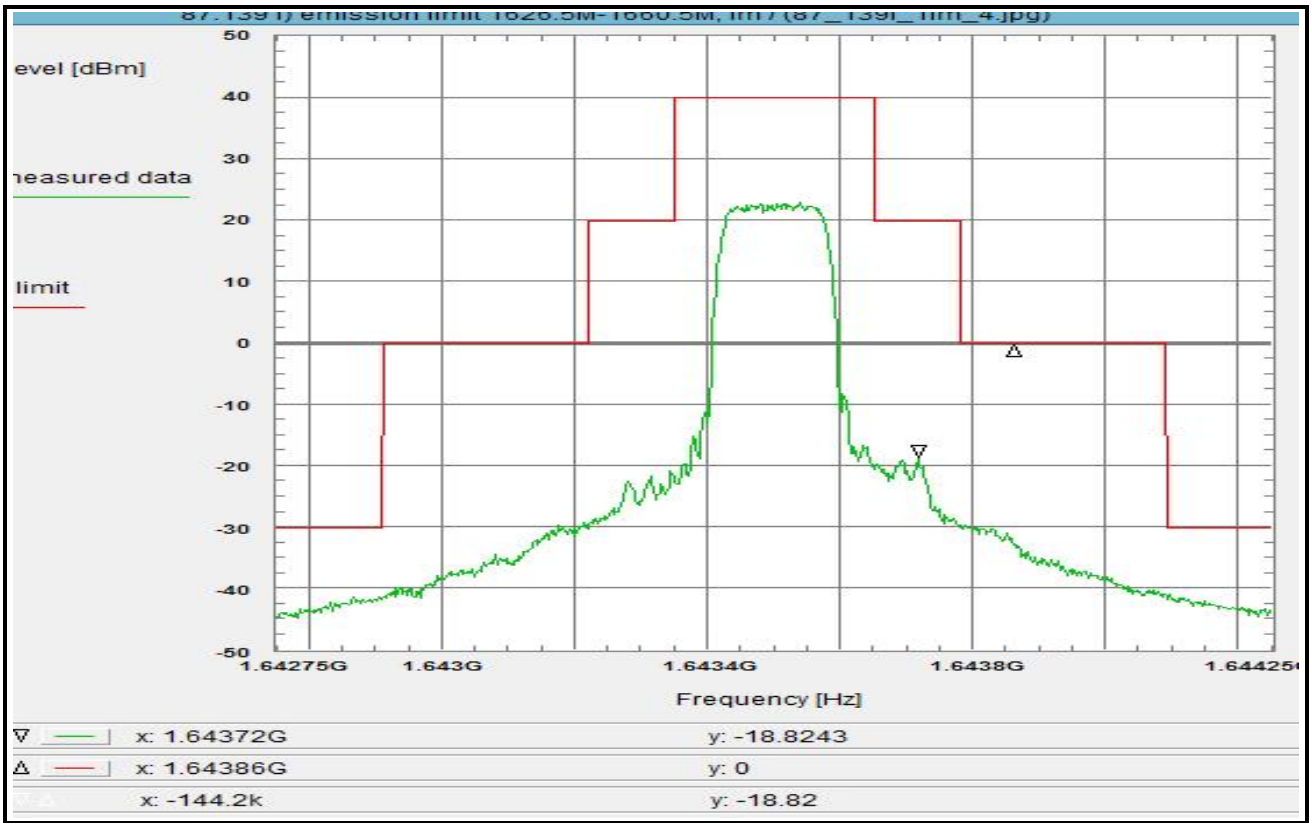
Start frequency:	1.6432	GHz
Stop frequency:	1.6438	GHz
Center frequency:	1.6435	GHz
Frequency span:	600	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	5	dB
Trace-Mode:	Average	
Detector-Mode:	AVG	

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	-	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. 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:

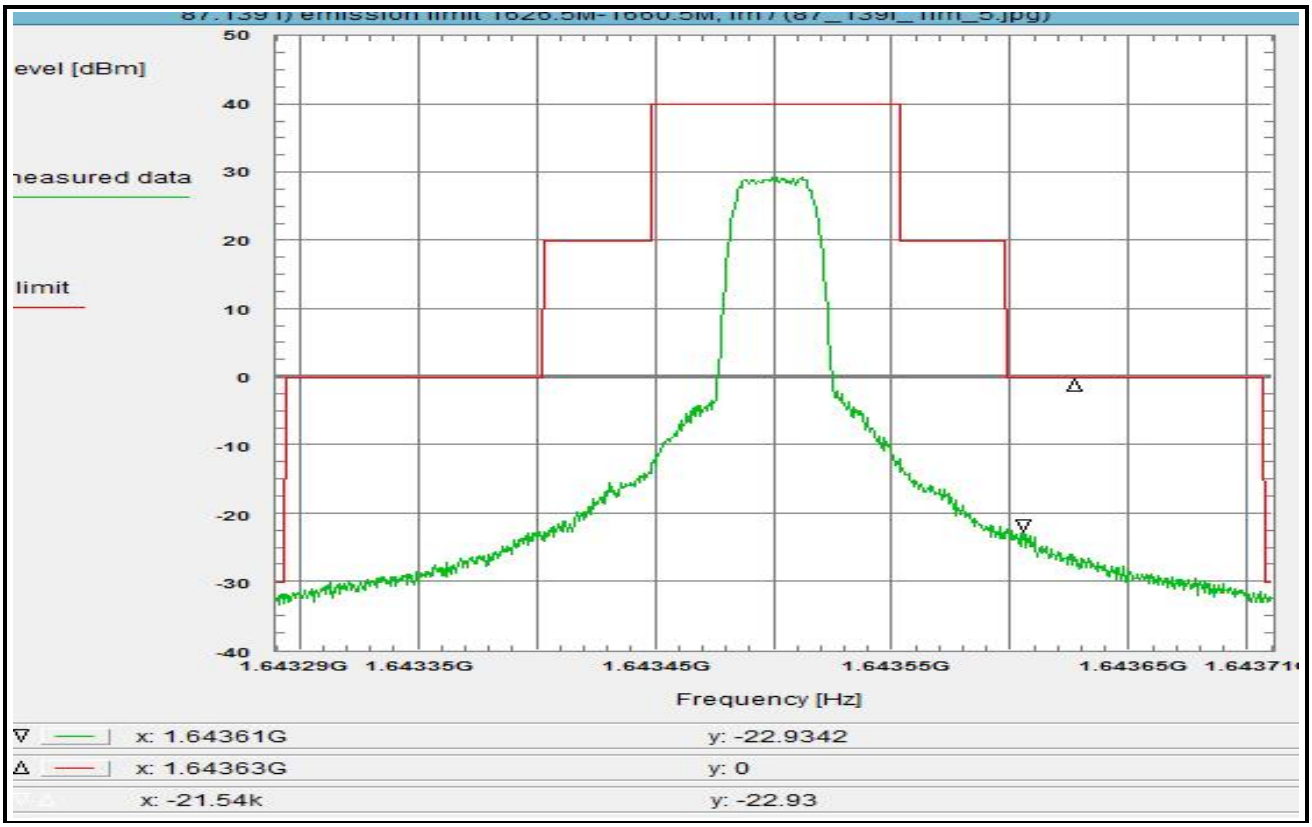
Start frequency:	1.64275	GHz
Stop frequency:	1.64425	GHz
Center frequency:	1.6435	GHz
Frequency span:	1.5	MHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	5	dB
Trace-Mode:	Clear Write	
Detector-Mode:	AVG	

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	-	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. 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:

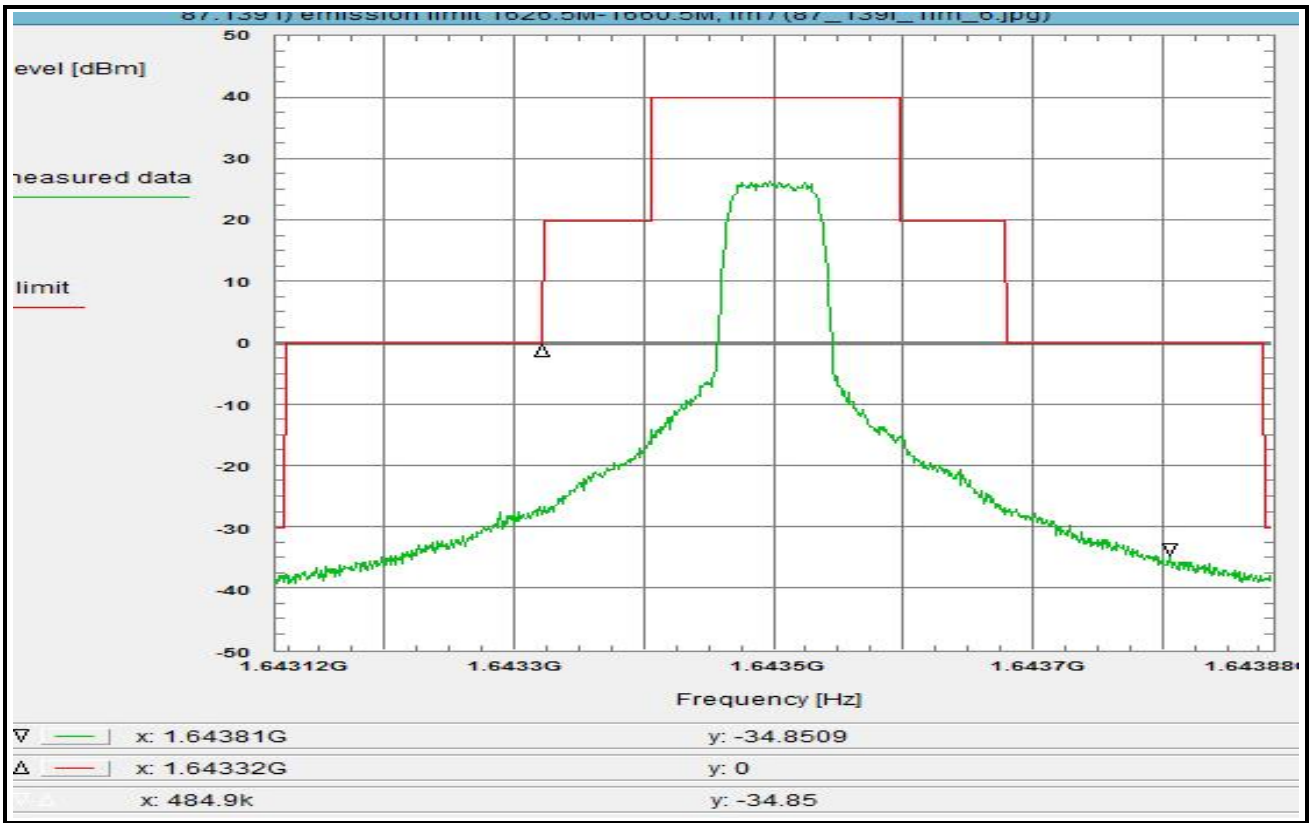
Start frequency:	1.64329	GHz
Stop frequency:	1.64371	GHz
Center frequency:	1.6435	GHz
Frequency span:	420	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	5	dB
Trace-Mode:	Average	
Detector-Mode:	AVG	

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:

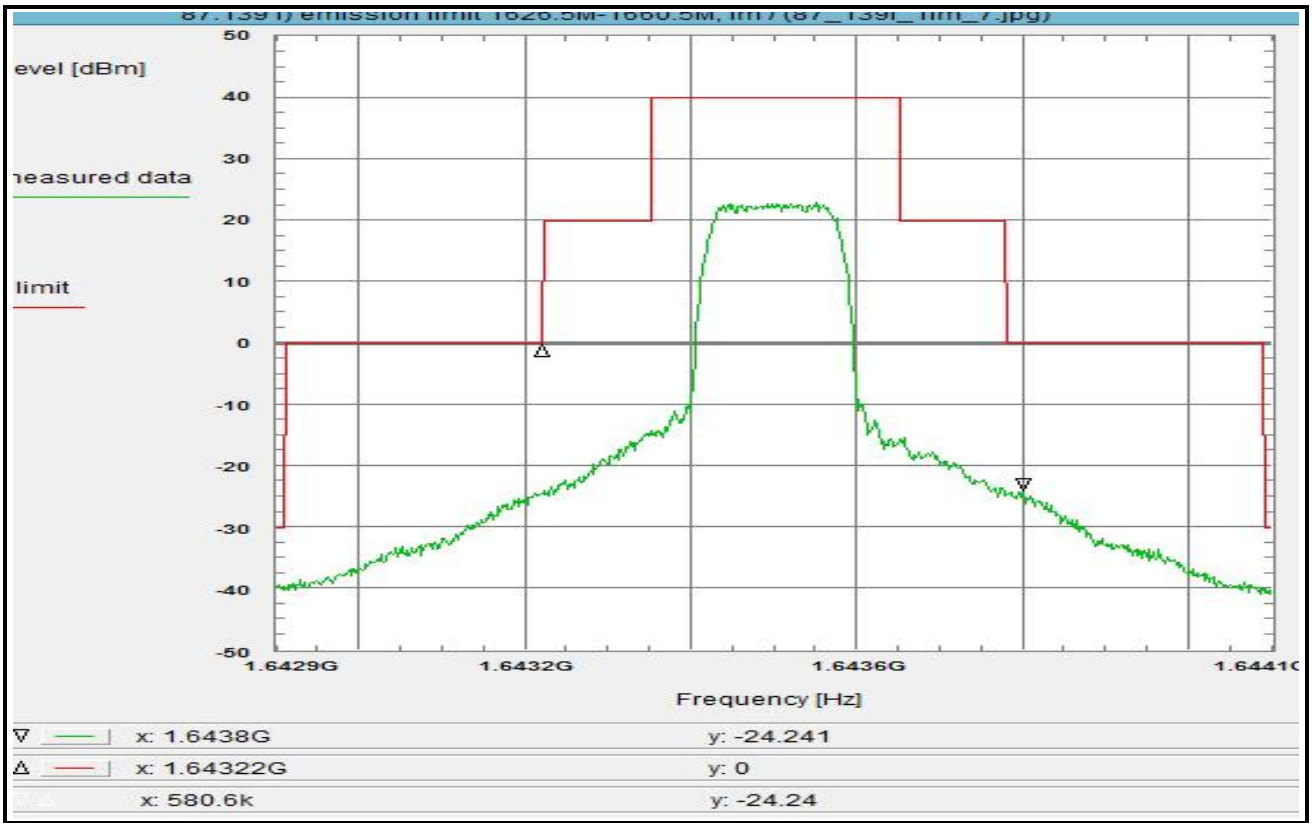
Start frequency:	1.643116	GHz
Stop frequency:	1.643884	GHz
Center frequency:	1.6435	GHz
Frequency span:	768	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	5	dB
Trace-Mode:	Clear Write	
Detector-Mode:	AVG	

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	-	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. 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:

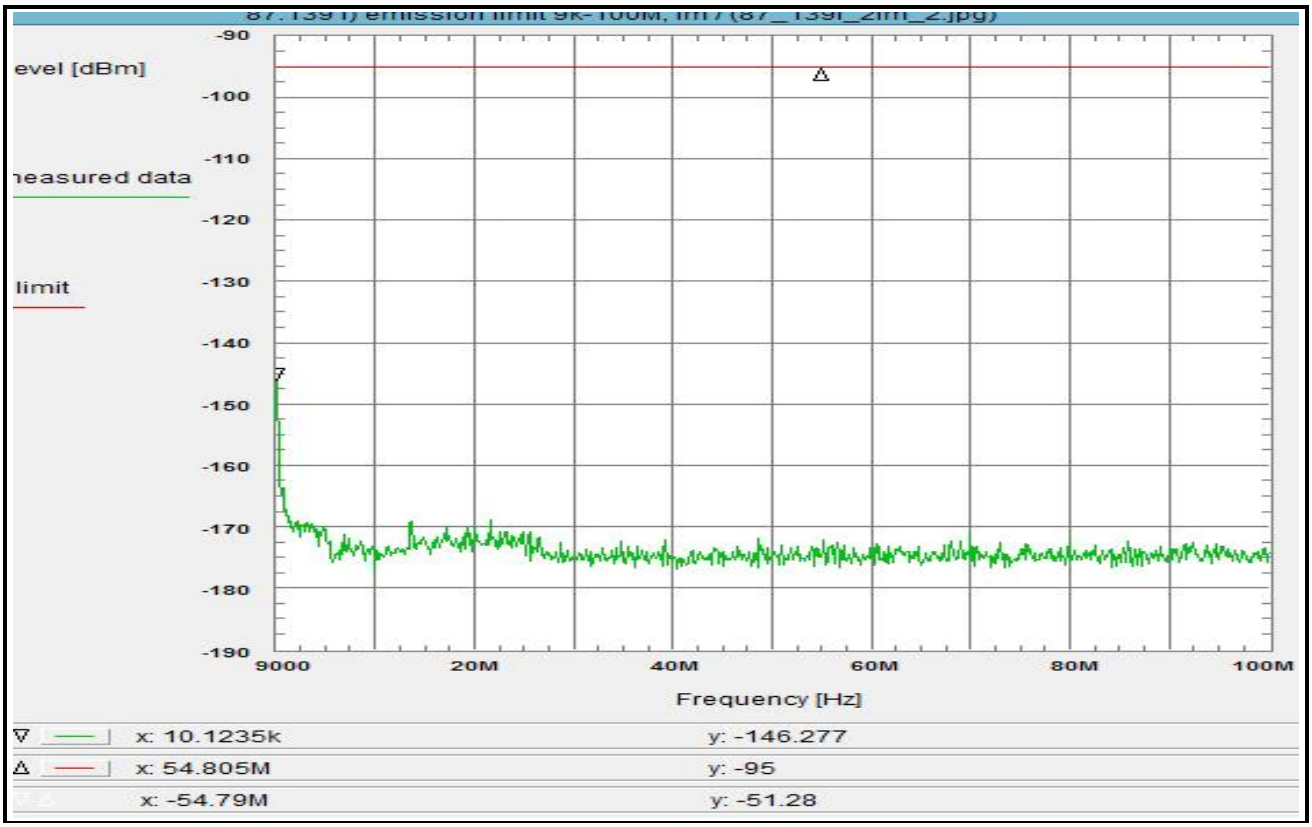
Start frequency:	1.6429	GHz
Stop frequency:	1.6441	GHz
Center frequency:	1.6435	GHz
Frequency span:	1.2	MHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	5	dB
Trace-Mode:	Average	
Detector-Mode:	AVG	

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	-	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. 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	

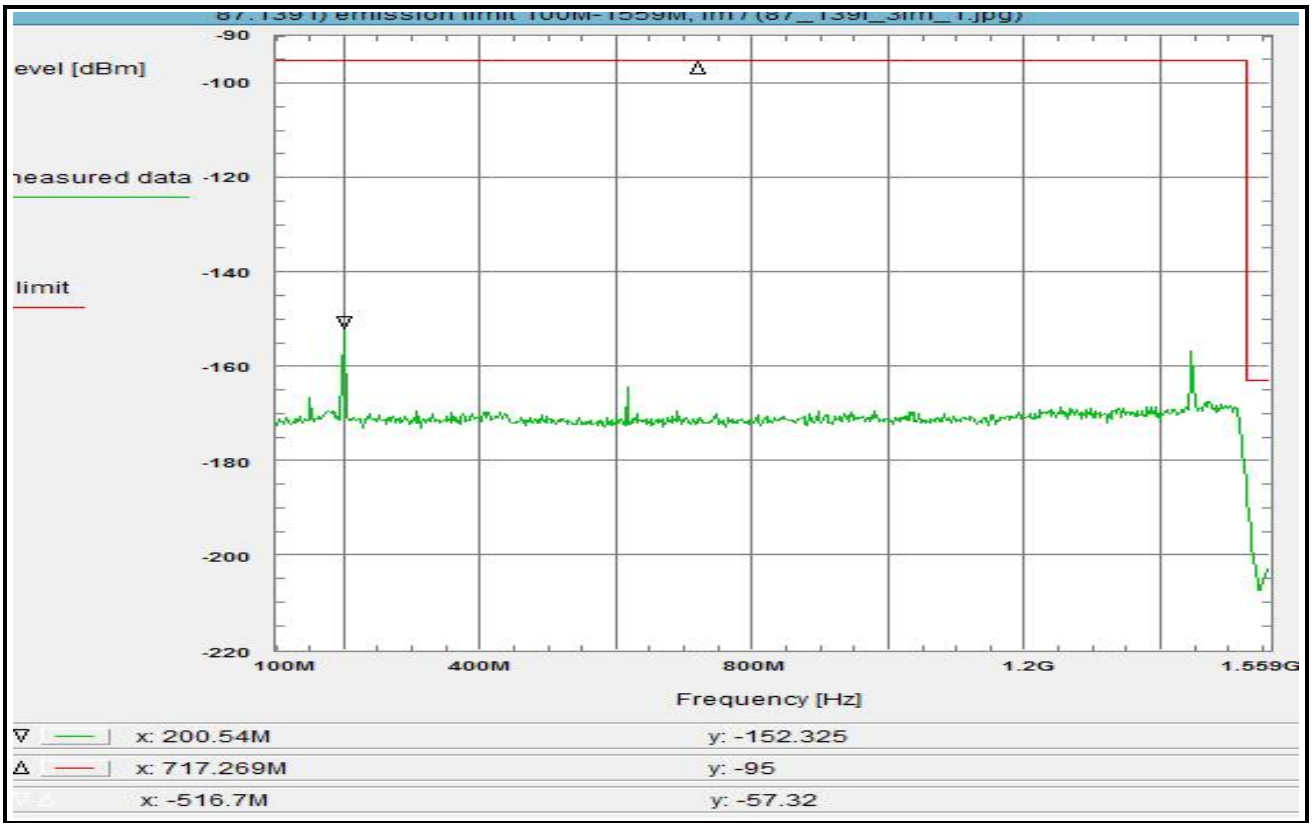
Correction:

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:

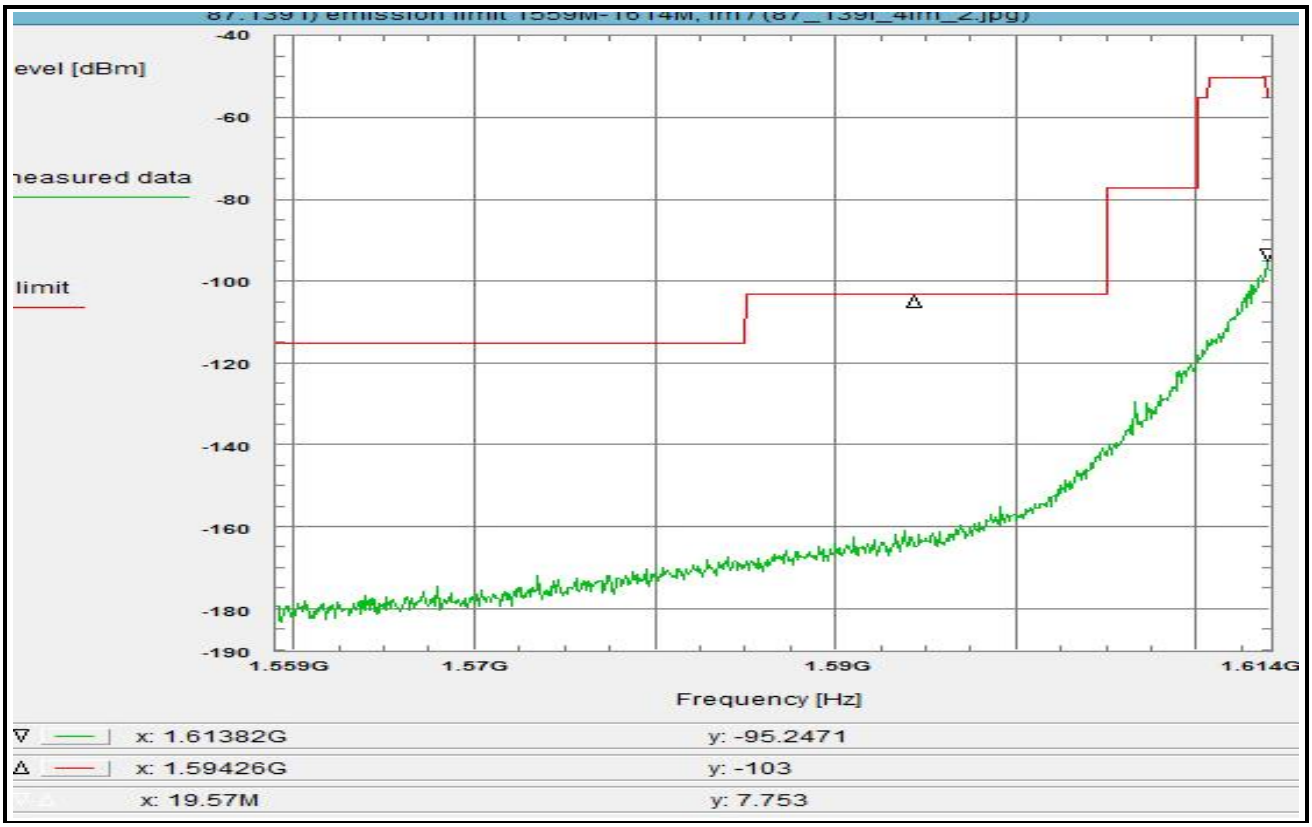
Start frequency:	100	MHz
Stop frequency:	1.559	GHz
Center frequency:	829.5	MHz
Frequency span:	1.459	GHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	5	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	Pos Peak	

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:

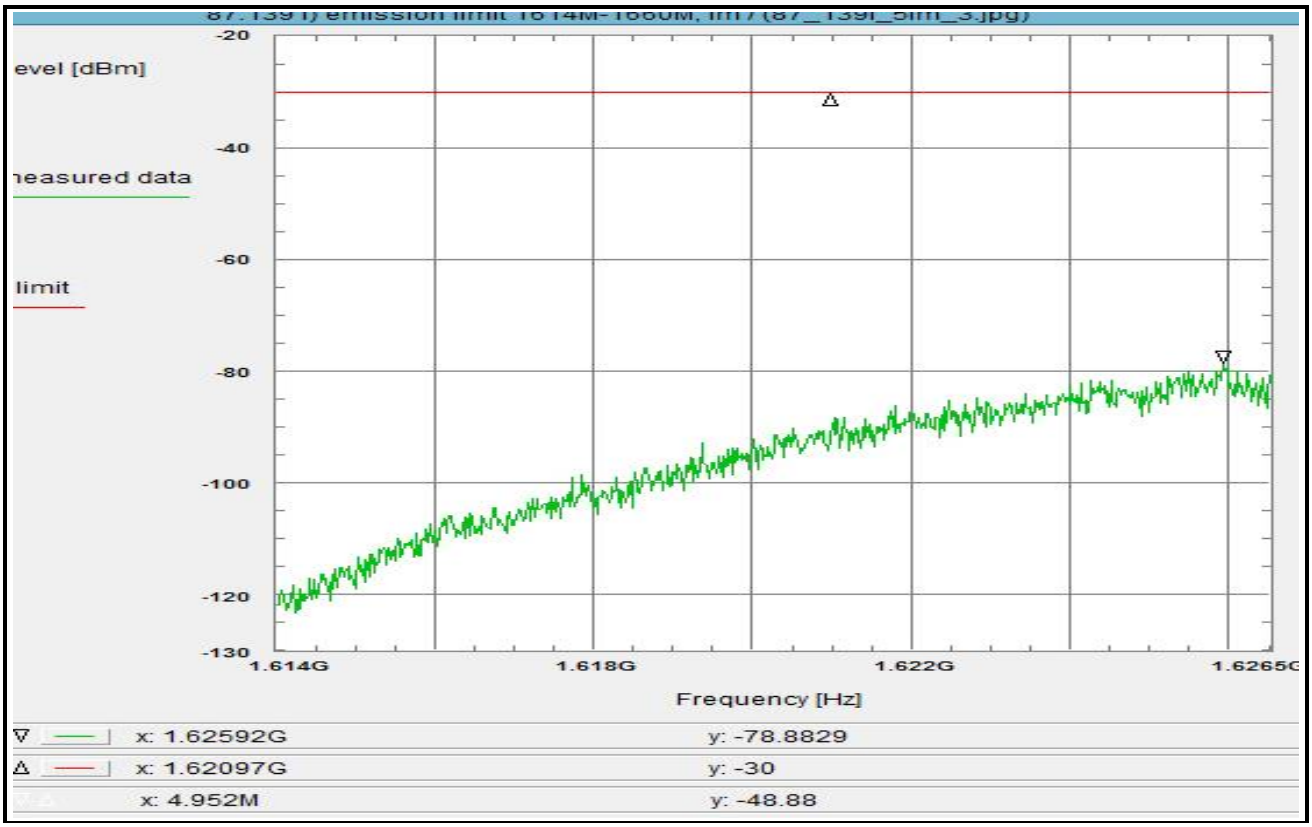
Start frequency:	1.559	GHz
Stop frequency:	1.614	GHz
Center frequency:	1.5865	GHz
Frequency span:	55	MHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	5	dB
Trace-Mode:	Clear Write	
Detector-Mode:	Pos Peak	

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:

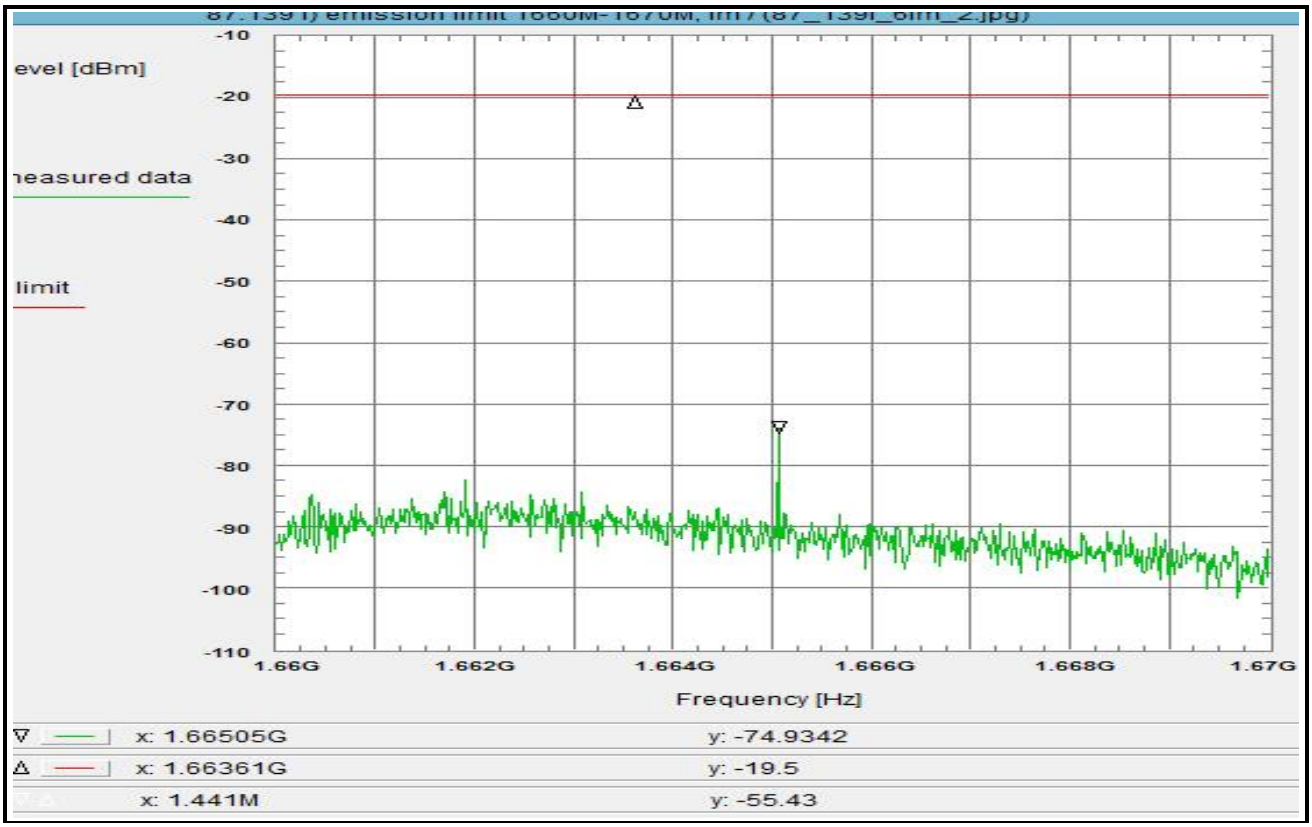
Start frequency:	1.614	GHz
Stop frequency:	1.6265	GHz
Center frequency:	1.62025	GHz
Frequency span:	12.5	MHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	5	dB
Trace-Mode:	Clear Write	
Detector-Mode:	Pos Peak	

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:

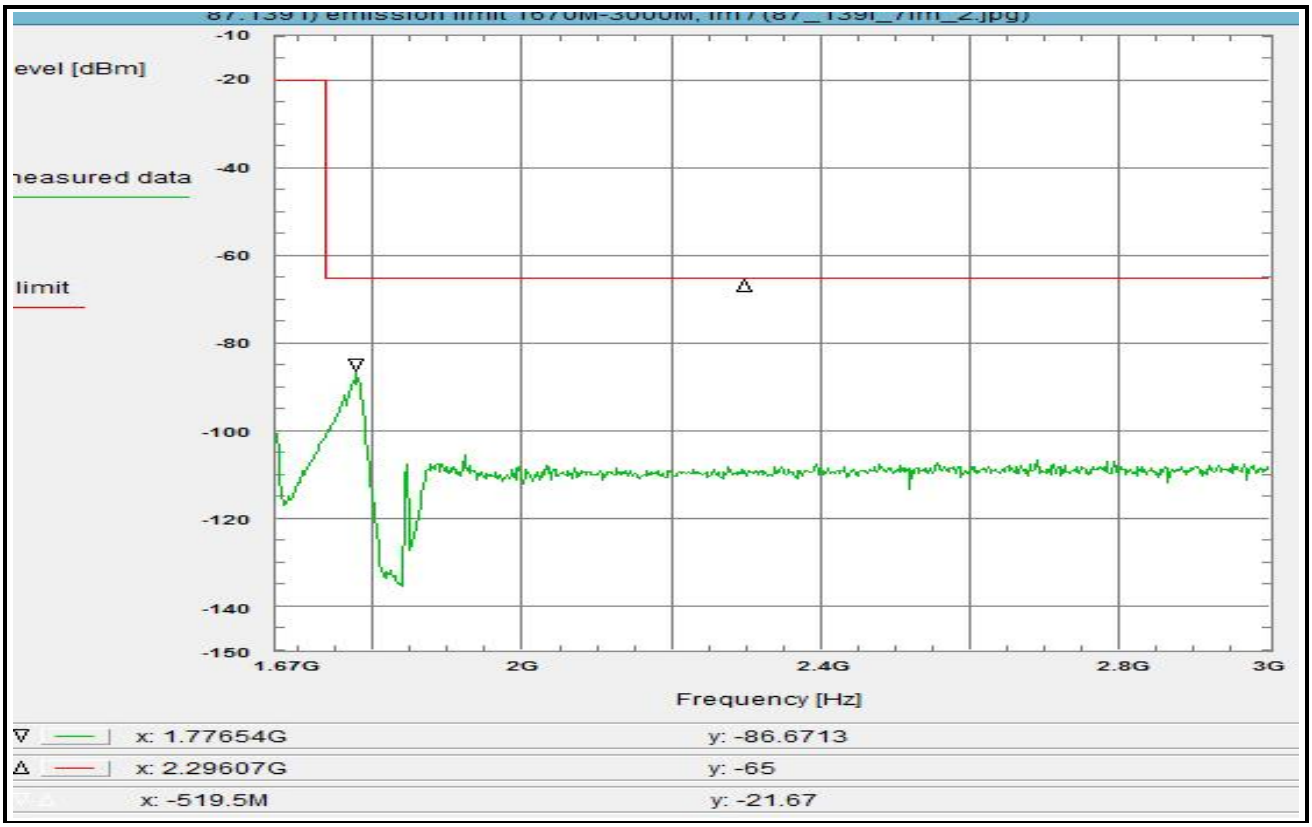
Start frequency:	1.66	GHz
Stop frequency:	1.67	GHz
Center frequency:	1.665	GHz
Frequency span:	10	MHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	5	dB
Trace-Mode:	Clear Write	
Detector-Mode:	Pos Peak	

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:

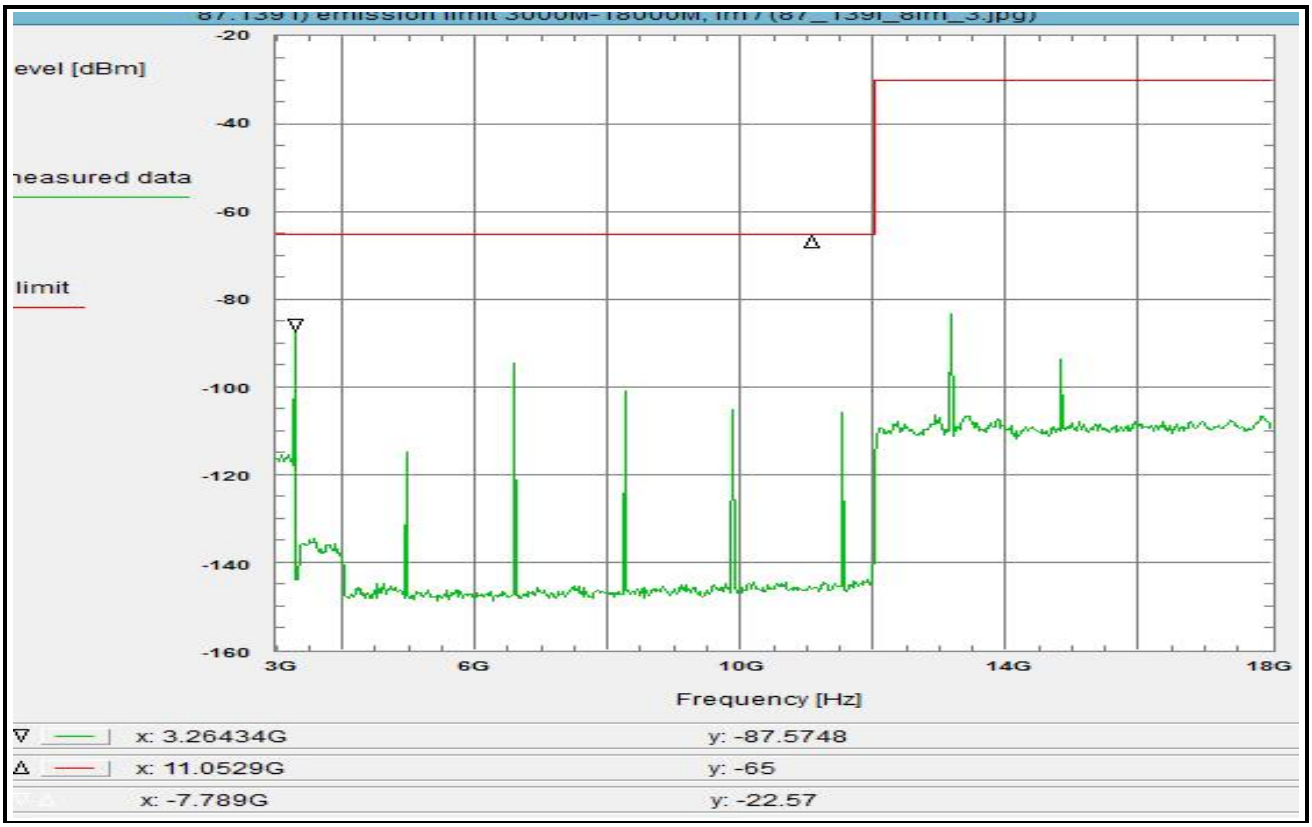
Start frequency:	1.67	GHz
Stop frequency:	3	GHz
Center frequency:	2.335	GHz
Frequency span:	1.33	GHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	5	dB
Trace-Mode:	Clear Write	
Detector-Mode:	Pos Peak	

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	

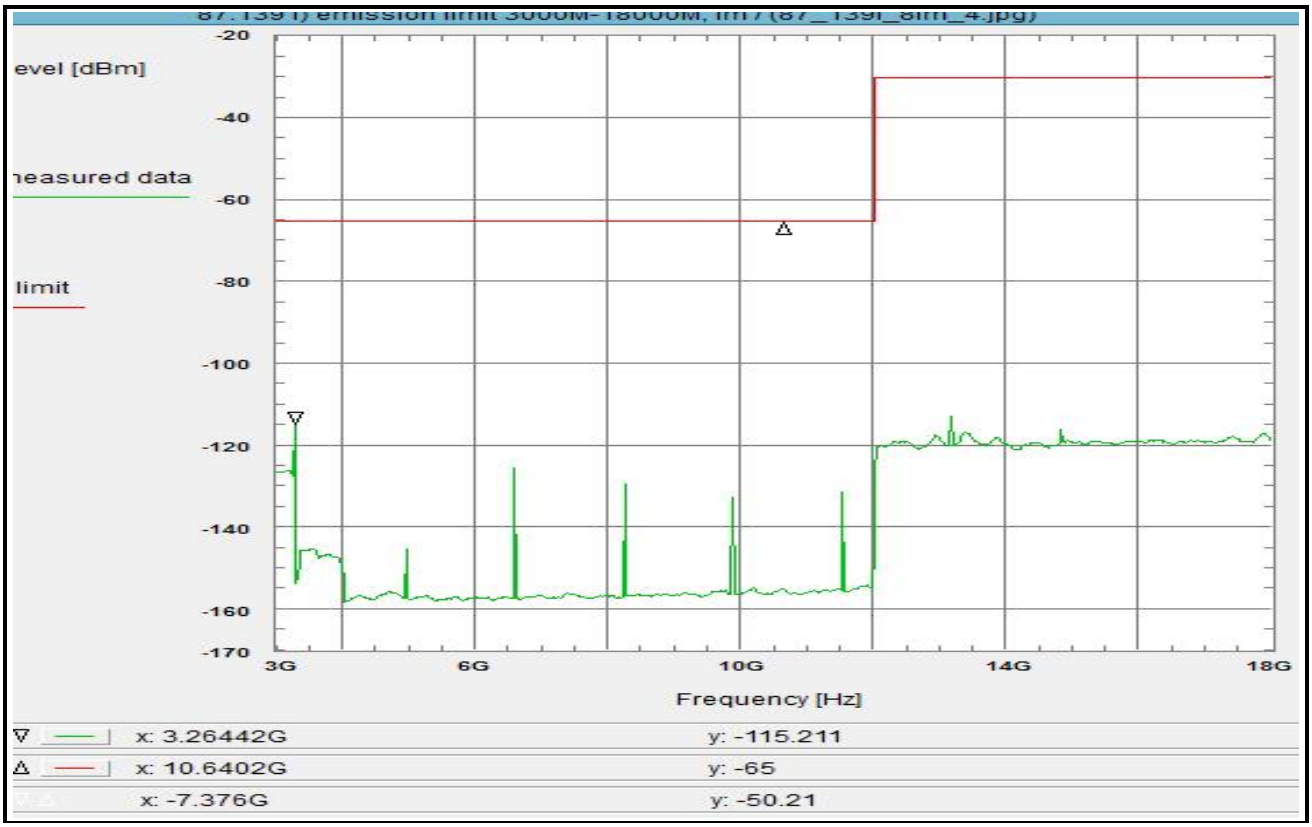
Correction:

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	

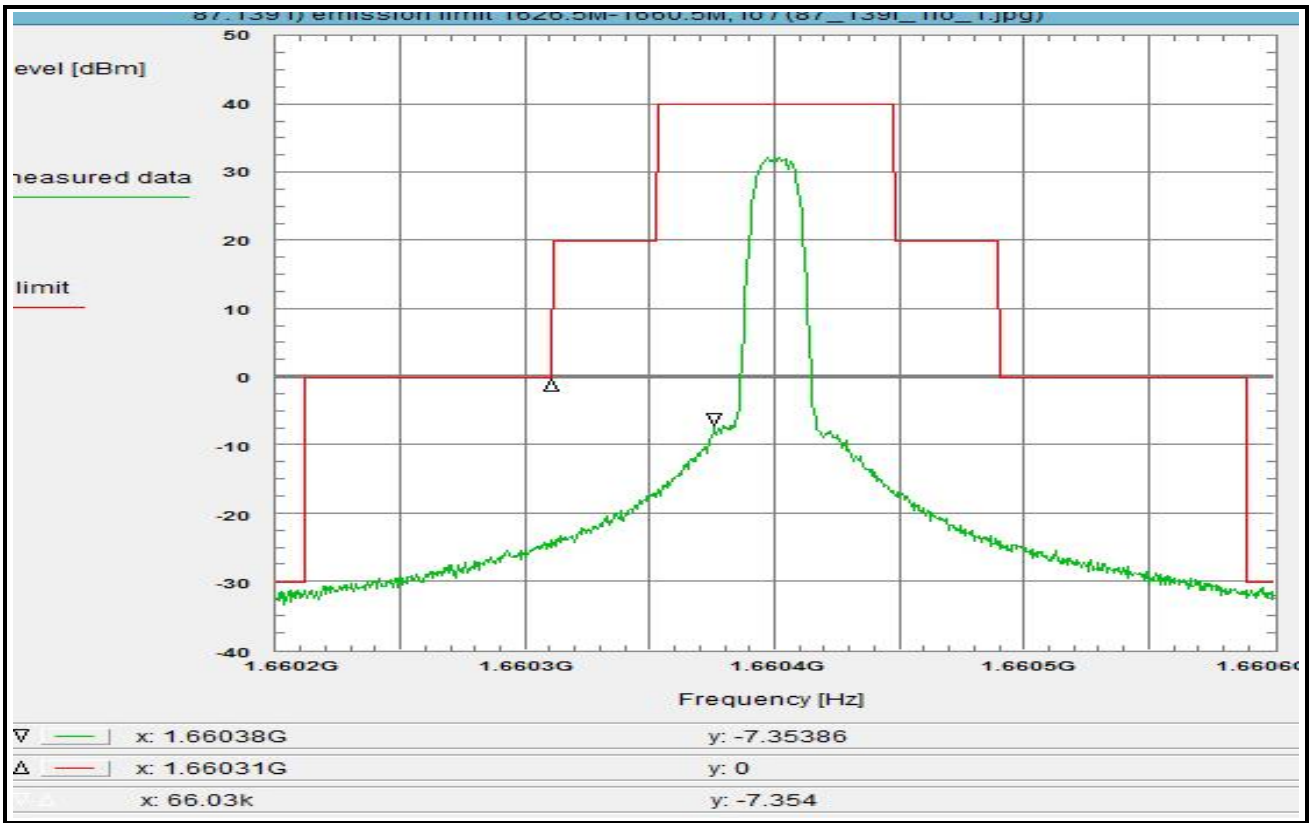
Correction:

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:

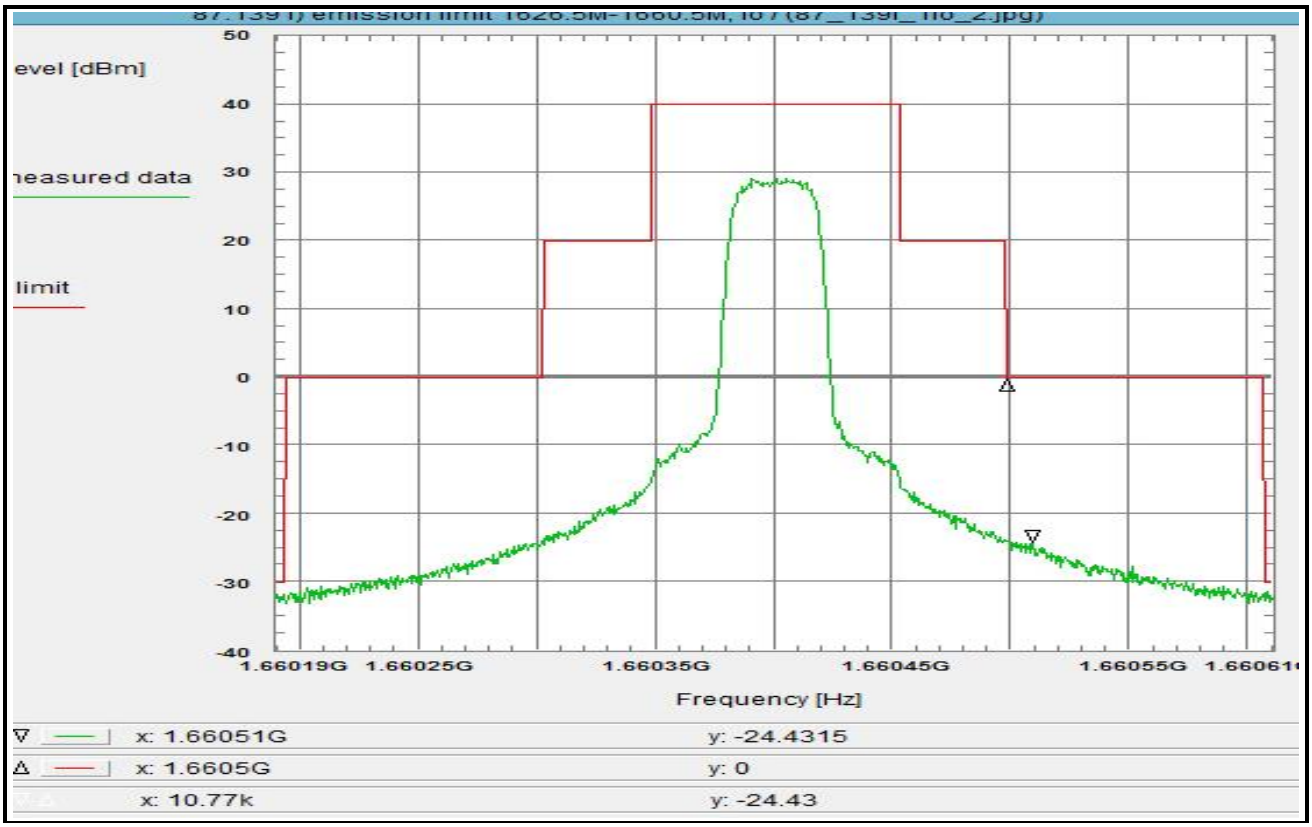
Start frequency:	1.6602	GHz
Stop frequency:	1.6606	GHz
Center frequency:	1.6604	GHz
Frequency span:	400	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	5	dB
Trace-Mode:	Average	
Detector-Mode:	AVG	

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	-	0.0	dB
(U005)	+	29.8	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:

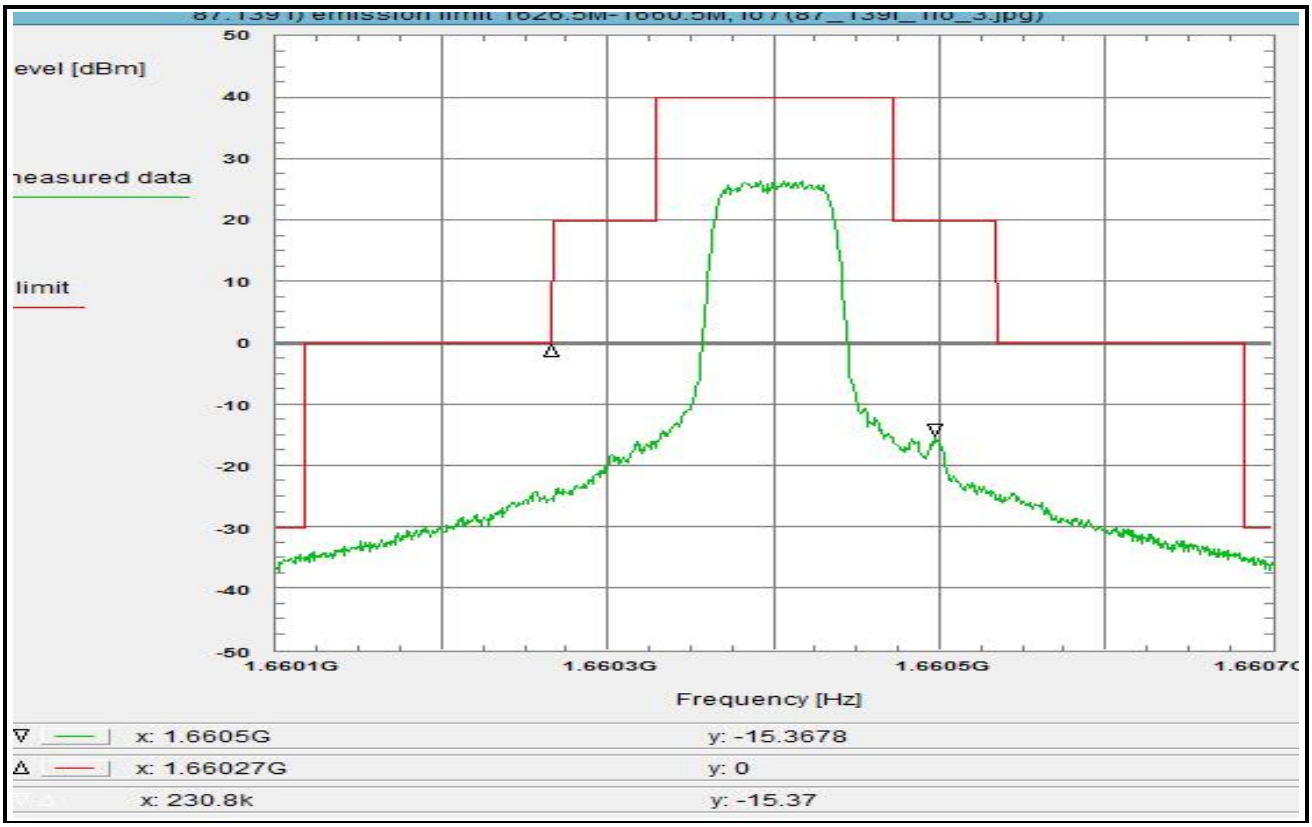
Start frequency:	1.66019	GHz
Stop frequency:	1.66061	GHz
Center frequency:	1.6604	GHz
Frequency span:	420	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	5	dB
Trace-Mode:	Average	
Detector-Mode:	AVG	

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	-	0.0	dB
(U005)	+	29.8	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:

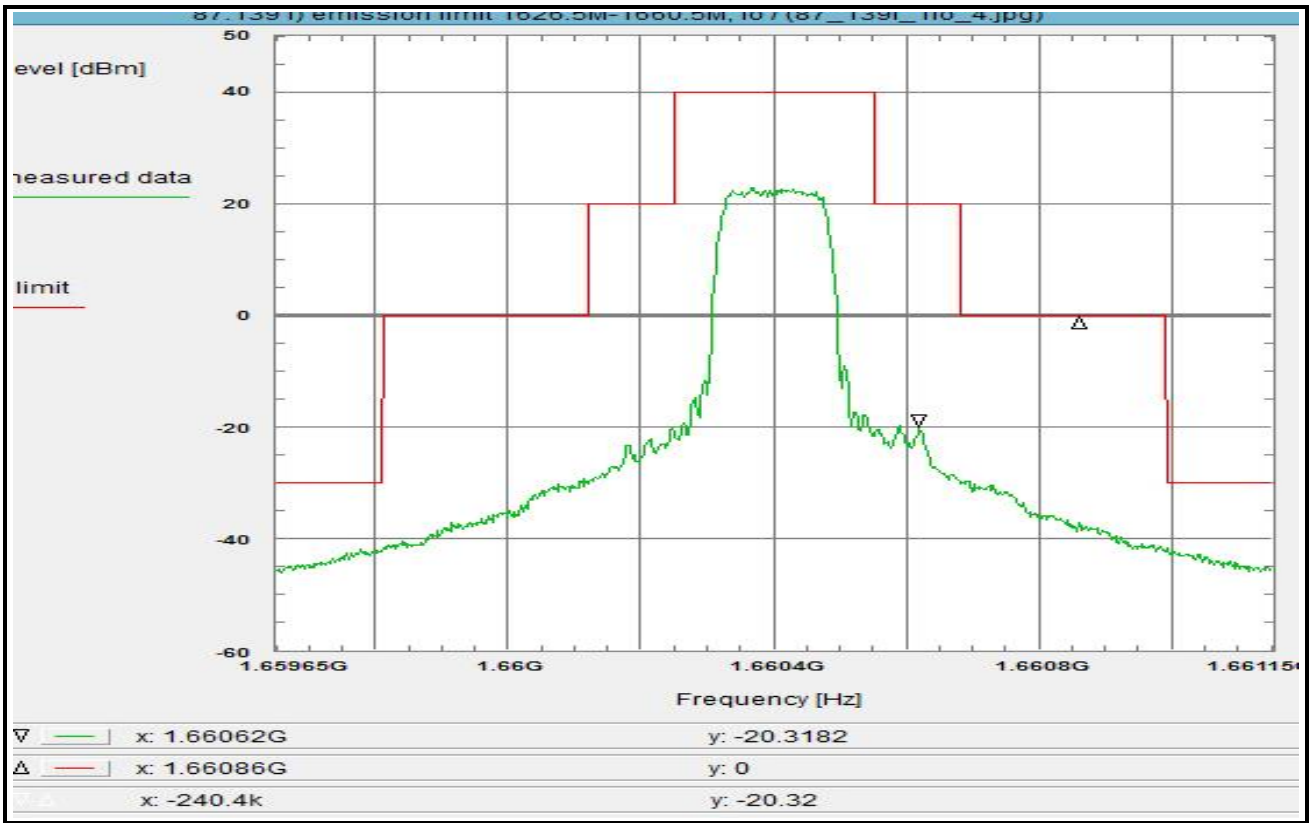
Start frequency:	1.6601	GHz
Stop frequency:	1.6607	GHz
Center frequency:	1.6604	GHz
Frequency span:	600	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	5	dB
Trace-Mode:	Average	
Detector-Mode:	AVG	

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	-	0.0	dB
(U005)	+	29.8	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:

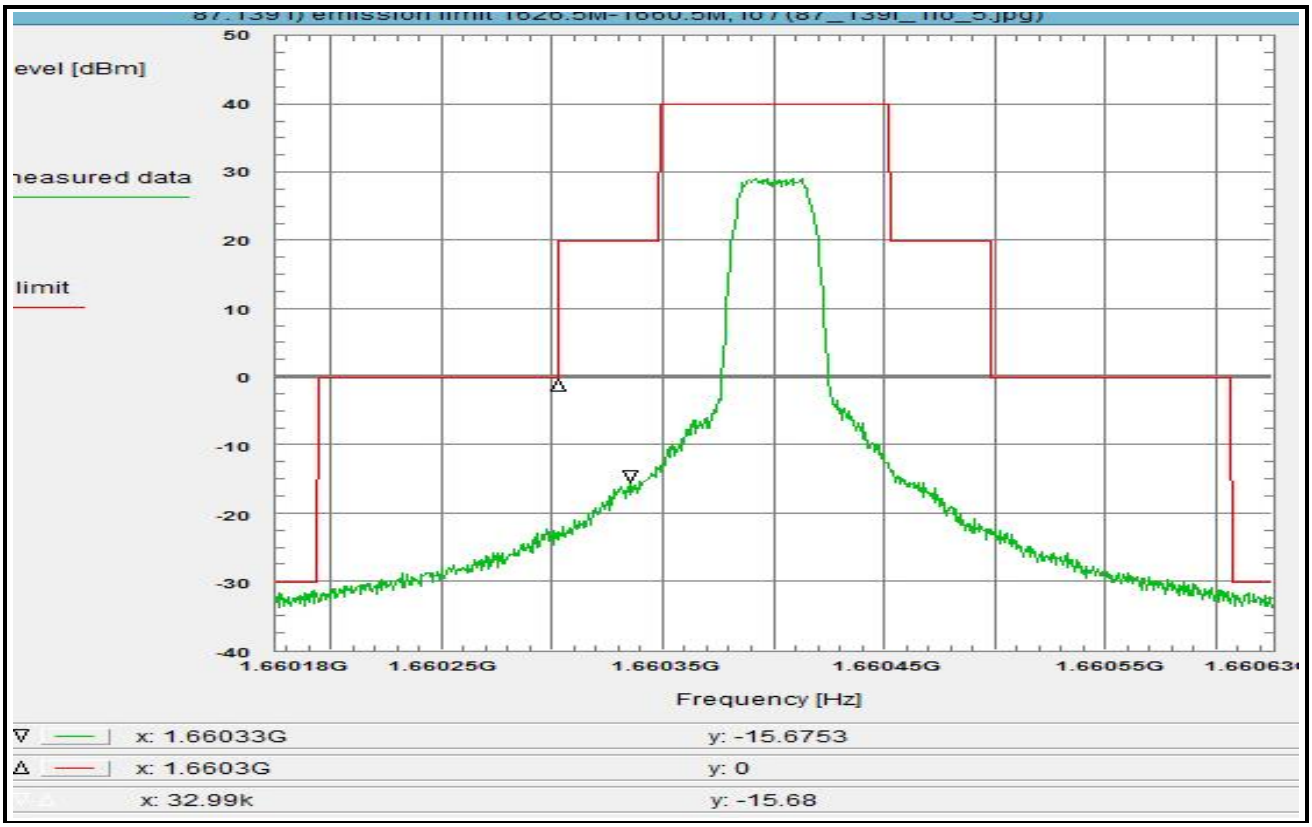
Start frequency:	1.65965	GHz
Stop frequency:	1.66115	GHz
Center frequency:	1.6604	GHz
Frequency span:	1.5	MHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	5	dB
Trace-Mode:	Average	
Detector-Mode:	AVG	

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	-	0.0	dB
(U005)	+	29.8	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:

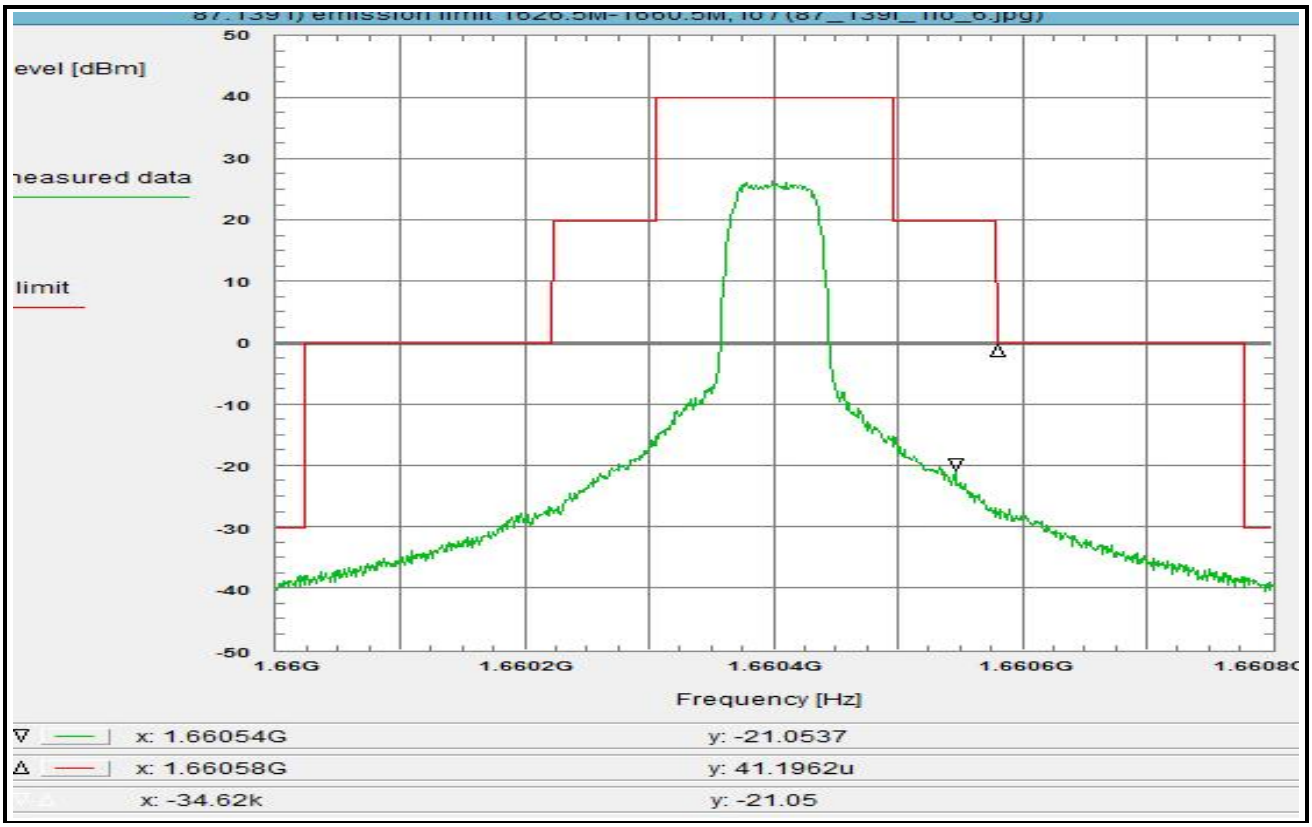
Start frequency:	1.660175	GHz
Stop frequency:	1.660625	GHz
Center frequency:	1.6604	GHz
Frequency span:	450	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	5	dB
Trace-Mode:	Average	
Detector-Mode:	AVG	

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	-	0.0	dB
(U005)	+	29.8	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:

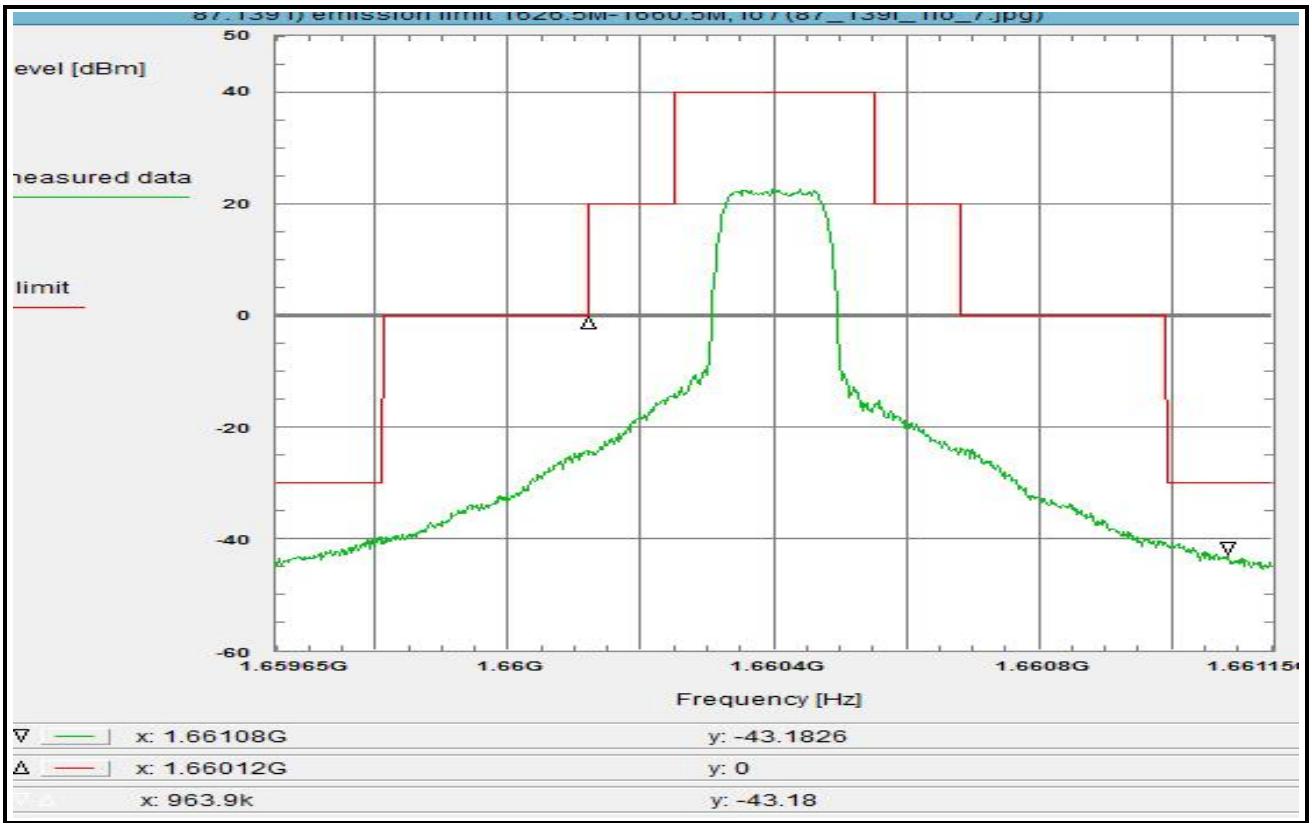
Start frequency:	1.66	GHz
Stop frequency:	1.6608	GHz
Center frequency:	1.6604	GHz
Frequency span:	800	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	5	dB
Trace-Mode:	Average	
Detector-Mode:	AVG	

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	-	0.0	dB
(U005)	+	29.8	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:

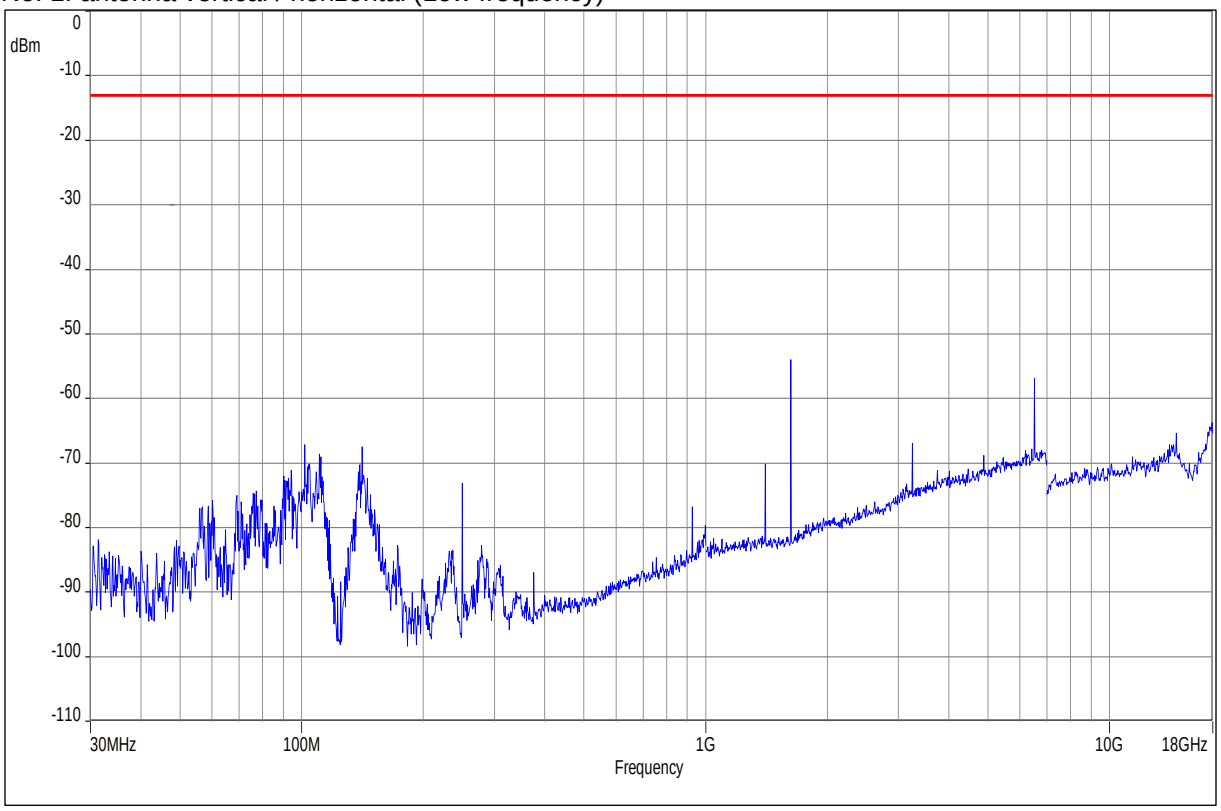
Directional coupler	+	0.0	dB
Coaxial cable (C218)	+	0.8	dB
DUT-Antenna (on-axis)	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U005)	+	29.8	dB
TOTAL CORRECTION:	+	31.8	dB

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

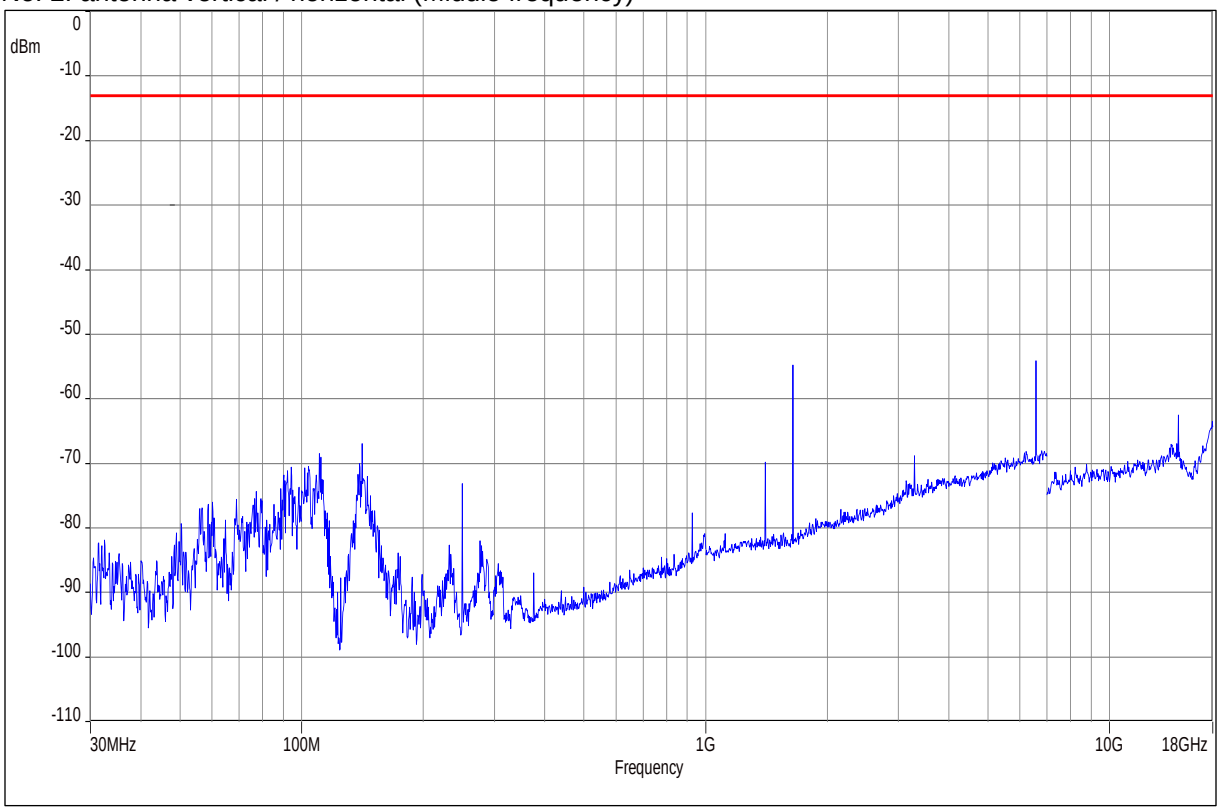
3 Measurement results, Spurious emissions 30MHz - 18 GHz

This Chapter 3 consists of 3 pages including this page.

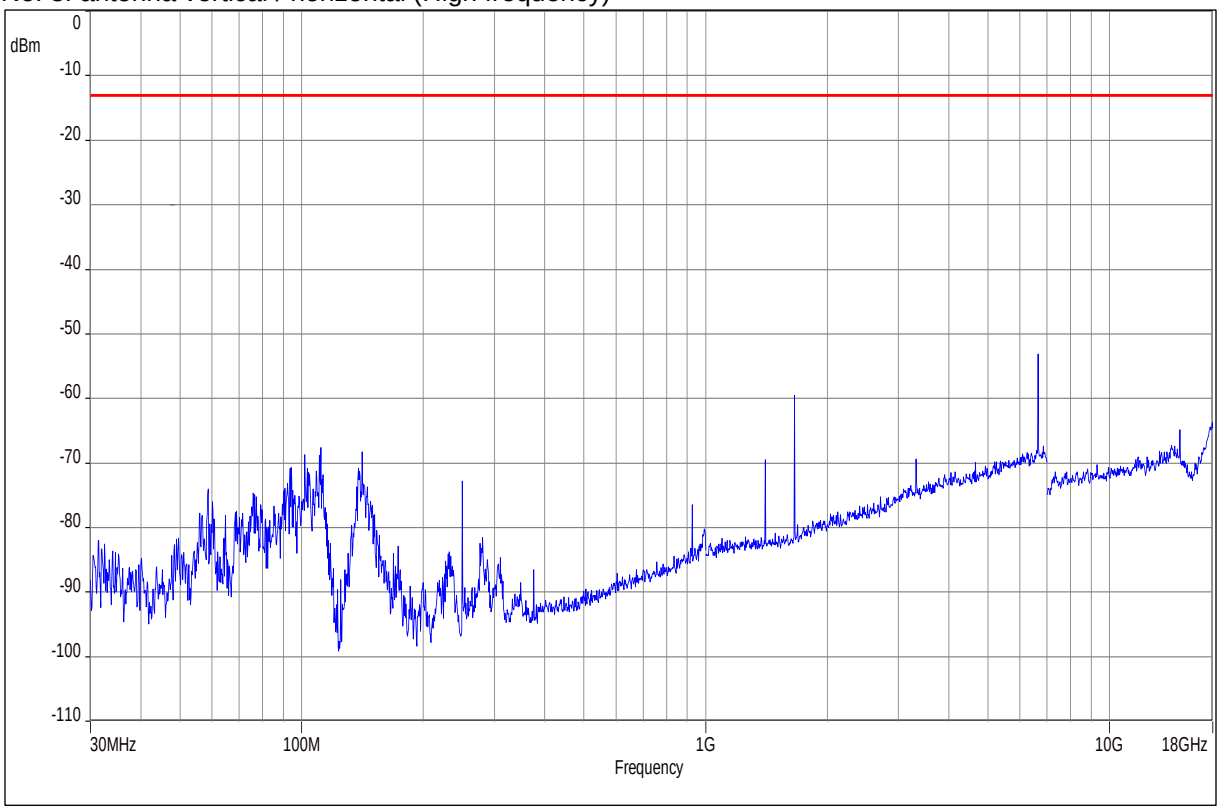
Plot No. 1: antenna vertical / horizontal (Low frequency)



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