



Flom Test Labs
EMI, EMC, RF Testing Experts Since 1963

toll-free: (866) 311-3268
fax: (480) 926-3598
<http://www.flomlabs.com>
info@flomlabs.com

Date: February 13, 2007

Federal Communications Commission
Via: Electronic Filing

Attention: Authorization & Evaluation Division

Applicant: Honeywell International Inc.
Equipment: RCZ-833
FCC ID: GB8RCZ-833E
FCC Rules: 87 part D

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.

Filing fees are attached.

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,

Hoosamuddin S. Bandukwala, Lab Director

enclosure(s)
cc: Applicant
HSB/mdw

Flom Test Labs
3356 N. San Marcos Place, Suite 107
Chandler, Arizona 85225-7176
(866) 311-3268 phone, (480) 926-3598 fax

FCC ID: GB8RCZ-833E
MFA p06a0005, d06a0024



Date: February 13, 2007

Federal Communications Commission
Via: Electronic Filing

Attention: Authorization & Evaluation Division

Applicant: Honeywell International Inc.
Equipment: RCZ-833
FCC ID: GB8RCZ-833E
FCC Rules: 87 part D, 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 (if applicable)
- c) Filing Fees
- d) Copy of Original Grant
- e) Expository Statement and/or letter by Applicant
- f) Photos (if applicable)
- g) Label Drawing (if changes have been made)

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,

Hoosamuddin S. Bandukwala, Lab Director

enclosure(s)
cc: Applicant
HSB/mdw



toll-free: (866) 311-3268
fax: (480) 926-3598
<http://www.flomlabs.com>
info@flomlabs.com

Transmitter Certification

of

FCC ID: GB8RCZ-833E
Model: RCZ-833

to

Federal Communications Commission

Rule Part(s) 87 part D

Date of report: February 13, 2007

On the Behalf of the Applicant:

Honeywell International Inc.

At the Request of:

Honeywell Inc., Business, Regional & General Aviation
5551 W. Talavi Blvd
Glendale, AZ 85306

Attention of: One of 2 listed under Applicant

Hoosamuddin S. Bandukwala, Lab Director

Supervised by:

Flom Test Labs
3356 N. San Marcos Place, Suite 107
Chandler, Arizona 85225-7176
(866) 311-3268 phone, (480) 926-3598 fax

FCC ID: GB8RCZ-833E
MFA p06a0005, d06a0024



toll-free: (866) 311-3268
fax: (480) 926-3598
<http://www.flomlabs.com>
info@flomlabs.com

Transmitter Certification

of

FCC ID: GB8RCZ-833E
Model: RCZ-833

to

Federal Communications Commission

Rule Part(s) 87 part D
Class II Permissive Change

Date of report: February 13, 2007

On the Behalf of the Applicant:

Honeywell International Inc.

At the Request of:

P.O.

Honeywell Inc., Business, Regional & General Aviation
5551 W. Talavi Blvd
Glendale, AZ 85306

Attention of:

One of 2 listed under Applicant

Hoosamuddin S. Bandukwala, Lab Director

Supervised by:

Flom Test Labs
3356 N. San Marcos Place, Suite 107
Chandler, Arizona 85225-7176
(866) 311-3268 phone, (480) 926-3598 fax

FCC ID: GB8RCZ-833E
MFA p06a0005, d06a0024

List of Exhibits

(FCC Certification (Transmitters) - Revised 9/28/98)

Applicant: Honeywell International Inc.

FCC ID: GB8RCZ-833E

By Applicant:

1. Letter of Authorization
2. Confidentiality Request: 0.457 And 0.459
3. Part 90.203(e) & (g) Attestation
4. Identification Drawings, 2.1033(c)(11)
 - Label
 - Location of Label
 - Compliance Statement
 - Location of Compliance Statement
5. Photographs, 2.1033(c)(12)
6. Documentation: 2.1033(c)
 - (3) User Manual
 - (9) Tune Up Info
 - (10) Schematic Diagram
 - (10) Circuit Description
 - Block Diagram
 - Parts List
 - Active Devices
7. MPE/SAR Report

By M.F.A. Inc.:

- A. Testimonial & Statement of Certification

The Applicant has been cautioned as to the following:

15.21 **Information to the User.**

The users manual or instruction manual for an intentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

15.27(a) **Special Accessories.**

Equipment marketed to a consumer must be capable of complying with the necessary regulations in the configuration in which the equipment is marketed. Where special accessories, such as shielded cables and/or special connectors are required to enable an unintentional or intentional radiator to comply with the emission limits in this part, the equipment must be marketed with, i.e. shipped and sold with, those special accessories. However, in lieu of shipping or packaging the special accessories with the unintentional or intentional radiator, the responsible party may employ other methods of ensuring that the special accessories are provided to the consumer, without additional charge.

Information detailing any alternative method used to supply the special accessories for a grant of equipment authorization or retained in the verification records, as appropriate. The party responsible for the equipment, as detailed in § 2.909 of this chapter, shall ensure that these special accessories are provided with the equipment. The instruction manual for such devices shall include appropriate instructions on the first page of text concerned with the installation of the device that these special accessories must be used with the device. It is the responsibility of the user to use the needed special accessories supplied with the equipment.

Table of Contents

Rule	Description	Page
2.1033(c)(14)	Rule Summary	2
	Standard Test Conditions and Engineering Practices	3
	Expository Statement for Permissive Changes	4
2.1033(c)	General Information Required	5
2.1046(a)	Carrier Output Power (Conducted)	7
2.1046(a)	ERP Carrier Power (Radiated)	9
2.1046(a)	RF Power Output (Radiated)	9
2.1051	Unwanted Emissions (Transmitter Conducted)	9
2.1053(a)	Field Strength of Spurious Radiation	11
2.1049(c)(1)	Emission Masks (Occupied Bandwidth)	15
90.214	Transient Frequency Behavior	18
2.1047(a)	Audio Frequency Response	18
2.1047(b)	Modulation Limiting	20
2.1055(a)(1)	Frequency Stability (Temperature Variation)	22
2.202(g)	Necessary Bandwidth and Emission Bandwidth	24

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

a)

Test Report

b) Laboratory:
(FCC: 31040/SIT)
(Canada: IC 2044)

M. Flom Associates, Inc.
3356 N. San Marcos Place, Suite 107
Chandler, AZ 85225

c) Report Number:

d06a0024

d) Client:

Honeywell International Inc.
Aerospace Electronic Systems
21111 N. 19th Avenue
Phoenix, AZ 85027

e) Identification:

RCZ-833
FCC ID: GB8RCZ-833E

EUT Description:

VHF Transmitter

f) EUT Condition:

Not required unless specified in individual tests.

g) Report Date:

February 13, 2007

EUT Received:

h, j, k):

As indicated in individual tests.

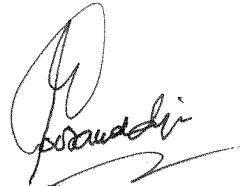
i) Sampling method:

No sampling procedure used.

l) Uncertainty:

In accordance with MFA internal quality manual.

m) Supervised by:



Hoosamuddin S. Bandukwala, Lab Director

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.

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
- _____ 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

A2LA

"A2LA has accredited Flom Test Labs, 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 17025:2005 'General Requirements for the Competence of Testing and Calibration Laboratories' and any additional program requirements in the identified field of testing."

Please refer to www.a2la.org for current scope of accreditation.

Certificate Number: **2152.01**

Expository Statement

Permissive Change

Applicant: Honeywell International Inc.

FCC ID: GB8RCZ-833E

The applicant has made no 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 as per attached letter of Explanation:

(none)

List of General Information Required for Certification

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

87 part D

Sub-part 2.1033

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

Honeywell International Inc.
Aerospace Electronic Systems
21111 N. 19th Avenue
Phoenix, AZ 85027

Manufacturer:

PT. Honeywell Indonesia
JL. Teratai Lot D16
Bintan Ind. Est
Lobam
Pulau Bintan 29154
Indonesia

(c)(2): FCC ID:

GB8RCZ-833E

Model Number:

RCZ-833

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

Please see attached exhibits

(c)(4): Type of Emission:

6K00A3E

(c)(5): Frequency Range, MHz:

118.00 to 136.975

(c)(6): Power Rating, Watts:

Switchable Variable N/A

28

N/A

FCC Grant Note:

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

55

DUT Results:

Passes 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	= per manual
Collector Voltage, Vdc	= per manual
Supply Voltage, Vdc	= 28.0

(c)(9): **Tune-Up Procedure:**

Please see attached exhibits

(c)(10): **Circuit Diagram/Circuit Description:**

Including description of circuitry & devices provided for determining and stabilizing frequency, for suppression of spurious radiation, for limiting modulation and limiting power.

Please see attached exhibits

(c)(11): **Label Information:**

Please see attached exhibits

(c)(12): **Photographs:**

Please see attached exhibits

(c)(13): **Digital Modulation Description:**

 Attached Exhibits
 x N/A

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

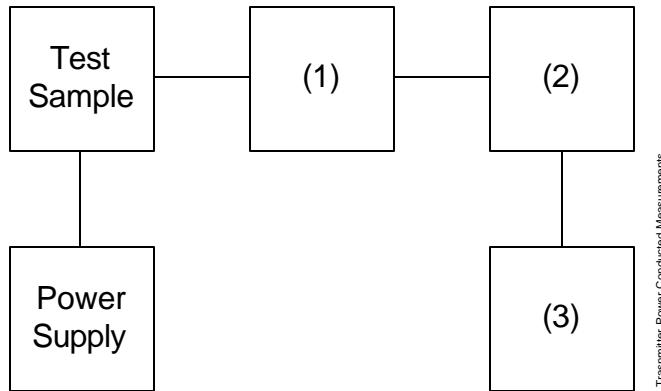
Follows

Name of Test: Carrier Output Power (Conducted)
Specification: 47 CFR 2.1046(a)
Guide: ANSI/TIA/EIA-603-1992, Paragraph 2.2.1

Measurement Procedure

- A) The EUT was connected to a resistive coaxial attenuator of normal load impedance, and the unmodulated output power was measured by means of an RF Power Meter.
- B) Measurement accuracy is $\pm 3\%$.

Transmitter Test Set-Up: RF Power Output



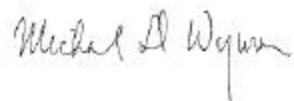
Asset	Description	s/n	Cycle	Last Cal
(1) X	Coaxial Attenuator			
	i00231/2 PASTERNACK PE7021-30 (30 dB)	231 or 232	N/A	NCR
	i00122/3 NARDA 766 (10 dB)	7802 or 7802A	N/A	NCR
(2) X	Power Meters			
	i00321 HP 8901A Power Mode	2239A02170	12 mo.	Sep-06
(3) X	Frequency Counter			
	i00321 HP 8901A Frequency Mode	2239A02170	12 mo.	Sep-06

Name of Test: Carrier Output Power (Conducted)

Measurement Results
(Worst case)

Frequency of Carrier, MHz = 118.00, 126.500, 136.975
Ambient Temperature = 23°C ± 3°C

Power Setting	RF Power, Watts
High	28



Performed by:

Michael Wyman

Flom Test Labs
3356 North San Marcos Place, Suite 107
Chandler, Arizona 85225-7176
(866) 311-3268 phone, (480) 926-3598 fax

Page 8 of 24
FCC ID: GB8RCZ-833E
MFA p06a0005, d06a0024

Name of Test: Unwanted Emissions (Transmitter Conducted)

Specification: 47 CFR 2.1051

Guide: ANSI/TIA/EIA-603-1992, Paragraph 2.2.13

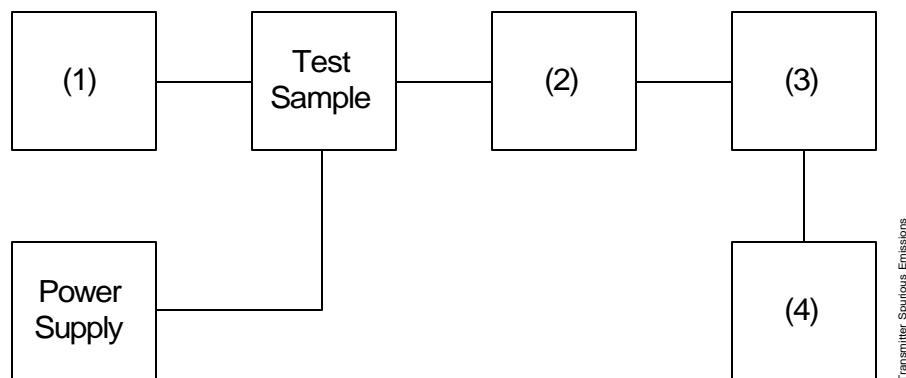
Measurement Procedure

A) The emissions were measured for the worst case as follows:

- 1). within a band of frequencies defined by the carrier frequency plus and minus one channel.
- 2). from the lowest frequency generated in the EUT and to at least the 10th harmonic of the carrier frequency, or 40 GHz, whichever is lower.

B) The magnitude of spurious emissions that are attenuated more than 20 dB below the permissible value need not be specified.

Transmitter Test Set-Up: Spurious Emission



Asset	Description	s/n	Cycle	Last cal
(1) Audio Oscillator/Generator				
X i00324	HP 8903B Audio Analyzer	3011A09079	12 mo.	Oct-06
i00002	HP 3336B Synthesizer / Level Gen.	1931A01465	12 mo.	Jun-06
(2) Coaxial Attenuator				
X i00231/2	PASTERNACK PE7021-30 (30 dB)	231 or 232	N/A	NCR
i0012/3	NARDA 766 (10 dB)	7802 or 7802A	N/A	NCR
(3) Filters; Notch, HP, LP, BP				
None required				
(4) Spectrum Analyzer				
X i00048	HP 8566B Spectrum Analyzer	2511A01467	12 mo.	Aug-06
i00029	HP 8563E Spectrum Analyzer	3213A00104	12 mo.	Jan-06

Name of Test: Unwanted Emissions (Transmitter Conducted)
Measurement Results
 (Worst Case)

Summary:

Frequency of carrier, MHz	=	118.00, 126.500, 136.975
Spectrum Searched, GHz	=	0 to 10 x F_C
Maximum Response, Hz	=	0
All Other Emissions	=	= 20 dB Below Limit
Limit(s), dBc		$-(43+10\log P) = -57.5$ (28 Watts)
		$-(43+10\log P) = -57.5$ (28 Watts)

Tabulated Results follow:

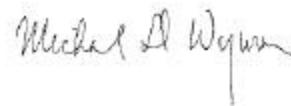
Measurement Results

g06a0109: 2006-Oct-19 Thu 13:57:00

State: 2:High Power

Ambient Temperature: $23^\circ\text{C} \pm 3^\circ\text{C}$

Frequency Tuned, MHz	Frequency Emission, MHz	Level, dBm	Level, dBc	Margin, dB
118.000000	236.019000	-34.2	-77.8	-21.2
126.500000	253.005000	-29.9	-73.5	-16.9
136.975000	273.951000	-15.3	-58.9	-2.3
118.000000	353.769000	-34.2	-77.8	-21.2
126.500000	379.509000	-15.3	-58.9	-2.3
136.975000	410.931000	-15.4	-59	-2.4
118.000000	471.801000	-34.2	-77.8	-21.2
126.500000	506.007000	-38.6	-82.2	-25.6
136.975000	547.889000	-41.9	-85.5	-28.9
118.000000	589.536000	-34.8	-78.4	-21.8
126.500000	632.723000	-42.5	-86.1	-29.5
136.975000	684.875000	-40.5	-84.1	-27.5
118.000000	707.931000	-35	-78.6	-22
126.500000	759.350000	-43.6	-87.2	-30.6
136.975000	822.274000	-42.8	-86.4	-29.8
118.000000	825.830000	-35.2	-78.8	-22.2
126.500000	885.035000	-43.1	-86.7	-30.1
118.000000	944.130000	-34.1	-77.7	-21.1
136.975000	958.711000	-42.9	-86.5	-29.9
126.500000	1012.373000	-43.5	-87.1	-30.5
118.000000	1061.613000	-34.7	-78.3	-21.7
136.975000	1095.992000	-43	-86.6	-30
126.500000	1138.949000	-41.7	-85.3	-28.7
118.000000	1179.720000	-34.1	-77.7	-21.1
136.975000	1232.573000	-43.2	-86.8	-30.2
126.500000	1264.994000	-42.5	-86.1	-29.5
136.975000	1370.011000	-42.9	-86.5	-29.9



Performed by:

Michael Wyman

Name of Test: Field Strength of Spurious Radiation

Specification: 47 CFR 2.1053(a)

Guide: ANSI/TIA/EIA-603-1992/2001, Paragraph 1.2.12 and Table 16, 47 CFR 22.917

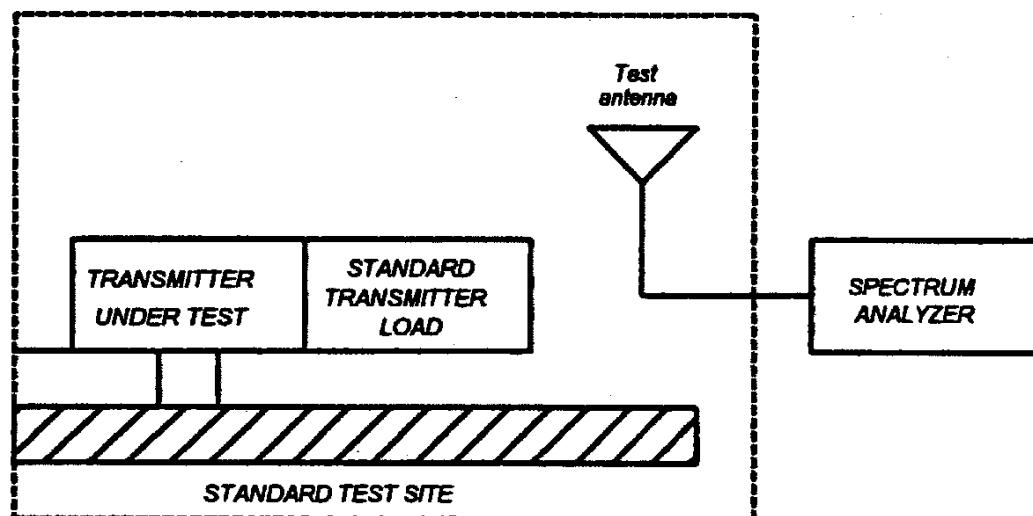
Measurement Procedure

Definition:

Radiated spurious emissions are emissions from the equipment when transmitting into a non-radiating load on a frequency or frequencies which are outside an occupied band sufficient to ensure transmission of information of required quality for the class of communications desired.

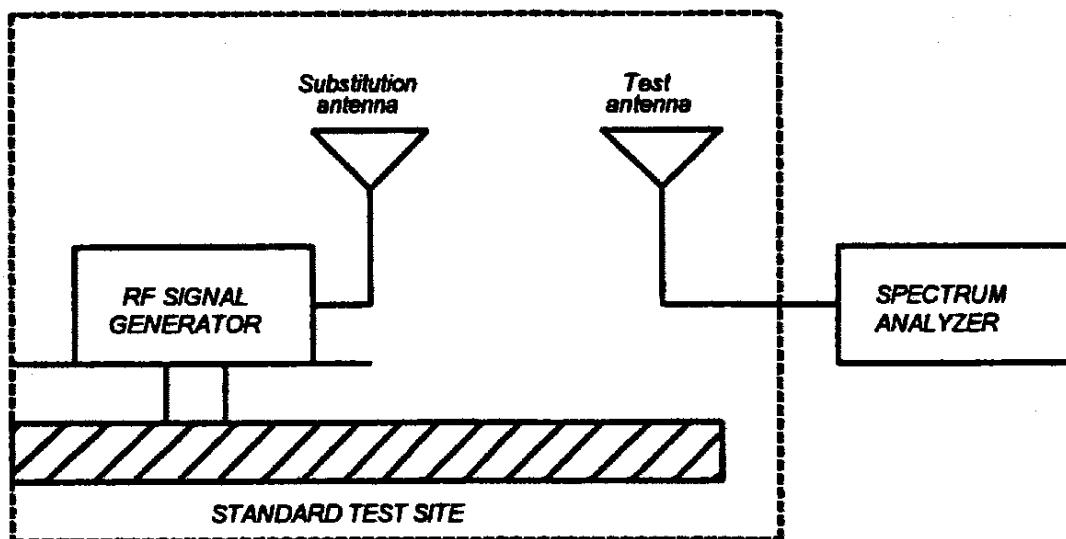
Method of Measurement:

- A) Connect the equipment as illustrated
- B) Adjust the spectrum analyzer for the following settings:
 - 1) Resolution Bandwidth 100 kHz (<1 GHZ), 1 MHZ (> 1GHz).
 - 2) Video Bandwidth = 3 times Resolution Bandwidth, or 30 kHz (22.917)
 - 3) Sweep Speed \leq 2000 Hz/second
 - 4) Detector Mode = Mean or Average Power
- C) Place the transmitter to be tested on the turntable in the standard test site. The transmitter is transmitting into a non-radiating load that is placed on the turntable. The RF cable to this load should be of minimum length.



Name of Test: Field Strength of Spurious Radiation (Cont.)

- D) For each spurious measurement the test antenna should be adjusted to the correct length for the frequency involved. This length may be determined from a calibration ruler supplied with the equipment. Measurements shall be made from the lowest radio frequency generated in the equipment to the tenth harmonic of the carrier, except for the region close to the carrier equal to \pm the test bandwidth (see section 1.3.4.4).
- E) For each spurious frequency, raise and lower the test antenna from 1 m to 4 m to obtain a maximum reading on the spectrum analyzer with the test antenna at horizontal polarity. Repeat this procedure to obtain the highest possible reading. Record this maximum reading.
- F) Repeat step E) for each spurious frequency with the test antenna polarized vertically.



- G) Reconnect the equipment as illustrated.
- H) Keep the spectrum analyzer adjusted as in step B).
- I) Remove the transmitter and replace it with a substitution antenna (the antenna should be half-wavelength for each frequency involved). The center of the substitution antenna should be approximately at the same location as the center of the transmitter. At lower frequencies, where the substitution antenna is very long, this will be impossible to achieve when the antenna is polarized vertically. In such case the lower end of the antenna should be 0.3 m above the ground.

Name of Test: Field Strength of Spurious Radiation (Cont.)

J) Feed the substitution antenna at the transmitter end with a signal generator connected to the antenna by means of a non-radiating cable. With the antennas at both ends horizontally polarized and with the signal generator tuned to a particular spurious frequency, raise and lower the test antenna to obtain a maximum reading at the spectrum analyzer. Adjust the level of the signal generator output until the previously recorded maximum reading for this set of conditions is obtained. This should be done carefully repeating the adjustment of the test antenna and generator output.

K) Repeat step J) with both antennas vertically polarized for each spurious frequency.

L) Calculate power in dBm into a reference ideal half-wave dipole antenna by reducing the readings obtained in steps J) and K) by the power loss in the cable between the generator and the antenna and further corrected for the gain of the substitution antenna used relative to an ideal half-wave dipole antenna.

M) The levels recorded in step L) are absolute levels of radiated spurious emissions in dBm. The radiated spurious emissions in dB can be calculated by the following:

Radiated spurious emissions dB =

$$10\log_{10}(\text{TX power in watts}/0.001) - \text{the levels in step I)}$$

NOTE: It is permissible that other antennas provided can be referenced to a dipole.

Test Equipment

Asset	Description	s/n	Cycle	Last Cal
Transducer				
	i00088 EMCO 3109-B 25MHz-300MHz	2336	24 mo.	Oct-05
X	i00089 Aprel 2001 200MHz-1GHz	001500	24 mo.	Oct-05
X	i00103 EMCO 3115 1GHz-18GHz	9208-3925	24 mo.	Sep-06
Amplifier				
X	i00028 HP 8449A	2749A00121	12 mo.	Dec-05
Spectrum Analyzer				
X	i00029 HP 8563E	3213A00104	12 mo.	Jan-06
X	i00033 HP 85462A	3625A00357	12 mo.	Oct-06
Substitution Generator				
X	i00067 HP 8920A Communication TS	3345U01242	12 mo.	Jun-06
	i00207 HP 8753D Network Analyzer	3410A08514	12 mo.	May-06

Microphone, Antenna Port, and Cabling

Microphone	_____	Cable Length	_____	Meters	
Antenna Port Terminated	_____	Load	_____	Antenna Gain	_____
All Ports Terminated by Load	_____	Peripheral	_____		

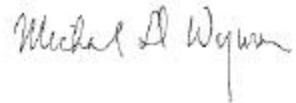
Name of Test: Field Strength of Spurious Radiation

Measurement Results

STATE:

Ambient Temperature: 23°C ± 3°C

Frequency Tuned, MHz	Frequency Emission, MHz	ERP, dBm
126.500000	253.000000	-46
126.500000	379.000000	-65.3
126.500000	506.000000	-56.1
126.500000	632.000000	-59.8
126.500000	759.000000	-50
126.500000	885.000000	-47.8



Performed by:

Michael Wyman

Name of Test: Emission Masks (Occupied Bandwidth)

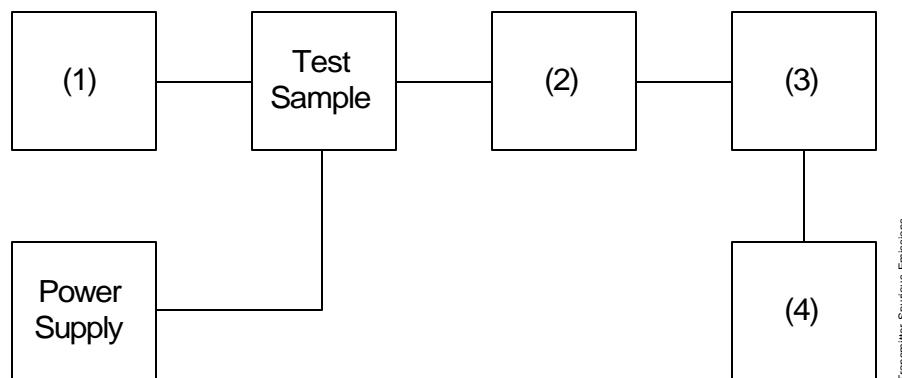
Specification: 47 CFR 2.1049(c)(1)

Guide: ANSI/TIA/EIA-603-1992, Paragraph 2.2.11

Measurement Procedure

- A) The EUT and test equipment were set up as shown below
- B) For EUTs supporting audio modulation, the audio signal generator was adjusted to the frequency of maximum response and with output level set for $\pm 2.5/\pm 1.25$ kHz deviation (or 50% modulation). With level constant, the signal level was increased 16 dB.
- C) For EUTs supporting digital modulation, the digital modulation mode was operated to its maximum extent.
- D) The Occupied Bandwidth was measured with the Spectrum Analyzer controls set as shown on the test results.

Transmitter Test Set-Up: Occupied Bandwidth



Asset	Description	s/n	Cycle	Last Cal
(1) Audio Oscillator/Generator X i00321	HP 8903A Modulation Meter	2239A02170	12 mo.	Sep-06
(2) Coaxial Attenuator X i00231/2 i00123	PASTERACK PE7021-30 (30 dB) NARDA 766 (10 dB)	231 or 232 7802A	N/A N/A	NCR NCR
(3) Interface X i00021	HP 8954A Transceiver Interface	2146A00159	N/A	NCR
(4) Spectrum Analyzer X i00048 i00029	HP 8566B Spectrum Analyzer HP 8563E Spectrum Analyzer	2511A01467 3213A00104	12 mo. 12 mo.	Aug-06 Jan-06

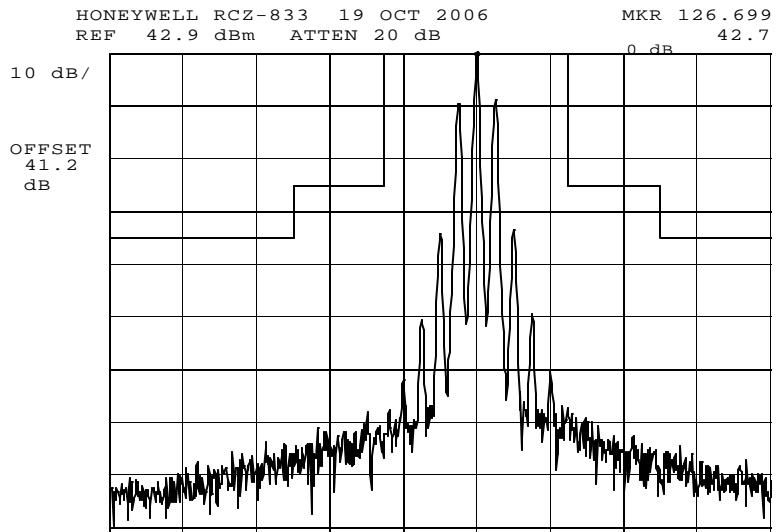
Name of Test: Emission Masks (Occupied Bandwidth)

Measurement Results

g06a0107: 2006-Oct-19 Thu 13:04:00

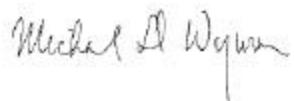
State: 2:High Power

Ambient Temperature: 23°C ± 3°C



Power:
 Modulation:

HIGH
 VOICE: 2500 Hz SINE WAVE
 MASK: FCC, 87.139, AM, 25kHz BW



Performed by:

Michael Wyman

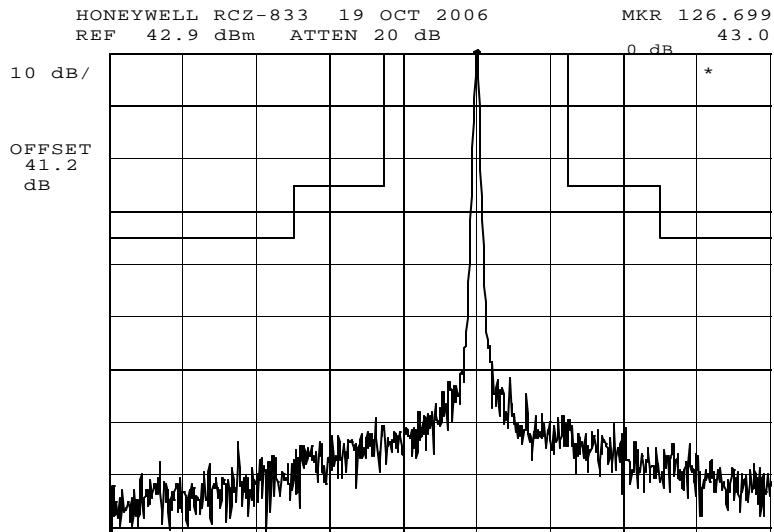
Name of Test: Emission Masks (Occupied Bandwidth)

Measurement Results

g06a0108: 2006-Oct-19 Thu 13:05:00

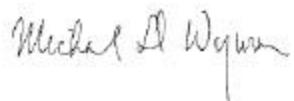
State: 2:High Power

Ambient Temperature: 23°C ± 3°C



Power:
 Modulation:

HIGH
 NONE
 MASK: FCC, 87.139, AM, 25KHZ BW



Performed by:

Michael Wyman

Name of Test: Audio Frequency Response

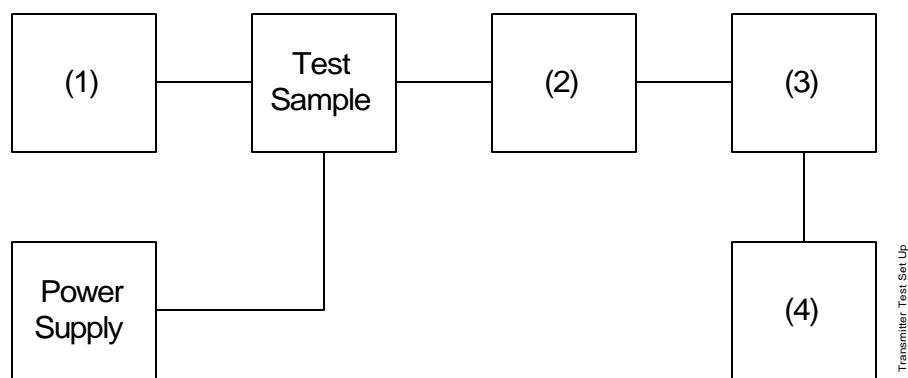
Specification: 47 CFR 2.1047(a)

Guide: ANSI/TIA/EIA-603-1992, Paragraph 2.2.6

Measurement Procedure

- A) The EUT and test equipment were set up as shown below.
- B) The audio signal generator was connected to the audio input circuit/microphone of the EUT.
- C) The audio signal input was adjusted to obtain 20% modulation at 1 kHz, and this point was taken as the 0 dB reference level.
- D) With input levels held constant and below limiting at all frequencies, the audio signal generator was varied from 100 Hz to 50 kHz.
- E) The response in dB relative to 1 kHz was measured, using the HP 8901A Modulation Meter.

Transmitter Test Set-Up: Audio Frequency Response



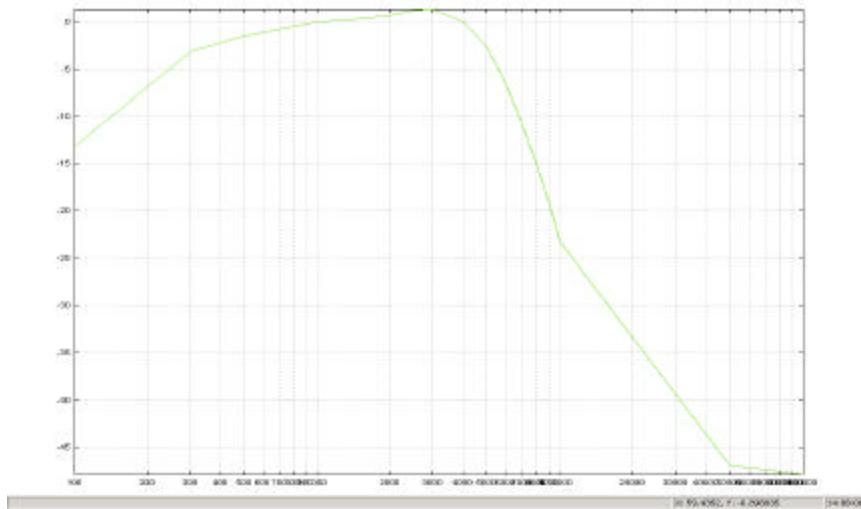
Asset	Description		s/n	Cycle	Last Cal
(1) Audio Oscillator					
X i00324	HP 8903B Audio Analyzer		3011A09079	12 mo.	Oct-06
(2) Coaxial Attenuator					
i00122/3	NARDA 766-(10 dB)		7802 or 7802A	N/A	NCR
X i00231/2	PASTERNAK PE7021-30 (30 dB)		231 or 232	N/A	NCR
(3) Modulation Analyzer					
X i00321	HP 8901A Modulation Meter		2239A02170	12 mo.	Oct-06
(4) Audio Analyzer					
X i00324	HP 8903B Audio Analyzer		3011A09079	12 mo.	Oct-06

Name of Test: Audio Frequency Response

Measurement Results

g06a0070: 2006-Oct-19 Thu 14:57:00
State: 0:General

Ambient Temperature: 23°C ± 3°C

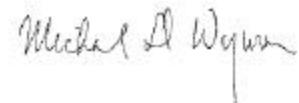


Frequency of Maximum Audio Response, Hz = 1000

Additional points:

Frequency, Hz	Level, dB
300	3.09
20000	39.25
30000	40.09
50000	40.09

Performed by:



Michael Wyman

Name of Test: Modulation Limiting

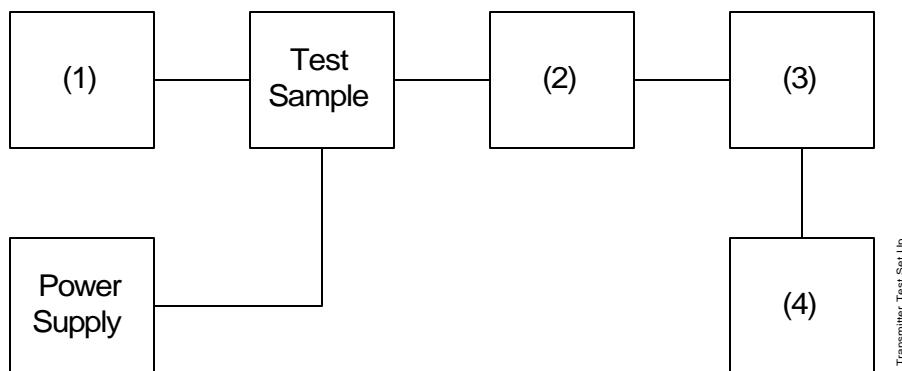
Specification: 47 CFR 2.1047(b)

Guide: ANSI/TIA/EIA-603-1992, Paragraph 2.2.3

Measurement Procedure

- A) The signal generator was connected to the input of the EUT as shown below.
- B) The modulation response was measured for each of three frequencies (one of which was the frequency of maximum response), and the input voltage was varied and was observed on an HP 8901A Modulation Analyzer.
- C) The input level was varied from 30% modulation (± 1.5 kHz deviation) to at least 20 dB higher than the saturation point.
- D) Measurements were performed for both negative and positive modulation and the respective results were recorded.

Transmitter Test Set-Up: Modulation Limiting



Asset	Description	s/n		
(1) Audio Oscillator				
X i00324	HP 8903A Audio Analyzer	3011A09079	12 mo.	Oct-06
(2) Coaxial Attenuator				
i0012/23	NARDA 766-(10 dB)	7802 or 7802A	N/A	NCR
X i00231/2	PASTERNAK PE7021-30 (30 dB)	231 or 232	N/A	NCR
(3) Modulation Analyzer				
X i00321	HP 8901A Modulation Meter	2239A02170	12 mo.	Sep-06
(4) Audio Analyzer				
X i00324	HP 8903A Audio Analyzer	3011A09079	12 mo.	Oct-06

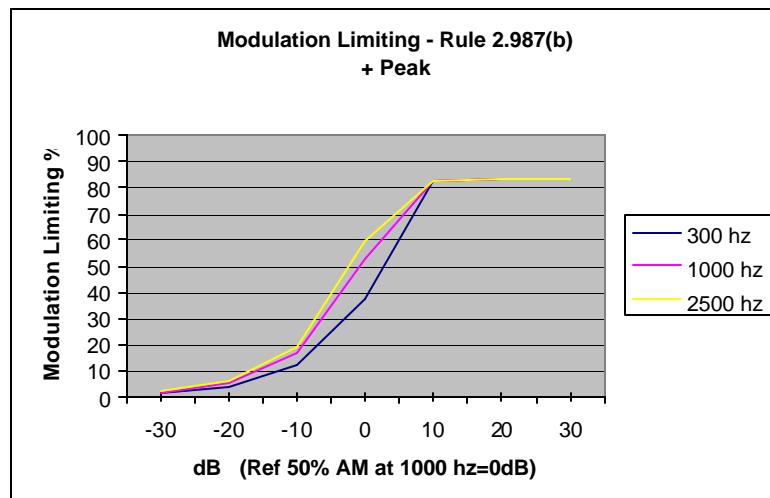
Name of Test: Modulation Limiting

Measurement Results

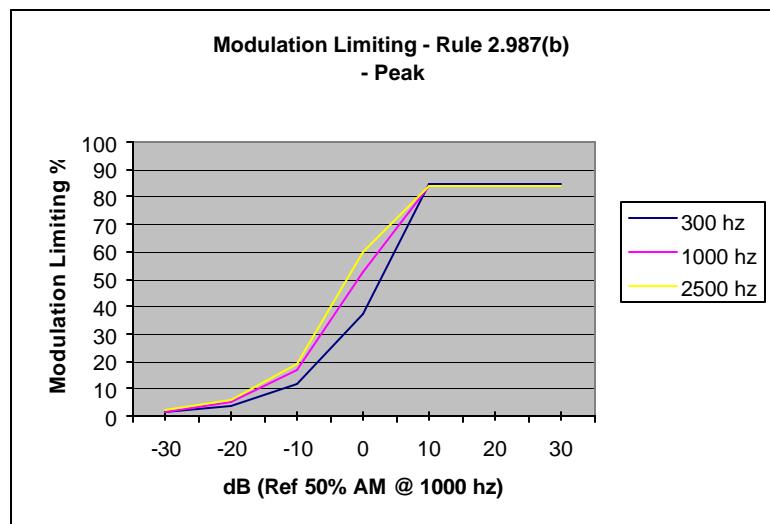
g06a0072: 2006-Oct-19 Thu 15:12:00
 State: 0:General

Ambient Temperature: 23°C ± 3°C

Positive
 Peaks:



Negative
 Peaks:



Performed by:

Michael Wyman

Name of Test: Frequency Stability (Temperature Variation)

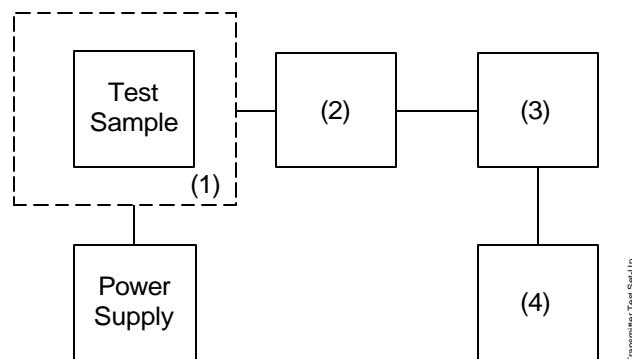
Specification: 47 CFR 2.1055(a)(1)

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	12 mo.	Sep-06
(2) Coaxial Attenuator				
X i00231/2	PASTERNACK PE7021-30 (30 dB)	231 or 232	N/A	NCR
i00122/3	NARDA 766 (10 dB)	7802 or 7802A	N/A	NCR
(3) RF Power				
X i00067	HP 8920A Communications TS	3345U01242	12 mo.	Jun-06
(4) Frequency Counter				
X i00067	HP 8920A Communications TS	3345U01242	12 mo.	Jun-06

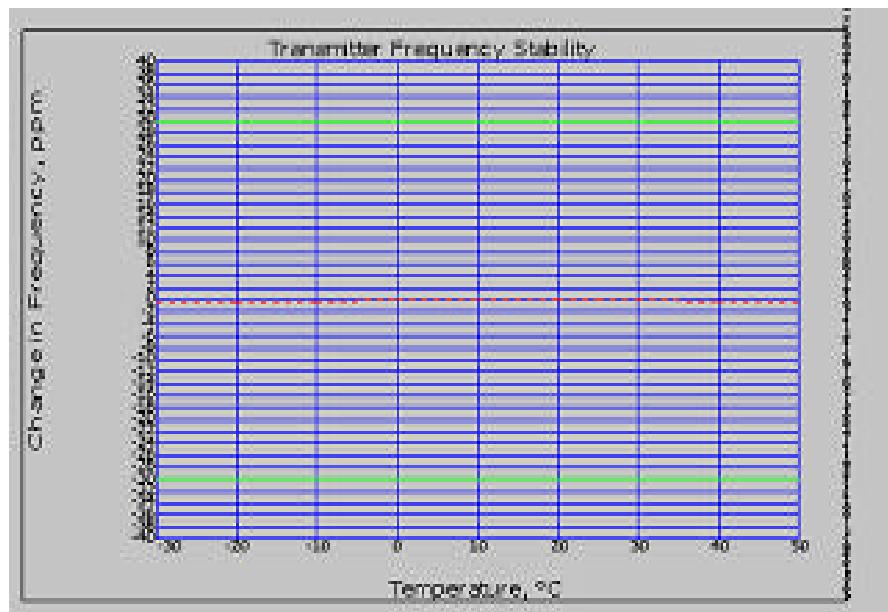
Name of Test: Frequency Stability (Temperature Variation)

Measurement Results

g06a0078: 2006-Oct-20 Fri 09:37:17

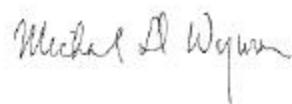
State: 0:General

Ambient Temperature: 23°C ± 3°C



Temp C	Freq Mhz	Change in freq, Hz	Change in freq, PPM
-30	126.499679	0.000000	0.0
-20	126.499688	9.000000	0.1
-10	126.499726	47.000000	0.4
0	126.499749	70.000000	0.6
10	126.499752	73.000000	0.6
20	126.499754	75.000000	0.6
25	126.499745	75.000000	0.6
30	126.499735	75.000000	0.6
40	126.499709	75.000000	0.6
50	126.499676	78.000000	0.6

Limits: 20 PPM Per 87.133



Performed by:

Michael Wyman

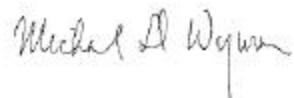
Name of Test: Necessary Bandwidth and Emission Bandwidth

Specification: 47 CFR 2.202(g)

Modulation = 6K00A3E

Necessary Bandwidth Calculation:

Maximum Modulation (M), kHz	= 3
Maximum Deviation (D), kHz	= 0
Constant Factor (K)	= 1
Necessary Bandwidth (B _N), kHz	= $(2 \times M) + (2 \times D \times K)$
	= 6.0



Performed by:

Michael Wyman

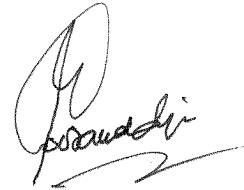
END OF TEST REPORT

**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:



Hoosamuddin S. Bandukwala, Lab Director