

PARTIAL TEST REPORT

Number: **MP_007080** - Date: **2018-01-04**

according to
GCF-CC (v3.61.1) and NAPRD03 (v5.30)

for

Netradyne

User Equipment Type:

DRI-128

Final Hardware Version: RevD

Final Software Version: 0.2.1

This test report consists of 11 pages and the following annexes:

Annex A - Accreditation Certificate	2 pages
Annex B - Test Equipment	4 pages
Annex C - ICS/IXIT Information	2 pages
Annex D - Photographs	2 pages
Annex E - Detailed Test Verdicts	7 pages

**CETECOM Inc. is accredited
according to
DIN EN ISO/IEC 17025 by:**



CETECOM Inc.
411 Dixon Landing Road ♦ Milpitas, CA 95035 ♦ USA
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CETECOM Inc. is a Delaware Corporation with File Number: 2905571

Supported Bands

Technology	Bands			
UMTS FDD	FDD II	FDD IV	FDD V	
LTE FDD	FDD 12 FDD 17	FDD 2 FDD 25	FDD 4 FDD 5	

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Annex A - Accreditation Certificate

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1. Test Results

1.1. Summary of Test Results

The following tables summarize the final test results of the tested user equipment. Detailed test results for each test case including the used/subcontracted testing location (according to sec. 2.2) are documented in Annex E of this test report. An explanation of the terms used for each column in the tables is given below.

Table 1a: Summary of Test Results according to related Frequency Bands

Specification	Amount of Test Cases														
	FDD II			FDD IV			FDD V			FDD 2			FDD 4		
	PASS	FAIL	INC	PASS	FAIL	INC	PASS	FAIL	INC	PASS	FAIL	INC	PASS	FAIL	INC
3GPP TS 34.124	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3GPP TS 36.124	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Total:	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0

Table 1b: Summary of Test Results according to related Frequency Bands

Specification	Amount of Test Cases											
	FDD 5			FDD 12			FDD 17			FDD 25		
	PASS	FAIL	INC	PASS	FAIL	INC	PASS	FAIL	INC	PASS	FAIL	INC
3GPP TS 34.124	0	0	0	0	0	0	0	0	0	0	0	0
3GPP TS 36.124	1	0	0	1	0	0	0	0	0	1	0	0
Total:	1	0	0	1	0	0	0	0	0	1	0	0

The following terms are used in the tables above:

<u>Specification:</u>	Name/Identifier of the used test specification for testing.
<u>PASS:</u>	Amount of test cases which are conformant to the applied standards in the given Band.
<u>FAIL:</u>	Amount of test cases which are not conformant to the applied standards in the given Band.
<u>INC:</u>	Inconclusive: Amount of test cases with ambiguous results to the applied standards in the given Band.

1.2. Type of this CETECOM Test Report

This **PARTIAL** Test Report contains within Annex E only a subset of all test cases as referenced in the corresponding "Leading Reference Documents for Testing" (see table 2 in section 4.1). This subset of test cases has been requested by the client and/or has been deemed necessary by CETECOM after review of the performed product modifications.

1.3. Documentation Received from the Client/Manufacturer

CETECOM has received the ICS/IXIT information for the equipment under test from the client and/or manufacturer (please refer to Annex C of this test report for details) which was the basis for accredited testing.

CETECOM has received sufficient documentation from the client and/or manufacturer to perform the tests as listed in Annex E of this report.

1.4. Validity of Test Results

The test results given in this test report only relate to the user equipment as specified in section 3.

Cathy Palacios
Test Manager
(Author of the Test Report)

Laith Saman
Deputy Test Manager
(Verification of the Test Report)

James Donnellan
Test Lab Manager
(Authorization of the Test Report)

2. Administrative Data

2.1. Identification of the Responsible Testing Laboratory

Company Name:	CETECOM Inc.
Department:	Mobile Communications
Address:	411 Dixon Landing Road Milpitas, CA USA 95035
Telephone:	+1 408 586 6200
Fax:	+1 408 586 6299
Responsible Test Lab Manager:	Peter Nevermann

2.2. Identification of the Testing Location(s)

Company Name:	CETECOM Inc.
Address:	411 Dixon Landing Road Milpitas, CA USA 95035

2.3. Organizational Items

CETECOM Reference No.:	MP_007080
CETECOM Order No.:	ACH Pay
CETECOM Test Manager:	Cathy Palacios
CETECOM Deputy Test Manager:	Laith Saman
Start of Testing:	2017-08-28
End of Testing:	2017-08-28

2.4. Identification of the Client

Company Name:	NetraDyne, Inc.
Address:	4350 Executive Dr., Suite 150 San Diego, CA USA 92127
Contact Person:	David Julian
Telephone:	1-858-752-8914

Note: This data is based on the client's information.

3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1. Identification of the Equipment Under Test

Brand Name:	Netradyne
Type Name:	DRI-128
Marketing Name:	NetraDyne Driver-I DashCam
UMTS Frequency Bands:	FDD II FDD IV FDD V
LTE FDD / E-UTRA Frequency Bands:	FDD 12 FDD 2 FDD 4 FDD 17 FDD 25 FDD 5
FCC ID Number:	2AM8R-DRI128
Industry Canada ID:	23098-DRI128
Special Features / Comments:	Intelligent Driving Monitoring System Smart Connected Dash Cam

3.2. Front View of the Equipment Under Test



3.3. Identification of all Used Test Samples of the Equipment Under Test

EUT ID *	Serial Number	IMEI	Hardware Version	Software Version	Test Lab internal ID
EUT1	16300054	356207070042024	RevD	0.2.1	a C01

*) The equipment under test identifier (EUT ID) is used to simplify the identification in this test report

3.4. Identification of the Ancillary Equipment

AE ID *	Description	Serial Number	HW Status	SW Status
AE1	Standard Laptop	--	--	--

*) The ancillary equipment identifier (AE ID) is used to simplify the identification in this test report

4. Applied Reference Documents

4.1. Leading Reference Documents for Testing

The equipment under test (EUT) has been tested at CETECOM's (own or subcontracted) laboratories according to the leading reference documents given in table 2 below:

Table 2: Leading Reference Documents

No.	Identity	Document Title	Version/Date
[1]	GCF-CC	Global Certification Forum - Certification Criteria	v3.61.1 (2016-02)
[2]	NAPRD03	GSM N.A. Permanent Reference Document	v5.30 (2016-12)

4.2. Specific Reference Documents for Testing

Table 3 summarizes specific reference documents such as harmonized standards or test specifications which were used for testing at CETECOM's (own or subcontracted) laboratories.

Table 3: Specific Reference Documents

No.	Identity	Document Title	Version/Date
[3]	3GPP TS 34.124	3rd Generation Partnership Project; Technical Specification Group Radio Access Network; ElectroMagnetic Compatibility (EMC) requirements for mobile terminals and ancillary equipment	V14.0.0 Release 14 (2017-03)
[4]	3GPP TS 36.124	3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA); ElectroMagnetic Compatibility (EMC) requirements for mobile terminals and ancillary equipment	V14.1.0 Release 14 (2017-01)

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Number: **MP_007080** - Date: **2018-01-04**

for

Netradyne

User Equipment Type:

DRI-128

Final Hardware Version: RevD

Final Software Version: 0.2.1

Annex A: Accreditation Certificate

This annex consists of 2 pages

**CETECOM Inc. is accredited
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Accredited Laboratory

A2LA has accredited

CETECOM INC.

Milpitas, CA

for technical competence in the field of

Electrical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 *General requirements for the competence of testing and calibration laboratories*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated 8 January 2009).



Presented this 8th day of March 2016.

President and CEO
For the Accreditation Council
Certificate Number 2135.01
Valid to January 31, 2018
Revised December 20, 2017

For the tests to which this accreditation applies, please refer to the laboratory's Electrical Scope of Accreditation.

The annex pages of the certificate may be received from CETECOM on request.

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for

Netradyne

User Equipment Type:

DRI-128

Final Hardware Version: RevD

Final Software Version: 0.2.1

Annex B: Test Equipment

This annex consists of 4 pages

**CETECOM Inc. is accredited
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ctia Authorized™
Test Lab
Lab Code: 20020328-00

CETECOM Inc.

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1. Test Equipment Location

Testing was performed at the following marked location:

1.1 Location "Essen"

Address: CETECOM GmbH
Im Teelbruch 116
45219 Essen
Germany

☐

1.2 Location "Milpitas, CA"

Address: CETECOM Inc.
411 Dixon Landing Road
Milpitas, CA
USA 95035

☒

1.3 Location "Anyang-si"

Address: CETECOM Limited
RN. 221, Dusanventuredigm Bldg., 415 Heungan-daero, Dongan-gu,
Anyang-si, Gyeonggi-do
Korea 14059

☐

1.4 Location "Düsseldorf"

Address: CETECOM GmbH, Branch Düsseldorf
Muendelheimer Weg 35
40472 Düsseldorf
Germany

☐

1.5 Location "Shanghai"

Address: 9/F, Silver Tower, 98 South Wanping Rd., Xuhui District,
200030 Shanghai
China

☐

1.6 Location "Tokyo"

Address: CETECOM Japan K.K.
Shin-Yokohama Business Center Bldg. 4F
3-2-6 Shin Yokohama, Kohoku-ku Tokyo
Japan 222-0033

☐

2. List of Test Equipment

2.1 Anechoic Chamber

ID: Anechoic Chamber [Mil 1]	
Location:	Milpitas, CA (1.2)
Serialnumber:	N/A
Ambient Conditions:	Temperature: 15°C - 35°C Rel. Humidity: 20% - 75%
Calibration:	Due date for the next test equipment calibration: N/A

2.2 R&S CMW500

ID: R&S CMW500 [Mil 1]	
Location:	Milpitas, CA (1.2)
Serialnumber:	109825
Hardware:	
Software version:	
Ambient Conditions:	Temperature: 15°C - 35°C Rel. Humidity: 20% - 75%
Calibration:	Due date for the next test equipment calibration: 2019-06-30

2.3 Additional Equipment for Testing the Radiated Spurious Emissions

ID	Loc	Instrument / Equipment	Type	Manufacturer	Serialnumber	Expiry Date
102M	1.2	Pre-Amplifier	JS40010260	MITEQ	340125	N/A
103M	1.2	High Pass Filter-1500MHz	HP12/1700	FILTEK	14C48	N/A
104M	1.2	High Pass Filter-2800MHz	HP12/2800	FILTEK	14C47	N/A
108M	1.2	BiConiLog Antenna	3141	EMCO	0005-1186	N/A
115M	1.2	Horn Antenna	3115	EMCO	35114	N/A
116M	1.2	EMI Receiver/Analyzer	ESU 40	Rohde & Schwarz	100251	N/A
117M	1.2	Relay Switch Unit	RSU	Rohde & Schwarz	338964/001	N/A
118M	1.2	Turn Table	2075	EMCO	N/A	N/A
119M	1.2	MAPS Position Controller	2092	ETS-Lindgren	0004-1510	N/A
120M	1.2	Antenna Mast	2075	EMCO	N/A	N/A
121M	1.2	BiConiLog Antenna	3249	ETS-Lindgren	J000123908	N/A
122M	1.2	Spectrum Analyzer	FSU	Rohde & Schwarz	200302	N/A

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for

Netradyne

User Equipment Type:

DRI-128

Final Hardware Version: RevD

Final Software Version: 0.2.1

Annex C:

ICS/IXIT Information

The (P)ICS/(P)IXIT data given or referenced in this annex is based on the latest information received from the client or user equipment (UE) manufacturer, either verbally or in writing. Therefore, this given information has been used for testing at **CETECOM** for the above mentioned UE configuration. It is the responsibility of the legal owner of the tested UE (i.e. owner of the UE's brand name as given on the cover page of this report) to verify the correctness of the data on the following pages and to indicate any possible incorrectness to **CETECOM**.

This annex consists of 2 pages

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PICS – Protocol Implementation Conformance Statement

Netradyne

*Power Supply

Nominal testing voltage 12V [WP7504: 3.7V]

Minimal testing voltage 10.5V [WP7504: 3.66V]

Maximal testing voltage 14.5V [WP7504: 3.73V]

PARTIAL TEST REPORT

Number: **MP_007080** - Date: **2018-01-04**

for

Netradyne

User Equipment Type:

DRI-128

Final Hardware Version: RevD

Final Software Version: 0.2.1

Annex D: Photographs

This annex consists of 2 pages

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1. Photographs of the Equipment Under Test

1.1 Front View of EUT



1.2 Back View of EUT



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for

Netradyne

User Equipment Type:

DRI-128

Final Hardware Version: RevD

Final Software Version: 0.2.1

Annex E: Detailed Test Verdicts

This annex consists of 7 pages

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Lab Code: 20020328-00

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1. General Description

This annex of the test report includes tables with detailed test results of the equipment under test (EUT).

2. Terms used in the detailed test result tables

This section defines the terms which are used in the enclosed detailed test result tables.

2.1 Main Terms

The following main terms are used in the detailed test result tables:

Term	Explanation
Test Case	Test case identifier of the corresponding test specification as referenced in section 4 of this test report.
Test Description	Name of the test case as referenced in the corresponding test specification.
Cat	Category of the related test case in the related frequency band. The interpretation of the corresponding category is defined in the related Permanent Reference Document GCF-CC and/or NAPRD03.
Verdict	Verdict for each test case. See section 2.2 of this annex for detailed information.
Notes	Information about used test samples, special test situations, special test setups or special interpretations of the test results. See section 2.3 of this annex for detailed information.

2.2 Terms in column "Verdict"

The following terms are used in the detailed test result tables to identify the verdicts of each test case in the given frequency bands:

Verdict	Explanation
PASS	EUT has been tested at CETECOM's (own or subcontracted) laboratories and is conformant to the applied standards for this test case in the given Band.
FAIL	EUT has been tested at CETECOM's (own or subcontracted) laboratories but is not conformant to the applied standards for this test case in the given Band.
PASS/----	For not completely validated tests only the validated parts of the test are "PASS" as mentioned above.
INC.	"Inconclusive": EUT has been tested at CETECOM's (own or subcontracted) laboratories but the test verdict for this test case in the given Band is ambiguous. Detailed explanation is given in the note for the corresponding test case.
N/A	"Not Applicable": According to the client's and/or manufacturer's documentation (PICS/PIXIT) this test is not applicable in the given Band or the test case is not applicable according to an exception which is documented in the corresponding "Additional Reference Documents for Testing". (listed in test report section 2.3.2).
N/R	"Not Required": This test case is not required for conformance testing in the given frequency band due to special rules accepted in the corresponding certification regime. <u>Examples:</u> - Test case only needs to be tested in one single frequency band - Test case only needs to be tested with limited parameters or settings - Test case has exceptions (e.g. due to test specification or test platform faults) - Test case is waived by the certification committee
R	"Redundant": This test has not been performed in the given Band but the test requirement has been verified by means of another test case (e.g. in an other technology).
NO	This test has not been performed with the EUT in the given Band and/or with the given test parameter(s) although the test may be mandatory for conformance testing.
----	Test is not defined or not validated in the given frequency band or not used by the specific certification regime.

2.3 Terms in column "Notes"

2.3.1 Test samples used for testing

The detailed test result tables contain **numerical notes** (e.g. "1,4,...") to identify the EUT test samples used for each performed test case.

These numerical notes directly refer to the corresponding EUT identifier defined in **section 3.3** of the test report (e.g. note "1,4" indicates that the given test case in the given Band has been tested with both user equipment test samples identified as EUT1 and EUT4).

2.3.2 Special Test Situations, Test Setups and Verdict Interpretations

The detailed test result tables may also contain **letter notes** (e.g. "A,C,...") to identify special test situations, special test setups or special interpretations for the given test case. The following letter notes are used:

Note	Explanation
A	3GPP TS 34.124 test case 8.2 in FDD II, IV, and FDD V are covered by testing 3GPP TS 36.124 in FDD 25, FDD4, and FDD 5 in the same order per NAPRD03 section 1.9.7.
B	3GPP TS 36.124 test case 8.2. Only harmonics of the carrier bands in addition to one idle sweep in FDD 25 were tested and passed per PPMD requirements in section 11.10.3.4.
C	3GPP TS 36.124 test case 8.2 in FDD 2 and FDD 17 are covered by testing 3GPP TS 36.124 in FDD 25 and FDD12 in the same order per NAPRD03 section 1.9.7.

3. General Notes

3.1 General Note GN1

DRI-128 is integrating Sierra Wireless WP7504 [HW: 1.0; SW: SWI9X15Y_07.12.09.00].

3.2 General Note GN2

Using a terminal program (TeraTerm) and AT commands as provided by the manufacturer was used to facilitate testing.

3.3 General Note GN3

IMEI SV was checked via CMW500 and verified to be 45.

4. Detailed Test Result Tables

The test result tables in the following sections include detailed information for all performed test cases.
The test result tables are arranged according to the different used test specifications.

4.1 Test Results according to 3GPP TS 34.124

Test Results of Netradyne DRI-128

3GPP TS 34.124	Band	Cat	Verdict	Notes
----------------	------	-----	---------	-------

8.2 Radiated Emission				
	FDD II	A	N/R	A
	FDD V	A	N/R	A
	FDD IV	A	N/R	A

Please refer to test report Annex E section 2 for detailed information of the used terms and notes.

4.2 Test Results according to 3GPP TS 36.124

Test Results of Netradyne DRI-128

3GPP TS 36.124	Band	Cat	Verdict	Notes
----------------	------	-----	---------	-------

8.2 Radiated Emission				
	FDD 12	A	PASS	1, B
	FDD 25	A	PASS	1, B
	FDD 17	A	N/R	C
	FDD 4	A	PASS	1, B
	FDD 2	A	N/R	C
	FDD 5	A	PASS	1, B

Please refer to test report Annex E section 2 for detailed information of the used terms and notes.