

FCC CERTIFICATION TEST REPORT

for

Dynamic Telecommunications, Inc.

FCC ID: N7F1998DX001

1.0 Introduction

This report has been prepared on behalf of Dynamic Telecommunications, Inc. to support the attached Application for Equipment Authorization. The test and application are submitted for a Unintentional Radiator under Part 15 of the FCC Rules and Regulations. The Equipment Under Test was the Dynamic Telecommunications SeeGull-DX™ Superheterodyne Scanning Receiver.

All measurements herein were performed according to the 1992 version of ANSI C63.4. The measurement equipment conforms to ANSI C63.2 Specifications for Electromagnetic Noise and field Strength Instrumentation. Calibration checks are made periodically to verify proper performance of the measuring instrumentation.

All measurements are performed at Washington Laboratories, Ltd. test center in Gaithersburg, MD. Site description and site attenuation data have been placed on file with the FCC's Sampling and Measurements Branch at the FCC laboratory in Columbia, MD. Washington Laboratories, LTD. has been accepted by the FCC and approved by NIST NVLAP (NVLAP Lab Code: 200066-0) as an independent FCC test laboratory.

All results reported herein relate only to the equipment tested. This report shall not be used to claim product endorsement by NVLAP or any agency of the US Government.

1.1 Summary

The Dynamic Telecommunications, Inc. SeeGull-DX complies with the limits for an unintentional radiator under Part 15.

2.0 Description of Equipment Under Test (EUT)

The SeeGull-DX is a dual-conversion superheterodyne scanning radio receiver that includes a DSP processor for signal demodulation, data acquisition, and control functions. It is intended for planning, installation, and maintenance of wireless cellular telephone networks, as a test tool for signal strength and modulation measurements. The unit contains no circuitry that converts the cellular transmissions to analog voice audio and is marketed only to cellular carrier providers and for propagation studies. The RS-232 port is provided for a PC connection to allow for control of the unit as well as receive the data. The SeeGull-DX is available in various parameters allowing the Rx band to cover frequencies from 935.20 MHz – 959.80 MHz, 1805 MHz – 1880 MHz, and from 1930 MHz – 1990 MHz.

The EUT contains the following:

I/O PORTS

DB-9
SMA RF Input

I/O CABLES

RS-232 & power, shielded "Y" cable
Antenna port, shielded

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2.1 On-board Oscillators

The Dynamic Telecommunications, Inc. SeeGull-DX™ contains the following oscillators:

9.6 MHz, 8 MHz

3.0 Test Configuration

To complete the minimum test configuration required by the FCC, the EUT was setup in the GSM parameters to scan in the highest frequency band from 1930 MHz to 1990 MHz. The EUT was also configured with external peripherals that also have been certified to comply with the limits for Class B digital devices.

3.1 Conducted Emissions Testing

Conducted emissions testing was not performed as the unit is DC powered.

3.2 Radiated Emissions Testing

The EUT was placed on an 80 cm high 1 x 1.5 meters non-conductive motorized turntable for radiated testing on a 3 meter open field test site. The emissions from the EUT were measured continuously at every azimuth by rotating the turntable. A broadband antenna was mounted on an antenna mast to determine the height of maximum emissions. The height of the antenna was varied between 1 and 4 meters. The peripherals were placed on the table in accordance with ANSI C63.4-1992. Cables were varied in position to produce maximum emissions. Both the horizontal and vertical field components were measured.

The output from the antenna was connected, via a preamplifier, to the input of the spectrum analyzer. The detector function was set to quasi-peak or peak, as appropriate. The measurement bandwidth on the spectrum analyzer system was set to at least 120 kHz, with all post-detector filtering no less than 10 times the measurement bandwidth.

3.2.1 Radiated Data Reduction and Reporting

To convert the raw spectrum analyzer radiated data into a form that can be compared with the FCC limits, it is necessary to account for various calibration factors that are supplied with the antennas and other measurement accessories. These factors are grouped into a composite antenna factor (AFc) and are supplied in the AFc column of Table 1. The AFc in dB/m is algebraically added to the Spectrum Analyzer Voltage in dB μ V to obtain the Radiated Electric Field in dB μ V/m. This level is then compared with the FCC limit.

Example:

Spectrum Analyzer Voltage:	VdB μ V
Composite Antenna Factor:	AFcdB/m
Electric Field:	EdB μ V/m = VdB μ V + AFcdB/m
To convert to linear units:	E μ V/m = antilog (EdB μ V/m/20)

Data is recorded in Table 1.

Table 1**FCC Class B Meter Radiated Emissions Data - Site 1**

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DATE: 9/18/98
BY: Steve Koster
JOB #: 4757X

Frequency	Polarity	Azimuth	Antenna	SA Level	Afc	E-Field	E-Field	Limit	Margin
MHz	H/V	Degree	Ht m	(QP) dBuV	dB/m	dBuV/m	uV/m	uV/m	dB
167.98	H	180.0	3	15.4	10.9	26.3	20.6	150.0	-17.2
199.94	H	180.0	3	27.8	11.3	39.1	90.2	150.0	-4.4
433.14	H	0.0	3	18.3	18.5	36.8	69.5	200.0	-9.2
700.02	H	0.0	3	10.9	22.9	33.8	49.0	200.0	-12.2
998.69	V	135.0	1.25	15.2	26.9	42.1	127.9	500.0	-11.8
1000.00	V	337.5	1.25	14.5	27.0	41.5	118.6	500.0	-12.5

Table 2

System Under Test

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EUT:	Dynamic Telecommunications, Inc. SeeGull-DX™; P/N: DT1201; S/N: 0005007D FCC ID: N7F1998DX001
PC:	Compaq; M/N: Contura 430C; FCC ID: CNT75MB2CC (CE Mark)
Monitor:	Gateway; M/N: N/A; S/N: 8148975; FCC ID: L5ACPD 100SF
Printer:	Hewlett Packard; M/N: 2225C+; S/N: 2717S40327; FCC ID: DSI6XU2225
Keyboard:	Gateway 2000; M/N: 219600X-XX-XXX; S/N: 01330529; FCC ID: P7J2196001-XX (CE Mark)

Table 3

Interface Cables Used

Shielded I/O cables were used throughout the system under test.

The EUT was powered via a non-shielded DC power cord.

Table 4

Measurement Equipment Used

The following equipment is used to perform measurements:

Hewlett-Packard Spectrum Analyzer: HP 8593A

Hewlett-Packard Spectrum Analyzer: HP 8568B

Hewlett-Packard Quasi-Peak Adapter: HP 85650A

Hewlett-Packard Preselector: HP 85685A

Hewlett-Packard Preamplifier: HP 8449B

Antenna Research Associates, Inc. Biconical Log Periodic Antenna: LPB-2520 (Site 1)

Antenna Research Associates, Inc. Standard Gain Horn Antenna: DRG-118/A

Solar 50 Ω /50 μ H Line Impedance Stabilization Network: 8012-50-R-24-BNC

Solar 50 Ω /50 μ H Line Impedance Stabilization Network: 8028-50-TS-24-BNC

Washington Laboratories Portable Antenna Mast (Site 1)

Washington Laboratories Motorized Turntable (Site 1)

RG-214 semi-rigid coaxial cable

RG-223 double-shielded coaxial cable