ENGINEERING TEST REPORT

SAPPHIRE 9870-L
Model No.: 9870
FCC ID: QHM-9870

Tested in Accordance With

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

Applicant: **INTELLECT INTERNATIONAL N.V.**
Leuvensesteenweg 540, Bus 5
1930 Zaventem
Belgium

UltraTech's File No.: IAP06_90

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

Date: May 27, 2002

Report Prepared by: Mike Tom	Tested by: Hung Trinh, RFI Engineer
Issued Date: May 27, 2002	Test Dates: June 14 - 18, 2001

- *The results in this Test Report apply only to the sample(s) tested, which was randomly selected.*
- *Under no circumstances may this report be used by the client to claim product endorsement by NVLAP or any agency of the US Government.*

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EXHIBIT 1. SUBMITTAL CHECK LIST

Annex	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	Ok
1	Test Setup Photos	Radiated Emissions at OFTS	Ok
2	External Photos of EUT	Photos # 1 to 3	Ok
3	Internal Photos of EUT	Photos # 1 to 15	Ok
4	Cover Letters	• Letter from UltraTech for Certification Request • Letter from the Applicant to appoint UltraTech to act as an agent	Ok Ok
5	ID Label/Location Info	• ID Label • Location of ID Label	Ok Ok
6	Operational Description	Please Refer to the document Uploaded by RIM	Ok
7	Users Manual	Operating Instructions	Ok
8	RF Exposure Info	SAR Test Report	OK

EXHIBIT 2. INTRODUCTION

2.1. SCOPE

Reference:	FCC Parts 2 and 90
Title:	Telecommunication - Code of Federal Regulations, 47 CFR, Parts 2 & 90
Purpose of Test:	To gain FCC Certification Authorization for Radio operating in the frequency bands 806-821 MHz (25 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. NORMATIVE REFERENCES

Publication	Year	Title
FCC CFR Parts 0-19, 80-End	2000	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	1999	Specification for Radio Disturbance and Immunity measuring apparatus and methods

EXHIBIT 3. PERFORMANCE ASSESSMENT

3.1. CLIENT INFORMATION

APPLICANT	
Name:	INTELLECT INTERNATIONAL N.V.
Address:	Leuvensesteenweg 540, Bus 5 1930 Zaventem BELGIUM
Contact Person:	Mr. Cyril Dewaleyne Phone #: 011-32-2-722-88-14 Fax #: 011-32-2-725-06-28 Email Address: cyril.dewaleyne@intellect.be

MANUFACTURER	
Name:	INTELLECT INTERNATIONAL N.V.
Address:	Leuvensesteenweg 540, Bus 5 1930 Zaventem BELGIUM
Contact Person:	Mr. Cyril Dewaleyne Phone #: 011-32-2-722-88-14 Fax #: 011-32-2-725-06-28 Email Address: cyril.dewaleyne@intellect.be

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:	INTELLECT INTERNATIONAL N.V.
Product Name:	SAPPHIRE 9870-L
Model Name or Number:	9870
Serial Number:	Pre-Production
Type of Equipment:	Licensed Non-Broadcast Radio Communication Equipment
External Power Supply:	None
Transmitting/Receiving Antenna Type:	Integral
Typical Usage:	Wireless handheld Point-Of-Sales Terminal for secure Debit/Credit transactions

3.3. EUT'S TECHNICAL SPECIFICATIONS

TRANSMITTER	
Equipment Type:	• Portable
Intended Operating Environment:	• Commercial
Power Supply Requirement:	4.1 – 4.75 Vdc
RF Output Power Rating:	2 Watts (Conducted) 1.7 Watts ERP
Operating Frequency Range:	806-821 MHz
RF Output Impedance:	50 Ohms
Channel Spacing:	25 kHz
Emission Designation:	20K0F1D
Antenna Information:	Manufacturer: Radiall/Larsen Model No.: KD0131 Antenna Type: PCB Dipole Frequency Range: 806 – 870 MHz Gain: 1.0 ± 1 dBi Connector Type: MMCX

3.4. LIST OF ANCILLARY EQUIPMENT

None.

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:	4.8V NiMH battery pack

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:	Test software supplied by RIM was used to exercise the functions of the radio transceiver.
Special Hardware Used:	None
Transmitter Test Antenna:	Integral

Transmitter Test Signals	
Frequency Band(s):	Near lowest, near middle & near highest frequencies in each frequency bands that the transmitter covers:
▪ 806-821 MHz band:	806 MHz, 813.5 MHz, 821 MHz
Transmitter Wanted Output Test Signals:	
▪ RF Power Output (measured maximum output power):	33.0 dBm or 32.2 dBm ERP
▪ Normal Test Modulation:	FM Data
▪ Modulating signal source:	Internal

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.

- 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: August 8, 2001.

5.2. APPLICABILITY & SUMMARY OF EMC 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 (refer to the attached SAR test report)
90.213 & 2.1055	Frequency Stability	See Note 1
90.242(b)(8) & 2.1047(a)	Audio Frequency Response	See Note 1
90.210 & 2.1047(b)	Modulation Limiting	See Note 1
90.209 90.210 & 2.1049	Emission Limitation & Emission Mask	See Note 1
90.210, 2.1057 & 2.1051	Emission Limits - Spurious Emissions at Antenna Terminal	See Note 1
90.210, 2.1057 & 2.1053	Emission Limits - Field Strength of Spurious Emissions	Yes

Note 1:

There are no changes to the FCC certified 802D Radio Transceiver manufactured by Research In Motion Ltd. (RIM), FCC ID: L6AR802D-2-O, therefore this test is not required to be performed. For more details, please refer to the FCC ID mentioned above.

5.3. MODIFICATIONS INCORPORATED IN THE EUT FOR COMPLIANCE PURPOSES

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 @ §2.1046 & §90.205

6.5.1. Limits

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

6.5.2. Method of Measurements

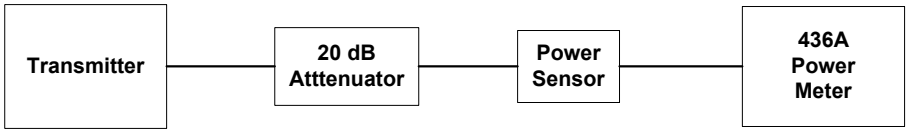
Refer to Exhibit 8, § 8.1 (Conducted) and 8.2 (Radiated) of this report for measurement details

6.5.3. Test Equipment List

Test Instruments	Manufacturer	Model No.	Serial No.	Frequency Range
Power Meter	Hewlett Packard	436A	1725A02249	10 kHz – 50 GHz, sensor dependent
Power Sensor	Hewlett Packard	8481A	2702A68983	10 MHz – 18 GHz
Attenuator(s)	Bird	…	…	DC – 22 GHz
EMI Receiver/ 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
Synthesized RF Signal Generator	Gigatronic	6061A	5130408	10kHz – 1050 MHz

6.5.4. Test Arrangement

- Power at RF Power Output Terminals



6.5.5. Test Data

6.5.5.1. Conducted RF Output Power Measurements

Transmitter Channel Output	Fundamental Frequency (MHz)	Measured Power (dBm)	Power Rating by the Radio Supplier (Research in Motion) (dBm)
Near Lowest	806.0	33.0	33.0
Near Middle	813.5	33.0	33.0
Near Highest	821.0	33.0	33.0

6.5.5.2. ERP Measurements Using Substitution Method

EUT's ANTENNA GAIN = 1.0 ± 1dBi

Frequency (MHz)	Peak E-Field @ 3m (dBµV/m)	Antenna Polarization (V/H)	Peak Power From Signal GEN. Ps – Cable Loss (dBm)	Substitution Antenna (Dipole) Gain Gd (dBi)	Measured Peak ERP = Ps+Gd-2.15 (dBm)
806.0	135.1	V	31.7	1.93	31.4
806.0	134.0	H	30.9	1.93	30.7
813.5	133.4	V	30.3	1.77	29.9
813.5	134.5	H	32.5	1.77	**32.2**
821.0	135.1	V	31.6	1.61	31.1
821.0	132.6	H	32.1	1.61	31.6
* The above measurements are the maximum readings with EUT oriented in three different orthogonal positions					

6.6. RF EXPOSURE REQUIRMENTS @ 1.1310 & 2.1093

Evaluation of RF Exposure Compliance Requirements	
RF Exposure Requirements	**Compliance with FCC Rules**
SAR Tests for Portable Transmitters	
• Body Tissue	• Complies with body tissue SAR limit, with a maximum SAR level of 1.422 W/Kg, 20 mm minimum separation and 25% duty cycle. Please refer to SAR Test Report. File #: IAP-011-SAR for details.
• Brain Tissue	• Not applicable

6.7. TRANSMITTER SPURIOUS/HARMONIC RADIATED EMISSIONS @ §90.210

6.7.1. Limits

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

FCC RULES	ATTENUATION LIMIT (dBc)
FCC 90.210 (g)	43 + 10 log (P) = 45.51 dBc

6.7.2. 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)

6.7.3. 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

6.7.4. Test Setup

Please refer to the photos # 1 to 3 in Annex 1 for detailed test setup

6.7.5. Test Data

6.7.5.1. Near Lowest Frequency (806 MHz)

Fundamental Frequency: 806 MHz
RF Output Power: 31.4 dBm (ERP) or 33 dBm (Conducted)
Modulation: FM modulation with internal data source

Frequency (MHz)	E-Field @3m (dBµV/m)	Emi Detector (Peak/QP)	Antenna Polarization (H/V)	ERP Measured By Substitution Method (dBm)	(dBc)	Limit (dBc)	Margin (dB)	Pass/ Fail
1612.0	73.00	Peak	V	-33.61	-65.01	-45.5	-19.51	Pass
4030.0	67.72	Peak	V	-31.75	-63.15	-45.5	-17.65	Pass
4836.0	70.53	Peak	V	-25.72	-57.12	-45.5	-11.62	Pass
4836.0	65.19	Peak	H	-32.72	-64.12	-45.5	-18.62	Pass

The emissions were scanned from 10 MHz to 10 GHz and all emissions within 20 dB below the limits were recorded.

6.7.5.2. Near Middle Frequency (813.5 MHz)

Fundamental Frequency: 813.5 MHz
RF Output Power: 32.2 dBm (ERP) or 33 dBm (Conducted)
Modulation: FM modulation with internal data source

Frequency (MHz)	E-Field @3m (dBµV/m)	Emi Detector (Peak/QP)	Antenna Polarization (H/V)	ERP Measured By Substitution Method (dBm)	(dBc)	Limit (dBc)	Margin (dB)	Pass/ Fail
3254.0	66.91	Peak	V	-33.3	-65.5	-45.5	-20.0	Pass
4881.0	69.75	Peak	V	-27.4	-59.6	-45.5	-14.1	Pass

The emissions were scanned from 10 MHz to 10 GHz and all emissions within 20 dB below the limits were recorded.

6.7.5.3. Near Highest Frequency (821 MHz)

Fundamental Frequency: 821 MHz
RF Output Power: 31.6 dBm (ERP) or 33 dBm (Conducted)
Modulation: FM modulation with internal data source

Frequency (MHz)	E-Field @3m (dBµV/m)	Emi Detector (Peak/QP)	Antenna Polarization (H/V)	ERP Measured By Substitution Method (dBm)	(dBc)	Limit (dBc)	Margin (dB)	Pass/ Fail
1642.0	73.0	Peak	V	-30.3	-61.9	-45.5	-16.4	Pass
2463.0	64.84	Peak	V	-32.0	-63.6	-45.5	-18.1	Pass
3284.0	65.19	Peak	V	-30.8	-62.4	-45.5	-16.9	Pass
3284.0	63.22	Peak	H	-33.8	-65.4	-45.5	-19.9	Pass

The emissions were scanned from 10 MHz to 10 GHz and all emissions within 20 dB below the limits were recorded.

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 Directivity	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 Γ_1 = 0.2 Antenna VRC Γ_R = 0.67(Bi) 0.3 (Lp) Uncertainty limits 20Log(1±$\Gamma_1\Gamma_R$)	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(s).
- If 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.

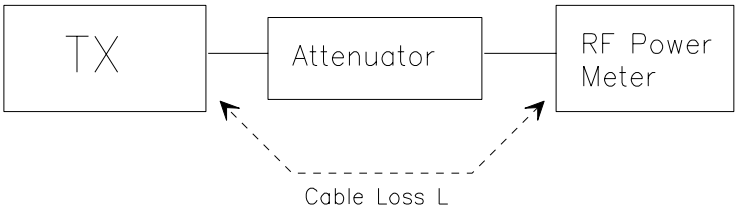
Step 2: Calculation of Average EIRP. See Figure 1

- 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 are performed with full RF output power and modulation.
(b) Test was performed at our 3m open area test site (listed with FCC, IC, ITI, NVLAP, ACA & VCCI).
(c) The transmitter under test is placed on a 80 cm high, non-conducting turntable.
(d) A Biconilog antenna (20 MHz to 1 GHz) or HORN antenna (1 GHz to 18 GHz) is used for measuring. (Refer to Figure 2 for details).
(e) The appropriate correction factors are then loaded into the EMI Receiver for correcting the field strength reading.

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

(f) The EMI Receiver and #2 is set 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) At each test frequency, the test antenna is lowered or raised from 1 to 4 meters until the maximum signal level was detected.
(h) The transmitter is rotated through 360^{o} about a vertical axis until a higher maximum signal was received.
(i) The test antenna is then varied in height, 1 to 4 meters; a second time to ensure a maximum was obtained. This level and its associated frequency are recorded.
(j) The recorded level is then corrected to obtain the true field strength level by adding the antenna factor, cable loss and subtracting the pre-amplifier gain (See (e) above).
(k) The above steps are repeated with both transmitters' antenna and test receiving antenna placed in vertical and horizontal polarization for each of the test frequency that are found.

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

(a) The EMI Receiver (for measuring E-Field) and Receiver #2 (for measuring EIRP) was set 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) The Appropriate correction factors were then loaded into the EMI Receiver for correcting the field strength reading.

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

(c) A signal generator connected to one of the following transmitting antenna (substitution antenna) was substituted in place of the EUT. (See Figure 3 below)
- ♦ DIPOLE antenna for the frequency range from 30-1000 MHz or
- ♦ HORN antenna for frequencies above 1 GHz.

(d) The selected antenna was then mounted at a 1.5 meter height from the ground plane.

(e) One of the following antenna was used as a receiving antenna:
- ♦ DIPOLE antenna for the frequency range from 30-1000 MHz or
- ♦ HORN antenna for frequencies above 1 GHz.

It normally matches the transmitting antenna. This antenna was then mounted onto the mast.

(f) If the DIPOLE antenna is used, the Dipole elements were tune to the frequency as specified in the calibration manual.

(g) Both transmitting and receiving antennas were then oriented in a VERTICAL polarization.

(h) The signal generator is then set to the measurement frequency, obtained using the method of Section 8.2.1.

(i) The EMI Receivers was also tuned to the measurement frequency and centered on the reciever's display.

(j) The test antenna is lowered or raised from 1 to 4 meters to ensure the maximum signal level is still received.

(k) The input signal to the substitution antenna is then adjusted until an equal or a known related level to that detected from the transmitter was obtained in the test receiver.

(l) The power level reading from the Average Power Meter is recorded and the ERP/EIRP is calculate 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

(m) The transmitting and receiving antenna is then oriented in the HORIZONTAL polarization, and steps (i) to (l) are repeated.

(n) Steps (c) to (f) is only performed once, unless the next measurement frequency is out of range of the current antenna.

(o) Repeat steps (g) to (m) for the next measurement frequency.

(p) 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

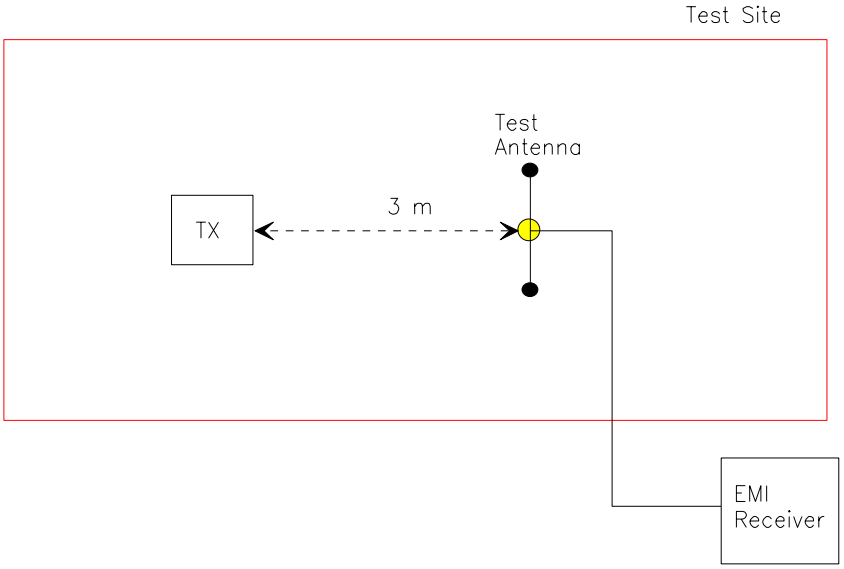


Figure 3