



EMI - T E S T R E P O R T

- FCC Part 15.209, RSS-GEN -

Type / Model Name : Compact Max+

Product Description : RFID LF Reader for PET animal identification

Applicant : Datamars SA

Address : Via Industria 16
Lamone 6814, SWITZERLAND

Manufacturer : Datamars SA

Address : Via Industria 16
Lamone 6814, SWITZERLAND

Test Result according to the standards listed in clause 1 test standards:	POSITIVE
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Test Report No. :	80193276-08 Rev_2	07. July 2025
		Date of issue



FCC ID: NDX-CMAX2 IC ID: 4678A-CMAX2

Contents

1 TEST STANDARDS	3
2 EQUIPMENT UNDER TEST	4
2.1 Information provided by the Client	4
2.2 Sampling	4
2.3 Photo documentation of the EUT	4
2.4 Short description of the equipment under test (EUT)	4
2.5 Variants of the EUT	4
2.6 EUT operation mode	4
2.7 EUT configuration	5
2.8 Power supply system utilised	5
3 TEST RESULT SUMMARY	6
3.1 Revision history of test report	6
3.2 FINAL ASSESSMENT	6
4 TEST ENVIRONMENT	7
4.1 Address of the test laboratory	7
4.2 Environmental conditions	7
4.3 Statement of the measurement uncertainty	7
4.4 Conformity Decision Rule	8
4.5 Measurement protocol for FCC and ISED	8
5 TEST CONDITIONS AND RESULTS	10
5.1 Field strength of the fundamental wave	10
5.2 Spurious emissions	12
5.3 Bandwidth	18
6 USED TEST EQUIPMENT AND ACCESSORIES	20

ATTACHMENT A to ATTACHMENT C as separate supplement



FCC ID: NDX-CMAX2

IC ID: 4678A-CMAX2

1 TEST STANDARDS

The tests were performed according to following standards:

FCC Rules and Regulations Part 15, Subpart A - General (February 2025)

FCC Rules and Regulations Part 15, Subpart C - Intentional Radiators (February 2025)

Part 15, Subpart C, Section 15.207 Conducted limits

Part 15, Subpart C, Section 15.209 Radiated emission limits, general requirements

Part 15, Subpart C, Section 15.215 Additional provisions to the general radiated emission limitations.

RSS Rules and Regulations

RSS-210, Issue 11, June 2024 Licence-Exempt Radio Apparatus: Category I Equipment

ANSI C63.10: 2020 Testing Unlicensed Wireless Devices

FCC ID: NDX-CMAX2

IC ID: 4678A-CMAX2

2 EQUIPMENT UNDER TEST

2.1 Information provided by the Client

Please note, we do not take any responsibility for information provided by the client or his representative which may have an influence on the validity of the test results.

2.2 Sampling

The customer is responsible for the choice of sample. Sample configuration, start-up and operation is carried out by the customer or according his/her instructions.

2.3 Photo documentation of the EUT

Detailed photos see ATTACHMENT A and ATTACHMENT B

ATTACHMENT A: External views, Internal views

ATTACHMENT B: Test setup

2.4 Short description of the equipment under test (EUT)

The EUT is a RFID LF Reader for PET animal identification with a BLE IC for data communication.

Number of tested samples: 1

Serial number: SAMPLE-A0001

2.5 Variants of the EUT

There are no variants.

2.6 EUT operation mode

The equipment under test was operated during the measurement under the following conditions:

- Cont. TAG reading at 134.2 kHz

FCC ID: NDX-CMAX2**IC ID: 4678A-CMAX2**

2.7 EUT configuration

The following peripheral devices and interface cables were connected during the measurements:

- -

Model : -

2.8 Power supply system utilised

Power supply voltage, V_{nom} : 3.7V DC Polymer Li-ion battery

FCC ID: NDX-CMAX2

IC ID: 4678A-CMAX2

3 TEST RESULT SUMMARY

FCC Rule Part	RSS Rule Part	Description	Result
15.207	RSS-Gen, 8.8 RSS-210, 7	AC power line conducted emissions	N/A ¹⁾
15.209	RSS-Gen, 8.9 RSS-210, 7	Field strength of fundamental	passed
15.209	RSS-Gen, 8.9 RSS-210, 7	Spurious emissions	passed
15.215	RSS-Gen, 6.7 RSS-210, 7	Occupied bandwidth	passed

Notes:

1) not applicable because the EuT is battery powered and RFID is deactivated while charging. RFID is also deactivated when EuT is connected via USB to a PC.

3.1 Revision history of test report

Test report No	Rev.	Issue Date	Changes
80193276-00	0	06 March 2025	Initial test report
80193276-00	1	06 June 2025	SER1 AV comment added
80193276-00	2	07 July 2025	Plots size adjusted

The test report with the highest revision number replaces the previous test reports.

3.2 FINAL ASSESSMENT

The equipment under test fulfills the requirements cited in clause 1 test standards.

Date of receipt of test sample : acc. to storage records

Testing commenced on : 19 December 2024

Testing concluded on : 31 January 2025

Checked by: _____ Tested by: _____

Jürgen Pessinger
Radio Team

Laurin Roth
Radio Team

FCC ID: NDX-CMAX2

IC ID: 4678A-CMAX2

4 TEST ENVIRONMENT

4.1 Address of the test laboratory

CSA Group Bayern GmbH
Ohmstrasse 1-4
94342 STRASSKIRCHEN
GERMANY

4.2 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature: 15 - 35 ° C

Humidity: 30 - 60 %

Atmospheric pressure: 86 - 106 kPa

4.3 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. It is noted that the expanded measurement uncertainty corresponds to the measurement results from the standard measurement uncertainty multiplied by the coverage factor $k = 2$. The true value is located in the corresponding interval with a probability of 95 %. The measurement uncertainty was calculated for all measurements listed in this test report on basis of the ETSI Technical Report TR 100 028 Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 1 and Part 2. The results are documented in the quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Measurement Type	Range	Confidence Level (%)	Calculated Uncertainty
AC Conducted Spurious Emissions	0.15 MHz to 30 MHz	95%	± 3.29 dB
20 dB Bandwidth	Center frequency of EuT	95%	$\pm 2.5 \cdot 10^{-7}$
99% Occupied Bandwidth	Center frequency of EuT	95%	$\pm 2.5 \cdot 10^{-7}$
Radiated Spurious Emissions	9 kHz to 30 MHz	95%	± 3.53 dB
Radiated Spurious Emissions	30 MHz to 1000 MHz	95%	± 3.71 dB
Radiated Spurious Emissions	1000 MHz to 10000 MHz	95%	± 2.34 dB
Peak conducted output power	902 MHz to 928 MHz	95%	± 0.35 dB
Conducted Spurious Emissions	9 kHz to 10000 MHz	95%	± 2.15 dB

FCC ID: NDX-CMAX2

IC ID: 4678A-CMAX2

4.4 Conformity Decision Rule

The applied conformity decision rule is based on ILAC G8:09/2019 clause 4.2.1 Binary Statement for Simple Acceptance Rule ($w = 0$).

Details can be found in the procedure CSA_B_V50_29.

4.5 Measurement protocol for FCC and ISED

4.5.1 GENERAL INFORMATION

CSA Group Bayern GmbH is recognized as wireless testing laboratory under the CAB identifier:

FCC: DE 0011
ISED: DE0009

4.5.2 General Standard information

The test methods used comply with ANSI C63.10 - "Testing Unlicensed Wireless Devices".

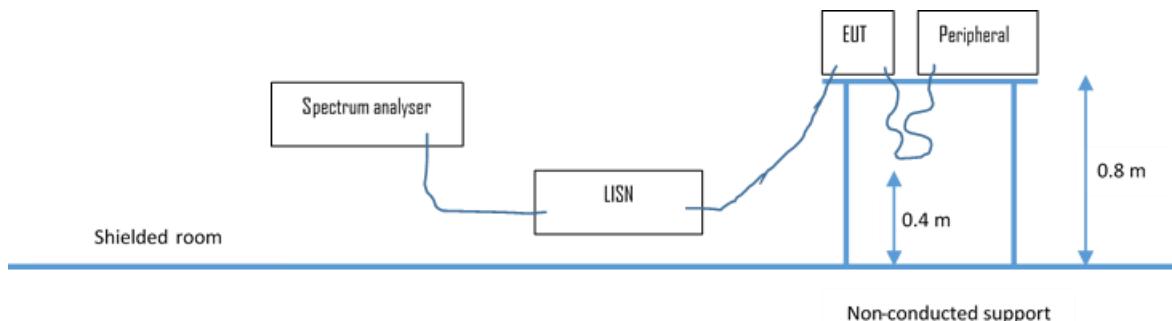
4.5.2.1 Justification

The equipment under test (EUT) is configured in a typical user arrangement in accordance with the manufacturer's instructions.

4.5.3 Details of test procedures

4.5.3.1 Conducted emission

Test setup according ANSI C63.10



The final level, expressed in $\text{dB}\mu\text{V}$, is arrived at by taking the reading directly from the Spectrum analyser. This level is compared to the limit.

To convert between $\text{dB}\mu\text{V}$ and μV , the following conversions apply:

$$\begin{aligned}\text{dB}\mu\text{V} &= 20(\log \mu\text{V}) \\ \mu\text{V} &= \text{Inverse log}(\text{dB}\mu\text{V}/20)\end{aligned}$$

Conducted emissions on the 50 Hz and/or 60 Hz power interface of the EUT are measured in the frequency range of 150 kHz to 30 MHz. The measurements are performed using a receiver, which has CISPR characteristic bandwidth and quasi-peak detection and a Line Impedance Stabilization Network (LISN) with 50Ω / $50 \mu\text{H}$ (CISPR 16) characteristics. The receiver is protected by means of an impedance matched pulse limiter connected directly to the RF input. Table top equipment is placed on a non-conducting table 80 centimetres above the floor and is positioned 40 centimetres from the vertical ground plane (wall) of the screen room. If the minimum limit margin appears to be less than 20 dB with a peak mode measurement, the emission is re-measured using a tuned receiver with quasi-peak and average detection and recorded on the data sheets.

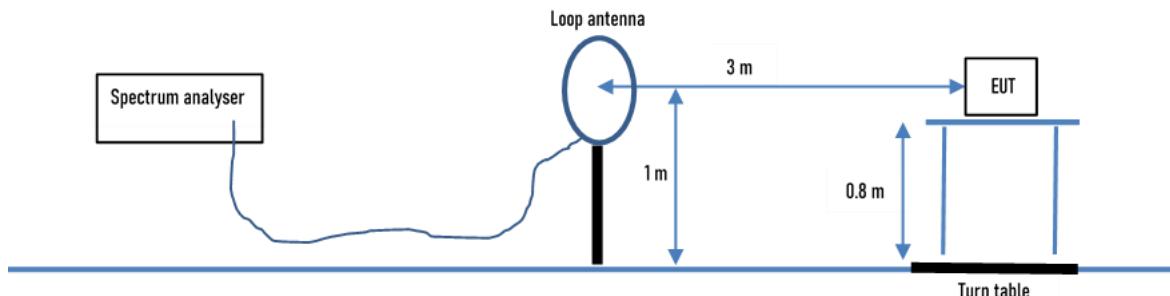
FCC ID: NDX-CMAX2

IC ID: 4678A-CMAX2

4.5.3.2 Radiated emission

4.5.3.2.1 OATS1 test site (9 kHz - 30 MHz):

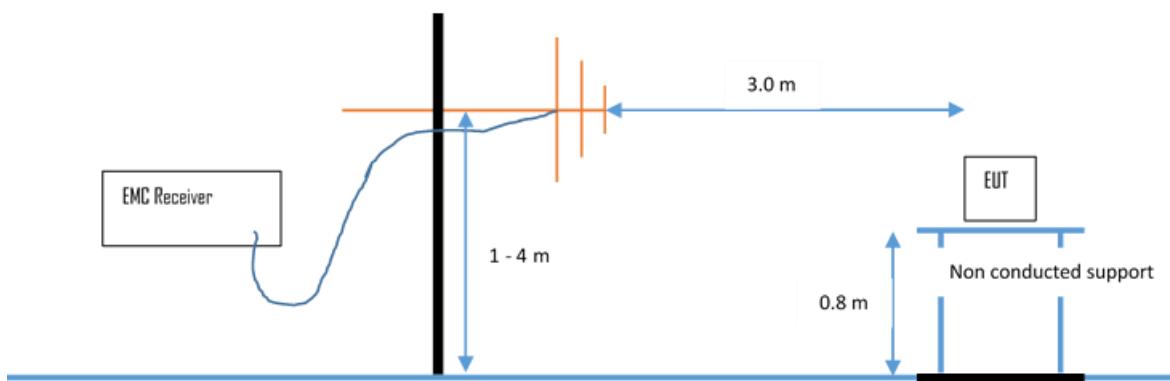
Test setup according ANSI C63.10



Emissions from the EUT are measured in the frequency range of 9 MHz to 30 MHz using a tuned receiver and a calibrated loop antenna. Table top equipment is placed on a 1.0 X 1.5 m non-conducting table 80 centimetres above the ground plane. Cables to simulators/testers (if used in this test) are routed through the center of the table and to a screened room located outside the test area. The antenna is positioned 3, 10 or 30 metres horizontally from the EUT and is repeated vertically. To locate maximum emissions from the test sample the antenna is varied along the site axis and the EUT is rotated 360 degrees.

4.5.3.2.2 OATS1 test site (30 MHz - 1 GHz):

Test setup according ANSI C63.10.



Spurious emissions from the EUT are measured in the frequency range of 30 MHz to 1000 MHz using a tuned receiver and appropriate broadband linearly polarised antennas. Measurements between 30 MHz and 1000 MHz are made with 120 kHz/6 dB bandwidth and quasi-peak detection. Table top equipment is placed on a 1.0 X 1.5 m non-conducting table 80 centimetres above the ground plane. Floor standing equipment is placed directly on the turntable/ground plane. Cables to simulators/testers (if used in this test) are routed through the center of the table and to a screened room located outside the test area. To locate maximum emissions from the test sample the antenna is varied in height from 1 to 4 metres and the EUT is rotated 360 degrees. The final level in dB μ V/m is calculated by taking the reading from the EMI receiver (Level dB μ V) and adding the correction factors and cable loss factor (dB). The FCC limit is subtracted from this result in order to provide the limit margin listed in the measurement protocol.

The resolution bandwidth setting:

30 MHz – 1000 MHz: RBW: 120 kHz

Example:

Frequency (MHz)	Level (dB μ V)	+	Factor (dB)	=	Level (dB μ V/m)	-	Limit (dB μ V/m)	=	Delta (dB)
719.0	75.0	+	32.6	=	107.6	-	110.0	=	-2.4

FCC ID: NDX-CMAX2 IC ID: 4678A-CMAX2

5 TEST CONDITIONS AND RESULTS

5.1 Field strength of the fundamental wave

For test instruments and accessories used see section 6 Part **CPR 1**.

5.1.1 Description of the test location

Test location: SAC2
 Test distance: 3 m

5.1.2 Photo documentation of the test set-up

See ATTACHMENT B to this test report.

5.1.3 Applicable standard

FCC Part 15, Section 15.209(a) / RSS-GEN, Section 8.9

5.1.4 Description of Measurement

The radiated power of the spurious emission from the EUT is measured in a test setup following the procedures set out in ANSI C63.10.

5.1.5 Test result accd. to FCC

a) Result at a measurement distance of 3 m

Frequency (kHz)	Level Pk @3m (dB μ V)	Ant. factor (dB 1/m)	Field strength @3m dB(μ V/m)
134,2	79,3	20,0	99,3

b) Result extrapolated to a distance of 300 m

Frequency (kHz)	Field strength @3m dB(μ V/m)	Extrapolation factor @300m (dB)	Field strength level @300m dB(μ V/m)	Limit dB(μ V/m)	Delta (dB)
134,2	99,3	-80,0	17,3	25,05	-7,8

Limit according to FCC Part 15, Section 15.209(a):

Frequency (kHz)	Field strength of fundamental wave		Measurement distance (metres)
	(μ V/m)	dB(μ V/m)	
134.2	17.88	25.05	300

FCC ID: NDX-CMAX2
IC ID: 4678A-CMAX2
5.1.6 Test result accd. to RSS

a) Result at a measurement distance of 3 m

Frequency (kHz)	Level Pk @3m (dB μ A)	Ant. factor (dB 1/m)	Field strength @3m dB(μ A/m)
134,20	27,8	20,0	47,8

b) Result extrapolated to a distance of 300 m

Frequency (kHz)	Field strength @3m dB(μ A/m)	Extrapolation factor @300m (dB)	Field strength level @300m dB(μ A/m)	Limit dB(μ A/m)	Delta (dB)
134,20	47,8	-80,0	-34,2	-26,5	-7,7

Limit according to RSS-GEN, Section 8.9:

Frequency (kHz)	Field strength of fundamental wave		Measurement distance (metres)
	(μ A/m)	dB(μ A/m)	
134.2	0.04747	-26.5	300

 The requirements are **FULFILLED**.

 Remarks: Peak measurement below Average Limit.

FCC ID: NDX-CMAX2

IC ID: 4678A-CMAX2

5.2 Spurious emissions

For test instruments and accessories used see section 6 Part **SER 1, SER 2**.

5.2.1 Description of the test location

Test location: SAC2
Test distance: 3 metres

5.2.2 Photo documentation of the test set-up

See ATTACHMENT B to this test report.

5.2.3 Applicable standard

FCC Part 15, Section 15.209 / RSS-GEN, Section 8.9

5.2.4 Description of Measurement

The radiated power of the spurious emission from the EUT is measured in a test setup following the procedures set out in ANSI C63.10.

The resolution bandwidth during the measurement is as follows:

9 kHz – 150 kHz: RBW: 200 Hz

150 kHz – 30 MHz: RBW: 9 kHz

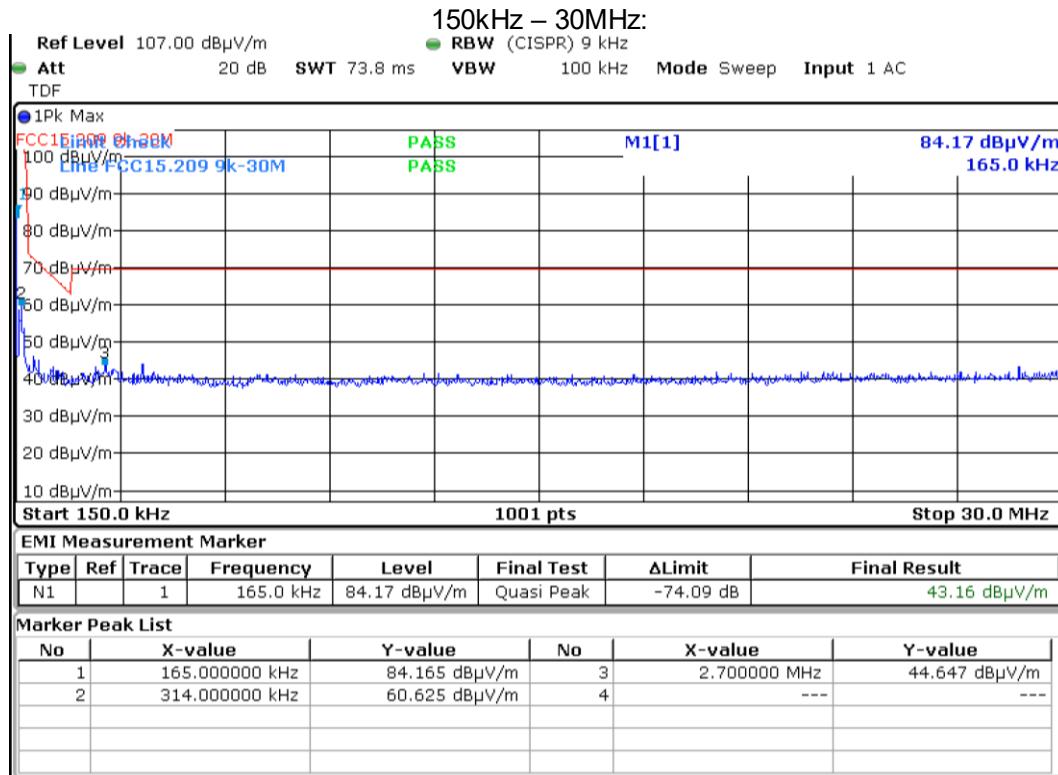
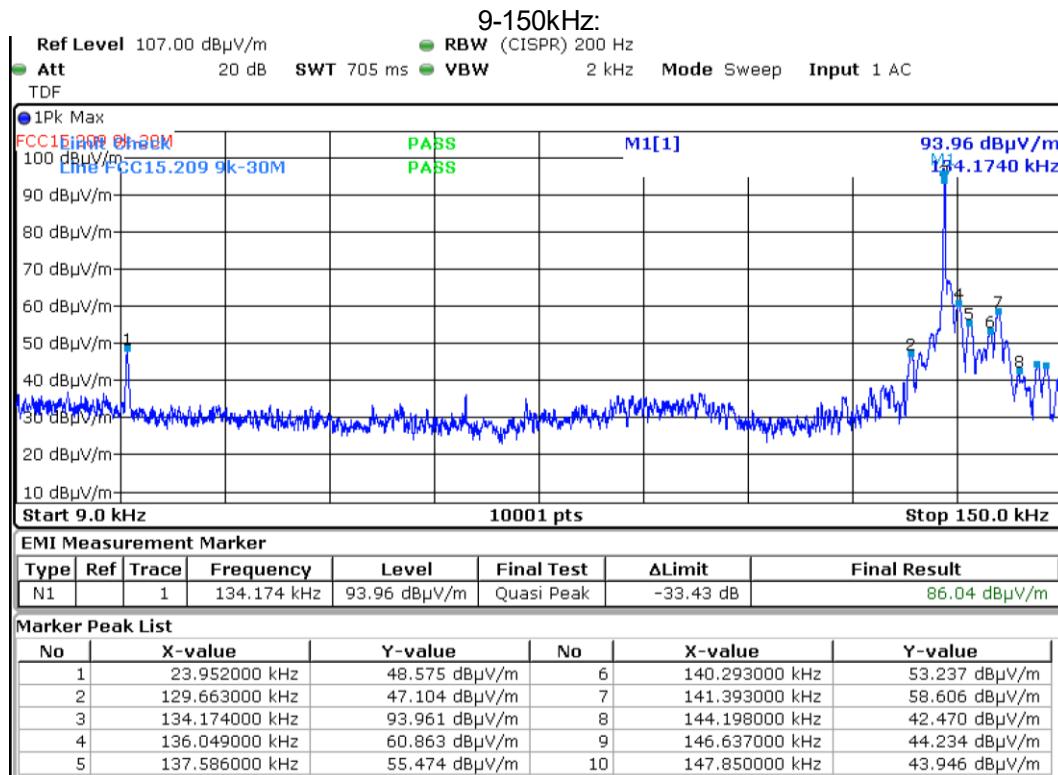
30 MHz – 1000 MHz: RBW: 120 kHz

Detector:QP (In frequency range 9-90 kHz and 110-490 kHz a linear average detector is used)

FCC ID: NDX-CMAX2

IC ID: 4678A-CMAX2

5.2.5 Test result < 30MHz



FCC ID: NDX-CMAX2
IC ID: 4678A-CMAX2

FCC Part 15.209 Radiated emission limits; general requirements (< 30 MHz)					
Frequency (kHz)	PK reading incl. Antenna factor (dB μ V/m)	Distance corr. (dB)	corr. level (dB μ V/m)	Limit (dB μ V/m)	Dlimit (dB)
23.95	48.6	-80.0	-31.4	40.0	-71.4
129.66	47.1	-80.0	-32.9	25.3	-58.2
134.17	94.0	-80.0	14.0	25.1	-11.1
136.05	60.9	-80.0	-19.1	24.9	-44.1
141.39	58.6	-80.0	-21.4	24.6	-46.0
146.64	44.2	-80.0	-35.8	24.3	-60.0

Peak values below Average Limit

RSS-GEN

Frequency (kHz)	Level Pk @3m including antenna factor (dB μ A/m)	Extrapolation factor @300m (dB)	Field strength level @300m dB(μ A/m)	Limit 20log(6.37/f) dB(μ A/m)	Delta (dB)
23.95	-2.9	-80.0	-82.9	-11.5	-71.4
129.66	-4.4	-80.0	-84.4	-26.2	-58.2
134.17	42.5	-80.0	-37.5	-26.5	-11.0
136.05	9.4	-80.0	-70.6	-26.6	-44.0
141.39	7.1	-80.0	-72.9	-26.9	-46.0
146.64	-7.3	-80.0	-87.3	-27.2	-60.1

Peak values below Average Limit

FCC ID: NDX-CMAX2

IC ID: 4678A-CMAX2

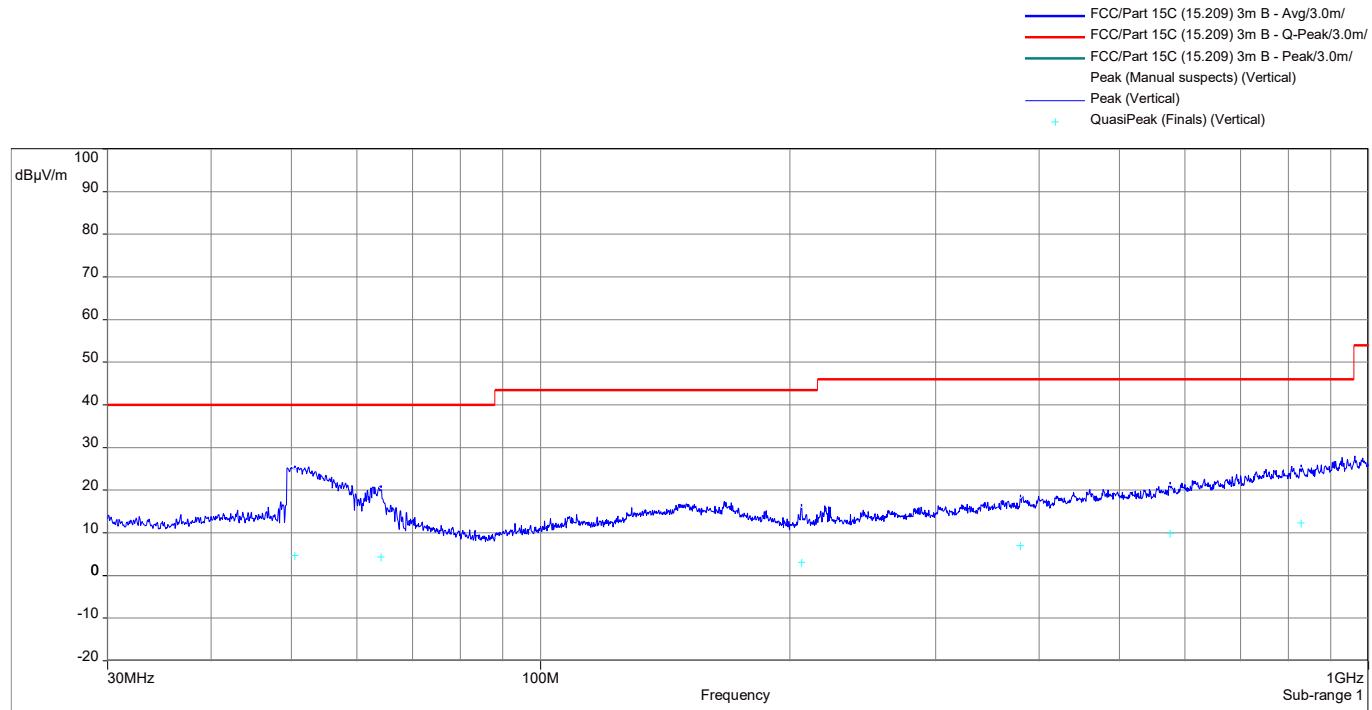
5.2.6 Test result 30 MHz < f < 1 GHz

Position	Vertical
Limit	FCC/Part 15C (15.209) 3m

Finals

Frequency (Hz)	QuasiPeak (dB μ V/m)	QP Margin	QP Limit (dB μ V/m)	angle	height	polarization	RBW (Hz)	Meas.Time (s)	Correction (dB)
50.5442319 M	4.65	-35.35	40	5	1	Vertical	120000	0.01	-12.567
64.1550365 M	4.35	-35.65	40	5	1	Vertical	120000	0.01	-13.624
206.6232023 M	3.054	-40.446	43.5	29	1.5	Vertical	120000	0.01	-14.029
379.9210623 M	7.056	-38.944	46	188	4	Vertical	120000	0.01	-9.468
575.6012323 M	9.944	-36.056	46	236	4	Vertical	120000	0.01	-6.289
828.8057043 M	12.354	-33.646	46	246	1.5	Vertical	120000	0.01	-3.083

Graph



Date:01/31/2025 11:20 Operator: Operation mode:

FCC ID: NDX-CMAX2

IC ID: 4678A-CMAX2

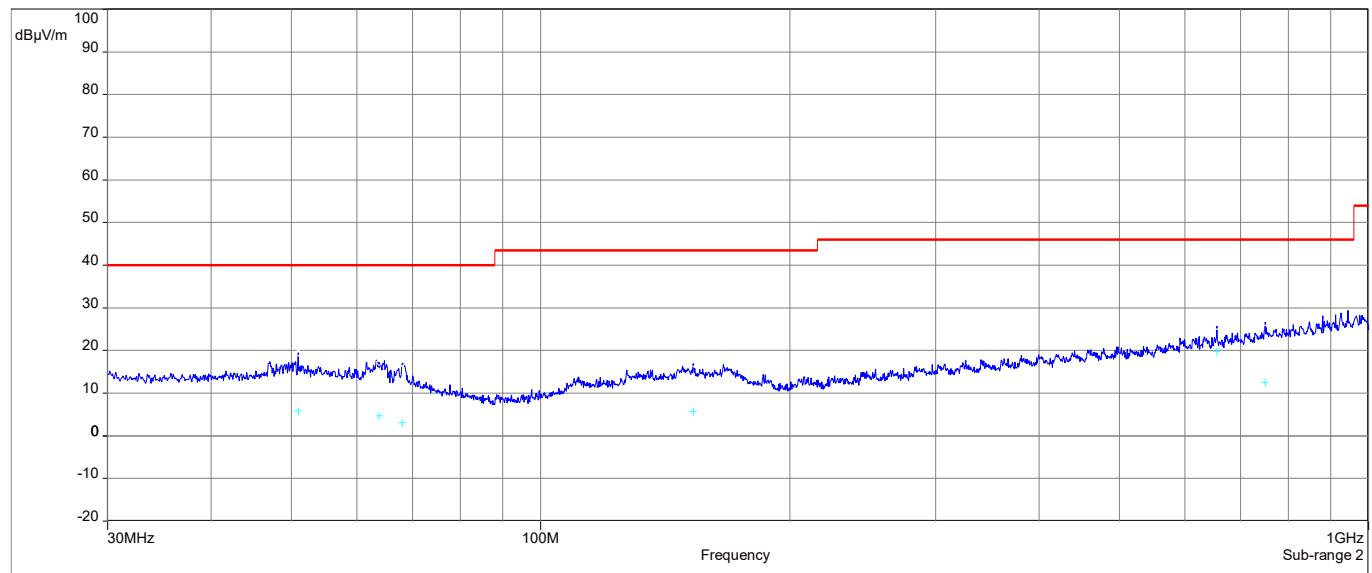
Position	Horizontal
Limit	FCC/Part 15C (15.209) 3m

Finals

Frequency (Hz)	QuasiPeak (dB μ V/m)	QP Margin	QP Limit (dB μ V/m)	angle	height	polarization	RBW (Hz)	Meas.Time (s)	Correction (dB)
50.9531961 M	5.894	-34.106	40	359	3.5	Horizontal	120000	0.01	-11.342
63.8084753 M	4.712	-35.288	40	357	2	Horizontal	120000	0.01	-12.903
68.0903269 M	3.094	-36.906	40	357	2	Horizontal	120000	0.01	-13.904
152.8084286 M	5.713	-37.787	43.5	359	2	Horizontal	120000	0.01	-11.584
656.0195415 M	19.781	-26.219	46	359	1	Horizontal	120000	0.01	-4.737
749.7214668 M	12.553	-33.447	46	0	1.5	Horizontal	120000	0.01	-3.044

Graph

— FCC/Part 15C (15.209) 3m B - Avg/3.0m/
— FCC/Part 15C (15.209) 3m B - Q-Peak/3.0m/
— FCC/Part 15C (15.209) 3m B - Peak/3.0m/
— Peak (Manual suspects) (Horizontal)
— Peak (Horizontal)
+ quasipeak (finals) (vertical) (Horizontal)



Date:01/31/2025 11:20 Operator: Operation mode:

FCC ID: NDX-CMAX2**IC ID: 4678A-CMAX2**

Limit according to FCC Part 15, Section 15.209(a)

Frequency (MHz)	Field strength of spurious emissions (μ V/m)	dB(μ V/m)	Measurement distance (metres)
0.009 - 0.490	2400/F(kHz)	--	300
0.490 - 1.705	24000/F (kHz)	--	30
1.705 - 30.0	30	29.5	30
30 - 88	100	40	3
88 - 216	150	43.5	3
216 - 960	200	46	3
Above 960	500	54	3

Limit according to RSS-Gen, Section 8.9

Frequency (MHz)	Field strength of spurious emissions (μ A/m)	dB(μ A/m)	Measurement distance (metres)
0.009 - 0.490	6.37/F(kHz)	--	300 (Note 1)
0.490 - 1.705	63.7/F (kHz)	--	30
1.705 - 30.0	0.08	-22	30
Frequency (MHz)	Field strength of spurious emissions (μ V/m)	dB(μ V/m)	Measurement distance (metres)
30 - 88	100	40	3
88 - 216	150	43.5	3
216 - 960	200	46	3
Above 960	500	54	3

Note 1: The emission limits for the ranges 9-90 kHz and 110-490 kHz are based on measurements employing a linear average detector.

The requirements are **FULFILLED**.Remarks: Measurement has been performed up to 1000 MHz.



FCC ID: NDX-CMAX2

IC ID: 4678A-CMAX2

5.3 Bandwidth

For test instruments and accessories used see section 6 Part MB.

5.3.1 Description of the test location

Test location: Shielded Room SR6

5.3.2 Photo documentation of the test set-up

See ATTACHMENT B to this test report.

5.3.3 Applicable standard

According to FCC Part 15, Section 15.215(c) / RSS-GEN, Section 6.7

5.3.4 Test result

Measured Bandwidth	result (kHz)	Limit (kHz)
20dB	1.76	--
99%	9.21	--

The requirements are **FULFILLED**.

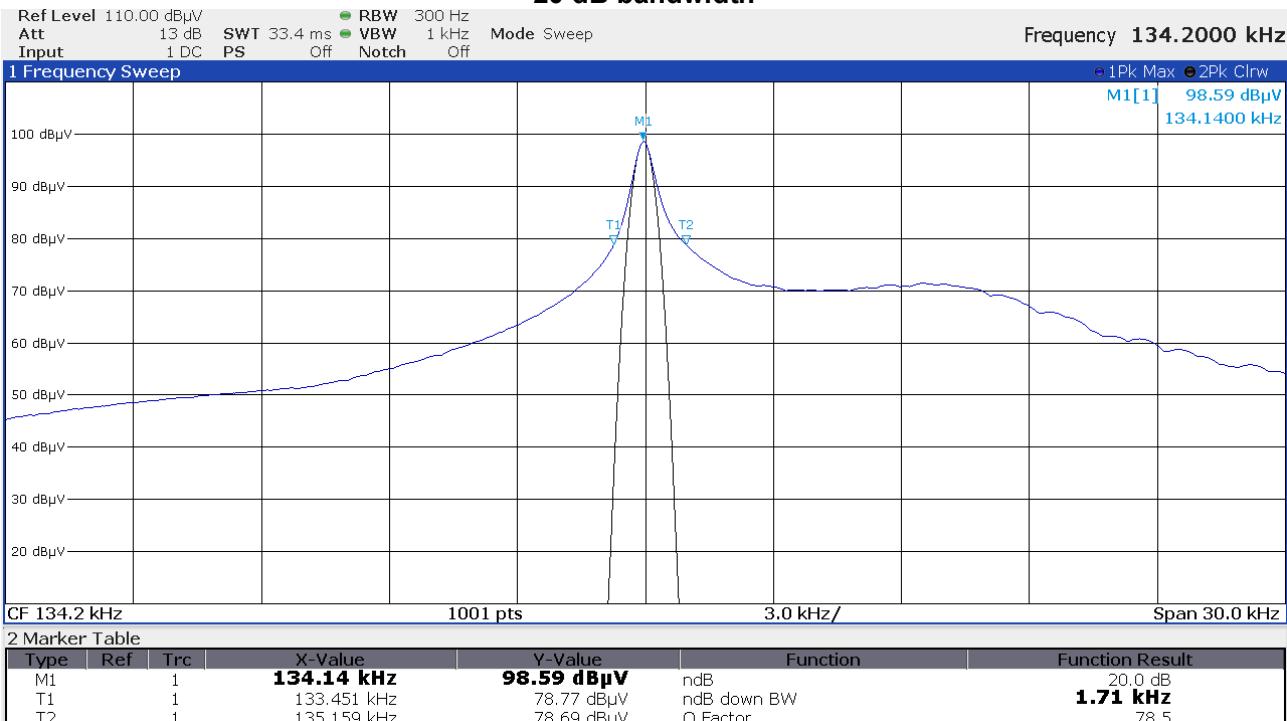
Remarks: For detailed test result please refer to following test protocol.

FCC ID: NDX-CMAX2

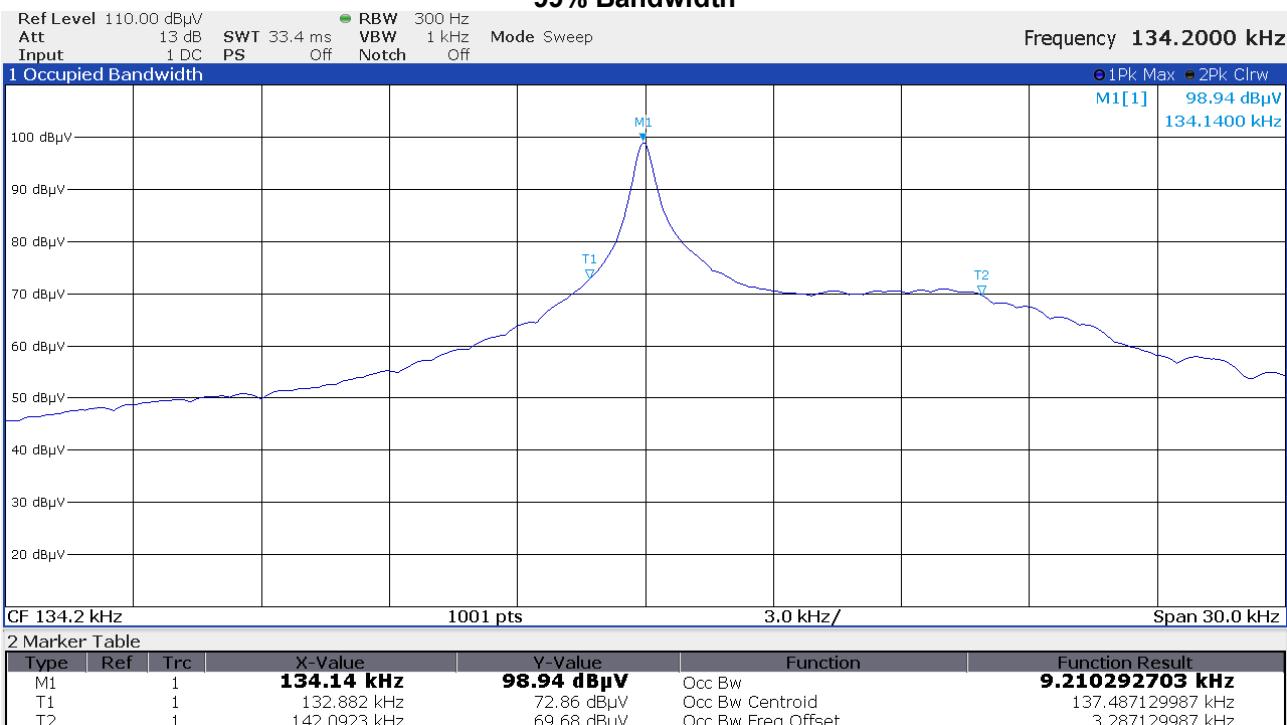
IC ID: 4678A-CMAX2

5.3.5 Test protocol

20 dB bandwidth



99% Bandwidth



FCC ID: NDX-CMAX2 IC ID: 4678A-CMAX2

6 USED TEST EQUIPMENT AND ACCESSORIES

All test instruments used are calibrated and verified regularly. The calibration history is available on request.
All listed measuring devices were calibrated at the time of use.

Test ID	Model Type	Equipment No.	Next Calib.	Last Calib.	Next Verif.	Last Verif.
CPR 1	ESR 7	02-02/03-17-001	22/10/2025	22/10/2024		
	HFH2-Z2E	09-02/24-21-001	05/08/2025	05/08/2024		
	IN600	09-02/50-21-015				
	KK-7.8F-2XNM_4.0M	09-02/50-21-018				
	KK-7.8F-2XNM_4.5M	09-02/50-21-023				
	KK-7.8F-2XNM_9.5M	09-02/50-21-025				
	50F-003 N 3dB	09-02/50-22-002				
	CDB-10K-18-50V-NMF-I	09-02/50-22-031			17/07/2025	17/07/2024
	KK-SF526S-2X11N-10.0M	09-02/50-25-002				
	BAT-EMC 2023.0.8.0	09-02/68-21-002				
SER 1	ESR 7	02-02/03-17-001	22/10/2025	22/10/2024		
	HFH2-Z2E	09-02/24-21-001	05/08/2025	05/08/2024		
	IN600	09-02/50-21-015				
	KK-7.8F-2XNM_4.0M	09-02/50-21-018				
	KK-7.8F-2XNM_4.5M	09-02/50-21-023				
	KK-7.8F-2XNM_9.5M	09-02/50-21-025				
	50F-003 N 3dB	09-02/50-22-002				
	CDB-10K-18-50V-NMF-I	09-02/50-22-031			17/07/2025	17/07/2024
	KK-SF526S-2X11N-10.0M	09-02/50-25-002				
	BAT-EMC 2023.0.8.0	09-02/68-21-002				
SER 2	ESR7	09-02/03-21-004	05/08/2025	05/08/2024		
	BBV 9743 B	09-02/17-21-002			17/12/2025	17/12/2024
	VULB9168	09-02/24-22-003	06/08/2025	06/08/2024	12/08/2025	12/08/2024
	KK-7.8F-2XNM_4.0M	09-02/50-21-018				
	KK-7.8F-2XNM_4.5M	09-02/50-21-023				
	KK-7.8F-2XNM_9.5M	09-02/50-21-025				
	50F-003 N 3dB	09-02/50-22-002				
	CDB-10K-18-50V-NMF-I	09-02/50-22-031			17/07/2025	17/07/2024
	KK-SF526S-2X11N-10.0M	09-02/50-25-002				
	BAT-EMC 2023.0.8.0	09-02/68-21-002				
MB	HFRAE 5161 _ 50 kHz-120	02-02/24-11-004				
	ESW44	09-16/03-24-001	16/12/2025	16/12/2024		