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TEST REPORT				
Report No. ·····:	GTI20191151F			
FCC ID······:	SRQ-ZTEF322			
Applicant:	ZTE Corporation			
Address:	ZTE Plaza, Keji Road South, Nanshan District, Shenzhen, Guar			
Manufacturer	ZTE Corporation			
Address	ZTE Plaza, Keji Road South, Nanshan District, Shenzhen, Guar	-		
Product Name:	WCDMA/GSM Feature Phone			
Trade Mark·····:	ZTE			
Model/Type reference	ZTE F322			
Listed Model(s) ······:	N/A			
Standard:	FCC CFR Title 47 Part 15 Subpart C Section 15.247			
Date of receipt of test sample:	2019-05-10			
Date of testing	2019-05-10 to 2019-06-12			
Date of issue	2019-06-12			
Result	PASS			
Compiled by:		Tuli shand		
(Printed name+signature)	Zaki Zhang	Zali Zhang Zric zhang		
Supervised by:		This shang		
(Printed name+signature)	Eric Zhang	BACZ		
Approved by:				
(Printed name+signature)	Walter Chen	Matter chis		
Testing Laboratory Name	. CTC Laboratories, Inc.			
Address	. 1-2/F., Building 2, Jiaquan Building, G	uanlan High-Tech Park,		
	Shenzhen, Guangdong, China			

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1. TEST SUMMARY

1.1. Test Standards

The tests were performed according to following standards:

FCC Rules Part 15.247: Operation within the bands of 902-928MHz, 2400-2483.5MHz, and 5725-5850MHz.

ANSI C63.10-2013: American National Standard for Testing Unlicensed Wireless Devices.

1.2. Report version

Revised No.	Date of issue	Description
01	2019-06-12	Original



1.3. Test Description

FCC Part 15 Subpart C(15.247)					
Test Kem	Standard Section	Decult			
Test Item	FCC	- Result	Test Engineer		
Antenna Requirement	15.203	Pass	Roy Wu		
Conducted Emission	15.207	Pass	Roy Wu		
Restricted Bands	15.205	Pass	Roy Wu		
Hopping Channel Separation	15.247(a)(1)	Pass	Roy Wu		
Dwell Time	15.247(a)(1)	Pass	Roy Wu		
Peak Output Power	15.247(b)(1)	Pass	Roy Wu		
Number of Hopping Frequency	15.247(b)(1)	Pass	Roy Wu		
Band Edge Emissions	15.247(d)	Pass	Roy Wu		
Radiated Spurious Emission	15.247(c)&15.209	Pass	Roy Wu		
99% Occupied Bandwidth & 20dB Bandwidth	15.247(a)	Pass	Roy Wu		

Note: The measurement uncertainty is not included in the test result.



Address of the report laboratory

CTC Laboratories, Inc.

Add: 2/F., Building 1 and 1-2/F., Building 2, Jiaquan Building, Guanlan High-Tech Park, Longhua District, Shenzhen, Guangdong, China

Laboratory accreditation

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

CNAS-Lab Code: L5365

CTC Laboratories, Inc. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories.

A2LA-Lab Cert. No.: 4340.01

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

ISED Registration No.: CN0029

The 3m alternate test site of CTC Laboratories, Inc. EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration NO.: CN0029 on Dec, 2018.

FCC-Registration No.: CN1208

CTC Laboratories, Inc. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration CN1208, Sep 07, 2017

1.5. Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to TR-100028-01" Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 1" and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 2 " and is documented in the CTC Laboratories, Inc. quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Below is the best measurement capability for CTC Laboratories, Inc.

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Test Items	Measurement Uncertainty	Notes
Transmitter power conducted	0.42 dB	(1)
Transmitter power Radiated	2.14 dB	(1)
Conducted spurious emissions 9kHz~40GHz	1.60 dB	(1)
Radiated spurious emissions 9kHz~40GHz	2.20 dB	(1)
Conducted Emissions 9kHz~30MHz	3.20 dB	(1)
Radiated Emissions 30~1000MHz	4.70 dB	(1)
Radiated Emissions 1~18GHz	5.00 dB	(1)
Radiated Emissions 18~40GHz	5.54 dB	(1)
Occupied Bandwidth		(1)

Note (1): This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

1.6. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15~35°C
Relative Humidity:	30~60 %
Air Pressure:	950~1050mba



2.1. Client Information

Applicant:	ZTE Corporation	
Address:	ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan Distri Shenzhen, Guangdong, 518057, P.R. China	
Manufacturer:	ZTE Corporation	
Address:	ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P.R. China	
Factory:	ZTE Corporation	
Address:	ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P.R. China	

2.2. General Description of EUT

Product Name:	WCDMA/GSM Feature Phone		
Model/Type reference:	ZTE F322		
Marketing Name:	ZTE		
Listed Model(s):	1		
Power supply:	3.7Vdc 800mAh from Li-ion Battery		
Battery 1:	Model: Li3708T42P3h533456 3.7Vdc 800mAh		
Battery 2:	Model: 5C0802 3.7Vdc 800mAh		
Adapter 1:	Model:50.069MX03 Input:100-240Vac 50/60Hz 0.2A Output:5Vdc/0.5A		
Adapter 2:	Model:TPA-97050050U01 Input:100-240Vac 50/60Hz 0.15A Output:5Vdc/0.5A		
Hardware version:	HS520_MB_V2.0		
Software version:	ZTE_F322V1.0_20190603		
Bluetooth EDR			
Modulation:	GFSK, π/4-DQPSK, 8-DPSK		
Operation frequency:	2402MHz~2480MHz		
Max Peak Output Power:	9.47dBm(GFSK)		
Channel number:	79		
Channel separation:	1MHz		
Antenna type:	Internal Antenna		
Antenna gain:	-2.59dBi		

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2.3. Operation state

Operation Frequency List: The EUT has been tested under typical operating condition. The Applicant provides communication tools software to control the EUT for staying in continuous transmitting and receiving mode for testing. BT EDR, 79 channels are provided to the EUT. Channels 00/39/78 were selected for testing. Operation Frequency List:

Channel	Frequency (MHz)
00	2402
01	2403
:	÷
38	2440
39	2441
40	2442
:	:
77	2479
78	2480

Note: The display in grey were the channel selected for testing.

Test mode

For RF test items:

The engineering test program was provided and enabled to make EUT continuous transmit

For AC power line conducted emissions:

The EUT was set to connect with the Bluetooth instrument under large package sizes transmission.

For Radiated spurious emissions test item:

The engineering test program was provided and enabled to make EUT continuous transmit. The EUT in each of three orthogonal axis emissions had been tested, but only the worst case (X axis) data recorded in the report.

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2.4. Measurement Instruments List

Tonsce	end JS0806-2 Test s	ystem						
Item	Test Equipment	Manufacturer	nufacturer Model		Serial N	lo.	Calibrated Date	Calibrated until
1	Spectrum Analyzer	Rohde & Schwarz	FSL	J26	10010	5	Dec. 29, 2018	B Dec. 28, 2019
2	Spectrum Analyzer	Rohde & Schwarz	FUV₄	40-N	10133	1	Dec. 29, 2018	B Dec. 28, 2019
3	MXG Vector Signal Generator	Agilent	N51	82A	MY47420	864	Dec. 29, 2018	B Dec. 28, 2019
4	Signal Generator	Agilent	E82	57D	MY46521	908	Dec. 29, 2018	B Dec. 28, 2019
5	Power Sensor	Agilent	U202	1XA	MY53650	004	Dec. 29, 2018	B Dec. 28, 2019
6	Power Sensor	Agilent	U202	1XA	MY53650	006	Dec. 29, 2018	B Dec. 28, 2019
7	Simultaneous Sampling DAQ	Agilent	U25	31A	TW54493	510	Dec. 29, 2018	B Dec. 28, 2019
8	Climate Chamber	TABAI	PR-	4G	A87080	55	Dec. 29, 2018	B Dec. 28, 2019
9	Wideband Radio Communication Tester	Rohde & Schwarz	CMW	/500	11641	0	Dec. 29, 2018	B Dec. 28, 2019
10	Climate Chamber	ESPEC	MT3	065	/		Dec. 29, 2018	B Dec. 28, 2019
11	300328 v2.1.1 test system	TONSCEND	v2	.6	/		/	/
Item	Test Equipment	Manufact	urer	Мс	odel No.	:	Serial No.	Calibrated until
1	EMI Test Receive	er Rohde & So	hwarz		ESCI		100658	Dec. 28, 2019
2	High pass filter	micro-tra	nics	HP	M50111		142	Dec. 28, 2019
3	Log-Bicon Antenr	na Schwarzt	beck	СВ	L6141A		4180	Dec. 28, 2019
4	Ultra-Broadbar Antenna	nd Shwarz	Beck	BB	HA9170		25841	Dec. 28, 2019
5	Loop Antenna	LAPL	٩C	F	RF300		9138	Dec. 28, 2019
6	Spectrum Analyz	er Rohde & So	hwarz	F	SU26		100105	Dec. 28, 2019
7	Horn Antenna	Schwarzt	beck	BB⊢	IA 9120D		647	Dec. 28, 2019
8	Pre-Amplifier	HP		8	3447D	19	937A03050	Dec. 28, 2019
9	Pre-Amplifier	EMC		EMC051835		980075	Dec. 28, 2019	
10	Antenna Mast	UC		UC3000		N/A	N/A	
11	Turn Table	UC		UC3000			N/A	N/A
12	Cable Below 1GH	lz Schwarzt	beck	AK9515E			33155	Dec. 28, 2019
13	Cable Above 1G	Hz Hubersul	nner	SUCC	OFLEX102		DA1580	Dec. 28, 2019
14	Splitter	Mini-Ciro	cuit	Z	APD-4		400059	Dec. 28, 2019
15	RF Connection Cable	HUBER+SU	HNER	R	E-7-FL		N/A	Dec. 28, 2019
16	RF Connection Cable	Chengo E-Microw						Dec. 28, 2019
17	High pass filter	Complia	nce	E	3SU-6		34202	Dec. 28, 2019

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18	Attenuator	Chengdu E-Microwave	EMCAXX-10R NZ-3		Dec. 28, 2019
19	High and low temperature box	ESPEC	MT3065	12114019	Dec. 28, 2019

Note:1. The Cal. Interval was one year.

2. The cable loss has calculated in test result which connection between each test instruments.



3. TEST ITEM AND RESULTS

3.1. Conducted Emission

<u>Limit</u>

Conducted Emission Test Limit

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

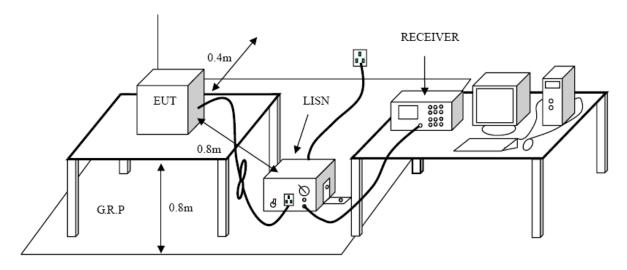
Notes:

(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.

Test Configuration



Test Procedure

- 1. The EUT was setup according to ANSI C63.10:2013 requirements.
- 2. The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface.
- The EUT and simulators are connected to the main power through a line impedances stabilization network (LISN). The LISN provides a 50ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs)
- 4. Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.
- 5. The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.
- 6. Conducted Emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.
- 7. During the above scans, the emissions were maximized by cable manipulation.

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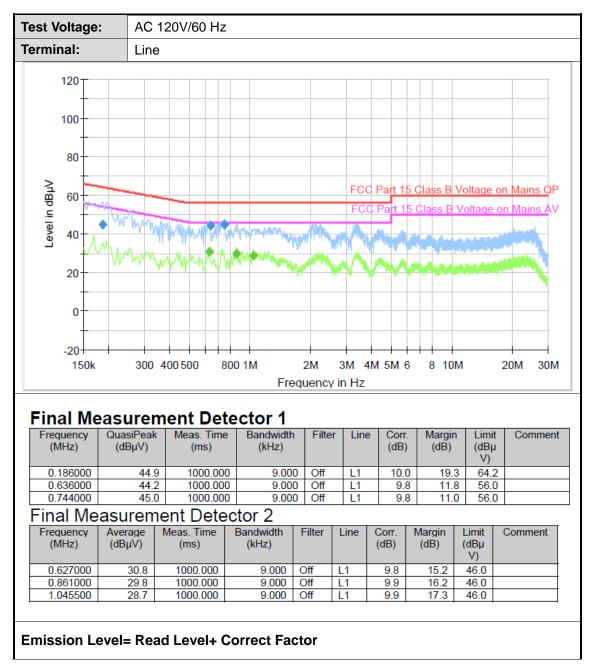
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Please refer to the clause 2.2.

Test Results

Only show worst adapter data.



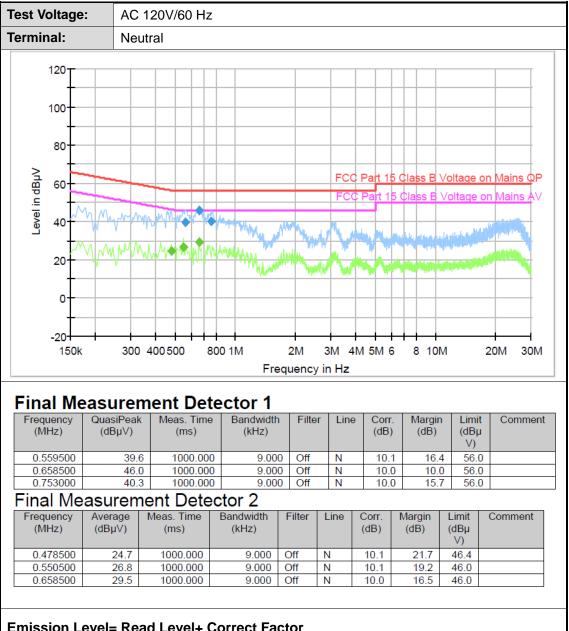
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Emission Level= Read Level+ Correct Factor

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<u>Limit</u>

Radiated Emission Limits (9 kHz~1000 MHz)

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

Radiated Emission Limit (Above 1000MHz)

Frequency	Distance Meters(at 3m)			
(MHz)	Peak	Average		
Above 1000	74	54		

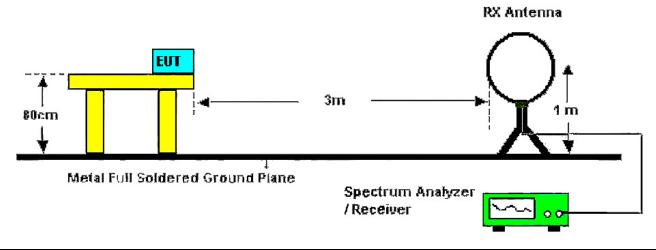
Note:

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

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

Test Configuration

ΞN



Below 30MHz Test Setup

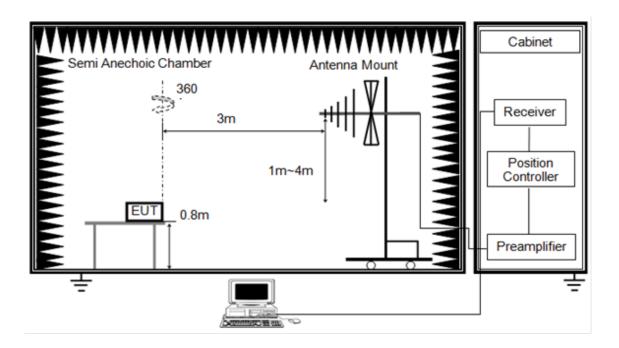
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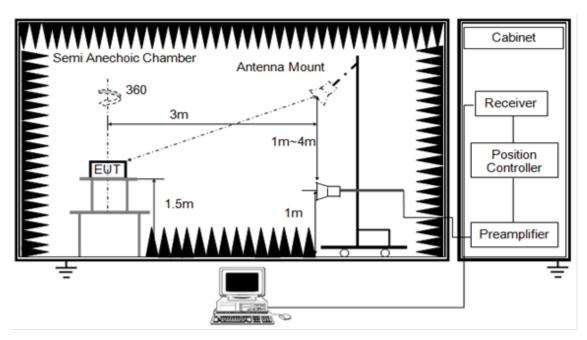


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Below 1000MHz Test Setup



Above 1000MHz Test Setup

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Test Procedure

- 1. The EUT was setup and tested according to ANSI C63.10:2013
- 2. The EUT is placed on a turn table which is 0.8 meter above ground for below 1 GHz, and 1.5 m for above 1 GHz. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
- The EUT was set 3 meters from the receiving antenna, which was mounted on the top of a variable height 3. antenna tower.
- 4. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.
- Set to the maximum power setting and enable the EUT transmit continuously. 5.
- 6. Use the following spectrum analyzer settings
 - Span shall wide enough to fully capture the emission being measured; (1)
 - (2) Below 1 GHz:

RBW=120 kHz, VBW=300 kHz, Sweep=auto, Detector function=peak, Trace=max hold;

If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

(3) From 1 GHz to 10th harmonic:

RBW=1MHz, VBW=3MHz Peak detector for Peak value.

RBW=1MHz, VBW=3MHz RMS detector for Average value.

Test Mode

Please refer to the clause 2.2.

Test Result

9 KHz~30 MHz

From 9 KHz to 30 MHz: 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.





No. Frequency (MHz) Factor (dB/m) Reading (dBuV) Level (dBuV/m) Limit (dBuV/m) Margin (dB) Detec 1 32.1795 -4.59 31.13 26.54 40.00 -13.46 QF 2 40.7016 -7.68 32.18 24.50 40.00 -15.50 QF 3 141.8262 -13.97 32.38 18.41 43.50 -25.09 QF 4 330.1949 -10.92 32.25 21.33 46.00 -24.67 QF 5 502.9395 -6.78 33.14 26.36 46.00 -19.64 QF 6 750.1083 -1.85 33.75 31.90 46.00 -14.10 QF	nt. Pol	. F	Horizontal					
No. Frequency (MHz) Factor (dB/m) Reading (dBuV) Level (dBuV/m) Limit (dBuV/m) Margin (dBuV/m) Detector 1 32.1795 -4.59 31.13 26.54 40.00 -13.46 QF 2 40.7016 -7.68 32.18 24.50 40.00 -15.50 QF 3 141.8262 -13.97 32.38 18.41 43.50 -25.09 QF 4 330.1949 -10.92 32.25 21.33 46.00 -19.64 QF 5 502.9395 -6.78 33.14 26.36 46.00 -19.64 QF 6 750.1083 -1.85 33.75 31.90 46.00 -14.10 QF	00.0 dB	uV/m						
No. Frequency (MHz) Factor (dB/m) Reading (dBuV) Level (dBuV/m) Limit (dBuV/m) Margin (dBuV/m) Detector (dB) 1 32.1795 -4.59 31.13 26.54 40.00 -13.46 QF 2 40.7016 -7.68 32.18 24.50 40.00 -15.50 QF 3 141.8262 -13.97 32.38 18.41 43.50 -25.09 QF 4 330.1949 -10.92 32.25 21.33 46.00 -19.64 QF 5 502.9395 -6.78 33.14 26.36 46.00 -19.64 QF 6 750.1083 -1.85 33.75 31.90 46.00 -14.10 QF								
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No. Frequency (MHz) Factor (dB/m) Reading (dBuV) Level (dBuV/m) Limit (dBuV/m) Margin (dBuV/m) Detector 1 32.1795 -4.59 31.13 26.54 40.00 -13.46 QF 2 40.7016 -7.68 32.18 24.50 40.00 -15.50 QF 3 141.8262 -13.97 32.38 18.41 43.50 -25.09 QF 4 330.1949 -10.92 32.25 21.33 46.00 -19.64 QF 5 502.9395 -6.78 33.14 26.36 46.00 -19.64 QF 6 750.1083 -1.85 33.75 31.90 46.00 -14.10 QF								
No. Frequency (MHz) Factor (dB/m) Reading (dBuV) Level (dBuV/m) Limit (dBuV/m) Margin (dBuV/m) Detector 1 32.1795 -4.59 31.13 26.54 40.00 -13.46 QF 2 40.7016 -7.68 32.18 24.50 40.00 -15.50 QF 3 141.8262 -13.97 32.38 18.41 43.50 -25.09 QF 4 330.1949 -10.92 32.25 21.33 46.00 -19.64 QF 5 502.9395 -6.78 33.14 26.36 46.00 -19.64 QF 6 750.1083 -1.85 33.75 31.90 46.00 -14.10 QF						FCC Part	58 3M Radiat	ion
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	5	502.939	5 -6.78	33.14	26.36	46.00	-19.64	QP
minsion Lough Dood Lough Connect Factor	6	750.1083	3 -1.85	33.75	31.90	46.00	-14.10	QP
mission Lough Dood Lough Connect Factor		I	I	1				
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		ю			Level		Margin	
30.000	Frequer	icy)	Factor	Reading	Level	Limit	Margin	I
30.000 No.	Frequer (MHz)	icy))8	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
30.000 No.	Frequer (MHz) 44.430	ncy))8 74	Factor (dB/m) -8.72	Reading (dBuV) 35.52	Level (dBuV/m) 26.80	Limit (dBuV/m) 40.00	Margin (dB) -13.20	Detector QP QP
30.000 No. 1 2	Frequer (MHz) 44.430 55.027	ncy))8 74 39	Factor (dB/m) -8.72 -12.45	Reading (dBuV) 35.52 37.58	Level (dBuV/m) 26.80 25.13	Limit (dBuV/m) 40.00 40.00	Margin (dB) -13.20 -14.87	Detector QP QP QP
30.000 No. 1 2 3	Frequer (MHz) 44.430 55.027 88.963	icy))8 74 39 02	Factor (dB/m) -8.72 -12.45 -14.99	Reading (dBuV) 35.52 37.58 35.21	Level (dBuV/m) 26.80 25.13 20.22	Limit (dBuV/m) 40.00 40.00 43.50	Margin (dB) -13.20 -14.87 -23.28	Detector QP QP QP
30.000 No. 1 2 3 4	Frequer (MHz) 44.430 55.027 88.963 238.31	ncy))8 74 39 02 56	Factor (dB/m) -8.72 -12.45 -14.99 -13.33	Reading (dBuV) 35.52 37.58 35.21 33.74	Level (dBuV/m) 26.80 25.13 20.22 20.41	Limit (dBuV/m) 40.00 40.00 43.50 46.00	Margin (dB) -13.20 -14.87 -23.28 -25.59	Detector QP QP QP QP



Only show worse case:GFSK

No report for the emission which more than 20 dB below the prescribed limit.

Test Mode:	GFSK - 2402	MHz					
Frequency (MHz)	Reading (dBuV)	Antenna Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
4804	48.02	3.09	51.11	74	-22.89	V	peak
7206	47.69	5.21	52.9	74	-21.10	V	peak
4804	46.34	3.09	49.43	74	-24.57	Н	peak
7206	47.21	5.21	52.42	74	-21.58	Н	peak

Remark:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

2.Margin value = Level -Limit value

Test Mode:	GFSK - 2441	MHz					
Frequency (MHz)	Reading (dBuV)	Antenna Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
4882	47.26	3.37	50.63	74	-23.37	V	peak
7323	46.89	5.56	52.45	74	-21.55	V	peak
4882	46.61	3.37	49.98	74	-24.02	Н	peak
4882	47.32	3.37	50.69	74	-23.31	V	peak

Remark:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

2.Margin value = Level -Limit value

Test Mode:	GFSK - 2480	MHz					
Frequency (MHz)	Reading (dBuV)	Antenna Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
4960	46.08	3.44	49.52	74	-24.48	V	peak
7440	45.13	5.64	50.77	74	-23.23	V	peak
4960	47.54	3.44	50.98	74	-23.02	Н	peak
7440	48.17	5.64	53.81	74	-20.19	Н	peak

Remark:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

2.Margin value = Level -Limit value

CTC Laboratories, Inc.

2/F., Building 1 and 1-2/F., Building 2, Jiaquan Building, Guanlan High-Tech Park, Longhua District, Shenzhen, Guangdong, China



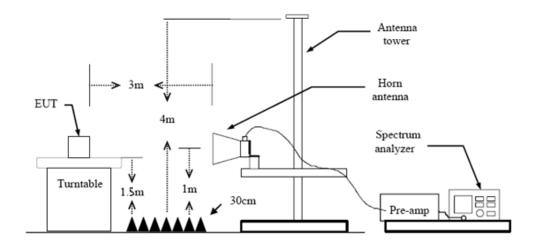


3.3. Band Edge Emissions

<u>Limit</u>

Restricted Frequency Band	(dBuV/m)(at 3m)				
(MHz)	Peak	Average			
2310 ~2390	74	54			
2483.5 ~2500	74	54			
Note: All restriction bands have	been tested, only the worst ca	se is reported.			

Test Configuration



Test Procedure

- 1. The EUT was setup and tested according to ANSI C63.10:2013 requirements.
- 2. The EUT is placed on a turn table which is 1.5 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
- 3. The EUT waspositioned such that the distance from antenna to the EUT was 3 meters.
- 4. The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. Thisis repeated for both horizontal and vertical polarization of the antenna. In order to find themaximum emission, all of the interface cables were manipulated according to ANSI C63.10:2013 on radiated measurement.
- The receiver set as follow: RBW=1MHz, VBW=3MHz PEAK detector for Peak value. RBW=1MHz, VBW=10Hz with PEAK Detector for Average Value.

Test Mode

Please refer to the clause 2.2.

Test Results

CTC Laboratories, Inc.

2/F., Building 1 and 1-2/F., Building 2, Jiaquan Building, Guanlan High-Tech Park, Longhua District, Shenzhen, Guangdong, China





(1) Radiation Test

Only show worse case:GFSK

EDR			2402M	1Hz			
Frequency (MHz)	Read Level (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin (dB)	Polarization	Test value
2390	51.08	3.28	54.36	74	-19.64	Vertical	Peak
2400	52.21	3.85	56.06	74	-17.94	Vertical	Peak
2390	53.29	3.02	56.31	74	-17.69	Horizontal	Peak
2400	50.51	3.67	54.18	74	-19.82	Horizontal	Peak
2390	44.27	3.28	47.55	54	-6.45	Vertical	Average
2400	45.12	3.85	48.97	54	-5.03	Vertical	Average
2390	43.91	3.02	46.93	54	-7.07	Horizontal	Average
2400	43.82	3.67	47.49	54	-6.51	Horizontal	Average

EDR			2480N	1Hz			
Frequency (MHz)	Read Level (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin (dB)	Polarization	Test value
2483.5	51.32	3.79	55.11	74	-18.89	Vertical	Peak
2500	52.54	4.09	56.63	74	-17.37	Vertical	Peak
2483.5	52.87	3.65	56.52	74	-17.48	Horizontal	Peak
2500	54.21	3.95	58.16	74	-15.84	Horizontal	Peak
2483.5	43.32	3.79	47.11	54	-6.89	Vertical	Average
2500	44.41	4.09	48.5	54	-5.5	Vertical	Average
2483.5	43.69	3.65	47.34	54	-6.66	Horizontal	Average
2500	44.78	3.95	48.73	54	-5.27	Horizontal	Average

Remark:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

2.Margin value = Level -Limit value

CTC Laboratories, Inc.





(2) Conducted Test

Constant	Mode 24021					
Spectrum Ref Level 20.00 d	Bm Offset 1.80 dB	🔵 RBW 100 kHz	!			[\Box
Att 30				Т		
●1Pk View			M1[1]			8.36 dBm
10 dBm						01880 GHz 48.81 dBm
0 dBm			M2[1]			48.81 upm 00000 GHz
-10 dBm D1 -11.6	40 dBm					
-20 dBm						
-30 dBm						
-40 dBm						
-50 dBm						MP 1
					M3	and the
welst dBm Atthe with out	man marganet and	- Aller Cale Jan Haller of Land	were and a series of the serie	wall grand and a life a	. Aling the state	2W0 *
-70 dBm						
Start 2.3 GHz		691 p	te		Stor '	2.405 GHz
Marker						
Type Ref Trc	X-value 2.40188 GHz	Y-value 8.36 dBm	Function	Functi	on Result	
M2 1	2.4 GHz	-48.81 dBm				
M3 1 M4 1	2.39 GHz 2.399522 GHz	-57.63 dBm -50.71 dBm				
			Measuring		X	5.06.2019
Date: 5.JUN.2019	19:57:13					
						m
Spectrum Ref Level 20.00 d	Bm Offset 1.80 dB (BBW 100 kHz				
Att 30		• VBW 300 kHz	Mode Auto FFT			
●1Pk View			M1[1]			9.37 dBm
● 1Pk View 10 dBm			M1[1]			9.37 dBm 79780 GHz
10 dBm			M1[1] M2[1]		-	
10 dBm					-	79780 GHz 54.84 dBm
10 dBm	30 dBm				-	79780 GHz 54.84 dBm
10 dBm	30 dBm				-	79780 GHz 54.84 dBm
10 dBm M1 0 dBm	30 dBm				-	79780 GHz 54.84 dBm
10 dBm 0 dBm01 -10.6 -20 dBm	30 dBm				-	79780 GHz 54.84 dBm
10 dBm					-	79780 GHz 54.84 dBm
10 dBm		13			-	79780 GHz 54.84 dBm
10 dBm		13 13			-	79780 GHz 54.84 dBm
10 dBm		13 13			-	79780 GHz 54.84 dBm
10 dBm		Televine and the second s	M2[1]		- 2.4	79780 GHz 83500 GHz
10 dBm M1 0 dBm 01 -10.6 -20 dBm		691 p	M2[1]		- 2.4	79780 GHz 54.84 dBm 83500 GHz
10 dBm M1 0 dBm 01 -10.6 -10 dBm 01 -10.6 -20 dBm -30 dBm -30 dBm -30 dBm -40 dBm -50 dBm -50 dBm -70 dBm -70 dBm -70 dBm Start 2.47 GHz -40 dHz	X-value	691 p Y-value	M2[1]	Functi	- 2.4	79780 GHz 54.84 dBm 83500 GHz
10 dBm M1 0 dBm 0 -10 dBm 01 -20 dBm -10.6 -20 dBm -30 dBm -40 dBm -10.6 -50 dBm -10.6 -70 dBm <td< td=""><td>X-value 2.47978 GH2 2.4895 GH2</td><td>691 p 691 p Y-value 9.37 dBm -54.84 dBm</td><td>M2[1]</td><td>Functi</td><td>- 2.4</td><td>79780 GHz 54.84 dBm 83500 GHz</td></td<>	X-value 2.47978 GH2 2.4895 GH2	691 p 691 p Y-value 9.37 dBm -54.84 dBm	M2[1]	Functi	- 2.4	79780 GHz 54.84 dBm 83500 GHz
10 dBm M1 0 dBm 01 -10.6 -10 dBm 01 -10.6 -20 dBm -30 dBm -30 dBm -30 dBm -50 dBm -30 dBm -70 dBm -30 dBm -70 dBm -30 dBm -70 dBm -30 dBm -70 dBm -70 dBm	×-value 2.47978 GHz	691 p 7-value 9.37 dBm	M2[1]	Functi	- 2.4	79780 GHz 54.84 dBm 83500 GHz

CTC Laboratories, Inc.





Spectrum						
Ref Level 2			RBW 100 kHz		(-)	
Att 1Pk View	30 dB SW	T 113.8 μs 🧉	VBW 300 kHz	Mode Auto FFT		
THE VIEW				M1[1]	8.56 dBm	
10 dBm				M2[1]	2.404770 GHŻ -56.69 dBm	
0 dBm				m2[1]	2.400000 GHz	
-10 dBm-D1	-11.440 dBm					
-20 dBm						
-30 dBm						
-40 dBm					I NVV	
-50 dBm					Ma Ma	
0=69\d8/m		www.kabyrha	and a market way and		- while the state of the state	
-70 dBm						
, o dom						
Start 2.3 GHz		1	691 pt:	5	Stop 2.405 GHz	
Marker Type Ref	Trc V-	value	Y-value	Function	Function Result	
M1	1 2	2.40477 GHz	8.56 dBm	rancault		
M2 M3	1	2.4 GHz 2.39 GHz	-56.69 dBm -59.48 dBm			
M4	1 2.	394957 GHz	-54.31 dBm			
				Measuring	05.06.2019	
Date: 5.JUN.2	019 20:11:48	I				
	<u> </u>					
Spectrum						
RefLevel 2 Att	0.00 dBm Off: 30 dB SW	set 1.80 dB 👄 T 94.8 µs 👄	VBW 300 kHz	Mode Auto FFT		
					1	
●1Pk View						
M1				M1[1]	9.39 dBm 2 475850 GHz	
				M1[1] M2[1]	2.475850 GHz -58.75 dBm	
M1					2.475850 GHz	
10 dBm	-10.610 dBm				2.475850 GHz -58.75 dBm	
10 dBm - 10	-10.610 dBm				2.475850 GHz -58.75 dBm	
10 dBm	-10.610 dBm				2.475850 GHz -58.75 dBm	
10 dBm - 10	-10.610 dBm				2.475850 GHz -58.75 dBm	
10 dgm ^ж 0 d3m - 10 dgm - 0 1 - 20 dgm - 0 1 - 20 dgm	-10.610 dBm				2.475850 GHz -58.75 dBm	
10 d8m 0 d3m - 10 d6m 0 1 - 20 d8m - 60 d8m - 40 d8m	-10.610 dBm				2.475850 GHz -58.75 dBm	
10 dBm 0 dBm - 10 dBm - 10 dBm - 0 dBm - 50 dBm - 50 dBm					2.475850 GHz -58.75 dBm	
10 d8m 0 d3m - 10 d6m 0 1 - 20 d8m - 60 d8m - 40 d8m	-10.610 dBm		Lifeder congress		2.475850 GHz -58.75 dBm	
10 dBm 0 dBm - 10 dBm - 10 dBm - 0 dBm - 50 dBm - 50 dBm		Mi Mi			2.475850 GHz -58.75 dBm	
M1 10 dBm - 10 dBm - 10 dBm - 20 dBm - 20 dBm - 30 dBm - 50 dBm - 60 dBm - 70 dBm	Maryuul		an the second	M2[1]	2.475850 GHz -58,75 dBm 2.483500 GHz 	
M1 10 dBm 0 bBm - 10 dBm - 20 dBm - 30 dBm - 40 dBm - 50 dBm - 60 dBm - 70 dBm - 70 dBm - 51 dBm	Maryuul	Ma Ma	691 pt:	M2[1]	2.475850 GHz -58.75 dBm	
M1 10 dBm 0 B3m 		M4	an the second	M2[1]	2.475850 GHz -58,75 dBm 2.483500 GHz 	
M1 10 dBm 0 BBm 10 dBm 10 dBm	iz	value	691 pt: Y-value 9.39 dBm	M2[1]	2.475850 GHz -58,75 dBm 2,483500 GHz 	
M1 10 dBm 0 BBm -10 dBm -10 dBm -10 dBm -10 dBm -10 dBm -10 dBm -50 dBm -50 dBm -70 dB	IZ Trc X 1 1 1	value	691 pt: Y-value	M2[1]	2.475850 GHz -58,75 dBm 2,483500 GHz 	
M1 dBm dBm dBm dBm dBm dBm dBm dBm	iz	value	691 pt: Y-value	M2[1]	2.475850 GHz -58,75 dBm 2,483500 GHz 	





st Mode:	π/4-D0							
	Spectrum							
	RefLevel 20.00	dBm Offset 1.80 30 dB SWT 94.8	dB 👄 RBW 100 kHz μs 👄 VBW 300 kHz					
	●1Pk View			M1[1]		0	06 dBm	
	10 dBm					2.4797	780 GHz	
	0 dBm			M2[1]			20 dBm 500 GHz	
		940 dBm						
	-20 dBm							
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	-condism	Mun mar mul	M3	السطه المعالية	www.ananation	An Judger Janger		
	-70 dBm							
	Start 2.47 GHz		691 p	pts		Stop 2.	55 GHz	
	Marker Type Ref Trc		Y-value	Function	Functio	on Result		
	M1 1 M2 1							
	M3 1 M4 1 Date: 5.JUN.2019	2.484029 G			() 4	XA 05.06	.2019	
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Ret	f Level	20.00 dBr			RBW 100 kHz				()
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U IFK	V10 W		1			M1[1]		7.42 d	Bm
10 d8	3m-					Mal	11		2.403860 C -57.82 d	GMR D.X
0 dBr						M2[1]		2.400000 0	3HIZ
-10 c	IBm (01 -12.580	dBm							
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	t 2.3 G	Ηz			691 pt	s		S	top 2.405 GI	Hz
Mark Tyn	er e Ref	Trc	X-value	1	Y-value	Functio	n l	Function Re	sult	ᅴ
E N	11	1	2.4038	6 GHz	7.42 dBm	. anotic		, anotion to		
	12 13	1		4 GHz 9 GHz	-57.82 dBm -59.85 dBm					-
M	14	1	2.39708	7 GHz	-56.90 dBm					
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Date:	5.JUN	.2019 20	:49:08							
6									ſ	₩)
	ctrum	20.00 dBr	Offset 1	90 dB 👄 B	RBW 100 kHz				(∀
👄 Att		30 d			/BW 300 kHz	Mode Au	to FFT			
O 1Pk	View									1
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10 di	M1					M1[6.81 d 2.476080 d	GHz
10 df	3m <mark>M1</mark>	17				M1[2.476080 C	GHz IBm
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C dEr -10 c -20 c -30 c +40 c	n Bm Bm Bm		dBm	M3					2.476080 C	GHz IBm
C dBr -10 c -20 c -30 c -30 c -50 c	n Bm Bm Bm Bm Bm Bm Bm Bm		dBm	M3 Awtoweddin	and the second s				2.476080 C	GHz IBm
0 dEr -10 5 -20 c -30 c -40 c -50 c	n Bm Bm Bm Bm Bm Bm Bm Bm		dBm	M3 Autorotation	A strain of the			theodering of the first state of	2.476080 C	GHz IBm
C den -10 ; -20 c -30 c -50 c -50 c -70 c	n Bm Bm Bm Bm Bm Bm Bm Bm		dBm	M3 Automation	691 pt	M2[Secology of the first	2.476080 C	3Hz Bm 3Hz
C der -0.0 c -20 c -300 c -50 c -50 c -70 c Star Mark	вт —	- MA	Anton	2004.0-4-9-405-04-1 		M2[1]		2.476080 C -60.35 d 2.483500 C	3Hz Bm 3Hz
0 den -10 c -20 c -30 c -50 c -50 c -50 c -70 c Star Mark _Typ	n — — — — — — — — — — — — — — — — — — —	Hz	dBm dBm hunu, dta X-value 2,4750	2004.0-0-0-00 	Y-value 6.81 dBm	M2[1]	Function Re	2.476080 C -60.35 d 2.483500 C	3Hz Bm 3Hz
C der -10 c -20 c -30 c -50 c -50 c -50 c -70 c Star Mark Typ Mark	19 18 18 18 18 18 18 18 18 18 18	Hz	X-value 2.4750 2.483	8 GHz 5 GHz	Y-value 6.81 dBm -60.35 dBm	M2[1]		2.476080 C -60.35 d 2.483500 C	3Hz Bm 3Hz
C der -10 s -20 c -30 c -50 c -50 c -50 c -70 c Star Mark Typ M	1 1 1 1 1 1 1 1 1 1 1 1 1 1	Hz I Trc	X-value 2.4750 2.483	8 GHz 5 GHz 5 GHz	Y-value 6.81 dBm	M2[1]		2.476080 C -60.35 d 2.483500 C	3Hz Bm 3Hz





Spectrum						
RefLevel 20.00 Att 3	dBm Offset 1.80 0 dB SWT 113.0	0 dB 👄 RBW 100 kH		T	<u>`</u>	
Att 3	oub SWI 113.8	8 µs 👄 VBW 300 kH	14 MODE AUTO FF	1		
			M1[1]	9	5.90 dBm 402190 ស្ណុHz	
10 dBm			M2[1]		-54.26 dBm	
0 dBm				2	400000 GHz	
-10 dBm						
-20 dBm	.100 dBm					
-30 dBm						
-40 dBm					<u>+ </u>	
-50 dBm	_				- Mp - [
~6C.13811-4-1000-		when and a strain	H-walkand war	-tracharow when	Healer h	
-70 dBm-						
-/0 ubm						
Start 2.3 GHz		691	pts	Stop	2.405 GHz	
Marker Type Ref Trc	X-value	Y-value	Function	Function Resu	lt	
M1 1	2.40219 G	GHz 5.90 dB	m			
M2 1 M3 1	2.39 G	GHz -59.43 dB	m			
M4 1	2.399978 G	GHz -53.95 dB	m			
			Measuring	4/4		
Date: 5.JUN.2019	20:37:56					
Spectrum						
Spectrum Ref Level 20.00		dB 🖷 RBW 100 kH:				
RefLevel 20.00 Att 3		dB e RBW 100 kH; i µs e VBW 300 kH;		г		
Ref Level 20.00 Att 3 PPk View					8.01 dBm	
RefLevel 20.00 Att 3			2 Mode Auto FF1		8.01 dBm 480130 GHz	
Ref Level 20.00 Att 3 PIPk View			z Mode Auto FF1	2	8.01 dBm	
Ref Level 20.00 Att 3 IPk View 10 dBm M1 0 dBm 10 dBm	0 dB SWT 94.8		2 Mode Auto FF1	2	8.01 dBm 480130 GHz -55.14 dBm	
Ref Level 20.00 Att 3 IPk View 10 dBm 0 dBm 1 -10 dBm 01 -11			2 Mode Auto FF1	2	8.01 dBm 480130 GHz -55.14 dBm	
Ref Level 20.00 Att 3 IPk View 10 dBm M1 0 dBm 10 dBm	0 dB SWT 94.8		2 Mode Auto FF1	2	8.01 dBm 480130 GHz -55.14 dBm	
Ref Level 20.00 Att 3 IPk View 10 dBm 0 dBm 1 -10 dBm 01 -11	0 dB SWT 94.8		2 Mode Auto FF1	2	8.01 dBm 480130 GHz -55.14 dBm	
Note M1 0 Att 3 ● IPk View 10 dBm 10 dBm 0 -10 dBm 01	0 dB SWT 94.8		2 Mode Auto FF1	2	8.01 dBm 480130 GHz -55.14 dBm	
Ref Level 20.00 Att 3 ● IPk View 10 dBm 10 dBm 01 -10 dBm 01 -20 dBm -30 dBm -40 dBm -40 dBm	0 dB SWT 94.8		2 Mode Auto FF1	2	8.01 dBm 480130 GHz -55.14 dBm	
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Ref Level 20.00 Att 3 ID Rb View 10 dBm 0 dBm 01 -11 -20 dBm -30 dBm -30 dBm -40 dBm	0 dB SWT 94.8	2 µs • VBW 300 kH:	2 Mode Auto FF1	2	8.01 dBm 480130 GHz -55.14 dBm	
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1Pk View	55 4			000 km						
					M1[1]		24	5.83 dBr 04920 GH	
10 dBm					M2[1]		-	58.14 dBr	0
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-10 dBm										
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-70 dBm										1
Start 2.3 G	Hz			691 p	ots			Stop 2	2.405 GHz	-
Marker							_			7
M1	f Trc 1	X-value 2.4049		Y-value 5.83 dBm	Functio	on	Funct	tion Result		4
M2 M3	1	2.4	4 GHz 9 GHz	-58.14 dBn -59.08 dBn	n					-
M4	1	2.33910		-56.85 dBn						-1
)[Measu	ring		4/4	5.06.2019	
Date: 5.JUN	.2019 20	0:54:47			Measu	ring		4/4	5.06.2019	
	_	0:54:47			Measu	ring			5.06.2019 20:54:48	
Spectrum					Measu	ring			5.06.2019	
		m Offset 1.		RBW 100 kHz /BW 300 kHz		to FFT			5.06.2019)
Spectrum Ref Level	1	m Offset 1.			Mode Au			49		- ר
Spectrum Ref Level Att 1Pk View	1	m Offset 1.						2.4	5.06.2019	
Spectrum Ref Level Att	1	m Offset 1.			Mode Au	1]		-	7.37 dBr 72030 GH 59.40 dBr	n z
Spectrum Ref Level Att 1Pk View	1	m Offset 1.			Mode Au	1]		-	7.37 dBr 72030 GH	n z
Spectrum Ref Level Att 1Pk View	1 20.00 dBr 30 d	m Offset 1. B SWT 94			Mode Au	1]		-	7.37 dBr 72030 GH 59.40 dBr	n z
Spectrum Ref Level Att IN UBm 0 BB D -10 dBm	1	m Offset 1. B SWT 94			Mode Au	1]		-	7.37 dBr 72030 GH 59.40 dBr	n z
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Spectrum Ref Level Att I dam 0 Bry -10 dBm -20 dBm -40 dBm -60 dBm -70 dBm	01 -12.630	m Offset 1. B SWT 94	4.8 μs 💿 Ν	M4	Mode Au M1[M2[1]		- 2.4	7.37 dBr 72030 GH 83500 GH	
Spectrum Ref Level Att 10 dBm -10 dBm -20 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm -70 dBm -70 dBm -70 dBm	D1 -12.63(m Offset 1. B SWT 94	4.8 µs • \	M4 691 F	Mode Au M1[M2]			- 2.4	7.37 dBr 72030 GH 83500 GH 83500 GH	
Spectrum Ref Level Att Id.dBm D BDN -10 dBm -20 dBm -20 dBm -60 dBm -70 dBm Start 2.47 Marker Type Ref	01 -12.630	m Offset 1. B SWT 94	4.8 µs • \	M4 691 F Y-value	Mode Au M1[M2[Funct	- 2.4	7.37 dBr 72030 GH 83500 GH 83500 GH	
Spectrum Ref Level Att 10k View 10k JdBm 0 BnN -10 dBm -20 dBm -80 dBm -50 dBm -60 dBm -70 dBm Start 2.47 Marker Type Ref M1	GHz	m Offset 1. B SWT 94 0 dBm 0 dBm X-value 2.4720 2.4720	4.8 µs • V	M4 691 p 7-value 	Mode Au M1[M2[All And J + An		Funct	- 2.4	7.37 dBr 72030 GH 83500 GH 83500 GH	
Spectrum Ref Level Att ● 1Pk View Ididam 0 Beneric -10 dBm -20 dBm -20 dBm -40 dBm -50 dBm -60 dBm -70 dBm Start 2.47 Marker Type Ref Marker	GHz	m Offset 1. B SWT 94 0 dBm 0 dBm X-value 2.4720 2.4720	4.8 µs • V	M4 691 r 7.37 dBn 7.37 dBn	Mode Au M1[M2] altAnl, b, y, y altAnl, b, y, y bts			- 2.4	7.37 dBr 72030 GH 83500 GH 83500 GH	



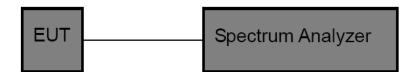


3.4. Bandwidth and Channel Separation

<u>Limit</u>

Test Item	Limit	Frequency Range(MHz)
20dB Occupied Bandwidth	/	2400-2483.5
99% Occupied Bandwidth	/	2400-2483.5
Channel Separation	>25KHz or >two-thirds of the 20 dB bandwidth Which is greater	2400~2483.5

Test Configuration



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:
 - (1) Set RBW = For 20dB Occupied Bandwidth:1% of the 20 dB bandwidth
 - (2) Set RBW = For 99% Occupied Bandwidth: 1% to 5% of the occupied bandwidth
 - (3) Set VBW= For 20dB Occupied Bandwidth: ≥ RBW
 - (4) Set VBW= For 99% Occupied Bandwidth: approximately 3×RBW
 - (5) Detector = Peak
 - (6) Trace mode = Max hold.
 - (7) Sweep = Auto couple

NOTE: The EUT was set to continuously transmitting in each mode and low, Middle and high channel for the test.

Test Mode

Please refer to the clause 2.2.

Test Results

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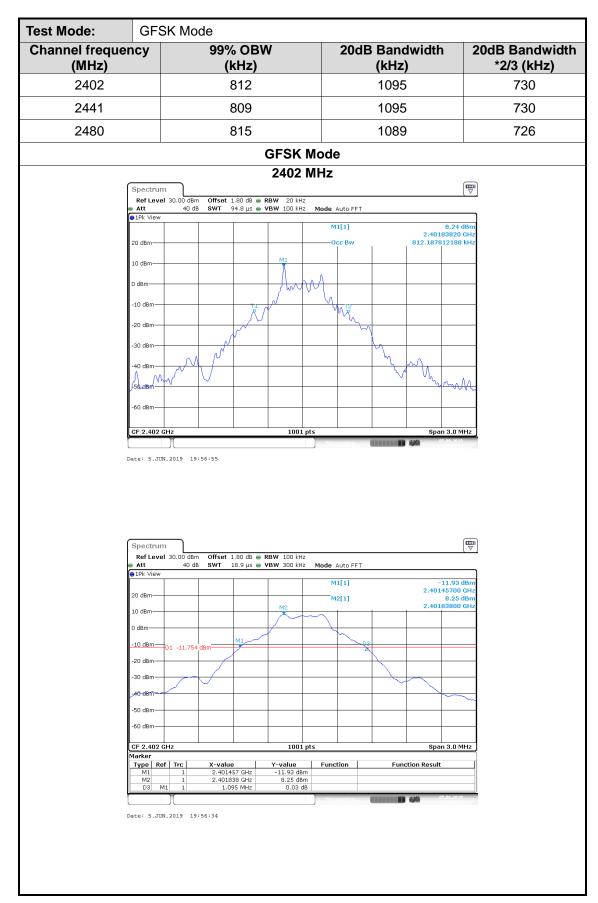
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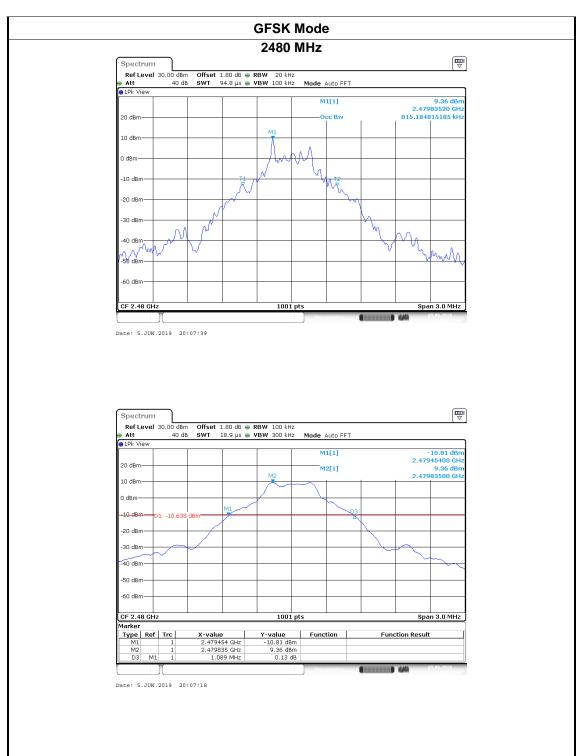
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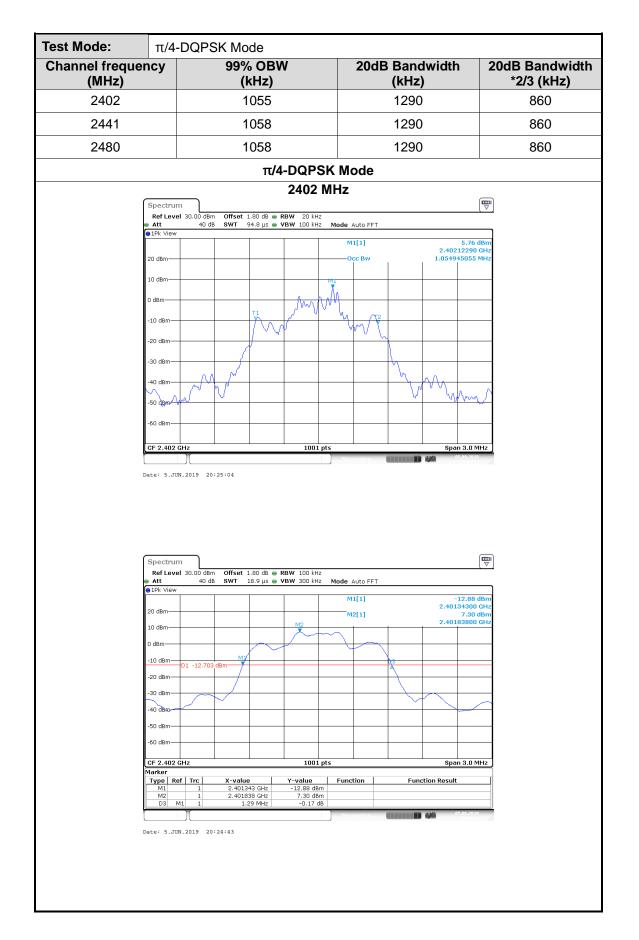


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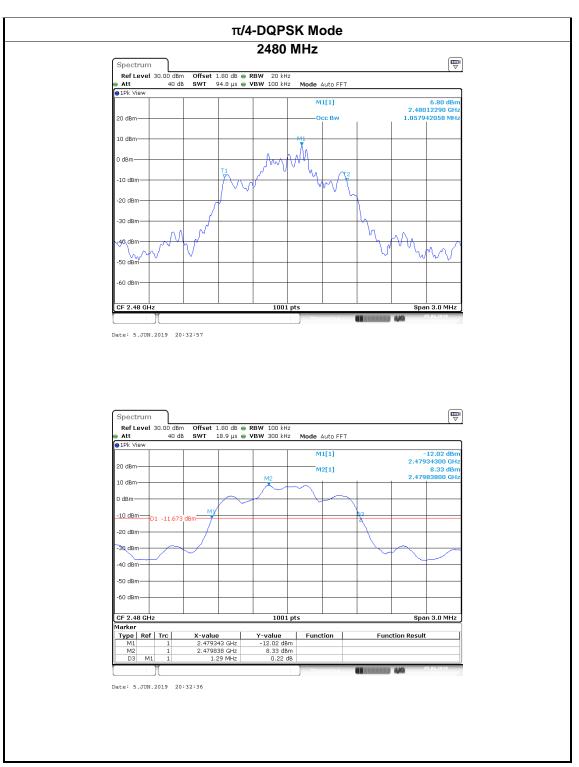
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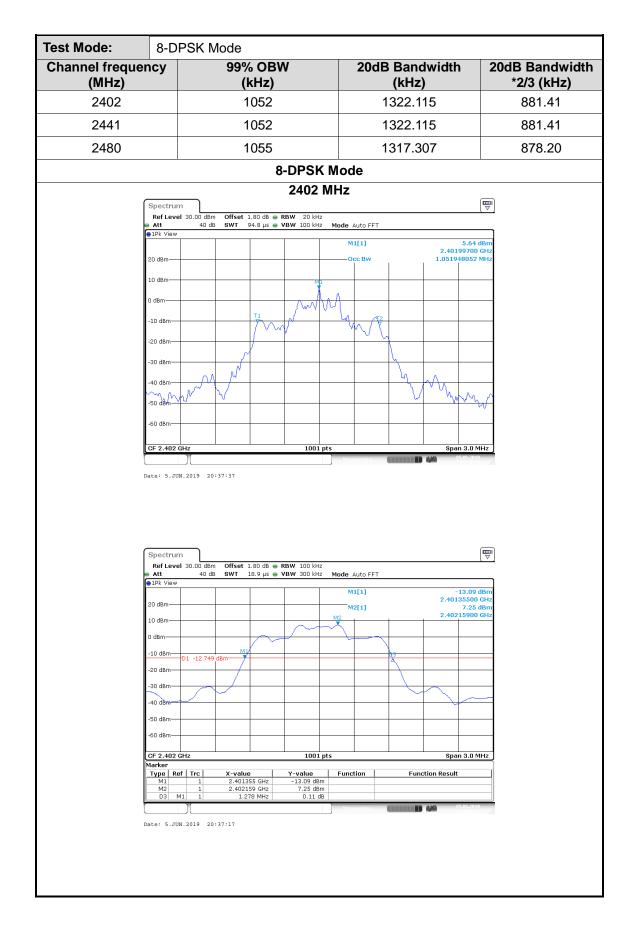


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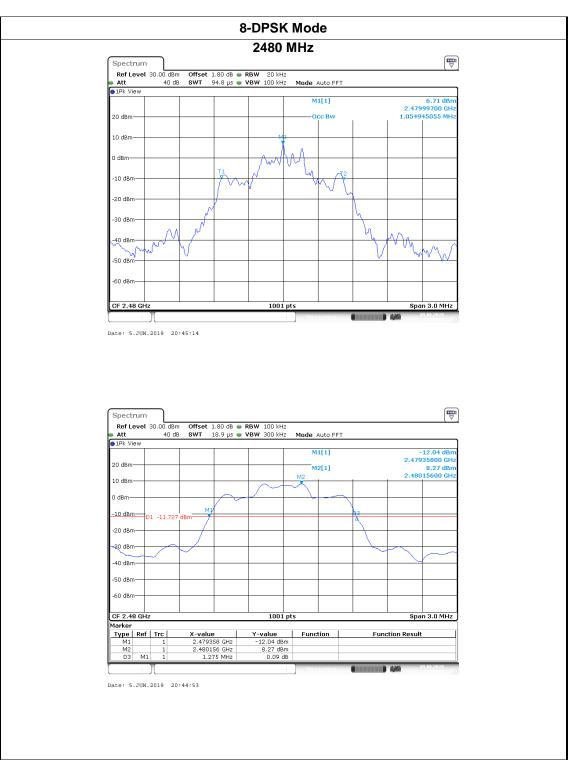
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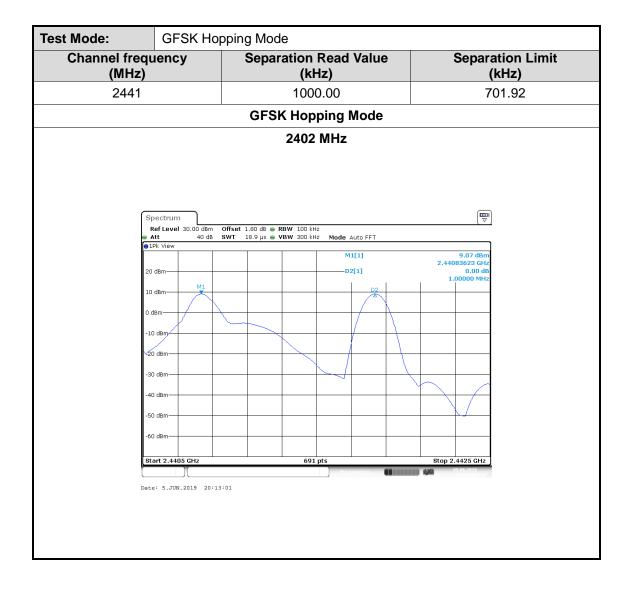
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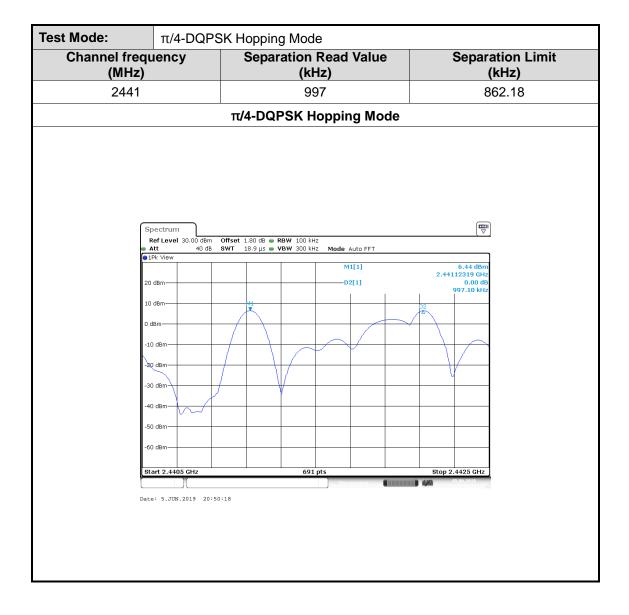


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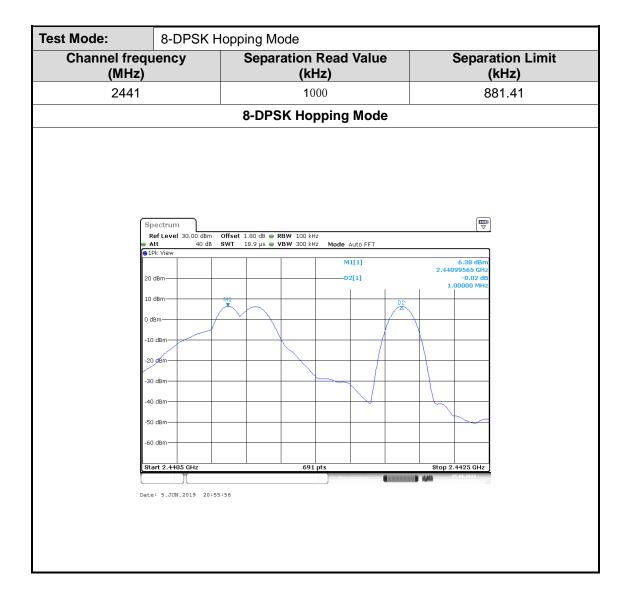
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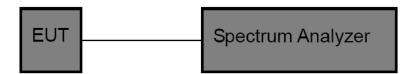


3.5. Number of Hopping Channel

<u>Limit</u>

Section	Test Item	Limit
15.247	Number of Hopping Channel	>15

Test Configuration



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:
 - (1) Peak Detector: RBW=100 kHz, VBW RBW, Sweep time= Auto.

Test Mode

Please refer to the clause 2.2.

Test Result

EN



Test Mode:	Нор	ping Mode		
Frequency Rang	ge	Test Mode	Quantity of Hopping Channel	Limit
		GFSK	79	
2402MHz~2483.5M	ЛНz	π/4-DQPSK	79	>15
		8-DPSK	79	
		I	GFSK Mode	
	oectrum Ref Level :	30.00 dBm Offset 1.80 dB 👄	DDW 100 Min	
• •	Att Pk View		VBW 100 kHz Mode Auto FFT	
20	dBm		M1[1] 8.50 2.401870 M2[1] 9.66	GHz
	dBm		2.479810 M	GHz
0	AN AN ANN	<u>MANAKI, MANDAN MAN</u> AN	<u>NO NALISADAN' I MANDARIA NA GARAGANA A</u>	
-1	⊃ #Brh+++	iddefahliahlidandhalithadi	axafinaachaachafhafhahahahahahahahahahahahahaah	
-2) dBm			
-31) dBm			
₿4i	D dBm			
-51) dBm			<u>Nu</u> .
-61) dBm			
st	art 2.4 GH	z	691 pts Stop 2.4835 0	iHz
Dat	e: 5.JUN.	2019 21:14:32	Measuring (1999) 1999 05.66-2015	
		π/4	-DQPSK Mode	
	pectrum	30.00 dBm Offset 1.80 dB 👄		
e 4	Att Pk View		VBW 300 kHz Mode Auto FFT	
20	dBm		M2[1] 7.13 2.480180 M1[1] 7.06	GHz
	ldBm		2.402110	
0		haann haranda aanaa A	<u>ANNANANANANANANANANANANANANANANANANANA</u>	
-1	D dBm	A All a translation.		
-21) dBm			
-31) dBm			+
(+4)) dBm			\
-51) dBm			<u>h</u>
-61) dBm			
st	art 2.4 GH	z	691 pts Stop 2.4835 0	iHz
Dat	e: 5.JUN.	2019 21:20:07	Measuring (Internet) 440 0506201	

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Spectrum							
Ref Level 30.00		L.80 dB 👄 R					
e Att · · · · · · · · · · · · · · · · · ·	40 dB SWT !	94.8 µs 👄 V	BW 300 kH	z Mode /	Auto FFT		
20 dBm					2[1] 1[1]		7.69 dBm 80060 GHz 6.29 dBm 01990 GHz
101dBm		WWW		MM	WWP		
-10 dBm							
40 dBm							4
-60 dBm							
Start 2.4 GHz	1	1	691	pts		Stop 2.	4835 GHz

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3.6. Dwell Time

<u>Limit</u>

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

Test Configuration

EUT	Spectrum Analyzer

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:
 - (1) Spectrum Setting: RBW=1MHz, VBW RBW.
 - (2) Use video trigger with the trigger level set to enable triggering only on full pulses.
 - (3) Sweep Time is more than once pulse time.
 - (4) Set the center frequency on any frequency would be measure and set the frequency span to zero.
 - (5) Measure the maximum time duration of one single pulse.
 - (6) Set the EUT for packet transmitting.

Test Mode

Please refer to the clause 2.2

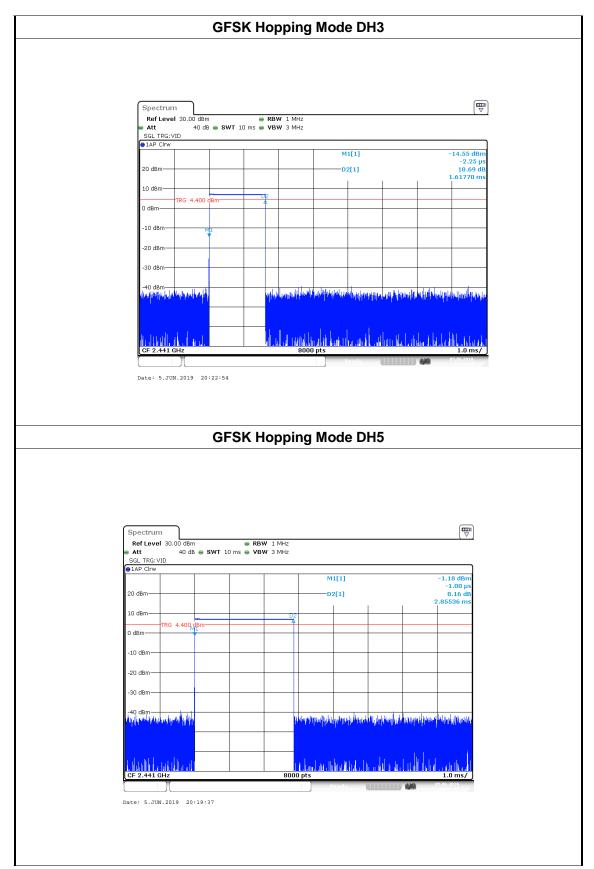
Test Result

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Test Mo	de:	Нор	ping Mode (G	iFSK)				
Test Mode	Chani (MH:		Pulse Time (ms)	Total of Dwell (ms)		d Time s)	Limit (ms)	Result
DH1	Нор)	0.37	330	0.1	121	400	PASS
DH3	Нор)	1.62	180	0.2	291	400	PASS
DH5	Нор)	2.86	130	0.3	371	400	PASS
DH3 Total o	of Dwell= P	Pulse Ti	me*(1600/2)*31.6, me*(1600/4)*31.6, me*(1600/6)*31.6,	/79			1	
			GF	SK Hopping M	ode DH1			
		 Att SGL TF IAP Cl IAP Cl IO dBm⁻ O dBm⁻ O dBm⁻ O dBm⁻ O dBm⁻ Ad Bm⁻ 	evel 30.00 dBm 40 dB SWT 10 GrVID 100 dBm TRG 4,400 Bm				10 dBm -1.00 μs 4.01 dB 56.30 μs	
		CF 2.44 Date: 5.	1 GHz JUN 2019 20:22:05	it edi di a unila daler i lata lan 8000 pts	, de la la antil terrar de la d Recedir	ndh da habb 1 1990 - Ala		
		Date: 5.	JUN.2019 20:22:05					





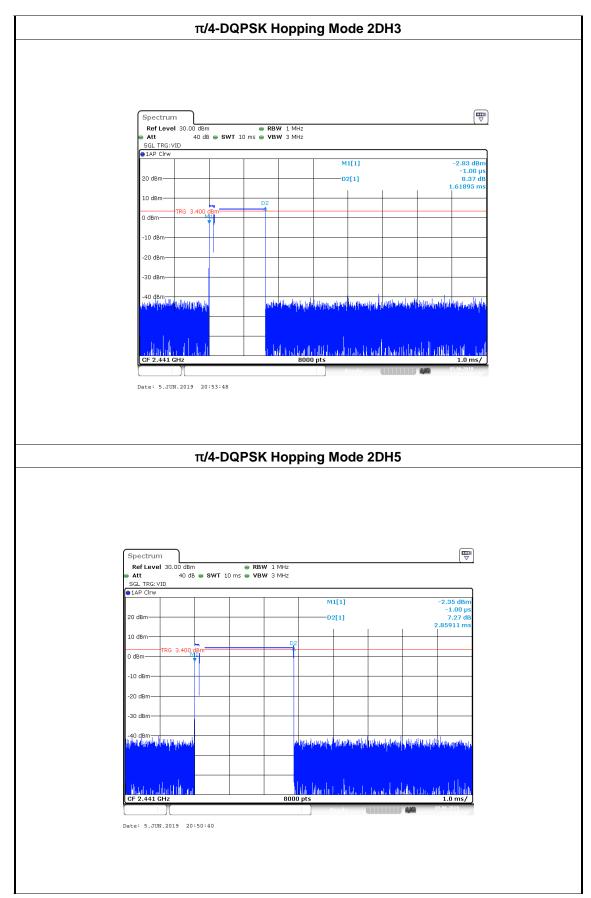
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Test Mo	de:	Нор	ping Mode (π	/4-DQPSK)			
Test Mode	Chani (MH:		Pulse Time (ms)	Total of Dwell (ms)	Period Time (s)	Limit (ms)	Result
2DH1	244	1	0.38	330	0.124	400	PASS
2DH3	244	1	1.62	170	0.275	400	PASS
2DH5	244	1	2.86	110	0.315	400	PASS
2DH1 Total	of Dwell=	Pulse	Time*(1600/2)*31.6	6/79			
			Time*(1600/4)*31.6				
2DH5 Total	of Dwell=	Pulse	Time*(1600/6)*31.6	6/79			
			π/4-D	QPSK Hopping M	ode 2DH1		
		Spect	rum				
			evel 30.00 dBm	RBW 1 MHz			
		Att SGL TR	RG: VID	ms 🖶 VBW 3 MHz			
		●1AP C	rw	M1[.7	41 dBm	
		20 dBm			-	1.00 μs 1.95 dB	
		20 UBII		D2[1		1.95 dB /5.05 μs	
		10 dBm	- D2				
		0 dBm-	TRG 3.400 dBm				
			M1				
		-10 dBn					
		-20 dBn	1	1			
		-30 dBn	,				
		-40,dBn	والمتعادية المليات الملية المتعادية الم	di Alamada salah kali bananan kirika	والمباعل أماريته وأرار رأي يتخر ويتشمر بالأربس را	د الله عليك	
				1.			
		de ato	I decision and	. Philadel and add add at	the first the following from	de la	
		CF 2.4	41 GHz	8000 pts	1.	.0 ms/	
		L		Rea	dy 05.06	2019	
		Date: 5	.JUN.2019 20:52:52				

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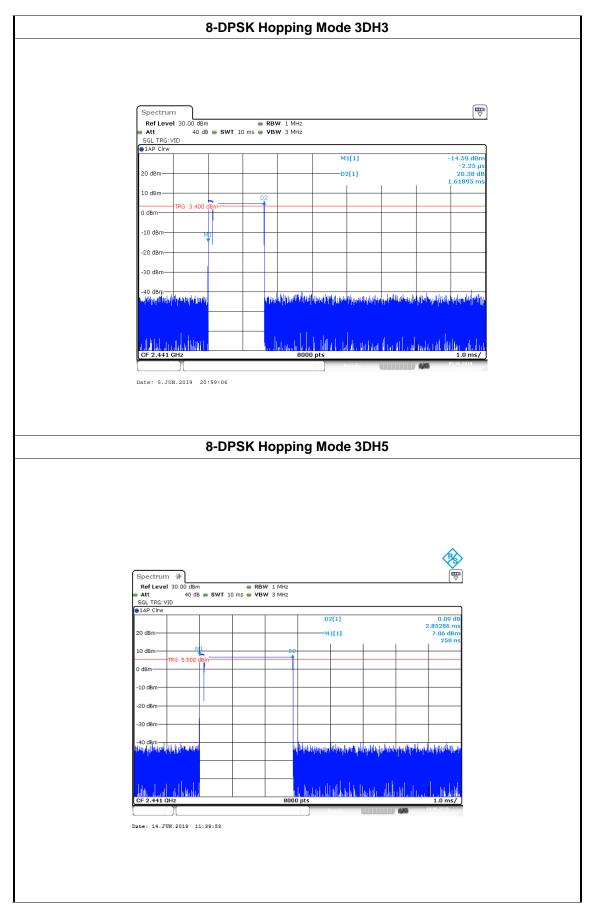
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Test Mo		-	ping Mode (8-				
Test Mode	Chan (MH		Pulse Time (ms)	Total of Dwell (ms)	Period Time (s)	Limit (ms)	Result
3DH1	244	1	0.38	330	0.124	400	PASS
3DH3	244	1	1.62	160	0.259	400	PASS
3DH5	244	1	2.85	304	-0.001	400	PASS
3DH1 Total	of Dwell=	Pulse	Time*(1600/2)*31.6	6/79	•		
			Time*(1600/4)*31.6				
3DH5 Total	of Dwell=	Pulse	Time*(1600/6)*31.6	8/79			
			8-DI	PSK Hopping Mo	de 3DH1		
						_	
		Spect					
		👄 Att		● RBW 1 MHz ms ● VBW 3 MHz			
		SGL TI	RG: VID Irw				
				M1		72 dBm 1.00 μs	
		20 dBm	· · · · · · · · · · · · · · · · · · ·	D2		0.43 dB /6.30 μs	
		10 dBm					
		0 dBm-	TRG 3.400 dBm				
		-10 dBr	MI				
		-20 dBr	n		1		
		-30 dBr	n				
		-40 dBr			and a second sec		
		n fan fan fi	aleededdaariidaanaa ahaalaada	annaktorigen bager geschichten im tersch	analisteller ellentrikelenenedelphelikipele	Ar M	
					W.		
			الدالية المالية	na al la diale	den Martine en en	, <mark>∯-+</mark>	
		CF 2.4	and and the second s	10 Martin II	la de Halli – Henrika Alexa, de la seconda de la second 1	.0 ms/	
				Re	ady 05.06	.2019	
		Date: 5	.JUN.2019 20:58:18				

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3.7. Peak Output Power

<u>Limit</u>

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

Test Configuration

EUT	Spectrum Analyzer
-----	-------------------

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 DTS Bandwidth, VBW 3*RBW. Sweep time=Auto. Detector= Peak. Trace mode= Maxhold.

Allow trace to fully stabilize. Then use the peak marker function to determine the maximum amplitude level.

Test Mode

Please refer to the clause 2.2

Test Result

FN

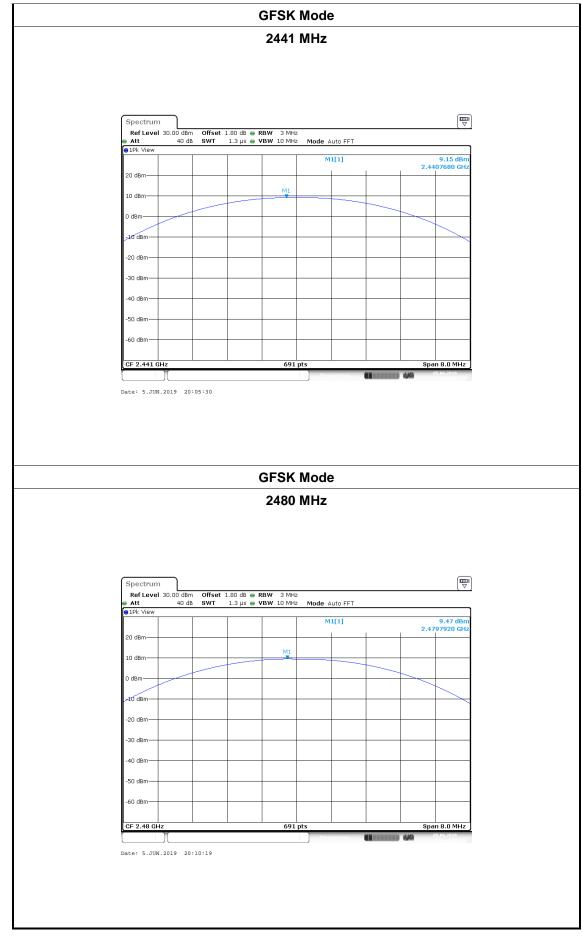
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Test Mode:	GFSK Mo	de			
Channel frequer	ncy (MHz)	Test Resu	ılt (dBm)	Limit (dBm)	
2402		8.3	5		
2441		9.1	5	21	
2480		9.4	7		
		GFSK	Mode		
		2402	MHz		
		Offset 1.80 dB 😑 RBW 3 MHz			
	Att 40 dB 1Pk View	SWT 1.3 μs 👄 VBW 10 MHz	Mode Auto FFT	8.35 dBm	
2	:0 dBm			2.4018150 GHz	
1	.0 dBm	M1			
c	dBm				
-	19 dBm				
-	20 dBm				
-	30 dBm				
	40 dBm				
	50 dBm				
	CF 2.402 GHz	691	ots Measuring	Span 8.0 MHz	
Da	te: 5.JUN.2019 19:59	: 35			

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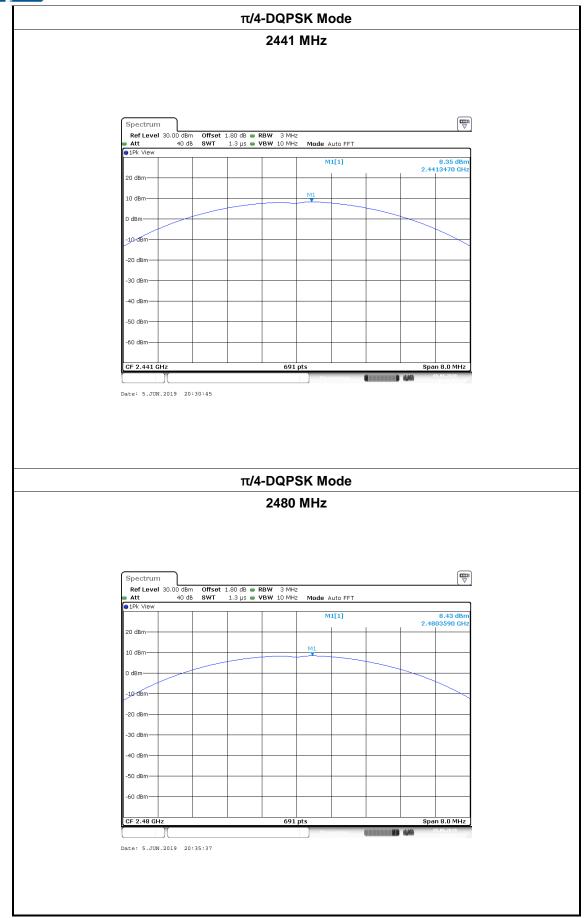
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	104 DQI 0	K Mode		
Channel freque	ency (MHz)	Test R	esult (dBm)	Limit (dB
2402			7.46	
2441			8.35	21
2480			8.43	
	1	π/4-DG	QPSK Mode	
		24	02 MHz	
		Offset 1.80 dB ● RBW 3 WT 1.3 µs ● VBW 10		7.46 dBm 2.4023470 GHz
	-20 dBm			
	-30 dBm		691 pts	Span 8.0 MHz





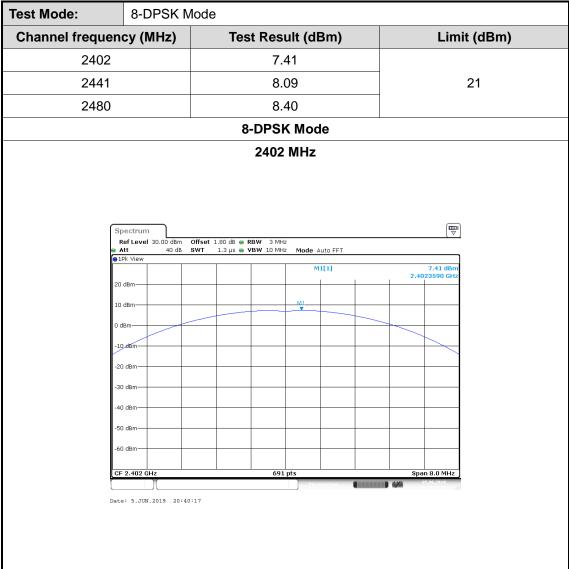
2/F., Building 1 and 1-2/F., Building 2, Jiaquan Building, Guanlan High-Tech Park, Longhua District, Shenzhen, Guangdong, China Tel.: (86)755-27521059 Fax: (86)755-27521011 Http://www.sz-ctc.org.cn



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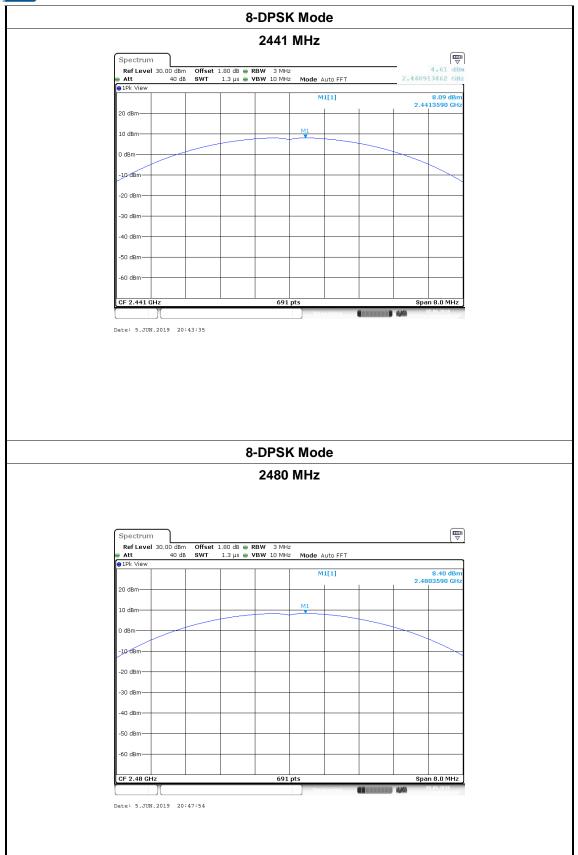


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3.8. Antenna requirement

Requirement

FCC CFR Title 47 Part 15 Subpart C Section 15.203:

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 anantenna that uses a unique coupling to the intentional radiator, 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.

FCC CFR Title 47 Part 15 Subpart C Section 15.247(c) (1)(i):

(i) Systems operating in the 2400~2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.

Test Result

The directional gain of the antenna less than 6dBi, please refer to the EUT internal photographs antenna photo.



Reference to the document No.: Test Photographs 1.

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Reference to the document No.: External Photographs and Internal Photographs.

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