

MAXIMUM PERMISSIBLE EXPOSURE EVALUATION REPORT

Applicant: FJ Dynamics Technology Academy (Changzhou)Co., Ltd.
Shenzhen Branch

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Product Name: FJDynamics Autosteering Kit

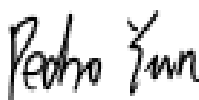
FCC ID: 2BLLH-AT208BD

Standard(s): 47 CFR §1.1310, 47 CFR §2.1091,
47 CFR §15.247(i), 47 CFR §15.407(f)

Report Number: 2402X97491E-RF-00E

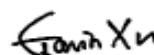
Report Date: 2024/11/22

The above device has been tested and found compliant with the requirement of the relative standards by Bay Area Compliance Laboratories Corp. (Dongguan).



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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
1.0	2402X97491E-RF-00E	Original Report	2024/11/22

1. GENERAL INFORMATION

1.1 General Description of Equipment under Test

EUT Name:	FJDynamics Autosteering Kit
Trade Name:	FJDynamics
EUT Model:	AT208BD-2.5GY
Rated Input Voltage:	DC 10~30V, Typical Voltage: DC 12V
EUT Received Date:	2024/9/29
EUT Received Status:	Good

1.2 Accessory Information

EUT Main Components			
Accessory Description	Manufacturer	Model	Parameters
Control Terminal	FJDynamics	AT208BD-2.5GY	Supply Voltage: 10~30VDC
GNSS Receiver	FJDynamics	FJD	Operating Voltage: 10~30VDC
Proportional Valve	FJDynamics	FJ31-3000PSB6NC3J5	Power Supply: 12V DC
Power Wiring Harness (With Switch Key)	FJDynamics	/	Unshielded without ferrite, 5.5Meter
Main Wiring Harness	FJDynamics	/	Unshielded without ferrite, 2.0Meter
Spare Main Wiring Harness	FJDynamics		Unshielded without ferrite, 2.5Meter
GNSS Receiver Wiring Harness	FJDynamics	/	Unshielded without ferrite, 4.0Meter
Position Valve Wire Harness	FJDynamics	/	Unshielded without ferrite, 3.0Meter
Proportional Valve Wire Harness	FJDynamics	/	Unshielded without ferrite, 2.0Meter
Attitude Sensor (With Wiring Harness)	FJDynamics	/	Unshielded without ferrite, 3.0Meter
Pressure Sensor (With Wiring Harness)	FJDynamics	/	Unshielded without ferrite, 3.0Meter
Extension Sensor Harness	FJDynamics	/	Unshielded without ferrite, 2.6Meter
Radio Antenna (With Coaxial Harness)	FJDynamics	/	Unshielded without ferrite, 4.0Meter

1.3 Output Power and Antenna Gain Information

Operation Modes	Frequency (MHz)	Antenna Gain (dBi)	Conducted output power including Tune-up Tolerance [▲] (dBm)	EIRP/ERP (dBm)	Limit (dBm)
GSM 850	824-849	1.54	33	32.39	38.45
GSM 1900	1850-1910	1.41	31.5	32.91	33
WCDMA B2	1850-1910	1.41	25	26.41	33
WCDMA B4	1710-1755	2.66	25	27.66	30
WCDMA B5	824-849	1.54	25	24.39	38.45
LTE B2	1850-1910	1.41	25	26.41	33
LTE B4	1710-1755	2.66	25	27.66	30
LTE B5	824-849	1.41	25	24.26	38.45
LTE B7	2500-2570	1.04	25	26.04	33
LTE B12	699-716	0.31	25	23.16	34.77
LTE B13	777-787	2.06	25	24.91	34.77
LTE B25	1850-1915	1.41	25	26.41	30
LTE B26	814-824	2.04	25	24.89	38.45
LTE B26	824-849	1.54	25	24.39	38.45
LTE B38	2570-2620	1.04	25	26.04	33
LTE B41	2496-2690	1.06	25	26.06	33
Note: 1. ERP is for operation below 1 GHz and EIRP for above 1 GHz.					

2. RF EXPOSURE EVALUATION (MPE)

2.1 RF Exposure Evaluation

2.1.1 Applicable Standard

According to subpart 15.247(i), 15.407(f) and subpart §1.1310, systems operating under the provisions of this 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.

Limits for Maximum Permissible Exposure (MPE) (§1.1310, §2.1091)

(B) Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (minutes)
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f ²)	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;

According to §1.1310 and §2.1091 RF exposure is calculated.

2.1.2 Calculation formula:

Prediction of power density at the distance of the applicable MPE limit

$S = PG/4\pi R^2$ = power density (in appropriate units, e.g. mW/cm²);

P = power input to the antenna (in appropriate units, e.g., mW);

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain;

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

For simultaneously transmit system, the calculated power density should comply with:

$$\sum_i \frac{S_i}{S_{Limit,i}} \leq 1$$

2.1.3 Calculated Data

Mode	Frequency Range (MHz)	Antenna Gain		Conducted output power including Tune-up Tolerance		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
		(dBi)	(numeric)	(dBm)	(mW)			
BLE	2402-2480	1.22	1.324	4.0	2.51	20	0.0007	1.00
BT	2402-2480	1.22	1.324	6.0	3.98	20	0.0010	1.00
2.4GHz WIFI	2412-2462	0.86	1.219	23.0	199.53	20	0.0484	1.00
GSM 850	824-849	1.54	1.426	25.81	381.07	20	0.1081	0.55
GSM 1900	1850-1910	1.41	1.384	22.81	190.99	20	0.0526	1.00
WCDMA B2	1850-1910	1.41	1.384	25	316.23	20	0.0871	1.00
WCDMA B4	1710-1755	2.66	1.845	25	316.23	20	0.1161	1.00
WCDMA B5	824-849	1.54	1.426	25	316.23	20	0.0897	0.55
LTE B2	1850-1910	1.41	1.384	25	316.23	20	0.0871	1.00
LTE B4	1710-1755	2.66	1.845	25	316.23	20	0.1161	1.00
LTE B5	824-849	1.41	1.384	25	316.23	20	0.0871	0.55
LTE B7	2500-2570	1.04	1.271	25	316.23	20	0.0800	1.00
LTE B12	699-716	0.31	1.074	25	316.23	20	0.0676	0.47
LTE B13	777-787	2.06	1.607	25	316.23	20	0.1011	0.52
LTE B25	1850-1915	1.41	1.384	25	316.23	20	0.0871	1.00
LTE B26	814-824	2.04	1.600	25	316.23	20	0.1007	0.54
LTE B26	824-849	1.54	1.426	25	316.23	20	0.0897	0.55
LTE B38	2570-2620	1.04	1.271	25	316.23	20	0.0800	1.00
LTE B41	2496-2690	1.06	1.276	25	316.23	20	0.0803	1.00

Note:

1. The Conducted output power including Tune-up Tolerance provided by manufacturer.
2. The device contains a certified WWAN module, FCC ID: XMR201903EG25G, certified on 03/29/2019.

Simultaneous transmission:

BT/BLE and 2.4G WIFI can transmit simultaneously with WWAN:

$$\sum_i \frac{S_i}{S_{Limit,i}} \leq 1$$

$$S_{BT}/S_{limit-BT} + S_{2.4G\ WIFI}/S_{limit-2.4G\ WIFI} + S_{WWAN}/S_{limit-WWAN}$$

$$= 0.001/1.0 + 0.048/1.0 + 0.108/0.55$$

$$= 0.246$$

$$< 1.0$$

Result: Compliant. The device compliant Simultaneous transmission at 20cm distances.

EXHIBIT A - EUT PHOTOGRAPHS

Please refer to the attachment 2402X97491E-RF-EXP EUT EXTERNAL PHOTOGRAPHS and 2402X97491E-RF-INP EUT INTERNAL PHOTOGRAPHS.

******* END OF REPORT *******