

Angelcare Monitors Inc.

Application
For
Certification

2.4GHz Transceiver

(FCC ID: N7TAC401-R)

07056011
KL/ ac
June 6, 2007

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INTERTEK TESTING SERVICES

LIST OF EXHIBITS

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MEASUREMENT/TECHNICAL REPORT

Angelcare Monitors Inc. - Model: AC401
FCC ID: N7TAC401-R

This report concerns (check one:) Original Grant Class II Change

Equipment Type : DXT - Pt 15 Low Pwr Transceiver, Rx Verified

Deferred grant requested per 47 CFR
0.457(d)(1)(ii)? Yes No

Company Name agrees to notify the Commission by:

date

of the intended date of announcement of the product so that the grant can be issued on that date.

Transition Rules Request per 15.37 ? Yes No

If no, assumed Part 15, Subpart C for intentional radiator - the new 47 CFR [04-05-05]

If no, assumed Part 15, Subpart C for intentional radiator - the new 47 CFR [04-05-05 Edition] Provision.

Report prepared by:

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List of attached file

Exhibit type	File Description	filename
Test Report	Test Report	report.pdf
Operation Description	Technical Description	descri.pdf
Test Setup Photo	Radiated & Conducted Emission	config photos.doc
Test Report	Emission Plot	emission.pdf
Test Report	Conducted Emission Test Result	conduct.pdf
External Photo	External Photo	external photos.doc
Internal Photo	Internal Photo	internal photos.doc
Block Diagram	Block Diagram	block.pdf
Schematics	Circuit Diagram	circuit.pdf
ID Label/Location	Label Artwork and Location	label.pdf
User Manual	User Manual	manual.pdf

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EXHIBIT 1
GENERAL DESCRIPTION

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1.0 General Description

1.1 Product Description

The Equipment Under Test (EUT) is a 2.4GHz Transceiver (Parent Unit of Sound Baby Monitor) operating at 2401.700MHz-2402.900MHz with 3 channels. The EUT is powered by 4 x "AAA" size 1.5Vdc alkaline battery, 4 x "AAA" Ni-MH type 1.2Vdc rechargeable battery, or 120VAC to 7.5Vdc 150mA AC adaptor.

It has a MENU button and a channel button for entering a monitor selection mode and channel selection mode respectively. Besides, it has a mute key, volume up, and volume down for muting the speaker and adjusting the volume respectively. After monitor mode is selected, it transmits data commands to baby unit to select monitor mode such as TIC, Sound and Movement. After switching on the unit, it receives a baby's voice from the corresponding 900MHz-transmitting unit with the same channel selection.

The antenna used in the unit is integral.

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

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1.2 Related Submittal(s) Grants

This is an application for certification of a 2.4GHz transmitter portion of Transceiver. The digital and 900MHz receiver portion of this transceiver was subjected to FCC Part 15 Verification Procedure.

The 900MHz transceiver, associated with this 2.4GHz transceiver, has FCC ID: N7TAC401-T and has been filed at the same time.

1.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.4 (2003). All measurements were performed in Open Area Test Sites. Preliminary scans were performed in the Open Area Test Sites only to determine 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 open area test site and conducted measurement facility used to collect the radiated data is located at Garment Centre, 576 Castle Peak Road, Kowloon, Hong Kong. This test facility and site measurement data have been fully placed on file with the FCC.

EXHIBIT 2
SYSTEM TEST CONFIGURATION

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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 4 x "AAA" size 1.5Vdc alkaline battery or 4 x Ni-MH "AAA" type 1.2Vdc rechargeable battery, or a 120VAC to 7.5Vdc 150mA AC adaptor.

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 rear of EUT, including peripherals, was aligned and flush with rear 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 turntable, which enabled the engineer to maximize emissions through its placement in the three orthogonal axes. For simplicity of testing, the unit was wired to transmit continuously.

All readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance. Analyzer resolution is 100 kHz or greater for frequencies below 1000 MHz. The resolution is 1 MHz or greater for frequencies above 1000 MHz. The spurious emissions more than 20 dB below the permissible value are not reported.

Radiated emission measurement were performed 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 to 4 GHz, whichever is lower.

All relevant operation modes with difference power sources have been tested, and the worst case data is included in this report.

2.2 EUT Exercising Software

There was no special software to exercise the device. Once the button is depressed, the unit transmits the typical signal. For simplicity of testing, the unit was wired to transmit continuously.

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2.3 Support Equipment List and Description

The FCC ID's for all equipment, plus descriptions of all cables used in the tested system are:

HARDWARE:

An AC adaptor (provided with the unit) or a battery were used to power the device. Their description are listed below.

- (1) An AC adaptor (120VAC to 7VDC 150mA, Model: DC0750150)
- (2) 4 x Ni-MH "AAA" type rechargeable battery (1.2V 840mAh)
- (3) 4 x "AAA" size 1.5Vdc battery

CABLES:

There are no special accessories necessary for compliance of this product.

OTHERS:

There are no special accessories necessary for compliance of this product.

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2.4 Measurement Uncertainty

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

Uncertainty and Compliance - Unless the standard specifically states that measured values are to be extended by the measurement uncertainty in determining compliance, all compliance determinations are based on the actual measured value.

2.5 Equipment Modification

Any modifications installed previous to testing by Angelcare Monitors Inc. will be incorporated in each production model sold/leased in the United States.

No modifications were installed by ETL Division, Intertek Testing Services Hong Kong Ltd.

All the items listed under section 2.0 of this report are confirmed by:

Confirmed by:

*Lam Chun Cheong, Kenneth
Assistant Supervisor
Intertek Testing Services
Agent for Angelcare Monitors Inc.*



Signature

June 6, 2007

Date

EXHIBIT 3
EMISSION RESULTS

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3.0 Emission Results

Data is included of the worst case configuration (the configuration which resulted in the highest emission levels). A sample calculation, configuration photographs and data tables of the emissions are included.

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3.1 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

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

where FS = Field Strength in $\text{dB}\mu\text{V}/\text{m}$

RA = Receiver Amplitude (including preamplifier) in $\text{dB}\mu\text{V}$

CF = Cable Attenuation Factor in dB

AF = Antenna Factor in dB

AG = Amplifier Gain in dB

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows:-

$$FS = RR + LF$$

where FS = Field Strength in $\text{dB}\mu\text{V}/\text{m}$

RR = $RA - AG$ in $\text{dB}\mu\text{V}$

LF = $CF + AF$ in dB

Assume a receiver reading of 52.0 $\text{dB}\mu\text{V}$ 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, giving a field strength of 32 $\text{dB}\mu\text{V}/\text{m}$. This value in $\text{dB}\mu\text{V}/\text{m}$ was converted to its corresponding level in $\mu\text{V}/\text{m}$.

$$RA = 52.0 \text{ dB}\mu\text{V}$$

$$AF = 7.4 \text{ dB}$$

$$CF = 1.6 \text{ dB}$$

$$AG = 29.0 \text{ dB}$$

$$FS = RR + LF$$

$$FS = 23 + 9 = 32 \text{ dB}\mu\text{V}/\text{m}$$

$$RR = 23.0 \text{ dB}\mu\text{V}$$

$$LF = 9.0 \text{ dB}$$

$$\text{Level in } \mu\text{V}/\text{m} = \text{Common Antilogarithm } [(32 \text{ dB}\mu\text{V}/\text{m})/20] = 39.8 \mu\text{V}/\text{m}$$

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3.2 Radiated Emission Configuration Photograph

Worst Case Radiated Emission

at 2400.963 MHz

For electronic filing, the worst case radiated emission configuration photographs are saved with filename: config photos.doc

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3.3 Radiated Emission Data

The data on the following pages list the significant emission frequencies, the limit and the margin of compliance.

Judgement : Passed by 4.1 dB margin

TEST PERSONNEL:



Tester Signature

Jess Tang, Lead Engineer
Typed/Printed Name

June 6, 2007

Date

INTERTEK TESTING SERVICES

Company: Angelcare Monitors Inc.
Model: AC401
Mode : TX-Channel 0

Date of Test: March 29-April 4, 2007

Table 1

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre- Amp (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Limit at 3m (dB μ V/m)	Margin (dB)
V	2401.700	93.5	33	29.4	89.9	94.0	-4.1
V	*1200.850	49.3	33	26.1	42.4	54.0	-11.6
V	*3602.550	40.5	33	33.3	40.8	54.0	-13.2
V	*4803.400	41.4	33	34.9	43.3	54.0	-10.7
V	6004.250	38.6	33	36.9	42.5	54.0	-11.5
V	7205.100	37.5	33	37.9	42.4	54.0	-11.6

NOTES: 1. Peak detector is used for the emission measurement.

2. All measurements were made at 3 meters. Radiated 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 radiated 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.

5. Emissions radiated outside of the specified frequency bands, except harmonics, are attenuated by 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation, which meet the requirement of part 15.249(d).

* Emission within the restricted band meets the requirement of part 15.205.

Test Engineer: Jess Tang

INTERTEK TESTING SERVICES

Company: Angelcare Monitors Inc.
Model: AC401
Mode : TX-Channel 2

Date of Test: March 29-April 4, 2007

Table 2

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Limit at 3m (dB μ V/m)	Margin (dB)
V	2402.900	93.0	33	29.4	89.4	94.0	-4.6
V	*1201.450	49.4	33	26.1	42.5	54.0	-11.5
V	*3604.350	40.3	33	33.3	40.6	54.0	-13.4
V	*4805.800	41.5	33	34.9	43.4	54.0	-10.6
V	6007.250	38.7	33	36.9	42.6	54.0	-11.4
V	7208.700	37.6	33	37.9	42.5	54.0	-11.5

NOTES: 1. Peak detector is used for the emission measurement.

2. All measurements were made at 3 meters. Radiated 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 radiated 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.

5. Emissions radiated outside of the specified frequency bands, except harmonics, are attenuated by 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation, which meet the requirement of part 15.249(d).

* Emission within the restricted band meets the requirement of part 15.205.

Test Engineer: Jess Tang

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3.4 Radiated Emission on the Bandedge

From the following plots, they show that the fundamental emissions are confined in the specified band (2400MHz and 2483.5MHz). In case of the fundamental emissions are within two standard bandwidths from the bandedge, the delta measurement technique is used for determining bandedge compliance. Standard bandwidth is the bandwidth specified by ANSI C63.4 (2003) for frequency being measured.

Emissions radiated outside of the specified frequency bands, except harmonics, are attenuated by 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation, which meet the requirement of part 15.249(d).

Please refer to the following plots for radiated emission on the bandedge:

Plot M1A - Low Channel Emissions
Plot M1B - High Channel Emissions

For electronic filing, the above plots are saved with filename: emission.pdf

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3.5 Line Conducted Configuration Photograph

Worst Case Line-Conducted Configuration

For electronic filing, the worst case line conducted configuration photographs are saved with filename: config photos.doc

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3.6 Line Conducted Emission Data

The data on the following pages list the significant emission frequencies, the limit, and the margin of compliance.

Judgement : Passed by more than 20 dB margin

TEST PERSONNEL:



Tester Signature

Jess Tang, Lead Engineer
Typed/Printed Name

June 6, 2007
Date

INTERTEK TESTING SERVICES

Company: Angelcare Monitors Inc.
Model: AC401

Date of Test: March 29-April 4, 2007

Conducted Emissions

For electronic filing, the conducted emission test result is saved with filename:
conduct.pdf

EXHIBIT 4
EQUIPMENT PHOTOGRAPHS

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4.0 Equipment Photographs

For electronic filing, the photographs are saved with filename: external photos.doc & internal photos.doc

EXHIBIT 5
PRODUCT LABELLING

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5.0 Product Labelling

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

EXHIBIT 6
TECHNICAL SPECIFICATIONS

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6.0 Technical Specifications

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

EXHIBIT 7
INSTRUCTION MANUAL

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7.0 Instruction Manual

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

The required FCC Information to the User is stated on P.8 of the Instruction Manual.

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