

TEST REPORT

Product : Bluetooth Headphones
Trade mark : Joytrain, boAt
Model/Type reference : JOY-1407, Rockerz 430
Serial Number : N/A
Report Number : EED32J00029401
FCC ID : 2ALIM-JOY-1407
Date of Issue : Mar. 29, 2017
Test Standards : 47 CFR Part 15 Subpart C (2015)
Test result : PASS

Prepared for:

Viewpoint Electronic Technology Co., Ltd.
No.1, Fengyuan Road, Dakan Management Zone, Huangjiang Town,
Dongguan, Guangdong, China.

Prepared by:

Centre Testing International Group Co., Ltd.
Hongwei Industrial Zone, Bao'an 70 District,
Shenzhen, Guangdong, China
TEL: +86-755-3368 3668
FAX: +86-755-3368 3385

Tested By:

Tom - chen

Tom chen (Test Project)

Compiled by:

Ware Xin

Ware xin (Project Engineer)

Reviewed by:

Kevin Yang

Kevin yang (Reviewer)

Approved by:

Sheek Luo

Sheek Luo (Lab supervisor)

Date:

Mar. 29, 2017

Check No.: 2496526077



2 Version

Version No.	Date	Description
00	Mar. 29, 2017	Original

3 Test Summary

Test Item	Test Requirement	Test method	Result
Antenna Requirement	47 CFR Part 15 Subpart C Section 15.203/15.247 (c)	ANSI C63.10-2013	PASS
AC Power Line Conducted Emission	47 CFR Part 15 Subpart C Section 15.207	ANSI C63.10-2013	PASS
Conducted Peak Output Power	47 CFR Part 15 Subpart C Section 15.247 (b)(1)	ANSI C63.10-2013	PASS
20dB Occupied Bandwidth	47 CFR Part 15 Subpart C Section 15.247 (a)(1)	ANSI C63.10-2013	PASS
Carrier Frequencies Separation	47 CFR Part 15 Subpart C Section 15.247 (a)(1)	ANSI C63.10-2013	PASS
Hopping Channel Number	47 CFR Part 15 Subpart C Section 15.247 (b)	ANSI C63.10-2013	PASS
Dwell Time	47 CFR Part 15 Subpart C Section 15.247 (a)(1)	ANSI C63.10-2013	PASS
Pseudorandom Frequency Hopping Sequence	47 CFR Part 15 Subpart C Section 15.247(b)(4)&TCB Exclusion List (7 July 2002)	ANSI C63.10-2013	PASS
RF Conducted Spurious Emissions	47 CFR Part 15 Subpart C Section 15.247(d)	ANSI C63.10-2013	PASS
Radiated Spurious emissions	47 CFR Part 15 Subpart C Section 15.205/15.209	ANSI C63.10-2013	PASS

Remark:

Test according to ANSI C63.4-2014 & ANSI C63.10-2013.

The tested samples and the sample information are provided by the client.

Model No.: JOY-1407, Rockerz 430

Only the model JOY-1407 was tested, since the electrical circuit design, layout, components used and internal wiring were identical for the above models, with difference being outer decoration.

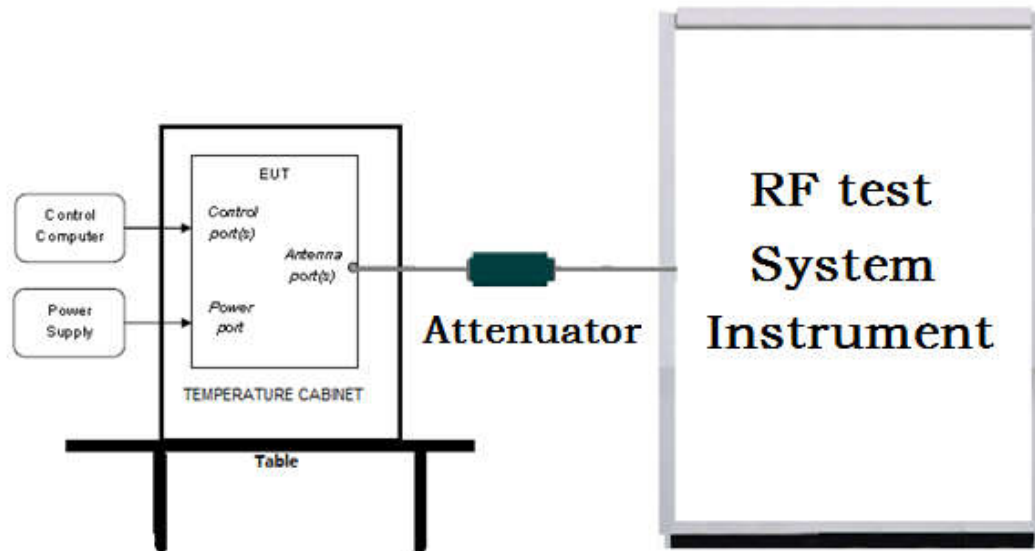
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5 Test Requirement

5.1 Test setup

5.1.1 For Conducted test setup



5.1.2 For Radiated Emissions test setup

Radiated Emissions setup:

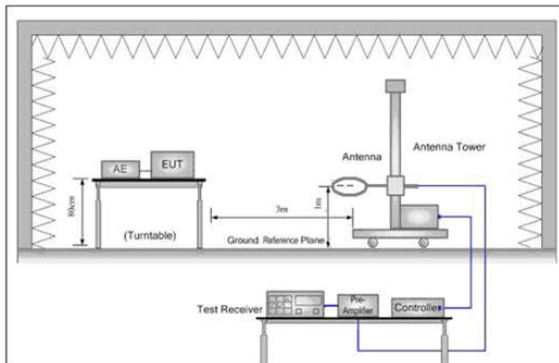


Figure 1. Below 30MHz

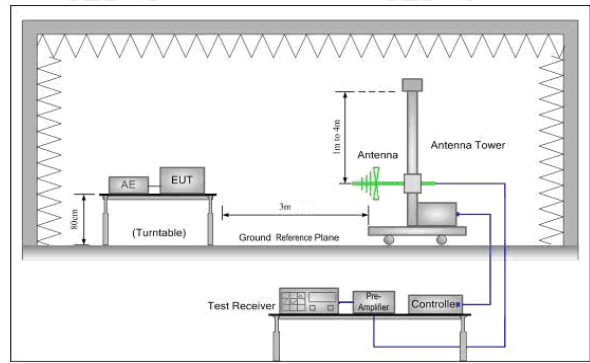


Figure 2. 30MHz to 1GHz

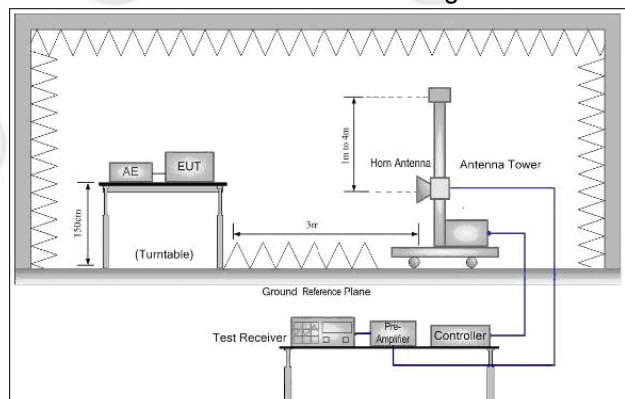
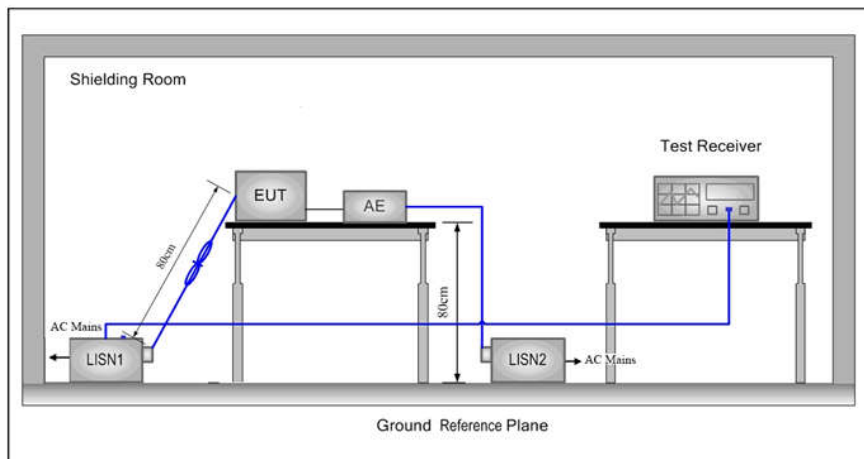


Figure 3. Above 1GHz

5.1.3 For Conducted Emissions test setup

Conducted Emissions setup



5.2 Test Environment

Operating Environment:	
Temperature:	24°C
Humidity:	54% RH
Atmospheric Pressure:	1010mbar

5.3 Test Condition

Test Mode	Tx	RF Channel		
		Low(L)	Middle(M)	High(H)
GFSK/ π /4DQPSK/ 8DPSK(DH1,DH3,DH5)	2402MHz ~2480 MHz	Channel 1	Channel 40	Channel79
		2402MHz	2441MHz	2480MHz

TX mode: The EUT transmitted the continuous modulation test signal at the specific channel(s).

Test mode:

Pre-scan under all rate at Highest channel 79

Mode	GFSK		
packets	1-DH1	1-DH3	1-DH5
Power(dBm)	6.213	6.288	6.300

Mode	π /4DQPSK		
packets	2-DH1	2-DH3	2-DH5
Power(dBm)	4.251	4.264	4.268
Mode	8DPSK		
packets	3-DH1	3-DH3	3-DH5
Power(dBm)	4.506	4.519	4.521

Through Pre-scan, 1-DH5 packet the power is the worst case of GFSK, 2-DH5 packet the power is the worst case of π /4DQPSK, 3-DH5 packet the power is the worst case of 8DPSK.

6 General Information

6.1 Client Information

Applicant:	Viewpoint Electronic Technology Co., Ltd.
Address of Applicant:	No.1, Fengyuan Road, Dakan Management Zone, Huangjiang Town, Dongguan, Guangdong, China.
Manufacturer:	Viewpoint Electronic Technology Co., Ltd.
Address of Manufacturer:	No.1, Fengyuan Road, Dakan Management Zone, Huangjiang Town, Dongguan, Guangdong, China.
Factory:	Viewpoint Electronic Technology Co., Ltd.
Address of Factory:	No.1, Fengyuan Road, Dakan Management Zone, Huangjiang Town, Dongguan, Guangdong, China.

6.2 General Description of EUT

Product Name:	Bluetooth Headphones
Model No.:	JOY-1407, Rockerz 430
Test Model No.:	JOY-1407
Trade mark:	Joytrain, boAt
EUT Supports Radios application:	BT4.1 Dual mode
Power Supply:	3.7V/300mAh (Lithium Battery)
Sample Received Date:	Mar. 03, 2017
Sample tested Date:	Mar. 03, 2017 to Mar. 29, 2017

6.3 Product Specification subjective to this standard

Operation Frequency:	2402MHz~2480MHz						
Bluetooth Version:	3.0						
Modulation Technique:	Frequency Hopping Spread Spectrum(FHSS)						
Modulation Type:	GFSK, $\pi/4$ DQPSK, 8DPSK						
Number of Channel:	79						
Hopping Channel Type:	Adaptive Frequency Hopping systems						
Test Power Grade:	Class 2(manufacturer declare)						
Test Software of EUT:	CSR Blue Test3 2.5.8 (manufacturer declare)						
Antenna Type:	PIFA Antenna						
Antenna Gain:	0dBi						
Test Voltage:	AC 120V, 60Hz						
Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2402MHz	21	2422MHz	41	2442MHz	61	2462MHz
2	2403MHz	22	2423MHz	42	2443MHz	62	2463MHz
3	2404MHz	23	2424MHz	43	2444MHz	63	2464MHz
4	2405MHz	24	2425MHz	44	2445MHz	64	2465MHz
5	2406MHz	25	2426MHz	45	2446MHz	65	2466MHz
6	2407MHz	26	2427MHz	46	2447MHz	66	2467MHz

7	2408MHz	27	2428MHz	47	2448MHz	67	2468MHz
8	2409MHz	28	2429MHz	48	2449MHz	68	2469MHz
9	2410MHz	29	2430MHz	49	2450MHz	69	2470MHz
10	2411MHz	30	2431MHz	50	2451MHz	70	2471MHz
11	2412MHz	31	2432MHz	51	2452MHz	71	2472MHz
12	2413MHz	32	2433MHz	52	2453MHz	72	2473MHz
13	2414MHz	33	2434MHz	53	2454MHz	73	2474MHz
14	2415MHz	34	2435MHz	54	2455MHz	74	2475MHz
15	2416MHz	35	2436MHz	55	2456MHz	75	2476MHz
16	2417MHz	36	2437MHz	56	2457MHz	76	2477MHz
17	2418MHz	37	2438MHz	57	2458MHz	77	2478MHz
18	2419MHz	38	2439MHz	58	2459MHz	78	2479MHz
19	2420MHz	39	2440MHz	59	2460MHz	79	2480MHz
20	2421MHz	40	2441MHz	60	2461MHz		

6.4 Description of Support Units

The EUT has been tested with associated equipment below.

Associated equipment name		Manufacture	model	Serial number	Supplied by
AE1	Adapter	apple	A1402	0005ADUCN	CTI

6.5 Test Location

All tests were performed at:

Centre Testing International Group Co., Ltd.

Hongwei Industrial Zone, Bao'an 70 District, Shenzhen, Guangdong, China 518101

Telephone: +86 (0) 755 33683668 Fax: +86 (0) 755 33683385

No tests were sub-contracted.

6.6 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

CNAS-Lab Code: L1910

Centre Testing International Group Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories..

A2LA-Lab Cert. No. 3061.01

Centre Testing International Group Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

FCC-Registration No.: 886427

Centre Testing International Group Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Registration 886427.

IC-Registration No.: 7408A-2

The 3m Alternate Test Site of Centre Testing International Group Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 7408A-2 .

IC-Registration No.: 7408B-1

The 10m Alternate Test Site of Centre Testing International Group Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 7408B-1.

NEMKO-Aut. No.: ELA503

Centre Testing International Group Co., Ltd. has been assessed the quality assurance system, the testing facilities, qualifications and testing practices of the relevant parts of the organization. The quality assurance system of the Laboratory has been validated against ISO/IEC 17025 or equivalent. The laboratory also fulfils the conditions described in Nemko Document NLA-10.

VCCI

The Radiation 3 &10 meters site of Centre Testing International Group Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-4096.

Main Ports Conducted Interference Measurement of Centre Testing International Group Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: C-4563.

Telecommunication Ports Conducted Disturbance Measurement of Centre Testing International Group Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: T-2146.

The Radiation 3 meters site of Centre Testing International Group Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-758

6.7 Deviation from Standards

None.

6.8 Abnormalities from Standard Conditions

None.

6.9 Other Information Requested by the Customer

None.

6.10 Measurement Uncertainty (95% confidence levels, k=2)

No.	Item	Measurement Uncertainty
1	Radio Frequency	7.9×10^{-8}
2	RF power, conducted	0.31dB (30MHz-1GHz)
		0.57dB (1GHz-18GHz)
3	Radiated Spurious emission test	4.5dB (30MHz-1GHz)
		4.8dB (1GHz-12.75GHz)
4	Conduction emission	3.6dB (9kHz to 150kHz)
		3.2dB (150kHz to 30MHz)
5	Temperature test	0.64°C
6	Humidity test	2.8%
7	DC power voltages	0.025%

7 Equipment List

RF test system					
Equipment	Manufacturer	Model No.	Serial Number	Cal. Date (mm-dd-yyyy)	Cal. Due date (mm-dd-yyyy)
Signal Generator	Keysight	E8257D	MY53401106	04-01-2016	03-31-2017
Spectrum Analyzer	Keysight	N9010A	MY54510339	04-01-2016	03-31-2017
Signal Generator	Keysight	N5182B	MY53051549	04-01-2016	03-31-2017
High-pass filter	Sinoscite	FL3CX03WG18 NM12-0398-002	TTF20120439	01-11-2017	01-10-2018
High-pass filter	MICRO-TRONICS	SPA-F-63029-4	003	01-11-2017	01-10-2018
DC Power	Keysight	E3642A	MY54436035	04-01-2016	03-31-2017
BT&WI-FI Automatic control	R&S	OSP120	101374	04-01-2016	03-31-2017
RF control unit	JS Tonscend	JS0806-2	158060006	04-01-2016	03-31-2017

Conducted disturbance Test					
Equipment	Manufacturer	Model No.	Serial Number	Cal. date (mm-dd-yyyy)	Cal. Due date (mm-dd-yyyy)
Receiver	R&S	ESCI	100009	06-16-2016	06-15-2017
Temperature/ Humidity Indicator	TAYLOR	1451	1905	04-27-2016	04-26-2017
LISN	R&S	ENV216	100098	06-16-2016	06-15-2017
LISN	schwarzbeck	NNLK8121	8121-529	06-16-2016	06-15-2017
Current Probe	R&S	EZ17	100106	06-16-2016	06-15-2017
ISN	TESEQ GmbH	ISN T800	30297	01-27-2017	01-25-2018

3M Semi/full-anechoic Chamber					
Equipment	Manufacturer	Model No.	Serial Number	Cal. date (mm-dd-yyyy)	Cal. Due date (mm-dd-yyyy)
3M Chamber & Accessory Equipment	TDK	SAC-3	TTE20130797	06-05-2016	06-05-2019
TRILOG Broadband Antenna	SCHWARZBEC K	VULB9163	9163-484	05-23-2016	05-22-2017
Microwave Preamplifier	Agilent	8449B	3008A02425	02-16-2017	02-15-2018
Horn Antenna	ETS-LINDGREN	3117	00057407	07-20-2015	07-18-2018
Loop Antenna	ETS	6502	00071730	07-30-2015	07-28-2017
Microwave Preamplifier	A.H.SYSTEMS	PAP-1840-60	6041.6042	06-30-2015	06-28-2018
Horn Antenna	A.H.SYSTEMS	SAS-574 374	374	06-30-2015	06-28-2018
Spectrum Analyzer	R&S	FSP40	100416	06-16-2016	06-15-2017
Receiver	R&S	ESCI	100435	06-16-2016	06-15-2017
LISN	schwarzbeck	NNBM8125	81251547	06-16-2016	06-15-2017
LISN	schwarzbeck	NNBM8125	81251548	06-16-2016	06-15-2017
Signal Generator	Agilent	E4438C	MY45095744	04-01-2016	03-31-2017
Signal Generator	Keysight	E8257D	MY53401106	04-01-2016	03-31-2017
Temperature/ Humidity Indicator	TAYLOR	1451	1905	04-27-2016	04-26-2017
Cable line	Fulai(7M)	SF106	5219/6A	01-11-2017	01-10-2018
Cable line	Fulai(6M)	SF106	5220/6A	01-11-2017	01-10-2018
Cable line	Fulai(3M)	SF106	5216/6A	01-11-2017	01-10-2018
Cable line	Fulai(3M)	SF106	5217/6A	01-11-2017	01-10-2018
High-pass filter	Sinoscite	FL3CX03WG18 NM12-0398-002	TTF20120439	01-11-2017	01-10-2018
High-pass filter	MICRO-TRONICS	SPA-F-63029-4	003	01-11-2017	01-10-2018
band rejection filter	Sinoscite	FL5CX01CA09 CL12-0395-001	TTF20120434	01-11-2017	01-10-2018
band rejection filter	Sinoscite	FL5CX01CA08 CL12-0393-001	TTF20120435	01-11-2017	01-10-2018
band rejection filter	Sinoscite	FL5CX02CA04 CL12-0396-002	TTF20120436	01-11-2017	01-10-2018
band rejection filter	Sinoscite	FL5CX02CA03 CL12-0394-001	TTF20120437	01-11-2017	01-10-2018

8 Radio Technical Requirements Specification

Reference documents for testing:

No.	Identity	Document Title
1	FCC Part15C (2015)	Subpart C-Intentional Radiators
2	ANSI C63.10-2013	American National Standard for Testing Unlicensed Wireless Devices

Test Results List:

Test requirement	Test method	Test item	Verdict	Note
Part15C Section 15.247 (a)(1)	ANSI 63.10	20dB Occupied Bandwidth	PASS	Appendix A)
Part15C Section 15.247 (a)(1)	ANSI 63.10	Carrier Frequencies Separation	PASS	Appendix B)
Part15C Section 15.247 (a)(1)	ANSI 63.10	Dwell Time	PASS	Appendix C)
Part15C Section 15.247 (b)	ANSI 63.10	Hopping Channel Number	PASS	Appendix D)
Part15C Section 15.247 (b)(1)	ANSI 63.10	Conducted Peak Output Power	PASS	Appendix E)
Part15C Section 15.247(d)	ANSI 63.10	Band-edge for RF Conducted Emissions	PASS	Appendix F)
Part15C Section 15.247(d)	ANSI 63.10	RF Conducted Spurious Emissions	PASS	Appendix G)
Part15C Section 15.247 (a)(1)	ANSI 63.10	Pseudorandom Frequency Hopping Sequence	PASS	Appendix H)
Part15C Section 15.203/15.247 (c)	ANSI 63.10	Antenna Requirement	PASS	Appendix I)
Part15C Section 15.207	ANSI 63.10	AC Power Line Conducted Emission	PASS	Appendix J)
Part15C Section 15.205/15.209	ANSI 63.10	Restricted bands around fundamental frequency (Radiated) Emission)	PASS	Appendix K)
Part15C Section 15.205/15.209	ANSI 63.10	Radiated Spurious Emissions	PASS	Appendix L)

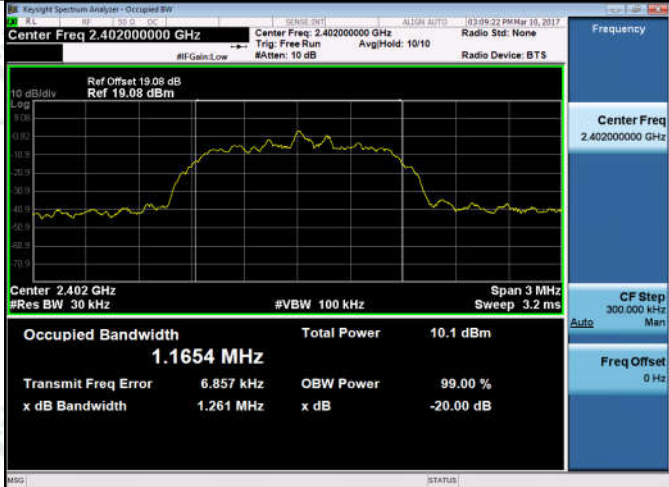
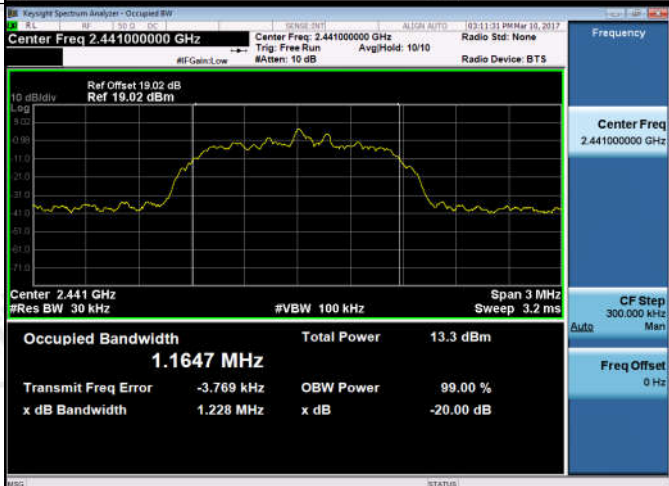
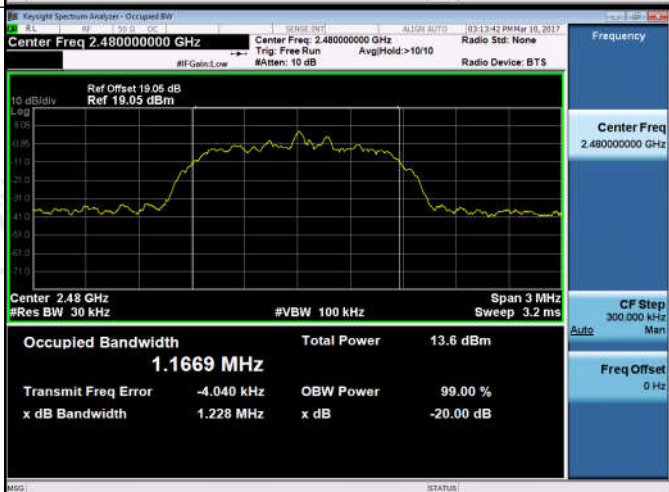
Appendix A): 20dB Occupied Bandwidth

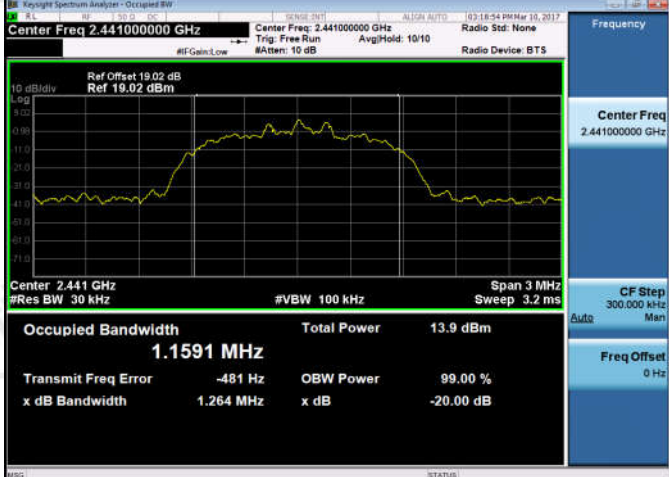
Test Result

Mode	Channel.	20dB Bandwidth [MHz]	99% OBW [MHz]	Verdict	Remark
GFSK	LCH	0.9410	0.86070	PASS	Peak detector
GFSK	MCH	0.9376	0.85128	PASS	
GFSK	HCH	0.9390	0.85686	PASS	
$\pi/4$ DQPSK	LCH	1.261	1.1654	PASS	
$\pi/4$ DQPSK	MCH	1.228	1.1647	PASS	
$\pi/4$ DQPSK	HCH	1.228	1.1669	PASS	
8DPSK	LCH	1.271	1.1574	PASS	
8DPSK	MCH	1.264	1.1591	PASS	
8DPSK	HCH	1.258	1.1594	PASS	

Test Graph



<p>$\pi/4$DQPSK/LCH</p>	
<p>$\pi/4$DQPSK/MCH</p>	
<p>$\pi/4$DQPSK/HCH</p>	

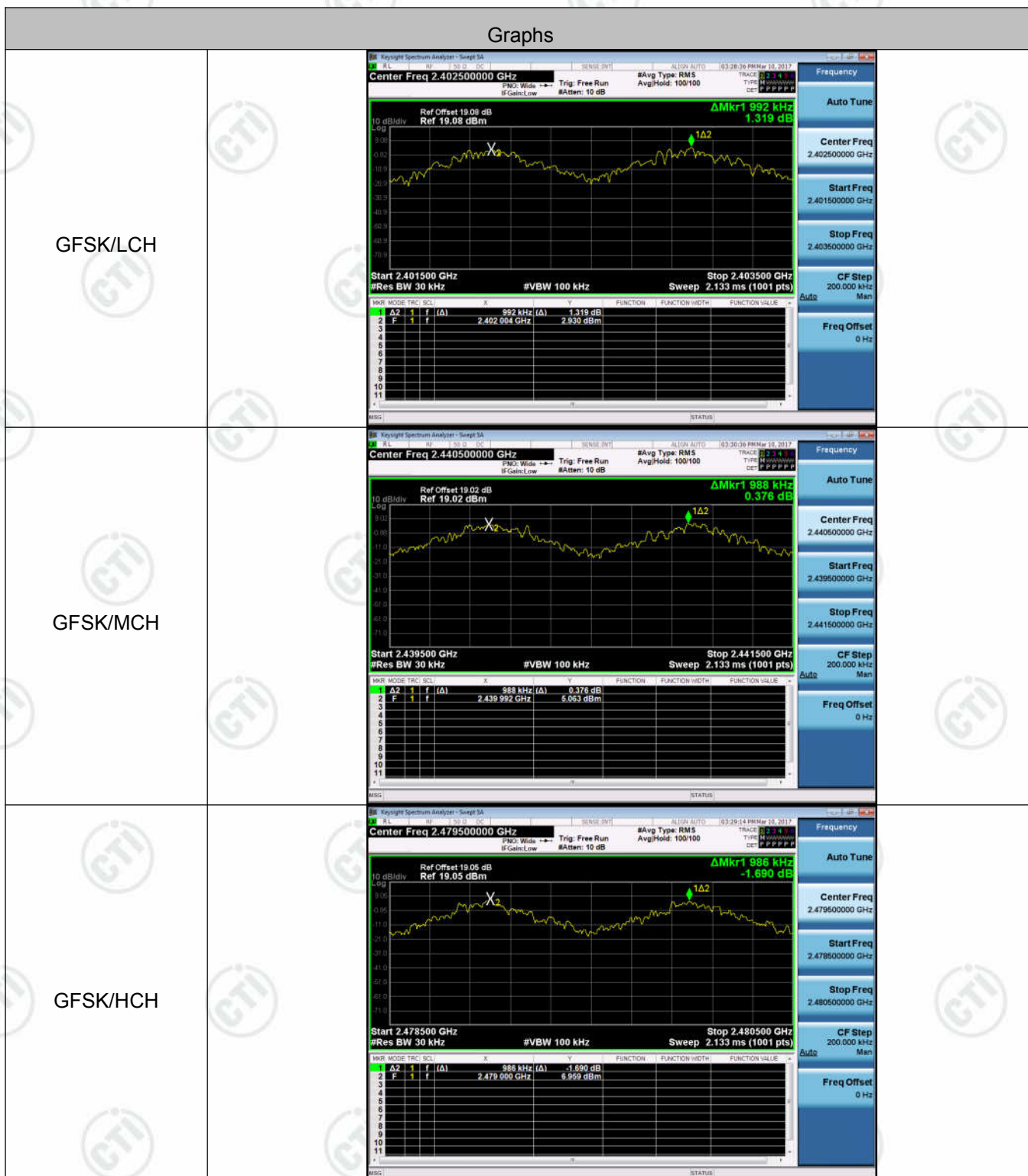
8DPSK/LCH	
8DPSK/MCH	
8DPSK/HCH	

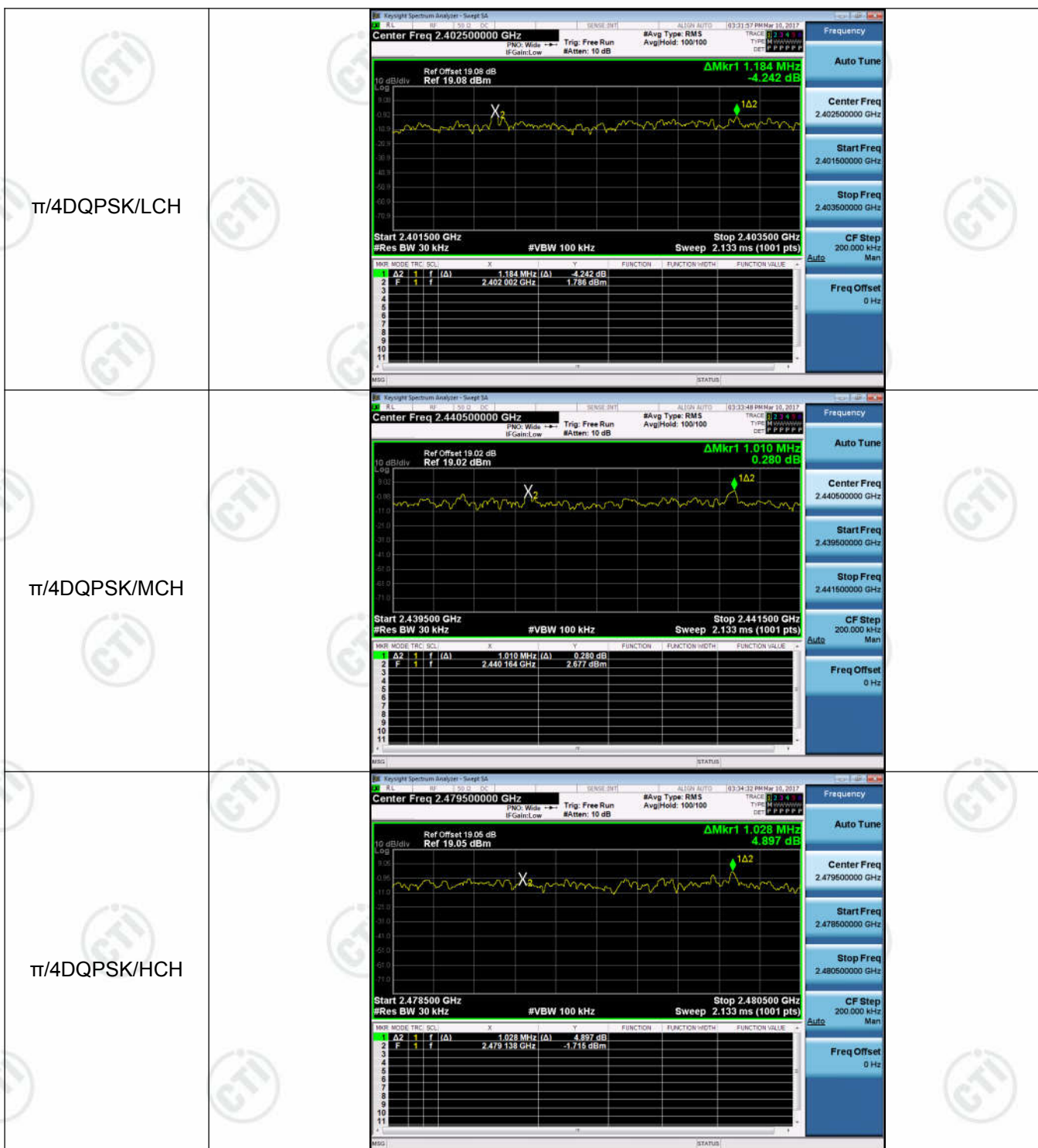
Appendix B): Carrier Frequency Separation

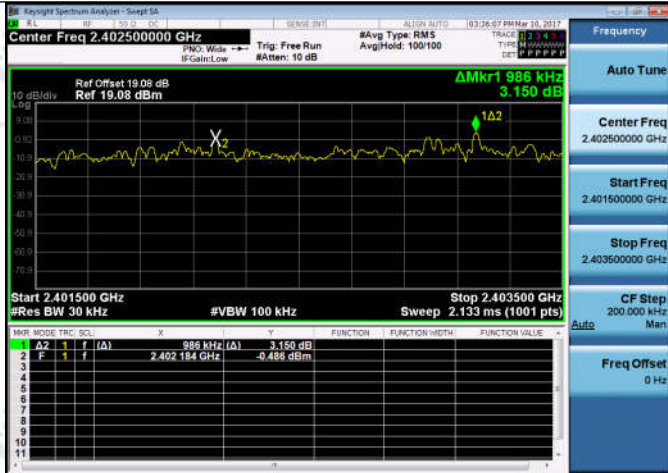
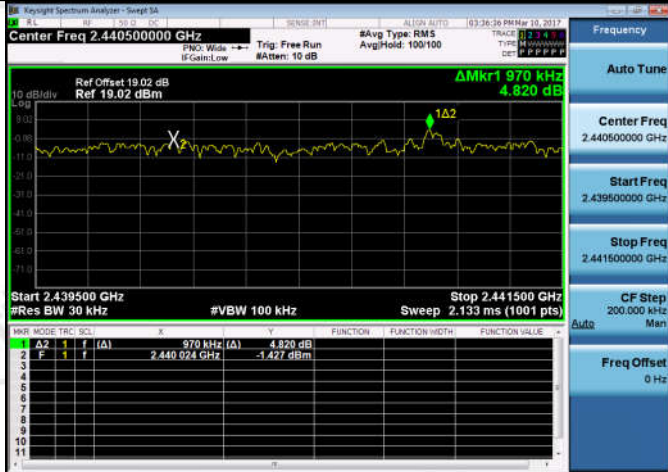
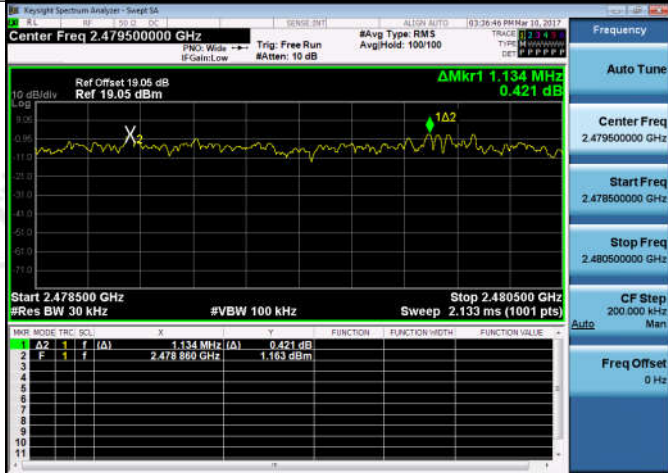
Result Table

Mode	Channel.	Carrier Frequency Separation [MHz]	Verdict
GFSK	LCH	0.992	PASS
GFSK	MCH	0.988	PASS
GFSK	HCH	0.986	PASS
$\pi/4$ DQPSK	LCH	1.184	PASS
$\pi/4$ DQPSK	MCH	1.010	PASS
$\pi/4$ DQPSK	HCH	1.028	PASS
8DPSK	LCH	0.986	PASS
8DPSK	MCH	0.970	PASS
8DPSK	HCH	1.134	PASS

Test Graph





8DPSK/LCH	
8DPSK/MCH	
8DPSK/HCH	

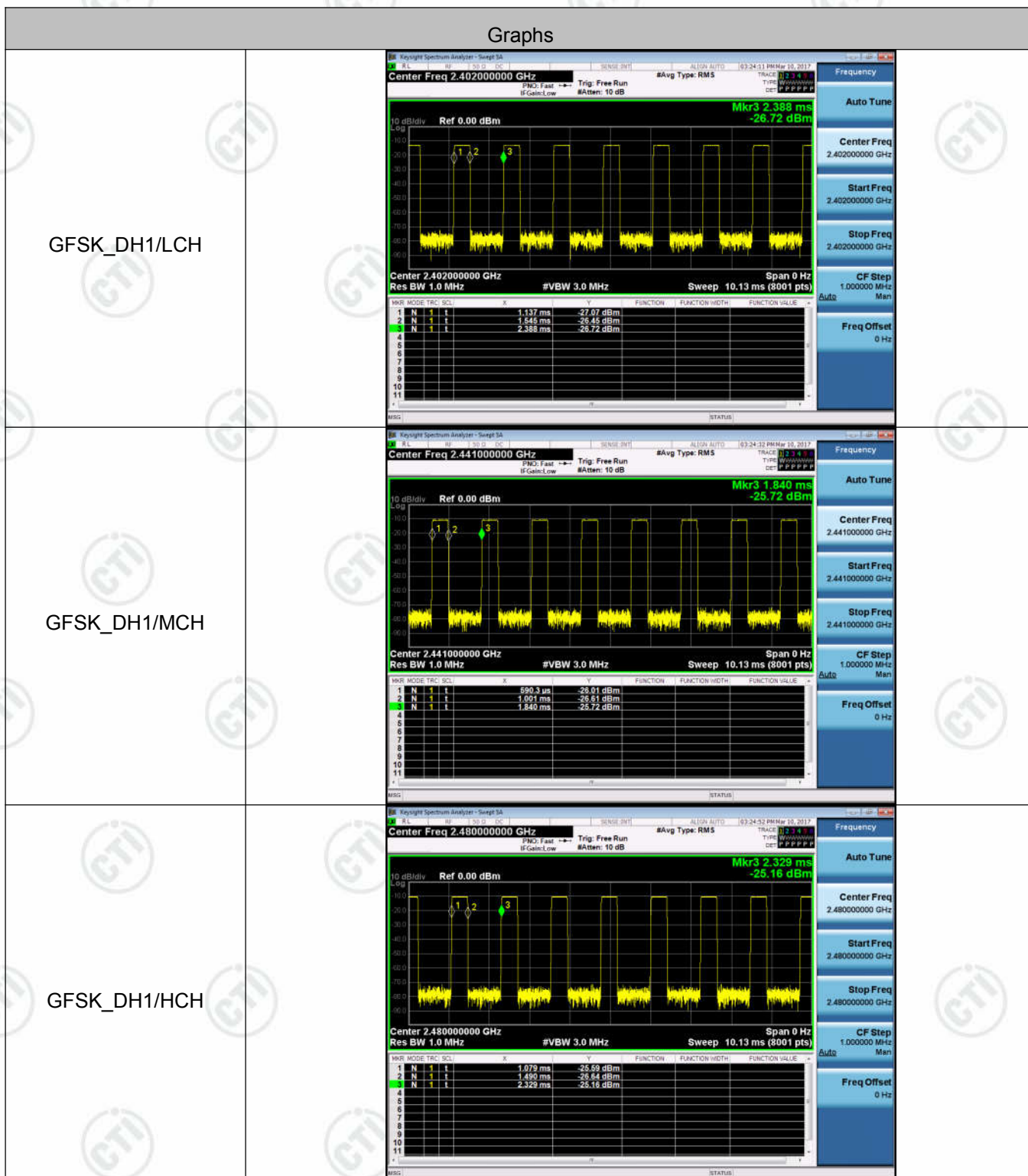
Appendix C): Dwell Time

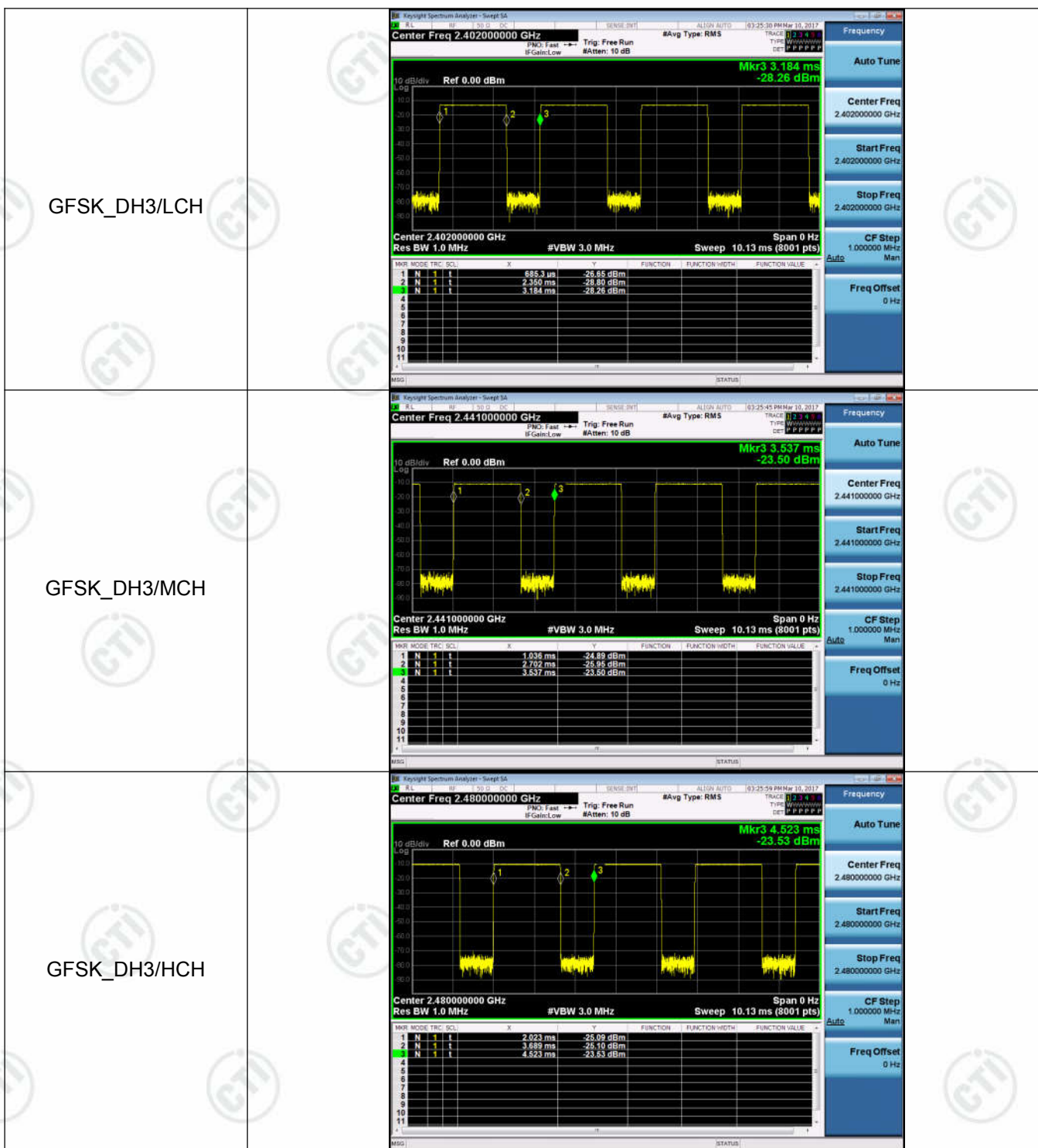
Result Table

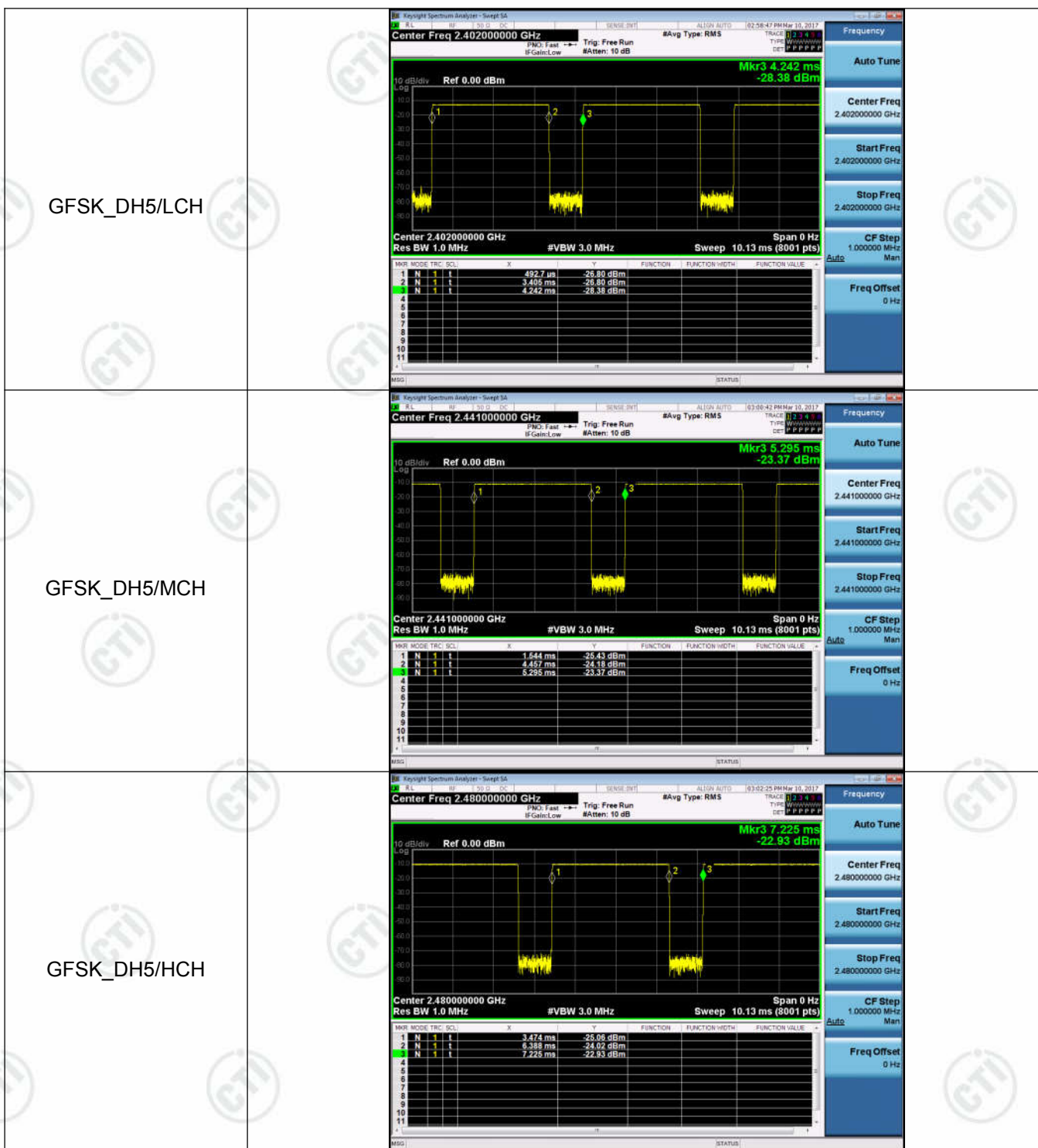
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Duty Cycle [%]	Verdict
GFSK	DH1	LCH	0.40786	320	0.131	0.33	PASS
GFSK	DH1	MCH	0.410403	320	0.131	0.33	PASS
GFSK	DH1	HCH	0.4104	320	0.131	0.33	PASS
GFSK	DH3	LCH	1.664403	160	0.266	0.67	PASS
GFSK	DH3	MCH	1.66567	160	0.267	0.67	PASS
GFSK	DH3	HCH	1.66566	160	0.267	0.67	PASS
GFSK	DH5	LCH	2.912067	106.7	0.311	0.78	PASS
GFSK	DH5	MCH	2.91333	106.7	0.311	0.78	PASS
GFSK	DH5	HCH	2.91333	106.7	0.311	0.78	PASS

Remark : All modes are tested, only the worst mode GFSK is reported.

Test Graph





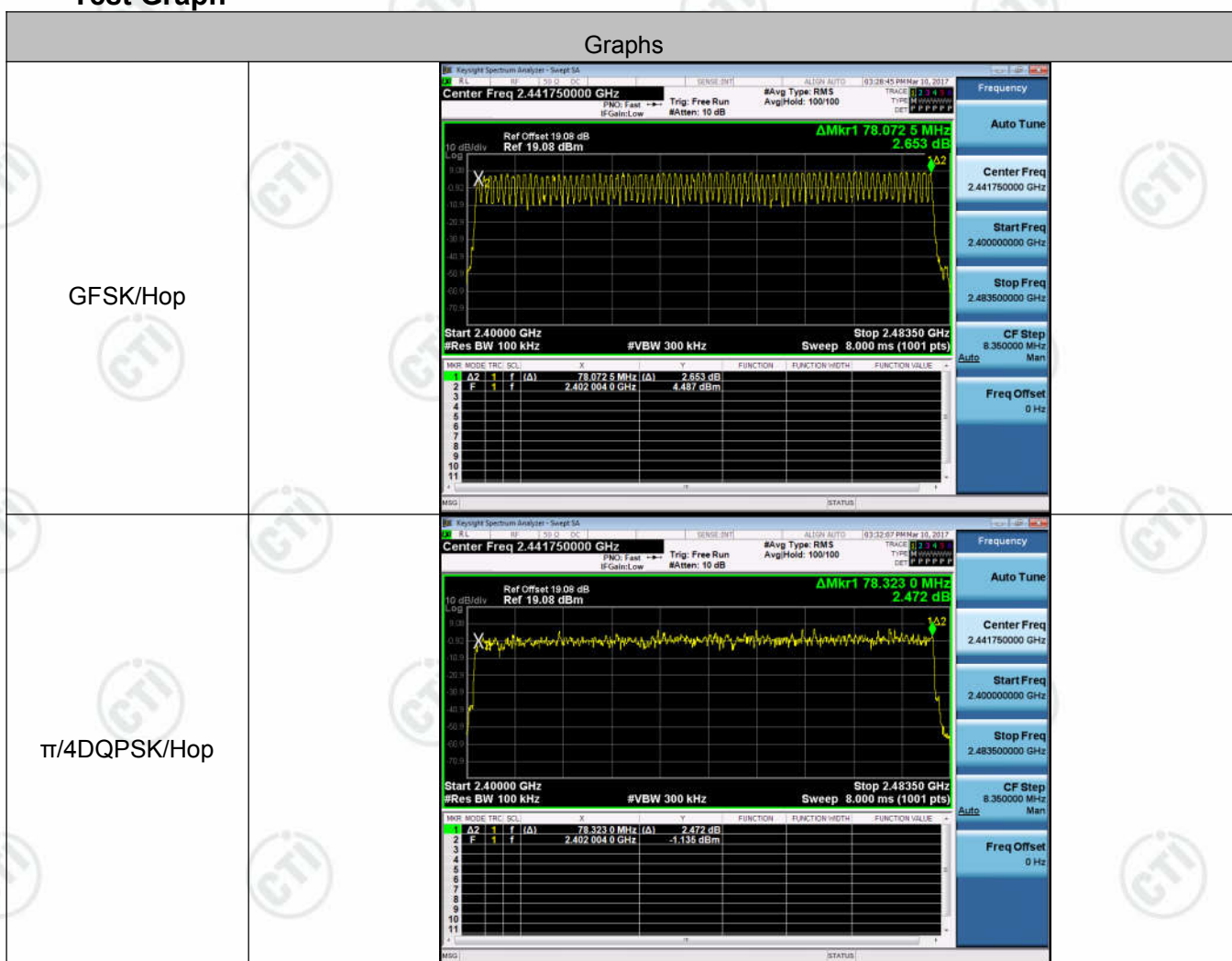


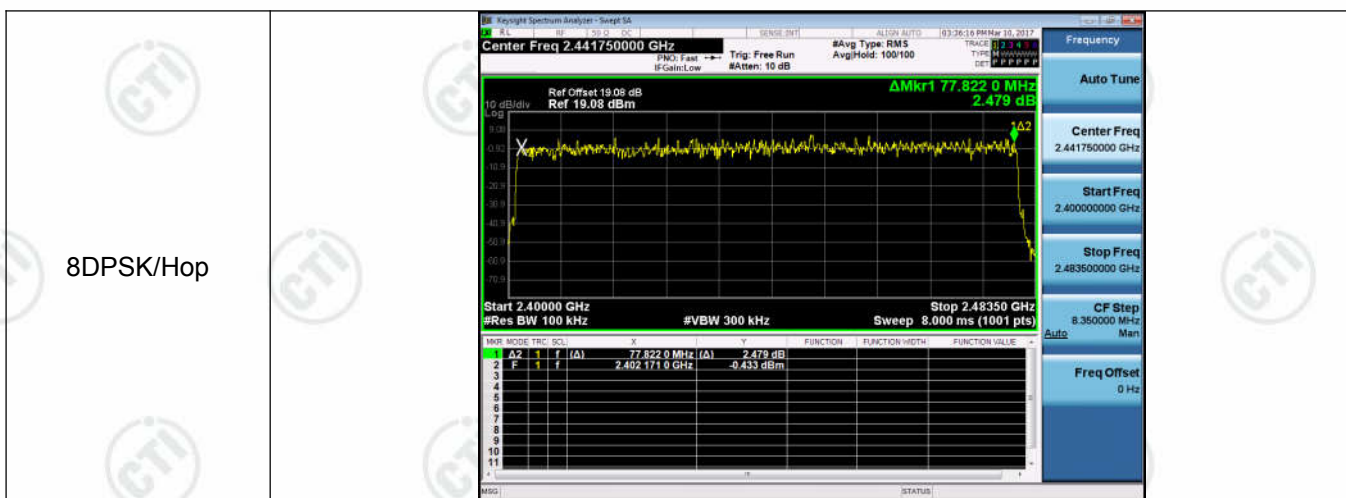
Appendix D): Hopping Channel Number

Result Table

Mode	Channel.	Number of Hopping Channel	Verdict
GFSK	Hop	79	PASS
$\pi/4$ DQPSK	Hop	79	PASS
8DPSK	Hop	79	PASS

Test Graph



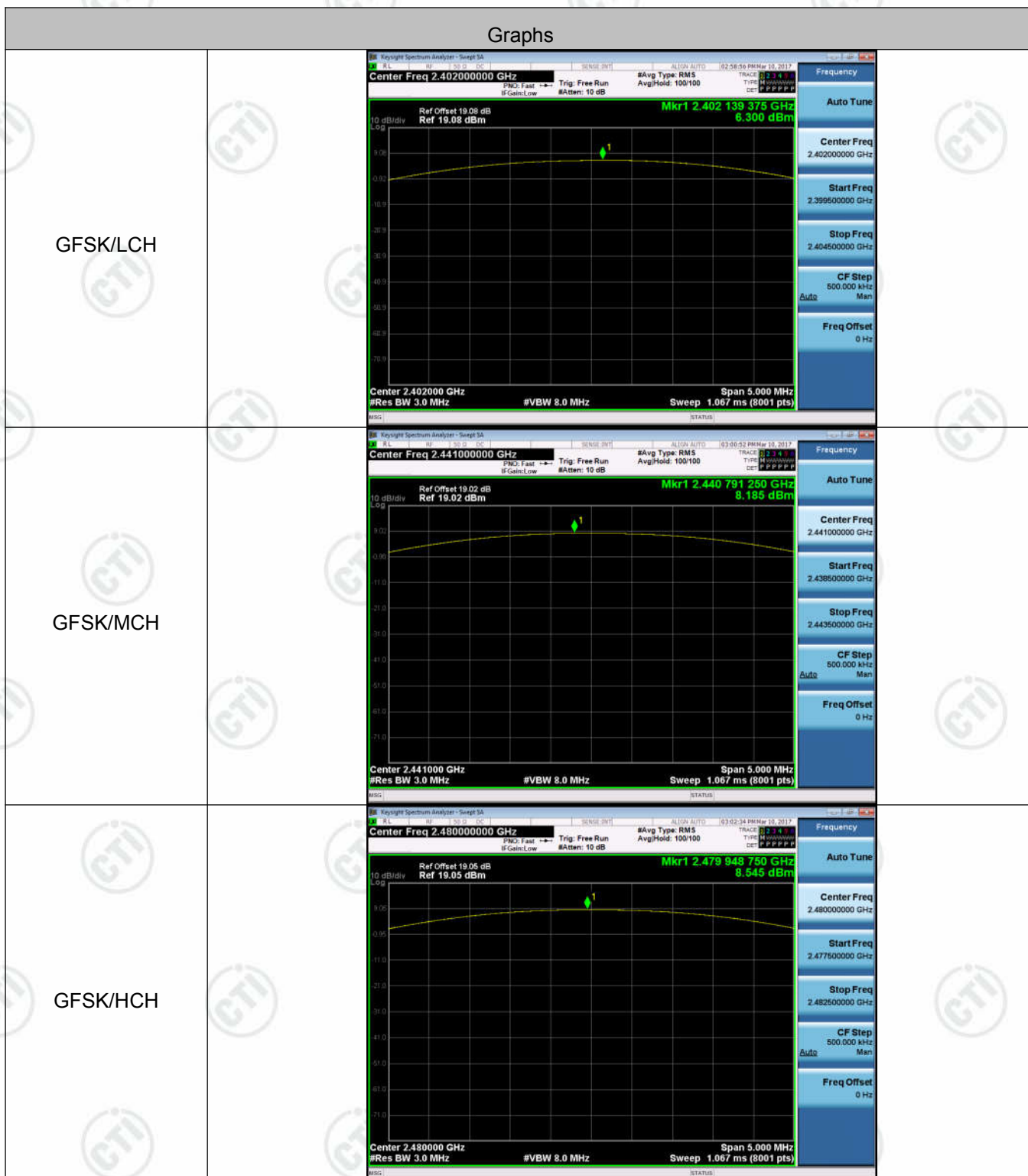



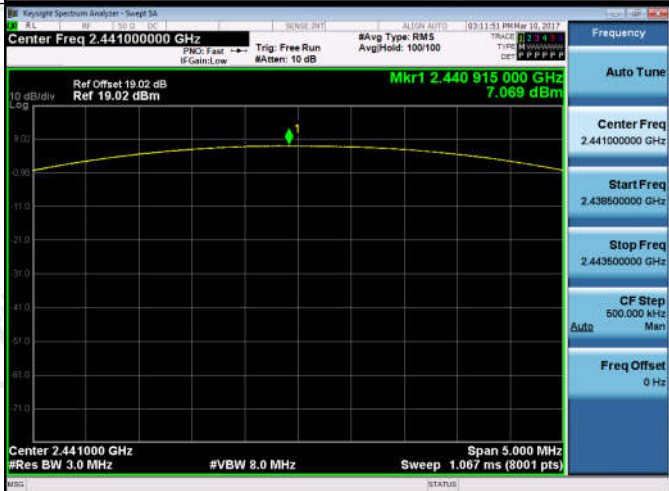
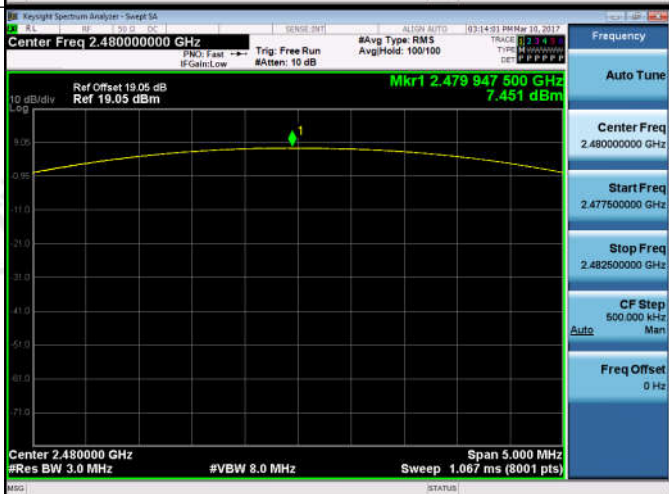
Appendix E): Conducted Peak Output Power

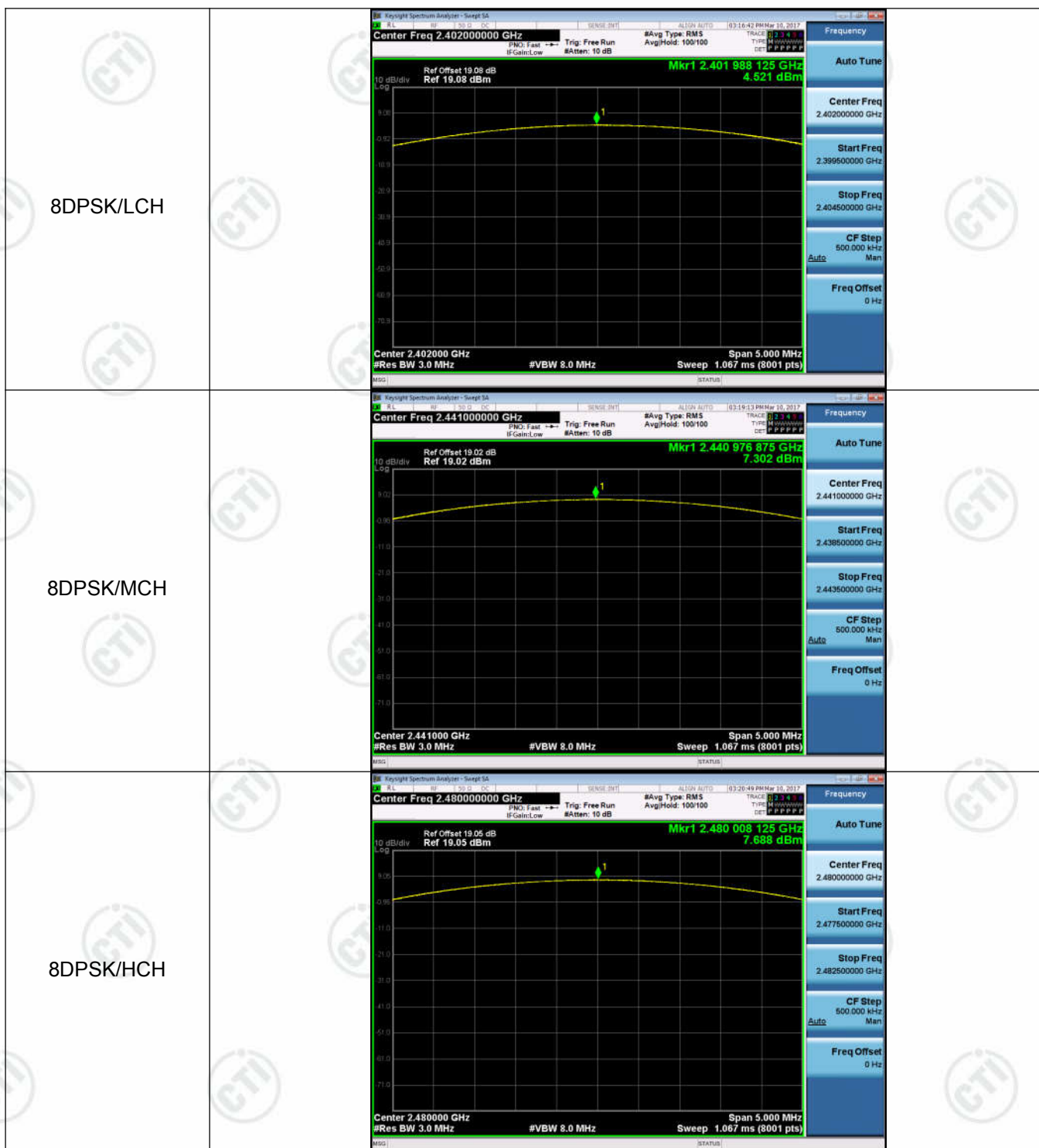
Result Table

Mode	Channel.	Maximum Peak Output Power [dBm]	Verdict
GFSK	LCH	6.300	PASS
GFSK	MCH	8.185	PASS
GFSK	HCH	8.545	PASS
$\pi/4$ DQPSK	LCH	4.268	PASS
$\pi/4$ DQPSK	MCH	7.069	PASS
$\pi/4$ DQPSK	HCH	7.451	PASS
8DPSK	LCH	4.521	PASS
8DPSK	MCH	7.302	PASS
8DPSK	HCH	7.688	PASS

Test Graph



<p>$\pi/4$DQPSK/LCH</p>	
<p>$\pi/4$DQPSK/MCH</p>	
<p>$\pi/4$DQPSK/HCH</p>	



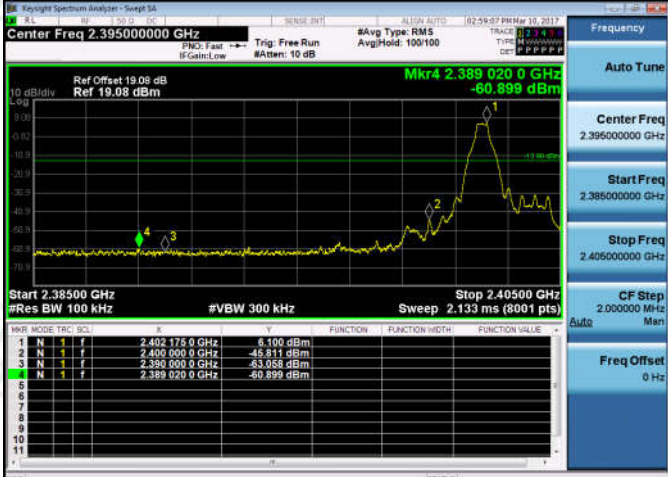
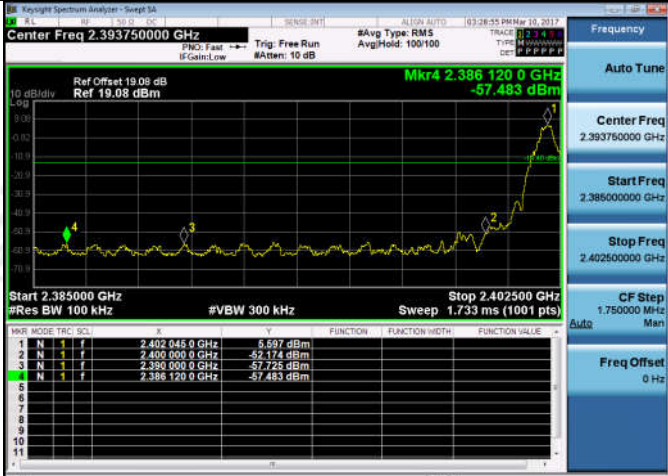
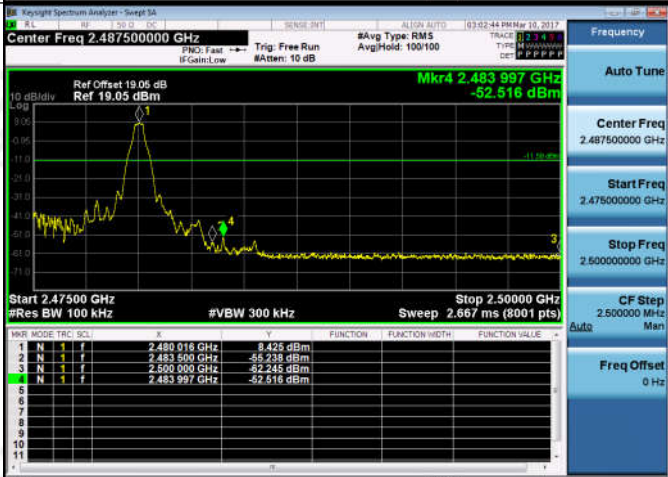
Appendix F): Band-edge for RF Conducted Emissions

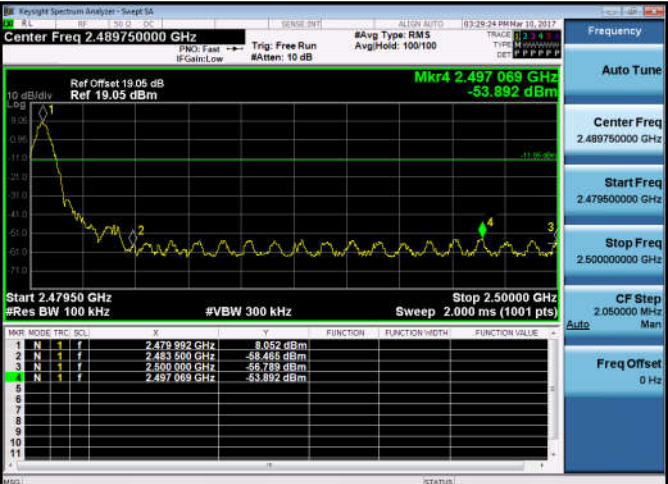
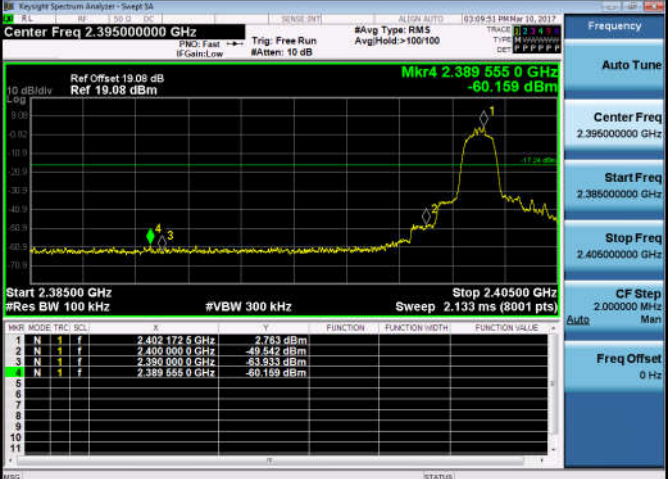
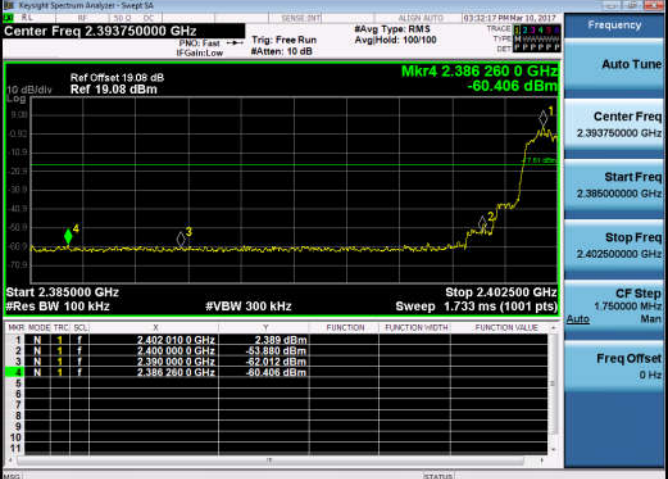
Result Table

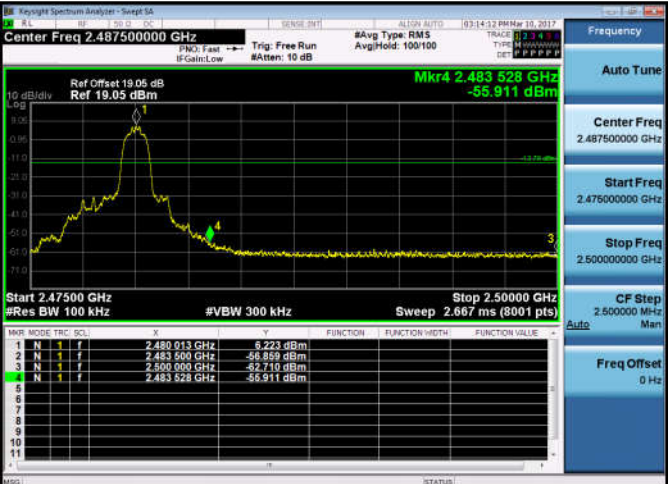
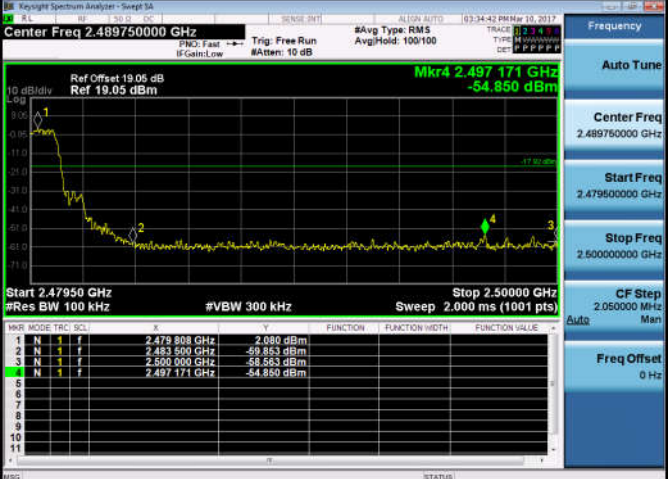

Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	6.100	Off	-60.899	-13.9	PASS
			5.597	On	-57.483	-14.4	PASS
GFSK	HCH	2480	8.425	Off	-52.516	-11.58	PASS
			8.052	On	-53.892	-11.95	PASS
$\pi/4$ DQPSK	LCH	2402	2.763	Off	-60.159	-17.24	PASS
			2.389	On	-60.406	-17.61	PASS
$\pi/4$ DQPSK	HCH	2480	6.223	Off	-55.911	-13.78	PASS
			2.080	On	-54.850	-17.92	PASS
8DPSK	LCH	2402	2.771	Off	-60.274	-17.23	PASS
			2.658	On	-60.351	-17.34	PASS
8DPSK	HCH	2480	6.296	Off	-55.555	-13.7	PASS
			3.123	On	-54.979	-16.88	PASS

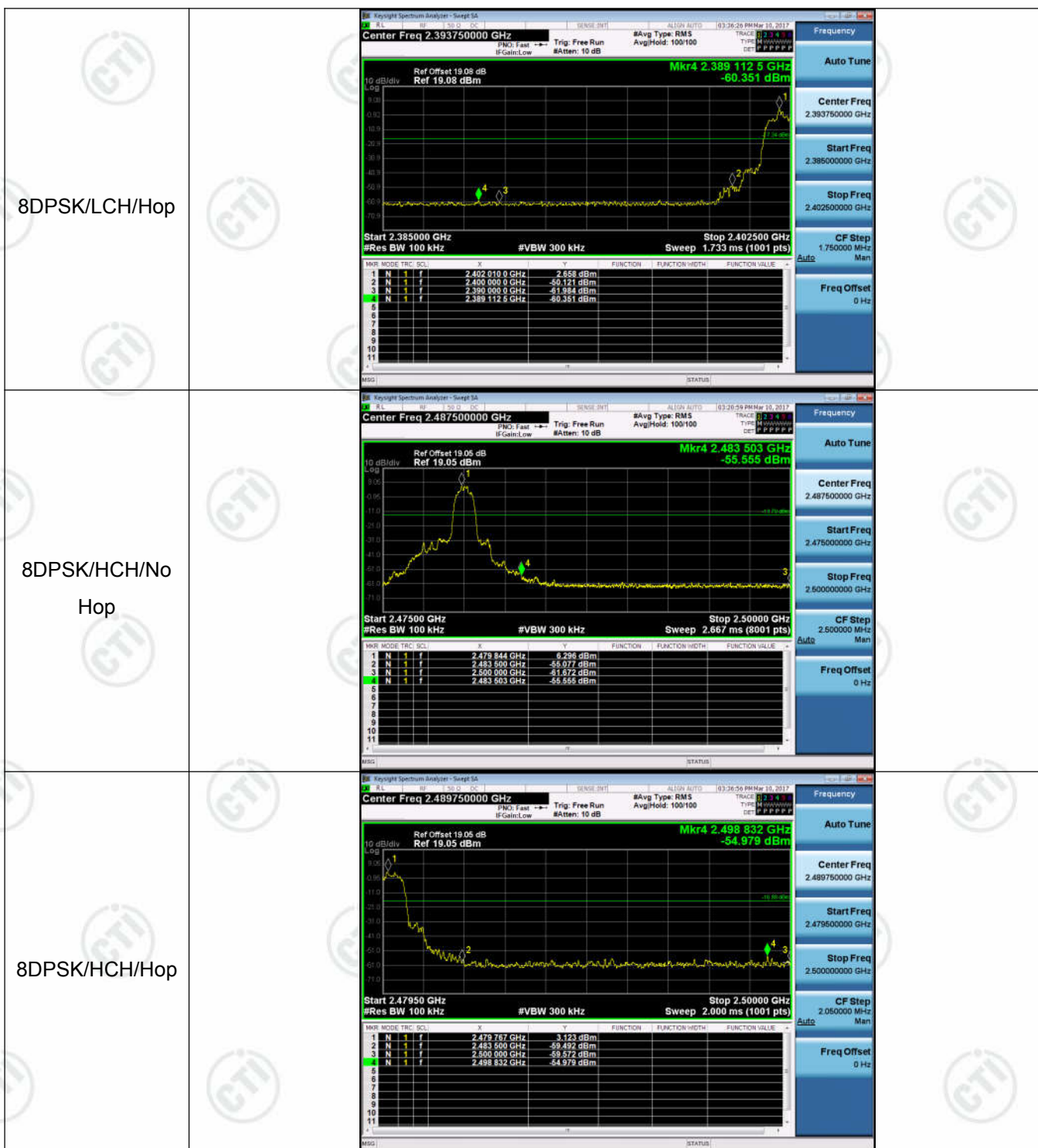
Test Graph

Graphs

Test Graph		Graphs																																								
GFSK/LCH/No Hop		 <p>Center Freq 2.395000000 GHz</p> <p>Ref Offset 19.08 dB Ref 19.08 dBm</p> <p>Mkr4 2.389 020 0 GHz -60.899 dBm</p> <p>Start 2.385000 GHz #Res BW 100 kHz</p> <p>Stop 2.405000 GHz #VBW 300 kHz Sweep 2.133 ms (8001 pts)</p> <table><tr><th>NR</th><th>MODE</th><th>TRC</th><th>SC</th><th>F</th><th>FUNCTION</th><th>FUNCTION WIDTH</th><th>FUNCTION VALUE</th></tr><tr><td>1</td><td>N</td><td>1</td><td>f</td><td>2.402 175 0 GHz</td><td></td><td></td><td>8.100 dBm</td></tr><tr><td>2</td><td>N</td><td>1</td><td>f</td><td>2.400 000 0 GHz</td><td></td><td></td><td>-45.811 dBm</td></tr><tr><td>3</td><td>N</td><td>1</td><td>f</td><td>2.380 000 0 GHz</td><td></td><td></td><td>-63.058 dBm</td></tr><tr><td>4</td><td>N</td><td>1</td><td>f</td><td>2.389 020 0 GHz</td><td></td><td></td><td>-60.899 dBm</td></tr></table>	NR	MODE	TRC	SC	F	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	N	1	f	2.402 175 0 GHz			8.100 dBm	2	N	1	f	2.400 000 0 GHz			-45.811 dBm	3	N	1	f	2.380 000 0 GHz			-63.058 dBm	4	N	1	f	2.389 020 0 GHz			-60.899 dBm
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GFSK/LCH/Hop		 <p>Center Freq 2.393750000 GHz</p> <p>Ref Offset 19.08 dB Ref 19.08 dBm</p> <p>Mkr4 2.386 120 0 GHz -57.483 dBm</p> <p>Start 2.385000 GHz #Res BW 100 kHz</p> <p>Stop 2.402500 GHz #VBW 300 kHz Sweep 1.733 ms (1001 pts)</p> <table><tr><th>NR</th><th>MODE</th><th>TRC</th><th>SC</th><th>F</th><th>FUNCTION</th><th>FUNCTION WIDTH</th><th>FUNCTION VALUE</th></tr><tr><td>1</td><td>N</td><td>1</td><td>f</td><td>2.402 046 0 GHz</td><td></td><td></td><td>5.597 dBm</td></tr><tr><td>2</td><td>N</td><td>1</td><td>f</td><td>2.400 000 0 GHz</td><td></td><td></td><td>-52.174 dBm</td></tr><tr><td>3</td><td>N</td><td>1</td><td>f</td><td>2.380 000 0 GHz</td><td></td><td></td><td>-57.725 dBm</td></tr><tr><td>4</td><td>N</td><td>1</td><td>f</td><td>2.386 120 0 GHz</td><td></td><td></td><td>-57.483 dBm</td></tr></table>	NR	MODE	TRC	SC	F	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	N	1	f	2.402 046 0 GHz			5.597 dBm	2	N	1	f	2.400 000 0 GHz			-52.174 dBm	3	N	1	f	2.380 000 0 GHz			-57.725 dBm	4	N	1	f	2.386 120 0 GHz			-57.483 dBm
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GFSK/HCH/No Hop		 <p>Center Freq 2.487500000 GHz</p> <p>Ref Offset 19.05 dB Ref 19.05 dBm</p> <p>Mkr4 2.483 997 GHz -52.516 dBm</p> <p>Start 2.475000 GHz #Res BW 100 kHz</p> <p>Stop 2.500000 GHz #VBW 300 kHz Sweep 2.667 ms (8001 pts)</p> <table><tr><th>NR</th><th>MODE</th><th>TRC</th><th>SC</th><th>F</th><th>FUNCTION</th><th>FUNCTION WIDTH</th><th>FUNCTION VALUE</th></tr><tr><td>1</td><td>N</td><td>1</td><td>f</td><td>2.480 016 GHz</td><td></td><td></td><td>8.425 dBm</td></tr><tr><td>2</td><td>N</td><td>1</td><td>f</td><td>2.483 500 GHz</td><td></td><td></td><td>-55.238 dBm</td></tr><tr><td>3</td><td>N</td><td>1</td><td>f</td><td>2.500 000 GHz</td><td></td><td></td><td>-52.245 dBm</td></tr><tr><td>4</td><td>N</td><td>1</td><td>f</td><td>2.483 997 GHz</td><td></td><td></td><td>-52.516 dBm</td></tr></table>	NR	MODE	TRC	SC	F	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	N	1	f	2.480 016 GHz			8.425 dBm	2	N	1	f	2.483 500 GHz			-55.238 dBm	3	N	1	f	2.500 000 GHz			-52.245 dBm	4	N	1	f	2.483 997 GHz			-52.516 dBm
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<p>GFSK/HCH/Hop</p>	
<p>$\pi/4$DQPSK/LCH/ No Hop</p>	
<p>$\pi/4$DQPSK/LCH/ Hop</p>	

<p>$\pi/4$DQPSK/HCH/ No Hop</p>	
<p>$\pi/4$DQPSK/HCH/ Hop</p>	
<p>8DPSK/LCH/No Hop</p>	



Appendix G): RF Conducted Spurious Emissions

Result Table

Mode	Channel	Pref [dBm]	Puw[dBm]	Verdict
GFSK	LCH	6.125	<Limit	PASS
GFSK	MCH	8.012	<Limit	PASS
GFSK	HCH	8.369	<Limit	PASS
$\pi/4$ DQPSK	LCH	2.65	<Limit	PASS
$\pi/4$ DQPSK	MCH	5.854	<Limit	PASS
$\pi/4$ DQPSK	HCH	6.177	<Limit	PASS
8DPSK	LCH	2.781	<Limit	PASS
8DPSK	MCH	5.912	<Limit	PASS
8DPSK	HCH	6.264	<Limit	PASS

Test Graph

