

<u>APPLICANT</u> Symbol Technologies Inc One Symbol Plaza Holtsville, NY 11742	<u>MANUFACTURER</u> Same as Applicant
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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: WWC1002-SW86S1US

FCC ID: H9PWWC1002SW86S1

TYPE: 2481.9 MHz Pulsed Transmitter

FREQUENCY RANGE: 2481.9 MHz

POWER REQUIREMENTS: 5 VDC derived from rechargeable battery pack

TESTS PERFORMED

- 15.249(a) Radiated Emissions, Fundamental and Harmonics
- 15.249(c)/15.209 Out-of-Band Radiated Emissions
- 15.249(c) Occupied Bandwidth

REPORT OF MEASUREMENTS

Applicant: Symbol Technologies, Inc.
Device: 2481.9 MHz Pulsed Transmitter
FCC ID: H9PWWC1002SW86S1
Power Requirements: 5 VDC derived from rechargeable battery pack
Applicable Rule Section: Part 15, Subpart C, Section 15.249

TEST RESULTS

- 15.203: The intentional radiator is designed to ensure that no antenna other than that furnished by the applicant can be used with the device.
- 15.249(a): The unit operates in the 2400-2483.5MHz band. The field strength of the fundamental did not exceed 50mV/M AVERAGE. The field strength of the harmonics did not exceed 500 μ V/M AVERAGE.
- 15.249(b): Field strength readings were taken at three meters unless otherwise noted.
- 15.249(c): Emissions radiated outside the specified frequency band were attenuated in accordance with the general radiated emissions limits of 15.209.
- 15.249(d): The peak field strength of any emission did not exceed the maximum permitted average field strength by more than 20dB under any condition of modulation.

GENERAL NOTES

1. All user accessible controls were adjusted to produce maximum emissions.
2. The device utilize a pulsed emission which has a worst case duty cycle of 50%. All readings above 1000 MHz were taken using a peak detector, were found to comply with the average limits.
3. The frequency range was scanned from 30MHz to 24.82 GHz. All emissions not reported were more than 20dB below the specified limit.

EXHIBIT 4

Radiated Emissions, Fundamental & Harmonics

Para. 15.249(a)

Test Method:	FCC Part 15 Subpart C Radiated Emissions Paragraph 15.249		
Customer:	Symbol Technologies	Job No.	R-7961-1
Test Sample:	Saturn cordless printing radio	FCC ID:	H9PWWC1002SW86S1
Model No.:	WWC1002SW86S1US	Serial No.	N/A
Operating Mode:	Continuously Transmitter 2.4819 Ghz Signal		
Technician:	Dennis Cortes	Date:	March 11,1999
Notes:	Test Distance: 3 Meters Temp: 01C Humidity: 39% Detector: Peak		

Test Freq.	Antenna Pol./Height	EUT Orientation	Meter Reading	Correction Factor	Corrected Reading	Converted Reading	Average Limit
Mhz	(V/H) / Degrees	X / Y / Z	dBuv	DB	dBuV/m	uV/m	uV/m
2.4819	H / 1.5	X	88.3	0.2	88.5	26607.25	50000
2.4819	H / 1.0	Y	79.3	0.2	79.5	9440.60	50000
2.4819	H / 1.1	Z	81.5	0.2	81.7	12161.86	50000
2.4819	V / 1.0	X	80.3	0.2	80.5	10592.54	50000
2.4819	V / 1.0	Y	81.5	0.2	81.7	12161.86	50000
2.4819	V / 1.0	Z	83.0	0.2	83.2	14454.40	50000
4.9638	H / 1.4	X	50.2	2.9	53.1	451.85	500
4.9638	H / 1.4	Y	50.0	2.9	52.9	441.57	500
4.9638	H / 1.3	Z	45.1	2.9	48.0	251.18	500
4.9638	V / 1.3	X	48.1	2.9	51.0	354.81	500
4.9638	V / 1.4	Y	48.9	2.9	51.8	389.04	500
4.9638	V / 1.3	Z	45.2	2.9	48.1	254.09	500
7.4457	H / 1.0	X	43.1	-4.0	39.1	*90.157	500
7.4457	H / 1.0	Y	43.1	-4.0	39.1	*90.157	500
7.4457	H / 1.0	Z	43.1	-4.0	39.1	*90.157	500
7.4457	V / 1.0	X	43.1	-4.0	39.1	*90.157	500
7.4457	V / 1.0	Y	43.1	-4.0	39.1	*90.157	500
7.4457	V / 1.0	Z	43.1	-4.0	39.1	*90.157	500
9.9276	H / 1.0	X	42.0	-1.1	40.9	*110.91	500
9.9276	H / 1.0	Y	42.0	-1.1	40.9	*110.91	500
9.9276	H / 1.0	Z	42.0	-1.1	40.9	*110.91	500
9.9276	V / 1.0	X	42.0	-1.1	40.9	*110.91	500
9.9276	V / 1.0	Y	42.0	-1.1	40.9	*110.91	500
9.9276	V / 1.0	Z	42.0	-1.1	40.9	*110.91	500
12.4095	H / 1.0	X	42.3	2.2	44.5	*167.88	500
12.4095	H / 1.0	Y	42.3	2.2	44.5	*167.88	500
12.4095	H / 1.0	Z	42.3	2.2	44.5	*167.88	500
12.4095	V / 1.0	X	42.3	2.2	44.5	*167.88	500
12.4095	V / 1.0	Y	42.3	2.2	44.5	*167.88	500
12.4095	V / 1.0	Z	42.3	2.2	44.5	*167.88	500

The frequency range was scanned from 30 Mhz to 25 Ghz. All emissions not recorded were more Than 10 dB below the specified limit. Emissions from the EUT do not exceed the specified limits.

*=Noise Floor Measurements (Minimum system sensitivity)

Test Method:	FCC Part 15 Subpart C Radiated Emissions Paragraph 15.249						
Customer:	Symbol Technologies	Job No.	R-7961-1				
Test Sample:	Saturn cordless printing radio	FCC ID:	H9PWWC1002SW86S1				
Model No.:	WWC1002SW86S1US	Serial No.	N/A				
Operating Mode:	Continuously Transmitter 2.4819 Ghz Signal						
Technician:	Dennis Cortes	Date:	March 11,1999				
Notes:	Test Distance: 3 Meters Temp: 01C Humidity: 39% Detector: Peak						
Test Freq.	Antenna Pol./Height	EUT Orientation	Meter Reading	Correction Factor	Corrected Reading	Converted Reading	Average Limit
Mhz	(V/H) / Degrees	X / Y / Z	dBuv	dB	dBuV/m	uV/m	uV/m
14.8914	H / 1.0	X	45.0	-0.6	44.4	*165.95	500
14.8914	H / 1.0	Y	45.0	-0.6	44.4	*165.95	500
14.8914	H / 1.0	Z	45.0	-0.6	44.4	*165.95	500
14.8914	V / 1.0	X	45.0	-0.6	44.4	*165.95	500
14.8914	V / 1.0	Y	45.0	-0.6	44.4	*165.95	500
14.8914	V / 1.0	Z	45.0	-0.6	44.4	*165.95	500
17.3733	H / 1.0	X	46.0	0.2	46.2	*204.17	500
17.3733	H / 1.0	Y	46.0	0.2	46.2	*204.17	500
17.3733	H / 1.0	Z	46.0	0.2	46.2	*204.17	500
17.3733	V / 1.0	X	46.0	0.2	46.2	*204.17	500
17.3733	V / 1.0	Y	46.0	0.2	46.2	*204.17	500
17.3733	V / 1.0	Z	46.0	0.2	46.2	*204.17	500
19.8552	H / 1.0	X	34.4	16.9	51.3	*367.28	500
19.8552	H / 1.0	Y	34.4	16.9	51.3	*367.28	500
19.8552	H / 1.0	Z	34.4	16.9	51.3	*367.28	500
19.8552	V / 1.0	X	34.4	16.9	51.3	*367.28	500
19.8552	V / 1.0	Y	34.4	16.9	51.3	*367.28	500
19.8552	V / 1.0	Z	34.4	16.9	51.3	*367.28	500
22.3371	H / 1.0	X	31.0	17.1	48.1	*254.09	500
22.3371	H / 1.0	Y	31.0	17.1	48.1	*254.09	500
22.3371	H / 1.0	Z	31.0	17.1	48.1	*254.09	500
22.3371	V / 1.0	X	31.0	17.1	48.1	*254.09	500
22.3371	V / 1.0	Y	31.0	17.1	48.1	*254.09	500
22.3371	V / 1.0	Z	31.0	17.1	48.1	*254.09	500
24.8190	H / 1.0	X	31.1	17.5	48.6	*269.15	500
24.8190	H / 1.0	Y	31.1	17.5	48.6	*269.15	500
24.8190	H / 1.0	Z	31.1	17.5	48.6	*269.15	500
24.8190	V / 1.0	X	31.1	17.5	48.6	*269.15	500
24.8190	V / 1.0	Y	31.1	17.5	48.6	*269.15	500
24.8190	V / 1.0	Z	31.1	17.5	48.6	*269.15	500
The frequency range was scanned from 30 Mhz to 25 Ghz. All emissions not recorded were more							

	Than 10 dB below the specified limit. Emissions from the EUT do not exceed the specified limits.
	*=Noise Floor Measurements (Minimum system sensitivity)

EXHIBIT 4

Out-of-Band Radiated Emissions

Para. 15.249(c)/15.209

Test Method:	FCC Part 15 Radiated Emissions Paragraph 15.209						
Customer:	Symbol Technologies	Job No.:	R-7961-1				
Test Sample:	Saturn cordless printing radio	FCC ID:	H9PWWC1002SW86S1				
Model No.:	WWC1002SW86S1US	Serial No.:	N/A				
Operating Mode:	Continuously Transmitting 2.4819 Ghz Signal						
Technician:	Dennis Cortes	Date:	March 11,1999				
Notes:	Test Distance: 3 Meters Temp: 01C Humidity: 39% Detector: Quasi-Peak (30Mhz – 1Ghz) Peak (above 1Ghz)						
Test Freq.	Antenna Pol./Height	EUT Orientation	Meter Reading	Correction Factor	Corrected Reading	Converted Reading	Limit
Mhz	(V/H) / meters	degrees	dBuv	DB	dBuV/m	uV/m	uV/m
30.0							100
88.0							100
88.0							150
216.00							150
216.00							200
320.0	V-1.4	180	33.4	-3.4	30.0	31.62	
344.0	V-1.3	203	35.5	-2.9	32.6	42.65	
352.0	V-1.2	180	29.5	-2.8	26.7	21.62	
376.0	V-1.1	180	35.6	-2.4	33.2	45.70	
400.4	V-1.0	180	32.3	-1.9	30.4	33.11	
408.2	V-1.1	000	37.1	-1.8	35.3	58.21	
424.0	V-1.4	023	35.1	-1.5	33.6	47.86	
960.0							200
960.0							500
1024.0	H-1.0	180	49.2	-5.2	44.0	158.48	
1614.0	H-1.6	225	46.1	-0.1	46.0	199.52	
2326.0	H-1.0	158	49.4	-0.9	48.5	266.07	
2486.0	H-1.5	180	50.9	0.2	51.1	358.92	
2638.0	H-1.0	180	49.0	-0.7	48.3	260.00	
3506.0	H-1.4	180	44.6	1.2	45.8	194.98	
3905.2	H-1.3	180	45.3	1.6	46.9	221.30	
4964.0	V-1.0	180	49.4	2.9	52.3	412.09	
5120.0	V-1.2	180	46.4	2.9	49.3	291.74	
5554.1	V-1.0	180	45.6	3.7	49.3	291.74	
5710.2	V-1.0	180	46.7	-4.0	42.7	136.45	
6578.1	V-1.0	180	48.2	-2.1	46.1	201.83	V
9060.0	V-1.2	180	49.6	-1.5	48.1	254.09	500
V	The frequency range was scanned from 30 Mhz to 25 Ghz. All emissions not recorded were more						
25000.0	Than 10 dB below the specified limit. Emissions from the EUT do not exceed the specified limits.						

Test Report Number R-7961-1

*=Noise Floor Measurements (Minimum system sensitivity)
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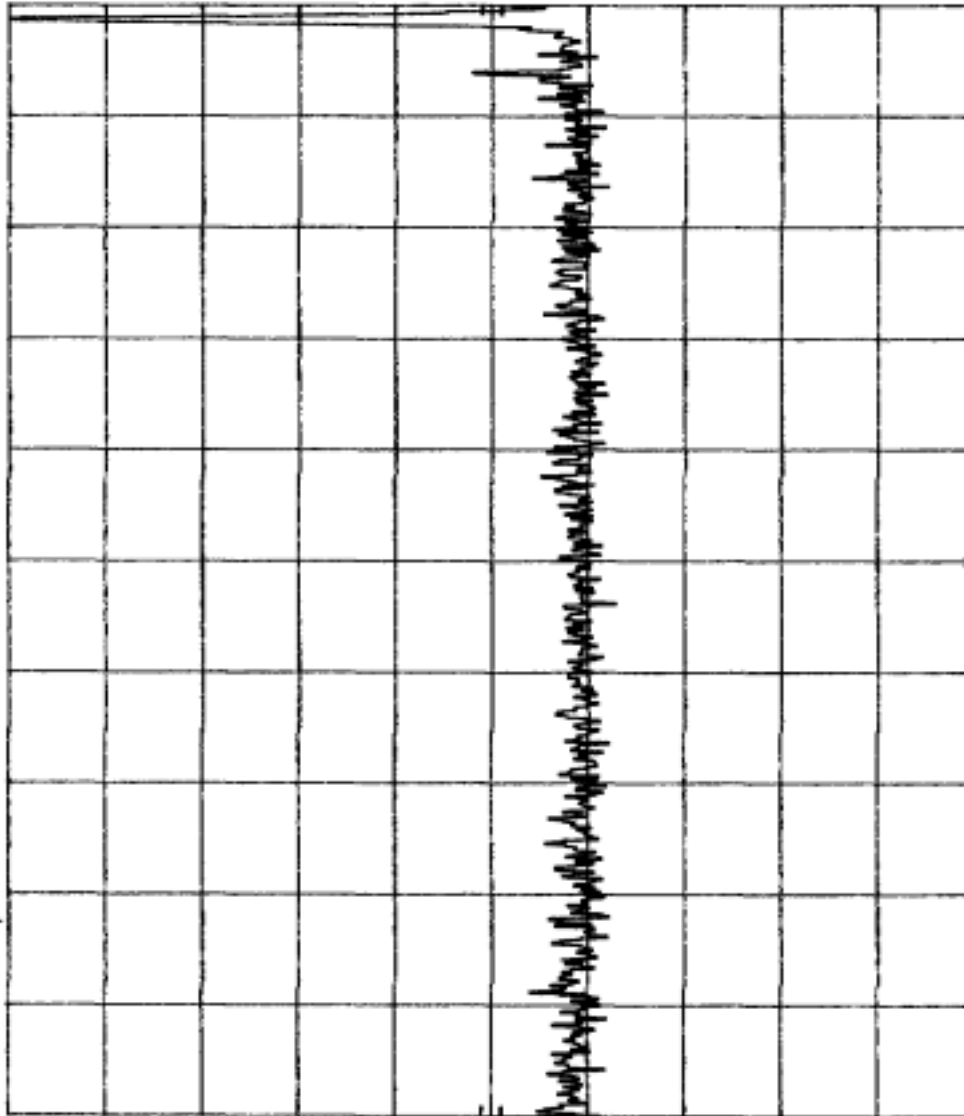
EXHIBIT 4

Occupied Bandwidth

Para. 15.249(c)

R-7932 OCC BW DC 3/10/99 WSS1000
 REF 88.3 dBμV ATTEN 10 dB

0 dB/



START 2.400 0 GHZ RES BW 100 KHZ VBW 300 KHZ STOP 2.483 5 GHZ SWP 25.1 msec

Customer: Symbol Technologies
 Test Sample: Saturn Cordless Printing Radio
 Model No.: WWC10025W06S1US FCCID:4RPWWC10025W06S1
 Test Method: FCC 15.249(a) Occupied Bandwidth
 Notes: Emissions are greater than 50dB from Modulated carrier at Band Edges
 Date: March 11, 1999 Tech: Dennis Gomez Sheet: 1 of 1



Retlif Testing Laboratories

Report No. R-7961-1

EQUIPMENT LIST

FCC Part 15 Subpart C Radiated Emissions

EN	Type	Manufacturer	Frequency Range	Model No.	Cal Date	Due Date
064	High Gain Horn Antenna	Microlab/FXR	3.95 GHz - 5.85 GHz	H638A	1/25/99	1/25/00
065	High Gain Horn Antenna	Microlab/FXR	5.85 GHz - 8.2 GHz	C638A	1/25/99	1/25/00
066	High Gain Horn Antenna	Microlab/FXR	8.2 GHz - 12.4 GHz	X638A	1/25/99	1/25/00
067	Open Area Test Site	Retlif	3 Meter	RNY	8/30/97	8/30/99
128C	Double Ridge Guide	Eaton Corporation	1 GHz - 18 GHz	96001	10/6/98	10/6/99
129D	High Gain Horn Antenna	Microlab/FXR	12.4 GHz - 18 GHz	Y638A	1/25/99	1/25/00
129E	High Gain Horn Antenna	Microlab/FXR	18 GHz - 26.5 GHz	K638A	10/14/98	10/14/99
133	Broadband Pre-Amplifier	Electro-Metrics	10 kHz - 1 GHz, 26dB	BPA-1000	6/22/98	6/22/99
141	Spectrum Analyzer	Hewlett Packard	100 Hz - 40 GHz	8566B	9/19/98	3/19/99
141A	Graphics Plotter	Hewlett Packard	N/A	7470A	3/5/99	3/5/00
141B	Quasi-Peak Adaptor	Hewlett Packard	100 Hz - 1 GHz	85650A	9/19/98	3/19/99
206B	6.0 dB Attenuator	Texscan	0 - 1.0 GHz	FP-50 - 6 dB	6/22/98	6/22/99
420	Amplifier	Hewlett Packard	2.0 GHz - 18 GHz	11975A	7/16/98	7/16/99
421	Harmonic Mixer	Hewlett Packard	18 GHz - 26.5 GHz	11970K	7/2/97	7/2/99
523	Biconilog	Electro-Mechanics	26 - 2000 MHz	3142B	10/22/98	4/22/00
543	Preamplifier	Hewlett Packard	1.0 GHz - 26.5 GHz	8449B	9/3/98	9/3/99