

Report on the FCC Exposure Testing of the DetNet South Africa (Pty)
Tagger Hand Held Electronic Tester,
Model: CE4 Tagger
In accordance with CFR 47 Part 18 KDB 680106



Product Service

Choose certainty.
Add value.

Prepared for: DetNet South Africa (Pty) Ltd
Block 1B, Founders Hill Office Park,
Centenary Road
Modderfontein P O Box 10
Modderfontein
1645
South Africa

COMMERCIAL-IN-CONFIDENCE

Document Number: 75943624-14 | Issue: 01

RESPONSIBLE FOR	NAME	DATE	SIGNATURE
Project Management	Natalie Bennett	21 November 2018	
Authorised Signatory	Matthew Russell	21 November 2018	

Signatures in this approval box have checked this document in line with the requirements of TUV SUD 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 CFR 47 Part 18, KDB 680106. The sample tested was found to comply with the requirements for wireless charging defined in the applied rules.

RESPONSIBLE FOR	NAME	DATE	SIGNATURE
Testing	Pete Dorey	21 November 2018	

EXECUTIVE SUMMARY

A sample of this product was tested and found to be compliant with CFR 47 Part 18, KDB 680106 for wireless charging.

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. © 2018 TÜV SÜD Product Service.

TÜV SÜD Product Service
is a trading name of TÜV SÜD Ltd
Registered in Scotland at East Kilbride,
Glasgow G75 0QF, United Kingdom
Registered number: SC215164

TÜV SÜD Ltd is a
TÜV SÜD Group Company

Phone: +44 (0) 1489 558100
Fax: +44 (0) 1489 558101
www.tuv-sud.co.uk

TÜV SÜD Product Service
Octagon House
Concorde Way
Fareham
Hampshire PO15 5RL
United Kingdom



Contents

1	Report Summary	2
1.1	Report Modification Record.....	2
1.2	Introduction.....	2
1.3	Brief Summary of Results	3
1.4	Product Information	4
1.5	Deviations from the Standard.....	4
1.6	EUT Modification Record	5
1.7	Test Location	5
2	Test Details	6
2.1	RF Exposure Electric and Magnetic Fields	6
2.2	Test Set-up Photographs	8
2.3	Test Location and Test Equipment Used	9
2.4	Measurement Uncertainty	9



1 Report Summary

1.1 Report Modification Record

Alterations and additions to this report will be issued to the holders of each copy in the form of a complete document.

Issue	Description of Change	Date of Issue
1	First Issue	21 November 2018

Table 1

1.2 Introduction

Applicant	DetNet South Africa (Pty)
Manufacturer	DetNet South Africa (Pty)
Model Number(s)	CE4 Tagger
Serial Number(s)	36383832 35355114 00440026
Hardware Version(s)	V3
Software Version(s)	34374
Number of Samples Tested	1
Test Specification/Issue/Date	FCC CFR 47 Part 18 (2017) Industrial, Scientific, and Medical Equipment
Order Number	4500348610
Date	21-August-2018
Date of Receipt of EUT	07-September-2018
Start of Test	26-September-2018
Finish of Test	26-September-2018
Name of Engineer(s)	Pete Dorey
Related Document(s)	KDB 680106 D01 V03 RF exposure considerations for low power consumer wireless power transfer applications. FCC CFR 47 Part 1.1310 Radiofrequency radiation exposure limits.



Product Service

1.3 Brief Summary of Results

A brief summary of the tests carried out in accordance with FCC CFR 47 Part 18, KDB 680106 is shown below.

Section	Specification Clause	Test Description	Result	Comments/Base Standard
Configuration: Tagger charging from 0% on wireless charging pad type Energizer WLACWH4				
2.1	3 c)	RF Exposure Electric and Magnetic fields	Pass	KDB 680106

Table 2

1.4 Product Information

1.4.1 Technical Description

Refer to manufacturers information for details.

The IntelliShot electronic initiating system is used in the mining sector.

The IntelliShot Tagger is a Tagger Hand Held Electronic Tester for use us with electronic detonators in the mining and blasting industry. see Figure 1. The Tagger can be wirelessly charged with a suitable WPT source. No intelligent communication is transmitted wirelessly during charging.



Figure 1 – General View

1.5 Deviations from the Standard

No deviations from the applicable test standard were made during testing.



1.6 EUT Modification Record

The table below details modifications made to the EUT during the test programme.
The modifications incorporated during each test are recorded on the appropriate test pages.

Modification State	Description of Modification still fitted to EUT	Modification Fitted By	Date Modification Fitted
Serial Number: 36383832 35355114 00440026			
0	As supplied by the customer	Not Applicable	Not Applicable

Table 3

1.7 Test Location

TÜV SÜD Product Service conducted the following tests at our Fareham Test Laboratory.

Test Name	Name of Engineer(s)	Accreditation
Configuration and Mode: Tagger charging from 0% on wireless charging pad type Energizer WLACWH4		
RF Exposure Electric and Magnetic Field	Pete Dorey	Not Accredited

Table 4

Office Address:

Octagon House
Concorde Way
Segensworth North
Fareham
Hampshire
PO15 5RL
United Kingdom



2 Test Details

2.1 RF Exposure Electric and Magnetic Fields

2.1.1 Specification Reference

FCC CFR 47 Part 18, KDB 680106, Clause 3 RF Exposure Requirements, 3 c): Desktop applications

2.1.2 Equipment Under Test and Modification State

Tagger Hand Held Electronic Tester - Modification State 0

2.1.3 Date of Test

26-September-2018

2.1.4 Test Method

For devices designed for typical desktop applications, such a wireless charging pads, RF exposure evaluation should be conducted assuming a user separation distance of 15 cm.

E and H field strength measurements shall be used to demonstrate compliance.

Measurements should be made from all sides and the top of the primary/client pair, with the 15 cm measured from the center of the probe(s) to the edge of the device.

Emissions between 100 kHz to 300 kHz should be assessed versus the limits at 300 kHz in Table 1 of Section 1.1310: 614 V/m and 1.63 A/m.

2.1.5 Environmental Conditions

Ambient Temperature 21 °C
 Relative Humidity 34 %

2.1.6 Test Results

Measurement Result

Field Type	Measurement position	Field Strength Result	MPE Limit *	Units	Test Separation Distance (mm)	Compliance (Yes/No)
Electric field	RHS	1.99	614	V/m rms	150	Yes
Electric field	LHS	1.92	614	V/m rms	150	Yes
Electric field	Top	1.54	614	V/m rms	150	Yes
Electric field	Bottom	1.52	614	V/m rms	150	Yes
Electric field	Front face	1.90	614	V/m rms	150	Yes

Table 5 – Electric Field



Field Type	Measurement position	Field Strength Result	MPE Limit *	Units	Test Separation Distance (mm)	Compliance (Yes/No)
Magnetic field	RHS	0.05	1.63	A/m rms	150	Yes
Magnetic field	LHS	0.04	1.63	A/m rms	150	Yes
Magnetic field	Top	0.04	1.63	A/m rms	150	Yes
Magnetic field	Bottom	0.03	1.63	A/m rms	150	Yes
Magnetic field	Front face	0.06	1.63	A/m rms	150	Yes

Table 6 – Magnetic Field

* Table 1 of Section 1.1310: 614 V/m and 1.63 A/m

Measurement Result Frequency Spectrum

The frequency spectrum was viewed using the Field Meter FFT function to confirm the frequency of the transmissions.

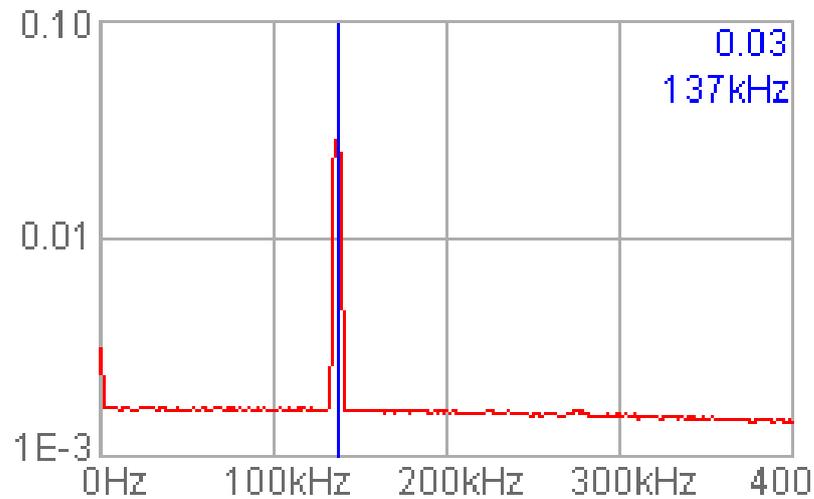


Figure 2 - Frequency Spectrum 137 kHz



2.2 Test Set-up Photographs

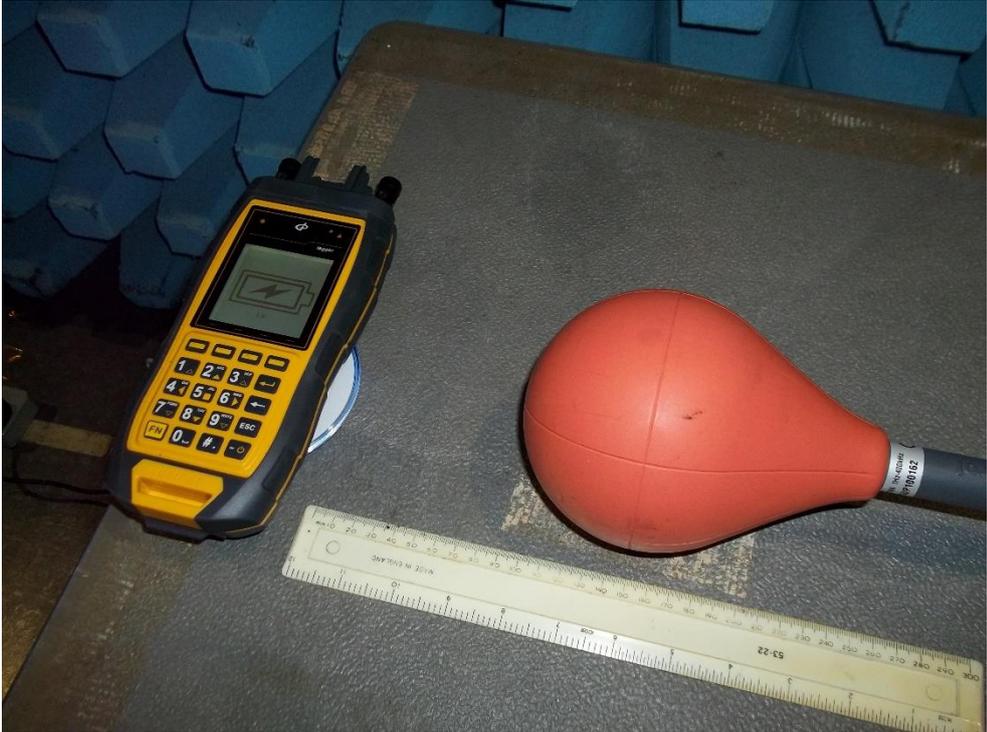


Figure 3 – Right Hand Side 150 mm Test Distance

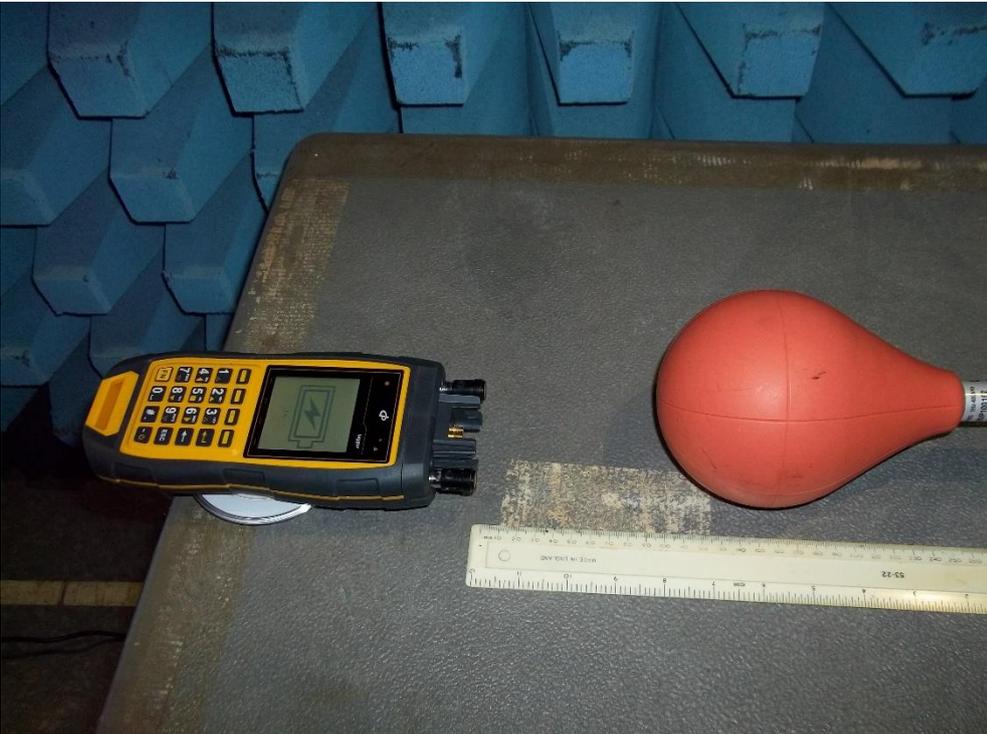


Figure 4 – Top 150 mm Test Distance



2.3 Test Location and Test Equipment Used

This test was carried out in Chamber 7.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Due
EM Field Meter	Wavecontrol	SMP2 & WP400 Probe	5128	24	O/P Mon*
Thermo-Hygro	RS	212-124	-	-	-

Table 7

O/P Mon – Output Monitored using calibrated equipment

* EM Field Meter TE5128 was checked with a calibrated meter TE2825 (Narda, ELT400) and results were comparable.

2.4 Measurement Uncertainty

For a 95% confidence level, the measurement uncertainties for defined systems are:

Test Name	Measurement Uncertainty
Electric field strength V/m	± 1.3 dB
Magnetic field strength A/m	± 1.2 dB

Table 8