



Radio Frequency Exposure Evaluation Report

For:
Universal Audio, Inc.

Model:
GPM-WDR, GPM-RUBY, GPM-DRM

Product Description:

Guitar Effects Pedal

FCC ID: 2AXKQ2029
ISED ID: 26610-2029

Applied Rules and Standards:
CFR 47 Part 2 (2.1093),
FCC KDB 447498 D01 General RF Exposure Guidance v06
ISED RSS-102 Issue 5

Report number: EMC_UNIVE-013-21001_FCC_ISED_SAREX_Rev1

DATE: 2022-1-31



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1. Assessment

The following device was evaluated against the limits for general population uncontrolled exposure specified in CFR 47 Part 2.1093 according to SAR evaluation exclusion requirements specified in FCC regulation as listed in KDB 447498, and ISED RSS-102 Issue 5.

The device meets the requirements for SAR exclusion as stipulated by the above given FCC/ISED rules.

Company	Description	Model #
Universal Audio, Inc.	Guitar Effects Pedal	GPM-WDR, GPM-RUBY, GPM-DRM

Responsible for Testing Laboratory:

2022-1-31	Compliance	Kevin Wang (Lab Manager)
Date	Section	Name

Responsible for the Report:

2022-1-31	Compliance	Kris Lazarov (EMC Engineer)
Date	Section	Name

The test results of this test report relate exclusively to the test item specified in Section 3. CETECOM Inc. USA does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of CETECOM Inc. USA.

2. Administrative Data

2.1. Identification of the Testing Laboratory Issuing the Test Report

Company Name:	CETECOM Inc.
Department:	Compliance
Street Address:	411 Dixon Landing Road
City/Zip Code	Milpitas, CA 95035
Country	USA
Telephone:	+1 (408) 586 6200
Fax:	+1 (408) 586 6299
Lab Manager:	Kevin Wang
Responsible Project Leader:	Cathy Palacios

2.2. Identification of the Client / Manufacturer

Client's Name:	Universal Audio, Inc.
Street Address:	4585 Scotts Valley Drive
City/Zip Code	Scotts Valley, CA 95066
Country	USA

Manufacturer's Name:	Same as Client
Manufacturers Address:	
City/Zip Code	
Country	

3. Equipment under Assessment

Model No	GPM-WDR, GPM-RUBY, GPM-DRM
HW Version	10005438, 10005439, 10005440
SW Version	1.1.0
FCC-ID	2AXKQ2029
ISED-ID:	26610-2029
FWIN:	1.1.0
HVIN	GPM-DRM, GPM-RUBY, GPM-WDR
PMN	Dream '65 Reverb-Amp, Ruby '63 Top Boost Amplifier, Woodrow '55 Instrument Amplifier
Product Description	Guitar Effects Pedal
Device Category	<input type="checkbox"/> Fixed Installation <input type="checkbox"/> Mobile <input checked="" type="checkbox"/> Portable <input type="checkbox"/> Mixed Mobile and Portable
Frequency Range / number of channels	BT LE: 2402 MHz (ch 0) – 2480 MHz (ch 39), 40 channels
Modes of Operation / Declared Output power	BT LE= 2.1 mW – See Note 1
Max. declared antenna gain	BT LE antenna = 0 dBi
Minimum distance of antenna or radiating parts to user	5mm
Power Supply/ Rated Operating Voltage Range	8.55 VDC (min) / 9 VDC (nom) / 9.45 VDC (max)
Operating Temperature Range	Tmin: 0 °C / Tmax: 40 °C
Co-located Transmitters / Antennas	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Sample Revision	<input type="checkbox"/> Prototype <input type="checkbox"/> Production <input checked="" type="checkbox"/> Pre-Production
Exposure Category	<input type="checkbox"/> Occupational/ Controlled <input checked="" type="checkbox"/> General Population/ Uncontrolled

Note 1: BLE output power is from CETECOM report # EMC_UNIVE-003-20001_15.247_DTS

Note 2: All three models have the same Main PCBA. The Top Panel PCBA is different since WDR has a two-position spring loaded switch, but DRM and RUBY have a three-position spring loaded switch. All models have different firmware.

4. FCC and ISED Exemption Limits for Routine Evaluation

4.1. FCC SAR test exclusions per KDB 447498 4.3.1. Standalone SAR test exclusion considerations

Appendix A: SAR Test Exclusion Thresholds for 100 MHz – 6 GHz and ≤ 50 mm

Frequency (MHz)	d[mm]	SAR Test Exclusion Threshold (mW)
2480	5	9.5

4.2. ISED SAR test exclusions per IC RSS-102 Issue 5

ISED RSS-102 Section: 2.5.1 Exemption Limits for Routine Evaluation — SAR Evaluation
SAR evaluation is required if the separation distance between the user and/or bystander and the antenna and/or radiating element of the device is less than or equal to 20 cm, except when the device operates at or below the applicable output power level (adjusted for tune-up tolerance) for the specified separation distance defined in Table 1. Output power level shall be the higher of the maximum conducted or equivalent isotropically radiated power (e.i.r.p.) source-based, time-averaged output power.

Table with limits for the frequencies off interest

Frequency (MHz)	d[mm]	Exemption Limits [mW]
2450	5	4

5. Stand-alone Transmission SAR Exclusion Evaluation

5.1. Justification for using the 5 mm Distance

The device is intended to be operated by foot. The conservative distance of 5 mm is an estimate of how close a human body can be to the device in its typical application.

5.2. SAR Exclusion Calculation Table

FCC / ISED Standalone Transmission SAR Exclusion Calculations								
Band	f [MHz]	Max Output Power [mW]	Max EIRP [mW]	Max Duty Cycle ²	Max Average Power [mW]	FCC Limit ¹ @ 5 mm [mW]	ISED Limit @ 5 mm [mW]	SAR Exclusion applicable (Yes/No)
BTLE	2480	2.1	2.1	0.1	0.21	9.5	4	Yes

Note 1: The FCC limit is calculated using the maximum output power passing the threshold for 1-g SAR exclusion

Note 2: BT duty cycle is worst case based on maximum packet size of 25 Bytes and minimum 7.5 ms connection interval.

6. Revision History

Date	Report Name	Changes to report	Report prepared by
2022-1-12	EMC_UNIVE-013-21001_FCC_ISED_SAREX	Initial version	Kris Lazarov
2022-1-31	EMC_UNIVE-013-21001_FCC_ISED_SAREX_Rev1	Page 5 – Updated table 3; Updated Note 2	Kris Lazarov

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