EMC TEST REPORT

No. 2407336STO-101

Electromagnetic disturbances

EQUIPMENT UNDER TEST

Equipment:	AIR Antenna Integrated Radio AAS
Type/Model:	AIR 3283 B25 B66
Product number*:	KRD 901 892/2
Product configuration:	LTE, 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:

FCC 47 CFR Part 2 Subpart J
FCC 47 CFR Part 24 Subpart E
FCC 47 CFR Part 27 Subpart C (2019) + Amendment (April 23, 2020)
RSS-GEN: Issue 5: Amendment 1 (March 2019), Amendment 2 (February 2021)
RSS-133 issue 6
RSS-139 issue 4

For details, see clause 2 – 4.

Signed by:Tsegereda Gebrehiwet
Signed at:2024-11-21 14:34:17 +01:00
Reason:I approve this document

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Signed at:2024-11-21 14:50:38 +01:00
Reason:I approve this document

Issued by: Tsegereda Gebrehiwet

Approved by: Anna-Karin Cedergren

Revision History

Test report number	Date	Description	Changes
2407336STO-101	November 21, 2024	First release	--

CONTENTS

1. CLIENT INFORMATION

The EUT has been tested by request of

Company:	Ericsson AB 164 80 Stockholm Sweden
Name of contact:	Lennart Blixt BNEW DNEW RA RPSE1 IVC EMC Phone +46 70 673 1973
Client observer:	Haji Akbar Babar

2. EQUIPMENT UNDER TEST (EUT)

2.1 Identification of the EUT

Equipment	AIR Antenna Integrated Radio AAS
Type/Model	AIR 3283 B25 B66
Product number	KRD 901 892/2
Product configuration	NR, LTE
Brand name	Ericsson
Manufacturer	Ericsson
Rating	-48VDC max: 50A
Class	III
Highest clock frequency	CPRI 25,78 GHz

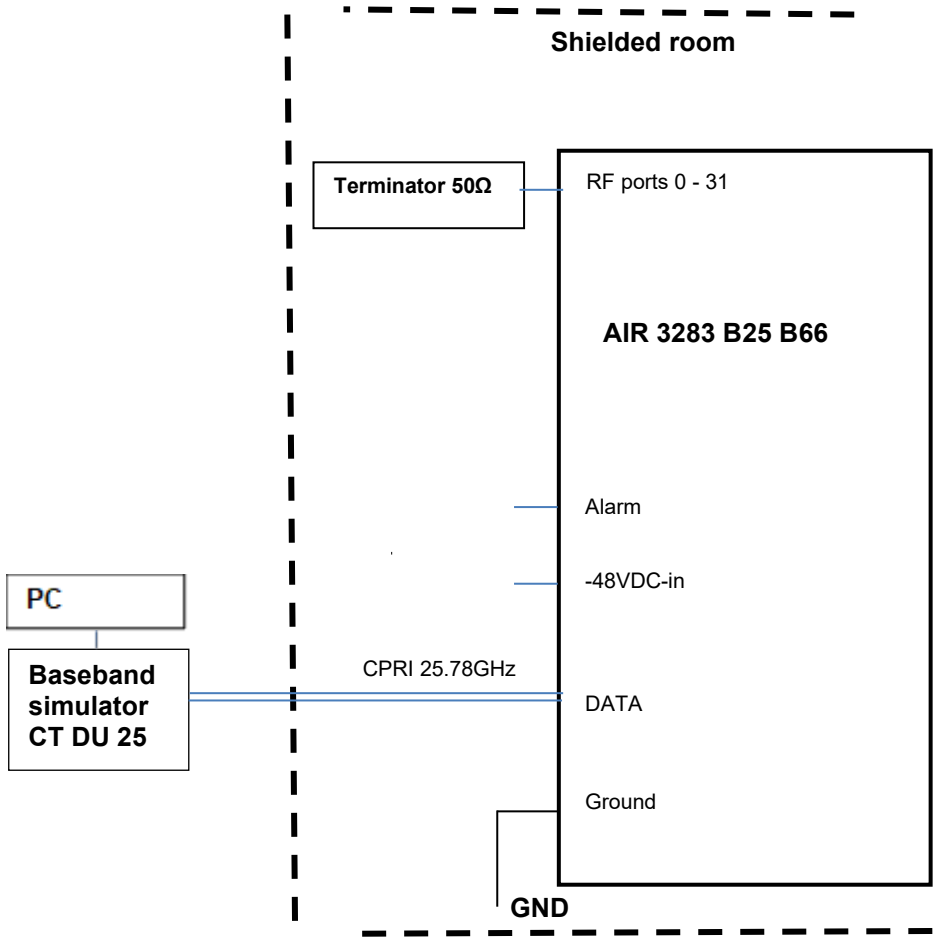
Photos of EUT

Photos of marking and EUT

2.2 Description of the EUT

The test object AIR 3283 B25 B66 is an antenna integrated radio AAS with LTE and NR support. 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 input power DCC	RPM 150 53/10M R1A	10,0	DC power Two-wire
Earth	Ground	2,0	Single wire, 35mm^2
External Alarm	RPM 513 2350/15000 R1A	10,0	Shielded signal cable
Data_1 & 2	RPM2531610/20M	20,0	Optical fibre cable
Antenna port	RF port	--	--

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	BAMS-1002122810
Baseband simulator CT-DU25	LPC 102 500/1	Ericsson	T01G522083
SFP module	RDH 102 75/3 R1A	Ericsson	EA61XL030D
SFP module	RDH 102 75/3 R1A	Ericsson	EA61XL0E7F
Power supply (for EUT)	SGA 60/250	Sorensen	BAMS-1000234866
Power supply (for AE)	SGA 80/125	Sorensen	BAMS-1000581824

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 3283 B25 B66	KRD 901 892/1	Radio including AFU (Antenna Filter Unit), with un-security software
	KRD 901 892/2*	Radio including VFU (Verification Filter Unit, excluding antenna) with un-security software
	KRD 901 892/11	Radio including AFU (Antenna Filter Unit) with security software
	KRD 901 892/21	Radio including VFU (Verification Filter Unit, excluding antenna) with security software

*Tested unit. The tests were performed on KRD 901 259/2.

The hardware and software (except for the security software) are identical for all types above. The difference is considered not to imply different FCC part 2 Radio 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 measures values are outside the specified limits.

3. TEST SPECIFICATIONS

3.1 Standards

Requirements:

FCC 47 CFR Part 2 Subpart J
FCC 47 CFR Part 24 Subpart E
FCC 47 CFR Part 27 Subpart C (2019) + Amendment (April 23, 2020)
RSS-GEN: Issue 5: Amendment 1 (March 2019), Amendment 2 (February 2021)
RSS-133 issue 6
RSS-139 issue 4

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 -48 V DC, up to 33 A. Max total output power is 320W.

Radio Configuration

The AIR 3283 B25 B66 was configured to operate with LTE and NR technologies.

The EUT was tested with 11 different radio transmitting configurations. See the table on next page for detailed radio configurations of the EUT.

Transmission bands:

B25/n25:	UL/DL 1850 - 1915 MHz / 1930MHz - 1995MHz
B2/n2:	UL/DL 1850 - 1910 MHz / 1930MHz - 1990MHz
B66/n66:	UL/DL 1710 - 1780 MHz / 2110MHz - 2200MHz

LTE:
The test object was activated for maximum transmission power with test model E-TM1.1 and E-TM3.1 as defined in ETSI TS 136 141/ 3GPP TS 36.141.

NR:
The test object was transmitting test model FR1-TM1.1 as defined in ETSI TS 138 141/ 3GPP TS 38.141-1.

Radio configuration for radiated emission

Configuration		No of Carriers	Carrier Frequeny	BW	RF power (W)/ Carrier	Total Power (W)
			MHz	MHz		
B25/B2						
C1	NR-MIMO-3C-20M (QPSK)	3	1942.5	20	80	240
			1962.5	20	80	
			1982.5	20	80	
C2	LTE-MIMO-3C-5M (64QAM)	3	1957.5	5	40	120
			1962.5	5	40	
			1967.5	5	40	
C3	LTE 5MHz (64QAM)+ NR 20MHz (QPSK) + NR 20MHz (QPSK)	3	1942.5	5	40	200
			1962.5	20	80	
			1982.5	20	80	
B66						
C4	NR-MIMO-3C-20M (QPSK)	3	2135.0	20	80	240
			2155.0	20	80	
			2175.0	20	80	
C5	LTE-MIMO-3C-20M (QPSK)	3	2135.0	20	80	240
			2155.0	20	80	
			2175.0	20	80	
C6	LTE 20MHz (QPSK)+ NR 20MHz (QPSK) + NR 20MHz (QPSK)	3	2135.0	20	80	240
			2155.0	20	80	
			2175.0	20	80	
C7	LTE 15MHz (QPSK)+ LTE 15MHz(QPSK)+ NR 15MHz(QPSK) + NR 15MHz(QPSK)	4	2132.5	15	60	240
			2147.5	15	60	
			2162.5	15	60	
			2177.5	15	60	
Multiband						
C8	LTE-5M 64QAM Band25+ NR-20M QSPK Band25+ LTE-20M QSPK Band66+ NR-20M QSPK Band66+ NR-20M QSPK Band66	5	1942.5	5	20	320
			1962.5	20	120	
			2135.0	20	60	
			2155.0	20	60	
			2175.0	20	60	
C9	LTE-5M 64QAM Band25+ NR-20M QSPK Band25+ NR-20M QSPK Band25+ LTE-20M QSPK Band66+ NR-20M QSPK Band66	5	1942.5	5	20	320
			1955.0	20	120	
			1975.0	20	60	
			2155.0	20	60	
			2175.0	20	60	
C10	LTE-5M 64QAM Band25+ NR-5M QPSK Band25 + NR-20M QPSK Band25 + LTE-20M QPSK Band66+ NR-20M QPSK Band66 + NR-20M QPSK Band66	6	1942.5	5	20	280
			1947.5	5	20	
			1960.0	20	60	
			2135.0	20	60	
			2155.0	20	60	
			2175.0	20	60	
C11	LTE-5M 64QAM Band25+ NR-15M QPSK Band25 + LTE-15M QPSK Band 66 + LTE-15M QPSK Band66 + NR-15M QPSK Band66 + NR-15M QPSK Band66	6	1942.5	5	20	320
			1962.5	15	60	
			2132.5	15	60	
			2147.5	15	60	
			2162.5	15	60	
			2177.5	15	60	

3.5 Compliance

The EUT shall comply with the emission limits as listed below

Spurious emission at antenna terminals
CFR47 §2.1051, §27.53(h), §24.229(a)(b)(c), RSS-133.6.5, RSS-139.5.6

The conducted power of any emission outside the licensee's authorized bandwidth shall not exceed −13 dBm/MHz.

4. TEST SUMMARY

The results in this report apply only to sample tested:

Standard	Description	Result
	Emission	
ANSI C63.26	**Field strength of spurious radiation**	**PASS**
	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 more than 20 dB to the limit at 1–26.5 GHz. See clause 5.3-5.5.	

5. RADIATED RF EMISSION IN THE FREQUENCY-RANGE 30 MHZ– 26.5 GHZ

Date of test	Temperature [°C]	Relative Humidity [%]	Tested by
October 28, 2024	21	31	Thomas Petersson & Mohammad Nourjoo
October 29, 2024	21	26	Thomas Petersson & Mohammad Nourjoo
October 30, 2024	21	38	Thomas Petersson & Mohammad Nourjoo
October 31, 2024	20	30	Thomas Petersson & Mohammad Nourjoo
November 1, 2024	21	42	Thomas Petersson & Mohammad Nourjoo

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 10 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 10 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 360º

Test set-up:	**30 MHz – 26.5 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 – 26.5 GHz
Type:	Bilog	Horn
Antenna tilt:	Not Activated	Activated
Height above ground plane:	1 – 4 m	
Polarisation:	Vertical and Horizontal	

E[dBµV/m] = Analyser reading [dBµV] + Antenna factor [1/m] - Amplifier gain [dB] + Cable loss [dB]

EIRP [dBm] = E[dBµV/m] +20log[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 %.

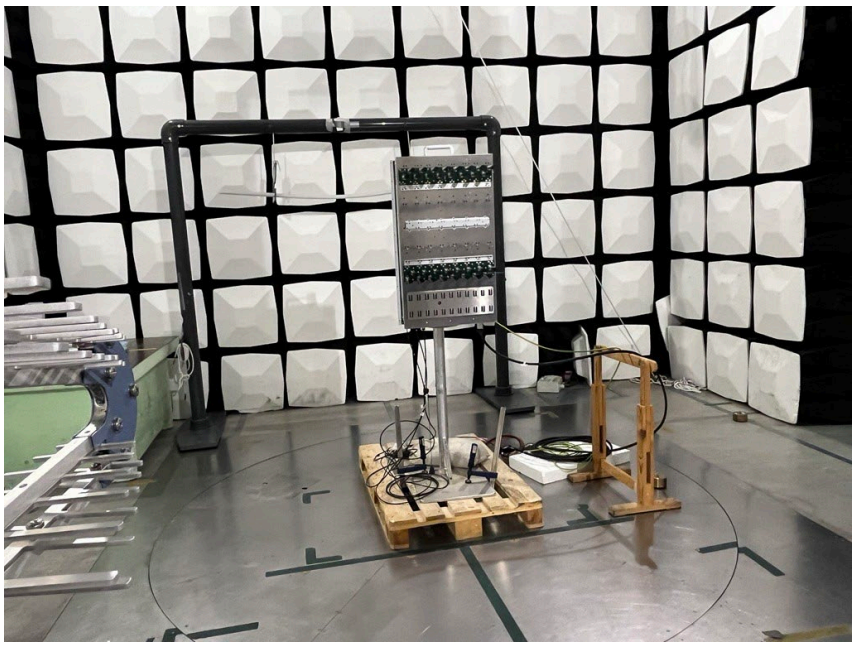


Photo of the test set up 30 – 1000 MHz

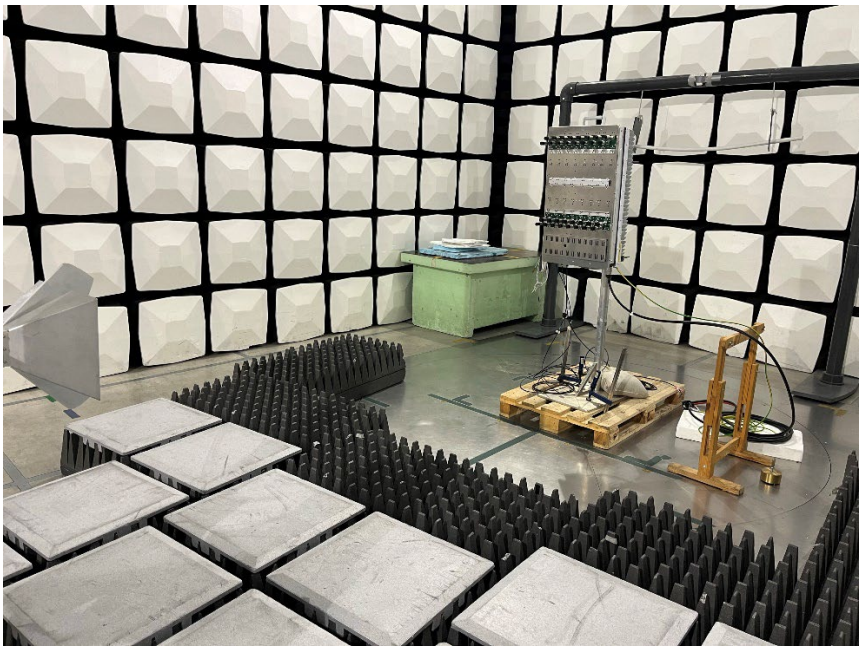
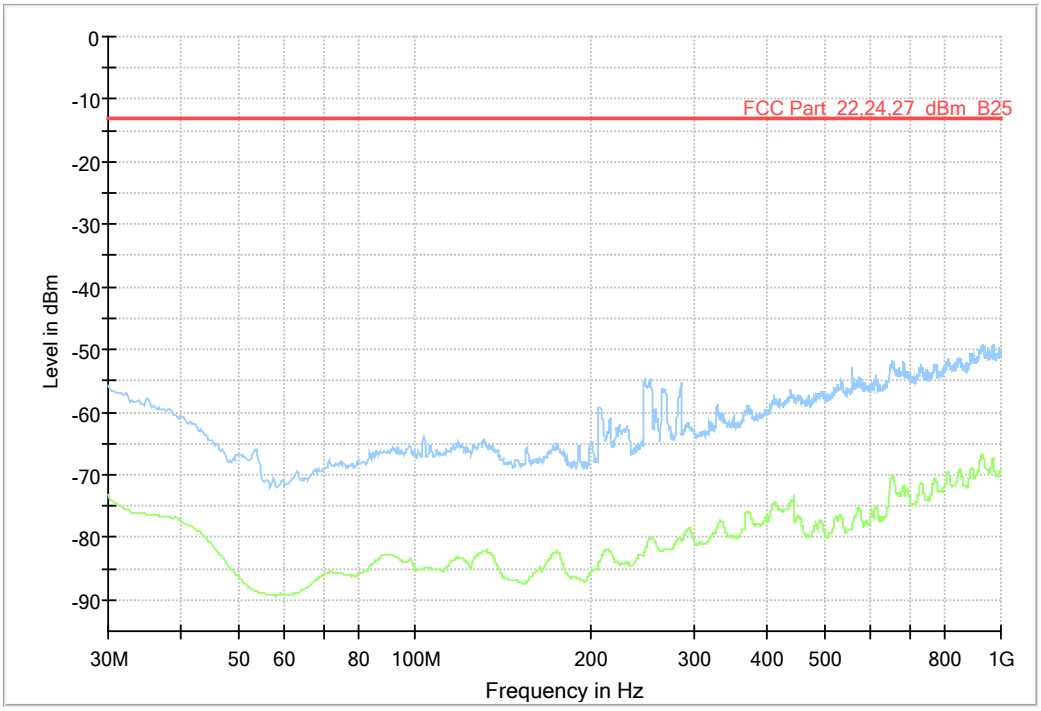
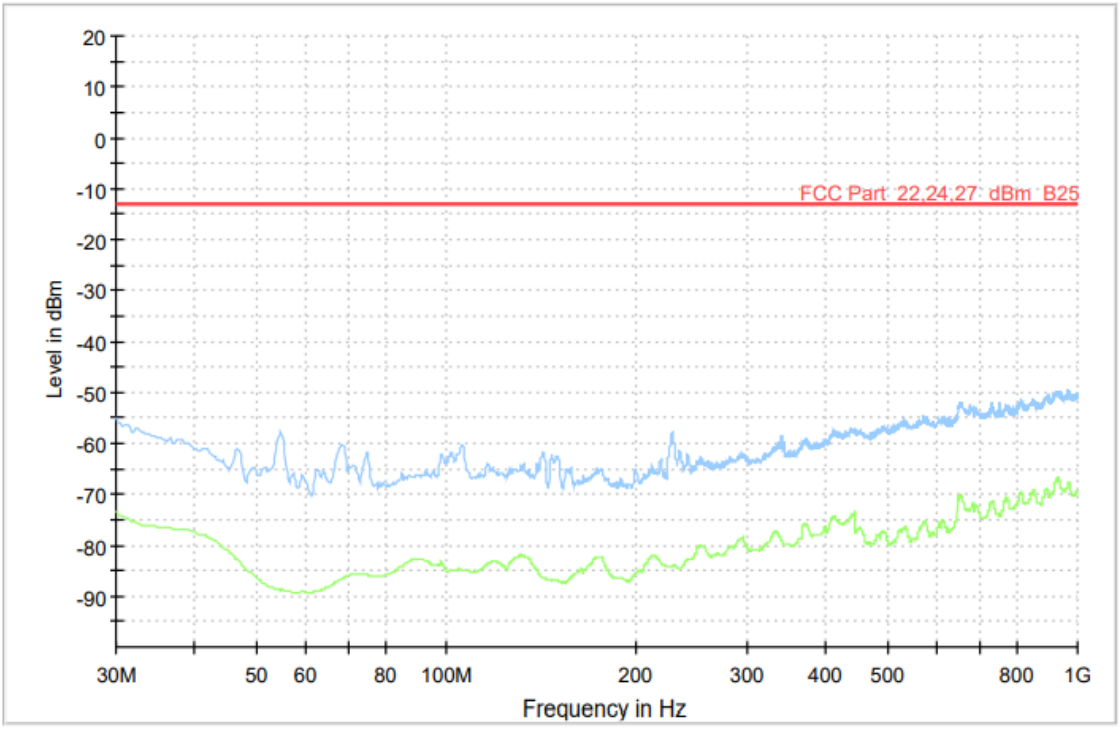


Photo of the test set up above 1 GHz

5.3 Test results, 30 – 1000 MHz



Diagram, Peak and average overview sweep, 30 – 1000 MHz, at 3 m distance, configuration C1.



Diagram, Peak and average overview sweep, 30 – 1000 MHz at 3 m distance, configuration C2.

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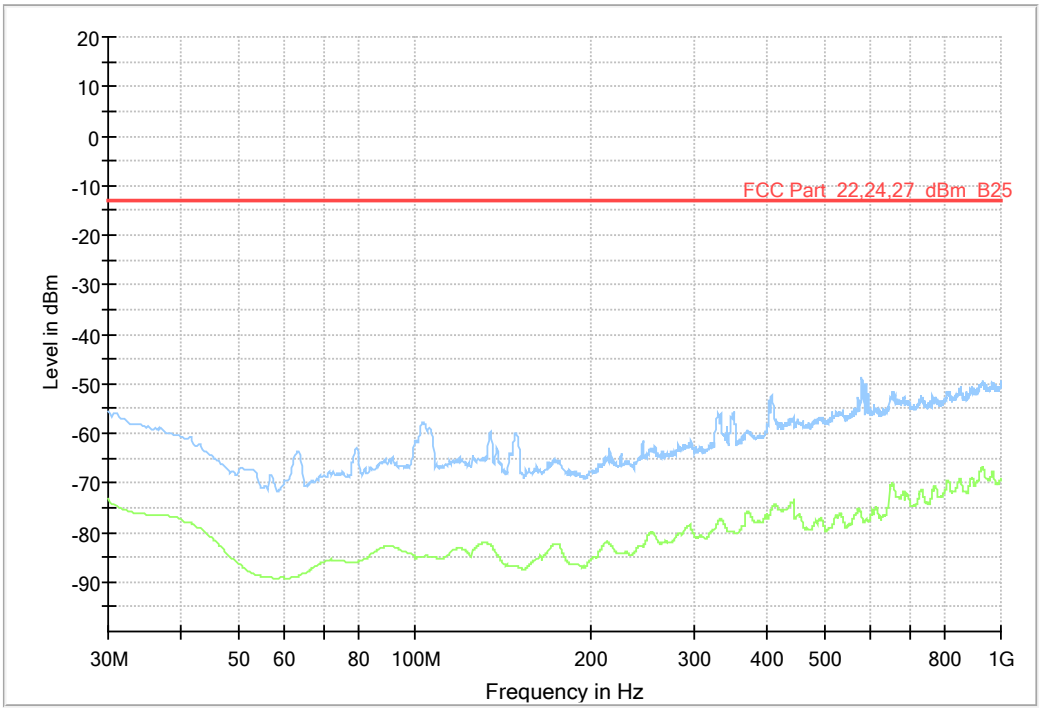
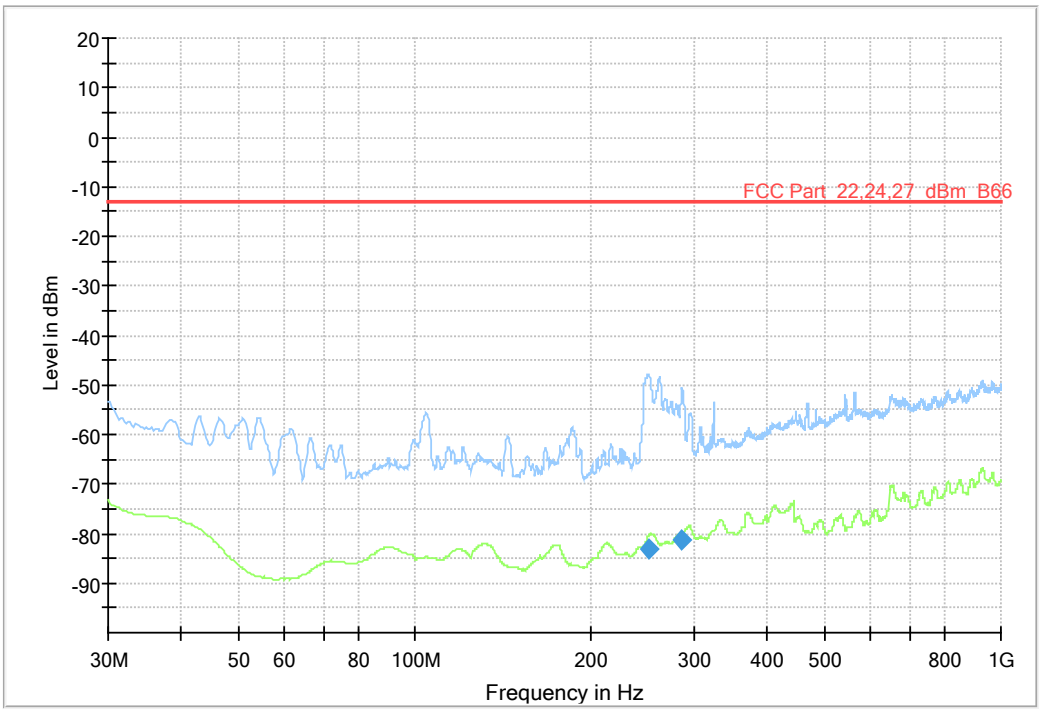
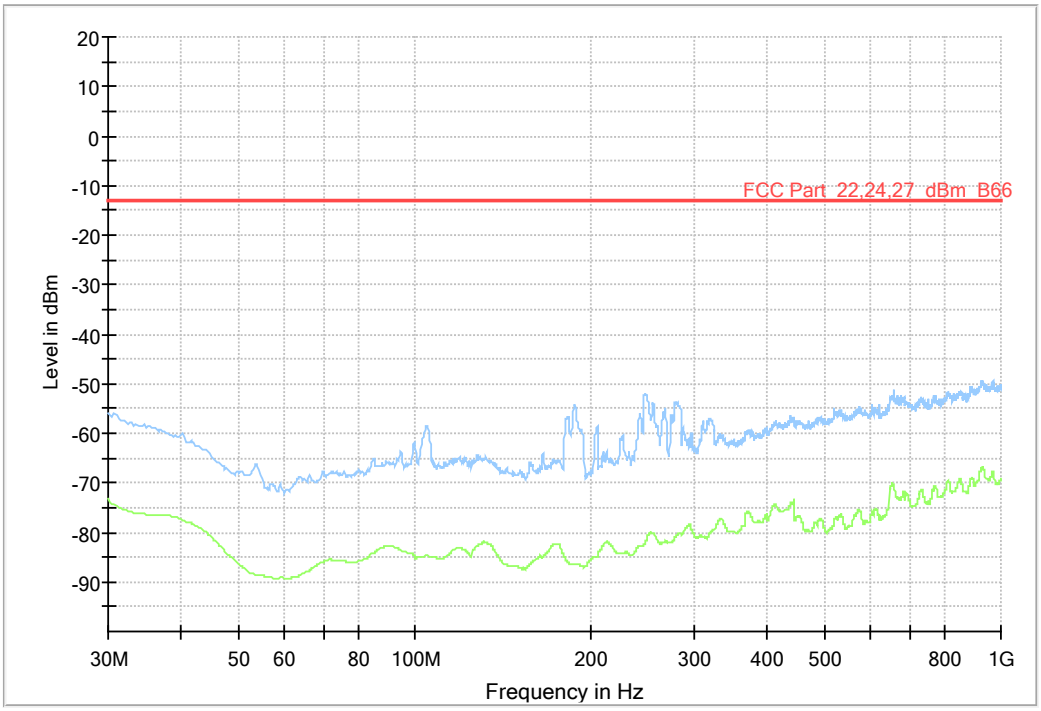


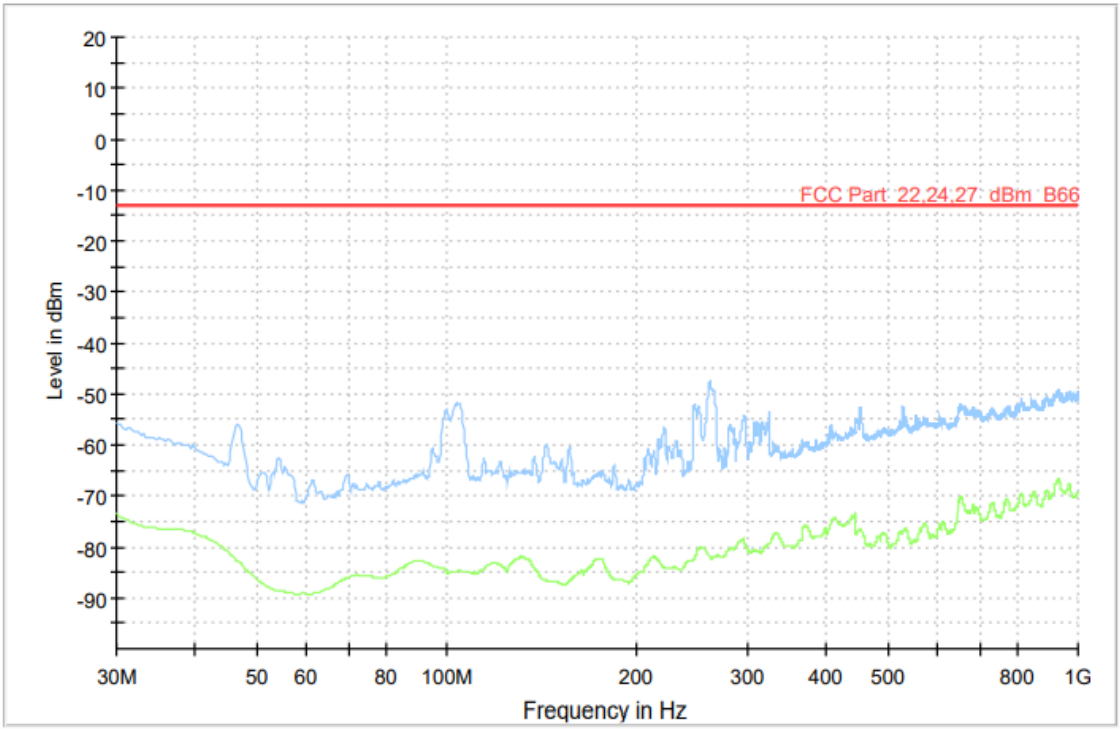
Diagram, Peak and average overview sweep, 30 – 1000 MHz at 3 m distance, configuration C3.



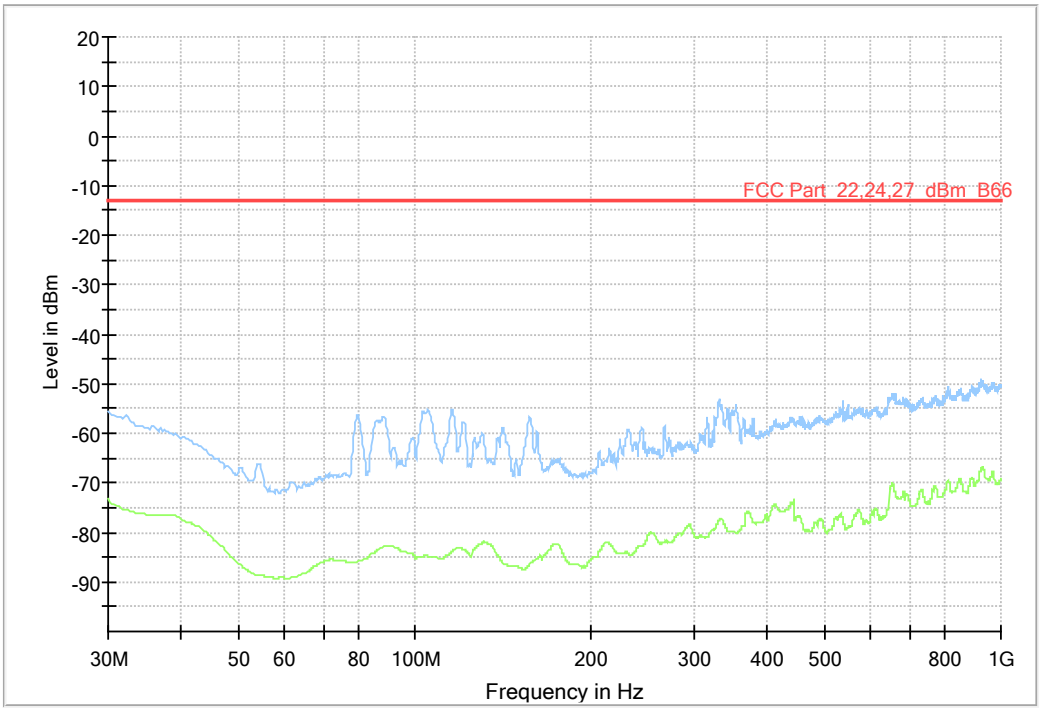
Diagram, Peak and average overview sweep, 30 – 1000 MHz at 3 m distance, configuration C4.



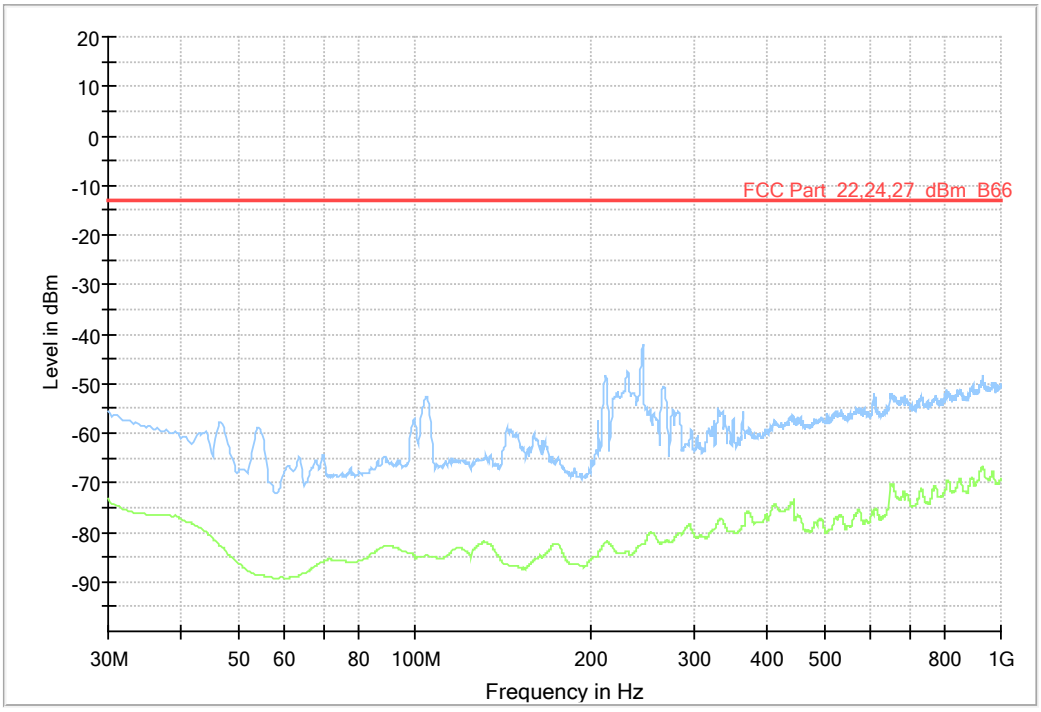
Diagram, Peak and average overview sweep, 30 – 1000 MHz at 3 m distance, configuration C5.



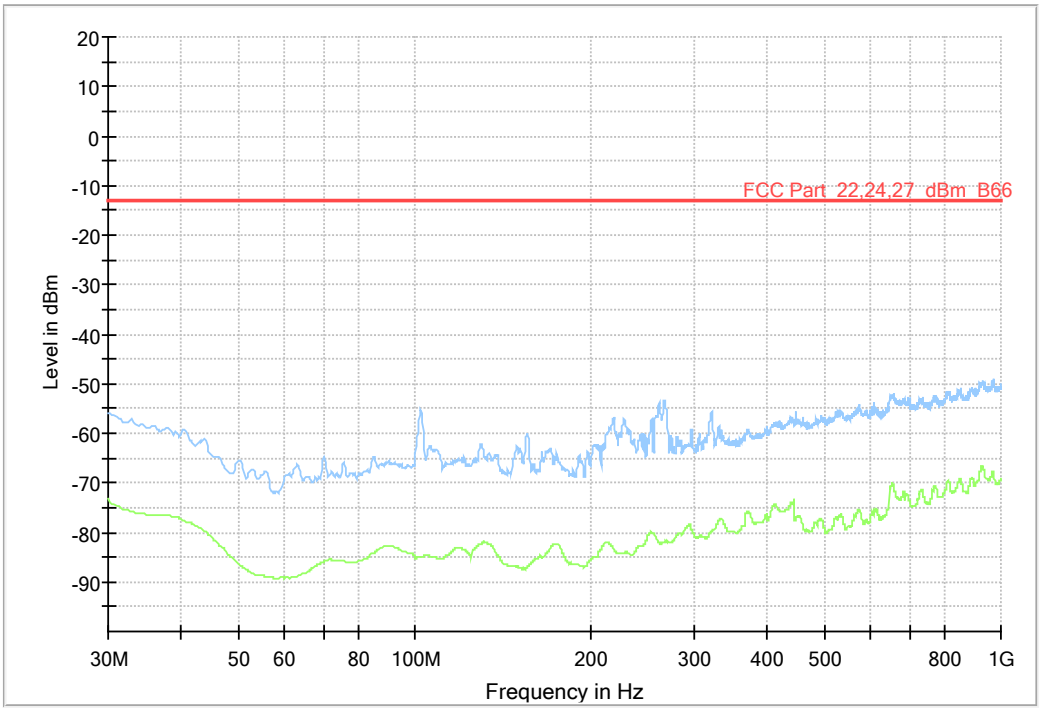
Diagram, Peak and average overview sweep, 30 – 1000 MHz at 3 m distance, configuration C6.



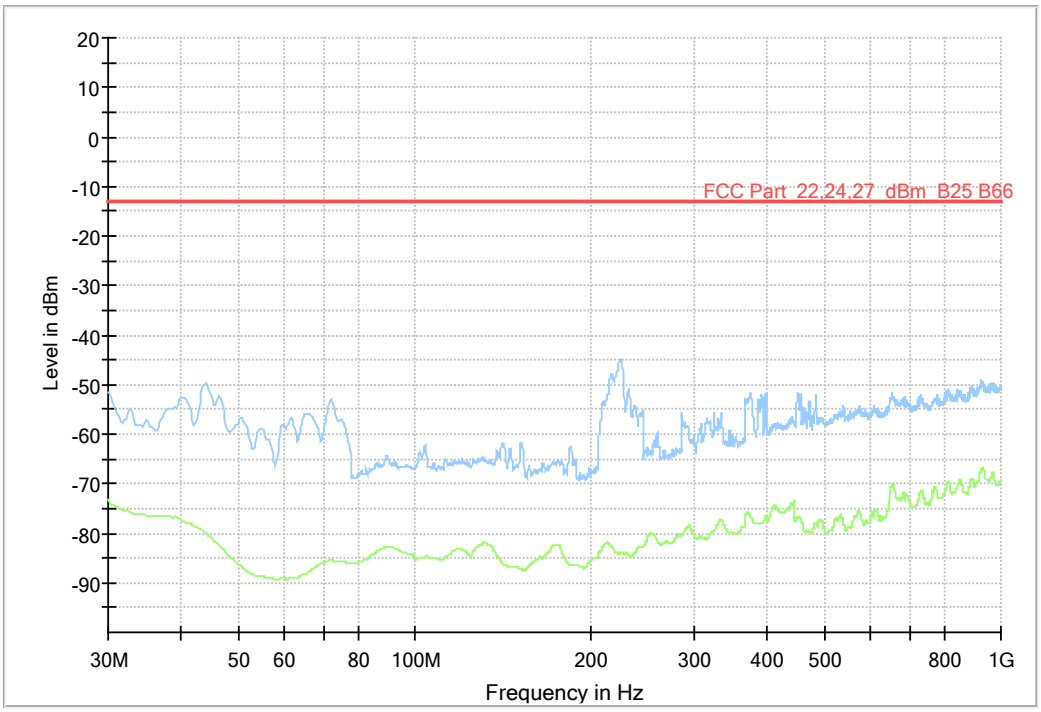
Diagram, Peak and average overview sweep, 30 – 1000 MHz at 3 m distance, configuration C7.



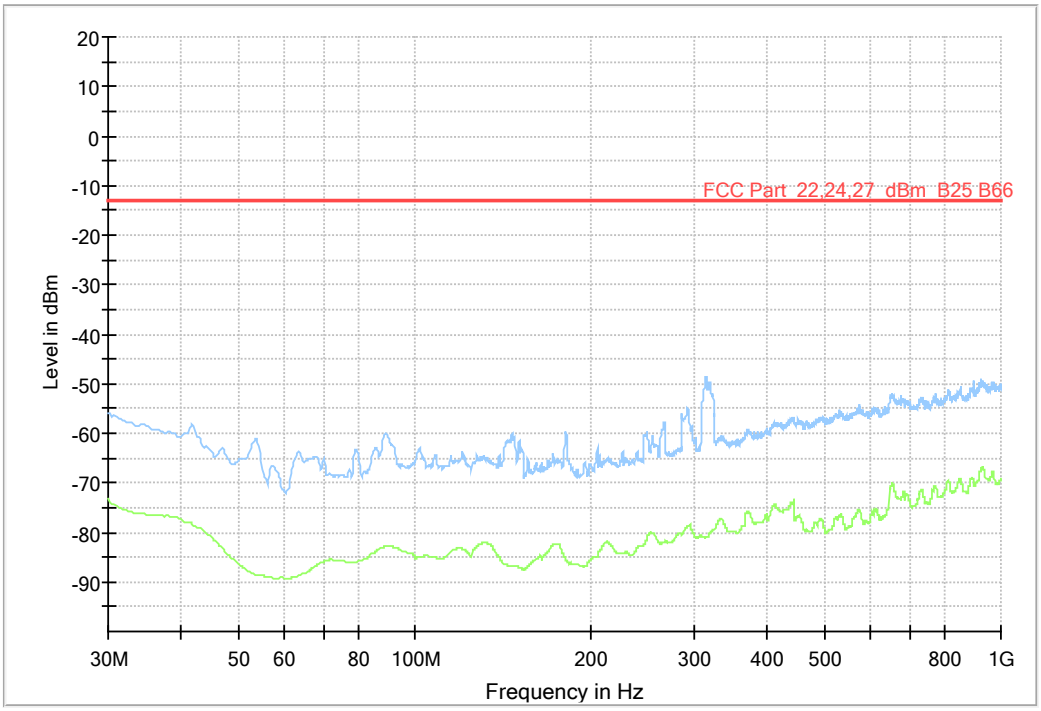
Diagram, Peak and average overview sweep, 30 – 1000 MHz at 3 m distance, configuration C8.



Diagram, Peak and average overview sweep, 30 – 1000 MHz at 3 m distance, configuration C9.



Diagram, Peak and average overview sweep, 30 – 1000 MHz at 3 m distance, configuration C10.

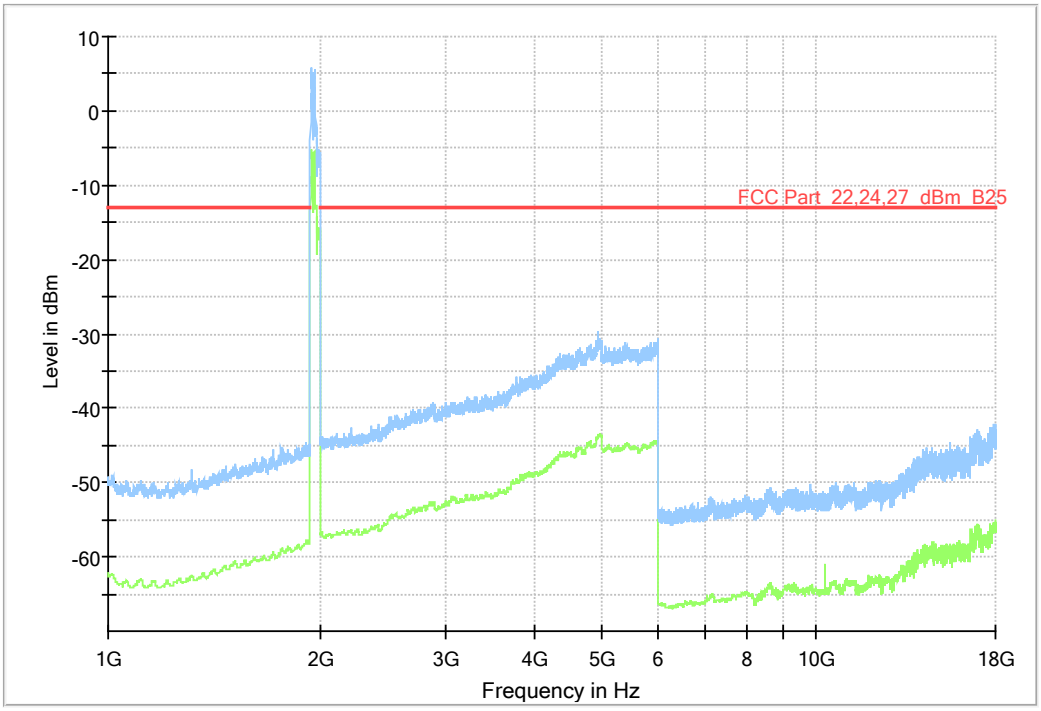


Diagram, Peak and average overview sweep, 30 – 1000 MHz at 3 m distance, configuration C11.

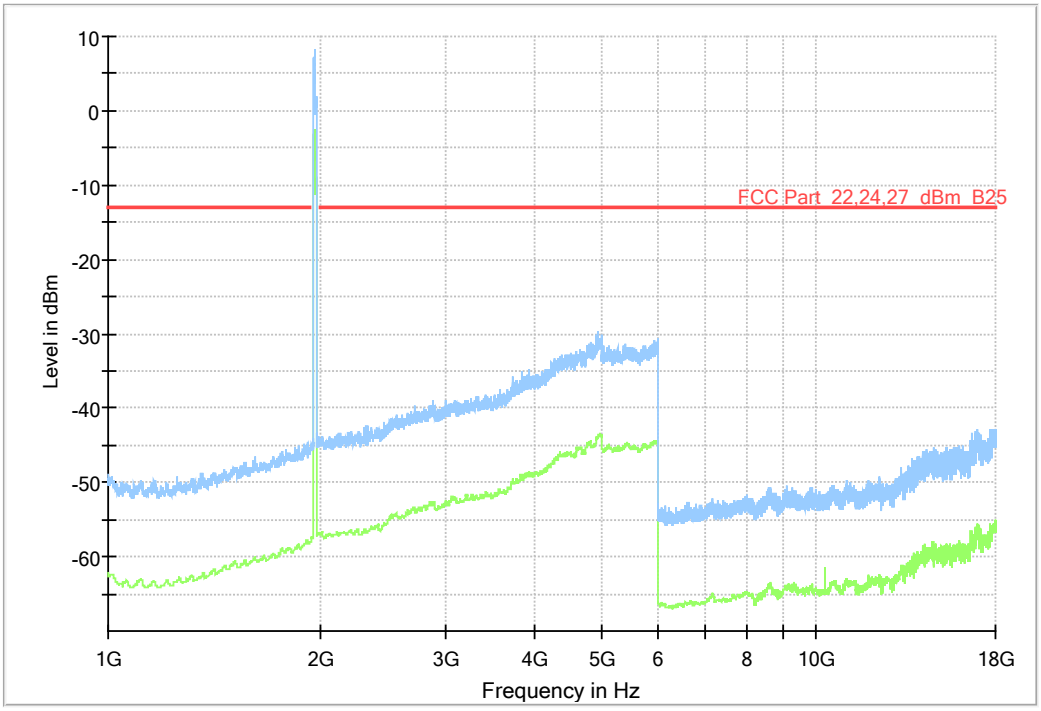
Measurement results, RMS

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

5.4 Test results, 1 – 18 GHz



Diagram, Peak and average overview sweep, 1 – 18 GHz at 3 m distance, configuration C1



Diagram, Peak and average overview sweep, 1 – 18 GHz at 3 m distance, configuration C2.

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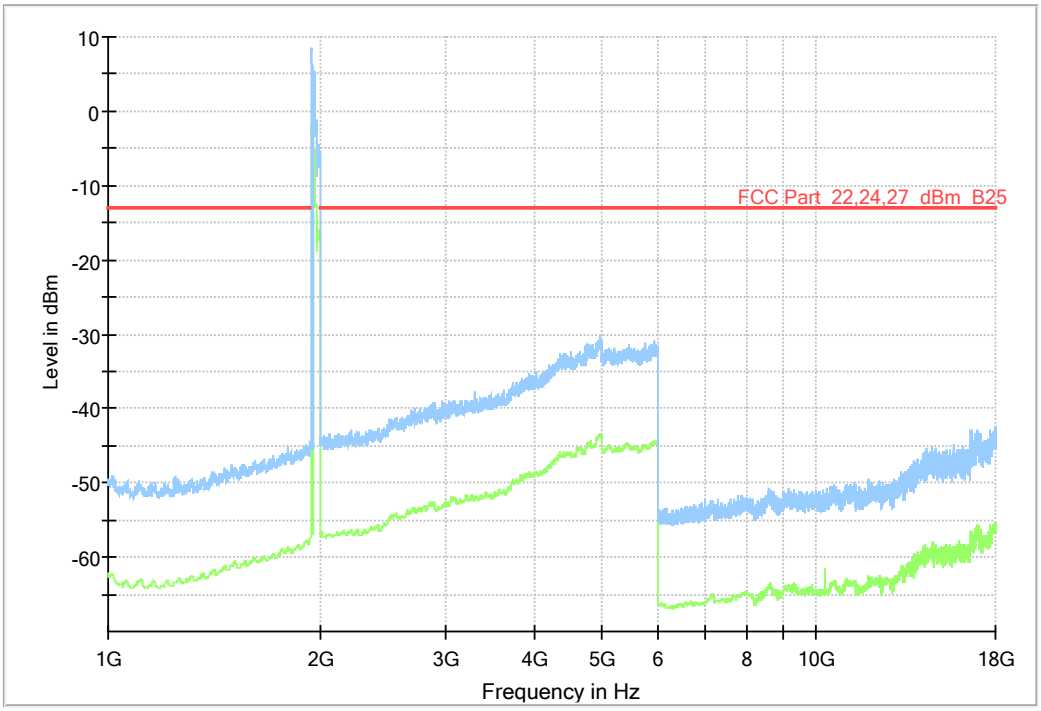
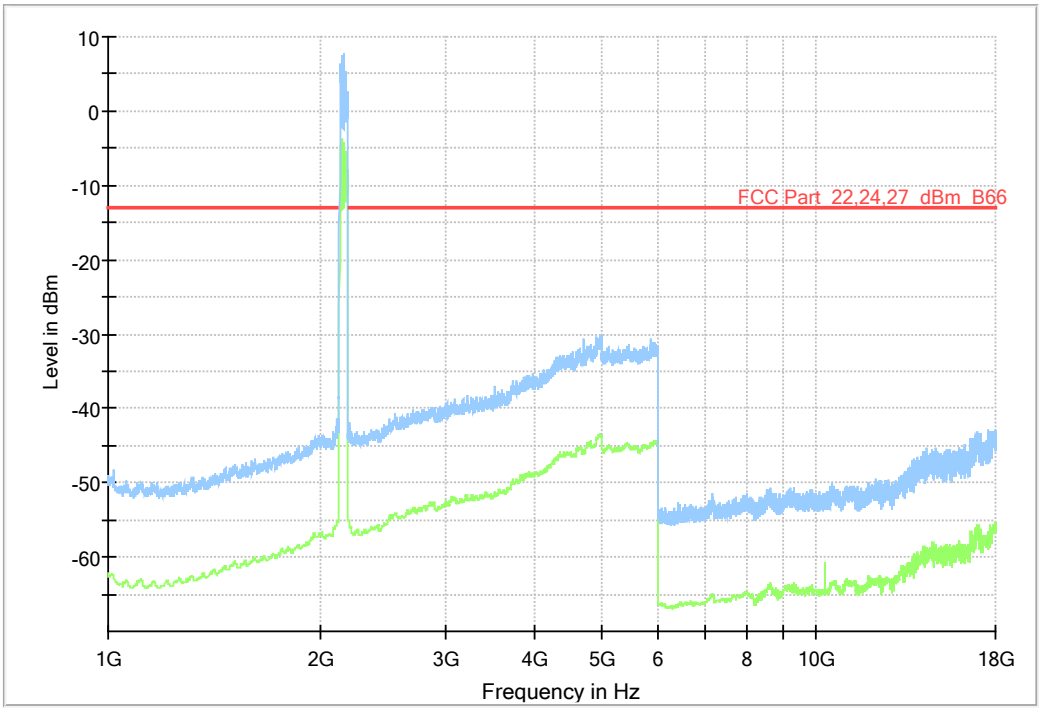
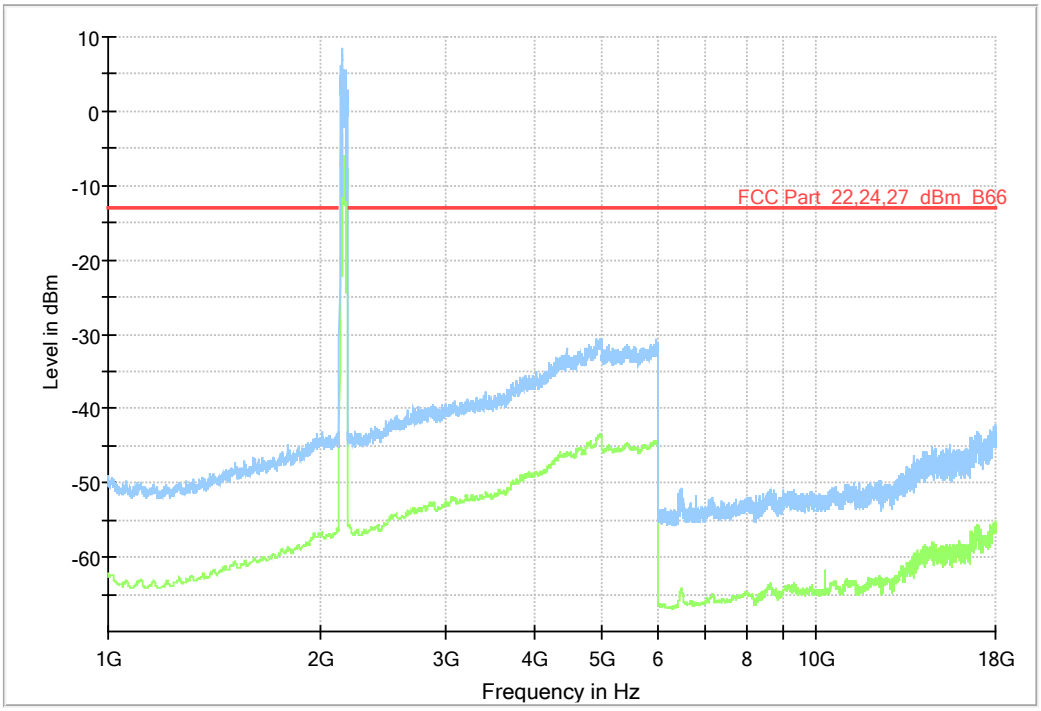


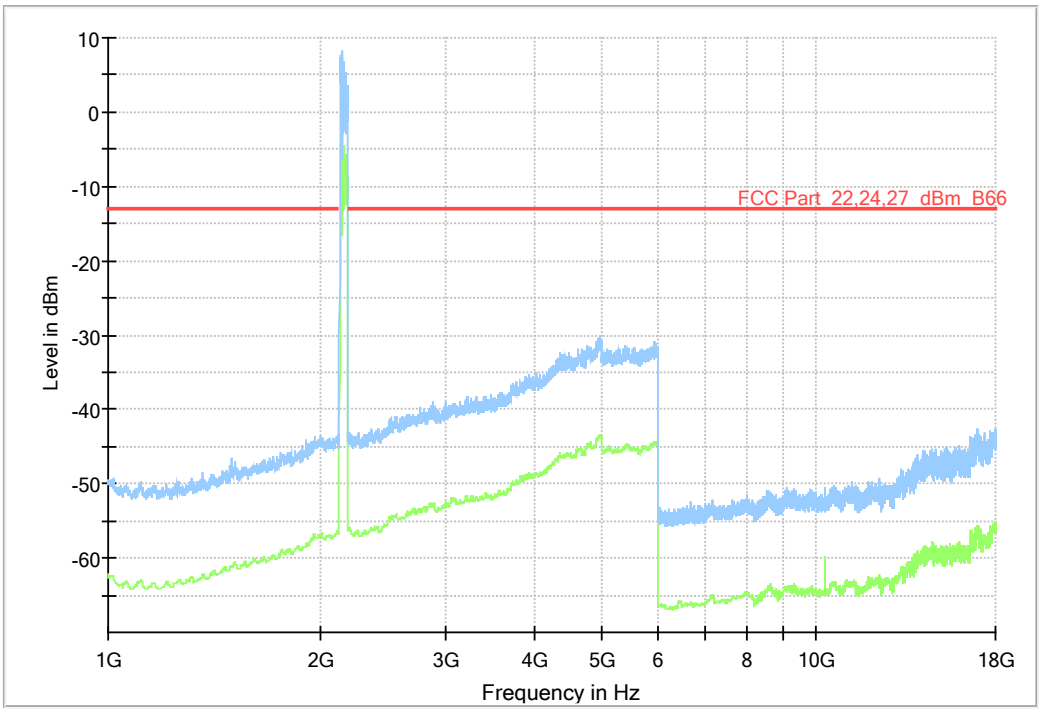
Diagram, Peak and average overview sweep, 1 – 18 GHz at 3 m distance, configuration C3.



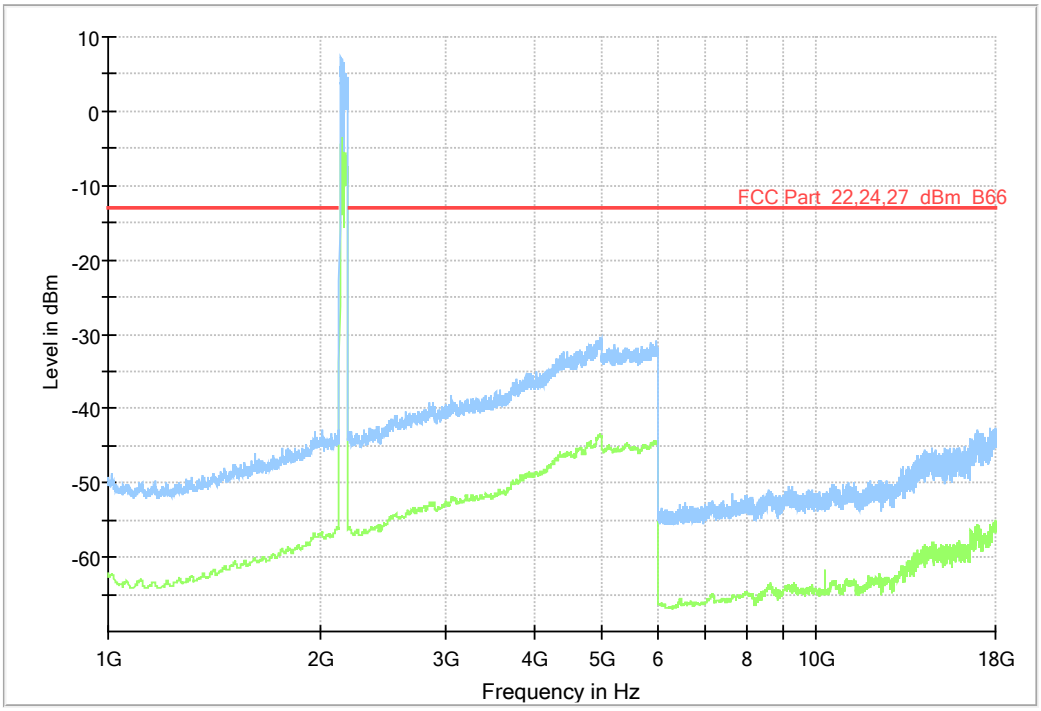
Diagram, Peak and average overview sweep, 1 – 18 GHz at 3 m distance, configuration C4.



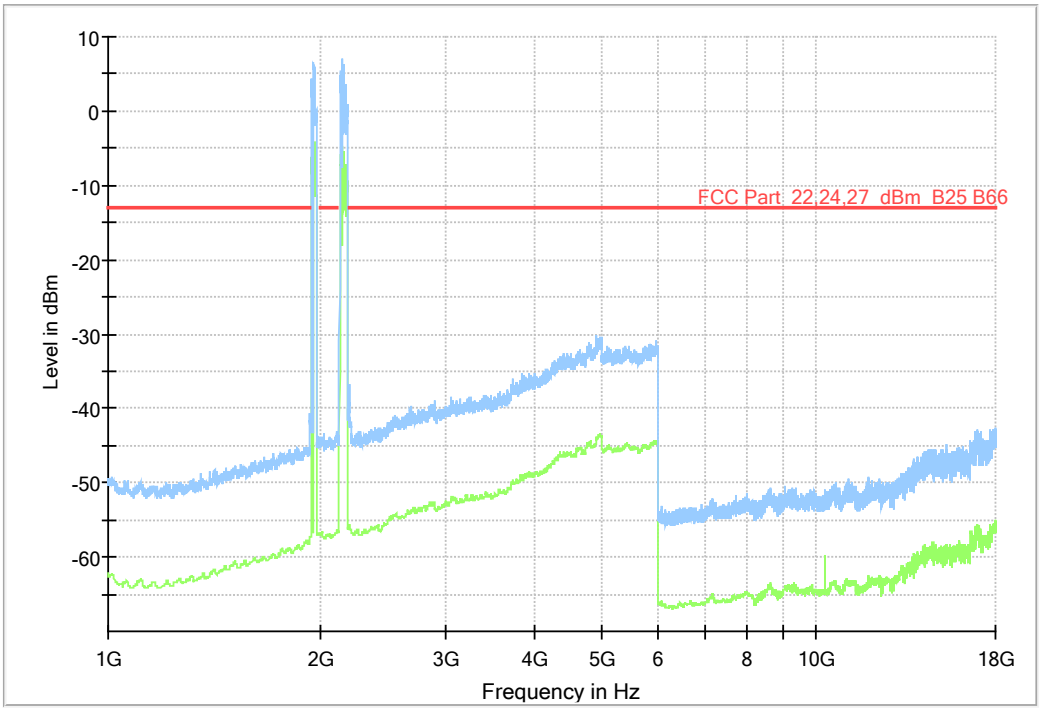
Diagram, Peak and average overview sweep, 1 – 18 GHz at 3 m distance, configuration C5.



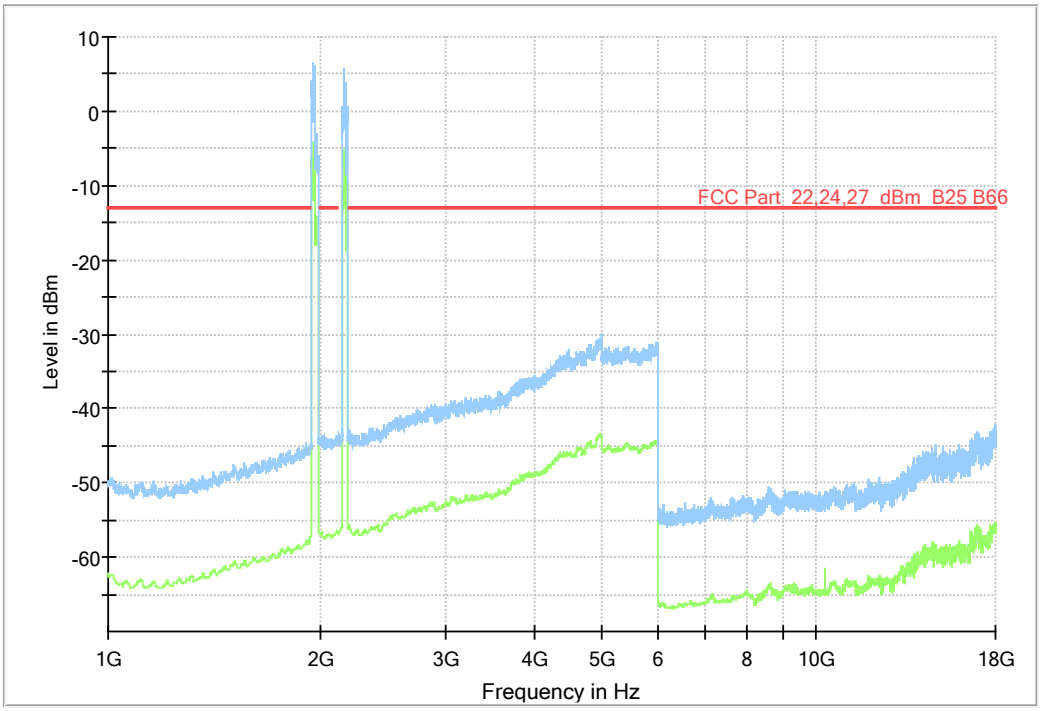
Diagram, Peak and average overview sweep, 1 – 18 GHz at 3 m distance, configuration C6.



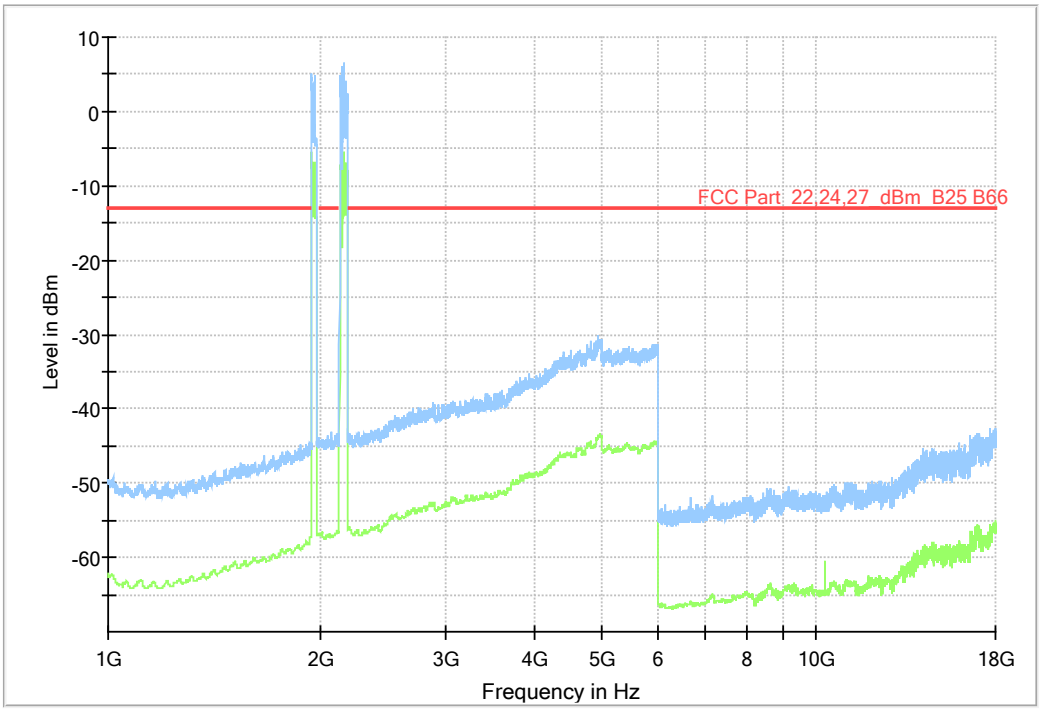
Diagram, Peak and average overview sweep, 1 – 18 GHz at 3 m distance, configuration C7.



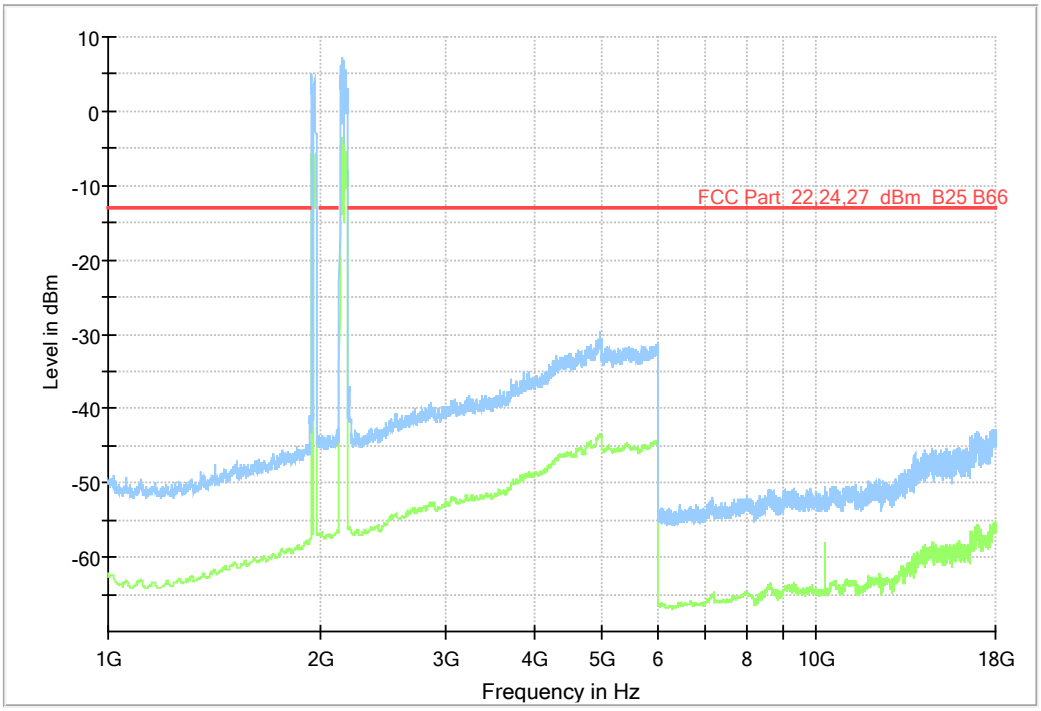
Diagram, Peak and average overview sweep, 1 – 18 GHz at 3 m distance, configuration C8.



Diagram, Peak and average overview sweep, 1 – 18 GHz at 3 m distance, configuration C9.



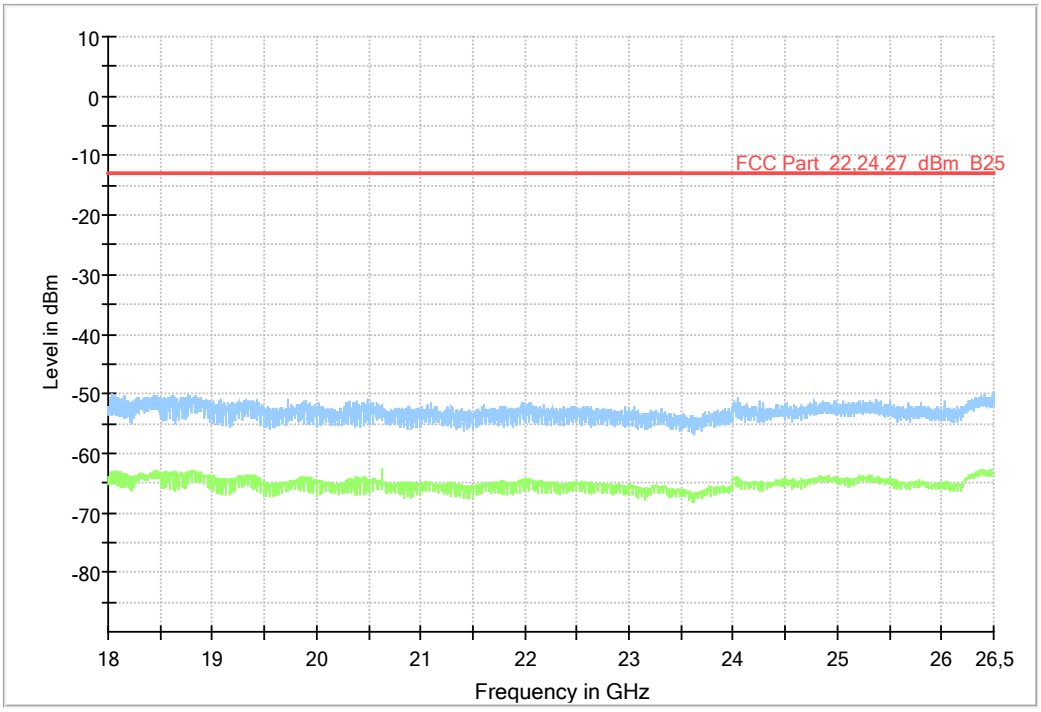
Diagram, Peak and average overview sweep, 1 – 18 GHz at 3 m distance, configuration C10.



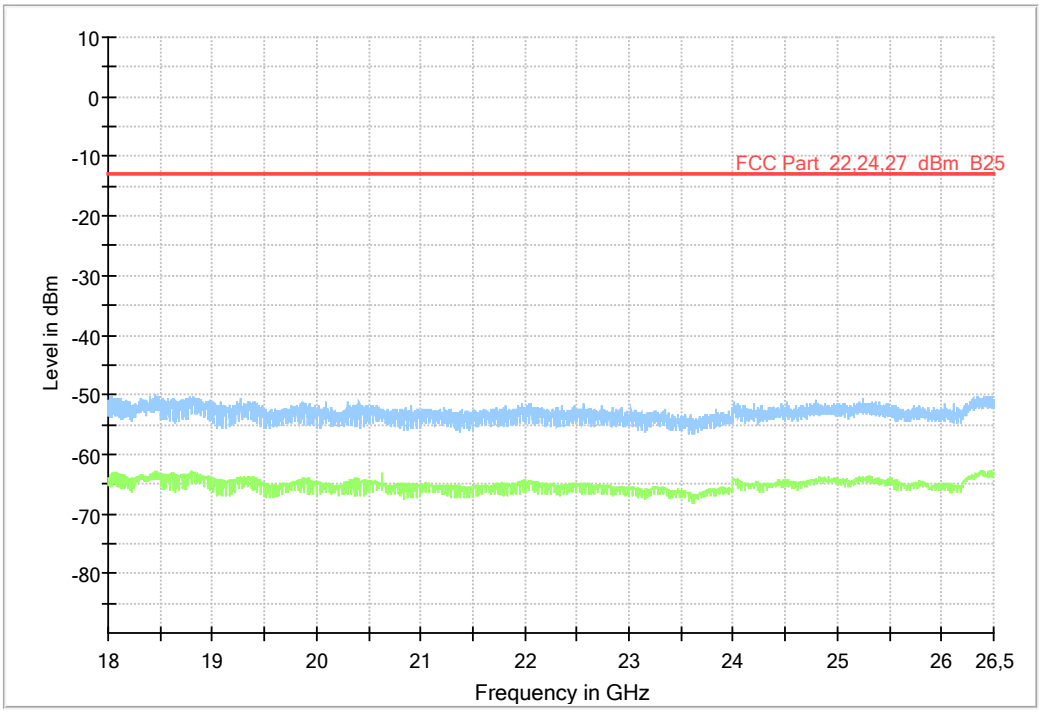
Diagram, Peak and average overview sweep, 1 – 18 GHz at 3 m distance, configuration C11.

Measurement results, RMS
All measured disturbances have a margin of more than 20 dB to the limit.

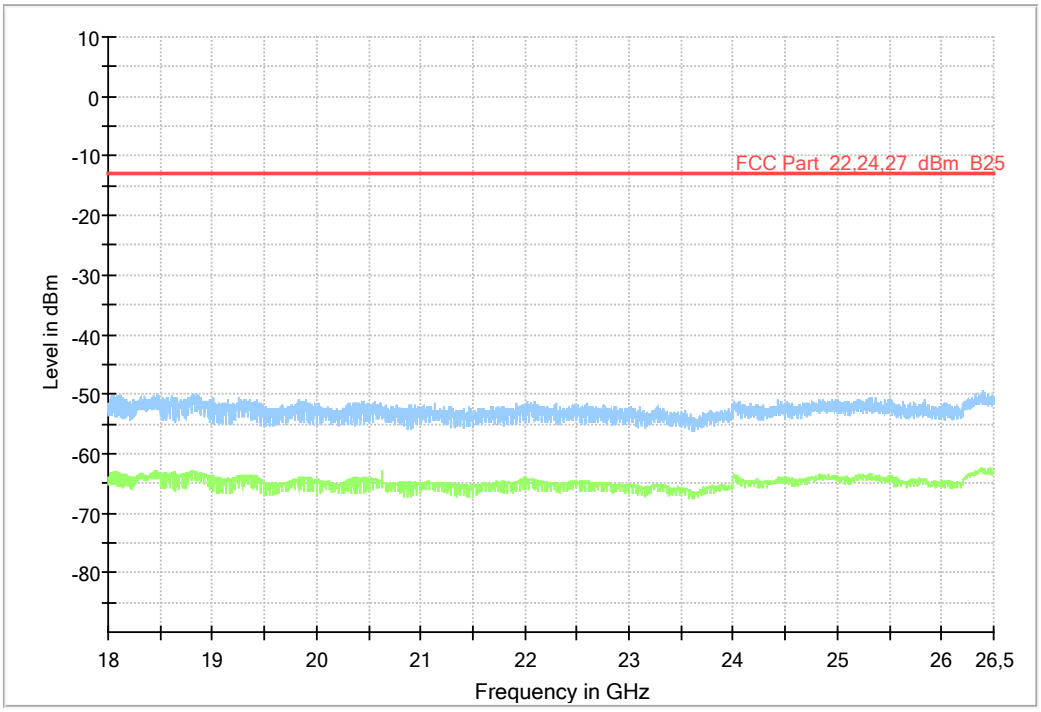
5.5 Test results, 18 – 26,5 GHz



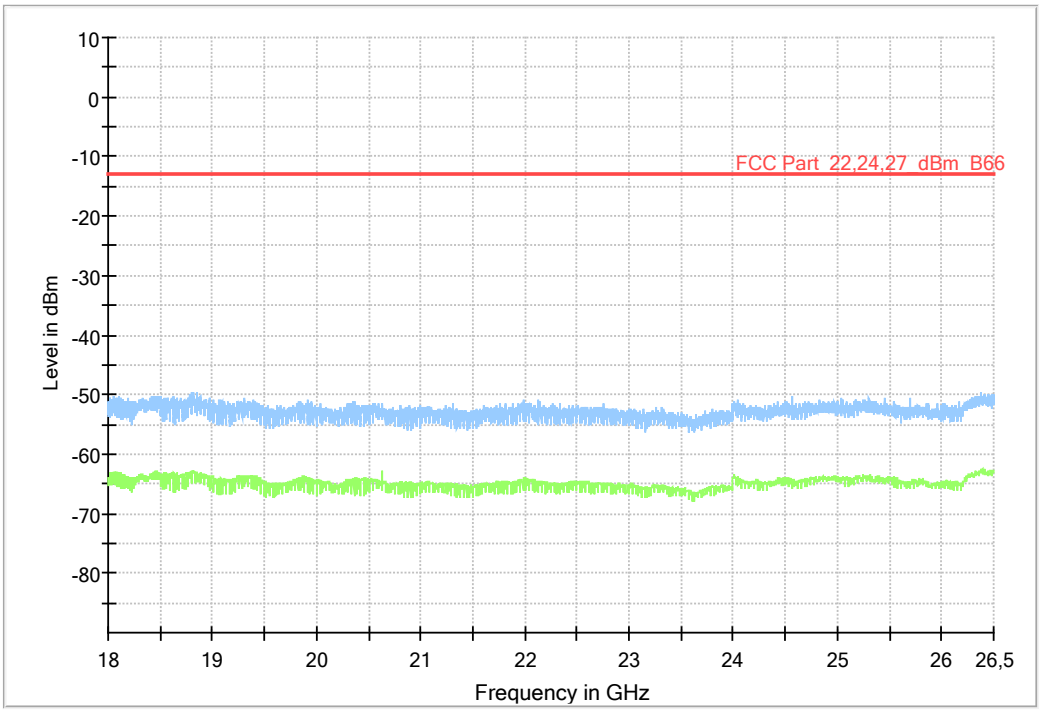
Diagram, Peak and average overview sweep, 18 – 26,5 GHz at 3 m distance, configuration C1.



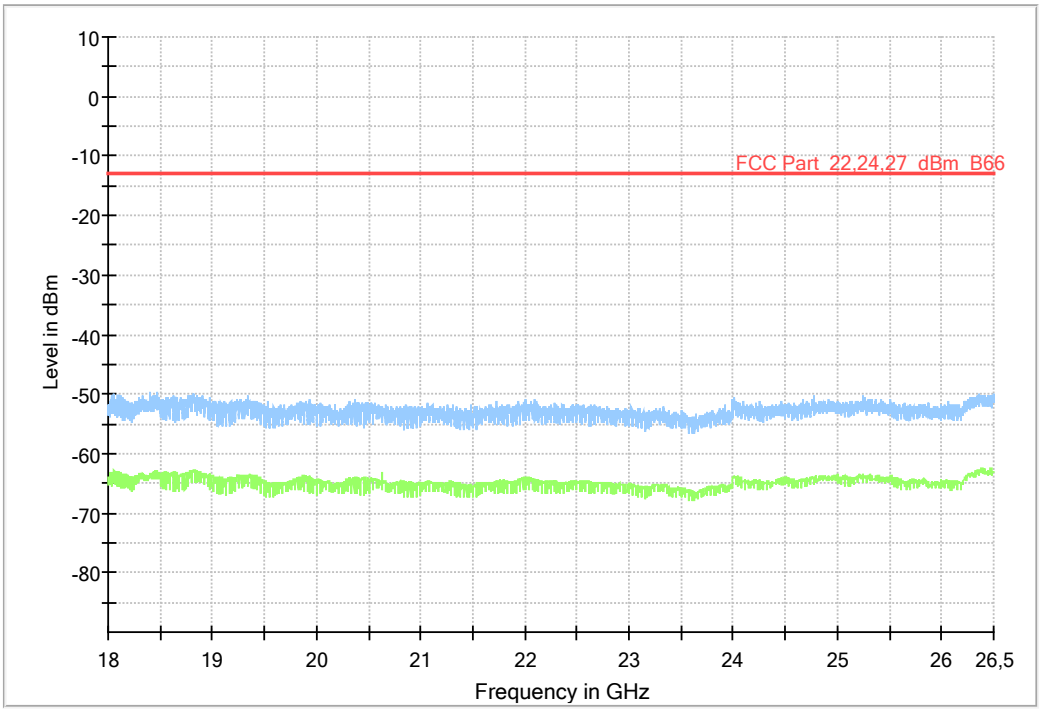
Diagram, Peak and average overview sweep, 18 – 26,5 GHz at 3 m distance, configuration C2.



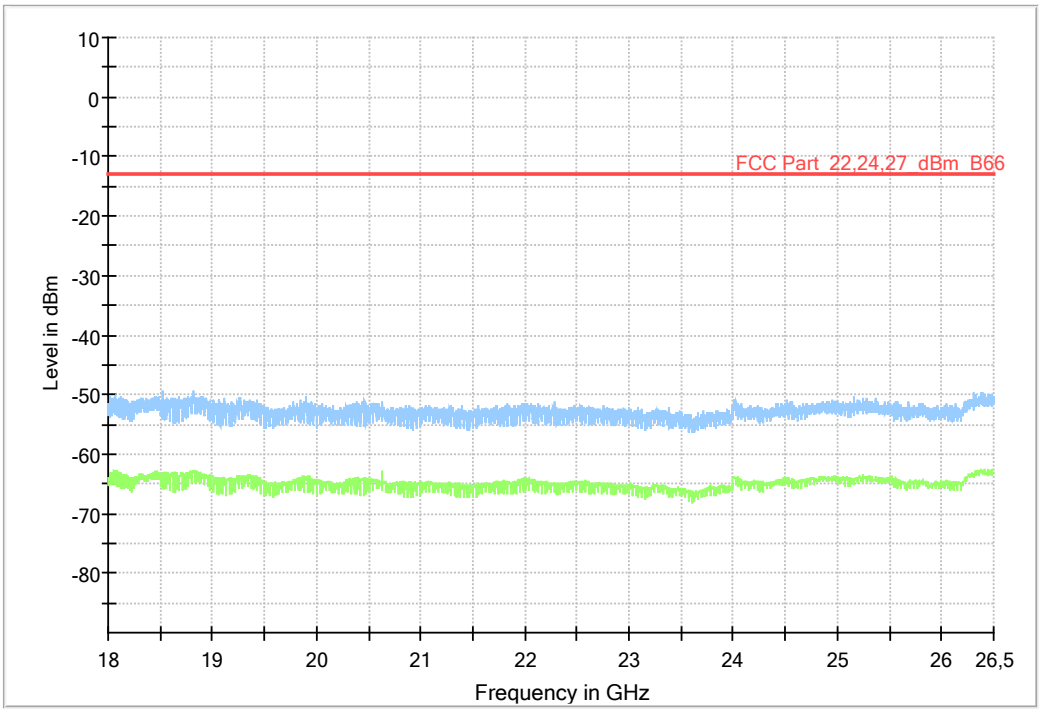
Diagram, Peak and average overview sweep, 18 – 26,5 GHz at 3 m distance, configuration C3.



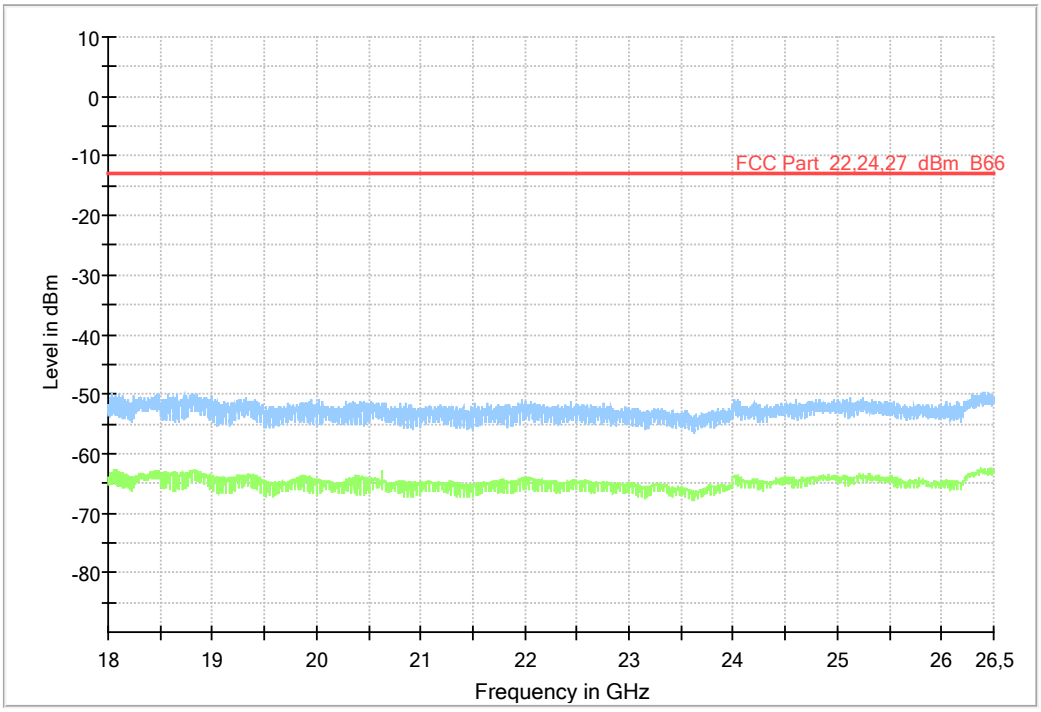
Diagram, Peak and average overview sweep, 18 – 26,5 GHz at 3 m distance, configuration C4.



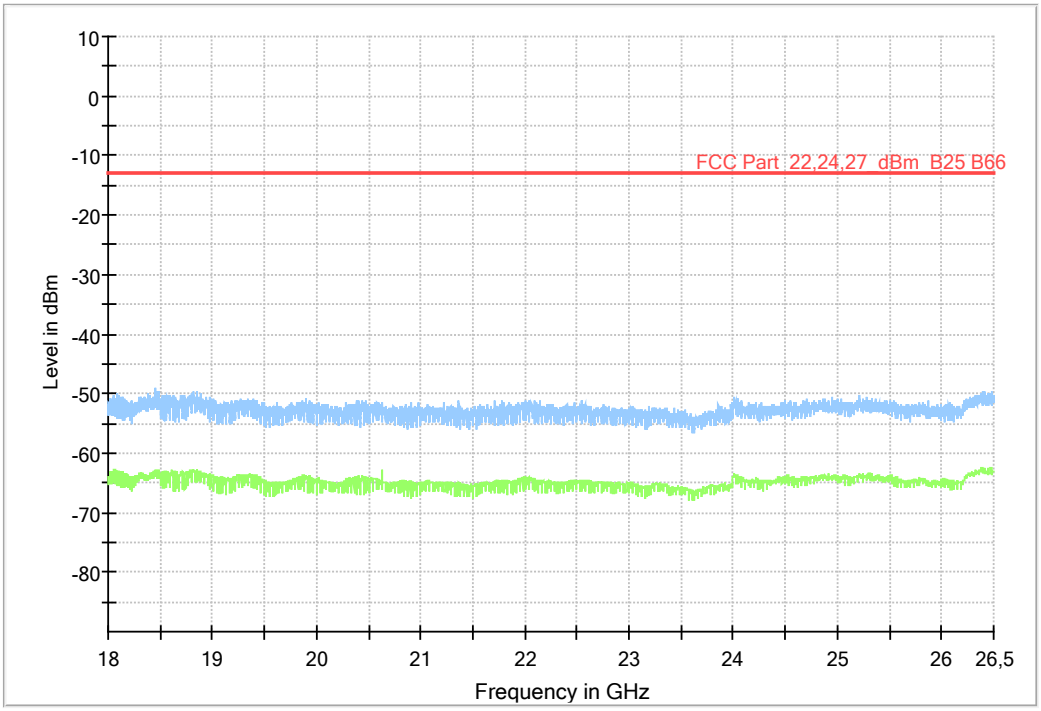
Diagram, Peak and average overview sweep, 18 – 26,5 GHz at 3 m distance, configuration C5.



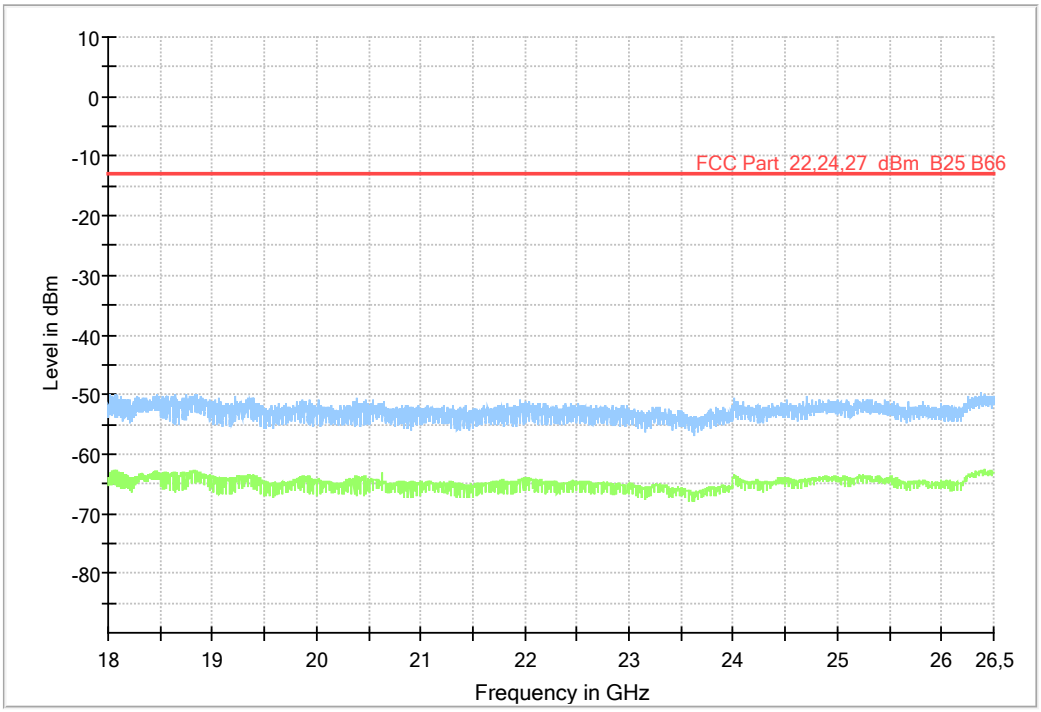
Diagram, Peak and average overview sweep, 18 – 26,5 GHz at 3 m distance, configuration C6.



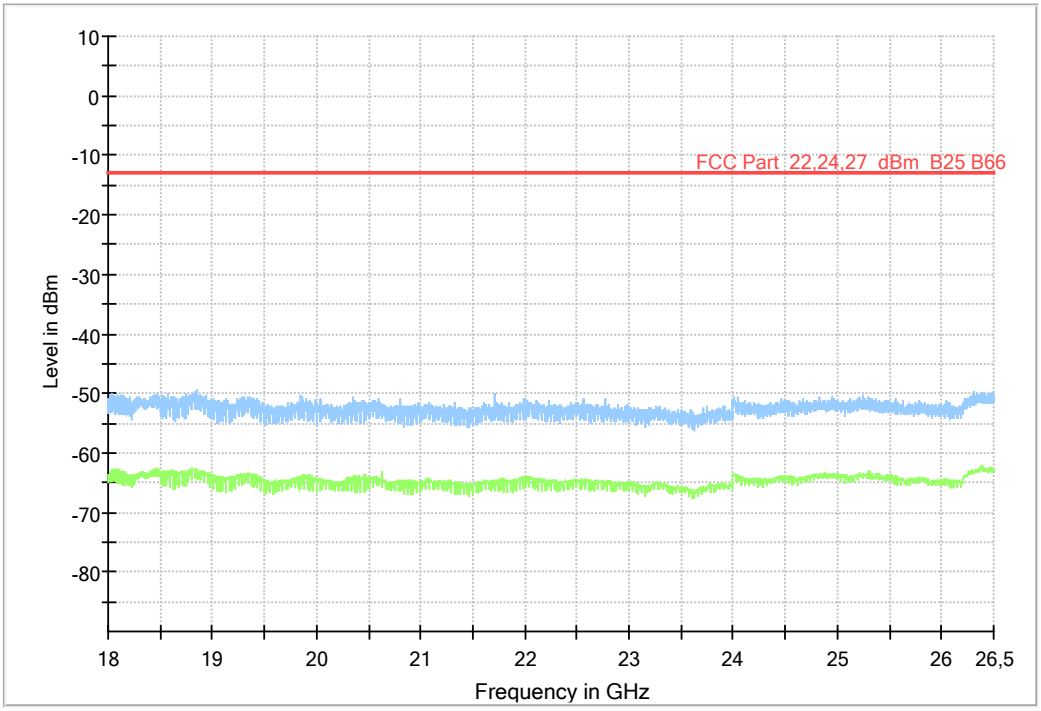
Diagram, Peak and average overview sweep, 18 – 26,5 GHz at 3 m distance, configuration C7.



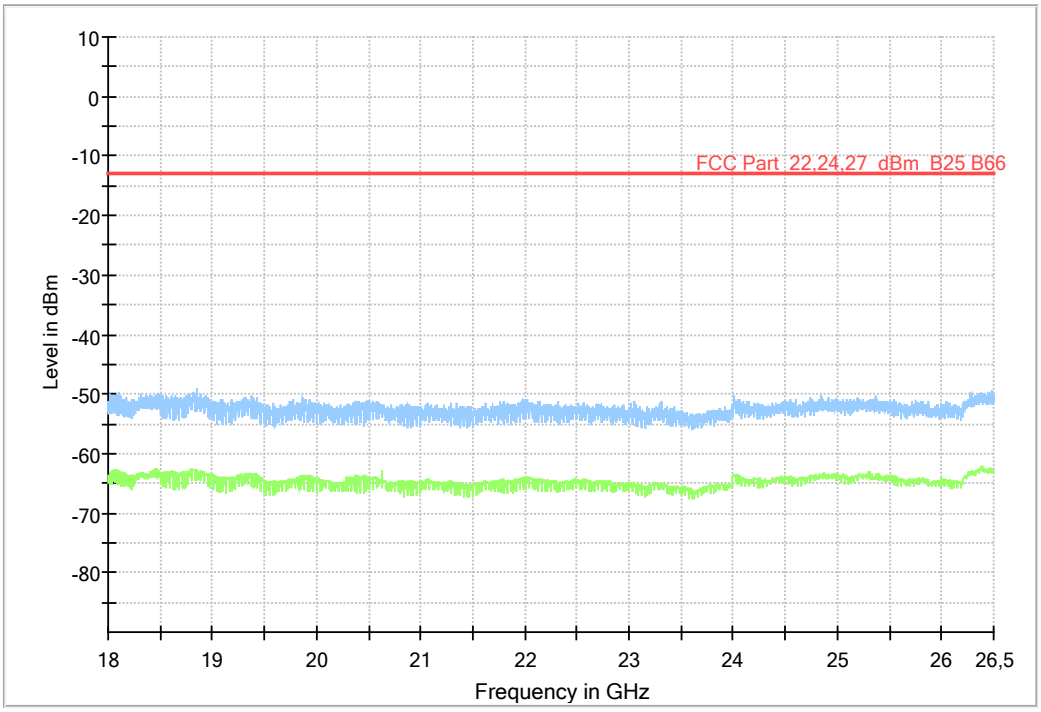
Diagram, Peak and average overview sweep, 18 – 26,5 GHz at 3 m distance, configuration C8.



Diagram, Peak and average overview sweep, 18 – 26,5 GHz at 3 m distance, configuration C9.



Diagram, Peak and average overview sweep, 18 – 26,5 GHz at 3 m distance, configuration C10.



Diagram, Peak and average overview sweep, 18 – 26,5 GHz at 3 m distance, configuration C11.

Measurement results, RMS
Only noise was detected

5.6 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 7, 2024	1 year
Open switch and control platform	Rohde & Schwarz	OSP130	32298	December 13, 2023	1 year
Open switch and control platform	Rohde & Schwarz	OSP-F7-B	32299	December 13, 2023	1 year
Coaxial cable	Schuner	SUCOFLEX 104	39003	October 10, 2024	1 year
Antenna	Rohde & Schwarz	HL562	32310	July17, 2024	3 years
Rotary join	Spinner	BN835027	31807	August 26 2024	1 year
Coaxial cable	Rosenberger	JFB293C	39141	July 1, 2024	1 year
Coaxial cable	Rosenberger	JFB293C	39142	July 1, 2024	1 year
Horn antenna	Rohde & Schwarz	HF907	32550	July 25, 2022	3 years
Preamplifier Signal path	Rohde & Schwarz	TS-PRE1 EMI	32297	July 4, 2024	1 year
Signal path	Rohde & Schwarz	EMI	39150	December 13 2023	1 year
Horn antenna	Bonn	BLMA 1826-5A	31247	September 13, 2023	3 years
Horn antenna	Bonn	BLMA 2640-5A	31248	September 14, 2023	3 years
Coaxial cable	MEGAPHASE	GC12-K1K1-140	39233	July 7,2024	1 year
Coaxial cable (blue)	MEGAPHASE	GC12-K1K1-315	39128	July 7,2024	1 year
Power Sensor	Rohde & Schwarz	NRP6AN	34447	July 2, 2024	1 year

6. EUT SOFTWARE

Software radio: CXP2021151/1-R23A113

7. EUT HARDWARE LIST

Product	Product No,	R-State	Serial Number
AIR 3283 B25 B66	KRD 901 892/2	R1C	E23F529480
SFP module	RDH 102 75/3	R1A	EA61XL17A7
SFP module	RDH 102 75/3	R1A	EA61XL17BF

8. TEST SET UP AND EUT PHOTOS

Test set up photos are in separate document 2407336STO-102 Annex 1.