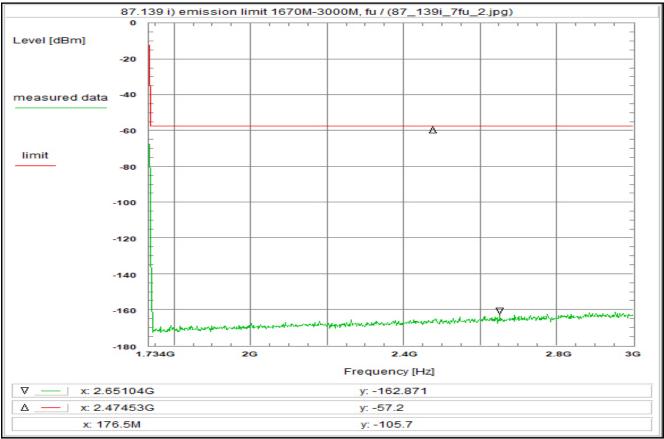


Plot No. 68



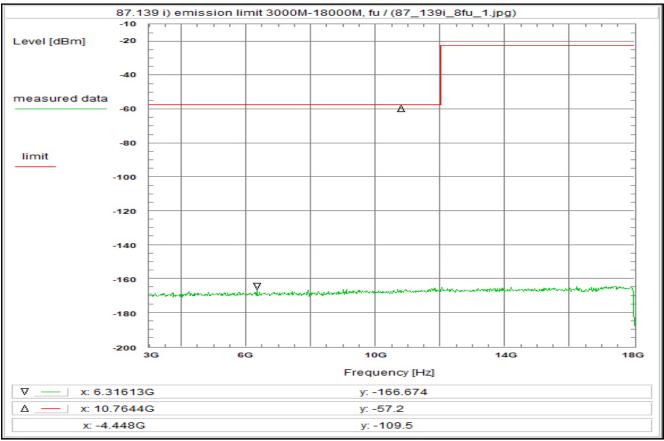
Subclause: 87.139 i) Frequencies, frequency tolerance and emission limitations Emission limitations Modulated rf-carrier at the lower edge of the band (ft)
Limit: Limit according to 87.139(i)(1) The mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance 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, valid for all modulations
Test setup: see test report chapter 8.2
Test equipment: see test report chapter 8.1-8.2: C220, R001, U331, W_RE
Remark:
Test result: Test passed

		0.14:19:56 GmbH, Laboratory RC-SYS *C % V DC
		GHz
Correction: W_RE Coaxial cable (C220) DUT-Antenna Test antenna BW correction factor (3k -> 4k) Atten. between HPA and feedhorn (U331) TOTAL CORRECTION: Remarks: Carrier-on state / Carrier at the lowe For EIRP calculation:	- + - er edge (1.1 dB 0.0 dBi 0.0 dB 1.2 dB 0.0 dB 32.3 dB -7.7 dB
'worst-case' = maximum antenna g	ain	

© CTC advanced GmbH Page 53 of 128



Plot No. 69



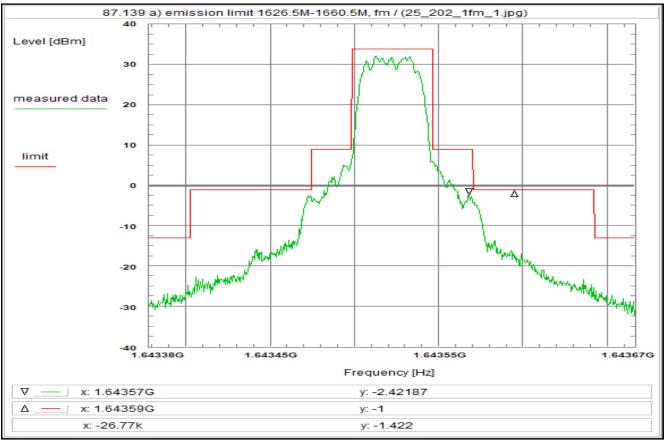
Subclause: 87.139 i) Frequencies, frequency tolerance and emission limitations Emission limitations Modulated rf-carrier at the lower edge of the band (fl)
Limit: Limit according to 87.139(i)(1) The mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance with 87.139(i)(1).
Test results: see plot (an explicit table was not generated)
Operating condition of DUT: Operating condition 1, see test report chapter 6.4 fl, valid for all modulations
Test setup: see test report chapter 8.2
Test equipment: see test report chapter 8.1-8.2: C220, R001, U331, U332, W_RE
Remark:
Test result: Test passed
l .

Temperature: 22 Humidity: 55	15:54:11 mbH, Laboratory RC-SYS °C % V DC
Stop frequency: 18 Center frequency: 10.5 Frequency span: 15 Resolution-BW: 10	GHz GHz GHz GHz kHz kHz dB
Caxial cable (C220) + DUT-Antenna + Test antenna + BW correction factor (10k -> 4k) - Atten. between HPA and feedhorn - (U332) +	dB 2.3 dB 0.0 dBi 0.0 dB 4.0 dB 0.0 dB 34.0 dB -85.7 dB
Carrier-on state / Carrier at the lower edge of For EIRP calculation: worst-case = maximum antenna gain	f the band (ff)

© CTC advanced GmbH Page 54 of 128



Plot No. 70



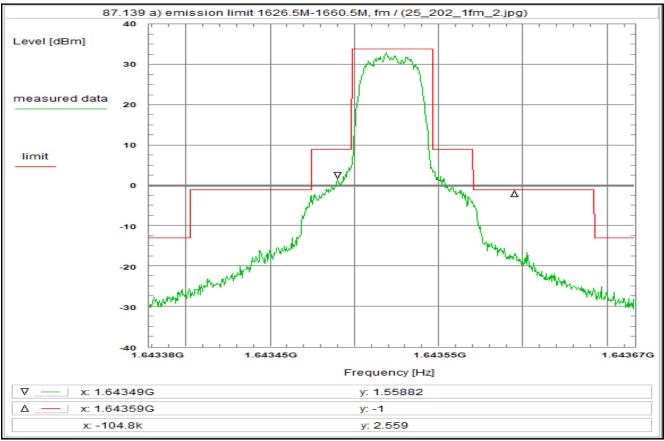
Subclause: 87.139 a)Frequencies, frequency tolerance and emission limitations Emission limitations Modulated rf-carrier in the middle of the band (fm)
Limit: Limit according to 87.139 a): 50-100% of assigned bw: -25dBc/4kHz 100-250% of assigned bw: -35dBc/4kHz > 250% of assigned bw: -43+10log(Pmax)dBc/4kHz = -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, R5T1XD
Test setup: see test report chapter 8.2
Test equipment: see test report chapter 8.1-8.2: C220, R001, U330
Remark:
<u>Test result:</u> Test passed

Temperature: 22 Humidity: 55	GmbH, Laboratory RC-SYS °C
Setup of measurement equipment: Start frequency: 1.643378 Stop frequency: 1.643666 Center frequency: 1.643522 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: Directional coupler + Coaxial cable (C220) + DUT-Antenna + Test antenna + BW correction factor (3k -> 4k) + Atten. between HPA and feedhorn (U330) + TOTAL CORRECTION: + Remarks: Carrier-on state / Carrier in the middle of the	0.9 dB 0.0 dBi 0.0 dB 1.2 dB 0.0 dB 31.9 dB 34.0 dB

© CTC advanced GmbH Page 55 of 128



Plot No. 71



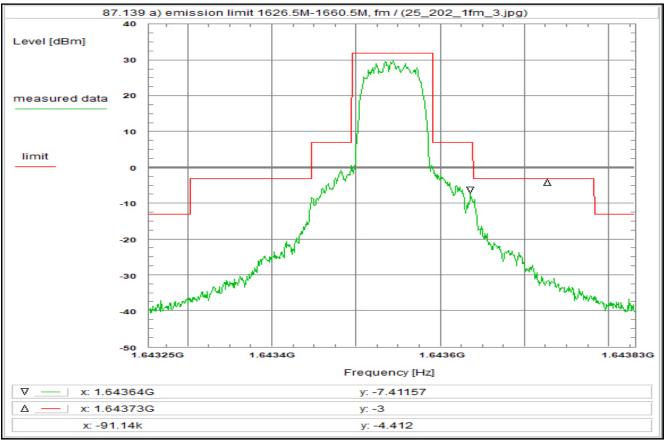
Subclause: 87.139 a)Frequencies, frequency tolerance and emission limitations Emission limitations Modulated rf-carrier in the middle of the band (fm)
Limit: Limit according to 87.139 a): 50-100% of assigned bw: -25dBc/4kHz 100-250% of assigned bw: -35dBc/4kHz > 250% of assigned bw: -43+10log(Pmax)dBc/4kHz = -43 dBW The mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance with the above schedule.
Test results: see plot (an explicit table was not generated)
Operating condition of DUT: Operating condition 1, see test report chapter 6.4 fm, R20T1XD
Test setup: see test report chapter 8.2
Test equipment: see test report chapter 8.1-8.2: C220, R001, U330
Remark:
Test result: Test passed

	22 55	SmbH, °C	Laboratory RC-SYS
Stop frequency: Center frequency: Frequency span: Resolution-BW: Video-BW: Input attenuation:	1.643378 1.643666 1.643522 288 3	GHz GHz kHz kHz kHz	
Correction: Directional coupler Coaxial cable (C220) DUT-Antenna Test antenna BW correction factor (3k -> 4k) Atten. between HPA and feedhor (U330) TOTAL CORRECTION:		0.9 0.0 0.0 1.2 0.0 31.9	dB dBi dB dB dB
Remarks: Carrier-on state / Carrier in the middle of the band (fm)			

© CTC advanced GmbH Page 56 of 128



Plot No. 72



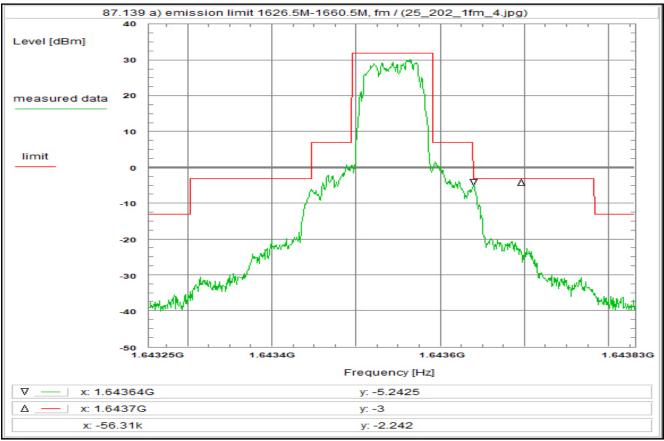
Subclause: 87.139 a)Frequencies, frequency tolerance and emission limitations Emission limitations Modulated rf-carrier in the middle of the band (fm)
Limit: Limit according to 87.139 a): 50-100% of assigned bw: -25dBc/4kHz 100-250% of assigned bw: -35dBc/4kHz > 250% of assigned bw: -43+10log(Pmax)dBc/4kHz = -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, R20T2XD
Test setup: see test report chapter 8.2
Test equipment: see test report chapter 8.1-8.2: C220, R001, U330
Remark:
Test result: Test passed

Environment condition:				
Date & Time:	Tue 27/Oct/2020	16:21	:23	
Location: CTC advanced GmbH, Laboratory RC-SYS				
Temperature:	22	°C	· · · · · · · · · · · · · · · · · · ·	
Humidity:	55	%		
Voltage:	28	V DO		
Setup of measurement ed	guipment:			
Start frequency:	1.643254	GHz		
Stop frequency:	1.64383	GHz		
Center frequency:	1.643542	GHz		
Frequency span:		kHz		
Resolution-BW:		kHz		
Video-BW:	10	kHz		
Input attenuation:	20	dB		
Trace-Mode:	Max-Hold	u.D		
Detector-Mode:	AVG			
Detector Wode.	7110			
Correction:				
Directional coupler	+	0.0	dB	
Coaxial cable (C220)	+			
DUT-Antenna	+			
Test antenna	+			
BW correction factor (3k -		1.2		
Atten, between HPA and		0.0		
(U330)	+			
TOTAL CORRECTION:	+			
TOTAL CONNECTION.	·	5 1.0	ub	
Remarks:				
Carrier-on state / Carrier	in the middle of th	e band	(fm)	
			(,	

© CTC advanced GmbH Page 57 of 128



Plot No. 73



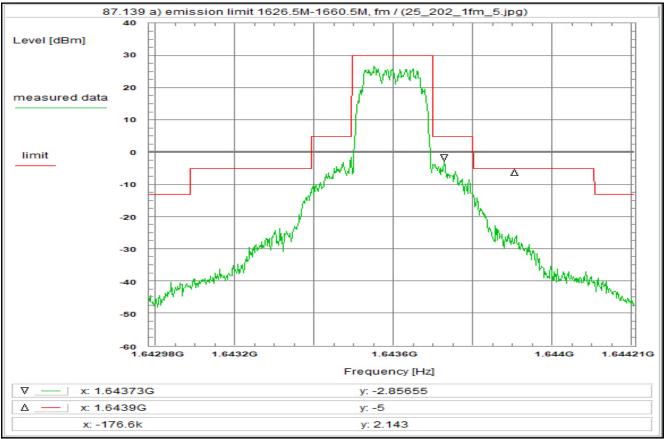
Subclause: 87.139 a) Frequencies, frequency tolerance and emission limitations Emission limitations Modulated rf-carrier in the middle of the band (fm) Limit: Limit according to 87.139 a): 50-100% of assigned bw: -25dBc/4kHz 100-250% of assigned bw: -35dBc/4kHz > 250% of assigned bw: -35dBc/4kHz > 250% 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, R5T2XD Test setup: see test report chapter 8.2 Test equipment: see test report chapter 8.1-8.2: C220, R001, U330 Remark: Test result: Test passed	
Emission limitations Modulated rf-carrier in the middle of the band (fm) Limit: Limit according to 87.139 a): 50-100% of assigned bw: -25dBc/4kHz 100-250% of assigned bw: -35dBc/4kHz > 250% of assigned bw: -43+10log(Pmax)dBc/4kHz = -43 dBW The mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance with the above schedule. Test results: see plot (an explicit table was not generated) Operating condition of DUT: Operating condition 1, see test report chapter 6.4 fm, R5T2XD Test setup: see test report chapter 8.2 Test equipment: see test report chapter 8.1-8.2: C220, R001, U330 Remark:	
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 8.2 Test equipment: see test report chapter 8.1-8.2: C220, R001, U330 Remark:	Emission limitations
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 8.2 Test equipment: See test report chapter 8.1-8.2: C220, R001, U330 Remark:	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
Operating condition 1, see test report chapter 6.4 fm, R5T2XD Test setup: see test report chapter 8.2 Test equipment: see test report chapter 8.1-8.2: C220, R001, U330 Remark:	
see test report chapter 8.2 Test equipment: see test report chapter 8.1-8.2: C220, R001, U330 Remark:	Operating condition 1, see test report chapter 6.4
see test report chapter 8.1-8.2: C220, R001, U330 Remark:	
Test result: Test passed	Remark:
	<u>Test result:</u> Test passed

Environment condition:			
Date & Time:	Tue 27/Oct/2020	16:26	5:07
Location:	CTC advanced (GmbH,	Laboratory RC-SYS
Temperature:	22		,
Humidity:	55	%	
Voltage:	28	V DO	
1			
Setup of measurement ed	guipment:		
Start frequency:	1.643254	GHz	
Stop frequency:	1.64383	GHz	
Center frequency:	1.643542		
Frequency span:	576		
Resolution-BW:	3	kHz	
Video-BW:	10	kHz	
Input attenuation:	20	dB	
Trace-Mode:	Max-Hold		
Detector-Mode:	AVG		
Correction:			
Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -	-> 4k) +	1.2	dB
Atten. between HPA and	feedhorn -	0.0	dB
(U330)	+	31.9	dB
TOTAL CORRECTION:	+	34.0	dB
Remarks:			
Carrier-on state / Carrier	in the middle of the	e band	(fm)

© CTC advanced GmbH Page 58 of 128



Plot No. 74



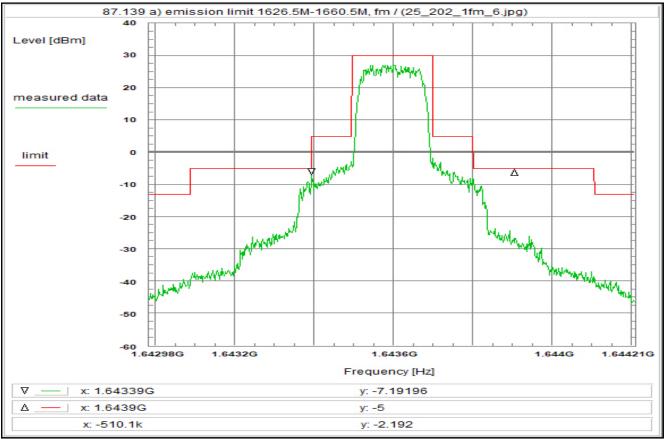
<u>Subclause:</u>	87.139 a)Frequencies, frequency tolerance and emission limitations Emission limitations Modulated rf-carrier in the middle of the band (fm)
100-250% of assig > 250% of assig The mean powe below the mean	to 87.139 a): gned bw: -25dBc/4kHz signed bw: -35dBc/4kHz ned bw: -43+10log(Pmax)dBc/4kHz = -43 dBW r of emissions shall be attenuated output power of the transmitter ith the above schedule.
Test results: see plot (an exp	licit table was not generated)
Operating condition Operating condition (m, R5T45XD)	tion of DUT: tion 1, see test report chapter 6.4
Test setup: see test report c	hapter 8.2
Test equipment: see test report c	hapter 8.1-8.2: C220, R001, U330
Remark:	
Test result:	Test passed

Environment condition:			
Date & Time:	Tue 27/Oct/202	16:28	3:46
Location:	CTC advanced GmbH, Laboratory RC-SYS		
Temperature:	22		•
Humidity:	55	%	
Voltage:		V DO	2
1			
Setup of measurement ed	guipment:		
Start frequency:	1.642983	GHz	
Stop frequency:	1.644207	GHz	
Center frequency:	1.643595		
Frequency span:	1,224		
Resolution-BW:	3		
Video-BW:	10		
Input attenuation:	20		
Trace-Mode:	Max-Hold		
Detector-Mode:	AVG		
Bottottor mode.	,,,,		
Correction:			
Directional coupler	+	0.0	dB
Coaxial cable (C220)	+		
DUT-Antenna	+		
Test antenna	+		
BW correction factor (3k		1.2	
Atten, between HPA and	feedhorn -		
(U330)	+		
TOTAL CORRECTION:	+		
Remarks:			
Carrier-on state / Carrier	in the middle of th	e band	I (fm)

© CTC advanced GmbH Page 59 of 128



Plot No. 75



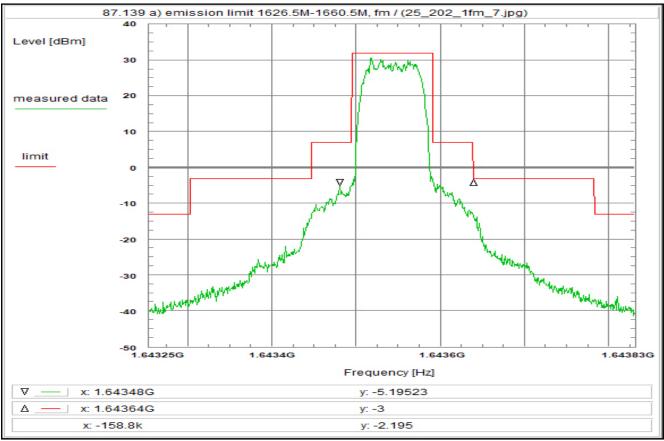
ı	C.
	Subclause: 87.139 a)Frequencies, frequency tolerance and emission limitations Emission limitations Modulated rf-carrier in the middle of the band (fm)
	Limit: Limit according to 87.139 a): 50-100% of assigned bw: -25dBc/4kHz 100-250% of assigned bw: -35dBc/4kHz > 250% of assigned bw: -43+10log(Pmax)dBc/4kHz = -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, R20T45XD
	Test setup: see test report chapter 8.2
	Test equipment: see test report chapter 8.1-8.2: C220, R001, U330
	Remark:
	Test result: Test passed

Environment condition: Date & Time:	Tue 27/Oct/2020	16:30	:17
Location:	CTC advanced GmbH, Laboratory RC-SYS		
Temperature:	22	°C	•
Humidity:	55	%	
Voltage:	28	V DC	
Setup of measurement ed	quipment:		
Start frequency:	1.642983		
Stop frequency:	1.644207		
Center frequency:	1.643595		
Frequency span:	1.224		
Resolution-BW:	3		
Video-BW:	10		
Input attenuation:		dB	
Trace-Mode:	Max-Hold		
Detector-Mode:	AVG		
Correction:			
Directional coupler	+		
Coaxial cable (C220)	+		dB
DUT-Antenna	+		dBi
Test antenna	+		
BW correction factor (3k			
Atten. between HPA and			
(U330)	+		
TOTAL CORRECTION:	+	34.0	g _B
Remarks:			<i>(</i> 2.)
Carrier-on state / Carrier	in the middle of the	e band	(fm)

© CTC advanced GmbH Page 60 of 128



Plot No. 76

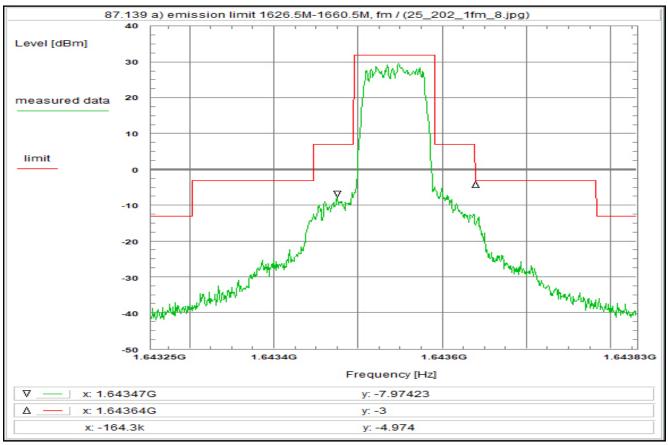


Environment condition: Date & Time: Tue 27/Oct/2020 16:33:38				
Location:	CTC advanced GmbH, Laboratory RC-SYS			
Temperature:	22	°C		
Humidity:	55			
Voltage:	28	V DC		
Setup of measurement ed				
Start frequency:	1.643254			
Stop frequency:	1.64383			
Center frequency:	1.643542			
Frequency span:	576			
Resolution-BW:	3			
Video-BW:	10			
Input attenuation:	20	dB		
Trace-Mode: Detector-Mode:	Max-Hold AVG			
Detector-wode:	AVG			
Correction:			_	
Directional coupler	+			
Coaxial cable (C220)	+		dB	
DUT-Antenna	+			
Test antenna	+			
BW correction factor (3k - Atten, between HPA and				
(U330)		0.0 31.9		
TOTAL CORRECTION:	+ +			
TOTAL CORRECTION:	+	34.0	ив	
Remarks:				
Carrier-on state / Carrier	in the middle of the	e band	(fm)	

© CTC advanced GmbH Page 61 of 128



Plot No. 77



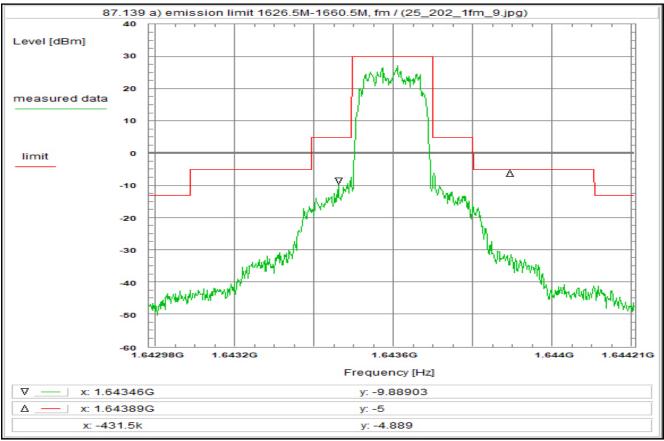
Subclause: 87.139 a)Frequencies, frequency tolerance and emission limitations Emission limitations Modulated rf-carrier in the middle of the band (fm)
Limit: Limit according to 87.139 a): 50-100% of assigned bw: -25dBc/4kHz 100-250% of assigned bw: -35dBc/4kHz > 250% of assigned bw: -43+10log(Pmax)dBc/4kHz = -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 8.2
Test equipment: see test report chapter 8.1-8.2: C220, R001, U330
Remark:
Test result: Test passed

Environment condition: Date & Time: Location: Temperature: Humidity: Voltage:	anced C 22 55	GmbH, °C	Laboratory RC-SYS
Stop frequency: 1.6 Center frequency: 1.6 Frequency span: Resolution-BW: Video-BW: Input attenuation:	3	GHz GHz kHz kHz kHz	
Correction: Directional coupler Coaxial cable (C220) DUT-Antenna Test antenna BW correction factor (3k -> 4k) Atten, between HPA and feedhorn (U330) TOTAL CORRECTION:	+ + + + + + + + +	0.9 0.0 0.0 1.2 0.0 31.9	
Remarks: Carrier-on state / Carrier in the midd	e of the	e band	(fm)

© CTC advanced GmbH Page 62 of 128



Plot No. 78



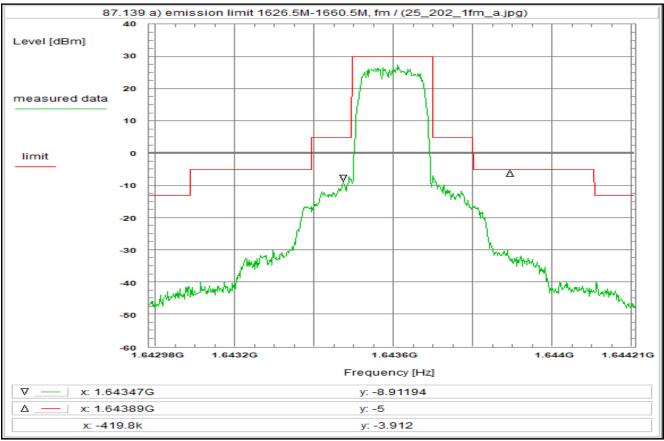
Subclause: 87.139 a)Frequencies, frequency tolerance and emission limitations Emission limitations Modulated rf-carrier in the middle of the band (fm)
Limit: Limit according to 87.139 a): 50-100% of assigned bw: -25dBc/4kHz 100-250% of assigned bw: -35dBc/4kHz > 250% of assigned bw: -43+10log(Pmax)dBc/4kHz = -43 dBW The mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance with the above schedule.
<u>Test results:</u> see plot (an explicit table was not generated)
Operating condition of DUT: Operating condition 1, see test report chapter 6.4 fm, R5T45QD
<u>Test setup:</u> see test report chapter 8.2
Test equipment: see test report chapter 8.1-8.2: C220, R001, U330
Remark:
Test result: Test passed

Environment condition:			
Date & Time: Tue 27/Oct/2020 16:38:39			
	CTC advanced GmbH, Laboratory RC-SYS		
Temperature: 22			
Humidity: 55			
Voltage: 28	V DC		
Setup of measurement equipment:			
Start frequency: 1.642983			
Stop frequency: 1.644207			
Center frequency: 1.643595			
Frequency span: 1.224			
Resolution-BW: 3	kHz		
Video-BW: 10			
Input attenuation: 20	dB		
Trace-Mode: Max-Hold			
Detector-Mode: AVG			
Correction:			
Directional coupler +			
Coaxial cable (C220) +			
DUT-Antenna +			
Test antenna +			
BW correction factor (3k -> 4k) +	1.2 dB		
Atten. between HPA and feedhorn -			
(U330) +	31.9 dB		
TOTAL CORRECTION: +	34.0 dB		
Barranda			
Remarks: Carrier-on state / Carrier in the middle of th	a hand (fm)		
Carner-on state / Carner in the middle of th	e band (im)		

© CTC advanced GmbH Page 63 of 128



Plot No. 79



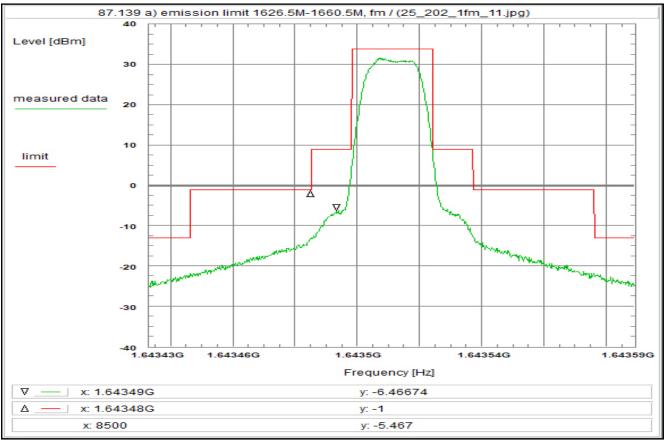
Subclause: 87.139	a) Frequencies, frequency tolerance and emission limitations Emission limitations Modulated rf-carrier in the middle of the band (fm)
	v: -25dBc/4kHz w: -35dBc/4kHz -43+10log(Pmax)dBc/4kHz = -43 dBW ssions shall be attenuated bower of the transmitter
Test results: see plot (an explicit table	e was not generated)
Operating condition of D Operating condition 1, s fm, R20T45QD	<u>out:</u> ee test report chapter 6.4
<u>Test setup:</u> see test report chapter 8	3.2
Test equipment: see test report chapter 8	3.1-8.2: C220, R001, U330
Remark:	
Test result: Test p	passed

Environment condition:				
Date & Time:	Tue 27/Oct/2020	16:39	:47	
Location:				
Temperature:	22	°C	Education of the original of t	
Humidity:	55	%		
Voltage:	28	V DC		
voltage.	20	V DC	,	
Setup of measurement ed	quinmont:			
Start frequency:	1.642983	GHz		
Stop frequency:	1.644207	GHz		
Center frequency:	1.643595			
Frequency span:	1.224			
Resolution-BW:	3			
Video-BW:		kHz		
Input attenuation:	20	dB		
Trace-Mode:	Max-Hold			
Detector-Mode:	AVG			
Correction:				
Directional coupler	+	0.0		
Coaxial cable (C220)	+	0.9		
DUT-Antenna	+	0.0	dBi	
Test antenna	+	0.0	dB	
BW correction factor (3k -	-> 4k) +	1.2	dB	
Atten, between HPA and		0.0	dB	
(U330)	+	31.9	dB	
TOTAL CORRECTION:	+	34.0	dB	
Remarks:				
Carrier-on state / Carrier	in the middle of the	e band	(fm)	

© CTC advanced GmbH Page 64 of 128



Plot No. 80



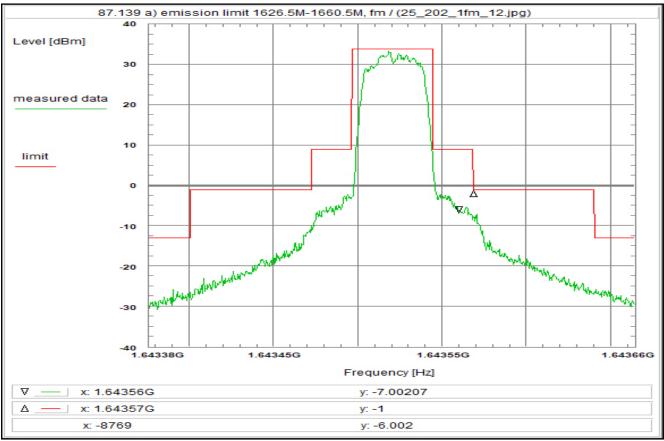
ı	
	Subclause: 87.139 a)Frequencies, frequency tolerance and emission limitations Emission limitations Modulated rf-carrier in the middle of the band (fm)
	Limit: Limit according to 87.139 a): 50-100% of assigned bw: -25dBc/4kHz 100-250% of assigned bw: -35dBc/4kHz > 250% of assigned bw: -43+10log(Pmax)dBc/4kHz = -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, R20T05QD
	Test setup: see test report chapter 8.2
	Test equipment: see test report chapter 8.1-8.2: C220, R001, U330
	Remark:
	Test result: Test passed

Environment condition: Date & Time: Tue 27/Oct/2020 16:43:22 Location: CTC advanced GmbH, Laboratory RC-SYS				
Location:			Laboratory RC-SYS	
Temperature:	22	-		
Humidity:	55			
Voltage:	28	V DC	,	
Setup of measurement ed	quipment:			
Start frequency:	1.643433	GHz		
Stop frequency:	1.643589	GHz		
Center frequency:	1.643511	GHz		
Frequency span:	156	kHz		
Resolution-BW:	3	kHz		
Video-BW:	10	kHz		
Input attenuation:	20	dB		
Trace-Mode:	Max-Hold			
Detector-Mode:	AVG			
Correction: Directional coupler	+	0.0	dB	
Coaxial cable (C220)	+		dB	
DUT-Antenna	+		dBi	
Test antenna	+		dB	
BW correction factor (3k -		1.2	dB	
Atten, between HPA and			dB	
(U330)	+			
TOTAL CORRECTION:	+			
TOTAL CORRECTION.	'	34.0	ub	
Remarks:	Sauthar and State of the		(6)	
Carrier-on state / Carrier	in the middle of the	e band	(tm)	

© CTC advanced GmbH Page 65 of 128



Plot No. 81



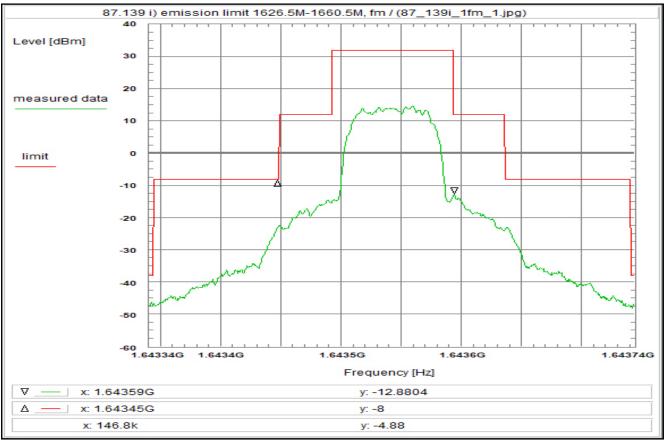
Emission lir	s, frequency tolerance and emission limitations nitations rf-carrier in the middle of the band (fm)
Limit: Limit according to 87.139 a): 50-100% of assigned bw: -25dBc/4kH 100-250% of assigned bw: -35dBc/ > 250% of assigned bw: -43+10log(t The mean power of emissions shall be below the mean output power of the tr in accordance with the above schedul	4kHz Pmax)dBc/4kHz = -43 dBW e attenuated ansmitter
Test results: see plot (an explicit table was not gen	erated)
Operating condition of DUT: Operating condition 1, see test report fm, R20T1QD	chapter 6.4
Test setup: see test report chapter 8.2	
Test equipment: see test report chapter 8.1-8.2: C220,	R001, U330
Remark:	
Test result: Test passed	

Environment condition:				
	Date & Time: Tue 27/Oct/2020 16:46:52			
Location:				
Temperature:	22			
Humidity:	55			
Voltage:	28	V DC	,	
Catum of management of				
Setup of measurement e	<u>quipment:</u> 1.643376	GHz		
Start frequency:	1.643664			
Stop frequency: Center frequency:	1.64352			
Frequency span:	288			
Resolution-BW:	3			
Video-BW:		кпz kHz		
Input attenuation:	20			
Trace-Mode:	Max-Hold	ub		
Detector-Mode:	AVG			
Detector-wode.	AVG			
Correction:				
Directional coupler	+	0.0	dB	
Coaxial cable (C220)	+		dB	
DUT-Antenna	+	0.0		
Test antenna	+			
BW correction factor (3k			dB	
Atten. between HPA and	feedhorn -			
(U330)	+			
TOTAL CORRECTION:	+	34.0	dB	
Remarks:				
Carrier-on state / Carrier	in the middle of the	e band	(fm)	
			` '	

© CTC advanced GmbH Page 66 of 128



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 lest report chapter 6.4 fm, R5T2XD
Test setup: see test report chapter 8.2
Test equipment: see test report chapter 8.1-8.2: C220, R001, U330
Remark:
Test result: Test passed

Environment condition:			
Date & Time: Wed 28/Oct/202			
	GmbH, Laboratory RC-SYS		
Temperature: 22	°C		
Humidity: 55	%		
Voltage: 28	V DC		
Setup of measurement equipment:	011		
Start frequency: 1.6433404	GHz		
Stop frequency: 1.6437436			
Center frequency: 1.643542			
Frequency span: 403.2			
	kHz		
Video-BW: 10			
Input attenuation: 0	dB		
Trace-Mode: Max-Hold			
Detector-Mode: AVG			
0 "			
Correction:	0.0 ID		
Directional coupler +	0.0 dB		
Coaxial cable (C220) +			
DUT-Antenna +			
Test antenna +			
	1.2 dB		
Atten. between HPA and feedhorn -	0.0 dB		
	31.9 dB		
TOTAL CORRECTION: +	34.0 dB		
Remarks:			
Carrier-on state / Carrier in the middle of th	e band (tm)		
For EIRP calculation:			
'worst-case' = maximum antenna gain			

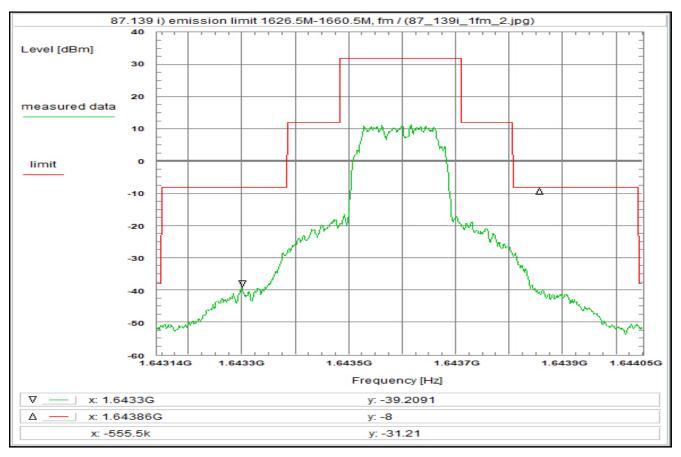
© CTC advanced GmbH Page 67 of 128



Plot No. 83

Remark:

Test result: Test passed



Environment condition:

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, RST45XD

Test setup:
see test report chapter 8.2

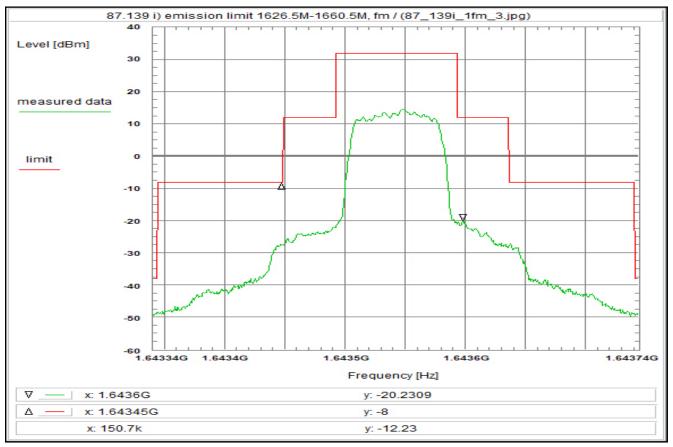
Test equipment:
see lest report chapter 8.1-8.2: C220, R001, U330

Wed 28/Oct/2020 15:10:03 CTC advanced GmbH, Laboratory RC-SYS Date & Time: Location: Temperature: Humidity: 55 % 28 V DC Voltage: Setup of measurement equipment:
Start frequency: 1.6431414 GHz Stop frequency: 1.6440486 GHz Center frequency: 1.643595 GHz kHz Frequency span: 907.2 Resolution-BW: kHz Video-BW: 10 kHz Input attenuation: dB Trace-Mode: Max-Hold Detector-Mode: AVG Correction: 0.0 dB 0.9 dB Directional coupler Coaxial cable (C220) DUT-Antenna 0.0 dBi 0.0 dB 1.2 dB Test antenna BW correction factor (3k -> 4k) Atten. between HPA and feedhorn Freefield attenuation (U330) 0.0 dB 31.9 dB TOTAL CORRECTION: 34.0 dB Remarks: Carrier-on state / Carrier in the middle of the band (fm) For EIRP calculation: 'worst-case' = maximum antenna gain

© CTC advanced GmbH Page 68 of 128



Plot No. 84



Environment condition:

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 lest report chapter 8.2

Test equipment:
see test report chapter 8.1-8.2: C220, R001, U330

Remark:

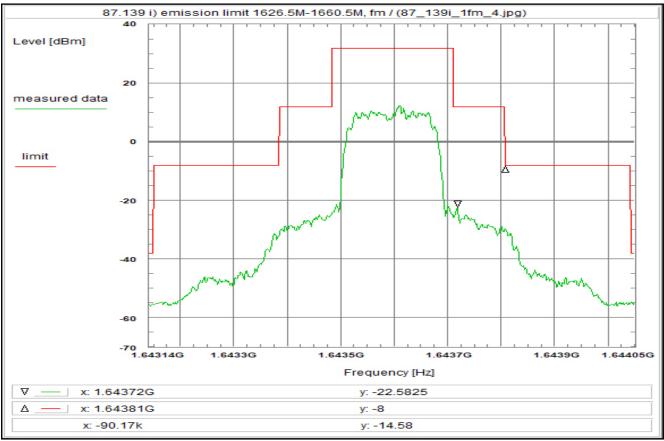
Test result: Test passed

Wed 28/Oct/2020 15:14:07 CTC advanced GmbH, Laboratory RC-SYS Date & Time: Location: Temperature: Humidity: 55 % 28 V DC Voltage: Setup of measurement equipment:
Start frequency: 1.6433404 GHz Stop frequency: 1.6437436 GHz Center frequency: 1.643542 GHz kHz Frequency span: 403.2 Resolution-BW: kHz Video-BW: 10 kHz Input attenuation: dB Trace-Mode: Max-Hold Detector-Mode: AVG Correction: 0.0 dB 0.9 dB Directional coupler Coaxial cable (C220) DUT-Antenna 0.0 dBi 0.0 dB 1.2 dB Test antenna BW correction factor (3k -> 4k) Atten. between HPA and feedhorn Freefield attenuation (U330) 0.0 dB 31.9 dB TOTAL CORRECTION: + 34.0 dB $\frac{Remarks:}{\text{Carrier-on state / Carrier in the middle of the band (fm)}}$ <u>For EIRP calculation:</u> 'worst-case' = maximum antenna gain

© CTC advanced GmbH Page 69 of 128



Plot No. 85



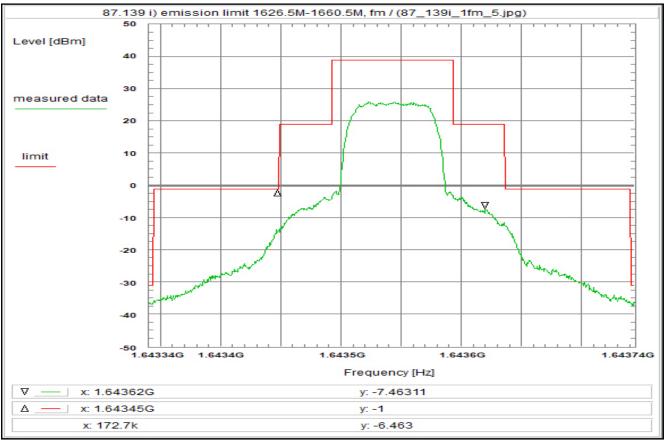
Subclause: 87.139 i) Frequencies, frequency tolerance and emission limitations Emission limitations Modulated rf-carrier in the middle of the band (fm)
Limit: Limit according to 87.139(i)(1) The mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance with 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, R5T45QD
Test setup: see test report chapter 8.2
Test equipment: see test report chapter 8.1-8.2: C220, R001, U330
Remark:
Test result: Test passed

Temperature: 22 Shumidity: 55	15:17:32 nbH, Laboratory RC-SYS °C % V DC		
Stop frequency: 1.6440486 Center frequency: 1.643595 Frequency span: 907.2 Resolution-BW: 3 Video-BW: 10	kHz		
Coaxial cable (C220)	0.0 dB 0.9 dB 0.0 dBi 0.0 dB 1.2 dB 0.0 dB 31.9 dB 34.0 dB		
Carrier-on state / Carrier in the middle of the band (fm) For EIRP calculation: 'worst-case' = maximum antenna gain			

© CTC advanced GmbH Page 70 of 128



Plot No. 86



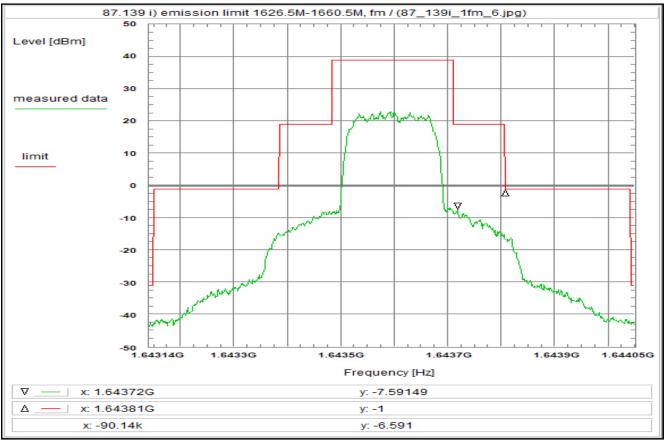
Subclause: 87.139 i) Frequencies, frequency tolerance and emission limitations Emission limitations Modulated rf-carrier in the middle of the band (fm)
Limit: Limit according to 87.139(i)(1) The mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance with 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, R20T2XD
Test setup: see test report chapter 8.2
Test equipment: see test report chapter 8.1-8.2: C220, R001, U330
Remark:
Test result: Test passed

Environment condition: Wed 28/Oct/2020 15:20:09 Location: CTC advanced GmbH, Laboratory RC-SYS Temperature: 22 °C Humidity: 55 % Voltage: 28 V DC			
Setup of measurement equipment: Start frequency: 1.6433404 Stop frequency: 1.6437436 Center frequency: 1.643542 Frequency span: 403.2 Resolution-BW: 3 kHz Video-BW: 10 kHz Input attenuation: 0 dB Trace-Mode: Max-Hold Detector-Mode: AVG			
Correction: Directional coupler + 0.0 dB Coaxial cable (C220) + 0.9 dB DUT-Antenna + 0.0 dBi Test antenna + 0.0 dB BW correction factor (3k -> 4k) + 1.2 dB Atten. between HPA and feedhorn - 0.0 dB Freefield attenuation (U330) + 31.9 dB TOTAL CORRECTION: + 34.0 dB			
Remarks: Carrier-on state / Carrier in the middle of the band (fm) For EIRP calculation: 'worst-case' = maximum antenna gain			

© CTC advanced GmbH Page 71 of 128



Plot No. 87



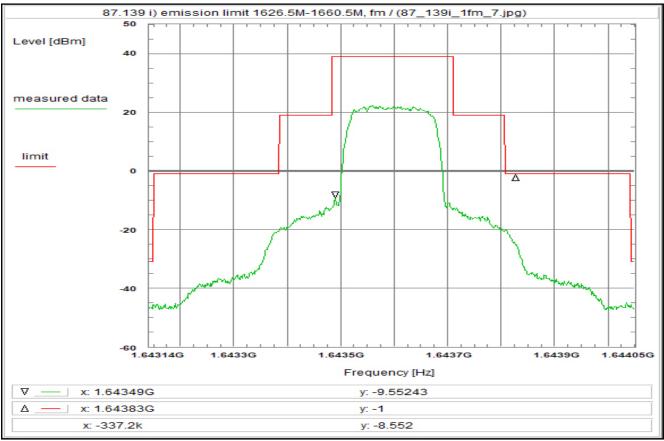
Subclause: 87.139 i) Frequencies, frequency tolerance and emission limitations Emission limitations Modulated rf-carrier in the middle of the band (fm)
Limit: Limit according to 87.139(i)(1) The mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance with 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, R20T45XD
Test setup: see test report chapter 8.2
Test equipment: see test report chapter 8.1-8.2: C220, R001, U330
Remark:
Test result: Test passed

Environment condition: Date & Time: Wed 28/Oct/2020 15:21:55				
Temperature:	22	°C	Education y 110 010	
Humidity:	55	%		
Voltage:	28	V DO	;	
Setup of measurement equipment:				
	31414	GHz		
	40486	GHz		
	43595	GHz		
	907.2			
Resolution-BW:		kHz		
Video-BW:	10	kHz		
Input attenuation:	0	dB		
	-Hold			
Detector-Mode:	AVG			
Correction:		0.0	JD.	
Directional coupler	+	0.0		
Coaxial cable (C220) DUT-Antenna	+	0.9		
Test antenna	+	0.0		
BW correction factor (3k -> 4k)	+	1.2		
Atten, between HPA and feedhorn	+	0.0		
Freefield attenuation (U330)		31.9		
TOTAL CORRECTION:	+			
TOTAL CORRECTION.	+	34.0	UB	
Remarks: Carrier-on state / Carrier in the middle of the band (fm) For EIRP calculation: worst-case = maximum antenna gain				

© CTC advanced GmbH Page 72 of 128



Plot No. 88



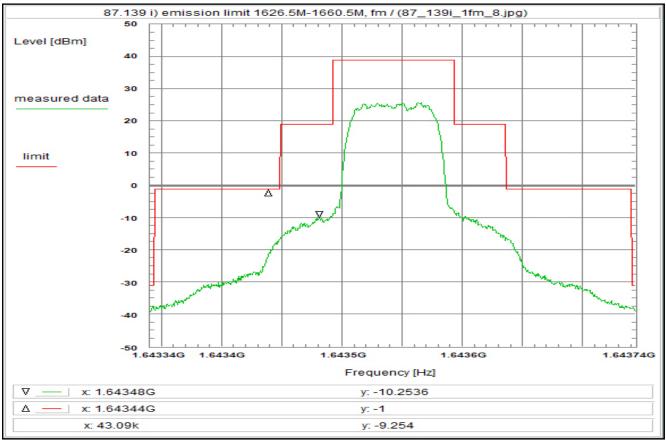
ı					
	Subclause: 87.139 i) Frequencies, frequency tolerance and emission limitations Emission limitations Modulated rf-carrier in the middle of the band (fm)				
	Limit: Limit according to 87.139(f)(1) The mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance with 87.139(f)(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, R20T45QD				
	Test setup: see test report chapter 8.2				
	Test equipment: see test report chapter 8.1-8.2: C220, R001, U330				
١	Remark:				
	Test result: Test passed				

Environment condition: Date & Time: Wed 28/Oct	m	0.15-22-24
Location: CTC advanced GmbH, Laboratory RC-SYS Temperature: 22 °C		
Humidity:	55	
Voltage:	28	
vollage.	20	V DC
Setup of measurement equipment:		
Start frequency: 1.64314	114	GHz
Stop frequency: 1.64404		
Center frequency: 1.6435		
		kHz
Resolution-BW:	3	
Video-BW:	10	
Input attenuation:	0	
Trace-Mode: Max-H	old	
Detector-Mode: A	VG	
Correction:		
Directional coupler	+	0.0 dB
Coaxial cable (C220)	+	
DUT-Antenna	+	
Test antenna	+	
BW correction factor (3k -> 4k)	+	
Atten. between HPA and feedhorn	-	0.0 dB
Freefield attenuation (U330) TOTAL CORRECTION:	+	31.9 dB
TOTAL CORRECTION:	+	31.9 dB 34.0 dB
Remarks:		
Carrier-on state / Carrier in the middle of	of the	e hand (fm)
For EIRP calculation:	JI (II)	c band (m)
worst-case' = maximum antenna gain		
morest subset in animalin anterina gain		

© CTC advanced GmbH Page 73 of 128



Plot No. 89



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, R20T2QD

Test setup:
s see test report chapter 8.2

Test equipment:
see test report chapter 8.1-8.2: C220, R001, U330

Remark:

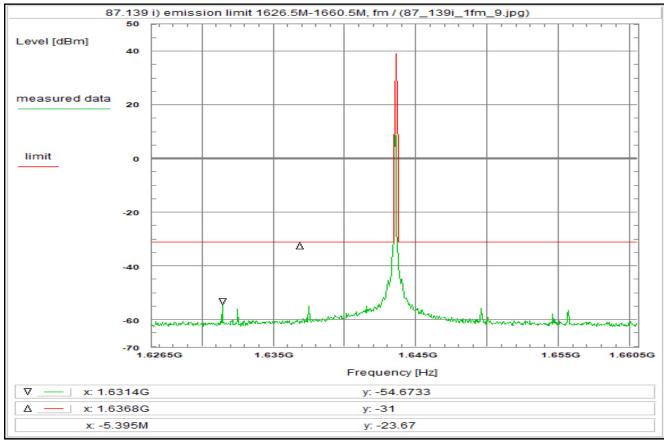
Test result: Test passed

Environment condition: Wed 28/Oct/2020 15:25:30 Date & Time: CTC advanced GmbH, Laboratory RC-SYS Location: Temperature: Humidity: 55 % 28 V DC Voltage: Setup of measurement equipment:
Start frequency: 1.6433404 GHz Stop frequency: 1.6437436 GHz Center frequency: 1.643542 GHz kHz Frequency span: 403.2 Resolution-BW: kHz Video-BW: 10 kHz Input attenuation: dB Trace-Mode: Max-Hold Detector-Mode: AVG Correction: 0.0 dB 0.9 dB Directional coupler Coaxial cable (C220) DUT-Antenna 0.0 dBi 0.0 dB 1.2 dB Test antenna BW correction factor (3k -> 4k) Atten. between HPA and feedhorn Freefield attenuation (U330) 0.0 dB 31.9 dB TOTAL CORRECTION: + 34.0 dB Remarks: Carrier-on state / Carrier in the middle of the band (fm) <u>For EIRP calculation:</u> 'worst-case' = maximum antenna gain

© CTC advanced GmbH Page 74 of 128



Plot No. 90



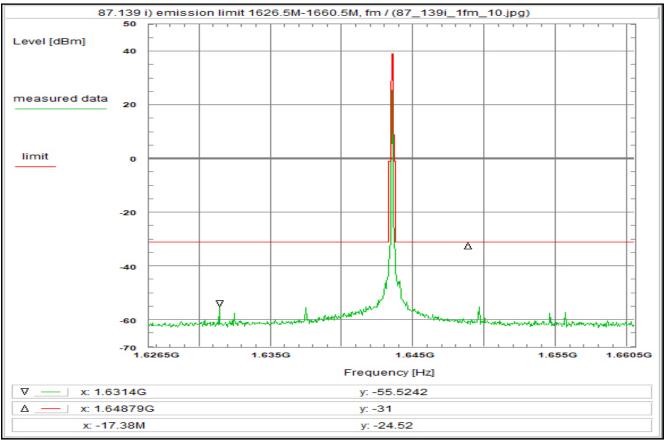
Subclause: 87.139 i) Frequencies, frequency tolerance and emission limitations Emission limitations Modulated rf-carrier in the middle of the band (fm)					
Limit: Limit according to 87.139(i)(1) The mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance 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, RST1XD					
Test setup: see test report chapter 8.2					
Test equipment: see test report chapter 8.1-8.2: C220, R001, U330					
Remark:					
Test result: Test passed					

Environment condition: Date & Time: Location: Temperature: Humidity: Voltage:	Thu 05/Nov/202 CTC advanced 0 22 55 28	GmbH, Laboratory RC-SYS °C %
Setup of measurement eq Start frequency: Stop frequency: Center frequency: Frequency span: Resolution-BW: Video-BW: Input attenuation: Trace-Mode: Detector-Mode:	uipment: 1.6265 1.6605 1.6435 34 3 30 0 Max-Hold RMS	GHz GHz MHz kHz kHz dB
Correction: Directional coupler Coaxial cable (C220) DUT-Antenna Test antenna BW correction factor (3k - Atten. between HPA and f (U330) TOTAL CORRECTION: Remarks:	eedhorn - + +	0.9 dB 0.0 dB 0.0 dB 1.2 dB 0.0 dB 31.9 dB 34.0 dB
Carrier-on state / Carrier in <u>For EIRP calculation:</u> worst-case = maximum a		ne band (tm)

© CTC advanced GmbH Page 75 of 128



Plot No. 91



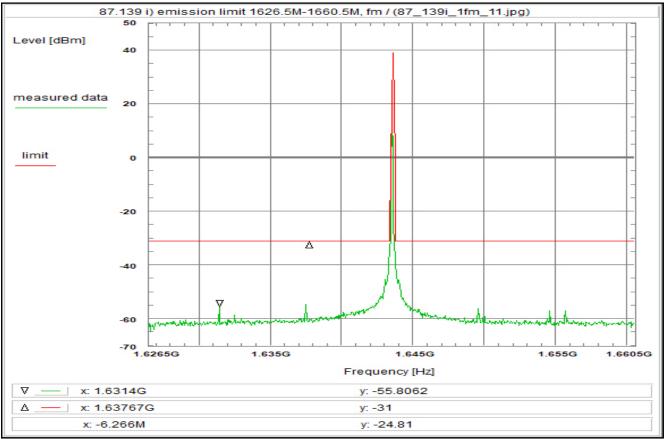
Subclause: 87.139 i) Frequencies, frequency tolerance and emission limitations Emission limitations Modulated rf-carrier in the middle of the band (fm)					
Limit: Limit according to 87.139(i)(1) The mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance 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 8.2					
Test equipment: see test report chapter 8.1-8.2: C220, R001, U330					
Remark:					
Test result: Test passed					

Environment condition:			
Date & Time:	Thu 05/Nov/202		
Location:			Laboratory RC-SYS
Temperature:	22	°C	
Humidity:	55	%	
Voltage:	28	V DC	
Setup of measurement eq	uinment·		
Start frequency:	1.6265	GHz	
Stop frequency:	1.6605		
Center frequency:	1.6435		
Frequency span:	34		
Resolution-BW:	3		
Video-BW:	30		
Input attenuation:	0	dB	
Trace-Mode:	Max-Hold	uD	
Detector-Mode:	RMS		
Detector-wode.	KIVIS		
Correction:			
Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -		1.2	
Atten. between HPA and t	feedhorn -	0.0	dB
(U330)	+		
TOTAL CORRECTION:	+	34.0	dB
Remarks:			
Carrier-on state / Carrier i	n the middle of the	e band	(fm)
For EIRP calculation:			,
'worst-case' = maximum	antenna gain		
	3		
1			

© CTC advanced GmbH Page 76 of 128



Plot No. 92



Subclause:

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

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

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

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

Test setup:
see test report chapter 8.2

Test equipment:
see test report chapter 8.1-8.2: C220, R001, U330

Remark:

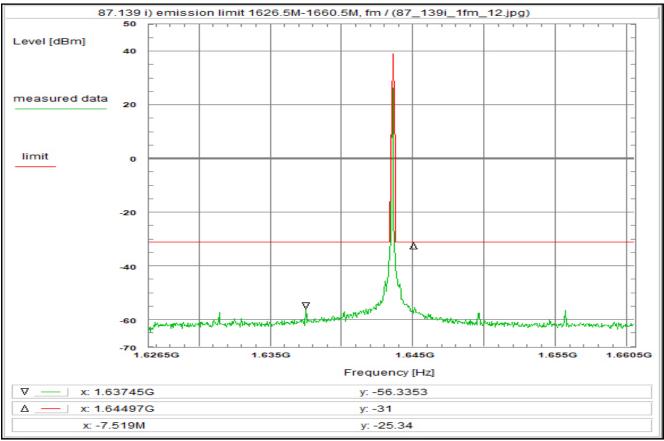
Test result: Test passed

Environment condition: Thu 05/Nov/2020 09:34:18 Date & Time: CTC advanced GmbH, Laboratory RC-SYS Location: Temperature: Humidity: 55 % 28 V DC Voltage: Setup of measurement equipment: Start frequency: 1.6265 GHz Stop frequency: Center frequency: 1.6435 GHz MHz Frequency span: 34 Resolution-BW: kHz Video-BW: 30 kHz Input attenuation: 0 dB Trace-Mode: Max-Hold Detector-Mode: RMS Correction: Directional coupler Coaxial cable (C220) 0.0 dB 0.9 dB DUT-Antenna 0.0 dBi 0.0 dB 1.2 dB Test antenna BW correction factor (3k -> 4k) 0.0 dB 31.9 dB Atten. between HPA and feedhorn (U330) TOTAL CORRECTION: 34.0 dB Remarks: Carrier-on state / Carrier in the middle of the band (fm) <u>For EIRP calculation:</u> 'worst-case' = maximum antenna gain

© CTC advanced GmbH Page 77 of 128



Plot No. 93



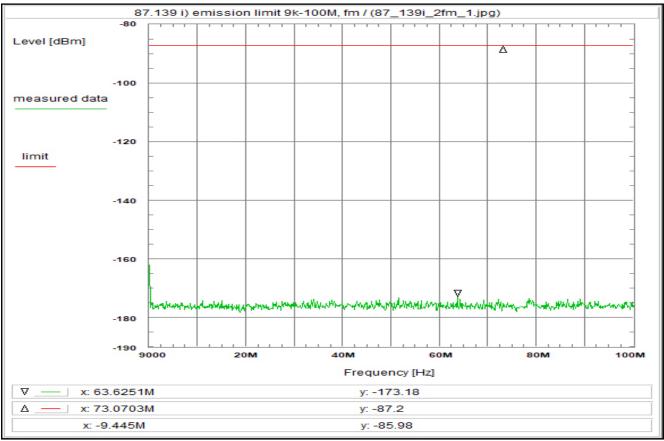
Subclause: 87.139 i) Frequencies, frequency tolerance and emission limitations Emission limitations Modulated rf-carrier in the middle of the band (fm)			
Limit: Limit according to 87.139(i)(1) The mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance 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, R20T1QD			
Test setup: see test report chapter 8.2			
Test equipment: see test report chapter 8.1-8.2: C220, R001, U330			
Remark:			
Test result: Test passed			

Environment condition:			
	05/Nov/2020	09:3	5:03
			Laboratory RC-SYS
Temperature:	22	°C	Ediboratory 110 010
Humidity:	55	%	
Voltage:	28	V DC	
voltage.	20	V DC	,
Setup of measurement equipme	ont:		
Start frequency:	1.6265	GHz	
	1.6605	GHZ	
Stop frequency:			
Center frequency:	1.6435		
Frequency span:		MHz	
Resolution-BW:		kHz	
Video-BW:	30	kHz	
Input attenuation:	0	dB	
Trace-Mode:	Max-Hold		
Detector-Mode:	RMS		
Correction:			
Directional coupler	+	0.0	dB
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna	+		
Test antenna	+		
BW correction factor (3k -> 4k)		1.2	
Atten. between HPA and feedho		0.0	
(U330)		31.9	
TOTAL CORRECTION:	+		
TOTAL CORRECTION.	т	34.0	ub
Domarka			
Remarks: Carrier-on state / Carrier in the	middle of the	hand	(fm)
	middle of the	Danu	(IIII)
For EIRP calculation:			
'worst-case' = maximum anteni	na gain		

© CTC advanced GmbH Page 78 of 128



Plot No. 94



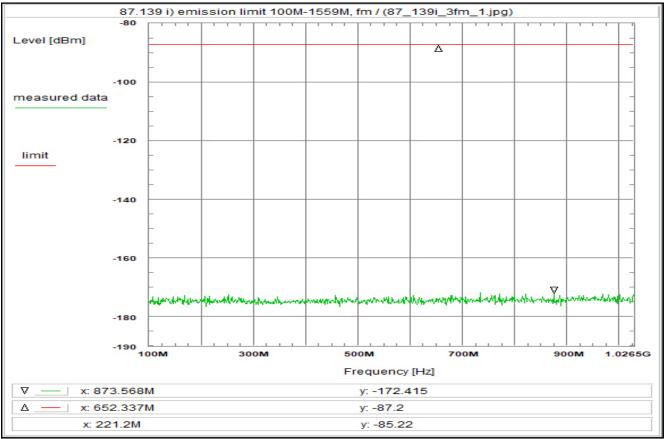
Subclause: 87.139 i) Frequencies, frequency tolerance and emission limitations Emission limitations Modulated rf-carrier in the middle of the band (fm)					
Limit: Limit according to 87.139(i)(1) The mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance 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, valid for all modulations					
Test setup: see test report chapter 8.2					
Test equipment: see test report chapter 8.1-8.2: C220, R001, U331, W_RE					
Remark:					
Test result: Test passed					

Environment condition: Date & Time: Location: Temperature: Humidity: Voltage: Tenvironment condition: Thu 29/Oct/2020 CTC advanced of the condition of the cond	0.14:22:09 GmbH, Laboratory RC-SYS °C % V DC
BW correction factor (3k -> 4k) + Atten. between HPA and feedhorn -	0.2 dB 0.0 dBi 0.0 dB 1.2 dB 0.0 dB 31.4 dB -87.2 dB
For EIRP calculation: worst-case = maximum antenna gain	

© CTC advanced GmbH Page 79 of 128



Plot No. 95



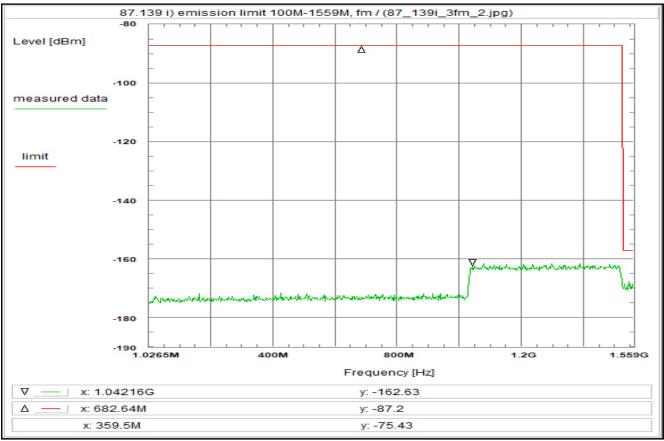
Subclause: 87.139 i) Frequencies, frequency tolerance and emission limitations Emission limitations Modulated rf-carrier in the middle of the band (fm) Limit: Limit according to 87.139(i)(1) The mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance with 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, valid for all modulations Test setup: see test report chapter 8.2 Test equipment: see test report chapter 8.1-8.2: C220, R001, U331, W_RE Remark: Test result: Test passed				
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, valid for all modulations Test setup: see test report chapter 8.2 Test equipment: see test report chapter 8.1-8.2: C220, R001, U331, W_RE Remark:				
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, valid for all modulations Test setup: see test report chapter 8.2 Test equipment: see test report chapter 8.1-8.2: C220, R001, U331, W_RE Remark:	Emission limitations			
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 Test setup: see test report chapter 8.2 Test equipment: see test report chapter 8.1-8.2: C220, R001, U331, W_RE Remark:	Limit according to 87.139(i)(1) The mean power of emissions shall be attenuated below the mean output power of the transmitter			
Operating condition 1, see test report chapter 6.4 fm, valid for all modulations Test setup: see test report chapter 8.2 Test equipment: see test report chapter 8.1-8.2: C220, R001, U331, W_RE Remark:				
see test report chapter 8.2 Test equipment: see test report chapter 8.1-8.2: C220, R001, U331, W_RE Remark:	Operating condition 1, see test report chapter 6.4			
see test report chapter 8.1-8.2: C220, R001, U331, W_RE Remark:				
Test result: Test passed	Remark:			
	Test result: Test passed			

Environment condition:		
	u 29/Oct/2020	
	C advanced (GmbH, Laboratory RC-SYS
Temperature:	22	°C
Humidity:	55	%
Voltage:	28	V DC
Setup of measurement equipr	nent:	
Start frequency:	100	MHz
Stop frequency:	1.0265	GHz
Center frequency:	563.25	MHz
Frequency span:	926.5	MHz
Resolution-BW:	3	kHz
Video-BW:	10	kHz
Input attenuation:	0	dB
Trace-Mode:	Max-Hold	
Detector-Mode:	Pos Peak	
Correction:		
W_RE	120.0	dB
Coaxial cable (C220)	+	0.5 dB
DUT-Antenna	+	0.0 dBi
Test antenna	+	0.0 dB
BW correction factor (3k -> 4k) +	1.2 dB
Atten, between HPA and feed	horn -	0.0 dB
(U331)	+	31.7 dB
TOTAL CORRECTION:	-	-86.6 dB
Remarks:		
Carrier-on state / Carrier in the	e middle of the	e band (fm)
For EIRP calculation:		
'worst-case' = maximum ante	nna gain	

© CTC advanced GmbH Page 80 of 128



Plot No. 96



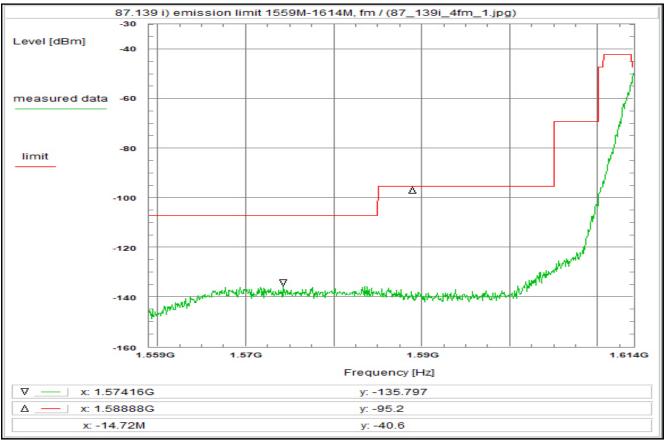
Subclause: 87.139 i) Frequencies, frequency tolerance and emission limitations Emission limitations Modulated rf-carrier in the middle of the band (fm)					
Limit: Limit according to 87.139(i)(1) The mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance 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, valid for all modulations					
Test setup: see test report chapter 8.2					
Test equipment: see test report chapter 8.1-8.2: C220, R001, U331, W_RE					
Remark:					
Test result: Test passed					

Environment condition: Date & Time: Thu 29/Oct/2020 Location: CTC advanced of Temperature: 22 Humidity: 55 Voltage: 28	0 15:03:15 GmbH, Laboratory RC-SYS °C % V DC
	MHz GHz kHz kHz
BW correction factor (3k -> 4k) + Atten. between HPA and feedhorn - (U331) + TOTAL CORRECTION: -	0.6 dB 0.0 dBi 0.0 dB 1.2 dB 0.0 dB 31.8 dB
Remarks: Carrier-on state / Carrier in the middle of the For EIRP calculation: worst-case = maximum antenna gain	e band (fm)

© CTC advanced GmbH Page 81 of 128



Plot No. 97



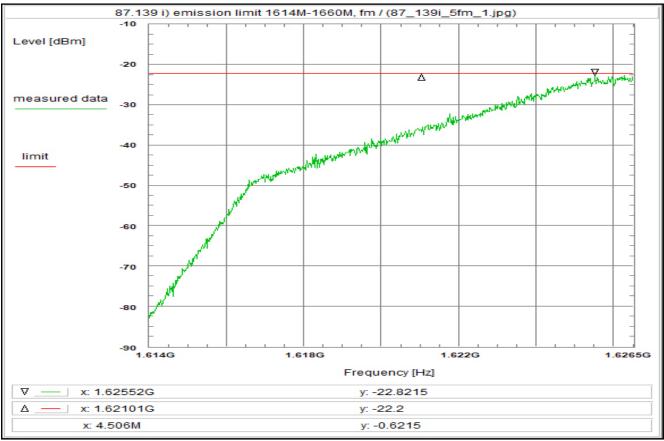
Subclause: 87.139 i) Frequencies, frequency tolerance and emission limitations Emission limitations Modulated rf-carrier in the middle of the band (fm) Limit: Limit according to 87.139(i)(1) The mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance with 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, valid for all modulations Test setup: see test report chapter 8.2 Test equipment: see test report chapter 8.1-8.2: C220, R001, U331, W_RE Remark: Test result: Test passed						
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, valid for all modulations Test setup: see test report chapter 8.2 Test equipment: see test report chapter 8.1-8.2: C220, R001, U331, W_RE Remark:						
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, valid for all modulations Test setup: see test report chapter 8.2 Test equipment: see test report chapter 8.1-8.2: C220, R001, U331, W_RE Remark:	Emission limitations					
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 Test setup: see test report chapter 8.2 Test equipment: see test report chapter 8.1-8.2: C220, R001, U331, W_RE Remark:	Limit according to 87.139(i)(1) The mean power of emissions shall be attenuated below the mean output power of the transmitter					
Operating condition 1, see test report chapter 6.4 fm, valid for all modulations Test setup: see test report chapter 8.2 Test equipment: see test report chapter 8.1-8.2: C220, R001, U331, W_RE Remark:						
see test report chapter 8.2 Test equipment: see test report chapter 8.1-8.2: C220, R001, U331, W_RE Remark:	Operating condition 1, see test report chapter 6.4					
see test report chapter 8.1-8.2: C220, R001, U331, W_RE Remark:						
Test result: Test passed	Remark:					
	Test result: Test passed					

Environment condition:			
Date & Time: Thu 29/Oct/2020 15:04:02			
Location: CTC advanced GmbH, Laboratory RC-SYS			
Temperature:	22	°C	1
Humidity:	55	%	
Voltage:	28	V DC	
- · · · · · · · · · · · · · · · · · · ·			
Setup of measurement equipm	ent:		
Start frequency:	1.559	GHz	
Stop frequency:	1.614	GHz	
Center frequency:	1.5865	GHz	
Frequency span:	55		
Resolution-BW:		kHz	
Video-BW:	10	kHz	
Input attenuation:	0	dB	
Trace-Mode:	Max-Hold		
Detector-Mode:	Pos Peak		
Bottosto: Mode.	. 00 . oak		
Correction:			
W RE	104.1	dB	
Coaxial cable (C220)	+		dB
DUT-Antenna	+		
Test antenna	+		
BW correction factor (3k -> 1M		25.2	
Atten, between HPA and feedh		0.0	
(U331)		32.6	
TOTAL CORRECTION:			
Remarks:			
Carrier-on state / Carrier in the	middle of the	e band	(fm)
For EIRP calculation:			(,
'worst-case' = maximum anter	nna gain		
	···- 9-···		

© CTC advanced GmbH Page 82 of 128



Plot No. 98



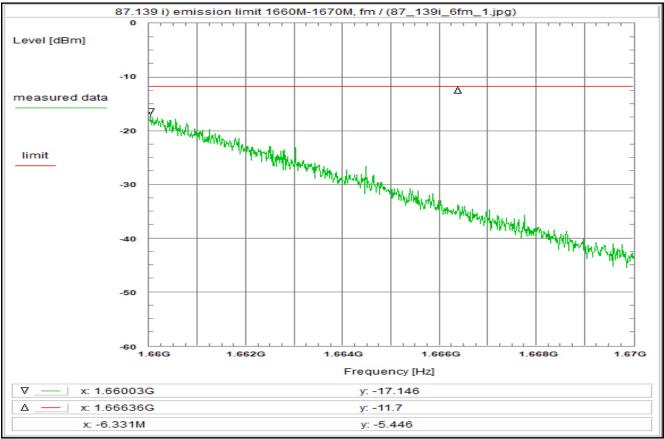
Subclause: 87.139 i) Frequencies, frequency tolerance and emission limitations Emission limitations Modulated rf-carrier in the middle of the band (fm)					
Limit: Limit according to 87.139(i)(1) The mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance 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, valid for all modulations					
Test setup: see test report chapter 8.2					
Test equipment: see test report chapter 8.1-8.2: C220, R001, U331, W_RE					
Remark:					
Test result: Test passed					

Environment condition:			
Date & Time: Thu 29/Oct/2020 15:06:05			
Location:	ocation: CTC advanced GmbH, Laboratory RC-SYS		
Temperature:	22	°C	Ť
Humidity:	55	%	
Voltage:	28	V DC	
J			
Setup of measurement ed	quipment:		
Start frequency:	1.614	GHz	
Stop frequency:	1.6265	GHz	
Center frequency:	1.62025	GHz	
Frequency span:	12.5	MHz	
Resolution-BW:	3	kHz	
Video-BW:	1	kHz	
Input attenuation:	0	dB	
Trace-Mode:	Max-Hold		
Detector-Mode:	AVG		
Correction:			
W RE	47.8	dB	
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna	+	0.0	
Test antenna	+	0.0	
BW correction factor (3k -		1.2	
Atten, between HPA and			
(U331)	+	56.6	
TOTAL CORRECTION:	+	10.9	
	·	10.7	
Remarks:			
Carrier-on state / Carrier	in the middle of the	e band	(fm)
For EIRP calculation:			,
'worst-case' = maximum	antenna gain		
	J .		

© CTC advanced GmbH Page 83 of 128



Plot No. 99



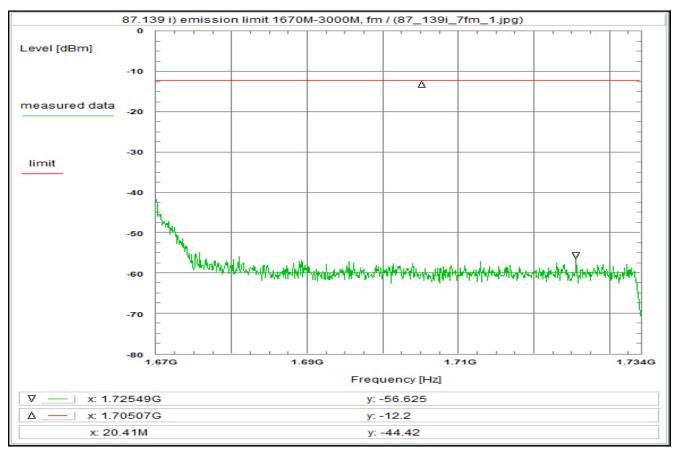
Subclause: 87.139 i) Frequencies, frequency tolerance and emission limitations Emission limitations Modulated rf-carrier in the middle of the band (fm)					
Limit. Limit according to 87.139(i)(1) The mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance 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, valid for all modulations					
Test setup: see test report chapter 8.2					
Test equipment: see test report chapter 8.1-8.2: C220, R001, U331, W_RE					
Remark:					
Test result: Test passed					

Environment condition: Date & Time: Location: Temperature: Humidity: Voltage: Thu 29/Oct CTC advan	ced G 22 55		Laboratory RC-SYS
Stop frequency: 1 Center frequency: 1. Frequency span: Resolution-BW: Video-BW: Input attenuation: Trace-Mode: Max-H	3 30 0	GHz GHz GHz MHz kHz kHz dB	
Correction: W_RE Coaxial cable (C220) DUT-Antenna Test antenna BW correction factor (3k -> 20k) Atten. between HPA and feedhorn (U331) TOTAL CORRECTION: Remarks:	+	0.9 0.0 0.0 8.2 0.0 72.8 77.4	dBi dB dB dB dB dB
Carrier-on state / Carrier in the middle For EIRP calculation: 'worst-case' = maximum antenna gain		e band	(fm)

© CTC advanced GmbH Page 84 of 128



Plot No. 100



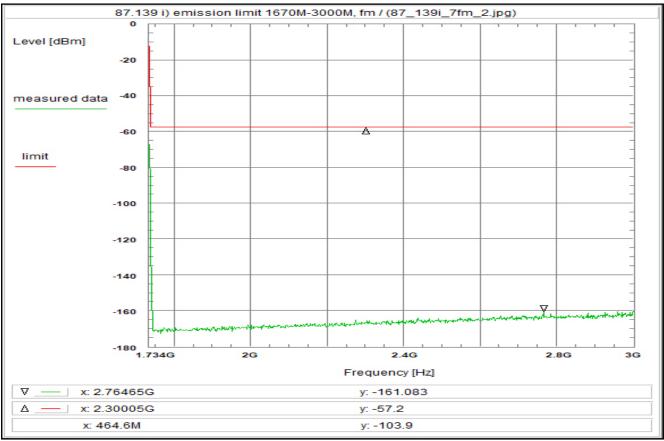
Subclause: 87.139 i) Frequencies, frequency tolerance and emission limitations Emission limitations Modulated rf-carrier in the middle of the band (fm)					
Limit: Limit according to 87.139(i)(1) The mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance 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, valid for all modulations					
Test setup: see test report chapter 8.2					
Test equipment: see test report chapter 8.1-8.2: C220, R001, U331, W_RE					
Remark:					
Test result: Test passed					

Environment condition: Date & Time: Location:	Thu 29/Oct/202		8:14 Laboratory RC-SYS
Temperature:	22	°C	Laburatory RC-313
Humidity:	55 55	%	
Voltage:	28	V DO	
voltage.	20	V DC	,
Setup of measurement eq			
Start frequency:	1.67	GHz	
Stop frequency:	1.734	GHz	
Center frequency:		GHz	
Frequency span:		MHz	
Resolution-BW:	-	kHz	
Video-BW:	10 0	kHz dB	
Input attenuation: Trace-Mode:	Clear Write	uВ	
Detector-Mode:	Pos Peak		
Detector-wode:	POS PEAK		
Correction:			
W_RE	4.5	dB	
Coaxial cable (C220)	+	0.9	dB
DUT-Antenna	+	0.0	dBi
Test antenna	+	0.0	dB
BW correction factor (3k -		1.2	
Atten. between HPA and t		0.0	
(U331)	+	35.5	
TOTAL CORRECTION:	+	33.1	dB
Remarks: Carrier-on state / Carrier i For EIRP calculation: 'worst-case' = maximum		e band	(fm)

© CTC advanced GmbH Page 85 of 128



Plot No. 101



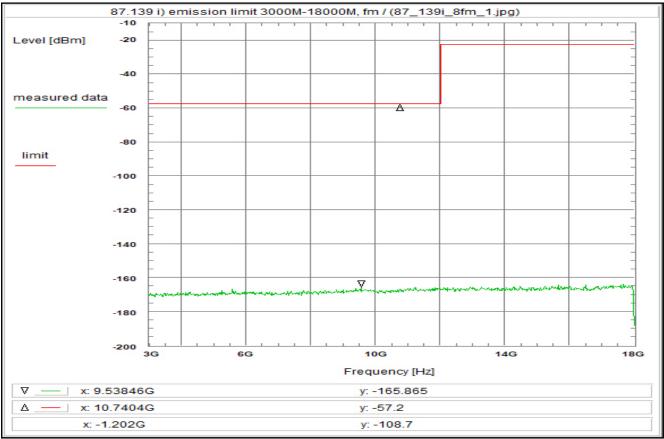
Subclause: 87.139 i) Frequencies, frequency tolerance and emission limitations Emission limitations Modulated rf-carrier in the middle of the band (fm)					
Limit: Limit according to 87.139(i)(1) The mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance 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, valid for all modulations					
Test setup: see test report chapter 8.2					
Test equipment: see test report chapter 8.1-8.2: C220, R001, U331, W_RE					
Remark:					
Test result: Test passed					

	0.15:13:41 SmbH, Laboratory RC-SYS °C % V DC	
	GHz GHz	
-	1.1 dB 0.0 dBi 0.0 dB 1.2 dB 0.0 dB 32.3 dB	
Remarks: Carrier-on state / Carrier in the middle of the band (fm) For EIRP calculation: 'worst-case' = maximum antenna gain		
	anced 0 22 55 28 1.734 3 2.367 1.266 3 10 0 K-Hold 6 Peak 42.3 + + +	

© CTC advanced GmbH Page 86 of 128



Plot No. 102



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, valid for all modulations

Test setup:
see test report chapter 8.2

Test equipment:
see test report chapter 8.1-8.2: C220, R001, U332, W_RE

Remark:

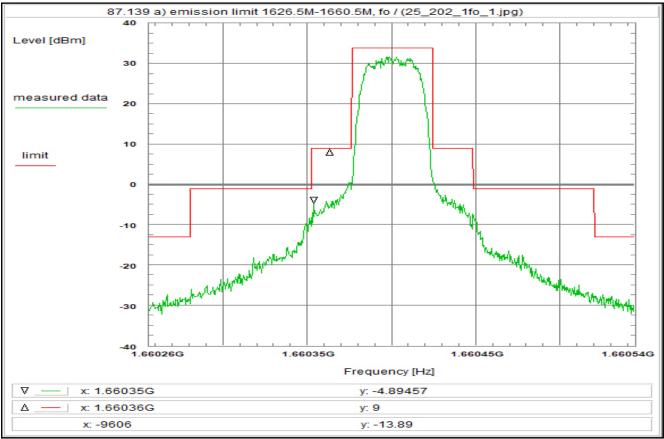
Test result: Test passed

Environment condition: Thu 29/Oct/2020 16:16:20 CTC advanced GmbH, Laboratory RC-SYS Date & Time: Location: Temperature: Humidity: 55 % 28 V DC Voltage: Setup of measurement equipment: Start frequency: 3 GHz Stop frequency: Center frequency: 10.5 GHz 15 GHz Frequency span: Resolution-BW: 10 kHz 30 kHz 0 dB Video-BW: Input attenuation: Trace-Mode: Max-Hold Detector-Mode: Pos Peak Correction: W_RE Coaxial cable (C220) 118.0 dB 2.3 dB DUT-Antenna ` Test antenna 0.0 dB BW correction factor (10k -> 4k) 4.0 dB Atten. between HPA and feedhorn 34.0 dB (U332) TOTAL CORRECTION: -85.7 dB Remarks: Carrier-on state / Carrier in the middle of the band (fm) For EIRP calculation: 'worst-case' = maximum antenna gain

© CTC advanced GmbH Page 87 of 128



Plot No. 103



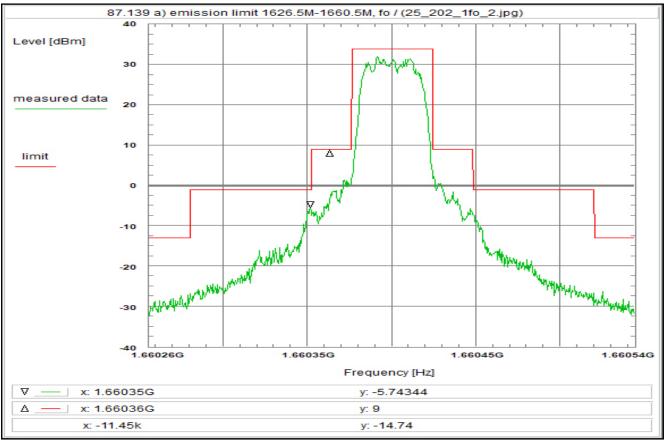
Em	equencies, frequency tolerance and emission limitations sission limitations dulated rf-carrier in the middle of the band (fh)
Limit: Limit according to 87.139 a): 50-100% of assigned bw: -25 100-250% of assigned bw: -43 The mean power of emissions below the mean output power in accordance with the above	-35dBc/4kHz +10log(Pmax)dBc/4kHz = -43 dBW s shall be attenuated of the transmitter
Test results: see plot (an explicit table was	not generated)
Operating condition of DUT: Operating condition 1, see tes fh, R20T1XD	st report chapter 6.4
Test setup: see test report chapter 8.2	
Test equipment: see test report chapter 8.1-8.2	2: C220, R001, U330
Remark:	
Test result: Test pass	ed

Environment condition:							
Date & Time: Tue 27/Oct/2020 15:43:46							
Location:	CTC advanced GmbH, Laboratory RC-SYS						
Temperature:	22		-				
Humidity:	55	%					
Voltage:	28	V DC	OC .				
Setup of measurement equipment:							
Start frequency:	1.660256		Z				
Stop frequency:	1.660544						
Center frequency:	1.6604	GHz	Z				
Frequency span:	288	kHz	7				
Resolution-BW:	3						
Video-BW:		kHz	7				
Input attenuation:	20	dB					
Trace-Mode:	Max-Hold						
Detector-Mode:	AVG						
Correction:							
Directional coupler	+		T				
Coaxial cable (C220)	+						
DUT-Antenna	+						
Test antenna	+						
BW correction factor (3k		1.2					
Atten. between HPA and							
(U330)	+		9 dB				
TOTAL CORRECTION:	+	34.0	0 dB				
Demonstra							
Remarks:		a£ 11a 1	hand (fh)				
Carrier-on state / Carrier	at the upper edge	or the	e band (in)				

© CTC advanced GmbH Page 88 of 128



Plot No. 104



Subclause: 87.139 a)Frequencies, frequency tolerance and emission limitations Emission limitations Modulated rf-carrier in the middle of the band (fh)
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, R5T1XD
Test setup: see test report chapter 8.2
Test equipment: see test report chapter 8.1-8.2: C220, R001, U330
Remark:
Test result: Test passed

	Environment condition:							
	Date & Time:	Tue 27/Oct/2020 15:45:43						
1	Location:	CTC advanced GmbH, Laboratory RC-SYS						
1	Temperature:	22	°C	Laboratory .				
1	Humidity:	55	%					
	Voltage:	28	V DC					
1	vollage.	20	V DC					
	Setup of measurement ed	uinmont:						
	Start frequency:	1.660256	GHz					
1	Stop frequency:	1.660544						
	Center frequency:	1.6604						
	Frequency span:		kHz					
	Resolution-BW:	3	kHz					
	Video-BW:	3 10	кпz kHz					
	Input attenuation:	20	dB					
1	Trace-Mode:	Max-Hold	ub					
1	Detector-Mode:	AVG						
	Detector-Mode:	AVG						
	Correction							
	Correction: Directional coupler		0.0	чD				
		+	0.0					
	Coaxial cable (C220)	+						
	DUT-Antenna	+	0.0					
	Test antenna	+						
	BW correction factor (3k -							
	Atten. between HPA and							
	(U330) TOTAL CORRECTION:	+						
	TOTAL CORRECTION:	+	34.0	uв				
	Remarks:							
	Carrier-on state / Carrier	at the unner edge	of tho	and (fh)				
	Carrier-on state / Carrier o	at the upper eage	OI IIIC	Janu (III)				
1								

© CTC advanced GmbH Page 89 of 128