## 7. Channel Number

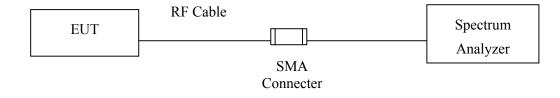
#### 7.1. Test Equipment

_	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2012
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2012
Х	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2012

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

Product	:	Mobile Computer
Test Item	:	Channel Number
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK)

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

#### 2402-2421MHz

#### 2422-2441MHz

Aglient Spectrum Analyzer - Swept SA			Agilent Spectrum Analyzer - Swept SA	
00 RL	11010241744 (er 11, 2011) 110417 (123456 1797 (N <del>NNNNN</del> 1777 (* NNNNN	Frequency	But RL     III     NIO     A     INIO     A     INIO     INIO<	Frequency
IFGalmLow #Atten: 30 dB Mkr2	2.421 00 GHz	Auto Tune	e Mkr2 2.441 00 GHz	Auto Tune
10 dB/dlv Ref 20.00 dBm	-7.60 dBm	Center Freq		Center Freq
	www	2.411500000 GHz Start Freq		2.431500000 GHz Start Freg
200		2.401500000 GHz		2.421500000 GHz
		Stop Freq 2.421500000 GHz	q	Stop Freq 2.441500000 GHz
#Res BW 100 kHz #VBW 100 kHz Sweep 2.	Stop 2.42150 GHz .47 ms (1001 pts)	2.000000 MHz		CF Step 2.000000 MHz
DBR MODEL     EXEMPT     Y     FARMENT       1     N     1     F     2.402.00 GHz     -9.43.4 BHz       2     N     1     F     2.402.00 GHz     -7.60 dBm       3     -     -     -7.50 dBm     -	FUNCTION VALUE	<u>Auto</u> Man	1 N 1 f 2.422 00 GHz -7.70 dBm 2 N 1 f 2.441 00 GHz -7.54 dBm	l <u>uto</u> Man
4 6 6		Freq Offset 0 Hz		Freq Offset 0 Hz
7 8 9 10			7 8 9 10	
11 12 14 start as 6 6 14 0 DepletoptionAu.	a : «)d		11 12 1 distant as A d ≥ 0 Trightsponenku 0 2 d da	

#### 2442-2461MHz

#### 2462-2480MHz

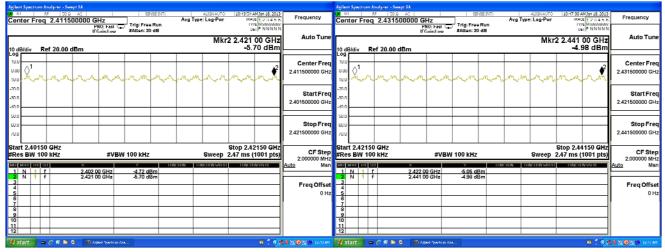
Agilant Spectrum Analyzer - Swept SA			Agilant Spectrum Analyzer - Swept SA
Center Freq 2.451500000 GHz	ALISNAUTO 10:14:57 AM3an 18, 2013 Avg Type: Log-Pwr IRAC: 12:0145 h 1715 Monowawa	Frequency	OD     HI     RF     D0.2     AC     SENSEDIT     ALIGNAUTO     LD128HG ANDo 18, 2013     Frequence       Center Freq     2.4715000000 GHz     Tric: Free Run     Avg Type: Log-Pwr     INVLC [1/214:5:6     Frequence
Trig: Free Run FRO: Last	Mkr2 2.461 00 GHz -8.21 dBm	Auto Tune	If Gainel wy #Attan: 30 dB Uei  P NNNN
		Center Freq 2.451500000 GHz	
	V V V V V V V V V	Start Freq 2.441500000 GHz	con
000		Stop Freq 2.461500000 GHz	
Start 2.44150 GHz #Res BW 100 kHz #VBW 100 kHz	Stop 2.45150 GHz Sweep 2.47 ms (1001 pts)	2.000000 MHz	#100 Bir 100 kii2 #100 kii2 Gircep 2.47 iii3 (100 pts) 2.000000
1 N 1 F 2442 00 GHz -7.54 dBm N F 2.461 00 GHz -2.21 dBm 4 5 6 7		Auto Man Freq Offset 0 Hz	1     1     f     2.452.00 GHz     -7.51 dBm
	n 1 4 1	S S S S W WOLLAN	10 11 12 12 12 12 12 12 12 12 12 12 12 12

Product	:	Mobile Computer
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



#### 2442-2461MHz

#### 2462-2480MHz

Aglient Spectrum Analyze RL III Center Freq 2.4	N10 //		Avg Type: Log-Pwr	TRACE AN Let 11, 2000 TRACE 1, 2, 3, 4, 5, 0 TVPF M	Frequency	UN RI	L		500000 GH	Z ):Fact (p.) In:Low	Trig: Free Rur #Atten: 30 dB	Ava	ATCNAUTO Type: Log-Pwr	TRACT AN LADUCATION TRACT 123450 TVFF M	Frequency
10 dB/dlv Ref 20	0.00 dBm			2 2.461 00 GHz -6.43 dBm		10 di	Bidly R	ef 20.00			FRACE OF B		Mk	r2 2.480 00 GHz -5.04 dBm	Auto Tune
	Marana		المعرب المراجع المراجع المراجع	2 11.11.11.1.1	Center Freq 2.451500000 GHz	10.0		, m., m	man	m.,	m_m_m	mana	minin	m m h	Center Freq 2.471500000 GHz
20.0					Start Freq 2.441500000 GHz	30.0 40.0								- ton	Start Free 2.461500000 GHz
-50 0 -50 0 -70 0					Stop Freq 2.461500000 GHz										Stop Free 2.481500000 GH
Start 2.44150 GH #Res BW 100 kHz		VBW 100 kHz		Stop 2.46150 GHz 2.47 ms (1001 pts)	CF Step 2.000000 MHz Auto Man	#Re	t 2.4615 s BW 10	0 kHz	*	#VBW	100 kHz	FUNCTION	Sweep	Stop 2.48150 GHz 2.47 ms (1001 pts)	CF Ster 2.000000 MH Auto Ma
1 N 1 f 2 N 1 f 3 4 5 6	2.442 00 GH 2.461 00 GH				Freq Offset 0 Hz	1		f	2,462 00 2,480 00		-4.96 dBm -5.04 dBm				Freq Offse
7 8 9 10 11						7 8 9 10 11 12									
start 🔰 🖬 🌈 🤇	S 🛤 🔕 🛛 👔 Aylortayo	dran Ana				- 12 - 14	tart a	600	0 Black	L Spectrum Ana					 k Q I Q I Q II (A 10.557

## 8. Channel Separation

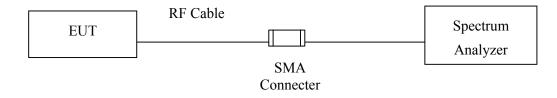
#### 8.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2012
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2012
Х	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2012

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

Channel No.	Fraguanau	Measurement	Limit	Limit of (2/3)*20dB		
	Frequency (MHz)	Level	(kHz)	Bandwidth (kHz)	Result	
	(WITIZ)	(kHz)	(KIIZ)	Dandwiddii (KHZ)		
00	2402	1000	>25 kHz	746.7	Pass	
39	2441	1000	>25 kHz	746.7	Pass	
78	2480	1000	>25 kHz	746.7	Pass	

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

RL RF 50 Ω AC		SENSE:INT	ALIGN AUTO	09:50:43 AM Jan 18, 2013	
enter Freq 2.4020000	PNO: Far C 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			Mkr	2 2.403 00 GHz -2.30 dBm	Auto Tur
20			2		Center Fro 2.402000000 Gi
0.0					<b>Start Fr</b> 2.397000000 G
0.0				The way was a	<b>Stop Fr</b> 2.407000000 G
enter 2.402000 GHz Res BW 100 kHz	#VBW	100 kHz	#Sweep	Span 10.00 MHz 500 ms (1001 pts)	CF Sto 1.000000 M
	402 00 GHz 403 00 GHz	-2.57 dBm -2.30 dBm	UNCTION FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> M
3 · · · · · · · · · · · · · · · · · · ·					Freq Offs 0
7 3 9 1 2					

#### Channel 00 2402MHz

		Channel 37			
gilent Spectrum Analy	zer - Swept SA				
RL RF	50 Ω AC	SENSE:INT	ALIGN AUTO	09:56:59 AM Jan 18, 2013	-
enter Freq 2.	441000000 GHz PNO: Far IFGain:Lov	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
	0.00 dBm		Mkr	2 2.442 00 GHz -2.22 dBm	Auto Tu
<b>0.0</b>					Center Fr
00			2		2.441000000 0
1.0			1		
.0					Start Fi 2.436000000 0
.0	and	$\sim$	hon m		2.40000000
.0	warmen war			w with the with	Stop F
.0					2.446000000
enter 2.441000		'BW 100 kHz	#Sween	Span 10.00 MHz 500 ms (1001 pts)	CF S
r mode troj sol	×		UNCTION FUNCTION WIDTH		1.000000 I Auto
N 1 f	2.441 00 GHz 2.442 00 GHz	-2.14 dBm -2.22 dBm			
					Freq Off
					C
start 🛛 🛋 🌈	🧭 😂 🧿 🏢 Agilent Spectr				🔇 🔎 💽 🎦 🛄 9:56

#### Channel 39 2441MHz

## Channel 78 2480 MHz

Agilent Spectrum Analyzer - Swep					
M RL RF 50 Ω Center Freq 2.48000		SENSE:INT	ALIGN AUT Avg Type: Log-Pw	r TRACE 1 2 3 4 5	Frequency
	PNO: Far Ģ IFGain:Low	┘ Trig: Free Run #Atten: 30 dB	MI	TYPE MWWWW DET P NNNN	Auto Tune
10 dB/div Ref 20.00 dB	3m			-3.01 dBm	Center Free
-10.0					2.480000000 GH
-20.0					Start Fre 2.475000000 GH
50.0 60.0				her and we have	Stop Fre
-70.0 Center 2.480000 GHz				Span 10.00 MH	
	#VBW	100 kHz Y 50 -3.01 dBm	#Swee	p 500 ms (1001 pts	1.000000 M⊢ Auto Ma
2 N 1 f 3 4 5 6	2.480 00 GHz	-2.15 dBm			Freq Offse
7 8 9 10 11					
12 🛛 🕹 🖓 🖬 🖓 🖬 🖓	Agilent Spectrum An			Q 7 <	🗙 🕸 🏳 🥑 🏳 🍓 10:05 AP

Product	:	Mobile Computer
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.	Frequency (MHz)	Level	(kHz)	Bandwidth (kHz)	Result
	(WIIIZ)	(kHz)	(KIIZ)	Dandwidth (KHZ)	
00	2402	1000	>25 kHz	940.0	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

RL RF 50Ω AC		SENSE:INT	ALIGN AUTO	10:26:10 AM Jan 18, 2013	-
enter Freq 2.4020000	DO GHz PNO: Far G 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			Mkr	2 2.403 00 GHz -5.21 dBm	Auto Tur
9 .0 .0 .0		1	2		Center Fr 2.402000000 GI
.0	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		han		<b>Start Fr</b> 2.397000000 G
.0 .0 <del>26/2014 - 100 28/2014 - 2017 - 2017</del>	Summer wand			and the second	<b>Stop Fr</b> 2.407000000 G
enter 2.402000 GHz tes BW 100 kHz R MODE TRE SCL		100 kHz	#Sweep	Span 10.00 MHz 500 ms (1001 pts) concion value	CF Ste 1.000000 M Auto M
N 1 f 2	.402 00 GHz .403 00 GHz	-4.90 dBm -5.21 dBm			Freq Offs 0

jilent Spectrum Analyzer - Swep	ot SA				
RL RF 50 Ω	AC	SENSE:INT	ALIGN AUTO	10:32:00 AM Jan 18, 2013	<b>F</b>
enter Freq 2.44100	0000 GHz PNO: Far G IFGain:Low	Trig: Free Run #Atten: 30 dB	Avg Type: Log-Pwr	TRACE 123456 TYPE MWWWWWW DET PNNNNN	Frequency
) dB/div Ref 20.00 dl	Bm		Mkr	2 2.442 00 GHz -5.38 dBm	Auto Tu
<b>9</b> g					Center Fr
			2		
00		- mar	Arte		2.441000000
.0					Start Fi
0.0				2	2.436000000
0.0	1	and a second sec			2.430000000
10			When	why me	
and the second second	was made bud			Were Were	Stop F
					2.446000000 0
1.0					2.4460000000
enter 2.441000 GHz	05	0.0		Span 10.00 MHz	
Res BW 100 kHz	#VB	V 100 kHz	#Sweep	500 ms (1001 pts)	CF St 1.000000 M
R MODE TRC SCL	×		UNCTION FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> N
N 1 f N 1 f	2.441 00 GHz 2.442 00 GHz	-5.01 dBm -5.38 dBm			
	2.442 00 0112	-0.00 dbiii			Erog Off
1					Freq Off
5					C
7					
3					
9					
1					
2					

#### Channel 39 2441MHz

Channel 78 2480 MHz

IQ AC	SENSE:INT	ALIGN AUTO	10:40:06 AM Jan 18, 2013					
000000 GHz PNO: Far C IFGain:Low	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				
) dBm								
	1 2			Center Fre 2.480000000 GF				
m		1 mm		<b>Start Fr</b> 2.475000000 G				
nd Parton			and to wanter and	<b>Stop Fr</b> 2.485000000 G				
				CF St 1.000000 M				
2.479 00 GHz	-5.54 dBm	INCTION FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> N				
				Freq Offs 0				
	2 #VB	2.479 00 GHz PN0: Far PN0: Far Trig: Free Run #Atten: 30 dB Trig: Free Run #Atten: 40 dB Trig: 50 dB	Avg Type: Log-Pwr PN0: Far Trig: Free Run IFGain:Low #Atten: 30 dB Mkr 0 dBm 1 2 #VBW 100 kHz #Sweep	000000 GHz Trig: Free Run Avg Type: Log-Pwr TRACE 12.34 5.5   PN0: Far Trig: Free Run Mkr1 2.479 00 GHz TRACE 12.34 5.5   O dBm Mkr1 2.479 00 GHz -5.54 dBm				

#### 9. Dwell Time

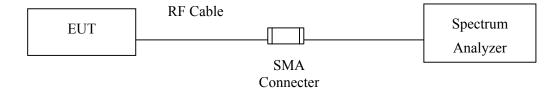
#### 9.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2012
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2012
Х	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2012

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	:	Mobile Computer
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	2.900	13	50	0.75	0.302	0.4	Pass
2441	2.900	13	50	0.75	0.302	0.4	Pass
2480	2.900	13	50	0.75	0.302	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

#### Center Freq 2.402000000 GHz enter Freq 2.4020 Avg Type: Log-Pwr Frequency Avg Type: Log-Pwr Frequency GHz PNO: F Trig:Free Run #Atten:30 dB (,) #Atten: 30 d Auto Tun Auto Tur Mkr3 4.750 ms -2.73 dBm Ref 20.00 dBm Ref 20.00 de 10 dE Log Center Freq 2.402000000 GHz Center Fre 2.402000000 GH Start Free 2000000 GH Start Fre Stop Free Stop Fre enter 2.4020000 s BW 1.0 MHz Span 0 Hz Sweep 10.00 ms (1001 pts CF Step 1.000000 MU-#VBW 1.0 MHz CF Step M -2.73 dBm -2.54 dBm -2.73 dBm 1 2 1.000 m 3.900 m 4.760 m N Freq Offse 0 H Freq Offse r 2.40200 Span 0 Hz Sweep 50.00 ms (1001 pts) #VBW 1.0 MHz Res BW 1.0 MHz a / d a o 0100

#### CH39 Time Interval between hops

#### CH 39Transmission Time

CH 00 Transmission Time

		ipectrum																										lyzer Sw															
		er Fre					in G	Hz		, I.,			i siNi   Nun		Avg Ty	pe: Lo		r	IN:54ж Т		ei 111, 211 2 3 4 5 NNNN	6	Frequency	Ce				2.4410		n Gi	Hz 10:Fast (	Ι.		NA IN		Avş		Log-Pwr	/  II	INSECIA AL TRACI TVP		45.6	Frequency
L							E IN	NO: Fa Galin:L	Low		Atten:	30 d	IB							DET 0	NNNN	Ň	Auda Tum							IFG	ill: Faed ( Salin: Low	<u>ار ا</u>	Atten: 3	0 dB								_	Auto Tomo
		điv	Ref	20.0	IÔ de	Bm																	Auto Tune	10 Loj	dB/c	div F	Ref	20.00	dBm										Mł	kr3 6. -2.0	550 05 di	ms Bm	Auto Tune
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## CH 78 Time Interval between hops

CH 78 Transmission Time

Apilant Spectrum Analyzer - Swept SA				Agilant Spectrum Analyzer - Swept SA	
Center Freq 2.480000000 GHz	Avg Type:   og-Pwr	10:03:00 AMJan 18, 2013 INACE 1 2:114 5 A	Frequency		quency
PNC: Fast Trig: Free RL PNC: Fast Trig: Free RL If Coincil www #Atten: 30 dB		UET P NNNN	Auto Tune	re Mkr3 6.940 ms A	luto Tune
10 dB/div Ref 20.00 dBm			Center Freq 2.480000000 GHz		enter Freq 100000 GHz
			Start Freq 2.480000000 GHz		Start Fred 100000 GHz
200			Stop Freq 2.480000000 GHz	H2 7/U	<b>Stop Fre</b> 100000 GH
		, , ,	CF Step 1.000000 MHz Auto Man	Hz hos by to mile weby to mile by to mile (100 pts) 1.00	CF Ste 00000 MH Ma
			Freq Offset 0 Hz	2 N 1 t 6.090 ms -2.23 dBm et 3 N 1 t 6.940 ms -2.05 dBm Fr.	req Offse 0 H
70.0 Center 2.480000000 GHz		Span û Hz		0 7 9 9 10 11	
Res BW 1.0 MHz #VBW 1.0 MHz	Sweep 50	0.00 ms (1001 pts)			<b>IO</b> marke

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	:	Mobile Computer
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	2.900	13	50	0.75	0.302	0.4	Pass
2480	2.910	13	50	0.76	0.303	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 Center Freq 2.40200000 GHz Nito Freq 1.40200000 GHz Nito Freq #44000000 GHz Besinctew Avg Type: Log-Pwr Frequency Avg Type: Log-Pw Frequency Center Freq 2.402000000 GHz nd (p) Trig: Free Auto Tur Auto Tur Mkr3 6.500 m -4.81 dBr 10 di Log Ref 20.00 dBm 20.00 Center Free 402000000 GH Center Fre Start Free 2000000 GH Start Fre Stop Free 2.402000000 GH Stop Fred 2.40200000 GH: Span 0 Hz Sweep 10.00 ms (1001 pts Center 2.402000000 GH; Res BW 1.0 MHz CF Step 1.000000 MHz Man #VBW 1.0 MHz CF Step 1.00 5.640 mi 6.600 mi -4.91 dBn -4.91 dBn Freq Offse Freq Offse OН Span 0 Hz Sweep 50.00 ms (1001 pts) #VBW 1.0 MHz 0:0000

#### CH39 Time Interval between hops

#### CH 39Transmission Time

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#### CH 78 Time Interval between hops

CH 78 Transmission Time

Agtion				n Swo						1				. 1							-	Agtion				ter - Swe														
Cen		req				0 GI	Hz	∣ sa( <sub>P</sub> :) sw	I Tri		Run		Avg	Туре		-Pwr	lus	TRAC	M Let 11 7 1 2 3 7 W <del>WA</del>	156	Frequency				2.	48000		in Ch	lz D: Fart	ان	Trig: Fre	e Run	Avg		.og-Pwr	) 1115	TRACE	lan 111, 21101 1 2 3 4 5 6 Water Market	Frequ	ency
10 de Log	3/div	Re	ef 20	).00 d	IBm	IFG	ialn:Lo	ow	#An	ten: 3	₿							ne	TINN	INNN	Auto Tune			/ R	er 2	0.00 d	iBm	⊪G	ain:Low		#Atten: 3	0 dB					3 4.0	80 ms 2 dBm	Au	to Tune
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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

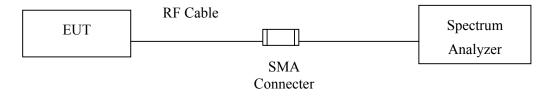
#### 10.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2012
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2012
Х	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2012

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	:	Mobile Computer
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	1150		NA

## Figure Channel 00:

encountering from contraction to the	6 AM Jan 18, 2013	09:44:36 A	ALIGN AUTO		VSE:INT	SEI		50 Ω AC	R	L
Frequency	ACE 123456 TYPE MWWWWW DET PNNNNN	TRAC	: Log-Pwr	Avg Type	Run	1	GHz PNO: Far IFGain:Low	2.402000000		
Auto Tur	1 41 GHz 3.03 dBm		Mkr					f 20.00 dBm	Re	B/div
Center Fre 2.402000000 GH					1					
<b>Start Fr</b> 2.397000000 Gi	22.32 dBm				3	¢2				
<b>Stop Fr</b> 2.407000000 G	h	m	Jonwan	Journal				man	Anna	h
CF Sto 1.000000 M	10.00 MHz (1001 pts)		Sweep	1		100 kHz	#VBW	00 GHz kHz	2.4020 N 100	
Auto M	TION VALUE	FUNCTIO	NCTION WIDTH	CTION FU	3m	-2.32 di -23.03 di	1 99 GHz 1 41 GHz	2.40	TRC SC 1 f 1 f	NODE N N
Freq Offs 0					3m	-23.14 dE	12 56 GHz	2.40	1 f	N

Product	:	Mobile Computer
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 Ω	AC CLL-	SENSE:INT	ALIGNAUTO Avg Type: Log-Pwr	09:51:38 AM Jan 18, 2013 TRACE 1 2 3 4 5 6	Frequency
enter Freq 2.44100	PNO: Far G IFGain:Low	Trig: Free Run #Atten: 30 dB	Avg Type. Log-t wi	TYPE MWWWWW DET P N N N N N	
) dB/div Ref 20.00 d	Bm		Mkr	2 2.440 42 GHz -22.00 dBm	Auto Tu
<b>99</b> 0.0					Center Fr
00		h			2.441000000 G
.0				-21.91 dBm	Otort Fr
.0					Start Fr 2.436000000 G
.0	man			my my my ym	
.0					Stop Fr 2.446000000 G
enter 2.441000 GHz				Span 10.00 MHz	
Res BW 100 kHz	#VBV	/ 100 kHz	Sweep	1.27 ms (1001 pts)	CF St 1.000000 N
R MODE TRC SCL	× 2.440 99 GHz	-1.91 dBm	NCTION FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> N
2 N 1 f 3 N 1 f 4	2.440 42 GHz 2.441 56 GHz	-22.00 dBm -22.58 dBm			Freq Off:
					0
7 3 9					
2 2 1					
2					

Product	:	Mobile Computer
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	1150		NA

## Figure Channel 78:

RL RF 50 Ω	AC	SENSE:INT	ALIGN AUTO	09:58:54 AM Jan 18, 2013	-
enter Freq 2.48000	10000 GHz PNO: Far G 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 d	Bm		Mkr	2 2.479 41 GHz -22.54 dBm	Auto Tur
9		1			Center Fr 2.480000000 G
.0		¢2 03		-21.94 dBm	
1.0 1.0					<b>Start Fr</b> 2.475000000 G
.0	and have been a second		and have	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Stop Fr
enter 2.480000 GHz				Span 10.00 MHz	2.485000000 G
tes BW 100 kHz		V 100 kHz		1.27 ms (1001 pts)	CF St 1.000000 M
R MODE TRE SCL N 1 f N 1 f	× 2.479 99 GHz 2.479 41 GHz	-1.94 dBm -22.54 dBm	JNCTION FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> N
3 N 1 f 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	2.480 56 GHz	-22.69 dBm			Freq Offs 0
7 3 9					
2 1					

Product	:	Mobile Computer
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	1390		NA

## Figure Channel 00:

RL RF 50 Ω	AC	SENSE:INT	ALIGNAUTO Avg Type: Log-Pwr	10:19:55 AM Jan 18, 2013 TRACE 1 2 3 4 5 6	Frequency
enter Freq 2.40200	DUUUU GHZ PNO: Far G IFGain:Low	☐ Trig: Free Run #Atten: 30 dB	Avg Type: Log-Pwr		
dB/div Ref 20.00 d	Bm		Mkr	2 2.401 29 GHz -25.22 dBm	Auto Tur
<b>9</b> 0.0		. 1			Center Fre
00		2m			2.402000000 G
.0		<b>♦</b> <sup>2</sup>	3	-24.58 dBm	Start Fr
0.0	771				2.397000000 G
0	monten		· Lawrence	a month	04a m En
).0 ).0					<b>Stop Fr</b> 2.407000000 G
enter 2.402000 GHz Res BW 100 kHz	#VB	V 100 kHz	Sween	Span 10.00 MHz 1.27 ms (1001 pts)	CF St
R MODE TRC SCL	×		UNCTION FUNCTION WIDTH		1.000000 M <u>Auto</u> N
N 1 f N 1 f	2.401 82 GHz 2.401 29 GHz	-4.58 dBm -25.22 dBm			
3 N 1 f	2.402 68 GHz	-24.98 dBm			Freq Offs 0
3					
3 9 0					

Product	:	Mobile Computer
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	2441	1390		NA

## Figure Channel 39:

RL RF 50 9		SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr	10:27:04 AM Jan 18, 2013 TRACE 1 2 3 4 5 6	Frequency
enter Freq 2.4410	PNO: Far G IFGain:Low	Trig: Free Run #Atten: 30 dB	Avg Type. Log-t wi	TYPE MWWWWW DET P N N N N N	
dB/div Ref 20.00	dBm		Mkr	2 2.440 29 GHz -25.22 dBm	Auto Tui
9 0.0					Center Fr
.0		1			2.441000000 G
1.0			3	-24.77 dBm	Start Fr
1.0					2.436000000 G
1.0	- Martine Art		harrow	- manne	
1.0 <u>Market and and and and and and and and and and</u>					Stop Fr 2.446000000 G
enter 2.441000 GHz				Span 10.00 MHz	05.04
tes BW 100 kHz		/ 100 kHz		1.27 ms (1001 pts)	CF St 1.000000 N
R MODE TRC SCL	× 2.440 99 GHz	-4.77 dBm	NCTION FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> N
N 1 f N 1 f	2.440 29 GHz 2.441 68 GHz	-25.22 dBm -25.35 dBm			Freq Offs
3					0
7					

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

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
78	2480	1390		NA

## Figure Channel 78:

i <mark>lent Spectrum Analyzer - Swep</mark> RL RF 50 Ω	AC	SENSE:INT	V	ALIGN AUTO		4 Jan 18, 2013	Frequency
enter Freq 2.48000	0000 GHz PNO: Far G IFGain:Low	Trig: Free Run #Atten: 30 dB	Avg Ty	vpe: Log-Pwr	TYP	123456 MWWWWW PNNNNN	
dB/div Ref 20.00 dl	3m			Mkr	2 2.479 -25.5	29 GHz 1 dBm	Auto Tur
<b>9</b> 0.0		<b>1</b>					Center Fre
.00		-May					2.480000000 G
1.0		<b>♦</b> <sup>2</sup>	3	-		-25.00 dBm	Start Fr
D.0 D.0	Mr. or		M				2.475000000 G
).0	mm		ww	0000000	- mar	mon	Stop Fr
).0							2.485000000 G
enter 2.480000 GHz Res BW 100 kHz	#VBV	V 100 kHz		Sweep ′	Span 10 1.27 ms (1	0.00 MHz 001 pts)	CF Sto 1.000000 M
R MODE TRC SCL	× 2.479 82 GHz	Y -5.00 dBm	UNCTION	FUNCTION WIDTH	FUNCTIO	N VALUE	1.000000 M Auto M
2 N 1 f 3 N 1 f	2.479 29 GHz 2.480 68 GHz	-25.51 dBm -25.69 dBm					Freq Offs
4 5 3							0
7							
0							
2							

# 11. EMI Reduction Method During Compliance Testing

No modification was made during testing.