

APPLICANT: SHINWOO TELECOM CO., LTD.

FCC ID: MQUST-945A

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SECURITY CODING INFORMATION

APPLICANT: SHINWOO TELECOM CO., LTD.

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15.214(d) - THIS DEVICE COMPLIES WITH THE SECURITY CODE REQUIREMENTS OF 15.214(d)(1)(2) AND (3). PLEASE SEE EXHIBIT 2.

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TEST EQUIPMENT LIST

1. Spectrum Analyzer: Hewlett Packard 8566B, with preselector HP 85685A, & Quasi-Peak Adapter HP 85650A, & HP 8449B OPT H02 Cal. 9/30/97
2. Eaton Biconical 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 Line Impedance Stabilization Network Model No. EM-7821, Serial No. 101; 100KHz-30MHz 50uH. 9/30/97
7. Electro-Metric Line Impedance Stabilization Network Model No. EM-7820, Serial No. 2682; 10KHz-30MHz 50uH. 9/30/97

TEST PROCEDURE

GENERAL: This report shall NOT be reproduced except in full without the written approval of TIMCO ENGINEERING, INC.

RADIATION INTERFERENCE: The test procedure used was ANSI STANDARD C63.4-1992 using a HEWLETT PACKARD 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 resolution bandwidth was 100KHz and the video bandwidth was 300KHz. The ambient temperature of the UUT was 82.5oF with a humidity of 82%.

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 dBuV) to the antenna correction factor supplied by the antenna manufacturer. 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 = FS
33 20 dBuV + 10.36 dB = 30.36 dBuV/m @ 3m

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 82.5oF with a humidity of 82%.

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TEST PROCEDURES CONTINUED

ANSI STANDARD C63.4-1992 10.1.7 MEASUREMENT PROCEDURES: The UUT was placed on a table 80 cm high and with dimensions of 1m by 1.5m. The UUT was placed flush with the back of the table (1.5m side). 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.

The situation was similar for the conducted measurement except that the table did not rotate. The EUT was setup as described in ANSI C63.4-1992 with the EUT 40 cm from the vertical ground wall.

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APPLICANT: SHINWOO TELECOM CO., LTD.

FCC ID: MQUST-945A (BASE)

NAME OF TEST: RADIATION INTERFERENCE

RULES PART NO.: 15.249

REQUIREMENTS: Carrier frequency will not exceed 94.0 dBuV/m

FREQUENCY		LEVEL	
MHz		dBuV/M	
902-	928	MHz:	54.0 dBuV/M
ABOVE	960	MHz:	54.0 dBuV/M

TEST DATA:

EMISSION FREQUENCY MHz	METER READING AT 3 METERS dBuV	COAX LOSS dB	ANTENNA CORRECTION FACTOR	FIELD STRENGTH dBuV/m@3m	MARGIN dB	ANT. POL.
TUNED FREQUENCY 902.69						
902.69	50.10	2.90	24.19	77.19	16.81	V
1805.38	11.50	1.00	27.22	39.72	14.28	H
2708.07	-6.20	1.14	29.77	24.71	29.29	H
5416.10	-6.40	1.54	34.59	29.74	24.26	H
9026.80	-3.80	2.05	38.18	36.43	17.57	V
TUNED FREQUENCY 903.64						
903.64	49.50	2.90	24.19	76.59	17.41	H
1807.28	11.40	1.00	27.23	39.63	14.37	V
2710.92	-3.90	1.14	29.78	27.01	26.99	V
5421.84	-6.20	1.54	34.60	29.94	24.06	H
9036.40	-3.00	2.05	38.18	37.24	16.76	H

SAMPLE CALCULATION:

$$FSdBuV/m = MR(dBuV) + ACFdB.$$

METHOD OF MEASUREMENT: The procedure used was ANSI STANDARD. Measurements were made at Timco Engineering, Inc. 6051 N.W. 19th Lane, Gainesville, FL 32605.

TEST RESULTS: The unit DOES meet the FCC requirements.

PERFORMED BY: S. S. SANDERS

DATE: JUNE 25, 1998

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APPLICANT: SHINWOO TELECOM CO., LTD.
 FCC ID: MQUST-945A (HANDSET)
 NAME OF TEST: RADIATION INTERFERENCE PAGE 1 OF 1
 RULES PART NO.: 15.249
 REQUIREMENTS: Carrier frequency will not exceed 94.0 dBuV/m

FREQUENCY	LEVEL
MHz	dBuV/M
902- 928 MHz	54.0 dBuV/M
ABOVE 960 MHz	54.0 dBuV/M

TEST DATA:

EMISSION FREQUENCY MHz	METER READING dBuV	ANTENNA CORRECTION FACTOR dB	COAX LOSS dB	FIELD STRENGTH dBuV/m@3m	MARGIN dB	ANT. POL.
TUNED FREQUENCY 926.67						
926.67	46.30	2.90	24.11	73.31	20.69	V
2780.00	-6.50	1.15	29.95	24.60	29.40	H
7413.50	-2.70	1.84	36.84	35.98	18.02	V
9266.90	-2.50	2.08	38.34	37.92	16.08	V
TUNED FREQUENCY 927.65						
927.65	47.10	2.90	24.12	74.12	19.88	V
1855.30	-1.30	1.01	27.42	27.13	26.87	V
2782.95	-6.30	1.15	29.96	24.80	29.20	H
7421.20	-3.10	1.84	36.85	35.59	18.41	V
9276.50	-4.10	2.08	38.35	36.32	17.68	V

SAMPLE CALCULATION:

$$FSdBuV/m = MR(dBuV) + ACFdB.$$

METHOD OF MEASUREMENT: The procedure used was ANSI STANDARD C63.4-1992 with the following exception: the unit was operated into its own antenna with the antenna at a height of four feet. Measurements were made at Timco Engineering, Inc. 6051 N.W. 19th Lane, Gainesville, FL 32605.

TEST RESULTS: The unit DOES meet the FCC requirements.

PERFORMED BY: _____ DATE: JUNE 25, 1998

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FCC ID: MQUST-945A

NAME OF TEST: POWER LINE CONDUCTED INTERFERENCE

RULES PART NUMBER: 15.207

MINIMUM REQUIREMENTS: FREQUENCY LEVEL
 MHz uV
 0.450-30 250

TEST PROCEDURE: ANSI STANDARD C63.4-1992

THE HIGHEST EMISSION READ FOR LINE 1 WAS 23.414 uV @ 800 kHz.

THE HIGHEST EMISSION READ FOR LINE 2 WAS 17.761 uV @ 800 kHz.

THE GRAPHS IN EXHIBITS 20A AND 20B REPRESENT THE EMISSIONS READ FOR POWERLINE CONDUCTED FOR THIS DEVICE.

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

PERFORMED BY: _____ DATE: JUNE 25, 1998

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APPLICANT: SHINWOO TELECOM CO., LTD.

FCC ID: MQUST-945A

NAME OF TEST: Occupied Bandwidth

RULES PART NO.: 15.233

REQUIREMENTS: The field strength of any emissions appearing between the band edges and up to 10 kHz above and below the band edges shall be attenuated at least 26 dB below the level of the unmodulated carrier or to the general limits of 15.209, whichever permits the higher emission levels.

THE GRAPHS IN EXHIBITS 21A-21E REPRESENT THE EMISSIONS TAKEN FOR THIS DEVICE.

METHOD OF MEASUREMENT: A small sample of the transmitter output was fed into the spectrum analyzer and the above photo was taken. The vertical scale is set to -10 dBm per division. The horizontal scale is set to 5 kHz per division.

TEST RESULTS: The unit DOES meet the FCC requirements.

PERFORMED BY: S. S. SANDERS JUNE 25, 1998

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