Exhibit O: Peak Power Spectral Density

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.

Low	
Mid	
High	

Operating Modes Investigated:

Typical

Data Rates Investigated:

Lowest, Middle, and Highest: Lowest data rate produced the highest PPSD.

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									
A notebook PC controls th	e radio through a serial po	rt 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.



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)-(2), the maximum peak power spectral density must not exceed the following limits:

For the 5.15 to 5.25 GHz band, the peak power spectral density shall not exceed 4 dBm/MHz.

For the 5.25 to 5.35 GHz band, the peak power spectral density shall not exceed 11 dBm/MHz.

For both bands, if the antenna gain is greater than 6 dBi, the output must be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Configuration: The peak power spectral density 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 highest PPSD). 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 MHz and the VBW was set greater than the RBW. The peak power spectral density (PPSD) was determined to be the highest level found across the emission in any 1 MHz band after 100 sweeps of video averaging.

Completed by:

J.K.P

NORTHWEST										
EMC		EMISSIONS	DATA SH	EET		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 SPECIFICATION										
Specification:	47 CFR 15.407(a)(1)	Year: Most Current	Method:	ANSI C63.4	Year:	1992				
SAMPLE CALCULATION	ONS									
Peak Power Density (EIRP) = Peak Power Density + Maximum antenna gain (dBi)										
COMMENTS										
Tested in WA21 Acces	s Point. Maximum antenna gain	in this band is 5 dBi								
EUT OPERATING MOD										
Modulated with worst	case data rate (lowest) at maximu	ım output power.								
DEVIATIONS FROM T	EST STANDARD									
None										
REQUIREMENTS										
For the 5.15 to 5.25 GI	Iz band, the peak power spectral	density shall not exceed 4 dBm /	MHz. The deFacto EIRP	requirement is 10 dB	m/MHz.					
RESULTS			Peak Power Density (E	EIRP)						
Pass			-0.9 dBm / MHz							
SIGNATURE										
Tested By:	Tested By:									
DESCRIPTION OF TES	тт									
	Peak Power Sp	ectral Density - Lo	w Channel - 5	5.15 to 5.25 C	Hz Band					

18:39:3 /1/7	5 AUG 26, 2	2002						MKR 5.18	325 GHz		
REF 10.0			AT 1	0 dB					-5.90 dBm		No us
SMPL											Me:
LOG 10											
dB/						♦.					
OFFST 22.0					Munn	MA					
dB											
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AVG 100			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~					M.			
WA SB SC FC		~	مىمى مىمى ر					Mynn	Mr.		
CORR	mm								~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	
CENTER 5.	1800 GHz							SPAN 100).O MHz		
#	RES BW 1.0	MHz			#VBW 3 MH2	5		SWP	20.0 msec		

NORTHWEST										
EMC		EMISSIONS	DATA SH	EET		Rev BETA 01/30/01				
EUT:	WN-5MP01				Work Order:	INMC0024				
Serial Number:	002-032				Date:	08/26/02				
Customer:	Intermec Corporation					24 degrees C				
Attendees:	None		Tested by:	Greg Kiemel	Humidity:	40% RH				
Customer Ref. No.:	N/A	Job Site:	EV06							
TEST SPECIFICATION	IS									
Specification:	47 CFR 15.407(a)(1)	Year: Most Current	Method:	ANSI C63.4	Year:	1992				
SAMPLE CALCULATION	ONS									
Peak Power Density (EIRP) = Peak Power Density + Maximum antenna gain (dBi)										
COMMENTS Tested in WA21 Acces	- Deint									
EUT OPERATING MOI		in this hand is 5 dBi								
	ss Point. Maximum antenna gain	In this band is 5 dBi								
DEVIATIONS FROM TI None	EST STANDARD									
REQUIREMENTS										
	Hz band, the peak power spectral	density shall not exceed 4 dBm /	MHz. The deFacto EIRP	requirement is 10 d	Bm/MHz.					
RESULTS			Peak Power Density (E							
Pass			-2.75 dBm / MHz							
SIGNATURE										
Tested By:										
DESCRIPTION OF TES	ST									
	Peak Power S	pectral Density - Mi	d Channel - 5	.15 to 5.25 (GHz Band					

18:42:10 /1/7	8 AUG 26, 2	2002						MKR 5.19	60 GHz		
REF 10.0			AT 1	0 dB					-7.75 dBm		No ນຣ.
SMPL											No us Me:
LOG 10											
dB/											
OFFST 22.0					L MAN	MMM.					
dB											
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AVG 100				a www.w		¥	month				
WA SB SC FC			مر م	<u></u>				My I			
CORR		www.ww	ward -					hum	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	mm	
CENTER 5.	2000 GHz							SPAN 100	.0 MHz	·J	
#1	RES BW 1.0	MHz			#VBW 3 MHz	:		SWP	20.0 msec		

NORTHWEST										
EMC		EMISSIONS	DATA SHI	EET		Rev BETA 01/30/01				
EUT:	WN-5MP01				Work Order:	INMC0024				
Serial Number:	002-032				Date:	08/26/02				
Customer:	Intermec Corporation					24 degrees C				
Attendees:	None		Tested by:	Greg Kiemel	Humidity:	40% RH				
Customer Ref. No.:	N/A									
TEST SPECIFICATION										
Specification:	47 CFR 15.407(a)(1)	Year: Most Current	Method:	ANSI C63.4	Year:	1992				
SAMPLE CALCULATION	ONS									
Peak Power Density (EIRP) = Peak Power Density + Maximum antenna gain (dBi)										
COMMENTS										
Tested in WA21 Acces										
EUT OPERATING MOD										
	ss Point. Maximum antenna gain	in this band is 5 dBi								
DEVIATIONS FROM T	EST STANDARD									
None										
REQUIREMENTS					B (MU)					
For the 5.15 to 5.25 G	Hz band, the peak power spectral	density shall not exceed 4 dBm /	MHZ. The defacto EIRP	requirement is 10 d	Bm/MHZ.					
RESULTS			Peak Power Density (E	IRP)						
Pass			-2.33 dBm / MHz							
SIGNATURE										
Tested By:	* BU.K.P									
DESCRIPTION OF TES	ЭТ									
	Peak Power Sp	ectral Density - Hi	gh Channel - 5	.15 to 5.25	GHz Band					

18:44:4 /1/7	6 AUG 26, 3	2002						MKR 5.21	48 GHz		
REF 10.0	dBm		AT 1	.0 dB					-7.33 dBm		No us
SMPL											Me:
LOG 10											
dB/											
OFFST 22.0					Minn	my					
dB											
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AVG 100				Nunna			WH M				
WA SB SC FC							· · · · ·	Ny h			
CORR	mmput	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	www					Www.	mm-	www.	
CENTER 5.	2200 GHz			1				SPAN 100	.0 MHz	·]	
#	RES BW 1.0	MHz			#VBW 3 MHz	5		SWP	20.0 msec		

NORTHWEST	EMISS	SIONS D	ATA SHE	ET		Rev BETA 01/30/01				
	WN-5MP01				Work Order:					
Serial Number:	002-032				Date:	08/26/02				
Customer:	Intermec Corporation				Temperature:	24 degrees C				
Attendees:	· · · · · · · · · · · · · · · · · · ·		Tested by: Gr	eg Kiemel	Humidity:					
Customer Ref. No.:	N/A		Power: 12	0 V, 60 Hz	Job Site:	EV06				
TEST SPECIFICATION	EST SPECIFICATIONS									
Specification:	47 CFR 15.407(a)(2) Year: Mos	st Current	Method: AN	ISI C63.4	Year:	1992				
SAMPLE CALCULATI	ONS									
COMMENTS										
	ss Point. Maximum antenna gain (less the minimu	im cable loss) in this	band is 12 dBi							
EUT OPERATING MOI										
	case data rate (lowest) at maximum output power.	r.								
DEVIATIONS FROM T	EST STANDARD									
None										
REQUIREMENTS										
For the 5.25 to 5.35 GI	Hz band, the peak power spectral density shall not	t exceed 11 dBm / Mi	12. The defacto EIRP r	equirement is 17 dBm	/MHZ.					
RESULTS		P	eak Power Density (EIR	P)						
Pass		4.	71 dBm / MHz							
SIGNATURE										
Tested By:	ADU.K.P									
DESCRIPTION OF TES										
	Peak Power Spectral De	ensitv - Low	Channel - 5.2	25 to 5.35 GF	Iz Band					

18:47: /1/	22 AUG 26, 2	2002						MKR 5.25	75 GHz		
REF 10.0 dBm AT 10 d				0 dB				-7.29 dBm			No us
SMPL											Me:
LOG 10											
dB/											
OFFST 22.0					mini	proving					
dB											
				www			Mry				
AVG 100				N M W.			"hy				
			1	~			4	h			
WA SB SC FC			المر ا					N N			
CORR	mm		~~~~					~~~~	×		
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CENTER 5.2600 GHz								SPAN 100	.0 MHz		
#RES BW 1.0 MHz					#VBW 3 MHz SWP 20.0 msec						

NORTHWEST			DATA SHEET		Rev BETA					
EMC					01/30/01					
EUT:	WN-5MP01			Worl	k Order: INMC0024					
Serial Number:	002-032		Date: 08/26/02							
Customer:	Intermec Corporation	Temp	erature: 24 degrees C							
Attendees:	None	el Hu	umidity: 40% RH							
Customer Ref. No.:	N/A	z J	ob Site: EV06							
TEST SPECIFICATION	TEST SPECIFICATIONS									
Specification:	47 CFR 15.407(a)(2)	Year: Most Current	Method: ANSI C63.4		Year: 1992					
SAMPLE CALCULATI	ONS									
	EIRP) = Peak Power Density + Maxim	um antenna gain (dBi)								
COMMENTS	- Daint Manimum antonna anin (la	- 46								
	ss Point. Maximum antenna gain (les	ss the minimum cable loss) in th	IS Dand IS 12 dBI							
EUT OPERATING MOI	case data rate (lowest) at maximum	output power								
DEVIATIONS FROM T		output power.								
None	EST STANDARD									
REQUIREMENTS										
	Hz band, the peak power spectral de	nsity shall not exceed 11 dBm / I	MHz The deFacto FIRP requirement	ant is 17 dBm/MHz						
RESULTS			Peak Power Density (EIRP)							
Pass			6.33 dBm / MHz							
SIGNATURE										
Tested By:	ADU.K.P									
DESCRIPTION OF TEST Peak Power Spectral Density - Mid Channel - 5.25 to 5.35 GHz Band										

18:49:4 /1/7	45 AUG 26, 2	2002						MKR 5.29	58 GHz		
	EF 10.0 dBm AT 10 dB				-5.67 dBm					No us	
SMPL											Me:
LOG 10											
dB/					m						
OFFST 22.0					-	m~~~					
dB											
						$\left  \right\rangle$					
				m	ľ		۳ <u>ـ</u>				
AVG 100				a marine			Mr. M				
WA SB SC FC			. M. Mark					h h			
CORR	www	m	~					My	mark	mm	
CENTER 5.3000 GHz SPAN 100.0 MHz											
#RES BW 1.0 MHz					#VBW 3 MHz SWP 20.0 msec						

NORTHWEST										
EMC		EMISSIONS		EET		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	120 V, 60 Hz	Job Site:	EV06						
TEST SPECIFICATIONS										
Specification:	47 CFR 15.407(a)(2)	Year: Most Current	Method:	ANSI C63.4	Year:	1992				
SAMPLE CALCULATION	ONS									
	Peak Power Density (EIRP) = Peak Power Density + Maximum antenna gain (dBi)									
COMMENTS	<b>-</b>									
		(less the minimum cable loss) in t	his band is 12 dBi							
EUT OPERATING MOI										
	case data rate (lowest) at maximu	im output power.								
DEVIATIONS FROM TI None	EST STANDARD									
REQUIREMENTS										
	He band the neek newer encetral	density shall not exceed 11 dBm /	Mua The deFeete FIR	D requirement is 47	d Daw/Miller					
1 of the 5.25 to 5.55 of	nz band, the peak power spectral		MILE. The del acto Link	r requirement is in t						
RESULTS			Peak Power Density (E	IRP)						
Pass			4.36 dBm / MHz							
SIGNATURE										
Tested By:										
DESCRIPTION OF TES	ST									
Peak Power Spectral Density - High Channel - 5.25 to 5.35 GHz Band										

18:34:0: ///	1 AUG 26, 2	2002						MKR 5.31	.53 GHz		
REF 10.0 dBm AT 10 dB			0 dB				-7.64 dBm			No us	
SMPL											Me:
LOG 10											
dB/											
OFFST 22.0					pnWr~~	wrw					
dB											
AVG 100				and the second sec			Arrow Why				
WA SB SC FC								Ny Ny			
CORR	mm	m	~~~``					h	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	
CENTER 5.3	3200 GHz	1		1	1		1	SPAN 100	.0 MHz		
#RES BW 1.0 MHz					#VBW 3 MHz SWP 20.0 msec						