Nemko Test Report:	119263-1TRFWL
Applicant:	Xmark Corporation 309 Legget Drive Ottawa, Ontario Canada K2K 3A3
Apparatus:	Patient Security Receiver
FCC ID:	ISEPSR
In Accordance With:	FCC Part 15 Subpart B, 15.107 and 15.109 Unintentional Radiators
Authorized By:	 Jason Nixon, Wireless/Telecom Specialist
Date:	January 28, 2009
Total Number of Pages:	15

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Section 1 : Report Summary

These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15, Subpart B. Radiated tests were conducted in accordance with ANSI C63.4-2003.

The assessment summary is as follows:

Apparatus Assessed:	Patient Security Receiver
Specification:	FCC Part 15 Subpart B, 15.107 and 15.109
Compliance Status:	Complies
Exclusions:	None
Non-compliances:	None
Report Release History:	Original Release
Test Location:	Nemko Canada Inc. 303 River Road Ottawa, Ontario K1V 1H2
Registration Number:	176392 (3m Semi-Anechoic Chamber)
Tests Performed By:	Andrey Adelberg, EMC/Wireless Specialist
Test Dates:	January 6, 2009

Note that the results contained in this report relate only to the items tested and were obtained in the period between the date of initial receipt of samples and the date of issue of the report.

This test report has been completed in accordance with the requirements of ISO/IEC 17025. All results contain in this report are within Nemko Canada's ISO/IEC 17025 accreditation.

Section 2 : Equipment Under Test

2.1 Identification of Equipment Under Test (EUT)

The following information identifies the EUT under test:

Type of Equipment:	Local Area Receiver
Brand Name:	Xmark
Model Name or Number:	Patient Security Receiver
Serial Number:	Prototype
Nemko Sample Number:	1
FCC ID:	ISEPSR
Date of Receipt:	January 6, 2009

2.2 Accessories

The following information identifies accessories used to exercise the EUT during testing:

Description:	AC Adaptor
Brand Name:	DVE
Model Name or Number:	DV-1250
Serial Number:	0298
Nemko Sample Number:	2
Connection Port:	DC jack
Cable Length and Type:	2 m, 2-wire DC cable

Description:	Ethernet Switch
Brand Name:	Dynex
Model Name or Number:	DX-ESW5
Serial Number:	06905801717
Nemko Sample Number:	3
Connection Port:	Ethernet
Cable Length and Type:	10 m, CAT.5E, Foiled Twisted 4, AWG 24 Ethernet cable

2.3 EUT Description

The Patient Security Receiver is a dual antenna Low IF receiver that allows for the monitoring of infants that wear an RFID tag in a hospital.
The receiver operating frequency is fixed at 217 MHz.

2.4 Technical Specifications of the EUT

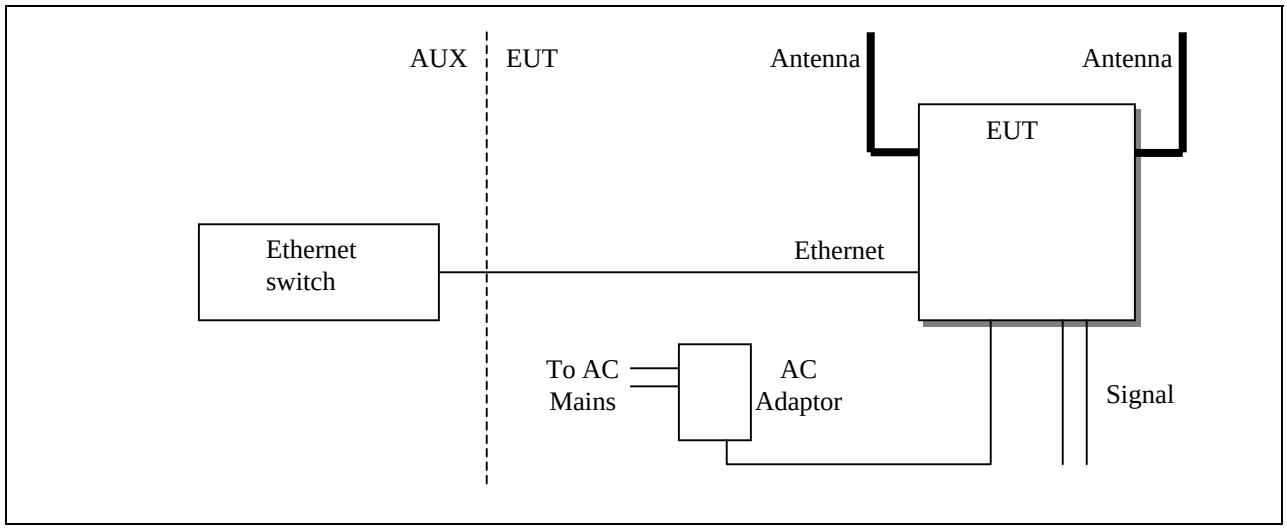
Operating Frequency: 217 MHz

Antenna Data: 2 x LINX RA Series screw-mount ¼ wave monopole 217 MHz antennae.

Receiver type: Superheterodyne

Power Supply Requirements: 12 VDC from AC adaptor powered from 120 VAC @ 60 Hz AC mains

2.5 EUT Setup diagram



2.6 Operation of the EUT during testing

The EUT was set to operate by plugging to AC mains.

2.7 Modifications incorporated in the EUT

There were no modifications performed to the EUT during this assessment.

Section 3 : Test Conditions

3.1 Specifications

The apparatus was assessed against the following specifications:

FCC Part 15 Subpart B, 15.107 and 15.109
Unintentional Radiators

3.2 Deviations From Laboratory Test Procedures

No deviations were made from laboratory test procedures.

3.3 Test Environment

All tests were performed under the following environmental conditions:

Temperature range	:	15 – 30 ^{o}C
Humidity range	:	20 - 75 %
Pressure range	:	86 - 106 kPa
Power supply range	:	+/- 5% of rated voltages

3.4 Measurement Uncertainty

Nemko Canada measurement uncertainty has been calculated using guidance of UKAS LAB 34:2003 and TIA-603-B Nov 7, 2002. All calculations have been performed to provide a confidence level of 95% and can be found in Nemko Canada document MU-003.

3.5 Test Equipment

Equipment	Manufacturer	Model No.	Asset/Serial No.	Cal. Date	Next Cal.
Receiver/Spectrum Analyzer	Rohde & Schwarz	ESU 40	FA002071	Nov. 25/08	Nov. 25/09
EMI 3 m Test Chamber	TDK	SAC-3	FA002047	May 06/08	May 06/09
Bilog	Sunol	JB3	FA002108	Jan. 21/08	Jan. 21/09
Flush Mount Turntable	Sunol	FM2022	FA002082	NCR	NCR
Controller	Sunol	SC104V	FA002060	NCR	NCR
Mast	Sunol	TLT2	FA002061	NCR	NCR
LISN	Rohde & Schwarz	ENV216	FA002023	Sept. 02/08	Sept. 02/09
50 Coax cable	HUBER + SUHNER	None	FA002015	Aug. 05/08	Aug. 05/09
50 Coax cable	HUBER + SUHNER	None	FA002022	July 07/08	July 07/09
50 Coax cable	HUBER + SUHNER	None	FA002074	July 07/08	July 07/09
International Power Supply	California Inst.	3001i	FA001021	Jan. 16/08	Jan. 16/09
Horn Antenna #2	EMCO	3115	FA000825	Jan. 15/08	Jan. 15/09
1 – 18 GHz Amplifier	JCA	JCA118-503	FA002091	Oct 2/08	Oct 2/09

COU – Calibrate on Use
NCR – No Calibration Required

Section 4 : Results Summary

This section contains the following:

FCC Part 15 Subpart B : Test Results

The column headed 'Required' indicates whether the associated clauses were invoked for the apparatus under test. The following abbreviations are used:

N No : not applicable / not relevant.

Y Yes : Mandatory i.e. the apparatus shall conform to these tests.

N/T Not Tested, mandatory but not assessed. (See Report Summary)

4.1 FCC Part 15 Subpart B : Test Results

Part 15	Test Description	Required	Result
15.107(a) 15.109(a)	Conducted Emissions Radiated Emissions, general requirements	Y Y	PASS PASS

Appendix A : Test Results

Clause 15.107(a) Conducted Emissions

Frequency of Conducted limit (dBµV)

Emission (MHz)	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

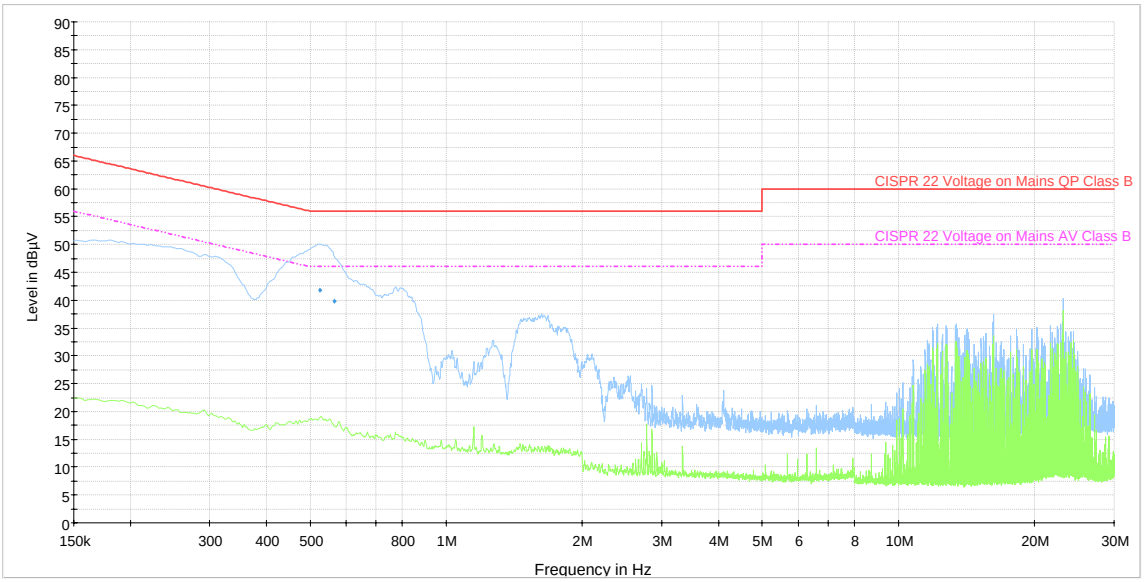
Test Results: Pass

Additional Observations:

All plots were obtained using a sweeping receiver with an IF of 9kHz using a Peak and Average detector. The plots have been corrected with the cable loss and LISN loss to show compliance.

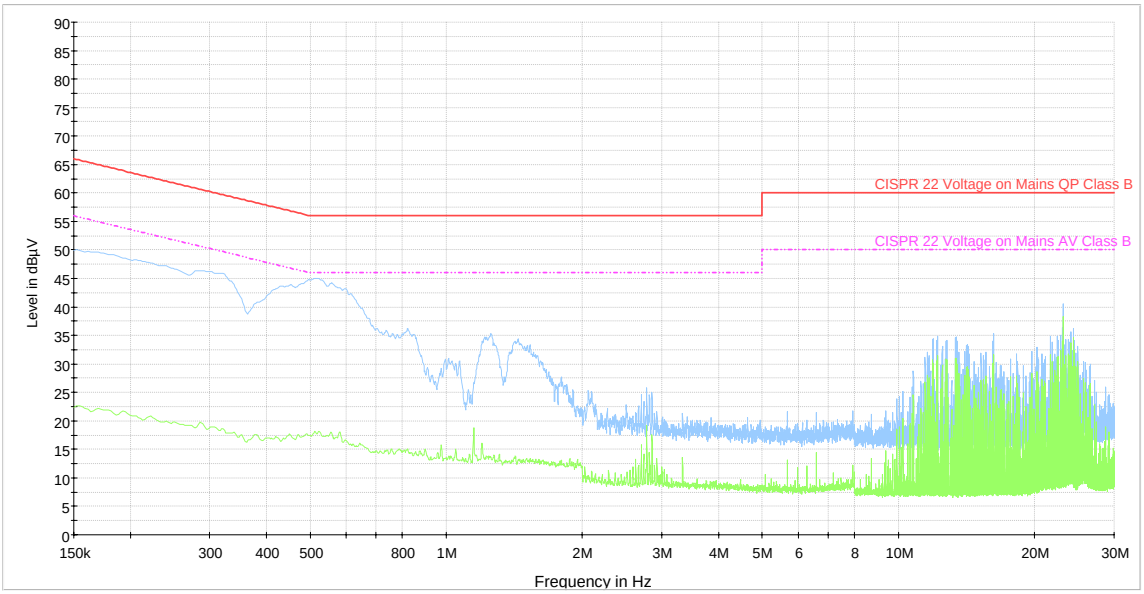
Frequency MHz	QuasiPeak dBµV	Meas. Time ms	Bandwidth kHz	Filter	Line	Corr. dB	Margin dB	Limit dBµV
0.525750	41.7	100.000	9.000	On	L1	10.1	14.3	56.0
0.566250	39.8	100.000	9.000	On	L1	10.1	16.2	56.0

Phase



Conducted Emissions on Phase Line
CISPR 22 Voltage on Mains QP Class B.LimitLine
CISPR 22 Voltage on Mains AV Class B.LimitLine
Preview Peak Result
Preview Average Result
Final Quasi-Peak Result

Neutral



Conducted Emissions on Neutral Line
CISPR 22 Voltage on Mains QP Class B.LimitLine
CISPR 22 Voltage on Mains AV Class B.LimitLine
Preview Peak Result
Preview Average Result

Clause 15.109(a) Radiated Emissions

Except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency of Emission (MHz)	Field Strength (microvoltsmeter)
30 - 88	100
88 - 216	150
216 - 960	200
Above 960	500

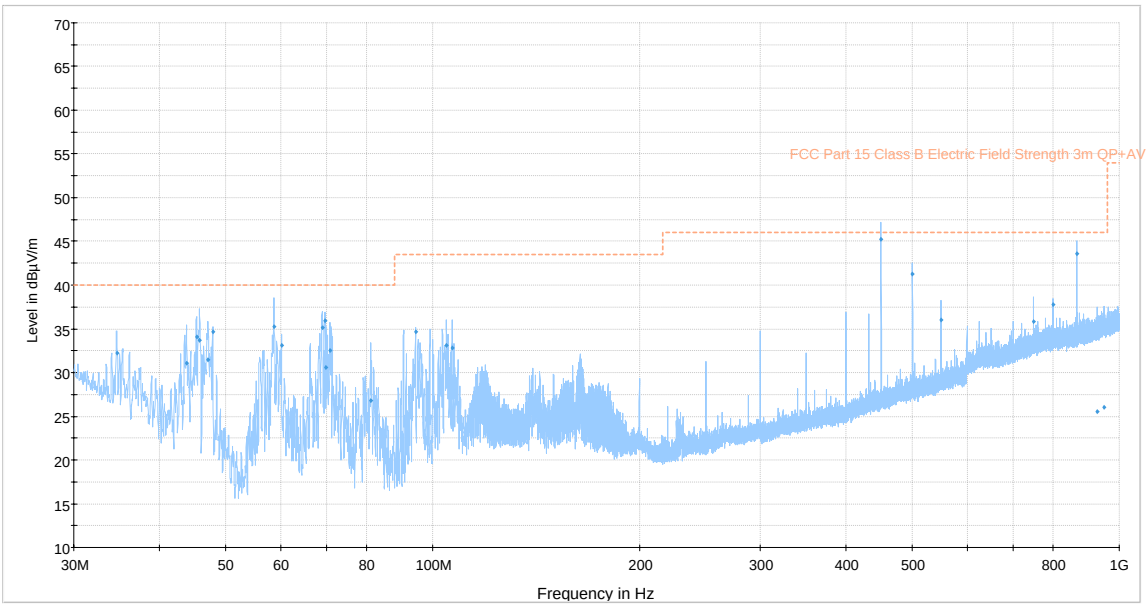
Test Results: Pass

Additional Observations:

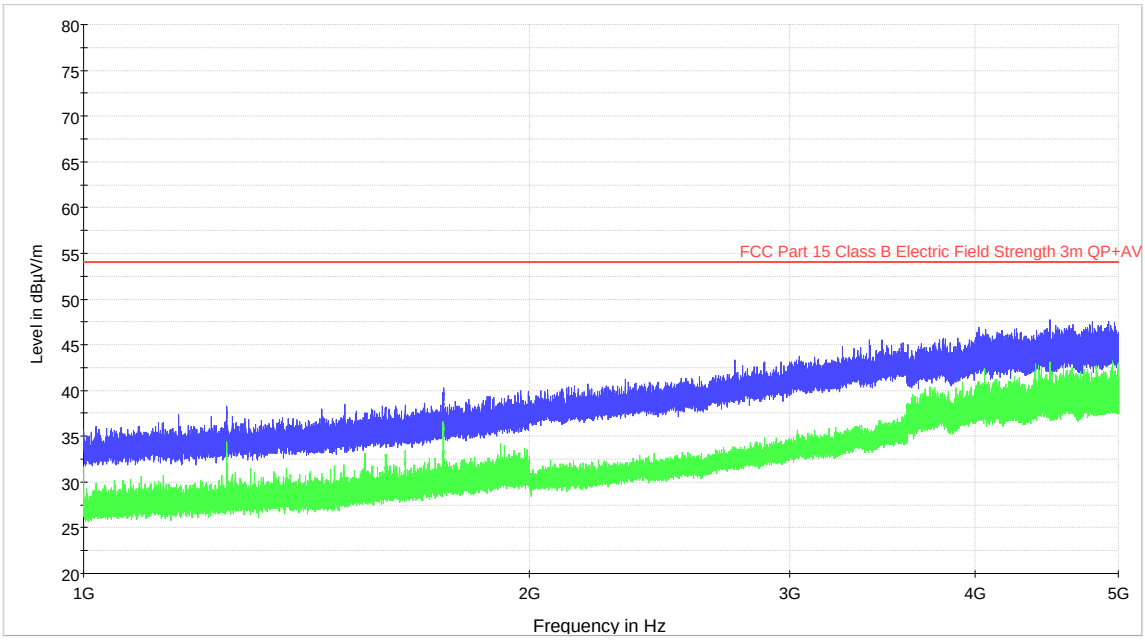
The Spectrum was searched from 30 MHz to 5GHz.

Measurement equipment setup was 120 kHz Quasi-peak detector for measurements below 1 GHz and 1 MHz RBW/VBW peak detector above 1 GHz.

All Measurements were performed at 3 meters.



Radiated Emissions
FCC Part 15 Class B Electric Field Strength 3m QP+AV.LimitLine
Preview Peak Result
Final Quasi-Peak Result



Radiated Emissions
MaxPeak-MaxHold
Average-MaxHold
FCC Part 15 Class B Electric Field Strength 3m QP+AV

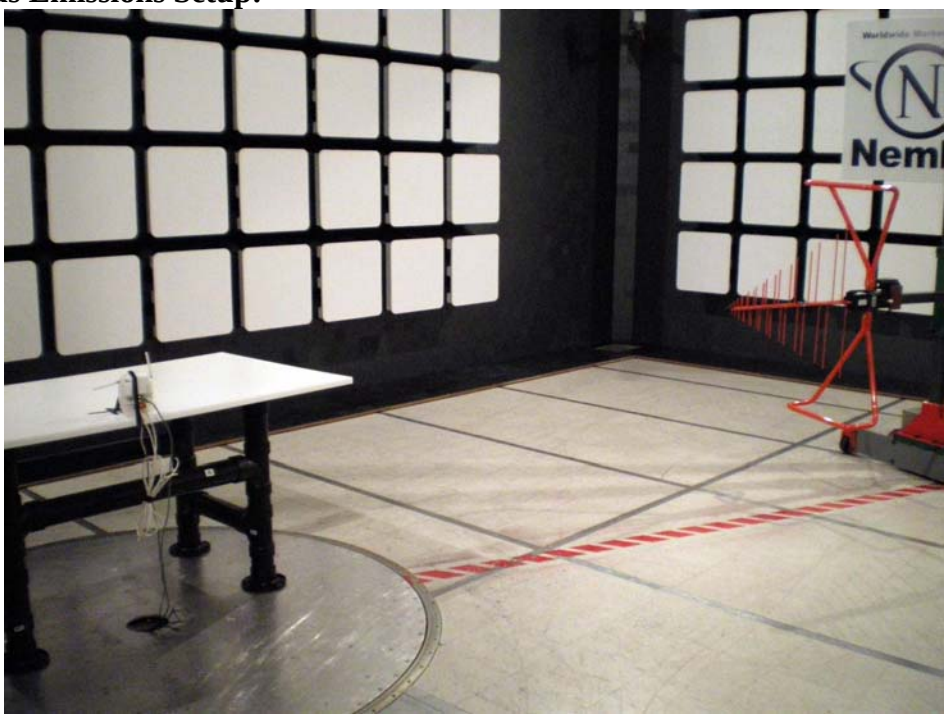
Frequency	QuasiPeak	Meas. Time	Bandwidth	Antenna height	Polarity	Turntable position	Corr.	Margin	Limit
MHz	dBµV/m	ms	kHz	cm		deg	dB	dB	dBµV/m
34.650000	32.2	100.000	120.000	100.0	V	7.0	17.6	7.8	40.0
43.800000	31.0	100.000	120.000	119.0	V	62.0	11.2	9.0	40.0
45.270000	34.1	100.000	120.000	100.0	V	223.0	10.4	5.9	40.0
45.750000	33.7	100.000	120.000	100.0	V	223.0	10.1	6.3	40.0
47.070000	31.4	100.000	120.000	108.0	V	223.0	9.5	8.6	40.0
47.790000	34.7	100.000	120.000	99.9	V	-1.0	9.2	5.3	40.0
58.710000	35.2	100.000	120.000	100.0	V	182.0	8.3	4.8	40.0
60.240000	33.1	100.000	120.000	100.0	V	22.0	8.4	6.9	40.0
69.000000	35.2	100.000	120.000	100.0	V	141.0	7.9	4.8	40.0
69.720000	36.0	100.000	120.000	111.0	V	141.0	7.8	4.0	40.0
69.960000	30.6	100.000	120.000	119.0	V	112.0	7.7	9.4	40.0
70.830000	32.6	100.000	120.000	100.0	V	141.0	7.7	7.4	40.0
81.210000	26.8	100.000	120.000	150.0	V	30.0	9.1	13.2	40.0
94.380000	34.6	100.000	120.000	108.1	V	100.0	10.4	8.9	43.5
104.76000	33.1	100.000	120.000	100.0	V	1.0	12.9	10.4	43.5
106.71000	32.8	100.000	120.000	100.0	V	13.0	13.2	10.7	43.5
450.00000	45.3	100.000	120.000	100.0	H	306.0	18.9	0.7	46.0
500.01000	41.2	100.000	120.000	100.1	V	278.0	19.5	4.8	46.0
549.99000	36.0	100.000	120.000	100.0	V	-1.0	20.5	10.0	46.0
750.00000	35.9	100.000	120.000	183.0	H	0.0	23.7	10.1	46.0
799.98000	37.8	100.000	120.000	121.0	V	138.0	23.9	8.2	46.0
867.60000	43.6	100.000	120.000	100.1	H	297.0	24.9	2.4	46.0
929.04000	25.6	100.000	120.000	279.9	H	0.0	25.6	20.4	46.0
951.33000	26.0	100.000	120.000	219.0	H	292.0	26.1	20.0	46.0

Note 1: Antenna Legend: BC = Biconical, BL = Bilog, LP = Log-Periodic, Horn = Horn, ED = EMCO Dipole

Appendix B : Setup Photographs

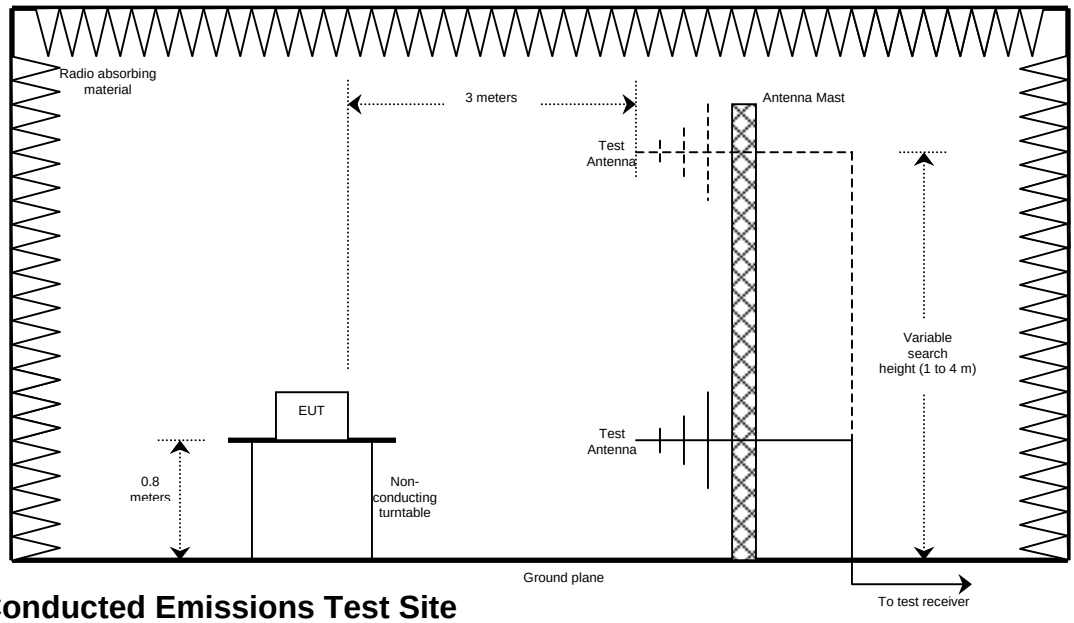
Conducted Emissions Setup:

Spurious Emissions Setup:



Appendix C : Block Diagram of Test Setups

Radiated Emissions above 30MHz Test Site



Conducted Emissions Test Site