

TEST REPORT

Applicant: Waveinnova Inc
Address: 319 Thompson Ave, Mountain View, CA (4043),USA
Equipment Type: Trac X2
Model Name: 0224-010
Brand Name: WaveTrac
FCC ID: 2BFGFWTX2
Test Standard: 47 CFR Part 2.1091
KDB 447498 D04 v01
Sample Arrival Date N/A
Test Date: N/A
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ISSUED BY:

Shanghai Tejet Communications Technology Co., Ltd. Testing Center.

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Revision History

Version	Issue Date	Revisions Content
<u>Rev. 01</u>	<u>Jan. 23, 2026</u>	<u>Initial Issue</u>

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1 GENERAL INFORMATION

1.1 Test Laboratory

Name	Shanghai Tejet Communications Technology Co., Ltd. Testing Center
Address	1-2/F., Building 1, No.222, Xuanlan Road, Xuanqiao, Pudong New District, Shanghai, China

1.2 Test Location

Name	Shanghai Tejet Communications Technology Co., Ltd. Testing Center
Location	1-2/F., Building 1, No.222, Xuanlan Road, Xuanqiao, Pudong New District, Shanghai, China
Accreditation Certificate	The laboratory is a testing organization accredited by FCC as a accredited testing laboratory. The designation number is CN1352. The laboratory has been listed by Industry Canada to perform electromagnetic emission measurements. The recognition numbers of test site are 29671.

2 PRODUCT INFORMATION

2.1 Applicant Information

Applicant	Waveinnova Inc
Address	319 Thompson Ave, Mountain View, CA (4043),USA

2.2 Manufacturer Information

Manufacturer	Waveinnova Inc
Address	319 Thompson Ave, Mountain View, CA (4043),USA

2.3 General Description for Equipment under Test (EUT)

EUT Name	Trac X2
Model Name Under Test	0224-010
Series Model Name	N/A
Description of Model name differentiation	N/A
Hardware Version	N/A
Software Version	N/A
Dimensions (Approx.)	125mm(L) X 63mm(W) X 20mm(H)
Weight (Approx.)	156 g

2.4 Technical Information

Network and Wireless connectivity	LTE CAT-M Band 2/4/5/12/13/25/26/66/85 LTE NB-IoT Band 2/4/5/12/13/17/25/26/66/85 BLE, WIFI(Only Receiver), GPS
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The requirement for the following technical information of the EUT was tested in this report:

Operating Mode	LTE; Bluetooth		
Frequency Range	LTE Band 2	TX: 1850 ~ 1910 MHz	RX: 1930 ~ 1990 MHz
	LTE Band 4	TX: 1710 ~ 1755 MHz	RX: 2110 ~ 2155 MHz
	LTE Band 5	TX: 824 ~ 849 MHz	RX: 869 ~ 894 MHz
	LTE Band 12	TX: 699 ~ 716MHz	RX: 729 ~ 746MHz
	LTE Band 13	TX: 777 ~ 787MHz	RX: 746 ~ 756MHz
	LTE Band 17	TX: 704 ~ 716MHz	RX: 734 ~ 746MHz
	LTE Band 25	TX: 1850 ~ 1915 MHz	RX: 1930 ~ 1995 MHz
	LTE Band 26	TX: 814 ~ 849 MHz	RX: 859 ~ 894 MHz
	LTE Band 66	TX: 1710 ~ 1780MHz	RX: 2110 ~ 2200MHz
	LTE Band 85	TX: 663 ~ 698MHz	RX: 617 ~ 652MHz
	BLE	2402 ~ 2480 MHz	
Antenna Type	WWAN: PIFA Antenna BLE: PIFA Antenna		
Exposure Category	General Population/Uncontrolled Exposure		
Product Type	Mobile Device		

3 SUMMARY OF TEST RESULT

3.1 Test Standards

No.	Identity	Document Title
1	47 CFR Part 2.1091	Radiofrequency radiation exposure evaluation: mobile devices
2	KDB 447498 D04 v01	447498 D04 Interim General RF Exposure Guidance v01

4 DEVICE CATEGORY AND LEVELS LIMITS

Mobile Devices:

CFR Title 47 §2.1091(b)

For purposes of this section, a mobile device is defined as a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 centimeters is normally maintained between the transmitter's radiating structure(s) and the body of the user or nearby persons.

FCC KDB 447498 D04 General RF Exposure Guidance v01 Limit

Evaluation of compliance with the exposure limits in § 1.1310 is necessary if the ERP of the device is greater than ERP_{20cm} in Formula (B.1) [repeated from § 2.1091(c)(1) and § 1.1307(b)(1)(i)(B)].

$$P_{th} \text{ (mW)} = ERP_{20 \text{ cm}} \text{ (mW)} = \begin{cases} 2040f & 0.3 \text{ GHz} \leq f < 1.5 \text{ GHz} \\ 3060 & 1.5 \text{ GHz} \leq f \leq 6 \text{ GHz} \end{cases} \quad (\text{B.1})$$

If the ERP is not easily obtained, then the available maximum time-averaged power may be used (i. e., without consideration of ERP only if the physical dimensions of the radiating structure(s) do not exceed the electrical length of $\lambda/4$ or if the antenna gain is less than that of a half-wave dipole.

SAR-based exemptions are constant at separation distances between 20 cm and 40 cm to avoid discontinuities in the threshold when transitioning between SAR-based and MPE-based exemption criteria at 40 cm, considering the importance of reflections.

The SAR-based exemption formula of § 1.1307(b)(3)(i)(B), repeated here as Formula (B.2), applies for single fixed, mobile, and portable RF sources with available maximum time-averaged power or effective radiated power (ERP), whichever is greater, of less than or equal to the threshold P_{th} (mW).

This method shall only be used at separation distances from 0.5 cm to 40 cm and at frequencies from 0.3 GHz to 6 GHz (inclusive). P_{th} is given by Formula (B.2).

$$P_{th} \text{ (mW)} = \begin{cases} ERP_{20 \text{ cm}} (d/20 \text{ cm})^x & d \leq 20 \text{ cm} \\ ERP_{20 \text{ cm}} & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases} \quad (\text{B.2})$$

where

$$x = -\log_{10} \left(\frac{60}{ERP_{20 \text{ cm}} \sqrt{f}} \right)$$

and f is in GHz, d is the separation distance (cm), and $ERP_{20 \text{ cm}}$ is per Formula (B.1).
The example values shown in Table B.2 are for illustration only.

Table B.2—Example Power Thresholds (mW)

Table B-2 Example Power Thresholds (mW)											
Frequency (MHz)	Distance (mm)										
	5	10	15	20	25	30	35	40	45	50	
	300	39	65	88	110	129	148	166	184	201	217
	450	22	44	67	89	112	135	158	180	203	226
	835	9	25	44	66	90	116	145	175	207	240
	1900	3	12	26	44	66	92	122	157	195	236
	2450	3	10	22	38	59	83	111	143	179	219
	3600	2	8	18	32	49	71	96	125	158	195
	5800	1	6	14	25	40	58	80	106	136	169

For 6000MHz to 10000Mhz

Frequencies above 300 kHz but at distances $R > \lambda / 2 \pi$, R is the antenna-person separation distance.
 λ =wavelength of transmitted signal.

Can calculate from the frequency of operation using $v=f \cdot \lambda$

v =speed of light= 3×10^8 m/s

f =frequency(Hz)

Primarily an MPE-based exclusion but also SAR-based where $\lambda / 2 \pi$ is $< 20 \text{ cm}$.

TABLE B.1—THRESHOLDS FOR SINGLE RF SOURCES
SUBJECT TO ROUTINE ENVIRONMENTAL EVALUATION

RF Source Frequency		Minimum Distance			Threshold ERP	
f_L MHz		f_H MHz	$\lambda_L / 2\pi$		$\lambda_H / 2\pi$	W
0.3	–	1.34	159 m	–	35.6 m	1,920 R ²
1.34	–	30	35.6 m	–	1.6 m	3,450 R ² /f ²
30	–	300	1.6 m	–	159 mm	3.83 R ²
300	–	1,500	159 mm	–	31.8 mm	0.0128 R ² /f
1,500	–	100,000 0	31.8 mm	–	0.5 mm	19.2R ²

Subscripts L and H are low and high; λ is wavelength.
From § 1.1307(b)(3)(i)(C), modified by adding Minimum Distance columns.

5 ASSESSMENT RESULT

5.1 Output Power

LTE Cat-M										
Mode	Band 2	Band 4	Band 5	Band 12	Band 13	Band 25	Band 26 (PART22)	Band 26 (PART90)	Band 66	Band 85
Conducted Power (dBm)	23.17	23.19	23.20	22.86	22.27	23.09	23.16	22.82	21.56	22.89
Antenna Gain (dBi)	2.50	3.60	1.70	0.30	0.30	3.40	1.70	1.70	3.60	0.60
EIRP/ERP (dBm)	25.67	26.79	22.75	21.01	20.42	26.49	22.71	22.37	26.68	21.34
Note: This report listed the worst case conducted power value, please refer to RF test report No.BL-SH25A1149-501 for more details.										

LTE NB_IoT											
Mode	Band 2	Band 4	Band 5	Band 12	Band 13	Band 17	Band 25	Band 26 (PART22)	Band 26 (PART90)	Band 66	Band 85
Conducted Power (dBm)	22.97	23.22	22.95	22.95	22.69	22.68	23.42	23.44	23.55	21.56	23.55
Antenna Gain (dBi)	2.50	3.60	1.70	0.30	0.30	0.60	3.40	1.70	1.70	3.60	0.60
EIRP/ERP (dBm)	25.47	26.82	22.50	21.10	20.84	21.13	26.82	22.99	23.10	26.15	22.00
Note: This report listed the worst case conducted power value, please refer to RF test report No.BL-SH25A1149-501 for more details.											

BLE		
Antenna	BLE 1Mbps	BLE 2Mbps
Conducted Power (dBm)	7.63	7.64
Antenna Gain (dBi)	2.90	2.90
EIRP (dBm)	10.53	10.54
Note: This report listed the worst case conducted power value, please refer to RF test report No.BL-SH25A1149-601 for more details.		

5.2 Tune-up power

Mode		Conducted Power Range (dBm)	EIRP Range (dBm)	ERP Range (dBm)
LTE Cat-M	Band 2	【22.00,24.00】	【24.50,26.50】	【22.35,24.35】
	Band 4	【22.00,24.00】	【25.60,27.60】	【23.45,25.45】
	Band 5	【22.00,24.00】	/	【21.55,23.55】
	Band 12	【22.00,24.00】	/	【20.15,22.15】
	Band 13	【21.00,23.00】	/	【19.15,21.15】
	Band 25	【22.00,24.00】	【25.40,27.40】	【23.25,25.25】
	Band 26	【22.00,24.00】	/	【23.55,25.55】
	Band 66	【21.00,23.00】	【24.60,26.60】	【22.45,24.45】
	Band 85	【22.00,24.00】	/	【20.45,22.45】
LTE NB_IoT	Band 2	【22.00,24.00】	【24.50,26.50】	【22.35,24.35】
	Band 4	【22.00,24.00】	【25.60,27.60】	【23.45,25.45】
	Band 5	【22.00,24.00】	/	【21.55,23.55】
	Band 12	【22.00,24.00】	/	【20.15,22.55】
	Band 13	【22.00,24.00】	/	【20.15,22.55】
	Band 17	【22.00,24.00】	/	【20.45,22.45】
	Band 25	【22.00,24.00】	【25.40,27.40】	【23.25,25.25】
	Band 26	【23.00,25.00】	/	【22.55,24.55】
	Band 66	【21.00,23.00】	【24.60,26.60】	【22.45,24.45】
	Band 85	【23.00,25.00】	/	【21.45,23.45】
BLE		【7.00,9.00】	【8.38,10.38】	【6.23,8.23】
Note1: ERP= EIRP -2.15dB.				
Note2: According KDB 447498 D04, used the greater of maximum conducted power and ERP to compare with the threshold value Pth.				

5.3 RF Exposure Evaluation Result

Evolution mode		f(MHz)	Distance (cm)	Maximum power (dBm)	Threshold Power (mW)	Plimit(mW)	P/Plimit	Verdict
LTE Cat-M	Band 2	1850	20	24.35	272.27	3060.00	0.0890	Pass
	Band 4	1710	20	25.45	350.75	3060.00	0.1146	Pass
	Band 5	824	20	24.00	251.19	1680.96	0.1494	Pass
	Band 12	699	20	24.00	251.19	1425.96	0.1762	Pass
	Band 13	777	20	23.00	199.53	1585.08	0.1259	Pass
	Band 25	1850	20	25.25	334.97	3060.00	0.1095	Pass
	Band 26	814	20	25.55	358.92	1660.56	0.2161	Pass
	Band 66	1710	20	24.45	278.61	3060.00	0.0910	Pass
	Band 85	698	20	24.00	251.19	1423.92	0.1764	Pass
LTE NB_IoT	Band 2	1850	20	24.35	272.27	3060.00	0.0890	Pass
	Band 4	1710	20	25.45	350.75	3060.00	0.1146	Pass
	Band 5	824	20	24.00	251.19	1680.96	0.1494	Pass
	Band 12	699	20	24.00	251.19	1425.96	0.1762	Pass
	Band 13	777	20	24.00	251.19	1585.08	0.1585	Pass
	Band 17	704	20	24.00	251.19	1436.16	0.1749	Pass
	Band 25	1850	20	25.25	334.97	3060.00	0.1095	Pass
	Band 26	814	20	25.00	316.23	1660.56	0.1904	Pass
	Band 66	1710	20	24.45	278.61	3060.00	0.0910	Pass
	Band 85	698	20	25.00	316.23	1423.92	0.2221	Pass
	BLE	2412	20	9.00	7.94	3060.00	0.0026	Pass

5.4 Collocated Power Calculation

Evolution mode	Frequency (MHz)	Power /Limit	$\Sigma(\text{Power/ Limit})$	Verdict
LTE NB_IoT Band 85	698MHz ~ 716MHz	0.2221	0.2247	Pass
BLE	2402 ~ 2480 MHz	0.0026		

Note:

1. $\Sigma(\text{Power / Limit})$: This is a summation of [(power for each transmitter/ antenna included in the simultaneous transmission)/ (corresponding Power limit)], for WWAN+ BLE.
2. Both of the WLAN\ WWAN can transmit simultaneously, the formula of calculated the Power is $CP1 / LP1 + CP2 / LP2 + \dots \text{etc.} < 1$
 CP = Calculation power
 LP = Limit of power
3. The worst-case situation is 0.2247, which is less than "1". This confirmed that the device comply with FCC KDB 447498 D04 Power limit.
4. More power list please refer to RF test report.

5.5 Conclusion

This EUT is deemed to comply with the reference level limits, therefore the basic restrictions are compliant with human exposure limits.

Statement

1. The Testing Center guarantees the scientificity, accuracy and impartiality of the test, and is responsible for all the information in the report, except the information provided by the customer. The customer is responsible for the impact of the information provided on the validity of the results.
2. For the report with Accreditation Symbol, the items marked with "☆" are not within the accredited scope.
3. This report is invalid if it is altered, without the signature of the testing and approval personnel, or without the test report stamp.
4. The test data and results are only valid for the tested samples provided by the customer.
5. This report shall not be partially reproduced without the written permission of the Testing Center.
6. Any objection shall be raised to the Testing Center within 30 days after receiving the report.

--END OF REPORT--