

RF Exposure Report

Report No.: SA181212C37

FCC ID: OUPIFDSP19U21U

Test Model: IFDSP19U21U

Received Date: Dec. 12, 2018

Test Date: Jan. 04 ~ Jan. 18, 2019

Issued Date: Jan. 23, 2019

Applicant: TranSystem INC.

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch

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Test Location: No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, TAIWAN (R.O.C.)

FCC Registration / Designation Number: 788550 / TW0003



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Release Control Record

Issue No.	Description	Date Issued
SA181212C37	Original release	Jan. 23, 2019

1 Certificate of Conformity

Product: sDAS+

Brand: TranSystem

Test Model: IFDSP19U21U

Sample Status: Engineering sample

Applicant: TranSystem INC.

Test Date: Jan. 04 ~ Jan. 18, 2019

Standards: FCC Part 2 (Section 2.1091)

KDB 447498 D01 General RF Exposure Guidance v06

IEEE C95.1

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan 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 RF characteristics under the conditions specified in this report.

Prepared by : Pettie Chen, **Date:** Jan. 23, 2019
Pettie Chen / Senior Specialist

Approved by : Bruce Chen, **Date:** Jan. 23, 2019
Bruce Chen / Project Engineer

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)
(A)Limits For Occupational / Control Exposures				
300-1500	...	...	F/300	6
1500-100,000	...	...	5	6
(B)Limits For General Population / Uncontrolled Exposure				
300-1500	...	...	F/1500	30
1500-100,000	...	...	1.0	30

F = Frequency in MHz

2.2 MPE Calculation 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

2.3 Classification

The antenna of this product, under normal use condition, is at least 28cm away from the body of the user. So, this device is classified as **fixed device**.

2.4 Antenna Gain

For Internal antenna

Antenna Spec.	Omni antenna with 4dBi gain
Antenna Model	NA
Antenna Gain	4dBi

For External antenna

Antenna Spec.	Panel antenna with 9dBi gain
Antenna Model	NA
Antenna Gain	9dBi

3 Calculation Result of Maximum Tune up Power

For Internal antenna

Wideband:

Function	Frequency Band (MHz)	EIRP (dBm)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
LTE Band 25	1932.5~1996.5	26.70	28	0.047	1

Function	Frequency Band (MHz)	EIRP (dBm)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
LTE Band 66	2112.5~2197.5	28.40	28	0.070	1

Narrowband:

Function	Frequency Band (MHz)	EIRP (dBm)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
LTE Band 25	1932.5~1996.5	30.70	28	0.119	1

Function	Frequency Band (MHz)	EIRP (dBm)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
LTE Band 66	2112.5~2197.5	27.10	28	0.052	1

For External antenna

Wideband:

Function	Frequency Band (MHz)	Max Power (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
LTE Band 25	1932.5~1996.5	24.90	9	28	0.249	1

Function	Frequency Band (MHz)	Max Power (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
LTE Band 66	2112.5~2197.5	22.80	9	28	0.154	1

Narrowband:

Function	Frequency Band (MHz)	Max Power (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
LTE Band 25	1932.5~1996.5	29.96	9	28	0.799	1

Function	Frequency Band (MHz)	Max Power (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
LTE Band 66	2112.5~2197.5	22.58	9	28	0.146	1

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

For Internal antenna

$LTE \text{ Band } 25 + LTE \text{ Band } 66 = 0.119 / 1 + 0.070 / 1 = 0.189$

For External antenna

$LTE \text{ Band } 25 + LTE \text{ Band } 66 = 0.799 / 1 + 0.154 / 1 = 0.953$

4 Brief Summary of results

The wireless device described within this report has been shown to be capable of compliance with the basic restrictions related to human exposure to electromagnetic fields for both General public and Occupational. The calculations shown in this report were made in accordance the procedures specified in the applied test specification(s)

Configuration	Required Compliance Boundary(cm)
LTE Band 25 + LTE Band 66	28

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