

August 9, 2011

Bensussen Deutsch & Associates, Inc. 15525 Woodinville-Redmond Road, NE Woodinville, Washington, United States

Dear Stanley Tang:

Enclosed you will find your file copy of a Part 15 Certification (FCC ID: YFK-01002901).

For your reference, TCB will normally take another 5 days for reviewing the report. Approval will then be granted when no query is sorted.

Please contact me if you have any questions regarding the enclosed material.

Sincerely,

Shawn Xing Manager

Enclosure



Bensussen Deutsch & Associates, Inc.

Application
For
Certification
(FCC ID: YFK-01002901)

XBOX UDRAW GAME TABLET

Model: 010029 2.4GHz Transceiver

We hereby certify that the sample of the above item is considered to comply with the requirements of FCC Part 15, Subpart C for Intentional Radiator,

Mention 47 CFR [10-1-10]

Billy li SZ11060329-1

Billy Li August 9, 2011

- The test results reported in this test report shall refer only to the sample actually tested and shall not refer or be deemed to refer to bulk from which such a sample may be said to have been obtained.
- This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to copy or distribute this report. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results referenced from this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.
- For Terms And Conditions of the services, it can be provided upon request.
- The evaluation data of the report will be kept for 3 years from the date of issuance.

LIST OF EXHIBITS

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MEASUREMENT/TECHNICAL REPORT

Bensussen Deutsch & Associates, Inc. - Model: 010029

FCC ID: YFK-01002901

August 9, 2011

This report concerns (check one:)	Original Grant X	Class II Change
Equipment Type: DXX - Part 15 Low Pow	ver Communication Dev	ce Transmitter
Deferred grant requested per 47 CFR 0.4	57(d)(1)(ii)? Yes	S No _X_
	If yes, defer unti	l: date
Company Name agrees to notify the Com	nmission by:	
of the intended date of announcement of date.	the product so that the	date grant can be issued on that
Transition Rules Request per 15.37?	Yes	s No _X
If no, assumed Part 15, Subpart C for Edition] provision.	intentional radiator –	the new 47 CFR [10-1-10
Report prepared by:		_
	Shawn Xing Intertek Testing Service Kejiyuan Branch 6F, Block D, Huahan Nanshan District, She Phone: (86 755) 860 Fax: (86 755) 860	Building, Langshan Road, nzhen, P. R. China 1 6288

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List of attached file

Exhibit type	File Description	Filename
Test Report	Test Report	report.pdf
Test Setup Photo	Radiated Emission	radiated photos.pdf
Test Report	Bandedge Plot	bandedge.pdf
Test Report	20dB BW Plot	bw.pdf
Test Report	Timing Plot	af.pdf
External Photo	External Photo	external photos.pdf
Internal Photo	Internal Photo	internal photos.pdf
Block Diagram	Block Diagram	block.pdf
Schematics	Circuit Diagram	circuit.pdf
Operation Description	Technical Description	descri.pdf
ID Label/Location	Label Artwork and Location	label.pdf
User Manual	User Manual	manual.pdf
Cover Letter	Letter of Agency	agency.pdf

EXHIBIT 1 GENERAL DESCRIPTION

1.0 **General Description**

1.1 Product Description

The Equipment under Test (EUT) is a XBOX UDRAW GAME TABLET unit, model: 010029 operating at 2.4GHz band. It is powered by 3 X 1.5V AA batteries.

Antenna Type: Integral antenna

For electronic filing, the brief circuit description is saved with filename: descri.pdf.

1.2 Related Submittal(s) Grants

This is an application for certification of a transceiver for the XBOX UDRAW GAME TABLET unit, and the corresponding Dongle unit (XBOX360 Console) (2.4GHz transceiver) has granted with FCC ID: C3K1409.

1.3 Test Methodology

Radiated emission measurement was performed according to the procedures in ANSI C63.4 (2003). Radiated emission measurement was performed in semi-anechoic chamber. For radiated emission measurement, preliminary scans were performed in the semi-anechoic chamber only to determine the worst case modes. All radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the "Justification Section" of this Application.

1.4 Test Facility

The Semi-Anechoic chamber used to collect the radiated data is **Interterk Testing Services Shenzhen Ltd. Kejiyuan Branch** and located at 6F, Block D, Huahan Building, Langshan Road, Nanshan District, Shenzhen, P. R. China. This test facility and site measurement data have been fully placed on file with the FCC.

EXHIBIT 2 SYSTEM TEST CONFIGURATION

2.0 **System Test Configuration**

2.1 Justification

The system was configured for testing in a typical fashion (as a customer would normally use it), and in the confines as outlined in ANSI C63.4 (2003).

The EUT was powered by 3 new 1.5Vdc AA batteries during the testing.

For maximizing emissions, the EUT was rotated through 360°, the antenna height was varied from 1 meter to 4 meters above the ground plane, and the antenna polarization was changed. This step by step procedure for maximizing emissions led to the data reported in Exhibit 3.0.

The unit was operated standalone and placed in the centre of the turntable.

The equipment under test (EUT) was configured for testing in a typical fashion (as a customer would normally use it). The EUT was placed on a turn table, which enabled the Engineer to maximize emissions through its placement in the three orthogonal axes.

2.2 EUT Exercising Software

There was no special software to exercise the device.

2.3 Special Accessories

No special accessories used.

2.4 Equipment Modification

Any modifications installed previous to testing by Bensussen Deutsch & Associates, Inc. will be incorporated in each production model sold / leased in the United States.

No modifications were installed by Intertek Testing Services Shenzhen Ltd. Kejiyuan Branch

2.5 Measurement Uncertainty

When determining the test conclusion, the Measurement Uncertainty of test has been considered.

2.6 Support Equipment List and Description

This product was tested in a standalone configuration.

All the items listed under section 2.0 of this report are

Confirmed by:

Shawn Xing Manager

Intertek Testing Services Shenzhen Ltd. Kejiyuan Branch Agent for Bensussen Deutsch & Associates, Inc.

Signature

August 9, 2011

Date

EXHIBIT 3

EMISSION RESULTS

3.0 **Emission Results**

Data is included worst-case configuration (the configuration which resulted in the highest emission levels).

3.1 Radiated Test Results

A sample calculation, configuration photographs and data tables of the emissions are included.

3.1.1 Field Strength Calculation

The field strength is calculated by adding the reading on the Spectrum Analyzer to the factors associated with preamplifiers (if any), antennas, cables, pulse desensitization and average factors (when specified limit is in average and measurements are made with peak detectors). A sample calculation is included below.

FS = RA + AF + CF - AG + PD + AV

Where $FS = Field Strength in dB\mu V/m$

RA = Receiver Amplitude (including preamplifier) in dBµV

CF = Cable Attenuation Factor in dB

AF = Antenna Factor in dB AG = Amplifier Gain in dB

PD = Pulse Desensitization in dB

AV = Average Factor in -dB

In the radiated emission table which follows, the reading shown on the data table may reflect the preamplifier gain. An example of the calculations, where the reading does not reflect the preamplifier gain, follows:

$$FS = RA + AF + CF - AG + PD + AV$$

Assume a receiver reading of 62.0 dBµV is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted. The pulse desensitization factor of the spectrum analyzer was 0 dB, and the resultant average factor was -10 dB. The net field strength for comparison to the appropriate emission limit is 32 dBµV/m. This value in dBµV/m was converted to its corresponding level in μ V/m.

 $RA = 62.0 \text{ dB}\mu\text{V}$ AF = 7.4 dB

CF = 1.6 dB

 $AG = 29.0 \, dB$

PD = 0 dB

AV = -10 dB

 $FS = 62 + 7.4 + 1.6 - 29 + 0 + (-10) = 32 dB\mu V/m$

Level in μ V/m = Common Antilogarithm [(32 dB μ V/m)/20] = 39.8 μ V/m

3.1.2 Radiated Emission Configuration Photograph

For electronic filing, the worst case radiated emission configuration photograph is saved with filename: radiated photos. pdf.

3.1.3 Radiated Emissions

The data on the following page lists the significant emission frequencies, the limit and the margin of compliance. Numbers with a minus sign are below the limit.

Worst Case Radiated Emission at 83.156 MHz

Judgement: Passed by 3.8 dB

TEST PERSONNEL:
Billy li
Signature
Billy Li, Team Leader
Typed/Printed Name
August 9, 2011
Date

Applicant: Bensussen Deutsch & Associates, Inc. Date of Test: August 9, 2011

Model: 010029 Sample: 1/1

Worst Case Operating Mode: Transmit

Table 1

Radiated Emissions

Polarization	Frequency	Reading	Pre-	Antenna	Net	Limit	Margin
	(MHz)	(dBµV)	Amp	Factor	at 3m	at 3m	(dB)
			Gain	(dB)	(dBµV/m)	(dBµV/m)	
			(dB)				
Horizontal	170.735	44.9	20.0	9.1	34.0	43.5	-9.5
Horizontal	252.025	44.9	20.0	12.0	36.9	46.0	-9.1
Horizontal	288.026	46.2	20.0	13.2	39.4	46.0	-6.6
Vertical	43.529	41.7	20.0	11.4	33.1	40.0	-6.9
Vertical	54.504	43.2	20.0	8.6	31.8	40.0	-8.2
Vertical	83.156	47.8	20.0	8.4	36.2	40.0	-3.8

NOTES: 1. Quasi-Peak detector is used except for others stated.

- 2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.
- 3. Negative value in the margin column shows emission below limit.
- 4. All emissions are below the QP limit.

3.1.4 Transmitter Spurious Emissions (Radiated)

The data on the following page lists the significant emission frequencies, the limit and the margin of compliance. Numbers with a minus sign are below the limit.

Worst Case Radiated Emission at 2442.0000 MHz

Judgement: Passed by 18.6 dB

IEST PERSONNEL:
Billy li
Signature
Billy Li, Team Leader Typed/Printed Name
August 9, 2011
Date

Applicant: Bensussen Deutsch & Associates, Inc. Date of Test: August 9, 2011

Model: 010029 Sample: 1/1

Worst Case Operating Mode: Transmit

Table 2

Radiated Emissions

(2402.000MHz)

Polarization	Frequency (MHz)	Reading (dBµV)	Pre- Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
Vertical	2402.000	101.3	36.7	28.1	92.7	114.0	-21.3
Vertical	4804.000	53.9	36.1	32.8	50.6	74.0	-23.4
Vertical	7206.000	51.5	36.2	36.5	51.8	74.0	-22.2
Vertical	9608.000	51.3	36.3	37.0	52.0	74.0	-22.0

Polarization	Frequency	Reading	Pre-	Antenna	Average	Net	Average Limit	Margin
	(MHz)	(dBµV)	Amp	Factor	Factor	at 3m	at 3m	(dB)
			Gain	(dB)	(-dB)	(dBµV/m)	(dBµV/m)	
			(dB)					
Vertical	2402.000	101.3	36.7	28.1	29.2	63.5	94.0	-30.5
Vertical	4804.000	53.9	36.1	32.8	29.2	21.4	54.0	-32.6
Vertical	7206.000	51.5	36.2	36.5	29.2	22.6	54.0	-31.4
Vertical	9608.000	51.3	36.3	37.0	29.2	22.8	54.0	-31.2

Notes: 1. Peak Detector Data unless otherwise stated.

- 2. All measurements were made at 3 meter. Harmonic emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.
- 3. Negative value in the margin column shows emission below limit.
- 4. Horn antenna is used for the emission over 1000MHz.

Test Engineer: Billy Li

Applicant: Bensussen Deutsch & Associates, Inc. Date of Test: August 9, 2011

Model: 010029 Sample: 1/1

Worst Case Operating Mode: Transmit

Table 3

Radiated Emissions

(2442.000MHz)

Polarization	Frequency (MHz)	Reading (dBµV)	Pre- Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
Vertical	2442.000	104.0	36.7	28.1	95.4	114.0	-18.6
Vertical	4884.000	49.6	36.1	35.5	49.0	74.0	-25.0
Vertical	7326.000	50.9	36.3	37.2	51.8	74.0	-22.2
Vertical	9768.000	49.8	36.3	38.9	52.4	74.0	-21.6

Polarization	Frequency	Reading	Pre-	Antenna	Average	Net	Average Limit	Margin
1 Glatization	(MHz)	(dBµV)	Amp	Factor	Factor	at 3m	at 3m	(dB)
	(IVII 12)	(αυμν)	•					(UD)
			Gain	(dB)	(-dB)	(dBµV/m)	(dBµV/m)	
			(dB)					
Vertical	2442.000	104.0	36.7	28.1	29.2	66.2	94.0	-27.8
Vertical	4884.000	49.6	36.1	35.5	29.2	19.8	54.0	-34.2
Vertical	7326.000	50.9	36.3	37.2	29.2	22.6	54.0	-31.4
Vertical	9768.000	49.8	36.3	38.9	29.2	23.2	54.0	-30.8

Notes: 1. Peak Detector Data unless otherwise stated.

- 2. All measurements were made at 3 meter. Harmonic emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.
- 3. Negative value in the margin column shows emission below limit.
- 4. Horn antenna is used for the emission over 1000MHz.

Test Engineer: Billy Li

Applicant: Bensussen Deutsch & Associates, Inc. Date of Test: August 9, 2011

Model: 010029 Sample: 1/1

Worst Case Operating Mode: Transmit

Table 4

Radiated Emissions

(2482.000MHz)

Polarization	Frequency (MHz)	Reading (dBµV)	Pre- Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Limit at 3m (dBµV/m)	Margin (dB)
Vertical	2482.000	100.4	36.7	31.1	94.8	114.0	-19.2
Vertical	4964.000	50.8	36.1	35.5	50.2	74.0	-23.8
Vertical	7446.000	50.9	36.3	37.2	51.8	74.0	-22.2
Vertical	9928.000	49.7	36.3	38.9	52.3	74.0	-21.7

Polarization	Frequency	Reading	Pre-	Antenna	Average	Net	Average Limit	Margin
	(MHz)	(dBµV)	Amp	Factor	Factor	at 3m	at 3m	(dB)
			Gain	(dB)	(-dB)	(dBµV/m)	(dBµV/m)	
			(dB)					
Vertical	2482.000	100.4	36.7	31.1	29.2	65.6	94.0	-28.4
Vertical	4964.000	50.8	36.1	35.5	29.2	21.0	54.0	-33.0
Vertical	7446.000	50.9	36.3	37.2	29.2	22.6	54.0	-31.4
Vertical	9928.000	49.7	36.3	38.9	29.2	23.1	54.0	-30.9

Notes: 1.Peak Detector Data unless otherwise stated.

- 2. All measurements were made at 3 meter. Harmonic emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.
- 3. Negative value in the margin column shows emission below limit.
- 4. Horn antenna is used for the emission over 1000MHz.

Test Engineer: Billy Li

EXHIBIT 4 EQUIPMENT PHOTOGRAPHS

4.0 **Equipment Photographs**

For electronic filing, the photographs of the tested EUT are saved with filename: external photos.pdf & internal photos.pdf.

EXHIBIT 5 PRODUCT LABELLING

5.0 **Product Labelling**

For electronic filing, the FCC ID label artwork and the label location are saved with filename: label.pdf.

EXHIBIT 6 TECHNICAL SPECIFICATIONS

6.0 <u>Technical Specifications</u>

For electronic filing, the block diagram and schematics of the tested EUT are saved with filename: block.pdf and circuit.pdf respectively.

EXHIBIT 7

INSTRUCTION MANUAL

7.0 **Instruction Manual**

For electronic filing, a preliminary copy of the Instruction Manual is saved with filename: manual.pdf.

This manual will be provided to the end-user with each unit sold/leased in the United States.

EXHIBIT 8

MISCELLANEOUS INFORMATION

8.0 <u>Miscellaneous Information</u>

This miscellaneous information includes details of the measured bandedge, the test procedure and calculation of factor such as pulse desensitization.

8.1 Bandedge Plot

For electronic filing, the plot shows the fundamental emission when modulated is saved with filename: be.pdf. From the plot, the field strength of any emissions outside of the specified frequency band are attenuated to the general radiated emission limits in section 15.209. It fulfils the requirement of 15.249(d).

Peak Measurement

Bandedge compliance is determined by applying marker-delta method, i.e (Bandedge Plot).

(i) Lower channel 2402.0000MHz:

Peak Resultant field strength = Fundamental emissions (peak value) - delta

from the bandedge plot

 $= 92.7 dB\mu v/m - 42.2 dB$

 $= 50.5 dB\mu v/m$

Average field strength = $50.5 \text{ dB}\mu\text{v/m}-29.2 \text{ dB}\mu\text{v/m}$

 $= 21.3 dB\mu v/m$

(ii) Upper channel 2482.0000MHz:

Peak Resultant field strength = Fundamental emissions (peak value) – delta from the bandedge plot

 $= 94.8 \text{ dB}\mu\text{v/m} - 40.7 \text{ dB}$

 $= 54.1 dB\mu v/m$

Average field strength = $54.1 \text{ dB}\mu\text{v/m}-29.2 \text{ dB}\mu\text{v/m}$

 $= 24.9 \text{ dB}\mu\text{v/m}$

The resultant field strength meets the general radiated emission limit in section 15.209, which does not exceed 74dBµv/m (Peak Limit) and 54dBµv/m (Average Limit).

8.1 Bandedge Plot (cont'd)

Pursuant to FCC part 15 Section 15.215(c), the 20dB bandwidth of the emission was contained within the frequency band designated (mentioned as above) which the EUT operated. The effects, if any, from frequency sweeping, frequency hopping, other modulation techniques and frequency stability over excepted variations in temperature and supply voltage were considered.

Figure 8.1 Bandwidth

8.2 Discussion of Pulse Desensitization

Pulse desensitivity is not applicable for this device. The effective period (T_{eff}) is approximately 348 µs for a digital "1" bit, as shown in the plots of Exhibit 8.3. With a resolution bandwidth (3 dB) of 100 kHz, the pulse desensitivity factor was 0 dB.

8.3 Calculation of Average Factor

Averaging factor in $dB = 20 \log (duty \text{ cycle})$

The specification for output field strengths in accordance with the FCC rules specify measurements with an average detector. During testing, a spectrum analyzer incorporating a peak detector was used. Therefore, a reduction factor can be applied to the resultant peak signal level and compared to the limit for measurement instrumentation incorporating an average detector.

The time period over which the duty cycle is measured is 100 milliseconds, or the repetition cycle, whichever is a shorter time frame. The worst case (highest percentage on) duty cycle is used for the calculation. The duty cycle is measured by placing the spectrum analyzer in zero scan (receiver mode) and linear mode at maximum bandwidth (3 MHz at 3 dB down) and viewing the resulting time domain signal output from the analyzer on a Tektronix oscilloscope. The oscilloscope is used because of its superior time base and triggering facilities.

A plot of the worst-case duty cycle as detected in this manner are saved with filename: af.pdf

The duty cycle is simply the on-time divided by the period:

The duration of one cycle = 100 msEffective period of the cycle = 10 X 0.348 ms = 3.48 ms

DC = 3.48 ms / 100 ms = 0.0348 or 3.48%

Therefore, the averaging factor is found by $20 \log_{10} 0.0348 = -29.2 \text{ dB}$

8.4 Emissions Test Procedures

The following is a description of the test procedure used by Intertek Testing Services in the measurements of transmitters operating under Part 15, Subpart C rules.

The test set-up and procedures described below are designed to meet the requirements of ANSI C63.4 - 2003.

The transmitting equipment under test (EUT) is placed on a wooden turntable which is four feet in diameter and approximately one meter in height above the ground plane. During the radiated emissions test, the turntable is rotated and any cables leaving the EUT are manipulated to find the configuration resulting in maximum emissions. The EUT is adjust through all three orthogonal axes to obtain maximum emission levels. The antenna height and polarization are varied during the testing to search for maximum signal levels.

Detector function for radiated emissions is in peak mode. Average readings, when required, are taken by measuring the duty cycle of the equipment under test and subtracting the corresponding amount in dB from the measured peak readings.

The frequency range scanned is from the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or 40 GHz, whichever is lower.

8.4 Emissions Test Procedures (cont'd)

The EUT is warmed up for 15 minutes prior to the test.

AC power to the unit is varied from 85% to 115% nominal and variation in the fundamental emission field strength is recorded. If battery powered, a new, fully charged battery is used.

Conducted measurements are made as described in ANSI C63.4 - 2003.

The IF bandwidth used for measurement of radiated signal strength was 10 kHz for emission below 30 MHz and 120 kHz for emission from 30 MHz to 1000 MHz. Where pulsed transmissions of short enough pulse duration warrant, a greater bandwidth is selected according to the recommendations of Hewlett Packard Application Note 150-2. Above 1000 MHz, a resolution bandwidth of 1 MHz is used.

Transmitter measurements are normally conducted at a measurement distance of three meters. However, to assure low enough noise floor in the restricted bands and above 1 GHz, signals are acquired at a distance of one meter or less. All measurements are extrapolated to three meters using inverse scaling, but those measurements taken at a closer distance are so marked.

EXHIBIT 9

TEST EQUIPMENT LIST

9.0 <u>Test Equipment List</u>

Equipment No.	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
SZ061-03	BiConiLog Antenna	ETS	3142C	00066460	25-Mar-11	25-Sep-11
SZ185-01	EMI Receiver	R&S	ESCI	100547	08-Mar-11	08-Mar-12
SZ061-08	Horn Antenna	ETS	3115	00092346	15-Mar-10	15-Sep-11
SZ056-03	Spectrum Analyzer	R&S	FSP 30	101148	08-Mar-11	08-Mar-12
SZ181-04	Preamplifier	Agilent	8449B	3008A02474	08-Mar-11	08-Mar-12
SZ188-01	Anechoic Chamber	ETS	RFD-F/A- 100	4102	15-Jan-11	15-Jan-12
SZ062-02	RF Cable	RADIALL	RG 213U		25-Mar-11	25-Sep-11
SZ062-06	RF Cable	RADIALL	0.04- 26.5GHz		16-Sep-10	16-Sep-11
SZ062-12	RF Cable	RADIALL	0.04- 26.5GHz		16-Sep-10	16-Sep-11
SZ067-04	Notch Filter	Micro-Tronics	BRM5070 2-02		25-Mar-11	25-Sep-11