



Report No: FCC 1705088-02 File reference No: 2017-05-23

Applicant: Shenzhen Jingwah Information Technology Co., Ltd.

Product: Tablet PC

Model No: A102, W10, WT1050

Trademark: Polaroid, Packard Bell

Test Standards: FCC Part 15.247

Test result:

It is herewith confirmed and found to comply with the

requirements set up by ANSI C63.10, FCC Part 15.247 for the

evaluation of electromagnetic compatibility

Approved By

Jack Chung

Jack Chung

Manager

Dated: May 23, 2017

Results appearing herein relate only to the sample tested

The technical reports is issued errors and omissions exempt and is subject to withdrawal at

SHENZHEN TIMEWAY TESTING LABORATORIES

Room 512-519, 5/F., East Tower, Building 4, Anhua Industrial Zone, Futian District, Shenzhen, Guangdong, China

Tel (755) 83448688, Fax (755) 83442996, E-Mail:info@timeway-lab.com

Report No.: FCC1705088-02 Page 2 of 85

Date: 2017-05-23



Special Statement:

The testing quality ability of our laboratory meet with "Quality Law of People's Republic of China" Clause 19.

The testing quality system of our laboratory meets with ISO/IEC-17025 requirements, which is approved by CNAS. This approval result is accepted by MRA of APLAC.

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

CNAS-LAB Code: L2292

The EMC Laboratory has been assessed and in compliance with CNAS-CL01 accreditation criteria for testing Laboratories (identical to ISO/IEC 17025:2005 General Requirements) for the Competence of testing Laboratories.

FCC-Registration No.: 899988

The 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 our files. Registration No.:899988.

Page 3 of 85

Report No.: FCC1705088-02

Date: 2017-05-23



Test Report Conclusion

Content

1.0	General Details	4
1.1	Test Lab Details.	4
1.2	Applicant Details	4
1.3	Description of EUT	4
1.4	Submitted Sample	4
1.5	Test Duration.	5
1.6	Test Uncertainty.	5
1.7	Test By	5
2.0	List of Measurement Equipment.	6
3.0	Technical Details	7
3.1	Summary of Test Results	7
3.2	Test Standards.	7
4.0	EUT Modification.	7
5.0	Power Line Conducted Emission Test.	8
5.1	Schematics of the Test.	8
5.2	Test Method and Test Procedure.	8
5.3	Configuration of the EUT.	8
5.4	EUT Operating Condition.	9
5.5	Conducted Emission Limit.	9
5.6	Test Result.	9
6.0	Radiated Emission test.	12
6.1	Test Method and Test Procedure.	12
6.2	Configuration of the EUT.	12
6.3	EUT Operation Condition.	12
6.4	Radiated Emission Limit.	13
7.0	20dB Bandwidth	22
8.0	Maximum Output Power.	34
9.0	Carrier Frequency Separation.	37
10.0	Number of Hopping Channel.	41
11.0	Time of Occupancy (Dwell Time)	45
12.0	Out of Band Measurement.	58
13.0	Antenna Requirement.	71
14.0	FCC ID Label	72
15.0	Photo of Test Setup and EUT View.	73

Report No.: FCC1705088-02

Date: 2017-05-23



Page 4 of 85

1.0 General Details

1.1 Test Lab Details

Name: SHENZHEN TIMEWAY TESTING LABORATORIES.

Address: Room 512-519,5/F., East Tower, Building 4, Anhua Industrial Zone, Futian

District, Shenzhen, Guangdong China

Telephone: (755) 83448688 Fax: (755) 83442996

Site on File with the Federal Communications Commission – United Sates

Registration Number: 899988

For 3m & 10 m OATS

Site Listed with Industry Canada of Ottawa, Canada

Registration Number: IC: 5205A-02

For 3m & 10 m OATS

1.2 Applicant Details

Applicant: Shenzhen Jingwah Information Technology Co., Ltd.

Address: 4F, Bldg 4, Jinghua Square, No.1 Huafa North Road, Futian District, Shenzhen, China

Telephone: --Fax: ---

1.3 Description of EUT

Product: Tablet PC

Manufacturer: Shenzhen Jingwah Information Technology Co., Ltd.

Address: 4F, Bldg 4, Jinghua Square, No.1 Huafa North Road, Futian District,

Shenzhen, China

Brand Name: Polaroid, Packard Bell

Model Number: A102 Additional Model Number: W10, WT1050

Power Adapter Model No.: JHD-AP012U-050200BA

Input: 100-240V, 50/60Hz, 0.35A; Output: 5V, 2000mA

Type of Modulation GFSK, 月/4DQPSK, 8DPSK for Bluetooth

Frequency range 2402-2480MHz for Bluetooth

Channel Spacing 1MHz for Bluetooth

Frequency Selection By software

Channel Number 79 channel for Bluetooth

Antenna: Integral Antenna and the maximum Gain of this antenna is 3.42dBi;

1.4 Submitted Sample: 2 Samples

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Report No.: FCC1705088-02 Page 5 of 85

Date: 2017-05-23



1.5 Test Duration 2017-05-16 to 2017-05-23

Test Uncertainty Conducted Emissions Uncertainty = 3.6dB Radiated Emissions Uncertainty =4.7dB

Test Engineer 1.7

The sample tested by

Print Name: Terry Tang

Page 6 of 85

Report No.: FCC1705088-02

Date: 2017-05-23



2.0 Test Equipment					
Instrument Type	Manufacturer	Model	Serial No.	Date of Cal.	Due Date
ESPI Test Receiver	R&S	ESPI 3	100379	2016-08-22	2017-08-21
TWO	R&S	F7112 7.5	100204	2017 00 22	2017 00 21
Line-V-NETW		EZH3-Z5	100294	2016-08-22	2017-08-21
TWO	R&S	EZH3-Z5	100253	2016-08-22	2017-08-21
Line-V-NETW		EZH3-Z3	100255	2010-08-22	2017-08-21
	R&S				
Ultra Broadband		HL562	100157	2016-08-23	2017-08-22
ANT					
	R&S	ESDV	100008	2016-08-22	2017-08-21
ESDV Test Receiver			100000		2017 00 21
Impuls-Begrenzer	R&S	ESH3-Z2	100281	2016-08-22	2017-08-21
System Controller	CT	SC100	-		
Printer	EPSON	РНОТО ЕХЗ	CFNH234850		
Computer	IBM	8434	1S8434KCE99BLXLO*	-	-
Loop Antenna	EMCO	6502	00042960	2016-08-23	2017-08-22
ESPI Test Receiver	R&S	ESI26	838786/013	2016-08-22	2017-08-21
3m OATS			N/A	2016-08-24	2017-08-23
Horn Antenna	R&S	BBHA 9170	BBHA9170265	2016-08-24	2017-08-23
Horn Antenna	R&S	BBHA 9120D	9120D-631	2016-08-24	2017-08-23
Power meter	Anritsu	ML2487A	6K00003613	2016-08-22	2017-08-21
Power sensor	Anritsu	MA2491A	32263	2016-08-22	2017-08-21
Bilog Antenna	Schwarebeck	VULB9163	9163/340	2016-08-23	2017-08-21
LISN	AFJ	LS16C	10010947251	2016-08-22	2017-08-21
LISN (Three Phase)	Schwarebeck	NSLK 8126	8126453	2016-08-23	2017-08-22
9*6*6 Anechoic			N/A	2016-08-24	2017-08-23
EMI Test Receiver	RS	ESCS30	100139	2016-08-22	2017-08-21
DE Calala	SCHWARZBEC			2016 09 22	2017 09 22
RF Cable	K			2016-08-23	2017-08-22
Pre-Amplifier	HP	8447D	2727A05017	2016-08-05	2017-08-04
Pre-Amplifier	EM	EM30265		2016-08-05	2017-08-04

2.1 **Auxiliary Equipment**

Name	Model No.	Rating	Manufacturer	FCC ID/DOC
Passive Earphone				

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Page 7 of 85

Report No.: FCC1705088-02

Date: 2017-05-23



3.0 **Technical Details**

3.1 **Summary of test results**

The EUT has been tested according to the following specifications:

Requirement	CFR 47 Section	Result	Notes
Antenna Requirement	15.203, 15.247(b)(4)	PASS	Complies
Maximum Peak Out Power	15.247 (b)(1), (4)	PASS	Complies
Carrier Frequency Separation	15.247(a)(1)	PASS	Complies
20dB Channel Bandwidth	15.247 (a)(1)	PASS	Complies
Number of Hopping Channels	15.247(a)(iii), 15.247(b)(1)	PASS	Complies
Time of Occupancy (Dwell Time)	15.247(a)(iii)	PASS	Complies
Spurious Emission, Band Edge, and Restricted bands	15.247(d),15.205(a), 15.209 (a),15.109	PASS	Complies
Conducted Emissions	15.207(a), 15.107	PASS	Complies
RF Exposure	15.247(i), 1.1307(b)(1)	PASS	Complies

3.2 **Test Standards**

FCC Part 15 Subpart & Subpart C, Paragraph 15.247

4.0 **EUT Modification**

No modification by SHENZHEN TIMEWAY TESTING LABORATORIES.

Page 8 of 85

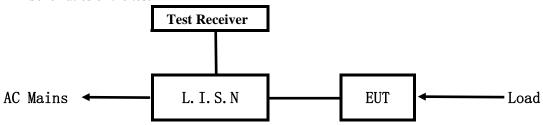
Report No.: FCC1705088-02

Date: 2017-05-23



5. Power Line Conducted Emission Test

5.1 Schematics of the test

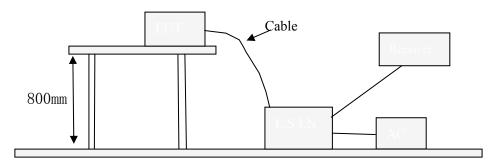


EUT: Equipment Under Test

5.2 Test Method and test Procedure

The EUT was tested according to ANSI C63.10-2013. The Frequency spectrum From 0.15MHz to 30MHz was investigated. The LISN used was 50ohm/50uH as specified by section 5.1 of ANSI C63.10-2013.

Test Voltage: 120V~60Hz Block diagram of Test setup



5.3 Configuration of The EUT

The EUT was configured according to ANSI C63.10-2013. All interface ports were connected to the appropriate peripherals. All peripherals and cables are listed below.

Page 9 of 85

Report No.: FCC1705088-02

Date: 2017-05-23



A. EUT

Device	Manufacturer	Model	FCC ID
Tablet PC	Shenzhen Jingwah Information	A102, W10, WT1050	RBD-A102
Tablet I C	Technology Co., Ltd.	A102, W10, W11030	KDD-A102

B. Internal Device

Device	Manufacturer	Model	Rating

C. Peripherals

Device	Manufacturer	Model	FCC ID/DOC	Cable

5.4 EUT Operating Condition

Operating condition is according to ANSI C63.10-2013.

- A Setup the EUT and simulators as shown on follow
- B Enable AF signal and confirm EUT active to normal condition

5.5 Power line conducted Emission Limit according to Paragraph 15.107, 15.207

Frequency		Class A Lim	its (dB µ V)	Class B Limits (dB µ V)		
	(MHz)	Quasi-peak Level	Average Level	Quasi-peak Level	Average Level	
	$0.15 \sim 0.50$	79.0	66.0	66.0~56.0*	56.0~46.0*	
	$0.50 \sim 5.00$	73.0	60.0	56.0	46.0	
	5.00 ~ 30.00	73.0	60.0	60.0	50.0	

Notes:

- 1. *Decreasing linearly with logarithm of frequency.
- 2. The tighter limit shall apply at the transition frequencies

5.6 Test Results

The frequency spectrum from 0.15MHz to 30MHz was investigated. All reading are quasi-peak values with a resolution bandwidth of 9kHz.

Report No.: FCC1705088-02

Date: 2017-05-23



A: Conducted Emission on Live Terminal (150kHz to 30MHz)

EUT Operating Environment

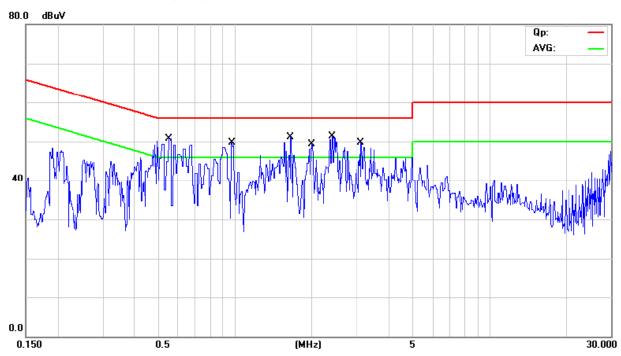
Temperature: 26°C Humidity: 65%RH Atmospheric Pressure: 101 KPa

EUT set Condition: Charging and Keep Bluetooth Transmitting

Equipment Level: Class B

Results: PASS

Please refer to following diagram for individual



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.5534	32.80	10.34	43.14	56.00	-12.86	QP	
2		0.5534	-2.80	10.34	7.54	46.00	-38.46	AVG	
3		0.9692	27.60	10.86	38.46	56.00	-17.54	QP	
4		0.9692	-2.60	10.86	8.26	46.00	-37.74	AVG	
5	*	1.6506	33.40	10.89	44.29	56.00	-11.71	QP	
6		1.6506	15.00	10.89	25.89	46.00	-20.11	AVG	
7		1.9991	28.60	10.88	39.48	56.00	-16.52	QP	
8		1.9991	-2.60	10.88	8.28	46.00	-37.72	AVG	
9		2.3903	32.30	10.87	43.17	56.00	-12.83	QP	
10		2.3903	1.80	10.87	12.67	46.00	-33.33	AVG	
11		3.1013	30.10	10.86	40.96	56.00	-15.04	QP	
12		3.1013	-0.10	10.86	10.76	46.00	-35.24	AVG	

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Date: 2017-05-23



B: Conducted Emission on Neutral Terminal (150kHz to 30MHz)

EUT Operating Environment

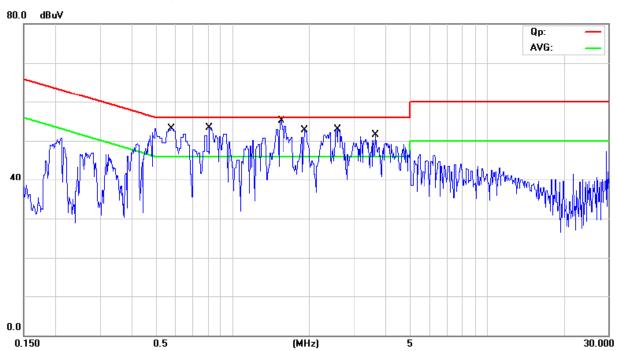
Humidity: 65%RH Atmospheric Pressure: 101 KPa Temperature: 26°C

EUT set Condition: Charging and Keep Bluetooth Transmitting

Equipment Level: Class B

Results: Pass

Please refer to following diagram for individual



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.5751	37.80	10.37	48.17	56.00	-7.83	QP	
2		0.5751	-0.60	10.37	9.77	46.00	-36.23	AVG	
3		0.8131	36.80	10.67	47.47	56.00	-8.53	QP	
4		0.8131	-1.60	10.67	9.07	46.00	-36.93	AVG	
5	*	1.5524	40.70	10.89	51.59	56.00	-4.41	QP	
6		1.5524	3.40	10.89	14.29	46.00	-31.71	AVG	
7		1.9145	37.50	10.88	48.38	56.00	-7.62	QP	
8		1.9145	2.70	10.88	13.58	46.00	-32.42	AVG	
9		2.5622	38.30	10.87	49.17	56.00	-6.83	QP	
10		2.5622	2.60	10.87	13.47	46.00	-32.53	AVG	
11		3.6445	34.30	10.85	45.15	56.00	-10.85	QP	
12		3.6445	15.40	10.85	26.25	46.00	-19.75	AVG	

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Report No.: FCC1705088-02 Page 12 of 85

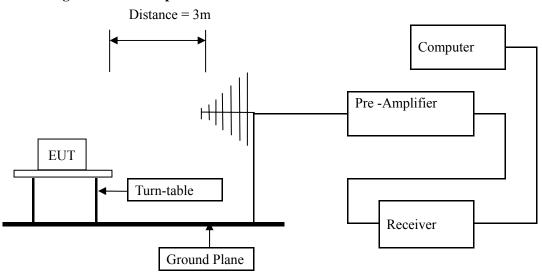
Date: 2017-05-23



6 Radiated Emission Test

- 6.1 Test Method and test Procedure:
- (1) The EUT was tested according to ANSI C63.10-2013. The radiated test was performed at Timeway EMC Laboratory. This site is on file with the FCC laboratory division, Registration No. 8999988
- (2) The EUT, peripherals were put on the turntable which table size is 1m x 1.5 m, table high 0.8 m. All set up is according to ANSI C63.10-2013.
- (3) The frequency spectrum from 30 MHz to 25GHz was investigated. All readings from 30 MHz to 1 GHz are quasi-peak values with a resolution bandwidth of 120 kHz. For measurement above 1GHz, peak values with RBW=VBW=1MHz and PK detector. AV value with RBW=1MHz, VBW=10Hz and PK detector. Measurements were made at 3 meters.
- (4) The antenna high is varied from 1 m to 4 m high to find the maximum emission for each frequency.
- (5) Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance is with all installation combinations. All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within -4 dB of specification limit), and are distinguished with a "QP" in the data table.
- (6) The antenna polarization: Vertical polarization and Horizontal polarization.

Block diagram of Test setup



- 6.2 Configuration of The EUT
 Same as section 5.3 of this report
- 6.3 EUT Operating Condition
 Same as section 5.4 of this report.

The report refers only to the sample tested and does not apply to the bulk.

Report No.: FCC1705088-02 Page 13 of 85

Date: 2017-05-23



6.4 Radiated Emission Limit

All emission from a digital device, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strength specified below:

Frequencies in restricted band are complied to limit on Paragraph 15.209 and 15.109 and RSS-210

Frequency Range (MHz)	Distance (m)	Field strength (dB µ V/m)
30-88	3	40.0
88-216	3	43.5
216-960	3	46.0
Above 960	3	54.0

Note:

- 1. RF Voltage (dBuV) = 20 log RF Voltage (uV)
- 2. In the Above Table, the higher limit applies at the band edges.
- 3. Distance refers to the distance in meters between the measuring instrument antenna and the EUT
- 4. This is a handhold device. The radiated emissions should be tested under 3-axes position (Lying, Side, and Stand), After pre-test. It was found that the worse radiated emission was get at the lying position.
- 5. 8-DPSK was the worse case because it has highest output power

Report No.: FCC1705088-02 Page 14 of 85

Date: 2017-05-23



Test result

General Radiated Emission Data and Harmonics Radiated Emission Data

Radiated Emission In Horizontal/Vertical (30MHz----1000MHz)

EUT set Condition: Keep Bluetooth Transmitting

Results: Pass

Frequency (MHz)	Level@3m (dB \u03b4 V/m)	Antenna Polarity	Limit@3m (dB \(\mu \)V/m)
976.800	40.97	Н	54.00
600.000	42.79	Н	46.00
263.640	33.24	Н	46.00
32.160	37.07	V	40.00
599.960	40.32	V	46.00
998.160	39.99	V	54.00

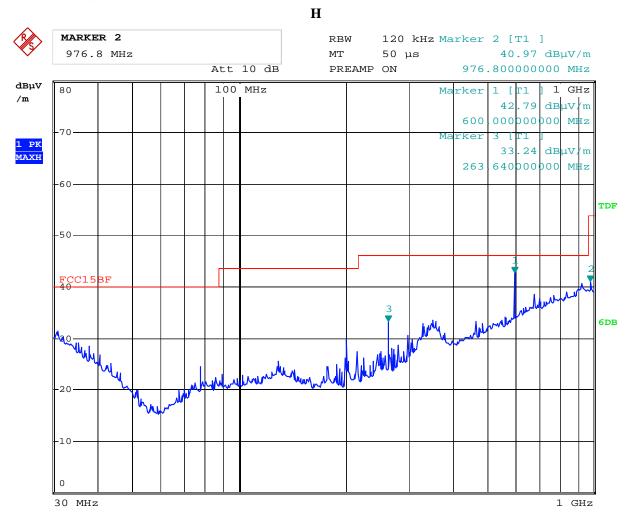
Page 15 of 85

Report No.: FCC1705088-02

Date: 2017-05-23



Test Figure:



Date: 16.MAY.2017 14:56:26

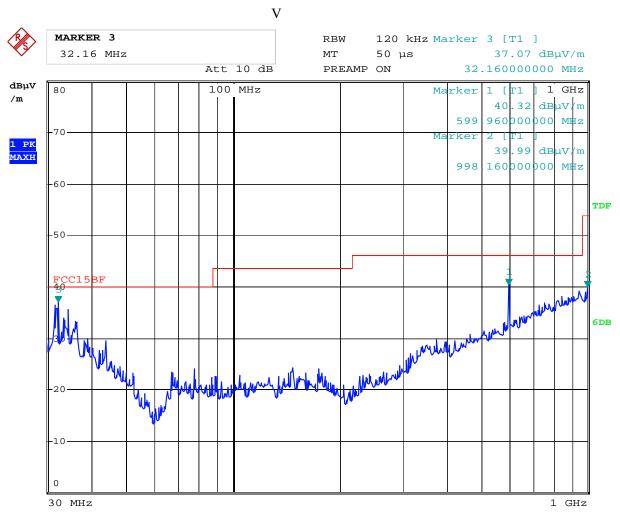
Page 16 of 85

Report No.: FCC1705088-02

Date: 2017-05-23



Test Figure:



Date: 16.MAY.2017 15:00:31 Report No.: FCC1705088-02 Page 17 of 85

Date: 2017-05-23



Operation Mode: Transmitting under Low Channel (2402MHz)

	0	, ,	
Frequency (MHz)	Level@3m (dB \u03b4 V/m)	Antenna Polarity	Limit@3m (dB \mu V/m)
4804		Н	74(Peak)/ 54(AV)
4804		V	74(Peak)/ 54(AV)
7206		H/V	74(Peak)/ 54(AV)
9608		H/V	74(Peak)/ 54(AV)
12010		H/V	74(Peak)/ 54(AV)
14412		H/V	74(Peak)/ 54(AV)
16814		H/V	74(Peak)/ 54(AV)
19216		H/V	74(Peak)/ 54(AV)
21618		H/V	74(Peak)/ 54(AV)
24020		H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

2. Remark "---" means that the emissions level is too low to be measured

Operation Mode: Transmitting under Middle Channel (2441MHz)

Frequency (MHz)	Level@3m (dB \u03b4 V/m)	Antenna Polarity	Limit@3m (dB \u03ba V/m)
4882	-	Н	74(Peak)/ 54(AV)
4882		V	74(Peak)/ 54(AV)
7323		H/V	74(Peak)/ 54(AV)
9764		H/V	74(Peak)/ 54(AV)
12205		H/V	74(Peak)/ 54(AV)
14646		H/V	74(Peak)/ 54(AV)
17087		H/V	74(Peak)/ 54(AV)
19528		H/V	74(Peak)/ 54(AV)
21969		H/V	74(Peak)/ 54(AV)
24410		H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

2. Remark "---" means that the emissions level is too low to be measured

Report No.: FCC1705088-02 Page 18 of 85

Date: 2017-05-23



Operation Mode: Transmitting under High Channel (2480MHz)

Frequency (MHz)	Level@3m (dB \u03b4 V/m)	Antenna Polarity	Limit@3m (dB \u03b4 V/m)
4960		Н	74(Peak)/ 54(AV)
4960		V	74(Peak)/ 54(AV)
7440		H/V	74(Peak)/ 54(AV)
9920		H/V	74(Peak)/ 54(AV)
12400		H/V	74(Peak)/ 54(AV)
14880		H/V	74(Peak)/ 54(AV)
17360		H/V	74(Peak)/ 54(AV)
19840		H/V	74(Peak)/ 54(AV)
22320		H/V	74(Peak)/ 54(AV)
24800		H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

^{2.} Remark "---" means that the emissions level is too low to be measured

Report No.: FCC1705088-02

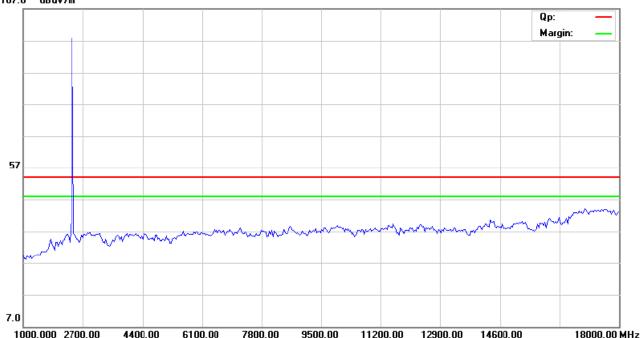
Date: 2017-05-23



Please refer to the following test plots for details:

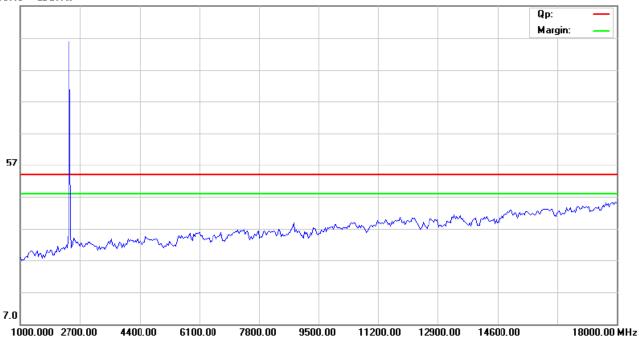
Low Channel: Horizontal

107.0 dBuV/m



Low Channel: Vertical

107.0 dBuV/m



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Page 20 of 85

Report No.: FCC1705088-02

Date: 2017-05-23



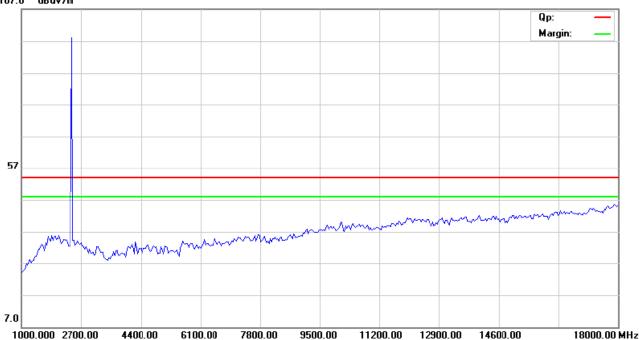
Middle Channel: Horizontal





Middle Channel: Vertical

107.0 dBuV/m



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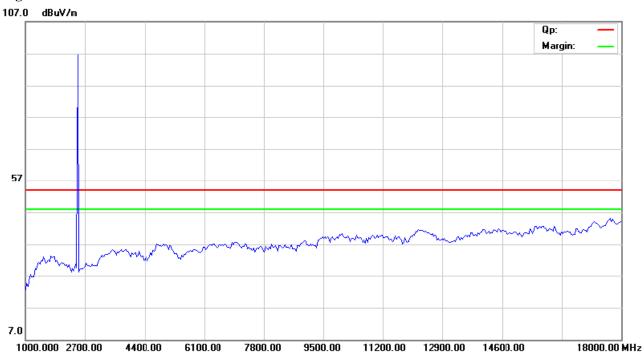
Page 21 of 85

Report No.: FCC1705088-02

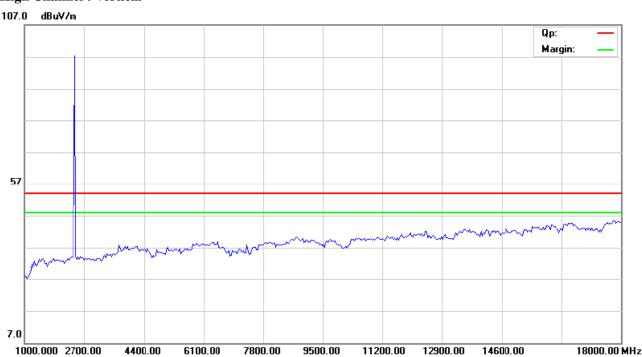
Date: 2017-05-23



High Channel: Horizontal



High Channel: Vertical



Note: for the radiated emissions above 18G, it is the floor noise.

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Report No.: FCC1705088-02

Date: 2017-05-23



Page 22 of 85

7.0 20dB Bandwidth Measurement

7.1 Regulation

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

7.2 Limits of 20dB Bandwidth Measurement

N/A

7.3 Test Procedure.

- 1. Check the calibration of the measuring instrument (spectrum analyzer) using either an internal calibrator or a known signal from an external generator.
- 2. Set the spectrum analyzer as follows: Span =3MHz, RBW =30 kHz, VBW=100 kHz, Sweep = auto Detector function = peak, Trace = max hold
- 3. Measure the highest amplitude appearing on spectral display and record the level to calculate results. 6. Repeat above procedures until all frequencies measured were complete.

7.4 Test Result

Type of Modulation: GFSK

Type of Maddanaton, G1811						
EUT		Tablet PC		Tablet PC Model		A102
Mode	Ke	Keep Transmitting		DC3.7V		
Temperat	ture 24 deg. C,		Humidity	56% RH		
Channel	Channel Frequency (MHz)	20 dB Bandwidth (kHz)	Minimum Limit (kHz)	Pass/ Fail		
Low	2402	1040		Pass		
Middle	2441 1040			Pass		
High	2480 1040			Pass		

Page 23 of 85

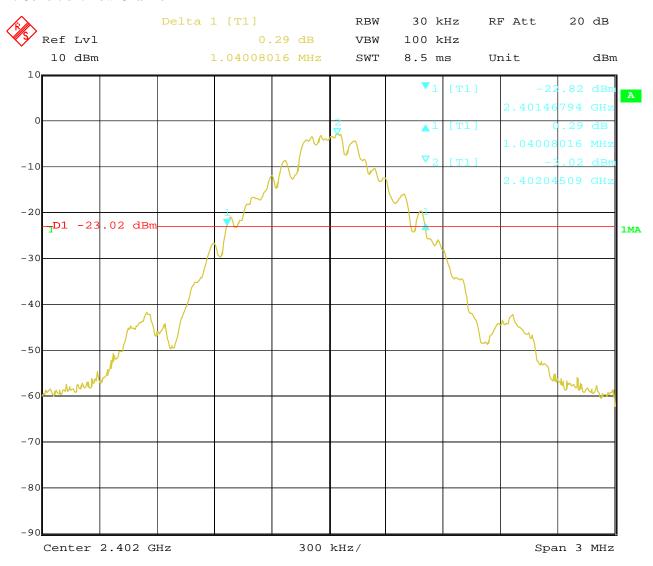
Report No.: FCC1705088-02

Date: 2017-05-23



Test Figure:

1. Condition: Low Channel

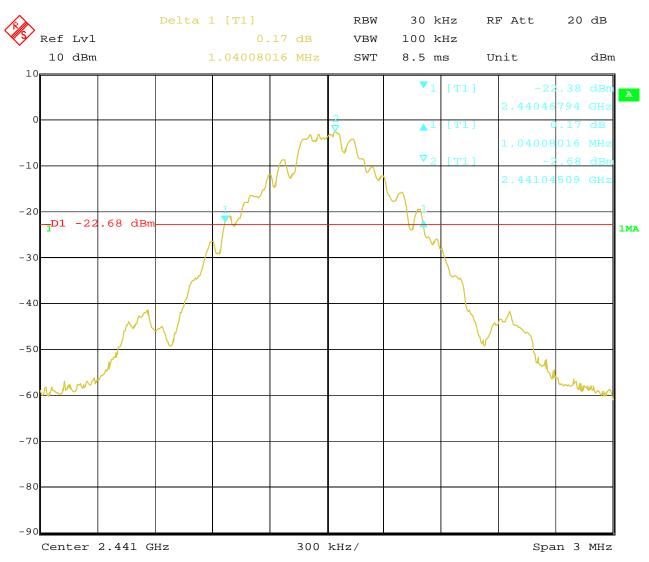


Date: 20.MAY.2017 15:37:18 Report No.: FCC1705088-02 Page 24 of 85

Date: 2017-05-23



2. Condition: Middle Channel



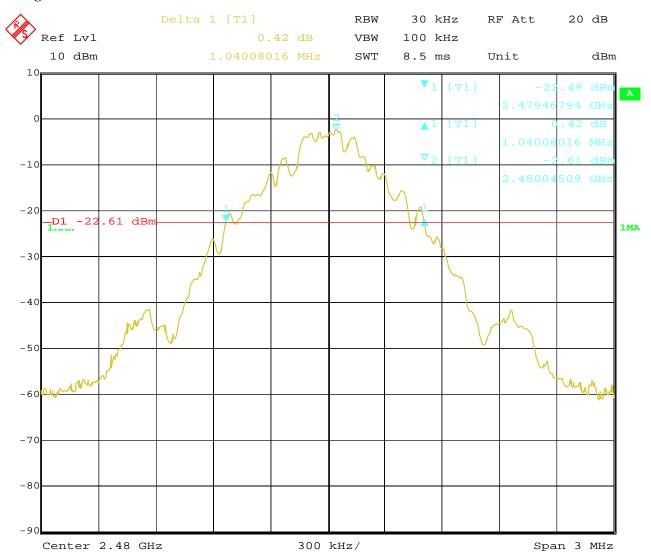
20.MAY.2017 15:36:13 Date:

Report No.: FCC1705088-02 Page 25 of 85

Date: 2017-05-23



3. High Channel



20.MAY.2017 15:35:11 Date:

Report No.: FCC1705088-02

Date: 2017-05-23



Page 26 of 85

Test Result

Type of Modulation: JI/4DQPSK

EUT		Tablet PC		Tablet PC Mo		A102
Mode	K	Keep Transmitting		Keep Transmitting Input Voltage		DC3.7V
Temperat	re 24 deg. C,		Humidity	56% RH		
Channel	Channel Frequency (MHz)	20 dB Bandwidth (kHz)	Maximum Limit (kHz)	Pass/ Fail		
Low	2402	1353		Pass		
Middle	2441 1353			Pass		
High	2480 1353			Pass		

Page 27 of 85

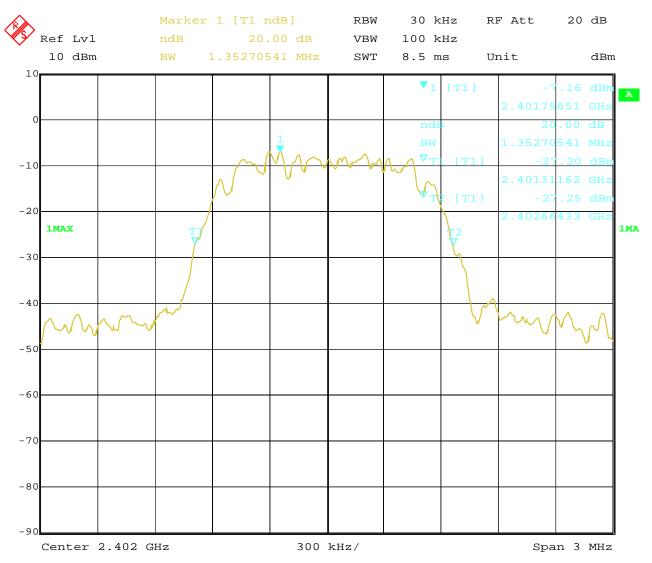
Date: 2017-05-23

Report No.: FCC1705088-02



Test Figure:

1. Condition: Low Channel

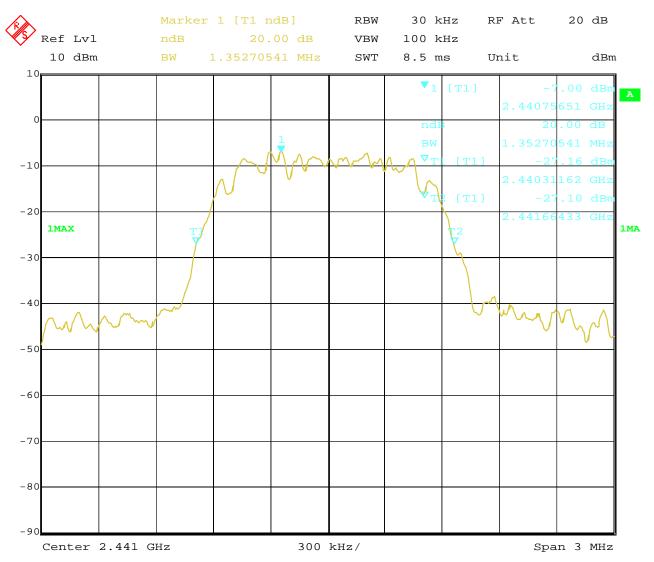


Date: 20.MAY.2017 15:10:07 Report No.: FCC1705088-02 Page 28 of 85

Date: 2017-05-23



2. Condition: Middle Channel



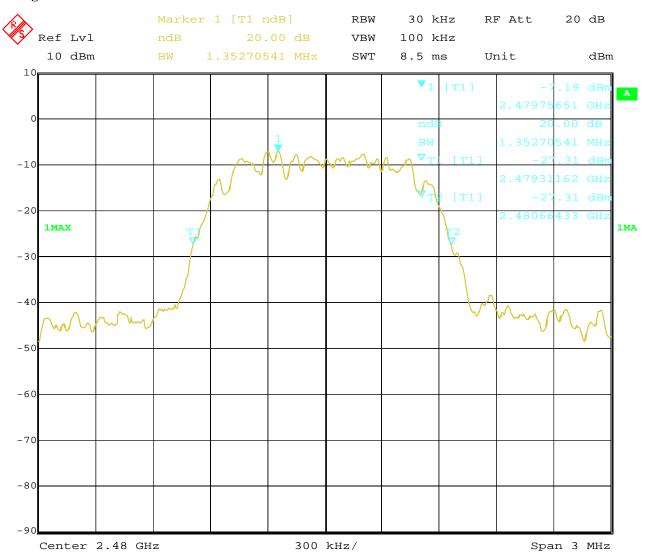
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Report No.: FCC1705088-02 Page 29 of 85

Date: 2017-05-23



3. High Channel



20.MAY.2017 15:12:45 Date:

Report No.: FCC1705088-02

Date: 2017-05-23



Page 30 of 85

Test Result

Type of Modulation: 8DPSK

EUT		Tablet PC		Tablet PC Model		A102
Mode	Ke	Keep Transmitting		Keep Transmitting Input Voltage		DC3.7V
Temperat	ure	e 24 deg. C,		56% RH		
Channel	Channel Frequency (MHz)	20 dB Bandwidth (kHz)	Maximum Limit (kHz)	Pass/ Fail		
Low	2402	1377		Pass		
Middle	2441	1383		Pass		
High	2480	1383		Pass		

Page 31 of 85

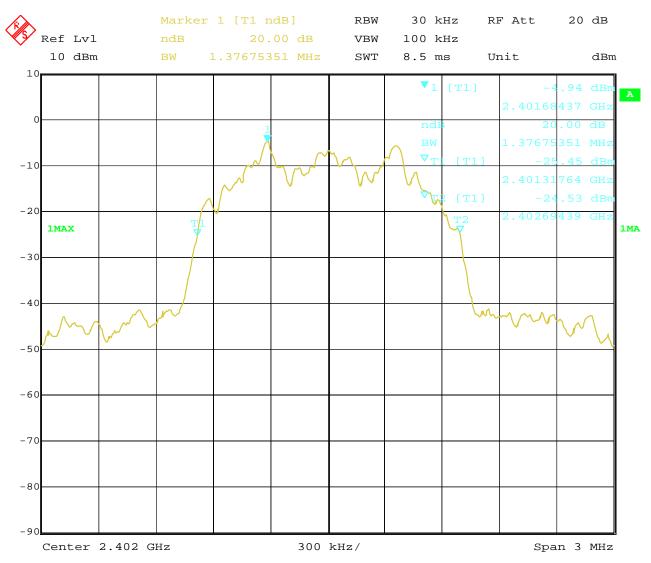
Report No.: FCC1705088-02

Date: 2017-05-23



Test Figure:

1. Condition: Low Channel

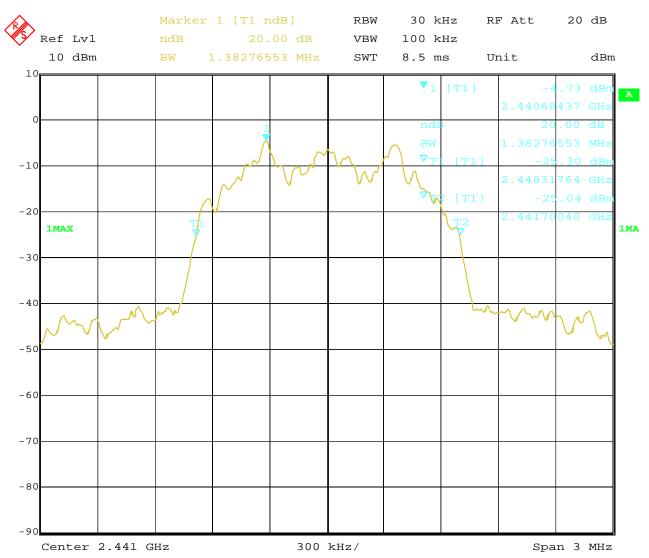


Date: 20.MAY.2017 15:09:10 Report No.: FCC1705088-02 Page 32 of 85

Date: 2017-05-23



2. Condition: Middle Channel



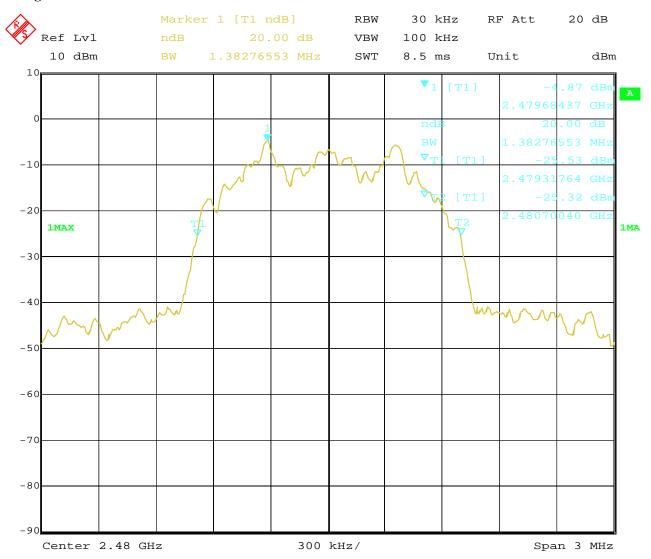
20.MAY.2017 15:06:23 Date:

Report No.: FCC1705088-02 Page 33 of 85

Date: 2017-05-23



3. High Channel



20.MAY.2017 15:02:32 Date:

Report No.: FCC1705088-02

Date: 2017-05-23



Page 34 of 85

8. Maximum Output Power

8.1 Regulation

According to §15.247(b)(1), for frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5MHz band:0.125 watts. According to §15.247(b)(4), the conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

8.2 Limits of Maximum Output Power

The Maximum Output Power Measurement is 30dBm.

8.3 Test Procedure

- 1. Check the calibration of the measuring instrument (spectrum analyzer) using either an internal calibrator or a known signal from an external generator.
- 2. Set the spectrum analyzer as follows: Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel; RBW > the 20 dB bandwidth of the emission being measured; VBW = RBW=3MHz; Sweep = 60s; Detector function = RMS; Trace = max hold
- 3. Measure the highest amplitude appearing on spectral display and record the level to calculate results.
- 4. Repeat above procedures until all frequencies measured were complete.

Page 35 of 85

Report No.: FCC1705088-02

Date: 2017-05-23



8.4Test Results

Type of Modulation: GFSK

EUT		Tablet PC		Model	A102
Mode	Ke	Keep Transmitting		ıt Voltage	DC3.7V
Temperature	e	24 deg. C, Hur		umidity	56% RH
Channel	Channel Frequency (MHz)	Max. Power Output (dBm)		Peak Power Limit (dBm)	Pass/ Fail
Low	2402	1.19		30	Pass
Middle	2441	1.33		30	Pass
High	2480	1.19		30	Pass

Note: 1. the result basic equation calculation as follow:

Max. Power Output = Power Reading + Cable loss + Attenuator

- 2. The worse case was recorded
- 3. Average power was measured

EUT		Tablet PC		Model		A102	
Mode	de Keep Transmitting Inpu		Input Voltage		DC3.7V		
Temperature	e	24 deg. C, Humidity		idity	56% RH		
Channel	Channel Frequency (MHz)		Max. Power Output (dBm	Limit		Pass/ Fail	
Low		2402	2.54		(dBm) 30	Pass	
Middle		2441	2.70		30	Pass	
High		2480	2.54		30	Pass	

Note: 1. the result basic equation calculation as follow:

Max. Power Output = Power Reading + Cable loss + Attenuator

- 2. The worse case was recorded
- 3. Average power was measured

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Page 36 of 85 Report No.: FCC1705088-02

Date: 2017-05-23



Type of Modulation: 8DPSK

EUT		Tablet PC N		el	A102
Mode]	Keep Transmitting Input		Voltage	DC3.7V
Temperature	e	24 deg. C, Humid		dity	56% RH
Channel	Channel Frequency (MHz)	Max. Power Output (dBm	Max. Power Output (dBm) AV		Pass/ Fail
Low	2402	2.92		30	Pass
Middle	2441	2.92		30	Pass
High	2480	2.70		30	Pass

Note: 1. the result basic equation calculation as follow:

Max. Power Output = Power Reading + Cable loss + Attenuator

- 2. The worse case was recorded
- 3. Average power was measured

Date: 2017-05-23



Page 37 of 85

9. Carrier Frequency Separation

9.1 Regulation

According to §15.247(a)(1), 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.

9.2 Limits of Carrier Frequency Separation

The Maximum Power Spectral Density Measurement is 25kHz or two-thirds of the 20dB bandwidth of the hopping Channel which is great.

9.3 Test Procedure

- 1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- 2. Set the spectrum analyzer as follows: Span = wide enough to capture the peaks of two adjacent channels: Resolution (or IF) Bandwidth (RBW) \geq 1% of the span; Video (or Average) Bandwidth (VBW) \geq RBW; Sweep = auto; Detector function = peak; Trace = max hold
- 3. Measure the separation between the peaks of the adjacent channels using the marker-delta function.
- 4. Repeat above procedures until all frequencies measured were complete.

Date: 2017-05-23

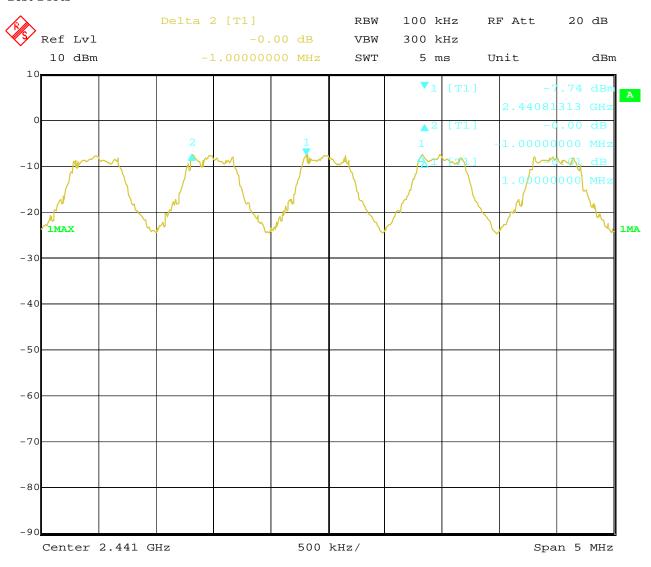


9.4Test Result

Type of Modulation: GFSK

EUT	Tablet PC N		Model		A102
Mode	Hopping On In		Input Voltage		DC3.7V
Temperature	24 deg. C,	24 deg. C,			56% RH
Carrier Frequency Separation			Limit		Pass/ Fail
	1.000MHz	≥ 25 kHz or 2/3 of the 20 dB bandwidth			Pass

Test Plots



19.MAY.2017 18:56:05 Date:

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Page 39 of 85

Report No.: FCC1705088-02

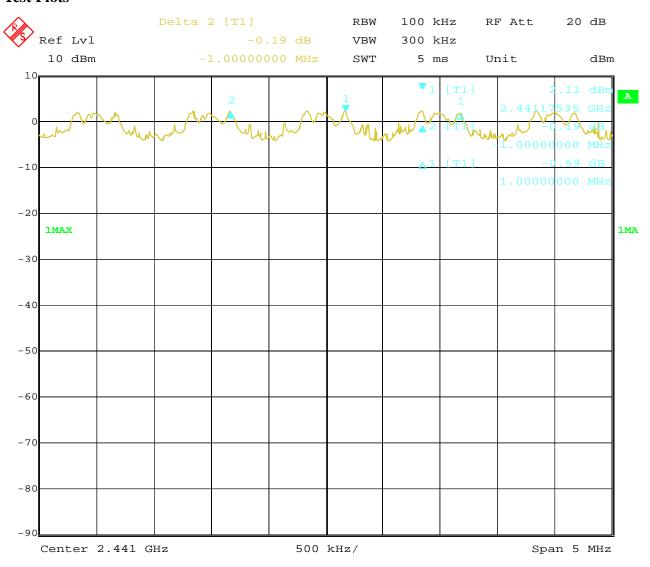
Date: 2017-05-23



Type of Modulation: Л/4DQPSK

EUT	Tablet PC		Model		A102
Mode	Hopping On		Input Voltage		DC3.7V
Temperature	24 deg. C,		Humidity		56% RH
Carrier Frequency Separation			Limit		Pass/ Fail
	1.000MHz		≥ 25 kHz or 2/3 of 20 dB bandwidth		Pass

Test Plots



20.MAY.2017 11:21:14

Page 40 of 85

Report No.: FCC1705088-02

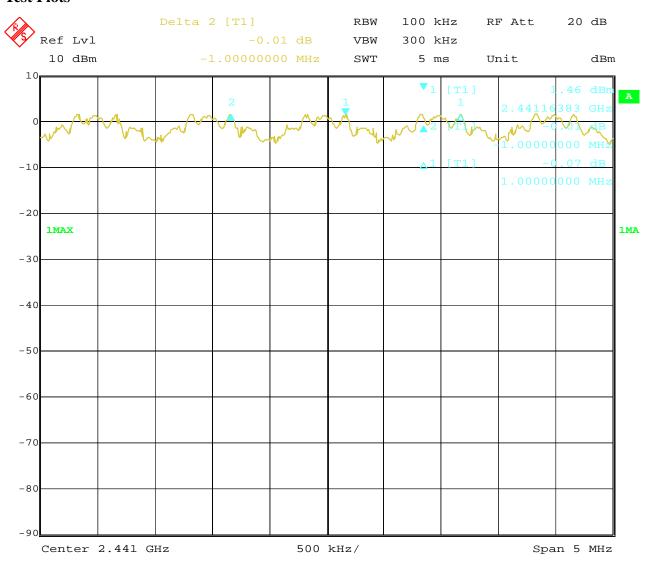
Date: 2017-05-23



Type of Modulation: 8DPSK

EUT	Tablet PC N		Model		A102
Mode	Hopping On In		Input Voltage		DC3.7V
Temperature	24 deg. C,	24 deg. C,		56% RH	
Carrier Frequency Separation		Limit		Pass/ Fail	
	1.000MHz	≥ 25 kHz or 2/3 of 20 dB bandwidth			Pass

Test Plots



20.MAY.2017 12:21:32 Date:

Date: 2017-05-23



Page 41 of 85

10. Number of Hopping Channels

10.1 Regulation

According to §15.247(a)(1)(iii), frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used. According to §15.247(b)(1), for frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.

10.2 Limits of Number of Hopping Channels

The frequency hopping systems in the 2400-2483.5MHz band shall use at least 15 channels.

10.3 Test Procedure

- 1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- 2. Set the spectrum analyzer as follows: Span = the frequency band of operation; RBW=100 kHz, VBW=300 kHz; Sweep = auto; Detector function = peak; Trace = max hold
- 3. Record the number of hopping channels.

Page 42 of 85

Report No.: FCC1705088-02

Date: 2017-05-23

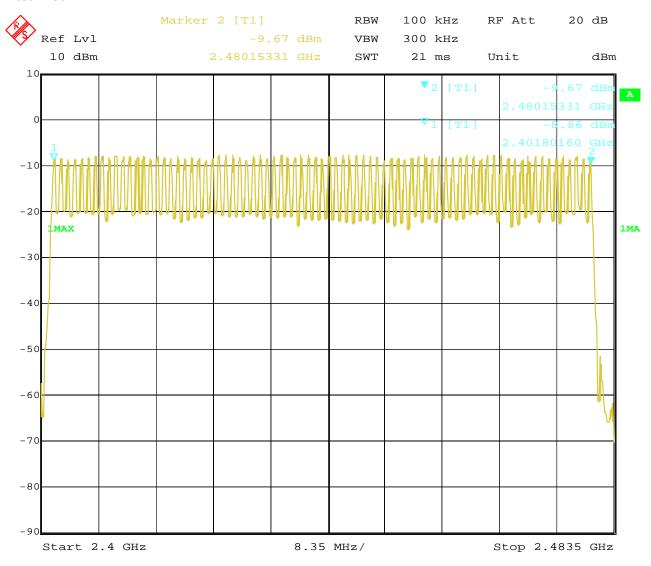


10.4Test Result

Type of Modulation: GFSK

EUT	Tablet PC		Model	A102	
Mode	Hopping On		Input Voltage	DC3.7V	
Temperature	24 deg. C,		Humidity	56% RH	
Operating Frequen	Operating Frequency Number of hopping channels		oing channels	Limit	Pass/ Fail
2402-2480MHz 79			≥ 15	Pass	

Test Plot



Date: 19.MAY.2017 18:49:33

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Page 43 of 85

Report No.: FCC1705088-02

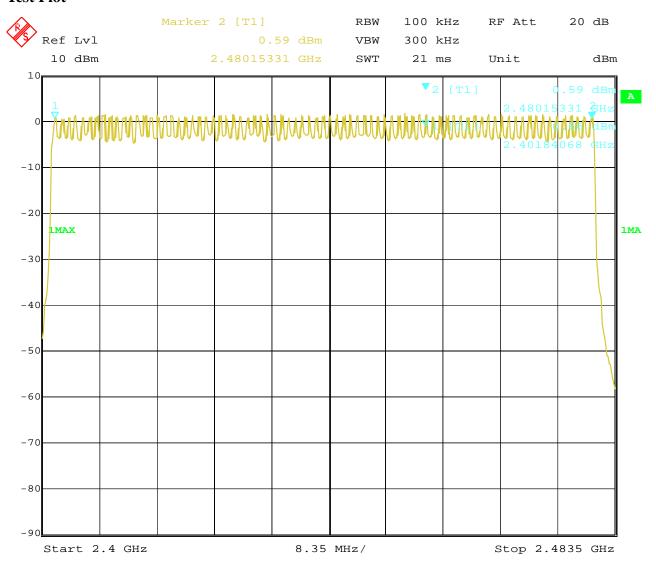
Date: 2017-05-23



Type of Modulation: $\sqrt{J/4DQPSK}$

EUT	Tablet PC		Model	el		A102	
Mode		Hopping On		Input Voltage		DC3.7V	
Temperature		24 deg. C,		dity		56% RH	
Operating Frequency Number of hop channels		Number of hopp channels	oing	Lin	nit	Pass/ Fail	
2402-2480MHz	79			≥ 15		Pass	

Test Plot



20.MAY.2017 11:31:38

Page 44 of 85

Report No.: FCC1705088-02

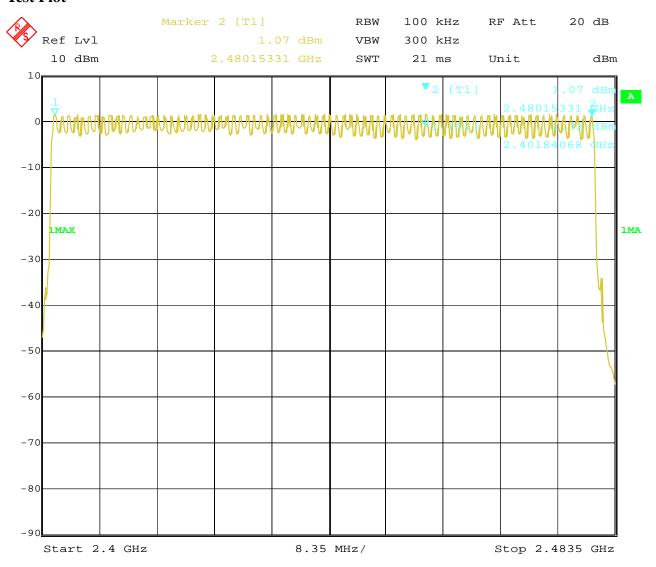
Date: 2017-05-23



Type of Modulation: 8DPSK

EUT	Tablet PC		Model	el		A102
Mode		Hopping On		oltage		DC3.7V
Temperature		24 deg. C,		ity		56% RH
Operating Frequency Number of hopp channels		oing	Liı	nit	Pass/ Fail	
2402-2480MHz	MHz 79			<u> </u>	15	Pass

Test Plot



20.MAY.2017 11:52:50 Date:

Date: 2017-05-23



Page 45 of 85

11. Time of Occupancy (Dwell Time)

11.1 Regulation

According to §15.247(a)(1)(iii), frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

11.2 Limits of Carrier Frequency Separation

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed

11.3 Test Procedure

- 1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- 2. Set the spectrum analyzer as follows: Span = zero span, centered on a hopping channel; RBW = 1 MHz; VBW \geq RBW; Sweep = as necessary to capture the entire dwell time per hopping channel; Detector function = peak; Trace = max hold
- 3. Measure the dwell time using the marker-delta function.
- 4. Repeat above procedures until all frequencies measured were complete.
- 5. Repeat this test for different modes of operation (e.g., data rate, modulation format, etc.), if applicable.

Report No.: FCC1705088-02 Page 46 of 85

Date: 2017-05-23



11.4 Test Result

Type of Modulation: GFSK

EUT	Tab	Tablet PC			A102		
Mode	Keep Tr	ansmitting	Input Voltage	D	OC3.7V		
Temperatur	re 24 d	leg. C,	Humidity	50	6% RH		
Channel	Reading	Hoping	g Rate	Actual	Limit		
	DH5						
High	2.91ms	266.667	7 hop/s	0.310s	0.4s		
			DH5				
Middle	2.91ms	266.667 hop/s		0.310s	0.4s		
DH5							
Low	2.93ms	266.667	7 hop/s	0.313s	0.4s		

Actual = Reading \times (Hopping rate / Number of channels) \times Test period, Test period = 0.4 [seconds / channel] \times 79 [channel] = 31.6 [seconds] NOTE: The EUT makes worst case 1600 hops per second or 1 time slot has a length of 625 μ s with 79 channels.

A DH5 Packet needs 5 time slot for transmitting and 1 time slot for receiving. Then the EUT makes worst case 266.667 hops per second with 79 channels.

A DH3 Packet needs 3 time slot for transmitting and 1 time slot for receiving. Then the EUT makes worst case 400 hops per second with 79 channels.

A DH1 Packet needs 1 time slot for transmitting and 1 time slot for receiving. Then the EUT makes worst case 800 hops per second with 79 channels.

Note: DH5 was the worst case.

Page 47 of 85

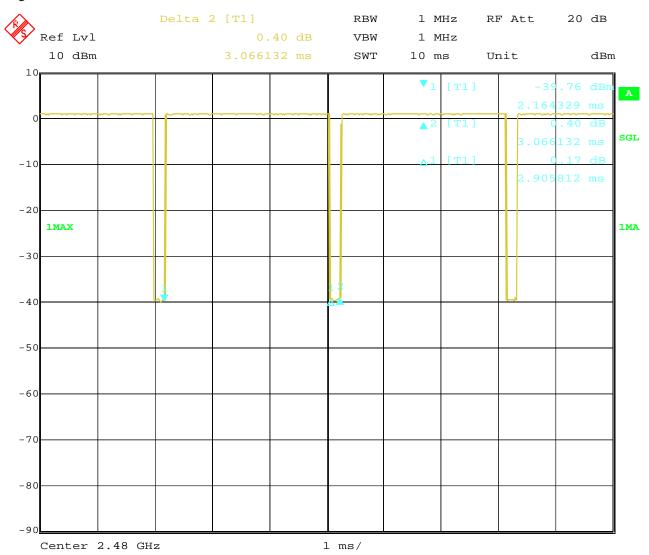
Report No.: FCC1705088-02

Date: 2017-05-23



Test Plots:

High Channel:



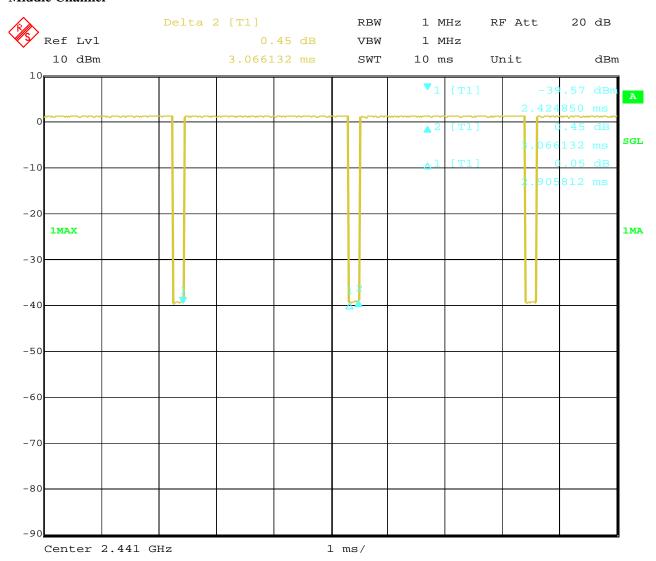
20.MAY.2017 15:54:27 Date:

Report No.: FCC1705088-02 Page 48 of 85

Date: 2017-05-23



Middle Channel



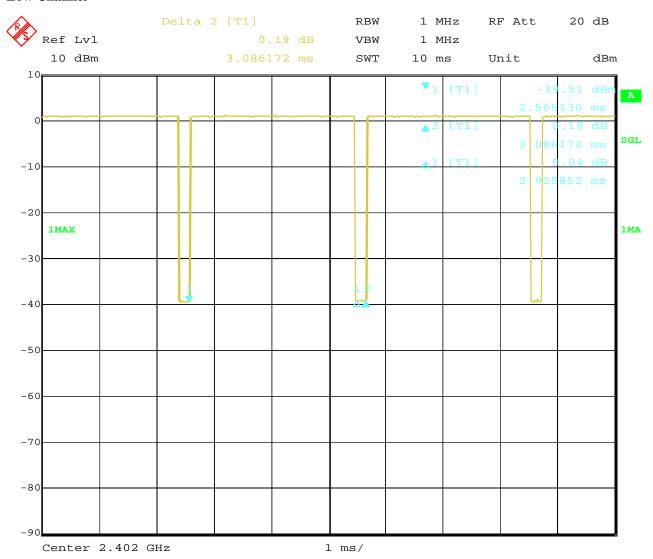
20.MAY.2017 15:55:06 Date:

Report No.: FCC1705088-02 Page 49 of 85

Date: 2017-05-23



Low Channel



20.MAY.2017 15:55:37 Date:

Date: 2017-05-23



Page 50 of 85

Test Result

Type of Modulation: $\sqrt{1/4}$ DQPSK

EUT	Tab	Tablet PC			A102
Mode	Keep Tr	ansmitting	Input Voltage	I	DC3.7V
Temperatur	re 24 d	leg. C,	Humidity	5	56% RH
Channel	Reading	Hoping	g Rate	Actual	Limit
			2DH5		
High	2.93ms	266.66	7 hop/s	0.313s	0.4s
			2DH5		
Middle	2.93ms	266.667 hop/s		0.313s	0.4s
2DH5					
Low	2.93ms	266.66	7 hop/s	0.313s	0.4s

Actual = Reading \times (Hopping rate / Number of channels) \times Test period, Test period = 0.4 [seconds / channel] \times 79 [channel] = 31.6 [seconds] NOTE: The EUT makes worst case 1600 hops per second or 1 time slot has a length of 625 μ s with 79 channels.

A DH5 Packet needs 5 time slot for transmitting and 1 time slot for receiving. Then the EUT makes worst case 266.667 hops per second with 79 channels.

A DH3 Packet needs 3 time slot for transmitting and 1 time slot for receiving. Then the EUT makes worst case 400 hops per second with 79 channels.

A DH1 Packet needs 1 time slot for transmitting and 1 time slot for receiving. Then the EUT makes worst case 800 hops per second with 79 channels.

Note: 2DH5 was the worst case.

Page 51 of 85

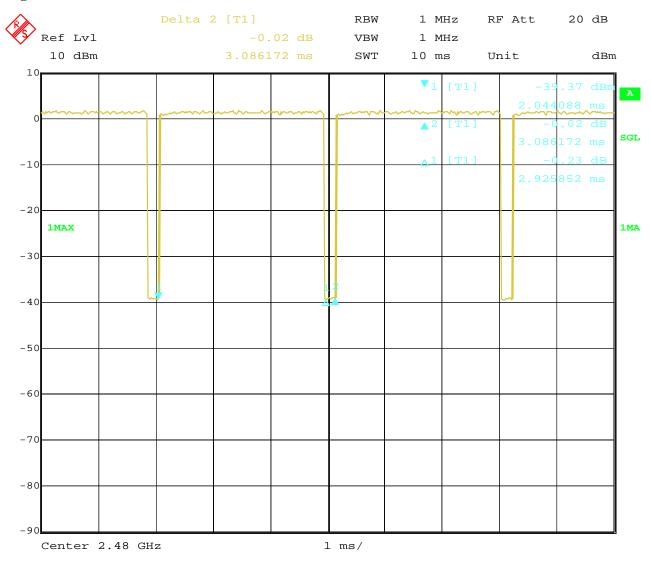
Report No.: FCC1705088-02

Date: 2017-05-23



Test Plots:

High Channel



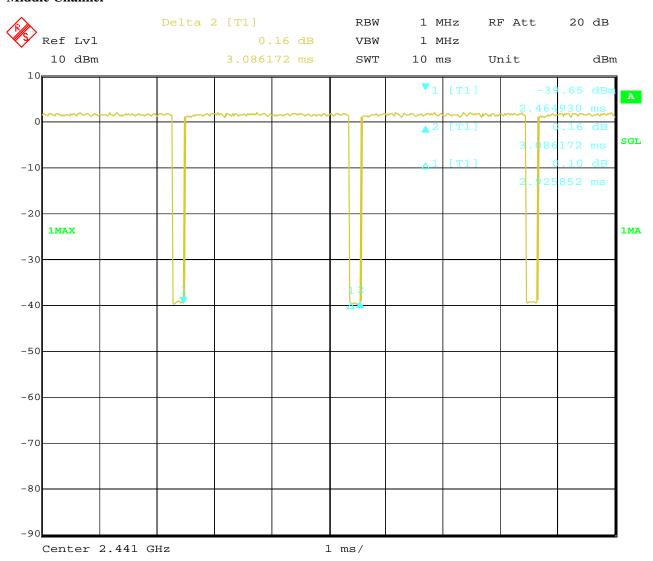
Date: 20.MAY.2017 15:52:36

Page 52 of 85 Report No.: FCC1705088-02

Date: 2017-05-23



Middle Channel



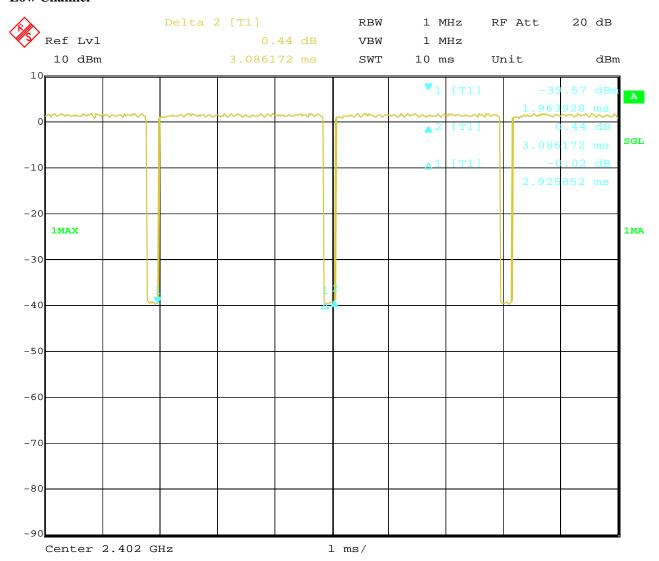
20.MAY.2017 15:51:59 Date:

Page 53 of 85 Report No.: FCC1705088-02

Date: 2017-05-23



Low Channel



20.MAY.2017 15:50:14 Date:

Report No.: FCC1705088-02 Page 54 of 85

Date: 2017-05-23



Type of Modulation: 8DPSK

EUT	Tab	let PC	Model		A102			
Mode	Keep Tra	ansmitting	Input Voltage	I	DC3.7V			
Temperatur	re 24 d	eg. C,	Humidity	5	6% RH			
Channel	Reading	Hoping	g Rate	Actual	Limit			
	3DH5							
High	2.93ms	266.667	7 hop/s	0.313s	0.4s			
			3DH5					
Middle	2.93ms	266.667 hop/s		0.313s	0.4s			
	3DH5							
Low	2.93ms	266.667	7 hop/s	0.313s	0.4s			

Actual = Reading \times (Hopping rate / Number of channels) \times Test period, Test period = 0.4 [seconds / channel] \times 79 [channel] = 31.6 [seconds] NOTE: The EUT makes worst case 1600 hops per second or 1 time slot has a length of 625 μ s with 79 channels.

A DH5 Packet needs 5 time slot for transmitting and 1 time slot for receiving. Then the EUT makes worst case 266.667 hops per second with 79 channels.

A DH3 Packet needs 3 time slot for transmitting and 1 time slot for receiving. Then the EUT makes worst case 400 hops per second with 79 channels.

A DH1 Packet needs 1 time slot for transmitting and 1 time slot for receiving. Then the EUT makes worst case 800 hops per second with 79 channels.

Note: 3DH5 was the worst case.

Page 55 of 85

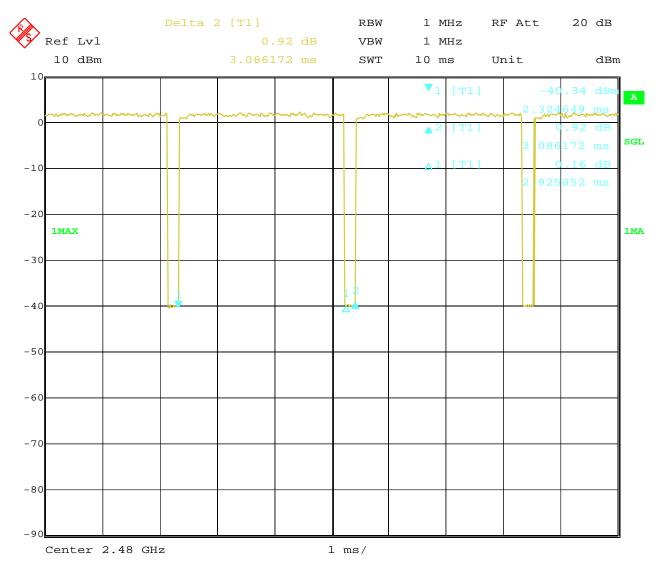
Report No.: FCC1705088-02

Date: 2017-05-23



Test Plots:

High Channel

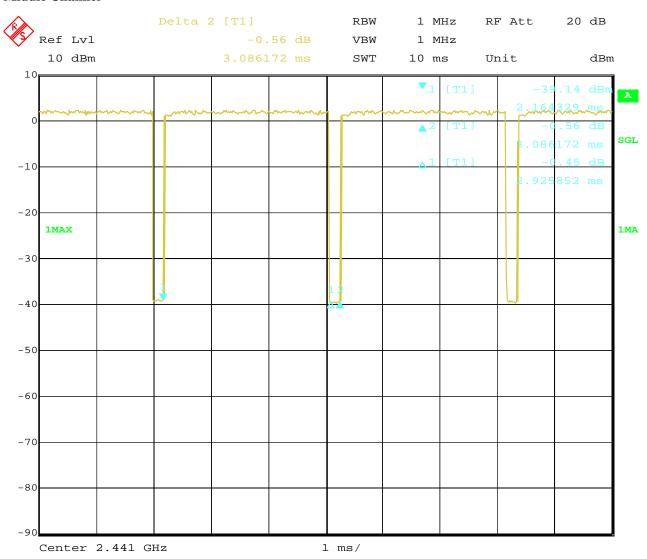


Date: 20.MAY.2017 15:46:47 Report No.: FCC1705088-02 Page 56 of 85

Date: 2017-05-23



Middle Channel



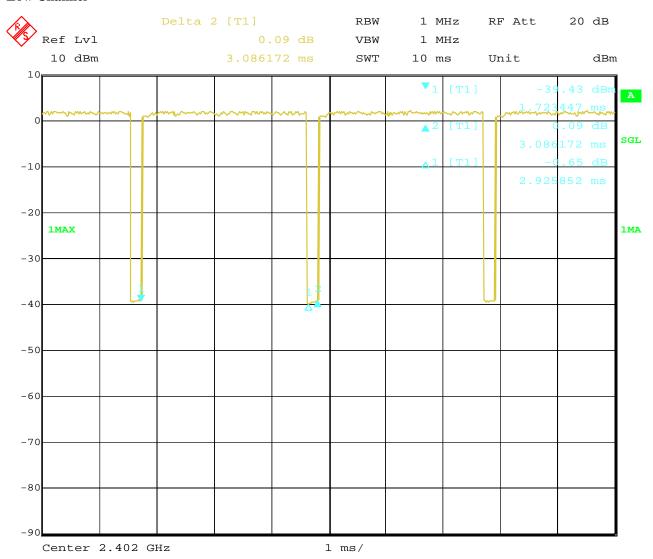
20.MAY.2017 15:47:28 Date:

Page 57 of 85 Report No.: FCC1705088-02

Date: 2017-05-23



Low Channel



20.MAY.2017 15:48:15 Date:

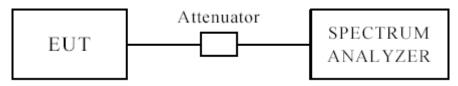
Date: 2017-05-23



Page 58 of 85

12 Out of Band Measurement

12.1 Test Setup



The restricted band requirement based on radiated emission test; please see the clause 6 for the test setup

12.2 Limits of Out of Band Emissions Measurement

- 1. Below –20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).
- 2. Fall in the restricted bands listed in section 15.205. The maximum permitted average field strength is listed in section 15.209.

12.3 Test Procedure

For signals in the restricted bands above and below the 2.4-2.483GHz allocated band a measurement was made of radiated emission test. Peak values with RBW=VBW=1MHz and PK detector.

For bandage test, the spectrum set as follows: RBW=100kHz, VBW=300 kHz. A conducted measurement used

- Note: 1. For band-edge measurement, the frequency from 30MHz-25GHz was tested. And It met the FCC rule.
- 2. This is a handhold device. The radiated emissions should be tested under 3-axes position (Lying, Side, and Stand), After pre-test. It was found that the worse radiated emission was get at the lying position.

Page 59 of 85

Report No.: FCC1705088-02

Date: 2017-05-23

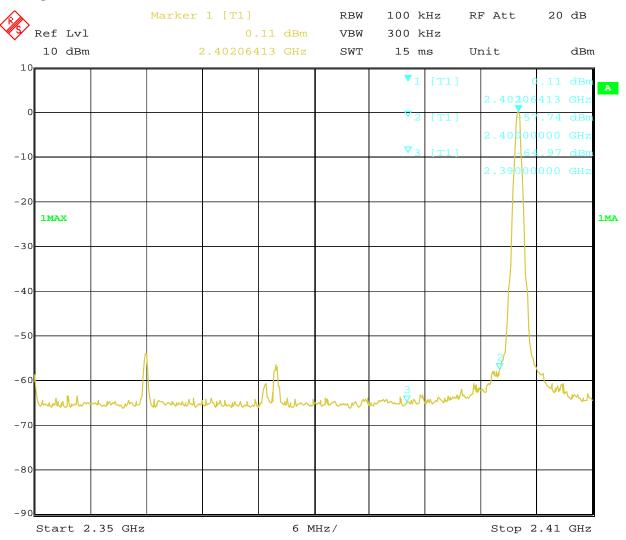


Type of Modulation: GFSK

Out of Band Test Result 12.4

Product:	Tablet PC		Test Mode:	Low Channel
Mode	Kee	ping Transmitting	Input Voltage	DC3.7V
Temperature		24 deg. C	Humidity	56% RH
Test Result:		Pass		PK
The Max. FS in	PK (dBµV/m)	44.9		$74(dB\mu V/m)$
Restrict Band	$AV(dB\mu V/m)$	AV(dBμV/m)		$54(dB\mu V/m)$
2390MHz				

Test Figure:



20.MAY.2017 13:00:13 Date:

Page 60 of 85

Report No.: FCC1705088-02

Date: 2017-05-23

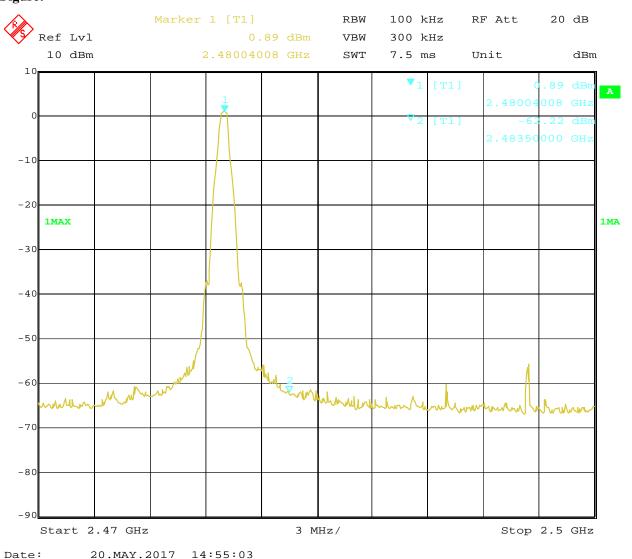


Type of Modulation: GFSK

12.4 Out of Band Test Result

Product:	Tablet PC		Test Mode:	High Channel
Mode	Keeping Transmitting		Input Voltage	DC3.7V
Temperature		24 deg. C,	Humidity	56% RH
Test Result:		Pass		PK
The Max. FS in	PK (dBμV/m)	42.9		$74(dB\mu V/m)$
Restrict Band	AV(dBμV/m)		Limit	54(dBμV/m)
2483.5MHz				

Test Figure:



Page 61 of 85

Report No.: FCC1705088-02

Date: 2017-05-23

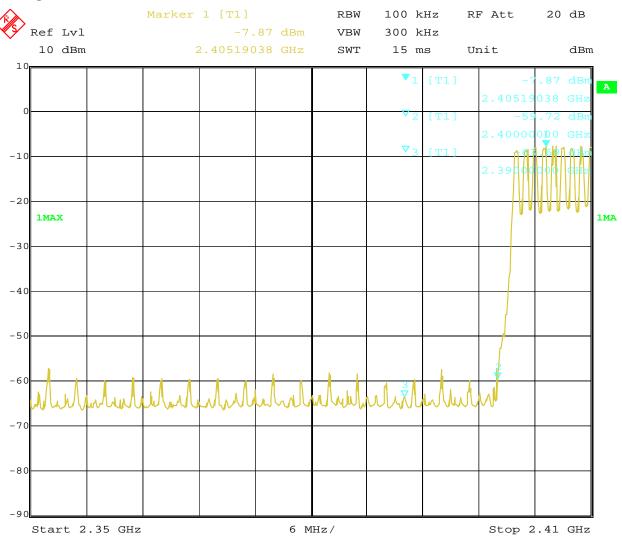


Type of Modulation: GFSK

Out of Band Test Result

Product:		Tablet PC	Test Mode:	Hopping mode
Mode	Hopping On		Input Voltage	DC3.7V
Temperature		24 deg. C,	Humidity	56% RH
Test Result:		Pass	Detector	PK
The Max. FS in	PK (dBμV/m)	43.9		$74(dB\mu V/m)$
Restrict Band	AV(dBμV/m)		Limit	$54(dB\mu V/m)$
2390MHz				

Test Figure:



20.MAY.2017 Date: 12:46:38

Page 62 of 85

Report No.: FCC1705088-02

Date: 2017-05-23

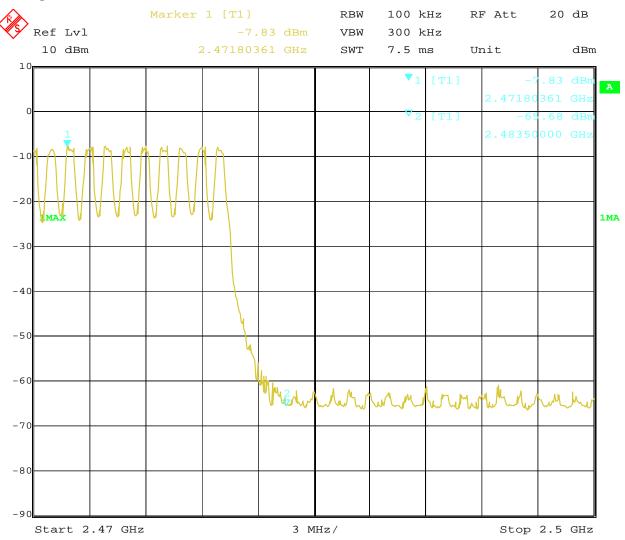


Type of Modulation: GFSK

Out of Band Test Result

Product:	Tablet PC		Test Mode:	Hopping mode
Mode	Hopping On		Input Voltage	DC3.7V
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
The Max. FS in	PK (dBμV/m) 42.6			$74(dB\mu V/m)$
Restrict Band	AV(dBμV/m)		Limit	$54(dB\mu V/m)$
2483.5MHz				

Test Figure:



20.MAY.2017 12:41:26 Date:

Page 63 of 85

Report No.: FCC1705088-02

Date: 2017-05-23

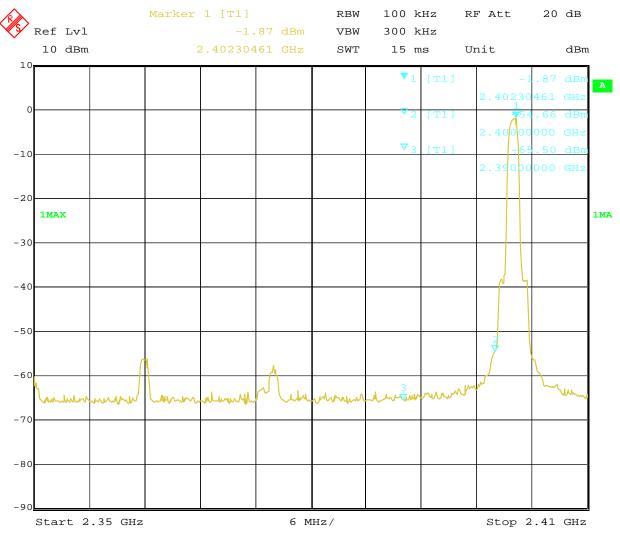


Type of Modulation: Л/4DQPSK

12.4 Out of Band Test Result

Product:	Tablet PC		Test Mode:	Low Channel
Mode	Keeping Transmitting		Input Voltage	DC3.7V
Temperature	24 deg. C		Humidity	56% RH
Test Result:	Pass		Detector	PK
The Max. FS in	PK (dBμV/m) 45.3			$74(dB\mu V/m)$
Restrict Band	AV(dBμV/m)		Limit	54(dBμV/m)
2390MHz				

Test Figure:



Date: 20.MAY.2017 12:57:47

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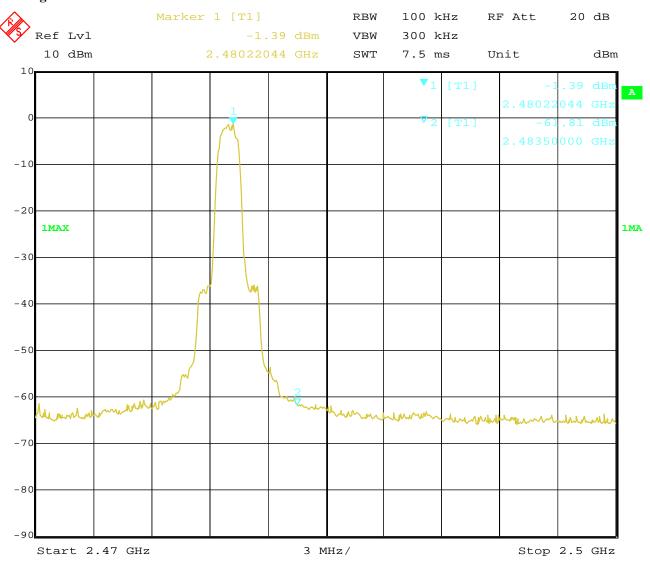


Type of Modulation: $\sqrt{1/4}$ DQPSK

12.4 Out of Band Test Result

Product:	Tablet PC		Test Mode:	High Channel
Mode	Keeping Transmitting		Input Voltage	DC3.7V
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
The Max. FS in	PK (dBμV/m) 43.4			74(dBµV/m)
Restrict Band	AV(dBμV/m)		Limit	54(dBµV/m)
2483.5MHz				

Test Figure:



Date: 20.MAY.2017 14:58:27

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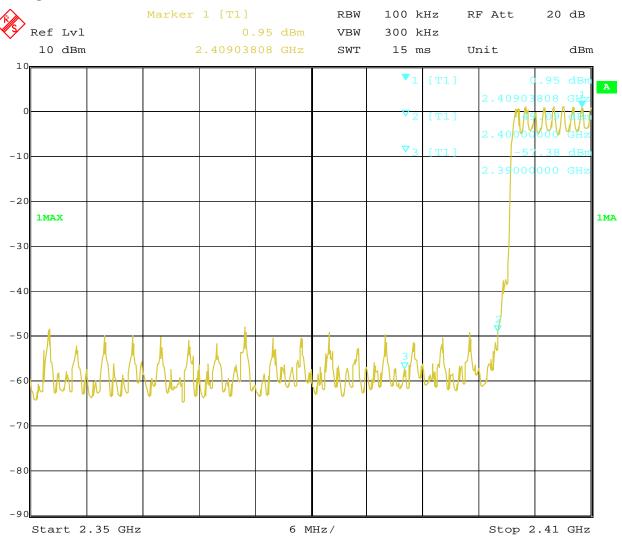


Type of Modulation: Л/4DQPSK

Out of Band Test Result

Product:		Tablet PC	Test Mode:	Hopping mode
Mode	Hopping On		Input Voltage	DC3.7V
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
The Max. FS in	PK (dBμV/m) 45.5			$74(dB\mu V/m)$
Restrict Band	AV(dBμV/m)		Limit	54(dBμV/m)
2390MHz				

Test Figure:



20.MAY.2017 12:50:52 Date:

Date: 2017-05-23

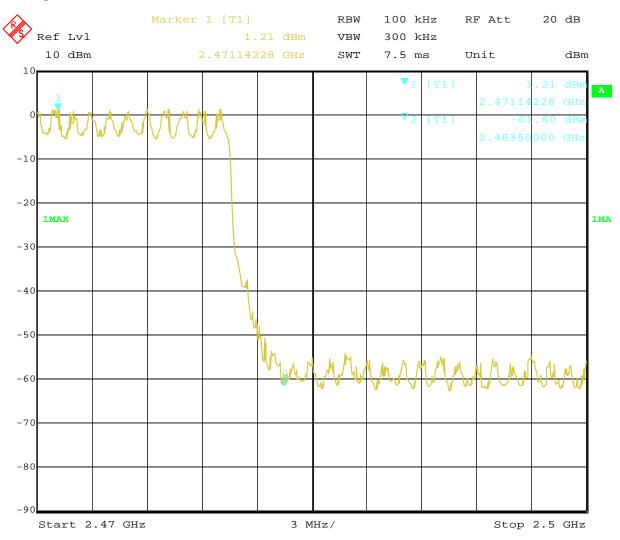


Type of Modulation: $\sqrt{1/4}$ DQPSK

12.4 Out of Band Test Result

Product:	Tablet PC		Test Mode:	Hopping mode
Mode	Hopping On I		Input Voltage	DC3.7V
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
The Max. FS in	PK (dBμV/m) 43.7			74(dBμV/m)
Restrict Band	AV(dBμV/m)		Limit	54(dBµV/m)
2483.5MHz				

Test Figure:



Date: 20.MAY.2017 12:32:06

Page 67 of 85

Report No.: FCC1705088-02

Date: 2017-05-23

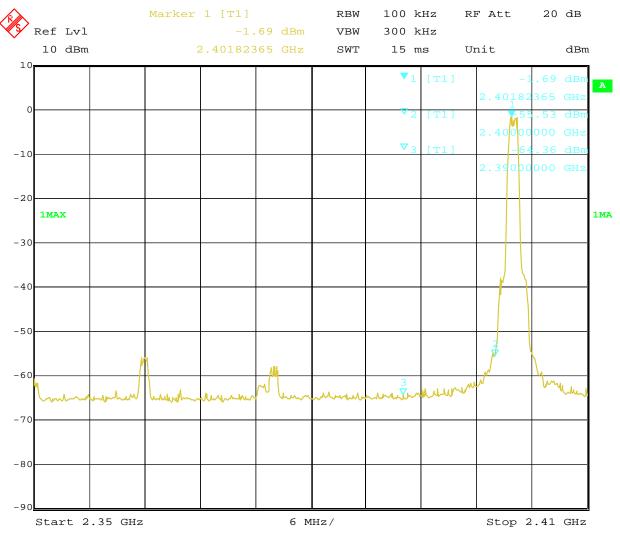


Type of Modulation: 8DPSK

12.4 Out of Band Test Result

Product:	Tablet PC		Test Mode:	Low Channel
Mode	Keeping Transmitting		Input Voltage	DC3.7V
Temperature	24 deg. C		Humidity	56% RH
Test Result:	Pass		Detector	PK
The Max. FS in	PK (dBμV/m) 45.1			74(dBµV/m)
Restrict Band	AV(dBμV/m)		Limit	54(dBµV/m)
2390MHz				

Test Figure:



Date: 20.MAY.2017 12:56:12

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Page 68 of 85

Report No.: FCC1705088-02

Date: 2017-05-23

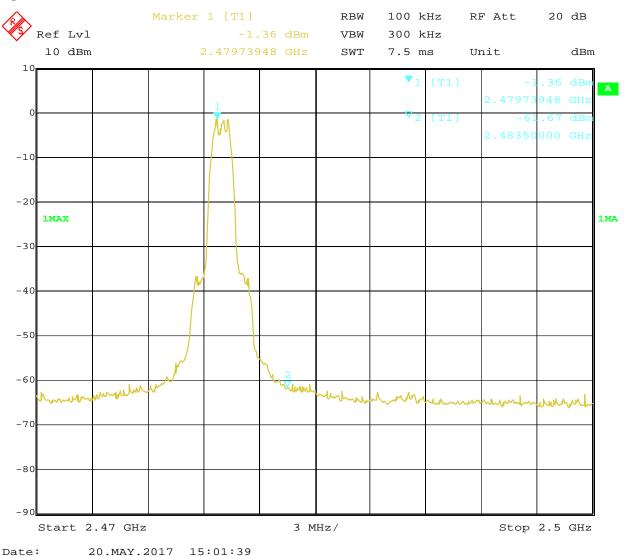


Type of Modulation: 8DPSK

12.4 Out of Band Test Result

Product:	Tablet PC		Test Mode:	High Channel
Mode	Keeping Transmitting		Input Voltage	DC3.7V
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
The Max. FS in	PK (dBμV/m) 43.0			$74(dB\mu V/m)$
Restrict Band	AV(dBμV/m)		Limit	54(dBμV/m)
2483.5MHz				

Test Figure:



Page 69 of 85

Report No.: FCC1705088-02

Date: 2017-05-23

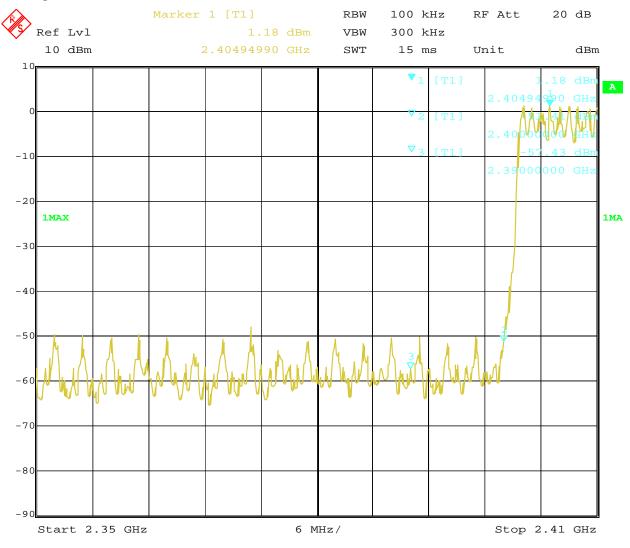


Type of Modulation: 8DPSK

Out of Band Test Result

Product:		Tablet PC	Test Mode:	Hopping mode
Mode	Hopping On		Input Voltage	DC3.7V
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
The Max. FS in	PK (dBμV/m) 46.2			$74(dB\mu V/m)$
Restrict Band	AV(dBμV/m)		Limit	54(dBμV/m)
2390MHz				

Test Figure:



20.MAY.2017 Date: 12:53:11

Page 70 of 85

Report No.: FCC1705088-02

Date: 2017-05-23

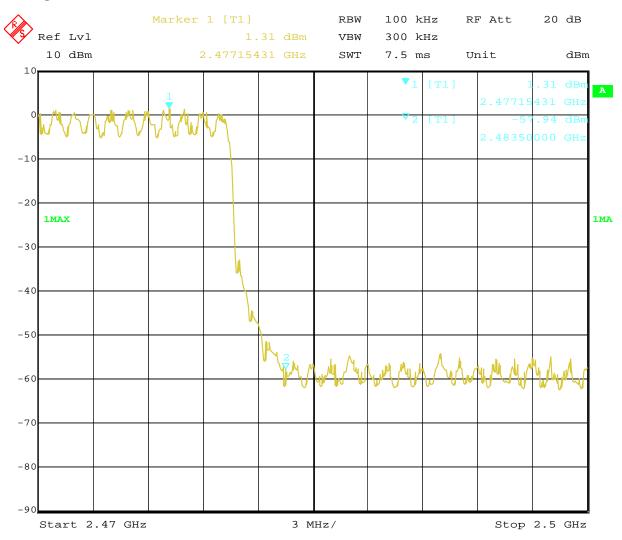


Type of Modulation: 8DPSK

Out of Band Test Result

Product:	Tablet PC		Test Mode:	Hopping mode
Mode	Hopping On I		Input Voltage	DC3.7V
Temperature	** •		Humidity	56% RH
Test Result:	Pass		Detector	PK
The Max. FS in	PK (dBμV/m) 43.6			74(dBμV/m)
Restrict Band	AV(dBμV/m)		Limit	54(dBµV/m)
2483.5MHz				

Test Figure:



Date: 20.MAY.2017 12:26:46

Date: 2017-05-23



Page 71 of 85

13.0 Antenna Requirement

13.1 Standard Applicable

For intentional device, according to FCC 47 CFR Section 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.

And according to FCC 47 CFR Section 15.247 (b), if transmitter antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the mount in dB that the directional gain of the antenna exceeds 6 dBi.

13.2 Antenna Connected constructions

Integral antenna used. The maximum Gain of the antennas is 3.42dBi.

Report No.: FCC1705088-02 Page 72 of 85

Date: 2017-05-23



14.0 FCC ID Label

FCC ID: RBD-A102

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The label must not be a stick-on paper label. The label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

Mark Location:



Page 73 of 85

Report No.: FCC1705088-02

Date: 2017-05-23



15.0 Photo of testing

Conducted Emission Test Setup:

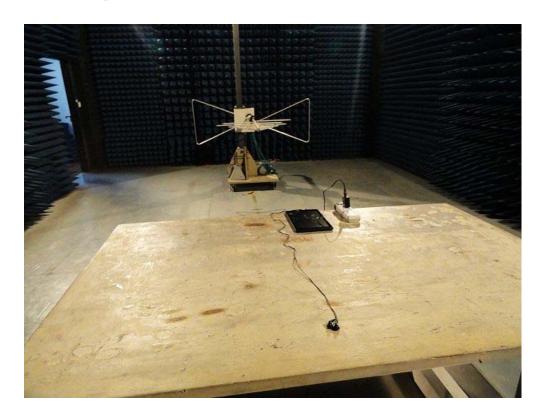


Report No.: FCC1705088-02

Date: 2017-05-23



Radiated Emission Test Setup:





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Report No.: FCC1705088-02

Date: 2017-05-23



Photographs - EUT

Outside view





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Page 76 of 85

Report No.: FCC1705088-02

Date: 2017-05-23



Outside view





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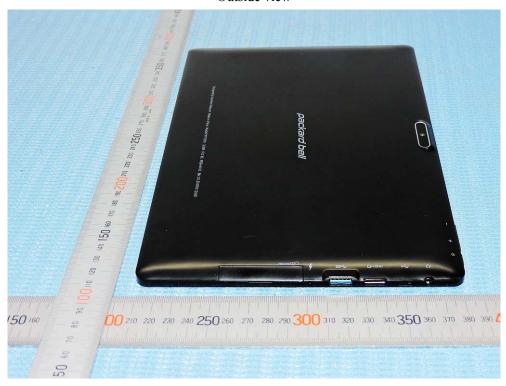
Page 77 of 85

Report No.: FCC1705088-02

Date: 2017-05-23



Outside view





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Page 78 of 85

Report No.: FCC1705088-02

Date: 2017-05-23



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Page 79 of 85

Report No.: FCC1705088-02

Date: 2017-05-23



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Page 80 of 85

Report No.: FCC1705088-02

Date: 2017-05-23



Inside view





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Page 81 of 85

Report No.: FCC1705088-02

Date: 2017-05-23



Inside view





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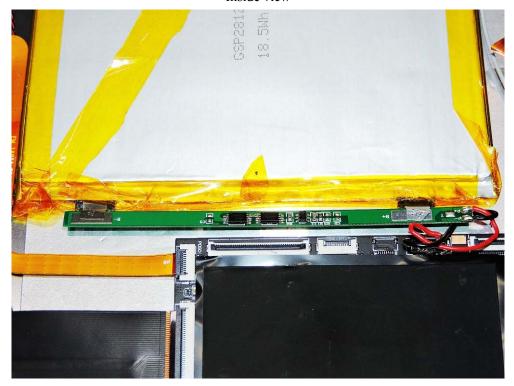
Page 82 of 85

Report No.: FCC1705088-02

Date: 2017-05-23



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Page 83 of 85

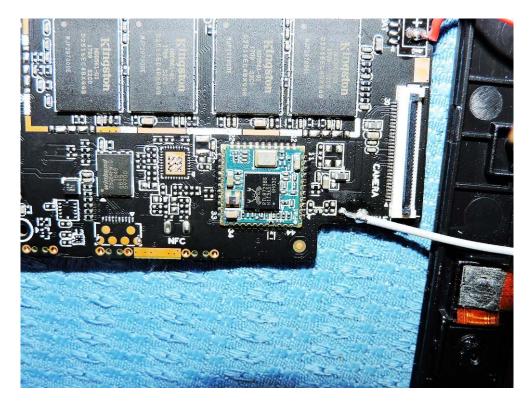
Report No.: FCC1705088-02

Date: 2017-05-23



Inside view





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Page 84 of 85

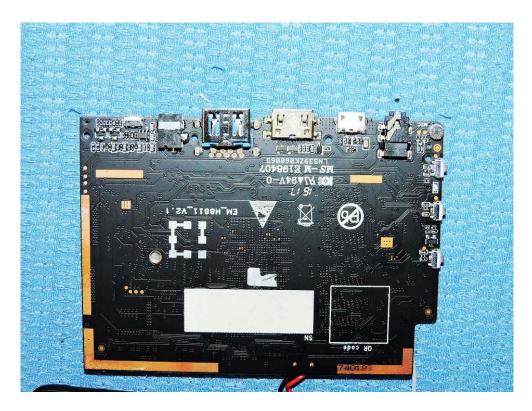
Report No.: FCC1705088-02

Date: 2017-05-23



Inside view





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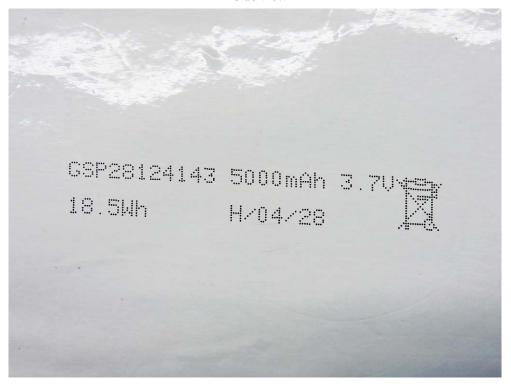
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Report No.: FCC1705088-02 Page 85 of 85

Date: 2017-05-23



Inside view



End of the report