

## TEST REPORT

**Report Number: HK12060930-1**

Application  
for

Class II Permissive Change of 47 CFR Part 15 Certification  
Class I Permissive Change of RSS-210 Issue 8 Equipment Certification

900MHz Transmitter - Baby Unit of Baby Monitor

**FCC ID: N7TAC601T**

**IC: 5786A-AC601T**

Prepared and Checked by:

Approved by:

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Assistant Manager  
September 17, 2012

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### GENERAL INFORMATION

<b>Applicant Name:</b>	Angelcare Monitors Inc.
<b>Applicant Address:</b>	3980, Rue St-Ambroise, Montreal, Quebec, H4C 2C7, Canada.
<b>FCC Specification Standard:</b>	FCC Part 15, October 1, 2010 Edition
<b>FCC ID:</b>	N7TAC601T
<b>FCC Model(s):</b>	AC601
<b>IC Specification Standard:</b>	RSS-210 Issue 8, December 2010 RSS-Gen Issue 3, December 2010
<b>IC:</b>	5786A-AC601T
<b>IC Model(s):</b>	AC601
<b>Type of EUT:</b>	Transmitter
<b>Description of EUT:</b>	900MHz Transmitter - Baby Unit of Baby Monitor
<b>Serial Number:</b>	N/A
<b>Sample Receipt Date:</b>	June 15, 2012
<b>Date of Test:</b>	July 5 – 6, 2012
<b>Report Date:</b>	September 17, 2012
<b>Environmental Conditions:</b>	Temperature: +10 to 40°C Humidity: 10 to 90%

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## Table of Contents

<b>1.0 Test Results Summary &amp; Statement of Compliance</b> .....	4
1.1 Summary of Test Results .....	4
1.2 Statement of Compliance .....	4
<b>2.0 General Description</b> .....	6
2.1 Product Description .....	6
2.2 Purpose of Application.....	6
2.3 Test Methodology.....	6
2.4 Test Facility.....	6
<b>3.0 System Test Configuration</b> .....	8
3.1 Justification .....	8
3.2 EUT Exercising Software.....	9
3.3 Details of EUT and Description of Accessories .....	10
3.4 Measurement Uncertainty .....	10
<b>4.0 Test Results</b> .....	12
4.1 Field Strength Calculation.....	12
4.2 Radiated Emissions.....	13
4.2.1 Radiated Emission Configuration Photograph.....	13
4.2.2 Radiated Emission Data .....	13
4.2.3 Transmitter Duty Cycle Calculation .....	13
4.3 Radiated Emission on the Bandedge.....	17
4.4 AC Power Line Conducted Emission .....	19
4.4.1 AC Power Line Conducted Emission Configuration Photograph.....	19
4.4.2 AC Power Line Conducted Emission Data .....	19
<b>5.0 Equipment List</b> .....	25

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**EXHIBIT 1  
TEST RESULTS SUMMARY & STATEMENT OF COMPLIANCE**

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### 1.0 Test Results Summary & Statement of Compliance

#### 1.1 Summary of Test Results

Test Items	FCC Part 15 Section	RSS-210/ RSS-Gen <sup>#</sup>	Results	Details see section
Antenna Requirement	15.203	7.1.2 <sup>#</sup>	Pass	2.1
Radiated Emission	15.249(a), 209 & 109	A2.9(a)	Pass	4.2
Radiated Emission on the Bandedge	15.249(d)	A2.9(b)	Pass	4.3
Radiated Emission in Restricted Bands	15.205	2.2	Pass	4.2
AC Power Line Conducted Emission	15.207	7.2.4 <sup>#</sup>	Pass	4.4

Note: 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 expected variations in temperature and supply voltage were considered.

#### 1.2 Statement of Compliance

The equipment under test is found to be complying with the following standards:

FCC Part 15, October 1, 2010 Edition  
RSS-210 Issue 8, December 2010  
RSS-Gen Issue 3, December 2010

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**EXHIBIT 2  
GENERAL DESCRIPTION**

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### 2.0 General Description

#### 2.1 Product Description

The Equipment Under Test (EUT) is a 900MHz Transmitter - Baby Unit of Baby Monitor. It operates at 926.2MHz, 926.8MHz and 927.6MHz. The EUT is powered by a 100-240VAC to 7.5VDC 0.5A adaptor and/or 4 x "AAA" size 1.5VDC alkaline battery.

The antenna used in baby unit is integral, and the test sample is a prototype.

#### 2.2 Purpose of Application

The purpose of change is saved with filename: product change.pdf.

#### 2.3 Test Methodology

Both AC power line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.4 (2009). Preliminary radiated scans and all radiated measurements were performed in Open Area Test Sites. All Radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the "**Justification Section**" of this Application.

#### 2.4 Test Facility

The open area test site and conducted measurement facility used to collect the radiated data and conducted data are at Roof Top and 2<sup>nd</sup> Floor respectively of Intertek Testing Services Hong Kong Ltd., which 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 and the Industry Canada.

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**EXHIBIT 3  
SYSTEM TEST CONFIGURATION**



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### 3.0 System Test Configuration

#### 3.1 Justification

For radiated emissions testing, the equipment under test (EUT) was setup to transmit continuously to simplify the measurement methodology. Care was taken to ensure proper power supply voltages during testing. During testing, all cables (if any) were manipulated to produce worst case emissions.

The EUT was powered by a 100-240VAC to 7.5VDC 0.5A adaptor and/or 4 x "AAA" size 1.5VDC new alkaline battery.

For the measurements, the EUT was attached to a plastic stand if necessary and placed on the wooden turntable. If the EUT attached to peripherals, they were connected and operational to simulate typical use.

The signal was maximized through rotation and placement in the three orthogonal axes. The antenna height and polarization were varied during the search for maximum signal level. The antenna height was varied from 1 to 4 meters. Radiated emissions were taken at three meters unless the signal level was too low for measurement at that distance. If necessary, a pre-amplifier was used and/or the test was conducted at a closer distance.

For any intentional radiator powered by AC power line, measurements of the radiated signal level of the fundamental frequency component of the emission was performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage.

For transmitter radiated measurement, the spectrum analyzer resolution bandwidth was 100 kHz for frequencies below 1000 MHz. The resolution bandwidth was 1 MHz for frequencies above 1000 MHz.

Radiated emission measurement for transmitter was performed 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 to 40 GHz, whichever is lower.

Emission that are directly caused by digital circuits in the transmit path and transmitter portion were measured, and the limit are according to FCC Part 15 Section 15.209. Digital circuitry used to control additional functions other than the operation of the transmitter are subject to FCC Part 15 Section 15.109 Limits.

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### 3.1 Justification - Cont'd

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. A detailed description for the calculation of the average factor can be found in section 4.2.3.

Pulse desensitization is not applicable for this device. Since the transmitter transmits the RF signal continuously.

For AC line conducted emission test, the EUT along with its peripherals were placed on a 1.0m(W)x1.5m(L) and 0.8m in height wooden table and the EUT was adjusted to maintain a 0.4 meter space from a vertical reference plane. The EUT was connected to power mains through a line impedance stabilization network (LISN), which provided 50ohm coupling impedance for measuring instrument. The LISN housing, measuring instrument case, reference ground plane, and vertical ground plane were bounded together. The excess power cable between the EUT and the LISN was bundled.

All connecting cables of EUT and peripherals were manipulated to find the maximum emission.

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

### 3.2 EUT Exercising Software

There was no special software to exercise the device. Once the unit is powered up, it transmits the RF signal continuously.

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### 3.3 Details of EUT and Description of Accessories

#### Details of EUT:

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

- (1) Baby Unit: An AC adaptor (100-240VAC to 7.5VDC 0.5A, Model: T07505U002) (Supplied by Client)
- (2) Backup Battery: Alkaline batteries (4 x "AAA" 1.5VDC) (Supplied by Intertek)

#### Description of Accessories:

- (1) Angelcare Sensor Pad (Supplied by Client)

### 3.4 Measurement Uncertainty

When determining of the test conclusion, the Measurement Uncertainty of 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.

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**EXHIBIT 4  
TEST RESULTS**

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### 4.0 Test 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.

#### 4.1 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 dB $\mu$ V
- 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:

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

#### Example

Assume a receiver reading of 62.0 dB $\mu$ 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. 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 dB $\mu$ V/m. This value in dB $\mu$ V/m was converted to its corresponding level in  $\mu$ V/m.

$$\begin{aligned} RA &= 62.0 \text{ dB}\mu\text{V} \\ AF &= 7.4 \text{ dB} \\ CF &= 1.6 \text{ dB} \\ AG &= 29 \text{ dB} \\ PD &= 0 \text{ dB} \\ AV &= -10 \text{ dB} \\ FS &= 62 + 7.4 + 1.6 - 29 + 0 + (-10) = 32 \text{ dB}\mu\text{V/m} \end{aligned}$$

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

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### 4.2 Radiated Emissions

#### 4.2.1 Radiated Emission Configuration Photograph

Worst Case Radiated Emission  
at

5557.200 MHz

The worst case radiated emission configuration photographs are saved with filename: config photos.pdf.

#### 4.2.2 Radiated Emission Data

The data in tables 1-3 list the significant emission frequencies, the limit and the margin of compliance.

Judgement -

Passed by 0.2 dB margin

#### 4.2.3 Transmitter Duty Cycle Calculation

The average factor is not applicable for this device as the transmitted signal is a continuously signal.

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Mode: TX-Channel A

Table 1

### Radiated Emission Data

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
V	926.200	73.4	16	33.0	90.4	94.0	-3.6
V	1852.400	56.0	33	27.2	50.2	54.0	-3.8
V	<b>2778.600</b>	<b>52.7</b>	<b>33</b>	<b>30.4</b>	<b>50.1</b>	<b>54.0</b>	<b>-3.9</b>
V	<b>3704.800</b>	<b>50.5</b>	<b>33</b>	<b>33.3</b>	<b>50.8</b>	<b>54.0</b>	<b>-3.2</b>
V	<b>4631.000</b>	<b>48.7</b>	<b>33</b>	<b>34.9</b>	<b>50.6</b>	<b>54.0</b>	<b>-3.4</b>
V	5557.200	50.2	33	36.6	53.8	54.0	-0.2
V	6483.400	45.5	33	36.9	49.4	54.0	-4.6
V	<b>7409.600</b>	<b>43.3</b>	<b>33</b>	<b>37.9</b>	<b>48.2</b>	<b>54.0</b>	<b>-5.8</b>

- 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. Emission (the row indicated by ***bold italic***) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.

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Mode: TX-Channel C

Table 2

### Radiated Emission Data

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
V	927.600	73.3	16	33.0	90.3	94.0	-3.7
V	1855.200	55.9	33	27.2	50.1	54.0	-3.9
<b>V</b>	<b>2782.800</b>	<b>52.8</b>	<b>33</b>	<b>30.4</b>	<b>50.2</b>	<b>54.0</b>	<b>-3.8</b>
<b>V</b>	<b>3710.400</b>	<b>50.3</b>	<b>33</b>	<b>33.3</b>	<b>50.6</b>	<b>54.0</b>	<b>-3.4</b>
<b>V</b>	<b>4638.000</b>	<b>48.5</b>	<b>33</b>	<b>34.9</b>	<b>50.4</b>	<b>54.0</b>	<b>-3.6</b>
V	5565.600	50.1	33	36.6	53.7	54.0	-0.3
V	6493.200	45.7	33	36.9	49.6	54.0	-4.4
<b>V</b>	<b>7420.800</b>	<b>44.5</b>	<b>33</b>	<b>37.9</b>	<b>49.4</b>	<b>54.0</b>	<b>-4.6</b>

- 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. Emission (the row indicated by **bold italic**) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.



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Mode: Talk

Table 3

### Radiated Emission Data

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
V	32.062	36.8	16	10.0	30.8	40.0	-9.2
V	40.080	36.6	16	10.0	30.6	40.0	-9.4
V	48.098	35.2	16	11.0	30.2	40.0	-9.8
V	56.110	34.6	16	11.0	29.6	40.0	-10.4
V	64.134	36.4	16	9.0	29.4	40.0	-10.6
V	72.152	38.0	16	7.0	29.0	40.0	-11.0

- 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. Emission (the row indicated by ***bold italic***) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.

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### 4.3 Radiated Emission on the Bandedge

From the following plots, they show that the fundamental emissions are confined in the specified band (902MHz and 928MHz). In case of emissions up to two standard bandwidths away from the bandedge, the delta measurement technique is used for determining bandedge compliance. Standard bandwidth is the bandwidth specified by ANSI C63.4 (2009) for frequency being measured.

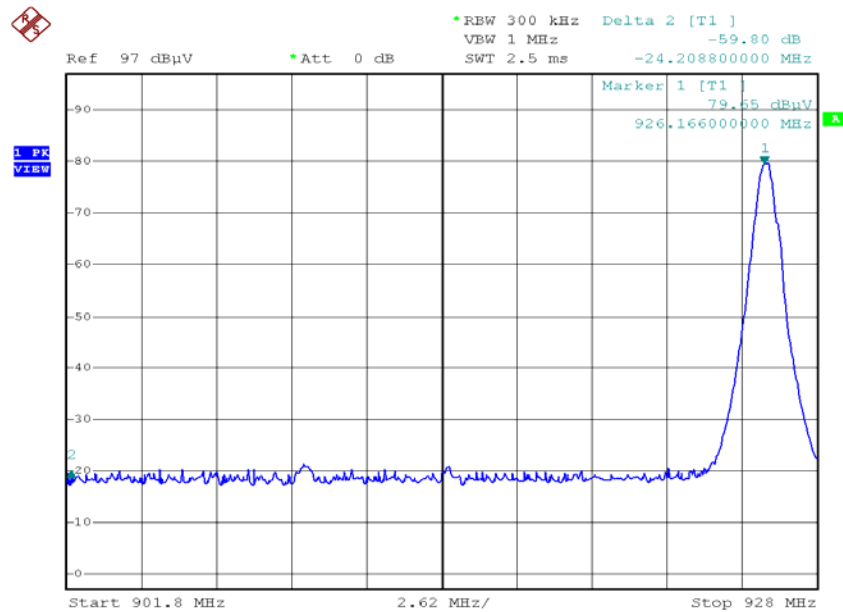
Emissions radiated outside of the specified frequency bands, except harmonics, are attenuated by 50 dB below the level of the fundamental or to the general radiated emission limits in FCC Part 15 Section 15.209 / Table 5 of RSS-Gen, whichever is the lesser attenuation, which meet the requirement of FCC Part 15 Section 15.249(d) / RSS-210 A2.9(b).

Radiated Emission on bandedge plots are saved as below.

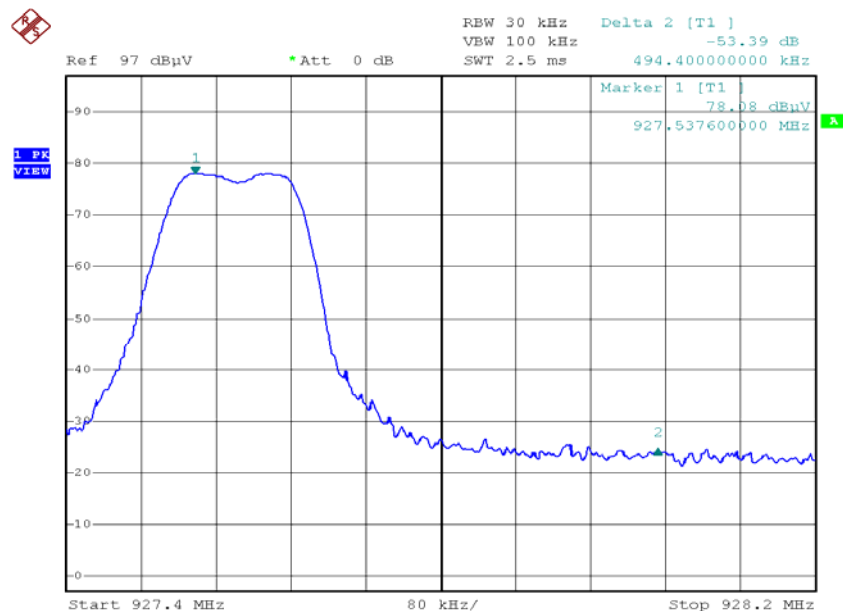
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## Plots of Radiated Emission on the Bandedge

### Baby unit, Lowest channel



### Baby unit, Highest channel



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### 4.4 AC Power Line Conducted Emission

- Not applicable – EUT is only powered by battery for operation.
- EUT connects to AC power line. Emission Data is listed in following pages.
- Base Unit connects to AC power line and has transmission. Handset connects to AC power line but has no transmission. Emission Data of Base Unit is listed in following pages.

#### 4.4.1 AC Power Line Conducted Emission Configuration Photograph

Worst Case Line-Conducted Configuration  
at

0.321 MHz

The worst case line conducted configuration photographs are saved with filename: config photos.pdf.

#### 4.4.2 AC Power Line Conducted Emission Data

The plot(s) and data in the following pages list the significant emission frequencies, the limit and the margin of compliance.

Passed by 12.0 dB margin compare with average limit

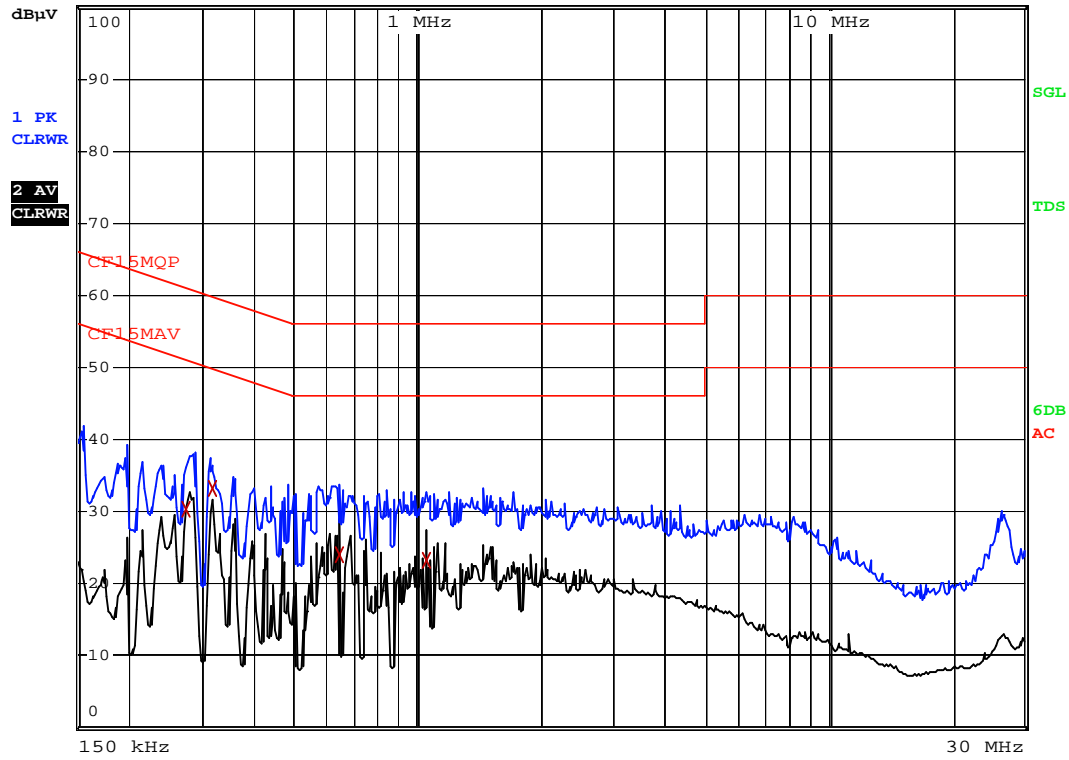
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## Worst Case: Alarm with Nightlight



RBW 9 kHz  
MT 1 s

Att 10 dB AUTO PREAMP OFF



Date: 5.JUL.2012 15:44:17

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Worst Case: Alarm with Nightlight

EDIT PEAK LIST (Final Measurement Results)				
Trace1: CF15MQP				
Trace2: CF15MAV				
Trace3: ---				
	TRACE	FREQUENCY	LEVEL dB $\mu$ V	DELTA LIMIT dB
2	CISPR Average	276 kHz	30.22 L1 gnd	-20.71
2	CISPR Average	316.5 kHz	33.23 L1 gnd	-16.56
2	CISPR Average	640.5 kHz	24.06 L1 gnd	-21.93
2	CISPR Average	1.0455 MHz	23.31 L1 gnd	-22.68

Date: 5.JUL.2012 15:43:35

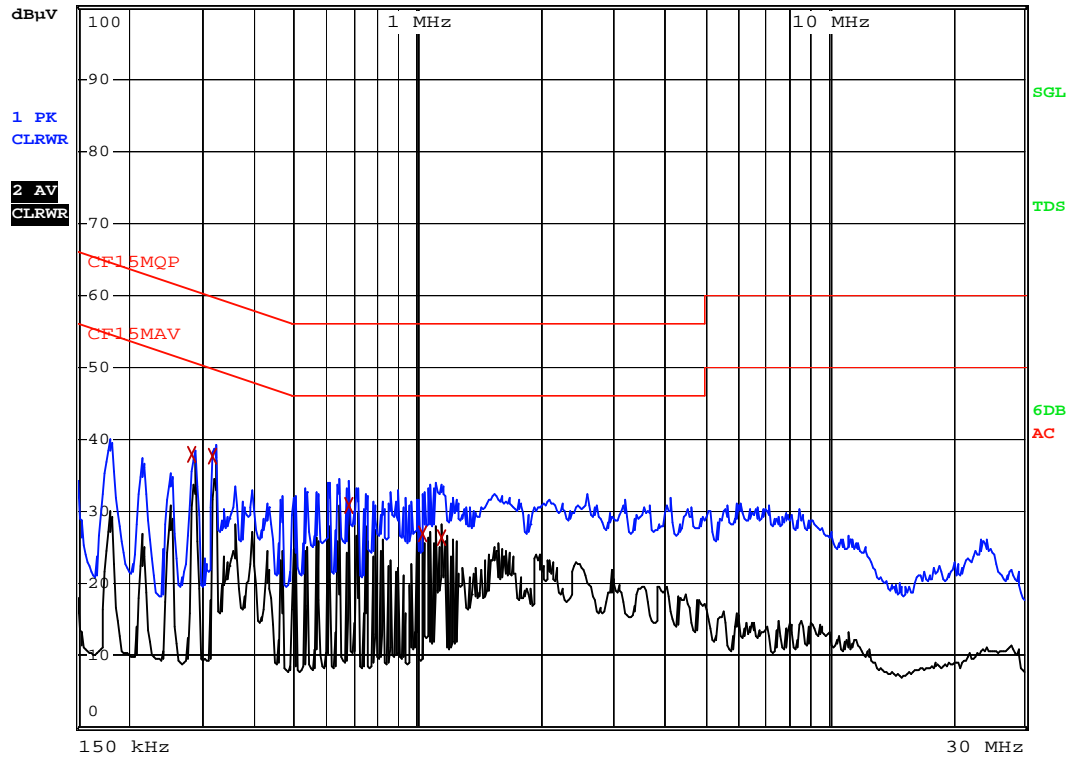
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## Worst Case: Talk with Nightlight and Movement Detection



RBW 9 kHz  
MT 1 s

Att 10 dB AUTO PREAMP OFF



Date: 5.JUL.2012 15:25:11

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Worst Case: Talk with Nightlight and Movement Detection

EDIT PEAK LIST (Final Measurement Results)				
Trace1: CF15MQP				
Trace2: CF15MAV				
Trace3: ---				
TRACE	FREQUENCY	LEVEL dB $\mu$ V		DELTA LIMIT dB
2	CISPR Average 285 kHz	37.88	L1 gnd	-12.78
2	CISPR Average 321 kHz	37.67	L1 gnd	-12.00
2	CISPR Average 676.5 kHz	30.90	L1 gnd	-15.09
2	CISPR Average 1.032 MHz	26.78	L1 gnd	-19.21
2	CISPR Average 1.14 MHz	26.37	L1 gnd	-19.62

Date: 5.JUL.2012 15:24:16



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**EXHIBIT 5  
EQUIPMENT LIST**

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### 5.0 Equipment List

#### 1) Radiated Emissions Test

Equipment	EMI Test Receiver	Log Periodic Antenna	Biconical Antenna
Registration No.	EW-2500	EW-0446	EW-2512
Manufacturer	ROHDESCHWARZ	EMCO	EMCO
Model No.	ESCI	3146	3104C
Calibration Date	24-Feb-2012	31-Oct-2011	15-Nov-2011
Calibration Due Date	24-Feb-2013	30-Apr-2013	15-May-2013

Equipment	Double Ridged Guide Antenna	Spectrum Analyzer	Digital Multimeter
Registration No.	EW-1133	EW-2188	EW-1237
Manufacturer	EMCO	AGILENTTECH	FLUKE
Model No.	3115	E4407B	179
Calibration Date	2-Mar-2011	26-Sep-2011	5-Sep-2011
Calibration Due Date	2-Sep-2012	26-Sep-2012	1-Oct-2012

Equipment	Spectrum Analyzer
Registration No.	EW-2253
Manufacturer	ROHDESCHWARZ
Model No.	FSP40
Calibration Date	12-Jan-2012
Calibration Due Date	12-Jan-2013

#### 2) Conducted Emissions Test

Equipment	EMI Test Receiver	Pulse Limiter	Artificial Mains
Registration No.	EW-2666	EW-0698	EW-0192
Manufacturer	ROHDESCHWARZ	ROHDESCHWARZ	R&S
Model No.	ESCI7	ESH3-Z2	ESH3-Z5
Calibration Date	21-May-2012	6-Apr-2012	11-Apr-2012
Calibration Due Date	21-May-2013	6-Apr-2013	11-Apr-2013

**END OF TEST REPORT**