



## TEST REPORT

Report No. : AJ010764-001 Date : 2007 May 15

Application No. : LJ203504(3)

Client : Janam Technologies LLC  
40 Goose Hill Road, Cold Spring Harbor,  
New York 11724, United States

Sample Description : One(1) submitted sample(s) stated to be Janam XP30W  
of Model No. XP30W-1P, XP30W-1N, XM60W-1P and XM60W-1N  
Rating : 1 x 3.7 V rechargeable battery  
: AC 100V ~ 240V to DC 5V adaptor  
No. of submitted sample : Two (2) piece(s) \*\*\*

Date Received : 2007 February 26

Test Period : 2007 February 26 – 2007 April 30

Test Requested : FCC Part 15 Certification.

Test Method : 47 CFR Part 15 (10-1-05 Edition)  
ANSI C63.4 – 2003

Test Result : See attached sheet(s) from page 2 to 18.

Conclusion : The submitted sample was found to comply with requirement of FCC Part 15  
Subpart C and Subpart B.

Remark : All four models are the same in circuitry and components; and therefore model  
XP30W-1P has been chosen to be the representative of the test sample.

*For and on behalf of*  
CMA Industrial Development Foundation Limited

Authorized Signature : \_\_\_\_\_

Danny Chui  
Deputy Manager - EL. Division



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### **1 General Information**

#### **1.1 General Description**

The equipment under test (EUT) is a PDA for Janam XP30W. The EUT is powered by 1 x 3.7V rechargeable battery. There is built-in 320MB memory, Barcode Scanner, Bluetooth and Wi-Fi features. All application program including Bluetooth and Wi-Fi transmission is single task operation. The transmission for Bluetooth and Wi-Fi can not operate simultaneously.

The brief circuit description is saved with filename: OpDes.pdf



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### **1.2 Location of the test site**

Radiated emissions measurements are investigated and taken pursuant to the procedures of ANSI C63.4 – 2003. A Semi-Anechoic Chamber Testing Site is set up for investigation and located at:

Ground Floor, Yan Hing Centre,  
9 – 13 Wong Chuk Yeung Street,  
Fo Tan, Shatin,  
New Territories,  
Hong Kong.

Conducted emissions measurements are investigated and also taken pursuant to the procedures of ANSI C63.4 – 2003. A shielded room is located at :

Ground Floor, Yan Hing Centre,  
9 – 13 Wong Chuk Yeung Street,  
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### 1.3 List of measuring equipment

Equipment	Manufacturer	Model No.	Serial No.
EMI Test Receiver	R&S	ESCI	100152
Spectrum Analyzer	R&S	FSP30	100628
Broadband Antenna	Schaffner	CBL6112B	2692
Horn Antenna	EMCO	3116	2616
Horn Antenna	Schwarzbeck	9120D	9120D-531
Pre-Amplifier	Schwarzbeck	9718	9718-119
EMI Test Receiver	R&S	ESCS30	100001
LISN	R&S	ESH3-Z5	100038
LISN	R&S	ESH3-Z5	100010



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### **2 Description of the radiated emission test**

#### **2.1 Test Procedure**

Radiated emissions measurements are investigated and taken pursuant to the procedures of ANSI C63.4 – 2003.

The equipment under test (EUT) was placed on a non-conductive turntable with dimensions of 1.5m x 1m and 0.8m high above the ground. 3m from the EUT, a broadband antenna mounting on the mast received the signal strength. The turntable was rotated to maximize the emission level. The antenna was then moving along the mast from 1m up to 4m until no more higher value was found. Both horizontal and vertical polarization of the antenna were placed and investigated.

For below 30MHz, a loop antenna with its vertical plane is placed 3m from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. And the centre of the loop shall be 1 m above the ground.

The device was rotated through three orthogonal axes to determine which attitude and configuration produce the highest emission during measurement.

The antenna output terminal was connected to spectrum directly for conducted output power measurement.

#### **2.2 Test Result**

All other measurements data were below the limits. Thus, those highest emission data were presented in table 2.3 and 2.4.

Peak Detector data was measured unless otherwise stated.

“#” means emissions appearing within the restricted bands shall follow the requirement of section 15.205.

It was found that the EUT meet the FCC requirement.



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### 2.3 Radiated Emission Measurement Data

**Radiated Emission**  
**pursuant to**  
**the requirement of FCC part 15 subpart B**

Operation Mode: Barcode Scanning with PC connection

Frequency (MHz)	Polarity (H/V)	Reading at 3m (dB $\mu$ V/m)	Antenna and Cable factor	Field Strength at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
45.811	V	17.6	13.0	30.6	40.0	-9.4
395.230	V	18.6	14.9	33.5	46.0	-12.5
468.520	H	18.9	17.9	36.8	46.0	-9.2
660.745	H	21.5	21.2	42.7	46.0	-3.3
664.120	V	16.7	21.2	37.9	46.0	-8.1



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**Radiated Emission**  
**pursuant to**  
**the requirement of FCC part 15 subpart C**

Operation Mode: Bluetooth CH00

Frequency (MHz)	Polarity (H/V)	Reading at 3m (dB $\mu$ V/m)	Antenna and Cable factor (with 35dB Pre-amplify)	Field Strength at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
2401.981	V	85.1	0.2	85.3	N/A	N/A
# 4803.938	V	31.7	7.1	38.8	54.0	-15.2

Operation Mode: Bluetooth CH39

Frequency (MHz)	Polarity (H/V)	Reading at 3m (dB $\mu$ V/m)	Antenna and Cable factor (with 35dB Pre-amplify)	Field Strength at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
2440.963	H	83.7	0.2	83.9	N/A	N/A
#4881.941	V	29.7	7.1	36.8	54.0	-17.2
#7322.918	H	20.1	12.1	32.2	54.0	-21.8

Operation Mode: Bluetooth CH78

Frequency (MHz)	Polarity (H/V)	Reading at 3m (dB $\mu$ V/m)	Antenna and Cable factor (with 35dB Pre-amplify)	Field Strength at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
2479.958	H	85.6	0.2	85.8	N/A	N/A
#4959.983	H	32.0	7.1	39.1	54.0	-14.9
#7439.888	H	22.0	12.1	34.1	54.0	-19.9

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Operation Mode: Wi-Fi CH01

Frequency (MHz)	Polarity (H/V)	Reading at 3m (dB $\mu$ V/m)	Antenna and Cable factor	Field Strength at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
2412.000	V	104.9	0.2	105.1	N/A	N/A
# 4823.960	V	45.4	7.1	52.5	54.0	-1.5

Operation Mode: Wi-Fi CH06

Frequency (MHz)	Polarity (H/V)	Reading at 3m (dB $\mu$ V/m)	Antenna and Cable factor	Field Strength at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
2437.020	V	106.6	0.2	106.8	N/A	N/A
# 4874.080	V	45.2	7.1	52.3	54.0	-1.7
# 7311.020	V	35.1	12.1	47.2	54.0	-6.8

Operation Mode: Wi-Fi CH11

Frequency (MHz)	Polarity (H/V)	Reading at 3m (dB $\mu$ V/m)	Antenna and Cable factor	Field Strength at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
2462.000	V	104.8	0.2	105.0	N/A	N/A
# 4924.000	V	43.9	7.1	51.0	54.0	-3.0
# 7386.180	V	29.9	12.1	42.0	54.0	-12.0



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### 2.4 Conducted Emission Measurement Data

**Conducted Emission**  
**pursuant to**  
**the requirement of FCC part 15 subpart C**

Operation Mode: Bluetooth CH00

Transmission Power

Frequency (MHz)	Reading (dB $\mu$ V)	Reading ( $\mu$ W)	Limit (W)	Margin (W)
2401.980	97.3	104.430	1.0	-0.999

Spurious Emission

Frequency (MHz)	Measured Field Strength (dB $\mu$ V)	Limit (20dB $\mu$ V below Carrier)	Margin (dB)
4803.980	43.6	77.3	-33.7
7205.940	45.6	77.3	-31.7



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Operation Mode: Bluetooth CH39

### Transmission Power

Frequency (MHz)	Reading (dB $\mu$ V)	Reading ( $\mu$ W)	Limit (W)	Margin (W)
2440.940	97.6	112.199	1.0	-0.999

### Spurious Emission

Frequency (MHz)	Measured Field Strength (dB $\mu$ V)	Limit (20dB $\mu$ V below Carrier)	Margin (dB)
4881.900	44.2	77.6	-33.4
7322.810	45.6	77.6	-32.0

Operation Mode: Bluetooth CH78

### Transmission Power

Frequency (MHz)	Reading (dB $\mu$ V)	Reading ( $\mu$ W)	Limit (W)	Margin (W)
2479.995	98.7	149.672	1.0	-0.999

### Spurious Emission

Frequency (MHz)	Measured Field Strength (dB $\mu$ V)	Limit (20dB $\mu$ V below Carrier)	Margin (dB)
4959.940	44.3	78.7	-33.4
7439.860	44.7	78.7	-34.0



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Operation Mode: Wi-Fi CH01

### Transmission Power

Frequency (MHz)	Reading (dB $\mu$ V)	Reading (mW)	Limit (W)	Margin (W)
2412.000	108.9	1.401	1.0	-0.999

### Spurious Emission

Frequency (MHz)	Measured Field Strength (dB $\mu$ V)	Limit (20dB $\mu$ V below Carrier)	Margin (dB)
4823.969	72.2	88.9	-16.7
7235.957	59.5	88.9	-29.4
9647.950	52.8	88.9	-36.1
12059.935	40.1	88.9	-48.8
14471.922	46.1	88.9	-42.8

Operation Mode: Wi-Fi CH06

### Transmission Power

Frequency (MHz)	Reading (dB $\mu$ V)	Reading (mW)	Limit (W)	Margin (W)
2436.985	108.3	1.337	1.0	-0.999

### Spurious Emission

Frequency (MHz)	Measured Field Strength (dB $\mu$ V)	Limit (20dB $\mu$ V below Carrier)	Margin (dB)
4873.967	69.3	88.3	-19.0
7310.962	58.0	88.3	-30.3
9747.900	53.4	88.3	-34.9
12184.903	41.0	88.3	-47.3
14621.893	49.1	88.3	-39.2



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Operation Mode: Wi-Fi CH11

Transmission Power

Frequency (MHz)	Reading (dBμV)	Reading (mW)	Limit (W)	Margin (W)
2461.856	108.0	1.275	1.0	-0.999

Spurious Emission

Frequency (MHz)	Measured Field Strength (dBμV)	Limit (20dBμV below Carrier)	Margin (dB)
4923.973	65.0	88.0	-23.0
7385.960	57.1	88.0	-30.9
9847.955	54.4	88.0	-33.6
12309.916	42.1	88.0	-45.9
14771.898	44.5	88.0	-43.5



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### **3 Description of the Line-conducted Test**

#### **3.1 Test Procedure**

Conducted emissions measurements are investigated and also taken pursuant to the procedures of ANSI C63.4 – 2003. The EUT was setup as described in the procedures, and both lines were measured.

#### **3.2 Test Result**

The battery charging mode has been tested. The EUT was connected to the adaptor producing the Maximum emission. The measurement data was indicated in Appendix.

It was found that the EUT met the FCC requirement.

#### **3.3 Graph and Table of Conducted Emission Measurement Data**

For electronic filing, the documents are saved with filename TestRpt2.pdf.



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### **4 Photograph**

#### **4.1 Photographs of the Test Setup for Radiated Emission and Conduction Emission**

For electronic filing, the photos are saved with filename TSup1.jpg to Tsup5.jpg

#### **4.2 Photographs of the External and Internal Configurations of the EUT**

For electronic filing, the photos are saved with filename ExPho1.jpg to ExPho2.jpg and InPho1.jpg to InPho6.jpg.



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### 5 Supplementary document

The following document were submitted by applicant, and for electronic filing, the document are saved with the following filenames:

Document	Filename
ID Label/Location	LabelSmp.jpg
Block Diagram	BlkDia.pdf
Schematic Diagram	Schem.pdf
Users Manual	UserMan.pdf
Operational Description	OpDes.pdf

#### 5.1 Bandwidth

The plot saved in TestRpt3.pdf shows the channel spacing has minimum 25KHz.

The plot saved in TestRpt4.pdf shows the frequency hopping channel over 75 hopping frequency.

The plot saved in TestRpt5.pdf shows the band edge is fulfil 15.205 restricted band, and 15.247 (d) requirement.

The plot saved in TestRpt6.pdf shows the fundamental emission is confined in the specified band. It also shows that the 20dB bandwidth met the 15.247(d) requirement for frequency band 2400 to 2483.5 MHz.

The plot saved in TestRpt7.pdf shows the 6dB bandwidth has minimum 500kHz for frequency channel 2412MHz, 2437MHz and 2462MHz. It fulfils the section 15.247(a) 2 requirement.

The plot saved in TestRpt8.pdf shows the band edge of frequency channel 11 met the 15.205 restricted band requirement.

#### 5.2 Duty Cycle

N/A

#### 5.3 Transmission Time

N/A





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### 5.4 Power Spectral Density

The plot saved in TestRpt9.pdf shows the frequency channel 2412 MHz, 2437MHz and 2462MHz did not greater than 8dBm for 3kHz bandwidth. It fulfils the section 15.247(e) requirement.

### 5.5 Average on time

The plot saved in TestRpt10.pdf shows the average on time for frequency hopping channel is with in 0.4 seconds.

The calculation for average on time as below:

Average hopping channel = Number of transmitted carrier / Sweep time

Average on time = Packet on time x Average hopping channel

Dwell time = Average on time x Total frequency hopping channel x 0.4

Test result:

Frequency Channel (MHz)	Packet	Dwell Time (Seconds)	Limit (Seconds)	Margin
2402	DH1	0.132	0.4	-0.268
2402	DH3	0.262	0.4	-0.138
2402	DH5	0.367	0.4	-0.033
2441	DH1	0.132	0.4	-0.268
2441	DH3	0.262	0.4	-0.138
2441	DH5	0.367	0.4	-0.033
2480	DH1	0.132	0.4	-0.268
2480	DH3	0.262	0.4	-0.138
2480	DH5	0.367	0.4	-0.033



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### **6 Appendices**

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A4.	Photos of Internal Configurations	2	pages
A5.	ID Label/Location	1	page
A6.	Conducted Emission Measurement Data	2	pages
A7.	Bluetooth Channel Spacing	1	page
A8.	Bluetooth Hopping channel	1	page
A9.	Bluetooth band edge	1	page
A10.	Wi-Fi Bandwidth	1	page
A11.	Wi-Fi 6dB Bandwidth Plot	2	pages
A12.	Wi-Fi Restricted band	1	page
A13.	Wi-Fi Power Spectral Density	2	pages
A14.	Bluetooth Average on time	6	pages
A15.	Block Diagram	1	page
A16.	Schematics Diagram	14	pages
A17.	User Manual	12	pages
A18.	Operation Description	2	pages

\*\*\*\*\* End of Report \*\*\*\*\*