

Certification Test Report

FCC ID: 2ADDB-NIPRO-01

FCC Rule Part: 15.247

ACS Report Number: 14-2108.W04.1A

Manufacturer: Nipro Diagnostics, Inc.

Model(s): BCM20736S

Test Begin Date: **October 31, 2014**

Test End Date: **November 13, 2014**

Report Issue Date: November 25, 2014



FOR THE SCOPE OF ACCREDITATION UNDER CERTIFICATE NUMBER AT-1533

This report must not be used by the client to claim product certification, approval, or endorsement by ACCLASS, ANSI, or any agency of the Federal Government.

Reviewed by:

A handwritten signature in blue ink, appearing to read "Thierry Jean-Charles".

Thierry Jean-Charles
EMC Engineer
Advanced Compliance Solutions, Inc.

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This report contains 12 pages

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1 GENERAL

1.1 Purpose

The purpose of this report is to demonstrate compliance with Part 15 Subpart C of the FCC's Code of Federal Regulations for a Class II Permissive Change.

The objective for the Class II permissive change is to add a new host configuration for the model BCM20736S. There are no power or hardware changes on the product.

1.2 Manufacturer Information

Nipro Diagnostics, Inc.
2400 NW 55th Court
Fort Lauderdale, FL 33309

1.3 Product Description

The model BCM20736S is a Bluetooth Low Energy wireless module. The unit is integrated within the blood glucose monitor model True Metrix Air.

Technical Details

Mode of Operation:	Bluetooth Low Energy
Frequency Range:	2402 MHz - 2480 MHz
Number of Channels:	40
Channel Separation:	2 MHz
Transmit Data Rates:	1 Mbps
Modulations:	GFSK
Antenna Type/Gain:	PIFA, -1.5 dBi
Input Power:	3 VDC (CR2032 lithium battery)

Model Number: BCM20736S

Test Sample Serial Number(s): TB0000133 (Host)

Test Sample Condition: The samples were in good conditions with no observable physical damages.

1.4 Test Methodology and Considerations

The model BCM20736S was tested for radiated emissions up to the 10th harmonic for the low, middle and high channels. Preliminary measurements were performed for the device set in three orthogonal orientations. Final measurements were performed using the orientation leading to the highest emissions which corresponds to the EUT set in the vertical position on the test table.

The unit was also evaluated for compliance to the unintentional emission requirements. The results are documented separately in a verification report.

2 TEST FACILITIES

2.1 Location

The radiated and conducted emissions test sites are located at the following address:

Advanced Compliance Solutions, Inc.
3998 FAU Blvd, Suite 310
Boca Raton, Florida 33431
Phone: (561) 961-5585
Fax: (561) 961-5587
www.acstestlab.com

FCC Test Firm Registration #: 475089
Industry Canada Lab Code: 4175C

2.2 Laboratory Accreditations/Recognitions/Certifications

ACS is accredited to ISO/IEC 17025 by ANSI-ASQ National Accreditation Board under their ACLASS program and has been issued certificate number AT-1533 in recognition of this accreditation. Unless otherwise specified, all test methods described within this report are covered under the ISO/IEC 17025 scope of accreditation.

2.3 Radiated & Conducted Emissions Test Site Description

2.3.1 Semi-Anechoic Chamber Test Site

The EMC radiated test facility consists of an RF-shielded enclosure. The interior dimensions of the indoor semi-anechoic chamber are approximately 48 feet (14.6 m) long by 36 feet (10.8 m) wide by 24 feet (7.3 m) high and consist of rigid, 1/8 inch (0.32 cm) steel-clad, wood core modular panels with steel framing. In the shielded enclosure, the faces of the panels are galvanized and the chamber is self-supporting. 8-foot RF absorbing cones are installed on 4 walls and the ceiling. The steel-clad ground plane is covered with vinyl floor.

The turntable is driven by pneumatic motor, which is capable of supporting a 2000 lb. load. The turntable is flushed with the chamber floor which it is connected to, around its circumference, with a continuous metallic loaded spring. An EMCO Model 1050 Multi-device Controller controls the turntable position.

A pneumatic motor is used to control antenna polarizations and height relative to the ground. The height information is displayed on the control unit EMCO Model 1050.

The control room is an RF shielded enclosure attached to the semi-anechoic chamber with two bulkhead panels for connecting RF, and control cables. The dimension of the room is 7.3 m x 4.9 m x 3 m high and the entrance doors of both control and conducted rooms are 3 feet (0.91 m) by 7 feet (2.13 m).

A diagram of the Semi-Anechoic Chamber Test Site is shown in Figure 2.3.1-1 below:

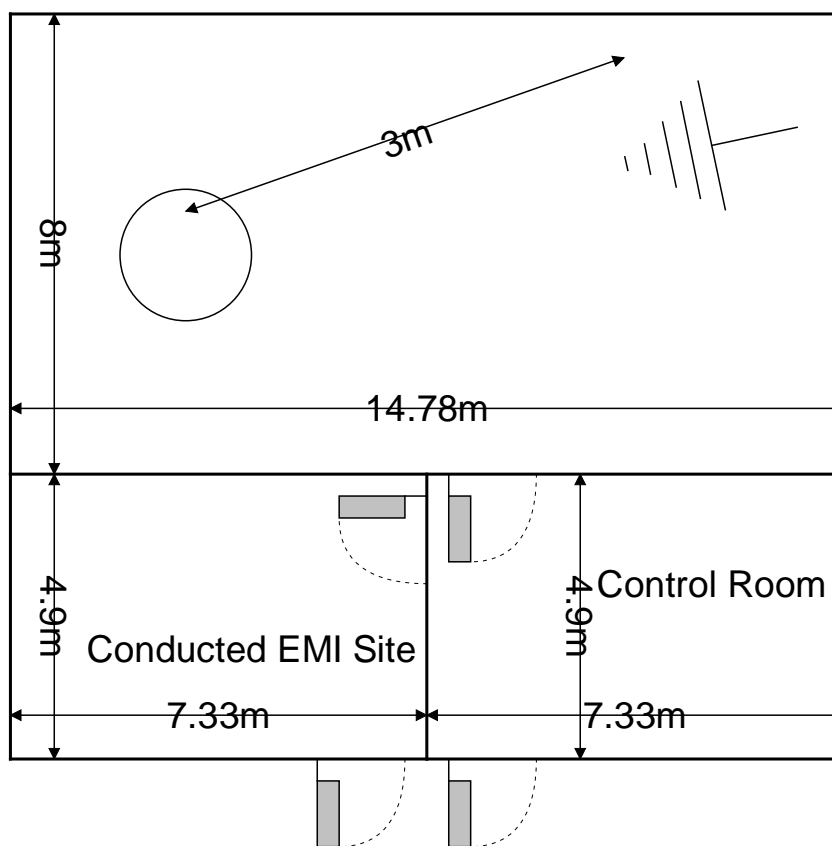


Figure 2.3.1-1: Semi-Anechoic Chamber Test Site

2.3.2 Conducted Emissions Test Site Description

The dimensions of the shielded conducted room are $7.3 \times 4.9 \times 3 \text{ m}^3$. As per ANSI C63.4 2003 requirements, the data were taken using two LISNs; a Solar Model 8028-50 $50 \Omega/50 \mu\text{H}$ and an EMCO Model 3825, which are installed as shown in Photograph 3. For 220 V, 50 Hz, a Polarad LISN (S/N 879341/048) is used in conjunction with a 1 kVA, 50 Hz/220 V EDGAR variable frequency generator, Model 1001B, to filter conducted noise from the generator.

A diagram of the room is shown below in figure 2.3.2-1:

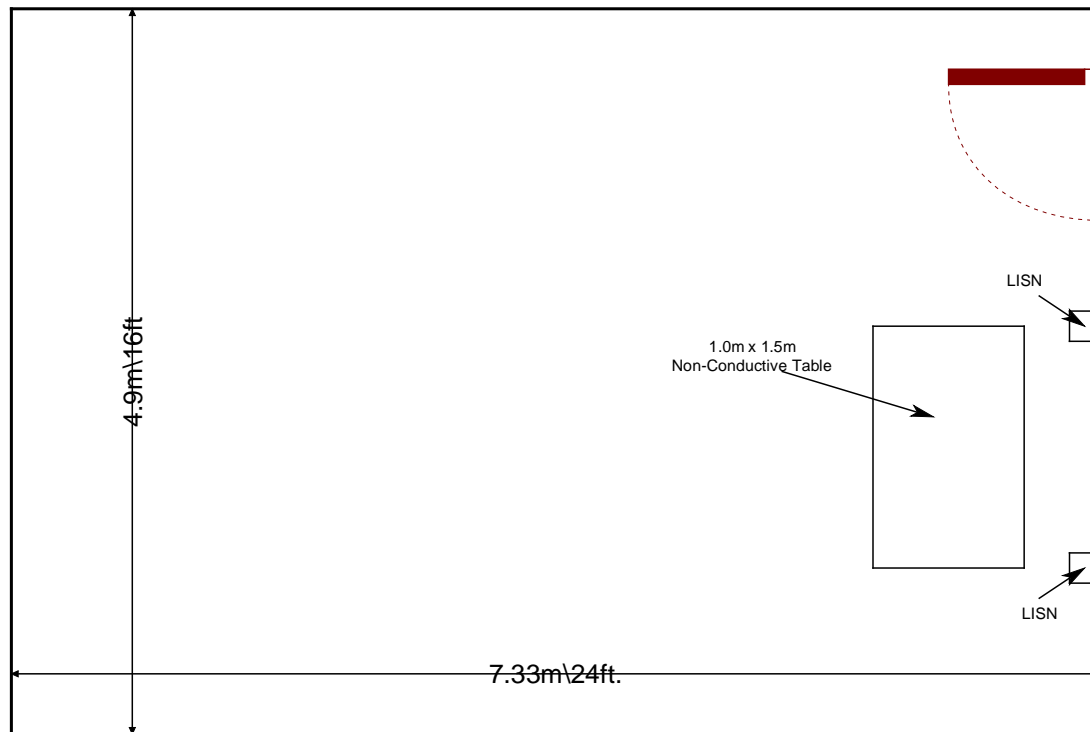


Figure 2.3.2-1: AC Mains Conducted EMI Site

3 APPLICABLE STANDARD REFERENCES

The following standards were used:

- ❖ ANSI C63.4-2003: Method of Measurements of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the 9 kHz to 40 GHz.
- ❖ ANSI C63.10-2009: American National Standard for Testing Unlicensed Wireless Devices.
- ❖ US Code of Federal Regulations (CFR): Title 47, Part 2, Subpart J: Equipment Authorization Procedures, 2014.
- ❖ US Code of Federal Regulations (CFR): Title 47, Part 15, Subpart C: Radio Frequency Devices, Intentional Radiators, 2014
- ❖ KDB Publication No. 558074 D01 DTS Meas Guidance v03r02 – Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under 15.247, June 2, 2014.

4 LIST OF TEST EQUIPMENT

The calibration interval of test equipment is annually or the manufacturer's recommendations. Where the calibration interval deviates from the annual cycle based on the instrument manufacturer's recommendations, it shall be stated below.

Table 4-1: Test Equipment

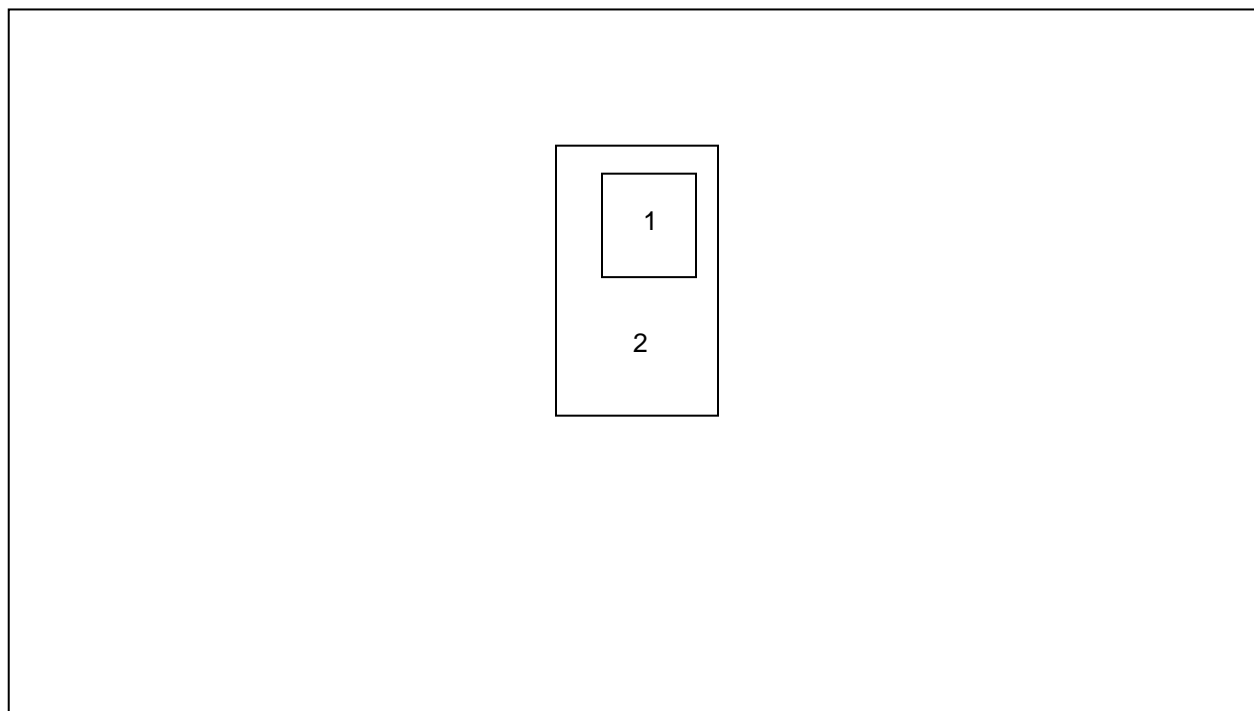
AssetID	Manufacturer	Model #	Equipment Type	Serial #	Last Calibration Date	Calibration Due Date
523	Agilent	E7405	Spectrum Analyzers	MY45103293	1/8/2013	1/8/2015
2002	EMCO	3108	Antennas	2147	11/22/2013	11/22/2015
2004	EMCO	3146	Antennas	1385	11/22/2013	11/22/2015
2006	EMCO	3115	Antennas	2573	4/24/2013	4/24/2015
2008	COM-Power	AH-826	Antennas	81009	NCR	NCR
2011	Hewlett-Packard	HP 8447D	Amplifiers	2443A03952	12/31/2013	12/31/2014
2037	ACS Boca	Chamber EMI Cable Set	Cable Set	2037	2/27/2014	2/27/2015
2044	QMI	N/A	Cables	2044	12/31/2013	12/31/2014
2070	Mini Circuits	VHF-8400+	Filter	2070	1/1/2014	1/1/2015
2072	Mini Circuits	VHF-3100+	Filter	30737	1/1/2014	1/1/2015
2076	Hewlett Packard	HP5061-5458	Cables	2076	12/31/2013	12/31/2014
2086	Merrimac	FAN-6-10K	Attenuators	23148-83-1	12/31/2013	12/31/2014
2089	Agilent Technologies, Inc.	83017A	Amplifiers	3123A00214	12/16/2013	12/16/2014
2095	ETS Lindgren	TILE4! - Version 4.2.A	Software	85242	NCR	NCR

Note: NCR=No Calibration Required

5 SUPPORT EQUIPMENT**Table 5-1: EUT and Support Equipment**

Item #	Type Device	Manufacturer or Responsible Party	Model/Part #	Serial #
1	EUT	Nipro Diagnostics, Inc.	BCM20736S	N/A
2	Host	Nipro Diagnostics, Inc.	True Metrix Air	TB0000133

Note: The EUT is standalone without provision for connection to accessory equipment.

6 EQUIPMENT UNDER TEST SETUP BLOCK DIAGRAM

7 SUMMARY OF TESTS

Along with the tabular data shown below, plots were taken of all signals deemed important enough to document.

7.1 Antenna Requirement – FCC: Section 15.203

The BCM20736S uses a PIFA that is internal to the module. The antenna cannot be replaced without permanently damaging the product, thus meeting the requirements of FCC Section 15.203.

7.2 Radiated Spurious Emissions into Restricted Frequency Bands - FCC 15.205, 15.209

7.2.1 Measurement Procedure

Radiated emissions tests were made over the frequency range of 30 MHz to 26 GHz, 10 times the highest fundamental frequency. Each emission found to be in a restricted band as defined by section 15.205, including any emission at the operational band-edge, was compared to the radiated emission limits as defined in section 15.209.

The EUT was rotated through 360° and the receive antenna height was varied from 1m to 4m so that the maximum radiated emissions level would be detected. For frequencies below 1000MHz, quasi-peak measurements were made using a resolution bandwidth RBW of 120 kHz and a video bandwidth VBW of 300 kHz. For frequencies above 1000 MHz, peak measurements are made with RBW of 1 MHz and VBW of 3 MHz. Average measurements are performed in the linear scale using VBW of 30 Hz over a 5 second sweep.

7.2.2 Measurement Results

Radiated band-edge and spurious emissions found in the restricted frequency bands of 30MHz to 26 GHz are reported in the tables below.

Table 7.2.2-1: Radiated Spurious Emissions Tabulated Data

Frequency (MHz)	Level (dBuV)		Antenna Polarity (H/V)	Correction Factors (dB)	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg			pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
Low Channel										
4804	47.98	40.09	H	-0.27	47.71	39.82	74.0	54.0	26.3	14.2
4804	48.63	41.97	V	-0.27	48.36	41.70	74.0	54.0	25.6	12.3
12010	43.68	30.87	V	12.72	56.40	43.59	83.5	63.5	27.1	19.9
Middle Channel										
4884	47.92	41.12	H	-0.03	47.89	41.09	74.0	54.0	26.1	12.9
4884	48.29	41.30	V	-0.03	48.26	41.27	74.0	54.0	25.7	12.7
7326	48.32	41.65	H	5.60	53.92	47.25	74.0	54.0	20.1	6.8
7326	48.39	40.43	V	5.60	53.99	46.03	74.0	54.0	20.0	8.0
High Channel										
2483.5	65.11	50.11	H	-7.61	57.50	42.50	74.0	54.0	16.5	11.5
2483.5	59.26	48.97	V	-7.61	51.65	41.36	74.0	54.0	22.3	12.6
4960	47.22	38.92	H	0.20	47.42	39.12	74.0	54.0	26.6	14.9
4960	47.51	39.26	V	0.20	47.71	39.46	74.0	54.0	26.3	14.5
7440	49.01	42.39	H	6.00	55.01	48.39	74.0	54.0	19.0	5.6
7440	51.22	45.70	V	6.00	57.22	51.70	74.0	54.0	16.8	2.3

Notes: All emissions above 12.01 GHz were attenuated below the limits and the noise floor of the measurement equipment.

7.2.3 Sample Calculation:

$$R_C = R_U + CF_T$$

Where:

CF_T	=	Total Correction Factor (AF+CA+AG)-DC (Average Measurements Only)
R_U	=	Uncorrected Reading
R_C	=	Corrected Level
AF	=	Antenna Factor
CA	=	Cable Attenuation
AG	=	Amplifier Gain
DC	=	Duty Cycle Correction Factor

Example Calculation: Peak

Corrected Level: $47.98 + (-0.27) = 47.71$ dB μ V/m

Margin: 74 dB μ V/m $- 47.71$ dB μ V/m = 26.3 dB

Example Calculation: Average

Corrected Level: $40.09 + (-0.27) = 39.82$ dB μ V/m

Margin: 54 dB μ V/m $- 39.82$ dB μ V/m = 14.2 dB

8 CONCLUSION

In the opinion of ACS, Inc., the BCM20736S meets the requirements of FCC Part 15 subpart C and Industry Canada's Radio Standards Specification RSS-210 for the test procedures documented in the test report.

END REPORT