Report No. 388656-01

Test Report

Product	DECT Base Station with Cordless Desktop Phone
Name and address of the applicant	Panasonic Corporation of North America Two Riverfront Plaza, 9th Floor Newark, 07102-5490, NJ, USA
Name and address of the manufacturer	Panasonic Corporation 1-62, 4-chome, Minoshima, Hakata-ku Fukuoka, 812-8531, Japan
Model	KX-TGM460
Rating	Mains (120V, 60Hz)
Trademark	Panasonic
Serial number	/
Additional information	DECT 6.0
Tested according to	**FCC Part 15, subpart B** Other Class B Digital Device **Industry Canada ICES-003, Issue 6** Information Technology Equipment (ITE)
Order number	388656
Tested in period	2019-12-10
Issue date	2020-01-09
Name and address of the testing laboratory	Nemko Instituttveien 6 Kjeller, Norway www.nemko.com CAB Number: FCC: NO0001 ISED: NO0470 TEL: +47 22 96 03 30 FAX: +47 22 96 05 50 ilac-MRA NORWEGIAN ACCREDITATION TEST 033 **An accredited technical test executed under the Norwegian accreditation scheme**

Prepared by [Frode Sveinsen]	Approved by [G.Suhanthakumar]

Template version: C

CONTENTS

1 INFORMATION

1.1 Tested Item

Name	Panasonic
Model name	KX-TGM460 (USA Model) KX-TGM460C (Canada Model)
FCC ID	ACJ96NKX-TGM460
ISED ID	216A-KXTGM460
FCC / ISED Canada Class	B
Serial number	/
Hardware identity and/or version	PNLB2574
Software identity and/or version	SW201
Radio Interfaces	1921.536 – 1928.448 MHz, GFSK, DECT 6.0
Tested to IC Radio Standard (RSS)	RSS-GEN Issue 5; ICES-003 Issue 6
Test Site IC Reg. Number	2040D-1
Interfaces	PSTN
Desktop Charger	AC Adaptor PNLV236
Companion Device	KX-TGMA45 (FCC ID: ACJ96NKX-TGMA45)

1.2 Description of Tested Device

KX-TGM460 is a DECT Base Station, KX-TGMA45 is a DECT Handset.
See description of similarity in below table.

Description	US Model	Canada Model	FCC ID	IC ID	Comment
DECT Base with Speakerphone	KX-TGM460	KX-TGM460C	ACJ96NKX-TGM460	216A-KXTGM460	Bluetooth and PNLV236
	KX-TGM450	KX-TGM450C	ACJ96NKX-TGM450	216A-KXTGM450	PNLV236, No Bluetooth
	KX-TGM430	KX-TGM430C	ACJ96NKX-TGM430	216A-KXTGM430	Bluetooth and PNLV226
	KX-TGM420	KX-TGM420C	ACJ96NKX-TGM420	216A-KXTGM420	PNLV226, No Bluetooth
DECT Handset	KX-TGMA45	KX-TGMA45C	ACJ96NKX-TGMA45	216A-KXTGMA45	50dB Amplified volume
	KX-TGMA44	KX-TGMA44C	ACJ96NKX-TGMA44	216A-KXTGMA44	40dB Amplified volume

The only difference between the Base Stations are the BT Module and the AC adaptor. Models without BT have the same PCB, but the BT module is removed.

1.3 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.

1.4 Test Engineer(s)

Frode Sveinsen

1.5 Test Equipment

See list of test equipment in clause 6.

1.6 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 is 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”.

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

RSS-GEN Issue 5, Clause 7.2 / 8.8

Measurement procedure: **ANSI C63.4-2014 using 50 µH/50 ohms LISN**

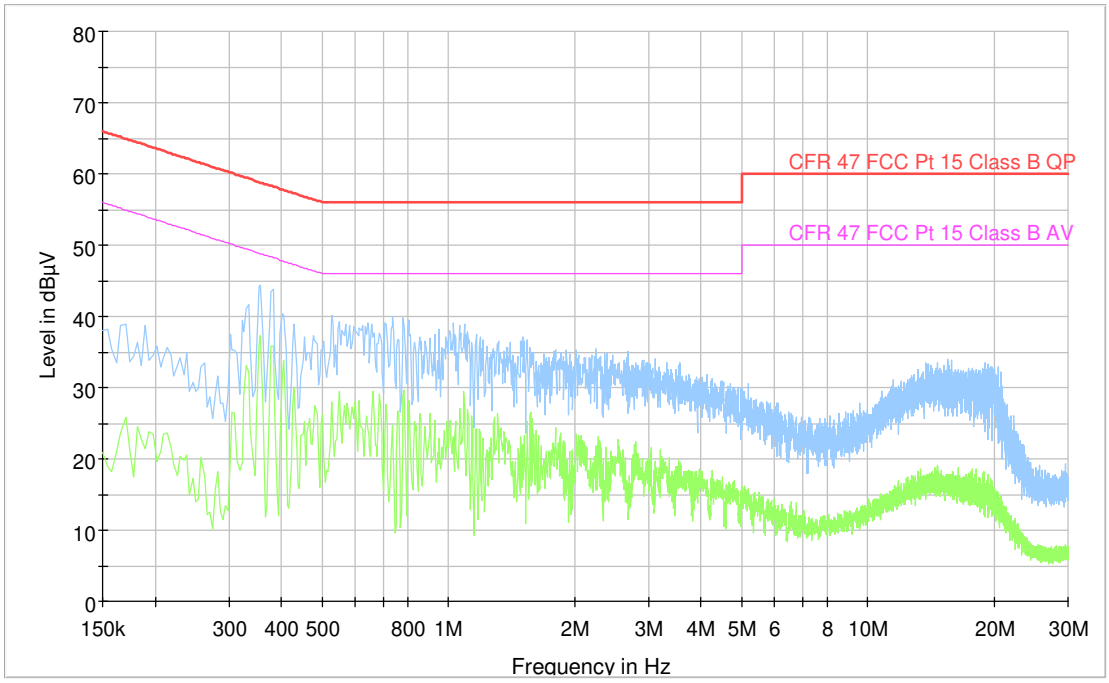
Test Results: **Complies**

Measurement Data: **See attached plots.**

120V 60Hz, Handset OFF Hook:

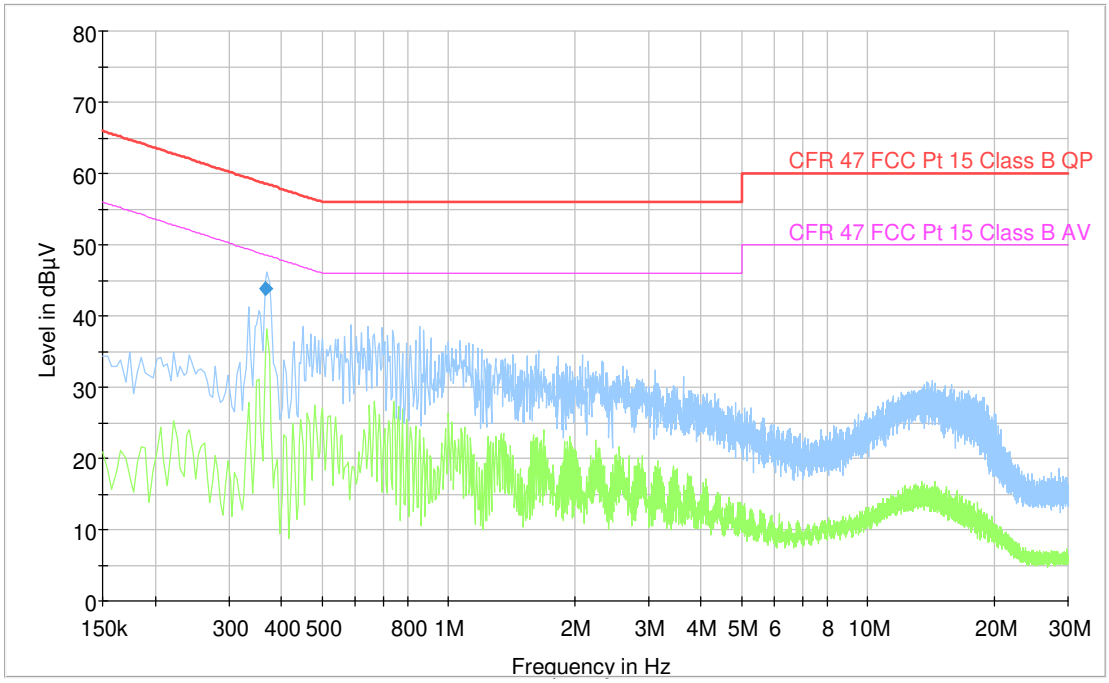
Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter
0.368	43.73	---	58.55	14.81	1000	9	N	OFF

Full Spectrum



120V 60Hz, Handset Charging

Full Spectrum



120V 60Hz, Handset OFF Hook

3.2 Spurious Emissions (Radiated)

FCC Part 15.109

ISED ICES-003 Issue 6, Clause 6.2

Test Results:

Radiated Emissions 30 - 6000 MHz.

Detector: Peak

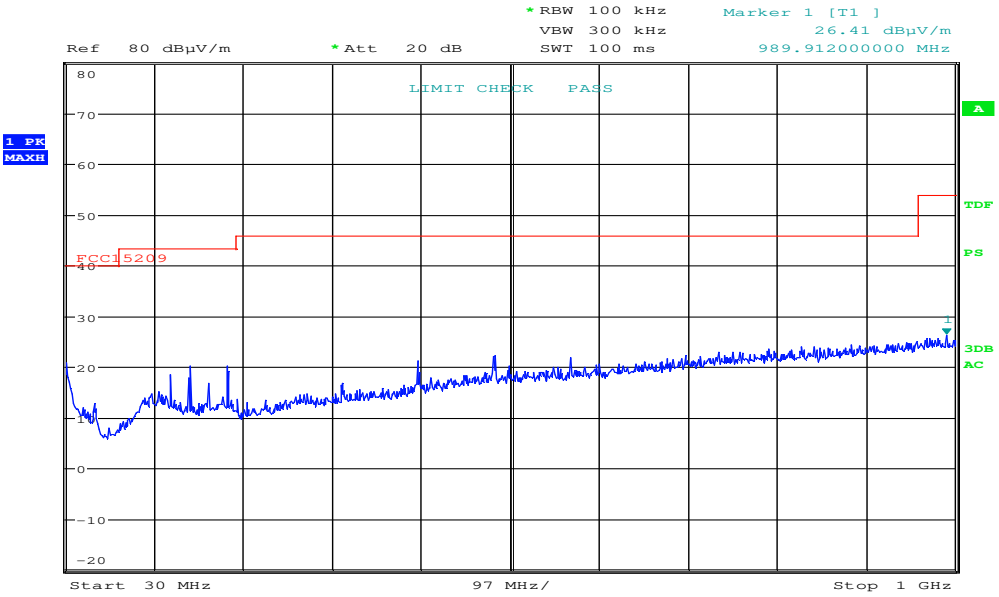
Measuring distance 3 m

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

All Emissions below 1 GHz were below the limit, even when measured with Peak Detector.
All Emissions above 1 GHz were at least 10 dB below the Average Limit, even when measured with Peak Detector.

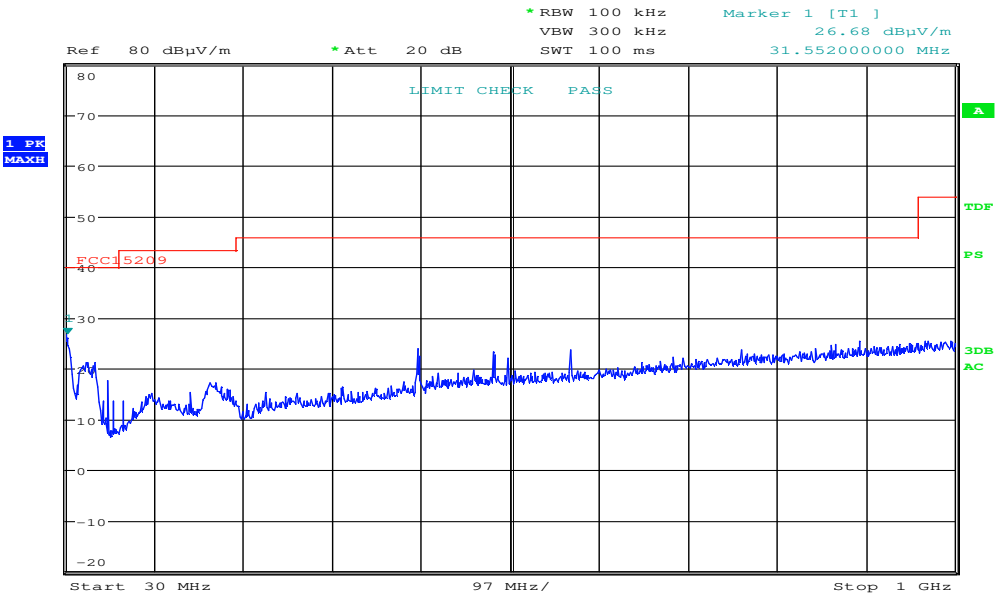
Requirements/Limit

FCC	Part 15.209 @ frequencies defined in §15.205	
ISED	RSS-GEN Issue 5, Clause 8.9 @ frequencies defined in clause 8.10	
	Radiated emission limit @3 meters	
Frequency (MHz)	Quasi Peak (µV/m)	Quasi Peak (dBµV/m)
30 – 88	100	40.0
88 – 216	150	43.5
216 – 960	200	46.0
960 – 1000	500	54.0
	Average Detector (dBµV/m)	Peak Detector (dBµV/m)
Above 1000	54.0	74.0



Date: 10.DEC.2019 09:52:47

Radiated Emissions, 30 – 1000 MHz, Handset Charging, HP



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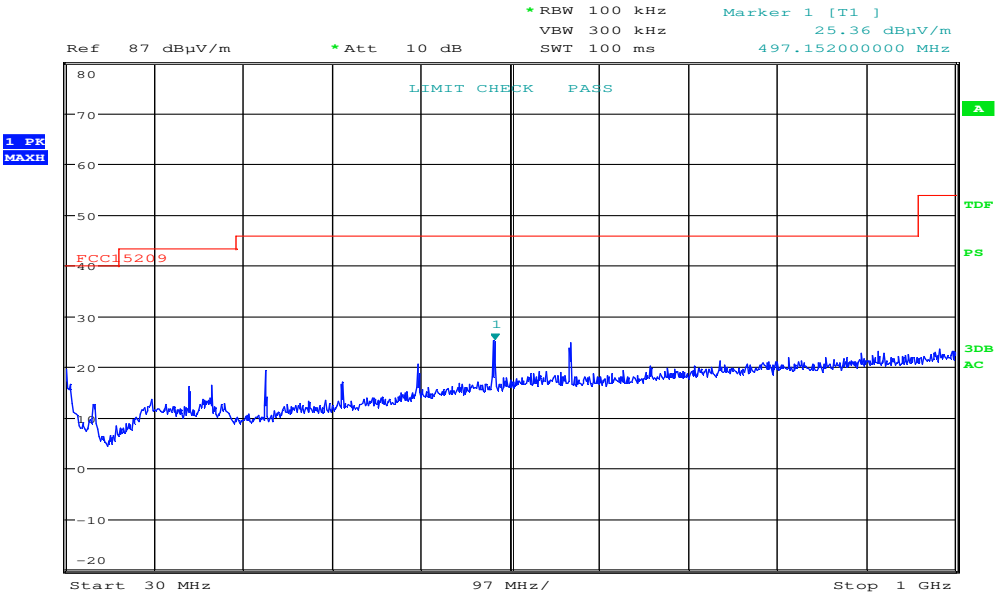
Radiated Emissions, 30 – 1000 MHz, Handset Charging, VP



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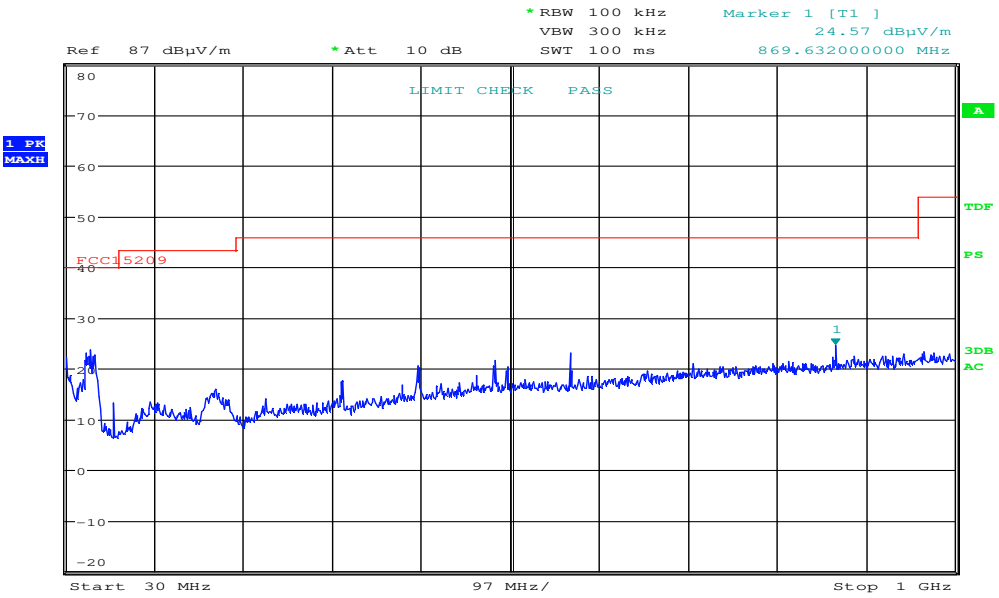
Radiated Emissions, 30 – 1000 MHz, Active Call, HP



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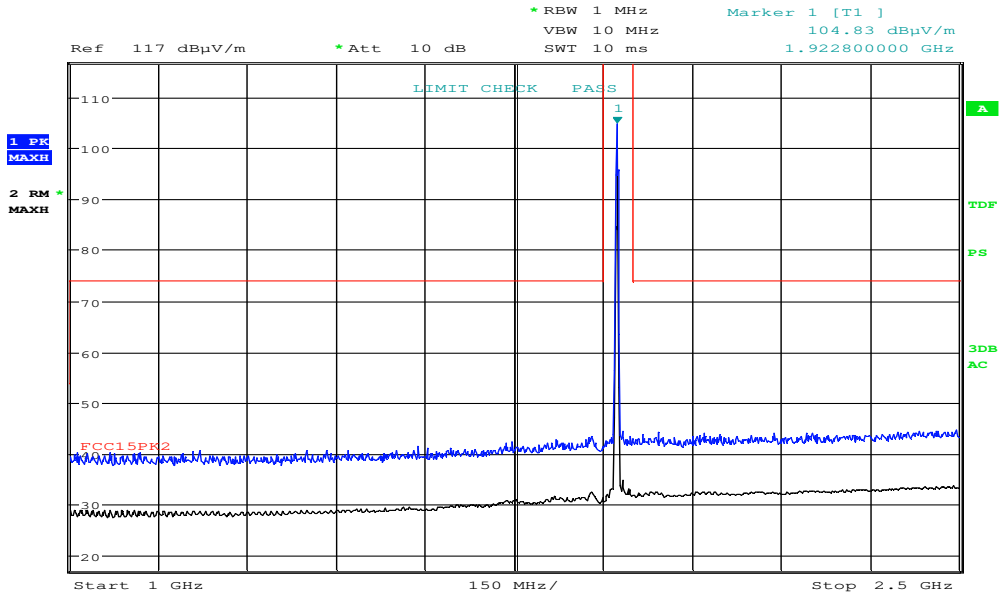
Radiated Emissions, 30 – 1000 MHz, Active Call, VP



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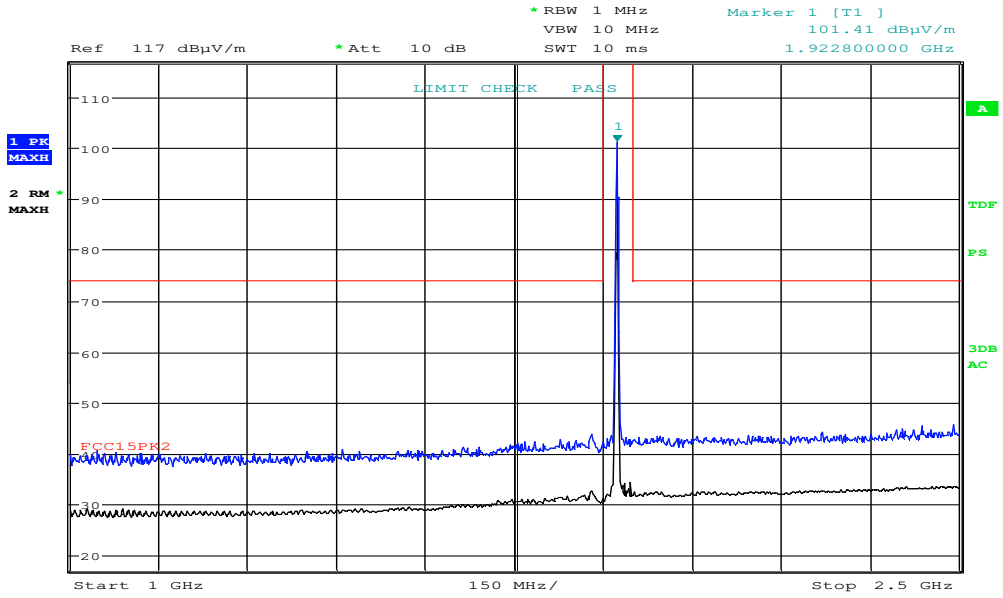
Radiated Emissions, 1000 – 2500 MHz, Handset Charging, HP



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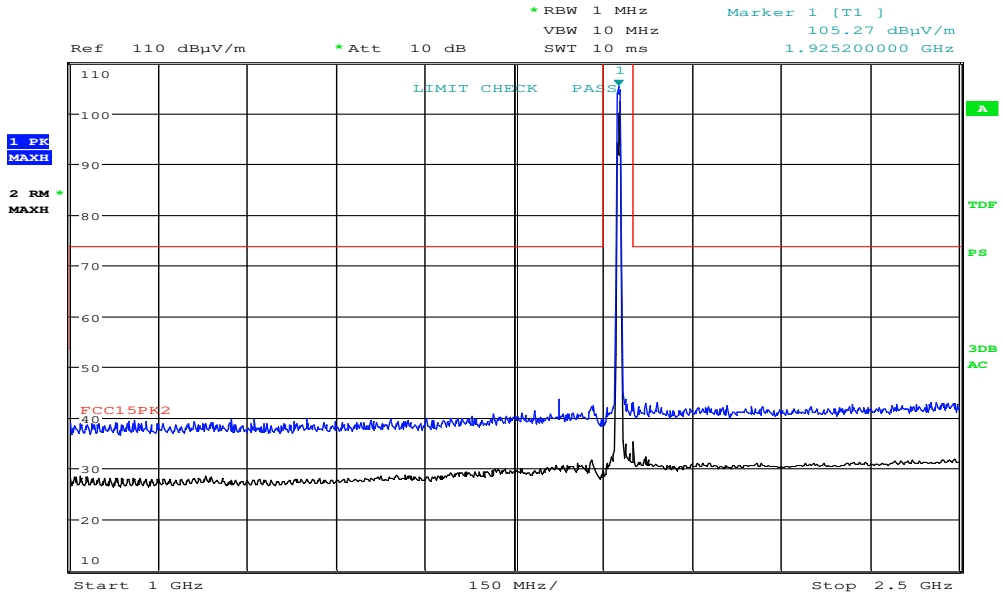
Radiated Emissions, 1000 – 2500 MHz, Handset Charging, VP



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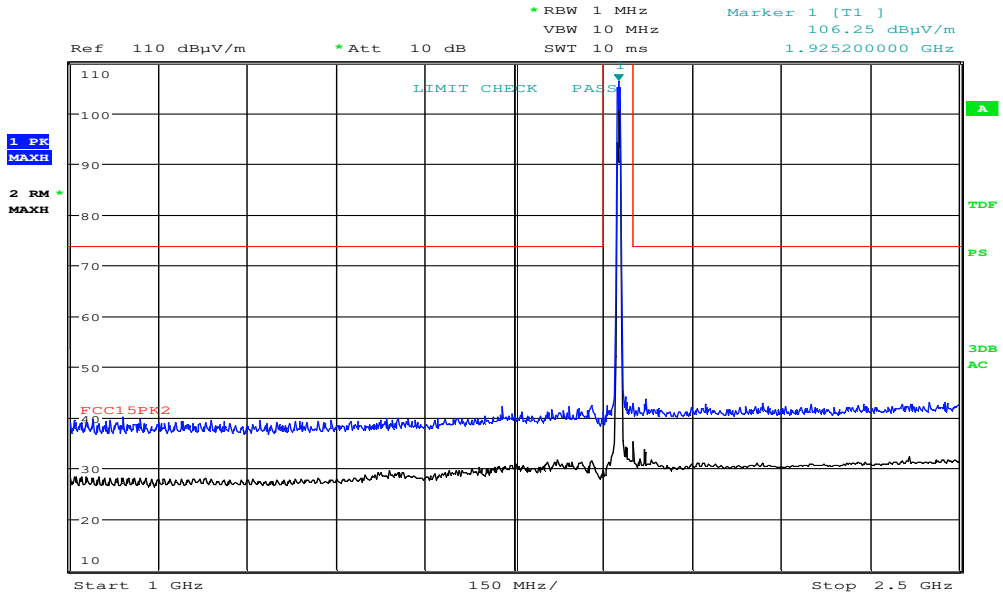
Radiated Emissions, 1000 – 2500 MHz, Active Call, HP



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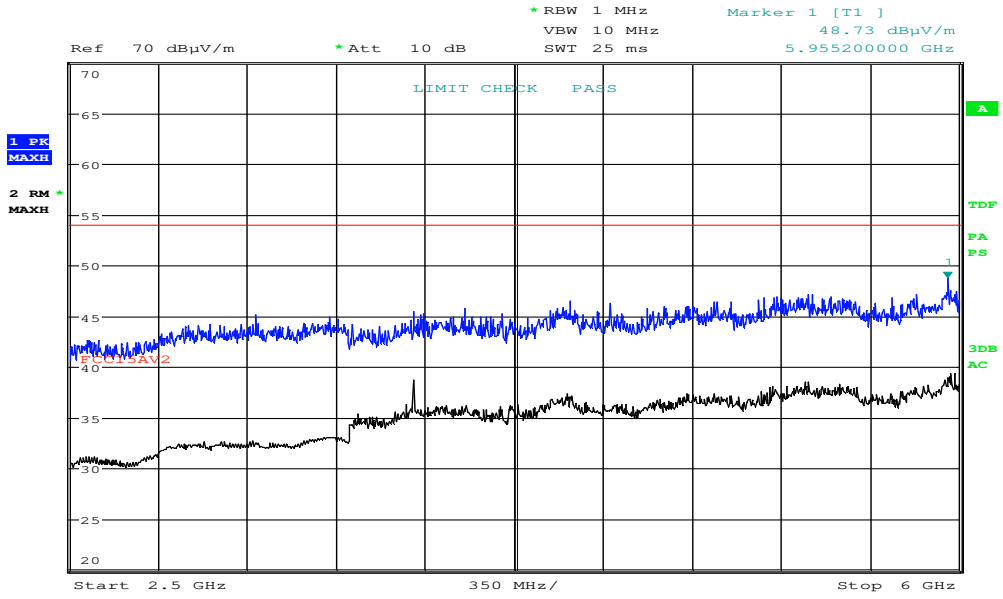
Radiated Emissions, 1000 – 2500 MHz, Active Call, VP



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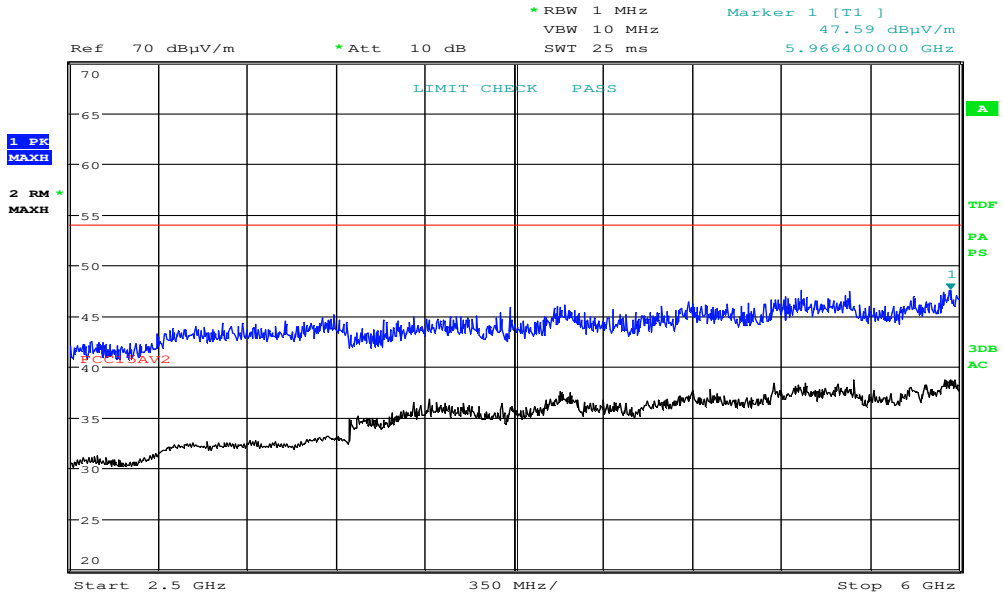
Radiated Emissions, 2500 – 6000 MHz, Handset Charging, HP



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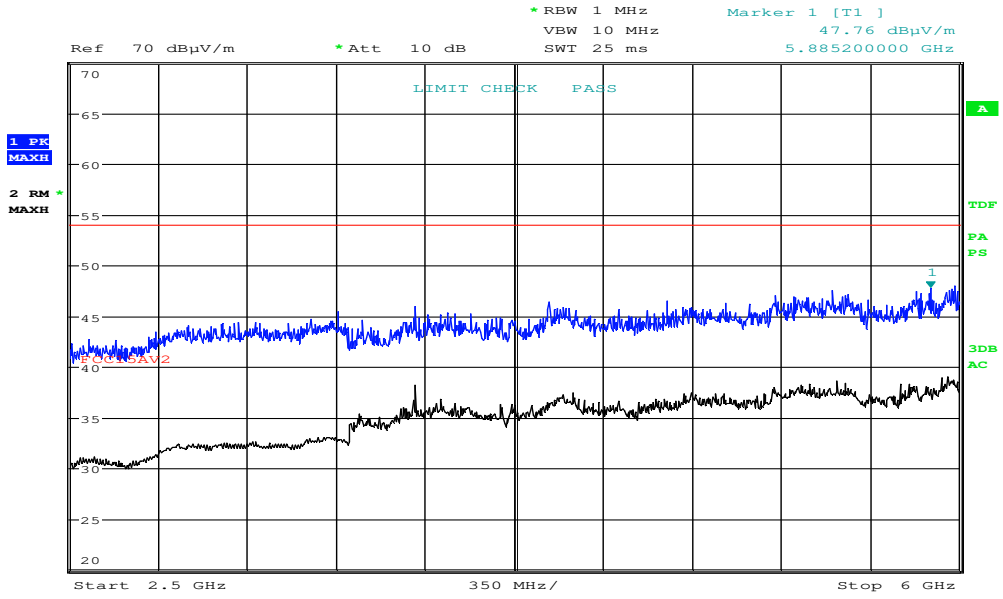
Radiated Emissions, 2500 – 6000 MHz, Handset Charging, VP



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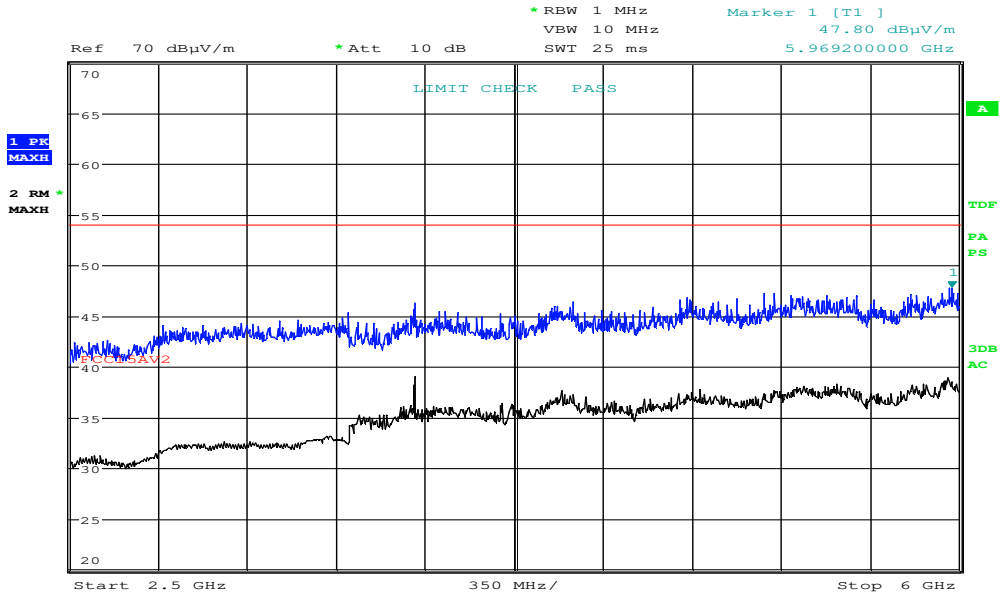
Radiated Emissions, 2500 – 6000 MHz, Active Call, HP



Date: 10.DEC.2019 10:52:22

Radiated Emissions, 2500 – 6000 MHz, Active Call, VP

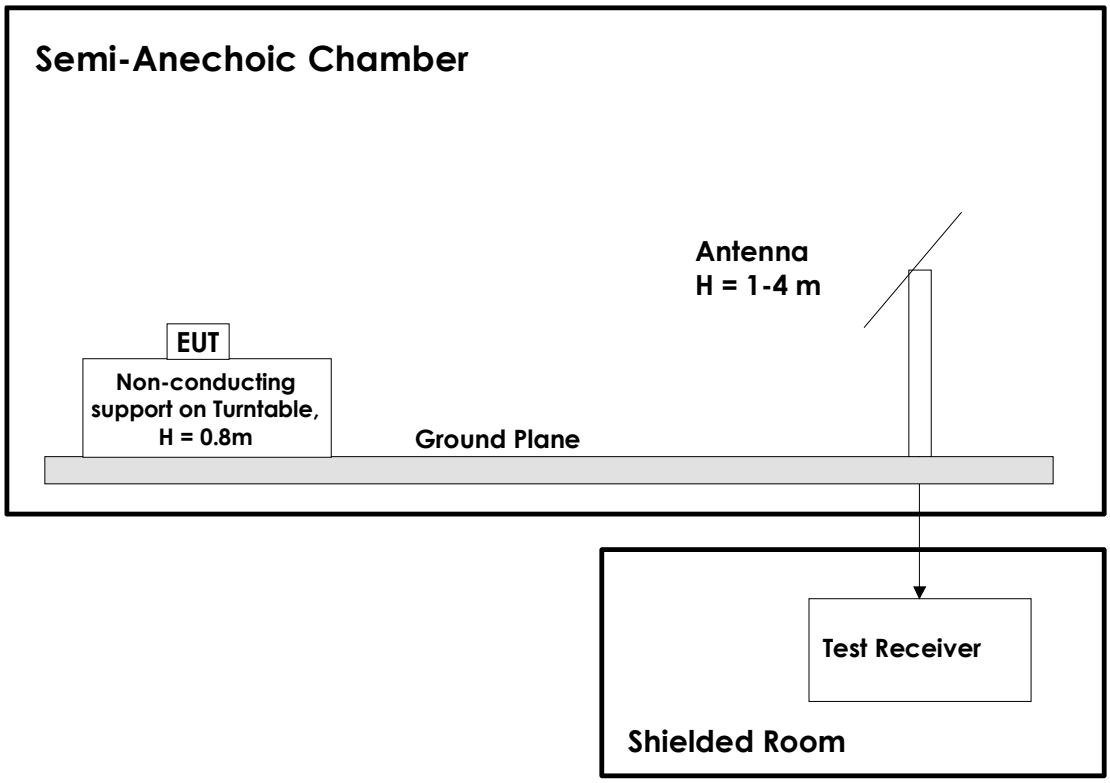
4 Measurement Uncertainty

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

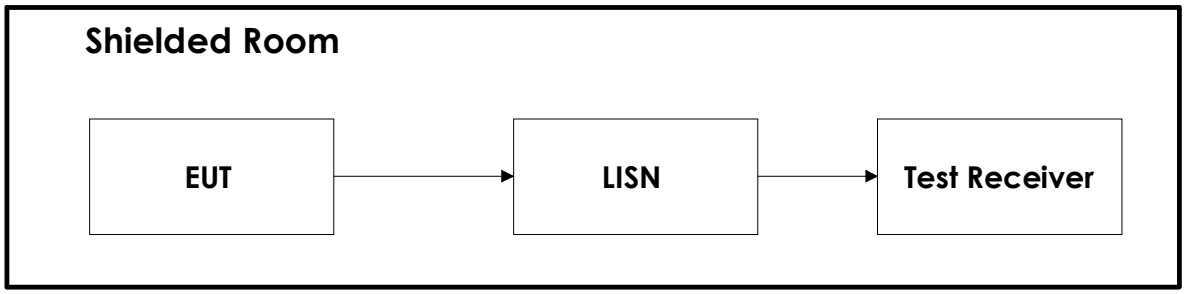
5 Test Setups

5.1 Radiated Emissions Test



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 the ground plane covered by absorbers. A pre-amplifier is used for all measurements above 30 MHz.

5.2 Power Line Conducted Emissions Test



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	2019.01	2020.01
2	JB3	BiLog Antenna	Sunol Sciences	N-4525	2017.11	2020.11
3	317	Pre-amplifier	Sonoma Inst.	LR 1687	2019.07	2020.07
4	Model 87V	Multimeter	Fluke	LR 1599	2019.03	2021.03
5	6812B	AC Power Source	Hewlett Packard	LR 1515	COU	
6	ESCI3	Measuring Receiver	Rohde & Schwarz	N-4259	2017.09	2019.09
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	2020-01-09	First Edition	FS