

RF Exposure Report

Report No.: FCC_RF_SL19101602-BSS-010_BTR-800_RF Exposure

FCC ID: B5DM543

Models: BTR-800-FD, BTR-800-FE, BTR-800-HE

Received Date: 12/09/2019

Issued Date: 03/03/2020

Applicant: Bosch Security Systems, Inc.

Address: 8601 East Cornhusker Highway, Lincoln, NE 68507 USA

Manufacturer: Bosch Security Systems, Inc.

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Issued By: Bureau Veritas Consumer Products Services, Inc.

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**FCC Registration /
Designation Number:** 540430



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Release Control Record

Issue No.	Description	Date Issued
FCC_RF_SL19101602-BSS-010_BTR-800_RF Exposure	Original Release	03/03/2020

1 Certificate of Conformity

Product: UHF Wireless Intercom Base Station

Brand: RTS

Models: BTR-800-FD, BTR-800-FE, BTR-800-HE

Series Model: N/A

Sample Status: Engineering sample

Applicant: Bosch Security Systems, Inc.

Standards: FCC Part 2 (Section 2.1093)

KDB 447498 D01 General RF Exposure Guidance v06

IEEE C95.1-1992

The above equipment has been tested by **Bureau Veritas Consumer Products Services, Inc., Milpitas Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

Prepared by :

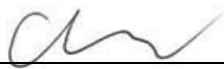


Date:

03/03/2020

Deon Dai / Test Engineer

Approved by :



Date:

03/03/2020

Chen Ge / Engineer Reviewer

2 RF Exposure

2.1 Limits for Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Average Time (minutes)
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; *Plane-wave equivalent power density

2.2 MPE Calculation Formula

$$P_d = (P_{out} * G) / (4 * \pi * r^2)$$

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

2.3 Classification

The antenna of this product, under normal use condition, is at least 20cm away from the body of the user.

So, this device is classified as Mobile Device.

2.4 Antenna Gain

The antenna type is Dipole antenna with 0.5 dBi gain.

Note: The antennas are sleeve dipole antennas. By itself, it has a gain of 2 dBi. However they are not matched to 50 Ohms which is the impedance of the TNC jack/coaxial cable. These antennas naturally have a lot higher impedance than 50 Ohms. The dipole antenna over the range 482 – 518 MHz has about a 2.5 to 1 VSWR match. So about 1dB is loss in matching and another 0.5 due to losses at UHF. So effectively the antenna when combined with the device is about a **0.5 dBi** gain antenna.

2.5 Calculation Result of Maximum Conducted Power

BTR-800 Band FD: TX: 482.1-499.9MHz

BTR-800 Band FE: TX: 482.1-499.9MHz

BTR-800 Band HE: TX: 500.1-517.9MHz

Band	Frequency (MHz)	Max Power (dBm)	Max Power (mW)	Turn-Up Tolerance	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
BTR-800N FD	499.9	20.23	105.44	± 1dB	0.5	20	0.0296	0.333
BTR-800N HE	517.9	20.47	111.43	± 1dB	0.5	20	0.0313	0.345

Note:

1. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
2. Calculate MPE from condition "f/1500" formulas.

3 Conclusion

BTR-80N FD = 0.0296 < **0.333**

BTR-80N HE = 0.0313 < **0.345**

Therefore the maximum calculations of above situations are less than the MPE limit.

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