RF Exposure Evaluation Report

Product	:	CS-iWPT302 Wireless Bluetooth Transmitter Series
Trade mark	:	N/A
Model/Type reference	:	See section 4.2
Serial Number	:	N/A
Report Number	:	EED32Q80776502
FCC ID	:	2BG7WCS-IWPT302
Date of Issue	:	Jul. 26, 2024
Test Standards	:	47 CFR Part 1.1307 47 CFR Part 1.1310 47 CFR Part 2.1091 47 CFR Part 2.1093 447498 D04 Interim General RF Exposure Guidance v01
Test result	:	PASS

Prepared for:

Xi'an Chinastar M&C Limited
F6, bldg A, No.1309 shanglinyuan 4th Rd, Xi'an Hi-tech Development Zone, Xi'an, China

Prepared by:

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Approved by:	Aaron Ma	Date:	Jul. 26, 2024

Check No.: 8954050624

2 Version

Version No.	Date	Description
00	Jul. 26, 2024	Original

3 Contents

4 General Information

4.1 Client Information

Applicant:	Xi'an Chinastar M&C Limited
Address of Applicant:	F6, bldg A, No.1309 shanglinyuan 4th Rd, Xi'an Hi-tech Development Zone, Xi'an, China
Manufacturer:	Xi'an Chinastar M&C Limited
Address of Manufacturer:	F6, bldg A, No.1309 shanglinyuan 4th Rd, Xi'an Hi-tech Development Zone, Xi'an, China
Factory:	Xi'an Chinastar M&C Limited
Address of Factory:	No.1309 shanglinyuan 4th Rd, Xi'an Hi-tech Development Zone, Xi'an, China

4.2 General Description of EUT

Product Name:	CS-iWPT302 Wireless Bluetooth Transmitter Series
Model No.:	CS-iWPT302-P-LLP5-B34WNM-N0X00-00, CS-iWPT302-P-LP5-B34WNM-N0X00-00, CS-iWPT302-P-LP5-B34WNM-W0X00-00, CS-iWPT302-P-HP5-B34WNM-W0X00-00, CS-iWPT302-T/a And other CS-iWPT302 Derived models：CS-iWPT302-P-□-B34W□-□0X00-□, CS-iWPT302-T/□(Refer to model differences table for details)
Test Model No.:	CS-iWPT302-P-LLP5-B34WNM-N0X00-00
Trade mark:	N/A

4.3 Product Specification subjective to this standard

Frequency Range:	2402MHz~2480MHz	
Modulation Type:	GFSK	
Test Power Grade:	Default	
Test Software of EUT:	SmartSnippets Toolbox v5.0.16	
Antenna Type:	PCB Antenna	
Antenna Gain:	-2.34dBi	
Power Supply:	Battery:	DC 3.6V
Sample Received Date:	Jul. 09, 2024	
Sample tested Date:	Jul. 09, 2024 to Jul. 15, 2024	

Remark:
Company Name and Address shown on Report, the sample(s) and sample Information was/ were provided by the applicant who should be responsible for the authenticity which CTI hasn't verified.
Model No.: CS-iWPT302-P-LLP5-B34WNM-N0X00-00, CS-iWPT302-P-LP5-B34WNM-N0X00-00, CS-iWPT302-P-LP5-B34WNM-W0X00-00, CS-iWPT302-P-HP5-B34WNM-W0X00-00, CS-iWPT302-T/a And other CS-iWPT302 Derived models: CS-iWPT302-P-□-B34W□ -□0X00-□, CS-iWPT302-T/□(Refer to model differences table for details), Only the model CS-iWPT302-P-LLP5-B34WNM-N0X00-00 was tested. All models are identical to each other except transformer board and sensor models used. See the table as below for more details. As a result, models CS-iWPT302-P-LP5-B34WNM-W0X00-00 was chosen to conduct the full tests.
Model differences table for details:
For CS-iWPT302-P-□-B34W□-□0X00-□：

CS-iWPT302-P-□-B34W□-□0X00-□
① ② ③ ④

The "①" represent Pressure range & Pressure accuracy，The "②" represent Pressure connector type, The "③" represent sealing material, The "④" represent some special instructions

"①"：Pressure range & Pressure accuracy，eg：LP5

Code 1	Pressure range	Code 2	Pressure accuracy
FLP	X<0	2	±0.25%F.S
LLP	0～2≤X≤5bar	5	±0.5%F.S
LP	0～5＜X≤50bar	A	±1.0%F.S
HP	0～50＜X≤600bar	B	±1.5%F.S
XX	no limit	C	±3%F.S
		1	±0.1%F.S
		Other undefined codes	Other undefined values

"②"： Pressure connector type，eg：NM

Code 1	Pressure connector type
GM	G1/4 external thread
GF	G1/4 internal thread
G2	G1/2 external thread
GT	G1/2 internal thread
G8	G1/8 external thread
G3	G3/4 external thread
GE	G3/8 internal thread
GS	G3/ 8external thread
NM	NPT1/4 external thread
NF	NPT1/4 internal thread
N2	NPT1/2 external thread
N8	NPT1/8 external thread
RM	R1/4 external thread
R2	R1/2 external thread
R8	R1/8 external thread
M2	M20×1.5 external thread
7M	7/16-20UNF external thread
7F	7/16-20UNF internal thread

9M	9/16-20UNF external thread
"xx"	Refer to the corresponding manual

"③" : Sealing material, eg: W

Code	Sealing material
N	Nitrile rubber
C	chloroprene rubber
F	fluoro rubber
W	welded seal

"④": Some special instructions, eg: 00

Code	Remark
00	No special requirements
S1	Special requirement 1
S2	Special requirement 2
Sx	Special requirement x

- For CS-iWPT302-T/☐

The "☐" may be the numbers 0 to 9 or the letters A~Z or a~z , or a blank space, that indicates different types of temperature sensors or different temperature measurement accuracies, please refer to the instruction manual.

Remark:

Model CS-iWPT302-P-☐-B34W☐-☐0X00-☐ and model CS-iWPT302-T/☐ are Sharing control board and Battery cathode board, the difference in the circuit between them is the transformer board.

For pressure transmitters, the types of transformer boards can be divided into current excitation type and voltage excitation type, which depending on the selected type of pressure sensor. The current excitation type circuit has more operational amplifier circuits (used to generate excitation current) than the voltage excitation type circuit. Both pressure transmitters and temperature transmitters use the same signal conditioner chip.

The sample selected for this test is the current excitation type of the circuit, which can cover voltage excitation modules, include CS-iWPT302-T/☐ temperature transmitters modules.

4.4 Test Location

All tests were performed at:

Centre Testing International Group Co., Ltd

Building C, Hongwei Industrial Park Block 70, Bao'an District, Shenzhen, China

Telephone: +86 (0) 755 33683668 Fax:+86 (0) 755 33683385

No tests were sub-contracted.

FCC Designation No.: CN1164

4.5 Deviation from Standards

None.

4.6 Abnormalities from Standard Conditions

None.

4.7 Other Information Requested by the Customer

None.

5 SAR Evaluation

5.1 RF Exposure Compliance Requirement

5.1.1 Limits

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 Pth (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). Pth is given by Formula

$$P_{\text{th}}\,(\text{mW}) = \begin{cases} ERP_{20\text{ cm}}(d/20\text{ cm})^{x} & d \le 20\text{ cm} \\ ERP_{20\text{ cm}} & 20\text{ cm} < d \le 40\text{ cm} \end{cases}$$

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 ERP20cm is per Formula (B.1).

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

The 1 mW Blanket Exemption of § 1.1307(b)(3)(i)(A) applies for single fixed, mobile, and portable RF sources with available maximum time-averaged power of no more than 1 mW, regardless of separation distance.

5.1.2 Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

5.1.3 EUT RF Exposure Evaluation

For Stand alone:

For BLE

Frequency (MHz)	Max. Conducted Output power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	ERP (dBm)	ERP (mW)	Limit (mW)	Result
2402	-3.48	-2.34	-5.82	-3.19	0.160	3060	PASS

Note：

①EIRP=conducted power+antenna gain；

②ERP=EIRP-2.15;

③EIRP(dBm) = Field strength of the fundamental signal(dBuV/m@3m) – 95.23;

④ERP(mW) = 10^(ERP (dBm)/10);

⑤The estimation distance is 20cm;

⑥The test data please refer to the report of EED32Q8077650101 and only the worst case data was recorded in the report.

*** End of Report ***