

MRT Technology (Suzhou) Co., Ltd Phone: +86-512-66308358

Web: www.mrt-cert.com

Report No.: 1809RSU017-U2 Report Version: Issue Date: 09-25-2018

RF Exposure Evaluation Declaration

FCC ID: R5DPIRCWK

APPLICANT: 4MOD Technology

Application Type: Certification

Product: PIR Board

Model No.: **PIRCWK**

Serial No.: 4MOD9122A, 4MOD9122B

Coworkr **Brand Name:**

FCC Classification: Digital Transmission System (DTS)

Reviewed By

Approved By



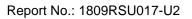


The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standards through the calibration of the equipment and evaluated measurement uncertainty herein.

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Revision History

Report No.	Version	Description	Issue Date	Note
1809RSU017-U2	Rev. 01	Initial Report	09-25-2018	Valid

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1. Equipment Description

Product Name	PIR Board
Model No.	PIRCWK
Serial Model No.	4MOD9122A, 4MOD9122B
Brand Name	Coworkr
Bluetooth Version	v4.0 (BLE Only)
Bluetooth Frequency	2402~2480MHz
Data Rate	250kbps
Modulation	GFSK
Antenna Type	PIFA Antenna
Antenna Gain	3.3dBi
Power Tune-up Tolerance	1.75dBm ± 0.5dBm

NOTE: The different models are only for marketing different clients. The PCBA configuration and software are the same for all models. All the materials used in different models are the same as well.

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2. RF Exposure Evaluation

2.1. Limits

SAR Test Exclusion Thresholds for 100 MHz - 6 GHz and ≤ 50 mm

Approximate SAR Test Exclusion Power Thresholds at Selected Frequencies and Test Separation Distances are illustrated in the following Table. The equation and threshold in Note 1 must be applied to determine SAR test exclusion.

MHz 5 10 15 20 25 mm 150 39 77 116 155 194 SAR Test 300 27 55 82 110 137 Exclusion 450 22 45 67 89 112 Threshold 835 16 33 49 66 82 19 66 82 19 66 82 19 66 82 19 61 19 11 10 19 29 38 48 48 48 48 48 48 48 48 3600 8 16 24 32 40 40 5200 7 13 20 26 33 5400 6 13 19 26 32 5800 6 12 19 25 31 54 50 mm 54 50 mm 54 50 mm 54 50 54							
Seculation	MHz	5	10	15	20	25	mm
A50	150	39	77	116	155	194	SAR Test
Sas 16	300	27	55	82	110	137	Exclusion
900	450	22	45	67	89	112	Threshold
1500	835	16	33	49	66	82	(mW)
1900 11 22 33 44 54 2450 10 19 29 38 48 3600 8 16 24 32 40 5200 7 13 20 26 33 5400 6 13 19 26 32 5800 6 12 19 25 31 MHz 30 35 40 45 50 mm 150 232 271 310 349 387 SAR Test 300 164 192 219 246 274 Exclusion 450 134 157 179 201 224 Threshold 835 98 115 131 148 164 (mW) 900 95 111 126 142 158 150 73 86 98 110 122 1900 65 76 87 98 109 2450 57 67 77 86 96 96 <td< th=""><th>900</th><th>16</th><th>32</th><th>47</th><th>63</th><th>79</th><th></th></td<>	900	16	32	47	63	79	
2450 10 19 29 38 48 3600 8 16 24 32 40 5200 7 13 20 26 33 5400 6 13 19 26 32 5800 6 12 19 25 31 MHz 30 35 40 45 50 mm 150 232 271 310 349 387 SAR Test Exclusion 300 164 192 219 246 274 Exclusion Threshold 450 134 157 179 201 224 Threshold (mW) 900 95 111 126 142 158 158 1500 73 86 98 110 122 1900 65 76 87 98 109 2450 57 67 77 86 96 96 3600 47 55 63 71 79 5200 39 46 53 59 <th>1500</th> <th>12</th> <th>24</th> <th>37</th> <th>49</th> <th>61</th> <th></th>	1500	12	24	37	49	61	
3600 8 16 24 32 40 5200 7 13 20 26 33 5400 6 13 19 26 32 5800 6 12 19 25 31 MHz 30 35 40 45 50 mm 150 232 271 310 349 387 SAR Test 300 164 192 219 246 274 Exclusion 450 134 157 179 201 224 Threshold 835 98 115 131 148 164 (mW) 900 95 111 126 142 158 1500 73 86 98 110 122 1900 65 76 87 98 109 2450 57 67 77 86 96 3600 47 55 63 71 79 5200 39 46 53	1900	11	22	33	44	54	
5200 7 13 20 26 33 5400 6 13 19 26 32 5800 6 12 19 25 31 MHz 30 35 40 45 50 mm 150 232 271 310 349 387 SAR Test 300 164 192 219 246 274 Exclusion 450 134 157 179 201 224 Threshold 835 98 115 131 148 164 (mW) 900 95 111 126 142 158 (mW) 1900 65 76 87 98 109 <td< th=""><th>2450</th><th>10</th><th>19</th><th>29</th><th>38</th><th>48</th><th></th></td<>	2450	10	19	29	38	48	
5400 6 13 19 26 32 5800 6 12 19 25 31 MHz 30 35 40 45 50 mm 150 232 271 310 349 387 SAR Test 300 164 192 219 246 274 Exclusion 450 134 157 179 201 224 Exclusion 835 98 115 131 148 164 (mW) 900 95 111 126 142 158 (mW) 1500 73 86 98 110 122 1900 65 76 87 98 109 2450 57 67 77 86 96 3600 47 55 63 71 79 5200 39 46 53 59 66 65 5400 39 45 52 58	3600	8	16	24	32	40	
MHz 30 35 40 45 50 mm 150 232 271 310 349 387 SAR Test 300 164 192 219 246 274 Exclusion 450 134 157 179 201 224 Threshold 835 98 115 131 148 164 (mW) 900 95 111 126 142 158 1500 73 86 98 110 122 1900 65 76 87 98 109 2450 57 67 77 86 96 3600 47 55 63 71 79 5200 39 46 53 59 66 5400 39 45 52 58 65	5200	7	13	20	26	33	
MHz 30 35 40 45 50 mm 150 232 271 310 349 387 SAR Test 300 164 192 219 246 274 Exclusion 450 134 157 179 201 224 Threshold 835 98 115 131 148 164 (mW) 900 95 111 126 142 158 158 1500 73 86 98 110 122 1900 65 76 87 98 109 2450 57 67 77 86 96 3600 47 55 63 71 79 5200 39 46 53 59 66 5400 39 45 52 58 65	5400	6	13	19	26	32	
150 232 271 310 349 387 SAR Test 300 164 192 219 246 274 Exclusion 450 134 157 179 201 224 Threshold 835 98 115 131 148 164 (mW) 900 95 111 126 142 158 1500 73 86 98 110 122 1900 65 76 87 98 109 2450 57 67 77 86 96 3600 47 55 63 71 79 5200 39 46 53 59 66 5400 39 45 52 58 65	5800	6	12	19	25	31	
150 232 271 310 349 387 SAR Test 300 164 192 219 246 274 Exclusion 450 134 157 179 201 224 Threshold 835 98 115 131 148 164 (mW) 900 95 111 126 142 158 1500 73 86 98 110 122 1900 65 76 87 98 109 2450 57 67 77 86 96 3600 47 55 63 71 79 5200 39 46 53 59 66 5400 39 45 52 58 65							
300 164 192 219 246 274 Exclusion 450 134 157 179 201 224 Threshold 835 98 115 131 148 164 (mW) 900 95 111 126 142 158 1500 73 86 98 110 122 1900 65 76 87 98 109 2450 57 67 77 86 96 3600 47 55 63 71 79 5200 39 46 53 59 66 5400 39 45 52 58 65	MHz	30	35	40	45	50	mm
450 134 157 179 201 224 Threshold 835 98 115 131 148 164 (mW) 900 95 111 126 142 158 1500 73 86 98 110 122 1900 65 76 87 98 109 2450 57 67 77 86 96 3600 47 55 63 71 79 5200 39 46 53 59 66 5400 39 45 52 58 65	150	232	271	310	349	387	SAR Test
835 98 115 131 148 164 (mW) 900 95 111 126 142 158 1500 73 86 98 110 122 1900 65 76 87 98 109 2450 57 67 77 86 96 3600 47 55 63 71 79 5200 39 46 53 59 66 5400 39 45 52 58 65	300	164	192	219	246	274	Exclusion
900 95 111 126 142 158 1500 73 86 98 110 122 1900 65 76 87 98 109 2450 57 67 77 86 96 3600 47 55 63 71 79 5200 39 46 53 59 66 5400 39 45 52 58 65	450	134	157	179	201	224	Threshold
1500 73 86 98 110 122 1900 65 76 87 98 109 2450 57 67 77 86 96 3600 47 55 63 71 79 5200 39 46 53 59 66 5400 39 45 52 58 65	835	98	115	131	148	164	(mW)
1900 65 76 87 98 109 2450 57 67 77 86 96 3600 47 55 63 71 79 5200 39 46 53 59 66 5400 39 45 52 58 65	900	95	111	126	142	158	
2450 57 67 77 86 96 3600 47 55 63 71 79 5200 39 46 53 59 66 5400 39 45 52 58 65	1500	73	86	98	110	122	
3600 47 55 63 71 79 5200 39 46 53 59 66 5400 39 45 52 58 65	1900	65	76	87	98	109	
5200 39 46 53 59 66 5400 39 45 52 58 65	2450	57	67	77	86	96	
5400 39 45 52 58 65	3600	47	55	63	71	79	
	5200	39	46	53	59	66	
F900 27 44 F0 FC C2	5400	39	45	52	58	65	
3000 31 44 50 50 62	5800	37	44	50	56	62	

Note: The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances \leq 50 mm are determined by:

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[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] * $[\sqrt{f(GHz)}] \le 3.0$ for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

- f(GHz) is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison
- 3.0 and 7.5 are referred to as the numeric thresholds in the step 2 below

The test exclusions are applicable only when the minimum test separation distance is \leq 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm according to 5) in section 4.1 is applied to determine SAR test exclusion.

2.2. Test Procedure

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

The temperature and related humidity: 18°C and 78% RH.

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2.3. Test Result of RF Exposure Evaluation

Product	PIR Board
Test Item	RF Exposure Evaluation

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 3.3dBi for 2.4GHz in logarithm scale.

Output Power into Antenna:

Test Mode	Frequency Band (MHz)	Maximum output power to antenna (mW)	SAR Test Exclusion Threshold (mW)
Bluetooth	2402 ~ 2480	1.68	10

Per FCC KDB 447498 D01v06, the SAR exclusion threshold for distances<50mm is defined by the following equation:

[(max. power of channel, including tune-up tolerance, mW) / (min. test separation distance, mm)] * $[\sqrt{f(GHz)}] \le 3.0$

Based on the maximum conducted power of Bluetooth and the antenna to use separation distance, Bluetooth SAR was not required;

 $[(1.68 \text{mW/5})^* \sqrt{2.402}] = 0.52 < 3.0$

Note: When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.

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The End