

FCC NFC REPORT

FCC Certification

Applicant Name:
SNPowercom Co.,Ltd.**Address:**
#805 Anyang K-Center, 25 Simin-daero 248beon-gil,
Dongan-gu, Anyang-si, Gyeonggi-do, Korea, 431-815**Date of Issue:**

July 30 ,2015

Test Site/Location:HCT CO., LTD., 74, Seoicheon-ro 578beon-gil,
Majang-myeon, Icheon-si, Gyeonggi-do, Korea**Report No.:** HCT-R-1507-F016-1**HCT FRN:** 0005866421**FCC ID:** 2AAZ7-SW100**APPLICANT:** SNPowercom Co.,Ltd**FCC Model(s):** SW100**EUT Type:** Medical Alert Device**RF Output Field Strength:** 14.00 dBuV/m @30 m**Frequency of Operation:** 13.5594 MHz**Modulation type:** ASK**FCC Classification:** Low Power Communication Device – Transmitter**FCC Rule Part(s):** FCC Part 15.225 Subpart C

The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this equipment were found to be within the limits applicable. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them.

HCT CO., LTD. Certifies that no party to this application has subject to a denial of Federal benefits that includes FCC benefits pursuant to section 5301 of the Anti-Drug Abuse Act of 1998,21 U.S. C.853(a)



Report prepared by
: Kyung Soo Kang
Test Engineer of RF Team



Approved by
: Sang Jun Lee
Manager of RF Team

This report only responds to the tested sample and may not be reproduced, except in full, without written approval of the HCT Co., Ltd.

Version

TEST REPORT NO.	DATE	DESCRIPTION
HCT-R-1507-F016	July 10, 2015	- First Approval Report
HCT-R-1507-F016-1	July 30, 2015	- Revised the address

Table of Contents

1. GENERAL INFORMATION	4
2. EUT DESCRIPTION	4
3. TEST METHODOLOGY	5
3.1 EUT CONFIGURATION	5
3.2 EUT EXERCISE	5
3.3 GENERAL TEST PROCEDURES	5
3.4 DESCRIPTION OF TEST MODES	5
3.5 STANDARDS	6
4. INSTRUMENT CALIBRATION.....	7
5. FACILITIES AND ACCREDITATIONS	7
5.1 FACILITIES	7
5.2 EQUIPMENT	7
6. ANTENNA REQUIREMENTS	7
7. TEST SUMMARY	8
8. RADIATED EMISSION MEASUREMENT	9
8.1. RADIATED EMISSION 9 kHz – 30 MHz	10
8.2. RADIATED EMISSION 30 MHz – 1000 MHz	13
9. EMISSION BANDWIDTH PLOT.....	14
10. FREQUENCY TOLERANCE.....	15
11. POWERLINE CONDUCTE EMISSIONS.....	16
12. LIST OF TEST EQUIPMENT	25
12.1 LIST OF TEST EQUIPMENT(Conducted Test)	25
12.2 LIST OF TEST EQUIPMENT(Radiated Test).....	26

1. GENERAL INFORMATION

Applicant: SNPowercom Co.,Ltd.

Address: #805 Anyang K-Center, 25 Simin-daero 248beon-gil, Dongan-gu,
Anyang-si, Gyeonggi-do, Korea, 431-815

FCC ID: 2AAZ7-SW100

EUT Type: Medical Alert Device

Model name(s): SW100

Date(s) of Tests: June 16, 2015 ~ July 03, 2015

Place of Tests: HCT Co., Ltd.
74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Korea
(IC Recognition No. : 5944A-3)

2. EUT DESCRIPTION

FCC Model Name	SW100
EUT Type	Medical Alert Device
Power Supply	DC 3.8 V
Battery Type	Li-ion Battery(Standard)
Frequency of Operation	13.5594 MHz
Transmit Power	14.00 dBuV/m @30 m
Modulation Type	ASK
Antenna Specification	Manufacturer: HCT CO., LTE. Antenna type: Loop Antenna

3. TEST METHODOLOGY

The measurement procedure described in the American National Standard for Testing Unlicensed Wireless Devices(ANSI C63.10-2009).

3.1 EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

3.2 EUT EXERCISE

The EUT was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements. According to its specifications, the EUT must comply with the requirements of the Section 15.207, 15.209 and 15.225 under the FCC Rules Part 15 Subpart C.

3.3 GENERAL TEST PROCEDURES

Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 6.2 of ANSI C63.10. (Version :2009) Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and average detector modes.

Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3 m away from the receiving antenna, which varied from 1 m to 4 m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes according to the requirements in Section 6.3 of ANSI C63.10. (Version: 2009).

3.4 DESCRIPTION OF TEST MODES

The EUT has been tested under operating condition. Test program used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

3.5 STANDARDS

The following tests were conducted on a sample of the equipment for the purpose of demonstrating compliance With

FCC Part 15.Subpart C

Regulation	Measurement standard	Range
Title 47 of the CFR: Part 15 Subpart (c), Clause 15.225(a)	ANSI C63.10:2009	13.553MHz to 13.567MHz
Title 47 of the CFR: Part 15 Subpart (c), Clause 15.225(d)	ANSI C63.10:2009	outside of the 13.110-14.010 MHz band
Title 47 of the CFR: Part 15 Subpart (c), Clause 15.209	ANSI C63.10:2009	9kHz to 30MHz
Title 47 of the CFR: Part 15 Subpart (c), Clause 15.209	ANSI C63.10:2009	30MHz to 1GHz
Title 47 of the CFR: Part 15 Subpart (c), Clause 15.207	ANSI C63.10:2009	150kHz to 30MHz
Title 47 of the CFR: Part 15 Subpart (c), Clause 15.225(e)	ANSI C63.10:2009	0.01% of nominal
Title 47 of the CFR: Part 15 Subpart (c), Clause 15.215(c)	ANSI C63.10:2009	-

4. INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipments, which is traceable to recognized national standards.

5. FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

The 10 m semi anechoic chamber used to collect the Conducted and Radiated data is located at the 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Korea. Those measurement facilities are constructed in conformance with the requirements of ANSI C63.4. Detailed description of test facilities was submitted to the Commission and accepted dated February 28, 2014 (Registration Number: 90661)

5.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of Linearly polarized antennas: tuned loop, dipole, bi-conical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers. Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

6. ANTENNA REQUIREMENTS

According to FCC 47 CFR §15.203:

"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 this E.U.T are permanently attached.

*The E.U.T Complies with the requirement of §15.203

7. TEST SUMMARY

The results in this report apply only to sample tested

Regulation	Test Type	Range	Result
Title 47 of the CFR: Part 15 Subpart (c), Clause 15.225(a)	Radiated Electric Field Emissions	13.553MHz to 13.567MHz	Pass
Title 47 of the CFR: Part 15 Subpart (c), Clause 15.225(b)	Radiated Electric Field Emissions	13.410MHz to 13.553MHz and 13.567MHz to 13.710MHz	Pass
Title 47 of the CFR: Part 15 Subpart (c), Clause 15.225(c)	Radiated Electric Field Emission	13.110 MHz to 13.410 MHz and 13.710 MHz to 14.010 MHz	Pass
Title 47 of the CFR: Part 15 Subpart (c), Clause 15.209 (d)	Radiated Electric Field Emissions	9kHz to 30MHz	Pass
Title 47 of the CFR: Part 15 Subpart (c), Clause 15.209	Radiated Electric Field Emissions	30MHz to 1GHz	Pass
Title 47 of the CFR: Part 15 Subpart (c), Clause 15.207	AC power conducted emissions	150kHz to 30MHz	Pass
Title 47 of the CFR: Part 15 Subpart (c), Clause 15.225(e)	Frequency Stability	0.01% of nominal	Pass
Title 47 of the CFR: Part 15 Subpart (c), Clause 15.215(c)	20 dB Bandwidth	-	Pass

8. RADIATED EMISSION MEASUREMENT

Requirement(s): 15.209, 15.225

Except as provided elsewhere in this paragraph the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Minimum Standard: FCC Part 15.225 / 15.209

Rule Part	Frequency (MHz)	Limit
Part 15.209	0.009 ~ 0.490	2400/F(kHz) uV/m@300 m
	0.490 ~1.705	24000/F(kHz) uV/m@30 m
	1.705 ~ 30	30 uV/m@30 m
	30 ~ 88	100 ** uV/m@3 m
	88 ~ 216	150 ** uV/m@3 m
	216 ~ 960	200 ** uV/m@3 m
	Above 960	500 uV/m@3 m

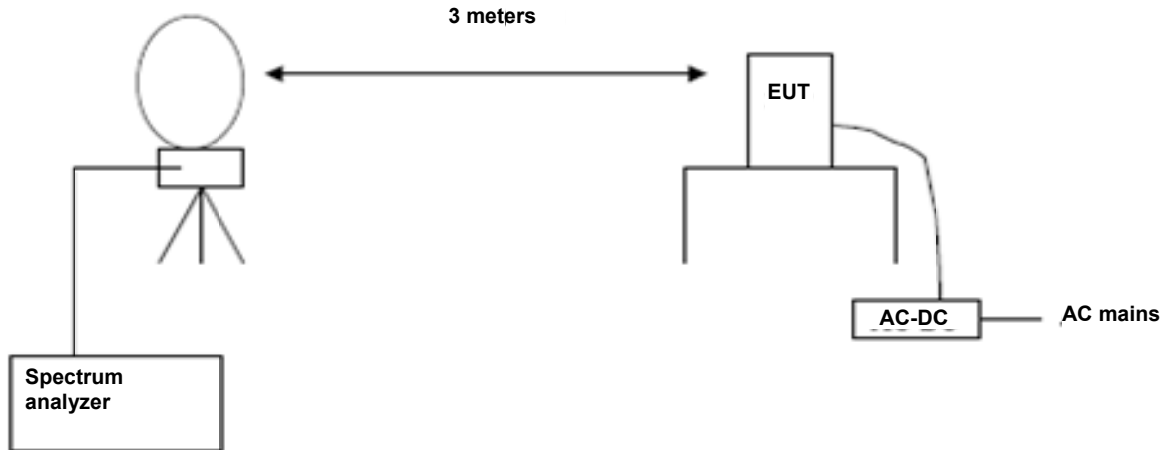
** Except as provided in 15.209(g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g. 15.231 and 15.241.

15.225 Operation within the band 13.110 – 14.010 MHz.

- (a) The field strength of any emissions within the band 13.553-13.567 MHz shall not exceed 15,848 microvolts/meter (= 84 dBuV/m) at 30 meters.
- (b) Within the bands 13.410-13.553 MHz and 13.567-13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter (=50.5dBuV/m) at 30 meters.
- (c) Within the bands 13.110-13.410 MHz and 13.710-14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter (=40.5 dBuV/m) at 30 meters.
- (d) The field strength of any emissions appearing outside of the 13.110-14.010 MHz band shall not exceed the general radiated emission limits in § 15.209.
- (e) The frequency tolerance of the carrier signal shall be maintained within +/- 0.01% of the operating frequency over a temperature variation of -20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.
- (f) In the case of radio frequency powered tags designed to operate with a device authorized under this section, the tag may be approved with the device or be considered as a separate device subject to its own authorization. Powered tags approved with a device under a single application shall be labeled with the same identification number as the device.

8.1. RADIATED EMISSION 9 kHz – 30 MHz

Test Set-up



Test Procedure

The EUT was placed on a non-conductive table located on a large open test site. The loop antenna was placed at a location 3m from the EUT. Radiated emissions were measured with the loop antenna both parallel and perpendicular to the plane of the EUT loop antenna and with x, y, z planes in EUT.

The limit is converted from microvolts/meter to decibel microvolts/meter. Sample Calculation:

Corrected Amplitude = Raw Amplitude(dB μ V/m) + ACF(dB) + Cable Loss(dB) – Distance Correction Factor

The spectrum analyzer is set to:

Frequency Range = 9 kHz ~ 1 GHz

RBW = 9 kHz (9 kHz ~ 30 MHz)
= 120 kHz (30 MHz ~ 1 GHz)

Trace Mode = max hold

Detector Mode = peak / Quasi-peak

Sweep time = auto

■ Test Results

13.553 MHz-13.567 MHz						
Frequency (MHz)	Read Level (dBuV/m)@3m	Ant.Factor+Cable Loss (dB/m)	Distance Correction (dB)	Result Level (dBuV/m)@30m	Limit (dBuV/m)@30m	Margin (dB)
13.5594(H)	33.63	20.37	-40.00	14.00	84.00	70.00
13.5596(V)	28.78	20.37	-40.00	9.15	84.00	74.85

13.410 MHz-13.553 MHz and 13.567 MHz-13.710 MHz						
Frequency (MHz)	Read Level (dBuV/m)@3m	Ant.Factor+Cable Loss (dB/m)	Distance Correction (dB)	Result Level (dBuV/m)@30m	Limit (dBuV/m)@30m	Margin (dB)
13.5530	21.78	20.37	-40.00	2.15	50.47	48.32
13.5670	19.69	20.37	-40.00	0.06	50.47	50.41

13.110 MHz – 13.410 MHz and 13.710 MHz-14.010 MHz						
Frequency (MHz)	Read Level (dBuV/m)@3m	Ant.Factor+Cable Loss (dB/m)	Distance Correction (dB)	Result Level (dBuV/m)@30m	Limit (dBuV/m)@30m	Margin (dB)
13.3500	13.26	20.37	-40.00	-6.37	40.51	46.88
13.7700	8.16	20.37	-40.00	-11.47	40.51	51.98

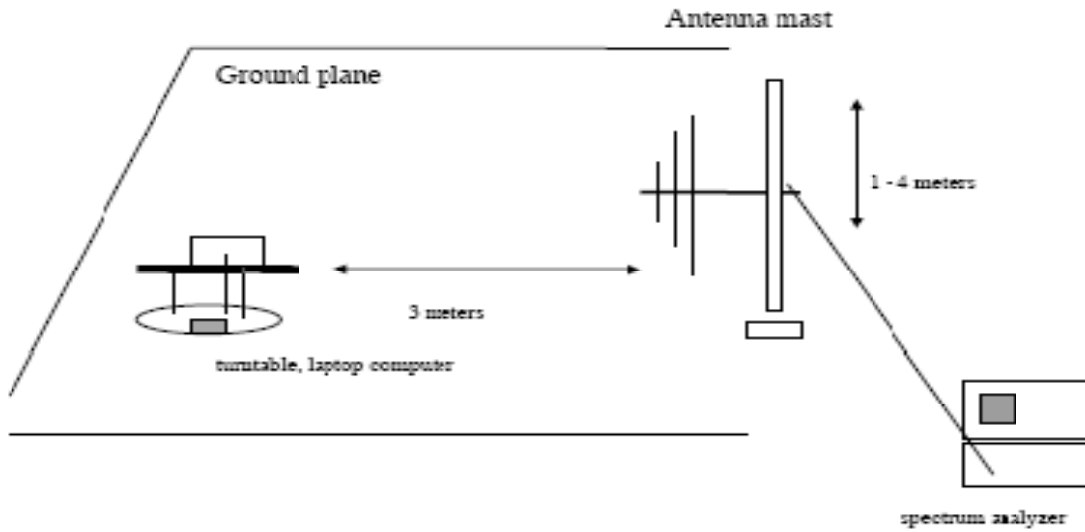
9 kHz -30 MHz						
Frequency (MHz)	Read Level (dBuV/m)@3m	Ant.Factor+Cable Loss (dB/m)	Distance Correction (dB)	Result Level (dBuV/m)@30m	Limit (dBuV/m)@30m	Margin (dB)
5.1784	10.19	20.62	-40.00	-9.19	29.54	38.73
15.7689	8.43	20.34	-40.00	-11.23	29.54	40.77
27.1290	7.42	20.65	-40.00	-11.93	29.54	41.47
27.1280	6.58	20.65	-40.00	-12.77	29.54	42.31

Note :

1. Distance Correction Below 30MHz = $40\log(3m/30m) = -40$ dB
Measurement Distance : 3 m (Below 30 MHz)
2. Factor = Antenna Factor + Cable Loss
3. Result Level = Read Level + Factor + Distance Correction
4. Margin = Limit – Result Level
5. We have done x, y, z planes in EUT
6. Antenna rotated about its vertical/horizontal axis for maximum response at each azimuth position around the EUT.
7. Worst case of operating mode is type A, analog mode and 106 kbps.

8.2. RADIATED EMISSION 30 MHz – 1000 MHz

Test Set-up



Test Procedures: Radiated emissions were measured according to ANSI C63.10.

The EUT was set to transmit at the highest output power.

The EUT was set 3 meter away from the measuring antenna.

Frequency	Reading	Ant. factor	Cable loss	Ant. POL	Total	Limit	Margin
Mhz	dB μ V	dB /m	dB	(H/V)	dB μ V/m	dB μ V/m	dB
39.70	19.10	11.95	0.66	H	31.71	40.00	8.29
57.16	19.45	11.82	0.74	H	32.01	40.00	7.99
94.02	18.37	7.73	0.86	V	26.96	43.50	16.54
*109.54	17.82	9.27	0.97	H	28.06	43.50	15.44
*134.76	17.57	12.84	1.00	H	31.41	43.50	12.09
*162.52	19.55	13.41	1.12	V	34.08	43.50	9.42

Remark

1. Result Level = Read Level + (Antenna Factor+ Cable Loss)
2. Margin = Limit – Result Level
3. '*' is the result for restricted band.

9. EMISSION BANDWIDTH PLOT.

Requirement(s):

Test Set-up: The EUT was connected to a spectrum analyzer.

Test Procedure: The 20 dB bandwidth was measured by using a spectrum analyzer.

RBW = Auto

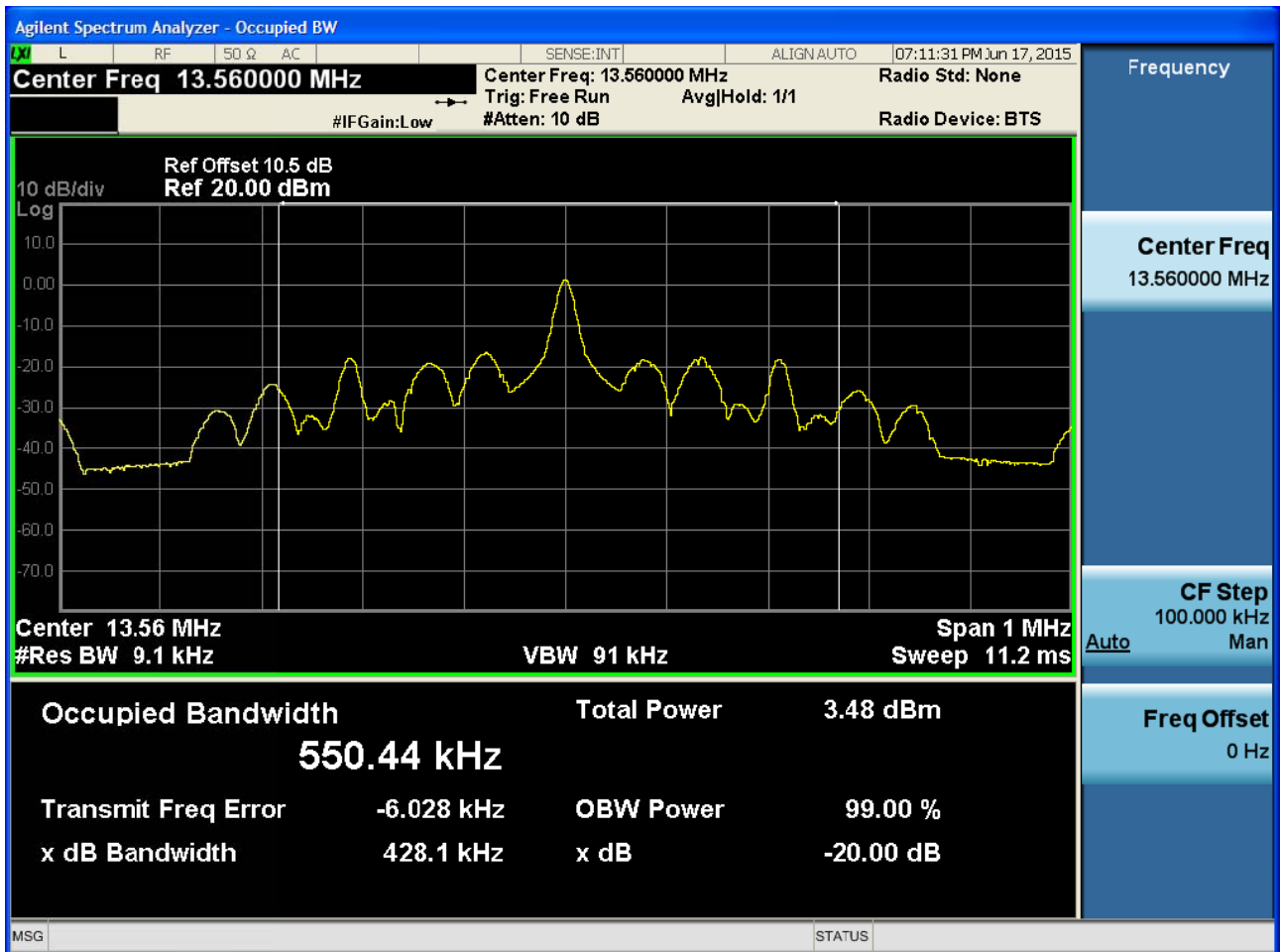
VBW = Auto

Span = Adequately in the operating Tx.

Detector = Peak

Trace mode = Max hold

Allow the trace to stabilize



10. FREQUENCY TOLERANCE

Procedure: Part 15.225, ANSI 63.10

If required, the operating or transmitting frequency of an intentional radiator should be measured in accordance with the following procedure to ensure that the device operates outside certain precluded frequency bands and within the frequency range. No modulation needs to be supplied to the intentional radiator during these tests, unless modulation is required to produce an output, e.g., single-sideband suppressed carrier transmitters.

The frequency stability of the transmitter is measured by:

- a) Temperature: The temperature is varied from -20°C to + 50°C using an environmental chamber.
- b) For battery operated equipment, the equipment tests shall be performed using a new battery.

The frequency tolerance of the carrier signal shall be maintained within +/- 0.01% of the operating frequency.

Measurement Result:

VOLTAGE	POWER	Temperature	Frequency	Frequency Error
(%)	(VDC)	(°C)	(MHz)	(Hz)
100%	3.8	-20	13.559600	-400.00
100%		-10	13.559620	-380.00
100%		0	13.559640	-360.00
100%		10	13.559655	-345.00
100%		20	13.559680	-320.00
100%		30	13.559695	-305.00
100%		40	13.559710	-290.00
100%		50	13.559720	-280.00
Batt. Endpoint		3.23	20	13.559670

11. POWERLINE CONDUCTE EMISSIONS

LIMIT

For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed 250 microvolt (The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz). The limits at specific frequency range is listed as follows:

Frequency Range (MHz)	Limits (dB μ V)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line (LINE and NEUTRAL) and ground at the power terminals.

Test Configuration

See test photographs attached in Appendix 1 for the actual connections between EUT and support equipment.

TEST PROCEDURE

1. The EUT is placed on a wooden table 80 cm above the reference ground plane.
2. The EUT is connected via LISN to a test power supply.
3. The measurement results are obtained as described below:
4. Detectors – Quasi Peak and Average Detector.
5. The EUT is the device operating below 30 MHz.
 - For unterminated the Antenna, the AC line conducted tests are performed with the antenna connected
 - For terminated the Antenna, the AC line conducted tests are performed with a dummy load connected to the EUT antenna output terminal.

Sample Calculation

Quasi-peak(Final Result) = Reading Value + Correction Factor

Test Plots

Underminate the Antenna

Conducted Emissions (Line 1)

EMI Auto Test(6)

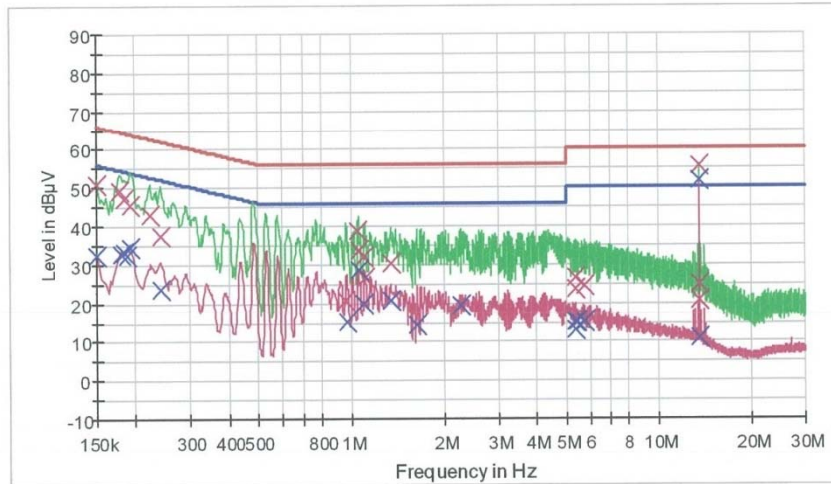
1 / 2

HCT TEST Report

Common Information

EUT: SW100
 Manufacturer: SNPowercom
 Test Site: SHIELD ROOM
 Operating Conditions: NFC MODE(UNTERMINATION)
 Operator Name: KS KANG

FCC CLASS B



— FCC CLASS B_QP — FCC CLASS B_AV — Preview Result 1-PK+
 — Preview Result 2-AVG × Final Result 1-QPK × Final Result 2-CAV

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	51.1	9.000	Off	L1	9.6	14.9	66.0
0.178000	49.2	9.000	Off	L1	9.6	15.4	64.6
0.184000	47.3	9.000	Off	L1	9.6	17.0	64.3
0.192000	45.5	9.000	Off	L1	9.6	18.4	63.9
0.222000	43.0	9.000	Off	L1	9.7	19.7	62.7
0.240000	37.4	9.000	Off	L1	9.7	24.7	62.1
0.960000	20.5	9.000	Off	L1	9.7	35.5	56.0
1.054000	38.9	9.000	Off	L1	9.7	17.1	56.0
1.060000	33.5	9.000	Off	L1	9.7	22.5	56.0
1.102000	31.9	9.000	Off	L1	9.7	24.1	56.0
1.108000	26.5	9.000	Off	L1	9.7	29.5	56.0
1.348000	30.3	9.000	Off	L1	9.8	25.7	56.0
5.380000	23.5	9.000	Off	L1	9.9	36.5	60.0
5.386000	26.7	9.000	Off	L1	9.9	33.3	60.0
5.724000	24.5	9.000	Off	L1	9.9	35.5	60.0
13.546000	24.9	9.000	Off	L1	10.1	35.1	60.0

6/17/2015

11:15:07

EMI Auto Test(6)

2 / 2

Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
13.560000	55.3	9.000	Off	L1	10.1	4.7	60.0
13.654000	20.8	9.000	Off	L1	10.1	39.2	60.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	32.3	9.000	Off	L1	9.6	23.7	56.0
0.180000	33.1	9.000	Off	L1	9.6	21.4	54.5
0.184000	33.5	9.000	Off	L1	9.6	20.8	54.3
0.188000	32.6	9.000	Off	L1	9.6	21.5	54.1
0.192000	34.6	9.000	Off	L1	9.6	19.3	53.9
0.240000	23.7	9.000	Off	L1	9.7	28.4	52.1
0.966000	15.3	9.000	Off	L1	9.7	30.7	46.0
1.058000	28.5	9.000	Off	L1	9.7	17.5	46.0
1.106000	19.9	9.000	Off	L1	9.7	26.1	46.0
1.346000	20.9	9.000	Off	L1	9.8	25.1	46.0
1.636000	14.4	9.000	Off	L1	9.8	31.6	46.0
2.258000	19.5	9.000	Off	L1	9.8	26.5	46.0
5.378000	13.2	9.000	Off	L1	9.9	36.8	50.0
5.386000	15.1	9.000	Off	L1	9.9	34.9	50.0
5.446000	15.4	9.000	Off	L1	9.9	34.6	50.0
5.724000	15.4	9.000	Off	L1	9.9	34.6	50.0
13.560000	51.6	9.000	Off	L1	10.1	-1.6	50.0
13.654000	10.8	9.000	Off	L1	10.1	39.2	50.0

6/17/2015

11:15:07

Conducted Emissions (Line 2)

EMI Auto Test(6)

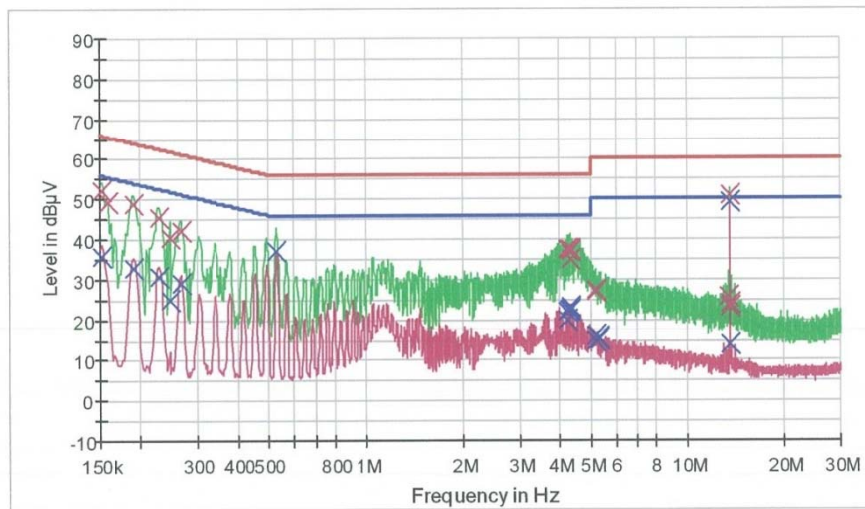
1 / 2

HCT TEST Report

Common Information

EUT: SW100
 Manufacturer: SNPowercom
 Test Site: SHIELD ROOM
 Operating Conditions: NFC MODE(UNTERMINATION)
 Operator Name: KS KANG

FCC CLASS B



— FCC CLASS B_QP — FCC CLASS B_AV — Preview Result 1-PK+
— Preview Result 2-AVG x Final Result 1-CPK x Final Result 2-CAV

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.152000	52.1	9.000	Off	N	9.6	13.8	65.9
0.158000	49.2	9.000	Off	N	9.6	16.4	65.6
0.190000	48.9	9.000	Off	N	9.6	15.1	64.0
0.228000	45.6	9.000	Off	N	9.6	16.9	62.5
0.246000	40.6	9.000	Off	N	9.6	21.3	61.9
0.266000	42.3	9.000	Off	N	9.7	18.9	61.2
4.216000	37.6	9.000	Off	N	9.8	18.4	56.0
4.296000	37.5	9.000	Off	N	9.8	18.5	56.0
4.300000	37.5	9.000	Off	N	9.8	18.5	56.0
4.338000	37.4	9.000	Off	N	9.9	18.6	56.0
4.344000	35.1	9.000	Off	N	9.9	20.9	56.0
4.348000	37.2	9.000	Off	N	9.9	18.8	56.0
5.196000	27.4	9.000	Off	N	9.9	32.6	60.0
5.204000	27.2	9.000	Off	N	9.9	32.8	60.0
13.448000	25.8	9.000	Off	N	10.1	34.2	60.0
13.560000	50.7	9.000	Off	N	10.1	9.3	60.0

6/17/2015

11:27:26

EMI Auto Test(6)

2 / 2

Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
13.570000	23.0	9.000	Off	N	10.1	37.0	60.0
13.640000	24.0	9.000	Off	N	10.1	36.0	60.0

Final Result 2

Frequency (MHz)	CAverage (dBμV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.152000	35.7	9.000	Off	N	9.6	20.2	55.9
0.190000	32.9	9.000	Off	N	9.6	21.1	54.0
0.228000	30.9	9.000	Off	N	9.6	21.6	52.5
0.246000	24.9	9.000	Off	N	9.6	27.0	51.9
0.266000	29.2	9.000	Off	N	9.7	22.0	51.2
0.530000	37.0	9.000	Off	N	9.7	9.0	46.0
4.214000	19.9	9.000	Off	N	9.8	26.1	46.0
4.222000	22.0	9.000	Off	N	9.8	24.0	46.0
4.302000	22.3	9.000	Off	N	9.8	23.7	46.0
4.306000	22.5	9.000	Off	N	9.8	23.5	46.0
4.338000	22.8	9.000	Off	N	9.9	23.2	46.0
4.342000	23.3	9.000	Off	N	9.9	22.7	46.0
5.192000	14.8	9.000	Off	N	9.9	35.2	50.0
5.196000	15.9	9.000	Off	N	9.9	34.1	50.0
5.286000	15.1	9.000	Off	N	9.9	34.9	50.0
5.334000	15.7	9.000	Off	N	9.9	34.3	50.0
13.560000	49.3	9.000	Off	N	10.1	0.7	50.0
13.640000	14.1	9.000	Off	N	10.1	35.9	50.0

6/17/2015

11:27:26

**Terminate the Antenna
Conducted Emissions (Line 1)**

EMI Auto Test(6)

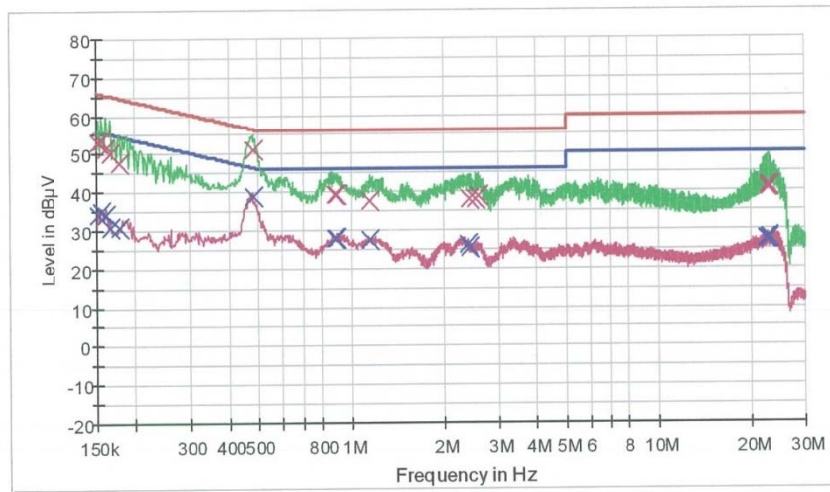
1 / 2

HCT TEST Report

Common Information

EUT: SW100
 Manufacturer: SNPowercom
 Test Site: SHIELD ROOM
 Operating Conditions: NFC MODE(TERMINATION)
 Operator Name: KS KANG

FCC CLASS B



— FCCCLASS_B_QP — FCCCLASS_B_AV — Preview Result 1-PK+
 — Preview Result 2-AVG × Final Result 1-QPK × Final Result 2-CAV

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.152000	53.1	9.000	Off	L1	9.6	12.8	65.9
0.156000	53.7	9.000	Off	L1	9.6	12.0	65.7
0.160000	51.5	9.000	Off	L1	9.6	14.0	65.5
0.166000	50.1	9.000	Off	L1	9.6	15.1	65.2
0.178000	47.5	9.000	Off	L1	9.6	17.1	64.6
0.178000	47.5	9.000	Off	L1	9.6	17.1	64.6
0.480000	50.9	9.000	Off	L1	9.7	5.4	56.3
0.890000	39.3	9.000	Off	L1	9.7	16.7	56.0
0.902000	39.1	9.000	Off	L1	9.7	16.9	56.0
1.156000	37.7	9.000	Off	L1	9.7	18.3	56.0
2.440000	38.0	9.000	Off	L1	9.8	18.0	56.0
2.542000	38.0	9.000	Off	L1	9.8	18.0	56.0
2.598000	38.9	9.000	Off	L1	9.8	17.1	56.0
22.690000	40.9	9.000	Off	L1	10.4	19.1	60.0
22.708000	41.3	9.000	Off	L1	10.4	18.7	60.0
22.828000	41.4	9.000	Off	L1	10.4	18.6	60.0

6/17/2015

1:18:52

EMI Auto Test(6)

2 / 2

Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
22.834000	41.3	9.000	Off	L1	10.4	18.7	60.0
22.854000	41.1	9.000	Off	L1	10.4	18.9	60.0
...

Final Result 2

Frequency (MHz)	CAverage (dBµV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.152000	34.0	9.000	Off	L1	9.6	21.9	55.9
0.156000	34.8	9.000	Off	L1	9.6	20.9	55.7
0.160000	34.2	9.000	Off	L1	9.6	21.3	55.5
0.166000	30.9	9.000	Off	L1	9.6	24.3	55.2
0.178000	31.0	9.000	Off	L1	9.6	23.6	54.6
0.480000	38.9	9.000	Off	L1	9.7	7.4	46.3
0.888000	27.9	9.000	Off	L1	9.7	18.1	46.0
0.892000	28.1	9.000	Off	L1	9.7	17.9	46.0
0.898000	28.0	9.000	Off	L1	9.7	18.0	46.0
1.156000	27.7	9.000	Off	L1	9.7	18.3	46.0
2.404000	26.1	9.000	Off	L1	9.8	19.9	46.0
2.440000	25.6	9.000	Off	L1	9.8	20.4	46.0
22.366000	27.4	9.000	Off	L1	10.4	22.6	50.0
22.590000	27.5	9.000	Off	L1	10.4	22.5	50.0
22.690000	27.6	9.000	Off	L1	10.4	22.4	50.0
22.708000	27.6	9.000	Off	L1	10.4	22.4	50.0
22.828000	27.8	9.000	Off	L1	10.4	22.2	50.0
22.834000	27.6	9.000	Off	L1	10.4	22.4	50.0

6/17/2015

1:18:52

Conducted Emissions (Line 2)

EMI Auto Test(6)

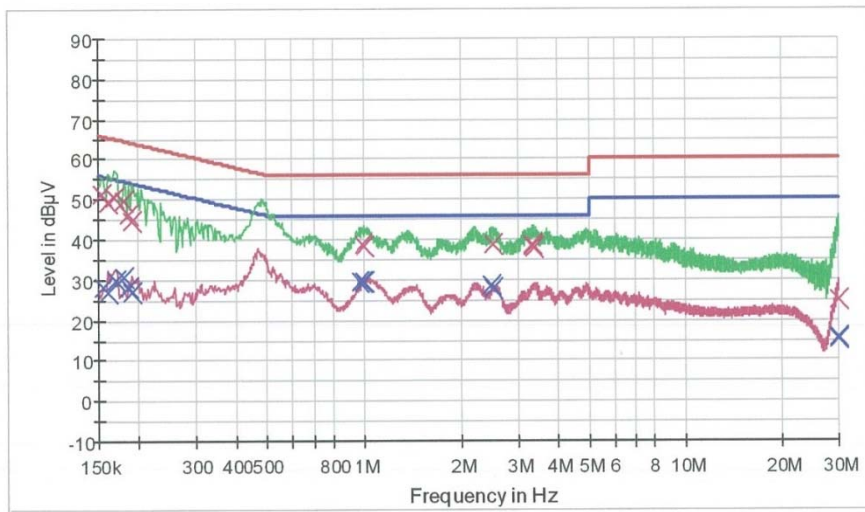
1 / 2

HCT TEST Report

Common Information

EUT: SW100
 Manufacturer: SNPowercom
 Test Site: SHIELD ROOM
 Operating Conditions: NFC MODE(TERMINATION)
 Operator Name: KS KANG

FCC CLASS B



— FCC CLASS B_QP — FCC CLASS B_AV — Preview Result 1-PK*
— Preview Result 2-AVG X Final Result 1-QPK X Final Result 2-CAV

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.154000	51.4	9.000	Off	N	9.6	14.4	65.8
0.160000	49.1	9.000	Off	N	9.6	16.4	65.5
0.168000	50.6	9.000	Off	N	9.6	14.5	65.1
0.180000	49.8	9.000	Off	N	9.6	14.7	64.5
0.186000	46.5	9.000	Off	N	9.6	17.7	64.2
0.190000	44.6	9.000	Off	N	9.6	19.4	64.0
0.992000	38.6	9.000	Off	N	9.7	17.4	56.0
1.008000	38.2	9.000	Off	N	9.7	17.8	56.0
2.522000	38.7	9.000	Off	N	9.8	17.3	56.0
3.336000	38.6	9.000	Off	N	9.8	17.4	56.0
3.344000	38.3	9.000	Off	N	9.8	17.7	56.0
3.378000	38.0	9.000	Off	N	9.8	18.0	56.0
29.846000	24.7	9.000	Off	N	10.5	35.3	60.0
29.910000	25.0	9.000	Off	N	10.5	35.0	60.0
29.962000	24.9	9.000	Off	N	10.5	35.1	60.0
29.972000	24.7	9.000	Off	N	10.5	35.3	60.0

6/17/2015

11:38:18

EMI Auto Test(6)

2 / 2

Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
29.986000	24.9	9.000	Off	N	10.5	35.1	60.0
29.996000	24.7	9.000	Off	N	10.5	35.3	60.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.156000	28.1	9.000	Off	N	9.6	27.6	55.7
0.160000	27.1	9.000	Off	N	9.6	28.4	55.5
0.170000	29.7	9.000	Off	N	9.6	25.3	55.0
0.180000	30.7	9.000	Off	N	9.6	23.8	54.5
0.186000	28.2	9.000	Off	N	9.6	26.0	54.2
0.190000	26.8	9.000	Off	N	9.6	27.2	54.0
0.972000	29.7	9.000	Off	N	9.7	16.3	46.0
0.992000	29.6	9.000	Off	N	9.7	16.4	46.0
1.004000	29.6	9.000	Off	N	9.7	16.4	46.0
1.008000	29.5	9.000	Off	N	9.7	16.5	46.0
2.482000	28.5	9.000	Off	N	9.8	17.5	46.0
2.522000	27.7	9.000	Off	N	9.8	18.3	46.0
29.842000	15.3	9.000	Off	N	10.5	34.7	50.0
29.846000	15.3	9.000	Off	N	10.5	34.7	50.0
29.886000	15.3	9.000	Off	N	10.5	34.7	50.0
29.962000	15.5	9.000	Off	N	10.5	34.5	50.0
29.970000	15.4	9.000	Off	N	10.5	34.6	50.0
29.996000	15.3	9.000	Off	N	10.5	34.7	50.0

6/17/2015

11:38:18

12. LIST OF TEST EQUIPMENT

12.1 LIST OF TEST EQUIPMENT(Conducted Test)

Manufacturer	Model / Equipment	Calibration Date	Calibration Interval	Serial No.
Rohde & Schwarz	ENV216/ LISN	01/13/2015	Annual	100073
Agilent	E4440A/ Spectrum Analyzer	03/18/2015	Annual	US45303008
Agilent	N9020A/ SIGNAL ANALYZER	04/29/2015	Annual	MY51110063
Agilent	N1911A/Power Meter	01/15/2015	Annual	MY45100523
Agilent	N1921A /POWER SENSOR	07/09/2014	Annual	MY45241059
Agilent	87300B/Directional Coupler	12/08/2014	Annual	3116A03621
Hewlett Packard	11667B / Power Splitter	04/30/2015	Annual	11275
ITECH	IT6720 / DC POWER SUPPLY	11/04/2014	Annual	010002156287001199
Agilent	8493C / Attenuator(10 dB)	07/21/2014	Annual	76649

12.2 LIST OF TEST EQUIPMENT(Radiated Test)

Manufacturer	Model / Equipment	Calibration Date	Calibration Interval	Serial No.
Schwarzbeck	VULB 9160/ TRILOG Antenna	10/10/2014	Biennial	3368
HD	MA240/ Antenna Position Tower	N/A	N/A	556
EMCO	1050/ Turn Table	N/A	N/A	114
HD GmbH	HD 100/ Controller	N/A	N/A	13
HD GmbH	KMS 560/ SlideBar	N/A	N/A	12
Rohde & Schwarz	SCU-18/ Signal Conditioning Unit	09/04/2014	Annual	10094
CERNEX	CBL18265035 / POWER AMP	07/23/2014	Annual	22966
Schwarzbeck	BBHA 9120D/ Horn Antenna	07/05/2013	Biennial	1151
Schwarzbeck	BBHA9170 / Horn Antenna(15 GHz ~ 40 GHz)	07/05/2013	Biennial	BBHA9170541
Rohde & Schwarz	FSP / Spectrum Analyzer	10/23/2014	Annual	836650/016
Rohde & Schwarz	LOOP ANTENNA	09/03/2014	Biennial	1513-175
CERNEX	CBL06185030 / POWER AMP	07/21/2014	Annual	22965
CERNEX	CBLU1183540 / POWER AMP	07/21/2014	Annual	22964