# RADIO TEST REPORT

Report No: STS1706064F03

Issued for

SD MOBILE SAS

CRA 34#43-110 LC B C 01 BARRANQUILLA, COLOMBIA.

Product Name:	smart phone
Brand Name:	7 Step
Model Name:	Paris
Series Model:	N/A
FCC ID:	2ALHPPARIS
Test Standard:	FCC Part 15.247

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## **TEST RESULT CERTIFICATION**

Applicant's name	SD MOBI	LE SAS			
Address:	CRA 34#43-110 LC B C 01 BARRANQUILLA,COLOMBIA.				
Manufacture's Name:	anufacture's Name moda communication co.,ltd				
Address	1708, bloc shenzhen	ck b, huihai plaza building, chuangye road, longhua district, , China.			
Product description					
Product name:	smart pho	one			
Model and/or type reference .:	Paris				
Series Model:	N/A				
Standards:	FCC Part	15.247			
Test procedure	ANSI C63	3.10-2013			
test (EUT) is in compliance with identified in the report. This report shall not be reproduct	the FCC re ed except	red by BZT, the test results show that the equipment under equirements. And it is applicable only to the tested sample in full, without the written approval of BZT, this document I only, and shall be noted in the revision of the document.			
Date of Test	:				
Date (s) of performance of tests.	:	09 Jun. 2017~24 Jun. 2017			
Date of Issue	:	26 Jun. 2017			
Test Result	:	Pass			
Testing Engine	eer :	Seun She			
	-	<u> </u>			
		(Sean she)			
Technical Man	ager :	hatim. hou			
		(Hakim.hou)			
Authorized Sig	natory:	Meali			

(Vita Li)

Table of Contents	Page
1. SUMMARY OF TEST RESULTS	6
1.1 TEST FACTORY	7
1.2 MEASUREMENT UNCERTAINTY	7
2. GENERAL INFORMATION 2.1 GENERAL DESCRIPTION OF EUT	<b>8</b> 8
2.1 GENERAL DESCRIPTION OF EUT 2.2 DESCRIPTION OF TEST MODES	10
2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED	11
2.4 DESCRIPTION OF SUPPORT UNITS	12
2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS	13
3. EMC EMISSION TEST	14
3.1 CONDUCTED EMISSION MEASUREMENT	14
3.2 RADIATED EMISSION MEASUREMENT	18
4. CONDUCTED SPURIOUS & BAND EDGE EMISSION	28
4.1 APPLIED PROCEDURES / LIMIT	<b>26</b> 28
4.2 TEST PROCEDURE	28
4.3 DEVIATION FROM STANDARD	28
4.4 TEST SETUP	28
4.5 EUT OPERATION CONDITIONS	28
4.6 TEST RESULTS	29
5. POWER SPECTRAL DENSITY TEST	38
5.1 APPLIED PROCEDURES / LIMIT	38
5.2 TEST PROCEDURE	38
5.3 DEVIATION FROM STANDARD	38
5.4 TEST SETUP	38
5.5 EUT OPERATION CONDITIONS	38
5.6 TEST RESULTS	39
6. BANDWIDTH TEST	45
6.1 APPLIED PROCEDURES / LIMIT	45
6.2 TEST PROCEDURE	45
6.3 DEVIATION FROM STANDARD	45
6.4 TEST SETUP	45
6.5 EUT OPERATION CONDITIONS	45
6.6 TEST RESULTS	46

Table of Contents	Page
7. PEAK OUTPUT POWER TEST	52
7.1 APPLIED PROCEDURES / LIMIT	52
7.2 TEST PROCEDURE	52
7.3 DEVIATION FROM STANDARD	52
7.4 TEST SETUP	52
7.5 EUT OPERATION CONDITIONS	52
7.6 TEST RESULTS	53
8. ANTENNA REQUIREMENT	54
8.1 STANDARD REQUIREMENT	54
8.2 EUT ANTENNA	54
APPENDIX - PHOTOS OF TEST SETUP	55

## **Revision History**

Rev.	Rev. Issue Date Re		Effect Page	Contents
00 26 Jun. 2017 STS1706064F03		STS1706064F03	ALL	Initial Issue

## 1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards: KDB 558074 D01 DTS Meas Guidance v04

FCC Part 15.247,Subpart C			
Standard Section	Test Item	Judgment	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)	15.247 (e) Power Spectral Density		
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

BZT Testing Technology Co., Ltd.

Add.: Buliding 17, Xinghua Road Xingwei industrial Park Fuyong,

Baoan District, Shenzhen, Guangdong, China

FCC Registration No.: 701733

#### 1.2 MEASUREMENT UNCERTAINTY

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

No.	Item	Uncertainty
1	Conducted Emission (9KHz-150KHz)	±2.88dB
2	Conducted Emission (150KHz-30MHz)	±2.67dB
3	RF power,conducted	±0.70dB
4	Spurious emissions,conducted	±1.19dB
5	All emissions,radiated(<30M) (9KHz-30MHz)	±2.45dB
6	All emissions,radiated(<1G) 30MHz-200MHz	±2.83dB
7	All emissions,radiated(<1G) 200MHz-1000MHz	±2.94dB
8	All emissions,radiated(>1G)	±3.03dB
9	Temperature	±0.5°C
10	Humidity	±2%

## 2. GENERAL INFORMATION

## 2.1 GENERAL DESCRIPTION OF EUT

Equipment	smart phone			
Trade Name	7 Step			
Model Name	Paris			
Series Model	N/A			
Model Difference	N/A			
	The EUT is a smart Operation Frequency:	phone 802.11b/g/n 20: 2412~2462 MHz		
	Modulation Type:	CCK/BPSK/QPSK/16QAM		
Product Description	Bit Rate of Transmitter:	802.11b:11/5.5/2/1 Mbps 802.11g:54/48/36/24/18/12/9/6 Mbps 802.11n(20MHz): 65/58.5/52/39/26/19.5/13/6.5 Mbps		
	Number Of Channel:	802.11b/g/n20: 11CH		
	Antenna Designation:	Please see Note 3.		
	Antenna Gain (dBi):	-0.25 dbi		
	Duty Cycle:	>98%		
Channel List	Please refer to the I	Note 2.		
Adapter	Input: AC 100-240V, 150mA, 50/60 Hz Output: DC 5.2V, 1000mA			
	Rated Voltage: 3.7\	Rated Voltage: 3.7V		
Battery	Charge Limit: 4.2V			
	Capacity: 1400mAh			
Hardware version number	V1.3			
Software version number	N/A			
Connecting I/O Port(s)	Please refer to the User's Manual			

## Note:

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

		١

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	

## 3 Note:

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

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	7 Step	Paris	PIFA Antenna	N/A	-0.25	WIFI Antenna

#### 2.2 DESCRIPTION OF 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.
- (3) The EUT was programmed to be in continuously transmitting mode and the transmit duty cycle is not less than 98%.

#### AC Conducted Emission

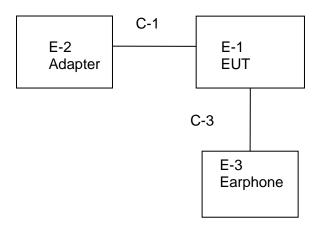
Test Case				
AC Conducted	Mode 10: Keeping WIFLTY			
Mode10: Keeping WIFI TX Emission				

## 2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

## **Radiation Test Set**

E-1 EUT

## conduction Test Set



#### 2.4 DESCRIPTION OF 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.	Serial No.	Note
E-1	smart phone	7 Step	Paris	N/A	EUT
E-2	Adapter	7 Step	Paris	N/A	EUT
E-3	Earphone	N/A	N/A	N/A	EUT

Item	Shielded Type	Ferrite Core	Length	Note
C-1	USB Cable shielded line (Charging)	NO	100cm	N/A
C-2	Earphone Line	NO	110cm	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 <sup>®</sup> Length <sup>a</sup> column.
- (3) "YES" is means "shielded" "with core"; "NO" is means "unshielded" "without core".

## 2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS

Radiation Test equipment

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Spectrum Analyzer	Agilent	E4407B	MY50140340	2016.10.23	2017.10.22
Test Receiver	R&S	ESCI	101427	2016.10.23	2017.10.22
Bilog Antenna	TESEQ	CBL6111D	34678	2014.11.24	2017.11.23
Horn Antenna	Schwarzbeck	BBHA 9120D(1201)	9120D-1343	2015.03.05	2018.03.04
Horn Antenna	Schwarzbeck	BBHA 9170	9170-0741	2016.03.06	2019.03.05
50Ω Coaxial Switch	Anritsu	MP59B	6200264416	2016.10.23	2017.10.22
PreAmplifier	Agilent	8449B	60538	2016.10.23	2017.10.22
Loop Antenna	EMCO	6502	9003-2485	2016.03.06	2019.03.05
Preamplifier	Agilent	8449B	60538	2016.10.23	2017.10.22
Low frequency cable	EM	R01	N/A	NCR	NCR
High frequency cable	SCHWARZBECK	AK9515H	SN-96286/9628 7	NCR	NCR
Semi-anechoic chamber	Changling	966	N/A	2016.10.23	2017.10.22

## Conduction Test equipment

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
EMI Test Receiver	R&S	ESPI	102086	2016.10.23	2017.10.22
LISN	R&S	ENV216	101242	2016.10.23	2017.10.22
LISN	EMCO	3810/2NM	000-23625	2016.10.23	2017.10.22
Conduction Cable	EM	C01	N/A	NCR	NCR
Shielding Room	Changling	854	N/A	2016.10.23	2017.10.22

## **RF Connected Test**

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
USB RF power sensor	DARE	RPR3006W	15I00041SNO03	2016.10.23	2017.10.22
Spectrum Analyzer	Agilent	E4407B	MY50140340	2016.10.23	2017.10.22
Signal Analyzer	Agilent	N9020A	MY49100060	2016.10.23	2017.10.22

## 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.

EDECLIENCY (MIL-)	Conducted Emission limit (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.

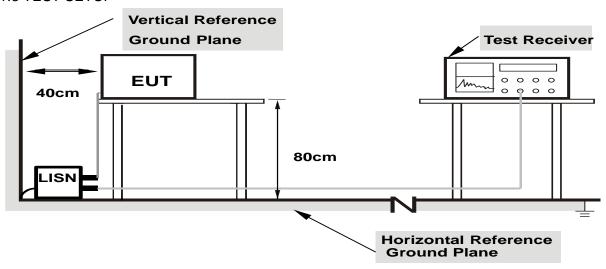
The following table is the setting of the receiver

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.

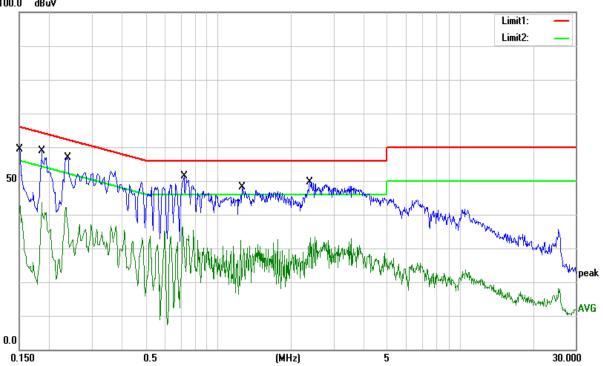
## 3.1.5 TEST RESULT

Temperature:	<b>23.1</b> ℃	Relative Humidity:	60%
Pressure:	1010hPa	Phase:	L
Test Voltage:	AC 120V/60Hz	Test Mode:	Mode 10

Frequency	Reading	Correct	Result	Limit	Margin	Remark
(MHz)	(dBuV)	Factor(dB)	(dBuV)	(dBuV)	(dB)	Remark
0.1500	50.13	9.23	59.36	66.00	-6.64	QP
0.1500	33.42	9.23	42.65	56.00	-13.35	AVG
0.1860	49.53	9.23	58.76	64.21	-5.45	QP
0.1860	30.87	9.23	40.10	54.21	-14.11	AVG
0.2380	47.64	9.19	56.83	62.17	-5.34	QP
0.2380	25.12	9.19	34.31	52.17	-17.86	AVG
0.7220	42.11	9.23	51.34	56.00	-4.66	QP
0.7220	22.35	9.23	31.58	46.00	-14.42	AVG
1.2500	38.90	9.18	48.08	56.00	-7.92	QP
1.2500	19.60	9.18	28.78	46.00	-17.22	AVG
2.3940	40.41	9.26	49.67	56.00	-6.33	QP
2.3940	22.63	9.26	31.89	46.00	-14.11	AVG

## Remark:

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

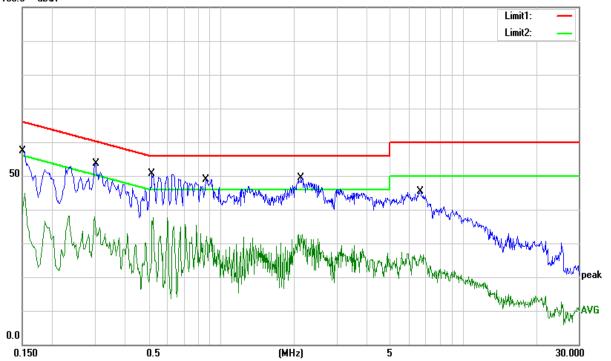


Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	1010hPa	Phase:	Ν
Test Voltage:	AC 120V/60Hz	Test Mode:	Mode 10

Frequency	Reading	Correct	Result	Limit	Margin	Remark
(MHz)	(dBuV)	Factor(dB)	(dBuV)	(dBuV)	(dB)	Remark
0.1500	48.13	9.23	57.36	66.00	-8.64	QP
0.1500	35.59	9.23	44.82	56.00	-11.18	AVG
0.3020	44.53	9.14	53.67	60.19	-6.52	QP
0.3020	24.38	9.14	33.52	50.19	-16.67	AVG
0.5180	41.42	9.15	50.57	56.00	-5.43	QP
0.5180	26.47	9.15	35.62	46.00	-10.38	AVG
0.8660	39.80	9.19	48.99	56.00	-7.01	QP
0.8660	21.74	9.19	30.93	46.00	-15.07	AVG
2.1340	40.15	9.26	49.41	56.00	-6.59	QP
2.1340	13.56	9.26	22.82	46.00	-23.18	AVG
6.6420	36.18	9.28	45.46	60.00	-14.54	QP
6.6420	11.69	9.28	20.97	50.00	-29.03	AVG

## Remark:

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



#### 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.

Page 18 of 56

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

	2111111 01 11 (21 11 22 21 11 00 10 11 11 12 10 01 11 12 10 00 11 11 12 10 00 11 12)						
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 (MIDZ)	PEAK	AVERAGE	
Above 1000	74	54	

#### Notes:

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

#### For Radiated Emission

Spectrum Parameter	Setting	
Attenuation	Auto	
Detector	Peak	
Start Frequency	1000 MHz(Peak/AV)	
Stop Frequency	10th carrier hamonic(Peak/AV)	
RB / VB (emission in restricted	4 MILI- /2MILI-	
band)	1 MHz /3MHz	

## For Band edge

or Barra dage				
Spectrum Parameter	Setting			
Detector	Peak			
Start/Ston Fraguency	Lower Band Edge: 2300 to 2422 MHz			
Start/Stop Frequency	Upper Band Edge: 2452 to 2500 MHz			
RB / VB (emission in restricted band)	1 MHz /3MHz			

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		

Page 19 of 56

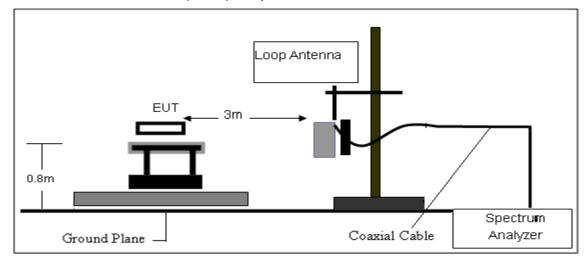
#### 3.2.2 TEST PROCEDURE

- 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
- f. For the actual test configuration, please refer to the related Item –EUT Test Photos. Note:

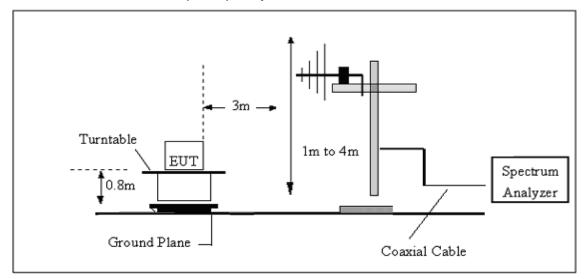
Both horizontal and vertical antenna polarities were tested and performed test to three orthogonal axis. The worst case emissions were reported

## 3.2.3 TEST SETUP

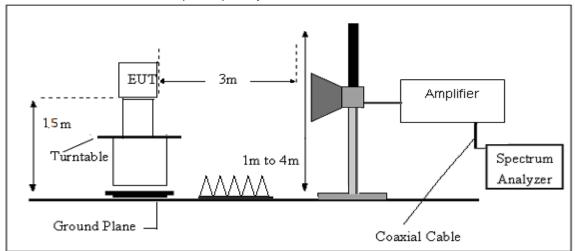
## (A) Radiated Emission Test-Up Frequency Below 30MHz



## (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 TEST RESULT

## 9KHz-30MHz

Temperature:	26 ℃	Relative Humidtity:	60%
Pressure:	1010 hPa	Test Voltage:	DC 3.7V From Battery
Test Mode:	TX Mode	Polarization:	

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.

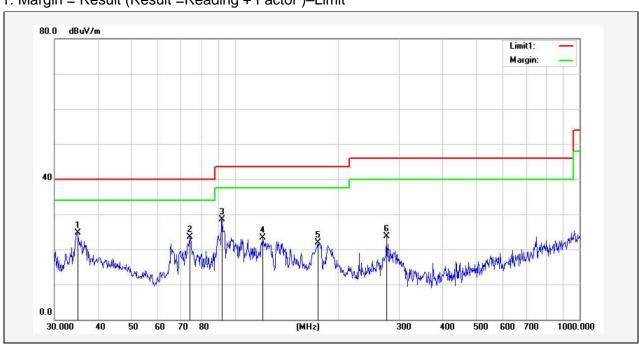
## (30MHz - 1000MHz)

Temperature:	26 ℃	Relative Humidtity:	60%
Pressure:	1010 hPa	Test Voltage:	DC 3.7V From Battery
LIACT IVIDAD.	Mode 1/2/3/4/5/6/7/8/9 (Mode 2-1M worst mode)	Polarization:	Horizontal

Frequency	Reading	Correct	Result	Limit	Margin	Remark
(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
35.0048	38.44	-13.75	24.69	40.00	-15.31	QP
74.1351	47.03	-23.52	23.51	40.00	-16.49	QP
91.8163	48.45	-20.02	28.43	43.50	-15.07	QP
120.2766	40.91	-17.69	23.22	43.50	-20.28	QP
174.4241	41.33	-19.38	21.95	43.50	-21.55	QP
275.1570	39.36	-15.65	23.71	46.00	-22.29	QP

## Remark:

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

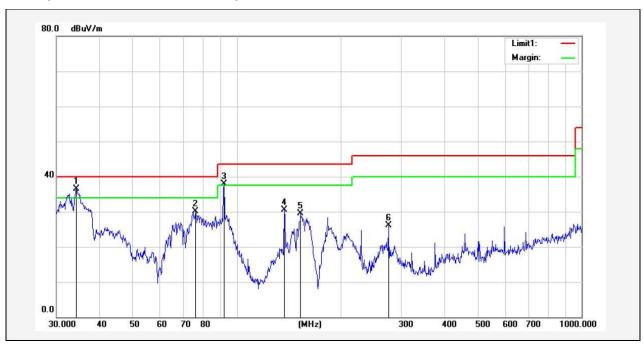


Temperature:	26 ℃	Relative Humidtity:	60%
Pressure:	1010 hPa	Test Voltage:	DC 3.7V From Battery
LIACT IVIDAD.	Mode 1/2/3/4/5/6/7/8/9 (Mode 2-1M worst mode)	Polarization:	Vertical

Frequency	Reading	Correct	Result	Limit	Margin	Remark
(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
34.2760	49.92	-13.38	36.54	40.00	-3.46	QP
75.9772	53.29	-23.26	30.03	40.00	-9.97	QP
91.8162	57.86	-20.02	37.84	43.50	-5.66	QP
137.4201	47.93	-17.52	30.41	43.50	-13.09	QP
153.2004	47.67	-18.14	29.53	43.50	-13.97	QP
275.1570	41.66	-15.65	26.01	46.00	-19.99	QP

## Remark:.

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



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

## 802.11b Low Channel

				Antenna	Corrected	Emission				
Frequency	Reading	Amplifier	Loss	Factor	Factor	Level	Limits	Margin	Detector	
(MHz)	(dBµV)	(dB)	(dB)	(dB/m)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре	Comment
,	(-  - /				Channel (2412 N		(-  - /	(- )	71, -	
3264.69	48.58	44.70	6.70	28.20	-9.80	38.78	74.00	-35.22	PK	Vertical
3264.69	39.17	44.70	6.70	28.20	-9.80	29.37	54.00	-24.63	AV	Vertical
3264.76	48.74	44.70	6.70	28.20	-9.80	38.94	74.00	-35.06	PK	Horizontal
3264.76	38.27	44.70	6.70	28.20	-9.80	28.47	54.00	-25.53	AV	Horizontal
4824.47	58.36	44.20	9.04	31.60	-3.56	54.80	74.00	-19.20	PK	Vertical
4824.47	39.11	44.20	9.04	31.60	-3.56	35.55	54.00	-18.45	AV	Vertical
4824.56	58.18	44.20	9.04	31.60	-3.56	54.62	74.00	-19.38	PK	Horizontal
4824.56	39.43	44.20	9.04	31.60	-3.56	35.87	54.00	-18.13	AV	Horizontal
5359.63	45.93	44.20	9.86	32.00	-2.34	43.59	74.00	-30.41	PK	Vertical
5359.63	37.24	44.20	9.86	32.00	-2.34	34.90	54.00	-19.10	AV	Vertical
5359.83	45.15	44.20	9.86	32.00	-2.34	42.81	74.00	-31.19	PK	Horizontal
5359.83	38.10	44.20	9.86	32.00	-2.34	35.76	54.00	-18.24	AV	Horizontal
7235.84	50.79	43.50	11.40	35.50	3.40	54.19	74.00	-19.81	PK	Vertical
7235.84	33.90	43.50	11.40	35.50	3.40	37.30	54.00	-16.70	AV	Vertical
7235.71	50.48	43.50	11.40	35.50	3.40	53.88	74.00	-20.12	PK	Horizontal
7235.71	33.53	43.50	11.40	35.50	3.40	36.93	54.00	-17.07	AV	Horizontal
11035.91	41.16	43.60	14.30	39.50	10.20	51.36	74.00	-22.64	PK	Vertical
11035.91	31.09	43.60	14.30	39.50	10.20	41.29	54.00	-12.71	AV	Vertical
11036.08	40.82	43.60	14.30	39.50	10.20	51.02	74.00	-22.98	PK	Horizontal
11036.08	30.54	43.60	14.30	39.50	10.20	40.74	54.00	-13.26	AV	Horizontal
13299.33	40.58	42.60	15.90	38.90	12.20	52.78	74.00	-21.22	PK	Vertical
13299.33	28.54	42.60	15.90	38.90	12.20	40.74	54.00	-13.26	AV	Vertical
13299.47	39.82	42.60	15.90	38.90	12.20	52.02	74.00	-21.98	PK	Horizontal
13299.47	29.61	42.60	15.90	38.90	12.20	41.81	54.00	-12.19	AV	Horizontal
15999.87	40.20	42.70	18.00	37.10	12.40	52.60	74.00	-21.40	PK	Vertical
15999.87	28.64	42.70	18.00	37.10	12.40	41.04	54.00	-12.96	AV	Vertical
15999.81	39.74	42.70	18.00	37.10	12.40	52.14	74.00	-21.86	PK	Horizontal
15999.81	29.07	42.70	18.00	37.10	12.40	41.47	54.00	-12.53	AV	Horizontal
17997.76	30.31	42.70	19.40	46.50	23.20	53.51	74.00	-20.49	PK	Vertical
17997.76	19.96	42.70	19.40	46.50	23.20	43.16	54.00	-10.84	AV	Vertical
17997.59	30.78	42.70	19.40	46.50	23.20	53.98	74.00	-20.02	PK	Horizontal
17997.59	18.25	42.70	19.40	46.50	23.20	41.45	54.00	-12.55	AV	Horizontal

## 802.11b Mid Channel

				Antenna	Corrected	Emission				
Frequency	Reading	Amplifier	Loss	Factor	Factor	Level	Limits	Margin	Detector	
(MHz)	(dBµV)	(dB)	(dB)	(dB/m)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре	Comment
				Mid	Channel (2437 N	ИHz)				
3264.69	48.05	44.70	6.70	28.20	-9.80	38.25	74.00	-35.75	PK	Vertical
3264.69	38.19	44.70	6.70	28.20	-9.80	28.39	54.00	-25.61	AV	Vertical
3264.57	48.81	44.70	6.70	28.20	-9.80	39.01	74.00	-34.99	PK	Horizontal
3264.57	38.33	44.70	6.70	28.20	-9.80	28.53	54.00	-25.47	AV	Horizontal
4874.31	59.15	44.20	9.04	31.60	-3.56	55.59	74.00	-18.41	PK	Vertical
4874.31	38.37	44.20	9.04	31.60	-3.56	34.81	54.00	-19.19	AV	Vertical
4874.33	59.45	44.20	9.04	31.60	-3.56	55.89	74.00	-18.11	PK	Horizontal
4874.33	38.87	44.20	9.04	31.60	-3.56	35.31	54.00	-18.69	AV	Horizontal
5359.68	46.25	44.20	9.86	32.00	-2.34	43.91	74.00	-30.09	PK	Vertical
5359.68	37.93	44.20	9.86	32.00	-2.34	35.59	54.00	-18.41	AV	Vertical
5359.86	45.13	44.20	9.86	32.00	-2.34	42.79	74.00	-31.21	PK	Horizontal
5359.86	38.06	44.20	9.86	32.00	-2.34	35.72	54.00	-18.28	AV	Horizontal
7310.73	51.28	43.50	11.40	35.50	3.40	54.68	74.00	-19.32	PK	Vertical
7310.73	33.37	43.50	11.40	35.50	3.40	36.77	54.00	-17.23	AV	Vertical
7310.79	51.94	43.50	11.40	35.50	3.40	55.34	74.00	-18.66	PK	Horizontal
7310.79	32.69	43.50	11.40	35.50	3.40	36.09	54.00	-17.91	AV	Horizontal
9747.72	40.35	43.60	14.30	39.50	10.20	50.55	74.00	-23.45	PK	Vertical
9747.72	31.19	43.60	14.30	39.50	10.20	41.39	54.00	-12.61	AV	Vertical
9747.99	40.33	43.60	14.30	39.50	10.20	50.53	74.00	-23.47	PK	Horizontal
9747.99	30.68	43.60	14.30	39.50	10.20	40.88	54.00	-13.12	AV	Horizontal
13299.32	39.84	42.60	15.90	38.90	12.20	52.04	74.00	-21.96	PK	Vertical
13299.32	28.54	42.60	15.90	38.90	12.20	40.74	54.00	-13.26	AV	Vertical
13299.29	39.76	42.60	15.90	38.90	12.20	51.96	74.00	-22.04	PK	Horizontal
13299.29	28.87	42.60	15.90	38.90	12.20	41.07	54.00	-12.93	AV	Horizontal
15999.77	40.83	42.70	18.00	37.10	12.40	53.23	74.00	-20.77	PK	Vertical
15999.77	28.64	42.70	18.00	37.10	12.40	41.04	54.00	-12.96	AV	Vertical
15999.77	40.14	42.70	18.00	37.10	12.40	52.54	74.00	-21.46	PK	Horizontal
15999.77	29.77	42.70	18.00	37.10	12.40	42.17	54.00	-11.83	AV	Horizontal
17997.89	30.87	42.70	19.40	46.50	23.20	54.07	74.00	-19.93	PK	Vertical
17997.89	19.41	42.70	19.40	46.50	23.20	42.61	54.00	-11.39	AV	Vertical
17997.60	30.47	42.70	19.40	46.50	23.20	53.67	74.00	-20.33	PK	Horizontal
17997.60	18.18	42.70	19.40	46.50	23.20	41.38	54.00	-12.62	AV	Horizontal

## 802.11b High Channel

	Antenna Corrected Emission									
Frequency	Reading	Amplifier	Loss	Factor	Factor	Level	Limits	Margin	Detector	
(MHz)	(dBµV)	(dB)	(dB)	(dB/m)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре	Comment
				High	Channel (2462 I	MHz)				
3264.78	48.88	44.70	6.70	28.20	-9.80	39.08	74.00	-34.92	PK	Vertical
3264.78	39.77	44.70	6.70	28.20	-9.80	29.97	54.00	-24.03	AV	Vertical
3264.70	48.12	44.70	6.70	28.20	-9.80	38.32	74.00	-35.68	PK	Horizontal
3264.70	38.59	44.70	6.70	28.20	-9.80	28.79	54.00	-25.21	AV	Horizontal
4924.32	58.87	44.20	9.04	31.60	-3.56	55.31	74.00	-18.69	PK	Vertical
4924.32	38.23	44.20	9.04	31.60	-3.56	34.67	54.00	-19.33	AV	Vertical
4924.48	59.56	44.20	9.04	31.60	-3.56	56.00	74.00	-18.00	PK	Horizontal
4924.48	39.16	44.20	9.04	31.60	-3.56	35.60	54.00	-18.40	AV	Horizontal
5359.70	45.68	44.20	9.86	32.00	-2.34	43.34	74.00	-30.66	PK	Vertical
5359.70	37.71	44.20	9.86	32.00	-2.34	35.37	54.00	-18.63	AV	Vertical
5359.64	46.36	44.20	9.86	32.00	-2.34	44.02	74.00	-29.98	PK	Horizontal
5359.64	37.42	44.20	9.86	32.00	-2.34	35.08	54.00	-18.92	AV	Horizontal
7385.77	51.50	43.50	11.40	35.50	3.40	54.90	74.00	-19.10	PK	Vertical
7385.77	32.80	43.50	11.40	35.50	3.40	36.20	54.00	-17.80	AV	Vertical
7385.77	51.78	43.50	11.40	35.50	3.40	55.18	74.00	-18.82	PK	Horizontal
7385.77	33.51	43.50	11.40	35.50	3.40	36.91	54.00	-17.09	AV	Horizontal
9847.72	40.63	43.60	14.30	39.50	10.20	50.83	74.00	-23.17	PK	Vertical
9847.72	30.80	43.60	14.30	39.50	10.20	41.00	54.00	-13.00	AV	Vertical
9848.25	41.04	43.60	14.30	39.50	10.20	51.24	74.00	-22.76	PK	Horizontal
9848.25	30.01	43.60	14.30	39.50	10.20	40.21	54.00	-13.79	AV	Horizontal
13299.26	40.25	42.70	18.00	37.10	12.40	52.65	74.00	-21.35	PK	Vertical
13299.26	28.54	42.70	18.00	37.10	12.40	40.94	54.00	-13.06	AV	Vertical
13299.34	40.84	42.70	18.00	37.10	12.40	53.24	74.00	-20.76	PK	Horizontal
13299.34	29.80	42.70	18.00	37.10	12.40	42.20	54.00	-11.80	AV	Horizontal
17997.84	30.70	42.70	19.40	46.50	23.20	53.90	74.00	-20.10	PK	Vertical
17997.84	19.32	42.70	19.40	46.50	23.20	42.52	54.00	-11.48	AV	Vertical
17997.55	30.32	42.70	19.40	46.50	23.20	53.52	74.00	-20.48	PK	Horizontal
17997.55	18.40	42.70	19.40	46.50	23.20	41.60	54.00	-12.40	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 802.11b. Emission Level = Reading + Factor

Margin = Limit - Emission Leve

3. 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.

## 3.2.6 TEST RESULTS (Band edge Requirements)

				Antenna	Corrected	Emission				
Frequency	Reading	Amplifier	Loss	Factor	Factor	Level	Limits	Margin	Detector	
(MHz)	(dBµV)	(dB)	(dB)	(dB/m)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре	Comment
					802.11b					
2390.00	68.25	43.80	4.91	25.90	-12.99	55.26	74.00	-18.74	PK	Vertical
2390.00	53.38	43.80	4.91	25.90	-12.99	40.39	54.00	-13.61	AV	Vertical
2390.00	69.20	43.80	4.91	25.90	-12.99	56.21	74.00	-17.79	PK	Horizontal
2390.00	52.17	43.80	4.91	25.90	-12.99	39.18	54.00	-14.82	AV	Horizontal
2483.50	69.62	43.80	5.12	25.90	-12.78	56.84	74.00	-17.16	PK	Vertical
2483.50	53.18	43.80	5.12	25.90	-12.78	40.40	54.00	-13.60	AV	Vertical
2483.50	70.54	43.80	5.12	25.90	-12.78	57.76	74.00	-16.24	PK	Horizontal
2483.50	52.11	43.80	5.12	25.90	-12.78	39.33	54.00	-14.67	AV	Horizontal
	802.11g									
2390.00	66.45	43.80	4.91	25.90	-12.99	53.46	74.00	-20.54	PK	Vertical
2390.00	52.60	43.80	4.91	25.90	-12.99	39.61	54.00	-14.39	AV	Vertical
2390.00	66.42	43.80	4.91	25.90	-12.99	53.43	74.00	-20.57	PK	Horizontal
2390.00	54.06	43.80	4.91	25.90	-12.99	41.07	54.00	-12.93	AV	Horizontal
2483.50	65.90	43.80	5.12	25.90	-12.78	53.12	74.00	-20.88	PK	Vertical
2483.50	52.76	43.80	5.12	25.90	-12.78	39.98	54.00	-14.02	AV	Vertical
2483.50	65.73	43.80	5.12	25.90	-12.78	52.95	74.00	-21.05	PK	Horizontal
2483.50	53.31	43.80	5.12	25.90	-12.78	40.53	54.00	-13.47	AV	Horizontal
					802.11n20					
2390.00	67.03	43.80	4.91	25.90	-12.99	54.04	74.00	-19.96	PK	Vertical
2390.00	53.30	43.80	4.91	25.90	-12.99	40.31	54.00	-13.69	AV	Vertical
2390.00	65.38	43.80	4.91	25.90	-12.99	52.39	74.00	-21.61	PK	Horizontal
2390.00	54.03	43.80	4.91	25.90	-12.99	41.04	54.00	-12.96	AV	Horizontal
2483.50	65.64	43.80	5.12	25.90	-12.78	52.86	74.00	-21.14	PK	Vertical
2483.50	52.30	43.80	5.12	25.90	-12.78	39.52	54.00	-14.48	AV	Vertical
2483.50	65.98	43.80	5.12	25.90	-12.78	53.20	74.00	-20.80	PK	Horizontal
2483.50	52.42	43.80	5.12	25.90	-12.78	39.64	54.00	-14.36	AV	Horizontal

Remark: Factor = Antenna Factor + Cable Loss - Pre-amplifier.

Low measurement frequencies is range from 2300 to 2422 MHz, high measurement frequencies is range from 2452 to 2500 MHz.

Only show the worst point data of the emissions in the frequency 2300-2422 MHz and 2452-2500 MHz.

#### 4. CONDUCTED SPURIOUS & BAND EDGE EMISSION

#### 4.1 APPLIED PROCEDURES / 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.

Page 28 of 56

#### **4.2 TEST PROCEDURE**

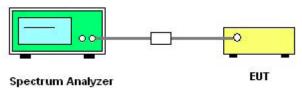
Spectrum Parameter	Setting		
Detector	Peak		
Start/Stop Frequency	30 MHz to 10th carrier harmonic		
RB / VB (emission in restricted band)	100 KHz/300 KHz		
Trace-Mode:	Max hold		

## For Band edge

Spectrum Parameter	Setting		
Detector	Peak		
Stort/Ston Fraguency	Lower Band Edge: 2300 to 2422 MHz		
Start/Stop Frequency	Upper Band Edge: 2452 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 coupled 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.

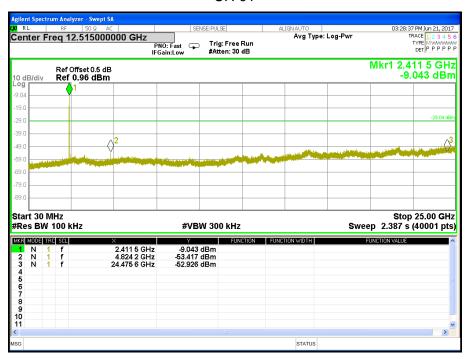
#### 4.5 EUT OPERATION CONDITIONS

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%				
Pressure:	1015 hPa	Test Voltage:	DC 3.7V				
Test Mode:	TX b Mode /CH01, CH06, CH11						

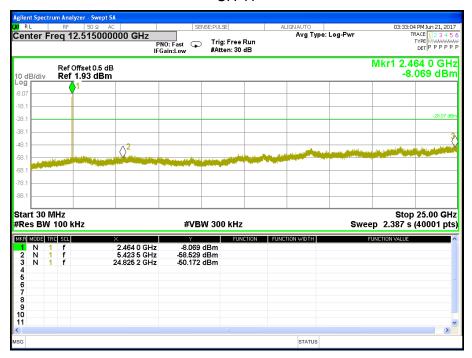
CH 01



CH 06

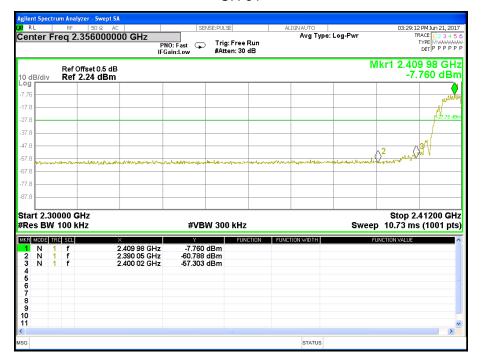


CH 11



#### Band edge

CH 01



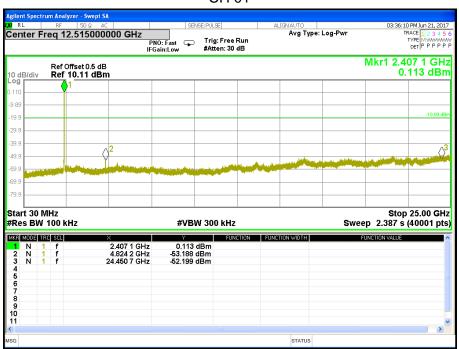
**CH 11** 



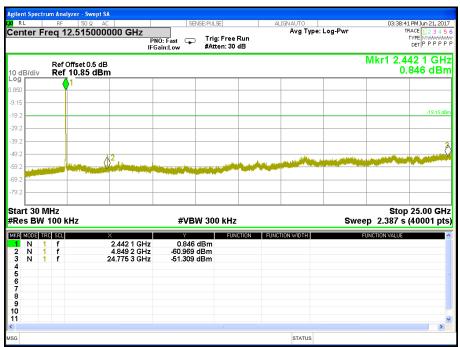
## Page 32 of 56 Report No.: STS1706064F03

Temperature:	25 ℃	Relative Humidity:	60%				
Pressure:	1015 hPa	Test Voltage:	DC 3.7V				
Test Mode:	TX g Mode /CH01, CH06, CH11						

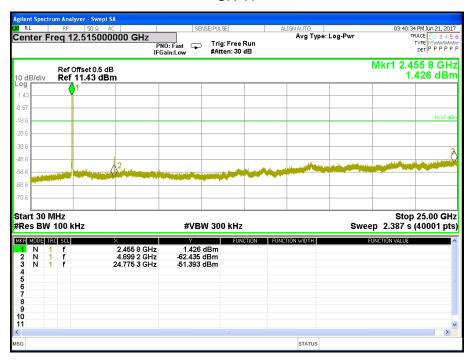
#### CH 01



#### CH06

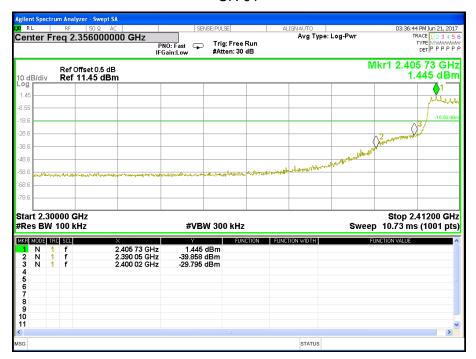


CH 11



#### Band edge

CH 01



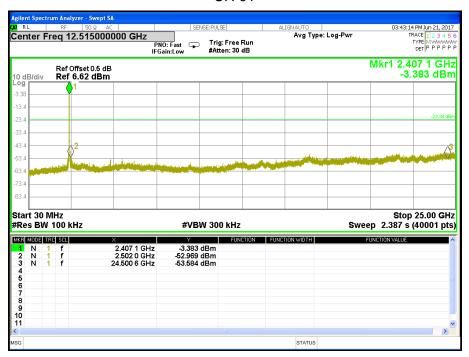
## CH11



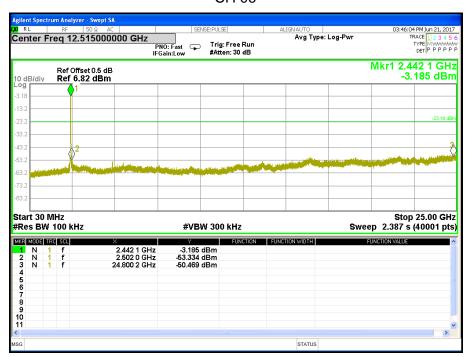
## Page 35 of 56 Report No.: STS1706064F03

Temperature:	25 ℃	Relative Humidity:	60%				
Pressure:	1015 hPa	Test Voltage:	DC 3.7V				
Test Mode:	TX n Mode(20M) /CH01, CH06, CH11						

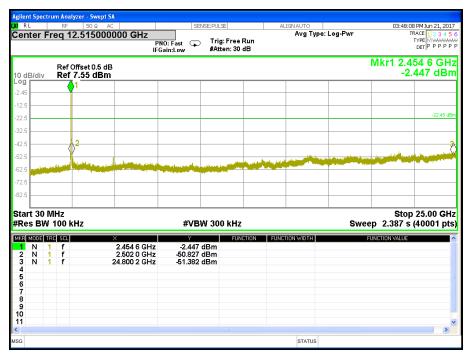
#### CH 01



CH 06



CH 11



#### Band edge

CH 01



CH 11



#### 5. POWER SPECTRAL DENSITY TEST

#### 5.1 APPLIED PROCEDURES / 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 ≥ 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:	<b>25</b> ℃	Relative Humidity:	60%
Pressure:	1015 hPa	Test Voltage:	DC 3.7V
Test Mode: TX b Mode /CH01, CH06, CH11			

Frequency	Power Density (dBm/3kHz)	Limit (dBm)	Result
2412 MHz	-21.776	≥8	PASS
2437 MHz	-19.232	≤8	PASS
2462 MHz	-20.932	≤8	PASS





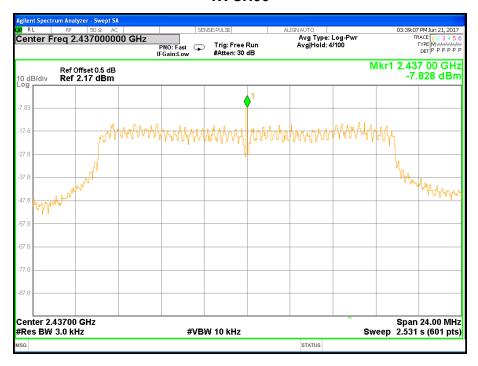


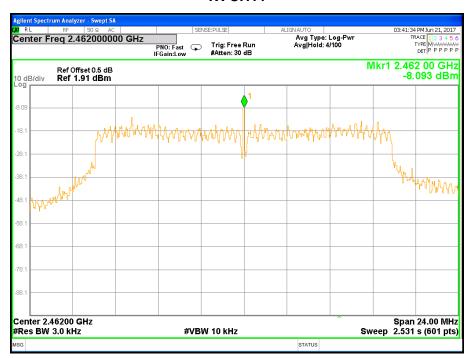
# Page 41 of 56 Report No.: STS1706064F03

Temperature:	25 ℃	Relative Humidity:	60%
Pressure:	1015 hPa	Test Voltage:	DC 3.7V
Test Mode: TX g Mode /CH01, CH06, CH11			

Frequency	Power Density (dBm/3kHz)	Limit (dBm)	Result
2412 MHz	-7.914	≤8	PASS
2437 MHz	-7.828	≤8	PASS
2462 MHz	-8.093	≤8	PASS



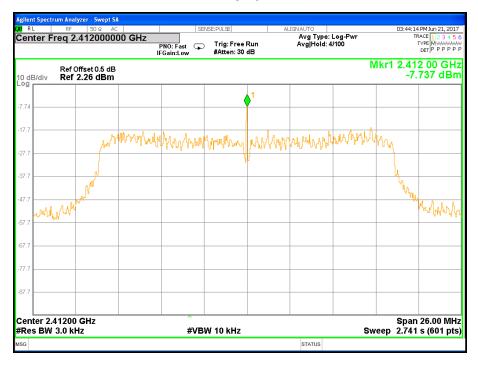




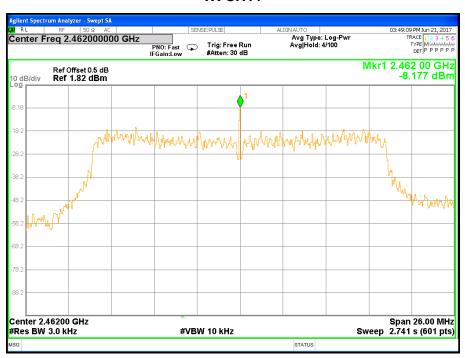
# Page 43 of 56 Report No.: STS1706064F03

Temperature:	25 ℃	Relative Humidity:	60%
Pressure:	1015 hPa	Test Voltage:	DC 3.7V
Test Mode: TX n Mode(20M) /CH01, CH06, CH11			

Frequency	Power Density (dBm/3kHz)	Limit (dBm)	Result
2412 MHz	-7.737	8≥	PASS
2437 MHz	-7.699	≤8	PASS
2462 MHz	-8.177	≤8	PASS







#### 6. BANDWIDTH TEST

#### 6.1 APPLIED PROCEDURES / LIMIT

FCC Part 15.247,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≥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≥6 dB.

# 6.3 DEVIATION FROM STANDARD No deviation.

#### 6.4 TEST SETUP

EUT	SPECTRUM
	ANALYZER

#### 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

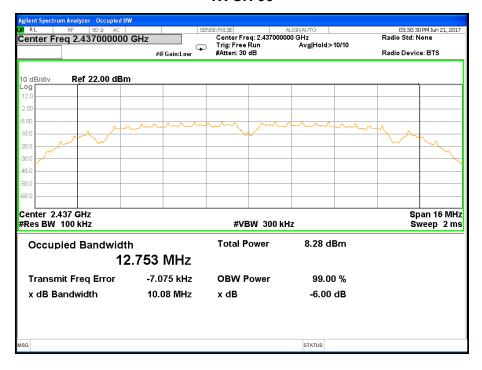
Temperature:	25 ℃	Relative Humidity:	60%
Pressure:	1012 hPa	Test Voltage:	DC 3.7V
Test Mode: TX b Mode /CH01, CH06, CH11			

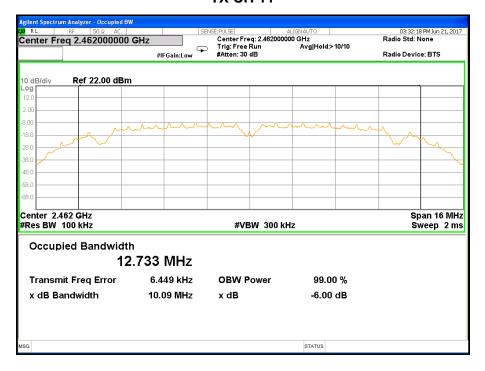
Remark: PEAK DETECTOR IS USED

Frequency	6dB Bandwidth (MHz)	Channel Separation (KHz)	Result
2412 MHz	10.10	≥500KHz	PASS
2437 MHz	10.08	≥500KHz	PASS
2462 MHz	10.09	≥500KHz	PASS

**TX CH 01** 





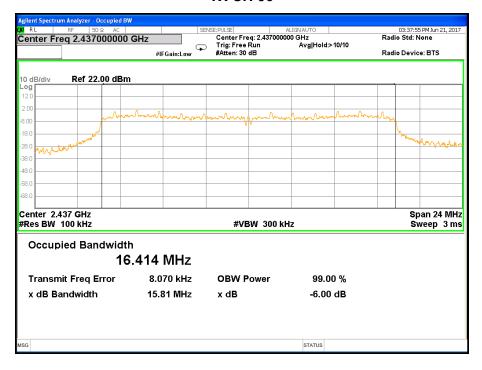


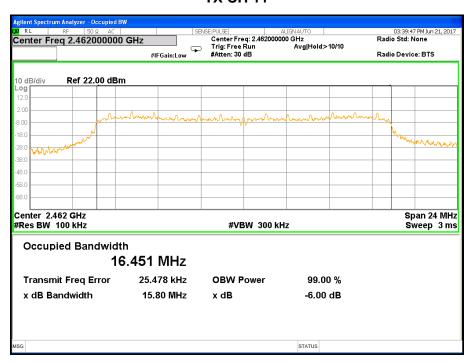
# Page 48 of 56 Report No.: STS1706064F03

Temperature:	25 ℃	Relative Humidity:	60%
Pressure:	1012 hPa	Test Voltage:	DC 3.7V
Test Mode:	TX g Mode /CH01, CH06, CH11		

Frequency	6dB Bandwidth (MHz)	Channel Separation (KHz)	Result
2412 MHz	15.79	≥500KHz	PASS
2437 MHz	15.81	≥500KHz	PASS
2462 MHz	15.80	≥500KHz	PASS



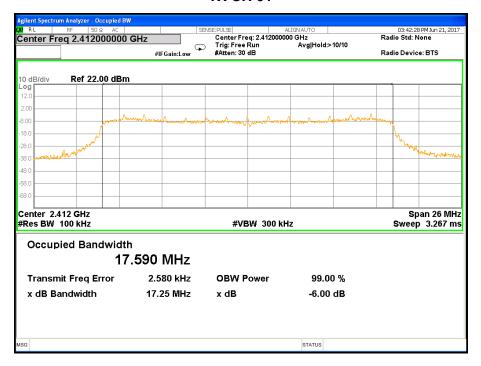


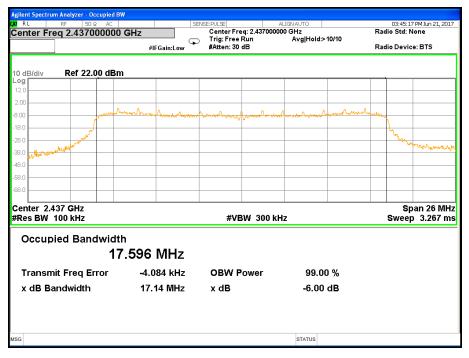


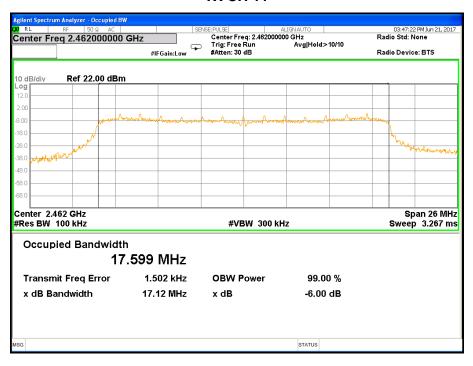
# Page 50 of 56 Report No.: STS1706064F03

Temperature:	25 ℃	Relative Humidity:	60%
Pressure:	1012 hPa	Test Voltage:	DC 3.7V
Test Mode:	TX n Mode(20M) /CH01, CH06, CH11		

Frequency	6dB Bandwidth (MHz)	Channel Separation (KHz)	Result
2412 MHz	17.25	≥500KHz	PASS
2437 MHz	17.14	≥500KHz	PASS
2462 MHz	17.12	≥500KHz	PASS







#### 7.1 APPLIED PROCEDURES / LIMIT

FCC Part 15.247, 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

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

# 7.3 DEVIATION FROM STANDARD No deviation.

#### 7.4 TEST SETUP

EUT	Power Sensor
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#### 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%
Pressure:	1012 hPa	Test Voltage:	DC 3.7V

TX 802.11b Mode						
Test	Frequency	Conducted	Output Power	LIMIT		
Channel	(MHz)	Peak(dBm)	AVG(dBm)	dBm		
CH01	2412	22.45	21.43	30		
CH06	2437	22.71	21.62	30		
CH11	2462	22.63	21.55	30		

TX 802.11g Mode					
Test	Frequency	Conducted	LIMIT		
Channel	(MHz)	Peak(dBm)	AVG(dBm)	dBm	
CH01	2412	19.98	18.87	30	
CH06	2437	19.35	19.18	30	
CH11	2462	20.31	19.23	30	

TX 802.11n20 Mode					
Test	Frequency	Conducted Output Power LIMIT			
Channel	(MHz)	Peak(dBm)	AVG(dBm)	dBm	
CH01	2412	17.98	15.92	30	
CH06	2437	18.65	16.38	30	
CH11	2462	18.89	16.47	30	

#### 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 party shall be used with the device.

#### **8.2 EUT ANTENNA**

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

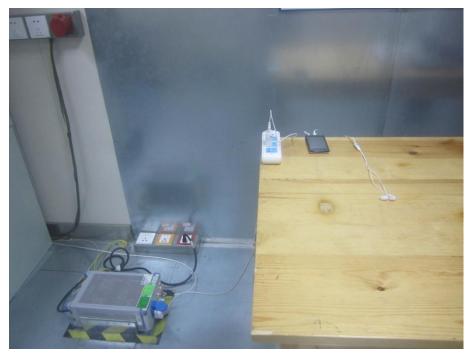
# APPENDIX - PHOTOS OF TEST SETUP







## **Conducted Measurement Photos**



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