RSE Test Summary

FOR:

Model Name: S320
A GNSS(Global Navigation Satellite System) smart antenna primarily to address the survey and construction market. This device also contains a pre-certified GSM/GPRS Telit GE865-Quad with FCC ID: RI7GE865

TEST SUMMARY #: EMC_HEMIS_003_11001_RSE
DATE: 2011-07-05

1. <u>Assessment</u>

The following device was tested against the applicable criteria specified in 3GPP TS 51.010-1 and with applicable criteria in Candidate Harmonized European Standards (Telecommunication Series) ETSI EN 301 511 V9.0.2 and no deviations were ascertained during the course of the tests performed.

Company	Description	Model #
Hemisphere GPS Inc.	A GNSS(Global Navigation Satellite System) smart antenna primarily to address the survey and construction market. This device also contains a pre-certified GSM/GPRS Telit GE865-Quad with FCC ID: RI7GE865	S320

Responsible for Testing Laboratory:

		Sajay Jose	
2011-07-05	Compliance	(Test Lab Manager)	
Date	**Section**	**Name**	**Signature**

Responsible for the Summary:

		Christopher Torio	
2011-07-05	Compliance	(EMC Engineer)	
Date	**Section**	**Name**	**Signature**

The test results of this test summary relate exclusively to the test item specified in Section3.
CETECOM Inc. USA does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of CETECOM Inc. USA.

2. Administrative Data

Identification of the Testing Laboratory Issuing the EMC Test Summary

Company Name:	CETECOM Inc.
Department:	Compliance
Address:	411 Dixon Landing Road Milpitas, CA 95035 U.S.A.
Telephone:	+1 (408) 586 6200
Fax:	+1 (408) 586 6299
Responsible Test Lab Manager:	Heiko Strehlow
Responsible Project Leader:	Rami Saman
Project Number:	HEMIS_003_11001

Identification of the Client

Applicant's Name:	Hemisphere GPS Inc.
Street Address:	4110 9th Street SE
City/Zip Code	Calgary, Alberta T2G 3C4
Country	Canada
Contact Person:	Abdulrahman M. Kassim
Phone No.	403-214-6088
Fax:	403-259-6088
e-mail:	akassim@hemispheregps.com

3. Equipment under Test (EUT)

Specification of the Equipment under Test

Marketing Name:	S320
Model No./Name:	S320
Product Description:	A GNSS(Global Navigation Satellite System) smart antenna primarily to address the survey and construction market. This device also contains a pre-certified GSM/GPRS Telit GE865-Quad with FCC ID: RI7GE865
Hardware Version :	A Revision
Software Version:	2.0.61
Frequency:	GSM 850/900/1800/1900
Antenna Type:	■Internal □External
Power Supply:	Internal Battery & Car Battery
Voltage Range:	lithium battery pack, 3.6V DC;

Identification of the Equipment Under Test (EUT)

EUT #	Serial Number	Cetecom ID	HW Version	SW Version
1	A1123-S3204M-1841016	C0011901	A Revision	2.0.61

4. <u>Measurement Procedure</u>

Ref: TIA-603C 2004- 2.2.12 Unwanted emissions: Radiated Spurious
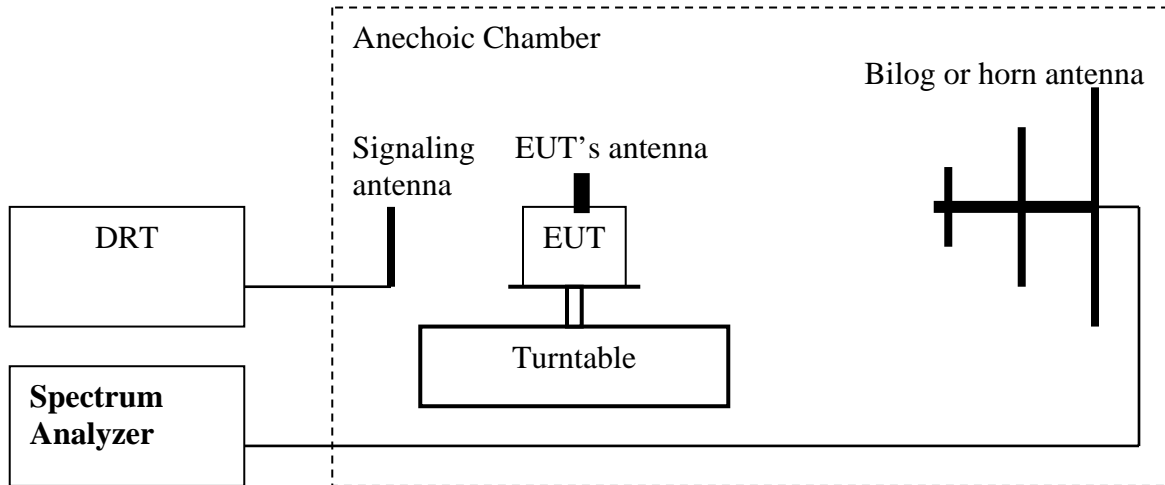
1. Connect the equipment as shown in the above diagram with the EUT's antenna in a horizontal orientation.
2. Adjust the settings of the Digital RadioCommunication Tester (DRT) to set the EUT to its maximum power at the required channel.
3. Set the spectrum analyzer to measure peak hold with the required settings.
4. Place the measurement antenna in a horizontal orientation. Rotate the EUT 360°. Raise the measurement antenna up to 4 meters in 0.5 meters increments and rotate the EUT 360° at each height to maximize all emissions. Measure and record all spurious emissions (**LVL**) up to the tenth harmonic of the carrier frequency.
5. Replace the EUT with a horizontally polarized half wave dipole or known gain antenna. The center of the antenna should be at the same location as the center of the EUT's antenna.
6. Connect the antenna to a signal generator with known output power and record the path loss in dB (**LOSS**). **LOSS** = Generator Output Power (dBm) – Analyzer reading (dBm).
7. Determine the level of spurious emissions using the following equation:
   Spurious (dBm) = **LVL** (dBm) + **LOSS** (dB):
8. Repeat steps 4, 5 and 6 with all antennas vertically polarized.
9. Determine the level of spurious emissions using the following equation:
   Spurious (dBm) = **LVL** (dBm) + **LOSS** (dB):
10. Measurements are to be performed with the EUT set to the middle channel of each frequency band.
    (**Note:** Steps 5 and 6 above are performed prior to testing and **LOSS** is recorded by test software. Steps 3, 4 and 7 above are performed with test software.)

RSE Summary	
Test Case Reference:	3GPP TS 51.010 TC 12.2.x
Test Case:	12.2.1 Radiated Spurious Emissions- MS allocated a channel
Test Conditions:	GSM 850; Mid ARFCN- 190
Type of test:	☐Partial ■Full
Extreme Conditions:	☐Applicable ■ Not Applicable
EUT:	EUT #1
Voltage:	12VDC
Location:	EMC Lab
Test Engineer:	Sam M.

Sweep	Antenna	EUT Configuration	Verdict
30M- 1GHz	H	■H ☐V	Passed
	V	■H ☐V	Passed
1GHz- 4GHz	H	■H ☐V	Passed
	V	■H ☐V	Passed
Date of Test:	2011-06-13		

RSE Summary	
Test Case Reference:	3GPP TS 51.010 TC 12.2.x
Test Case:	12.2.2 Radiated Spurious Emissions- MS in Idle Mode
Test Conditions:	GSM 850; Mid ARFCN- 190
Type of test:	☐Partial ■Full
Extreme Conditions:	☐Applicable ■ Not Applicable
EUT:	EUT #1
Voltage:	12VDC
Location:	EMC Lab
Test Engineer:	Sam M.

Sweep	Antenna	EUT Configuration	Verdict
30M- 1GHz	H	■H ☐V	Passed
	V	■H ☐V	Passed
1GHz- 4GHz	H	■H ☐V	Passed
	V	■H ☐V	Passed
Date of Test:	2011-06-13		

RSE Summary	
Test Case Reference:	3GPP TS 51.010 TC 12.2.x
Test Case:	12.2.1 Radiated Spurious Emissions- MS allocated a channel
Test Conditions:	GSM 900; Mid ARFCN- 62
Type of test:	☐Partial ■Full
Extreme Conditions:	☐Applicable ■ Not Applicable
EUT:	EUT #1
Voltage:	12VDC
Location:	EMC Lab
Test Engineer:	Sam M.

Sweep	Antenna	EUT Configuration	Verdict
30M- 1GHz	H	■H ☐V	Passed
	V	■H ☐V	Passed
1GHz- 4GHz	H	■H ☐V	Passed
	V	■H ☐V	Passed
Date of Test:	2011-06-13		

RSE Summary	
Test Case Reference:	3GPP TS 51.010 TC 12.2.x
Test Case:	12.2.2 Radiated Spurious Emissions- MS in Idle Mode
Test Conditions:	GSM 900; Mid ARFCN- 62
Type of test:	☐Partial ■Full
Extreme Conditions:	☐Applicable ■ Not Applicable
EUT:	EUT #1
Voltage:	12VDC
Location:	EMC Lab
Test Engineer:	Sam M.

Sweep	Antenna	EUT Configuration	Verdict
30M- 1GHz	H	■H ☐V	Passed
	V	■H ☐V	Passed
1GHz- 4GHz	H	■H ☐V	Passed
	V	■H ☐V	Passed
Date of Test:	2011-06-13		

RSE Summary	
Test Case Reference:	3GPP TS 51.010 TC 12.2.x
Test Case:	12.2.1 Radiated Spurious Emissions- MS allocated a channel
Test Conditions:	GSM 1800; Mid ARFCN- 700
Type of test:	☐Partial ■Full
Extreme Conditions:	☐Applicable ■ Not Applicable
EUT:	EUT #1
Voltage:	12VDC
Location:	EMC Lab
Test Engineer:	Sam M.

Sweep	Antenna	EUT Configuration	Verdict
30M- 1GHz	H	■H ☐V	Passed
	V	■H ☐V	Passed
1GHz- 4GHz	H	■H ☐V	Passed
	V	■H ☐V	Passed
Date of Test:	2011-06-13		

RSE Summary	
Test Case Reference:	3GPP TS 51.010 TC 12.2.x
Test Case:	12.2.2 Radiated Spurious Emissions- MS in Idle Mode
Test Conditions:	GSM 1800; Mid ARFCN- 700
Type of test:	☐Partial ■Full
Extreme Conditions:	☐Applicable ■ Not Applicable
EUT:	EUT #1
Voltage:	12VDC
Location:	EMC Lab
Test Engineer:	Sam M.

Sweep	Antenna	EUT Configuration	Verdict
30M- 1GHz	H	■H ☐V	Passed
	V	■H ☐V	Passed
1GHz- 4GHz	H	■H ☐V	Passed
	V	■H ☐V	Passed
Date of Test:	2011-06-13		

RSE Summary	
Test Case Reference:	3GPP TS 51.010 TC 12.2.x
Test Case:	12.2.1 Radiated Spurious Emissions- MS allocated a channel
Test Conditions:	GSM 1900; Mid ARFCN- 661
Type of test:	☐Partial ■Full
Extreme Conditions:	☐Applicable ■ Not Applicable
EUT:	EUT #1
Voltage:	12VDC
Location:	EMC Lab
Test Engineer:	Sam M.

Sweep	Antenna	EUT Configuration	Verdict
30M- 1GHz	H	■H ☐V	Passed
	V	■H ☐V	Passed
1GHz- 4GHz	H	■H ☐V	Passed
	V	■H ☐V	Passed
Date of Test:	2011-06-13		

RSE Summary	
Test Case Reference:	3GPP TS 51.010 TC 12.2.x
Test Case:	12.2.2 Radiated Spurious Emissions- MS in Idle Mode
Test Conditions:	GSM 1900; Mid ARFCN- 661
Type of test:	☐Partial ■Full
Extreme Conditions:	☐Applicable ■ Not Applicable
EUT:	EUT #1
Voltage:	12VDC
Location:	EMC Lab
Test Engineer:	Sam M.

Sweep	Antenna	EUT Configuration	Verdict
30M- 1GHz	H	■H ☐V	Passed
	V	■H ☐V	Passed
1GHz- 4GHz	H	■H ☐V	Passed
	V	■H ☐V	Passed
Date of Test:	2011-06-13		