Nemko

COMLAB
Accredited Testing and Certification
EMC, Radio and Telecommunications

www.nemko.com

Test report no. : 110398-11

Item tested : KX-TH1211

Type of equipment : UPCS Base station with Bluetooth Transceiver

FCC ID : ACJ96NKX-TH1211

Client : Panasonic Communications Co., Ltd.

FCC Part 15.247

Frequency Hopping Transmitters /
Digital Transmission System

1 August 2008

Authorized by : .....

Egil Hauger
Technical Verificator

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CONTENTS

1 GENERAL INFORMATION 3
1.1 Testhouse Info 3
1.2 Client Information 3
1.3 Manufacturer 3

2 Test Information 4
2.1 Test Item 4
2.2 Test Environment 5
2.3 Test Period 5

3 TEST REPORT SUMMARY 6
3.1 General 6
3.2 Test Summary 7
3.3 Description of modification for Modification Filing 7
3.4 Comments 7
3.5 Family List Rational 7

4 TEST RESULTS 8
4.1 Power Line Conducted Emissions 8
4.2 Spurious Emissions 11

5 LIST OF TEST EQUIPMENT 17

6 BLOCK DIAGRAM 18
6.1 System set up 18
6.2 Power Line Conducted Emission 18
6.3 Test Site Radiated Emission 19

1 GENERAL INFORMATION

1.1 Testhouse Info

Name :	Nemko AS
Address :	Nemko Comlab Gåsevikveien 8, Box 96 N-2027 Kjeller, NORWAY
Telephone :	+47 64 84 57 00
Fax :	+47 64 84 57 05
E-mail:	post@comlab.no
FCC test firm registration # :	994405
Total Number of Pages:	19

1.2 Client Information

Name :	Panasonic Communications Co. Ltd.
Address :	1-62, 4-chome, Minoshima, Hakata-ku, Fukuoka 812-8531, Japan
Telephone :	+81 92 477 1405

Contact:

Name :	Mr. Junji Sumi
Telephone :	+81 92 477 1405
E-mail :	sumi.junji@jp.panasonic.com

1.3 Manufacturer

Name :	/
Address :	/

2 Test Information

2.1 Test Item

Name :	Panasonic
FCC ID :	ACJ96NKX-TH1211
Model/version :	KX-TH1211
Serial number :	/
Hardware identity and/or version:	/
Software identity and/or version :	/
Frequency Range :	2402 – 2480 MHz
Tunable Bands :	1
Number of Channels :	79
Operating Modes :	Frequency Hopping Spread Spectrum
Type of Modulation :	Digital (GFSK)
User Frequency Adjustment :	None
Rated Output Power :	30 mW Peak
Type of Power Supply :	Power Adaptor: Panasonic PQLV219
Antenna Connector :	None
Number of Antennas :	2
Antenna Diversity Supported :	Yes
Desktop Charger :	None

Description of Test Item

The tested equipment is a Bluetooth Transceiver that is integrated into a UPCS base station.

This test report covers only for the Bluetooth Transceiver. The UPCS part is identical to the previously certified model KX-TG9331 (FCC ID: ACJ96NKX-TG9331; IC ID: 216A-KXTG9331) which is covered by Nemko Comlab test reports **93830-5** and **95029-5**

The tested equipment has integral antennas only.

Theory of Operation

The tested EUT is a Frequency Hopping Transmitter that uses the Bluetooth protocols.

Exposure Evaluation

The EUT is designed to be fixed to a wall etc. and the user manual contains text that it shall be mounted with a separation distance of at least 20cm from any persons. For the purposes of exposure evaluation this EUT is a mobile or fixed device. MPE Calculation at 20cm satisfying FCC requirements is submitted as a separate document.

2.2 Test Environment

2.2.1 Normal test condition

Temperature:	21 – 23 °C
Relative humidity:	20 - 40 %
Normal test voltage:	120 V 60 Hz AC

The values are the limit registered during the test period.

2.3 Test Period

Item received date:	2008-07-28
Test period :	from 2008-07-28 to 2008-07-30

3 TEST REPORT SUMMARY

3.1 General

Manufacturer: Panasonic

Model No.: KX-TH1211

Serial No.: /

All measurements are tracable to national standards.

The tests were conducted for the purpose of demonstrating compliance with FCC CFR 47 Part 15, paragraph 15.247.

Radiated tests were conducted in accordance with ANSI C63.4-2003. The radiated tests were made in a semi-anechoic chamber at measuring distances of 3 and 10 metres.

☐ New Submission ☒ Production Unit

☒ Class I Permissive Change ☐ Pre-production Unit

DSS Equipment Code ☐ Family Listing

THIS TEST REPORT APPLIES ONLY TO THE ITEM(S) AND CONFIGURATIONS TESTED.

Deviations from, additions to, or exclusions from the test specifications are described in "Summary of Test Data".

TEST REPORT NO: 110398-11

TESTED BY: _____ DATE: 31 July 2008

Frode Sveinsen, Chief engineer

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3.2 Test Summary

Name of test	FCC Part 15 reference	Result
Power Line Conducted Emission	15.107(a) 15.207(a)	Complies
Spurious Emissions (Radiated)	15.247(c) 15.109(a) 15.209(a)	Complies[1]

[1] This report covers only frequencies below 1 GHz.

3.3 Description of modification for Modification Filing

Not applicable.

3.4 Comments

This test report covers only re-tests for use with the new AC Adaptor PQLV219.

This test report covers only the Bluetooth Module in the KX-TH1211.

The operating channel(s) and slot length was programmed with a computer and with the software supplied by the manufacturer.

All ports were populated during spurious emission measurements.

3.5 Family List Rational

Not Applicable.

4 TEST RESULTS

4.1 Power Line Conducted Emissions

Para. No.: 15.207 (a)

Test Performed By: Tore Moe	**Date of Test: 30-Jul-2008**

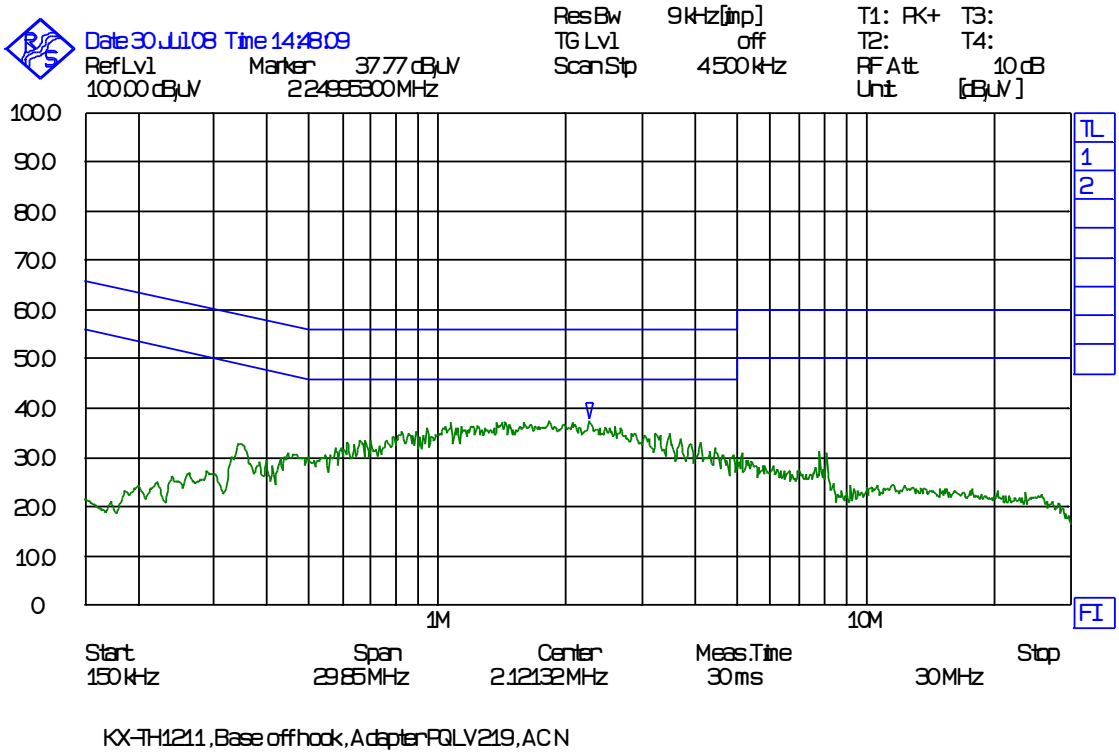
Measurement procedure: **ANSI C63.4-2003 using 50 µH/50 ohms LISN.**

Test Results: **Complies.**

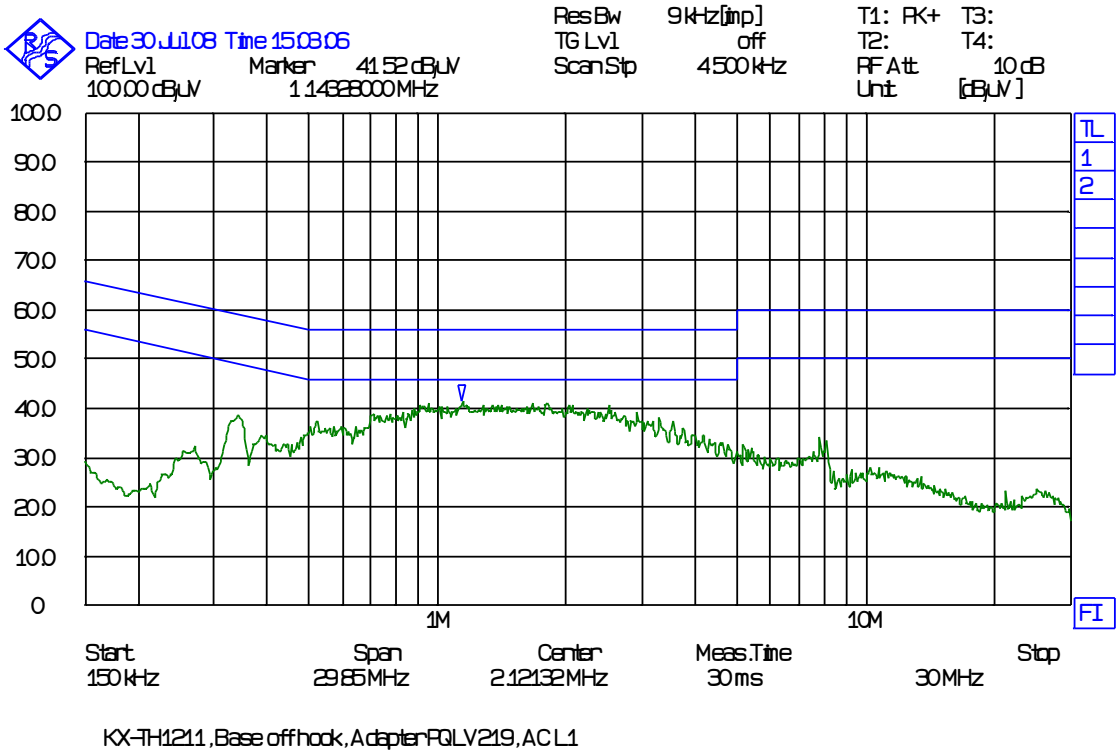
Measurement Data: **See attached graph, (Peak detector).**

Highest measured value (L1 and N):

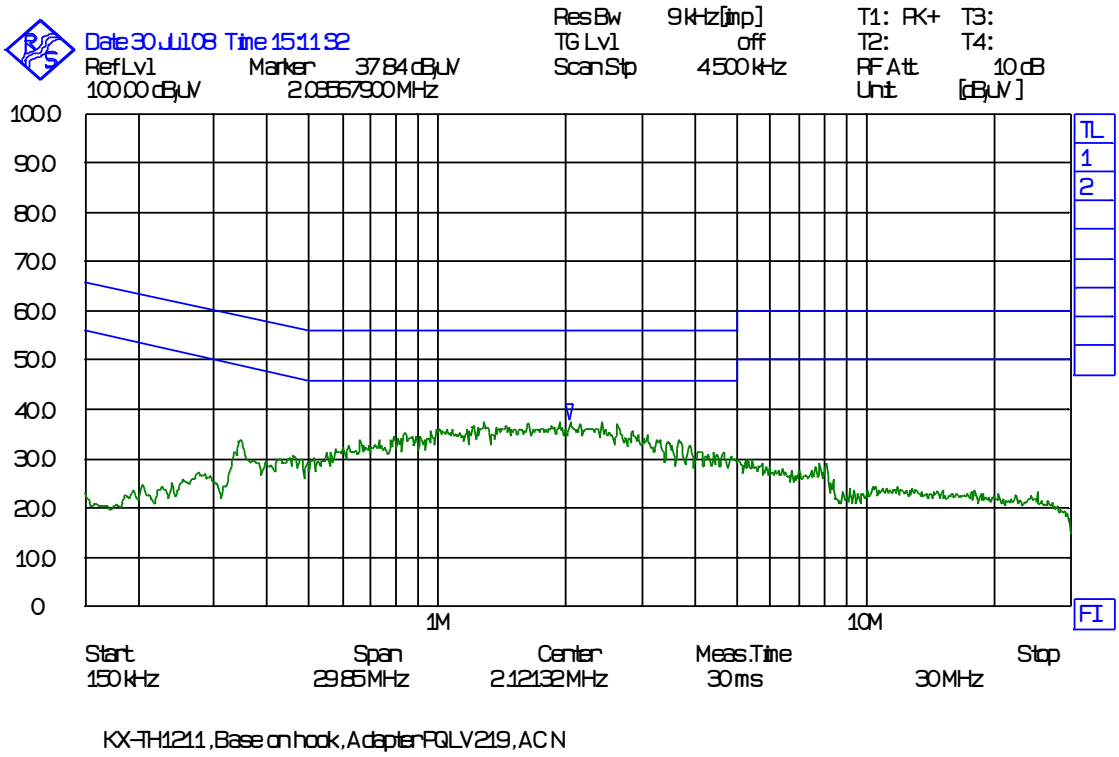
Frequency	Detector	Measured value	Limit	Margin
KHz	Peak/QP/AV	dBµV	dBµV	dB
/	QP	/	/	/
/	AV	/	/	/
/	QP	/	/	/
/	AV	/	/	/



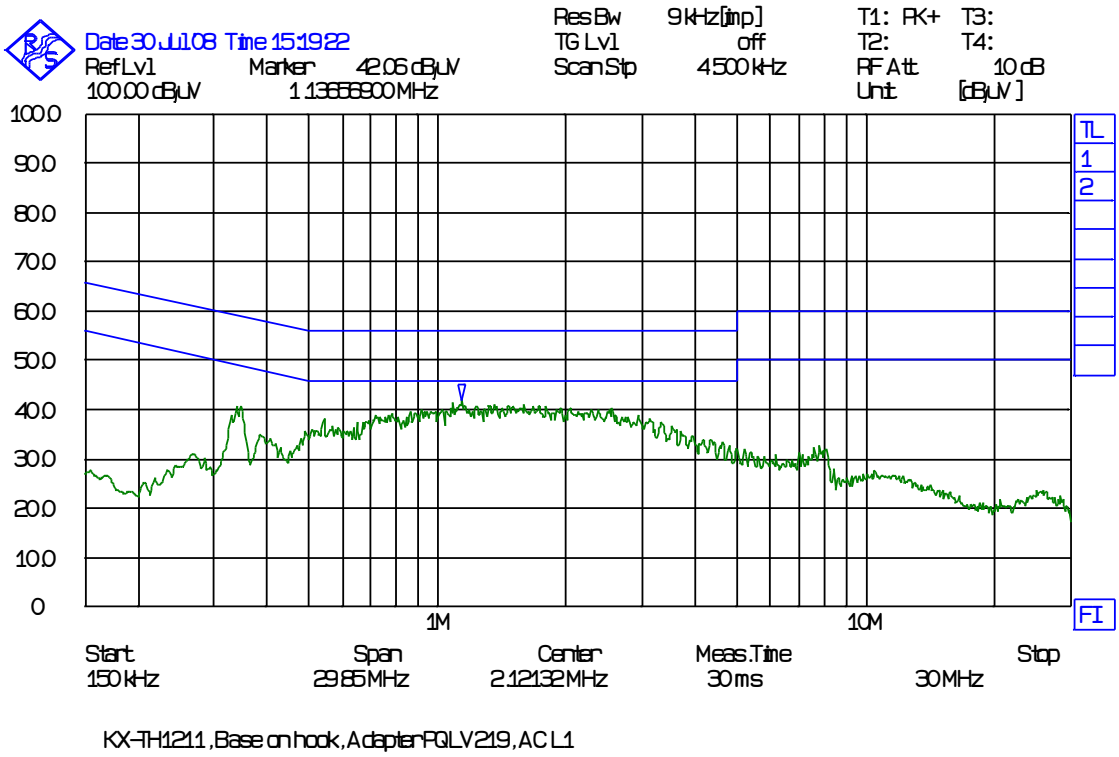
Phase N, TX ON



Phase L1, TX ON



Phase N, RX



Phase L1, RX

4.2 Spurious Emissions

Para. No.: 15.247 (c)

Test Performed By: Frode Sveinsen	**Date of Test: 29-Jul-2008**

Test Results: Complies

Measurement Data:

Radiated Emission 30 – 1000 MHz.

Detector: Quasi-Peak

Measuring distance 10m according to CISPR 22.

Tested in TX-mode with hopping active.

See attached graphs.

Radiated Emissions 10 kHz-30 MHz.

Measuring distance 10m, measured with Peak detector.

No component were detected, see attached graph.

Limit is converted to 10m using 40 dB/decade according to 15.31 (f) (2).

Tested in TX-mode with hopping active.

NEMKO AS 29. Jul 08 14:07

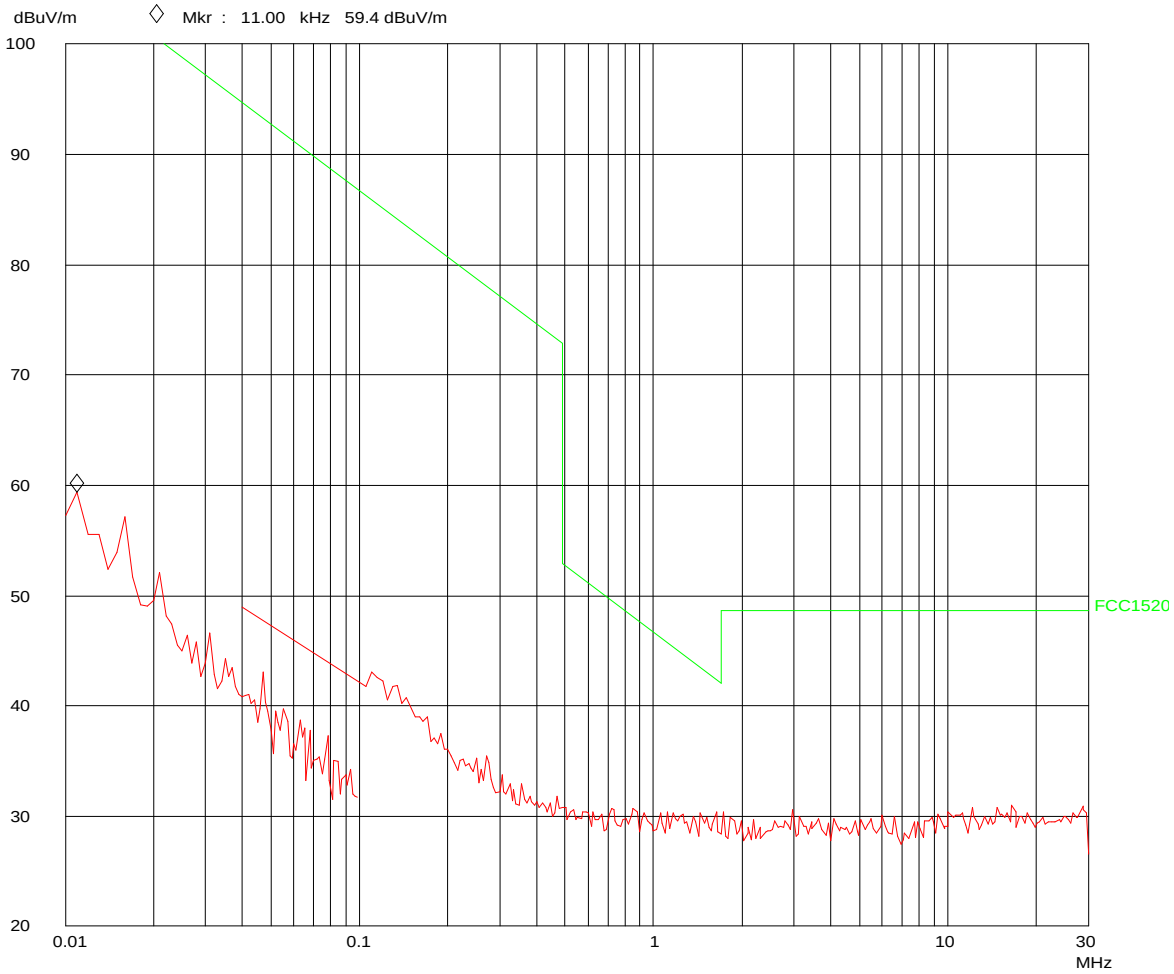
Peak

Operator: FS
Comment: Panasonic
KX-TH1211 BT
@10m
FCC 15.209
Bluetooth TX

Scan Settings (4 Ranges)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
10k	100k	1k	1k	PK	20ms	0dB	LN OFF	60dB
20k	20k	5k	9k	PK	20ms	AUTO	LN ON	60dB
20k	10M	5k	9k	PK	20ms	AUTO	LN OFF	60dB
10M	30M	5k	9k	PK	20ms	AUTO	LN OFF	60dB

Transducer No.	Start	Stop	Name
13	10k	30M	HFH2Z2



Radiated Emissions 10 kHz – 30 MHz

NEMKO AS 29. Jul 08 13:02

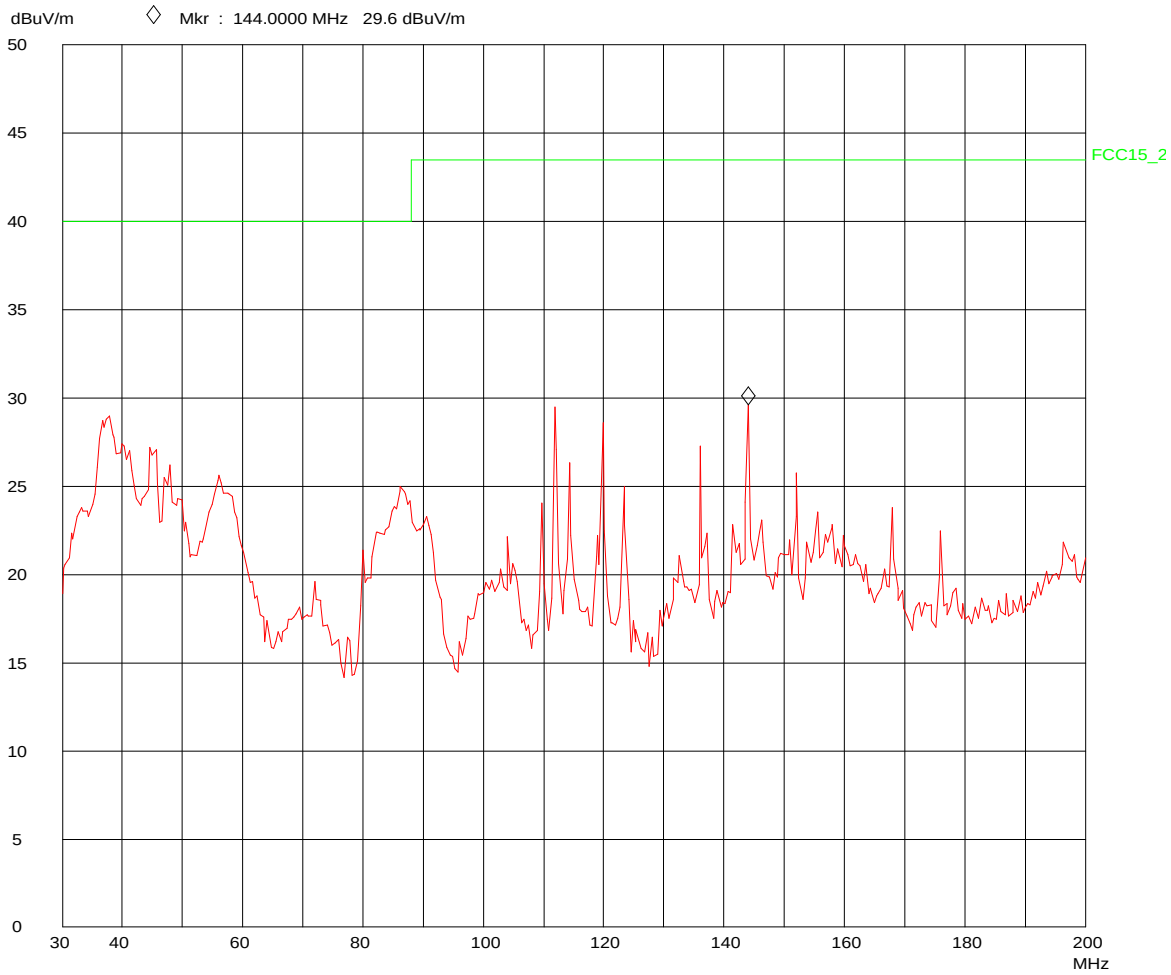
Peak

Operator: FS
Comment: Panasonic
KX-TH1211 BT
1m VP, @3m
FCC 15.209
Bluetooth TX

Scan Settings (1 Range)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
30M	200M	50k	120k	PK	50ms	AUTO	LN ON	60dB

Transducer No.	Start	Stop	Name
20	30M	200M	HK116



Radiated Emissions 30 – 200 MHz, Vertical Polarization

NEMKO AS 29. Jul 08 13:15

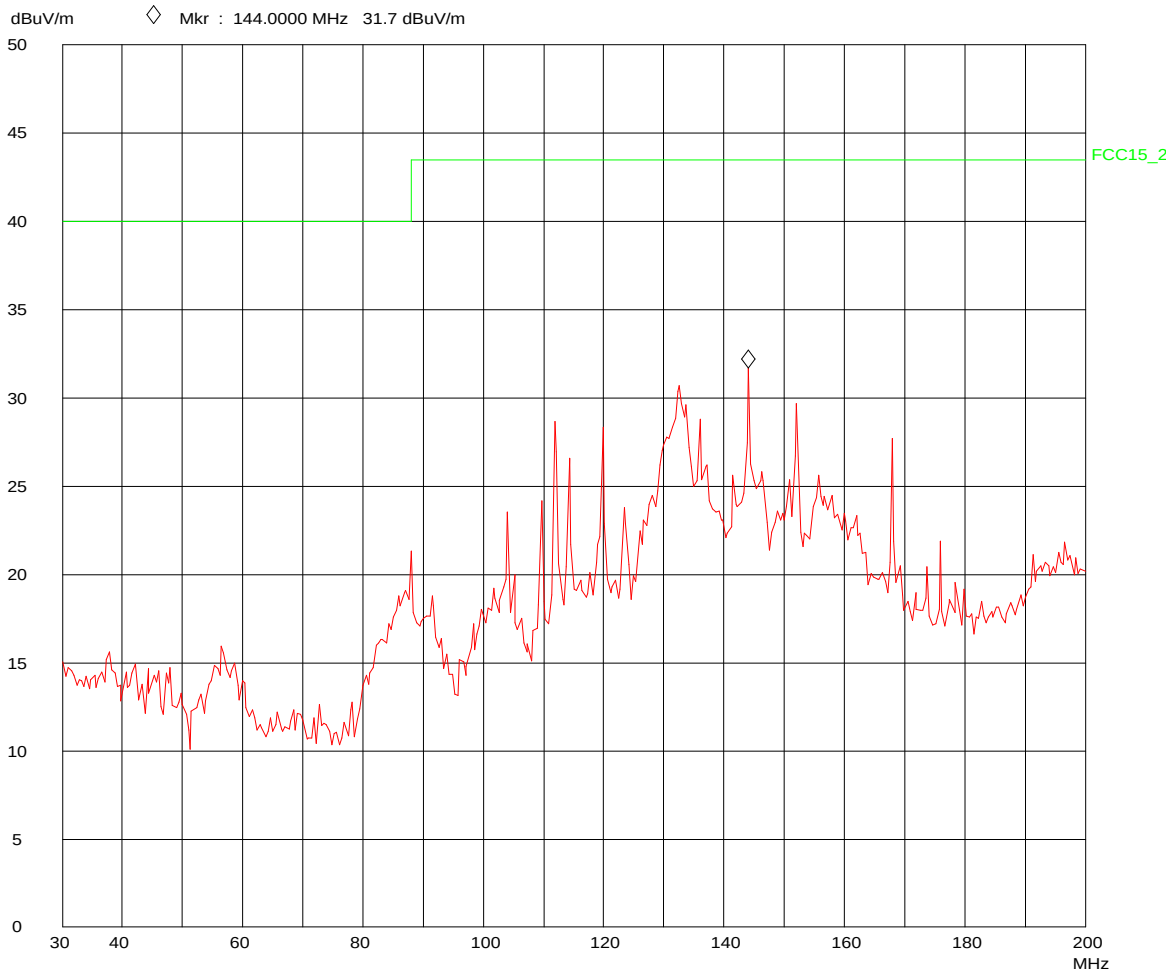
Peak

Operator: FS
Comment: Panasonic
KX-TH1211 BT
2m HP, @3m
FCC 15.209
Bluetooth TX

Scan Settings (1 Range)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
30M	200M	50k	120k	PK	50ms	AUTO	LN ON	60dB

Transducer No.	Start	Stop	Name
20	30M	200M	HK116



Radiated Emissions 30 – 200 MHz, Horizontal Polarization

NEMKO COMLAB 29. Jul 08 12:26

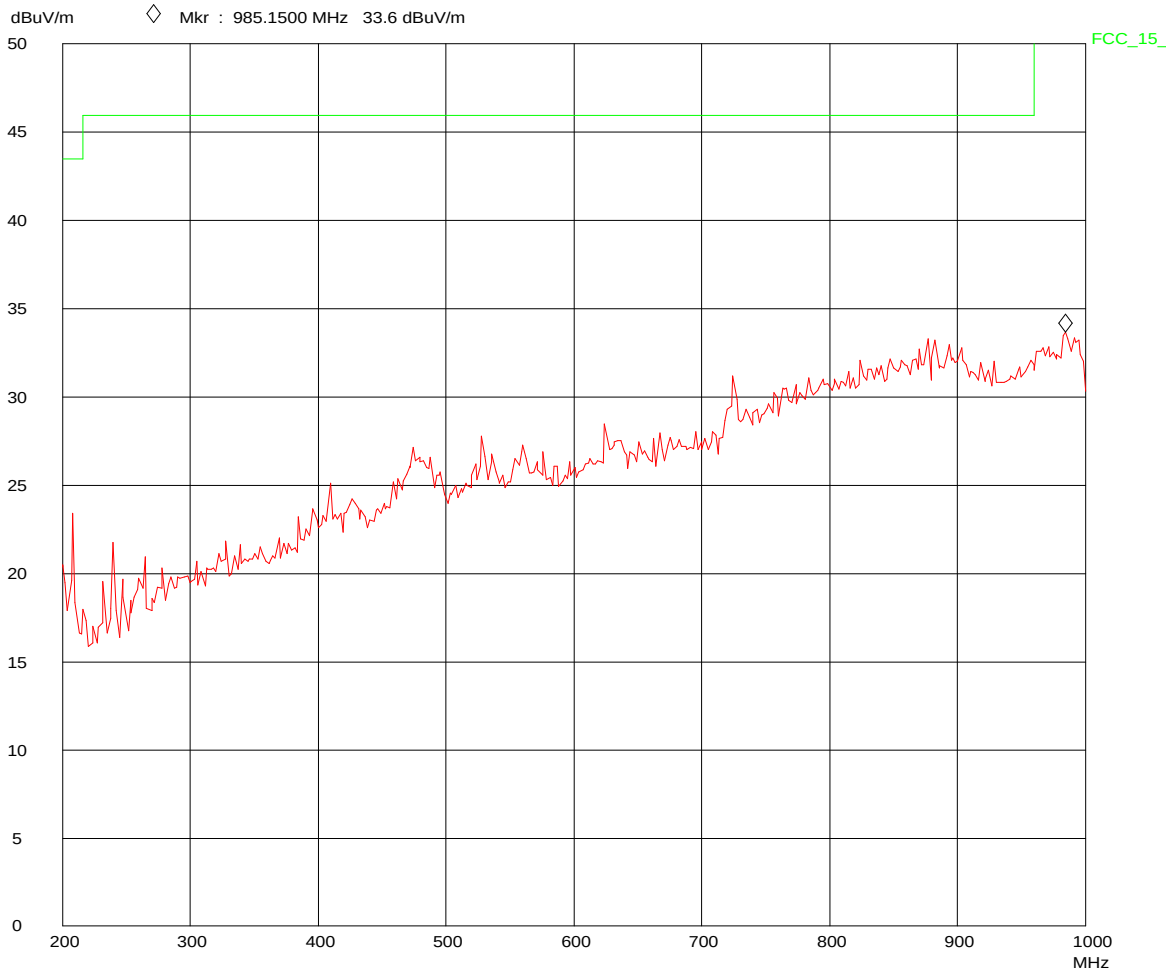
Peak

Operator: FS
Comment: Panasonic
KX-TH1211 BT
1m VP, @3m
FCC 15.209
Bluetooth TX

Scan Settings (1 Range)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
200M	1000M	50k	120k	PK	20ms	AUTO	LN ON	60dB

Transducer No.	Start	Stop	Name
21	200M	1000M	HL223



Radiated Emissions 200 – 1000 MHz, Vertical Polarization

NEMKO COMLAB 29. Jul 08 12:39

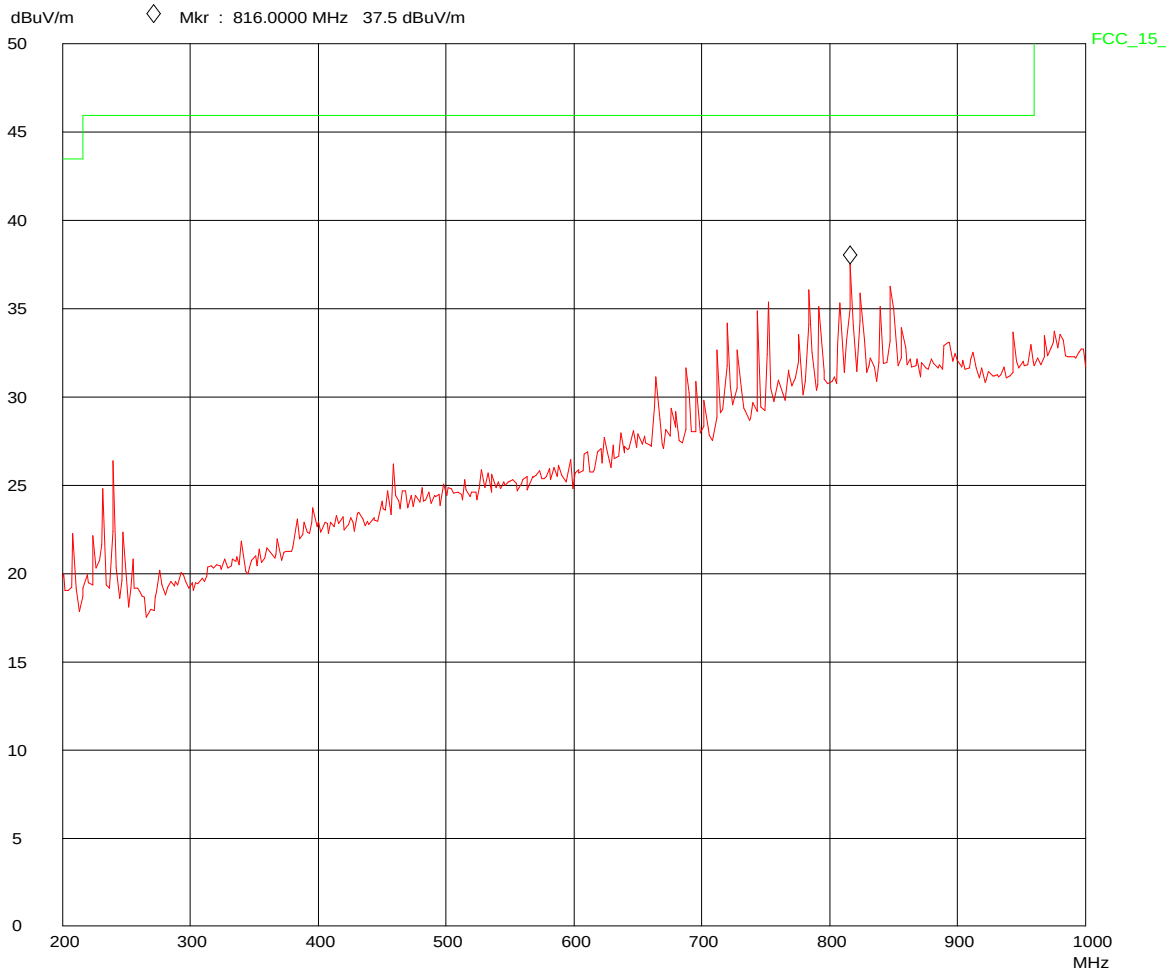
Peak

Operator: FS
Comment: Panasonic
KX-TH1211 BT
2m HP, @3m
FCC 15.209
Bluetooth TX

Scan Settings (1 Range)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
200M	1000M	50k	120k	PK	20ms	AUTO	LN ON	60dB

Transducer No.	Start	Stop	Name
21	200M	1000M	HL223



Radiated Emissions 200 – 1000 MHz, Horizontal Polarization

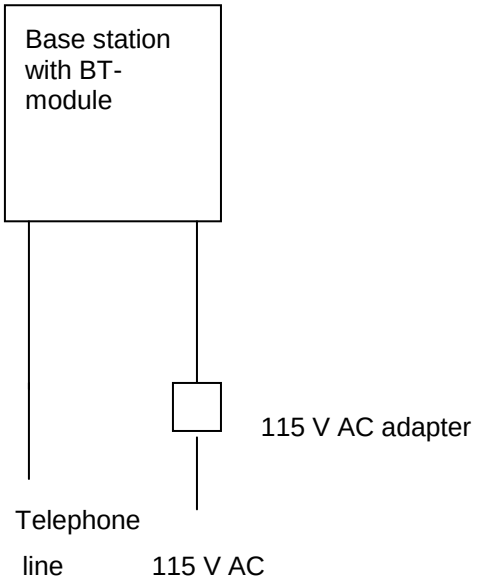
5 LIST OF TEST EQUIPMENT

To facilitate inclusion on each page of the test equipment used for related tests, each item of test equipment and ancillaries are identified (numbered) by the Test Laboratory.

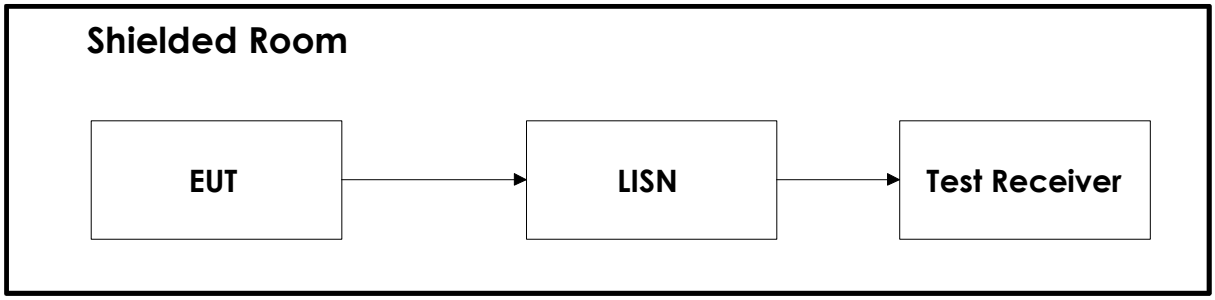
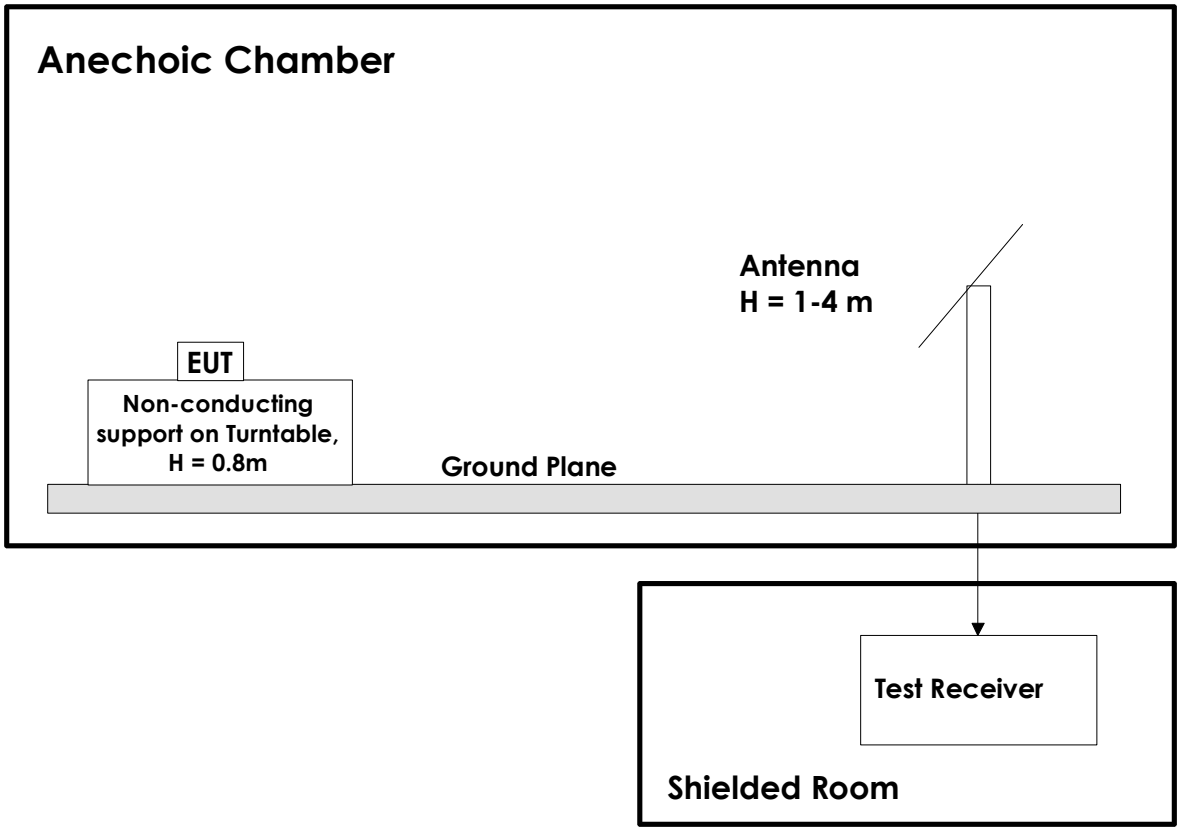
No.	Instrument/ancillary	Type of instrument/ancillary	Manufacturer	Ref. no.
1	FSU26	Spectrum Analyzer	Rohde & Schwarz	LR 1504
2	3115	Antenna horn	EMCO	LR 1330
3	643	Antenna horn	Narda	LR 093
4	642	Antenna horn	Narda	LR 220
5	PM7320X	Antenna horn	Siverts lab	LR 103
6	DBF-520-20	Antenna horn	Systron Donner	LR 101
7	638	Antenna horn	Narda	LR 098
8	6812B	AC Power Source	Agilent	LR 1515
9	ESH3-Z3	LISN	Rohde & Schwarz	LR 1076
10	8449B	Amplifier	Hewlett Packard	LR 1322
11	HFH2-Z2	Antenna loop	Rohde and Schwarz	LR 285
12	10855A	Amplifier	Hewlett Packard	LR 1445
13	HL223	Antenna log.per	Rohde & Schwarz	LR 1261
14	HK116	Antenna biconic	Rohde & Schwarz	LR 1260
15	ESVS 30	Test Receiver	Rohde & Schwarz	LR 1101
16	ESN	Test Receiver	Rohde & Schwarz	LR 1237
17	80S	Signal Generator	Powertron	LT 502

6 BLOCK DIAGRAM

6.1 System set up



6.2 Power Line Conducted Emission



6.3 Test Site Radiated Emission