

RF Exposure Estimation

1. Introduction

Applicant:	Pro Design, LLC
Address:	1151 Campus Dr., 44224 Stow, OHIO, USA
Product:	15-Channel Emitter
FCC ID:	2BMF4DD7412H
Model No.:	DD7402H, DD7402HB, DD7412H, DD7412HB
Reference RF report #	709502501344-00B

2. B.2 Blanket 1 mW Blanket Exemption

The 1 mW Blanket Exemption of § 1.1307(b)(3)(i)(A) applies for single fixed, mobile, and portable RF sources with available maximum time-averaged power of no more than 1 mW, regardless of separation distance. The 1 mW blanket exemption applies at separation distances less than 0.5 cm, including where there is no separation. This exemption shall not be used in conjunction with other exemption criteria other than those for multiple RF sources in paragraph § 1.1307(b)(3)(ii)(A). The 1 mW exemption is independent of service type and covers the full range of 100 kHz to 100 GHz, but it shall not be used in conjunction with other exemption criteria or in devices with higher-power transmitters operating in the same time-averaging period. Exposure from such higher-power transmitters would invalidate the underlying assumption that exposure from the lower-power transmitter is the only contributor to SAR in the relevant volume of tissue.

3. RF Exposure Evaluation

Per the test report included herein, for 433.92MHz

According to C63.10-2020 Annex G

$$\text{EIRP} = \text{pt} \times \text{gt} = (\text{E} \times \text{d})^2 / 30 \quad (\text{G.1})$$

where

pt is the transmitter output power in watts

gt is the numeric gain of the transmitting antenna (dimensionless)

E is the electric field strength in V/m

d is the measurement distance in meters (m)

$$\text{ERP} = \text{EIRP} / 1.64 = (\text{E} \times \text{d})^2 / (30 \times 1.64) = (\text{E} \times \text{d})^2 / 49.2 \quad (\text{G.2})$$

Transmitter output power for 433.92MHz Function

Field strength (E):	87.74 (dBuV/m) = 0.0244 (V/m)
Measurement distance (d):	3 (m)
ERP (W):	0.0001089(W)
ERP (mW):	0.1089(mW)

According to client's declaration, all models have same PCB layout, schematics and BOM. The differences are model name, number of buttons, brand name, appearance color and shell shape. Model DD7402HB was chosen to perform the full test items.



We used the maximum ERP/EIRP to perform RF exposure exemption evaluation.

	Evaluation method	Exempt Limit (mW)	Verdict
■	Blanket 1 mW Blanket Exemption	1mW	Yes
□	MPE-based Exemption (ERP)	7mW (ERP)	N/A
□	SAR-based Exemption (Pth)	3060mW	N/A

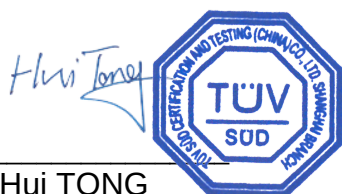
So, the device is qualified for SAR test exemption, the exemption report is in lieu of the SAR report.

- TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch

Reviewed by:

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