

## Test Report

<b>Product</b>	DECT Base Station with Bluetooth Transceiver		
<b>Name and address of the applicant</b>	Panasonic Corporation of North America Two Riverfront Plaza, 9 <sup>th</sup> Floor Newark, 07102-5490, NJ, USA		
<b>Name and address of the manufacturer</b>	Panasonic Corporation 1-62, 4-chome, Minoshima, Hakata-ku Fukuoka, 812-8531, Japan		
<b>Model</b>	KX-TGF770, KX-TGF780		
<b>Rating</b>	Mains (120V, 60Hz)		
<b>Trademark</b>	Panasonic		
<b>Serial number</b>	/		
<b>Additional information</b>	DECT 6.0, Bluetooth		
<b>Tested according to</b>	<b>FCC Part 15, subpart B</b> Other Class B Digital Device <b>Industry Canada ICES-003, Issue 6</b> Information Technology Equipment (ITE)		
<b>Order number</b>	363985		
<b>Tested in period</b>	2018.10.12 to 2018.11.08		
<b>Issue date</b>	2018.11.19		
<b>Name and address of the testing laboratory</b>	 Instituttveien 6 Kjeller, Norway www.nemko.com	SITE NUMBER: FCC: NO0001 IC: 2040D-1	 
An accredited technical test executed under the Norwegian accreditation scheme			
 Prepared by [Frode Sveinsen]		 Approved by [Jan G Eriksen]	
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## CONTENTS

<b>1</b>	<b>INFORMATION .....</b>	<b>3</b>
1.1	Tested Item.....	3
1.2	Test Environment.....	4
1.3	Test Engineer(s).....	4
1.4	Test Equipment.....	4
1.5	Other Comments .....	4
<b>2</b>	<b>TEST REPORT SUMMARY .....</b>	<b>5</b>
2.1	General.....	5
2.2	Test Summary .....	6
<b>3</b>	<b>TEST RESULTS.....</b>	<b>7</b>
3.1	Power Line Conducted Emissions .....	7
3.2	Spurious Emissions (Radiated) .....	9
<b>4</b>	<b>MEASUREMENT UNCERTAINTY .....</b>	<b>15</b>
<b>5</b>	<b>TEST SETUPS.....</b>	<b>16</b>
5.1	Radiated Emissions Test .....	16
5.2	Power Line Conducted Emissions Test .....	16
<b>6</b>	<b>TEST EQUIPMENT USED .....</b>	<b>17</b>

## 1 INFORMATION

### 1.1 Tested Item

<b>Name</b>	Panasonic
<b>FCC ID</b>	ACJ96NKX-TGF780
<b>ISED ID</b>	216A-KXTGF780
<b>Model name</b>	KX-TGF770, KX-TGF780
<b>FCC / IC Class</b>	B
<b>Serial number</b>	/
<b>Hardware identity and/or version</b>	PNLB2793xx
<b>Software identity and/or version</b>	SW200
<b>Tested to IC Radio Standard (RSS)</b>	RSS-GEN Issue 5; ICES-003 Issue 6
<b>Test Site IC Reg. Number</b>	2040D-1
<b>Desktop Charger</b>	AC Adaptor PNLV226

#### Description of Tested Device(s)

The EUT is a DECT Base Station with Bluetooth transceiver for connection to a cellular phone or Bluetooth headset. If the Base station is connected to a cellular phone it is possible to make outgoing calls through the cellular phone from DECT handsets connected to the Base Station.

The models KX-TGF770 and KX-TGF780 are identical.

## 1.2 Test Environment

Temperature:	20 – 25 °C
Relative humidity:	30 – 50 %
Normal test voltage:	120 V AC

The values are the limit registered during the test period.

## 1.3 Test Engineer(s)

Frode Sveinsen

## 1.4 Test Equipment

See list of test equipment in clause 6.

## 1.5 Other Comments

All tests were performed with all ports populated and operating.

## 2 TEST REPORT SUMMARY

### 2.1 General

All measurements are traceable to national standards.

All tests were performed in accordance with ANSI C63.4-2014 where applicable. Radiated emissions are made in a 10m semi-anechoic chamber. A description of the test facility is on file with FCC and Industry Canada.



#### **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".

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## 2.2 Test Summary

Name of test	FCC CFR 47, Paragraph #	ISED RSS-GEN, Issue 5, Paragraph #	ISED ICES-003, Issue 6, Paragraph #	Verdict
Power Line Conducted Emission	15.107(a) 15.207(a)	7.2 / 8.8	6.1	Complies
Spurious Emissions (Radiated)	15.109	7.3 / 8.9	6.2	Complies

### 3 TEST RESULTS

#### 3.1 Power Line Conducted Emissions

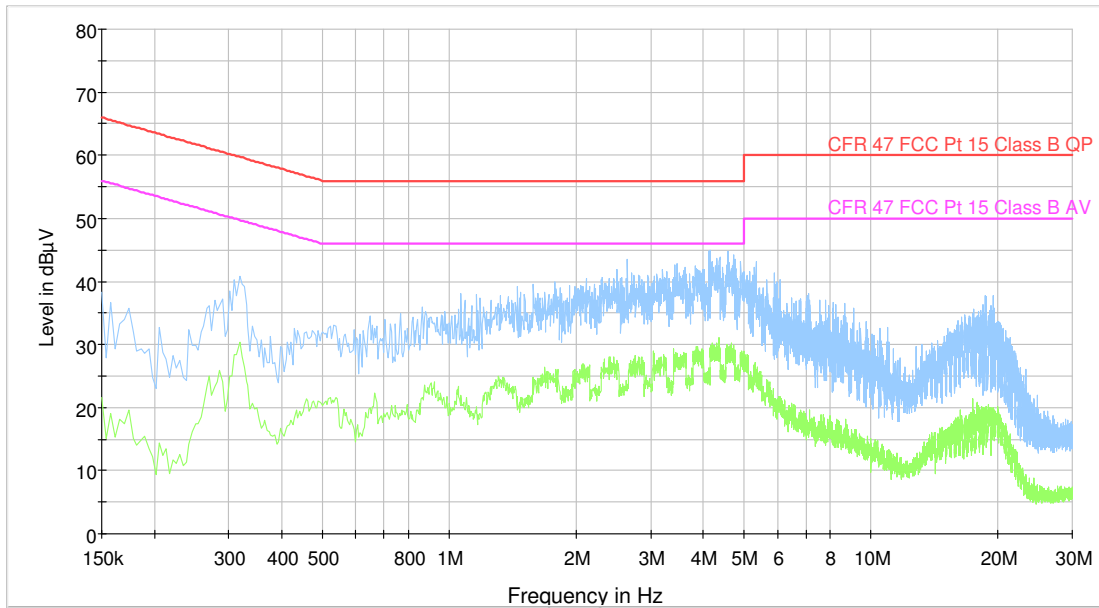
FCC Part 15.107 (a)

ISED ICES-003 Issue 6, Clause 6.1

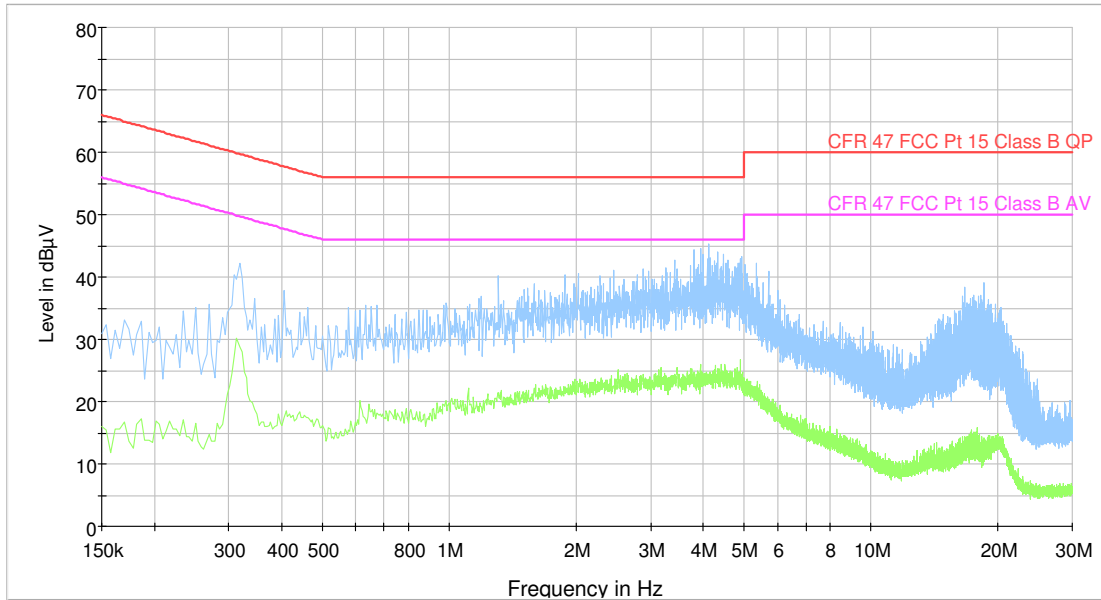
Measurement procedure: ANSI C63.4-2014 using 50  $\mu$ H/50 ohms LISN.

Test Results: Complies

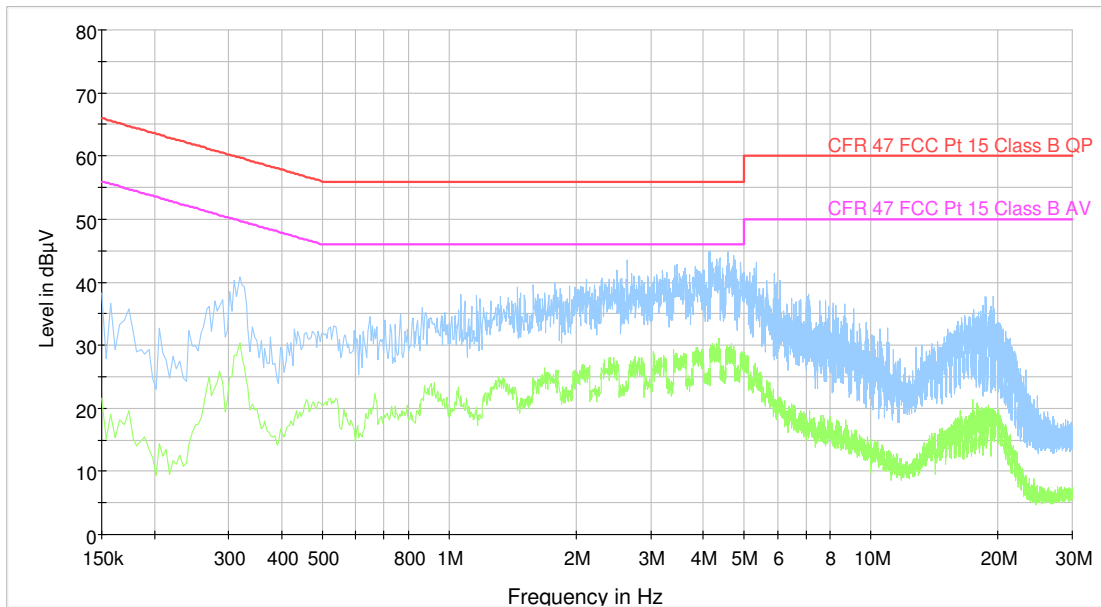
Measurement Data: See attached plots.



120V 60Hz, Standby



**120V 60Hz, OFF Hook**



**120V 60Hz, ON Hook, Handset Charging**



### 3.2 Spurious Emissions (Radiated)

FCC Part 15.109

ISED ICES-003 Issue 6, Clause 6.2

#### Test Results:

##### Radiated emission 10 kHz-30 MHz.

Measuring distance 10 m, Peak Detector.

No component detected, see attached graph.

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

##### Radiated Emissions 30 - 1000 MHz.

Detector: Quasi-Peak

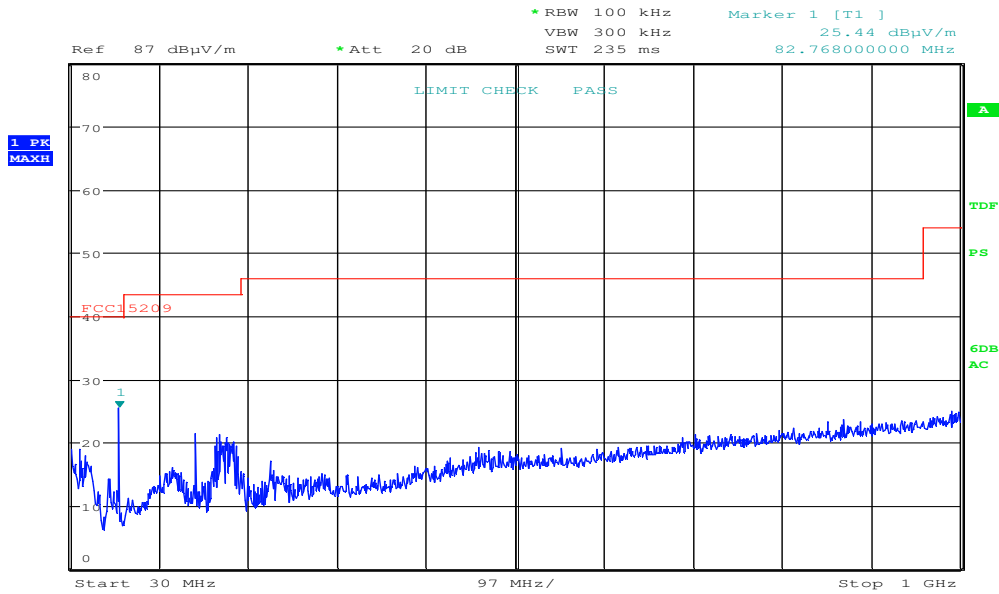
Measuring distance 3 m

The EUT were rotated 360 degrees and the antenna height varied between 1 and 4 m on all found frequencies.

Frequency MHz	Dist. corr. Factor dB	Field strength @3m QP Det., dB $\mu$ V/m	Limit dB $\mu$ V/m	Margin dB
41.505	0	28.1	40.0	11.9
53.096	0	28.7	40.0	11.3
82.964	0	32.1	40.0	7.9
190.147	0	19.4	43.5	24.1
228.221	0	19.6	46.0	26.4
746.635	0	23.6	46.0	22.4

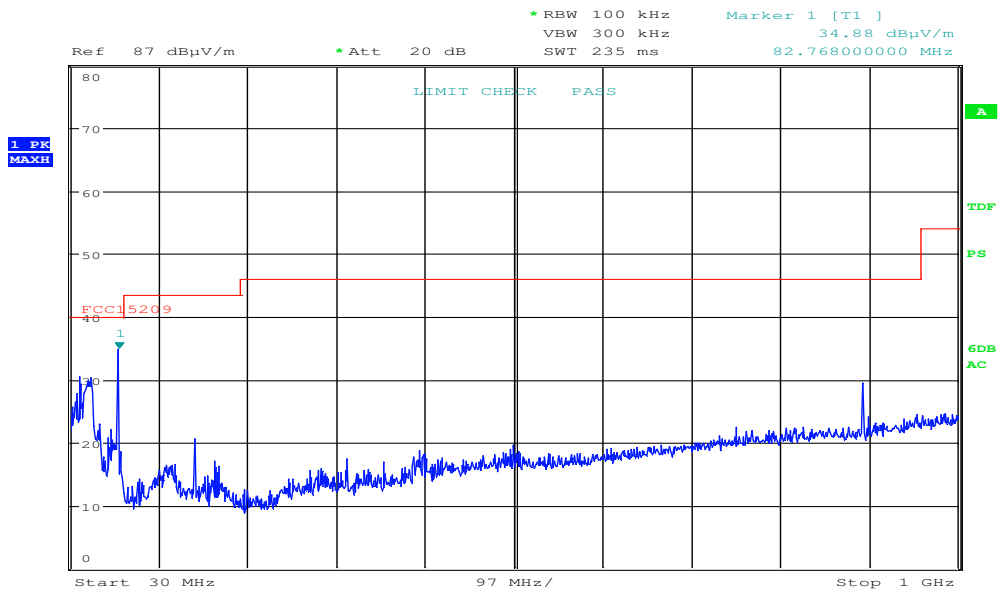
#### Requirements/Limit

<b>FCC</b>	Part 15.209 @ frequencies defined in §15.205	
<b>ISED</b>	RSS-GEN Issue 4, Clause 8.9 @ frequencies defined in clause 8.10	
	<b>Radiated emission limit @3 meters</b>	
<b>Frequency (MHz)</b>	<b>Quasi Peak (<math>\mu</math>V/m)</b>	<b>Quasi Peak (dB<math>\mu</math>V/m)</b>
<b>30 – 88</b>	100	40.0
<b>88 – 216</b>	150	43.5
<b>216 – 960</b>	200	46.0
<b>960 – 1000</b>	500	54.0



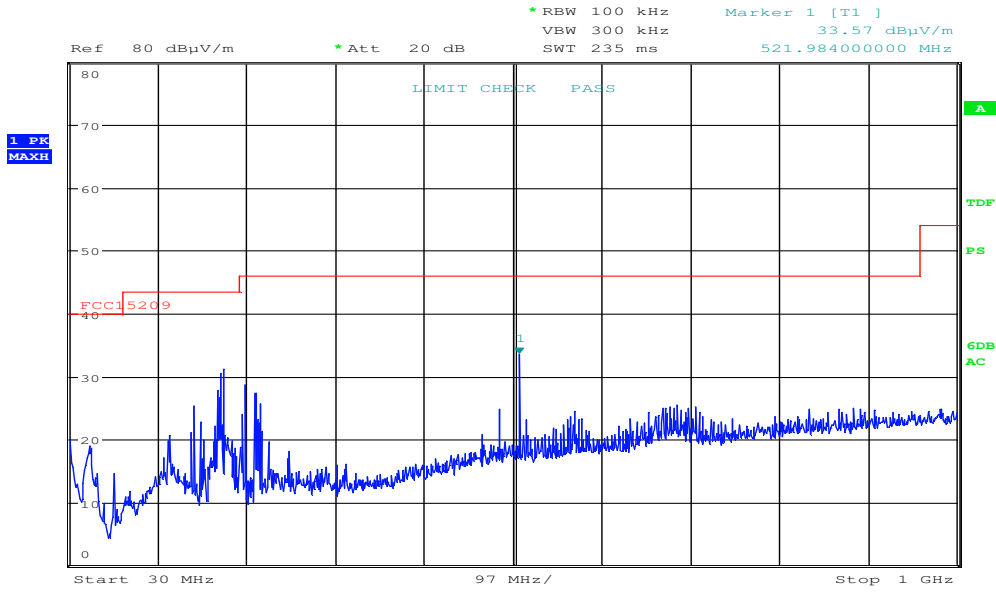
Date: 15.OCT.2018 11:08:23

**Radiated Emissions, 30 – 1000 MHz, Standby, HP**



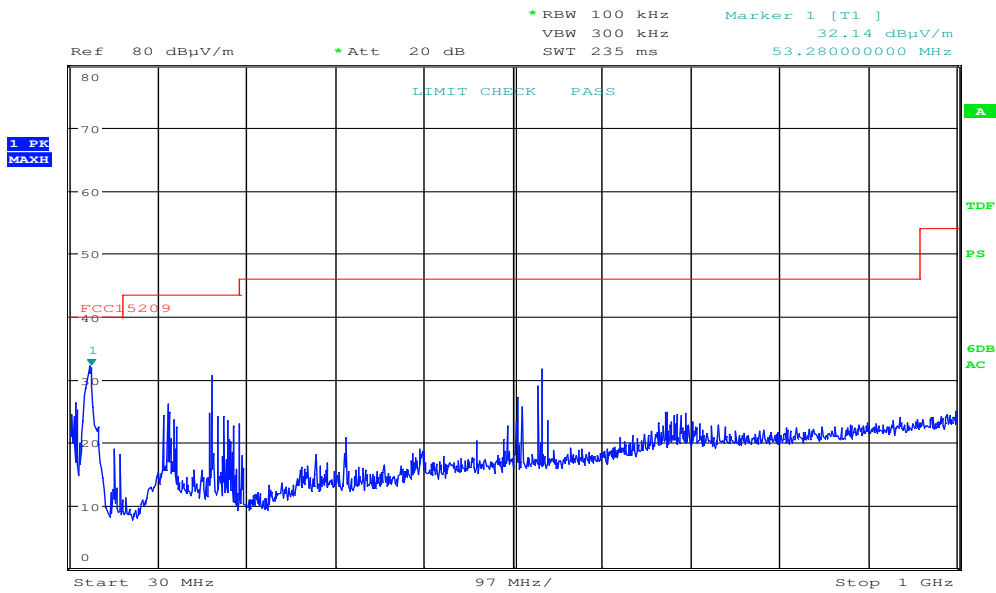
Date: 15.OCT.2018 11:06:20

**Radiated Emissions, 30 – 1000 MHz, Standby, VP**



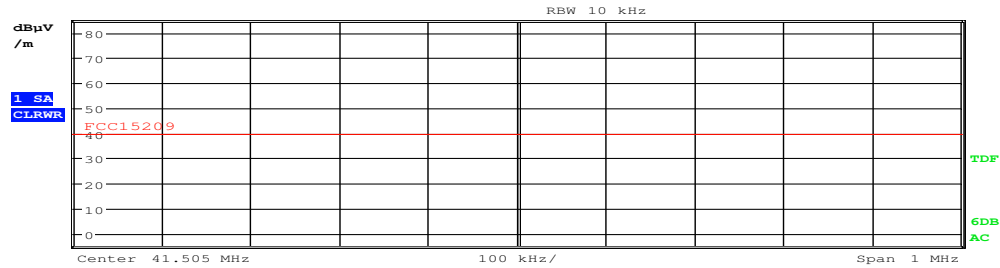
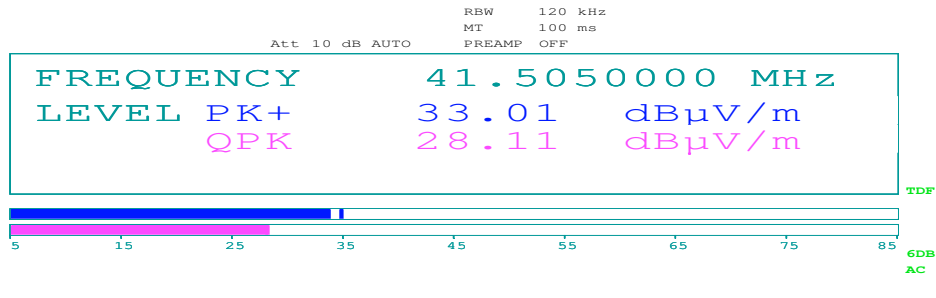
Date: 15.OCT.2018 12:52:35

**Radiated Emissions, 30 – 1000 MHz, BT Call, HP**



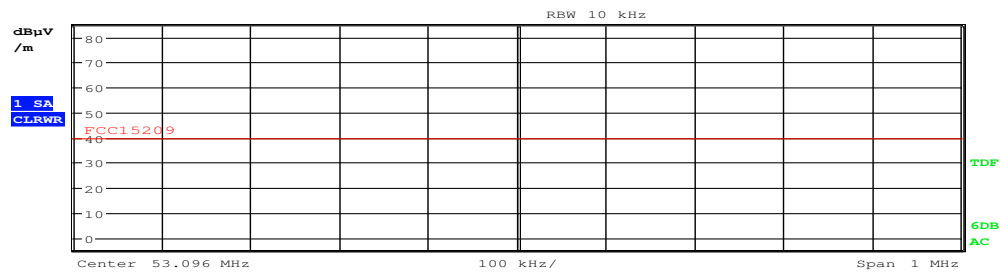
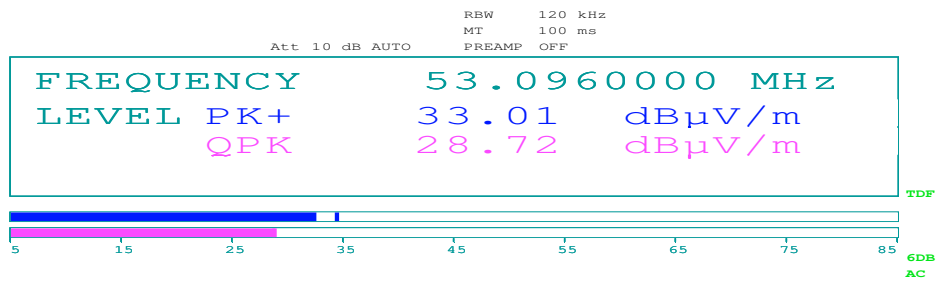
Date: 15.OCT.2018 12:50:32

**Radiated Emissions, 30 – 1000 MHz, BT Call, VP**



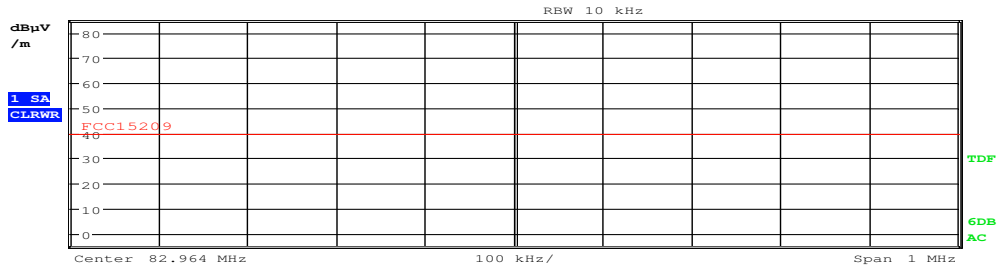
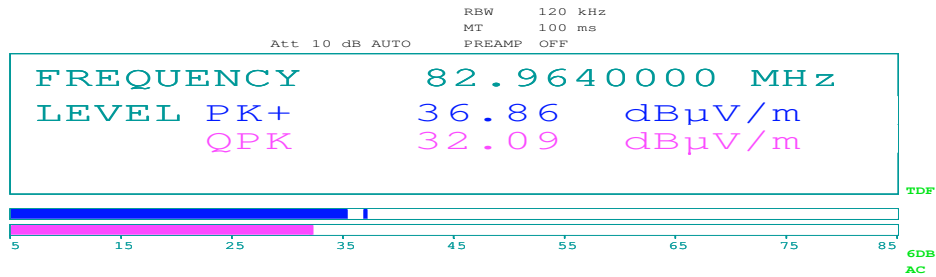
Date: 15.OCT.2018 12:20:33

**Radiated Emissions, 41.505 MHz, BT Call, VP**



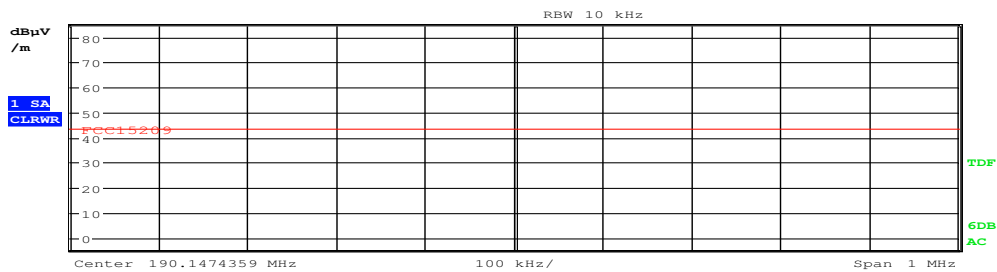
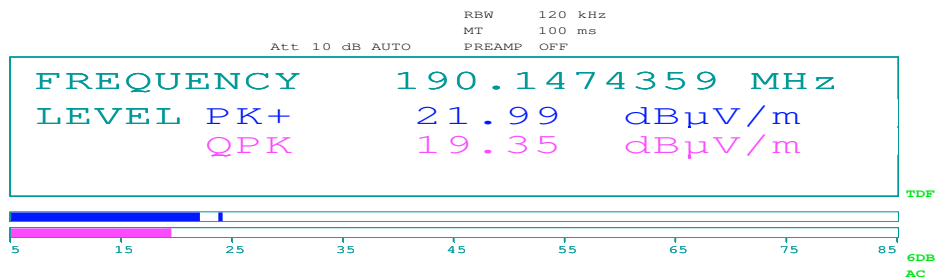
Date: 15.OCT.2018 13:13:41

**Radiated Emissions, 53.096 MHz, BT Call, VP**



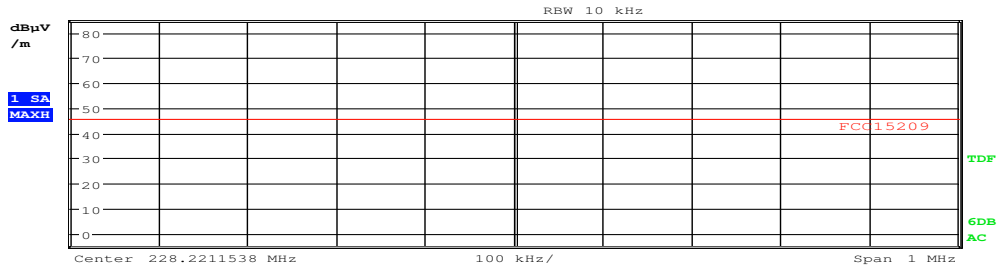
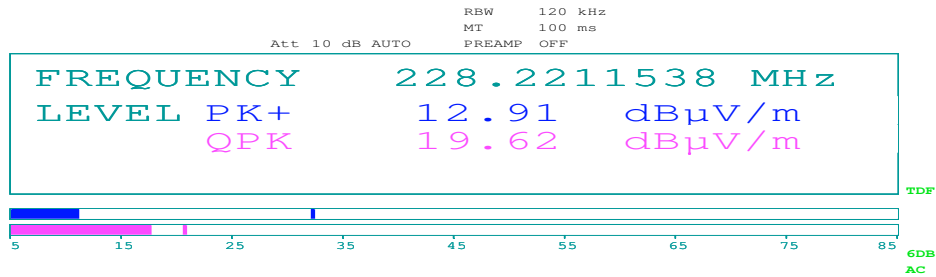
Date: 15.OCT.2018 10:45:42

**Radiated Emissions, 82.964 MHz, BT Call, VP**



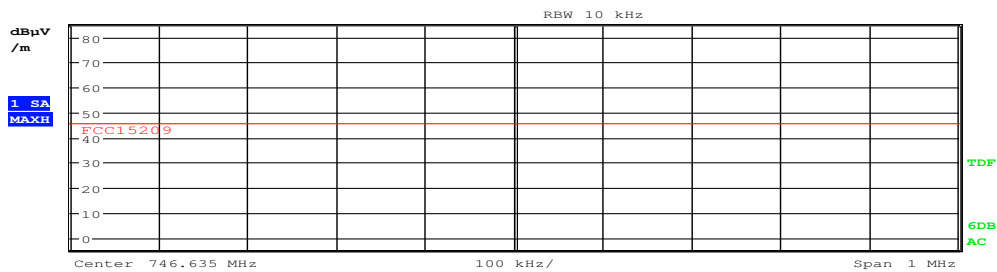
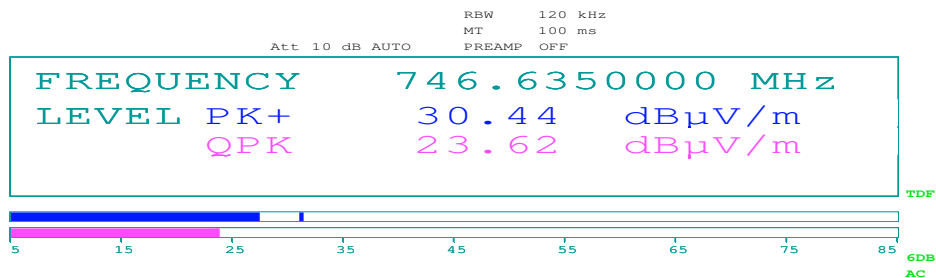
Date: 15.OCT.2018 12:22:37

**Radiated Emissions, 190.147 MHz, BT Call, HP**



Date: 15.OCT.2018 14:13:15

**Radiated Emissions, 228.221 MHz, BT Call, VP**



Date: 15.OCT.2018 14:35:32

**Radiated Emissions, 746.635 MHz, BT Call, VP**

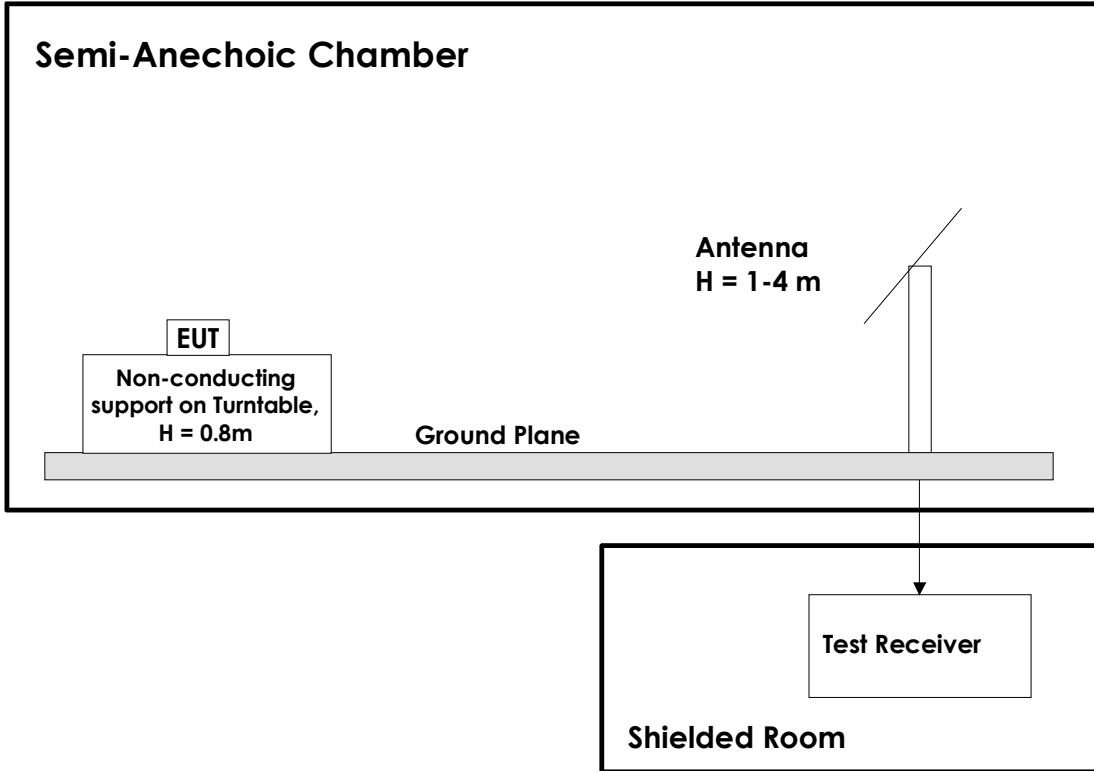
## 4 Measurement Uncertainty

Measurement Uncertainty Values		
Test Item		Uncertainty
Spurious Emissions, Radiated	< 1 GHz	±2.5 dB
	> 1 GHz	±2.2 dB
Power Line Conducted Emissions		+2.9 / -4.1 dB
Temperature Uncertainty		±1 °C

All uncertainty values are expanded standard uncertainty to give a confidence level of 95%, based on coverage factor k=2

## 5 Test Setups

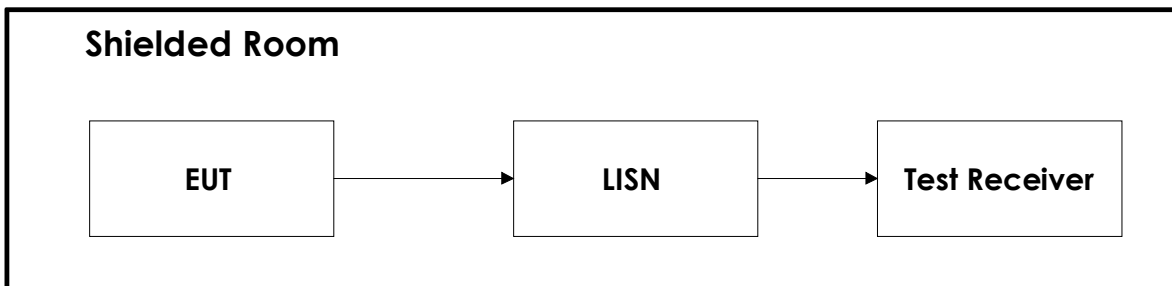
### 5.1 Radiated Emissions Test



#### Test Set-Up 1

This test setup is used for all radiated emissions tests. For frequencies below 30 MHz the measuring distance is 10m, for all other frequencies it is 3m or 1m. Emissions above 1 GHz are measured with a Spectrum Analyzer and Horn Antenna. For measurements above 18 GHz the test receiver is moved inside the anechoic chamber and located next to the antenna to minimize the cable loss. All measurements at 1GHz and above were performed with turntable height 1.5m and with the ground plane covered by absorbers. A pre-amplifier is used for all measurements above 30 MHz.

### 5.2 Power Line Conducted Emissions Test



#### Test Set-Up 2



## 6 Test Equipment Used

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 Testhouse.

No.	Model number	Description	Manufacturer	Ref. no.	Cal. date	Cal. Due
1	ESU40	Measuring Receiver	Rohde & Schwarz	LR 1639	2018.03	2019.03
2	JB3	BiLog Antenna	Sunol Sciences	N-4525	2017.11	2020.11
3	317	Pre-amplifier	Sonoma Inst.	LR 1687	2018.07	2019.07
4	Model 87V	Multimeter	Fluke	LR 1597	2018.02	2019.02
5	6812B	AC Power Source	Hewlett Packard	LR 1515	COU	
6	ESCI3	Measuring Receiver	Rohde & Schwarz	N-4259	2017.10	2019.10
7	ENV216	Two Line V-Network	Rohde & Schwarz	LR 1665	2017.11	2019.11
8	ST18/SMA/N/36	RF Cable	Suhner	LR 1627	COU	

COU = Cal on use

The software listed below has been used for one or more tests in this report.

No.	Manufacturer	Name	Version	Comment
1	Rohde & Schwarz	EMC32	10.40.10	Conducted Emissions test software
2	Rohde & Schwarz	GPIBShot	2.7	Screenshots from R&S Spectrum Analyzers

### Revision history

Version	Date	Comment	Sign
1.0	2018.11.19	First Edition	FS