UltraTech
Group of Labs

Nov. 05, 2001

KAVAL WIRELESS TECHNOLOGIES INC.
60 Gough Road
Markham, Ontario
Canada, L3R 8X7

Attn.: **Mr. Alan Aslett**

Subject: **Certification Testing in accordance with FCC CFR 47, Parts 2 and 90 (Subpart I) - Non-Broadcast Radio Transceivers Operating in the frequency bands 896-901 MHz and 935-940 MHz (12.5 kHz Channel Spacing).**

Product: **LinkNet LNKF800 RF REPEATER Module (896-901 MHz/935-940 MHz Bi-Directional Repeater)**
Model: **LNKF800**

Dear Mr. Aslett,

The product sample has been tested in accordance with **FCC CFR 47, Parts 2 and 90 (Subpart I) - Non-Broadcast Radio Transceivers Operating in the frequency bands 896-901 MHz and 935-940 MHz (12.5 kHz Channel Spacing),** and the results and observation were recorded in the engineering report, Our File No.: KTI-021FCC90

Enclosed you will find copy of the engineering report. If you have any queries, please do not hesitate to contact us.

Yours truly,

Tri Minh Luu, P.Eng
Vice President - Engineering

Encl.

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ENGINEERING TEST REPORT

LinkNet LNKF800 RF MODULE

(896-901 MHz/935-940 MHz BI-DIRECTIONAL REPEATER)

Model No.: LNKF800

FCC ID: H6M-LNKF800

Applicant: **KAVAL WIRELESS TECHNOLOGIES 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-021FCC90

This Test report is Issued under the Authority of
Tri M. Luu, Professional Engineer,
Vice President of Engineering
UltraTech Group of Labs

Date: Nov. 07, 2001

Report Prepared by: Tri M. Luu	Tested by: Mr. Hung Trinh, EMI/RFI Technician
Issued Date: Nov. 05, 2001	Test Dates: Oct. 29 - Nov. 03, 2001

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

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EXHIBIT 1. SUBMITTAL CHECK LIST

Annex No.	Exhibit Type	Description of Contents	Quality Check (OK)
--	Test Report	• Exhibit 1: Submittal check lists • Exhibit 2: Introduction • Exhibit 3: Performance Assessment • Exhibit 4: EUT Operation and Configuration during Tests • Exhibit 5: Summary of test Results • Exhibit 6: Measurement Data • Exhibit 7: Measurement Uncertainty • Exhibit 8: Measurement Methods	
1	Test Report - Plots of Measurement Data	Plots # 1 to 40	
2	Test Setup Photos	Photos # 1 to 2	
3	External Photos of EUT	Photos # 1 to 3	
4	Internal Photos of EUT	Photos of 1 to 14	
5	Cover Letters	• Letter from Ultratech for Certification Request	OK
6	Attestation Statements	• Letter from the Applicant to appoint Ultratech to act as an agent • Letter from the Applicant to request for Confidentiality Filing	OK OK
7	ID Label/Location Info	ID Label Location of ID Label	OK OK
8	Block Diagrams	Block diagrams # 1 of 1	OK
9	Schematic Diagrams	Schematic diagrams # 1 to 6	OK
10	Parts List/Tune Up Info		OK
11	Operational Description		OK
12	RF Exposure Info		OK
13	Users Manual		OK

EXHIBIT 2. INTRODUCTION

2.1. SCOPE

Reference:	FCC Parts 2 and 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 896-901 MHz and 935-940 MHz (12.5 kHz Channel Spacing).
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. RELATED SUBMITAL(S)/GRANT(S)

None

2.3. NORMATIVE REFERENCES

Publication	Year	Title
FCC CFR Parts 0-19, 80-End	1999	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 WIRELESS TECHNOLOGIES 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: asslett@kaval.com

MANUFACTURER	
Name:	KAVAL WIRELESS TECHNOLOGIES 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: asslett@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 WIRELESS TECHNOLOGIES INC.
Product Name:	LinkNet LNKF800 RF REPEATER Module (896-901 MHz/935-940 MHz Bi-Directional Repeater)
Model Name or Number:	LNKF800
Serial Number:	Pre-porduction
Type of Equipment:	Non-broadcast Radio Communication Equipment
External Power Supply:	None
Transmitting/Receiving Antenna Type:	Non-integral

THEORY OF OPERATION:

A LinkNet FM Module is a radio repeater that simultaneously receives and transmits a single narrow radio channel on exactly the same frequency.

The LinkNet FM Module accomplishes its repeater function without store and forward circuitry, or expensive conventional simulcasting techniques. The fact is the same frequency is retransmitted by the LinkNet RF Module means that additional frequency allocations are required in situations where an existing radio coverage pattern needs to be extended. The most common LinkNet FM Module applications are the extension of above ground signals into buildings, tunnels, vehicles or the extension of radio coverage patterns into outdoors shaded areas such as deep valley.

From an applications standpoint, the LinkNet FM Module is very similar to a regular two-way radio repeater. LinkNet FM Modules can be combined using regular two-way multicoupling or duplexing equipment and have input and output signal characteristics to those of regular transmitters and receivers. The one special consideration in LinkNet FM Module systems is that of input to output antenna isolation. This must be carefully engineered for each installation.

LinkNet FM Modules are designed for inddor use only and are intended for mounting in a standard EIA 19" Rack. The modular design of LinkNet FM Module circuitry allows for easy servicing, stocking of spares, adaptability and upgrade ability.

3.3. EUT'S TECHNICAL SPECIFICATIONS

TRANSMITTER	
Equipment Type:	[x] Mobile [x] Base station (fixed use)
Intended Operating Environment:	[x] Commercial [x] Light Industry & Heavy Industry
Power Supply Requirement:	120V 60Hz
RF Output Power Rating:	5 Watts
Operating Frequency Range:	896-901 MHz and 935-940 MHz
RF Output Impedance:	50 Ohms
Channel Spacing:	12.5 kHz
Occupied Bandwidth (99%):	9.1 kHz for both voice and data
Emission Designation*:	11K0F3E and 14K6F1D
Antenna Connector Type:	SMA
Antenna Description:	Not provided by manufacturer

* For an average case of commercial telephony, the Necessary Bandwidth is calculated as follows:

1. For FM Voice Modulation:
   Channel Spacing = 12.5 KHz, D = 2.5 KHz max, K = 1, M = 3 KHz
   B_n = 2M + 2DK = 2(3) + 2(2.5)(1) = **11 KHz**
   emission designation: 11K0F3E

2. For FM Digital Modulation:
   M = 9.6/2 kb/s
   B_n = 2M + 2DK = 2(9.6/2) + 2(2.5)(1) = **14.6 KHz**
   emission designation: 14K6F1D

RECEIVER	
Equipment Type:	[x] Mobile [x] Base station (fixed use)
Intended Operating Environment:	[x] Commercial [x] Light Industry & Heavy Industry
Power Supply Requirement:	120V 60Hz
RF Input Power Rating:	-110 dBm (minimum) to -30 dBm (max)
Operating Frequency Range:	896-901 MHz and 935-940 MHz
RF Input Impedance:	50 Ohms
Channel Spacing:	12.5 kHz
Antenna Connector Type:	SMA
Antenna Description:	Not provided by manufacturer

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	RS-232 Communication Port	1	DB9 (on the back of the card cage)	shielded
2	RF Input/Output Ports	2	SMA (on the back of the card cage)	Shielded

NOTES:

(1) ***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.*

(2) ***Ports, which are not connected to cables during normal intended operation*** *(for factory/technical services uses only): None.*

3.5. ANCILLARY EQUIPMENT

The EUT was tested while connected to the following representative configuration of ancillary equipment necessary to exercise the ports during tests:

Ancillary Equipment # 1	
Description:	Laptop Computer
Brand name:	IBM
Model Name or Number:	2625
Serial Number:	34591
Cable Length & Type:	Shielded
Connected to EUT's Port:	RS232 port

3.6. DRAWING OF TEST SETUP

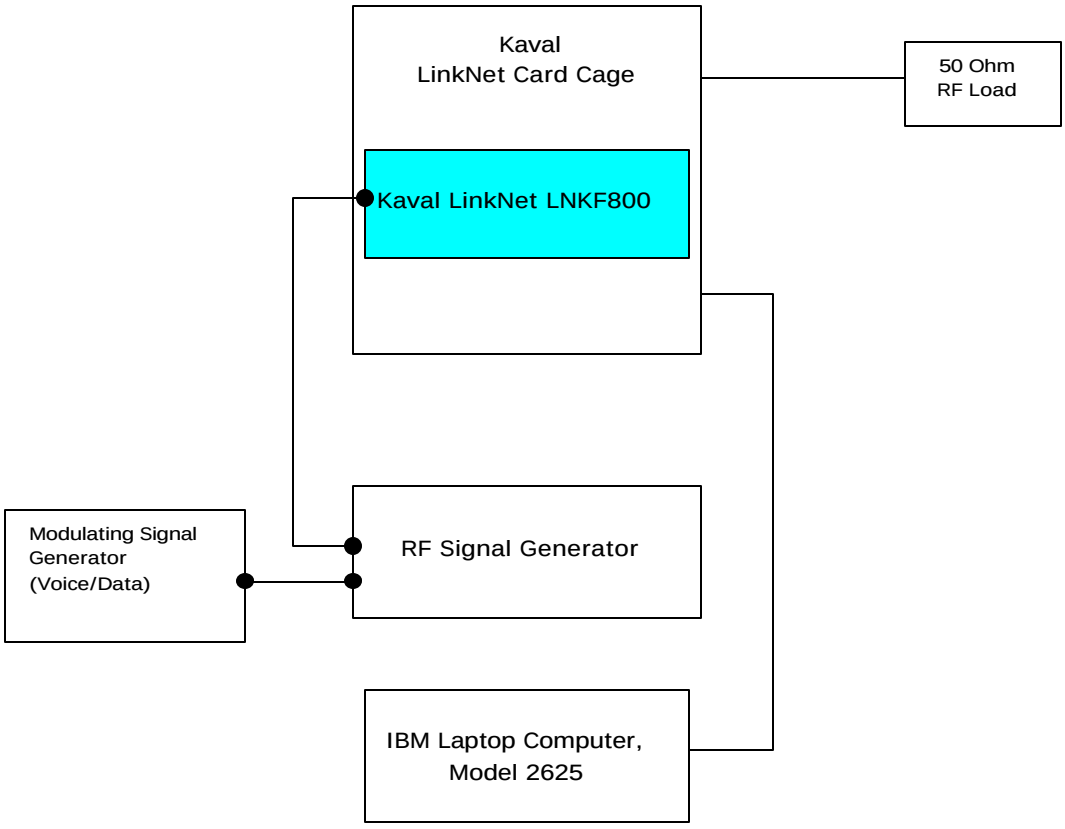


EXHIBIT 4. EUT OPERATING CONDITIONS AND CONFIGURATIONS DURING TESTS

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:	Software provided by the manufacturer for selecting the channel frequency.
Special Hardware Used:	None
Transmitter Test Antenna:	The EUT is tested with the transmitter antenna port terminated to a 50 Ohms RF Load.

Transmitter Test Signals	
Frequency Band(s): ▪ 896 - 901 MHz band: ▪ 935 - 940 MHz band:	Near lowest, near middle & near highest frequencies in each frequency bands that the transmitter covers: ▪ 896.0125 & 900.9875 MHz ▪ 935.0125 & 939.9825 MHz
Transmitter Wanted Output Test Signals: ▪ Maximum RF Input applied to the Rx input port: ▪ RF Power Output (measured maximum output power): ▪ Normal Test Modulation ▪ Modulating signal source:	 ▪ -30 dBm ▪ 37 dBm (or 5 Watts) ▪ FM with voice and random data @ 9600 b/s ▪ 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: Aug. 08, 2001.

5.2. APPLICABILITY & SUMMARY OF EMISSION TEST RESULTS

FCC PARAGRAPH.	TEST REQUIREMENTS	APPLICABILITY (YES/NO)
90.205 & 2.1046	RF Power Output	Yes
1.1307, 1.1310, 2.1091 & 2.1093	RF Exposure Limit	Yes
90.213 & 2.1055	Frequency Stability	Yes
90.242(b)(8) & 2.1047(a)	Audio Frequency Response	Not applicable for repeater or amplifier & there is no voice/data input/output port
90.210 & 2.1047(b)	Modulation Limiting	Not applicable for repeater or amplifier & there is no voice/data input/output port
90.210 & 2.1049	Emission Limitation (Emission Mask) or 99% OBW	Yes
90.210, 2.1057 & 2.1051	Emission Limits - Spurious Emissions at Antenna Terminal	Yes
90.210, 2.1057 & 2.1053	Emission Limits - Field Strength of Spurious Emissions	Yes
LinkNet LNKF800 RF REPEATER Module (896-901 MHz/935-940 MHz Bi-Directional Repeater), **Model No.: LNKF800**, by **KAVAL WIRELESS TECHNOLOGIES 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.		

5.3. MODIFICATIONS INCORPORATED IN THE EUT FOR COMPLIANCE PURPOSES

None

5.4. DEVIATION OF STANDARD TEST PROCEDURES

None

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 MANUFACTURER:

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

6.5. RF POWER OUTPUT @ FCC 2.1046 & 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

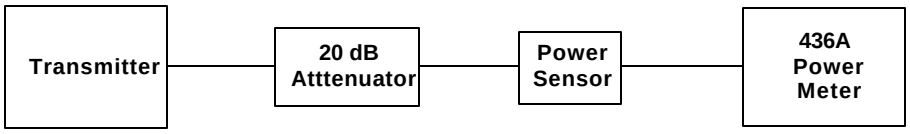
Refer to Exhibit 8, § 8.1 (Conducted) and 8.2 (Radiated) of this report for measurement details

6.5.3. Test Equipment List

Test Instruments	Manufacturer	Model No.	Serial No.	Frequency Range
Spectrum Analyzer/ EMI Receiver	Hewlett Packard	HP 8546A	…	9 kHz to 5.6 GHz with built-in 30 dB Gain Pre-selector, QP, Average & Peak Detectors.
Attenuator(s)	Bird	…	…	DC – 22 GHz
Spectrum Analyzer/ EMI Receiver	Advantest	R3271	15050203	100 Hz – 26.5 GHz
Attenuator(s)	Weinschel Corp	24-20-34	BJ2357	DC – 8.5 GHz
Dipole Antenna	EMCO	3121C	8907-440	30 MHz – 1 GHz
Dipole Antenna	EMCO	3121C	8907-434	30 MHz – 1 GHz
Power Meter	Hewlett Packard	436A	1725A02249	10 kHz – 50 GHz, sensor dependent
Power Sensor	Hewlett Packard	8481A	2702A68983	10 MHz – 18 GHz
Synthesize Sweeper	Hewlett Packard	83752B	3610A00457	0.01 – 20 GHz

6.5.4. Test Arrangement

- Power at RF Power Output Terminals



6.5.5. Test Data

6.5.5.1. RF Conducted Output Power (896-901 MHz)

RF Input = -30 dBm (maximum rf input level rated by the manufacturer)

Transmitter Channel Output	Fundamental Frequency (MHz)	Measured (Average) Power (dBm)	Power Rating (dBm)
Lowest	896.0125	37.0	37.0
Highest	900.9875	36.8	37.0

6.5.5.2. RF Conducted Output Power (935-940 MHz)

RF Input = -30 dBm (maximum rf input level rated by the manufacturer)

Transmitter Channel Output	Fundamental Frequency (MHz)	Measured (Average) Power (dBm)	Power Rating (dBm)
Lowest	935.0125	37.3	37.0
Highest	939.9875	37.2	37.0

6.6. FREQUENCY STABILITY @ FCC 2.1055 & 90.213

6.6.1. Limits @ FCC 90.213

Please refer to FCC CFR 47, Part 90, Subpart I, Para. 90.213 for specification details.

FREQUENCY RANGE (MHz)	FIXED & BASE STATIONS (ppm)	MOBILE STATIONS (ppm)	
		> 2 W	≤ 2 W
896-901	0.1	1.5	1.5
935-940	0.1	1.5	1.5

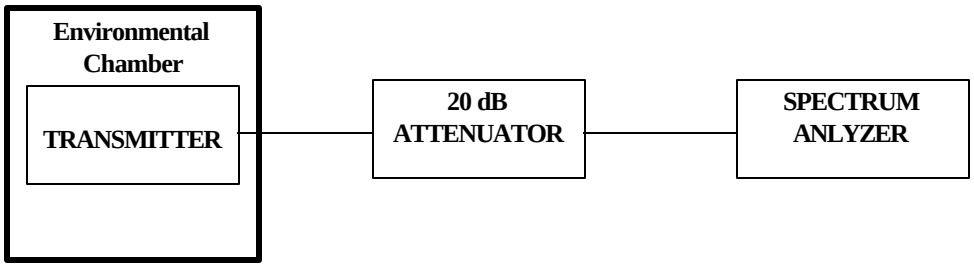
6.6.2. Method of Measurements

Refer to Exhibit 8, § 8.3 of this report for measurement details

6.6.3. Test Equipment List

Test Instruments	Manufacturer	Model No.	Serial No.	Frequency Range
EMI Receiver/ EMI Receiver	Hewlett Packard	HP 8593EM	3412A00103	9 kHz – 26.5 GHz
Attenuator(s)	Bird	..	…	DC – 22 GHz
Temperature & Humidity Chamber	Tenney	T5	9723B	-40° to +60 ° C range

6.6.4. Test Arrangement



6.6.5. Test Data

Product Name: **Model No.:**	**LinkNet LNKF800 RF REPEATER Module (896-901 MHz/935-940 MHz Bi-Directional Repeater)** **LNKF800**
Center Frequency:	896.0125 MHz
Full Power Level:	37 dBm
Frequency Tolerance Limit:	0.1 ppm or 89.6 Hz at 896.0125 MHz
Max. Frequency Tolerance Measured:	-0.075 ppm or-68 Hz
Input Voltage Rating:	120 V, 60 Hz

CENTER FREQUENCY & RF POWER OUTPUT VARIATION			
Ambient Temperature	**Supply Voltage (Nominal) Volts**	**Supply Voltage (85% of Nominal) Volts**	**Supply Voltage (115% of Nominal) Volts**
(°C)	**Hz**	**Hz**	**Hz**
-30	-60	N/A	N/A
-20	-58	N/A	N/A
-10	-68	N/A	N/A
0	-65	N/A	N/A
+10	-31	N/A	N/A
+20	-10	+15	+35
+30	+15	N/A	N/A
+40	+14	N/A	N/A
+50	+15	N/A	N/A

6.7. EMISSION MASK & 99% OCCUPIED BANDWIDTH @ FCC 2.1049, 90.208 & 90.210

6.7.1. Limits @ FCC 90.209 & 90.210

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. FREQ. DEVIATION (KHz)	FCC APPLICABLE MASK @ FCC 90.210
896-901/935-940	13.6	12.5	2.5	MASK I (Voice) & MASK J (Data)

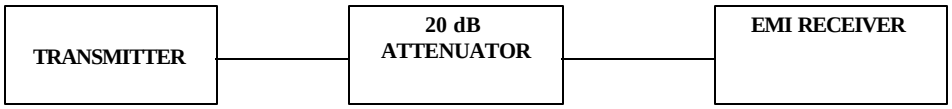
6.7.2. Method of Measurements

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

6.7.3. Test Equipment List

Test Instruments	Manufacturer	Model No.	Serial No.	Frequency Range
EMI Receiver/ 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

6.7.4. Test Arrangement



6.7.5. Test Data

Conform.

Please refer to Plot # 1 through # 8 in Annex 1 for 99 % Occupied Bandwidth Measurements.
Please refer to Plot # 9 through # 24 in Annex 1 for Emission Mask Measurements.

Note: The comparison tests between the RF input and rf output signals were performed for both 99% OBW and Emission Mask measurements.

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

6.8.1. Limits @ 90.210

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

FCC Rules	Frequency Range	Attenuation Limit (dBc)
FCC 90.210 (i),(j)	896-901 MHz and 935-940 MHz	50 + 10*log(P in Watts) or 70 dBc whichever is lesser attenuation

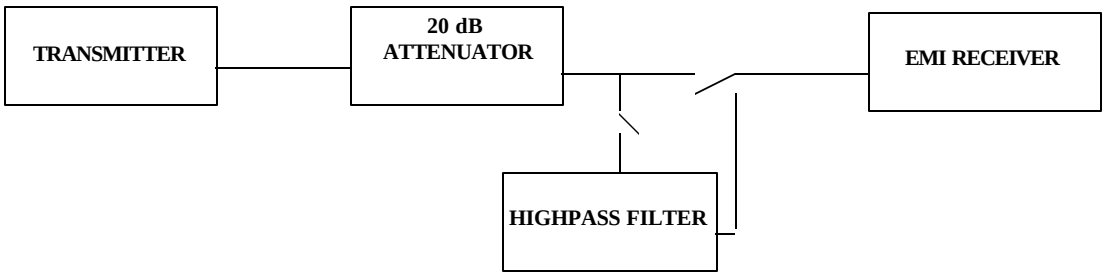
6.8.2. Method of Measurements

Refer to Exhibit 8 § 8.5 of this report for measurement details

6.8.3. Test Equipment List

Test Instruments	Manufacturer	Model No.	Serial No.	Frequency Range
EMI Receiver/ 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
Highpass Filter, Microphase	Microphase	CR220HID	IITI11000AC	Cut-off Frequency at 600 MHz, 1.3 GHz or 4 GHz

6.8.4. Test Arrangement



6.8.5. Plots

Please refer to plots # 25 through # 40 in Annex 1 for details of measurements

6.8.6. Test Data

6.8.6.1. Transmitter in the band 896-901 MHz

6.8.6.1.1. Near Lowest Frequency (898.0125 MHz)

Fundamental Frequency: 898.0125 MHz
RF Output Power: 37 Watts (conducted)
Modulation: FM modulation with 2.5 kHz Sine Wave Signal

FREQUENCY	TRANSMITTER CONDUCTED ANTENNA EMISSIONS		MINIMUM ATTENUATION LIMIT	MARGIN	PASS/
(MHz)	(dBm)	(dBc)	(dBc)	(dB)	FAIL
896.0125	37.0	--	--	--	--
1792.0250	-24.7	61.7	57.0	4.7	PASS
2688.0375	-58.8	95.8	57.0	38.8	PASS
3584.0500	-56.3	93.3	57.0	36.3	PASS
5376.0750	-50.9	87.9	57.0	30.9	PASS
6272.0875	-43.2	80.2	57.0	23.2	PASS

* The emissions were scanned from 10 MHz to 5 GHz and all emissions within 40 dB below the limits were recorded.
* Please refer to plots # 25 through # 26 in Annex 1 for details of measurement.

Fundamental Frequency: 898.0125 MHz
RF Output Power: 37 Watts (conducted)
Modulation: FM modulation with 9600 b/s random data

FREQUENCY	TRANSMITTER CONDUCTED ANTENNA EMISSIONS		MINIMUM ATTENUATION LIMIT	MARGIN	PASS/
(MHz)	(dBm)	(dBc)	(dBc)	(dB)	FAIL
896.0125	37.0	--	--	--	--
1792.0250	-24.9	61.9	57.0	4.9	PASS
2688.0375	-60.9	97.9	57.0	40.9	PASS
3584.0500	-56.4	93.4	57.0	36.4	PASS
5376.0750	-51.5	88.5	57.0	31.5	PASS
6272.0875	-43.8	80.8	57.0	23.8	PASS

* The emissions were scanned from 10 MHz to 5 GHz and all emissions within 40 dB below the limits were recorded.
* Please refer to plots # 27 through # 28 in Annex 1 for details of measurement.

6.8.6.1.2. Near Highest Frequency (900.9875 MHz)

Fundamental Frequency: 900.9875 MHz
RF Output Power: 36.8 Watts (conducted)
Modulation: FM modulation with 2.5 kHz Sine Wave Signal

FREQUENCY	TRANSMITTER CONDUCTED ANTENNA EMISSIONS		MINIMUM ATTENUATION LIMIT	MARGIN	PASS/
(MHz)	(dBm)	(dBc)	(dBc)	(dB)	FAIL
900.9875	36.8	--	--	--	--
1801.9750	-24.1	60.9	56.8	4.1	PASS
2702.9625	-60.0	96.8	56.8	40.0	PASS
3603.9500	-56.3	93.1	56.8	36.3	PASS
5405.9250	-49.8	86.6	56.8	29.8	PASS
6306.9125	-44.6	81.4	56.8	24.6	PASS

* The emissions were scanned from 10 MHz to 5 GHz and all emissions within 40 dB below the limits were recorded.
* Please refer to plots # 29 through # 30 in Annex 1 for details of measurement.

Fundamental Frequency: 900.9875 MHz
RF Output Power: 36.8 Watts (conducted)
Modulation: FM modulation with 9600 b/s random data

FREQUENCY	TRANSMITTER CONDUCTED ANTENNA EMISSIONS		MINIMUM ATTENUATION LIMIT	MARGIN	PASS/
(MHz)	(dBm)	(dBc)	(dBc)	(dB)	FAIL
900.9875	36.8	--	--	--	--
1801.9750	-24.2	61.0	56.8	4.2	PASS
2702.9625	-60.6	97.4	56.8	40.6	PASS
3603.9500	-56.3	93.1	56.8	36.3	PASS
5405.9250	-51.3	88.1	56.8	31.3	PASS
6306.9125	-46.0	82.8	56.8	26.0	PASS

* The emissions were scanned from 10 MHz to 5 GHz and all emissions within 40 dB below the limits were recorded.
* Please refer to plots # 31 through # 32 in Annex 1 for details of measurement.

6.8.6.2. Transmitter in the band 935-940 MHz

6.8.6.2.1. Near Lowest Frequency (935.0125 MHz)

Fundamental Frequency: 935.0125 MHz
RF Output Power: 37.3 Watts (conducted)
Modulation: FM modulation with 2.5 kHz Sine Wave Signal

FREQUENCY	TRANSMITTER CONDUCTED ANTENNA EMISSIONS		MINIMUM ATTENUATION LIMIT	MARGIN	PASS/
(MHz)	(dBm)	(dBc)	(dBc)	(dB)	FAIL
935.0125	37.3	--	--	--	--
1386.0000	-59.5	96.8	57.3	39.5	PASS
1870.0250	-24.1	61.4	57.3	4.1	PASS
2805.0375	-60.0	97.3	57.3	40.0	PASS
5610.0750	-56.3	93.6	57.3	36.3	PASS

* The emissions were scanned from 10 MHz to 5 GHz and all emissions within 40 dB below the limits were recorded.
* Please refer to plots # 33 through # 34 in Annex 1 for details of measurement.

Fundamental Frequency: 935.0125 MHz
RF Output Power: 37.3 Watts (conducted)
Modulation: FM modulation with 9600 b/s random data

FREQUENCY	TRANSMITTER CONDUCTED ANTENNA EMISSIONS		MINIMUM ATTENUATION LIMIT	MARGIN	PASS/
(MHz)	(dBm)	(dBc)	(dBc)	(dB)	FAIL
935.0125	37.3	--	--	--	--
1386.0000	-59.5	96.8	57.3	39.5	PASS
1870.0250	-23.2	60.5	57.3	3.2	PASS
2805.0375	-42.5	79.8	57.3	22.5	PASS
5610.0750	-39.8	77.1	57.3	19.8	PASS

* The emissions were scanned from 10 MHz to 5 GHz and all emissions within 40 dB below the limits were recorded.
* Please refer to plots # 35 through # 36 in Annex 1 for details of measurement.

6.8.6.2.2. Near Highest Frequency (939.9875 MHz)

Fundamental Frequency: 939.9875 MHz
RF Output Power: 37.2 Watts (conducted)
Modulation: FM modulation with 2.5 kHz Sine Wave Signal

FREQUENCY	TRANSMITTER CONDUCTED ANTENNA EMISSIONS		MINIMUM ATTENUATION LIMIT	MARGIN	PASS/
(MHz)	(dBm)	(dBc)	(dBc)	(dB)	FAIL
939.9875	37.2	--	--	--	--
1386.0000	-60.8	98.0	57.2	40.8	PASS
1879.9750	-23.8	61.0	57.2	3.8	PASS
2325.9875	-44.2	81.4	57.2	24.2	PASS
2819.9625	-42.0	79.2	57.2	22.0	PASS

* The emissions were scanned from 10 MHz to 5 GHz and all emissions within 40 dB below the limits were recorded.
* Please refer to plots # 37 through # 38 in Annex 1 for details of measurement.

Fundamental Frequency: 939.9875 MHz
RF Output Power: 37.2 Watts (conducted)
Modulation: FM modulation with 9600 b/s random data

FREQUENCY	TRANSMITTER CONDUCTED ANTENNA EMISSIONS		MINIMUM ATTENUATION LIMIT	MARGIN	PASS/
(MHz)	(dBm)	(dBc)	(dBc)	(dB)	FAIL
939.9875	37.2	--	--	--	--
1386.0000	-59.0	96.2	57.2	39.0	PASS
1879.9750	-23.9	61.1	57.2	3.9	PASS
2325.9875	-44.9	82.1	57.2	24.9	PASS
2819.9625	-42.8	80.0	57.2	22.8	PASS

* The emissions were scanned from 10 MHz to 5 GHz and all emissions within 40 dB below the limits were recorded.
* Please refer to plots # 39 through # 40 in Annex 1 for details of measurement.

6.9. TRANSMITTER SPURIOUS/HARMONIC RADIATED EMISSIONS @ FCC 90.210

6.9.1. Limits @ FCC 90.210

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

FCC Rules	Frequency Range	Attenuation Limit (dBc)
FCC 90.210 (i),(j)	896-901 MHz and 935-940 MHz	50 + 10*log(P in Watts) or 70 dBc whichever is lesser attenuation

6.9.2. Method of Measurements

The spurious/harmonic ERP measurements are using substitution method specified in Exhibit 8, § 8.2 of this report and its value in dBc is calculated as follows:

(1) If the transmitter's antenna is an integral part of the EUT, the ERP is measured using substitution method.
(2) If the transmitter's antenna is non-integral and diverse, the lowest ERP of the carrier with 0 dBi antenna gain is used for calculation of the spurious/harmonic emissions in dBc:
Lowest ERP of the carrier = EIRP – 2.15 dB = Pc + G - 2.15 dB = xxx dBm (conducted) + 0 dBi – 2.15 dB
(3) Spurious /harmonic emissions levels expressed in dBc (dB below carrier) are as follows:

ERP of spurious/harmonic (dBc) = ERP of carrier (dBm) – ERP of spurious/harmonic emission (dBm)

6.9.3. Test Equipment List

Test Instruments	Manufacturer	Model No.	Serial No.	Frequency Range
Spectrum Analyzer/ EMI Receiver	Hewlett Packard	HP 8546A	…	9 kHz to 5.6 GHz with built-in 30 dB Gain Pre-selector, QP, Average & Peak Detectors.
RF Amplifier	Com-Power	PA-102		1 MHz to 1 GHz, 30 dB gain nomimal
Microwave Amplifier	Hewlett Packard	HP 83017A		1 GHz to 26.5 GHz, 30 dB nominal
Biconilog Antenna	EMCO	3142	10005	30 MHz to 2 GHz
Dipole Antenna	EMCO	3121C	8907-434	30 GHz – 1 GHz
Dipole Antenna	EMCO	3121C	8907-440	30 GHz – 1 GHz
Horn Antenna	EMCO	3155	9701-5061	1 GHz – 18 GHz
Horn Antenna	EMCO	3155	9911-5955	1 GHz – 18 GHz
RF Signal Generator	Hewlett Packard	HP 83752B	3610A00457	0.01 – 20 GHz

6.9.4. Test Setup

Please refer to Photo # 1 to 2 in Annex 2 for detailed of test setup.

6.9.5. Test Data

6.9.5.1. Transmitter in the band 896-901 MHz

6.9.5.1.1. Near Lowest Frequency (898.0125 MHz)

Fundamental Frequency:	896.0125 MHz
RF Output Power:	37. 0 dBm (conducted)
Modulation:	FM modulation with 2.5 kHz sine wave signal

FREQUENCY (MHz)	E-FIELD @3m (dBuV/m)	ERP measured by Substitution Method (dBm)	(dBc)	EMI DETECTOR (Peak/QP)	ANTENNA POLARIZATION (H/V)	MINIMUM LIMIT (dBc)	MARGIN (Db)	PASS/ FAIL
10-1000	< 30.0	< -65.0	> 100	PEAK	V	57	--	PASS
1000-5000	< 30.0	< -65.0	> 100	PEAK	H	57	--	PASS

The emissions were scanned from 10 MHz to 5 GHz and there no spurious/harmonic emission attenuation were found to be less than 100 dBc.

Fundamental Frequency:	896.0125 MHz
RF Output Power:	37. 0 dBm (conducted)
Modulation:	FM modulation with 9600 b/s random data

FREQUENCY (MHz)	E-FIELD @3m (dBuV/m)	ERP measured by Substitution Method (dBm)	(dBc)	EMI DETECTOR (Peak/QP)	ANTENNA POLARIZATION (H/V)	MINIMUM LIMIT (dBc)	MARGIN (Db)	PASS/ FAIL
10-1000	< 30.0	< -65.0	> 100	PEAK	V	57	--	PASS
1000-5000	< 30.0	< -65.0	> 100	PEAK	H	57	--	PASS

The emissions were scanned from 10 MHz to 5 GHz and there no spurious/harmonic emission attenuation were found to be less than 100 dBc.

6.9.5.1.2. Near Highest Frequency (900.9875 MHz)

Fundamental Frequency: 900.9875 MHz
RF Output Power: 36.8 dBm (conducted)
Modulation: FM modulation with 2.5 kHz sine wave signal

FREQUENCY (MHz)	E-FIELD @3m (dBuV/m)	ERP measured by Substitution Method (dBm)	(dBc)	EMI DETECTOR (Peak/QP)	ANTENNA POLARIZATION (H/V)	MINIMUM LIMIT (dBc)	MARGIN (Db)	PASS/ FAIL
10-1000	< 30.0	< -65.0	> 100	PEAK	V	56.8	--	PASS
1000-5000	< 30.0	< -65.0	> 100	PEAK	H	56.8	--	PASS

The emissions were scanned from 10 MHz to 5 GHz and there no spurious/harmonic emission attenuation were found to be less than 100 dBc.

Fundamental Frequency: 900.9875 MHz
RF Output Power: 36.8 dBm (conducted)
Modulation: FM modulation with 9600 b/s random data

FREQUENCY (MHz)	E-FIELD @3m (dBuV/m)	ERP measured by Substitution Method (dBm)	(dBc)	EMI DETECTOR (Peak/QP)	ANTENNA POLARIZATION (H/V)	MINIMUM LIMIT (dBc)	MARGIN (Db)	PASS/ FAIL
10-1000	< 30.0	< -65.0	> 100	PEAK	V	56.8	--	PASS
1000-5000	< 30.0	< -65.0	> 100	PEAK	H	56.8	--	PASS

The emissions were scanned from 10 MHz to 5 GHz and there no spurious/harmonic emission attenuation were found to be less than 100 dBc.

6.9.5.2. Transmitter in the band 935-940 MHz

6.9.5.2.1. Near Lowest Frequency (935.0125 MHz)

Fundamental Frequency: 896.0125 MHz
RF Output Power: 37.3 dBm (conducted)
Modulation: FM modulation with 2.5 kHz sine wave signal

FREQUENCY (MHz)	E-FIELD @3m (dBuV/m)	ERP measured by Substitution Method (dBm)	(dBc)	EMI DETECTOR (Peak/QP)	ANTENNA POLARIZATION (H/V)	MINIMUM LIMIT (dBc)	MARGIN (Db)	PASS/ FAIL
10-1000	< 30.0	< -65.0	> 100	PEAK	V	57.3	--	PASS
1000-5000	< 45.0	< -50.0	> 87	PEAK	H	57.3	--	PASS

The emissions were scanned from 10 MHz to 5 GHz and there no spurious/harmonic emission attenuation were found to be less than 87 dBc.

Fundamental Frequency: 896.0125 MHz
RF Output Power: 37. 0 dBm (conducted)
Modulation: FM modulation with 9600 b/s random data

FREQUENCY (MHz)	E-FIELD @3m (dBuV/m)	ERP measured by Substitution Method (dBm)	(dBc)	EMI DETECTOR (Peak/QP)	ANTENNA POLARIZATION (H/V)	MINIMUM LIMIT (dBc)	MARGIN (Db)	PASS/ FAIL
10-1000	< 30.0	< -65.0	> 100	PEAK	V	57.3	--	PASS
1000-5000	< 45.0	< -50.0	> 87	PEAK	H	57.3	--	PASS

The emissions were scanned from 10 MHz to 5 GHz and there no spurious/harmonic emission attenuation were found to be less than 87 dBc.

6.9.5.2.2. Near Highest Frequency (940.9875 MHz)

Fundamental Frequency: 940.9875 MHz
RF Output Power: 37.2 dBm (conducted)
Modulation: FM modulation with 2.5 kHz sine wave signal

FREQUENCY (MHz)	E-FIELD @3m (dBuV/m)	ERP measured by Substitution Method (dBm)	(dBc)	EMI DETECTOR (Peak/QP)	ANTENNA POLARIZATION (H/V)	MINIMUM LIMIT (dBc)	MARGIN (Db)	PASS/ FAIL
10-1000	< 30.0	< -65.0	> 100	PEAK	V	57.2	--	PASS
1000-5000	< 45.0	< -50.0	> 87	PEAK	H	57.2	--	PASS

The emissions were scanned from 10 MHz to 5 GHz and there no spurious/harmonic emission attenuation were found to be less than 87 dBc.

Fundamental Frequency: 940.9875 MHz
RF Output Power: 37.2 dBm (conducted)
Modulation: FM modulation with 9600 b/s random data

FREQUENCY (MHz)	E-FIELD @3m (dBuV/m)	ERP measured by Substitution Method (dBm)	(dBc)	EMI DETECTOR (Peak/QP)	ANTENNA POLARIZATION (H/V)	MINIMUM LIMIT (dBc)	MARGIN (Db)	PASS/ FAIL
10-1000	< 30.0	< -65.0	> 100	PEAK	V	57.2	--	PASS
1000-5000	< 45.0	< -50.0	> 87	PEAK	H	57.2	--	PASS

The emissions were scanned from 10 MHz to 5 GHz and there no spurious/harmonic emission attenuation were found to be less than 87 dBc.

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. CONDUCTED POWER 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 if the transmitter's transmission is transient

- Using a EMI Receiver 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.

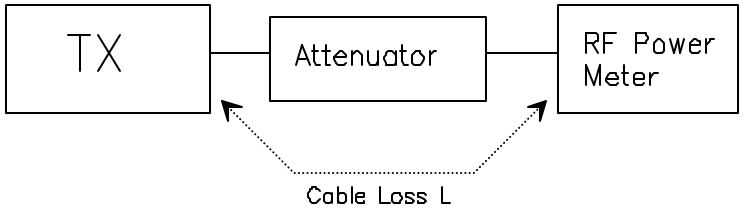
Step 2: Calculation of Average EIRP. See Figure 1

- The average output power of the transmitter shall be determined using a wideband, calibrated RF average 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)

{ X = 1 for continuous transmission => 10log(1/x) = 0 dB }

Figure 1.



8.2. RADIATED POWER MEASUREMENTS (ERP & EIRP) USING SUBSTITUTION METHOD

8.2.1. Maximizing RF Emission Level (E-Field)

(a) The measurements was performed with full rf output power and 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) Load an appropriate correction factors file in EMI Receiver for correcting the field strength reading level

Total Correction Factor recorded in the EMI Receiver = Cable Loss + Antenna Factor
E (dBuV/m) = Reading (dBuV) + Total Correction Factor (dB/m)

(f) Set the EMI Receiver and #2 as follows:

Center Frequency:	test frequency
Resolution BW:	100 kHz
Video BW:	same
Detector Mode:	positive
Average:	off
Span:	3 x the signal bandwidth

(g) The test antenna was lowered or raised from 1 to 4 meters until the maximum signal level was detected.
(h) The transmitter was rotated through 360^{o} about a vertical axis until a higher maximum signal was received.
(i) The test antenna was lowered or raised again from 1 to 4 meters until a maximum was obtained. This level was recorded.
(j) The recorded reading was corrected to the true field strength level by adding the antenna factor, cable loss and subtracting the pre-amplifier gain.
(k) The above steps were repeated with both transmitters' antenna and test receiving antenna placed in vertical and horizontal polarization. Both readings with the antennas placed in vertical and horizontal polarization shall be recorded.
(l) Repeat for all different test signal frequencies

8.2.2. Measuring the EIRP of Spurious/Harmonic Emissions using Substitution Method

(a) Set the EMI Receiver (for measuring E-Field) and Receiver #2 (for measuring EIRP) as follows:

Center Frequency:	equal to the signal source
Resolution BW:	10 kHz
Video BW:	same
Detector Mode:	positive
Average:	off
Span:	3 x the signal bandwidth

(b) Load an appropriate correction factors file in EMI Receiver for correcting the field strength reading level

Total Correction Factor recorded in the EMI Receiver = Cable Loss + Antenna Factor
E (dBuV/m) = Reading (dBuV) + Total Correction Factor (dB/m)

(c) Select the frequency and E-field levels obtained in the Section 8.2.1 for ERP/EIRP measurements.
(d) Substitute the EUT by a signal generator and one of the following transmitting antenna (substitution antenna):
- DIPOLE antenna for frequency from 30-1000 MHz or
- HORN antenna for frequency above 1 GHz }.

(e) Mount the transmitting antenna at 1.5 meter high from the ground plane.
(f) Use one of the following antenna as a receiving antenna:
- DIPOLE antenna for frequency from 30-1000 MHz or
- HORN antenna for frequency above 1 GHz }.

(g) If the DIPOLE antenna is used, tune it's elements to the frequency as specified in the calibration manual.
(h) Adjust both transmitting and receiving antenna in a VERTICAL polarization.
(i) Tune the EMI Receivers to the test frequency.
(j) Lower or raise the test antenna from 1 to 4 meters until the maximum signal level was detected.
(k) The transmitter was rotated through 360° about a vertical axis until a higher maximum signal was received.
(l) Lower or raise the test antenna from 1 to 4 meters until the maximum signal level was detected.
(m) Adjust input signal to the substitution antenna until an equal or a known related level to that detected from the transmitter was obtained in the test receiver.
(n) Record the power level read from the Average Power Meter and calculate the ERP/EIRP as follows:

P = P1 - L1 = (P2 + L2) – L1 = P3 + A + L2 - L1
EIRP = P + G1 = P3 + L2 - L1 + A + G1
ERP = EIRP – 2.15 dB
Total Correction factor in EMI Receiver # 2 = L2 – L1 + G1

Where: P: Actual RF Power fed into the substitution antenna port after corrected.
P1: Power output from the signal generator
P2: Power measured at attenuator A input
P3: Power reading on the Average Power Meter
EIRP: EIRP after correction
ERP: ERP after correction

(o) Adjust both transmitting and receiving antenna in a HORIZONTAL polarization, then repeat step (k) to (o)
(p) Repeat step (d) to (o) for different test frequency
(q) Repeat steps (c) to (j) with the substitution antenna oriented in horizontal polarization.

(r) Actual gain of the EUT's antenna is the difference of the measured EIRP and measured RF power at the RF port. Correct the antenna gain if necessary.:

Figure 2

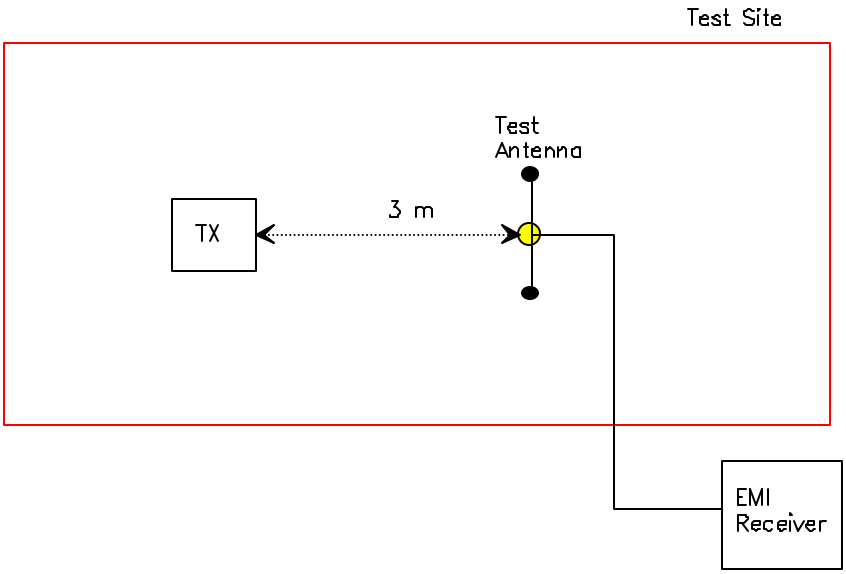
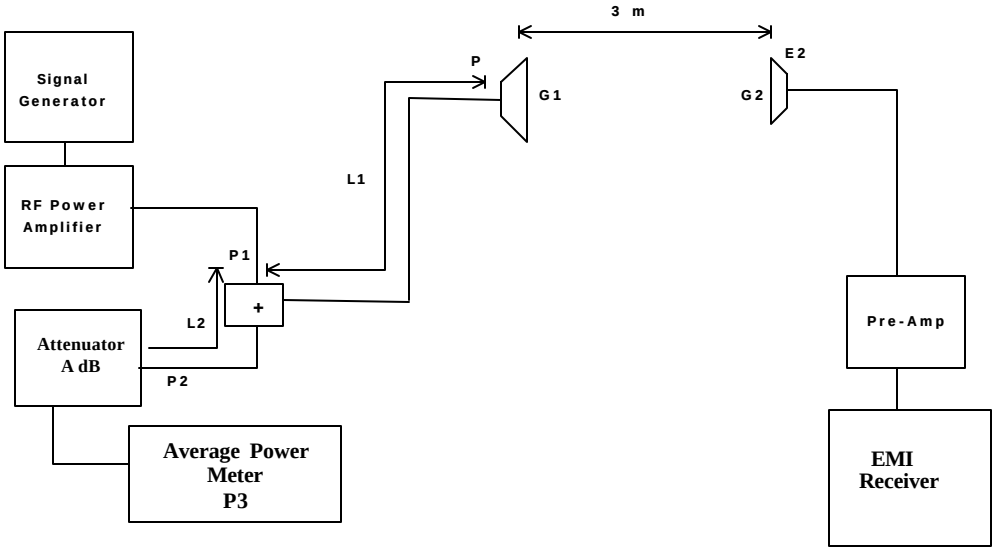


Figure 3



8.3. FREQUENCY STABILITY

Refer to FCC @ 2.1055.

(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).

8.4. EMISSION MASK

Voice or Digital Modulation Through a Voice Input Port @ 2.1049(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 @ 2.1049(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 EMI Receiver 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.

8.5. SPURIOUS EMISSIONS (CONDUCTED)

With transmitter modulation characteristics described in Out-of-Band Emissions measurements @ 2.1049, the transmitter spurious and harmonic emissions were scanned. The spurious and harmonic emissions were measured with the EMI Receiver 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. 2.1057 - 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. 2.1051 - 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 2.1049 as appropriate. The magnitude of spurious emissions which are attenuated more than 20 dB below the permissible value need not be specified.