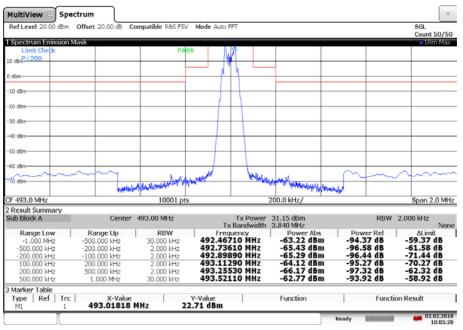
Plot 2: middle channel, spectrum mask



10:05:21 02.02.2018

Plot 3: highest channel, spectrum mask

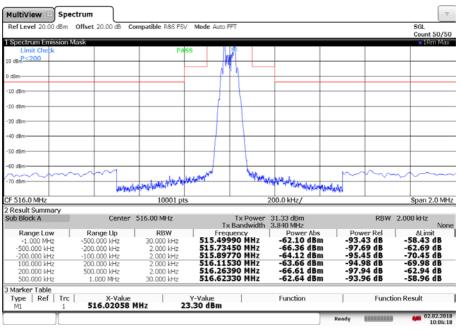
Ref Level 20.00 d	Bm Offs	et 20.00 dB (Compatibl	e R&S FS	SV Mode	e Auto	FFT					SGL Count 50/
Spectrum Emissi	ion Mask											• 1Rm Ma
Limit Check				Pi	ASS		し先					
0 d8m ^{P<200}			<u> </u>			- 1	₩.	_				
						1	1.		-			
d8m		-				- (
0 dBm												
J GBm												
dBm			_			-+						
) dBm						-	-					
0 dBm-			_				-			-		
) dBm												
J GBII								1				
0 dBm			_				-					
-	~~~	-m-1			يلين ا	d -		Sherry			$\sim \sim \sim$	\sim
0 dBm		-	Verylderia	WUM AN	Program.		+	- AND	new with the shares	4.1.4		-
		Wate								al subscript		
516.0 MHz				10001 p	ts			2	200.0 kHz/			Span 2.0 M
Result Summary	1											
Ib Block A		Center	516.00	MHz					31.28 dBm		RBW	2.000 kHz
Departem		Dengo He	1 .	RBW					3.840 MHz Power Ab		Power Rel	No ALimit
-1.000 MHz		Range Up 00.000 kHz		NDW kHz	51		quen	MHz	-62.52 dB		3.80 dB	-58.80 dB
-500.000 kHz		00.000 kHz		00 kHz				MHZ	-66.56 dB		7.84 dB	-62.84 dB
-200.000 kHz		00.000 kHz		000 kHz				MHZ	-64.22 dB		5.50 dB	-70.50 dB
100.000 kHz		00.000 kHz		000 kHz				MHZ	-65.07 dB		6.34 dB	-71.34 dB
200.000 kHz		00.000 kHz		000 kHz	51	6.25	5670	MHz	-66.99 dB	m -9	8.26 dB	-63.26 dB
500.000 kHz		1.000 MHz	30.0	000 kHz	51	6.74	1030	MHz	-62.14 dB	m -9	3.41 dB	-58.41 dB
Aarker Table												
ype Ref	Trc	X-Value		1	Y-Val				Function	1		on Result

10:04:35 02.02.2018



Plots: conducted, range A

Plot 1: lowest channel, spectrum mask



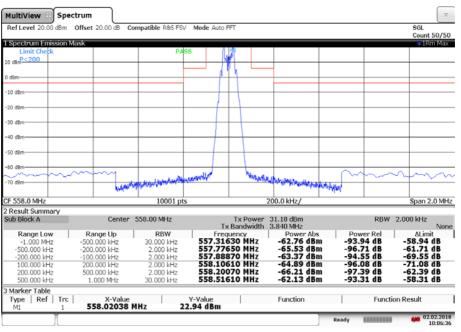
10:06:19 02.02.2018

Plot 2: middle channel, spectrum mask

	Offset 20.00 dB	compatible Res PS	V Mode	Auto FFI					SGL Count 50/5
Spectrum Emission	Mask								1Rm Ma
Limit Check		P/	SS	1.13					
0 d8mP<200				11					
				11	h —	- 1			
d8m									
0 dBm									
0.000									
0 dBm				(+ +)					
0 dBm									
0 dBm								1	_
0 dBm									
0 dbm									
i0 dBm									
mm	\sim		L W		Mana .			\sim	\rightarrow
70 dBm		adam the head of the second	194 Walter		- SOL	Martin Martin Strate	h. 1		
	NAT AN	Water All Line .				and the second and the	- AND		
537.0 MHz		10001 p	ts			200.0 kHz/			Span 2.0 M
Result Summary									
ub Block A	Center	537.00 MHz				31.22 dBm		RBW	2.000 kHz
	0	0.0011				3.840 MHz			No
-1.000 MHz	-500.000 kHz	30.000 kHz	E26	Freque	O MHZ	Power Abs -61.00 dBn		ver Rel	∆Limit -57.22 dB
-500.000 kHz	-200.000 kHz	2.000 kHz			O MHZ	-66.66 dBn		88 dB	-62.88 dB
-200.000 kHz	-100.000 kHz	2.000 kHz			O MHZ	-64.49 dBn		72 dB	-70.72 dB
100.000 kHz	200.000 kHz	2.000 kHz			O MHZ	-64.66 dBn		88 dB	-70.88 dB
200.000 kHz	500.000 kHz	2.000 kHz			0 MHz	-67.31 dBn		54 dB	-63.54 dB
500.000 kHz	1.000 MHz	30.000 kHz			0 MHz	-61.63 dBn		85 dB	-57.85 dB
Aarker Table									
Type Ref Tro	X-Value		Y-Value			Function		Functio	on Result

10:07:15 02.02.2018

Plot 3: highest channel, spectrum mask



10:06:37 02.02.2018

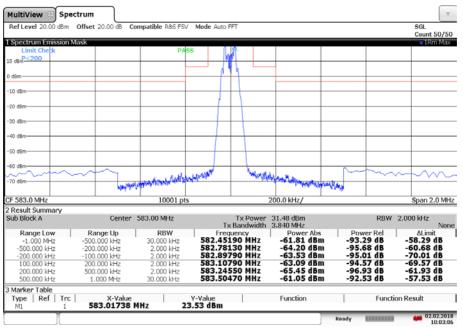
Plots: conducted, range G

Plot 1: lowest channel, spectrum mask

Ref Level 20.00 dBm	Offset 20.00 dB C	ompatible R&S FS	V Mode Auto	FFT					SGL Count 50/5
Spectrum Emission	Mask								1Rm Ma
Limit Check		P	ss						
0 d8m ^{P<200}									
				11					
dBm			ľ						
			1 🚺						
10 dBm									
20 dBm									
LO GUIN									
10 dBm				+					
				11					
10 dBm-									
0 dBm									
U dBm									
i0 dBm									
\sim	\sim		and the second		Man Ar	1		+-	nom
70 dBm	din di	Non-With Maryun Ashal	Mission c.	-	-Treeboo	Warnawijwignad	Adder		
	N 94.					1.0.01	With an a		
566.0 MHz		10001 p	ts		20	0.0 kHz/	-		Span 2.0 M
Result Summary									
ub Block A	Center	566.00 MHz				1.43 dBm		RBW	2.000 kHz
				fx Band		.840 MHz	1 0		No
-1.000 MHz	-500.000 kHz	80.000 kHz	565.16	quency		Power Abs -61.50 dBr		wer Rel .93 dB	∆Limit -57.93 dB
-500.000 kHz	-200.000 kHz	2.000 kHz	565.73			-64.37 dBr		.80 dB	-60.80 dB
-200.000 kHz	-100.000 kHz	2.000 kHz	565.87			-64.41 dBr		.84 dB	-70.84 dB
100.000 kHz	200.000 kHz	2.000 kHz	566.10			-64.50 dBr		.94 dB	-70.94 dB
200.000 kHz	500.000 kHz	2.000 kHz	566.21			-63.38 dBr		.81 dB	-59.81 dB
500.000 kHz	1.000 MHz	30.000 kHz	566.6	5830 N	IHz	-62.08 dBr	n -93	.51 dB	-58.51 dB
Marker Table									
Type Ref Tro	X-Value		Y-Value			Function		Eunctio	on Result

10:01:44 02.02.2018

Plot 2: middle channel, spectrum mask



10:03:07 02.02.2018

Plot 3: highest channel, spectrum mask

Ref Level 20.00 dBm	Offset 20.00	dB Com	patible R&S FS	W Mode	Auto Fi	FT						SGL Count S	50/5
Spectrum Emission	Mask											• 1Rn	n Ma
Limit Check			P/	55		<u>P</u>							
) d8mP<200					N	1	_					_	
						k		-					
dBm					-1-1	+						_	
0 dBm						+							
					$t \parallel$	- 1							
) dBm													
dBm						_							
					1 1	- 1							
) dBm						_						_	
					1								
) dBm													_
0 dBm											-	-	_
~~~~~ ~	$\sim 1$		LANN	A MARINE			" Market	ANNOUL OF		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~	$\sim \sim \sim$	$\sim$
0 dBm		mantell	and the second	<b>1</b> 4				and had a photos and	min Apple				
608.0 MHz			10001 p				2	00.0 kHz/				Span 2.	0 M
Result Summary													
ib Block A		Center 6	08.00 MHz		TH			31.57 dBm 3.840 MHz			RBW 2	.000 kHz	N
Range Low	Range U	In	RBW	1.00	Frequ			Power Abs		Power	Rel	ΔLimit	
-1.000 MHz	-500.000 k		30.000 kHz	607	.487			-59.74 dBn	n -	91.31	dB	-56.31 (	dB.
-500.000 kHz	-200.000 k	Hz	2.000 kHz		.772			-65.52 dBr		97.09		-62.09 (	
-200.000 kHz	-100.000 k		2.000 kHz		.863			-62.93 dBr		94.50		-69.50 (	
100.000 kHz	200.000 k		2.000 kHz		.113			-64.16 dBr		95.73		-70.73 (	
200.000 kHz	500.000 k		2.000 kHz		.254			-64.90 dBr		96.47		-61.47 (	
500.000 kHz	1.000 M	Hz	30.000 kHz	608	.569	50	MHZ	-61.60 dBr	n .	93.17	aв	-58.17 (	18
larker Table													
vpe Ref Tr	n X-	-Value		Y-Value				Function			Function	Result	

10:02:15 02.02.2018



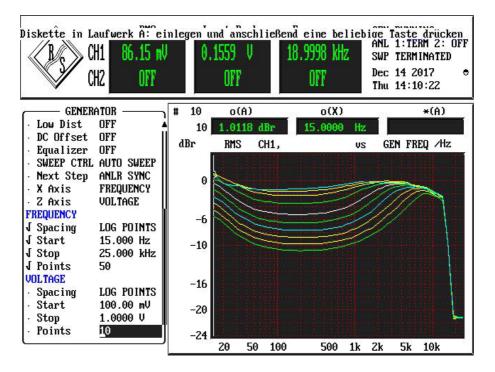
## **11.5 Modulation characteristics**

#### Method of measurement:

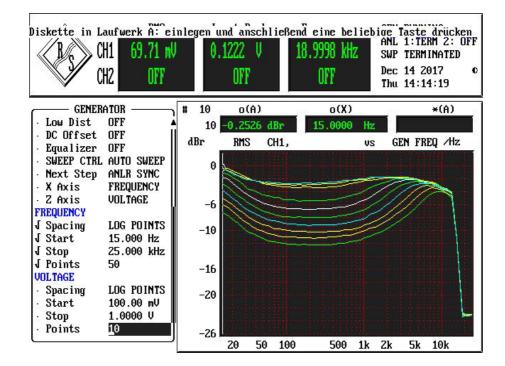
The audio frequency response was measured in accordance with EIA/TIA 603. The plots shows 10 curves with different modulation levels, the test frequency is varied from 15 Hz to 20 kHz.

#### Plots: Range A1

Plot 1: low channel, 10 curves with voltage and frequency variation

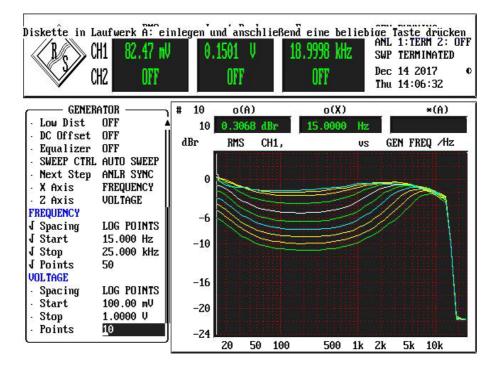






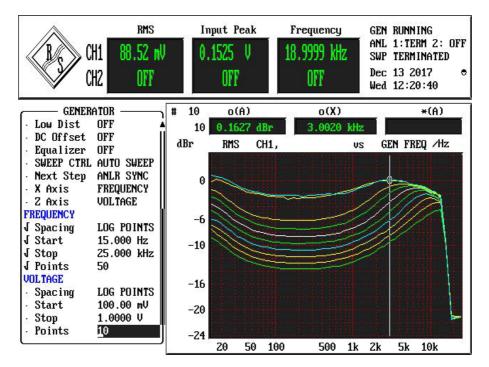
Plot 2: middle channel, 10 curves with voltage and frequency variation

Plot 3: high channel, 10 curves with voltage and frequency variation

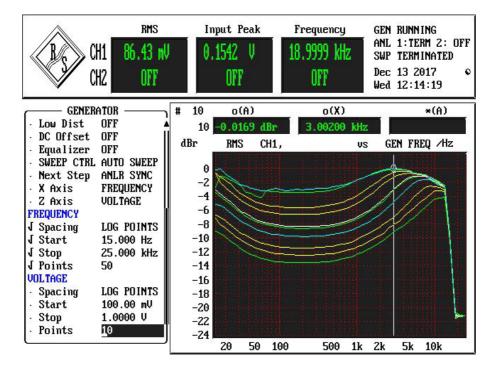


## Plots: Range A

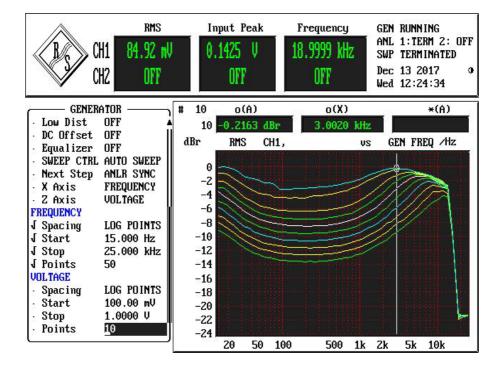
Plot 1: low channel, 10 curves with voltage and frequency variation



Plot 2: middle channel, 10 curves with voltage and frequency variation



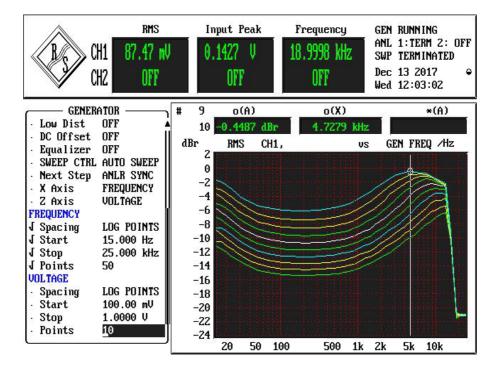




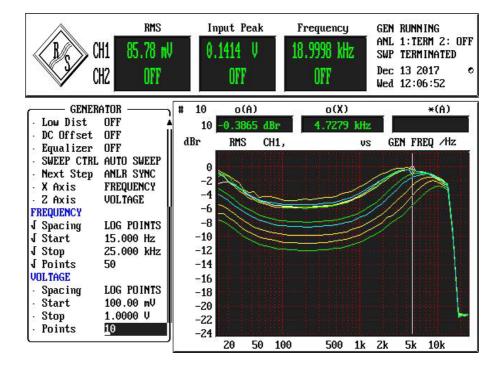
Plot 3: high channel, 10 curves with voltage and frequency variation

#### Plots: Range G

Plot 1: low channel, 10 curves with voltage and frequency variation

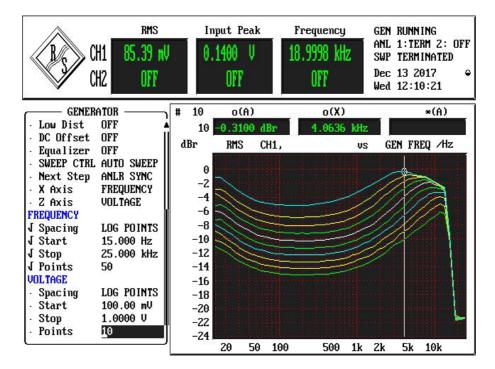






Plot 2: middle channel, 10 curves with voltage and frequency variation

Plot 3: high channel, 10 curves with voltage and frequency variation



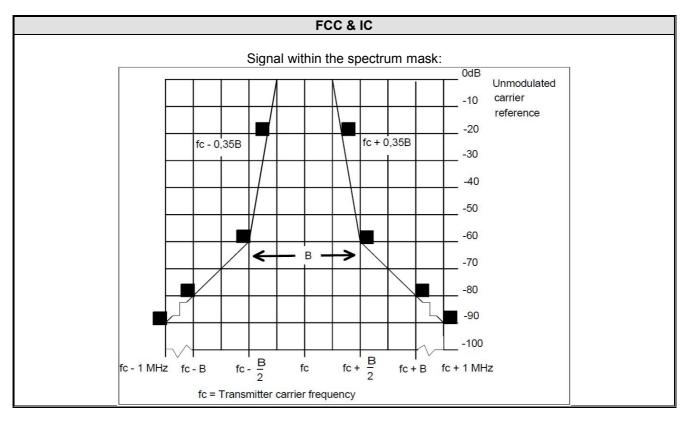


# 11.6 Necessary bandwidth (BN) for analogue systems

## Measurement:

Measurement parameter						
Detector:	Peak / Average (-90 dBc point only)					
Sweep time:	Auto					
Resolution bandwidth:	1 kHz					
Video bandwidth:	1 kHz					
Span:	fc - 1 MHz to fc + 1 MHz (2 MHz)					
Trace mode:	Max hold/view					
EUT:	CW and MC					
Test setup:	See sub clause 6.3 - C					
Measurement uncertainty:	See sub clause 8					

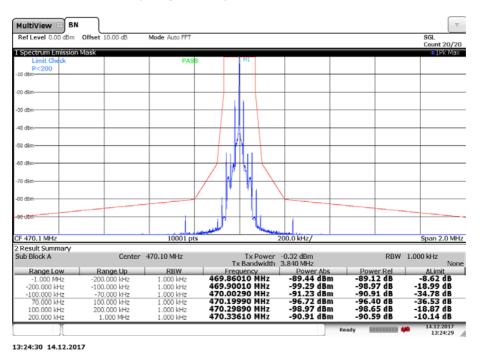
## Limits: according to ETSI EN 300 422-1 v1.4.2 (2011-08)





#### Plots: Range A1, lowest channel

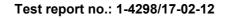
Plot 1: Unmodulated carrier reference (with pilot-tone)



Plot 2: Modulated carrier with the weighted noise source

MultiView 🕀 BN  $\nabla$ Ref Level 0.00 dBm Off 10.00 dF Mode Auto EE SGI . int 20/20 ectrum En 1 I 10001 pts 200.0 kHz/ Span 2.0 MHz CF 470.1 MHz 2 Result Summary Sub Block A Center 470.10 MHz RBW 1.000 kHz Tx Power 7.66 dBm Tx Bandwidth 3.840 MHz None ALimit -18.46 dB -26.87 dB -28.71 dB -33.97 dB -27.42 dB -18.80 dB Frequency 469.11070 MHz 469.90030 MHz 470.00010 MHz 470.19370 MHz 470.29630 MHz 471.06230 MHz Power Abs -100.67 dBm -99.15 dBm -80.92 dBm -77.91 dBm -99.02 dBm -100.67 dBm Power Rel -108.33 dB -106.81 dB -88.58 dB -85.57 dB -106.68 dB -108.33 dB Range Up Range Low RBW -1.000 MHz -200.000 kHz -200.000 kHz -100.000 kHz 1.000 kHz 1.000 kHz -100.000 kHz 70.000 kHz -70.000 kHz 100.000 kHz 1.000 kHz 1.000 kHz 100.000 kHz 200.000 kHz 1.000 kHz 200.000 kHz 1.000 MHz 1.000 kH; 14.12.2017 13:24:57

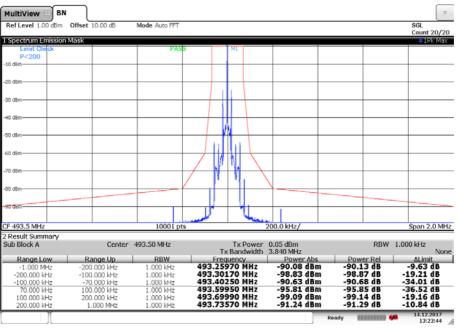
13:24:58 14.12.2017





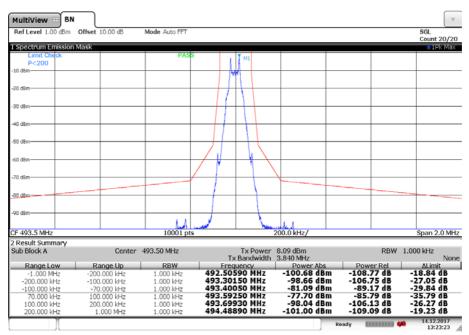
#### Plots: Range A1, middle channel

**Plot 1:** Unmodulated carrier reference (with pilot-tone)



13:23:44 14.12.2017

**Plot 2:** Modulated carrier with the weighted noise source

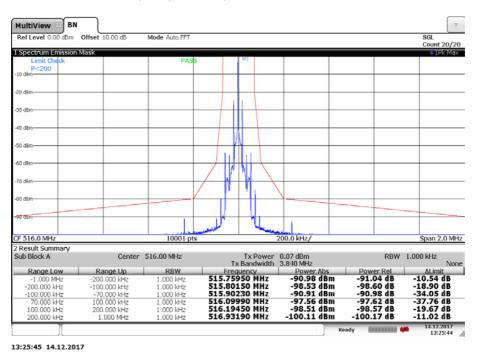


13:23:24 14.12.2017

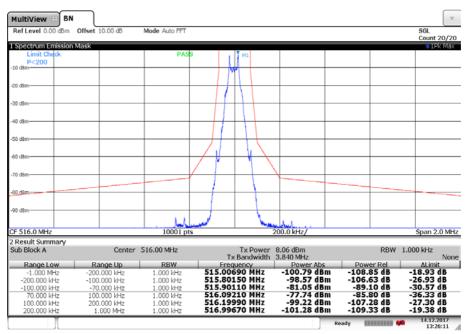


### Plots: Range A1, highest channel

Plot 1: Unmodulated carrier reference (with pilot-tone)



Plot 2: Modulated carrier with the weighted noise source

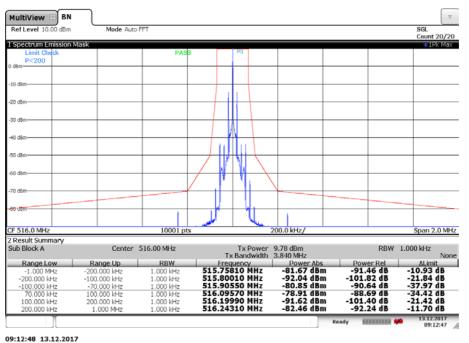


13:26:11 14.12.2017



#### Plots: Range A, lowest channel

Plot 1: Unmodulated carrier reference (with pilot-tone)



09.12.46 13.12.2017

**Plot 2:** Modulated carrier with the weighted noise source

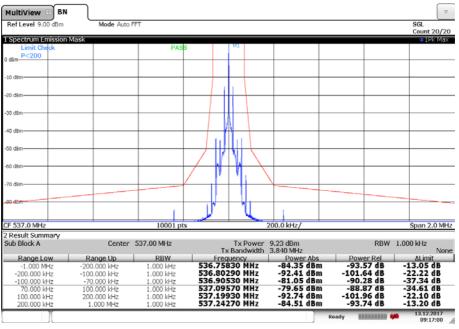
MultiView 🕀 BN  $\nabla$ Ref Level 10.00 dBm Mode Auto FE SGI Count 20/20 ectra um Ernis X. 10001 pt 200.0 kHz/ Span 2.0 MHz CF 516.0 MHz 2 Result Summary Sub Block A Center 516.00 MHz Tx Power 17.96 dBm Tx Bandwidth 3.840 MHz RBW 1.000 kHz None ALimit -24.33 dB -30.10 dB -34.52 dB -30.79 dB -30.09 dB -24.42 dB Frequency 515.73810 MHz 515.80170 MHz 515.90330 MHz 516.09990 MHz 516.19890 MHz 516.26430 MHz Power Abs -87.14 dBm -91.80 dBm -72.16 dBm -72.70 dBm -91.90 dBm -87.26 dBm Power Rel -105.11 dB -109.76 dB -90.12 dB -90.66 dB -109.87 dB -105.22 dB Range Up RBW Range Low -1.000 MHz -200.000 kHz -200.000 kHz -100.000 kHz 1.000 kHz 1.000 kHz -100.000 kHz 70.000 kHz -70.000 kHz 100.000 kHz 1.000 kHz 1.000 kHz 100.000 kHz 200.000 kHz 1.000 kHz 200.000 kHz 1.000 MHz 1.000 kH; 13.12.2017 09:13:51

09:13:51 13.12.2017



#### Plots: Range A, middle channel

Plot 1: Unmodulated carrier reference (with pilot-tone)



09:17:00 13.12.2017

**Plot 2:** Modulated carrier with the weighted noise source

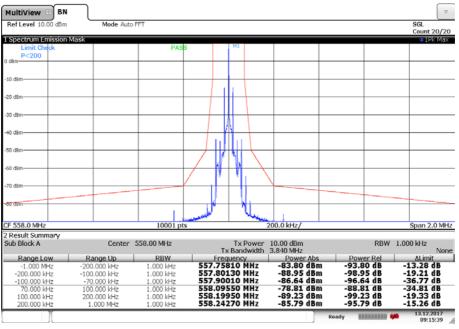
MultiView 🕀 BN  $\nabla$ Ref Level 9.00 -HB m Mode Auto FE SGI Count 20/20 mum Em М1 Т. P<200 Span 2.0 MHz CF 537.0 MHz 10001 pts 200.0 kHz/ 2 Result Summary Sub Block A Center 537.00 MHz RBW 1.000 kHz Tx Power 17.28 dBm Tx Bandwidth 3.840 MHz None ALimit -25.87 dB -29.80 dB -34.84 dB -31.68 dB -29.29 dB -26.76 dB Frequency 536.77910 MHz 536.80110 MHz 536.90370 MHz 537.09990 MHz 537.19850 MHz 537.26410 MHz Power Abs -88.86 dBm -92.31 dBm -72.64 dBm -74.27 dBm -91.71 dBm -90.29 dBm Power Rel -106.13 dB -109.58 dB -89.91 dB -91.55 dB -108.99 dB -107.57 dB Range Up RBW Range Low -1.000 MHz -200.000 kHz -200.000 kHz -100.000 kHz 1.000 kHz 1.000 kHz -100.000 kHz 70.000 kHz -70.000 kHz 100.000 kHz 1.000 kHz 1.000 kHz 100.000 kHz 200.000 kHz 1.000 kHz 200.000 kHz 1.000 MHz 1.000 kH; 13.12.2017 09:17:29

09:17:29 13.12.2017



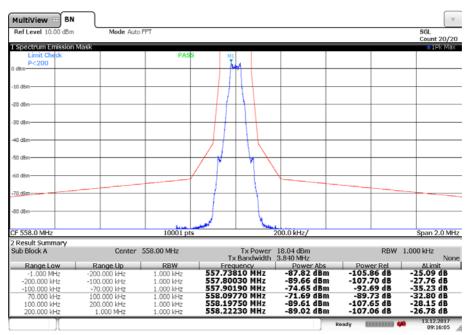
### Plots: Range A, highest channel

Plot 1: Unmodulated carrier reference (with pilot-tone)

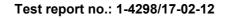


09:15:40 13.12.2017

**Plot 2:** Modulated carrier with the weighted noise source



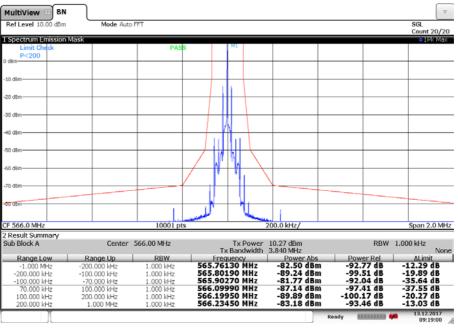
09:16:05 13.12.2017





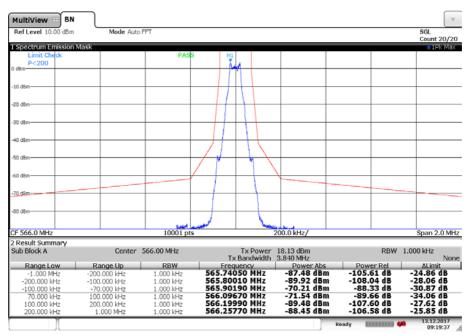
### Plots: Range G, lowest channel

Plot 1: Unmodulated carrier reference (with pilot-tone)



09:19:01 13.12.2017

**Plot 2:** Modulated carrier with the weighted noise source

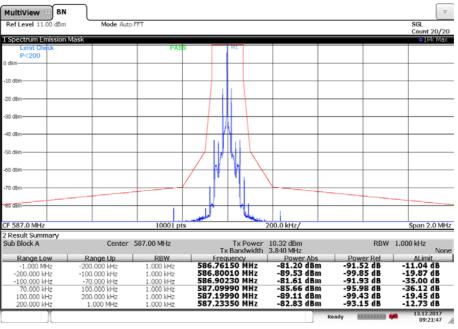


09:19:38 13.12.2017



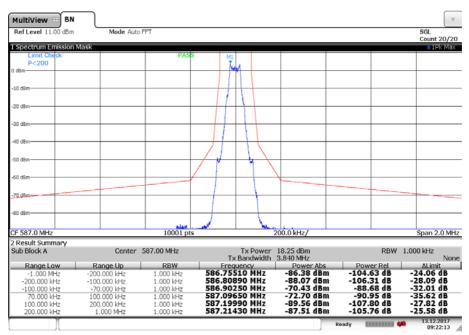
### Plots: Range G, middle channel

Plot 1: Unmodulated carrier reference (with pilot-tone)



09:21:48 13.12.2017

**Plot 2:** Modulated carrier with the weighted noise source

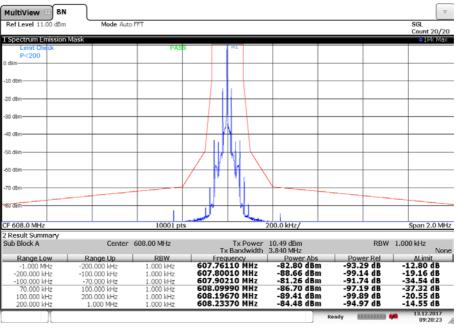


09:22:13 13.12.2017



### Plots: Range G, highest channel

Plot 1: Unmodulated carrier reference (with pilot-tone)



09:20:23 13.12.2017

**Plot 2:** Modulated carrier with the weighted noise source

MultiView 🕀 BN  $\nabla$ Ref Level 11.00 dBm Mode Auto EE SGI Count 20/20 a um E 1 Span 2.0 MHz CF 608.0 MH 10001 pt 200.0 kHz/ 2 Result Summary Sub Block A Center 608.00 MHz RBW 1.000 kHz Tx Power 18.52 dBm Tx Bandwidth 3.840 MHz None ALimit -24.80 dB -27.32 dB -31.06 dB -36.49 dB -28.14 dB -26.46 dB Frequency 607.77890 MHz 607.80150 MHz 607.90250 MHz 608.09610 MHz 608.19990 MHz 608.20030 MHz Power Abs -86.54 dBm -88.50 dBm -69.21 dBm -72.77 dBm -89.59 dBm -87.95 dBm Power Rel -105.06 dB -107.02 dB -87.73 dB -91.29 dB -108.12 dB -106.47 dB RBW Range Low Range Up -1.000 MHz -200.000 kHz -200.000 kHz -100.000 kHz 1.000 kHz 1.000 kHz -100.000 kHz 70.000 kHz -70.000 kHz 100.000 kHz 1.000 kHz 1.000 kHz 100.000 kHz 200.000 kHz 1.000 kHz 200.000 kHz 1.000 MHz 1.000 kH; 13.12.2017 09:20:52

09:20:52 13.12.2017



# 11.7 Frequency modulation

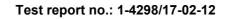
## Measurement:

Measureme	nt parameter
Detector:	Peak
Sweep time:	Auto
Resolution bandwidth:	1 % to 5 % of the occupied bandwidth
Video bandwidth:	3 x resolution bandwidth
Span:	2 x emission bandwidth
Trace mode:	Max. hold
Analyzer function:	99% power occupied bandwidth function
EUT:	Modulated signal with frequency varied between 50 Hz and 15 kHz
Test setup:	See sub clause 6.3 - B
Measurement uncertainty:	See sub clause 8

### Limits:

FCC & IC

Frequency deviation up to a maximum of  $\pm$  75 kHz





### Plots: Range A1

 $\nabla$ MultiView 🕀 Spectrum ● RBW 1 kHz SWT 4.19 ms (~12 ms) ● VBW 3 kHz Ref Level 20.0 dBn Mode Auto FFT Att ) dE 1 Occupied Bandwidth 10k May M1[1] 8.07 .092410 MHz 20 30 di F 470.1 MHz 1001 pt 10.0 kHz/ Span 400.0 kHz Mark Tab Type Ref Trc M1 1 Function Function Result 87.814577527 kHz X-Value 470.09241 MHz I Occ Bw Centroid Occ Bw Freq Offset 8.07 dBm 470.054826 MHz 470.14264 MHz -11.22 dB -10.34 dB 470.098733074 MHz -1.266926107 kHz T: 25.01.2018 13:29:53 Aborted 13:29:54 25.01.2018

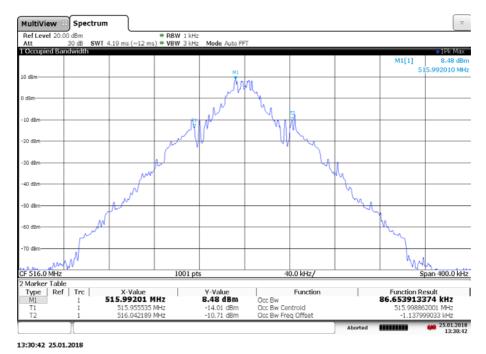
Plot 1: lowest channel, max hold with frequency variation from 50 Hz to 15 kHz

Plot 2: middle channel, max hold with frequency variation from 50 Hz to 15 kHz

MultiView 🖽 Spectrum ▼ RBW 1 kHz
 SWT 4.19 ms (~12 ms) 
 VBW 3 kHz Ref Level 20 Att Mode Auto FET 1 Occupied Bandy 1Pk Max M1[1] 8.42 dBm 504800 MHz 10 c 20 70 d Span 400.0 kHz 40.0 kHz/ CF 493.5 MHz 1001 pts Marker Tabl Type Ref Trc M1 Function Result 88.948345685 kHz Occ Bw Occ Bw Centroid Occ Bw Freq Offse Function Τ Y-Value 8.42 dBm X-Value 493.5048 MHz 493.499757942 MHz -242.058423162 Hz 493.455284 MHz 493.544232 MHz -12.04 dBn -14.67 dBn 25.01.2018 13:28:54 *******

13:28:55 25.01.2018





Plot 3: highest channel, max hold with frequency variation from 50 Hz to 15 kHz

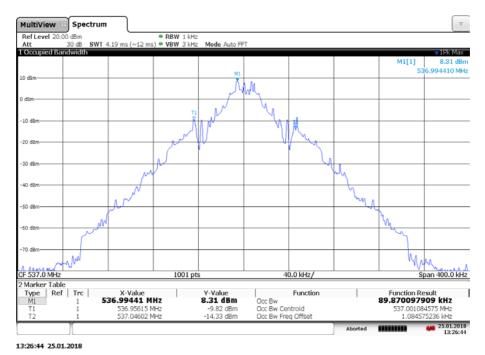
### Plots: Range A

Plot 1: lowest channel, max hold with frequency variation from 50 Hz to 15 kHz



13:25:35 25.01.2018



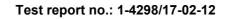


Plot 2: middle channel, max hold with frequency variation from 50 Hz to 15 kHz

Plot 3: highest channel, max hold with frequency variation from 50 Hz to 15 kHz

MultiView 🖽 Spectrum ▼ RBW 1 kHz
 SWT 4.19 ms (~12 ms) 
 VBW 3 kHz Ref Level 20 Att Mode Auto FET 1 Occupied Bandwidth 1Pk Max M1[1] 8.26 dBn 7.994410 MHz -10 d 30 70 di . As 41 CF 558.0 MHz 40.0 kHz/ Span 400.0 kHz 1001 pts Marker Table Type Ref Trc M1 Function Result 87.039430255 kHz Occ Bw Occ Bw Centroid Occ Bw Freq Offse Function Τ Y-Value 8.26 dBm X-Value 557.99441 MHz -10.63 dBn -12.42 dBn 558.000542441 MHz 542.441334009 Hz 557.957023 MHz 558.044062 MHz 25.01.2018 13:27:34 *******

13:27:35 25.01.2018





## Plots: Range G

 $\nabla$ MultiView 🕀 Spectrum ● RBW 2 kHz SWT 2.1 ms (~9.5 ms) ● VBW 10 kHz Ref Level 20:0 dBr Mode Auto FFT Att ) dE 1 Occupied Bandwidth Dk May M1[1] 9.10 998000 MH M 20 30 di ~~^ CF 566.0 MH: 1001 pt 10.0 kHz/ Span 400.0 kHz Mark Tab Type Ref Trc M1 1 Function Function Result 104.469434291 kHz I Occ Bw Centroid Occ Bw Freq Offset 565.998 MHz 9.10 dBm 565.945536 MHz 566.050005 MHz -11.06 dB -11.09 dB 565.997770321 MHz -2.229678693 kHz T: 25.01.2018 13:35:22 Aborted 13:35:22 25.01.2018

Plot 1: lowest channel, max hold with frequency variation from 50 Hz to 15 kHz

Plot 2: middle channel, max hold with frequency variation from 50 Hz to 15 kHz

MultiView 🗄 Spectrum ▼ ● RBW 2 kHz s (~9.5 ms) ● VBW 10 kHz Ref Level 20 Att SWT Mode Auto FET 1 Occupied Bandy 1Pk Max M1[1] 9.20 dBn 997600 MHz -10 d h I.M 20 50 70 d hana 21 1001 pts 40.0 kHz/ Span 400.0 kHz CF 587.0 MHz Marker Table Type Ref Trc M1 Function Result 104.746695601 kHz Occ Bw Occ Bw Centroid Occ Bw Freq Offse Function Τ Y-Value 9.20 dBm X-Value 586.9976 MHz 586.94519 MHz 587.049936 MHz -11.18 dBn -11.20 dBn 586.997563095 MHz -2.436905261 kHz 25.01.2018 13:34:25 *******

13:34:26 25.01.2018





Plot 3: highest channel, max hold with frequency variation from 50 Hz to 15 kHz

13:36:09 25.01.2018



# 11.8 Spurious emissions conducted below 30 MHz (AC conducted)

#### **Description:**

Measurement of the conducted spurious emissions in transmit mode below 30 MHz. The EUT is set to channel 6. This measurement is repeated for DSSS and OFDM modulation. If peaks are found channel 1 and channel 11 will be measured too. The measurement is performed with the data rate producing the highest output power. Both power lines, phase and neutral line, are measured. Found peaks are re-measured with average and quasi peak detection to show compliance to the limits.

#### Measurement:

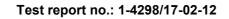
Measurement parameter									
Detector:	Peak - Quasi Peak / Average								
Sweep time:	Auto								
Resolution bandwidth:	F < 150 kHz: 200 Hz F > 150 kHz: 9 kHz								
Video bandwidth:	F < 150 kHz: 1 kHz F > 150 kHz: 100 kHz								
Span:	9 kHz to 30 MHz								
Trace mode:	Max Hold								
Test setup:	See sub clause 6.2 – A								
Measurement uncertainty:	See sub clause 8								

#### Limits:

	FCC & IC										
Frequency (MHz)	Quasi-Peak (dBµV/m)	Average (dBµV/m)									
0.15 – 0.5	66 to 56*	56 to 46*									
0.5 – 5	56	46									
5 – 30.0	60	50									

#### **Results:**

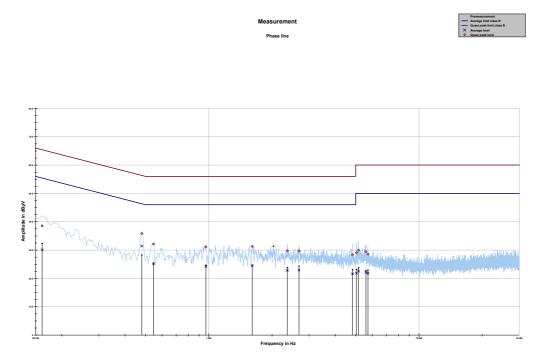
TX Spurious Emissions Conducted < 30 MHz [dBµV/m]										
F [MHz] Detector Level [dBµV/m]										
	See table below the plots!									





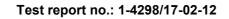
# **<u>Plots:</u>** Frequency range A1, middle channel

Plot 1: 150 kHz to 30 MHz, phase line

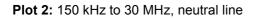


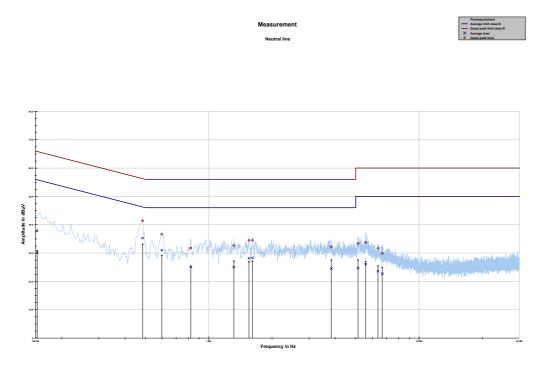
Project ID: 1-4298/17-01-09

Frequency	Quasi peak level	Margin quasi peak	Limit QP	Average level	Margin average	Limit AV
MHz	dBµV	dB	dBµV	dBµV	dB	dBµV
0.161234	38.55	26.85	65.400	30.05	25.63	55.679
0.480123	35.82	20.51	56.337	31.42	15.15	46.568
0.545748	32.13	23.87	56.000	25.13	20.87	46.000
0.969176	31.14	24.86	56.000	24.25	21.75	46.000
1.610666	31.29	24.71	56.000	24.55	21.45	46.000
2.365649	29.76	26.24	56.000	22.82	23.18	46.000
2.685930	29.73	26.27	56.000	22.93	23.07	46.000
4.828645	28.34	27.66	56.000	21.62	24.38	46.000
5.038565	29.02	30.98	60.000	21.86	28.14	50.000
5.157777	29.99	30.01	60.000	22.59	27.41	50.000
5.591171	29.43	30.57	60.000	22.15	27.85	50.000
5.718963	28.60	31.40	60.000	21.79	28.21	50.000

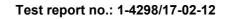








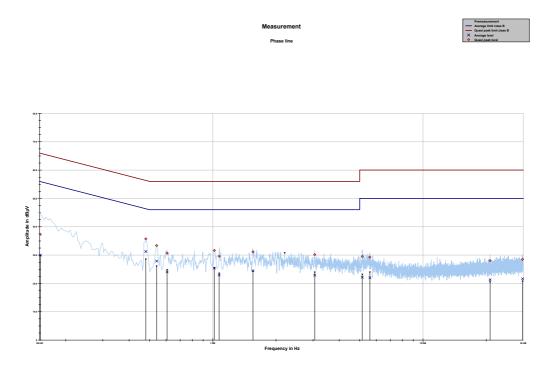
Frequency	Quasi peak level	Margin quasi peak	Limit QP	Average level	Margin average	Limit AV
MHz	dBµV	dB	dBµV	dBµV	dB	dBµV
0.152754	37.94	27.91	65.849	30.17	25.75	55.921
0.484615	41.41	14.85	56.260	35.31	11.13	46.440
0.597917	36.69	19.31	56.000	31.01	14.99	46.000
0.821520	31.80	24.20	56.000	25.11	20.89	46.000
1.316192	32.70	23.30	56.000	25.03	20.97	46.000
1.553623	34.51	21.49	56.000	28.16	17.84	46.000
1.613509	34.56	21.44	56.000	28.30	17.70	46.000
3.830201	32.20	23.80	56.000	24.56	21.44	46.000
5.130570	33.41	26.59	60.000	24.70	25.30	50.000
5.576509	33.79	26.21	60.000	26.09	23.91	50.000
6.380078	31.69	28.31	60.000	23.64	26.36	50.000
6.688928	29.85	30.15	60.000	22.71	27.29	50.000





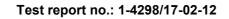
# **<u>Plots:</u>** Frequency range A, middle channel

Plot 1: 150 kHz to 30 MHz, phase line

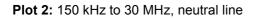


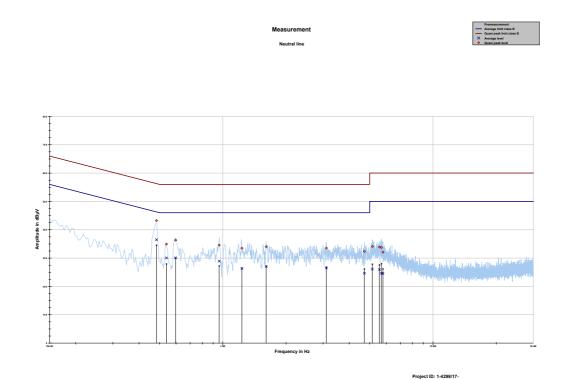
Project ID: 1-4298/17-

Frequency	Quasi peak level	Margin quasi peak	Limit QP	Average level	Margin average	Limit AV
MHz	dBµV	dB	dBµV	dBµV	dB	dBµV
0.151199	37.34	28.59	65.934	29.98	25.98	55.966
0.480044	35.71	20.62	56.338	31.25	15.32	46.570
0.540557	33.37	22.63	56.000	27.87	18.13	46.000
0.606611	30.67	25.33	56.000	24.04	21.96	46.000
1.017125	31.63	24.37	56.000	25.36	20.64	46.000
1.072563	29.60	26.40	56.000	22.95	23.05	46.000
1.553438	31.14	24.86	56.000	24.45	21.55	46.000
3.056567	30.15	25.85	56.000	22.89	23.11	46.000
5.143105	29.50	30.50	60.000	22.17	27.83	50.000
5.588244	29.28	30.72	60.000	22.02	27.98	50.000
20.854536	28.08	31.92	60.000	21.28	28.72	50.000
29.782612	28.48	31.52	60.000	21.63	28.37	50.000

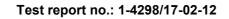








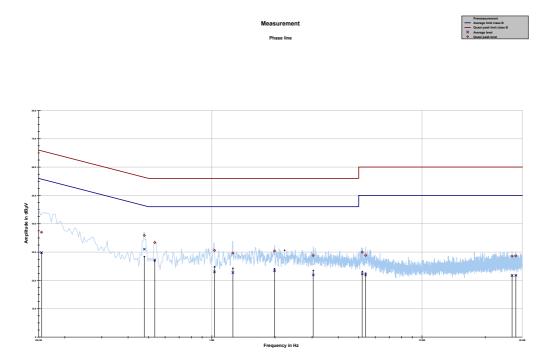
Frequency	Quasi peak level	Margin quasi peak	Limit QP	Average level	Margin average	Limit AV
MHz	dBµV	dB	dBµV	dBµV	dB	dBµV
0.483713	43.22	13.06	56.275	36.47	9.99	46.465
0.539492	34.93	21.07	56.000	30.06	15.94	46.000
0.596451	36.34	19.66	56.000	30.11	15.89	46.000
0.961310	34.57	21.43	56.000	28.90	17.10	46.000
1.232952	33.50	22.50	56.000	26.42	19.58	46.000
1.609112	33.99	22.01	56.000	27.10	18.90	46.000
3.110794	33.54	22.46	56.000	26.49	19.51	46.000
4.717039	32.38	23.62	56.000	24.66	21.34	46.000
5.147087	34.10	25.90	60.000	26.11	23.89	50.000
5.559572	33.91	26.09	60.000	25.94	24.06	50.000
5.682928	33.74	26.26	60.000	24.60	25.40	50.000
5.779926	32.10	27.90	60.000	24.57	25.43	50.000





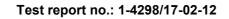
## **<u>Plots:</u>** Frequency range G, middle channel

Plot 1: 150 kHz to 30 MHz, phase line

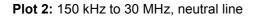


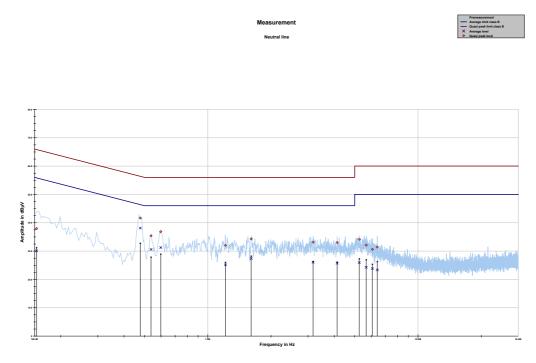
Project ID: 1-4298/17-01-09

Frequency	Quasi peak level	Margin quasi peak	Limit QP	Average level	Margin average	Limit AV
MHz	dBµV	dB	dBµV	dBµV	dB	dBµV
0.154932	37.02	28.71	65.731	29.83	26.03	55.859
0.477789	35.89	20.48	56.377	31.02	15.62	46.635
0.535439	33.36	22.64	56.000	27.24	18.76	46.000
1.030258	30.57	25.43	56.000	23.02	22.98	46.000
1.260320	29.66	26.34	56.000	22.75	23.25	46.000
1.988690	30.40	25.60	56.000	23.39	22.61	46.000
3.039829	28.81	27.19	56.000	21.95	24.05	46.000
5.199250	29.99	30.01	60.000	22.29	27.71	50.000
5.392471	28.86	31.14	60.000	21.94	28.06	50.000
26.830633	28.58	31.42	60.000	21.71	28.29	50.000
27.953001	28.64	31.36	60.000	21.82	28.18	50.000









Frequency	Quasi peak level	Margin quasi peak	Limit QP	Average level	Margin average	Limit AV
MHz	dBµV	dB	dBµV	dBµV	dB	dBµV
0.153274	37.93	27.89	65.821	30.09	25.82	55.906
0.477691	41.66	14.72	56.379	38.11	8.53	46.637
0.537323	35.41	20.59	56.000	30.59	15.41	46.000
0.597589	36.86	19.14	56.000	31.24	14.76	46.000
1.214125	32.05	23.95	56.000	25.15	20.85	46.000
1.609098	34.28	21.72	56.000	27.40	18.60	46.000
3.170466	33.15	22.85	56.000	26.05	19.95	46.000
4.124920	33.04	22.96	56.000	25.73	20.27	46.000
5.257729	34.12	25.88	60.000	25.91	24.09	50.000
5.671508	32.12	27.88	60.000	24.27	25.73	50.000
6.069394	30.61	29.39	60.000	23.82	26.18	50.000
6.405009	31.41	28.59	60.000	23.36	26.64	50.000



# 12 Observations

No observations except those reported with the single test cases have been made.

# Test report no.: 1-4298/17-02-12



EUT	Equipment under test			
DUT	Device under test			
UUT	Unit under test			
GUE	GNSS User Equipment			
ETSI	European Telecommunications Standards Institute			
EN	European Standard			
FCC	European Standard Federal Communications Commission			
FCC ID	Company Identifier at FCC			
	Industry Canada			
PMN	Product marketing name			
HMN	Host marketing name			
HVIN	Hardware version identification number			
FVIN	Firmware version identification number			
EMC	Electromagnetic Compatibility			
HW	Hardware			
SW	Software			
Inv. No.	Inventory number			
S/N or SN	Serial number			
C S/N OF SN	Compliant			
NC	Not compliant			
NC	Not applicable			
NA	Not applicable			
PP	Positive peak			
QP	Quasi peak			
AVG	Average			
	Operating channel			
ocw	Operating channel bandwidth			
OBW	Occupied bandwidth			
OOB	Out of band			
DFS	Dynamic frequency selection			
CAC	Channel availability check			
OP	Occupancy period			
NOP	Non occupancy period			
DC	Duty cycle			
PER	Packet error rate			
CW	Clean wave			
MC	Modulated carrier			
WLAN	Wireless local area network			
RLAN	Radio local area network			
DSSS	Dynamic sequence spread spectrum			
OFDM	Orthogonal frequency division multiplexing			
FHSS	Frequency hopping spread spectrum			
GNSS	Global Navigation Satellite System			
C/N ₀	Carrier to noise-density ratio, expressed in dB-Hz			
50	······································			

# Annex B Document history

Version	Applied changes	Date of release
-/-	Initial release	2018-03-21

# Annex C Accreditation Certificate

first page	last page
Deutsche Aktreditierungsstelle Deutsche Akkreditierungsstelle GmbH Entrusted according to Section 8 subsection 1 AkkStelleG in connection with Section 1 subsection 1 AkkStelleGBV Signatory to the Multiareral Agreements of EA, ILAC and IAF for Mutual Recognition Accreditation	Deutsche Akkreditierungsstelle GmbH Office Berlin Office Frankfurt am Main Office Brunschweig Spittelmarkt 10 Europa-Alles 52 Bundesallee 100 10117 Berlin 60327 Frankfurt am Main 38116 Braunschweig
The Deutsche Akkreditierungsstelle GmbH attests that the testing laboratory CTC advanced GmbH Untertürkheimer Straße 6-10, 66117 Saarbrücken is competent under the terms of DIN EN ISO/IEC 17025:2005 to carry out tests in the following fields: Telecommunication	
The accreditation certificate shall only apply in connection with the notice of accreditation of 02.06.2017 with the accreditation number D-Pt-12076-01 and is valid until 21.04.2021. It comprises the cover sheet, the reverse side of the cover sheet and the following annex with a total of 43 pages.	The publication or extracts of the accreditation certificate is subject to the prior written approval by Deutsche Alkonditieningstatelli Grahit (AlkAS). Exemptide this to unchanged from of separate disseminations of the cover sheet by the conformity assessment body mentioned overleaf. No impression shall be made that the accreditation also extends to fields beyond the scope of accreditation was granted pursuant to the Act on the Accreditation Body (AkkStelleG) of 31 July 2009 (Frederal taw Gazette Ip. 2625) and the Regulation (EC) No 756/2006 of the European Parliament and of the Council of July 2008 setting out the requirements for accreditation and market surveillance relating to the marketing of graducts (Official Journal of the European Linion 12.18.69 July 2008, p. 50). AkkAs is a signatory to the Multilateral Agreements for Accreditation and market surveillance relating to the marketing of graducts (Official Journal of the European Linion 12.18.69 July 2008, p. 50). AkkAs is a signatory to the Multilateration al Accreditation for the European Linion (2008, p. 50). AkkAs is Accreditation (IRA), International Accreditation forum (IAP) and International Laboratory Accreditation. Cooperation (ILA), International Accreditation forum (IAP) and International Laboratory Accreditation.
Registration number of the certificate: D-PI-12076-01-03 Frankfurt, 02.06.3017 Frankfurt	The up-to-date state of membership can be retrieved from the following websites: EA: www.garopegn-accreditation.org IAC: www.garopeg IAF: www.garopeg

Note: The current certificate annex is published on the website (link see below) of the Accreditation Body DAkkS or may be received by CTC advanced GmbH on request

http://www.dakks.de/as/ast/d/D-PL-12076-01-03.pdf