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Contact person RISE Tomas Lennhager Electronics +46 10 516 54 09 tomas.lennhager@ri.se Date 2017-10-23

Reference 7P06127-G Page 1 (64) **SP** Testing

Ericsson AB Anders Karlsson BURA DURA RP QRM Torshamnsgatan 21 164 80 Stockholm

Radio measurements on Radio 4415 B2 B25 equipment with FCC ID TA8AKRC161636 and IC: 287AB-AS161636

Product name: Radio 4415 B2 B25 Product number: KRC 161 636/1

RISE Research Institutes of Sweden AB

Electronics - EMC

Performed by

Examined by

Tomas Lennhager

Monika Fuller

RISE Research Institutes of Sweden AB

Postal address Box 857 SE-501 15 BORÅS Sweden Office location Brinellgatan 4 SE-504 62 BORÅS

Phone / Fax / E-mail +46 10 516 50 00 +46 33 13 55 02 info@ri.se This report may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.







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Summary

Standard Listed part of	Compliant	
FCC CFR 47 part 24/ RSS 133, RSS-Gen		
2.1046/ 6.4 RF power output, conducted	Yes	
2.1049/ 4.6.1 Occupied bandwidth	Yes	
2.1051/ 6.6 Band edge	Yes	
2.1051/ 6.2 Spurious emission at antenna terminals	Yes	
2.1053/ 6.5 Field strength of spurious radiation	Yes	
2.1055/ 6.3 Frequency stability	Yes	





Description of the test object

Equipment:	Radio equipment Radio 4415 B2 B25 Product number KRC 161 636/1 FCC ID: TA8AKRC161636 IC: 287AB-AS161636
HVIN:	AS161636
Hardware revision state:	R1B
Tested configuration:	Single RAT GSM
Frequency range:	TX: 1930 – 1990 MHz RX: 1850 – 1910 MHz
IBW:	20 MHz
Output power:	Max 40 W/ antenna port Single carrier: 1x 43 dBm (1x 20W) Multi carrier: 2x 43 dBm (2x 20W) 4x 40 dBm (4x 10W)
Antenna ports:	4 TX / 4 RX ports
Antenna:	No dedicated antenna, handled during licensing
RF configurations:	Single and multi-carrier, 1-4 carriers/ port
Modulations:	GMSK, 8PSK and AQPSK
RF power Tolerance:	+0.6/ -2.5 dB
CPRI Speed	Up to 10.1 Gbit/s
Nominal supply voltage:	-48VDC

The information above is supplied by the manufacturer.



Purpose of test

The purpose of the tests is to verify compliance to the performance characteristics specified in applicable items of FCC CFR 47 part 24, Industry Canada RSS-133 and RSS-Gen.

Operation modes during measurements

Measurements were performed with the test object transmitting following modulations: GMSK, AQPSK, 8-PSK.

Unless otherwise stated, all measurements were performed with the test object transmitting pseudorandom data in all timeslots and settings for maximum transmitter output power applicable for each configuration.

All measurements were performed with the test object configured for maximum transmit power if not otherwise noted. At ARFCN 512 and 810 maximum power was reduced by 8 dbm to 38.0 dbm.

The measured configurations covers worst case settings.

Conducted measurements

The test object was supplied with -48 VDC by an external power supply. Additional connections are documented in the setup drawings for conducted measurements.

Radiated measurements

The test object was powered with -48 VDC by an external power supply. Additional connections are documented in the setup drawings for radiated measurements.

References

Measurements were done according to relevant parts of the following standards: ANSI C63.4-2014 CFR 47 part 2, April 2017 CFR 47 part 24, April 2017 ANSI C63.26-2015 KDB 971168 D03 IM Emission Repeater Amp v01 3GPP TS 37.141, version 13.5.0 RSS-Gen Issue 4 RSS-133 Issue 6



Measurement equipment

	Calibration Due	RISE number
Test site Tesla	2019-12	503 881
R&S ESU 40	2018-07	901 385
R&S FSQ 40	2018-07	504 143
R&S FSW 43	2018-08	902 073
Control computer with	-	BX62351
R&S software EMC32 version 10.20.01		
High pass filter 3-26.5 GHz	2017-12	BX40074
High pass filter 3-26.5 GHz	2018-06	901 502
RF attenuator Weinschel WA73-20-11	2018-05	900 691
Coaxial cable Sucoflex 102EA	2018-05	BX50191
Coaxial cable Sucoflex 102EA	2018-05	BX50236
ETS Lindgren BiConiLog Antenna 3142E	2019-03	BX61914
EMCO Horn Antenna 3115	2019-12	502 175
µComp Nordic, Low Noise Amplifier	2017-12	901 545
Temperature and humidity meter, Testo 635	2018-06	504 203
Temperature and humidity meter, Testo 625	2018-06	504 188

Uncertainties

Measurement and test instrument uncertainties are described in the quality assurance documentation "SP-QD 10885". The uncertainties are calculated with a coverage factor k=2 (95% level of confidence).

Compliance evaluation is based on a shared risk principle with respect to the measurement uncertainty.

Reservation

The test results in this report apply only to the particular test object as declared in the report.

Delivery of test object

The test object was delivered: 2017-09-07.

Manufacturer's representative

Mikael Jansson, Ericsson AB.

Test engineers

Tomas Isbring for radiated tests, RISE Tomas Lennhager and Andreas Johnson for conducted tests, RISE.

Test participant(-s)

None.



Test frequencies used for radiated and conducted measurements

Reference

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Date

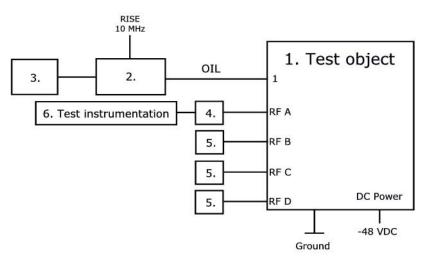
TX test frequencies, conducted measurements:			
ARFCN	Frequency	Symbolic	Comment
Downlink	[MHz]	name	
512	1930.2	В	Single carrier TX bottom frequency
513	1930.4	B+1	Lowest carrier frequency supporting full nominal power.
513	1930.4	B2	2 carrier TX bottom constellation
516	1931.0		
513	1930.4	B4	4 carrier TX bottom constellation
516	1931.0		
519	1931.6		
522	1932.2		
661	1960.0	М	Single carrier TX mid frequency
660	1959.8	M2	2 carrier TX mid constellation
663	1960.4		
657	1959.2	M4	4 carrier TX mid constellation
660	1959.8		
663	1960.4		
666	1961.0		
809	1989.6	T-1	Highest carrier frequency supporting full nominal power.
810	1989.8	Т	Single carrier TX bottom frequency
806	1989.0	T2	2 carrier TX top constellation
809	1989.6		
800	1987.8	T4	4 carrier TX top constellation
803	1988.4		-
806	1989.0		
809	1989.6		
513	1930.4	B _{im 3}	3 carrier TX bottom configuration
516	1931.0	-	according to KDB 971168 D03
611	1950.0		
711	1970.0	T _{im 3}	3 carrier TX top configuration
806	1989.0		according to KDB 971168 D03
809	1989.6		

TX test frequencies, conducted measurements:

All RX frequencies were configured 80 MHz below the corresponding TX frequency according the applicable duplex offset for the operating band.



Test setup: conducted measurements



Test object:

1.	Radio 4415 B2 B25, KRC 161 636/1, rev. R1B, s/n: D16W963153
	With Radio Software: CXP 901 7316/7, rev. R67HA. FCC ID: TA8AKRC161636 and
	IC: 287AB-AS161636

Associated equipment:

2.	Testing Equipment:
	CT10, LPC 102 467/1, rev. R1C, s/n: T01F375047, BAMS – 1001466801
	with software CXA 104 446/1, rev. R8AA

Functional test equipment:

3.	Computer, HP EliteBook 8560w, BAMS - 1001236851	
4.	RF Attenuator: RISE number: 900 691	
5.	Terminator, 50 ohm	
6.	RISE Test Instrumentation according to measurement equipment list for each test.	
	The signal analyzer was connected to the RISE 10 MHz reference standard during all	
	measurements.	

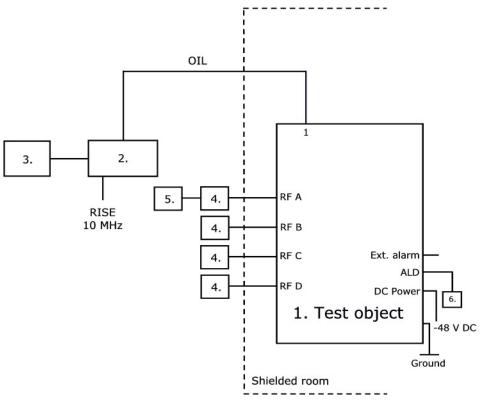
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Test setup: radiated measurements



 Radio 4415 B2 B25, KRC 161 636/1, rev. R1B, s/n: D16W963156
 With Radio Software: CXP 901 7316/7, rev. R67HA. FCC ID: TA8AKRC161636 and IC: 287AB-AS161636

Associated equipment:

2.	Testing Equipment:
	CT10, LPC 102 467/1, rev. R1C, s/n: T01F375046, BAMS – 1001466800
	with software CXA 104 446/1, rev. R8AA

Functional test equipment:

3.	Computer, HP EliteBook 8560w, BAMS - 1001236854
4.	Attenuator
5.	R&S ESIB 26, RISE no: 503 292, for supervision purpose only
6.	ALD Control, Andrew, model: ATM200-A20, s/n: DESA101412073







Interfaces:

interfaces.	
Power input configuration DC: -48 VDC	Power
RF A, 4.3-10 connector, combined TX/RX	Antenna
RF B, 4.3-10 connector, combined TX/RX	Antenna
RF C, 4.3-10 connector, combined TX/RX	Antenna
RF D, 4.3-10 connector, combined TX/RX	Antenna
1, Optical Interface Link, single mode opto fibre	Signal
2, Optical Interface Link, not used in this configuration	Signal
EXT Alarm, shielded multi-wire	Signal
ALD, shielded multi-wire	Signal
Ground wire	Ground



RF power output measurements according to CFR 47 §24.232 / IC RSS-133 6.4, conducted

Date	Temperature	Humidity
2017-10-03	$22 \ ^{\circ}C \pm 3 \ ^{\circ}C$	47% ± 5 %
2017-10-04	$23 \ ^{\circ}C \pm 3 \ ^{\circ}C$	$38\% \pm 5\%$
2017-10-05	$22 \degree C \pm 3 \degree C$	30% ± 5 %

Test set-up and procedure

The test object was connected to a signal analyser measuring peak and RMS output power in CDF mode. A resolution bandwidth of 80 MHz was used.

Measurement equipment	RISE number
R&S FSW 43	902 073
RF attenuator	900 691
Testo 635, temperature and humidity meter	504 203

Measurement uncertainty: 1.1 dB

Results

Single carrier

Rated output power level at each RF port 1x 43 dBm/ port.

	Output power CCDF [RMS dBm/ PAR dB]			
Tested modulation and Symbolic name	Port RF A	Port RF B	Port RF C	Port RF D
GMSK, B+1	42.81/0.38	42.98/ 0.30	42.98/ 0.30	42.76/ 0.34
GMSK, M	42.74/ 0.38	42.80/ 0.32	42.79/ 0.32	42.84/ 0.38
GMSK, T-1	42.71/0.38	42.80/ 0.38	42.74/ 0.34	42.71/0.38
8PSK, B+1	42.65/ 3.46	42.82/ 3.46	42.84/ 3.44	42.67/ 3.46
AQPSK, B+1	42.79/ 3.64	42.97/ 3.60	43.02/ 3.62	42.79/ 3.62
AQPSK, M	42.76/ 3.62	42.89/ 3.60	42.78/ 3.60	42.80/ 3.60
AQPSK, T-1	42.77/ 3.60	42.81/ 3.64	42.74/ 3.62	42.69/ 3.62
GMSK, B+1	42.81/0.38	42.98/ 0.30	42.98/ 0.30	42.76/ 0.34
GMSK, M	42.74/ 0.38	42.80/ 0.32	42.79/ 0.32	42.84/ 0.38
GMSK, T-1	42.71/0.38	42.80/ 0.38	42.74/ 0.34	42.71/0.38

Note: The PAR value is the 0.1 % Peak to Average Ratio.



Reduced output power apply for the channel 512 and 810: 38 dBm/ port.

	Output power CCDF [RMS dBm/ PAR dB]
Tested modulation and Symbolic name	Port RF C
GMSK, B	38.06/ 0.40
GMSK, T	37.82/ 0.38

Multi carrier

Rated output power 2x 43 dBm/ port.

	Output power CCDF [RMS dBm/ PAR dB]
Tested modulation and Symbolic name	Port RF C
AQPSK, B2	45.09/ 6.44
AQPSK, M2	45.59/ 6.44
AQPSK, T2	45.58/ 6.42

Multi carrier

Rated output power 4x 40 dBm/ port.

	Output power CCDF [RMS dBm/ PAR dB]	
Tested modulation and Symbolic name	Port RF C	
AQPSK, B4	43.85/ 7.36	
8PSK, B4	43.52/ 7.24	
GMSK, B4	45.09/ 6.08	
AQPSK, M4	44.39/ 7.34	
8PSK, M4	44.00/ 7.28	
GMSK, M4	45.58/ 6.08	
AQPSK, T4	44.31/ 7.34	
8PSK, T4	44.07/ 7.24	
GMSK, T4	45.53/ 6.08	



Power Spectrum Density

Single carrier

Rated output power level at RF connector 1x 43 dBm/ port.

	Output power per 1 MHz [RMS dBm]	
Tested modulation and Symbolic name	Port RF C	
AQPSK, B+1	43.04	

Remark

ERP/EIRP compliance is addressed at the time of licensing, as required by the responsible FCC/IC Bureau(s). Licensee's are required to take into account maximum antenna gain used in combination with above power settings to prevent the radiated output power to exceed the limits.

Limits

CFR 47 §24.232

The maximum output power may not exceed 3280 W/MHz (EIRP). The Peak to Average Ratio (PAR) may not exceed 13 dB.

RSS-133

Base station transmitters operating in the band 1930-1990 MHz shall not have output power exceeding 100 watts. When the transmitter power is measured in terms of average value, the peak-to-average ratio(PAR) of the power shall not exceed 13 dB

There is no EIRP limit specified for base station equipment in the RSS-133.

EIRP compliance is addressed at the time of licensing, as required by the responsible IC Bureau. Licensee's are required to take into account the antenna gain to get the maximum usable power settings to prevent the radiated output power to exceed the EIRP limits specified in SRSP-510

Complies? Yes



Occupied bandwidth measurements according to CFR47 2.1049 / RSS-Gen 4.6.1

Date	Temperature	Humidity
2017-10-05	$22 \ ^{\circ}C \pm 3 \ ^{\circ}C$	$30\% \pm 5\%$

Test set-up and procedure

The measurements were made per definition in § 2.1049. The output was connected to a signal analyzer with the Peak detector activated in max hold.

Measurement equipment	RISE number
R&S FSW 43	902 073
RF attenuator	900 691
Testo 635, temperature and humidity meter	504 203

Measurement uncertainty: 3.7 dB

Results

Single carrier

Diagram	Modulation	Symbolic name	Tested Port	Occupied BW (99%) [kHz]
1	8PSK	B+1	RF C	245
2	8PSK	М	RF A	245
3	8PSK	М	RF B	245
4	GMSK	М	RF C	245
5	8PSK	М	RF C	245
6	AQPSK	М	RF C	241
7	8PSK	М	RF D	245
8	8PSK	T-1	RF C	245

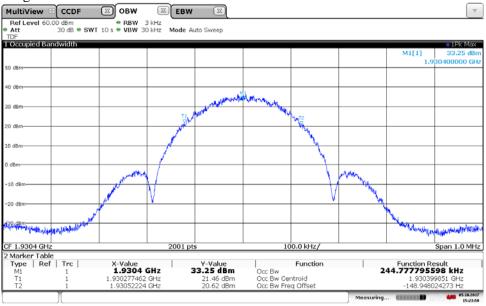
The diagrams are shown on the following pages.

Date 2017-10-23

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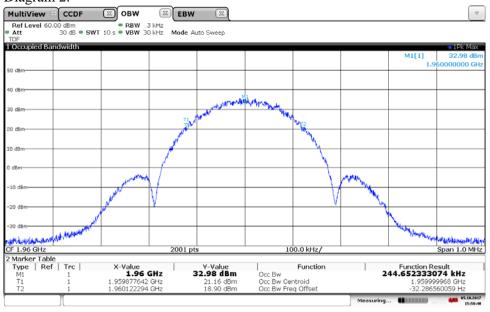


Diagram 1:



15:23:51 05.10.2017

Diagram 2:



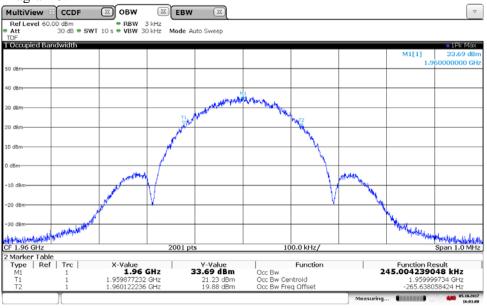
15:58:40 05.10.2017

Date 2017-10-23

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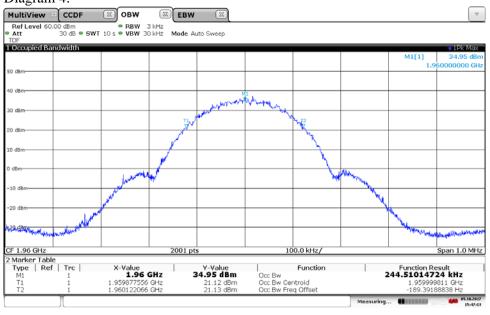


Diagram 3:



16:01:00 05.10.2017

Diagram 4:



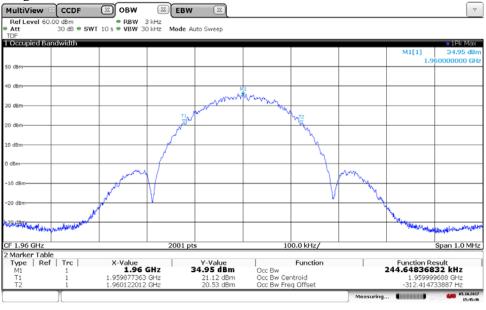
15:47:14 05.10.2017

Date 2017-10-23

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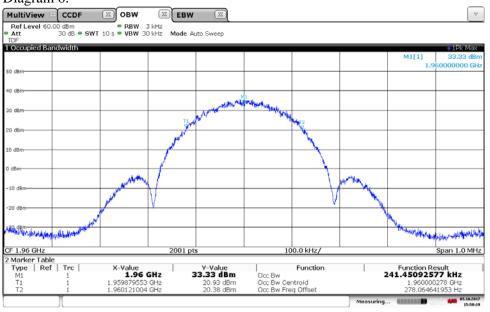


Diagram 5:



15:45:47 05.10.2017

Diagram 6:



15:50:19 05.10.2017

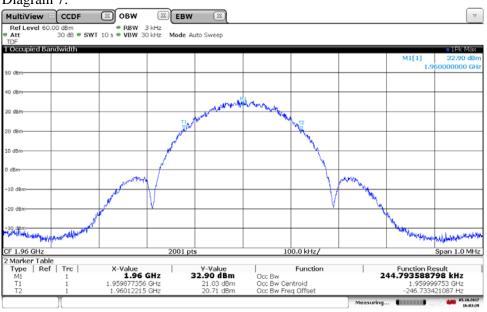
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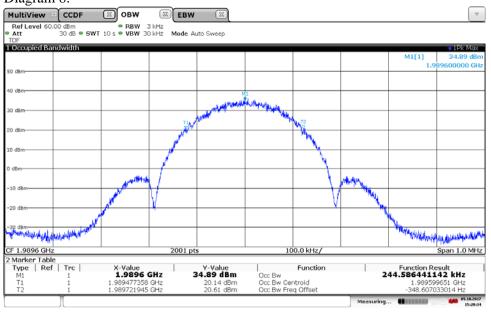






16:03:39 05.10.2017





15:20:35 05.10.2017



Band edge measurements according to CFR 47 §24.238 / IC RSS-133 6.6

Date	Temperature	Humidity
2017-10-06	$22 \degree C \pm 3 \degree C$	21% ± 5 %
2017-10-10	$22 \ ^{\circ}C \pm 3 \ ^{\circ}C$	22% ± 5 %

Test set-up and procedure

The measurements were made per definition in §24.238. The output was connected to a spectrum analyzer with the RMS detector activated. The spectrum analyzer was connected to an external 10 MHz reference standard during the measurements. A RBW of 3 kHz (>1% of EBW) was used up to 1 MHz away from the band edges.

From 1 MHz to 30 MHz away from the band edges a RBW of 100 kHz was used. To compensate for the reduced RBW the limit was adjusted by 10 dB to -23 dBm in this frequency range.

Measurement equipment	RISE number
R&S FSW 43	902 073
RF attenuator	900 691
Testo 635, temperature and humidity meter	504 203

Measurement uncertainty: 3.7 dB

Results

Singel carrier

Diagram	Modulation	Symbolic name	Tested Port
1 a-b	GMSK	B+1	RF C
2 a-b	8PSK	B+1	RF C
3 a-b	AQPSK	B+1	RF C
4 a-b	GMSK	T-1	RF C
5 a-b	8PSK	T-1	RF C
6 a-b	AQPSK	T-1	RF C
7 a-b	GMSK	В	RF A
8 a-b	GMSK	Т	RF A
9 a-b	GMSK	В	RF B
10 a-b	GMSK	Т	RF B
11 a-b	GMSK	В	RF C
12 a-b	GMSK	Т	RF C
13 a-b	GMSK	В	RF D
14 a-b	GMSK	Т	RF D

Multi carrier

Diagram	Modulation	Symbolic name	Tested Port		
15 a-b	GMSK	Bim	RF C		
16 a-b	GMSK	Tim	RF C		

The diagrams are shown on the following pages.

RISE Research Institutes of Sweden AB



Limits

CFR 47 §24.238 and RSS-133 6.5

Outside a licensee's frequency band(s) of operation the power of any emission shall be attenuated below the transmitter power (P) by at least $43 + 10 \log (P) dB$, resulting in a limit of -13 dBm.

Complies? Yes	Compliant	* 7
	Complies?	Yes

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altiview 🕀 CCDF	D1 🕅		Ш нг	EBW	X			_
Ref Level 50.00 d Att 30 DF	Bm dB = SWT 100 ms	 RBW 3 kHz VBW 30 kHz Mod 	le Auto Sweep					Count 100/10
Frequency Swee	p							1Rm Avç
							M1[1]	-39.15 dB
) dBm							1	.92988410 G
dem-								
dBm-						<u>^</u>		
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dBm					-/			
dBm								
					1			
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	3.000 d8m			A			~	
0 dBm								
0 dBm				/				
			M1					
0 dBm-			- www	1			- h	un
			John The	~				the second
- 1.93 GHz		a martin	1	P	10.0 kHz/			0
- 1.93 GHZ		1001 p	ts	20	10.0 KHZ/			Span 2.0 MH

Diagram 1 b:

altiView 🕀 CCDF 🛛 🖾	B1 🛛 🕅 02	🖾 ні 🖾 нг	EBW X		
Ref Level 50.00 dBm	• RBW 100 ki				
Att 30 dB = S DF	WT10s VBW 1 Mi	Iz Mode Auto Sweep			
Frequency Sweep					1Rm Max
					M1[1] -37.41 dBr
dBm					1.9289928 GH
dBm					
I dBm					
dBm					
dBm-					
0 dBm					
0 dBm	_				
H1 -23.000 dBr					
0 dBm					
0 dBm					
i0 dBm					
0 dBm					
.9 GHz		2001 pts	2.9 MHz/		1.929 GH
Y			215 1112/	Measuring	

12:29:42 06.10.2017

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Itaniew 🕀 CCDF	🖾 0.1 🖾 🗷	Ш ні 🖾	HZ 🖾 EBW	XX			
RefLevel 50.00 dB Att 30 d DF	m 18 • SWT 100 ms V	BW 3 kHz BW 30 kHz Mode Auto:	Sweep			c	Count 100/100
Frequency Sweep							1Rm Avc
						M1[1]	-39.34 dB
						1	.92990410 G
dBm-							
dBm							
				NA NA	m		
dBm					<u> </u>		+
				l J			1
dBm							
dom							
dBm							
0 dBm			. 4				+
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				1	' ')	
0 dBm-							
			M1 /				
0 dBm			- Martin -				armin
							~~ v
1.93 GHz		1001.000	—	00.01/11=/			Span 2.0 MF
1.95 GHZ		1001 pts	Z	00.0 kHz/			Span 2.0 MF

Diagram 2 b:

Itaview 🕀 CCDF	B1	X 102 X	ні 🕅 на	t 🖾 EBW	X			▼
RefLevel 50.00 d Att 30 DF	Bm dB ● SWT 10 s	RBW 100 kHz VBW 1 MHz	Mode Auto Swee	:p				
Frequency Swee	p							1Rm Max
							M1[1]	-37.12 dBn
								1.9289638 GH
) dBm								
dBm								
Gen								
dBm-								
Gom								
) dBm								
dBm								
0 dBm								
0 dBm								
41 -2	3.000 dBm							
0 dBm					_			
								,
0 dBm-								
i0 dBm								
i0 dBm						-		+
.9 GHz			2001 pts	1	2.9 MHz/			1.929 GH
Y						Measuring		66.10.2017

12:32:57 06.10.2017

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Reference

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Diagram 3 a: ▽ MultiView 🕀 CCDF 🛛 🕅 D1 BZ X H1 X HZ EBW X Ref Level 50.00 dBm RBW 3 kHz • Att 30 dB • SWT 100 ms VBW 30 kHz Mode Auto Sweep TDF • Trequency Sweep • Frequency Sweep • Frequency Sweep Count 100/100 1Rm Avg M1[1] -38.86 dBm N M1 Ż 1001 pts CF 1.93 GHz 200.0 kHz/ Span 2.0 MHz Measuring.. 12:35:10 06.10.2017

Itariew 🗄 CCDF 🔣 I	81 22 02	Ж	XX Hz	EBW	22		~
Ref Level 50.00 dBm	• RBW 10						
Att 30 dB 🖷 SV DF	NT 10 s VBW	1 MHz Mode	Auto Sweep				
Frequency Sweep							1Rm Max
						M1[1]	-37.04 dBr
d8m-							1.9289928 GH
dBm						 	
dBm						 	
dBm						 	
dBm							<u> </u>
0 dBm							
0 dBm							
41 -23.000 dBm	B					 	
0 dBm							
0 dBm						 	
0 dBm							
0 dBm-							<u> </u>
.9 GHz		2001 pt	ts		2.9 MHz/		1.929 GH

12:34:28 06.10.2017

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ltsview 🕀 cco		EZ B2	E III	Ш нг	EBW	X			
Ref Level 50 Att DF	0.00 dBm 30 dB = SWT		3 kHz 30 kHz Mode	Auto Sweep				0	Count 100/10
Frequency S	Sweep				,				• 1Rm Avg
								M1[1]	-40.84 dE
								1	.99008190 G
dBm									<u> </u>
dBm									
		m	m -						
dBm		pr -	Y						
			4						
dBm									
dom		A							
jBm		1							
		1/							
0 dBm		/		h					
				1					
0 dBm									
0 dBm									
	1 (
	M				M1				
o den and	Jun .			2	mm				
					~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	the second second			
1.99 GHz	1		1001 pt	s	- 20	00.0 kHz/			Span 2.0 M
	Y						Measuring		66.10.2

Diagram 4 b:

ultiview 88 CCDF	XX B1	EZ BZ	Ш н	EH 🕅	EBM	X		~
Ref Level 50.00 Att	) dBm 30 dB = SWT	10 s VBW	00 kHz 1 MHz Mode /	Auto Sweep				
Frequency Sw	еер							1Rm Max
							M1[1]	-41.03 dBn
								1.9961667 GH
0 dBm								
0 dBm								
0 dBm								
0 dBm							 	
dBm					-			
10 dBm-							 	
20 dBm-							 	
	-23.000 dBm -							
90 dBm								
10 dBm								
		*****					 	
50 dBm								
50 dBm							 	
.996 GHz			2001 pt			.9 MHz/		2.025 GH
0.220 012	W.		2001 pt	*	1			05.10.2017

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# Diagram 5 a: ♥ MultiView 🕀 CCDF 🖾 B1 🖾 B2 🖾 H1 🖾 H2 🖾 EBW 🖾 Count 100/100 • 1Rm Avg M1[1] -41.30 dBm 1.99006390 GHz mm. 1 200.0 kHz/ 1001 pts Span 2.0 MHz CF 1.99 GHz Measuring... .....

12:58:49 06.10.2017

#### Diagram 5 b:

	C) 81 X 8		EN IN	EBW	X			
RefLevel 50.00 dBm Att 30 dB		V 100 kHz V 1 MHz Mode Au	to Sweep					
)F								1Rm Max
requency Sweep							M1[1]	-40.67 dBi
							mili	1.9962391 GH
dBm								
dBm								
dBm								
dBm								
iBm								
0 dBm								
0 dBm								
) dBm								
) dBm-								
0 dBm								
0 dBm								
996 GHz		2001 pts			2.9 MHz/	1		2.025 GF
- Y						Magguring		66.10.201

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ultiview 🕀 CCDF 🛛 🖾	B1 🛛 B2	III III	Ж	EBW	XX		~
Ref Level 50.00 dBm           Att         30 dB • S	• RBW WT 100 ms VBW		e Auto Sweep			,	Count 100/100
DF Frequency Sweep							1Rm Avg
						M1[1]	-40.62 dBr .99008590 GH
D dBm-							<u> </u>
D dBm	~~~	<u></u>					+
D dBm	~	my					
) dBm		1					
dBm	1						
10 dBm			~				
0 dBm							
80 dBm	-						
HO dBaharan			- how	MI			
					mannen		
F 1.99 GHz		1001 pt	s	20	0.0 kHz/		Span 2.0 MH

#### Diagram 6 b:

iterien 🔠 ccor	XX 81	XX BZ	Ш	SH [2]	EBW	X			~
Ref Level 50.0 Att DF	0 dBm 30 dB = SWT	• RBW 1 10 s VBW		Auto Sweep					
Frequency Sw	eep								🜻 1 Rm Max
								M1[1]	-41.09 dBr
) dBm									1.9963986 GH
dBm									
ubm									
d8m									
dBm									
dBm									
0 dBm									
0 dBm-	1 -23.000 dBm								
0 dBm									
dBm-									
1 dBm									
0 dBm									
0 dBm									
u usm									
.996 GHz			2001 pt	s	2	.9 MHz/			2.025 GH
,	Υ						Measuring		66.10.201 12:07:0

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ultiView 🗄 CCDF 🛛 🖾 🕅 01	EZ B2	Ши	Нг	EBW	X			~
Ref Level 40.00 dBm Att 30 dB • SWT 1 DF	00 ms VBW	3 kHz 30 kHz Mode	e Auto Sweep					Count 100/100
Frequency Sweep								1Rm Avg
							M1[1]	-13.88 dBi
dBm								
dBm				- And	m.			
				ſ	N,			
) dBm-				ľ				
dBm								
ubin								
10 dBm			M1	(				
H1 -13.000 dbm			Ĵ.			m		
0 dBm				<				
30 dBm								
			1					
40 dBm-			M					
50 dBm						5		
www.www.www.	umperson	Mar and a state of the state of					1 - Way	- manana ha
F 1.93 GHz		1001 pt		20	0.0 kHz/			Span 2.0 MH
1.95 GHz		1001 pt	.3	20	0.0 KHZ/			3part 2.0 Min

16:11:40 10.10.2017

#### Diagram 7 b:

oultiview EE CCDF	<b>X</b> B1	50	Ш н1	Ш нг	EBW	22			~
Ref Level 50.00	dBm	• RBW 1	.00 kHz						
Att 3 DF	0 dB 🖷 SWT :	10 s VBW	1 MHz Mode	Auto Sweep					
Frequency Swe	ep								1Rm Max
								M1[1]	-39.56 dBr
									1.9289928 GH
0 dBm									
0 dBm									
) dBm									
0 dBm									
dBm									
Gom									
10 dBm-									
to dem									
20 dBm	23.000 d8m								
0 dBm									
10 dBm									
50 dBm									
i0 dBm									
.9 GHz			2001 pt	is in the second		2.9 MHz/			1.929 GH
7			2001 0				<u> </u>		10.10.2017

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Reference

Measuring...

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# Diagram 8 a: Nultrieven 🗄 CCDF 🖾 B1 🖾 B2 🖾 H1 🖾 H2 🖾 EEW 🖾 Count 100/100 • 1Rm Avg M1[1] -14.14 dBm 1.99002000 GHz -10 dE Ŵ $^{\wedge}$ 20 d 200.0 kHz/ Span 2.0 MHz CF 1.99 GHz 1001 pts

16:19:02 10.10.2017

#### Diagram 8 b:

daview 🕀 CCDF 🛛 🖾	81 🕅 82	Ш (н1 (	нг	EBW	22		
Ref Level 50.00 dBm Att 30 dB • S	RBW 100 WT 10.5 VBW 1	kHz MHz Mode Aut	o Sween				
DF							15.11
Frequency Sweep						M1[1]	<ul> <li>1Rm Max</li> <li>-41.54 dBi</li> </ul>
							.9961087 G
) dBm							
) dBm							
I dBm-							
dBm							
dBm							
0 dBm						 	
a							
0 dBm							
0 dBm							
o dom							
0 dBm							
0 dBm							
0 dBm-						 	
.996 GHz		2001 pts		2	.9 MHz/		2.025 GH

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Diagram 9 a:								_
ultiview 🗄 🖸 CCDF 🛛 🖾 🛛		Ш н1	XX Hz	EBW	X			~
Ref Level         40.00 dBm           Att         30 dB • SV           DF		3 kHz 30 kHz Mode	e Auto Sweep					Count 100/100
Frequency Sweep							M1[1]	<ul> <li>1Rm Avg</li> <li>-13.87 dBr</li> </ul>
								.92998000 GH
) dBm-								
				And	da a			
I dBm-				M	Ny.			
dBm					h.			
iBm								
0 dBm	•		MI	/				
	-			J		m I		
0 dBm-								
0 dBm								
			<u>ار</u>					
0 dBm								
						2		
0 dBm		and the second	r				human	
www.www.www.www.www.www.www.www.www.ww		-	1					
1.93 GHz	1	1001 pt	s	20	0.0 kHz/			Span 2.0 MH

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#### Diagram 9 b:

altiview 🗄 CCDF 🛛 🖾	81 🕅 02	Ш ні Ш	HZ EBW	X			~
Ref Level 50.00 dBm	RBW 100	kHz					
Att 30 dB = S DF	WT 10 s VBW 1	MHz Mode Auto Swe	ep				
Frequency Sweep							1Rm Max
inequency on cop						M1[1]	-40.10 dB
							.9289928 GH
) dBm							.5205520 01
							1
) dBm							
40							1
) dBm							
							1
) dBm							
							1
dBm							
							1
0 dBm							
							1
20 dBm							
H1 -23.000 dBr							
							1
0 dBm							
10 dBm-							
50 dBm							
i0 dBm							
.9 GHz		2001 pts		2.9 MHz/			1.929 GH
Y					Manguring		10.10.201

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Reference

Measuring...

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# Diagram 10 a: ♥ Count 100/100 1Rm Avg M1[1] -13.87 dBm 1.99002000 GHz -10 dE VX Л 20 d 200.0 kHz/ Span 2.0 MHz 1001 pts CF 1.99 GHz

15:41:16 10.10.2017

#### Diagram 10 b:

altiview 🕀 CCDF 🔣 81	EZ BZ	Ж (н1 🕅	H2 X EBW	XX		
Ref Level 50.00 dBm	• RBW 100 k 10 s VBW 1 M	Hz				
DF	10 S VBW 1 M	HZ Mode Auto SW	eep			
Frequency Sweep						1Rm Max
					M1[1]	-41.54 dB
0 dBm						1.9962246 GH
0 dBm						
o don						
0 dBm						
0 dBm						
dBm						
10 dBm-						
20 dBm-						
41 -23 000 dBm				-		
30 dBm						
40 dBm						
50 dBm						
60 dBm						
.996 GHz		2001 pts		2.9 MHz/		2.025 GH
Y					 	10.10.201

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Reference

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# Diagram 11 a: MultiView 🕀 CCDF 🛛 🖾 01 BZ C H1 C HZ EBW C ♥ Ref Level 50.00 dBm RBW 3 kHz • Att 30 dB • SWT 100 ms VBW 30 kHz Mode Auto Sweep TDF • Trequency Sweep • Frequency Sweep • Frequency Sweep Count 100/100 • 1Rm Avg M1[1] -13.75 dBm 1.92998000 GHz N 200.0 kHz/ 1001 pts CF 1.93 GHz Span 2.0 MHz Measuring

13:22:56 06.10.2017

#### Diagram 11 b:

ultrion 88 CCDF	81 🕅	D2 X H1	XX Hz	EBW	22			~
Ref Level 50.00 dBm	• RB	W 100 kHz						
Att 30 dB	SWT 10 s VB	W 1 MHz Mode A	uto Sweep					
Frequency Sweep								1Rm Max
							M1[1]	
								1.9289928 GH
0 dBm								<u> </u>
D dBm								
								1
0 dBm-								-
								1
0 dBm								
dBm								
								1
10 dBm								
								1
20 dBm	l clam							
30 dBm								
10 dBm								
50 dBm								
50 dBm					-			
.9 GHz		2001 pts			2.9 MHz/		1	1.929 GH
Ϋ́						Managuring		05.10.2017

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# Diagram 12 a: ♥ Count 100/100 • 1Rm Avg M1[1] -13,48 dBm 1,99002000 GHz m Span 2.0 MHz 1001 pts 200.0 kHz/ CF 1.99 GHz Measuring... Concession of

13:09:28 06.10.2017

#### Diagram 12 b:

tiview 🗄 CCDF 🛛 🖾 🗍		22 н1	H2	EBW	X		~
RefLevel 50.00 dBm Att 30 dB = SV	● RBW WT 10 s VBW	100 kHz 1 MHz Mode	Auto Sweep				
Frequency Sweep			-				1Rm Max
requency sweep						M1[1]	-41.59 dBi
							1.9960797 GH
dBm-							-
dBm							
dBm-							
dBm							
abm							
Bm							
0 dBm							
0 dBm	_						
H1 -23.000 dBm							
0 dBm							
) dBm		-					
					10076-00-01-0-00-00-00-0-0-0-0-0-0-0-0-0-0-0	 	
0 dBm				-			
0 dBm							
996 GHz		2001 pt	s	2	2.9 MHz/		2.025 GH

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#### Diagram 13 a: ▽ MultiView 🕀 CCDF 🛛 🖾 01 BZ C H1 C HZ EBW C Ref Level 40.00 dBm RBW 3 kHz • Att 30 dB • SWT 100 ms VBW 30 kHz Mode Auto Sweep TDF 1 Frequency Sweep 1 1 1 1 Count 100/100 1Rm Avg M1[1] -14.17 dBm 1.92998000 GHz -10 dE Â, 20 d m CF 1.93 GHz 200.0 kHz/ 1001 pts Span 2.0 MHz Measuring.. Concession in the local division of the loca

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#### Diagram 13 b:

ultrien 🗄 CCDF 🛛 🖾	81 🕅 02 (	🖾 ні 🖾 нг	EBW X		~
Att 30 dB •	• RBW 100 ki SWT 10 s VBW 1 Mi	tz			
DF	SWI 105 VBW 1M	12 Mode Auto Sweep	9		
Frequency Sweep					1Rm Max
				M1[1	
0 dBm					1.9288623 GH
) dBm					
0 d8m					
0 dBm					
dBm-					
10 dBm					
20 dBm	_				
H1 -23.000 d	Bm				-
30 dBm					
10 dBm-					-
			**************************************		
50 dBm					
50 dBm-					
.9 GHz		2001 pts	2.9 MHz	/	1.929 GH:
Υ Y				Measuring	

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Reference

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#### Diagram 14 a: MalBYNew ↔ CCDF 🛛 81 🖾 82 🖾 H1 HZ EBW X ♥ Count 100/100 1Rm Avg M1[1] -14.63 dBm 1.99002000 GHz h -10 dE M $\wedge$ 20 d Span 2.0 MHz 1001 pts 200.0 kHz/ CF 1.99 GHz Measuring.. Concession in the local division of the loca

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#### Diagram 14 b:

altiview 🕀 CCDF 🛛 🕅 🕅 🛙	BZ BZ	X H1 XX H2	EBW X			~
RefLevel 50.00 dBm Att 30 dB = SWT	<ul> <li>RBW 100 kH</li> <li>10 s VBW 1 MH</li> </ul>					
DF Frequency Sweep						• 1Rm Max
rrequency sweep					M1[1]	
) dBm						1.9960507 GF
0Bm						
dBm						
) dBm						
dBm						
dBm-						
0 dBm						
0.40						
0 dBm						
0 dBm						
0 dBm						
0 dBm						
0 dBm						
.996 GHz		2001 pts	2.9 M	Hz/		2.025 GH
Υ					ing 🔳	10.10.201

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#### Diagram 15 a: MultiView 🗄 CCDF 🖾 01 BZ C H1 C HZ EBW C ▼ Ref Level 50.00 dBm RBW 3 kHz • Att 30 dB • SWT 100 ms VBW 30 kHz Mode Auto Sweep TDF • Trequency Sweep • Frequency Sweep • Frequency Sweep Count 100/100 1Rm Avg M1[1] -40.57 dBm .92988210 GHz 11 Ż 1001 pts 200.0 kHz/ CF 1.93 GHz Span 2.0 MHz Measuring.. CONTRACTOR OF STREET, STREET,

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#### Diagram 15 b:

ultyriew 🗄 CCDF 🛛 🖾	81 22 02	Ш ні Ш н	2 X EBW X		~
Ref Level 50.00 dBm	• RBW 100	kHz	· · · ·		
Att 30 dB	SWT 10 s VBW 1	MHz Mode Auto Swee	*P		
Frequency Sweep					🜻 1Rm Max
				MI	
					1.9286014 GH
0 dBm					
) dBm					
u dum					
) dBm					
0 UBIN					
0 dBm					
Goin					
dBm-					
dom.					
10 dBm					
20 dBm-					
H1 -23.000 d	im -				
30 dBm					
					M
40 dBm-					
	a				
50 dBm					
50 dBm					
.9 GHz		2001 pts	2.9 MHz/		1.929 GH
Y				Measuring	

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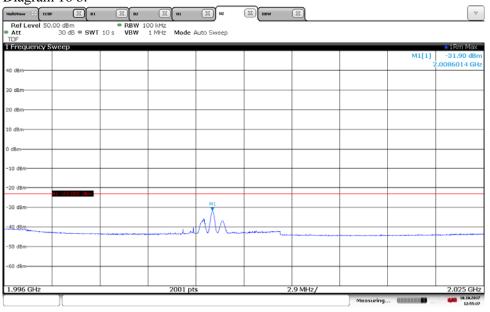
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# Diagram 16 a:

Att	30 dB 🖷 SWT	100 ms VBW	30 kHz Mode	Auto Sweep			C	ount 100/100
Frequency S	weep							1Rm Avg
							M1[1] 17	-40.19 dBn 99014990 GH
I dBm								
dBm							 	
M dBho		M	m					
dBm			N N					
$\langle \rangle$								
dBm		1						
0 dBm	H1 -13.000 dBm 🐴	/	(	n				
0 dBm	$\rightarrow$			7			 	
	$\sim$							
0 dBm								
0 dBm					M1		 	
				~	mmth	min		
1.99 GHz			1001 pt	s	20	0.0 kHz/		Span 2.0 MH

Diagram 16 b:



12:55:37 10.10.2017



# Conducted spurious emission measurements according to CFR 47 §24.238 / IC RSS-133 6.2

Date	Temperature	Humidity
2017-10-10	$22 \degree C \pm 3 \degree C$	$22\% \pm 5~\%$

### Test set-up and procedure

The measurements were made per definition in §24.238. The output was connected to a spectrum analyzer with a RBW setting of 1 MHz and RMS detector activated. The spectrum analyzer was connected to an external 10 MHz reference standard during the measurements

Measurement equipment	RISE number
R&S FSW 43	902 073
RF attenuator	900 691
HP filter	BX40074
Testo 635, temperature and humidity meter	504 203

Measurement uncertainty: 3.7 dB

#### Results

Single carrier

Diagram	Modulation	Symbolic name	Tested Port
1 a-b	GMSK	B+1	RF C
2 a-b	GMSK	T-1	RF C
3 a-b	GMSK	М	RF C
4 a-b	8PSK	М	RF C
5 a-b	AQPSK	М	RF C
6 a-b	GMSK	М	RF A
7 a-b	GMSK	М	RF B
8 a-b	GMSK	М	RF D

Multi carrier

Diagram	Modulation	Symbolic name	Tested Port
9 a-c	GMSK	M4	RF C
10 a-c	GMSK	Bim	RF C
11 a-c	GMSK	Tim	RF C

Note: Measurements were mainly limited to port RF C due to the measurement result in single carrier mode that shows that the ports are electrical identical as declared by the client.

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# Remark

The emission at 9 kHz on the plots was not generated by the test object. A complementary measurement with a smaller RBW showed that it was related to the LO feed-through.

The upper frequency boundary covers 10x the highest TX fundamental frequency.

#### Limits

CFR 47 §24.238 and RSS-133 6.5

Outside a licensee's frequency band(s) of operation the power of any emission shall be attenuated below the transmitter power (P) by at least  $43 + 10 \log (P) dB$ , resulting in a limit of -13 dBm per 1 MHz RBW.

Complies?	Yes

Date 2017-10-23

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IultiView	CCDF	X	9k3GHz	z 🖾	3-20GHz	(XX)				ſ
Ref Level 50	.00 dBm		RBW	1 MHz						
Att DF	30 dB 🗢 SW1	1 4U m	s VBW	10 MHZ M	Mode Auto Sweep					ount 100/10
Frequency S	weep						M1		M2[1]	• 1Rm Av -29.26 d
) dBm							Ť			2.9854220 0
									M1[1]	42.82 d
0 dBm										
) dBm										
) dBm										
dBm										
.0 dBm-	H1 -13.000 dBm -									
20 dBm										
0 dBm										
0 dBm										
0 dBm										
0 d8m										
.0 kHz				000	01 pts		300.0 MHz/			3.0 0
iagran	n 1b:				~		00.0 WH 127	Measuring.		10.10
)iagran	1 1b:	X	9k3GHz	z X	~		00.0 WH 127	Measuring.	((11111))	10.10
iagran	1 1b:	-(	RBW	z 🖾	~		00.0 Mirt2/	Measuring.		10.10 17:
iagran	n 1b: ccDF	-(	RBW	z 🕅	3-20GHz		00.0 Mirt2/	Measuring.		60.10 37 () Count 100/1
iagran	n 1b: ccDF	-(	RBW	z 🕅	3-20GHz			Measuring.		Count 100/1 • 1Rm A -38.00 (
Diagram IultiView Ref Level 40 Att DF Frequency S	n 1b: ccDF	-(	RBW	z 🕅	3-20GHz			Measuring.	(	Count 100/1 • 1Rm A -38.00 (
Diagram IultiView Ref Level 40 Att DF Frequency S	n 1b: ccDF	-(	RBW	z 🕅	3-20GHz			Measuring.	(	Count 100/1
Diagram IultiView Ref Level 40 Att DF Frequency S	n 1b: ccDF	-(	RBW	z 🕅	3-20GHz			Meosuring.	(	Count 100/1
Diagram MultiView Ref Level 40 Att DF Frequency S	n 1b: ccDF	-(	RBW	z 🕅	3-20GHz			Meosuring.	(	Count 100/1
Diagram	n 1b: ccDF	-(	RBW	z 🕅	3-20GHz			Meosuring.	(	Count 100/1
Diagram	n 1b: ccDF	-(	RBW	z 🕅	3-20GHz			Meosuring.	(	Count 100/1
Diagram tultiView Ref Level 40 DF Frequency S 0 d8m	n 1b: ccDF	-(	RBW	z 🕅	3-20GHz			Meosuring.	(	Count 100/1
Viagram IultiView Ref Level 40 Att DF Frequency S dem dBm dBm dBm	n 1b: ccDF	-(	RBW	z 🕅	3-20GHz			Meosuring.	(	Count 100/1
Diagram IultiView Ref Level 40 Att DF Indem Indem Indem Indem Indem Indem Indem Indem Indem Indem Indem Indem Indem Indem Indem Indem Indem Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Index Indo	n 1b: ccDF	-(	RBW	z 🕅	3-20GHz			Meosuring.	(	Count 100/1
Autiview Ref Level 40 Att DF Frequency S 0 dBm dBm dBm dBm 20 dBm	n 1b: ccDF	-(	RBW	z 🕅	3-20GHz			Meosuring.	(	6.10. 17:1 27:1 Count 100/1 • 18m A -38.00 o
Diagram           Jultiview           Ref Level 40           Att           DF           IFRATION           0 dbm           0 dbm           0 dbm           0 dbm           0 dbm           10 dbm           10 dbm           10 dbm           10 dbm           10 dbm           10 dbm	n 1b: ccDF	-(	RBW	z 🕅	3-20GHz			Meosuring.	(	6.10. 17:1 27:1 Count 100/1 • 18m A -38.00 o
Diagram           fultiview           Ref Level 400           Att           DF           of d8m           0 d8m           00 d8m           00 d8m           00 d8m           00 d8m           00 d8m	n 1b: ccDF	-(	RBW	z 🕅	3-20GHz			Meosuring.	(	6.10. 17:1 27:1 Count 100/1 • 18m A -38.00 o
Diagram           fultiview           Ref Level 400           Att           DF           of d8m           0 d8m           00 d8m           00 d8m           00 d8m           00 d8m           00 d8m	n 1b: ccDF	-(	RBW	z 🕅	3-20GHz			Meosuring.	(	6.10. 17:1 27:1 Count 100/1 • 18m A -38.00 o
Diagram           AultiView           Ref Level 40           Att           DF           Frequency S           0 dBm           0 dBm           00 dBm	n 1b: ccDF	-(	RBW	z 🕅	3-20GHz			Meosuring.	c	6.10. 17:1 27:1 Count 100/1 • 18m A -38.00 o
Diagram           Jultiver           Ref Level           Att           DF           Frequence           0           0           0           0           0           0           0           0           0           0           0           0           0           0           0           0           0           0           0           0           0           0           0           0           0           0           0           0           0           0           0           0           0           0           0           0           0           0           0           0           0           0           0           0           0           0           0 <td>n 1b: ccDF</td> <td>-(</td> <td>RBW</td> <td>z 🕅</td> <td>3-20GHz</td> <td></td> <td></td> <td>Meosuring.</td> <td>c</td> <td>6.10. 17:1 27:1 Count 100/1 • 18m A -38.00 o</td>	n 1b: ccDF	-(	RBW	z 🕅	3-20GHz			Meosuring.	c	6.10. 17:1 27:1 Count 100/1 • 18m A -38.00 o
35:55 10.10.201 Autiview Autiview Ref Level 40 Att DF Frequency 5 0 d8m	n 1b: ccDF	-(	RBW	z 🕅	3-20GHz			Meosuring.	c	Count 100/1
Diagram           Jultiview           Ref Level 40           Att           DF           Frequences           0 d8m	n 1b: ccDF	-(	RBW	z 🖾 / 1 MHz / 10 MHz	3-20GHz			Meosuring.	c	6.10. 17:1 27:1 Count 100/1 • 18m A -38.00 o

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ItiView	CCDF	🖾 9k3G	Hz 🖾 3-	-20GHz	(XX)				
ef Level 5		- RBV	V 1 MHz V 10 MHz Mode		_				ount 100/10
t		I⇔Ums VBN	10 MHZ Mode	Auto Sweep					• 1Rm Av
equency	sweep					M1		M1[1]	42.56 di
Bm						Ť		M2[1]	1.9896000 G -29.80 di
								MZ[1]	2.9854220 G
im									
Bm									
im									
m									
dBm	H1 -13.000 dBm								
dBm									
iBm									
dBm-									
dBm									
dBm									
kHz			32001 p	ts	30	0.0 MHz/			3.0 0
agrar	m 2b:						Measuring.		<b>446</b> 10.10 17:
	m 2b:	9k3GI		-20GHz	I		Measuring.		10.10 17:
agrar	m 2b:	• RB	Hz 🖾 3- 3W 1 MHz W 10 MHz Mod	-20GHz			Measuring.		0
agran	m 2b: CCDF 10 dB • sw	• RB	W 1 MHz	-20GHz			Measuring.		ount 100/1
agrar IltiView	m 2b: CCDF 10 dB • sw	• RB	W 1 MHz	-20GHz			Measuring.		count 100/1
agrar IltiView	m 2b: CCDF 10 dB • sw	• RB	W 1 MHz	-20GHz			Meosuring.	c	count 100/1
agran ItiView of Level 4 tt equency	m 2b: CCDF 10 dB • sw	• RB	W 1 MHz	-20GHz			Meosuring.	c	count 100/1
agran	m 2b: CCDF 10 dB • sw	• RB	W 1 MHz	-20GHz			Measuring	c	count 100/1
agran ItiView of Level 4 tt equency	m 2b: CCDF 10 dB • sw	• RB	W 1 MHz	-20GHz			Measuring	c	count 100/1
agran ItiView of Level 4 cquency Bm Bm	m 2b: CCDF 10 dB • sw	• RB	W 1 MHz	-20GHz			Measuring.	c	count 100/1
agrar ItiView ef Level 4 tt equency em	m 2b: CCDF 10 dB • sw	• RB	W 1 MHz	-20GHz			Measuring	c	count 100/1
agran ItiView of Level 4 cquency Bm Bm	m 2b: CCDF 10 dB • sw	• RB	W 1 MHz	-20GHz			Meosuring.	c	count 100/1
agran ItiView ef Level 4 tt cequency 8m 8m 8m d8m	m 2b: CCDF 10 dB • sw	• RB	W 1 MHz	-20GHz			Meosuring.	c	count 100/1
agraf ItiView of Level 4 equency Bm Bm m	m 2b: CCDF 10 dB • sw	• RB	W 1 MHz	-20GHz			Meosuring.	c	count 100/1
agran ItiView ef Level 4 tt cequency 8m 8m 8m d8m	m 2b: CCDF 10 dB • sw	• RB	W 1 MHz	-20GHz			Meosuring.	c	count 100/1
agran	m 2b: CCDF 10 dB • sw	• RB	W 1 MHz	-20GHz			Measuring.	c	count 100/1
Agran	m 2b: CCDF 10 dB • sw	• RB	W 1 MHz	-20GHz			Measuring.	c	count 100/1
agran	m 2b: CCDF 10 dB • sw	• RB	W 1 MHz	-20GHz			Measuring.	c	count 100/1
Agran	m 2b: CCDF 10 dB • sw	• RB	W 1 MHz	-20GHz			Measuring.	c	count 100/1
Agran	m 2b: CCDF 10 dB • sw	• RB	W 1 MHz	-20GHz			Measuring.	c	count 100/1
Agran	m 2b: CCDF 10 dB • sw	• RB	W 1 MHz	-20GHz			Measuring.	c	count 100/1
Agran	m 2b: CCDF 10 dB • sw	• RB	W 1 MHz	-20GHz		.7 GHz/	Measuring.	c	iount 100/11

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iagrar ultiView	CCDF	🗵 9k3GH	Iz 🖾						-
Ref Level 5 Att		40 ms RBW	1 MHz 10 MHz Mode	Auto Sween					Count 100/10
DF Frequency		40 115 101	101/1/2 Mode	Auto oncep					• 1Rm Av
requercy	Sweep					M1		M2[1]	-29.81 di
dBm						I		M1[1]	2.9940470 G 42.63 dt
								MILI	1.9600000 6
dBm									
dBm-									
dBm									
Bm									
) dBm	-H1 -13.000 dBm -								
) dBm									
0 dBm									and the second data
) dBm-							_		
) dBm									
) dBm									
0 kHz			32001 pt	ts	30	0.0 MHz/			3.0 G
iagrar	m 3b:						Measuri	ing	16:5
iagrar ultiView	m 3b: ≅€ ccdf	🖾 9кзан		-20GHz			Measuri	ing	16.10. 16:7
iagrar ultiView	m 3b:	• RB\	N 1 MHz				Measur		16:5
iagran ultiView Ref Level 4	m 3b: CCDF 10 dB = swt	• RB\	N 1 MHz	•20GHz e Auto Sweep			Measur		Gount 100/1
iagran ultiView Ref Level 4	m 3b: CCDF 10 dB = swt	• RB\	N 1 MHz				Measur		Count 100/1
iagraf ultiView Ref Level 4 Att F	m 3b: CCDF 10 dB = swt	• RB\	N 1 MHz				Meosur		Count 100/1
iagraf ultiView Ref Level 4 Att Frequency dBm	m 3b: CCDF 10 dB = swt	• RB\	N 1 MHz				Meosur		Count 100/1
iagraf ultiView Ref Level 4 Att Frequency dBm	m 3b: CCDF 10 dB = swt	• RB\	N 1 MHz				Meosur		Count 100/1
iagrat ultiView Kef Level 4 Mt F requency dBm	m 3b: CCDF 10 dB = swt	• RB\	N 1 MHz				Meosur		Count 100/1
iagrat ultiview Ref Level 4 tt # requency dBm dBm	m 3b: CCDF 10 dB = swt	• RB\	N 1 MHz				Meosur		Count 100/1
iagrat ultiview Ref Level 4 tt # requency dBm dBm	m 3b: CCDF 10 dB = swt	• RB\	N 1 MHz				Meosur		Count 100/1
International and the second s	m 3b: CCDF 10 d8 • swr Sweep	• RB\	N 1 MHz				Meosur		Count 100/1
iagran ultiView Act Level 4 SF requency dBm dBm dBm dBm dBm	m 3b: CCDF 10 dB = swt	• RB\	N 1 MHz				Meosur		Count 100/1
2:18 10.10.20 iagran ultiView Ref Level 4 Att SF requency dBm	m 3b: CCDF 10 d8 • swr Sweep	• RB\	N 1 MHz				Meosur		Count 100/1
iagran ultiView Ref Level 4 3F dBm dBm dBm dBm dBm	m 3b: CCDF 10 d8 • swr Sweep	• RB\	N 1 MHz						Count 100/11 • 18m Av -38.05 d
iagran ultiview Ref Level 4 Att SF Frequency dBm dBm dBm dBm dBm dBm dBm dBm dBm dBm	m 3b: CCDF 10 d8 • swr Sweep	• RB\	N 1 MHz				Meosur		Count 100/11 • 18m Av -38.05 d
iagran ultiview Ref Level 4 Att PF requency dBm dBm dBm b m b dBm dBm	m 3b: CCDF 10 d8 • swr Sweep	• RB\	N 1 MHz						Count 100/11 • 18m Av -38.05 d
iagran ultiview Ref Level 4 Mt irrequency dBm dBm dBm dBm dBm dBm dBm	m 3b: CCDF 10 d8 • swr Sweep	• RB\	N 1 MHz						Count 100/1
iagran ultiview Ref Level 4 Att Frequency dBm dBm dBm dBm dBm dBm dBm dBm dBm dBm	m 3b: CCDF 10 d8 • swr Sweep	• RB\	N 1 MHz						Count 100/11 • 18m Av -38.05 d
iagran ultiview Ref Level 4 Att Frequency dBm dBm dBm dBm dBm dBm dBm dBm dBm dBm	m 3b: CCDF 10 d8 • swr Sweep	• RB\	N 1 MHz						Count 100/11 • 18m Av -38.05 d
iagrai ultiView Ref Level 4 Att dBm dBm dBm dBm dBm dBm dBm dBm dBm dBm	m 3b: CCDF 10 d8 • swr Sweep	• RB\	N 1 MHz						Count 100/1
iagran ultiview Ref Level 4 Att Frequency dBm dBm dBm dBm dBm dBm dBm dBm dBm dBm	m 3b: CCDF 10 d8 • swr Sweep	• RB\	N 1 MHz	e Auto Sweep		.7 GHz/			Count 100/11 • 18m Av -38.05 d

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lultiView	CCDF	9k3G	Hz 🖾 🛛 3-	-20GHz (	222				
Ref Level 50	.00 dBm 30 dB = SW		V 1 MHz V 10 MHz Mode	Auto Sweep	_				Count 100/10
Att DF Frequency S		140103 000	10 Mile Mode	Hato oweep					
rrequency a	weep					M1		M2[1]	• 1Rm Av -29.39 de
dBm						M1		M1[1]	2.9857970 C
								MILI	1.9600000 0
dBm									
dBm-									
dBm									
iBm									
) dBm	H1 -13.000 dBm								
dBm									
) dBm			_						
I dBm-									
) dBm									
dBm									
0 kHz			32001 p	te.		0.0 MHz/			3.0 0
iagran	1 4b:					5.5 Witz /	Measuring.		10.10
iagran ultiView	1 4b:		Hz 🖾 3-		30	5.0 (m tz)	Measuring.		10.10
iagran ultiView	1 4b:	• RE	Hz 🖾 3-	-20GHz (			Measuring.		10.10 17:
iagran ultiView tef Level 40	n 4b: ■ ( <b>CCDF</b> .00 dBm 10 dB ● sw	• RE	Hz 🖾 3-				Measuring		e 19.16 17: Count 100/1
iagran ultiView Ref Level 40	n 4b: ■ ( <b>CCDF</b> .00 dBm 10 dB ● sw	• RE	Hz 🖾 3-	-20GHz (			Measuring		Count 100/1
iagran ultiView Ref Level 40 Mtt Frequency S	n 4b: ■ ( <b>CCDF</b> .00 dBm 10 dB ● sw	• RE	Hz 🖾 3-	-20GHz (			Measuring		Count 100/1
iagran ultiView Ref Level 40 Att Frequency S	n 4b: ■ ( <b>CCDF</b> .00 dBm 10 dB ● sw	• RE	Hz 🖾 3-	-20GHz (			Measuring		€ 18.10 200000000000000000000000000000000000
iagran ultiView Ref Level 40 Att Frequency S	n 4b: ■ ( <b>CCDF</b> .00 dBm 10 dB ● sw	• RE	Hz 🖾 3-	-20GHz (			Measuring		Count 100/1
iagram ultiView Ref Level 40 Att F dBm dBm	n 4b: ■ ( <b>CCDF</b> .00 dBm 10 dB ● sw	• RE	Hz 🖾 3-	-20GHz (			Measuring		Count 100/1
iagran ultiView Ref Level 40 Att %F requency 5 dBm	n 4b: ■ ( <b>CCDF</b> .00 dBm 10 dB ● sw	• RE	Hz 🖾 3-	-20GHz (			Measuring		Count 100/1
iagran ultiView Ref Level 40 Att %F requency 5 dBm	n 4b: ■ ( <b>CCDF</b> .00 dBm 10 dB ● sw	• RE	Hz 🖾 3-	-20GHz (			Measuring		Count 100/1
iagram ultiView Ref Level 40 Rt Frequency S d8m d8m d8m bm	n 4b: ■ ( <b>CCDF</b> .00 dBm 10 dB ● sw	• RE	Hz 🖾 3-	-20GHz (			Measuring		Count 100/1
iagram ultiView ket Level 40 y= requency S dBm dBm dBm bm dBm dBm	n 4b: ■ ( <b>CCDF</b> .00 dBm 10 dB ● sw	• RE	Hz 🖾 3-	-20GHz (			Measuring		Count 100/1
iagram ultiView Ver Level 40 SF Trequency S dBm dBm dBm dBm dBm	n 4b: ■ ( <b>CCDF</b> .00 dBm 10 dB ● sw	• RE	Hz 🖾 3-	-20GHz (			Measuring		Count 100/1
iagram ultiView Ref Level 40 Xet Frequency S dBm dBm bm bm bm bm bm bm	n 4b: ■ ( <b>CCDF</b> .00 dBm 10 dB ● sw	• RE	Hz 🖾 3-	-20GHz (			Measuring		€ 18.10 Count 100/1 • 18m A -38.12 <
iagram ultiView Ref Level 40 Att J ² recutency S dBm dBm dBm b dBm b dBm b dBm b dBm b dBm b dBm b dBm b dBm b dBm b dBm	n 4b: ■ ( <b>CCDF</b> .00 dBm 10 dB ● sw	• RE	Hz 🖾 3-	-20GHz (			Measuring		€ 18.10 Count 100/1 • 18m A -38.12 <
iagram ultiView RefLevel 40 Att % Frecuency S dBm dBm dBm dBm dBm dBm dBm dBm dBm dBm	n 4b: ■ ( <b>CCDF</b> .00 dBm 10 dB ● sw	• RE	Hz 🖾 3-	-20GHz (			Measuring		€ 18.10 Count 100/1 • 18m A -38.12 <
iagram ultiView Ref Level 40 Frequency S requency S dBm dBm dBm dBm dBm dBm dBm dBm dBm dBm	n 4b: ■ ( <b>CCDF</b> .00 dBm 10 dB ● sw	• RE	Hz 🖾 3-	-20GHz (			Measuring		• 18.10 Count 100/1 • 18m A -38.12 o
UILIVIEW IULIVIEW Ref Level 40 Att SF Trequency 5 Trequency 5 dBm	n 4b: ■ ( <b>CCDF</b> .00 dBm 10 dB ● sw	• RE	Hz 🖾 3-	-20GHz (			Measuring		• 18.10 Count 100/1 • 18m A -38.12 o
55:23 10.10.201 iagram ultiview Ref Level 40 treeuency dBm dBm dBm 0 dBm	n 4b: ■ ( <b>CCDF</b> .00 dBm 10 dB ● sw	• RE	Hz 🖾 3-	-20GHz (			Measuring.		• 18.10 Count 100/1 • 18m A -38.12 o
iagram ultiView Ref Level 40 Att Frecuency S dem dem dem dem dem dem dem dem dem dem	n 4b: ■ ( <b>CCDF</b> .00 dBm 10 dB ● sw	• RE	Hz 🖾 3-	-20GHz (			Measuring		Count 100/1
iagram ultiView RefLevel 40 Att Freeduency 5 dBm dBm dBm dBm dBm dBm dBm dBm	n 4b: <b>CCDF</b> ^{.00 dBm} 10 dB ● sw	• RE	Hz 🖾 3-	-20GHz (		7 GHz/	Measuring		e 18m A -38.12 d

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lultiView	CCDF	X	9k3GHz	z X	3-20GHz	XX				
Ref Level 50 Att			RBW	1 MHz	lode Auto Sweep					Count 100/10
DF Frequency S		40 m	S VDW	10 MHZ IV	iode Auto Sweep					
Frequency 5	weep						M1		M2[1]	• 1Rm Av -29.73 d
) dBm		_							M1[1]	2.9710790 C 42.94 d
									mili	1.9600000
) dBm										
) dBm		_								
) dBm										
dBm										
0 dBm										
	H1 -13.000 dBm -									
0 dBm										
0 dBm										
0 dBm										
0 dBm		_								
i0 dBm										
.0 kHz				0000	01 pts		00.0 MHz/			3.0 0
19:30 10.10.201				3200			55.0 Militzy	Measuring.		4440 10.10
19:30 10.10.201 Diagram IultiView	1 5b:	X	9k3GHz	z 🗵				Measuring.	(	4440 10.10
19:30 10.10.201 Diagram IultiView	1 5b:	(	RBW	z 🗵 1 MHz	~		00.0 Witz	Measuring		10.10 127
19:30 10.10.201 )iagram IultiView Ref Level 40 Att	1 5b: CCDF .00 dBm 10 dB • sw	(	RBW	z 🗵	3-20GHz		00.0 WH 127	Measuring.		60.11 17 Count 100/ 2
19:30 10.10.201 Diagram AultiView Ref Level 40 Att DF Frequency S	1 5b: CCDF .00 dBm 10 dB • sw	(	RBW	z 🗵	3-20GHz			Measuring.		Count 100/J • 1Rm A -38,02 (
19:30 10.10.201 Diagram AultiView Ref Level 40 Att DF Frequency S	1 5b: CCDF .00 dBm 10 dB • sw	(	RBW	z 🗵	3-20GHz			Measuring.	(	Count 100/1 • 1Rm A -38.02 (
19:30 10.10.201 Diagram IultiView Ref Level 40 Att DF Frequency S	1 5b: CCDF .00 dBm 10 dB • sw	(	RBW	z 🗵	3-20GHz			Meosuring.	(	Count 100/J • 1Rm A -38,02 (
19:30 10.10.201 Diagram AultiView Ref Level 40 Att DF Frequency S 0 dBm	1 5b: CCDF .00 dBm 10 dB • sw	(	RBW	z 🗵	3-20GHz			Measuring.	(	Count 100/1 • 1Rm A -38.02 (
19:30 10.10.201 Diagram fultiView Ref Level 40 Att	1 5b: CCDF .00 dBm 10 dB • sw	(	RBW	z 🗵	3-20GHz			Measuring.	(	Count 100/1 • 1Rm A -38.02 (
19:30 10.10.201 Diagram AultiView Ref Level 40 Att DF Frequency S 0 dBm	1 5b: CCDF .00 dBm 10 dB • sw	(	RBW	z 🗵	3-20GHz			Measuring	(	Count 100/1 • 1Rm A -38.02 (
19:30 10.10.201 Diagram IultiView RefLevel 40 Att DF Frequency S dBm dBm dBm dBm	1 5b: CCDF .00 dBm 10 dB • sw	(	RBW	z 🗵	3-20GHz			Measuring	(	Count 100/1 • 1Rm A -38.02 (
19:30 10.10.201 Diagram fultiview Ref Level 40 DF Frequency 8 dBm dBm dBm	1 5b: CCDF .00 dBm 10 dB • sw	(	RBW	z 🗵	3-20GHz			Measuring	(	Count 100/1 • 1Rm A -38.02 (
19:30 10.10.201 Diagram IultiView RefLevel 40 Att DF Frequency S dBm dBm dBm dBm	1 5b: CCDF .00 dBm 10 dB • sw	(	RBW	z 🗵	3-20GHz			Measuring.	(	Count 100/J • 1Rm A -38,02 (
19:30 10.10.201 Diagram Iultiview Ref Level 40 Att DF 0 d8m d8m d8m d8m 0 d8m 0 d8m 0 d8m	1 5b: CCDF .00 dBm 10 dB • sw	(	RBW	z 🗵	3-20GHz			Measuring	(	Count 100/1
19:30 10.10.201 Diagram Iultiview Ref Level 40 Att DF Irequency S dbm dbm dbm dbm b	1 5b: CCDF .00 dBm 10 dB • sw	(	RBW	z 🗵	3-20GHz			Measuring.	(	Count 100/1
19:30 10.10.201 Diagram Iultiview Ref Level 40 Att DF 0 d8m d8m d8m d8m 0 d8m 0 d8m 0 d8m	1 5b: CCDF .00 dBm 10 dB • sw	(	RBW	z 🗵	3-20GHz			Measuring	(	Count 100/1
19:30 10.10.201 Diagram Iultiview Ref Level 40 Att DF Irequency S dbm dbm dbm dbm b	1 5b: CCDF .00 dBm 10 dB • sw	(	RBW	z 🗵	3-20GHz			Measuring	(	Count 100/1
19:30 10.10.201 Diagram IultiView RefLevel 40 Att DF Iccourses Att Att Att Att Att Att BF	1 5b: CCDF .00 dBm 10 dB • sw	(	RBW	z 🗵	3-20GHz			Measuring	(	Count 100/1
19:30 10.10.201	1 5b: CCDF .00 dBm 10 dB • sw	(	RBW	z 🗵	3-20GHz			Measuring.	(	Count 100/1
19:30 10.10.201 Diagram IultiView RefLevel 40 Att DF Iccourses Att Att Att Att Att Att BF	1 5b: CCDF .00 dBm 10 dB • sw	(	RBW	z 🗵	3-20GHz			Measuring	(	Count 100/1
19:30 10.10.201 Diagram tultiview Ref Level 40 Att Trecuency S 0 d8m 0 d	1 5b: CCDF .00 dBm 10 dB • sw	(	RBW	z 🐹 1 MHz 10 MHz	3-20GHz			Measuring.	(	20.0 C

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1ultiView 🗄	CCDF	)) 9k3GHz	3-	20GHz	[22]				ſ
Ref Level 50.0	00 dBm	RBW	1 MHz						(
Att	30 dB • SWT 40 r	ms VBW 1	10 MHz Mode	Auto Sweep				0	ount 100/1
Frequency Sv	weep							MOLU	• 1Rm A
						M1 Y		M2[1]	-29.32 ( 2.9962030
0 dBm								M1[1]	42.73
) dBm									1.9600000
, doin									
) dBm									
dBm									
dBm									
0 dBm	H1 -13 000 dBm								
0 dBm									
o asm									
0 dBm									
0 dBm									
0 dBm									
o ubm									
0 dBm									
.0 kHz			32001 p	19	30	0.0 MHz/			3.0
iagram	6b:						Measuring.		10.1 10
)iagram IultiView 🛙	бb: Ссрғ 🖾	1	: X 3.		x x		Measuring		10.1
iagram	i 6b: € <b>сср</b>	RBW	: 🖾 <b>3-</b> 1 MHz	20GHz			Measuring.		10
Diagram	1 <b>6b:</b> <b>CCDF</b> ⊠ ^{00 dBm} 10 dB ● swt 200	RBW	: 🖾 <b>3-</b> 1 MHz				Measuring		Sount 100/
Diagram	1 <b>6b:</b> <b>CCDF</b> ⊠ ^{00 dBm} 10 dB ● swt 200	RBW	: 🖾 <b>3-</b> 1 MHz	20GHz			Measuring		ount 100/ • 18m / -37.97
Diagram IultiView Ref Level 40.0 Att DF Frequency St	1 <b>6b:</b> <b>CCDF</b> ⊠ ^{00 dBm} 10 dB ● swt 200	RBW	: 🖾 <b>3-</b> 1 MHz	20GHz			Measuring	(	count 100/
Diagram IultiView Ref Level 40.0 Att DF Frequency St	1 <b>6b:</b> <b>CCDF</b> ⊠ ^{00 dBm} 10 dB ● swt 200	RBW	: 🖾 <b>3-</b> 1 MHz	20GHz			Measuring	(	ount 100/ • 18m / -37.97
Hagram IultiView Ref Level 40.0 Att DF Frequency St dBm	1 <b>6b:</b> <b>CCDF</b> ⊠ ^{00 dBm} 10 dB ● swt 200	RBW	: 🖾 <b>3-</b> 1 MHz	20GHz			Measuring	(	ount 100/ • 18m / -37.97
lultiView P Ref Level 40.4 Att DF dBm dBm	1 <b>6b:</b> <b>CCDF</b> ⊠ ^{00 dBm} 10 dB ● swt 200	RBW	: 🖾 <b>3-</b> 1 MHz	20GHz			Measuring	(	ount 100/ • 18m / -37.97
lultiView P Ref Level 40.4 Att DF dBm dBm	1 <b>6b:</b> <b>CCDF</b> ⊠ ^{00 dBm} 10 dB ● swt 200	RBW	: 🖾 <b>3-</b> 1 MHz	20GHz			Measuring	(	ount 100/ • 18m / -37.97
IultiView C Ref Level 40.4 Att DF Frequency S dBm dBm	1 <b>6b:</b> <b>CCDF</b> ⊠ ^{00 dBm} 10 dB ● swt 200	RBW	: 🖾 <b>3-</b> 1 MHz	20GHz			Measuring	(	count 100/
Diagram	1 <b>6b:</b> <b>CCDF</b> ⊠ ^{00 dBm} 10 dB ● swt 200	RBW	: 🖾 <b>3-</b> 1 MHz	20GHz			Measuring	(	count 100/
Diagram	1 <b>6b:</b> <b>CCDF</b> ⊠ ^{00 dBm} 10 dB ● swt 200	RBW	: 🖾 <b>3-</b> 1 MHz	20GHz			Measuring	(	count 100/
Diagram IultiView P Ref Level 40.4 Att DF dBm dBm dBm dBm	1 <b>6b:</b> <b>CCDF</b> ⊠ ^{00 dBm} 10 dB ● swt 200	RBW	: 🖾 <b>3-</b> 1 MHz	20GHz			Measuring.	(	count 100/
Diagram IultiView P Ref Level 40.4 Att DF dBm dBm dBm dBm	1 <b>6b:</b> <b>CCDF</b> ⊠ ^{00 dBm} 10 dB ● swt 200	RBW	: 🖾 <b>3-</b> 1 MHz	20GHz			Measuring.	(	count 100/
Diagram AultiView I Ref Level 40.1 Att DF Frequency S 0 dBm 0 dBm 0 dBm 10 dBm 10 dBm	1 <b>6b:</b> <b>CCDF</b> ⊠ ^{00 dBm} 10 dB ● swt 200	RBW	: 🖾 <b>3-</b> 1 MHz	20GHz			Measuring.	(	Count 100/: Count
Diagram AultiView P Ref Level 40.4 Att DF Codem 0 dBm 0 dBm 0 dBm 0 dBm 0 dBm 10 dBm 10 dBm 10 dBm	1 <b>6b:</b> <b>CCDF</b> ⊠ ^{00 dBm} 10 dB ● swt 200	RBW	: 🖾 <b>3-</b> 1 MHz	20GHz			Measuring.	(	count 100/3
Diagram IultiView P Ref Level 40.4 Att DF dBm dBm dBm dBm dBm dBm dBm dBm dBm	1 <b>6b:</b> <b>CCDF</b> ⊠ ^{00 dBm} 10 dB ● swt 200	RBW	: 🖾 <b>3-</b> 1 MHz	20GHz			Measuring.	(	count 100/
Diagram	1 <b>6b:</b> <b>CCDF</b> ⊠ ^{00 dBm} 10 dB ● swt 200	RBW	: 🖾 <b>3-</b> 1 MHz	20GHz			Measuring.	(	count 100/
18:01 10.10.2017 Diagram IultiView Ref Level 40, Att Frequency St Gammed Bam dBam dBam dBam dBam dBam dBam dBam d	1 <b>6b:</b> <b>CCDF</b> ⊠ ^{00 dBm} 10 dB ● swt 200	RBW	: 🖾 <b>3-</b> 1 MHz	20GHz			Measuring.	(	count 100/
Diagram AultiView P Ref Level 40.4 Att DF 0 d8m 0 d8	1 <b>6b:</b> <b>CCDF</b> ⊠ ^{00 dBm} 10 dB ● swt 200	RBW	: 🖾 <b>3-</b> 1 MHz	20GHz			Measuring.	(	count 100/3
Diagram	1 <b>6b:</b> <b>CCDF</b> ⊠ ^{00 dBm} 10 dB ● swt 200	RBW	: 🖾 <b>3-</b> 1 MHz	20GHz			Measuring.	(	count 100/
Diagram	1 <b>6b:</b> <b>CCDF</b> ⊠ ^{00 dBm} 10 dB ● swt 200	RBW	: 🖾 <b>3-</b> 1 MHz	20GHz			Meosuring.	(	count 100/
Diagram	1 <b>6b:</b> <b>CCDF</b> ⊠ ^{00 dBm} 10 dB ● swt 200	RBW	: 🖾 <b>3-</b> 1 MHz	20GHz e Auto Sweep			Measuring.	(	count 100/3

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1ultiView 🗄	CCDF C	ា៍ 9k3GHz	<b>3</b>	-20GHz	(X)				ſ
Ref Level 50.0	00 dBm	BBW	1 MHz						
Att	30 dB 🖷 SWT 4	Oms VBW :	10 MHz Mode	Auto Sweep				0	ount 100/1
Frequency Sv	weep							10(1)	• 1Rm A
						M1 Y		M2[1]	-29.22 d 2.9953600 (
) dBm-								M1[1]	42.66 0
0 dBm									1.9600000
) dBm-									
) dBm									
dBm-									
0 dBm									
	41 -13.000 dBm								
0 dBm									
0 dBm									
0 dBm									
0 dBm									
0 dBm									
.0 kHz			32001 p	ts	30	0.0 MHz/			3.0
iagram	7b:						Measuring.		10.10 10:
iagram	7b:	🔊 9k3GHz	3	-20GHz	I		Measuring.		10.1
iagram	7b:	- RBW	1 MHz				Measuring		10
Diagram	<b>CCDF</b>	- RBW	1 MHz	-20GHz e Auto Sweep			Measuring		19 Count 100/
Diagram	<b>CCDF</b>	- RBW	1 MHz				Measuring.	(	10 Count 100/
Diagram IultiView B Ref Level 40.0 Att DF Frequency St	<b>CCDF</b>	- RBW	1 MHz				Measuring.		Count 100/
Diagram IultiView B Ref Level 40.0 Att DF Frequency St	<b>CCDF</b>	- RBW	1 MHz				Measuring	(	Count 100/
Hagram IultiView 8 Ref Level 40.0 Att DF Frequency St dBm	<b>CCDF</b>	- RBW	1 MHz				Measuring	(	Count 100/
HultiView B Ref Level 40.0 Att DF dBm dBm	<b>CCDF</b>	- RBW	1 MHz				Measuring	(	Count 100/
HultiView B Ref Level 40.0 Att DF dBm dBm	<b>CCDF</b>	- RBW	1 MHz				Measuring.	(	Count 100/
Introduction of the second sec	<b>CCDF</b>	- RBW	1 MHz				Measuring	(	Count 100/
Diagram	<b>CCDF</b>	- RBW	1 MHz				Measuring	(	Count 100/3
Diagram	<b>CCDF</b>	- RBW	1 MHz				Measuring	(	Count 100/3
Diagram IultiView R Ref Level 40.0 Att DF dBm dBm dBm dBm	<b>CCDF</b>	- RBW	1 MHz				Measuring	(	Count 100/
Diagram	<b>CCDF</b>	- RBW	1 MHz				Measuring	(	Count 100/3
Diagram	<b>CCDF</b>	- RBW	1 MHz				Measuring	(	Count 100/3
Diagram IultiView P Ref Level 40.0 Att DF dBm dBm dBm dBm dBm dBm dBm dBm	<b>CCDF</b>	- RBW	1 MHz					(	Count 100/3
Diagram	<b>CCDF</b>	- RBW	1 MHz				Measuring	(	Count 100/3
12:14 10.10.2017 Diagram IultiView Prequency St Idem Idem Idem Idem Idem Idem Idem Idem	<b>CCDF</b>	- RBW	1 MHz				Measuring.	(	Count 100/ 0 18m A -38.02 16.599440
Diagram JultiView P Ref Level 40.0 Att DF dBm dBm dBm dBm dBm dBm dBm dBm	<b>CCDF</b>	- RBW	1 MHz				Measuring.	(	Count 100/3
Diagram	<b>CCDF</b>	- RBW	1 MHz					(	Count 100/3
Diagram JultiView P Ref Level 40.0 Att DF dBm dBm dBm dBm dBm dBm dBm dBm	<b>CCDF</b>	- RBW	1 MHz					(	Count 100/3
Diagram	<b>CCDF</b>	- RBW	1 MHz	e Auto Sweep		7 GHz/	Measuring.	(	Count 100/3

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MultiView 🖽 🤇 🕻		9k3GHz		20GHz (	x)				~
Ref Level 50.00 d Att 30 DF	18m ) dB 🖷 SWT 40 ms	RBW VBW 1	1 MHz 10 MHz Mode	Auto Sweep				c	ount 100/10
Frequency Swee	ep							MOLU	• 1Rm Avg
						M1 ¥		M2[1]	-29.49 dB 9848600 GI
0 dBm								M1[1]	42.62 dB
) dBm									.9600000 GI
0 dBm									
din co									
dBm									
dBm									
IO dBm	13.000 dBm								
20 dBm									
30 dBm					description in the	Level -			
10 dBm									
50 dBm									
60 dBm									
9.0 kHz			32001 pt		20	0.0 MHz/			3.0 Gł
7.0 KHZ									
	COF 🕅	9k3GH7			_		Measuring		10.10.20
MultiView (C	IBm	9k3GHz	3-	20GHz (			Measuring		10.10.20 10:09:
Ref Level 40.00 d Att 10 TDF	IBm ) dB ● SWT 200 m	RBW	3-	20GHz (	_		Measuring		eunt 100/10
AultiView C Ref Level 40.00 d Att 10	IBm ) dB ● SWT 200 m	RBW	3-	20GHz (	_		Measuring	c	eunt 100/10
AultiView C Ref Level 40.00 d Att 10 DF Frequency Swee	IBm ) dB ● SWT 200 m	RBW	3-	20GHz (	_		Measuring	C M1[1]	ount 100/10
AultiView C Ref Level 40.00 d Att 10 DF Frequency Swee	IBm ) dB ● SWT 200 m	RBW	3-	20GHz (	_		Measuring	C M1[1]	eunt 100/10
AultiView BCC Ref Level 40.00 d Att 10 DF Frequency Swee	IBm ) dB ● SWT 200 m	RBW	3-	20GHz (	_		Measuring	C M1[1]	eunt 100/10
AultiView ECC Ref Level 40.00 d Att 10 DF Frequency Swee 0 dBm	IBm ) dB ● SWT 200 m	RBW	3-	20GHz (	_		Measuring	C M1[1]	eunt 100/10
AultiView ECC Ref Level 40.00 d Att 10 IDF Frequency Swee 0 dBm 0 dBm	IBm ) dB ● SWT 200 m	RBW	3-	20GHz (	_		Measuring	C M1[1]	eunt 100/10
MultiView         E         C           Ref Level 40.00 d         Att         10           DDF         10         IDF           O dBm         0         dBm           0 dBm         0         dBm	IBm ) dB ● SWT 200 m	RBW	3-	20GHz (	_		Measuring	C M1[1]	eunt 100/10
HultiView     C       Ref Level     40.00       Att     10       DF     Frequency       Sweet     0       0 dBm     0       0 dBm     0       0 dBm     0	IBm ) dB ● SWT 200 m	RBW	3-	20GHz (	_		Measuring	C M1[1]	eunt 100/10
AultiView     C       Ref Level     40.00       Att     10       DF     Fréquency Swee       0 d8m     0       0 d8m     0       0 d8m     0	IBm ) dB ● SWT 200 m	RBW	3-	20GHz (	_		Measuring	C M1[1]	eunt 100/10
AultiView CC Ref Level 40.00 d Att 10 DF Frequency Swee Frequency Swee 0 d8m 0 d8m 10 d8m	IBm ) dB ● SWT 200 m	RBW	3-	20GHz (	_		Measuring	C M1[1]	eunt 100/10
AultiView     C       Ref Level     40.00 dkm       DDF     Frequency       Dradie     0       D dBm     0	IBm ) dB ● SWT 200 m	RBW	3-	20GHz (	_		Measuring	C M1[1]	eunt 100/10
AultiView         Image: Constraint of the second seco	IBm ) dB ● SWT 200 m	RBW	3-	20GHz (	_		Measuring	C M1[1]	ount 100/10
AultiView 30         C           Ref Level 40.00 d         Att         10           DF         Frequency Sweet         0           Frequency Sweet         0         d8m           0 d8m         0         d8m           10 d8m         0         d8m           10 d8m         0         30	IBm ) dB ● SWT 200 m	RBW	3-	20GHz (	_		Measuring	C M1[1]	ount 100/10
HultiView     C       Ref Level     40.00       Att     10       DP     Frequency Sweet       0 d8m     0       00 d8m     0       00 d8m     0	IBm ) dB ● SWT 200 m	RBW	3-	20GHz (	_		Measuring	C M1[1]	ount 100/10
AultiView         C           Ref Level 40.00 d         Att           10         DF           IDF         IO           0 dBm         0           0 dBm         0           0 dBm         0           20 dBm         0           20 dBm         10           30 dBm         10           40 dBm         10	IBm ) dB ● SWT 200 m	RBW	3-	20GHz (	_		Measuring	C M1[1]	ount 100/10 IRM AVG -37.96 dB
MultiView         Image: Constraint of the second seco	IBm ) dB ● SWT 200 m	RBW	3-	20GHz (	_		Measuring	C M1[1]	ount 100/10 IRM AVG -37.96 dB
MultiView C Ref Level 40.00 d Att 10	IBm ) dB ● SWT 200 m	RBW	3-	20GHz (	_		Measuring	C M1[1]	ount 100/10 IRM AVG -37.96 dB
MultiView         Image: Constraint of the second seco	IBm ) dB ● SWT 200 m	RBW	3-	20GHz (	_		Measuring	C M1[1]	4 1838 1867 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
AultiView ::         C           Ref Level 40.00 d         Att           IDF         10           Frequency Sweet         0           0 d8m         0           50 d8m         60 d8m	IBm ) dB ● SWT 200 m	RBW	3-	20GHz (	_		Measuring	C M1[1]	ount 100/10 IRM AVG -37.96 dB

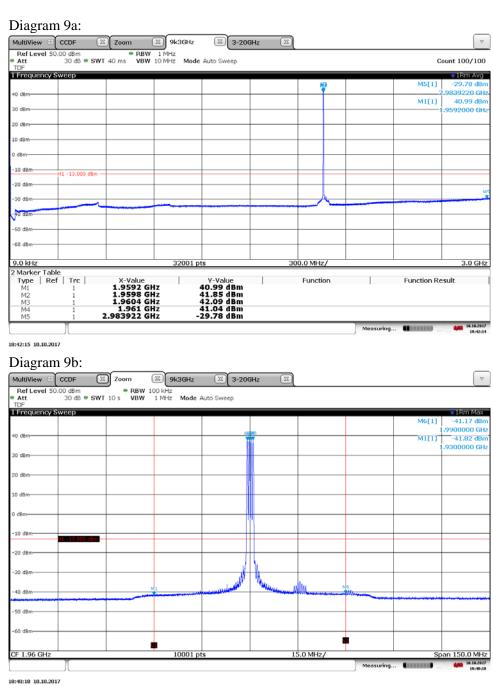
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Diagram 8b:

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RI. SE



Note: Due to the use of reduced measurement bandwidth the limit should be adjusted by 10 dB to -23 dBm.

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### Diagram 9c:

MultiView 🕀	CCDF	Zoom	9k3GHz	3-206	Hz 🖾				~
Ref Level 40 Att	0.00 dBm 10 dB • SWT	200 ms V	BW 1 MHz BW 10 MHz Mod	e Auto Sweep				c	Count 100/100
Frequency :	Sweep								1Rm Avg
								M1[1]	-37.91 dBm
									16.598249 GHz
0 dBm									
0 dBm									
0 dBm									
dBm									
10 dBm									
	-H1 -13.000 dBm -								
20 dBm									
oo .io									
30 dBm								×1	
40 dBm								1	
1			-						
SO dBm	h								
60 dBm									
70 dBm									
3.0 GHz			100001 p	ots	1	.7 GHz/			20.0 GHz
,	Y						Measuring		10.10.2017

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ItiView 🗄 CCDF 🛛 🛛	Zoom 20 9k3G RBW 1 MHz	Hz 🖾 3-20GHz			
ntt 30 dB ● SW F	T 40 ms VBW 10 MHz M	Mode Auto Sweep			nt 100/100
requency Sweep					<ul> <li>1Rm Avg</li> <li>-29.69 dBi</li> </ul>
IBm			M&a	2.98	309230 GI
pm-				M1[1] 1.93	41.55 dBi 304000 GH
Bm					
3m					
âm					
0					
IBm					
H1 - 13.000 dBm -					
JBm-					
Bm			MU		
dBm-		,			
Bm					
iBm					
kHz	320	01 pts	300.0 MHz/		3.0 GH
agram 10b:	図 zoom 図 9k3G	Hz 🛛 3-206Hz		Measuring	_
ef Level 50.00 dBm	RBW 100 kHz	-(	Ø		_
agram 10b:	• RBW 100 kHz	Hz 🛛 <b>3-20GHz</b> ode Auto Sweep	X		
agram 10b: tiView 🕀 ccDF 🔅 of Level 50.00 dBm tt 30 dB = sw	RBW 100 kHz	-(	<u>x</u>		TRm Max
agram 10b:	<ul> <li>RBW 100 kHz</li> </ul>	-(	<u> </u>	M1[1]	1Rm Max -23.72 dB 300000 Gł
agram 10b:	<ul> <li>RBW 100 kHz</li> </ul>	ode Auto Sweep	<u> </u>	M1[1] .93 M2[1]	1Rm Max -23.72 dB 300000 GH 38.00 dB
agram 10b:	<ul> <li>RBW 100 kHz</li> </ul>	ode Auto Sweep		M1[1] .93 M2[1]	1Rm Max -23.72 dB 300000 GH 38.00 dB
agram 10b: itiview CCDF (2) if Level 50.00 dBm ad dB * sw equency sweep am	<ul> <li>RBW 100 kHz</li> </ul>	ode Auto Sweep		M1[1] .93 M2[1]	1Rm Max -23.72 dB 300000 GH 38.00 dB
agram 10b:	<ul> <li>RBW 100 kHz</li> </ul>	ode Auto Sweep		M1[1] .93 M2[1]	■ 1Rm Max -23.72 dB 300000 GF 38.00 dB
agram 10b:	<ul> <li>RBW 100 kHz</li> </ul>	ode Auto Sweep		M1[1] .93 M2[1]	■ 1Rm Max -23.72 dB 300000 GF 38.00 dB
agram 10b:	<ul> <li>RBW 100 kHz</li> </ul>	ode Auto Sweep		M1[1] .93 M2[1]	■ 1Rm Max -23.72 dB 300000 GF 38.00 dB
agram 10b:	<ul> <li>RBW 100 kHz</li> </ul>	ode Auto Sweep		M1[1] .93 M2[1]	■ 1Rm Max -23.72 dB 300000 GF 38.00 dB
agram 10b:	<ul> <li>RBW 100 kHz</li> </ul>	ode Auto Sweep		M1[1] .93 M2[1]	■ 1Rm Max -23.72 dB 300000 GF 38.00 dB
agram 10b: tiview CCOF C of Level 50.00 dBm tt 30 dB * sw cquency Sweep Bm Bm Bm Bm Bm Bm Bm Bm Bm Bm	<ul> <li>RBW 100 kHz</li> </ul>	ode Auto Sweep		M1[1] .93 M2[1]	■ 1Rm Max -23.72 dB 300000 GF 38.00 dB
agram 10b:	<ul> <li>RBW 100 kHz</li> </ul>	ode Auto Sweep		M1[1] .93 M2[1]	■ 1Rm Max -23.72 dB 300000 GF 38.00 dB
agram 10b:	<ul> <li>RBW 100 kHz</li> </ul>	ode Auto Sweep		M1[1] .93 M2[1]	■ 1Rm Max -23.72 dB 300000 GF 38.00 dB
agram 10b:	<ul> <li>RBW 100 kHz</li> </ul>	ode Auto Sweep		M1[1] .93 M2[1]	■ 1Rm Max -23.72 dB 300000 GH 38.00 dB
agram 10b:	<ul> <li>RBW 100 kHz</li> </ul>	ode Auto Sweep		M1[1] .93 M2[1]	■ 1Rm Max -23.72 dB 300000 GF 38.00 dB
agram 10b:	<ul> <li>RBW 100 kHz</li> </ul>	ode Auto Sweep		M1[1] .93 M2[1]	■ 1Rm Max -23.72 dB 300000 GH 38.00 dB
agram 10b:	<ul> <li>RBW 100 kHz</li> </ul>	ode Auto Sweep		M1[1] 1.9: M2[1] 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9: 1.9:	• LRm Max -23.72 dB 300000 GH 38.00 dB 304000 GH

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Note: Due to the use of reduced measurement bandwidth the limit should be adjusted by 10 dB to -23 dBm.

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# Diagram 10c:

0 d8m     Image: state	MultiView	CCDF	Zoom	9k3GHz	3-20	3Hz 🖾				
Frequency Sweep         • Ifm Avg           0 den         M1[1]         -37.93 der           0 den         16.595189 GH         16.595189 GH           0 den         0 den         1         1           0 den         1         1         1         1           0 den         1         1         1         1           0 den         1         1         1         1           1 den         1         1         1         1           20 den         1         1         1         1           20 den         1         1         1         1           30 den         1         1         1         1           50 den         1         1         1         1         1           30 den         1         1         1         1         1           50 den         1         1         1         1         1           50 den         1         1	Att				e Auto Sweep				C	ount 100/100
0 dem		weep								1Rm Ava
0 dem       Image: constraint of the second se									M1[1]	
0 dBm										
0 d8m     Image: Constraint of the second seco	30 dBm									01070107 0112
0 d8m     Image: Constraint of the second seco										
0 d8m     Image: Constraint of the second seco	o dam									
dBm     Image: Constraint of the second	co delli									
dBm     Image: Constraint of the second										
10 dkm     10 dkm <td>LO dBm-</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	LO dBm-									
10 dkm     10 dkm <td></td>										
20 dBm     100001 pts     1.7 GHz/     20.0 GHz	0 dBm									
20 dBm     100001 pts     1.7 GHz/     20.0 GHz										
20 dBm     100001 pts     1.7 GHz/     20.0 GHz	10 dBm									
30 dbm 40 dbm 50 dbm 60 dbm 70 dbm 100001 pts 1.7 GHz/ 20.0 GHz 20.0 GHz	10 000	H1 -13.000 d8m								
30 dbm 40 dbm 50 dbm 60 dbm 70 dbm 100001 pts 1.7 GHz/ 20.0 GHz 20.0 GHz										
40 dBm 50 dBm 60 dBm 70 dBm 70 dBm 100001 pts 1.7 GHz/ 20.0 GHz 20.0 GHz	-20 dBm									
40 dBm 50 dBm 60 dBm 70 dBm 70 dBm 100001 pts 1.7 GHz/ 20.0 GHz 20.0 GHz										
50 dBm 60 dBm 70 dBm 3.0 GHz 100001 pts 1.7 GHz/ 20.0 GH	-30 dBm									
50 dBm 60 dBm 70 dBm 3.0 GHz 100001 pts 1.7 GHz/ 20.0 GH								N	1	
50 dBm 60 dBm 70 dBm 3.0 GHz 100001 pts 1.7 GHz/ 20.0 GH	40 dBm									
60 dBm- 70 dBm- 3.0 GHz 100001 pts 1.7 GHz/ 20.0 GH	To doin								~~~~~	
60 dBm- 70 dBm- 3.0 GHz 100001 pts 1.7 GHz/ 20.0 GH										
70 d&m	-S0 dBm-									
70 d&m										
3.0 GHz 100001 pts 1.7 GHz/ 20.0 GH	-60 dBm									
3.0 GHz 100001 pts 1.7 GHz/ 20.0 GH										
3.0 GHz 100001 pts 1.7 GHz/ 20.0 GH	70 dBm									
18.10.201	3.0 GHz			100001 p	ots	. 1	.7 GHz/			20.0 GHz
Measuring 🖬 🖬 🚧 11.0.201		Y						Measuring		10.10.2017

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View 😁	( –		9k3GHz						
Level 50	0.00 dBm 30 dB • SWT	• RBV 40 ms VBV	W 1 MHz W 10 MHz Mode	Auto Sweep				с	ount 100/100
quency :									• 1Rm Avc
						Ma		M4[1]	-29.50 dB
n						T T		2	2.9794230 GI
						1 11		M1[1]	40.84 dB
								,	-9700000 GI
						<b>└──</b>			
m	H1 -13.000 d8m -								
m									
m	-					, ML			
m									
m									
m	1					1	-		
5000045			32001 p	ots	30	00.0 MHz/		Span	2.999991 Gł
ker Tab	ef   Trc	X-Value		Y-Value		Function		Function Re	
е   ке	1	1.97 C	GHz	40.84 dBm		Function		Function Re	suit
	1	1.97 ( 1.989 ( 1.9896 (	GHz	40.84 dBm 41.96 dBm 41.74 dBm					
3	1	1.9896 0 2.979423 0	GHZ	41.74 dBm 29.50 dBm					
	n 11b:	~					Measuri	ıg <b>UIIIIIII</b>	19:51
igran	n 11b:	Zoom	(X) 9k3GHz	<u>∞</u> 3-200	SHz 🗵		Measuri	ng (AAAAAAA 🖬 🚬	10:51
igran	n 11b:	Zoom	9k3GHz		GHz 🗵		Measuri	ng (1111111 🕅 📄	10:51
view ==	117 n 11b: CCDF 30 dB ● SWT	Zoom • RBW	9k3GHz	☑ 3-200	SHZ 🗵		Measuria	ng (111111) D	10:51
gran	117 n 11b: CCDF 30 dB ● SWT	Zoom • RBW	9k3GHz	☑ 3-200			Measuri	ng (11111) D	• 1Rm Mar -22.79 dB
Igran	117 n 11b: CCDF 30 dB ● SWT	Zoom • RBW	9k3GHz	☑ 3-200	SHZ (X)		Measuri	M5[1]	• 1Rm Ma: -22,79 dB ,990000 G
Igran	117 n 11b: CCDF 30 dB ● SWT	Zoom • RBW	9k3GHz	☑ 3-200			Measuri		• 1Rm Mar -22.79 dB .9900000 G -41.97 dB
Igran	117 n 11b: CCDF 30 dB ● SWT	Zoom • RBW	9k3GHz	☑ 3-200			Meosuri	M5[1]	• 1Rm Ma -22.79 dE .990000 G -41.97 dE
gran	117 n 11b: CCDF 30 dB ● SWT	Zoom • RBW	9k3GHz	☑ 3-200			Measuri	M5[1]	• 1Rm Mar -22.79 dB .9900000 G -41.97 dB
gran	117 n 11b: CCDF 30 dB ● SWT	Zoom • RBW	9k3GHz	☑ 3-200			Measuri Maris	M5[1]	• 1Rm Mar -22.79 dB .9900000 G -41.97 dB
View Level 50 quency	117 n 11b: CCDF 30 dB ● SWT	Zoom • RBW	9k3GHz	☑ 3-200			Meosuria	M5[1]	• 1Rm Mar -22.79 dB .9900000 G -41.97 dB
Qran Level 50 quency	117 n 11b: CCDF 30 dB ● SWT	Zoom • RBW	9k3GHz	☑ 3-200			Measuri 	M5[1]	• 1Rm Maa -22.79 dB .9900000 GI -41.97 dB
Qran Level 50 quency	117 n 11b: CCDF 30 dB ● SWT	Zoom • RBW	9k3GHz	☑ 3-200			Measuri	M5[1]	• 1Rm Mar -22.79 dB .9900000 G -41.97 dB
Qran Level 50 quency	117 n 11b: CCDF 30 dB ● SWT	Zoom • RBW	9k3GHz	☑ 3-200			Measuria ado	M5[1]	• 1Rm Maa -22.79 dB .9900000 GI -41.97 dB
gran	117 n 11b: CCDF 30 dB ● SWT	Zoom • RBW	9k3GHz	☑ 3-200			Measuria ange	M5[1]	• 1Rm Maa -22.79 dB .9900000 GI -41.97 dB
Ulevel 50	117 n 11b: CCDF 30 dB ● SWT	Zoom • RBW	9k3GHz	☑ 3-200			Measuria	M5[1]	• 1Rm Mar -22.79 dB .9900000 G -41.97 dB
Ulevel 50	117 n 11b: CCDF 30 dB ● SWT	Zoom • RBW	9k3GHz	☑ 3-200			Measurh	M5[1]	• 1Rm Maa -22.79 dB .9900000 GI -41.97 dB
gran	117 n 11b: CCDF 30 dB ● SWT	Zoom • RBW	9k3GHz	☑ 3-200			Measuria	M5[1]	• 1Rm Maa -22.79 dB .9900000 GI -41.97 dB
gran	117 n 11b: CCDF 30 dB ● SWT	Zoom • RBW	9k3GHz	☑ 3-200			Measuria	M5[1]	• 1Rm May -22.79 dB .9900000 Gi -41.97 dB
Uiew Concernence Solution	117 n 11b: CCDF 30 dB ● SWT	Zoom • RBW	9k3GHz	3-200     Auto Sweep			Measuria	M5[1]	• 1Rm May -22.79 dB .9900000 Gi -41.97 dB
in an	117 n 11b: CCDF 30 dB ● SWT	Zoom • RBW	9k3GHz	3-200     Auto Sweep			Measuria	M5[1]	• 1Rm May -22.79 dB .9900000 Gi -41.97 dB
Agram View 30 Level 50 quency 3 n n n	117 n 11b: CCDF 30 dB ● SWT	Zoom • RBW	9k3GHz	☑ 3-200			Measuria	M5[1]	• 1Rm May -22.79 dB .9900000 Gi -41.97 dB
agram	117 n 11b: CCDF 30 dB ● SWT	Zoom • RBW	9k3GHz	3-200     Auto Sweep			Measurin	M5[1]	• 1Rm May -22.79 dB .9900000 Gi -41.97 dB
ny construction of the second	117 n 11b: CCDF 30 dB ● SWT	Zoom • RBW	9k3GHz	3-200     Auto Sweep			Measuria	M5[1]	• 1Rm May -22.79 dB .9900000 Gi -41.97 dB
agram	117 n 11b: CCDF 30 dB ● SWT	Zoom • RBW	9k3GHz	3-200     Auto Sweep			Measuria	M5[1]	• 1Rm May -22.79 dB .9900000 Gi -41.97 dB
gram	117 n 11b: CCDF 30 dB ● SWT	Zoom • RBW	9k3GHz	3-200     Auto Sweep		, , , , , , , , , , , , , , , ,	Measuria	M5[1]	18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/2017     18/10/201     18/10/201     18/10/201     18/10/201     18/10/201     18/10/201     18/10/201     18/10/201     18/10/201     18/10/201     18/10/201     18/10/201     18/10/201     18/10/201     18/10/201     18/10/201     18/10/201     18/10/201     18/10/201     18/10/201     18/10/201     18/10/201     18/10/201     18/10/201     18/10/201     18/10/201     18/10/201     18/10/201     18/10/201     18/10/201     18/10/201     18/10/201     18/10/201     18/10/201     18/10/201     18/10/201     18/10/201     18/10/201     18/10/201     18/10/201     18/10/201     18/10/201     18/10/201     18/10/201     18/10/201     1
gram	117 n 11b: CCDF 30 dB ● SWT	Zoom • RBW	9k3GHz           100 kHz           1 MHz           Mode	3-200     Auto Sweep			Measuria	M5[1]	• 1Rm May -22.79 dB .9900000 Gi -41.97 dB
agram	117 n 11b: CCDF 30 dB ● SWT	Zoom • RBW	9k3GHz	3-200 Auto Sweep		5.0 MHz/		M5[1] 	• 1Rm Mar -22.79 dB .9900000 G -41.97 dB

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Note: Due to the use of reduced measurement bandwidth the limit should be adjusted by 10 dB to -23 dBm.

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# Diagram 11c:

MultiView 🕀		Zoom	9k3GHz	3-200	Hz ⊠				▼
Ref Level 40 Att TDF	0.00 dBm 10 dB • SW1	■ RE [ 200 ms   VE	W 1 MHz W 10 MHz Mod	e Auto Sweep				c	ount 100/100
Frequency :	Sweep								1Rm Avg
								M1[1]	-37.91 dBm
0 dBm									6.599609 GHz
o dem-									
0 dBm									
dBm									
-									
dBm									
0 dBm-	H1 -13.000 d8m								
20 dBm									
0 dBm									
								Ť	
0 dBm								~~~~~	
1.0			1						
0 dBm									
50 dBm									
70 dBm									
.0 GHz			100001 p	ots	1	1.7 GHz/			20.0 GHz
	1						Measuring.		10.10.201

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# Field strength of spurious radiation measurements according to CFR 47 §24.238 / IC RSS-133 6.5

Date	Temperature	Humidity
2017-09-14	$22 \ ^{\circ}C \pm 3 \ ^{\circ}C$	45 % ± 5 %
2017-10-03	$22 \ ^{\circ}C \pm 3 \ ^{\circ}C$	47 % ± 5 %
2017-10-04	$23 \ ^{\circ}C \pm 3 \ ^{\circ}C$	38 % ± 5 %
2017-10-05	$22 \degree C \pm 3 \degree C$	34 % ± 5 %

The test site conform to the site validation criterion specified in ANSI C63.4 2014. The test site complies with RSS-Gen, Industry Canada file no. 3482A-1.

The measurements were performed with both horizontal and vertical polarization of the antenna. The antenna distance was 3 m in the frequency range 30 MHz - 18 GHz and 1 m in the frequency range 18 GHz - 20 GHz.

RF absorbers were covering a floor area in the frequency range 1 GHz – 18 GHz to comply with site validation requirements according to ANSI C63.4-2014.

The EUT was placed 0.8 m above reference ground plane in frequency range 30 MHz - 1 GHz and 1.5 m above reference ground plane in frequency range 1 GHz - 20 GHz.

The measurement was performed with a RBW of 1 MHz.

A propagation loss in free space was calculated. The used formula was

 $\gamma = 20 \log \left(\frac{4\pi D}{\lambda}\right)$ ,  $\gamma$  is the propagation loss and *D* is the antenna distance.

The measurement procedure was as the following:

- 1. A pre-measurement is performed with peak detector. For measurement < 1 GHz the test object was measured in eight directions with the antenna at three heights, 1.0 m, 1.5 m and 2.0 m. For measurements > 1 GHz the test object was measured in seventeen directions with the antenna height 1.0 m, 1.5 m and 2m.
- 2. Spurious radiation on frequencies closer than 20 dB to the limit in the pre-measurement is scanned 0-360 degrees and the antenna is scanned 1- 4 m for maximum response. The emission is then measured with the RMS detector and the RMS value is reported. Frequencies closer than 10 dB to the limit when measured with the RMS detector were measured with the substitution method according to ANSI 63.26.

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The test set-up during the spurious radiation measurements is shown in the picture below: 30-1000 MHz



1-18GHz





# Measurement equipment

Measurement equipment	RISE number
Semi anechoic chamber Tesla	503 881
R&S ESU 40	901 385
EMC 32 ver.10.20.01	BX62351
ETS Lindgren BiConiLog 3142E	BX61914
ETS Lindgren Horn Antenna 3115	502 175
Flann STD Gain Horn Antenna 20240-20	503 674
µComp Nordic, Low Noise Amplifier	901 545
Miteq, Low Noise Amplifier	503 278
HP Filter 3-26.5 GHz	901 502
Temperature and humidity meter, Testo 625	504 188

#### Results

Tested configurations: M, B2, M2, T2, Bim and Tim

representing worst case: Symbolic name T2, GMSK, Diagram 1 a-d

	Spurious emission level (dBm)					
Frequency (MHz)	Vertical	Horizontal				
30-20000	All emission > 20 dB below limit	All emission > 20 dB below limit				

Measurement uncertainty: 3.1 dB

### Limits

CFR 47 §24.238 and IC RSS-133 6.5

(g) Outside a licensee's frequency band(s) of operation the power of any emission shall be attenuated below the transmitter power (P) by at least  $43 + 10 \log (P) dB$ , resulting in a limit of -13 dBm.

Complies?	Yes
-----------	-----

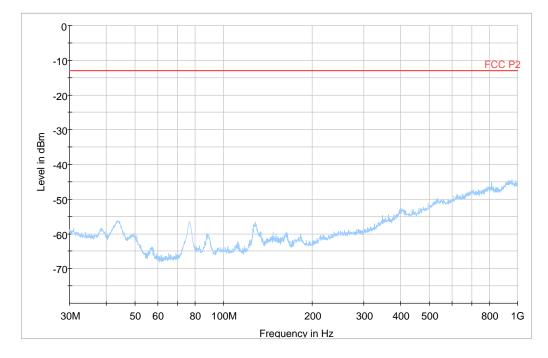


Date 2017-10-23

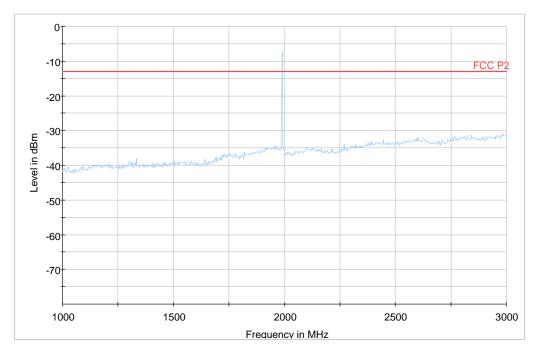
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### Diagram 1a:







Note: The emission at1989.0 and 1989.6 MHz is the carrier frequency and shall be ignored in the context.

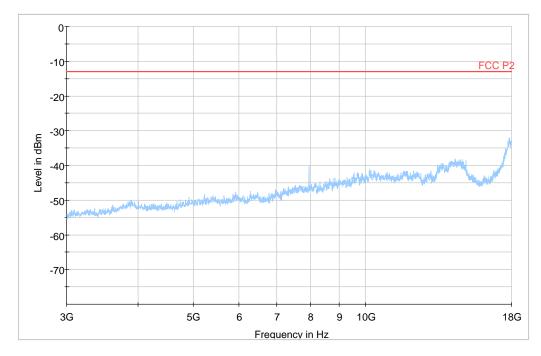


Date 2017-10-23

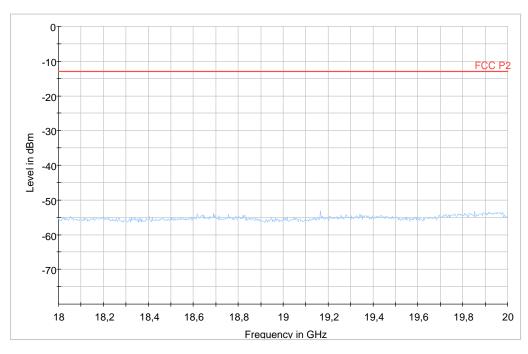
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# Diagram 1c:









# Frequency stability measurements according to CFR 47 § 24.235 / IC RSS 133 6.3

Date	Temperature (test equipment)	Humidity (test equipment)
2017-10-12	$23 \ ^{\circ}C \pm 3 \ ^{\circ}C$	35% ± 5 %
2017-10-13	$22 \ ^{\circ}C \pm 3 \ ^{\circ}C$	$20\% \pm 5\%$
2017-10-15	$23 \ ^{\circ}C \pm 3 \ ^{\circ}C$	36% ± 5 %

#### Test set-up and procedure

The measurement was made per 3GPP TS 37.141. The output was connected to a spectrum analyzer. The spectrum analyzer was connected to an external 10 MHz reference standard during the measurements.

The measurement was also made per IC RSS 199 Issue 3, 4.3. Using a resolution bandwidth of 1% of the emission bandwidth, a reference point at the unwanted emission level which complies with the attenuation of  $43 + 10 \log 10 p$  (watts) (i.e. -13 dBm) at the band edge of the lowest and highest channel was selected, and the frequency at these points was recorded as fL and fH respectively.

Measurement equipment	RISE number
R&S FSQ 40	504 143
Rohde & Schwarz signal analyzer FSW 43	902 073
RF attenuator	900 691
Temperature Chamber	503 360
Testo 635, temperature and humidity meter	504 203
Multimeter Fluke 87	502 190



RI. SE

Nominal transmitter frequency was 1960 MHz (M). Rated output power level at connector RF A (maximum): 43 dBm.

Test condit	ions	
Supply voltage DC (V)	Temp. (°C)	Frequency error (Hz)
40.8	+20	15
55.2	+20	16
48	+20	15
48	+30	13
48	+40	17
48	+50	12
48	+10	16
48	0	-17
48	-10	-17
48	-20	16
48	-30	16
Maximum freq.	error (Hz)	17
Measurement ur	ncertainty	$<\pm 1 \text{ x } 10^{-7}$

KI. SE

#### Rated output power level at connector RF B (maximum): 38.2 dBm

	Test cor	ditions		Frequency margin	to band edge	e at -13dBm
Supply voltage	Temp [°C].	Carrier Bandwidth [MHz]	-	uency Symbolic me Bottom	Test freq	uency Symbolic name Top
DC [V]			fL [MHz]	Offset to lower band edge (1930 MHz) [kHz]	fH [MHz]	Offset to upper band edge (1990 MHz) [kHz]
-48.0	+20	0.2	1930.019	19	1989.975	25

The frequency error results clearly shows that the frequency stability is good enough to ensure that the transmitted carrier stay within the operating band.

#### Remark

It was deemed sufficient to test one combination of TX frequency, channel bandwidth configuration and test model (modulation), as all combinations share a common internal reference to derive the TX frequency from.

#### Limits

CFR 47 §24.235

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

RSS-133 6.3 Frequency stability:

The carrier frequency shall not depart from the reference frequency in excess of  $\pm 1.0$  ppm ( $\pm 1930$  Hz) for base stations when tested to the temperature and supply voltage variations specified in RSS-Gen.

Complies? Yes
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# Photos of test object



Rear side

Left side



Right side





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#### Bottom side



Top side





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Labels:

Radiated measurements:

Radio label:



SFP module:



Conducted measurements:

Radio label:



SFP module:

