

Maximum Permissible Exposure Report

1. Product Information

FCC ID : 2BDJXYUNLI02 EUT : intelligent station

Test Model : X20

Additional Model No. : *20, X****, **0*, ***MAX, ***PRO, ***PLUS, ***SE ("*"Can be letters

from A-Z or figures from 0-9 or blank to represent painted the color of

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product)

Model Declaration : PCB board, structure and internal of these model(s) are the same, So

no additional models were tested

Power Supply : Input: 120V~, 60Hz, 1600W

Output: DC 24V, 1.5A

Hardware Version : X20station_V1.0

Software Version : V07

910MHz

Frequency Range : 910MHz

Channel Number : 1 Modulation Type : FSK

Antenna Description : Internal Antenna, 3.0dBi(Max)

Exposure category : General population/uncontrolled environment

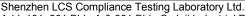
EUT Type : Production Unit
Device Type : Mobile Device

2. Evaluation Method

Systems operating under the provisions of FCC 47 CFR section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as mobile device whereby a distance of 0.2m normally can be maintained between the user and the device, and below RF Permissible Exposure limit shall comply with.

In accordance with KDB447498D01 for Simultaneous transmission MPE test exclusion applies when the sum of the MPE ratios for all simultaneous transmitting antennas incorporated in a host device, based on the calculated/estimated, numerically modelled or measured field strengths or power density, is ≤ 1.0. The MPE ratio of each antenna is determined at the minimum test separation distance required by the operating configurations and exposure conditions of the host device, according to the ratio of field strengths or power density to MPE limit, at the test frequency. Either the maximum peak or spatially averaged results from measurements or numerical simulations may be used to determine the MPE ratios. Spatial averaging does not apply when MPE is estimated using simple calculations based on far-field plane-wave equivalent conditions. The antenna installation and operating requirements for the host device must meet the minimum test separation distances required by all antennas, in both standalone and simultaneous transmission operations, to satisfy compliance.







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3. Limit

3. 1 Refer Evaluation Method

ANSI C95.1–2019: IEEE Standard for Safety Levels with Respect to Human Exposure to Electric, Magnetic, and Electromagnetic Fields, 0 Hz to 300 GHz

FCC KDB publication 447498 D01 General 1 RF Exposure Guidance v06: Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies.

FCC CFR 47 part1 1.1310: Radiofrequency radiation exposure limits.

FCC CFR 47 part2 2.1091: Radiofrequency radiation exposure evaluation: mobile devices.

3. 2 Limit

Limits for Maximum Permissible Exposure (MPE)/Controlled Exposure

Frequency	Electric Field	Magnetic Field	Power Density	Averaging Time		
Range(MHz)	Strength(V/m)	Strength(A/m)	(mW/cm²)	(minute)		
Limits for Occupational/Controlled Exposure						
0.3 - 3.0	614	1.63	(100) *	6		
3.0 - 30	1842/f	4.89/f	(900/f ²)*	6		
30 – 300	61.4	0.163	1.0	6		
300 – 1500	1		f/300	6		
1500 – 100,000	1	/	5	6		

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Range(MHz)	Strength(V/m)	Strength(A/m)	(mW/cm²)	(minute)		
Limits for Occupational/Uncontrolled Exposure						
0.3 - 3.0	614	1.63	(100) *	30		
3.0 - 30	824/f	2.19/f	(180/f ²)*	30		
30 - 300	27.5	0.073	0.2	30		
300 – 1500	YA SELECTION OF THE PARTY.	lab I	f/1500	30		
1500 – 100,000	Testing	1	1.0	30		

F=frequency in MHz

4. MPE Calculation Method

Predication of MPE limit at a given distance Equation from page 18 of OET Bulletin 65, Edition 97-01

S=PG/4πR²

Where: S=power density

P=power input to antenna

G=power gain of the antenna in the direction of interest relative to an isotropic radiator

R=distance to the center of radiation of the antenna

5. Antenna Information

Internal Antenna can only use antennas certificated as follows provided by manufacturer;

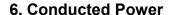
Internal/External Identification	Antenna type and antenna number	Operate frequency band	Maximum antenna gain	Notes
Antenna	Internal Antenna	910MHz	3.0dBi	910MHz Antenna



^{*=}Plane-wave equivalent power density

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Test Procedure

TX frequency range: 910 MHz Field Strength: 87.80dBuV/m @3m

Device category: Mobile Device (Distance: 20cm) Max. EIRP=E-104.7+20logD=87.80-104.7+20log3=-7.36dm Maximum Conducted Output Power: -7.36dBm

Turn-up: -7±1

7. Measurement Results

7.1 Standalone MPE Evaluation

As declared by the Applicant, the EUT is a wireless device used in a fix application, at least 20 cm from any body part of the user or nearby persons; from the maximum EUT RF output power, the minimum separation distance, r =20cm, as well as the gain of the used antenna refer to antenna information, the RF power density can be obtained.

[910MHz]

Band/Mode	RF output power		Antenna	Antenna	MPE	MPE
	dBm	mW	Gain (dBi)	Gain (linear)	(mW/cm2)	Limits (mW/cm2)
910	-6.0	0.2512	3.0	1.9953	0.000100	0.6067

Remark:

- 1. Output power including tune-up tolerance;
- 2. Output power was adjust to duty cycle at 100% if measured duty cycle less than 98%;
- 3. MPE evaluate distance is 20cm from user manual provide by manufacturer.

7.2 Simultaneous Transmission MPE Evaluation

The sample support one 910MHz modular. No need consider simultaneous transmission.

8. Conclusion

The measurement results comply with the FCC Limit per 47 CFR 2.1091 for the uncontrolled RF Exposure of mobile device.

-----THE END OF REPORT-----



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