

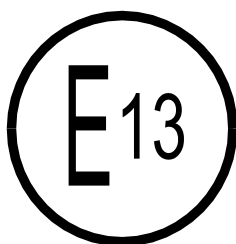


Référence: E13*10R06/01*16236*00

Annexes: - Rapport Technique
- Fiche de Renseignements du constructeur

Bertrange, le 08 août 2022

Communication concernant:⁽²⁾
Communication concerning:



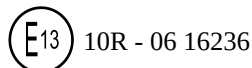
- **la délivrance d'une homologation**
approval granted
- **l'extension d'homologation**
approval extended
- **le refus d'homologation**
approval refused
- **le retrait d'homologation**
approval withdrawn
- **l'arrêt définitif de la production**
production definitely discontinued

d'un type de sous-ensemble électrique/électronique⁽²⁾ en ce qui concerne le Règlement N° 10
of a type of electrical/electronic sub-assembly with regard to Regulation N° 10

Numéro d'homologation par type:
Approval number:

E13*10R06/01*16236*00

Marque d'homologation:
Approval mark:



10R - 06 16236

1. Fabricant: (marque commerciale du constructeur):

Make (trade name of manufacturer):

REEL

2. Type:
Type:

planTEC-GNSS high gain

Dénomination(s) commerciale(s) générale(s):
General commercial description(s):

Not available

~~Variante(s)/Version(s):~~
~~Variant(s)/Version(s):~~

Not applicable

3.	Moyens d'identification du type, s'ils sont marqués sur le véhicule / composant / entité technique⁽²⁾: Means of identification of type, if marked on the vehicle / component / separate technical unit:	Label
3.1.	Emplacement de ce marquage: Location of that marking:	approx. 10 cm before the end of the cable (connector side)
4.	Catégorie du véhicule: Category of vehicle:	Not applicable
5.	Nom et adresse du constructeur: Name and address of manufacturer:	REEL Reinheimer Elektronik GmbH Schmalheck 18 35625 Hüttenberg Germany
6.	Dans le cas de composants ou d'entités techniques, emplacement et procédé de fixation de la marque de réception CEE: In the case of components and separate technical units, location and method of affixing of the ECE approval mark:	See item 3.
7.	Adresse(s) de l' (des) usine(s) d'assemblage: Address(es) of assembly plant(s):	REEL Reinheimer Elektronik GmbH Schmalheck 18 35625 Hüttenberg Germany
8.	Informations supplémentaires (s'il y a lieu): Additional informations (where applicable):	See appendix below
9.	Service technique responsable de l'exécution des essais: Technical service responsible for carrying out the tests:	Luxcontrol S.A. BP 349 L-4004 Esch-sur-Alzette
10.	Date du rapport d'essai: Date of test report:	21.04.2022
11.	Numéro du rapport d'essai: Number of test report:	LC 0400 002 22
12.	Remarques (s'il y a lieu): Remarks (if any):	See appendix below

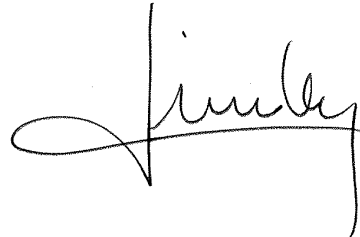
13. **Lieu:** Bertrange
Place:
14. **Date:** 08 août 2022
Date:
15. **Signature:**
Signature:

**Pour le Ministre de la Mobilité
et des Travaux publics**



Alain DISIVISCOUR
Conseiller

Pour la SNCH



Laurent LINDEN
Directeur opérationnel



16. **L'index de l'ensemble des renseignements déposé chez l'autorité de réception, qui peut être obtenu sur demande, est joint.**
The index to the information package lodged with the approval authority, which may be obtained on request, is attached.

See index to type-approval report
17. **Raison(s) de l'extension:** Not applicable
Reason(s) for extension:

² **Biffer la mention inutile**
Strike out what does not apply

Appendice

Appendix

au certificat d'homologation par type N° E13*10R06/01*16236*00
to type-approval certificate N° E13*10R06/01*16236*00
concernant l'homologation par type d'un sous ensemble électrique/électronique selon le Règlement N° 10.
concerning the type-approval of an electrical/electronic sub-assembly under Regulation N° 10.

- | | | |
|---------------|--|--|
| 1. | Informations supplémentaires.
Additional information. | |
| 1.1. | Tension nominale du système électrique [V]:
Electrical system rated voltage [V]: | 1 to 5 V |
| | Masse:
Ground: | Positive /negative ⁽²⁾ |
| 1.2. | Ce SEEE peut être utilisé sur n'importe quel type de véhicule avec les restrictions suivantes:
This ESA can be used on any vehicle type with the following restrictions: | See item 1.2.1. below |
| 1.2.1. | Conditions d'installation, s'il y a lieu:
Installation conditions, if any: | Not applicable |
| 1.3. | CE SEEE peut seulement être utilisé sur les types de véhicules suivants:
This ESA can be used only on the following vehicle types: | Not applicable |
| 1.3.1. | Conditions d'installation, s'il y a lieu:
Installation conditions, if any: | Not applicable |
| 1.4. | La (les) méthode(s) spécifique(s) d'essais utilisée(s) et les bandes de fréquences couvertes pour déterminer l'immunité étai(ent): (indiquez s'il vous plaît à partir de l'annexe 9 la méthode précise utilisée).
The specific test method(s) used and the frequency ranges covered to determine immunity were: (Please specify precise method used from annex 9). | Not applicable |
| 1.5. | Laboratoire accrédité au titre de la norme ISO 17025 et reconnu par l'autorité d'homologation chargé d'effectuer les essais:
Laboratory accredited to ISO 17025 and recognized by the Approval Authority responsible for carrying out the tests: | Not applicable |
| 2. | Commentaires:
Remarks: | None |



Référence: E13*10R06/01*16236*00

Annexes: - Rapport Technique
- Fiche de Renseignements du constructeur

Bertrange, le 08 août 2022

Index du dossier d'homologation

Index to type-approval report

Numéro d'homologation: E13*10R06/01*16236*00
Approval number:

Révision: 00
Revision:

Marque de fabrique ou de commerce: REEL
Trade name or mark:

Type: planTEC-GNSS high gain
Type:

1. **Procès-verbal d'essai:** N° LC 0400 002 22
Test report:
 - Technical report: Page 1 to 3
 - Index: Page 1
 - Communication: Annex A - Page 1 & 2
 - Test results: Annex B - Page 1 & 2
 - EMC Test Report: Annex C - Page 1 to 16
2. **Dossier du constructeur:** Annex D
Report of the manufacturer:
 - Manufacturer's information folder: Page 1 to 3
3. **Autres documents annexés:** Not applicable
Other documents annexed:
4. **Date de délivrance de l'homologation initiale:** 08.08.2022
Date of issue of initial type approval:
5. **Date de la dernière délivrance de pages révisées:** Not applicable
Date of last issue of revised pages:
6. **Date de la dernière délivrance d'une homologation révisée:** Not applicable
Date of last extension:

TECHNICAL REPORT

No.: LC 0400 002 22

Inspection concerning

Radio interference (electromagnetic compatibility) of motor vehicles

performed according to

ECE-Regulation No. 10
series of amendments: 06
Including supplement: 01

Type approval previously granted: **not applicable**

Contents:

1. General
 2. Test details
 3. Statement of compliance
- Index

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1. General

Manufacturer: **REEL Reinheimer Elektronik GmbH
Schmalheck 18
35625 Hüttenberg
Germany**

~~Vehicle Type~~
or component or ESA or STU: **planTEC-GNSS high gain**

2. Test details

	Inspector	Location of test:	Date of receipt of test item:	Date of test:
Main report	S.E. Weber	Spezial EMV GmbH Saarbrückerstr. 1 66706 Perl Deutschland	February 2022	March 3- April 8 2022

2.1. Remarks

2.1.1. Main report:
not applicable



3. Statement of compliance

The inspections items and measurements carried out have shown the compliance of the type described in this technical report and the attached Annexes with the requirements of the standard as stated on page 1.

Esch-Alzette , April 21, 2022

Luxcontrol s.a.
Service Homologation-automobile

Max Flammang
Ingénieur-Inspecteur

Luc Siebert
Ingénieur-Inspecteur

Annexes



* LC 0400 002 22 * REEL Reinheimer Elektronik GmbH * planTEC-GNSS high gain * R10 *

Index, Page 1 of 1

Details to the information package, including a summary in chronological order, concerning extensions and/or amendments

Type-approval previously granted: not applicable

Main Report

Technical Report No.: LC 0400 002 22

Page 1 to 3

Index:

Page 1

Composition of the Annex:

A: Communication according to standard

Page 1 to 2

B: Test Results

Page 1 to 2

C: Laboratory report SE22000191A-001

Page 1 to 16

D: Information folder

Page 1 to 3

Content of the information folder:

- Manufacturer's information document (page 1)
- Bill of material (page 2)
- Schematic plan (page 3)



COMMUNICATION AS NUMBERED [] IN THE STANDARD

- [1.] Make (trade name of manufacturer):
REEL
- [2.] Type:
Type: **planTEC-GNSS high gain**
Commercial description(s): Not applicable
Variants: Not applicable
- [3.] Means of identification of type, if marked on the vehicle / component /
~~separate technical unit~~:
Label
- [3.1.] Location of that marking: **approx. 10 cm before the end of the cable
(connector side)**
- [4.] Category of the vehicle: **Not applicable**
- [5.] Name and address of the manufacturer:
**REEL Reinheimer Elektronik GmbH
Schmalheck 18
35625 Hüttenberg
Germany**
- [6.] In the case of components and separate technical units, location and method
of affixing of the approval mark:
See item [3.].
- [7.] Address(es) of assembly plant(s):
**REEL Reinheimer Elektronik GmbH
Schmalheck 18
35625 Hüttenberg
Germany**



[] Numbering according to the communication concerning the approval following ECE-R10; Appendix to Annex 3A.

- [1.] Additional information:
- [1.1.] Electrical system rated voltage:
1 to 5V, positive / negative ground
- [1.2.] This ESA can be used on any vehicle type with the following restrictions:
See item 1.2.1. below
- [1.2.1.] Installation conditions, if any:
Not applicable.
- [1.3.] This ESA can only be used on following vehicle types:
Not applicable
- [1.3.1.] Installation conditions, if any:
Not applicable
- [1.4.] The specific test method(s) used and the frequency ranges covered to determine immunity were:
Not applicable
- [1.5.] Approved/recognised laboratory responsible for carrying out the tests:
Not applicable
- [2.] Remarks:
None



1. Test results:

1.1. Version of the tested vehicle or Information concerning the ~~vehicle type~~ / ESA and the requested approval

Following variant(s) has (have) been used for testing:

- planTEC-GNSS high gain

The tested item(s) is (are) representative of the worst-case configuration..

1.2. Broadband electromagnetic radiation

Results of the measurements in accordance with the method described in Annex 7 of ECE-R10:

Reference antenna distance: 1m / ~~3-m~~ / ~~10-m~~

Test facility: ~~outdoor~~/ enclosed

State of the ESA: normal working condition

Input voltage: 4 V

The ESA is in compliance with the requirements

For more details please refer to annex C.

1.3. Narrowband electromagnetic radiation

Results of the measurements in accordance with the method described in Annex 8 of ECE-R10:

Reference antenna distance: 1m / ~~3-m~~ / ~~10-m~~

Test facility: ~~outdoor~~/ enclosed

State of the ESA: normal working condition

Input voltage: 4 V

The ESA is in compliance with the requirements.

For more details please refer to annex C.



1.4. Immunity of Electrical/ Electronic subassemblies to electromagnetic radiation

Not applicable.

1.5. Emission of conducted disturbances:

Not applicable.

1.6. Immunity to transient disturbances conducted along supply lines:

Not applicable.

1.7. Remarks

The inspection results are only applicable to items which have been tested.

1.8. Test facilities

Calibration of measuring and test equipment used to carry out the inspections is in accordance with the standard stated on page 1 of the report and with ISO 17025.

Testreport
SE22000191A-001

SPEZIAL EMV
EMI / EMC TESTLAB & SOLUTIONS

Customer: REEL Reinheimer Elektronik GmbH
Schmalheck 18
35625 Hüttenberg
Germany

Device: planTEC-GNSS high gain
Modell: see page 4

Order number: 22000191
Sample number: 0002387
Date of receipt: 23.02.2022

- ☒ Complete test
☐ Partial test
☐ Customized testing

Execution period 03.03.2022

The purpose of the test was to test the sample for electromagnetic compatibility (EMC):

**Test specification
according to:**

- ☐ 2014/30/EU (EMV)
☐ 2014/53/EU (RED)
☒ Customized test plan

Applied standards:

UNECE Regulation No. 10 / Revision 06
+ Amendment 01

Test result:

- ☒ **The tested sample conforms to the test specification**
☐ **The tested sample does not conform to the test specification**

Date of release: 08.04.2022


Sven Eric Weber
Tested and written


Michael Linder
Reviewed and approved

Copyright notice:

This test report including all appendices are protected under copyright law. Unauthorized publication or use is not permitted and is punishable by law. For the above-mentioned use outside the participants in the test, a written consent of Spezial EMV GmbH is required.

This document has been signed digitally only. Verification of the validity of this document is in the responsibility of the customer. Upon request, Spezial-EMV GmbH can confirm the validity of this document separately.

The test report contains **16** pages.

Managing director
Dr.-Ing. Edgar v. Hinüber
Dipl.-Ing. (FH) Sven Eric Weber

Place of testing
Spezial EMV GmbH
Saarbrückerstraße 1
D-66706 Perl
Germany

Commercial register
HRB 106686
Amtsgericht Saarbrücken

Seat of the company
Spezial EMV GmbH
Im Reihersbruch 3
D-66386 St. Ingbert
Germany

Contact
Tel: +49 6894/9657 - 800
Fax +49 6894/9657 - 801
E-Mail: sales@spezial-emv.de

Bank account
SWIFT/BIC: DEUTDE33
IBAN: DE86 5907 0070 0035 0132 00
UST-ID-Nr.: DE333161425
Steuer-Nr.: 040/118/01353

Table of contents

Summary of the tests.....	3
Conformity Statement.....	3
Test item features.....	4
Technical data	4
Pictures	5
Test configuration.....	6
Abbreviations	6
Information on measurement uncertainties.....	7
Measurement uncertainty	7
Example for the interpretation of the measurement uncertainty for emission tests.....	8
Immunity performance criteria	9
Specification of the evaluation criteria.....	9
Criterium A.....	9
Criterium B	9
Criterium C.....	9
Criterium D.....	9
Criterium E	9
Evaluation of performance criteria	10
Description of the monitoring setup:.....	10
Photo documentation of the monitoring setup	10
Information provided by costumer:.....	11
Additional documentation	12
Radiated Emission (Broadband / Narrowband) – CISPR 25.....	12
Change directory	15

Testreport: SE22000191A-001

Summary of the tests

		Terminal	Standard*	Result
Emission	Transient Emissions	DC-Mains	ISO 7637-2:2004 (Ed. 2.0)	☐ P ☐ F ☒ N/A ☐ N/T
	Broad- and Narrowband Emissions [30-1000MHz]	Housing	CISPR25:2002 +Cor1:2004 (Ed.2.0)	☒ P ☐ F ☐ N/A ☐ N/T
Immunity	Bulk current injection [20-200MHz]	DC-Mains	ISO 11452-4:2011 (Ed. 4.0)	☐ P ☐ F ☒ N/A ☐ N/T
	Absorber-lined chamber [200-2000MHz]	Housing	ISO 11452-2:2004 (Ed. 2.0)	☐ P ☐ F ☒ N/A ☐ N/T
	Pulses on supply- lines	DC-Mains	ISO 7637-2:2004 (Ed. 2.0)	☐ P ☐ F ☒ N/A ☐ N/T

Legend:

P	PASS	Meets the requirements
F	FAIL	Does not comply with the requirements
N/A	Not Applicable	Not applicable
N/T	Not tested	Not tested

*If no information is given on the applied standards, the dated requirements in the applied higher-level standards on page 1 apply.

Conformity Statement

Unless otherwise agreed with the customer, the conformity assessment is carried out on the basis of the specified criteria/requirements of the applied standards. The evaluation of the requirements (Conformity statement) is based on the decision rules defined in this report. Evaluation conditions deviating from these are documented separately in the respective chapters.

Testreport: SE22000191A-001

Test item features

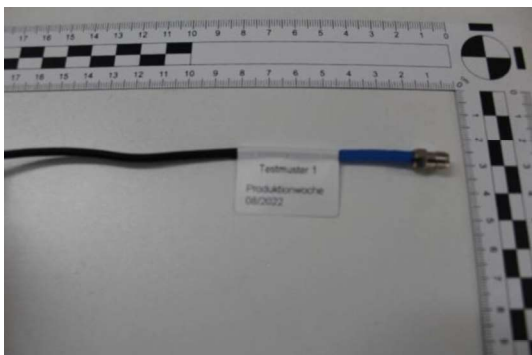
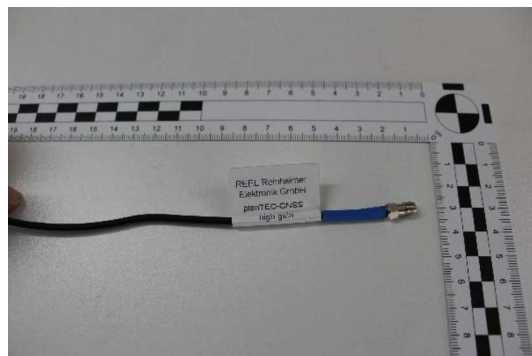
Technical data

Condition of the test sample	Sample fully functional. No defects recognizable	
Manufacturer	Same as customer	
Origin of the test sample	Send by customer	
Modell	F71LGNR_0023_387_386_382_CL10.5 BL	
Identical models	---	
Serial number	Test sample 1	
Test sample description	Planar combined antenna for UMTS/LTE/5G, WLAN 2400+5300	
Software version	---	
Hardware version	03/2022	
Number of phases	0	
Rated voltage	3-5V (Tested with 4V over external injector)	
Rated frequency	☒ DC / F=	
Rated current	---	
Rated power	---	
Internal frequencies	CPU:	---
	Radio:	Only Receiver GNSS (1575,42MHz – 1612 MHz)
Device category	No immunity relevant functions according chapter 2.12 of the regulation implemented.	
Dimensions	---	
Weight	---	
Other information's	The tests according to ISO 7637-2 are not applicable because the antenna is not directly connected to the vehicle supply network. No limit values exist for a supply voltage of 4V. The passive antenna functions (UMTS,LTE,5G,WLAN) does not include requirements of the ECE regulation.	

All results mentioned in this report refer to the test sample mentioned in this report without exception.

Testreport: SE22000191A-001

Pictures



Testreport: SE22000191A-001

Test configuration

Test sample:

No	Product type	Manufacturer	Model	Comments
1	planTEC-GNSS high gain	REEL Reinheimer Elektronik GmbH	F71LGNR_0023_387_386 _382_CL10.5 BL	EUT

Auxiliary Equipment / Peripherals:

No	Product type	Manufacturer	Model	Comments
1	BIAS TEE	Mini-Circuits	ZFBT-6GW-FT+	Power Injector for antenna supply
2	Power Supply	Peak Tech	P6227	SE-GmbH

Input- / Output ports:

No	Name	Art	Cable length	Shielded	Comments
1	Housing	N/E	None	—	—
2	Antenna-Line	I/O	3m	Yes	3 Lines for active and passive antenna connections

AC AC power connection
 DC DC power connection
 N/E Not electric
 I/O Signal lines
 DATA Communication line

Operating modes:

No.	Name	Description
1	GNSS Receiver active	The Antenna System (GNSS) is powered over the BIAS TTE injector and is working normally, passive functions are not connected.

Abbreviations

Description	
NCR	No calibration required
VBT	Verification before test

Information on measurement uncertainties

General statement on measurement uncertainty

For all methods used by Spezial-EMV GmbH, it is generally specified that the specific measurement uncertainty of the method used is not included in compliance with the specified limit values. This corresponds to method 2 (Accuracy method) according to IEC Guide 115:2021. For emission measurements according to CISPR 16 (EN 55016), the requirements of the currently valid version of CISPR 16-4-2 (EN 55016-4-2) also apply.

Decision Rule

The "simple acceptance" or "shared risk" rule according ILAC-G8:09/2019 is used for all statements in this report. Statements of the conformity (Binary Statement) are reported as:

PASS – The measurement value is below the acceptance limit

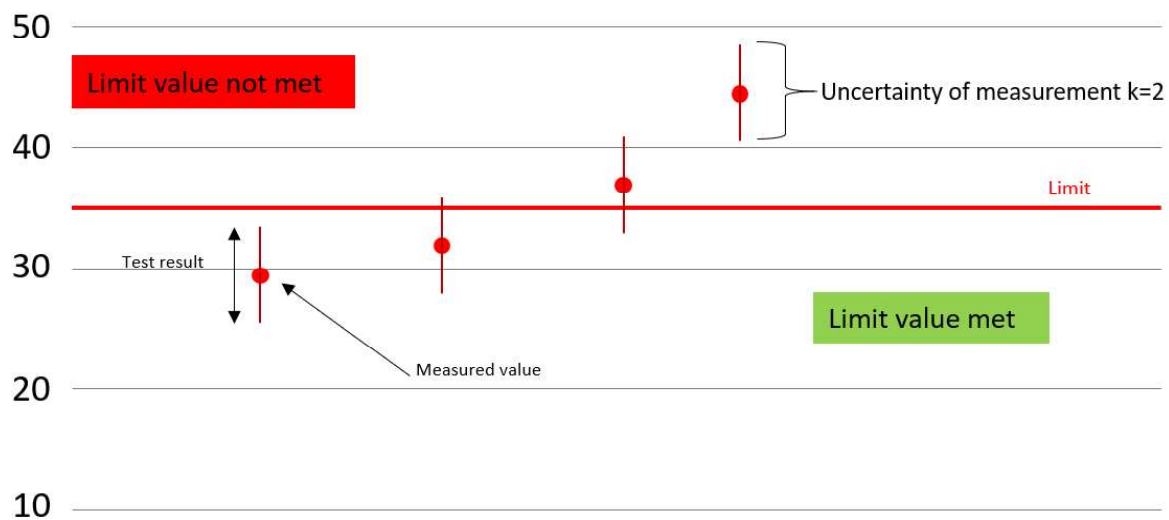
FAIL – The measured value is above the acceptance limit

Measurement uncertainty

Test	U _{Lab}
Conducted voltage emission LISN 9 kHz – 150 kHz (CISPR Band A) 150 kHz – 30 MHz (CISPR Band B)	2.3 dB 3.3 dB
Conducted voltage emissions voltage-probe 9 kHz – 30 MHz (CISPR Band A/B)	2.0 dB
Conducted voltage emissions with ISN 150 kHz – 30 MHz (CISPR Band B)	3.3 dB
Conducted current emissions with current-clamp 150 kHz – 30 MHz (CISPR Band B)	2.2 dB
Disturbance power emissions 30 MHz – 300 MHz (CISPR Band C)	2.9 dB
Conducted voltage emissions with CDNE 30 MHz – 300 MHz (CISPR Band C)	2.6 dB
Radiated magnetic emissions 9 kHz – 30 MHz (CISPR Band A/B)	1.6 dB
Radiated emission (3m distance) 30 MHz – 1 GHz (CISPR Band C/D) 1 GHz – 6 GHz (CISPR Band E) 6 GHz – 18 GHz (CISPR Band E)	4.4 dB 5.0 dB 5.3 dB
Immunity against electrostatic discharges EN 61000-4-2	18.1%
Immunity against electromagnetic fields EN 61000-4-3 (20 MHz – 6000 MHz)	2.6 dB
Immunity against fast transients EN 61000-4-4	According Standard
Immunity against Surges EN 61000-4-5	According Standard
Immunity against conducted electromagnetic fields EN 61000-4-6 CDN (150 kHz – 230 MHz) EM-Clamp (150 kHz – 230 MHz) Current-Clamp (150kHz – 80 MHz)	1.5 dB 3.3 dB 3.3 dB

Testreport: SE22000191A-001

Example for the interpretation of the measurement uncertainty for emission tests



Example calculation:

Limit	Measured value	Margin	U_{LAB}	Test result
35 dBμV	33.5 dBμV	-1.5 dB	4.2 dB	29.3 — 37.7 dBμV

Immunity performance criteria

Specification of the evaluation criteria

- ☐ Requirements of the specified standards
- ☐ Specified by the client

The criteria to be reached in each case can be found in the additional documentation at the end of the report.

- ☐ The evaluation of conformity was performed by Spezial EMV GmbH.
- ☐ The evaluation and compliance evaluation were performed by the client and included in this report.
- Spezial EMV GmbH does not take any responsibility for these statements.**

Criterion A

All functions of a device/system perform as designed during and after exposure to disturbance.

Parameter	
---	---

Criterion B

All functions of a device/system perform as designed during exposure. However, one or more of them can go beyond specified tolerance. All functions return automatically to within normal limits after exposure is removed. Memory functions shall remain class A.

Parameter	
---	---

Criterion C

One or more functions of a device/system do not perform as designed during exposure but return automatically to normal operation after exposure is removed

Parameter	
---	---

Criterion D

One or more functions of a device/system do not perform as designed during exposure and do not return to normal operation until exposure is removed and the device/system is reset by simple "operator/use" action.

Criterion E

One or more functions of a device/system do not perform as designed during and after exposure and cannot be returned to proper operation without repairing or replacing the device/system

Testreport: SE22000191A-001



Evaluation of performance criteria

☐ Monitoring and compliance with the evaluation criteria were carried out by the customer

Description of the monitoring setup:

None

Photo documentation of the monitoring setup:

---	---
-----	-----

Testreport: SE22000191A-001

SPEZIAL EMV
 EMI / EMC TESTLAB & SOLUTIONS

Information provided by costumer:

 ANTENNEN UND SYSTEME FÜR TELEMATIK, MOBILFUNK UND NAVIGATION
 HIGH PERFORMANCE MANUFACTURER ... MADE IN GERMANY


REEL Reinheimer Elektronik GmbH • Schmalbeck 18 • 35025 Hüttenberg

planTEC-GNSS high gain

Clear assignment of the active navigation-circuit :

planTEC-GNSS high gain is indicated in our article-numbers as 'GN'.

Our antenna-description is divided into blocks.

For example :

Article number -> **K71PGNR_0300_29_28_WP**

The individual blocks of the number are separated from each other by an Underscore -> (_)

It always supplies :

The first blocks describes the type and function of the antenna.

The 2th block describes the length of cable in centimeter - at least 4 digits.

Up from the 3th block it describes the typ of connector.

The last block is for special customer requirements - only optical requirements and environmental requirements - respectively other special thinks as 'WP' = cable entrance waterproofed cast.

The description 'GN' ist always located in the first part of our article-number.

The 2th part of article is built pure numerical and contains 4 digits.

Before and after the acronym 'GN' stands a capital letter.

Here are all letters allowed except 'GN'.

Examples for short and long article-description :

N70XGNW_0100_XX_03_AB1.2 (antenna with one function)

Only antenna with an additional 'N'-> Navigationantenna

('N' is never directly next to 'GN')

K98LLLLGNFFFF_0050_03_03_03_03_51_51_51_51_XX

(Antenna with 9 functions)

Both designations are standard.

Date : 06.04.2022

signature :


 Hans-Jörg Reinheimer / CEO
 planTEC® ...das Original.

REEL Reinheimer Elektronik GmbH
 Schmalbeck 18 • 35025 Hüttenberg
 Telefon: +49 6441 67 141-0
 Fax: +49 6441 67 141-29
 e-mail: info@reel-gmbh.de
 Web: www.reel-gmbh.de

Bankverbindungen:
 Volks Mittelhessen
 BLZ: 513 900 00
 Konto-Nr.: 107 877 00
 BIC: VBMH DE 5 F
 IBAN: DE02 5139 0000 0010 7877 00

Sparkasse Wetzlar
 BLZ: 515 500 35
 Konto-Nr.: 2300 11 34
 BIC: HELA DEF 1 WET
 IBAN: DE93 5155 0035 0023 0011 34

Geschäftsführer:
 Dipl.-Ingenieur, MBM
 Hans-Jörg Reinheimer



Amtsgericht Wetzlar, HRB 7338
 Ust.ID.-Nr.: DE 165 956 123

Zertifiziert nach
 DIN EN ISO 9001:2015

Testreport: SE22000191A-001

Additional documentation

Radiated Emission (Broadband / Narrowband) – CISPR 25

Execution date	03.03.2022	
Result	PASS	
Operator	SEW	
Applied Standard	ECE 10R06+AMD1	
Applied Method	CISPR 25	
Operation Mode	1	
EUT	1	
Limit (Broadband)	Frequency [MHz]	Limit QP [dB μ V/m]
	30 - 75	62-52*
	75 - 400	52-63*
	400 - 1000	63
Limit (Narrowband)	Frequency [MHz]	Limit AV [dB μ V/m]
	30 - 75	52-42*
	75 - 400	42-53*
	400 - 1000	53
Temperature (°C)	21.9	
Air pressure (mbar)	986.2	
Humidity (% rH)	11.9	
Remark	—	

*linear with the logarithm in- /de-creasing

Documentation of the test setup:

The DUT and wiring harness is placed on a non-conductive low permittivity table 50 $\pm$ 5mm 1m above the ground plane. The face of the DUT is 200 $\pm$ 10mm from the front edge of the test table. The test specimen is supplied via artificial networks (LISN). The length of the cable harness on the front side of the test table must be 1500 $\pm$ 75mm. The measuring antenna is located at a distance of 1m from the test table. The measurement is made at a fixed height of 1m. For frequencies up to 1 GHz, the antenna is located in the centre of the test table. For frequencies above 1 GHz, the measurement is made on the axis of the DUT. All measurements above 30 MHz are performed in horizontal and vertical polarization.

Used test equipment:

Type	Manufacturer	Modell	ID	Last calibration	Next calibration
LISN	Solar	9117-5-TS-50-N	0055	02.02.2021	02.02.2024
LISN	Solar	9117-5-TS-50-N	0056	02.02.2021	02.02.2024
Antenna	Schwarzbeck	VULB 9160	0026	05.08.2021	05.08.2024
Receiver	Rohde & Schwarz	ESU 26	0081	19.05.2021	19.05.2023
Software	Rohde & Schwarz	EMC 32 (11.30.00)	None	NCR	NCR

Testreport: SE22000191A-001

Picture of test setup:



Testreport: SE22000191A-001

EMI Auto Test Template: ECE R10 - BBNB - Component - 1m

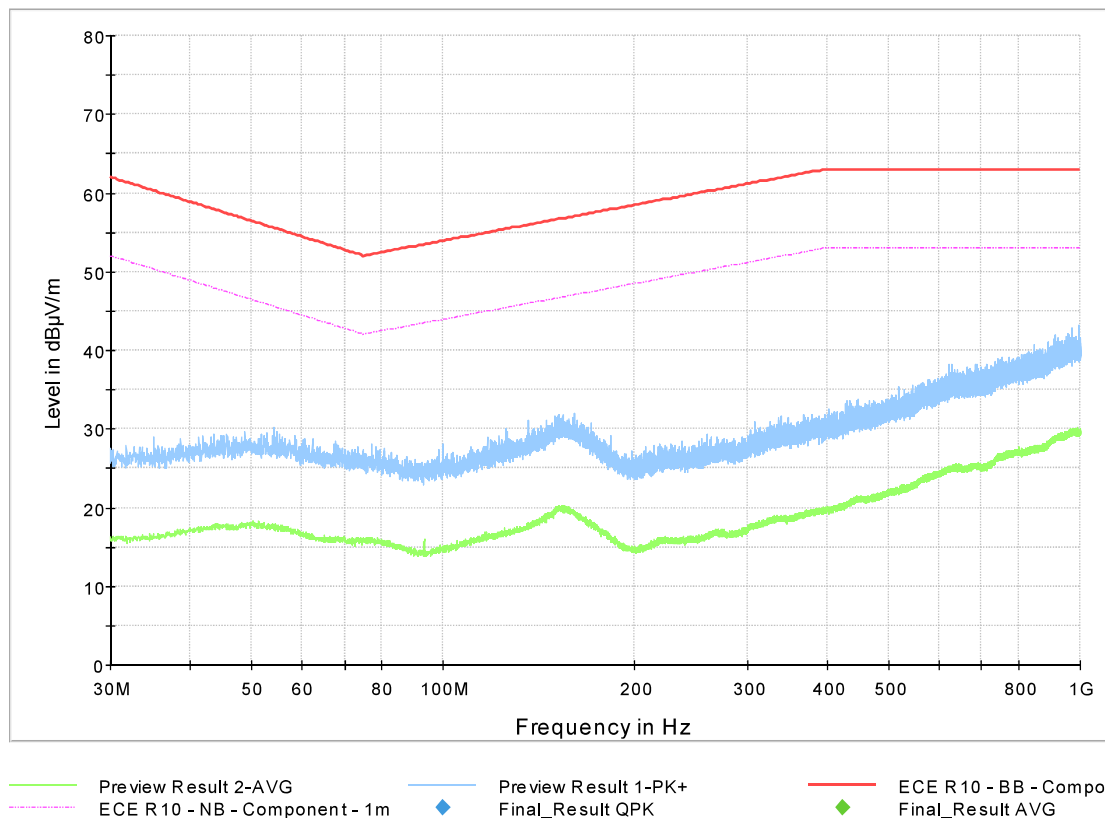
Hardware Setup: Electric Field 9k-18GHz-3301-VULB-BBHA CISPR 25 -1m
 Measurement Type: Open-Area-Test-Site (SAC/FAR)
 Frequency Range: 30 MHz - 1 GHz
 Graphics Level Range: 0 dB μ V/m - 80 dB μ V/m

Preview Measurements:
 Scan Test Template: CISPR 25 Feldstärke VULB 9160 Prescan 30-1000 PK AV

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
Receiver: [ESU 26] 30 MHz - 1 GHz	40 kHz	PK+ ; AVG	120 kHz	0,005 s	0 dB

Final Measurements:
 Template for Single Meas.: CISPR 25 Feldstärke VULB 9160 Final 30-1000MHz QP AV

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
Receiver: [ESU 26] 30 MHz - 1 GHz	40 kHz	QPK ; AVG	120 kHz	5 s	0 dB



Final Result

No emissions detected

Testreport: SE22000191A-001



Change directory

Test report number	Author	Date	Changes
SE22000191A-001	Sven Eric Weber	08.04.2022	First version

The latest version of the report replaces all previous versions.

Testreport: SE22000191A-001



End of report

Annex 2B

Information document for type approval of an electric/electronic sub-assembly with respect to electromagnetic compatibility

The following information, if applicable, shall be supplied in triplicate and shall include a list of contents. Any drawings shall be supplied in appropriate scale and in sufficient detail. If submission is paper based, documents shall be on size A4 or in a folder of A4 format. Electronic submissions may be of any standard size. Photographs, if any, shall show sufficient detail.

If the systems, components or separate technical units have electronic controls, information concerning their performance shall be supplied.

1. Make (trade name of manufacturer): REEL
2. Type: planTEC-GNSS high gain
3. Means of identification of type, if marked on the component/separate technical unit: Label
 - 3.1. Location of that marking: Appr. 10cm before the end of the cable (connector side)
4. Name and address of manufacturer: REEL Reinheimer Elektronik GmbH, Schmalheck 18, D-35625 Hüttenberg

Name and address of authorized representative, if any:

5. In the case of components and separate technical units, location and method of affixing of the approval mark: Antenna cable
6. Address(es) of assembly plant(s): Schmalheck 18, D-35625 Hüttenberg
7. This ESA shall be approved as a component.
8. Any restrictions of use and conditions for fitting: not applicable
9. Electrical system rated voltage: +1 to +5 V, positive/negative 2/ ground.

Appendix 1: Description of the ESA chosen to represent the type (electronic block diagram and list of main component constituting the ESA (e.g. make and type of microprocessor, crystal, etc.).

Appendix 2: Relevant test report(s) supplied by the manufacturer from a test laboratory accredited to ISO 17025 and recognized by the Type Approval Authority for the purpose of drawing up the type approval certificate.

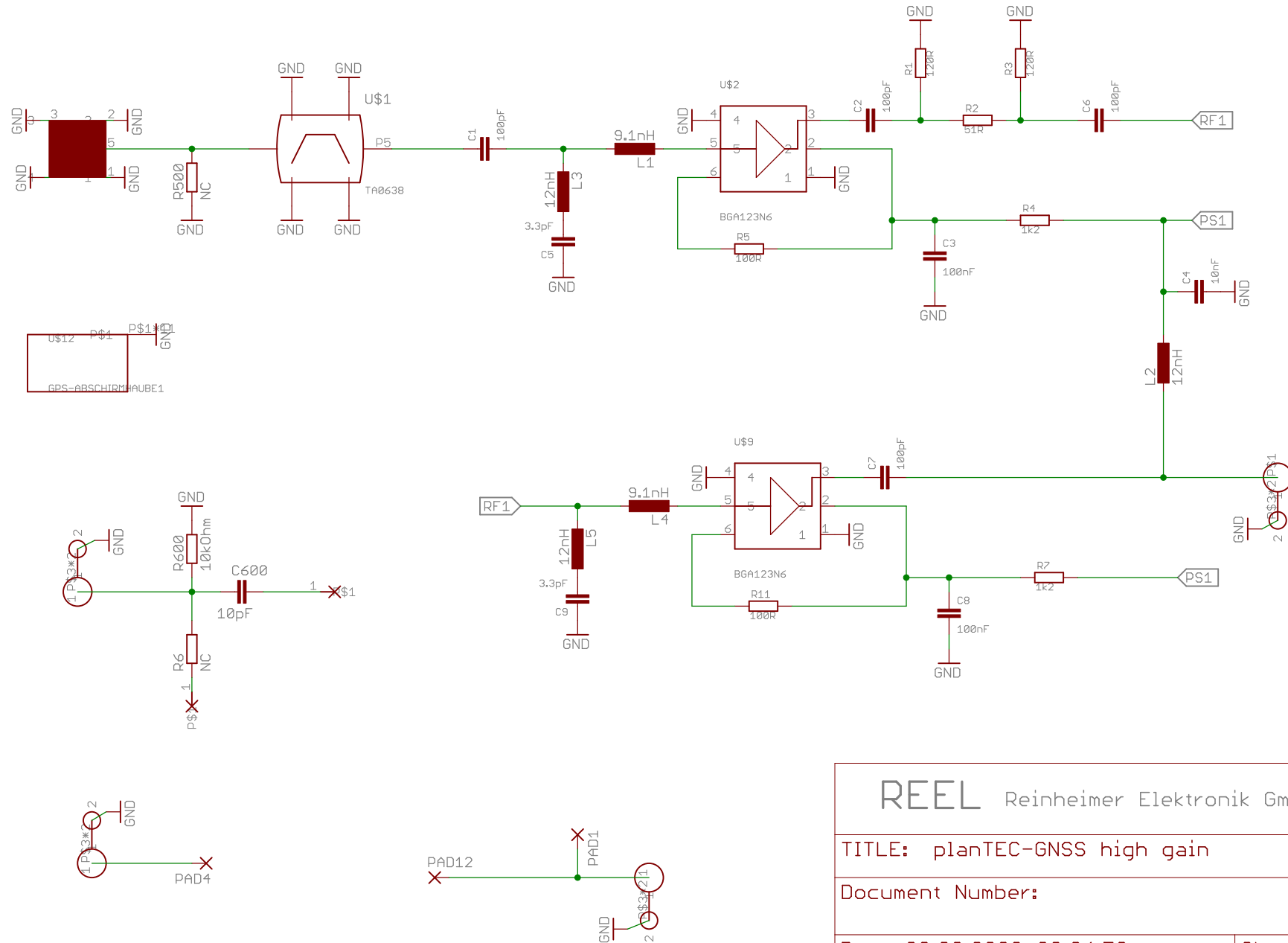
Only applicable for charging systems:

10. Charger: on board/external: not applicable
11. Charging current: direct current/alternating current (number of phases/frequency): not applicable
12. Maximal nominal current (in each mode if necessary): not applicable
13. Nominal charging voltage: not applicable
14. Basic ESA interface functions: ex. LL11//LL2/L3/N/PE/control pilot: not applicable
15. Minimum R_{sce} value (see paragraph 7.11. of this Regulation): not applicable

1/ If the means of identification of type contains characters not relevant to describe the component or separate technical unit types covered by this information document, such characters shall be represented in the documentation by the symbol "?" (e.g. ABC??123??)..

2/ Delete where not applicable.

Stückliste : planTEC-GNSS high gain				
Wert	Ref-Nr.	Bauform		
100pF	C1	0402		
100pF	C2	0402		
100nF	C3	0402		
10nF	C4	0402		
3.3pF	C5	0402		
100pF	C6	0402		
100pF	C7	0402		
100nF	C8	0402		
3.3pF	C9	0402		
9.1nH	L1	0402		
12nH	L2	0402		
12nH	L3	0402		
9.1nH	L4	0402		
12nH	L5	0402		
82R	R1	0402		
100R	R11	0402		
100R	R2	0402		
82R	R3	0402		
953R	R4	0402		
100R	R5	0402		
953R	R7	0402		
10pF	C600	0603		
NC	R500	0603		
NC	R6	0603		
10kOhm	R600	0603		
TA0638	U\$1	NAVI-FILTER		
BGA123N6	U\$2	BGA123N6		
GNSS Patch-18MM	U\$6	GPS-18		
BGA123N6	U\$9	BGA123N6		
GPS-ABSCHIRMHAUBE	U\$12	GPS-SCHUTZDECKEL		



REEL Reinheimer Elektronik GmbH

TITLE: planTEC-GNSS high gain

Document Number:

REV:

Date: 03.03.2022 09:34:50

Sheet: 1/1