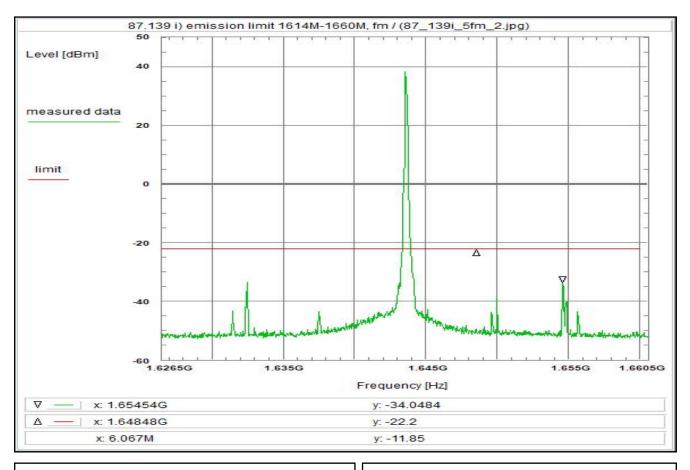


Plot No. 84



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:

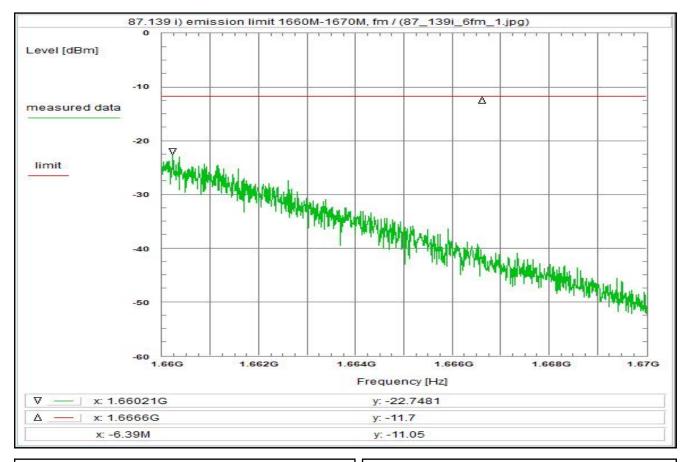
Test result: Test passed

Environment condition: Date & Time: Fri 25/Aug/2023 Location: CTC advanced CT	19:15:00 3mbH, Laboratory RC-SYS °C % Vac	
Resolution-BW: 3	GHz GHz GHz MHz kHz kHz dB	
Atten. between HPA and feedhom -	0.0 dB 1.2 dB 0.0 dB 31.9 dB 35.4 dB	
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 -30.2 dBm $$		

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Plot No. 85



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

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

see test report chapter 7.2:

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

Remark:

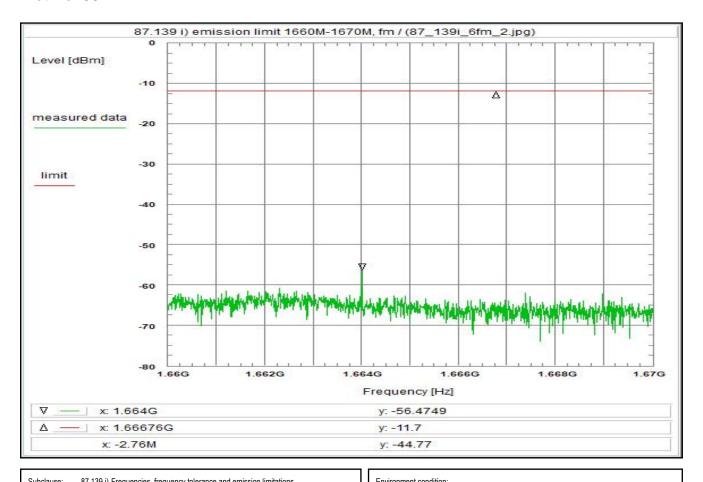
Test result: Test passed

Environment condition: Date & Time: Location: Temperature: Humidity: Voltage: Wed 23/Aug/202 CTC advanced G 22 Humidity: 55 Voltage: 230	SmbH, Laboratory RC-SYS °C %
Setup of measurement equipment: 1.66 Start frequency: 1.67 Stop frequency: 1.65 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: + Remarks:	1.4 dBi 0.0 dB 8.2 dB 0.0 dB 72.8 dB
Carrier-on state / Carrier in the middle of the For EIRP calculation: worst-case' = maximum antenna gain	band (fm)
Since the measurement was updated with t corrected value of the marker is -18.9 dBm	he maximum antenna gain, which is 5.23 dBic, the

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Plot No. 86



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:

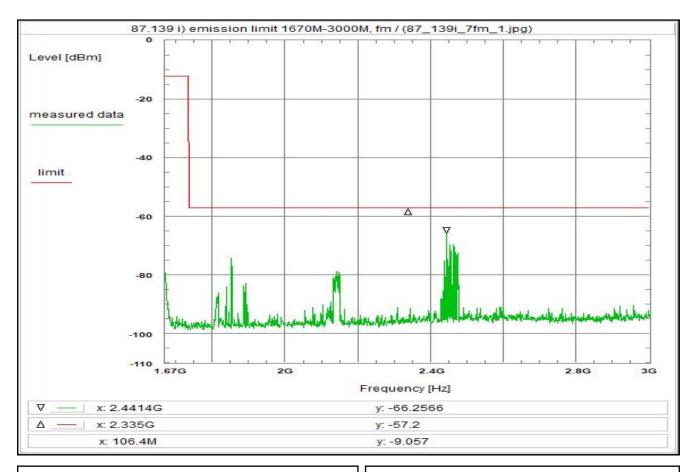
see test report chapter 7.1-7.2: C220, R001, U330

Remark:

Environment condition:			
Date & Time:	Wed 23/Aug/20	23 18:3	80:13
Location:	CTC advanced	GmbH,	Laboratory RC-SYS
Temperature:	22	°C	•
Humidity:	55	%	
Voltage:	230	Vac	
Setup of measurement equ	inment		
Start frequency:	1.66	GHz	
Stop frequency:	1.67		
Center frequency:	1.665		
Frequency span:	10		
Resolution-BW:	3		
Video-BW:	300		
Input attenuation:	20		
Trace-Mode:	Max-Hold		
Detector-Mode:	AVG		
Correction:	,		
(W RE)		4.5	dB
Coaxial cable (C220)	+		
DUT-Antenna (on-axis)	+		
Test antenna		0.0	
BW correction factor (3k ->			
Atten. between HPA and fe		0.0	
(U330)	+		
TOTAL CORRECTION:	+		
TOTAL CORRECTION.	•	31.3	UB
Remarks: Carrier-on state / Carrier in For EIRP calculation: 'worst-case' = maximum a		e band	(fm)
Since the measurement was updated with the maximum antenna gain, which is 5.23 dBic, the corrected value of the marker is -52.6 dBm			



Plot No. 87



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

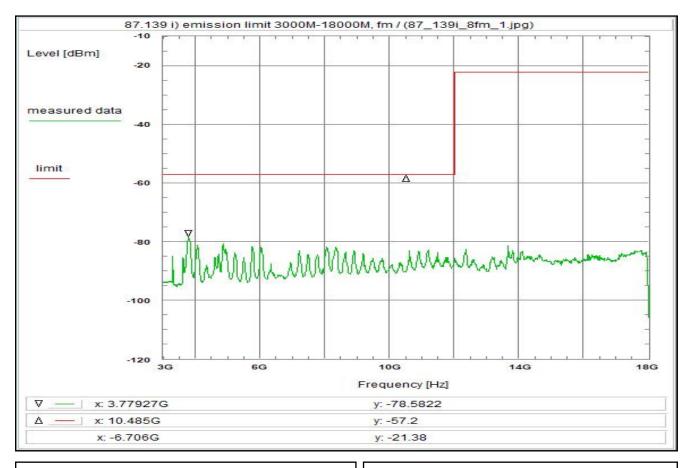
see test report chapter 7.1-7.2: C220, R001, U331

Remark:

Temperature: 2 Humidity: 5	ed G 22 55	BmbH,	s:14 Laboratory RC-SYS
Stop frequency: Center frequency: Frequency span: Resolution-BW: Video-BW: 13	33 3 10 0 old	GHz GHz GHz kHz kHz	
Coaxial cable (C220) DUT-Antenna (on-axis) Test antenna BW correction factor (3k -> 4k) Atten. between HPA and feedhom (U331)	+ + + + + + + + +	1.1 1.4 0.0 1.2 0.0	dB dBi dB dB dB dB
Remarks: Carrier-on state / Carrier in the middle of For EIRP calculation: 'worst-case' = maximum antenna gain	f the	band	(fm)
Since the measurement was updated wi corrected value of the marker is -62.4 dB		he ma	ximum antenna gain, which is 5.23 dBic, the



Plot No. 88



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:

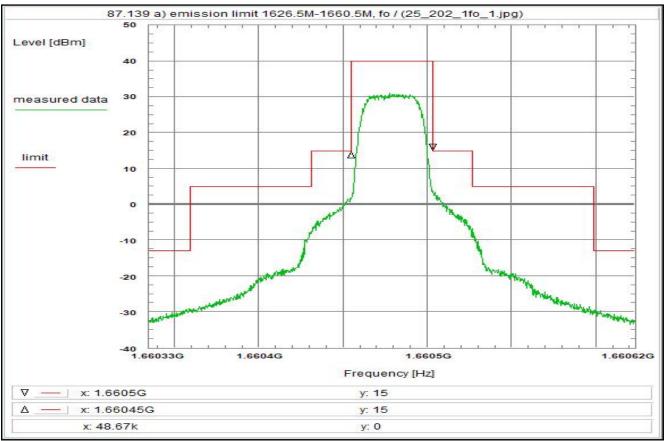
see test report chapter 7.1-7.2: C220, R001, U332

Remark:

dvanced (22 55	GmbH, °C %	t:19 Laboratory RC-SYS
18 10.5 15 10 30	GHz GHz GHz kHz kHz	
+ + + +	2.3 1.4 0.0 4.0 0.0 34.0 33.7	dB dBi dB dB dB dB
ited with t 4.8 dBm	the max	ximum antenna gain, which is 5.23 dBic, the
	22 55 230 18 10.5 15 10 30 0 0 ax-Hold AVG	22 °C 55 % 230 Vac 3 GHz 18 GHz 10.5 GHz 10 kHz 0 dB ax-Hold AVG + 0.0 + 2.3 + 1.4 + 0.0 - 4.0 - 0.0 + 34.0 + 33.7 Idle of the band gain



Plot No. 89



Subclause:

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

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

Test setup:
see test report chapter 7.2:

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

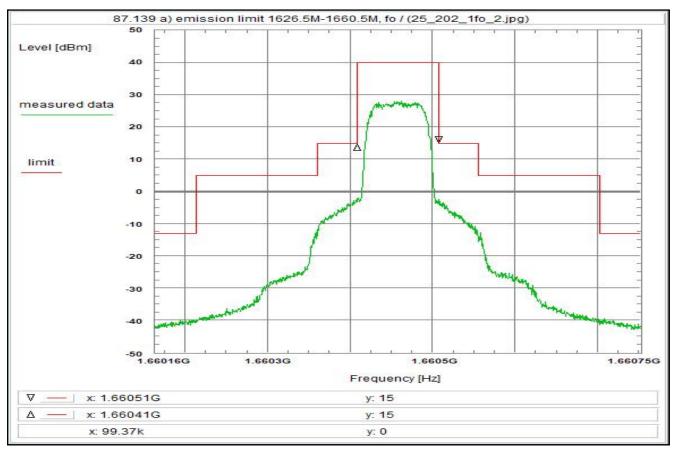
Remark:

Test result: Test passed

Environment condition: Date & Time: Mon 21/Aug/2023 10:02:12 Location: CTC advanced GmbH, Laboratory RC-SYS 22 °C Temperature: Humidity: Voltage: 230 Vac Setup of measurement equipment: 1.66033475 GHz Start frequency: 1.66062275 GHz Stop frequency: Center frequency: 1.66047875 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 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 upper edge of the band (fo) Reference of limit = 40 dBm Spectrum mask referenced to necessary bandwidth



Plot No. 90



Subclause:

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

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
fh, R5T2XD

Test setup:
see test report chapter 7.2:

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

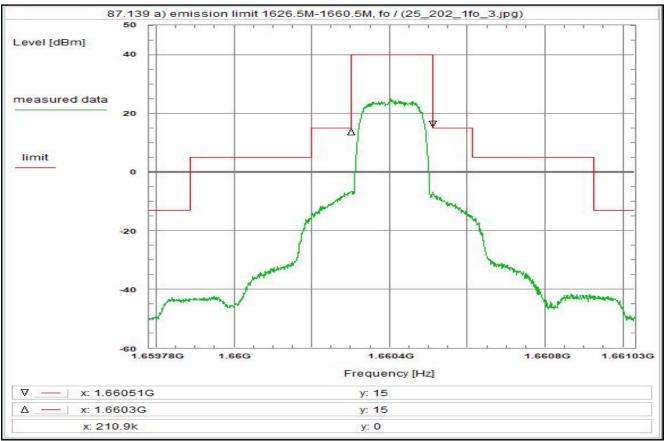
Remark:

Test result: Test passed

Environment condition: Date & Time: Mon 21/Aug/2023 10:05:16 Location: CTC advanced GmbH, Laboratory RC-SYS 22 °C Temperature: Humidity: Voltage: 230 Vac Setup of measurement equipment: 1.6601635 GHz Start frequency: 1.6607515 GHz Stop frequency: Center frequency: 1.6604575 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 0.0 dB Atten. between HPA and feedhorn (U330) 31.9 dB TOTAL CORRECTION: 35.4 dB Remarks: Carrier-on state / Carrier at the upper edge of the band (fo) Reference of limit = 40 dBm Spectrum mask referenced to necessary bandwidth



Plot No. 91



Subclause:

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

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
fft, R5T4.5XD

Test setup:
see test report chapter 7.2:

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

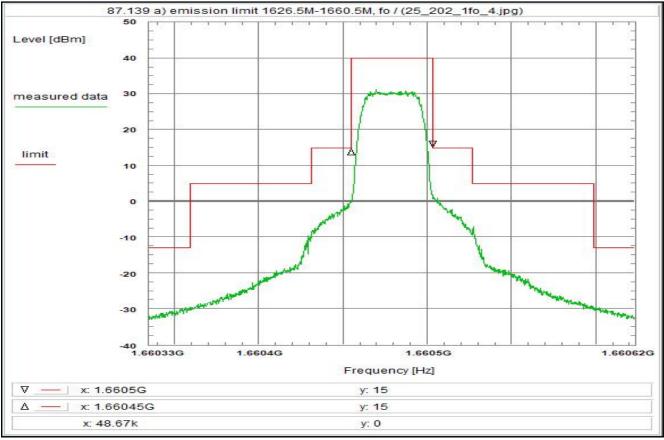
Remark:

Test result: Test passed

Environment condition: Date & Time: Mon 21/Aug/2023 10:08:11 Location: CTC advanced GmbH, Laboratory RC-SYS 22 °C Temperature: Humidity: Voltage: 230 Vac Setup of measurement equipment: 1 659781 GHz Start frequency: 1.661029 GHz Stop frequency: Center frequency: 1.660405 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 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 upper edge of the band (fo) Reference of limit = 40 dBm Spectrum mask referenced to necessary bandwidth



Plot No. 92



Subclause:

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

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
fh, R20T1XD

Test setup:
see test report chapter 7.2:

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

Remark:

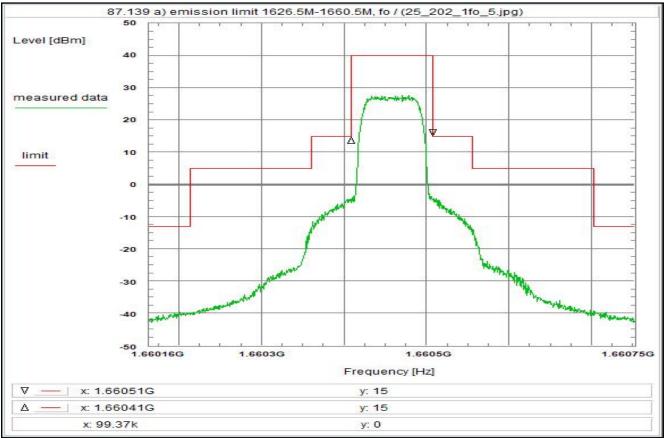
Test result: Test passed

Temperature: 22 Humidity: 55	GmbH, Laboratory RC-SYS °C
Setup of measurement equipment: Start frequency: 1.66033475 Stop frequency: 1.66062275 Center frequency: 1.66047875 Frequency span: 288 Resolution-BW: 3 Video-BW: 10 Input attenuation: 20 Trace-Mode: Max-Hold Detector-Mode: AVG	GHz GHz kHz kHz kHz
Correction:	0.9 dB 1.4 dBi 0.0 dB 1.2 dB 0.0 dB 31.9 dB 35.4 dB
Reference of limit = 40 dBm Spectrum mask referenced to necessary b	. ,

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Plot No. 93



Subclause:

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

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 fh, R20T2XD

Test setup:
see test report chapter 7.2:

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

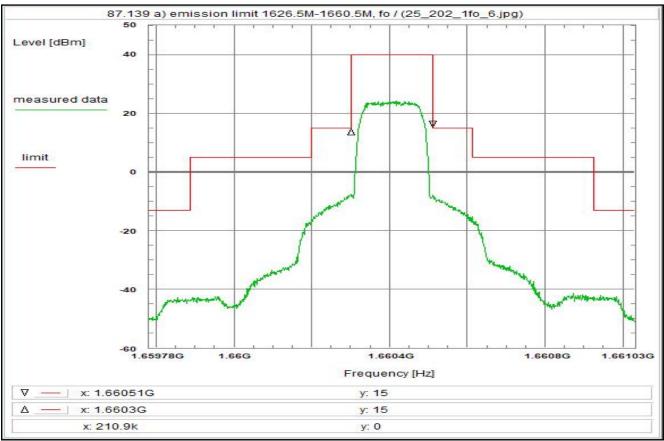
Remark:

Test result: Test passed

Environment condition: Date & Time: Mon 21/Aug/2023 10:38:30 Location: CTC advanced GmbH, Laboratory RC-SYS 22 °C Temperature: Humidity: Voltage: 230 Vac Setup of measurement equipment: 1.6601635 GHz Start frequency: 1.6607515 GHz Stop frequency: Center frequency: 1.6604575 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 upper edge of the band (fo) Reference of limit = 40 dBm Spectrum mask referenced to necessary bandwidth



Plot No. 94

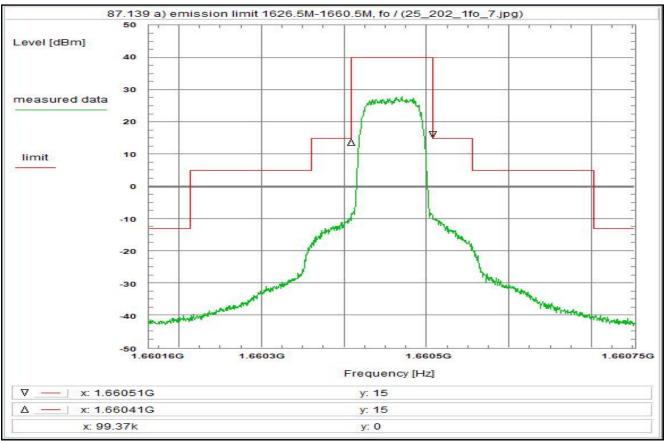


87.139 a)Frequencies, frequency tolerance and emission limitations Subclause: Emission limitations Modulated rf-carrier in the middle of the band (fo) Limit: Limit according to 87.139 a): 50-100% of assigned bw: -25dBc/4kHz 100-250% of assigned bw: -35dBc/4kHz > 250% of assigned bw: -43+10log(Pmax)dBc/4kHz = -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 fh, R20T4.5XD 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: Mon 21/Aug/2023 10:41:05 Location: CTC advanced GmbH, Laboratory RC-SYS 22 °C Temperature: Humidity: Voltage: 230 Vac Setup of measurement equipment: 1 659781 GHz Start frequency: 1.661029 GHz Stop frequency: Center frequency: 1.660405 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) 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 upper edge of the band (fo) Reference of limit = 40 dBm Spectrum mask referenced to necessary bandwidth



Plot No. 95



Subclause:

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

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 fh, R5T2QD

Test setup:
see test report chapter 7.2:

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

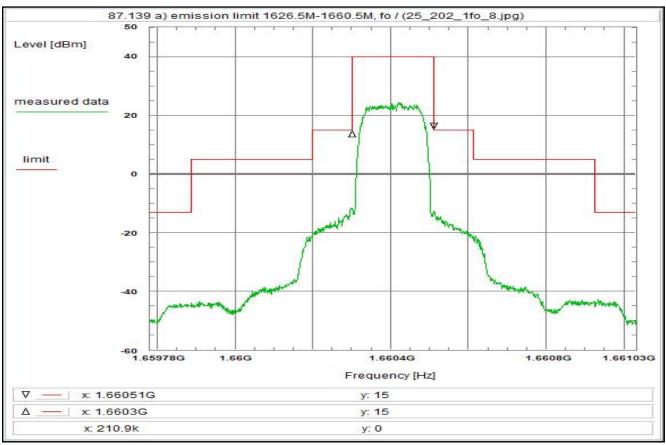
Remark:

Test result: Test passed

Environment condition: Date & Time: Mon 21/Aug/2023 10:50:57 Location: CTC advanced GmbH, Laboratory RC-SYS 22 °C Temperature: Humidity: Voltage: 230 Vac Setup of measurement equipment: 1.6601635 GHz Start frequency: 1.6607515 GHz Stop frequency: Center frequency: 1.6604575 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 feedhorn 0.0 dB (U330) 31.9 dB TOTAL CORRECTION: 35.4 dB Carrier-on state / Carrier at the upper edge of the band (fo) Reference of limit = 40 dBm Spectrum mask referenced to necessary bandwidth



Plot No. 96



Subclause:

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

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
fth, R5T4.5QD

Test setup:
see test report chapter 7.2:

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

Remark:

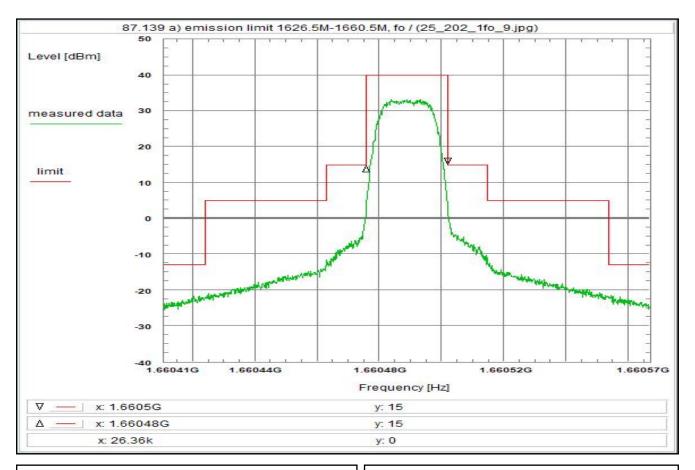
Test result: Test passed

Environment condition: Mon 21/Aug/202 Date & Time: CTC advanced 0 Location: 22 Humidity: 55 Voltage: 230	GmbH, Laboratory RC-SYS °C %	
Setup of measurement equipment: Start frequency: 1.659781 Stop frequency: 1.661029 Center frequency: 1.600405 Frequency span: 1.248 Resolution-BW: 3 Video-BW: 10 Input attenuation: 20 Trace-Mode: Max-Hold Detector-Mode: AVG	GHz MHz kHz kHz	
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 at the upper edge of the band (fo) Reference of limit = 40 dBm		
Spectrum mask referenced to necessary ba	ndwidth	

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Plot No. 97



Subclause:

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

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: -3410log(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
fth, R20T0.5QD

Test setup:
see test report chapter 7.2:

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

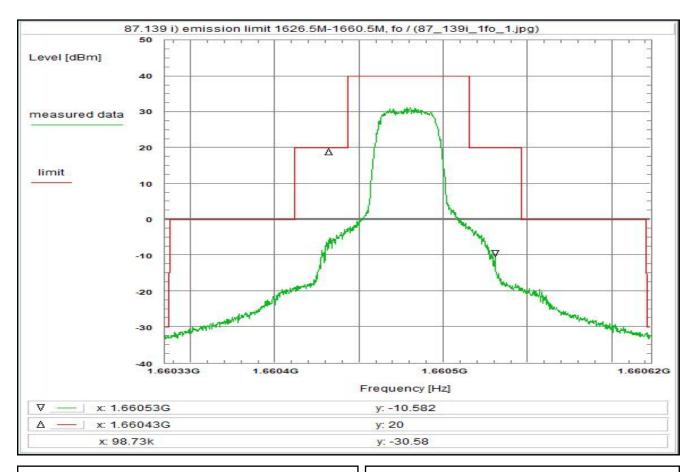
Remark:

Test result: Test passed

Environment condition: Date & Time: Mon 21/Aug/2023 11:02:29 Location: CTC advanced GmbH, Laboratory RC-SYS 22 °C Temperature: Humidity: Voltage: 230 Vac Setup of measurement equipment: 1.66041075 GHz Start frequency: 1.66056675 Stop frequency: GHz Center frequency: 1.66048875 GHz Frequency span: Resolution-BW: 156 kHz kHz 3 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 0.0 dB Atten. between HPA and feedhom (U330) 31.9 dB TOTAL CORRECTION: 35.4 dB Remarks: Carrier-on state / Carrier at the upper edge of the band (fo) Reference of limit = 40 dBm Spectrum mask referenced to necessary bandwidth



Plot No. 98



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

<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 fh, R5T1XD

see test report chapter 7.2:

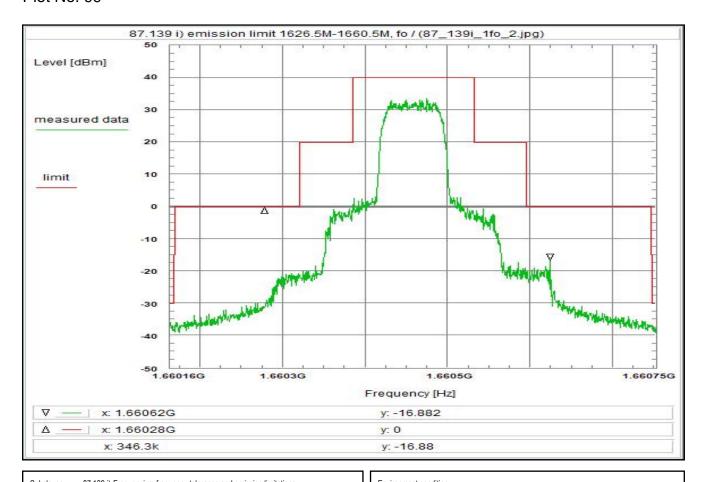
see test report chapter 7.1-7.2: C220, R001, U330

Remark:

Temperature: 22 Humidity: 55	GmbH, Laboratory RC-SYS °C
	GHz GHz kHz 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 at the upper edge For EIRP calculation: worst-case' = maximum antenna gain	of the band (fo)
Reference of limit = 40 dBm Spectrum mask referenced to necessary ba	undwidth



Plot No. 99



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

Limit:
Limit according to 87.139(i)(1)

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 fh, R5T2XD

see test report chapter 7.2:

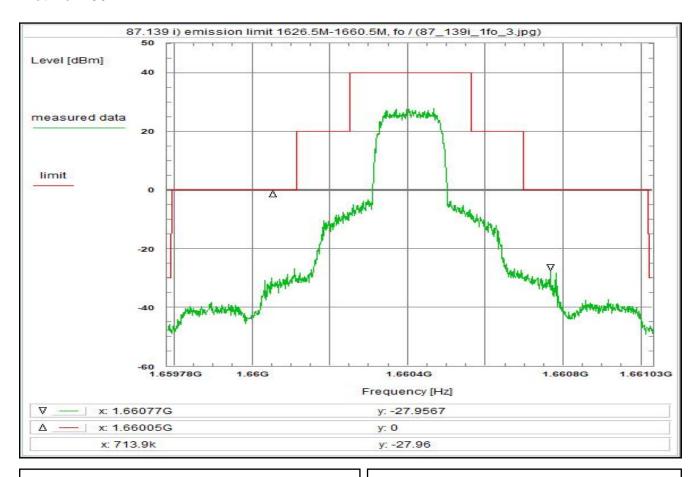
see test report chapter 7.1-7.2: C220, R001, U330
Remark:

Test result: Test passed

Environment condition: Date & Time: Mon 21/Aug/2023 10:06:15 Location: CTC advanced GmbH, Laboratory RC-SYS 22 °C Temperature: Humidity: Voltage: 230 Vac Setup of measurement equipment: 1.6601635 GHz Start frequency: 1.6607515 GHz Stop frequency: Center frequency: 1.6604575 GHz Frequency span: Resolution-BW: 588 kHz kHz 3 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 at the upper edge of the band (fo) For EIRP calculation: worst-case' = maximum antenna gain Reference of limit = 40 dBm Spectrum mask referenced to necessary bandwidth



Plot No. 100



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

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 fh, R5T4.5XD

see test report chapter 7.2:

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

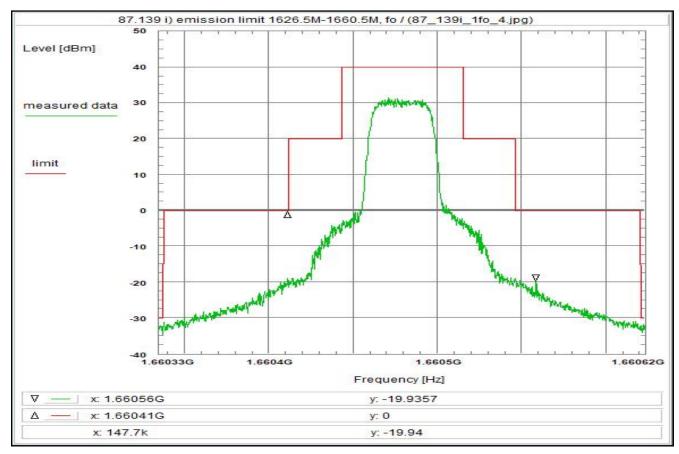
Remark:

Test result: Test passed

Environment condition: Date & Time: Mon 21/Aug/2023 10:09:51 Location: CTC advanced GmbH, Laboratory RC-SYS 22 °C Temperature: Humidity: Voltage: 230 Vac Setup of measurement equipment: 1.659781 GHz Start frequency: 1.661029 GHz Stop frequency: Center frequency: 1.660405 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 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 at the upper edge of the band (fo) For EIRP calculation: 'worst-case' = maximum antenna gain Reference of limit = 40 dBm Spectrum mask referenced to necessary bandwidth



Plot No. 101



Subclause:

87.139 i) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier at the upper edge of the band (fo)

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
fth, R20T1XD

Test setup:
see test report chapter 7.2:

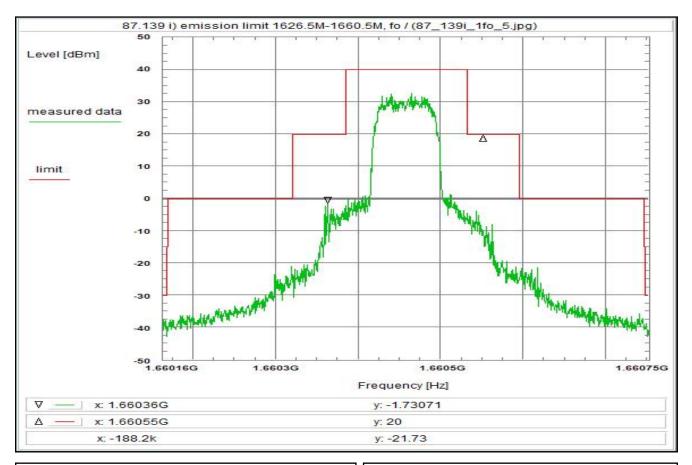
Test equipment:
see lest report chapter 7.1-7.2: C220, R001, U330

Environment condition:
Date & Time: Mon 21/Aug/2023 10:36:36 Location: CTC advanced GmbH, Laboratory RC-SYS 22 °C Temperature: Humidity: Voltage: 230 Vac Setup of measurement equipment: 1.66033475 GHz Start frequency: 1.66062275 GHz Stop frequency: Center frequency: 1.66047875 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 ub + 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 at the upper edge of the band (fo) For EIRP calculation: worst-case' = maximum antenna gain Reference of limit = 40 dBm Spectrum mask referenced to necessary bandwidth

Remark:



Plot No. 102



Subclause:

87.139 i) Frequencies, frequency tolerance and emission limitations Emission limitations Modulated rf-carrier at the upper edge of the band (fo)

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
fth, R20T2XD

Test setup:
see test report chapter 7.2:

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

Remark:

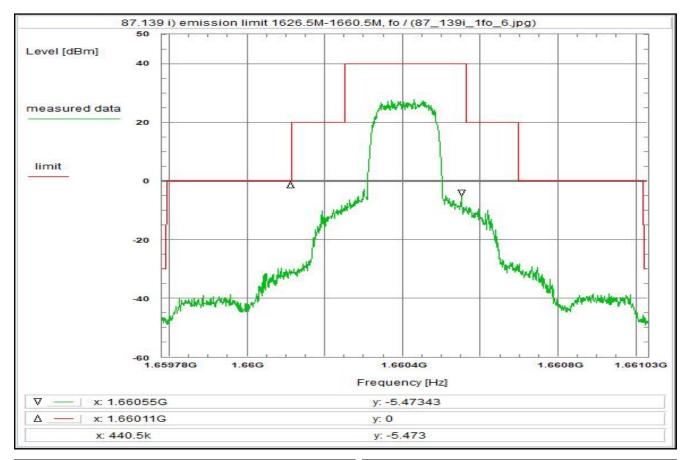
Test result: Test passed

Environment condition:
Date & Time: Mon 21/Aug/2023 10:39:18 Location: CTC advanced GmbH, Laboratory RC-SYS 22 °C Temperature: Humidity: Voltage: 230 Vac Setup of measurement equipment: 1.6601635 GHz Start frequency: 1.6607515 GHz Stop frequency: Center frequency: 1.6604575 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 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 Atten. between HPA and feedhorn 0.0 dB + 31.9 dB + 35.4 dB (U330) TOTAL CORRECTION: Carrier-on state / Carrier at the upper edge of the band (fo) 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. 103



Subclause:

87.139 i) Frequencies, frequency tolerance and emission limitations Emission limitations Modulated rf-carrier at the upper edge of the band (fo)

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
fth, R20T4.5XD

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

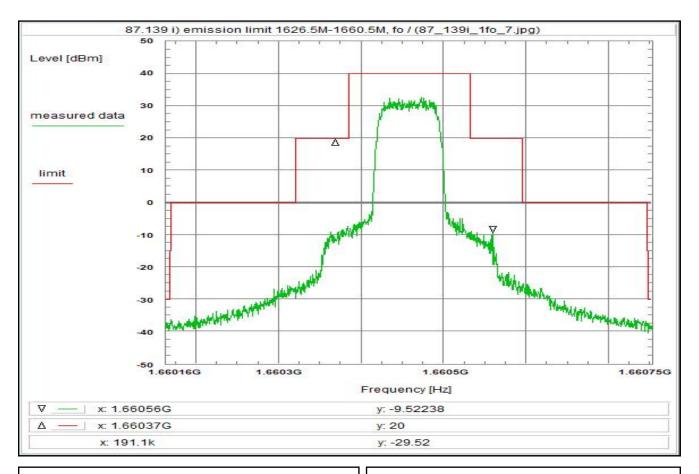
Remark:

Test result: Test passed

Environment condition: Date & Time: Mon 21/Aug/2023 10:41:55 Location: CTC advanced GmbH, Laboratory RC-SYS 22 °C Temperature: Humidity: Voltage: 230 Vac Setup of measurement equipment: 1.659781 GHz Start frequency: 1.661029 GHz Stop frequency: Center frequency: 1.660405 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 feedhorn 1.2 dB 0.0 dB (U330) 31.9 dB TOTAL CORRECTION: 35.4 dB Carrier-on state / Carrier at the upper edge of the band (fo) For EIRP calculation: 'worst-case' = maximum antenna gain Reference of limit = 40 dBm Spectrum mask referenced to necessary bandwidth



Plot No. 104



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

<u>Limit:</u>
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 fh, RST2QD

see test report chapter 7.2:

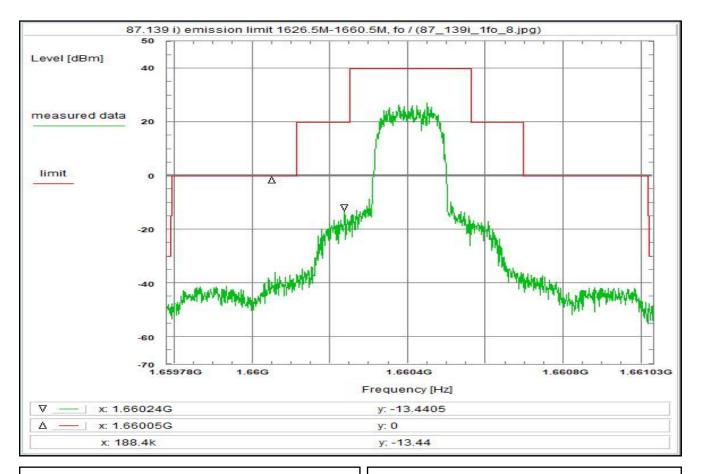
see test report chapter 7.1-7.2: R001

Remark:

Environment condition:			
Date & Time:			
Location:	CTC advanced (GmbH,	, Laboratory RC-SYS
Temperature:	22	°C	•
Humidity:	55	%	
Voltage:	230	Vac	
•			
Setup of measurement ed			
Start frequency:	1.6601635		
Stop frequency:	1.6607515		
Center frequency:	1.6604575		
Frequency span:	588		
Resolution-BW:	3	kHz	
Video-BW:	300	Hz	
Input attenuation:	20	dB	
Trace-Mode:	Max-Hold		
Detector-Mode:	AVG		
Correction:			
Directional coupler	+		
Coaxial cable (C220)	+		
DUT-Antenna (on-axis)	+		
Test antenna	+	0.0	
BW correction factor (3k -			
Atten. between HPA and	feedhorn -		
(U330)	+	31.9	dB
TOTAL CORRECTION:	+	35.4	dB
Remarks:			
Carrier-on state / Carrier	at the upper edge	of the	band (fo)
For EIRP calculation:			
'worst-case' = maximum	antenna gain		
Reference of limit = 40 dBm			
Reference of limit = 40 dBm Spectrum mask referenced to necessary bandwidth			
Opocii um mask reference	A to necessary be	ai iu wiu	iui
I			



Plot No. 105



87.139 i) Frequencies, frequency tolerance and emission limitations Subclause: Modulated rf-carrier at the upper edge of the band (fo) <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 fh, R5T4.5QD

see test report chapter 7.2:

see test report chapter 7.1-7.2: R001

Remark:

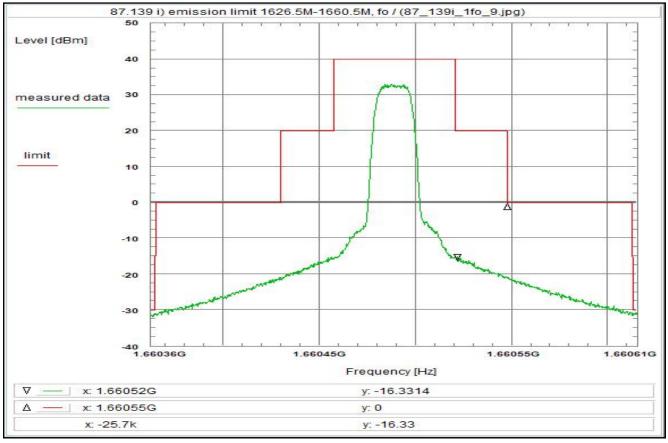
Test result: Test passed

Environment condition: Date & Time: Mon 21/Aug/202 Location: CTC advanced C Temperature: 22 Humidity: 55 Voltage: 230	GmbH, Laboratory RC-SYS °C %
Setup of measurement equipment: Start frequency: 1.659781 Stop frequency: 1.661029 Center frequency: 1.660405 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 at the upper edge of For EIRP calculation: worst-case' = maximum antenna gain Reference of limit = 40 dBm	of the band (fo)
Spectrum mask referenced to necessary ba	ndwidth

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Plot No. 106



Subclause:

87.139 i) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier at the upper edge of the band (fo)

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
th, R20T0.5QD

Test setup:
see test report chapter 7.2:

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

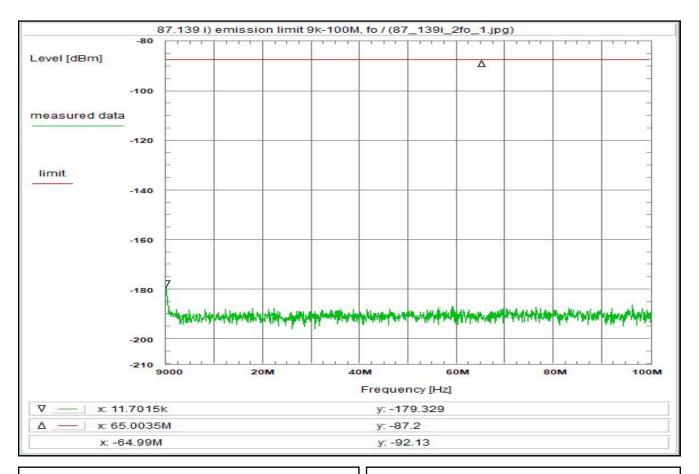
Remark:

Test result: Test passed

Environment condition:
Date & Time: Mon 21/Aug/2023 10:57:23 Location: CTC advanced GmbH, Laboratory RC-SYS 22 °C Temperature: Humidity: Voltage: 230 Vac Setup of measurement equipment: 1.66036275 GHz Start frequency: 1.66061475 GHz Stop frequency: Center frequency: 1.66048875 GHz Frequency span: Resolution-BW: 252 kHz 3 kHz Video-BW: 300 Hz 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 upper edge of the band (fo) For EIRP calculation: 'worst-case' = maximum antenna gain Reference of limit = 40 dBm Spectrum mask referenced to necessary bandwidth



Plot No. 107



Subclause: 87.139 i) Frequencies, frequency tolerance and emission limitations Emission limitations Modulated rf-carrier at the upper edge of the band (fo) <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 fh, max hold, valid for all modulations

see test report chapter 7.2:

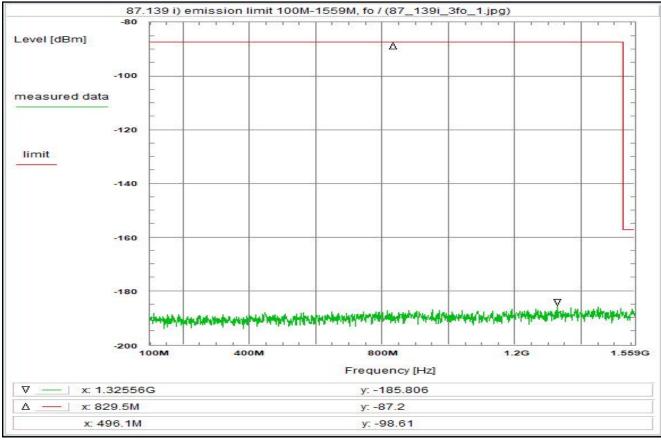
see test report chapter 7.1-7.2: C220, R001, U330

Remark:

Environment condition: Date & Time: Location: Temperature: Humidity: Voltage: Wed 23/Aug/202 CTC advanced 0 STE	GmbH, Laboratory RC-SYS °C %	
Setup of measurement equipment: 9 Start frequency: 9 Stop frequency: 50.0045 Center 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)	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 -175.5 dBm		



Plot No. 108



Subclause:

87.139 i) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier at the upper edge of the band (fo)

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
fh, 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:

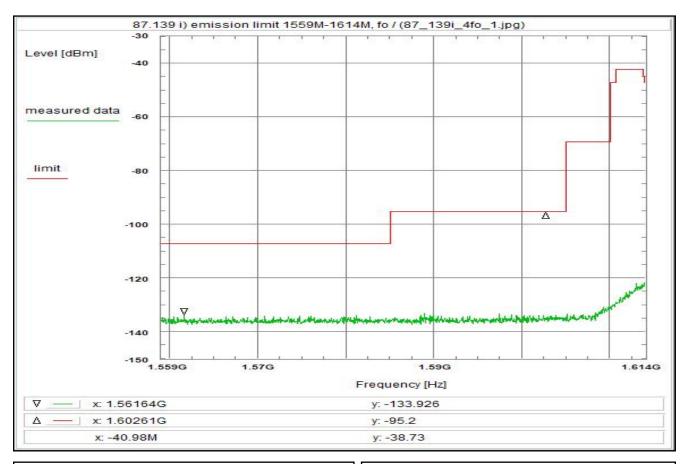
Test result: Test passed

Environment condition: Date & Time: Wed 23/Aug/202: Location: CTC advanced G Temperature: 22 Humidity: 55 Voltage: 230	mbH, Laboratory RC-SYS °C %
Setup of measurement equipment: Start frequency: 100 Stop frequency: 1.559 Center frequency: 829.5 Frequency span: 1.459 Resolution-BW: 3 Video-BW: 10 Input attenuation: 20 Trace-Mode: Max-Hold Detector-Mode: AVG	MHz GHz MHz GHz kHz kHz dB
	0.0 dB
Remarks: Carrier-on state / Carrier at the upper edge of For EIRP calculation: 'worst-case' = maximum antenna gain	of the band (fo)
Since the measurement was updated with the corrected value of the marker is -182 dBm	ne maximum antenna gain, which is 5.23 dBic, the

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Plot No. 109



Environment condition: Date & Time:

Subclause:

87.139 i) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier at the upper edge of the band (fo)

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

Test setup:
see test 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 upper edge of the band (fo) 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 -130 dBm

Wed 23/Aug/2023 11:35:25

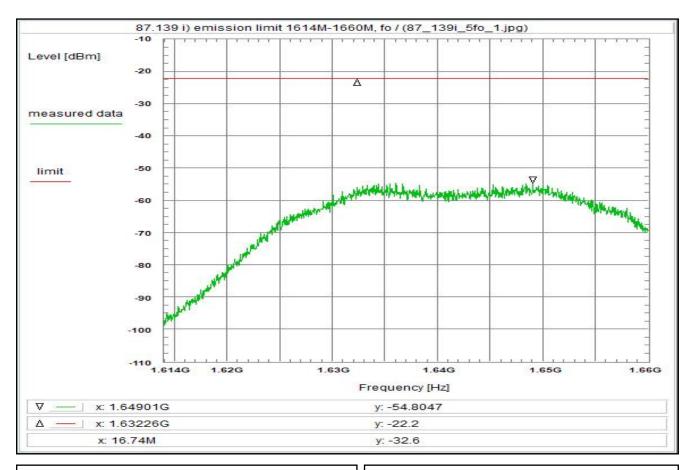
see test report chapter 7.1-7.2: C220, R001, U331

Test result: Test passed

Remark:



Plot No. 110



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

Modulated rf-carrier at the upper edge of the band (fo)

<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 fh, max hold, valid for all modulations

see test report chapter 7.2:

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

Remark:

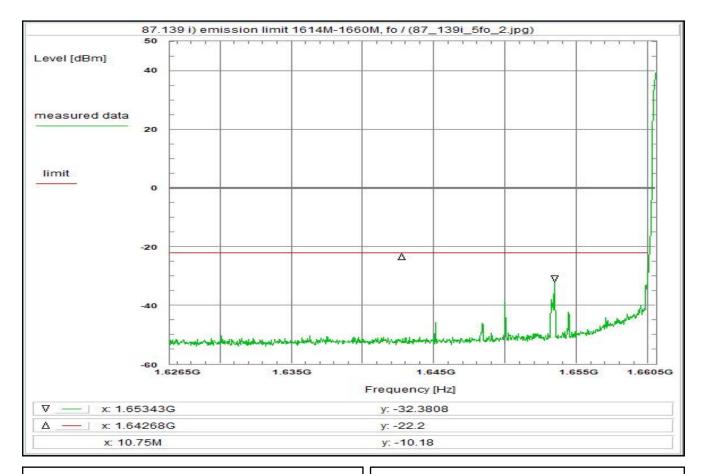
Test result: Test passed

	anced (22 55			
Stop frequency: Center frequency: Frequency span: Resolution-BW: Video-BW: Input attenuation:	1.614 1.66 1.637 46 3 10 20 c-Hold AVG	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: Carrier-on state / Carrier at the uppe For EIRP calculation: "worst-case" = maximum antenna qa	+ + r edge	1.4 dBi 0.0 dB 1.2 dB 0.0 dB 74.2 dB 29.9 dB		
Since the measurement was updated with the maximum antenna gain, which is 5.23 dBic, the corrected value of the marker is -51 dBm				

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Plot No. 111



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

<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 fh, max hold, valid for all modulations

see test report chapter 7.2:

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

Remark:

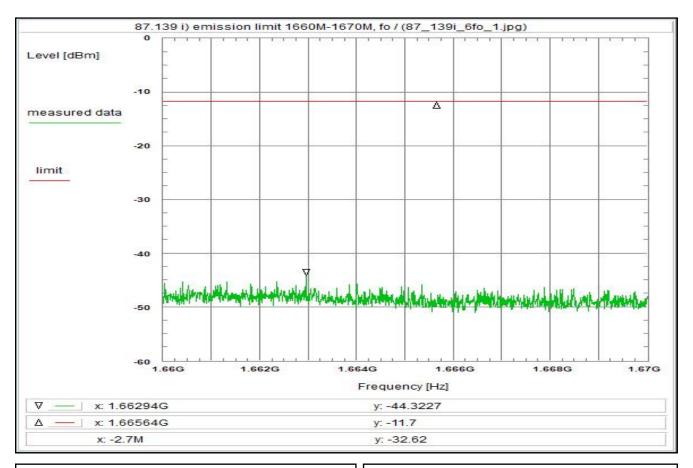
Test result: Test passed

Temperature: Humidity:	ced 0 22 55	∃mbH,	I, Laboratory RC-SYS	
Stop frequency: 1.66		GHz MHz kHz kHz	2 2 2 2	
Correction: Directional coupler Coaxial cable (C220) DUT-Antenna (on-axis) Test antenna BW correction factor (3k -> 4k) Atten. between HPA and feedhom Freefield attenuation (U330) TOTAL CORRECTION: Remarks: Carrier-on state / Carrier at the upper e	+ + + + - +	0.9 1.4 0.0 1.2 0.0 31.9 35.4	dB dBi dB dB dB dB	
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 -28.6 dBm				

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Plot No. 112



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

Modulated rf-carrier at the upper edge of the band (fo)

<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:

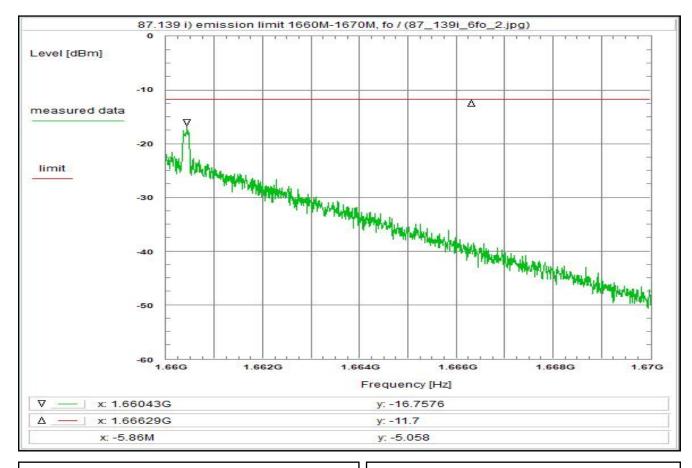
see test report chapter 7.1-7.2: C220, R001, U330

Remark:

Temperature: 22 Humidity: 55	GmbH, Laboratory RC-SYS °C
Setup of measurement equipment: 1.66 Start frequency: 1.67 Stop frequency: 1.665 Center frequency: 10 Frequency span: 10 Resolution-BW: 10 Video-BW: 30 Input attenuation: 20 Trace-Mode: Max-Hold Detector-Mode: AVG	GHz GHz MHz kHz kHz dB
(U330) + TOTAL CORRECTION: +	0.9 dB 1.4 dBi 0.0 dB 3.0 dB 0.0 dB 31.9 dB
Remarks: Carrier-on state / Carrier at the upper edge For EIRP calculation: 'worst-case' = maximum antenna gain	e of the band (fo)
Since the measurement was updated with corrected value of the marker is -40.5 dBm	the maximum antenna gain, which is 5.23 dBic, the



Plot No. 113



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

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 fh, max hold, valid for all modulations

see test report chapter 7.2:

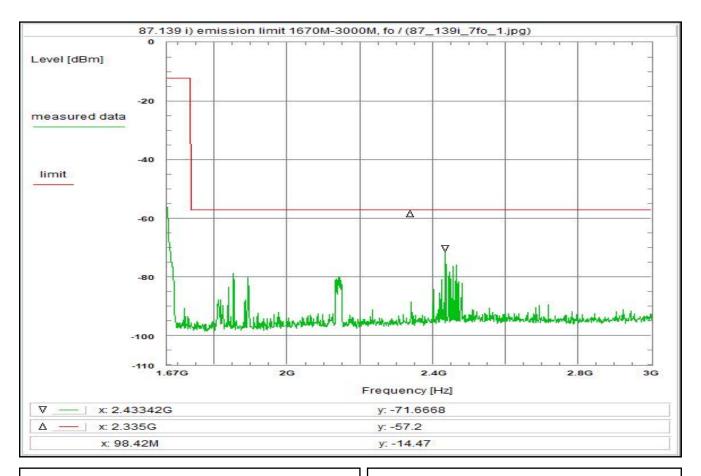
see test report chapter 7.1-7.2: C220, R001, U331

Remark:

	anced (22 55	23 19:00:48 GmbH, Laboratory RC-SYS °C % Vac		
Frequency span: Resolution-BW: Video-BW: Input attenuation:	1.66 1.67 1.665 10 3 300 20 c-Hold 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: Remarks: Carrier-on state / Carrier at the uppe For EIRP calculation: 'worst-case' = maximum antenna ga	-	1.4 dBi 0.0 dB 8.2 dB 0.0 dB 72.8 dB 78.8 dB		
Since the measurement was updated with the maximum antenna gain, which is 5.23 dBic, the corrected value of the marker is -12.9 dBm				



Plot No. 114



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

<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 fh, max hold, valid for all modulations

see test report chapter 7.2:

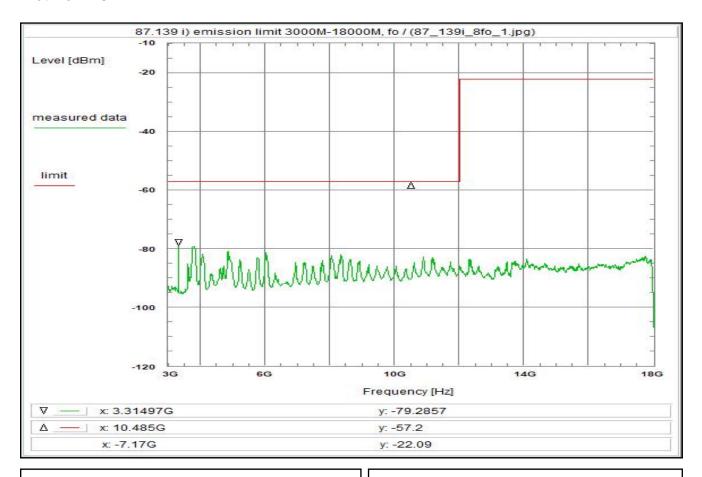
see test report chapter 7.1-7.2: C220, R001, U331

Remark:

	2/Aug/202 dvanced (22 55 230	bH, Laboratory RC-SYS C	;
Setup of measurement equipment Start frequency: Stop frequency: Center frequency: Frequency span: Resolution-BW: Video-BW: Input attenuation: Trace-Mode: Detector-Mode:	t: 1.67 3 2.335 1.33 3 10 0 Max-Hold AVG	Hz Hz Hz Hz Hz Hz R	
Correction: Directional coupler Coaxial cable (C220) DUT-Antenna (on-axis) Test antenna BW correction factor (3k -> 4k) Atten. between HPA and feedhor (U331) TOTAL CORRECTION: Remarks: Carrier-on state / Carrier at the up	+	0 dB 1 dB 4 dBi 0 dB 2 dB 0 dB 2.5 dB 6.2 dB	
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 -67.8 dBm			



Plot No. 115



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

<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 fh, max hold, valid for all modulations

see test report chapter 7.2:

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

Remark:

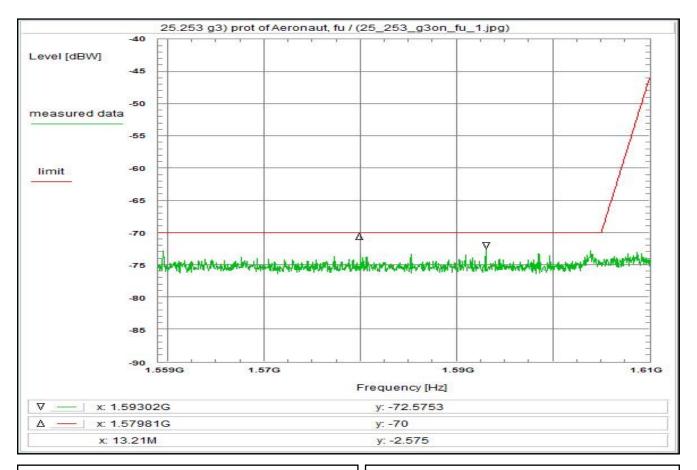
Test result: Test passed

Environment condition: Date & Time:	uo 22/Aug/202	2 15.50	50-10		
Date & Time: Tue 22/Aug/2023 15:59:10 Location: CTC advanced GmbH, Laboratory RC-SYS					
Temperature:	22	°C	i, Laboratory NO-313		
Humidity:	55	-			
Voltage:		√o Vac			
Voltage.	200	Vuo			
Setup of measurement equip	ment:				
Start frequency:	3	GHz	<u>z</u>		
Stop frequency:	18	GHz	<u>z</u>		
Center frequency:	10.5	GHz	<u>z</u>		
Frequency span:	15	GHz	<u>z</u>		
Resolution-BW:	10	kHz			
Video-BW:	30	kHz			
Input attenuation:	0	dB			
Trace-Mode:	Max-Hold				
Detector-Mode:	AVG				
Correction:					
Directional coupler	+	0.0			
Coaxial cable (C220)	+				
DUT-Antenna (on-axis)	+				
Test antenna	+	0.0			
BW correction factor (10k ->					
Atten. between HPA and fee	dhorn -	0.0			
(U332)	+	0			
TOTAL CORRECTION:	+	33.7	7 dB		
Remarks:					
Carrier-on state / Carrier at the	ne upper edge	of the I	band (fo)		
For EIRP calculation:					
'worst-case' = maximum anti	enna gain				
0'					
Since the measurement was updated with the maximum antenna gain, which is 5.23 dBic, the corrected value of the marker is -75.5 dBm					
corrected value of the market	1 IS -7 3.3 UDIII				

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Plot No. 116



 $\underline{\underline{Subclause:}} \qquad 25.253 \ g) 3) \ \ \text{Special requirements for ancillary terrestrial components operating in the} \\ \underline{1626.5-1660.5} \ \ \text{MHz} \ / \ 1525-1559 \ \ \text{MHz} \ \ \text{bands}$

Carrier-on state, modulated carrier at the lower edge of the band (fu) Conducted measurement at the antenna-connector

Limit according to 25.253 g)3): 1559.0 - 1605.0MHz: -70d 1605.0 - 1610MHz: -70 t

-70dBW/1MHz -70dBW/1MHz -70 to -46dBW/1MHz)linear interpolated) The EIRP, averaged over any two-millisecond active transmission interval from the MESs in the carrier-on state shall not exceed the limits above.

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

<u>Test setup:</u> see test report chapter 7.2:

<u>Test equipment:</u> see test report chapter 7.1-7.2: C220, R001, U330

Remark:

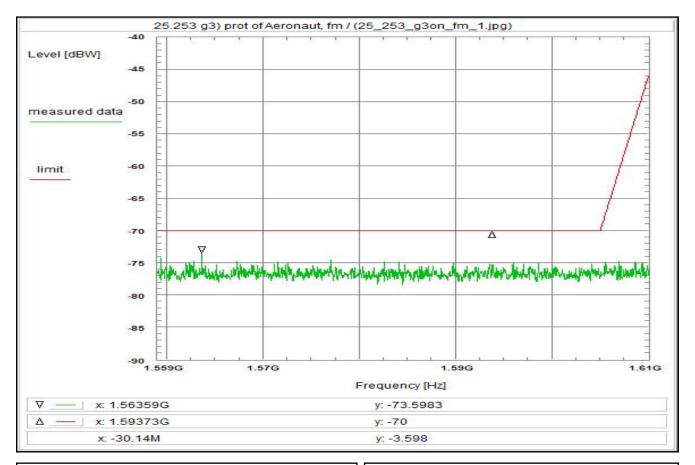
Test result: Test passed

Environment condition: Date & Time: Location: Temperature: Humidity:	Fri 25/Aug/2023 CTC advanced 0 22 55	GmbH, °C		oratory RC-SYS
Voltage:		Vac		
1				
Setup of measurement ed				
Start frequency:	1.559			
Stop frequency:	1.61			
Center frequency:	1.5845			
Frequency span:	51			
Resolution-BW:	1			
Video-BW:	50 0			
Input attenuation: Trace-Mode:	Max-Hold	aв		
Detector-Mode:	Pos Peak			
Detector-Mode.	POS Peak			
Correction:				
Directional coupler	+	0.0	dB	
Coaxial cable (C220)	+			
DUT-Antenna (on-axis)	+			
Test antenna	+			
BW correction factor	+			
Atten, between HPA and	feedhorn +	0.0	dB	
(U330)	+	31.9	dB	
TOTAL CORRECTION:	+	34.2	dB	
Remarks: Carrier-on state / Carrier at the lower edge of the band (fu) Measurement with 1 MHz resolution/video filter and noise averaging. For EIRP calculation: worst-case' = maximum antenna gain				
The plot shows the noise floor with the Max-Hold Positive Peak detector as the worst-case scenario. The average value is therefore compliant.				

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Plot No. 117



 $\underline{\underline{Subclause:}} \qquad 25.253 \ g) 3) \ \ \text{Special requirements for ancillary terrestrial components operating in the} \\ \underline{1626.5-1660.5} \ \ \text{MHz} \ / \ 1525-1559 \ \ \text{MHz} \ \ \text{bands}$

Carrier-on state, modulated carrier in the middle of the band (fm)

Conducted measurement at the antenna-connector

Limit:

Limit according to 25.253 g)3): 1559.0 - 1605.0MHz: -70d 1605.0 - 1610MHz: -70 t -70dBW/1MHz

-70 to -46dBW/1MHz)linear interpolated) The EIRP, averaged over any two-millisecond active transmission interval from the MESs in the carrier-on state shall not exceed the limits above.

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

<u>Test setup:</u> see test report chapter 7.2:

<u>Test equipment:</u> see test report chapter 7.1-7.2: C220, R001, U330

Remark:

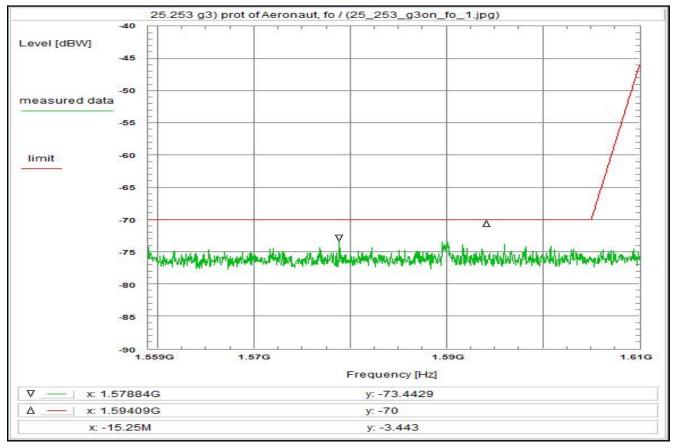
Test result: Test passed

Environment condition:					
Date & Time: Fri 25/Aug/2023 18:33:20					
	22	°C	•		
Humidity:	55	%			
Voltage: 2	30	Vac			
Setup of measurement equipment:					
	59	GHz			
	61	GHz			
Center frequency: 1.58					
	51	MHz			
Resolution-BW:	1	MHz			
	50	MHz			
Input attenuation:	0	dB			
Trace-Mode: Max-H					
Detector-Mode: Pos Pe	ak				
0					
Correction:		0.0	4D		
Directional coupler Coaxial cable (C220)	+				
DUT-Antenna (on-axis)	+				
Test antenna	+	0.0			
BW correction factor	+	0.0	-		
Atten, between HPA and feedhorn	-	0.0			
(U330)	+		-		
TOTAL CORRECTION:	+				
101/12 00111120110111		0	45		
Remarks:					
Carrier-on state / Carrier in the middle of the band (fm)					
Measurement with 1 MHz resolution/video filter and noise averaging.					
For EIRP calculation:					
worst-case = maximum antenna gain					
The plot shows the noise floor with the Max-Hold Positive Peak detector as the worst-case					
scenario. The average value is therefore compliant.					

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Plot No. 118



 $\underline{\underline{Subclause:}} \qquad 25.253 \ g) 3) \ \ \text{Special requirements for ancillary terrestrial components operating in the} \\ \underline{1626.5-1660.5} \ \ \text{MHz} \ / \ 1525-1559 \ \ \text{MHz} \ \ \text{bands}$

Carrier-on state, modulated carrier at the upper edge of the band (fo) Conducted measurement at the antenna-connector

Limit:

Limit according to 25.253 g)3): 1559.0 - 1605.0MHz: -70d 1605.0 - 1610MHz: -70 t -70dBW/1MHz

-70 to -46dBW/1MHz)linear interpolated) The EIRP, averaged over any two-millisecond active transmission interval from the MESs in the carrier-on state shall not exceed the limits above.

Test results:

see plot (an explicit table was not generated)

Operating condition of DUT:

operating condition 1, see test report chapter 6.4 fh, max hold, valid for all modulations

<u>Test setup:</u> see test report chapter 7.2:

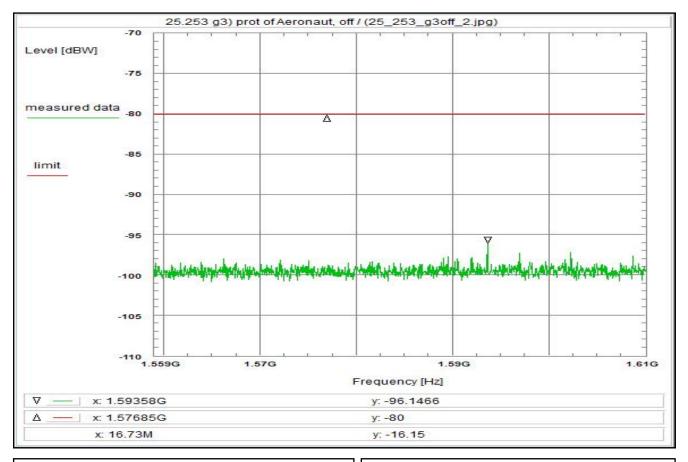
<u>Test equipment:</u> see test report chapter 7.1-7.2: C220, R001, U330

Remark:

Temperature: Humidity:	ced (22 55		03 Laboratory RC-SYS	
Stop frequency: 1 Center frequency: 1.58 Frequency span: Resolution-BW:	.61 345 51 1 50 0	GHz GHz GHz MHz MHz MHz dB		
Correction: Directional coupler Coaxial cable (C220) DUT-Antenna (on-axis) Test antenna BW correction factor Atten. between HPA and feedhorn (U330) TOTAL CORRECTION:	+ + + + + +	0.0 0.9 1.2 0.0 0.0 0.0 31.9 34.0	dB dBi dB dB dB dB	
Remarks: Carrier-on state / Carrier at the upper edge of the band (fo) Measurement with 1 MHz resolution/video filter and noise averaging. For EIRP calculation: worst-case = maximum antenna gain				
The plot shows the noise floor with the Max-Hold Positive Peak detector as the worst-case scenario. The average value is therefore compliant.				



Plot No. 119



<u>Subclause:</u> 25.253 g)3) Special require 1626.5-1660.5 MHz / 1525-1559 MHz bands 25.253 g)3) Special requirements for ancillary terrestrial components operating in the Carrier-off state, conducted measurement at the antenna-connector <u>Limit:</u> Limit according to 25.253 g)3): -80dBW/1MHz The EIRP, averaged over any two-millisecond active transmission interval from the MESs in the carrier-off state shall not exceed the limit above. Test results: see plot (an explicit table was not generated) Operating condition of DUT: operating condition 2, see test report chapter 6.4 TX-Off

Test setup:

see test report chapter 7.2:

<u>Test equipment:</u> see test report chapter 7.1-7.2: R001

Test result: Test passed

Environment condition: Fri 25/Aug/2023 18:29:17 CTC advanced GmbH, Laboratory RC-SYS Location: 22 Temperature: Humidity: 55 Voltage: 230 Vac Setup of measurement equipment: 1.559 GHz Start frequency: Stop frequency: 1.61 GHz Center frequency: 1.5845 Frequency span: Resolution-BW: 51 MHz MHz Video-BW: MHz Input attenuation: 0 dB Trace-Mode: Average Detector-Mode: Sample Correction: + 0.0 dB + 0.9 dB Directional coupler Coaxial cable (C220) DUT-Antenna (on-axis) 1.4 Test antenna + 0.0 dB BW correction factor + 0.0 dB Atten. between HPA and feedhorn 0.0 dB (U330) TOTAL CORRECTION: 31.9 dB 34.2 dB Remarks: Carrier-off state. Measurement with 1 MHz resolution filter and noise averaging. 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 -92.3 dBm

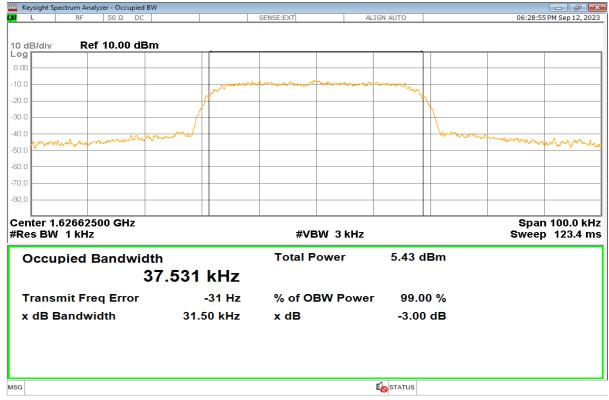


3. Measurement results for CLASS 7, FCC Part 87

This chapter consists of 92 pages including this page.

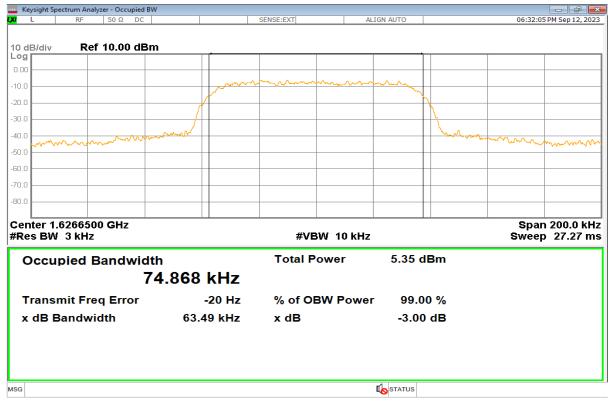


Plot No. 120



B3dB, Sub-Band 1, Low Channel, R5T1XD

Plot No. 121

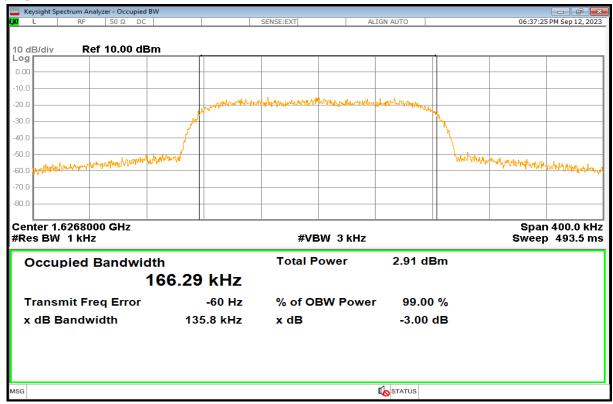


B3dB, Sub-Band 1, Low Channel, R5T2XD

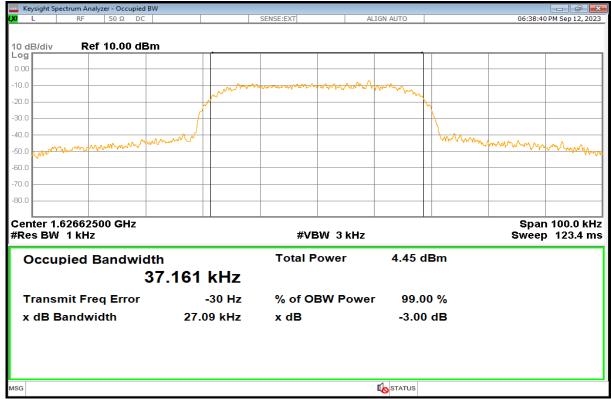
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Plot No. 122



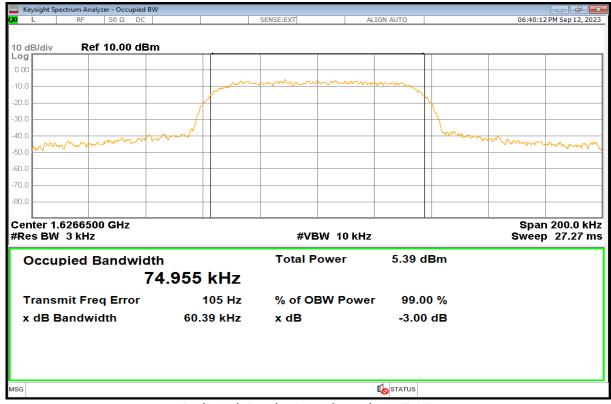
B3dB, Sub-Band 1, Low Channel, R5T4.5XD



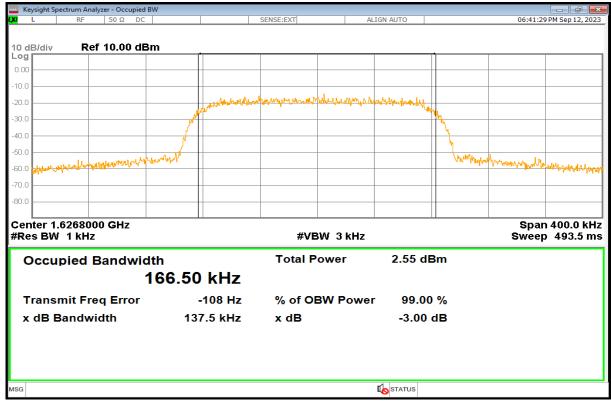
B3dB, Sub-Band 1, Low Channel, R20T1XD



Plot No. 124



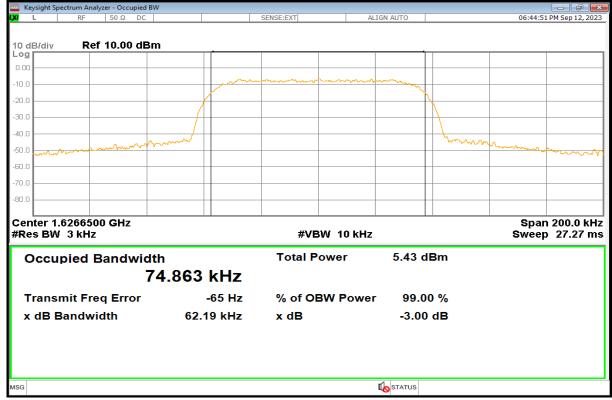
B3dB, Sub-Band 1, Low Channel, R20T2XD



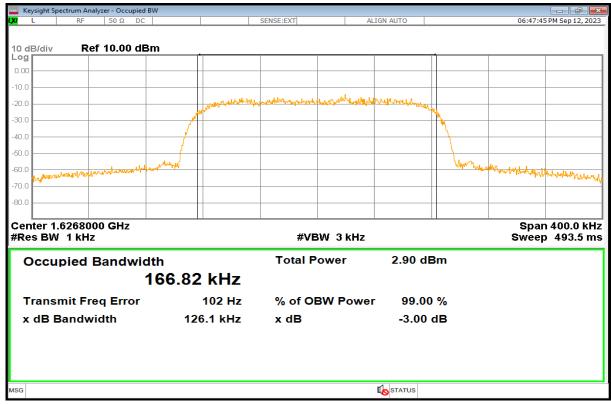
B3dB, Sub-Band 1, Low Channel, R20T4.5XD



Plot No. 126



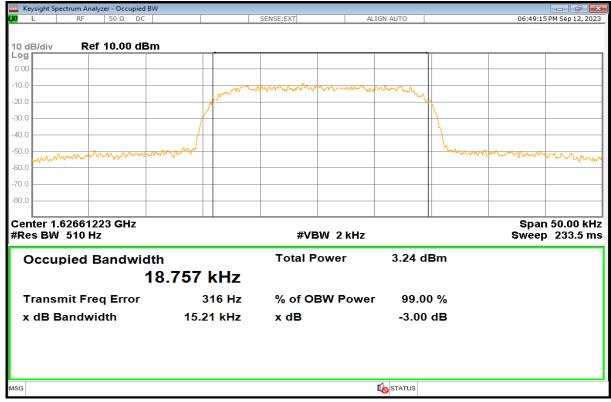
B3dB, Sub-Band 1, Low Channel, R5T2QD



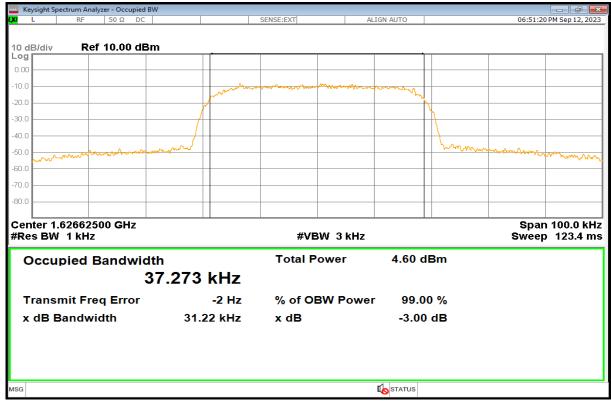
B3dB, Sub-Band 1, Low Channel, R5T4.5QD



Plot No. 128



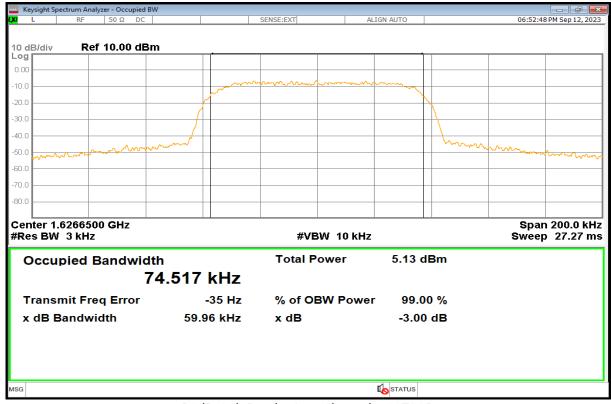
B3dB, Sub-Band 1, Low Channel, R20T0.5QD



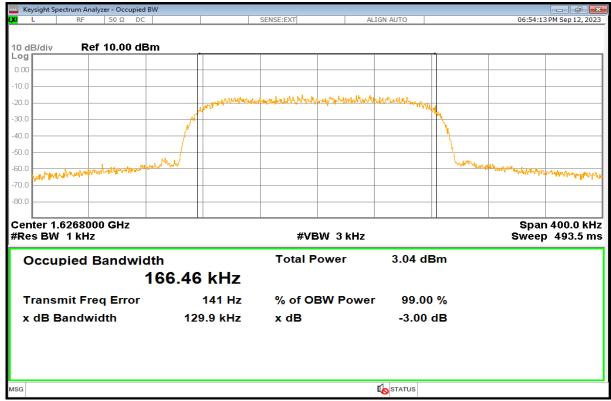
B3dB, Sub-Band 1, Low Channel, R20T1QD



Plot No. 130



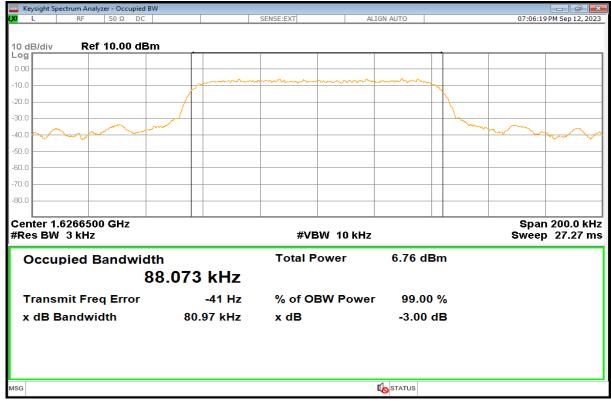
B3dB, Sub-Band 1, Low Channel, R20T2QD



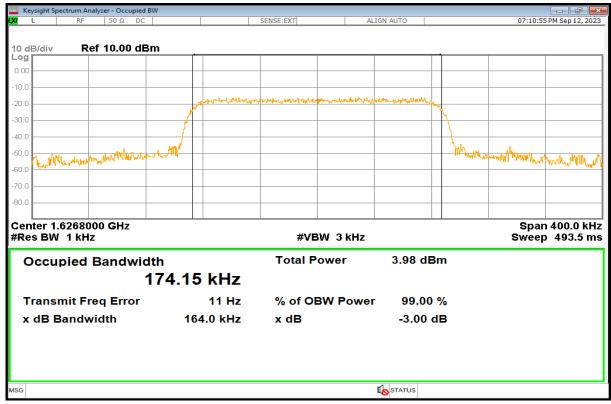
B3dB, Sub-Band 1, Low Channel, R20T4.5QD



Plot No. 132



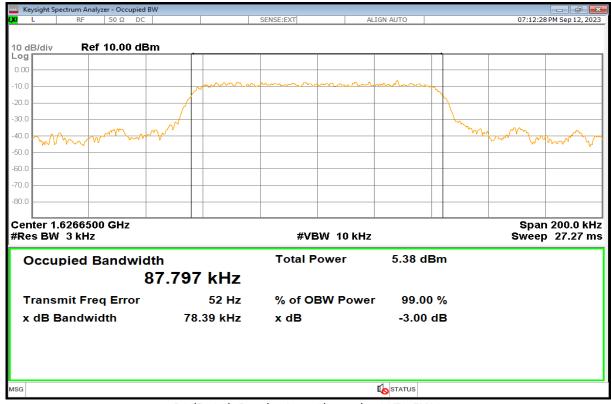
B3dB, Sub-Band 1, Low Channel, R80T2.5X16



B3dB, Sub-Band 1, Low Channel, R80T5X16

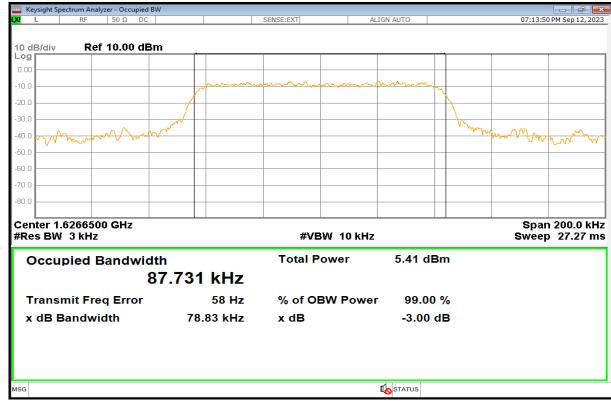


Plot No. 134



B3dB, Sub-Band 1, Low Channel, R80T2.5X32

Plot No. 135

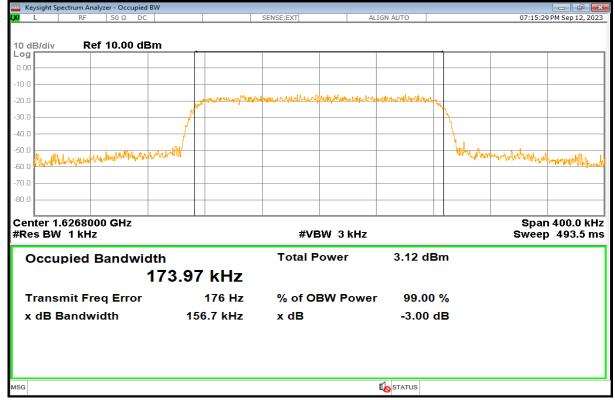


B3dB, Sub-Band 1, Low Channel, R80T2.5X64

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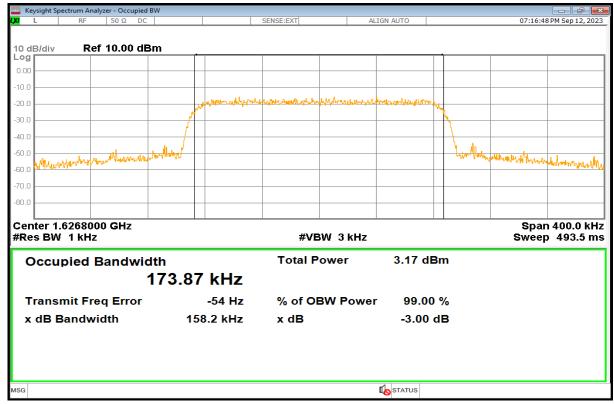


Plot No. 136



B3dB, Sub-Band 1, Low Channel, R80T5X32

Plot No. 137

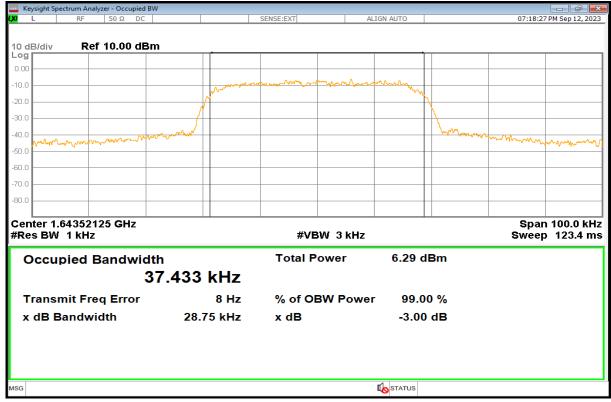


B3dB, Sub-Band 1, Low Channel, R80T5X64

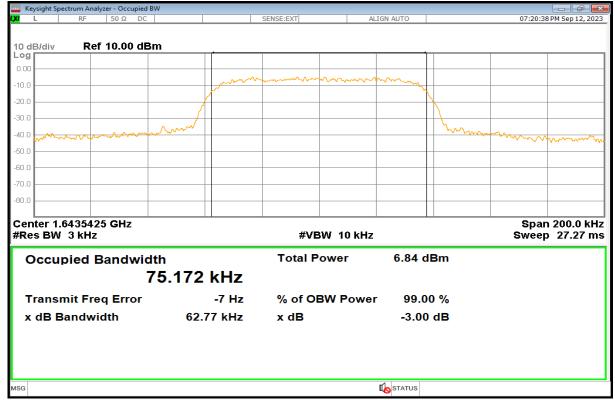
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Plot No. 138



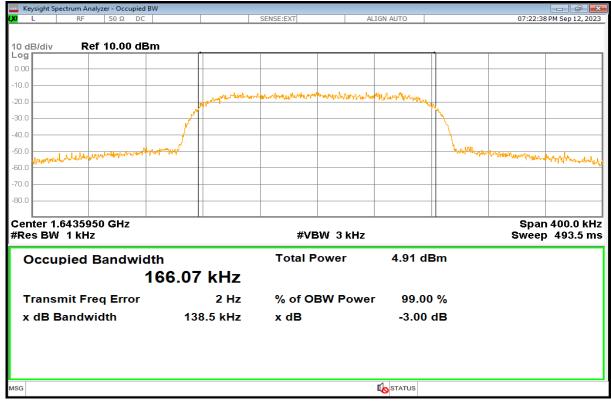
B3dB, Sub-Band 1, Middle Channel, R5T1XD



B3dB, Sub-Band 1, Middle Channel, R5T2XD

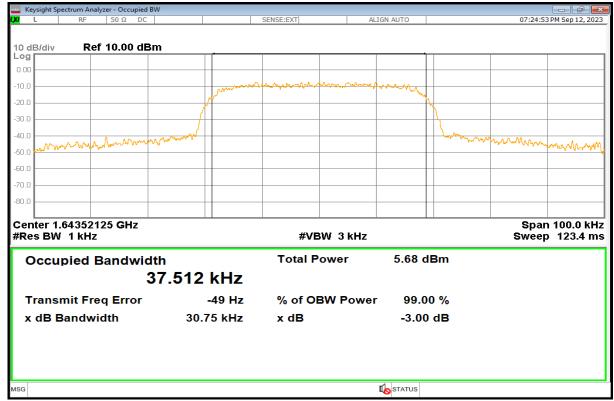


Plot No. 140



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

Plot No. 141

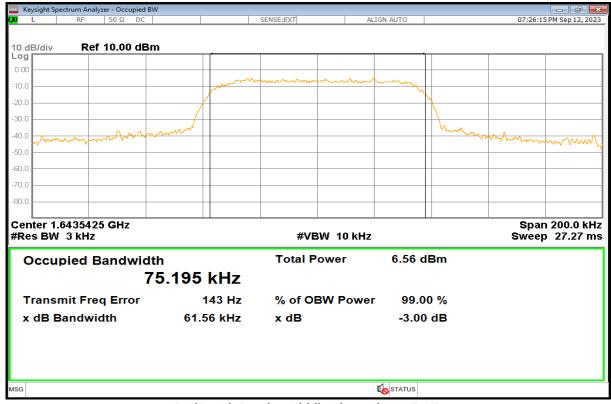


B3dB, Sub-Band 1, Middle Channel, R20T1XD

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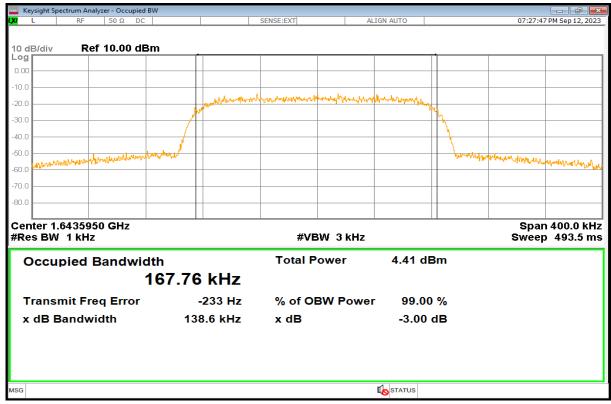


Plot No. 142



B3dB, Sub-Band 1, Middle Channel, R20T2XD

Plot No. 143

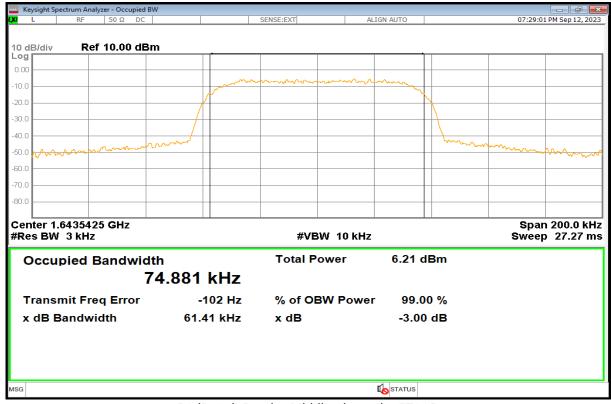


B3dB, Sub-Band 1, Middle Channel, R20T4.5XD

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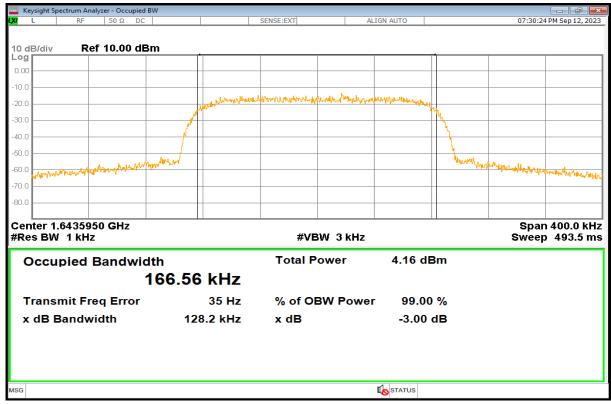


Plot No. 144



B3dB, Sub-Band 1, Middle Channel, R5T2QD

Plot No. 145

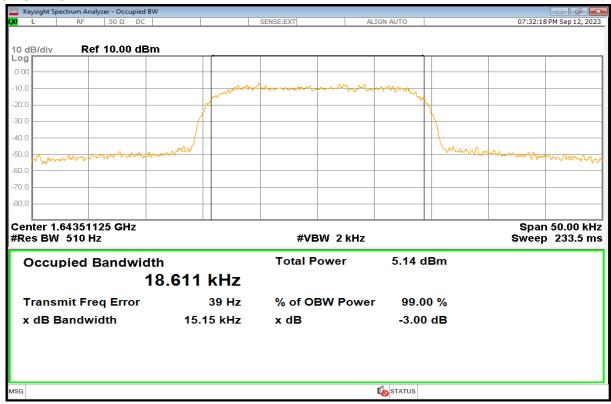


B3dB, Sub-Band 1, Middle Channel, R5T4.5QD

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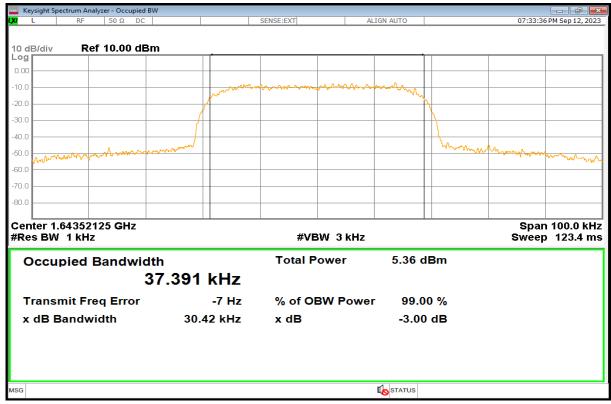


Plot No. 146



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

Plot No. 147

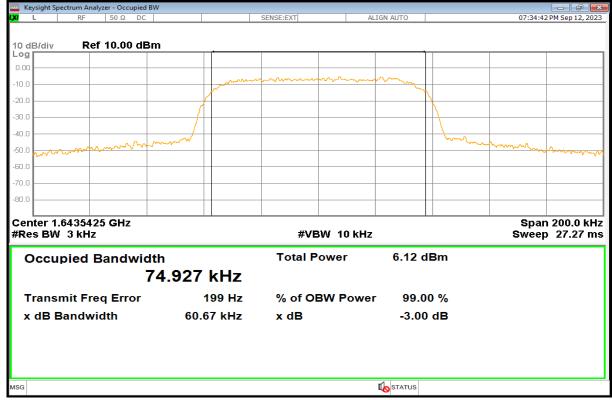


B3dB, Sub-Band 1, Middle Channel, R20T1QD

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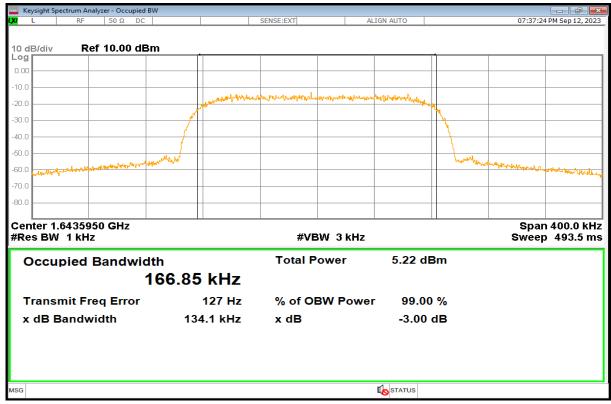


Plot No. 148



B3dB, Sub-Band 1, Middle Channel, R20T2QD

Plot No. 149

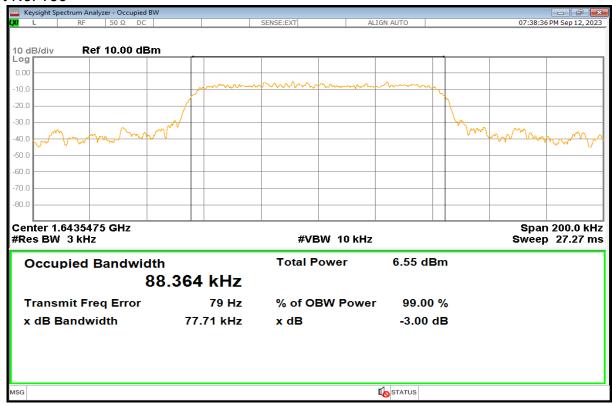


B3dB, Sub-Band 1, Middle Channel, R20T4.5QD

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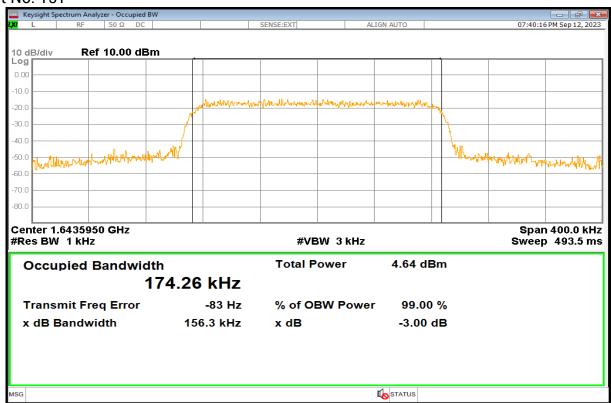


Plot No. 150



B3dB, Sub-Band 1, Middle Channel, R80T2.5X16

Plot No. 151

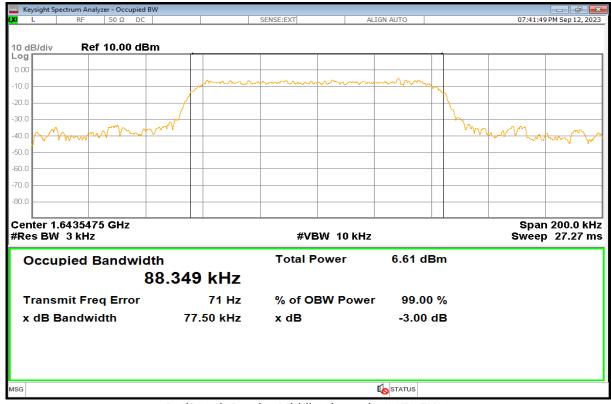


B3dB, Sub-Band 1, Middle Channel, R80T5X16

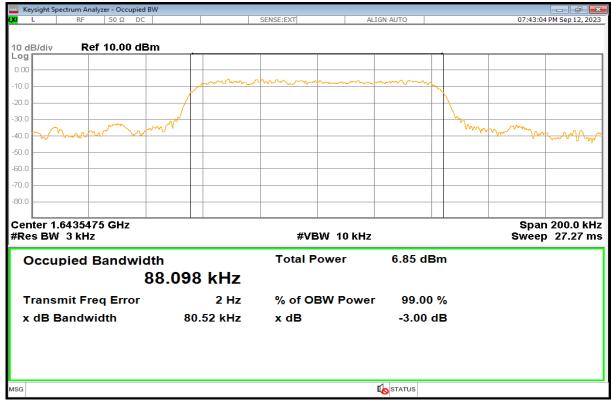
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Plot No. 152



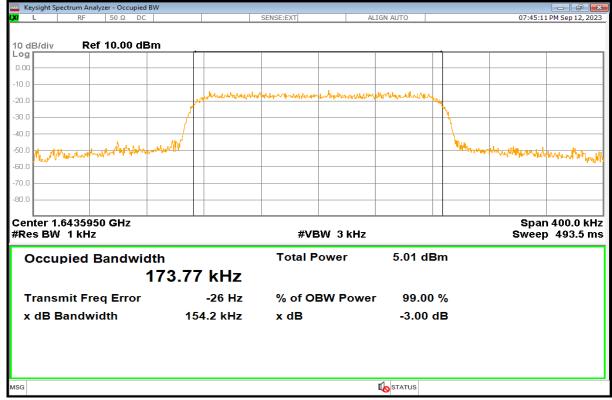
B3dB, Sub-Band 1, Middle Channel, R80T2.5X32



B3dB, Sub-Band 1, Middle Channel, R80T2.5X64

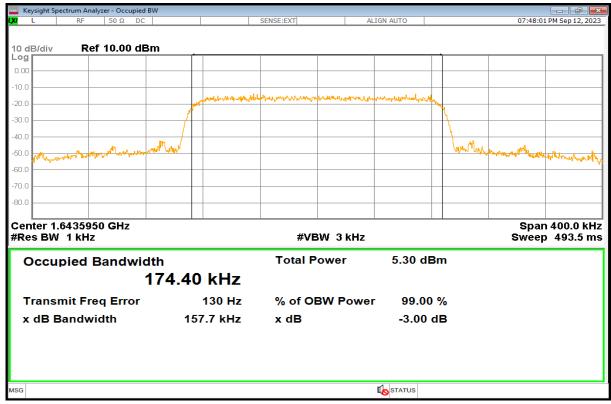


Plot No. 154



B3dB, Sub-Band 1, Middle Channel, R80T5X32

Plot No. 155

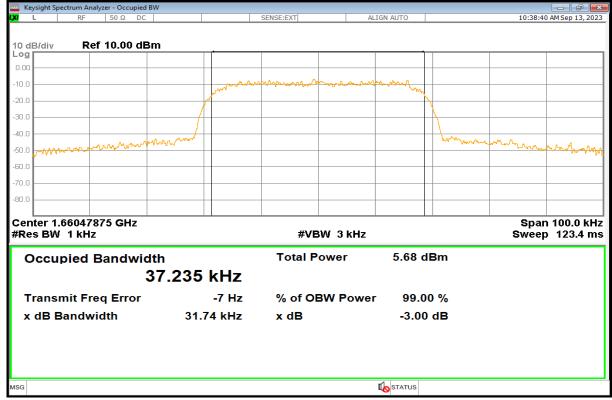


B3dB, Sub-Band 1, Middle Channel, R80T5X64

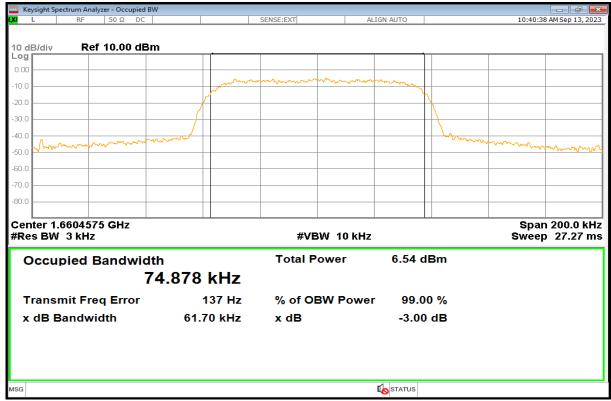
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Plot No. 156



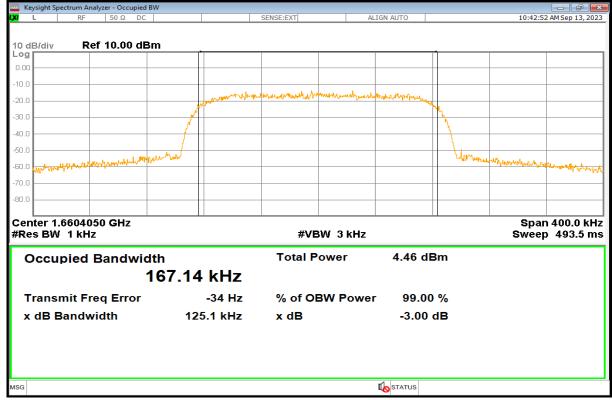
B3dB, Sub-Band 1, High Channel, R5T1XD



B3dB, Sub-Band 1, High Channel, R5T2XD

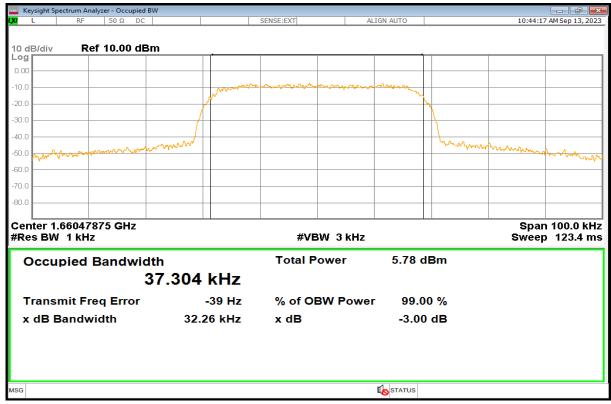


Plot No. 158



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

Plot No. 159

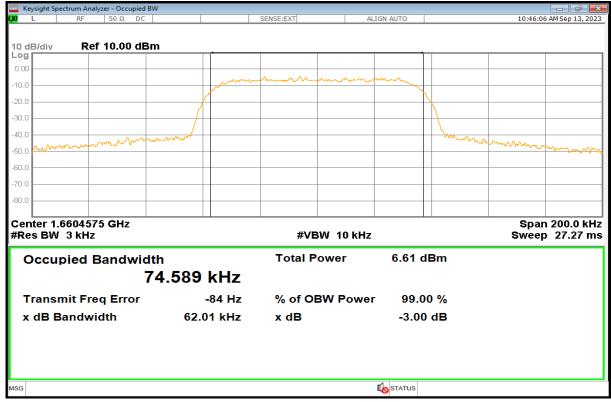


B3dB, Sub-Band 1, High Channel, R20T1XD

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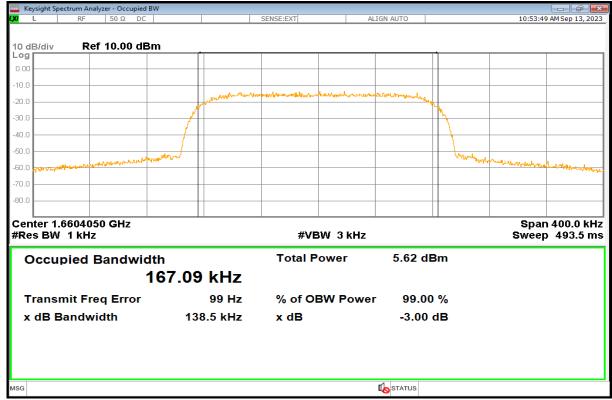


Plot No. 160



B3dB, Sub-Band 1, High Channel, R20T2XD

Plot No. 161

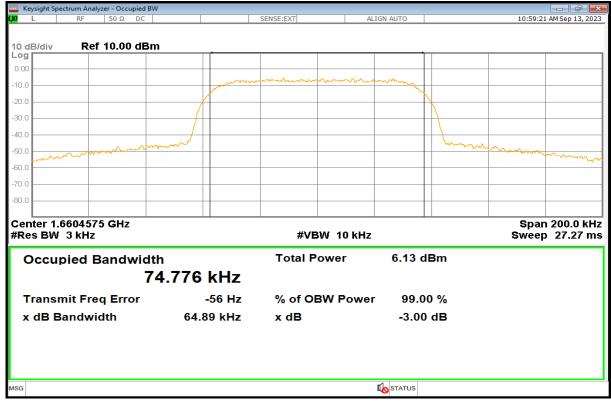


B3dB, Sub-Band 1, High Channel, R20T4.5XD

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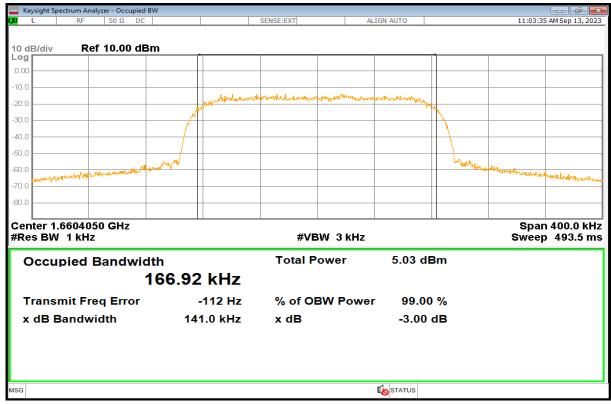


Plot No. 162



B3dB, Sub-Band 1, High Channel, R5T2QD

Plot No. 163

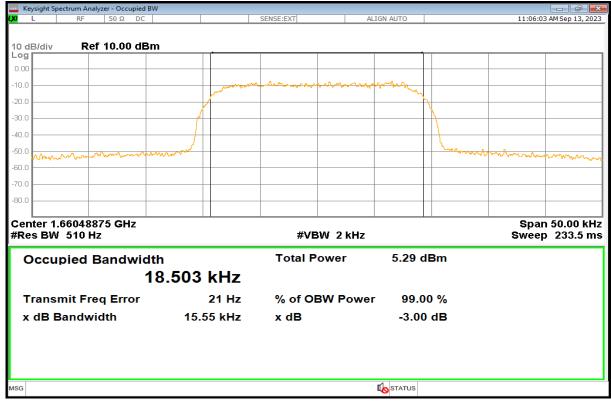


B3dB, Sub-Band 1, High Channel, R5T4.5QD

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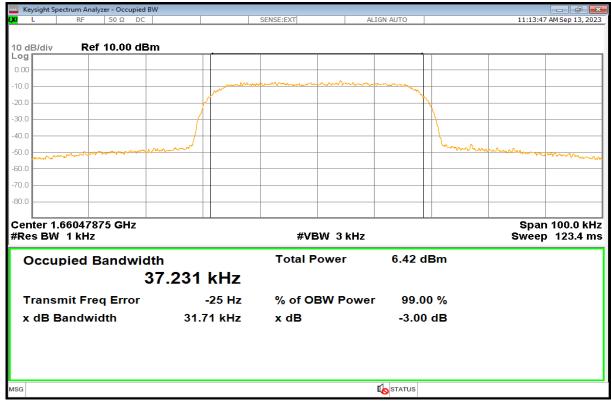


Plot No. 164



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

Plot No. 165

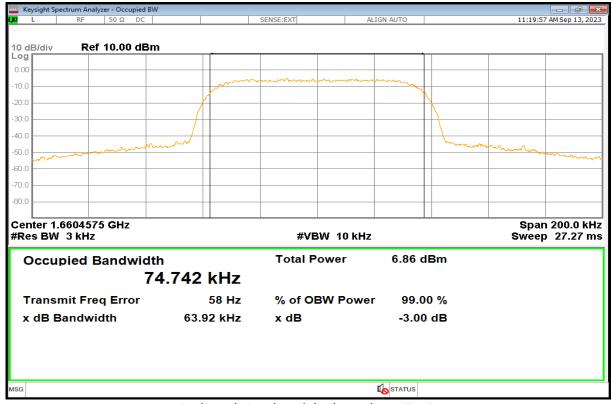


B3dB, Sub-Band 1, High Channel, R20T1QD

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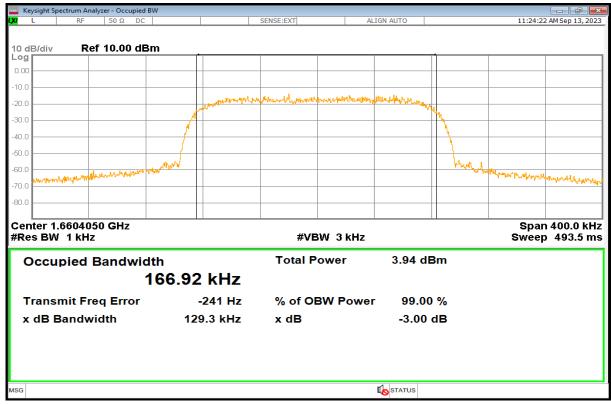


Plot No. 166



B3dB, Sub-Band 1, High Channel, R20T2QD

Plot No. 167

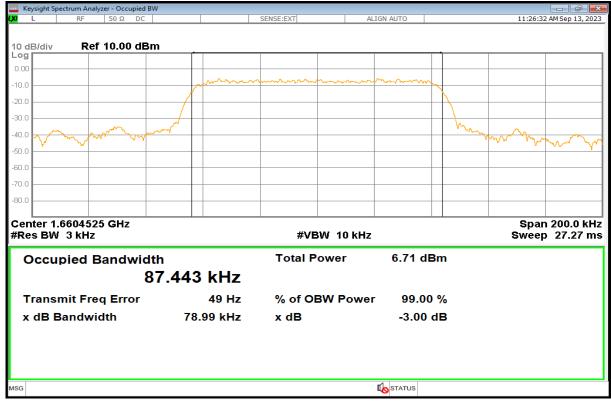


B3dB, Sub-Band 1, High Channel, R20T4.5QD

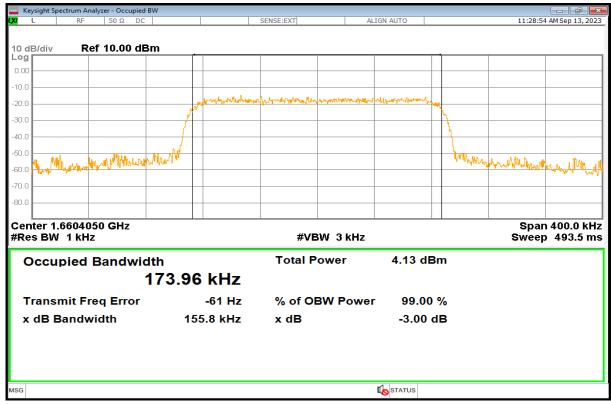
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Plot No. 168



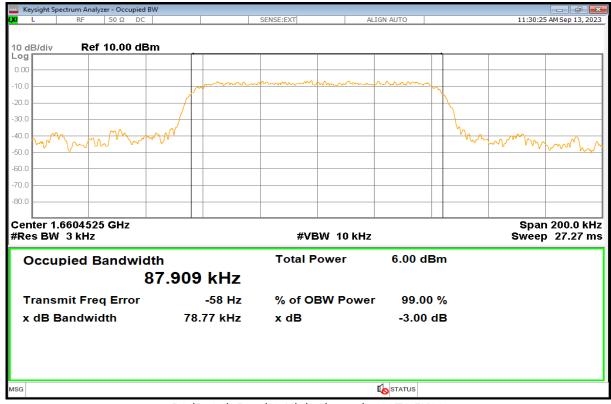
B3dB, Sub-Band 1, High Channel, R80T2.5X16



B3dB, Sub-Band 1, High Channel, R80T5X16

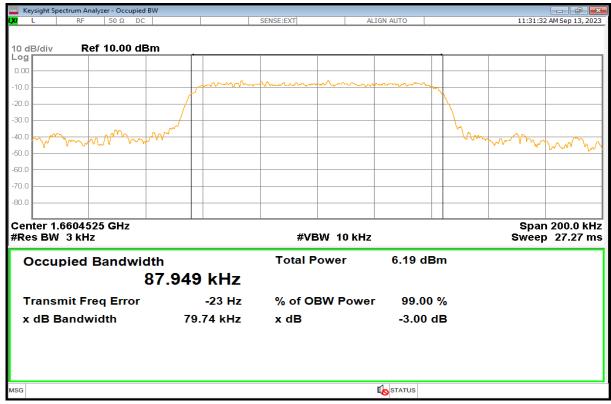


Plot No. 170



B3dB, Sub-Band 1, High Channel, R80T2.5X32

Plot No. 171

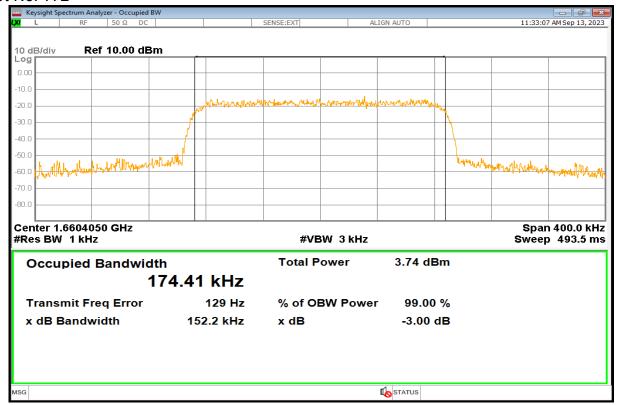


B3dB, Sub-Band 1, High Channel, R80T2.5X64

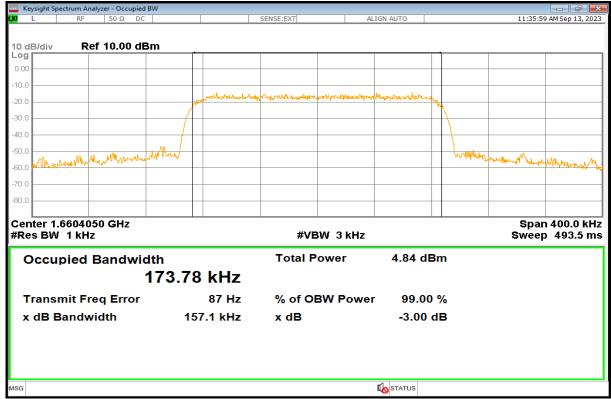
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Plot No. 172



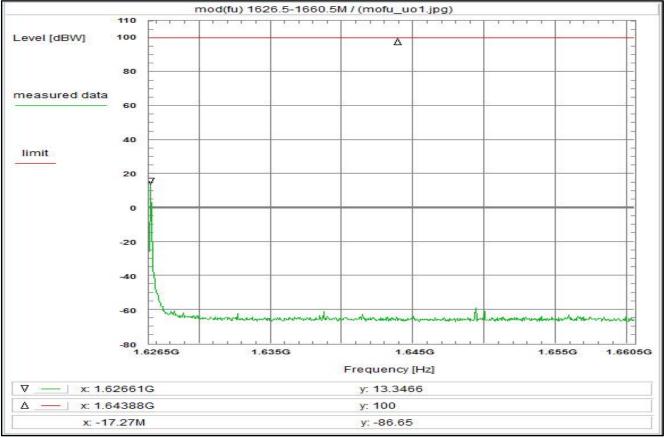
B3dB, Sub-Band 1, High Channel, R80T5X32



B3dB, Sub-Band 1, High Channel, R80T5X64



Plot No. 174

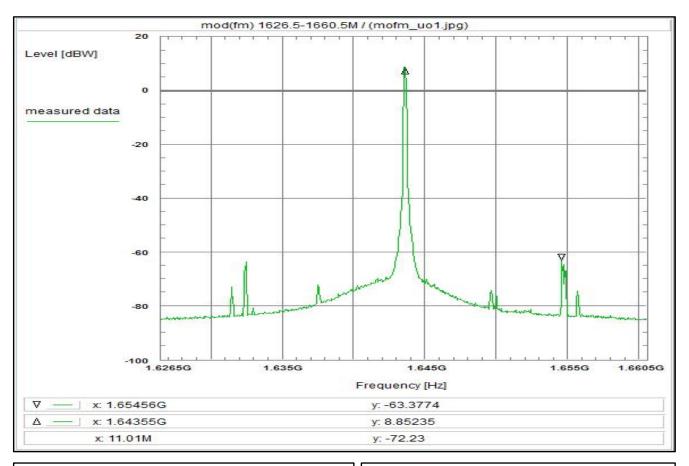


Subclause: Function test Modulated rf-carrier at the lower edge of the band (fu) Measurement within the band Limit: no limits defined This test serves to verify the general function of the EUT and for orientation regarding to the spurious emissions which are expected within the band, furthermore for comparison of the actual power with the rated value at modulated carrier adjusted as close to the lower edge of the operating frequency band. 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: <u>Test equipment:</u> see test report chapter 7.1-7.2: C107, R001, U330 Remark: Test result: Test passed

Environment condition: Tue 26/Sep/2023 20:28:07 Date & Time: Location: CTC advanced GmbH, Laboratory RC-SYS 22 °C Temperature: Humidity: Voltage: 230 Vac Setup of measurement equipment: 1 6265 GHz Start frequency: Stop frequency: 1.6605 GHz Center frequency: Frequency span: Resolution-BW: 34 MHz 30 kHz Video-BW: Input attenuation: 20 dB Max-Hold Trace-Mode: Detector-Mode: Correction: Directional coupler 0.0 dB Coaxial cable (C107) 1.3 dB 11.0 dBi DUT-Antenna (on-axis) Test antenna 0.0 BW correction factor 0.0 dB 0.0 dB Atten. between HPA and feedhorn (U330) 31.9 dB TOTAL CORRECTION: 44.2 dB Test of general function of the EUT and measurement for orientation.



Plot No. 175



Subclause: -/-Function test Modulated rf-carrier in the middle of the band (fm) Measurement within the band

<u>Limit:</u> no limits defined

This test serves to verify the general function of the EUT and for orientation regarding to the spurious emissions which are expected within the band, furthermore for comparison of the actual power with the rated value at modulated carrier adjusted in the middle of the band (EIRP).

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

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

see test report chapter 7.2:

<u>Test equipment:</u> see test report chapter 7.1-7.2: C107, R001, U330

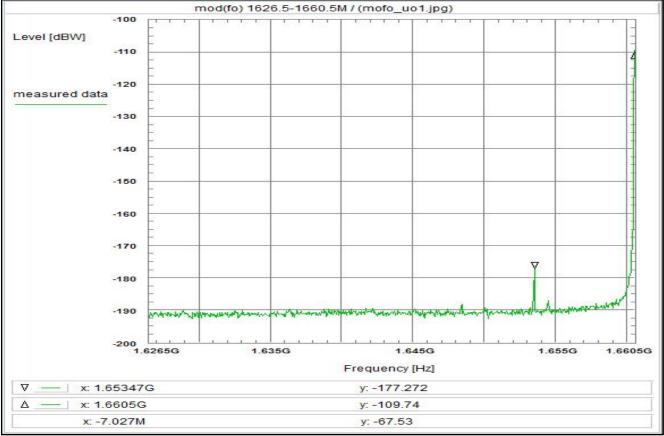
Remark:

Test result: Test passed

Environment condition:			
Date & Time:	Wed 27/Sep/202	3 13:0	08:04
Location:	CTC advanced GmbH, Laboratory RC-SYS		
Temperature:	22	°C	•
Humidity:	55	%	
Voltage:		Vac	
l image			
Setup of measurement equ	uinment:		
Start frequency:	1.6265	GHz	
Stop frequency:			
Center frequency:	1.6435		
Frequency span:	34	MHz	
Resolution-BW:	30	kHz	
Video-BW:	300	kHz	
Input attenuation:	0	dB	
Trace-Mode:	Max-Hold	uБ	
Detector-Mode:	AVG		
Detector-wode.	AVG		
Correction:			
Direction coupler		0.0	4D
	+		
Coaxial cable (C107)	+		dBi
DUT-Antenna (on-axis) Test antenna		0.0	
	+		
BW correction factor	+	0.0	
Atten. between HPA and fe		0.0 31.9	
(U330) TOTAL CORRECTION:	+		
TOTAL CORRECTION:	+	44.2	dВ
Damada			
Remarks:	the FLIT and may		ment for exicutation
Test of general function of the EUT and measurement for orientation.			



Plot No. 176



Environment condition:

Subclause: -/- Function test Modulated rf-carrier at the upper edge of the band (fo) Measurement within the band

Limit: no limits defined

This test serves to verify the general function of the EUT and for orientation regarding to the spurious emissions which are expected within the band, furthermore for comparison of the actual power with the rated value at modulated carrier adjusted as close to the upper edge of the operating frequency band.

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

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

Test setup: see test report chapter 7.2:

Test equipment: see test report chapter 7.1-7.2: C107, R001, U330

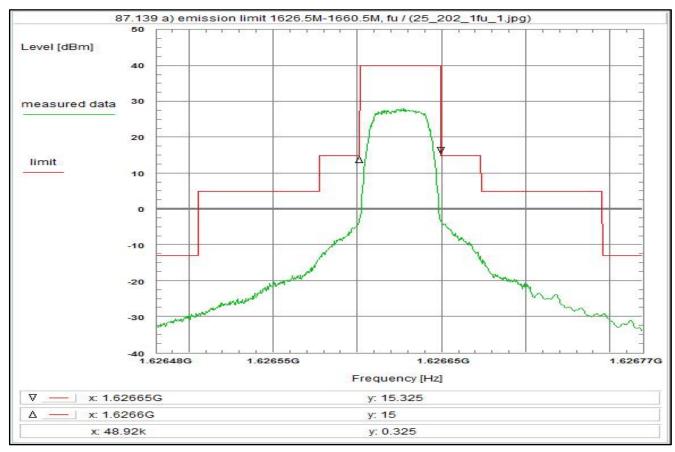
Remark:

Wed 27/Sep/2023 12:58:24 Date & Time: Location: CTC advanced GmbH, Laboratory RC-SYS 22 °C Temperature: Humidity: Voltage: 230 Vac Setup of measurement equipment: 1 6265 GHz Start frequency: Stop frequency: 1.6605 GHz Center frequency: Frequency span: Resolution-BW: 34 MHz 30 kHz Video-BW: Input attenuation: 20 dB Clear Write Trace-Mode: Detector-Mode: AVG Correction: (W_RE) 115.7 dB Coaxial cable (C107) 1.3 dB 11.0 dBi DUT-Antenna (on-axis) Test antenna BW correction factor + 0.0 dB 0.0 dB Atten. between HPA and feedhom (U330) 31.9 dB TOTAL CORRECTION: -71.5 dB Remarks: Test of general function of the EUT and measurement for orientation.

Test result: Test passed



Plot No. 177



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, max hold, valid for R5T1XD-R20T1XD-R20T1QD

Test setup:
see test report chapter 7.2:

Test equipment:
see test report chapter 7.1-7.2: C107, R001, U330

Remark:

Test result: Test passed

Environment condition: Wed 27/Sep/2023 13:54:50 Date & Time: 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 Frequency span: Resolution-BW: 288 kHz kHz Video-BW: Input attenuation: 10 dB Clear Write Trace-Mode: Detector-Mode: AVG Correction: (W_RE) 4.5 dB 1.3 dB 11.0 dBi Coaxial cable (C107) DUT-Antenna (on-axis) 0.0 dB BW correction factor (3k -> 4k) 1.2 dB 0.0 dB Atten. between HPA and feedhorn (U330) 31.9 dB TOTAL CORRECTION: 40.9 dB Carrier-on state / Carrier at the lower edge of the band (fu) Reference limit = 40 dBm / Spectrum mask referenced to necessary bandwidth

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