FCC CFR47 PART 22 SUBPART H
FCC CFR47 PART 24 SUBPART E
CLASS II PERMISSIVE CHANGE

CERTIFICATION TEST REPORT

FOR

850/900/1800/1900MHZ GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA MINI-PCIE WIRELESS WAN CARD
(Tested Inside Toshiba NB300)

MODEL: F3307

FCC ID: VV7-MBMF33071-T

REPORT NUMBER: 10U13160-1

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Prepared for
ERICSSON AB
BUSINESS UNIT NETWORK
LINDHOLMSPIREN 11
GOT SE-41756, SWEDEN

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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
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1. ATTESTATION OF TEST RESULTS

COMPANY NAME:	ERICSSON AB BUSINESS UNIT NETWORK LINDHOLMSPIREN 11, GOT, SE-417 56, SWEDEN
EUT DESCRIPTION:	850/900/1800/1900MHZ GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA MINI-PCIE WIRELESS WAN CARD (Tested Inside Toshiba NB300)
MODEL:	F3307
SERIAL NUMBER:	358830030001661
DATE TESTED:	APRIL 15-16. 2010

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 Part 22 Subpart H	Pass
CFR 47 Part 24 Subpart E	Pass

Compliance Certification Services, Inc. (CCS) tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by CCS based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by CCS and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by CCS will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Approved & Released For CCS By:

THU CHAN
EMC MANAGER
COMPLIANCE CERTIFICATION SERVICES

Tested By:

CHIN PANG
EMC ENGINEER
COMPLIANCE CERTIFICATION SERVICES

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with TIA-603-C, FCC CFR 47 Part 2, FCC CFR 47 Part 22, and FCC CFR Part 24.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 Benicia Street, Fremont, California, USA.

CCS is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at http://www.ccsemc.com.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)

36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	3.52 dB
Radiated Disturbance, 30 to 1000 MHz	4.94 dB

Uncertainty figures are valid to a confidence level of 95%.

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a 850/900/1800/1900MHz GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Mini-PCIe Wireless WAN card.

5.2. MAXIMUM RF CONDUCTED OUTPUT POWER

The test measurement passed within ± 0.5dBm of the original output power.

5.3. MAXIMUM RF RADIATED OUTPUT POWER

The transmitter has a maximum ERP & EIRP output powers as follows:

GPRS MODE

824 to 849 MHz Authorized Band

Frequency Range (MHz)	Modulation	ERP Peak Power (dBm)	ERP Peak Power (mW)
Low CH - 824.2	GPRS	31.0	1258.9
Mid CH - 836.6		30.2	1047.1
High CH - 848.8		29.0	794.3

1850 to 1910 MHz Authorized Band

Frequency Range (MHz)	Modulation	EIRP Peak Power (dBm)	EIRP Peak Power (mW)
Low CH - 1850.2	GPRS	27.6	575.4
Mid CH - 1880.00		27.8	602.6
High CH - 1909.8		29.5	891.3

5.4. DESCRIPTION OF CLASS II PERMISSIVE CHANGE

The major changes filed under this application are:

1. Adding Toshiba portable netbooks: Satellite T210/T230 and NB300
2. Co-locate with WLANs.

5.5. SOFTWARE AND FIRMWARE

The EUT is linked with Agilent Communications Test Set.

5.6. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a Hitachi PIFA antenna, with a maximum gain of -0.6dBi (Cell) and -1.6dBi (PCS).

5.7. WORST-CASE CONFIGURATION AND MODE

Worst-case determine based on the highest output power based on the original report, thus the test was performed on GPRS modulation for Cellular and PCS bands.

5.8. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	**Manufacture**	**Model**	**Serial Number**	**FCC ID**
AC Adapter	Lenovo	ADP=40NH	11S36001648ZZ3009CK9AM	DoC

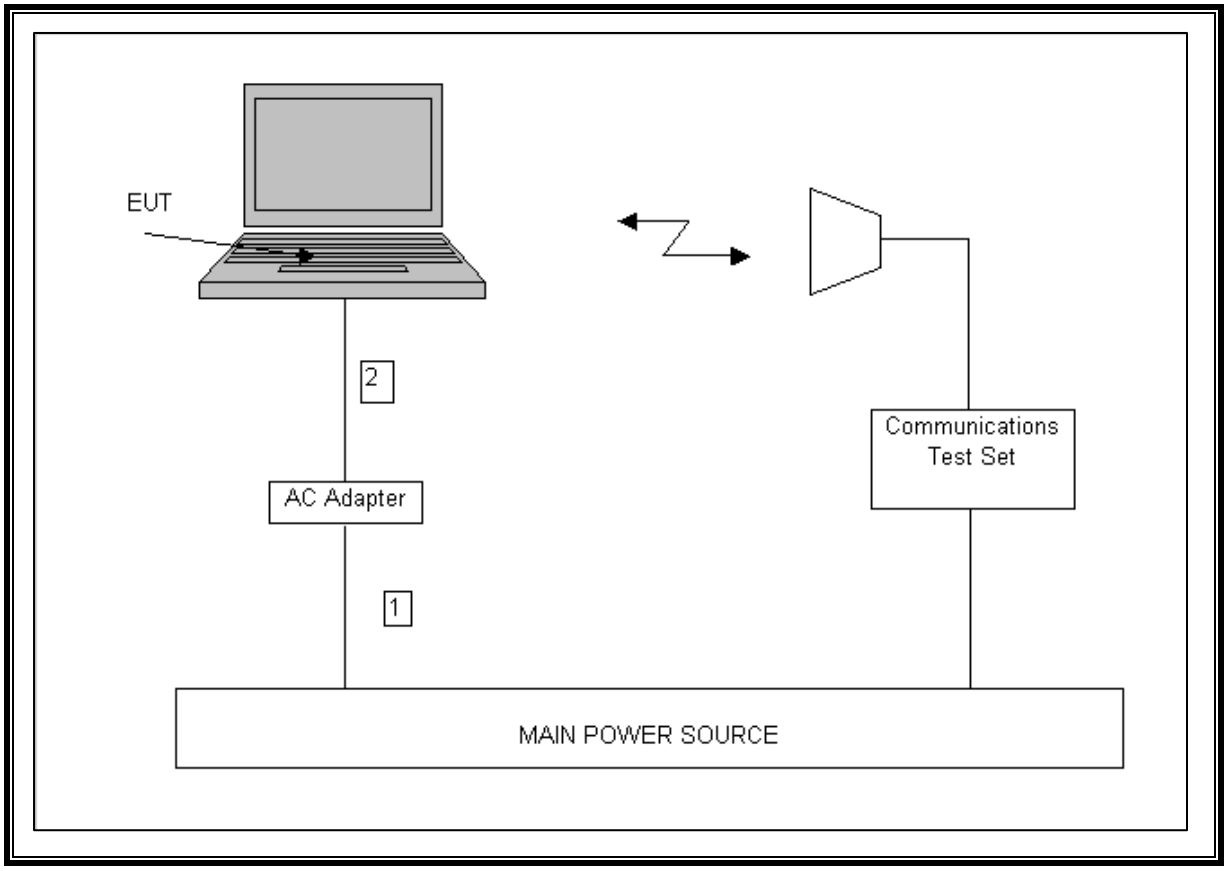
I/O CABLES

I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	AC	1	US 115V	Un-shielded	2m	No
2	DC	1	DC	Un-shielded	2m	Ferrite at one end

TEST SETUP

The EUT installed inside Toshiba mini-netbook during the tests. The Wireless Communications test set exercised the EUT.

RADIATED TEST SETUP DIAGRAM



6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

TEST EQUIPMENT LIST				
Description	**Manufacturer**	**Model**	**Serial Number**	**Cal Due**
Spectrum Analyzer, 26.5 GHz	Agilent / HP	E4440A	MY48250923	08/24/10
Antenna, Horn, 18 GHz	EMCO	3115	6739	07/29/10
Antenna, Horn, 18 GHz	EMCO	3115	6717	07/29/10
Preamplifier, 26.5 GHz	Agilent / HP	8449B	3008A00931	08/04/10
Preamplifier, 1300 MHz	Agilent / HP	8447D	2944A06589	07/10/10
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	A0022704	07/14/10
Communications Test Set	Agilent / HP	E5515C	GB46160222	09/15/10
Signal Generator 1024 MHz	R & S	SMY01	DE 12311	05/28/10
Dipole	EMCO	3121C-DB2	22435	06/17/10
2.7GHz HPF	MicroTronic	HPM13194	2	CNR
1.5GHz HPF	MicroTronic	HPM13195	1	CNR

7. LIMITS AND RESULTS

7.1. OUTPUT POWER

LIMIT

22.913(a) The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.
24.232(b) Mobile/portable stations are limited to 2 watts e.i.r.p. peak power and the equipment must employ means to limit the power to the minimum necessary for successful communications.

TEST PROCEDURE

ANSI / TIA / EIA 603C Clause 2.2.17

RESULTS

850 MHz GPRS Mode

Channel	Frequency (MHz)	ERP Peak Power (dBm)	ERP Peak Power (mW)
Low	824.2	31.00	1258.93
Middle	836.6	30.20	1047.13
High	848.8	29.00	794.33

1900 MHz GPRS Mode

Channel	Frequency (MHz)	EIRP Peak Power (dBm)	EIRP Peak Power (mW)
Low	1850.2	27.60	575.44
Middle	1880.0	27.80	602.56
High	1909.8	29.50	891.25

CELL BAND GPRS OUTPUT POWER (ERP)

High Frequency Substitution Measurement
Compliance Certification Services Chamber A

Company:	Ericsson AB
Project #:	10U13160
Date:	4/15/2010
Test Engineer:	Chin Pang
Configuration:	EUT and Laptop
Mode:	TX, GPRS CELL BAND

Test Equipment:
Receiving: Sunol T122, and 3m Chamber N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 6ft SMA Cable (SN # 208947003) Warehouse.

f MHz	SA reading (dBm)	Ant. Pol. (H/V)	Path Loss (dBm)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch							
824.20	-3.8	V	34.8	31.0	38.5	-7.5	
824.20	-3.9	H	30.5	26.6	38.5	-11.8	
Mid Ch							
836.60	-2.9	V	33.1	30.2	38.5	-8.2	
836.60	-2.0	H	31.2	29.2	38.5	-9.3	
High Ch							
848.80	-3.1	V	32.1	29.0	38.5	-9.4	
848.80	-4.5	H	31.2	26.7	38.5	-11.7	

Rev. 1.24.7

PCS BAND GPRS OUTPUT POWER (EIRP)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber A

Company:	Ericsson AB
Project #:	10U13160
Date:	4/15/2010
Test Engineer:	Chin Pang
Configuration:	EUT and Laptop
Mode:	TX, GPRS PCS BAND

Test Equipment:
Receiving: Horn T73, and Camber B SMA Cables
Substitution: Horn T72 Substitution, 6ft SMA Cable (208947003) Warehouse

f GHz	SA reading (dBm)	Ant. Pol. (H/V)	Path Loss (dBm)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch							
1.850	-12.8	V	40.4	27.6	33.0	-5.4	
1.850	-18.0	H	39.7	21.7	33.0	-11.3	
Mid Ch							
1.880	-12.1	V	39.9	27.8	33.0	-5.2	
1.880	-15.4	H	40.1	24.7	33.0	-8.3	
High Ch							
1.910	-10.3	V	39.8	29.5	33.0	-3.5	
1.910	-14.7	H	40.2	25.5	33.0	-7.6	

Rev. 1.24.7

7.2. FIELD STRENGTH OF SPURIOUS EMISSION

LIMIT

§22.917 (e), §24.238 (a), Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (P) dB.

TEST PROCEDURE

ANSI / TIA / EIA 603C Clause 2.2.12

RESULTS

Note: No emissions were found within 30-1000MHz & after the third harmonic of 20dB below the system noise.

CELL BAND GPRS SPURIOUS & HARMONIC (ERP)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: Ericsson AB
Project #: 10U13160
Date: 4/16/2010
Test Engineer: Chin Pang
Configuration: EUT and Laptop
Mode: TX , CELL GPRS MODE

Chamber	Pre-amplifer	Filter	Limit
5m Chamber A	T145 8449B	Filter 1	TX Part 22

f GHz	SA reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Path Loss (dB)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch 824.2MHz										
1.648	-50.1	H	3.0	36.5	35.5	1.0	-50.2	-13.0	-37.2	
2.473	-43.6	H	3.0	40.0	35.4	1.0	-40.2	-13.0	-27.2	
4.121	-62.0	H	3.0	46.2	35.2	1.0	-52.2	-13.0	-39.2	
1.648	-50.0	V	3.0	36.8	35.5	1.0	-49.9	-13.0	-36.9	
2.473	-43.0	V	3.0	41.7	35.4	1.0	-37.9	-13.0	-24.9	
4.121	-59.2	V	3.0	45.9	35.2	1.0	-49.7	-13.0	-36.7	
Mid Ch 836.6MHz										
1.674	-50.3	H	3.0	36.8	35.5	1.0	-50.2	-13.0	-37.2	
2.510	-45.0	H	3.0	40.1	35.4	1.0	-41.4	-13.0	-28.4	
4.183	-60.0	H	3.0	46.4	35.2	1.0	-50.0	-13.0	-37.0	
1.674	-46.1	V	3.0	37.1	35.5	1.0	-45.7	-13.0	-32.7	
2.510	-44.6	V	3.0	41.9	35.4	1.0	-39.3	-13.0	-26.3	
4.183	-57.6	V	3.0	46.1	35.2	1.0	-47.9	-13.0	-34.9	
High Ch 848.8 MHz										
1.698	-52.0	H	3.0	37.0	35.5	1.0	-51.6	-13.0	-38.6	
2.546	-45.2	H	3.0	40.4	35.4	1.0	-41.4	-13.0	-28.4	
4.255	-60.3	H	3.0	46.6	35.2	1.0	-50.1	-13.0	-37.1	
1.698	-46.7	V	3.0	37.4	35.5	1.0	-46.0	-13.0	-33.0	
2.546	-44.1	V	3.0	42.0	35.4	1.0	-38.7	-13.0	-25.7	
4.244	-58.6	V	3.0	46.2	35.2	1.0	-48.7	-13.0	-35.7	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

PCS BAND GPRS SPURIOUS & HARMONIC (EIRP)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: Ericsson AB
Project #: 10U13160
Date: 4/15/2010
Test Engineer: Chin Pang
Configuration: EUT and Laptop
Mode: TX , PCS GPRS MODE

Chamber	Pre-amplifer	Filter	Limit
5m Chamber A	T144 8449B	Filter 1	TX Part 24

f GHz	SA reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Path Loss (dB)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1850.2MHz										
3.704	-60.2	H	3.0	45.0	36.8	1.0	-51.0	-13.0	-38.0	
5.551	-62.4	H	3.0	49.9	36.3	1.0	-47.8	-13.0	-34.8	
9.251	-65.0	H	3.0	55.2	37.0	1.0	-45.8	-13.0	-32.8	
3.704	-59.0	V	3.0	44.9	36.8	1.0	-49.9	-13.0	-36.9	
5.551	-62.0	V	3.0	49.3	36.3	1.0	-48.0	-13.0	-35.0	
9.251	-57.5	V	3.0	54.2	37.0	1.0	-39.3	-13.0	-26.3	
Mid Ch, 1880MHz										
3.760	-62.1	H	3.0	45.2	36.8	1.0	-52.7	-13.0	-39.7	
5.640	-60.3	H	3.0	50.1	36.3	1.0	-45.5	-13.0	-32.5	
9.400	-64.5	H	3.0	55.4	37.0	1.0	-45.1	-13.0	-32.1	
3.760	-59.2	V	3.0	45.1	36.8	1.0	-49.9	-13.0	-36.9	
5.640	-57.1	V	3.0	49.4	36.3	1.0	-43.0	-13.0	-30.0	
9.400	-55.0	V	3.0	54.4	37.0	1.0	-36.6	-13.0	-23.6	
High Ch, 1909.8MHz										
3.820	-61.3	H	3.0	45.3	36.7	1.0	-51.7	-13.0	-38.7	
5.729	-50.0	H	3.0	50.2	36.3	1.0	-35.1	-13.0	-22.1	
9.549	-63.4	H	3.0	55.6	37.1	1.0	-43.9	-13.0	-30.9	
3.820	-58.5	V	3.0	45.2	36.7	1.0	-49.0	-13.0	-36.0	
5.729	-44.3	V	3.0	49.5	36.3	1.0	-30.1	-13.0	-17.1	
9.549	-60.2	V	3.0	54.6	37.1	1.0	-41.7	-13.0	-28.7	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.