Radio Test Report

Report No.: CTA231114009H01

Issued for

spaceti s.r.o.

Italska 2581/67, 120 00 Prague 2, Czech Republic

Product Name: Sensor Gateway

Brand Name: Spaceti

Model Name: SHU1M1A200

Series Model(s):   N/A

FCC ID: 2APJ3SHU1M1A200

Test Standard: FCC 47CFR §2.1091

TEST REPORT

Applicant's Name................. : spaceti s.r.o.

Address .... : Italska 2581/67, 120 00 Prague 2, Czech Republic

Manufacturer's Name .... : spaceti s.r.o.

Address .... : Italska 2581/67, 120 00 Prague 2, Czech Republic

Product Description

Product Name........................ : Sensor Gateway

Brand Name .... : Spaceti

Model Name .... : SHU1M1A200

Series Model(s) .... : N/A

Test Standards..................... : FCC 47CFR §2.1091
447498 D04 Interim General RF Exposure Guidance v01

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Date of Test... :

Date of receipt of test item .... : 11 Sept. 2023

Date (s) of performance of tests............. : 11 Sept. 2023 ~ 11 Dec. 2023

Date of Issue... : 11 Dec. 2023

Test Result... : **Pass**

Testing Engineer   :   *Zoey Cao*

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(Zoey Cao)

Technical Manager   :   *Amy Wen*

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(Amy Wen)

Authorized Signatory :   *Eric Wang*

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(Eric Wang)

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Revision History

Rev.	Issue Date	Report No.	Effect Page	Contents
00	11 Dec. 2023	CTA231114009H01	ALL	Initial Issue

1. GENERAL INFORMATION

1.1 GENERAL DESCRIPTION OF THE EUT

Product Name	Sensor Gateway		
Brand Name	Spaceti		
Model Name	SHU1M1A200		
Series Model(s)	N/A		
Model Difference	N/A		
Product Description	The EUT is Sensor Gateway		
	Operation Frequency:	WCDMA: Band 2: 1850-1910 MHz Band 5: 824-849 MHz LTE: Band 2:1850~1910 MHz Band 4:1710~1755 MHz Band 12:699~716 MHz	
	Modulation Type:	WCDMA: QPSK; HSDPA:QPSK/16QAM; HSUPA:BPSK LTE:QPSK, 16QAM, 64QAM	
	Antenna gain:	WCDMA: Band2:3.4 dBi Band5:1.0 dBi LTE: Band2 : 3.4 dBi Band4 : 3.4 dBi Band12 : 1.0 dBi	
	Antenna Designation:	PIFA	
Rating:	Input: DC5V, 12.5W		
Hardware Version	02		
Software Version	1.0.0		

1.2 TEST FACTORY

SHENZHEN CTA TESTING TECHNOLOGY CO., LTD.
ROOM 106, BUILDING 1, YIBAOLAI INDUSTRIAL PARK, QIAOTOU COMMUNITY,FUHAI STREET, BAO'AN DISTRICT, SHENZHEN, CHINA

FCC TEST FIRM REGISTRATION NUMBER: 517856

IC TEST FIRM REGISTRATION NUMBER: 27890

A2LA CERTIFICATE NO.: 6534.01

IC CAB ID: CN0127

2. FCC 47CFR §2.1091 REQUIREMENT

2.1 TEST STANDARDS

The limit for Maximum Permissible Exposure (MPE) specified in FCC 1.1310 is followed. The gain of the antennas used in the product is extracted from the Antenna data sheets provided and also the maximum total power input to the antenna is measured. Through the Friis transmission formula and the maximum gain of the antenna, we can calculate the distance, away from the product, where the limit of MPE is reached.

Although the Friis Transmission formula is far field assumption, the calculated result of that is an over-prediction for near field power density. It is taken as worst case to specify the safety range.

2.2 LIMIT

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environmental impact of the human exposure to radio-frequency (RF) radiation as specified in 1.1307 (b)

Limits for Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm²)
Limits for Occupational / controlled Exposures			
300 - 1500	--	--	F/300
1500 – 100000	--	--	5.0
Limits for General population / Uncontrolled Exposure			
300 - 1500	--	--	F/1500
1500 – 100000	--	--	1.0

F= Frequency in MHz

Friss Formula

Friss Transmission Formula: $Pd = (Pout * G) / (4*pi*r^2)$

Where

Pd = power density in mW/cm²

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 3.1416

R = Distance between observation point and the center of radiator in cm

If we know the maximum gain of the antenna and the total output power to the antenna, through calculation, we will know MPE value at distance 20cm.

2.3 TEST RESULT

Turn up

Mode	Detector	Turn up Power
WCDMA Band 2	AV	22±1dBm
WCDMA Band 5	AV	24±1dBm
LTE Band 2	AV	23±1dBm
LTE Band 4	AV	22±1dBm
LTE Band 12	AV	24±1dBm

Protocol	Fre. (KHz)	Separation distance (cm)	Max Turn up power (dBm)	ANT Gain (dBi)	Max EIRP (dBm)	Max ERP (dBm)	Max ERP (mW)	Power Density (mW/cm²)	Limit (mW/cm²)	Result
WCDMA Band 2	1850	20	23.00	3.4	26.40	26.40	436.516	0.087	1	Pass
WCDMA Band 5	824	20	25.00	1	26.00	23.85	398.107	0.079	0.5493333	Pass
LTE Band 2	1850	20	24.00	3.4	27.40	27.40	549.541	0.109	1	Pass
LTE Band 4	1710	20	23.00	3.4	26.40	26.40	436.516	0.087	1	Pass
LTE Band 12	699	20	25.00	1	26.00	23.85	398.107	0.079	0.466	Pass

Note: 1. The Maximum power is less than the limit, complies with the exemption requirements.

2. ERP = EIRP - 2.15

※※※※※END OF THE REPORT※※※※※