

<p>APPLICANT</p> <p>Symbol Technologies Inc One Symbol Plaza Holtsville, NY 11742</p>	<p>MANUFACTURER</p> <p>Same As Applicant</p>
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TEST SPECIFICATION: FCC Rules and Regulations Part 15, Subpart C, Para. 15.247

TEST PROCEDURE: ANSI C63.4:1992

**TEST SAMPLE DESCRIPTION**

BRANDNAME: Symbol

MODEL: CST30XX

TYPE: 2.4 GHz Frequency Hopping Spread Spectrum PCMCIA Module

POWER REQUIREMENTS: 5 VDC derived from a fully charged Nicad Battery

FREQUENCY OF OPERATION: 2.4 GHz

**TESTS PERFORMED**

Para. 15.247(a)(1)(ii), Occupancy Time

Para. 15.247(a)(1)(ii), Occupied Bandwidth / Hopping Frequencies

Para. 15.247(b)(1) Output Power

Para. 15.247(a)(1)(ii), 20 dB Bandwidth

Para. 15.247(c) Antenna Conducted Emissions

Para. 15.247 (c) Spurious Radiated Emissions, Restricted Bands

## REPORT OF MEASUREMENTS

Applicant: Symbol Technologies Inc  
Device: 2.4 GHz Frequency Hopping Spread Spectrum PCMCIA Module  
FCC ID: H9PCST3040K088R1  
Power Requirements: 5 VDC derived from a fully charged Nicad Battery  
Applicable Rule Section: Part 15, Subpart C, Section 15.247

### TEST RESULTS

#### 15.247 (a)(1)

The frequency hopping system has hopping channel carrier frequencies separated by 1 MHz, which is greater than the 20 dB bandwidth of the hopping channel (600 kHz).

#### 15.247 (a)(1)(ii)

The frequency hopping system operated in the 2400-2483.5 MHz band and uses 79 frequencies. The maximum 20 dB bandwidth of the hopping channel is 600 kHz. The average time of occupancy on any frequency is 0.0448 seconds within a 30 second period maximum.

#### 15.247 (b)(1)

The frequency hopping system operates in the 2400-2483.5 MHz with a maximum output power of 224 milliwatts as measured at the antenna terminal.

#### 15.247 (b)(3)

The transmitting antenna has a maximum directional gain of -2 dBi. Therefore no reduction in output power is required.

#### 15.247 (b)(4)

The system operating under the provisions of this section is operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines.

The maximum Output Power was measured to be 224 mWatts at the antenna terminal. The highest directional gain of the antenna is -2 dBi, yielding an EIRP of 141 mWatts (21.5 dBm), which is below the MPE guidelines specified in OET Bulletin 65, Supplement C for devices operated within 20 cm of the body.

#### 15.247 (c)

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator is at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on an RF conducted measurement. All emissions, which fell within the restricted bands specified in 15.205(a), were measured and found to be in compliance with the limits specified in 15.209(a).

## REPORT OF MEASUREMENTS (continued)

### SPECTRUM ANALYZER DESENSITIZATION CONSIDERATIONS

Due to the nature of the emissions being measured, care was taken to ensure that the resolution bandwidth of the spectrum analyzer was adequate to provide accurate measurements. FCC specified bandwidths of 100kHz and 1MHz were utilized below and above 1GHz, respectively.

### GENERAL NOTES

1. All readings were taken utilizing a peak detector function at a test distance of 3 meters.
2. The duty cycle was applied to the peak readings in order to determine the average value of the emissions.
3. All measurements were made with a fully charged 5 VDC Nicad Battery.
4. The frequency range was scanned from 30 MHz to 25 GHz. All emissions not reported were more than 20 dB below the specified limit.

## EQUIPMENT LIST

### FCC 15, Subpart C

<b>EN</b>	<b>Type</b>	<b>Manufacturer</b>	<b>Frequency</b>	<b>Model No.</b>	<b>Cal Date</b>	<b>Due Date</b>
129F	High Gain Horn Antenna	Microlab/FXR	18 GHz - 26.5 GHz	K638A	09/16/1999	09/16/2000
141	Spectrum Analyzer	Hewlett Packard	100 Hz - 40 GHz	8566B	09/20/1999	03/20/2000
141A	Graphics Plotter	Hewlett Packard	N/A	7470A	03/05/1999	03/05/2000
141B	Quasi-Peak Adaptor	Hewlett Packard	100 Hz - 1 GHz	85650A	09/20/1999	03/20/2000
333	Attenuator	Narda	DC - 11 GHz	768-10	06/22/1999	06/22/2000
420	Amplifier	Hewlett Packard	2.0 GHz - 18 GHz	11975A	07/15/1999	07/15/2000
421	Harmonic Mixer	Hewlett Packard	18 GHz - 26.5 GHz	11970K	07/14/1999	07/14/2000

FCC 15.247(a)

SPURIOUS CASE RADIATED EMISSIONS

(See separate e-file attachment named Spurious RE.doc)

FCC 15.247(a)

OCCUPIED BANDWIDTH / HOPPING FREQUENCIES

(See separate e-file attachment named occbwhop.pdf)

FCC 15.247(a)

**BANDWIDTH**

(See separate e-file attachment named bandwidth.pdf)

FCC 15.247(b)

OUTPUT POWER

(See separate e-file attachment named outputpower.pdf)



FCC 15.247(c)

ANTENNA CONDUCTED EMISSIONS

(See separate e-file attachments named antcedata1-4.pdf, antcedata5-8.pdf, antcedata9-12.pdf, antcedata13-16.pdf, antcedata17-20.pdf, antcedata21-24.pdf, antcedata25-28.pdf, antcedata29-32.pdf, antcedata33-36.pdf, antcedata37-39.pdf)

FCC 15.247(c)

OCCUPANCY TIME

(See separate e-file attachment named occupancetime.pdf)