



# PCTEST ENGINEERING LABORATORY, INC.

7185 Oakland Mills Road, Columbia, MD 21046 USA

Tel. 410.290.6652 / Fax 410.290.6654

<http://www.pctestlab.com>



## MEASUREMENT REPORT FCC PART 15.249 900MHz ISM

**Applicant Name:**

Primetech Corporation  
Koishikawa Daikoku Bldg. 9F  
1-3-25 Koishikawa, Bunkyo-ku  
Tokyo 112-0002, Japan

**Date of Testing:**

6/2 - 6/6/2014

**Test Site/Location:**

PCTEST Lab. Columbia, MD, USA

**Test Report Serial No.:**

0Y1405161008.2ACHI

**FCC ID:** 2ACHI300

**APPLICANT:** Primetech Corporation

**Application Type:** Certification

**Model(s):** SMP-300

**EUT Type:** Micro Infusion Pump

**Operating Frequency:** 916.1MHz

**FCC Classification:** Low Power Communications Device Transmitter (DXX)

**FCC Rule Part(s):** Part 15 Subpart C (15.249)

**Test Procedure(s):** ANSI C63.10-2009

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.10-2009. Test results reported herein relate only to the item(s) tested.

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

  
Randy Ortanez  
President



|                                               |                                                                                     |                                                                  |                                        |
|-----------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------|----------------------------------------|
| <b>FCC ID:</b> 2ACHI300                       |  | <b>FCC Pt. 15.249 900MHz ISM TEST REPORT<br/>(CERTIFICATION)</b> | <b>Reviewed by:</b><br>Quality Manager |
| <b>Test Report S/N:</b><br>0Y1405161008.2ACHI | <b>Test Dates:</b><br>6/2 - 6/6/2014                                                | <b>EUT Type:</b><br>Micro Infusion Pump                          | Page 1 of 14                           |

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# MEASUREMENT REPORT

## FCC Part 15.249



### § 2.1033 General Information

**APPLICANT:** Primetech Corporation

**APPLICANT ADDRESS:** Koishikawa Daikoku Bldg. 9F  
1-3-25 Koishikawa, Bunkyo-ku, Tokyo 112-0002, Japan

**TEST SITE:** PCTEST ENGINEERING LABORATORY, INC.

**TEST SITE ADDRESS:** 7185 Oakland Mills Road, Columbia, MD 21046 USA

**FCC RULE PART(S):** Part 15 Subpart C (15.249)

**MODEL:** SMP-300

**FCC ID:** 2ACHI300

**Test Device Serial No.:** FCC 1 ☐ Production ☒ Pre-Production ☐ Engineering

**FCC CLASSIFICATION:** Low Power Communications Device Transmitter (DXX)

**DATE(S) OF TEST:** 6/2 - 6/6/2014

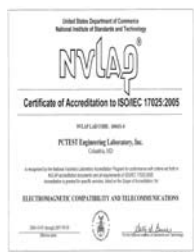
**TEST REPORT S/N:** 0Y1405161008.2ACHI

### Test Facility / Accreditations

Measurements were performed at PCTEST Engineering Lab located in Columbia, MD 21046, U.S.A.



- PCTEST facility is an FCC registered (PCTEST Reg. No. 159966) test facility with the site description report on file and has met all the requirements specified in Section 2.948 of the FCC Rules and Industry Canada (2451B-1).
- PCTEST Lab is accredited to ISO 17025 by U.S. National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program (NVLAP Lab code: 100431-0) in EMC, FCC and Telecommunications.
- PCTEST Lab is accredited to ISO 17025-2005 by the American Association for Laboratory Accreditation (A2LA) in Specific Absorption Rate (SAR) testing, Hearing Aid Compatibility (HAC) testing, CTIA Test Plans, and wireless testing for FCC and Industry Canada Rules.
- PCTEST Lab is a recognized U.S. Conformity Assessment Body (CAB) in EMC and R&TTE (n.b. 0982) under the U.S.-EU Mutual Recognition Agreement (MRA).
- PCTEST TCB is a Telecommunication Certification Body (TCB) accredited to ISO/IEC Guide 65 by the American National Standards Institute (ANSI) in all scopes of FCC Rules and Industry Canada Standards (RSS).
- PCTEST facility is an IC registered (2451B-1) test laboratory with the site description on file at Industry Canada.
- PCTEST is a CTIA Authorized Test Laboratory (CATL) for AMPS, CDMA, and EvDO wireless devices and for Over-the-Air (OTA) Antenna Performance testing for AMPS, CDMA, GSM, GPRS, EGPRS, UMTS (W-CDMA), CDMA 1xEVDO, and CDMA 1xRTT.



|                                               |                                                                                     |                                                                  |                                        |
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## 1.0 INTRODUCTION

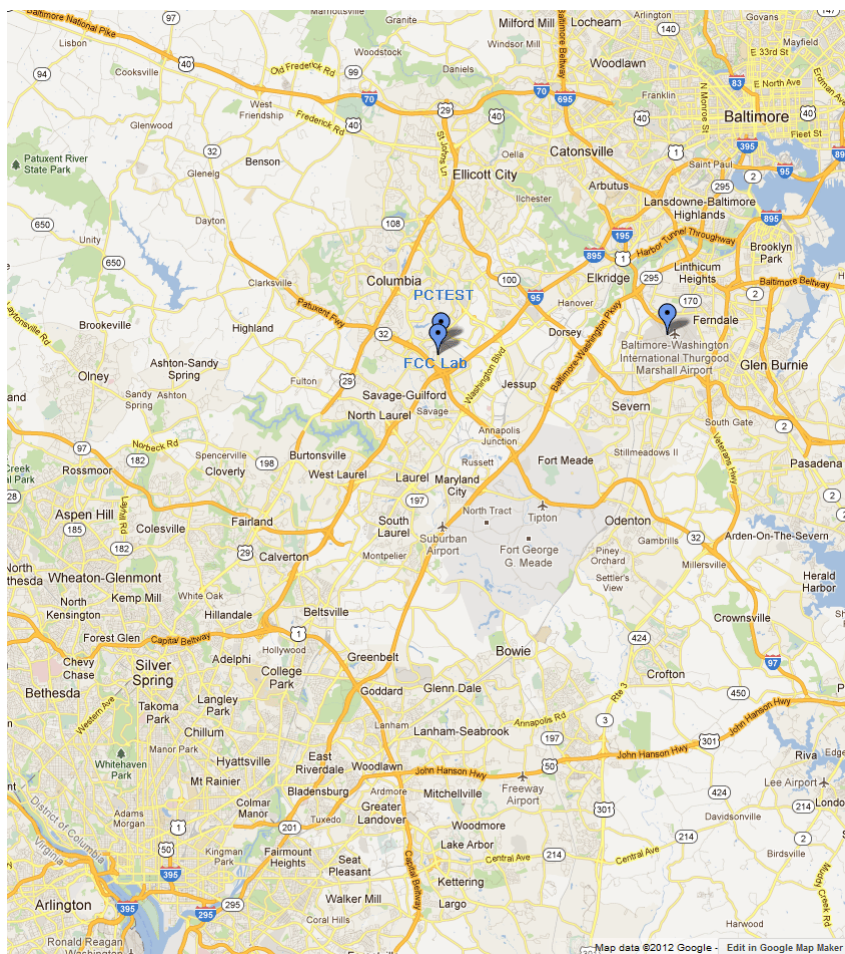
### 1.1 Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission and the Industry Canada Certification and Engineering Bureau.

### 1.2 PCTEST Test Location

The map below shows the location of the PCTEST LABORATORY, its proximity to the FCC Laboratory, the Columbia vicinity, the Baltimore-Washington Intern't'l (BWI) airport, the city of Baltimore and the Washington, DC area. (See **Figure 1-1**).

These measurement tests were conducted at the PCTEST Engineering Laboratory, Inc. facility located at 7185 Oakland Mills Road, Columbia, MD 21046. The site coordinates are 39° 10'23" N latitude and 76° 49'50" W longitude. The facility is 0.4 miles North of the FCC laboratory, and the ambient signal and ambient signal strength are approximately equal to those of the FCC laboratory. The detailed description of the measurement facility was found to be in compliance with the requirements of § 2.948 according to ANSI C63.4-2009 on February 15, 2012.



**Figure 1-1. Map of the Greater Baltimore and Metropolitan Washington, D.C. area**

|                                               |                                                                  |                                         |                                        |
|-----------------------------------------------|------------------------------------------------------------------|-----------------------------------------|----------------------------------------|
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## 2.0 PRODUCT INFORMATION

### 2.1 Equipment Description

The Equipment Under Test (EUT) is the **Primetech Micro Infusion Pump FCC ID: 2ACHI300**. The test data contained in this report pertains only to the emissions due to the EUT's 900MHz ISM transmitter.

### 2.2 Device Capabilities

This device contains the following capabilities:

900MHz ISM

### 2.3 Test Configuration

The Primetech Micro Infusion Pump FCC ID: 2ACHI300 was tested per the guidance of ANSI C63.10-2009. See Section 3.2 and Section 6 of this test report for a description of the radiated emissions, and antenna port conducted emissions test setups, respectively.

### 2.4 EMI Suppression Device(s)/Modifications

No EMI suppression device(s) were added and no modifications were made during testing.

### 2.5 Labeling Requirements

Per 15.19; Docket 95-19

The label shall be permanently affixed at a conspicuous location on the device; instruction manual or pamphlet supplied to the user and be readily visible to the purchaser at the time of purchase. However, when the device is so small wherein placement of the label with specified statement is not practical, only the trade name and FCC ID must be displayed on the device per Section 15.19(a)(5). Please see attachment for FCC ID label and label location.

|                                        |                                                                                     |                                                          |                                 |
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## 3.0 DESCRIPTION OF TEST

### 3.1 Evaluation Procedure

The measurement procedure described in the American National Standard for Testing Unlicensed Wireless Devices (ANSI C63.10-2009) was used in the measurement of the **Primetech Micro Infusion Pump** FCC ID: 2ACH1300.

Deviation from measurement procedure.....None

### 3.2 Radiated Emissions

The radiated test facilities consisted of an indoor 3 meter semi-anechoic chamber used for final measurements and exploratory measurements, when necessary. The measurement area is contained within the semi-anechoic chamber which is shielded from any ambient interference. The test site inside the chamber is a 6m x 5.2m elliptical, obstruction-free area in accordance with Clause 5, Figure 5.7 of ANSI C63.4-2009. For measurements above 1GHz absorbers are arranged on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections. For measurements below 1GHz, the absorbers are removed. An ETS Lindgren Model 2188 raised turntable is used for radiated measurement. It is a continuously rotatable, remote-controlled, metallic turntable and 2 meters (6.56 ft.) in diameter. The turn table is flush with the raised floor of the chamber in order to maintain its function as a ground plane. A 78cm high PVC support structure is placed on top of the turntable. A ¾" (~1.9cm) sheet of high density polyethylene is used as the table top and is placed on top of the PVC supports to bring the total height of the table to 80cm.

For all measurements, the spectrum was scanned through all EUT azimuths and from 1 to 4 meter receive antenna height using a broadband antenna from 30MHz up to the upper frequency shown in 15.33(b)(1) depending on the highest frequency generated or used in the device or on which the device operates or tunes. For frequencies above 1GHz, linearly polarized double ridge horn antennas were used. For frequencies below 30MHz, a calibrated loop antenna was used. When exploratory measurements were necessary, they were performed at 1 meter test distance inside the semi-anechoic chamber using broadband antennas, broadband amplifiers, and spectrum analyzers to determine the frequencies and modes producing the maximum emissions. Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The test set-up was placed on top of the 0.8 meter high, 1 x 1.5 meter table. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Appropriate precaution was taken to ensure that all emissions from the EUT were maximized and investigated. The system configuration, clock speed, mode of operation or video resolution, if applicable, turntable azimuth, and receive antenna height was noted for each frequency found.

Final measurements were made in the semi-anechoic chamber using calibrated, linearly polarized broadband and horn antennas. The test setup was configured to the setup that produced the worst case emissions. The spectrum analyzer was set to investigate all frequencies required for testing to compare the highest radiated disturbances with respect to the specified limits. The turntable containing the EUT was rotated through 360 degrees and the height of the receive antenna was varied 1 to 4 meters and stopped at the azimuth and height producing the maximum emission. Each emission was maximized by varying: the mode of operation or resolution, clock or data rate, scrolling H pattern to the EUT and/or support equipment, and changing the polarity of the receive antenna, whichever produced the worst-case emissions.

|                                        |                                                                                     |                                                          |                                 |
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## 4.0 ANTENNA REQUIREMENTS

### Excerpt from §15.203 of the FCC Rules/Regulations:

“An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.”

- The antennas of the Primetech Micro Infusion Pump are **permanently attached**.
- There are no provisions for connection to an external antenna.

### Conclusion:

The **Primetech Micro Infusion Pump FCC ID: 2ACH1300** unit complies with the requirement of §15.203.

|                                               |                                                                                     |                                                                  |                                        |
|-----------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------|----------------------------------------|
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## 5.0 TEST EQUIPMENT CALIBRATION DATA

Test Equipment Calibration is traceable to the National Institute of Standards and Technology (NIST).

| Manufacturer    | Model             | Description                            | Cal Date   | Cal Interval | Cal Due    | Serial Number |
|-----------------|-------------------|----------------------------------------|------------|--------------|------------|---------------|
| -               | RE1               | Radiated Emissions Cable Set (UHF/EHF) | 5/29/2014  | Annual       | 5/29/2015  | N/A           |
| Agilent         | 8447D             | Broadband Amplifier                    | 5/30/2014  | Annual       | 5/30/2015  | 2443A01900    |
| Agilent         | N9020A            | MXA Signal Analyzer                    | 10/29/2013 | Annual       | 10/29/2014 | US46470561    |
| Emco            | 3115              | Horn Antenna (1-18GHz)                 | 1/30/2014  | Biennial     | 1/30/2016  | 9704-5182     |
| K & L           | 13SH10-1000/U1000 | N Type High Pass Filter                | 5/22/2014  | Annual       | 5/22/2015  | 1             |
| Rohde & Schwarz | TS-PR18           | 1-18 GHz Pre-Amplifier                 | 3/5/2014   | Annual       | 3/5/2015   | 100071        |
| Rohde & Schwarz | ESU26             | EMI Test Receiver (26.5GHz)            | 1/27/2014  | Annual       | 1/27/2015  | 100342        |
| Sunol           | JB5               | Bi-Log Antenna (30M - 5GHz)            | 1/28/2014  | Biennial     | 1/28/2016  | A051107       |

**Table 5-1. Annual Test Equipment Calibration Schedule**

|                                               |                                                                                     |                                                                  |                                        |
|-----------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------|----------------------------------------|
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## 6.0 TEST RESULTS

### 6.1 Summary

Company Name: Primetech Corporation

FCC ID: 2ACH1300

| FCC Part Section(s)          | Test Description                                                              | Test Limit                                                              | Test Condition | Test Result | Reference    |
|------------------------------|-------------------------------------------------------------------------------|-------------------------------------------------------------------------|----------------|-------------|--------------|
| <b>TRANSMITTER MODE (Tx)</b> |                                                                               |                                                                         |                |             |              |
| 2.1049                       | Occupied Bandwidth                                                            | N/A                                                                     | CONDUCTED      | PASS        | Section 6.2  |
| 15.249(a)(e)                 | Fundamental Field Strength Level                                              | < 50 mV/m                                                               | RADIATED       | PASS        | Section 6.3  |
| 15.249(a)(e)                 | Harmonic Field Strength Level                                                 | < 500 $\mu$ V/m                                                         |                | PASS        | Section 6.4  |
| 15.205, 15.209, 15.249(d)(e) | General Field Strength Limits (Restricted Bands and Radiated Emission Limits) | The lesser of 15.209 limits and 50dB below the level of the fundamental |                | PASS        | Sections 6.4 |

**Table 6-1. Summary of Test Results**

#### Notes:

- 1) All modes of operation were investigated. The test results shown in the following sections represent the worst case emissions.
- 2) All antenna port conducted emissions testing was performed on a test bench with the antenna port of the EUT connected to the spectrum analyzer through calibrated cables, attenuators, and couplers.

|                                        |                                                                                     |                                                          |                                 |
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## 6.2 Occupied Bandwidth Measurement

**\$2.1049**

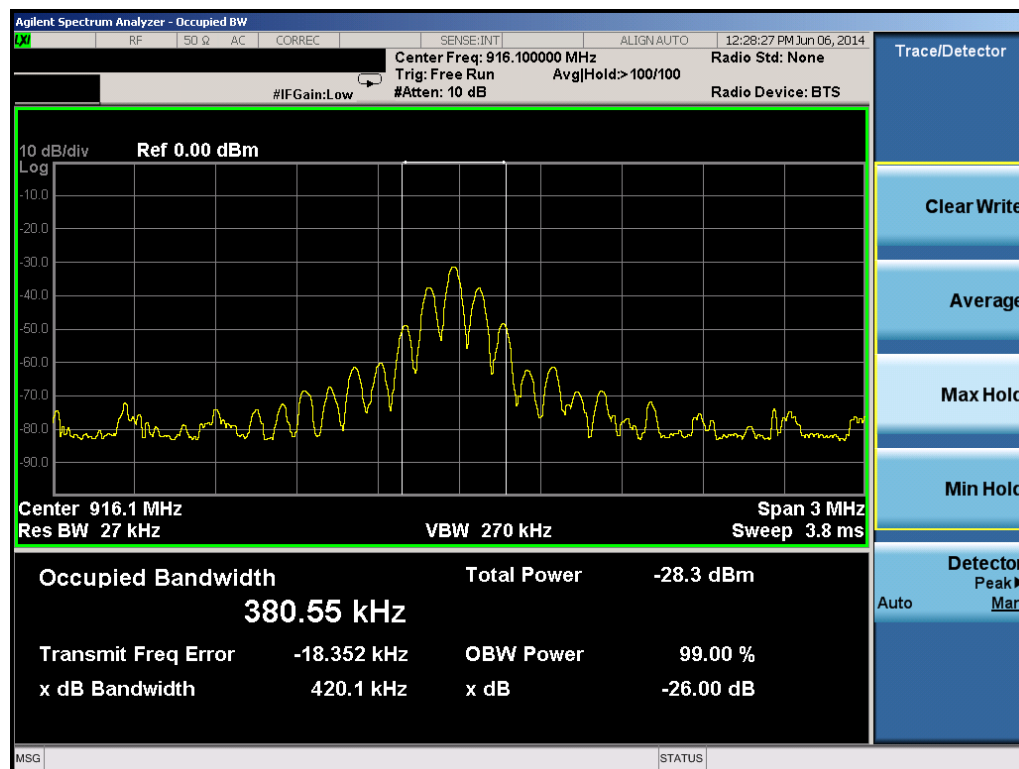
The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured. The spectrum analyzers' "occupied bandwidth" measurement function was used to record the occupied bandwidth.

| Frequency [MHz] | Measured Bandwidth [kHz] |
|-----------------|--------------------------|
| 916.1           | 380.55                   |

**Table 6-2. Occupied Bandwidth Measurement**



**Figure 6-1. Test Instrument & Measurement Setup**



**Plot 6-1. Occupied Bandwidth Plot**

|                                        |                                               |                                                          |                                 |
|----------------------------------------|-----------------------------------------------|----------------------------------------------------------|---------------------------------|
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### 6.3 Fundamental Field Strength Level Measurement

§15.249(a)(e)

Measurement is made while the EUT is operating in continuous RF transmission mode. The field strength shown below was measured using a spectrum analyzer. Peak field strength measurements are performed in the analyzers' swept spectrum mode using a peak detector with RBW = 3MHz and VBW ≥ RBW. The receiving antenna is distanced 3 meters away from the EUT.

*The maximum permissible quasi-peak field strength level is 50mV/m (93.98 dBμV/m).*

| Frequency [MHz] | Analyzer Level [dBm] | Detector | Ant. Pol. [H/V] | EUT Pol. [H/H2/V] | AFCL [dB] | Field Strength [dBμV/m] | Limit [dBμV/m] | Margin [dB] |
|-----------------|----------------------|----------|-----------------|-------------------|-----------|-------------------------|----------------|-------------|
| 916.10          | -84.54               | Peak     | H               | H                 | 25.15     | 47.60                   | 93.98          | -46.38      |

**Table 6-3. Field Strength Measurements**

**Note:**

The peak detector was used to measure the field strength of the emission; however, the peak field strength is still below the quasi-peak limit.

|                                        |                                                                                     |                                                          |                                 |
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## 6.4 Radiated Spurious Emission Measurements

§15.205 §15.249 (a)(d)(e)

| Frequency         | Field Strength<br>[μV/m] | Measured Distance<br>[Meters] |
|-------------------|--------------------------|-------------------------------|
| 0.009 – 0.490 MHz | 2400/F (kHz)             | 300                           |
| 0.490 – 1.705 MHz | 24000/F (kHz)            | 30                            |
| 1.705 – 30.00 MHz | 30                       | 30                            |
| 30.00 – 88.00 MHz | 100                      | 3                             |
| 88.00 – 216.0 MHz | 150                      | 3                             |
| 216.0 – 960.0 MHz | 200                      | 3                             |
| Above 960.0 MHz   | 500                      | 3                             |

**Table 6-4. Radiated Limits**

### Sample Calculation

- o Avg. Field Strength Level  $_{[dB\mu V/m]} = \text{Analyzer Level}_{[dBm]} + 107 + AFCL_{[dB/m]}$
- o Pk. Field Strength Level  $_{[dB\mu V/m]} = \text{Analyzer Level}_{[dBm]} + 107 + AFCL_{[dB/m]}$
- o  $AFCL_{[dB/m]} = \text{Antenna Factor}_{[dB/m]} + \text{Cable Loss}_{[dB]}$
- o  $\text{Margin}_{[dB]} = \text{Field Strength Level}_{[dB\mu V/m]} - \text{Limit}_{[dB\mu V/m]}$

### Test Notes

- The spectrum is measured from 9kHz to the 10<sup>th</sup> harmonic and the worst-case emissions are reported. There were no non-harmonic emissions detected whose levels were within 20dB of the applicable limits so only harmonic emissions data is shown in this section.
- All emissions lying in restricted bands specified in §15.205 are below the limit shown in Table 6-4. Per 15.249(d), the radiated emissions limits from 15.209 were used since they were less than the limit of 50dB of attenuation from the measured fundamental field strength level.
- Peak measurements > 1GHz using RBW = 1MHz and VBW = 3MHz. Average measurements > 1GHz using RBW = 1MHz and VBW = 1kHz  $\geq 1/\tau$  Hz, where  $\tau$  = pulse width in seconds. Both average and peak measurements were made using a peak detector.
- The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.
- This unit was tested with its standard battery.
- The receiving antenna is distanced 3 meters away from the EUT.

|                                        |                                                                                     |                                                          |                                 |
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## Radiated Spurious Emission Measurements

§15.205 §15.209 §15.249 (a)(d)(e)

Worst Case Mode: 900MHz ISM  
 Measurement Distance: 3 Meters  
 Operating Frequency: 916.1MHz

| Frequency [MHz] | Analyzer Level [dBm] | Detector | Ant. Pol. [H/V] | EUT Pol. [H/H2/V] | AFCL [dB] | Field Strength [dBμV/m] | Limit [dBμV/m] | Margin [dB] |
|-----------------|----------------------|----------|-----------------|-------------------|-----------|-------------------------|----------------|-------------|
| 1832.20         | -108.70              | Avg      | H               | H                 | 30.48     | 28.78                   | 53.98          | -25.20      |
| 1832.20         | -97.64               | Peak     | H               | H                 | 30.48     | 39.84                   | 73.98          | -34.14      |
| 2748.30         | -109.53              | Avg      | H               | H                 | 32.86     | 30.33                   | 53.98          | -23.65      |
| 2748.30         | -97.52               | Peak     | H               | H                 | 32.86     | 42.34                   | 73.98          | -31.64      |
| 3664.40         | -109.93              | Avg      | H               | H                 | 36.50     | 33.57                   | 53.98          | -20.41      |
| 3664.40         | -97.97               | Peak     | H               | H                 | 36.50     | 45.53                   | 73.98          | -28.45      |

**Table 6-5. Radiated Measurements**

|                                        |                                                                                                                                                  |                                  |                                 |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|---------------------------------|
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## 7.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Primetech Micro Infusion Pump** **FCC ID: 2ACHI300** is in compliance with Part 15 Subpart C (15.249) of the FCC Rules.

|                                               |                                                                                     |                                                                  |                                        |
|-----------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------|----------------------------------------|
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