Report No: CCISE170709902

# FCC REPORT

## (Bluetooth)

**Applicant:** APRIX LATINOAMERICA S.A.

Address of Applicant: ADVANCED 099 BLDG SUITE 4 C CALLE BEATRIZ M DE

CABAL PANAMA

**Equipment Under Test (EUT)** 

Product Name: Tablet PC

Model No.: Aprix Tab8ii

Trade mark: APRIX

FCC ID: 2AHJQ-APT8II

Applicable standards: FCC CFR Title 47 Part 15 Subpart C Section 15.247

Date of sample receipt: 01 Jun., 2017

Date of Test: 01 Jun., to 11Jul., 2017

Date of report issued: 11 Jul., 2017

Test Result: PASS \*

\* In the configuration tested, the EUT complied with the standards specified above.

#### Authorized Signature:



Bruce Zhang Laboratory Manager

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the CCIS product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

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### 2 Version

Version No.	Date	Description
00	11 Jul., 2017	Original

Tested by: Quey Chen Date: 11 Jul., 2017

Test Engineer

Reviewed by: Date: 11 Jul., 2017

Project Engineer





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4 Test Summary

Test Item	Section in CFR 47	Result
Antenna Requirement	15.203/15.247 (c)	Pass
AC Power Line Conducted Emission	15.207	Pass
Conducted Peak Output Power	15.247 (b)(1)	Pass
20dB Occupied Bandwidth	15.247 (a)(1)	Pass
Carrier Frequencies Separation	15.247 (a)(1)	Pass
Hopping Channel Number	15.247 (a)(1)	Pass
Dwell Time	15.247 (a)(1)	Pass
Spurious Emission	15.205/15.209	Pass
Band Edge	15.247(d)	Pass

Pass: The EUT complies with the essential requirements in the standard.



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### **5** General Information

#### 5.1 Client Information

Applicant:	APRIX LATINOAMERICA S.A.	
Address of Applicant:	ADVANCED 099 BLDG SUITE 4 C CALLE BEATRIZ M DE CABAL PANAMA	
Manufacturer:	Todos industrial limited	
Address of Manufacturer:	Room 308, Building #5, Cofoc (Fuan) Robotics Industrial Park, No.90, Dayang Road, Fuyong Street, Shenzhen City, P.R. China	

### 5.2 General Description of E.U.T.

Product Name:	Tablet PC
Model No.:	Aprix Tab8ii
	2402MHz~2480MHz
Operation Frequency:	
Transfer rate:	1/2/3 Mbits/s
Number of channel:	79
Modulation type:	GFSK, π/4-DQPSK, 8DPSK
Modulation technology:	FHSS
Antenna Type:	Internal Antenna
Antenna gain:	1.5 dBi
Power supply:	Rechargeable Li-ion Battery DC3.8V-4000mAh
AC adapter:	Model: BY120502000
	Input: AC100-240V, 50/60Hz, 0.3A
	Output: DC 5.0V, 2000mAh





Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
0	2402MHz	20	2422MHz	40	2442MHz	60	2462MHz
1	2403MHz	21	2423MHz	41	2443MHz	61	2463MHz
2	2404MHz	22	2424MHz	42	2444MHz	62	2464MHz
3	2405MHz	23	2425MHz	43	2445MHz	63	2465MHz
4	2406MHz	24	2426MHz	44	2446MHz	64	2466MHz
5	2407MHz	25	2427MHz	45	2447MHz	65	2467MHz
6	2408MHz	26	2428MHz	46	2448MHz	66	2468MHz
7	2409MHz	27	2429MHz	47	2449MHz	67	2469MHz
8	2410MHz	28	2430MHz	48	2450MHz	68	2470MHz
9	2411MHz	29	2431MHz	49	2451MHz	69	2471MHz
10	2412MHz	30	2432MHz	50	2452MHz	70	2472MHz
11	2413MHz	31	2433MHz	51	2453MHz	71	2473MHz
12	2414MHz	32	2434MHz	52	2454MHz	72	2474MHz
13	2415MHz	33	2435MHz	53	2455MHz	73	2475MHz
14	2416MHz	34	2436MHz	54	2456MHz	74	2476MHz
15	2417MHz	35	2437MHz	55	2457MHz	75	2477MHz
16	2418MHz	36	2438MHz	56	2458MHz	76	2478MHz
17	2419MHz	37	2439MHz	57	2459MHz	77	2479MHz
18	2420MHz	38	2440MHz	58	2460MHz	78	2480MHz
19	2421MHz	39	2441MHz	59	2461MHz		



5.3 Test mode

Transmitting mode:	Keep the EUT in transmitting mode with worst case data rate.
Remark	GFSK (1 Mbps) is the worst case mode.

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The sample was placed 0.8m(below 1GHz)/1.5m(above 1GHz) above the ground plane of 3m chamber\*. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working with a fresh battery, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.

### 5.4 Measurement Uncertainty

Items	Expanded Uncertainty (Confidence of 95%)
Conducted Emission (9kHz ~ 30MHz)	2.14 dB (k=2)
Radiated Emission (9kHz ~ 30MHz)	4.24 dB (k=2)
Radiated Emission (30MHz ~ 1000MHz)	4.35 dB (k=2)
Radiated Emission (1GHz ~ 18GHz)	4.44 dB (k=2)
Radiated Emission (18GHz ~ 26.5GHz)	4.56 dB (k=2)

#### 5.5 Laboratory Facility

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

#### ● FCC - Registration No.: 817957

Shenzhen Zhongjian Nanfang Testing Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in out files. Registration 817957, February 27, 2012.

#### ■ IC - Registration No.: 10106A-1

The 3m Semi-anechoic chamber of Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.

#### CNAS - Registration No.: CNAS L6048

Shenzhen Zhongjian Nanfang Testing Co., Ltd. is accredited to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L6048.

#### 5.6 Laboratory Location

Shenzhen Zhongjian Nanfang Testing Co., Ltd.

Address: No. B-C, 1/F., Building 2, Laodong No.2 Industrial Park, Xixiang Road,

Bao'an District, Shenzhen, Guangdong, China

Website: http://www.ccis-cb.com

Tel: +86-755-23118282 Fax:+86-755-23116366 Email: info@ccis-cb.com

Shenzhen Zhongjian Nanfang Testing Co., Ltd.
No. B-C, 1/F., Building 2, Laodong No.2 Industrial Park, Xixiang Road, Bao'an District, Shenzhen, Guangdong, China
Telephone: +86 (0) 755 23118282 Fax: +86 (0) 755 23116366



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#### 5.7 Test Instruments list

Radia	Radiated Emission:					
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
1	3m SAC	SAEMC	9(L)*6(W)* 6(H)	CCIS0001	08-23-2014	08-22-2017
2	BiConiLog Antenna	SCHWARZBECK	VULB9163	CCIS0005	02-25-2017	02-24-2018
3	Horn Antenna	SCHWARZBECK	BBHA9120D	CCIS0006	02-25-2017	02-24-2018
4	Pre-amplifier (10kHz-1.3GHz)	HP	8447D	CCIS0003	02-25-2017	02-24-2018
5	Pre-amplifier (1GHz-18GHz)	Compliance Direction Systems Inc.	PAP-1G18	CCIS0011	02-25-2017	02-24-2018
6	Pre-amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	02-25-2017	02-24-2018
7	Horn Antenna	ETS-LINDGREN	3160	GTS217	02-25-2017	02-24-2018
8	Spectrum analyzer 9k-30GHz	Rohde & Schwarz	FSP30	CCIS0023	02-25-2017	02-24-2018
9	EMI Test Receiver	Rohde & Schwarz	ESRP7	CCIS0167	02-25-2017	02-24-2018
10	Loop antenna	Laplace instrument	RF300	EMC0701	02-25-2017	02-24-2018
11	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
12	Coaxial Cable	N/A	N/A	CCIS0018	02-25-2017	02-24-2018
13	Coaxial Cable	N/A	N/A	CCIS0020	02-25-2017	02-24-2018

Cond	Conducted Emission:					
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
1	Shielding Room	ZhongShuo Electron	11.0(L)x4.0(W)x3.0(H)	CCIS0061	08-23-2014	08-22-2017
2	EMI Test Receiver	Rohde & Schwarz	ESCI	CCIS0002	02-25-2017	02-24-2018
3	LISN	CHASE	MN2050D	CCIS0074	02-25-2017	02-24-2018
4	Coaxial Cable	CCIS	N/A	CCIS0086	02-25-2017	02-24-2018
5	EMI Test Software	AUDIX	E3	N/A	N/A	N/A



#### 6 Test results and Measurement Data

### 6.1 Antenna requirement

#### Standard requirement: FCC Part 15 C Section 15.203 /247(c)

15.203 requirement:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

15.247(c) (1)(i) requirement:

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

#### **E.U.T Antenna:**

The Bluetooth antenna is an integral antenna which permanently attached, and the best case gain of the antenna is 1.5 dBi.



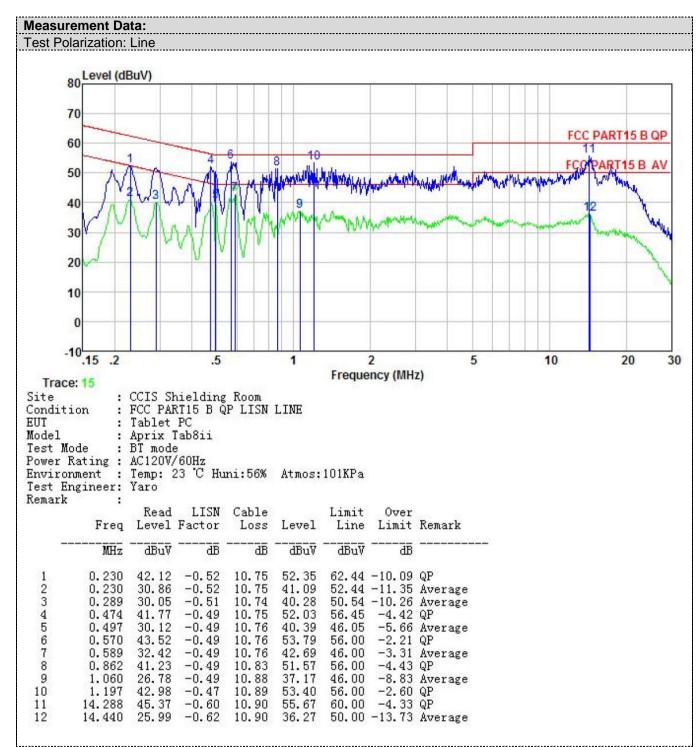




#### 6.2 Conducted Emissions

Test Requirement:	FCC Part 15 C Section 15.207				
Test Method:	ANSI C63.10:2013				
Test Frequency Range:	150 kHz to 30 MHz	150 kHz to 30 MHz			
Class / Severity:	Class B				
Receiver setup:	RBW=9 kHz, VBW=30 k	Hz, Sweep time=auto			
Limit:	Frequency range	Limit (	dBuV)		
	(MHz)	Quasi-peak	Average		
	0.15-0.5	66 to 56*	56 to 46*		
	0.5-5	56	46		
	5-30	60	50		
	* Decreases with the log	arithm of the frequency.			
Test setup:	Reference	e Plane			
	AUX Equipment   E.U.T   Filter   AC power   EMI   Receiver    Remark   E.U.T   Equipment Under Test   LISN Line Impedence Stabilization Network   Test table height=0.8m				
Test procedure:	<ol> <li>The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment.</li> <li>The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs).</li> <li>Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2014 on conducted measurement.</li> </ol>				
Test Instruments:	Refer to section 5.7 for d	letails			
Test mode:	Bluetooth (Continuous transmitting) mode				
Test results:	Pass				

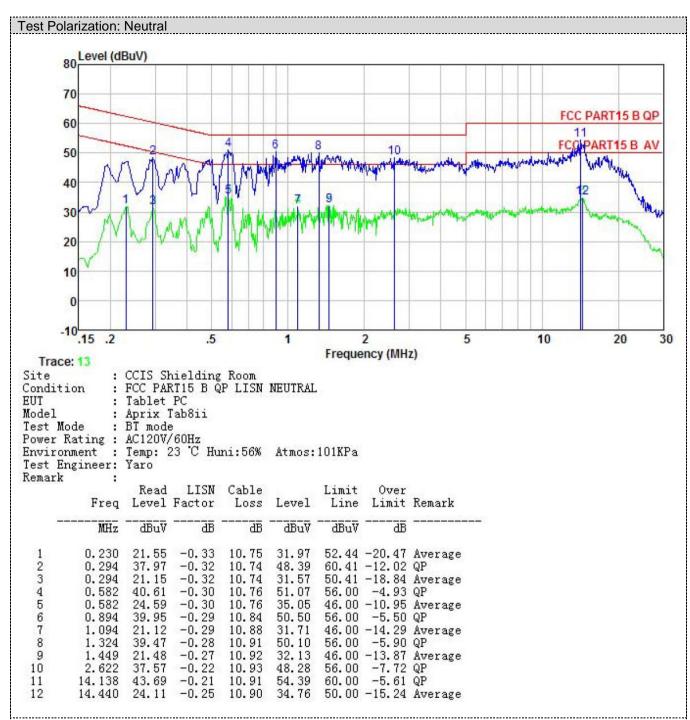




#### Notes:

- 1. An initial pre-scan was performed on the line and neutral lines with peak detector.
- 2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
- 3. Final Level =Receiver Read level + LISN Factor + Cable Loss.





#### Notes:

- 1. An initial pre-scan was performed on the line and neutral lines with peak detector.
- 2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
- 3. Final Level =Receiver Read level + LISN Factor + Cable Loss.



### 6.3 Conducted Output Power

Test Requirement:	FCC Part 15 C Section 15.247 (b)(1)	
Test Method:	ANSI C63.10:2013 and DA00-705	
Receiver setup:	Set the RBW ≥ 20dB bandwidth, Set VBW ≥ 3 RBW, Set span ≥ 3 RBW Sweep time = auto couple. Detector = peak, Trace mode = max hold.	
Limit:	125 mW(21 dBm)	
Test setup:	Spectrum Analyzer  E.U.T  Non-Conducted Table  Ground Reference Plane	
Test Instruments:	Refer to section 5.7 for details	
Test mode:	Non-hopping mode	
Test results:	Pass	

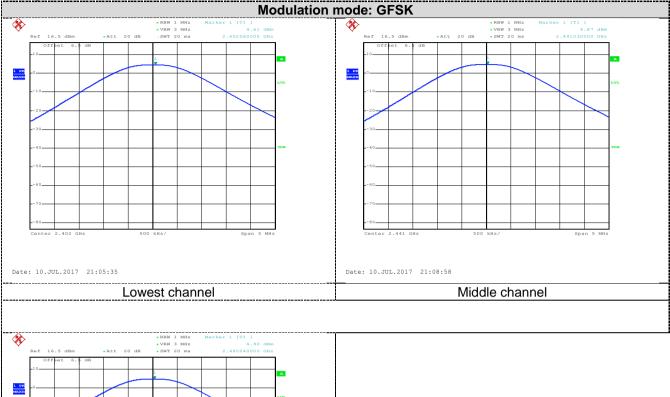
#### **Measurement Data:**

	GFSK mode				
Test channel	Peak Output Power (dBm) Limit (dBm) Res		Result		
Lowest	4.61	21.00	Pass		
Middle	4.87	21.00	Pass		
Highest	4.90	21.00	Pass		
	π/4-DQPSK	mode			
Test channel	Peak Output Power (dBm)	Peak Output Power (dBm) Limit (dBm)			
Lowest	3.71 21.00		Pass		
Middle	4.01 21.00 Pa		Pass		
Highest	4.10 21.00 Pass		Pass		
	8DPSK mode				
Test channel	Peak Output Power (dBm)	Limit (dBm)	Result		
Lowest	3.69	21.00	Pass		
Middle	3.97	21.00	Pass		
Highest	4.09	21.00	Pass		



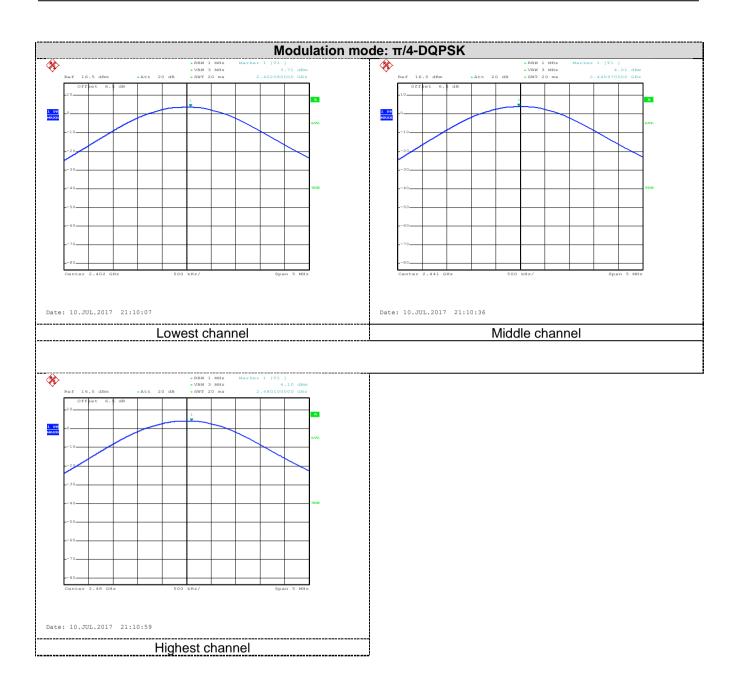


Test plot as follows:

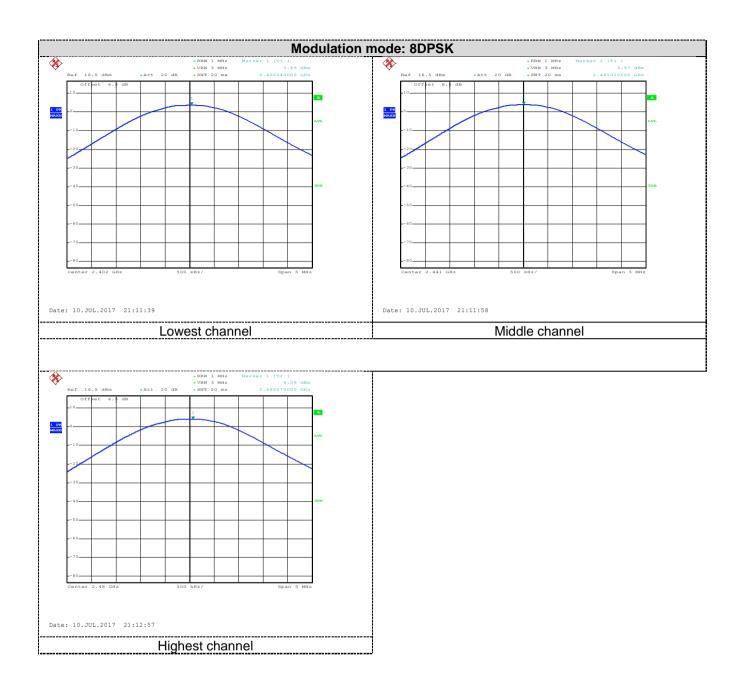














### 6.4 20dB Occupy Bandwidth

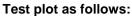
Test Requirement:	FCC Part 15 C Section 15.247 (a)(1)	
Test Method:	ANSI C63.10:2013 and DA00-705	
Receiver setup:	RBW=30 kHz, VBW=100 kHz, detector=Peak	
Limit:	NA	
Test setup:	Spectrum Analyzer  E.U.T  Non-Conducted Table  Ground Reference Plane	
Test Instruments:	Refer to section 5.7 for details	
Test mode:	Non-hopping mode	
Test results:	Pass	

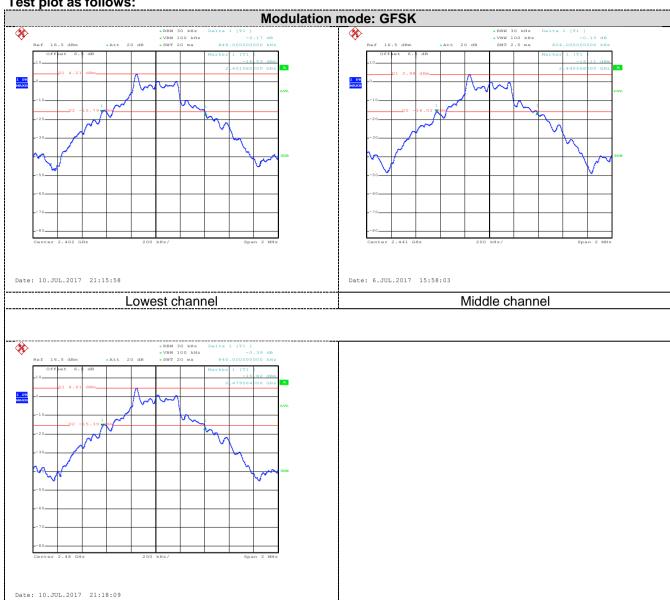
#### **Measurement Data:**

Toot shannel	20dB Occupy Bandwidth (kHz)		
Test channel	GFSK	π/4-DQPSK	8DPSK
Lowest	848	1124	1176
Middle	824	1124	1168
Highest	840	1124	1176



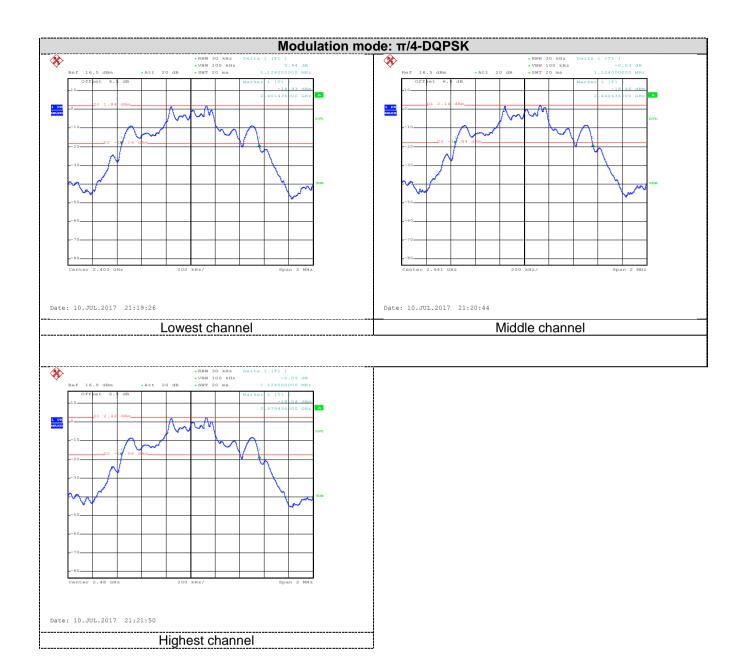




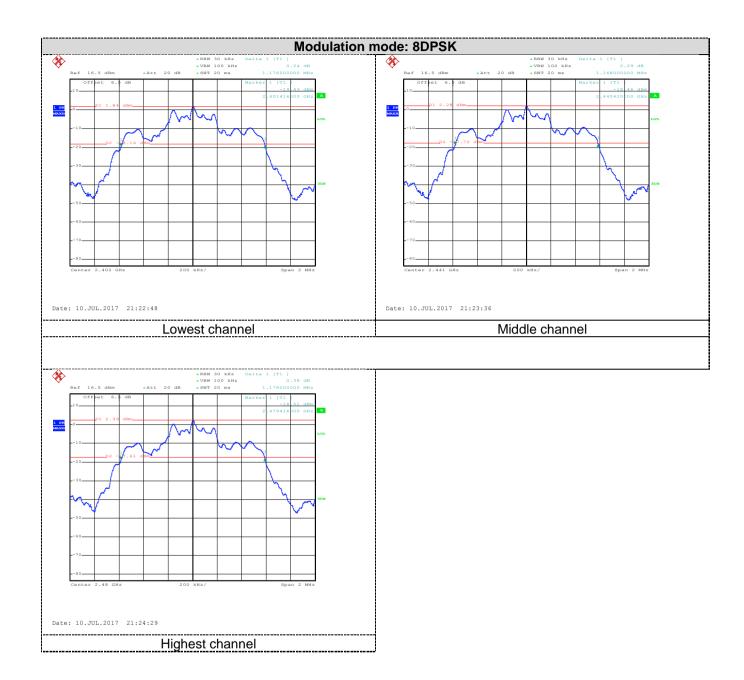


Highest channel













### 6.5 Carrier Frequencies Separation

<del>-</del>	<u>-</u>	
Test Requirement:	FCC Part 15 C Section 15.247 (a)(1)	
Test Method:	ANSI C63.10:2013 and DA00-705	
Receiver setup:	RBW=100 kHz, VBW=300 kHz, detector=Peak	
Limit:	0.025MHz or 2/3 of the 20dB bandwidth (whichever is greater)	
Test setup:	O.025MHz or 2/3 of the 20dB bandwidth (whichever is greater)  Spectrum Analyzer  Non-Conducted Table  Ground Reference Plane	
Test Instruments:	Refer to section 5.7 for details	
Test mode:	Hopping mode	
Test results:	Pass	





#### **Measurement Data:**

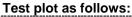
GFSK mode				
Test channel	Carrier Frequencies Separation (kHz) Result		Result	
Lowest	1000	565.33	Pass	
Middle	1000	565.33	Pass	
Highest	1004	565.33	Pass	
	π/4-DQPSK mo	de		
Test channel	Carrier Frequencies Separation (kHz) Limit (kHz) Re		Result	
Lowest	1004 749.33 Pas		Pass	
Middle	1000	749.33	Pass	
Highest	1004 749.33 Pass		Pass	
	8DPSK mode			
Test channel	Carrier Frequencies Separation (kHz) Limit (kHz)		Result	
Lowest	1000 784.00 Pass		Pass	
Middle	1000 784.00 Pass		Pass	
Highest	1000 784.00 Pass		Pass	

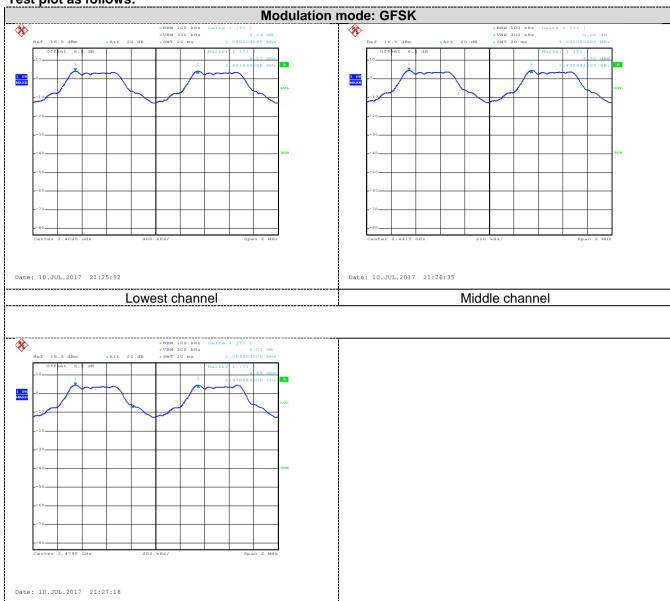
Note: According to section 6.4

Mode	20dB bandwidth (kHz)	Limit (kHz)
Wode	(worse case)	(Carrier Frequencies Separation)
GFSK	848	565.33
π/4-DQPSK	1124	749.33
8DPSK	1176	784.00



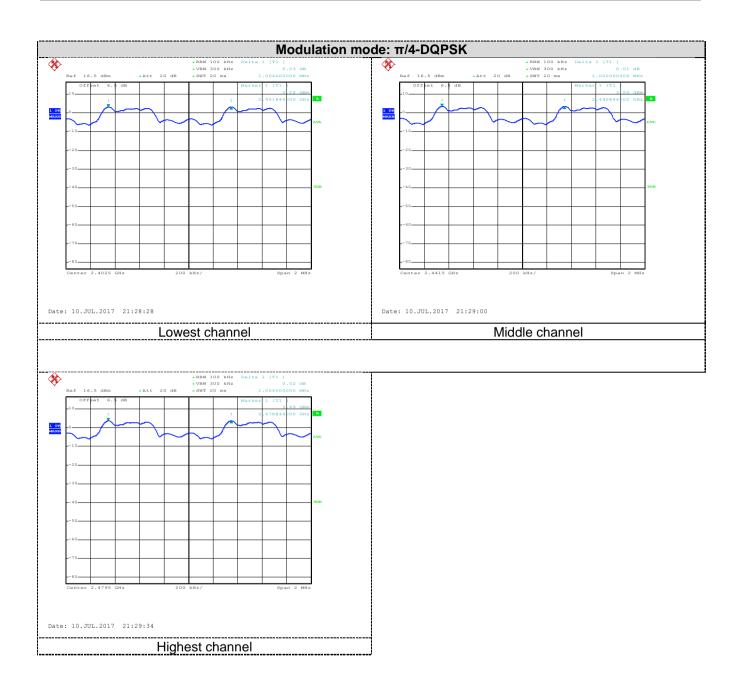




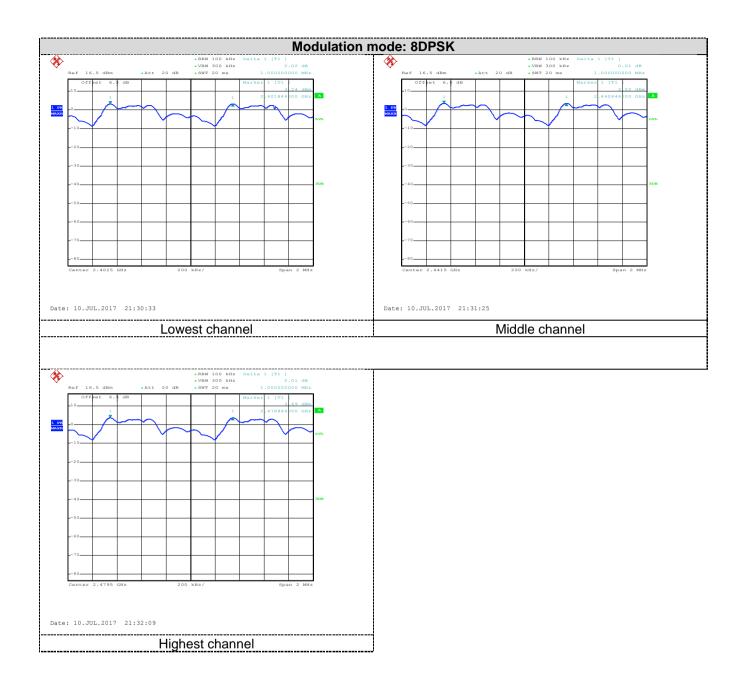


Highest channel











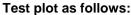
### 6.6 Hopping Channel Number

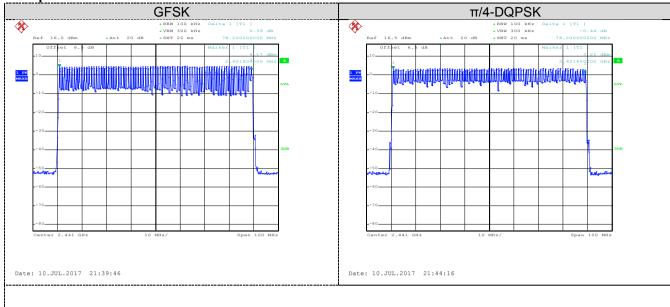
Test Requirement:	FCC Part 15 C Section 15.247 (a)(1)	
Test Method:	ANSI C63.10:2013 and DA00-705	
Receiver setup:	RBW=100 kHz, VBW=300 kHz, Frequency range=2400MHz-2483.5MHz, Detector=Peak	
Limit:	15 channels	
Test setup:	Spectrum Analyzer  E.U.T  Non-Conducted Table  Ground Reference Plane	
Test Instruments:	Refer to section 5.7 for details	
Test mode:	Hopping mode	
Test results:	Pass	

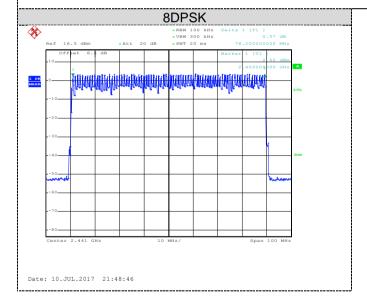
#### **Measurement Data:**

Mode	Hopping channel numbers	Limit	Result
GFSK, π/4-DQPSK, 8DPSK	79	15	Pass











#### 6.7 Dwell Time

Test Requirement:	FCC Part 15 C Section 15.247 (a)(1)	
Test Method:	ANSI C63.10:2013 and KDB DA00-705	
Receiver setup:	RBW=1 MHz, VBW=1 MHz, Span=0 Hz, Detector=Peak	
Limit:	0.4 Second	
Test setup:	Spectrum Analyzer  E.U.T  Non-Conducted Table  Ground Reference Plane	
Test Instruments:	Refer to section 5.7 for details	
Test mode:	Hopping mode	
Test results:	Pass	

#### Measurement Data (Worse case):

Mode	Packet	Dwell time (second)	Limit (second)	Result
	DH1	0.12544		
GFSK	DH3	0.27072	0.4	Pass
	DH5	0.31317		
	2-DH1	0.12736		
π/4-DQPSK	2-DH3	0.26784	0.4	Pass
	2-DH5	0.31147		
	3-DH1	0.12672		
8DPSK	3-DH3	0.26976	0.4	Pass
	3-DH5	0.31659		

For GFSK,  $\pi/4$ -DQPSK and 8DPSK:

The test period: T= 0.4 Second/Channel x 79 Channel = 31.6 s

DH1 time slot=0.392\*(1600/(2\*79))\*31.6=125.44ms DH3 time slot=1.692\*(1600/(4\*79))\*31.6=270.72ms DH5 time slot=2.936\*(1600/(6\*79))\*31.6=313.17ms

2-DH1 time slot=0.398\*(1600/ (2\*79))\*31.6=127.36ms 2-DH3 time slot=1.674\*(1600/ (4\*79))\*31.6=267.84ms

2-DH5 time slot=2.920\*(1600/ (6\*79))\*31.6=311.47ms

3-DH1 time slot=0.396\*(1600/ (2\*79))\*31.6=126.72ms

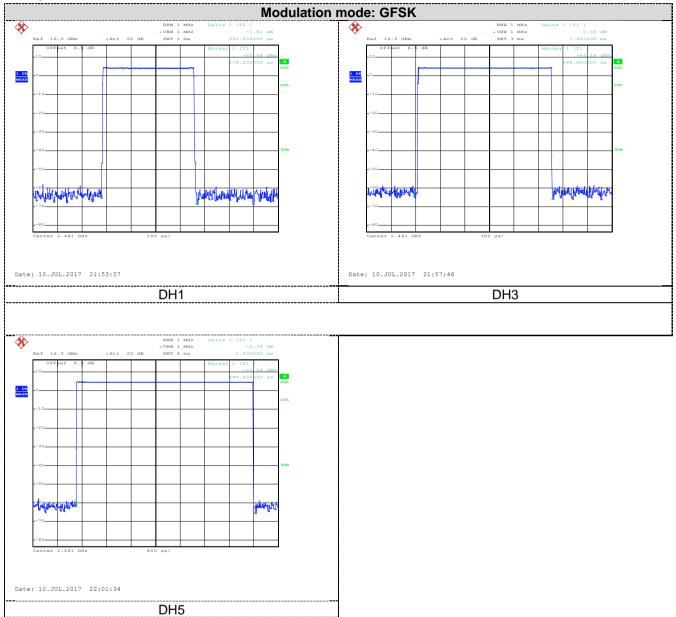
3-DH3 time slot=1.686\*(1600/ (4\*79))\*31.6=269.76ms

3-DH5 time slot=2.968\*(1600/ (6\*79))\*31.6=316.59ms

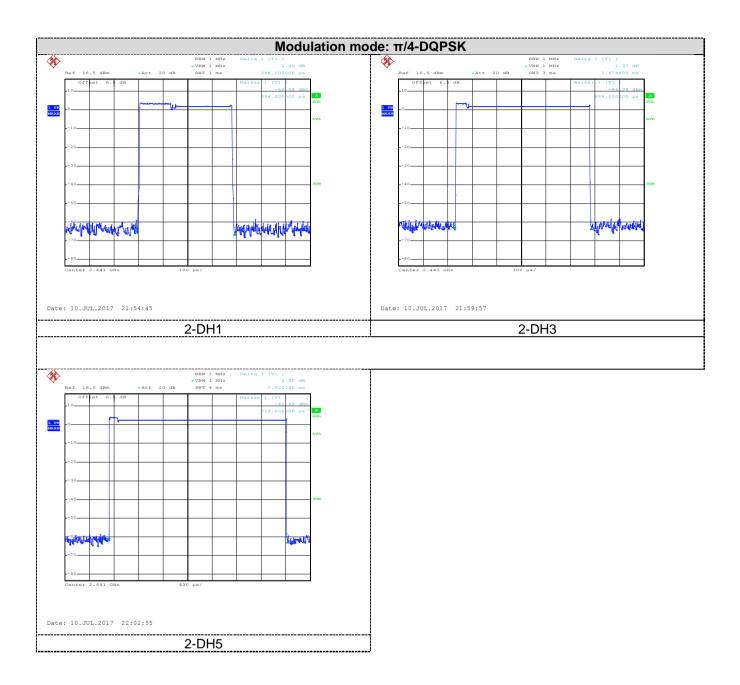




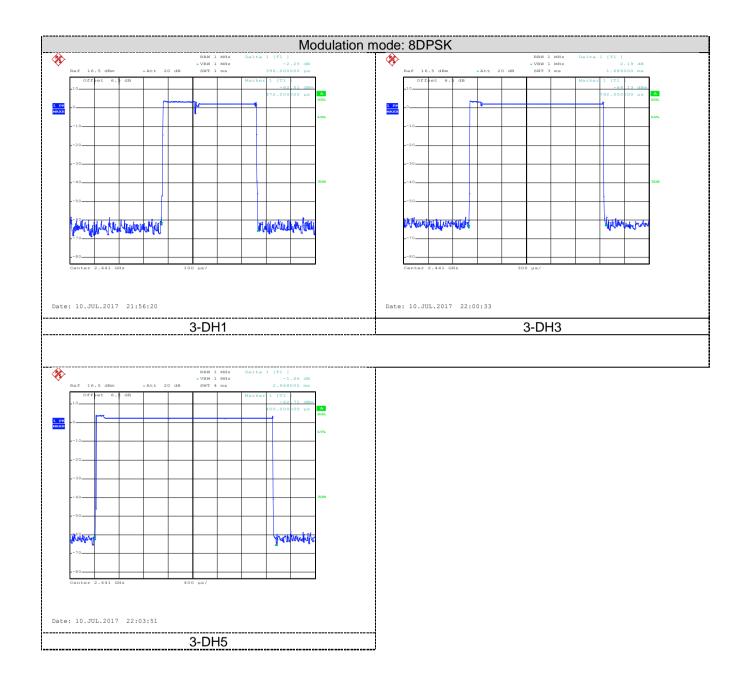
#### Test plot as follows:











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### 6.8 Pseudorandom Frequency Hopping Sequence

#### Test Requirement: FCC Part 15 C Section 15.247 (a)(1) requirement:

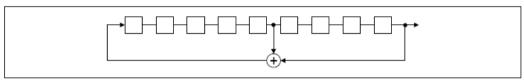
Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

Alternatively. Frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW. The system shall hop to channel frequencies that are selected at the system hopping rate from a Pseudorandom ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

### **EUT Pseudorandom Frequency Hopping Sequence**

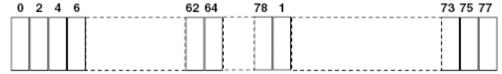
The pseudorandom sequence may be generated in a nine-stage shift register whose 5th and 9th stage outputs are added in a modulo-two addition stage. And the result is fed back to the input of the first stage. The sequence begins with the first ONE of 9 consecutive ONEs; i.e. the shift register is initialized with nine ones.

- Number of shift register stages: 9
- Length of pseudo-random sequence: 29 -1 = 511 bits
- Longest sequence of zeros: 8 (non-inverted signal)



Linear Feedback Shift Register for Generation of the PRBS sequence

An example of Pseudorandom Frequency Hopping Sequence as follow:



Each frequency used equally on the average by each transmitter.

The system receivers have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shift frequencies in synchronization with the transmitted signals.



### 6.9 Band Edge

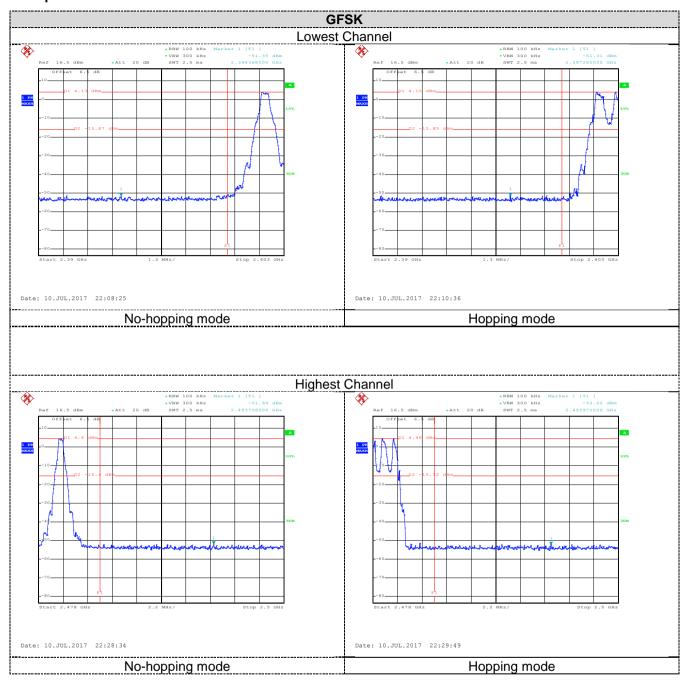
### 6.9.1 Conducted Emission Method

Test Requirement:	FCC Part 15 C Section 15.247 (d)	
Test Method:	ANSI C63.10:2013 and DA00-705	
Receiver setup:	RBW=100 kHz, VBW=300 kHz, Detector=Peak	
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.	
Test setup:	Spectrum Analyzer  E.U.T  Non-Conducted Table  Ground Reference Plane	
Test Instruments:	Refer to section 5.7 for details	
Test mode:	Non-hopping mode and hopping mode	
Test results:	Pass	

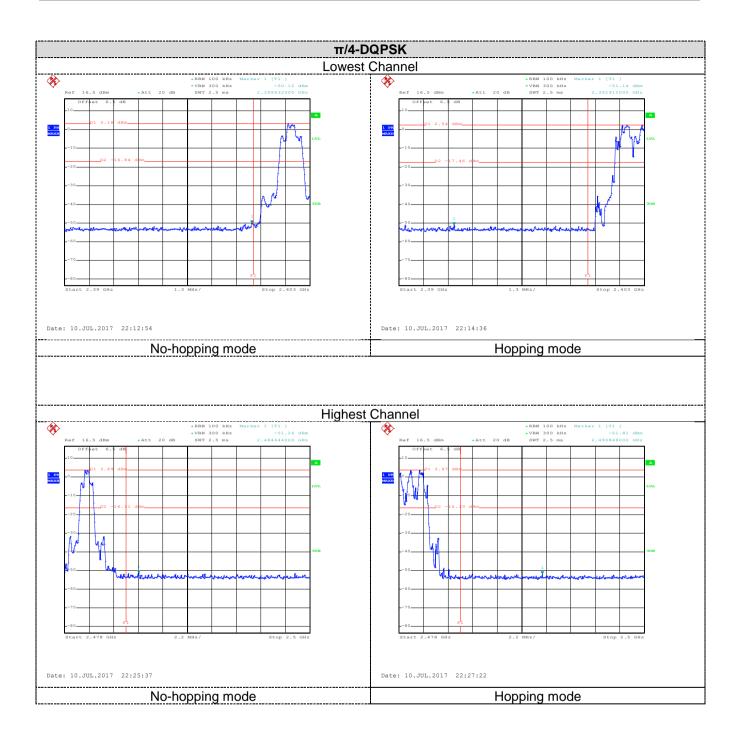




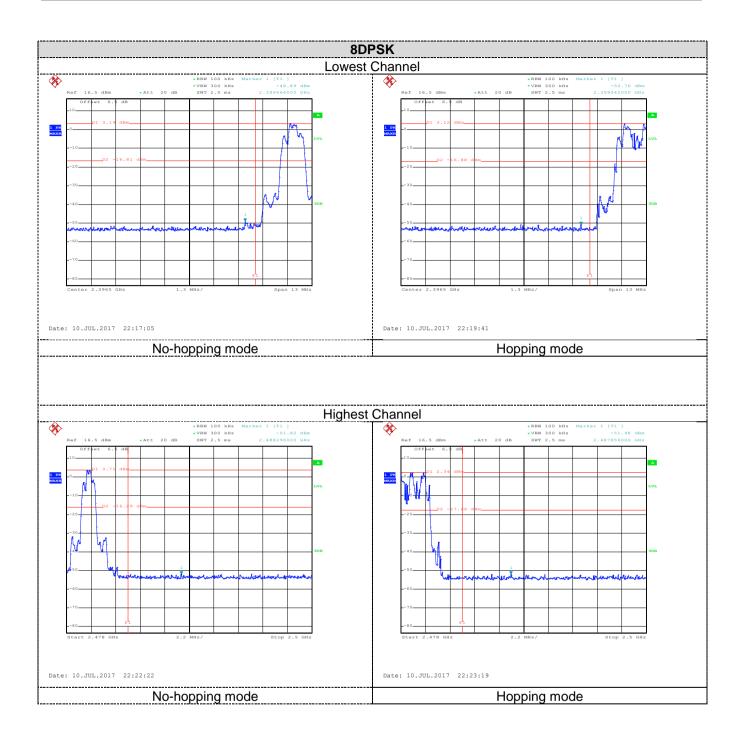
#### Test plot as follows:













## 6.9.2 Radiated Emission Method

Test Requirement:	FCC Part 15 C	Section 15.20	9 and 15.205						
Test Method:	ANSI C63.10: 2013								
Test Frequency Range:	2.3GHz to 2.5GHz								
Test site:	Measurement	Measurement Distance: 3m							
Receiver setup:	Frequency	Detector	RBW	VBW	Remark				
·	AL 4011	Peak	1MHz	3MHz	Peak Value				
	Above 1GHz	RMS	1MHz	3MHz	Average Value				
Limit:	Frequen		nit (dBuV/m @:		Remark				
		-	54.00		Average Value				
	Above 10	Hz -	74.00	Peak Value					
	Artenna Tower  Ground Reference Plane  Test Receiver Plane  Controller								
Test Procedure:	<ol> <li>The EUT was placed on the top of a rotating table 1.5meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.</li> <li>The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.</li> <li>The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.</li> <li>For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading.</li> <li>The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</li> <li>If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.</li> </ol>								
Test Instruments:	Refer to section 5.7 for details								
Test mode:	Non-hopping m								
Test results:	Passed								
Pomark:									

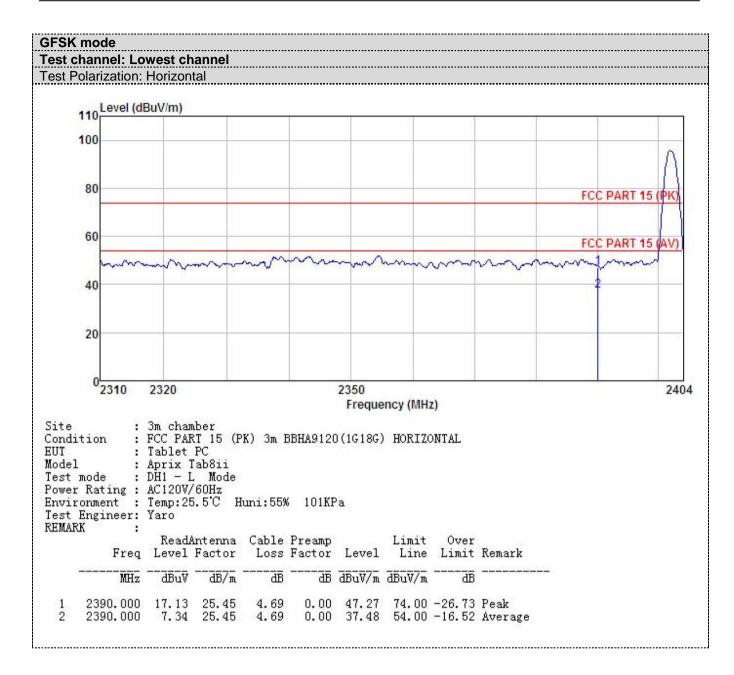
# Remark:

- 1. During the test, pre-scan the GFSK,  $\pi/4$ -DQPSK, 8DPSK, and all data were shown in report.
- 2. Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the Y-axis is the worst case.

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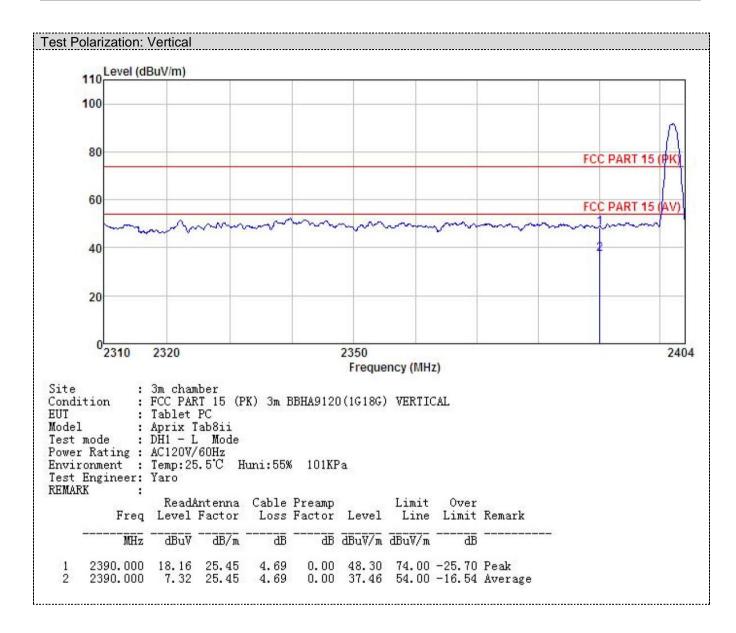






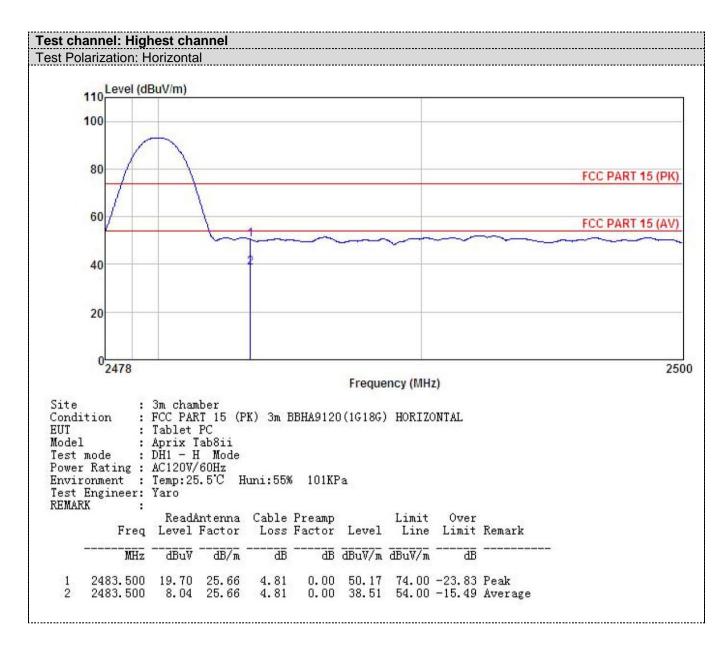






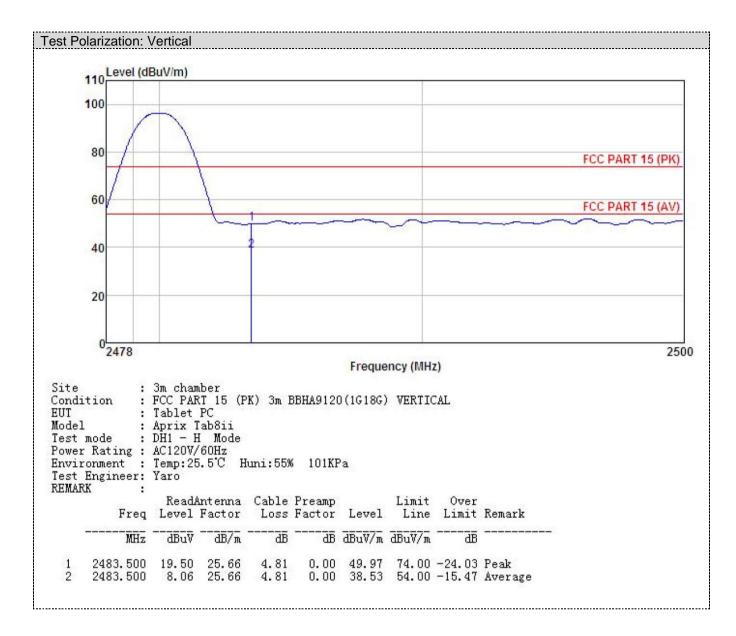






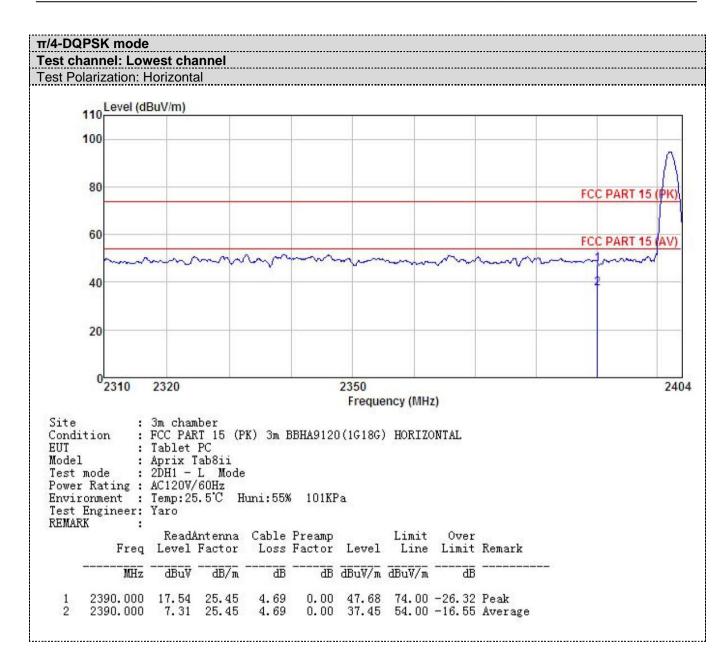






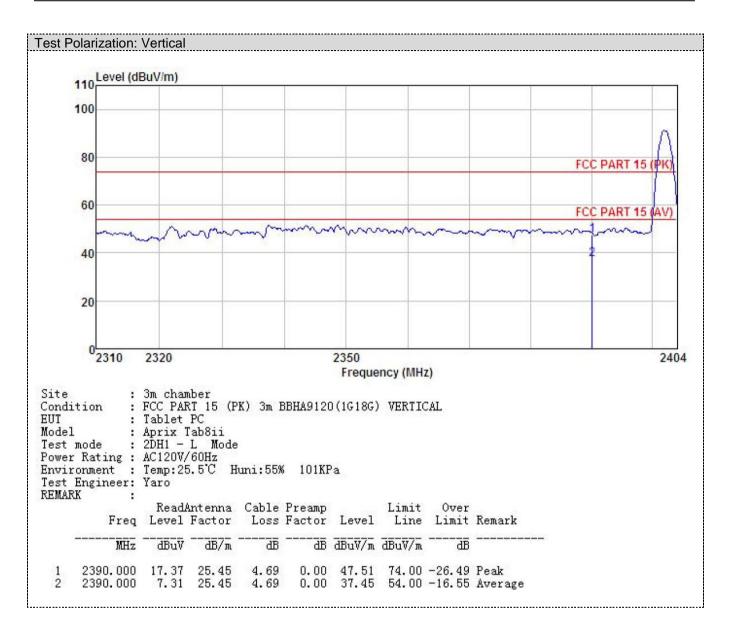






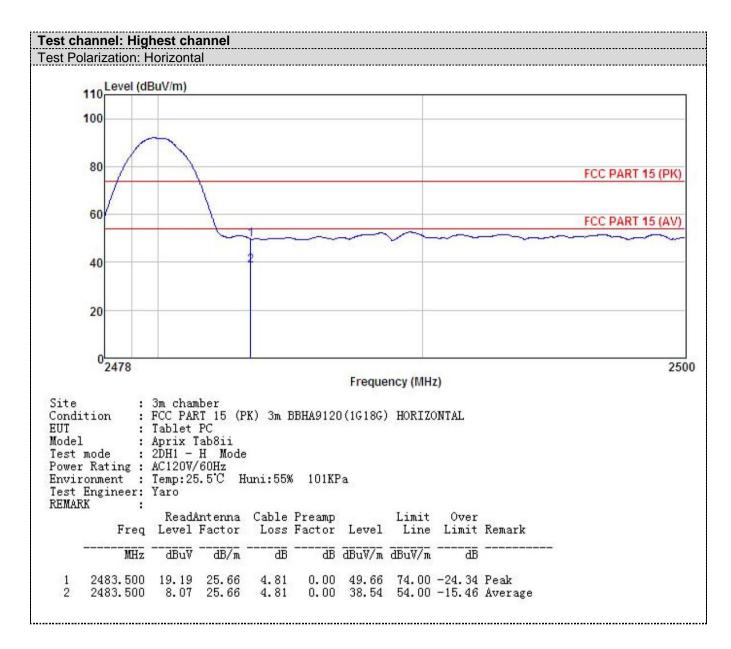






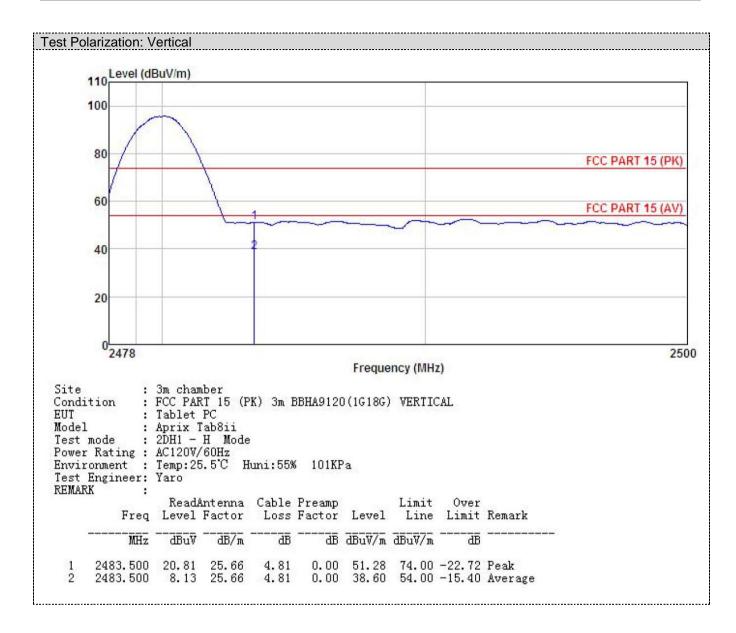






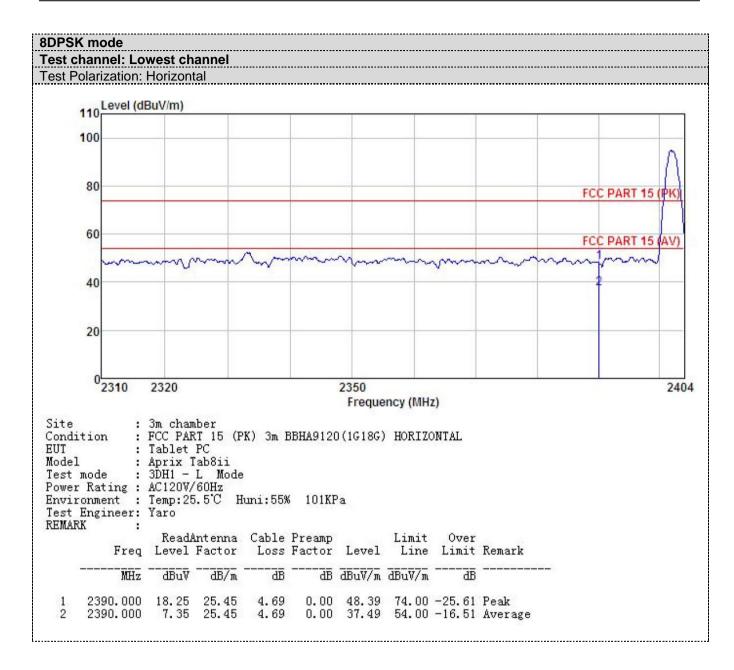






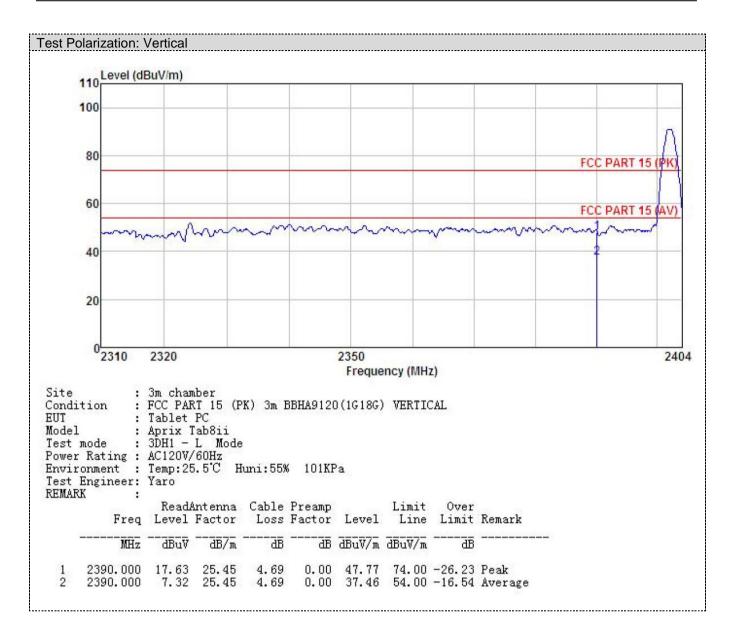






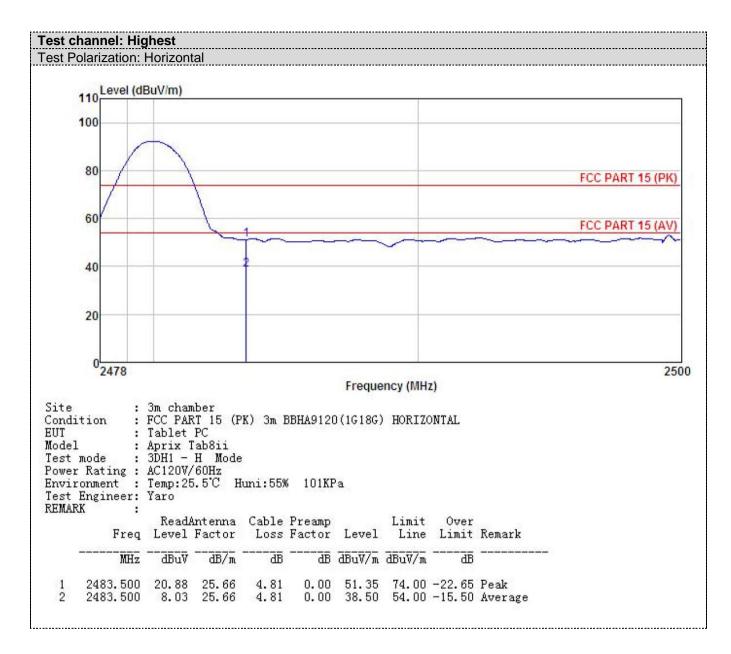






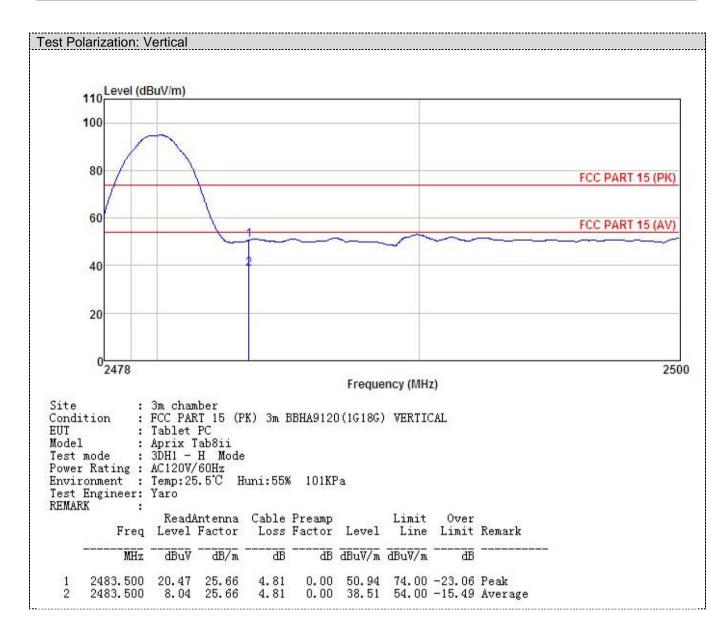














# 6.10 Spurious Emission

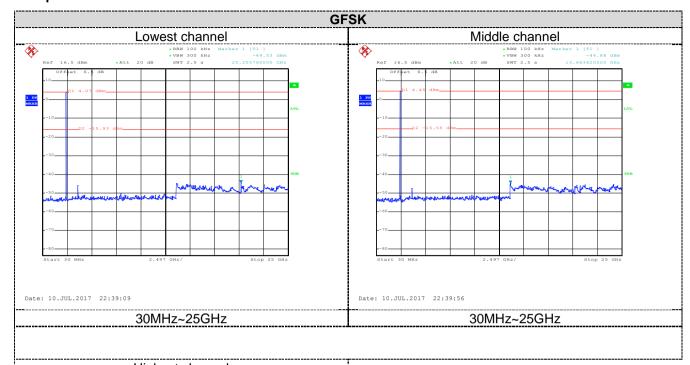
# 6.10.1 Conducted Emission Method

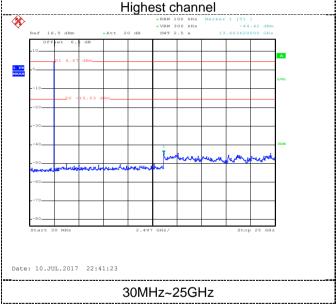
Test Requirement:	FCC Part 15 C Section 15.247 (d)					
Test Method:	ANSI C63.10:2013 and DA00-705					
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.					
Test setup:	Spectrum Analyzer  E.U.T  Non-Conducted Table  Ground Reference Plane					
Test Instruments:	Refer to section 5.7 for details					
Test mode:	Non-hopping mode					
Test results:	Pass					



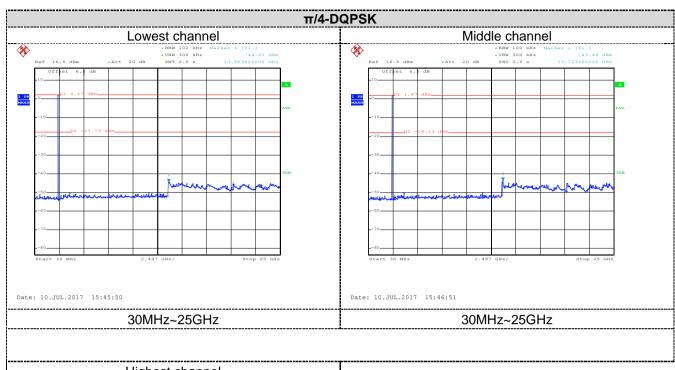


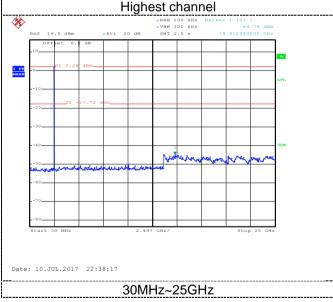
## Test plot as follows:



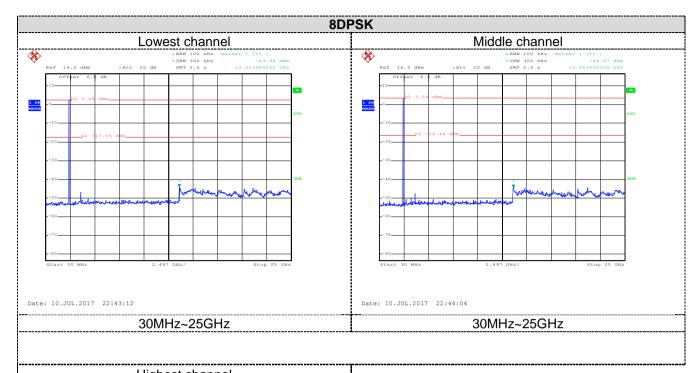


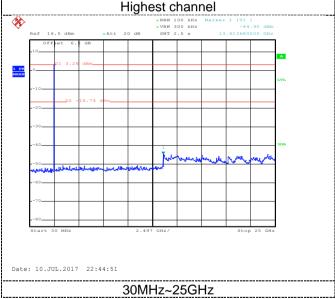
















# 6.10.2 Radiated Emission Method

6.10.2 Radiated Emission M	0.2 Radiated Emission Method								
Test Requirement:	FCC Part 15 C Section 15.209								
Test Method:	ANSI C63.10: 2013								
Test Frequency Range:	9 kHz to 25 GHz								
Test site:	Measurement Distance: 3m								
Receiver setup:	Frequency Detector RBW VBW Rem						Remark		
	30MHz-1GHz	Quasi-pe	eak	120kHz	300kH	Ηz	Quasi-peak Value		
	Above 1GHz Pea			1MHz	3МН	Z	Peak Value		
	Above 1G112	RMS		1MHz	Hz 3MH		z Average Value		
Limit:	Frequenc	:y	Lim	it (dBuV/m @	@3m)	Remark			
	30MHz-88N	ИHz		40.0		(	Quasi-peak Value		
	88MHz-216	MHz		43.5		•	Quasi-peak Value		
	216MHz-960	MHz		46.0		(	Quasi-peak Value		
	960MHz-10	GHz		54.0		(	Quasi-peak Value		
	Above 1GI	H7		54.0			Average Value		
	Above 101	12		74.0			Peak Value		
Test setup:	Below 1GHz  Antenna Tower  Search Antenna  RF Test Receiver  Ground Plane  Above 1GHz  Antenna Tower  Antenna Tower  Frest Receiver  Ground Relevance Plane  Test Receiver  Test Receiver  Test Receiver  Test Receiver  Test Receiver								



1. The EUT was placed on the top of a rotating table 0.8m(below 1GHz) Test Procedure: /1.5m(above 1GHz) above the ground at a 3 meter chamber. The table was rotated 360 degrees to determine the position of the highest 2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna 3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. 4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet. Test Instruments: Refer to section 5.7 for details Test mode: Non-hopping mode

Report No: CCISE170709902

#### Remark:

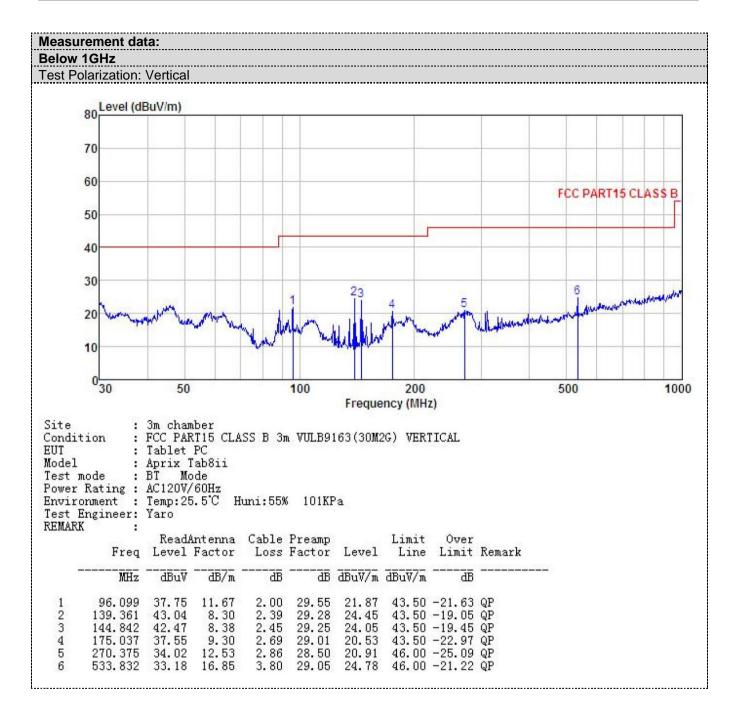
Test results:

- 1. During the test, pre-scan the GFSK,  $\pi/4$ -DQPSK, 8DPSK modulation, and found the GFSK modulation is the worst case.
- 2. Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the Y-axis is the worst case.
- 3. 9 kHz to 30 MHz is noise floor, so only shows the data of above 30MHz in this report.

Pass

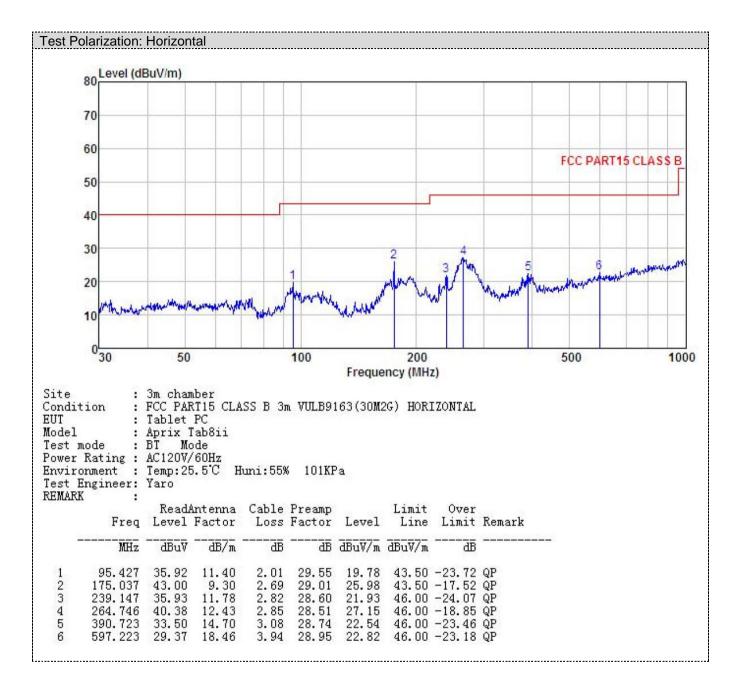
















#### Above 1GHz:

ADOVC TOTIZ									
Test channel: Lowest channel									
Peak Value									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	
4804.00	46.21	35.99	6.80	41.81	47.19	74.00	-26.81	Vertical	
4804.00	46.83	35.99	6.80	41.81	47.81	74.00	-26.19	Horizontal	
				Average Va	lue				
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	
4804.00	40.01	35.99	6.80	41.81	40.99	54.00	-13.01	Vertical	
4804.00	40.67	35.99	6.80	41.81	41.65	54.00	-12.35	Horizontal	

Test channel: Middle channel									
Peak Value									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	
4882.00	47.39	36.38	6.86	41.84	48.79	74.00	-25.21	Vertical	
4882.00	47.62	36.38	6.86	41.84	49.02	74.00	-24.98	Horizontal	
				Average Va	llue				
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	
4882.00	41.29	36.38	6.86	41.84	42.69	54.00	-11.31	Vertical	
4882.00	41.34	36.38	6.86	41.84	42.74	54.00	-11.26	Horizontal	

Test channel: Highest channel									
Peak Value									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	
4960.00	46.66	36.71	6.91	41.87	48.41	74.00	-25.59	Vertical	
4960.00	47.24	36.71	6.91	41.87	48.99	74.00	-25.01	Horizontal	
				Average Va	lue				
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	
4960.00	39.54	36.71	6.91	41.87	41.29	54.00	-12.71	Vertical	
4960.00	40.19	36.71	6.91	41.87	41.94	54.00	-12.06	Horizontal	

# Remark:

- 1. Final Level =Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor
- 2. The emission levels of other frequencies are very lower than the limit and not show in test report.

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