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COMMERCIAL-IN-CONFIDENCE

SAR EXCLUSION DOCUMENT

Document 75943624-11 Issue 02

**CE4 Commander 1 (declared variant: CE4 Commander 2)
13.56 MHz Transmitter:**

ISED RSS-102 Exemption Limits for Routine Evaluation – SAR Evaluation (RSS-102 Section 2.5.1)

Up to 6 GHz – Separation Distance \leq 200 mm

The SAR evaluation exemption is determined by comparison of the output power level (adjusted for tune-up tolerance) for the specified comparison distance to the limit given in RSS-102 Table 1.

SAR Exclusion Result:

Frequency (MHz)	Maximum Power EIRP (Tune up Value) * (mW)	Test Separation Distance (mm) **	Exemption Limit *** (mW)	SAR Test Exclusion (Yes/No)
13.56	3.98	200	345	Yes

*Tune-up value is the maximum declared output power of the device.

**Test separation distance refers to the minimum test separation distance based on the smallest distance between the antenna and radiating structures or the outer surface of the device, according to the most conservative exposure condition for the applicable module or host platform test procedure requirements, to any part of the body or extremity of a user or bystander.

*** Select power from RSS-102 Table 1 for the applicable frequency and separation distance. For controlled use devices where the 8 W/kg for 1 gram of tissue applies, the exemption limits for routine evaluation in Table 1 are multiplied by a factor of 5. For limb-worn devices where the 10 gram value applies, the exemption limits for routine evaluation in Table 1 are multiplied by a factor of 2.5. If the operating frequency of the device is between two frequencies located in Table 1, linear interpolation shall be applied for the applicable separation distance.

The SAR exclusion threshold has been evaluated using the method described above from information supplied by the manufacturer. Based on the evaluation above, the EUT is categorically excluded from SAR testing.

Approved by

Matthew Russell
Authorised Signatory

Date 03February 2022



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Manufacturer's Declaration of Product information (extract):

Product Description:	Free standing blast controller
Model number:	Commander 1 (declared variant: Commander 2)

Antenna length (cm):	4.5	Centimetres (cm)
Frequency range:		
Bottom frequency:		MHz
Middle frequency:	13.56	MHz
Top frequency:		MHz

Maximum power (input to the antenna including a tolerance):	0.00398	W
Antenna gain (or maximum gain allowed):	0	dBi

Or

Field Strength Measurement		dBµA/M
Measurement Distance		cm

Separation distance from antenna to the user/bystander:	20	cm
Transmitter Duty Cycle:		%

Note: EIRP = Max Power P_o x Antenna Gain G_i = 3.98 mW x 1 = 3.98 mW



Manufacturer's Declared Variant(s)

Declared Variant: CE4 Commander DS600

Classification: Restricted	System/Product:	Document Ref:	Revision:
	Document Type:	TGN-00106	1
	DigiShot 600	Current Author:	
	TGN-Tech General	Morgan Lombard	
	Title:	Original Author:	
	Changes between DigiShot 600 Commander and CE4 Commander.	Morgan Lombard	
		Page:	
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1 INTRODUCTION

1.1 Objective

This document describes the differences between the standard CE4 Commander and the DigiShot Commander. Note that from a branding perspective, the system will be branded as 'DigiShot' not 'DigiShot 600' – the latter name being used internally in DetNet to distinguish between the new and old systems.

1.2 Reference Documents

- URS-00111 : DigiShot 600

2 CHANGES

2.1 Hardware Changes

The number of Channels have been reduced to from 4 IOM to 2 IOM.

Table 1 - Hardware differences

	CE4 Commander	DigiShot Commander
Channels	4	2 *

* Channel 3 and 4 will be used on DigiShot.

2.2 Mechanical changes

- Main enclosure colour changed from Pantone Yellow 1235C to Pantone Orange 21C. Base material remains PA 66. Other elements remain the same.
- Top two IOM, bezels, spring-loaded wire terminals, associated gaskets and fastening hardware removed.
- The DigiShot UI Faceplate lacks the holes for the above bezels and spring-loaded wire terminals. A Matt Polycarbonate product label is placed over this area.
- Same packaging will be used as the CE4 Commander, at roughly the same weight (14Kg). Packaging tests are conducted to the nearest Kg so the difference in weight from the lack of two IOM is negligible.
- Fitted with an improved UI front plate and sealing.

APPROVER	APPROVER SIGNATURE	SIGNATURE DATE	ISSUE DATE
Abrie Liebenberg		2020/10/20	2020/10/20
	<small>Signed by: ALieb 20200403</small>		

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Figure 1: CE4 Commander UI vs. DigiShot Commander UI



Figure 2: DigiShot System packaging uses existing CE4 Commander Packaging.



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2.3 Firmware Changes

The Base is only allowed to connect to one Bench by default. A ticket option can be used to change the number of benches to two. The Bench only allows 300 detonators per channel. The Bench is limited to two channels. The Bench only works with DigiShot detonators.

Table 2 - Firmware differences

	CE4 Commander	DigiShot Commander
Benches	10	1 (2)
Channels	4	2
Detonators per Channel	400	300
Detonator Product	DigiShot+, IntelliShot	DigiShot

3 REVISION HISTORY

Revision 1: New document