

FCC Testing of the
DAQRI International Ltd
Model: DAQRI Smart Helmet
In accordance with FCC 47 CFR Part 15B

Prepared for: DAQRI LLC
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FCC ID: 2AEWMDQR001001

COMMERCIAL-IN-CONFIDENCE

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Product Service

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RESPONSIBLE FOR	NAME	DATE	SIGNATURE
Project Management	Steven White	24 March 2017	
Authorised Signatory	Matthew Russell	24 March 2017	

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. The sample tested was found to comply with the requirements defined in the applied rules.

RESPONSIBLE FOR	NAME	DATE	SIGNATURE
Testing	Jack Tuckwell	24 March 2017	

FCC Accreditation

90987 Octagon House, Fareham Test Laboratory

EXECUTIVE SUMMARY

A sample of this product was tested and found to be in compliance with FCC 47 CFR Part 15B: (2015).



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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	24 March 2017

Table 1

1.2 Introduction

Applicant	DAQRI LLC
Manufacturer	DAQRI International Ltd
Model Number(s)	DAQRI Smart Helmet
Serial Number(s)	1829C-DC8-6UPN9XJWJW
Hardware Version(s)	DAQRI Thor DE
Software Version(s)	V16
Number of Samples Tested	1
Test Specification/Issue/Date	FCC 47 CFR Part 15B: (2015)
Order Number	107133
Date	25-November-2016
Date of Receipt of EUT	25-November-2016
Start of Test	07-March-2017
Finish of Test	07-March-2017
Name of Engineer(s)	Jack Tuckwell
Related Document(s)	ANSI C63.4 (2014)



Product Service

1.3 Brief Summary of Results

A brief summary of the tests carried out in accordance with FCC 47 CFR Part 15B is shown below.

Section	Specification Clause	Test Description	Result	Comments/Base Standard
Configuration: Idle				
2.1	15.109	Radiated Emissions	Pass	ANSI C63.4

Table 2



1.4 Declaration of Build Status

Manufacturer	DAQRI LLP
Country of origin	USA
UK Agent	DAQRI LLP
Technical Description	DAQRI Smart Helmet is a wearable human-machine interface that connects workers in a variety of industries and environments to real time information and augmented work instructions.
Model No	DAQRI Smart Helmet
Part No	THR5002101
Serial No	1829C-DC8-6UPN9XJWJW
Drawing Number	
Build Status	DAQRI Thor DE
Software Issue	V16
Hardware Issue	DAQRI Thor DE
Highest Internally Generated Frequency	5.825 GHz
FCC ID	2AEWMDQR001001
Industry Canada ID	N/A
Signature	Dave Williams
Date	1 March 2017
D of B S Serial No	

Note: This document has been prepared to enable manufacturers with no mechanism for producing their own Declaration of Build Status, to declare the build state of the equipment submitted for test.

No responsibility will be accepted by TÜV SÜD Product Service as to the accuracy of the information declared in this document by the manufacturer.

1.5 Product Information

1.5.1 Technical Description

DAQRI Smart Helmet is a wearable human-machine interface that connects workers in a variety of industries and environments to real time information and augmented work instructions.

1.6 Deviations from the Standard

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

1.7 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: 1829C-DC8-6UPN9XJWJW			
0	As supplied by the customer	Not Applicable	Not Applicable

Table 3

1.8 Test Location

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

Test Name	Name of Engineer(s)	Accreditation
Configuration: Idle		
Radiated Emissions	Jack Tuckwell	UKAS

Table 4

Office Address:

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

2 Test Details

2.1 Radiated Emissions

2.1.1 Specification Reference

FCC 47 CFR Part 15B, Clause 15.109

2.1.2 Equipment Under Test and Modification State

DAQRI Smart Helmet, S/N: 1829C-DC8-6UPN9XJWJW - Modification State 0

2.1.3 Date of Test

07-March-2017

2.1.4 Test Method

The test was performed in accordance with ANSI C63.4, clause 8.

2.1.5 Environmental Conditions

Ambient Temperature 18.7 °C

Relative Humidity 37.0 %

2.1.6 Test Results

Idle

Highest frequency generated or used within the EUT: 5825 MHz

Upper frequency test limit: 40 GHz

Frequency (MHz)	QP Level (dB μ V/m)	QP Limit (dB μ V/m)	QP Margin (dB μ V/m)	Angle(Deg)	Height(m)	Polarity
40.776	31.4	40.0	-8.6	269	1.70	Vertical
53.574	39.2	40.0	-0.8	261	1.00	Vertical
79.217	36.2	40.0	-3.8	232	1.59	Vertical
88.535	35.0	43.5	-8.5	138	1.00	Vertical
228.352	37.7	46.0	-8.3	230	1.00	Horizontal
861.415	34.9	46.0	-11.1	76	1.00	Vertical

Table 5 - 30 MHz to 1 GHz Emissions Results

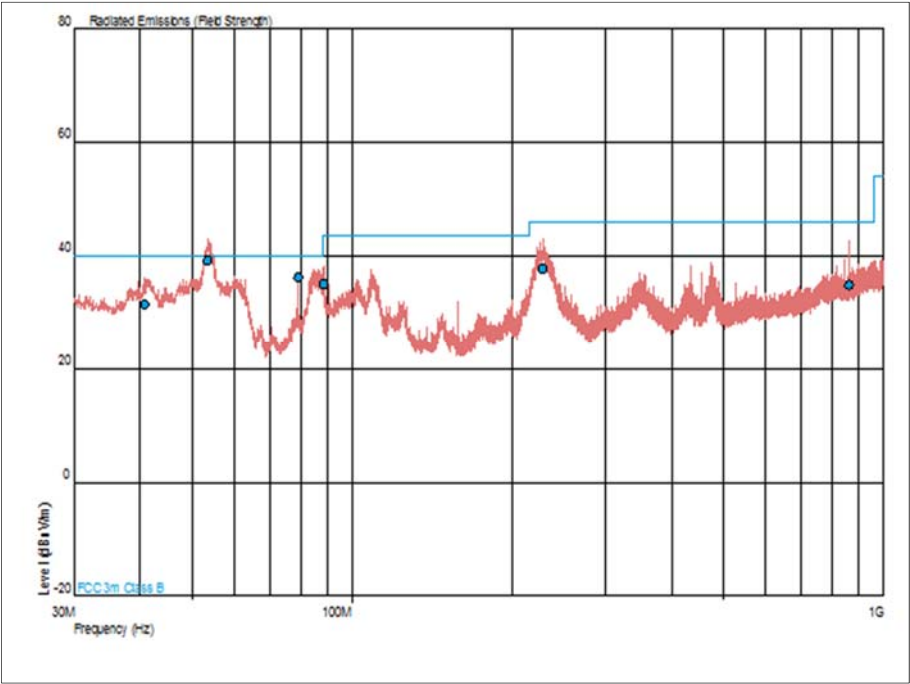


Figure 1 - 30 MHz to 1 GHz - Horizontal and Vertical

Frequency (GHz)	Result (µV/m)		Limit (µV/m)		Margin (µV/m)		Angle (°)	Height (m)	Polarisation
	Peak	Average	Peak	Average	Peak	Average			
*									

Table 6 - 1 GHz to 40 GHz Emissions Results

*No emissions were detected within 6 dB of the limit.

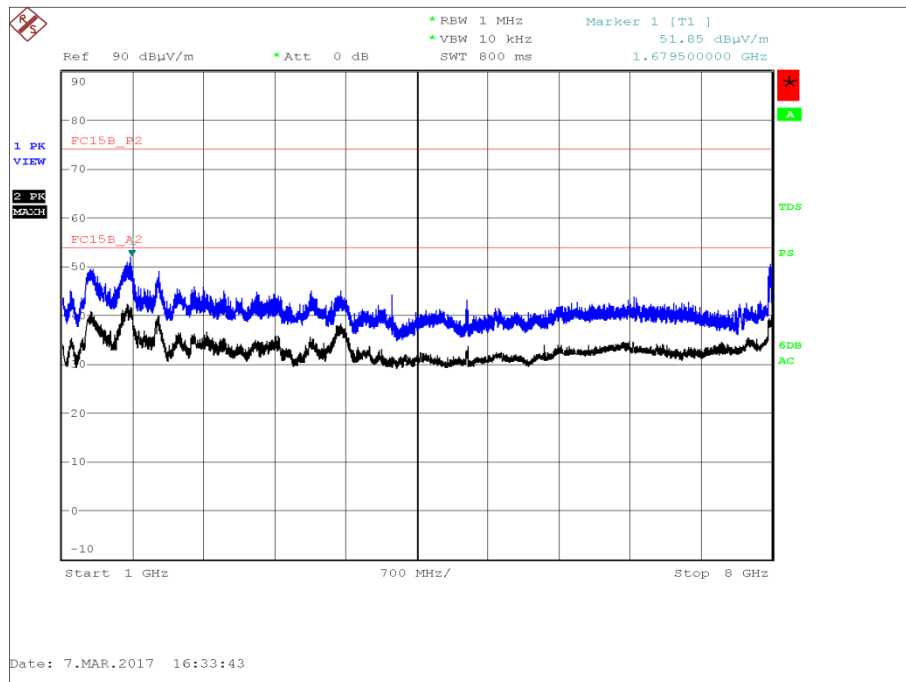


Figure 2 - 1 GHz to 8 GHz - Horizontal and Vertical

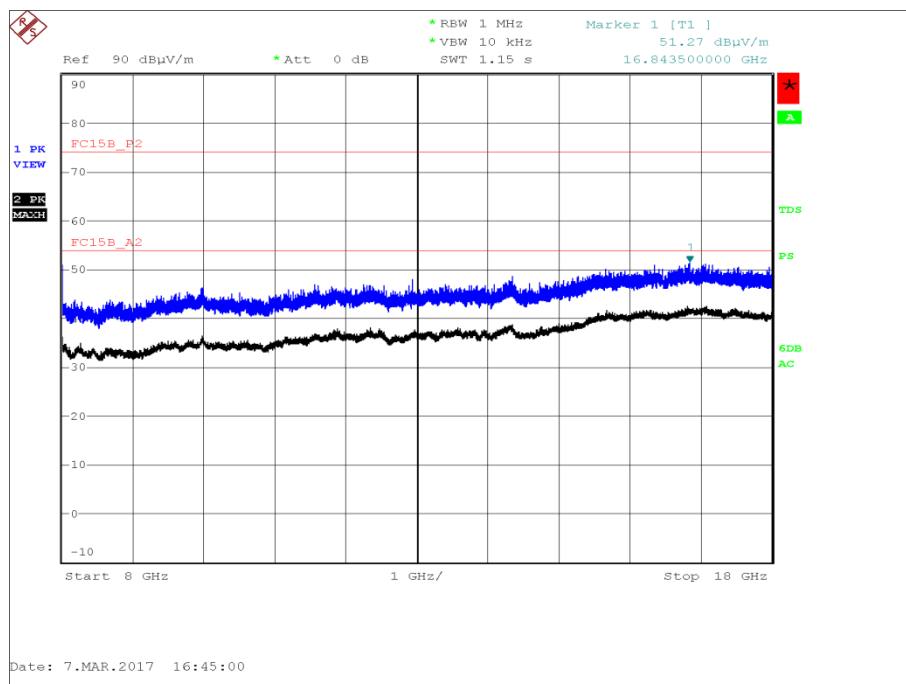


Figure 3 - 8 GHz to 18 GHz - Horizontal and Vertical

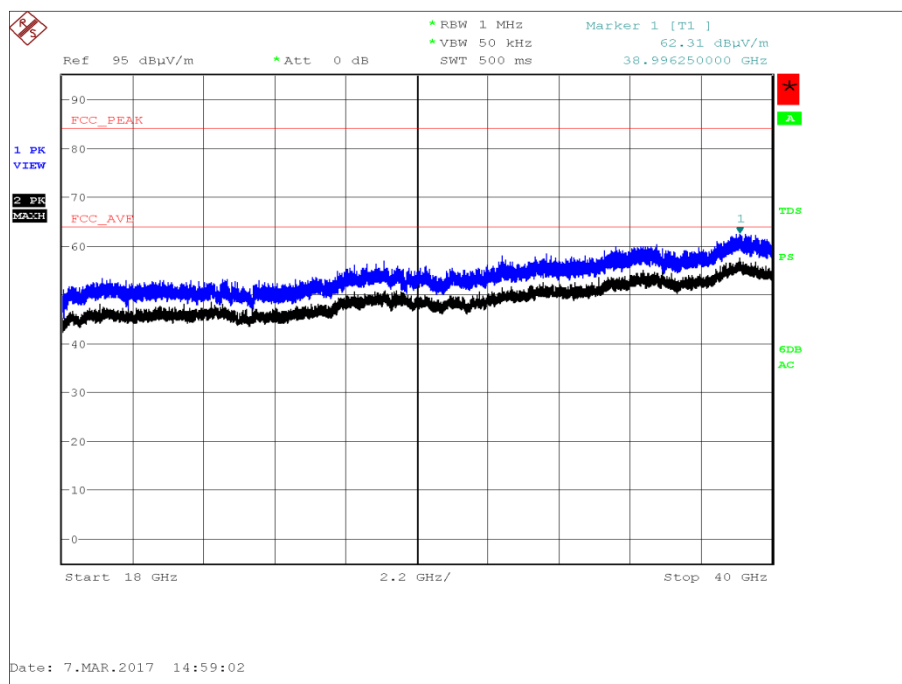


Figure 4 - 18 GHz to 40 GHz - Horizontal and Vertical

FCC 47 CFR Part 15, Limit Clause 15.109

Frequency of Emission (MHz)	Field Strength ($\mu\text{V/m}$)
30 to 88	100.0
88 to 216	150.0
216 to 960	200.0
Above 960	500.0



2.1.7 Test Location and Test Equipment Used

This test was carried out in EMC Chamber 5.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Due
Antenna 18-40GHz (Double Ridge Guide)	Link Microtek Ltd	AM180HA-K-TU2	230	24	12-Feb-2018
Pre-Amplifier	Phase One	PS04-0086	1533	12	29-Jul-2017
18GHz - 40GHz Pre-Amplifier	Phase One	PS04-0087	1534	12	23-Jan-2018
Screened Room (5)	Rainford	Rainford	1545	36	20-Dec-2017
Turntable Controller	Inn-Co GmbH	CO 1000	1606	-	TU
Hygrometer	Rotronic	I-1000	2891	12	23-Aug-2017
EMI Test Receiver	Rohde & Schwarz	ESU40	3506	12	12-Nov-2017
Tilt Antenna Mast	matur GmbH	TAM 4.0-P	3916	-	TU
Mast Controller	matur GmbH	NCD	3917	-	TU
1GHz to 8GHz Low Noise Amplifier	Wright Technologies	APS04-0085	4365	12	17-Oct-2017
Double Ridged Waveguide Horn Antenna	ETS-Lindgren	3117	4722	12	17-Feb-2018

Table 7

TU - Traceability Unscheduled



3 Measurement Uncertainty

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

Test Name	Measurement Uncertainty
Radiated Emissions	30 MHz to 1 GHz: ± 5.2 dB 1 GHz to 40 GHz: ± 6.3 dB

Table 8