TEST REPORT

Product	:	HANDHELD VITALSIGNS MONITORING SYSTEM
Trade mark	:	bewell connect
Model/Type reference	:	BW-X07HD
Serial Number	:	N/A
Report Number	:	EED32I00251301
FCC ID	:	2AF8T-BW-X07HD
Date of Issue	:	Jun. 14, 2017
Test Standards	:	47 CFR Part 15 Subpart C (2015)
Test result	:	PASS

Prepared for:

BEWELL CONNECT CORP
SUITE 410, 185 ALEWIFE BROOK PARKWAY
CAMBRIDGE,Massachusetts,United States

Prepared by:

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Date:	Jun. 14, 2017		Check No.: 2392125448

Report Seal

2 Version

Version No.	Date	Description
00	Jun. 14, 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.

4 Content

1 COVER PAGE 1

2 VERSION 2

3 TEST SUMMARY 3

4 CONTENT 4

5 TEST REQUIREMENT 5

5.1 TEST SETUP 5
5.1.1 For Conducted test setup 5
5.1.2 For Radiated Emissions test setup 5
5.1.3 For Conducted Emissions test setup 6
5.2 TEST ENVIRONMENT 6
5.3 TEST CONDITION 6

6 GENERAL INFORMATION 7

6.1 CLIENT INFORMATION 7
6.2 GENERAL DESCRIPTION OF EUT 7
6.3 PRODUCT SPECIFICATION SUBJECTIVE TO THIS STANDARD 7
6.4 DESCRIPTION OF SUPPORT UNITS 8
6.5 TEST LOCATION 8
6.6 TEST FACILITY 9
6.7 DEVIATION FROM STANDARDS 9
6.8 ABNORMALITIES FROM STANDARD CONDITIONS 9
6.9 OTHER INFORMATION REQUESTED BY THE CUSTOMER 9
6.10 MEASUREMENT UNCERTAINTY (95% CONFIDENCE LEVELS, K=2) 9

7 EQUIPMENT LIST 10

8 RADIO TECHNICAL REQUIREMENTS SPECIFICATION 12

Appendix A): 20dB Occupied Bandwidth 13
Appendix B): Carrier Frequency Separation 17
Appendix C): Dwell Time 21
Appendix D): Hopping Channel Number 25
Appendix E): Conducted Peak Output Power 27
Appendix F): Band-edge for RF Conducted Emissions 31
Appendix G): RF Conducted Spurious Emissions 36
Appendix H): Pseudorandom Frequency Hopping Sequence 43
Appendix I): Antenna Requirement 44
Appendix J): AC Power Line Conducted Emission 45
Appendix K): Restricted bands around fundamental frequency (Radiated) 48
Appendix L): Radiated Spurious Emissions 59

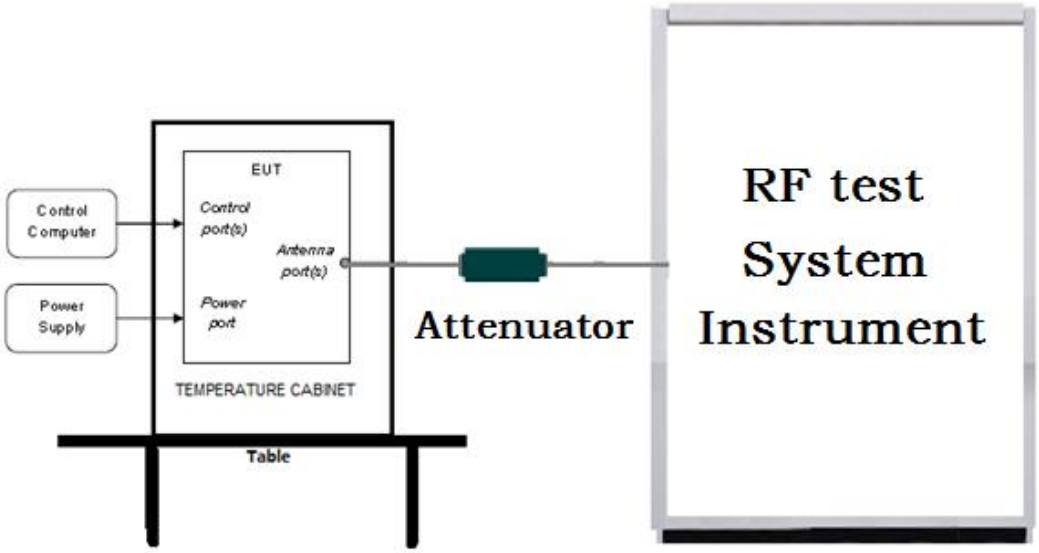
PHOTOGRAPHS OF TEST SETUP 67

APPENDIX 2 PHOTOGRAPHS OF EUT 69

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:

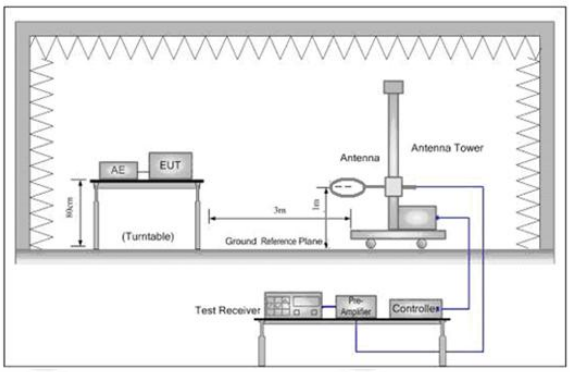


Figure 1. Below 30MHz

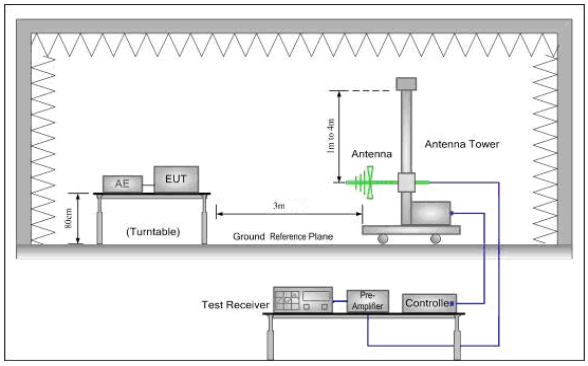


Figure 2. 30MHz to 1GHz

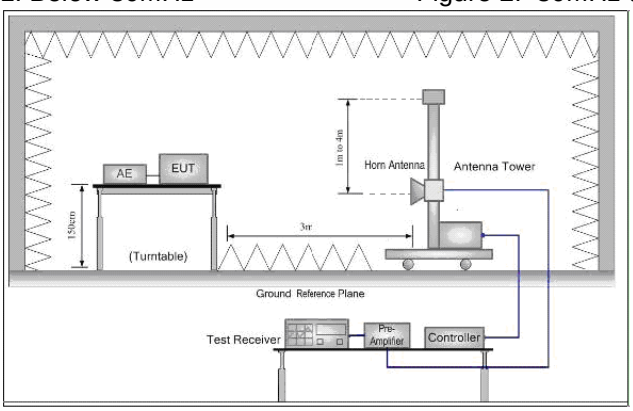
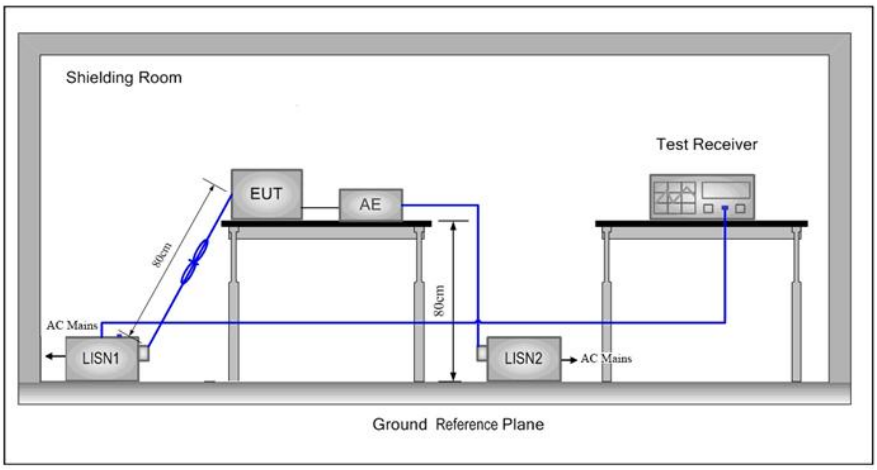


Figure 3. Above 1GHz

5.1.3 For Conducted Emissions test setup

Conducted Emissions setup



5.2 Test Environment

Operating Environment:	
Temperature:	23°C
Humidity:	51% 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)	-4.423	-4.395	-4.352

Mode	π/4DQPSK		
packets	**2-DH1**	**2-DH3**	**2-DH5**
Power(dBm)	-3.576	-3.613	-3.484
Mode	8DPSK		
packets	**3-DH1**	**3-DH3**	**3-DH5**
Power(dBm)	-3.401	-3.423	-3.364

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:	BEWELL CONNECT CORP
Address of Applicant:	SUITE 410, 185 ALEWIFE BROOK PARKWAY CAMBRIDGE,Massachusetts,United States
Manufacturer:	Visiomed Technology Co., Ltd
Address of Manufacturer:	2 Floor of No.1 Building, Jia An Technological Industrial Park, 67 District, Bao An, 518101 Shenzhen China
Factory:	Visiomed Technology Co., Ltd
Address of Factory:	2 Floor of No.1 Building, Jia An Technological Industrial Park, 67 District, Bao An, 518101 Shenzhen China

6.2 General Description of EUT

Product Name:	HANDHELD VITALSIGNS MONITORING SYSTEM	
Test Model No.(EUT):	BW-X07HD	
Trade mark:	bewell connect	
EUT Supports Radios application:	LTE Band 2: TX:1850 MHz to 1910 MHz RX:1930 MHz to 1990 MHz. LTE Band 4: TX:1710 MHz to 1755 MHz RX:2110 MHz to 2170 MHz. LTE band 7: TX:2500 MHz to 2570 MHz RX:2620 MHz to2690 MHz. LTE band 12: TX: 699 MHz to 716 MHz RX: 729 MHz to746 MHz. WCDMA1900: TX:1850 MHz to 1910 MHz RX:1930 MHz to 1990 MHz. WIFI 802.11b/g/n(20)/n(40): TX/RX:2412 MHz to 2462 MHz BT4.0 Dual mode: 2402 MHz to 2480 MHz. GPS:1575.42MHz	
Power Supply:	AC adapter:	MODEL No.:UE10WCP1-050200SPA PART No.:UE160106HKWY1-P INPUT:100-240V~50/60Hz, 500mA OUTPUT:5.0V⎓2.0A
	Battery:	2500mAh 3.7V (Rechargeable Li-ion Battery)
Hardware Version:	(manufacturer declare)H.VS.MSM8909.02	
Software Version:	(manufacturer declare)Visiocheck_1.0.6	
Sample Received Date:	Oct. 19, 2016	
Sample tested Date:	Oct. 19, 2016 to Jun. 13, 2017	

6.3 Product Specification subjective to this standard

Operation Frequency:	2402MHz~2480MHz
Bluetooth Version:	Other than BT 4.0
Modulation Technique:	Frequency Hopping Spread Spectrum(FHSS)
Modulation Type:	GFSK, π/4DQPSK, 8DPSK
Number of Channel:	79

Hopping Channel Type:	Adaptive Frequency Hopping systems
Test Power Grade:	N/A
Test Software of EUT:	N/A
Antenna Type:	PIFA Antenna
Antenna Gain:	2dBi
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 independently.

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

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.

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**	**Mode No.**	**Serial Number**	**Cal. Date (mm-dd-yyyy)**	**Cal. Due date (mm-dd-yyyy)**
Signal Generator	Keysight	E8257D	MY53401106	03-14-2017	03-13-2018
Spectrum Analyzer	Keysight	N9010A	MY54510339	03-14-2017	03-13-2018
Signal Generator	Keysight	N5182B	MY53051549	03-14-2017	03-13-2018
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
DC Power	Keysight	E3642A	MY54436035	03-14-2017	03-13-2018
power meter & power sensor	R&S	OSP120	101374	03-14-2017	03-13-2018
RF control unit	JS Tonscend	JS0806-2	158060006	03-14-2017	03-13-2018

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	04-20-2017	04-19-2018
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	SCHWARZBECK	VULB9163	9163-618	07-28-2016	07-27-2017
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	03-14-2017	03-13-2018
Signal Generator	Keysight	E8257D	MY53401106	03-14-2017	03-13-2018
Temperature/ Humidity Indicator	TAYLOR	1451	1905	04-20-2017	04-19-2018
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 Unlicesed Wireless Devices

Test Results List:

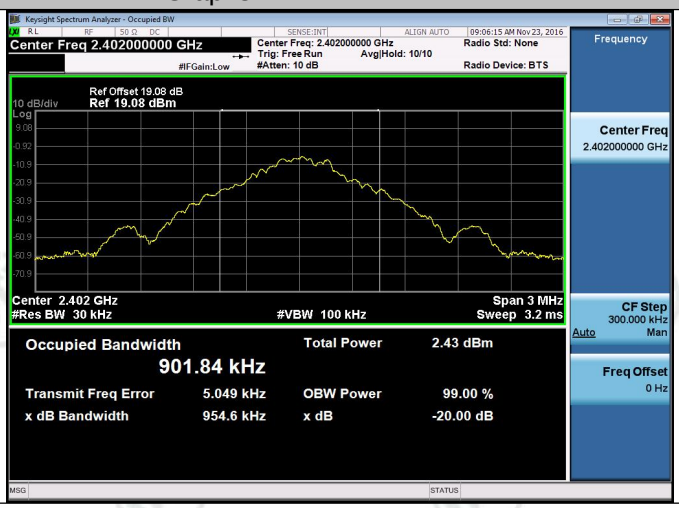
Test requirement	Test method	Test item	Verdict	Note
Part15C Section 15.247 (a)(1)	ANSI 63.10	20dB Occupied Bandwidth	PASS	Appendix A)
Part15C Section 15.247 (a)(1)	ANSI 63.10	Carrier Frequencies Separation	PASS	Appendix B)
Part15C Section 15.247 (a)(1)	ANSI 63.10	Dwell Time	PASS	Appendix C)
Part15C Section 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)

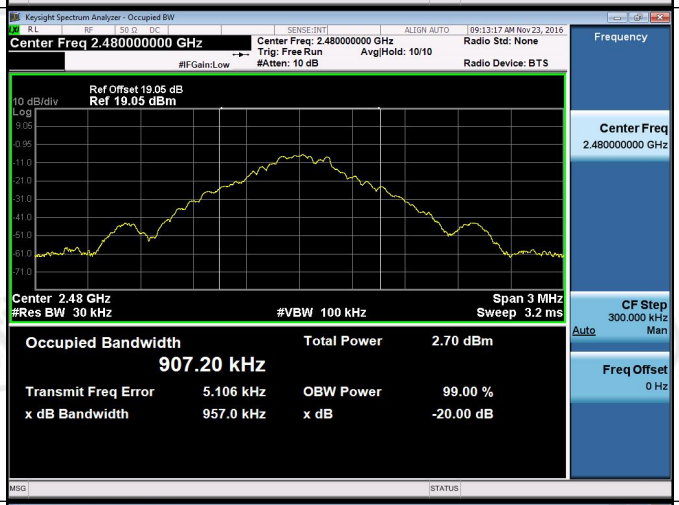
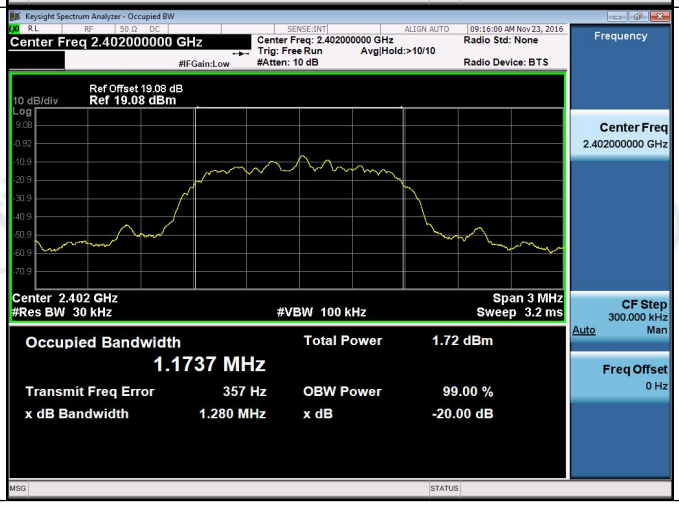
Appendix A): 20dB Occupied Bandwidth

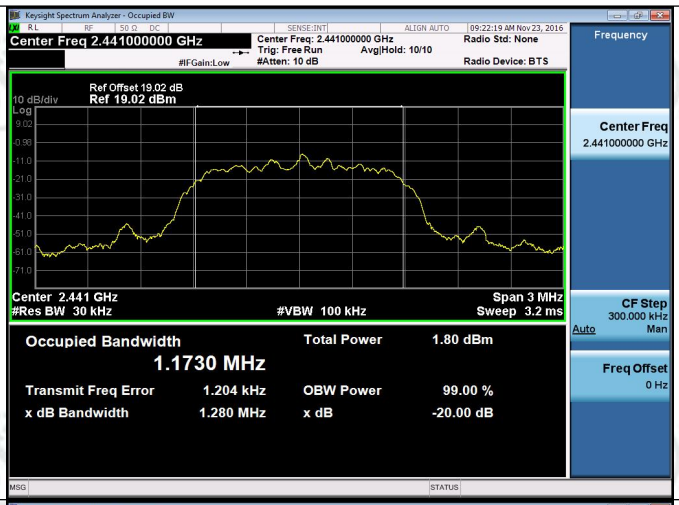
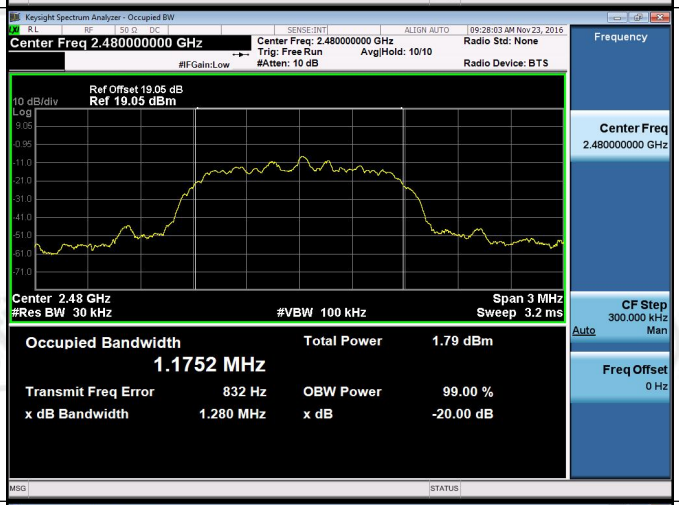
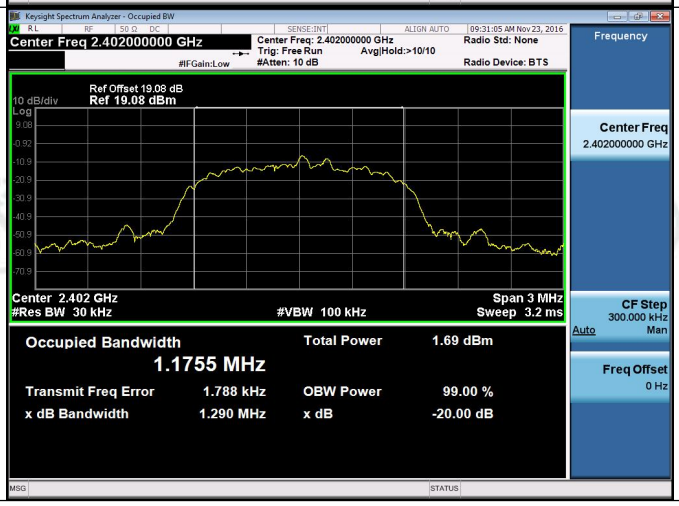
Test Result

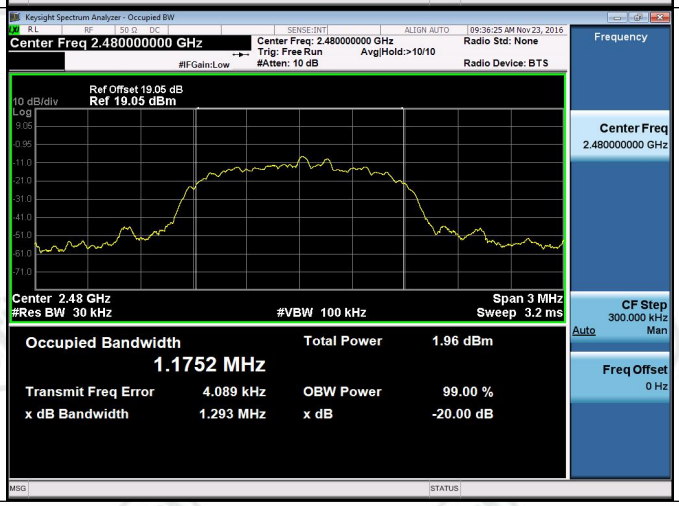
Mode	Channel.	20dB Bandwidth [MHz]	99% OBW [MHz]	Verdict	Remark
GFSK	LCH	0.9546	0.90184	PASS	Peak detector
GFSK	MCH	0.9589	0.90054	PASS	
GFSK	HCH	0.9570	0.90720	PASS	
π /4DQPSK	LCH	1.280	1.1737	PASS	
π /4DQPSK	MCH	1.280	1.1730	PASS	
π /4DQPSK	HCH	1.280	1.1752	PASS	
8DPSK	LCH	1.290	1.1755	PASS	
8DPSK	MCH	1.291	1.1746	PASS	
8DPSK	HCH	1.293	1.1752	PASS	

Test Graph

Graphs		
GFSK/LCH		

GFSK/MCH			
GFSK/HCH			
π/4DQPSK/LCH			

π/4DQPSK/MCH			
π/4DQPSK/HCH			
8DPSK/LCH			

8DPSK/MCH			
8DPSK/HCH			

Appendix B): Carrier Frequency Separation

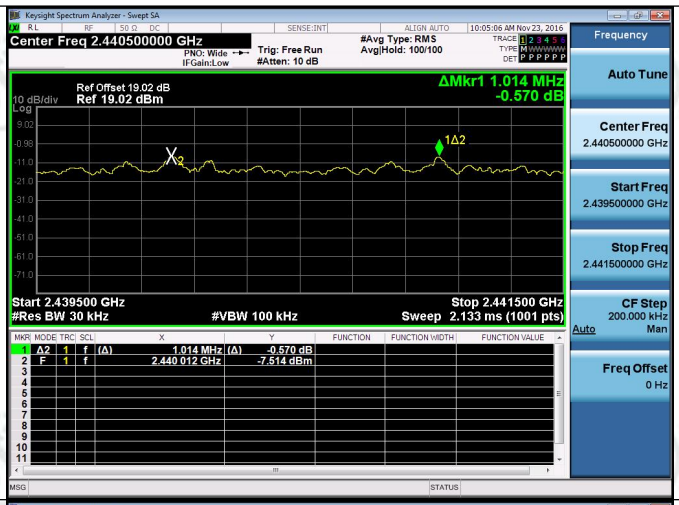
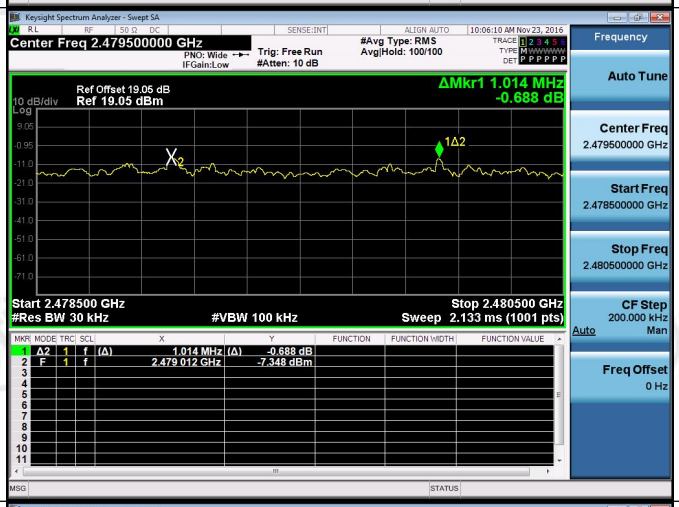
Result Table

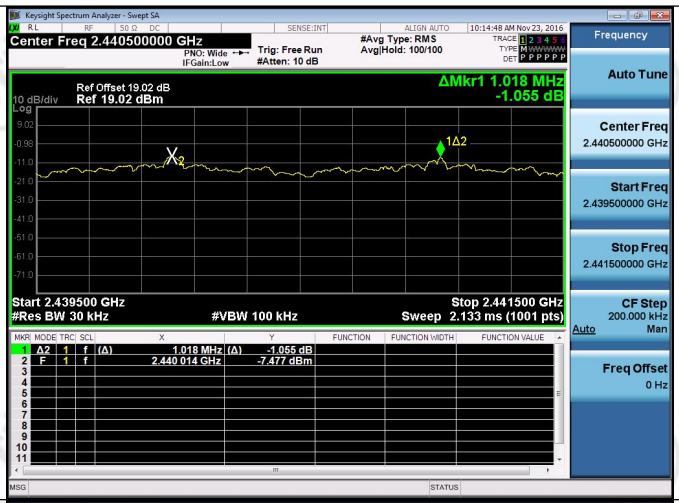
Mode	Channel.	Carrier Frequency Separation [MHz]	Verdict
GFSK	LCH	1.006	PASS
GFSK	MCH	1.000	PASS
GFSK	HCH	0.998	PASS
π/4DQPSK	LCH	1.010	PASS
π/4DQPSK	MCH	1.014	PASS
π/4DQPSK	HCH	1.014	PASS
8DPSK	LCH	0.996	PASS
8DPSK	MCH	1.018	PASS
8DPSK	HCH	1.006	PASS

Test Graph

Graphs			
GFSK/LCH			

GFSK/MCH			
GFSK/HCH			
π/4DQPSK/LCH			

π/4DQPSK/MCH			
π/4DQPSK/HCH			
8DPSK/LCH			

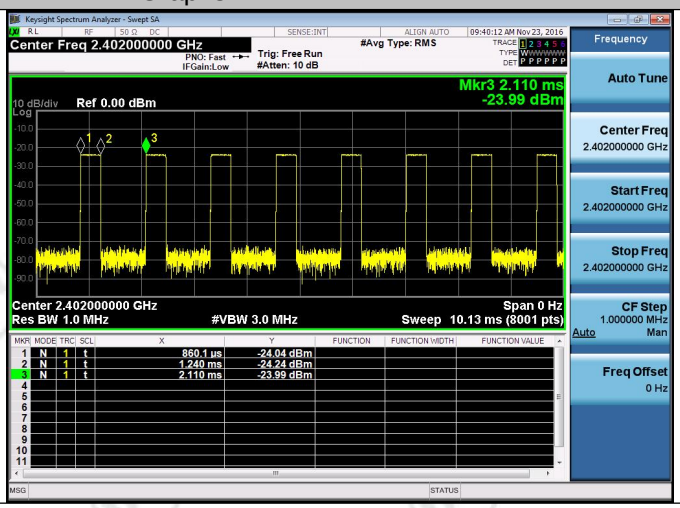
8DPSK/MCH			
8DPSK/HCH			

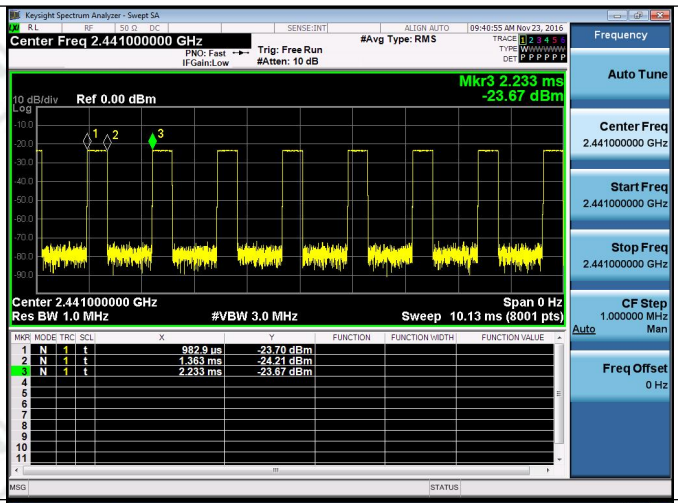
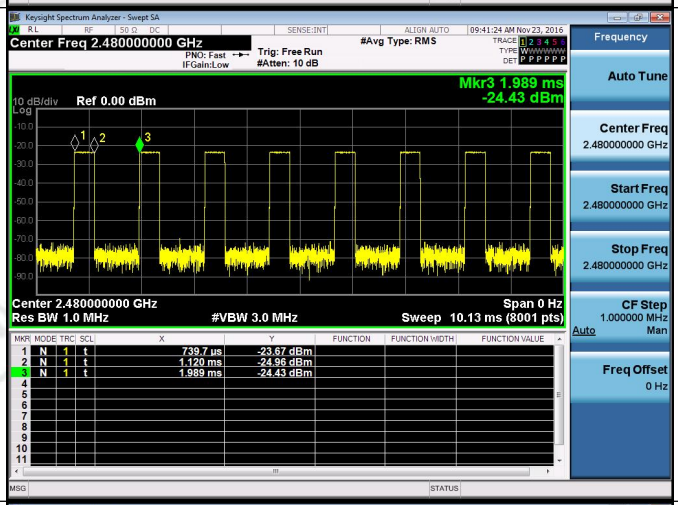
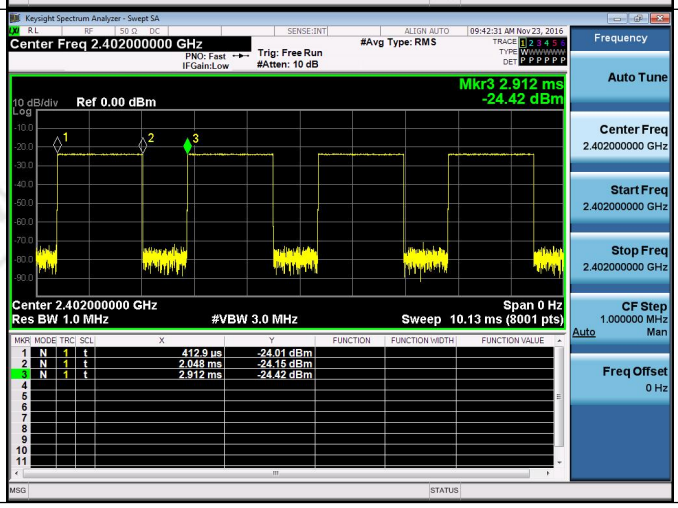
Appendix C): Dwell Time

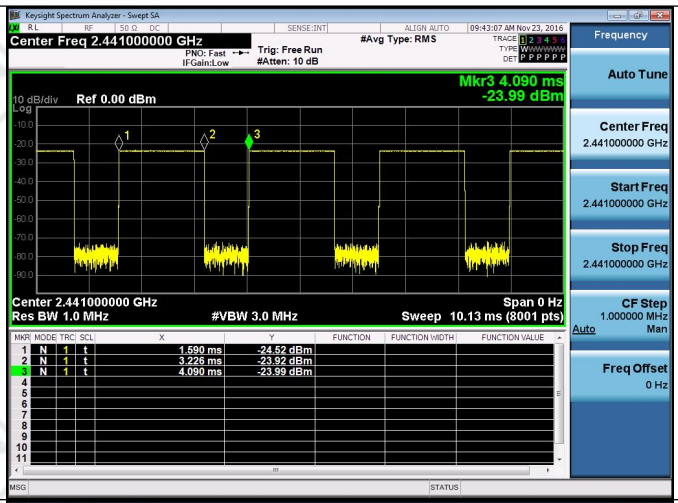
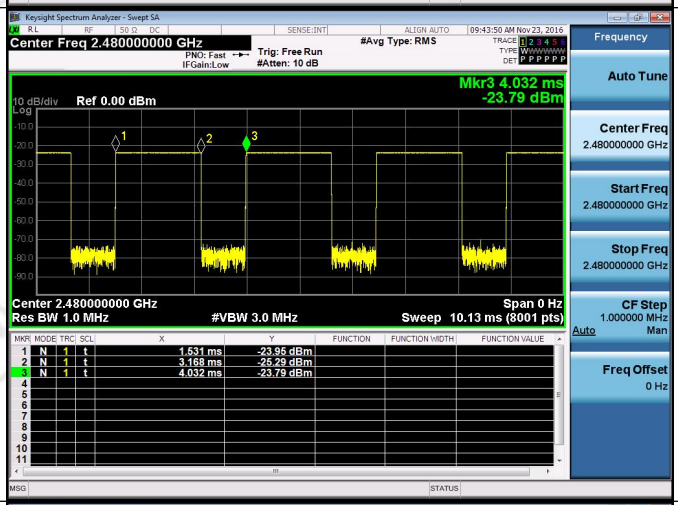
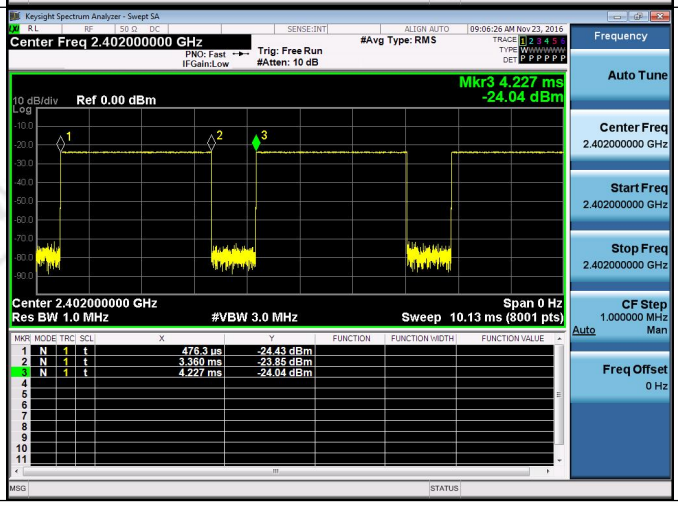
Result Table

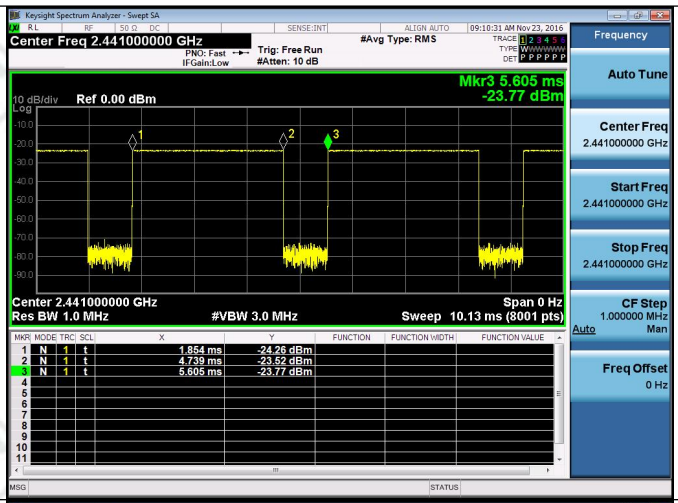
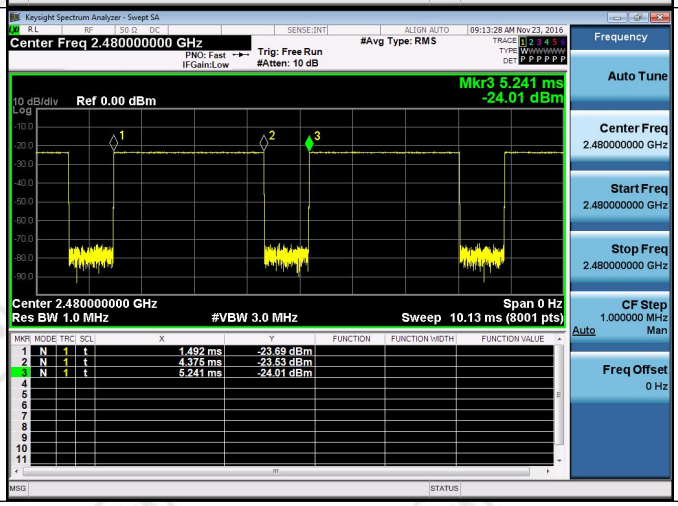
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Duty Cycle [%]	Verdict
GFSK	DH1	LCH	0.380003	320	0.122	0.30	PASS
GFSK	DH1	MCH	0.379997	320	0.122	0.30	PASS
GFSK	DH1	HCH	0.379997	320	0.122	0.30	PASS
GFSK	DH3	LCH	1.635267	160	0.262	0.65	PASS
GFSK	DH3	MCH	1.63653	160	0.262	0.65	PASS
GFSK	DH3	HCH	1.63653	160	0.262	0.65	PASS
GFSK	DH5	LCH	2.884203	106.7	0.308	0.77	PASS
GFSK	DH5	MCH	2.8842	106.7	0.308	0.77	PASS
GFSK	DH5	HCH	2.88294	106.7	0.308	0.77	PASS

Test Graph

Graphs	
GFSK_DH1/LCH	

GFSK_DH1/MCH			
GFSK_DH1/HCH			
GFSK_DH3/LCH			

GFSK_DH3/MCH			
GFSK_DH3/HCH			
GFSK_DH5/LCH			

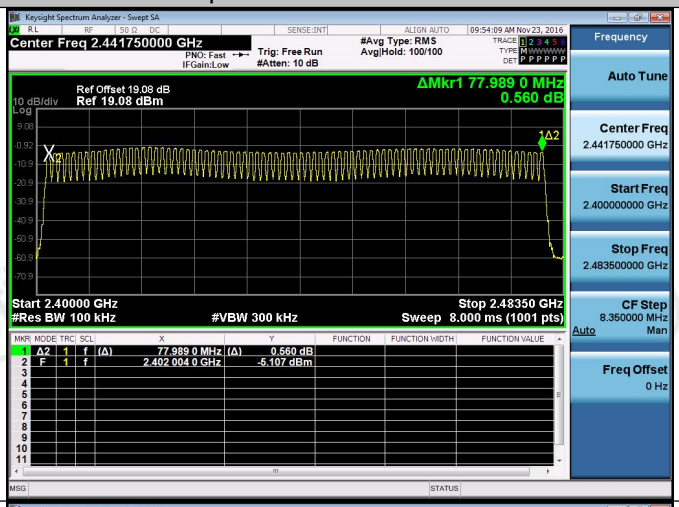
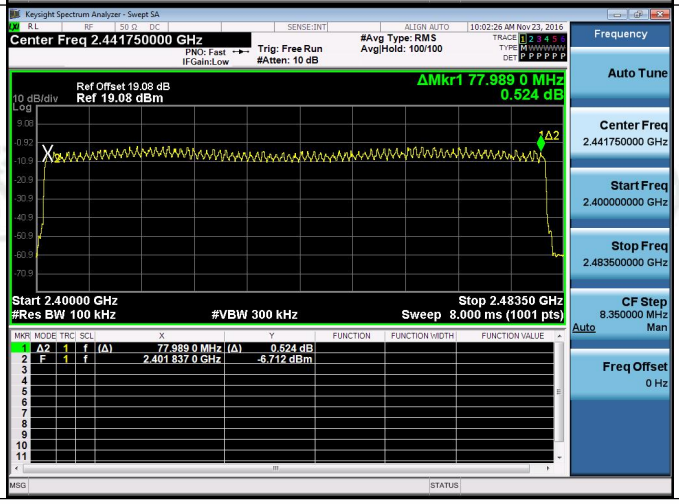
GFSK_DH5/MCH			
GFSK_DH5/HCH			

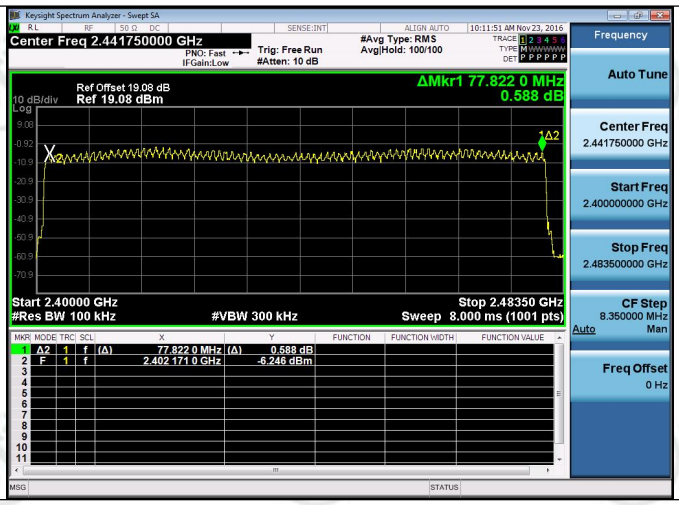
Appendix D): Hopping Channel Number

Result Table

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

Test Graph

Graphs			
GFSK/Hop			
π/4DQPSK/Hop			

8DPSK/Hop		

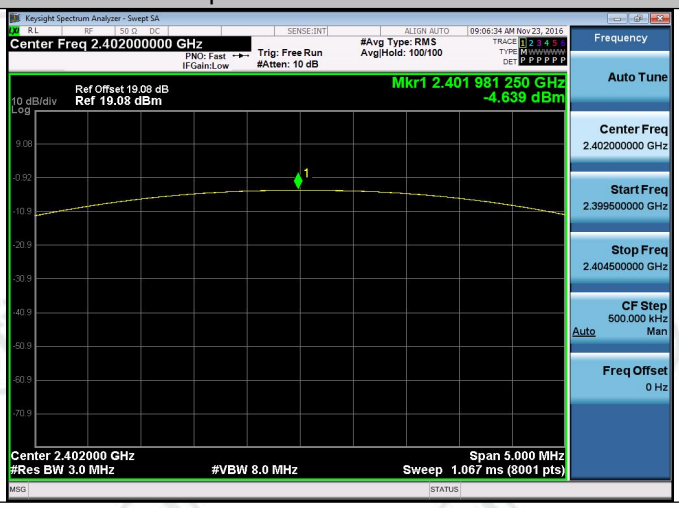
Keysight Spectrum Analyzer - Swept SA
Center Freq 2.441750000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 10 dB
#Avg Type: RMS
Avg|Hold: 100/100
10:11:51 AM Nov 23, 2016
Ref Offset 19.08 dB
10 dB/div
Ref 19.08 dBm
ΔMkr1 77.822 0 MHz
0.588 dB
Start 2.40000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.48350 GHz
Sweep 8.000 ms (1001 pts)
1 Δ2 1 f (Δ) 77.822 0 MHz (Δ) 0.588 dB
2 F 1 f 2.402 171 0 GHz -6.246 dBm
Frequency
Auto Tune
Center Freq
2.441750000 GHz
Start Freq
2.400000000 GHz
Stop Freq
2.483500000 GHz
CF Step
8.350000 MHz
Auto Man
Freq Offset
0 Hz

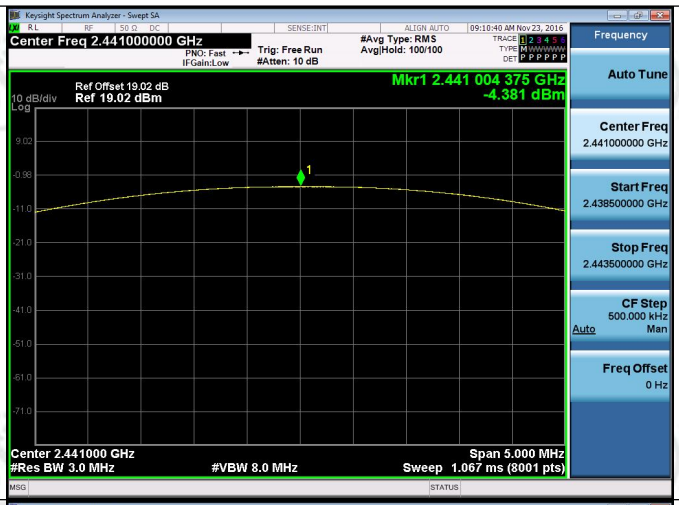
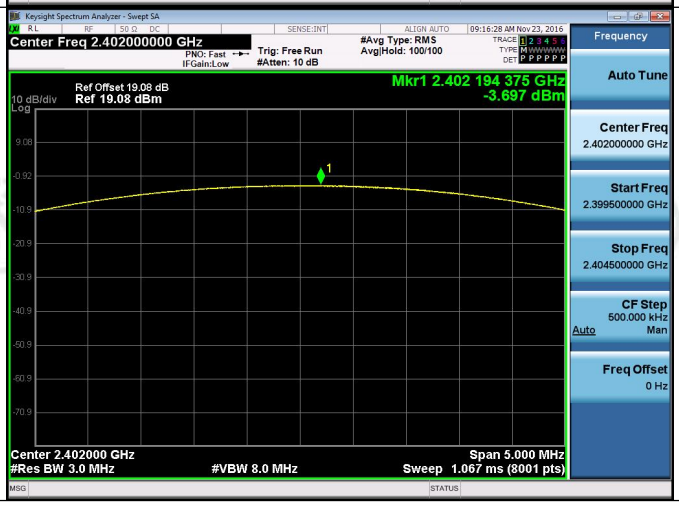
Appendix E): Conducted Peak Output Power

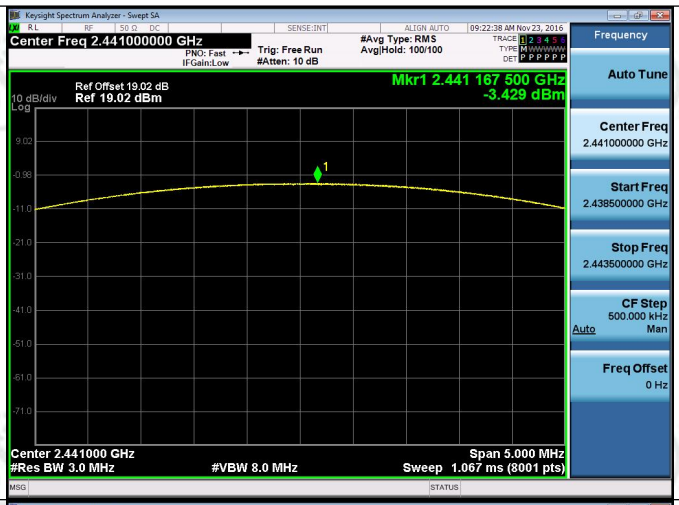
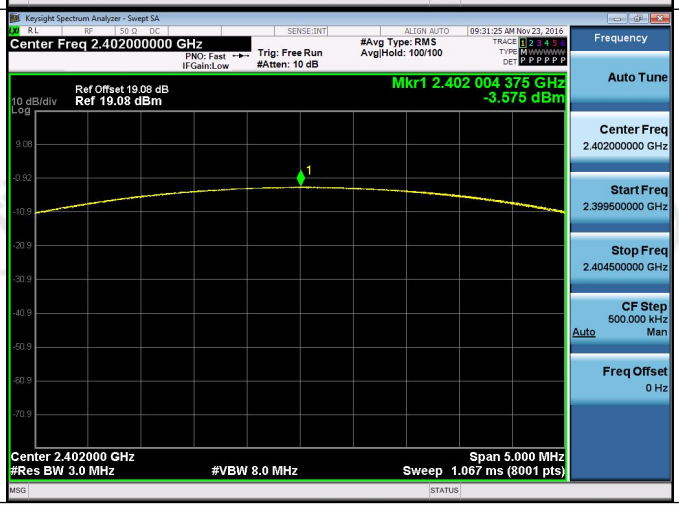
Result Table

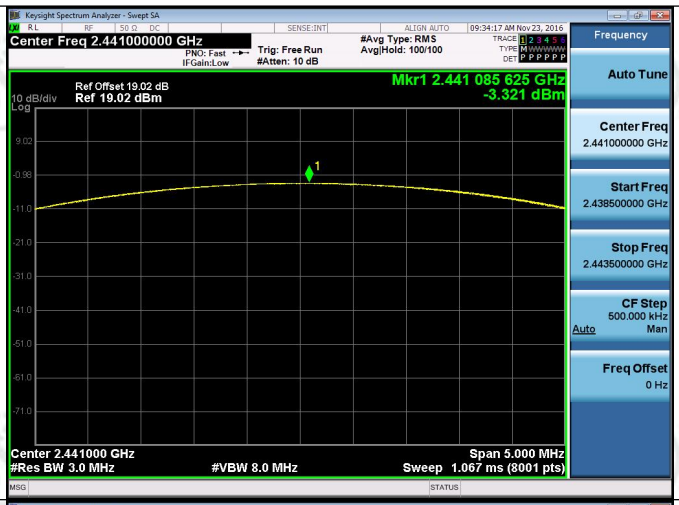
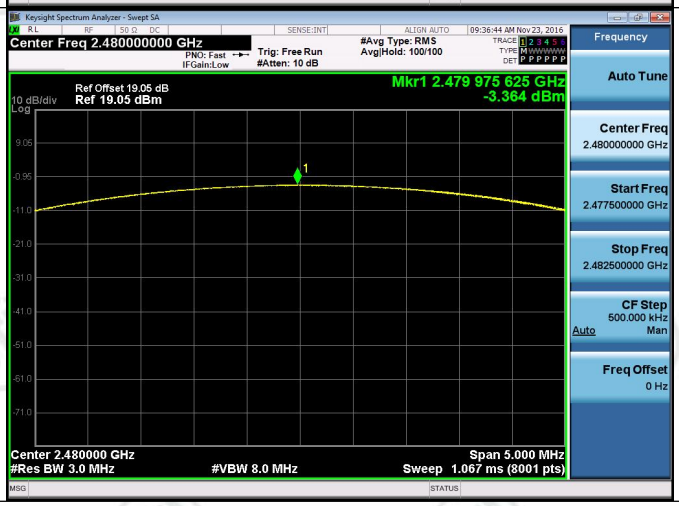
Mode	Channel.	Maximum Peak Output Power [dBm]	Verdict
GFSK	LCH	-4.639	PASS
GFSK	MCH	-4.381	PASS
GFSK	HCH	-4.352	PASS
π/4DQPSK	LCH	-3.697	PASS
π/4DQPSK	MCH	-3.429	PASS
π/4DQPSK	HCH	-3.484	PASS
8DPSK	LCH	-3.575	PASS
8DPSK	MCH	-3.321	PASS
8DPSK	HCH	-3.364	PASS

Test Graph

Graphs			
GFSK/LCH			

GFSK/MCH			
GFSK/HCH			
π/4DQPSK/LCH			

π/4DQPSK/MCH			
π/4DQPSK/HCH			
8DPSK/LCH			

8DPSK/MCH			
8DPSK/HCH