



M. Flom Associates, Inc.

International Compliance Testing Laboratory

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Date: November 10, 2005

Federal Communications Commission
Via: Electronic Filing

Attention: Authorization & Evaluation Division

Applicant: Kenwood USA Corporation
Equipment: TK-480
FCC ID: ALH22961110
FCC Rules: 90, Class II Permissive Change

Gentlemen:

On behalf of the Applicant, enclosed please find Application Form 731, Engineering Test Report and all pertinent documentation, the whole for approval of the referenced equipment as shown i.e.:

- a) Application Form
- b) Test Report
- c) Filing Fees
- d) Expository Statement and/or letter by Applicant

We trust the same is in order. Should you need any further information, kindly contact the writer who is authorized to act as agent.

Sincerely yours,

David E. Lee, Quality Assurance Manager

enclosure(s)
cc: Applicant
DEL/del



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Date: November 10, 2005

Applicant: Kenwood USA Corporation
Equipment: TK-480
FCC ID: ALH22961110

Expository Statement
Permissive Change

The applicant has made design changes/improvements to the originally FCC approved equipment.

Data contained herein confirms that a Permissive Change to the unit has been effected and that the performance of the unit is at or better than the levels originally reported to the commission.

The following changes/improvements have been made:

The frequency tolerance on the grant has been changed to 1.5ppm versus 2.5ppm. The unit was always capable of this tighter frequency stability than authorized and no changes to hardware or software have been made to achieve this figure.

No changes of output power, modulation hardware, or frequency determining circuitry have been made in the change that necessitate a SAR re-evaluation

David E. Lee, Quality Assurance Manager

enclosure(s)
cc: Applicant
DEL/del



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Transmitter Certification

Class II Permissive Change

of

Model: TK-480
FCC ID: ALH22961110

to

Federal Communications Commission

Rule Part(s) 90

Date of report: November 10, 2005

On the Behalf of the Applicant:

Kenwood USA Corporation

At the Request of:

Kenwood USA Corporation
Communications Division
3975 Johns Creek Court, Suite 300
Suwanee, GA 30024

Attention of:

Joel E. Berger, Research & Development
JBerger@kenwoodusa.com
(678) 474-4722; FAX: -4731

Supervised by:

David E. Lee, Quality Assurance Manager

M. Flom Associates, Inc.
3356 N. San Marcos Place, Suite 107
Chandler, Arizona 85225-7176
(480) 926-3100 phone, fax (480) 926-3598

FCC ID: ALH22961110
MFA p05b0005, d05b0021

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Required information per ISO/IEC Guide 25-1990, paragraph 13.2:

a) **Test Report**

b) Laboratory: M. Flom Associates, Inc.
(FCC: 31040/SIT) 3356 N. San Marcos Place, Suite 107
(Canada: IC 2044) Chandler, AZ 85225

c) Report Number: d05b0021

d) Client: Kenwood USA Corporation
Communications Division
3975 Johns Creek Court, Suite 300
Suwanee, GA 30024

e) Identification: TK-480
FCC ID: ALH22961110
EUT Description: UHF Portable

f) EUT Condition: Not required unless specified in individual tests.

g) Report Date: November 10, 2005
EUT Received: November 5, 2005

h, j, k): As indicated in individual tests.

i) Sampling method: No sampling procedure used.

l) Uncertainty: In accordance with MFA internal quality manual.

m) Supervised by:



David E. Lee, Quality Assurance Manager

n) Results: The results presented in this report relate only to the item tested.

o) Reproduction: This report must not be reproduced, except in full, without written permission from this laboratory.

Accessories used during testing:

Type	Quantity	Manufacturer	Model	Serial No.	FCC ID
Audio Test Jig	1	Kenwood	-	-	-
Battery Eliminator	1	Kenwood	-	-	-

Sub-part

2.1033(c)(14):

Test and Measurement Data

All tests and measurement data shown were performed in accordance with FCC Rules and Regulations, Volume II; Part 2, Sub-part J, Sections 2.947, 2.1033(c), 2.1041, 2.1046, 2.1047, 2.1079, 2.1051, 2.1053, 2.1055, 2.1057 and the following individual Parts:

- _____ 21 – Domestic Public Fixed Radio Services
- _____ 22 – Public Mobile Services
- _____ 22 Subpart H - Cellular Radiotelephone Service
- _____ 22.901(d) - Alternative technologies and auxiliary services
- _____ 23 – International Fixed Public Radiocommunication services
- _____ 24 – Personal Communications Services
- _____ 74 Subpart H - Low Power Auxiliary Stations
- _____ 80 – Stations in the Maritime Services
- _____ 80 Subpart E - General Technical Standards
- _____ 80 Subpart F - Equipment Authorization for Compulsory Ships
- _____ 80 Subpart K - Private Coast Stations and Marine Utility Stations
- _____ 80 Subpart S - Compulsory Radiotelephone Installations for Small Passenger Boats
- _____ 80 Subpart T - Radiotelephone Installation Required for Vessels on the Great Lakes
- _____ 80 Subpart U - Radiotelephone Installations Required by the Bridge-to-Bridge Act
- _____ 80 Subpart V - Emergency Position Indicating Radio Beacons (EPIRB'S)
- _____ 80 Subpart W - Global Maritime Distress and Safety System (GMDSS)
- _____ 80 Subpart X - Voluntary Radio Installations
- _____ 87 – Aviation Services
- _____ X 90 – Private Land Mobile Radio Services
- _____ 94 – Private Operational-Fixed Microwave Service
- _____ 95 Subpart A - General Mobile Radio Service (GMRS)
- _____ 95 Subpart C - Radio Control (R/C) Radio Service
- _____ 95 Subpart D - Citizens Band (CB) Radio Service
- _____ 95 Subpart E - Family Radio Service
- _____ 95 Subpart F - Interactive Video and Data Service (IVDS)
- _____ 97 - Amateur Radio Service
- _____ 101 – Fixed Microwave Services

Standard Test Conditions and Engineering Practices

Except as noted herein, the following conditions and procedures were observed during the testing:

In accordance with ANSI C63.4-1992/2002, and unless otherwise indicated in the specific measurement results, the ambient temperature of the actual EUT was maintained within the range of 10° to 40°C (50° to 104 °F) unless the particular equipment requirements specify testing over a different temperature range. Also, unless otherwise indicated, the humidity levels were in the range of 10% to 90% relative humidity.

Prior to testing, the EUT was tuned up in accordance with the manufacturer's alignment procedures. All external gain controls were maintained at the position of maximum and/or optimum gain throughout the testing.

Measurement results, unless otherwise noted, are worst-case measurements.



A2LA

"A2LA has accredited M. Flom Associates, Inc. Chandler, AZ for technical competence in the field of Electrical Testing. The accreditation covers the specific tests and types of tests listed on the agreed scope of accreditation. This laboratory meets the requirements of ISO/IEC 17025 - 1999 'General Requirements for the Competence of Testing and Calibration Laboratories' and any additional program requirements in the identified field of testing."

Certificate Number: **2152-01**

List of General Information Required for Certification

In Accordance with FCC Rules and Regulations,
Volume II, Part 2 and to Part 90

Sub-part 2.1033

(c)(1): **Name and Address of Applicant:**

Kenwood USA Corporation
Communications Division
3975 Johns Creek Court, Suite 300
Suwanee, GA 30024

Manufacturer:

Kenwood Electronics Technologies PTE Ltd.
1 Ang Mo Kio Street 63
Singapore 569110

(c)(2): **FCC ID:** ALH22961110

Model Number: TK-480

(c)(3): **Instruction Manual(s):**

Please see original exhibits

(c)(4): **Type of Emission:** 16K0F3E, 14K0F3E

(c)(5): **Frequency Range, MHz:** 806 - 825
851 - 874

(c)(6): **Power Rating, Watts:** 2.5
_____ Switchable _____ X Variable _____ N/A

FCC Grant Note: BK

(c)(7): **Maximum Power Rating, Watts:** 100

DUT Results: Passes _____ X _____ Fails _____

Subpart 2.1033 (continued)

(c)(8): Voltages & currents in all elements in final RF stage, including final transistor or solid-state device:

Collector Current, A	=	1.7
Collector Voltage, Vdc	=	6.0
Supply Voltage, Vdc	=	7.5

(c)(14): **Test and Measurement Data:**

Follows

Name of Test: Frequency Stability (Temperature Variation)

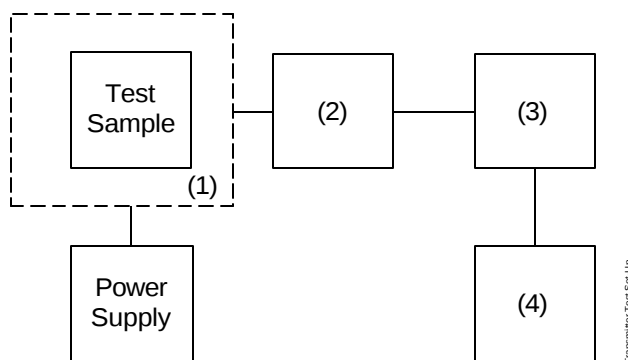
Specification: 47 CFR 2.1055(a)(1)

Guide: ANSI/TIA/EIA-603-1992, Paragraph 2.2.2

Measurement Procedure

- A) The EUT and test equipment were set up as shown on the following page.
- B) With all power removed, the temperature was decreased to -30°C and permitted to stabilize for three hours. Power was applied and the maximum change in frequency was noted within one minute.
- C) With power OFF, the temperature was raised in 10°C steps. The sample was permitted to stabilize at each step for at least one-half hour. Power was applied and the maximum frequency change was noted within one minute.
- D) The temperature tests were performed for the worst case.

Transmitter Test Set-Up: Temperature Variation



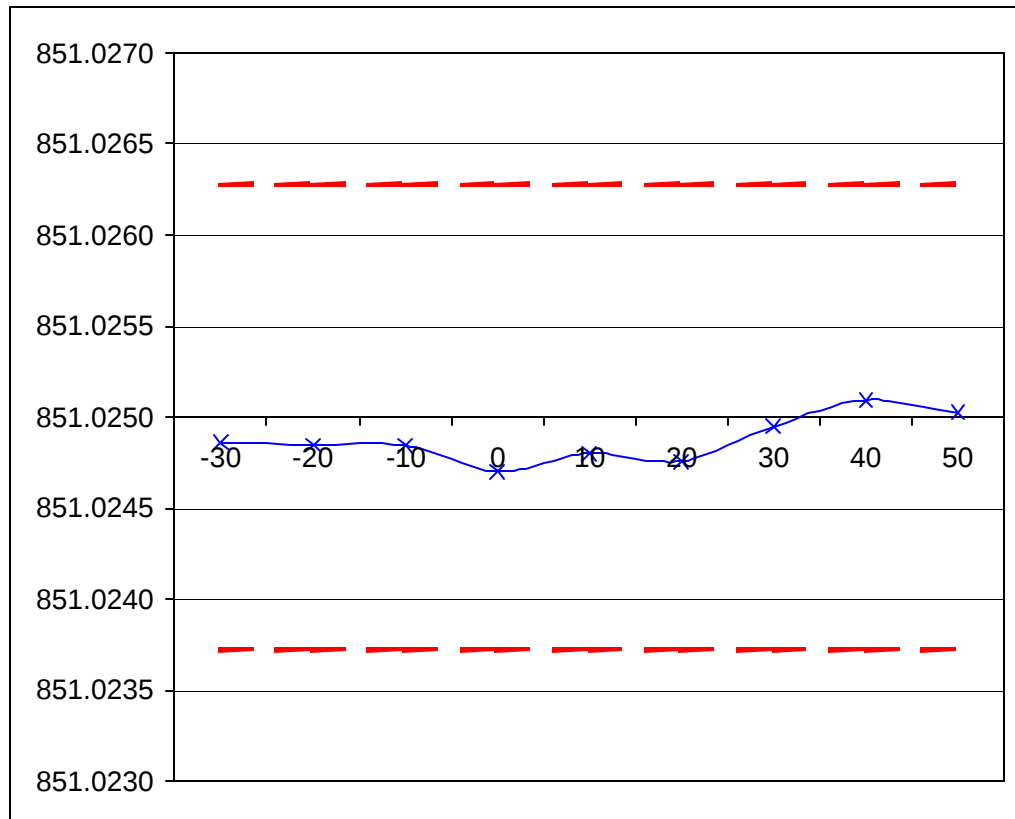
Asset	Description	s/n	Cycle	Last Cal
(1) Temperature, Humidity, Vibration				
X i00027	Tenney Temp. Chamber	9083-765-234	NCR	
(2) Coaxial Attenuator				
X i00231/2	PASTERNAK PE7021-30 (30 dB)	231 or 232	NCR	
i00122/3	NARDA 766 (10 dB)	7802 or 7802A	NCR	
(3) RF Power				
X i00067	HP 8920A Communications TS	3345U01242	12 mo.	Jun-05
(4) Frequency Counter				
X i00067	HP 8920A Communications TS	3345U01242	12 mo.	Jun-05

Name of Test: Frequency Stability (Temperature Variation)

Measurement Results

State: High Power

Room Temperature: 23°C ± 3°C



Vertical Axis = MHz
Horizontal Axis = Degrees Centigrade



Performed by:

Fred Chastain, Test Technicians

Name of Test: Frequency Stability (Voltage Variation)

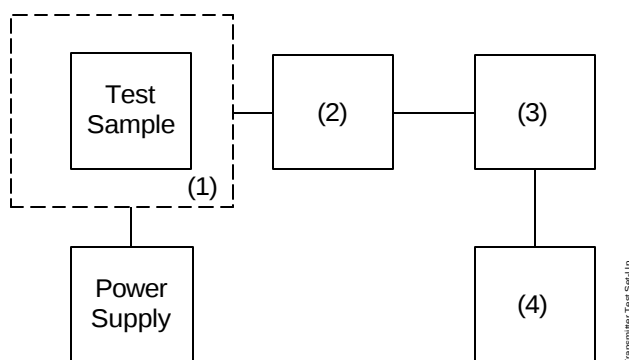
Specification: 47 CFR 2.1055(d)(1)

Guide: ANSI/TIA/EIA-603-1992, Paragraph 2.2.2

Measurement Procedure

- A) The EUT was placed in a temperature chamber (if required) at $25 \pm 5^\circ\text{C}$ and connected as shown below.
- B) The power supply voltage to the EUT was varied from 85% to 115% of the nominal value measured at the input to the EUT.
- C) The variation in frequency was measured for the worst case.

Transmitter Test Set-Up: Voltage Variation



Asset	Description	s/n	Cycle	Last Cal
(1) Temperature, Humidity, Vibration				
i00027	Tenney Temp. Chamber	9083-765-234	NCR	
(2) Coaxial Attenuator				
X i00231/2	PASTERNAK PE7021-30 (30 dB)	231 or 232	NCR	
i00122/3	NARDA 766 (10 dB)	7802 or 7802A	NCR	
(3) RF Power				
X i00020	HP 8901A Power Mode	2105A01087	12 mo.	Apr-05
(4) Frequency Counter				
X i00020	HP 8901A Frequency Mode	2105A01087	12 mo.	Apr-05

Results: Frequency Stability (Voltage Variation)

State: Ambient Temperature: 23°C ± 3°C

Limit, ppm = ± 1.5
 Limit, Hz = ± 1276
 Battery End Point (Voltage) = 6.0

% of STV	Voltage	Frequency, MHz	Change, Hz	Change, ppm
115%	8.63	851.024763	-237	-0.28
100%	7.50	851.024760	-240	-0.28
85%	6.35	851.024759	-241	-0.28
80%	6.00	851.024759	-241	-0.28



Performed by: Fred Chastain, Test Technicians

END OF TEST REPORT

**Testimonial
and
Statement of Certification**

This is to Certify:

1. **That** the application was prepared either by, or under the direct supervision of, the undersigned.
2. **That** the technical data supplied with the application was taken under my direction and supervision.
3. **That** the data was obtained on representative units, randomly selected.
4. **That**, to the best of my knowledge and belief, the facts set forth in the application and accompanying technical data are true and correct.



Certifying Engineer:

David E. Lee, Quality Assurance Manager