Annex E

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Test report annex authorized:

Meheza Walla
Lab Manager
Radio Communications & EMC

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2. Measurement results for CLASS 15, FCC Part 87

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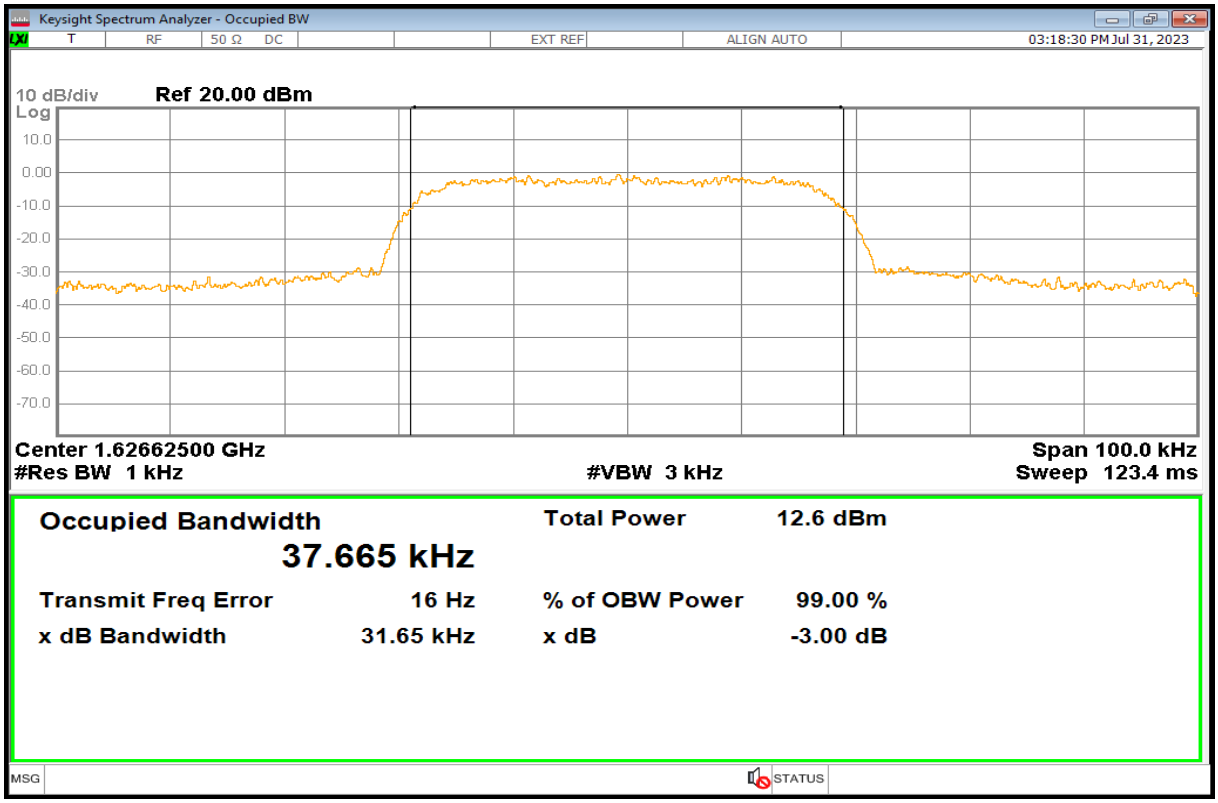
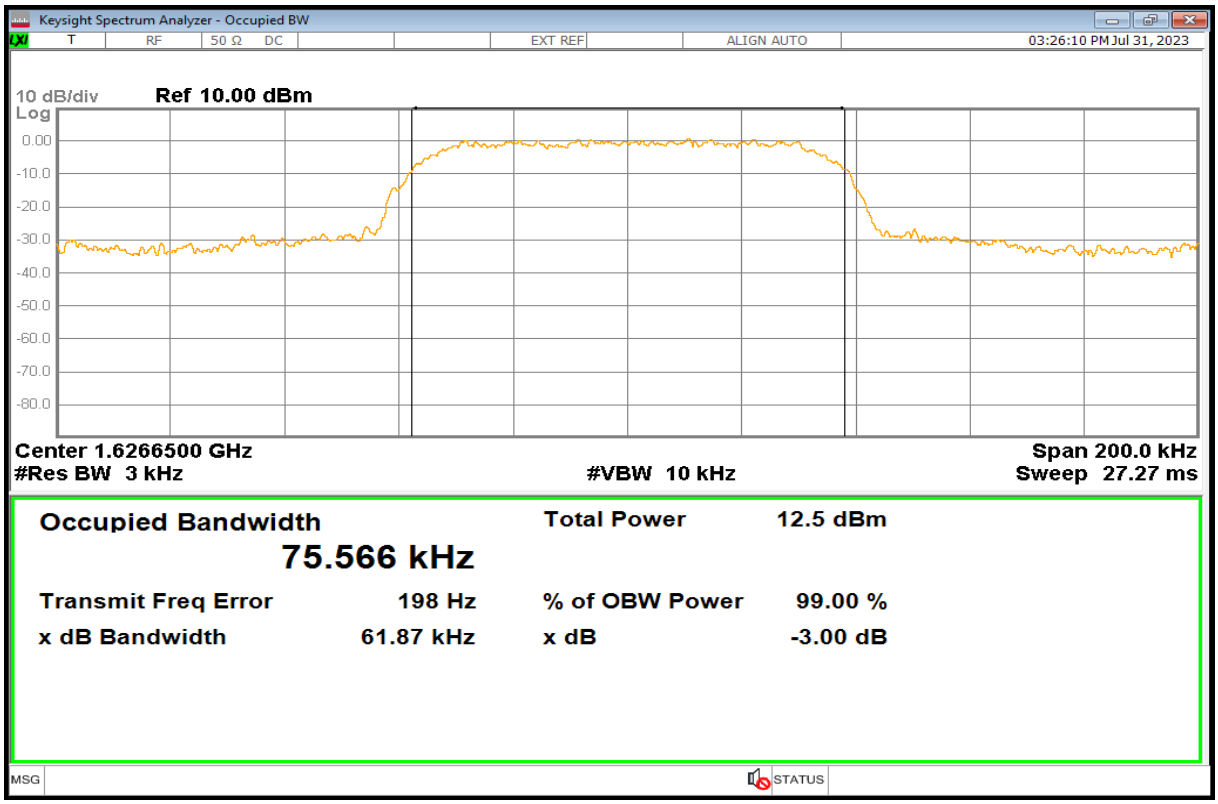
Plot No. 1



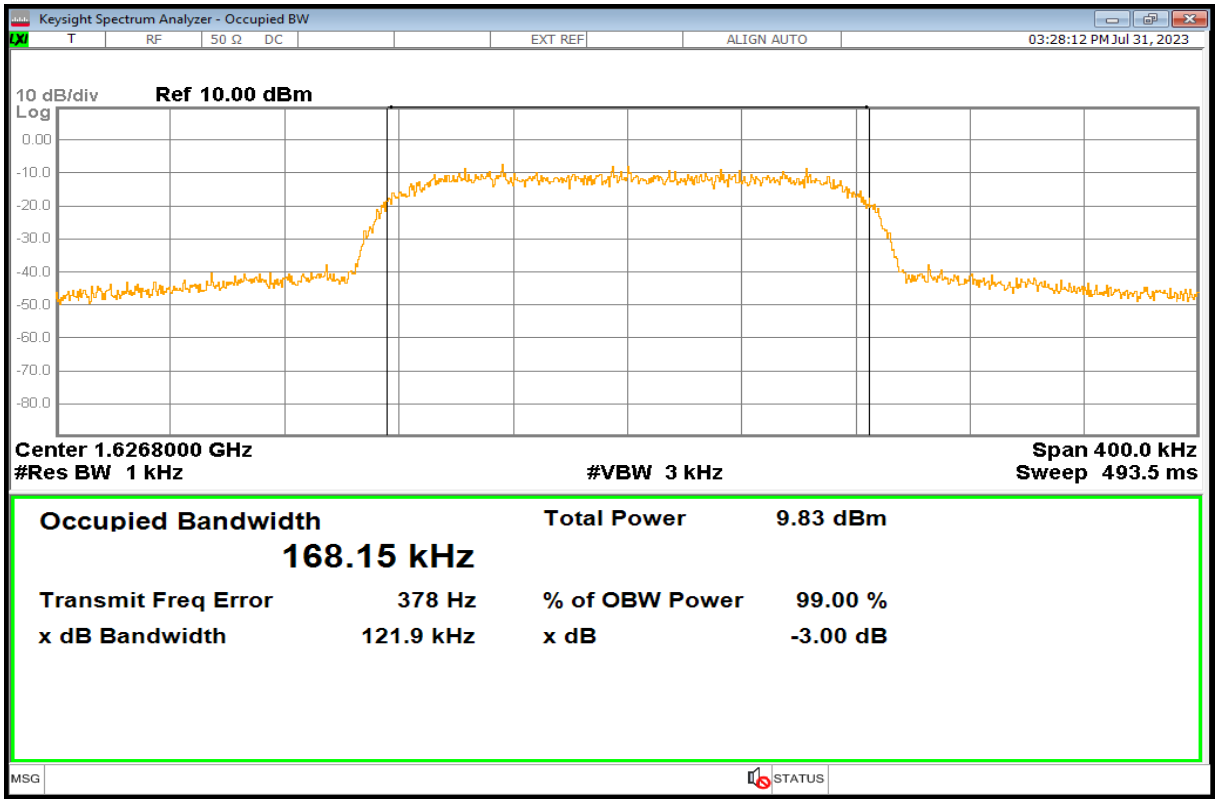
B3dB, Sub-Band 1, Low Channel, R5T1XD

Plot No. 2



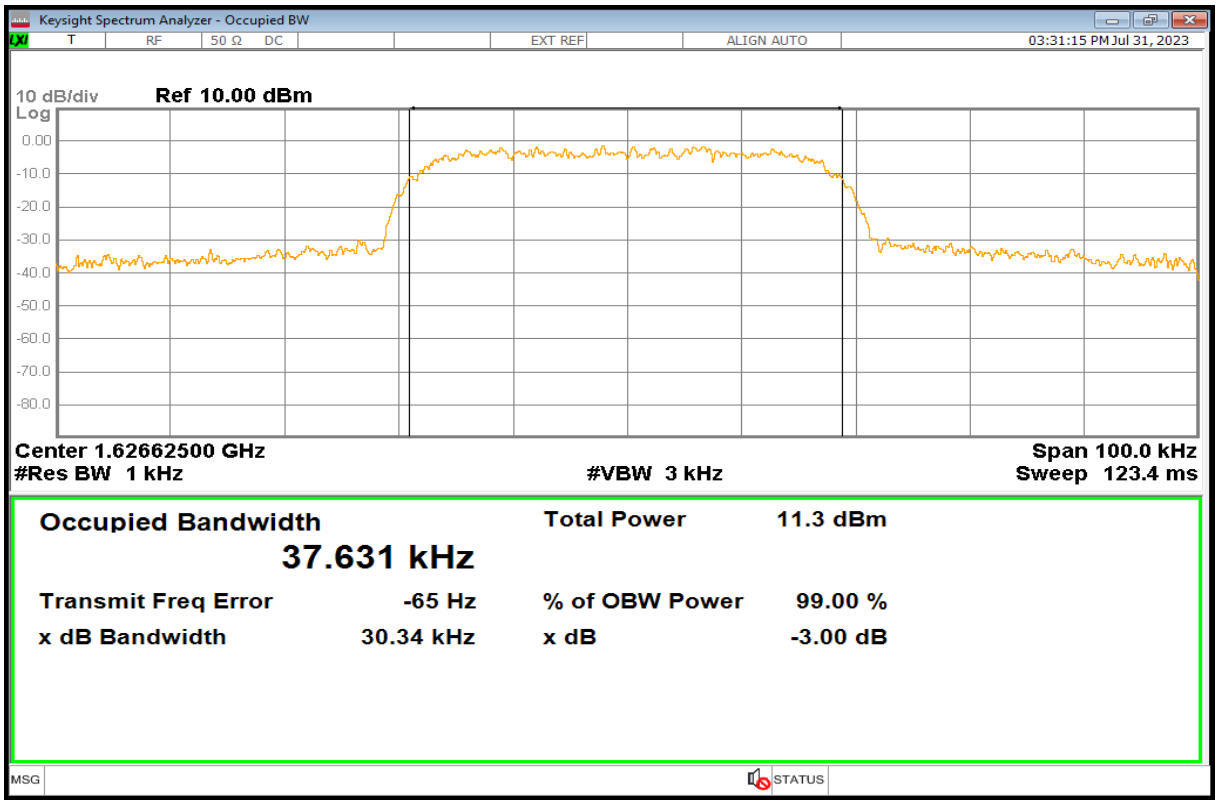
B3dB, Sub-Band 1, Low Channel, R5T2XD

Plot No. 3



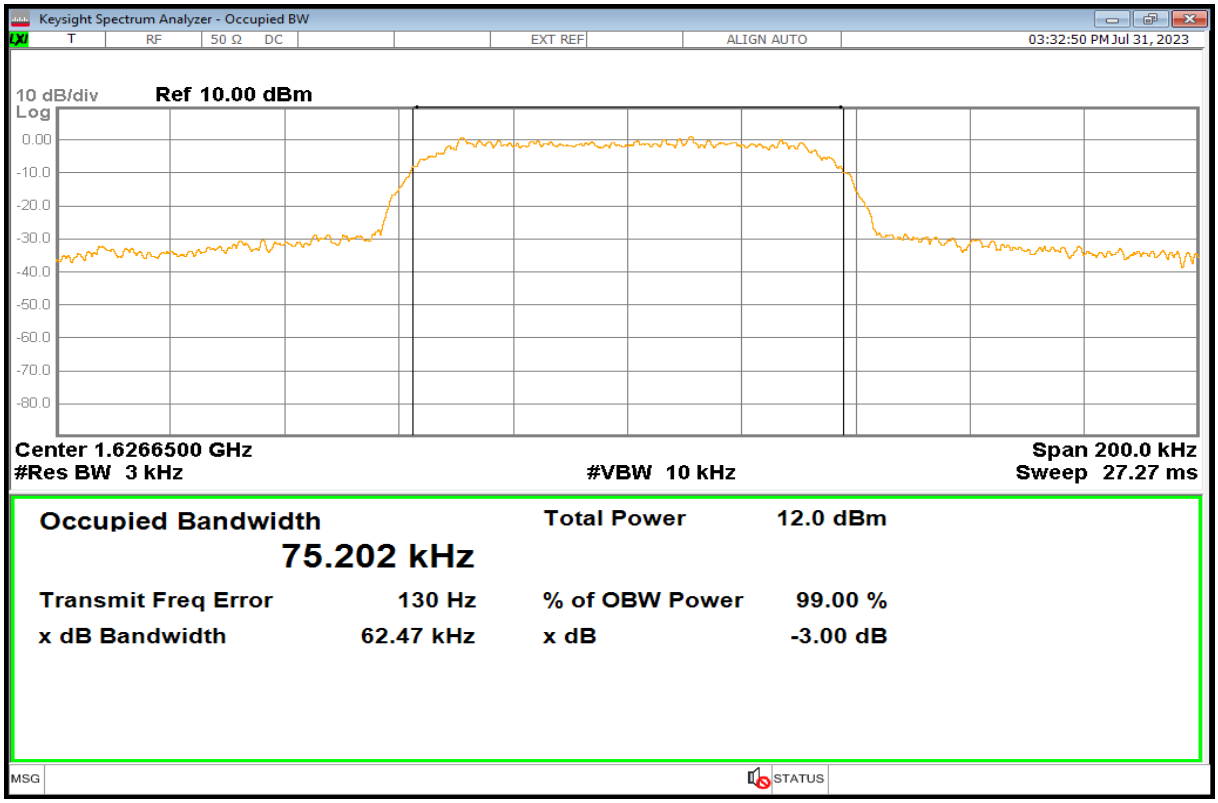
B3dB, Sub-Band 1, Low Channel, R5T4.5XD

Plot No. 4



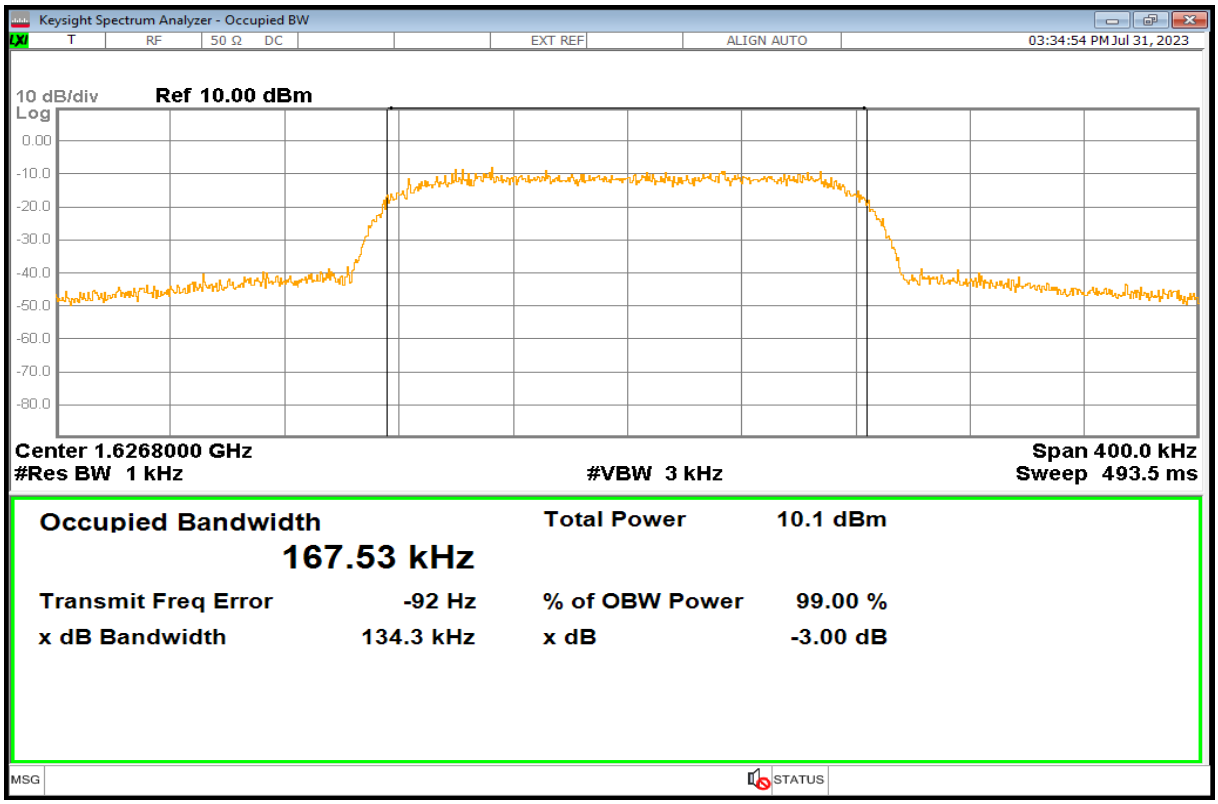
B3dB, Sub-Band 1, Low Channel, R20T1XD

Plot No. 5



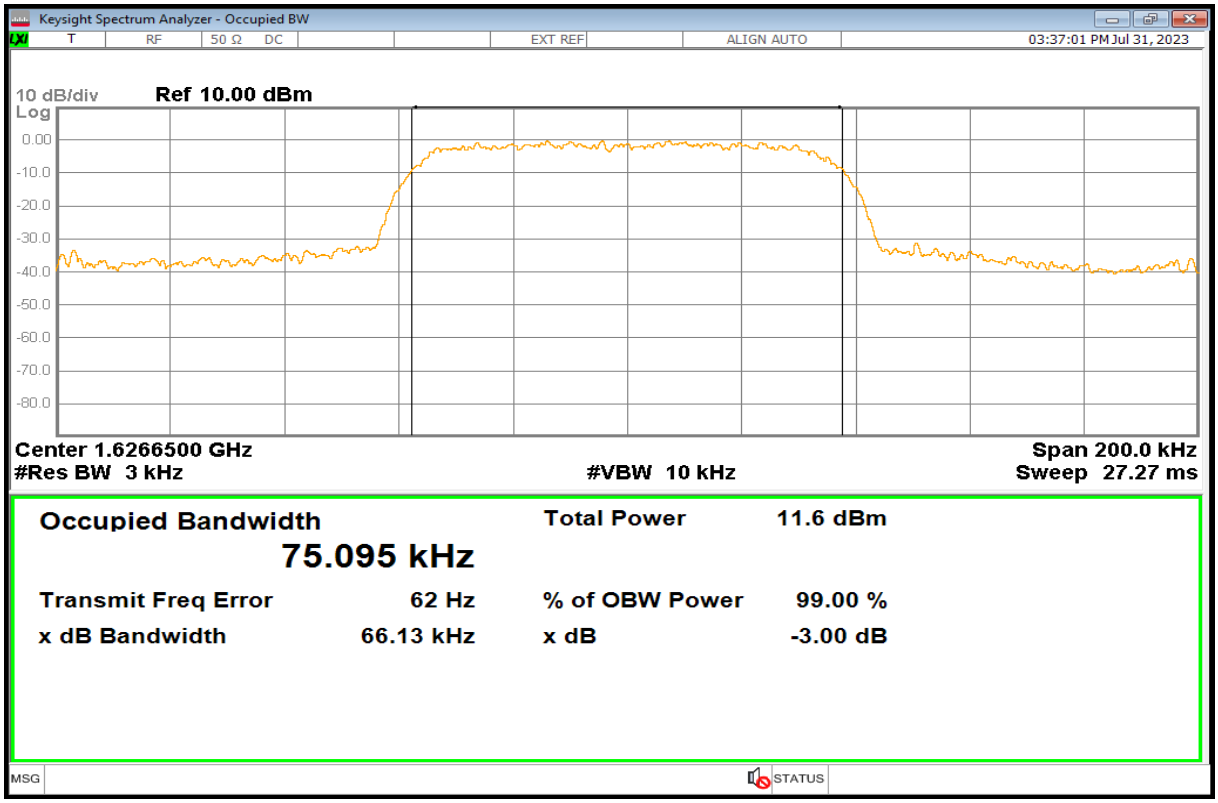
B3dB, Sub-Band 1, Low Channel, R20T2XD

Plot No. 6



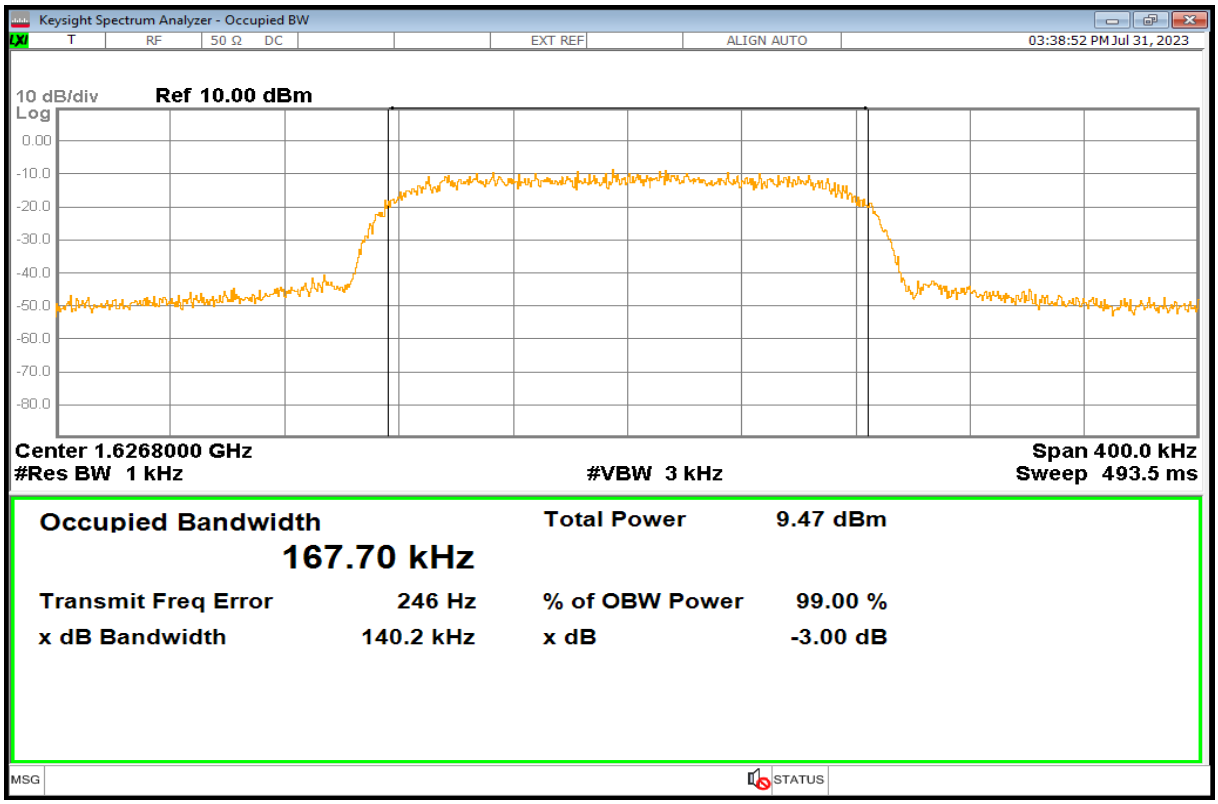
B3dB, Sub-Band 1, Low Channel, R20T4.5XD

Plot No. 7



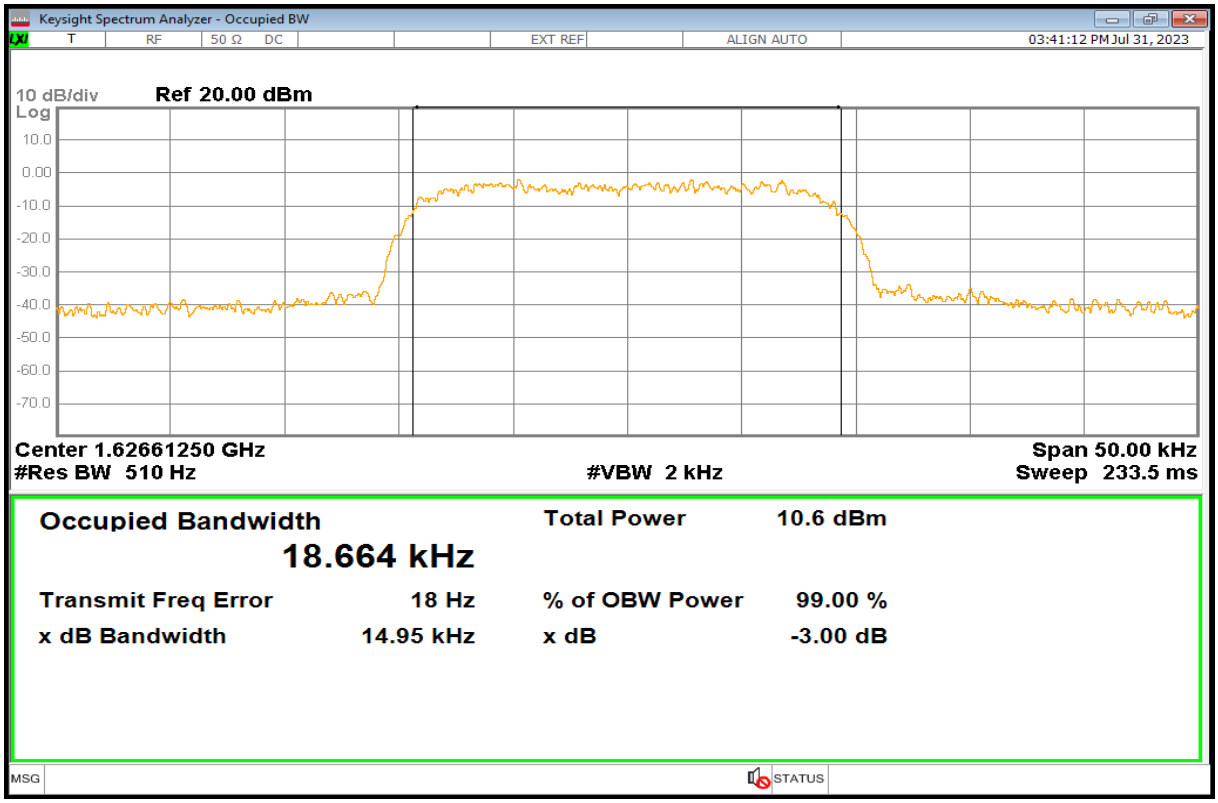
B3dB, Sub-Band 1, Low Channel, R5T2QD

Plot No. 8



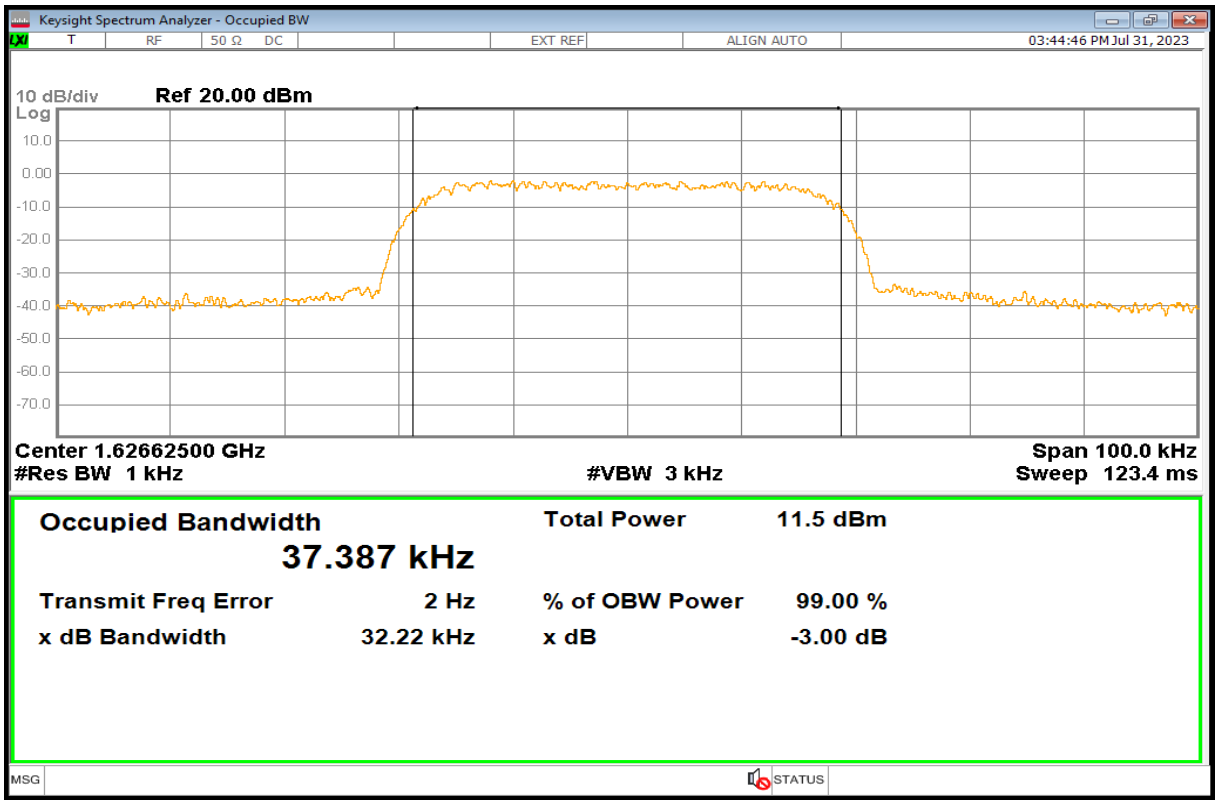
B3dB, Sub-Band 1, Low Channel, R5T4.5QD

Plot No. 9



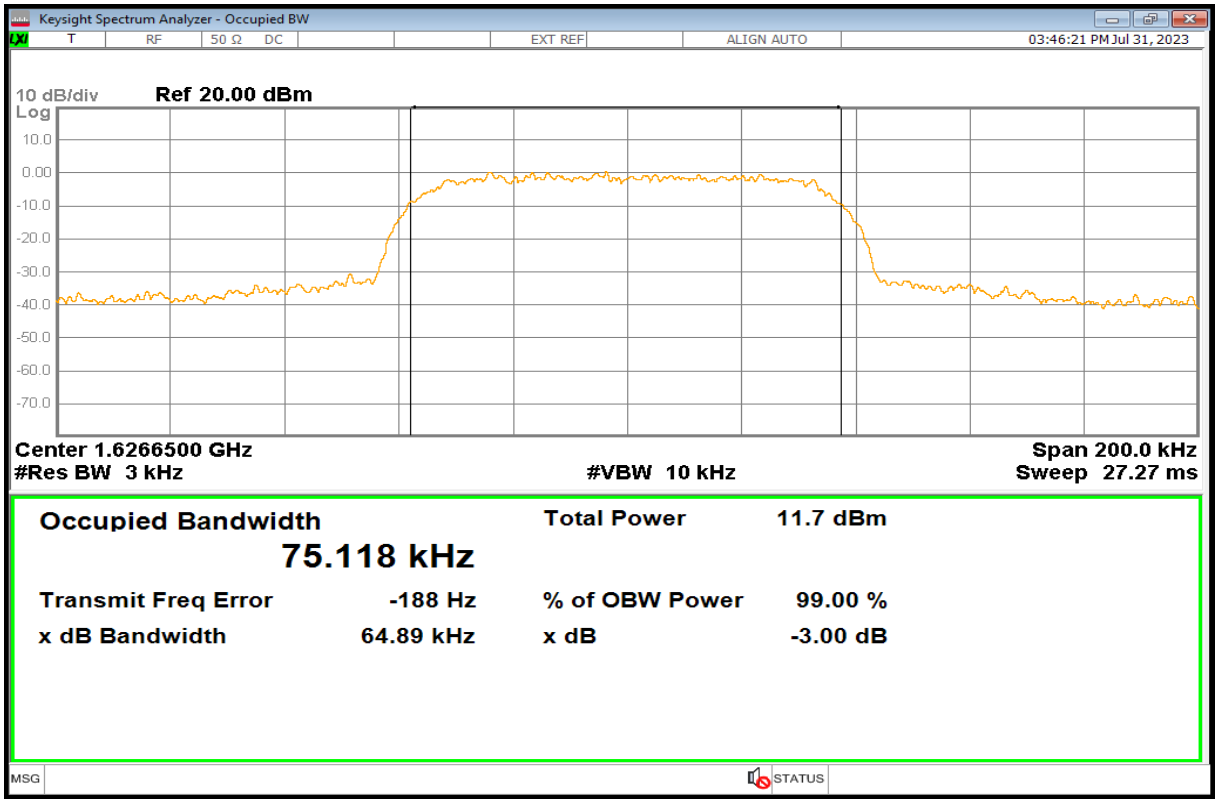
B3dB, Sub-Band 1, Low Channel, R20T0.5QD

Plot No. 10



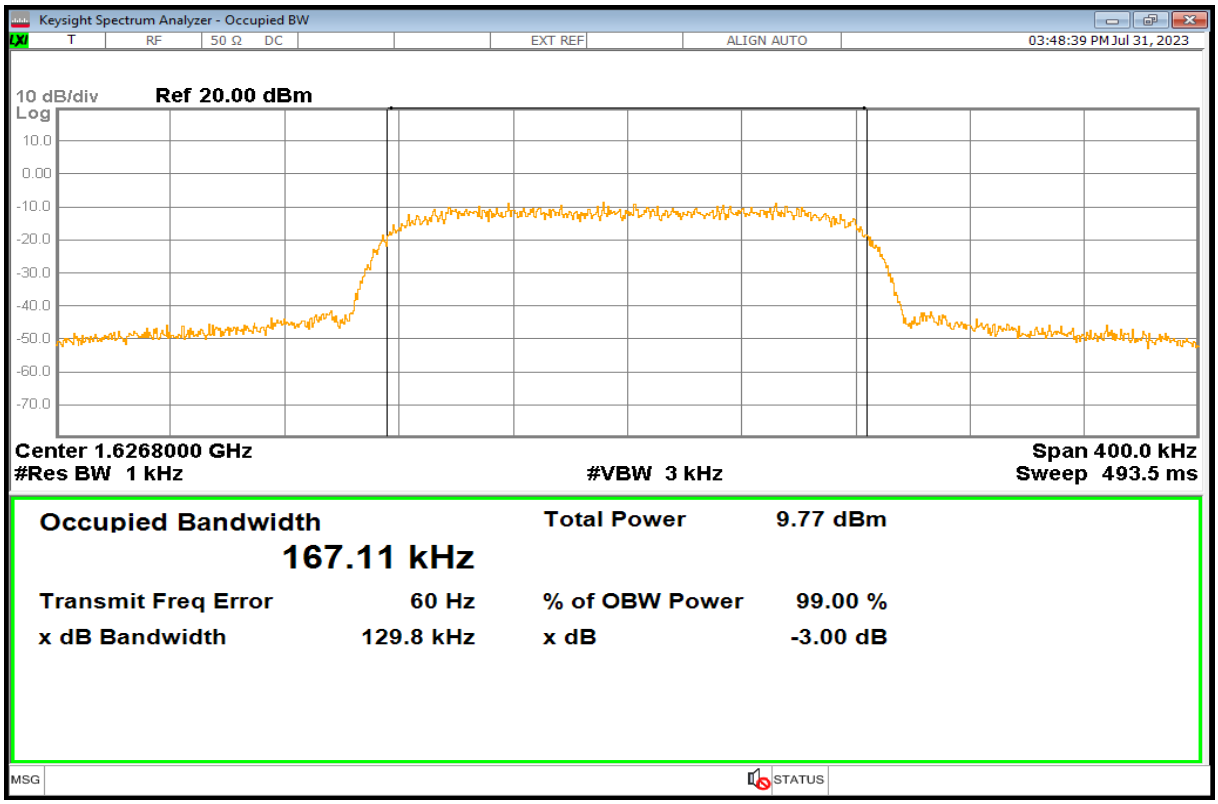
B3dB, Sub-Band 1, Low Channel, R20T1QD

Plot No. 11



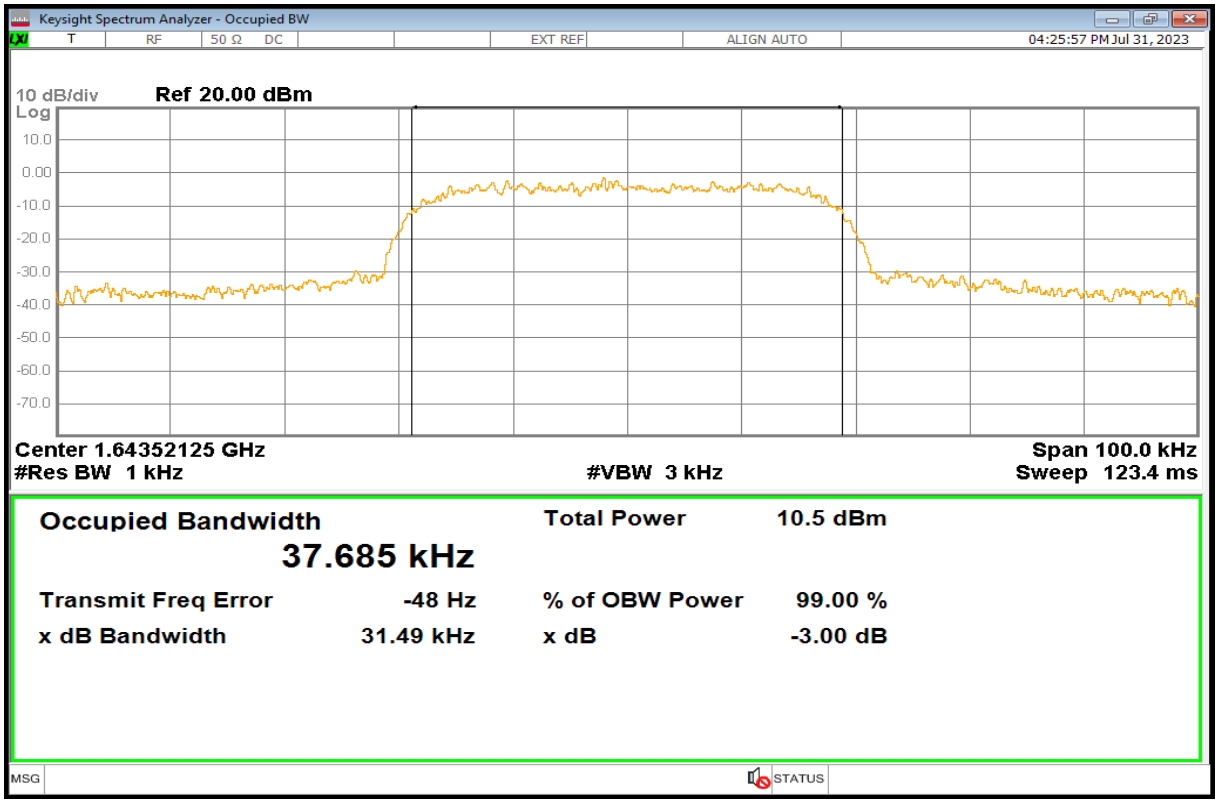
B3dB, Sub-Band 1, Low Channel, R20T2QD

Plot No. 12



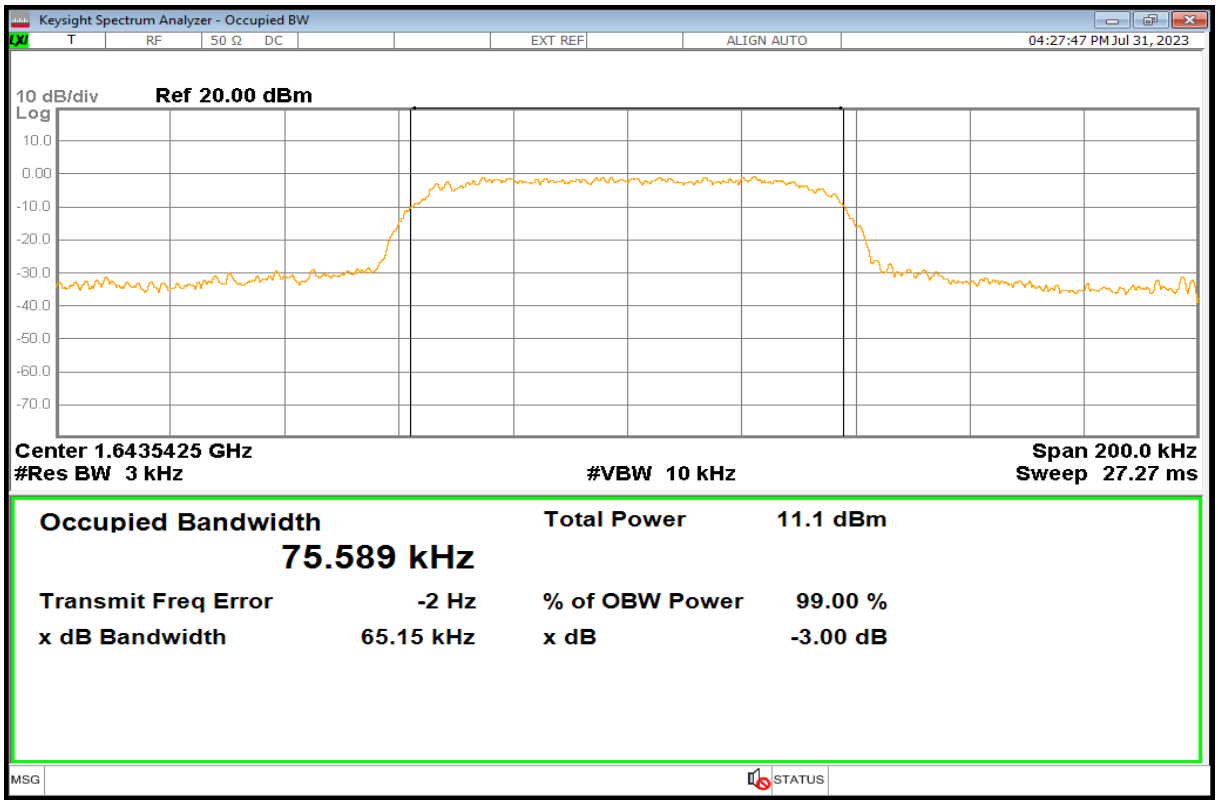
B3dB, Sub-Band 1, Low Channel, R20T4.5QD

Plot No. 13



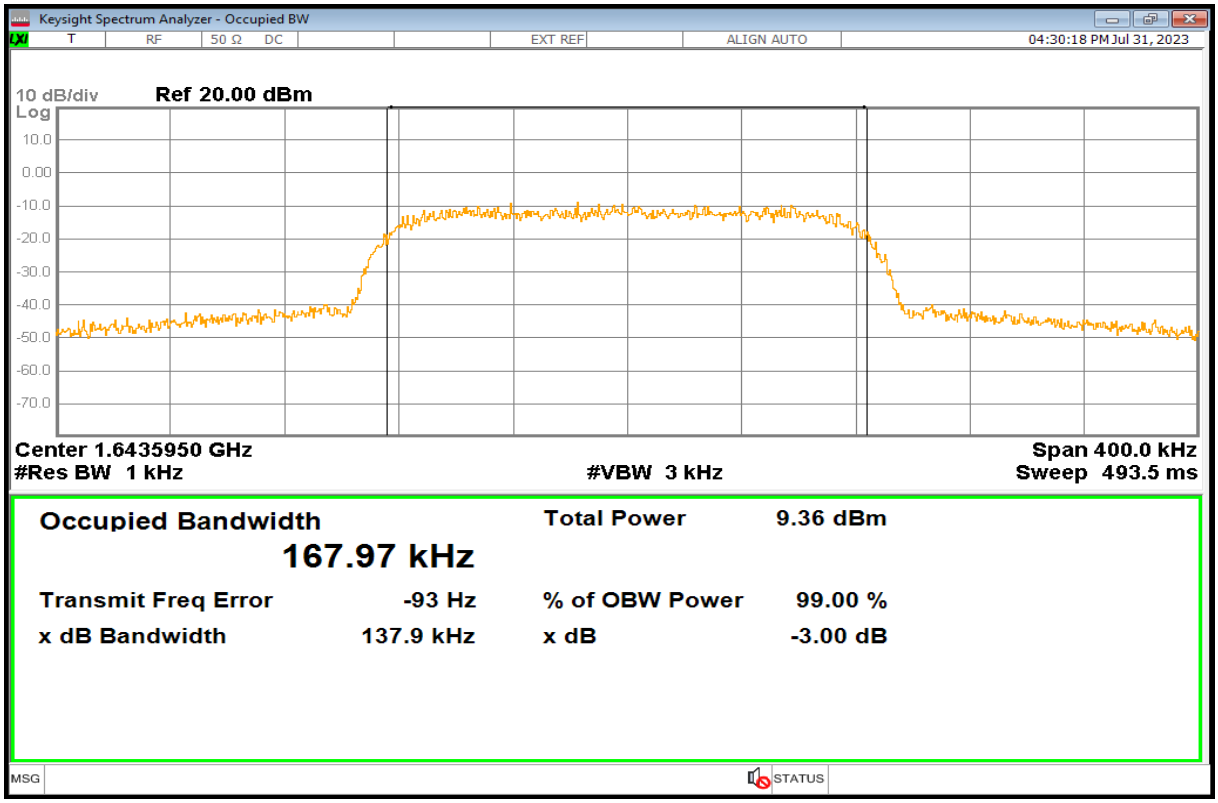
B3dB, Sub-Band 1, Middle Channel, R5T1XD

Plot No. 14



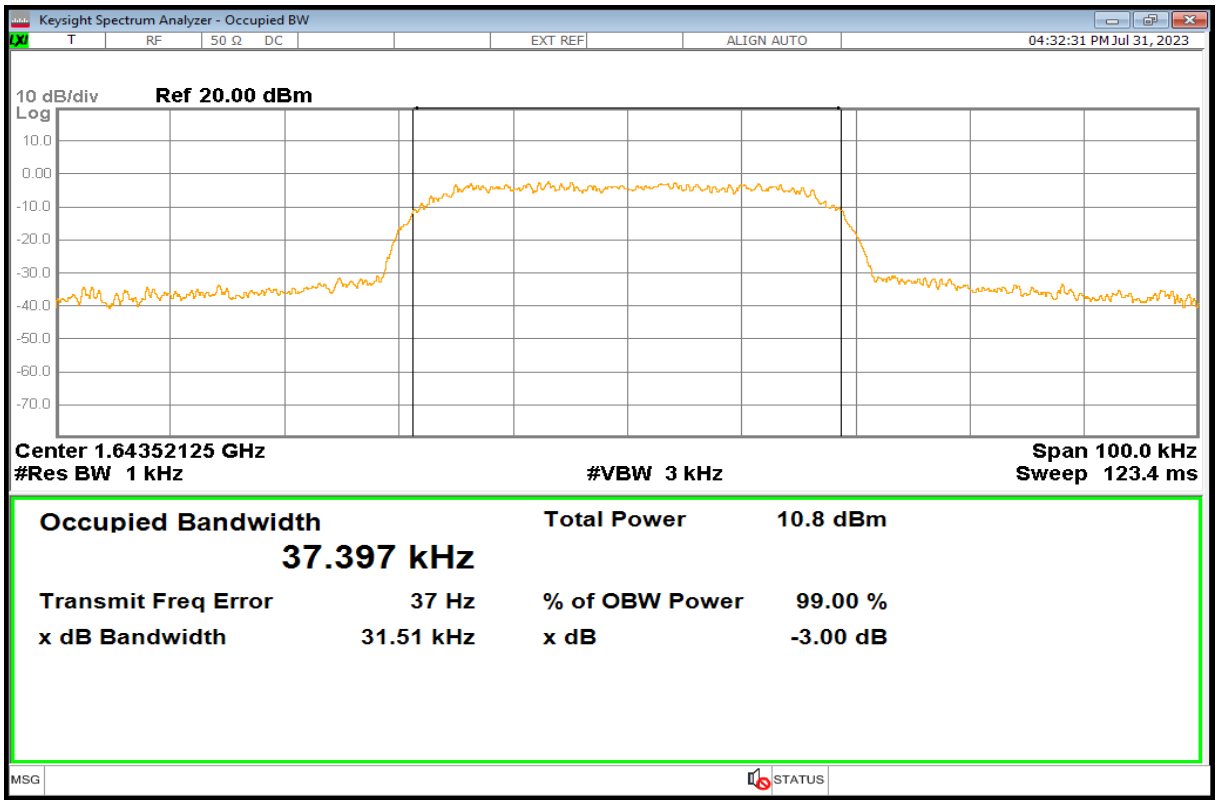
B3dB, Sub-Band 1, Middle Channel, R5T2XD

Plot No. 15



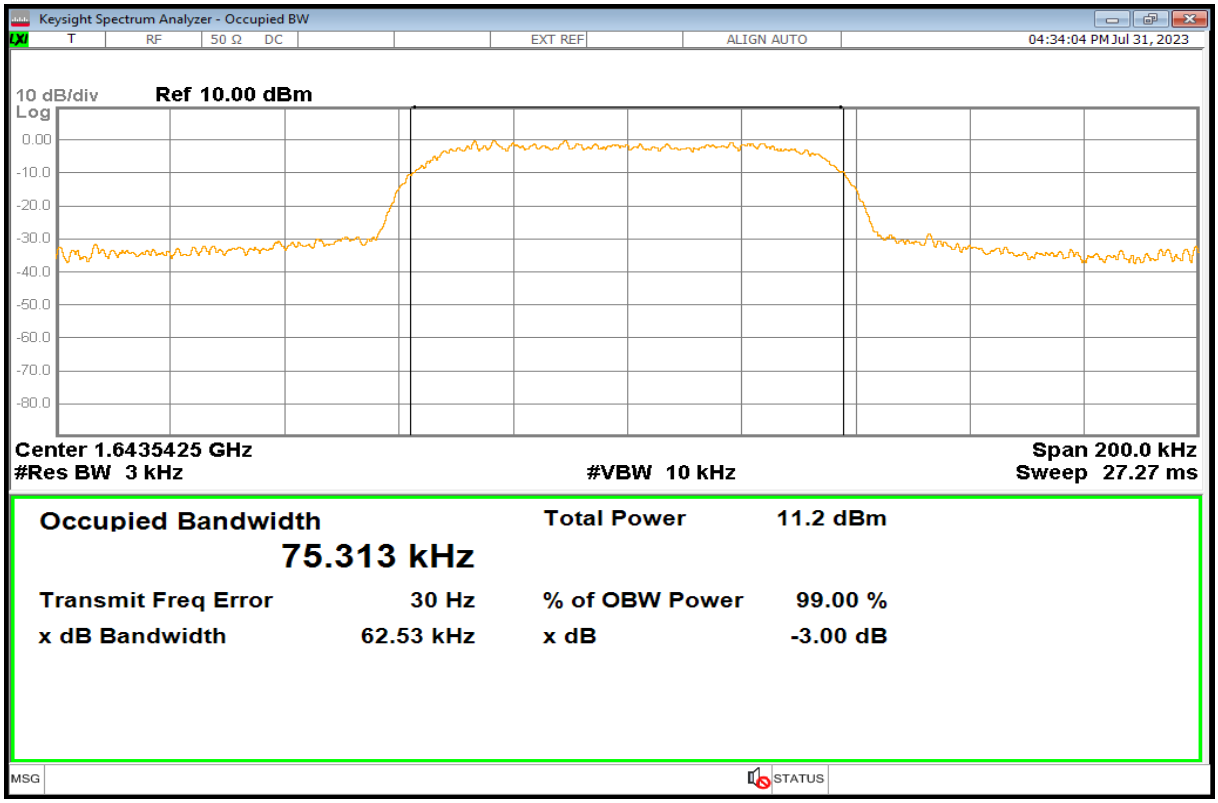
B3dB, Sub-Band 1, Middle Channel, R5T4.5XD

Plot No. 16



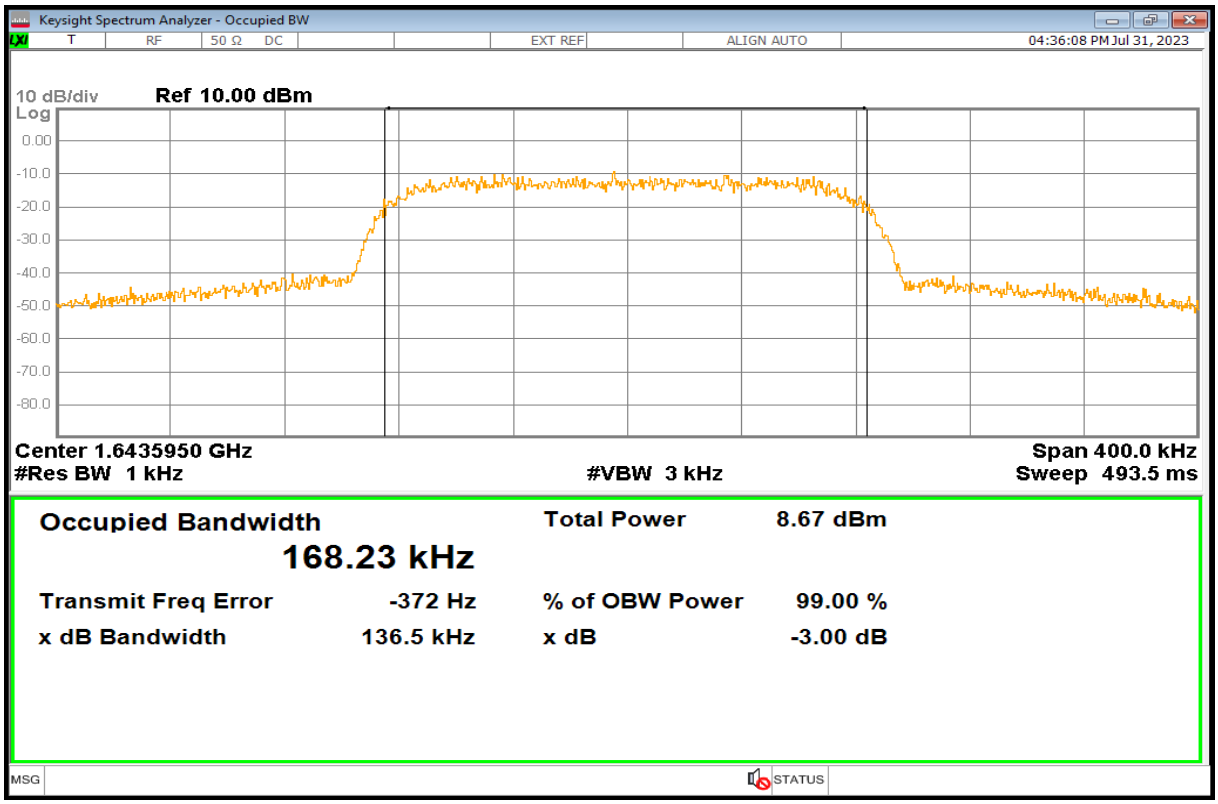
B3dB, Sub-Band 1, Middle Channel, R20T1XD

Plot No. 17



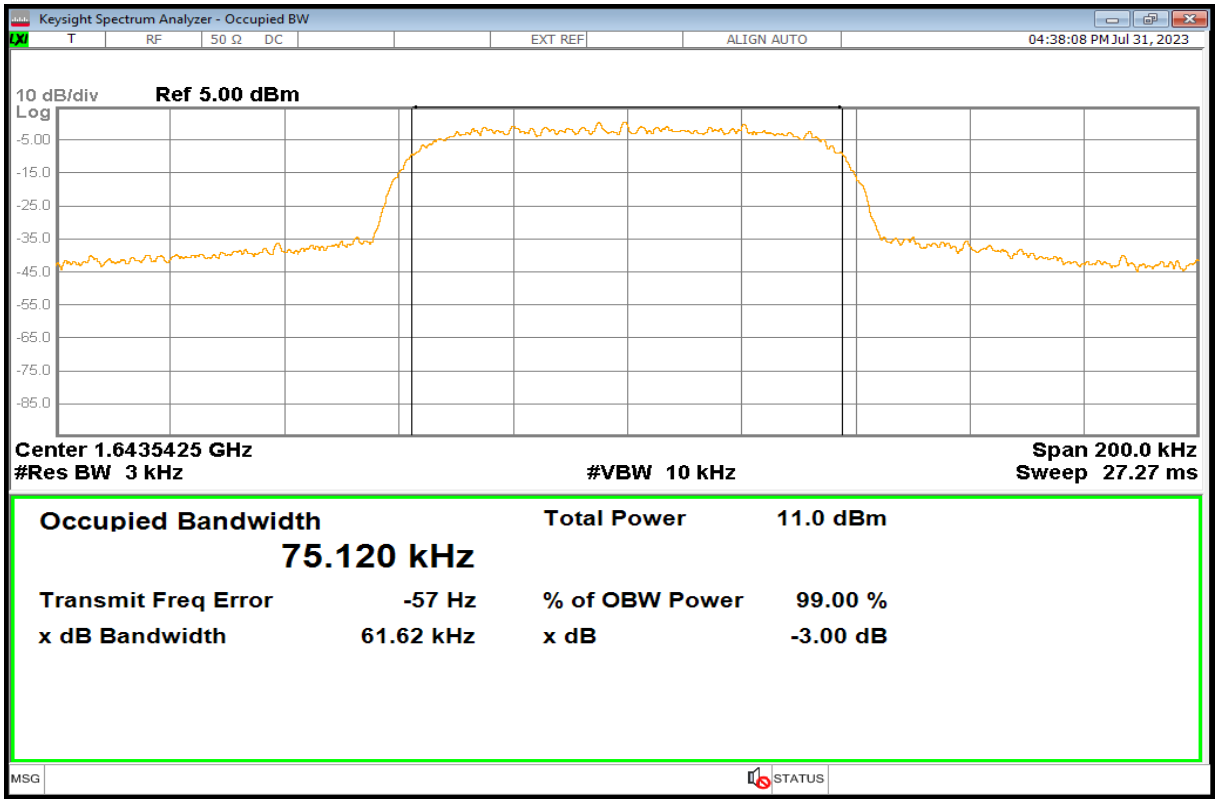
B3dB, Sub-Band 1, Middle Channel, R20T2XD

Plot No. 18



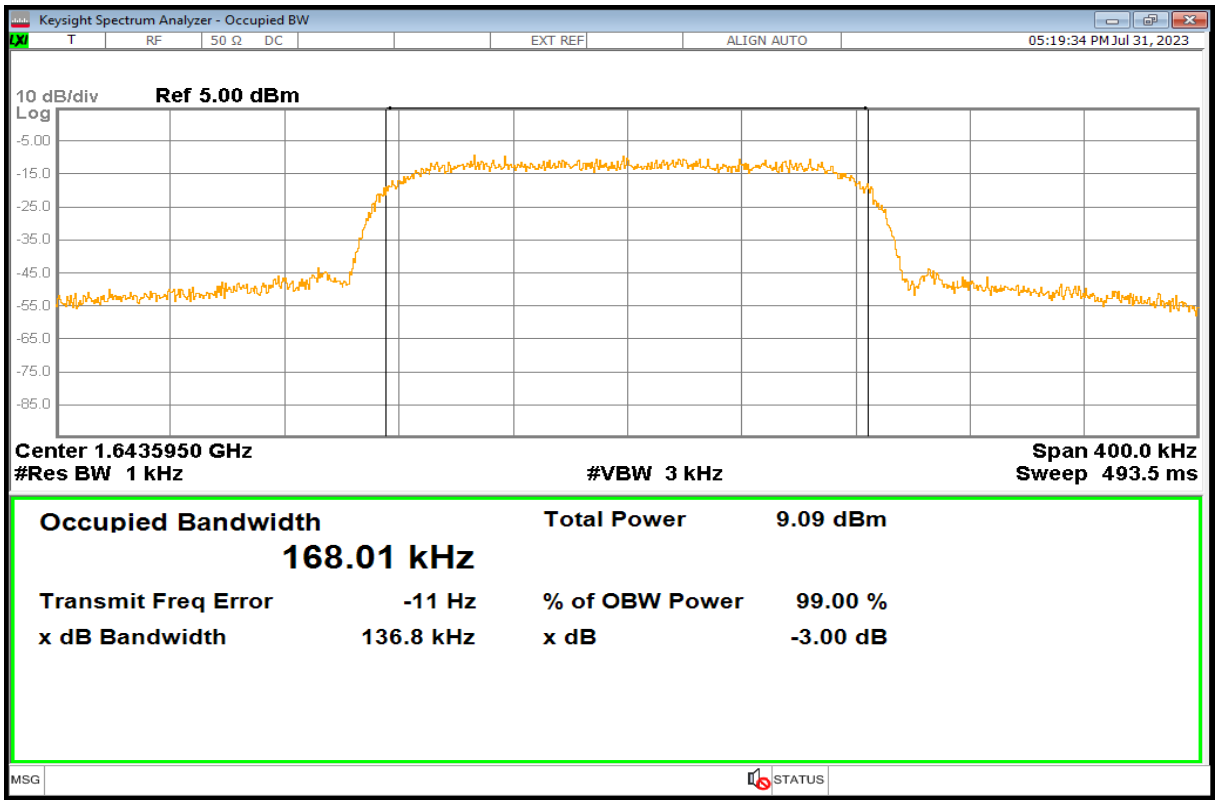
B3dB, Sub-Band 1, Middle Channel, R20T4.5XD

Plot No. 19



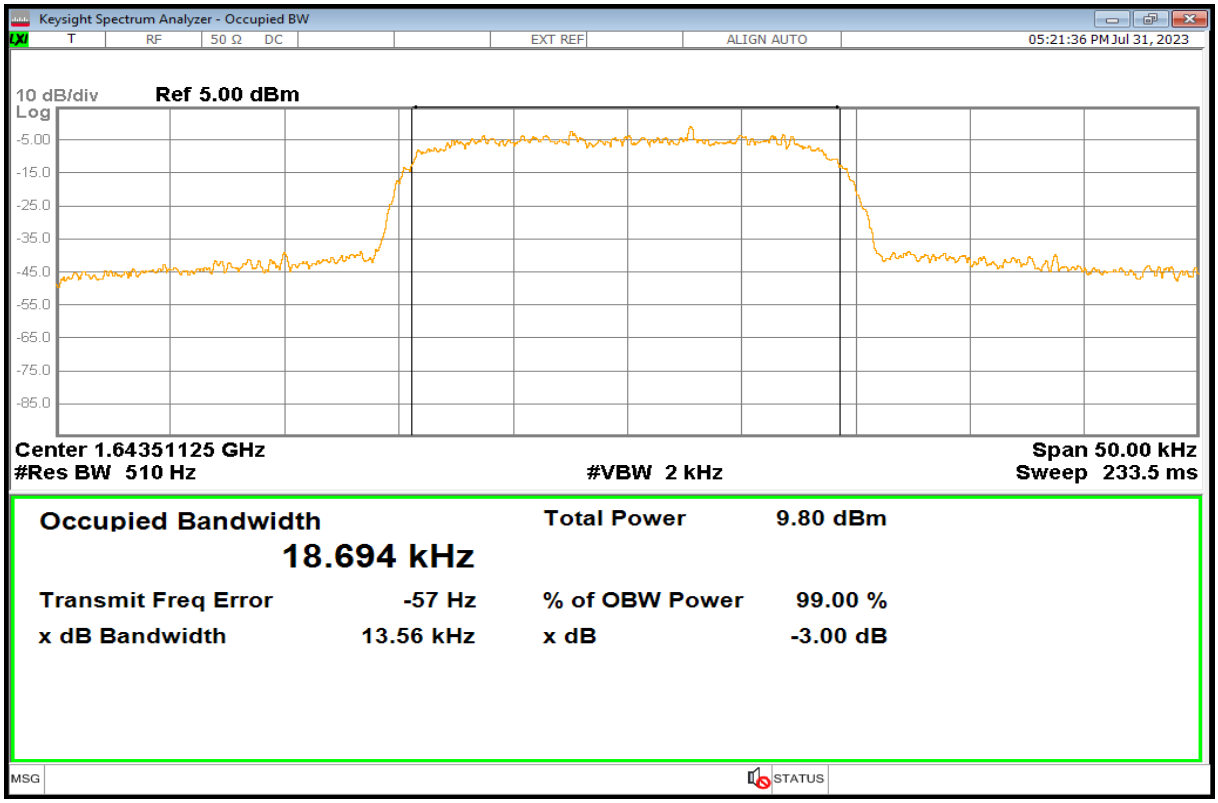
B3dB, Sub-Band 1, Middle Channel, R5T2QD

Plot No. 20



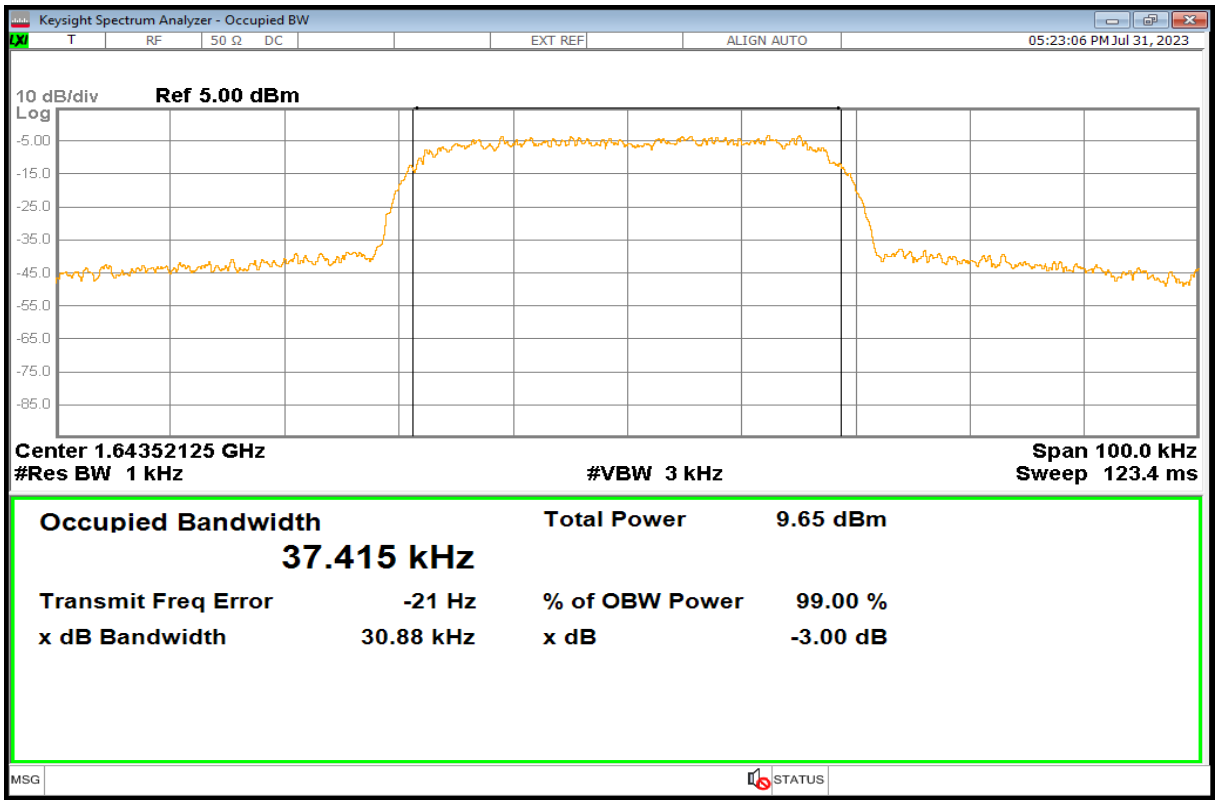
B3dB, Sub-Band 1, Middle Channel, R5T4.5QD

Plot No. 21



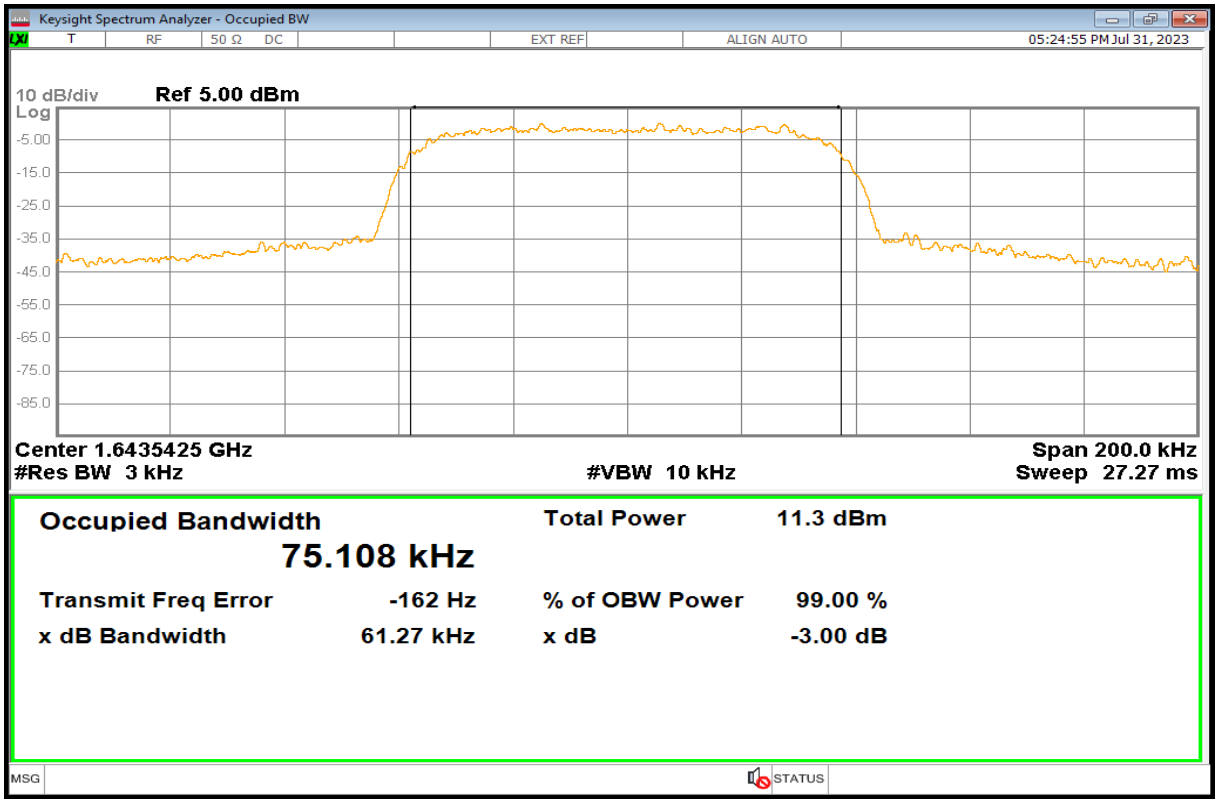
B3dB, Sub-Band 1, Middle Channel, R20T0.5QD

Plot No. 22



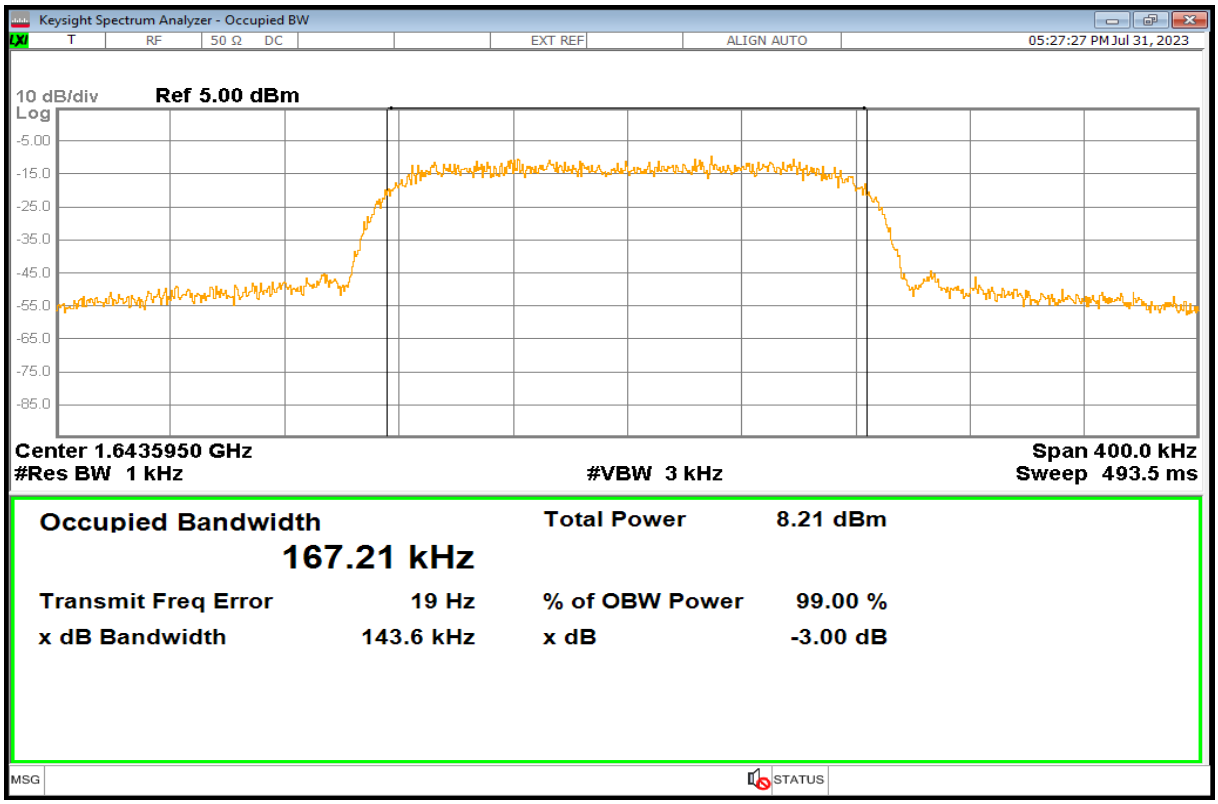
B3dB, Sub-Band 1, Middle Channel, R20T1QD

Plot No. 23



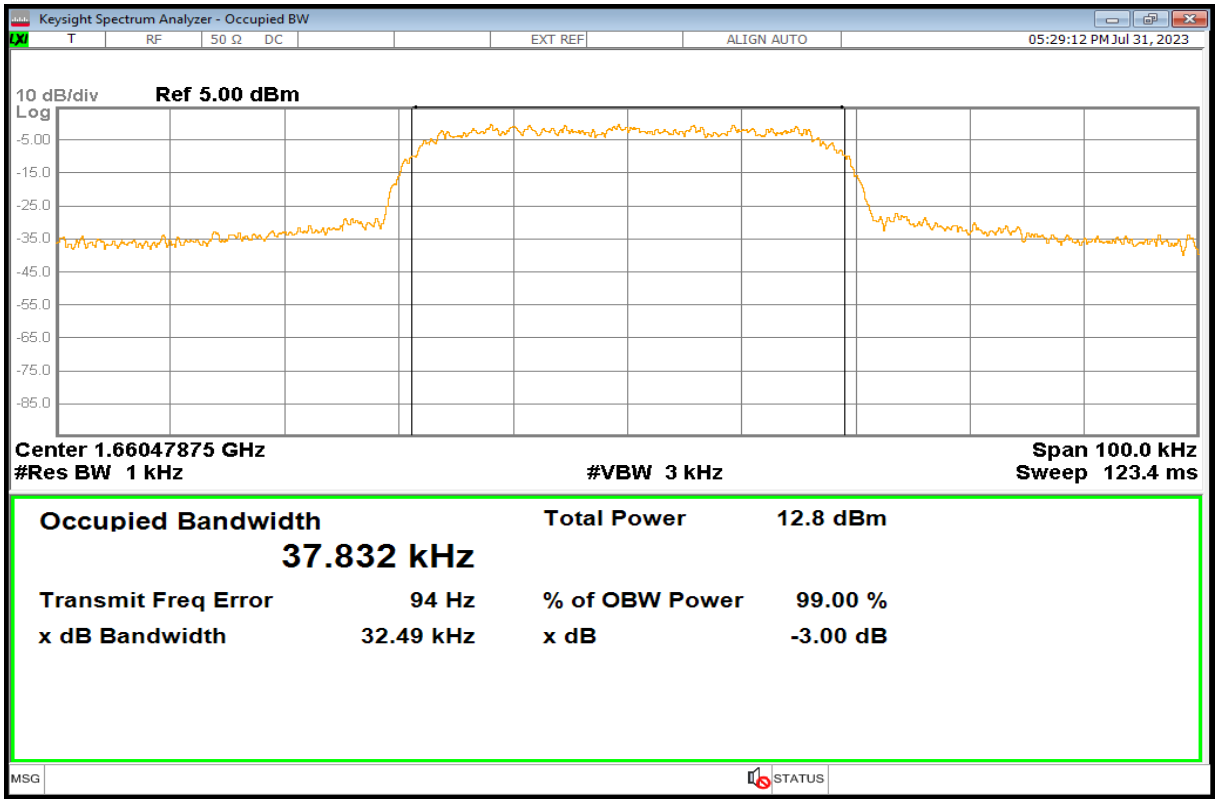
B3dB, Sub-Band 1, Middle Channel, R20T2QD

Plot No. 24



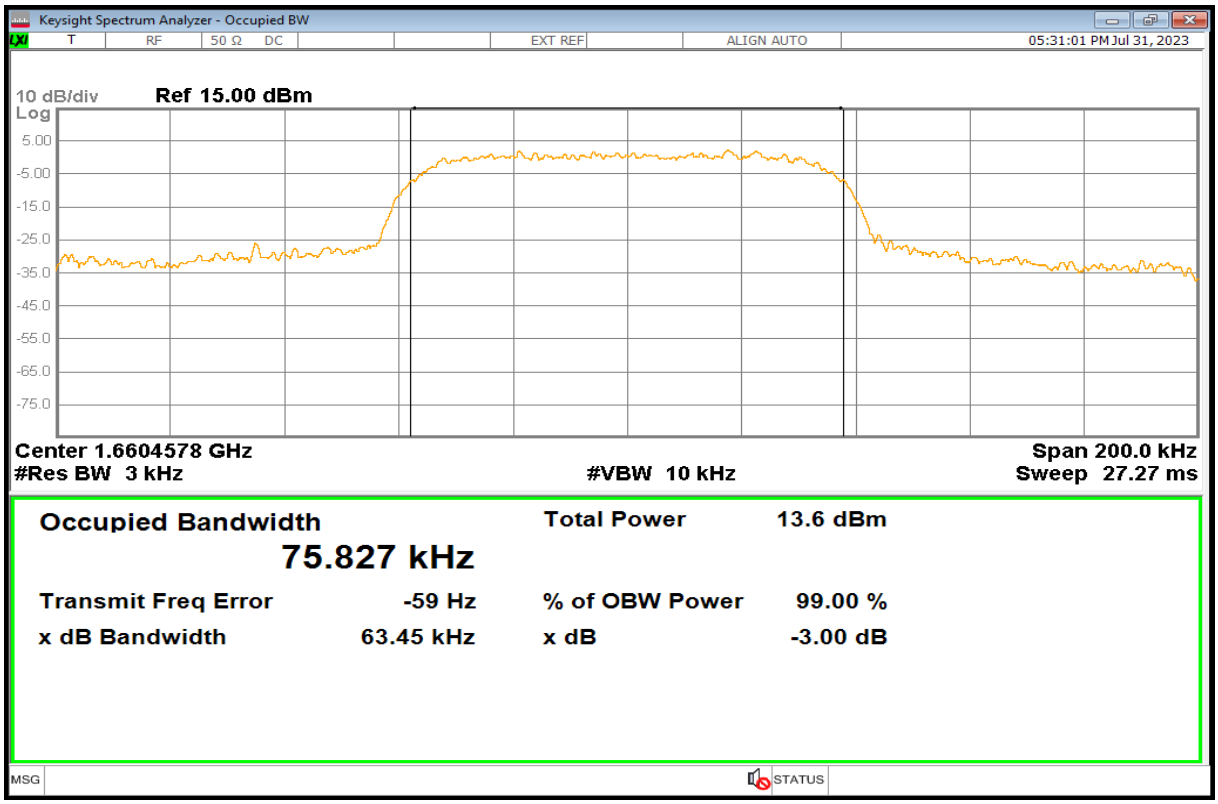
B3dB, Sub-Band 1, Middle Channel, R20T4.5QD

Plot No. 25



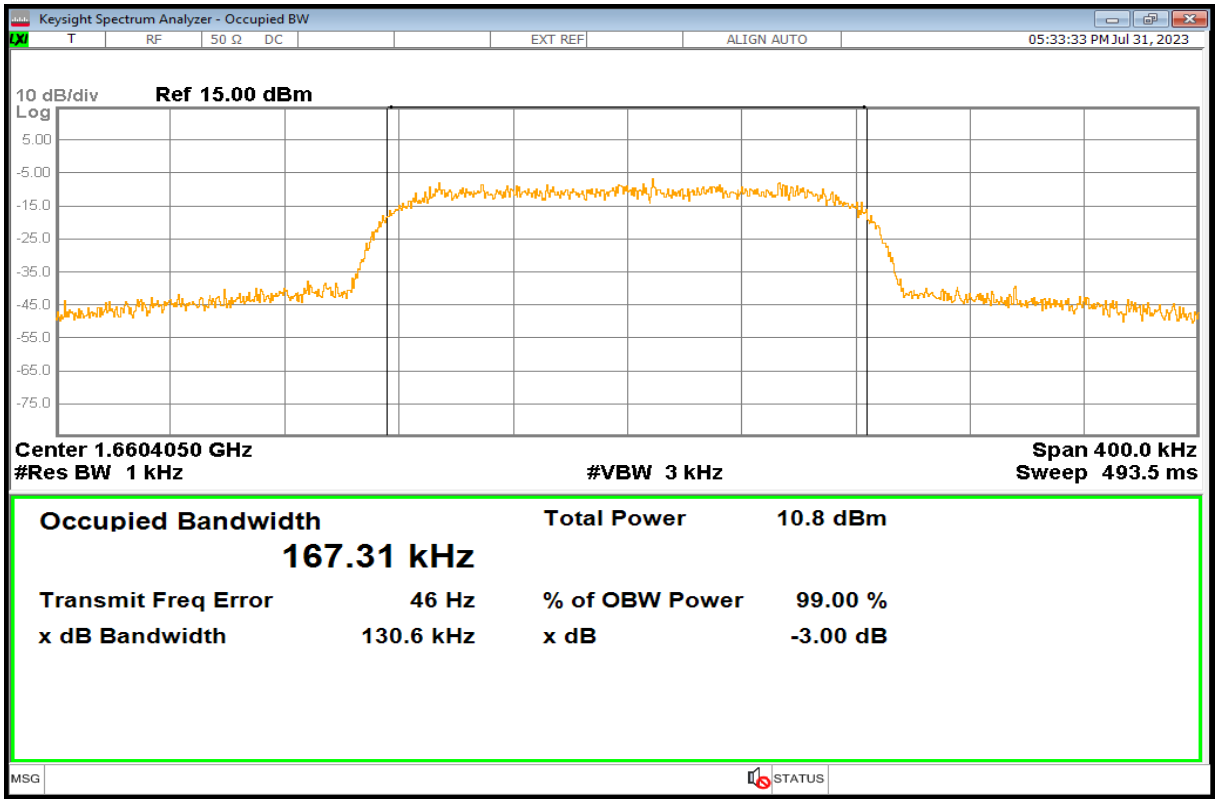
B3dB, Sub-Band 1, High Channel, R5T1XD

Plot No. 26



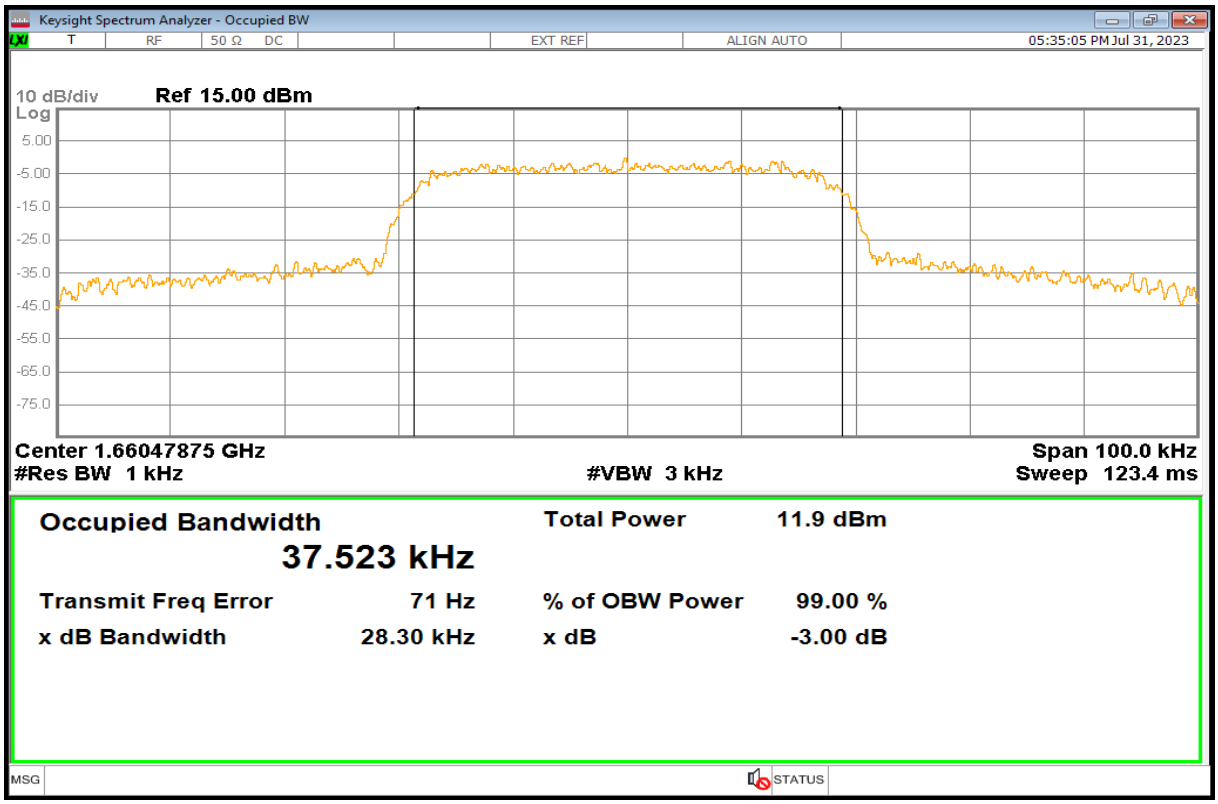
B3dB, Sub-Band 1, High Channel, R5T2XD

Plot No. 27



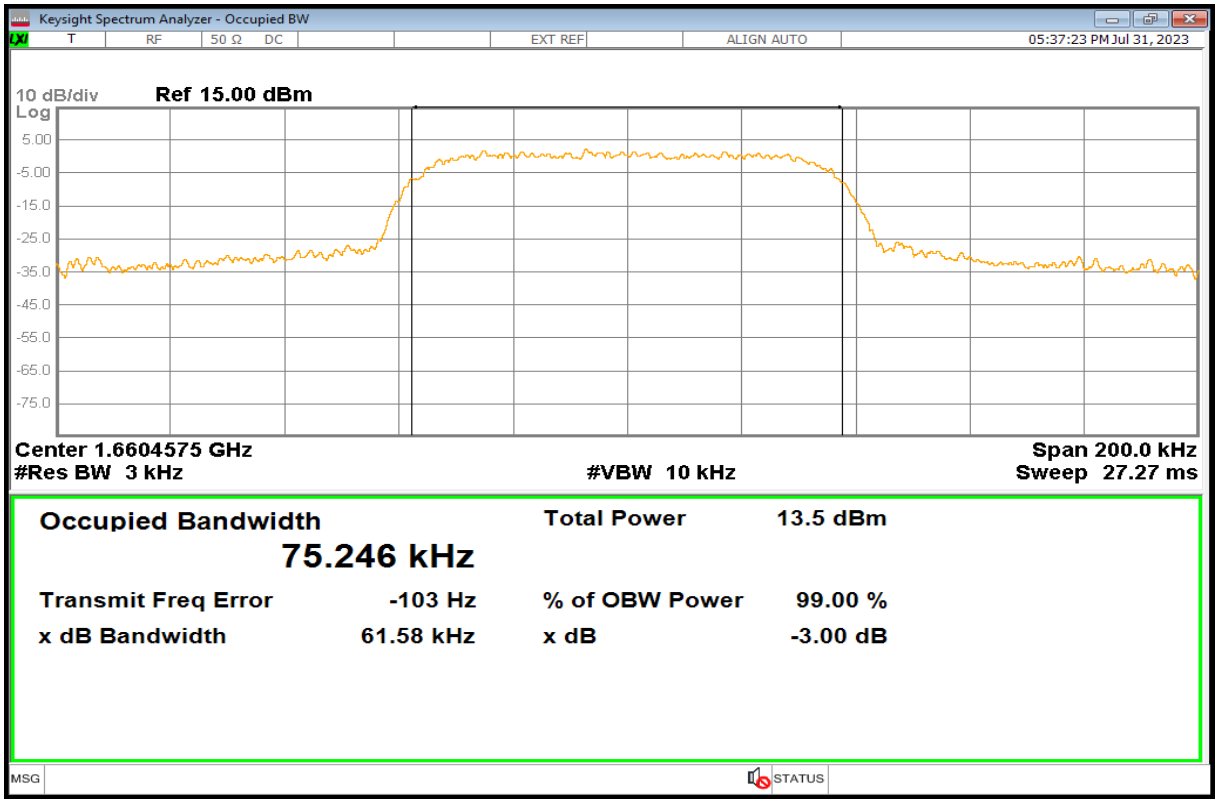
B3dB, Sub-Band 1, High Channel, R5T4.5XD

Plot No. 28



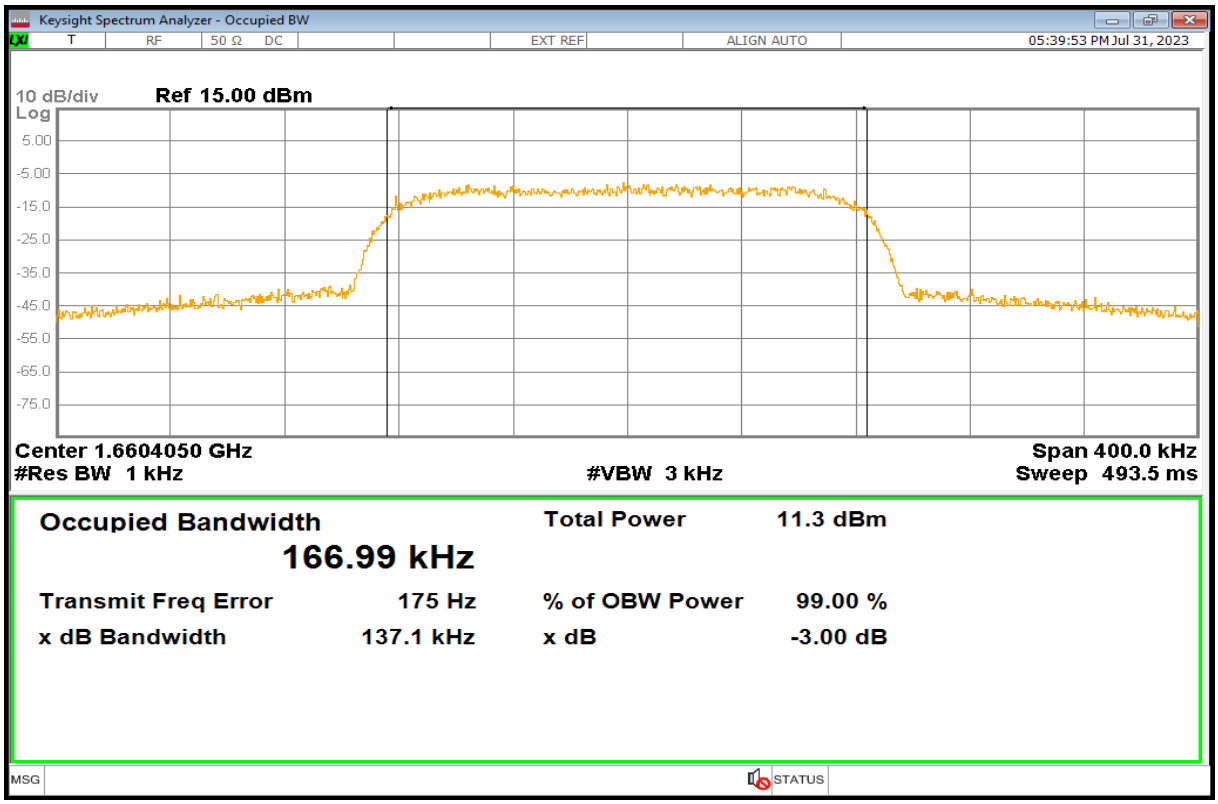
B3dB, Sub-Band 1, High Channel, R20T1XD

Plot No. 29



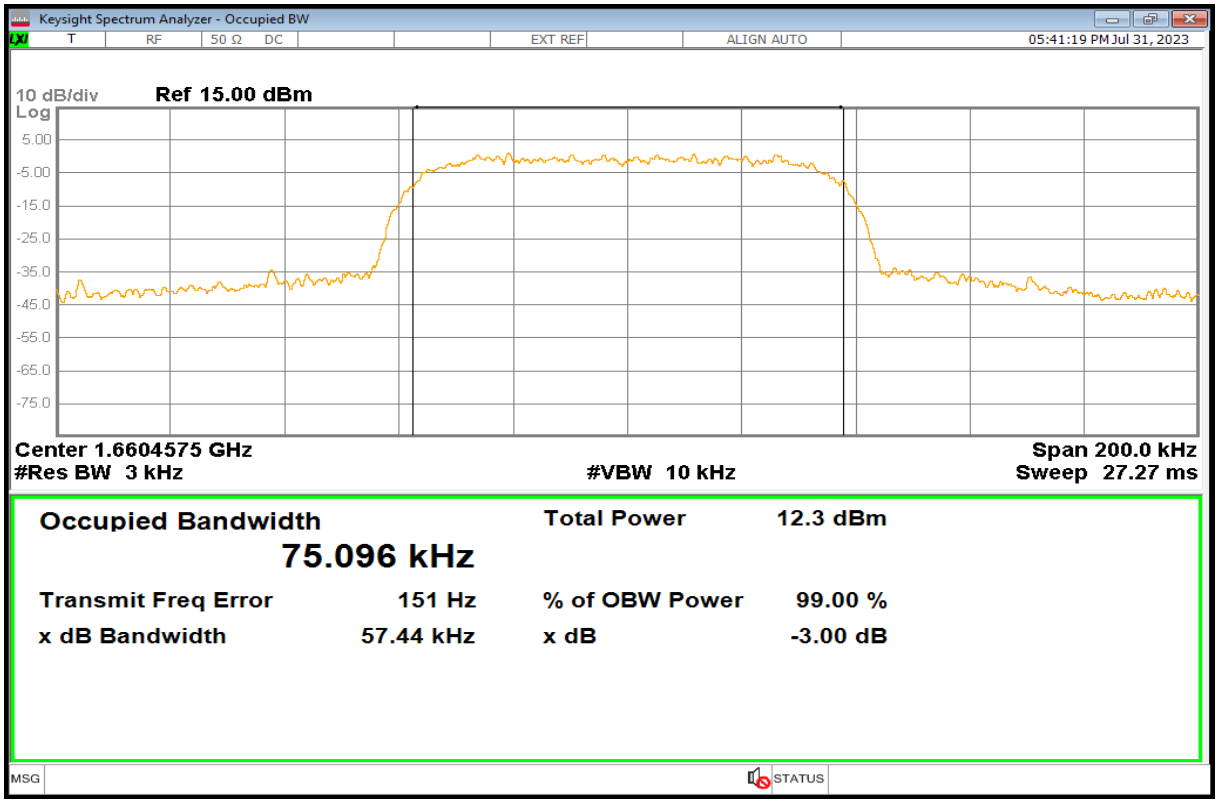
B3dB, Sub-Band 1, High Channel, R20T2XD

Plot No. 30



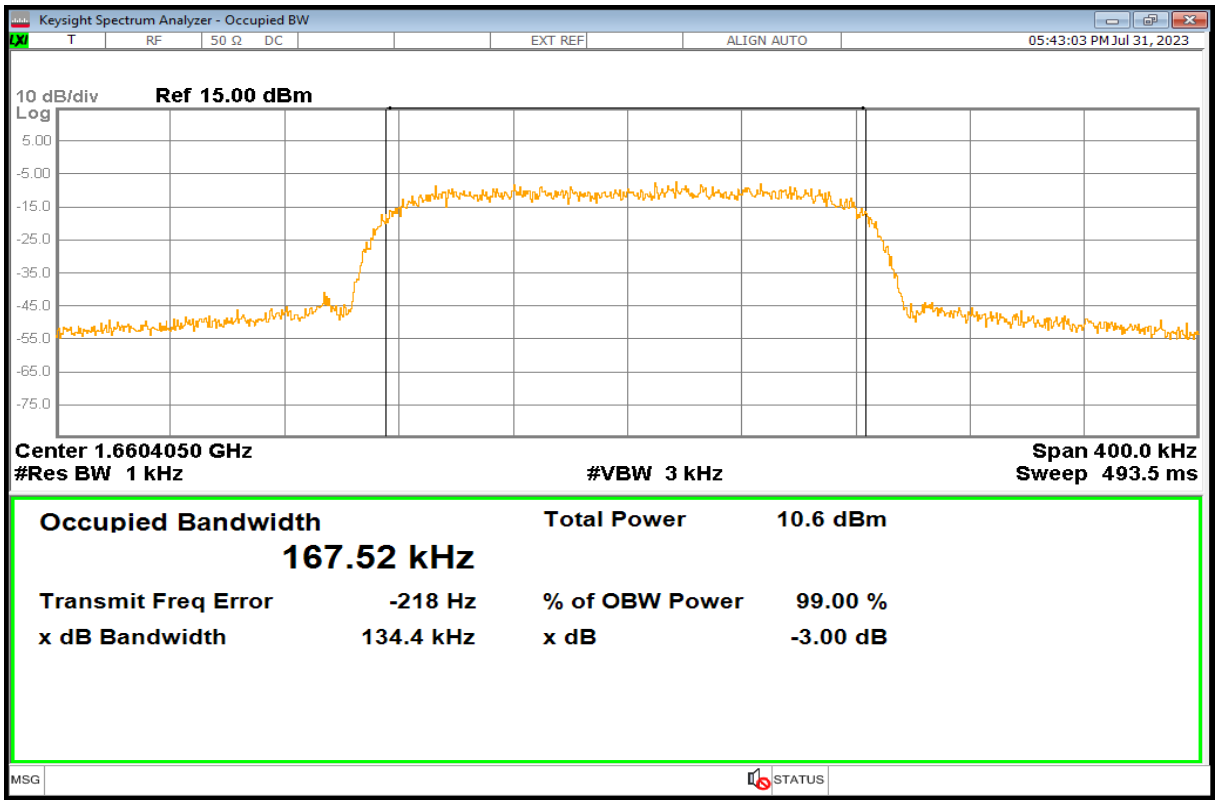
B3dB, Sub-Band 1, High Channel, R20T4.5XD

Plot No. 31



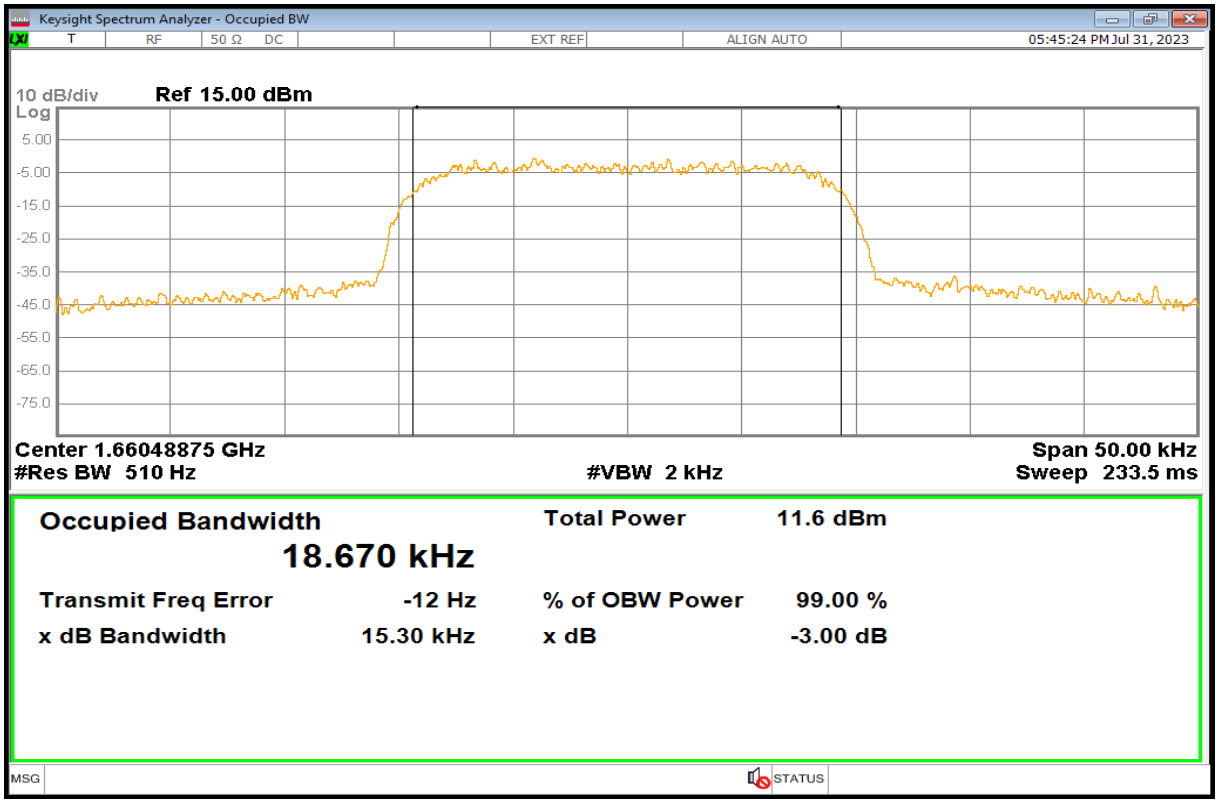
B3dB, Sub-Band 1, High Channel, R5T2QD

Plot No. 32



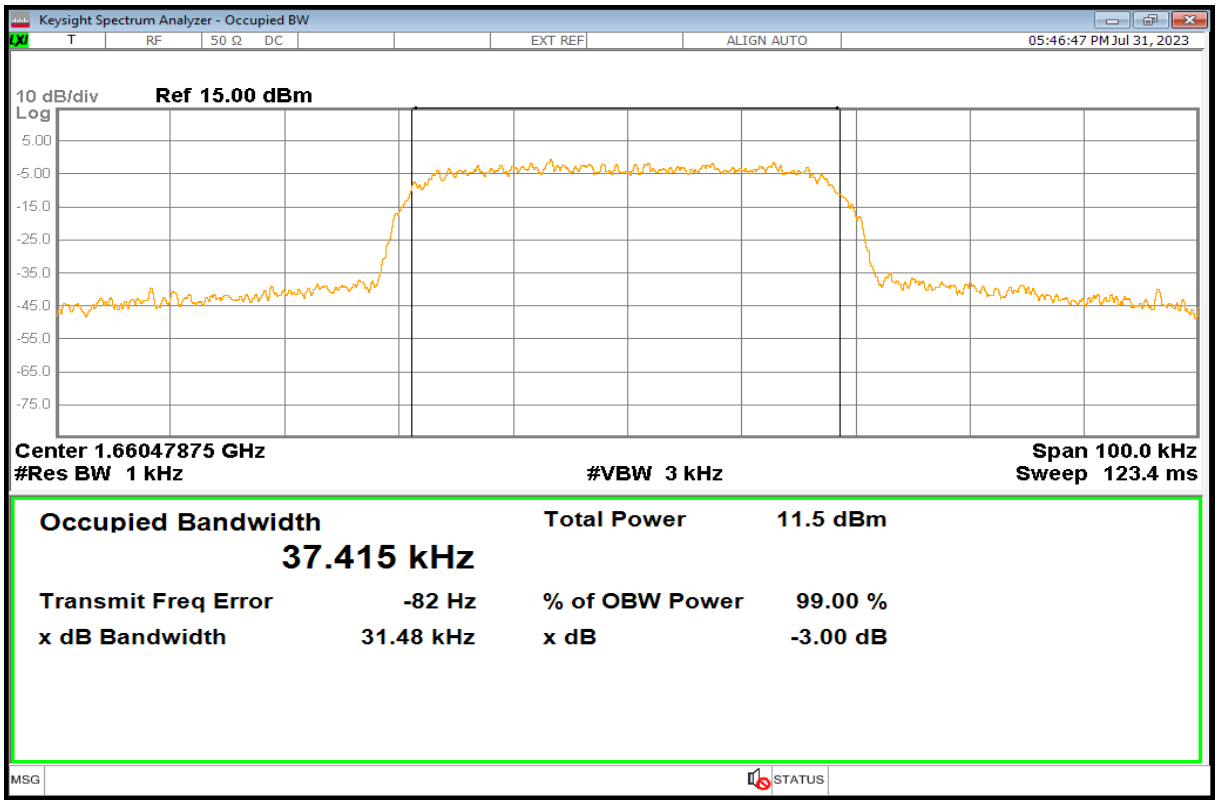
B3dB, Sub-Band 1, High Channel, R5T4.5QD

Plot No. 33



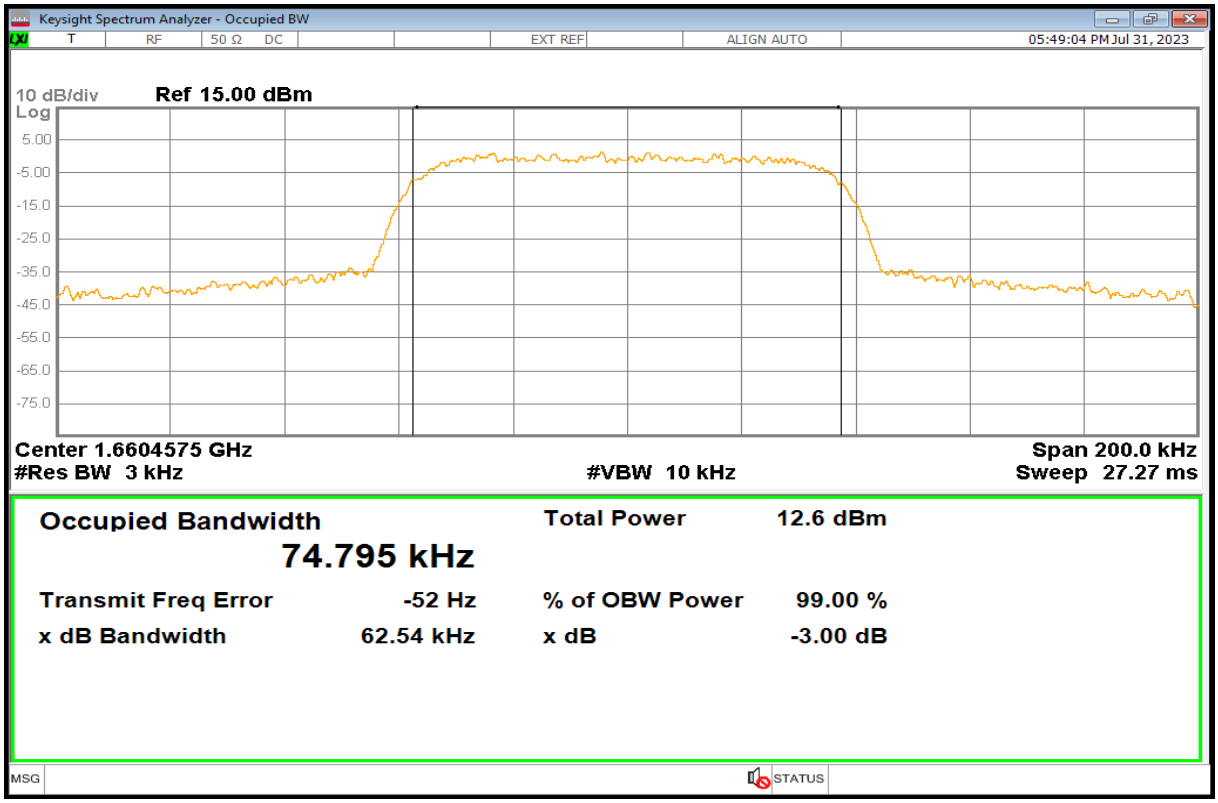
B3dB, Sub-Band 1, High Channel, R20T0.5QD

Plot No. 34



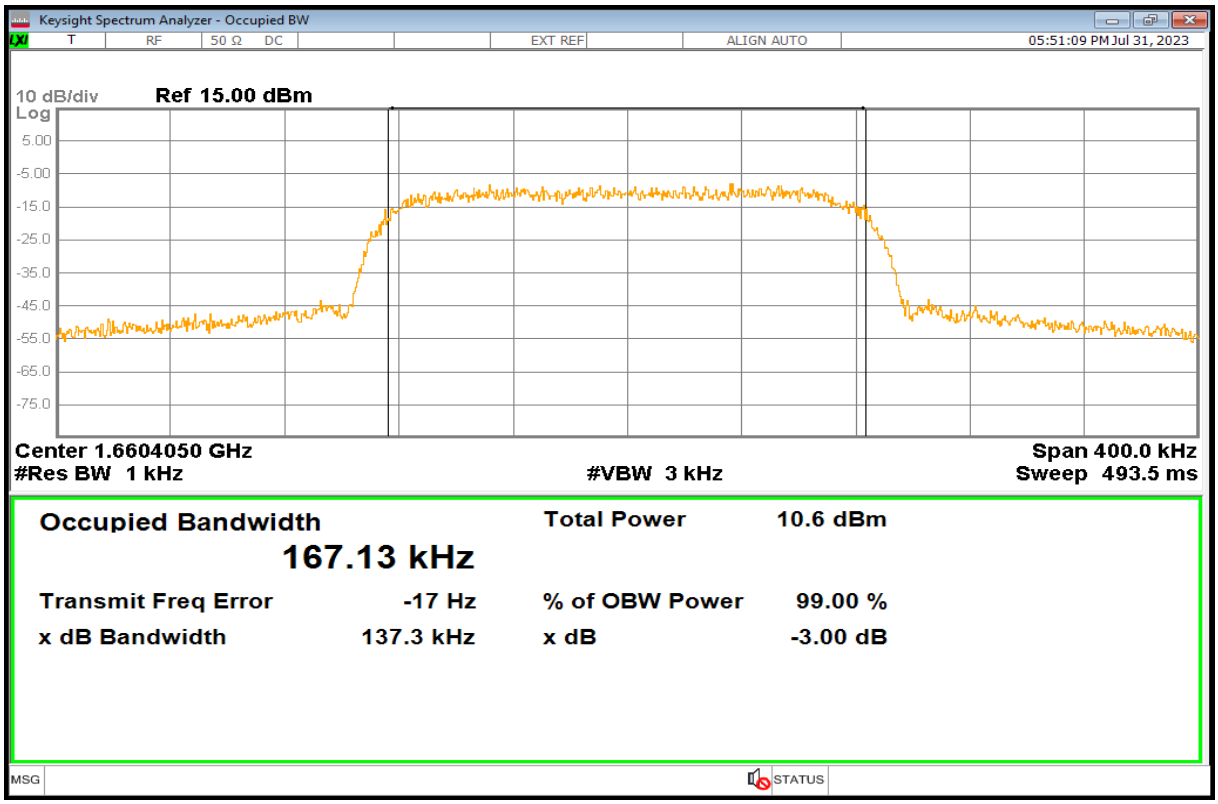
B3dB, Sub-Band 1, High Channel, R20T1QD

Plot No. 35



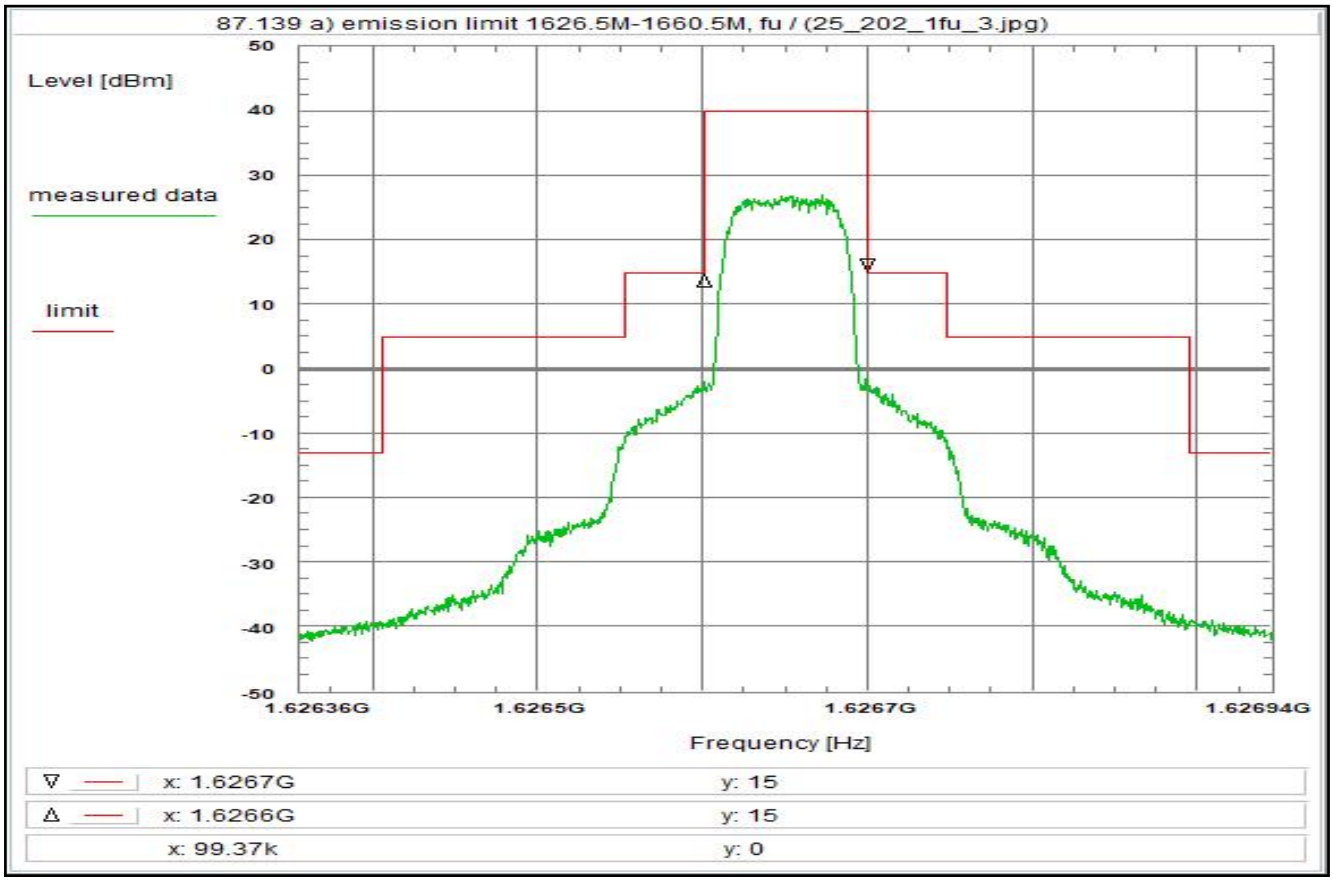
B3dB, Sub-Band 1, High Channel, R20T2QD

Plot No. 36



B3dB, Sub-Band 1, High Channel, R20T4.5QD

Plot No. 37



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

Limit:
Limit according to 87.139 a):
50-100% of assigned bw: -25dBc/4kHz
100-250% of assigned bw: -35dBc/4kHz
> 250% of assigned bw: -43+10log(Pmax)dBc/4kHz = -43 dBW
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with the above schedule.

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
fl, R5T2XD

Test setup:
see test report chapter 7.2:

Test equipment:
see test report chapter 7.1-7.2: C220, R001, U330

Remark:

Test result: **Test passed**

Environment condition:

Date & Time:	Wed 16/Aug/2023 16:09:22
Location:	CTC advanced GmbH, Laboratory RC-SYS
Temperature:	22 °C
Humidity:	55 %
Voltage:	230 Vac

Setup of measurement equipment:

Start frequency:	1.626356	GHz
Stop frequency:	1.626944	GHz
Center frequency:	1.62665	GHz
Frequency span:	588	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	20	dB
Trace-Mode:	Clear Write	
Detector-Mode:	AVG	

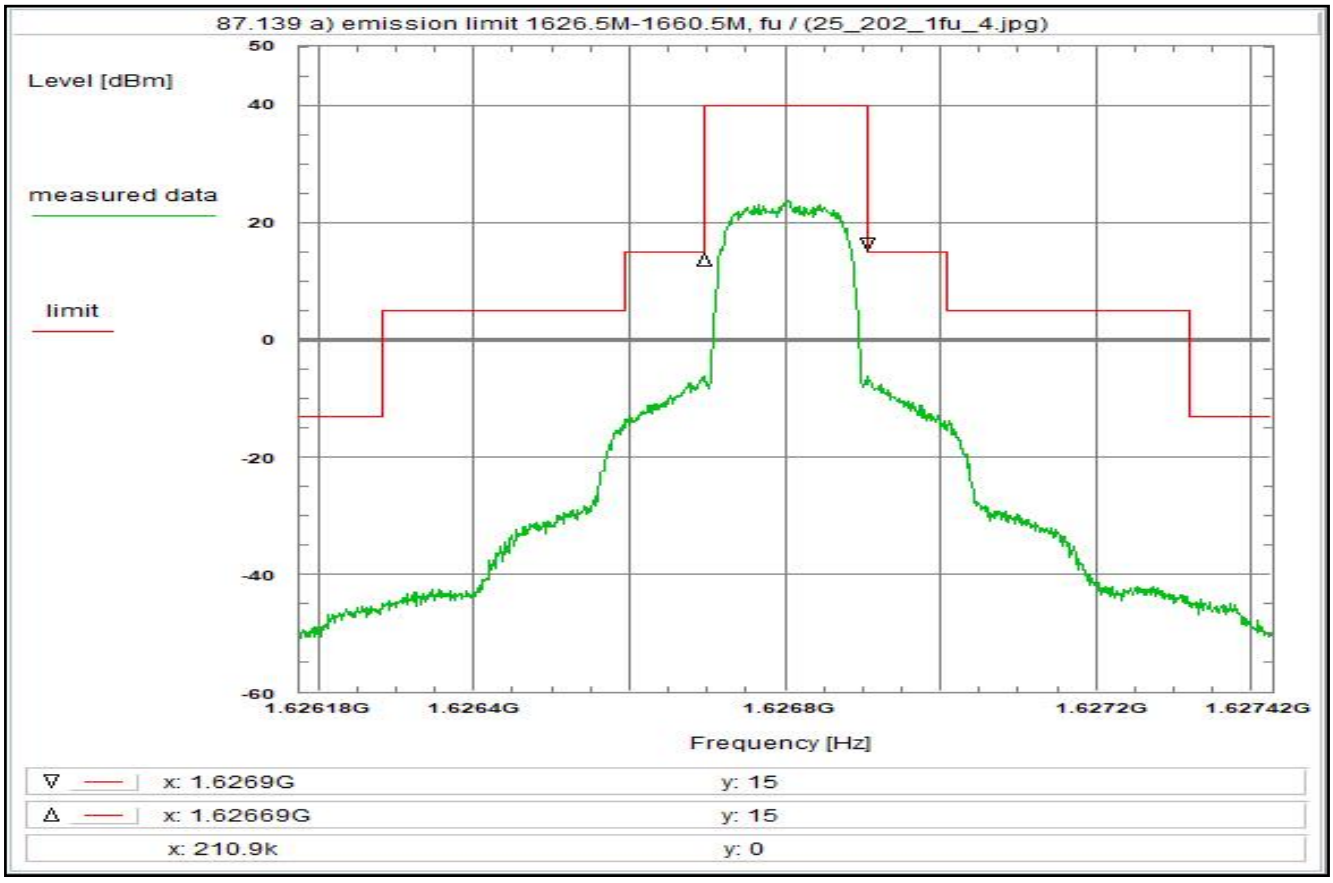
Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna (on-axis)	+	1.4	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U330)	+	31.9	dB
TOTAL CORRECTION:	+	35.4	dB

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

Reference of limit = 40 dBm
Spectrum mask referenced to necessary bandwidth

Plot No. 38



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

Limit:
Limit according to 87.139 a):
50-100% of assigned bw: -25dBc/4kHz
100-250% of assigned bw: -35dBc/4kHz
> 250% of assigned bw: -43+10log(Pmax)dBc/4kHz = -43 dBW
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with the above schedule.

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
fl, R5T4.5XD

Test setup:
see test report chapter 7.2:

Test equipment:
see test report chapter 7.1-7.2: R001

Remark:

Test result: **Test passed**

Environment condition:

Date & Time:	Wed 16/Aug/2023 16:13:14	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	230	Vac

Setup of measurement equipment:

Start frequency:	1.626176	GHz
Stop frequency:	1.627424	GHz
Center frequency:	1.6268	GHz
Frequency span:	1.248	MHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	20	dB
Trace-Mode:	Clear Write	
Detector-Mode:	AVG	

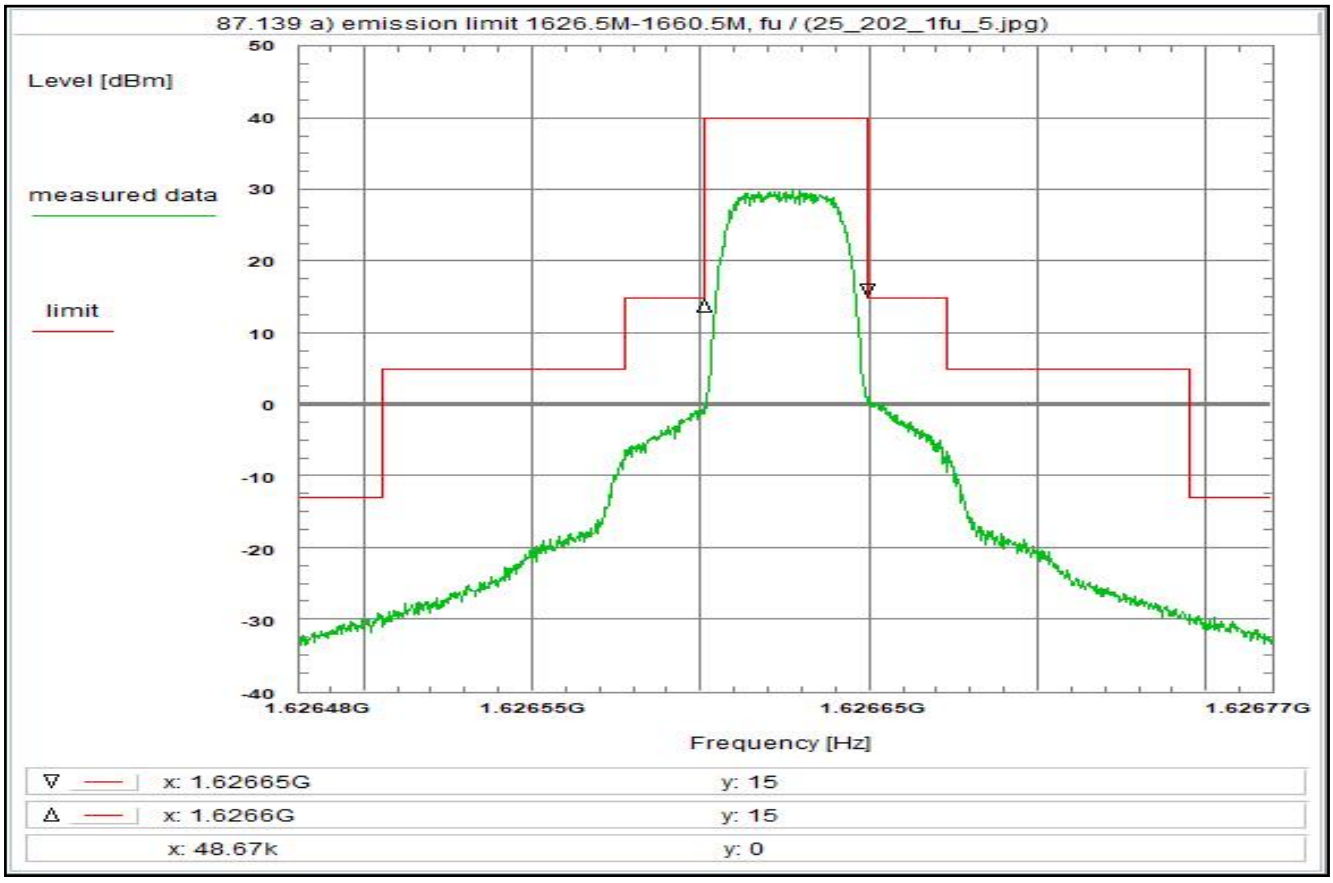
Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna (on-axis)	+	1.4	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U330)	+	31.9	dB
TOTAL CORRECTION:	+	35.4	dB

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

Reference of limit = 40 dBm
Spectrum mask referenced to necessary bandwidth

Plot No. 39



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

Limit:
Limit according to 87.139 a):
50-100% of assigned bw: -25dBc/4kHz
100-250% of assigned bw: -35dBc/4kHz
> 250% of assigned bw: -43+10log(Pmax)dBc/4kHz = -43 dBW
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with the above schedule.

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
fl, R20T1XD

Test setup:
see test report chapter 7.2:

Test equipment:
see test report chapter 7.1-7.2: C220, R001, U330

Remark:

Test result: **Test passed**

Environment condition:

Date & Time:	Wed 16/Aug/2023 16:18:06	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	230	Vac

Setup of measurement equipment:

Start frequency:	1.626481	GHz
Stop frequency:	1.626769	GHz
Center frequency:	1.626625	GHz
Frequency span:	288	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	20	dB
Trace-Mode:	Clear Write	
Detector-Mode:	AVG	

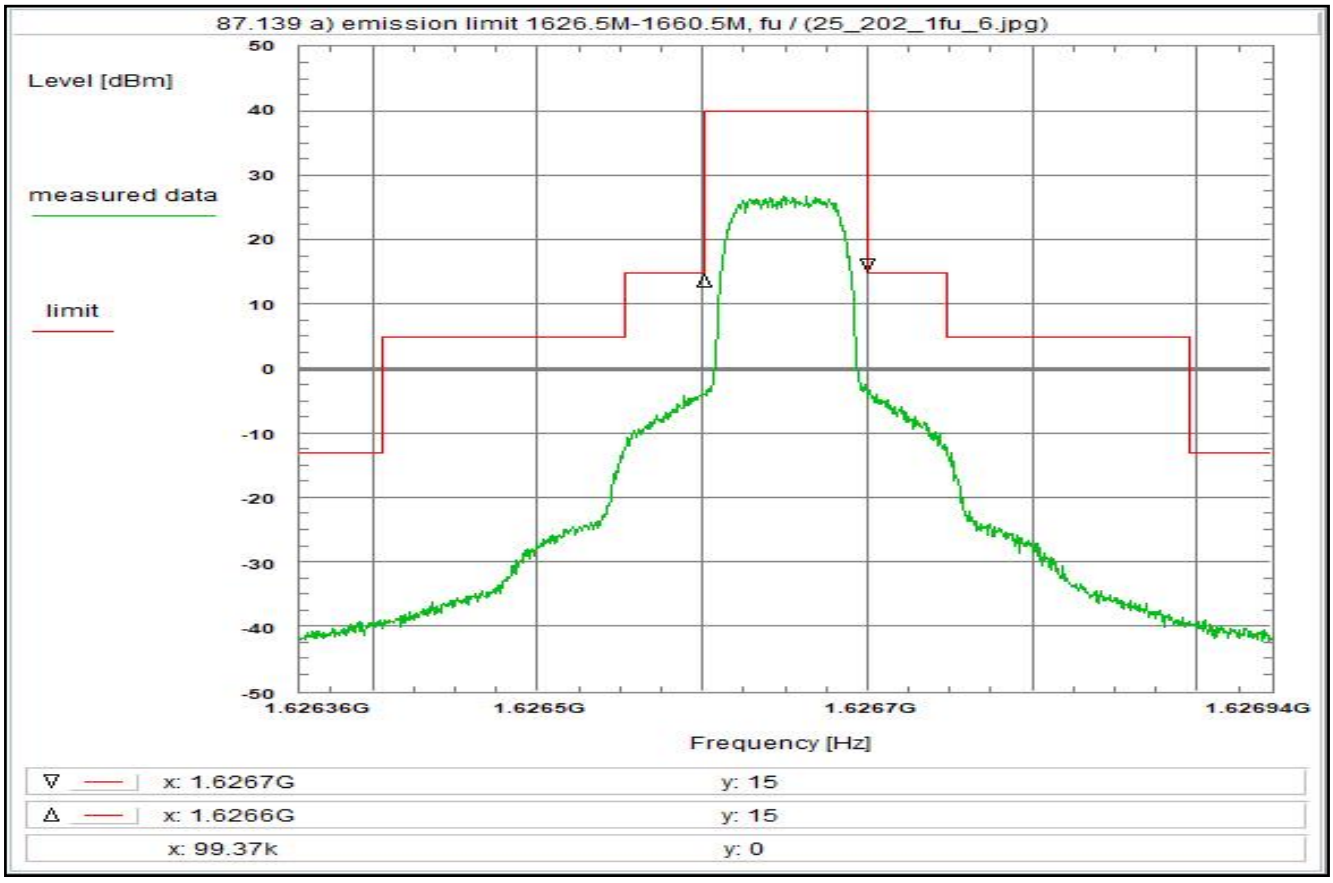
Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna (on-axis)	+	1.4	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U330)	+	31.9	dB
TOTAL CORRECTION:	+	35.4	dB

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

Reference of limit = 40 dBm
Spectrum mask referenced to necessary bandwidth

Plot No. 40



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

Limit:
Limit according to 87.139 a):
50-100% of assigned bw: -25dBc/4kHz
100-250% of assigned bw: -35dBc/4kHz
> 250% of assigned bw: -43+10log(Pmax)dBc/4kHz = -43 dBW
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with the above schedule.

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
fl, R20T2XD

Test setup:
see test report chapter 7.2:

Test equipment:
see test report chapter 7.1-7.2: C220, R001, U330

Remark:

Test result: **Test passed**

Environment condition:

Date & Time:	Wed 16/Aug/2023 16:49:20
Location:	CTC advanced GmbH, Laboratory RC-SYS
Temperature:	22 °C
Humidity:	55 %
Voltage:	230 Vac

Setup of measurement equipment:

Start frequency:	1.626356	GHz
Stop frequency:	1.626944	GHz
Center frequency:	1.62665	GHz
Frequency span:	588	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	20	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

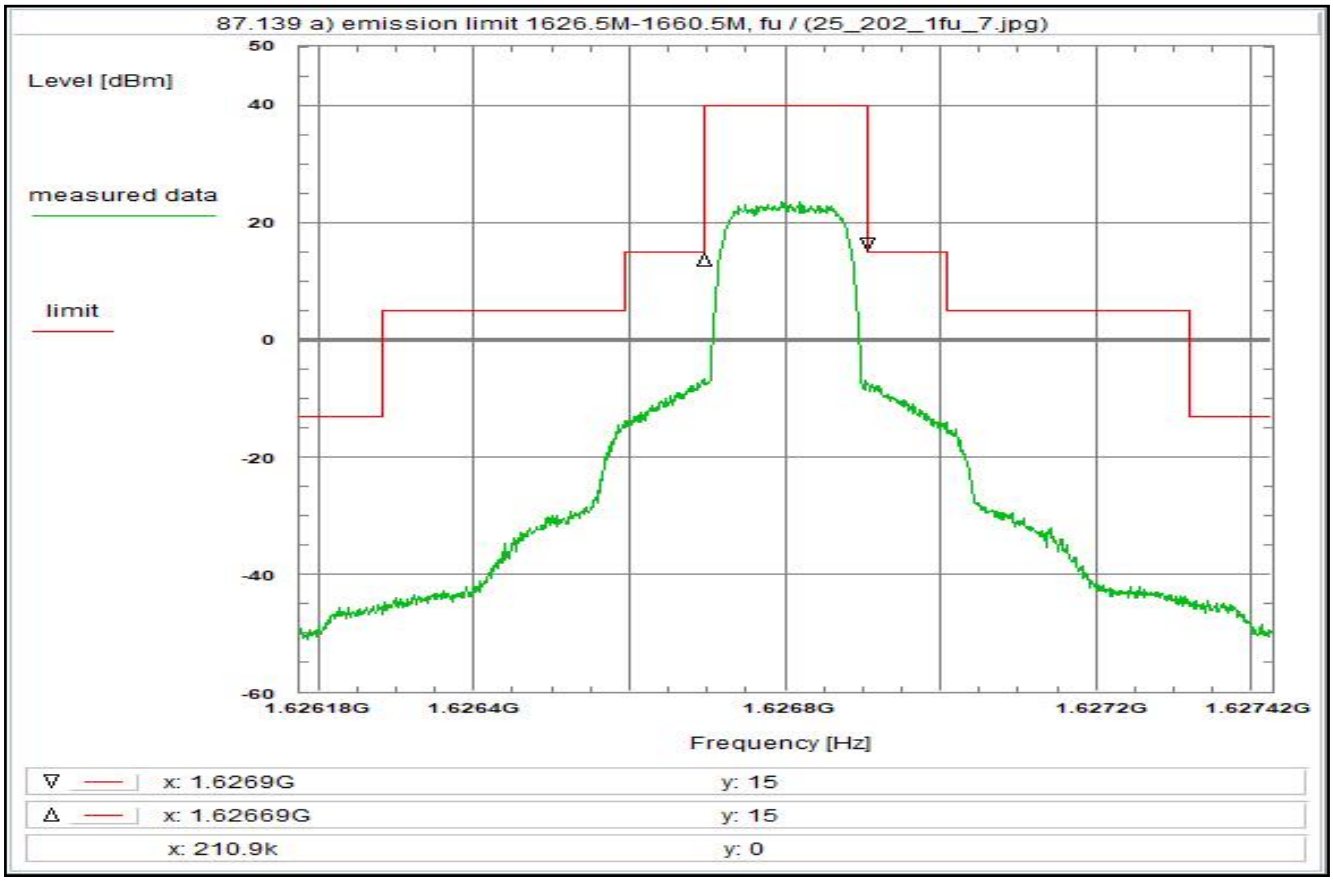
Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna (on-axis)	+	1.4	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U330)	+	31.9	dB
TOTAL CORRECTION:	+	35.4	dB

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

Reference of limit = 40 dBm
Spectrum mask referenced to necessary bandwidth

Plot No. 41



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

Limit:
Limit according to 87.139 a):
50-100% of assigned bw: -25dBc/4kHz
100-250% of assigned bw: -35dBc/4kHz
> 250% of assigned bw: -43+10log(Pmax)dBc/4kHz = -43 dBW
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with the above schedule.

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
fl, R20T4.5XD

Test setup:
see test report chapter 7.2:

Test equipment:
see test report chapter 7.1-7.2: C220, R001, U330

Remark:

Test result: **Test passed**

Environment condition:

Date & Time:	Wed 16/Aug/2023 16:55:45	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	230	Vac

Setup of measurement equipment:

Start frequency:	1.626176	GHz
Stop frequency:	1.627424	GHz
Center frequency:	1.6268	GHz
Frequency span:	1.248	MHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	20	dB
Trace-Mode:	Clear Write	
Detector-Mode:	AVG	

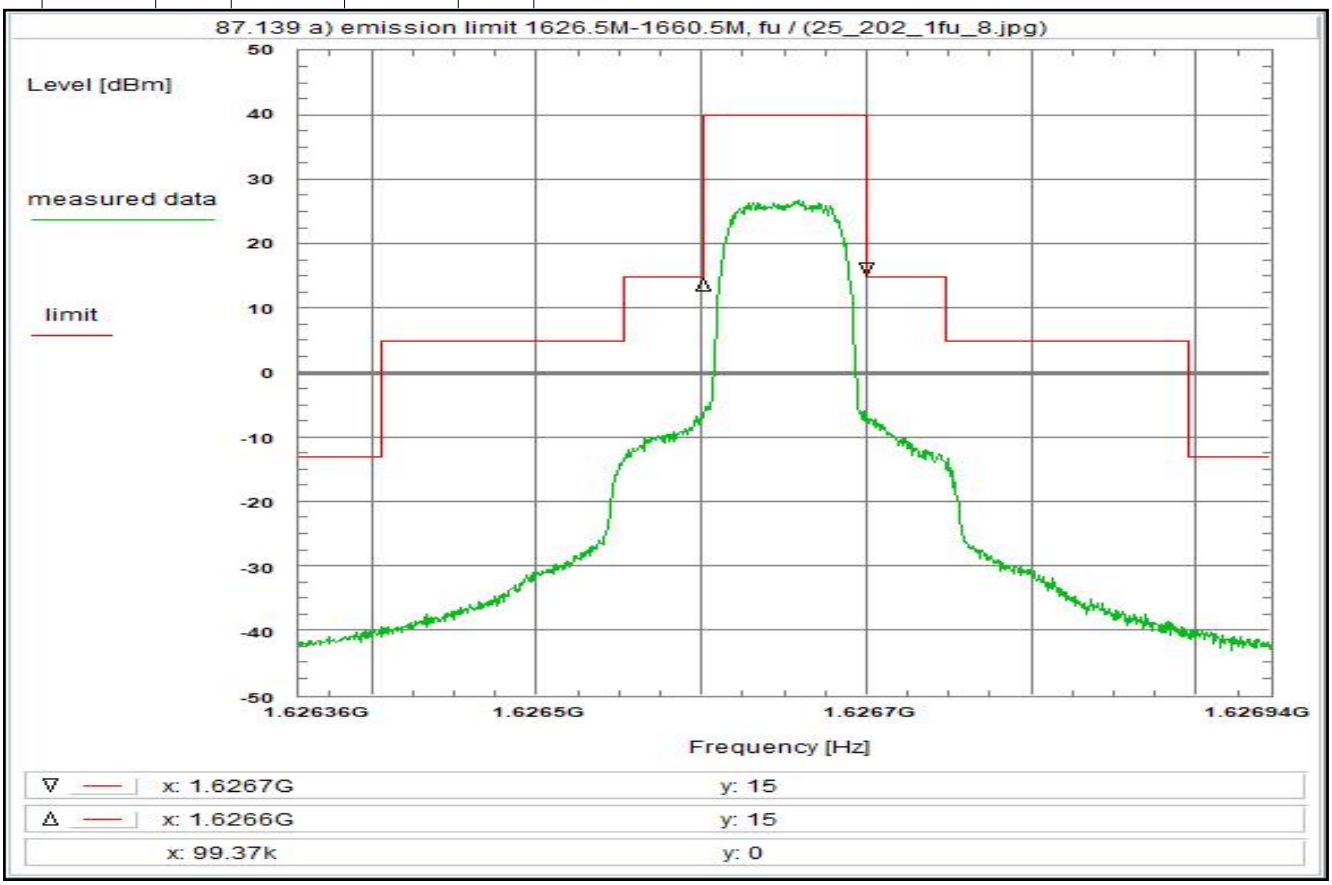
Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna (on-axis)	+	1.4	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U330)	+	31.9	dB
TOTAL CORRECTION:	+	35.4	dB

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

Reference of limit = 40 dBm
Spectrum mask referenced to necessary bandwidth

Plot No. 42



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

Limit:
Limit according to 87.139 a):
50-100% of assigned bw: -25dBc/4kHz
100-250% of assigned bw: -35dBc/4kHz
> 250% of assigned bw: -43+10log(Pmax)dBc/4kHz = -43 dBW
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with the above schedule.

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
fl, R5T2QD

Test setup:
see test report chapter 7.2:

Test equipment:
see test report chapter 7.1-7.2: C220, R001, U330

Remark:

Test result: **Test passed**

Environment condition:

Date & Time:	Wed 16/Aug/2023 17:05:28
Location:	CTC advanced GmbH, Laboratory RC-SYS
Temperature:	22 °C
Humidity:	55 %
Voltage:	230 Vac

Setup of measurement equipment:

Start frequency:	1.626356	GHz
Stop frequency:	1.626944	GHz
Center frequency:	1.62665	GHz
Frequency span:	588	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	20	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

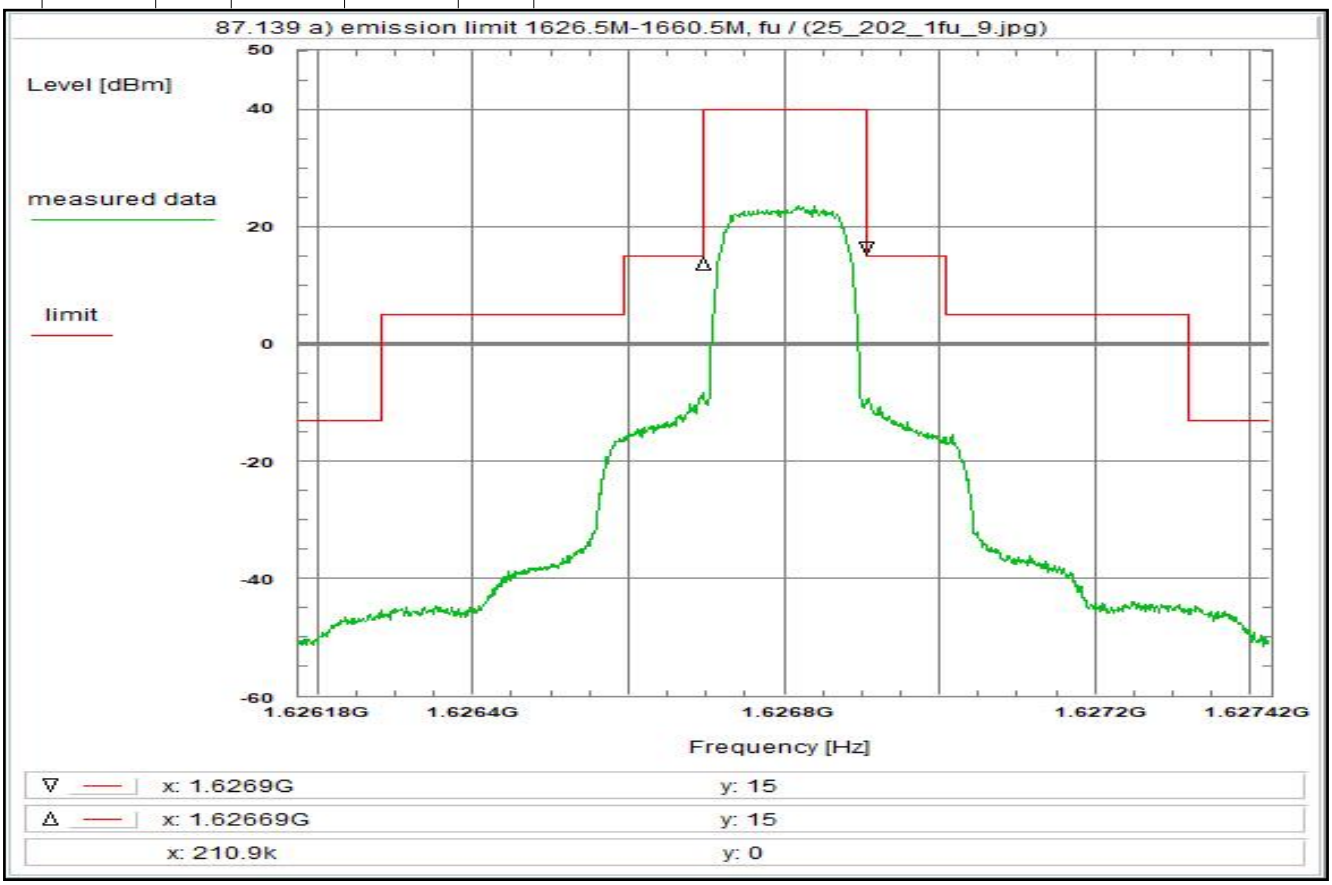
Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna (on-axis)	+	1.4	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U330)	+	31.9	dB
TOTAL CORRECTION:	+	35.4	dB

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

Reference of limit = 40 dBm
Spectrum mask referenced to necessary bandwidth

Plot No. 43



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

Limit:
Limit according to 87.139 a):
50-100% of assigned bw: -25dBc/4kHz
100-250% of assigned bw: -35dBc/4kHz
> 250% of assigned bw: -43+10log(Pmax)dBc/4kHz = -43 dBW
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with the above schedule.

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
fl, R5T4.5QD

Test setup:
see test report chapter 7.2:

Test equipment:
see test report chapter 7.1-7.2: C220, R001, U330

Remark:

Test result: **Test passed**

Environment condition:

Date & Time:	Wed 16/Aug/2023 18:01:04	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	230	Vac

Setup of measurement equipment:

Start frequency:	1.626176	GHz
Stop frequency:	1.627424	GHz
Center frequency:	1.6268	GHz
Frequency span:	1.248	MHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	20	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

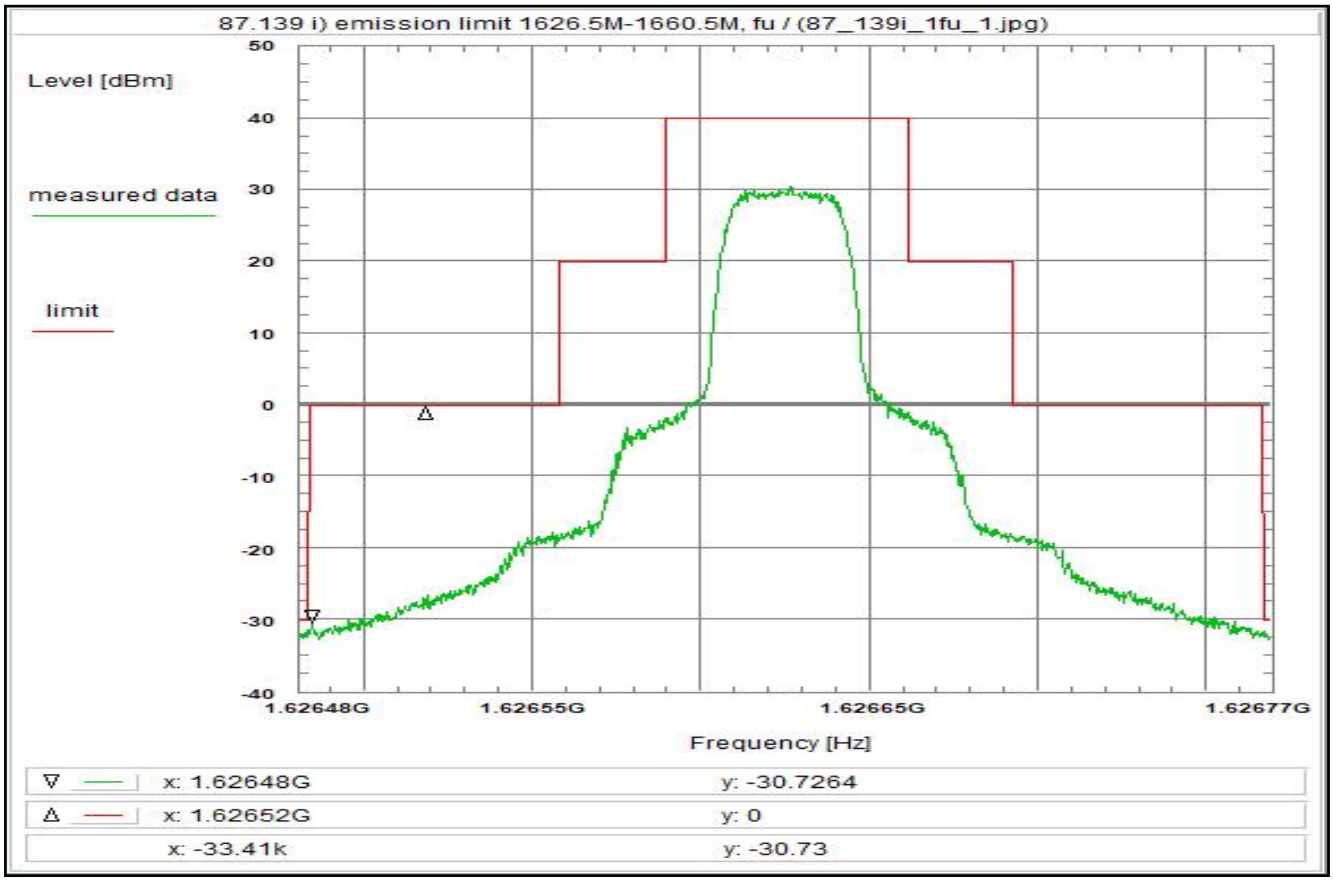
Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna (on-axis)	+	1.4	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U330)	+	31.9	dB
TOTAL CORRECTION:	+	35.4	dB

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

Reference of limit = 40 dBm
Spectrum mask referenced to necessary bandwidth

Plot No. 44



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

Limit:
Limit according to 87.139(i)(1)
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with 87.139(i)(1).

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
fl, R5T1XD

Test setup:
see test report chapter 7.2:

Test equipment:
see test report chapter 7.1-7.2: R001

Remark:

Test result: **Test passed**

Environment condition:

Date & Time:	Wed 16/Aug/2023 16:05:08	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	230	Vac

Setup of measurement equipment:

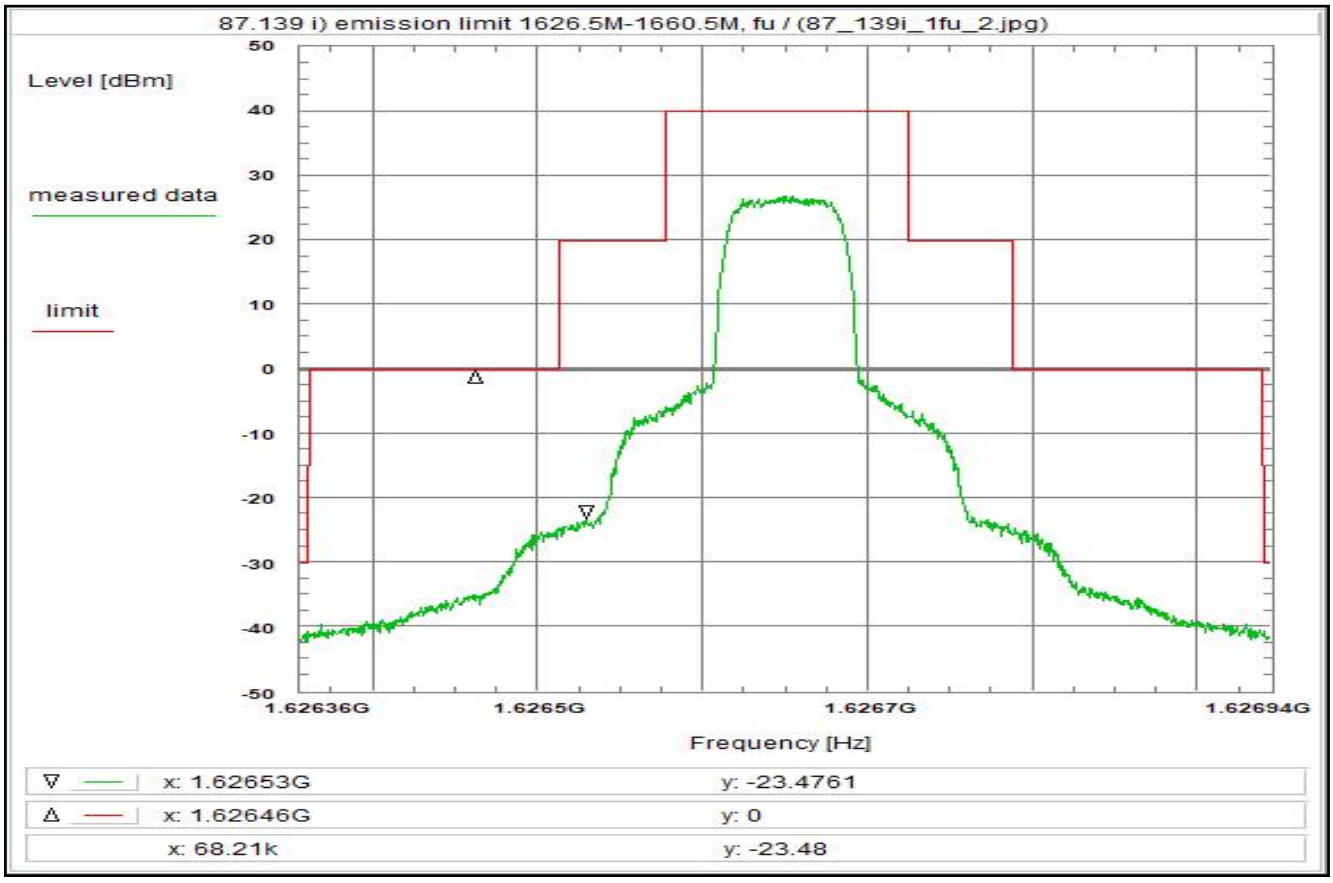
Start frequency:	1.626481	GHz
Stop frequency:	1.626769	GHz
Center frequency:	1.626625	GHz
Frequency span:	288	kHz
Resolution-BW:	3	kHz
Video-BW:	300	Hz
Input attenuation:	20	dB
Trace-Mode:	Average	
Detector-Mode:	AVG	

Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna (on-axis)	+	1.4	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U330)	+	31.9	dB
TOTAL CORRECTION:	+	35.4	dB

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

Plot No. 45



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

Limit:
Limit according to 87.139(i)(1)
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with 87.139(i)(1).

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
fl, R5T2XD

Test setup:
see test report chapter 7.2:

Test equipment:
see test report chapter 7.1-7.2: R001

Remark:

Test result: **Test passed**

Environment condition:

Date & Time:	Wed 16/Aug/2023 16:07:41	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	230	Vac

Setup of measurement equipment:

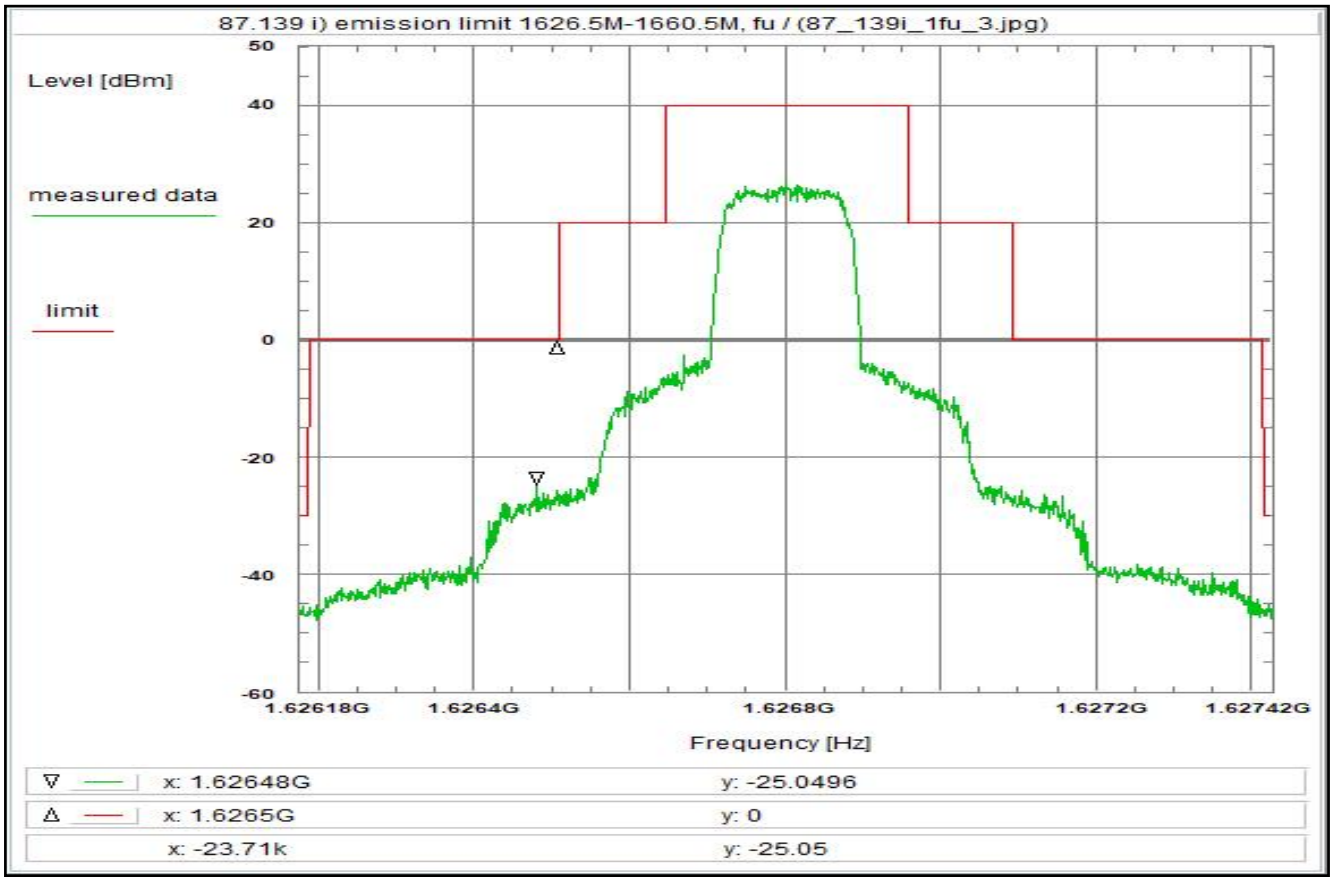
Start frequency:	1.626356	GHz
Stop frequency:	1.626944	GHz
Center frequency:	1.62665	GHz
Frequency span:	588	kHz
Resolution-BW:	3	kHz
Video-BW:	300	Hz
Input attenuation:	20	dB
Trace-Mode:	Average	
Detector-Mode:	AVG	

Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna (on-axis)	+	1.4	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U330)	+	31.9	dB
TOTAL CORRECTION:	+	35.4	dB

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

Plot No. 46



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

Limit:
Limit according to 87.139(i)(1)
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with 87.139(i)(1).

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
fl, R5T4.5XD

Test setup:
see test report chapter 7.2:

Test equipment:
see test report chapter 7.1-7.2: C220, R001, U330

Remark:

Test result: **Test passed**

Environment condition:

Date & Time:	Wed 16/Aug/2023 16:34:53	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	230	Vac

Setup of measurement equipment:

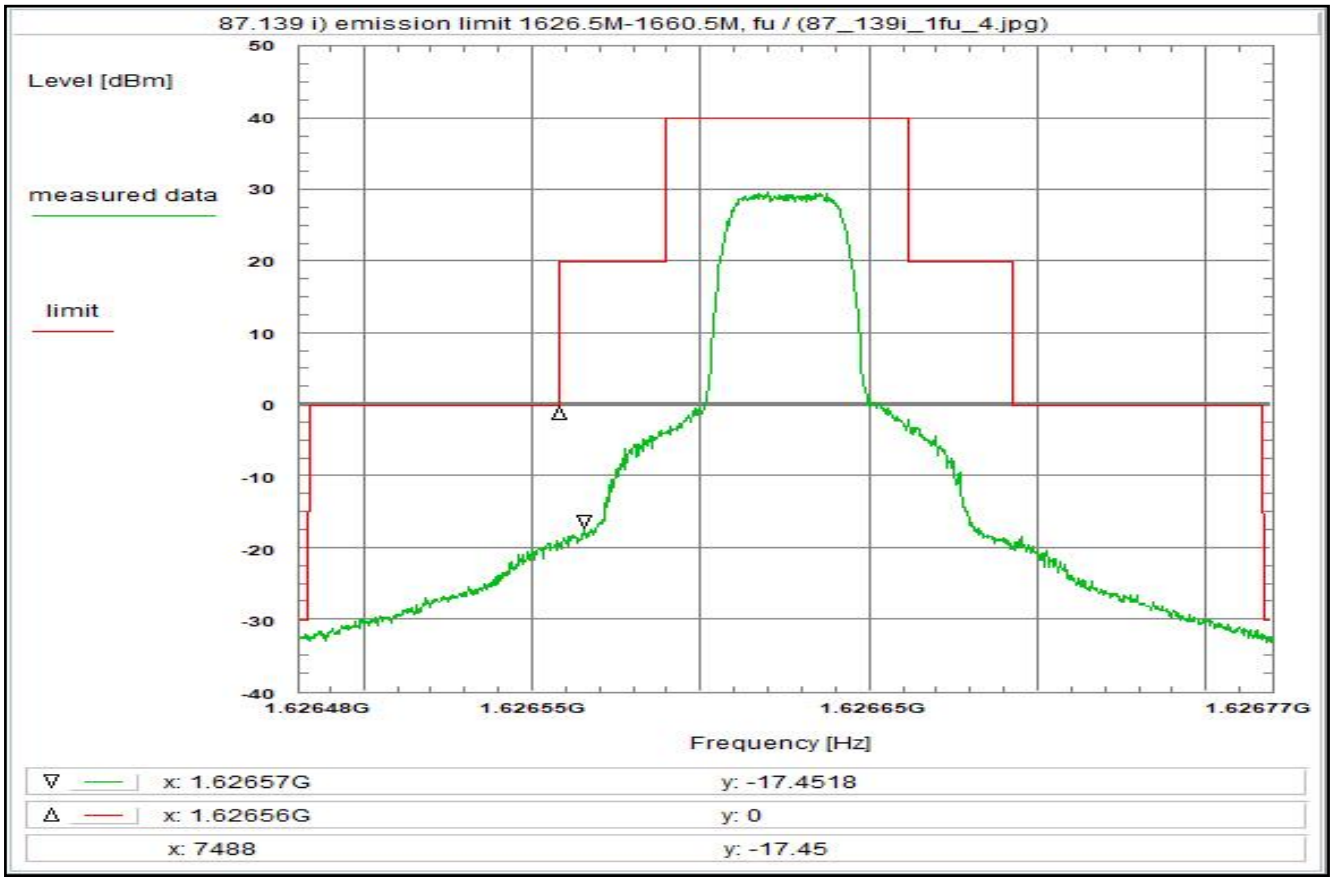
Start frequency:	1.626176	GHz
Stop frequency:	1.627424	GHz
Center frequency:	1.6268	GHz
Frequency span:	1.248	MHz
Resolution-BW:	3	kHz
Video-BW:	300	Hz
Input attenuation:	20	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna (on-axis)	+	1.4	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U330)	+	31.9	dB
TOTAL CORRECTION:	+	35.4	dB

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

Plot No. 47



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

Limit:
Limit according to 87.139(i)(1)
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with 87.139(i)(1).

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
fl, R20T1XD

Test setup:
see test report chapter 7.2:

Test equipment:
see test report chapter 7.1-7.2: C220, R001, U330

Remark:

Test result: **Test passed**

Environment condition:

Date & Time:	Wed 16/Aug/2023 16:37:36	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	230	Vac

Setup of measurement equipment:

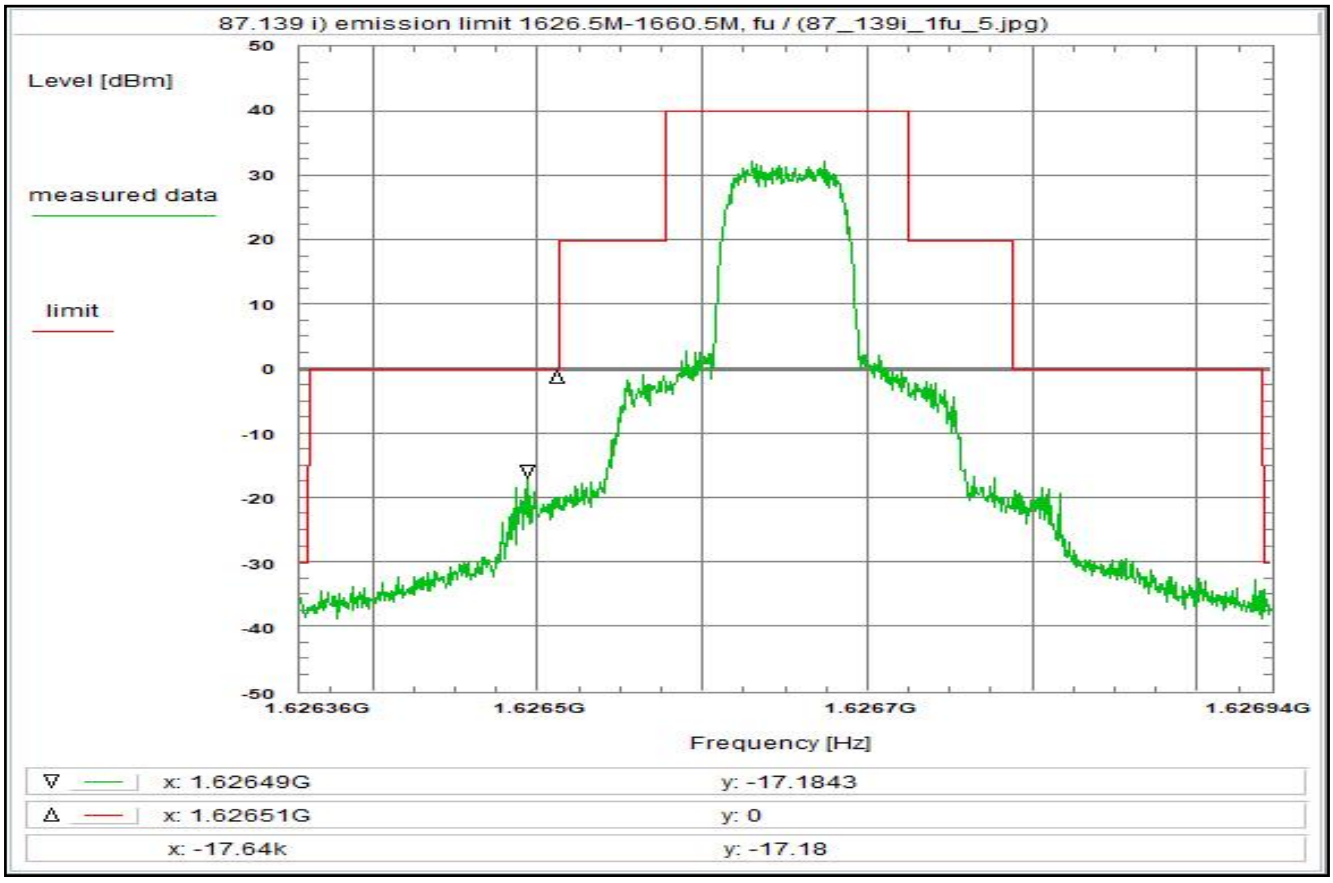
Start frequency:	1.626481	GHz
Stop frequency:	1.626769	GHz
Center frequency:	1.626625	GHz
Frequency span:	288	kHz
Resolution-BW:	3	kHz
Video-BW:	300	Hz
Input attenuation:	20	dB
Trace-Mode:	Average	
Detector-Mode:	AVG	

Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna (on-axis)	+	1.4	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U330)	+	31.9	dB
TOTAL CORRECTION:	+	35.4	dB

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

Plot No. 48



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

Limit:
Limit according to 87.139(i)(1)
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with 87.139(i)(1).

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
fl, R20T2XD

Test setup:
see test report chapter 7.2:

Test equipment:
see test report chapter 7.1-7.2: R001

Remark:

Test result: **Test passed**

Environment condition:

Date & Time:	Wed 16/Aug/2023 16:50:26	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	230	Vac

Setup of measurement equipment:

Start frequency:	1.626356	GHz
Stop frequency:	1.626944	GHz
Center frequency:	1.62665	GHz
Frequency span:	588	kHz
Resolution-BW:	3	kHz
Video-BW:	300	Hz
Input attenuation:	20	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

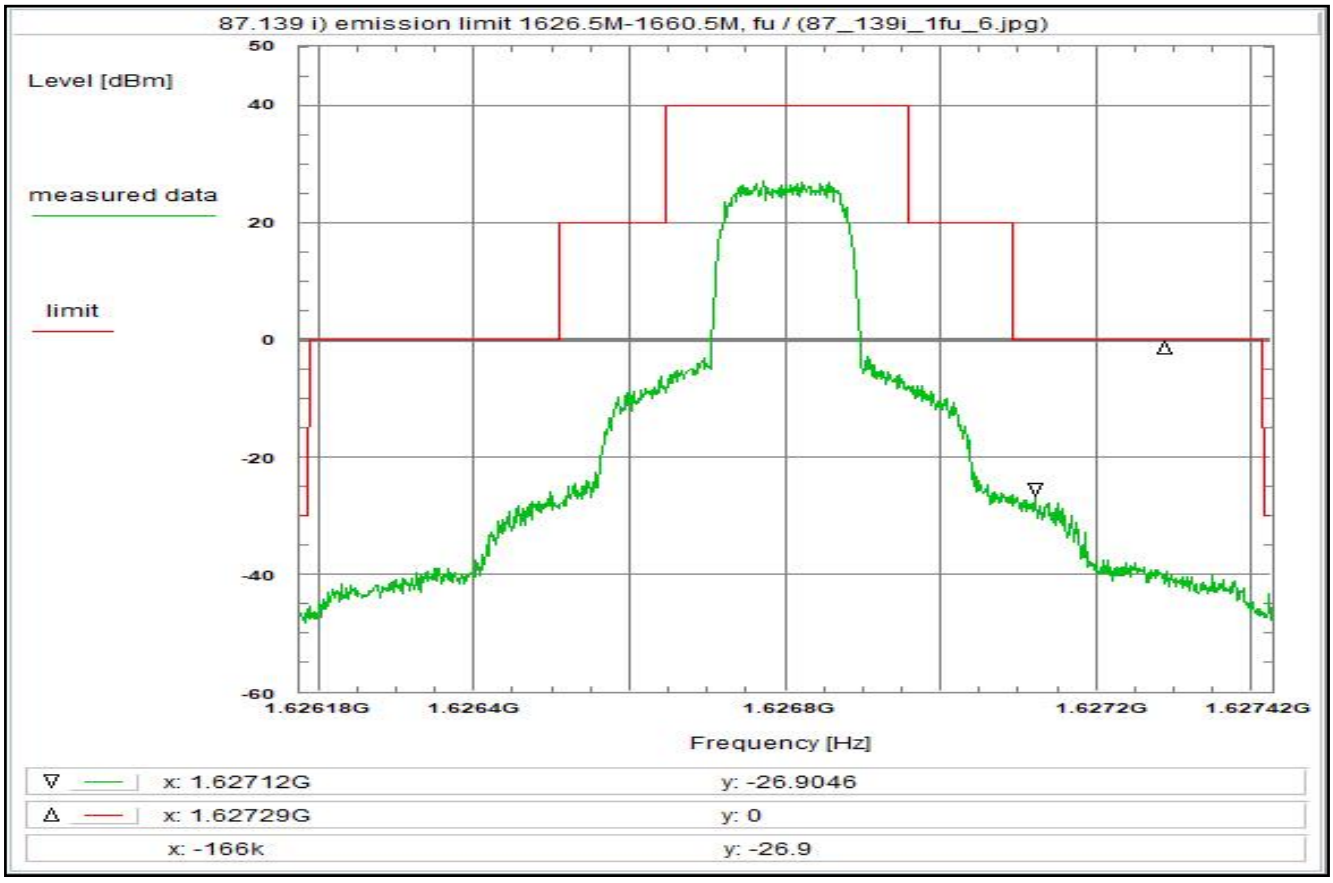
Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna (on-axis)	+	1.4	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U330)	+	31.9	dB
TOTAL CORRECTION:	+	35.4	dB

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

Reference of limit = 40 dBm
Spectrum mask referenced to necessary bandwidth

Plot No. 49



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

Limit:
Limit according to 87.139(i)(1)
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with 87.139(i)(1).

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
fl, R20T4.5XD

Test setup:
see test report chapter 7.2:

Test equipment:
see test report chapter 7.1-7.2: C220, R001, U330

Remark:

Test result: **Test passed**

Environment condition:

Date & Time:	Wed 16/Aug/2023 16:57:23	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	230	Vac

Setup of measurement equipment:

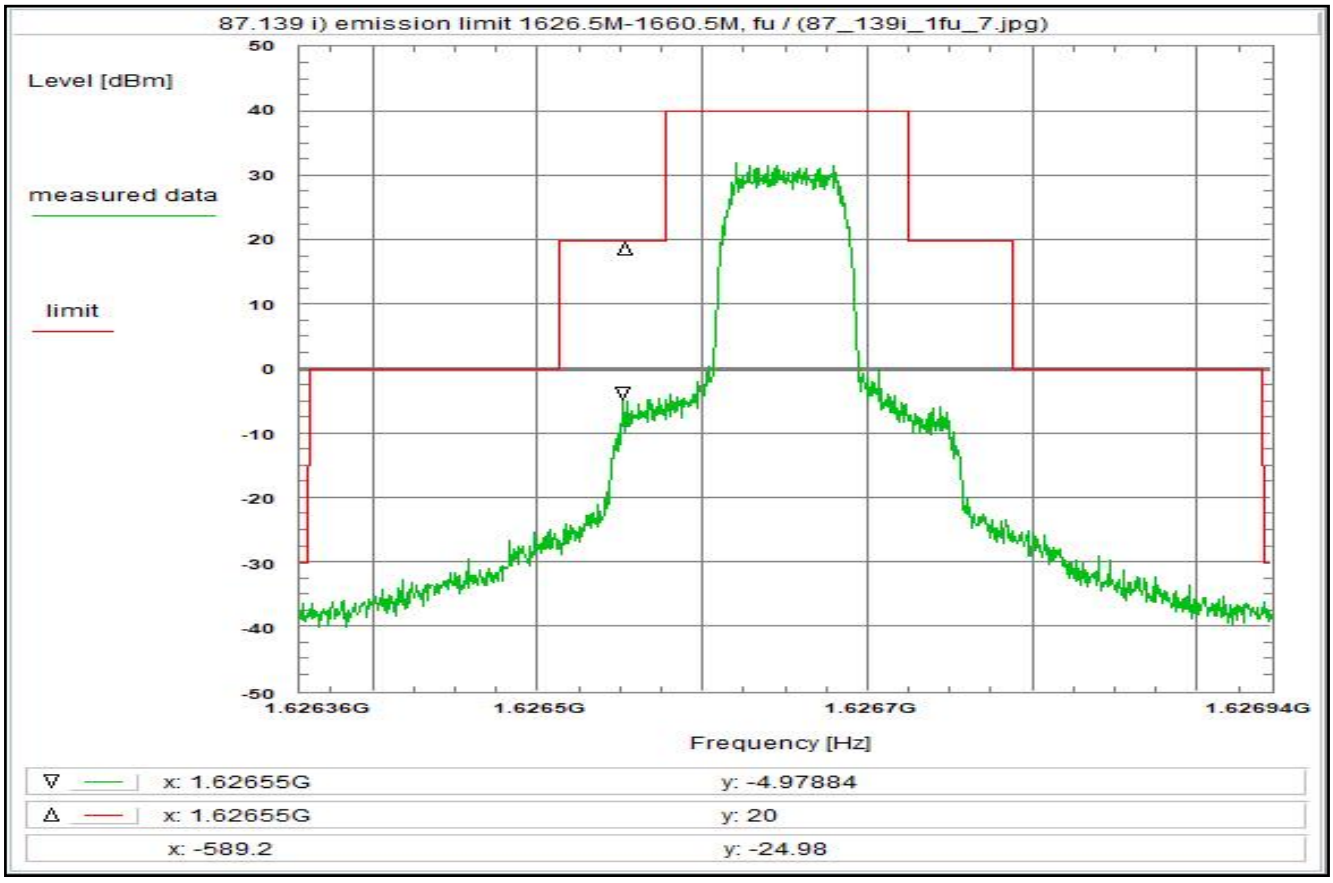
Start frequency:	1.626176	GHz
Stop frequency:	1.627424	GHz
Center frequency:	1.6268	GHz
Frequency span:	1.248	MHz
Resolution-BW:	3	kHz
Video-BW:	300	Hz
Input attenuation:	20	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna (on-axis)	+	1.4	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U330)	+	31.9	dB
TOTAL CORRECTION:	+	35.4	dB

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

Plot No. 50



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

Limit:
Limit according to 87.139(i)(1)
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with 87.139(i)(1).

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
fl, R5T2QD

Test setup:
see test report chapter 7.2:

Test equipment:
see test report chapter 7.1-7.2: C220, R001, U330

Remark:

Test result: **Test passed**

Environment condition:

Date & Time:	Wed 16/Aug/2023 17:57:11	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	230	Vac

Setup of measurement equipment:

Start frequency:	1.626356	GHz
Stop frequency:	1.626944	GHz
Center frequency:	1.62665	GHz
Frequency span:	588	kHz
Resolution-BW:	3	kHz
Video-BW:	300	Hz
Input attenuation:	20	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

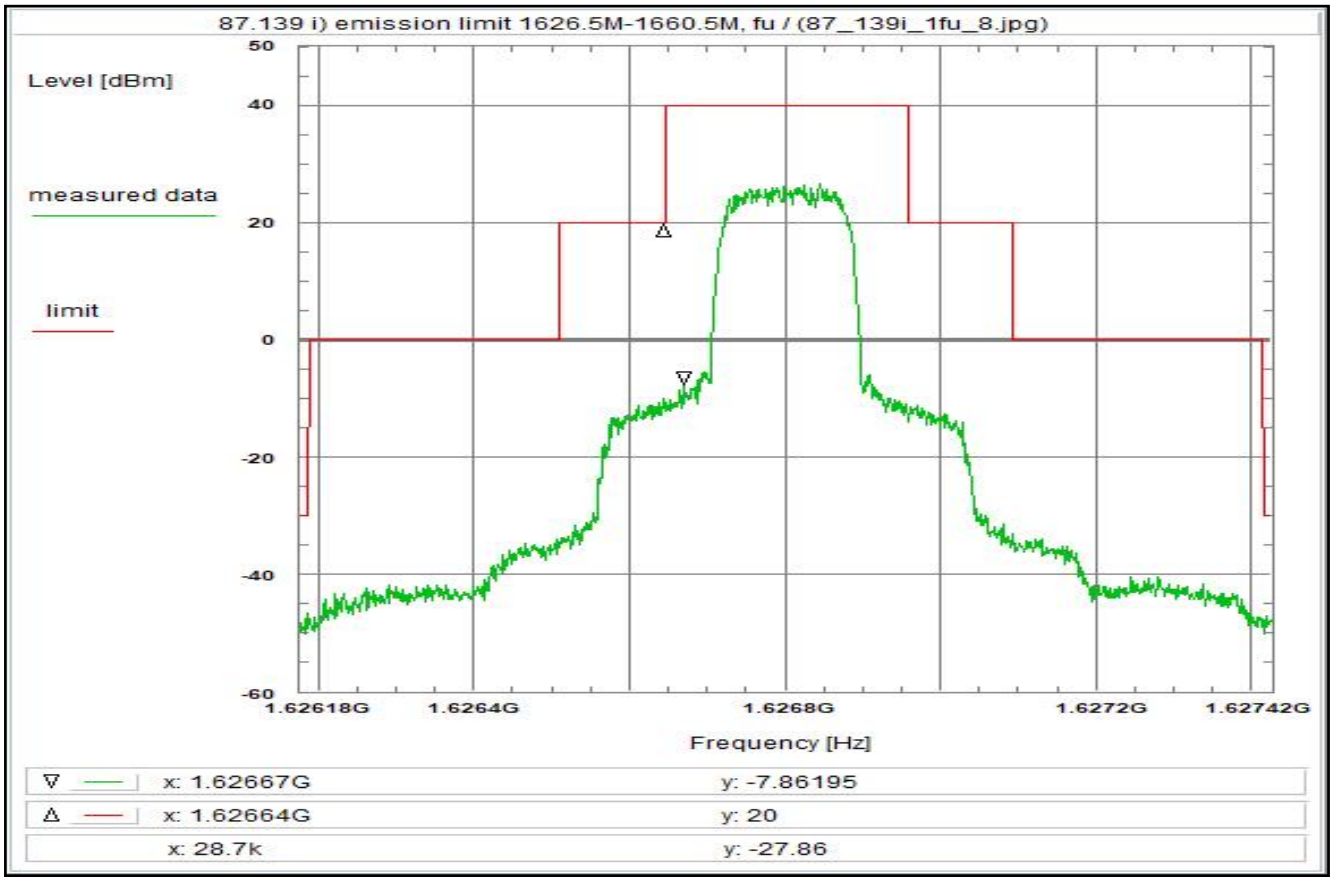
Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna (on-axis)	+	1.4	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U330)	+	31.9	dB
TOTAL CORRECTION:	+	35.4	dB

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

Reference of limit = 40 dBm
Spectrum mask referenced to necessary bandwidth

Plot No. 51



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

Limit:
Limit according to 87.139(i)(1)
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with 87.139(i)(1).

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
fl, R5T4.5QD

Test setup:
see test report chapter 7.2:

Test equipment:
see test report chapter 7.1-7.2: R001

Remark:

Test result: **Test passed**

Environment condition:

Date & Time:	Wed 16/Aug/2023 18:02:11	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	230	Vac

Setup of measurement equipment:

Start frequency:	1.626176	GHz
Stop frequency:	1.627424	GHz
Center frequency:	1.6268	GHz
Frequency span:	1.248	MHz
Resolution-BW:	3	kHz
Video-BW:	300	Hz
Input attenuation:	20	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

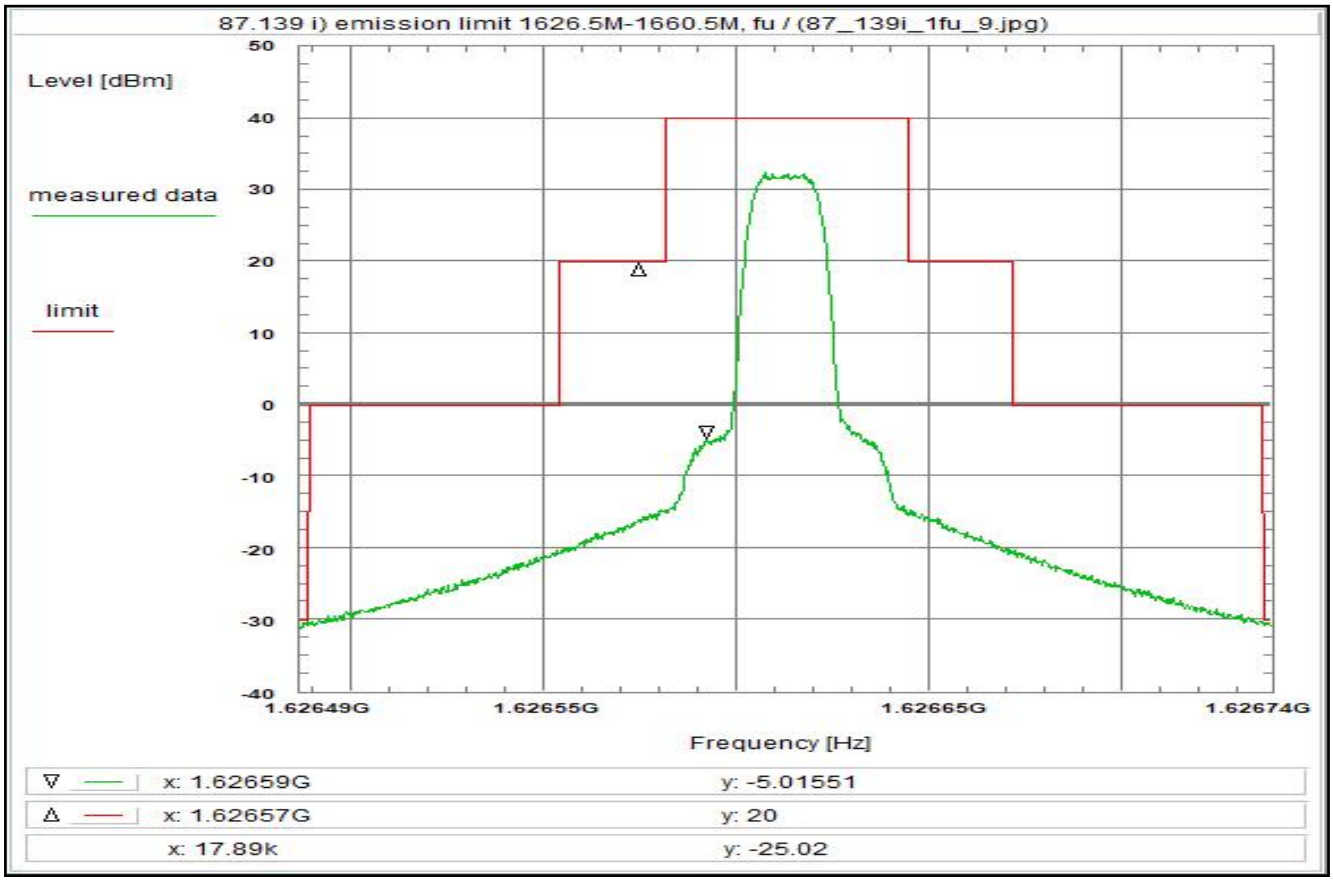
Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna (on-axis)	+	1.4	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U330)	+	31.9	dB
TOTAL CORRECTION:	+	35.4	dB

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

Reference of limit = 40 dBm
Spectrum mask referenced to necessary bandwidth

Plot No. 52



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

Limit:
Limit according to 87.139(i)(1)
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with 87.139(i)(1).

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
fl, R20T0.5QD

Test setup:
see test report chapter 7.2:

Test equipment:
see test report chapter 7.1-7.2: R001

Remark:

Test result: **Test passed**

Environment condition:

Date & Time:	Wed 16/Aug/2023 18:14:42	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	230	Vac

Setup of measurement equipment:

Start frequency:	1.6264865	GHz
Stop frequency:	1.6267385	GHz
Center frequency:	1.6266125	GHz
Frequency span:	252	kHz
Resolution-BW:	3	kHz
Video-BW:	300	Hz
Input attenuation:	20	dB
Trace-Mode:	Average	
Detector-Mode:	AVG	

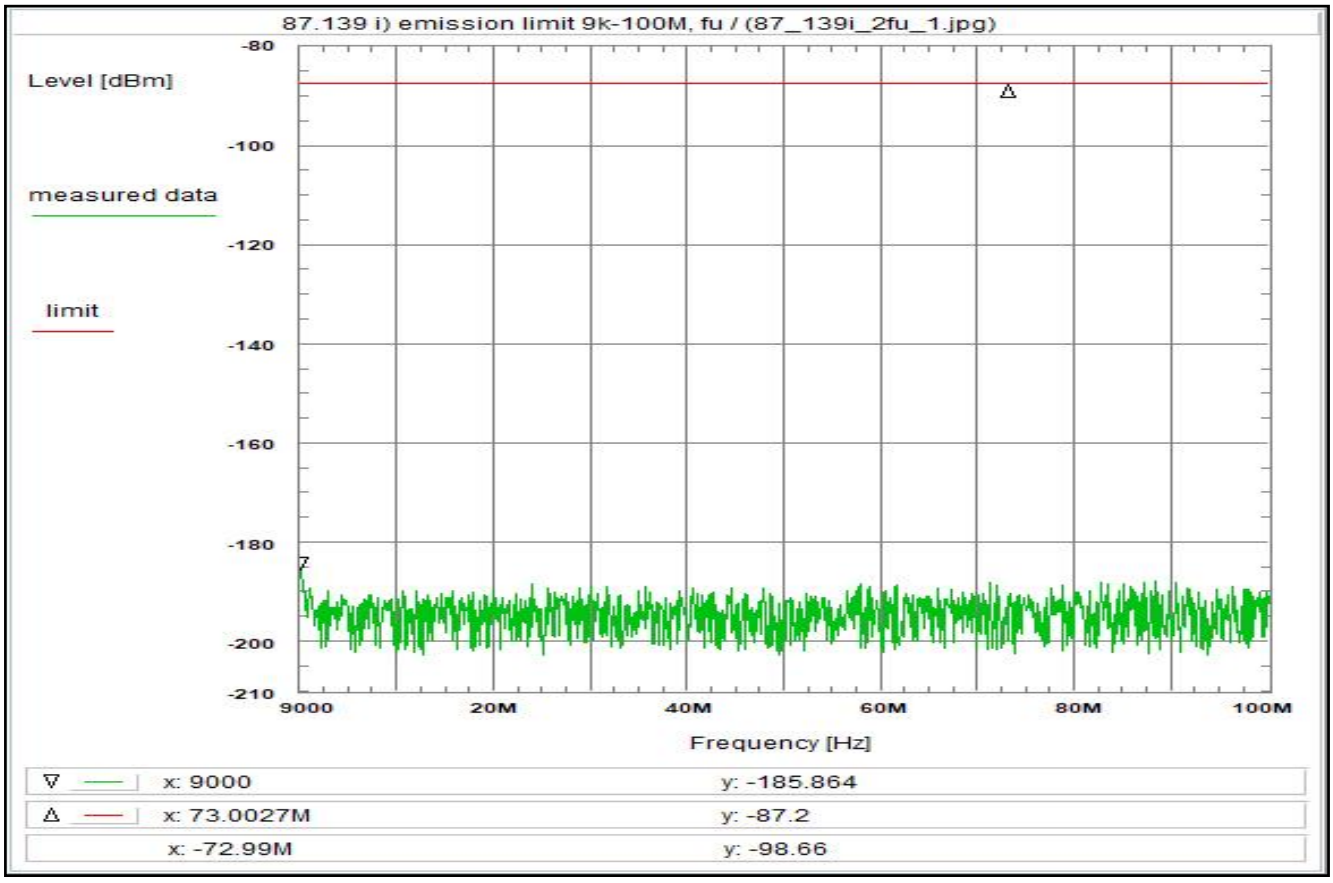
Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna (on-axis)	+	1.4	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U330)	+	31.9	dB
TOTAL CORRECTION:	+	35.4	dB

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

Reference of limit = 40 dBm
Spectrum mask referenced to necessary bandwidth

Plot No. 53



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

Limit:
Limit according to 87.139(i)(1)
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with 87.139(i)(1).

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
fl, max hold, valid for all modulations

Test setup:
see test report chapter 7.2:

Test equipment:
see test report chapter 7.1-7.2: C220, R001, U330, W_RE, W_REJF

Remark:

Test result: **Test passed**

Environment condition:

Date & Time:	Wed 23/Aug/2023 19:06:45	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
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:	10	kHz
Input attenuation:	20	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

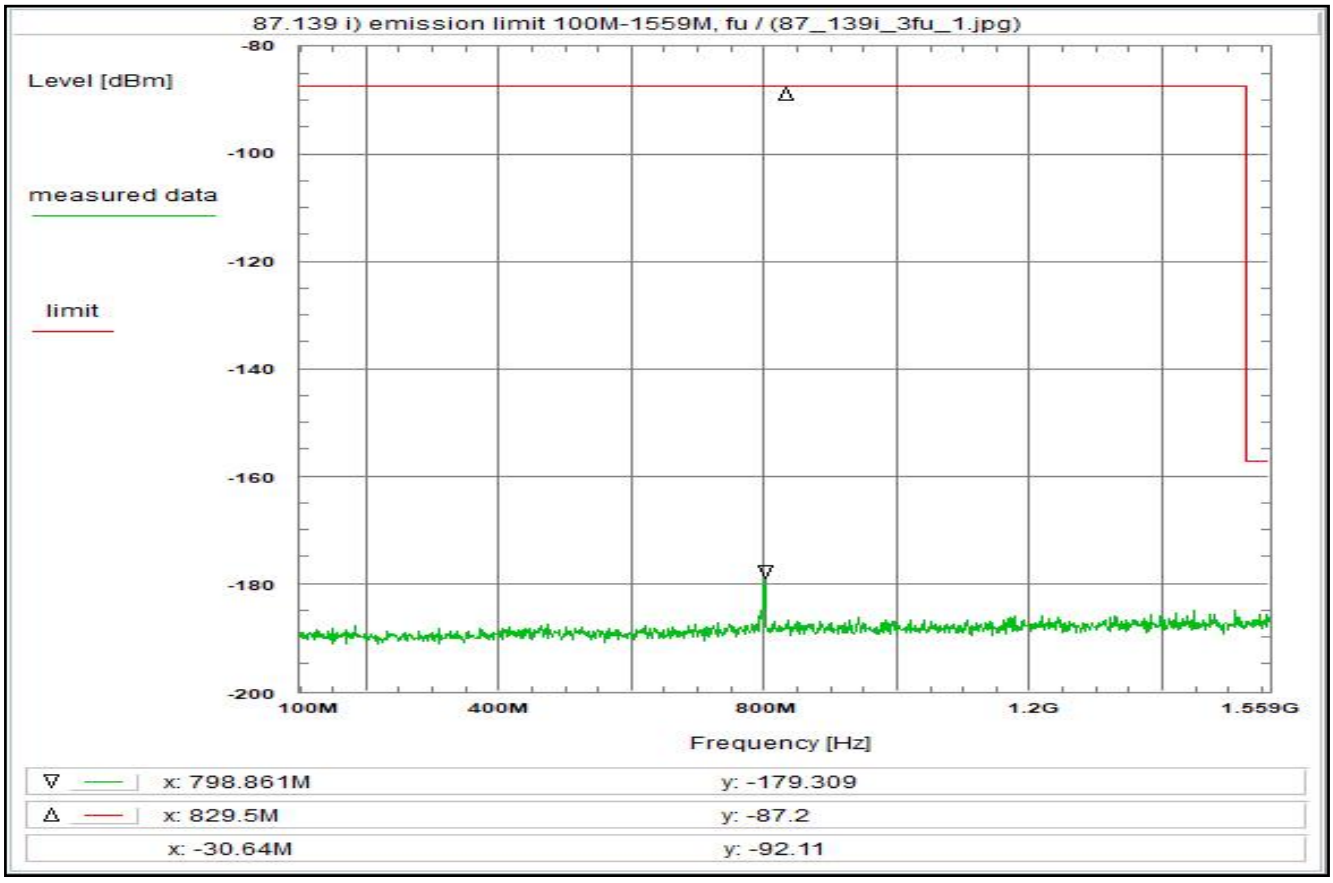
Correction:

(W_RE)	-	120.0	dB
Coaxial cable (C220)	+	0.2	dB
DUT-Antenna (on-axis)	+	1.4	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U330)	+	31.3	dB
TOTAL CORRECTION:	-	-85.9	dB

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

Since the measurement was updated with the maximum antenna gain, which is 5.23 dBic, the corrected value of the marker is -182 dBm

Plot No. 54



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

Limit:
Limit according to 87.139(i)(1)
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with 87.139(i)(1).

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
fl, max hold, valid for all modulations

Test setup:
see test report chapter 7.2:

Test equipment:
see test report chapter 7.1-7.2: C220, R001, U330

Remark:

Test result: **Test passed**

Environment condition:

Date & Time:	Wed 23/Aug/2023 09:27:27	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
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:	10	kHz
Input attenuation:	20	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

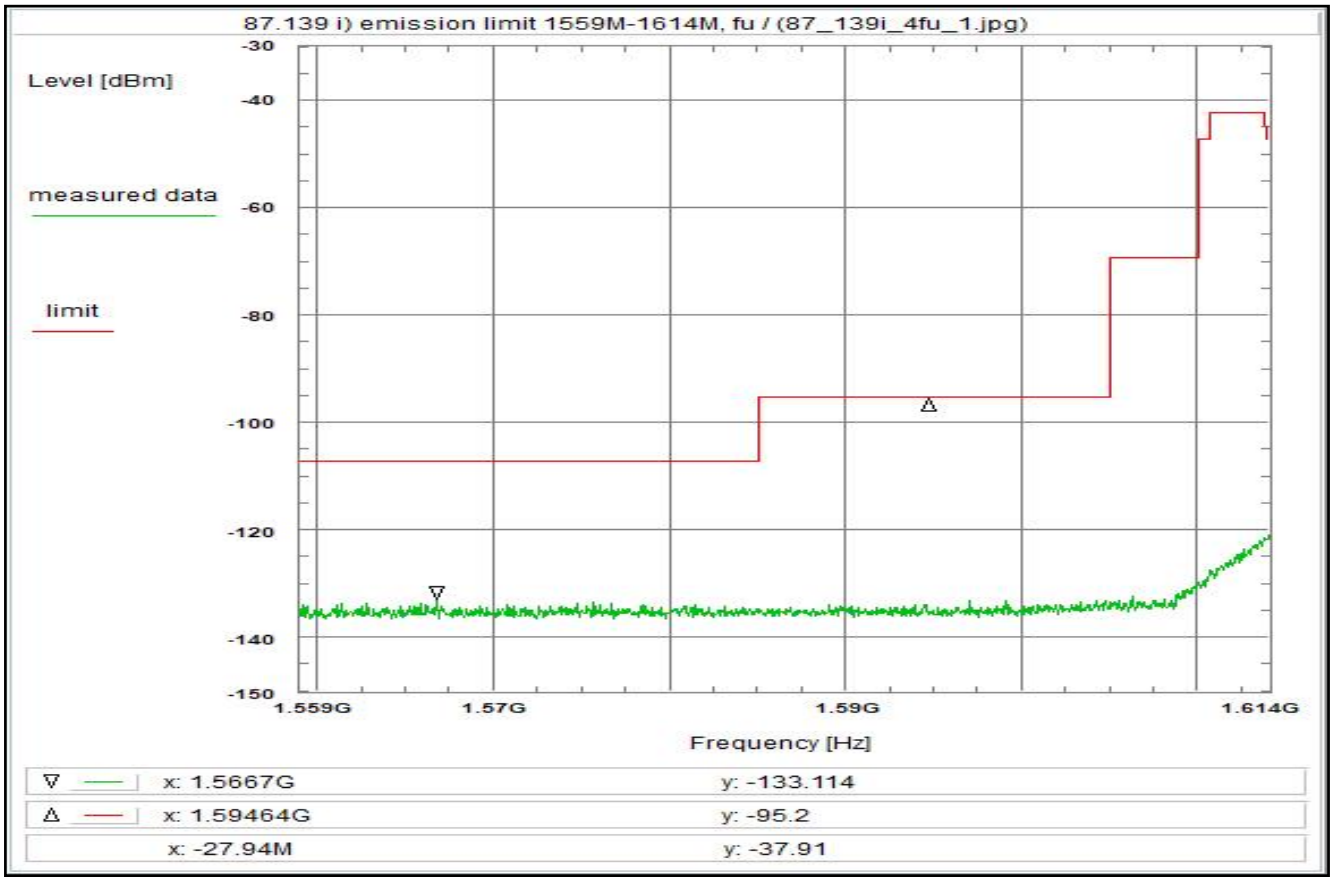
Correction:

(W_RE)	-	115.7	dB
Coaxial cable	+	0.6	dB
DUT-Antenna (on-axis)	+	1.4	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U330)	+	31.7	dB
TOTAL CORRECTION:	-	-80.8	dB

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

Since the measurement was updated with the maximum antenna gain, which is 5.23 dBic, the corrected value of the marker is-175 dBm

Plot No. 55



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

Limit:
Limit according to 87.139(i)(1)
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with 87.139(i)(1).

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
fl, max hold, valid for all modulations

Test setup:
see test report chapter 7.2:

Test equipment:
see test report chapter 7.1-7.2: C220, R001, U331, W_RE

Remark:

Test result: **Test passed**

Environment condition:

Date & Time:	Wed 23/Aug/2023 11:23:47	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
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:	1	MHz
Video-BW:	3	MHz
Input attenuation:	20	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

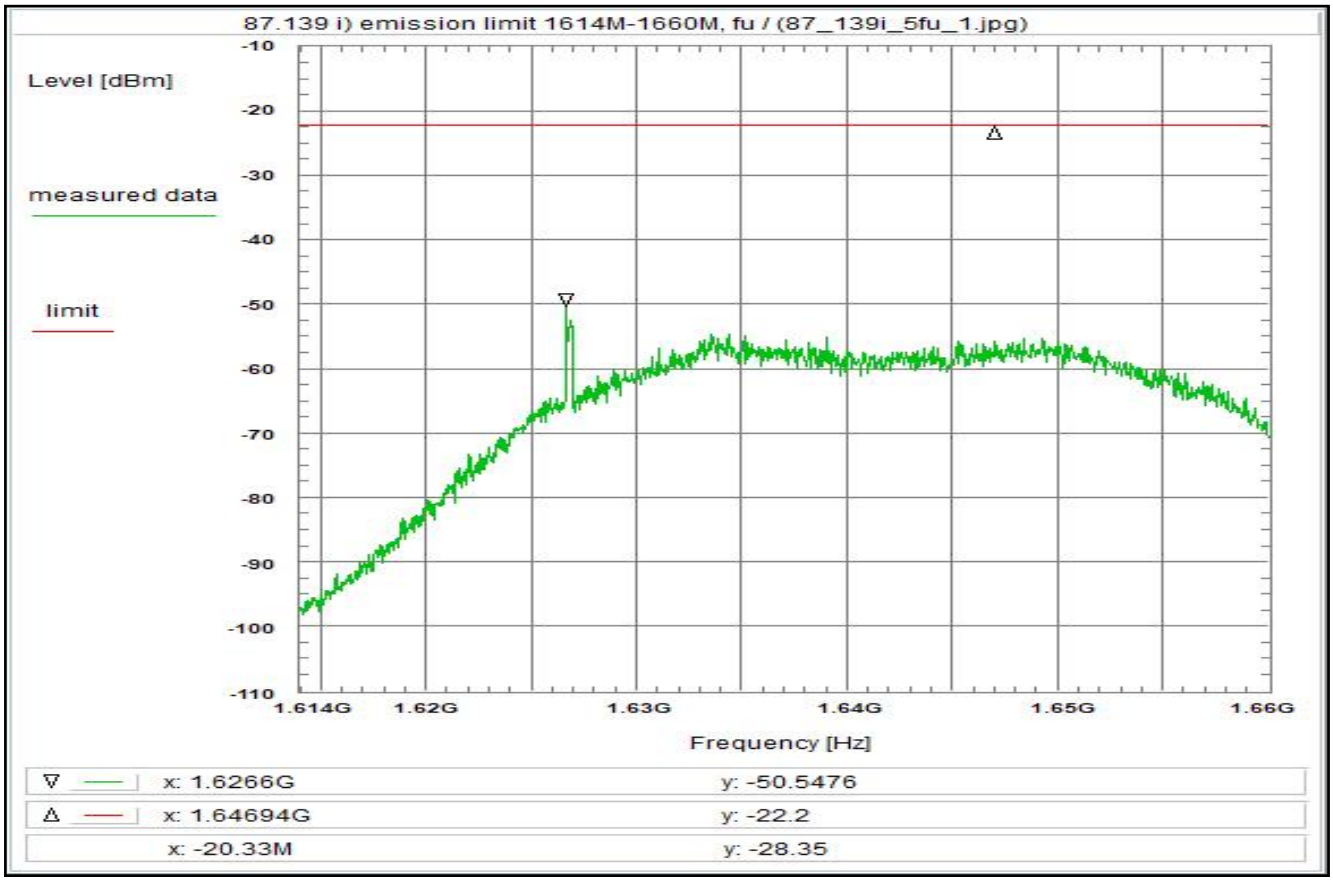
Correction:

(W_RE)	-	104.1	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna (on-axis)	+	1.4	dBi
Test antenna	+	0.0	dB
BW correction factor	+	0.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U331)	+	32.6	dB
TOTAL CORRECTION:	-	-69.2	dB

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

Since the measurement was updated with the maximum antenna gain, which is 5.23 dBic, the corrected value of the marker is -129 dBm

Plot No. 56



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

Limit:
Limit according to 87.139(i)(1)
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with 87.139(i)(1).

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
fl, max hold, valid for all modulations

Test setup:
see test report chapter 7.2:

Test equipment:
see test report chapter 7.1-7.2: C220, R001, U331

Remark:

Test result: **Test passed**

Environment condition:

Date & Time:	Wed 23/Aug/2023 14:30:49	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
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:	20	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

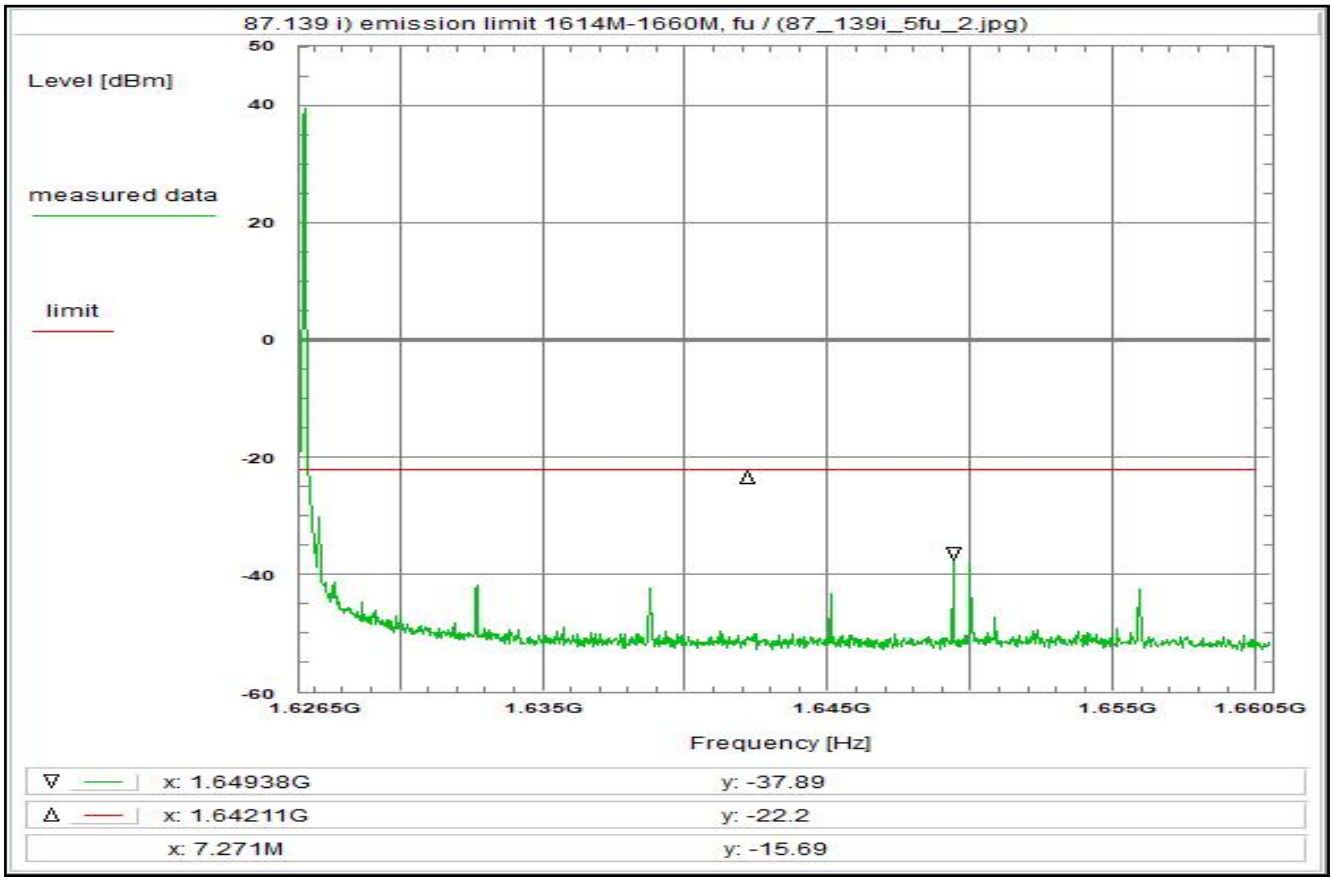
Correction:

(W_RE)	-	47.8	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna (on-axis)	+	1.4	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U331)	+	74.2	dB
TOTAL CORRECTION:	+	29.9	dB

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

Since the measurement was updated with the maximum antenna gain, which is 5.23 dBic, the corrected value of the marker is -46.7 dBm

Plot No. 57



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

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:

No.	Frequency	Level	Acceptance	Exceeding	Limit	Exceeding
#	Hz	dBm	dBm	dB	dBm	dB
1	1.6600G	-27.4	-32.2	4.8	-22.2	-5.2

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
fl, max hold, valid for all modulations

Test setup:
see test report chapter 7.2:

Test equipment:
see test report chapter 7.1-7.2: C220, R001, U330

Remark:

Test result: Test passed

Environment condition:

Date & Time:	Fri 25/Aug/2023 19:08:23	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	230	Vac

Setup of measurement equipment:

Start frequency:	1.6265	GHz
Stop frequency:	1.6605	GHz
Center frequency:	1.6435	GHz
Frequency span:	34	MHz
Resolution-BW:	3	kHz
Video-BW:	30	kHz
Input attenuation:	20	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	Pos Peak	

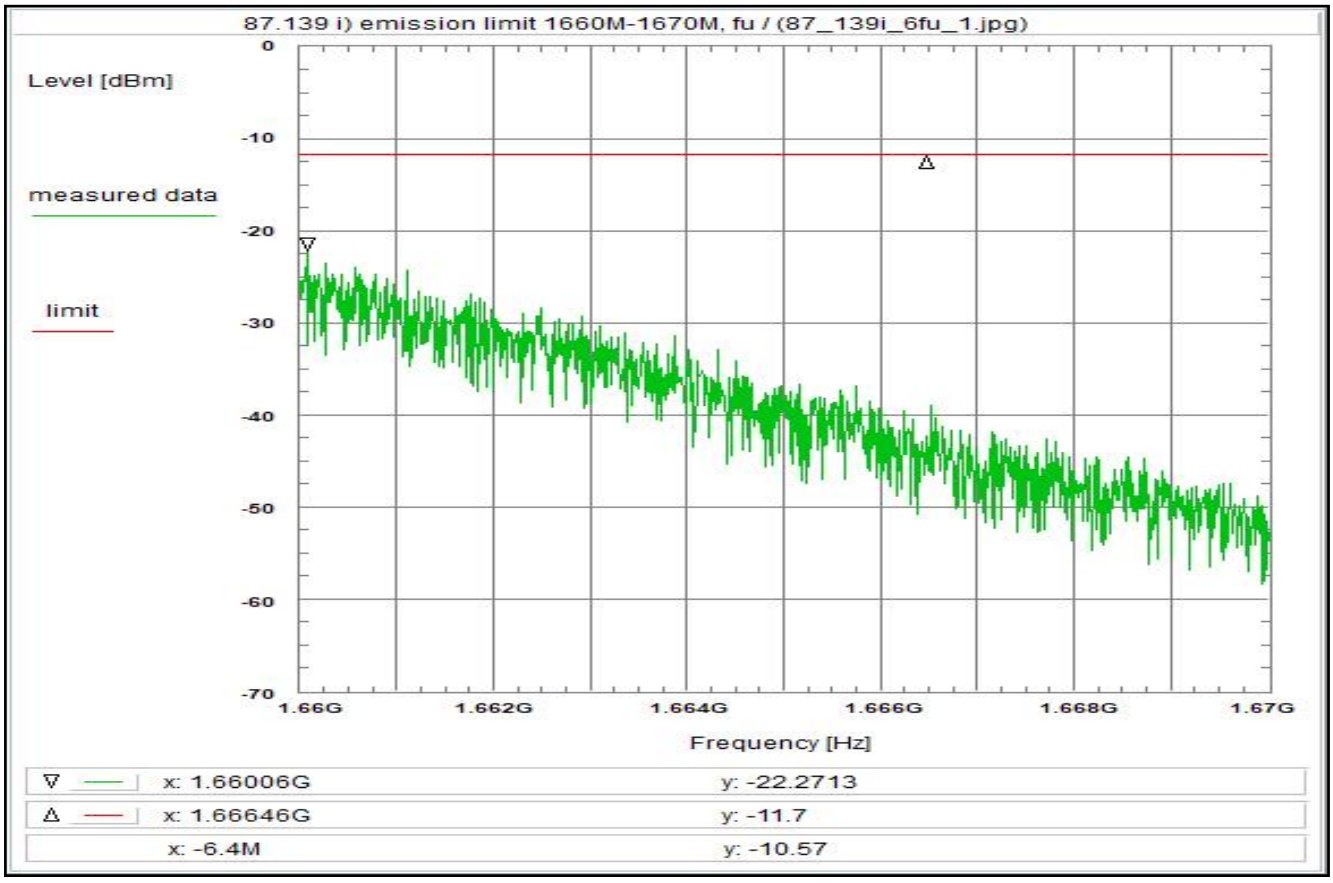
Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna (on-axis)	+	1.4	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
Freefield attenuation (U330)	+	31.9	dB
TOTAL CORRECTION:	+	35.4	dB

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

Since the measurement was updated with the maximum antenna gain, which is 5.23 dBic, the corrected value of the marker is -34.1 dBm

Plot No. 58



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

Limit:
Limit according to 87.139(i)(1)
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with 87.139(i)(1).

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
fl, max hold, valid for all modulations

Test setup:
see test report chapter 7.2:

Test equipment:
see test report chapter 7.1-7.2: C220, R001, U331

Remark:

Test result: **Test passed**

Environment condition:

Date & Time:	Wed 23/Aug/2023 15:09:52	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
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:	300	Hz
Input attenuation:	20	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

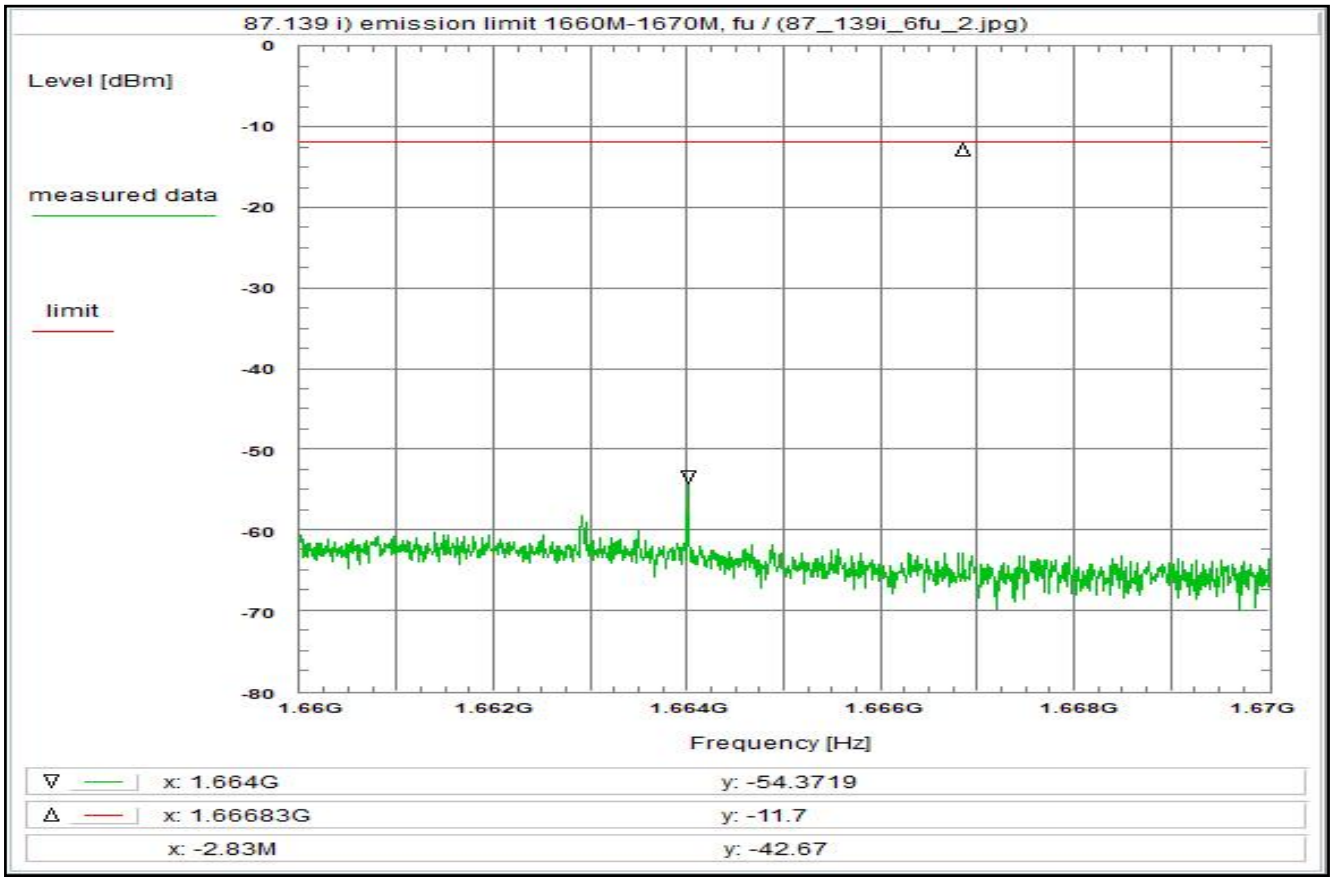
Correction:

(W_RE)	-	4.5	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna (on-axis)	+	1.4	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 20k)	+	8.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U331)	+	72.8	dB
TOTAL CORRECTION:	+	78.8	dB

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

Since the measurement was updated with the maximum antenna gain, which is 5.23 dBic, the corrected value of the marker is -18.4 dBm

Plot No. 59



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

Limit:
Limit according to 87.139(i)(1)
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with 87.139(i)(1).

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
fl, max hold, valid for all modulations

Test setup:
see test report chapter 7.2:

Test equipment:
see test report chapter 7.1-7.2: C220, R001, U330

Remark:

Test result: **Test passed**

Environment condition:

Date & Time:	Wed 23/Aug/2023 18:22:34	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
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:	300	Hz
Input attenuation:	20	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

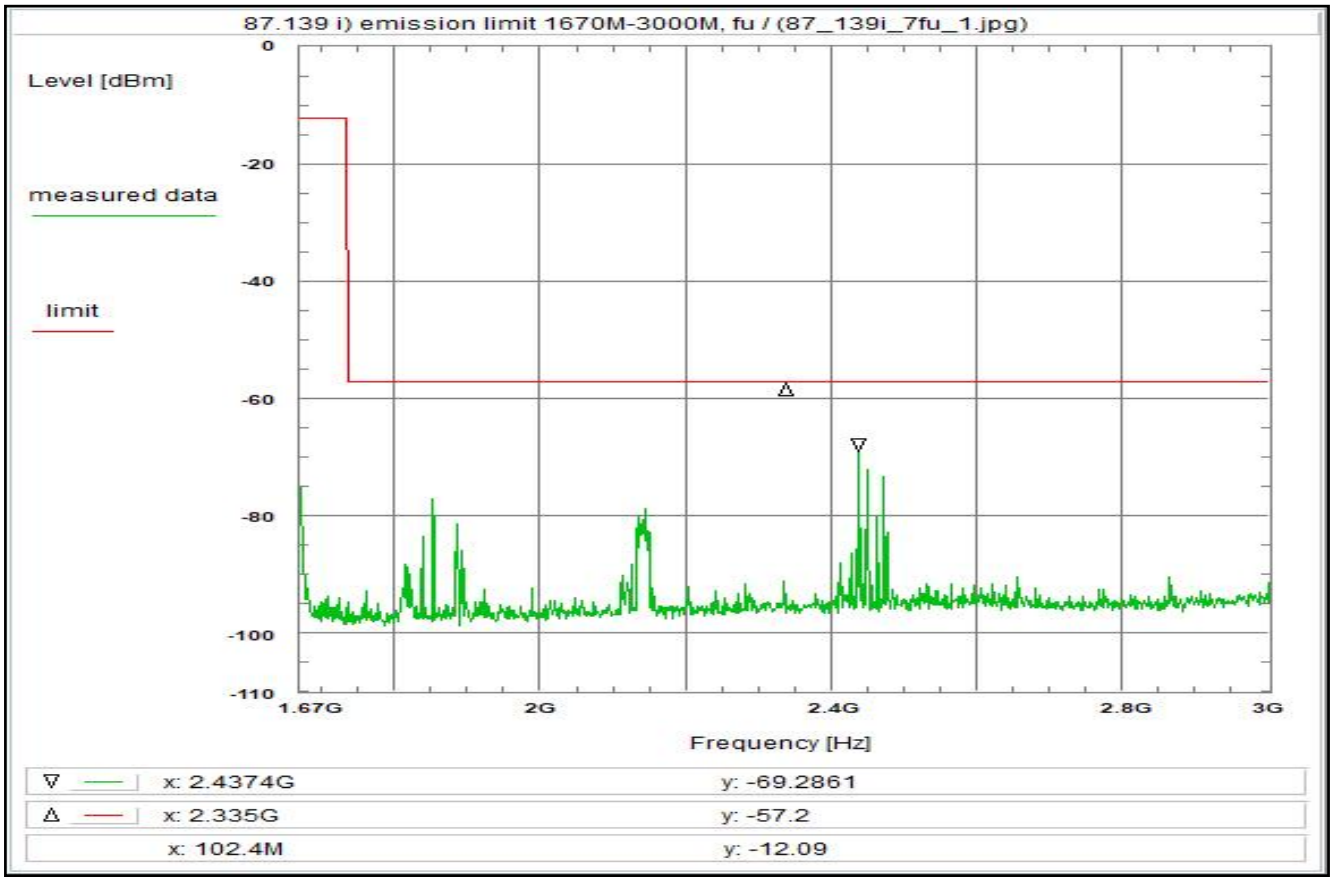
Correction:

(W_RE)	-	4.5	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna (on-axis)	+	1.4	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 20k)	+	8.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U330)	+	31.9	dB
TOTAL CORRECTION:	+	37.9	dB

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

Since the measurement was updated with the maximum antenna gain, which is 5.23 dBic, the corrected value of the marker is -50.5 dBm

Plot No. 60



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

Limit:
Limit according to 87.139(i)(1)
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with 87.139(i)(1).

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
fl, max hold, valid for all modulations

Test setup:
see test report chapter 7.2:

Test equipment:
see test report chapter 7.1-7.2: C220, R001, U331

Remark:

Test result: **Test passed**

Environment condition:

Date & Time:	Tue 22/Aug/2023 15:02:23	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
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:	10	kHz
Input attenuation:	0	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

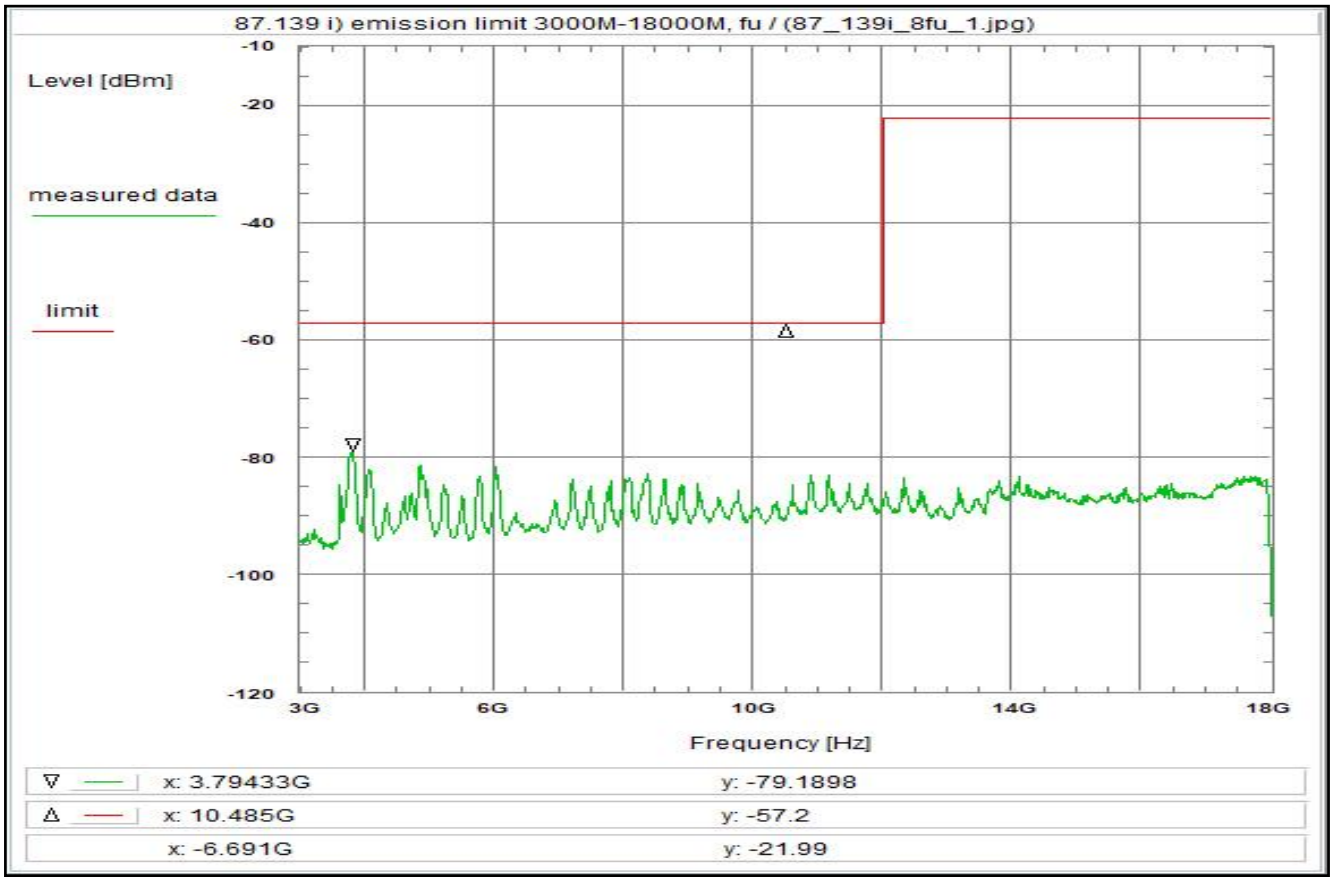
Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	1.1	dB
DUT-Antenna (on-axis)	+	1.4	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U331)	+	32.5	dB
TOTAL CORRECTION:	+	36.2	dB

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

Since the measurement was updated with the maximum antenna gain, which is 5.23 dBic, the corrected value of the marker is -65.5 dBm

Plot No. 61



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

Limit:
Limit according to 87.139(i)(1)
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with 87.139(i)(1).

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
fl, max hold, valid for all modulations

Test setup:
see test report chapter 7.2:

Test equipment:
see test report chapter 7.1-7.2: C220, R001, U332

Remark:

Test result: **Test passed**

Environment condition:

Date & Time:	Tue 22/Aug/2023 15:42:48	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
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:	30	kHz
Input attenuation:	0	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

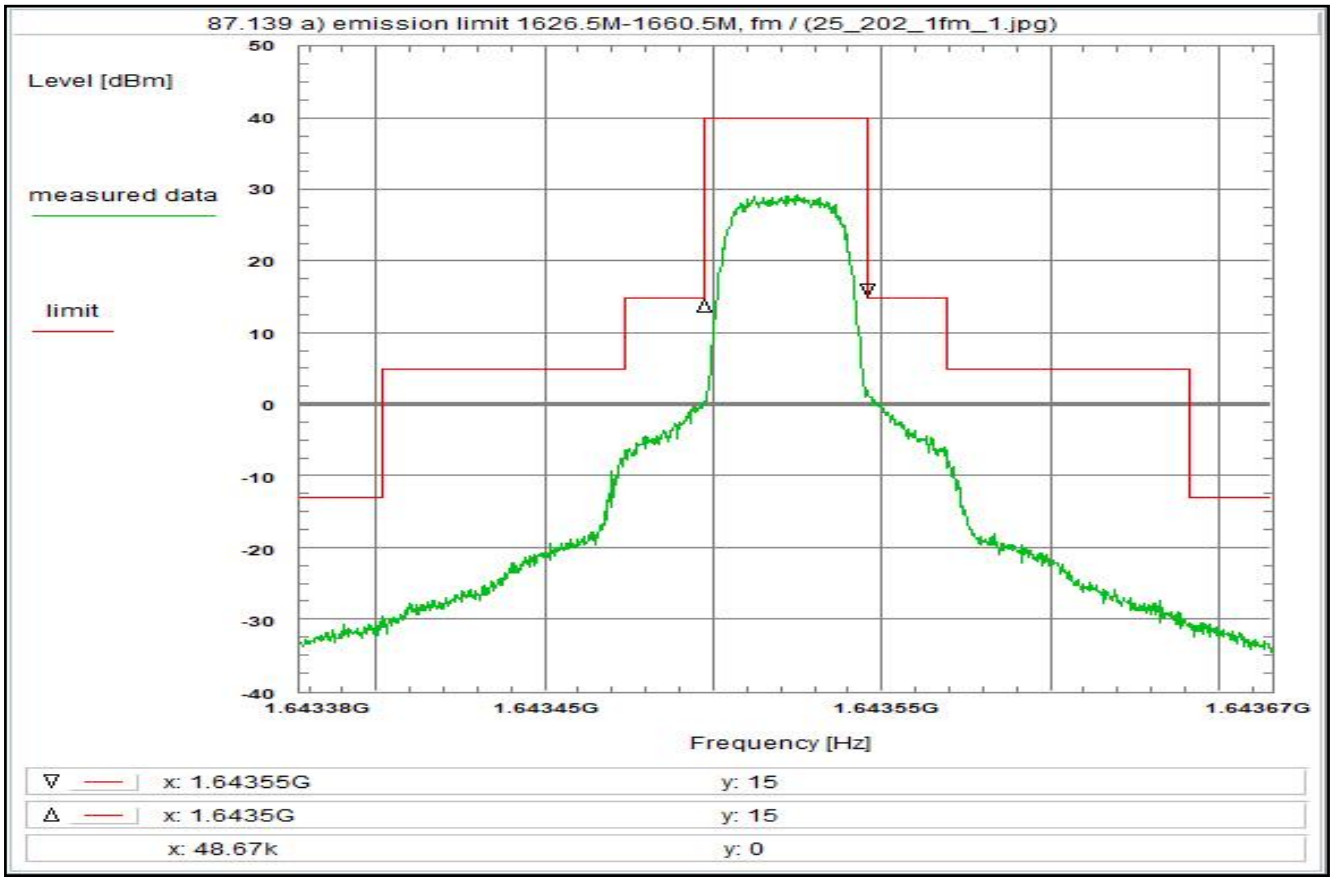
Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	2.3	dB
DUT-Antenna (on-axis)	+	1.4	dBi
Test antenna	+	0.0	dB
BW correction factor (10k -> 4k)	-	4.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U332)	+	34.0	dB
TOTAL CORRECTION:	+	33.7	dB

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

Since the measurement was updated with the maximum antenna gain, which is 5.23 dBic, the corrected value of the marker is -75.4 dBm

Plot No. 62



Subclause: 87.139 a)Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 87.139 a):
50-100% of assigned bw: -25dBc/4kHz
100-250% of assigned bw: -35dBc/4kHz
> 250% of assigned bw: -43+10log(Pmax)dBc/4kHz = -43 dBW
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with the above schedule.

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
fm, R5T1XD

Test setup:
see test report chapter 7.2:

Test equipment:
see test report chapter 7.1-7.2: C220, R001, U330

Remark:

Test result: **Test passed**

Environment condition:

Date & Time:	Fri 18/Aug/2023 14:53:30	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	230	Vac

Setup of measurement equipment:

Start frequency:	1.64337725	GHz
Stop frequency:	1.64366525	GHz
Center frequency:	1.64352125	GHz
Frequency span:	288	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	20	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

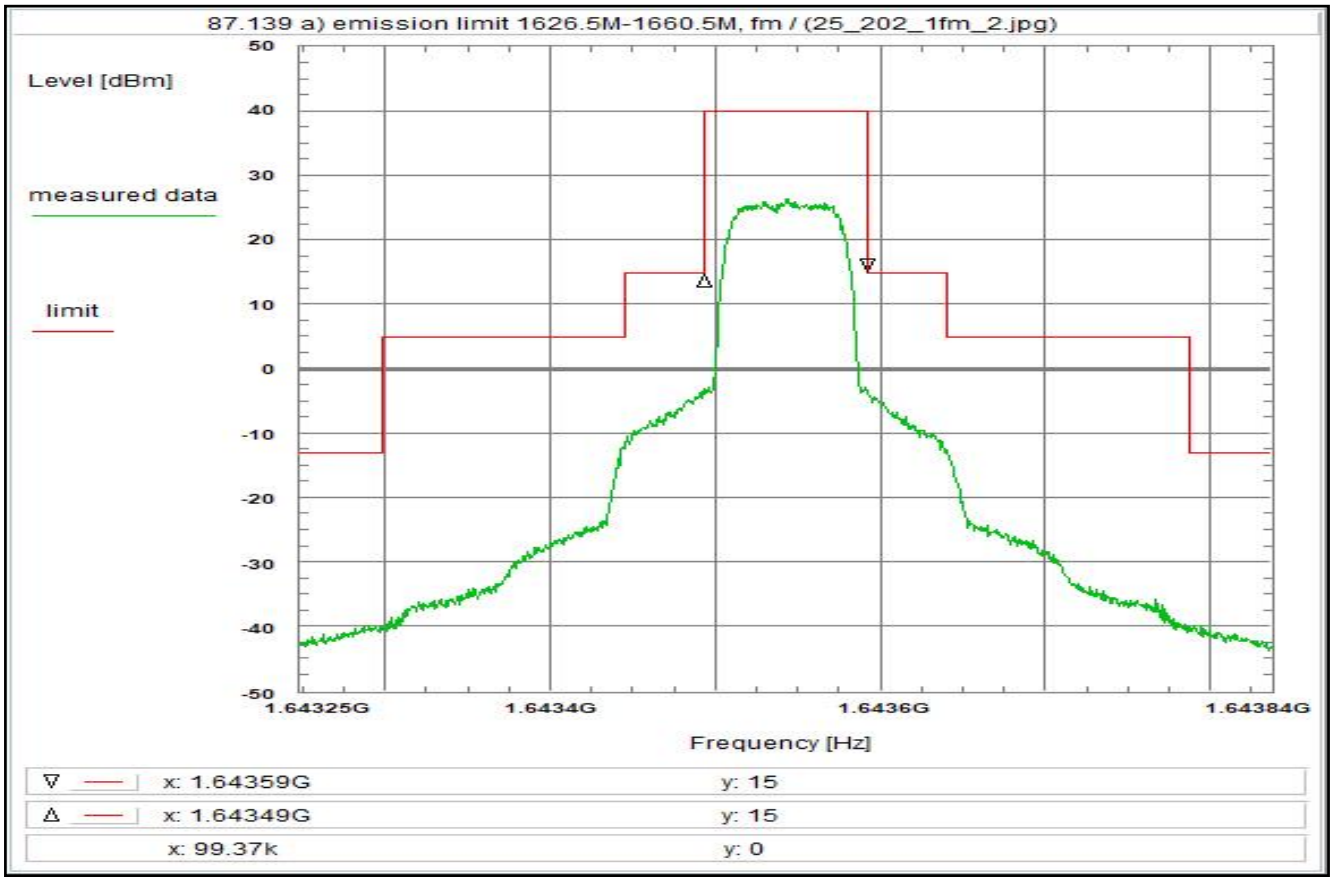
Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna (on-axis)	+	1.4	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U330)	+	31.9	dB
TOTAL CORRECTION:	+	35.4	dB

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

Reference of limit = 40 dBm
Spectrum mask referenced to necessary bandwidth

Plot No. 63



Subclause: 87.139 a)Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 87.139 a):
50-100% of assigned bw: -25dBc/4kHz
100-250% of assigned bw: -35dBc/4kHz
> 250% of assigned bw: -43+10log(Pmax)dBc/4kHz = -43 dBW
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with the above schedule.

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
fm, R5T2XD

Test setup:
see test report chapter 7.2:

Test equipment:
see test report chapter 7.1-7.2: R001

Remark:

Test result: **Test passed**

Environment condition:

Date & Time:	Fri 18/Aug/2023 14:57:39	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	230	Vac

Setup of measurement equipment:

Start frequency:	1.64324825	GHz
Stop frequency:	1.64383625	GHz
Center frequency:	1.64354225	GHz
Frequency span:	588	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	20	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

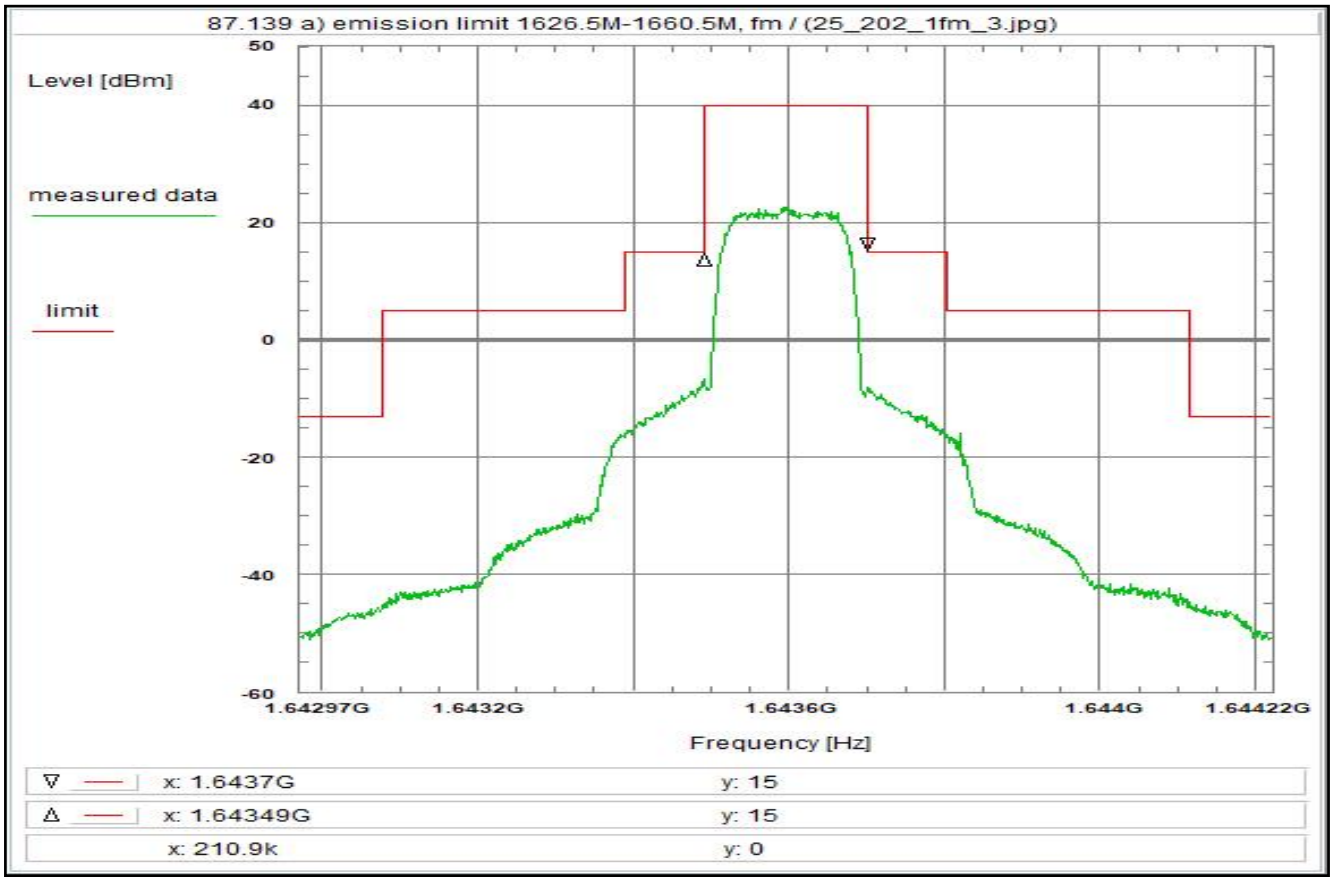
Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna (on-axis)	+	1.4	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U330)	+	31.9	dB
TOTAL CORRECTION:	+	35.4	dB

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

Reference of limit = 40 dBm
Spectrum mask referenced to necessary bandwidth

Plot No. 64



Subclause: 87.139 a)Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 87.139 a):
50-100% of assigned bw: -25dBc/4kHz
100-250% of assigned bw: -35dBc/4kHz
> 250% of assigned bw: -43+10log(Pmax)dBc/4kHz = -43 dBW
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with the above schedule.

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
fm, R5T4.5XD

Test setup:
see test report chapter 7.2:

Test equipment:
see test report chapter 7.1-7.2: C220, R001, U330

Remark:

Test result: **Test passed**

Environment condition:

Date & Time:	Fri 18/Aug/2023 15:01:08	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	230	Vac

Setup of measurement equipment:

Start frequency:	1.642971	GHz
Stop frequency:	1.644219	GHz
Center frequency:	1.643595	GHz
Frequency span:	1.248	MHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	20	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

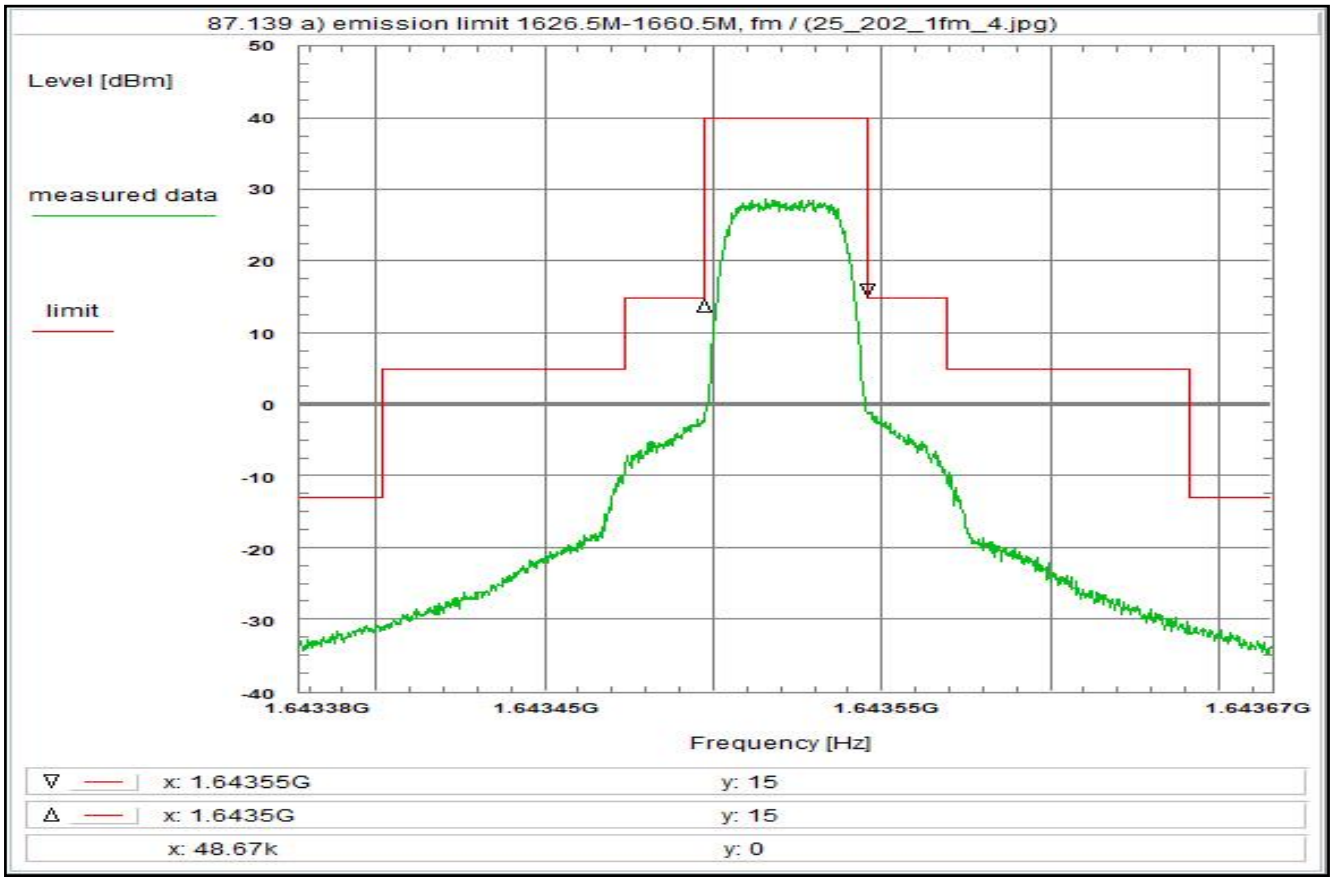
Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna (on-axis)	+	1.4	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U330)	+	31.9	dB
TOTAL CORRECTION:	+	35.4	dB

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

Reference of limit = 40 dBm
Spectrum mask referenced to necessary bandwidth

Plot No. 65



Subclause: 87.139 a)Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 87.139 a):
50-100% of assigned bw: -25dBc/4kHz
100-250% of assigned bw: -35dBc/4kHz
> 250% of assigned bw: -43+10log(Pmax)dBc/4kHz = -43 dBW
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with the above schedule.

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
fm, R20T1XD

Test setup:
see test report chapter 7.2:

Test equipment:
see test report chapter 7.1-7.2: C220, R001, U330

Remark:

Test result: **Test passed**

Environment condition:

Date & Time:	Fri 18/Aug/2023 15:04:28	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	230	Vac

Setup of measurement equipment:

Start frequency:	1.64337725	GHz
Stop frequency:	1.64366525	GHz
Center frequency:	1.64352125	GHz
Frequency span:	288	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	20	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

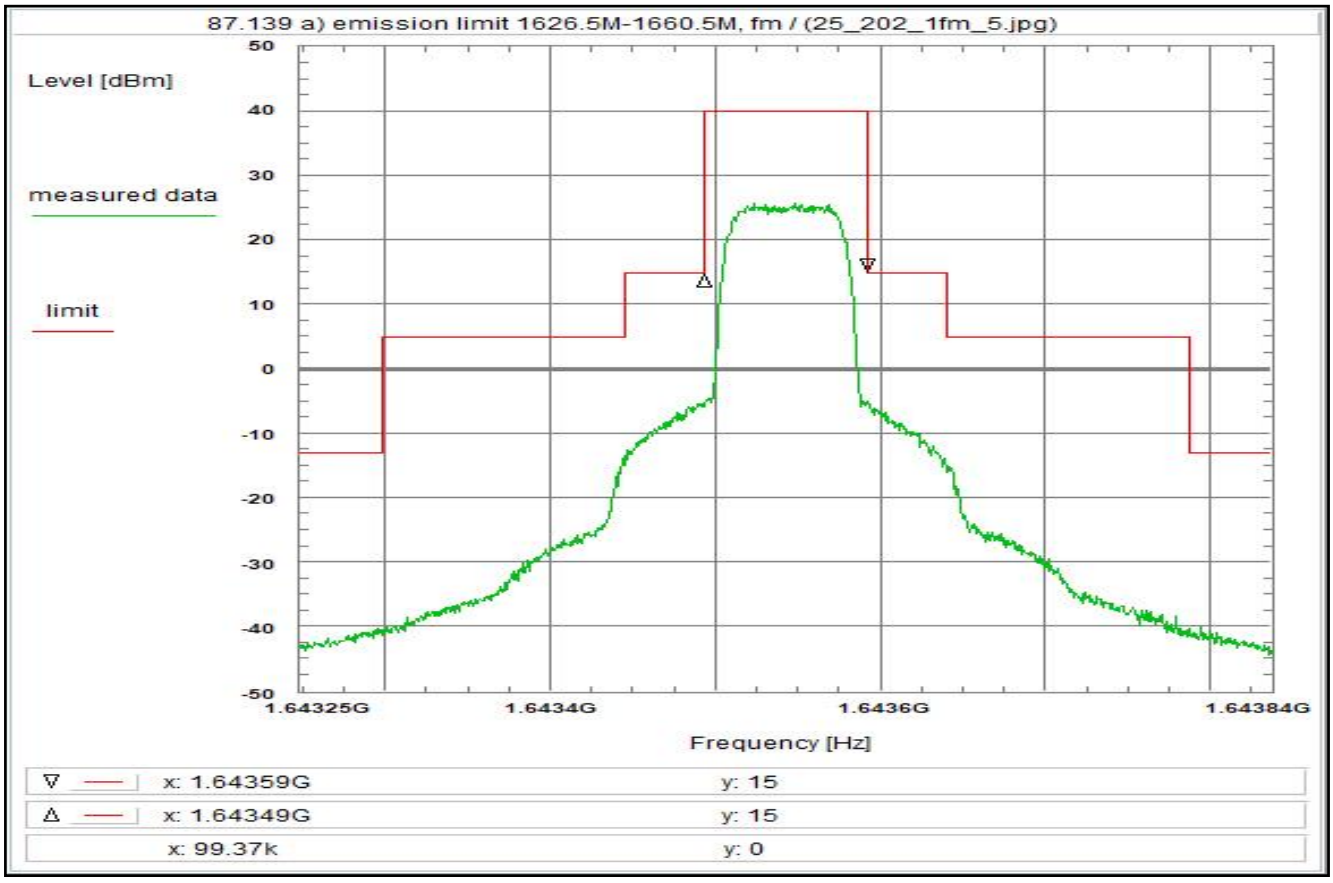
Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna (on-axis)	+	1.4	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U330)	+	31.9	dB
TOTAL CORRECTION:	+	35.4	dB

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

Reference of limit = 40 dBm
Spectrum mask referenced to necessary bandwidth

Plot No. 66



Subclause: 87.139 a)Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 87.139 a):
50-100% of assigned bw: -25dBc/4kHz
100-250% of assigned bw: -35dBc/4kHz
> 250% of assigned bw: -43+10log(Pmax)dBc/4kHz = -43 dBW
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with the above schedule.

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
fm, R20T1XD

Test setup:
see test report chapter 7.2:

Test equipment:
see test report chapter 7.1-7.2: C220, R001, U330

Remark:

Test result: **Test passed**

Environment condition:

Date & Time:	Fri 18/Aug/2023 15:07:20	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	230	Vac

Setup of measurement equipment:

Start frequency:	1.64324825	GHz
Stop frequency:	1.64383625	GHz
Center frequency:	1.64354225	GHz
Frequency span:	588	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	20	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

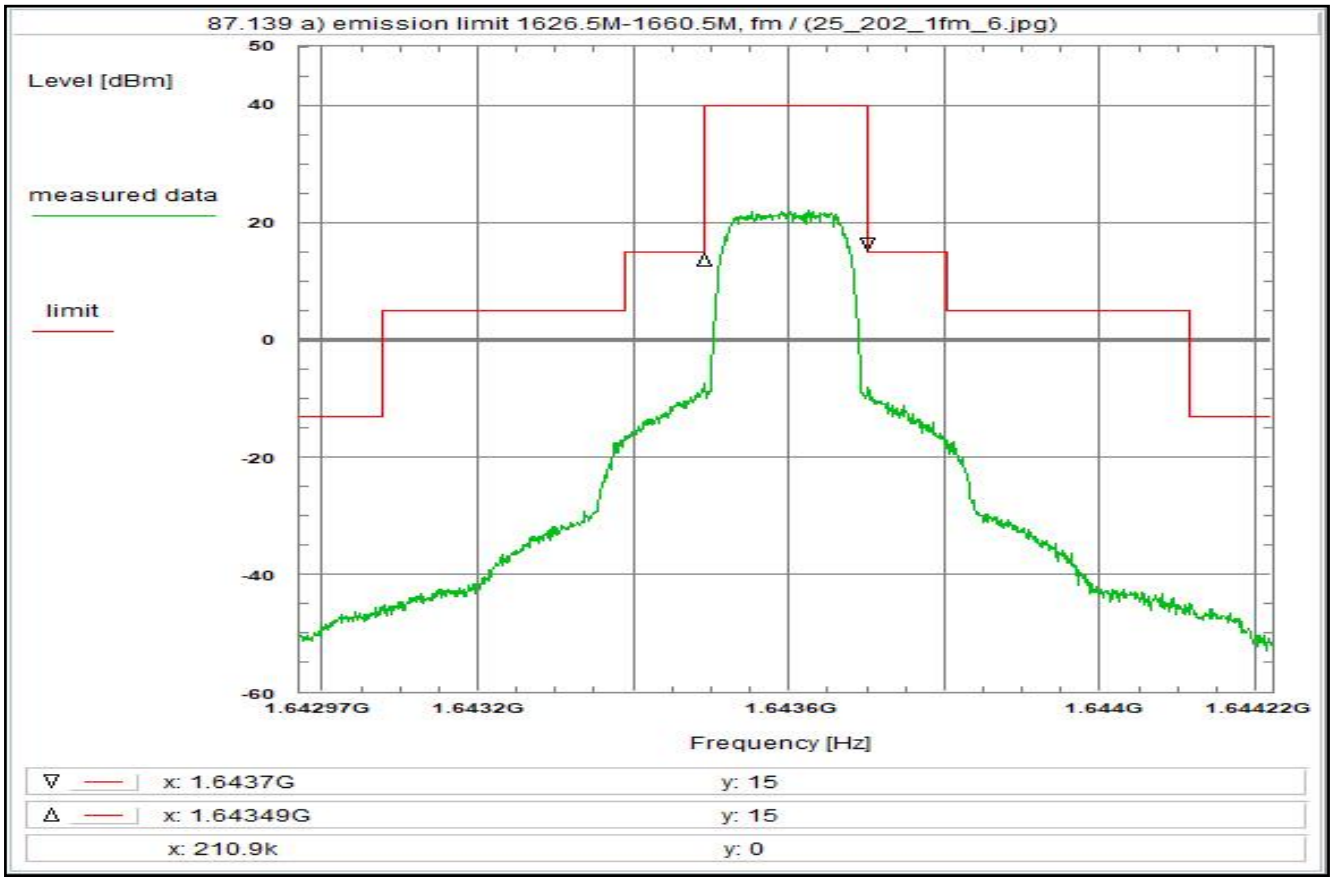
Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna (on-axis)	+	1.4	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U330)	+	31.9	dB
TOTAL CORRECTION:	+	35.4	dB

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

Reference of limit = 40 dBm
Spectrum mask referenced to necessary bandwidth

Plot No. 67



Subclause: 87.139 a)Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 87.139 a):
50-100% of assigned bw: -25dBc/4kHz
100-250% of assigned bw: -35dBc/4kHz
> 250% of assigned bw: -43+10log(Pmax)dBc/4kHz = -43 dBW
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with the above schedule.

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
fm, R20T4.5XD

Test setup:
see test report chapter 7.2:

Test equipment:
see test report chapter 7.1-7.2: C220, R001, U330

Remark:

Test result: **Test passed**

Environment condition:

Date & Time:	Fri 18/Aug/2023 15:10:17	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	230	Vac

Setup of measurement equipment:

Start frequency:	1.642971	GHz
Stop frequency:	1.644219	GHz
Center frequency:	1.643595	GHz
Frequency span:	1.248	MHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	20	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

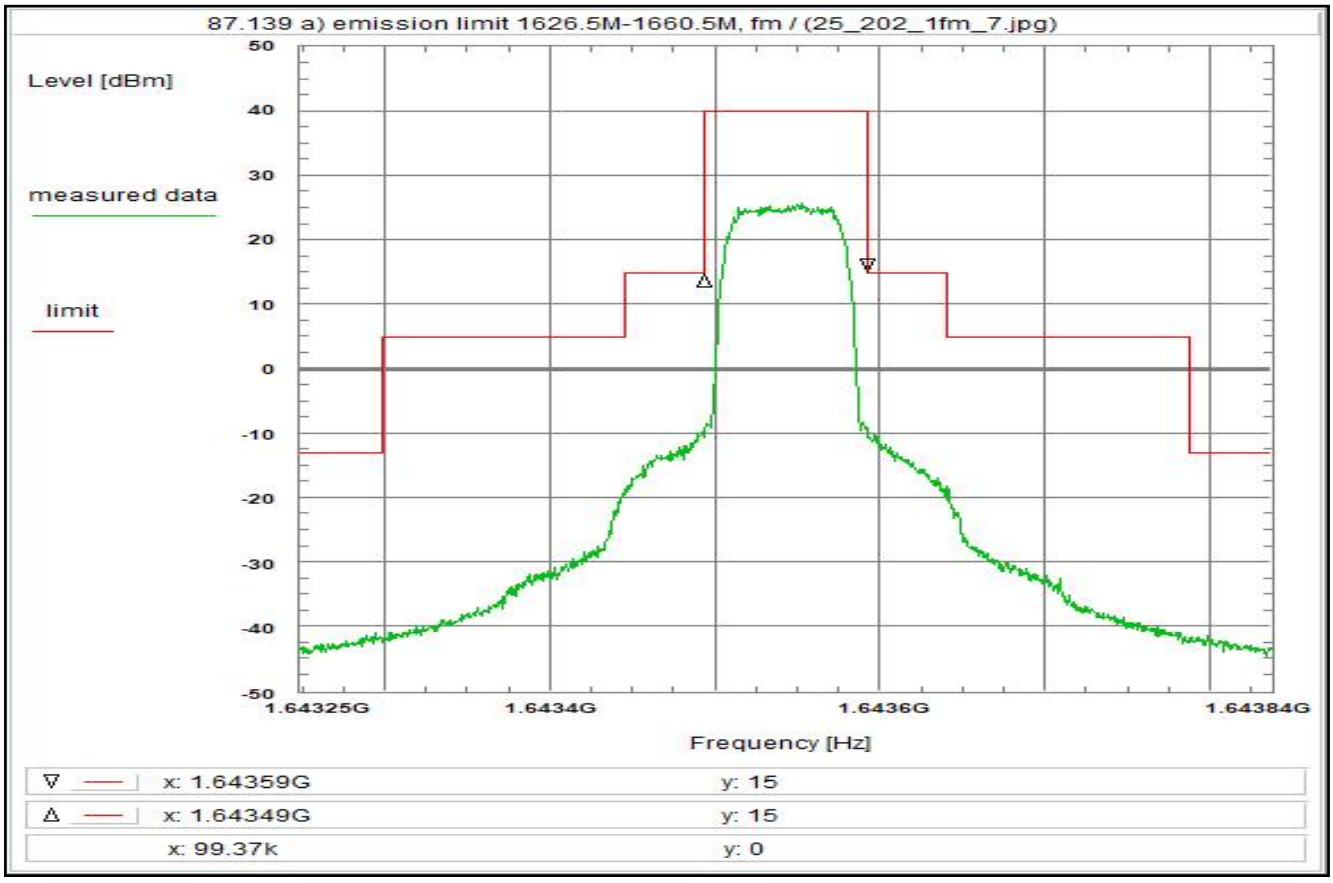
Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna (on-axis)	+	1.4	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U330)	+	31.9	dB
TOTAL CORRECTION:	+	35.4	dB

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

Reference of limit = 40 dBm
Spectrum mask referenced to necessary bandwidth

Plot No. 68



Subclause: 87.139 a)Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 87.139 a):
50-100% of assigned bw: -25dBc/4kHz
100-250% of assigned bw: -35dBc/4kHz
> 250% of assigned bw: -43+10log(Pmax)dBc/4kHz = -43 dBW
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with the above schedule.

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
fm, R5T2QD

Test setup:
see test report chapter 7.2:

Test equipment:
see test report chapter 7.1-7.2: C220, R001, U330

Remark:

Test result: **Test passed**

Environment condition:

Date & Time:	Fri 18/Aug/2023 15:13:51	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	230	Vac

Setup of measurement equipment:

Start frequency:	1.6432485	GHz
Stop frequency:	1.6438365	GHz
Center frequency:	1.6435425	GHz
Frequency span:	588	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	20	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

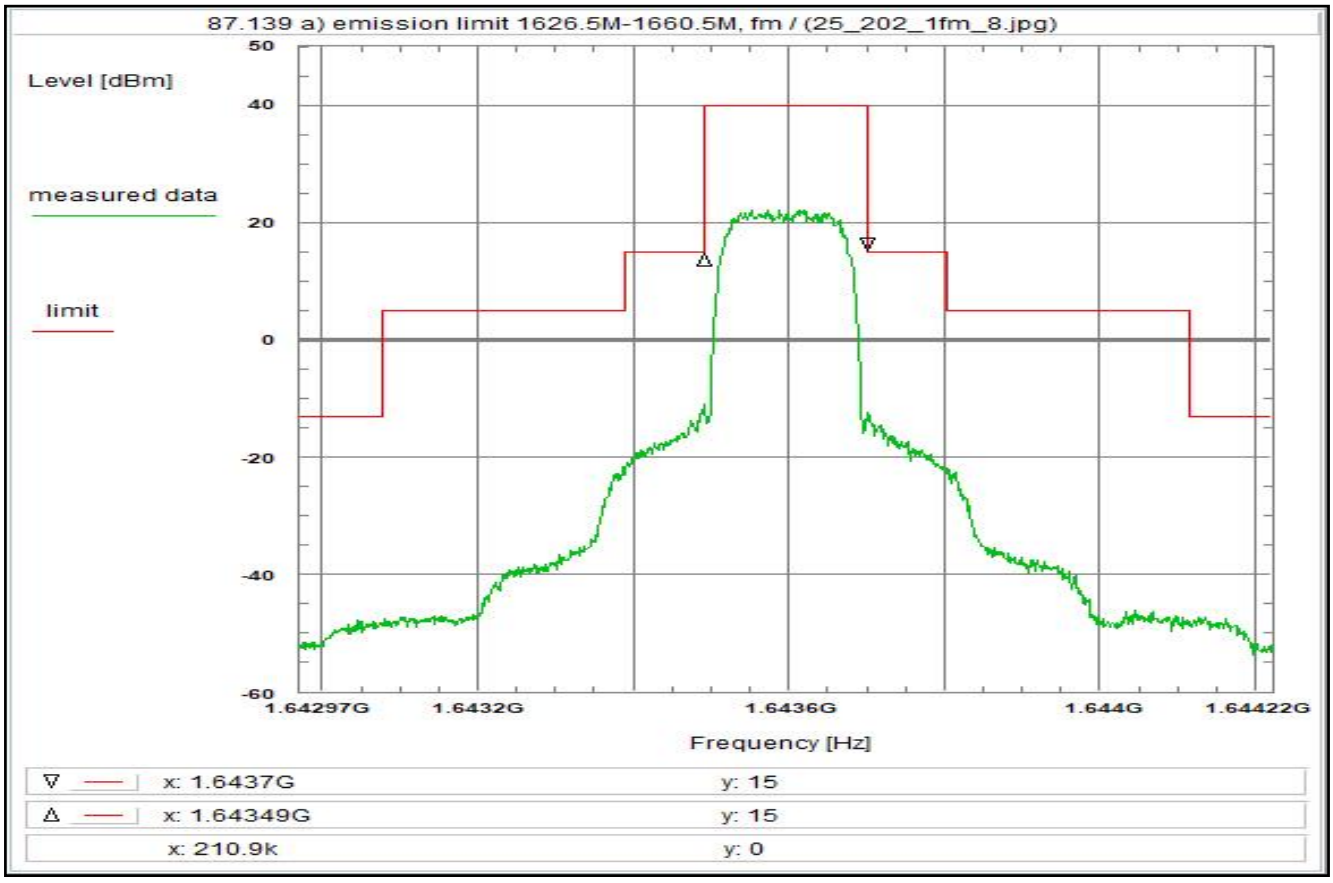
Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna (on-axis)	+	1.4	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U330)	+	31.9	dB
TOTAL CORRECTION:	+	35.4	dB

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

Reference of limit = 40 dBm
Spectrum mask referenced to necessary bandwidth

Plot No. 69



Subclause: 87.139 a)Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 87.139 a):
50-100% of assigned bw: -25dBc/4kHz
100-250% of assigned bw: -35dBc/4kHz
> 250% of assigned bw: -43+10log(Pmax)dBc/4kHz = -43 dBW
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with the above schedule.

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
fm, R5T4.5QD

Test setup:
see test report chapter 7.2:

Test equipment:
see test report chapter 7.1-7.2: C220, R001, U330

Remark:

Test result: **Test passed**

Environment condition:

Date & Time:	Fri 18/Aug/2023 15:17:48	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	230	Vac

Setup of measurement equipment:

Start frequency:	1.642971	GHz
Stop frequency:	1.644219	GHz
Center frequency:	1.643595	GHz
Frequency span:	1.248	MHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	20	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

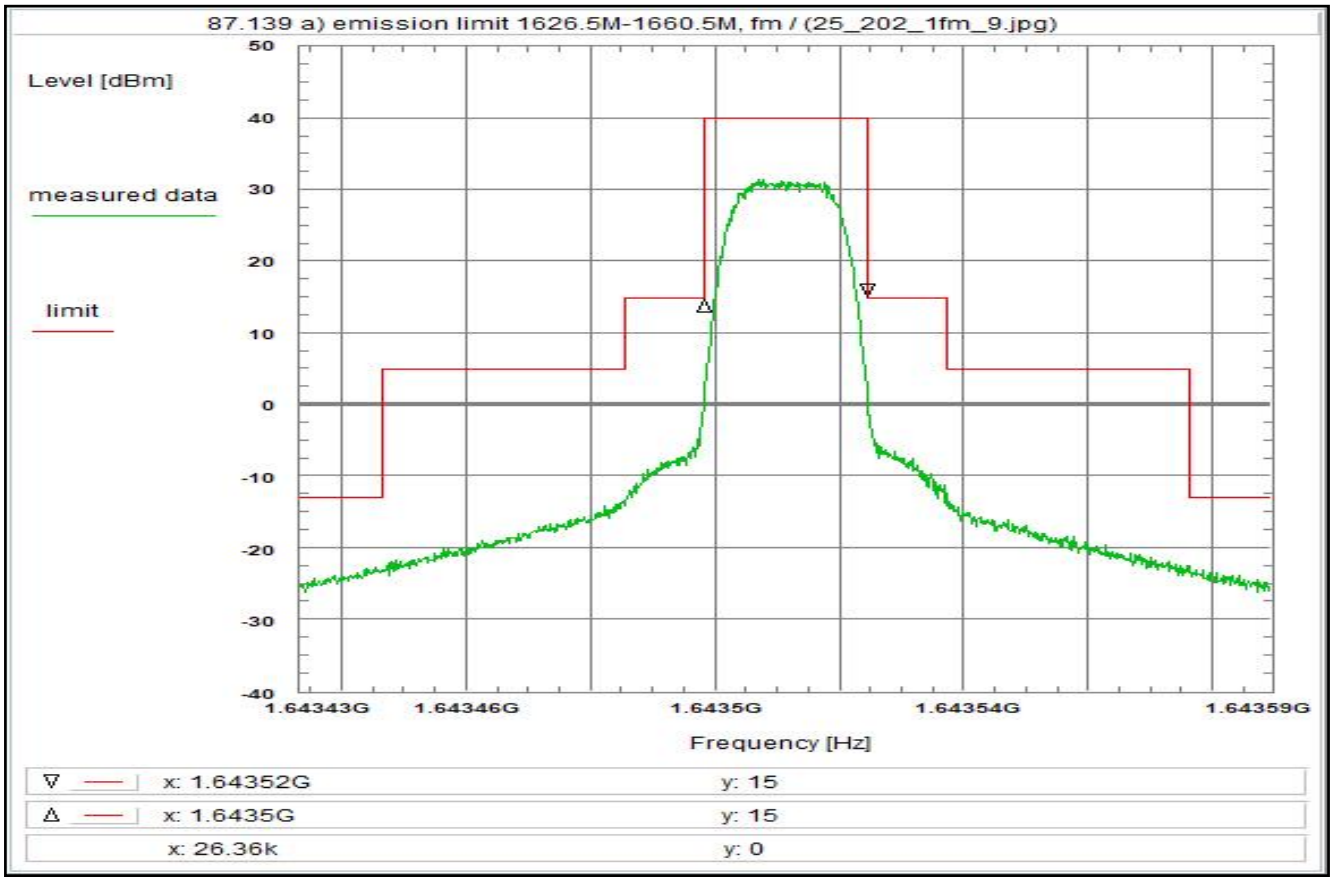
Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna (on-axis)	+	1.4	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U330)	+	31.9	dB
TOTAL CORRECTION:	+	35.4	dB

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

Reference of limit = 40 dBm
Spectrum mask referenced to necessary bandwidth

Plot No. 70



Subclause: 87.139 a)Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 87.139 a):
50-100% of assigned bw: -25dBc/4kHz
100-250% of assigned bw: -35dBc/4kHz
> 250% of assigned bw: -43+10log(Pmax)dBc/4kHz = -43 dBW
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with the above schedule.

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
fm, R20T0.5QD

Test setup:
see test report chapter 7.2:

Test equipment:
see test report chapter 7.1-7.2: C220, R001, U330

Remark:

Test result: **Test passed**

Environment condition:

Date & Time:	Fri 18/Aug/2023 15:20:37	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	230	Vac

Setup of measurement equipment:

Start frequency:	1.64343325	GHz
Stop frequency:	1.64358925	GHz
Center frequency:	1.64351125	GHz
Frequency span:	156	kHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	20	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

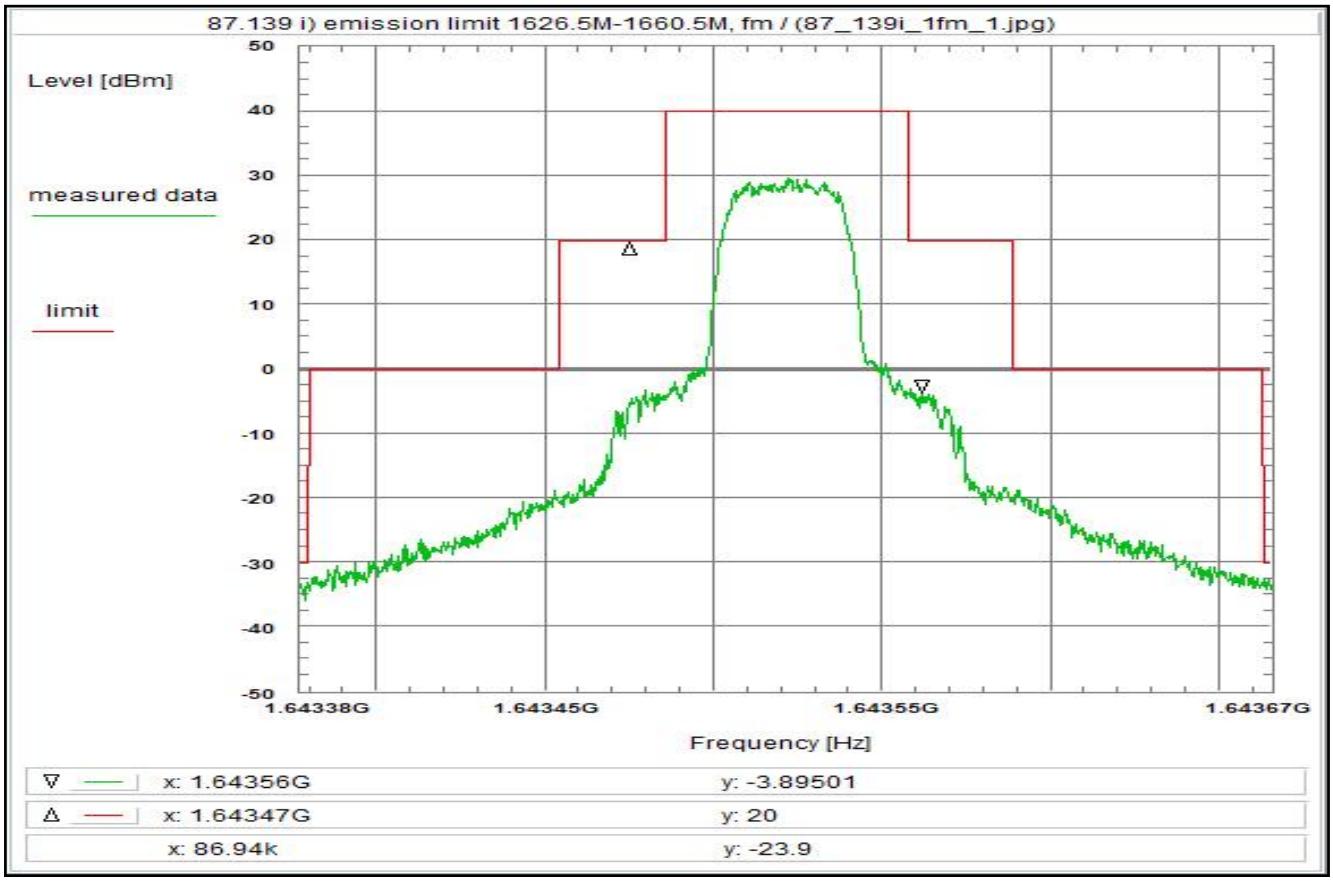
Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna (on-axis)	+	1.4	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U330)	+	31.9	dB
TOTAL CORRECTION:	+	35.4	dB

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

Reference of limit = 40 dBm
Spectrum mask referenced to necessary bandwidth

Plot No. 71



Subclause: 87.139 i) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 87.139(i)(1)
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with 87.139(i)(1).

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
fm, R5T1XD

Test setup:
see test report chapter 7.2:

Test equipment:
see test report chapter 7.1-7.2: C220, R001, U330

Remark:

Test result: **Test passed**

Environment condition:

Date & Time:	Fri 18/Aug/2023 14:54:36	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	230	Vac

Setup of measurement equipment:

Start frequency:	1.64337725	GHz
Stop frequency:	1.64366525	GHz
Center frequency:	1.64352125	GHz
Frequency span:	288	kHz
Resolution-BW:	3	kHz
Video-BW:	300	Hz
Input attenuation:	20	dB
Trace-Mode:	Average	
Detector-Mode:	AVG	

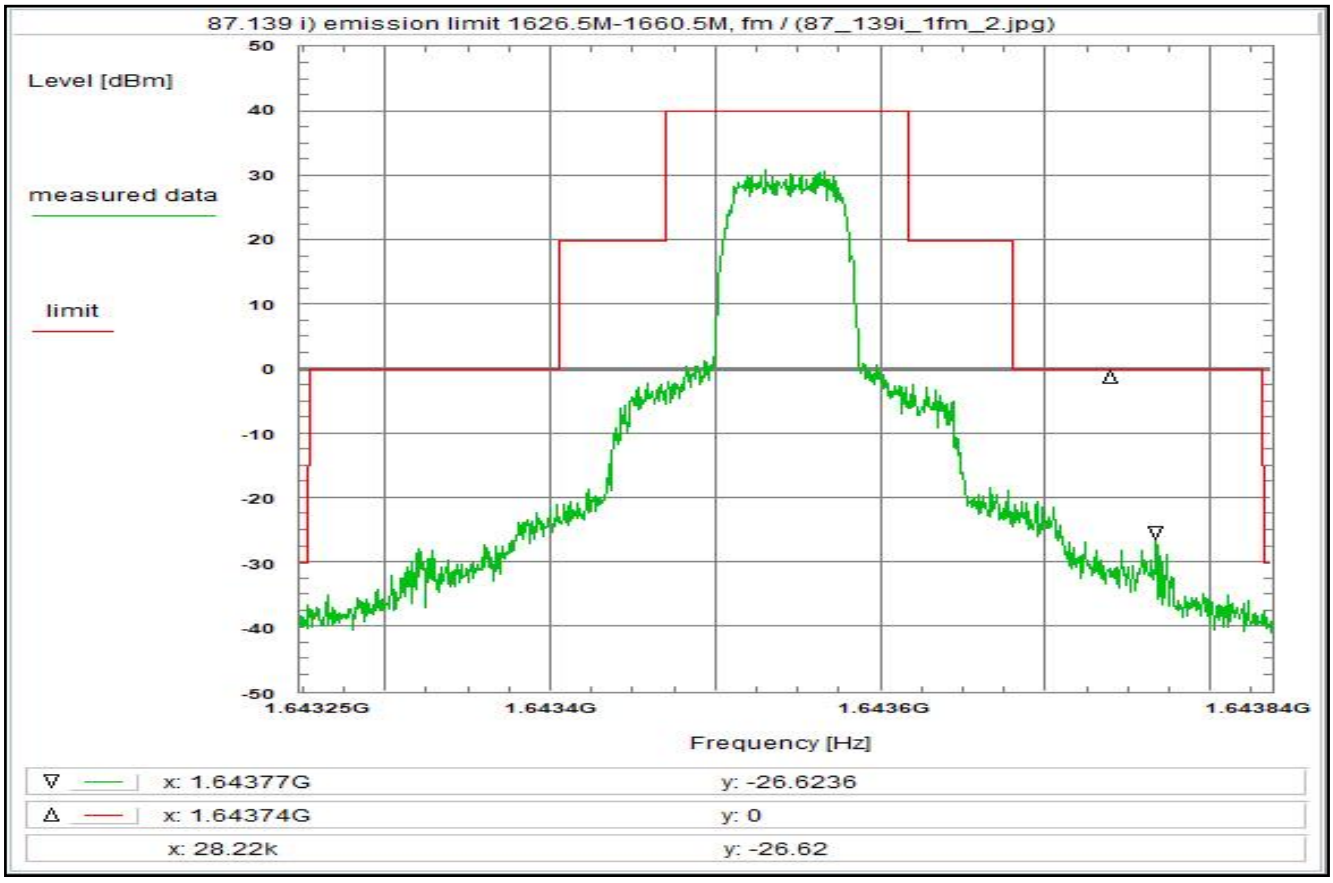
Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna (on-axis)	+	1.4	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U330)	+	31.9	dB
TOTAL CORRECTION:	+	35.4	dB

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

Reference of limit = 40 dBm
Spectrum mask referenced to necessary bandwidth

Plot No. 72



Subclause: 87.139 i) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 87.139(i)(1)
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with 87.139(i)(1).

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
fm, R5T2XD

Test setup:
see test report chapter 7.2:

Test equipment:
see test report chapter 7.1-7.2: C220, R001, U330

Remark:

Test result: **Test passed**

Environment condition:

Date & Time:	Fri 18/Aug/2023 14:58:39	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	230	Vac

Setup of measurement equipment:

Start frequency:	1.64324825	GHz
Stop frequency:	1.64383625	GHz
Center frequency:	1.64354225	GHz
Frequency span:	588	kHz
Resolution-BW:	3	kHz
Video-BW:	300	Hz
Input attenuation:	20	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

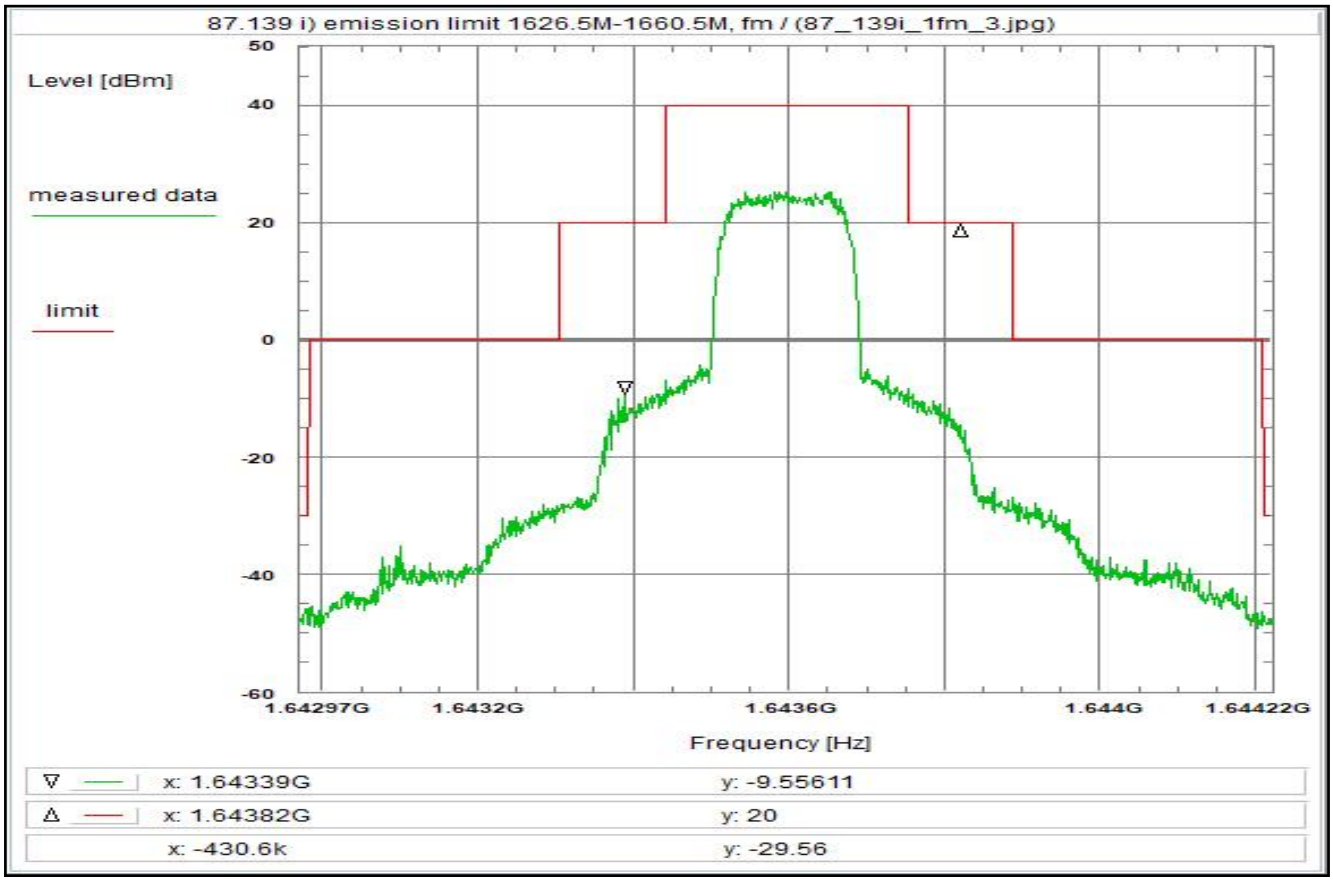
Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna (on-axis)	+	1.4	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U330)	+	31.9	dB
TOTAL CORRECTION:	+	35.4	dB

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

Reference of limit = 40 dBm
Spectrum mask referenced to necessary bandwidth

Plot No. 73



Subclause: 87.139 i) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 87.139(i)(1)
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with 87.139(i)(1).

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
fm, R5T4.5XD

Test setup:
see test report chapter 7.2:

Test equipment:
see test report chapter 7.1-7.2: C220, R001, U330

Remark:

Test result: **Test passed**

Environment condition:

Date & Time:	Fri 18/Aug/2023 15:02:24	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	230	Vac

Setup of measurement equipment:

Start frequency:	1.642971	GHz
Stop frequency:	1.644219	GHz
Center frequency:	1.643595	GHz
Frequency span:	1.248	MHz
Resolution-BW:	3	kHz
Video-BW:	300	Hz
Input attenuation:	20	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

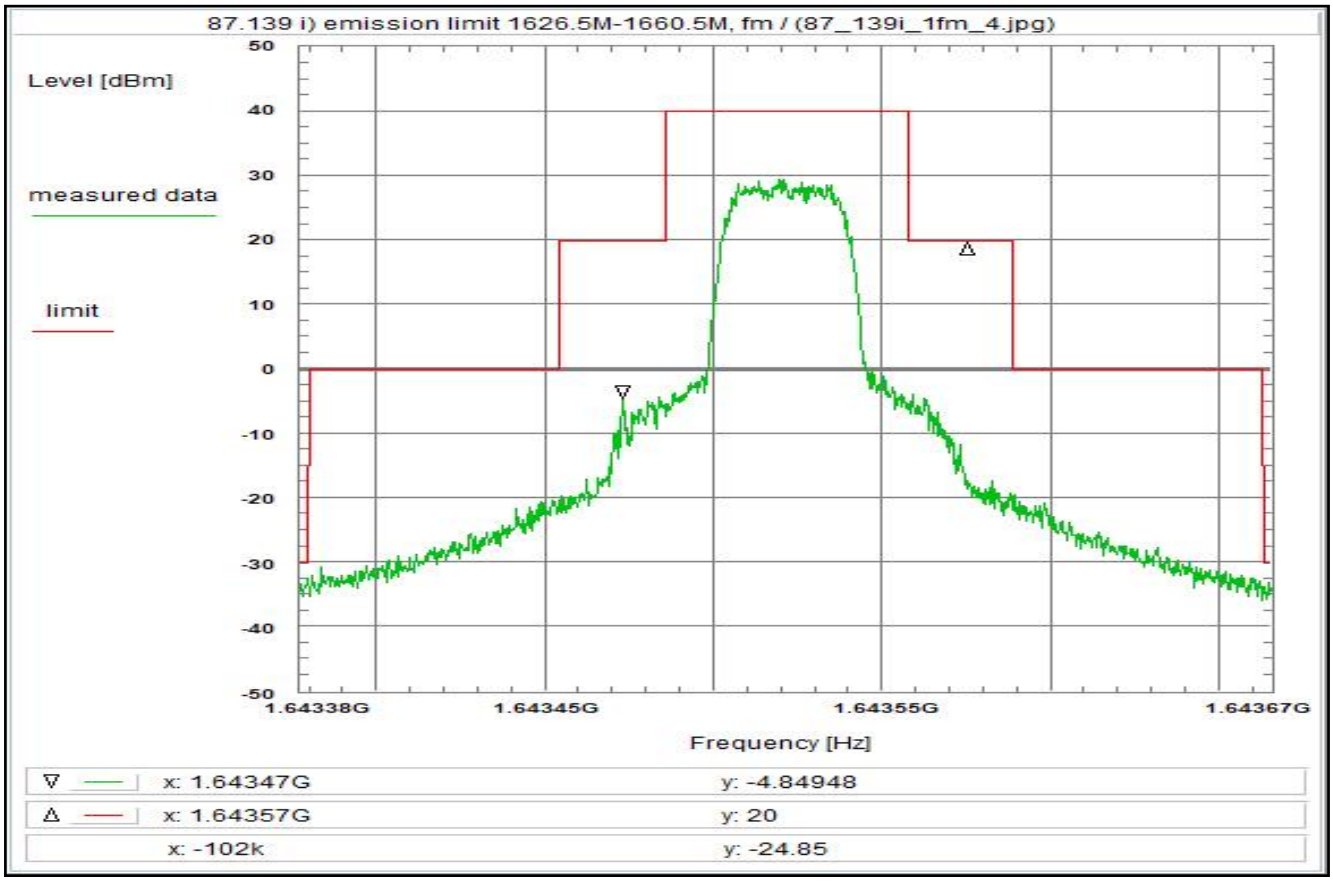
Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna (on-axis)	+	1.4	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U330)	+	31.9	dB
TOTAL CORRECTION:	+	35.4	dB

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

Reference of limit = 40 dBm
Spectrum mask referenced to necessary bandwidth

Plot No. 74



Subclause: 87.139 i) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 87.139(i)(1)
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with 87.139(i)(1).

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
fm, R20T1XD

Test setup:
see test report chapter 7.2:

Test equipment:
see test report chapter 7.1-7.2: C220, R001, U330

Remark:

Test result: **Test passed**

Environment condition:

Date & Time:	Fri 18/Aug/2023 15:05:17	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	230	Vac

Setup of measurement equipment:

Start frequency:	1.64337725	GHz
Stop frequency:	1.64366525	GHz
Center frequency:	1.64352125	GHz
Frequency span:	288	kHz
Resolution-BW:	3	kHz
Video-BW:	300	Hz
Input attenuation:	20	dB
Trace-Mode:	Average	
Detector-Mode:	AVG	

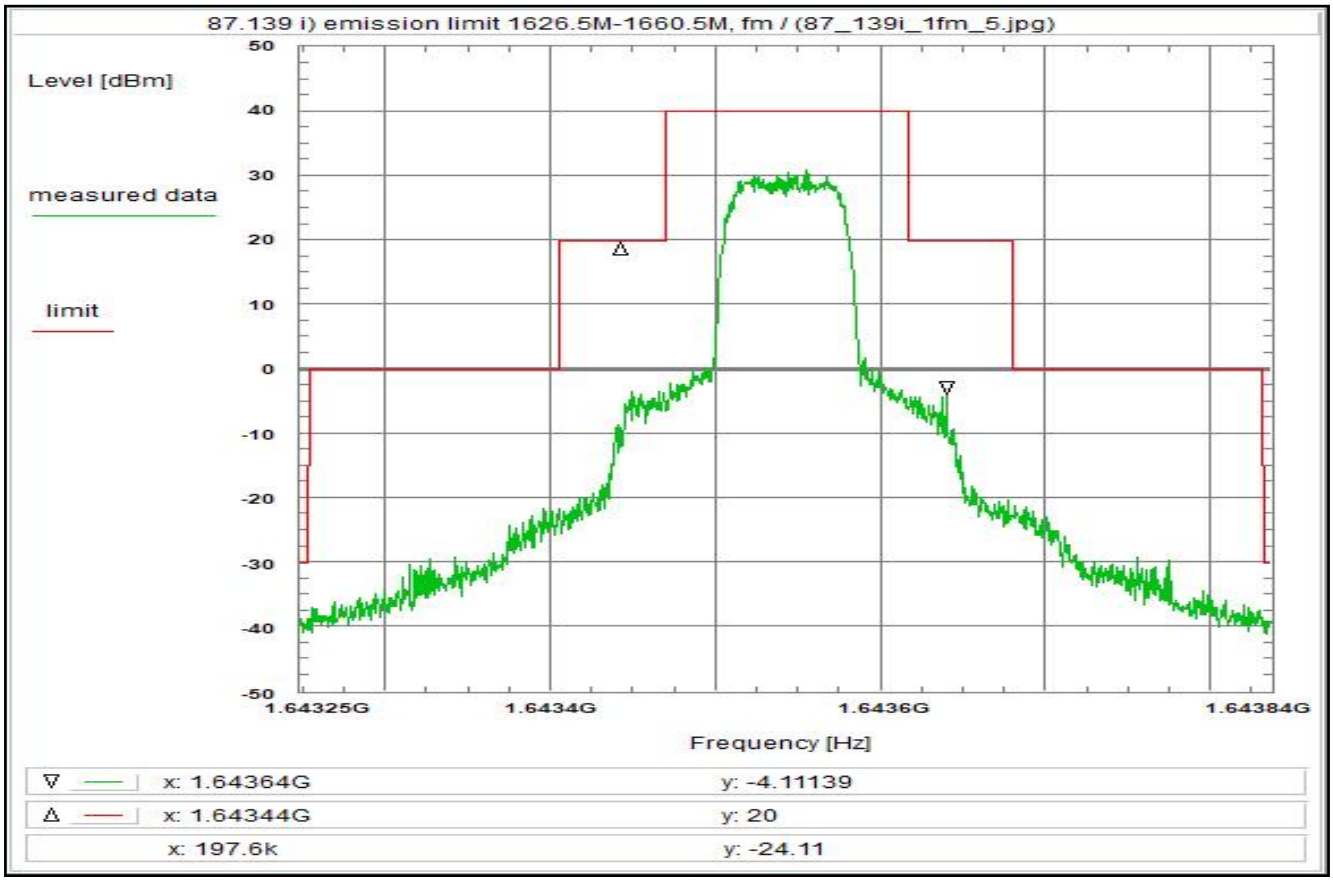
Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna (on-axis)	+	1.4	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U330)	+	31.9	dB
TOTAL CORRECTION:	+	35.4	dB

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

Reference of limit = 40 dBm
Spectrum mask referenced to necessary bandwidth

Plot No. 75



Subclause: 87.139 i) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 87.139(i)(1)
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with 87.139(i)(1).

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
fm, R20T1XD

Test setup:
see test report chapter 7.2:

Test equipment:
see test report chapter 7.1-7.2: C220, R001, U330

Remark:

Test result: **Test passed**

Environment condition:

Date & Time:	Fri 18/Aug/2023 15:08:08	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	230	Vac

Setup of measurement equipment:

Start frequency:	1.64324825	GHz
Stop frequency:	1.64383625	GHz
Center frequency:	1.64354225	GHz
Frequency span:	588	kHz
Resolution-BW:	3	kHz
Video-BW:	300	Hz
Input attenuation:	20	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

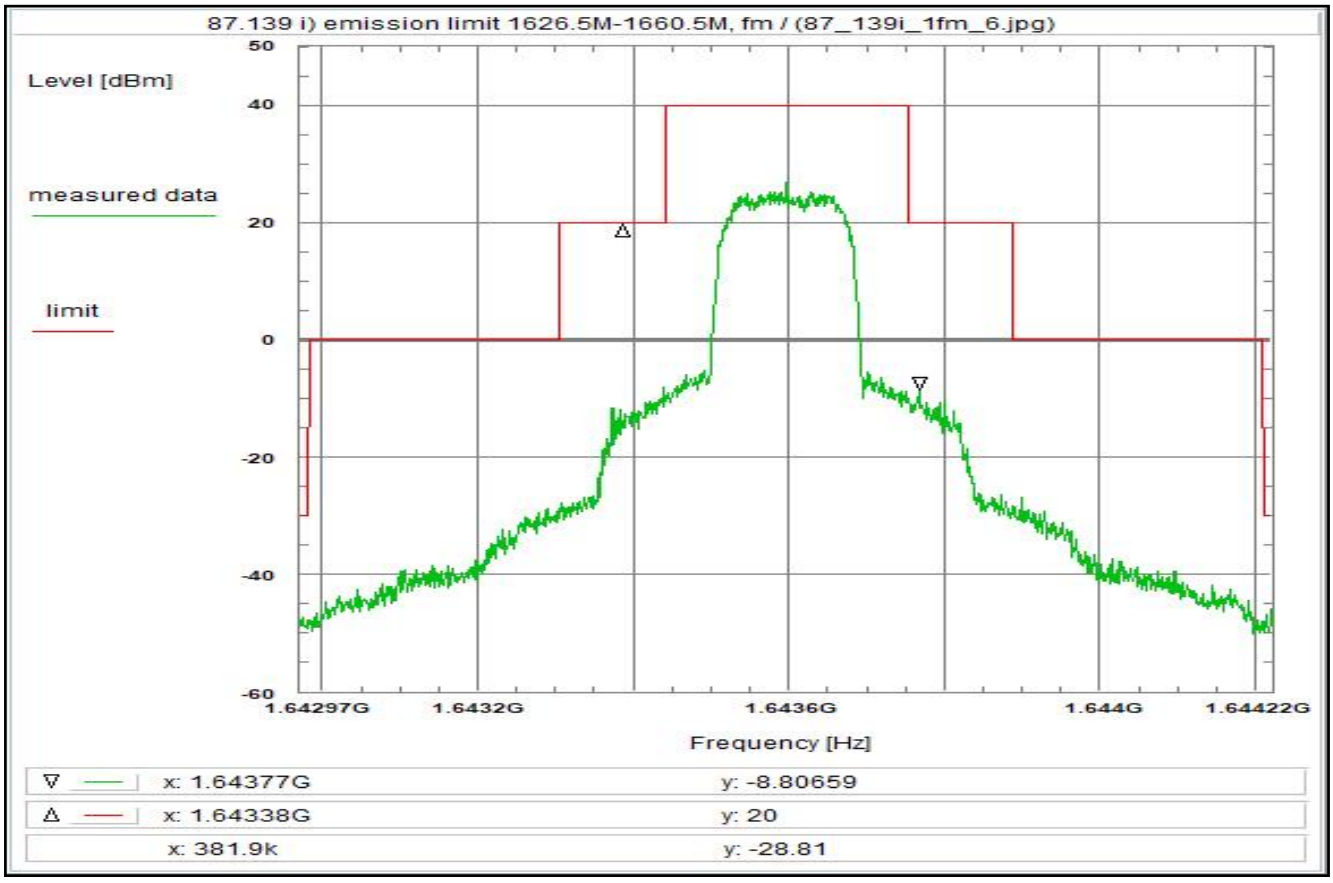
Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna (on-axis)	+	1.4	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U330)	+	31.9	dB
TOTAL CORRECTION:	+	35.4	dB

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

Reference of limit = 40 dBm
Spectrum mask referenced to necessary bandwidth

Plot No. 76



Subclause: 87.139 i) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 87.139(i)(1)
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with 87.139(i)(1).

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
fm, R20T4.5XD

Test setup:
see test report chapter 7.2:

Test equipment:
see test report chapter 7.1-7.2: R001

Remark:

Test result: **Test passed**

Environment condition:

Date & Time:	Fri 18/Aug/2023 15:11:01	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	230	Vac

Setup of measurement equipment:

Start frequency:	1.642971	GHz
Stop frequency:	1.644219	GHz
Center frequency:	1.643595	GHz
Frequency span:	1.248	MHz
Resolution-BW:	3	kHz
Video-BW:	300	Hz
Input attenuation:	20	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

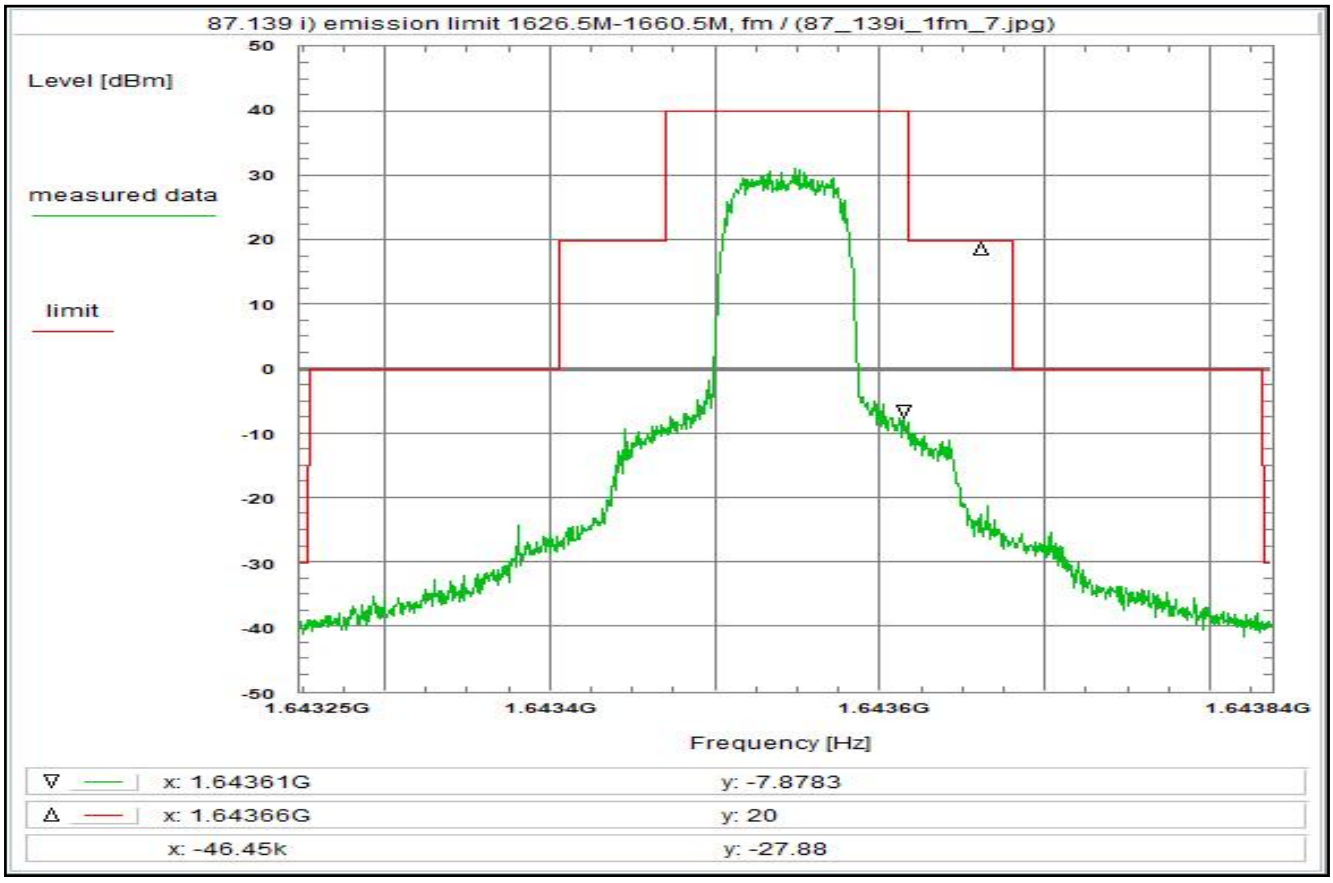
Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna (on-axis)	+	1.4	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U330)	+	31.9	dB
TOTAL CORRECTION:	+	35.4	dB

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

Reference of limit = 40 dBm
Spectrum mask referenced to necessary bandwidth

Plot No. 77



Subclause: 87.139 i) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 87.139(i)(1)
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with 87.139(i)(1).

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
fm, R5T2QD

Test setup:
see test report chapter 7.2:

Test equipment:
see test report chapter 7.1-7.2: C220, R001, U330

Remark:

Test result: **Test passed**

Environment condition:

Date & Time:	Fri 18/Aug/2023 15:14:50	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	230	Vac

Setup of measurement equipment:

Start frequency:	1.6432485	GHz
Stop frequency:	1.6438365	GHz
Center frequency:	1.6435425	GHz
Frequency span:	588	kHz
Resolution-BW:	3	kHz
Video-BW:	300	Hz
Input attenuation:	20	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

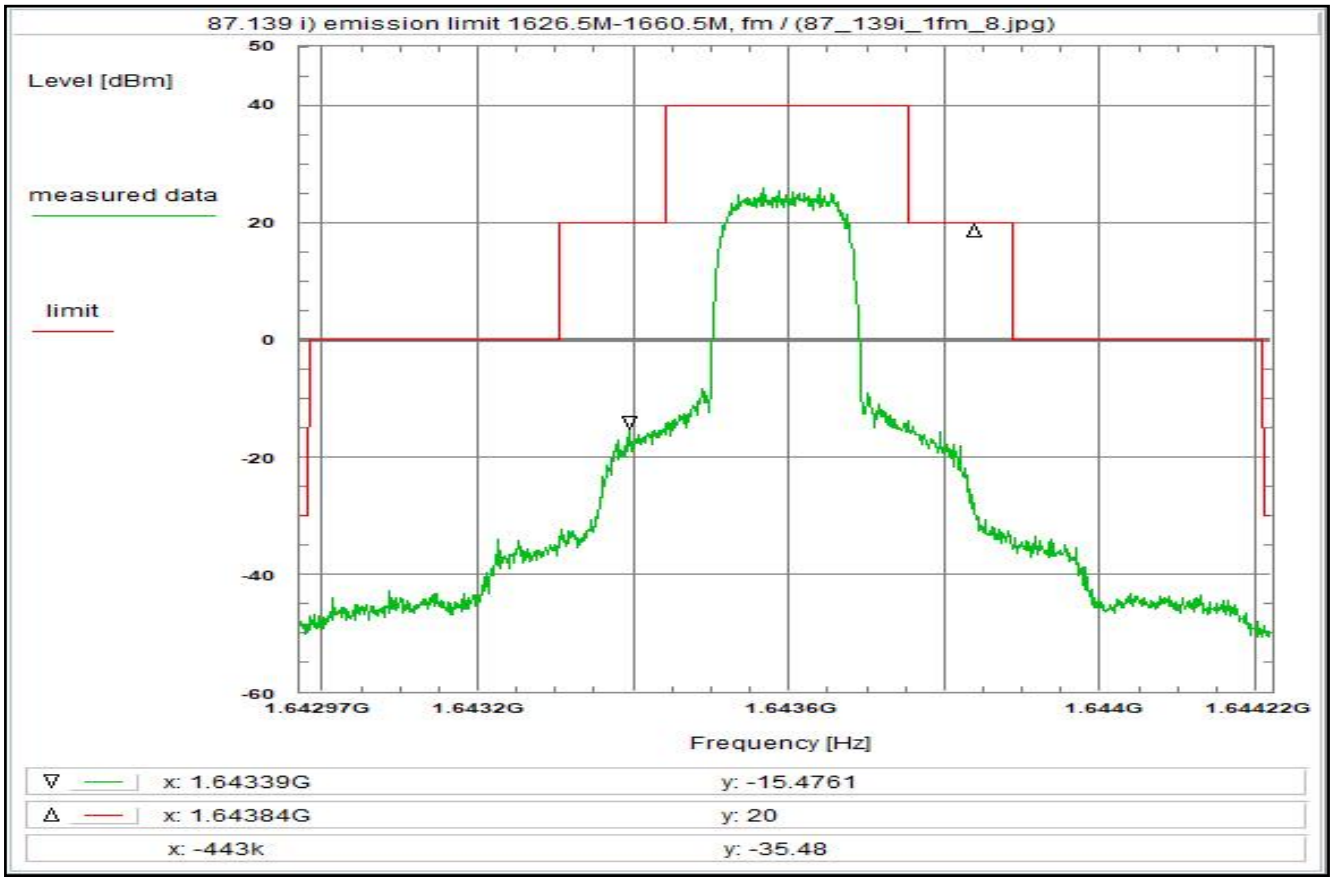
Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna (on-axis)	+	1.4	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U330)	+	31.9	dB
TOTAL CORRECTION:	+	35.4	dB

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

Reference of limit = 40 dBm
Spectrum mask referenced to necessary bandwidth

Plot No. 78



Subclause: 87.139 i) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 87.139(i)(1)
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with 87.139(i)(1).

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
fm, R5T4.5QD

Test setup:
see test report chapter 7.2:

Test equipment:
see test report chapter 7.1-7.2: C220, R001, U330

Remark:

Test result: **Test passed**

Environment condition:

Date & Time:	Fri 18/Aug/2023 15:18:48	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	230	Vac

Setup of measurement equipment:

Start frequency:	1.642971	GHz
Stop frequency:	1.644219	GHz
Center frequency:	1.643595	GHz
Frequency span:	1.248	MHz
Resolution-BW:	3	kHz
Video-BW:	300	Hz
Input attenuation:	20	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

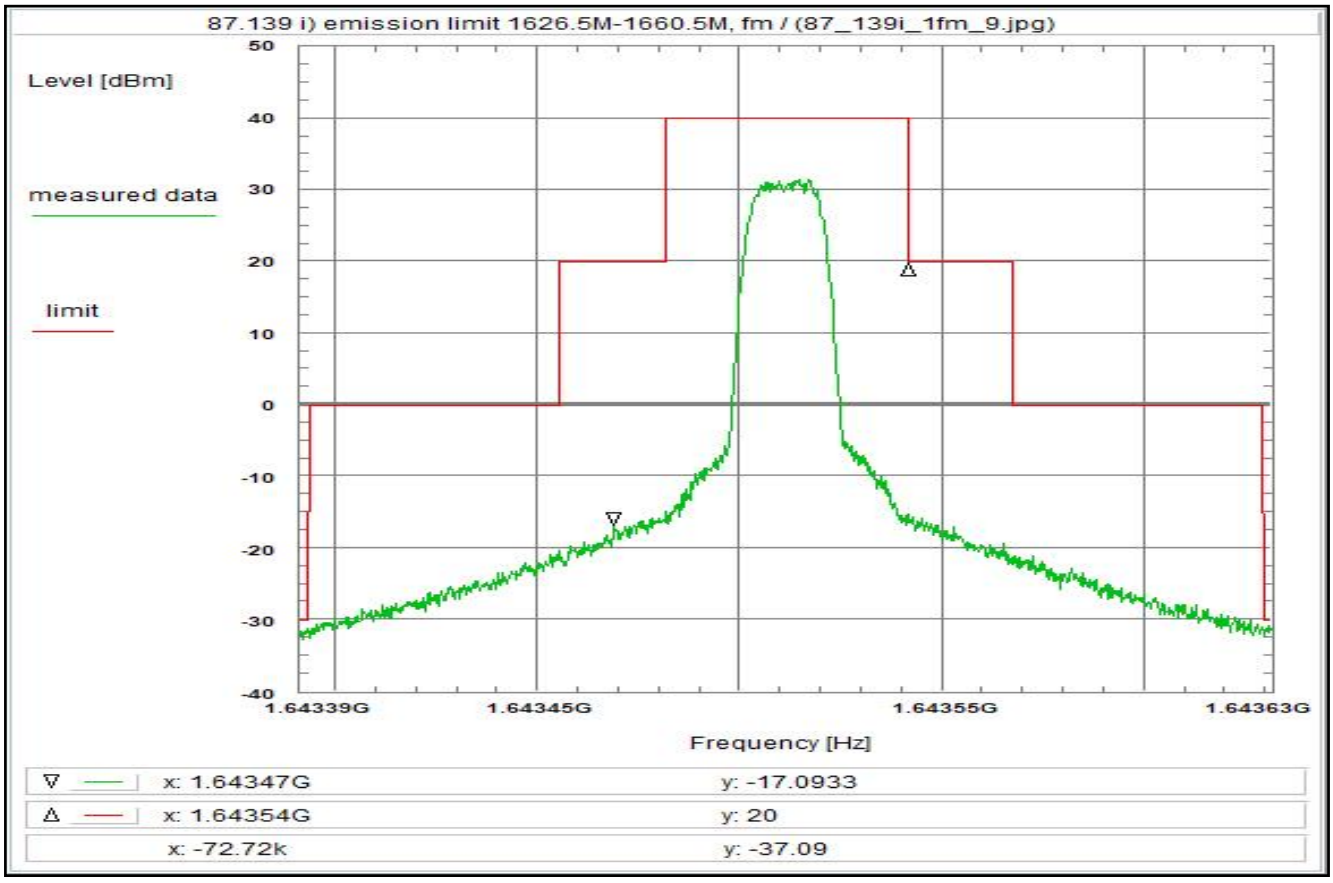
Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna (on-axis)	+	1.4	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U330)	+	31.9	dB
TOTAL CORRECTION:	+	35.4	dB

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

Reference of limit = 40 dBm
Spectrum mask referenced to necessary bandwidth

Plot No. 79



Subclause: 87.139 i) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 87.139(i)(1)
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with 87.139(i)(1).

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
fm, R20T0.5QD

Test setup:
see test report chapter 7.2:

Test equipment:
see test report chapter 7.1-7.2: C220, R001, U330

Remark:

Test result: **Test passed**

Environment condition:

Date & Time:	Fri 18/Aug/2023 15:23:08	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
Temperature:	22	°C
Humidity:	55	%
Voltage:	230	Vac

Setup of measurement equipment:

Start frequency:	1.64339125	GHz
Stop frequency:	1.64363125	GHz
Center frequency:	1.64351125	GHz
Frequency span:	240	kHz
Resolution-BW:	3	kHz
Video-BW:	300	Hz
Input attenuation:	20	dB
Trace-Mode:	Average	
Detector-Mode:	AVG	

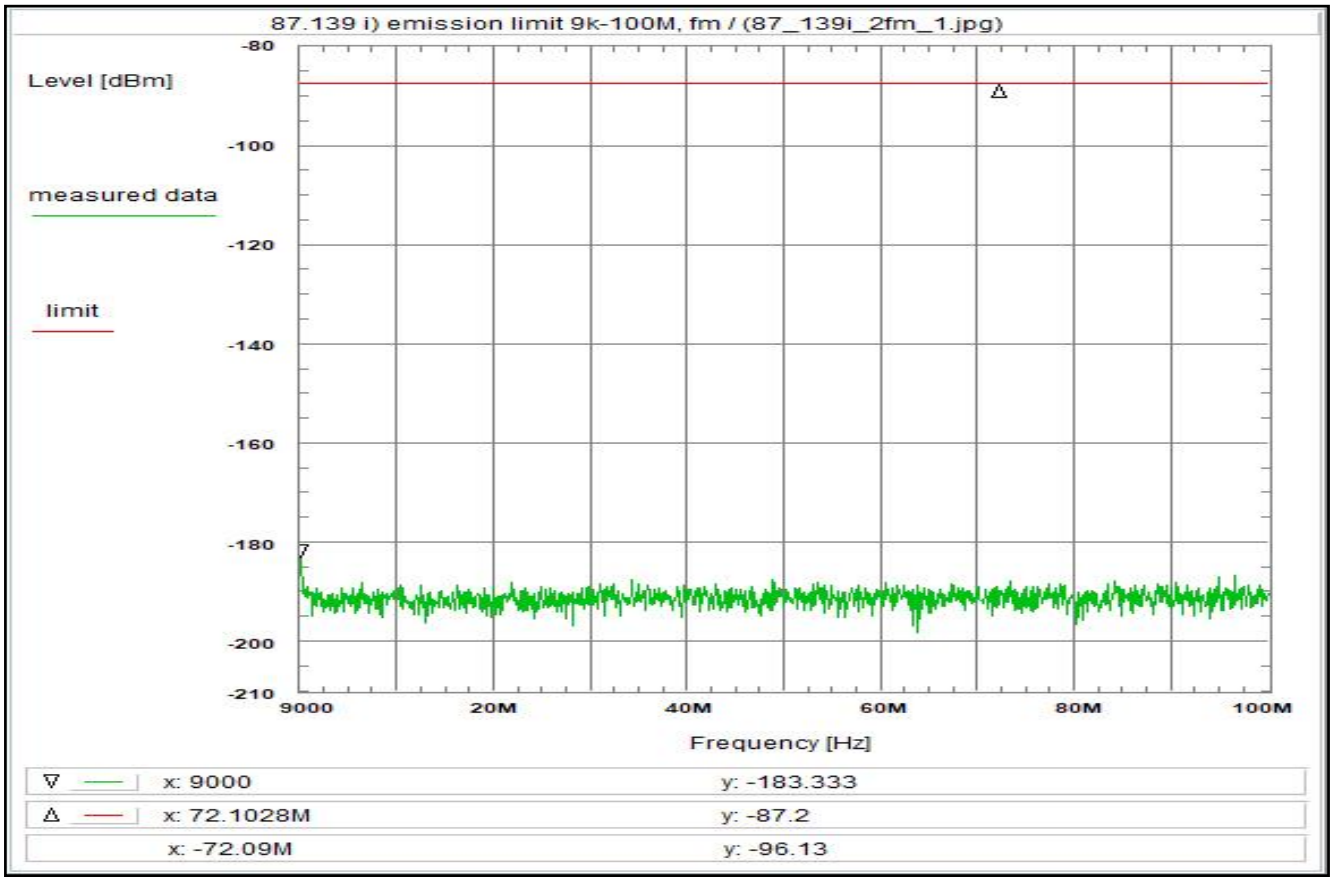
Correction:

Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna (on-axis)	+	1.4	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U330)	+	31.9	dB
TOTAL CORRECTION:	+	35.4	dB

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

Reference of limit = 40 dBm
Spectrum mask referenced to necessary bandwidth

Plot No. 80



Subclause: 87.139 i) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 87.139(i)(1)
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with 87.139(i)(1).

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
fm, max hold, valid for all modulations

Test setup:
see test report chapter 7.2:

Test equipment:
see test report chapter 7.1-7.2: C220, R001, U330

Remark:

Test result: **Test passed**

Environment condition:

Date & Time:	Wed 23/Aug/2023 19:08:51	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
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:	10	kHz
Input attenuation:	20	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

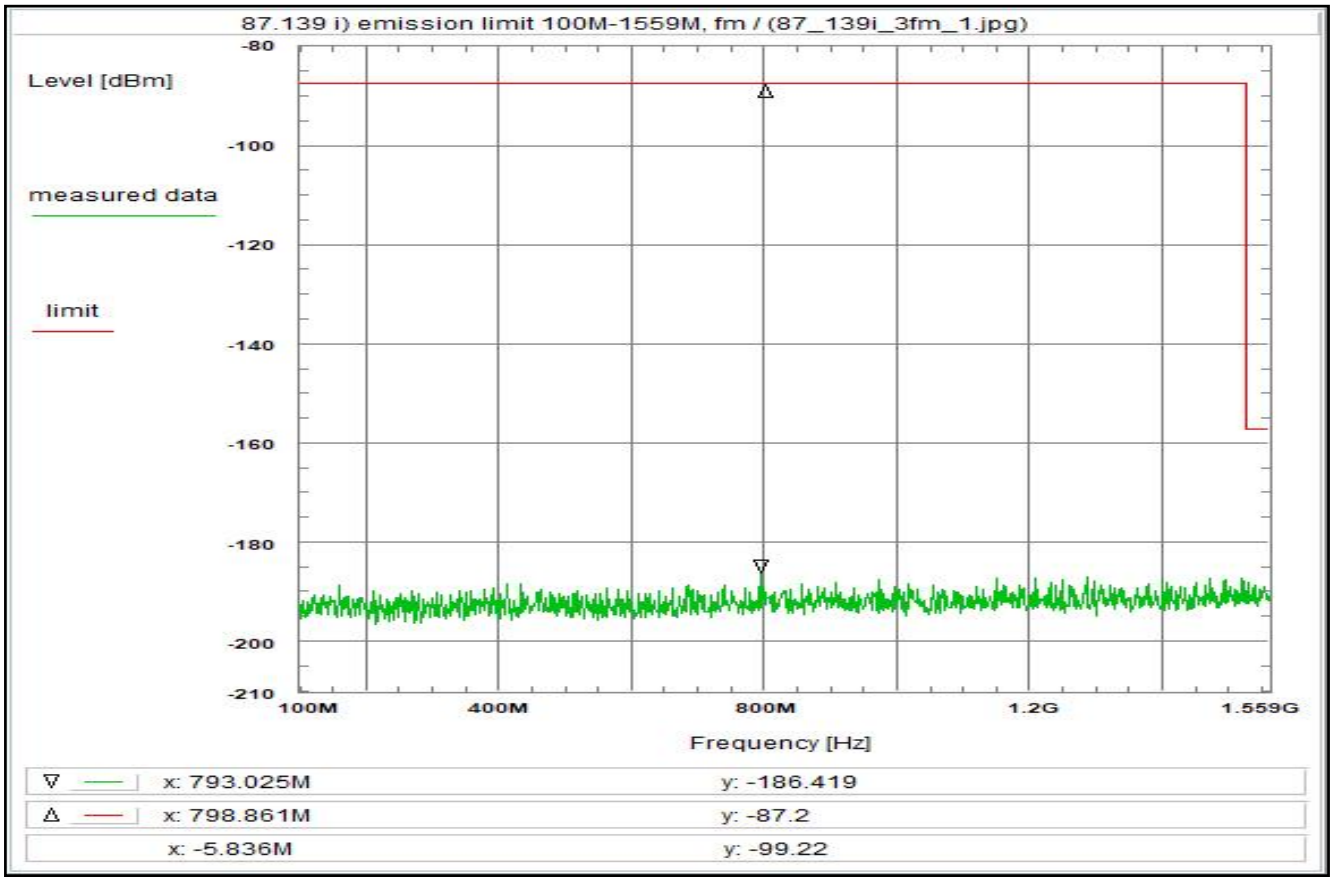
Correction:

(W_RE)	-	120.0	dB
Coaxial cable (C220)	+	0.2	dB
DUT-Antenna (on-axis)	+	1.4	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U330)	+	31.3	dB
TOTAL CORRECTION:	-	-85.9	dB

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

Since the measurement was updated with the maximum antenna gain, which is 5.23 dBic, the corrected value of the marker is -179.5 dBm

Plot No. 81



Subclause: 87.139 i) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 87.139(i)(1)
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with 87.139(i)(1).

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
fm, max hold, valid for all modulations

Test setup:
see test report chapter 7.2:

Test equipment:
see test report chapter 7.1-7.2: R001, U330

Remark:

Test result: **Test passed**

Environment condition:

Date & Time:	Wed 23/Aug/2023 09:34:02	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
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:	10	kHz
Input attenuation:	20	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

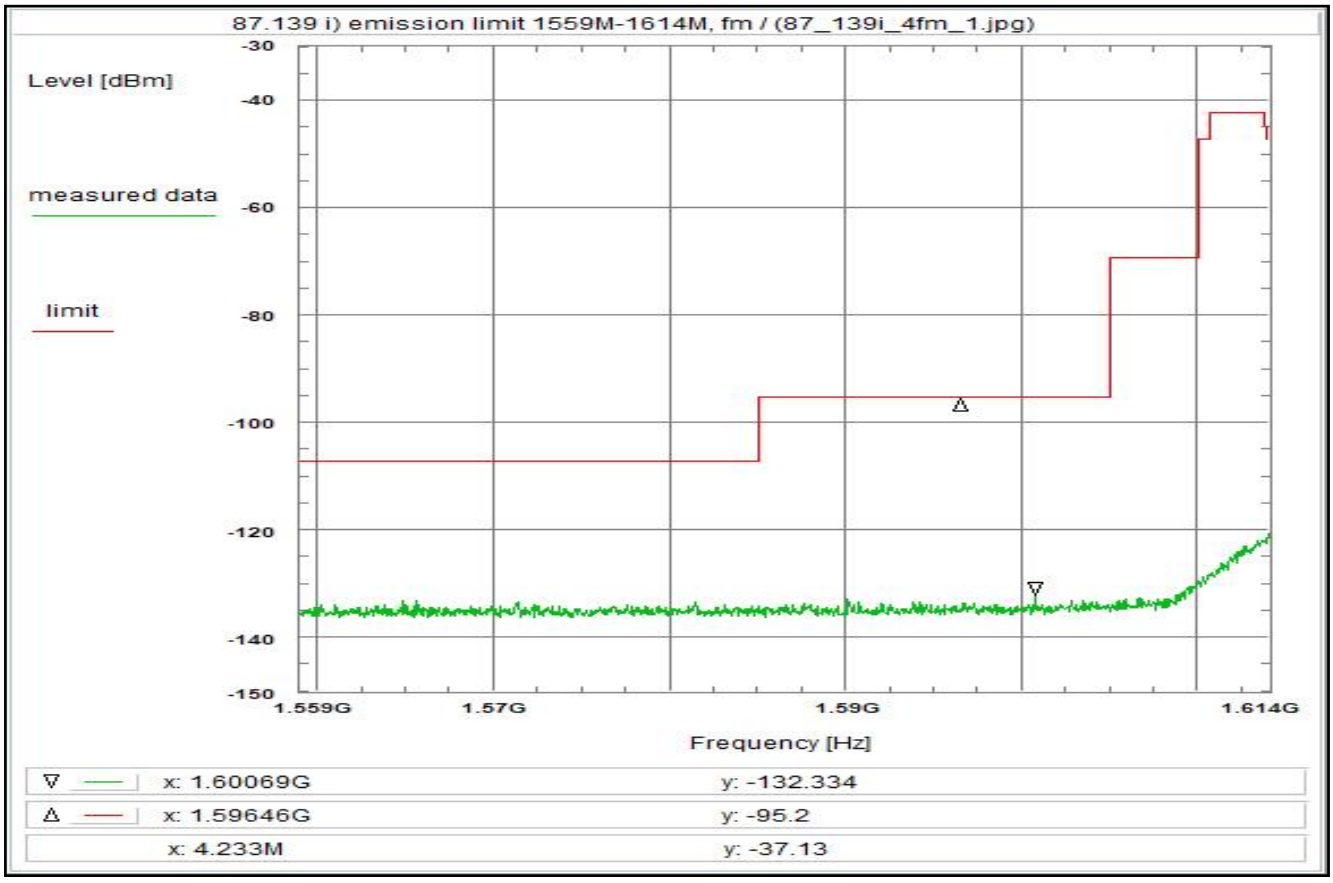
Correction:

(W_RE)	-	115.7	dB
Coaxial cable	+	0.6	dB
DUT-Antenna (on-axis)	+	1.4	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U330)	+	31.7	dB
TOTAL CORRECTION:	-	-80.8	dB

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

Since the measurement was updated with the maximum antenna gain, which is 5.23 dBic, the corrected value of the marker is -182.6 dBm

Plot No. 82



Subclause: 87.139 i) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 87.139(i)(1)
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with 87.139(i)(1).

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
fm, max hold, valid for all modulations

Test setup:
see test report chapter 7.2:

Test equipment:
see test report chapter 7.1-7.2: C220, R001, U331

Remark:

Test result: **Test passed**

Environment condition:

Date & Time:	Wed 23/Aug/2023 11:28:33	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
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:	1	MHz
Video-BW:	3	MHz
Input attenuation:	20	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

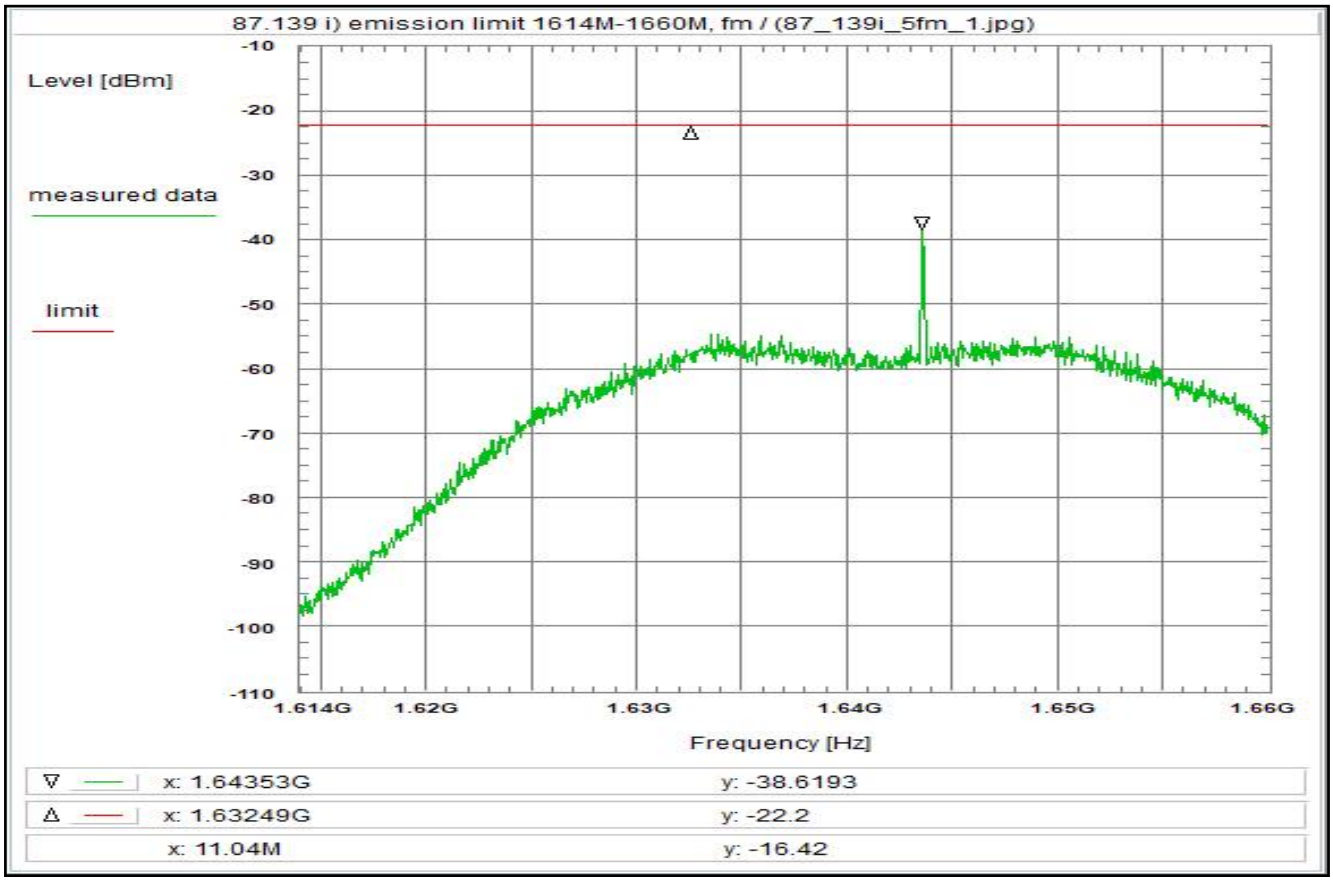
Correction:

(W_RE)	-	104.1	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna (on-axis)	+	1.4	dBi
Test antenna	+	0.0	dB
BW correction factor	+	0.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U331)	+	32.6	dB
TOTAL CORRECTION:	-	-69.2	dB

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

Since the measurement was updated with the maximum antenna gain, which is 5.23 dBic, the corrected value of the marker is -128.5 dBm

Plot No. 83



Subclause: 87.139 i) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 87.139(i)(1)
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with 87.139(i)(1).

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

Operating condition of DUT:
operating condition 1, see test report chapter 6.4
fm, max hold, valid for all modulations

Test setup:
see test report chapter 7.2:

Test equipment:
see test report chapter 7.1-7.2: C220, R001, U331

Remark:

Test result: **Test passed**

Environment condition:

Date & Time:	Wed 23/Aug/2023 14:35:53	
Location:	CTC advanced GmbH, Laboratory RC-SYS	
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:	20	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	AVG	

Correction:

(W_RE)	-	47.8	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna (on-axis)	+	1.4	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -> 4k)	+	1.2	dB
Atten. between HPA and feedhorn	-	0.0	dB
(U331)	+	74.2	dB
TOTAL CORRECTION:	+	29.9	dB

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

Since the measurement was updated with the maximum antenna gain, which is 5.23 dBic, the corrected value of the marker is -34.8 dBm