

## RF Exposure Report (FCC)

**Report No.:** FCC\_RF\_SL19110601\_PST-001\_BT\_MPE\_Rev01

**FCC ID:** 2AKA8-FA470NAXAA

**Test Model:** FA-470\_NA\_01\_AA

**Series Model:** FA-470\_NA\_02\_AA, FA-470\_NA\_03\_AA

**Received Date:** 11/18/2019

**Test Date:** 11/20/2019 – 01/25/2019

**Issued Date:** 01/31/2020

**Applicant:** PST ELETRONICA LTD

**Address:** Av. Alan Turing, nº 385, Cidade Universitária, Campinas-SP, CEP 13083898

**Manufacturer:** PST ELETRONICA LTDA

**Address:** Av. Açaí, 2045 - lote 2.2, Distrito Industrial - Manaus – AM, CEP 69075-020

**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:** 540430/4842D



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### Release Control Record

Issue No.	Description	Date Issued
FCC_RF_SL19110601_PST-001_BTEDR_MPE	Original Release	12/18/2019
FCC_RF_SL19110601_PST-001_BTEDR_MPE_Rev01	Revision 01	01/31/2020

## 1 Certificate of Conformity

**Product:** FleetArc Gateway

**Brand:** Stoneridge

**Test Model:** FA-470\_NA\_01\_AA

**Series Model:** FA-470\_NA\_02\_AA, FA-470\_NA\_03\_AA


**Sample Status:** Engineering Sample


**Applicant:** PST ELETRONICA LTDA

**Test Date:** 11/20/2019 – 01/25/2020

**Product Type:** Automotive Fleet Tracker

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:** 01/31/2020  
Yao Wei Lee / Test Engineer

**Approved by :**  , **Date:** 01/31/2020  
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 <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

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

Where

$P_d$  = power density in mW/cm<sup>2</sup>

$P_{out}$  = 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 BT antenna type is a PCB antenna with 0 dBi gain.

The BLE antenna type is a PCB antenna with 0 dBi gain.

LTE Band 2 has an antenna gain of 2.92dBi.

LTE Band 4 has an antenna gain of 3.05dBi.

LTE Band 12 has an antenna gain of -0.21dBi.

## 2.5 Calculation Result of Maximum Conducted Power

Type	Frequency Band (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> )
BT-EDR	2402-2480	1.204	0.805	± 1dB	0	20	0.00033	1
BLE	2402-2480	-2.39	0.577	± 1dB	0	20	0.000145	1
LTE (Band 2)	1880	23	200	± 2dB	2.92	20	0.12330	1
LTE (Band 4)	1732.5	23	200	± 2dB	3.05	20	0.12704	1
LTE (Band 12)	707.5	23	200	± 2dB	-0.21	20	0.05997	0.471

Note:

1. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
2. This device contains Quectel LTE Module BG96 (FCC ID: XMR201707BG96).

## 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 worse case (LTE & BT-EDR)

$$BT-EDR = (0.00033 / 1) * 100\% = 0.033\%$$

$$LTE \text{ Band 4} = (0.12704 / 1) * 100\% = 12.704\%$$

$$\text{Total MPE Percentage} = (0.033 + 12.704) = 12.737\% < 100\% \text{ for LTE \& BT to transmit simultaneously.}$$

**Therefore the maximum calculations of above situations are less than the "1" limit.**

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