

**M. Flom Associates, Inc. - Global Compliance Center**

3356 North San Marcos Place, Suite 107, Chandler, Arizona 85225-7176

www.mflom.com general@mflom.com (480) 926-3100, FAX: 926-3598

Date: November 16, 1999

Federal Communications Commission
Via: Electronic Filing

Attention: Authorization & Evaluation Division

Applicant: Kenwood Communications Corporation

Equipment: TK-880H-3

FCC ID: ALH24593230

FCC Rules: 90, CLASS II PERMISSIVE CHANGE: DATA MODEM

Gentlemen:

In support of a CLASS II PERMISSIVE CHANGE, attached please find the following:

1. Application Form 731
2. Filing Fee Form 159
3. Copy of original Grant
4. Engineering Test Data Report

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,

A handwritten signature in black ink, appearing to read "William H. Graff".

William H. Graff, Director
of Engineeringenclosure(s)
cc: Applicant
WHG/cvr



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Sub-part
2.1033(c):

EQUIPMENT IDENTIFICATION

FCC ID: ALH24593230

NAMEPLATE DRAWING

ATTACHED, EXHIBIT 1.

LOCATION

AS PER LABEL DRAWING(S)

DATE OF REPORT

November 16, 1999

SUPERVISED BY:

A handwritten signature in black ink, appearing to read 'William H. Graff', is positioned above the printed name.

William H. Graff, Director
of Engineering

THE APPLICANT HAS BEEN CAUTIONED AS TO THE FOLLOWING:

15.21 INFORMATION TO 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.

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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 85224
- c) Report Number: d99b0049
- d) Client: Kenwood Communications Corporation
P.O. Box 22745
Long Beach, CA 90801-5745
- e) Identification: TK-880H-3
FCC ID: ALH24593230
Description: UHF FM Mobile Transceiver
- f) EUT Condition: Not required unless specified in individual tests.
- g) Report Date: November 16, 1999
EUT Received: July 12, 1999
- 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:
- 
William H. Graff, Director
of Engineering
- 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.

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EXPOSITORY STATEMENT
PERMISSIVE CHANGE

APPLICANT: Kenwood Communications Corporation

FCC ID: ALH24593230

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.

A copy of the original grant of equipment approval is included for convenience.

The following changes/improvements have been made:

Addition of Data Modem

PAGE NO. 3 of 23.

LIST OF GENERAL INFORMATION REQUIRED FOR CERTIFICATION

IN ACCORDANCE WITH FCC RULES AND REGULATIONS,
VOLUME II, PART 2 AND TO

90

Sub-part 2.1033

(c)(1): NAME AND ADDRESS OF APPLICANT:

Kenwood Communications Corporation
2201 E. Dominguez St
P.O. Box 22745
Long Beach, CA 90801-5745

MANUFACTURER:

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

(c)(2): FCC ID: ALH24593230

MODEL NO: TK-880H-3

(c)(3): INSTRUCTION MANUAL(S):

PLEASE SEE ATTACHED EXHIBITS

(c)(4): TYPE OF EMISSION: 20K0F1D, 16K0F3E, 11K0F3E,
11K2F1D

(c)(5): FREQUENCY RANGE, MHz: 400 to 430

(c)(6): POWER RATING, Watts: 10 to 40
___ Switchable ___ x Variable ___ N/A

(c)(7): MAXIMUM POWER RATING, Watts: 300

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M. Flom Associates, Inc. is accredited by the American Association for Laboratory Accreditation (A2LA) as shown in the scope below.



**THE AMERICAN
ASSOCIATION
FOR LABORATORY
ACCREDITATION**

ACCREDITED LABORATORY

A2LA has accredited

M. FLOM ASSOCIATES, INC.
Chandler, AZ

for technical competence in the field of

Electrical (EMC) 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 Guide 25-1990 "General Requirements for the Competence of Calibration and Testing Laboratories" (equivalent to relevant requirements of the ISO 9000 series of standards) and any additional program requirements in the identified field of testing.

Presented this 24th day of November, 1998.



Peter M. Meyer
President
For the Accreditation Council
Certificate Number 1008.01
Valid to December 31, 2000

For tests or types of tests to which this accreditation applies, please refer to the laboratory's Electrical (EMC) Scope of Accreditation



American Association for Laboratory Accreditation

SCOPE OF ACCREDITATION TO ISO/IEC GUIDE 25-1990 AND EN 45001

M. FLOM ASSOCIATES, INC.
Electronic Testing Laboratory
3356 North San Marcos Place, Suite 107
Chandler, AZ 85224-1571
Morton Flom Phone: 602 926 3100

ELECTRICAL (EMC)

Valid to: December 31, 2000 Certificate Number: 1008-01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following electromagnetic compatibility tests:

Tests	Standard(s)
RF Emissions	FCC Part 15 (Subparts B and C) using ANSI C63.4-1992; CISPR 11; CISPR 13; CISPR 14; CISPR 22; EN 55011; EN 55013; EN 55014; EN 55022; EN 50081-1; EN 50081-2; FCC Part 18; ICES-003; AS/NZS 1044; AS/NZS 1053; AS/NZS 3548; AS/NZS 4251.1
RF Immunity	EN 50082-1; EN 50082-2; AS/NZS 4251.1
Radiated Susceptibility	EN 61000-4-3; ENV 50140; ENV 50204; IEC 1000-4-3; IEC 801-3
ESD	EN 61000-4-2; IEC 1000-4-2; IEC 801-2
EFT	EN 61000-4-4; IEC 1000-4-4; IEC 801-4
Surge	EN 61000-4-5; ENV 50142; IEC 1000-4-5; IEC 801-5
47 CFR (FCC)	2, 21, 22, 23, 24, 74, 80, 87, 90, 95, 97

Peter M. Meyer

5301 Buckeystown Pike, Suite 350 • Frederick, MD 21704-8307 • Phone: 301 644 3200 • Fax: 301 662 2974

"This laboratory is accredited by the American Association for Laboratory Accreditation (A2LA) and the results shown in this report have been determined in accordance with the laboratory's terms of accreditation unless stated otherwise in the report."

Should this report contain any data for tests for which we are not accredited, or which have been undertaken by a subcontractor that is not A2LA accredited, such data would not covered by this laboratory's A2LA accreditation.

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Subpart 2.1033 (continued)

(c)(8): VOLTAGES & CURRENTS IN ALL ELEMENTS IN FINAL R. F. STAGE,
INCLUDING FINAL TRANSISTOR OR SOLID STATE DEVICE:

COLLECTOR CURRENT, A = per manual
COLLECTOR VOLTAGE, Vdc = per manual
SUPPLY VOLTAGE, Vdc = 13.6

(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

PAGE NO.

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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 Radiobeacons (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

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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, section 6.1.9, 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.

PAGE NO. 8 of 23.
NAME OF TEST: Emission Masks (Occupied Bandwidth)
SPECIFICATION: 47 CFR 2.1049(c)(1)
GUIDE: ANSI/TIA/EIA-603-1992, Paragraph 2.2.11
TEST EQUIPMENT: As per previous page

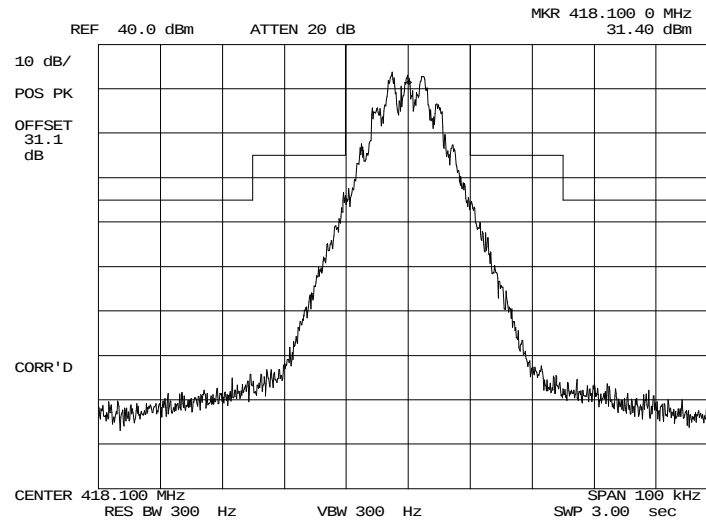
MEASUREMENT PROCEDURE

1. The EUT and test equipment were set up as shown on the following page, with the Spectrum Analyzer connected.
2. For EUTs supporting audio modulation, the audio signal generator was adjusted to the frequency of maximum response and with output level set for ± 2.5 kHz deviation (or 50% modulation). With level constant, the signal level was increased 16 dB.
3. For EUTs supporting digital modulation, the digital modulation mode was operated to its maximum extent.
4. The Occupied Bandwidth was measured with the Spectrum Analyzer controls set as shown on the test results.
5. MEASUREMENT RESULTS: ATTACHED

PAGE NO.

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NAME OF TEST: Emission Masks (Occupied Bandwidth)
 g99b0224: 1999-Nov-05 Fri 10:12:00
 STATE: 1:Low Power



POWER:

LOW

MODULATION:

GMSK 19200 BITS PER SECOND
 MASK: B, VHF/UHF 25kHz,
 w/LPF

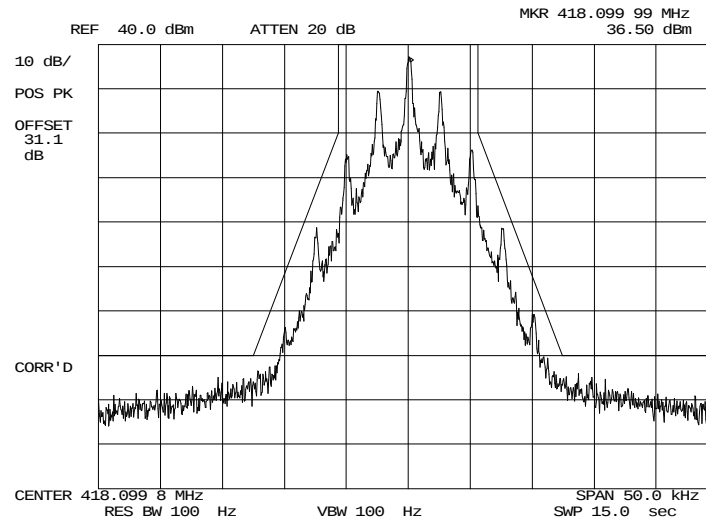
SUPERVISED BY:


 William H. Graff, Director
 of Engineering

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NAME OF TEST: Emission Masks (Occupied Bandwidth)
 g99b0223: 1999-Nov-05 Fri 10:09:00
 STATE: 1:Low Power



POWER:
 MODULATION:

LOW
 GMSK 9600 BITS PER SECOND
 MASK: D, VHF/UHF 12.5 KHZ
 BW

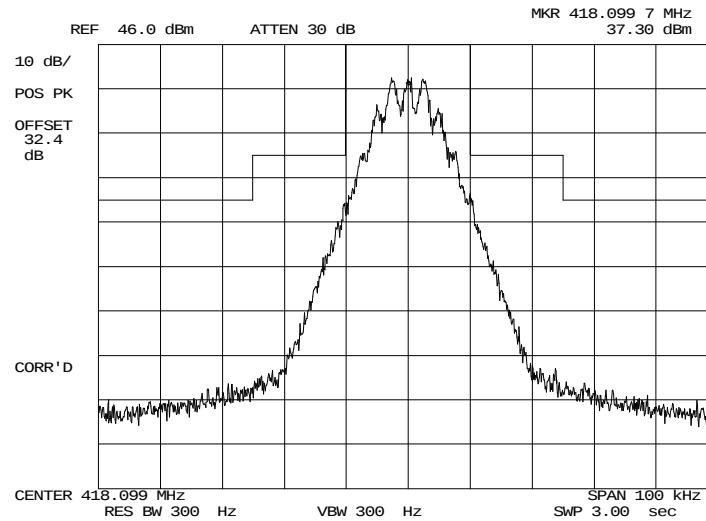
SUPERVISED BY:


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NAME OF TEST: Emission Masks (Occupied Bandwidth)
 g99b0225: 1999-Nov-05 Fri 10:21:00
 STATE: 2:High Power



POWER:

HIGH

MODULATION:

GMSK 19200 BITS PER SECOND
 MASK: B, VHF/UHF 25kHz,
 w/LPF

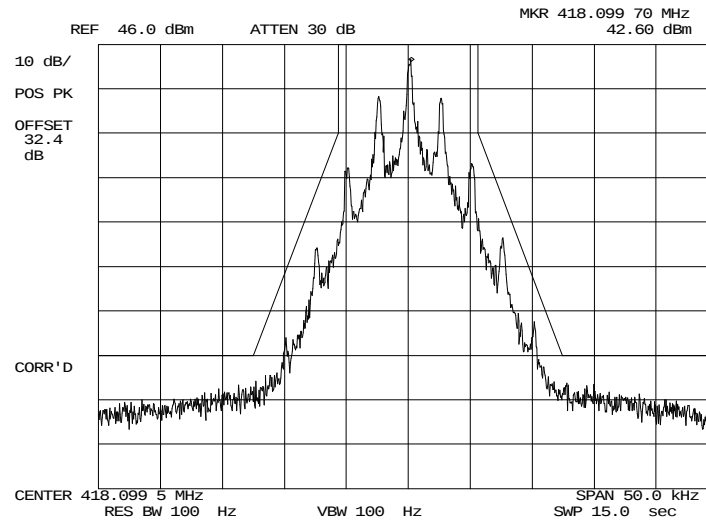
SUPERVISED BY:


 William H. Graff, Director
 of Engineering

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NAME OF TEST: Emission Masks (Occupied Bandwidth)
 g99b0226: 1999-Nov-05 Fri 10:30:00
 STATE: 2:High Power



POWER:
 MODULATION:

HIGH
 GMSK 9600 BITS PER SECOND
 MASK: D, VHF/UHF 12.5kHz BW

SUPERVISED BY:


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 of Engineering

PAGE NO. 13 of 23.

NAME OF TEST: Transient Frequency Behavior

SPECIFICATION: 47 CFR 90.214

GUIDE: ANSI/TIA/EIA-603-1992, Paragraph 2.2.19

TEST EQUIPMENT: As per attached page

MEASUREMENT PROCEDURE

1. The EUT was setup as shown on the attached page, following TIA/EIA-603 steps a, b, and c as a *guide*.
2. The transmitter was turned on.
3. Sufficient attenuation was provided so that the transmitter carrier level measured at the output of the combiner was 40 dB below the maximum input level of the test receiver. This level was recorded as step f.
4. The transmitter was turned off.
5. An RF signal generator (1) modulated with a 1 kHz tone at either 25, 12.5, or 6.25 kHz deviation, and set to the same frequency as the assigned transmitter frequency, (2) was adjusted to a level -20 dB below the level recorded for step f, as measured at the output of the combiner. This level was then fixed for the remainder of the test and is recorded at step h.
6. The oscilloscope was setup using TIA/EIA-603 steps j and k as a guide, and to either 10 ms/div (UHF) or 5 ms/div (VHF).
7. The 30 dB attenuator was removed, the transmitter was turned on, and the level of the carrier at the output of the combiner was recorded as step l.
8. The carrier on-time as referenced in TIA/EIA-603 steps m, n, and o was captured and plotted. The carrier off-time as referenced in TIA/EIA-603 steps p, q, r, and s was captured and plotted.

LEVELS MEASURED:

step f, dBm	= -17.3
step h, dBm	= -36.4
step l, dBm	= 13.8

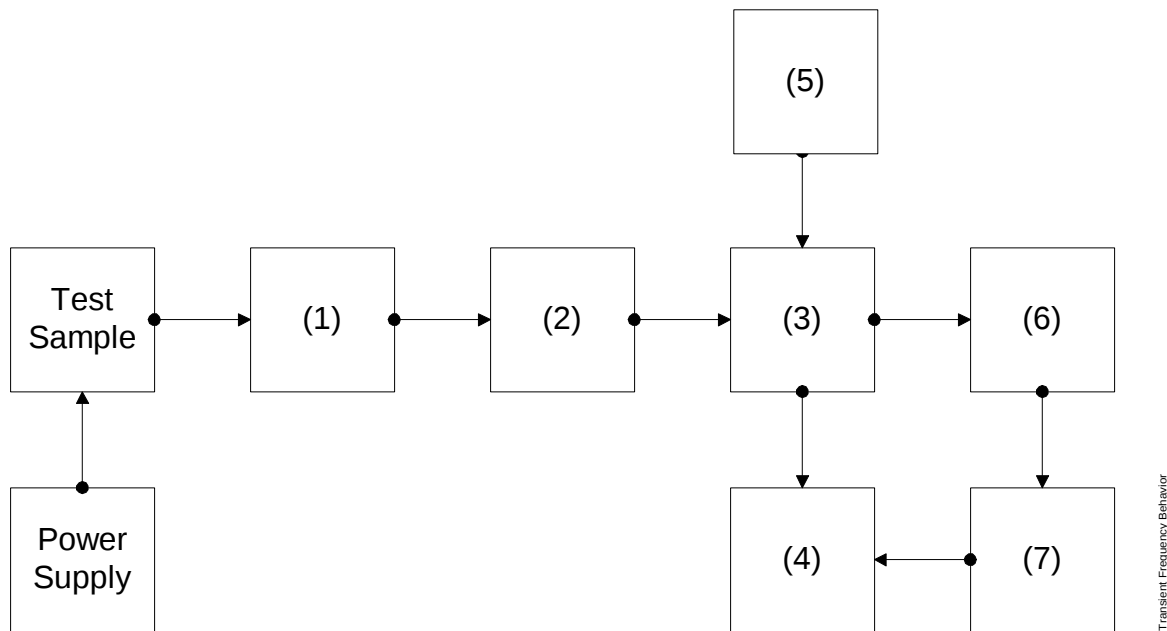
SUPERVISED BY:



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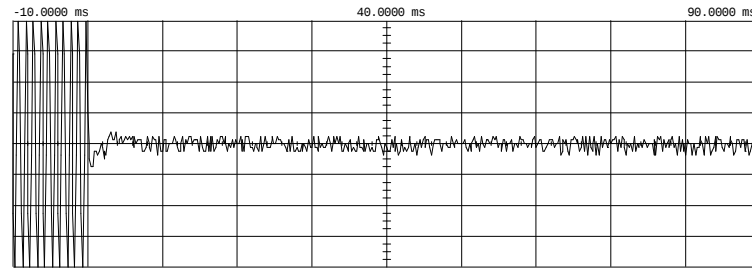
TRANSIENT FREQUENCY BEHAVIOR

Asset	Description (as applicable)	s/n
(1)	ATTENUATOR (Removed after 1st step)	
i00112	Philco 30 dB	989
(2)	ATTENUATOR	
i00112	Philco 30 dB	989
i00172	Bird 30 dB	989
i00122	Narda 10 dB	7802
i00123	Narda 10 dB	7802A
i00110	Kay Variable	145-387
(3)	COMBINER	
i00154	4 x 25 Ω COMBINER	154
(4)	CRYSTAL DETECTOR	
i00159	HP 8470B	1822A10054
(5)	RF SIGNAL GENERATOR	
i00018	HP 8656A	2228A03472
i00031	HP 8656A	2402A06180
i00067	HP 8920A	3345U01242
(6)	MODULATION ANALYZER	
i00020	HP 8901A	2105A01087
(7)	SCOPE	
i00030	HP 54502A	2927A00209

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NAME OF TEST: Transient Frequency Behavior
 g99b0227: 1999-Nov-08 Mon 11:49:00
 STATE: 2:High Power



Main Timebase 10.0 ms/div Delay/Pos 40.0000 ms Reference Center Mode Repetitive
 Channel 1 Sensitivity 550 mV/div Offset 0.00000 V Probe 1.000 :1 Coupling dc (1M ohm)
 Trigger mode : Edge
 On Negative Edge Of Chan2
 Trigger Level
 Chan2 = -4.000 mV (noise reject ON)
 Holdoff = 40.000 ns

POWER:
 MODULATION:
 DESCRIPTION:

HIGH
 Ref Gen=25 kHz Deviation
 CARRIER ON TIME

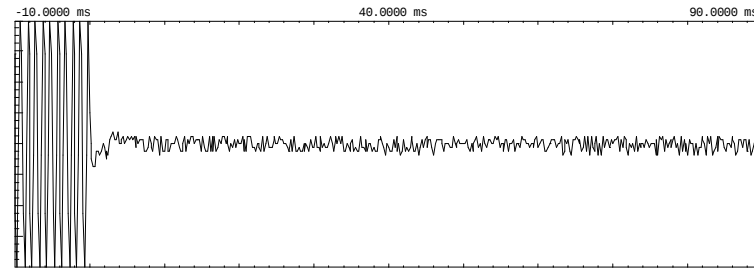
SUPERVISED BY:


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 of Engineering

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NAME OF TEST: Transient Frequency Behavior
 999b0228: 1999-Nov-08 Mon 11:49:00
 STATE: 2:High Power



Main Timebase 10.0 ms/div Delay/Pos 40.0000 ms Reference Center Mode Repetitive
 Channel 1 Sensitivity 550 mV/div Offset 0.00000 V Probe 1.000 :1 Coupling dc (1M ohm)
 Trigger mode : Edge
 On Negative Edge Of Chan2
 Trigger Level
 Chan2 = -4.000 mV (noise reject ON)
 Holdoff = 40.000 ns

POWER:
 MODULATION:
 DESCRIPTION:

HIGH
 Ref Gen=25 kHz Deviation
 CARRIER ON TIME

SUPERVISED BY:

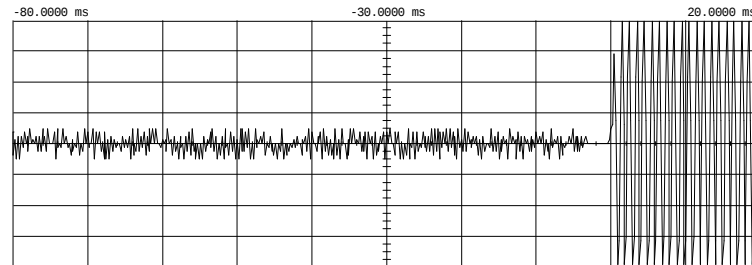

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 of Engineering

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NAME OF TEST: Transient Frequency Behavior
 999b0229: 1999-Nov-08 Mon 11:52:00
 STATE: 2:High Power

0



Main Timebase 10.0 ms/div Delay/Pos -30.0000 ms Reference Center Mode Repetitive
 Channel 1 Sensitivity 550 mV/div Offset 0.00000 V Probe 1.000 :1 Coupling dc (1M ohm)
 Trigger mode : Edge
 On Positive Edge Of Chan2
 Trigger Level
 Chan2 = -962.500 mV (noise reject ON)
 Holdoff = 40.000 ns

POWER:
 MODULATION:
 DESCRIPTION:

HIGH
 Ref Gen=25 kHz Deviation
 CARRIER OFF TIME

SUPERVISED BY:

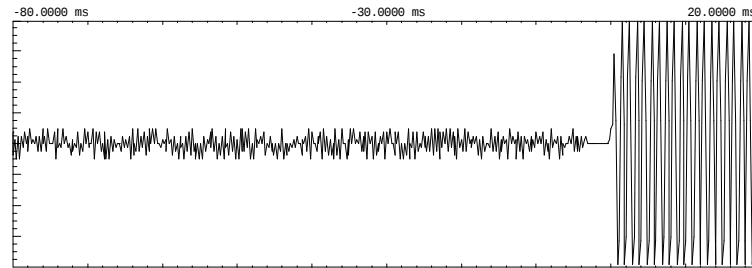

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NAME OF TEST: Transient Frequency Behavior
 999b0230: 1999-Nov-08 Mon 11:52:00
 STATE: 2:High Power

0



Main Timebase 10.0 ms/div Delay/Pos -30.0000 ms Reference Center Mode Repetitive
 Channel 1 Sensitivity 550 mV/div Offset 0.00000 V Probe 1.000 :1 Coupling dc (1M ohm)
 Trigger mode : Edge
 On Positive Edge Of Chan2
 Trigger Level
 Chan2 = -962.500 mV (noise reject ON)
 Holdoff = 40.000 ns

POWER:
 MODULATION:
 DESCRIPTION:

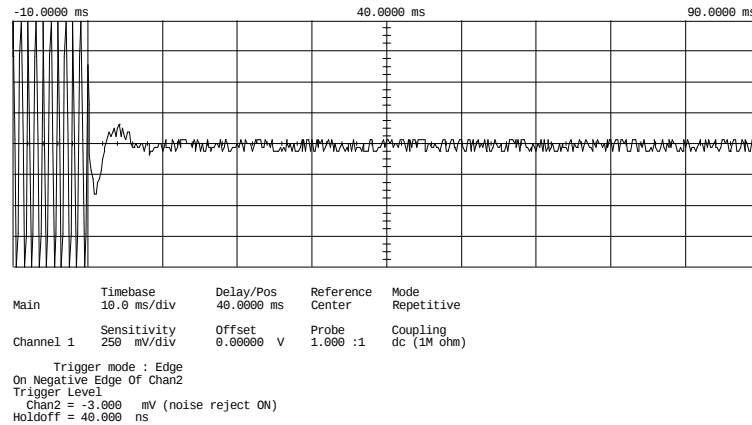
HIGH
 Ref Gen=25 kHz Deviation
 CARRIER OFF TIME

SUPERVISED BY:

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 of Engineering

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NAME OF TEST: Transient Frequency Behavior
g99b0231: 1999-Nov-08 Mon 12:40:00
STATE: 2:High Power



POWER:
MODULATION:
DESCRIPTION:

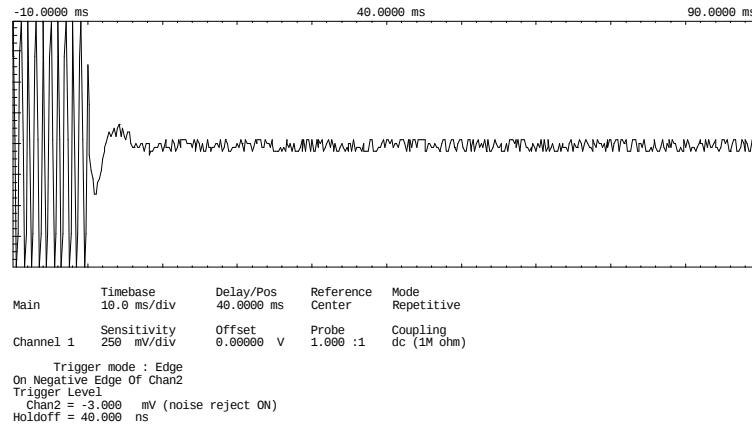
HIGH
Ref Gen=12.5 kHz Deviation
CARRIER ON TIME

SUPERVISED BY:


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of Engineering

PAGE NO. 20 of 23.

NAME OF TEST: Transient Frequency Behavior
 g99b0232: 1999-Nov-08 Mon 12:41:00
 STATE: 2:High Power



POWER:
 MODULATION:
 DESCRIPTION:

HIGH
 Ref Gen=12.5 kHz Deviation
 CARRIER ON TIME

SUPERVISED BY:

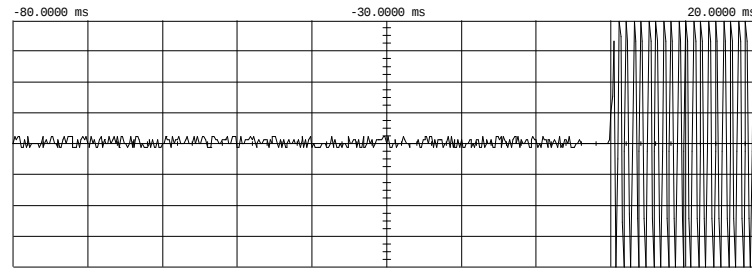

 William H. Graff, Director
 of Engineering

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NAME OF TEST: Transient Frequency Behavior
g99b0237: 1999-Nov-08 Mon 12:53:00
STATE: 2:High Power

0



+12.5

Fc

-12.5

Main Timebase 10.0 ms/div Delay/Pos -30.0000 ms Reference Center Mode Repetitive
Channel 1 Sensitivity 250 mV/div Offset 0.00000 V Probe 1.000 :1 Coupling dc (1M ohm)
Trigger mode : Edge
On Positive Edge Of Chan2
Trigger Level
Chan2 = -962.500 mV (noise reject ON)
Holdoff = 40.000 ns

POWER:
MODULATION:
DESCRIPTION:

HIGH
Ref Gen=12.5 kHz Deviation
CARRIER OFF TIME

SUPERVISED BY:

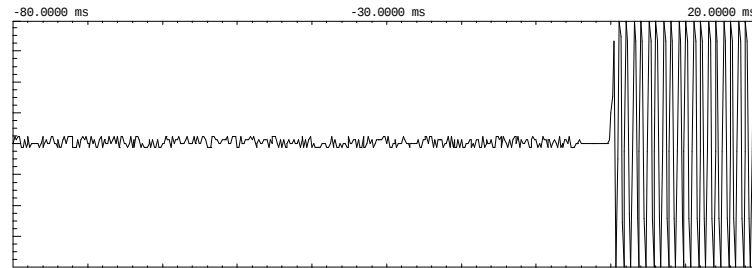

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of Engineering

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NAME OF TEST: Transient Frequency Behavior
 999b0238: 1999-Nov-08 Mon 12:54:00
 STATE: 2:High Power

0



Main Timebase 10.0 ms/div Delay/Pos -30.0000 ms Reference Center Mode Repetitive
 Channel 1 Sensitivity 250 mV/div Offset 0.00000 V Probe 1.000 :1 Coupling dc (1M ohm)
 Trigger mode : Edge
 On Positive Edge Of Chan2
 Trigger Level
 Chan2 = -962.500 mV (noise reject ON)
 Holdoff = 40.000 ns

POWER:
 MODULATION:
 DESCRIPTION:

HIGH
 Ref Gen=12.5 kHz Deviation
 CARRIER OFF TIME

SUPERVISED BY:


 William H. Graff, Director
 of Engineering

PAGE NO. 23 of 23.

NAME OF TEST: Necessary Bandwidth and Emission Bandwidth

SPECIFICATION: 47 CFR 2.202(g)

MODULATION = 20K0F1D

NECESSARY BANDWIDTH CALCULATION:

MAXIMUM MODULATION (M), kHz	= 6400
MAXIMUM DEVIATION (D), kHz	= 3600
CONSTANT FACTOR (K)	= 1
NECESSARY BANDWIDTH (B _N), kHz	= (2 x M) + (2 x D x K)
	= 20.0

MODULATION = 11K2F1D

NECESSARY BANDWIDTH CALCULATION:

MAXIMUM MODULATION (M), kHz	= 3200
MAXIMUM DEVIATION (D), kHz	= 2400
CONSTANT FACTOR (K)	= 1
NECESSARY BANDWIDTH (B _N), kHz	= (2 x M) + (2 x D x K)
	= 11.0

SUPERVISED BY:



William H. Graff, Director
of Engineering

TESTIMONIAL
AND
STATEMENT OF CERTIFICATION

THIS IS TO CERTIFY THAT:

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:



William H. Graff, Director
of Engineering