

FCC Radio Test Report FCC ID: 2ASWW-KS001

Original Grant

Report No.	:	TB-FCC165111
Applicant	1	XINCHUANGXIN INTERNATIONAL CO. LTD
Equipment Under Test	(EU	T) TI
EUT Name	:	Mobile phone
Model No.	:	K1
Series Model No.		K2, K6, K6 plus, K8
Brand Name	÷	CORN
Receipt Date	61	2019-03-27
Test Date	-	2019-03-27 to 2019-04-09
Issue Date		2019-04-10
Standards	-	FCC Part 15: 2017, Subpart C(15.247)
Test Method	÷	ANSI C63.10: 2013
Conclusions	-	PASS
		In the configuration tested, the EUT complied with the standards specified above,

The EUT technically complies with the FCC requirements

Test/Witness Engineer

Engineer Supervisor

Engineer Manager



This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in the report.



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Revision History

Report No.	Version	Description	Issued Date
TB-FCC165111	Rev.01	Initial issue of report	2019-04-10
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1. General Information about EUT

1.1 Client Information

Applicant		XINCHUANGXIN INTERNATIONAL CO. LTD
Address	:	ROOM 605 6/F, FA YUEN COMMERCIAL BUILDING, 75-77 FA YUEN STREET MONGKOK KL
Manufacturer	1	XINCHUANGXIN INTERNATIONAL CO. LTD
Address		ROOM 605 6/F, FA YUEN COMMERCIAL BUILDING, 75-77 FA YUEN STREET MONGKOK KL

1.2 General Description of EUT (Equipment Under Test)

EUT Name	:	Mobile phone			
Models No.	:	K1, K2, K6, K6 plus, K8			
Model Difference		All these models are identical in the same PCB layout and electrical circuit, the only difference is the appearance.			
ange		Operation Frequency:	Bluetooth2.1+EDR: 2402~2480 MHz		
	1	Number of Channel:	Bluetooth: 79 Channels See Note 2		
Product		Max Peak Output Power:	Bluetooth: 5.362(GFSK)		
Description		Antenna Gain: -2.8 dBi Internal Antenna			
BU _ (1		Modulation Type:	GFSK (1 Mbps)		
			Pi/4-DQPSK (2 Mbps)		
	2		8-DPSK (3 Mbps)		
		DC 3.7V by rechargeable Li-ion Battery(800mAh).			
Power Rating	-	USB DC 5V from AC/DC Adapter(FSF-01):			
i en or rearing	-	Input: AC 100-240V, 50/60Hz, 0.25A.			
		Output: DC 5V, 500mA.			
Software Version		HC201_3232_128160_XC	X_1807E_K1_KGTEL		
Hardware Version		CE001-MAIN_V2.0			
Connecting I/O		Please refer to the User's	Manual		
Port(S)					

Note:

(1) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.



(2) Channel List:

Bluetooth Channel List							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)		
00	2402	27	2429	54	2456		
01	2403	28	2430	55	2457		
02	2404	29	2431	56	2458		
03	2405	30	2432	57	2459		
04	2406	31	2433	58	2460		
05	2407	32	2434	59	2461		
06	2408	33	2435	60	2462		
07	2409	34	2436	61	2463		
08	2410	35	2437	62	2464		
09	2411	36	2438	63	2465		
10	2412	37	2439	64	2466		
11	2413	38	2440	65	2467		
12	2414	39	2441	66	2468		
13	2415	40	2442	67	2469		
14	2416	41	2443	68	2470		
15	2417	42	2444	69	2471		
16	2418	43	2445	70	2472		
17	2419	44	2446	71	2473		
18	2420	45	2447	72	2474		
19	2421	46	2448	73	2475		
20	2422	47	2449	74	2476		
21	2423	48	2450	75	2477		
22	2424	49	2451	76	2478		
23	2425	50	2452	77	2479		
24	2426	51	2453	78	2480		
25	2427	52	2454				
26	2428	53	2455	CUID?			

(3) The Antenna information about the equipment is provided by the applicant.



1.3 Block Diagram Showing the Configuration of System Tested

Charging + TX Mode
Adapter
Cable 1

EUT





1.4 Description of Support Units

The EUT has been test as an independent unit.

1.5 Description of Test Mode

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned follow was evaluated respectively.

For Conducted Test					
Final Test Mode	Final Test Mode Description				
Mode 1		Charging + TX Mode			
	For I	Radiated Test			
Final Test Mode	de la compañía de la comp	Description			
Mode 1		TX GFSK Mode			
Mode 2	640	TX Mode(GFSK) Channel 00/39/78			
Mode 3	13	TX Mode(Pi/4-DQPSK) Channel 00/39/78			
Mode 4		TX Mode(8-DPSK) Channel 00/39/78			
Mode 5		Hopping Mode(GFSK)			
Mode 6	Ann	Hopping Mode(Pi /4-DQPSK)			
Mode 7		Hopping Mode(8-DPSK)			



Note:

(1) For all test, we have verified the construction and function in typical operation. And all the test modes were carried out with the EUT in transmitting operation in maximum power with all kinds of data rate. We have pretested all the test modes above.

According to ANSI C63.10 standards, the measurements are performed at the highest, middle, lowest available channels, and the worst case data rate as follows:

TX Mode: GFSK (1 Mbps)

TX Mode:Pi/4-DQPSK (2 Mbps)

TX Mode: 8-DPSK (3Mbps)

(2) The EUT is considered a portable unit; it was pre-tested on the positioned of each 3 axis, X-plane, Y-plane and Z-plane. The worst case was found positioned on X-plane as the normal use. Therefore only the test data of this X-plane was used for radiated emission measurement test.

1.6 Description of Test Software Setting

During testing channel power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters of Bluetooth mode.

Test Software Version		#*8378#1#	0000
Frequency	2402 MHz	2441MHz	2480 MHz
GFSK	1	1	1
Pi/4-DQPSK	1	100-1	1
8-DPSK	1	1002	1

1.7 Measurement Uncertainty

The reported uncertainty of measurement $y \pm U$, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95 %.

Test Item	Parameters	Expanded Uncertainty (U _{Lab})
Conducted Emission	Level Accuracy: 9kHz~150kHz 150kHz to 30MHz	±3.42 dB ±3.42 dB
Radiated Emission	Level Accuracy: 9kHz to 30 MHz	±4.60 dB
Radiated Emission	Level Accuracy: 30MHz to 1000 MHz	±4.40 dB
Radiated Emission	Level Accuracy: Above 1000MHz	±4.20 dB



1.8 Test Facility

The testing was performed by the Shenzhen Toby Technology Co., Ltd., in their facilities located at:1A/F., Bldg.6, Yusheng Industrial Zone, The National Road No.107 Xixiang Section 467, Xixiang, Bao'an, Shenzhen, Guangdong, China.

At the time of testing, the following bodies accredited the Laboratory:

CNAS (L5813)

The Laboratory has been accredited by CNAS to ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories for the competence in the field of testing. And the Registration No.: CNAS L5813.

A2LA Certificate No.: 4750.01

The laboratory has been accredited by American Association for Laboratory Accreditation(A2LA) to ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories for the technical competence in the field of Electrical Testing. And the A2LA Certificate No.: 4750.01.FCC Accredited Test Site Number: 854351.

IC Registration No.: (11950A-1)

The Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing. The site registration: Site# 11950A-1.



2. Test Summary

	FCC Part 15 Subpart C(15.247)/ RSS 247 Issue 2				
Standard S	ection				
FCC	IC	- Test Item	Judgment	Remark	
15.203	2	Antenna Requirement	PASS	N/A	
15.207	RSS-GEN 7.2.2	Conducted Emission	PASS	N/A	
15.205	RSS-Gen 7.2.3	Restricted Bands	PASS	N/A	
15.247(a)(1)	RSS 247 5.1 (2)	Hopping Channel Separation	PASS	N/A	
15.247(a)(1)	RSS 247 5.1 (4)	Dwell Time	PASS	N/A	
15.247(b)(1)	RSS 247 5.4 (2)	Peak Output Power	PASS	N/A	
15.247(b)(1)	RSS 247 5.1 (4)	Number of Hopping Frequency	PASS	N/A	
15.247(d)	RSS 247 5.5	Band Edge	PASS	N/A	
15.247(c)& 15.209	RSS 247 5.5	Radiated Spurious Emission	PASS	N/A	
15.247(a)	RSS 247 5.1 (1)	99% Occupied Bandwidth & 20dB Bandwidth	PASS	N/A	

Note: N/A is an abbreviation for Not Applicable.

3. Test Equipment

Conducted Emiss					Cal. Due	
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date	
EMI Test Receiver	Rohde & Schwarz	ESCI	100321	Jul.18, 2018	Jul. 17, 2019	
RF Switching Unit	Compliance Direction Systems Inc	RSU-A4	34403	Jul.18, 2018	Jul. 17, 2019	
AMN	SCHWARZBECK	NNBL 8226-2	8226-2/164	Jul.18, 2018	Jul. 17, 2019	
LISN	Rohde & Schwarz	ENV216	101131	Jul.18, 2018	Jul. 17, 2019	
Radiation Emissio	on Test					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date	
Spectrum Analyzer	Agilent	E4407B	MY45106456	Jul.18, 2018	Jul. 17, 2019	
EMI Test Receiver	Rohde & Schwarz	ESPI	100010/007	Jul.18, 2018	Jul. 17, 2019	
Bilog Antenna	ETS-LINDGREN	3142E	00117537	Jan. 27, 2019	Jan. 26, 2020	
Bilog Antenna	ETS-LINDGREN	3142E	00117542	Jan. 27, 2019	Jan. 26, 2020	
Horn Antenna	ETS-LINDGREN	3117	00143207	Mar.03, 2019	Mar. 02, 2020	
Horn Antenna	ETS-LINDGREN	3117	00143209	Mar.03, 2019	Mar. 02, 2020	
Loop Antenna	SCHWARZBECK	FMZB 1519 B	1519B-059	Jul. 15, 2018	Jul. 14, 2019	
Pre-amplifier	Sonoma	310N	185903	Mar.04, 2019	Mar. 03, 2020	
Pre-amplifier	HP	8449B	3008A00849	Mar.03, 2019	Mar. 02, 2020	
Cable	HUBER+SUHNER	100	SUCOFLEX	Mar.03, 2019	Mar. 02, 2020	
Positioning Controller	ETS-LINDGREN	2090	N/A	N/A	N/A	
Antenna Conducte	ed Emission					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date	
Spectrum Analyzer	Agilent	E4407B	MY45106456	Jul.18, 2018	Jul. 17, 2019	
Spectrum Analyzer	Rohde & Schwarz	ESCI	100010/007	Jul.18, 2018	Jul. 17, 2019	
MXA Signal Analyzer	Agilent	N9020A	MY49100060	Sep. 15, 2018	Sep. 14, 2019	
Vector Signal Generator	Agilent	N5182A	MY50141294	Sep. 15, 2018	Sep. 14, 2019	
Analog Signal Generator	Agilent	N5181A	MY50141953	Sep. 15, 2018	Sep. 14, 2019	
	DARE!! Instruments	RadiPowerRPR3006W	17100015SNO26	Sep. 15, 2018	Sep. 14, 2019	
	DARE!! Instruments	RadiPowerRPR3006W	17100015SNO29	Sep. 15, 2018	Sep. 14, 2019	
RF Power Sensor	DARE!! Instruments	RadiPowerRPR3006W	17100015SNO31	Sep. 15, 2018	Sep. 14, 2019	
	DARE!! Instruments	RadiPowerRPR3006W	17100015SNO33	Sep. 15, 2018	Sep. 14, 2019	



4. Conducted Emission Test

- 4.1 Test Standard and Limit
 - 4.1.1Test Standard FCC Part 15.207
 - 4.1.2 Test Limit

Eronuonov	Maximum RF Line	e Voltage (dBµV)
Frequency	Quasi-peak Level	Average Level
150kHz~500kHz	66 ~ 56 *	56 ~ 46 *
500kHz~5MHz	56	46
5MHz~30MHz	60	50

Conducted Emission Test Limit

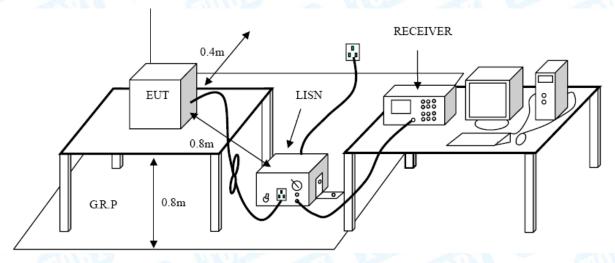
Notes:

(1) *Decreasing linearly with logarithm of the frequency.

(2) The lower limit shall apply at the transition frequencies.

(3) The limit decrease in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

4.2 Test Setup



4.3 Test Procedure

The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.

Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.



I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

LISN at least 80 cm from nearest part of EUT chassis

The bandwidth of EMI test receiver is set at 9kHz, and the test frequency band is from 0.15MHz to 30MHz.

4.4 EUT Operating Mode

Please refer to the description of test mode.

4.5 Test Data

Please refer to the Attachment A.



5. Radiated Emission Test

- 5.1 Test Standard and Limit
 - 5.1.1 Test Standard
 - FCC Part 15.209
 - 5.1.2 Test Limit

Radiated Emission Limit (9 kHz~1000MHz)

Frequency (MHz	Field Strength (microvolt/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

Frequency	Class B (dBu	ıV/m)(at 3m)
(MHz)	Peak	Average
bove 1000	74	54

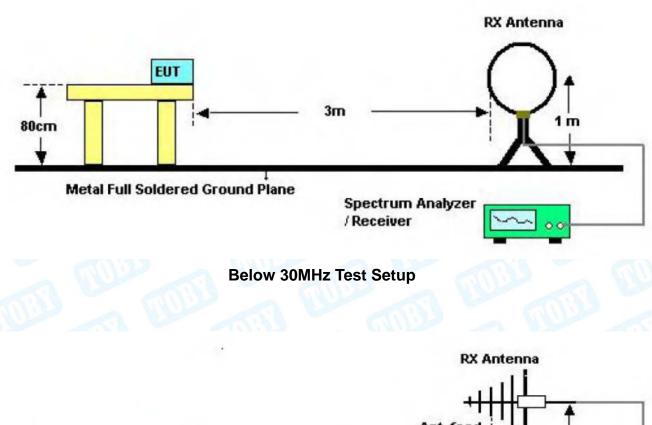
Note:

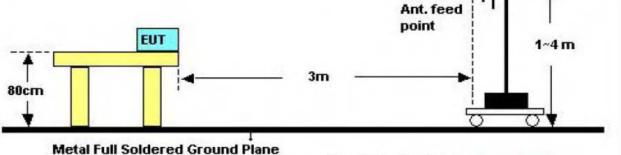
(1) The tighter limit applies at the band edges.

(2) Emission Level (dBuV/m)=20log Emission Level (uV/m)



5.2 Test Setup



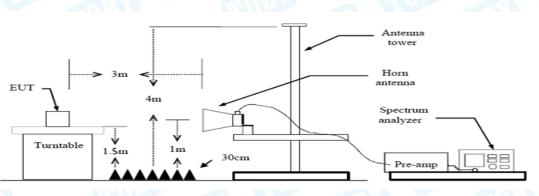


Spectrum Analyzer / Receiver

Below 1000MHz Test Setup

0.0





Above 1GHz Test Setup

5.3 Test Procedure

- (1) The measuring distance of 3m shall be used for measurements at frequency up to 1GHz and above 1 GHz. The EUT was placed on a rotating 0.8m high above ground, the table was rotated 360 degrees to determine the position of the highest radiation.
- (2) Measurements at frequency above 1GHz. The EUT was placed on a rotating 1.5m high above the ground. RF absorbers covered the ground plane with a minimum area of 3.0m by 3.0m between the EUT and measurement receiver antenna. The RF absorber shall not exceed 30cm in high above the conducting floor. The table was rotated 360 degrees to determine the position of the highest radiation.
- (3) The Test antenna shall vary between 1m and 4m, Both Horizontal and Vertical antenna are set to make measurement.
- (4) The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- (5) If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit Bellow 1 GHz, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed. But the Peak Value and average value both need to comply with applicable limit above 1 GHz.
- (6) Testing frequency range below 1GHz the measuring instrument use VBW=120 kHz with Quasi-peak detection.
- (7) Testing frequency range above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.
- (8) For the actual test configuration, please see the test setup photo.

5.4 EUT Operating Condition

The Equipment Under Test was set to Continual Transmitting in maximum power in TX mode.

5.5 Test Data

Remark: During testing above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.

Please refer to the Attachment B.

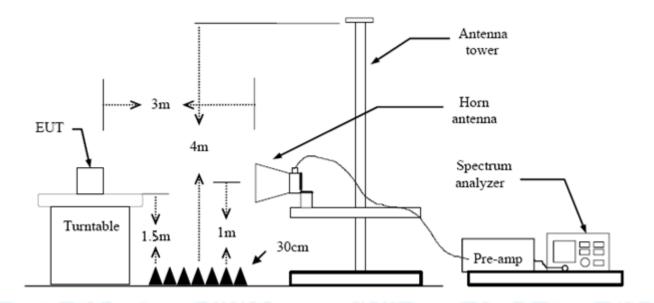


6. Restricted Bands Requirement

- 6.1 Test Standard and Limit
 - 6.1.1 Test Standard FCC Part 15.209 FCC Part 15.205
 - 6.1.2 Test Limit

Restricted Frequency	Class B (dB	BuV/m)(at 3m)
Band (MHz)	Peak	Average
2310 ~2390	74	54
2483.5 ~2500	74	54

6.2 Test Setup



6.3 Test Procedure

- (1) The measuring distance of 3m shall be used for measurements at frequency up to 1GHz and above 1 GHz. The EUT was placed on a rotating 0.8m high above ground, the table was rotated 360 degrees to determine the position of the highest radiation.
- (2) Measurements at frequency above 1GHz. The EUT was placed on a rotating 1.5m high above the ground. RF absorbers covered the ground plane with a minimum area of 3.0m by 3.0m between the EUT and measurement receiver antenna. The RF absorber shall not exceed 30cm in high above the conducting floor. The table was rotated 360 degrees to determine the position of the highest radiation.



- (3) The Test antenna shall vary between 1m and 4m, Both Horizontal and Vertical antenna are set to make measurement.
- (4) The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- (5) If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit Bellow 1 GHz, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed. But the Peak Value and average value both need to comply with applicable limit above 1 GHz.
- (6) Testing frequency range below 1GHz the measuring instrument use VBW=120 kHz with Quasi-peak detection.
- (7) Testing frequency range above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with AVG Detector for Average Values.
- (8) For the actual test configuration, please see the test setup photo.

6.4 EUT Operating Condition

The Equipment Under Test was set to Continual Transmitting in maximum power.

6.5 Test Data

Remark: During testing above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.

All restriction bands have been tested, only the worst case is reported. Please refer to the Attachment C.

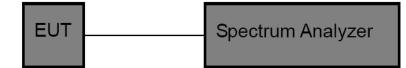


7. Number of Hopping Channel

- 7.1 Test Standard and Limit
 - 6.1.1 Test Standard
 - FCC Part 15.247 (a)(1)
 - 6.1.2 Test Limit

Section	Test Item	Limit
15.247	Number of Hopping Channel	>15

7.2 Test Setup



7.3 Test Procedure

- (1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- (2) Spectrum Setting: RBW=100 KHz, VBW=100 KHz, Sweep time= Auto.

7.4 EUT Operating Condition

The EUT was set to the Hopping Mode by the Customer.

7.5 Test Data

Please refer to the Attachment D.

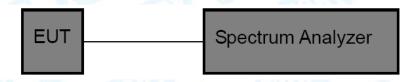


8. Average Time of Occupancy

- 8.1 Test Standard and Limit
 - 8.1.1 Test Standard
 - FCC Part 15.247 (a)(1)
 - 8.1.2 Test Limit

Section	Test Item	Limit
15.247(a)(1)/ RSS-210	Average Time of	0.4.000
Annex 8(A8.1d)	Occupancy	0.4 sec

8.2 Test Setup



8.3 Test Procedure

- (1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- (2) Spectrum Setting: RBW=1MHz, VBW=3MHz.
- (3) Use video trigger with the trigger level set to enable triggering only on full pulses.
- (4) Sweep Time is more than once pulse time.
- (5) Set the center frequency on any frequency would be measure and set the frequency span to zero.
- (6) Measure the maximum time duration of one single pulse.
- (7) Set the EUT for packet transmitting.
- (8) Measure the maximum time duration of one single pulse.

8.4 EUT Operating Condition

The average time of occupancy on any channel within the Period can be calculated with formulas:

{Total of Dwell} = {Pulse Time} * (1600 / X) / {Number of Hopping Frequency} * {Period} {Period} = 0.4s * {Number of Hopping Frequency}

Note: X=2 or 4 or 6 (1DH1=2, 1DH3=4, 1DH5=6. 2DH1=2, 2DH3=4, 2DH5=6. 3DH1=2, 3DH3=4, 3DH5=6)

The lowest, middle and highest channels are selected to perform testing to record the dwell time of each occupation measured in this channel, which is called Pulse Time here.

The EUT was set to the Hopping Mode by the Customer.

8.5 Test Data

Please refer to the Attachment E.

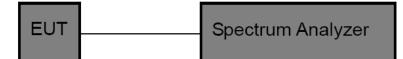


9. Channel Separation and Bandwidth Test

- 9.1 Test Standard and Limit
 - 9.1.1 Test Standard
 - FCC Part 15.247
 - 9.1.2 Test Limit

Test Item	Limit	Frequency Range(MHz)
Bandwidth	<=1 MHz (20dB bandwidth)	2400~2483.5
Channel Separation	>25KHz or >two-thirds of the 20 dB bandwidth Which is greater	2400~2483.5

9.2 Test Setup



9.3 Test Procedure

- (1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- (2) Spectrum Setting: Channel Separation: RBW=30 kHz, VBW=100 kHz. Bandwidth: RBW=30 kHz, VBW=100 kHz.
- (3) The bandwidth is measured at an amplitude level reduced 20dB from the reference level. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst –case (i.e the widest) bandwidth.
 - (4) Measure the channel separation the spectrum analyzer was set to Resolution Bandwidth:30 kHz, and Video Bandwidth:100 kHz. Sweep Time set auto.

9.4 EUT Operating Condition

The EUT was set to the Hopping Mode for Channel Separation Test and continuously transmitting for the Bandwidth Test.

9.5 Test Data

Please refer to the Attachment F.



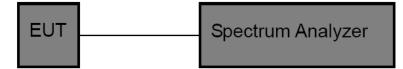
10. Peak Output Power Test

10.1 Test Standard and Limit

- 10.1.1 Test Standard FCC Part 15.247 (b) (1)
- 10.1.2 Test Limit

Test Item	Limit	Frequency Range(MHz)
Peak Output Power	Hopping Channels>75 Power<1W(30dBm)	2400~2483.5
- 600D	Other <125 mW(21dBm)	

10.2 Test Setup



10.3 Test Procedure

- (1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- (2) Spectrum Setting:

Peak Detector: RBW=1 MHz, VBW=3 MHz for bandwidth less than 1MHz. RBW=3 MHz, VBW=3 MHz for bandwidth more than 1MHz.

10.4 EUT Operating Condition

The EUT was set to continuously transmitting in the max power during the test.

10.5 Test Data

Please refer to the Attachment G.



11. Antenna Requirement

11.1 Standard Requirement

11.1.1 Standard

FCC Part 15.203

11.1.2 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 of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

11.2 Antenna Connected Construction

The gains of the antenna used for transmitting is -2.8dBi, and the antenna connector is de-signed with permanent attachment and no consideration of replacement. Please see the EUT photo for details.

11.3 Result

The EUT antenn	a is a Internal Antenna. It complies with the standard requiremer
	Antenna Type
1 Deb	Permanent attached antenna
	Unique connector antenna
	Professional installation antenna

Attachment A-- Conducted Emission Test Data

Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz	A V /	B3
Terminal:	Line		
Test Mode:	Charging+ TX Mode	COURS -	ALL CALLER
Remark:	Only worse case is report	ted	
	AMONTAN MARINA		QP: AVG:
40	ANN MANAMANA way	Manufacture and a second and a second and a second and a second a second a second a second a second a second a	AV

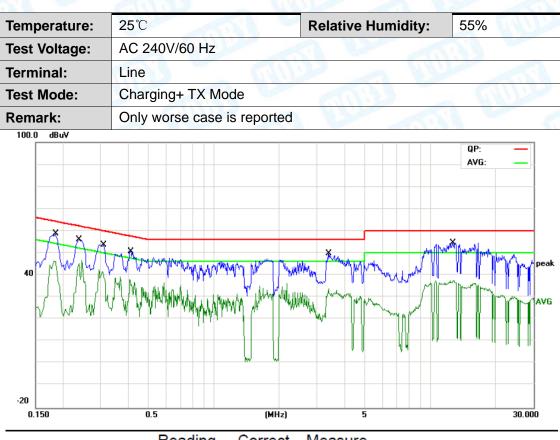
No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1	0.1539	50.47	9.58	60.05	65.78	-5.73	QP
2	0.1539	31.49	9.58	41.07	55.78	-14.71	AVG
3	0.1819	49.21	9.58	58.79	64.39	-5.60	QP
4	0.1819	39.05	9.58	48.63	54.39	-5.76	AVG
5	0.2419	46.60	9.58	56.18	62.03	-5.85	QP
6	0.2419	36.62	9.58	46.20	52.03	-5.83	AVG
7	0.3059	44.64	9.59	54.23	60.08	-5.85	QP
8	0.3059	34.99	9.59	44.58	50.08	-5.50	AVG
9	0.3659	43.43	9.60	53.03	58.59	-5.56	QP
10	0.3659	31.57	9.60	41.17	48.59	-7.42	AVG
11 *	2.7540	42.28	9.64	51.92	56.00	-4.08	QP
12	2.7540	29.93	9.64	39.57	46.00	-6.43	AVG



Temperature:	25 ℃	Relative Hu	imidity:	55%
Test Voltage:	AC 120V/60 Hz		52	~ 610
Ferminal:	Neutral		-0	23
Fest Mode:	Charging+ TX Mode	ILLE .		
Remark:	Only worse case is repo	orted		CTUL!
				QP: AVG:
40	MMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM			

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.1819	48.43	9.65	58.08	64.39	-6.31	QP
2		0.1819	38.08	9.65	47.73	54.39	-6.66	AVG
3		0.3059	43.56	9.57	53.13	60.08	-6.95	QP
4		0.3059	32.93	9.57	42.50	50.08	-7.58	AVG
5		0.5540	41.34	9.58	50.92	56.00	-5.08	QP
6		0.5540	26.11	9.58	35.69	46.00	-10.31	AVG
7		0.6700	41.18	9.59	50.77	56.00	-5.23	QP
8		0.6700	27.85	9.59	37.44	46.00	-8.56	AVG
9		2.7299	40.16	9.65	49.81	56.00	-6.19	QP
10	*	2.7299	31.94	9.65	41.59	46.00	-4.41	AVG
11		5.4179	43.23	9.99	53.22	60.00	-6.78	QP
12		5.4179	28.13	9.99	38.12	50.00	-11.88	AVG





No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.1863	48.98	9.65	58.63	64.20	-5.57	QP
2		0.1863	35.69	9.65	45.34	54.20	-8.86	AVG
3		0.2380	46.32	9.62	55.94	62.16	-6.22	QP
4		0.2380	35.75	9.62	45.37	52.16	-6.79	AVG
5		0.3100	43.97	9.57	53.54	59.97	-6.43	QP
6		0.3100	29.49	9.57	39.06	49.97	-10.91	AVG
7		0.4140	41.09	9.58	50.67	57.57	-6.90	QP
8		0.4140	25.79	9.58	35.37	47.57	-12.20	AVG
9		3.3820	40.01	9.69	49.70	56.00	-6.30	QP
10		3.3820	22.09	9.69	31.78	46.00	-14.22	AVG
11	*	12.7579	44.19	10.44	54.63	60.00	-5.37	QP
12		12.7579	26.95	10.44	37.39	50.00	-12.61	AVG



	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 240V/60 Hz	6001	
Terminal:	Neutral	AV	
Test Mode:	Charging+ TX Mode		
Remark:	Only worse case is rep	orted	A MULL
			QP: AVG:

No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1 *	0.1779	50.67	9.65	60.32	64.58	-4.26	QP
2	0.1779	37.46	9.65	47.11	54.58	-7.47	AVG
3	0.2379	47.10	9.62	56.72	62.17	-5.45	QP
4	0.2379	35.56	9.62	45.18	52.17	-6.99	AVG
5	0.2979	45.22	9.57	54.79	60.30	-5.51	QP
6	0.2979	33.22	9.57	42.79	50.30	-7.51	AVG
7	0.3539	43.22	9.58	52.80	58.87	-6.07	QP
8	0.3539	32.63	9.58	42.21	48.87	-6.66	AVG
9	0.4139	41.64	9.58	51.22	57.57	-6.35	QP
10	0.4139	31.27	9.58	40.85	47.57	-6.72	AVG
11	1.0700	40.63	9.59	50.22	56.00	-5.78	QP
12	1.0700	24.87	9.59	34.46	46.00	-11.54	AVG



Attachment B-- Radiated Emission Test Data

9KHz~30MHz

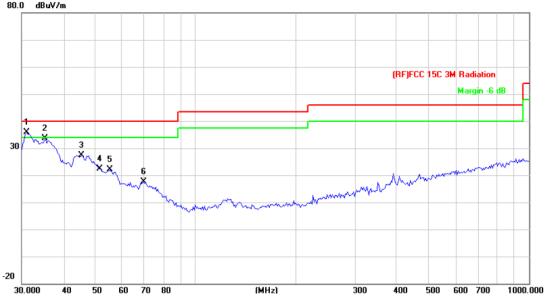
From 9KHz to 30MHz: Conclusion: PASS

Note: The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

30MHz~1GHz

Temperature:	25℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Horizontal	NUDD A	NUL -
Test Mode:	Charging+ TX Mode(GFSK 2	402MHz)	
Remark:	Only worse case is reported		

80.0 dBuV/m



No	. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	31.0704	49.74	-13.80	35.94	40.00	-4.06	peak
2		35.2511	50.40	-16.87	33.53	40.00	-6.47	peak
3		45.3755	48.99	-21.70	27.29	40.00	-12.71	peak
4		51.4807	45.78	-23.41	22.37	40.00	-17.63	peak
5		55.2207	46.07	-23.83	22.24	40.00	-17.76	peak
6		69.6005	41.16	-23.54	17.62	40.00	-22.38	peak
-								

*:Maximum data x:Over limit !:over margin



Temperature:	25 ℃		Relative H	umidity:	55%	
Test Voltage:	AC 120V/60Hz	RU C		52	-	NUL:
Ant. Pol.	Vertical			-0	35	
Test Mode:	Charging+ TX I	Mode(GFSK 24	402MHz)	112		132
Remark:	Only worse cas	e is reported	and	2	01	1990
80.0 dBu¥/m						
				(RF)FCC 15	C 3M Radiation	
					Margin -6	ar [
_						
30 2 3	5					
	mxm h	6				m
	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	v h		Munter	Manne	
		million	happennen			
-20						
	50 60 70 80	(MHz)	300	400 50	0 600 700	1000.00
	Readin	g Correct	Measure-			
No. Mk.	Freq. Level	•	ment	Limit	Over	
	MHz dBuV	dB/m	dBuV/m	dBuV/m	dB	Detecto
1 * 31	.5093 48.96		34.82	40.00	-5.18	peak
2 35	.4992 49.48	-16.99	32.49	40.00	-7.51	peak
3 43	.8119 51.51	-20.99	30.52	40.00	-9.48	peak
4 49	.3594 52.94	-23.02	29.92	40.00	-10.08	peak
5 57	.1914 52.14	-24.05	28.09	40.00	-11.91	peak
	9.4360 44.37				-21.43	· ·
0 118	9.4300 44.37	-22.30	22.07	43.50	-21.43	peak

*:Maximum data x:Over limit !:over margin

#### Above 1GHz(Only worse case is reported)

Temperatura	<b>25</b> ℃		55%
Temperature:	25 0	Relative Humidity:	55%
Test Voltage:	DC 3.7V		
Ant. Pol.	Horizontal		33
Test Mode:	TX GFSK Mode 2402MHz		1 and
Remark:	No report for the emission v prescribed limit.	vhich more than 10 dB b	elow the

No.	Mk.	Freq.		Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4803.628	45.15	14.43	59.58	74.00	-14.42	peak
2	*	4803.628	33.94	14.43	48.37	54.00	-5.63	AVG



Temperature:	<b>25</b> ℃		Relative Humidity:	55%		
Test Voltage:	DC 3.7V		1000			
Ant. Pol.	Vertical			ABL -		
Test Mode:	TX GFSK Mode 2	2402MHz	PAN			
Remark:	No report for the prescribed limit.	No report for the emission which more than 10 dB below the prescribed limit.				
	Reading	Correct	Measure-	_		

No	o. Mk	. Freq.	Level		ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4803.352	29.63	14.43	44.06	54.00	-9.94	AVG
2		4805.338	43.75	14.44	58.19	74.00	-15.81	peak



Temperature:	<b>25</b> ℃	Relative Humidity:	55%			
Test Voltage:	DC 3.7V	100 M				
Ant. Pol.	Horizontal		OBL.			
Test Mode:	TX GFSK Mode 2441M	TX GFSK Mode 2441MHz				
Remark:	No report for the emissi prescribed limit.	on which more than 10 dl	B below the			

No	. Mk	Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4880.500	29.71	14.89	44.60	54.00	-9.40	AVG
2		4881.436	42.94	14.91	57.85	74.00	-16.15	peak



Temperature:	<b>25</b> ℃	Relative Humidity:	55%	
Test Voltage:	DC 3.7V	60022	A 110	
Ant. Pol.	Vertical		35	
Test Mode:	TX GFSK Mode 2441N	ЛНz		
Remark: No report for the emission which more than 10 dB below the prescribed limit.				

No.	Mk.	Freq.		Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4883.134	43.20	14.91	58.11	74.00	-15.89	peak
2	*	4883.134	29.71	14.91	44.62	54.00	-9.38	AVG



Temperature	: 25°	С	19	Relative H	lumidity:	55%	1		
Test Voltage:	DC	DC 3.7V							
Ant. Pol.	Ho	Horizontal							
Test Mode:	ТХ	TX GFSK Mode 2480MHz							
Remark:		report for the scribed limit.	emission w	hich more the	an 10 dB b	elow the			
No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over			
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector		

			4241	ab/m	abarrin	abarrin	42	20100101
1		4960.210	43.39	15.39	58.78	74.00	-15.22	peak
2	*	4960.210	29.82	15.39	45.21	54.00	-8.79	AVG



Temperature:	<b>25</b> ℃	Relative Humidity:	55%
Test Voltage:	DC 3.7V		
Ant. Pol.	Vertical		au -
Test Mode:	TX GFSK Mode 24	80MHz	
Remark:	No report for the er prescribed limit.	nission which more than 10 dB	below the

No.	. Mk.	Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4959.532	43.66	15.39	59.05	74.00	-14.95	peak
2	*	4961.350	30.11	15.40	45.51	54.00	-8.49	AVG



2

*

AVG

-10.23

Temperatu	re: 25°C		19	Relative Hu	umidity:	55%	100		
Test Voltag	e: DC	3.7V		1177	32	-	Mar.		
Ant. Pol.	Hori	Horizontal							
Test Mode:	TXI	TX Pi/4-DQPSK Mode 2402MHz							
Remark:		report for the scribed limit.	emission v	vhich more th	an 10 dB l	below the			
No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over			
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector		
	4804.822	43.11	14.44	57.55	74.00	-16.45			

14.44

43.77

54.00

Emission Level= Read Level+ Correct Factor

29.33

4805.500



Temperature:	<b>25</b> ℃	Relative Humidity:	55%				
Test Voltage:	DC 3.7V	10 million					
Ant. Pol.	Vertical		ARY -				
Test Mode:	TX Pi/4-DQPSK Mo	TX Pi/4-DQPSK Mode 2402MHz					
Remark:	No report for the emission which more than 10 dB below the prescribed limit.						

No.	Mk.	Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4803.988	42.46	14.43	56.89	74.00	-17.11	peak
2	*	4803.988	29.54	14.43	43.97	54.00	-10.03	AVG



Temperature:	: 25°	С		Relative Hu	midity:	55%		
Test Voltage:	DC	3.7V				-	In Same	
Ant. Pol.	Hor	rizontal				23		
Test Mode:	de: TX Pi/4-DQPSK Mode 2441MHz							
Remark:		report for the scribed limit.	emission w	vhich more that	an 10 dB t	below the	and a second	
No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	

		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4881.292	42.87	14.91	57.78	74.00	-16.22	peak
2	*	4881.292	29.61	14.91	44.52	54.00	-9.48	AVG



2

AVG

-9.08

Temperature	: 25°	C		Relative H	umidity:	55%	
Test Voltage:	DC	3.7V		112	52	-	MAR.
Ant. Pol.	Ver	tical			1	283	
Test Mode:	TX	Pi/4-DQPSK	Mode 244	1MHz	1 15		1
Remark:		scribed limit.		vhich more th			
No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1 48	383.290	41 27	14.91	56,18	74.00	-17.82	peak

14.91

44.92

54.00

Emission Level= Read Level+ Correct Factor

30.01

4883.290



remt	peratur	<b>e</b> : 25	C	19	Relative I	Humidity:	55%	100		
Test	Voltage	e: DC	3.7V			52		NUL -		
Ant.	Pol.	Ho	rizontal				23			
Test	Mode:	ТХ	TX Pi/4-DQPSK Mode 2480MHz							
Remark:         No report for the emission which more than 10 dB below the prescribed limit.								U.L.		
No	. <b>M</b> k.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over			
No.	. Mk.	Freq.				Limit dBuV/m	Over dB	Detector		
No.		· ·	Level	Factor	ment			Detector peak		



Temperature:	<b>25</b> ℃	Relative Humidity:	55%					
Test Voltage:	DC 3.7V	(nn))2						
Ant. Pol.	Vertical		39					
Test Mode:	TX Pi/4-DQPSK Mode	TX Pi/4-DQPSK Mode 2480MHz						
Remark:	No report for the emission which more than 10 dB below the prescribed limit.							

No.	Mk.	Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4961.194	43.45	15.40	58.85	74.00	-15.15	peak
2	*	4961.230	30.05	15.40	45.45	54.00	-8.55	AVG



2

54.00 -10.29

AVG

Temperature:	<b>25</b> ℃	19	Relative Hu	umidity:	55%	100	
Test Voltage:	DC 3.7V	22	1177	32	2	B. O.S.	
Ant. Pol.	Horizontal			-11	33		
Test Mode: TX 8-DPSK Mode 2402MHz							
Remark:	No report for the prescribed limit.	emission v	vhich more th	an 10 dB t	below the		
No. Mk. F	Reading req. Level	Correct Factor	Measure- ment	Limit	Over		
N	MHz dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	
1 480	5.194 42.79	14.44	57.23	74.00	-16.77	peak	

14.44

43.71

Emission Level= Read Level+ Correct Factor

29.27

4805.194



Temperature:	<b>25</b> ℃	<b>Relative Humidity:</b>	55%					
Test Voltage:	DC 3.7V	2000						
Ant. Pol.	Vertical		181					
Test Mode:	TX 8-DPSK Mode 2402M	TX 8-DPSK Mode 2402MHz						
<b>Remark:</b> No report for the emission which more than 10 dB below the prescribed limit.								

No.	Mk.	Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4802.560	42.60	14.42	57.02	74.00	-16.98	peak
2	*	4803.562	29.71	14.43	44.14	54.00	-9.86	AVG



2

Temperature	: <b>25</b> ℃	2	19	Relative Hu	midity:	55%	
Test Voltage:	DC	3.7V			52	2	Ross
Ant. Pol.	Hori	zontal			11	CIS	
Test Mode:	TX 8-DPSK Mode 2441MHz						
Remark:		eport for the cribed limit.	emission w	hich more that	an 10 dB t	below the	
No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1 48	382.432	41.52	14.91	56.43	74.00	-17.57	peak

14.91

44.85

54.00

-9.15

AVG

Emission Level= Read Level+ Correct Factor

4882.432

29.94



Temperature:	<b>25</b> ℃	Relative Humidity:	55%
Test Voltage:	DC 3.7V	6002	~ 000
Ant. Pol.	Vertical		00
Test Mode:	TX 8-DPSK Mode 2	2441MHz	
Remark:	No report for the er prescribed limit.	nission which more than 10 dB	below the

I	No. M	k. Freq.	Level		ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4882.252	43.70	14.91	58.61	74.00	-15.39	peak
2	*	4883.326	30.08	14.91	44.99	54.00	-9.01	AVG



Temperature	: 25°	С	19	Relative H	lumidity:	55%	100
Test Voltage:	DC	3.7V				-	MAR.
Ant. Pol.	Ho	rizontal			-0	23	-
Test Mode:	ТХ	8-DPSK Mod	le 2480MHz	2			1300
Remark:		report for the scribed limit.	emission w	which more th	an 10 dB b	elow the	Under State
No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector

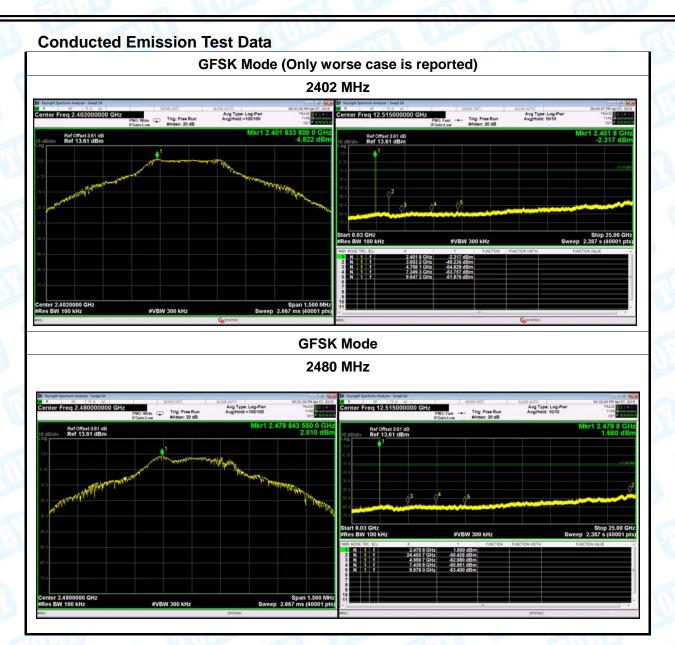
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4960.696	43.02	15.40	58.42	74.00	-15.58	peak
2	*	4960.696	29.73	15.40	45.13	54.00	-8.87	AVG



Mode 2480MHz
r the emission which more than 10 dB below the mit.

No	. Mk.	Freq.	Level		ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4959.124	43.13	15.39	58.52	74.00	-15.48	peak
2	*	4961.230	30.03	15.40	45.43	54.00	-8.57	AVG





# **Attachment C-- Restricted Bands Requirement Test Data**

Tomr	on Te		<b>25</b> ℃	1	(A)			Bolotiv	e Humidity:	55%	
-			DC 3			-	-	Relative	Furnity.	55%	_
	Volta	ge:						-		-	
Ant.			Horiz		_	240014			20		1
	Mode	:				2402M			Can li	5	_
Rema			Uniy	WOI	se case	e is repo	rtea	-			
110.0	dBu¥/m	<u> </u>									3
_											×
_			_								Ă
											$\square$
							<u> </u>			ART 15C (PEAK	
60											
									(RF) FCC F	PART 15C AVE	0 \
							_			2	
							+			×/	
-											
_											
10.0	7.000 23	217 DD 2	327.00	2337	7 00 23	47.00 23	57.00	2367.00	2377.00 2387.0	n ;	407.00
2001	.000 20	17.00 22	21.00	200	.00 2.5	¥7.00 L0	Jr.00	2001.00	2311.00 233	0.	.401.04
				Re	ading	Corre	ct	Measure	_		
No.	. Mk.	. Free	q.		evel	Fact		ment	Limit	Over	
		MHz	z	d	BuV	dB/m		dBuV/m	dBuV/m	dB	Det
1		2390.0	000	50	0.67	2.82		53.49	74.00	-20.51	pe
2		2390.0	000	3	8.79	2.82		41.61	54.00	-12.39	A
				40		0.07		402.04	Fundamental Fr	equency	-
3	Х	2402.0	100	10	0.14	2.87		103.01	i unuamentai i i	equency	pe



Temperature:	<b>25</b> ℃		Rela	tive Humidity:	55%
Fest Voltage:	DC 3.7	V		AUL	AV
Ant. Pol.	Vertical			(II)	20
Fest Mode:	TX GFS	SK Mode 2402	2MHz		
Remark:	Only wo	orse case is re	eported	Julie -	
110.0 dBuV/m					
					3 3
					4 ×
					<u> </u>
				(RF) FCC P/	ART 15C (PEAK)
60				(85) 500 1	PART 15C (AVG)
					2
10.0 2308.000 2318.00	2328.00 23	38.00 2348.00	2358.00 2368.00	0 2378.00 2388.0	0 2408.00

No	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	49.87	2.82	52.69	74.00	-21.31	peak
2		2390.000	38.83	2.82	41.65	54.00	-12.35	AVG
3	Х	2402.000	100.28	2.87	103.15	Fundamental	Frequency	peak
4	*	2402.000	89.34	2.87	92.21	Fundamental	Frequency	AVG



DC 3.7V       nt. Pol.     Horizontal       emark:     Only worse case is reported       10.0     dBuV/m       1     1       2     1       3     1       60     3       X     1       Image: Structure     (FF) FCC PART 15C (PEAK)       0     1       1     1       2     1       3     1       60     1       1     1       2     1       1     1       1     1       2     1       1     1       2     1       1     1       2     1       1     1       2     1       1     1       1     1       2     1       1     1       2     1       1     1       1     1       1     1       1     1       1     1       2     1       1     1       1     1       1     1       1     1       1     1       1 <th1< th="">       1</th1<>	emper	ature:	<b>25</b> ℃			Relativ	e Humidity:	55%
est Mode: TX GFSK Mode 2480 MHz emark: Only worse case is reported  10.0 dBuV/m	est Vo	Itage:	DC 3.7	'V			W.Y.	
emark:         Only worse case is reported           10.0         dBuV/m           1         1           2         1           2         1           3         1           3         1           3         1           3         1           3         1           1         1           1         1           1         1           1         1           1         1           1         1           1         1           1         1           1         1           1         1           1         1           1         1           1         1           1         1           1         1           1         1           1         1           1         1           1         1           1         1           1         1           1         1           1         1           1         1           1         1	nt. Po	I.	Horizo	ntal	-01	20 -	111	30
10.0 dBuV/m         1         2         2         X         0         1         1         2         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1	est Mo	ode:	TX GF	SK Mode	2480 MHz	-		
1         x	emarl	<b>c</b> :	Only w	orse case	is reported	1 (SV)	10	
X         Image: Second se	10.0 dB	u¥/m						
X         Image: Constraint of the second secon								
60 X (RF) FCC PART 15C AVG)								
60 X (RF) FCC PART 15C AVG)		Ň						
60 X (RF) FCC PART 15C AVG)								
60 X (RF) FCC PART 15C AVG) (RF) FCC PART 15C AVG) X		$\square$						ANT TOC (FEAK)
(RF) FCC PART 15C AVG)								
	60						(RF) FCC	PART 15C (AVG)
		×						
	$\vdash$							
D.O								
		0 2483.00	2493.00 2	2503.00 251	3.00 2523.0	2533.00	2543.00 2553.0	0 2573.00

No	. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	Х	2479.800	98.67	3.38	102.05	Fundamenta	I Frequency	peak
2	*	2479.800	87.81	3.38	91.19	Fundamental	Frequency	AVG
3		2483.500	59.20	3.41	62.61	74.00	-11.39	peak
4		2483.500	46.92	3.41	50.33	54.00	-3.67	AVG



Temperature:	<b>25</b> ℃	Relative Humidity: 55	5%
Fest Voltage:	DC 3.7V	ددرام	100
Ant. Pol.	Vertical	00	5
Fest Mode:	TX GFSK Mode 2480	) MHz	-01
Remark:	Only worse case is re	eported	AUR
100.0 dBuV/m			
×			
2 X			
		(RF) FCC PART 1	5C (PEAK)
3		(RF) FCC PART	
50 4			
0.0			
2475.000 2485.00	2495.00 2505.00 2515.00	2525.00 2535.00 2545.00 2555.00	2575.00

No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	Х	2479.800	92.14	3.38	95.52	Fundamenta	I Frequency	peak
2	*	2479.800	81.24	3.38	84.62	Fundamenta	I Frequency	AVG
3		2483.500	53.85	3.41	57.26	74.00	-16.74	peak
4		2483.500	42.68	3.41	46.09	54.00	-7.91	AVG

TOBY

emperature:	<b>25</b> ℃	Relative Humidity: 55%	
Test Voltage:	DC 3.7V		NY P
Ant. Pol.	Horizontal		
Test Mode:	TX Pi/4-DQPSK Mode	2402MHz	
Remark:	Only worse case is rep	orted	0000
110.0 dBu¥/m			
			3 ×
			4
			Ň
		(RF) FCC PART 150	(PEAK)
60			$  \rangle$
		(RF) FCG PART 15	
		2	
10.0 2309.000 2319.00	2329.00 2339.00 2349.00	2359.00 2369.00 2379.00 2389.00	2409.00

No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	49.33	2.82	52.15	74.00	-21.85	peak
2		2390.000	38.78	2.82	41.60	54.00	-12.40	AVG
3	Х	2402.000	99.27	2.87	102.14	Fundamenta	I Frequency	peak
4	*	2402.200	87.37	2.87	90.24	Fundamenta	I Frequency	AVG



Temperature:	<b>25</b> ℃	Relative Humidity:	55%
Test Voltage:	DC 3.7V		
Ant. Pol.	Vertical		Les a
Test Mode:	TX Pi/4-DQPSK M	lode 2402MHz	
Remark:	Only worse case is	s reported	
100.0 dBuV/m			
			3 X
			4
		(RF) FCC	
		(05) 500	PART 15C (AVG)
50			× /
			2
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No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	48.77	2.82	51.59	74.00	-22.41	peak
2		2390.000	38.78	2.82	41.60	54.00	-12.40	AVG
3	Х	2402.000	90.89	2.87	93.76	Fundamental I	Frequency	peak
4	*	2402.200	79.02	2.87	81.89	Fundamental I	Frequency	AVG



em	perature:	2	<b>25℃</b>			Relative	Humidity:	55%
Test	t Voltage:	1	DC 3.7V	and b	0	110	22	AV
Ant	Pol.	J	Horizont	al	-		1100	30
Test Mode: TX Pi/4-DQPSK Mode 2480MHz								
Ren	nark:	(	Only wo	rse case i	s reported	2010		
110.0	dBuV/m							
	1 X							
	2							
	Ň							
	$-(\Lambda)$						(RF) FCC PA	ART 15C (PEAK)
	3							
60	×						(BF) FCC F	PART 15C (AVG)
10.0	72,000 2482,00	2492	0.00 050	2.00 2512.0	00 2522.00	2532.00 25	542.00 2552.00	0 2572.00

No	. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	Х	2480.000	97.63	3.38	101.01	Fundamental	Frequency	peak
2	*	2480.000	85.75	3.38	89.13	Fundamental	Frequency	AVG
3		2483.500	58.15	3.41	61.56	74.00	-12.44	peak
4		2483.500	46.62	3.41	50.03	54.00	-3.97	AVG
1								



Temperature:	<b>25</b> ℃	Relative Humidity:	55%
Fest Voltage:	DC 3.7V	THUR A	
Ant. Pol.	Vertical		Nº2
Fest Mode:	TX Pi/4-DQPSK Mode	2480MHz	
Remark:	Only worse case is repo	orted	
100.0 dBuV/m			
1 X			
2 ×			
$\square$		(RF) FCC	PART 15C (PEAK)
3		(BF) FC	C PART 15C (AVG)
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×			
0.0			

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	Х	2480.000	91.21	3.38	94.59	Fundamental	Frequency	peak
2	*	2480.000	79.34	3.38	82.72	Fundamental	Frequency	AVG
3		2483.500	53.00	3.41	56.41	74.00	-17.59	peak
4		2483.500	42.35	3.41	45.76	54.00	-8.24	AVG



emp	erature:	<b>25</b> ℃			Relative Hu	imidity:	55%	
est \	/oltage:	DC 3	3.7V					199
Ant. F	Pol.	Horiz	zontal	100		100	132	-
est I	Node:	TX 8	-DPSK Mod	e 2402MHz			4	
Rema	rk:	Only	worse case	is reported	CU10			and the second s
110.0	dBuV/m							
							3	8   K
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							1	
-						(RF) FCC	PART 15C (PEAI	9
60								
							PART 15C AVI	3)
							2	
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-								
10.0								
2309	.000 2319.00	2329.00	2339.00 234	9.00 2359.00	2369.00 237	/9.00 2389.	.uu .	2409.00 MH
Na		-	Reading	Correct	Measure-	Limit	Over	
NO.		req.	Level	Factor	ment			
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detecto
1	239	0.000	50.05	2.82	52.87	74.00	-21.13	peak

No.	Mk	. Freq.	Level	Factor	ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	50.05	2.82	52.87	74.00	-21.13	peak
2		2390.000	38.78	2.82	41.60	54.00	-12.40	AVG
3	Х	2402.000	99.19	2.87	102.06	Fundamenta	I Frequency	peak
4	*	2402.000	87.27	2.87	90.14	Fundamenta	I Frequency	AVG



emperature:	<b>25</b> ℃	Relative Humidity:	55%						
est Voltage:	DC 3.7V	THUR -							
nt. Pol.	Vertical		2						
est Mode:	TX 8-DPSK Mode 2402	TX 8-DPSK Mode 2402MHz							
lemark:	Only worse case is repo	rted							
00.0dBuV/m									
			4 ×						
			3						
		(RF) FCC PA	RT 15C (PEAK)						
		(RF) FCG P	ART 15C (AVG)						
50		X	-						
	-	2 X							
0.0 2309.000 2319.00	2329.00 2339.00 2349.00 23	59.00 2369.00 2379.00 2389.00	) 2409.00						

No.	Mk	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	49.74	2.82	52.56	74.00	-21.44	peak
2		2390.000	38.80	2.82	41.62	54.00	-12.38	AVG
3	*	2402.000	78.97	2.87	81.84	Fundamental	Frequency	AVG
4	Х	2402.200	90.87	2.87	93.74	Fundamental	Frequency	peak



Temp	perature:	<b>25℃</b>			Relative Hum	idity:	55%			
Test	Voltage:	DC 3.7	V		CIUL2					
Ant.	Pol.	Horizor	Horizontal							
<b>Fest</b>	Mode:	TX 8-D	TX 8-DPSK Mode 2480MHz							
Rem	ark:	Only w	orse case	is reported	SUP-		1 Line			
110.0	dBu¥/m									
	1 X									
	2									
-	Ň									
-	-					RFJ FCC PART	( 15C (PEAK)			
60	) Э Х									
┝	- / · /e					(RF) FCC PAR	(T 15C (AVG)			
	/ *									
F			<u></u>							
-										
10.0										
247	4.000 2484.00	2494.00 2	504.00 251	4.00 2524.00	2534.00 2544.00	2554.00	2574.00			

No	o. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	Х	2479.800	97.60	3.38	100.98	Fundamental	Frequency	peak
2	*	2480.000	85.72	3.38	89.10	Fundamental	Frequency	AVG
3		2483.500	58.59	3.41	62.00	74.00	-12.00	peak
4		2483.500	46.10	3.41	49.51	54.00	-4.49	AVG



Fest Voltage:       DC 3.7V         Ant. Pol.       Vertical         Fest Mode:       TX 8-DPSK Mode 2480MHz         Remark:       Only worse case is reported         100.0       dBuV/m         1       Image: Comparison of the second o	emperature:	<b>25</b> ℃	Relative Humidity:	55%					
TX 8-DPSK Mode 2480MHz           Remark:         Only worse case is reported           100.0         dBuV/m           1         1           2         1           2         1           3         1           3         1           3         1	est Voltage:	DC 3.7V	TUP						
Remark:         Only worse case is reported           100.0         dBuV/m           1         1           2         1           2         1           3         1           3         1           50         4	Ant. Pol.	Vertical		120					
100.0 dBuV/m	est Mode:	TX 8-DPSK Mode 2480MHz							
1	Remark:	Only worse case is reported							
	1 2 × 3 3 50								
	No. Mk. Fi		orrect Measure- actor ment Limit	Over					

No	. Mk	. Freq.	Level	Factor	ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	Х	2479.800	91.22	3.38	94.60	Fundamental	Frequency	peak
2	*	2480.000	79.38	3.38	82.76	Fundamental	Frequency	AVG
3		2483.500	53.22	3.41	56.63	74.00	-17.37	peak
4		2483.500	42.02	3.41	45.43	54.00	-8.57	AVG

### (2) Conducted Test

25°C Relative Humidity: 55%							
DC 3.7V							
TX GFSK Mode 2402MHz/24	TX GFSK Mode 2402MHz/2480 MHz						
Only worse case is reported							
	DC 3.7V TX GFSK Mode 2402MHz/24	DC 3.7V TX GFSK Mode 2402MHz/2480 MHz					

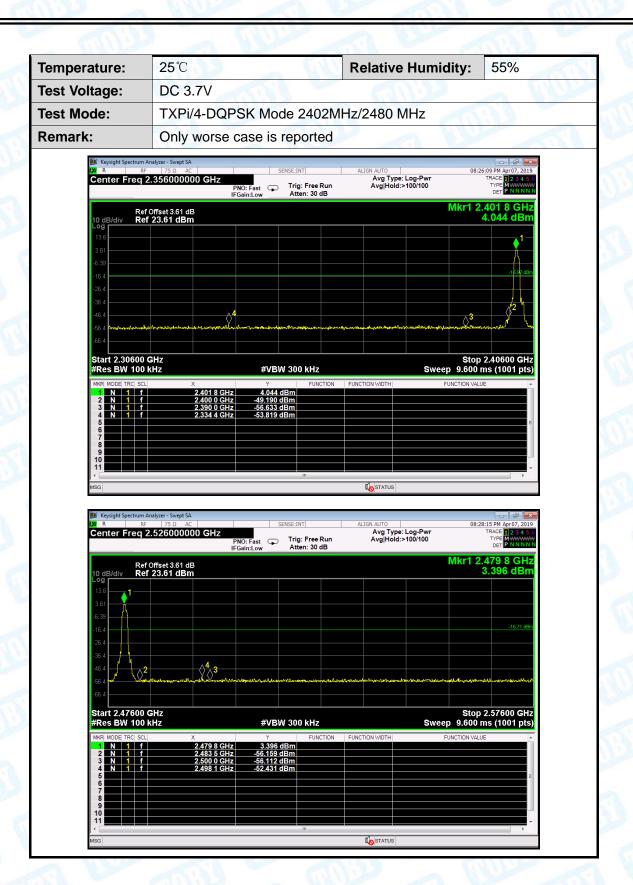
	req 2	2.3560000	P	NO: Fast 🖵 Gain:Low	Trig: Fre Atten: 30			/pe: Log-Pwr Id:>100/100		TRACE 1 2 3 4 5 TYPE MWWWW DET P NNNN
0 dB/div		Offset 3.61 dl 7 <b>23.61 dBn</b>								402 2 GHz 5.174 dBm
13.6										<u>_</u> 1-
3.61										t i
6.39										-14.58 dBr
26.4										
36.4										
46.4										
56.4 <b></b>	-	generation proposed and	ware and a second second of the	antalagur an	phone and the second second		n i gaaraa dahaa ka	anga magalama		and h
66.4										
itart 2.3 Res BM				#VB\	N 300 kH	z		Sw	Stop: eep 9.600 n	2.40600 GH; ns (1001 pts
tart 2.3 Res BW	V 100	kHz	X	Y	FU	Z	FUNCTION WIDTH	Sw	Stop : eep 9.600 n	ns (1001 pts
tart 2.3 Res BW	V 100	kHz	2.402 2 GHz 2.400 0 GHz	۲ <u>5.174</u> -51.677	dBm dBm		FUNCTION WIDTH	Sw	eep 9.600 n	ns (1001 pts
itart 2.3 Res BW KR MODE 1 1 N 2 N 3 N 4 N	V 100	kHz	2.402 2 GHz	۲ 5.174	FU dBm dBm dBm		FUNCTION WIDTH	Sw	eep 9.600 n	ns (1001 pts
itart 2.3 Res BW KR MODE 1 1 N 2 N 3 N 4 N 5 6	V 100	kHz	2.402 2 GHz 2.400 0 GHz 2.390 0 GHz	5.174 -51.677 -56.045	FU dBm dBm dBm		FUNCTION WIDTH	Sw	eep 9.600 n	ns (1001 pts
Itart 2.3 Res BW IKR MODE 1 1 N 2 N 3 N 4 N 5 6 7 8	V 100	kHz	2.402 2 GHz 2.400 0 GHz 2.390 0 GHz	5.174 -51.677 -56.045	FU dBm dBm dBm		FUNCTION WIDTH	Sw	eep 9.600 n	ns (1001 pts
itart 2.3 Res BW KR MODE 1 1 N 2 N 3 N 4 N 5 6 7	V 100	kHz	2.402 2 GHz 2.400 0 GHz 2.390 0 GHz	5.174 -51.677 -56.045	FU dBm dBm dBm		FUNCTION WIDTH	Sw	eep 9.600 n	ns (1001 pts

R	RF		С		SENSE:INT		ALIGN A				55 PM Apr 07, 2019
enter	Freq	2.5260000		PNO: Fast G	⊃ Trig: F Atten:	ree Run 30 dB	A	vg Type: vg Hold:>	Log-Pwr 100/100		TYPE MWWW DET P NNNN
0 dB/div		Offset 3.61 d f 23.61 dBr									480 2 GHz 1.518 dBm
og 13.6	<mark></mark> 1—										
3.61 3.39	Ĭ										
6.4	<u> </u>										-15.56 dBi
16.4											
6.4		24	3								
56.4 <b></b> 56.4	<u></u>	her white the may shap be	- master more	nd and the second s	n-shark-typh	e-elipelylidenst	haydaa haydaa	ManphanAr	walan ang na M	abranana	alaanta a
tart 2.4	17600	GH7								Ston	2.57600 GH
Res B				#VI	3W 300 k	Hz			Swee	p 9.600 n	ns (1001 pts
KR MODE	TRC SCL	-	× 2.480 2 GHz	Y 4.51	8 dBm	FUNCTION	FUNCTION	WIDTH	i	FUNCTION VALUE	
2 N 3 N	1 f 1 f		2.483 5 GHz 2.500 0 GHz	-54.81	8 dBm 2 dBm						
4 N 5	1 f		2.489 8 GHz	-53.90	5 dBm						
7 8											
9											
1 1					m			STATUS			۱.



erature:	<b>25</b> ℃		Relative Humidity	<b>y:</b> 55%		
Voltage:	DC 3.7V	21				
Mode:	GFSK Hoppir	ng Mode		RU		
ark:	Only worse case is reported					
Keysight Spectrum A				- 6 -		
Center Freq 2	2.356000000 GHz	SENSE:INT D: Fast D Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	09:38:25 PM Apr07, 2019 TRACE 1 2 3 4 5 6 TYPE MWWWW DET P N N N N N		
Ref	Offset 3.61 dB	ain:Low Atten: 30 dB	Mk	r1 2.403 0 GHz		
10 dB/div Ref	23.61 dBm			4.723 dBm		
3.61				MM		
-16.4				-1\$:¥6'tiBm		
-26.4 -36.4						
-46.4	4	hast store and approximate the second	الارجاب الدرار است الإسر محمد مرحم الإراب المحمد مريد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد ا			
-66.4						
Start 2.30600 ( #Res BW 100		#VBW 300 kHz	Sweep 9	Stop 2.40600 GHz .600 ms (1001 pts)		
MKR MODE TRC SCL 1 N 1 f 2 N 1 f 3 N 1 f 4 N 1 f 5	X 2.403 0 GHz 2.400 0 GHz 2.390 0 GHz 2.317 6 GHz	Y FUNCTION 4.723 dBm -53.911 dBm -56.368 dBm -53.751 dBm	I FUNCTION WIDTH FUNCT	ON VALUE		
6 7 8						
9						
11		m				
MSG			STATUS	• • • • • • • • • • • • • • • • • • •		
	nalyzer - Swept SA		<b>Lo</b> status			
Keysight Spectrum A	75 Ω AC 2.526000000 GHz	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr Avg Type: 100/100	09:39:39 PM Apr 07, 2019 TRACE 23:4 5 0 TYPE		
MSG Keysight Spectrum A (X) R RF Center Freq 2	2.526000000 GHz PN0 IFGa		ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	09:39:39 PM Apr07, 2019 TRACE 123456 TYPE WWWWWW DET P NNNNN r1 2.478 1 GHz		
MSG Keysight Spectrum A (X) R RF Center Freq 2 10 dB/div Ref Log	75 Ω AC 2.526000000 GHz PN0	D: Fast 🖵 Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	09:39:39 PM Apr07, 2019 TRACE 1 2 3 4 5 6 TYPE MWWWW DET P NNNNN		
Keysight Spectrum A Kall R RF Center Freq 2 10 dB/div Ref 136 361	75 Ω AC 2.526000000 GHz PNO IFGa Offset 3.61 dB	D: Fast 🖵 Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	09:39:39 PM Apr07, 2019 TRACE 123456 TYPE WWWWWW DET P NNNNN r1 2.478 1 GHz		
MSG Keysight Spectrum A (X) R RF Center Freq 2 10 dE/dlv Ref 13 6	75 Ω AC 2.526000000 GHz PNO IFGa Offset 3.61 dB	D: Fast 🖵 Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	09:39:39 PM Apr07, 2019 TRACE 123456 TYPE WWWWWW DET P NNNNN r1 2.478 1 GHz		
Keysight Spectrum A Kall R RF Center Freq 2 10 dB/div Ref 136 361	25 2 AC PRO 2.526000000 GHz PN IFG Offset 3.61 dB 23.61 dBm	D: Fast 🖵 Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	09:39:39 PM Apr07, 2019 TRACK [] 2 3 4 5 6 TYPE [] 2 3 4 5 7 TYPE [] 2 3 5 7 TYPE []		
MSG MSG Center Freq 2 10 dB/div Ref 13.6 13.6 1.6.4 -6.4 -6.4	275 0. AC   2.526000000 GHz PN IFGa Offset 3.61 dB 23.61 dBm	D: Fast 🖵 Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	09:39:39 PM Apr07, 2019 TRACK [] 2 3 4 5 6 TYPE [] 2 3 4 5 7 TYPE [] 2 3 5 7 TYPE []		
Keysight Spectrum A (X) R RF Center Freq 2 136 16.4 -26.4 -36.4	25 2 AC PRO 2.526000000 GHz PN IFG Offset 3.61 dB 23.61 dBm	D: Fast 🖵 Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	09:39:39 PM Apr07, 2019 TRACE [] 2 3 4 5 6 TYPE HWWWWW DET P NNNNN r1 2.478 1 GHz 3.440 dBm		
MSG MSG X R RF Center Freq 2 10 dB/div Ref 10 dB/div Ref 13 61 16.4 -26.4 -46.4 -56.4	275 0. AC   2.526000000 GHz   PN IFGa Offset 3.61 dB 23.61 dBm 4 A A A A A A A A A A A A A	D: Fast 🖵 Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	09:39:39 PM Apr07, 2019 TRACE [1 2 3 4 5 6 TYPE H WWWW DET P NNNN r1 2,478 1 GHz 3,440 dBm 		
MSG MSG MSG Center Freq 2 Center Freq 2 10 dB/div Ref 10 dB/div Ref 13.6 1.6 1.6 1.6 1.6 1.4 1.6 1.4 1.6 1.4 1.6 1.4 1.6 1.4 1.6 1.4 1.6 1.4 1.6 1.4 1.6 1.4 1.6 1.4 1.6 1.4 1.6 1.4 1.6 1.4 1.6 1.4 1.6 1.4 1.6 1.4 1.6 1.4 1.6 1.4 1.6 1.4 1.6 1.4 1.6 1.4 1.6 1.4 1.6 1.4 1.6 1.4 1.6 1.4 1.6 1.4 1.6 1.4 1.6 1.4 1.6 1.4 1.6 1.4 1.6 1.4 1.6 1.4 1.6 1.4 1.6 1.4 1.6 1.4 1.6 1.4 1.6 1.4 1.6 1.4 1.6 1.4 1.6 1.4 1.6 1.4 1.6 1.4 1.6 1.4 1.6 1.4 1.6 1.4 1.6 1.4 1.5 1.4 1.5 1.4 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5	275 Ω AC 2.526000000 GHz PNC IFG Offset 3.61 dB 23.61 dB 4 4 4 6 GHz KHz X	D: Fast Trig: Free Run Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hoid:>100/100 Mk	09:39:39 PM Apr07, 2019 TRACE [] 2 3 4 5 9 TYPE MYNWWW DET NNNNN r1 2,478 1 GHz 3,440 dBm -16 06 dBm		
Keysight Spectrum A           Keysight Spectrum A           Msg           Center Freq 2           10 dE/div         Ref           13.6         1           361         2           14.4         2           4.65.4         2           Start 2.47600.0         #Res BW 1001           MRR MODE TRC ScLI         1         f           2         N         1         f           3         N         1         f	2.526000000 GHz 2.526000000 GHz PN IFG 0ffset 3.61 dB 2.3.61 dB 4 4 3 GHz KHz 2.478 1 GHz 2.478 1 GHz 2.478 1 GHz 2.450 0 6Hz	Trig: Free Run Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hoid:>100/100 Mk	09:39:39 PM Apr07, 2019 TRACE [] 2 3 4 5 6 TYPE [] 2 3 4 5 6 TYPE [] 2 3 4 5 6 PM APP (] 2 3 4 5 6 PM APP		
Keysight Spectrum A           Keysight Spectrum A           Keysight Spectrum A           Center Freq 2           10 dB/div         Ref           10 dB/div         Ref	275 0. AC 2.526000000 GHz PN IFG Offset 3 61 dB 2.3.61 dB 4 4 GHz KHz 2.478 1 GHz	P: Fast Trig: Free Run Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hoid:>100/100 Mk	09:39:39 PM Apr07, 2019 TRACE [] 2 3 4 5 6 TYPE [] 2 3 4 5 6 TYPE [] 2 3 4 5 6 PM APP (] 2 3 4 5 6 PM APP		
Keysight Spectrum A           MSG           Ref           Center Freq 2           10 dB/div         Ref           10 dB/div         Ref           10 dB/div         Ref           10 dB/div         Ref           13 6         1           3 61         1           -16.4         -26.4           -36.4         -26.4           -66.4         -22           Key BW 100 I         -22           1         1         1           2         1         1         1           3         1         1         1           4         1         1         1	2.526000000 GHz 2.526000000 GHz PN IFG 0ffset 3.61 dB 2.3.61 dB 4 4 3 GHz KHz 2.478 1 GHz 2.478 1 GHz 2.478 1 GHz 2.450 0 6Hz	Trig: Free Run Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hoid:>100/100 Mk	09:39:39 PM Apr07, 2019 TRACE [] 2 3 4 5 6 TYPE [] 2 3 4 5 6 TYPE [] 2 3 4 5 6 PM APP (] 2 3 4 5 6 PM APP		

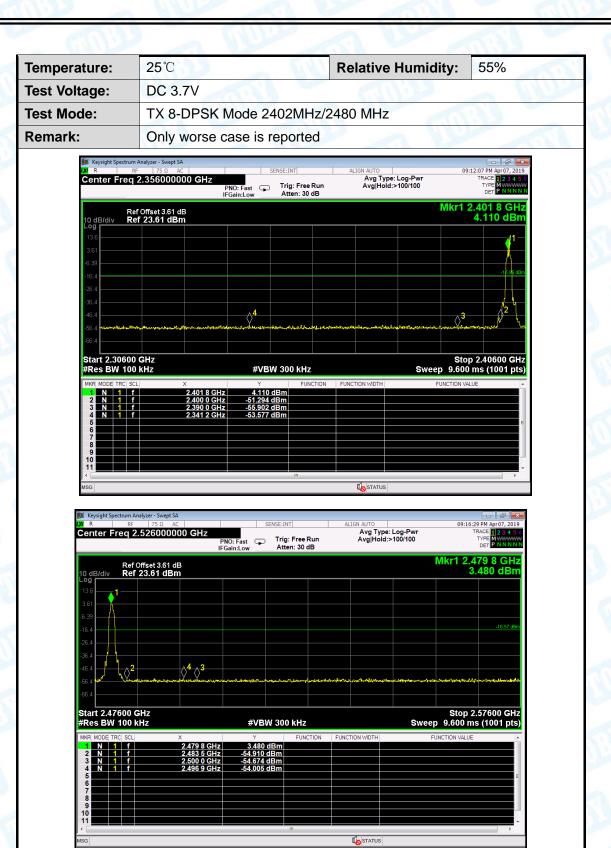






nperature:	<b>25</b> ℃	Relative Humidity:	55%
st Voltage:	DC 3.7V	< (10)	~ 010
st Mode:	Pi/4-DQPSK Hopping Mod	de	RV -
mark:	Only worse case is reported	ed	
	Analyzer - Swept SA 75 0 AC SENSE:INT 2.356000000 GHz PNO: Fast IFGain:Low Trig: Free Atten: 30 of Coffset 3.61 dB r 23.61 dBm GHz	ALIGN AUTO 0 Avg Type: Log-Pwr Avg]Hold:>100/100 B Mkr1	9:42:35 PM Apr07, 2019 TRACE 12:34 5 6 TYPE MANNAN 2:4019 GHz 1.640 dBm
MKR MODE TRC SCL 1 N 1 f 2 N 1 f 3 N 1 f 4 N 1 f 6 7 8	2.401 9 GHz 1.640 dBm 2.400 0 GHz -52.325 dBm 2.390 0 GHz -56.559 dBm	CTION FUNCTION WIDTH FUNCTION \	ALUE
9 10 11 Keysight Spectrum.	Analyzer - Swept SA	<b>K</b> ostatus	· · ·
10 11 MSG MSG MSG MSG MSG RF Center Freq RF	2.52 0. AC SENSE:INT 2.526000000 GHz PNO: Fast IFGain:Low FOffset 3.61 dB	ALIGN AUTO Avg Type: Log-Pwr Run Avg Hold:>100/100 dB	9:43:20 PM Apr 07, 2019 TRACE 2 2 4 5 6 TYPE MWWWWW DET PNNNN 2.478 0 GHz
10 11 MSG MSG MSG MSG MSG RF Center Freq RF	2.526000000 GHz PNO: Fast IFGain:Low Trig: Free Atten: 30 ( Coffset 3.61 dB f 23.61 dB f 23.61 dB	ALIGN AUTO Avg Type: Log-Pwr Run Avg Hold:>100/100 dB	9:43:20 PM Apr 07, 2019 TRACE 2 2 3 4 5 6 TYPE M WWWWW DET P NNNN
10 11 MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC MISC	Coffset 3.61 dB 2.3.61 dB 7.0.67 set 3.61 dB 7.0.67 set 3.61 dB 7.0.61 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100 Mikr1	9:43:20 PM Apr07, 2019 TRACE 2 4 5 6 TYPE HWWWWW DET P NINNN 2.478 0 GHz 2.223 dBm





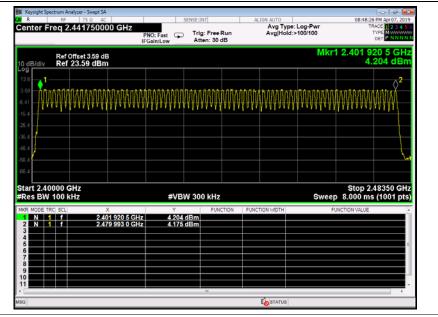


perature:	<b>25</b> ℃		Relative Humidi	ty: 55%			
Voltage:	DC 3.7V		Collina -				
Mode:	8-DPSK Hop	ping Mode		633			
ark:	Only worse o	ase is reported		No.			
Keysight Spectrum	n Analyzer - Swept SA RF 75 Ω AC	SENSE:INT	ALIGN AUTO	09:24:46 PM Apr07, 2019			
	2.356000000 GHz	IO: Fast Trig: Free Run Sain:Low Atten: 30 dB	Avg Type: Log-Pwr	TRACE 1 2 3 4 5 6 TYPE MWWWWW DET P NNNNN			
Re	ef Offset 3.61 dB ef 23.61 dBm		M	kr1 2.406 0 GHz 3.941 dBm			
10 dB/div R Log 13.6	er 23.61 dBm			1			
3.61				MA			
-16.4							
-36.4							
-46.4 -56.4 <b>Announce</b>	defentition of the second of t	and the set of the set	A				
-66.4				Stop 2 40600 CHz			
#Res BW 100	0 kHz	#VBW 300 kHz	-	Stop 2.40600 GHz 9.600 ms (1001 pts)			
MKR MODE TRC SC 1 N 1 f 2 N 1 f	2.406 0 GHz 2.400 0 GHz	Y FUNCTIO 3.941 dBm -52.577 dBm -55.600 dBm	N FUNCTION WIDTH FUNC	CTION VALUE			
3 N 1 f 4 N 1 f	2.390 0 GHZ 2.361 2 GHz	-55.600 dBm -54.118 dBm		E			
6 7 8 9							
10							
1 * L	III ,						
MSG			No miles				
💓 Keysight Spectrum	n Analyzer - Swept SA						
🎉 Keysight Spectrum 📈 R – F	RF 75 Ω AC 2.526000000 GHz	O: Fast Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr	09:23:31 PM Apr 07, 2019 TRACE 1 2 3 4 5 6 TYPE MAAAAAAAA			
Keysight Spectrum WRRF Center Freq	RF         75 Ω         AC           2.526000000         GHz         PN           FG         FG         FG           ef Offset 3.61 dB         FG         FG	Trin: Free Dur	ALIGN AUTO Avg Type: Log-Pwr Avg[Hold:>100/100	09:23:31 PM Apr07, 2019 TRACE 2 3 4 5 6 TYPE MWWWW DET P NNNNN kr1 2.477 0 GHz			
Keysight Spectrum WRRF Center Freq	RF 75 Ω AC 2.526000000 GHz PM IFG	IO: Fast 😱 Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg[Hold:>100/100	09:23:31 PM Apr07, 2019 TRACE 1 2 3 4 5 6 TYPE MWWWW DET P N N N N N			
Center Freq	RF         75 Ω         AC           2.526000000         GHz         PN           FG         FG         FG           ef Offset 3.61 dB         FG         FG	IO: Fast 😱 Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg[Hold:>100/100	09:23:31 PM Apr07, 2019 TRACE 2 3 4 5 6 TYPE MWWWW DET P NNNNN kr1 2.477 0 GHz			
Center Freq 10 dB/div R 13.6 3.61 -6.39	RF         75 Ω         AC           2.526000000         GHz         PN           FG         FG         FG           ef Offset 3.61 dB         FG         FG	IO: Fast 😱 Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg[Hold:>100/100	09:23:31 PM Apr07, 2019 TRACE 2 3 4 5 6 TYPE MWWWW DET P NNNNN kr1 2.477 0 GHz			
Center Freq	RF         75 Ω         AC           2.526000000         GHz         PN           FG         FG         FG           ef Offset 3.61 dB         FG         FG	IO: Fast 😱 Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg[Hold:>100/100	09:23:31 PM Apr07, 2019 TRACE 2 3 4 5 6 TYPE MWWWW DET P NNNNN kr1 2.477 0 GHz			
10 dB/div R 10 dB/div R 13 6 -6 39 -16 4 -26 4	RF         75 Ω         AC           2.526000000         GHz         PN           FG         FG         FG           ef Offset 3.61 dB         FG         FG	IO: Fast 😱 Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg[Hold:>100/100	09:23:31 PM Apr07, 2019 TRACE 2 3 4 5 6 TYPE MWWWW DET P NNNNN kr1 2.477 0 GHz			
Image: Keysight Spectrum           Xi         R         F           Center Freq         R         R           10 dB/div         R         R           13.6         1         1           3.61         1         1           -6.39         -16.4         -           -76.4         -         -           -36.4         -         -	E 75 0 AC 2.526000000 GHz P FC ef Offset 3.61 dB ef 23.61 dBm	IO: Fast 😱 Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg[Hold:>100/100	09:23:31 PM Apr07, 2019 TRACE 2 3 4 5 6 TYPE MWWWW DET P NNNNN kr1 2.477 0 GHz			
Image: Keysight Spectrum           Xi         R         F           Center Freq         R         R           10 dB/div         R         R           13.6         1         1           -6.39         1         1           -16.4         -36.4         -36.4           -36.4         -36.4         -36.4	PF         75.0. AC         P           2.526000000 GHz         PP           Provide         P           ef Offset 3.61 dB         P           ef 2.561 dB         P           2.526000000 GHz         P           0 GHz         P	IO: Fast 😱 Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	09:23:31 PM Apr07, 2019 TRACE 2 3 4 5 6 TYPE MWWWW DET P NNNNN kr1 2.477 0 GHz			
Keysight Spectrum           Center Freq           10 dB/div         R           13.6         1           3.61         1           -16.4         -           -36.4         -           Start 2.47600         #Res BW 100           MKR MODE TRC SC         MODE TRC SC	PF         75.0         AC           2.526000000 GHz         PP           ef Offset 3.61 dB         P           ef 2.526000000 GHz         P           get 2.526000000 GHz         P           ef 0ffset 3.61 dB         P           ef 2.526000000 GHz         P           ef 0ffset 3.61 dB         P           ef 2.526000000 GHz         P           get 2.526000000 GHz         P           get 2.526000000 GHz         P           get 2.526000000 GHz         P           get 2.5260000000 GHz         P           get 2.526000000 GHz         P           get 2.526000000 GHz         P           get 2.526000000 GHz         P           get 2.5260000000 GHz         P           get 2.526000000000000000000 GHz         P           get 2.52600000000000000000000000000000000000	Trig: Free Rur Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	09:23:31 PM Apr07, 2019 TRACE [] 2:3 4:5 TYPE    2:3 4:5 TYPE    2:4 7:7 0 GHz 2:324 dBm 1873-806 1873-806 Stop 2:57600 GHz			
Image: Regist Spectrum           Center Freq           O dB/div         R           Image: Regist Spectrum         R	PF         75.0         AC           2.526000000 GHz         PP           2.526000000 GHz         PP           ef Offset 3.61 dB         P           ef 2.3.61 dB         P           2         4         3           2         4         3           2         4         3           2         4         3           3         P         P           4         3         P           0 GHz         P         P           2         4         3           0 GHz         P         P           2         2.477 0 GHz         P           2         2.483 6 GHz         P	Trig: Free Rur Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	09-23:31 PM Apr07, 2019 TRACE [] 2:3 4:5 TYPE    2:4 7:7 0 GHz 2:324 dBm 1873:600 1873:600 Stop 2:57600 GHz 9.600 ms (1001 pts)			
Keysight Spectrum           Center Freq           OdB/div         R           13.6         1           -6.33         1           -16.4         -           -26.4         -           -66.4         -           Start 2.47600         #Res BW 100           MRR MODE TRC ISC         N         1         f           2         N         1         f           2         N         1         f           3         1         1         f	PF         75.0         AC           2.526000000 GHz         PP           PF         PP           ef Offset 3.61 dB         PP           ef 2.3.61 dB         PP           get 2.477 0 GHz         2.483 5 GHz           get 2.500 0 GHz         PP	IO: Fast IO: Fast Atten: 30 dB Trig: Free Rur Atten: 30 dB #VBW 300 kHz #VBW 300 kHz Y FUNCTIO 2.324 dBm -55.475 dBm	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	09:23:31 PM Apr07, 2019 TRACE [] 2:3 4:5 TYPE [] 4:4:4:4:4:4:4:4:4:4:4:4:4:4:4:4:4:4:4:			
Image: Registive Spectrum           Center Freq           O dB/div         R           Center Freq           13.6         1           3.61         1           3.61         1           3.61         1           3.61         1           3.61         1           3.61         1           3.61         1           3.61         1           3.61         1           3.64         1           3.64         1           3.64         1           3.64         1           3.64         1           3.64         1           3.64         1           4.65.4         1           56.4         1           57.7         1           1         1         1           2         1         1         1           3         1         1         1         1           3         1         1         1         1           3         1         1         1         1           4         N         1         1         1	PF         75.0         AC           2.526000000 GHz         PP           PF         PP           ef Offset 3.61 dB         PP           ef 2.3.61 dB         PP           get 2.477 0 GHz         2.483 5 GHz           get 2.500 0 GHz         PP	IO: Fast IO: Fast Atten: 30 dB Trig: Free Rur Atten: 30 dB #VBW 300 kHz #VBW 300 kHz Y FUNCTIO 2.324 dBm -55.475 dBm	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	09:23:31 PM Apr07, 2019 TRACE [] 2:3 4:5 TYPE [] 4:4:4:4:4:4:4:4:4:4:4:4:4:4:4:4:4:4:4:			

## **Attachment D-- Number of Hopping Channel Test Data**

Temperature:	<b>25</b> ℃	Relative Humidity:	55%
Test Voltage:	DC 3.7V		39
Test Mode:			
Frequency Rang	ge Test Mod	e Quantity of Hopping Channel	Limit
	GFSK	79	
2402MHz~2480M	Hz Pi/4-DQPS	K 79	>15
	8-DPSK	79	

#### **GFSK Mode**



#### Pi/4-DQPSK Mode

nter Freq 2.4	175 Q AC	F	NO: Fast G		ig: Free iten: 30		AL	Avg Type Avg Hold:	: Log-Pwr >100/100		8 PM Apr07, 2019 RACE 1 2 3 4 5 TYPE M DET P NNNN
Ref Off B/div Ref 23	set 3.59 dE 8.59 dBm	8							Mkr		86 5 GH2 561 dBm
6	ուչչուրչ	WWWW	WWW	NVVVV	WWW	ww	WW	www	hhingh	trmatur	ANNA 2
											),
rt 2.40000 GH s BW 100 kH			#V	BW 30	00 kHz				Sweep	Stop 2 8.000 m	.48350 GH: s (1001 pts
MODE TRC SCL N 1 f N 1 f		( 11 586 5 GHz 0 160 0 GHz	Y -2.56 2.89	1 dBm 15 dBm		CTION	FUNC	FION WIDTH	FU	INCTION VALUE	
											-



Keysight Spectrum Analyzer - Swept SA     R	PNO: Fast Trig: Free IFGain:Low Atten: 30	ALIGN AUTO Avg Type: I Run Avg Hold:> dB	09:21:39 PM Apr 07, 201 Log-Pwr TRACE 12 3 4 100/100 TPE M
Ref Offset 3.59 dB 10 dB/dly Ref 23.59 dBm			Mkr1 2.401 586 5 GH -4.711 dBr
Log 136 6.11 164 6.4 6.4 6.4 6.4 6.4 6.4 6.4 6	www.www.	AMAMAM AMBAM	
#Res BW 100 kHz	#VBW 300 kHz		Stop 2.48350 GH Sweep 8.000 ms (1001 pts
MRR MODE TRC: SCL X 1 N 1 7 2401569.5 ( 2 N 1 7 2480410 5 ( 3 1 7 2480410 5 ( 5 6 6 7 8 9 9 9 10 1	GHz -4.711 dBm	CTION FUNCTION WIDTH	FUNCTION VALUE

## Attachment E-- Average Time of Occupancy Test Data

Temper	ature:	25°	С	Re	elative Humidity:	55%	MOR
Test Vo	Itage:	DC	3.7V		1	689	
Test Mo	ode:	Ho	oping Mode (C	GFSK)			
Test	Chan	nel	Pulse	Total of Dwell	Period Time	Limit	Result
Mode	(MH:	z)	Time (ms)	(ms)	(s)	(ms)	Result
1DH1	240	2	0.377	120.64	31.60	400	PASS
1DH3	240	2	1.633	261.28	31.60	400	PASS
1DH5	240	2	2.881	307.31	31.60	400	PASS

1DH1 Total of Dwell= Pulse Time*(1600/2)*31.6/79

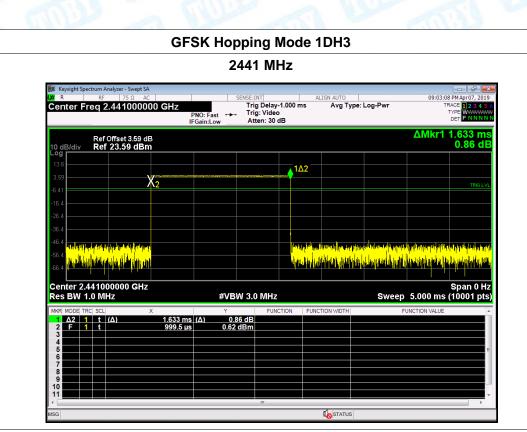
1DH3 Total of Dwell= Pulse Time*(1600/4)*31.6/79

1DH5 Total of Dwell= Pulse Time*(1600/6)*31.6/79

#### GFSK Hopping Mode 1DH1

R RF 75Ω AC	SEN	ISE:INT	ALIGN AUTO		08:48:34 PM	Apr 07, 20
enter Freq 2.441000000 G		Trig Delay-1.000 ms Trig: Video Atten: 30 dB	Avg Type	: Log-Pwr	TRAC TYP DE	1234 WWWW PNNN
Ref Offset 3.59 dB 0 dB/div Ref 23.59 dBm					ΔMkr1 3 -2	76.5 µ 2.27 d
0g 13.6						
	<u>1∆2</u>					
3.59 <b>X2</b>						TRIG L
6.4						
26.4						
36.4						
16.4						
16.4	a dia ka ka she ka di ka she	inter i parti provinsi i su	de talogi, findet der besoldt	TRANSPORT PLAN	and the second	
56.4 Ninte (printe) in a biograph of the Minte American in the first of the other in		leand d'hadda ann ann da 191 <mark>1 - Thalan Marana</mark>	denne og er hen som og er Hen i sin denne som og er som og er Hen i sin den som og er s	<mark>dah palan kang palan</mark> Tan palan tang	n de la company de la company A participany de la company de la company A company de la company de	
46.4 46.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 41.4 4	#UP 1 A BURNER	3.0 MHz	de na provinska provinska Na <mark>U</mark> ndra provinska p Na provinska	din pala pilan kann	S.000 ms (1	pan 0 H
36.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4         10.4 <td< td=""><td>Y</td><td>FUNCTION</td><td></td><td>Sweep</td><td>S 5.000 ms (10 UNCTION VALUE</td><td>pan 0 H</td></td<>	Y	FUNCTION		Sweep	S 5.000 ms (10 UNCTION VALUE	pan 0 H
6.4         Market Million Handler           6.6.4         Market Million           6.6.4         Market Million           enter 2.441000000 GHz           es BW 1.0 MHz           KR MODE TRC SCL         X           4         A2         1         A3	76.5 μs (Δ) -2.27	FUNCTION I	ing ( transmission ( the share) (	Sweep	5.000 ms (1	pan 0 H
$ \begin{array}{c} & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & & \\ & & & & \\ & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ $	76.5 μs (Δ) -2.27	FUNCTION I	ing ( transmission ( the share) (	Sweep	5.000 ms (1	pan 0 H
$ \begin{array}{c} & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & & \\ & & & \\ & & & & \\ & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \\ & $	76.5 μs (Δ) -2.27	FUNCTION I	ing ( transmission ( the share) (	Sweep	5.000 ms (1	pan 0 H
4       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1	76.5 μs (Δ) -2.27	FUNCTION I	ing ( transmission ( the share) (	Sweep	5.000 ms (1	pan 0 H
56 4         A Provide and the second se	76.5 μs (Δ) -2.27	FUNCTION I	ing ( transmission ( the share) (	Sweep	5.000 ms (1	pan 0 H
Image: Image and the second	76.5 μs (Δ) -2.27	FUNCTION I	ing ( transmission ( the share) (	Sweep	5.000 ms (1	pan 0 H





### GFSK Hopping Mode 1DH5

Keysight Specti R	rum Analyzer - Swept S RF 75 Ω 4	A AC		SENSE:INT		ALIGN AUTO		09:07:09 PM Apr 07, 201
	eq 2.4410000	000 GHz	NO: Fast 🔸 Gain:Low	Trig Delay	)	Avg Type: L	og-Pwr	TRACE 1 2 3 4 5 TYPE WWWW DET P NNN
	Ref Offset 3.59 o Ref 23.59 dB							ΔMkr1 2.881 m -0.99 d
3.6							<u>_</u> 1∆2	
.59		X ₂						TRIG LY
6.4								
6.4 6.4								
6.4	n dati kalkan saata						is later	iat Mitta alah sarata nincharata hadari
6.4 <mark>Million (</mark>	n a na sea ann an sea an s	·• •					a de presenta de la composición de la c	na er breeningen sereningen U. Male titelen besete die Mitte
6.4								
enter 2.44 es BW 1.0	1000000 GH: ) MHz	Z	#VB	W 3.0 MHz			Sweep 5	Span 0 F 000 ms (10001 pt.
KR MODE TRC	SCL	x 2.881 ms	(A) Y	FUNC	CTION FU	JNCTION WIDTH	FUNC	TION VALUE
2 F 1 3	t	1.000 ms		dBm				
4 5								
8								
9								
								Þ
						STATUS		



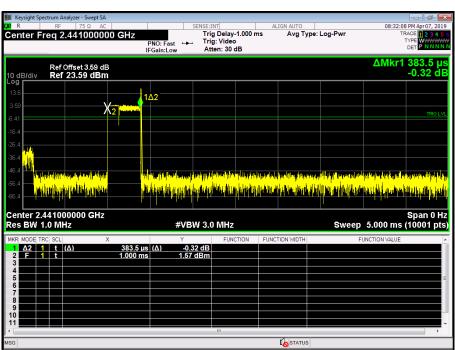
Temper	ature:	25°	С	Re	lative Humidity:	55%	100
Test Vo	Itage:	DC	3.7V	QU -	COM SP		MO.
Test Mo	ode:	Hop	oping Mode (F	Pi/4-DQPSK)		183	
Test	Chan	nel	Pulse	Total of Dwell	Period Time	Limit	Desult
Mode	(MH:	z)	Time (ms)	(ms)	(s)	(ms)	Result
Mode 2DH1	<b>(MH</b> ) 240	•	<b>Time (ms)</b> 0.384	(ms) 122.88	<b>(s)</b> 31.60	(ms) 400	PASS
	•	2	. ,				
2DH1	240	2 2	0.384	122.88	31.60	400	PASS

2DH1 Total of Dwell= Pulse Time*(1600/2)*31.6/79

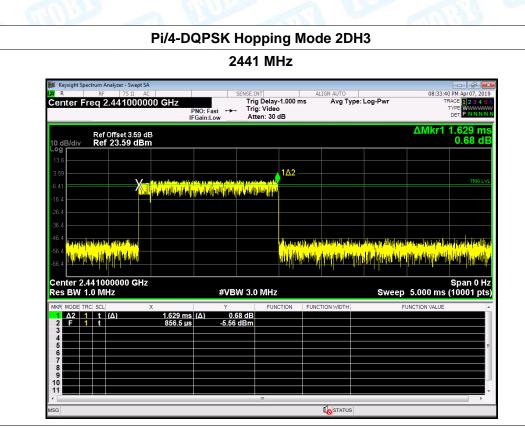
2DH3 Total of Dwell= Pulse Time*(1600/4)*31.6/79

2DH5 Total of Dwell= Pulse Time*(1600/6)*31.6/79

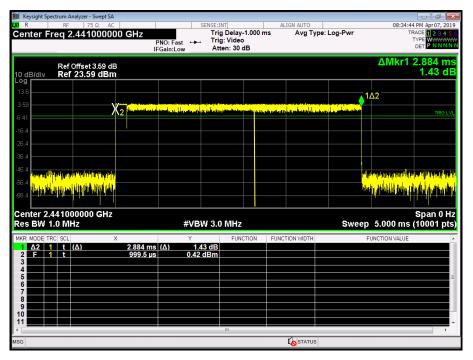
#### Pi/4-DQPSK Hopping Mode 2DH1







#### Pi/4-DQPSK Hopping Mode 2DH5





Temper	ature:	25°	С	55%	A COL		
Test Vo	Itage:	DC 3.7V					MAR
Test Mo	de:	Hopping Mode (8-DPSK)					
Test	Chan	nel	Pulse	Total of Dwell	Period Time	Limit	Desult
Mode	(MH:	z)	Time (ms)	(ms)	(s)	(ms)	Result
Mode 3DH1	<b>(MH</b> ) 2402		<b>Time (ms)</b> 0.385	(ms) 123.20	<b>(s)</b> 31.60	(ms) 400	PASS
	•	2	. ,	. ,			
3DH1	240	, 2 2	0.385	123.20	31.60	400	PASS

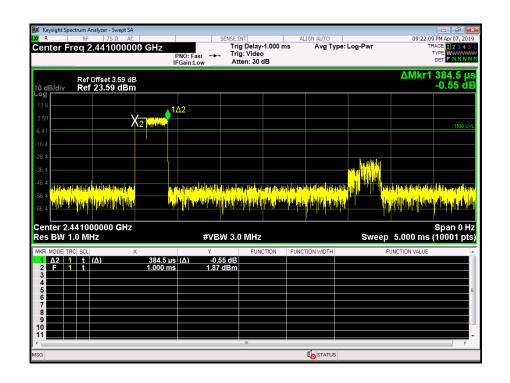
3DH1 Total of Dwell= Pulse Time*(1600/2)*31.6/79

3DH3 Total of Dwell= Pulse Time*(1600/4)*31.6/79

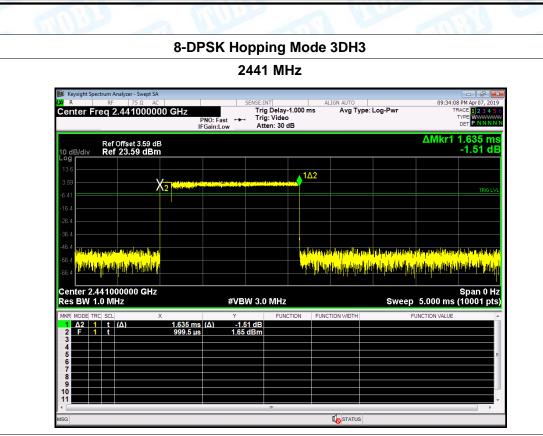
3DH5 Total of Dwell= Pulse Time*(1600/6)*31.6/79

#### 8-DPSK Hopping Mode 3DH1









### 8-DPSK Hopping Mode 3DH5

R	ectrum Analyzer - Swej RF 75 Ω	AC AC		SENSE:INT	4	LIGN AUTO		09:35:12	2 PM Apr 07, 20
enter F	req 2.44100		PNO: Fast ↔ IFGain:Low	Trig Delay Trig: Video Atten: 30	<b>b</b>	Avg Type:	Log-Pwr		ACE 1234 TYPE WWWW DET PNNN
dB/div	Ref Offset 3.5 Ref 23.59 d							ΔMkr1	2.886 m -0.47 d
<b>3</b> .6							1.	∆2	
41		X ₂	a da sila kanan k	<mark>y ^{ala}n sites feb_{al}a j</mark> i	and the state of the second	a de la catalante de la catalan			TRIG L
5.4 <b></b>									
5.4 5.4									
i.4	an ala ^h irail a sina da diki (s	Allar						<mark>e pri strengen de la prista de la presión de la prista de la prista de la presión de la pr</mark>	and _{a da} bit of
.4 .4 <mark>          </mark>	tool for hundre	ki av					li l	N MARKAR MI	, milland, p
	441000000 G	Hz							Span 0 H
es BW 1	1.0 MHz		#VE	SW 3.0 MHz			Sweep	5.000 ms	(10001 pt
R MODE TR 1 Δ2 1 2 F 1	RC SCL  1 t (Δ) 1 t	× 2.886 ms 1.000 ms		47 dB 48 m	CTION FUN	CTION WIDTH	F	JNCTION VALUE	
5									
			_						

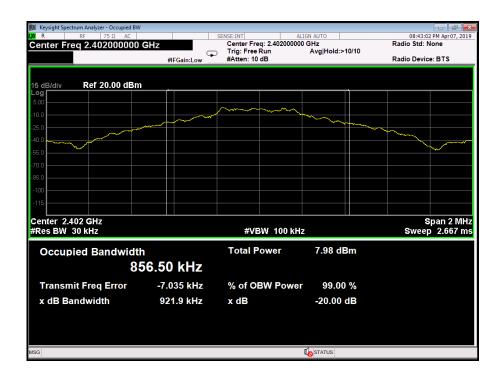


# **Attachment F-- Channel Separation and Bandwidth Test**

## Data

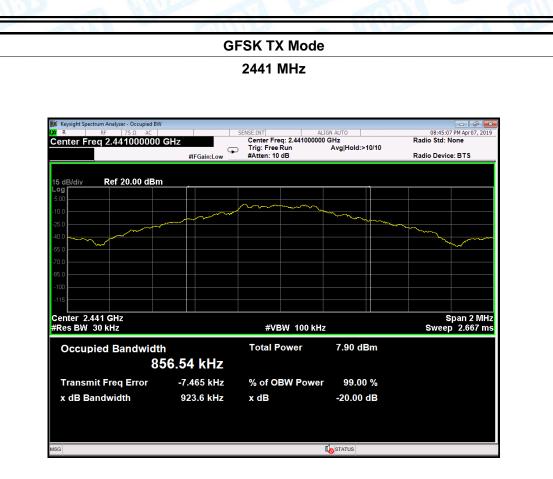
#### **Bandwidth Test**

	_			
Temperature:	25°	C	Relative Humidity:	55%
Test Voltage:	DC	3.7V	A DEC	
Test Mode:	ТΧ	Mode (GFSK)		
Channel frequer (MHz)	ncy	99% OBW (kHz)	20dB Bandwidth (kHz)	20dB Bandwidth *2/3 (kHz)
2402		856.50	921.9	
2441		856.54	923.6	
2480		855.76	928.9	
		GFSK TX	Mode	



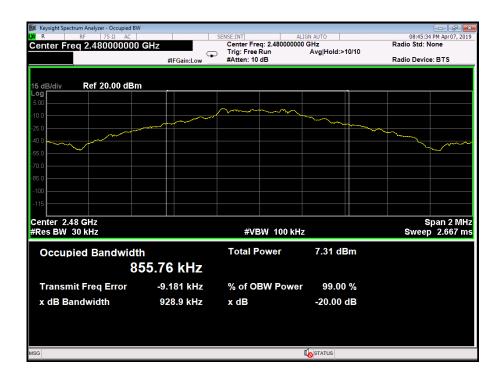






# GFSK TX Mode

<b>Z</b> 4	ōυ	IVI	ΠZ	



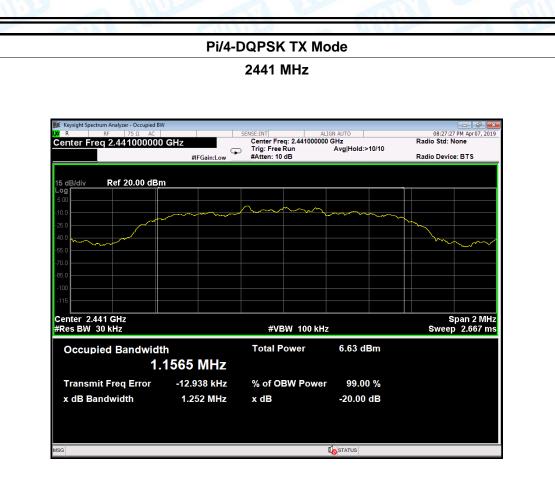


Temperature:	25°	C	Relative Humidity:	55%
Test Voltage:	DC	3.7V		~ ~
Test Mode:	ТΧ	Mode (Pi/4-DQPSK)		RU
Channel frequency (MHz)		99% OBW (kHz)	20dB Bandwidth (kHz)	20dB Bandwidth *2/3 (kHz)
2402		1154.6	1253	835.33
2441		1156.5	1252	834.67
2480		1154.8	1248	832.00

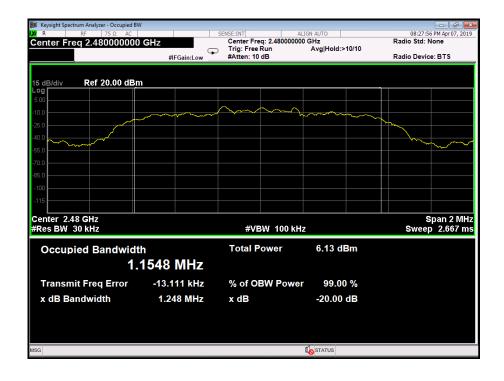
#### Pi/4-DQPSK TX Mode

Keysight Spectrum Analyzer - Occupied BW				- 7
R RF 75 Ω AC Center Freq 2.402000000 GH		Center Freq: 2.40200000		08:25:50 PM Apr 07, 201 Radio Std: None
	#IFGain:Low	Trig: Free Run #Atten: 10 dB	Avg Hold:>10/10	Radio Device: BTS
5 dB/div Ref 20.00 dBm				
og 5.00				
0.0		$\sim$		
5.0				
0.0				
5.0				m
0.0				
50				
115				
enter 2.402 GHz Res BW 30 kHz		#VBW 100 kHz		Span 2 MH Sweep 2.667 m
Kes DW JUKHZ			2	Sweep 2.007 II
<b>Occupied Bandwidth</b>		Total Power	6.79 dBm	
1,15	46 MHz			
-	-12.662 kHz	% of OBW Power	99.00 %	
x dB Bandwidth	1.253 MHz	x dB	-20.00 dB	
G			<b>K</b> STATUS	





#### Pi/4-DQPSK TX Mode

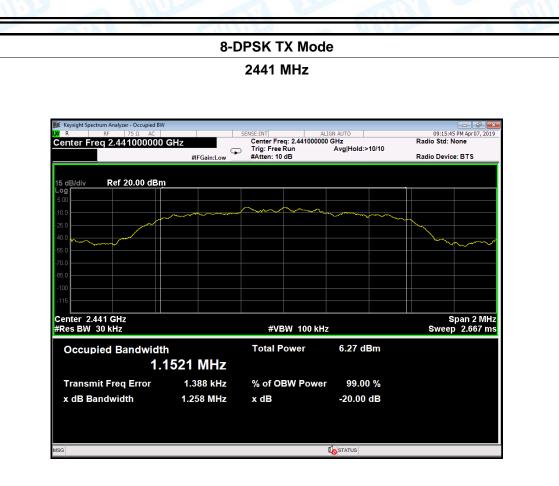




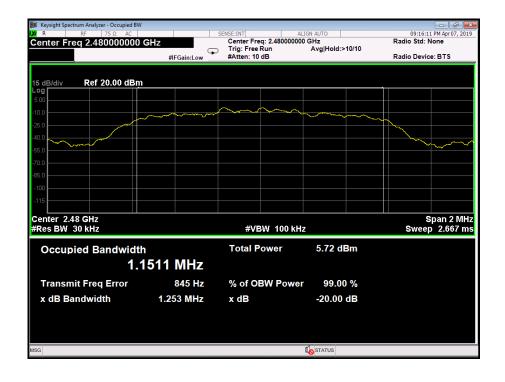
Temperature:   25°C		Relative Humidity:	55%	
Test Voltage:	DC	3.7V	1	RU
Test Mode:	ТΧ	Mode (8-DPSK)		
Channel frequency (MHz)		99% OBW (kHz)	20dB Bandwidth (kHz)	20dB Bandwidth *2/3 (kHz)
2402		1152.0	1258	838.67
2441		1152.1	1258	838.67
2480		1151.1	1253	835.33
		8-DPSK TX	Mode	

R         RF         75 Ω         AC			IGN AUTO	09:11:26 PM Apr 07, 201
enter Freq 2.402000000	GHz #FGain:Low	Center Freq: 2.402000000 Trig: Free Run #Atten: 10 dB	GHz Avg Hold:>10/10	Radio Std: None Radio Device: BTS
5 dB/div Ref 20.00 dBm				
0.0				
5.0	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		~ ~~~~	
5.0				
5.0				
00				
15				
enter 2.402 GHz				Span 2 MH
Res BW 30 kHz		#VBW 100 kHz		Sweep 2.667 m
Occupied Bandwidth		Total Power	6.37 dBm	
1.1	520 MHz			
Transmit Freq Error	-5 Hz	% of OBW Power	99.00 %	
x dB Bandwidth	1.258 MHz	x dB	-20.00 dB	





### 8-DPSK TX Mode

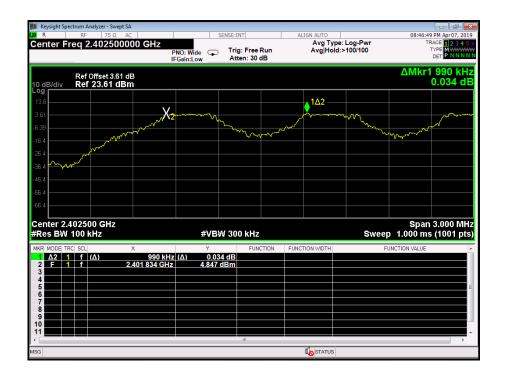




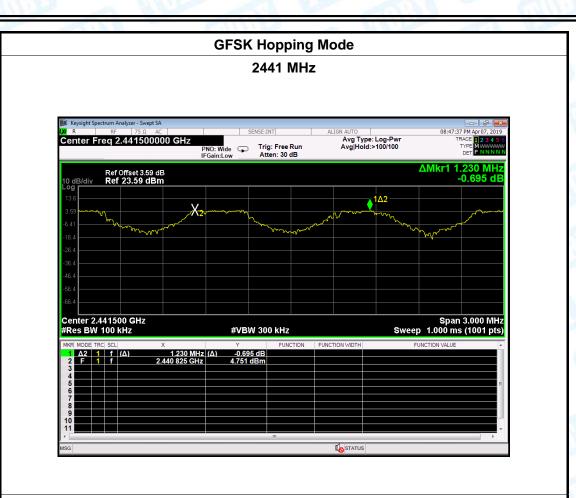
#### **Channel Separation Test**

ner coparation	1001						
Temperature:	<b>25</b> ℃	55%					
Test Voltage:	DC 3.7V						
Test Mode:	Hopping I	Hopping Mode (GFSK)					
Channel freq	luency	Separation Read Value Sepa		paration Limit			
(MHz)		(kHz)		(kHz)			
2402		990		921.9			
2441		1230		923.6			
2480		990		928.9			
		CESK Honnir	a Modo				

### GFSK Hopping Mode







#### GFSK Hopping Mode 2480 MHz



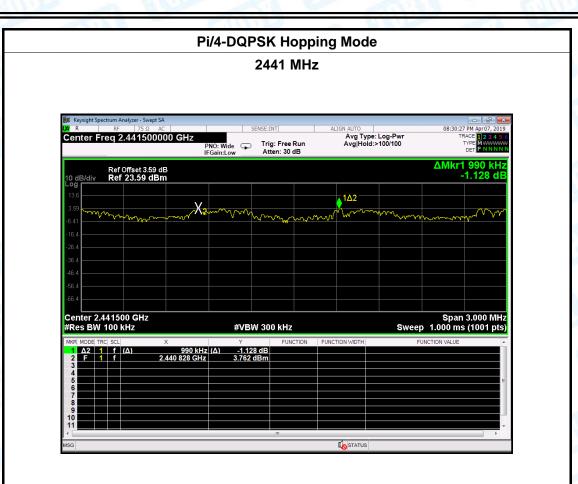


Temperature:	<b>25</b> ℃		Relative Humidity:	55%		
Test Voltage:	st Voltage: DC 3.7V					
Test Mode:	Hopping Mode (Pi/4-DQPSK)					
Channel freq	uency	Separation Re	ad Value Se	eparation Limit		
(MHz)		(kHz)		(kHz)		
2402		1000		835.33		
2441		990		834.67		
2480		1300		832.00		
		DIA DODEK Har	ning Mada			

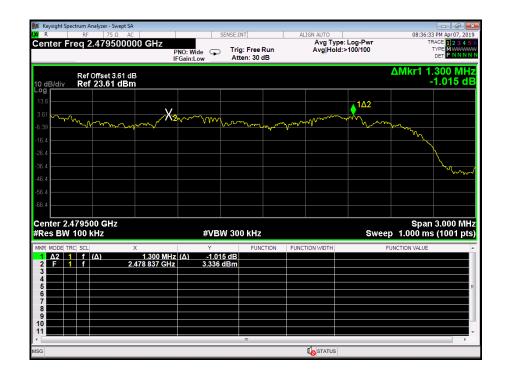
### Pi/4-DQPSK Hopping Mode

R	ectrum Analyzer - RF 7	Swept SA 5 Ω AC		SENSE:INT	ALIGN AUTO		08:29:24 PM Apr 07, 201
enter F	req 2.402	500000 GHz	PNO: Wide		Avg Type: Avg Hold:>		TRACE 1 2 3 4 5 TYPE MWWW DET P NNN
0 dB/div	Ref Offset Ref 23.6					ΔΝ	/kr1 1.000 MH -0.700 d
og 13.6					142		
3.61		m	$X_{2}$	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	hum	m
5.39 16.4	~~~						
26.4							
36.4 <b>~~~</b> 46.4							
56.4							
56.4							
	402500 GH 100 kHz	lz	#VB	W 300 kHz		Sweep 1	Span 3.000 MH .000 ms (1001 pt
IKR MODE TI		х	Y	FUNCTION	FUNCTION WIDTH	FUNCT	ION VALUE
1 Δ2 1 2 F 1 3	1 f (Δ) 1 f	<u>1.000 M</u> 2.401 843 G		00 dB dBm			
4 5							
4 5 6 7							
4 5 6 7 8 9							
4 5 6 7 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9							





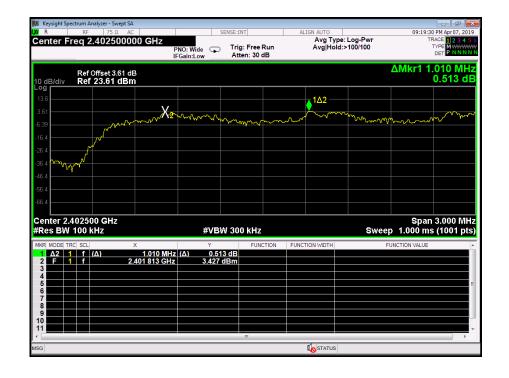
# Pi/4-DQPSK Hopping Mode



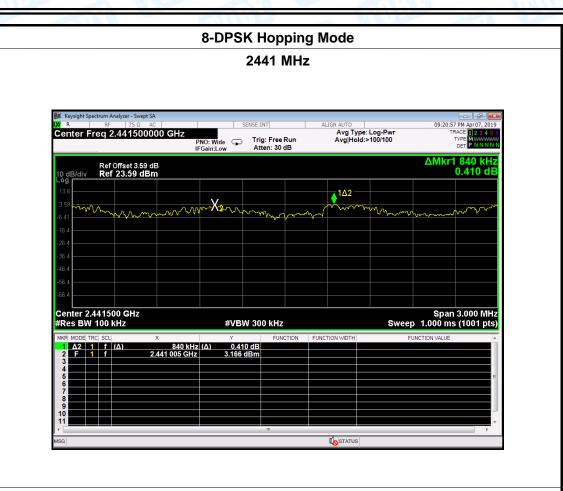


Temperature:	<b>25</b> ℃		Relative H	umidity:	55%		
Test Voltage:	DC 3.7V						
Test Mode:	Hopping I	Hopping Mode (8-DPSK)					
Channel freq	uency	Separation Read Value		Sep	aration Limit		
(MHz)		(kHz)			(kHz)		
2402		1010			838.67		
2441		840			838.67		
2480		1170		835.33			
		8-DPSK Honni	na Mode				

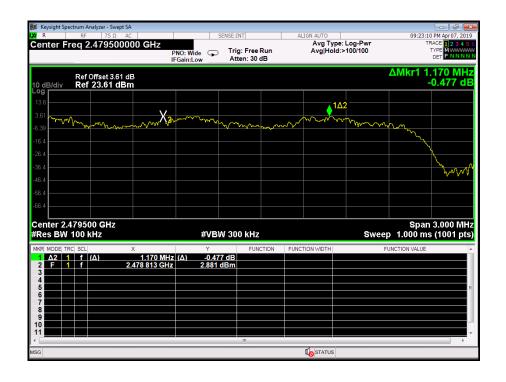
#### 8-DPSK Hopping Mode





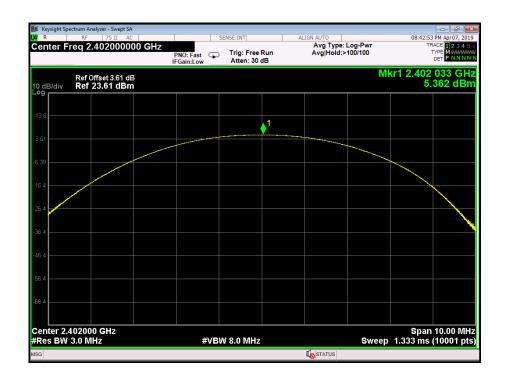


#### 8-DPSK Hopping Mode 2480 MHz



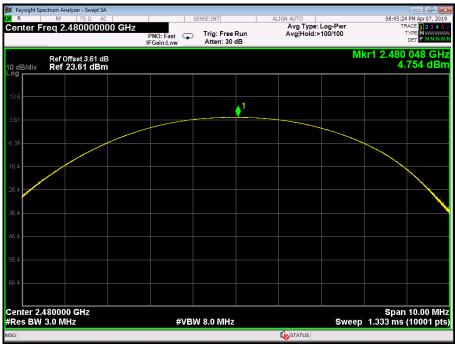
# Attachment G-- Peak Output Power Test Data

Temperature:	<b>25</b> ℃		Relative Humidity:	55%	
Test Voltage:	DC 3.7V				
Test Mode:	TX Mode (GFSK)				
Channel frequer	ncy (MHz)	Test Result	(dBm) L	.imit (dBm)	
2402		5.362			
2441		5.207		30	
2480		4.754			
		GFSK TX N	Node		



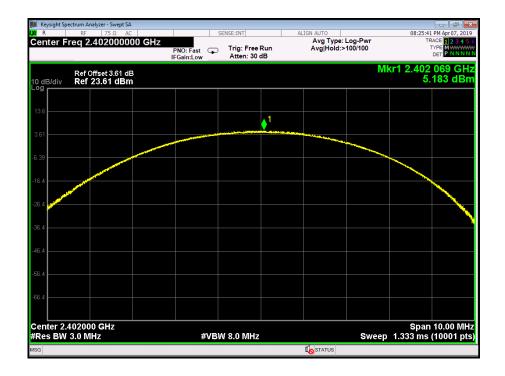






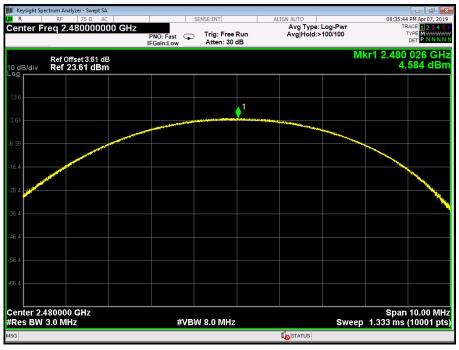


Temperature:	<b>25</b> ℃	Relative Humidity:		55%	
Test Voltage:	DC 3.7V	CON CONTRACT	60002	- NU2	
Test Mode:	TX Mode (Pi/4-DQPSK)				
Channel frequen	cy (MHz)	Test Result (dB	m) Li	mit (dBm)	
2402		5.183	5.183		
2441		5.031		30	
2480		4.584			
		Pi/4-DQPSK TX N	lode		



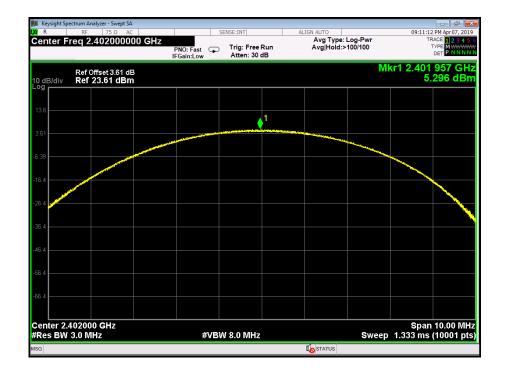




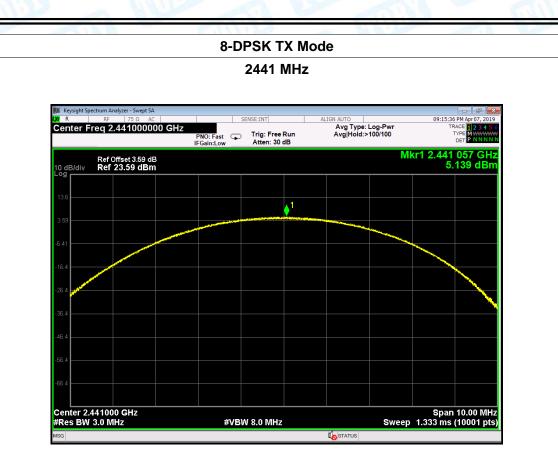




Temperature:	<b>25</b> ℃		Relative Humidity:	55%	
Test Voltage:	DC 3.7V	AR L	6000	~ 01	
Test Mode:	TX Mode (8-DPSK)				
Channel frequency (MHz)		Test Result (c	IBm) Lin	Limit (dBm)	
2402		5.296			
2441 2480		5.139 <b>30</b> 4.704		30	
		8-DPSK TX N	lode		
		2402 MU			

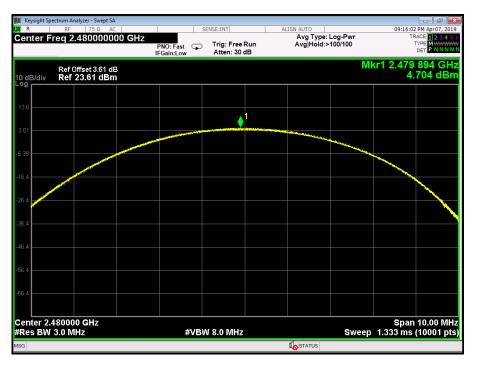






## 8-DPSK TX Mode





## -----END OF REPORT-----