

External Radio Modules

ERM-2400 / ERM-900 SUP2.2

USER MANUAL

Date 01.08.2019



Imprint

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Document revision history

Version	SUP	Date
1.0	2.2	01.08.2019

Scope

This document describes the components, the setup and programming of the **ERM-2400 and ERM-900** external radio modules by FoMa Systems.

Disclaimer

Before using the products described in this manual, be sure to read and understand all the respective instructions.

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1 For your safety

Warning

The ERM in combination with the stabilized remote head SRH-3 and related products should only be used by experienced and trained operators. This product is **NOT** designed for inexperienced users and should not and must not be used without proper training.

ARRI recommends that all users read the manual in its entirety prior to use.

All directions are given from a camera operator's point of view. For example, camera-right side refers to the right side of the camera when standing behind the camera and operating it in a normal fashion.

1.1

Risk Levels and Alert Symbols

Safety warnings, safety alert symbols, and signal words in these instructions indicate different risk levels:

DANGER

DANGER indicates an imminent hazardous situation which, if not avoided, **will result in** death or serious injury.

Warning

WARNING indicates a potentially hazardous situation which, if not avoided, **may result in** death or serious injury.

CAUTION

CAUTION indicates a potentially hazardous situation which, if not avoided, **may result in** minor or moderate injury.

NOTICE

NOTE explains practices not related to physical injury. No safety alert symbol appears with this signal word.

NOTE

Provides additional information to clarify or simplify a procedure.

2 Functions

2.1 Functions front view



2.2 Functions back view



3 Introduction

NOTICE

The external radio modules ERM-2400 and ERM-900 have been developed exclusively for use with the SRH-3 remote head.
Any other use is not recommended and may damage the modules.
 Activating the external radio modules will deactivate the internal radio module.

3.1

Transmitter / Receiver Mode

NOTICE

Before the ERMs can be used, one of the modules needs to be **configured** as the **Transmitter** and the second module as the **Receiver**.
Please carry out the next steps precisely.

3.2

Multi radio use

NOTICE

For maximum performance, **no more** than **two** ERM-2400 or **two** ERM-900 transmitter / receiver sets should be used together in the **same location**.

Any additional ERM transmitter / receiver set will affect the performance of all ERM transmitter / receiver sets used.

4 Powering the remote control panel

NOTICE

To enable a wireless connection the remote control panel needs to be powered externally with 12V.



Recommended power supply:

SRH-3 RCP ext. Power Supply Set Gold-Mount	K0.0024195
SRH-3 RCP ext. Power Supply Set V-Mount	K0.0024196



5 Configuration of the **first** ERM

5.1

Connecting the **first** ERM

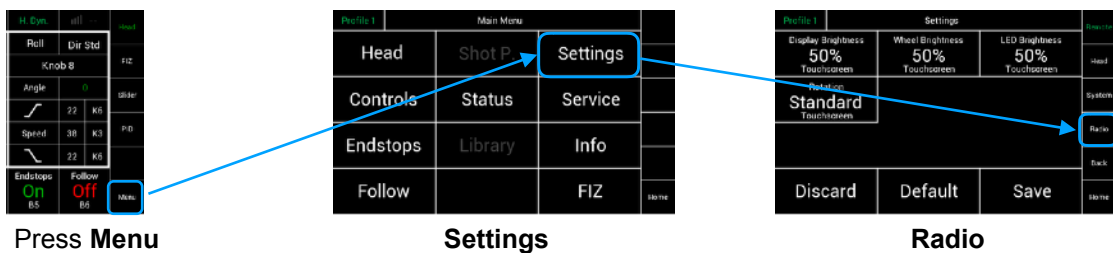
First connect the ERM Power Cable to the remote control panel (12V out and FS CAN Bus), then connect the FS CAN Bus Cable and then connect the **first** ERM.



5.2

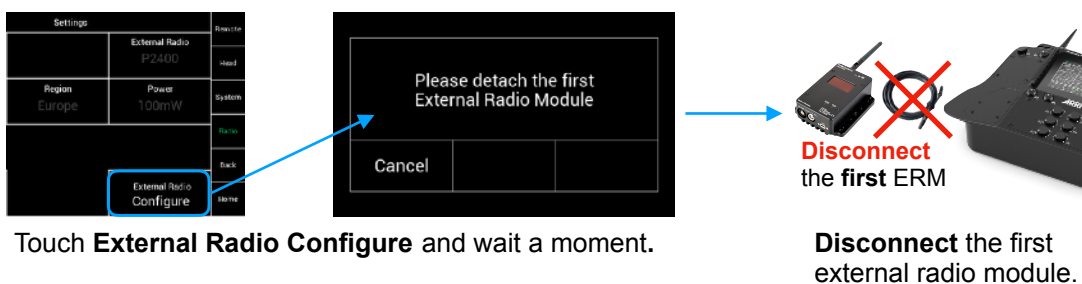
Setup the Remote Control Panel

Once the first external wireless module has been **connected** to the remote control, it must be **configured** in the **GUI**.



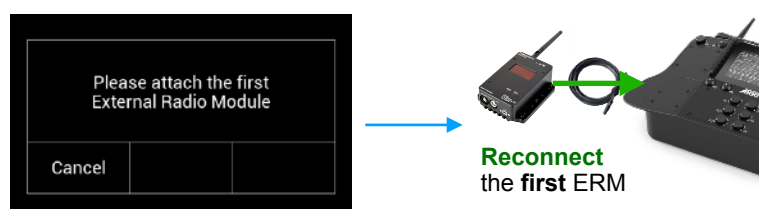
5.3

Disconnect of the first ERM



5.4

Reconnect the **first** module to put it in configuration mode and wait a moment.



5.6 Regional Settings

Once the ERM has been detected, a new window opens, where you can select the **region** by touching **Region**.



Press **Apply** as soon as you have made the required settings.

5.7 Finalizing the first ERM

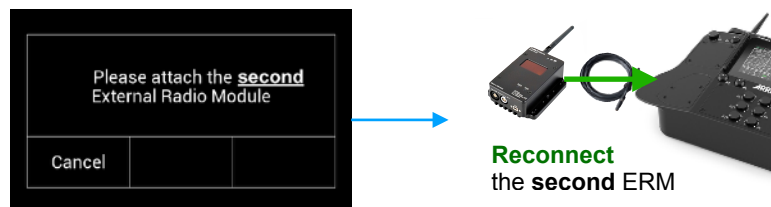
Your settings will now be saved in the first ERM module.



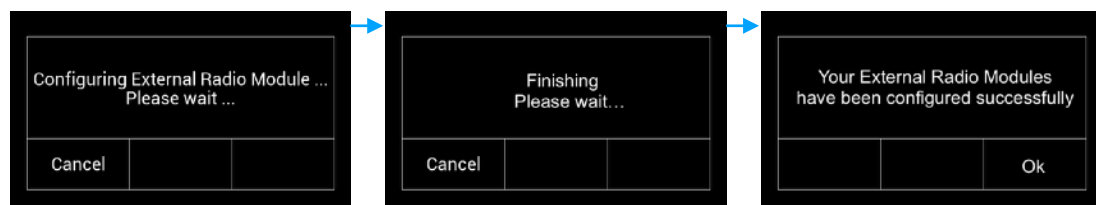
When this is done, **disconnect** the **first** ERM.

6 Configuration of the **second** ERM

6.1 Connecting the **second** ERM



6.2 Configuration of the second ERM



All settings of the **first** ERM are now also saved in the **second** ERM.

The external radio modules are now ready.

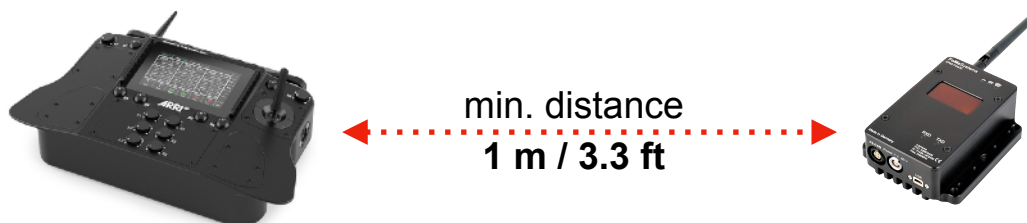
7 Positioning the ERM

7.1

Remote Control Panel

⚠ CAUTION

To exclude any health risk, the minimum distance between the ERM transmitter and the operator must be at least 1 m.



NOTE:

To increase the range, it is recommended to mount the transmitter on a stand or otherwise in an elevated position.

Longer FS CAN bus cable like:

SRH-3, FS CAN Bus Cable, 10m/32.8ft **K2.0019302**

SRH-3, FS CAN Bus Cable, 25m/82 ft **K2.0019301**

SRH-3, FS CAN Bus Coupler, 0.2m/0.65ft **K2.0019300**

allows longer distances between the remote control panel and the transmitter.



7.2

Remote Head

NOTE:

To increase the range, it is recommended to mount the receiver to an elevated position at the crane or rig.



Connect the **FS CAN Bus Cable** to the second **ERM** and then to the remote head.

8 Regionals limitations

The ERM-2400 can be used in Europe (CE), Canada (IC), USA (FCC) and Japan (MIC). Further markets are not intended to be certified.

NOTE:

The ERM-2400 will be shipped with readjusted 0.1Watt transmission power to be complaint in all addressed markets.

For USA and Canada the transmission power can be changed locally by the ARRI service to 1Watt transmission power.

The ERM-900 got IC for Canada and FCC for USA.

Therefore ERM-900 can only be used and ordered from ARRI Inc. in USA.

Note:

Using the ERM-900 outside USA and Canada might be illegal!

NOTICE

**Wireless region settings specify where the wireless function can be used in compliance with local regulations. It might be illegal to use the wireless function in a region other than specified in the setting.
Please ensure that the region is configured correctly, e. g. when traveling.**

NOTICE

**Make sure that you select the proper area you are operating the device in.
All available region settings comply with Part 15 of the FCC rules.**

§15.19(a)

Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

Part 15 Clause 15.21

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Canada:

Contains IC: 9482A-EMIP400

This device complies with Industry Canada's licence-exempt RSSs.

Operation is subject to the following two conditions:

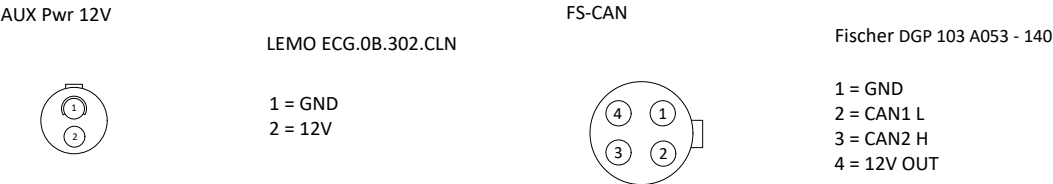
- (1) This device may not cause interference; and
- (2) This device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

- 1) l'appareil ne doit pas produire de brouillage;
- 2) l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

9 Technical Data

8.1
Pinout



8.2
Dimensions without antenna **ERM-2400 / ERM-900**

Length	11 cm / 4.33"
Width	9 cm / 3,54"
Hight	4 cm / 1,57"
Weight	380 gr / 0.83 lb
Operating Temperature	-40°C to 85°C / -40° to 185°F
Humidity	5% to 95% non-condensing

8.3
ERM-2400 Specifications Electrical / General

Supported Frequency	2.400 - 2.4835 GHz
Spreading Method	Frequency Hopping, DTS

8.4
ERM-900 Specifications Electrical / General

Supported Frequency	902 - 928 MHz
Spreading Method	Frequency Hopping, DTS

10 International Declarations



FoMaSystems GmbH • Oskar-Sembach-Ring 11 • 91207 Lauf • Germany



Declaration of Conformity

Product Type	External Radiomodule
Brand Name	FoMaSystems
Product Name	FoMaSystems ERM-P2400

Address	FoMa Systems GmbH Oskar-Sembach-Ring 11 D-91207 Lauf
----------------	--

The product complies with the requirements of the following European directives:

2014/53/EU	DIRECTIVE 2014/53/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC
-------------------	--

Compliance was proved by the application of the following standards:

EN 62368-1:2014 + AC:2015
Draft ETSI EN 301 489-1:V2.2.0 (2017-03)
Draft ETSI EN 301 489-17:V3.2.0 (2017-03)
EN 300 328 V2.1.1

2011/65/EU	Directive of the European Parliament and of the council on the restriction of the use of certain hazardous substances in electrical and electronic equipment.
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Compliance was proved by the application of the following standards:
EN 50581 : 2012

Year of the first marking: **2019**

Eigentumsvorbehalt: Die gelieferte Ware (Vorbehaltsware) bleibt bis zur vollständigen Erfüllung der Kaufpreisforderung Eigentum des Verkäufers. Es gelten die AGB der FoMaSystems GmbH (einsehbar unter www.foma-systems.com).

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Geschäftsführer
Dr.-Ing. Roman Foltyn
Rainer Maertin

Amtsgericht Nürnberg
HRB: 30926

Sitz der Gesellschaft
Lauf a. d. Pegnitz

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BIC: DEUTDE33HAN33



Die Übereinstimmung mit den Richtlinien erfolgte unter Anwendung nachfolgend genannter Normen:

The compliance with the requirements of the European Directives was proved by the application of the following standards:

Grundlegende Anforderungen zu Nr. 1. Essential Requirements regarding No 1

- EN 62368-1:2014 + AC:2016
- Draft ETSI EN 301 489-1:V2.2.0 (2017-03)
- Draft ETSI EN 301 489-17:V3.2.0 (2017-03)
- EN 300 328 V2.1.1

Grundlegende Anforderungen zu Nr. 2. - Essential Requirements regarding No 2

- EN 50581:2012;

Für die Ermittlung der entsprechenden Normen haben wir die folgende Quelle verwendet:

To evaluate the respective information, we used:

http://ec.europa.eu/growth/single-market/european-standards/harmonised-standards/index_en.htm

Jahr der Anbringung des CE-Zeichens / Year of affixed CE-marking: 2019

Lauf, den 23.07.2019

A handwritten signature in blue ink, appearing to read 'Roman Foltyn'.

Roman Foltyn
CEO

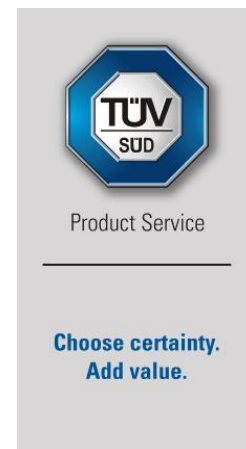
FCC and ISED Canada Testing of the FoMa Systems GmbH

Model: ERM-P2400

In accordance with FCC 47 CFR Part 15B and
ICES-003

Prepared for: FoMa Systems GmbH
Oskar-Sembach-Ring 11
91207 Lauf

FCC ID: ---
IC: ---



COMMERCIAL-IN-CONFIDENCE

Date: 2019-07-01

Document Number: TR-25880-63178-01 | Issue: 01

RESPONSIBLE FOR	NAME	DATE	SIGNATURE
Project Management	Michael Ingerl	2019-07-01	
Authorised Signatory	Matthias Stumpe	2019-07-01	

Signatures in this approval box have checked this document in line with the requirements of TÜV SÜD Product Service document control rules.

ENGINEERING STATEMENT

The measurements shown in this report were made in accordance with the procedures described on test pages. All reported testing was carried out on a sample equipment to demonstrate limited compliance with FCC 47 CFR Part 15B and ICES-003. The sample tested was found to comply with the requirements defined in the applied rules.

RESPONSIBLE FOR	NAME	DATE	SIGNATURE
Testing	Michael Ingerl	2019-07-01	

Laboratory Accreditation

DAkkS Reg. No. D-PL-11321-11-02

Laboratory recognition


Registration No. BNetzA-CAB-16/21-15

ISED Canada test site registration

3050A-2

EXECUTIVE SUMMARY

A sample of this product was tested and found to be compliant with FCC 47 CFR Part 15B and ICES-003:2017 and 2016.

 <p>Bundesznetzentwurf</p> <p>BNetzA-CAB-16/21-15</p>	<p>DISCLAIMER AND COPYRIGHT</p> <p>This non-binding report has been prepared by TÜV SÜD Product Service with all reasonable skill and care. The document is confidential to the potential Client and TÜV SÜD Product Service. No part of this document may be reproduced without the prior written approval of TÜV SÜD Product Service. © 2019 TÜV SÜD Product Service.</p> <p>ACCREDITATION</p> <p>Our BNetzA Accreditation does not cover opinions and interpretations and any expressed are outside the scope of our BNetzA Accreditation. Results of tests not covered by our BNetzA Accreditation Schedule are marked NBA (Not BNetzA Accredited).</p>
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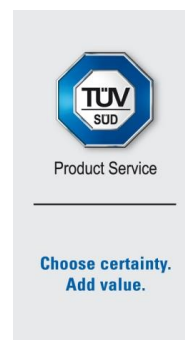
Managing Directors:
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TÜV SÜD Product Service

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2019-07-01

Page 1 of 29

Prüfbericht / Test Report**Nr. / No. TR-25880-63178-02 (Edition 01)**

Auftraggeber <i>Applicant</i>	FoMa Systems GmbH
Geräteart <i>Type of equipment</i>	External Radiomodule
Typenbezeichnung <i>Type designation</i>	ERM-P2400
Seriennummer / <i>Serial number</i>	---
Auftragsnummer / <i>Order No.</i>	5201866
Prüfgrundlage <i>Test standards</i>	Draft ETSI EN 301 489-1:V2.2.0 (2017-03) Draft ETSI EN 301 489-17:V3.2.0 (2017-03)

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Fax: +49 9421 5522-99
Web: www.tuev-sued.de



Product Service

Summary

Prüfergebnisse / Test Results	Auftragsnummer / Order No. 5201866
<p>Die Prüfungen wurden nach folgenden Vorschriften durchgeführt: Tests were performed according to:</p> <p>Draft ETSI EN 301 489-1:V2.2.0 (2017-03) Draft ETSI EN 301 489-17:V3.2.0 (2017-03)</p>	
Durchgeführte Prüfung Test performed	Prüfergebnis Test result
Radiated Emissions (Enclosure Port)	Pass
Immunity to Radio Frequency Electromagnetic Field (Enclosure Port)	Pass
Immunity to Electrostatic Discharge (Enclosure Port)	Pass

Bemerkungen / Remarks:

Die Prüfergebnisse beziehen sich ausschließlich auf das zur Prüfung vorgestellte Prüfmuster. Ohne schriftliche Genehmigung des Prüflabors darf der Prüfbericht auszugsweise nicht vervielfältigt werden. The test results relate only to the individual item which has been tested. Without the written approval of the test laboratory this report may not be reproduced in extracts.

Datum / Date	Geprüft von / Tested by	Freigabe durch / Checked by	Prüfergebnis / Test Result
2019-07-01	Michael Ingerl Responsible for testing	Matthias Stumpe Reviewer	Pass

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Product Service

TEST REPORT IEC 62368-1 Audio/video, information and communication technology equipment Part 1: Safety requirements	
Report Number	TR-25880-63178-03
Date of issue.....	2019-07-31
Total number of pages	63
Applicant's name.....	FoMa Systems GmbH
Address	Oskar-Sembach-Ring 11, 91207 Lauf, Germany
Test specification:	
Standard	EN 62368-1:2014 + AC:2015
Test procedure	Standard
Non-standard test method.....	N/A
Test Report Form No.....	IEC62368_1B
Test Report Form(s) Originator	UL(US)
Master TRF.....	2014-03
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General disclaimer:	
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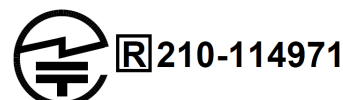
Phone: +49 9421 5522-0
 Fax: +49 9421 5522-99
 Web: www.tuev-sued.de



Test Item description	External Radiomodule	
Trade Mark	FoMa	
Manufacturer	FoMa Systems GmbH	
Model/Type reference	ERM-P2400	
Ratings	14.4 - 36 Vdc, max. 4A	
Testing procedure and testing location:		
<input checked="" type="checkbox"/> Testing Laboratory:	TÜV SÜD Product Service GmbH	
Testing location/ address	Äußere Frühlingsstraße 45, D-94315 Straubing, Germany	
Tested by (name + signature)	Alexander Fischer	
Approved by (name + signature)	Stefan Weiherer	

Contains:
FCCID: NS9P2400 IC: 3143A-14P2400

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
 (1) this device may not cause harmful interference, and (2) this device must accept any interference received including interference that may cause undesired operation.



Contains:
FCCID: NS9P2400 IC: 3143A-P2400

Cet appareil est conforme à la partie 15 des règles de la FCC. Son fonctionnement est soumis aux deux conditions suivantes : (1) ce dispositif ne doit pas causer d'interférences nuisibles et (2) cet appareil doit accepter toute interférence reçue, incluant les interférences qui peuvent provoquer un fonctionnement indésirable .

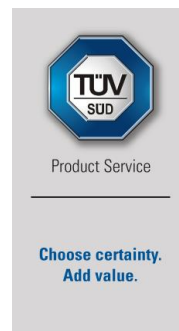
FCC and ISED Canada Testing of the FoMa Systems GmbH

Model: ERM-N900

In accordance with FCC 47 CFR Part 15B and ICES-003

Prepared for: FoMa Systems GmbH
Oskar-Sembach-Ring 11
91207 Lauf

FCC ID: ---
IC: ---



COMMERCIAL-IN-CONFIDENCE

Date: 2019-07-01
Document Number: TR-25880-61293-01 | Issue: 01

RESPONSIBLE FOR	NAME	DATE	SIGNATURE
Project Management	Michael Ingerl	2019-07-01	
Authorised Signatory	Matthias Stumpe	2019-07-01	

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ENGINEERING STATEMENT

The measurements shown in this report were made in accordance with the procedures described on test pages. All reported testing was carried out on a sample equipment to demonstrate limited compliance with FCC 47 CFR Part 15B and ICES-003. The sample tested was found to comply with the requirements defined in the applied rules.

RESPONSIBLE FOR	NAME	DATE	SIGNATURE
Testing	Michael Ingerl	2019-07-01	

Laboratory Accreditation
DAkkS Reg. No. D-PL-11321-11-02

Laboratory recognition
Registration No. BNetzA-CAB-16/21-15

ISED Canada test site registration
3050A-2

EXECUTIVE SUMMARY

A sample of this product was tested and found to be compliant with FCC 47 CFR Part 15B and ICES-003:2017 and 2016.

 Bundesnetzagentur BNetzA-CAB-16/21-15	DISCLAIMER AND COPYRIGHT This non-binding report has been prepared by TÜV SÜD Product Service with all reasonable skill and care. The document is confidential to the potential Client and TÜV SÜD Product Service. No part of this document may be reproduced without the prior written approval of TÜV SÜD Product Service. © 2019 TÜV SÜD Product Service.
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For n920S/F/BD Nano Series OEM

FCCID: NS908P24
IC: 3143A-08P24

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received including interference that may cause undesired operation.

For n920T Nano Series OEM

FCCID: NS908P25
IC: 3143A-08P25

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received including interference that may cause undesired operation.

For n2420

FCCID: NS911P31
IC: 3143A-11P31

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received including interference that may cause undesired operation.

n920X2

FCCID: NS9N920X2
IC: 3143A-N920X2

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received including interference that may cause undesired operation.