



## **Compliance Testing, LLC**

Previously Flom Test Lab

EMI, EMC, RF Testing Experts Since 1963

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### **Test Report**

**Prepared for: HDH Technologies**

**Model: Sanicheck NFC**

**Description: Sanicheck NFC Hand Sanitizing Monitor**

**FCC ID: 2AB9U-SANICHECK1**

**To**

**FCC Part 15.225**

**Date of Issue: April 29, 2014**

**On the behalf of the applicant:**

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**Attention of:**

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Project No: p1420005**

**Alex Macon  
Project Test Engineer**

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All results contained herein relate only to the sample tested



### Test Report Revision History

Revision	Date	Revised By	Reason for Revision
1.0	4/29/14	Alex Macon	Original Document



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**ILAC / A2LA**

Compliance Testing, LLC, has been accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer joint ISO-ILAC-IAF Communiqué dated January 2009)

The tests results contained within this test report all fall within our scope of accreditation, unless noted in the table below.

Please refer to <http://www.compliancetesting.com/labscope.html> for current scope of accreditation.

Testing Certificate Number: **2152.01**



**FCC Site Reg. #349717**

**IC Site Reg. #2044A-2**

**Non-accredited tests contained in this report:**

**N/A**



**The applicant has been cautioned as to the following:**

**15.21 Information to User**

The user's manual or instruction manual for an intentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

**15.27(a) Special Accessories**

Equipment marketed to a consumer must be capable of complying with the necessary regulations in the configuration in which the equipment is marketed. Where special accessories, such as shielded cables and/or special connectors are required to enable an unintentional or intentional radiator to comply with the emission limits in this part, the equipment must be marketed with, i.e. shipped and sold with, those special accessories. However, in lieu of shipping or packaging the special accessories with the unintentional or intentional radiator the responsible part may employ other methods of ensuring that the special accessories are provided to the consumer, without an additional charge.

Information detailing any alternative method used to supply the special accessories for a grant of equipment authorization or retained in the verification records, as appropriate. The party responsible for the equipment, as detailed in § 2.909 of this chapter, shall ensure that these special accessories are provided with the equipment. The instruction manual for such devices shall include appropriate instructions on the first page of text concerned with the installation of the device that these special accessories must be used with the device. It is the responsibility of the user to use the needed special accessories supplied with the equipment.



## Standard Test Conditions Engineering Practices

Except as noted herein, the following conditions and procedures were observed during the testing.

In accordance with ANSI C63.10-2009 and unless otherwise indicated in the specific measurement results, the ambient temperature of the actual EUT was maintained within the range of 10° to 40°C (50° to 104°F) unless the particular equipment requirements specify testing over a different temperature range. Also, unless otherwise indicated the humidity levels were in the range of 10% to 90% relative humidity.

Measurement results, unless otherwise noted, are worst-case measurements.

Environmental Conditions		
Temperature (°C)	Humidity (%)	Pressure (mbar)
23.7 – 24.5	16.8 – 25.1	964.5 – 972.6

### EUT Description

**Model:** Sanicheck NFC

**Description:** NFC Hand Sanitizing Monitor

The EUT is a wall mounted device used to monitor an entrance way and ensure sanitation procedure is followed. It uses NFC in order to download and upload data.

### EUT Operation during Tests

The EUT's NFC was activated using the manufacturer supplied tablet. For frequency stability, a continuous signal device was supplied for testing.

#### Accessories:

Qty	Description	Mfg	Model	S/N
1	Tablet	Asus	Nexus	N/A

#### Cables:

Qty	Description	Length (M)	Shielding Y/N	Shielded Hood Y/N	Termination
1	Ribbon cable	<3m	N	N	N/A



### Test Results Summary

Specification	Test Name	Pass, Fail, N/A	Comments
15.225(a)	Fundamental Field Strength	Pass	
15.225(b)(c)	Out of Band Spurious Emissions	Pass	
15.225(e)	Frequency Stability	Pass	
15.209, 15.225(d)	Radiated Emissions	Pass	
15.207	Conducted Powerline Emissions	N/A	EUT is a battery powered device.



## Field Strength

**Name of Test:**  
**Test Equipment Utilized:**

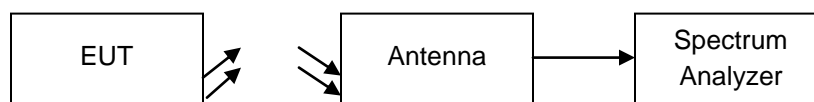
Field Strength  
i00379, i00326, i00428

**Engineer:** Alex Macon  
**Test Date:** 4/28/14

## Test Procedure

The EUT was tested in a semi anechoic chamber at a distance of 1 meter from the receiving loop antenna and characterized to the 30 meter limit. A spectrum analyzer was used to verify that the EUT met the requirements for Fundamental Field Strength. The antenna correction and distance correction factors were summed with the quasi-peak measurement to ensure accurate readings were obtained. The following table indicates the highest emission in each of the indicated bands.

## Test Setup



## Field Strength

Frequency Band (MHz)	Measured Frequency (MHz)	Monitored Level (dBuV/m)	Distance CF (dB)	Antenna CF (dB)	Corrected Measurement (dBuV/m)	Limit (dBuV/m)	Result
13.110_13.410	13.3875	25.7	59.1	17.0	-16.4	40.51	Pass
13.410_13.553	13.5523	41.04	59.1	17.0	-1.06	50.47	Pass
13.553_13.567	13.561	54.15	59.1	17.0	12.05	84.00	Pass
13.567_13.710	13.567	44.11	59.1	17.0	2.01	50.47	Pass
13.710_14.010	13.982	26.05	59.1	17.0	-16.05	40.51	Pass

Note: Cable correction factors are not included in this measurement as the low loss of the high quality TWINAX cable at low frequencies is practically non-existent.





## Frequency Stability

Name of Test:

Frequency Stability

Engineer: Alex Macon

Test Equipment Utilized:

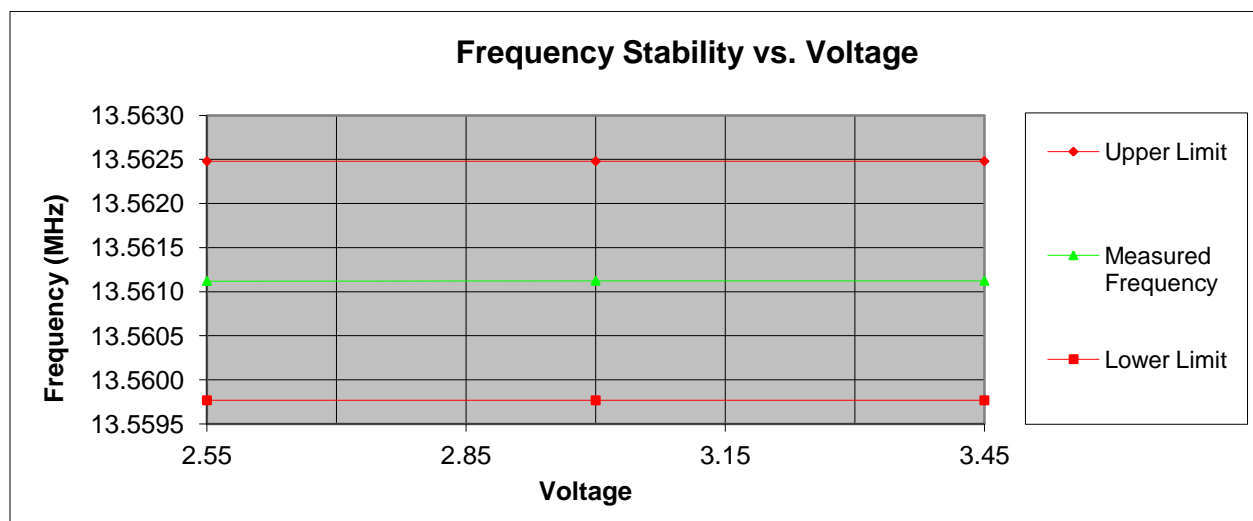
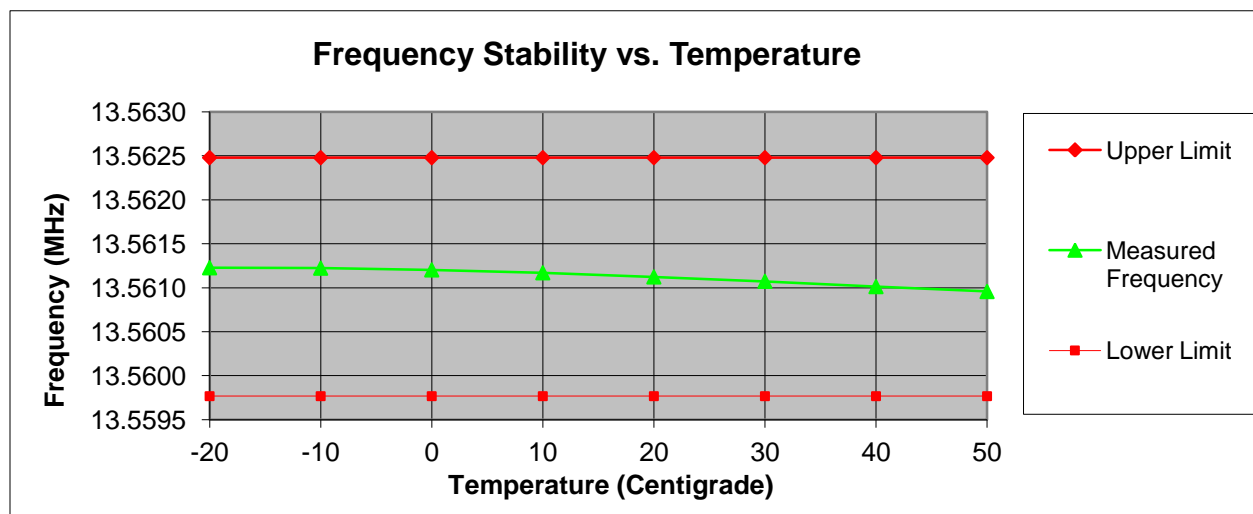
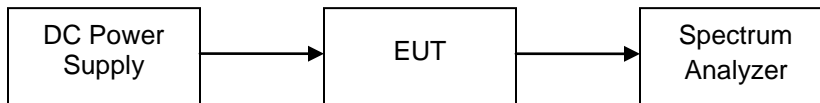
i00008, i00027, i00029

Test Date: 4/29/14

### Test Procedure

The EUT was placed in an environmental test chamber and a spectrum analyzer was utilized to verify that the frequency stability met the requirement for frequency stability across the temperature range from -20°C to +50°C. A variable DC power supply was used to vary the voltage from 85% to 115% of the rated voltage.

### Test Setup





## Radiated Emissions

**Name of Test:**

Radiated Emissions

**Engineer:** Alex Macon

**Test Equipment Utilized:**

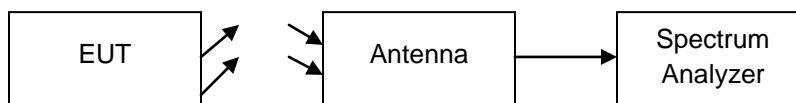
i00326, i00349, i00379, i00428

**Test Date:** 4/28/14

### Test Procedure

The EUT was tested in a semi anechoic chamber at a distance of 3 meters from the receiving antenna. A spectrum analyzer was used to verify that the UUT met the requirements for Radiated Emissions. The spectrum for each tuned frequency was examined beyond the 10<sup>th</sup> harmonic.

### Test Setup



### Radiated Emissions

Emission Frequency (MHz)	Measured Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Antenna Polarity (V/H)	Turntable Position (deg)	Detector (QP,PK,Avg)
312.52	23.69	46	-22.31	100	V	236	QP
36.990	16.69	40	-23.31	100	V	360	QP
106.980	12.06	43.5	-31.44	100	V	360	QP
252.000	14.98	46	-31.02	100	V	360	QP
473.990	20.51	46	-25.49	100	V	360	QP
726.020	22.24	46	-23.76	100	V	360	QP



### Test Equipment Utilized

Description	Manufacturer	Model #	CT Asset #	Last Cal Date	Cal Due Date
Power Supply	Kenwood	PR18-3A	i00008	Verified on: 4/29/14	
Temperature Chamber	Tenney	Tenney Jr	i00027	Verified on: 4/29/14	
Spectrum Analyzer	HP	8563E	i00029	3/25/14	3/25/15
Voltmeter	Fluke	87III	i00319	2/22/14	2/22/15
Active Loop Antenna	EMCO	6507	i00326	8/1/13	8/1/15
Bi-Log Antenna	Schaffner	CBL 6111D	i00349	10/8/13	10/8/15
EMI Analyzer	Agilent	E7405A	i00379	1/14/14	1/14/15
3 Meter Semi-Anechoic Chamber	Panashield	3 Meter Semi-Anechoic Chamber	i00428	11/26/13	11/26/15

In addition to the above listed equipment standard RF connectors and cables were utilized in the testing of the described equipment. Prior to testing these components were tested to verify proper operation.

END OF TEST REPORT