

TEST REPORT

Product : over-ear noise cancellation
: headphones
Trade mark : blackbox
Model/Type reference : Trip
Serial Number : N/A
Report Number : EED32K00209201
FCC ID : 2AN4C-1266
Date of Issue : Aug. 16, 2018
Test Standards : 47 CFR Part 15 Subpart C
Test result : PASS

Prepared for:

Shenzhen Grandsun Electronic Co., Ltd.
Pingdi Gaoqiao Industry Zone, Longgang District, Shenzhen, China

Prepared by:

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Date:

Aug. 16, 2018

Check No.: 3096341526

2 Version

Version No.	Date	Description
00	Aug. 16, 2018	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.

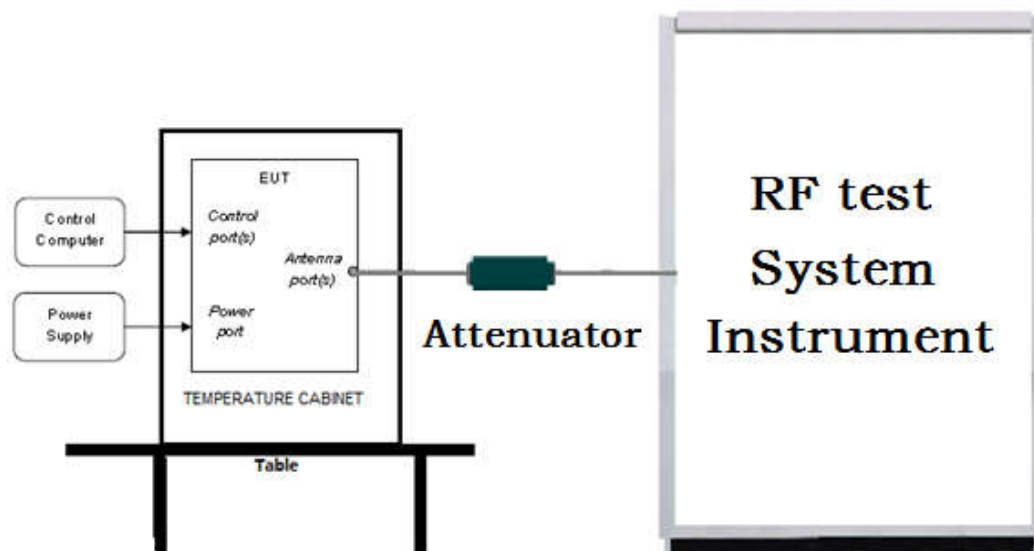
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5 Test Requirement

5.1 Test setup

5.1.1 For Conducted test setup



5.1.2 For Radiated Emissions test setup

Radiated Emissions setup:

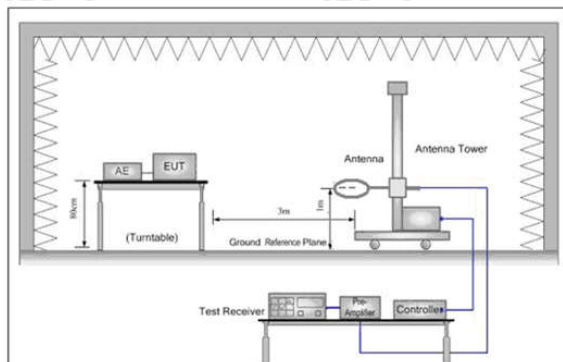


Figure 1. Below 30MHz

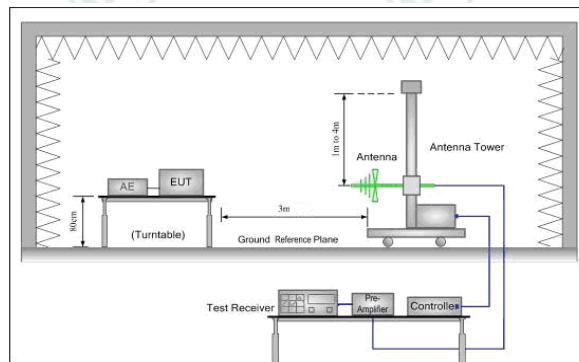


Figure 2. 30MHz to 1GHz

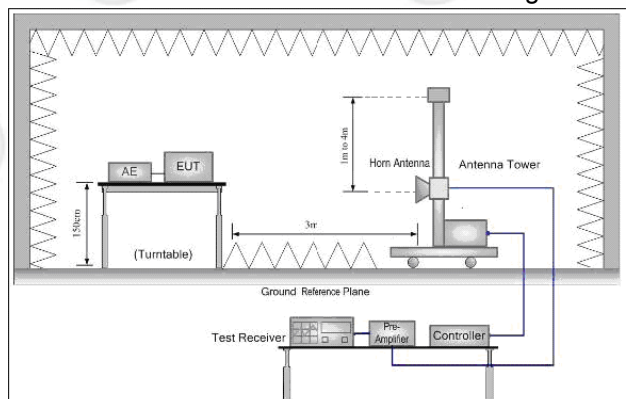
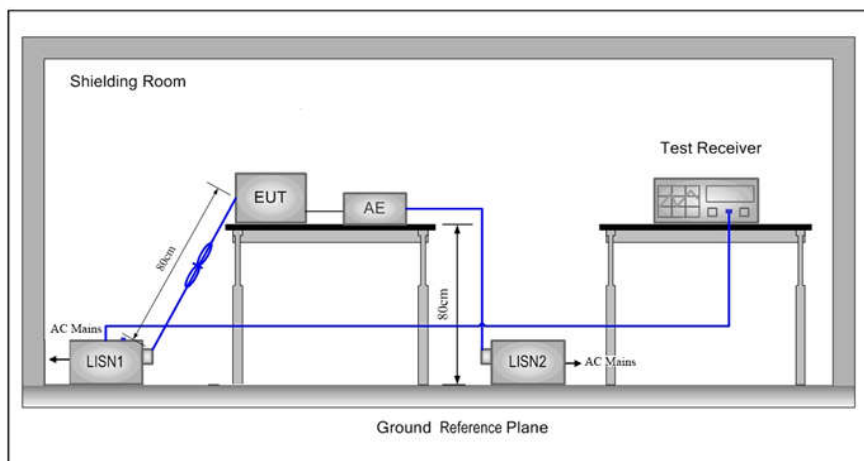


Figure 3. Above 1GHz

5.1.3 For Conducted Emissions test setup

Conducted Emissions setup



5.2 Test Environment

Operating Environment:	
Temperature:	25.7°C
Humidity:	56% 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 Lowest channel 1

Mode	GFSK		
packets	1-DH1	1-DH3	1-DH5
Power(dBm)	0.782	1.324	1.608

Mode	π /4DQPSK		
packets	2-DH1	2-DH3	2-DH5
Power(dBm)	-3.872	-3.250	-2.934

Mode	8DPSK		
packets	3-DH1	3-DH3	3-DH5
Power(dBm)	-3.012	-2.872	-2.056

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:	Shenzhen Grandsun Electronic Co., Ltd.
Address of Applicant:	Pingdi Gaoqiao Industry Zone, Longgang District, Shenzhen, China
Manufacturer:	Shenzhen Grandsun Electronic Co., Ltd.
Address of Manufacturer:	Pingdi Gaoqiao Industry Zone, Longgang District, Shenzhen, China
Factory:	Shenzhen Grandsun Electronic Co., Ltd.
Address of Factory:	Pingdi Gaoqiao Industry Zone, Longgang District, Shenzhen, China

6.2 General Description of EUT

Product Name:	over-ear noise cancellation headphones
Model No.(EUT):	Trip
Trade mark:	blackbox
EUT Supports Radios application:	BT Signal mode, 2402-2480MHz
Power Supply:	Battery: 3.7V, 720mAh
Sample Received Date:	Aug. 02, 2018
Sample tested Date:	Aug. 02, 2018 to Aug. 06, 2018

6.3 Product Specification subjective to this standard

Operation Frequency:	2402MHz~2480MHz
Bluetooth Version:	4.2 BT Signal mode
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
Hardware Version:	V0.3(manufacturer declare)
Firmware version:	V2.5(manufacturer declare)
Test Power Grade:	N/A
Test Software of EUT:	CSR BlueTest3(manufacturer declare)
Antenna Type:	PIFA type FPC antenna
Antenna Gain:	2dBi
Test Voltage:	DC 5V

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	Type
AE1	adapter	Shenzhen yiboyuan technology company	QC01	N/A	CTI	FCC

6.5 Test Location

All tests were performed at:

Centre Testing International Group Co., Ltd

Building C, Hongwei Industrial Park Block 70, Bao'an District, Shenzhen, China

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

No tests were sub-contracted.

FCC Designation No.: CN1164

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.: CN1164

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 CN1164.

IC-Registration No.: 7408A

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 .

IC-Registration No.: 7408B

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.

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	03-13-2018	03-12-2019
Spectrum Analyzer	Keysight	N9010A	MY54510339	03-13-2018	03-12-2019
Signal Generator	Keysight	N5182B	MY53051549	03-13-2018	03-12-2019
High-pass filter	Sinoscite	FL3CX03WG18 NM12-0398-002	---	01-10-2018	01-09-2019
High-pass filter	MICRO-TRONICS	SPA-F-63029-4	---	01-10-2018	01-09-2019
DC Power	Keysight	E3642A	MY54426035	03-13-2018	03-12-2019
PC-1	Lenovo	R4960d	---	03-13-2018	03-12-2019
BT&Wi-Fi Automatic control	R&S	OSP120	101374	03-13-2018	03-12-2019
RF control unit	JS Tonscend	JS0806-2	15860006	03-13-2018	03-12-2019
RF control unit	JS Tonscend	JS0806-1	15860004	03-13-2018	03-12-2019
RF control unit	JS Tonscend	JS0806-4	158060007	03-13-2018	03-12-2019
BT&Wi-Fi Automatic test software	JS Tonscend	JS1120-2	---	03-13-2018	03-12-2019

Conducted disturbance Test					
Equipment	Manufacturer	Model No.	Serial Number	Cal. date (mm-dd-yyyy)	Cal. Due date (mm-dd-yyyy)
Receiver	R&S	ESCI	100435	05-25-2018	05-24-2019
Temperature/Humidity Indicator	Defu	TH128	/	07-02-2018	07-01-2019
Communication test set	Agilent	E5515C	GB47050534	03-16-2018	03-15-2019
Communication test set	R&S	CMW500	152394	03-16-2018	03-15-2019
LISN	R&S	ENV216	100098	05-10-2018	05-10-2019
LISN	schwarzbeck	NNLK8121	8121-529	05-10-2018	05-10-2019
Voltage Probe	R&S	ESH2-Z3 0299.7810.56	100042	06-13-2017	06-11-2020
Current Probe	R&S	EZ-17 816.2063.03	100106	05-30-2018	05-29-2019
ISN	TESEQ	ISN T800	30297	02-06-2018	02-05-2019

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	---	06-04-2016	06-03-2019
TRILOG Broadband Antenna	Schwarzbeck	VULB9163	9163-401	04-26-2018	04-25-2019
TRILOG Broadband Antenna	Schwarzbeck	VULB9163	9163-618	07-30-2018	07-29-2019
Microwave Preamplifier	Agilent	8449B	3008A02425	08-21-2018	08-20-2019
Microwave Preamplifier	Tonscend	EMC051845SE	980380	01-19-2018	01-18-2019
Horn Antenna	Schwarzbeck	BBHA 9120D	9120D-1869	04-25-2018	04-23-2021
Double ridge horn antenna	A.H.SYSTEMS	SAS-574	6042	06-05-2018	06-04-2021
Pre-amplifier	A.H.SYSTEMS	PAP-1840-60	6041	06-05-2018	06-04-2021
Loop Antenna	ETS	6502	00071730	06-22-2017	06-21-2019
Spectrum Analyzer	R&S	FSP40	100416	05-11-2018	05-10-2019
Receiver	R&S	ESCI	100435	05-25-2018	05-24-2019
Multi device Controller	maturio	NCD/070/10711112	---	01-10-2018	01-09-2019
LISN	schwarzbeck	NNBM8125	81251547	05-11-2018	05-10-2019
LISN	schwarzbeck	NNBM8125	81251548	05-11-2018	05-10-2019
Signal Generator	Agilent	E4438C	MY45095744	03-13-2018	03-12-2019
Signal Generator	Keysight	E8257D	MY53401106	03-13-2018	03-12-2019
Temperature/ Humidity Indicator	TAYLOR	1451	1905	05-02-2018	05-01-2019
Communication test set	Agilent	E5515C	GB47050534	03-16-2018	03-15-2019
Cable line	Fulai(7M)	SF106	5219/6A	01-10-2018	01-09-2019
Cable line	Fulai(6M)	SF106	5220/6A	01-10-2018	01-09-2019
Cable line	Fulai(3M)	SF106	5216/6A	01-10-2018	01-09-2019
Cable line	Fulai(3M)	SF106	5217/6A	01-10-2018	01-09-2019
Communication test set	R&S	CMW500	104466	02-05-2018	02-04-2019
High-pass filter	Sinoscite	FL3CX03WG18NM1 2-0398-002	---	01-10-2018	01-09-2019
band rejection filter	Sinoscite	FL5CX01CA09CL12 -0395-001	---	01-10-2018	01-09-2019
band rejection filter	Sinoscite	FL5CX01CA08CL12 -0393-001	---	01-10-2018	01-09-2019
band rejection filter	Sinoscite	FL5CX02CA04CL12 -0396-002	---	01-10-2018	01-09-2019
band rejection filter	Sinoscite	FL5CX02CA03CL12 -0394-001	---	01-10-2018	01-09-2019

8 Radio Technical Requirements Specification

Reference documents for testing:

No.	Identity	Document Title
1	FCC Part15C	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)

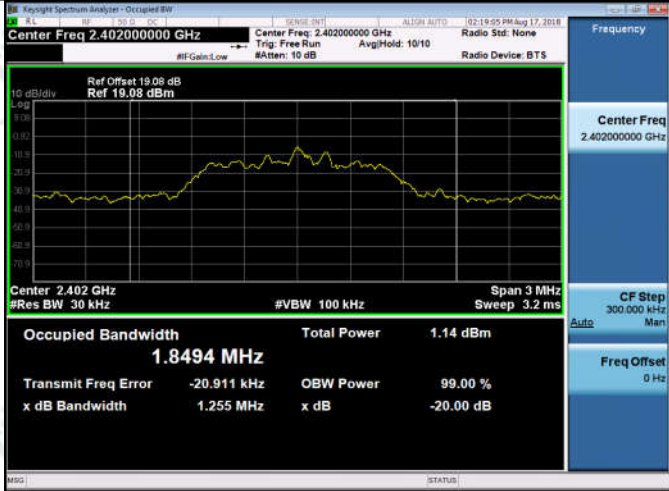
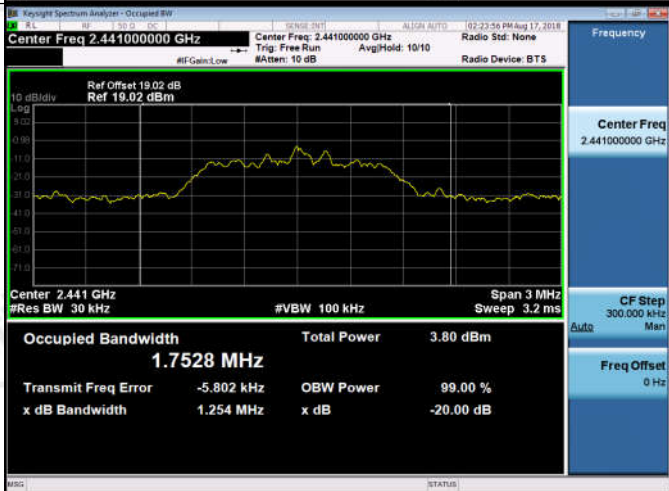
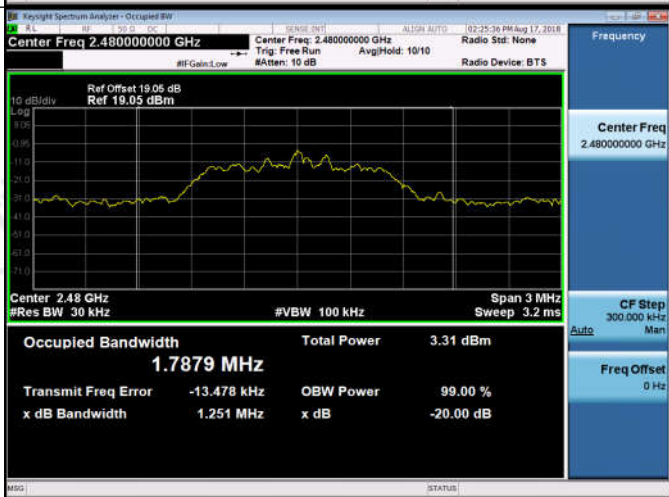
Appendix A): 20dB Occupied Bandwidth

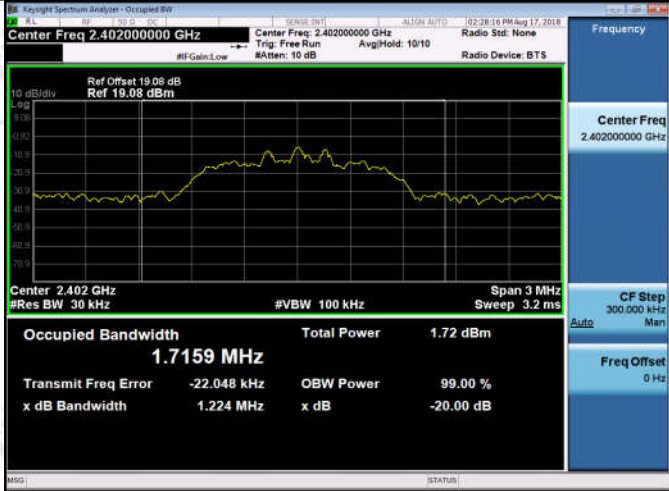
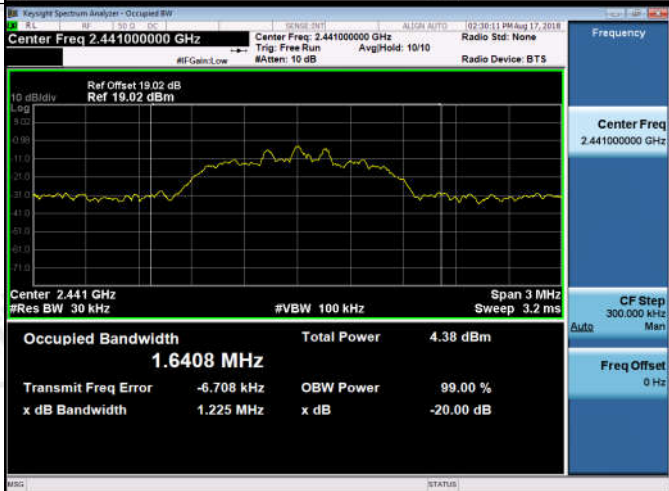
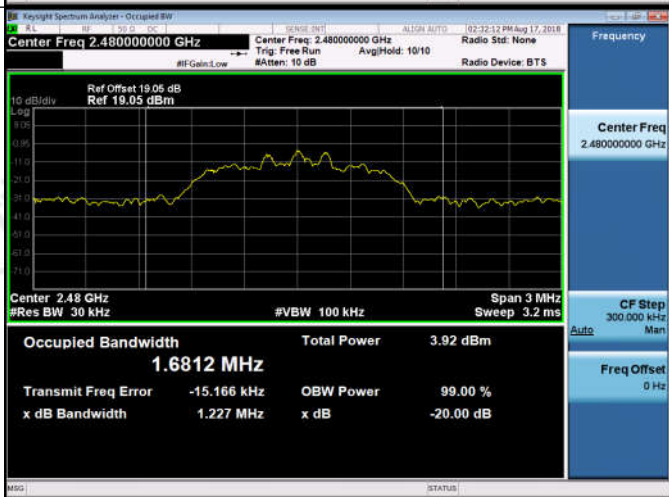
Test Result

Mode	Channel.	20dB Bandwidth [MHz]	99% OBW [MHz]	Verdict	Remark
GFSK	LCH	0.9487	0.87107	PASS	Peak detector
GFSK	MCH	0.9413	0.86059	PASS	
GFSK	HCH	0.9387	0.85591	PASS	
$\pi/4$ DQPSK	LCH	1.255	1.8494	PASS	
$\pi/4$ DQPSK	MCH	1.254	1.7528	PASS	
$\pi/4$ DQPSK	HCH	1.251	1.7879	PASS	
8DPSK	LCH	1.224	1.7159	PASS	
8DPSK	MCH	1.225	1.6408	PASS	
8DPSK	HCH	1.227	1.6812	PASS	

Test Graph



$\pi/4$DQPSK/LCH	
$\pi/4$DQPSK/MCH	
$\pi/4$DQPSK/HCH	

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

Appendix B): Carrier Frequency Separation

Result Table

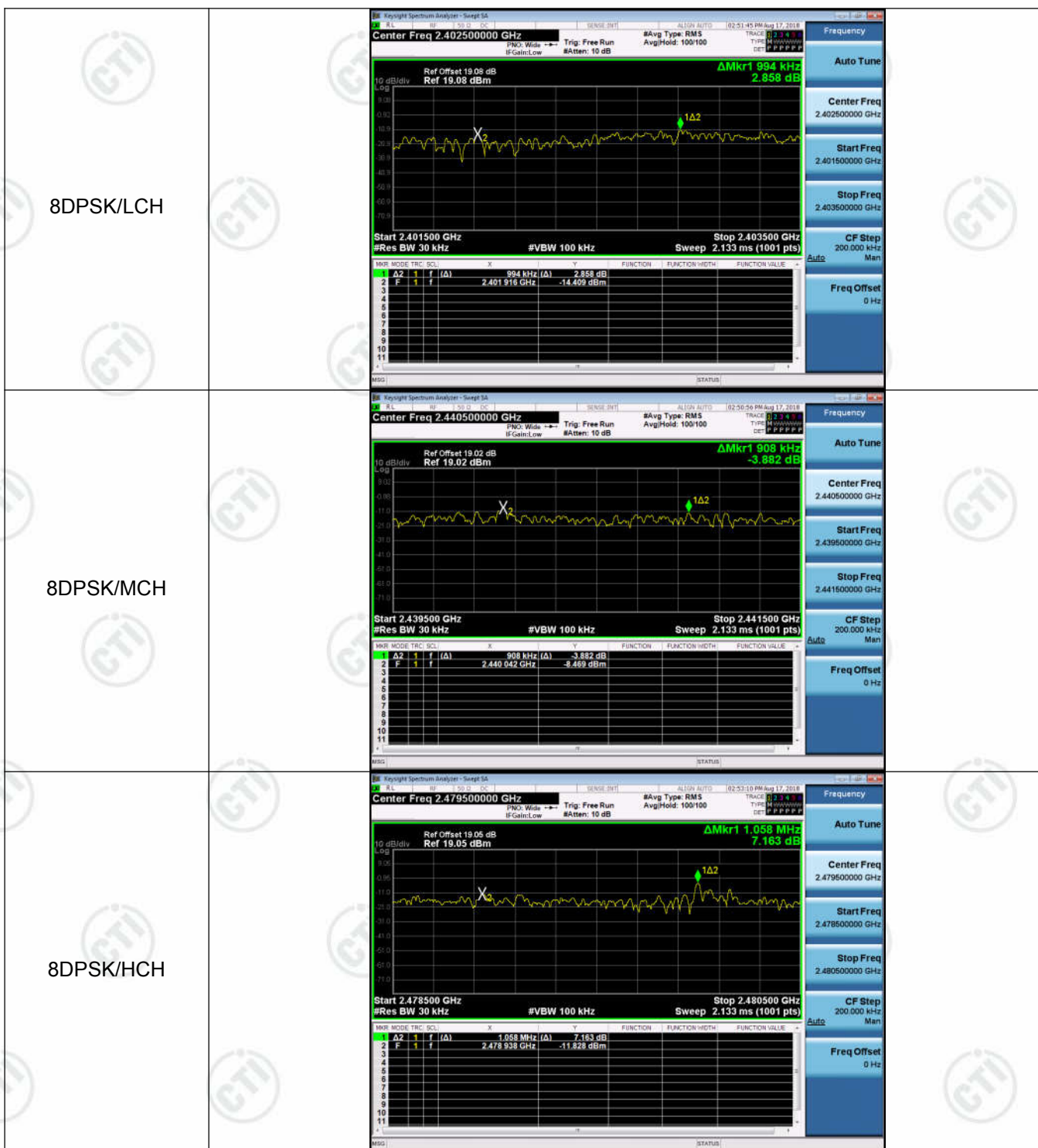
Mode	Channel.	Carrier Frequency Separation [MHz]	Verdict
GFSK	LCH	1.064	PASS
GFSK	MCH	0.910	PASS
GFSK	HCH	0.970	PASS
$\pi/4$ DQPSK	LCH	1.014	PASS
$\pi/4$ DQPSK	MCH	0.972	PASS
$\pi/4$ DQPSK	HCH	1.002	PASS
8DPSK	LCH	0.994	PASS
8DPSK	MCH	0.908	PASS
8DPSK	HCH	1.058	PASS

Test Graph

Graphs



$\pi/4$DQPSK/LCH	Key parameters from screenshot: - Center Freq: 2.402500000 GHz - Ref Offset: 19.08 dB - Ref: 19.08 dBm ΔMkr1: 1.014 MHz, 2.012 dB - Start: 2.401500 GHz - Stop: 2.403500 GHz - Res BW: 30 kHz #VBW: 100 kHz - Sweep: 2.133 ms (1001 pts)
$\pi/4$DQPSK/MCH	Key parameters from screenshot: - Center Freq: 2.440500000 GHz - Ref Offset: 19.02 dB - Ref: 19.02 dBm ΔMkr1: 972 kHz, -4.380 dB - Start: 2.439500 GHz - Stop: 2.441500 GHz - Res BW: 30 kHz #VBW: 100 kHz - Sweep: 2.133 ms (1001 pts)
$\pi/4$DQPSK/HCH	Key parameters from screenshot: - Center Freq: 2.479500000 GHz - Ref Offset: 19.05 dB - Ref: 19.05 dBm ΔMkr1: 1.002 MHz, -4.493 dB - Start: 2.478500 GHz - Stop: 2.480500 GHz - Res BW: 30 kHz #VBW: 100 kHz - Sweep: 2.133 ms (1001 pts)

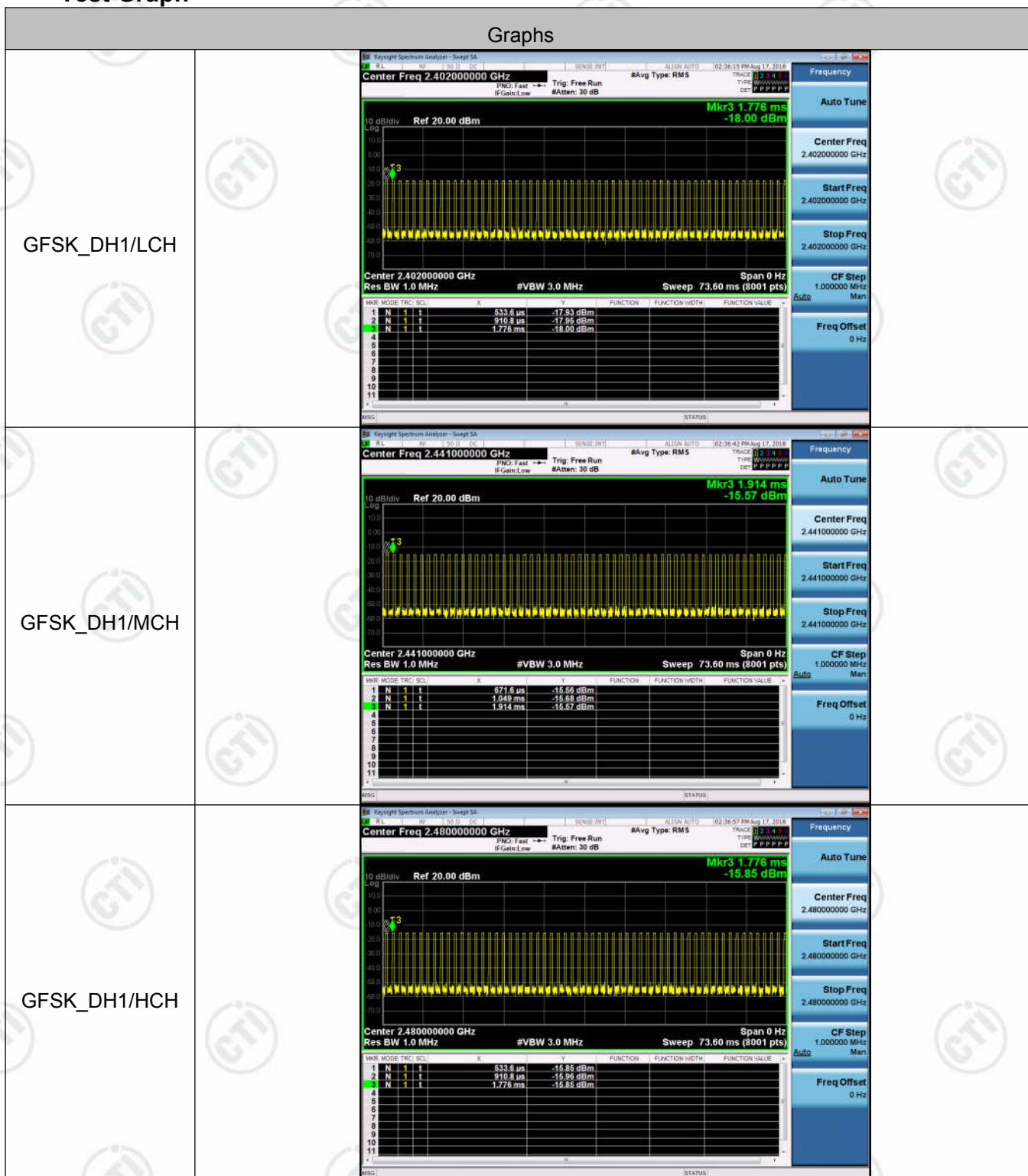


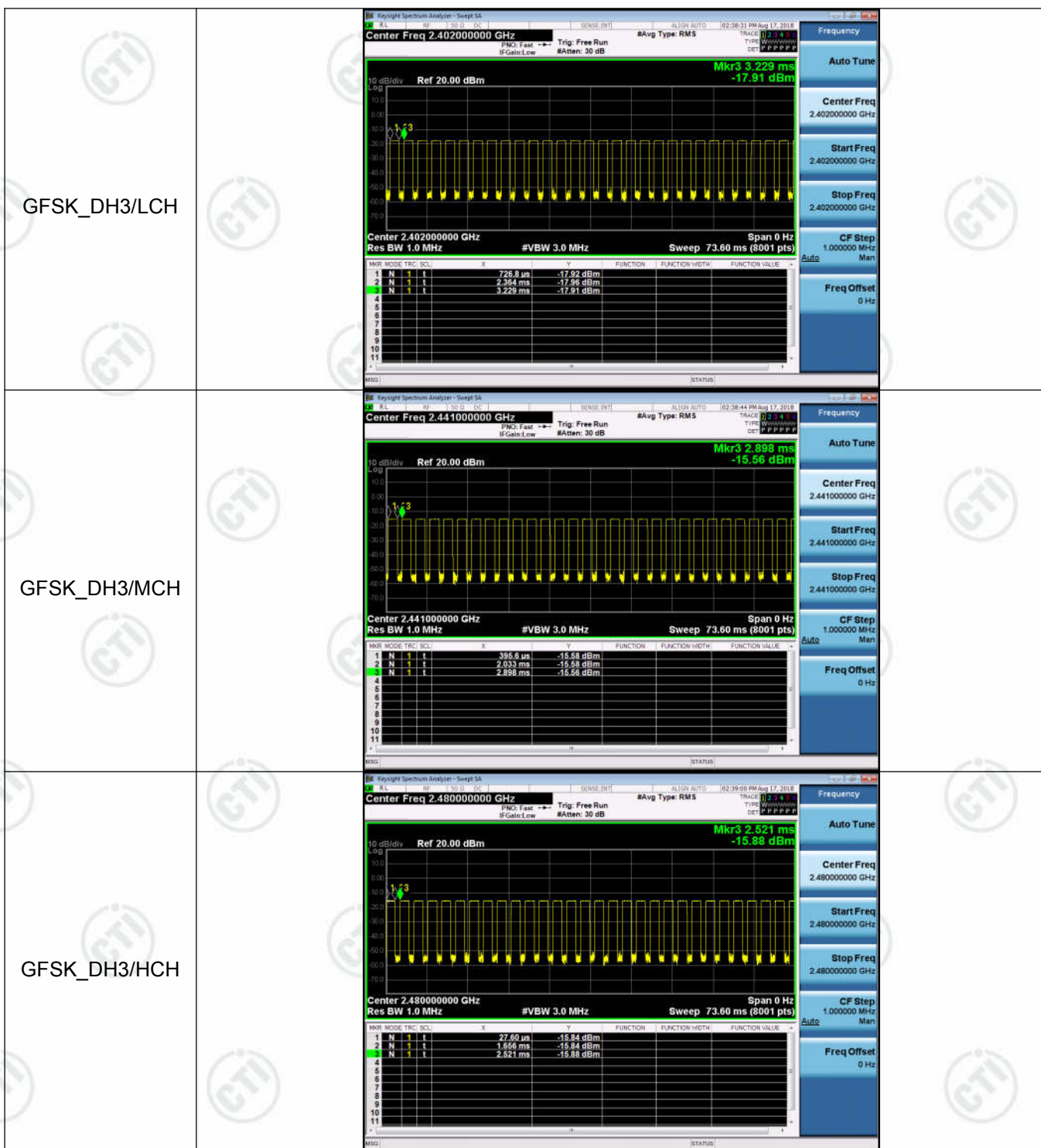
Appendix C): Dwell Time

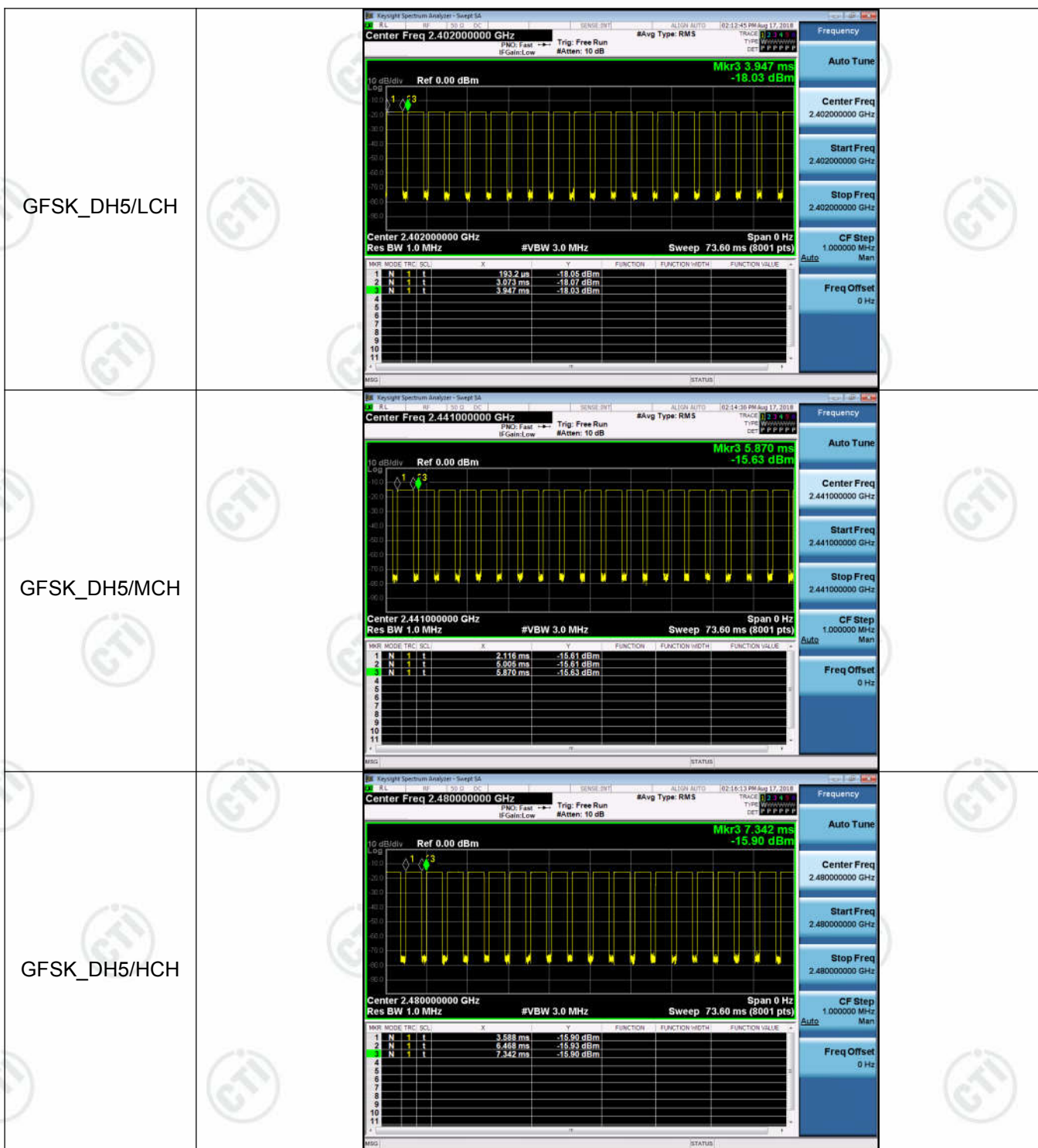
Result Table

Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Duty Cycle [%]	Verdict
GFSK	DH1	LCH	0.3772	320	0.121	0.30	PASS
GFSK	DH1	MCH	0.3772	320	0.121	0.30	PASS
GFSK	DH1	HCH	0.3772	320	0.121	0.30	PASS
GFSK	DH3	LCH	1.6376	160	0.262	0.65	PASS
GFSK	DH3	MCH	1.6376	160	0.262	0.65	PASS
GFSK	DH3	HCH	1.6284	160	0.261	0.65	PASS
GFSK	DH5	LCH	2.8796	106.7	0.307	0.77	PASS
GFSK	DH5	MCH	2.8888	106.7	0.308	0.77	PASS
GFSK	DH5	HCH	2.8796	106.7	0.307	0.77	PASS

Test Graph





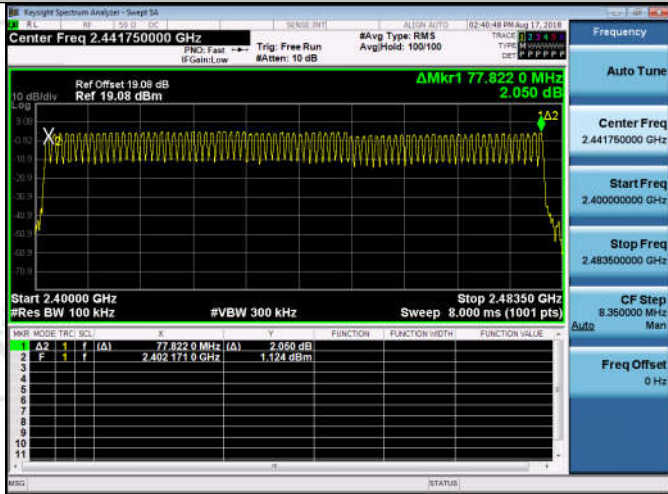
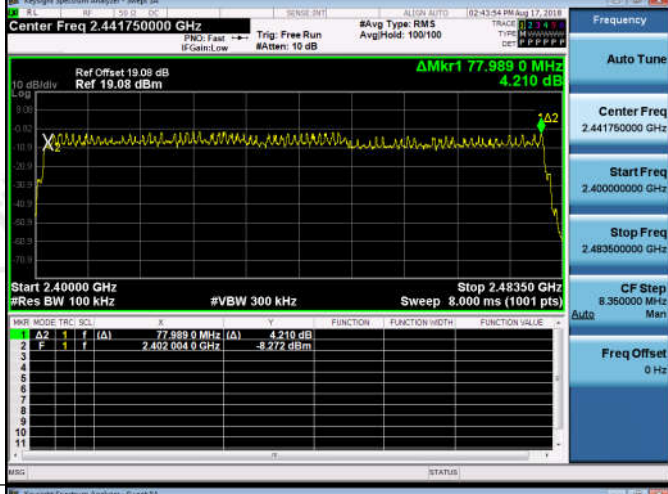
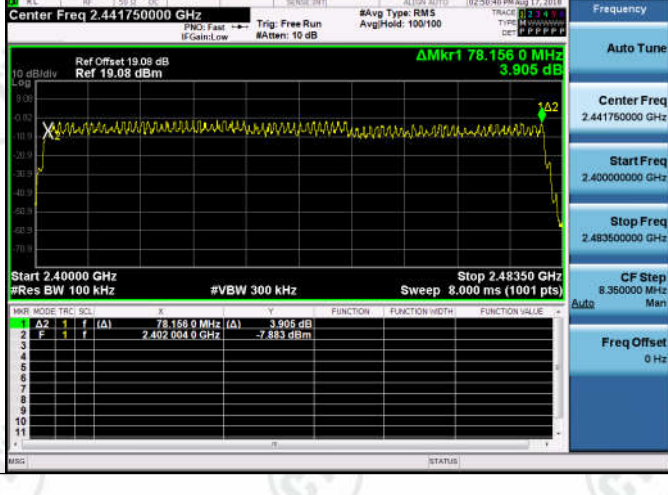


Appendix D): Hopping Channel Number

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

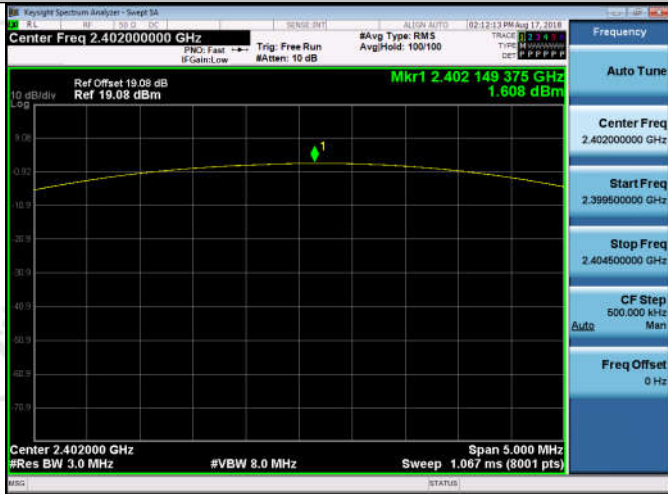
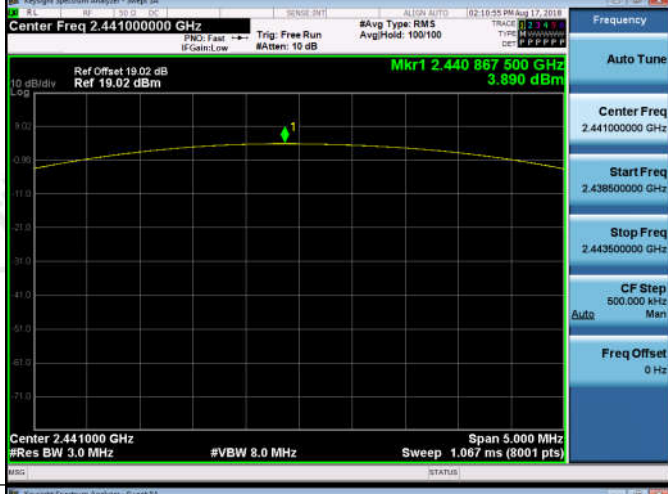
Graphs		
GFSK/Hop		
$\pi/4$ DQPSK/Hop		
8DPSK/Hop		

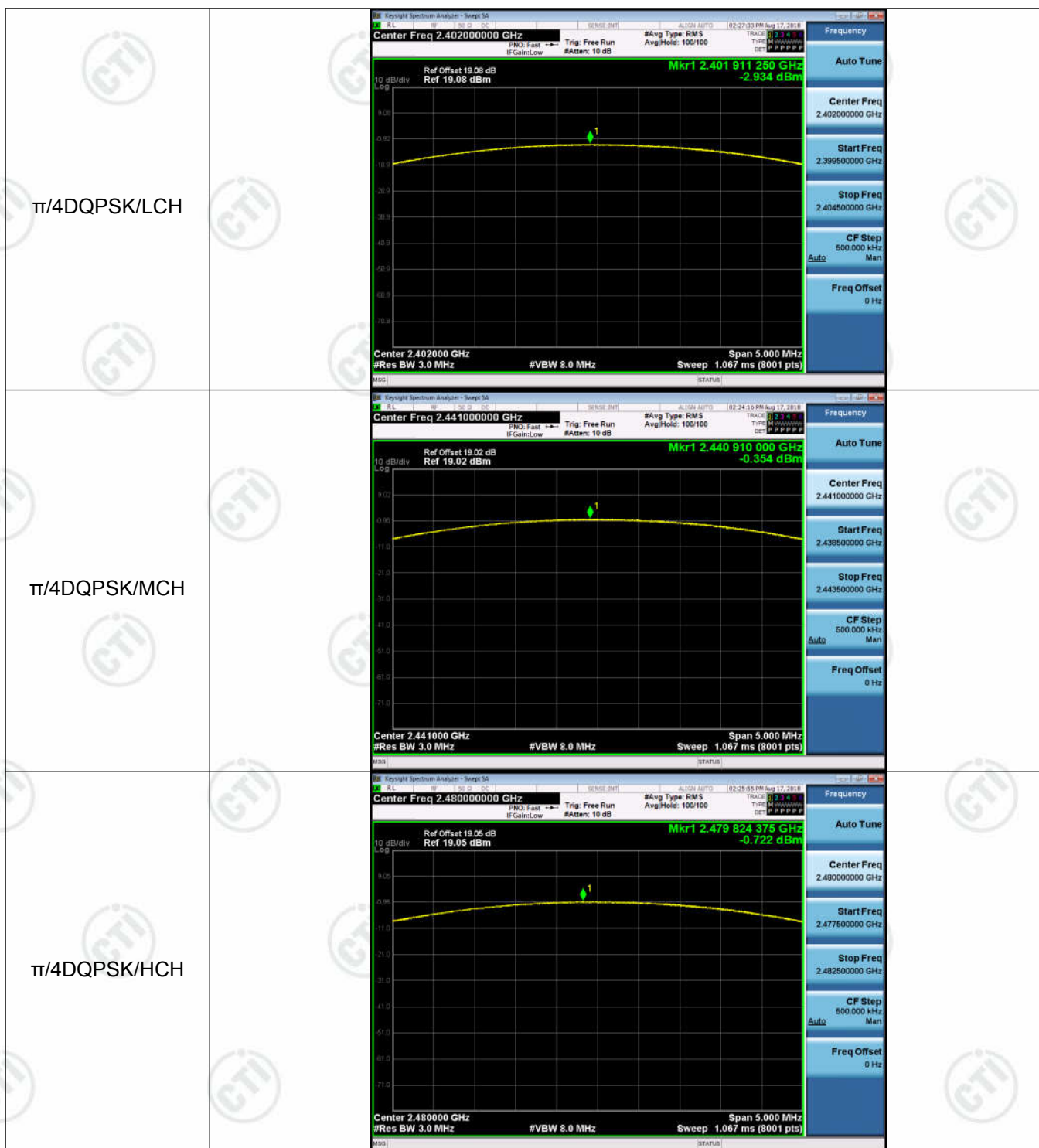
Appendix E): Conducted Peak Output Power

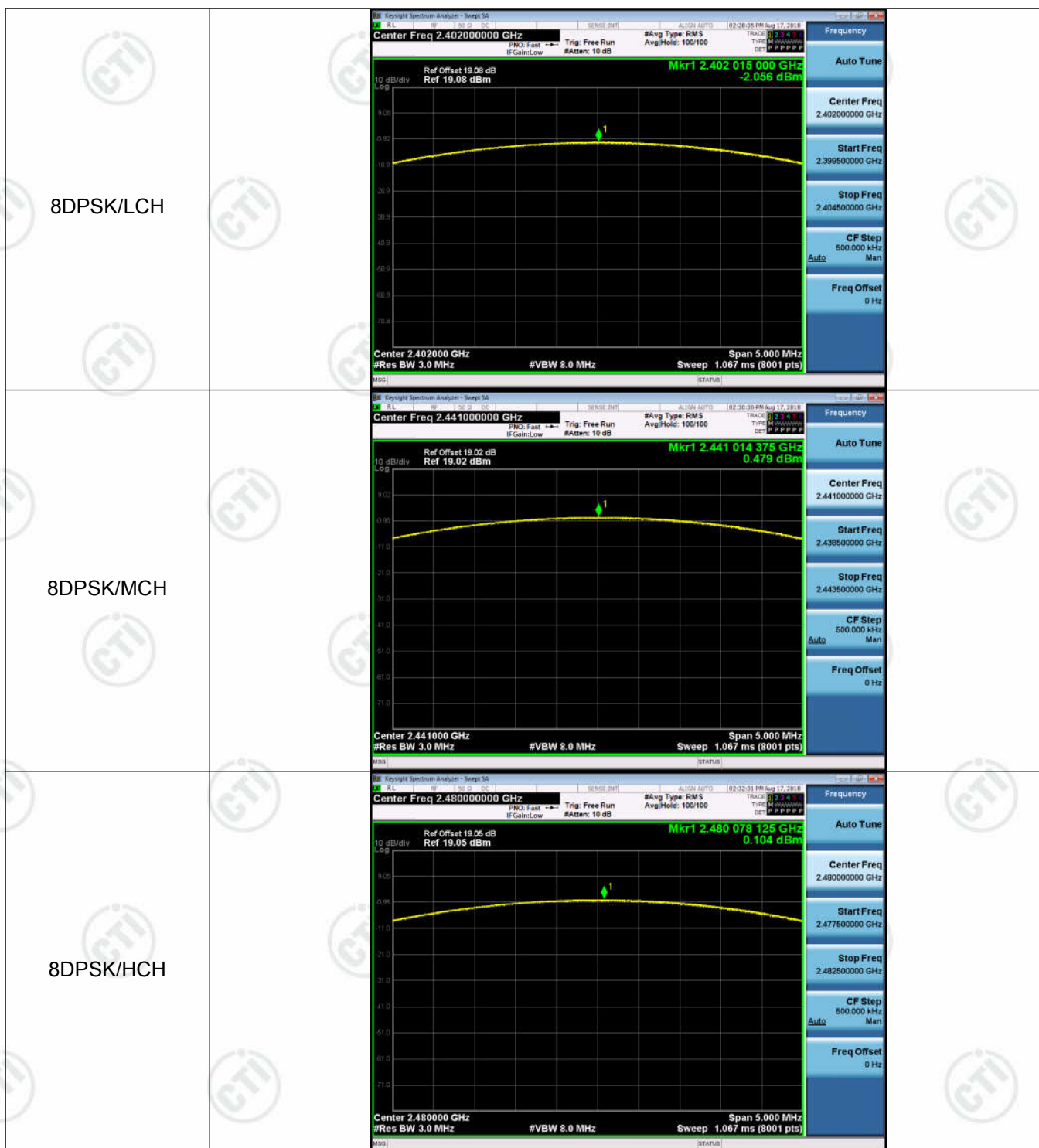
Result Table

Mode	Channel.	Maximum Peak Output Power [dBm]	Verdict
GFSK	LCH	1.608	PASS
GFSK	MCH	3.890	PASS
GFSK	HCH	3.653	PASS
$\pi/4$ DQPSK	LCH	-2.934	PASS
$\pi/4$ DQPSK	MCH	-0.354	PASS
$\pi/4$ DQPSK	HCH	-0.722	PASS
8DPSK	LCH	-2.056	PASS
8DPSK	MCH	0.479	PASS
8DPSK	HCH	0.104	PASS

Test Graph

Graphs		
GFSK/LCH		
GFSK/MCH		
GFSK/HCH		





Appendix F): Band-edge for RF Conducted Emissions

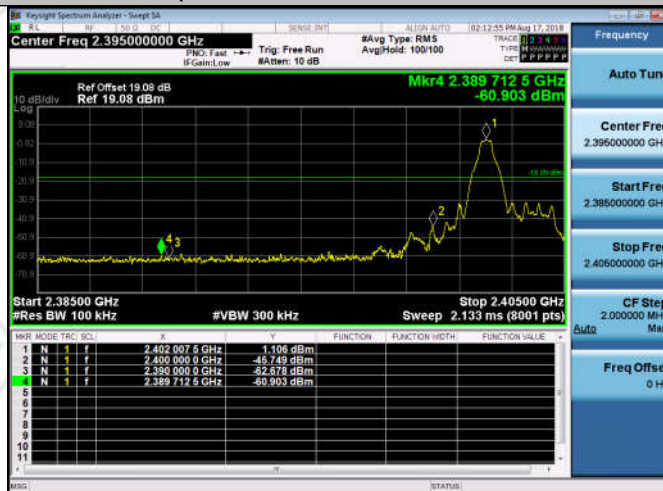
Result Table

Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	1.106	Off	-60.903	-18.89	PASS
			3.518	On	-60.017	-16.48	PASS
GFSK	HCH	2480	2.983	Off	-52.471	-17.02	PASS
			2.925	On	-53.491	-17.08	PASS
$\pi/4$ DQPSK	LCH	2402	-6.203	Off	-61.244	-26.2	PASS
			-3.366	On	-59.841	-23.37	PASS
$\pi/4$ DQPSK	HCH	2480	-3.859	Off	-56.804	-23.86	PASS
			-3.990	On	-58.822	-23.99	PASS
8DPSK	LCH	2402	-6.019	Off	-60.661	-26.02	PASS
			-3.226	On	-58.129	-23.23	PASS
8DPSK	HCH	2480	-3.744	Off	-54.925	-23.74	PASS
			-3.879	On	-58.150	-23.88	PASS

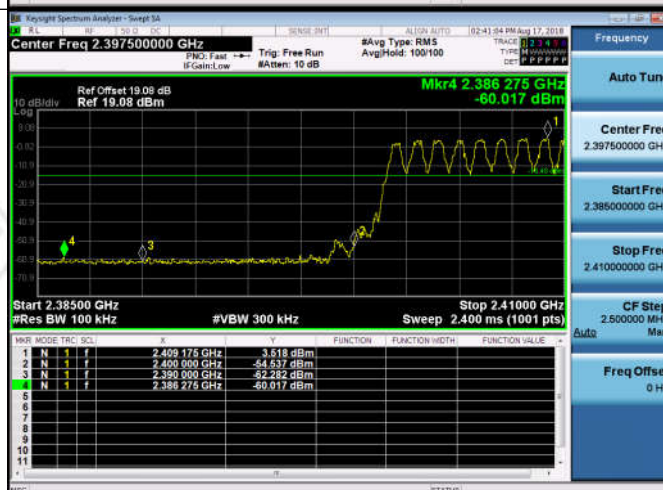
Test Graph

Graphs

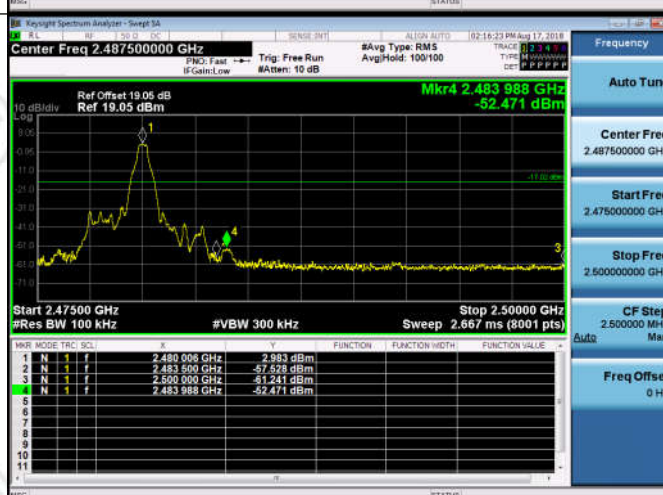
GFSK/LCH/No Hop

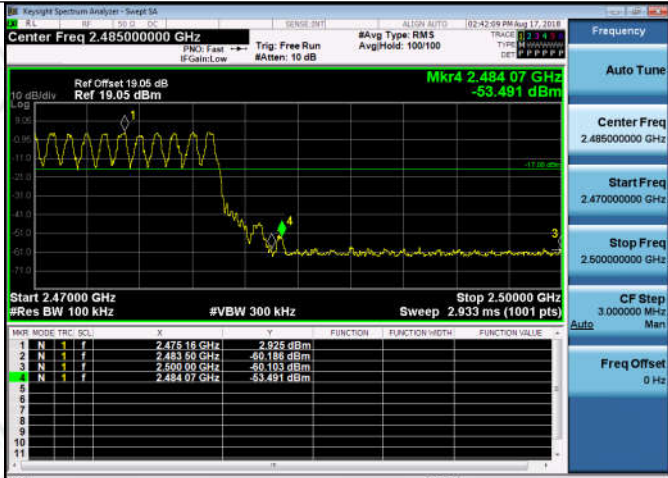
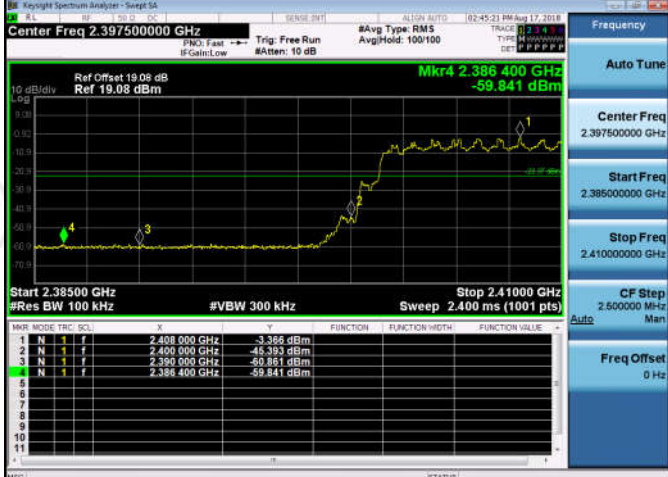


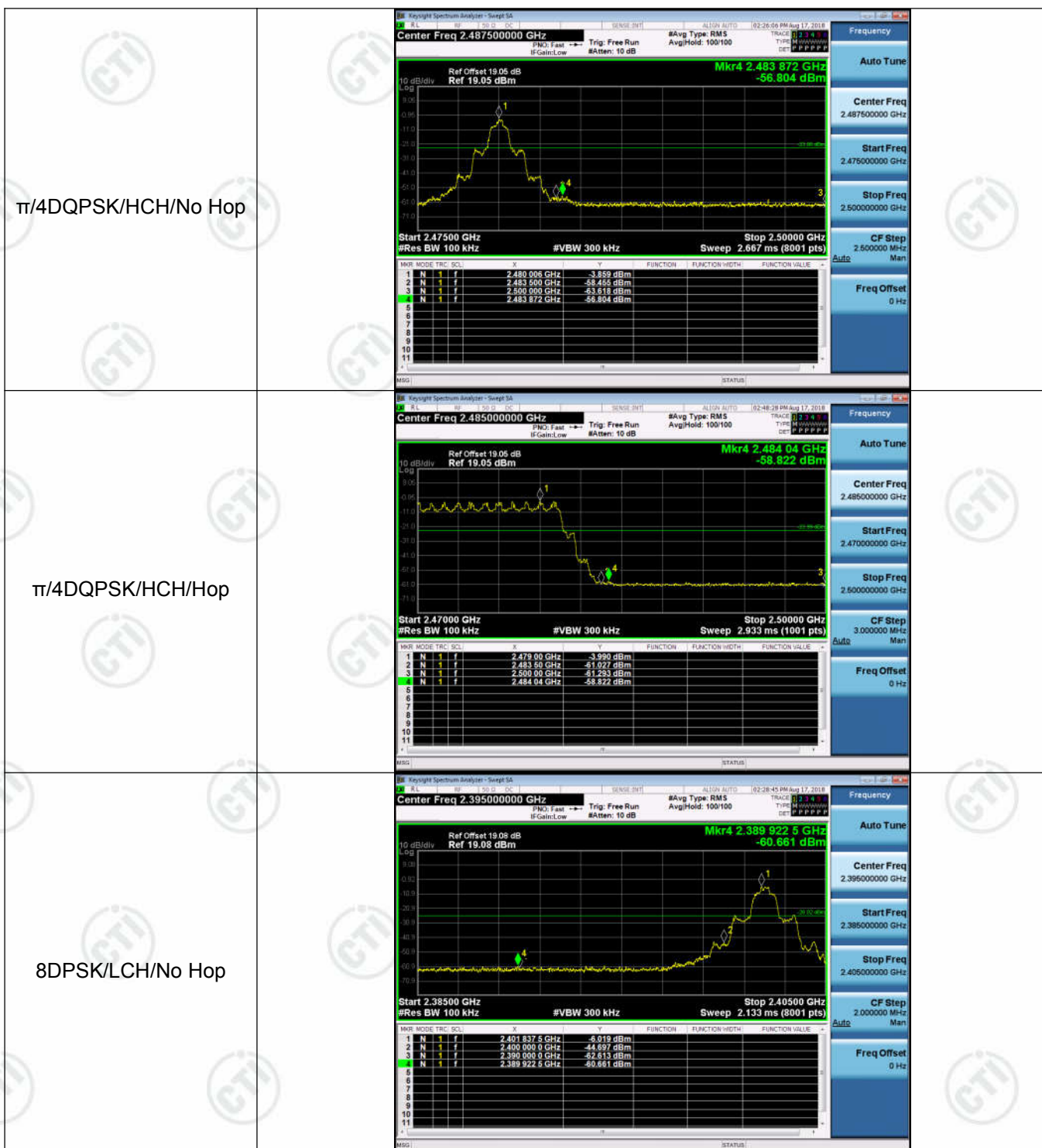
GFSK/LCH/Hop

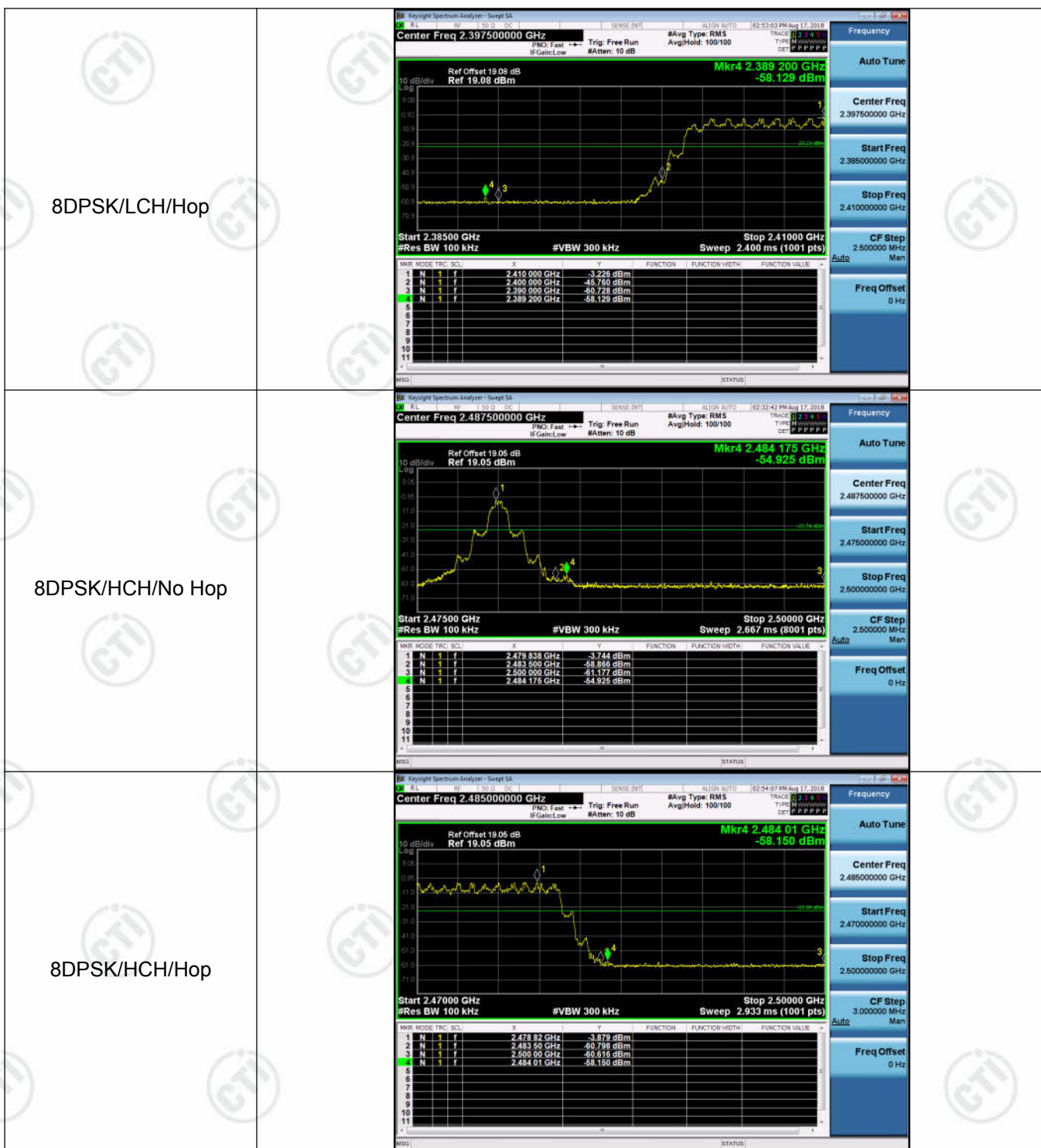


GFSK/HCH/No Hop



GFSK/HCH/Hop	 Center Freq 2.485000000 GHz Ref Offset 19.05 dB Ref 19.05 dBm Mkr4 2.484 07 GHz -53.491 dBm Start 2.47000 GHz #Res BW 100 kHz Stop 2.50000 GHz #VBW 300 kHz Sweep 2.933 ms (1001 pts) <table><tr><th>N</th><th>Mode</th><th>TRC</th><th>SCL</th><th>X</th><th>Y</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>2.47516 GHz</td><td>-2.926 dBm</td><td></td><td></td><td></td></tr><tr><td>2</td><td>N</td><td>1</td><td>f</td><td>2.48350 GHz</td><td>-40.186 dBm</td><td></td><td></td><td></td></tr><tr><td>3</td><td>N</td><td>1</td><td>f</td><td>2.50000 GHz</td><td>-40.103 dBm</td><td></td><td></td><td></td></tr><tr><td>4</td><td>N</td><td>1</td><td>f</td><td>2.48407 GHz</td><td>-53.491 dBm</td><td></td><td></td><td></td></tr></table>	N	Mode	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	N	1	f	2.47516 GHz	-2.926 dBm				2	N	1	f	2.48350 GHz	-40.186 dBm				3	N	1	f	2.50000 GHz	-40.103 dBm				4	N	1	f	2.48407 GHz	-53.491 dBm			
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4	N	1	f	2.48407 GHz	-53.491 dBm																																									
$\pi/4$ DQPSK/LCH/No Hop	 Center Freq 2.395000000 GHz Ref Offset 19.08 dB Ref 19.08 dBm Mkr4 2.388 085 0 GHz -61.244 dBm Start 2.38500 GHz #Res BW 100 kHz Stop 2.40500 GHz #VBW 300 kHz Sweep 2.133 ms (8001 pts) <table><tr><th>N</th><th>Mode</th><th>TRC</th><th>SCL</th><th>X</th><th>Y</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>2.4020025 GHz</td><td>-6.203 dBm</td><td></td><td></td><td></td></tr><tr><td>2</td><td>N</td><td>1</td><td>f</td><td>2.4000000 GHz</td><td>-44.357 dBm</td><td></td><td></td><td></td></tr><tr><td>3</td><td>N</td><td>1</td><td>f</td><td>2.3900000 GHz</td><td>-43.186 dBm</td><td></td><td></td><td></td></tr><tr><td>4</td><td>N</td><td>1</td><td>f</td><td>2.388085 GHz</td><td>-61.244 dBm</td><td></td><td></td><td></td></tr></table>	N	Mode	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	N	1	f	2.4020025 GHz	-6.203 dBm				2	N	1	f	2.4000000 GHz	-44.357 dBm				3	N	1	f	2.3900000 GHz	-43.186 dBm				4	N	1	f	2.388085 GHz	-61.244 dBm			
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$\pi/4$ DQPSK/LCH/Hop	 Center Freq 2.397500000 GHz Ref Offset 19.08 dB Ref 19.08 dBm Mkr4 2.386 400 GHz -59.841 dBm Start 2.38500 GHz #Res BW 100 kHz Stop 2.41000 GHz #VBW 300 kHz Sweep 2.400 ms (1001 pts) <table><tr><th>N</th><th>Mode</th><th>TRC</th><th>SCL</th><th>X</th><th>Y</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>2.408000 GHz</td><td>-3.386 dBm</td><td></td><td></td><td></td></tr><tr><td>2</td><td>N</td><td>1</td><td>f</td><td>2.400000 GHz</td><td>-43.353 dBm</td><td></td><td></td><td></td></tr><tr><td>3</td><td>N</td><td>1</td><td>f</td><td>2.390000 GHz</td><td>-40.861 dBm</td><td></td><td></td><td></td></tr><tr><td>4</td><td>N</td><td>1</td><td>f</td><td>2.386400 GHz</td><td>-59.841 dBm</td><td></td><td></td><td></td></tr></table>	N	Mode	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	N	1	f	2.408000 GHz	-3.386 dBm				2	N	1	f	2.400000 GHz	-43.353 dBm				3	N	1	f	2.390000 GHz	-40.861 dBm				4	N	1	f	2.386400 GHz	-59.841 dBm			
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4	N	1	f	2.386400 GHz	-59.841 dBm																																									





Appendix G): RF Conducted Spurious Emissions

Result Table

Mode	Channel	Pref [dBm]	Puw[dBm]	Verdict
GFSK	LCH	1.124	<Limit	PASS
GFSK	MCH	3.314	<Limit	PASS
GFSK	HCH	3.054	<Limit	PASS
$\pi/4$ DQPSK	LCH	-6.233	<Limit	PASS
$\pi/4$ DQPSK	MCH	-3.509	<Limit	PASS
$\pi/4$ DQPSK	HCH	-3.964	<Limit	PASS
8DPSK	LCH	-6.066	<Limit	PASS
8DPSK	MCH	-3.334	<Limit	PASS
8DPSK	HCH	-3.889	<Limit	PASS

Test Graph

