

RF Exposure Evaluation Report

Report Reference No......: **MTEB24070171-H**

FCC ID.....: **2BHEA-PTWO**

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Representative Laboratory Name.: **Shenzhen Most Technology Service Co., Ltd.**

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Applicant's name.....: **Ortega Guitars,a brand of Roland Meinl Musikinstrumente GmbH & Co.KG**

Address: Musik-Meinl-Str.1 91468 Gutenstetten Germany

Test specification/ Standard: **47 CFR Part 1.1307;47 CFR Part 1.1310**
KDB447498D01 General RF Exposure Guidance v06

TRF Originator.....: Shenzhen Most Technology Service Co., Ltd.

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Test item description: **ACOUSTIC AMPLIFIER**

Trade Mark: Ortega

Model/Type reference.....: PTWO

Listed Models: N/A

Modulation Type: GFSK
GFSK, $\pi/4$ DQPSK, 8DPSK

Operation Frequency.....: From 2402MHz to 2480MHz

Hardware Version.....: V1.0

Software Version: V1.0

Rating: DC 7.4V by Battery
DC 5V by USB Port

Result.....: **PASS**

TEST REPORT

Equipment under Test : ACOUSTIC AMPLIFIER

Model /Type : PTWO

Listed Models : N/A

Remark : N/A

Applicant : Ortega Guitars,a brand of Roland Meinl Musikinstrumente GmbH & Co.KG

Address : Musik-Meintl-Str.1 91468 Gutenstetten Germany

Manufacturer : Ortega Guitars,a brand of Roland Meinl Musikinstrumente GmbH & Co.KG

Address : Musik-Meintl-Str.1 91468 Gutenstetten Germany

Test Result:	PASS
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The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

1. Revision History

Revision	Issue Date	Revisions	Revised By
00	2024.07.11	Initial Issue	Alisa Luo

2. SAR Evaluation

2.1 RF Exposure Compliance Requirement

2.1.1 Standard Requirement

According to KDB447498D01 General RF Exposure Guidance v06

4.3.1. Standalone SAR test exclusion considerations

Unless specifically required by the published RF exposure KDB procedures, standalone 1-g head or body and 10-g extremity SAR evaluation for general population exposure conditions, by measurement or numerical simulation, is not required when the corresponding SAR Exclusion Threshold condition, listed below, is satisfied.

2.1.2 Limits

According to FCC Part1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in part1.1307(b)

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3–3.0	614	1.63	*(100)	6
3.0–30	1842/f	4.89/f	*(900/f ²)	6
30–300	61.4	0.163	1.0	6
300–1500			f/300	6
1500–100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f ²)	30
30–300	27.5	0.073	0.2	30
300–1500			f/1500	30
1500–100,000			1.0	30

F= Frequency in MHz

Friis Formula

Friis transmission formula: $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot R^2)$ Where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

R = distance between observation point and center of the radiator in cm

P_d is the limit of MPE, 1 mW/cm². If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

2.1.3 EUT RF Exposure

BLE

GFSK			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(2402 MHz)	1.581	1.581 ± 1	2.581
Middle(2440MHz)	1.619	1.619 ± 1	2.619
Highest(2480MHz)	1.161	1.161 ± 1	2.161

BLE

Worst case: GFSK						
Channel	Maximum tune-up Power (dBm)	Maximum tune-up Power (MW)	Antenna Gain (dBi)	Power Density at R = 20 cm (mW/cm ²)	Limit	Result
Middle(2440MHz)	2.619	1.83	-0.58	0.00032	1.0	Pass

Note: 1) Refer to report MTEB24070171-R for EUT test Max Conducted average Output Power value.

Note: 2) $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot R^2) = (1.83 \cdot 0.87) / (4 \cdot 3.1416 \cdot 20^2) = 0.00032$

BT classic

GFSK			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(2402MHz)	-0.691	-0.691 ± 1	0.309
Middle(2441MHz)	-0.293	-0.293 ± 1	0.707
Highest(2480MHz)	-0.831	-0.831 ± 1	0.169

$\pi/4$ DQPSK			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(2402MHz)	0.189	0.189 ± 1	1.189
Middle(2441MHz)	0.547	0.547 ± 1	1.547
Highest(2480MHz)	0.059	0.059 ± 1	1.059

8DPSK			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(2402MHz)	0.618	0.618 ± 1	1.618
Middle(2441MHz)	1.015	1.015 ± 1	2.015
Highest(2480MHz)	0.519	0.519 ± 1	1.519

Worst case: 8DPSK						
Channel	Maximum tune-up Power (dBm)	Maximum tune-up Power (MW)	Antenna Gain (dBi)	Power Density at R = 20 cm (mW/cm ²)	Limit	Result
Middle(2441MHz)	2.015	1.59	-0.58	0.00028	1.0	Pass

Note: 1) Refer to report MTEB24070171-R1 for EUT test Max Conducted average Output Power value.

Note: 2) $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot R^2) = (1.59 \cdot 0.87) / (4 \cdot 3.1416 \cdot 20^2) = 0.00028$

Note: 3) EUT's Bluetooth module is more than 20cm away from the human body.

.....THE END OF REPORT.....