

APPLICANT: HANCHANG CORPORATION

FCC ID: GH3HD-800

TABLE OF CONTENTS

TEST REPORT CONTAINING:

PAGE 1.....15.214(d) - SECURITY CODING INFORMATION
PAGE 2-3.....TEST EQUIPMENT LIST AND TEST PROCEDURE
AND CIRCUIT DESCRIPTION
PAGE 4.....POWER LINE CONDUCTED EMISSIONS
PAGE 5.....OCCUPIED BANDWIDTH TEST DATA
PAGE 6.....ANTENNA CONDUCTED SPURIOUS EMISSIONS
PAGE 7.....RADIATION INTERFERENCE TEST DATA - BASE
PAGE 8.....RADIATION INTERFERENCE TEST DATA - HANDSET
PAGE 9.....TRANSMITTER POWER DENSITY AND PROCESSING GAIN

EXHIBITS:

EXHIBIT 1.....CLASS II PERMISSIVE CHANGE REQUEST LETTER
EXHIBIT 2.....POWER OF ATTORNEY LETTER
EXHIBIT 3A.....SCHEMATIC- HANDSET
EXHIBIT 3B.....SCHEMATIC - BASE
EXHIBIT 3C.....SCHEMATIC - RF
EXHIBIT 4.....BLOCK DIAGRAMS
EXHIBIT 5.....FCC ID LABEL SAMPLES
EXHIBIT 6.....FCC ID LABEL LOCATION
EXHIBIT 7A-7B.....LINE CONDUCTED INTERFERENCE TEST DATA
EXHIBIT 8A-8F.....BANDWIDTH PLOTS
EXHIBIT 9A-9F.....SPECTRAL DENSITY PLOTS
EXHIBIT 10A-10M....USER'S MANUAL
EXHIBIT 11.....EXTERNAL FRONT VIEW - BASE AND HANDSET
EXHIBIT 12.....EXTERNAL BACK VIEW - BASE AND HANDSET
EXHIBIT 13.....INTERNAL COPPER - BASE RF
EXHIBIT 14.....INTERNAL COMPONENT - BASE RF
EXHIBIT 15.....INTERNAL COPPER - BASE MAIN
EXHIBIT 16.....INTERNAL COMPONENT - BASE MAIN
EXHIBIT 17.....INTERNAL COMPONENT - HANDSET
EXHIBIT 18.....INTERNAL COPPER - HANDSET

APPLICANT: HANCHANG CORPORATION

FCCID: GH3HD-800

REPORT #: F:\CUS\H\HANCHANG\HAN128B8.RPT

PAGE: TABLE OF CONTENTS LIST



Telephone: (352) 472-5500
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MAY 25, 1998

Federal Communication Commission
Authorization and Evaluation Division
7435 Oakland Mills Road
Columbia, MD 21046

SUBJECT: FCC ID: GH3HD-800
HANCHANG CORPORATION

REFERENCE: REQUEST FOR CLASS II PERMISSIVE CHANGE

TO WHOM IT MAY CONCERN:

This letter is a request for a Class II Permissive change. The applicant has made modifications to the RF portion of this telephone.

Attached please find the test data and a revised schematic to reflect these changes.

Should you require any further information, please contact me at 1-888-472-2424.

Sincerely,

S. S. Sanders

APPLICANT: HANCHANG CORPORATION
FCCID: GH3HD-800
REPORT #: F:\CUS\H\HANCHANG\HAN128B8.RPT
EXHIBIT #: 1

SECURITY CODING INFORMATION

APPLICANT: HANCHANG CORPORATION

FCC ID: GH3HD-800

15.214(d) - THIS DEVICE COMPLIES WITH THE SECURITY CODE REQUIREMENTS OF 15.214(d)(1)(2) AND (3) BY MEANS OF THE FOLLOWING:

THE EPROM IS CAPABLE OF 16 MILLION DIGIT CODING AND THE FACTORY WRITES THE SERIES IN PRODUCTION. THIS MEANS THAT EACH OF 16 MILLION INDIVIDUAL SECURITY CODES ARE REPEATED ONLY ONCE IN ANY CONSECUTIVELY PRODUCED UNIT.

APPLICANT: HANCHANG CORPORATION
FCCID: GH3HD-800
REPORT #: F:\CUS\H\HANCHANG\HAN128B8.RPT
PAGE #: 1

APPLICANT: HANCHANG CORPORATION
FCCID : GH3HD-800

TEST EQUIPMENT LIST

1. Spectrum Analyzer: Hewlett Packard 8566B, with preselector HP 85685A, & Quasi-Peak Adapter HP 85650A, & HP 8449B OPT H02
Cal. 10/1/97
2. Eaton Biconnical Antenna Model 94455-1
20-200 MHz Serial No. 0997 Cal. 9/17/97
3. Electro-Metric Dipole Kit, 20-1000 MHz, Model TDA 25 cal. 5/15/97
4. Electro-Metric Horn 1-18 GHz, Model RGA-180, Cal. 9/24/97
5. Electro-Metric Antennas Model TDS-25-1, TDS-25-2, 9/3/97
6. Electro-Metric Horn 1-18 GHz, Model RGA-180
7. Systron Donner Horn Model No. DBE-520-20 18-26GHz
8. Electro-Metric Line Impedance Stabilization Network Model
No. EM-7021, 50uH. 5/21/97
9. Electro-Metric Line Impedance Stabilization Network Model
No. EM-7021, 50uH. 5/21/97
10. Peak Power Meter HP 8900C With Peak Power Sensor HP 84811A

TEST PROCEDURE

GENERAL: This report shall NOT be reproduced except in full without the written approval of TIMCO ENGINEERING, INC. Shielded interface cables were used in all cases except for cables connecting to the telephone line and the power cords. A test program was run which simulated a normal data transmission on a network.

POWER LINE CONDUCTED INTERFERENCE: The procedure used was ANSI STANDARD C63.4-1992 using a 50uH LISN. Both lines were observed. The bandwidth of the spectrum analyzer was 10kHz with an appropriate sweep speed. The ambient temperature of the UUT was 78oF with a humidity of 48%.

BANDWIDTH 6.0dB: The measurements were made with the spectrum analyzer's resolution bandwidth(RBW)=100KHz and the video bandwidth(VBW)=300KHz and the span set as shown on plot.

POWER OUTPUT: The RF power output was measured at the antenna feed point by removing the permanent antenna and connecting the UUT to a peak power meter, HP Model No. 8900C.

ANTENNA CONDUCTED EMISSIONS: The RBW=100KHz, VBW > or = RBW and the spectrum was scanned from 30MHz to the 10th Harmonic of the fundamental.

RADIATION INTERFERENCE: The test procedure used was ANSI STANDARD C63.4-1992 using a HEWLETT PACKARD spectrum analyzer with a preselector. The bandwidth(RBW) of the spectrum analyzer was 100kHz up to 1GHz and 1.0MHz above 1GHz with an appropriate sweep speed. The VBW above 1.0GHz was = 1.0MHz. The analyzer was calibrated in dB above a microvolt at the output of the antenna. The ambient temperature of the UUT was 78oF with a humidity of 72%.

APPLICANT: HANCHANG CORPORATION
FCC ID: GH3HD-800

TEST PROCEDURE (Continued)

15.247(d) **POWER SPECTRAL DENSITY.** The peak within the pass band was located with a RBW OF 3KHz and a span of 2.0MHz, slightly greater than the 6dB bandwidth, then span was centered on the display and the span is reduced to 900KHz and the sweep time set to 300 seconds. Since the spectral line spacing could not be resolved, the spectral density was measured using the noise power density and adding the correction of 35dB. This response is then plotted.

15.247(e): PROCESSING GAIN, This gain is supplied by the manufacturer of the UUT.

2.1033(b)(4)

ANTENNA AND GROUND SYSTEM:

This unit uses a short, inductively loaded, antenna element for the base unit and the handset. The antenna is permanently attached to the unit and no provision is made for connection to an external antenna.

No ground connection is provided. The only ground in use is the ground plane on the printed circuit board.

CIRCUIT DESCRIPTION:

HANDSET:

This unit is a low power device with a maximum power output of 100 mW. It uses Direct Sequence Spread Spectrum technique. It operates in the 902 to 928 MHz part 15 band.

The receiver is a superhetrodyne and uses dedicated ICs for most major functions.

The transmitter also is designed around specialized ICs.

The unit uses a microprocessor for control functions.

APPLICANT: HANCHANG CORPORATION
FCCID: GH3HD-800
REPORT #: F:\CUS\H\HANCHANG\HAN128B8.RPT
PAGE #: 3

APPLICANT: HANCHANG CORPORATION

FCC ID: GH3HD-800

NAME OF TEST: POWER LINE CONDUCTED INTERFERENCE

RULES PART NUMBER: 15.207

MINIMUM REQUIREMENTS:	FREQUENCY ____MHz____	LEVEL ____dBuV__
	0.450-30	48 dBuV

TEST PROCEDURE: ANSI STANDARD C63.4-1992

THE HIGHEST EMISSION READ FOR LINE 1 WAS 20.63 uV @ 800kHz.

THE HIGHEST EMISSION READ FOR LINE 2 WAS 12.15 uV @ 800kHz.

THE GRAPHS INCLUDED AS EXHIBITS 7A AND 7B REPRESENT THE EMISSIONS READ FOR POWERLINE CONDUCTED FOR THIS DEVICE.

TEST RESULTS: Both lines were observed with the UUT transmitting. The measurements indicate that the unit DOES appear to meet the FCC requirements for this class of equipment.

PERFORMED BY: S. S. SANDERS

DATE: MAY 25, 1998

APPLICANT: HANCHANG CORPORATION

FCCID: GH3HD-800

REPORT #: F:\CUS\H\HANCHANG\HAN128B8.RPT

PAGE #: 4

APPLICANT: HANCHANG CORPORATION
FCC ID: GH3HD-800
NAME OF TEST: OCCUPIED BANDWIDTH
RULES PART NUMBER: 15.247

15.247(a)(2)

6dB bandwidth shall be at least 500 kHz. The 6dB points for both the base is 1.5MHz and handset is 1.58MHz. As shown in the accompanying plots. The bandwidth was measured at three places in the band and the narrowest is reported below.

Base 6dB Bandwidth = 1.5MHz

Handset 6 dB Bandwidth = 1.58MHz

15.247(B)

The maximum peak output power shall not exceed 1 watt (30 dBm). If directional transmitting antennas with a gain of more than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Both the base and handsets have a maximum power output of less than 10 mW. Power was measured by disconnecting the antennas and measuring across a 50 ohm load as recommended by the manufacturer into a HP peak power meter Model 8900C. The antennas are non directional and do not exceed 6 dBi gain. The power output was measured at three places in the band highest is reported below.

POWER OUTPUT - LIMIT 30 dBm

BASE PEAK POWER OUTPUT = 0.0dBm
HANDSET PEAK POWER OUTPUT = +0.0dBm

THE OCCUPIED BANDWIDTH PLOTS ARE INCLUDED AS EXHIBITS 8A-8F.

APPLICANT: HANCHANG CORPORATION
FCCID: GH3HD-800
REPORT #: F:\CUS\H\HANCHANG\HAN128B8.RPT
PAGE #: 5

APPLICANT: HANCHANG CORPORATION
FCC ID: GH3HD-800
NAME OF TEST: ANTENNA CONDUCTED SPURIOUS EMISSIONS
RULES PART NUMBER: 15.247(c)

FREQUENCY MHz	ATTENUATION dBc
BASE	
906.8	00.00
1813.67	-53.50
2720.4	-58.10
3672.2	-57.50
4534.0	-67.40
7254.4	-70.30
916.4	00.00
1832.8	-67.50
2749.2	-37.40
3665.6	-41.30
4582.0	-43.00
5498.4	-58.20
923.6	00.00
1847.2	-48.60
2770.8	-59.90
3694.4	-62.10
5541.6	-<65.20
HANDSET	
903.8	00.00
1807.4	-54.80
2709.6	-54.50
3614.3	-57.20
5421.4	-72.30
910.0	00.00
1820.0	-55.30
2730.0	-56.40
3640.0	-62.10
5460.0	-73.20
923.3	00.00
1846.6	-52.60
2769.9	-54.80
3693.2	-55.20
5539.8	-69.40

The searches were made to the tenth harmonic.

APPLICANT: HANCHANG CORPORATION

FCC ID: GH3HD-800

NAME OF TEST: **RADIATED SPURIOUS EMISSIONS - BASE**

RULES PART NUMBER: 15.247(c)

REQUIREMENTS: Emissions that fall in the restricted bands (15.205). These emissions must be less than or equal to 500 uV/m (54 dBuV/m).

TEST DATA:

EMISSION FREQUENCY MHZ AT 3m	METER READING dBuV	COAX LOSS dB	ACF dB	FIELD STRENGTH dBuV/m @ 3m	ANT.
906.80	67.80	2.90	24.17	94.87	V
1813.67	6.40	1.00	27.25	34.66	H
2720.40R	5.30	1.14	29.80	36.24	H
3672.20R	4.70	1.28	32.18	38.16	H
4534.00R	6.90	1.41	33.60	41.91	H
7254.40R	2.50	1.82	36.66	40.98	H
916.40	68.20	2.90	24.13	95.23	V
1832.80	7.20	1.00	27.33	35.54	H
2749.20R	5.80	1.14	29.87	36.82	H
3665.60R	4.90	1.28	32.16	38.34	H
4582.00R	7.10	1.42	33.65	42.17	H
5498.40	3.20	1.56	34.69	39.44	H
923.60	69.40	2.90	24.11	96.41	V
1847.20	6.90	1.01	27.39	35.30	H
2770.80R	5.70	1.15	29.93	36.77	H
3694.40R	4.70	1.28	32.24	38.22	H
5541.60	3.30	1.56	34.73	39.60	H

SAMPLE CALCULATION: $FSdBuV/m = MR(dBuV) + ACFdB + COAX.$

METHOD OF MEASUREMENT: The procedure used was ANSI STANDARD C63.4-1992. When an emission was found, the table was rotated to produce the maximum signal strength. The antenna was placed in both the horizontal and vertical planes and the worse case emissions were reported. The spectrum was scanned from 30 MHz to 10 GHz using a Hewlett Packard Model 8566B spectrum analyzer, a Hewlett Packard Model 85685A Preselector, a Hewlett Packard model 85650A Quasi-Peak Adaptor, an Eaton model 94455-1 Biconical Antenna, and an Electrometrics RGA-180 Horn Antenna. Low loss coax was used above 1 GHz, At the higher frequencies, the measuring antenna was moved to within 1m of the UUT to search for emissions. Measurements were made at Timco Engineering, Inc. 6051 NW 19TH Lane Gainesville, FL.

TEST RESULTS: The unit DOES meet the FCC requirements.

PERFORMED BY: S. S. SANDERS

DATE: MAY 25, 1998

APPLICANT: HANCHANG CORPORATION

FCCID: GH3HD-800

PAGE #: 7

APPLICANT: HANCHANG CORPORATION
 FCC ID: GH3HD-800
 NAME OF TEST: RADIATED SPURIOUS EMISSIONS - HANDSET
 RULES PART NUMBER: 15.247(c)
 REQUIREMENTS: Emissions that fall in the restricted bands (15.205). These emissions must be less than or equal to 500 uV/m (54 dBuV/m).

TEST DATA:

EMISSION FREQUENCY MHZ	METER READING AT 3m dBuV	COAX LOSS dB	ACF dB	FIELD STRENGTH dBuV/m @ 3m	ANT.
903.80	68.10	2.90	24.18	95.18	V
1807.40	7.20	1.00	27.23	35.43	H
2709.60R	5.80	1.14	29.77	36.71	H
3614.30R	5.20	1.27	32.04	38.51	H
5421.40R	7.10	1.54	34.60	43.24	H
910.00	67.80	2.90	24.16	94.86	V
1820.00	6.80	1.00	27.28	35.08	H
2730.00R	5.40	1.14	29.83	36.36	H
3640.00R	4.60	1.28	32.10	37.98	H
5460.00R	6.30	1.55	34.64	42.49	H
923.30	68.30	2.90	24.11	95.31	V
1846.60	6.90	1.01	27.39	35.29	H
2769.90R	5.80	1.15	29.92	36.87	H
3693.20R	4.90	1.28	32.23	38.42	H
5539.80	5.80	1.56	34.73	42.09	H

SAMPLE CALCULATION: $FSdBuV/m = MR(dBuV) + ACFdB + COAX.$

METHOD OF MEASUREMENT: The procedure used was ANSI STANDARD C63.4-1992. When an emission was found, the table was rotated to produce the maximum signal strength. The antenna was placed in both the horizontal and vertical planes and the worse case emissions were reported. The spectrum was scanned from 30 MHz to 10 GHz using a Hewlett Packard Model 8566B spectrum analyzer, a Hewlett Packard Model 85685A Preselector, a Hewlett Packard model 85650A Quasi-Peak Adaptor, an Eaton model 94455-1 Biconical Antenna, and an Electrometrics RGA-180 Horn Antenna. Low loss coax was used above 1 GHz, At the higher frequencies, the measuring antenna was moved to within 1m of the UUT to search for emissions. Measurements were made at Timco Engineering, Inc. 6051 NW 19th Lane Gainesville, FL.

TEST RESULTS: The unit DOES meet the FCC requirements.

PERFORMED BY: _____ DATE: MAY 25, 1998

APPLICANT: HANCHANG CORPORATION FCCID: GH3HD-800
 REPORT #: F:\CUS\H\HANCHANG\HAN128B8.RPT
 PAGE #: 8

APPLICANT: HANCHANG CORPORATION

FCC ID: GH3HD-800

NAME OF TEST: TRANSMITTED POWER DENSITY

RULES PART NUMBER: 15.247(d)

REQUIREMENTS: The transmitted power density averaged over any 1 second interval shall not be greater than 8 dBm in any 3 kHz bandwidth within these bands.

TEST DATA:

The spectrum line spacing could not be resolved so the noise power density was measured;

	FREQUENCY	METER READING
HANDSET:	908.68MHz	-75.87dBm + 35dB = -40.87dBm
	911.28MHz	-81.47dBm + 35dB = -46.47dBm
	925.97MHz	-81.57dBm + 35dB = -46.57dBm
BASE:	907.680MHz	-78.97dBm + 35dB = -43.97dBm
	909.31MHz	-79.17dBm + 35dB = -44.17dBm
	920.71MHz	-86.37dBm + 35dB = -51.37dBm

Measurement Method:

Starting from the settings that were used for the 6Db bandwidth the peak signal was located and the span was reduced and the sweep time increased in a manner to maintain calibration and to keep the peak emission in the display, then once the sweep time reached 300seconds at 900KHz span the spectrum analyzer was put into the noise power mode and the plots made.

SEE ATTACHED PLOTS AS EXHIBITS 9A-9F.

NAME OF TEST: PROCESSING GAIN

RULES PART NUMBER: 15.247(e)

REQUIREMENTS: The processing gain shall be at least 10 dB.

TEST DATA:

The processing gain of this unit is 11.2dB . This information was provided by the manufacturer.

PERFORMED BY: S. S. SANDERS

DATE: MAY 25, 1998

APPLICANT: HANCHANG CORPORATION

FCCID: GH3HD-800

PAGE #: 9