



FCC ID: W5Y-1002244  
Report No.: T191120D05-MF

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Rev.: 02

**IEEE C95.1 2005  
KDB 447498 D03  
47 C.F.R. Part 1, Subpart I, Section 1.1310  
47 C.F.R. Part 2, Subpart J, Section 2.1091**

## **RF EXPOSURE REPORT**

**For**

**GUARDIAN SYSTEM LTE**

**Model: G2-SY-CON2**

**Trade Name: GUARDIAN**

*Issued to*

**Seeing Machines Pty Ltd  
80 Mildura Street, Fyshwick, ACT , Canberra 2609 Australia**

*Issued by*

**Compliance Certification Services Inc.  
Wugu Laboratory  
No.11, Wugong 6th Rd., Wugu Dist.,  
New Taipei City 24891, Taiwan. (R.O.C.)  
Issue Date: May 29, 2020**

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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.  
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## Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	January 22, 2020	Initial Issue	ALL	Doris Chu
01	April 28, 2020	See the following Note Rev. (01)	ALL	Doris Chu
02	May 29, 2020	See the following Note Rev. (02)	P.6, P.10-12	May Lin

*Rev (01):*

*1. Added section 6 and 2G function.*

*Rev (02):*

*1. Revised the section 3 · 5.*



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# 1. TEST RESULT CERTIFICATION

## We hereby certify that:

The above equipment was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10: 2013 and the energy emitted by the sample EUT tested as described in this report is in compliance with the requirements of FCC Rules Part 15.207, 15.209, 15.247.

The test results of this report relate only to the tested sample EUT identified in this report.

APPLICABLE STANDARDS	
STANDARD	TEST RESULT
IEEE C95.1 2005 KDB 447498 D03 47 C.F.R. Part 1, Subpart I, Section 1.1310 47 C.F.R. Part 2, Subpart J, Section 2.1091	No non-compliance noted
Statements of Conformity	
Determination of compliance is based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.	

Approved by:

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Kevin Tsai  
Deputy Manager  
Compliance Certification Services Inc.



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## 2. LIMIT

According to §15.247(i), 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 levels in excess of the Commission's guidelines. See § 1.1307(b)(1) of this chapter.

### 3. EUT SPECIFICATION

<b>EUT</b>	GUARDIAN SYSTEM LTE
<b>Model</b>	G2-SY-CON2
<b>Model Discrepancy</b>	N/A
<b>Frequency band (Operating)</b>	<input checked="" type="checkbox"/> Bluetooth: 2402MHz-2480MHz <input checked="" type="checkbox"/> GPRS: 850: 824.2 ~ 848.8 MHz <input checked="" type="checkbox"/> GPRS: 1900: 1850.2 ~ 1909.8 MHz <input checked="" type="checkbox"/> WCDMA Band II: 1852.4 ~ 1907.6 MHz <input checked="" type="checkbox"/> WCDMA Band IV: 1712.4-1752.6 MHz <input checked="" type="checkbox"/> WCDMA Band V: 826.4 ~ 846.6MHz <input checked="" type="checkbox"/> LTE Band 2: 1850MHz ~ 1910MHz <input checked="" type="checkbox"/> LTE Band 4: 1710MHz ~ 1755MHz <input checked="" type="checkbox"/> LTE Band 5: 824MHz ~ 849MHz <input checked="" type="checkbox"/> LTE Band 12: 699 MHz ~ 716 MHz <input checked="" type="checkbox"/> LTE Band 13: 777 MHz ~ 787 MHz <input checked="" type="checkbox"/> LTE Band 25: 1850 MHz ~ 1915MHz <input checked="" type="checkbox"/> LTE Band 26: 814 MHz ~ 824 MHz <input checked="" type="checkbox"/> LTE Band 26: 824 MHz ~ 849 MHz <input checked="" type="checkbox"/> LTE Band 41: 2496MHz ~ 2690MHz <input type="checkbox"/> Others
<b>Device category</b>	<input type="checkbox"/> Portable (<20cm separation) <input checked="" type="checkbox"/> Mobile (>20cm separation) <input type="checkbox"/> Others
<b>Exposure classification</b>	<input type="checkbox"/> Occupational/Controlled exposure (S = 5mW/cm <sup>2</sup> ) <input checked="" type="checkbox"/> General Population/Uncontrolled exposure (S=1mW/cm <sup>2</sup> ) Frequency Range 300MHz~1500MHz = f/1500 (mW/cm <sup>2</sup> ) Frequency Range 1500MHz~100000MHz = 1 (mW/cm <sup>2</sup> )

<b>Antenna Specification</b>	<b>WLAN</b>		
	FPC Antenna		
	BT:	Directional Gain : 2.56 dBi (Numeric gain: 1.80)	
	<b>WWAN</b>		
	Dipole Antenna		
	GPRS: 850:	Directional Gain : -0.10 dBi (Numeric gain: 0.98)	Worst
	GPRS: 1900:	Directional Gain : 1.20 dBi (Numeric gain: 1.32)	Worst
	WCDMA Band II:	Directional Gain : 1.20 dBi (Numeric gain: 1.32)	Worst
	WCDMA Band IV:	Directional Gain : 1.80 dBi (Numeric gain: 1.51)	Worst
	WCDMA Band V:	Directional Gain : -0.10 dBi (Numeric gain: 0.98)	Worst
	LTE Band 2:	Directional Gain : 1.20 dBi (Numeric gain: 1.32)	Worst
	LTE Band 4:	Directional Gain : 1.80 dBi (Numeric gain: 1.51)	Worst
	LTE Band 5:	Directional Gain : -0.10 dBi (Numeric gain: 0.98)	Worst
	LTE Band 12:	Directional Gain : 1.00 dBi (Numeric gain: 1.26)	Worst
	LTE Band 13:	Directional Gain : 1.00 dBi (Numeric gain: 1.26)	Worst
LTE Band 25:	Directional Gain : 1.20 dBi (Numeric gain: 1.32)	Worst	
LTE Band 26:	Directional Gain : -0.10 dBi (Numeric gain: 0.98)	Worst	
LTE Band 26:	Directional Gain : -0.10 dBi (Numeric gain: 0.98)	Worst	
LTE Band 41:	Directional Gain : 0.10 dBi (Numeric gain: 1.02)	Worst	

<p><b>Maximum Measurement Average Power</b></p>	<p><b>WLAN</b></p> <table border="1"> <tr> <td>BT:</td> <td>11.13 dBm</td> <td>(12.972 mW)</td> </tr> </table> <p><b>WWAN</b></p> <table> <tr><td>GPRS: 850:</td><td>29.80 dBm</td><td>(954.993 mW)</td></tr> <tr><td>GPRS: 1900:</td><td>27.00 dBm</td><td>(501.187 mW)</td></tr> <tr><td>WCDMA Band II:</td><td>23.42 dBm</td><td>(219.786 mW)</td></tr> <tr><td>WCDMA Band IV:</td><td>23.37 dBm</td><td>(217.270 mW)</td></tr> <tr><td>WCDMA Band V:</td><td>24.23 dBm</td><td>(264.850 mW)</td></tr> <tr><td>LTE Band 2:</td><td>21.00 dBm</td><td>(125.893 mW)</td></tr> <tr><td>LTE Band 4:</td><td>21.49 dBm</td><td>(140.929 mW)</td></tr> <tr><td>LTE Band 5:</td><td>22.67 dBm</td><td>(184.927 mW)</td></tr> <tr><td>LTE Band 12:</td><td>21.96 dBm</td><td>(157.036 mW)</td></tr> <tr><td>LTE Band 13:</td><td>21.11 dBm</td><td>(129.122 mW)</td></tr> <tr><td>LTE Band 25:</td><td>21.43 dBm</td><td>(138.995 mW)</td></tr> <tr><td>LTE Band 26:</td><td>22.44 dBm</td><td>(175.388 mW)</td></tr> <tr><td>LTE Band 26:</td><td>22.35 dBm</td><td>(171.791 mW)</td></tr> <tr><td>LTE Band 41:</td><td>22.40 dBm</td><td>(173.780 mW)</td></tr> </table>	BT:	11.13 dBm	(12.972 mW)	GPRS: 850:	29.80 dBm	(954.993 mW)	GPRS: 1900:	27.00 dBm	(501.187 mW)	WCDMA Band II:	23.42 dBm	(219.786 mW)	WCDMA Band IV:	23.37 dBm	(217.270 mW)	WCDMA Band V:	24.23 dBm	(264.850 mW)	LTE Band 2:	21.00 dBm	(125.893 mW)	LTE Band 4:	21.49 dBm	(140.929 mW)	LTE Band 5:	22.67 dBm	(184.927 mW)	LTE Band 12:	21.96 dBm	(157.036 mW)	LTE Band 13:	21.11 dBm	(129.122 mW)	LTE Band 25:	21.43 dBm	(138.995 mW)	LTE Band 26:	22.44 dBm	(175.388 mW)	LTE Band 26:	22.35 dBm	(171.791 mW)	LTE Band 41:	22.40 dBm	(173.780 mW)
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<p><b>Evaluation applied</b></p>	<p> <input checked="" type="checkbox"/> MPE Evaluation*  <input type="checkbox"/> SAR Evaluation  <input type="checkbox"/> N/A         </p>																																													



## 4. TEST RESULTS

**No non-compliance noted.**

### Calculation

Given  $E = \frac{\sqrt{30 \times P \times G}}{d}$  &  $S = \frac{E^2}{377}$

Where  $E =$  Field strength in Volts / meter

$P =$  Power in Watts

$G =$  Numeric antenna gain

$d =$  Distance in meters

$S =$  Power density in milliwatts / square centimeter

Combining equations and re-arranging the terms to express the distance as a function of the remaining variables yields:

$$S = \frac{30 \times P \times G}{377 d^2}$$

Changing to units of mW and cm, using:

$$P (mW) = P (W) / 1000 \text{ and}$$

$$d (cm) = d(m) / 100$$

Yields

$$S = \frac{30 \times (P/1000) \times G}{377 \times (d/100)^2} = 0.0796 \times \frac{P \times G}{d^2} \text{ Equation 1}$$

Where  $d =$  Distance in cm

$P =$  Power in mW

$G =$  Numeric antenna gain

$S =$  Power density in mW / cm<sup>2</sup>

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## 5. MAXIMUM PERMISSIBLE EXPOSURE

Substituting the MPE safe distance using  $d = 20$  cm into Equation 1:

$$S = 0.000199 \times P \times G$$

Where  $P =$  Power in mW

$G =$  Numeric antenna gain

$S =$  Power density in mW / cm<sup>2</sup>

### BT:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm <sup>2</sup>	Limit (mW/cm <sup>2</sup> )
0	2402	14.125	1.80	20	0.0051	1

### GPRS 850 mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm <sup>2</sup>	Limit (mW/cm <sup>2</sup> )
128	824.2	1000.000	0.98	20	0.1950	0.549

### GPRS 1900 mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm <sup>2</sup>	Limit (mW/cm <sup>2</sup> )
810	1909.8	562.341	1.32	20	0.1477	1

### WCDMA Band II mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm <sup>2</sup>	Limit (mW/cm <sup>2</sup> )
9400	1880	251.189	1.32	20	0.0660	1

### WCDMA Band IV mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm <sup>2</sup>	Limit (mW/cm <sup>2</sup> )
1312	1712.4	251.189	1.51	20	0.0755	1

### WCDMA Band V mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm <sup>2</sup>	Limit (mW/cm <sup>2</sup> )
4132	826.4	316.228	0.98	20	0.0617	0.551

**LTE Band 2 mode:**

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm <sup>2</sup>	Limit (mW/cm <sup>2</sup> )
18900	1880	125.893	1.32	20	0.0331	1

**LTE Band 4 mode:**

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm <sup>2</sup>	Limit (mW/cm <sup>2</sup> )
20300	1745	158.489	1.51	20	0.0476	1

**LTE Band 5 mode:**

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm <sup>2</sup>	Limit (mW/cm <sup>2</sup> )
20600	844	199.526	0.98	20	0.0389	0.563

**LTE Band 12 mode:**

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm <sup>2</sup>	Limit (mW/cm <sup>2</sup> )
23130	711	158.489	1.26	20	0.0397	0.474

**LTE Band 13 mode:**

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm <sup>2</sup>	Limit (mW/cm <sup>2</sup> )
23230	782	177.828	1.26	20	0.0446	0.521

**LTE Band 25 mode:**

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm <sup>2</sup>	Limit (mW/cm <sup>2</sup> )
26365	1882.5	141.254	1.32	20	0.0371	1

**LTE Band 26 mode:**

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm <sup>2</sup>	Limit (mW/cm <sup>2</sup> )
26740	819	177.828	0.98	20	0.0347	0.546

**LTE Band 26 mode:**

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm <sup>2</sup>	Limit (mW/cm <sup>2</sup> )
26865	831.5	199.526	0.98	20	0.0389	0.554

**LTE Band 41 mode:**

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm <sup>2</sup>	Limit (mW/cm <sup>2</sup> )
41490	2680	177.828	1.02	20	0.0361	1



## 6. SIMULTANEOUS TRANSMISSION SAR ANALYSIS

Both of the WLAN and WWAN can transmit simultaneously, the formula of calculated the MPE is:

$$CPD1 / LPD1 + CPD2 / LPD2 + \dots \text{etc.} < 1$$

CPD = Calculation power density

LPD = Limit of power density

### WLAN+WWAN

Therefore, the worst-case situation is  $0.0051 / 1 + 0.1950 / 0.549 = 0.3602$ , which is less than "1".

**--End of Report--**