



Annex E



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Test report annex authorized:						

Meheza Walla Lab Manager Radio Communications & EMC



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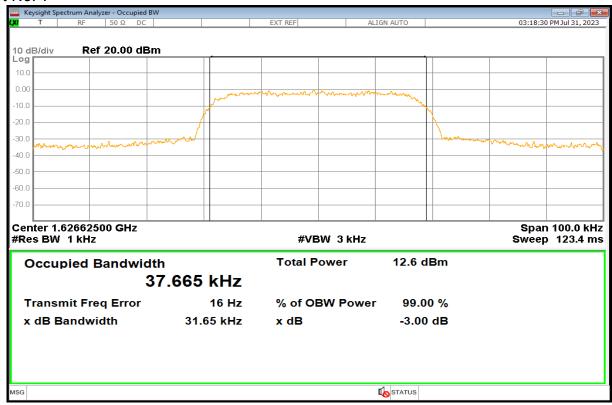


2. Measurement results for CLASS 15, FCC Part 87

This chapter consists of 102 pages including this page.

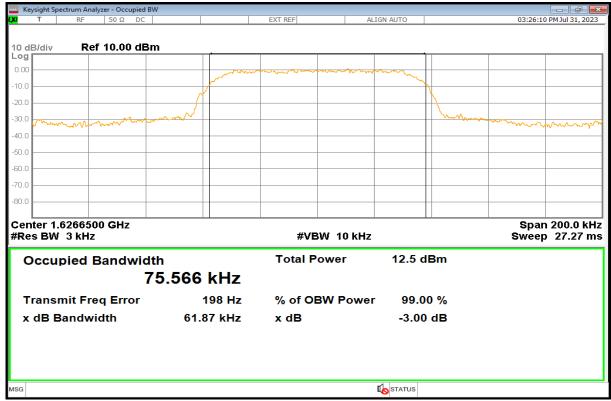


Plot No. 1



B3dB, Sub-Band 1, Low Channel, R5T1XD

Plot No. 2

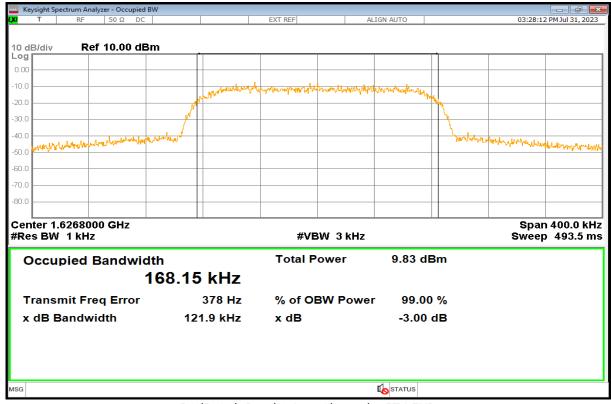


B3dB, Sub-Band 1, Low Channel, R5T2XD

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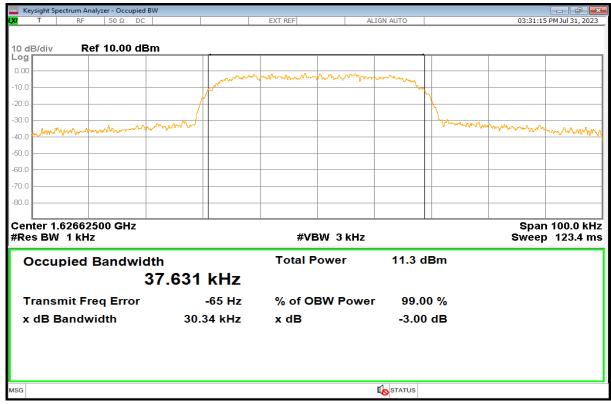


Plot No. 3



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

Plot No. 4

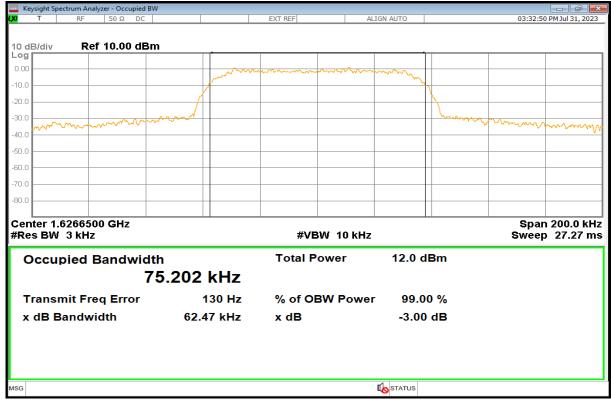


B3dB, Sub-Band 1, Low Channel, R20T1XD

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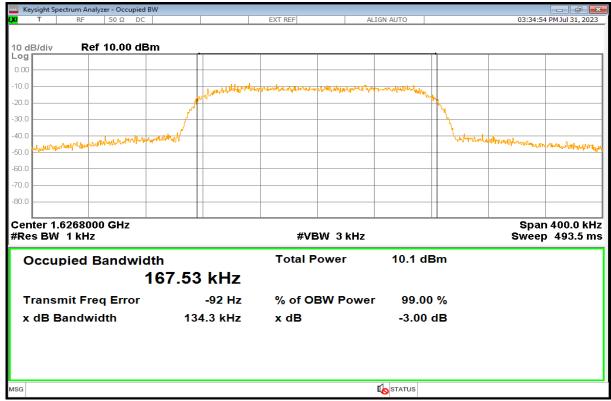


Plot No. 5



B3dB, Sub-Band 1, Low Channel, R20T2XD

Plot No. 6

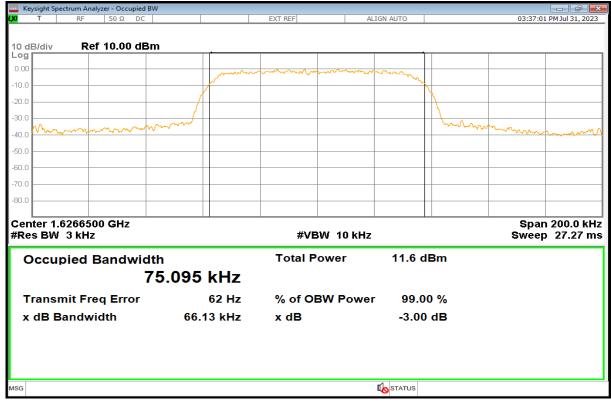


B3dB, Sub-Band 1, Low Channel, R20T4.5XD

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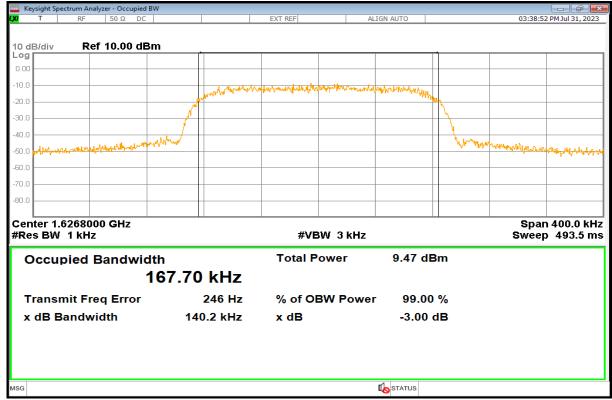


Plot No. 7



B3dB, Sub-Band 1, Low Channel, R5T2QD

Plot No. 8

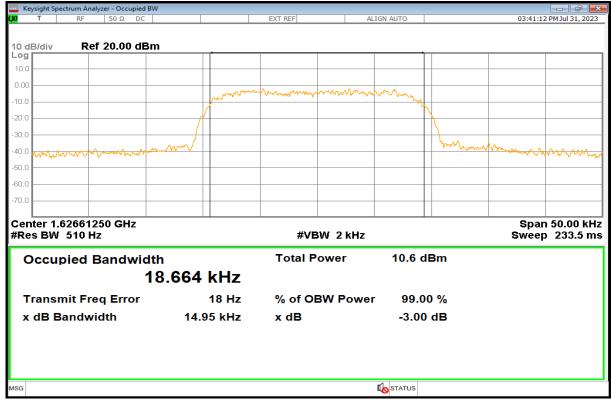


B3dB, Sub-Band 1, Low Channel, R5T4.5QD

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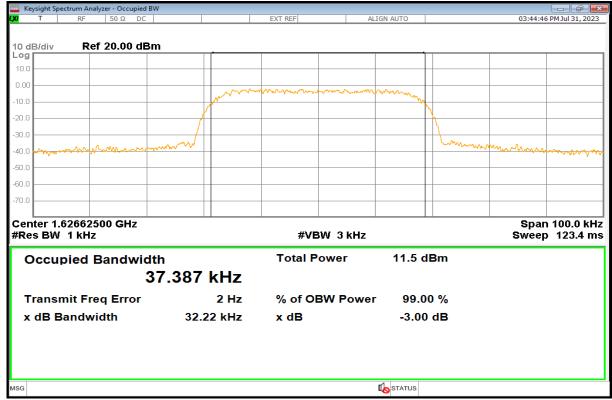


Plot No. 9



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

Plot No. 10

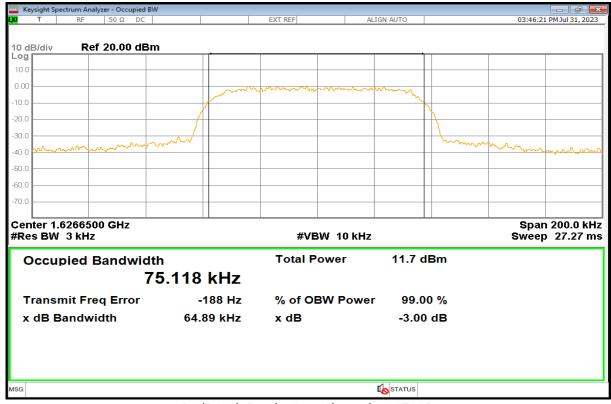


B3dB, Sub-Band 1, Low Channel, R20T1QD

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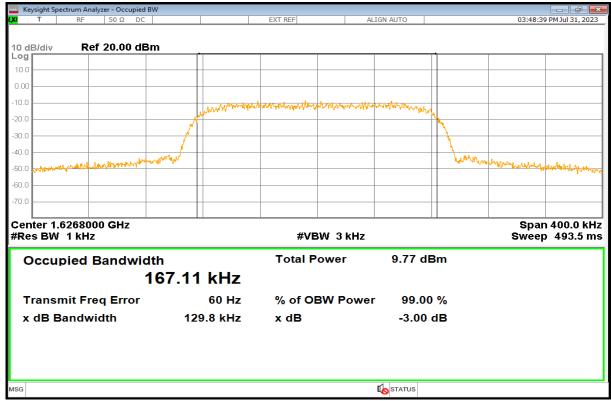


Plot No. 11



B3dB, Sub-Band 1, Low Channel, R20T2QD

Plot No. 12

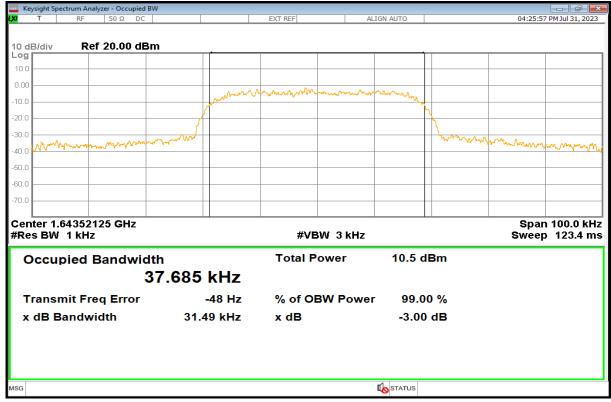


B3dB, Sub-Band 1, Low Channel, R20T4.5QD

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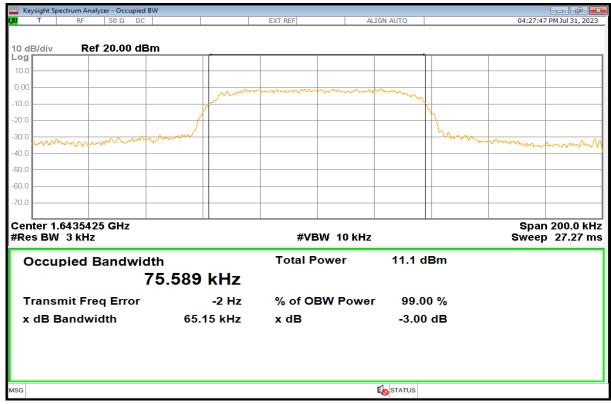


Plot No. 13



B3dB, Sub-Band 1, Middle Channel, R5T1XD

Plot No. 14

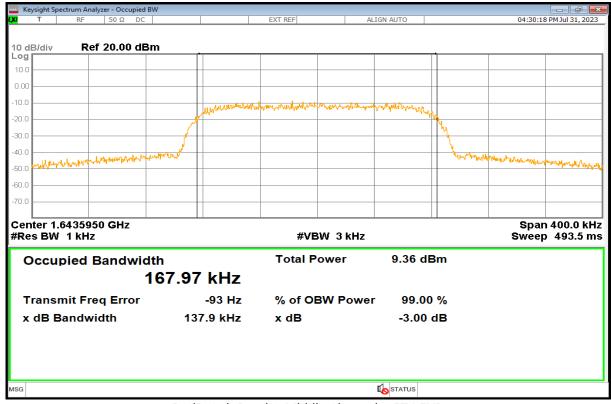


B3dB, Sub-Band 1, Middle Channel, R5T2XD

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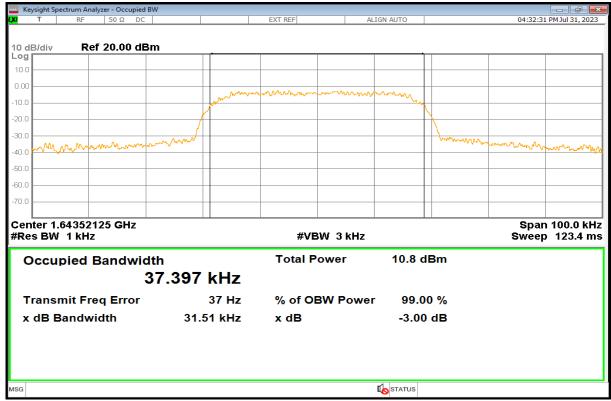


Plot No. 15



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

Plot No. 16

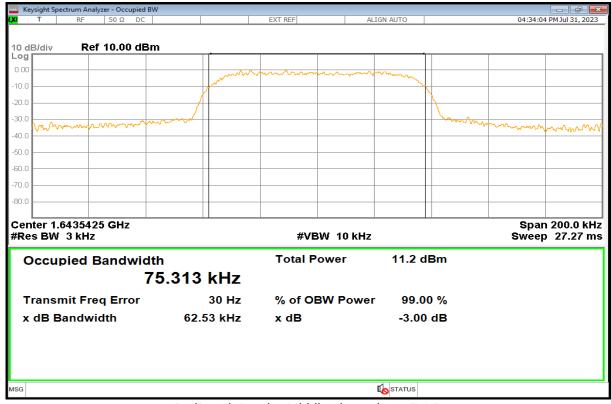


B3dB, Sub-Band 1, Middle Channel, R20T1XD

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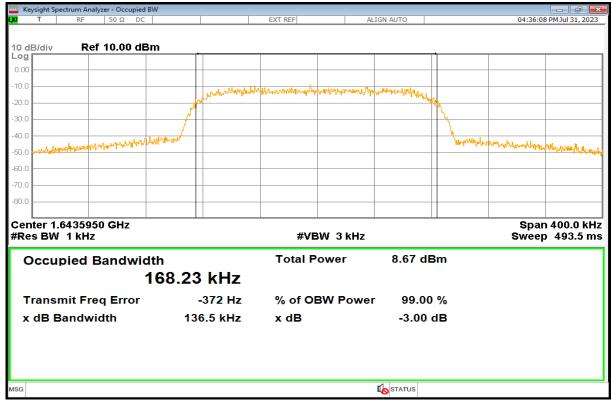


Plot No. 17



B3dB, Sub-Band 1, Middle Channel, R20T2XD

Plot No. 18

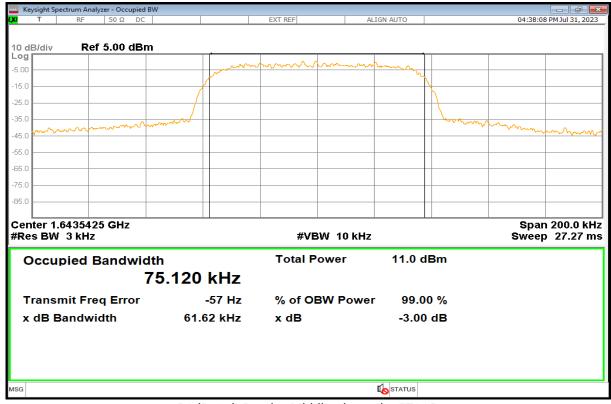


B3dB, Sub-Band 1, Middle Channel, R20T4.5XD

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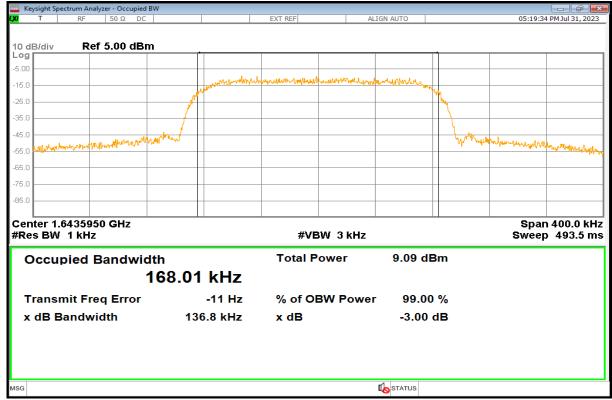


Plot No. 19



B3dB, Sub-Band 1, Middle Channel, R5T2QD

Plot No. 20

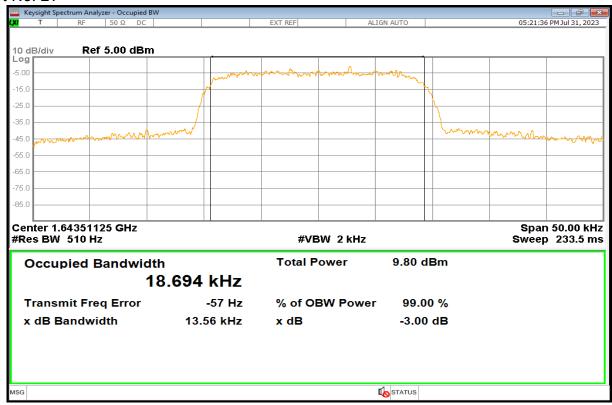


B3dB, Sub-Band 1, Middle Channel, R5T4.5QD

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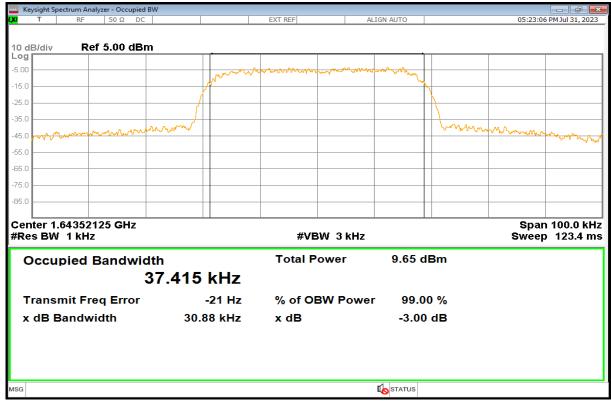


Plot No. 21



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

Plot No. 22

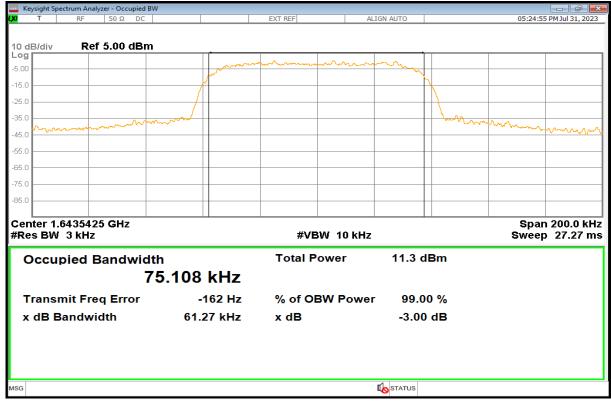


B3dB, Sub-Band 1, Middle Channel, R20T1QD

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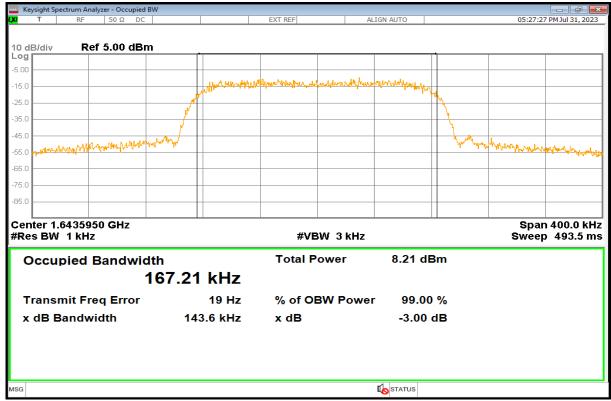


Plot No. 23



B3dB, Sub-Band 1, Middle Channel, R20T2QD

Plot No. 24

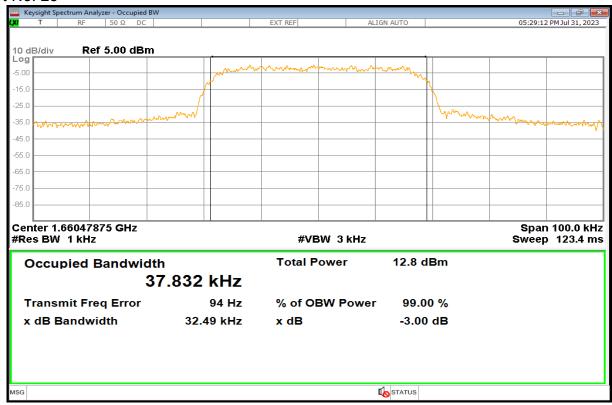


B3dB, Sub-Band 1, Middle Channel, R20T4.5QD

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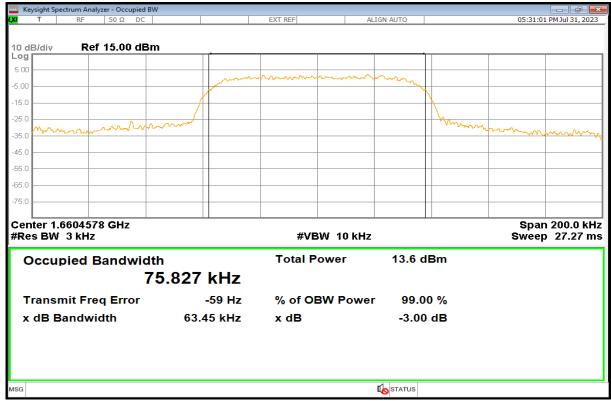


Plot No. 25



B3dB, Sub-Band 1, High Channel, R5T1XD

Plot No. 26

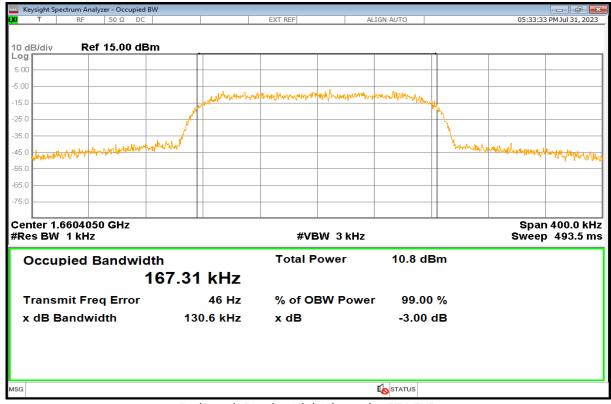


B3dB, Sub-Band 1, High Channel, R5T2XD

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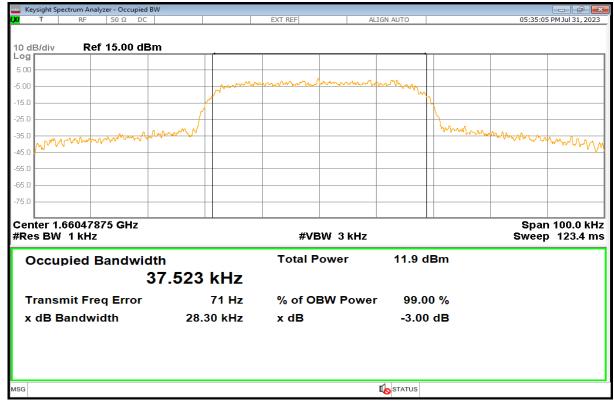


Plot No. 27



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

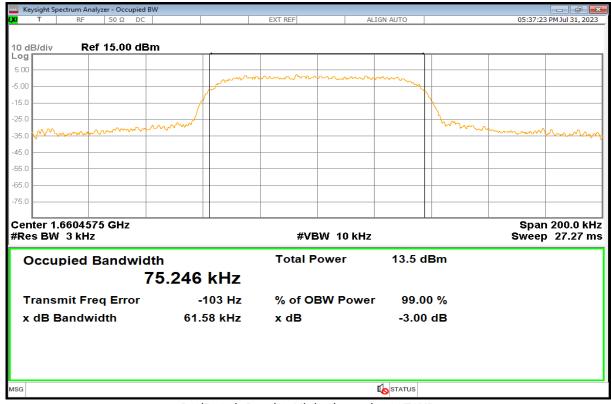
Plot No. 28



B3dB, Sub-Band 1, High Channel, R20T1XD

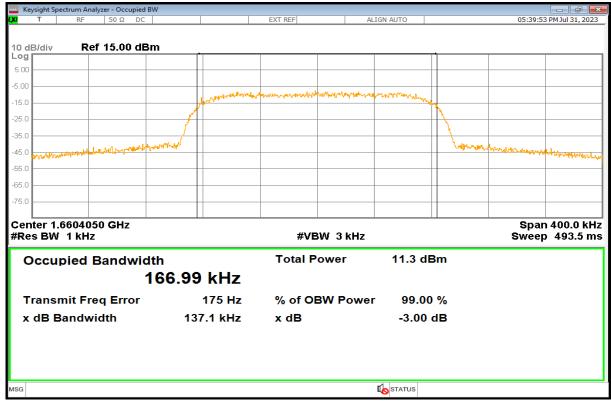


Plot No. 29



B3dB, Sub-Band 1, High Channel, R20T2XD

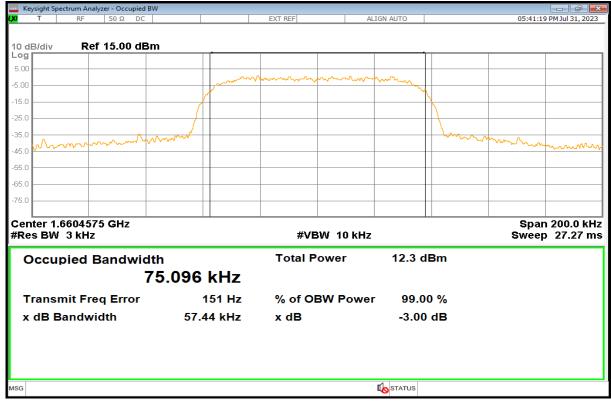
Plot No. 30



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

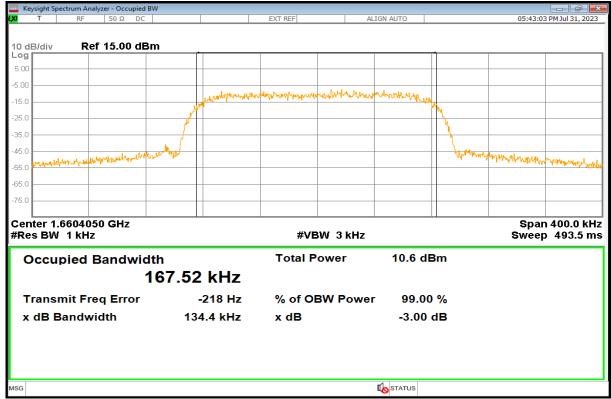


Plot No. 31



B3dB, Sub-Band 1, High Channel, R5T2QD

Plot No. 32

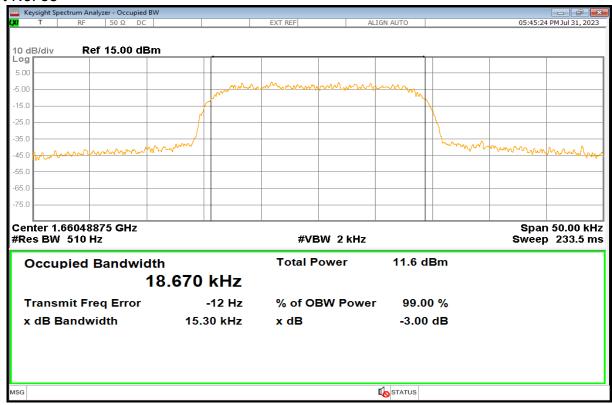


B3dB, Sub-Band 1, High Channel, R5T4.5QD

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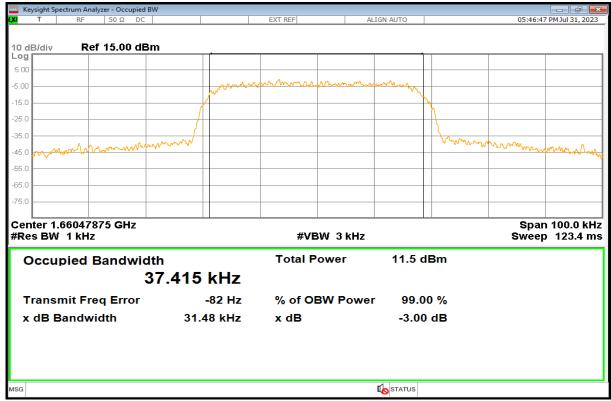


Plot No. 33



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

Plot No. 34

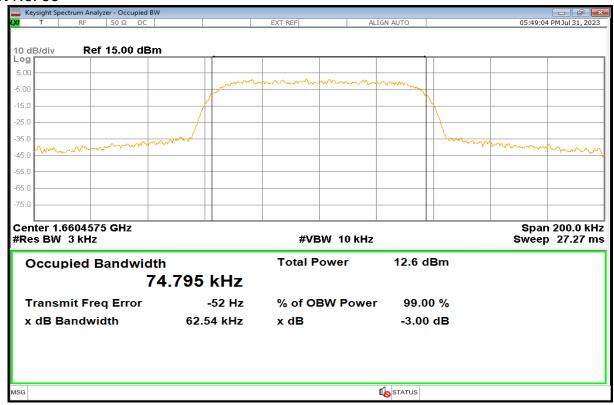


B3dB, Sub-Band 1, High Channel, R20T1QD

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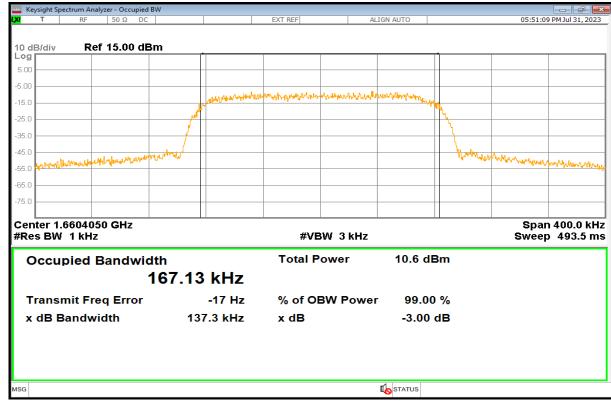


Plot No. 35



B3dB, Sub-Band 1, High Channel, R20T2QD

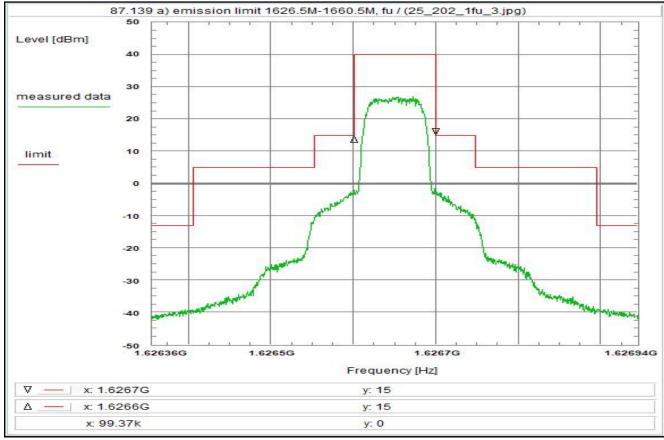
Plot No. 36



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 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

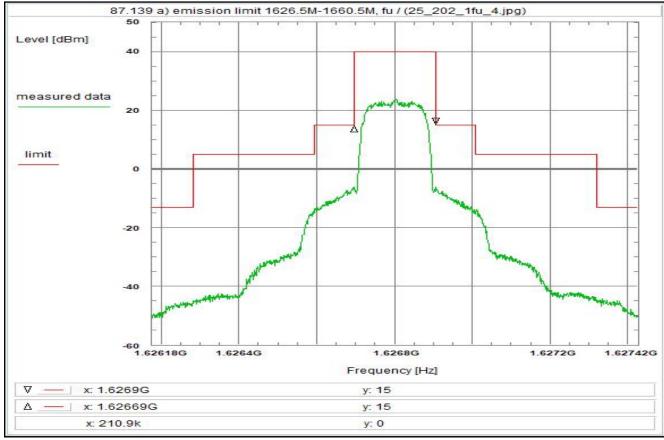
Remark:

Test result: Test passed

Temperature: 22 Humidity: 55	imbH, Laboratory RC-SYS °C %				
Setup of measurement equipment: Start frequency: 1.626356 Stop frequency: 1.626944 Center frequency: 1.62665 Frequency span: 588 Resolution-BW: 3 Video-BW: 10 Input attenuation: 20 Trace-Mode: Clear Write Detector-Mode: AVG	GHz				
Correction: Directional coupler	0.0 dB 0.9 dB 1.4 dBi 0.0 dB 1.2 dB 0.0 dB 31.9 dB 35.4 dB				
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
> 2509% of assigned bw: -35dBc/4kHz
> 2509% 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

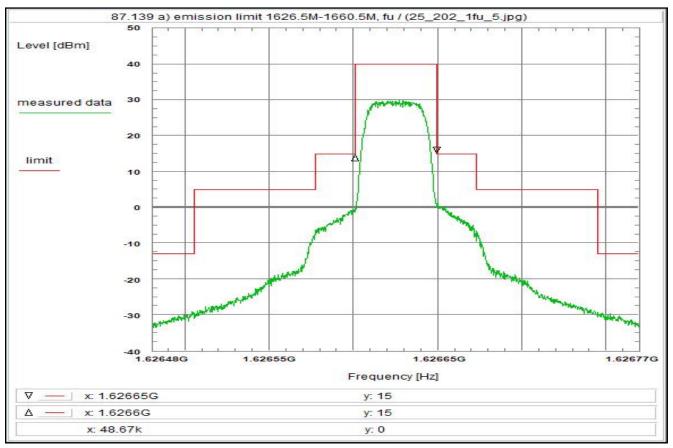
Remark:

Test result: Test passed

Environment condition:
Date & Time: Wed 16/Aug/2023 16:13:14 Location: CTC advanced GmbH, Laboratory RC-SYS 22 °C Temperature: Humidity: Voltage: 230 Vac Setup of measurement equipment: 1 626176 GHz Start frequency: 1.627424 GHz Stop frequency: Center frequency: 1.6268 GHz Frequency span: Resolution-BW: 1.248 MHz kHz Video-BW: 10 Input attenuation: 20 dB Clear Write Trace-Mode: Detector-Mode: Correction: Directional coupler 0.0 dB 0.9 dB 1.4 dBi Coaxial cable (C220) DUT-Antenna (on-axis) dBi 0.0 dB BW correction factor (3k -> 4k) 1.2 dB Atten. between HPA and feedhom 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

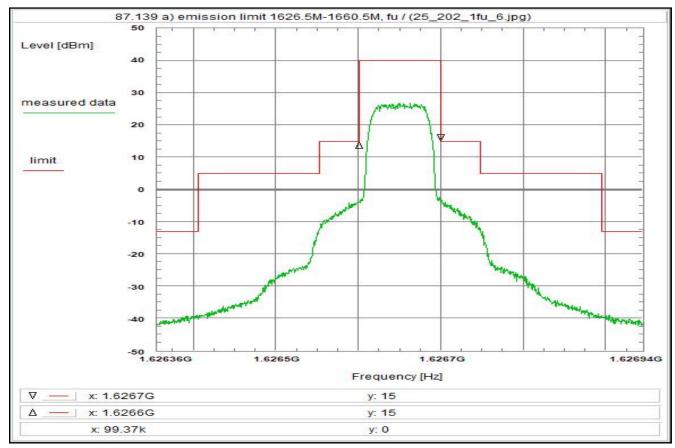
Remark:

Test result: Test passed

Environment condition:
Date & Time: Wed 16/Aug/2023 16:18:06 Location: CTC advanced GmbH, Laboratory RC-SYS 22 °C Temperature: Humidity: Voltage: 230 Vac Setup of measurement equipment: 1.626481 GHz Start frequency: 1.626769 GHz Stop frequency: Center frequency: 1.626625 GHz Frequency span: Resolution-BW: 288 kHz kHz Video-BW: Input attenuation: 20 dB Clear Write Trace-Mode: Detector-Mode: Correction: Directional coupler 0.0 dB 0.9 dB 1.4 dBi Coaxial cable (C220) DUT-Antenna (on-axis) dBi 0.0 dB BW correction factor (3k -> 4k) 1.2 dB Atten. between HPA and feedhom 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

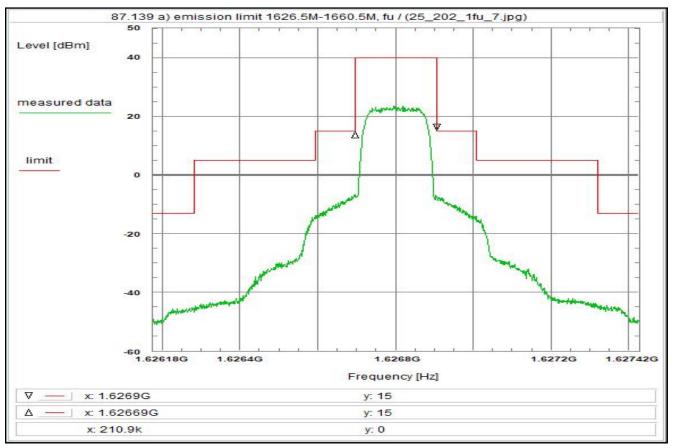
Remark:

Test result: Test passed

Environment condition: Date & Time: Wed 16/Aug/2023 16:49:20 Location: CTC advanced GmbH, Laboratory RC-SYS 22 °C Temperature: Humidity: Voltage: 230 Vac Setup of measurement equipment: 1 626356 GHz Start frequency: 1.626944 GHz Stop frequency: Center frequency: 1.62665 GHz Frequency span: Resolution-BW: 588 kHz kHz 3 Video-BW: Input attenuation: 20 dB Trace-Mode: Max-Hold Detector-Mode: AVG Correction: Directional coupler 0.0 dB 0.9 dB 1.4 dBi Coaxial cable (C220) DUT-Antenna (on-axis) dBi Test antenna 0.0 dB BW correction factor (3k -> 4k) 1.2 dB Atten. between HPA and feedhom 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:

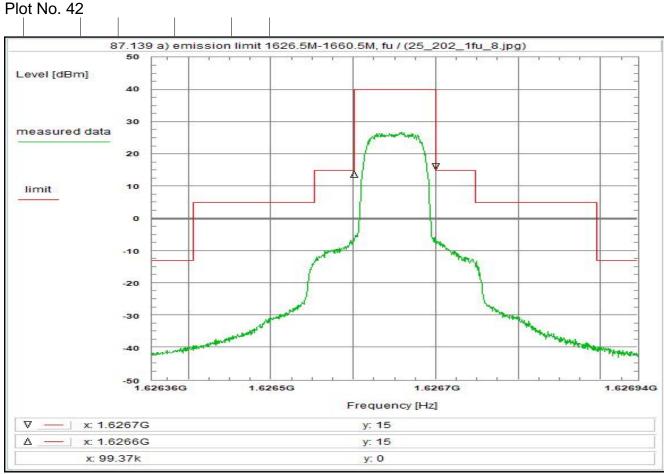
Test equipment:
see test report chapter 7.1-7.2: C220, R001, U330

Remark:

Test result: Test passed

Environment condition:
Date & Time: Wed 16/Aug/2023 16:55:45 Location: CTC advanced GmbH, Laboratory RC-SYS 22 °C Temperature: Humidity: Voltage: 230 Vac Setup of measurement equipment: 1 626176 GHz Start frequency: 1.627424 GHz Stop frequency: Center frequency: 1.6268 GHz Frequency span: Resolution-BW: 1.248 MHz kHz Video-BW: 10 Input attenuation: 20 dB Clear Write Trace-Mode: Detector-Mode: AVG Correction: Directional coupler 0.0 dB 0.9 dB 1.4 dBi Coaxial cable (C220) DUT-Antenna (on-axis) dBi 0.0 dB BW correction factor (3k -> 4k) 1.2 dB Atten. between HPA and feedhom 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





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

Limit according to 87.139 a):
50-100% of assigned bw: -25dBc/4kHz
100-250% of assigned bw: -35dBc/4kHz
> 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 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:

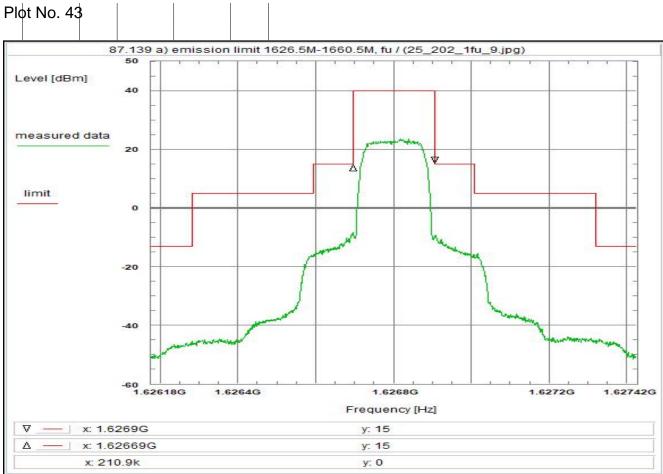
Test result: Test passed

Environment condition: Date & Time: Wed 16/Aug/2023 17:05:28 Location: CTC advanced GmbH, Laboratory RC-SYS 22 °C Temperature: Humidity: Voltage: 230 Vac Setup of measurement equipment: 1.626356 GHz Start frequency: 1.626944 GHz Stop frequency: Center frequency: 1.62665 GHz Frequency span: Resolution-BW: 588 kHz kHz 3 Video-BW: Input attenuation: 20 dB Trace-Mode: Max-Hold Detector-Mode: AVG Correction: Directional coupler 0.0 dB Coaxial cable (C220) 0.9 dB 1.4 dBi DUT-Antenna (on-axis) dBi Test antenna 0.0 dB BW correction factor (3k -> 4k) 1.2 dB Atten. between HPA and feedhom 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

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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 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:

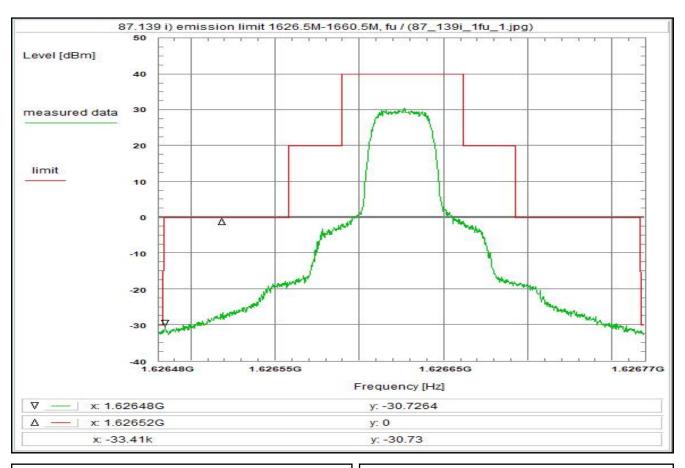
Test result: Test passed

Environment condition: Date & Time: Wed 16/Aug/2023 18:01:04 Location: CTC advanced GmbH, Laboratory RC-SYS 22 °C Temperature: Humidity: Voltage: 230 Vac Setup of measurement equipment: 1 626176 GHz Start frequency: 1.627424 GHz Stop frequency: Center frequency: 1.6268 GHz Frequency span: Resolution-BW: 1.248 MHz kHz Video-BW: 10 Input attenuation: 20 dB Trace-Mode: Max-Hold Detector-Mode: AVG Correction: Directional coupler 0.0 dB 0.9 dB 1.4 dBi Coaxial cable (C220) DUT-Antenna (on-axis) dBi 0.0 dB BW correction factor (3k -> 4k) 1.2 dB Atten. between HPA and feedhom 0.0 dB (U330) 31.9 dB TOTAL CORRECTION: 35.4 dB Carrier-on state / Carrier at the lower edge of the band (fu) Reference of limit = 40 dBm Spectrum mask referenced to necessary bandwidth

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Plot No. 44



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

<u>Limit:</u>
<u>Limit according to 87.139(i)(1)</u>
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

see test report chapter 7.2:

see test report chapter 7.1-7.2: R001

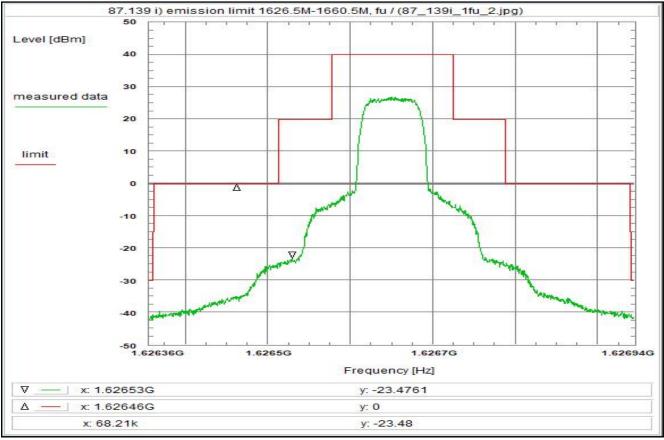
Test result: Test passed

Temperature: 22 Humidity: 55	GmbH, Laboratory RC-SYS °C
Setup of measurement equipment: Start frequency: 1.626481 Stop frequency: 1.626769 Center frequency: 1.626625 Frequency span: 288 Resolution-BW: 3 Video-BW: 300 Input attenuation: 20 Trace-Mode: Average Detector-Mode: AVG	GHz GHz kHz kHz Hz dB
Correction: Directional coupler	0.9 dB 1.4 dBi 0.0 dB 1.2 dB 0.0 dB 31.9 dB 35.4 dB
Carrier-on state / Carrier at the lower edge For EIRP calculation: 'worst-case' = maximum antenna gain	of the band (fu)

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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

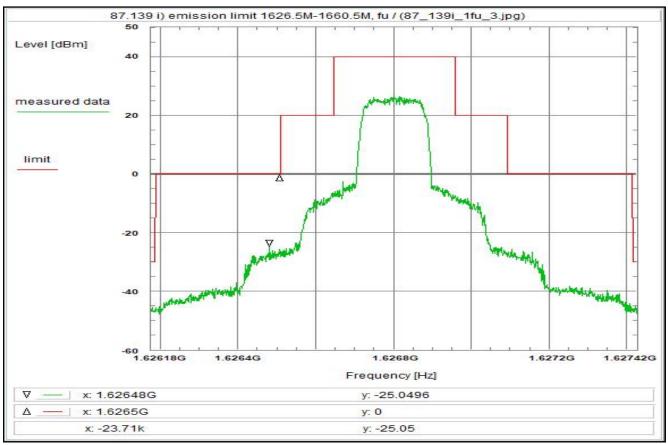
Remark:

Test result: Test passed

Environment condition:						
Date & Time: Wed 16/Aug/2023 16:07:41						
Location:						
Temperature:	22		•			
Humidity:	55	%				
Voltage:	230	Vac				
*						
Setup of measurement e						
Start frequency:	1.626356					
Stop frequency:	1.626944					
Center frequency:	1.62665					
Frequency span:		kHz				
Resolution-BW:	3					
Video-BW:	300					
Input attenuation:	20	dB				
Trace-Mode:	Average					
Detector-Mode:	AVG					
0						
Correction:		0.0	an a			
Directional coupler	+	0.0				
Coaxial cable (C220)	+	0.0				
DUT-Antenna (on-axis) Test antenna	+		 -			
BW correction factor (3k						
Atten, between HPA and						
(U330)	reeurioiri -					
TOTAL CORRECTION:	+					
TOTAL CORRECTION.	+	33.4	· UD			
Remarks:						
Carrier-on state / Carrier	at the lower edge	of the l	hand (fu)			
For EIRP calculation:	at the lower eage	or tric i	bana (ia)			
'worst-case' = maximum	antenna gain					
Wordt dado maximum	antonna gam					
I						



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 lest report chapter 7.1-7.2: C220, R001, U330

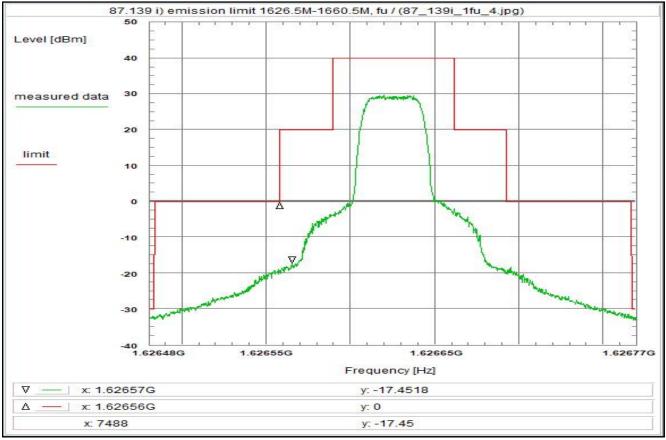
Remark:

Test result: Test passed

Environment condition: Date & Time: Wed 16/Aug/2023 16:34:53 Location: CTC advanced GmbH, Laboratory RC-SYS 22 °C Temperature: Humidity: Voltage: 230 Vac Setup of measurement equipment: 1.626176 GHz Start frequency: 1.627424 GHz Stop frequency: Center frequency: 1.6268 GHz Frequency span: Resolution-BW: 1.248 MHz kHz Video-BW: 300 Input attenuation: 20 dB Max-Hold Trace-Mode: Detector-Mode: AVG Correction: Directional coupler 0.0 dB 0.9 dB 1.4 dBi Coaxial cable (C220) DUT-Antenna (on-axis) 0.0 dB BW correction factor (3k -> 4k)
Atten. between HPA and feedhorn 1.2 dB 0.0 dB (U330) 31.9 dB TOTAL CORRECTION: 35.4 dB 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

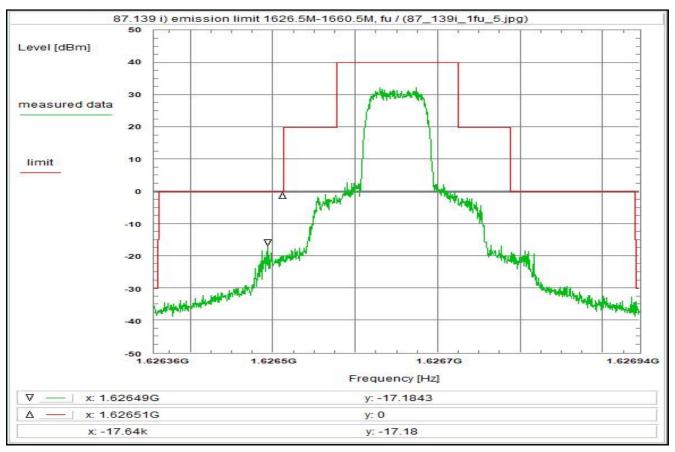
Remark:

Test result: Test passed

Environment condition:
Date & Time: Wed 16/Aug/2023 16:37:36 Location: CTC advanced GmbH, Laboratory RC-SYS 22 °C Temperature: Humidity: Voltage: 230 Vac Setup of measurement equipment: 1.626481 GHz Start frequency: 1.626769 GHz Stop frequency: Center frequency: 1.626625 GHz Frequency span: Resolution-BW: 288 kHz 3 kHz Video-BW: 300 Input attenuation: 20 dB Trace-Mode: Average AVG Detector-Mode: Correction: Directional coupler + 0.0 dB + 0.9 dB + 1.4 dBi Coaxial cable (C220) DUT-Antenna (on-axis) Test antenna 0.0 dB BW correction factor (3k -> 4k)
Atten. between HPA and feedhorn 1.2 dB 0.0 dB (U330) 31.9 dB TOTAL CORRECTION: 35.4 dB 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

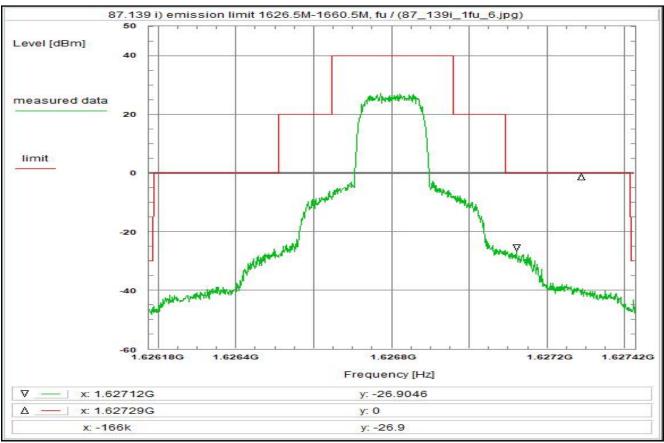
Remark:

Test result: Test passed

Environment condition: Date & Time: Wed 16/Aug/2023 16:50:26 Location: CTC advanced GmbH, Laboratory RC-SYS 22 °C Temperature: Humidity: Voltage: 230 Vac Setup of measurement equipment: 1 626356 GHz Start frequency: 1.626944 GHz Stop frequency: Center frequency: 1.62665 GHz Frequency span: Resolution-BW: 588 kHz 3 kHz Video-BW: 300 Input attenuation: 20 dB Max-Hold Trace-Mode: Detector-Mode: Correction: Directional coupler 0.0 dB Coaxial cable (C220) 0.9 dB 1.4 dBi DUT-Antenna (on-axis) Test antenna 0.0 dB BW correction factor (3k -> 4k)
Atten. between HPA and feedhorn 1.2 dB 0.0 dB (U330) 31.9 dB TOTAL CORRECTION: 35.4 dB 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

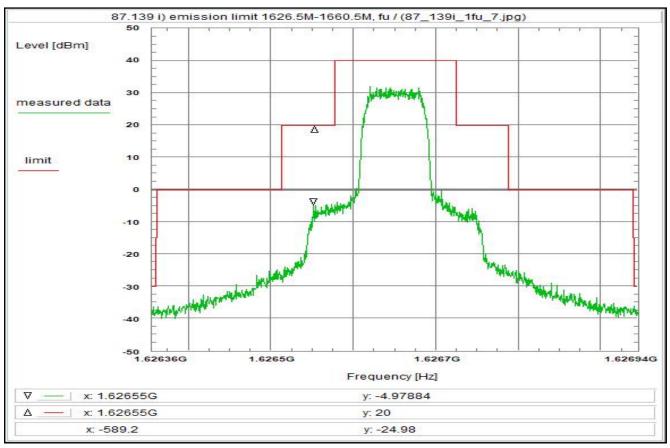
Remark:

Test result: Test passed

Environment condition: Date & Time: Wed 16/Aug/2023 16:57:23 Location: CTC advanced GmbH, Laboratory RC-SYS 22 °C Temperature: Humidity: Voltage: 230 Vac Setup of measurement equipment: 1.626176 GHz Start frequency: 1.627424 GHz Stop frequency: Center frequency: 1.6268 GHz Frequency span: Resolution-BW: 1.248 MHz kHz Video-BW: 300 Input attenuation: 20 dB Max-Hold Trace-Mode: Detector-Mode: AVG Correction: Directional coupler 0.0 dB 0.9 dB 1.4 dBi Coaxial cable (C220) DUT-Antenna (on-axis) 0.0 dB BW correction factor (3k -> 4k)
Atten. between HPA and feedhorn 1.2 dB 0.0 dB (U330) 31.9 dB TOTAL CORRECTION: 35.4 dB 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

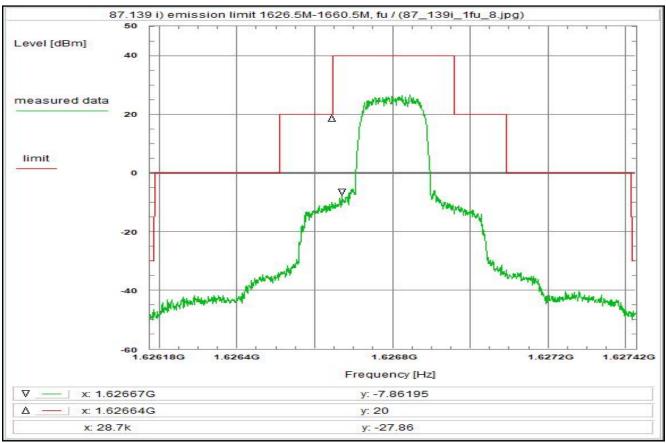
Remark:

Test result: Test passed

Environment condition: Date & Time: Wed 16/Aug/2023 17:57:11 Location: CTC advanced GmbH, Laboratory RC-SYS 22 °C Temperature: Humidity: Voltage: 230 Vac Setup of measurement equipment: 1.626356 GHz Start frequency: 1.626944 GHz Stop frequency: Center frequency: 1.62665 GHz Frequency span: Resolution-BW: 588 kHz 3 kHz Video-BW: 300 Input attenuation: 20 dB Max-Hold Trace-Mode: Detector-Mode: Correction: Directional coupler + 0.0 ub + 0.9 dB + 1.4 dBi Coaxial cable (C220) DUT-Antenna (on-axis) Test antenna 0.0 dB BW correction factor (3k -> 4k) + 1.2 dB - 0.0 dB Atten. between HPA and feedhom + 31.9 dB + 35.4 dB (U330) TOTAL CORRECTION: 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

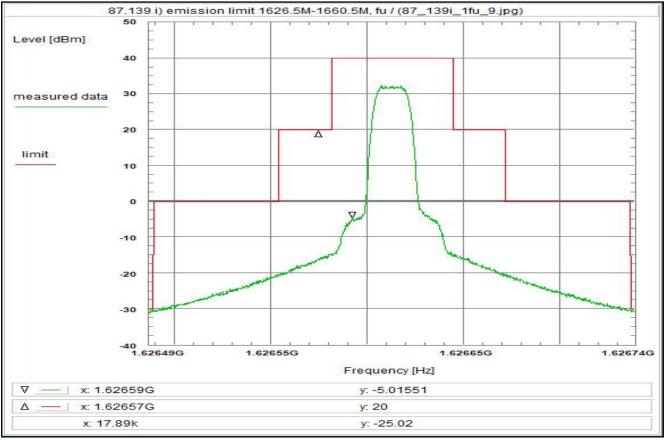
Remark:

Test result: Test passed

Environment condition: Date & Time: Wed 16/Aug/2023 18:02:11 Location: CTC advanced GmbH, Laboratory RC-SYS 22 °C Temperature: Humidity: Voltage: 230 Vac Setup of measurement equipment: 1.626176 GHz Start frequency: 1.627424 GHz Stop frequency: Center frequency: 1.6268 GHz Frequency span: Resolution-BW: 1.248 MHz kHz Video-BW: 300 Input attenuation: 20 dB Max-Hold Trace-Mode: Detector-Mode: Correction: Directional coupler 0.0 dB Coaxial cable (C220) 0.9 dB 1.4 dBi DUT-Antenna (on-axis) 0.0 dB BW correction factor (3k -> 4k)
Atten. between HPA and feedhom 1.2 dB 0.0 dB (U330) 31.9 dB TOTAL CORRECTION: 35.4 dB 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

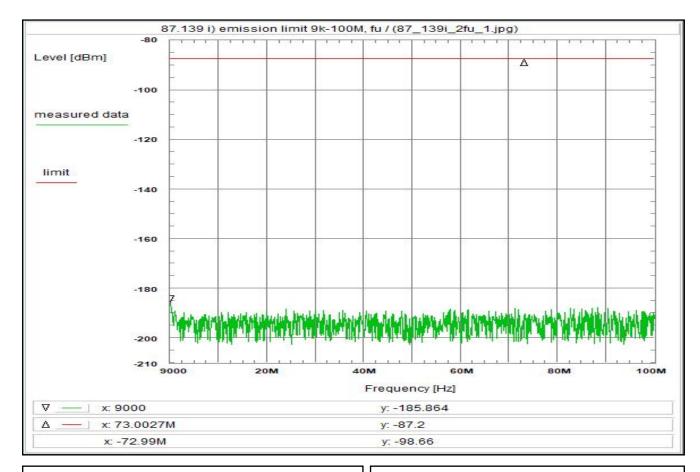
Remark:

Test result: Test passed

Environment condition:
Date & Time: Wed 16/Aug/2023 18:14:42 Location: CTC advanced GmbH, Laboratory RC-SYS 22 °C Temperature: Humidity: Voltage: 230 Vac Setup of measurement equipment: 1.6264865 GHz Start frequency: 1.6267385 GHz Stop frequency: Center frequency: 1.6266125 GHz Frequency span: Resolution-BW: 252 kHz 3 kHz Video-BW: 300 Input attenuation: 20 dB Trace-Mode: Average AVG Detector-Mode: Correction: Directional coupler + 0.0 dB + 0.9 dB + 1.4 dBi Coaxial cable (C220) DUT-Antenna (on-axis) Test antenna 0.0 dB BW correction factor (3k -> 4k)
Atten. between HPA and feedhorn + 1.2 dB - 0.0 dB + 31.9 dB + 35.4 dB (U330) TOTAL CORRECTION: 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)

<u>Limit:</u>
<u>Limit according to 87.139(i)(1)</u>
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

see test report chapter 7.2:

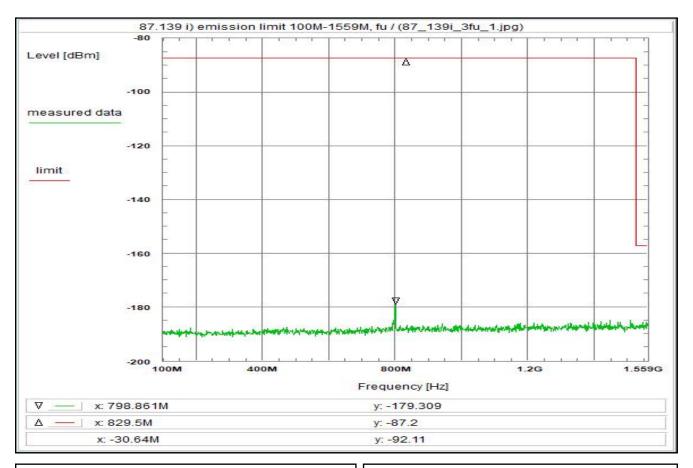
see test report chapter 7.1-7.2: C220, R001, U330, W_RE, W_REJF

Remark:

Environment condition:				
Date & Time:	Wed 23/Aug/202	23 19:0	:06:45	
Location:	CTC advanced (H, Laboratory RC-SYS	
Temperature:	22	°C		
Humidity:	55	%		
Voltage:	230	Vac	;	
Temperature: Humidity: Voltage: Setup of measurement eq Start frequency: Stop frequency: Center frequency: Frequency span: Resolution-BW: Video-BW: Input attenuation: Trace-Mode: Detector-Mode: Correction: (W_RE) Coaxial cable (C220) DUT-Antenna (on-axis) Test antenna BW correction factor (3k - Atten. between HPA and f (U330) TOTAL CORRECTION:	22 55 230 uipment: 9 100 50.0045 99.991 3 10 20 Max-Hold AVG	°C % Vac KHz MHz MHz MHz kHz dB 120.0 0.2 1.4 0.0 31.3	2.	
Remarks:				
Carrier-on state / Carrier a For EIRP calculation:	t the lower edge of	of the b	band (fu)	
'worst-case' = maximum a	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



87.139 i) Frequencies, frequency tolerance and emission limitations Subclause: Emission limitations

Modulated rf-carrier at the lower edge of the band (fu)

<u>Limit:</u>
<u>Limit according to 87.139(i)(1)</u>
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

see test report chapter 7.2:

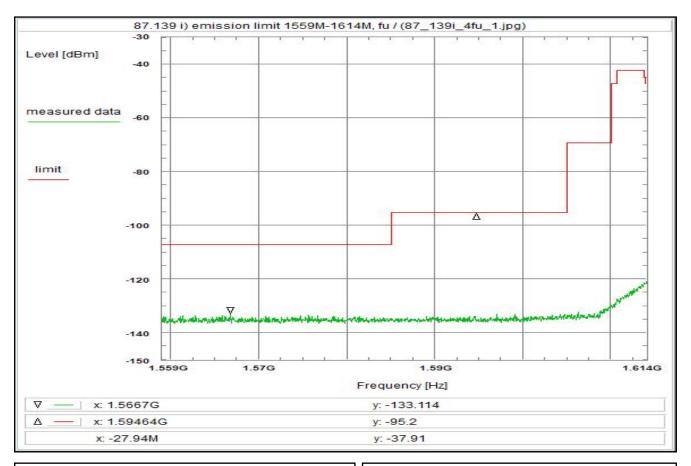
see test report chapter 7.1-7.2: C220, R001, U330

Remark:

Temperature: Humidity:	22 55	GmbH, Laboratory RC-SYS °C
Stop frequency: 1.1 Center frequency: 82 Frequency span: 1.4 Resolution-BW: Video-BW: Input attenuation: Trace-Mode: Max-H	100 559 29.5 459 3 10 20 Hold	GHz MHz GHz kHz kHz
Correction: (W_RE) Coaxial cable DUT-Antenna (on-axis) Test antenna BW correction factor (3k -> 4k) Atten. between HPA and feedhom (U330) TOTAL CORRECTION: Remarks: Carrier-on state / Carrier at the lower e For EIRP calculation: 'worst-case' = maximum antenna gain	•	1.4 dBi 0.0 dB 1.2 dB 0.0 dB 31.7 dB -80.8 dB
Since the measurement was updated corrected value of the marker is-175 dt		he maximum antenna gain, which is 5.23 dBic, the



Plot No. 55



Environment condition:
Date & Time:

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 lest report chapter 7.2:

Location: CTC advanced GmbH, Laboratory RC-SYS 22 °C Temperature: Humidity: Voltage: 230 Vac Setup of measurement equipment: 1.559 GHz Start frequency: 1.614 GHz Stop frequency: Center frequency: 1.5865 GHz Frequency span: Resolution-BW: 55 MHz MHz Video-BW: MHz Input attenuation: 20 dB Trace-Mode: Max-Hold Detector-Mode: Correction: (W_RE) 104.1 dB Coaxial cable (C220) + 0.9 dB + 1.4 dBi DUT-Antenna (on-axis) Test antenna BW correction factor Atten. between HPA and feedhorn 0.0 dB 0.0 dB (U331) TOTAL CORRECTION: -69.2 dB 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 $5.23\ \mathrm{dBic}$, the corrected value of the marker is -129 dBm

Wed 23/Aug/2023 11:23:47

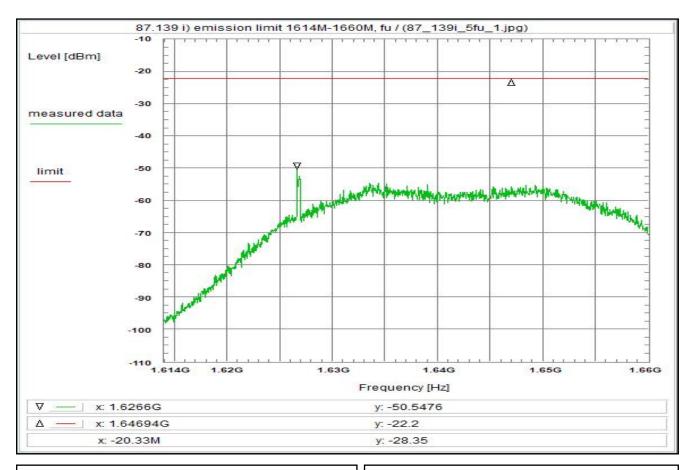
Test result: Test passed

Remark:

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



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)

<u>Limit:</u>
<u>Limit according to 87.139(i)(1)</u>
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

see test report chapter 7.2:

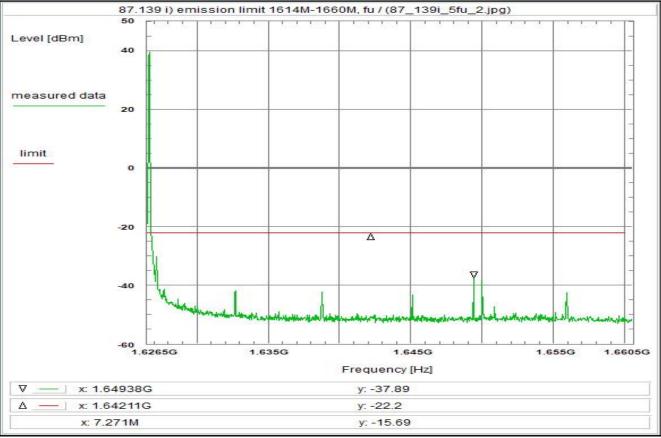
see test report chapter 7.1-7.2: C220, R001, U331

Remark:

Temperature:	ed (22 55	SmbH, °C		oratory RC-SYS
Stop frequency: 1.1. Center frequency: 1.6: Frequency span: Resolution-BW: Video-BW:	46 3 10 20 old	GHz GHz MHz kHz kHz		
Correction: (W_RE) Coaxial cable (C220) DUT-Antenna (on-axis) Test antenna BW correction factor (3k -> 4k) Atten. between HPA and feedhorn (U331) TOTAL CORRECTION: Remarks:	- + + + +	1.4 0.0 1.2 0.0 74.2	dB dBi dB dB dB dB	
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

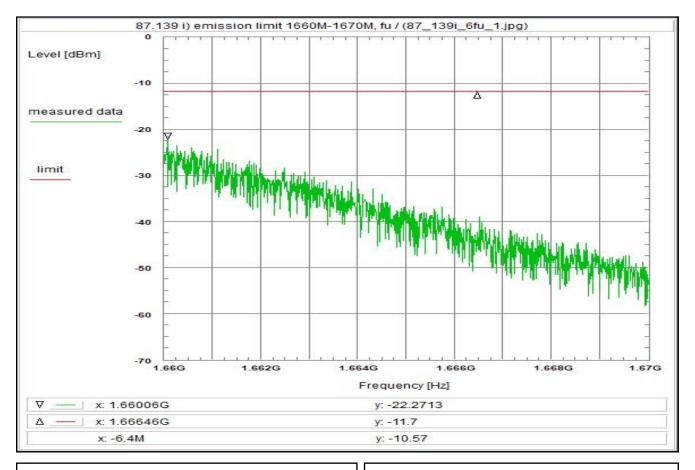


Subclause: 87.139 i) Frequencies, frequency tolerance and emission limitations Emission limitations Modulated rf-carrier at the lower edge of the band (fu) Limit: Limit according to 87.139(i)(1)
The mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance with 87.139(i)(1). Test results: Frequency Level Acceptance Exceeding Limit Exceeding dBm dBm -32.2 dBm -22.2 dB dB 1.6600G -27.4 -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: see test report chapter 7.1-7.2: C220, R001, U330 Test result: Test passed

Temperature: 22 Humidity: 55	GmbH, Laboratory RC-SYS °C			
Setup of measurement equipment: Start frequency: 1.6265 Stop frequency: 1.6605 Center frequency: 1.6435 Frequency span: 34 Resolution-BW: 3 Video-BW: 30 Input attenuation: 22 Trace-Mode: Max-Hold Detector-Mode: Pos Peak	GHz GHz MHz kHz kHz			
Correction: Directional coupler + Coaxial cable (C220) + DUT-Antenna (on-axis) + Test antenna + BW correction factor (3k -> 4k) + Atten. between HPA and feedhorn - Freefield attenuation (U330) + TOTAL CORRECTION: +	1.4 dBi 0.0 dB 1.2 dB 0.0 dB 31.9 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 -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)

<u>Limit:</u>
<u>Limit according to 87.139(i)(1)</u>
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

see test report chapter 7.2:

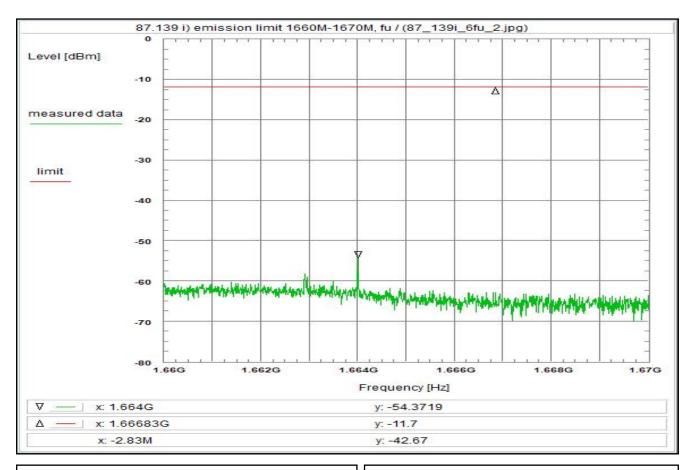
see test report chapter 7.1-7.2: C220, R001, U331

Remark:

Environment condition: Date & Time: Wed 23/Aug/202 Location: CTC advanced C Temperature: 22 Humidity: 55 Voltage: 230	GmbH, Laboratory RC-SYS °C %			
Setup of measurement equipment: 1.66 Start frequency: 1.67 Stop frequency: 1.665 Center frequency: 10 Resolution-BW: 3 Video-BW: 300 Input attenuation: 20 Trace-Mode: Max-Hold Detector-Mode: AVG	GHz GHz MHz kHz Hz			
Correction: (W_RE) - Coaxial cable (C220) + DUT-Antenna (on-axis) + Test antenna + BW correction factor (3k -> 20k) + Atten. between HPA and feedhom (U331) + TOTAL CORRECTION: +	1.4 dBi 0.0 dB 8.2 dB 0.0 dB 72.8 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)

<u>Limit:</u>
<u>Limit according to 87.139(i)(1)</u>
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

see test report chapter 7.2:

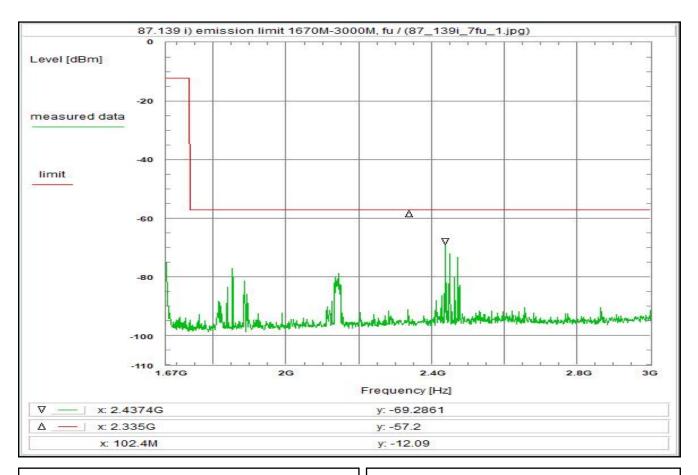
see test report chapter 7.1-7.2: C220, R001, U330

Remark:

Temperature: 22 Humidity: 55	GmbH, Laboratory RC-SYS °C			
Setup of measurement equipment: Start frequency: 1.66 Stop frequency: 1.665 Center frequency: 1.665 Frequency span: 10 Resolution-BW: 3 Video-BW: 300 Input attenuation: 20 Trace-Mode: Max-Hold Detector-Mode: AVG	GHz GHz MHz kHz Hz			
Correction: (W, RE)	1.4 dBi 0.0 dB 8.2 dB 0.0 dB 31.9 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



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

<u>Limit:</u>
<u>Limit according to 87.139(i)(1)</u>
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

see test report chapter 7.2:

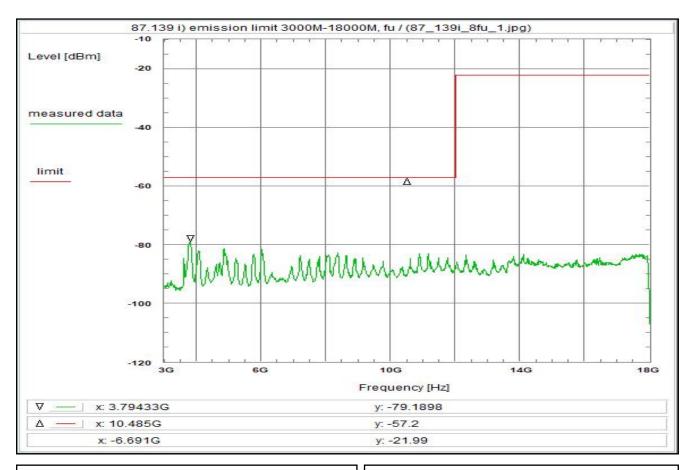
see test report chapter 7.1-7.2: C220, R001, U331

Remark:

Environment condition:				
Date & Time:	Tue 22/Aug/2023	3 15:02	2:23	
Location:	CTC advanced (Labo	oratory RC-SYS
Temperature:	22	°C		•
Humidity:	55	%		
Voltage:	230	Vac		
-				
Setup of measurement equ				
Start frequency:	1.67			
Stop frequency:	3			
Center frequency:	2.335			
Frequency span:		GHz		
Resolution-BW:	3			
Video-BW:	10			
Input attenuation:	0	dB		
Trace-Mode:	Max-Hold			
Detector-Mode:	AVG			
2				
Correction:				
Directional coupler	+	0.0		
Coaxial cable (C220)	+			
DUT-Antenna (on-axis)	+			
Test antenna	+	0.0		
BW correction factor (3k ->				
Atten. between HPA and fe				
(U331)	+			
TOTAL CORRECTION:	+	36.2	dB	
D orko				
Remarks:	the lewer edge.	of the b		(f.,)
Carrier-on state / Carrier at	the lower eage	of the L)anu	(tu)
For EIRP calculation:				
'worst-case' = maximum a	ntenna 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)

<u>Limit:</u>
<u>Limit according to 87.139(i)(1)</u>
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

see test report chapter 7.2:

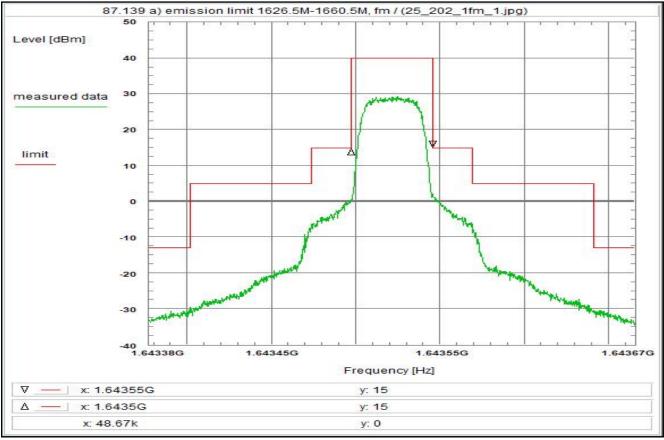
see test report chapter 7.1-7.2: C220, R001, U332

Remark:

Environment condition:				
Date & Time:	Tue 22/Aug/202	23 15:42	2:48	
Location:			Labo	oratory RC-SYS
Temperature:	22			
Humidity:	55	%		
Voltage:	230	Vac		
Setup of measurement eq Start frequency: Stop frequency: Center frequency:	3 18 10.5	GHz GHz		
Frequency span:	15			
Resolution-BW:	10			
Video-BW:	30			
Input attenuation:	0			
Trace-Mode:	Max-Hold			
Detector-Mode:	AVG			
Correction: Directional coupler Coaxial cable (C220) DUT-Antenna (on-axis) Test antenna BW correction factor (10k Atten. between HPA and f (U332) TOTAL CORRECTION: Remarks: Carrier-on state / Carrier a For EIRP calculation: 'worst-case' = maximum a	eedhorn - + + t the lower edge	1.4 0.0 4.0 0.0 34.0 33.7	dB dBi dB dB dB dB	(fu)
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 of DUT:
see test report chapter 7.2:
Test equipment:
see test report chapter 7.1-7.2: C220, R001, U330

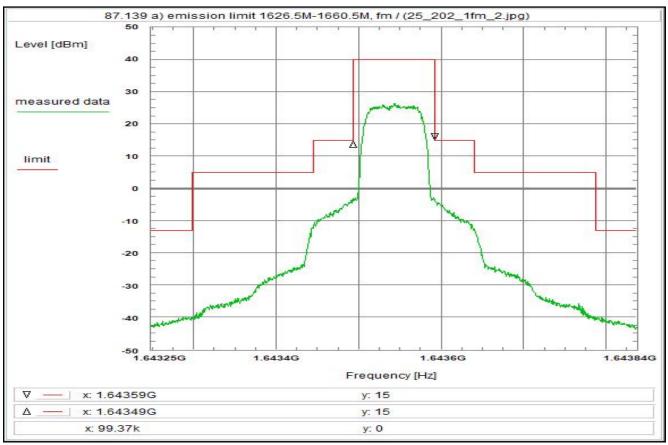
Remark:

Test result: Test passed

Environment condition: Date & Time: Fri 18/Aug/2023 14:53:30 Location: CTC advanced GmbH, Laboratory RC-SYS °C Temperature: 22 Humidity: Voltage: 230 Vac Setup of measurement equipment: 1.64337725 GHz Start frequency: 1.64366525 Stop frequency: GHz Center frequency: 1.64352125 GHz Frequency span: Resolution-BW: 288 kHz kHz 3 Video-BW: Input attenuation: 20 dB Trace-Mode: Max-Hold Detector-Mode: AVG Correction: Directional coupler 0.0 dB 0.9 dB 1.4 dBi Coaxial cable (C220) DUT-Antenna (on-axis) dBi Test antenna 0.0 dB BW correction factor (3k -> 4k) 1.2 dB Atten. between HPA and feedhom 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: -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

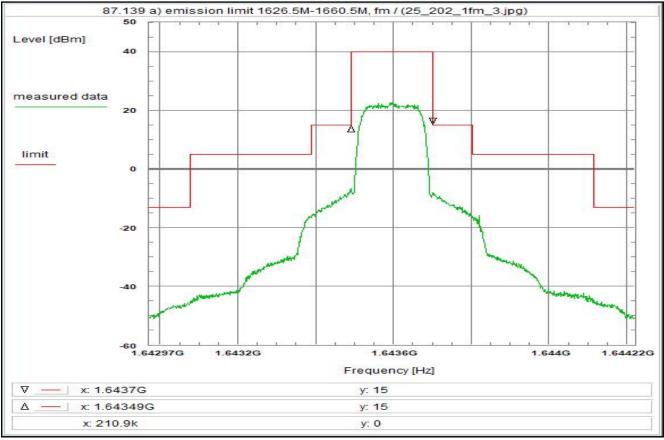
Remark:

Test result: Test passed

Environment condition:
Date & Time: Fri 18/Aug/2023 14:57:39 Location: CTC advanced GmbH, Laboratory RC-SYS °C Temperature: 22 Humidity: Voltage: 230 Vac Setup of measurement equipment: 1.64324825 GHz Start frequency: 1.64383625 Stop frequency: GHz Center frequency: 1.64354225 GHz Frequency span: Resolution-BW: 588 kHz kHz 3 Video-BW: Input attenuation: 20 dB Trace-Mode: Max-Hold Detector-Mode: AVG Correction: Directional coupler 0.0 dB Coaxial cable (C220) 0.9 dB 1.4 dBi DUT-Antenna (on-axis) dBi Test antenna 0.0 dB BW correction factor (3k -> 4k) 1.2 dB Atten. between HPA and feedhom 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 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

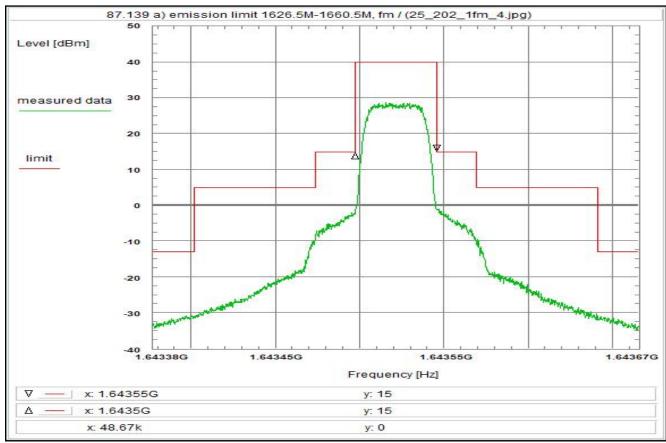
Remark:

Test result: Test passed

Environment condition:
Date & Time: Fri 18/Aug/2023 15:01:08 Location: CTC advanced GmbH, Laboratory RC-SYS °C Temperature: 22 Humidity: Voltage: 230 Vac Setup of measurement equipment: 1.642971 GHz Start frequency: 1.644219 GHz Stop frequency: Center frequency: 1.643595 GHz Frequency span: Resolution-BW: 1.248 MHz kHz Video-BW: 10 Input attenuation: 20 dB Trace-Mode: Max-Hold Detector-Mode: AVG Correction: Directional coupler 0.0 dB Coaxial cable (C220) 0.9 dB 1.4 dBi DUT-Antenna (on-axis) Test antenna 0.0 dB BW correction factor (3k -> 4k) 1.2 dB Atten. between HPA and feedhom 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: -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

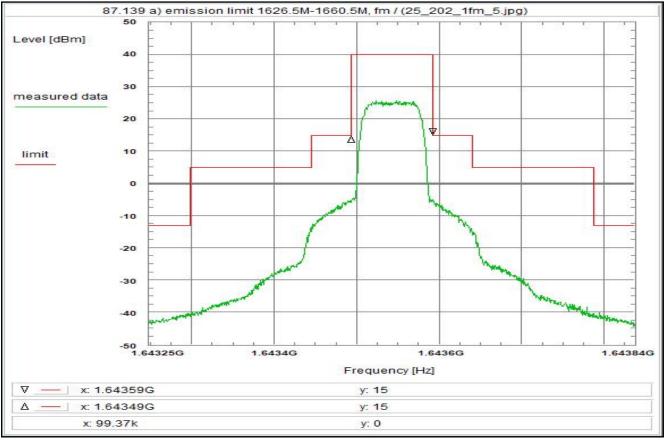
Remark:

Test result: Test passed

Environment condition:
Date & Time: Fri 18/Aug/2023 15:04:28 Location: CTC advanced GmbH, Laboratory RC-SYS 22 °C Temperature: Humidity: Voltage: 230 Vac Setup of measurement equipment: 1.64337725 GHz Start frequency: 1.64366525 Stop frequency: GHz Center frequency: 1.64352125 GHz Frequency span: Resolution-BW: 288 kHz kHz 3 Video-BW: Input attenuation: 20 dB Trace-Mode: Max-Hold Detector-Mode: AVG Correction: Directional coupler 0.0 dB Coaxial cable (C220) 0.9 dB 1.4 dBi DUT-Antenna (on-axis) dBi 0.0 dB BW correction factor (3k -> 4k) 1.2 dB Atten. between HPA and feedhom 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: -35dBc/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 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

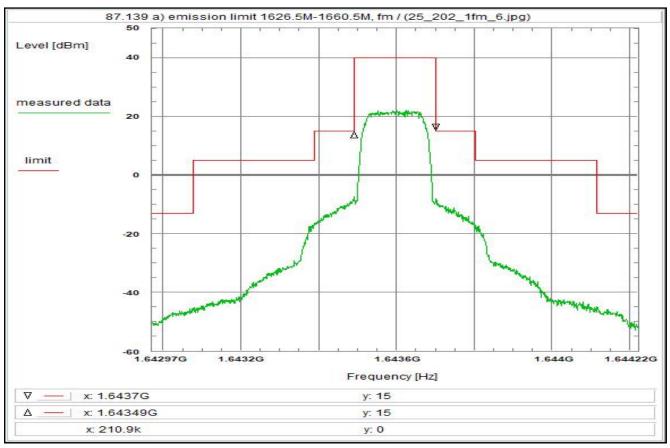
Remark:

Test result: Test passed

Environment condition:
Date & Time: Fri 18/Aug/2023 15:07:20 Location: CTC advanced GmbH, Laboratory RC-SYS 22 °C Temperature: Humidity: Voltage: 230 Vac Setup of measurement equipment: 1.64324825 GHz Start frequency: 1.64383625 Stop frequency: GHz Center frequency: 1.64354225 GHz Frequency span: Resolution-BW: 588 kHz kHz 3 Video-BW: Input attenuation: 20 dB Trace-Mode: Max-Hold Detector-Mode: AVG Correction: Directional coupler 0.0 dB Coaxial cable (C220) 0.9 dB 1.4 dBi DUT-Antenna (on-axis) dBi 0.0 dB BW correction factor (3k -> 4k) 1.2 dB Atten. between HPA and feedhom 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: -250Bc/4kHz
100-250% of assigned bw: -35dBc/4kHz
> 250% of assigned bw: -434-10log(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

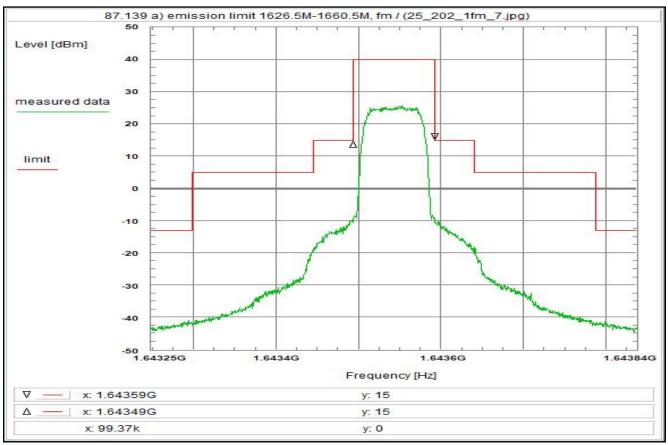
Remark:

Test result: Test passed

Environment condition:				
Location: CTC ad	· · · · · · · · · · · · · · · · · · ·			
Temperature:	22	°C	,	
Humidity:	55	%		
Voltage:		Vac		
1				
Setup of measurement equipment:				
	642971			
	644219			
	643595			
Frequency span:	1.248			
Resolution-BW:	3	kHz		
Video-BW:	10			
Input attenuation:	20	dB		
	ax-Hold			
Detector-Mode:	AVG			
l				
Correction:				
Directional coupler	+			
Coaxial cable (C220)	+	0.0		
DUT-Antenna (on-axis)	+			
Test antenna	+	0.0		
BW correction factor (3k -> 4k)	+			
Atten. between HPA and feedhom		0.0		
(U330)	+	0		
TOTAL CORRECTION:	+	35.4	dB	
l _ ,				
Remarks:				
Carrier-on state / Carrier in the middle of the band (fm)				
Reference of limit = 40 dBm				
	ha	المشامة	ıL.	
Spectrum mask referenced to nece	SSary Da	inawiai	ın	



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

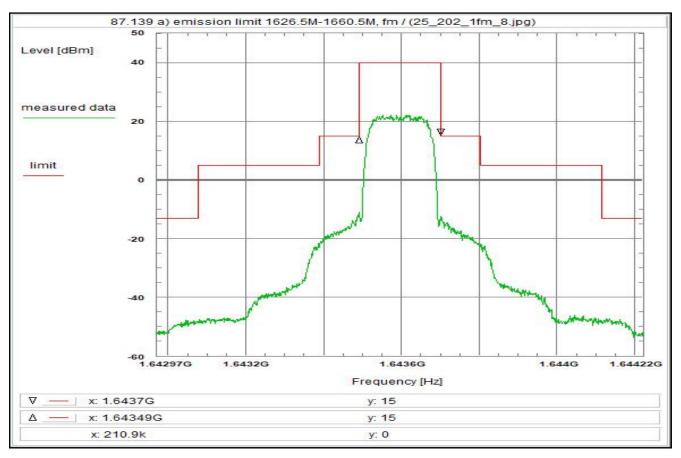
Remark:

Test result: Test passed

Environment condition: Date & Time: Fri 18/Aug/2023 15:13:51 Location: CTC advanced GmbH, Laboratory RC-SYS °C Temperature: 22 Humidity: Voltage: 230 Vac Setup of measurement equipment: 1.6432485 GHz Start frequency: 1.6438365 Stop frequency: GHz Center frequency: 1.6435425 GHz Frequency span: Resolution-BW: 588 kHz kHz 3 Video-BW: Input attenuation: 20 dB Trace-Mode: Max-Hold Detector-Mode: AVG Correction: Directional coupler 0.0 dB Coaxial cable (C220) 0.9 dB 1.4 dBi DUT-Antenna (on-axis) dBi 0.0 dB BW correction factor (3k -> 4k) 1.2 dB Atten. between HPA and feedhom 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:

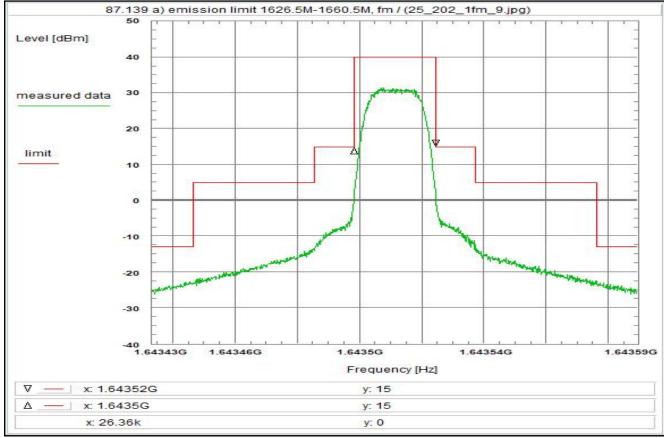
Test result: Test passed

Environment condition: Date & Time: Fri 18/Aug/202 Location: CTC advanced Temperature: 22 Humidity: 55 Voltage: 230	GmbH, Laboratory RC-SYS °C %				
Setup of measurement equipment: Start frequency: 1.642971 Stop frequency: 1.643595 Center frequency: 1.643595 Frequency span: 1.248 Resolution-BW: 3 Video-BW: 10 Input attenuation: 20 Trace-Mode: Max-Hold Detector-Mode: AVG	GHz GHz MHz kHz kHz dB				
Coaxial cable (C220) + DUT-Antenna (on-axis) + Test antenna + BW correction factor (3k -> 4k) Atten. between HPA and feedhorn (U330) +	0.0 dB 0.9 dB 1.4 dBi 0.0 dB 1.2 dB 0.0 dB 31.9 dB 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					

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Plot No. 70

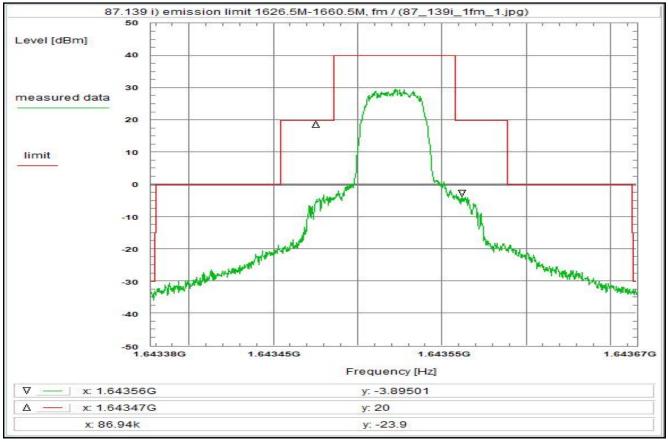


Subclause: 87.139 a)Frequencies, frequency tolerance and emission limitations Emission limitations Modulated rf-carrier in the middle of the band (fm) Limit: Limit according to 87.139 a): 50-100% of assigned bw: -25dBc/4kHz 100-250% of assigned bw: -35dBc/4kHz > 250% of assigned bw: -43+10log(Pmax)dBc/4kHz = -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 see test report chapter 7.2: 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 °C Temperature: 22 Humidity: Voltage: 230 Vac Setup of measurement equipment: 1.64343325 GHz Start frequency: 1.64358925 GHz Stop frequency: Center frequency: 1.64351125 GHz Frequency span: Resolution-BW: 156 kHz kHz 3 Video-BW: 10 Input attenuation: 20 dB Trace-Mode: Max-Hold Detector-Mode: AVG Correction: Directional coupler 0.0 dB 0.9 dB 1.4 dBi Coaxial cable (C220) DUT-Antenna (on-axis) Test antenna 0.0 dB BW correction factor (3k -> 4k) 1.2 dB Atten. between HPA and feedhom - 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:

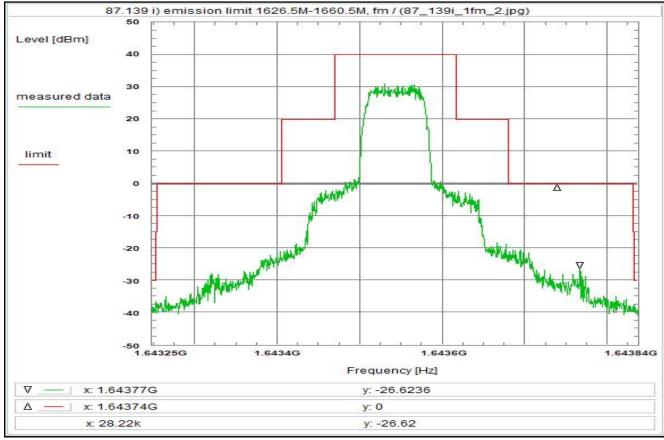
Test result: Test passed

Environment condition: Date & Time: Fri 18/Aug/2023 14:54:36 Location: CTC advanced GmbH, Laboratory RC-SYS °C Temperature: 22 Humidity: Voltage: 230 Vac Setup of measurement equipment: 1.64337725 GHz Start frequency: 1.64366525 GHz Stop frequency: Center frequency: 1.64352125 GHz Frequency span: Resolution-BW: 288 kHz 3 kHz Video-BW: 300 Input attenuation: 20 dB Trace-Mode: Average AVG Detector-Mode: Correction: Directional coupler + 0.0 dB + 0.9 dB + 1.4 dBi Coaxial cable (C220) DUT-Antenna (on-axis) 0.0 dB BW correction factor (3k -> 4k)
Atten. between HPA and feedhorn + 1.2 dB - 0.0 dB + 31.9 dB + 35.4 dB (U330) TOTAL CORRECTION: 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

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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

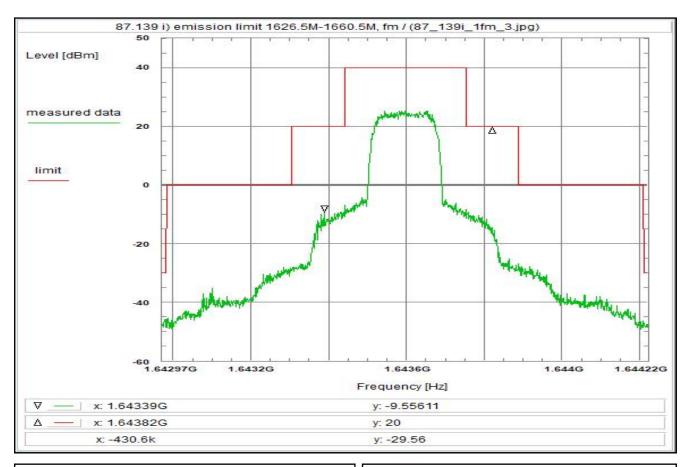
Remark:

Test result: Test passed

Environment condition: Date & Time: Fri 18/Aug/2023 14:58:39 Location: CTC advanced GmbH, Laboratory RC-SYS °C Temperature: 22 Humidity: Voltage: 230 Vac Setup of measurement equipment: 1.64324825 GHz Start frequency: 1.64383625 GHz Stop frequency: Center frequency: 1.64354225 GHz Frequency span: Resolution-BW: 588 kHz 3 kHz Video-BW: 300 Input attenuation: 20 dB Max-Hold Trace-Mode: Detector-Mode: AVG Correction: Directional coupler 0.0 dB Coaxial cable (C220) 0.9 dB 1.4 dBi DUT-Antenna (on-axis) 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 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)

<u>Limit:</u>
<u>Limit according to 87.139(i)(1)</u>
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

see test report chapter 7.2:

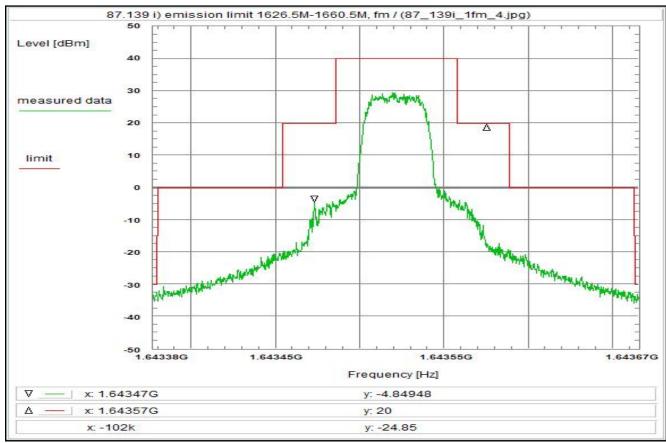
see test report chapter 7.1-7.2: C220, R001, U330

Remark:

Environment condition: Date & Time:	Fri 18/Aug/2023				
Location:			, Laboratory RC-SYS		
Temperature:	22 55				
Humidity:					
Voltage:	230	Vac			
Setup of measurement ed					
Start frequency:	1.642971				
Stop frequency:	1.644219				
Center frequency:	1.643595				
Frequency span:	1.248				
Resolution-BW:	3				
Video-BW:	300				
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	feedhom -	0.0	dB		
(U330)	+				
TOTAL CORRECTION:	+	35.4	- dB		
Remarks:					
Carrier-on state / Carrier i	n the middle of th	e band	d (fm)		
For EIRP calculation:					
'worst-case' = maximum	antenna gain				
	g				
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

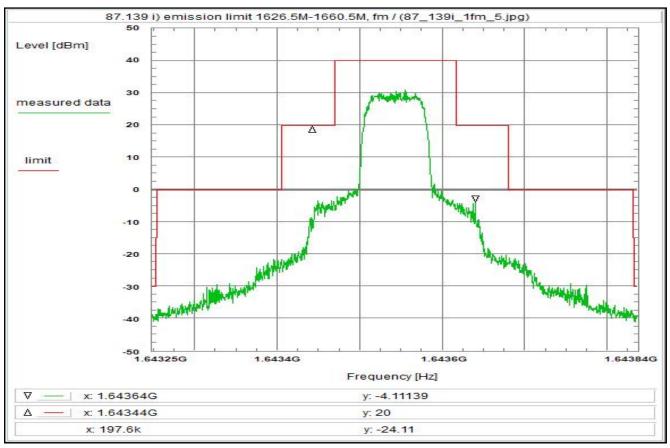
Remark:

Test result: Test passed

Environment condition: Date & Time: Fri 18/Aug/2023 15:05:17 Location: CTC advanced GmbH, Laboratory RC-SYS 22 °C Temperature: Humidity: Voltage: 230 Vac Setup of measurement equipment: 1.64337725 GHz Start frequency: 1.64366525 GHz Stop frequency: Center frequency: 1.64352125 GHz Frequency span: Resolution-BW: 288 kHz 3 kHz Video-BW: 300 Input attenuation: 20 dB Trace-Mode: Average AVG Detector-Mode: Correction: Directional coupler + 0.0 dB + 0.9 dB + 1.4 dBi Coaxial cable (C220) DUT-Antenna (on-axis) 0.0 dB BW correction factor (3k -> 4k)
Atten. between HPA and feedhorn + 1.2 dB - 0.0 dB + 31.9 dB + 35.4 dB (U330) TOTAL CORRECTION: 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

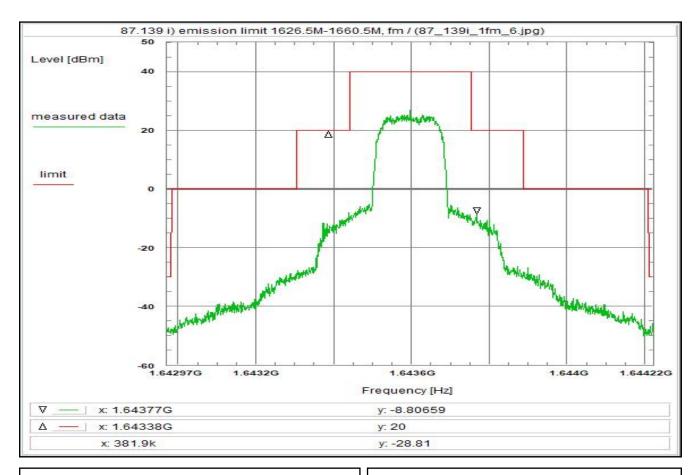
Remark:

Test result: Test passed

Environment condition:
Date & Time: Fri 18/Aug/2023 15:08:08 Location: CTC advanced GmbH, Laboratory RC-SYS 22 °C Temperature: Humidity: Voltage: 230 Vac Setup of measurement equipment: 1.64324825 GHz Start frequency: 1.64383625 GHz Stop frequency: Center frequency: 1.64354225 GHz Frequency span: Resolution-BW: 588 kHz 3 kHz Video-BW: 300 Input attenuation: 20 dB Max-Hold Trace-Mode: Detector-Mode: AVG Correction: Directional coupler 0.0 dB Coaxial cable (C220) 0.9 dB 1.4 dBi DUT-Antenna (on-axis) Test antenna 0.0 dB BW correction factor (3k -> 4k)
Atten. between HPA and feedhom 1.2 dB - 0.0 dB (U330) 31.9 dB TOTAL CORRECTION: 35.4 dB 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)

<u>Limit:</u>
<u>Limit according to 87.139(i)(1)</u>
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

see test report chapter 7.2:

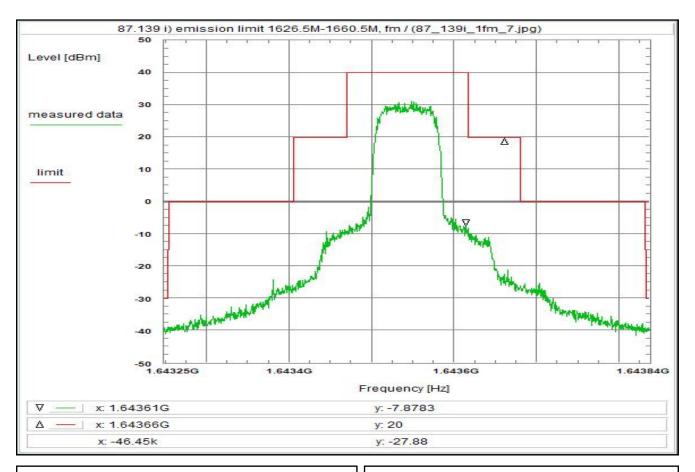
see test report chapter 7.1-7.2: R001

Remark:

Environment condition: Date & Time: Fri 18/Aug/2023 Location: CTC advanced C Temperature: 22 Humidity: 55 Voltage: 230	GmbH, Laboratory RC-SYS °C %			
Setup of measurement equipment: Start frequency: 1.642971 Stop frequency: 1.644219 Center frequency: 1.643595 Frequency span: 1.248 Resolution-BW: 3 Video-BW: 300 Input attenuation: 20 Trace-Mode: Max-Hold Detector-Mode: AVG	GHz GHz MHz kHz Hz			
Correction: Directional coupler	0.9 dB 1.4 dBi 0.0 dB 1.2 dB 0.0 dB 31.9 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:

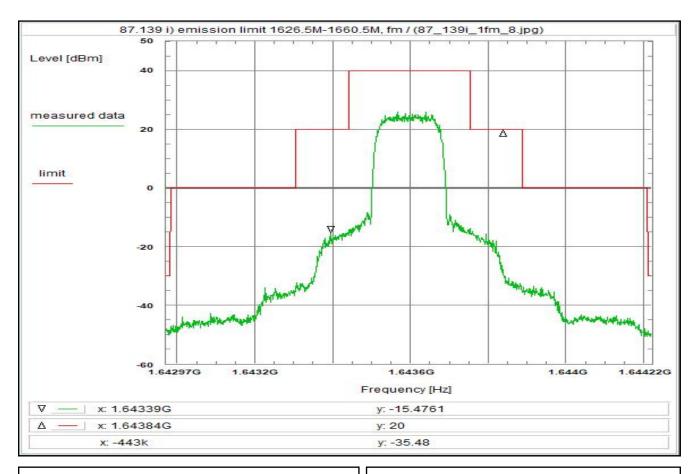
Test equipment:
see lest report chapter 7.1-7.2: C220, R001, U330

Environment condition: Date & Time: Fri 18/Aug/2023 15:14:50 Location: CTC advanced GmbH, Laboratory RC-SYS 22 °C Temperature: Humidity: Voltage: 230 Vac Setup of measurement equipment: 1.6432485 GHz Start frequency: 1.6438365 GHz Stop frequency: Center frequency: 1.6435425 GHz Frequency span: Resolution-BW: 588 kHz kHz Video-BW: 300 Input attenuation: 20 dB Max-Hold Trace-Mode: Detector-Mode: AVG Correction: Directional coupler 0.0 dB Coaxial cable (C220) 0.9 dB 1.4 dBi DUT-Antenna (on-axis) dBi 0.0 dB BW correction factor (3k -> 4k)
Atten. between HPA and feedhorn 1.2 dB 0.0 dB (U330) 31.9 dB TOTAL CORRECTION: 35.4 dB 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

Remark:



Plot No. 78



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

<u>Limit:</u>
<u>Limit according to 87.139(i)(1)</u>
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

see test report chapter 7.2:

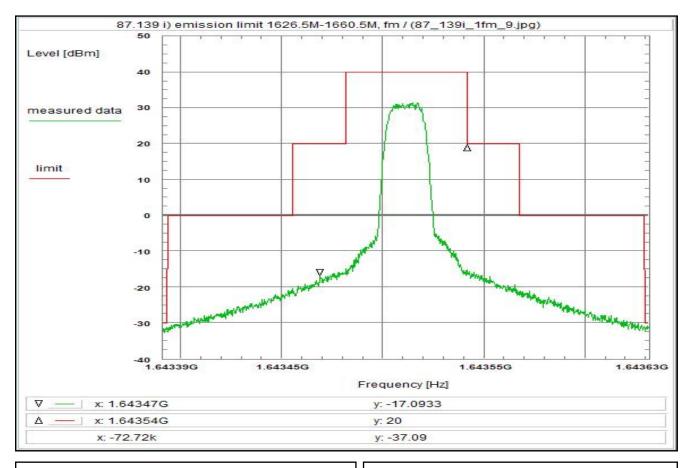
see test report chapter 7.1-7.2: C220, R001, U330

Remark:

Temperature: 22 Humidity: 55	GmbH, Laboratory RC-SYS °C			
Setup of measurement equipment: Start frequency: 1.642971 Stop frequency: 1.64219 Center frequency: 1.643595 Frequency span: 1.248 Resolution-BW: 3 Video-BW: 300 Input attenuation: 20 Trace-Mode: Max-Hold Detector-Mode: AVG	GHz GHz MHz kHz Hz			
Correction:	0.9 dB 1.4 dBi 0.0 dB 1.2 dB 0.0 dB 31.9 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) <u>Limit:</u>
<u>Limit according to 87.139(i)(1)</u>
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

see test report chapter 7.2:

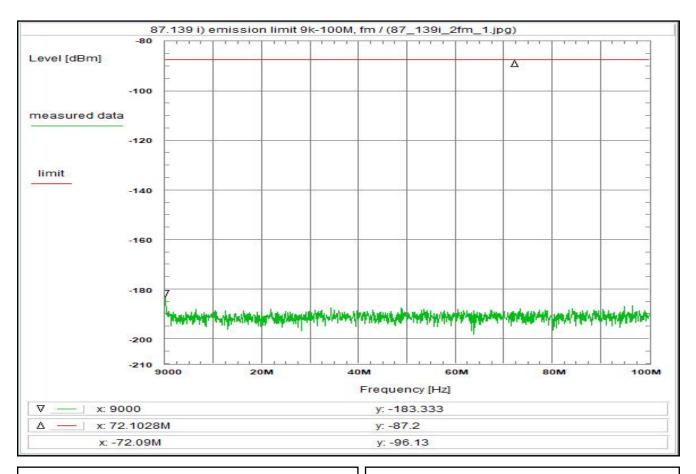
see test report chapter 7.1-7.2: C220, R001, U330

Remark:

Temperature: 22 Humidity: 55	GmbH, Laboratory RC-SYS °C			
Setup of measurement equipment: Start frequency: 1.64339125 Stop frequency: 1.64363125 Center frequency: 1.64351125 Frequency span: 240 Resolution-BW: 3 Video-BW: 300 Input attenuation: 20 Trace-Mode: Average Detector-Mode: AVG	GHz GHz kHz kHz Hz			
Correction:	0.9 dB 1.4 dBi 0.0 dB 1.2 dB 0.0 dB 31.9 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)

<u>Limit:</u>
<u>Limit according to 87.139(i)(1)</u>
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

see test report chapter 7.2:

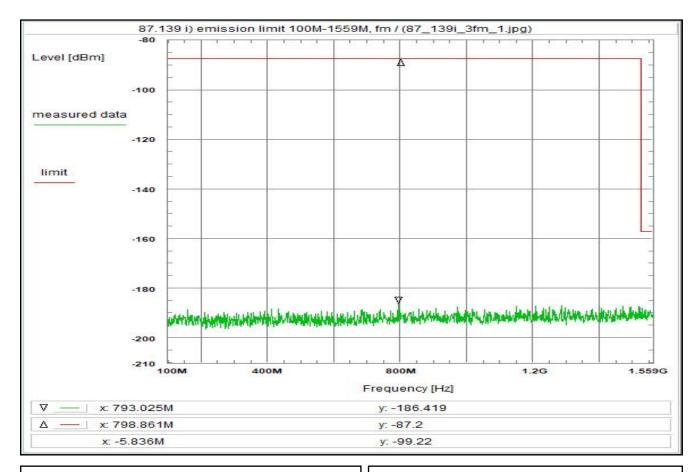
see test report chapter 7.1-7.2: C220, R001, U330

Remark:

Environment condition: Wed 23/Aug/202 Date & Time: CTC advanced C Location: 22 Temperature: 55 Voltage: 230	SmbH, Laboratory RC-SYS °C %		
Setup of measurement equipment: 9 Start frequency: 100 Stop frequency: 50.0045 Frequency span: 99.991 Resolution-BW: 3 Video-BW: 10 Input attenuation: 20 Trace-Mode: Max-Hold Detector-Mode: AVG	MHz MHz kHz kHz		
Correction: (W_RE) Coaxial cable (C220) + DUT-Antenna (on-axis) + Test antenna + BW correction factor (3k -> 4k) + Atten. between HPA and feedhom (U330) + TOTAL CORRECTION: - Remarks: Carrier-on state / Carrier in the middle of the For EIRP calculation: 'worst-case' = maximum antenna gain	1.4 dBi 0.0 dB 1.2 dB 0.0 dB 31.3 dB -85.9 dB		
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)

<u>Limit:</u>
<u>Limit according to 87.139(i)(1)</u>
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

see test report chapter 7.2:

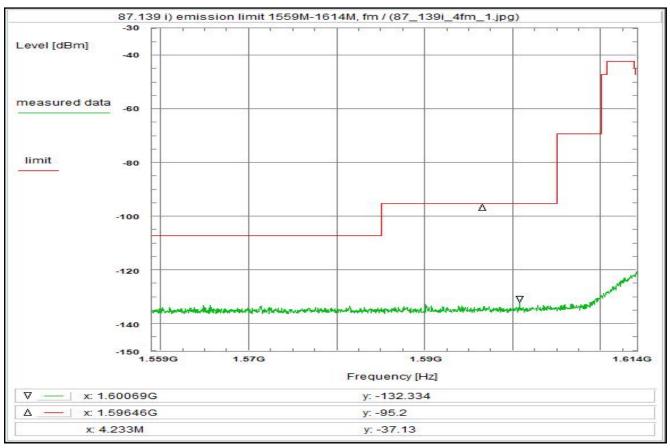
see test report chapter 7.1-7.2: R001, U330

Remark:

Temperature: 22 Humidity: 55	0 09:34:02 mbH, Laboratory RC-SYS °C Vac				
Stop frequency: 1.559 Center frequency: 829.5 Frequency span: 1.459 Resolution-BW: 3 Video-BW: 10	MHz GHz MHz GHz kHz kHz kHz				
Coaxial cable	115.7 dB 0.6 dB 1.4 dBi 0.0 dB 1.2 dB 0.0 dB 31.7 dB -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:

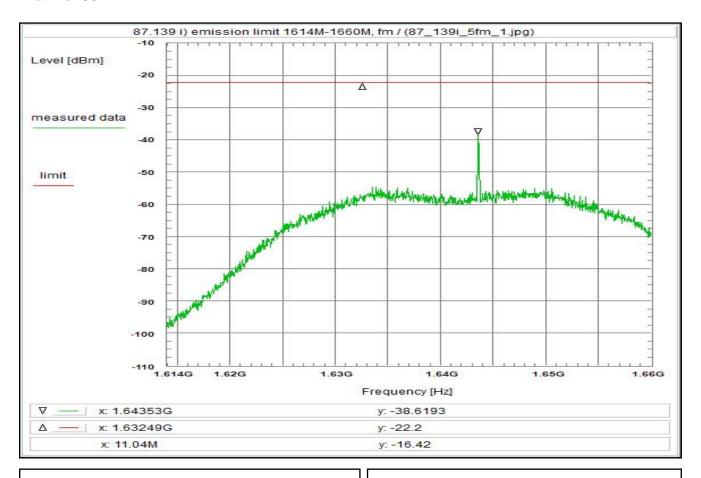
Test result: Test passed

Temperature: 22 Humidity: 55	23 11:28:33 GmbH, Laboratory RC-SYS °C % Vac		
Resolution-BW: 1 Video-BW: 3	GHz MHz MHz		
(U331) + TOTAL CORRECTION: - Remarks:	1.4 dBi 0.0 dB 0.0 dB 0.0 dB 32.6 dB -69.2 dB		
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			

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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)

<u>Limit:</u>
<u>Limit according to 87.139(i)(1)</u>
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

see test report chapter 7.2:

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

Remark:

ı	Environment condition:				
ı	Date & Time: W	Wed 23/Aug/2023 14:35:53			
ı	Location: C	TC adva			Laboratory RC-SYS
ı	Temperature:		22	°C	
ı	Humidity:		55	%	
ı	Voltage:		230	Vac	
ı					
ı	Setup of measurement equip	ment:			
ı	Start frequency:	1	1.614	GHz	
ı	Stop frequency:		1.66	GHz	
ı	Center frequency:	1	1.637	GHz	
ı	Frequency span:		46	MHz	
ı	Resolution-BW:		3	kHz	
ı	Video-BW:		10	kHz	
ı	Input attenuation:		20	dB	
ı	Trace-Mode:	Max-	-Hold		
ı	Detector-Mode:		AVG		
ı					
ı	Correction:				
ı	(W RE)		_	47.8	dB
ı	Coaxial cable (C220)		+	0.9	
ı	DUT-Antenna (on-axis)		+	1.4	
ı	Test antenna		+	0.0	
ı	BW correction factor (3k -> 4	k)	+	1.2	
ı	Atten. between HPA and feed		-	0.0	
ı	(U331)	u110111		74.2	
ı	TOTAL CORRECTION:		+	29.9	
ı	TOTAL CONNECTION.		•	25.5	ub
ı	Remarks:				
ı	Carrier-on state / Carrier in th	ne middle	e of the	band	(fm)
ı	For EIRP calculation:				· /
ı	'worst-case' = maximum ante	enna gai	'n		
ı					
ı					
ı	Since the measurement was	updated	d with the	he ma	ximum antenna gain, which is 5.23 dBic, the
ı	corrected value of the market	r is -34.8	dBm		- · · · · · · · · · · · · · · · · · · ·
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