

Exhibit M: Occupied Bandwidth

FCC ID: HN2WN-5MP01

Justification

The individuals and/or the organization requesting the test provided the modes, configurations and settings available to evaluate. While scanning the radiated emissions, all of the EUT parameters listed below were investigated. This includes, but may not be limited to, antennas, tuned transmit frequency ranges, operating modes, and data rates.

Channels in Specified Band Investigated:

Low
Mid
High

Operating Modes Investigated:

Typical

Data Rates Investigated:

Lowest, Middle, and Highest: Lowest data rate produced the largest bandwidth.

Output Power Setting(s) Investigated:

Maximum

Power Input Settings Investigated:

120 V, 60 Hz

Software\Firmware Applied During Test

Exercise software	AP Monitor	Version	V5.37
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Description

A notebook PC controls the radio through a serial port connection on the WA21 access point. Hyper Terminal running in Windows 98 address the AP monitor commands for setting the transmit channel and data rate.
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Equipment Modifications

No EMI suppression devices were added or modified. The EUT was tested as delivered.

EUT and Peripherals

Description	Manufacturer	Model/Part Number	Serial Number
EUT – 802.11(a) radio module installed in WA21 Access Point	Intermec	WN-5MP01	002-032
Laptop PC	Panasonic	CF-35	7KHSA02247

Cables

Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
Serial cable	Yes	1.5	No	Access Point	Laptop
AC power	No	1.9	No	Access Point	AC mains
AC power	No	1.8	No	Laptop	AC mains

PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.

Measurement Equipment

Description	Manufacturer	Model	Identifier	Last Cal	Interval
Spectrum Analyzer	Hewlett Packard	HP8593E	AAP	05/03/2002	12 mo

Test Description

Requirement: Per 47 CFR 15.407(a)(1), the limit for peak transmit power may be dependent on the emission bandwidth "B". Measure the widest occupied bandwidth that is 26 dB down from the peak of the emission.

Configuration: The 26-dB emission bandwidth was measured with the EUT set to low, medium, and high transmit frequencies; at the worst-case data rate (investigations showed that the lowest data rate produced the largest bandwidth). The EUT was transmitting at its maximum output power.

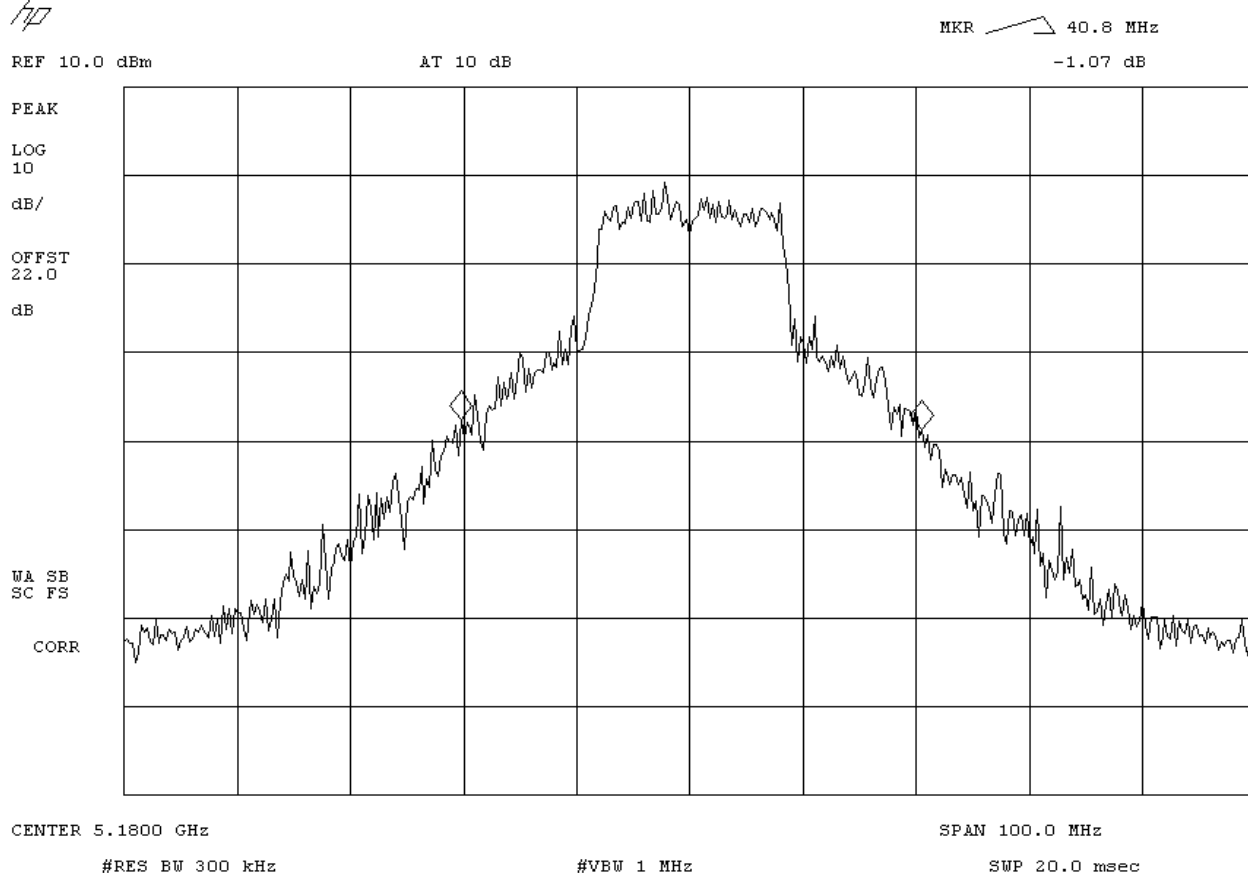
Per the workshop notes provided by Joe Dichoso of the FCC during the TCB training February 2002, the measurement was made in the following manner: using a direct connection between the RF output of the EUT and a spectrum analyzer, the RBW was set to 1% of the emission bandwidth, the VBW was set greater than the RBW, and a peak detector was used. The Max hold feature was not used, rather, a single sweep was used to capture the emission. The widest occupied BW that is 26 dB down from the peak of the emission was measured.

Completed by:



NORTHWEST EMC		EMISSIONS DATA SHEET		Rev BETA 01/30/01	
EUT: WN-5MP01			Work Order: INMC0024		
Serial Number: 002-032			Date: 08/27/02		
Customer: Intermec Corporation			Temperature: 24 degrees C		
Attendees: None		Tested by: Greg Kiemel		Humidity: 40% RH	
Customer Ref. No.: N/A		Power: 120 V, 60 Hz		Job Site: EV06	
TEST SPECIFICATIONS					
Specification: 47 CFR 15.407(a)(1)		Year: Most Current		Method: ANSI C63.4	
				Year: 1992	
SAMPLE CALCULATIONS					
COMMENTS					
Tested in WA21 Access Point					
EUT OPERATING MODES					
Modulated with worst case data rate (lowest) at maximum output power.					
DEVIATIONS FROM TEST STANDARD					
None					
REQUIREMENTS					
The limit for peak transmit power may be dependent on the emission bandwidth "B". Measure the widest occupied BW that is 26 dB down from the peak of the emission					
RESULTS					
			BANDWIDTH		
Pass			40.8 MHz		
SIGNATURE					
 Tested By: _____					
DESCRIPTION OF TEST					
Occupied Bandwidth - Low Channel - 5.15 to 5.25 GHz Band					

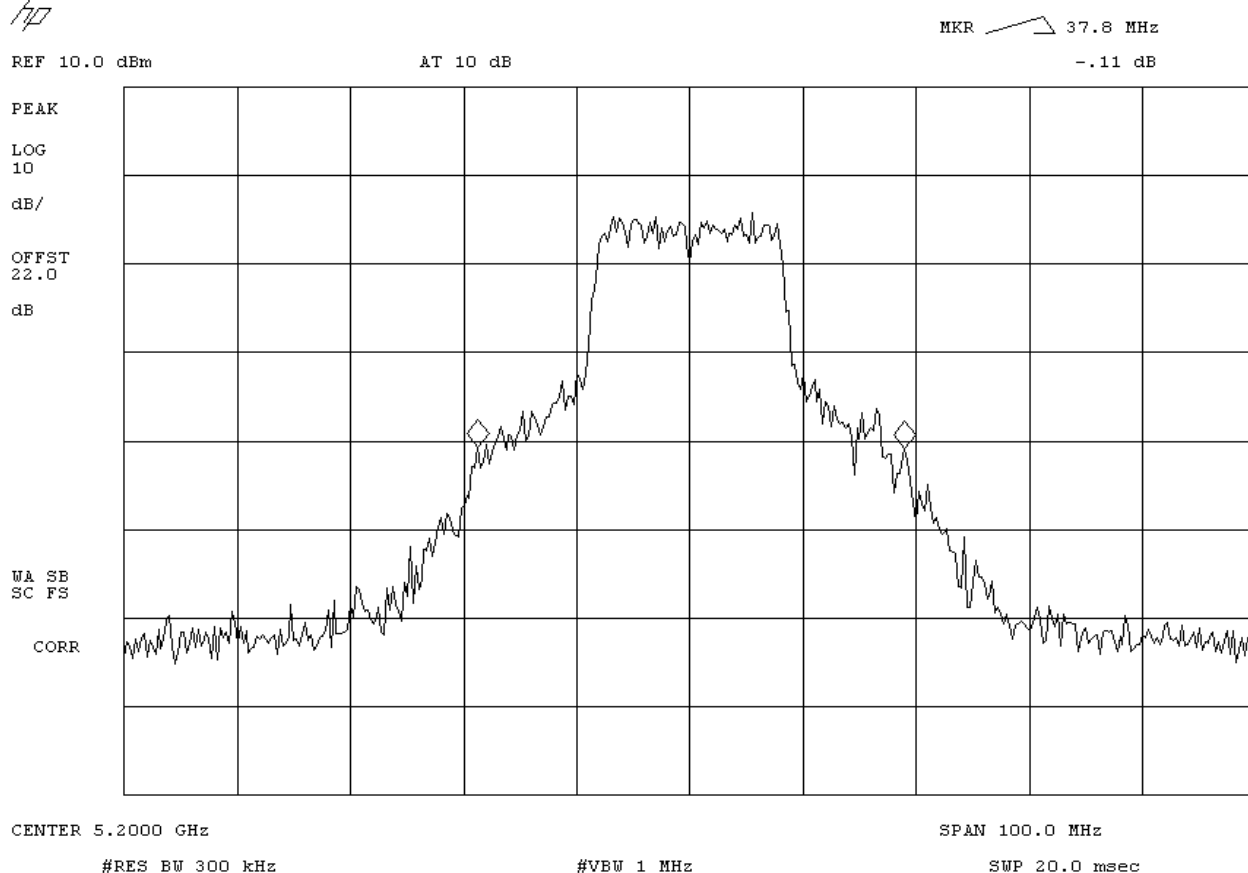
11:15:48 AUG 27, 2002



No us
Me:

NORTHWEST EMC		EMISSIONS DATA SHEET		Rev BETA 01/30/01	
EUT: WN-5MP01			Work Order: INMC0024		
Serial Number: 002-032			Date: 08/27/02		
Customer: Intermec Corporation			Temperature: 24 degrees C		
Attendees: None		Tested by: Greg Kiemel		Humidity: 40% RH	
Customer Ref. No.: N/A		Power: 120 V, 60 Hz		Job Site: EV06	
TEST SPECIFICATIONS					
Specification: 47 CFR 15.407(a)(1)		Year: Most Current		Method: ANSI C63.4	
				Year: 1992	
SAMPLE CALCULATIONS					
COMMENTS					
Tested in WA21 Access Point					
EUT OPERATING MODES					
Modulated with worst case data rate (lowest) at maximum output power.					
DEVIATIONS FROM TEST STANDARD					
None					
REQUIREMENTS					
The limit for peak transmit power may be dependent on the emission bandwidth "B". Measure the widest occupied BW that is 26 dB down from the peak of the emission					
RESULTS			BANDWIDTH		
Pass			37.8 MHz		
SIGNATURE					
 Tested By: _____					
DESCRIPTION OF TEST					
Occupied Bandwidth - Mid Channel - 5.15 to 5.25 GHz Band					

11:18:01 AUG 27, 2002



NORTHWEST EMC		EMISSIONS DATA SHEET		Rev BETA 01/30/01	
EUT: WN-5MP01			Work Order: INMC0024		
Serial Number: 002-032			Date: 08/27/02		
Customer: Intermec Corporation			Temperature: 24 degrees C		
Attendees: None		Tested by: Greg Kiemel		Humidity: 40% RH	
Customer Ref. No.: N/A		Power: 120 V, 60 Hz		Job Site: EV06	
TEST SPECIFICATIONS					
Specification: 47 CFR 15.407(a)(1)		Year: Most Current		Method: ANSI C63.4	
				Year: 1992	
SAMPLE CALCULATIONS					
COMMENTS					
Tested in WA21 Access Point					
EUT OPERATING MODES					
Modulated with worst case data rate (lowest) at maximum output power.					
DEVIATIONS FROM TEST STANDARD					
None					
REQUIREMENTS					
The limit for peak transmit power may be dependent on the emission bandwidth "B". Measure the widest occupied BW that is 26 dB down from the peak of the emission					
RESULTS			BANDWIDTH		
Pass			37.5 MHz		
SIGNATURE					
 Tested By: _____					
DESCRIPTION OF TEST					
Occupied Bandwidth - High Channel - 5.15 to 5.25 GHz Band					

11:21:46 AUG 27, 2002

hp

MKR  37.5 MHz

REF 10.0 dBm

AT 10 dB

.04 dB

No us
Me:

PEAK

LOG
10

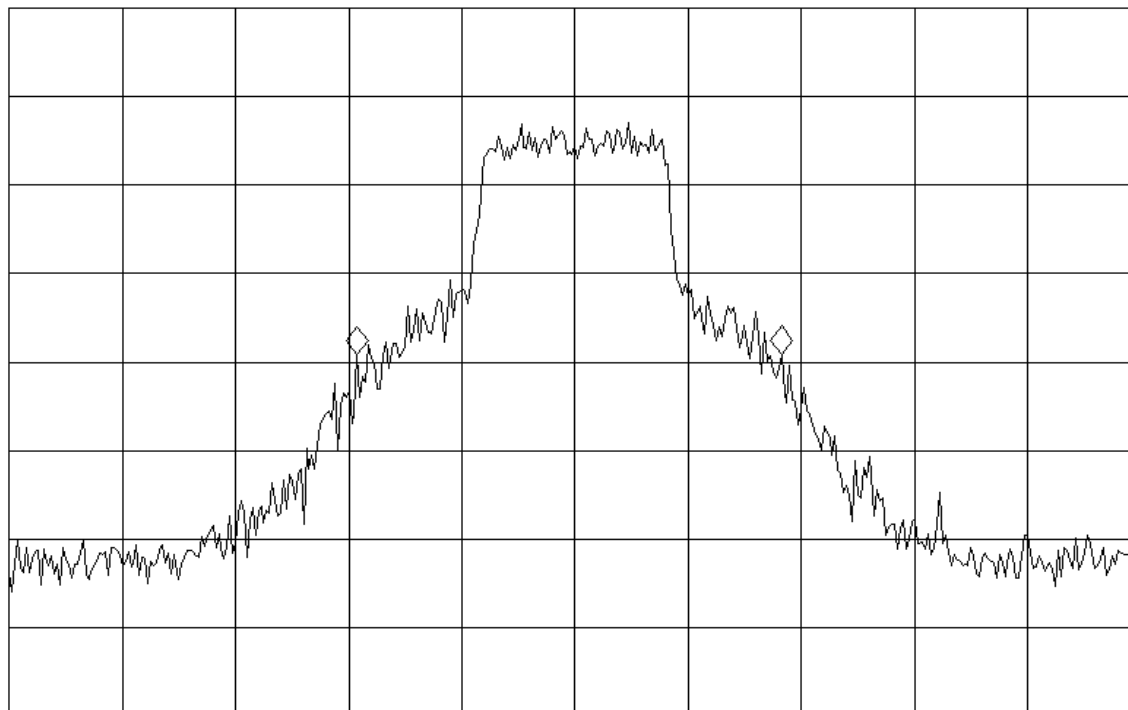
dB/

OFFST
22.0

dB

WA SB
SC FS

CORR



CENTER 5.2200 GHz

SPAN 100.0 MHz

#RES BW 300 kHz

#VBW 1 MHz

SWP 20.0 msec

NORTHWEST EMC		EMISSIONS DATA SHEET		Rev BETA 01/30/01	
EUT: WN-5MP01			Work Order: INMC0024		
Serial Number: 002-032			Date: 08/27/02		
Customer: Intermec Corporation			Temperature: 24 degrees C		
Attendees: None		Tested by: Greg Kiemel		Humidity: 40% RH	
Customer Ref. No.: N/A		Power: 120 V, 60 Hz		Job Site: EV06	
TEST SPECIFICATIONS					
Specification: 47 CFR 15.407(a)(1)		Year: Most Current		Method: ANSI C63.4	
				Year: 1992	
SAMPLE CALCULATIONS					
COMMENTS					
Tested in WA21 Access Point					
EUT OPERATING MODES					
Modulated with worst case data rate (lowest) at maximum output power.					
DEVIATIONS FROM TEST STANDARD					
None					
REQUIREMENTS					
The limit for peak transmit power may be dependent on the emission bandwidth "B". Measure the widest occupied BW that is 26 dB down from the peak of the emission					
RESULTS			BANDWIDTH		
Pass			34.5 MHz		
SIGNATURE					
 Tested By: _____					
DESCRIPTION OF TEST					
Occupied Bandwidth - Low Channel - 5.25 to 5.35 GHz Band					

11:26:55 AUG 27, 2002

hp

MKR  34.5 MHz

REF 10.0 dBm

AT 10 dB

-1.70 dB

No us
Me:

PEAK

LOG

10

dB/

OFFST

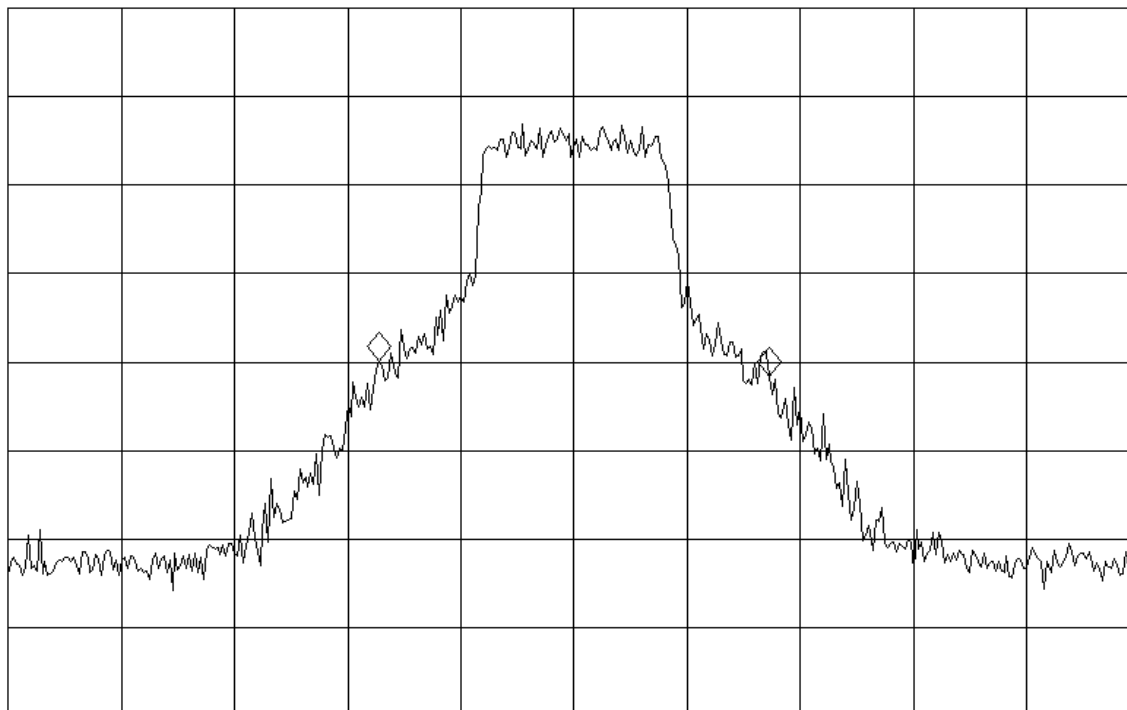
22.0

dB

WA SB

SC FS

CORR



CENTER 5.2600 GHz

SPAN 100.0 MHz

#RES BW 300 kHz

#VBW 1 MHz

SWP 20.0 msec

NORTHWEST EMC		EMISSIONS DATA SHEET		Rev BETA 01/30/01	
EUT: WN-5MP01			Work Order: INMC0024		
Serial Number: 002-032			Date: 08/27/02		
Customer: Intermec Corporation			Temperature: 24 degrees C		
Attendees: None		Tested by: Greg Kiemel		Humidity: 40% RH	
Customer Ref. No.: N/A		Power: 120 V, 60 Hz		Job Site: EV06	
TEST SPECIFICATIONS					
Specification: 47 CFR 15.407(a)(1)		Year: Most Current		Method: ANSI C63.4	
				Year: 1992	
SAMPLE CALCULATIONS					
COMMENTS					
Tested in WA21 Access Point					
EUT OPERATING MODES					
Modulated with worst case data rate (lowest) at maximum output power.					
DEVIATIONS FROM TEST STANDARD					
None					
REQUIREMENTS					
The limit for peak transmit power may be dependent on the emission bandwidth "B". Measure the widest occupied BW that is 26 dB down from the peak of the emission					
RESULTS					
Pass			BANDWIDTH 35.8 MHz		
SIGNATURE					
 Tested By: _____					
DESCRIPTION OF TEST					
Occupied Bandwidth - Mid Channel - 5.25 to 5.35 GHz Band					

11:29:33 AUG 27, 2002

hp

MKR  35.8 MHz

REF 10.0 dBm

AT 10 dB

1.02 dB

No us
Me:

PEAK

LOG
10

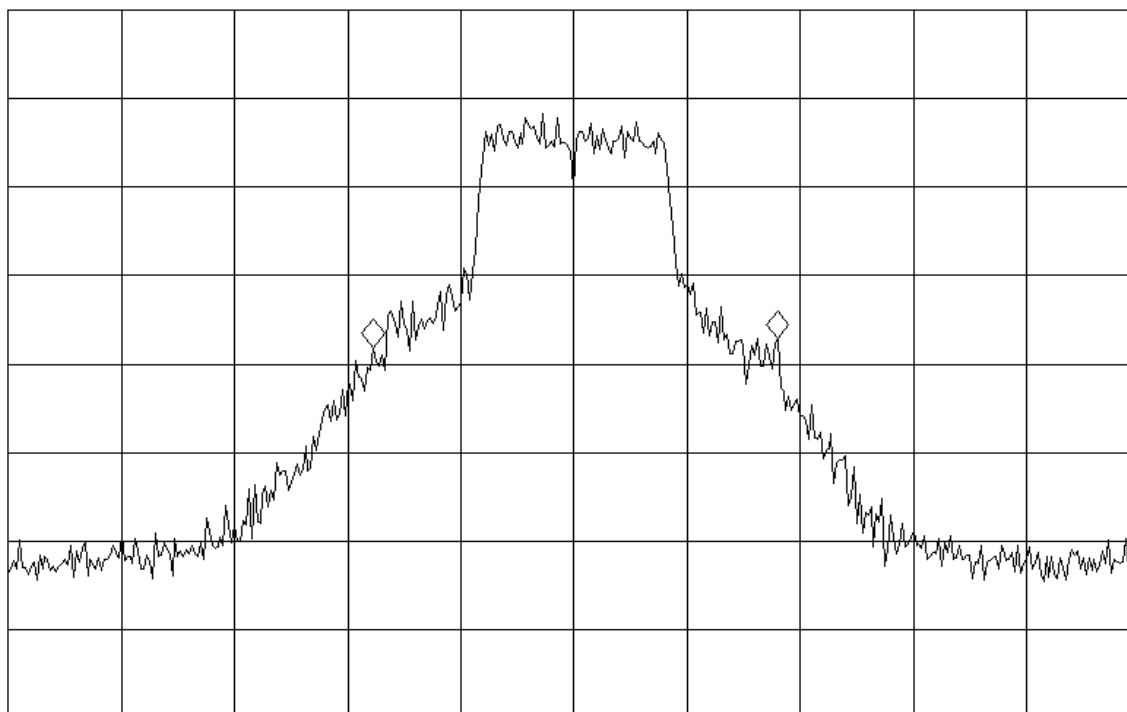
dB/

OFFST
22.0

dB

WA SB
SC FS

CORR



CENTER 5.3000 GHz

SPAN 100.0 MHz

#RES BW 300 kHz

#VBW 1 MHz

SWP 20.0 msec

NORTHWEST EMC		EMISSIONS DATA SHEET		Rev BETA 01/30/01	
EUT: WN-5MP01			Work Order: INMC0024		
Serial Number: 002-032			Date: 08/27/02		
Customer: Intermec Corporation			Temperature: 24 degrees C		
Attendees: None		Tested by: Greg Kiemel		Humidity: 40% RH	
Customer Ref. No.: N/A		Power: 120 V, 60 Hz		Job Site: EV06	
TEST SPECIFICATIONS					
Specification: 47 CFR 15.407(a)(1)		Year: Most Current		Method: ANSI C63.4	
				Year: 1992	
SAMPLE CALCULATIONS					
COMMENTS					
Tested in WA21 Access Point					
EUT OPERATING MODES					
Modulated with worst case data rate (lowest) at maximum output power.					
DEVIATIONS FROM TEST STANDARD					
None					
REQUIREMENTS					
The limit for peak transmit power may be dependent on the emission bandwidth "B". Measure the widest occupied BW that is 26 dB down from the peak of the emission					
RESULTS			BANDWIDTH		
Pass			35.5 MHz		
SIGNATURE					
 Tested By: _____					
DESCRIPTION OF TEST					
Occupied Bandwidth - High Channel - 5.25 to 5.35 GHz Band					

11:10:47 AUG 27, 2002

hp

MKR  35.5 MHz

REF 10.0 dBm

AT 10 dB

.07 dB

No us
Me:

PEAK

LOG

10

dB/

OFFST

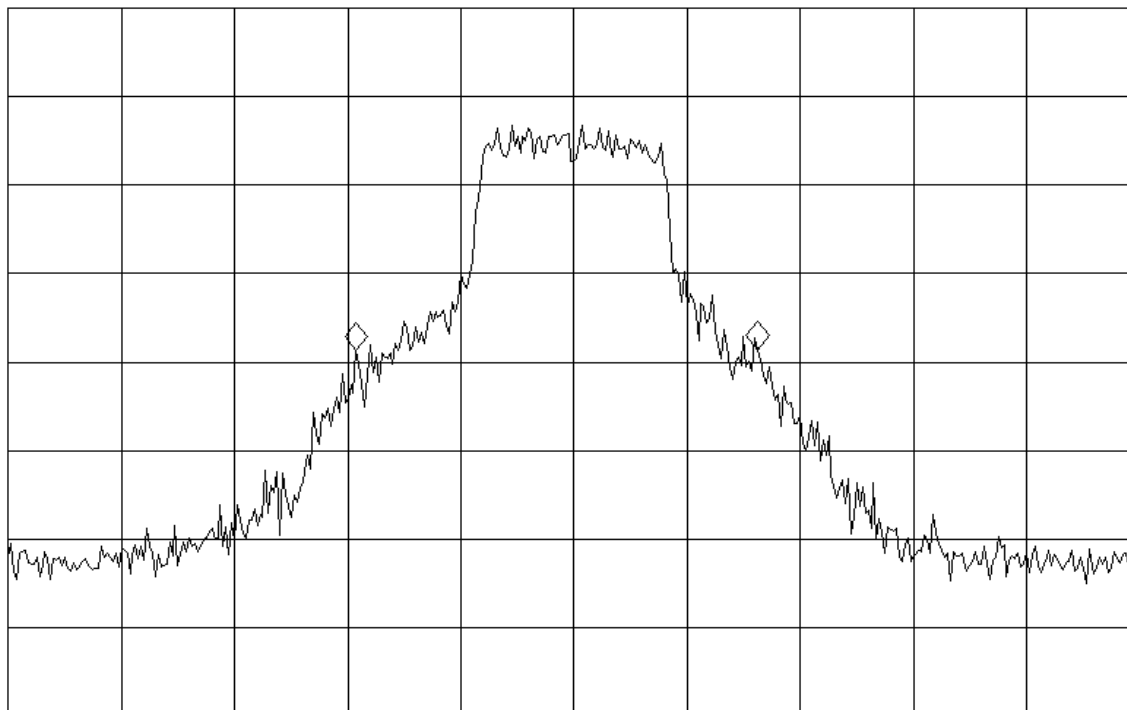
22.0

dB

WA SB

SC FS

CORR



CENTER 5.3200 GHz

SPAN 100.0 MHz

#RES BW 300 kHz

#VBW 1 MHz

SWP 20.0 msec