

Exhibit P: Peak Excursion of the Modulation Envelope

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 peak excursion

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.

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.

Peak Excursion of the Modulation Envelope

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)(6), the ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the peak transmit power shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.


Configuration: Per the workshop notes provided by Joe Dichoso of the FCC during the TCB training February 2002, this measurement is not required if the peak power measurement was performed with the VBW \geq 1 MHz and no other averaging. The peak power measurement was made with a RF detector diode which permits a truly broadband peak power measurement with no averaging. Therefore, this measurement was not required.

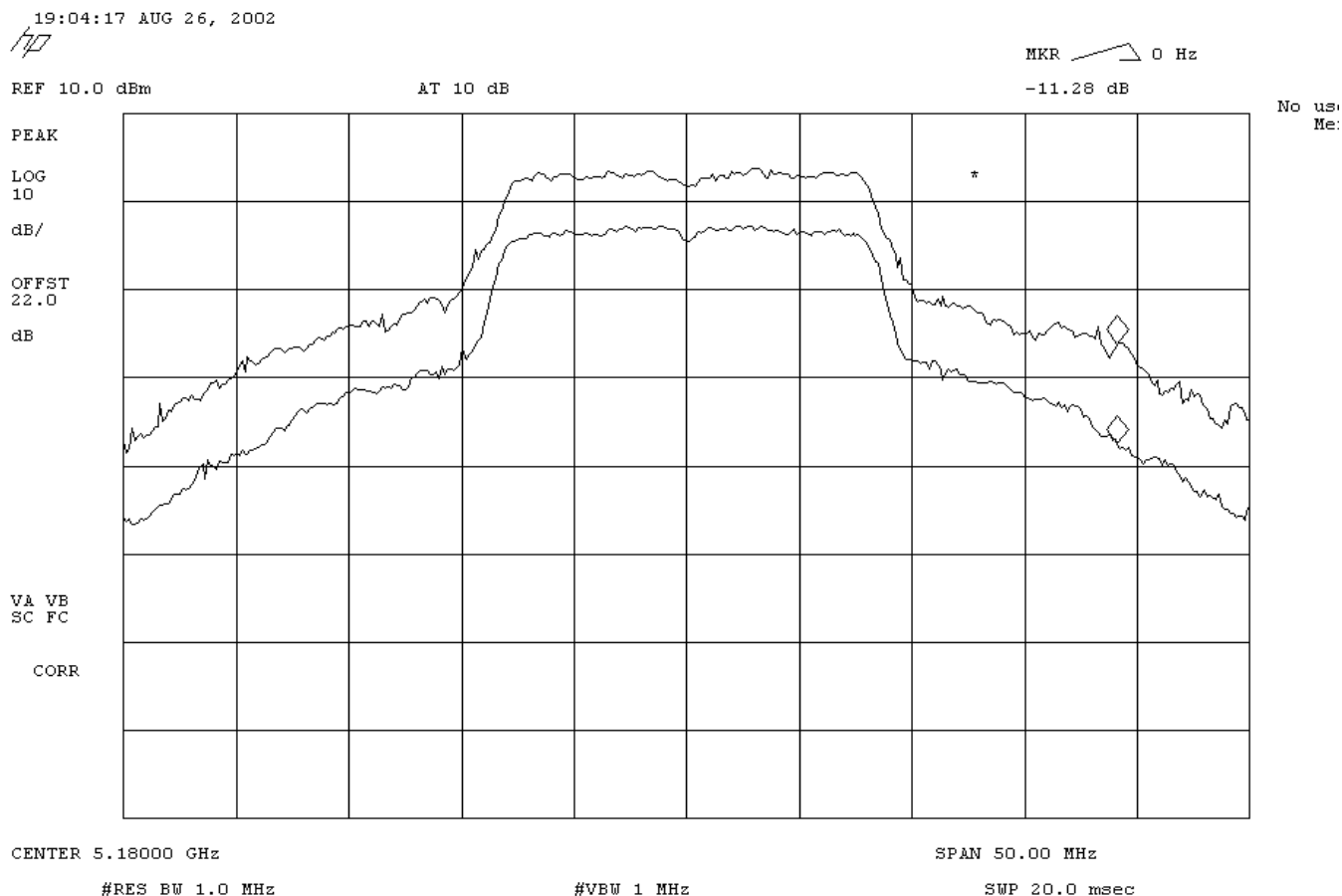
Even though it was not required, the peak excursion of the modulation envelope was measured per the workshop notes provided by Greg Czumak of the FCC during the TCB training in December 1999: using a direct connection between the RF output of the EUT and a spectrum analyzer, one trace was put into Peak Max Hold with the RBW = VBW = 1MHz. The 2nd trace was put into Peak Max Hold with the RBW = 1MHz and the VBW = 30 kHz. The marker delta function was used to show that the largest difference between the two traces (in any 1 MHz band) is less than 13 dB.


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 peak excursion). The EUT was transmitting at its maximum output power.

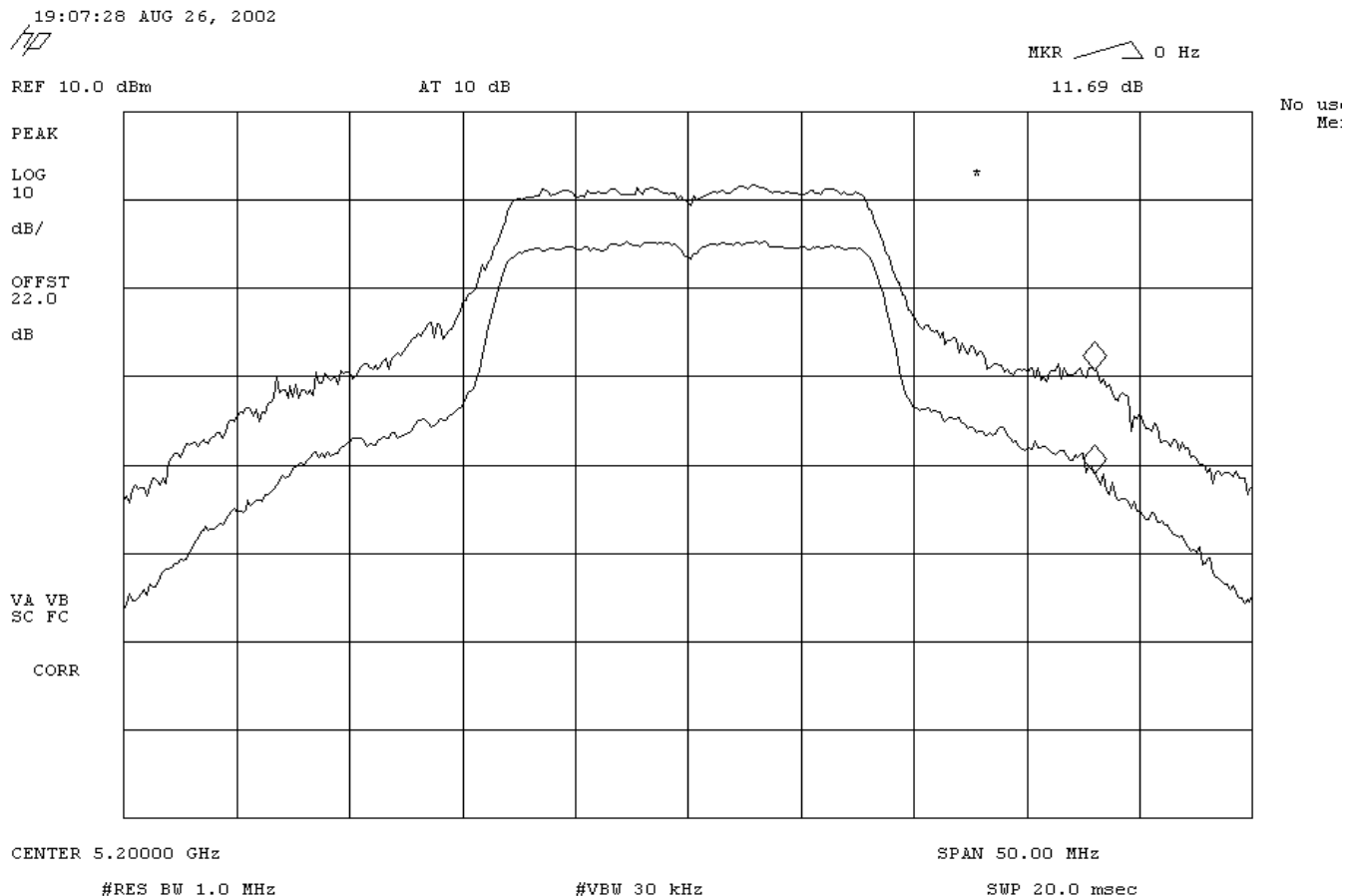
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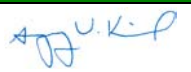


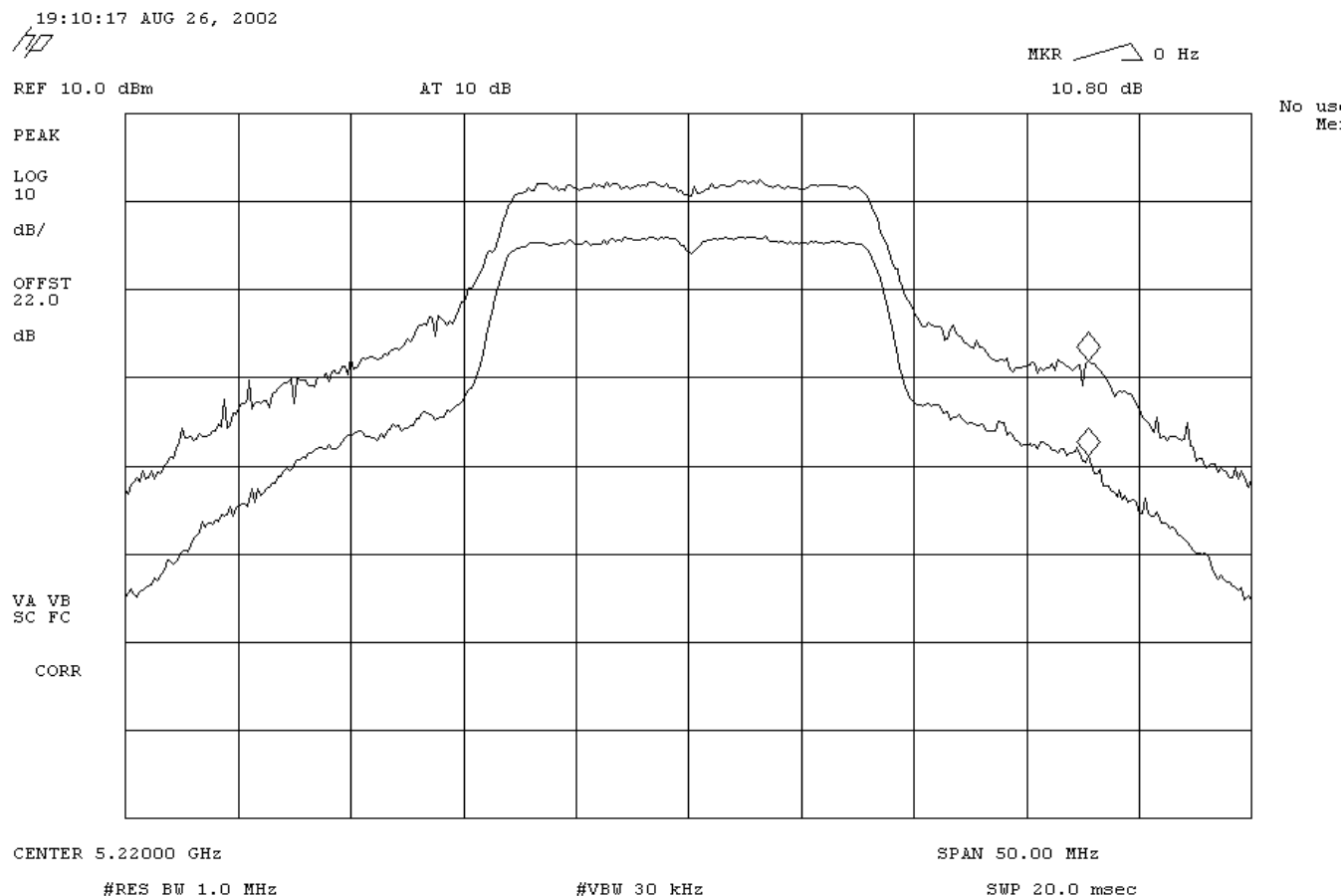
NORTHWEST EMC				EMISSIONS DATA SHEET				Rev BETA 01/30/01	
EUT: WN-5MP01				Work Order: INMC0024					
Serial Number: 002-032				Date: 08/26/02					
Customer: Intermec Corporation				Temperature: 24 degrees C					
Attendees: None				Tested by: Greg Kiemel				Humidity: 40% RH	
Customer Ref. No.: N/A				Power: 120 V, 60 Hz				Job Site: EV06	
TEST SPECIFICATIONS									
Specification: 47 CFR 15.407(a)(6)				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 ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the peak transmit power shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.									
RESULTS									
				Peak Excursion					
Pass				11.28 dB					
SIGNATURE									
 Tested By: _____									
DESCRIPTION OF TEST									
Peak Excursion of the Modulation Envelope - Low Channel - 5.15 to 5.25 GHz Band									




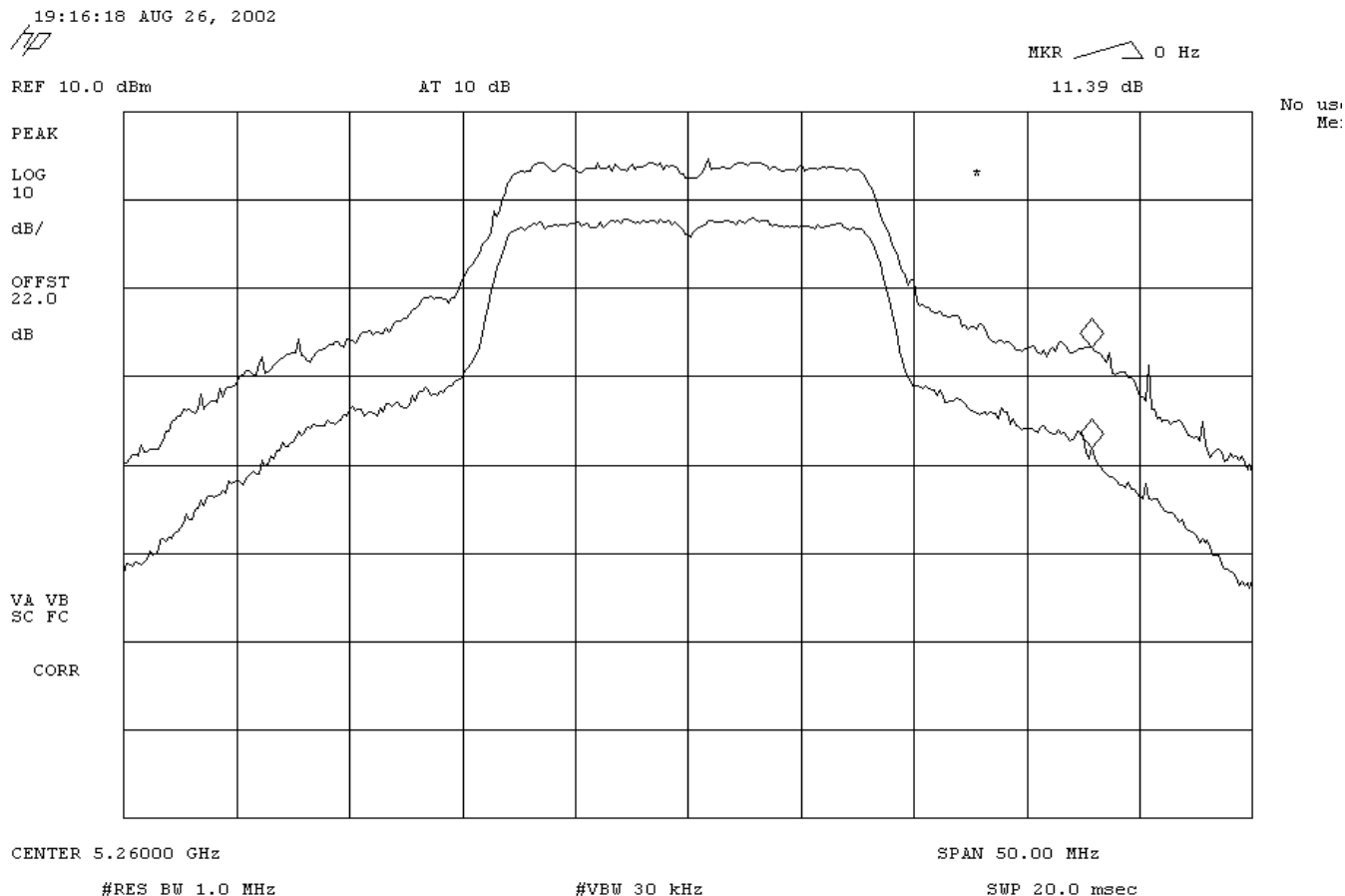
NORTHWEST EMC				EMISSIONS DATA SHEET				Rev BETA 01/30/01	
EUT: WN-5MP01				Work Order: INMC0024					
Serial Number: 002-032				Date: 08/26/02					
Customer: Intermec Corporation				Temperature: 24 degrees C					
Attendees: None				Tested by: Greg Kiemel				Humidity: 40% RH	
Customer Ref. No.: N/A				Power: 120 V, 60 Hz				Job Site: EV06	
TEST SPECIFICATIONS									
Specification: 47 CFR 15.407(a)(6)			Year: Most Current		Method: ANSI C63.4			Year: 1992	
SAMPLE CALCULATIONS									
COMMENTS									
Tested in WA21 Access Point.									
EUT OPERATING MODES									
Tested in WA21 Access Point. Maximum antenna gain in this band is 5 dBi									
DEVIATIONS FROM TEST STANDARD									
None									
REQUIREMENTS									
The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the peak transmit power shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.									
RESULTS									
Pass				Peak Excursion 11.69 dB					
SIGNATURE									
<div style="text-align: center;">  Tested By: _____ </div>									
DESCRIPTION OF TEST									
Peak Excursion of the Modulation Envelope - Mid Channel - 5.15 to 5.25 GHz Band									




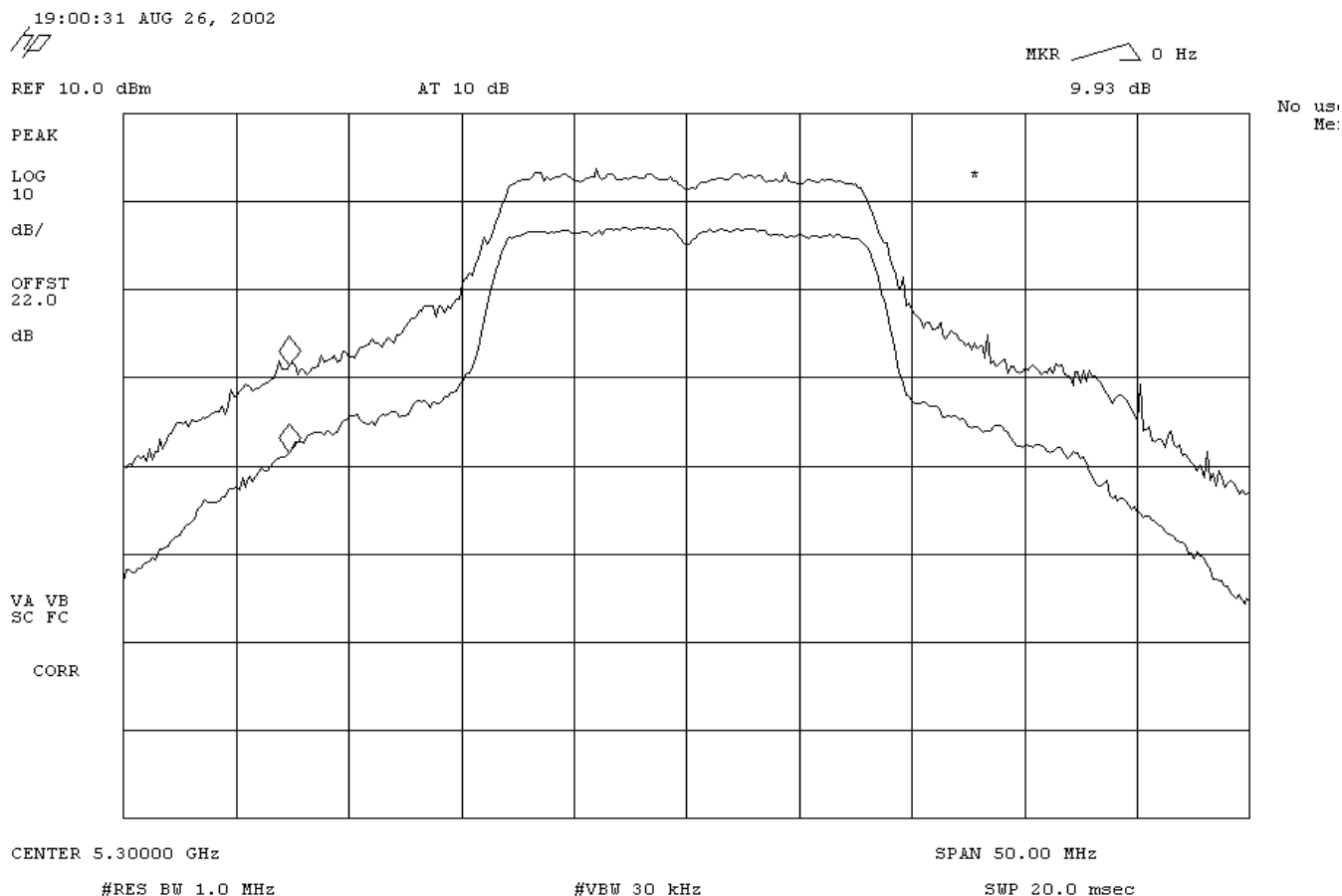
NORTHWEST EMC		EMISSIONS DATA SHEET		Rev BETA 01/30/01	
EUT:	WN-5MP01	Work Order:	INMC0024		
Serial Number:	002-032	Date:	08/26/02		
Customer:	Intermec Corporation		Temperature:	24 degrees C	
Attendees:	None	Tested by:	Greg Klemel	Humidity:	40% RH
Customer Ref. No.:	N/A	Power:	120 V, 60 Hz	Job Site:	EV06
TEST SPECIFICATIONS					
Specification:	47 CFR 15.407(a)(6)	Year:	Most Current	Method:	ANSI C63.4
				Year:	1992
SAMPLE CALCULATIONS					
COMMENTS					
Tested in WA21 Access Point.					
EUT OPERATING MODES					
Tested in WA21 Access Point. Maximum antenna gain in this band is 5 dBi					
DEVIATIONS FROM TEST STANDARD					
None					
REQUIREMENTS					
The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the peak transmit power shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.					
RESULTS		Peak Excursion			
Pass		10.80 dB			
SIGNATURE					
 Tested By: _____					
DESCRIPTION OF TEST					
Peak Excursion of the Modulation Envelope - High Channel - 5.15 to 5.25 GHz Band					




NORTHWEST EMC				EMISSIONS DATA SHEET				Rev BETA 01/30/01	
EUT: WN-5MP01				Work Order: INMC0024					
Serial Number: 002-032				Date: 08/26/02					
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)(6)			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 ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the peak transmit power shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.									
RESULTS									
Pass				Peak Excursion 11.39 dB					
SIGNATURE									
<div style="text-align: center;">  Tested By: _____ </div>									
DESCRIPTION OF TEST									
Peak Excursion of the Modulation Envelope - Low Channel - 5.25 to 5.35 GHz Band									



NORTHWEST EMC		EMISSIONS DATA SHEET		Rev BETA 01/30/01	
EUT: WN-5MP01			Work Order: INMC0024		
Serial Number: 002-032			Date: 08/26/02		
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)(6)		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 ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the peak transmit power shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.					
RESULTS			Peak Excursion		
Pass			9.93 dB		
SIGNATURE					
<div style="text-align: center;">  Tested By: _____ </div>					
DESCRIPTION OF TEST					
Peak Excursion of the Modulation Envelope - Mid Channel - 5.25 to 5.35 GHz Band					



NORTHWEST EMC				EMISSIONS DATA SHEET				Rev BETA 01/30/01	
EUT: WN-5MP01				Work Order: INMC0024					
Serial Number: 002-032				Date: 08/26/02					
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)(6)		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 ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the peak transmit power shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.									
RESULTS				Peak Excursion					
Pass				10.58 dB					
SIGNATURE									
<div style="text-align: center;">  Tested By: _____ </div>									
DESCRIPTION OF TEST									
Peak Excursion of the Modulation Envelope - High Channel - 5.25 to 5.35 GHz Band									

