ENGINEERING TEST REPORT

Bi-directional Amplifier
Model No.: BDA1200
FCC ID: H6M-BDA1200

Applicant: **KAVAL TELECOM INC.**
60 Gough Road
Markham, Ontario
Canada, L3R 8X7

Tested in Accordance With

Federal Communications Commission (FCC)
CFR 47, PARTS 2 and 90 (Subpart I)

UltraTech's File No.: KTI-013F90

This Test report is Issued under the Authority of Tri M. Luu, Professional Engineer, Vice President of Engineering UltraTech Group of Labs Date: ………………………	
Report Prepared by: Dan Huynh Issued Date: November 15, 2000	Tested by: Mr. Hung Trinh, EMI/RFI Technician Test Dates: Oct. 27 - Nov. 09, 2000

The results in this Test Report apply only to the sample(s) tested, and the sample tested is randomly selected.

UltraTech

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EXHIBIT 1. SUBMITTAL CHECK LIST

Exhibit No.	Exhibit Type	Description of Contents	Quality Check (OK)
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9	Test Report - Plots of Measurement Data	• Exhibit 9A – Amplifier Gain Frequency Response Characteristics (Plots A1 to A24) • Exhibit 9B – Emission Mask I and J (Plots B1 to B16) • Exhibit 9C – Transmitter Antenna Power Spurious/Harmonic Conducted Emissions; 896-902 MHz Uplink Band (Plots C1 to C30) • Exhibit 9D - Transmitter Antenna Power Spurious/Harmonic Conducted Emissions; 935-941 MHz Downlink Band (Plots D1 to D30)	OK
10	Test Setup Photos	Transmitter Radiated Emissions Setup Photos	OK
11	External Photos of EUT	Same as the original submission	--
12	Internal Photos of EUT	Same as the original submission	--
13	Cover Letters	• Letter from Ultratech for Certification Request • Letter from the Applicant to appoint Ultratech to act as an agent	OK
14	Attestation Statements	Manufacturer's Declaration for Equipment Specifications, Installation (if it is professionally installed) and Production Quality Production Assurance. Manufacturer's Declaration of Conformity (FCC DoC) for compliance with FCC Part 15, Sub. B, Class B - Computing Devices - if required	None
15	Application Forms	Form 731 Form 159	Electronic Electronic
16	ID Label/Location Info	Same as the original submission	--
17	Block Diagrams	Same as the original submission	--
18	Schematic Diagrams	Same as the original submission	--
19	Parts List/Tune Up Info	Same as the original submission	--
20	Operational Description	Same as the original submission	--
21	RF Exposure Info	Same as the original submission	--
22	Users Manual	Information/instructions that will be intended in the installation/operation pertains to: Correct output power settings required for compliance operation for every antenna proposed for use with EUT Point-to-point operational requirements and responsibilities RF exposure compliance requirements, if any	OK

EXHIBIT 2. INTRODUCTION

2.1. SCOPE

Reference:	FCC Parts 2 and 90 (Subpart 90)
Title	Telecommunication - Code of Federal Regulations, CFR 47, Parts 2 & 90
Purpose of Test:	To gain FCC Certification Authorization for Radio operating in the frequency bands 896-902 MHz and 935-941 MHz.
Test Procedures	Both conducted and radiated emissions measurements were conducted in accordance with American National Standards Institute ANSI C63.4 - American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.

2.2. NORMATIVE REFERENCES

Publication	**Year**	**Title**
FCC CFR Parts 0-19, 80-End	1998	Code of Federal Regulations – Telecommunication
ANSI C63.4	1992	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
CISPR 22 & EN 55022	1997 1998	Limits and Methods of Measurements of Radio Disturbance Characteristics of Information Technology Equipment
CISPR 16-1		Specification for Radio Disturbance and Immunity measuring apparatus and methods

EXHIBIT 3. PERFORMANCE ASSESSMENT

3.1. CLIENT INFORMATION

APPLICANT	
Name:	KAVAL TELECOM INC.
Address:	60 Gough Road Markham, Ontario Canada, L3R 8X7
Contact Person:	Mr. Alan Aslett Phone #: 905-946-3397 Fax #: 905-946-3392 Email Address: aaslett@kaval.com

MANUFACTURER	
Name:	KAVAL TELECOM INC.
Address:	60 Gough Road Markham, Ontario Canada, L3R 8X7
Contact Person:	Mr. Alan Aslett Phone #: 905-946-3397 Fax #: 905-946-3392 Email Address: aaslett@kaval.com

3.2. EQUIPMENT UNDER TEST (EUT) INFORMATION

The following information (with the exception of the Date of Receipt) has been supplied by the applicant.

Brand Name	KAVAL TELECOM INC.
Product Name	Bi-directional Amplifier
Model Name or Number	BDA1200
Serial Number	Pre-porduction
Type of Equipment	Radio Communication Equipment
External Power Supply	None
Transmitting/Receiving Antenna Type	Non-integral

3.3. EUT'S TECHNICAL SPECIFICATIONS

TRANSMITTER	
Equipment Type:	Portable Mobile Base station (fixed use)
Intended Operating Environment:	Commercial, light industry & heavy industry
Power Supply Requirement:	120V 60Hz
RF Output Power Rating (Watt):	8.9 W/ channel in/out 1.1 W/ 2 channels in/out 0.6 W/ 3 channels in/out 0.5 W/ 4 channels in/out
Operating Frequency Range:	896-902 MHz and 935-941 MHz
RF Output Impedance:	50 Ohms
Occupied Bandwidth (99%):	N/A for an RF amplifier
Emission Designation*:	F1D and F3E
Digital Oscillator Frequencies:	4 MHz
Antenna Connector Type:	N Type
Antenna Description:	None

3.4. LIST OF EUT'S PORTS

Port Number	EUT's Port Description	Number of Identical Ports	Connector Type	Cable Type (Shielded/Non-shielded)
1	896-902 MHz RF IN / 935-941 MHz RF OUT Port	1	N	Double shielded coax
2	935-941 MHz RF IN / 896-902 MHz RF OUT Port	1	N	Double shielded coax

NOTES:
Ports of the EUT which in normal operation *were connected to ancillary equipment through interconnecting cables via a representative interconnecting cable to simulate the input/output characteristics. RF input/output was correctly terminated to the 50 Ohm RF Load.*

3.5. SPECIAL CHANGES ON THE EUT'S HARDWARE/SOFTWARE FOR TESTING PURPOSES

None

3.6. MODIFICATIONS INCORPORATED IN THE EUT FOR COMPLIANCE PURPOSES

None

3.7. RELATED SUBMITAL(S)/GRANT(S)

None

3.8. ANCILLARY EQUIPMENT

None

3.9. GENERAL TEST SETUP BLOCK DIAGRAM

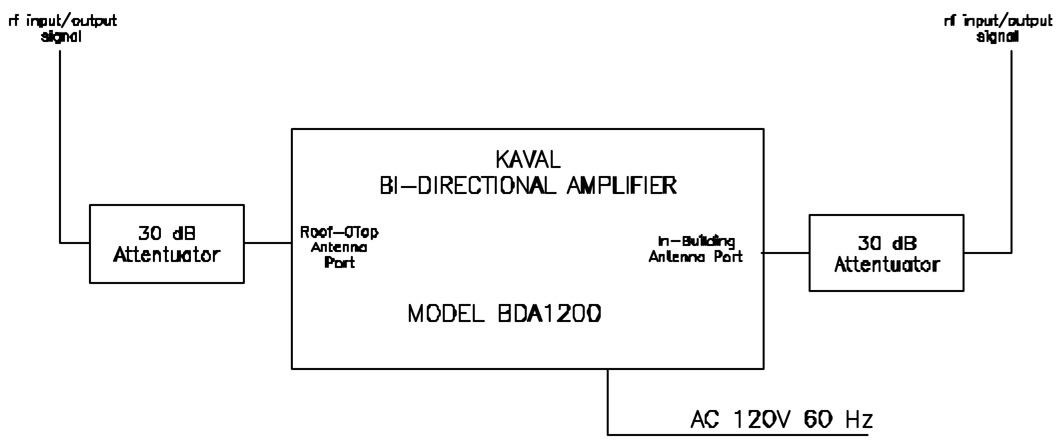


EXHIBIT 4. EUT OPERATING CONDITIONS AND CONFIGURATIONS DURING TESTS

4.1. CLIMATE TEST CONDITIONS

The climate conditions of the test environment are as follows:

Temperature:	21°C
Humidity:	51%
Pressure:	102 kPa
Power input source:	120V 60Hz

4.2. OPERATIONAL TEST CONDITIONS & ARRANGEMENT FOR TEST SIGNALS

Operating Modes:	The transmitter was operated in a continuous transmission mode with the carrier modulated as specified in the Test Data.
Special Test Software:	None
Special Hardware Used:	None
Transmitter Test Antenna:	The EUT is tested with the transmitter antenna port terminated to a 50 Ohm RF Load.

Transmitter Test Signals	
Frequencies: ▪ 896-902 MHz band: ▪ 935-941 MHz band:	Near lowest & near highest frequencies each frequency bands that the transmitter covers: ▪ 896 and 902 MHz ▪ 935 and 941 MHz
Transmitter Wanted Output Test Signals: ▪ RF Power Output (measured maximum output power): ▪ Normal Test Modulation ▪ Modulating signal source:	 ▪ 8.9 Watts ▪ FM with 2.5 kHz sine wave & external 9600 bps random data source ▪ External

EXHIBIT 5. SUMMARY OF TEST RESULTS

5.1. LOCATION OF TESTS

All of the measurements described in this report were performed at Ultratech Group of Labs located in the city of Oakville, Province of Ontario, Canada.

- AC Powerline Conducted Emissions were performed in UltraTech's shielded room, 16'(L) by 12'(W) by 12'(H).
- Radiated Emissions were performed at the Ultratech's 3 Meter Open Field Test Site (OFTS) situated in the Town of Oakville, province of Ontario.

  The above sites have been calibrated in accordance with ANSI C63.4, and found to be in compliance with the requirements of Sec. 2.948 of the FCC Rules. The descriptions and site measurement data of the Oakville Open Field Test Site has been filed with FCC office (FCC File No.: 31040/SIT 1300B3) and Industry Canada office (Industry Canada File No.: IC2049). Last Date of Site Calibration: Sep. 20, 1999.

5.2. APPLICABILITY & SUMMARY OF EMC EMISSION TEST RESULTS

FCC PARAGRAPH.	TEST REQUIREMENTS	APPLICABILITY (YES/NO)
90.205 & 2.985	RF Power Output	Yes
90.213 & 2.995	Frequency Stability	N/A for a RF amplifier
90.242(b)(8) & 2.987(a)	Audio Frequency Response	N/A for a RF amplifier
90.210 & 2.987(b)	Modulation Limiting	N/A for a RF amplifier
90.209, 90.210 & 2.989	Emission Limitation & Emission Masks	Yes (Comparison tests between in/out signals)
90.210, 2.997 & 2.991	Emission Limits - Spurious Emissions at Antenna Terminal	Yes
90.210, 2.997 & 2.993	Emission Limits - Field Strength of Spurious Emissions	Yes
90.214	Transient Frequency Behavior	Not applicable

Bi-directional Amplifier, **Model No.: BDA1200**, by **KAVAL TELECOM INC.** has also been tested and found to comply with **FCC Part 15, Subpart B - Radio Receivers and Class A Digital Devices**. The engineering test report has been documented and kept in file and it is available anytime upon FCC request.

EXHIBIT 6. MEASUREMENTS, EXAMINATIONS & TEST DATA FOR EMC EMISSIONS

6.1. TEST PROCEDURES

This section contains test results only. Details of test methods and procedures can be found in Exhibit 8 of this report

6.2. MEASUREMENT UNCERTAINTIES

The measurement uncertainties stated were calculated in accordance with requirements of UKAS Document NIS 81 with a confidence level of 95%. Please refer to Exhibit 7 for Measurement Uncertainties.

6.3. MEASUREMENT EQUIPMENT USED:

The measurement equipment used complied with the requirements of the Standards referenced in the Methods & Procedures ANSI C63.4:1992 and CISPR 16-1.

6.4. ESSENTIAL/PRIMARY FUNCTIONS AS DECLARED BY THE MANUACTURER:

The essential function of the EUT is to correctly communicate data to and from radios over RF link.

6.5. RF POWER OUTPUT @ FCC 2.985 & 90.205

6.5.1. Limits @ FCC 90.205

Please refer to FCC CFR 47, Part 90, Subpart I, Para. 90.205 for specification details.

6.5.2. Method of Measurements

FCC @ 2.985 – The rf output power of the transmitter was measured at the RF output terminals when the transmitter is adjusted by the manufacturer in accordance with the tune-up procedure to give the values of the current and voltage on the circuit elements specified in 2.983(d)(5). The electrical characteristics of the radio frequency load attached to the output terminals was 50 Ohms.

Two Tone Test:

1. Connect two signal generators to the input of the device under test (DUT), via a proper impedance matching network (and preferably via a variable attenuator) so that the two input signals are equal (and can be raised equally).

2. Connect a dummy load of suitable load rating to the enhancer output point. Connect also a spectrum analyzer to this output point via a coupling network and attenuator, so that only a portion of the output signal is coupled to the spectrum analyzer. The coupling attenuation shall be stated in the test report. Set two signal generator frequencies f_1 and f_2 such as they and their third order intermodulation product frequencies, $f_3 = 2f_1 - f_2$ and $f_4 = 2f_2 - f_1$, are all within the passband of the DUT.

3. Raise the input level to the DUT while observing the output tone levels, P_{01} and P_{02}, and the intermodulation product levels, P_{03} and P_{04}.

4. Raise the input level to the DUT until the greater level of the I.M. products at the enhancer output terminals, P_{03} and P_{04}, equals -43 dBW or -13 dBm.

5. Record all signal levels and their frequencies. Calculate the mean output power under this testing condition, given by: $P_{mean} = P_{01} + 3$ dB

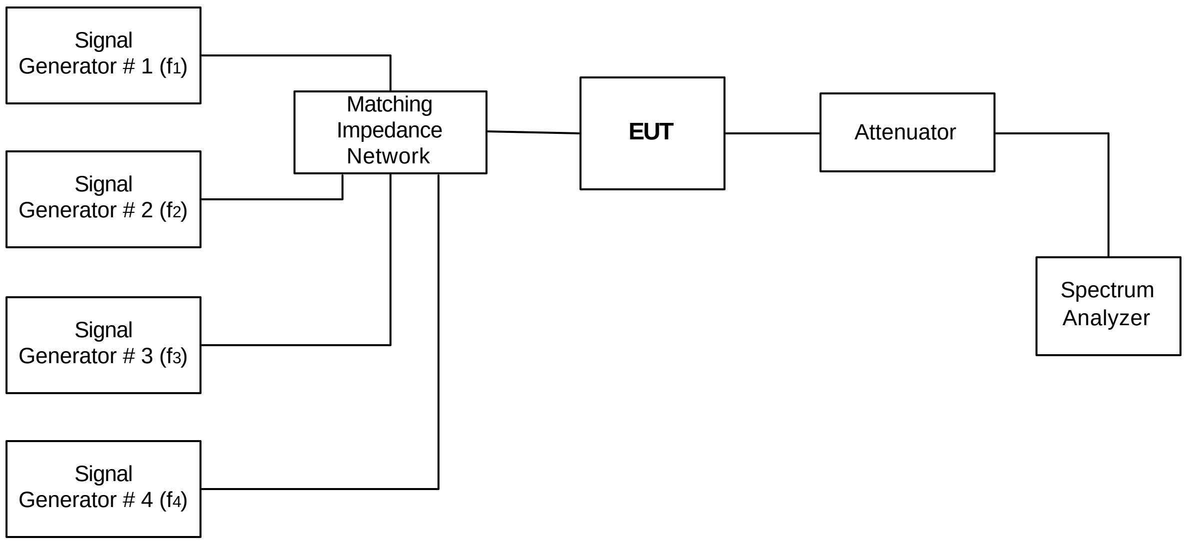
Multiple Tone Test:

The test procedure is identical with "Two Tone Test" with the number of the input signal sources changed as preferred.

6.5.3. Test Equipment List

Test Instruments	Manufacturer	Model No.	Serial No.	Frequency Range
Spectrum Analyzer/ EMI Receiver	Hewlett Packard	HP 8593EM	3412A00103	9 kHz – 26.5 GHz
Attenuator(s)	Bird	..	…	DC – 22 GHz

6.5.4. Test Arrangement



6.5.5. Test Data.

TEST CONFIGURATION

- *The transmitter terminal was coupled to the Spectrum Analyzer through a 30 dB attenuator*
- *Power of the transmitter channel near the lowest, middle and highest of each frequency block/band were measured using the power meter, and the reading was corrected by added the calibrated attenuator's attenuation value and cable loss.*
- *The RF Output was turned on with no modulation.*

Single Channel Input/output

Channel Frequency (MHz)	Maximum Input Power (dBm)		Maximum RF Output Level (dBm)	
	Measured	Rating	Measured	Rating
Uplink Band (896-902 MHz)				
896	10	10	38.8	40
902	10	10	38.8	40
Downlink Band (935-941 MHz)				
935	10.7	10	39.5	40
941	10.7	10	39.4	40
Please refer to Exhibit 9A; test data plots A1 to A10 for details.				

Multiple Channel Input/Output

Number of Channel Input/Output	Channel Frequency (MHz)	Measured Average per Channel RF Output Level (dBm) to provide -13 dBm Maximum I.M.C
Uplink Band (896-902 MHz)		
2	895.975 & 896.025	30.2
3	895.975, 896 & 896.025	27.8
4	895.975, 896, 896.025 & 896.05	27.0
2	901.975 & 902.025	29.6
3	901.975, 902 & 902.025	27.4
4	901.975, 901.998, 902.025 & 902.05	27.0
Downlink Band (935-941 MHz)		
2	934.975 & 935.025	30.2
3	934.975, 935 & 935.025	27.8
4	934.975, 935, 935.025 & 935.05	27.1
2	940.975 & 941.025	30.3
3	940.975, 940.9988 & 941.0263	27.9
4	940.975, 940.9988, 941.0263 & 941.0513	27.1
Please refer to Exhibit 9A; test data plots A13 to A24 for details.		

20 dB Gain Bandwidth

Frequency Band	20 dB Bandwidth (BW)
896-902 MHz	17.5 MHz
935-941 MHz	16.6 MHz
Please refer to Exhibit 9A; test data plots A11 to A12 for details.	

6.6. EMISSION LIMITATION & EMISSION MASK @ FCC 2.989, 90.209 & 90.910

6.6.1. Limits @ 90.209 & 90.910

Emissions shall be attenuated below the mean output power of the transmitter as follows:

Frequency Range (MHz)	Maximum Authorized BW (KHz)	Channel Spacing (KHz)	Recommended Max. Frequency Deviation (KHz)	FCC Applicable Mask @ FCC 90.210
806-821/ 851-866	20	25	5	MASK B (Voice) & MASK G (Data)
821-824/866-869	20	12.5	5	MASK B (Voice) & MASK H (Data)
896-901/935-940	13.6	12.5	2.5	MASK I (Voice) & MASK J (Data)
902-928	Note 1	..	..	Mask K (Voice & Data)
929-930	20	25	5	MASK B (Voice) & MASK G (Data)
Above 940	…	…	..	MASK B (Voice) & MASK C (Data)

Note 1: See note 4 of 90.209 for non-multilateration and multilateration LMS operations

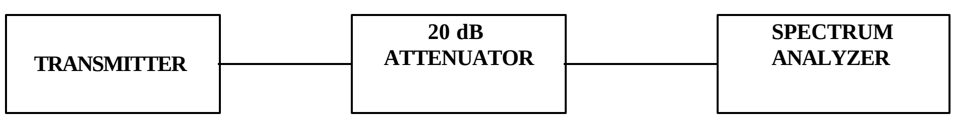
6.6.2. Method of Measurements

Refer to Exhibit 7, Sec. 7.3 of this report for measurement details

6.6.3. Test Equipment List

Test Instruments	Manufacturer	Model No.	Serial No.	Frequency Range
Spectrum Analyzer/ EMI Receiver	Hewlett Packard	HP 8593EM	3412A00103	9 kHz – 26.5 GHz
Attenuator(s)	Bird	..	…	DC – 22 GHz
Audio Oscillator	Hewlett Packard	HP 204C	0989A08798	DC to 1.2 MHz

6.6.4. Test Arrangement



6.6.5. Test Data

Since the EUT is an amplifier, the RF output will be the same as the RF input from a FCC certified FCC transmitter source. Input and output signals in 896-902 MHz and 935-941 MHz amplifier sub-bands will be measured for comparison purposes.

Please refer to exhibit 9B; test data plots B1 to B16 for details.

6.7. TRANSMITTER ANTENNA POWER SPURIOUS/HARMONIC CONDUCTED EMISSIONS @ FCC 90.210

6.7.1. Limits @ 90.210

Emissions shall be attenuated below the mean output power of the transmitter as follows:

FCC RULES	WORST CASE EMISSIONS LIMIT	ATTENUATION LIMIT (dBc)
FCC 90.210 (i), (j)	FCC 90.210 (j)	-20 dBm

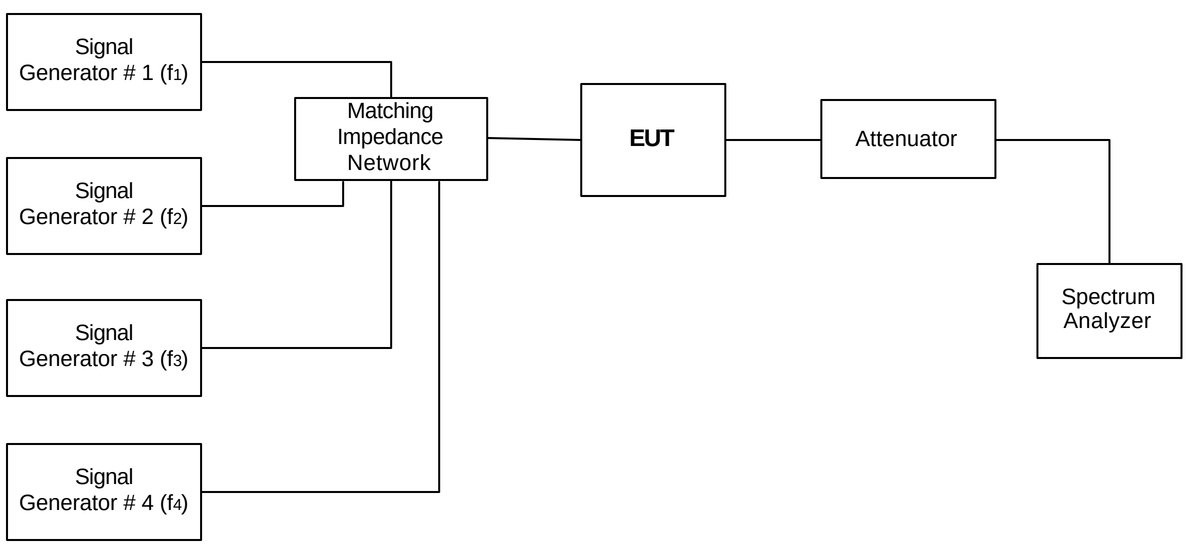
6.7.2. Method of Measurements

Refer to Exhibit 8, Sec. 8.4 of this report for measurement details

6.7.3. Test Equipment List

Test Instruments	Manufacturer	Model No.	Serial No.	Frequency Range
Spectrum Analyzer/ EMI Receiver	Hewlett Packard	HP 8593EM	3412A00103	9 kHz – 26.5 GHz
Attenuator(s)	Bird	..	…	DC – 22 GHz
Audio Oscillator	Hewlett Packard	HP 204C	0989A08798	DC to 1.2 MHz
Hihpass Filter, Microphase	Microphase	CR220HID	IITI11000AC	Cut-off Frequency at 600 MHz, 1.3 GHz or 4 GHz

6.7.4. Test Arrangement



6.7.5. Test Data

896-902 MHz Uplink Band

RF Input/Output Frequency: 896 MHz (single input/output) RF Power Input: 10 dBm (maximum input level) RF Power Output: 38.8 dBm Modulation: FM modulation with 2.5 kHz sine wave signal, frequency deviation = ± 4 kHz
The emissions were scanned from 10 MHz to 10 GHz and no significant signal was found. Please refer to exhibit 9C; test data plots C1 to C3 for details.

RF Input/Output Frequency: 896 MHz (single input/output) RF Power Input: 10 dBm (maximum input level) RF Power Output: 38.8 dBm Modulation: FM modulation with external 9600 bps random data source, frequency deviation = ± 4 kHz
The emissions were scanned from 10 MHz to 10 GHz and no significant signal was found. Please refer to exhibit 9C; test data plots C4 to C6 for details.

RF Input/Output Frequency: 902 MHz (single input/output)
RF Power Input: 10 dBm (maximum input level)
RF Power Output: 38.8 dBm
Modulation: FM modulation with 2.5 kHz sine wave signal, frequency deviation = ± 4 kHz

Frequency (MHz)	RF Level 30 kHz BW (dBm)	Limit (dBm)	Margin (dB)	Pass / Fail
3613	-37.26	-20	-17.26	**Pass**

The emissions were scanned from 10 MHz to 10 GHz and all emissions less 20 dB below the limits were recorded. Please refer to exhibit 9C; test data plots C7 to C9 for details.

RF Input/Output Frequency: 902 MHz (single input/output)
RF Power Input: 10 dBm (maximum input level)
RF Power Output: 38.8 dBm
Modulation: FM modulation with external 9600 bps random data source, frequency deviation = ± 4 kHz

Frequency (MHz)	RF Level 30 kHz BW (dBm)	Limit (dBm)	Margin (dB)	Pass / Fail
3613	-35.20	-20	-15.2	**Pass**

The emissions were scanned from 10 MHz to 10 GHz and all emissions less 20 dB below the limits were recorded. Please refer to exhibit 9C; test data plots C10 to C12 for details.

RF Input/Output Frequency: 895.975 & 896.025 MHz (2 in/out channels) RF Power Output: 30.2 dBm/channel as rated Modulation: FM modulation with 2.5 kHz sine wave signal, frequency deviation = ± 4 kHz
The emissions were scanned from 10 MHz to 10 GHz and no significant signal was found. Please refer to exhibit 9C; test data plots C13 to C15 for details.

RF Input/Output Frequency: 895.975, 896 & 896.025 MHz (3 in/out channels) RF Power Output: 27.8 dBm/channel as rated Modulation: FM modulation with 2.5 kHz sine wave signal, frequency deviation = ± 4 kHz
The emissions were scanned from 10 MHz to 10 GHz and no significant signal was found. Please refer to exhibit 9C; test data plots C16 to C18 for details.

RF Input/Output Frequency: 895.975, 896, 896.025 & 896.05 MHz (4 in/out channels) RF Power Output: 27.0 dBm/channel as rated Modulation: FM modulation with 2.5 kHz sine wave signal, frequency deviation = ± 4 kHz
The emissions were scanned from 10 MHz to 10 GHz and no significant signal was found. Please refer to exhibit 9C; test data plots C19 to C21 for details.

RF Input/Output Frequency: 901.975 & 902.025 MHz (2 in/out channels) RF Power Output: 29.6 dBm/channel as rated Modulation: FM modulation with 2.5 kHz sine wave signal, frequency deviation = ± 4 kHz
The emissions were scanned from 10 MHz to 10 GHz and no significant signal was found. Please refer to exhibit 9C; test data plots C22 to C24 for details.

RF Input/Output Frequency: 901.975, 902 & 902.025 MHz (3 in/out channels) RF Power Output: 27.4 dBm/channel as rated Modulation: FM modulation with 2.5 kHz sine wave signal, frequency deviation = ± 4 kHz
The emissions were scanned from 10 MHz to 10 GHz and no significant signal was found. Please refer to exhibit 9C; test data plots C25 to C27 for details.

RF Input/Output Frequency: 901.975, 902, 902.025 & 902.05 MHz (4 in/out channels) RF Power Output: 27.0 dBm/channel as rated Modulation: FM modulation with 2.5 kHz sine wave signal, frequency deviation = ± 4 kHz
The emissions were scanned from 10 MHz to 10 GHz and no significant signal was found. Please refer to exhibit 9C; test data plots C28 to C30 for details.

935-941 MHz Downlink Band

RF Input/Output Frequency: 935 MHz (single input/output) RF Power Input: 10 dBm (maximum input level) RF Power Output: 39.5 dBm Modulation: FM modulation with 2.5 kHz sine wave signal, frequency deviation = ± 4 kHz
The emissions were scanned from 10 MHz to 10 GHz and no significant signal was found. Please refer to exhibit 9D; test data plots D1 to D3 for details.

RF Input/Output Frequency: 935 MHz (single input/output) RF Power Input: 10 dBm (maximum input level) RF Power Output: 39.5 dBm Modulation: FM modulation with external 9600 bps random data source, frequency deviation = ± 4 kHz
The emissions were scanned from 10 MHz to 10 GHz and no significant signal was found. Please refer to exhibit 9D; test data plots D4 to D6 for details.

RF Input/Output Frequency: 941 MHz (single input/output) RF Power Input: 10 dBm (maximum input level) RF Power Output: 39.4 dBm Modulation: FM modulation with 2.5 kHz sine wave signal, frequency deviation = ± 4 kHz
The emissions were scanned from 10 MHz to 10 GHz and no significant signal was found. Please refer to exhibit 9D; test data plots D7 to D9 for details.

RF Input/Output Frequency: 941 MHz (single input/output) RF Power Input: 10 dBm (maximum input level) RF Power Output: 39.4 dBm Modulation: FM modulation with external 9600 bps random data source, frequency deviation = ± 4 kHz
The emissions were scanned from 10 MHz to 10 GHz and no significant signal was found. Please refer to exhibit 9D; test data plots D10 to D12 for details.

RF Input/Output Frequency: 934.975, 935.025 MHz (2 in/out channels) RF Power Output: 30.2 dBm/channel as rated Modulation: FM modulation with 2.5 kHz sine wave signal, frequency deviation = ± 4 kHz
The emissions were scanned from 10 MHz to 10 GHz and no significant signal was found. Please refer to exhibit 9D; test data plots D13 to D15 for details.

RF Input/Output Frequency: 934.975, 935 & 935.025 MHz (3 in/out channels) RF Power Output: 27.8 dBm/channel as rated Modulation: FM modulation with 2.5 kHz sine wave signal, frequency deviation = ± 4 kHz
The emissions were scanned from 10 MHz to 10 GHz and no significant signal was found. Please refer to exhibit 9D; test data plots D16 to D18 for details.

RF Input/Output Frequency: 934.975, 935, 935.025 &935.05 MHz (4 in/out channels) RF Power Output: 27.1 dBm/channel as rated Modulation: FM modulation with 2.5 kHz sine wave signal, frequency deviation = ± 4 kHz
The emissions were scanned from 10 MHz to 10 GHz and no significant signal was found. Please refer to exhibit 9D; test data plots D19 to D21 for details.

RF Input/Output Frequency: 940.975 & 941.025 MHz (2 in/out channels) RF Power Output: 30.3 dBm/channel as rated Modulation: FM modulation with 2.5 kHz sine wave signal, frequency deviation = ± 4 kHz
The emissions were scanned from 10 MHz to 10 GHz and no significant signal was found. Please refer to exhibit 9D; test data plots D22 to D24 for details.

RF Input/Output Frequency: 940.975, 941 & 941.025 MHz (3 in/out channels) RF Power Output: 27.9 dBm/channel as rated Modulation: FM modulation with 2.5 kHz sine wave signal, frequency deviation = ± 4 kHz
The emissions were scanned from 10 MHz to 10 GHz and no significant signal was found. Please refer to exhibit 9D; test data plots D25 to D27 for details.

RF Input/Output Frequency: 934.975, 935, 935.025 & 935.05 MHz (4 in/out channels) RF Power Output: 27.1 dBm/channel as rated Modulation: FM modulation with 2.5 kHz sine wave signal, frequency deviation = ± 4 kHz
The emissions were scanned from 10 MHz to 10 GHz and no significant signal was found. Please refer to exhibit 9D; test data plots D28 to D30 for details.

6.8. TRANSMITTER SPURIOUS/HARMONIC RADIATED EMISSIONS @ FCC 90.210

6.8.1. Limits @ FCC 90.210

Emissions shall be attenuated below the mean output power of the transmitter as follows:

FCC RULES	WORST CASE EMISSIONS LIMIT	ATTENUATION LIMIT (dBc)
FCC 90.210 (i),(j)	FCC 90.210 (j)	-20 dBm

6.8.2. Method of Measurements

Refer to Exhibit 8, Sec. 8.5 of this report and ANSI C63-4:1992 for radiated emissions test method.

6.8.3. Test Equipment List

Test Instruments	Manufacturer	Model No.	Serial No.	Frequency Range
Spectrum Analyzer/ EMI Receiver	Advantest	R3271	15050203	100 Hz to 32 GHz with external mixer for frequency above 32 GHz
Microwave Amplifier	Hewlett Packard	HP 83017A		1 GHz to 26.5 GHz
Active Loop Antenna	EMCO	6507	8906-1167	1 kHz – 30 MHz
Biconilog Antenna	EMCO	3143	1029	20 MHz to 2 GHz
Horn Antenna	EMCO	3155	9701-5061	1 GHz – 18 GHz
Horn Antenna	EMCO	3160-09	..	18 GHz – 26.5 GHz
Horn Antenna	EMCO	3160-10	..	26.5 GHz – 40 GHz
Mixer	Tektronix	118-0098-00	..	18 GHz – 26.5 GHz
Mixer	Tektronix	119-0098-00	..	26.5 GHz – 40 GHz

6.8.4. Test Arrangement

Please refer to section 3.9 General Test Setup Block Diagram of this report for details.

6.8.5. Test Data

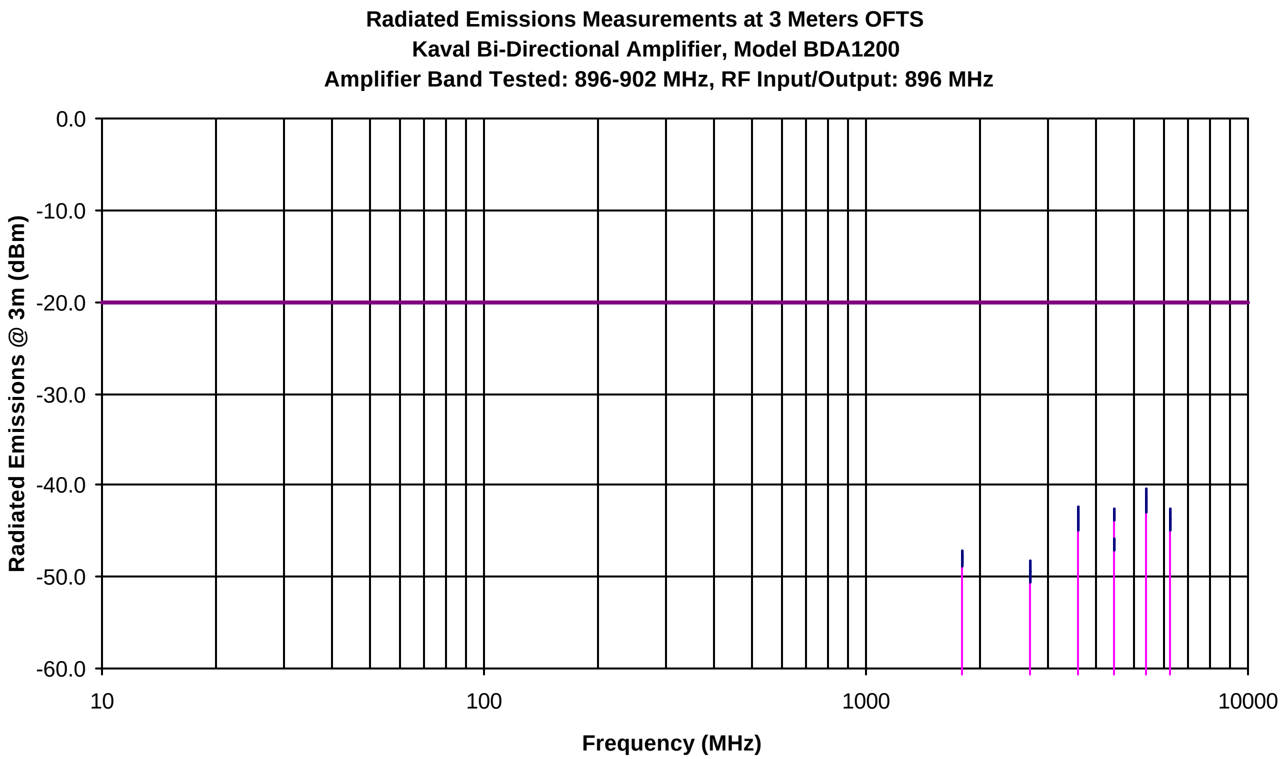
Remarks: According to the transmitter conducted test results, the single channel operations are worst case of spurious/harmonic rf emissions since the transmitter operated at highest rf input/output power. Therefore, the single channel input/output test configuration will be performed in the following tests and the results shall represent the worst case of rf interference.

896-902 MHz Uplink Band

RF Input/Output Frequency: 896 MHz (single input/output)
RF Power Input: 10 dBm (maximum input level)
RF Power Output: 38.8 dBm
Modulation: FM modulation with 2.5 kHz sine wave signal, frequency deviation = ± 4 kHz

Frequency (MHz)	RF Field Level @ 3 Meters (dBµV/m)	RF Power Level (dBm)	Detector Used (Peak/QP)	Antenna Plane (H/V)	Limit (dBm)	Margin (dB)	Pass / Fail
1792	49.30	-48.2	Peak	V	-20.0	-28.2	Pass
1792	49.69	-47.8	Peak	H	-20.0	-27.8	Pass
2688	48.68	-48.8	Peak	V	-20.0	-28.8	Pass
2688	47.52	-50.0	Peak	H	-20.0	-30.0	Pass
3584	53.28	-44.2	Peak	V	-20.0	-24.2	Pass
3584	54.42	-43.1	Peak	H	-20.0	-23.1	Pass
4480	54.25	-43.3	Peak	V	-20.0	-23.3	Pass
4480	51.01	-46.5	Peak	H	-20.0	-26.5	Pass
5376	55.26	-42.2	Peak	V	-20.0	-22.2	Pass
5376	56.50	-41.0	Peak	H	-20.0	-21.0	Pass
6272	54.30	-43.2	Peak	V	-20.0	-23.2	Pass
6272	53.19	-44.3	Peak	H	-20.0	-24.3	Pass

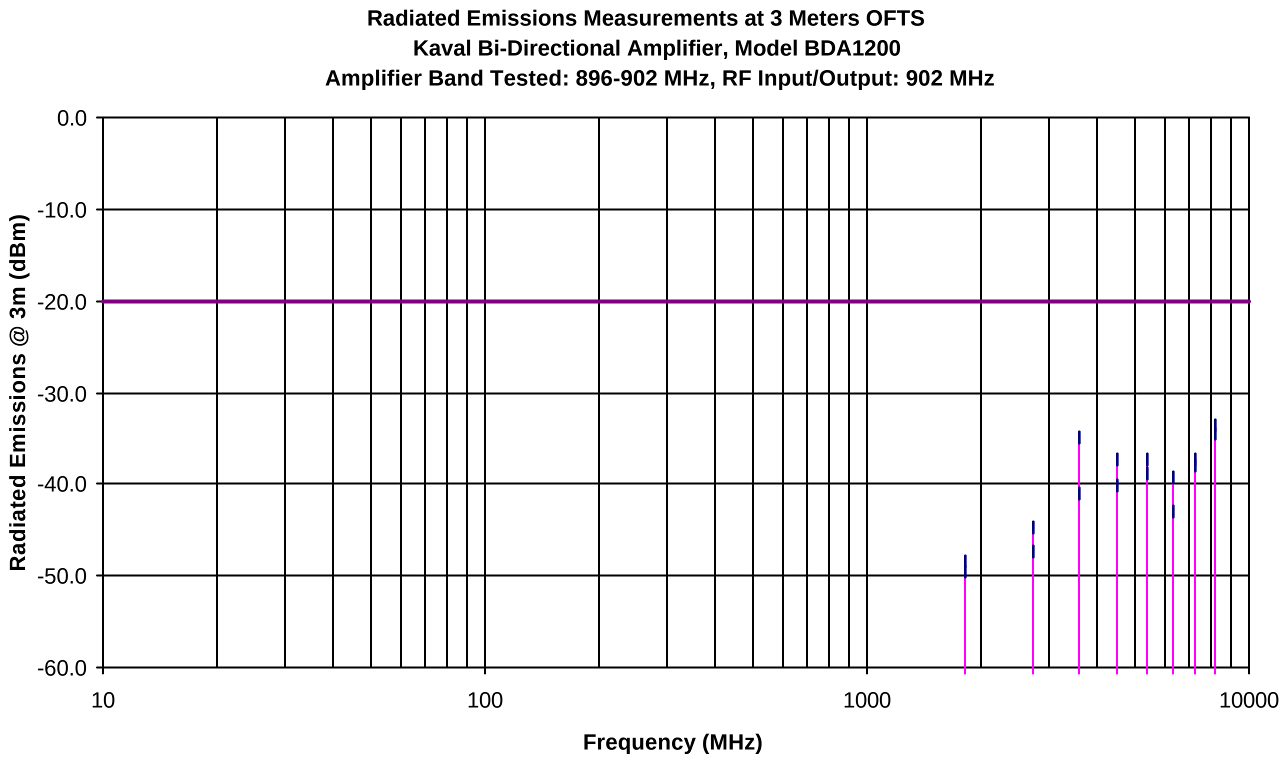
The emissions were scanned from 10 MHz to 10 GHz and all emissions less 40 dB below the limits were recorded.


Radiated Emissions Measurements at 3 Meters OFTS
Kaval Bi-Directional Amplifier, Model BDA1200
Amplifier Band Tested: 896-902 MHz, RF Input/Output: 896 MHz
Radiated Emissions @ 3m (dBm)
0.0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
10
100
1000
10000
Frequency (MHz)

RF Input/Output Frequency: 902 MHz (single input/output)
RF Power Input: 10 dBm (maximum input level)
RF Power Output: 38.8 dBm
Modulation: FM modulation with 2.5 kHz sine wave signal, frequency deviation = ± 4 kHz

Frequency (MHz)	RF Field Level @ 3 Meters (dBµV/m)	RF Power Level (dBm)	Detector Used (Peak/QP)	Antenna Plane (H/V)	Limit (dBm)	Margin (dB)	Pass / Fail
1804	48.96	-48.5	Peak	V	-20.0	-28.5	Pass
1804	47.89	-49.6	Peak	H	-20.0	-29.6	Pass
2706	52.83	-44.7	Peak	V	-20.0	-24.7	Pass
2706	50.26	-47.2	Peak	H	-20.0	-27.2	Pass
3608	62.51	-35.0	Peak	V	-20.0	-15.0	Pass
3608	56.38	-41.1	Peak	H	-20.0	-21.1	Pass
4510	60.18	-37.3	Peak	V	-20.0	-17.3	Pass
4510	57.42	-40.1	Peak	H	-20.0	-20.1	Pass
5412	60.22	-37.3	Peak	V	-20.0	-17.3	Pass
5412	58.69	-38.8	Peak	H	-20.0	-18.8	Pass
6314	58.23	-39.3	Peak	V	-20.0	-19.3	Pass
6314	54.51	-43.0	Peak	H	-20.0	-23.0	Pass
7216	59.63	-37.9	Peak	V	-20.0	-17.9	Pass
7216	60.20	-37.3	Peak	H	-20.0	-17.3	Pass
8118	63.92	-33.6	Peak	V	-20.0	-13.6	Pass
8118	63.05	-34.5	Peak	H	-20.0	-14.5	Pass

The emissions were scanned from 10 MHz to 10 GHz and all emissions less 40 dB below the limits were recorded.

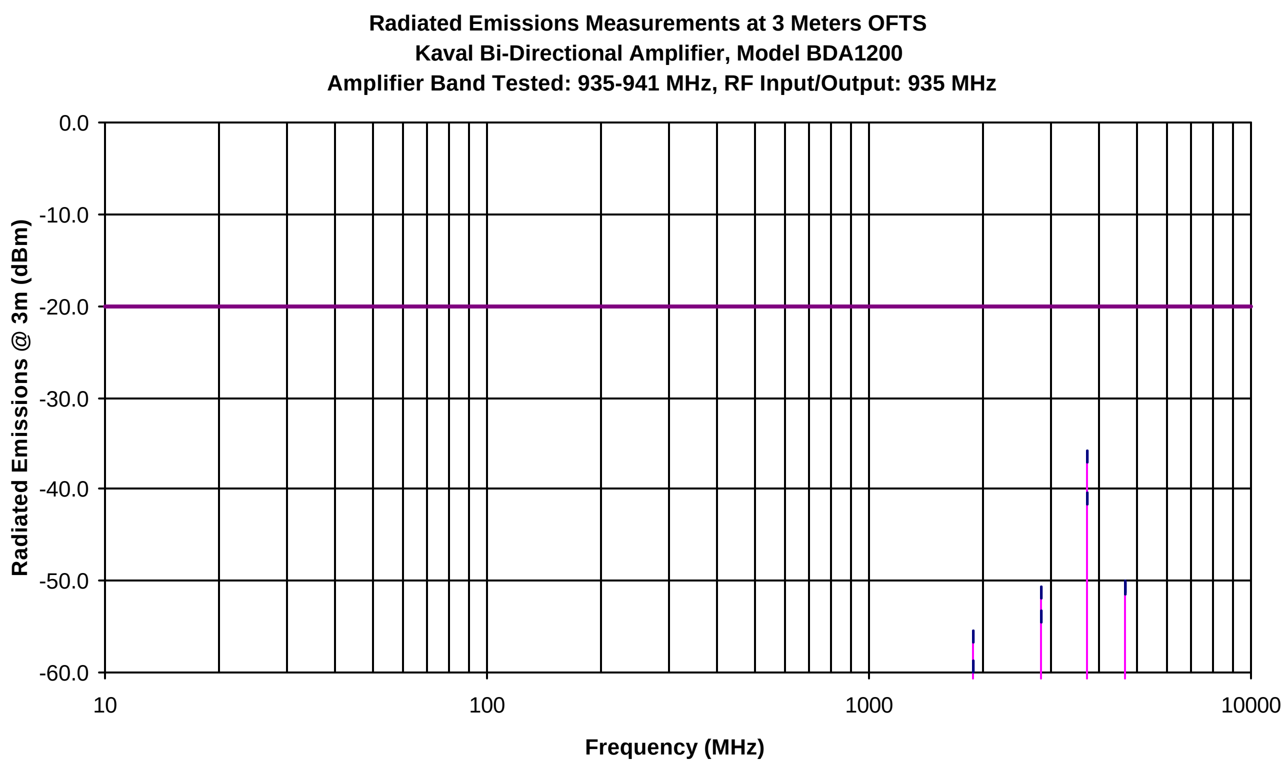

Radiated Emissions Measurements at 3 Meters OFTS
Kaval Bi-Directional Amplifier, Model BDA1200
Amplifier Band Tested: 896-902 MHz, RF Input/Output: 902 MHz
Radiated Emissions @ 3m (dBm)
0.0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
10
100
1000
10000
Frequency (MHz)

935-941 MHz Downlink Band

RF Input/Output Frequency: 935 MHz (single input/output)
RF Power Input: 10 dBm (maximum input level)
RF Power Output: 39.5 dBm
Modulation: FM modulation with 2.5 kHz sine wave signal, frequency deviation = ± 4 kHz

Frequency (MHz)	RF Field Level @ 3 Meters (dBµV/m)	RF Power Level (dBm)	Detector Used (Peak/QP)	Antenna Plane (H/V)	Limit (dBm)	Margin (dB)	Pass / Fail
1870	41.45	-56.1	Peak	V	-20.0	-36.1	Pass
1870	38.18	-59.3	Peak	H	-20.0	-39.3	Pass
2805	46.21	-51.3	Peak	V	-20.0	-31.3	Pass
2805	43.62	-53.9	Peak	H	-20.0	-33.9	Pass
3740	61.03	-36.5	Peak	V	-20.0	-16.5	Pass
3740	56.59	-40.9	Peak	H	-20.0	-20.9	Pass
4675	46.78	-50.7	Peak	V	-20.0	-30.7	Pass
4675	46.69	-50.8	Peak	H	-20.0	-30.8	Pass

The emissions were scanned from 10 MHz to 10 GHz and all emissions less 40 dB below the limits were recorded.



RF Input/Output Frequency: 941 MHz (single input/output)
RF Power Input: 10 dBm (maximum input level)
RF Power Output: 39.4 dBm
Modulation: FM modulation with 2.5 kHz sine wave signal, frequency deviation = ± 4 kHz

Frequency (MHz)	RF Field Level @ 3 Meters (dBµV/m)	RF Power Level (dBm)	Detector Used (Peak/QP)	Antenna Plane (H/V)	Limit (dBm)	Margin (dB)	Pass / Fail
1870	44.24	-53.3	Peak	V	-20.0	-33.3	Pass
1870	41.36	-56.1	Peak	H	-20.0	-36.1	Pass
2805	44.94	-52.6	Peak	V	-20.0	-32.6	Pass
2805	42.47	-55.0	Peak	H	-20.0	-35.0	Pass
3740	61.75	-35.8	Peak	V	-20.0	-15.8	Pass
3740	57.15	-40.4	Peak	H	-20.0	-20.4	Pass
4675	47.56	-49.9	Peak	V	-20.0	-29.9	Pass
4675	47.44	-50.1	Peak	H	-20.0	-30.1	Pass

The emissions were scanned from 10 MHz to 10 GHz and all emissions less 40 dB below the limits were recorded.

Radiated Emissions Measurements at 3 Meters OFTS
Kaval Bi-Directional Amplifier, Model BDA1200
Amplifier Band Tested: 935-941 MHz, RF Input/Output: 941 MHz

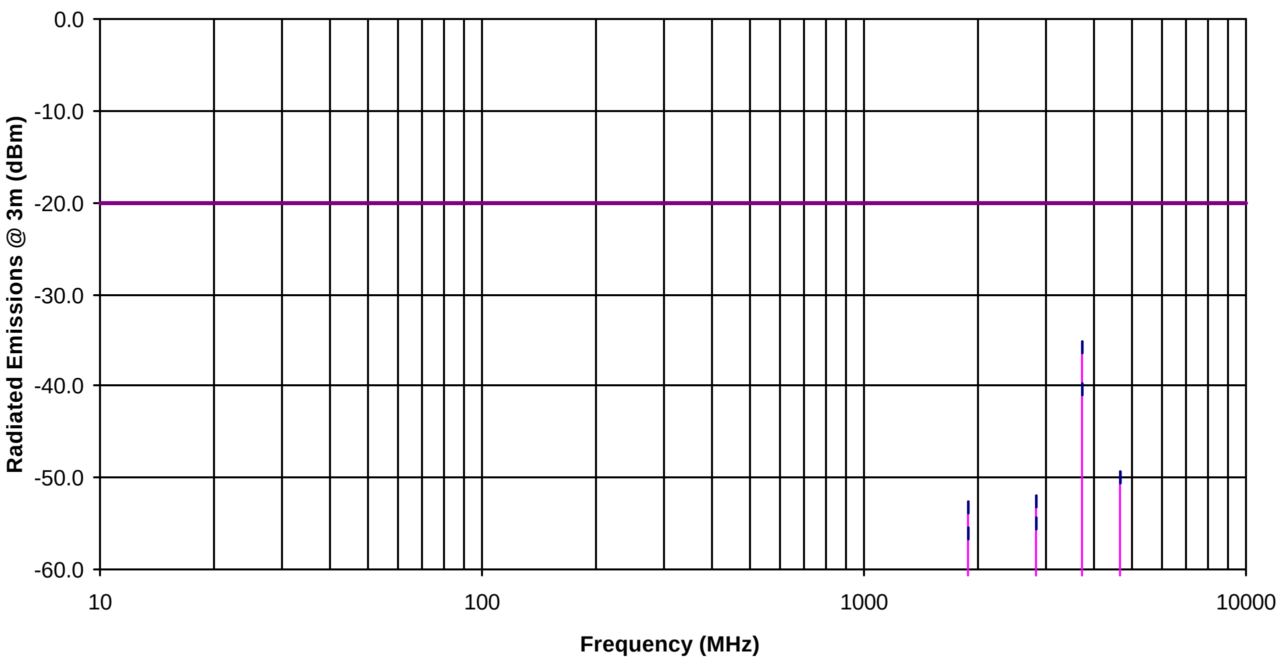


EXHIBIT 7. MEASUREMENT UNCERTAINTY

The measurement uncertainties stated were calculated in accordance with the requirements of NIST Technical Note 1297 and NIS 81 (1994)

7.1. RADIATED EMISSION MEASUREMENT UNCERTAINTY

CONTRIBUTION (Radiated Emissions)	PROBABILITY DISTRIBUTION	UNCERTAINTY (± dB)	
		3 m	10 m
Antenna Factor Calibration	Normal (k=2)	±1.0	±1.0
Cable Loss Calibration	Normal (k=2)	±0.3	±0.5
EMI Receiver specification	Rectangular	±1.5	±1.5
Antenna Directivit	Rectangular	+0.5	+0.5
Antenna factor variation with height	Rectangular	±2.0	±0.5
Antenna phase center variation	Rectangular	0.0	±0.2
Antenna factor frequency interpolation	Rectangular	±0.25	±0.25
Measurement distance variation	Rectangular	±0.6	±0.4
Site imperfections	Rectangular	±2.0	±2.0
Mismatch: Receiver VRC $\Gamma_1 = 0.2$ Antenna VRC $\Gamma_R = 0.67$(Bi) 0.3 (Lp) Uncertainty limits $20\text{Log}(1 \pm \Gamma_1 \Gamma_R)$	U-Shaped	+1.1 -1.25	±0.5
System repeatability	Std. Deviation	±0.5	±0.5
Repeatability of EUT		-	-
Combined standard uncertainty	Normal	+2.19 / -2.21	+1.74 / -1.72
Expanded uncertainty U	Normal (k=2)	+4.38 / -4.42	+3.48 / -3.44

Calculation for maximum uncertainty when 3m biconical antenna including a factor of k=2 is used:

$U = 2u_c(y) = 2x(+2.19) = +4.38$ dB And $U = 2u_c(y) = 2x(-2.21) = -4.42$ dB

EXHIBIT 8. MEASUREMENT METHODS

8.1. EFFECTIVE RADIATED POWER (ERP) MEASUREMENTS

- The following shall be applied to the combination(s) of the radio device and its intended antenna(e).
- I f the RF level is user adjustable, all measurements shall be made with the highest power level available to the user for that combination.
- The following method of measurement shall apply to both conducted and radiated measurements.
- The radiated measurements are performed at the Ultratech Calibrated Open Field Test Site.
- The measurement shall be performed using normal operation of the equipment with modulation.

Test procedure shall be as follows:

Step 1: Duty Cycle measurements

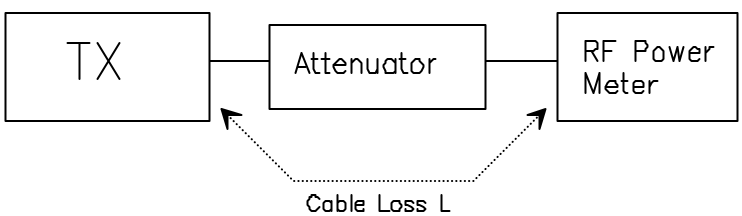
- Using a spectrum analyzer with the frequency span set to 0 Hz and the sweep time set at a suitable value to capture the envelope peaks and the duty cycle of the transmitter output signal;
- The duty cycle of the transmitter, x = Tx on / (Tx on + Tx off) with $0<x<1$, is measure and recorded in the test report. For the purpose of testing, the equipment shall be operated with a duty cycle that is equal or more than 0.1.

Step 2: Calculation of Average EIRP. See Figure 1

- The average output power of the transmitter shall be determined using a wideband, calibrated RF power meter with the power sensor with an integration period that exceeds the repetition period of the transmitter by a factor 5 or more. The observed value shall be recorded as “A” (in dBm);
- The e.i.r.p. shall be calculated from the above measured power output “A”, the observed duty cycle x, and the applicable antenna assembly gain “G” in dBi, according to the formula:

EIRP = A + G + 10log(1/x)

Figure 1.



Step 3: Substitution Method. See Figure 2

(a) The measurements was performed in the absence of modulation (un-modulated)
(b) Test was performed at listed 3m open area test site (listed with FCC, IC, ITI, NVLAP, ACA & VCCI).
(c) The transmitter under test was placed at the specified height on a non-conducting turntable (80 cm height)
(d) The dipole test antenna was used and tuned to the transmitter carrier frequency.
(e) The spectrum analyzer was tuned to transmitter carrier frequency. The test antenna was lowered or raised from 1 to 4 meters until the maximum signal level was detected.
(f) The transmitter was rotated through 360^{o} about a vertical axis until a higher maximum signal was received.
(g) The test antenna was lowered or raised again from 1 to 4 meters until a maximum was obtained. This level was recorded.
(h) The substitution dipole antenna and the signal generator replaced the transmitter and antenna under test in the same position, and the substitution dipole antenna was placed in vertical polarization. The test dipole antenna was lowered or raised as necessary to ensure that the maximum signal is stilled received.

(i) The input signal to the substitution antenna was adjusted in level until an equal or a known related level to that detected from the transmitter was obtained in the test receiver. The maximum carrier radiated power is equal to the power supply by the generator.
(j) The substitution antenna gain and cable loss were added to the signal generator level for the corrected ERP level.
(k) Repeat steps (c) to (j) with the substitution antenna oriented in horizontal polarization.
(l) Actual gain of the EUT's antenna is the difference of the measured ERP and measured RF power at the RF port. Correct the antenna gain if necessary.

Figure 2

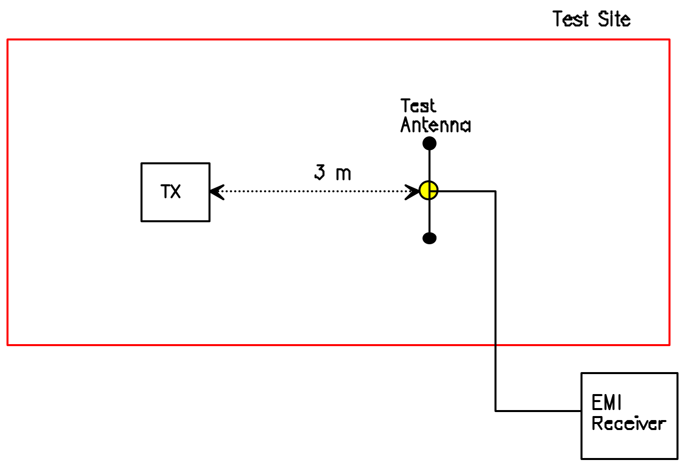
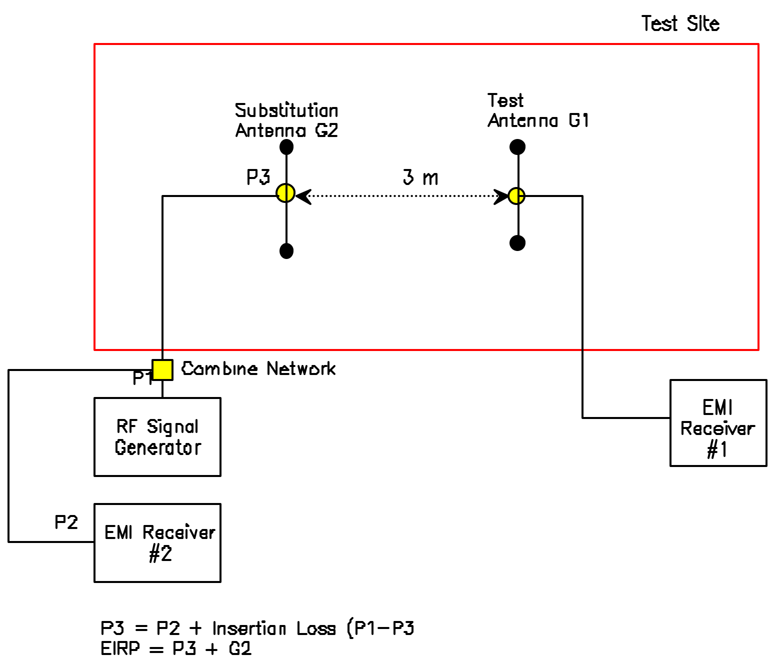


Figure 3



8.2. FREQUENCY STABILITY

Refer to FCC @ 2.995.

(a) The frequency stability shall be measured with variation of ambient temperature as follows: From -30 to +50 centigrade except that specified in subparagraph (2) & (3) of this paragraph.

(b) Frequency measurements shall be made at extremes of the specified temperature range and at intervals of not more than 10 centigrade through the range. A period of time sufficient to stabilize all of the components of the oscillator circuit at each temperature level shall be allowed prior to frequency measurement. The short term transient effects on the frequency of the transmitter due to keying (except for broadcast transmitters) and any heating element cycling normally occurring at each ambient temperature level also shall be shown. Only the portion or portions of the transmitter containing the frequency determining and stability circuitry need be subjected to the temperature variation test.

(d) The frequency stability supply shall be measured with variation of primary supply voltage as follows:

(1) Vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment.

(2) For hand carried, battery powered equipment, reduce primary supply voltage to the battery operating end point which shall be specified by the manufacturer.

(3) The supply voltage shall be measured at the input to the cable normally provide with the equipment, or at the power supply terminals if cables are not normally provided. Effects on frequency of transmitter keying (except for broadcast transmitters) and any heating element cycling at the nominal supply voltage and at each extreme also shall be shown.

(e) When deemed necessary, the Commission may require tests of frequency stability under conditions in addition to those specifically set out in paragraphs (a), (b), (c) and (d) of this section. (For example, measurements showing the effect of proximity to large metal objects, or of various types of antennas, may be required for portable equipment).

8.3. EMISSION MASK

Voice or Digital Modulation Through a Voice Input Port @ 2.989(c)(i):- The transmitter was modulated by a 2.5 KHz tone signal at an input level 16 dB greater than that required to produce 50% modulation (e.g.: ±2.5 KHz peak deviation at 1 KHz modulating frequency). The input level was established at the frequency of maximum response of the audio modulating circuit.

Digital Modulation Through a Data Input Port @ 2.989(h):- Transmitters employing digital modulation techniques - when modulated by an input signal such that its amplitude and symbol rate represent the maximum rated conditions under which the equipment will be operated. The signal shall be applied through any filter networks, pseudo-random generators or other devices required in normal service. Additionally, the Emission Masks shall be shown for operation with any devices used for modifying the spectrum when such devices are operational at the discretion of the user.

The following spectrum analyzer bandwidth shall be used for measurement of Emission Mask/Out-of-Band Emission Measurements:

(1) For 25 kHz Channel Spacing: RBW = 300 Hz
(2) For 12.5 kHz or 6.25 kHz Channel Spacings: RBW = 100 Hz

The all cases the Video Bandwidth shall be equal or greater than the measuring bandwidth.

8.4. SPURIOUS EMISSIONS (CONDUCTED)

With transmitter modulation characteristics described in Out-of-Band Emissions measurements @ 2.989, the transmitter spurious and harmonic emissions were scanned. The spurious and harmonic emissions were measured with the Spectrum Analyzer controls set as RBW = 30 kHz minimum , VBW ≥ RBW and SWEEP TIME = AUTO). The transmitter was operated at a full rated power output, and modulated as follows:

FCC CFR 47, Para. 2.997 - Frequency spectrum to be investigated:- The spectrum was investigated from the lowest radio generated in the equipment up to at least the 10^{th} harmonic of the carrier frequency or to the highest frequency practicable in the present state of the art of measuring techniques, whichever is lower. Particular attention should be paid to harmonics and subharmonics of the carrier frequency. Radiation at the frequencies of multiplier stages should be checked. The amplitude of spurious emissions which are attenuated more than 20 dB below the permissible value need not be reported.

FCC CFR 47, Para. 2.991 - Spurious Emissions at Antenna Terminal:- The radio frequency voltage or powers generated within the equipment and appearing on a spurious frequency shall be checked at the equipment output terminals when properly loaded with a suitable artificial antenna. Curves or equivalent data shall show the magnitude of the harmonic and other spurious emission that can be detected when the equipment is operated under the conditions specified in 2.989 as appropriate. The magnitude of spurious emissions which are attenuated more than 20 dB below the permissible value need not be specified.

8.5. SPURIOUS EMISSIONS (RADIATED)

With transmitter modulation characteristics described in Out-of-Band Emissions measurements @ 2.989, the transmitter spurious and harmonic emissions were scanned. The spurious and harmonic emissions were measured with the Spectrum Analyzer controls set as RBW = 100 kHz minimum , VBW $\geq$ RBW and SWEEP TIME = AUTO). The transmitter was operated at a full rated power output, and modulated as follows:

FCC CFR 47, Para. 2.997 - Frequency spectrum to be investigated:- The spectrum was investigated from the lowest radio generated in the equipment up to at least the 10^{th} harmonic of the carrier frequency or to the highest frequency practicable in the present state of the art of measuring techniques, whichever is lower. Particular attention should be paid to harmonics and subharmonics of the carrier frequency. Radiation at the frequencies of multiplier stages should be checked. The amplitude of spurious emissions which are attenuated more than 20 dB below the permissible value need not be reported.

FCC CFR 47, Para. 2.993 - Field Strength Spurious Emissions

(a) Measurements was made to detect spurious emissions radiated directly from the cabinet, control circuits, power leads, or intermediate circuit elements under normal conditions of installation and operation. Curves or equivalent data were supplied showing the magnitude of each harmonic and other spurious emission. For this test, single sideband, independent sideband, and controlled carrier transmitters shall be modulated under the conditions specified in paragraph 2.989(c) as appropriate. For equipment operating on frequencies below 1 GHz , an Open Field Test is normally required, with the measuring instrument antenna located in the far field at all test frequencies. In event it is either impractical or impossible to make open field measurements (e.g. a broadcast transmitter installed in a building) measurement will be accepted of the equipment as installed. Such measurements must be accompanied by a description of the site where the measurements were made showing the location of any possible source of reflections which might distort the field strength measurements. Information submitted shall include the relative radiated power of each spurious emission with the reference to the rated power output of the transmitter, assuming all emissions are radiated from half-wave dipole antennas.

(b) Measurements specified in paragraph (a) of this section shall be made for the following equipment:

(1) Those in which the spurious emission are required to be 60 dB or more below the mean power of the transmitter.
(2) All equipment operating on frequencies higher than 25 MHz
(3) All equipment where the antenna is an integral part of, and attached directly to the transmitter.
(4) Other types of equipment as required, when deemed necessary by the Commission.

<u>Maximizing RF Emission Level</u>:

(a) The measurements was performed with standard modulation
(b) Test was performed at listed 3m open area test site (listed with FCC, IC, ITI, NVLAP, ACA & VCCI).
(c) The transmitter under test was placed at the specified height on a non-conducting turntable (80 cm height)
(d) The biconilog Antenna (20 MHz to 1 GHz) or Horn Antenna (1 GHz to 18 GHz) was used for measuring.
(e) The spectrum analyzer was tuned to transmitter carrier frequency. The test antenna was lowered or raised from 1 to 4 meters until the maximum signal level was detected.
(f) The transmitter was rotated through 360^o about a vertical axis until a higher maximum signal was received.
(g) The test antenna was lowered or raised again from 1 to 4 meters until a maximum was obtained. This level was recorded.
(h) The recorded reading was corrected to the true field strength level by adding the antenna factor, cable loss and subtracting the pre-amplifier gain.
(i) The field strength level measured at 3m is converted to the power in dBm by subtracting a constant factor of 97.5 dB

METHOD OF CALCULATION FOR TRANSMITTED POWER (P) FROM THE MEASURED FIELD STRENGTH LEVEL (E):

According to IEC 801-3, the power density can be calculated as follows:

$S = P / (4xPIxD^2)$ Where: S: Power density in watts per square feet
P: Transmitted power in watts
PI: 13.1415
D: Distance in meters

The power density S (W/m^2) and electric field E (V/m) is related by:

$S = E^2/(120xPI)$

Accordingly, the field intensity of isotropic radiator in free space can be expressed as follows:

$E = (30xP)^{1/2}/D = 5.5x(P)^{1/2}/D$

For Halfwave dipole antenna or other antennas correlated to dipole in direction of maximum radiation:

$S = (1.64xP)/(4xPIxD^2)$
$E = (49.2xP)^{1/2}xD = 7.01x(P)^{1/2}/D$

$$P = (ExD/7.01)^2$$

Calculation of transmitted power P (dBM) given a measured field intensity E (dBuV/m):

$P(W) = [E(V/m)xD/7.01]^2$
$P(mW) = P(W)x1000$
=> $P(dBm) = 10logP(mW)$
$= 20logE(V/m) + 20log(D) - 20log(7.01) + 10log1000$
$= E(dBV/m) + 20logD + 13$
$= E(dBuV/m) - 120 + 20log(D) + 13$
$= E(dBuV/m) + 20log(D) - 107$

The Transmitted Power @ D = 3 Meters

P(dBm) = E(dBuV/m) - 97.5

EXHIBIT 9. TEST DATA PLOTS

Exhibit 9 contained the following subparts:

- Exhibit 9A - Amplifier Gain Frequency Response Characteristics (Plots A1 to A24)
- Exhibit 9B - Emission Mask I and J (Plots B1 to B16)
- Exhibit 9C - Transmitter Antenna Power Spurious/Harmonic Conducted Emissions; 896-902 MHz Uplink Band (Plots C1 to C30)
- Exhibit 9D - Transmitter Antenna Power Spurious/Harmonic Conducted Emissions; 935-941 MHz Downlink Band (Plots D1 to D30)

EXHIBIT 10. TEST SETUP PHOTOS

EXHIBIT 11. EXTERNAL EUT PHOTOS

Please refer to the original submission.

EXHIBIT 12. INTERNAL EUT PHOTOS

Please refer to the original submission.

EXHIBIT 13. COVER LETTERS

EXHIBIT 14. ATTESTATION STATEMENTS

None.

EXHIBIT 15. APPLICATION FORMS

EXHIBIT 16. ID LABEL/LOCATION INFO

Please refer to the original submission.

EXHIBIT 17. BLOCK DIAGRAM

Please refer to the original submission.

EXHIBIT 18. SCHEMATIC DIAGRAMS

Please refer to the original submission.

EXHIBIT 19. PARTS LIST/TUNE UP INFO

None.

EXHIBIT 20. RF EXPOSURE INFO

Please refer to the original submission.

EXHIBIT 21. USER'S MANUAL

Please refer to the original submission.