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# RF EXPOSURE REPORT

**REPORT NO.:** SA140422E06 R4

**MODEL NO.:** ESL201

**FCC ID:** H9PESL201

**IC:** 1549D-ESL201

**RECEIVED:** Apr. 22, 2014

**TESTED:** May 07, 2014

**ISSUED:** June 27, 2014

**APPLICANT:** Symbol Technologies, Inc.

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**MANUFACTURER:** Symbol Technologies, Inc.

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**ISSUED BY:** Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory

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## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
SA140422E06	Original release	May 22, 2014
SA140422E06 R1	Added Canada RF exposure.	May 28, 2014
SA140422E06 R2	SAR evaluation distance changed (20cm -> 5mm)	June 06, 2014
SA140422E06 R3	Revised the applicant, manufacturer and brand name.	June 27, 2014
SA140422E06 R4	Revised FCC ID & IC ID.	June 27, 2014



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## 1. CERTIFICATION

**PRODUCT:** Electronic Shelf Label

**BRAND NAME:** Symbol

**MODEL NO.:** ESL201

**TEST SAMPLE:** ENGINEERING SAMPLE

**APPLICANT:** Symbol Technologies, Inc.

**TESTED DATE:** May 07, 2014

**STANDARDS:** FCC Part 2 (Section 2.1091)

FCC OET Bulletin 65, Supplement C (01-01)

IEEE C95.1

RSS-102 Issue 4 (2010-12)

The above equipment (Model: ESL201) has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

**PREPARED BY** :  , **DATE:** June 27, 2014  
( Elsie Hsu, Specialist )

**APPROVED BY** :  , **DATE:** June 27, 2014  
( May Chen, Manager )

## 2. EVALUATION RESULT

Following FCC KDB 447498 D01 “General SAR test exclusion guidance” [For FCC](#)  
The corresponding SAR Exclusion Threshold condition, listed below:

- 1) 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:  
[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)]  $\cdot$   $\sqrt{f(\text{GHz})}$   $\leq$  3.0 for 1-g SAR and  $\leq$  7.5 for 10-g extremity SAR where
  - $f(\text{GHz})$  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 comparisonThe 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 is applied to determine SAR test exclusion.
- 2) At 100 MHz to 6 GHz and for test separation distances  $>$  50 mm, the SAR test exclusion threshold is determined according to the following:
  - a) [Threshold at 50 mm in step 1) + (test separation distance - 50 mm)  $\cdot$  ( $f(\text{MHz})/150$ )] mW, at 100MHz to 1500 MHz
  - b) [Threshold at 50 mm in step 1) + (test separation distance - 50 mm)  $\cdot$  10] mW at  $>$  1500 MHz and  $\leq$  6 GHz
- 3) At frequencies below 100 MHz, the following may be considered for SAR test exclusion.
  - a) The threshold at the corresponding test separation distance at 100 MHz in step 2) is multiplied by  $[1 + \log(100/f(\text{MHz}))]$  for test separation distances  $>$  50 mm and  $<$  200 mm.
  - b) The threshold determined by the equation in a) for 50 mm and 100 MHz is multiplied by  $\frac{1}{2}$  for test separation distances  $\leq$  50 mm.
  - c) SAR measurement procedures are not established below 100 MHz. When SAR test exclusion cannot be applied, a KDB inquiry is required to determine SAR evaluation requirements for any test results to be acceptable.



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## Following IC NOTICE 2013-DRS0911 “LATEST PUBLICATION OF IEEE 1528-2013 AND POWER EXEMPTION LIMITS” [For IC](#)

### Exemption Limits for Routine Evaluation – SAR Evaluation

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 defined in below table:

**Table 1: SAR evaluation – exemption limits for routine evaluation based on frequency and separation distance<sup>1</sup>.**

Frequency (MHz)	Exemption Limits (mW)				
	At separation distance of <b>≤5 mm</b>	At separation distance of <b>10 mm</b>	At separation distance of <b>15 mm</b>	At separation distance of <b>20 mm</b>	At separation distance of <b>25 mm</b>
≤300	71 mW	101 mW	132 mW	162 mW	193 mW
450	52 mW	70 mW	88 mW	106 mW	123 mW
835	17 mW	30 mW	42 mW	55 mW	67 mW
1900	7 mW	10 mW	18 mW	34 mW	60 mW
2450	4 mW	7 mW	15 mW	30 mW	52 mW
3500	2 mW	6 mW	16 mW	32 mW	55 mW
5800	1 mW	6 mW	15 mW	27 mW	41 mW

Frequency (MHz)	Exemption Limits (mW)				
	At separation distance of <b>30 mm</b>	At separation distance of <b>35 mm</b>	At separation distance of <b>40 mm</b>	At separation distance of <b>45 mm</b>	At separation distance of <b>≥50 mm</b>
≤300	223 mW	254 mW	284 mW	315 mW	345 mW
450	141 mW	159 mW	177 mW	195 mW	213 mW
835	80 mW	92 mW	105 mW	117 mW	130 mW
1900	99 mW	153 mW	225 mW	316 mW	431 mW
2450	83 mW	123 mW	173 mW	235 mW	309 mW
3500	86 mW	124 mW	170 mW	225 mW	290 mW
5800	56 mW	71 mW	85 mW	97 mW	106 mW



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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 g of tissue applies, the exemption limits for routine evaluation in Table 1 are multiplied by a factor of 5. For limb-worn devices where the 10 gram 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 medical implant devices, the exemption limit for routine evaluation is set at 1 mW. The output power of a medical implant device is defined as the higher of the conducted or e.i.r.p to determine if the device is exempt from the SAR evaluation.



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### 3. SAR TEST EXCLUSION THRESHOLDS

#### For FCC

Maximum measured transmitter power:

Frequency (GHz)	Max. Power (mW)	Min. test separation distance (mm)	SAR test exclusion calculation value <sup>(NOTE 2)</sup>	1g SAR test exclusion thresholds	Result
2.440	3.228	5	1.008	3	Pass

**NOTE:** 1. The antenna type is Chip antenna with 0.5dBi gain.

2. Calculate SAR test exclusion thresholds from condition “1” formulas.

#### For IC

Frequency (GHz)	Max. Power (mW)	Min. test separation distance (mm)	SAR test exclusion power thresholds <sup>*2</sup> (mW)	Result
2.440	3.228	5	4	Pass

**NOTE:** 1. The antenna type is Chip antenna with 0.5dBi gain.

2. SAR test exclusion thresholds from “ table 1 ”.

### 4. CONCLUSION

Since peak power is below SAR test exclusion power thresholds, the SAR evaluation is not required.

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