



Certification Test Report
for
Symbol Technologies, Inc.
MC906R Mobile Computer with
RFID Reader and 802.11b Device
FCC ID: H9PMC906RC
IC ID: 1549D-MC906RC

April 26, 2005

Rev. 1: May 5, 2005

Rev, 2: May 11, 2005

Prepared for:

Symbol Technologies, Inc.
One Symbol Plaza M/S B-4
Holtsville, NY 11742

Prepared By:

Washington Laboratories, Ltd.
7560 Lindbergh Drive
Gaithersburg, Maryland 20879



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WLL JOB# 8596/7

Prepared by: Gregory M. Snyder
Chief EMC Engineer

Reviewed by: Steven D. Koster
EMC Operations Manager

Abstract

This report has been prepared on behalf of Symbol Technologies, Inc. to support the attached Application for Equipment Authorization. The test report and application are submitted for a Frequency Hopping Spread Spectrum Transmitter under Part 15.247 of the FCC Rules and Industry Canada RSS-210, and an 802.11b radio.

The MC906RC contains 2 previously approved radios. The 802.11 card is approved as a module under FCC ID: H9P2164436 and the RFID radio is approved under FCC ID: NTTWJMPR7XXX. Additionally the 802.11 card is approved with a system under FCC ID: H9PMC906RA. The MC906RC in this report is identical to the H9PMC906RA except that the RFID radio has been replaced with a WJ reader FCC ID: NTTWJMPR7XXX.

This Certification Test Report documents the test configuration and test results for the MC906RC. As both radios can operate simultaneously and are considered co-located, testing for spurious radiated emissions was performed with both radios transmitting. Since there are no changes to the approved radios the existing test reports are used for compliance.

Testing was performed on an Open Area Test Site (OATS) of Washington Laboratories, Ltd, 7560 Lindbergh Drive, Gaithersburg, MD 20879. Site description and site attenuation data have been placed on file with the FCC's Sampling and Measurements Branch at the FCC laboratory in Columbia, MD. Washington Laboratories, Ltd. has been accepted by the FCC and approved by NIST NVLAP (NVLAP Lab Code: 200066-0) as an independent FCC test laboratory.

The MC906RC complies with the limits of §15.247 and RSS-210.

Revision 1 of this test report includes bandedge data for the 802.11b radio operating on Channel 1 and Channel 11.

Revision 2 of this test report updates Table 1 to list the correct conducted power of 38.5mW.

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1 Introduction

1.1 Compliance Statement

The MC906RC complies with the limits for a Frequency Hopping Spread Spectrum Transmitter device and an 802.11b device under FCC Part 15.247 and RSS-210.

1.2 Test Scope

Tests for radiated emissions were performed. All measurements were performed in accordance with FCC Part 15 and RSS-210, and the 2003 version of ANSI C63.4. The measurement equipment conforms to ANSI C63.2 Specifications for Electromagnetic Noise and Field Strength Instrumentation.

1.3 Contract Information

Customer: Symbol Technologies, Inc.
One Symbol Plaza M/S B-4
Holtsville, NY 11742

Quotation Number: 62117

Test Dates March 1 and March 8, 2005

1.4 Test and Support Personnel

Washington Laboratories James Ritter, Greg Snyder
Client Representative Dennis Cortes

2 Equipment Under Test

2.1 EUT Identification & Description

The MC906RC is a commercial hand held computer with an RFID reader and 2.4GHz 802.11b Wireless LAN connectivity. The 802.11 card is approved as a module under FCC ID: H9P2164436 and the RFID radio is approved under FCC ID: NTTWJMPR7XXX. Additionally the 802.11 card is approved with a system under FCC ID: H9PMC906RA. The MC906RC in this report is identical to the H9PMC906RA except that the RFID radio has been replaced with a WJ reader FCC ID: NTTWJMPR7XXX.

Table 1. Device Summary

ITEM	DESCRIPTION
Manufacturer:	Symbol Technologies Inc.
FCC ID:	H9PMC906RC
IC:	1549D-MC906RC
EUT Name:	Gemini
Model:	MC906R
FCC Rule Parts:	§15.247
Industry Canada:	RSS-210
RFID Device	
FCC ID:	NTTWJMPR7XXX
Frequency Range:	903M – 927MHz
Maximum Output Power:	29.8dBm (955mW)
Operation:	FHSS
Occupied Bandwidth:	257kHz
Keying:	Automatic
Type of Information:	Data
Number of Channels:	50
Power Output Level	Fixed
Antenna Connector	Reverse MMCX (Internal: Not user accessible)
Antenna Type	6dBi Yagi
802.11b Device	
FCC ID: (module)	H9P2164436
FCC ID: (system)	H9PMC906RA
Model:	21-64436
Frequency Range:	2412M – 2462MHz
Maximum Output Power:	38.5mW
Operation:	DSSS
Occupied Bandwidth:	11.13MHz
Keying:	Automatic
Type of Information:	Data
Power Output Level	Fixed
Antenna Type	Integral
Interface Cables:	None
Power Source & Voltage:	7.2Vdc via Lithium Battery

2.2 Test Configuration and Conditions

The MC906RC was configured with a fully charged battery. Testing for radiated emissions was performed with both radios transmitting at maximum power. The RFID radio was set to continuously transmit at the low, middle and high frequency of operation. The 802.11 radio was also set to transmit at the low, middle and high frequencies.

During emissions testing the EUT was positioned in 3 orthogonal planes. Worst-case emission levels are provided in the test results data.

2.3 Test Location

All measurements herein were performed at Washington Laboratories, Ltd. test center in Gaithersburg, MD. Site description and site attenuation data have been placed on file with the FCC's Sampling and Measurements Branch at the FCC laboratory in Columbia, MD. The Industry Canada OATS numbers are 3035A-1 and 3035A-2 for Washington Laboratories, Ltd. Site 1 and Site 2, respectively. Washington Laboratories, Ltd. has been accepted by the FCC and approved by NIST NVLAP (NVLAP Lab Code: 200066-0) as an independent FCC test laboratory.

2.4 Measurements

2.4.1 References

ANSI C63.2 Specifications for Electromagnetic Noise and Field Strength Instrumentation
ANSI C63.4 American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

2.5 Measurement Uncertainty

All results reported herein relate only to the equipment tested. For the purposes of the measurements performed by Washington Laboratories, the measurement uncertainty is ± 2.3 dB. This has been calculated for a *worst-case situation* (radiated emissions measurements performed on an open area test site).

The following measurement uncertainty calculation is provided:

$$\text{Total Uncertainty} = (A^2 + B^2 + C^2)^{1/2}/(n-1)$$

where:

A = Antenna calibration uncertainty, in dB = 2 dB

B = Spectrum Analyzer uncertainty, in dB = 1 dB

C = Site uncertainty, in dB = 4 dB

n = number of factors in uncertainty calculation = 3

Thus, Total Uncertainty = $0.5 (2^2 + 1^2 + 4^2)^{1/2} = \pm 2.3$ dB.

3 Test Equipment

Table 2 shows a list of the test equipment used for measurements along with the calibration information.

Table 2: Test Equipment List

Equipment	WLL Asset #	Calibration Due
Hewlett-Packard 8568B Spectrum Analyzer	0073	7/08/05
Hewlett-Packard 85650A Quasi-Peak Adapter	0069	7/08/05
Hewlett-Packard 8564E Spectrum Analyzer	0067	7/07/05
Hewlett-Packard 8449B Microwave Preamp	0312	9/29/05
ARA LPB-2520 BiconiLog Antenna	0007	9/14/05
ARA DRG118/A Microwave Horn Antenna	0425	4/17/05
Hewlett-Packard 85685A RF Preselector	0071	7/08/05

4 Test Results

4.1 Radiated Spurious Emissions, Co-location

The EUT must comply with the requirements for radiated spurious emissions that fall within the restricted bands. These emissions must meet the limits specified in §15.209 and §15.35(b) for peak measurements.

For this testing, both radios are FCC approved however, emissions testing was performed to cover the co-location issues of the devices operating simultaneously.

4.1.1 Test Procedure

In order to determine spurious emissions caused by the co-location operation of the radios, a prescan of the unit was performed in an RF chamber to determine the worst case configuration and mode (i.e. frequency of operation, orientation). Both radios were initially set to transmit simultaneously on their low channels. A 0.5 meter scan of the unit was then performed and all detected frequencies were noted. This process was repeated for the combinations of middle and high frequencies and at different orientations. Once all frequencies were identified, the unit was set for only one radio transmitting. The measurements were repeated for each radio operating individually so as to determine if any harmonics are created or changed due to the radios operating simultaneously. Once the worst case orientation and operation was determined the unit was placed on the test site for radiated emissions testing at 3 meters.

The EUT was placed on motorized turntable for radiated testing on a 3-meter open field test site. The emissions from the EUT were measured continuously at every azimuth by rotating the turntable. Receiving antennas were mounted on an antenna mast to determine the height of maximum emissions. The height of the antenna was varied between 1 and 4 meters. The peripherals were placed on the table in accordance with ANSI C63.4-2003. Cables were varied in position to produce maximum emissions. Both the horizontal and vertical field components were measured.

The unit was set to continuous transmit at the selected channels for each radio.

The emissions were measured using the following resolution bandwidths:

Frequency Range	Resolution Bandwidth	Video Bandwidth
30MHz-1000 MHz	120kHz	>100 kHz
>1000 MHz	1 MHz	10 Hz (Avg.) 1MHz (Peak)

The following is a sample calculation used in the data tables for calculating the final field strength of spurious emissions and comparing these levels to the specified limits.

Sample Calculation:

Spectrum Analyzer Voltage (SA Level):	V dB μ V
Antenna Factor (Ant Corr):	AFdB/m
Cable Loss Correction (Cable Corr):	CCdB
Amplifier Gain:	GdB
Duty Cycle Correction Factor:	DCCFdB (if applicable)
Electric Field (Corr Level):	EdB μ V/m = VdB μ V + AFdB/m + CCdB – GdB-DCCFdB
To convert to linear units:	E μ V/m = antilog (EdB μ V/m/20)

Worst case data are supplied in the following tables. Testing was performed to the tenth harmonic at the highest power setting. Both peak and average measurements are listed.

Emissions labeled as INTMOD indicates intermod signals due to co-location operation of the radios.

Table 3: Radiated Emission Test Data

CLIENT:	Symbol Technologies, Inc.	DATE:	3/8/2005
TESTER:	Greg Snyder	JOB #:	8596
<u>EUT Information:</u>		<u>Test Requirements:</u>	
EUT:	MC906R	TEST STANDARD:	FCC Part 15
		DISTANCE:	3m
		CLASS:	B

CONFIGURATION 1: Low Channels: RFID at 902.75MHz and 802.11b at 2412MHz

Freq (MHz)	Pol H/V	Azimuth Degree	Ant. Height (m)	SA Level dBµV	Ant. Corr. dB/m	Cable Corr. dB	Amp Gain dB	Corr. Level dBµV/m	Corr. Level µV/m	Limit µV/m	Margin dB	Notes	
				AVG									
1057	V	180.0	1.0	32	25.4	1.3	36.4	6.8	2.2	500.0	-31.7	INTMOD	
1057	H	180.0	1.0	33.6	25.4	1.3	36.4	23.9	15.7	500.0	-30.1		
1805	V	180.0	1.0	39	28.6	3.1	35.6	35.1	56.6	500.0	-18.9		
1805	H	180.0	1.0	34.4	28.6	3.1	35.6	30.5	33.3	500.0	-23.5		
2714	H	225.0	1.0	49.7	30.3	2.9	35.6	47.3	231.9	500.0	-6.7		
3314	H	180.0	1.0	32	30.9	2.8	35.6	30.0	31.8	500.0	-23.9		
4076	H	180.0	1.0	34.6	31.4	2.9	35.4	33.5	47.3	500.0	-20.5		
4076	V	180.0	1.0	29.4	31.4	2.9	35.4	28.3	26.0	500.0	-25.7		
4824	H	45.0	1.0	32.7	33.3	4.2	35.9	34.3	51.8	500.0	-19.7		
4824	V	45.0	1.0	29.4	33.3	4.2	35.9	31.0	35.4	500.0	-23.0		
				PEAK									
1057	V	180.0	1.0	45.2	25.4	1.3	36.4	35.5	59.7	5000.0	-38.5	INTMOD	
1057	H	180.0	1.0	46.4	25.4	1.3	36.4	36.7	68.6	5000.0	-37.3		
1805	V	180.0	1.0	47.4	28.6	3.1	35.6	43.5	148.9	5000.0	-30.5		
1805	H	180.0	1.0	44	28.6	3.1	35.6	40.1	100.7	5000.0	-33.9		
2714	H	225.0	1.0	57	30.3	2.9	35.6	54.6	537.3	5000.0	-19.4		
3314	H	180.0	1.0	43.3	30.9	2.8	35.6	41.3	116.7	5000.0	-32.6		
4076	H	180.0	1.0	43.4	31.4	2.9	35.4	42.3	130.2	5000.0	-31.7		
4076	V	180.0	1.0	41.2	31.4	2.9	35.4	40.1	101.0	5000.0	-33.9		
4824	H	45.0	1.0	44.4	33.3	4.2	35.9	46.0	199.0	5000.0	-28.0		
4824	V	45.0	1.0	41.6	33.3	4.2	35.9	43.2	144.2	5000.0	-30.8		

CONFIGURATION 2: Low Channels: RFID Not Transmitting and 802.11b at 2412MHz

Freq (MHz)	Pol H/V	Azimuth Degree	Ant. Height (m)	SA Level dBμV	Ant. Corr. dB/m	Cable Corr. dB	Amp Gain dB	Corr. Level dBμV/m	Corr. Level μV/m	Limit μV/m	Margin dB	Notes	
				AVG									NS = No Signal
1057	V	0.0	1.0	NS									
1057	H	0.0	1.0	NS									
1805	V	0.0	1.0	NS									
1805	H	0.0	1.0	NS									
2714	H	0.0	1.0	NS									
3314	H	0.0	1.0	NS									
4076	H	180.0	1.0	36.5	31.4	2.9	35.4	35.4	58.8	500.0	-18.6		
4076	V	180.0	1.0	29	31.4	2.9	35.4	27.9	24.8	500.0	-26.1		
4824	H	45.0	1.0	33.6	33.3	4.2	35.9	35.2	57.4	500.0	-18.8		
4824	V	45.0	1.0	30.3	33.3	4.2	35.9	31.9	39.3	500.0	-22.1		
<hr/>													
Freq (MHz)	Pol H/V	Azimuth Degree	Ant. Height (m)	SA Level dBμV	Ant. Corr. dB/m	Cable Corr. dB	Amp Gain dB	Corr. Level dBμV/m	Corr. Level μV/m	Limit μV/m	Margin dB	Notes	
				PEAK									NS = No Signal
1057	V	0.0	1.0	NS									
1057	H	0.0	1.0	NS									
1805	V	0.0	1.0	NS									
1805	H	0.0	1.0	NS									
2714	H	0.0	1.0	NS									
3314	H	0.0	1.0	NS									
4076	H	180.0	1.0	44.4	31.4	2.9	35.4	43.3	146.1	5000.0	-30.7		
4076	V	180.0	1.0	41.4	31.4	2.9	35.4	40.3	103.4	5000.0	-33.7		
4824	H	45.0	1.0	45.7	33.3	4.2	35.9	47.3	231.2	5000.0	-26.7		
4824	V	45.0	1.0	42.7	33.3	4.2	35.9	44.3	163.6	5000.0	-29.7		

CONFIGURATION 3: Low Channels: RFID at 902.75MHz and 802.11b Not Transmitting

Freq (MHz)	Pol H/V	Azimuth Degree	Ant. Height (m)	SA Level dBμV	Ant. Corr. dB/m	Cable Corr. dB	Amp Gain dB	Corr. Level dBμV/m	Corr. Level μV/m	Limit μV/m	Margin dB	Notes	
				AVG									NS = No Signal
1057	V	180.0	1.0	32.3	25.4	1.3	36.4	22.6	13.5	500.0	-31.4		
1057	H	180.0	1.0	33.7	25.4	1.3	36.4	24.0	15.9	500.0	-30.0		
1805	V	180.0	1.0	38.3	28.6	3.1	35.6	34.4	52.2	500.0	-19.6		
1805	H	180.0	1.0	33.5	28.6	3.1	35.6	29.6	30.1	500.0	-24.4		
2714	H	225.0	1.0	49.7	30.3	2.9	35.6	47.3	231.9	500.0	-6.7		
3314	H	0.0	1.0	NS									
4076	H	0.0	1.0	NS									
4076	V	0.0	1.0	NS									
4824	H	0.0	1.0	NS									
4824	V	0.0	1.0	NS									
				PEAK									NS = No Signal
1057	V	180.0	1.0	45.6	25.4	1.3	36.4	35.9	62.5	5000.0	-38.1		
1057	H	180.0	1.0	46.5	25.4	1.3	36.4	36.8	69.4	5000.0	-37.2		
1805	V	180.0	1.0	46.8	28.6	3.1	35.6	42.9	139.0	5000.0	-31.1		
1805	H	180.0	1.0	43.3	28.6	3.1	35.6	39.4	92.9	5000.0	-34.6		
2714	H	225.0	1.0	57.0	30.3	2.9	35.6	54.6	537.3	5000.0	-19.4		
3314	H	0.0	1.0	NS									
4076	H	0.0	1.0	NS									
4076	V	0.0	1.0	NS									
4824	H	0.0	1.0	NS									
4824	V	0.0	1.0	NS									

CONFIGURATION 4: High Channels: RFID at 927.25MHz and 802.11b at 2462MHz

Freq (MHz)	Pol H/V	Azimuth Degree	Ant. Height (m)	SA Level dBµV	Ant. Corr. dB/m	Cable Corr. dB	Amp Gain dB	Corr. Level dBµV/m	Corr. Level µV/m	Limit µV/m	Margin dB	Notes	
				AVG									
1061	H	180.0	1.0	36.6	25.5	1.3	36.4	27.0	22.3	500.0	-27.0		
2781	H	225.0	1.0	43.2	30.4	2.9	35.7	40.8	110.2	500.0	-13.1		
3394	H	180.0	1.0	33.3	30.9	2.8	35.6	31.4	37.2	500.0	-22.6		
3997	H	180.0	1.0	34.3	31.2	2.8	35.4	32.9	44.1	500.0	-21.1		
4922	H	45.0	1.0	30.3	33.5	4.4	36.0	32.2	40.7	500.0	-21.8		
1061	V	180.0	1.0	34.8	25.5	1.3	36.4	25.2	18.1	500.0	-28.8	INTMOD INTMOD	
2781	V	225.0	1.0	41.8	30.4	2.9	35.7	39.4	93.8	500.0	-14.5		
3394	V	180.0	1.0	33.7	30.9	2.8	35.6	31.8	39.0	500.0	-22.2		
3997	V	180.0	1.0	33.5	31.2	2.8	35.4	32.1	40.2	500.0	-21.9		
4922	V	45.0	1.0	28.7	33.5	4.4	36.0	30.6	33.9	500.0	-23.4		
				PEAK									
1061	H	180.0	1.0	49.6	25.5	1.3	36.4	40.0	99.6	5000.0	-34.0		
2781	H	225.0	1.0	55.8	30.4	2.9	35.7	53.4	469.9	5000.0	-20.5		
3394	H	180.0	1.0	44.2	30.9	2.8	35.6	42.3	130.5	5000.0	-31.7		
3997	H	180.0	1.0	48.5	31.2	2.8	35.4	47.1	226.1	5000.0	-26.9		
4922	H	45.0	1.0	42.6	33.5	4.4	36.0	44.5	167.9	5000.0	-29.5		
1061	V	180.0	1.0	48.3	25.5	1.3	36.4	38.7	85.8	5000.0	-35.3	INTMOD INTMOD	
2781	V	225.0	1.0	53.9	30.4	2.9	35.7	51.5	377.6	5000.0	-22.4		
3394	V	180.0	1.0	42.0	30.9	2.8	35.6	40.1	101.3	5000.0	-33.9		
3997	V	180.0	1.0	47.2	31.2	2.8	35.4	45.8	194.7	5000.0	-28.2		
4922	V	45.0	1.0	40.3	33.5	4.4	36.0	42.2	128.8	5000.0	-31.8		

CONFIGURATION 5: High Channels: RFID Not Transmitting and 802.11b at 2462MHz

Freq (MHz)	Pol H/V	Azimuth Degree	Ant. Height (m)	SA Level dBμV	Ant. Corr. dB/m	Cable Corr. dB	Amp Gain dB	Corr. Level dBμV/m	Corr. Level μV/m	Limit μV/m	Margin dB	Notes	
				AVG									NS = No Signal
1061	H	0.0	1.0	NS									
2781	H	0.0	1.0	NS									
3394	H	0.0	1.0	NS									
3997	H	0.0	1.0	NS									
4922	H	45.0	1.0	30.7	33.5	4.4	36.0	32.6	42.7	500.0	-21.4		
1061	V	0.0	1.0	NS									
2781	V	0.0	1.0	NS									
3394	V	0.0	1.0	NS									
3997	V	0.0	1.0	NS									
4922	V	45.0	1.0	29	33.5	4.4	36.0	30.9	35.1	500.0	-23.1		
<hr/>													
Freq (MHz)	Pol H/V	Azimuth Degree	Ant. Height (m)	SA Level dBμV	Ant. Corr. dB/m	Cable Corr. dB	Amp Gain dB	Corr. Level dBμV/m	Corr. Level μV/m	Limit μV/m	Margin dB	Notes	
				PEAK									NS = No Signal
1061	H	180.0	1.0	NS									
2781	H	225.0	1.0	NS									
3394	H	180.0	1.0	NS									
3997	H	180.0	1.0	NS									
4922	H	45.0	1.0	42.2	33.5	4.4	36.0	44.1	160.3	5000.0	-29.9		
1061	V	180.0	1.0	NS									
2781	V	225.0	1.0	NS									
3394	V	180.0	1.0	NS									
3997	V	180.0	1.0	NS									
4922	V	45.0	1.0	40.8	33.5	4.4	36.0	42.7	136.4	5000.0	-31.3		

CONFIGURATION 6: High Channels: RFID at 927.25MHz and 802.11b Not Transmitting

Freq (MHz)	Pol H/V	Azimuth Degree	Ant. Height (m)	SA Level dBµV	Ant. Corr. dB/m	Cable Corr. dB	Amp Gain dB	Corr. Level dBµV/m	Corr. Level µV/m	Limit µV/m	Margin dB	Notes
				AVG								
1061	H	180.0	1.0	36.8	25.5	1.3	36.4	27.2	22.8	500.0	-26.8	NS = No Signal
2781	H	225.0	1.0	43.2	30.4	2.9	35.7	40.8	110.2	500.0	-13.1	
3394	H	0.0	1.0	NS								
3997	H	0.0	1.0	NS								
4922	H	0.0	1.0	NS								
1061	V	180.0	1.0	35.2	25.5	1.3	36.4	25.6	19.0	500.0	-28.4	
2781	V	225.0	1.0	41.4	30.4	2.9	35.7	39.0	89.5	500.0	-14.9	
3394	V	0.0	1.0	NS								
3997	V	0.0	1.0	NS								
4922	V	0.0	1.0	NS								
				PEAK								
1061	H	180.0	1.0	50.2	25.5	1.3	36.4	40.6	106.7	5000.0	-33.4	NS = No Signal
2781	H	225.0	1.0	56.7	30.4	2.9	35.7	54.3	521.2	5000.0	-19.6	
3394	H	0.0	1.0	NS								
3997	H	0.0	1.0	NS								
4922	H	0.0	1.0	NS								
1061	V	180.0	1.0	49.6	25.5	1.3	36.4	40.0	99.6	5000.0	-34.0	
2781	V	225.0	1.0	54	30.4	2.9	35.7	51.6	381.9	5000.0	-22.3	
3394	V	0.0	1.0	NS								
3997	V	0.0	1.0	NS								
4922	V	0.0	1.0	NS								

CONFIGURATION 7: Low and High Channel RFID at 927.25MHz and 802.11b at 2412MHz

Freq (MHz)	Pol H/V	Azimuth Degree	Ant. Height (m)	SA Level dBμV	Ant. Corr. dB/m	Cable Corr. dB	Amp Gain dB	Corr. Level dBμV/m	Corr. Level μV/m	Limit μV/m	Margin dB	Notes
				AVG								
1061	H	180.0	1.0	37.6	25.5	1.3	36.4	28.0	25.0	500.0	-26.0	
3342	H	180.0	1.0	32.2	30.9	2.8	35.6	30.3	32.6	500.0	-23.7	INTMOD
3898.6	H	180.0	1.0	29.2	31.2	2.8	35.4	27.7	24.3	500.0	-26.3	INTMOD
4822	H	45.0	1.0	31.7	33.3	4.2	35.9	33.3	46.1	500.0	-20.7	
1061	V	180.0	1.0	34.8	25.5	1.3	36.4	25.2	18.1	500.0	-28.8	
3342	V	225.0	1.0	31.0	30.9	2.8	35.6	29.1	28.4	500.0	-24.9	INTMOD
3898.6	V	180.0	1.0	27.8	31.2	2.8	35.4	26.3	20.7	500.0	-27.7	INTMOD
4822	V	45.0	1.0	29.8	33.3	4.2	35.9	31.4	37.0	500.0	-22.6	
				PEAK								
1061	H	180.0	1.0	51	25.5	1.3	36.4	41.4	117.0	5000.0	-32.6	
3342	H	180.0	1.0	43.3	30.9	2.8	35.6	41.4	117.0	5000.0	-32.6	INTMOD
3898.6	H	180.0	1.0	40.7	31.2	2.8	35.4	39.2	91.4	5000.0	-34.8	INTMOD
4822	H	45.0	1.0	38.9	33.3	4.2	35.9	40.5	105.6	5000.0	-33.5	
1061	V	180.0	1.0	50.3	25.5	1.3	36.4	40.7	108.0	5000.0	-33.3	
3342	V	225.0	1.0	42.2	30.9	2.8	35.6	40.3	103.1	5000.0	-33.7	INTMOD
3898.6	V	180.0	1.0	39.7	31.2	2.8	35.4	38.2	81.4	5000.0	-35.8	INTMOD
4822	V	45.0	1.0	39.0	33.3	4.2	35.9	40.6	106.8	5000.0	-33.4	

Table 4, Bandedge Radiated Emissions Test Data

Channel 1, 2412MHz

CLIENT: Symbol
 TESTER: James Ritter

DATE: 5/4/2005
 JOB #: 8487

EUT Information:

EUT: MC9000 w/WJ Reader handheld Terminal
 CONFIGURATION: Transmitting 802.11 Chan 1 @ 2412 MHz
 Also hopping on RFID at 902.5-927.25 MHz

Test Requirements:

TEST STANDARD: FCC Part 15
 DISTANCE: 3m
 CLASS: B

Test Equipment/Limit:

ANTENNA: A_00425
 CABLE: CSITE1_HF

LIMIT: 15.247
 AMPLIFIER (dB) A_00522

Frequency (MHz)	Pol. H/V	Azimuth Degree	Ant. Height (m)	SA Level dBµV	Ant. Corr. dB/m	Cable Corr. dB	Amp Gain dB	Corr. Level dBµV/m	Corr. Level µV/m	Limit µV/m	Margin dB	Comments
2412.000	gun down V	270.0	1.0	102.7	28.9	1.6	38.1	95.0	56544.0			Fund
2412.000	H	280.0	1.0	97.8	28.9	1.6	38.1	90.2	32388.2			Fund
2400.000	V	270.0	1.0	54.2	28.9	1.6	38.1	46.6	212.7	5644.4	-28.5	100k RBW
2400.000	H	280.0	1.0	48.8	28.9	1.6	38.1	41.2	114.6	3238.8	-29.0	100k RBW
2390.000	V	270.0	1.0	53.7	28.9	1.6	38.1	46.0	199.6	5000.0	-28.0	1 M RBW peak
2390.000	H	280.0	1.0	56.2	28.9	1.6	38.1	48.5	266.2	5000.0	-25.5	1 M RBW peak
2390.000	H	280.0	1.0	45.5	28.9	1.6	38.1	37.8	77.9	500.0	-16.1	1M RBW AVG
2390.000	V	270.0	1.0	44.3	28.9	1.6	38.1	36.7	68.1	500.0	-17.3	1M RBW AVG
	Upright											
2412.000	V	150.0	1.0	108.5	28.9	1.6	38.1	100.9	110633.4			Fund
2412.000	H	280.0	1.0	91.8	28.9	1.6	38.1	84.2	16176.6			Fund
2400.000	V	150.0	1.0	64.3	28.9	1.6	38.1	56.7	680.3	11063.3	-24.2	100k RBW
2400.000	H	280.0	1.0	43.7	28.9	1.6	38.1	36.0	63.3	1617.6	-28.2	100k RBW
2390.000	V	150.0	1.0	65.3	28.9	1.6	38.1	57.7	764.3	5000.0	-16.3	1 M RBW peak
2390.000	H	280.0	1.0	52.5	28.9	1.6	38.1	44.8	174.5	5000.0	-29.1	1 M RBW peak
2390.000	H	280.0	1.0	43.0	28.9	1.6	38.1	35.3	58.4	500.0	-18.6	1M RBW

2390.000	V	150.0	1.0	50.2	28.9	1.6	38.1	42.5	133.4	500.0	-11.5	AVG 1M RBW AVG
	Flat											
2412.000	V	90.0	1.0	97.3	28.9	1.6	38.1	89.7	30576.4			Fund
2412.000	H	180.0	1.0	102.2	28.9	1.6	38.1	94.5	53381.0			Fund
2400.000	V	90.0	1.0	47.8	28.9	1.6	38.1	40.2	101.8	3057.6	-29.6	100k RBW
2400.000	H	180.0	1.0	53.2	28.9	1.6	38.1	45.5	188.9	5338.1	-29.0	100k RBW
2390.000	V	90.0	1.0	52.7	28.9	1.6	38.1	45.0	177.9	5000.0	-29.0	1 M RBW peak
2390.000	H	180.0	1.0	54.8	28.9	1.6	38.1	47.1	227.4	5000.0	-26.8	1 M RBW peak
2390.000	H	180.0	1.0	44.8	28.9	1.6	38.1	37.2	72.2	500.0	-16.8	1M RBW AVG
2390.000	V	90.0	1.0	43.5	28.9	1.6	38.1	35.8	61.9	500.0	-18.1	1M RBW AVG

Table 5, Bandedge Radiated Emissions Test Data

Channel 11, 2462MHz

CLIENT: Symbol
 TESTER: James Ritter

DATE: 5/4/2005
 JOB #: 8487

EUT Information:

EUT: MC9000 w/WJ Reader handheld Terminal
 CONFIGURATION: Transmitting 802.11 Chan 11 @ 2462 MHz
 Also hopping on RFID at 902.5-927.25 MHz

Test Requirements:

TEST STANDARD: FCC Part 15
 DISTANCE: 3m
 CLASS: B

Test Equipment/Limit:

ANTENNA: A_00425
 CABLE: CSITE1_HF

LIMIT: 15.247
 AMPLIFIER (dB) A_00522

Frequency (MHz)	Pol. H/V	Azimuth Degree	Ant. Height (m)	SA Level dBµV	Ant. Corr. dB/m	Cable Corr. dB	Amp Gain dB	Corr. Level dBµV/m	Corr. Level µV/m	Limit µV/m	Margin dB	Comments
	down											
2462.000	V	290.0	1.0	100.3	29.0	1.5	38.1	92.8	43671.0			Fund
2462.000	H	270.0	1.0	102.3	29.0	1.5	38.1	94.8	54978.6			Fund
2483.500	V	290.0	1.0	44.7	29.1	1.5	38.1	37.2	72.3	4367.1	-35.6	100k RBW
2483.500	H	270.0	1.0	44.8	29.1	1.5	38.1	37.3	73.7	5497.8	-37.5	100k RBW
2483.500	V	290.0	1.0	58.0	29.1	1.5	38.1	50.5	335.5	5000.0	-23.5	1 M RBW peak
2483.500	H	270.0	1.0	53.3	29.1	1.5	38.1	45.8	196.0	5000.0	-28.1	1 M RBW peak
2483.500	H	270.0	1.0	43.5	29.1	1.5	38.1	36.0	63.2	500.0	-18.0	1M RBW AVG
2483.500	V	290.0	1.0	44.4	29.1	1.5	38.1	36.9	69.9	500.0	-17.1	1M RBW AVG
	upright											
2462.000	V	270.0	1.0	106.5	29.0	1.5	38.1	99.0	88857.4			Fund
2462.000	H	250.0	1.0	98.5	29.0	1.5	38.1	91.0	35374.8			Fund
2483.500	V	270.0	1.0	53.5	29.1	1.5	38.1	46.0	199.9	8885.7	-33.0	100k RBW
2483.500	H	250.0	1.0	42.8	29.1	1.5	38.1	35.3	58.5	3537.4	-35.6	100k RBW
2483.500	V	270.0	1.0	62.7	29.1	1.5	38.1	55.2	574.4	5000.0	-18.8	1 M RBW peak

2483.500	H	250.0	1.0	55.5	29.1	1.5	38.1	48.0	251.6	5000.0	-26.0	1 M RBW peak
2483.500	H	250.0	1.0	43.5	29.1	1.5	38.1	36.0	63.2	500.0	-18.0	1M RBW AVG
2483.500	V	270.0	1.0	48.7	29.1	1.5	38.1	41.2	115.0	500.0	-12.8	1M RBW AVG
	Flat											
2462.000	V	90.0	1.0	96.5	29.0	1.5	38.1	89.0	28099.2			Fund
2462.000	H	220.0	1.0	98.9	29.0	1.5	38.1	91.4	37041.9			Fund
2483.500	V	90.0	1.0	42.8	29.1	1.5	38.1	35.3	58.3	2809.9	-33.7	100k RBW
2483.500	H	220.0	1.0	44.0	29.1	1.5	38.1	36.5	66.9	3704.1	-34.9	100k RBW
2483.500	V	90.0	1.0	54.3	29.1	1.5	38.1	46.8	219.1	5000.0	-27.2	1 M RBW peak
2483.500	H	220.0	1.0	54.5	29.1	1.5	38.1	47.0	224.2	5000.0	-27.0	1 M RBW peak
2483.500	H	220.0	1.0	43.3	29.1	1.5	38.1	35.8	62.0	500.0	-18.1	1M RBW AVG
2483.500	V	90.0	1.0	43.0	29.1	1.5	38.1	35.5	59.7	500.0	-18.5	1M RBW AVG