

# EMC TEST REPORT

No. 2202277STO-101

## Electromagnetic disturbances

### EQUIPMENT UNDER TEST

Equipment: Radio Unit  
Type/Model: AIR 6419 B77G  
Product number: KRD 901 238/3  
Additional product number\*: KRD 901 238/1, KRD 901 238/11,  
KRD 901 238/31  
Product configuration: NR  
Manufacturer: Ericsson AB  
Tested by request of: Ericsson AB

\*See opinions and interpretations clause 2.6

### SUMMARY

Referring to the emission limits, and the operating mode during the tests specified in this report, the equipment complies with the radiated spurious emission requirements according to the following standards:

47 CFR Part 2 Subpart J  
47 CFR Part 27 Subpart C

For details, see clause 2 – 4.

Date of issue: April 27, 2022

Issued by:

  
Anna Karin Cedergren

Approved by:

  
Per Larsson

Per Larsson

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**Revision History**

Test report number	Date	Description	Changes
2202277STO-101	April 27, 2022	First release	

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**1. CLIENT INFORMATION**

The EUT has been tested by request of

Company: Ericsson AB  
164 80 Stockholm  
Sweden

Name of contact: Krister Andersen  
BNEW DNEW RA RPSE1 IVC  
Phone +46 722 44 19 44

Client observer: Per Sjöberg & Tomas Johansson

**2. EQUIPMENT UNDER TEST (EUT)****2.1 Identification of the EUT**

Equipment	Radio Unit
Type/Model	AIR 6419 B77G
Product number	KRD 901 238/3
Additional product number	KRD 901 238/1, KRD 901 238/11, KRD 901 238/31
Product configuration	NR
Brand name	Ericsson
Manufacturer	Ericsson
Rating	-48VDC max: 30A
Class	III
Highest clock frequency	CPRI 25,78 GHz

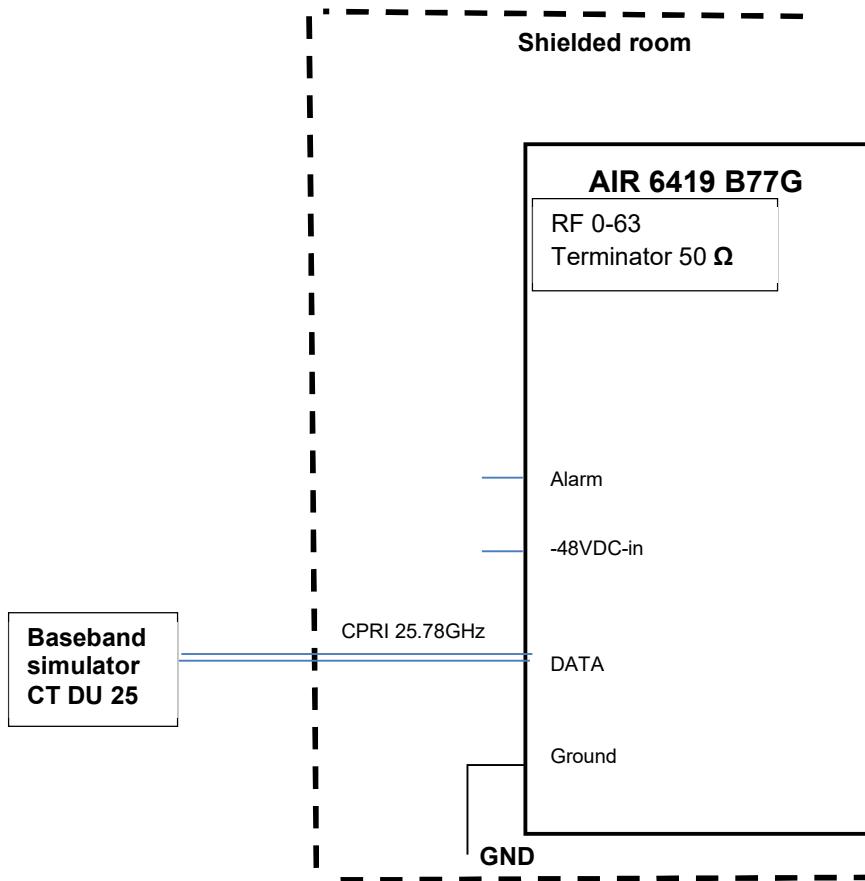


Photos of marking and EUT

## 2.2 Description of the EUT

The test object is an Antenna Integrated Radio AIR 6419 for a base station with NR. It is designed to provide mobile users with a connection to a mobile network.

## 2.3 Test setup- block diagram



Block diagram of EUT during the tests

## 2.4 External cables connected to the EUT

Port	Type	Length [m]	Specifications
DC in	DC power	3.0	Two-core
Earth	Ground	3.0	Single wire, 35mm <sup>2</sup>
External alarm	Signal cable	5.0	RPM 513 2350/1
Data_1 & Data_2	RPM 253 1610/20M	20.0	Optical fibre cable

## 2.5 Auxiliary equipment (AE)

Auxiliary equipment is equipment needed for correct operation of the EUT, but not included as part of the testing and evaluation of the EUT.

Equipment	Type / Model	Manufacturer	Serial no.
Computer	MacBook Pro	Apple	BAMS1002122808
PSU	LP1400	PA Emilsson	BAMS-1017033679
Baseband simulator	LPC 102 500/1	Ericsson	T01G522534
CT-DU25			BAMS-1017028173
SFP module	RDH 102 75/3 R1A	Ericsson	CU82116P9W
SFP module	RDH 102 75/3 R1A	Ericsson	CU82116RQW
Power supply (for EUT)	SGA 60/250	Sorensen	BAMS-1000234866

## 2.6 Opinions and interpretations

The following types are also included as additional types in this test report:

The differences between the models are (according to the manufacturer):

Type/Model	Product numbers	Comment
AIR 6419 B77G	KRD 901 238/1	With un-security software and antenna
	KRD 901 238/11	With security software and antenna
	KRD 901 238/3 *	With un-security software and RDNB board for testing
	KRD 901 238/31	With security software and RDNB board for testing

\* Tested model. The tests were performed on KRD 901 238/3 (AIR 6419 B77G with un-security software and RDNB board for testing purpose).

The hardware and software (except for the security software) are identical for all types above. The difference is considered not to imply different EMC-characteristics when compared to the tested type.

## 2.7 Decision rule

The statements of conformity are reported as:

Passed – When the measured values are within the specified limits.

Failed – When one or more measured values are outside the specified limits.

### 3. TEST SPECIFICATIONS

#### 3.1 Standards

Requirements:

FCC 47 CFR Part 2 Subpart J (2019)

FCC 47 CFR Part 27 Subpart C (2019) + amendment published on April 23, 2020

Test methods:

KDB971168 D01 Power Meas License Digital Systems v03r01

ANSI C63.26: 2015: American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services

#### 3.2 Additions, deviations and exclusions from standards and accreditation

The following deviation from standards and accreditation was made: only the radiated spurious emission performed according to manufacturer's request.

No other additions, deviations or exclusions have been made from standards and accreditation.

#### 3.3 Test site

Measurements were performed at:

Intertek Semko AB.

Torshamnsgatan 43,

P.O. Box 1103

SE-164 22 Kista

Intertek Semko AB is a FCC listed test site with site registration number 90913

Intertek Semko AB is a FCC accredited conformity assessment body with designation number SE0002

Intertek Semko AB is an Industry Canada listed test facility with IC assigned code 2042G

Intertek Semko AB is an Innovation, Science and Economic Development Canada recognized wireless device testing laboratory with CAB identifier SE0003

Measurement chambers

Measurement Chamber	Type of chamber	IC Site filing #
5 m CHAMBER	Semi-anechoic 5 m	2042G-3

### 3.4 Mode of operation during the test

The EUT was tested with – 53 V DC, up to 24 A. Output Power: 8W/MHz up to max 320W.

Transmission band B77G: 3450 – 3550 MHz.

#### Radio Configuration

##### NR:

The test object was transmitting test model FR1-TM3.2 as defined in ETSI TS 138 141/3GPP TS 38.141-1.

All the RF ports are activated for maximum transmit power. See table below for detailed radio configurations.

#### Radio configuration emission (NR)

Configuration No.	No. of Carriers	Channel BW (MHz)	RF power (W)	RF power (dBm)	Test Model	Carrier Frequency (DL)
						MHz
1	NR1	40	320	36.99	FR1-TM3.2	3470.0
2	NR1	40	320	36.99	FR1-TM3.2	3500.0
3	NR1	40	320	36.99	FR1-TM3.2	3530.0
4	NR2	40	2x 160	2x 33.97	FR1-TM3.2	3470.0 3530.0
5	NR3	30	3x 106.7	3x 32.21	FR1-TM3.2	3465.0 3504.99 3534.99

### 3.5 Compliance

The EUT shall comply with the emission limits as listed below

#### Spurious emission at antenna terminals

CFR47 §2.1051, §27.53(n)(1)

For base station operations in the 3450-3550 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed –13 dBm/MHz. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

Notwithstanding the channel edge requirement of –13 dBm per megahertz, for base station operations in the 3450-3550 MHz band, the conducted power of any emission below 3440 MHz or above 3560 MHz shall not exceed –25 dBm/MHz, and the conducted power of emissions below 3430 MHz or above 3570 MHz shall not exceed –40 dBm/MHz.

#### 4. TEST SUMMARY

The results in this report apply only to sample tested:

Standard	Description	Result
<b>Emission</b>		
<b>ANSI C63.26 5.5</b>	<b>Field strength of spurious radiation</b>  The EUT complies with the limits.  The margin to the limit was more than 20 dB to the limit at 30— 1000 MHz.  The margin to the limit was at least 14.4 dB at 17893.75 MHz.  The margin to the limit was at least 16.3 dB at 25781.25 MHz.  The margin to the limit was at least 14.7 dB at 31104.25 MHz.	<b>PASS</b>

## 5. RADIATED RF EMISSION IN THE FREQUENCY-RANGE 30 MHZ– 1 – 18 – 26.5 – 40 GHZ

Date of test	Temperature [°C]	Relative Humidity [%]	Tested by
April 7, 2022	21	23	Anna Karin Cedergren
April 8, 2022	21	28	Anna Karin Cedergren
April 11, 2022	21	19	Anna Karin Cedergren
April 20, 2022	21	26	Anna Karin Cedergren
April 21, 2022	22	27	Anna Karin Cedergren
April 22, 2022	22	26	Anna Karin Cedergren

### 5.1 Test set-up and test procedure

The test method is in accordance with ANSI C63.26.

The EUT was set up in order to emit maximum disturbances.

30 – 1000 MHz: The EUT was placed on a pole 0.8 m above the turntable which is part of the reference ground plane (RGP). The pole was insulated from RGP with 15 cm thick support.

> 1000 MHz: The EUT was placed on a pole 1.5 m above the turntable which is part of the reference ground plane (RGP). The pole was insulated from RGP with 15 cm thick support. Absorbers were placed on the floor between the EUT and measurement antenna.

Overview sweeps were performed with the measurement receiver in max-hold mode and the peak and average detectors activated in the frequency-range

The EUT is continuously rotated 360°

Test set-up:	30 MHz – 40 GHz	
Test receiver set-up:		
Preview test:	Peak	RBW 1 MHz, VBW 3 MHz
	Average	RBW 1 MHz, VBW 3 MHz
Final test:	RMS	RBW 1 MHz, VBW 3 MHz
Measuring distance:	3 m	
Measuring angle:	0 – 359°	
EUT height above ground plane:	0.8 m	1.5 m
Antenna	30 – 1000 MHz	1 – 40 GHz
Type:	Bilog	Horn
Antenna tilt:	Not Activated	Activated
Height above ground plane:	1 – 4 m	
Polarisation:	Vertical and Horizontal	

$E[\text{dB}\mu\text{V}/\text{m}] = \text{Analyser reading } [\text{dB}\mu\text{V}] + \text{Antenna factor } [1/\text{m}] - \text{Amplifier gain } [\text{dB}] + \text{Cable loss } [\text{dB}]$

$EIRP [\text{dBm}] = E[\text{dB}\mu\text{V}/\text{m}] + 20\log[3] - 104.8$

### 5.2 Measurement uncertainty

Measurement uncertainty for radiated disturbance

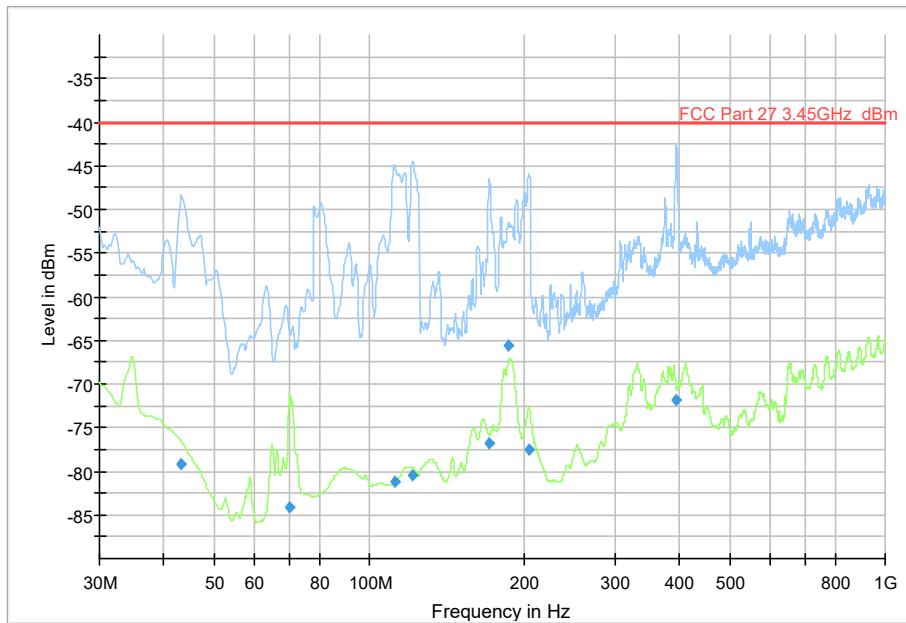
Uncertainty for the frequency range 30 to 1000 MHz at 3 m	± 5.1 dB
Uncertainty for the frequency range 30 to 1000 MHz at 10 m	± 5.0 dB
Uncertainty for the frequency range 1.0 to 18 GHz at 3 m	± 4.5 dB
Uncertainty for the frequency range 18 to 26 GHz at 3 m	± 4.8 dB
Uncertainty for the frequency range 26 to 40 GHz at 3 m	± 5.7 dB

Measurement uncertainty is calculated in accordance with CISPR 16-4-2: 2011.

The measurement uncertainty is given with a confidence of 95 %.

**30 – 1000 MHz****1 – 18 GHz****18 – 26,5 MHz****26,5 – 40 GHz****Photos of the test set ups**

### 5.3 Test results, 30 – 1000 MHz, configuration 1: 1 NR Bottom

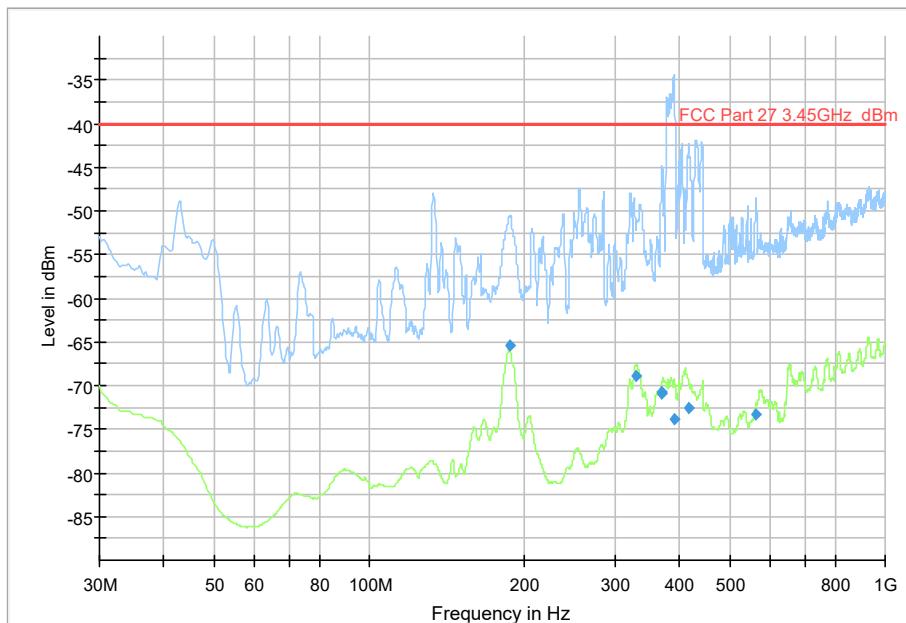


**Diagram, Peak and average overview sweep, 30 – 1000 MHz at 3 m distance.**

#### Measurement results, RMS

All measured disturbances have a margin of more than 20 dB to the limit.

### 5.4 Test results, 30 – 1000 MHz, configuration 2: 1 NR Middle

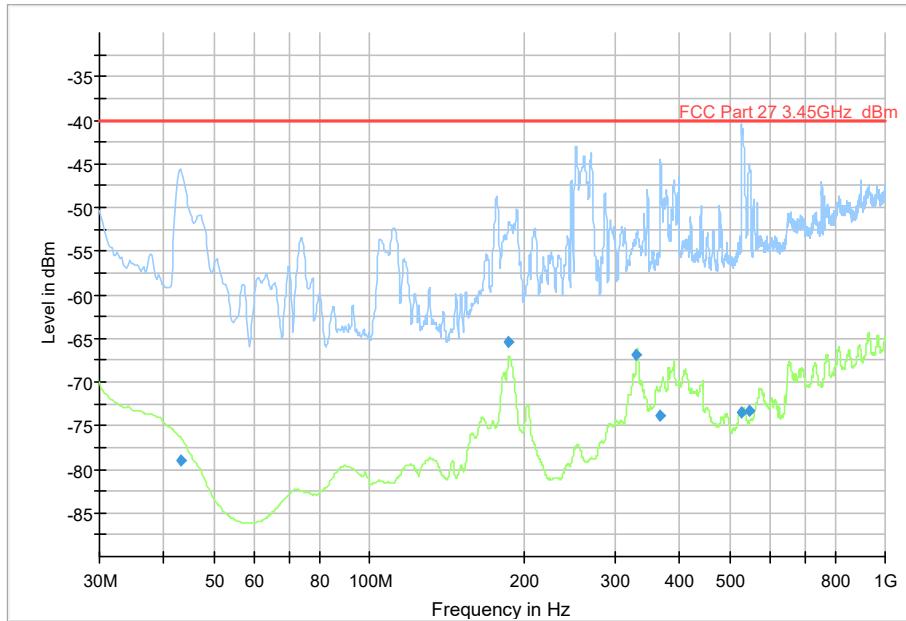


**Diagram, Peak and average overview sweep, 30 – 1000 MHz at 3 m distance.**

#### Measurement results, RMS

All measured disturbances have a margin of more than 20 dB to the limit.

### 5.5 Test results, 30 – 1000 MHz, configuration 3: 1 NR Top

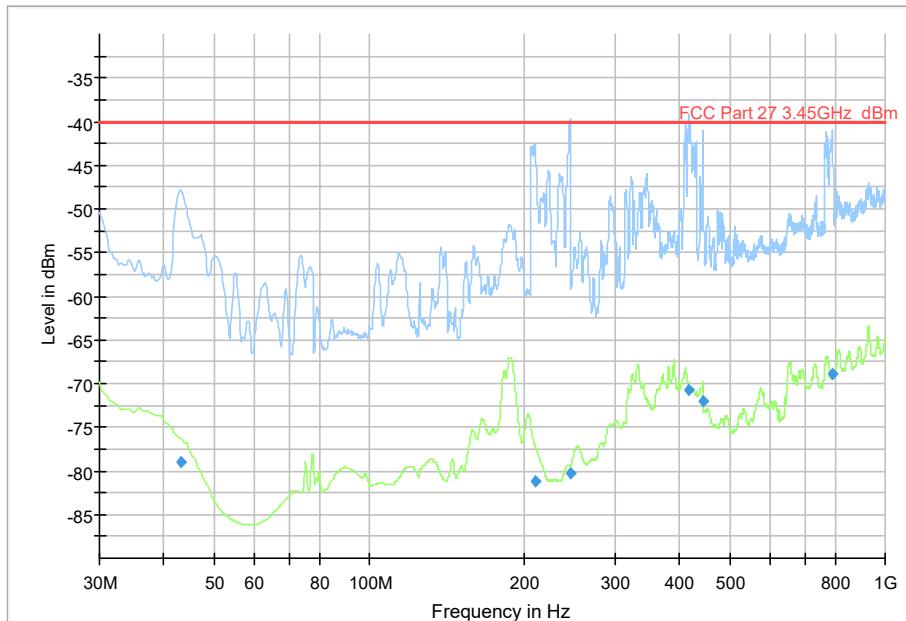


Diagram, Peak and average overview sweep, 30 – 1000 MHz at 3 m distance.

#### Measurement results, RMS

All measured disturbances have a margin of more than 20 dB to the limit.

### 5.6 Test results, 30 – 1000 MHz, configuration 4: 2 NR Middle

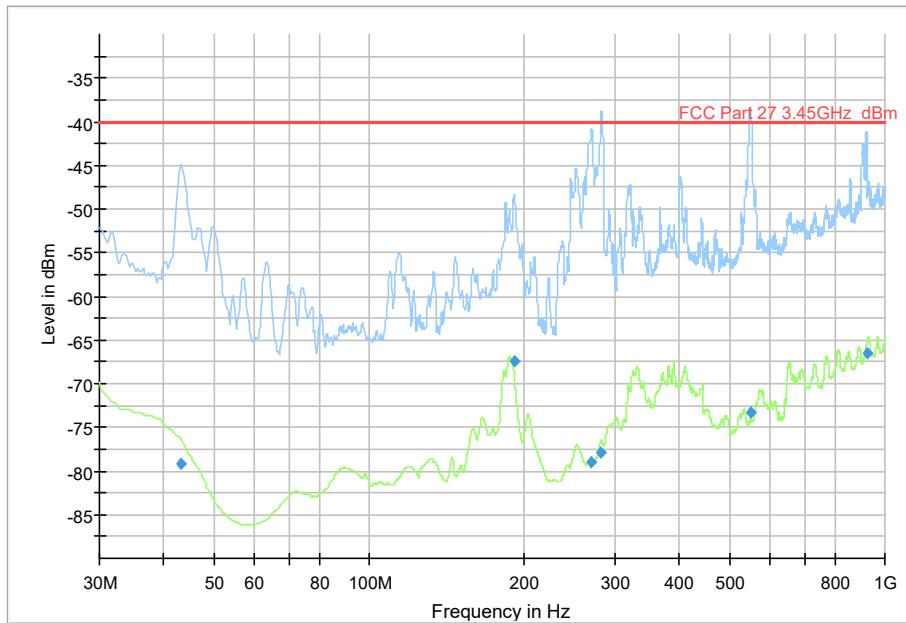


Diagram, Peak and average overview sweep, 30 – 1000 MHz at 3 m distance.

#### Measurement results, RMS

All measured disturbances have a margin of more than 20 dB to the limit.

### 5.7 Test results, 30 – 1000 MHz, configuration 5: 3 NR Middle

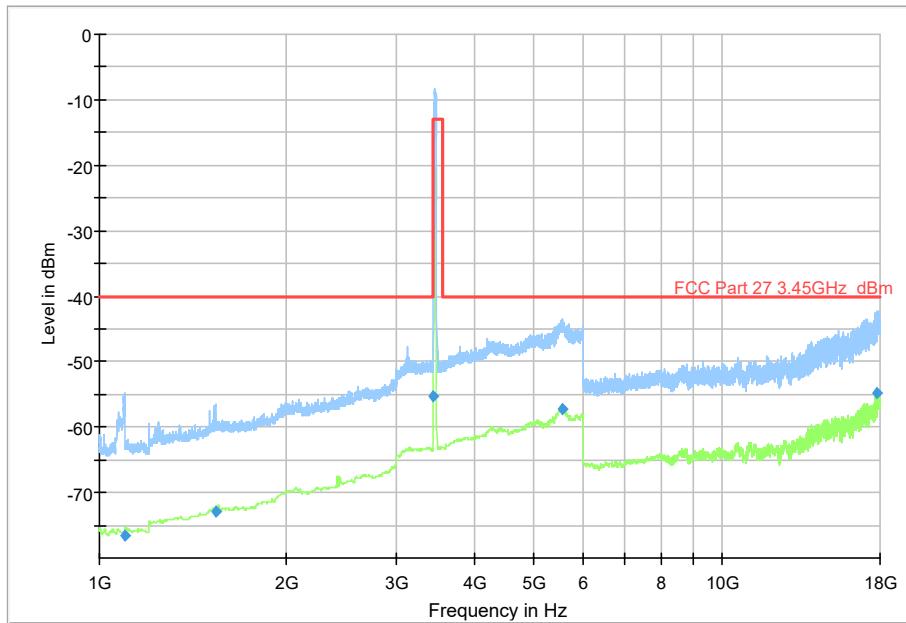


Diagram, Peak and average overview sweep, 30 – 1000 MHz at 3 m distance.

#### Measurement results, RMS

All measured disturbances have a margin of more than 20 dB to the limit.

### 5.8 Test results, 1 – 18 GHz, configuration 1: 1 NR Bottom



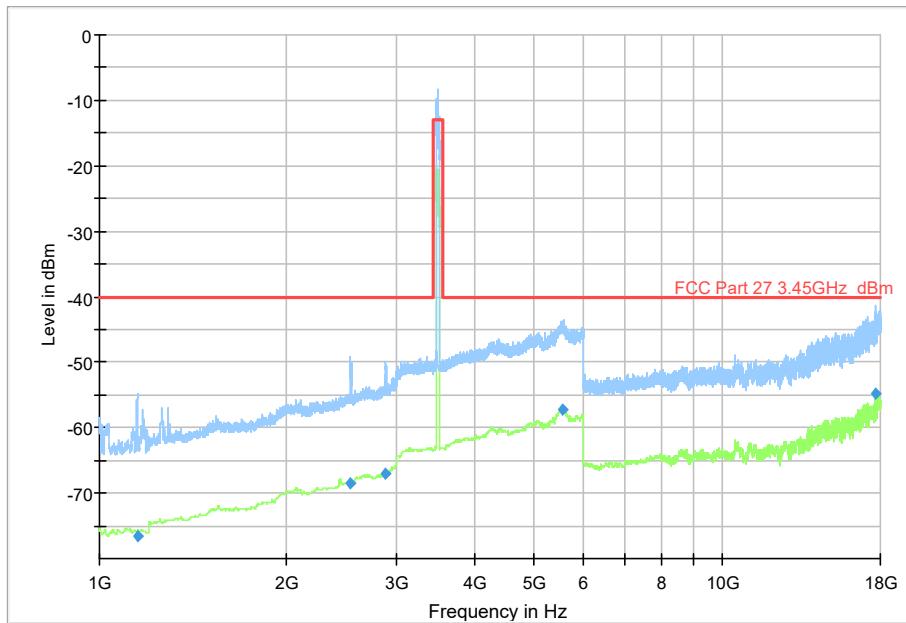
Diagram, Peak and average overview sweep, 1 – 18 GHz at 3 m distance.

#### Measurement results, RMS

Frequency [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]	Polarization H/V
5536.500000	-57.20	-40.00	17.20	H
17754.000000	-54.76	-40.00	14.76	V

All other measured disturbances have a margin of more than 20 dB to the limit.

### 5.9 Test results, 1 – 18 GHz, configuration 2: 1 NR Middle



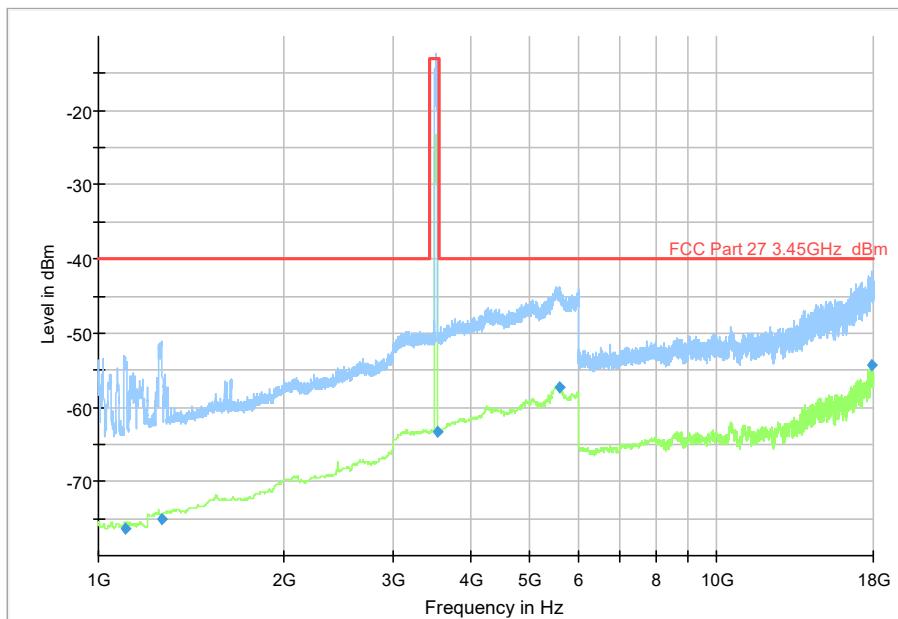
Diagram, Peak and average overview sweep, 1 – 18 GHz at 3 m distance.

Measurement results, RMS

Frequency [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]	Polarization H/V
5551.000000	-57.15	-40.00	17.15	H
17714.250000	-54.73	-40.00	14.73	V

All other measured disturbances have a margin of more than 20 dB to the limit.

### 5.10 Test results, 1 – 18 GHz, configuration 3: 1 NR Top



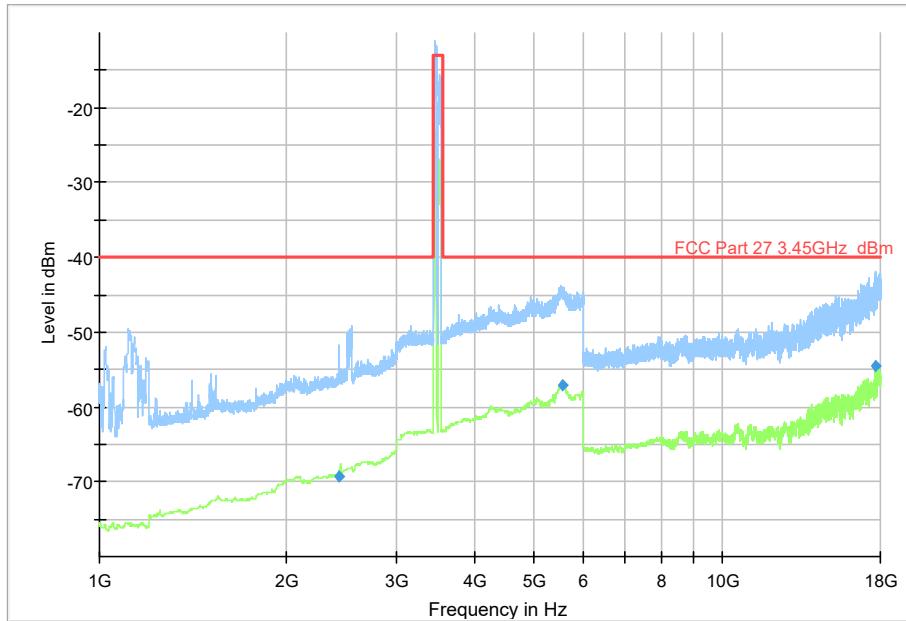
Diagram, Peak and average overview sweep, 1 – 18 GHz at 3 m distance.

#### Measurement results, RMS

Frequency [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]	Polarization H/V
5573.000000	-57.35	-40.00	17.35	V
17893.750000	-54.38	-40.00	14.38	V

All other measured disturbances have a margin of more than 20 dB to the limit.

### 5.11 Test results, 1 – 18 GHz, configuration 4: 2 NR Middle



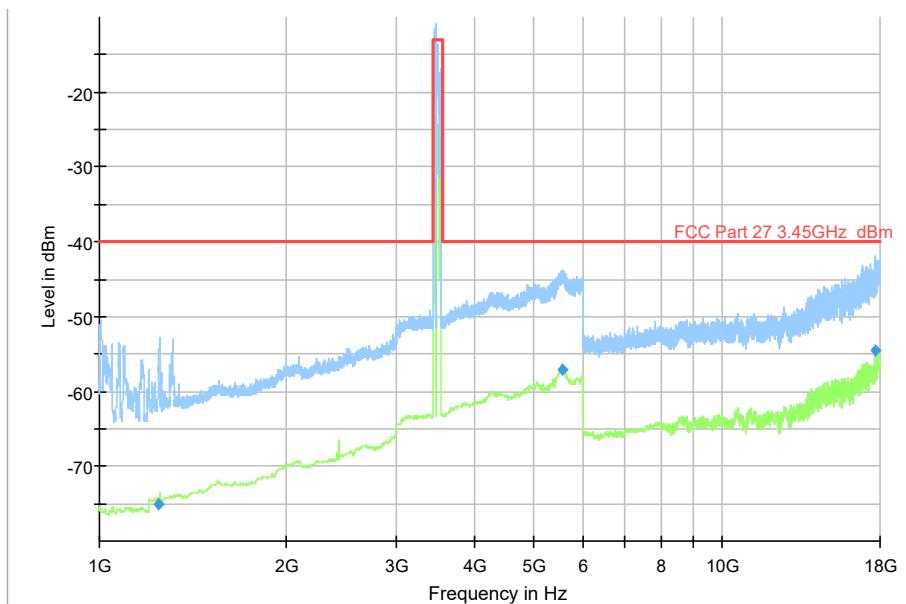
Diagram, Peak and average overview sweep, 1 – 18 GHz at 3 m distance.

Measurement results, RMS

Frequency [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]	Polarization H/V
5541.500000	-57.13	-40.00	17.13	V
17697.750000	-54.61	-40.00	14.61	V

All other measured disturbances have a margin of more than 20 dB to the limit.

### 5.12 Test results, 1 – 18 GHz, configuration 5: 3 NR Middle



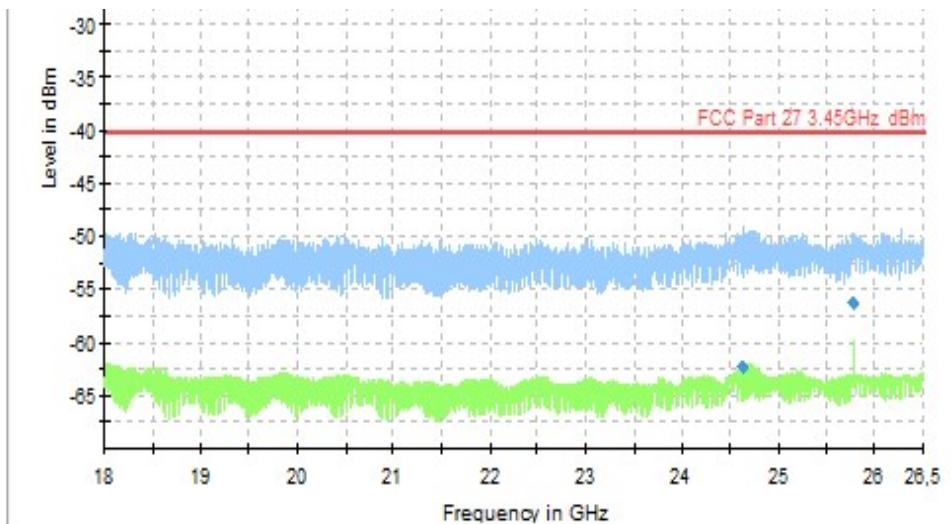
Diagram, Peak and average overview sweep, 1 – 18 GHz at 3 m distance.

#### Measurement results, RMS

Frequency [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]	Polarization H/V
5542.000000	-57.15	-40.00	17.15	V
17717.000000	-54.58	-40.00	14.58	H

All other measured disturbances have a margin of more than 20 dB to the limit.

### 5.13 Test results, 18 – 26.5 GHz, configuration 1: 1 NR Bottom



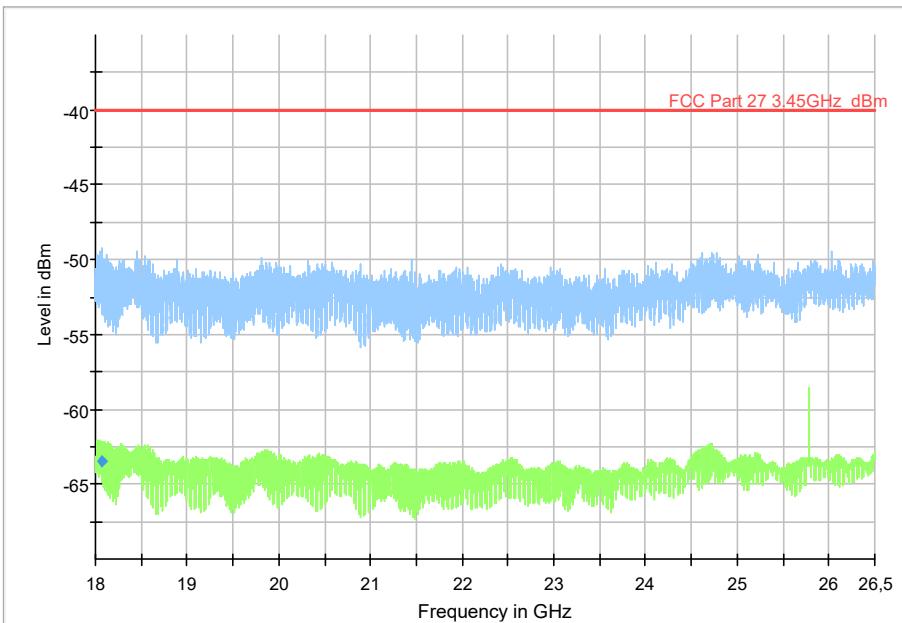
Diagram, Peak and average overview sweep, 18 – 26.5 GHz at 3 m distance.

#### Measurement results, RMS

Frequency [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]	Polarization H/V
25781.250000	-56.29	-40.00	16.29	V

All other measured disturbances have a margin of more than 20 dB to the limit.

### 5.14 Test results, 18 – 26.5 GHz, configuration 2: 1 NR Middle

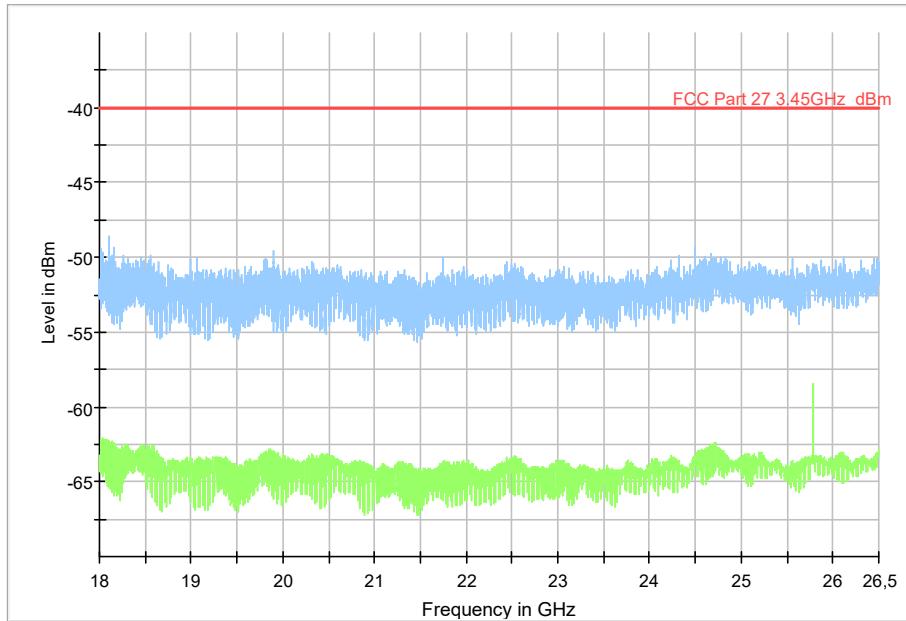


Diagram, Peak and average overview sweep, 18 – 26.5 GHz at 3 m distance.

#### Measurement results, RMS

All measured disturbances have a margin of more than 20 dB to the limit.

### 5.15 Test results, 18 – 26.5 GHz, configuration 3: 1 NR Top

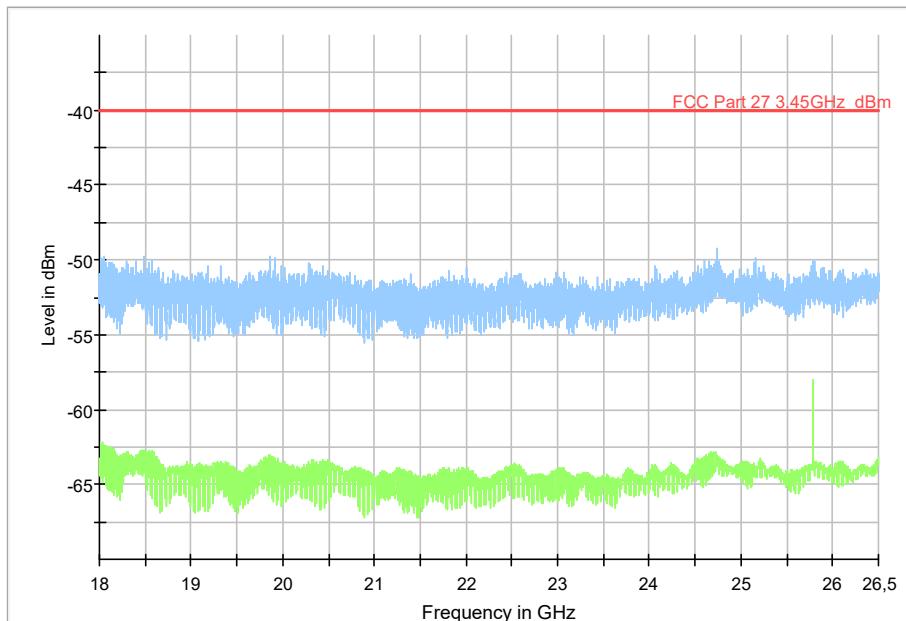


**Diagram, Peak and average overview sweep, 18 – 26.5 GHz at 3 m distance.**

#### Measurement results, RMS

All measured disturbances have a margin of more than 20 dB to the limit.

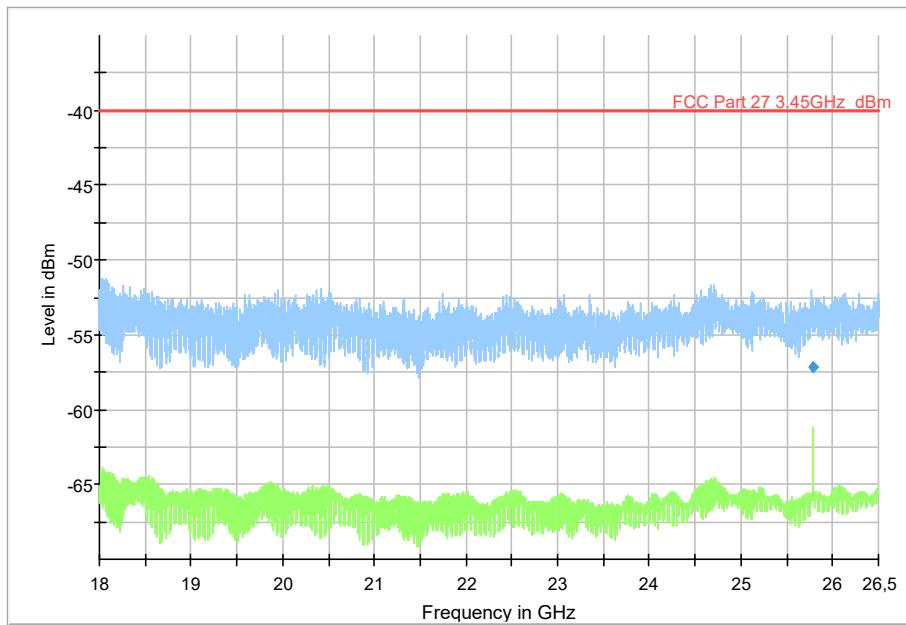
### 5.16 Test results, 18 – 26.5 GHz, configuration 4: 2 NR Middle



**Diagram, Peak and average overview sweep, 18 – 26.5 GHz at 3 m distance.**

#### Measurement results, RMS

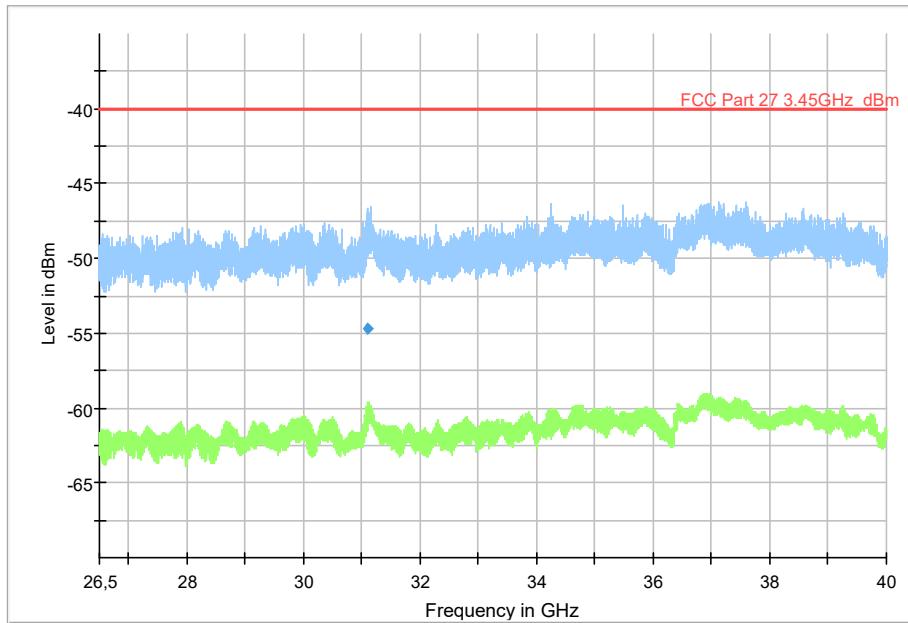
All measured disturbances have a margin of more than 20 dB to the limit.

**5.17 Test results, 18 – 26.5 GHz, configuration 5: 3 NR Middle****Diagram, Peak and average overview sweep, 18 – 26.5 GHz at 3 m distance.****Measurement results, RMS**

Frequency [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]	Polarization H/V
25781.250000	-57.17	-40.00	17.17	V

All measured disturbances have a margin of more than 20 dB to the limit.

### 5.18 Test results, 26.5 – 40 GHz, configuration 1: 1 NR Bottom



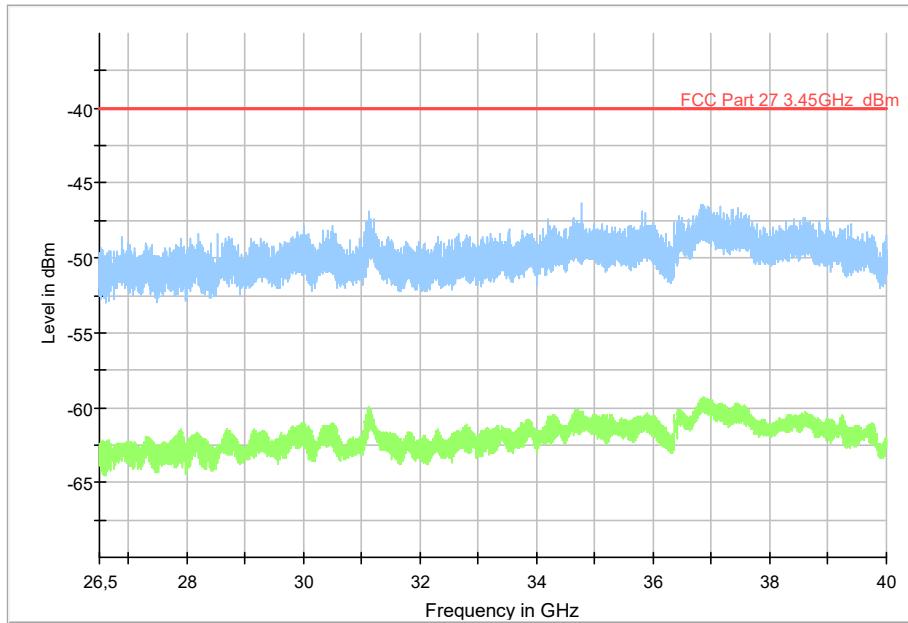
Diagram, Peak and average overview sweep, 26.5 – 40 GHz at 3 m distance.

#### Measurement results, RMS

Frequency [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]	Polarization H/V
31104.250000	-54.70	-40.00	14.70	H

All measured disturbances have a margin of more than 20 dB to the limit.

### 5.19 Test results, 26.5 – 40 GHz, configuration 2: 1 NR Middle

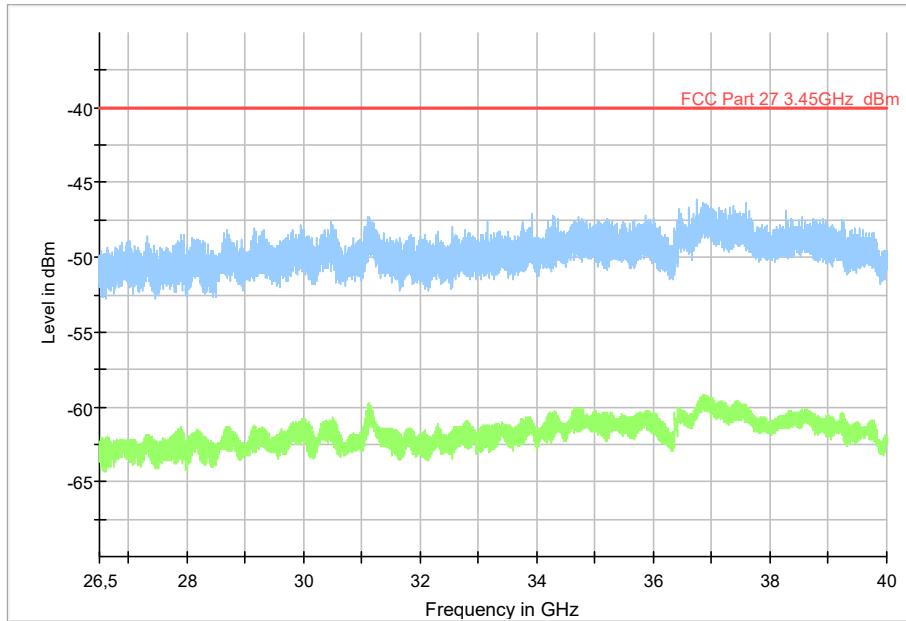


Diagram, Peak and average overview sweep, 26.5 – 40 GHz at 3 m distance.

#### Measurement results, RMS

All measured disturbances have a margin of more than 20 dB to the limit.

## 5.20 Test results, 26.5 – 40 GHz, configuration 3: 1 NR Top

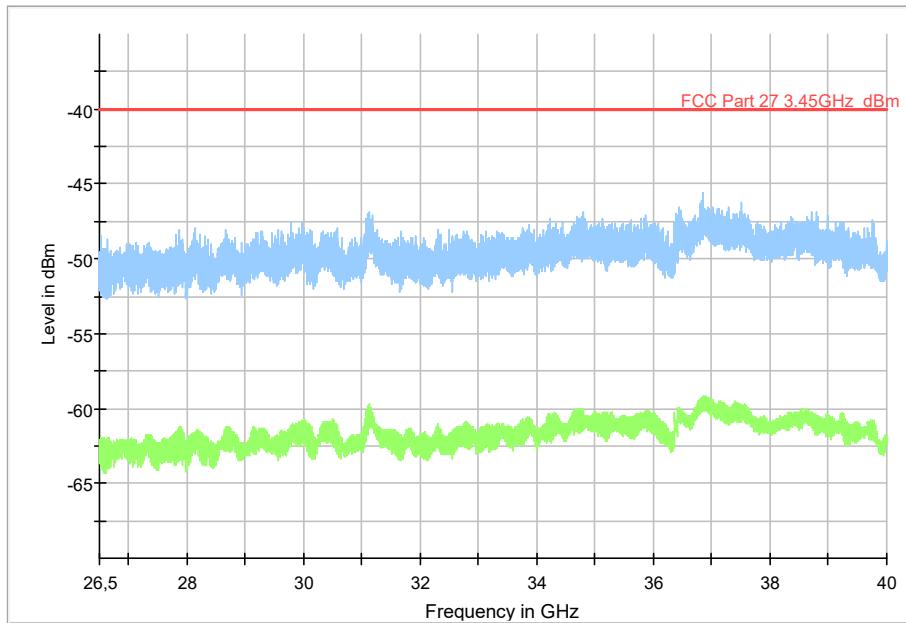


**Diagram, Peak and average overview sweep, 26.5 – 40 GHz at 3 m distance.**

### Measurement results, RMS

All measured disturbances have a margin of more than 20 dB to the limit.

## 5.21 Test results, 26.5 – 40 GHz, configuration 4: 2 NR Middle

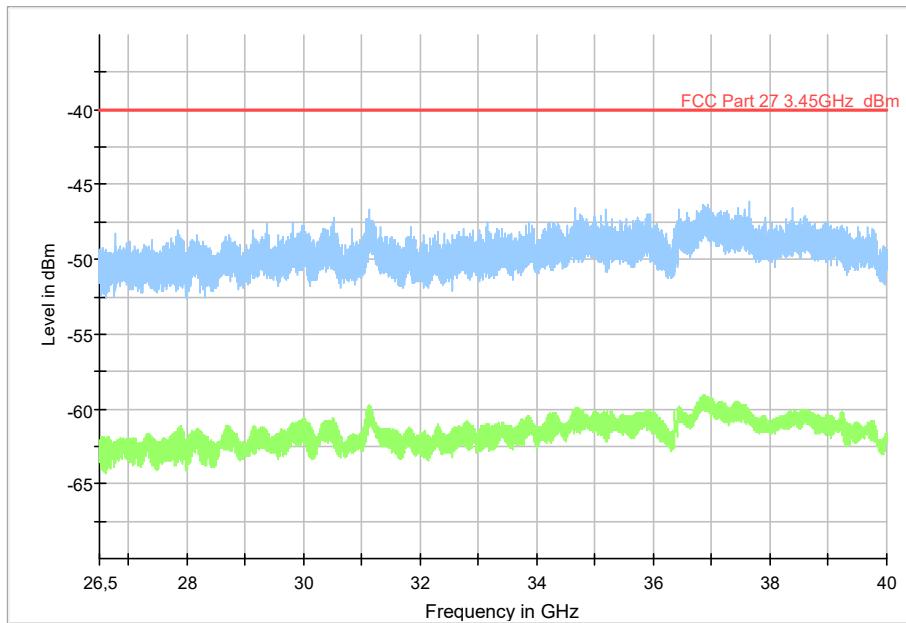


**Diagram, Peak and average overview sweep, 26.5 – 40 GHz at 3 m distance.**

### Measurement results, RMS

All measured disturbances have a margin of more than 20 dB to the limit.

## 5.22 Test results, 26.5 – 40 GHz, configuration 5: 3 NR Middle



Diagram, Peak and average overview sweep, 26.5 – 40 GHz at 3 m distance.

### Measurement results, RMS

All measured disturbances have a margin of more than 20 dB to the limit.

## 5.23 Test equipment

Equipment type	Manufacturer	Model	Inv. No.	Last Cal. date	Next Cal. date
Measurement software	Rohde & Schwarz	EMC32 – 11.30.00	--	--	--
Measurement receiver	Rohde & Schwarz	ESW44	33950	July 28, 2021	1 year
Coaxial cable	Schuner	SUCOFLEX 104	39003	September 28, 2021	1 year
Antenna ultralog	Rohde & Schwarz	HL562	32310	May 6, 2019	3 years
Coaxial cable	Rosenberger	UFB311A	39053	May 28, 2021	1 year
Coaxial cable	Rosenberger	JFB293C	39141	April 5, 2022	1 year
Coaxial cable	Rosenberger	JFB293C	39142	April 5, 2022	1 year
Horn antenna	Rohde & Schwarz	HF907	32550	July 5, 2019	3 years
Horn antenna	Bonn	BLMA 1826-5A	31247	August 26, 2020	3 years
Horn antenna	Bonn	BLMA 2640-5A	31248	August 27, 2020	3 years
Coaxial cable	Megaphase	GC12-K1K1-315	39128	August 20, 2021	1 year
Temp & RH meter	Vaisala	HM41	32403	October 18, 2021	1 year

**6. EUT SOFTWARE**

Software Radio: CXP 203 0039/7 R22A127

**7. EUT HARDWARE LIST**

Product	Product No,	R-State	Serial Number
AIR 6419 B77G	KRD 901 238/3	R1B	E23D829867
SFP module Sumitomo	RDH 102 75/3	R1A	02T704900277
SFP module Sumitomo	RDH 102 75/3	R1A	02T704900279