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RF EXPOSURE PROCEDURES AND EQUIPMENT AUTHORIZATION POLICIES FOR MOBILE AND PORTABLE DEVICES

REPORT NUMBER: M2210003-5 V2

STANDARD: FCC KDB 447498 D01

CLIENT: HITIQ LIMITED

DEVICE: MOUTHGUARD AND CHARGER CASE

DATE OF ISSUE: 26 SEPTEMBER 2023

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REVISION TABLE

Version	Sec/Para Changed	Change Made	Date
1		Initial issue of document	15/05/2023
2	Page 6 Section 2 & 6 Page 9	FCC ID corrected. Sections deleted. Requirements statement added.	19/09/2023



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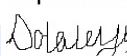
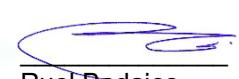
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RADIOFREQUENCY RADIATION EXPOSURE EVALUATION REPORT - MPE

Device 1:	Mouthguard
Model Number:	NEX-MG-1-002
Device 2:	Charger Case
Tested Model:	NEX-MC-002-S
Variant Model:	NEX-MC-002-L (<i>The internal electronics and most of the plastics are the same with -S, only the tray size is different between two models.</i>)
Manufacturer:	HITIQ Limited
Inspected for:	HITIQ Limited
Address:	Suite 1, Level 2, 9-17 Raglan St, South Melbourne, 3205, Victoria
Phone Number:	0415296907
Contact:	Sharafat Hossain
Email:	sharafat@hitiq.co
Standards:	447498 D01 General RF Exposure Guidance v06 RF exposure procedures and equipment authorization policies for mobile and portable devices.
Result:	Based on an assessment of the documentation provided, performed measurements and the declared separation distance from the human body under normal use, the Mouthguard and Charger Case comply with the RF exposure requirements of 447498 D01 V06. Refer to Report M2210003-5 V2 V2 for full details.
Assessment Date:	06 February 2023
Issue Date:	26 September 2023
Assessment Engineer:	 Deborah Olaleye
	 Ruel Badajos
Authorised Signatory:	 Shabbir Ahmed Technical Director

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1 INTRODUCTION

This report is intended to demonstrate compliance of the Mouthguard and Charger Case model with the RF exposure requirements of KDB 447498 D01-v06. Evaluation was performed in accordance with KDB 680106-v03.

The test sample was provided by the Client. The conclusion herein is based on the information provided by the client.

1.1 Laboratory Overview

EMC Technologies Pty. Ltd. is an independently owned Australian company that is NATA accredited to ISO 17025 for both testing and calibration and ISO 17020 for Inspection. – **Accreditation Number 5292.**

1.2 Test Laboratory/Accreditations

Inspection was performed at EMC Technologies' laboratory in Keilor Park, Victoria Australia.

Table 1-1: Accreditations for Conformity Assessment

Country/Region	Body	
Australia/New Zealand	NATA	Accreditation Number: 5292
Europe	European Union	Notified Body Number: 0819
USA	FCC	Designation Number: AU0001 (Melb)
Canada	ISED Canada	Company Number: 3569B(Melb)
Japan	VCCI	Company Number: 785
Taiwan	BSMI	Lab Code SL2-IN-E-5001R

2 DEVICE DETAILS

(Information supplied by the Client)

The Smart mouthguard monitors head impact. Charger case is used as the charging device and storage for the smart mouthguard.

Manufacturer:	HITIQ Limited
Sample 1:	Mouthguard
Model Number:	NEX-MG-1-002
Distance From human body in normal use:	5mm
Sample 2:	Charger Case
FCC ID:	2A2G6-ICC2
Tested Model:	NEX-MC-002-S
Variant Model:	NEX-MC-002-L
Distance From human body in normal use:	Greater than 20cm

Transmit parameters were provided by the customer and are shown below:

Table 2-1: Transmitter Parameters

Transmitter Parameters	
Wireless Interface:	5W Auto Resonant Wireless Power Transmitter (Linear Technology), LTC 4125
Operating frequency:	215 kHz wireless charging (no data just power)
Transmitter Coil:	LC Network
Current:	-1mA to 2mA
H-Field*:	0.2936 A/m @ 215kHz
E-Field*:	18.88 V/m @ 215kHz
*Measured at 15cm from WPT using EM field meter (Wavecontrol SMP2 with WP400 Sensor)	



Accreditation No.5292

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3 MEASUREMENT METHOD

3.1 Table 1: Test Equipment List

Equipment Type	Make, Model and Serial Number	Calibration due	Calibrated by
EM Field Meter	Asset Number: P-199-1 Manufacturer: Wavecontrol Model Number: SMP2 S/N: 18WP100446/18SN0901	03/2024	Wavecontrol (Manufacturer)
E-Field/ H-Field Probe	Asset Number: P-199-2 Manufacturer: Wavecontrol Model Number: WP400* Freq: 1 Hz to 400 kHz Measurement Type: Selective/Broadband S/N: 18WP100466	03/2024	Wavecontrol (Manufacturer)

*The WP400 probe is a Realtime isotropic, 3-axis probe with 100 cm^2 sensor (diameter = 5.64 cm), the isotropy of this probe is 5% (0.42 dB).

The Uncertainty of the probe is 0.67 dB (Total, counting isotropy, temperature deviation, resolution, frequency response, linearity, repeatability).

3.2 Measurement Procedures

The measurements were performed at 100 Hz – 400 kHz frequency range; magnetic and electric flux measurements were taken using the WaveControl meter. The levels recorded were then compared against the limits in Section 8.

4 UNCERTAINTY

EMC Technologies has evaluated the tools and methods used to perform Radiated Electromagnetic Field predictions.

The Measurement Uncertainties for DC and ELF magnetic field measurements are derived from the manufacturer, Instruments' stated uncertainty factors and calibration data.

Expanded Uncertainty:

Testing: DC to 400kHz $\pm 2.3 \text{ dB}$

The above expanded uncertainties are based on standard uncertainties multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95%.

5 MEASUREMENT RESULTS – WIRELESS POWER TRANSFER

5.1 Limits for Low Power Consumer Wireless Power Transfer Application

The limit as per “680106 D01 RF Exposure Wireless Charging App v03r01”

- 83 V/m for the electric field
- 90 A/m for the magnetic field.

5.2 Results

Table 5-1: Magnetic Field Result

Survey point #	Measured Magnetic Field (A/m)	Limit (A/m)	% of General Public Limit
1	0.075	90	0.084%
2	0.153	90	0.170%
3	0.067	90	0.074%
4	0.076	90	0.085%
5	0.294	90	0.326%

Note: Ambient Field (DUT off) was 0.03 A/m.

Table 5-2: E-Field Result

Survey point #	Measured Electric Field (V/m)	Limit (V/m)	% of General Public Limit
1	12.63	83	15.22%
2	12.24	83	14.75%
3	11.78	83	14.19%
4	15.61	83	18.81%
5	18.88	83	22.75%

Note: Ambient Field (DUT off) was 0.60 V/m.



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5.3 Equipment Approval Considerations

1	Power transfer frequency is less than 1 MHz	215 kHz
2	Output power from each primary coil is less than or equal to 15 watts.	5 watts
3	The system may consist of more than one source primary coils, charging one or more clients. If more than one primary coil is present, the coil pairs may be powered on at the same time.	one coil only
4	The system may consist of more than one source primary coils, charging one or more clients. If more than one primary coil is present, the coil pairs may be powered on at the same time.	one coil only
5	Mobile exposure conditions only (portable exposure conditions are not covered by this exclusion).	✓
6	The aggregate H-field strengths anywhere at or beyond 15 cm surrounding the device, and 20 cm away from the surface from all coils that by design can simultaneously transmit, and while those coils are simultaneously energized, are demonstrated to be less than 50% of the applicable MPE limit.	✓



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6 APPENDIX A

Referenced Documents

Document	Comments
Data Sheet LTC4125	WPT transmitter technical information
Form 005 Customer and EUT Information	CE And Transmitter details



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7 APPENDIX-B**EUT Identification Photos:**

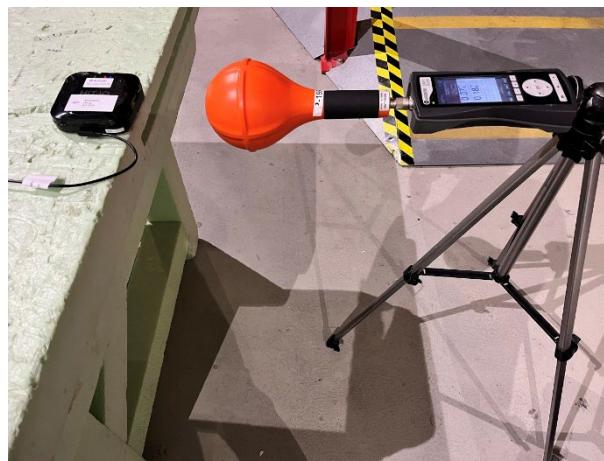
Test Setup



Test Point 5



Test Point 1



Test Point 4

-- END OF REPORT --