TEST REPORT

7			Dt&C Co., Ltd.
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		L	
1. Report	No : DRTFCC2402-0006	3	
2. Custom	er		
• Name (F	CC) : Point Mobile Co., LTD		
Address	(FCC) : B-9F Kabul Great Va	alley, 32, Digital-ro	9-gil, Geumcheon-gu, Seoul South Korea 08512
3. Use of R	eport : FCC Certification		
	Name / Model Name : Mobile V2X-PM84	Computer / PM84	
	gulation(s): Part 15.247 thod used: KDB558074 D	01v05r02, ANSI (C63.10-2013
6. Date of	Test : 2023.11.28 ~ 2023.	12.12	
7. Locatior	of Test : 🛛 Permanent 🕯	Testing Lab	On Site Testing
8. Testing	Environment : See append	ded test report.	
9. Test Re	sult : Refer to the attached	test result.	
The results This test rep	shown in this test report refe port is not related to KOLAS a	r only to the sample accreditation.	e(s) tested unless otherwise stated.
Affirmation	Tested by		Technical Manager
	Name : SeungMin Gil	(Signature)	Name : JaeJin Lee
		2024.02.	05.
		Dt&C Co.	, Ltd.
	f this report is required to cor	firmation of authen	ticity, please contact to report@dtnc.net

Test Report Version

Test Report No.	Date	Description	Revised by	Reviewed by
DRTFCC2402-0006	Feb. 05, 2024	Initial issue	SeungMin Gil	JaeJin Lee



Table of Contents

1. General Information	
1.1. Description of EUT	
1.2. Declaration by the applicant / manufacturer	4
1.3. Testing Laboratory	5
1.4. Testing Environment	5
1.5. Measurement Uncertainty	5
1.6. Information about the FHSS characteristics	6
1.7. Conclusion of worst-case and operation mode	7
1.8. Test Equipment List	8
2. Antenna Requirement	9
3. Summary of Test Results	. 10
4. Maximum Peak Conducted Output Power	11
4.1. Test Setup	11
4.2. Limit	11
4.3. Test Procedure	11
4.4. Test Results	12
5. 20 dB BW & Occupied BW	
5.1. Test Setup	
5.2. Limit	
5.3. Test Procedure	-
5.4. Test Results	
6. Carrier Frequency Separation	
6.1. Test Setup	
6.2. Limit	
6.3. Test Procedure	
6.4. Test Results	
7. Number of Hopping Channels	
7.1. Test Setup	
7.2. Limit	
7.3. Test Procedure	
7.4. Test Results	
8. Time of Occupancy	
8.1. Test Setup	
8.2. Limit	
8.3. Test Procedure	
8.4. Test Results	
9. Unwanted Emissions	
9.1. Test Setup	
9.2. Limit	
9.3. Test Procedures	
9.3.1. Test Procedures for Unwanted Emissions(Radiated)	
9.3.2. Test Procedures for Unwanted Emissions(Conducted)	
9.4. Test Results	
9.4.1. Unwanted Emissions(Radiated)	
9.4.2. Unwanted Emissions(Conducted)	
10. AC Power-Line Conducted Emissions.	
10.1. Test Setup	
10.2. Limit	
10.2. Ennit	
10.4. Test Results	
APPENDIX I	
	3

1. General Information

1.1. Description of EUT

Equipment Class	Part 15 Spread Spectrum Transmitter (DSS)
Product Name	Mobile Computer
Model Name	PM84
Add Model Name	-
Firmware Version Identification Number	84.01
EUT Serial Number	Conducted: 23287A0055, Radiated: 23287A0058
Power Supply	DC 3.87 V
Frequency Range	2 402 MHz ~ 2 480 MHz
Max. RF Output Power	8.25 dBm (0.007 W)
Modulation Technique (Data rate)	GFSK(1 Mbps), π/4DQPSK(2 Mbps), 8DPSK(3 Mbps)
Number of Channels	79
Antenna Specification	Antenna Type: FPC Antenna Gain: 0.3 dBi (PK)

1.2. Declaration by the applicant / manufacturer

- NA

1.3. Testing Laboratory

Dt&C Co., Ltd.

The 3 m test site and conducted measurement facility used to collect the radiated data are located at the 42, Yurim-ro, 154beon-gil, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea 17042.

The test site complies with the requirements of Part 2.948 according to ANSI C63.4-2014.

- FCC & IC MRA Designation No. : KR0034

- ISED#: 5740A

www.dtnc.net			
Telephone	:	+ 82-31-321-2664	
FAX	:	+ 82-31-321-1664	

1.4. Testing Environment

Ambient Condition				
Temperature	+19 ℃ ~ +25 ℃			
 Relative Humidity 	30 % ~ 35 %			

1.5. Measurement Uncertainty

The measurement uncertainties shown below were calculated in accordance with requirements of ANSI C63.4-2014 and ANSI C63.10-2013. All measurement uncertainty values are shown with a coverage factor of k = 2 to indicate a 95 % level of confidence.

Parameter	Measurement uncertainty
Antenna-port conducted emission	1.0 dB (The confidence level is about 95 %, $k = 2$)
AC power-line conducted emission	3.4 dB (The confidence level is about 95 %, $k = 2$)
Radiated emission (1 GHz Below)	4.8 dB (The confidence level is about 95 %, k = 2)
Radiated emission (1 GHz ~ 18 GHz)	4.8 dB (The confidence level is about 95 %, k = 2)
Radiated emission (18 GHz Above)	4.9 dB (The confidence level is about 95 %, k = 2)

1.6. Information about the FHSS characteristics

- This Bluetooth module has been tested by a Bluetooth Qualification Lab, and we confirm the following :
 - A) The hopping sequence is pseudorandom
 - Note 1 : Pseudorandom Frequency Hopping Sequence Table as below:
 - Channel: 08, 24, 40, 56, 42, 54, 72, 09, 01, 11, 33, 41, 34, 42, 65, 73, 53, 69, 06, 22, 04, 20, 36, 52, 38, 46, 70, 78, 68, 76, 21, 29, 10, 26, 41, 58, 44, 60, 76, 13, 03, 11, 35, 43, 37, 45, 69, 77, 52, 71, 08, 24, 06, 24, 48, 56, 45, 46, 70, 01, 72, 06, 25, 33, 12, 28, 49, 60, 45, 58, 74, 13, 05, 18, 37, 49 etc

The System receiver have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shift frequencies in synchroniztation with the transmit ted signals.

- B) All channels are used equally on average
- C) The receiver input bandwidth equals the transmit bandwidth
- D) The receiver hops in sequenc e with the transmit signal
- 15.247(g) : In accordance with the Bluetooth Industry Standard, the system is designed to comply with all
 of the regulations in Section 15.247 when the transmitter is presented with a continuous data
 (or information) system.
- 15.247(h) : In accordance with the Bluetooth Industry Standard, the system does not coordinate its channels selection / hopping sequence with other frequency hopping systems for the express purpose of avoiding the simultaneous occupancy of individual hopping frequencies by multiple transmitters.
- 15.247(h): The EUT employs Adaptive Frequency Hopping (AFH) which identifies sources of interference namely devices operating in 802.11 WLAN and excludes them from the list of available channels. The process of re-mapping reduces the number of test channels from 79 channels to a minimum number of 20 channels.

1.7. Conclusion of worst-case and operation mode

The EUT has three types of modulation (GFSK, π /4DQPSK and 8DPSK). Therefore all applicable requirements were tested with all the modulations. And packet type was tested at the worst case(DH5).

EUT Operation test setup

Bluetooth tester was used to control the transmit parameters during test.

Tested frequency information

- Hopping Function : Enable

	Tested Frequency (MHz)		
Hopping Band	2 402 ~ 2 480		

- Hopping Function : Disable

	Tested Frequency (MHz)			
Lowest Channel	2 402			
Middle Channel	2 441			
Highest Channel	2 480			



1.8. Test Equipment List

Туре	Manufacturer	Model	Cal.Date (yy/mm/dd)	Next.Cal.Date (yy/mm/dd)	S/N
Spectrum Analyzer	Agilent Technologies	N9020A	22/12/16	23/12/16	MY48011700
Spectrum Analyzer	Agilent Technologies	N9020A	23/06/23	24/06/23	US47360812
Spectrum Analyzer	Agilent Technologies	N9020A			MY50110097
DC Power Supply	Agilent Technologies	66332A	22/12/16	23/12/16	GB37470191
Multimeter	FLUKE	17B+	22/12/16	23/12/16	36390701WS
BlueTooth Tester	TESCOM	TC-3000C	23/06/23	24/06/23	3000C000563
Power Splitter	Anritsu	K241B	22/12/16	23/12/16	1301183
Signal Generator	Rohde Schwarz	SMBV100A	22/12/16	23/12/16	255571
Signal Generator	ANRITSU	MG3695C	22/12/16	23/12/16	173501
Thermohygrometer	BODYCOM	BJ5478	22/12/16	23/12/16	120612-1
Thermohygrometer	BODYCOM	BJ5478	22/12/16	23/12/16	120612-2
Thermohygrometer	BODYCOM	BJ5478	23/06/23	24/06/23	N/A
Loop Antenna	ETS-Lindgren	6502	22/04/22	24/04/22	203480
Hybrid Antenna	Schwarzbeck	VULB 9160	22/12/16	23/12/16	3362
Horn Antenna	ETS-Lindgren	3117	23/06/23	24/06/23	00143278
Horn Antenna	A.H.Systems Inc.	SAS-574	23/06/23	24/06/23	155
PreAmplifier	tsj	MLA-0118-B01-40	22/12/16	23/12/16	1852267
PreAmplifier	tsj	MLA-1840-J02-45	23/06/23	24/06/23	16966-10728
PreAmplifier	H.P	8447D	22/12/16	23/12/16	2944A07774
High Pass Filter	Wainwright Instruments	WHKX12-935- 1000-15000-40SS	23/06/23	24/06/23	8
High Pass Filter	Wainwright Instruments	WHKX10-2838- 3300-18000-60SS	23/06/23	24/06/23	1
High Pass Filter	Wainwright Instruments	WHNX8.0/26.5- 6SS	23/06/23	24/06/23	3
Attenuator	Hefei Shunze	SS5T2.92-10-40	23/06/23	24/06/23	16012202
Attenuator	Aeroflex/Weinschel	56-3	23/06/23	24/06/23	Y2370
Attenuator	SMAJK	SMAJK-2-3	23/06/23	24/06/23	3
Attenuator	SMAJK	SMAJK-2-3	23/06/23	24/06/23	2
Attenuator	Aeroflex/Weinschel	86-10-11	23/06/23	24/06/23	408
Power Meter & Wide Bandwidth Sensor	Anritsu	ML2496A MA2411B	22/12/16	23/12/16	1338004 1911481
EMI Test Receiver	ROHDE&SCHWARZ	ESCI	23/02/24	24/02/24	100364
PULSE LIMITER	ROHDE&SCHWARZ	ESH3-Z2	23/08/21	24/08/21	101333
LISN	SCHWARZBECK	NSLK 8128 RC	23/10/26	24/10/26	8128 RC-387
Thermo Hygro Meter	TESTO	608-H1	23/01/13	24/01/13	45084791
Cable	DT&C	Cable	23/01/04	24/01/04	G-2
Cable	HUBER+SUHNER	SUCOFLEX 100	23/01/04	24/01/04	G-3
Cable	DT&C	Cable	23/01/04	24/01/04	G-4
Cable	OMT	YSS21S	23/01/04	24/01/04	G-5
Cable	Junkosha	MWX241	23/01/03	24/01/03	mmW-1
Cable	Junkosha	MWX241	23/01/03	24/01/03	mmW-4
Cable	HUBER+SUHNER	SUCOFLEX100	23/01/04	24/01/04	M-1
Cable	HUBER+SUHNER	SUCOFLEX100	23/01/04	24/01/04	M-2
Cable	JUNKOSHA	MWX241/B	23/01/04	24/01/04	M-3
Cable	JUNKOSHA	J12J101757-00	23/01/04	24/01/04	M-7
Cable	HUBER+SUHNER	SUCOFLEX106	23/01/04	24/01/04	M-9
Cable	DT&C	Cable	23/01/04	24/01/04	RFC-42
Cable	Dt&C	Cable	23/01/04	24/01/04	RFC-69
Test Software	tsj	Radiated Emission Measurement	NA	NA	Version 2.00.0185
Test Software	tsj	Noise Terminal Measurement	NA	NA	Version 2.00.0190

Note1: The measurement antennas were calibrated in accordance to the requirements of ANSI C63.5-2017

Note2: The cable is not a regular calibration item, so it has been calibrated by Dt&C itself.



2. Antenna Requirement

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions.

Conclusion: Comply

The antenna is attached on the device by means of unique coupling method. Therefore this E.U.T complies with the requirement of Part 15.203

3. Summary of Test Results

FCC part section(s)	Test Description	Limit (Using in 2 400~ 2 483.5 MHz)	Test Condition	Status Note 1
15.247(a) 15.247(b)	Maximum Peak Conducted Output Power	For FCC =< 0.125 W(conducted)		С
	20 dB Bandwidth	NA		С
15.247(a)	Separation whichever is greater.	>= Two thirds of the 20 dB BW,		С
13.247 (a)	Number of Hopping Channels			с
	Time of Occupancy	=< 0.4 seconds		С
-	Occupied Bandwidth (99 %)	NA		С
15.247(d)	Unwanted Emissions (Conducted)	The radiated emission to any 100 kHz of out-band shall be at least 20 dB below the highest in-band spectral density.	_	с
15.247(d) 15.205 15.209	Unwanted Emissions (Radiated)	Part 15.209 Limits (Refer to section 9)	Radiated	C Note3
15.207	AC Power-Line Conducted Emissions	Part 15.207 Limits (Refer to section 10)	AC Line Conducted	С
	Antenna Requirement	Part 15.203 (Refer to section 2)	-	С



4. Maximum Peak Conducted Output Power

4.1. Test Setup

Refer to the APPENDIX I.

4.2. Limit

FCC Requirements

The maximum peak output power of the intentional radiator shall not exceed the following :

- 1. §15.247(a)(1), 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. Alternatively, frequency hopping systems operating in the 2 400 MHz 2 483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.
- 2. §15.247(b)(1), For frequency hopping systems operating in the 2 400 2 483.5 MHz employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5 725 MHz 5 805 MHz band : 1 Watt. For all other frequency hopping systems in the 2 400 MHz 2 483.5 MHz band: 0.125 watts.

4.3. Test Procedure

- 1. The RF output power was measured with a spectrum analyzer connected to the RF Antenna connector (conducted measurement) while EUT was operating in transmit mode at the appropriate center frequency, A spectrum analyzer was used to record the shape of the transmit signal.
- 2. The peak output power of the fundamental frequency was measured with the spectrum analyzer using ; Span = approximately 5 times of the 20 dB bandwidth, centered on a hopping channel RBW ≥ 20 dB BW VBW ≥ RBW Sweep = auto Detector function = peak Trace = max hold

4.4. Test Results

Modulation	Tested Channel	Burst Average Output Power		Peak Output Power		Antenna Gain	e.i.r.p ^{Note3}
	Tested Channel	dBm	mW	dBm	mW	(dBi)	(dBm)
	Lowest	6.68	4.66	8.02	6.34	0.30	8.32
<u>GFSK</u>	Middle	7.02	5.04	7.57	5.71	0.30	7.87
	Highest	7.31	5.38	8.25	6.68	0.30	8.55
	Lowest	3.90	2.45	7.11	5.14	0.30	7.41
<u>π/4DQPSK</u>	Middle	3.76	2.38	7.33	5.41	0.30	7.63
	Highest	4.22	2.64	7.17	5.21	0.30	7.47
<u>8DPSK</u>	Lowest	3.90	2.45	7.46	5.57	0.30	7.76
	Middle	3.76	2.38	7.50	5.62	0.30	7.80
	Highest	4.23	2.65	7.72	5.92	0.30	8.02

Note 1: The average output power was tested using an average power meter for reference only. Note 2: See next pages for actual measured spectrum plots.

Note 3: e.i.r.p = $P_{cond} + G_{EUT}$

 P_{cond} = measured power at feedpoint of the EUT antenna, in dBm (Peak Conducted Output Power) G_{EUT} = gain of the EUT radiating element (antenna), in dBi



Peak Output Power





Peak Output Power

Middle Channel & Modulation : GFSK



Start Fred 2.475000000 GHz

Stop Freq 2.485000000 GHz

CF Step 1.000000 MHz Man

Freq Offset 0 Hz

Auto



Peak Output Power

10 dB/div Log



Highest Channel & Modulation : GFSK

Peak Output Power

Center 2.480000 GHz #Res BW 2.0 MHz

Lowest Channel & Modulation : π/4DQPSK

Span 10.00 MHz Sweep 1.000 ms (3001 pts)



#VBW 6.0 MHz



Peak Output Power

Middle Channel & Modulation : π/4DQPSK



Peak Output Power

Highest Channel & Modulation : π/4DQPSK



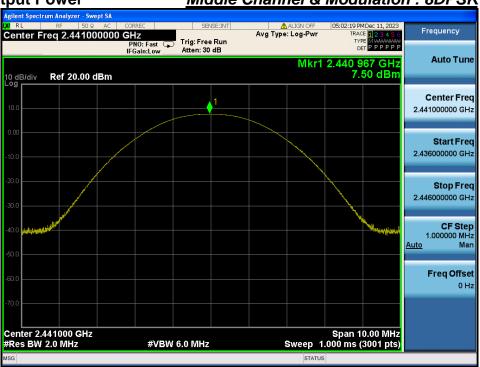
Lowest Channel & Modulation : 8DPSK



Peak Output Power



Peak Output Power <u>Middle Channel & Modulation : 8DPSK</u>





Peak Output Power

Highest Channel & Modulation : 8DPSK





5. 20 dB BW & Occupied BW

5.1. Test Setup

Refer to the APPENDIX I.

5.2. Limit

Limit : Not Applicable

5.3. Test Procedure

- 1. The 20 dB bandwidth was measured with a spectrum analyzer connected to RF antenna Connector (conducted measurement) while EUT was operating in transmit mode. The analyzer center frequency was set to the EUT carrier frequency, using the analyzer.
- 2. The bandwidth of the fundamental frequency was measured with the spectrum analyzer using below setting: RBW = 1 % to 5 % of the 20 dB BW & Occupied BW

VBW ≥ 3 × RBW

Span = between two times and five times the 20 dB bandwidth & Occupied BW

Sweep = auto

Detector function = peak

Trace = max hold

5.4. Test Results

Modulation	Tested Channel	20 dB BW (MHz)	Occupied BW (MHz)	
	Lowest	0.790	0.768	
<u>GFSK</u>	Middle	0.790	0.757	
	Highest	0.790	0.758	
<u>π/4DQPSK</u>	Lowest	1.250	1.164	
	Middle	1.270	1.154	
	Highest	1.260	1.155	
	Lowest	1.260	1.167	
<u>8DPSK</u>	Middle	1.250	1.158	
	Highest	1.240	1.161	





Lowest Channel & Modulation : GFSK

Middle Channel & Modulation : GFSK





20 dB BW

Highest Channel & Modulation : GFSK



Lowest Channel & Modulation : π/4DQPSK



Pages: 20 / 83



20 dB BW

Middle Channel & Modulation : π/4DQPSK



<u>Highest Channel & Modulation : π/4DQPSK</u>





Lowest Channel & Modulation : 8DPSK



20 dB BW

Middle Channel & Modulation : 8DPSK

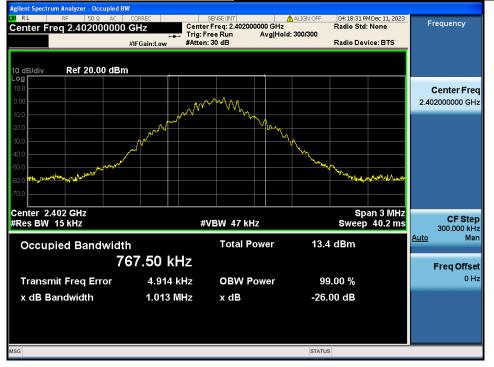




Highest Channel & Modulation : 8DPSK

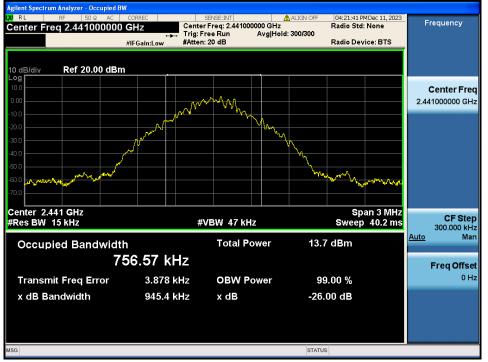






Occupied BW

Middle Channel & Modulation : GFSK



Highest Channel & Modulation : GFSK



Occupied BW

Lowest Channel & Modulation : π/4DQPSK



Middle Channel & Modulation : π/4DQPSK

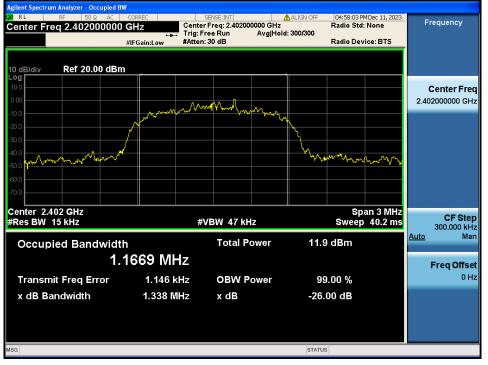


Occupied BW

Highest Channel & Modulation : π/4DQPSK



Lowest Channel & Modulation : 8DPSK



Occupied BW

Middle Channel & Modulation : 8DPSK



Highest Channel & Modulation : 8DPSK





6. Carrier Frequency Separation

6.1. Test Setup

Refer to the APPENDIX I.

6.2. Limit

Limit : ≥ 25 kHz or ≥ Two-Thirds of the 20 dB BW whichever is greater.

6.3. Test Procedure

The carrier frequency separation was measured with a spectrum analyzer connected to the antenna terminal, while EUT had its hopping function enabled.

After the trace being stable, the reading value between the peaks of the adjacent channels using the markerdelta function was recorded as the measurement results.

The spectrum analyzer is set to :

Span = wide enough to capture the peaks of two adjacent channels

RBW = Start with the RBW set to approximately 30 % of the channel spacing; adjust as necessary to best identify the center of each individual channel.

	Sweep = auto
Detector function = peak	Trace = max hold

6.4. Test Results

FH mode

Hopping Mode	Modulation	Peak of reference channel(MHz)	Peak of adjacent Channel(MHz)	Test Result (MHz)
	GFSK	2 440.057	2 441.054	0.997
Enable	π/4DQPSK	2 441.165	2 442.162	0.997
	8DPSK	2 441.164	2 442.163	0.999

AFH mode

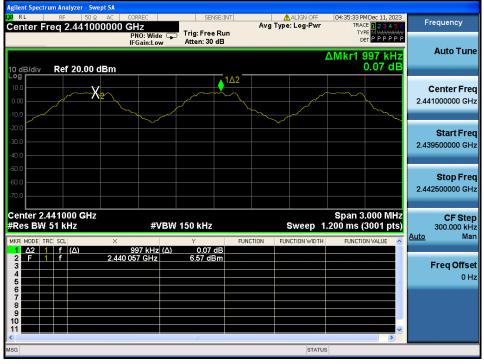
Hopping Mode	Modulation Peak of reference channel(MHz)		Peak of adjacent Channel(MHz)	Test Result (MHz)
	GFSK	2 441.057	2 442.056	0.999
Enable	π/4DQPSK	2 440.841	2 441.844	1.003
	8DPSK	2 441.160	2 442.161	1.001

Note 1 : See next pages for actual measured spectrum



Carrier Frequency Separation (FH)

Hopping mode : Enable&GFSK



Carrier Frequency Separation (FH)

Hopping mode : Enable&π/4DQPSK





Carrier Frequency Separation (FH)

Hopping mode : Enable&8DPSK

Agilent Spectrum Analyzer - Swept S					
LX/RL RF 50Ω A		SENSE:INT	ALIGN OFF	05:17:15 PMDec 11, 2023	Frequency
Center Freq 2.4410000		Trig: Free Run	Avg Type: Log-Pwr	TRACE 123456 TYPE MWWWWW	Trequency
	PNO: Wide 😱 IFGain:Low	Atten: 30 dB		DETPPPPP	
				∆Mkr1 999 kHz	Auto Tune
				0.09 dB	
10 dB/div Ref 20.00 dBr	n				
10.0				_1∆2	Conton From
		~ 2	~	\sim	Center Freq
0.00	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	2.441000000 GHz
-10.0					
-20.0					
-30.0					Start Freq
					2.439500000 GHz
-40.0					
-50.0					
-60.0					Stop Freq
-70.0					2.442500000 GHz
-70.0					
Center 2.441000 GHz				Span 3.000 MHz	05.044
#Res BW 51 kHz	#VBW	150 kHz	Sween 1	.200 ms (3001 pts)	CF Step 300.000 kHz
			-		Auto Man
MKR MODE TRC SCL	× 999 kHz (Δ)	Y FUN 0.09 dB	CTION FUNCTION WIDTH	FUNCTION VALUE	
	2.441 164 GHz	6.61 dBm			
3					Freq Offset
4 5					0 Hz
6				=	
7					
8					
10					
11				×	
(<)				>	
MSG			STATUS	5	



Carrier Frequency Separation (AFH) <u>Hopping mode : Enable&GFSK</u>

Agilent Spectrum Analyzer - Swept S					
KI RF 50 Ω AC Center Freq 2.4410000	00 GHz		pe: Log-Pwr T	PMDec 11, 2023 RACE 123456	Frequency
		ree Run : 30 dB			
10 dB/div Ref 20.00 dBn	n		ΔMkr1	999 kHz 0.07 dB	Auto Tune
Log 10.0 .000 .10.0		X2	1	∆2	Center Freq 2.441000000 GHz
-20.0					Start Freq 2.439500000 GHz
-50.0 -60.0 -70.0					Stop Freq 2.442500000 GHz
Center 2.441000 GHz #Res BW 51 kHz	#VBW 150 ki	Hz	Span Sweep 1.200 ms		CF Step 300.000 kHz Auto Man
MKR MODE TRC SCL	× γ 999 kHz (Δ) 0.	FUNCTION F	FUNCTION WIDTH FUNC	CTION VALUE	<u>Adto</u> Mali
		dBm		=	Freq Offset 0 Hz
7 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9					
MSG	ш		STATUS	>	

Carrier Frequency Separation (AFH) <u>Hopping mode : Enable&π/4DQPSK</u>





Carrier Frequency Separation (AFH) <u>Hopping mode : Enable&8DPSK</u>

Agilent Spectrum Analyzer - Swept SA				
Center Freq 2.44100000		E:INT ALIO		
Center Freq 2.44100000	PNO: Wide 😱 Trig: Free	Run	TYPE MWWW DET P P P	ALALAI
	IFGain:Low Atten: 30 o	IB	-	
			ΔMkr1 1.001 M	FIZ
10 dB/div Ref 20.00 dBm			0.07	dB
10.0			<mark>1∆2</mark>	Center Freq
0.00		~^X2	m	2.441000000 GHz
-10.0				
-20.0				
				Start Freq
-30.0				2.439500000 GHz
-40.0				
-50.0				Stop Freq
-60.0				2.442500000 GHz
-70.0				
Center 2.441000 GHz			Span 3.000 N	
#Res BW 51 kHz	#VBW 150 kHz	Swe	eep 1.200 ms (3001 p	
MKR MODE TRC SCL X	Y		N WIDTH FUNCTION VALUE	<u>Auto</u> Man
1 Δ2 1 f (Δ)	1.001 MHz (Δ) 0.07 d	В		
2 F 1 f 2.44	41 160 GHz 6.45 dB	m		Freq Offset
4				0 Hz
5				
7				
9				
10				
<				
MSG			STATUS	

7. Number of Hopping Channels

7.1. Test Setup

Refer to the APPENDIX I.

7.2. Limit

Limit : >= 15 hops

7.3. Test Procedure

The number of hopping frequencies was measured with a spectrum analyzer connected to the antenna terminal, while EUT had its hopping function enabled.

To get higher resolution, two frequency ranges for FH mode within the 2 400 MHz ~ 2 483.5 MHz were examined.

The spectrum analyzer is set to :

		o. =
Span for FH mode = 50 MHz	Start Frequency = 2 391.5 MHz,	Stop Frequency = 2 441.5 MHz
	Start Frequency = 2 441.5 MHz,	Stop Frequency = 2 491.5 MHz
Span for AFH mode = 30 MHz	Start Frequency = 2 426.0 MHz,	Stop Frequency = 2 456.0 MHz
RBW = To identify clearly the indi	vidual channels, set the RBW to lea	ss than 30 % of the channel spacing
or the 20 dB bandwidth, w	vhichever is smaller.	
VBW ≥ RBW	Sweep = auto	
Detector function = peak	Trace = max hold	

7.4. Test Results

FH mode

Hopping mode	Modulation	Test Result (Total Hops)
	GFSK	79
Enable	π/4DQPSK	79
	8DPSK	79

AFH mode

Hopping mode	Modulation	Test Result (Total Hops)
	GFSK	20
Enable	π/4DQPSK	20
	8DPSK	20

Note 1 : See next pages for actual measured spectrum plots.



Number of Hopping Channels 1(FH) Hopping mode : Enable & GFSK

Agilent Spectrum Analyzer - Swe IXI RL RF 50Ω		CENIC	E:INT	ALIGN OFF	04:30:51 PM Dec 11, 2023	
Center Freq 2.41650			Avg	Type: Log-Pwr	TRACE 1 2 3 4 5 6	Frequency
.	PNO: Fa: IFGain:Lo				TYPE MWWWWW DET PPPPP	
	IFGalit.LU	nu nacen oo e		Milero	0.444.000 CU	Auto Tune
				IVIKT2	2.441 000 GHz 7.72 dBm	
10 dB/div Ref 20.00 d	IBm				7.72 UBII	
10.0	≬ '				\	Center Freq
0.00	ΛΛΛΛΛΛΛ	$\Lambda \Lambda \Lambda \Lambda \Lambda \Lambda \Lambda \Lambda \Lambda \Lambda$	ገለለለለለለ	ממממממ	ΛΛΛΛΛΛΛΛΛΛ	2.416500000 GHz
-10.0	,	AAAAAAAA	****			2.410000000 0112
-20.0						Start Freq
-30.0						2.391500000 GHz
-40.0						
-50.0 -50.0						
-60.0						Stop Freq
-70.0						2.441500000 GHz
Start 2.39150 GHz					Stop 2.44150 GHz	CF Step
#Res BW 270 kHz	#	VBW 820 kHz		Sweep 1.	000 ms (3001 pts)	5.000000 MHz
MKR MODE TRC SCL	×	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Man
1 N 1 f	2.402 000 GHz	7.48 dB	m			
2 N 1 f	2.441 000 GHz	7.72 dB	m			Freq Offset
4						0 Hz
5					=	
7						
8						
10						
11					~	
MSG				STATUS		

Number of Hopping Channels 2(FH)

Hopping mode : Enable & GFSK

Agilent Spectrum Analyzer - Swept SA						
RL RF 50 Ω AC Center Freq 2.466500000	CORREC GH7	SENSE:IN		ALIGN OFF	04:32:03 PM Dec 11, 2023 TRACE 1 2 3 4 5 6	Frequency
10 dB/div Ref 20.00 dBm	PNO: Fast IFGain:Low	Trig: Free Run Atten: 30 dB			түре Минини Det P P P P P P 2.480 000 GHz 8.05 dBm	Auto Tune
						Center Freq 2.466500000 GHz
-20.0						Start Freq 2.441500000 GHz
-50.0 -60.0 -70.0					**************************************	Stop Freq 2.491500000 GHz
Start 2.44150 GHz #Res BW 270 kHz	#VBW	820 kHz		Sweep 1.	Stop 2.49150 GHz 000 ms (3001 pts)	CF Step 5.000000 MHz Auto Mar
MKR MODE TAC Scl. X 1 N 1 f 2.44 2 N 1 f 2.43 3 - - - - 4 - - - - 5 - - - - 6 - - - - -	2 000 GHz 0 000 GHz	7.74 dBm 8.05 dBm	FUNCTION FUR	NCTION WIDTH	FUNCTION VALUE	Freq Offset
7 8 9 10 11					~	
NSG				STATUS		



Number of Hopping Channels 1(FH)

<u>Hopping mode : Enable&π/4DQPSK</u>

Agilent Spectrum Analyzer -	Swept SA				
	i0 Ω AC CORREC	SENSE:INT	🛕 ALIGN OFF	04:49:18 PM Dec 11, 2023	Engeneration
Center Freq 2.416	500000 GHz		Avg Type: Log-Pwr	TRACE 123456	Frequency
	PNO: Fast 🖵	Trig: Free Run			
	IFGain:Low	Atten: 30 dB		Der	
			Mkr2	2.441 000 GHz	Auto Tune
				6.88 dBm	
10 dB/div Ref 20.0	IV dBm			0.00 0.011	
				A A A A A A A A A A A A A A A A A A A	
10.0			$\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{$	ALMANAAAAAA	Center Freq
0.00	1~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	*** * * * * * * * * * *	4 4 7 Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y	<u> </u>	2.416500000 GHz
-10.0					
-20.0					
					Start Freq
-30.0	N				2.391500000 GHz
-40.0	{				
	L .				
-50.0 am dutional additional					Stop Freq
-60.0					
70.0					2.441500000 GHz
-70.0					
Start 2.39150 GHz				Stop 2.44150 GHz	CF Step
#Res BW 270 kHz	#VBN	/ 820 kHz	Sweep 1	.000 ms (3001 pts)	5.000000 MHz
MKR MODE TRC SCL	X	Y FLIN	CTION FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Man
1 N 1 f	2.402 000 GHz		CHON FUNCTION WIDTH	FUNCTION VALUE	
2 N 1 f	2.402 000 GHz	6.74 dBm 6.88 dBm			
3	2.441 000 3112	0.00 0.011			Freq Offset
4					0 Hz
5					0 112
6					
7					
8					
10					
11				~	
<				>	
MSG			STATUS		
MOG			STATUS		

Number of Hopping Channels 2(FH)

Hopping mode : Enable &π/4DQPSK

Agilent Spectrum Analyzer - Swept SA IXI RL RF 50 Q AC Center Freq 2.4665500000		SENSE:INT		ALIGN OFF	04:50:30 PMDec 11, 2023 TRACE 12 3 4 5 6 TYPE MWWWWW	Frequency
10 dB/div Ref 20.00 dBm	PNO: Fast 🖵 IFGain:Low	Atten: 30 dB		Mkr2	2.480 000 GHz 7.47 dBm	
Log 10.0 .000 -10.0	~~~~~~~		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	2 2 2 2 2 2		Center Freq 2.466500000 GHz
-20.0						Start Fred 2.441500000 GHz
-50.0					had a support for some for som	Stop Fred 2.491500000 GH;
Start 2.44150 GHz #Res BW 270 kHz MKR MODE TRC SCL X		820 kHz		Sweep 1	Stop 2.49150 GHz .000 ms (3001 pts) FUNCTION VALUE	CF Step 5.000000 MHz <u>Auto</u> Mar
1 N 1 f 2.44 2 N 1 f 2.48 3 4 5 5 5 6 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	2 000 GHz 0 000 GHz	5.15 dBm 7.47 dBm				Freq Offset 0 Hz
6 7 8 9 9 10						
MSG				STATUS		



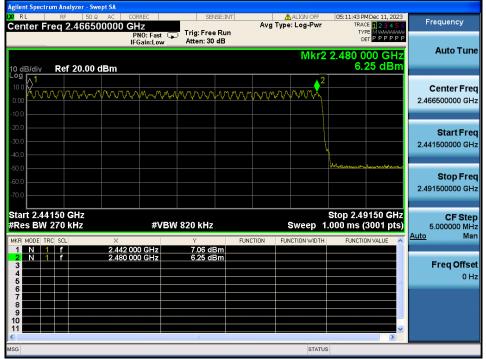
Number of Hopping Channels 1(FH)

Hopping mode : Enable&8DPSK

		trum	ı Ana	lyzer -	Swep	ot SA															
l xi r			RF		ΩC	AC	COR			SE	VSE:INT				ALIGN OFF			MDec 11, 202		Francisco	
Cer	iter F	Fre	q 2	.416	500	0000) GH	z					Avg	Туре	: Log-Pwr		TRAC	CE 12345	6	Frequency	
							PI	10: Fast		Trig: Fre							TY	PE MWWWW ET P P P P P	**		
		_					IFG	Gain:Lov	N .	Atten: 30	dB						U				
															Mkr	2.2	441.0	00 GH		Auto Tune	e
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10 d	B/div		Ref	20.0	0 d	Bm											.	24 dBr			
Log						∧1													2		
10.0	L				-		· • ·		_					-		D4 00 4				Center Free	a
0.00	1				1	ny√r	V W 1	$\gamma\gamma\gamma\gamma$	$\sim \sim$	WWW	$\sqrt{\sqrt{2}}$	Υ¥	$\sim \sim \sim$	\mathcal{N}	\mathcal{M}	rvv.	$\nabla \nabla \gamma \gamma$	$\sim \sim \sim \sim$	ri I	2.416500000 GH	- H
0.00																				2.41000000 GH.	2
-10.0	L																				
	1																				
-20.0																				Start Free	a
-30.0																					- H
	1				ſ															2.391500000 GH	z
-40.0	\vdash				+																
-50.0	-	-		Server hi	(I																
																				Stop Free	a
-60.0	<u> </u>																				- 1 I
-70.0	1																			2.441500000 GH	Z
-70.0																					
- 1																					
	rt 2.3																	1150 GH		CF Step	p
#Re	s BN	27	70	٢Hz				#V	/BW	820 kHz					Sweep	1.00	0 ms (3001 pt:	5)	5.000000 MH	z
-									_					_						Auto Mar	n
MKR	MODE					×		_		Y	_	FUNC	TION	FUN	ICTION WIDTH	4	FUNCTIO	ON VALUE	<u>^</u>		
1		1	f) GHz		7.18 d											
2	N	1	f			2.44	1 000) GHz		5.24 d	3m					_				Freq Offse	.t
3																					
5																			_	0 H:	z
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7																					
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10																					
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<																		>			
MSG															STATI	US					
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Number of Hopping Channels 2(FH)

Hopping mode : Enable & 8DPSK





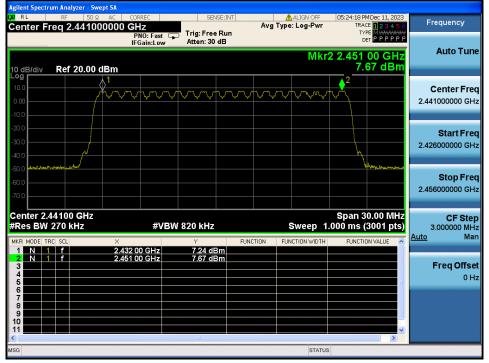
Number of Hopping Channels 1(AFH)

Hopping mode : Enable & GFSK

	Spectrum																						
LXI RL		RF		Q		CORF			-	S	ENSE:I	NT		A			IGN O		05:2		MDec 11, 202		Frequency
Cent	ter Fre	q 2	.4410	000	000				Tri	a. Er	ee Ru			AV	д Тур	e: L	og-P	wr		TY	CE 12345 PE MWWWW	6	
							0:Fa: ain:Lo	stĢ			BO dB									D	тРРРР	P	
						11-04	am.cu	144														-	Auto Tune
																	- N	lkr	2 2.4		00 GH:		Auto Tune
10 dE	Ndiv	Ref	20.00	l dE	m															8.	31 dBn	n	
Log			20100	Å															<) —			
10.0				$-\nabla$																-			Center Freq
				\cap	$\cap I$	$\Lambda \Pi$	\sum	\square	$\Lambda \cap$	n,	$\cap I$	\mathbb{N}^{\prime}	\mathcal{A}	\mathcal{N}	Λ	\cap .	\cap	$ \land /$	Λ				•
0.00					1 V	۲.	V	f V	V	Υt	t V	-Y	V	¥.	γV	Ţ	-Y	4	V				2.441000000 GHz
-10.0				\prod		1		r r	•	1			Y						<u> </u>	\			
-20.0			- 1																				
-20.0			Í																				Start Freq
-30.0																				-{			2.426000000 GHz
-40.0			{																	۱.			2.42000000000112
			. M																	6			
-50.0	unstyrus, Aurolythe	deserve and	www.t/i ^{ng}																	· V	hang and the case of	4	
-60.0																							Stop Freq
																							2.456000000 GHz
-70.0																							
L 1																							
	ter 2.44																		Sp	an 3	0.00 MH	z	CF Step
#Res	5 BW 2	70 I	٢Hz				#	VBN	820	l kH	Z					S۳	/eep	o 1.	.000	ms (3001 pts	0	3.000000 MHz
		0.01						1			_		-	TION		NOT	-	10 T I I					Auto Man
	IODE TRC	f			×	0.00	GHz			Ý 1944 –	dBm		UNC	HUN	FL	INUT	ON WI	ылн		UNCTI	ON VALUE	1	
		F			2.40	2 00	GHz		-	0.34 0	авт dBm												
3					2.40	100	GHZ				abiii												Freq Offset
4																							0 Hz
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6																							
7																							
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10																							
11																						~	
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MSG																	ST	TATUS					
		_	_	_		_	_		_	_	_	_	_	_		_	_	_	_			_	

Number of Hopping Channels 1(AFH)

Hopping mode : Enable &π/4DQPSK





Number of Hopping Channels 1(AFH) Hopping mode : Enable & 8DPSK

Agilent Spectru	m Analyzer	- Swep	pt SA								
LXI RL		50 Ω		REC	SEN	SE:INT		ALIGN OFF		24 PM Dec 11, 2023	Engeneration
Center Fr	eq 2.44	100	0000 GH	z			Avg Type	e: Log-Pwr		TRACE 1 2 3 4 5 6	Frequency
			PI	NO: Fast 🔾	🗇 Trig: Free						
			IFG	Gain:Low	Atten: 30	dB				Derj	
								Mkr	224	51 00 GHz	Auto Tune
			_							7.49 dBm	
10 dB/div Log	Ref 20.	00 d	Bm							7.49 UDIII	
		Å	1						▲2		
10.0		X	mmm	n m m	mmmm	n m m ,	m m m /	mmm	m m		Center Freq
0.00			\sim \sim \sim	$\vee \vee \vee$	$\sim \sim \sim \sim$	\vee \vee \vee	\vee \vee \vee	$\vee \vee \vee$	\vee		2.441000000 GHz
-10.0									+ +		
-20.0											
											Start Freq
-30.0		7									2.426000000 GHz
-40.0	r	1								Ly .	
										have a	
-50.0 milandation	distant with a									- Will be and the second	
-60.0											Stop Freq
											2.456000000 GHz
-70.0											
Center 2.4		z								n 30.00 MHz	CF Step
#Res BW 2	270 kHz			#VBV	V 820 kHz			Sweep 1	.000 m	is (3001 pts)	3.000000 MHz
											Auto Man
MKR MODE TRO	SCL		×		Y		CTION FUI	NCTION WIDTH	FUI	NCTION VALUE	
1 N 1 2 N 1	f		2.432 0		7.04 dE						
2 N 1 3			2.451 0	UGHZ	7.49 dE	sm					Freq Offset
4											
5										=	0 Hz
6											
7											
8											
9						_					
10											
<										>	
		_							_		
MSG								STATU	S		
		-									



8. Time of Occupancy

8.1. Test Setup

Refer to the APPENDIX I.

8.2. Limit

The maximum permissible time of occupancy is 400 ms within a period of 400 ms multiplied by the number of hopping channels employed.

8.3. Test Procedure

The dwell time was measured with a spectrum analyzer connected to the antenna terminal, while EUT had its hopping function enabled.

The spectrum analyzer is set to :

Center frequency = 2 441 MHz

Span = zero

RBW = 1 MHz (RBW shall be ≤ channel spacing and where possible RBW should be set >> 1 / T, where T is the expected dwell time per channel)

VBW ≥ RBW

Detector function = peak

Trace = max hold

8.4. Test Results

FH mode

Hopping mode	Packet Type	Number of hopping Channels	Burst On Time (ms)	Period (ms)	Test Result (sec)
	DH 5	79	2.880	3.750	0.307
Enable	2 DH 5	79	2.880	3.750	0.307
	3 DH 5	79	2.880	3.750	0.307

AFH mode

Hopping mode	Packet Type	Number of hopping Channels	Burst On Time (ms)	Period (ms)	Test Result (sec)
	DH 5	20	2.880	3.750	0.154
Enable	2 DH 5	20	2.880	3.750	0.154
	3 DH 5	20	2.880	3.750	0.154

Note 1 : Dwell Time = 0.4 × Hopping channel × Burst ON time ×

((Hopping rate ÷ Time slots) ÷ Hopping channel)

- Time slots for DH5 = 6 slots (TX = 5 slots / RX = 1 slot)
- Hopping Rate = 1 600 for FH mode & 800 for AFH mode

Note 2 : See next pages for actual measured spectrum plots.

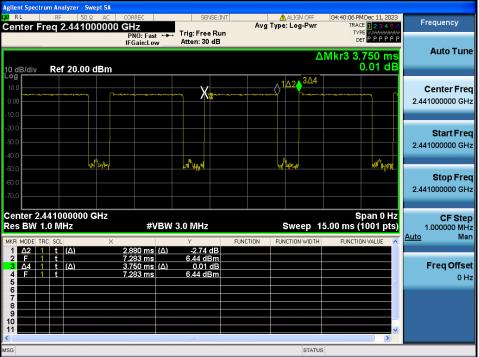


Time of Occupancy (FH)

Agilent Spectrum Analyzer - Swept SA						
RL RF 50 Ω AC Center Freq 2.441000000		SENSE:INT	Avg Type: I		4:22:21 PM Dec 11, 2023 TRACE 1 2 3 4 5 6 TYPE WAAAAAAAA	Frequency
10 dB/div Ref 20.00 dBm	PNO: Fast ↔ IFGain:Low	Trig: Free Run Atten: 30 dB		ΔM	kr3 3.750 ms 0.02 dB	Auto Tune
10.0 .10.0	X	<u></u> 1∆2,	3∆4			Center Freq 2.441000000 GHz
-20.0 -30.0 -40.0		Hall Astron				Start Freq 2.441000000 GHz
-50.0 (U) (W) (W) (U) (U) (U) (U) (U) (U) (U) (U) (U) (U		yını kater		k(^hu	N/	Stop Freq 2.441000000 GHz
Center 2.441000000 GHz Res BW 1.0 MHz	#VBW 3	Y FUN		weep 15.0	Span 0 Hz 0 ms (1001 pts) FUNCTION VALUE	CF Step 1.000000 MHz <u>Auto</u> Man
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	2.880 ms (Δ) 5.170 ms 3.750 ms (Δ) 5.170 ms	-0.65 dB 7.40 dBm 0.02 dB 7.40 dBm				Freq Offset 0 Hz
10 11 MSG		ш		STATUS		

Time of Occupancy (FH)





Hopping mode : Enable&DH5



Time of Occupancy (FH)

Hopping mode : Enable&3-DH5

Agilent Spectrum Analyzer - Swept SA					
LX/RL RF 50.0 AC CORF				PMDec 11, 2023	Frequency
Center Freq 2.441000000 GH		Avg Type:	Log-Pwr Th	ACE 123456	riequency
	0: Fast ↔ Trig: Free F ain:Low Atten: 30 d			DETPPPPP	
110		=			Auto Tune
			ΔMkr3 3	3.750 ms	Auto Fulle
10 dB/div Ref 20.00 dBm				1.26 dB	
Log	۸ 1۵	2▲3∆4			
					Center Freq
0.00					2.441000000 GHz
-10.0					
-20.0					Start Freq
-30.0					2.441000000 GHz
-40.0					2.441000000 GH2
han har	۰۸.		us Myter		
-50.0	V	<u>hha</u>	AN INTRO		
-60.0					Stop Freq
-70.0					2.441000000 GHz
-70.0					
Center 2.441000000 GHz				Span 0 Hz	
Res BW 1.0 MHz	#VBW 3.0 MHz				CF Step
Res BW 1.0 MHz	#VOVV J.U IVINZ		weep 15.00 ms		1.000000 MHz
MKR MODE TRC SCL X	Y		CTION WIDTH FUNC	TION VALUE 🛛 🖌	<u>Auto</u> Man
	0 ms (∆) 0.85 di				
	86 ms 5.64 dBr 50 ms (∆) 1.26 dI	n			Freq Offset
	6 ms 5.64 dBr	D			
5	0.0142				0 Hz
6					
8					
9					
10					
11				<u>×</u>	
				>	
MSG			STATUS		

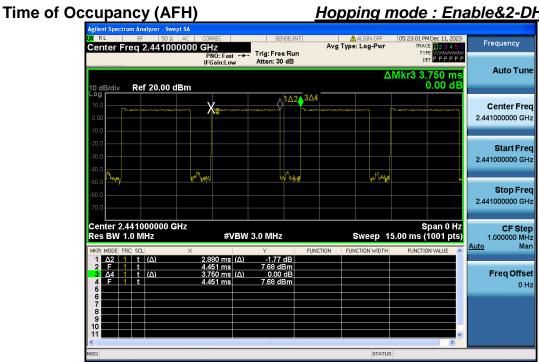


Time of Occupancy (AFH)

Hopping mode : Enable&DH5

	rum Analyzer - Swept SA					
Center F	RF 50 Q AC req 2.441000000		SENSE:INT	ALIGN OFF Avg Type: Log-Pwr	05:19:38 PM Dec 11, 2023 TRACE 1 2 3 4 5 6 TYPE WWWWWW DET P P P P P P	Frequency
10 dB/div	Ref 20.00 dBm	IFGain:Low	Atten: 30 dB	Δ	Mkr3 3.750 ms 0.01 dB	Auto Tune
Log 10.0 0.00		Xa				Center Freq 2.441000000 GHz
-20.0			นป้าปุกๆ	· · · · · · · · · · · · · · · · · · ·		Start Freq 2.441000000 GHz
-50.0 *** -60.0 -70.0			44 N/47	¥ nandn		Stop Freq 2.441000000 GHz
Center 2. Res BW 1	RC SCL X	#VBW		Sweep 1	Span 0 Hz 5.00 ms (1001 pts) FUNCTION VALUE	CF Step 1.000000 MHz <u>Auto</u> Man
1 <u>2</u> 7 2 F 1 3 <u>24</u> 1 4 F 1 5 6 8 8 9	$\begin{array}{c c} t & (\Delta) \\ t \\ t \\ t \\ \end{array}$	2.880 ms (Δ) 4.046 ms 3.750 ms (Δ) 4.046 ms	0.67 dB 7.57 dBm 0.01 dB 7.57 dBm			Freq Offset 0 Hz
10 11 MSG				STATUS		

Hopping mode : Enable&2-DH5



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Time of Occupancy (AFH)

Hopping mode : Enable&3-DH5

	rum Analyzer - Swept S					
LXI RL	RF 50 Ω A0		SENSE:INT	🛕 ALIGN OFF	05:28:08 PM Dec 11, 2023	Frequency
Center F	req 2.4410000	00 GHz		Avg Type: Log-Pwr	TRACE 123456	Frequency
		PNO: Fast 🔸	Trig: Free Run		DET P P P P P	
		IFGain:Low	Atten: 30 dB		DET	
				/	\Mkr3 3.750 ms	Auto Tune
				-	0.00 dB	
10 dB/div	Ref 20.00 dBr	n			0.00 UB	
Log				<u>∧1∆2</u> ▲3∆4		
10.0	reasoned Theory of the	المراجع	Xmandaparter	Manufacture and a second se	presentes Developmente	Center Freq
0.00						2.441000000 GHz
						2.441000000 0112
-10.0						
-20.0						
						Start Freq
-30.0						2.441000000 GHz
-40.0						
	W WWW	4 min	6	well month	W LUA	
-50.0	1971 - 2010 - A.	w Iw		and fiddly.	4 4 1 M PA 7	
-60.0						Stop Freq
						2.441000000 GHz
-70.0						
Center 2.	441000000 GHz				Span 0 Hz	CF Step
Res BW	1.0 MHz	#VBW	3.0 MHz	Sween 7	5.00 ms (1001 pts)	1.000000 MHz
				encop	ence ine (neer pro,	Auto Man
MKR MODE T		X	Y	FUNCTION FUNCTION WIDTH	FUNCTION VALUE	Auto
1 <u>Δ2</u> '		2.880 ms (Δ)	-1.89 dB			
2 F 1	1 t	6.189 ms	7.70 dBm			En a Offerst
3 <u>∆4</u> *		3.750 ms (∆)	0.00 dB			Freq Offset
4 E ·	1 t	6.189 ms	7.70 dBm			0 Hz
6					=	
7						
8						
9						
10						
11					~	
<					>	
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9. Unwanted Emissions

9.1. Test Setup

Refer to the APPENDIX I.

9.2. Limit

Part 15.247(d), Part 15.205, Part 15.209

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of Part 15.247 the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.205(c)).

- Part 15.209 : General requirement

Frequency (MHz)	FCC Limit (uV/m)	Measurement Distance (m)
0.009 - 0.490	2 400 / F (kHz)	300
0.490 - 1.705	24 000 / F (kHz)	30
1.705 – 30.0	30	30

Frequency (MHz)	FCC Limit (uV/m)	Measurement Distance (m)
30 ~ 88	100 **	3
88 ~ 216	150 **	3
216 ~ 960	200 **	3
Above 960	500	3

**Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §15.231 and 15.241.