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FCC PART 15 B SUBPART B RECEIVER TEST REPORT

Applicant	Harris Corporation
Address	1025 West NASA Boulevard Melbourne FL 32919-0001 USA
Model Number	3226316
Product Description	DUAL BAND CELLULAR BASE STATION
Date Sample Received	7/12/2013
Date Tested	8/27/2013
Tested By	NAM NGUYEN
Approved By	NAM NGUYEN
Report Number	1210YUT13TestReport.docx
Test Results	<input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL

**THE ATTACHED REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL
WITHOUT THE WRITTEN APPROVAL OF TIMCO ENGINEERING, INC.**



Certificate # 0955-01

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GENERAL REMARKS

The attached report shall not be reproduced except in full without the written permission of Timco Engineering Inc.

The test results relate only to the items tested.

Summary

The device under test does:

- ☒ fulfill the general approval requirements as identified in this test report
☐ not fulfill the general approval requirements as identified in this test report

Attestations

This equipment has been tested in accordance with the standards identified in this test report. To the best of my knowledge and belief, these tests were performed using the measurement procedures described in this report.

All instrumentation and accessories used to test products for compliance to the indicated standards are calibrated regularly in accordance with ISO 17025 requirements.



Testing Certificate # 0955-01

I attest that the necessary measurements were made, under my supervision, at:

Timco Engineering Inc.
849 NW State Road 45
Newberry, Fl 32669



Authorized Signatory Name:

Nam Nguyen
Function: Project Manager/Testing Technician

Date: Aug 27, 2013

REPORT SUMMARY

Disclaimer	The test results only relate to the item tested.
Applicable Rule(s)	Pt 15.109, Pt 15.107, ANSI C63.4: 2003

TEST ENVIRONMENT

Test Facility	Timco Engineering, Inc. 849 NW State Road 45 Newberry, FL 32669 USA.
Test Condition in the laboratory	Temperature: 26°C Relative humidity: 50%

TEST SETUP SUMMARY

Test Setup Diagram/Description	The DUT was placed on the turntable per setup per ANSI C63.4: 2003. A test set up photo is provided for clarification.
Deviation from the standard/procedure	No deviation
Modification of DUT	No modification

DUT SPECIFICATION

DUT Description	DUAL BAND CELLULAR BASE STATION
Model Number	3226316
DUT Power Source	<input type="checkbox"/> 110–120Vac/50– 60Hz
	<input checked="" type="checkbox"/> DC Power
	<input type="checkbox"/> Battery Operated Exclusively
Test Item	<input type="checkbox"/> Prototype
	<input checked="" type="checkbox"/> Pre-Production
	<input type="checkbox"/> Production
Type of Equipment	<input checked="" type="checkbox"/> Fixed
	<input type="checkbox"/> Mobile
	<input type="checkbox"/> Portable
Laboratory Test Conditions	Temperature: 26°C Humidity: 55%
Modifications to DUT:	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes (explanation below)

TEST EQUIPMENT LIST

Device	Manufacturer	Model	Serial Number	Cal/Char Date	Due Date
Analyzer Tan Tower Spectrum Analyzer	HP	8566B Opt 462	3138A07786 3144A20661	10/28/11	10/28/13
Analyzer Tan Tower Preamplifier	HP	8449B-H02	3008A00372	10/28/11	10/28/13
Antenna: Biconnical	Eaton	94455-1	1096	05/10/13	05/10/15
Antenna: Log-Periodic	Electro-Metrics	LPA-25	1122	05/09/13	05/09/15
Horn Antenna	ETS	3117	35923	12/7/11	12/7/13
Power Meter	Boonton Electronics	4531	11793	1/9/13	1/9/15
Sensor	Boonton	51072A	34647	01/19/13	01/19/15
Frequency Counter	HP	5352B	2632A00165	06/26/13	06/26/15
Frequency Counter	HP	5385A	2730A03025	08/17/11	08/17/13
Hygro-Thermometer	Extech	445703	0602	06/20/13	06/20/15
Digital Multimeter	Fluke	77	35053830	09/09/11	09/09/13
Analyzer Tan Tower RF Preselector	HP	85685A	3221A01400	10/28/11	10/28/13
Attenuator	Narda	769-30	10267	3/15/13	3/15/15
EMI Receiver	Rohde & Schwarz	ESIB40	100274	3/16/12	3/16/14
Analyzer Tan Tower Quasi-Peak Adapter	HP	85650A	3303A01690	10/28/11	10/28/13
Temperature Chamber	Tenney Engineering	TTRC	11717-7	07/03/12	07/03/14
Frequency Counter	HP	5385A	3242A07460	08/17/11	08/17/13
3-Meter Semi-Anechoic Chamber	Panashield	N/A	N/A	12/31/11	12/31/13
DC Power Supply	Astron	VS-50M	9001191	01/19/13	01/19/15

TEST PROCEDURES

Power line conducted Emission: The test procedure used was ANSI C63.4-2003. The spectrum was scanned from 0.15 to 30 MHz.

Radiation Interference: The test procedure used was ANSI C63.4-2003 using a spectrum analyzer with a preselector. The bandwidth of the spectrum analyzer was 100 kHz with an appropriate sweep speed. The analyzer was calibrated in dB above a microvolt at the output of the antenna. The video bandwidth was always greater than or equal to the RBW.

The frequency was scanned from 30 MHz to 1.0 GHz. When an emission was found, the table was rotated to produce the maximum signal strength. The DUT was measured in three (3) orthogonal planes when necessary.

Formula Of Conversion Factors: The field strength at 3m was established by adding the meter reading of the spectrum analyzer (which is set to read in units of dB μ V) to the antenna correction factor supplied by the antenna manufacturer plus the coax loss. The antenna correction factors are stated in terms of dB. The gain of the preselector was accounted for in the spectrum analyzer meter reading.

Example:

Freq (MHz)	Meter Reading	+ ACF	+CL	= FS
33	20 dB μ V	+ 10.36 dB/m	+0.40 dB	=30.36 dB μ V/m @ 3m

ANSI C63.4-2003 Measurement Procedures: The unit under test was placed on a table 80 cm high and with dimensions of 1m by 1.5m. The table used for radiated measurements is capable of continuous rotation. When an emission was found, the table was rotated to produce the maximum signal strength. At this point, the antenna was raised and lowered from 1m to 4m. The antenna was placed in both the horizontal and vertical planes.

RADIATED SPURIOUS EMISSIONS

Rules Part No.: 15.109

Requirements:

Frequency MHz	Limits
30 – 88	40.0 dB μ V/m measured @ 3 meters
88 – 216	43.5 dB μ V/m measured @ 3 meters
216 – 960	46.0 dB μ V/m measured @ 3 meters
Above 960	54.0 dB μ V/m measured @ 3 meters

Test Data: The transmitter of EUT is OFF (standby).

Emission Frequency MHz	Meter Reading dB μ V	Ant. Polarity	Coax Loss dB	Correction Factor dB/m	Field Strength dB μ V/m	Margin dB
94.60	10.3	V	0.64	10.87	21.81	21.69
94.80	15.5	H	0.64	10.88	27.02	16.48
105.50	11.0	H	0.66	10.67	22.33	21.17
116.20	11.4	H	0.67	10.52	22.59	20.91
122.00	7.8	V	0.67	11.26	19.73	23.77
137.80	12.3	H	0.69	14.72	27.71	15.79
160.60	9.2	V	0.74	16.84	26.78	16.72
235.20	29.7	V	0.97	11.00	41.67	4.33
235.20	32.9*	H	0.97	11.00	44.87	1.13
272.00	26.9	H	1.04	13.86	41.80	4.20
311.20	16.6	V	1.11	13.90	31.61	14.39
328.00	20.7	H	1.13	13.98	35.81	10.19
356.40	20.2	H	1.16	14.66	36.02	9.98
388.40	19.0	H	1.19	15.22	35.41	10.59
452.40	17.0	H	1.25	16.63	34.88	11.12
457.60	14.2	V	1.26	16.47	31.93	14.07
472.00	16.7	H	1.27	17.72	35.69	10.31
604.80	21.7	H	1.60	18.54	41.84	4.16
605.20	15.2	V	1.61	18.56	35.37	10.63

All readings are peak measurements unless noted otherwise.

*= Quasi-Peak

POWER LINE CONDUCTED INTERFERENCE

Rules Part No.: Part 15.107

Requirements:

Frequency (MHz)	Quasi Peak Limits (dB μ V)	Average Limits (dB μ V)
0.15 – 0.5	66 – 56 *	56 – 46 *
0.5 – 5.0	56	46
5.0 – 30	60	50
* Decrease with logarithm of frequency		

Test Data: Not applicable – 12Vdc operated device