

## RF Exposure Report

**Report No.:** FCC\_RF\_SL20051301-TRB-015\_MPE Rev\_2.0

**FCC ID:** JUP-R8S (BT)  
KEAXDLM (403MHz - 473MHz)

**Product:** GNSS SYSTEM

**Test Model:** R8s

**Series Model:** N/A

**Received Date:** 07/14/2020

**Test Date:** 07/16/2020

**Issued Date:** 08/19/2020

**Applicant:** Trimble Inc.

**Address:** 935 Stewart Drive, Sunnyvale, CA 94085, USA

**Manufacturer:** Trimble Inc.

**Address:** 935 Stewart Drive, Sunnyvale, CA 94085, USA

**Issued By:** Bureau Veritas Consumer Products Services, Inc.

**Lab Address:** 775 Montague Expressway, Milpitas, CA 95035

**Test Location (1):** 775 Montague Expressway, Milpitas, CA 95035

**FCC Registration /  
Designation Number:** 540430



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## Table of Contents

<b>Release Control Record</b> .....	<b>3</b>
<b>1 Certificate of Conformity</b> .....	<b>4</b>
<b>2 RF Exposure</b> .....	<b>5</b>
2.1 Limits for Maximum Permissible Exposure (MPE) .....	5
2.2 MPE Calculation Formula .....	5
2.3 Classification .....	5
2.4 Antenna Gain .....	5
2.5 Calculation Result of Maximum Conducted Power .....	6
<b>3 Conclusion</b> .....	<b>6</b>

### Release Control Record

Issue No.	Description	Date Issued
FCC_RF_SL20051301-TRB-015_MPE	Original Release	07/31/2020
FCC_RF_SL20051301-TRB-015_MPE Rev_1.0	Update Per customer review	08/11/2020
FCC_RF_SL20051301-TRB-015_MPE Rev_2.0	Update BT Module FCC ID	08/19/2020



**1 Certificate of Conformity**

**Product:** Smart GNSS Receiver

**Brand:** Trimble

**Test Model:** R8s with BT & UHF (450MHz)

**Series Model:** R8s

**Sample Status:** Engineering Sample

**Trimble SW app used:** UHF: CSGTestSuite  
BT: Commset

**Applicant:** Trimble Inc.

**Test Date:** 07/16/2020

**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 :** Deon , **Date:** 08/19/2020  
Deon Dai / Test Engineer

**Approved by :** Gary Chou , **Date:** 08/19/2020  
Gary Chou / 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 <sup>2</sup> )	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 <sup>2</sup> )*	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

$$Pd = (Pout * G) / (4 * \pi * r^2)$$

Where

Pd = power density in mW/cm<sup>2</sup>

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 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 Monopole antenna with -4.6 dBi gain for Bluetooth and -2.0 dBi gain for UHF.

## 2.5 Calculation Result of Maximum Conducted Power

Frequency (MHz)	Max Power (dBm)	Max Power (mW)	Turn-Up Tolerance	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
2441	12.89	19.45	± 1dB	-4.6	30	0.00075	1
429.95	33.06	2023	± 1dB	-2.0	30	0.142	0.2866

Note:

1. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

### 3 Conclusion

#### Conclusion:

The formula of calculated the MPE is:

$CPD1 / LPD1 + CPD2 / LPD2 + \dots \text{etc.} < 1$

CPD = Calculation power density

LPD = Limit of power density

Co-location:  $BT+UHF = 0.00075+0.142 = 0.14275 < 0.2866$

**Therefore the maximum calculations of above situations are less than the "0.2866" limit.**

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