

RADIO TEST REPORT

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Report No: STS1905146W04

Issued for

CHINA NATIONAL HUACHEN ENERGY GROUP CO., LTD.

3/F,Sangpu Building,No.10 Dayangfang, Beiyuan Road, Chaoyang Dist, Beijing, 100012, China

Product Name:	Tablet
Brand Name:	Blueing
Model Name:	RK8863H
Series Model:	N/A
FCC ID:	2AS9KRK8863H
Test Standard:	FCC Part 15.247

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TEST RESULT CERTIFICATION

Applicant's Name:	CHINA NATIONAL HUACHEN ENERGY GROUP CO.,LTD.
Address	3/F,Sangpu Building,No.10 Dayangfang, Beiyuan Road, Chaoyang Dist, Beijing, 100012, China
Manufacture's Name:	CHINA NATIONAL HUACHEN ENERGY GROUP CO., LTD.
Address	3/F,Sangpu Building,No.10 Dayangfang, Beiyuan Road, Chaoyang Dist, Beijing, 100012, China
Product Description	
Product Name:	Tablet
Brand Name:	Blueing
Model Name:	RK8863H
Series Model:	N/A
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 .: 09 May 2019 ~ 14 May 2019

Date of Issue 14 May 2019

Test Result Pass

Testing Engineer

(Chris Chen)

Technical Manager

Ju

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Authorized Signatory :

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Revision History

Rev.	Issue Date	Report NO.	Effect Page	Contents
00	14 May 2019	STS1905146W04	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



2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF THE EUT

Product Name	Tablet
Trade Name	Blueing
Model Name	RK8863H
Series Model	N/A
Model Difference	N/A
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
Bluetooth configuration	BR+EDR
Adapter	Input: 100-240V, 50-60Hz, 0.35A Output: DC 5V, 2A
Battery	Rated Voltage: 3.8V Charge Limit: 4.35V Capacity: 6000mAh
Hardware version number	R863-3368-168-V1.0
Software version number	Rk3368-userdebug 8.1.0 OPM6.171019.030.B1 200617 test-keys
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.

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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	Blueing	RK8863H	PIFA	N/A	0 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.

Description	Data Rate/Modulation
TX CH00	1Mbps/GFSK
TX CH39	1Mbps/GFSK
TX CH78	1Mbps/GFSK
TX CH00	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 CH00 TX CH39 TX CH78 TX CH00 TX CH39 TX CH78 TX CH78 TX CH78 TX CH78 TX CH00 TX CH78 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 MHz				
(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		

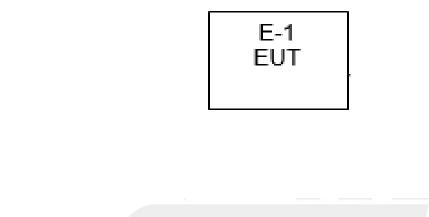


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2.4 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

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



Conducted Emission Test

	E-2 apter	E-1 EUT
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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-2	Adapter	MINGXIN	JZB310-050200UU	N/A	N/A			
C-1	DC Cable	N/A	100cm	N/A	N/A			

Support units

Item	Equipment	Mfr/Brand	Model/Type No.	Serial No.	Note
N/A	N/A	N/A	N/A	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 ^rLength_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	2020.11.1
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

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	2019.10.10

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	2019.10.10



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.

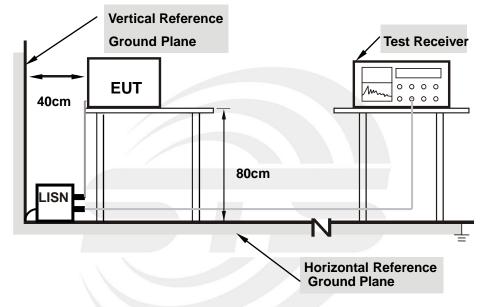
The following table is the setting of the receiver

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:	23.7°C	Relative Humidity:	67%
Test Voltage:	AC 120V/60Hz	Phase:	L
Test Mode:	Mode 10		

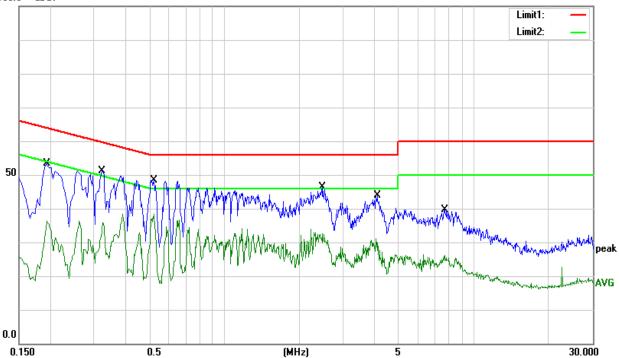
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB)	(dBuV)	(dBuV)	(dB)	
1	0.1940	33.21	20.23	53.44	63.86	-10.42	QP
2	0.1940	16.05	20.23	36.28	53.86	-17.58	AVG
3	0.3220	30.38	20.67	51.05	59.66	-8.61	QP
4	0.3220	17.63	20.67	38.30	49.66	-11.36	AVG
5	0.5220	28.01	20.46	48.47	56.00	-7.53	QP
6	0.5220	17.87	20.46	38.33	46.00	-7.67	AVG
7	2.4740	26.29	20.02	46.31	56.00	-9.69	QP
8	2.4740	12.53	20.02	32.55	46.00	-13.45	AVG
9	4.1100	23.82	19.95	43.77	56.00	-12.23	QP
10	4.1100	7.71	19.95	27.66	46.00	-18.34	AVG
11	7.6860	19.71	19.95	39.66	60.00	-20.34	QP
12	7.6860	5.40	19.95	25.35	50.00	-24.65	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:	23.7°C	Relative Humidity:	67%
Test Voltage:	AC 120V/60Hz	Phase:	Ν
Test Mode:	Mode 10		

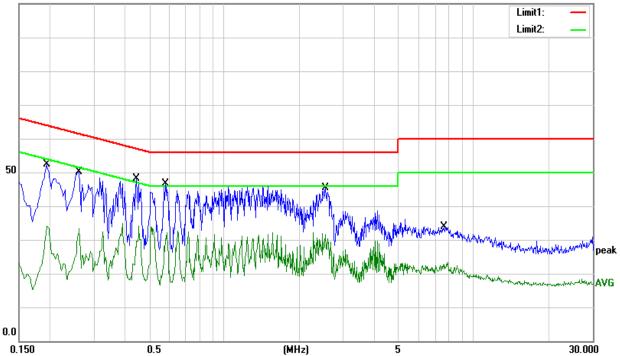
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB)	(dBuV)	(dBuV)	(dB)	
1	0.1940	32.03	20.31	52.34	63.86	-11.52	QP
2	0.1940	13.84	20.31	34.15	53.86	-19.71	AVG
3	0.2620	29.56	20.60	50.16	61.37	-11.21	QP
4	0.2620	12.83	20.60	33.43	51.37	-17.94	AVG
5	0.4460	27.76	20.48	48.24	56.95	-8.71	QP
6	0.4460	13.57	20.48	34.05	46.95	-12.90	AVG
7	0.5820	26.20	20.37	46.57	56.00	-9.43	QP
8	0.5820	12.14	20.37	32.51	46.00	-13.49	AVG
9	2.5420	25.23	20.12	45.35	56.00	-10.65	QP
10	2.5420	11.50	20.12	31.62	46.00	-14.38	AVG
11	7.6260	13.95	19.89	33.84	60.00	-26.16	QP
12	7.6260	3.38	19.89	23.27	50.00	-26.73	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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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/AV		
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/AV		
Chart/Oton Engruenau	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 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

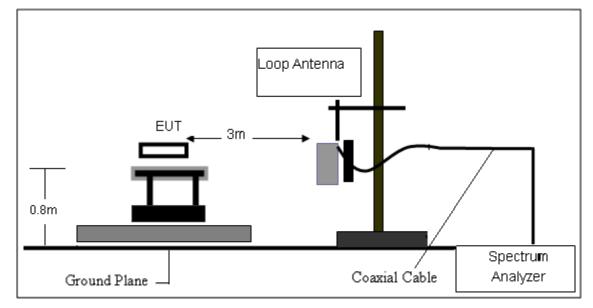
No deviation

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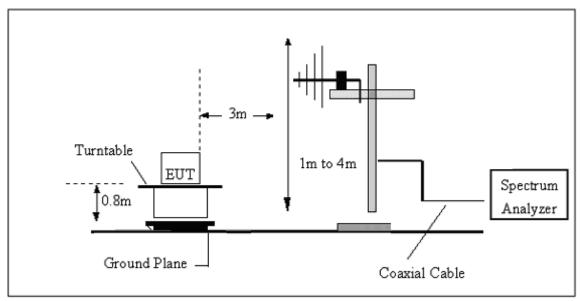


3.2.4 TESTSETUP

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



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

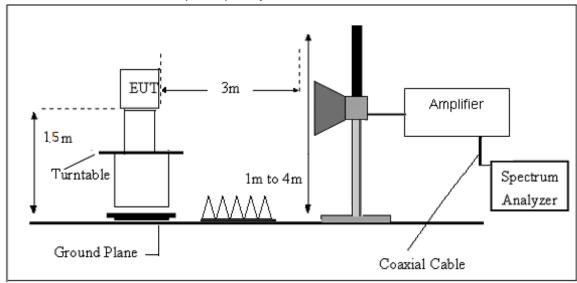




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Report No.: STS1905146W04

(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:	20.5°C	Relative Humidity:	64%
Test Voltage:	DC 3.8V	Test Mode:	TX Mode

Freq.	Reading	Limit	Margin	State	Toot Dooult
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F	Test Result
					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.





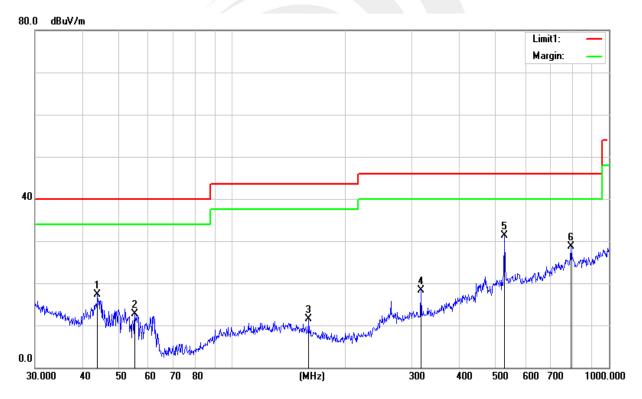
(30MHz-1000MHz)

Temperature:	20.5°C	Relative Humidity:	64%		
Test Voltage:	DC 3.8V	Phase:	Horizontal		
Test Mode:	Mode 1/2/3/4/5/6/7/8/9(Mode 1 worst mode)				

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	43.9658	35.76	-18.37	17.39	40.00	-22.61	QP
2	55.2207	35.76	-22.97	12.79	40.00	-27.21	QP
3	159.7844	30.07	-18.49	11.58	43.50	-31.92	QP
4	316.5890	32.68	-14.28	18.40	46.00	-27.60	QP
5	528.2458	39.38	-8.09	31.29	46.00	-14.71	QP
6	793.3960	32.02	-3.34	28.68	46.00	-17.32	QP

Remark:

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



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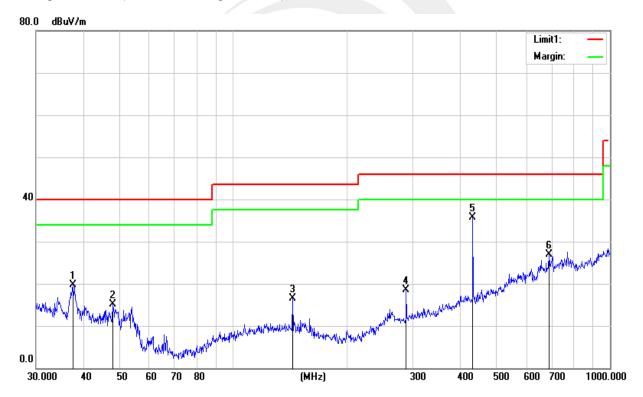


Temperature:	20.5°C	Relative Humidity:	64%		
Test Voltage:	DC 3.8V	Phase:	Vertical		
Test Mode:	Mode 1/2/3/4/5/6/7/8/9(Mode 1 worst mode)				

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	37.5478	34.71	-15.06	19.65	40.00	-20.35	QP
2	47.9940	35.64	-20.45	15.19	40.00	-24.81	QP
3	143.8294	34.24	-17.69	16.55	43.50	-26.95	QP
4	287.9904	34.00	-15.49	18.51	46.00	-27.49	QP
5	432.5457	46.55	-10.89	35.66	46.00	-10.34	QP
6	689.5643	32.39	-5.57	26.82	46.00	-19.18	QP

Remark:

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



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Report No.: STS1905146W04

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

					GFSK					
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)				
3264.84	60.97	44.70	6.70	28.20	-9.80	51.17	74.00	-22.83	PK	Vertical
3264.84	51.55	44.70	6.70	28.20	-9.80	41.75	54.00	-12.25	AV	Vertical
3264.83	62.07	44.70	6.70	28.20	-9.80	52.27	74.00	-21.73	PK	Horizontal
3264.83	50.42	44.70	6.70	28.20	-9.80	40.62	54.00	-13.38	AV	Horizontal
4804.35	59.21	44.20	9.04	31.60	-3.56	55.65	74.00	-18.35	PK	Vertical
4804.35	49.38	44.20	9.04	31.60	-3.56	45.82	54.00	-8.18	AV	Vertical
4804.49	58.85	44.20	9.04	31.60	-3.56	55.29	74.00	-18.71	PK	Horizontal
4804.49	50.34	44.20	9.04	31.60	-3.56	46.78	54.00	-7.22	AV	Horizontal
5359.61	49.24	44.20	9.86	32.00	-2.34	46.90	74.00	-27.10	PK	Vertical
5359.61	39.52	44.20	9.86	32.00	-2.34	37.18	54.00	-16.82	AV	Vertical
5359.79	48.07	44.20	9.86	32.00	-2.34	45.73	74.00	-28.27	PK	Horizontal
5359.79	38.70	44.20	9.86	32.00	-2.34	36.36	54.00	-17.64	AV	Horizontal
7205.77	53.53	43.50	11.40	35.50	3.40	56.93	74.00	-17.07	PK	Vertical
7205.77	44.20	43.50	11.40	35.50	3.40	47.60	54.00	-6.40	AV	Vertical
7205.88	53.93	43.50	11.40	35.50	3.40	57.33	74.00	-16.67	PK	Horizontal
7205.88	44.50	43.50	11.40	35.50	3.40	47.90	54.00	-6.10	AV	Horizontal
			•	Middle	Channel (244	1 MHz)				
3264.79	61.82	44.70	6.70	28.20	-9.80	52.02	74.00	-21.98	PK	Vertical
3264.79	50.92	44.70	6.70	28.20	-9.80	41.12	54.00	-12.88	AV	Vertical
3264.74	62.02	44.70	6.70	28.20	-9.80	52.22	74.00	-21.78	PK	Horizontal
3264.74	51.16	44.70	6.70	28.20	-9.80	41.36	54.00	-12.64	AV	Horizontal
4882.43	59.52	44.20	9.04	31.60	-3.56	55.96	74.00	-18.04	PK	Vertical
4882.43	49.93	44.20	9.04	31.60	-3.56	46.37	54.00	-7.63	AV	Vertical
4882.49	59.59	44.20	9.04	31.60	-3.56	56.03	74.00	-17.97	PK	Horizontal
4882.49	49.33	44.20	9.04	31.60	-3.56	45.77	54.00	-8.23	AV	Horizontal
5359.74	48.86	44.20	9.86	32.00	-2.34	46.52	74.00	-27.48	PK	Vertical
5359.74	38.94	44.20	9.86	32.00	-2.34	36.60	54.00	-17.40	AV	Vertical
5359.62	47.91	44.20	9.86	32.00	-2.34	45.57	74.00	-28.43	PK	Horizontal
5359.62	39.44	44.20	9.86	32.00	-2.34	37.10	54.00	-16.90	AV	Horizontal
7323.95	54.76	43.50	11.40	35.50	3.40	58.16	74.00	-15.84	PK	Vertical
7323.95	44.33	43.50	11.40	35.50	3.40	47.73	54.00	-6.27	AV	Vertical
7323.84	54.63	43.50	11.40	35.50	3.40	58.03	74.00	-15.97	PK	Horizontal
7323.84	44.40	43.50	11.40	35.50	3.40	47.80	54.00	-6.20	AV	Horizontal



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				High C	hannel (248	0 MHz)				
3264.64	62.07	44.70	6.70	28.20	-9.80	52.27	74.00	-21.73	PK	Vertical
3264.64	50.62	44.70	6.70	28.20	-9.80	40.82	54.00	-13.18	AV	Vertical
3264.75	61.01	44.70	6.70	28.20	-9.80	51.21	74.00	-22.79	PK	Horizontal
3264.75	50.52	44.70	6.70	28.20	-9.80	40.72	54.00	-13.28	AV	Horizontal
4960.51	58.53	44.20	9.04	31.60	-3.56	54.97	74.00	-19.03	PK	Vertical
4960.51	50.14	44.20	9.04	31.60	-3.56	46.58	54.00	-7.42	AV	Vertical
4960.33	58.88	44.20	9.04	31.60	-3.56	55.32	74.00	-18.68	PK	Horizontal
4960.33	50.47	44.20	9.04	31.60	-3.56	46.91	54.00	-7.09	AV	Horizontal
5359.81	49.45	44.20	9.86	32.00	-2.34	47.11	74.00	-26.89	PK	Vertical
5359.81	39.97	44.20	9.86	32.00	-2.34	37.63	54.00	-16.37	AV	Vertical
5359.69	48.21	44.20	9.86	32.00	-2.34	45.87	74.00	-28.13	PK	Horizontal
5359.69	38.86	44.20	9.86	32.00	-2.34	36.52	54.00	-17.48	AV	Horizontal
7439.72	54.86	43.50	11.40	35.50	3.40	58.26	74.00	-15.74	PK	Vertical
7439.72	44.94	43.50	11.40	35.50	3.40	48.34	54.00	-5.66	AV	Vertical
7439.73	54.08	43.50	11.40	35.50	3.40	57.48	74.00	-16.52	PK	Horizontal
7439.73	44.98	43.50	11.40	35.50	3.40	48.38	54.00	-5.62	AV	Horizontal

Note:

1) Scan with GFSK, π/4-DQPSK,8DPSK,the worst case is GFSK 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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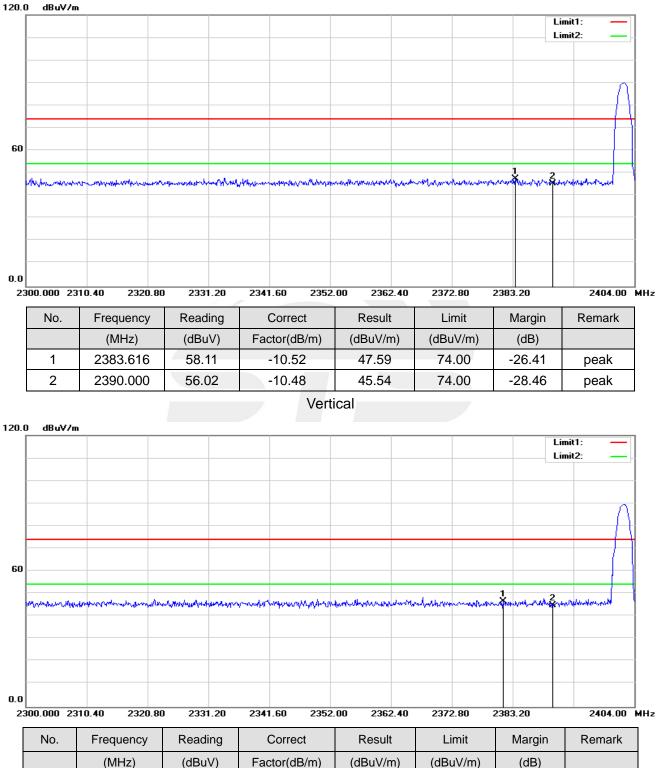
 1/F., Building B, Zhuoke Science Park, No.190, Chongqing Road, Fuyong Street, Bao'an District, Shenzhen, Guangdong, China

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 3688
 6277
 Http://www.stsapp.com
 E-mail: sts@stsapp.com



Restricted band Requirements

GFSK-Low Horizontal



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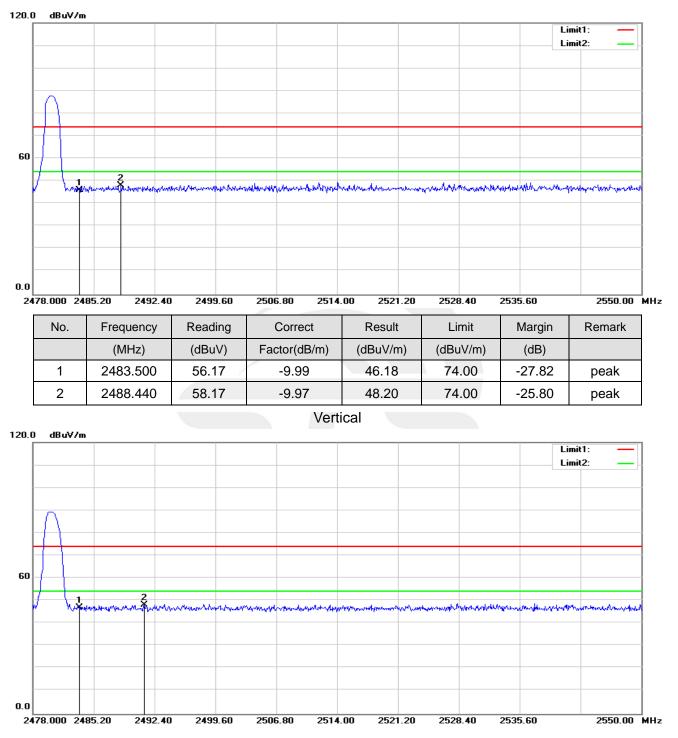
1/F., Building B, Zhuoke Science Park, No.190, Chongqing Road, Fuyong Street, Bao'an District, Shenzhen, Guangdong, China Tel: + 86-755 3688 6288 Fax:+ 86-755 3688 6277 Http://www.stsapp.com E-mail: sts@stsapp.com



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GFSK-High Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.500	56.95	-9.99	46.96	74.00	-27.04	peak
2	2491.176	58.19	-9.95	48.24	74.00	-25.76	peak

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

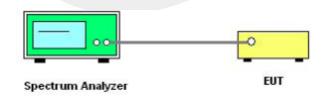
Spectrum Parameter	Setting
Detector	Peak
Start/Stop Frequency	30 MHz to 10th carrier harmonic
RB / VB (emission in restricted band)	100 KHz/300 KHz
Trace-Mode:	Max hold

For Band edge

Spectrum Parameter	Setting
Detector	Peak
Start/Stop Eroguapau	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 3.8V

00 CH

	um Analyzer - Sw							
enter Fr				≊E j:FreeRun :en:30 dB	ALIGN AUTO Avg Type:	Log-Pwr		S AM May 13, 20: RACE 1 2 3 4 5 TYPE M WAAAAA DET P P P P P
) dB/div	Ref Offset 0.9 Ref 4.67 d	5 dB Bm					Mkr1 2.4 -5	.02 2 GH .335 dBr
.33	1							
i.3								-25.33 di
5.3								
i.3	<u>^2</u>							
i.3	- P		and the second of the second		and the second second			
i.3			a Marina and a star and a star a s					
5.3								
art 30 N tes BW	/Hz 100 kHz		#VBW 30) kHz		Swe	Stop ep 2.387 s) 25.00 GH (40001 pt
IN 1 2N 1 3N 1	f	× 2.402 2 GHz 2.711 8 GHz 5.886 1 GHz	-5.335 dBm -56.490 dBm -56.523 dBm	FUNCTION	FUNCTION WIDTH		FUNCTION VALUE	
N 1	f	24.327 1 GHz	-47.728 dBm					
7 3 9								
i I								>
					STATUS			

39 CH

R L	rum Ana RF	l <mark>lyzer - Swept</mark> S		CEN	VSE:PULSE		LIGN AUTO		10:54:4	2 AM May 13, 20
		2.515000	1000 GHz	IO: Fast 😱 ain:Low	Trig: Free #Atten: 30	Run	Avg Type: Lo	-	т	RACE 1 2 3 4 5 TYPE MWAAAAA DET P P P P F
) dB/div		Offset 0.5 dB -0.31 dBn							Mkr1 2.4 -10.	40 9 GH 310 dBi
og 0.3		1								
0.3										
0.3										-30.31 d
1.3										
0.3		۸2	∧3							\square
		$\langle Q \rangle$	$\sum_{i=1}^{n}$		and the second	المتله ومناقروهم ومقا	And the second	No. of Concession, Name		A CONTRACTOR
).3			1							
0.3										
).3										
0.3										
tart 30 ľ Res BW		kHz		#VB\	N 300 kHz			Swee	Stop p 2.387 s	25.00 GH (40001 pt
R MODE T			×	Y		CTION FUNC	TION WIDTH	FL.	INCTION VALUE	
1 N ^ 2 N ^			2.440 9 GHz 3.052 0 GHz	-10.310 -57.312						
3 N 4 N			5.992 2 GHz 24.281 5 GHz	-57.088 -48.541						
5			24.2010 0112	-40.041	abiii					
5 7										
3										
5										
1										

П



78 CH

ilent Spectrum A			SENS	E:PULSE	AL	IGNAUTO		10:57:	01 AM May 13, 20
enter Freq		00000 GHz	NO: Fast 🖵 Gain:Low	Trig: Free Run #Atten: 30 dB		Avg Type:	Log-Pwr		TRACE 1 2 3 4 5 TYPE MWWWW DET P P P P
	ef Offset 0.5 ef_1.02 dE								480 2 GH 8.983 dBr
98	1								
9.0									-28.98 di
0.0									
.0	2	3			المربعة المرا				
9.0									
art 30 MHz								Sto	p 25.00 GH
Res BW 100			#VBW	/ 300 kHz			Swe	ep 2.387 s	
8 MODE TRG 50 1 N 1 f 2 N 1 f 3 N 1 f 4 N 1 f 5		× 2.480 2 GHz 2.801 7 GHz 4.982 8 GHz 24.600 5 GHz	-8.983 dl -57.038 dl -56.840 dl -48.010 dl	Bm Bm	N FUNC	TION WIDTH		FUNCTION VALUE	
3 9 0									
)						STATUS			



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 Http://www.stsapp.com
 E-mail: sts@stsapp.com



For Band edge

00 CH

Avg Type: Log-Pwr PNO: Fast PNO: Fast PNO	5.395 dB
All All <th>5.395 dB</th>	5.395 dB
39 30 <	
4 4 4 4 4 4 4 4 4 <th></th>	
14 <	
4 4 4 4 4 4 4 4 4 4 4 4 4 4	2
4 4 4 4 <t< td=""><td>2</td></t<>	2
4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	
4	- manager Miner
art 2.30000 GHz Stop es BW 100 kHz #VBW 300 kHz Sweep 9.867 r	
tes BW 100 kHz #VBW 300 kHz Sweep 9.867 r	
N MODE TRC SCL X Y FUNCTION VIDTH FUNCTION VAL	2.40300 Gi ns (1001 pi
N 1 f 2.402 073 GHz -5.395 dBm	E
N 1 f 2.390 022 GHz -60.091 dBm N 1 f 2.398 777 GHz -58.946 dBm	

78 CH

RL RF	- Swept SA 50 Ω AC	SENSE:PULS	E	ALIGNAUTO		10:57:39 AM May 13, 20
nter Freq 2.48	9500000 GHz	NO: East Trig	: Free Run en: 30 dB	Avg Type: Lo	og-Pwr	TRACE 1 2 3 4 TYPE MWWWW DET P P P P
Ref Offs dB/div Ref 3.0	et 0.5 dB 19 dBm				Mkr1	2.480 176 GH -6.895 dB
9						-26.91 c
	mm	-monte	-m-masm	moundantia	alman door and	mmmmmmm
9						
9						
art 2.47900 GHz es BW 100 kHz		#VBW 300) kHz			Stop 2.50000 G 067 ms (1001 p
MODE TRC SCL N 1 f N 1 f	× 2.480 176 GHz 2.483 767 GHz	-6.895 dBm -59.195 dBm	FUNCTION	FUNCTION WIDTH	FUNCTIO	ON VALUE
N 1 f	2.494 246 GHz	-57.752 dBm				
						>





For Hopping Band edge

00 CH

lent Spectr	um Analyzer - S	Swept SA	SENSE:	nuise	ALIGNAUTO		18:42:42	AM May 13, 20
		500000 GHz	NO: East	Folder Trig: Free Run #Atten: 30 dB	Aug Type:		TR T	ACE 1 2 3 4 5 YPE MWWWW DET P P P P F
dB/div	Ref Offset Ref 4.38					M	kr1 2.402 -5.0	073 GH 625 dBr
62								
.6								-25.63 di
.6								-25.63 0
.6								
i.6		a state the state of the		a da a su da ta angla a da ang				
.6	and the spectrum.		and a second production and dependent					in calling Crisic
i.6								
i.6								
	000 GHz 100 kHz		#VBW :	300 kHz		Swee	Stop 2.4 p 9.867 ms	10300 GH (1001 pt:
R MODE TR	ic scu f	× 2.402 073 GHz	-5.625 dB	FUNCTION	FUNCTION WIDTH		FUNCTION VALUE	
2 N 1 8 N 1		2.390 022 GHz 2.399 395 GHz	-58.835 dB -58.470 dB					
)))								
								>
					STATUS			/

78 CH

RL RF	50 Ω AC	SENSE:PULS	E	ALIGN AUTO		l0:45:04 AM May 13, 2
nter Freq 2.48			Free Run en: 30 dB	Avg Type: Lo	·g-Pwr	TRACE 1 2 3 4 TYPE MWAAA DET P P P P
Ref Offs B/div Ref 3.0					Mkr1 2.	480 176 GI -6.990 dB
$\sqrt{1}$						-26.99
<u> </u>	^ 2					
- bres	menninghamman	www.www.	m	an manana manana ana ana ana ana ana ana		- hydron lawyr ar yr fran
rt 2.47900 GHz s BW 100 kHz		#VBW 300	kHz			op 2.50000 G 7 ms (1001 p
MODE TRC SCL N 1 f N 1 f N 1 f	× 2.480 176 GHz 2.483 641 GHz 2.487 841 GHz	-6.990 dBm -57.855 dBm -56.805 dBm	FUNCTION	FUNCTION WIDTH	FUNCTION	ALUE

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Temperature:	25 ℃	Relative Humidity:	50%
Test Mode:	π/4-DQPSK(2Mbps)– 00/39/78 CH	Test Voltage:	DC 3.8V

nt Spectrum Analyzer - S L RF 50		SENSE:PUL	SE I	ALIGNAUTO		11:29:05 AM May 13,
ter Freq 12.51	5000000 GHz	.	: Free Run	Avg Type:	Log-Pwr	TRACE 1 2 3
			en:30 dB			DET P P P
Ref Offset					Mk	r1 2.402 2 G
B/div Ref -3.39						-13.391 dE
						-33.35
2	3					
			a set of the set of			
		-	and the frequency of the			
						0 4 05 00 0
rt 30 MHz s BW 100 kHz		#VBW 30	0 kHz		Sweep 2	Stop 25.00 G ا 387 s (40001)
MODE TRC SCL	×	Y	FUNCTION	FUNCTION WIDTH		ON VALUE
N 1 f	2.402 2 GHz	-13.391 dBm				
N 1 f N 1 f	2.792 9 GHz 5.865 5 GHz	-57.182 dBm -57.188 dBm				
N 1 f	24.435 7 GHz	-47.298 dBm				
				STATUS		
		7				
		~	9 CH			

00 CH

39	CH
00	0

RL	rum Analyzer RF	50 Q AC	SENSE:PUL	9E	ALIGNAUTO		11:26:1	2 AM May 13, 20
enter F		15000000 GHz	NO: East 😱 Trig	g: Free Run ten: 30 dB	Avg Type	: Log-Pwr	Т	TYPE MWAAAA DET P P P P I
) dB/div	Ref Offse Ref -7.4						Mkr1 2.4 -12.	40 9 GH 237 dB
7.5	1							
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.5								-37.49
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.5	$\langle \rangle^2$				and the second second second	- International	and the second second	No.
.5							-	
.5								
.5								
5								
art 30 I Res BW	MHz 100 kHz		#VBW 30	0 kHz		Swe	Stop ep 2.387 s	25.00 GI (40001 p
R MODE T		X	Y	FUNCTION	FUNCTION WIDTH		FUNCTION VALUE	
	1 f 1 f	2.440 9 GHz 2.667 5 GHz	-12.237 dBm -56.637 dBm					
	1 f 1 f	5.437 3 GHz 24.265 3 GHz	-55.595 dBm -47.696 dBm					
		24.200 0 0112	47.000 dBill					
i i								
5 7 8								
5 5 7 3 9								>

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78 CH

		lyzer - Swept								
nter F	_{RF} req 1				g: Free Run tten: 30 dB	ALIGN #	NUTO Ng Type:	Log-Pwr		34 AM May 13, TRACE 1 2 3 4 TYPE MWWW DET P P P F
dB/div		Offset 0.5 dl -9.28 dBr							Mkr1 2.4 -19	180 2 G .276 dE
3	(
3										-39.28
3		2	3			6		Antonitika		
3								. Bracky, and the second second		
3										
3									_	
urt 30 I es BW		ĸHz		#VBW 30	0 kHz			Swe	Stop ep 2.387 s	o 25.00 G (40001 p
14	1 f 1 f		× 2.480 2 GHz 3.049 5 GHz 6.393 0 GHz	Y -19.276 dBm -56.100 dBm -56.473 dBm	FUNCTION	FUNCTION	WIDTH		FUNCTION VALUE	
N 1	1 f 1 f		24.094 8 GHz	-47.618 dBm						
N [*]										



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 E-mail: sts@stsapp.com



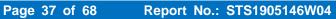
For Band edge

00 CH

	um Analyzer									
RL	RF 1	50Ω AC	CH ₇	SE	NSE:PULSE		ALIGNAUTO Avg Type:	Log-Pwr		AM May 13, 20 RACE 1 2 3 4 5
	164 2.33	1300000	Р	NO: Fast 🖵	Trig: Free #Atten: 30					DET P P P P
			IF	Gain:Low	#Atten: 30	dВ				,
) dB/div	Ref Offse Ref -1.7							IVI	402 kr1 2.40 11-	176 GH 773 dBr
g aBlaiv	Rei -1.7									
1.8										
1.8										
.8										-31.77 d
.8										
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1.8	mellenan	mughow	miletinente	mehrhan	al where many	-	Murranner	un markanalow	montenergetine	manyment
1.8										
1.8										
									0 1 0	10000 01
	000 GHz 100 kHz			#VB	W 300 kHz			Swee	5.0p 2. p 9.867 ms	40300 GH
R MODE TH	ad sa l	×		Y	FUN	ICTION FUN	ICTION WIDTH		UNCTION VALUE	· ·
1 N 1	f	2.40	2 176 GHz	-11.773	dBm					
2 N 1 3 N 1			0 022 GHz 9 704 GHz	-59.757 -59.187						
5										
3										
7 3										
9										
í										
										>
i							STATUS			

78 CH

ent Spectrum Analyze R L RF	r - Swept SA 50 Ω AC	SENSE:PULS	Ξ	ALIGN AUTO		11:23:13 AM May 13, 2
nter Freq 2.48	39500000 GHz		: Free Run en: 30 dB	Avg Type: Lo	og-Pwr	TRACE 1 2 3 4 TYPE MWWWW DET P P P P
	et 0.5 dB 68 dBm				Mkr1 2	.480 176 GI -13.682 dB
7						
7 N M						
						-33.68
	2					
	hornorman	manhamman	mmmmul	monnon	mann	mana
rt 2.47900 GHz s BW 100 kHz		#VBW 300) kHz			top 2.50000 G 67 ms (1001 p
MODE TRC SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION	VALUE
N 1 f N 1 f N 1 f	2.480 176 GHz 2.484 313 GHz 2.499 643 GHz	-58.536 dBm				
						3





For Hopping Band edge

00 CH

	ectrur		zer - Swept										
RL enter	r Fre	RF 9 q 2.	50 Ω 351500	AC 000 GHz	PNO: F		NSE:PULSE	Run	AL	IGNAUTO Avg Type	: Log-Pwr	11:16	20 AM May 13, 20 TRACE 1 2 3 4 5 TYPE MWWWW
					IFGain:L	ast 🖵	#Atten: 30						DETPPPF
) dB/d			ffset 0.5 d 2.09 dB								IV		2 176 GH 2.093 dBr
2.1													
2.1													
2.1													-32.09 d
2.1													2 3.
2.1	horan	menu	بالهممين	menonen	mono	ي. مرمي مي مرمي	havenan	mont	monul	mondula	manyman	n	2
2.1													
2.1													
2.1					_								
tart 2	.300	00 G	Hz									Stop	2.40300 GH
Res E	3W 1	00 kl	Hz			#VB	W 300 kH:	z			Swe	ep 9.867 n	ns (1001 pt
R MOD	e Trc 1	SCL f		× 2.402 176 GH	-Iz	۲ -12.093		NCTION	FUNC	TION WIDTH		FUNCTION VALUE	
2 N 3 N	1	f		2.390 022 GH 2.398 571 GH		-58.418 -57.988							
4													
5													
3													
)													
							: 111						
										STATUS			

78 CH

tL		ίΟ Ω ΑC	SENSE:PUL:	SE	ALIGN AUTO		11:18:41 AM May 13, 20
nter Fi	req 2.489	9500000 GHz PN IFG		g: Free Run :en: 30 dB	Avg Type: L	og-Pwr	TRACE 1 2 3 4 TYPE MMMMM DET P P P P
B/div	Ref Offset Ref -3.94					Mkr1	2.479 189 GF -13.943 dB
	\						
ΨŲ.	1						-33.94 (
	L,	()2			3		
	when	manhan	an a	mm	m		man the state of the second
<u> </u>							
	900 GHz 100 kHz		#VBW 30	0 kHz		Sweep 2	Stop 2.50000 G .067 ms (1001 p
MODE TH		×	Y	FUNCTION	FUNCTION WIDTH	FUNCTI	ON VALUE
N 1 N 1 N 1	f	2.479 189 GHz 2.483 998 GHz 2.491 873 GHz	-13.943 dBm -57.353 dBm -57.122 dBm				



Page 38 of 68 Report No.: STS1905146W04

Temperature:	25 ℃	Relative Humidity:	50%
Test Mode:	8DPSK(3Mbps) -00/39/78 CH	Test Voltage:	DC 3.8V

00 CH

	ım Analyzer - Swe							
enter Fr	RF 50 Ω	AC 00000 GHz	SENSE:P		ALIGNAUTO Avg Type:	Log-Pwr		O AM May 13, 201 RACE 1 2 3 4 5
		PI		ig: Free Run tten: 30 dB				DET P P P P P
							Mkr1 2.4	02 2 GH
) dB/div	Ref Offset 0.5 Ref -5.05 d							.050 dBr
5.1	1							
5.1								
5.1								-35.05 df
5.1								
5.1	\Diamond^2	$\langle \rangle^3$				and the second	and the second second second	and the second sec
			والمراجع المراجع المراجع	أراف فالجويل				
5.1								
5.1								
5.1								
tart 30 M Res BW			#VBW 3	00 641-		C auca		25.00 GH
			#VBW J				ep 2.387 s	(40001 pt
KR MODE TR	f	× 2.402 2 GHz	-15.050 dBm	FUNCTION	FUNCTION WIDTH		FUNCTION VALUE	
2 N 1 3 N 1	f	3.030 8 GHz 5.532 8 GHz	-56.075 dBm -57.082 dBm					
4 N 1	f	24.811 5 GHz	-47.451 dBm					
5 6								
7 B								
9								
0								
9 0 1								

39 CH

		zer - Swept S							
enter F	req 12	50 Q AC 2.515000	000 GHz	SENS 10: Fast Gain:Low	E:PULSE Trig: Free Run #Atten: 30 dB	ALIGNAUTO Avg) Type: Log-Pwr		36 AM May 13, 2 TRACE 1 2 3 4 TYPE MWMM DET P P P P
) dB/div		ffset 0.5 dB •2 <mark>.27 dB</mark> m							440 9 GI 2.267 dB
2.3		1							
2.3									-32.27
2.3		\ <mark>2</mark>	3					استغارین از	
.3 .3 <mark>.1</mark>					and the second secon	Angel Street			
.3									
2.3									
art 30 I tes BW		Hz		#VBW	300 kHz		Sw	Sto eep 2.387 s	p 25.00 G s (40001 p
	1 f		× 2.440 9 GHz	-12.267 d		FUNCTION WIDT	Н	FUNCTION VALUE	
N	1 f 1 f 1 f		2.700 5 GHz 5.933 5 GHz 24.278 4 GHz	-56.744 d -56.680 d -46.563 d	Bm				
: 									
						STAT			

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78 CH

enter Fre	RF 50 Ω q 12.5150	AC 00000 GHz	SENSE:PUL:		ALIGNAUTO			LAM May 13, 20:
		PN	0: Fast 😱 Trig ain:Low #Att	g: Free Run ten: 30 dB	Avg Type:	Log-Pwr		RACE 1 2 3 4 5 TYPE MWAAAAA DET P P P P P
	Ref Offset 0.5 Ref -4.02 d						Mkr1 2.4 -14.	80 2 GH 020 dBr
.0	1							
0								-34.02 d
o	<u>2</u>	3						{√4
	Y	∇^{-}	elel anno de a basela la fra-	and the second	A CONTRACTOR OF THE OWNER			
0								
art 30 MH es BW 10			#VBW 300) kHz		Swee	Stop p 2.387 s	25.00 GH (40001 pt
	SCL f f f f	x 2.480 2 GHz 2.613 8 GHz 5.458 5 GHz 24.184 7 GHz	-14.020 dBm -55.303 dBm -56.673 dBm -47.057 dBm	FUNCTION	FUNCTION WIDTH	F	UNCTION VALUE	
		24.1047 0112						
								>



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For Band edge

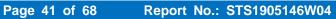
00 CH

RL		Swept SA							
optor E		0 Ω AC 500000 GHz		ENSE:PULSE	AL	IGNAUTO Avg Type: I	og-Pwr		AM May 13, 20
	eq 2.551	500000 GH2	PNO: Fast 😱 IFGain:Low	Trig: Free R #Atten: 30 d					DET P P P F
dB/div	Ref Offset Ref -1.88						MI	kr1 2.402 -11.8	176 GH 875 dBi
g									
.9									
.9									-31.88 d
.9									
.9								<u>2</u>	-0^3
9 marte	universiteshere	wangerman	whenter	wan manuel	hounderson	montport	mangenerary	mannakin	modal
.9									
.9									
.9									
								Stop 2.4	40300 GH
art 2.30	1000 GHz						Sweet	p 9.867 ms	(1001 pt
art 2.30 Res BW	0000 GHz 100 kHz		#VB	W 300 kHz					(1001
Res BW	100 kHz	X	Y	FUNC	TION FUNCT	ION WIDTH		UNCTION VALUE	(1001 - 20
Res BW R MODE TR N 1 2 N 1	100 kHz f f	2.402 176 GI 2.390 022 GI	Hz -11.875 Hz -59.249	dBm dBm	TION FUNCT	ION WIDTH			(1001)
Res BW Mode H N 1 N 1 N 1	100 kHz Reisel f	2.402 176 G	Hz -11.875 Hz -59.249	dBm dBm	TION FUNCT	ION WIDTH			(1
Res BW	100 kHz f f	2.402 176 GI 2.390 022 GI	Hz -11.875 Hz -59.249	dBm dBm	TION FUNCT	ION WIDTH			(1
Res BW	100 kHz f f	2.402 176 GI 2.390 022 GI	Hz -11.875 Hz -59.249	dBm dBm	TION FUNC	ION WIDTH			(1
N 1 N 1 N 1	100 kHz f f	2.402 176 GI 2.390 022 GI	Hz -11.875 Hz -59.249	dBm dBm	TION FUNCT	ION WIDTH			(
es BW MODE TE N 1 N 1	100 kHz f f	2.402 176 GI 2.390 022 GI	Hz -11.875 Hz -59.249	dBm dBm	FUNCT	ION WIDTH			

78 CH

	RF 50 Ω AC		SENSE;PU	JLSE	ALIGNAUTO		11:39:30 AM May 13, 2
nter Frec	2.489500000	GHz PNO: F IFGain:I] ast ⊂⊃ Tr Low #A	rig: Free Run Atten: 30 dB	Avg Type: L	.og-Pwr	TRACE 1 2 3 4 TYPE MWWW DET P P P P
	tef Offset 0.5 dB tef -3.63 dBm					Mkr1	2.480 176 GF -13.625 dB
' 1							
s N h							
i							-33.63
μ							
Υ	4	2					
	monter	mon	mann	man man and and and and and and and and and a	montermo	ummennen	and a manufacture of the second second
rt 2.4790 s BW 10			#VBW 3	00 kHz			Stop 2.50000 G .067 ms (1001 p
MODE TRC S			Y	FUNCTION	FUNCTION WIDTH	FUNCT	ON VALUE
N 1	f 2.484	187 GHz	-13.625 dBm -58.969 dBm -57.691 dBm	1			

Shenzhen STS Test Services Co., Ltd.





For Hopping Band edge

00 CH

		alyzer - Swep								
RL	RF			SE	NSE:PULSE	A	IGNAUTO Avg Type:	Log Pur		3 PM May 13, 20
enter	Freq	2.351500	0000 GHz	PNO: Fast 🖵 IFGain:Low	Trig: Free R #Atten: 30 dl		Avg type.			DET P P P P
dB/div		Offset 0.5 f -2.05 dE						N	lkr1 2.403 -12	000 GH .048 dBi
.1										
.1										-32.05 d
.1										
.1										\rightarrow
.1	wantra	- Marcharles	on the most of the second	waterland and	anner and	wylanes masule	temotector	montheline	vouenenalis	mound
.1										
.1										
.1										
	30000 W 100			#VB	W 300 kHz		1	Swee	Stop 2 9.867 m	.40300 GH s (1001 pt
R MODE	TRO SCL 1 f		× 2.403 000 GHz	-12.048	dBm	ION FUNC	TION WIDTH		FUNCTION VALUE	
N N	1 f 1 f		2.390 022 GHz 2.398 983 GHz	-59.409	dBm					
1										
										>

78 CH

L	RF	50 Ω		SENSE	E:PULSE	ALIGNAUTO		01:14:53 PM May 13,
ter F	req 2	2.489500	PN	0: Fast 😱 ain:Low	Trig: Free Run #Atten: 30 dB	Avg Type	: Log-Pwr	TRACE 1 2 3 TYPE MWAAN DET P P P
B/div		Offset 0.5 d f -3.86 dB					Mkr	1 2.480 155 G -13.863 dE
n. 1								
W	Vh							
	+							-33.8
-		n	<u>^2</u>					
	ſ	hormours		mannon	mann	man	mmmaa	manna
	7900			#VBW	300 kHz		Sweep	Stop 2.50000 G 2.067 ms (1001 j
MODE T			×	Y	FUNCTION	FUNCTION WIDTH	FUNC	TION VALUE
N	1 f 1 f 1 f		2.480 155 GHz 2.484 124 GHz 2.498 236 GHz	-13.863 dE -57.280 dE -56.877 dE	Зm			



5. NUMBER OF HOPPING CHANNEL

5.1 LIMIT

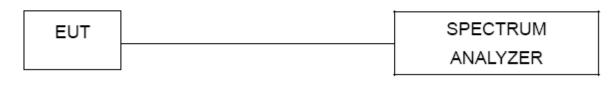
	FCC Part 15.247,Subpart C								
Section	Test Item	Limit	FrequencyRange (MHz)	Result					
15.247 (a)(1)(iii)	Number of Hopping Channel	≥15	2400-2483.5	PASS					

Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	> Operating FrequencyRange
RB	300KHz
VB	300KHz
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= 300KHz, VBW=300KHz, 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 3.8V

Number of Hopping Channel

79

Hopping channel

Ref Offset 0.5 dB Mkr2 2.479 930 G 0 GB/div Ref offset 0.5 dB 0 GB/div Ref 0.11 (GB/div 0 GB/div GB/div 0 GB/div GB/div <th>ent Spectrum Analyzer - Swept SA R L RF 50 Q AC</th> <th>SENSE:PULSE</th> <th>ALIGNAUTO</th> <th>10:40:20 AM May 13, 20</th>	ent Spectrum Analyzer - Swept SA R L RF 50 Q AC	SENSE:PULSE	ALIGNAUTO	10:40:20 AM May 13, 20
dB/div Ref 3.31 dBm -6.57 dE 37	nter Freq 2.441750000 GHz	PNO: Fast C Trig: Free I	Run	TRACE 1 2 3 4 5 TYPE MWMMMM DET P P P P
art 2.40000 GHz Stop 2.48350 G	dB/div Ref 3.31 dBm		Mk	r2 2.479 993 0 GH -6.57 dBi
art 2.40000 GHz Stop 2.48350 G				
X X FUNCTION FUNCTION<	art 2.40000 GHz es BW 300 kHz	GHz -5.05 dBm		Stop 2.48350 GF ep 1.133 ms (1001 pt FUNCTION VALUE

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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.
- 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 3.8V

Data Packet	Channel	pulse time(ms)	Dwell Time(s)	Limits(s)
DH1	middle	0.384	0.123	0.4
DH3	middle	1.647	0.264	0.4
DH5	middle	2.808	0.300	0.4



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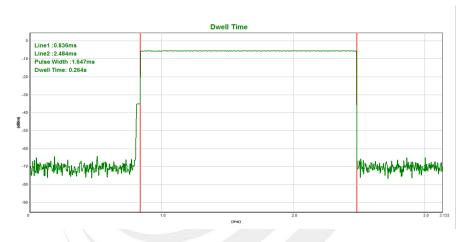
 Tel: + 86-755 3688 6288
 Fax:+ 86-755 3688 6277
 Http://www.stsapp.com
 E-mail: sts@stsapp.com



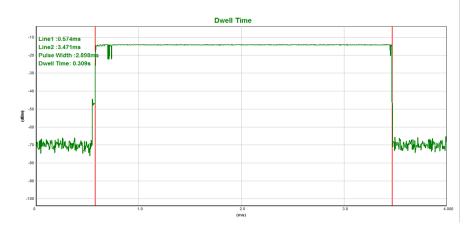
CH39-DH1



CH39-DH3







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Temperature:	25 ℃	Relative Humidity:	50%
Test Mode:	π/4-DQPSK(2Mbps)– 2DH1/2DH3/2DH5	Test Voltage:	DC 3.8V

Data Packet	Channel	pulse time(ms)	Dwell Time(s)	Limits(s)
2DH1	middle	0.392	0.125	0.4
2DH3	middle	1.646	0.263	0.4
2DH5	middle	2.901	0.309	0.4



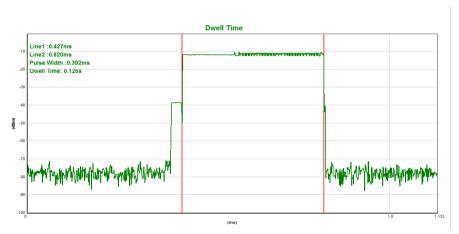
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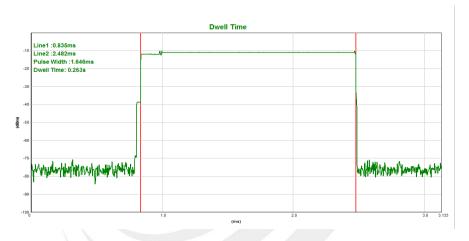
 Tel: + 86-755 3688 6288
 Fax:+ 86-755 3688 6277
 Http://www.stsapp.com
 E-mail: sts@stsapp.com



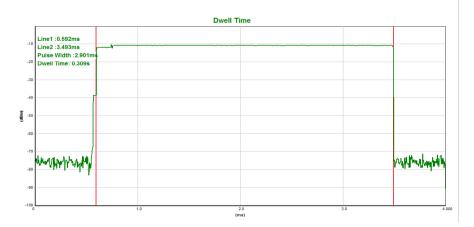
CH39-2DH1



CH39-2DH3



CH39-2DH5





Page 49 of 68 Report No.: STS1905146W04

Temperature:	25 ℃	Relative Humidity:	50%
	8DPSK(3Mbps)– 3DH1/3DH3/3DH5	Test Voltage:	DC 3.8V

Data Packet	Channel	pulse time(ms)	Dwell Time(s)	Limits(s)
3DH1	middle	0.392	0.125	0.4
3DH3	middle	1.648	0.264	0.4
3DH5	middle	2.899	0.309	0.4



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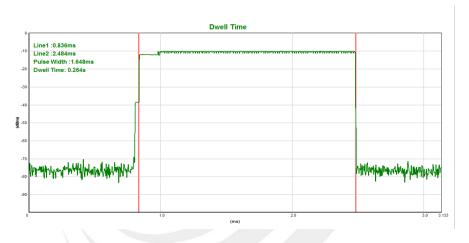
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 Fax:+ 86-755 3688 6277
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 E-mail: sts@stsapp.com



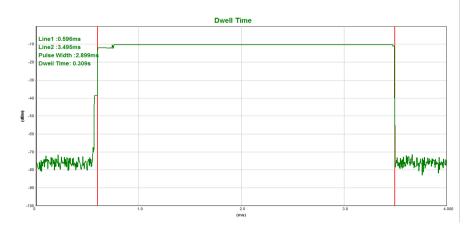
CH39-3DH1



CH39-3DH3



CH39-3DH5





7. HOPPING CHANNEL SEPARATION MEASUREMEN

7.1 LIMIT

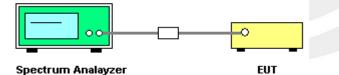
Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that 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°C	Relative Humidity:	50%
	CH00 / CH39 / CH78 (GFSK(1Mbps) Mode)	Test Voltage:	DC 3.8V

Frequency	Ch. Separation (MHz)	Limit (MHz)	Result
2402 MHz	1.002	0.697	Complies
2441 MHz	1.002	0.697	Complies
2480 MHz	0.999	0.696	Complies

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

RL	RF 5	iOΩ AC		SENSE:PULSE	ALIGNAU	ЛО	10:52:49 AM	May 13, 20
enter F	req 2.402	2500000 GHz	PNO: Wide C IFGain:Low		Av	g Type: Log-Pwr	TRACE	12345 MWWWW PPPPF
) dB/div	Ref Offsel Ref 2.23					M	kr2 2.403 01 -7.71	I0 GH 0 dBr
2g			<u>1</u>			2		
7.8			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	γ	\sim	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		
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7.8								
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.8								
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7.8								
enter 2. Res BW	402500 GI 30 kHz	Hz	#V	BW 100 kHz		Swee	Span 3.0 p 3.200 ms (1	000 MH 001 pt
R MODE T		×	Y	FUNC	TION FUNCTION W	IDTH	FUNCTION VALUE	
1 N 1 2 N 1 3 4 5		2.402 008 2.403 010		78 dBm 71 dBm				
7 3 9 0 1								
•								>

CH00 -1Mbps

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CH39 -1Mbps



CH78 -1Mbps



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Temperature:	25℃	Relative Humidity:	50%
Test Mode:	CH00 / CH39 / CH78 (π/4-DQPSK(2Mbps) Mode)	Test Voltage:	DC 3.8V

Frequency	Ch. Separation (MHz)	Limit (MHz)	Result
2402 MHz	0.999	0.872	Complies
2441 MHz	0.996	0.873	Complies
2480 MHz	1.005	0.872	Complies

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

RF 50 Ω cq 2.40250	AC 00000 GHz	- SENG	E:PULSE	AL AL	IGN AUTO			
					Avg Type:	Log-Pwr	Т	5 AM May 13, RACE 1 2 3
		NO: Wide 😱 Gain:Low	Trig: Free Ru #Atten: 30 dB	1				DET P P P
Ref Offset 0 /	5 dB					Mk	r2 2.403	
							-14.	393 dI
					2			
	~~~~	1° hay	$\sim$	$\Lambda$	$\sim \sim$	$m_{\gamma}$		
							$\sim$	
							L	<u> </u>
/								1
<u> </u>								
2500 GHz		-43 (D14	400 611-			0		3.000 N
								, (1001
	× 2.402 008 GHz			N FUNCT	TION WIDTH	FU	NCTION VALUE	
f	2.403 007 GHz							
	Ref -4.52 c	0 kHz sciX f 2.402 008 GHz	Ref -4.52 dBm	Ref -4.52 dBm           4.52 dBm           4.52 dBm           4.52 dBm           4.52 dBm           4.52 dBm           502500 GHz           0 kHz           #VBW 100 kHz           502           7           2.402 008 GHz           -14.42 dBm           -14.39 dBm	Kef         4.52 dBm           4         4           4         4           4         4           4         4           4         4           4         4           4         4           4         4           500 GHz         #VBW 100 kHz           501         2.402 008 GHz           7         2.402 008 GHz           -14.39 dBm         4	Kef         4.52 dBm           1         1           1         1           1         1           1         1           1         1           1         1           1         1           1         1           1         1           1         1           1         1           1         1           1         1           1         1           1         1           1         1           1         1           1         1           1         1           1         1           1         1           1         1           1         1           1         1           1         1           1         1           1         1           1         1           1         1           1         1           1         1           1         1           1         1           1         1           1	Ref - 4.52 dBm           1         2           2         2           4         2           4         4           4         4           500 GHz         #VBW 100 kHz           500 GHz         14.42 dBm           1         14.39 dBm	Ref -4.52 dBm     -14.       1     2       1     2       2     2       1     2       1     2       1     2       1     2       1     2       1     2       1     2       1     2       1     2       1     2       1     2       1     2       1     2       1     2       1     2       1     2       1     2       1     2       1     2       1     2       1     2       1     2       1     2       1     2       1     2       1     2       1     2       1     2       1     2       1     2       1     2       1     2       1     1       1     1       1     1       1     1       1     1       1     1       1     1       1     1        1     1 </td

### CH00 -2Mbps



#### CH39 -2Mbps



#### CH78 -2Mbps



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Temperature:	25℃	Relative Humidity:	50%
LOCT MINDAD.	CH00 / CH39 / CH78 (8DPSK(3Mbps)Mode)	Test Voltage:	DC 3.8V

Frequency	Ch. Separation (MHz)	Limit (MHz)	Result
2402 MHz	0.996	0.855	Complies
2441 MHz	1.002	0.854	Complies
2480 MHz	1.002	0.855	Complies

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

		yzer - Swept S								
enter F	_R , req 2.	50 Ω AC 4025000	00 GHz P	SB NO: Wide 🖵 Gain:Low	NSE:PULSE Trig: Free #Atten: 30	Run	LIGN AUTO Avg Type:		т	DAM May 13, 20 RACE 1 2 3 4 5 TYPE MWWWW DET P P P P
0 dB/div		offset 0.5 dB -4.54 dBm						MI	kr2 2.403 -14.	001 GH 518 dBi
.0g 14.5 24.5 34.5 44.5		$\sim$	~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	$\Lambda$	~~~~	2		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	
54.5 54.5 74.5										
34.5 94.5 <b></b>									Span	3.000 MI
Res BW				#VB	W 100 kHz				p 3.200 ms	s (1001 p
KE MODE 17 1 N 1 2 N 1 3 4 5 6 7 8	f	2	× 402 005 GHz 403 001 GHz	-14.39 -14.52	dBm	CTION FUNC	TION WIDTH		UNCTION VALUE	
9 0 1 G							STATUS			>

### CH00 -3Mbps

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#### CH39 -3Mbps



#### CH78 -3Mbps



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# 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%
	GFSK(1Mbps) CH00 / CH39 / C78	Test Voltage:	DC 3.8V

Frequency	20dB Bandwidth (MHz)	Result
2402 MHz	1.045	PASS
2441 MHz	1.045	PASS
2480 MHz	1.044	PASS

## CH00 -1Mbps



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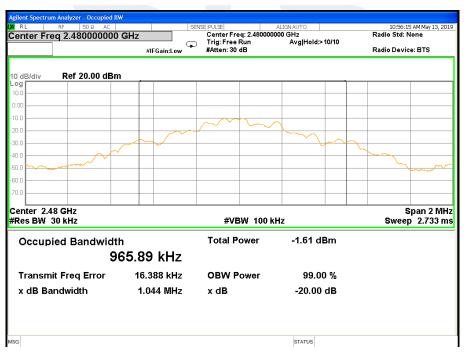
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### CH39 -1Mbps



CH78 -1Mbps



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Temperature:	25℃	Relative Humidity:	50%
	π/4-DQPSK(2Mbps) CH00 / CH39 / C78	Test Voltage:	DC 3.8V

Frequency	20dB Bandwidth (MHz)	Result
2402 MHz	1.308	PASS
2441 MHz	1.309	PASS
2480 MHz	1.308	PASS

### CH00 -2Mbps



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Temperature:	25°C	Relative Humidity:	50%
	8DPSK(3Mbps) CH00 / CH39 / CH78	Test Voltage:	DC 3.8V

Frequency	20dB Bandwidth (MHz)	Result
2402 MHz	1.282	PASS
2441 MHz	1.281	PASS
2480 MHz	1.282	PASS

### CH00 -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	Outout	1 W or 0.125W			
(a)(1)&(b)(1)	Output Power	if channel separation > 2/3 bandwidthprovided thesystems operatewith an output power no greater than125 mW(20.97dBm)	2400-2483.5	PASS	

#### 9.2 TEST PROCEDURE

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

#### 9.3 TEST SETUP

EUT	Power sensor		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°C	Relative Humidity:	60%
Test Voltage:	DC 3.8V		

Mode	Channel	Frequency	Peak Power	Average Power	Limit
	Number	(MHz)	(dBm)	(dBm)	(dBm)
	0	2402	-4.98	-13.89	20.97
GFSK(1M)	39	2441	-5.68	-14.60	20.97
	78	2480	-6.70	-15.66	20.97

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

Mode	Channel	Frequency	Peak Power (dBm) -8.81	Average Power	Limit
	Number	(MHz)		(dBm)	(dBm)
π/4-DQPSK( 2bps)	0	2402	-8.81	-18.51	20.97
	39	2441	-9.25	-19.02	20.97
	78	2480	-10.60	-19.33	20.97

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

Mode	Channel	Frequency	Peak Power	Average Power	Limit
	Number	(MHz)	(dBm) -8.82	(dBm)	(dBm)
8-DPSK(3Mb ps)	0	2402	-8.82	-20.12	20.97
	39	2441	-9.21	-21.85	20.97
	78	2480	-10.56	-22.20	20.97

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



## 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 PIFA 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.

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