Exhibit P: Peak Excursion of the Modulation Envelope

FCC ID: HN2WN-5MP01



Peak Excursion of the Modulation Envelope

Revision 2/4/02

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
Description			
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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

Revision 2/4/02

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.

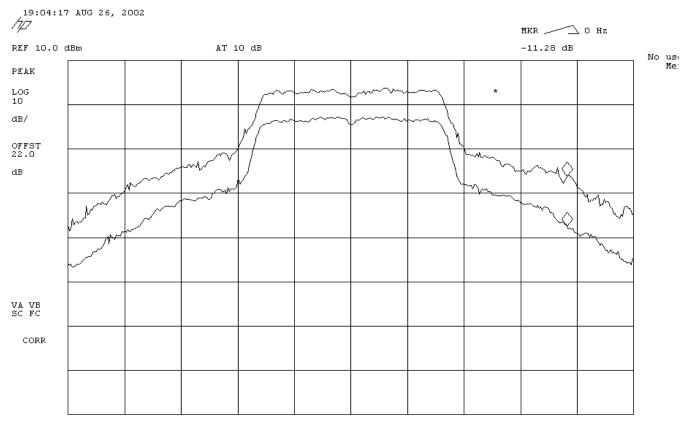
Configuration: Per the workshop notes provided by Joe Dichoso of the FCC during the TCB training February 2002, this measurement is not required if the peak power measurement was performed with the VBW >= 1 MHz and no other averaging. The peak power measurement was made with a RF detector diode which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

Completed by:

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
FEST SPECIFICATIONS			
Specification: 47 CFR 15.407(a)(6)	Year: Most Current	Method: ANSI C63.4	Year: 1992
SAMPLE CALCULATIONS			
Tested in WA21 Access Point. EUT OPERATING MODES Modulated with worst case data rate (lowest) at maxim DEVIATIONS FROM TEST STANDARD None REQUIREMENTS The ratio of the peak excursion of the modulation envi		d function) to the poak transmit power shall no	t aveged 13 dB across any 1 MHz
andwidth or the emission bandwidth whichever is les			t exceed to ab across any 1 minz
RESULTS		Peak Excursion	
Pass		11.28 dB	
Tested By:			
DESCRIPTION OF TEST	Modulation Envel	ope - Low Channel - 5.15 to	s 5 05 CH= Bond



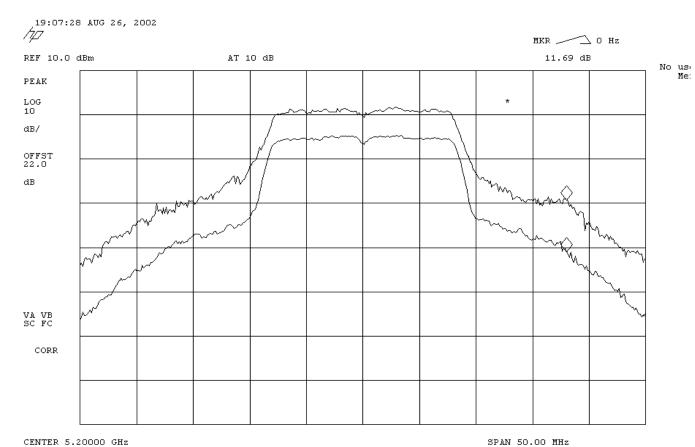
CENTER 5.18000 GHz

NORTHWEST

SPAN 50.00 MHz

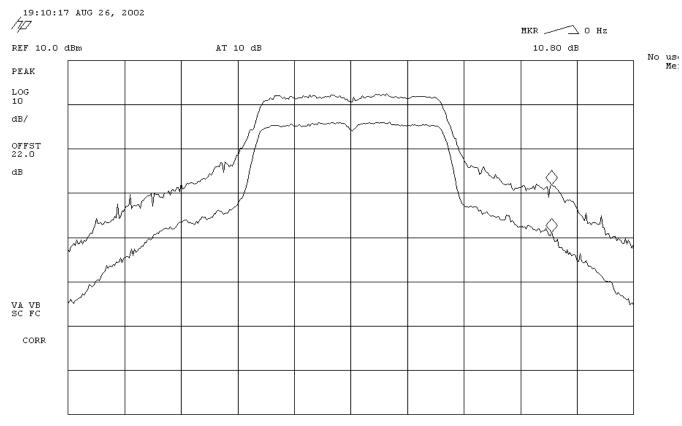
#RES BW 1.0 MHz #VBW 1 MHz

EMC	EMISSIONS	DATA SHEET	•	Rev BE 01/30/0
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 Kie	mel Humidity	: 40% RH
Customer Ref. No.: N/A		Power: 120 V, 60	Hz Job Site	EV06
EST SPECIFICATIONS				
Specification: 47 CFR 15.407(a)(6)	Year: Most Current	Method: ANSI C6	3.4 Year	1992
OMMENTS ested in WA21 Access Point. UT OPERATING MODES ested in WA21 Access Point. Maximum antenna	gain in this band is 5 dBi			
lone				
REQUIREMENTS				
he ratio of the peak excursion of the modulation of the modulation of the emission bandwidth whichever is		d function) to the peak transmit po	ower shall not exceed 13 dB across	any 1 MHz
ESULTS		Peak Excursion		
ass		11.69 dB		
IGNATURE				
Tested By:				
DESCRIPTION OF TEST				
Peak Excursion of	the Modulation Envel	one - Mid Channel	- 5.15 to 5.25 GHz B	and



#RES BW 1.0 MHz #VBW 30 kHz SWP 20.0 msec

EMC		EMISSIONS	DATA SH	EET		Rev BET 01/30/01		
EUT:	WN-5MP01				Work Order:	INMC0024		
Serial Number:	002-032				Date:	08/26/02		
Customer:	Customer: Intermec Corporation Temperature: 24							
Attendees:	None		Tested by:	Greg Kiemel	Humidity:	40% RH		
Customer Ref. No.:	N/A		Power:	120 V, 60 Hz	Job Site:	EV06		
EST SPECIFICATION	s							
Specification:	47 CFR 15.407(a)(6)	Year: Most Current	Method:	ANSI C63.4	Year:	1992		
OMMENTS								
ested in WA21 Acces	s Point.							
UT OPERATING MOD	•							
ested in WA21 Acces	s Point. Maximum antenna g	ain in this band is 5 dBi						
EVIATIONS FROM TE	EST STANDARD							
one								
EQUIREMENTS								
	xcursion of the modulation e sion bandwidth whichever is	nvelope (measured using a peak hold less.	function) to the peak tr	ansmit power shall n	ot exceed 13 dB across	any 1 MHz		
ESULTS			Peak Excursion					
ass			10.80 dB					
IGNATURE								
Tested By:	ADU.K.P							
ESCRIPTION OF TES								
Pea	k Excursion of the	ne Modulation Envelo	pe - High Cha	annel - 5.15	to 5.25 GHz B	and		



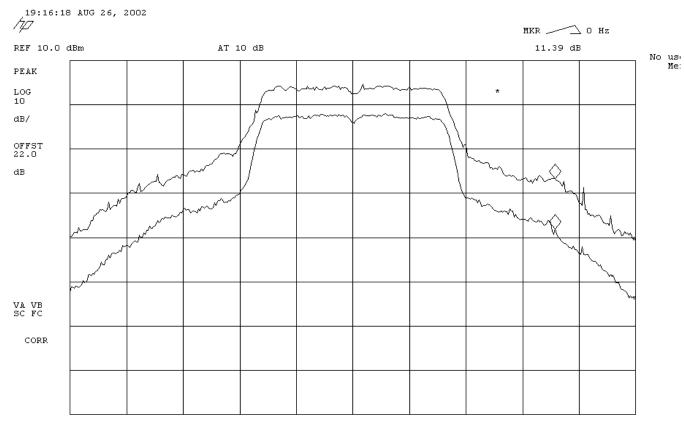
CENTER 5.22000 GHz

SPAN 50.00 MHz

#VBW 30 kHz

#RES BW 1.0 MHz

Tested by: Greg Kiemel Power: 120 V, 60 Hz Method: ANSI C63.4	Work Order: Date: Temperature: Humidity: Job Site: Year:	08/26/02 24 degrees C 40% RH EV06
Power: 120 V, 60 Hz	Temperature: Humidity: Job Site:	24 degrees C 40% RH EV06
Power: 120 V, 60 Hz	Humidity: Job Site:	40% RH EV06
Power: 120 V, 60 Hz	Job Site:	EV06
7.1		
Method: ANSI C63.4	Year:	1992
Method: ANSI C63.4	Year:	1992
on) to the peak transmit power shall no	ot exceed 13 dB across a	any 1 MHz
Excursion		
dB		
d	ixcursion dB	



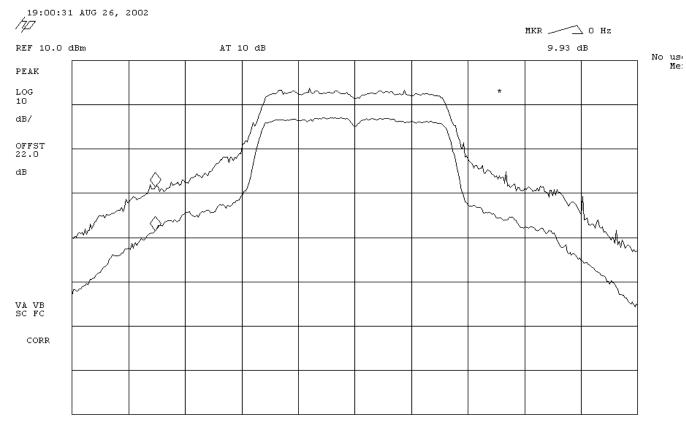
CENTER 5.26000 GHz

SPAN 50.00 MHz

#VBW 30 kHz

#RES BW 1.0 MHz

Specification: 47 CFR 15.407(a)(6) Year: Most Current Method: ANSI C63.4 Year: 1992 MPLE CALCULATIONS MMENTS sted in WA21 Access Point. T OPERATING MODES dulated with worst case data rate (lowest) at maximum output power. VIATIONS FROM TEST STANDARD ne QUIREMENTS Pratio 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 adwidth or the emission bandwidth whichever is less. SULTS Peak Excursion	ORTHWEST EMC	EMISSIONS D	DATA SHEET		Rev BE 01/30/0
Customer: Intermec Corporation Attendees: None Attendee	EUT: WN-5MP01			Work Order:	INMC0024
Attendees: None Tested by: Greg Kiemel Humidity: 40% RH Dustomer Ref. No.: IMA Power: 120 V, 60 Hz Job Site: EV06 ST SPECIFICATIONS Specification: 47 CFR 15.407(a)(6) Year: Most Current Method: ANSI C63.4 Year: 1992 MPLE CALCULATIONS MMENTS sted in WA21 Access Point. T OPERATING MODES duilated with worst case data rate (lowest) at maximum output power. WATIONS FROM TEST STANDARD ne QUIREMENTS or 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 addidth or the emission bandwidth whichever is less. SULTS Peak Excursion 9.93 dB SCRIPTION OF TEST	Serial Number: 002-032			Date:	08/26/02
Customer Ref. No.: N/A Power: 120 V, 60 Hz Job Site: EV06 ST SPECIFICATIONS Specification: 47 CFR 15.407(a)(6) MMEINTS Ited in WA21 Access Point. T OPERATING MODES dulated with worst case data rate (lowest) at maximum output power. VIATIONS FROM TEST STANDARD ne Quilrements or 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 adwidth or the emission bandwidth whichever is less. SULTS Peak Excursion SULTS Peak Excursion SOUTH TEST OF TEST Tested By: Tested By: SCRIPTION OF TEST	Customer: Intermec Corporation			Temperature:	24 degrees C
Specification: 47 CFR 15.407(a)(6) Year: Most Current Method: ANSI C63.4 Year: 1992 MMEL CALCULATIONS MMENTS Ited in WA21 Access Point. T OPERATING MODES dulated with worst case data rate (lowest) at maximum output power. Vivial 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 individity or the emission bandwidth whichever is less. SULTS Peak Excursion 9.93 dB NATURE Tested By: SCRIPTION OF TEST	Attendees: None		Tested by: Greg Kiemel	Humidity:	40% RH
Specification: (47 CFR 15.407(a)(6) MMENTS MMENTS Sted in WA21 Access Point. T OPERATING MODES dulated with worst case data rate (lowest) at maximum output power. VIATIONS FROM TEST STANDARD THE OUIREMENTS TO tatio 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 and with or the emission bandwidth whichever is less. SULTS Peak Excursion 9.93 dB SCRIPTION OF TEST	Customer Ref. No.: N/A		Power: 120 V, 60 Hz	Job Site:	EV06
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Tested By:SCRIPTION OF TEST	ass		9.93 dB		
	Tested By:	? 			
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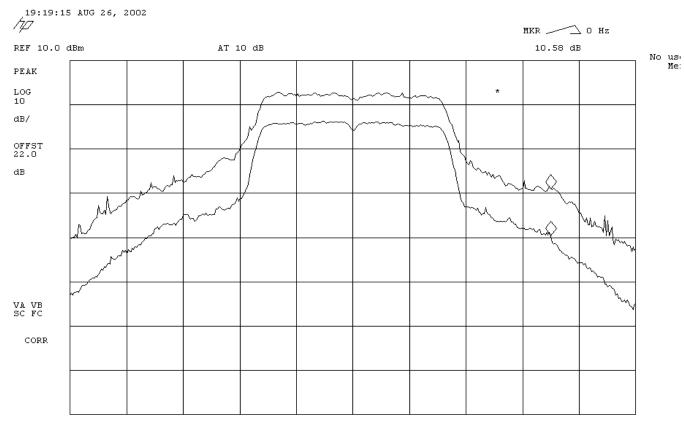


CENTER 5.30000 GHz

SPAN 50.00 MHz

#VBW 30 kHz

EMC		EMISSIONS	DATA SH	EET		Rev BE ⁻ 01/30/01		
EUT:	WN-5MP01				Work Order:	INMC0024		
Serial Number:	002-032				Date:	08/26/02		
Customer:	Customer: Intermec Corporation Temperature: 24							
Attendees:	None		Tested by:	Greg Kiemel	Humidity:	40% RH		
Customer Ref. No.:	N/A		Power:	120 V, 60 Hz	Job Site:	EV06		
EST SPECIFICATION	s							
Specification:	47 CFR 15.407(a)(6)	Year: Most Current	Method:	ANSI C63.4	Year:	1992		
OMMENTS								
sted in WA21 Acces	s Point.							
JT OPERATING MOD	ES							
odulated with worst	case data rate (lowest) at max	rimum output power.						
EVIATIONS FROM TE	EST STANDARD							
one								
EQUIREMENTS								
	xcursion of the modulation e sion bandwidth whichever is	nvelope (measured using a peak hold less.	function) to the peak tr	ansmit power shall n	ot exceed 13 dB across	any 1 MHz		
ESULTS			Peak Excursion					
ass			10.58 dB					
IGNATURE								
Tested By:	ADU.K.P							
ESCRIPTION OF TES								
Pea	k Excursion of the	ne Modulation Envelo	pe - High Cha	annel - 5.25	to 5.35 GHz B	and		



CENTER 5.32000 GHz

#RES BW 1.0 MHz

SPAN 50.00 MHz

#VBW 30 kHz