

<u>APPLICANT</u> Symbol Technologies Inc One Symbol Plaza Holtsville, NY 11742	<u>MANUFACTURER</u> Lucent Technologies
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TEST SPECIFICATION: FCC Rules and Regulations Part 15, Subpart C

TEST PROCEDURE: ANSI C63.4:1992

TEST SAMPLE DESCRIPTION

BRANDNAME: Symbol

MODEL: PPT4600

FCC ID: H9PPPT4600SOHWEW9

TYPE: 2.4 GHz Direct Sequence Spread Spectrum Transceiver

FREQUENCY RANGE: 2412 to 2462 MHz

POWER REQUIREMENTS: Internal Nicad Batteries or 11 VDC derived from Symbol AC Adapter,  
P/N: 50-14000-045

TESTS PERFORMED

- 15.207(a) Conducted Emissions, AC Power
- 15.247(a)(2) Occupied Bandwidth
- 15.247(b)(1) Power Output
- 15.247(c) Spurious Emissions, Antenna Conducted Emissions,  
Forbidden Band Radiated Emissions
- 15.247(c) Radiated Emissions, Transit Mode
- 15.247(d) Power Density
- 15.247(e) Processing Gain Data

## REPORT OF MEASUREMENTS

Applicant: Symbol Technologies, Inc.  
Device: 2.4 GHz Direct Sequence Spread Spectrum Transceiver  
FCC ID: H9PPPT4600SOHWEW9  
Power Requirements: Internal Nicad Batteries or 11 VDC derived from Symbol AC Adapter,  
P/N: 50-14000-045  
Applicable Rule Section: Part 15, Subpart C, Section 15.247

### TEST RESULTS

- 15.207(a): The radio frequency voltage that was conducted back on to the AC power line on any frequency/frequencies within the bandwidth of 450kHz to 30MHz did not exceed 250 microvolts.
- 15.247(a)(2): The minimum 6dB bandwidth was no less than 500 kHz.
- 15.247(b)(1): The maximum peak output power of the transmitter did not exceed 1 watt. The test sample's peak power measured 29.5mW.
- 15.247(b)(4) The device does not operate in such a manner that causes the public to be exposed to levels in excess of the commissions guidelines. The devices maximum output power at the antenna terminal is 29.5mW. The patch antenna used in the device has a maximum gain of 0dBi in all directions. The device may operate within 20cm of a user and does not exceed the MPE as outlined in OET Bulletin 65, Supplement C, therefore, SAR evaluation is deemed unnecessary.
- 15.247(c): The antenna conducted emissions were found to be at least 20dB down from the fundamental frequencies. All other emissions outside these bands did not exceed the general radiated emissions limits specified in 15.209(a).
- 15.247(d): The power density did not exceed 8dBm in any 3 kHz bandwidth averaged over 1 second.
- 15.247(e) The process gain information was supplied by Symbol and can be found as a separate e-file attachment named Lucent Processing Gain.doc.

## GENERAL NOTES

1. All readings were taken using a peak detector function at a distance of 3 meters.
2. The duty cycle was applied to the peak readings in order to determine the average value of emissions.
3. All measurements were made with the device operating on the AC Power Adapter, Symbol P/N: 50-14000-045.
4. The frequency range was scanned from 30 MHz to 25 GHz. All emissions not reported were more than 10dB below the specified limit.

EXHIBIT 4

Conducted Emissions

Para. 15.207(a)

(Please see separate e-file attachments named CEdata.pdf)

EXHIBIT 4

Occupied Bandwidth

Para. 15.247(a)(2)

(Please see separate e-file attachments named OccBw.pdf)

EXHIBIT 4

Power Output

Para. 15.247(b)

(Please see separate e-file attachments named outputpwr.pdf)

EXHIBIT 4

Antenna Conducted Emissions

Para. 15.247(c)

(Please see separate e-file attachments named Antce1-6.pdf, Antce7-12.pdf, Antce13-18.pdf, Antce19-24.pdf, Antce25-30.pdf, Antce31-36.pdf, Antce37-41.pdf, Antce42-45.pdf)

EXHIBIT 4

Spurious Case Radiated Emissions

Para. 15.247(c)

(Please see separate e-file attachments named Spur RE.pdf)



EXHIBIT 4

Power Density

Para. 15.247(d)

(Please see separate e-file attachments named pwrden.pdf)

EXHIBIT 4

Processing Gain Data

Para. 15.247(e)

(Please see separate e-file attachments named Lucent Processing Gain.doc)

## EQUIPMENT LIST

### FCC 15, Subpart C, 15.247

<b>EN</b>	<b>Type</b>	<b>Manufacturer</b>	<b>Frequency</b>	<b>Model No.</b>	<b>Cal Date</b>	<b>Due Date</b>
067	Open Area Test Site	Retlif	3 Meter	RNY	10/15/1997	10/15/2000
078	LISN	Solar Electronics	10 kHz - 30 MHz	8028-50-TS24BNC	05/11/1999	05/11/2000
128C	Double Ridge Guide	Eaton Corporation	1 GHz - 18 GHz	96001	09/16/1999	09/16/2000
129E	High Gain Horn Antenna	Microlab/FXR	18 GHz - 26.5 GHz	K638A	09/16/1999	09/16/2000
133	Broadband Pre-Amplifier	Electro-Metrics	10 kHz - 1 GHz, 26dB	BPA-1000	06/22/1999	06/22/2000
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
202	Transient Limiter	Hewlett Packard	.009 MHz - 200 MHz	11947A	07/19/1999	07/19/2000
206B	6.0 dB Attenuator	Texscan	0 - 1.0 GHz	FP-50 - 6 dB	06/22/1999	06/22/2000
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
456	LISN	Solar Electronics	DC - 60 Hz	9409-50-R-24	06/24/1999	06/24/2000
513	LISN	Solar Electronics	10 kHz - 30 MHz	8028-50-TS24BNC	11/02/1999	11/02/2000
523	Biconilog	Electro-Mechanics	26 - 2000 MHz	3142B	10/22/1998	04/22/2000
543	Preamplifier	Hewlett Packard	1.0 GHz - 26.5 GHz	8449B	06/16/1999	06/16/2001
575	Graphics Plotter	Hewlett Packard	N/A	7470A	04/22/1999	04/22/2000
617	Interference Analyzer	Electro-Metrics	10 kHz - 1 GHz	EMC-30	01/17/2000	01/17/2001
R089	Spectrum Analyzer	Hewlett Packard	30 Hz - 2.9 GHz	8560E	09/16/1999	09/16/2001