



EMC CERTIFICATE

WO# 6105850

EQUIPMENT UNDER TEST

Type of equipment :	Patient Alert
Type/Model :	TS9643
Applicant :	TFE Hong Kong Ltd. Room 1301-2, Eastern Centre, 1065 King's Road, Quarry Bay, Hong Kong.

STANDARDS

Emission
EN 50081-1 (EN 55022) : 1992

Immunity
EN 50082-1 (IEC 801-2) : 1992
EN 50082-1 (IEC 801-3) : 1992

TEST REPORTS

WO# 6105850

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SUMMARY OF RESULTS

This is to certify that the sample of the above item is considered to comply with the requirements of the above standards, pursuant to the EMC Directive 89/336/EEC.

Inchcape Testing Services Hong Kong Ltd.
EMC Center

for

Laurence Kwan - Senior Manager

Date : December 10, 1996

* This certificate is part of the full report and should be read in conjunction with it.



Inchcape Testing Services

ETL Testing Laboratories

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EMC VERIFICATION SUMMARY

Report No.: 6105850

Radio Cassette Recorder CD Others Alarm

Model : TS9643				Client: TFE Hong Kong Ltd. Room 1301-2, Eastern Centre, 1065 King's Road, Quarry Bay, Hong Kong.			
Product Description : Patient Alert				Sample Receipt Date: November 22, 1996			
<input checked="" type="checkbox"/> 1st TEST <input type="checkbox"/> 2nd TEST (after modification)				ALL TESTS WERE CONDUCTED IN ACCORDANCE WITH: * EN 50081-1 (EN 55022) : 1992 * EN 50082-1 (IEC 801-2) : 1992 * EN 50082-1 (IEC 801-3) : 1992			
Test Result	ok	not ok	See Remark	Test Result	ok	not ok	See Remark
EN 50081-1 (EN55022) : 1992	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	EN55011 : 1991	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EN55013 : 1994	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	IEC801-2 : 1992	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EN61000-3-2 : 1995	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	IEC801-3 : 1992	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EN61000-3-3 : 1995	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	IEC801-4 : 1992	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Remarks:

Test Engineer:

Approved By:

for

Signature
Laurence Kwan - Senior Manager

Billy C. M. Chow

10 December, 1996 Date



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EMC Results Conclusion
(with Justification)

RE: EMC Testing Pursuant to EMC Directive 89/336/EEC Performed On the Patient Alert,
Model: TS9643

We tested the Patient Alert, Model: TS9643, to determine if it was in compliance with the relevant EN standards as marked on the EMC Verification Summary. We found that the unit met the requirement of EN 50081-1 (EN 55022), EN 50082-1 (IEC 801-2) and EN 50082-1 (IEC 801-3) standards when tested as received.

The production units are required to conform to the initial sample as received when the units are placed on the market.

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LABORATORY MEASUREMENTS

Configuration Information

Equipment Under Test (EUT):	Patient Alert
Model:	TS9643
Serial No.	Not Labelled
Support Equipment:	N/A
Cables:	N/A

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Company: TFE Hong Kong Ltd.
Model: TS9643

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Data Table

Radiated Scan

Pursuant to EN55022 : Class B Emissions Requirement

Polarity	Frequency (MHz)	Reading (dB μ V)	Pre-Amp (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Calculated Net at 10m (dB μ V/m)	Limit at 10m (dB μ V/m)	Margin (dB)
H	37.25	26.30	16	10	20.3	9.8	30	-20.20
H	45.73	27.70	16	10	21.7	11.2	30	-18.80
H	52.12	24.80	16	11	19.8	9.3	30	-20.70
H	57.27	27.30	16	11	22.3	11.8	30	-18.20
H	73.27	30.20	16	6	20.2	9.7	30	-20.30
H	79.27	31.50	16	6	21.5	11.0	30	-19.00
H	83.72	30.20	16	7	21.2	10.7	30	-19.30

Notes: 1. Quasi-Peak Detector Data

2. Negative sign (-) in the margin column signify levels below the limit.
3. Frequency range scanned: 30 MHz to 1000 MHz
4. Only emissions significantly above equipment noise floor are reported.
5. Uncertainty : ± 3.0 dB at a level of confidence of 95%

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Summary for EN50082-1 : Generic Immunity Standard Part 1

The following basic IEC standards are referenced in EN50082-1.

Basic Standard	Required Performance Criteria
IEC 801-2	B
IEC 801-3	A
IEC 801-4	B

Definition of Performance Criteria :

Criterion A: The apparatus shall continue to operate as intended (during and after the test).

No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer then either of these may be derived from the apparatus if used as intended.

Criterion B: The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed. No change of actual operating state or stored data is allowed. If the minimum performance level or the permissible performance loss is not specified by the manufacturer then either of these may be derived from the product description and documentation and what the user may reasonably expect from the apparatus if used as intended

Criterion C: Temporary loss of function is allowed, provided the function is self recoverable or can be restored by the operation of the controls.

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Company: TFE Hong Kong Ltd.
Model: TS9643

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IEC 801-2 Electrostatic Discharge

Test Summary (Pursuant to EN50082-1)

Port:	Enclosure
Basic Standard:	IEC 801-2: 1984
Required Performance Criterion:	B
Limit:	8.0 kV (Air Discharge)

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Test Results

IEC 801-2 Electrostatic Discharge

Direct Application of ESD

- Single discharge at > 1 second interval
10 positive + 10 negative
- Apply Air discharges to surfaces of the EUT

Point of Discharge	Applied Voltage (kV)	No. of Discharge	Result (Pursuant to EN50082-1, criterion B)
See attached Figure 1, 2	2	20	OK
See attached Figure 1, 2	4	20	OK
See attached Figure 1, 2	8	20	OK

X - Direct

O - Indirect

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IEC 801-2 Electrostatic Discharge

Indirect Application of ESD

Horizontal Coupling Plane under the EUT

- ESD probe shall be positioned vertically at a distance of 0.1m from the EUT, with Discharge Electrode touching the coupling plane
- At least 10 positive + 10 negative single discharges
- Apply discharges to the earth reference plane on each accessible side of the EUT.

Point of Discharge	Applied Voltage (kV)	No. of Discharge	Result (pursuant to EN50082-1 criterion B)
See attached Figure 3	2	20	OK
See attached Figure 3	4	20	OK
See attached Figure 3	8	20	OK

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IEC 801-2 Electrostatic Discharge

Additional Information

Point of Discharge	Applied voltage (kV)	Type of Discharge	Result Details
1	-8.0	Indirect	During the test, the sound was changed and resumed to normal after few seconds.
2	-4.0 -8.0	Indirect	During the test, the sound was changed and resumed to normal after few seconds.

* Please refer to the attached diagram for the location of discharge.

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Company: TFE Hong Kong Ltd.
Model: TS9643

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IEC 801-2 Electrostatic Discharge (Fig. 1 to 3 for Points of Discharge)

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Company: TFE Hong Kong Ltd.
Model: TS9643

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IEC 801-3 Radiated Immunity

Test Summary (Pursuant to EN50082-1)

Port :	Enclosure
Basic Standard:	IEC 801-3: 1984
Required Performance Criterion:	A
Limit:	3.0 V/m
Modulation:	None
Frequency	27 MHz to 500 MHz
Antenna Polarization	Horizontal and Vertical

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Test Results

IEC801-3 Radiated Immunity

Frequency (MHz)	Exposed Side	Field Strength (V/m)	Result
27.0 to 500.0	Front	3	OK
27.0 to 500.0	Left	3	OK
27.0 to 500.0	Rear	3	OK
27.0 to 500.0	Right	3	OK

- Meet criterion A - operate as intended during and after the test
- Meet criterion B - operate as intended after the test
- Meet criterion C - loss/error of function
- Additional Information
- There was no observable degradation in performance
- EUT stopped operation and could / could not be reset by operator at ____ V/m of frequency ____ MHz.
- EUT was in abnormal operation:
- operation mode was changed from ____ to ____ at ____ V/m of frequency ____ MHz.
- _____



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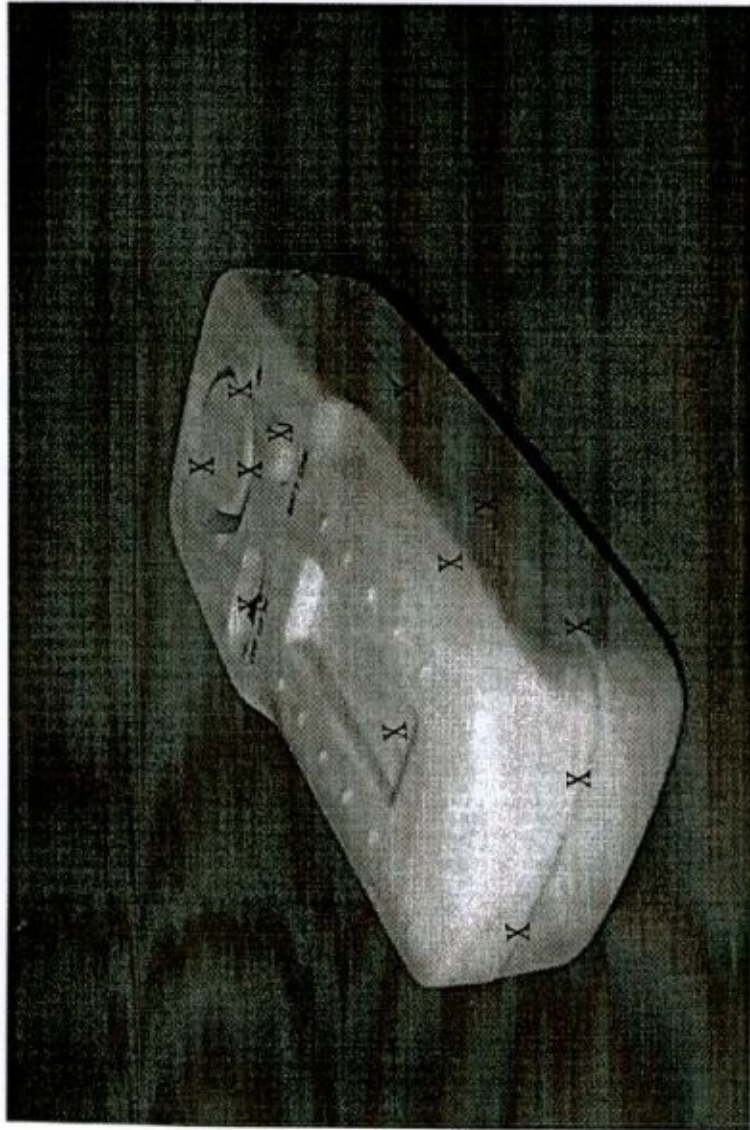
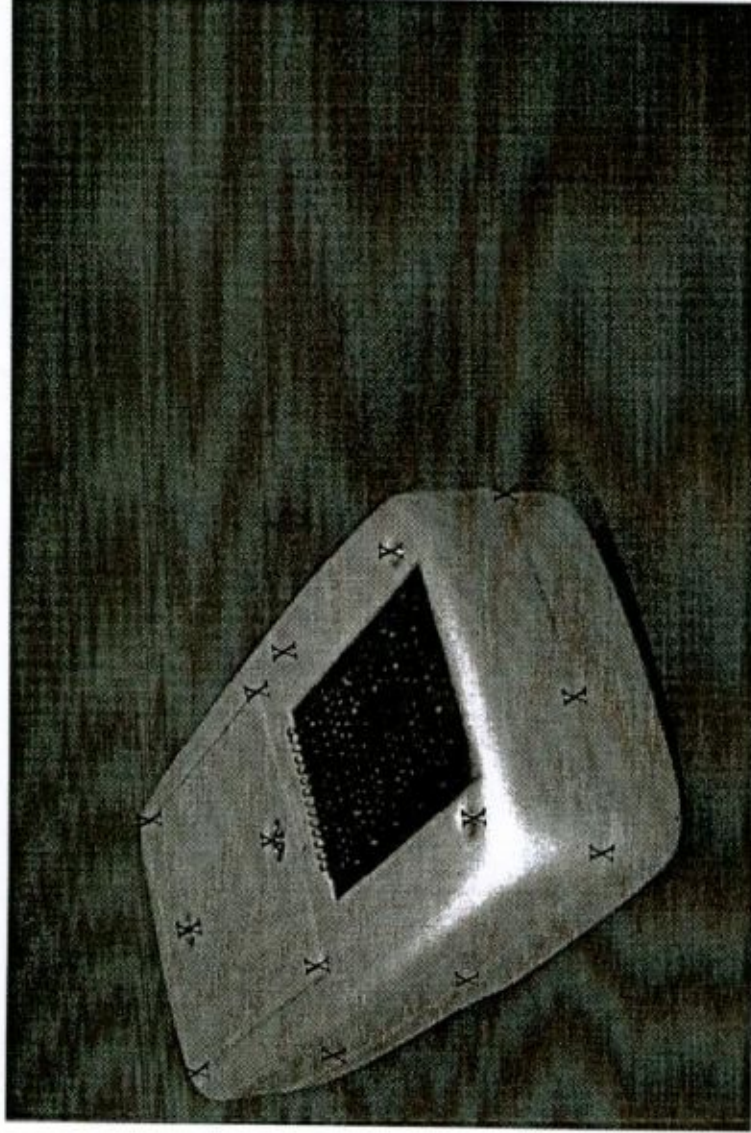


Fig. 1

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Direct Air Discharge - **X**
Direct Contact Discharge - *N/A*



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Fig. 2

Direct Air Discharge - X
Direct Contact Discharge - N/A

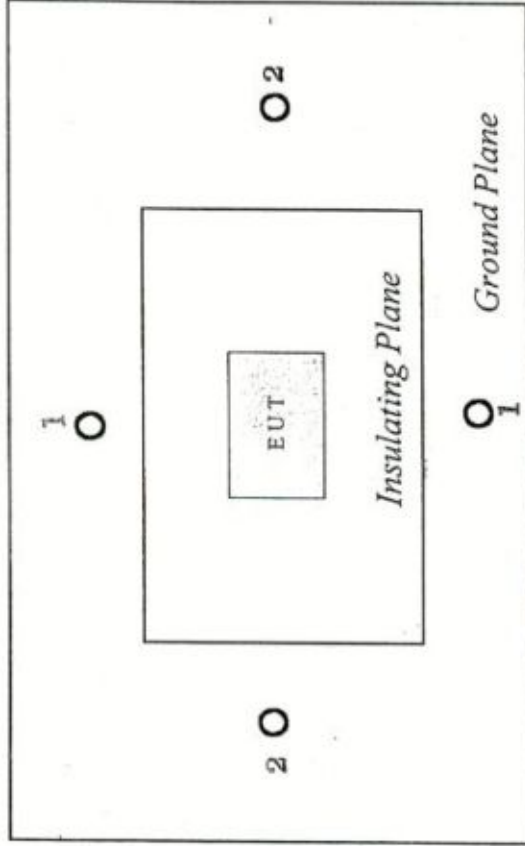


Fig. 3

Indirect Discharge - O