

8DPSK

									Analyzer - Swep		
Marker	M Aug 10, 2021 E <b>1 2 3 4 5 6</b>	TRAC	LIGN AUTO	Avg Type	NSE:INT				8F 50 Ω 78.15600		X/ RL Mark
Select Marker				Avg Hold:		Atten: 20	NO: Fast 🕞 Gain:Low				
1	6 0 MHz .569 dB	1 78.156 -2	ΔMkr					dB Bm	of Offset 0.5 ef 10.00 d	Re Vdiv <b>R</b> e	10 dB Log r
Norma	142									V.	
Norma	ψų	WAAW	MMMM	WWW	MAMA	WWWW	YUMWAW	WWW	WWW	NW	0.00
Delta				13							-10.0
_											-20.0
Fixed										 	-30.0
				21							-40.0
Of											-50.0
	ţ,										-60.0
Properties				21							-70.0
More											-80.0
1.053	350 GHz	Stop 2.48								2.40000	
	1001 pts)					300 kHz	#VBW		kHz	BW 100	#Res
			STATUS								MSG



# 14. DWELL TIME

# 14.1 Block Diagram Of Test Setup



## 14.2 Limit

Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

# 14.3 Test procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.

2. Set spectrum analyzer span = 0. Centred on a hopping channel;

3. Set RBW = 1MHz and VBW = 3MHz.Sweep = as necessary to capture the entire dwell time per hopping channel. Set the EUT for DH5, DH3 and DH1 packet transmitting.

4. Use the marker-delta function to determine the dwell time. If this value varies with different modes of operation (e.g., data rate, modulation format, etc.), repeat this test for each variation. The limit is specified in one of the subparagraphs of this Section. Submit this plot(s).



#### 14.4 Test Result

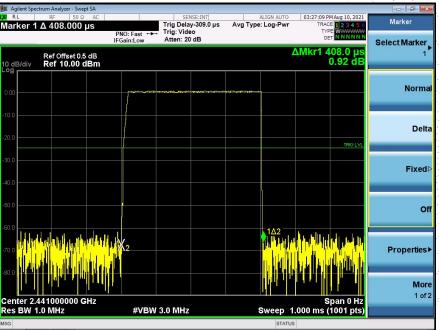
DH5 Packet permit maximum 1600 / 79 / 6 hops per second in each channel (5 time slots RX, 1 time slot TX).

DH3 Packet permit maximum 1600 / 79 / 4 hops per second in each channel (3 time slots RX, 1 time slot TX).

DH1 Packet permit maximum 1600 / 79 /2 hops per second in each channel (1 time slot RX, 1 time slot TX). So, the Dwell Time can be calculated as follows:

DH5:1600/79/6\*0.4\*79\*(MkrDelta)/1000 DH3:1600/79/4\*0.4\*79\*(MkrDelta)/1000 DH1:1600/79/2\*0.4\*79\*(MkrDelta)/1000 Remark: Mkr Delta is once pulse time.

Modulation	Channel Data	Packet	pulse time(ms)	Dwell Time(s)	Limits(s)
		DH1	0.408	0.131	0.4
GFSK	Middle	DH3	1.662	0.266	0.4
		DH5	2.940	0.314	0.4
		2DH1	0.418	0.134	0.4
$\pi$ /4DQPSK	Middle	2DH3	1.668	0.267	0.4
		2DH5	2.930	0.313	0.4
		3DH1	0.420	0.134	0.4
8DPSK	Middle	3DH3	1.674	0.268	0.4
		3DH5	2.930	0.313	0.4



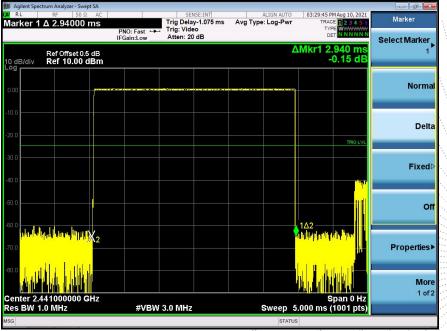
**Test Plots GFSK DH1 Middle Channel** 



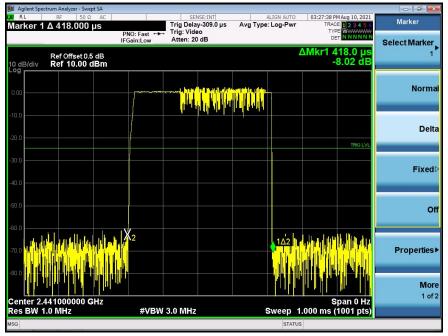
Magilent Spectrum Analyzer - Swept SA					
Marker 1 Δ 1.66200 ms	PNO: Fast +++ Trig Dela Trig: Vid	eo	ALIGN AUTO	03:29:15 PM Aug 10, 2021 TRACE 2 3 4 5 6 TYPE WWWWWW DET N N N N N N	Marker
Ref Offset 0.5 dB 10 dB/div Ref 10.00 dBm	IFGain:Low Atten: 2	0 dB	ΔN	Select Marker 1 ►	
0.00	bional a surface inconding of state according				Normal
-10.0					Delta
-30.0				TRIG LVL	Fixed⊳
-40.0					Off
-60.0 -70.0 41.0 41.0 41.0 41.0 42.0 14.0 42.0 14.0 14.0 14.0 14.0 14.0 14.0 14.0 14				dala entre palabalabilit	Properties►
				n Wheel	More 1 of 2
Center 2.441000000 GHz Res BW 1.0 MHz	#VBW 3.0 MHz	2	Sweep 3.00	Span 0 Hz 00 ms (1001 pts)	1012

### GFSK DH3 Middle Channel

### GFSK DH5 High Middle Channel

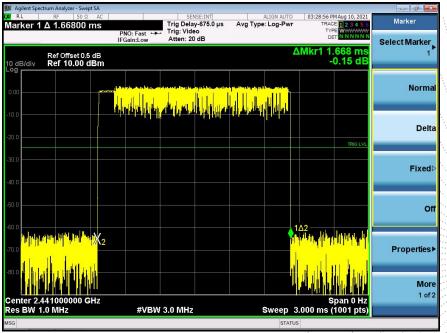






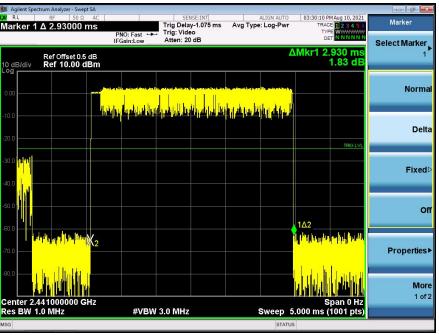
#### $\pi$ /4DQPSK DH1 Middle Channel

#### $\pi$ /4DQPSK DH3 Middle Channel

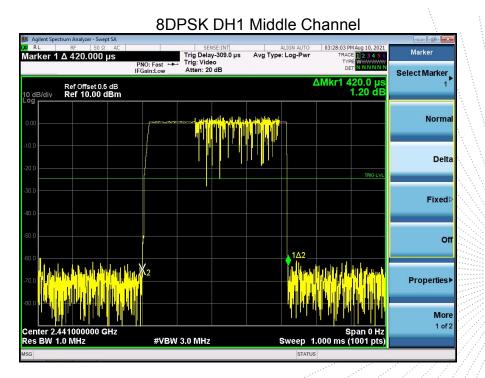








 $\pi$  /4DQPSK DH5 Middle Channel

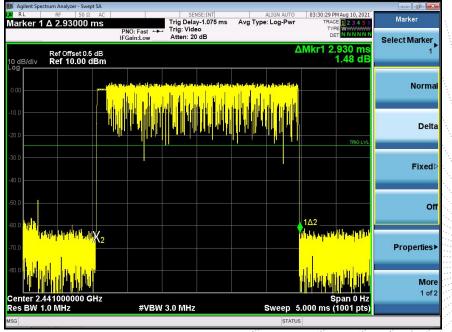




				gilent Spectrum Analyzer - Swept SA
Marker	03:28:35 PM Aug 10, 2021 TRACE 1 2 3 4 5 6 TYPE WWWWWWW	ALIGN AUTO	SENSE:INT Trig Delay-675.0 µs Trig: Video	rker 1 Δ 1.67400 ms
Select Marker	DET NNNNN		PNO: Fast Trig: Video FGain:Low Atten: 20 dB	
1	Mkr1 1.674 ms -1.97 dB	Δ		Ref Offset 0.5 dB B/div Ref 10.00 dBm
Norma		la sud da ha til at a pilita tat. Na ha sud da ha sud da sud da sud	ي مقاليم من القالية في أو المراجع المر المراجع من المراجع المر	
			. Alalah di selah di selah selah se	
Delta			لابلا لأنكرته للتلاط	
	TRIG LVL			
Fixed▷				
Off				
	Δ2	1		
Properties •		Y		
	al Roman de La			at a day bill at state 1. A
More 1 of 2				
1 of 2	Span 0 Hz .000 ms (1001 pts)	Sween 3	#VBW 3.0 MHz	nter 2.441000000 GHz BW 1.0 MHz
		STATUS	WEDN ON MILZ	- BW- BV WI12

#### 8DPSK DH3 Middle Channel

### 8DPSK DH5 Middle Channel





# 15. ANTENNA REQUIREMENT

### 15.1 Limit

15.203 requirement: For intentional device, according to 15.203: 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.

### 15.2 Test Result

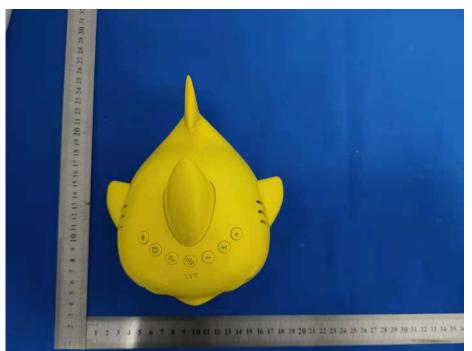
The EUT antenna is PCB antenna, fulfill the requirement of this section.

Edition: A.3



# 16. EUT PHOTOGRAPHS

### EUT Photo 1





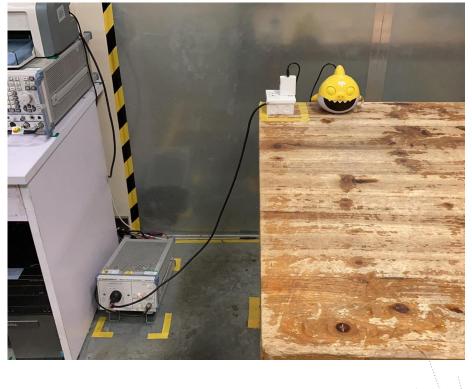


Page 67 of 70



# 17. EUT TEST SETUP PHOTOGRAPHS

### **Conducted emissions**



**Radiated Measurement Photos** 



Page 68 of 70







# **STATEMENT**

1. The equipment lists are traceable to the national reference standards.

2. The test report can not be partially copied unless prior written approval is issued from our lab.

3. The test report is invalid without stamp of laboratory.

4. The test report is invalid without signature of person(s) testing and authorizing.

5. The test process and test result is only related to the Unit Under Test.

6. The quality system of our laboratory is in accordance with ISO/IEC17025.

7.If there is any objection to report, the client should inform issuing laboratory within 15 days from the date of receiving test report.

Address:

1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Tangwei, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China

TEL: 400-788-9558

P.C.: 518103

FAX: 0755-33229357

Website : http://www.chnbctc.com

E-Mail : <u>bctc@bctc-lab.com.cn</u>

\*\*\*\*\* END \*\*\*\*\*

No. : BCTC/RF-EMC-005

Page 70 of 70