



The Hong Kong Standards and Testing Centre Ltd.

TEST REPORT

Page 1 of 10

Date: 1998-06-23
No.: HM974/504

APPLICANT: (CODE : 000023)

ALCO ELECTRONICS LTD.
5/F, Zung Fu Ind. Bldg., 1067,
King's Road, Quarry Bay,
Hong Kong

DATE OF SAMPLES RECEIVED: 1998.05.08

DATE OF TESTING: 1998.05.12 & 1998.06.18

DESCRIPTION OF SAMPLE(S):

A sample of product said to be:

Product: AM/CB/SW/FM-TV1/TV2/AIR-PBH-WB Multi-Band Receiver

Manufacturer:

1. Hau Kai Alco Electronics

2. Chang An Communisoc Electronics Pty.

Band Combination:

AM/CB/SW/FM-TV1/TV2/AIR-PBH-WB

Model No./Brand Name :

2960/VENTURER, 12-795/RADIO SHACK

Rating:

120V a.c. 5W 60Hz

DC 6.0V('D' size battery x 4)

Origin:

China

INVESTIGATIONS REQUESTED:

Measurement to the relevant clauses of F.C.C. Rules and Regulations Part 15 Subpart C - Radio

Receiver.

RESULT/REMARK: Please see attached sheet(s).

CONCLUSION:

From the measurement data obtained, the tested sample was considered to have COMPLIED after modification by customer with the requirement for the relevant clauses of Federal Communication Commission Rules for Radio Receivers.

TEST EQUIPMENT AUDIT: Please see Appendix A

Testing Engineer

Verify by

for Managing Director

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The Hong Kong Standards and Testing Centre Ltd.

TEST REPORT

Page 2 of 10

Date: 1998-06-23
No.: HM974/504

TEST SUMMARY

(A) Measurement of Radiated Emissions
(On CB, FM, TV1, TV2, AIR, PBH, WEATHER BAND)

Result -- Satisfactory
Data -- See the attached data

(B) Measurement of Line-Conducted Voltage
(On CB, FM, TV1, TV2, AIR, PBH, WEATHER BAND)

Result : Satisfactory
Data : (The spectrum was checked from 450KHz to 30KHz. All emissions were too low to be measurable and they were all more than 20dB below the permitted limit.)



The Hong Kong Standards and Testing Centre Ltd.

TEST REPORT

Page 3 of 10

Date: 1998-06-23
No.: HM974/504

CITIZEN BAND

(A) Measurement of Radiated Interference

TEST REFERENCE: FCC Rules Part 15 Subpart C section 15.63(a)
TEST CONDITION : Citizen Band (Build in antenna)
TEST DATE : 1998.06.18

Freq. to which tuned	Freq. of the emission	Polarity	Meter Reading (including Antenna Factor) at 3m dB(μ V/m)	Field Strength (at 3m) μ V/m	FCC Limit @ μ V/m
27.0 MHz	37.7 MHz	Vertical	28.58	26.85	100

SUMMARY

All data is within limits
Broad-band Antennas were used and both polarizations
of emissions were measured.

Remark: IF = 10.70 MHz



The Hong Kong Standards and Testing Centre Ltd.

TEST REPORT

Page 4 of 10

Date: 1998-06-23
No.: HM974/504

FM BAND RADIO RECEIVER

(A) Measurement of Radiated Interference

TEST REFERENCE: FCC Rules Part 15 Subpart C section 15.63(a)
TEST CONDITION : Normal
TEST DATE : 1998.06.18

Freq. to which tuned	Freq. of the emission	Polarity	Meter Reading (including Antenna Factor) at 3m dB(μ V/m)	Field Strength (at 3m) μ V/m	FCC Limit @ μ V/m
88.3	99.0	Vertical	36.1	63.83	500
98.3	109.0	Vertical	46.5	211.35	500
108.3	119.0	Vertical	46.8	218.78	500

SUMMARY

All data is within limits

Broad-band Antennas were used

Remark: IF = 10.70 MHz



The Hong Kong Standards and Testing Centre Ltd.

TEST REPORT

Page 5 of 10

Date:1998-06-23
No.: HM974/504

AIR BAND RECEIVER

(A) Measurement of Radiated Interference

TEST REFERENCE: FCC Rules Part 15 Subpart C section 15.63(a)
TEST CONDITION : Air Band (Build in Antenna)
TEST DATE : 1998.06.18

Freq. to which tuned	Freq. of the emission	Polarity	Meter Reading (including Antenna Factor) at 3m dB(μ V/m)	Field Strength (at 3m) μ V/m	FCC Limit @ μ V/m
108.3	119	Vertical	46.8	218.78	500
	238	Horizontal	42.0	125.89	1500
	357	Horizontal	37.4	74.13	3090
122.3	133	Horizontal	44.3	164.06	565
	266	Horizontal	44.0	158.49	1609
	399	Horizontal	35.1	56.89	3830
135.3	146	Horizontal	37.6	75.86	853
	292	Horizontal	42.8	138.04	2035

SUMMARY

All data is within limits

Broad-band Antennas were used

Remark: IF = 10.70 MHz



The Hong Kong Standards and Testing Centre Ltd.

TEST REPORT

Page 6 of 10

Date:1998-06-23
No.: HM974/504

TVI BAND RECEIVER

(A) Measurement of Radiated Interference

TEST REFERENCE: FCC Rules Part 15 Subpart C section 15.63(a)
TEST CONDITION : TVI BAND (Build in Antenna)
TEST DATE : 1998.06.18

Freq. to which tuned	Freq. of the emission	Polarity	Meter Reading (including Antenna Factor) at 3m dB(μ V/m)	Field Strength (at 3m) μ V/m	FCC Limit @ μ V/m
59.75	70.45	Vertical	46.9	221.31	500
	140.9	Vertical	24.6	16.98	670
	211.3	Horizontal	36.9	69.98	1567
	281.8	Vertical	43.5	149.62	1718
65.75	76.45	Horizontal	43.0	141.25	500
	152.9	Vertical	26.5	21.13	871
	229.3	Vertical	44.9	175.79	1500
	305.8	Vertical	38.5	84.14	1928
71.75	82.45	Horizontal	45.1	179.89	500
	164.9	Vertical	29.9	31.26	1775
	247.3	Vertical	48.9	278.61	1500
	329.8	Vertical	38.4	83.18	2213
81.75	92.45	Vertical	46.7	216.27	500
	184.9	Vertical	37.8	77.62	1500
	277.3	Vertical	46.8	218.78	1660
	369.8	Horizontal	38.0	79.43	2213
87.75	98.45	Vertical	42.0	125.89	500
	196.9	Vertical	39.8	97.72	1500
	295.3	Horizontal	39.5	94.41	2100

SUMMARY

All data is within limits

Broad-band Antennas were used

Remark: IF = 10.70 MHz



The Hong Kong Standards and Testing Centre Ltd.

TEST REPORT

Page 7 of 10

Date: 1998-06-23
No.: HM974/504

TV2 BAND RECEIVER

(A) Measurement of Radiated Interference

TEST REFERENCE: FCC Rules Part 15 Subpart C section 15.63(a)
TEST CONDITION : TV2 BAND (Build in Antenna)
TEST DATE : 1998.06.18

Freq. to which tuned	Freq. of the emission	Polarity	Meter Reading (including Antenna Factor) at 3m dB(μ V/m)	Field Strength (at 3m) μ V/m	FCC Limit @ μ V/m
179.5	190.45	Horizontal	56.2	645.65	1500
	380.90	Horizontal	41.1	113.50	3000
185.75	196.45	Horizontal	55.1	568.85	1500
	392.90	Vertical	41.3	116.14	3273
191.75	202.45	Horizontal	54.2	512.86	1500
	404.90	Horizontal	40.1	101.16	3467
197.75	208.45	Horizontal	53.6	478.63	1500
	416.90	Horizontal	38.3	82.22	3715
203.75	214.45	Horizontal	54.3	518.80	1500
	428.90	Vertical	37.9	78.52	3981
209.75	220.45	Horizontal	55.0	562.34	1500
	440.90	Horizontal	37.8	77.62	4266
215.75	226.45	Horizontal	54.8	549.54	1500
	452.90	Horizontal	41.0	112.20	4500

SUMMARY

All data is within limits

Broad-band Antennas were used

Remark: IF = 10.70 MHz



The Hong Kong Standards and Testing Centre Ltd.

TEST REPORT

Page 8 of 10

Date:1998-06-23
No.: HM974/504

VHF BAND RECEIVER

(A) Measurement of Radiated Interference

TEST REFERENCE: FCC Rules Part 15 Subpart C section 15.63(a)
TEST CONDITION : PBH BAND (Build in Antenna)
TEST DATE : 1998.06.18

Freq. to which tuned	Freq. of the emission	Polarity	Meter Reading (including Antenna Factor) at 3m dB(μ V/m)	Field Strength (at 3m) μ V/m	FCC Limit @ μ V/m
145.3	156.00	Horizontal	47.2	229.09	1000
	312.00	Vertical	41.1	113.50	2000
163.0	171.00	Vertical	56.4	660.69	1413
	342.00	Horizontal	50.9	350.75	2239
	512.00	Horizontal	39.1	90.16	5000
175.3	186.00	Horizontal	49.5	298.54	1500
	372.00	Horizontal	46.3	206.54	2723

SUMMARY

All data is within limits

Broad-band Antennas were used

Remark: IF = 10.70 MHz



The Hong Kong Standards and Testing Centre Ltd.

TEST REPORT

Page 9 of 10

Date: 1998-06-23
No.: HM974/504

WEATHER BAND RECEIVER

(A) Measurement of Radiated Interference

TEST REFERENCE: FCC Rules Part 15 Subpart C section 15.63(a)
TEST CONDITION : WEATHER BAND RECEIVER (Build in Antenna)
TEST DATE : 1998.06.18

Freq. to which tuned	Freq. of the emission	Polarity	Meter Reading (including Antenna Factor) at 3m dB(μ V/m)	Field Strength (at 3m) μ V/m	FCC Limit @ μ V/m
163.0	173.70	Horizontal	56.1	638.26	1550
	347.40	Horizontal	48.2	257.04	2239
	521.10	Horizontal	36.7	68.39	5000

SUMMARY

All data is within limits

Broad-band Antennas were used

Remark: IF = 10.70 MHz



The Hong Kong Standards and Testing Centre Ltd.

TEST REPORT

Page 10 of 10

Date: 1998-06-23
No.: HM974/504

NOTES FOR THE RADIATION MEASUREMENT

- (1) Test site facility:
Open field test site located at Taiipo (Hong Kong) with a metal ground plane on filed with the FCC pursuant to section 15.38 of the FCC rules (old rule).
- (2) Distance between the EUT and measuring antenna:
3 meters.
- (3) Measuring instruments:
CISPR Quasi-peak type field strength meter (25MHz - 1000MHz) 6 dB bandwidth set at 120KHz.

- (4) Measuring antenna:
Broad band antenna for the frequency range 25 - 1000 MHz, connected with 10 meters coaxial cable. Cable loss of the coaxial cable, included in the Antenna Factor for measurement data. The antenna are capable of measuring both horizontal and vertical polarization.

- (5) Frequency range scanned:
The frequency range from 25 MHz to 1000 MHz had been searched. Readings of the highest emissions relating to the limit were reported as above.

- (6) Arrangement of EUT:
During the test, the sample was operated at rated supply voltage and arranged for maximum emissions.

- (7) Measuring Procedure:
In accordance with the relevant sections of ANSI C63.4:1992.

- (8) Measuring Uncertainty:
The calculated uncertainty for measurement performed at 3M test distance are:-
30MHz to 200MHz = $\pm 3.7\text{dB}$, 300MHz to 1000MHz + 3.0dB/-2.7dB.

*** END OF DOCUMENT ***



The Hong Kong Standards and Testing Centre Ltd.

APPENDIX A

Page A1 of A1

Date:1998-06-23
No.: HM974/504

TEST EQUIPMENT AUDIT

Radiated Emission

EQP NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	LAST CAL
EM007	SPECTRUM ANALYZER	HP	HP85660B	3144A21192	28/05/98
EM008	SPECTRUM ANALYZER DISPLAY	HP	HP85662A	3144A20514	28/05/98
EM009	QUASI PEAK ADAPTOR	HP	HP85650A	3303A01702	28/05/98
EM010	RF PRESELECTOR	HP	HP85685A	3221A01410	28/05/98
EM011	ATTENUATOR/SWITCH	HP	HP11713A	2508A10595	28/05/98
EM012	PRE-AMPLIFIER	HP	HP8449B	3008A00262	28/05/98
EM013	CONTROLLER (COMPUTER), COLOR MONITOR, KEYBOARD & MOUSE FLOPPY DRIVE	HP HP HP HP	HP9000 HPA1097C HP9133L	6226A60314 3151J39517 2623A02468	CM
EM017	ANTENNA	ARA INC.	LPB-2513/A	1069	31/12/97
EM072	SIGNAL GENERATOR	HP	8640B	1948A11892	30/03/98
EM083	HKSTC OPEN AREA TEST SITE	HKSTC	N/A	N/A	16/02/98

ABBREVIATIONS:

CM = Corrective Maintenance
N/A= Not Applicable