

Product	:	Notebook
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK)

Fundamental Filed Strength

Antenna	Frequency	Correction Factor	Reading Level	Emission Level	Detector
Pole	[MHz]	[dB/m]	[dBuV]	[dBuV/m]	
Horizontal	2480	68.95	101.106	101.106	Peak
Horizontal	2480	53.9	86.056	86.056	Average
Vertical	2480	68.47	99.882	99.882	Peak
Vertical	2480	53.69	85.102	85.102	Average

Note: 1:Spectrum Analyzer setting:

Peak detector: RBW=1MHz, VBW=1MHz

Average detector: RBW=1MHz, VBW=10Hz

Band Edge Test Data

Antenna Pole	Test Frequency (MHz)	Fundamental (dBuV/m)	Δ (dB)	Band Edge Field Strength (dBuV/m)	Limit (dBuV/m)	Detector
Horizontal	2485.1	101.106	42.81	58.296	74.000	Peak
Horizontal	2483.5	86.056	44.94	41.116	54.000	Average
Vertical	2485.1	99.882	42.81	57.072	74.000	Peak
Vertical	2483.5	85.102	44.94	40.162	54.000	Average

Note:

The Band Edge Field Strength was calculated using the Fundamental and Conducted Band Edge measurements per the Marker-Delta Method with the following formula:

Band Edge field Strength = F - Δ

F = Fundamental field Strength (Peak or Average)

 Δ = Conducted Band Edge Delta (Peak or Average)

RL RF	50 Ω AC	SENSE:INT	ALIGN AUTO	03:59:35 PM Jul 22, 2013	Frequency
enter Freq 2	.483500000 GHz IFGain:Low	Trig: Free Run #Atten: 30 dB	Avg Type: Log-Pwr	TRACE 1 2 3 4 5 6 TYPE MWWWWW DET P N N N N N	
	20.00 dBm		Mk	r3 2.485 1 GHz -37.54 dBm	Auto Tur
D. 0		1			Center Fro
00		Å			2.483500000 G
1.0					Otort Fr
1.0		3	<u>.</u>		Start Fr 2.433500000 G
.0	an a	eternite	unine many formation of the second	nergender Marthale and fight the descences	ot F
0.0					Stop Fr 2.533500000 G
enter 2.48350 Res BW 1.0 Mi		BW 1.0 MHz	#Sweep	Span 100.0 MHz 500 ms (1001 pts)	CF St
R MODE TRC SCL	×		JNCTION FUNCTION WIDTH		10.000000 N <u>Auto</u> N
1 N 1 f 2 N 1 f	2.480 0 GHz 2.483 5 GHz	5.27 dBm -39.91 dBm			
N 1 f	2.485 1 GHz	-37.54 dBm			Freq Offs 0
3					
3))					
1					
3			STATUS		

Peak Detector of conducted Band Edge Delta

Average Detector of conducted Band Edge Delta

	10								Analyzer - Sv		
Frequency	PM Jul 22, 2013 CE 1 2 3 4 5 6 PE MWWWWW	TRAC	ALIGNAUTO E: Log-Pwr	Avg Typ	NSE:INT	1	SHz	2 AC 500000 G			Cent
Auto Tur	3 5 GHz 21 dBm	2 2.483	Mkı		0 dB	#Atten: 3	Gain:Low		lef 20.00	S/div R	10 dE
Center Fre 2.483500000 GF						1					- og 10.0 0.00
Start Fre 2.433500000 G					2						20.0 30.0 40.0
Stop Fr 2.533500000 G				-						~	50.0 50.0 70.0
CF Ste 10.000000 M	00.0 MHz 1001 pts)		Sweep			10 Hz	#VBV		350 GHz 0 MHz	er 2.48: BW 1.0	
Auto M	DN VALUE	FUNCTIO	NCTION WIDTH	NCTION	Bm	- <u>9.27</u> d -54.21 d	0 1 GHz 3 5 GHz		f f		1
Freq Offs 0											3 4 5 6
											7 9 0
			STATUS				I				12 sg

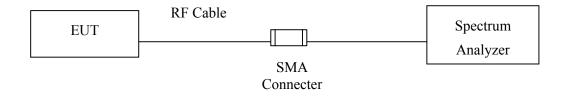
7. Channel Number

7.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2013
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2013
Х	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2013

Note: 1. All equipments are calibrated every one year.2. The test instruments marked by "X" are used to measure the final test results.

7.2. Test Setup



7.3. Limit

Frequency hopping systems operating in the 2400-2483.5 MHz bands shall use at least 75 hopping frequencies.

7.4. Test Procedure

The EUT was setup to ANSI C63.10, 2009; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

7.5. Uncertainty

N/A

7.6. Test Result of Channel Number

:	Notebook
:	Channel Number
:	No.3 OATS
:	Mode 1: Transmit - 1Mbps (GFSK)
	:

Frequency Range	Measurement	Required Limit	Result
(MHz)	(Hopping Channel)	(Hopping Channel)	Kesuit
$2402 \sim 2480$	79	>75	Pass

2402-2421MHz

2422-2441MHz

		ctrun		lyzer																			it Spectr																			
Cen		Fre		2.41) Gł	lz		<u>.</u> .		122 SIN		Avg T		Log-Pwr	111	TRACE 12 TRACE 12 TVPE MW DET 11 N	іжи, жилсі 2-3-4-5-6	Frequency		en	∟ iterFi	req		3150		GH	z			1 N 2 17		Avg 1		og-Pwr		TRA	PM 1022, 7 1 2 3 4 PF MWWW FT P N N 1	,9101 456	Fre	quency
			-				⊪G	aln:Lo	w	#At	g:Free ten:30	dB												-				⊪Ga	lin:Low	P	Trig:Fr #Atten:	30 dB	1									
10 di	3/di	, 1	Ref	20.0	0 dE	۶m										Mki	2 2.4	421 00 7.10 c					B/div	Ret	f 20.	.00 di	Bm									Mki	r2 2.		00 G 85 dE			Auto Tune
Log 10.0 0.00	ß	¹ √	V	V	Ŵ	ł	Ą	A	Δ	Α	Л	Λ	А	A	$\overline{\mathbb{A}}$		A	ΛΛ	Å	Center F 2.411500000	req SHz	.og 10.0 0.00	Å	N	h	N	N	N	N	Ŋ	Ŵ	\mathbb{V}	Л	A	V	\mathbb{V}^{1}	h	A	N	Â		enter Freq 500000 GHz
2010 3010 4010				_									_		_	-			_	Start F 2.401500000	req SHz	20.0 30.0 40.0						_							+		+					Start Freq
-50.0 -50.0 -70.0																				Stop F 2.421500000	req	500 600 700															_					Stop Freq
Star #Re								#\	VBW	100	kHz				5	weep		o 2.42150 ms (1001		2.000000	tep _{MHz}	tar Res	t 2.42 s BW	150 100	GHz kHz	:			#VI	BW	100 kH	Iz			S	weep			4150 G 1001 p		2	CF Step
1 2	Ν	1	f f					GHz			8.74 di 1.10 di		FUNC	TION	FUNC	TION WIDTH		FUNCTION VAL	LUE	Auto	- I	1	N 1 N 1	f				22 00 41 00			6.81 6.85	dBm dBm	PUN	TION	FUNCT	ION WIDTH	1	FUNCTI	IN VALUE		Auto	Man
3 4 6												-		_			-			FreqOf	sei	3 4 6	-	-					-			_					+				F	req Offset 0 Hz
6 7 8 9												+									t	6 7 8 9															t	_				
9 10 11 12			+						-			+		_			-		_			9 10 11 12	+	+	-				-			-					+			-		
MSG												_				STATU	8			1		80														STATU	18					

2442-2461MHz

2462-2480MHz

Agilent Spectrum Analyzer - Swept SA		Agilent Spectrum Analyzer - Swept SA										
NI RF SD R SBNSEdVT ALIGNAUTO 03/12/12 FM 3/122, 2013 Center Freq 2.451500000 GHz Avg Type: Log Pwr IMAGE 1/2/14 5 h	Frequency	M BF SD(2) AC SBISEDIT ALIGHAUTO 03H3H0TM 3422,2013 Frequency Center Freq 2.471500000 GHz Tric: Free Run Avg Type: Log-Pwr IRAC [12:3:4:5:6:6 Frequency										
If Could now # Attack 30 dB Let P NNNNN If Could now # Attack 30 dB Let P NNNNN												
10 dB/div Ref 20.00 dBm 6.56 dBm		Mkr2 2.480 00 GHz Auto Tun 10 dB/div Ref 20.00 dBm 6.96 dBm										
	Center Freq 2.451500000 GHz											
	Start Freq 2.441500000 GHz	3000										
	Stop Freq 2.461500000 GHz											
Start 2.44150 GHz Stop 2.46150 GHz #Res BW 100 kHz #VBW 100 kHz Sweep 2.47 ms (1001 pts)	CF Step 2.000000 MHz	Start 2.46150 GHz Stop 2.48150 GHz #Res BW 100 kHz #VBW 100 kHz Sweep 2.47 ms (1001 pts) 2.000000 MH										
CODE (CEDE (CED (CED	<u>Auto</u> Man	XXX Y TRACTOR UN TRACTOR WORLD Auto Mail 1 N 1 f 2.452.00 GHz 7.30 dBm Mail Mail										
N T Z.46100 GHZ b.00 dbm 3	Freq Offset 0 Hz	3 FreqOffse										
7 -		7 8 9 10										
11 12 12 17 17 17 17 17 17 17 17 17 17 17 17 17												

Product	:	Notebook
Test Item	:	Channel Number
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK)

Frequency Range (MHz)	Measurement (Hopping Channel)	Required Limit (Hopping Channel)	Result
$2402 \sim 2480$	79	>75	Pass

2402-2421MHz

2422-2441MHz

Agilent Spectrum Analyzer - Swept SA		Agilent Spectrum Analyzer - Swept SA	
VB RF SD R AC SENSE DVT ALIGNAUTO O1:00:08 FM 20/22, 201 Center Freq 2.411500000 GHz Avg Type: Log-Pwr IMA/S [1/21:45]	Frequency	M RF SDA AC SEVISED/IT ALDIVAUTO Onderter Mutu22,2019 Center Freq 2.431500000 GHz Tric: Free Run Avg Type: Leg-Pwr MAXE [2:14 h h	Frequency
Trig: Free Run Informations 20 dB		IF Coniect war #Atten: 30 dB	Auto Tune
Mkr2 2.421 00 GHz 10 dB/div Ref 20.00 dBm -0.10 dBr	41	Mkr2 2.441 00 GHz 10 dB/div Ref 20.00 dBm 3.47 dBm	Auto Tulle
	Center Freq 2.411500000 GHz		Center Freq 2431500000 GHz
งกก งจกก งกก	Start Freq 2.401500000 GHz	-0.0	Start Freq 2.421500000 GHz
	Stop Freq 2.421500000 GHz		Stop Freq 441500000 GHz
Start 2.40150 GHz Stop 2.42150 GHz #Res BW 100 kHz #VBW 100 kHz Sweep 2.47 ms (1001 pts	CF Step 2.000000 MHz	Start 2.42150 GHz Stop 2.44150 GHz #Res BW 100 kHz #VBW 100 kHz Sweep 2.47 ms (1001 pts)	CF Step 2.000000 MHz
COST MARKET DIE (22) X Y DEMANDING DEM	Auto Man	CEEL X Y HINKHEIM HINKHEIMMEILE HINKHEIMMEILE </td <td>to Man</td>	to Man
	Freq Offset		Freq Offset 0 Hz
8 9 10 11		9	
12 status	1]	12	

2442-2461MHz

2462-2480MHz

Agtient Spectrum Analyzer - Swept SA		Aglient Spectrum Analyzer - Swept SA	
Center Freq 2.451500000 GHz Avg Type: Log-Pwr The	I 2 3 4 5 6 Frequency		quency
Position Practice of the		Position Processing and the second se	
	00 GHz Auto Tune 17 dBm	e Mkr2 2.480 00 GHz Au 10 dB/div. Ref 20.00 dBm 3.90 dBm	uto Tune
	Center Freq 2.451500000 GHz	a ⁱⁿⁿ ⊖ ¹	enter Freq 00000 GHz
200	Start Freq 2.441500000 GHz		Start Freq 00000 GHz
400 400 	Stop Freq 2.461500000 GHz		Stop Freq 00000 GHz
Start 2.44150 GHz Stop 2.46 #Res BW 100 kHz #VBW 100 kHz Sweep 2.47 ms (*	150 GHz 001 pts) CF Step 2.000000 MHz	Start 2.46150 GHz Stop 2.48150 GHz #Res BW 100 kHz #VEW 100 kHz Sweep 2.47 ms (1001 pts)	CF Step
DDR MODE TASE X Y PUNCTION PUNCTION	Auto Man	MDF Model FACI Sci. Y RUNCTION RUNCTION WIGHT RUNCTION WIGHT RUNCTION NAULE Auto 1 N 1 f 2.462 00 GHz 1.76 dBm 1.76 dBm 1 7 2.480 00 GHz 3.80 dBm 1 1 1 1 7 2.480 00 GHz 3.80 dBm 1 1 1 1 1 1 3.80 dBm 1 1 1 1 1 1.80 dBm 1	Man
	Freq Offset	t 3 Fre	eq Offset 0 Hz
- <u>6</u> 7 -8		5 7 8	
9 10 11 12			
NSC STATUS		12 STATUS	

8. Channel Separation

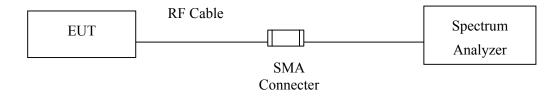
8.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2013
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2013
Х	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2013

Note: 1. All equipments are calibrated every one year.

2. The test instruments mark by "X" are used to measure the final test results.

8.2. Test Setup



8.3. Limit

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

8.4. Test Procedure

The EUT was setup to ANSI C63.10, 2009; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

8.5. Uncertainty

± 150Hz

8.6. Test Result of Channel Separation

Product	:	Notebook
Test Item	:	Channel Separation
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK)

	Fraguancy	Measurement	Limit	Limit of (2/3)*20dB	Result	
Channel No.	Frequency (MHz)	Level (kHz)	(kHz)	Bandwidth (kHz)		
		(KI1Z)				
00	2402	1000	>25 kHz	746.7	Pass	
39	2441	1000	>25 kHz	753.3	Pass	
78	2480	1000	>25 kHz	746.7	Pass	

NOTE: The 20dB Bandwidth is refer to section 10.

			U.	Tanner ou A					
Agilent Sp	ectrum	Analyzer - S	wept SA						
RL		RF 50	Ω AC	SENSE:		ALIGN AUTO	03:23:39 PM Jul:		
enter	Free	q 2.402	000000 GHz	Trig: Free Ru		Type: Log-Pwr	TRACE 1 2 TYPE MH	Inteleter	су
			IFGain:Low	#Atten: 30 dB				Auto	T
0 dB/di	v F	Ref 20.00	dBm			Mkr	2 2.403 00 6.64 c	GHZ	Tur
					2				
835				M	512			Center	
0.0								2.40200000	0 G
0.0						$\langle $			
0.0						1		Star	tFr
0.0						5		2.39700000	0 G
			Mar Haller			White .		1	
).0 	herrow	Marmontha	Myndulward No My Laute			-us dedu	Chrocas-Mary-Jard With	makel	
0.0						_			
0.0								2.40700000	0 G
enter	2.40	2000 GH	z				Span 10.00	MHz	
Res B	W 10	0 kHz	#VE	3W 100 kHz		#Sweep	500 ms (100	1 pts) CF 1.00000	
KR MODE	TRC	SCL	×	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VAL		M
1 N	1	f	2.402 00 GHz	7.59 dBm					
2 N 3	1	f	2.403 00 GHz	6.64 dBm					
1			0					Freq	
5	-								0
7									
3									
9	+	3							
1									
2									
з						STATUS			

Channel 00 2402MHz

Agilent Spectrum Analyzer - Swe	opt SA				
Center Freq 2.4410	AC	SENSE:INT	ALIGNAUTO Avg Type: Log-Pwr	03:32:09 PM Jul 22, 2013 TRACE 1 2 3 4 5 6 TYPE MWWWWW DET P NN N N	Frequency
10 dB/div Ref 20.00 c		watten. 30 dB	Mkr2	2 2.442 00 GHz 7.64 dBm	Auto Tun
-og 10.0 0.00 10.0			2		Center Fre 2.441000000 GH
20.0 30.0 40.0	and the same of the second the second		herman	4. /	Start Fre 2.436000000 GF
0.0 0.0 0.0				All How makes we have	Stop Fr 2.446000000 G
enter 2.441000 GHz Res BW 100 kHz Remodel TRe Scl	#VBW	100 kHz	#Sweep	Span 10.00 MHz 500 ms (1001 pts)	CF Ste 1.000000 M Auto M
1 N 1 f 2 N 1 f 3 - - - 4 - - - 5 - - - 6 - - - 7 - - - 9 - - - 1 - - -	2.441 00 GHz 2.442 00 GHz	7.64 dBm 7.64 dBm			Freq Offs 01
2 66			STATUS		

Channel 39 2441MHz

Channel 78 2480 MHz

Agilent Spectrum Analyzer - Swej					
X RL RF 50 Ω Center Freq 2.48000	AC 0000 GHz	SENSE:INT	ALIGNAUTO Avg Type: Log-Pwr	03:38:56 PM Jul 22, 2013 TRACE 1 2 3 4 5 6 TYPE MWWWWW	Frequency
10 dB/div Ref 20.00 d	IFGain:Low	#Atten: 30 dB	Mkr	1 2.479 00 GHz 7.60 dBm	Auto Tune
10.0 0.00 -10.0					Center Fre 2.480000000 G⊦
20.0	Security 4		Maryanna las		Start Fre 2.475000000 GH
50.0 (1997) (199				Browners and Bullery subpret	Stop Fre 2.485000000 GH
Center 2.480000 GHz Res BW 100 kHz	#VBW	100 kHz	#Sweep	Span 10.00 MHz 500 ms (1001 pts) FUNCTION VALUE	CF Ste 1.000000 MI <u>Auto</u> Mi
1 1 f 2 N 1 f 3 - - - 4 - - - 5 - - - 6 - - -	2.479 00 GHz 2.480 00 GHz	7.60 dBm 7.61 dBm			Freq Offs 01
7 8 9 9 10 11 11 11 11 11 11 11 11 11 11 11 11					
sg			STATUS	3	

Product	:	Notebook
Test Item	:	Channel Separation
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK)

	Frequency	Measurement	Limit	Limit of (2/3)*20dB		
Channel No.	(MHz)	Level (kHz)	(kHz)	Bandwidth (kHz)	Result	
		(KHZ)				
00	2402	1000	>25 kHz	946.7	Pass	
39	2441	1000	>25 kHz	946.7	Pass	
78	2480	1000	>25 kHz	940.0	Pass	

NOTE: The 20dB Bandwidth is refer to section 10.

Channel 00 2402MHz

Agilent Spectrum Analyzer - Swept	t SA					12	
Center Freq 2.40200	AC 0000 GHz	SENSE:IN		ALIGNAUTO	TRAC	M Jul 22, 2013	Frequency
	IFGain:Low	Trig: Free Run #Atten: 30 dB			DE		Auto Tuno
10 dB/div Ref 20.00 dE	3m			Mkr:	2 2.403 0.6	00 GHz 36 dBm	Auto Tune
10.0		1	2				Center Freq
-10.0		/ white	Vartice 1				2.402000000 GHz
-20.0							Start Fred
-40.0				hand			2.397000000 GHz
-50.0 -60.0	was the over the			/v		hannan	Stop Fred
-70.0							2.407000000 GHz
Center 2.402000 GHz #Res BW 100 kHz	#VBW	/ 100 kHz		#Sweep	Span 1 500 ms (*	0.00 MHz 1001 pts)	CF Step 1.000000 MHz
MKR MODE TRO SCL 1 N 1 f	× 2.402 00 GHz	ĭ 3.49 dBm	FUNCTION FUI	NCTION WIDTH	FUNCTIO	N VALUE	<u>Auto</u> Mar
2 N 1 f 3 4	2.403 00 GHz	0.66 dBm					Freq Offse
5							0 H:
7 8 9							
10 11 12							
MSG				STATUS			

RL RF	50 Ω AC	SENSE:INT	ALIGN AUTO	03:57:02 PM Jul 22, 2013	Francisco
enter Freq 2.44	1000000 GHz	Trig: Free Run #Atten: 30 dB	Avg Type: Log-Pwr	TRACE 1 2 3 4 5 6 TYPE M WWWWWW DET P N N N N N	Frequency
	00 dBm	WALLEN, SO UL	Mkr	2 2.442 00 GHz 3.91 dBm	Auto Tur
og 0.0 0.0		1	2		Center Fre 2.441000000 Gi
0.0	m				Start Fr 2.436000000 G
0.0 0.0	rent and a second s			and how more and	Stop Fr 2.446000000 G
enter 2.441000 C Res BW 100 kHz		W 100 kHz	#Sweep	Span 10.00 MHz 500 ms (1001 pts)	CF Sto 1.000000 M
KR MODE TRC SCL 1 N 1 f 2 N 1 f	× 2.441 00 GHz 2.442 00 GHz	3.88 dBm 3.91 dBm	UNCTION FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> M
3 4 5 6					Freq Offs 0
7 8 9 0					
2					

Channel 39 2441MHz

Channel 78 2480 MHz

RL RE 5	- Swept SA 50 Ω AC	SENSE:INT	ALIGN AUTO	04:04:50 PM Jul 22, 2013	
enter Freq 2.48		Trig: Free Run #Atten: 30 dB	Avg Type: Log-Pwr	TRACE 1 2 3 4 5 6 TYPE MWWWW DET P N N N N N	Frequency
0 dB/div Ref 20.0			Mkr	1 2.479 00 GHz 4.10 dBm	Auto Tun
og 10.0 0.00		1 2 manual 2			Center Fre 2.480000000 G⊦
	www		In the second se		Start Fre 2.475000000 GH
50.0				Harriston Brank Hardingson	Stop Fre 2.485000000 GR
enter 2.480000 Gl Res BW 100 kHz		SW 100 kHz		Span 10.00 MHz 500 ms (1001 pts)	CF Ste 1.000000 M
KR MODE TRC SCL 1 N 1 f 2 N 1 f	× 2.479 00 GHz 2.480 00 GHz	4.10 dBm 4.11 dBm	NCTION FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> M
3 4 5 6					Freq Offs 0
7 8 9 0					
2					

9. Dwell Time

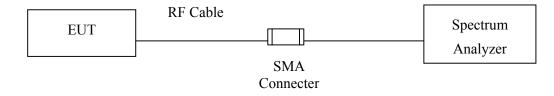
9.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2013
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2013
Х	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2013

Note: 1. All equipments are calibrated every one year.

2. The test instruments marked by "X" are used to measure the final test results.

9.2. Test Setup



9.3. Limit

The dwell time shall be the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 30 second period.

9.4. Test Procedure

The EUT was setup to ANSI C63.10, 2009; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

9.5. Uncertainty

± 25msec

9.6. Test Result of Dwell Time

Product	:	Notebook
Test Item	:	Dwell Time
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK) (Channel 00,39,78 –DH5)

Frequency (MHz)	Time slot length (ms)	Hopping of Number	Sweep time (ms)	Duty cycle	Dwell Time (Sec)	Limit (Sec)	Result
2402	2.880	13	50	0.75	0.300	0.4	Pass
2441	2.880	13	50	0.75	0.300	0.4	Pass
2480	2.880	13	50	0.75	0.300	0.4	Pass

Duty cycle =((Time slot length(ms)*Hopping of Number) / Sweep time (ms)

Dwell time = (Duty cycle / 79) * (79*0.4)

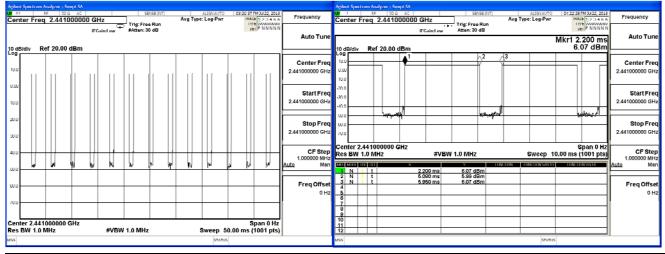
CH 00 Time Interval between hops

CH 00 Transmission Time

Agilent Spect																							Agile	ent Sp	ectrum																				
Center F			20 2.402			GH	z].	rig: Fr	SENSE			Avgl			AUTO Pwr	03:2	INACE	M Jul 22, 1 2 01 -	43.0	Frequency	и Сег	' nter	Fred		2.402			GH	z		Trig: Fre	ENSE:1		Avs	g Type	ALIGNAU Log-Pw		1	KALE 15	22, 2013	51	Frequency	,
10 dB/dlv	F	Ref	20.00) dBi		IF Ga	ánd a	~	**	Atten:	30 di	3							Der	PNN	NNN	Auto Tune	10 c	dB/di	v R	ef :	20.00) dB	3m	IFG.	aincl uw		Atten: 3	0 48					N	Akr1	2.42	0 ms dBm	al -	Auto T	une
		-	_										1 -			-1 -			1 1	_		Center Freq 2.402000000 GHz		u u					1 					Î	2	∂ ³						ľ	2	Center F 2.402000000	- 1
10.0																						Start Freq 2.402000000 GHz	-40.0	n n				wurke							الجار الإرجار							ليميا	2	Start F 2.402000000	
20.0 30.0																						Stop Freq 2.402000000 GHz	/0.1	U U																				Stop F 2.402000000	
40.0	t	Τļ	4	ň		4	┤	1	ļ		ţ		U	,Br		u,	┤	-	Ų	ţ	H	CF Step 1.000000 MHz Auto Man	Res	s BV		мн	iz	GH	×			BW 1	.0 MH		118	NOUN		Sweep			Spar s (100		i Aut	CF S 1.000000	Step MH: Mai
6010 2010																			_		_	Freq Offset 0 Hz	2 3 4	N N N						6.30	0 ms 0 ms 0 ms		5.72 6.63 5.72	dBm										Freq Of	ffse 0 H
Center 2	2.40	200	0000	GHz	z														Ŝ	pan Ö	Hz		7 8 9 10 11														+								
Res BW							#	VBW	1.0	D MH	lz				S	_	ер 50 ататиа).00 n		001			12 MSG	_			_	_	_	_		_				_		STA	ATUS		_	_	1		

CH39 Time Interval between hops

CH 39Transmission Time



CH 78 Time Interval between hops

CH 78 Transmission Time

Aglien	t Spect	rum Ar	alyzer	- Swe	pt SA											- T									Aglie	ant Sp	pectrur	i Anal	lyzer - Sv	rept S/	A															
Cen		req					Hz	: 1		L (Eree			4	lvg 1		Log-	Pwr		ICIE INS TR	ALIM MOT	1 2 3 4 1 2 3 4 9 1 1 2 3 4	5.6	Frequency	µ¤ Cer				2.4800			GHz		Trig		Bun	1	Avg 1		.og-Pwr		HISCISS TR T	NOT 12 VPT WW	0, 2010) 3 4 5 6	Frequen	cy
						P	Galir	Low		Trig #Att	en: 30	dB									DPT)	" N N N	NN	Auto Tune	_						_	FGaln:Lo		Atte	en: 30	dB					MIL		ост) ¹¹ N			Tune
10 de Log	Mdiv	Re	f 20.	00 d	Bm																				10 d Log	dB/d	div	Ref	20.00	dBn	n										IVIN		.28 c			
-																								Center Freq	10.0	Ĺ		4	(1_		_			^2		¢ ³		_			-	,	_	Cente	
10.0	٦٢	╡		٦٢		1	ħ		╡		٦٢		1 Г	ħ	Γ	٦			┢	٦٢	+	1	퀴	2.480000000 GHz	-10.0			1																	2.4900000	0 GHz
0.00		+	\vdash		_		Η		+				Ħ		+	1	+			╈	+			Start Freq	20.0			+		\parallel		+		-	+		+		+		+	+	+	-	Star	tFreq
-10.0	++-	+	+		_	╟	+	+	+	-	++	-	╫	+	+	+	+	╢	\parallel	╫	+		╢	2.480000000 GHz	30.0 40.0			Τ									n								2.48000000	0 GHz
-20.0		+	-				\parallel	-	+					+	+	-	-			++-	+		-1	Stop Freq	-50 r -60 r			14	white the	1					W	ΗØÝ	γI					Υ.	statil.		Stor	Freq
-30.0									_				1									11		2.480000000 GHz				+		-		+		_					-		+		-	_	2.48000000	
-40.0						11		ļ		ļ			ĮĮ.		ļ		ļ.			IJ		IJ.		CF Step	Cer	ntei	r 2.48	000	00000	GHz			(D14)	1.0	MU-					veep 1	10.00		Span (1001	0 Hz	CF	Step
	Ų			ų		J.		J	Ļ		μ		ų.		h	ļ	Ļ	A		, b.		ų.		1.000000 MHz Auto Man	1002	MOC	DE TRC		12	_	x			Y	_		FUNC	TION	_	ienwiac	_	_	000090		1.00000	0 MHz Man
-50.0																									2	N N		t			4	.910 ms .790 ms .660 ms		6	28 d 21 d 28 d	Bm Bm									<u> </u>	
-60.0																								Freq Offset 0 Hz	4	-		·					-		20 0	5111			-		+			-	Freq	Offset 0 Hz
-7N N																									6 7 8			+					\vdash			+					+			-	<u> </u>	
Cent	ar 2	4900	000	10.0	W7																Sn	an 0 I			9 10																					
Res					112			#VE	BW	1.0 /	٨Hz					s		-				001 p			11 12																					
MSG																		STATUS	5						MSC															STATU	15					

Note:

The dwell times of the packet type of DH1, DH3, and DH5 are tested. Only the worst case is shown on the report.

Product	:	Notebook
Test Item	:	Dwell Time
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK) (Channel 00,39,78 –DH5)

Frequency (MHz)	Time slot length (ms)	Hopping of Number	Sweep time (ms)	Duty cycle	Dwell Time (Sec)	Limit (Sec)	Result
2402	2.890	13	50	0.75	0.301	0.4	Pass
2441	2.890	13	50	0.75	0.301	0.4	Pass
2480	2.890	13	50	0.75	0.301	0.4	Pass

Duty cycle =((Time slot length(ms)*Hopping of Number) / Sweep time (ms)

Dwell time = (Duty cycle /79) * (79*0.4)

CH 00 Time Interval between hops

Addate SSC (1997) Addate SSC (Avg Type: Log-Pwr Frequency Avg Type: Log-Pw Frequency Center Freq 2.402000000 GHz TVPF GHZ (F) Trig: Free Run #Atten: 30 dB Trig: Free Ru Atten: 30 dB IFGaln:Lo Auto Tur Auto Tui Mkr1 1.860 m 3.77 dBn 10 dE Log Ref 20.00 dBm Ref 20.00 dBr $\langle \rangle^3$ _()² Center Free 402000000 GH Center Fre i d Start Free 2000000 GH: Start Fre 240 wayahi Stop Free 2.402000000 GH Stop Fred 2.40200000 GH: Span 0 Hz Sweep 10.00 ms (1001 pts) Center 2.402000000 GHz Res BW 1.0 MHz CF Step 1.000000 MHz Man #VBW 1.0 MHz CF Step 1.00 3.77 dBn 4.24 dBn 3.76 dBn 4.750 ms 6.610 ms Freq Offse Freq Offsel Span 0 Hz Sweep 50.00 ms (1001 pts) Center 2.402000 Res BW 1.0 MHz #VBW 1.0 MHz

CH39 Time Interval between hops

CH 39Transmission Time

CH 00 Transmission Time

Aglient Spectrum Analyzer - Swept SA		Aglient Spectrum Analyzer - Swept SA	
Bit L III NIO AC 12782-RNI AVENNAND TELEMATING 1222 Center Freq 2.441000000 GHz Trig:Free Run Avg Type: Log-Pwr MVR/122 Mitter C Trig:Free Run Bitter 30 dB RVF 1232	Frequency	04 L m 1910 x 0 01723-000000000000000000000000000000000000	Frequency
Trig:Free Run Trig:Fr	Auto Tune		Auto Tune
	Center Freq 2.441000000 GHz		Center Freq 2.441000000 GHz
100	Start Freq 2.441000000 GHz		Start Freq 2.441000000 GHz
	Stop Freq 2.441000000 GHz		Stop Freq 2.441000000 GHz
	CF Step 1.000000 MHz <u>Auto</u> Man	MKR MODE TRC SCL X Y FUNCTION WIDTH FUNCTION VALUE	CF Step 1.000000 MHz <u>uto</u> Man
40.0	Freq Offset 0 Hz	2 N 1 t 4.59 dBm 3 N 1 t 6.670 ms 4.16 dBm 4 4.16 dBm 4.16 dBm	Freq Offset 0 Hz
-mn		7 8 9 9 10	
Res BW 1.0 MHz #VBW 1.0 MHz Sweep 50.00 ms (1001	pts)	12 STATUS	

CH 78 Time Interval between hops

CH 78 Transmission Time

Aglient	Spects	rum Ani	alyzer	Swep	e sa											L.								Aglier	nt Spe	ctrum.	Analyz	ter - Sv	vept S/	A														
Cent				NI 0 000			Hz		.1			Run	1	A	и тур		sg-Pw		INGIN: T		N22, 20 2 3 4 5 NNNN	n:i	Frequency	Cer	L nter	Free		4800			SHz		Tris		Per an		Avg		.og-Pwr	114	TRAC TVP	M 602, 21	5.6	Frequency
10 dB		D -4	200	00 dE		IH	Galin:	Low	•	Trig: #Atte	en: 30	dB								DET	' NNNN	2.74	Auto Tune								+Galin:Lo		Att	en: 30	dB					Mki	r 1 1 .	770 m 4 dBi	is	Auto Tun
10 dB Log		,			,	~1 £		"1 <i>?</i> "	****	1.77		•و	••• ,		יז <i>ו</i> יי					,			Center Freq 2.49000000 GHz	10 d 10 n 10 n 10 n -10 n		/ R		•		n 				¢2		¢3					-		╊	Center Fre 2.480000000 GH
-10 O																						ľ	Start Freq 2.48000000 GHz	20.0 30.0 40.0			وطواله													_	ultani,		ſ	Start Fre 2.480000000 GH
-200-																						1	Stop Freq 2.49000000 GHz	-50 0 -60 0 -70 0				w						.44		y.				Ľ	Abiev	4		Stop Fre 2.480000000 GH
-40.0			4	ļ		l		ų		l			ļ		,			4		Í	L		CF Step 1.000000 MHz Auto Man	Res	BW MORE	2.480 / 1.0	MHz		GHz	x		VBW	_	(FUN	CTION	_	veep 1	_	ms ('	pan 0 H 1001 pt	:s)	CF Ste 1.000000 MH Luto Ma
-5110 -6110						Ţ																	Freq Offset 0 Hz	1 2 3 4 5 5	ZZZ	1				4.	.770 m: . <u>660 m</u> : .620 m:	3	4 4 4	.14 d .74 d .13 d	Bm Bm Bm									Freq Offse 0 H
-700 Cent				0 GH	iz			#VB	W 1	.0 N	AHZ					Sw	eep	50.0			an 0 H)01 pt:			7 8 9 10 11 12																				
MBG								_			_						STAI			,		1		мес															STATUS	s				

Note:

The dwell times of the packet type of DH1, DH3, and DH5 are tested. Only the worst case is shown on the report.

10. Occupied Bandwidth (20dB BW)

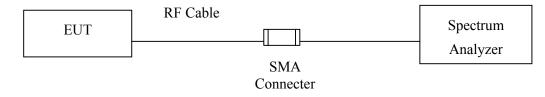
10.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2013
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2013
Х	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2013

Note: 1. All equipments are calibrated every one year.

2. The test instruments marked by "X" are used to measure the final test results.

10.2. Test Setup



10.3. Limits

N/A

10.4. Test Procedure

The EUT was setup to ANSI C63.10, 2009; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

10.5. Uncertainty

± 150Hz

10.6. Test Result of Occupied Bandwidth

Product	:	Notebook
Test Item	:	Occupied Bandwidth Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK)(2402MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
00	2402	1130		NA

Figure Channel 00:

		SENSE:INT	ALIGNAUTO	03:17:47 PM Jul 22, 2013	-
enter Freq 2.4020000	DO GHz IFGain:Low	Trig: Free Run #Atten: 30 dB	Avg Type: Log-Pwr	TRACE 1 2 3 4 5 6 TYPE MWWWWW DET P N N N N N	Frequency
dB/div Ref 20.00 dBm	1		Mkr2	2 2.401 43 GHz -14.67 dBm	Auto Tur
0.0		1			Center Fre
0.0				-14.19 dBm	2.402000000 Gi
D.0 D.0			4		Start Fr 2.397000000 G
 	no Andra		Monto	omment Mond	Stop Fr 2.407000000 G
enter 2.402000 GHz Res BW 100 kHz	#VBW	/ 100 kHz		Span 10.00 MHz I.27 ms (1001 pts)	CF Ste 1.000000 M
			UNCTION FUNCTION WIDTH		
IN 1 F 2	.401 99 GHz	5.81 dBm	ONCTION FONCTION WIDTH	FUNCTION VALUE	<u>Auto</u> M
Image Tricle Scl. X 1 N 1 f 2 2 N 1 f 2 3 N 1 f 2 4					FreqOffs
KR MODE TRC SCL X 1 N 1 f 2 2 N 1 f 2	.401 99 GHz .401 43 GHz	5.81 dBm -14.67 dBm			Auto Mi Freq Offs 0 F

Product	:	Notebook
Test Item	:	Occupied Bandwidth Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK)(2441MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
39	2441	1140		NA

Figure Channel 39:

RL RF 50 S		SENSE:INT	ALIGNAUTO Avg Type: Log-Pwr	03:24:45 PM Jul 22, 2013 TRACE 1 2 3 4 5 6	Frequency
enter Freq 2.4410	IFGain:Low	Trig: Free Run #Atten: 30 dB	Avg Type: Log-Pwr	TYPE MWWWWW DET P N N N N N	
dB/div Ref 20.00	dBm		Mkr	2 2.440 43 GHz -12.55 dBm	Auto Tur
9 g 0.0		1			Center Fr
.00		2			2.441000000 G
0.0				-12.05 dBm	
1.0					Start Fr
0.0			~		2.436000000 G
0.0	al marine		WWWWWWWWWWWWWWWW	ĵ	
monomenter	Mar		and Bergelow with	Mannansand	Stop Fr
1.0					2.446000000 G
enter 2.441000 GHz	pt 99			Span 10.00 MHz	
Res BW 100 kHz		V 100 kHz	Sweep	1.27 ms (1001 pts)	CF St 1.000000 M
R MODE TRC SCL	×		NCTION FUNCTION WIDTH	FUNCTION VALUE	Auto N
1 N 1 f	2.441 00 GHz 2.440 43 GHz	7.95 dBm -12.55 dBm			
3 N 1 f	2.441 57 GHz	-12.89 dBm			Freq Offs
5					0
			2		
3 9 0					

Product	:	Notebook
Test Item	:	Occupied Bandwidth Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK)(2480MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
78	2480	1130		NA

Figure Channel 78:

· · · · · · · ·	50 Ω AC	SENSE:INT	ALIGNAUTO Avg Type: Log-Pwr	03:33:32 PM Jul 22, 2013 TRACE 1 2 3 4 5 6	Frequency
enter Freq 2.48	IFGain:Low	☐ Trig: Free Run #Atten: 30 dB	Avg Type. Log-Pwr	TYPE MWWWWW DET P N N N N N	
0 dB/div Ref 20.	00 dBm		Mkr2	2 2.479 43 GHz -12.60 dBm	Auto Tur
og 10.0		1			Center Fre
0.00		2			2.480000000 GI
0.0				-12.14 dBm	
0.0					Start Fr
80.0			~		2.475000000 G
0.0	mel la aver		manage and the	/	
	and water was		March 6	mmmmmmmm	Stop Fr
0.0					2.485000000 G
		=5. 2			
enter 2.480000 G Res BW 100 kHz	5304-5305-750	V 100 kHz	Sweep 1	Span 10.00 MHz I.27 ms (1001 pts)	CF St
		Y I U	NCTION FUNCTION WIDTH		1.000000 M Auto M
KR MODE TRC SCL	×				
1 N 1 f	2.480 00 GHz	7.86 dBm			
1 N 1 f 2 N 1 f 3 N 1 f					Freq Offs
1 N 1 f 2 N 1 f 3 N 1 f 4 5	2.480 00 GHz 2.479 43 GHz	7.86 dBm -12.60 dBm			 Description
1 N 1 f 2 N 1 f 3 N 1 f 4 5 6 6 7	2.480 00 GHz 2.479 43 GHz	7.86 dBm -12.60 dBm			 Description
1 N 1 f 2 N 1 f 3 N 1 f 4	2.480 00 GHz 2.479 43 GHz	7.86 dBm -12.60 dBm			 Developing president for
1 N 1 f 2 N 1 f	2.480 00 GHz 2.479 43 GHz	7.86 dBm -12.60 dBm			Freq Offs 0

Product	:	Notebook
Test Item	:	Occupied Bandwidth Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK) (2402MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
00	2402	1452		NA

Figure Channel 00:

L RF 50 Ω AC enter Freq 2.40200000	0 GHz		ALIGNAUTO Avg Type: Log-Pwr Avg Hold>100/100	06:36:43 PM Jul 24, 20: TRACE 1 2 3 4 5	6 Frequency
dB/div Ref 10.00 dBm	IFGain:Low Atter	rree Run A I: 20 dB		2.402 002 GH 2.482 dBr	z Auto Tun
.00	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	1 And	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		Center Fre 2.402000000 GF
			-20.0 1.452	×	Start Fro 2.401000000 G
				/	2.403000000 G
.0					CF Sto 200.000 k Auto M
1.0					Freq Offs
enter 2.402000 GHz Res BW 30 kHz	#VBW 300 k			Span 2.000 MH 2.07 ms (1001 pts	

Product	:	Notebook
Test Item	:	Occupied Bandwidth Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK) (2441MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
39	2442	1443		NA

Figure Channel 39:

L RF 50 Ω AC enter Freq 2.441000000 G	iHz	ALIGNAUTO Avg Type: Log-Pwr Avg Hold>100/100	06:37:43 PM Jul 24, 2013 TRACE 1 2 3 4 5 6	Frequency
	NO: Wide C FGain:Low Atten: 20 dB		2.440 992 GHz 3.283 dBm	
		time		Center Fre 2.441000000 GI
		-20.0		Start Fr 2.440000000 G
			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	<b>Stop Fr</b> 2.442000000 G
1.0				CF Sto 200.000 k <u>Auto</u> M
.0				Freq Offs 0
0.0				
enter 2.441000 GHz Res BW 30 kHz	#VBW 300 kHz	Sweep	Span 2.000 MHz 2.07 ms (1001 pts)	

Product	:	Notebook
Test Item	:	Occupied Bandwidth Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit - 3Mbps (8DPSK)(2480MHz)

Channel No. Frequency (MHz)		Measurement Level Required Limit (kHz) (kHz)		Result	
78	2480	1452		NA	

#### Figure Channel 78:

			SE	NSE:INT		ALIGNAUTO : Log-Pwr		M Jul 24, 2013	Frequency
enter Fred	2.480000	PNO: Wide IFGain:Lov		∍Run A		>100/100	TYP	E MWWWWW T P N N N N N	
10 dB/div Ref 10.00 dBm					Mkr1 2.480 164 GHz 3.399 dBm				Auto Tui
									Center Fre
0.00		~~~~		how	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	m			2.480000000 Gł
10.0						-20.0	0 dB		Start Fro
20.0	~					1.452	MHz 🏹	7	2.479000000 G
10.0								h-	Stop Fr
40.0								<u>〜</u>	2.481000000 G
0.0									CF Ste
0.0									200.000 k
0.0									<u>Auto</u> M
0.0									Freq Offs
0.0									0
lan a									
enter 2.480 Res BW 30		#V	BW 300 kHz			Sween	Span 2. 2.07 ms (	000 MHz	
sg						STATUS		1001 pto,	

# 11. EMI Reduction Method During Compliance Testing

No modification was made during testing.