

RADIO TEST REPORT

Report No.:STS2009164W02

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Issued for

XTR S.A.C.

Av. Camino Real 1225 Of 201-A San Isidro Lima, Peru

Product Name:	Tablet
Brand Name:	EKS
Model Name:	X7
Series Model:	N/A
FCC ID:	2AGAK-X7
Test Standard:	FCC Part 15.247

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TEST RESULT CERTIFICATION

Applicant's Name	XTR S.A.C.
Address:	Av. Camino Real 1225 Of 201-A San Isidro Lima, Peru
Manufacture's Name	
Address	Room 411.4th floor, Yonghe high R&D building, NO.25 Langshan road, xili street, Nanshan district Shenzhen, China
Product Description	
Product Name:	Tablet
Brand Name:	EKS
Model Name:	X7
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 of receipt of test item	02 Sept. 2020
Date (s) of performance of tests:	02 Sept. 2020 ~ 10 Sept. 2020
Date of Issue:	10 Sept. 2020
Test Result	Pass

1

Testing Engineer

(Chris Chen)

Technical Manager

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(Sean she)



(Vita Li)

Authorized Signatory :



Table of Contents

Page

1. SUMMARY OF TEST RESULTS	6
1.1 TEST FACTORY	7
1.2 MEASUREMENT UNCERTAINTY	7
2. GENERAL INFORMATION	8
2.1 GENERAL DESCRIPTION OF THE EUT	8
2.2 DESCRIPTION OF THE TEST MODES	10
2.3 TEST SOFTWARE AND POWER LEVEL	10
2.4 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED	11
2.5 DESCRIPTION OF NECESSARY ACCESSORIES AND SUPPORT UNITS	12
2.6 EQUIPMENTS LISTS	13
3. EMC EMISSION TEST	14
3.1 CONDUCTED EMISSION MEASUREMENT	14
3.2 RADIATED EMISSION MEASUREMENT	18
4.CONDUCTED SPURIOUS & BAND EDGE EMISSION	30
4.1 LIMIT	30
4.2 TEST PROCEDURE	30
4.3 DEVIATION FROM STANDARD	30
4.4 TEST SETUP	30
4.5 EUT OPERATION CONDITIONS	30
4.6 TEST RESULTS	31
5. POWER SPECTRAL DENSITY TEST	43
5.1 LIMIT	43
5.2 TEST PROCEDURE	43
5.3 DEVIATION FROM STANDARD	43
5.4 TEST SETUP	43
5.5 EUT OPERATION CONDITIONS	43
5.6 TEST RESULTS	44
6. BANDWIDTH TEST	50
6.1 LIMIT	50
6.2 TEST PROCEDURE	50
6.3 DEVIATION FROM STANDARD	50
6.4 TEST SETUP	50
6.5 EUT OPERATION CONDITIONS	50



Table of Contents

Page

6.6 TEST RESULTS	51
7. PEAK OUTPUT POWER TEST	57
7.1 LIMIT	57
7.2 TEST PROCEDURE	57
7.3 DEVIATION FROM STANDARD	57
7.4 TEST SETUP	57
7.5 EUT OPERATION CONDITIONS	57
7.6 TEST RESULTS	58
8. ANTENNA REQUIREMENT	59
8.1 STANDARD REQUIREMENT	59
8.2 EUT ANTENNA	59
APPENDIX-PHOTOS OF TEST SETUP	60



Page 5 of 60 Report No.:STS2009164W02

Revision History

Rev.	Issue Date			Contents	
00	10 Sept. 2020			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	Lest Item		Remark
15.207	Conducted Emission	PASS	
15.247 (a)(2)	6dB Bandwidth	PASS	
15.247 (b)(3)	Output Power	PASS	
15.247 (c)	Radiated Spurious Emission	PASS	
15.247 (d)	Conducted Spurious & Band Edge Emission	PASS	
15.247 (e)	Power Spectral Density	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.



1.1 TEST FACTORY

SHENZHEN STS TEST SERVICES CO., LTD Add. : A 1/F, Building B, Zhuoke Science Park, No.190 Chongqing Road, HepingShequ, Fuyong Sub-District,Bao'an District, Shenzhen, Guang Dong, China FCC test Firm Registration Number: 625569

IC test Firm Registration Number: 12108A

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	±0.68dB
2	Unwanted Emissions, conducted	±2.988dB
3	All emissions, radiated 30-1GHz	±5.6dB
4	All emissions, radiated 1G-6GHz	±5.5dB
5	All emissions, radiated>6G	±5.8dB
6	Conducted Emission (9KHz-150KHz)	±3.37dB
7	Conducted Emission (150KHz-30MHz)	±3.83dB



2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF THE EUT

Product Name	Tablet			
Trade Name	EKS			
Model Name	X7	X7		
Series Model	N/A			
Model Difference	N/A			
Product Description	The EUT is a Table Operation Frequency: Modulation Type: Bit Rate of Transmitter: Number of Channel: Antenna Designation: AntennaGain (dBi): Duty Cycle:	t 802.11b/g/n 20: 2412~2462 MHz 802.11b(DSSS):CCK,DQPSK,DBPSK 802.11g(OFDM):BPSK,QPSK,16-QAM,64-QAM 802.11b:11/5.5/2/1 Mbps 802.11b:54/48/36/24/18/12/9/6Mbps 802.11g:54/48/36/24/18/12/9/6Mbps 802.11n(20MHz): 65/58.5/52/39/26/19.5/13/6.5Mbps 802.11b/g/n20: 11CH Please refer to see Note 3. 2.37 dBi >98%		
Channel List	Please refer to the	Please refer to the Note 2.		
Adapter	Input: AC 100-240V 50/60HZ 0.3A Output: DC 5V,1.5A			
Battery	Rated Voltage: 3.7V Charge Limit: 4.2V Capacity: 3200mAh			
Hardware version number	S706-9863A-V1.0-200723-C			
Software version number	XTR_X7_PE_V01_20200916			
Connecting I/O Port(s)	Please refer to the Note 1.			

Note:

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



Page 9 of 60 Report No.:STS2009164W02

2.

Operation Frequency of channel				
802.11b/g/n(20MHz)				
Channel	Frequency			
01	2412			
02	2417			
03	2422			
04	2427			
05	2432			
06	2437			
07	2442			
08	2447			
09	2452			
10	2457			
11	2462			

Note:

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

2.4GHz Test Frequency:

For 802.11b/g/n (HT20)			
Channel	Freq.(MHz)		
01	2412		
06	2437		
11	2462		

3.

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
1	EKS	X7	PIFA	N/A	2.37 dBi	WLAN Antenna



2.2 DESCRIPTION OF THE TEST MODES

Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Worst Mode	Description	Data Rate
Mode 1	TX IEEE 802.11b CH1	1 Mbps
Mode 2	TX IEEE 802.11b CH6	1 Mbps
Mode 3	TX IEEE 802.11 b CH11	1 Mbps
Mode 4	TX IEEE 802.11g CH1	6 Mbps
Mode 5	TX IEEE 802.11g CH6	6 Mbps
Mode 6	TX IEEE 802.11g CH11	6 Mbps
Mode 7	TX IEEE 802.11n HT20 CH1	MCS 0
Mode 8	TX IEEE 802.11n HT20 CH6	MCS 0
Mode 9	TX IEEE 802.11n HT20 CH11	MCS 0

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.
- (3) The battery is full-charged during the radited and RF conducted test.

AC Conducted Emission

	Test Case
AC Conducted Emission	Mode10: Keeping WIFI TX

2.3 TEST SOFTWARE AND POWER LEVEL

During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level.

RF Function	Туре	Mode Or Modulation type	Ant Gain(dBi)	Power Class	Software For Testing
		802.11b		13	
WIFI(2.4G)	2.4G WIFI	802.11g	2.37	10	Engineering mode
		802.11n(HT20)		10	



2.4 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Radiation Test Set

Conduction Test Set

	-2 opter	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.

Item	Equipment	Mfr/Brand	Model/Type No.	Length	Note
E-2	Adapter	EKS	X7	N/A	N/A
C-1	DC Cable	N/A	N/A	110cm	N/A

Support units

Item	Equipment	Mfr/Brand	Model/Type No.	Length	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 ^CLength₂ column.

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2.6 EQUIPMENTS LISTS

Radiation Test equipment

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Test Receiver	R&S	ESCI	101427	2019.10.09	2020.10.08
Signal Analyzer	Agilent	N9020A	MY51110105	2020.03.05	2021.03.04
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-3GHz)	EM	EM330	060665	2019.10.09	2020.10.08
Pre-Amplifier (1G-18GHz)	SKET	LNPA-01018G-45	SK2018080901	2019.10.12	2020.10.11
Pre-Amplifier (18G-40GHz)	SKET	LNPA-1840-50	SK2018101801	2019.10.12	2020.10.11
Temperature & Humidity	HH660	Mieo	N/A	2019.10.17	2020.10.16
turn table	EM	SC100_1	60531	N/A	N/A
Antenna mast	EM	SC100	N/A	N/A	N/A
Test SW	FARAD	EZ-EMC(Ver.STSLAB-03A1 RE)			

Conduction Test equipment

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Test Receiver	R&S	ESCI	101427	2019.10.09	2020.10.08
LISN	R&S	ENV216	101242	2019.10.09	2020.10.08
LISN	EMCO	3810/2NM	23625	2019.10.09	2020.10.08
Temperature & Humidity	HH660	Mieo	N/A	2019.10.12	2020.10.11
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	15I00041SNO03	2019.10.09	2020.10.08
Signal Analyzer	Agilent	N9020A	MY49100060	2019.10.09	2020.10.08
Temperature & Humidity	HH660	Mieo	N/A	2019.10.12	2020.10.11
Test SW	FARAD	LZ-RF /LzRf-3A3			

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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 15. 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.

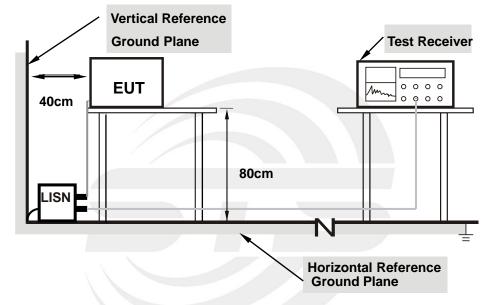
The following table is the setting of the receiver

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 cm from other units and other metal planes

3.1.4EUT 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.



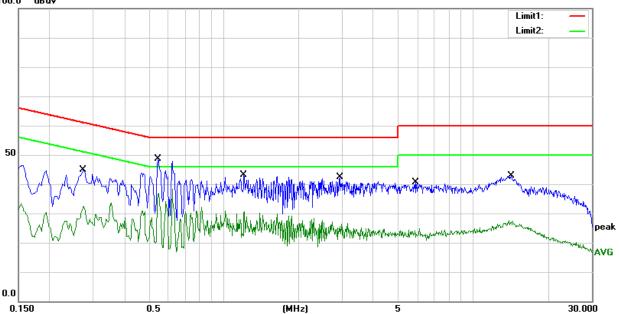
3.1.5 TEST RESULT

Temperature:	27.3(C)	Relative Humidity:	62%RH
Test Voltage:	AC 120V/60Hz	Phase:	L
Test Mode:	Mode 10		

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(d B)	(dBuV)	(dBuV)	(dB)	
1	0.2740	24.25	20.65	44.90	61.00	-16.10	QP
2	0.2740	11.78	20.65	32.43	51.00	-18.57	AVG
3	0.5460	28.20	20.39	48.59	56.00	-7.41	QP
4	0.5460	16.51	20.39	36.90	46.00	-9.10	AVG
5	1.2060	23.03	20.15	43.18	56.00	-12.82	QP
6	1.2060	10.49	20.15	30.64	46.00	-15.36	AVG
7	2.9220	22.19	20.09	42.28	56.00	-13.72	QP
8	2.9220	6.22	20.09	26.31	46.00	-19.69	AVG
9	5.9140	20.77	19.94	40.71	60.00	-19.29	QP
10	5.9140	4.85	19.94	24.79	50.00	-25.21	AVG
11	14.2780	22.80	20.03	42.83	60.00	-17.17	QP
12	14.2780	7.68	20.03	27.71	50.00	-22.29	AVG

Remark:

- 1. All readings are Quasi-Peak and Average values
- 2. Margin = Result (Result = Reading + Factor)-Limit
- 3. Factor=LISN factor+Cable loss+Limiter (10dB)
- 100.0 dBu¥



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Page 17 of 60 Report No.:STS2009164W02

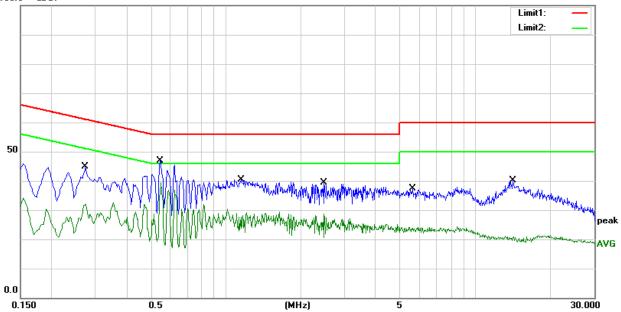
Temperature:	27.3(C)	Relative Humidity:	62%RH
Test Voltage:	AC 120V/60Hz	Phase:	Ν
Test Mode:	Mode 10		

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(d B)	(dBuV)	(dBuV)	(dB)	
1	0.2740	24.13	20.65	44.78	61.00	-16.22	QP
2	0.2740	11.39	20.65	32.04	51.00	-18.96	AVG
3	0.5460	26.36	20.39	46.75	56.00	-9.25	QP
4	0.5460	18.88	20.39	39.27	46.00	-6.73	AVG
5	1.1500	20.18	20.16	40.34	56.00	-15.66	QP
6	1.1500	8.95	20.16	29.11	46.00	-16.89	AVG
7	2.4860	19.22	20.11	39.33	56.00	-16.67	QP
8	2.4860	8.58	20.11	28.69	46.00	-17.31	AVG
9	5.6180	17.36	19.97	37.33	60.00	-22.67	QP
10	5.6180	4.19	19.97	24.16	50.00	-25.84	AVG
11	14.1940	20.08	20.03	40.11	60.00	-19.89	QP
12	14.1940	0.79	20.03	20.82	50.00	-29.18	AVG

Remark:

- 1. All readings are Quasi-Peak and Average values
- 2. Margin = Result (Result = Reading + Factor)-Limit
- 3. Factor=LISN factor+Cable loss+Limiter (10dB)

100.0 dBu¥



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Page 18 of 60 Report No.:STS2009164W02



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 (1000MHz-25GHz)

FREQUENCY (MHz)	(dBuV/m) (at 3M)		
FREQUENCT (MILZ)	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).

LIMITS OF RESTRICTED FREQUENCY BANDS

FREQUENCY (MHz)	FREQUENCY (MHz)	FREQUENCY (MHz)	FREQUENCY (GHz)
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	Above 38.6
13.36-13.41			

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For Radiated Emission

Spectrum Parameter	Setting		
Attenuation	Auto		
Detector	Peak/QP/AV		
Start Frequency	9 KHz/150KHz(Peak/QP/AV)		
Stop Frequency	150KHz/30MHz(Peak/QP/AV)		
	200Hz (From 9kHz to 0.15MHz)/		
RB / VB (emission in restricted	9KHz (From 0.15MHz to 30MHz);		
band)	200Hz (From 9kHz to 0.15MHz)/		
	9KHz (From 0.15MHz to 30MHz)		

Spectrum Parameter	Setting		
Attenuation	Auto		
Detector	Peak/QP		
Start Frequency	30 MHz(Peak/QP)		
Stop Frequency	1000 MHz (Peak/QP)		
RB / VB (emission in restricted band)	120 KHz / 300 KHz		

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	1 MHz / 3 MHz(Peak)	
band)	1 MHz/1/T MHz(AVG)	

For Restricted band

Spectrum Parameter	Setting		
Detector	Peak/AV		
Start/Stop Frequency	Lower Band Edge: 2300 to 2403 MHz		
	Upper Band Edge: 2479 to 2500 MHz		
	1 MHz / 3 MHz(Peak)		
RB / VB	1 MHz/1/T MHz(AVG)		

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Page 20 of 60 Report No.:STS2009164W02

Receiver Parameter	Setting
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

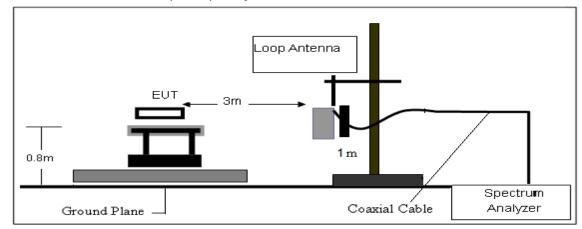
- a. The measuring distance of at 3 m shall be used for measurements at frequency 0.009MHz up to 1GHz, and above 1GHz.
- b. The EUT was placed on the top of a rotating table 0.8 meters(above 1GHz is 1.5 m) above the ground at a 3 meter anechoic chamber. The table was rotated 360 degrees to determine 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 Quasi Peak 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 testedand performed test to three orthogonal axis. The worst case emissions were reported.

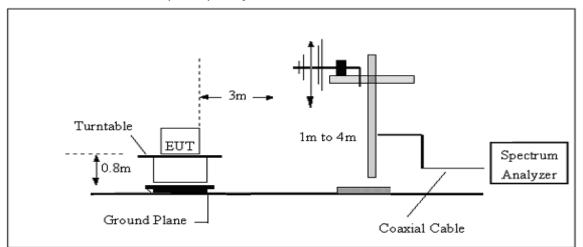


3.2.3 TEST SETUP

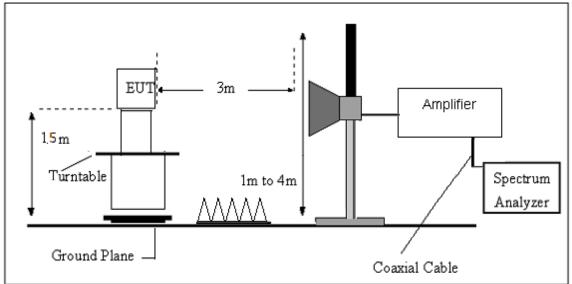
(A) Radiated Emission Test-Up Frequency Below 30MHz



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



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



3.2.4 EUT OPERATING CONDITIONS

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



3.2.5 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 - AGWhere 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



Shenzhen STS Test Services Co., Ltd.



3.2.6 TEST RESULT

9KHz-30MHz

Temperature:	23.2(C)	Relative Humidtity:	61%RH
Test Voltage:	DC 3.7V	Polarization:	
Test Mode:	TX Mode		

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

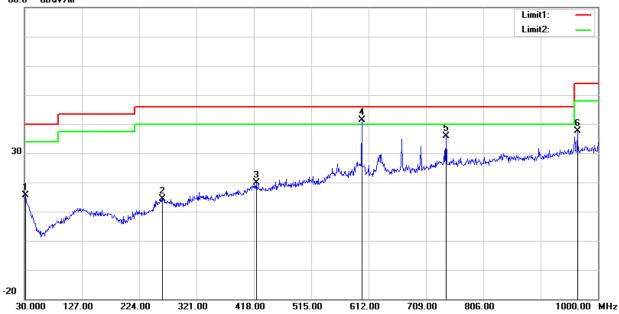
Temperature:	23.2(C)	Relative Humidtity:	61%RH			
Test Voltage:	DC 3.7V	Phase:	Horizontal			
Test Mode:	Mode 1/2/3/4/5/6/7/8/9 (Mode 4 worst mode)					

Frequency	Reading	Correct	Result	Limit	Margin	Remark
(MHz)	(dBuV)	Factor(dB/ m)	(dBuV/m)	(dBuV/m)	(dB)	
31.9400	29.37	-13.86	15.51	40.00	-24.49	QP
263.7700	29.02	-14.75	14.27	46.00	-31.73	QP
421.8800	30.07	-10.10	19.97	46.00	-26.03	QP
600.3600	47.22	-5.84	41.38	46.00	-4.62	QP
742.9500	37.98	-2.13	35.85	46.00	-10.15	QP
965.0800	35.63	1.89	37.52	54.00	-16.48	QP
	(MHz) 31.9400 263.7700 421.8800 600.3600 742.9500	(MHz)(dBuV)31.940029.37263.770029.02421.880030.07600.360047.22742.950037.98	(MHz)(dBuV)Factor(dB/ m)31.940029.37-13.86263.770029.02-14.75421.880030.07-10.10600.360047.22-5.84742.950037.98-2.13	(MHz)(dBuV)Factor(dB/ m)(dBuV/m)31.940029.37-13.8615.51263.770029.02-14.7514.27421.880030.07-10.1019.97600.360047.22-5.8441.38742.950037.98-2.1335.85	(MHz)(dBuV)Factor(dB/ m)(dBuV/m)(dBuV/m)31.940029.37-13.8615.5140.00263.770029.02-14.7514.2746.00421.880030.07-10.1019.9746.00600.360047.22-5.8441.3846.00742.950037.98-2.1335.8546.00	(MHz) (dBuV) Factor(dB/ m) (dBuV/m) (dBuV/m) (dBuV/m) 31.9400 29.37 -13.86 15.51 40.00 -24.49 263.7700 29.02 -14.75 14.27 46.00 -31.73 421.8800 30.07 -10.10 19.97 46.00 -26.03 600.3600 47.22 -5.84 41.38 46.00 -4.62 742.9500 37.98 -2.13 35.85 46.00 -10.15

Remark:

- 1. Margin = Result (Result = Reading + Factor)-Limit
- 2. Factor= Antenna factor+Cable attenuation factor(cable loss)-Amplifier gain







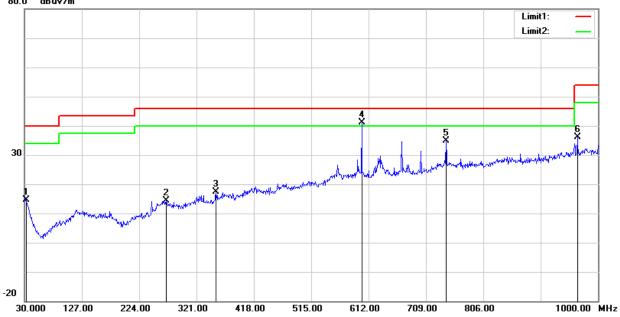
Temperature:	23.2(C)	Relative Humidtity:	61%RH			
Test Voltage:	DC 3.7V	Phase:	Vertical			
Test Mode:	Node 1/2/3/4/5/6/7/8/9 (Mode 4 worst mode)					

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/ m)	(dBuV/m)	(dBuV/m)	(dB)	
1	32.9100	28.87	-14.33	14.54	40.00	-25.46	QP
2	269.5900	29.66	-15.29	14.37	46.00	-31.63	QP
3	353.9800	30.26	-12.98	17.28	46.00	-28.72	QP
4	600.3600	46.89	-5.84	41.05	46.00	-4.95	QP
5	742.9500	37.05	-2.13	34.92	46.00	-11.08	QP
6	965.0800	34.20	1.89	36.09	54.00	-17.91	QP

Remark:.

Margin = Result (Result =Reading + Factor)–Limit
Factor= Antenna factor+Cable attenuation factor(cable loss)-Amplifier gain







(1000MHz-25GHz) Restricted band and Spurious emission Requirements

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 Chan	nel (802.11g/2	2412 MHz)				
3264.72	60.93	44.70	6.70	28.20	-9.80	51.13	74.00	-22.87	PK	Vertical
3264.72	50.80	44.70	6.70	28.20	-9.80	41.00	54.00	-13.00	AV	Vertical
3264.56	61.71	44.70	6.70	28.20	-9.80	51.91	74.00	-22.09	PK	Horizontal
3264.56	50.75	44.70	6.70	28.20	-9.80	40.95	54.00	-13.05	AV	Horizontal
4824.32	59.18	44.20	9.04	31.60	-3.56	55.62	74.00	-18.38	PK	Vertical
4824.32	49.13	44.20	9.04	31.60	-3.56	45.57	54.00	-8.43	AV	Vertical
4824.34	59.05	44.20	9.04	31.60	-3.56	55.49	74.00	-18.51	PK	Horizontal
4824.34	49.74	44.20	9.04	31.60	-3.56	46.18	54.00	-7.82	AV	Horizontal
5359.79	48.45	44.20	9.86	32.00	-2.34	46.11	74.00	-27.89	PK	Vertical
5359.79	39.35	44.20	9.86	32.00	-2.34	37.01	54.00	-16.99	AV	Vertical
5359.69	47.69	44.20	9.86	32.00	-2.34	45.35	74.00	-28.65	PK	Horizontal
5359.69	39.42	44.20	9.86	32.00	-2.34	37.08	54.00	-16.92	AV	Horizontal
7235.87	54.88	43.50	11.40	35.50	3.40	58.28	74.00	-15.72	PK	Vertical
7235.87	43.84	43.50	11.40	35.50	3.40	47.24	54.00	-6.76	AV	Vertical
7235.83	54.80	43.50	11.40	35.50	3.40	58.20	74.00	-15.80	PK	Horizontal
7235.74	44.01	43.50	11.40	35.50	3.40	47.41	54.00	-6.59	AV	Horizontal
				Middle Chai	nnel (802.11g	/2437 MHz)				
3264.65	61.81	44.70	6.70	28.20	-9.80	52.01	74.00	-21.99	PK	Vertical
3264.65	51.23	44.70	6.70	28.20	-9.80	41.43	54.00	-12.57	AV	Vertical
3264.69	61.53	44.70	6.70	28.20	-9.80	51.73	74.00	-22.27	PK	Horizontal
3264.69	51.07	44.70	6.70	28.20	-9.80	41.27	54.00	-12.73	AV	Horizontal
4874.42	58.31	44.20	9.04	31.60	-3.56	54.75	74.00	-19.25	PK	Vertical
4874.42	50.58	44.20	9.04	31.60	-3.56	47.02	54.00	-6.98	AV	Vertical
4874.41	58.16	44.20	9.04	31.60	-3.56	54.60	74.00	-19.40	PK	Horizontal
4874.41	50.39	44.20	9.04	31.60	-3.56	46.83	54.00	-7.17	AV	Horizontal
5359.73	48.89	44.20	9.86	32.00	-2.34	46.55	74.00	-27.45	PK	Vertical
5359.73	40.01	44.20	9.86	32.00	-2.34	37.67	54.00	-16.33	AV	Vertical
5359.74	48.40	44.20	9.86	32.00	-2.34	46.06	74.00	-27.94	PK	Horizontal
5359.74	39.10	44.20	9.86	32.00	-2.34	36.76	54.00	-17.24	AV	Horizontal
7310.87	54.71	43.50	11.40	35.50	3.40	58.11	74.00	-15.89	PK	Vertical
7310.87	43.86	43.50	11.40	35.50	3.40	47.26	54.00	-6.74	AV	Vertical
7310.94	54.13	43.50	11.40	35.50	3.40	57.53	74.00	-16.47	PK	Horizontal
7310.94	44.41	43.50	11.40	35.50	3.40	47.81	54.00	-6.19	AV	Horizontal

802.11 g



Page 27 of 60 Report No.:STS2009164W02

				High Chan	nel (802.11g	/2462 MHz)				
3264.85	61.85	44.70	6.70	28.20	-9.80	52.05	74.00	-21.95	PK	Vertical
3264.85	51.12	44.70	6.70	28.20	-9.80	41.32	54.00	-12.68	AV	Vertical
3264.66	61.93	44.70	6.70	28.20	-9.80	52.13	74.00	-21.87	PK	Horizontal
3264.66	51.20	44.70	6.70	28.20	-9.80	41.40	54.00	-12.60	AV	Horizontal
4924.56	59.23	44.20	9.04	31.60	-3.56	55.67	74.00	-18.33	PK	Vertical
4924.56	49.30	44.20	9.04	31.60	-3.56	45.74	54.00	-8.26	AV	Vertical
4924.42	58.26	44.20	9.04	31.60	-3.56	54.70	74.00	-19.30	PK	Horizontal
4924.42	50.58	44.20	9.04	31.60	-3.56	47.02	54.00	-6.98	AV	Horizontal
5359.86	48.14	44.20	9.86	32.00	-2.34	45.80	74.00	-28.20	PK	Vertical
5359.86	39.90	44.20	9.86	32.00	-2.34	37.56	54.00	-16.44	AV	Vertical
5359.57	47.14	44.20	9.86	32.00	-2.34	44.80	74.00	-29.20	PK	Horizontal
5359.57	39.18	44.20	9.86	32.00	-2.34	36.84	54.00	-17.16	AV	Horizontal
7385.96	54.30	43.50	11.40	35.50	3.40	57.70	74.00	-16.30	PK	Vertical
7385.96	44.48	43.50	11.40	35.50	3.40	47.88	54.00	-6.12	AV	Vertical
7385.69	54.69	43.50	11.40	35.50	3.40	58.09	74.00	-15.91	PK	Horizontal
7385.69	43.63	43.50	11.40	35.50	3.40	47.03	54.00	-6.97	AV	Horizontal

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

2. Scan with 802.11b, 802.11g, 802.11n (HT-20), the worst case is 802.11 g. Emission Level = Reading + Factor

Margin = Limit - Emission Level

3. The frequency emission of peak pointsthat did not show above the forms are at least 20dB below

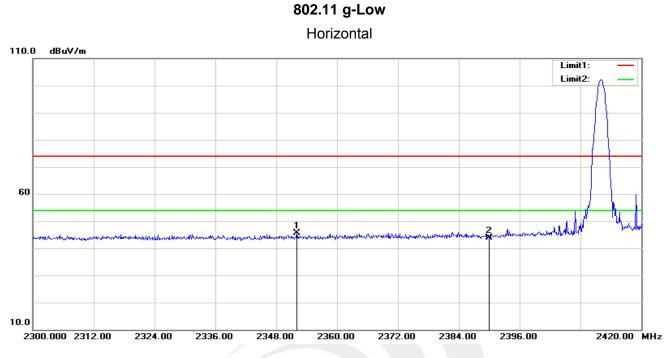
the limit, the frequency emission is mainly from the environment noise.



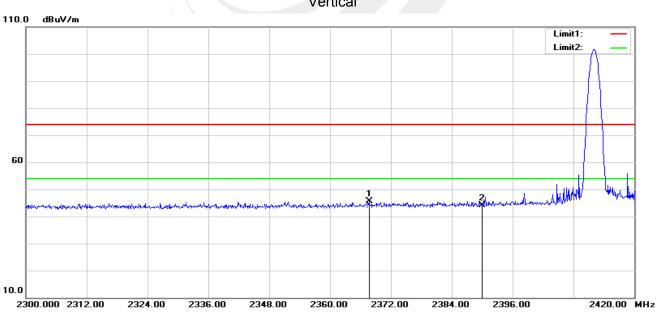
Shenzhen STS Test Services Co., Ltd.



3.2.6 TEST RESULTS(Band edge Requirements)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2352.080	41.88	3.77	45.65	74.00	-28.35	peak
2	2390.000	39.55	4.34	43.89	74.00	-30.11	peak



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2367.680	41.74	4.01	45.75	74.00	-28.25	peak
2	2390.000	39.91	4.34	44.25	74.00	-29.75	peak

Vertical

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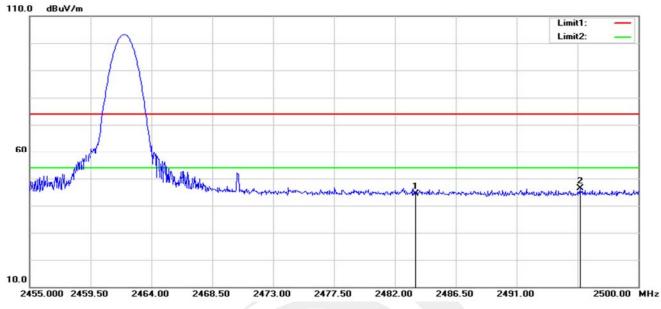


Page 29 of 60

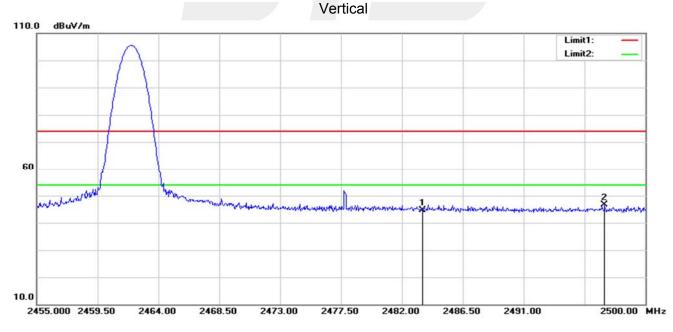
Report No.:STS2009164W02

802.11 g-High

Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.500	39.74	4.60	44.34	74.00	-29.66	peak
2	2495.680	41.71	4.64	46.35	74.00	-27.65	peak



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.500	40.14	4.60	44.74	74.00	-29.26	peak
2	2496.985	41.90	4.64	46.54	74.00	-27.46	peak

Note: 802.11b, 802.11g, 802.11n (HT-20) mode all have been tested, the worst case is 802.11 g, 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

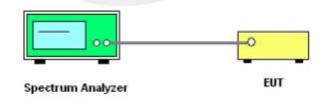
Spectrum Parameter	Setting					
Detector	Peak					
Start/Stop Frequency	30 MHz to 10th carrier harmonic					
RB / VB (emission in restricted band)	100 KHz/300 KHz					
Trace-Mode:	Max hold					

For Band edge

Spectrum Parameter	Setting				
Detector	Peak				
Start/Stan Eraguanay	Lower Band Edge: 2300 to 2412 MHz				
Start/Stop Frequency	Upper Band Edge: 2462 to 2500 MHz				
RB / VB (emission in restricted band)	100 KHz/300 KHz				
Trace-Mode:	Max hold				

4.3 DEVIATION FROM STANDARD No deviation.

4.4 TEST SETUP



The EUT which is powered by the Battery, 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.

4.5 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.



4.6 TEST RESULTS

Temperature:	25 ℃	Relative Humidity:	60%		
Test Voltage:	DC 3.7V	Test Mode:	TX b Mode /CH01, CH06, CH11		

CH 01

nter Fr	eq 12.515		D: Fast 😱 1	Trig: Free Run #Atten: 30 dB	,	Avg Type:	Log-PWr		TYPE MMMMM DET P P P P
	Ref Offset 0	.5 dB							410 3 GI
dB/div g	Ref 11.52	dBm							l.519 dB
52									
18									-16.88 (
.5									
.5									
.5									0
.5	0	3					and a state of the		AND AND AND AND AND AND AND AND AND AND
5	and the state of				A CONTRACTOR OF THE OWNER				
5									
5									
art 30 M	IHz 100 kHz		#VBW 3	300 644			Swe	Sto	p 25.00 Gi s (40001 p
		×	#VDVV.	FUNCTION	FUNCTION	WINTY		UNOTION WALUE	s (40001 p
N 1 N 1 N 1	f f f f	2.410 3 GHz 2.662 5 GHz 6.015 9 GHz 24.317 7 GHz	1.519 dB -55.915 dB -56.922 dB -48.886 dB	m m m	PONCTION	WIDTH			
)

CH 06

		RF	50 Q AC		SENSE:PUL	.SE	ALIGNAUTO		02:13:54 PM	Sep 04, 2
nter	Fre	eq 12.	5150000	PN	0: Fast 🖵 Tri ain:Low #At	g: Free Run ten: 30 dB	Аvg Тур	e: Log-Pwr	TRACE TYPE DET	1234 MWWW PPPP
dB/di			fset 0.5 dB 3.31 dB m						Mkr1 2.435 3.30	9 GI 6 dB
B1										
9										
7										-16.59
7										
										\Diamond
		. (\mathcal{O}^2 (3				a star and star	and the state of the	
7	a. 6.		No.		distantic di setteri	Contraction of the local data	AND ADDRESS OF			
	and a second									
				-						
es B		HZ 00 kH	z		#VBW 30	0 kHz		Swee	Stop 25 p 2.387 s (40	.00 G 001 p
	e Tric		×		Y	FUNCTION	FUNCTION WIDTH	F	UNCTION VALUE	
	1	f		2.435 9 GHz 2.999 6 GHz	3.306 dBm -57.290 dBm					
NODE N N	1			5.044 6 GHz	-57.222 dBm					
222	1	f			49 266 dBm					
NN	1 1 1	f f		4.215 9 GHz	-48.266 dBm					
NN	1 1 1	f			-48.266 dBm					
ZZZ	1 1	f			-48.266 dBm					
222	1 1	f			-48.266 dBm					
ZZZ	1 1 1	f			-48.266 dBm					

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CH 11

ent Spec R L	trum Ar	nalyzer - Swept		CENC	PULSE		IGNAUTO		02-16-2	3 PM Sep 04, 2
		12.515000	0000 GHz	D: Fast	Trig: Free Ri #Atten: 30 dl	un	Avg Type:	Log-Pwr	TI	TYPE MWWW DET P P P
dB/div		f Offset 0.5 d f 12.90 dB							Mkr1 2.4 2.	60 2 G 901 dE
90		1								
0										-16.62
1										
1		2							< <tr> ↓</tr>	
1		\ <u></u>		No. Contraction of States of States		and wind			-	
art 30 es BV		kHz		#VBW	300 kHz			Swe	Stop ep 2.387 s	25.00 G (40001 p
	TRC SC 1 f 1 f 1 f 1 f	L	× 2.460 2 GHz 3.143 1 GHz 7.056 6 GHz 21.679 0 GHz	2.901 dE -55.751 dE -56.612 dE -47.267 dE	3m 3m	ION FUNC	TION WIDTH		FUNCTION VALUE	
										1.1
							STATUS			



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Band edge(it's also the reference level for conducted spurious emission)



CH 01

CH 06





CH 11





Shenzhen STS Test Services Co., Ltd.



Page 35 of 60 Report No.:STS2009164W02

Temperature:	25 ℃	Relative Humidity:	60%		
Test Voltage:	DC 3.7V	Test Mode:	TX g Mode /CH01, CH06, CH11		

CH 01



CH06

enter	_		50 Q AC	SENSE:PUL	36	ALIGNAUTO		02:21:	40 PM Sep 04, 20
	Fre	q 12.5			: Free Run en: 30 dB	Ауд Туре	e: Log-Pwr		TYPE MUMM DET P P P P
dB/div			et 0.5 dB 34 dBm						429 6 GH 6.164 dB
16		(1							
2									
2									-21.17
.2									
.2		- 102	<u>3</u>						
5.2		() ²			. Marine Marine Sarah				
2	, ek							T	
2		-						-	-
.2									-
art 30 tes BV		iz 00 kHz		#VBW 30) kHz		Swe	Sto ep 2.387 s	p 25.00 G s (40001 p
R MODE	TRC		×	Y	FUNCTION	FUNCTION WIDTH		FUNCTION VALUE	
N N N N	1 1	f f	2.429 6 GHz 2.660 0 GHz 5.265 0 GHz	-5.164 dBm -55.981 dBm -56.133 dBm					
N	1	f	24.590 5 GHz	-47.945 dBm					
5									
3									
) 									
)

Shenzhen STS Test Services Co., Ltd.



CH 11

		ectru		alyzer - Swep							
UXU R			RF	50 Q		SENSE:P	ULSE	ALIGNAUTO			7 PM Sep 04, 2020
Cer	nter	Fre	eq '	12.51500			rig: Free Run Atten: 30 dB	Avg Typ	e: Log-Pwr	1	RACE 1 2 3 4 5 6 TYPE MWWWWW DET P P P P P P
10 d	B/di	v		Offset 0.5							60 2 GHz 235 dBm
Log -4.23				0 1							
-14.2											
-24.2											-20.86 dBm
-34.2	⊢										A
-44.2	⊢			2	⊘ ³						<u> </u>
-54.2				9		des a la constitució esta del		No. of Concession, Name			
-64.2											
-84.2											
Sta	L_	n M	H7							Stor	25.00 GHz
				kHz		#VBW 3	00 kHz		Swe	eep 2.387 s	
MKR	MODE	TRO	SCL		×	Y	FUNCTION	FUNCTION WIDTH		FUNCTION VALUE	~
1	NN	1	f		2.460 2 GHz 3.048 2 GHz	-4.235 dBn -57.380 dBn					
3	NN	1	f		5.471 0 GHz 24.804 6 GHz	-57.111 dBm -48.229 dBm					
5 6											
2 3 4 5 6 7 8 9 10											
9 10											
11 <											~
MSG								STATUS			



Shenzhen STS Test Services Co., Ltd.



Band edge(it's also the reference level for conducted spurious emission)



CH 01

CH06



Shenzhen STS Test Services Co., Ltd.



CH11

		zer - Swept SA									
RL optor F	RF	50 R AC			SENSE:PULS	E	ALIG	Avg Type:	Log-Pwr		06 PM Sep 04, 200 TRACE 1 2 3 4
enterr	-req 2.4	+7 100000		PNO: Fast IFGain:Low		: Free Run en: 30 dB		nig type.	Lugin		DET P P P P
) dB/div		ffset 0.5 dB).14 dBm							N	1kr1 2.463 -0	3 286 GH .856 dBi
.86			Muchan	hand hay -	1 Andreak when	hul					
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		NOW TO AND				New York	man	A A.	023		
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1.9										the manufacture of the second	Nummer
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art 2.4	4200 G	Hz		;	#VBW 300	kHz			Swee	Stop 2 ep 5.600 m	.50000 Gl s (1001 pl
	100 kł	łz									
Res BW			×		Y	FUNCTION	FUNCTIO	ON WIDTH		FUNCTION VALUE	
Res BW		2. 2. 2.	× 463 286 GH 483 528 GH 484 282 GH 491 358 GH	iz 42 iz 42	Y 0.856 dBm 2.468 dBm 2.871 dBm 1.071 dBm	FUNCTION	FUNCTIO	ON WIDTH		FUNCTION VALUE	
Res BW R 1009 N 2 N 3 N 4 N 5 6 7	TRC SCL 1 f 1 f	2. 2. 2.	463 286 GH 483 528 GH 484 282 GH	iz 42 iz 42	0.856 dBm 2.468 dBm 2.871 dBm	FUNCTION	FUNCTIO	ON WIDTH		FUNCTION VALUE	
Res BW R M000 N N N N N N N N N N N N N	TRC SCL 1 f 1 f	2. 2. 2.	463 286 GH 483 528 GH 484 282 GH	iz 42 iz 42	0.856 dBm 2.468 dBm 2.871 dBm	FUNCTION	FUNCTIO	ON WIDTH		FUNCTION VALUE	>
Res BW RE MODE 1 N 2 N	TRC SCL 1 f 1 f	2. 2. 2.	463 286 GH 483 528 GH 484 282 GH	iz 42 iz 42	0.856 dBm 2.468 dBm 2.871 dBm	FUNCTION	FUNCTIO	IN WIDTH		FUNCTION VALUE	. 84



Shenzhen STS Test Services Co., Ltd.



Page 39 of 60 Report No.:STS2009164W02

Temperature:	25 ℃	Relative Humidity:	60%
Test Voltage:	DC 3.7V	Test Mode:	TX n Mode(20M) /CH01, CH06, CH11

CH 01



011	00
CH	06

L	RF	50 Q /		SENSE:	PULSE	ALIGNAUTO		02:31:29 PM Sep 04,
nter F	req 1	2.515000			rig: Free Run Atten: 30 dB	Ауд Тур	e: Log-Pwr	TRACE 1 2 3 TYPE MWWW DET P P P
B/div		Offset 0.5 dl 7.29 dBm						Mkr1 2.430 9 G -2.706 dl
		1						
-								-21.9
,								
			- 2					
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		and the second						
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rt 30 I es BW		(Hz		#VBW 3	800 kHz		Swee	Stop 25.00 C p 2.387 s (40001
MODE T	RC SCL		× 2.430 9 GHz	-2.706 dBr	FUNCTION	FUNCTION WIDTH	FL	UNCTION VALUE
N			2.648 1 GHz 5.871 7 GHz	-57.275 dBr -56.283 dBr	n			
N	f		24.136 7 GHz	-47.256 dBr	n			



CH 11

Spectrum Analyz	50 Q AC		E:PULSE	ALIGN AUTO			05 PM Sep 04
er Freq 12.	515000000 GHz	PNO: Fast G	Trig: Free Run #Atten: 30 dB	Avg Ty	pe: Log-Pwr		TYPE MWA DET P P I
	fset 0.5 dB .75 dBm					Mkr1 2.4	467 1 (6.254 d
0 1							
					_		-21
	\wedge^2 \wedge^3						
State State	V V	a shedi ka walika a	State of the second	and the second second			
-							
30 MHz BW 100 kH	z	#VBW	/ 300 kHz		Sw	Sto eep 2.387 s	p 25.00
ODE TRC SCL	×	Y	FUNCTION	FUNCTION WIDTH		FUNCTION VALUE	. (
N 1 f N 1 f N 1 f N 1 f	2.467 1 Gi 3.062 0 Gi 5.855 5 Gi 24.431 3 Gi	Hz -56.930 d Hz -57.267 d	Bm Bm				
			41				



Shenzhen STS Test Services Co., Ltd.



Band edge(it's also the reference level for conducted spurious emission)



CH 01

CH 06





CH 11

ent Spectrum Anal R L RF	yzer - Swept SA	SENSE	DI II 65	ALIGNAUTO		02:26	35 PM Sep 04, 20
	.471000000 GHz	PNO: Fast	Trig: Free Run #Atten: 30 dB		: Log-Pwr	02.20	TRACE 1 2 3 4 TYPE MWWW DET P P P P
	0ffset 0.5 dB 8.16 dBm				M	lkr1 2.46 -1	3 286 GH 1.333 dB
4		mhahy mhahidin	mahal				
8		V I					-21.84 d
8 8 Material Material	www.www			Malumus Williams	023		
8					23	- Martin	munno
8							
8							
art 2.44200 G es BW 100 k		#VBW	300 kHz		Swee	Stop 2 2p 5.600 m	2.50000 GI ns (1001 pi
MODE TRC SCL N 1 f N 1 f N 1 f N 1 f	2.463 286 G 2.483 528 G 2.484 456 G 2.491 068 G	Hz -40.333 dB Hz -42.664 dB	m m	FUNCTION WIDTH		FUNCTION VALUE	
							>



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5. POWER SPECTRAL DENSITY TEST

5.1 LIMIT

FCC Part15.247, Subpart C					
Section	Test Item	Limit	Frequency Range (MHz)	Result	
15.247(e)	Power Spectral Density	≤8 dBm (RBW ≥3KHz)	2400-2483.5	PASS	

5.2 TEST PROCEDURE

- 1. Set analyzer center frequency to DTS channel center frequency.
- 2. Set the span to 1.5 times the DTS channel bandwidth.
- 3. Set the 100 kHz \geq RBW \geq 3 kHz.
- 4. Set the VBW \geq 3 x RBW.
- 5. Detector = peak.
- 6. Sweep time = auto couple.
- 7. Trace mode = max hold.
- 8. Allow trace to fully stabilize.
- 9. Use the peak marker function to determine the maximum amplitude level.
- 10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

5.3 DEVIATION FROM STANDARD No deviation.

5.4 TEST SETUP

EUT	SPECTRUM
	ANALYZER

5.5 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.



5.6 TEST RESULTS

Temperature:	25 ℃	Relative Humidity:	60%
Test Voltage:	DC 3.7V	Test Mode:	TX b Mode /CH01, CH06, CH11

Fraguanay	Power Density	Limit (3KHZ/dBm)	Docult	
Frequency	(dBm/3kHz)		Result	
2412 MHz	-13.113	≤8	PASS	
2437 MHz	-13.196	≤8	PASS	
2462 MHz	-13.774	≤8	PASS	

TX CH01



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TX CH11



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Page 46 of 60 Report No.:STS2009164W02

Temperature:	25 ℃	Relative Humidity:	60%
Test Voltage:	DC 3.7V	Test Mode:	TX g Mode /CH01, CH06, CH11

Frequency	Power Density	Limit (2KHZ/dDm)	Deput	
Frequency	(dBm/3kHz)	Limit (3KHZ/dBm)	Result	
2412 MHz	-18.5910	≤8	PASS	
2437 MHz	-17.9050	≤8	PASS	
2462 MHz	-16.9990	≤8	PASS	

TX CH01



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TX CH11



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Page 48 of 60 Report No.:STS2009164W02

Temperature:	25 °C	Relative Humidity:	60%
Test Voltage:	DC 3.7V	Test Mode:	TX n Mode(20M) /CH01, CH06, CH11

Fraguaday	Power Density	Limit (3KHZ/dBm)	Docult	
Frequency	(dBm/3kHz)		Result	
2412 MHz	-18.0390	≤8	PASS	
2437 MHz	-17.8850	≤8	PASS	
2462 MHz	-17.4490	≤8	PASS	

TX CH01



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TX CH11



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6. BANDWIDTH TEST

6.1 LIMIT

FCC Part15.247,Subpart C					
Section	Test Item	Limit	Frequency Range (MHz)	Result	
15.247(a)(2)	Bandwidth	≥500KHz (6dB bandwidth)	2400-2483.5	PASS	

6.2 TEST PROCEDURE

The automatic bandwidth measurement capability of an instrument may be employed using the X dB bandwidth mode with X set to 6 dB, if the functionality described above (i.e., RBW = 100 kHz, VBW \geq 3RBW, peak detector with maximum hold) is implemented by the instrumentation function. When using this capability, care shall be taken so that the bandwidth measurement is not influenced by any intermediate power nulls in the fundamental emission that might be \geq 6 dB.

6.3 DEVIATION FROM STANDARD No deviation.

6.4 TEST SETUP



6.5 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.



6.6 TEST RESULTS

Temperature:	25 ℃	Relative Humidity:	60%
Test Voltage:	DC 3.7V	Test Mode:	TX b Mode /CH01, CH06, CH11

Remark: PEAK DETECTOR IS USED

Fraguanay	6dB Bandwidth	Limit	Result
Frequency	(MHz)	(KHz)	Result
2412 MHz	8.612	≥500KHz	PASS
2437 MHz	9.098	≥500KHz	PASS
2462 MHz	9.072	≥500KHz	PASS

TX CH 01



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TX CH 11





Page 53 of 60 Report No.:STS2009164W02

Temperature:	25 ℃	Relative Humidity:	60%
Test Voltage:	DC 3.7V	Test Mode:	TX g Mode /CH01, CH06, CH11

Fraguanay	6dB Bandwidth	Limit	Popult
Frequency	(MHz)	(KHz)	Result
2412 MHz	16.36	≥500KHz	PASS
2437 MHz	16.38	≥500KHz	PASS
2462 MHz	16.36	≥500KHz	PASS

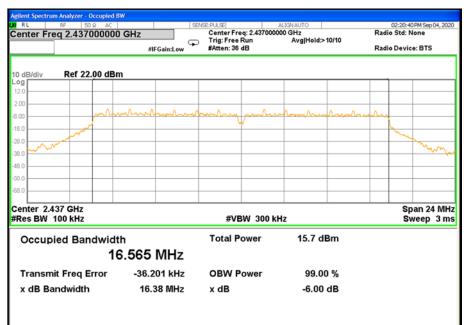
TX CH 01

ilent Spectrum Analyzer - Occupied B\ RL RF 50 Ω AC	S		ALIGNAUTO	02:18:23 PM Sep 04, 202
enter Freq 2.412000000	GHz	Center Freq: 2.4120000 Trig: Free Run	00 GHz Avg Hold:>10/10	Radio Std: None Radio Device: BTS
	#IFGain:Low #Atten: 36 dB			
dB/div Ref 22.00 dBm)			
0				
0				
	at mar and	front my remains	-A-row-ArgoryA-work-	mon
				- market
				~~~~
0				
0				
nter 2.412 GHz es BW 100 kHz		#VBW 300 ki	4.7	Span 24 MH Sweep 3 n
CS BW 100 KH2		#VDVV 500 KI	12	Sweep 51
Occupied Bandwidt	h	Total Power	13.2 dBm	
16	.540 MHz			
Transmit Freq Error	32.217 kHz	<b>OBW Power</b>	99.00 %	
x dB Bandwidth	16.36 MHz	x dB	-6.00 dB	
			STATUS	

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## **TX CH 11**

STATUS

gilent Spectrum Analyzer	- Occupied B' 50 Q AC		ENSE:PULSE	ALIGNAUTO	02	:23:31 PM Sep 04, 2020
enter Freq 2.46			Center Freq: 2.4620000	00 GHz		td: None
		#IFGain:Low	) Trig: Free Run #Atten: 36 dB	Avg Hold:>10/10	Radio D	evice: BTS
0 dB/div Ref 2	2.00 dBn					
og	2.00 0.51	•				
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3.0 www.						- Mar Manuel
5.0						
3.0						
0.0		1				
8,0						
enter 2.462 GHz						Span 24 MH
Res BW 100 kHz			#VBW 300 kl	Hz		Sweep 3 ms
Occupied Ba	ndwidt	h	Total Power	15.4 dBm		
		5.530 MHz				
Transmit Freq	Error	-29.549 kHz	<b>OBW Power</b>	99.00 %		
x dB Bandwidt	h	16.36 MHz	x dB	-6.00 dB		
00 84T0TAUAAAAAAAA						
3				STATUS		

Shenzhen STS Test Services Co., Ltd.



Page 55 of 60 Report No.:STS2009164W02

Temperature:	<b>25</b> ℃	Relative Humidity:	60%
Test Voltage:	DC 3.7V	Test Mode:	TX n Mode(20M) /CH01, CH06, CH11

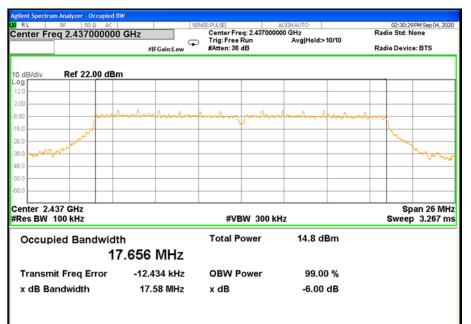
Fraguanay	6dB Bandwidth	Limit	Result
Frequency	(MHz)	(KHz)	Result
2412 MHz	17.57	≥500KHz	PASS
2437 MHz	17.58	≥500KHz	PASS
2462 MHz	17.32	≥500KHz	PASS

#### TX CH 01

RL     RF     S0 R     AC       enter Freq 2.412000000     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R     R	S	Center Freq: 2.4120000		02:28:11 PM Sep 04, 202 Radio Std: None
	#IFGain:Low	Trig: Free Run #Atten: 36 dB	Avg Hold:>10/10	Radio Device: BTS
dB/div Ref 22.00 dBm	1			
g				
0			Anna Anna Anna Anna	4
		Amar marken	formal and the contract	www
				have a second
0 martin martin				- www
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0				
enter 2.412 GHz les BW 100 kHz		#VBW 300 ki	łz	Span 26 MH Sweep 3.267 n
Occupied Bandwidt	h	Total Power	14.7 dBm	
17	.647 MHz			
Transmit Freq Error	42.864 kHz	<b>OBW Power</b>	99.00 %	
x dB Bandwidth	17.57 MHz	x dB	-6.00 dB	
			STATUS	

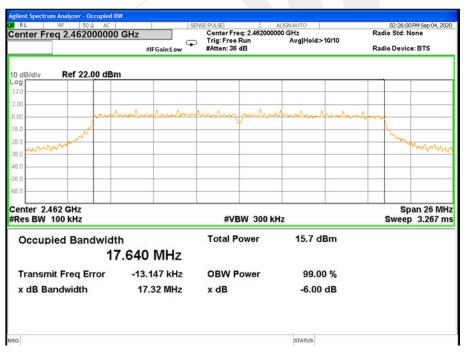
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#### **TX CH 11**

STATUS



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# 7. PEAK OUTPUT POWER TEST

#### 7.1 LIMIT

FCC Part15.247,Subpart C							
Section	Test Item	Limit	Frequency Range (MHz)	Result			
15.247(b)(3)	Output Power	1 watt or 30dBm	2400-2483.5	PASS			

#### 7.2 TEST PROCEDURE

One of the following procedures may be used to determine the maximum peak conducted output power of a DTS EUT.

 $RBW \ge DTS$  bandwidth

The following procedure shall be used when an instrument with a resolution bandwidth that is greater than the DTS bandwidth is available to perform the measurement:

a) Set the RBW  $\geq$  DTS bandwidth.

b) Set VBW  $\geq$  [3 × RBW].

c) Set span  $\geq$  [3  $\times$  RBW].

d) Sweep time = auto couple.

e) Detector = peak.

f) Trace mode = max hold.

g) Allow trace to fully stabilize.

h) Use peak marker function to determine the peak amplitude level.

Integrated band power method:

The following procedure can be used when the maximum available RBW of the instrument is less than the

DTS bandwidth:

a) Set the RBW = 1 MHz.

b) Set the VBW  $\geq$  [3  $\times$  RBW].

c) Set the span  $\geq$  [1.5 × DTS bandwidth].

d) Detector = peak.

e) Sweep time = auto couple.

f) Trace mode = max hold.

g) Allow trace to fully stabilize.

h) Use the instrument's band/channel power measurement function with the band limits set equal to the DTS bandwidth edges (for some instruments, this may require a manual override to select the peak detector). If the instrument does not have a band power function, then sum the spectrum levels (in linear power units) at intervals equal to the RBW extending across the DTS channel bandwidth.

PKPM1 Peak power meter method:

The maximum peak conducted output power may be measured using a broadband peak RF power meter. The power meter shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall use a fast-responding diode detector.

7.3 DEVIATION FROM STANDARD No deviation.

7.4 TEST SETUP



#### 7.5 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.



## 7.6 TEST RESULTS

Temperature:	<b>25</b> ℃	Relative Humidity:	60%
Test Voltage:	DC 3.7V		

Mode	Test Channe	Frequency	Peak Conducted Output Power	Average Conducted Output Power	LIMIT
		(MHz)	(dBm)	(dBm)	dBm
TX 802.11b	CH01	2412	14.59	11.69	30
	CH06	2437	13.60	10.69	30
	CH11	2462	15.29	12.48	30
TX 802.11g	CH01	2412	19.21	9.47	30
	CH06	2437	18.14	9.12	30
	CH11	2462	18.70	10.20	30
TX 802.11n20	CH01	2412	18.49	8.91	30
	CH06	2437	17.69	8.35	30
	CH11	2462	18.06	9.67	30

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## 8. ANTENNA REQUIREMENT

#### 8.1 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 partyshall be used with the device.

#### 8.2 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.

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



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