



**SGS-CSTC Standards Technical Services
(Shanghai) Co., Ltd.**

588 West Jindu Road, Xinqiao, Songjiang, 201612 Shanghai, China
 Telephone: +86 (0) 21 6191 5666
 Fax: +86 (0) 21 6191 5678
 ee.shanghai@sgs.com

Report No.: SHEM160800539509
 Page: 1 of 8

1 Cover Page

RF MPE REPORT

Application No.:	SHEM1608005395CR
Applicant:	MINE SITE TECHNOLOGIES PTY LTD
FCC ID:	N73-PRX-TAG
IC:	7449B-PRXTAG
Equipment Under Test (EUT):	
NOTE: The following sample(s) was/were submitted and identified by the client as	
Product Name:	Proximity Tag
Model No.(EUT):	PRX-TAG
Standards:	FCC Rules 47 CFR §2.1093 KDB447498 D01 General RF Exposure Guidance v06 RSS-102 Issue 5 (March 2015)
Date of Receipt:	2015-10-10
Date of Test:	2017-12-29 to 2018-05-10
Date of Issue:	2018-05-15
Test Result:	Pass*

*In the configuration tested, the EUT detailed in this report complied with the standards specified above.



Parlam Zhan
E&E Section Manager
SGS-CSTC (Shanghai) Co., Ltd.

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. All test results in this report can be traceable to National or International Standards.

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at www.sgs.com/terms_and_conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at www.sgs.com/terms_e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

2 Version

Revision Record				
Version	Chapter	Date	Modifier	Remark
00	/	2018-05-15	/	Original

Authorized for issue by:			
Engineer		Vincent Zhu _____	 _____
Reviewer		Parlam Zhan _____	 _____

3 Contents

	Page
1 COVER PAGE.....	1
2 VERSION.....	2
3 CONTENTS.....	3
4 GENERAL INFORMATION.....	4
4.1 CLIENT INFORMATION.....	4
4.2 GENERAL DESCRIPTION OF E.U.T.....	4
4.3 DETAILS OF E.U.T.....	4
4.4 TEST LOCATION.....	5
4.5 TEST FACILITY.....	5
5 TEST STANDARDS AND LIMITS.....	6
5.1 FCC RADIOFREQUENCY RADIATION EXPOSURE LIMITS:.....	6
5.2 IC RADIOFREQUENCY RADIATION EXPOSURE LIMITS:.....	6
6 MEASUREMENT AND CALCULATION.....	7
6.1 MAXIMUM TRANSMIT POWER.....	7
6.2 MPE CALCULATION.....	8
7 EUT CONSTRUCTIONAL DETAILS.....	8

4 General Information

4.1 Client Information

Applicant:	MINE SITE TECHNOLOGIES PTY LTD
Address of Applicant:	Level 5, 113 Wicks Rd., North Ryde NSW 2113

4.2 General Description of E.U.T.

Product Description:	Mobile Product with 2.4GHz band Zigbee function
Power Supply:	3.7V rechargeable Li-ion battery

4.3 Details of E.U.T.

Operation Frequency:	2405MHz-2470MHz
Modulation Technique:	DSSS
Data Rate:	250kbps
Number of Channel:	14
Antenna Type:	Ceramic antenna
Antenna Gain:	3.2dBi

4.4 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.

588 West Jindu Road, Xinqiao, Songjiang, 201612 Shanghai, China

Tel: +86 21 6191 5666

Fax: +86 21 6191 5678

4.5 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **CNAS (No. CNAS L0599)**

CNAS has accredited SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

- **NVLAP (Certificate No. 201034-0)**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP). Certificate No. 201034-0.

- **FCC –Designation Number: CN5033**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been recognized as an accredited testing laboratory.

Designation Number: CN5033. Test Firm Registration Number: 479755.

- **Industry Canada (IC) – IC Assigned Code: 8617A**

The 3m Semi-anechoic chamber of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 8617A-1.

- **VCCI (Member No.: 3061)**

The 3m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-3868, C-4336, T-12221, G-10830 respectively.

5 Test Standards and Limits

5.1 FCC Radiofrequency radiation exposure limits:

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:

$[(\text{max power of channel})/(\text{min test separation distance})]^*[\sqrt{f(\text{GHz})}] \leq 3.0$ 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
- The result is rounded to one decimal place for comparison
- 3.0 and 7.5 are referred to as the numeric thresholds

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

For 2.4G band device, the limit of worse case is $P_{\text{max}} \leq 3.0 * D_{\text{min}} / \sqrt{f} = 7.5 * 5 / \sqrt{2.480} = 9.52 \text{mW}$

5.2 IC Radiofrequency radiation exposure limits:

According to RSS-102 section 2.5.1, SAR evaluation is required if the separation distance between the user and/or bystander and the antenna and/or radiating element of the device is less than or equal to 20 cm, except when the device operates at or below the applicable output power level (adjusted for tune-up tolerance) for the specified separation distance

MHz	5	10	15	20	25	30	35	40	45	50	mm
≤ 300	71	101	132	162	193	223	254	284	315	345	mW
450	52	70	88	106	123	141	159	177	195	213	
835	17	30	42	55	67	80	92	105	117	130	
1900	7	10	18	34	60	99	153	225	316	431	
2450	4	7	15	30	52	83	123	173	235	309	
3500	2	6	16	32	55	86	124	170	225	290	
5800	1	6	15	27	41	56	71	85	97	106	

Output power level shall be the higher of the maximum conducted or equivalent isotropically radiated power (e.i.r.p.) source-based, time-averaged output power. For controlled use devices where the 8 W/kg for 1 gram of tissue applies, the exemption limits for routine evaluation are multiplied by a factor of 5. For limb-worn devices where the 10 gram value applies, the exemption limits for routine evaluation in Table 1 are multiplied by a factor of 2.5. If the operating frequency of the device is between two frequencies located in Table 1, linear interpolation shall be applied for the applicable separation distance. For test separation distance less than 5 mm, the exemption limits for a separation distance of 5 mm can be applied to determine if a routine evaluation is required.

For 2.4G device, the limit of worse case is 4mW

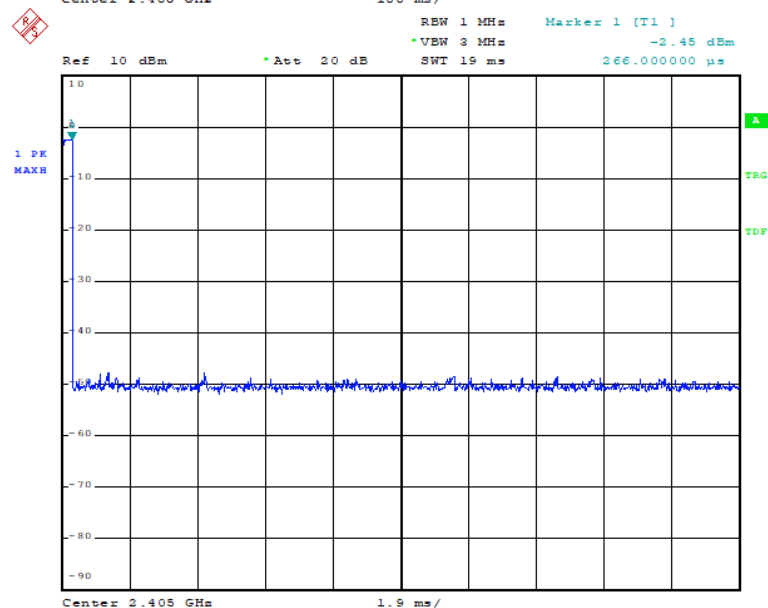
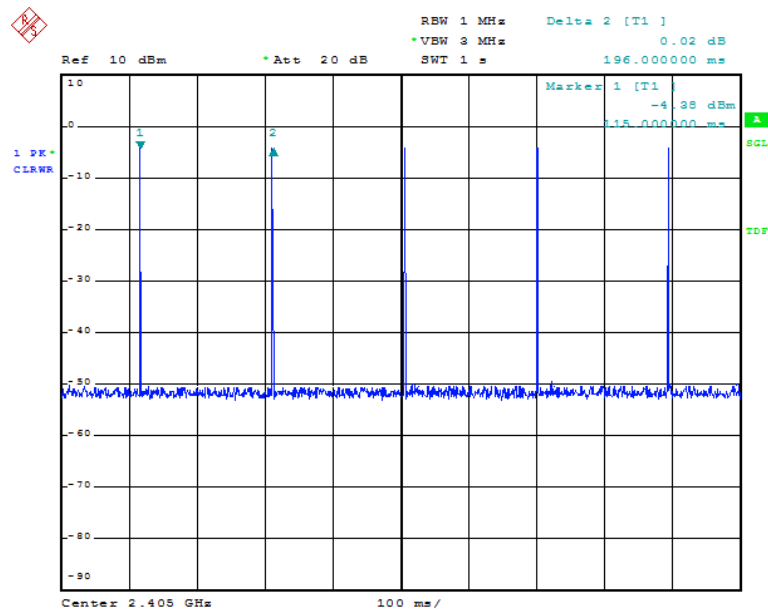
6 Measurement and Calculation

6.1 Maximum transmit power

The Peak Power Data is based on the RF Test Report SHEM160800539508

Test Channel	Test Frequency (MHz)	Output Power (dBm)	Output Power (mW)
Lowest	2405	12.39	17.34
Middle	2440	7.65	5.82
Highest	2470	11.70	14.79

Duty Cycle:



6.2 MPE Calculation

The Max Conducted Peak Output Power is 12.39dBm;

This is a low transmission duty factor devices, duty cycle factor = $10\log(0.266/100) = -25.75$

According to KDB 447498 section 6.3, the duty factor adjusted maximum output power $P_{ad} = 12.39 - 25.75 = -13.36\text{dBm} = 0.046\text{mW}$

The best case gain of the antenna is 3.2dBi. 3.2dB logarithmic terms convert to numeric result is nearly 2.09.

$P_{ad} = 0.046\text{mW} < 4\text{mW} < 9.525\text{mW}$

So the device is exclusion from SAR test.

7 EUT Constructional Details

Refer to the < External Photos > & < Internal Photos>.

--End of the Report--