

FCC TEST REPORT FCC ID:AUSCR8005FJYK

Report Number.	: ZKT-210603L2356
Date of Test	Jun. 03, 2021 to Jun. 15, 2021
Date of issue	: Jun. 16, 2021
Total number of pages	. 70
Test Result	: PASS
Testing Laboratory	: Shenzhen ZKT Technology Co., Ltd.
Address	. 1/F, No. 101, Building B, No. 6, Tangwei Community Industrial Avenue, Fuhai Street, Bao'an District, Shenzhen, China
Applicant's name	: Modern Marketing Concepts, Inc.
Address	: 1220 E Oak, St. Louisville Kentucky, United States. 40204
Manufacturer's name	: Shenzhen Jiayinking Technology Holding Company Limited
Address	A1102, workshop 1, Tianan Digital Innovation Park, No. 524, Qinglin : Road, huanggekeng community, Longcheng street, Longgang District, Shenzhen
Test specification:	
Standard	FCC CFR Title 47 Part 15 Subpart C Section 15.247 ANSI C63.10:2013
Test procedure	:/
Non-standard test method	: N/A
Test Report Form No	: TRF-EL-116_V0
Test Report Form(s) Originator	: ZKT Testing
Master TRF	Dated: 2021-06-16
test (EUT) is in compliance with th identified in the report. This report shall not be reproduced	en tested by ZKT, and the test results show that the equipment under e FCC requirements. And it is applicable only to the tested sample except in full, without the written approval of ZKT, this document may hal only, and shall be noted in the revision of the document.
Product name	: TURNTABLE PLAYER
Trademark Model/Type reference	CROSLEY CR8005F-BK, CR8005F-XX(XX represent the colorcode, they can be replaced by letters from A to Z.)
Ratings	: DC 5V/1A From Adapter

Shenzhen ZKT Technolgy Co., Ltd.

1/F, No. 101, Building B, No. 6, Tangwei Community Industrial Avenue, Fuhai Street, Bao'an District, Shenzhen, China





Testing procedure and testing location:	
Testing Laboratory	Shenzhen ZKT Technology Co., Ltd.
Address:	1/F, No. 101, Building B, No. 6, Tangwei Community Industrial Avenue, Fuhai Street, Bao'an District, Shenzhen, China
Tested by (name + signature):	Alen He
Reviewer (name + signature):	Joe. Lin
Approved (name + signature):	Lake Xie



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ZKT Technolgy Co., Ltd.	

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Report No.	Version	Description	Approved
ZKT-210603L2356	Rev.01	Initial issue of report	Jun. 16, 2021





Test procedures according to the technical standards:

FCC Part15 (15.247) , Subpart C							
Standard Section	Test Item	Result	Remark				
15.203/15.247 (c)	Antenna Requirement	PASS					
15.207	AC Power Line Conducted Emission	PASS					
15.247 (b)(1)	Conducted Peak Output Power	PASS					
15.247 (a)(1)	20dB Occupied Bandwidth	PASS					
15.247 (a)(1)	Carrier Frequencies Separation	PASS					
15.247 (a)(1)(iii)	Hopping Channel Number	PASS					
15.247 (a)(1)(iii)	Dwell Time	PASS					
15.205/15.209	Radiated Emission	PASS					
15.247(d)	Band Edge	PASS					

NOTE:

(1)" N/A" denotes test is not applicable in this Test Report







2.1 TEST FACILITY

Shenzhen ZKT Technology Co., Ltd. Add. : 1/F, No. 101, Building B, No. 6, Tangwei Community Industrial Avenue, Fuhai Street, Bao'an District, Shenzhen, China

FCC Test Firm Registration Number: 692225 Designation Number: CN1299 IC Registered No.: 27033

2.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement y ± 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 $\,\%$ $\,^{\circ}$

No.	Item	Uncertainty
1	Conducted Emission Test	±1.38dB
2	RF power conducted	±0.16dB
3	Spurious emissions conducted	±0.21dB
4	All emissions radiated(<1G)	±4.68dB
5	All emissions radiated(>1G)	±4.89dB
6	Temperature	±0.5°C
7	Humidity	±2%



3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Product Name:	TURNTABLE PLAYER
Model No.:	CR8005F-BK
Sample ID:	ZKT210603L2356E-1#
Serial No.:	CR8005F-XX(XX represent the colorcode, they can be replaced by letters from A to Z or blank.)
Model Different.:	Above models are identical in schematic and structure. XX represent the colorcode, they can be replaced by letters from A to Z.
Hardware Version:	V1.0
Software Version:	V1.0
Sample(s) Status:	Engineer sample
Channel numbers:	79
Channel separation:	2402MHz~2480MHz
Modulation technology:	GFSK, π/4-DQPSK, 8-DPSK
Antenna Type:	PCB Antenna
Antenna gain:	0dBi
Power supply:	DC 5V/1A from adapter
Adapter 1	
Manufacturer:	SHENZHEN TIANHANGXING ELECTRONICS CO., LTD
Description:	AC ADAPTER
Model No:	THX-050100KV
Input:	100-240V~50/60Hz 0.65A MAX
Output:	5V/1A

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2402MHz	21	2422MHz	41	2442MHz	61	2462MHz
2	2403MHz	22	2423MHz	42	2443MHz	62	2463MHz
3	2404MHz	23	2424MHz	43	2444MHz	63	2464MHz
4	2405MHz	24	2425MHz	44	2445MHz	64	2465MHz
5	2406MHz	25	2426MHz	45	2446MHz	65	2466MHz
6	2407MHz	26	2427MHz	46	2447MHz	66	2467MHz
7	2408MHz	27	2428MHz	47	2448MHz	67	2468MHz
8	2409MHz	28	2429MHz	48	2449MHz	68	2469MHz
9	2410MHz	29	2430MHz	49	2450MHz	69	2470MHz
10	2411MHz	30	2431MHz	50	2451MHz	70	2471MHz
11	2412MHz	31	2432MHz	51	2452MHz	71	2472MHz
12	2413MHz	32	2433MHz	52	2453MHz	72	2473MHz





13	2414MHz	33	2434MHz	53	2454MHz	73	2474MHz
14	2415MHz	34	2435MHz	54	2455MHz	74	2475MHz
15	2416MHz	35	2436MHz	55	2456MHz	75	2476MHz
16	2417MHz	36	2437MHz	56	2457MHz	76	2477MHz
17	2418MHz	37	2438MHz	57	2458MHz	77	2478MHz
18	2419MHz	38	2439MHz	58	2459MHz	78	2479MHz
19	2420MHz	39	2440MHz	59	2460MHz	79	2480MHz
20	2421MHz	40	2441MHz	60	2461MHz		

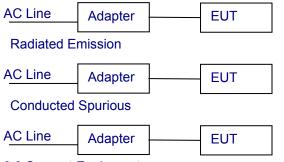
Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Test channel	Frequency
The lowest channel	2402MHz
The middle channel	2441MHz
The Highest channel	2480MHz

3.2 Test Setup Configuration

Conducted Emission



3.3 Support Equipment

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
E-1	TURNTABLE PLAYER	CROSLEY	CR8005F-BK	N/A	EUT
AE	Notebook	lenovo	B40-80	MP07F6JD	AE

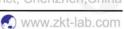
Item	Shielded Type	Ferrite Core	Length	Note

Note:

(1) The support equipment was authorized by Declaration of Confirmation.

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(2) For detachable type I/O cable should be specified the length in cm in $\[\]$ Length $\[\]$ column.



Transmitting mode	Keep the EUT in continuously transmitting mode.
	, the test voltage was tuned from 85% to 115% of the nominal rated supply the worst case was under the nominal rated supply condition. So the report n's data.

Test Software	FCC_assist_1.0.2.2
Power level setup	<7dBm



3.5 EQUIPMENTS LIST FOR ALL TEST ITEMS

Radiation Test equipment

Item	Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	Spectrum Analyzer (9kHz-26.5GHz)	KEYSIGHT	9020A	MY45109572	Sep. 22, 2020	Sep. 21, 2021
2	Spectrum Analyzer (1GHz-40GHz)	Agilent	E4446A	100363	Sep. 22, 2020	Sep. 21, 2021
3	Test Receiver (9kHz-7GHz)	R&S	ESCI7	101169	Sep. 22, 2020	Sep. 21, 2021
4	Bilog Antenna (30MHz-1400MHz)	Schwarzbeck	VULB9168	00877	Sep. 22, 2020	Sep. 21, 2021
5	Horn Antenna (1GHz-18GHz)	SCHWARZBEC K	BBHA9120D	1541	Sep. 22, 2020	Sep. 21, 2021
6	Horn Antenna (18GHz-40GHz)	A.H. System	SAS-574	588	Sep. 22, 2020	Sep. 21, 2021
7	Amplifier (30-1000MHz)	EM Electronics	EM330 Amplifier	N/A	Sep. 22, 2020	Sep. 21, 2021
8	Amplifier (1GHz-40GHz)	全聚达	DLE-161	097	Sep. 22, 2020	Sep. 21, 2021
9	Loop Antenna (9KHz-30MHz)	SCHWARZBEC K	FMZB1519B	014	Sep. 22, 2020	Sep. 21, 2021
10	RF cables1 (9kHz-30MHz)	N/A	9kHz-30MHz	N/A	Sep. 22, 2020	Sep. 21, 2021
11	RF cables2 (30MHz-1GHz)	N/A	30MHz-1GHz	N/A	Sep. 22, 2020	Sep. 21, 2021
12	RF cables3 (1GHz-40GHz)	N/A	1GHz-40GHz	N/A	Sep. 22, 2020	Sep. 21, 2021
13	CMW500 Test	R&S	CMW500	106504	Sep. 22, 2020	Sep. 21, 2021
14	ESG Signal Generator	Agilent	E4421B	GB40051203	Sep. 22, 2020	Sep. 21, 2021
15	Signal Generator	Agilent	N5182A	MY47420215	Sep. 22, 2020	Sep. 21, 2021
16	D.C. Power Supply	LongWei	TPR-6405D	/	/	/
17	Software	Frad	EZ-EMC	FA-03A2 RE	\	\

Conduction Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	LISN	R&S	ENV216	101471	Sep. 22, 2020	Sep. 21, 2021
2	LISN	CYBERTEK	EM5040A	E185040014 9	Sep. 22, 2020	Sep. 21, 2021
3	Test Cable	N/A	C01	N/A	Sep. 22, 2020	Sep. 21, 2021
4	Test Cable	N/A	C02	N/A	Sep. 22, 2020	Sep. 21, 2021
5	EMI Test Receiver	R&S	ESRP3	101946	Sep. 22, 2020	Sep. 21, 2021
6	Absorbing Clamp	DZ	ZN23201	N/A	Sep. 22, 2020	Sep. 21, 2021







4. EMC EMISSION TEST

4.1 Conducted emissions

Test Requirement:	FCC Part15 C Section 15.207
Test Method:	ANSI C63.10:2013
Test Frequency Range:	150KHz to 30MHz
Receiver setup:	RBW=9KHz, VBW=30KHz, Sweep time=auto

4.1.1 POWER LINE CONDUCTED EMISSION Limits

FREQUENCY (MHz)	Limit (Standard	
	Quasi-peak	Average	Stanuaru
0.15 -0.5	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	56.00	46.00	FCC
5.0 -30.0	60.00	50.00	FCC

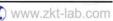
Note:

(1) *Decreases with the logarithm of the frequency.

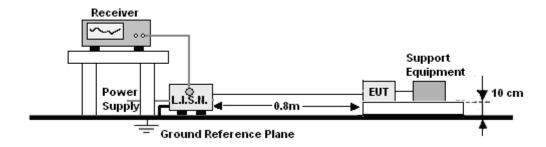
4.1.2 TEST PROCEDURE

- a. The EUT was placed 0.1 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.
- b. 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.
- c. 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.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item -EUT Test Photos.

4.1.3 DEVIATION FROM TEST STANDARD No deviation







4.1.5 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

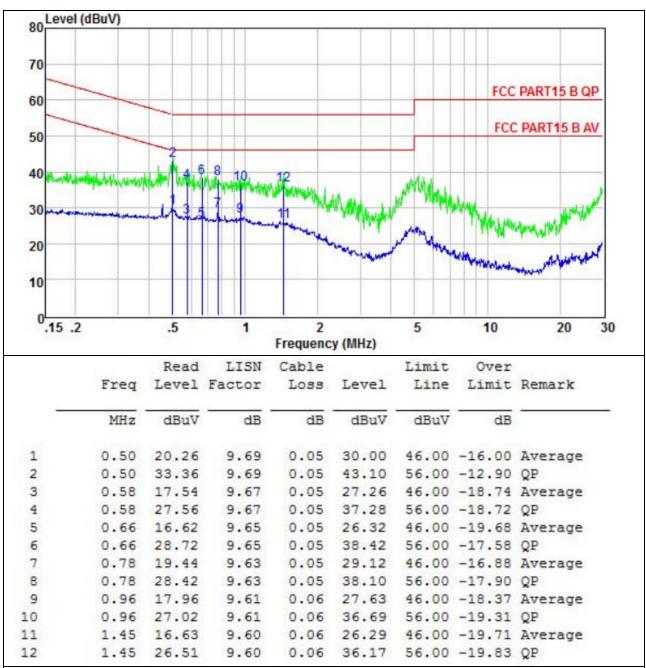
We pretest AC 120V and AC 230V, the worst voltage was AC 120V and the data recording in the report.





4.1.6 Test Result

Temperature :	26 ℃	Relative Humidity:	54%
Pressure :	101kPa	Phase :	L
Test Voltage :	AC 120V/60Hz		



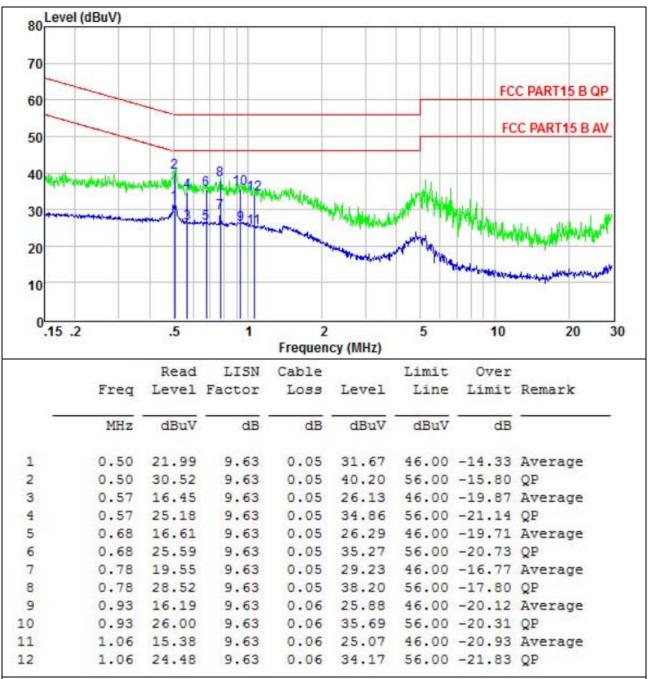
Notes:

An initial pre-scan was performed on the line and neutral lines with peak detector.
 Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
 Mesurement Level = Reading level + Correct Factor





Temperature :	26 ℃	Relative Humidity:	54%
Pressure :	101kPa	Phase :	Ν
Test Voltage :	AC 120V/60Hz		



Notes:

1.An initial pre-scan was performed on the line and neutral lines with peak detector.

2.Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.3.Mesurement Level = Reading level + Correct Factor







4.2 Radiated emissions

Test Requirement:	FCC Part15 C Section 15.209					
Test Method:	ANSI C63.10:2013					
Test Frequency Range:	9kHz to 25GHz					
Test site:	Measurement Distance: 3m					
Receiver setup:	Frequency	Detector	RBW	VBW	Value	
	9KHz-150KHz	Quasi-peak	200Hz	600Hz	Quasi-peak	
	150KHz-30MHz	Quasi-peak	9KHz	30KHz	Quasi-peak	
	30MHz-1GHz	Quasi-peak	100KHz	300KHz	Quasi-peak	
	Above 1GHz	Peak	1MHz	3MHz	Peak	
		Peak	1MHz	10Hz	Average	

4.2.1 Radiated Emission Limits

Frequencies (MHz)	Field Strength (micorvolts/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

LIMITS OF RADIATED EMISSION MEASUREMENT

FREQUENCY (MHz)	Limit (dBuV/m) (at 3M)		
	PEAK	AVERAGE	
Above 1000	74	54	

Notes:

- (1) The limit for radiated test was performed according to FCC PART 15C.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

4.2.2 TEST PROCEDURE

Below 1GHz test procedure as below:

- a. The EUT was placed on the top of a rotating table 0.1 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.





- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

Above 1GHz test procedure as below:

- g. Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 metre to 1.5 metre(Above 18GHz the distance is 1 meter and table is 1.5 metre).
- h. Test the $\ensuremath{\mathsf{EUT}}$ in the lowest channel ,the middle channel ,the Highest channel

Note:

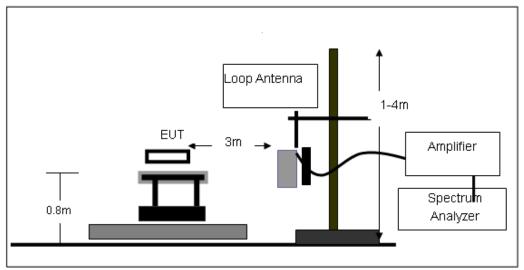
Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

4.2.3 DEVIATION FROM TEST STANDARD

No deviation

4.2.4 TEST SETUP

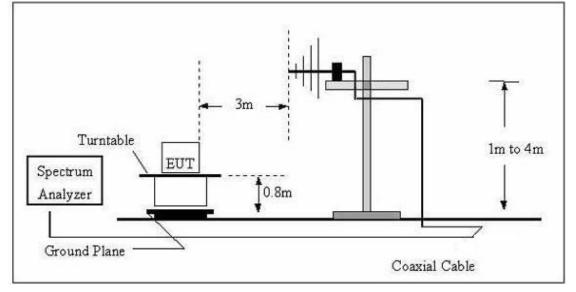
(A) Radiated Emission Test-Up Frequency Below 30MHz



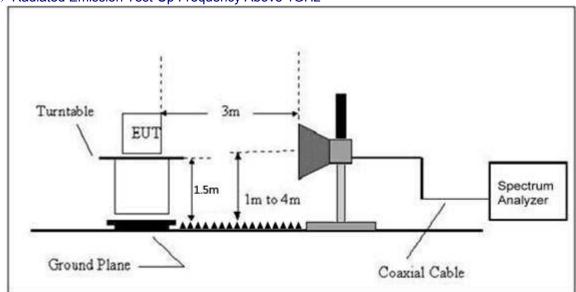




(B) Radiated Emission Test-Up Frequency 30MHz~1GHz



(C) Radiated Emission Test-Up Frequency Above 1GHz



4.2.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.







4.2.6 TEST RESULTS

Between 9KHz – 30MHz

The emission from 9 kHz to 30MHz was pre-tested and found the result was 20dB lower than the limit, and according to 15.31(o) & RSS-Gen 6.13, the test result no need to reported.

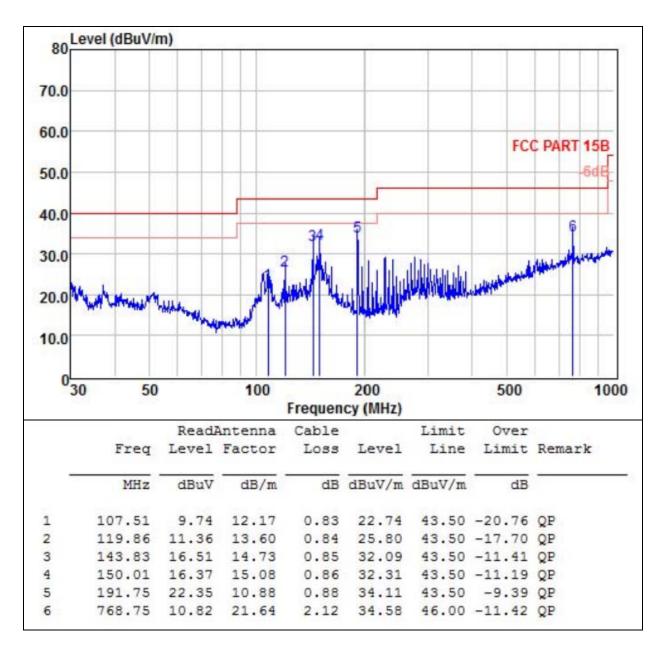






Between 30MHz - 1GHz

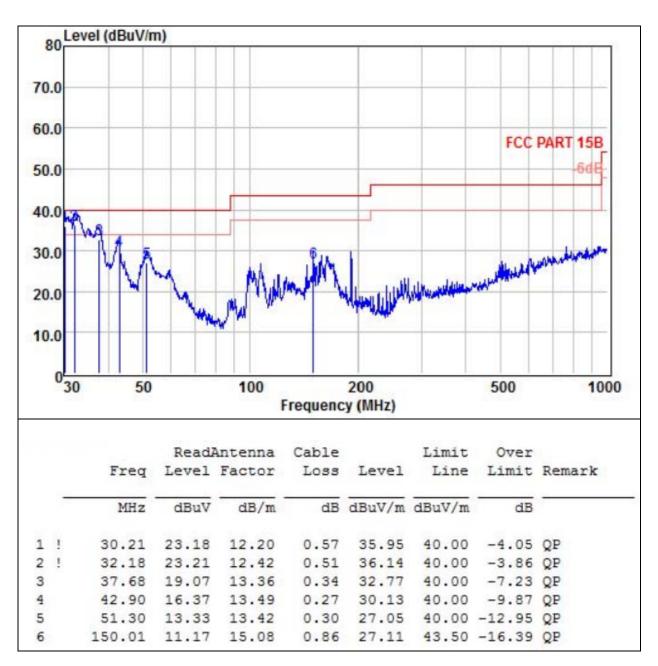
Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Horizontal
Test Voltage:	AC 120V/60Hz		







Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101kPa	Polarization:	Vertical
Test Voltage:	AC 120V/60Hz(with Adapter 1)		



Remarks:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss

2. The emission levels of other frequencies are very lower than the limit and not show in test report.

3. The test data shows only the worst case GFSK mode







Above 1 GHz Test Results (GFSK Worst Case): 1GHz~25GHz

				(GFSK	-			
Polar	Frequency	Meter Reading	Pre-ampli fier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detector
(H/V)	(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	Туре
				Low Cha	nnel:2402M	Hz			
V	4804.00	58.36	30.55	5.77	24.66	58.24	74.00	-15.76	Pk
V	4804.00	49.12	30.55	5.77	24.66	49	54.00	-5	AV
V	7206.00	57.23	30.33	6.32	24.55	57.77	74.00	-16.23	Pk
V	7206.00	47.12	30.33	6.32	24.55	47.66	54.00	-6.34	AV
V	9608.00	56.32	30.85	7.45	24.69	57.61	74.00	-16.39	Pk
V	9608.00	45.69	30.85	7.45	24.69	46.98	54.00	-7.02	AV
V	12010.00	56.33	31.02	8.99	25.57	59.87	74.00	-14.13	Pk
V	12010.00	46.28	31.02	8.99	25.57	49.82	54.00	-4.18	AV
Н	4804.00	57.41	30.55	5.77	24.66	57.29	74.00	-16.71	Pk
Н	4804.00	45.88	30.55	5.77	24.66	45.76	54.00	-8.24	AV
Н	7206.00	53.62	30.33	6.32	24.55	54.16	74.00	-19.84	Pk
Н	7206.00	45.19	30.33	6.32	24.55	45.73	54.00	-8.27	AV
Н	9608.00	52.69	30.85	7.45	24.69	53.98	74.00	-20.02	Pk
Н	9608.00	45.63	30.85	7.45	24.69	46.92	54.00	-7.08	AV
Н	12010.00	52.18	31.02	8.99	25.57	55.72	74.00	-18.28	Pk
Н	12010.00	45.33	31.02	8.99	25.57	48.87	54.00	-5.13	AV

Polar	Frequency	Meter Reading	Pre-ampli fier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detector
(H/V)	(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	Туре
			N	Aiddle Ch	nannel:2441	MHz			
V	4804.00	58.36	30.55	5.77	24.66	58.24	74.00	-15.76	Pk
V	4804.00	49.12	30.55	5.77	24.66	49	54.00	-5	AV
V	7206.00	57.23	30.33	6.32	24.55	57.77	74.00	-16.23	Pk
V	7206.00	47.12	30.33	6.32	24.55	47.66	54.00	-6.34	AV
V	9608.00	56.32	30.85	7.45	24.69	57.61	74.00	-16.39	Pk
V	9608.00	45.69	30.85	7.45	24.69	46.98	54.00	-7.02	AV
V	12010.00	56.33	31.02	8.99	25.57	59.87	74.00	-14.13	Pk
V	12010.00	46.28	31.02	8.99	25.57	49.82	54.00	-4.18	AV
Н	4804.00	57.41	30.55	5.77	24.66	57.29	74.00	-16.71	Pk
Н	4804.00	45.88	30.55	5.77	24.66	45.76	54.00	-8.24	AV
Н	7206.00	53.62	30.33	6.32	24.55	54.16	74.00	-19.84	Pk
Н	7206.00	45.19	30.33	6.32	24.55	45.73	54.00	-8.27	AV
Н	9608.00	52.69	30.85	7.45	24.69	53.98	74.00	-20.02	Pk
Н	9608.00	45.63	30.85	7.45	24.69	46.92	54.00	-7.08	AV
Н	12010.00	52.18	31.02	8.99	25.57	55.72	74.00	-18.28	Pk
Н	12010.00	45.33	31.02	8.99	25.57	48.87	54.00	-5.13	AV



Polar	Frequency	Meter Reading	Pre-ampli fier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detector
(H/V)	(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	Туре
				High Cha	nnel:2480N	Hz		•	
V	4960.00	54.69	30.55	5.77	24.66	54.57	74.00	-19.43	Pk
V	4960.00	43.26	30.55	5.77	24.66	43.14	54.00	-10.86	AV
V	7440.00	53.68	30.33	6.32	24.55	54.22	74.00	-19.78	Pk
V	7440.00	44.29	30.33	6.32	24.55	44.83	54.00	-9.17	AV
V	9920.00	55.16	30.85	7.45	24.69	56.45	74.00	-17.55	Pk
V	9920.00	43.69	30.85	7.45	24.69	44.98	54.00	-9.02	AV
V	12400.00	53.69	31.02	8.99	25.57	57.23	74.00	-16.77	Pk
V	12400.00	45.87	31.02	8.99	25.57	49.41	54.00	-4.59	AV
Н	4960.00	53.92	30.55	5.77	24.66	53.8	74.00	-20.2	Pk
Н	4960.00	47.19	30.55	5.77	24.66	47.07	54.00	-6.93	AV
Н	7440.00	54.16	30.33	6.32	24.55	54.7	74.00	-19.3	Pk
Н	7440.00	46.39	30.33	6.32	24.55	46.93	54.00	-7.07	AV
Н	9920.00	57.18	30.85	7.45	24.69	58.47	74.00	-15.53	Pk
Н	9920.00	46.36	30.85	7.45	24.69	47.65	54.00	-6.35	AV
Н	12400.00	57.29	31.02	8.99	25.57	60.83	74.00	-13.17	Pk
Н	12400.00	46.32	31.02	8.99	25.57	49.86	54.00	-4.14	AV

Remark:

- 1. Emission Level = Meter Reading + Antenna Factor + Cable Loss Pre-amplifier, Margin= Emission Level - Limit
- 2. If peak below the average limit, the average emission was no test.
- 3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.





5. RADIATED BAND EMISSION MEASUREMENT

5.1 Test Requirement:

Test Requirement:	FCC Part15 C Section 15.209 and 15.205						
Test Method:	ANSI C63.10: 2013						
Test Frequency Range:	All of the restrict bands were tested, only the worst band's (2310MHz to 2500MHz) data was showed.						
Test site:	Measurement Distance: 3m						
Receiver setup:	Frequency	Detector	RBW	VBW	Value		
	Above	Peak	1MHz	3MHz	Peak		
	1GHz	Average	1MHz	3MHz	Average		

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

	Limit (dBuV/m) (at 3M)				
FREQUENCY (MHz)	PEAK	AVERAGE			
Above 1000	74	54			

Notes:

(1) The limit for radiated test was performed according to FCC PART 15C.

- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	2300MHz
Stop Frequency	2520
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average

5.2 TEST PROCEDURE

Above 1GHz test procedure as below:

- a. 1. The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
- g. Test the EUT in the lowest channel,the Highest channel Note:

Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

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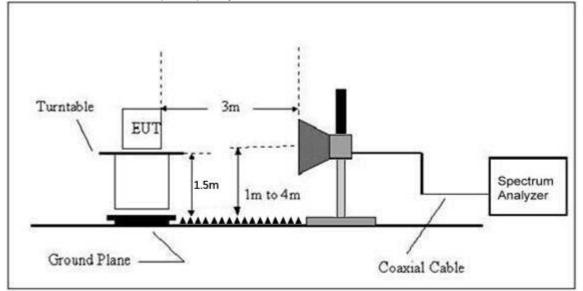




5.3 DEVIATION FROM TEST STANDARD No deviation

5.4 TEST SETUP

Radiated Emission Test-Up Frequency Above 1GHz



5.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.







5.6 TEST RESULT

PASS

Remark: All modes of GFSK, $\pi/4$ DQPSK, 8DPSK were tested, only the worst result of GFSK was reported as below.

	Polar	Frequenc	Meter	Pre-	Cable	Antenna	Emission	Limit	Detec	Resul								
	(H/V)	У	Reading	amplifier	Loss	Factor	level	(dBuV	tor	+								
	(1 // V)	(MHz)	(dBuV)	(dB)	(dB)	(dB/m)	(dBuV/m)	/m)	Туре	l								
				Low	Channe	el: 2402MHz	2											
	Н	2390.00	57.42	30.22	4.85	23.98	56.03	74.00	PK	PASS								
	Н	2390.00	48.36	30.22	4.85	23.98	46.97	54.00	AV	PASS								
	Н	2400.00	60.24	30.22	4.85	23.98	58.85	74.00	PK	PASS								
	Н	2400.00	50.13	30.22	4.85	23.98	48.74	54.00	AV	PASS								
	V	2390.00	62.38	30.22	4.85	23.98	60.99	74.00	PK	PASS								
	V	2390.00	50.84	30.22	4.85	23.98	49.45	54.00	AV	PASS								
	V	2400.00	61.57	30.22	4.85	23.98	60.18	74.00	PK	PASS								
GFSK	V	2400.00	53.26	30.22	4.85	23.98	51.87	54.00	AV	PASS								
GFSK		High Channel: 2480MHz																
	Н	2483.50	61.34	30.22	4.85	23.98	59.95	74.00	PK	PASS								
	Н	2485.50	52.84	30.22	4.85	23.98	51.45	54.00	AV	PASS								
	Н	2483.50	59.66	30.22	4.85	23.98	58.27	74.00	PK	PASS								
	Н	2483.50	50.32	30.22	4.85	23.98	48.93	54.00	AV	PASS								
	V	2483.50	60.84	30.22	4.85	23.98	59.45	74.00	PK	PASS								
	V	2483.50	50.21	30.22	4.85	23.98	48.82	54.00	AV	PASS								
	V	2483.50	61.52	30.22	4.85	23.98	60.13	74.00	PK	PASS								
	V	2483.50	50.32	30.22	4.85	23.98	48.93	54.00	AV	PASS								
Remark: 1. Emissior	1 Level =	Meter Readi	ng + Antenr	na Factor +	Cable Lo	oss – Pre-ai	mplifier, Marg	in= Emis	sion Leve									





6. CONDUCTED BAND EDGE AND SPURIOUS EMISSION

Test Requirement:	FCC Part15 C Section 15.247 (d)
Test Method:	KDB558074 D0115.247 Meas Guidancev05r02

Project No.: ZKT-210603L2356

Page 28 of 70

6.1 Limit

Regulation 15.247 (d),In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

6.2 Test Setup



6.3 Test procedure

Using the following spectrum analyzer setting: A) Set the RBW = 100KHz.

B) Set the VBW = 300KHz.

C) Sweep time = auto couple.

D) Detector function = peak.

E) Trace mode = max hold.

F) Allow trace to fully stabilize.

6.4 DEVIATION FROM STANDARD

No deviation.







6.5 Test Result

Remark: Spurious Emission all modes of GFSK, $\pi/4$ DQPSK, 8DPSK were tested, only the worst result of GFSK

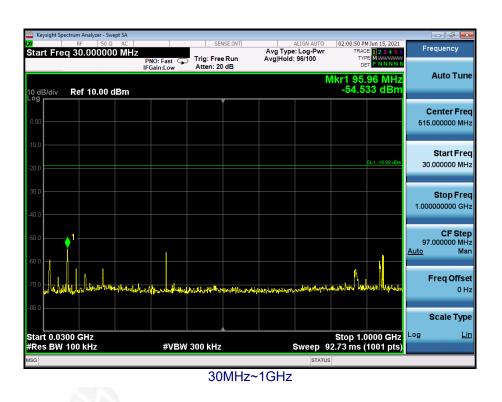
Lowest channel

was reported	as below:
GFSK mode:	

Test channel:



CH:2402MHz



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昌





Test channel:



1MHz~25GHz



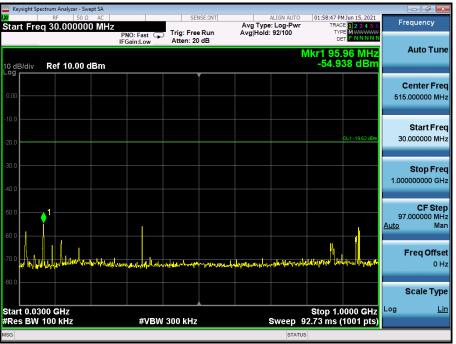


Test channel:

Middle channel

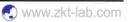


CH:2441



30MHz~1GHz

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Keysight Spectrum Analyzer - Swept SA				- 7 -
Kart Freg 1.000000000 G	SENS	E:INT ALIGN AUTO Avg Type: Log-Pwr	01:59:26 PM Jun 15, 2021 TRACE 1 2 3 4 5 6	Frequency
	PNO: Fast Trig: Free F IFGain:Low Atten: 20 c	Run Avg Hold: 99/100	TYPE MWWWWW DET P N N N N N	
	IFGain:Low Atten: 200	_		Auto Tune
10 JDJUL Dof 10 00 dBm		IV	lkr1 2.440 GHz 1.226 dBm	
10 dB/div Ref 10.00 dBm			1.220 abiii	
0.00				Center Freq
-10.0				13.000000000 GHz
-20.0			DL1 -19.62 dBm	
-30.0				Start Freq
-40.0				1.000000000 GHz
-50.0		with and when the second and a second of the	and have and share and	
-60.0 mart hanna mart mad	المريبا المحمد المريبي المصالي والمحمد المحمد المحالية	and a second and the		
-70.0				Stop Freq 25.00000000 GHz
-80.0				25.00000000 GHZ
Start 1.00 GHz #Res BW 1.0 MHz	#VBW 3.0 MHz	Sween 6	Stop 25.00 GHz).00 ms (1001 pts)	CF Step 2.40000000 GHz
		-		Auto Man
MKR MODE TRC SCL X	2.440 GHz 1.226 dBr	FUNCTION FUNCTION WIDTH	FUNCTION VALUE	
2 N 1 f 2	2.440 GHz 1.226 dBr	n		Freq Offset
4				0 Hz
5			E	
7				Scale Type
9				ocale Type
10				Log <u>Lin</u>
	m		•	
MSG		STATUS		

1GHz~25GHz

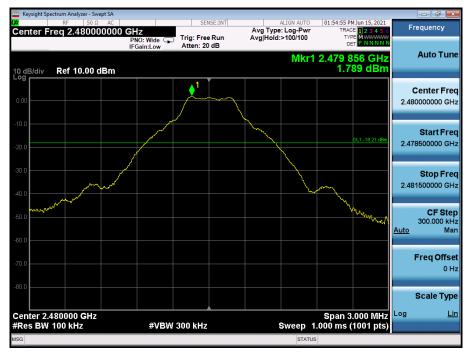




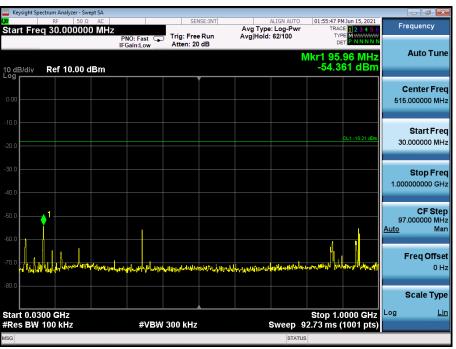


Test channel:

Highest channel



CH:2480MHz



³⁰MHz~1GHz

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+86-755-2233 6688





Keysight Spe												7 ×
Start Fre	RF a 1 0(50 Ω			SEN	SE:INT	Avg Typ	ALIGN AUTO		M Jun 15, 2021	Frequen	cy
otart ric	q 1.00	/00000	Р	NO: Fast C Gain:Low	Trig: Free Atten: 20			d:>100/100	TY	PE MWWWWW ET P N N N N N		
10 dB/div Log	Ref	10.00 d	Bm					N	1kr1 2.4 1.8	88 GHz 82 dBm	Auto	Tune
-10.0 -20.0										DL1 -18.21 dBm	Center 13.00000000	
-30.0 -40.0 -50.0		2 ²			(Malachard and a start	- Marine Marine	and a start and a start	-	and the state of the	m	Start 1.00000000	t Freq 0 GHz
المري _{سين 1} 60.0 -70.0 -80.0		Pollul Industry	il ^{en} entealityelettate								Stop 25.00000000	Freq 0 GHz
Start 1.00 #Res BW	1.0 M	Hz		#VB	W 3.0 MHz			Sweep 6	0.00 ms (CF 2.40000000 Auto	0 GHz Man
MKR MODE TF 1 N 1 2 N 1 3 4 5 5 6	f			8 GHz 0 GHz	Y 1.882 dE -38.471 dB	m	ICTION FU	INCTION WIDTH	FUNCTI	ON VALUE	Freq	
7 8 9 10 11										-	Scale	Type <u>Lin</u>
MSG								STATUS				

1GHz~25GHz

Conducted band edge Test result Pass

Modulation		Frequency Band	Delta Peak to band emission (dBc)	> Limit (dBc)	Result
	Non bonning	Left Band	46.63	20	Pass
GFSK	Non-hopping	Right Band	35.77	20	Pass
	honning	Left Band	32.93	20	Pass
	hopping	Right Band	38.07	20	Pass
	Non bonning	Left Band	49.86	20	Pass
π/4DQPSK	Non-hopping	Right Band	36.29	20	Pass
	henning	Left Band	33.61	20	Pass
	hopping	Right Band	36.36	20	Pass
	New hereine	Left Band	47.20	20	Pass
	Non-hopping	Right Band	36.32	20	Pass
8DPSK	honoing	Left Band	33.72	20	Pass
	hopping	Right Band	42.07	20	Pass



GFSK No-hopping Band edge-left side



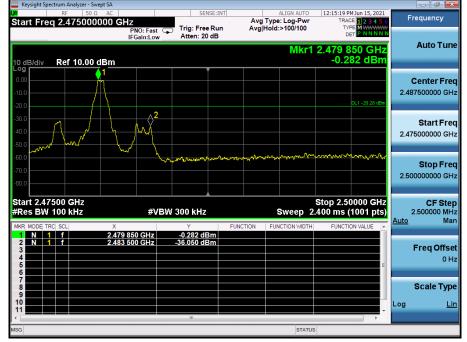
GFSK Hopping Band edge-left side

Keysight Spectrum Analyzer - Swept SA						
α RF 50 Ω AC Start Freq 2.310000000 GI		SENSE:		ALIGN AUTO Type: Log-Pwr	12:03:21 PM Jun 15, 2021 TRACE 1 2 3 4 5 0	Frequency
10 dB/div Ref 10.00 dBm	PNO: Fast G IFGain:Low	Trig: Free Ru Atten: 20 dB	in Avg	Hold:>100/100	TYPE MWWWW DET PNNNN (r1 2.403 9 GHz 0.849 dBm	Auto Tuno
						Center Fred 2.360000000 GHz
-30.0			du se de bullo d	Mallace And	AP AP	Start Freq 2.310000000 GHz
-co.o <mark>larwa/mpaja/ir waarmina/ina/ina</mark> /ini	MMM	hy y y hy hu h	ahuukhan k. Av	. Ալեկութ կարություն	NUMPT	Stop Fred
-70.0						
80.0 Start 2.31000 GHz #Res BW 100 kHz	#VB	W 300 kHz		Sweep 9	Stop 2.41000 GHz .600 ms (1001 pts)	2.410000000 GH
80.0 Start 2.31000 GHz #Res BW 100 kHz MKR MODE TRC SCL X 1 1 5 2.4	#VB\ 103 9 GHz 100 0 GHz	N 300 kHz <u>0.849 dBm</u> -32.077 dBm	FUNCTION		Stop 2.41000 GHz	2.41000000 GH CF Step 10.00000 MH <u>Auto</u> Mar Freq Offse
B0 0	103 9 GHz	۲ 0.849 dBm	FUNCTION	Sweep 9	Stop 2.41000 GHz .600 ms (1001 pts)	2.41000000 GH CF Ster 10.00000 MH <u>Auto</u> Mai Freq Offse 0 H Scale Type
80.0 Start 2.31000 GHz #Res BW 100 KHz MCR MKR MODE TRC SCL X 1 1 1 2 N 1 1 3 3 3 4 5 5 5 7 8 9 9	103 9 GHz	۲ 0.849 dBm	FUNCTION	Sweep 9	Stop 2.41000 GHz .600 ms (1001 pts)	2.41000000 GH CF Step 10.000000 MH <u>Auto</u> Mar Freq Offse 0 H Scale Type

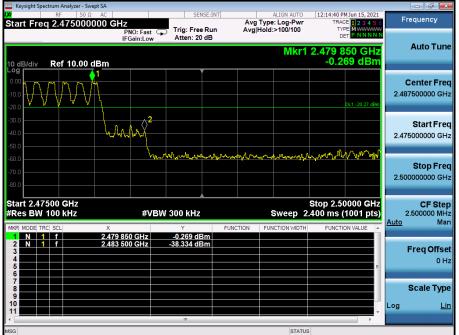




GFSK No-hopping Band edge-right side



GFSK Hopping Band edge-right side







Keysight Spectrum Analyzer - Swept SA - J - X 12:05:54 PM Jun 15, 2021 TRACE 1 2 3 4 5 6 TYPE M WWWW DET P N N N N ALIGN AUTO Avg Type: Log-Pwr Avg|Hold:>100/100 Frequency Start Freq 2.310000000 GHz PNO: Fast Trig: Free Run IFGain:Low Atten: 20 dB Auto Tune Mkr1 2.401 9 GH -0.765 dBn Ref 10.00 dBm Center Freq 2.36000000 GHz Start Freq 1/2 2.310000000 GHz Stop Freq 2.41000000 GHz Start 2.31000 GHz #Res BW 100 kHz Stop 2.41000 GHz Sweep 9.600 ms (1001 pts) **CF Step** 10.000000 MHz <u>o</u> Man #VBW 300 kHz Auto 2.401 9 GHz 2.400 0 GHz -0.765 dBm -50.625 dBm N 1 f N 1 f **Freq Offset** 0 Hz Scale Type <u>Lin</u> Log STATUS

π /4-DQPSK No-hopping Band edge-left side

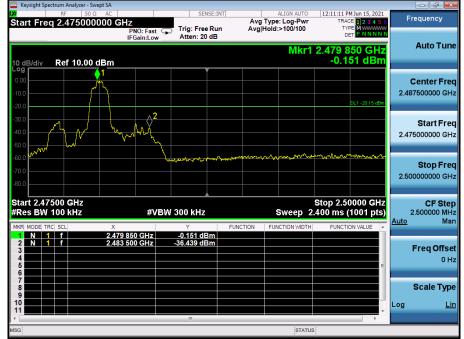
π /4-DQPSK Hopping Band edge-left side

Keysight Spectrum Analyzer -				.	- 6 -
tart Freg 2.31000		SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr	12:04:55 PM Jun 15, 2021 TRACE 1 2 3 4 5 6	Frequency
an 1109 2.51000	PNO: Fast	Trig: Free Run Atten: 20 dB	Avg Hold:>100/100	TYPE MWWWWW DET P. N.N.N.N.N.	
	IFGain:Low	Atten: 20 dB			Auto Tun
			M	kr1 2.408 9 GHz -0.954 dBm	
0 dB/div Ref 10.0	0 dBm			-0.954 dBm	
0.00					Center Fre
10.0				<u>hunnanna</u>	2.36000000 GH
20.0				D 1 -20 95 dBm	2.00000000000
				A 2	
30.0				X	Start Fre
40.0				<u>^</u>	2.310000000 GH
50.0					
50.0 MMr. La Mh. Marit	and the set of the second s	L MAN HARANAN LANATAN	waydallana	annuk name	
70.0	and the second	· • • • • • • • • • • • • • • • • • • •			Stop Fre
30.0					2.410000000 GH
00.0					
tart 2.31000 GHz				Stop 2.41000 GHz	CF Ste
Res BW 100 kHz	#VE	3W 300 kHz	Sweep	9.600 ms (1001 pts)	10.000000 MH
IKR MODE TRC SCL	Х	Y F	UNCTION FUNCTION WIDTH	H FUNCTION VALUE	<u>Auto</u> Ma
1 N 1 f	2.408 9 GHz	-0.954 dBm			
2 N 1 f	2.400 0 GHz	-34.567 dBm			Freq Offs
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				E	
5					
6 7					
6 7 8					Scale Typ
6 7					Scale Typ
6 7 8 9					
6 7 8 9		III	STAT		

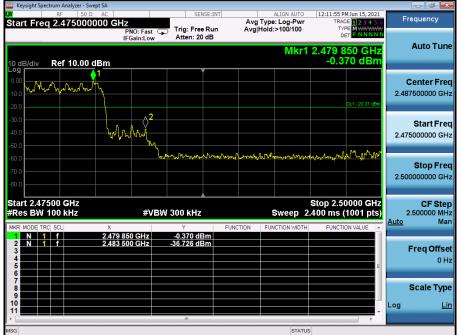




π/4-DQPSK No-hopping Band edge-right side



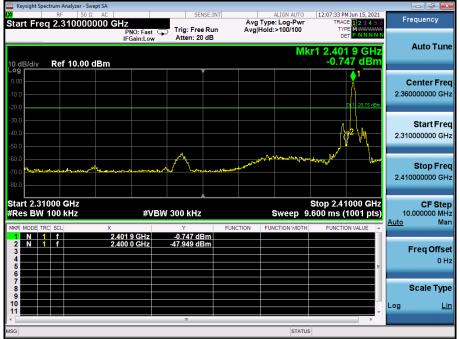
π /4-DQPSK Hopping Band edge-right side







8-DQPSK No-hopping Band edge-left side



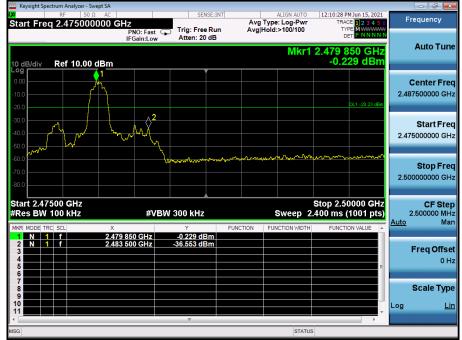
8-DQPSK Hopping Band edge-left side

Keysight Spectrum Analyzer - Swept SA								- 7
RF 50 Ω AC	NI I-	SENSE		ALIGN AUTO	12:08:35 PM	Jun 15, 2021	Frequ	ency
art Freq 2.310000000 G	PNO: Fast IFGain:Low	Trig: Free R Atten: 20 dB	un Avg l	Hóld:>100/100	TYPE DET	9 GHz		ito Tu
dB/div Ref 10.00 dBm					-1.04	l5 dBm		
0.0						21-21.05 dBm	Cen 2.36000	ter Fi 0000 G
					Ŵ	2	St 2.31000	art Fr
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 พุฬษุทันปูญที่มากระบาทยุกรับ 		Гудл ^{анны} лбал V 300 kHz	nnn an		Stop 2.41		2.41000	0000 G CF St
עליקאלא איז איז איז איז איז איז איז איז איז אי	#VBW	V 300 kHz Y	FUNCTION		Stop 2.41	001 pts)	2.41000	0000 G CF St
milenir-ingeniring mileniring ant 2.31000 GHz ses BW 100 kHz R MODE TRCI SCLI X N 1 f 2 N 1 f 2 N 1 f 2		V 300 kHz	FUNCTION	Sweep 9	Stop 2.41 .600 ms (1	001 pts)	2.41000 10.000 <u>Auto</u>	CF St DOOD M N q Offs
Image: Second	#VBW	∜ 300 kHz Y -1.045 dBm	FUNCTION	Sweep 9	Stop 2.41 .600 ms (1	001 pts)	2.41000 <u>10.000</u> <u>Auto</u> Fre Sca	CF St DOOD M N Q Offe ale Ty
a milenity mi	#VBW	∜ 300 kHz Y -1.045 dBm	FUNCTION	Sweep 9	Stop 2.41 .600 ms (1	001 pts)	2.41000 10.000 <u>Auto</u> Fre	CF St CF St 0000 M M q Offs 0 ale Ty

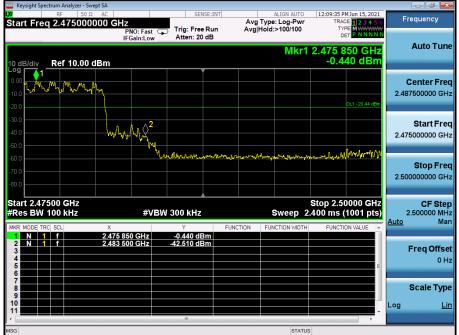




8-DQPSK No-hopping Band edge-right side



8-DQPSK Hopping Band edge-right side









7. 20DB BANDWIDTH

Test Requirement:	FCC Part15 C Section 15.247 (a)(1)
Test Method:	ANSI C63.10:2013

7.1 Test Setup



7.2 Limit

N/A

7.3 Test procedure

1. Set RBW = 30 kHz.

2. Set the video bandwidth (VBW) \ge 3 x RBW.

- 3. Detector = Peak.
- 4. Trace mode = max hold.
- 5. Sweep = auto couple.
- 6. Allow the trace to stabilize.

7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

7.4 DEVIATION FROM STANDARD

No deviation.







7.5 Test Result

Mode	Test channel	20dB Emission Bandwidth (MHz)	Result
	Lowest	0.880	
GFSK	Middle	0.878	Pass
	Highest	0.878	
	Lowest	1.256	
π/4-DQPSK	Middle	1.247	Pass
	Highest	1.245	
0.000//	Lowest	1.249	
8-DPSK	Middle	1.219	Pass
	Highest	1.245	

Test plots

Keysight Spectrum Analyzer - Occupied BW					
ໝ RF 50 Ω AC Center Freq 2.402000000 G #	Trig:	SENSE:INT er Freq: 2.40200000 Free Run A en: 10 dB	ALIGN AUTO O GHz vg Hold:>10/10	12:00:00 PM Jun 15, 2021 Radio Std: None Radio Device: BTS	Frequency
15 dB/div Ref 10.00 dBm					
-5.00		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			Center Freq 2.402000000 GHz
-50.0					
-80.0 -95.0 -110					
-125 Center 2.402 GHz				Span 3 MHz	CF Step
#Res BW 30 kHz Occupied Bandwidth		VBW 100 kHz Total Pow	er 5.4	Sweep 4.133 ms 5 dBm	300.000 kHz <u>Auto</u> Man
83	1.25 kHz				Freq Offset
Transmit Freq Error	5.628 kHz	% of OBW	Power 9	9.00 %	0 Hz
x dB Bandwidth	880.0 kHz	x dB	-20	.00 dB	
MSG			STATU	IS	

GFSK Low Channel





GFSK Middle Channel

Penter Freq 2.441000000 GHz #FGaln:Low Center Freq: 2.441000000 CHz Trig: Freq Run Avg Hold:>10/10 Radio Device: BTS Radio Device: BTS Radio Device: BTS Radio Device: BTS Center Freq 2.441000000 GHz Center Freq: 2.441000000 GHz Center Freq: 2.44100000 GHz Center Freq: 2.4410 GHz Span 3 MHz Span 3 MHz Span 3 GHz CF Ster 300.000 kHz Matter Matter Matter Span 3 GHz Span 3 GHz Span 3 GHz Span 3 GHz CF Ster 300.000 kHz Span 3 GHz CF Ster 300.000 kHz Center Freq Offset Center Freq O	RF 50 Ω AC		SENSE:INT	ALIGN AUTO	11:59:22 AM Jun 15,	2021
Avg Hold:>10/10 Radio Device: BTS Radio Device: BTS Radio Device: BTS Radio Device: BTS Radio Device: BTS Center Fre 2.44100000 GH 2.44100000 GH 2.4410 GH 2.44100000 GH 2.44100000 GH 2.44100000 GH 2.4410 GH 2.44100000 GH 2.4410000 GH 2.4410000 GH 2.4410000 GH 2.4410000 GH 2.4410000 GH 2.4410000 GH 2.4410000 GH 2.40000 GH			nter Freq: 2.44100000	GHz		Frequency
5 d3/d/v Ref 10.00 dBm Center Fre 2.44100000 GF 2.44100000 GF 2.441000000 GF 2.44100000 GF 2.44100000 GF 2.44100000 GF 2.44100000 GF 2.44100000 GF 2.44100000 GF 2.44100000 GF 2.44100000 GF 2.44100000 GF 2.4410 GF 3.00.000 KF 3.00.000 KF 3.00 KF				/g Hold:>10/10	Dadia Daviase BT	
Center Fre 2.44100000 GH 2.44100000 GH 2.441000000 GH 2.44100000 GH 2.44100000 GH 2.44100000 GH 2.44100000 GH 2.44100000 GH 2.44100000 GH 2.4410 GH 2.44100000 GH 2.4410 GH 2.44100000 GH 2.4410 G		#FGain:Low #At	ten: 10 dB		Radio Device: B I	5
Center Fre 2.44100000 GH 2.44100000 GH 2.441000000 GH 2.44100000 GH 2.44100000 GH 2.44100000 GH 2.44100000 GH 2.44100000 GH 2.44100000 GH 2.4410 GH 2.44100000 GH 2.4410 GH 2.44100000 GH 2.4410 G						
Center Fre 2.44100000 GH Conter 2.441 GHz Res BW 30 kHz Transmit Freq Error 5.134 kHz % of OBW Power 99.00 % x dB Bandwidth 877.6 kHz x dB -20.00 dB						
CF Ste 30.000 KHz 2.44100000 GH 2.44100000 GH 2.441000000 GH 2.44100000 GH						Conton Eng
560 4		لممريد ا	and the second			
and a second sec				m.		2.441000000 GH
560 100 1	35.0			- man		
000 0	50.0				and the second second	
250 200 2	65.0				- Carrier - Carr	~~~-
110 Image: Constraint of the second seco	80.0					
125 Span 3 MHz Center 2.441 GHz #VBW 100 kHz Span 3 MHz Stres BW 30 kHz #VBW 100 kHz Sweep 4.133 ms Occupied Bandwidth Total Power 6.01 dBm 829.79 kHz Freq Offset Transmit Freq Error 5.134 kHz % of OBW Power 99.00 % x dB Bandwidth 877.6 kHz x dB -20.00 dB	95.0					
125 Span 3 MHz Center 2.441 GHz #VBW 100 kHz Span 3 MHz Stres BW 30 kHz #VBW 100 kHz Sweep 4.133 ms Occupied Bandwidth Total Power 6.01 dBm 829.79 kHz Freq Offset Transmit Freq Error 5.134 kHz % of OBW Power 99.00 % x dB Bandwidth 877.6 kHz x dB -20.00 dB	-110					
Center 2.441 GHz Res BW 30 kHz Occupied Bandwidth 829.79 kHz Transmit Freq Error x dB Bandwidth 877.6 kHz x dB Transmit Freq Error Transmit Freq Error 5.134 kHz Transmit Freq Error Transmit Freq Er						
Res BW 30 kHz #VBW 100 kHz Sweep 4.133 ms CF Step 300.000 kH Occupied Bandwidth Total Power 6.01 dBm 829.79 kHz Auto Ma Transmit Freq Error 5.134 kHz % of OBW Power 99.00 % x dB Bandwidth 877.6 kHz x dB -20.00 dB	-125					
Res BW 30 kHz #VBW 100 kHz Sweep 4.133 ms CF Step 300.000 kH Occupied Bandwidth Total Power 6.01 dBm 829.79 kHz Auto Ma Transmit Freq Error 5.134 kHz % of OBW Power 99.00 % x dB Bandwidth 877.6 kHz x dB -20.00 dB	Center 2.441 GHz				Span 3 l	
Occupied Bandwidth Total Power 6.01 dBm Auto Ma 829.79 kHz Freq Offset Freq Offset 0 H Transmit Freq Error 5.134 kHz % of OBW Power 99.00 % 0 H x dB Bandwidth 877.6 kHz x dB -20.00 dB 0 H	Res BW 30 kHz		#VBW 100 kHz			UT SIE
829.79 kHz Transmit Freq Error 5.134 kHz % of OBW Power 99.00 % x dB Bandwidth 877.6 kHz x dB -20.00 dB						
Transmit Freq Error 5.134 kHz % of OBW Power 99.00 % x dB Bandwidth 877.6 kHz x dB -20.00 dB	Occupied Bandwidth		Total Pow	er 6.01	dBm	
Transmit Freq Error 5.134 kHz % of OBW Power 99.00 % x dB Bandwidth 877.6 kHz x dB -20.00 dB	82	9 79 kHz				Ener Offer
x dB Bandwidth 877.6 kHz x dB -20.00 dB	6					
	Transmit Freq Error	5.134 kHz	% of OBW	Power 99	0.00 %	0 H
	x dB Bandwidth	877 6 kHz	x dB	-20	00 dB	
ig status				20.		
IG STATUS						
G STATUS						
3G STATUS						
	ISG			STATUS	S	

GFSK High Channel







π/4-DQPSK Low Channel

Keysight Spectrum Analyzer - Occupied BW		05105	TA (77)			11.53.05.1		_	
RF 50 Ω AC Center Freq 2.402000000	CH-	SENSE: Center Freq:			ALIGN AUTO	Radio Std	M Jun 15, 2021	Fr	equency
Senter Freq 2.40200000		Trig: Free Ru	un	Avg Hold	:>10/10				
	#IFGain:Low	#Atten: 10 dl	В			Radio Dev	rice: BTS		
15 dB/div Ref 10.00 dBm									
_og									
5.00		\sim	~~~~~~~	245				0	Center Fre
20.0	and a second second				~			2.40	2000000 GH
35.0	<u>/ </u>				\sim				
50.0 mmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmm					مسمر	m	man		
5.0									
30.0	الكمالك								
95.0									
110	، عصد الک								
-125	، السمال ک								
Center 2.402 GHz			400 1-11	_			an 3 MHz		CF Ste
Res BW 30 kHz		#VBW	100 kH	z		Sweep	4.133 ms		300.000 kł
Occupied Bandwidth		т	otal Po	wer	4 80	dBm		<u>Auto</u>	M
			otarro		-1.00				
1.1	698 MH	Ζ							Freq Offs
Transmit Freq Error	7.550 ki	47 %	of OBV		ar 00	.00 %			01
x dB Bandwidth	1.256 MI	z x	dB		-20.	00 dB			
SG					STATUS				
					STATUS				

π /4-DQPSK Middle Channel







π/4-DQPSK High Channel

RF 50 Ω AC		SENSE:INT	AL	IGN AUTO	11:58:28 A	M Jun 15, 2021		
Center Freq 2.48000000	GHz	Center Freq: 2.4800	000000 GHz		Radio Std		Freq	lency
	#IFGain:Low	Trig: Free Run #Atten: 10 dB	Avg Hold:>	10/10	Radio Dev	rice: BTS		
	SH GUINEON							
15 dB/div Ref 10.00 dBn	n							
-5.00		\sim	~~~~ -				Cer	nter Fred
-20.0	~			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			2.48000	0000 GHz
-35.0				-				
-50.0				<u>}</u> ^~~~		man		
-65.0								
-80.0								
-95.0								
-110								
-125								
Center 2.48 GHz		20 (B) 11 - 40 0				an 3 MHz		CF Step
#Res BW 30 kHz		#VBW 100	KHZ		sweep	4.133 ms	30	0.000 kHz
Occupied Bandwidt	h	Total	Power	5.72	dBm		Auto	Mar
		-						
1.	1688 MH	Z					Fre	eq Offset
Transmit Freq Error	4.758 ki	Hz % of C	BW Power	r 99	.00 %			0 H:
x dB Bandwidth	1.245 MI	-lz x dB		-20 (00 dB			
x db bundwidth	1.245 101			-20.0				
ISG				STATUS				

8-DPSK Low Channel







8-DPSK Middle Channel

Keysight Spectrum Analyzer - Occupied BW					- 6 ×
Center Freq 2.441000000	GHZ #IFGain:Low Center #Atten	SENSE:INT Freq: 2.44100000 GHz free Run Avg Hold :: 10 dB	Radio 5	14 AM Jun 15, 2021 Std: None Device: BTS	Frequency
15 dB/div Ref 10.00 dBm		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			Center Fred 2.441000000 GH:
				~~~~	
-110 -125					
Center 2.441 GHz #Res BW 30 kHz	#	VBW 100 kHz		Span 3 MHz p   4.133 ms	CF Step 300.000 kH Auto Mai
Occupied Bandwidtl	ո I614 MHz	Total Power	5.55 d <b>B</b> m	1	Freq Offse
Transmit Freq Error x dB Bandwidth	19.205 kHz 1.219 MHz	% of OBW Pow x dB	er 99.00 % -20.00 dB		0 H
SG			STATUS		

#### 8-DPSK High Channel







#### 8. Maximum Peak Output Power

Test Requirement:	FCC Part15 C Section 15.247 (b)(1)
Test Method:	ANSI C63.10:2013
Limit:	20.97dBm(for GFSK), 20.97dBm(for EDR)

#### 8.1 Block Diagram Of Test Setup



#### 8.2 Limit

For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.

#### 8.3 Test procedure

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

2. Set the spectrum analyzer: RBW = 3MHz. VBW = 3MHz. Sweep = auto; Detector Function = Peak.

3. Keep the EUT in transmitting at lowest, medium and highest channel individually. Record the max value.

#### 8.4 DEVIATION FROM STANDARD

No deviation.

8.5 Test Result

Mode	Test channel	Peak Output Power (dBm)	Limit (dBm)	Result
	Lowest	0.772		
GFSK	Middle	1.152	20.97	Pass
	Highest	1.609		
	Lowest	-0.650		
π/4-DQPSK	Middle	-0.293	20.97	Pass
	Highest	0.330		
	Lowest	-0.101		
8-DPSK	Middle	0.239	20.97	Pass
	Highest	0.557		

88







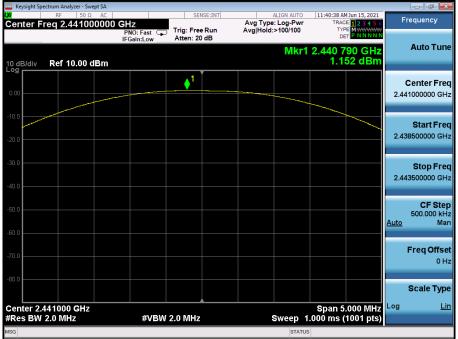


#### Test plots

#### **GFSK Low Channel**

SG						STATUS	3		_	
	402000 GHz 2.0 MHz	#VBW	2.0 MHz			Sweep 1	Span 5 000 ms (	.000 MHz 1001 pts)	Log	<u>Lir</u>
30.0										Scale Type
70.0										- 0 H:
										Freq Offse
50.0									<u>Auto</u>	Mar
50.0										CF Stej 500.000 kH
0.0									2.40	
30.0									2.40	Stop Free 04500000 GH
20.0									2.39	Start Free 99500000 GH
10.0	and the second s									
0.00										02000000 GH
.og			<b>1</b>							Center Free
0 dB/div	Ref 10.00 dBm					MKr1	2.401 /	'00 GHz 72 dBm		Auto Full
		PNO: Fast 🖵 IFGain:Low	Atten: 20		Avginoia:					Auto Tun
enter F	req 2.40200000		Trig: Free			: Log-Pwr	TRAC	E 1 2 3 4 5 6	F	requency
	RF 50 Ω AC		CER	ISE:INT		ALIGN AUTO	11:20:00 4	M Jun 15, 2021		

#### **GFSK Middle Channel**



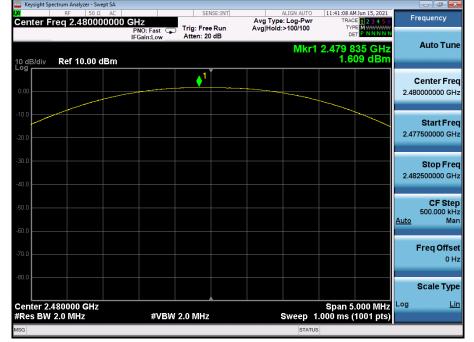
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#### **GFSK High Channel**



#### π/4-DQPSK Low Channel

	NO: East	SENSE:INT	Avg Type: Log Avg Hold:>100	g-Pwr TR 100 T	AMJun 15, 2021 ACE 1 2 3 4 5 6 YPE MWWW DET P NNNNN 050 GHz 650 dBm	Frequency Auto Tur Center Fre 2.40200000 G
10 dB/div Ref 10.00 dBm				Mkr1 2.402	050 GHz	Center Fre
0.00		<b>1</b>				
10.0				and a state of the		
20.0						<b>Start Fre</b> 2.399500000 GF
10.0						<b>Stop Fre</b> 2.404500000 GH
50.0						<b>CF St</b> e 500.000 kł <u>Auto</u> M:
70.0						Freq Offs 0 F
					5 000 Mile	Scale Typ
Center 2.402000 GHz Res BW 2.0 MHz	#VBW 2.	0 MHz	Swe	span ep 1.000 ms status	3.000 Mil 12	

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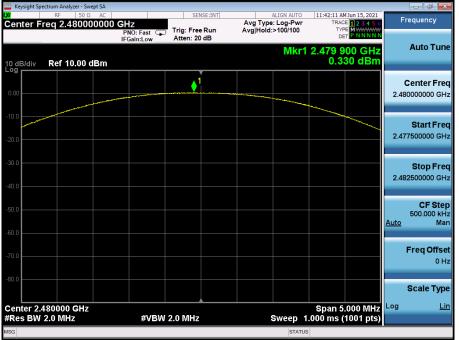




#### π/4-DQPSK Middle Channel



#### π/4-DQPSK High Channel



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#### 8-DPSK Low Channel



#### 8-DPSK Middle Channel

Keysight Spe	ectrum Analyzer - Swept SA							
XI Contor Fi	RF 50 Ω AC req 2.441000000		ISE:INT	ALIGN AUTO		MJun 15, 2021	F	requency
	req 2.44 100000	PNO: Fast Trig: Free IFGain:Low Atten: 20	Run Avg	Hold:>100/100	TYF DE			
0 dB/div	Ref 10.00 dBm			Mkr1	2.440 9 0.2	55 GHz 39 dBm		Auto Tune
0.00			1					Center Free
10.0							2.44	1000000 GH.
and the second sec							2.43	Start Free 8500000 GH
20.0								
30.0							2.44	Stop Free 3500000 GH
40.0								CF Ster
50.0							<u>Auto</u>	500.000 kH
50.0								
70.0								Freq Offse 0 H
30.0								Scale Type
	441000 GHz				Span 5	.000 MHz	Log	Li
Res BW	2.0 MHZ	#VBW 2.0 MHz			.000 ms (	1001 pts)		
SG				STATU	5			





#### 8-DPSK High Channel

Keysight Spectrum Analyzer - Swept SA					- 6 🔀
RF 50 Ω AC Center Freq 2.48000000	0 GHz		ALIGN AUTO	11:44:10 AM Jun 15, 2021 TRACE 1 2 3 4 5 6	Frequency
10 dB/div Ref 10.00 dBm	PNO: Fast Trig: Free IFGain:Low Atten: 20		/gjHold:>100/100 Mkr1	2.479 995 GHz 0.557 dBm	Auto Tur
0.00		1			Center Fred 2.480000000 GH:
20.0					<b>Start Fre</b> 2.477500000 GH
40.0					<b>Stop Fre</b> 2.482500000 GH
50.0					<b>CF Ste</b> 500.000 kH <u>Auto</u> Ma
70.0					Freq Offse 0 H
80.0					Scale Typ
Center 2.480000 GHz #Res BW 2.0 MHz	#VBW 2.0 MHz		Sweep 1	Span 5.000 MHz .000 ms (1001 pts)	
SG			STATUS		





#### 9. HOPPING CHANNEL SEPARATION

Test Requirement:	FCC Part15 C Section 15.247 (a)(1)
Test Method:	ANSI C63.10:2013
Receiver setup:	RBW=100KHz, VBW=300KHz, detector=Peak
Limit:	GFSK: 20dB bandwidth $\pi$ /4-DQPSK & 8DPSK: 0.025MHz or 2/3 of the 20dB bandwidth (whichever is greater)

#### 9.1 Test Setup

EUT	SPECTRUM
	ANALYZER

#### 9.2 Test procedure

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

to the spectrum.

2. Set the spectrum analyzer: RBW = 100kHz. VBW = 300kHz , Span = 3.0MHz. Sweep = auto; Detector Function = Peak. Trace = Max hold.

3. Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels. The limit is specified in one of the subparagraphs of this Section Submit this plot.

9.3 DEVIATION FROM STANDARD

No deviation.







#### 9.4 Test Result

Modulation	Test Channel	Separation (MHz)	Limit(MHz)	Result
GFSK	Low	1.002	0.880	PASS
GFSK	Middle	1.000	0.878	PASS
GFSK	High	1.000	0.878	PASS
π/4-DQPSK	Low	1.002	0.837	PASS
π/4-DQPSK	Middle	1.004	0.831	PASS
π/4-DQPSK	High	0.994	0.830	PASS
8-DPSK	Low	0.998	0.833	PASS
8-DPSK	Middle	0.998	0.813	PASS
8-DPSK	High	0.998	0.830	PASS

#### Test plots GFSK Low Channel











#### **GFSK High Channel**

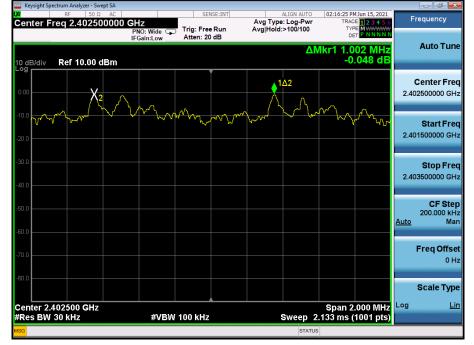


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#### π/4-DQPSK Low Channel



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



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#### π/4-DQPSK High Channel



#### 8-DPSK Low Channel



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#### 8-DPSKMiddle Channel



#### 8-DPSK High Channel







#### **10.NUMBER OF HOPPING FREQUENCY**

Test Requirement:	FCC Part15 C Section 15.247 (a)(1)(iii)
Test Method:	ANSI C63.10:2013
Receiver setup:	RBW=100kHz, VBW=300kHz, Frequency range=2400MHz-2483.5MHz, Detector=Peak
Limit:	15 channels

#### 10.1 Test Setup

EUT	SPECTRUM
	ANALYZER

#### 10.2 Test procedure

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

2. Set the spectrum analyzer: RBW = 100kHz. VBW = 300kHz. Sweep = auto; Detector Function = Peak. Trace = Max hold.

3. Allow the trace to stabilize. It may prove necessary to break the span up to sections. in order to clearly show all of the hopping frequencies. The limit is specified in one of the subparagraphs of this Section.

4. Set the spectrum analyzer: Start Frequency = 2.4GHz, Stop Frequency = 2.4835GHz. Sweep=auto;

10.3 DEVIATION FROM STANDARD No deviation.









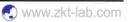
#### Test Plots: 79 Channels in total GFSK



### π/4-DQPSK

Keysight Spectrum Analyzer - Swept SA				- J -
₩ RF 50 Ω AC Start Freq 2.400000000 Gi	PNO: Fast Trig: Free	Avg Type e Run Avg Hold:		3 4 5 6 Frequency
10 dB/div Ref 10.00 dBm	IFGain:Low Atten: 20	3 48	ΔMkr1 -78.072 5 I -1.614	MHZ Auto Tune
	MAAAMMAAMAA	MMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM	UNN UNN UNN	Center Fred 2.441750000 GHz
20.0				Start Free 2.400000000 GH
-40.0				<b>Stop Free</b> 2.483500000 GH
50.0				CF Ste 8.350000 MH <u>Auto</u> Ma
-70.0				Freq Offse 0 H
-80.0 GHz			Stop 2.48350	GHz ^{Log Lir}
#Res BW 100 kHz <mark>Isg</mark>	#VBW 300 kHz		Sweep 8.000 ms (1001	ptsj

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8-DPSK

Keysight Spectrum Analyzer										
× RF Start Freq 2.4000	50 Ω AC   00000 GH	z		ISE:INT	Avg Type	ALIGN AUTO	TRAC	1 Jun 15, 2021 E <b>1 2 3 4 5 6</b>	F	requency
		PNO: Fast 🖵 IFGain:Low	Trig: Free Atten: 20		Avg Hold:		-78.23			Auto Tune
10 dB/div Ref 10.0	0 dBm							.446 dB		
		) ^ <b>n . It if if . </b> . <b></b>	* 6 8 + 6 - 1	<b></b>	1	11.7.8.6.1.1.	s.R	X.		Center Freq
-10.0	NAMAN	1. MANAMAN	YVYNIW	MMM	WWW	ŴŴŴ	HAMMA	WW 2	2.44	1730000 8H2
									2.40	Start Freq
-20.0										
-30.0									2.48	Stop Freq 3500000 GHz
-40.0										
-50.0									Auto	CF Step 8.350000 MHz Man
-60.0										
-70.0										Freq Offset 0 Hz
-80.0										Scale Type
Start 2.40000 GHz							Stop 2.49	2250 CH-	Log	Lin
#Res BW 100 kHz		#VBW	300 kHz			Sweep 8	3.000 ms (	3350 GHz 1001 pts)		
MSG						STATUS	6			





#### 11. DWELL TIME

Test Requirement:	FCC Part15 C Section 15.247 (a)(1)(iii)
Test Method:	ANSI C63.10:2013
Receiver setup:	RBW=1MHz, VBW=3MHz, Span=0Hz, Detector=Peak
Limit:	0.4 Second

#### 11.1 Test Setup

EUT	SPECTRUM
	ANALYZER

#### 11.2 Test procedure

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

2. Set spectrum analyzer span = 0Hz;

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

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

**11.3 DEVIATION FROM STANDARD** No deviation.







#### 11.4 Test Result

GFSK DH5 mode:

Frequency	Packet	Dwell time(ms)	Limit(ms)	Result
2402MHz	DH5	310.19	400	Pass
2441MHz	DH5	311.15	400	Pass
2480MHz	DH5	309.33	400	Pass

Remarks:

The test period: T= 0.4 Second/Channel x 79 Channel = 31.6 s

Test channel: as blow

CH:2402MHz time slot=2.908(ms)*(1600/ (6*79))*31.6=310.19ms

CH:2441MHz time slot=2.917(ms)*(1600/ (6*79))*31.6=311.15ms

CH:2480MHz time slot=2.900(ms)*(1600/ (6*79))*31.6=309.33ms

π/4-DQPSK mode:

Frequency	Packet	Dwell time(ms)	Limit(ms)	Result
2402MHz	2DH5	310.19	400	Pass
2441MHz	2DH5	312.00	400	Pass
2480MHz	2DH5	311.15	400	Pass

Remarks:

The test period: T= 0.4 Second/Channel x 79 Channel = 31.6 s Test channel: as blow CH:2402MHz time slot= $2.908(ms)^*(1600/(6^*79))^*31.6=310.19ms$ 

CH:2441MHz time slot=2.925(ms)*(1600/ (6*79))*31.6=312.00ms

CH:2480MHz time slot=2.917(ms)*(1600/ (6*79))*31.6=311.15ms

#### 8-DPSK mode:

Frequency	Packet	Dwell time(ms)	Limit(ms)	Result
2480MHz	3DH5	311.15	400	Pass
2480MHz	3DH5	313.81	400	Pass
2480MHz	3DH5	312.85	400	Pass

Remarks:

The test period: T= 0.4 Second/Channel x 79 Channel = 31.6 s Test channel: as blow CH:2402MHz time slot=2.917(ms)*(1600/ (6*79))*31.6=311.15ms CH:2441MHz time slot=2.942(ms)*(1600/ (6*79))*31.6=313.81ms CH:2480MHz time slot=2.933(ms)*(1600/ (6*79))*31.6=312.85ms

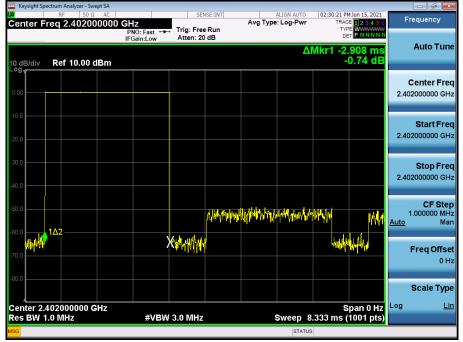




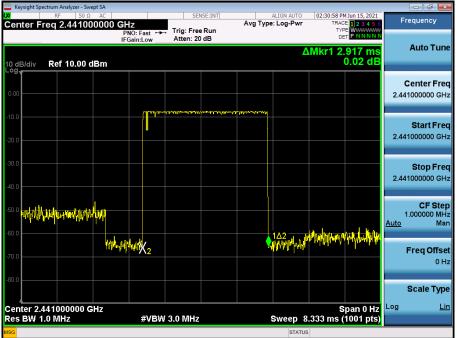


#### Test Plots

#### GFSK 2402MHz



#### GFSK 2441MHz



Shenzhen ZKT Technolgy Co., Ltd. 1/F, No. 101, Building B, No. 6, Tangwei Community Industrial Avenue, Fuhai Street, Bao'an District, Shenzhen, China

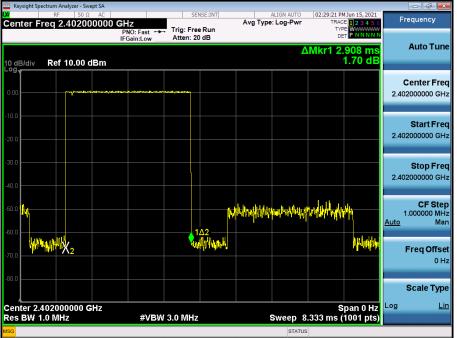




#### GFSK 2480MHz

Keysight Spectrum Analyzer - Swept SA					
RF 50 Ω AC Center Freg 2.480000000 C	SH7	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr	02:31:36 PM Jun 15, 2021 TRACE 1 2 3 4 5 6	Frequency
	PNO: Fast +++ T	rig: Free Run Atten: 20 dB		TYPE WWWWWWW DET P N N N N N	
	IFGain:Low	Atten: 20 dB			Auto Tun
A JELES Dof 10.00 dBm			4	Mkr1 2.900 ms 0.19 dB	
odB/div Ref 10.00 dBm				0.10 00	
					Center Fre
.00					2.480000000 GH
10.0					01-11 E-1
					Start Fre 2.48000000 GH
20.0					2.48000000 GH
30.0					Stop Fre
(0.0					2.48000000 GH
10.0					
50.0					CF Ste
0.0					1.000000 MH Auto Ma
0.0		142			Auto Ma
Line of the solution		Summer why why	while when the second	Manuf William and with a shade	
70.0 <b>7111111111111111111111111111111111111</b>		all the last	414.1.1	Leaded as	Freq Offse
					0 H
80.0					
					Scale Typ
Contor 2 48000000 CHa				Enon 0 Hz	Log <u>Li</u>
enter 2.480000000 GHz es BW 1.0 MHz	#VBW 3.	0 MHz	Sween_8	Span 0 Hz (333 ms (1001 pts).	
	<i>"•</i> DH 0.	• • • • • • • • • • • • • • • • • • • •	STATUS		
<mark>-</mark>			Shirle		

#### π/4-DQPSK 2402MHz



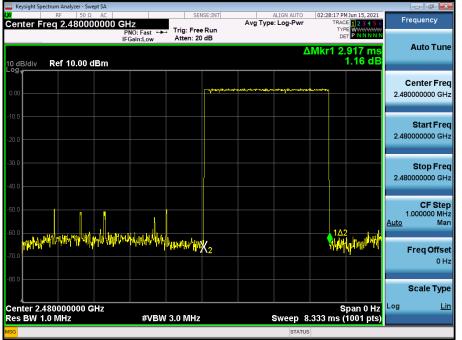




#### π/4-DQPSK 2441MHz

Keysight Spectrum Analyzer - Swept SA				
₩ RF 50 Ω AC Center Freq 2.441000000		ISE:INT ALIGN Avg Type: Log	-Pwr TRACE 12 3 4 5 6	Frequency
10 dB/div Ref 10.00 dBm	PNO: Fast ↔ Trig: Free IFGain:Low Atten: 20		ΔMkr1 -2.925 ms 1.11 dB	Auto Tune
0.00	Awana da ana ana ana ana ana ana ana ana a			Center Fred 2.441000000 GH:
20.0				<b>Start Fred</b> 2.441000000 GH;
-30.0				<b>Stop Fred</b> 2.441000000 GHz
50.0 60.0 <b></b>		momphiliadaritationalartational	hulun lahan	CF Step 1.000000 MH: <u>Auto</u> Mar
-70.0	Xizputindah		Anthropeon and provide	Freq Offse 0 H:
-80.0 Center 2.441000000 GHz			Span 0 Hz	Scale Type
Res BW 1.0 MHz	#VBW 3.0 MHz	Swe	ep 8.333 ms (1001 pts)	
<mark>/SG</mark>			STATUS	

#### π/4-DQPSK 2480MHz



Shenzhen ZKT Technolgy Co., Ltd. 1/F, No. 101, Building B, No. 6, Tangwei Community Industrial Avenue, Fuhai Street, Bao'an District, Shenzhen, China

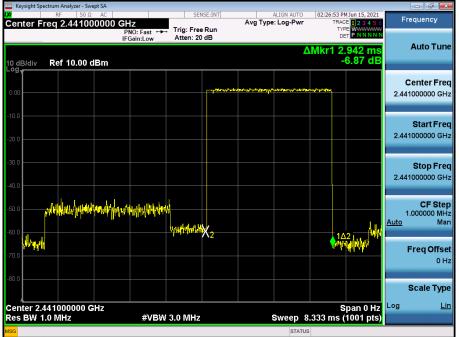




#### 8-DPSK 2402MHz

Keysight Sp	ectrum Analyzer - Swept SA					
onter E	RF 50 Ω AC reg 2.402000000	CH2	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr	02:26:01 PM Jun 15, 2021 TRACE 1 2 3 4 5 6	Frequency
		PNO: Fast ↔→ IFGain:Low	Trig: Free Run Atten: 20 dB		Mkr1 2.917 ms 1.69 dB	Auto Tun
0 dB/div	Ref 10.00 dBm				1.69 aB	Center Fre
).00				≈ydddfallanogig acholffallyn ywyr acholffall aryn ywdr	la hay gode la c	2.402000000 GH
20.0						Start Fre 2.402000000 GH
30.0						Stop Fre
40.0						2.402000000 GH
50.0						<b>CF Ste</b> 1.000000 MH <u>Auto</u> Ma
50.0 70.0	yw the hast we want have	menangerspielen angeben				Freq Offse
30.0						0 H Scale Typ
	402000000 GHz				Span 0 Hz	Log <u>Li</u>
tes BW 1	1.0 MHz	#VBW	3.0 MHz		.333 ms (1001 pts)	
SG				STATUS		

#### 8-DPSK 2441MHz





### 8-DPSK 2480MHz

Keysight Spectrum Analyzer - Swept SA					- J - X
RF 50 Ω AC		SENSE:INT	ALIGN AUTO		Frequency
Center Freq 2.480000000	CHZ PNO: Fast +++ Trig	a: Free Run	Avg Type: Log-Pwr	TRACE 1 2 3 4 5 6 TYPE WWWWW DET P NNNNN	
		en: 20 dB		DET PNNNN	
				ΔMkr1 2.933 ms	Auto Tune
10 dB/div Ref 10.00 dBm				0.55 dB	
og					
					Center Free
0.00					2.480000000 GH:
	eppershipping when the	Myd-hydeleth			
10.0		··· · · · · · · · · · · · · · · · · ·			
					Start Free
20.0					2.48000000 GH
30.0					04 E
					Stop Free
40.0					2.48000000 GH
40.0					
50.0			أبلا الدارانية والمراري المراريس	the later and the latter to	CF Step
30.0			W bar sa ha - Million	de sede and a first of the seden of the	1.000000 MH
					<u>Auto</u> Mar
		- MARINA	tymy	Ϋ́Υ	Freq Offse
70.0					он:
80.0					
					Scale Type
Center 2.480000000 GHz				Span 0 Hz	Log <u>Lir</u>
Res BW 1.0 MHz	#VBW 3.01	MHZ	Sween	8.333 ms (1001 pts)	
	#VD9V 5.0	WII 12			
ISG			STAT	US	







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12. Antenna Requirement	
Standard requirement:	FCC Part15 C Section 15.203 /247(c)
be used with the device. The use of a intentional radiator, the manufacturer muse of a standard antenna jack or elect 15.247(c) (1)(i) requirement: (i) Systems operating in the 2400-244 employ transmitting antennas with direct	ed to ensure that no antenna other than that furnished by the responsible party shal a permanently attached antenna or of an antenna that uses a unique coupling to the may design the unit so that a broken antenna can be replaced by the user, but the trical connector is prohibited. 83.5 MHz band that is used exclusively for fixed. Point-to-point operations may ectional gain greater than 6dBi provided the maximum conducted output power o dB for every 3 dB that the directional gain of the antenna exceeds 0.5dBi.
EUT Antenna:	db for every 5 db that the directional gain of the antenna exceeds 0.5dbl.
	est case gain of the antennas are 0dBi.







#### 13. Test Setup Photo

Reference to the **appendix I** for details.

#### **14. EUT Constructional Details**

Reference to the appendix II for details.

***** END OF REPORT *****

