

RADIO TEST REPORT

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Report No: STS1904279W02

Issued for

KINGTA TECHNOLOGY CO., LTD

4F, Building 2, HaoJingDa Science Park, Shangmugu,

Shenzhen, China

Product Name:	Bluetooth Speaker
Brand Name:	N/A
Model Name:	H1
Series Model:	Aqua Powerful, iBall Musi Boom, PUNCH
FCC ID:	N7KH1
Test Standard:	FCC Part 15.247

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TEST RESULT CERTIFICATION

Applicant's Name	KINGTA TECHNOLOGY CO., LTD
Address	4F, Building 2, HaoJingDa Science Park,Shangmugu,Shenzhen, China
Manufacture's Name:	KINGTA TECHNOLOGY CO., LTD
Address	4F, Building 2, HaoJingDa Science Park,Shangmugu,Shenzhen, China
Product Description	
Product Name	Bluetooth Speaker
Brand Name	N/A
Model Name:	H1
Series Model	Aqua Powerful, iBall Musi Boom, PUNCH
Test Standards	FCC Part15.247
Test Procedure: /	ANSI C63.10-2013

This device described above has been tested by STS, the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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Date of Test.....

Date (s) of performance of tests : 29 Apr. 2019 ~ 10 May 2019

Date of Issue: 16 May 2019

Test Result Pass

Testing Engineer

(Chris Chen)

Technical Manager

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(Sunday Hu)

APPROVAL 01111430 NOUND

Authorized Signatory :

(Vita Li)

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Revision History

Rev.	Issue Date	Report NO.	Effect Page	Contents
00	16 May 2019	STS1904279W02	ALL	Initial Issue



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1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards: KDB 558074 D01 15.247 Meas Guidance v05r02

	FCC Part 15.247,Subpart C		
Standard Section	Test Item	Judgment	Remark
15.207	Conducted Emission	PASS	
15.247(a)(1)	Hopping Channel Separation	PASS	
15.247(a)(1)&(b)(1)	Output Power	PASS	
15.247(c)	Radiated Spurious Emission	PASS	
15.247(d)	Conducted Spurious & Band Edge Emission	PASS	
15.247(a)(iii)	Number of Hopping Frequency	PASS	
15.247(a)(iii)	Dwell Time	PASS	
15.247(a)(1)	Bandwidth	PASS	
15.205	Restricted Band Edge Emission	PASS	
Part 15.247(d)/part 15.209(a)	Band Edge Emission	PASS	
15.203	Antenna Requirement	PASS	

NOTE:

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

(2) All tests are according to ANSI C63.10-2013

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1.1 TEST FACTORY

Shenzhen STS Test Services Co., Ltd. Add. : 1/F., Building B, Zhuoke Science Park, No.190, Chongqing Road, Fuyong Street, Bao'an District, Shenzhen, Guangdong, China FCC test Firm Registration Number: 625569 A2LA Certificate No.: 4338.01;

1.2 MEASUREMENT UNCERTAINTY

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

No.	Item	Uncertainty
1	RF output power, conducted	±0.71dB
2	Unwanted Emissions, conducted	±0.63dB
3	All emissions, radiated 30-200MHz	±3.43dB
4	All emissions, radiated 200MHz-1GHz	±3.57dB
5	All emissions, radiated>1G	±4.13dB
6	Conducted Emission (9KHz-150KHz)	±3.18dB
7	Conducted Emission (150KHz-30MHz)	±2.70dB

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2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF THE EUT

Product Name	Bluetooth Speaker
Trade Name	N/A
Model Name	H1
Series Model	Aqua Powerful, iBall Musi Boom, PUNCH
Model Difference	Only different in model name
Channel List	Please refer to the Note 2.
Bluetooth	Frequency:2402 – 2480 MHz Modulation: GFSK(1Mbps), π/4-DQPSK(2Mbps), 8DPSK(3Mbps)
Bluetooth Version	4.2 BR+EDR
Power Rating	Input: 5V/2000mA
Battery	Rated Voltage: DC 7.2V Charge Limit: DC 8.4V Capacity: 5000mAh
Hardware version number	H1-MAIN-V1.2
Software version number	N/A
Connecting I/O Port(s)	Please refer to the User's Manual

Note:

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





2.

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

3. Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
1	N/A	H1	РСВ	N/A	1.2 dBi	BT Antenna



2.2 DESCRIPTION OF THE TEST MODES

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

TX CH00 TX CH39 TX CH78	1Mbps/GFSK 1Mbps/GFSK 1Mbps/GFSK
TX CH78	1Mbps/GFSK
	•
IX CHOO	2 Mbps/π/4-DQPSK
TX CH39	2 Mbps/π/4-DQPSK
TX CH78	2 Mbps/π/4-DQPSK
TX CH00	3 Mbps/8DPSK
TX CH39	3 Mbps/8DPSK
TX CH78	3 Mbps/8DPSK
	TX CH78 TX CH00 TX CH39

Note:

(1) The measurements are performed at all Bit Rate of Transmitter, the worst data was reported

(2) We have be tested for all avaiable U.S. voltage and frequencies(For 120V,50/60Hz

and 240V, 50/60Hz) for which the device is capable of operation, and the worst case of 120V/ 60Hz is shown in the report

For AC Conducted Emission

	Test Case
AC Conducted	Mode 10 : Keeping BT TX
Emission	

2.3 TABLE OF PARAMETERS OF TEXT SOFTWARE SETTING

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

Test software Version	Test program: Bluetooth				
Frequency	2402 MHz 2441 MHz 2480 MH				
(Power control software) Parameters(1/2/3Mbps)	Power class: 1 M rate:4:27 2 M rate:11:183 3 M rate:15:339	Power class: 1 M rate:4:27 2 M rate:11:183 3 M rate:15:339	Power class: 1 M rate:4:27 2 M rate:11:183 3 M rate:15:339		



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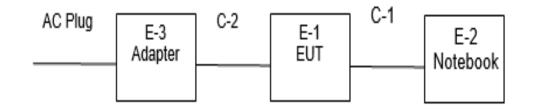
2.4 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

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

Radiated Spurious Emission Test







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2.5 DESCRIPTION OF NECESSARY ACCESSORIES AND SUPPORT UNITS

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.

	Necessary accessories						
Item	Equipment	Mfr/Brand	Serial No.	Note			
E-3	Adapter	LITEON	PA-1650-86	N/A	N/A		
C-2	DC Cable	N/A	110cm	N/A	N/A		

Support units

Item	Equipment	Mfr/Brand	Model/Type No.	Serial No.	Note
E-2	Notebook	HP	500-320cx	N/A	N/A
C-1	USB Cable	N/A	100cm	N/A	N/A

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in ^r Length ^a column.
- (3) "YES" is means "shielded" "with core"; "NO" is means "unshielded" "without core".



2.6 EQUIPMENTS LIST

Radiation Test equipment

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Test Receiver	R&S	ESCI	101427	2018.10.13	2019.10.12
Signal Analyzer	Agilent	N9020A	MY51110105	2019.03.02	2020.03.01
Active loop Antenna	ZHINAN	ZN30900C	16035	2018.03.11	2021.03.10
Bilog Antenna	TESEQ	CBL6111D	34678	2017.11.02	2020.11.01
Horn Antenna	SCHWARZBECK	BBHA 9120D(1201)	9120D-1343	2018.10.19	2021.10.18
SHF-EHF Horn Antenna (18G-40GHz)	A-INFO	LB-180400-KF	J211020657	2018.03.11	2021.03.10
Pre-Amplifier(0.1M-3G Hz)	EM	EM330	060665	2018.10.13	2019.10.12
Pre-Amplifier (1G-18GHz)	SKET	LNPA-01018G-45	SK201808090 1	2018.10.13	2019.10.12
Temperature & Humidity	HH660	Mieo	N/A	2018.10.11	2019.10.10
turn table	EM	SC100_1	60531	N/A	N/A
Antenna mast	EM	SC100	N/A	N/A	N/A
Test SW	FARAD	E	Z-EMC(Ver.STS	LAB-03A1 RE)	

Conduction Test equipment

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	
Test Receiver	R&S	ESCI	101427	2018.10.13	2019.10.12	
LISN	R&S	ENV216	101242	2018.10.11	2019.10.10	
LISN	EMCO	3810/2NM	23625	2018.10.11	2019.10.10	
Temperature & Humidity	HH660	Mieo N/A 2018.10.11 2019.1				
Test SW	FARAD	EZ-EMC(Ver.STSLAB-03A1 CE)				

RF Connected Test

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	
USB RF power sensor	DARE	RPR3006W	15100041SNO03	2018.10.13	2019.10.12	
Signal Analyzer	Agilent	N9020A	MY49100060	2018.10.13	2019.10.12	
Temperature & Humidity	HH660	Mieo N/A		2018.10.11 2019.10.7		
Test SW	FARAD	LZ-RF /LzRf-3A3				



3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION LIMITS

Operating frequency band. In case the emission fall within the restricted band specified on Part 207(a) limit in the table below has to be followed.

	Conducted Emissionlimit (dBuV)		
FREQUENCY (MHz)	Quasi-peak	Average	
0.15 -0.5	66 - 56 *	56 - 46 *	
0.50 -5.0	56.00	46.00	
5.0 -30.0	60.00	50.00	

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

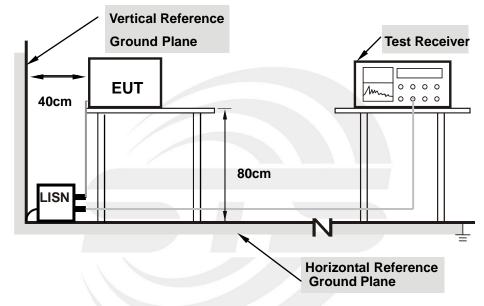
The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz



3.1.2 TEST PROCEDURE

- a. The EUT was 0.8 meters from the horizontal ground plane and 0.4 meters from the vertical 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.



3.1.3 TEST SETUP

Note: 1.Support units were connected to second LISN. 2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

3.1.4 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.



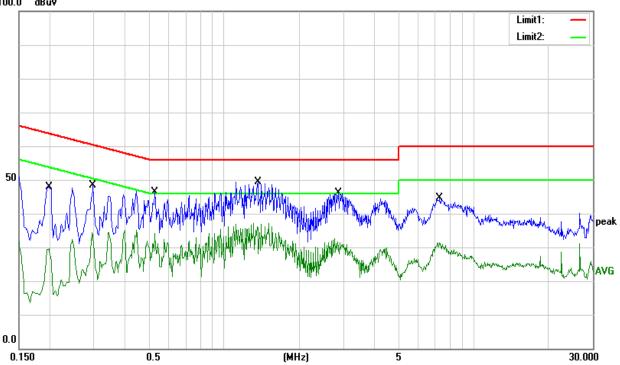
3.1.5 TEST RESULT

Temperature:	25.2 ℃	Relative Humidity:	64%
Test Voltage:	AC 120V/60Hz	Phase:	L
Test Mode:	Mode 10		

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB)	(dBuV)	(dBuV)	(dB)	
1	0.1980	27.59	20.32	47.91	63.69	-15.78	QP
2	0.1980	10.84	20.32	31.16	53.69	-22.53	AVG
3	0.2980	27.70	20.75	48.45	60.30	-11.85	QP
4	0.2980	12.90	20.75	33.65	50.30	-16.65	AVG
5	0.5260	26.09	20.40	46.49	56.00	-9.51	QP
6	0.5260	13.63	20.40	34.03	46.00	-11.97	AVG
7	1.3620	29.31	20.16	49.47	56.00	-6.53	QP
8	1.3620	10.69	20.16	30.85	46.00	-15.15	AVG
9	2.8700	25.91	20.09	46.00	56.00	-10.00	QP
10	2.8700	5.39	20.09	25.48	46.00	-20.52	AVG
11	7.2980	24.65	19.90	44.55	60.00	-15.45	QP
12	7.2980	7.60	19.90	27.50	50.00	-22.50	AVG

Remark:

- 1. All readings are Quasi-Peak and Average values.
- 2. Margin = Result (Result = Reading + Factor)-Limit
- 100.0 dBuV



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Temperature:	25.2 ℃	Relative Humidity:	64%
Test Voltage:	AC 120V/60Hz	Phase:	Ν
Test Mode:	Mode 10		

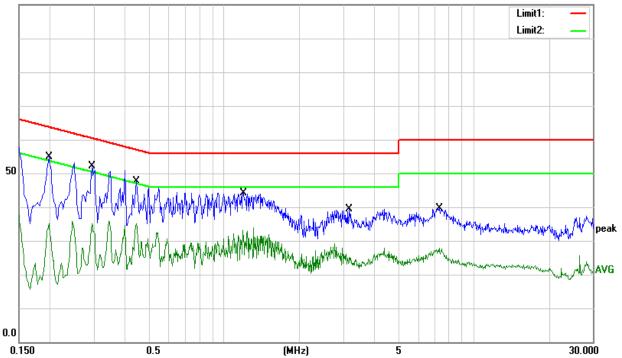
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB)	(dBuV)	(dBuV)	(dB)	
1	0.1980	34.66	20.32	54.98	63.69	-8.71	QP
2	0.1980	15.48	20.32	35.80	53.69	-17.89	AVG
3	0.2940	31.38	20.74	52.12	60.41	-8.29	QP
4	0.2940	14.43	20.74	35.17	50.41	-15.24	AVG
5	0.4460	27.03	20.48	47.51	56.95	-9.44	QP
6	0.4460	10.07	20.48	30.55	46.95	-16.40	AVG
7	1.1940	23.93	20.15	44.08	56.00	-11.92	QP
8	1.1940	9.53	20.15	29.68	46.00	-16.32	AVG
9	3.1660	19.34	20.07	39.41	56.00	-16.59	QP
10	3.1660	5.96	20.07	26.03	46.00	-19.97	AVG
11	7.2580	19.76	19.90	39.66	60.00	-20.34	QP
12	7.2580	7.89	19.90	27.79	50.00	-22.21	AVG

Remark:

1. All readings are Quasi-Peak and Average values.

2. Margin = Result (Result = Reading + Factor)-Limit

100.0 dBu¥



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3.2 RADIATED EMISSION MEASUREMENT

3.2.1 RADIATED EMISSION LIMITS

In any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the Restricted band specified on Part15.205(a)&209(a) limit in the table and according to ANSI C63.10-2013 below has to be followed

LIMITS OF RADIATED EMISSION MEASUREMENT (0.009MHz - 1000MHz)

Frequencies	Field Strength	Measurement Distance
(MHz)	(micorvolts/meter)	(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 (1GHz-25 GHz)

FREQUENCY (MHz)	(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).

For Radiated Emission

Spectrum Parameter	Setting
Attenuation	Auto
Detector	Peak
Start Frequency	1000 MHz(Peak/AV)
Stop Frequency	10th carrier hamonic(Peak/AV)
RB / VB (emission in restricted	
band)	PK=1MHz / 1MHz, AV=1 MHz /10 Hz

For Band edge

Spectrum Parameter	Setting		
Detector	Peak		
	Lower Band Edge: 2300 to 2403 MHz		
Start/Stop Frequency	Upper Band Edge: 2479 to 2500 MHz		
RB / VB (emission in restricted band)	PK=1MHz / 1MHz, AV=1 MHz / 10 Hz		

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Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~90kHz / RB 200Hz for PK & AV
Start ~ Stop Frequency	90kHz~110kHz / RB 200Hz for QP
Start ~ Stop Frequency	110kHz~490kHz / RB 200Hz/ 9kHz for PK & AV
Start ~ Stop Frequency	490kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

3.2.2 TEST PROCEDURE

- a. The measuring distance of at 3 m shall be used for measurements at frequency 0.009MHz up to 1GHz,and above 1GHz.
- b. The EUT was placed on the top of a rotating table 0.8 meters (above 1GHz is 1.5 m) above the ground at a 3 meter anechoic chamber test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The height of the equipment shall be 0.8 m(above 1GHz is 1.5 m); the height of the test antenna shall vary between 1 m to 4 m. horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then QuasiPeak detector mode re-measured.
- e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- f. For the actual test configuration, please refer to the related Item –EUT Test Photos. Note:

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

3.2.3 DEVIATION FROM TEST STANDARD

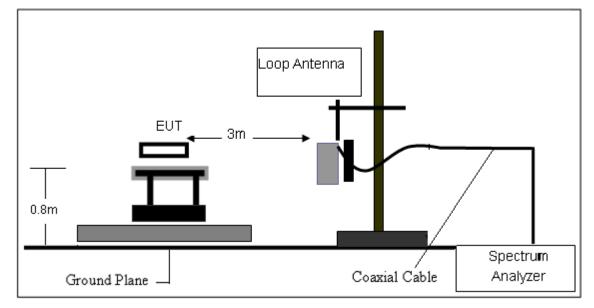
No deviation

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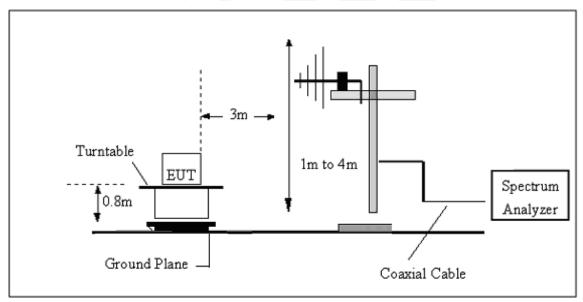


3.2.4 TESTSETUP

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



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

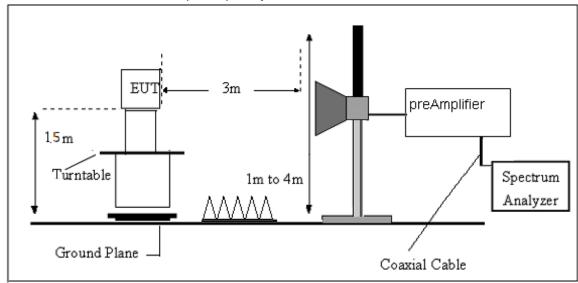




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(C) Radiated Emission Test-Up Frequency Above 1GHz



3.2.5 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.

3.2.6 FIELD STRENGTH CALCULATION

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CL - AG

Where

FS = Field Strength

CL = Cable Attenuation Factor (Cable Loss)

RA = Reading Amplitude

AG = Amplifier Gain

AF = Antenna Factor

For example

Frequency	FS	RA	AF	CL	AG	Factor
(MHz)	(dBµV/m)	(dBµV/m)	(dB)	(dB)	(dB)	(dB)
300	40	58.1	12.2	1.6	31.9	-18.1

Factor=AF+CL-AG



3.2.7 TEST RESULTS

(9KHz-30MHz)

Temperature:	24.4℃	Relative Humidity:	65%
Test Voltage:	DC 7.4V	Test Mode:	TX Mode

Freq.	Reading	Limit	Margin	State	Test Result
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F	iesi kesuli
					PASS
					PASS

Note:

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

Distance extrapolation factor =40 log (specific distance/test distance)(dB);

Limit line = specific limits (dBuv) + distance extrapolation factor.





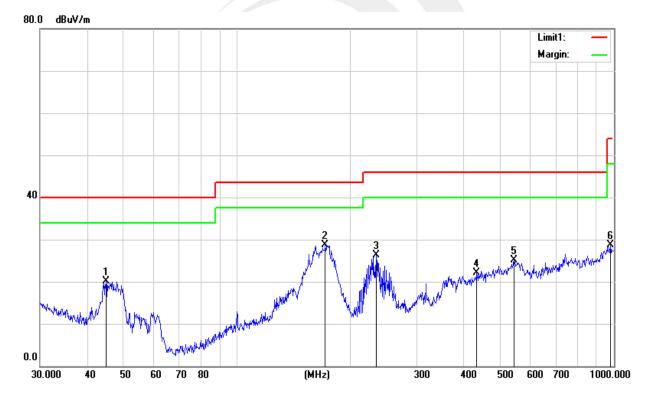
(30MHz-1000MHz)

Temperature:	24.4 ℃	Relative Humidity:	65%	
Test Voltage:	DC 7.4V	Phase:	Horizontal	
Test Mode:	Mode 1/2/3/4/5/6/7/8/9 (Mode 9 worst mode)			

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	44.9004	38.92	-18.86	20.06	40.00	-19.94	QP
2	171.3925	48.07	-19.34	28.73	43.50	-14.77	QP
3	234.1683	44.49	-18.18	26.31	46.00	-19.69	QP
4	432.5457	32.93	-10.89	22.04	46.00	-23.96	QP
5	543.2741	32.04	-6.92	25.12	46.00	-20.88	QP
6	979.1803	28.86	-0.16	28.70	54.00	-25.30	QP

Remark:

1. Margin = Result (Result = Reading + Factor)-Limit



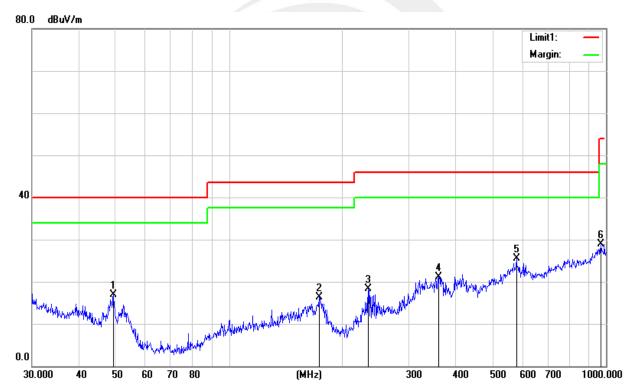


Temperature:	24.4 ℃	Relative Humidity:	65%	
Test Voltage:	DC 7.4V	Phase:	Vertical	
Test Mode:	Mode 1/2/3/4/5/6/7/8/9 (Mode 9 worst mode)			

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	49.3594	38.00	-21.15	16.85	40.00	-23.15	QP
2	173.2050	35.58	-19.36	16.22	43.50	-27.28	QP
3	234.1683	36.39	-18.18	18.21	46.00	-27.79	QP
4	360.4476	34.22	-13.12	21.10	46.00	-24.90	QP
5	578.6698	32.23	-6.70	25.53	46.00	-20.47	QP
6	968.9338	29.07	-0.13	28.94	54.00	-25.06	QP

Remark:

1. Margin = Result (Result = Reading + Factor)–Limit



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(1GHz~25GHz) Restricted band and Spurious emission Requirements

					8DPSK					
Frequency	Meter Reading	Amplifier	Loss	Antenna Factor	Orrected Factor	Emission Level	Limits	Margin	Detector	Comment
(MHz)	(dBµV)	(dB)	(dB)	(dB/m)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре	
				Low C	hannel (2402	MHz)				-
3264.79	61.34	44.70	6.70	28.20	-9.80	51.54	74.00	-22.46	PK	Vertical
3264.79	50.92	44.70	6.70	28.20	-9.80	41.12	54.00	-12.88	AV	Vertical
3264.73	61.33	44.70	6.70	28.20	-9.80	51.53	74.00	-22.47	PK	Horizontal
3264.73	50.28	44.70	6.70	28.20	-9.80	40.48	54.00	-13.52	AV	Horizontal
4804.44	58.73	44.20	9.04	31.60	-3.56	55.17	74.00	-18.83	PK	Vertical
4804.44	49.66	44.20	9.04	31.60	-3.56	46.10	54.00	-7.90	AV	Vertical
4804.31	58.87	44.20	9.04	31.60	-3.56	55.31	74.00	-18.69	PK	Horizontal
4804.31	49.39	44.20	9.04	31.60	-3.56	45.83	54.00	-8.17	AV	Horizontal
5359.66	49.06	44.20	9.86	32.00	-2.34	46.72	74.00	-27.28	PK	Vertical
5359.66	40.35	44.20	9.86	32.00	-2.34	38.01	54.00	-15.99	AV	Vertical
5359.83	47.36	44.20	9.86	32.00	-2.34	45.02	74.00	-28.98	PK	Horizontal
5359.83	38.99	44.20	9.86	32.00	-2.34	36.65	54.00	-17.35	AV	Horizontal
7205.69	54.68	43.50	11.40	35.50	3.40	58.08	74.00	-15.92	PK	Vertical
7205.69	44.22	43.50	11.40	35.50	3.40	47.62	54.00	-6.38	AV	Vertical
7205.86	54.73	43.50	11.40	35.50	3.40	58.13	74.00	-15.87	PK	Horizontal
7205.86	43.97	43.50	11.40	35.50	3.40	47.37	54.00	-6.63	AV	Horizontal
				Middle	Channel (244	1 MHz)				
3264.68	61.62	44.70	6.70	28.20	-9.80	51.82	74.00	-22.18	PK	Vertical
3264.68	50.40	44.70	6.70	28.20	-9.80	40.60	54.00	-13.40	AV	Vertical
3264.56	61.91	44.70	6.70	28.20	-9.80	52.11	74.00	-21.89	PK	Horizontal
3264.56	50.78	44.70	6.70	28.20	-9.80	40.98	54.00	-13.02	AV	Horizontal
4882.50	58.92	44.20	9.04	31.60	-3.56	55.36	74.00	-18.64	PK	Vertical
4882.50	50.46	44.20	9.04	31.60	-3.56	46.90	54.00	-7.10	AV	Vertical
4882.39	59.28	44.20	9.04	31.60	-3.56	55.72	74.00	-18.28	PK	Horizontal
4882.39	49.85	44.20	9.04	31.60	-3.56	46.29	54.00	-7.71	AV	Horizontal
5359.85	48.75	44.20	9.86	32.00	-2.34	46.41	74.00	-27.59	PK	Vertical
5359.85	39.79	44.20	9.86	32.00	-2.34	37.45	54.00	-16.55	AV	Vertical
5359.69	48.26	44.20	9.86	32.00	-2.34	45.92	74.00	-28.08	PK	Horizontal
5359.69	38.19	44.20	9.86	32.00	-2.34	35.85	54.00	-18.15	AV	Horizontal
7323.75	53.79	43.50	11.40	35.50	3.40	57.19	74.00	-16.81	PK	Vertical
7323.75	43.73	43.50	11.40	35.50	3.40	47.13	54.00	-6.87	AV	Vertical
7323.68	54.44	43.50	11.40	35.50	3.40	57.84	74.00	-16.16	PK	Horizontal
7323.68	43.74	43.50	11.40	35.50	3.40	47.14	54.00	-6.86	AV	Horizontal

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 Fax:+ 86-755 3688 6277
 Http://www.stsapp.com
 E-mail: sts@stsapp.com



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	High Channel (2480 MHz)											
3264.78	61.83	44.70	6.70	28.20	-9.80	52.03	74.00	-21.97	PK	Vertical		
3264.78	50.06	44.70	6.70	28.20	-9.80	40.26	54.00	-13.74	AV	Vertical		
3264.84	62.19	44.70	6.70	28.20	-9.80	52.39	74.00	-21.61	PK	Horizontal		
3264.84	51.32	44.70	6.70	28.20	-9.80	41.52	54.00	-12.48	AV	Horizontal		
4960.38	59.14	44.20	9.04	31.60	-3.56	55.58	74.00	-18.42	PK	Vertical		
4960.38	49.33	44.20	9.04	31.60	-3.56	45.77	54.00	-8.23	AV	Vertical		
4960.49	58.21	44.20	9.04	31.60	-3.56	54.65	74.00	-19.35	PK	Horizontal		
4960.49	49.68	44.20	9.04	31.60	-3.56	46.12	54.00	-7.88	AV	Horizontal		
5359.82	48.70	44.20	9.86	32.00	-2.34	46.36	74.00	-27.64	PK	Vertical		
5359.82	40.26	44.20	9.86	32.00	-2.34	37.92	54.00	-16.08	AV	Vertical		
5359.77	47.34	44.20	9.86	32.00	-2.34	45.00	74.00	-29.00	PK	Horizontal		
5359.77	39.26	44.20	9.86	32.00	-2.34	36.92	54.00	-17.08	AV	Horizontal		
7439.77	54.45	43.50	11.40	35.50	3.40	57.85	74.00	-16.15	PK	Vertical		
7439.77	44.95	43.50	11.40	35.50	3.40	48.35	54.00	-5.65	AV	Vertical		
7439.71	53.61	43.50	11.40	35.50	3.40	57.01	74.00	-16.99	PK	Horizontal		
7439.71	43.76	43.50	11.40	35.50	3.40	47.16	54.00	-6.84	AV	Horizontal		

Note:

1) Scan with GFSK, $\pi/4$ -DQPSK, 8DPSK, the worst case is 8DPSK Mode

2) Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Emission Level = Reading + Factor

The frequency emission of peak points that did not show above the forms are at least 20dB below the limit, the frequency

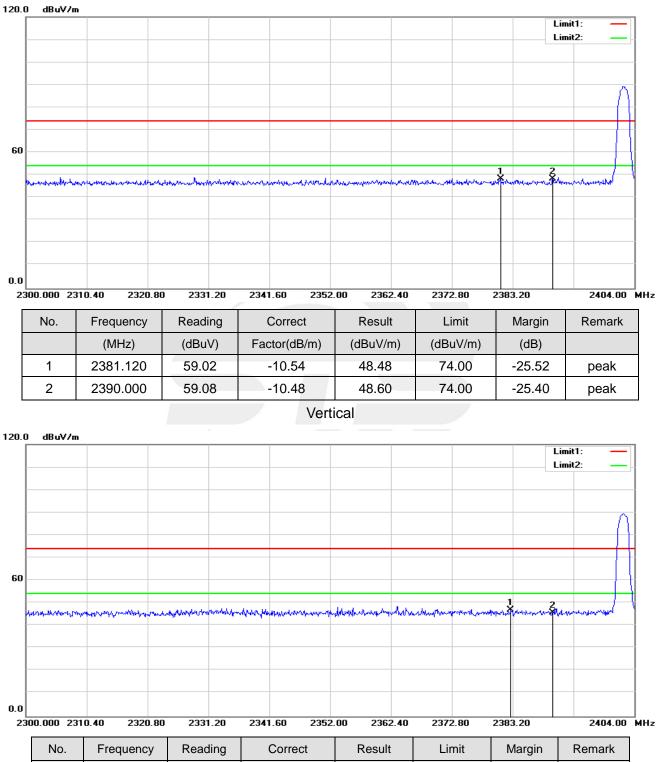
emission is mainly from the environment noise.

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Restricted band Requirements

8DPSK-Low Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2382.888	57.39	-10.53	46.86	74.00	-27.14	peak
2	2390.000	56.33	-10.48	45.85	74.00	-28.15	peak

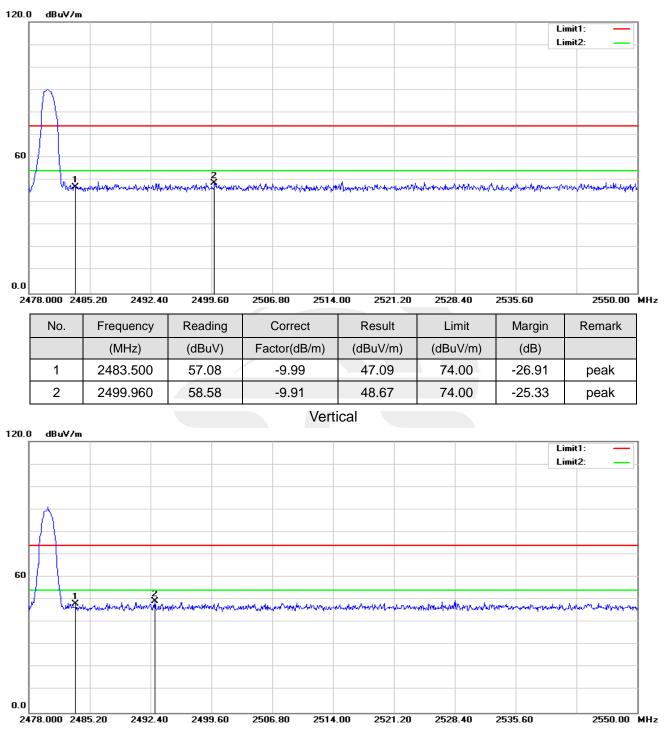
1/F., Building B, Zhuoke Science Park, No.190, Chongqing Road, Fuyong Street, Bao'an District, Shenzhen, Guangdong, China Tel: + 86-755 3688 6288 Fax:+ 86-755 3688 6277 Http://www.stsapp.com E-mail: sts@stsapp.com



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8DPSK-High Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.500	58.20	-9.99	48.21	74.00	-25.79	peak
2	2492.904	59.43	-9.95	49.48	74.00	-24.52	peak

Note: GFSK, π /4-DQPSK, 8DPSK of the nohopping and hopping mode all have been test, the worst case is 8DPSK of the nohopping mode, this report only show the worst case.

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4. CONDUCTED SPURIOUS & BAND EDGE EMISSION

4.1 LIMIT

According to FCC section 15.247(d), in any 100kHz 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 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

4.2 TEST PROCEDURE

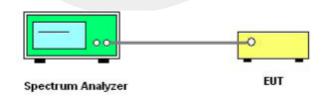
Spectrum Parameter	Setting
Detector	Peak
Start/Stop Frequency	30 MHz to 10th carrier harmonic
RB / VB (emission in restricted band)	100 KHz/300 KHz
Trace-Mode:	Max hold

For Band edge

Spectrum Parameter	Setting				
Detector	Peak				
Stort/Stop Eroguopou	Lower Band Edge: 2300– 2403 MHz				
Start/Stop Frequency	Upper Band Edge: 2479 – 2500 MHz				
RB / VB (emission in restricted band)	100 KHz/300 KHz				
Trace-Mode:	Max hold				

Remark: Hopping on and Hopping off mode all have been tested, only worst case hopping off is reported.

4.3 TEST SETUP



The EUT is connected to the Spectrum Analyzer; the RF load attached to the EUT antenna terminal is 500hm; the path loss as the factor is calibrated to correct the reading. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. In order to make an accurate measurement, set the span greater than RBW.

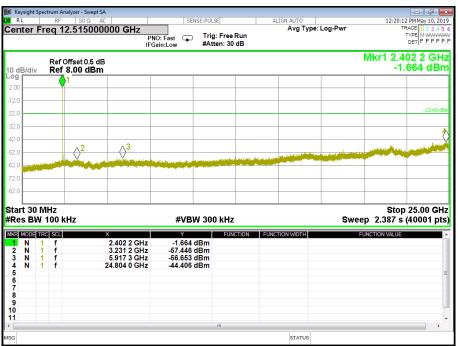
4.4 EUT OPERATION CONDITIONS

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.



4.5 TEST RESULTS

Temperature:	25 ℃	Relative Humidity:	50%
Test Mode:	GFSK(1Mbps)-00/39/78 CH	Test Voltage:	DC 7.4V



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39 CH

		Analyzer - Swept								
RL	RF		AC	SEN	SE:PULSE	A	ALIGN AUTO			46 PM May 10, 20
enter F	-req '	12.51500	0000 GHz		Trig: Free F	Run	Avg Type:	Log-Pwr		TYPE M WAWAA
			IF)	NO: Fast 😱 Gain:Low	#Atten: 30					DET P P P P
									Mkr1 2	440 9 GH
		Offset 0.5 c								.001 dB
dB/div	Re	f 10.00 dE	3m							.001 08
		? '								
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art 30				<i>(</i>)						p 25.00 GI
les BW	100	KHZ		#VBV	V 300 kHz			SWe	ep 2.387 s	s (40001 p
R MODE 1			Х	Y	FUNC	TION FUN	CTION WIDTH		FUNCTION VALUE	
N	1 f 1 f		2.440 9 GHz 2.707 4 GHz	-0.001 c						
N	1 f		6.822 5 GHz	-56.121 0	IBm					
	1 f		24.812 1 GHz	-44.177 c	lBm					
i										
					m					•

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78 CH

	specti		nalyzer - Swep	DT SA								
RL		RF	50 Ω	AC		SENSE:	PULSE	ALIGN AUTO				2 PM May 10, 20
enter	Fre	eq 1	2.51500	00000 GHz	PNO: Fast IFGain:Lov		Trig: Free #Atten: 30	Avg Ty	/pe: Log-Pw	r	Т	TYPE MWWW DET P P P P
dB/div			Offset 0.5 10.53 d					 		N		80 2 GH .530 dBi
30			1									
47												-19.47 d
.5												-19.47 0
.5												
.5			\ <mark>2</mark>	3						1 Classical de La		
.5												
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art 30			۲			#VBW :	300 kHz			Sweep		
art 30 tes B1	W 1	00 k	٢	×		Y	FUN	NCTION WIDTH				
art 30 es Bl N N N N	W 1	00 H	٢Hz	× 2.480 2 GH 2.557 0 GH 5.694 4 GH 24.760 3 GH	z -5 z -5	#VBW 3 0.530 dB 7.174 dB 7.281 dB 4.470 dB	FUN m m m	NCTION WIDTH			2.387 s	
art 30 les Bi N N N N	W 1	00 k SCU f f	(Hz	2.480 2 GH 2.557 0 GH 5.694 4 GH	z -5 z -5	Y 0.530 dB 7.174 dB 7.281 dB	FUN m m m	NCTION WIDTH			2.387 s	
art 30 tes Bi N N N N	W 1	00 k SCU f f	(Hz	2.480 2 GH 2.557 0 GH 5.694 4 GH	z -5 z -5	Y 0.530 dB 7.174 dB 7.281 dB	FUN m m m	NCTION WIDTH			2.387 s	
art 30 tes B1 N N N N N N N N	W 1	00 k SCU f f	κHz	2.480 2 GH 2.557 0 GH 5.694 4 GH	z -5 z -5	Y 0.530 dB 7.174 dB 7.281 dB	FUN m m m m	NOTION WIDTH			2.387 s	
2 N 3 N	W 1	00 k SCU f f	(Hz	2.480 2 GH 2.557 0 GH 5.694 4 GH	z -5 z -5	Y 0.530 dB 7.174 dB 7.281 dB	FUN m m m	STATUS			2.387 s	25.00 GF (40001 pt



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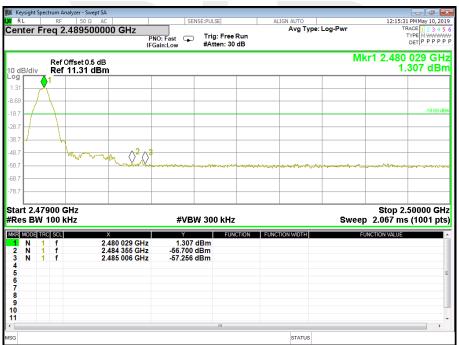


For Band edge

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Ref Offset 0.5 dB Mkr1 2.402 073 G 1.27	Keysight Spectrum Analyzer - Swept SA			- 7
Ref Offset 0.5 dB Mkr1 2.402 073 GB 127	RL RF 50 Ω AC	SENSE:PULSE	ALIGN AUTO	12:20:50 PM May 10, 201
Ref 8.73 dBm -1.271 dE 127 - </th <th>Center Freq 2.351500000 GF</th> <th>PNO: Fast 😱 Trig: Free Ru</th> <th>n</th> <th>TYPE MWWWW DET PPPP</th>	Center Freq 2.351500000 GF	PNO: Fast 😱 Trig: Free Ru	n	TYPE MWWWW DET PPPP
1.27 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3	10 dB/div Ref 8.73 dBm		Ν	/kr1 2.402 073 GHz -1.271 dBm
213	-			
1.3 31.3	11.3			
11.3 11.3 11.3 11.4	21.3			-21.27 dÐr
31.3				
King King King King King King 71.3 Image: Start 2.30000 GHz Stop 2.40300 G Stop 2.40300 G Start 2.30000 GHz #VEW 300 KHz Stop 2.40300 G Res BW 100 KHz #VEW 300 KHz Sweep 9.867 ms (1001 p Image: Stop 2.402 073 GHz				2
Mail Annual Annual Annual Annual Annual Start 2.30000 GHz #VBW 300 kHz Stop 2.40300 G Res BW 100 kHz #VBW 300 kHz Stop 2.40300 G Res BW 100 kHz #VBW 300 kHz Stop 2.40300 G In 1 f 2.402 073 GHz -1.271 dBm 2 N 1 f 2.399 010 GHz -59.516 dBm 3 N 1 f 2.399 910 GHz -48.550 dBm 6 - - 7 - 8 - 9 - 10 -			ungerhanden einen sinn aller Margare	erono and a second
XI XI XI Y FUNCTION FUNCTION WIDTH FUNCTION VALUE XRS MODE T 2.40300 G Stop 2.40300 G Sweep 9.867 ms (1001 p XRS MODE T FUNCTION FUNCTION WIDTH FUNCTION VALUE XRS N 1 f 2.402 073 GHz -1271 dBm FUNCTION VALUE 2 N 1 f 2.399 010 2GHz -59.516 dBm FUNCTION VALUE 3 N 1 f 2.399 910 GHz -48.550 dBm FUNCTION VALUE 4 F FUNCTION VALUE FUNCTION VALUE FUNCTION VALUE FUNCTION VALUE 6 F F F FUNCTION VALUE F 7 F F F F F 9 F F F F F 9 F F F F F	71.3			
KR MODE TRC ION FUNCTION FUNCTI	81.3			
Image: Node TRC Sci X Y Function Function with the procession of the procesion of the procession of the procession of the procession of th		#VBW 300 kHz	Swe	Stop 2.40300 GHz ep 9.867 ms (1001 pts
2 N 1 f 2.390 022 GHz -59.516 dBm 3 N 1 f 2.399 910 GHz -48.550 dBm 4	IKR MODE TRC SCL X	Y FUNCTIO		
5 6 7 8 9 9 10	2 N 1 f 2.390 02 3 N 1 f 2.399 91	2 GHz -59.516 dBm		
8 9 9 10 10 10 10 10 10 10 10 10 10 10 10 10				
9 0 1				
1	9			
	1			
G STATUS			STATUS	•

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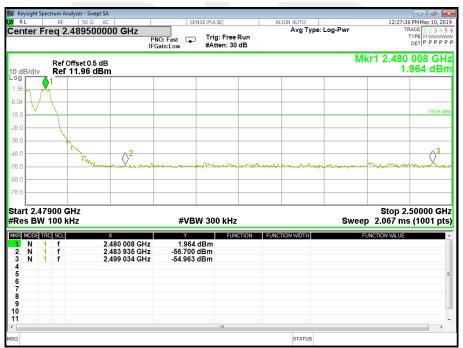


For Hopping Band edge

00 CH

Keysight Spectrum Analyz							- 7
RL RF	50 Ω AC	SE	NSE:PULSE	ALIGN AUTO	Law Down		M May 10, 201
enter Freq 2.3	51500000 GHz	PNO: Fast G	Trig: Free Run #Atten: 30 dB	Avg Type:	Log-Pwr	TY	E 1 2 3 4 5 E M WWWW T P P P P P
	set 0.5 dB 19 dBm				Mk	r1 2.402 8 -0.8	97 GH 14 dBr
9 81							
.8							
.8							-20.81 d
.8							
.8							1
8	ma dard states and shake		-			2 1	
8 Annon Martin Martin	and a second	Interferentiel (had might fere		and an open state of the state			(-))) - ())
.8							
art 2.30000 GH: tes BW 100 kHz		#VB	W 300 kHz		Sweep	Stop 2.40 9.867 ms (
R MODE TRC SCL	Х	Y	FUNCTION	FUNCTION WIDTH	FL	INCTION VALUE	
N 1 f N 1 f N 1 f	2.402 897 G 2.390 022 G 2.399 910 G	-58.673	dBm				
			m				

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Report No.: STS1904279W02



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Temperature:	25 ℃	Relative Humidity:	50%
Test Mode:	π/4-DQPSK(2Mbps)– 00/39/78 CH	Test Voltage:	DC 7.4V

		Analyzer - Swept								
RL	RF		AC 0000 GHz	SEN	ISE:PULSE	AL	IGN AUTO Avg Type:	Log-Pwr		2 PM May 10, 20 RACE 1 2 3 4
nterr	-req	12.51500	P	NO: Fast	Trig: Free Run #Atten: 30 dB		Ang Type.	Log-I III		TYPE M WWW DET P P P P
			IF	Gain:Low	#Atten: 00 db				Mkr1 2.4	02.2 CL
dB/div		Offset 0.5 d f 5.76 dBr							-4.	245 dB
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2										
art 30	MHz								Ston	25.00 GI
es BV		kHz		#VB\	№ 300 kHz			Swe	ep 2.387 s	
MODE			Х	Y	FUNCTIO	I FUNC	TION WIDTH		FUNCTION VALUE	
N N	1 f		2.402 2 GHz 3.607 6 GHz	-4.245						
N	1 f		5.637 0 GHz	-56.695	dBm					
N	1 f		24.731 6 GHz	-43.628	dBm					
					III		STATUS			

00 CH

39 CH

L Iter F	RF	alyzer - Swept S				_				
			AC 0000 GHz	PNO: Fast FGain:Low	Trig: Fre #Atten: 3		ALIGN AUTO Avg T	/pe: Log-Pwr		55 PM May 10 TRACE 1 2 3 TYPE M WW DET P P P
B/div		offset 0.5 d 7.37 dBm							Mkr1 2.4 -2	440 9 G 2.634 d
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<u> </u>										
L rt 30 M	/Hz								Sto	p 25.00 (
s BW	100 k	Hz		#VB	W 300 kH	Z		Sw	eep 2.387 s	
MODE TR	RC SCL		× 2.440 9 GHz	-2.634		INCTION	FUNCTION WIDTH		FUNCTION VALUE	
N 1	f		3.570 1 GHz 6.015 9 GHz	-57.122	dBm					
N 1			24.764 7 GHz							

Π



78 CH

Ref Offset 0.5 dB Mkr1 2.480 2 0 dB/div 1 1 1		trum Analyzer - Sw							- ¢
Ref Offset 0.5 dB Mkr1 2.480 2 M 0 dB/div Ref 7.88 dBm -09 -2.121 c -21 -2 1 -2 22 -3 3 MHz Res BW 100 kHz #VBW 300 kHz Stop 25.00 Sweep 2.387 s (4000' 1 1 2 -2 3 1 4 1 5 -7076 dBm 5 -7076 dBm 6 -2				SENSE:PULSE		ALIGN AUTO	og-Dwr		
Ref Offset 0.5 dB Mkr1 2.480 2 fd 0 dB/div Ref 7.88 dBm -2.121 c 212	enter Fr	eq 12.5150	PN			Avg Type. L	og-r wi	т	YPE M WAAWAAA
Alter Unset US dBm -2.121 c 02 1 1 1 121 1 1 <th></th> <th></th> <th>IFG</th> <th>ain:Low #Atter</th> <th>n: 30 dB</th> <th></th> <th></th> <th></th> <th>,</th>			IFG	ain:Low #Atter	n: 30 dB				,
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Image: Stop 2 3 Image: Stop 25.00 arrt 30 MHz #VEW 300 kHz Stop 25.00 ses BW 100 kHz #VEW 300 kHz Stop 25.00 N 1 f 2.480 2 GHz -2.121 dBm N 1 f 2.480 2 GHz -57.075 dBm N 1 f 24.787 1 GHz -43.170 dBm									
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N 1 f 2.480 2 GHz -2.121 dBm N 1 f 3.093 2 GHz -57.041 dBm N 1 f 5.703 2 GHz -57.075 dBm N 1 f 24.787 1 GHz -43.170 dBm				#VBW 300	kHz		Sweep		
N 1 f 2.480 2 GHz -2.121 dBm 2 N 1 f 3.093 2 GHz -57.041 dBm 3 N 1 f 5.703 2 GHz -57.075 dBm 4 N 1 f 24.787 1 GHz -43.170 dBm 5 - - - -43.170 dBm	R MODE TRO	CISCL	x	Y	FUNCTION	FUNCTION WIDTH	FUN	ICTION VALUE	
N 1 f 5.703 2 GHz -57.075 dBm N 1 f 24.787 1 GHz -43.170 dBm	N 1	f							
N 1 f 24.787 1 GHz -43.170 dBm									
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 E-mail: sts@stsapp.com



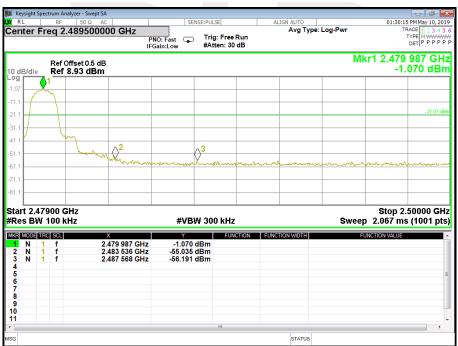


For Band edge

00 CH

	ectrum Analyzer -							
RL		0 Ω AC 500000 GHz	SENSI	E:PULSE	ALIGN AUTO Avg Type:	Log-Pwr		M May 10, 20
enter r	1eq 2.551	P	NO: Fast	Trig: Free Run			TY	
		IF	Gain:Low	#Atten: 30 dB			D	ETICECC
	Ref Offset	0.5 dB				M	kr1 2.401 9	
dB/div	Ref 6.47						-3.5	34 dBı
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	0000 GHz 100 kHz		#\/B\/	300 kHz		Swoo	Stop 2.4 p 9.867 ms (
							-	1001 pt
R MODE T	RC SCL	× 2.401 970 GHz	-3.534 dF	FUNCTION	FUNCTION WIDTH	F	UNCTION VALUE	
2 N 1	1 f	2.390 022 GHz	-59.075 dE	Bm				
N [·]	1 f	2.399 704 GHz	-49.587 dE	3m				
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5 7 8								
				III				•

78 CH





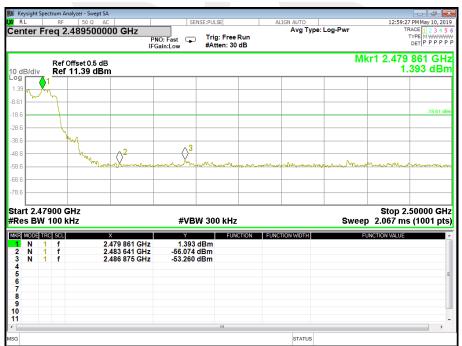


For Hopping Band edge

00 CH

		alyzer - Swept S								
RL enter F	^{R⊧} req 2.	50 Ω 4 3515000	000 GHz	PNO: Fast	Trig: Free F		Avg Type:	Log-Pwr	Т	5 PM May 10, 20 RACE 1 2 3 4 5 TYPE M WWWW
			1	IFGain:Low	#Atten: 30 d	βB				DETPPPP
) dB/div		ffset 0.5 di 9.17 dBm						М	kr1 2.402 -0.	176 GH 830 dBr
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	0000 G i 100 k			#VB	W 300 kHz			Swee	Stop 2. p 9.867 m	40300 GH s (1001 pts
R MODE T			Х	Y	FUNC	TION FUNC	TION WIDTH	F	UNCTION VALUE	
	1 f 1 f 1 f		2.402 176 GHz 2.390 022 GHz 2.399 910 GHz	-59.522	dBm					
1										
					III		1			Þ
							STATUS			

78 CH



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Page 38 of 68 Report No.: STS1904279W02

Temperature:	25 ℃	Relative Humidity:	50%
Test Mode:	8DPSK(3Mbps) -00/39/78 CH	Test Voltage:	DC 7.4V

	ight S	pect		nalyzer - Swept SA									
LXI RL			RF	50 Ω AC			SENSE:PU	LSE	AL	IGN AUTO			7 PM May 10, 2019
Cent	er l	Fre	eq 1	2.515000		PNO: Fast IFGain:Low		g: Free Run tten: 30 dB		Avg Type	: Log-Pwr		RACE 1 2 3 4 5 6 TYPE M WWWW DET P P P P P P
10 dB	/div			Offset 0.5 dB 5.60 dBm								Mkr1 2.4 -4	01 5 GHz .404 dBm
Log -4.40				1									
-14.4													
-24.4					0.3								-24.40 dBm
-34.4 -					$\langle \rangle^3$								2
-54.4				∂ ²							وروبيان وروبيا		And the second second
-64.4													
-74.4 -													
-84.4 -													
Start #Res				kHz		#	VBW 30	0 kHz			Swe	Stop eep 2.387 s	25.00 GHz (40001 pts)
MKR M		TRC	SCL		x		Y	FUNCTION	FUNCT	ION WIDTH		FUNCTION VALUE	
2	N N N	1	f f		2.401 5 GH 2.535 1 GH 5.180 1 GH	z -57.	404 dBm 074 dBm 246 dBm						
4	N	1	f		24.802 1 GH		246 dBm 088 dBm						
5 6 7 8 9													
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10 11													-
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00 CH

39 CH	
39 CH	

Inter Freq 12.515000000 GHz Trig: Free Run Avg Type: Log-Pwr Trace I and Type		pectru		lyzer - Swept										
Trig: Free Run IFGain:Low Trig: Free Run #Atten: 30 dB Mkr1 2.441 5 G d Ref Offset 0.5 dB Mkr1 2.441 5 G d Ref Offset 0.5 dB Mkr1 2.441 5 G d Ref Offset 0.5 dB Mkr1 2.441 5 G d Ref Offset 0.5 dB Mkr1 2.441 5 G d Ref Offset 0.5 dB	RL RL	iro					SENSE:PUL	SE .	A		Log-Pwr		:57 PM May 10, 20 TRACE 1 2 3 4	
Bildit Ref 0.03 dBm -1.974 d Image: State of the st		100	4 12	.51500		PNO: Fast C FGain:Low							DET P P P P	
arr 3	dB/div													
Image: Stop 25.00 (Stop 2.387 s (40001) Image: Stop 2.387 s (4001)	g			.03 001	•									
Image: State of the s	7		- Y								-			
Image: Stop 25.00 f Stop 25.00 f art 30 MHz #VEW 300 kHz Stop 25.00 f e BW 100 kHz #VEW 300 kHz Stop 25.00 f N 1 f 2.441 5 GHz -1.974 dBm N 1 f 2.580 7 GHz -4.974 dBm N 1 f 2.481 9 6 GHz -44.531 dBm	.0		_											
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X Y Function Width Function Width Function Value MODE TRC SCI X Y Function Width Function Value N 1 f 2.4415 GHz -1.974 dBm -57.137 dBm N 1 f 2.590 7 GHz -57.137 dBm -67.137 dBm N 1 f 24.819 6 GHz -40.777 dBm -44.531 dBm	0													
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es BW 100 kHz #VBW 300 kHz Sweep 2.387 s (40001 MODE TRG SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE N 1 f 2.401 5 GHz -1.974 dBm FUNCTION WIDTH FUNCTION VALUE N 1 f 2.590 7 GHz -501 7 GHz -501 7 GHz -501 7 GHz N 1 f 2.590 7 GHz -40.777 dBm -44.531 dBm -44.531 dBm	Ĭ.													
N 1 f 2.4416 GHz -1.974 dBm N 1 f 2.5907 GHz -57.137 dBm N 1 f 5.180 1 GHz -40.777 dBm N 1 f 24.819 6 GHz -44.531 dBm				lz		#V	'BW 30) kHz			Swe			
N 1 f 2.690 7 GHz -57.137 dBm N 1 f 5.180 1 GHz -40.777 dBm N 1 f 24.819 6 GHz -44.531 dBm N 1 f 24.819 6 GHz -44.531 dBm						Y		FUNCTION	FUNC	TION WIDTH		FUNCTION VALUE		
N 1 f 24.819.6 GHz -44.531 dBm	N	1	f		2.590 7 GHz	-57.1	37 dBm							
	N		· .		24.013 0 0112	-44.0	JI UDIII							
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78 CH

01:26:05 PM May 10, 20 TRACE [] 2 3 4 TYPE MWWW DET P P P Mkr1 2.479 6 GH
Mkr1 2.479 6 GH
Mkr1 2.479 6 GH
4 570 -10
-1.570 dBi
-21.90 d
Stop 25.00 GH weep 2.387 s (40001 pt
FUNCTION VALUE
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 Http://www.stsapp.com
 E-mail: sts@stsapp.com



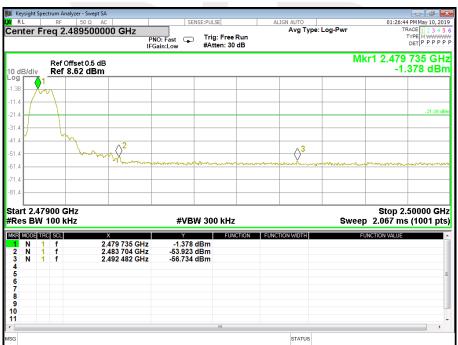


For Band edge

00 CH

	RF 50 9 9q 2.3515	00000 GHz	SENSE:PI	JLSE	ALIGN AUTO			
	⁵ 4 2.33 13				Avg Type:	Log-Pwr		PM May 10, 201
		PI		rig: Free Run Atten: 30 dB			T	
		IFC	Gain:Low #/	Atten: 30 dB				
	Ref Offset 0 Ref 6.28 (м	′ kr1 2.401 -3 7	764 GH: 716 dBn
	Rei 0.20 (
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tart 2.300 Res BW 1			#VBW 3	00 KU-		Curren		0300 GH
			#VBW 3				p 9.867 ms	(1001 pt
R MODE TRC	f	× 2.401 764 GHz	-3.716 dBm	FUNCTION	FUNCTION WIDTH	F	UNCTION VALUE	
2 N 1	f	2.390 022 GHz	-60.121 dBm	1				
3 N 1 4	f	2.399 910 GHz	-49.300 dBm	1				
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					STATUS			

78 CH







For Hopping Band edge

00 CH

	n Analyzer - Swept SA RF 50 Ω AC		CE.	NSE:PULSE		IGN AUTO		01:14:59	PM May 10, 20
	2.35150000	DO GHz	PNO: Fast		un	Avg Type:	Log-Pwr	TR/ T	ACE 1 2 3 4 5 YPE M WWW DET P P P P
	ef Offset 0.5 dB ef 8.99 dBm						M	kr1 2.402 -1.(897 GH)06 dBr
9)1									
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art 2.30000								Ot an 0.4	0300 GH
es BW 100			#VB	W 300 kHz			Swee	9.867 ms	
R MODE TRC SC		x 402 897 GHz	-1.006	FUNC	TION FUNC	TION WIDTH	F	UNCTION VALUE	
N 1 f	2.	390 022 GHz 399 807 GHz	-58.846	dBm					
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						STATUS			·

78 CH



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5. NUMBER OF HOPPING CHANNEL

5.1 LIMIT

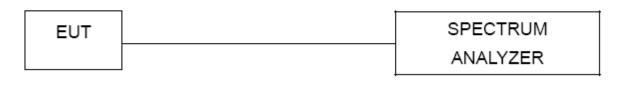
	FCC Part 15.247,Subpart C								
Section	Test Item	Limit	FrequencyRange (MHz)	Result					
15.247 (a)(1)(iii)	Number of Hopping Channel	≥15	2400-2483.5	PASS					

Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	> Operating FrequencyRange
RB	1MHz
VB	1MHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

5.2 TEST PROCEDURE

- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- b. Spectrum Setting: RBW= 1MHz, VBW=1MHz, Sweep time = Auto.

5.3 TEST SETUP



5.4 EUT OPERATION 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.



5.5 TEST RESULTS

Temperature:	25 ℃	Relative Humidity:	60%
Test Mode:	Hopping Mode -GFSK Mode	Test Voltage:	DC 7.4V

Number of Hopping Channel

79

Hopping channel

Keysight Spectrum Analyze	er - Swept SA 50 Ω AC	SENSE:PULSE	ALIGN AUTO	12:22:52 PM May 10, 20
enter Freq 2.44	1750000 GHz	Fast 🕞 Trig: Free Run	Avg Type: Log-Pwr	TRACE 1 2 3 4 5 TYPE MWWW DET P P P F
dB/div Ref 11.	et 0.5 dB .80 dBm		Mk	r2 2.479 993 0 GH 1.80 dBr
^{2g} .80 () ¹				2
20				
1.2				
1.2				
1.2				
1.2				
1.2				
1.2				
3.2				
art 2.40000 GHz Res BW 1.0 MHz		#VBW 1.0 MHz	Swe	Stop 2.48350 GH p 1.000 ms (1001 pt
R MODE TRC SCL	X 2.401 920 5 GHz	Y FUNCTION -0.55 dBm	FUNCTION WIDTH	FUNCTION VALUE
N 1 f N 1 f	2.401 920 5 GHz 2.479 993 0 GHz	-0.55 dBm 1.80 dBm		
3 4				
5				
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ă l				

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6. AVERAGE TIME OF OCCUPANCY

6.1 LIMIT

FCC Part 15.247,Subpart C					
Section	Test Item	Limit	FrequencyRange (MHz)	Result	
15.247 (a)(1)(iii)	Average Time of Occupancy	0.4sec	2400-2483.5	PASS	

6.2 TEST PROCEDURE

- a. The transmitter output (antenna port) was connected to the spectrum analyzer
- b. Set RBW =1MHz/VBW =3MHz.
- c. Use a video trigger with the trigger level set to enable triggering only on full pulses.
- d. Sweep Time is more than once pulse time.
- Set the center frequency on any frequency would be measure and set the frequency span to e. zero span.
- f. Measure the maximum time duration of one single pulse.
- g. Set the EUT for DH5, DH3 and DH1 packet transmitting.
- \tilde{h} . Measure the maximum time duration of one single pulse.
- i. DH5 Packet permit maximum 1600/ 79 / 6 = 3.37 hops per second in each channel (5 time slots RX, 1 time slot TX). Sothe dwell time is the time duration of the pulse times 3.37 x 31.6 = 106.6 within 31.6 seconds.
- j. DH3 Packet permit maximum 1600 / 79 / 4 = 5.06 hops per second in each channel (3 time slots RX, 1 time slot TX). So he dwell time is the time duration of the pulse times $5.06 \times 31.6 = 160$ within 31.6 seconds.
- k. DH1 Packet permit maximum 1600 / 79 / 2 = 10.12 hops per second in each channel (1 time slot RX, 1 time slot TX). So the dwell time is the time duration of the pulse times $10.12 \times 31.6 = 320$ within 31.6 seconds.

6.3 TEST SETUP



6.4 EUT OPERATION 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.



6.5 TEST RESULTS

Temperature:	25 ℃	Relative Humidity:	50%
Test Mode:	GFSK(1Mbps)-DH1/DH3/DH5	Test Voltage:	DC 7.4V

Data Packet	Channel	pulse time(ms)	Dwell Time(s)	Limits(s)
DH1	middle	0.391	0.125	0.4
DH3	middle	1.657	0.265	0.4
DH5	middle	2.903	0.310	0.4



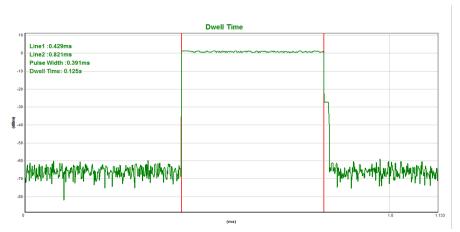
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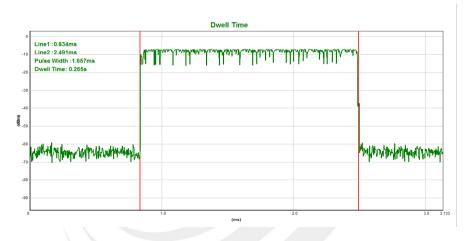
 Tel: + 86-755 3688 6288
 Fax:+ 86-755 3688 6277
 Http://www.stsapp.com
 E-mail: sts@stsapp.com



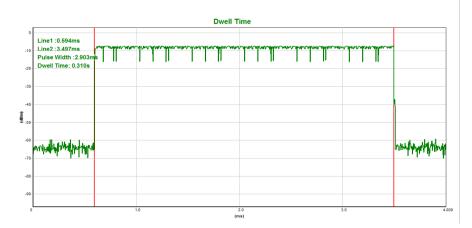
CH39-DH1



CH39-DH3



CH39-DH5



Shenzhen STS Test Services Co., Ltd.

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Temperature:	25 ℃	Relative Humidity:	50%
	π/4-DQPSK(2Mbps)– 2DH1/2DH3/2DH5	Test Voltage:	DC 7.4V

Data Packet	Channel	pulse time(ms)	Dwell Time(s)	Limits(s)
2DH1	middle	0.401	0.128	0.4
2DH3	middle	1.656	0.265	0.4
2DH5	middle	2.911	0.311	0.4



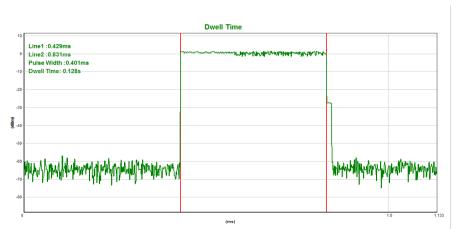
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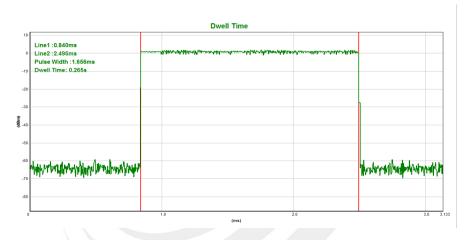
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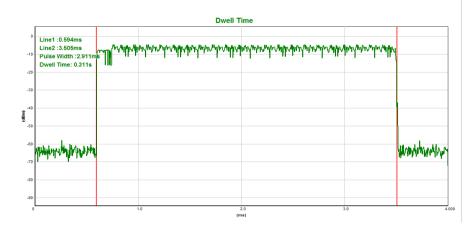
CH39-2DH1



CH39-2DH3



CH39-2DH5



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Temperature:	25 ℃	Relative Humidity:	50%
	8DPSK(3Mbps)– 3DH1/3DH3/3DH5	Test Voltage:	DC 7.4V

Data Packet	Channel	pulse time(ms)	Dwell Time(s)	Limits(s)
3DH1	middle	0.401	0.128	0.4
3DH3	middle	1.659	0.265	0.4
3DH5	middle	2.913	0.311	0.4



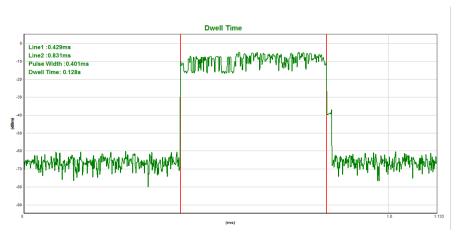
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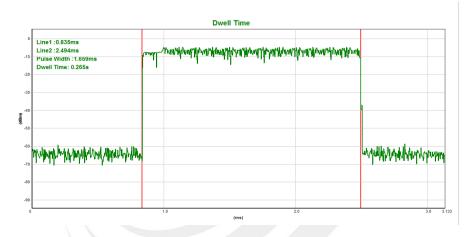
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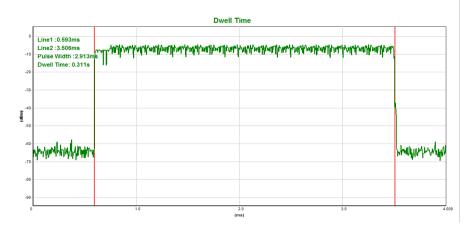
CH39-3DH1



CH39-3DH3



CH39-3DH5



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7. HOPPING CHANNEL SEPARATION MEASUREMEN

7.1 LIMIT

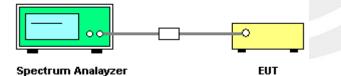
Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	> 20 dB Bandwidth or Channel Separation
RB	30 kHz (20dB Bandwidth) / 30 kHz (Channel Separation)
VB	100 kHz (20dB Bandwidth) / 100 kHz (Channel Separation)
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

7.2 TEST PROCEDURE

- a. The transmitter output (antenna port) was connected to the spectrum analyser in peak hold mode.
- b. The resolution bandwidth of 30 kHz and the video bandwidth of 100 kHz were utilised for 20 dB bandwidth measurement.
- c. The resolution bandwidth of 30 kHz and the video bandwidth of 100 kHz were utilised for channel separation measurement.

7.3 TEST SETUP



7.4 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.



7.5 TEST RESULTS

Temperature:	25 ℃	Relative Humidity:	50%
Test Mode:	CH00 / CH39 / CH78 (GFSK(1Mbps) Mode)	Test Voltage:	DC 7.4V

Frequency	Ch. Separation (MHz)	Limit (MHz)	Result
2402 MHz	0.999	0.690	Complies
2441 MHz	1.002	0.690	Complies
2480 MHz	1.002	0.691	Complies

For GFSK: Ch. Separation Limits: > two-thirds 20dB bandwidth

Keysight Spectrum Analyz R L RF	ter - Swept SA 50 Ω AC	SENSE:PULSE	ALIGN AUTO	12:21:29 PM May 10, 20
enter Freq 2.4	02500000 GHz): Wide Trig: Free F ain:Low #Atten: 30	Avg Type: Log-Pwr Run	
dB/div Ref 4.	set 0.5 dB 93 dBm			Mkr2 2.403 052 GH -5.029 dBr
07 			2	~~~
5.1				
5.1				
5.1 enter 2.402500 (Res BW 30 kHz	GHz	#VBW 100 kHz	Si	Span 3.000 MH weep 3.200 ms (1001 pt
R MODE TRC SCL 1 N 1 f 2 N 1 f 3 4 1 f	X 2.402 053 GHz 2.403 052 GHz	Y FUNC -5.07 dBm -5.03 dBm	TION FUNCTION WIDTH	FUNCTION VALUE
5 6 7 8 9				
0		m		•

CH00 -1Mbps





CH39 -1Mbps



CH78 -1Mbps





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Temperature:	25 ℃	Relative Humidity:	50%
	CH00 / CH39 / CH78 (π/4-DQPSK(2Mbps) Mode)	Test Voltage:	DC 7.4V

Frequency	Ch. Separation (MHz)	Limit (MHz)	Result
2402 MHz	0.999	0.892	Complies
2441 MHz	0.999	0.893	Complies
2480 MHz	0.999	0.896	Complies

For π /4-DQPSK(2Mbps): Ch. Separation Limits: > two-thirds 20dB bandwidth

	trum Analyzer - Swept S							
RL		AC	SENSE:P	ULSE	ALIGN AUTO			PM May 10, 20
enter Fre	eq 2.4025000	PI		rig: Free Run Atten: 30 dB	Avg Type	e: Log-Pwr	т	ACE 1 2 3 4 TYPE M WWW DET P P P P
dB/div	Ref Offset 0.5 dl Ref 0.65 dBm					Mł	(r2 2.402 -9.1	773 GF 218 dB
35		1			2			
9.4	$- \wedge$			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			\sim	
.4								
.4								m.
.4								
4								
4								
4	02500 GHz							
enter 2.4	30 kHz		#VBW 1) 3.200 ms	
enter 2.40 es BW 3 R MODE TRO N 1	30 kHz	× 2.401 774 GHz	Y -9.35 dBr	FUNCTION	FUNCTION W/DTH			
.4 enter 2.44 les BW 3 R MODE TRO N 1 N 1	30 kHz		Y	FUNCTION	FUNCTION WIDTH) 3.200 ms	
A enter 2.44 les BW 3 R MODE TRO N 1 N 1	30 kHz	2.401 774 GHz	Y -9.35 dBr	FUNCTION	FUNCTION WIDTH) 3.200 ms	
A center 2.44 Res BW 3 R MODE TRC N 1 N 1	30 kHz	2.401 774 GHz	Y -9.35 dBr	FUNCTION	FUNCTION WIDTH) 3.200 ms	
A ces BW 3 R MODE TRO N 1 2 N 1 3 4 5 5 5 6 9	30 kHz	2.401 774 GHz	Y -9.35 dBr	FUNCTION	FUNCTION WIDTH) 3.200 ms	3.000 MH (1001 pt
E MODE TRC N 1 N 1 N 1 N 1 N 1 N 1 N 1 N 1 N 1 N 1	30 kHz	2.401 774 GHz	Y -9.35 dBr	FUNCTION	FUNCTION WIDTH) 3.200 ms	

CH00 -2Mbps



CH39 -2Mbps



CH78 -2Mbps





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Temperature:	25 ℃	Relative Humidity:	50%
	CH00 / CH39 / CH78 (8DPSK(3Mbps)Mode)	Test Voltage:	DC 7.4V

Frequency	Ch. Separation (MHz)	Limit (MHz)	Result
2402 MHz	1.002	0.905	Complies
2441 MHz	0.999	0.908	Complies
2480 MHz	0.999	0.907	Complies

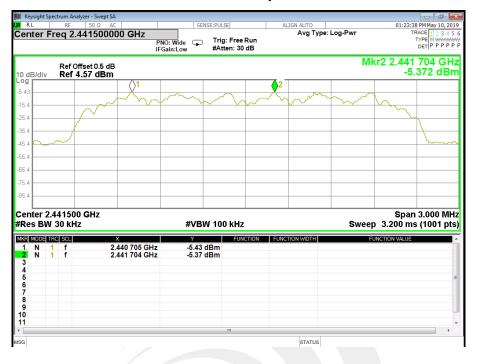
For 8DPSK(3Mbps):Ch. Separation Limits: > two-thirds 20dB bandwidth

		nalyzer - Swept SA								- F
RL	RF	50 Ω AC		SENSE:	PULSE	AL	IGN AUTO	Les Dum		5 PM May 10, 2
enter F	req 2	.40250000	P		rig: Free Run Atten: 30 dB		Avg Type:	Log-Pwr		RACE 1 2 3 4 TYPE M WWW DET P P P P
		Offset 0.5 dB						М	kr2 2.402	704 GH 153 dB
dB/div	Ref	2.77 dBm				<u></u> 2 -				
.23			$\sim \sim $	\sim	\sim	~~~~	an	~~~~		
.2		\sim	V \$		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		V ~		1 mg	
.2									<u> </u>	1
2	m									hanne
.2										
2										
2										
.2										
enter 2.	40250	0 GHz							Span	3.000 M
les BW	30 kl	lz		#VBW 1	00 kHz			Swee	p 3.200 ms	s (1001 p
R MODE TH			x 401 702 GHz	Y -7.23 dBi	FUNCTION	FUNC	TION WIDTH	F	UNCTION VALUE	
N 1	f f		401 702 GHZ 402 704 GHz	-7.15 dBi						
,										
					m					•

CH00 -3Mbps



CH39 -3Mbps



CH78 -3Mbps





8. BANDWIDTH TEST

8.1 LIMIT

FCC Part15 15.247,Subpart C					
Section Test Item Limit FrequencyRange (MHz)				Result	
15.247 (a)(1)	Bandwidth	(20dB bandwidth)	2400-2483.5	PASS	

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	> Measurement Bandwidth or Channel Separation
RB	30 kHz (20dB Bandwidth) / 30 kHz (Channel Separation)
VB	100 kHz (20dB Bandwidth) / 100 kHz (Channel Separation)
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

8.2 TEST PROCEDURE

- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- b. Spectrum Setting: RBW= 30KHz, VBW=100KHz, Sweep time = Auto.

8.3 TEST SETUP

EUT	SPECTRUM
	ANALYZER

8.4 EUT OPERATION 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.



8.5 TEST RESULTS

Temperature:	25 ℃	Relative Humidity:	50%
Test Mode:	GFSK(1Mbps) CH00 / CH39 / C78	Test Voltage:	DC 7.4V

Frequency	20dB Bandwidth (MHz)	Result
2402 MHz	1.035	PASS
2441 MHz	1.035	PASS
2480 MHz	1.036	PASS

CH00 -1Mbps

🎉 Keysight Spectrum Analyzer - Occupied BW				
RL RF 50 Ω AC Center Freq 2.402000000	CH-	SENSE:PULSE Center Freg: 2.4020000	ALIGN AUTO	12:19:27 PM May 10, 2019 Radio Std: None
senter Freq 2.40200000		Trig: Free Run	Avg Hold:>10/10	
	#IFGain:Low	#Atten: 30 dB		Radio Device: BTS
10 dB/div Ref 20.00 dBm	ا			
10.0				
0.00				
-10.0				
			\sim	
-20.0				
-30.0	~~			\sim
-40.0				
-50.0				
-60.0				
-70.0				
Center 2.402 GHz #Res BW 30 kHz		#VBW 100 k	Hz	Span 2 MHz Sweep 2.733 ms
Occupied Bandwidt	h	Total Power	3.88 dBm	
-	 07.08 kHz			
50				
Transmit Freq Error	7.244 kHz	OBW Power	99.00 %	
x dB Bandwidth	1.035 MHz	x dB	-20.00 dB	
	1.000 10112		-20.00 ub	
ISG			STATUS	

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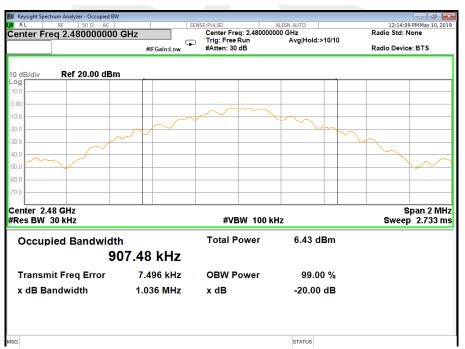
1/F., Building B, Zhuoke Science Park, No.190, Chongqing Road, Fuyong Street, Bao'an District, Shenzhen, Guangdong, China Tel: + 86-755 3688 6288 Fax: + 86-755 3688 6277 Http://www.stsapp.com E-mail: sts@stsapp.com



CH39 -1Mbps



CH78 -1Mbps



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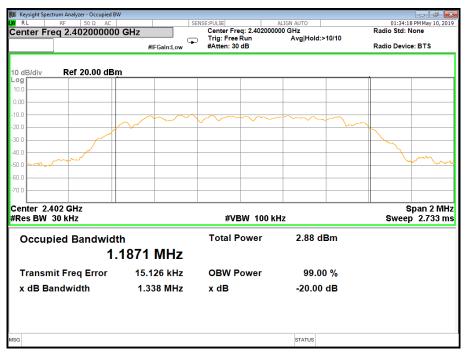


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Temperature:	25 ℃	Relative Humidity:	50%
	π/4-DQPSK(2Mbps) CH00 / CH39 / C78	Test Voltage:	DC 7.4V

Frequency	20dB Bandwidth (MHz)	Result
2402 MHz	1.338	PASS
2441 MHz	1.34	PASS
2480 MHz	1.344	PASS

CH00 -2Mbps



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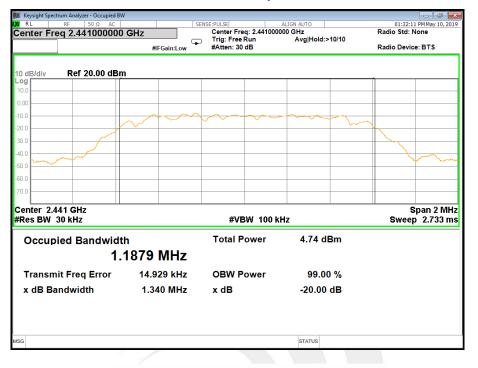
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 Tel: + 86-755 3688 6288
 Fax: + 86-755 3688 6277

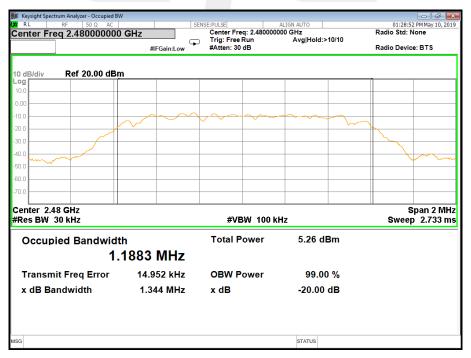
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 E-mail: sts@stsapp.com



CH39 -2Mbps



CH78 -2Mbps





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Temperature:	25 ℃	Relative Humidity:	50%
LOST MICODO.	8DPSK(3Mbps) CH00 / CH39 / CH78	Test Voltage:	DC 7.4V

Frequency	20dB Bandwidth (MHz)	Result
2402 MHz	1.357	PASS
2441 MHz	1.362	PASS
2480 MHz	1.361	PASS

CH00 -3Mbps

Keysight Spectrum Analyzer - Occupied BW RL RF 50 Ω AC		ENSE:PULSE	ALIGN AUTO	01:19:24 PM May 10, 201
Center Freq 2.402000000	GHz	Center Freq: 2.402000		Radio Std: None
	#IFGain:Low	#Atten: 30 dB	Avg Hold.>10/10	Radio Device: BTS
0 dB/div Ref 20.00 dBm				
D.0				
00				
.0	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	\sim	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	
0 mm				hmin
0				
.0				
enter 2.402 GHz				Span 2 MH
tes BW 30 kHz		#VBW 100 k	Hz	Sweep 2.733 m
Occupied Bandwidth	า	Total Power	2.86 dBm	
1.2	2257 MHz			
Transmit Freq Error	2.785 kHz	OBW Power	99.00 %	
x dB Bandwidth	1.357 MHz	x dB	-20.00 dB	
			STATUS	

Π

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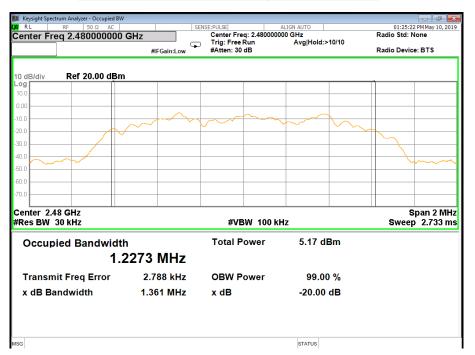
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CH39 -3Mbps



CH78 -3Mbps



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9. OUTPUT POWER TEST

9.1 LIMIT

FCC Part 15.247,Subpart C					
Section	Test Item	Limit	FrequencyRange (MHz)	Result	
15.247	Output	1 W or 0.125W if channel separation >	2400-2483.5	PASS	
(a)(1)&(b)(1)	Power	2/3 bandwidthprovided thesystems operatewith an output power no greater than125 mW(20.97dBm)			

9.2 TEST PROCEDURE

a. The EUT was directly connected to the Power Sensor&PC

9.3 TEST SETUP

EUT Power s	ensor PC
-------------	----------

9.4 EUT OPERATION 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.



9.5 TEST RESULTS

Temperature:	25 ℃	Relative Humidity:	60%
Test Voltage:	DC 7.4V		

Mode Channel Number		Frequency		Peak Power	Average Power	Limit
	(MHz)	(dBm)	(dBm)	(dBm)		
	0	2402	-0.12	-1.61	20.97	
GFSK(1M)	39	2441	0.97	0.41	20.97	
	78	2480	2.23	1.67	20.97	

Note: the channel separation >2/3 20dB bandwidth

Mode Channel Number		Frequency	Peak Power	Average Power	Limit
	(MHz)	(dBm)	(dBm)	(dBm)	
	0	2402	0.40	-2.46	20.97
π/4-DQPSK(2bps)	39	2441	2.36	-0.45	20.97
. ,	78	2480	3.52	0.87	20.97

Note: the channel separation >2/3 20dB bandwidth

Mode Channel Number		Frequency	Frequency	Peak Power	Average Power	Limit
	(MHz)	(dBm)	(dBm)	(dBm)		
	0	2402	0.67	-2.50	20.97	
8-DPSK(3Mb ps)	39	2441	2.56	-0.47	20.97	
	78	2480	3.68	0.81	20.97	

Note: the channel separation >2/3 20dB bandwidth



Report No.: STS1904279W02

10. ANTENNA REQUIREMENT

10.1 STANDARD REQUIREMENT

15.203 requirement: For intentional device, according to 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.

10.2 EUT ANTENNA

The EUT antenna is PCB Antenna. It comply with the standard requirement.



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APPENDIX-PHOTOS OF TEST SETUP

Note: See test photos in setup photo document for the actual connections between Product and support equipment.

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



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