



Accredited testing-laboratory

DAR registration number: DAT-P-176/94-D1

**Federal Motor Transport Authority (KBA)
DAR registration number: KBA-P 00070-97**

Recognized by the Federal Communications Commission

Anechoic chamber registration no.: 90462 (FCC)

Anechoic chamber registration no.: 3463A-1 (IC)

Certification ID: DE 0001

Accreditation ID: DE 0002

Accredited Bluetooth® Test Facility (BQTF)

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Test report no. : 1-1268-01-10/09-FP
Type identification : KX-TGP550
Applicant : Panasonic Corporation of North America
FCC ID : ACJ96NKX-TGP550
IC Certification No : 216A-KXTGP550
Test standards : FCC Part 15, subpart D
Industry Canada RSS-213, Issue 2

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1 General information

1.1 Notes

The test results of this test report relate exclusively to the test item specified in 3.1.1. The CETECOM ICT Services GmbH does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of the CETECOM ICT Services GmbH.

Test laboratory manager:

2009-08-25

Marco Lenjoint



Date

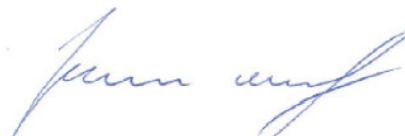
Name

Signature

Technical responsibility for area of testing:

2009-08-25

Joachim Wolf



Date

Name

Signature

1.2 Testing laboratory

CETECOM ICT Services GmbH

Untertürkheimer Straße 6 - 10

66117 Saarbrücken

Germany

Phone: + 49 681 5 98 - 0

Fax: + 49 681 5 98 - 9075

e-mail: info@ICT.cetecom.de

Internet: <http://www.cetecom-ict.de>

State of accreditation: The test laboratory (area of testing) is accredited according to
DIN EN ISO/IEC 17025
DAR registration number: DAT-P-176/94-D1

Accredited by: Federal Motor Transport Authority (KBA)
DAR registration number: KBA-P 00070-97

Testing location, if different from CETECOM ICT Services GmbH:

Name :
Street :
Town :
Country :
Phone :
Fax :

1.3 Details of applicant

Name:	Panasonic Corporation of North America
Street:	One Panasonic Way, Panazip 4B-8
Town:	Secaucus, NJ 07094
Country:	USA
Telephone:	201 348-7758
Fax:	201 392-4564
Contact:	Mr. Richard Mullen
E-mail:	/
Telephone:	/

1.4 Application details

Date of receipt of order:	2009-03-17
Date of receipt of test item:	2009-03-17 and 2009-04-25
Date of start test:	2009-03-17
Date of end test	2009-08-25
Persons(s) who have been present during the test:	/

2 Test standard/s:

FCC Part 15, subpart D

Industry Canada RSS-213, Issue 2

Isochronous UPCS Device 1920 – 1930 MHz

**2 GHz Licence-exempt Personal
Communication Service Devices (LE-PCS)**

3 Technical tests

3.1 Details of manufacturer

Name:	Panasonic Communications Co., Ltd., Communication Network Company
Street:	1-62, 4-chome Minoshima, Hakataku-ku
Town:	Fukuoka-shi 812-8531
Country:	Japan

3.1.1 Test Item

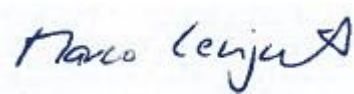
Kind of test item	: UPCS Base station
Type identification	: KX-TGP550
S/N serial number	: /
HW hardware status	: Prototype sample
SW software status	: SW 1.45
Tested to Radio Standards Specification (RSS) No.:	RSS-213 Issue 2
Open Area Test Site Industry Canada Number	: IC 3463A-1
Frequency Band [MHz]	: 1920 – 1930
Frequency Range (or fixed frequency)	: 1921.536 – 1928.448 MHz
Type of Modulation	: Digital (Gaussian Frequency Shift Keying)
Number of channels	: 5 RF Channels, 5x12 = 60 TDMA Duplex Channels
Antenna information	: 2 permanently attached antennas, no ext. connector
RF Power [W] (max)	: Conducted: 17.3 dBm, 53.7 mW Rad. EIRP: 18.1 dBm, 64.6 mW
Occupied Bandwidth (99% BW)	: /
Emission Designator (TRC-43)	: /
Receiver Spurious (worst case)	: /
Transmitter Spurious (worst case)	: /
Power Supply	: 120 V AC
Temperature Range	: -20 °C to 50 °C

FCC ID: ACJ96NKX-TGP550

IC: 216A-KXTGP550

ATTESTATION: I attest that the testing was performed or supervised by me; that the test measurements were made in accordance with the above-mentioned departmental standard(s), and that the radio equipment identified in this application has been subject to all applicable test conditions specified in the departmental standards and all of the requirements of the standards have been met.

Signature:



Date: 2009-08-25

Test engineer: Marco Lenjoint

3.2 Description of the tested Device

3.3 Test Environment

Description	Shortcut	Unit	Value
Nominal Temperature	T _{nom}	°C	21 - 24
Nominal Humidity	H _{nom}	%	30 -50
Nominal Power Source	V _{nom}	V	120 V AC

3.4 Other Comments

The tested device supports full and long slot operation mode. The used operation mode has no influence to the recorded measurement results.

The Power Line Conducted Emissions test was performed with two different AC Adaptors.

4 Statement of Compliance

4.1 Summary of Measurement Results

- ☒ **No deviations from the technical specifications were ascertained**
- ☐ There were deviations from the technical specifications ascertained

CFR 47 Part 15 UPCS

Name of test	FCC CFR 47 Paragraph	IC RSS-213 Paragraph	Verdict
Coordination with fixed microwave	15.307(b)	N/A	Not Tested
Digital Modulation Techniques	15.319(b)	6.1	Not Tested
Labeling requirements	15.19(a)(3)	RSS-GEN 5.2	Not Tested
Antenna requirements	15.317, 15.203	4.1(e)	Not Tested
Power Line Conducted Emission	15.107(a), 15.207(a)	6.3 RSS_GEN 7.2.2	Complies
Emission Bandwidth	15.323(a)	6.4	Not Tested
In-band Emission	15.323(d)	6.7.2	Not Tested
Out-of-band Emissions	15.323(d)	6.7.1	Not Tested
Peak Transmit Power	15.319(c)(e), 15.31(e)	6.5	Complies ⁵
Power Spectral Density	15.319(d)	4.3.2.1	Not Tested
Automatic discontinuation of transmission	15.319(f)	4.3.4(a)	Not Tested
Carrier frequency stability	15.323(f)	6.2	Not Tested
Frame repetition stability	15.323(e)	4.3.4(c)	Not Tested
Frame period and jitter	15.323(e)	4.3.4(c)	Not Tested
Monitoring threshold, Least interfered channel	15.323(c)(2);(5); (9)	4.3.4(b)	Not Tested
Monitoring of intended transmit window and maximum reaction time	15.323(c)(1)	4.3.4	Not Tested
Threshold monitoring bandwidth	15.323(c)(7)	4.3.4	Not Tested
Reaction time and monitoring interval	15.323(c)(1);(5); (7)	4.3.4	Not Tested
Access criteria test interval	15.323(c)(4);(6)	4.3.4	Not Tested
Access criteria functional test	15.323(c)(4);(6)	4.3.4	Not Tested
Acknowledgments	15.323(c)(4)	4.3.4	Not Tested
Transmission duration	15.323(c)(3)	4.3.4	N/A ¹
Dual access criteria	15.323(c)(10)	4.3.4	N/A ¹
Alternative monitoring interval	15.323(c)(10);(11)	4.3.4	N/A ²
Spurious Emissions (Antenna Conducted)	15.323(d)	6.7.1	Not Tested
Spurious Emissions (Radiated)	15.319(g), 15.109(a), 15.209(a)	4.3.3 RSS-GEN 7.2.3	Not Tested
Receiver Spurious Emissions	N/A	6.8	Not Tested

¹ Only applicable for EUT that can initiate a communication link

² The client declares that the tested equipment does not implement this provision

³ The tested equipment has integrated antennas only

⁴ Only requirement FCC 15.109 for unintentional radiators was tested radiated

⁵ Only radiated output power was measured

5 Measurements and results

5.1 Power Line Conducted Emissions

Measurement Procedure:

ANSI C63.4-2003 using 50 μ H/50 ohms LISN.

Test Result: Pass

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

Highest measured value (L1 and N):

All values were below the Average Limit even when measured with the Peak Detector.

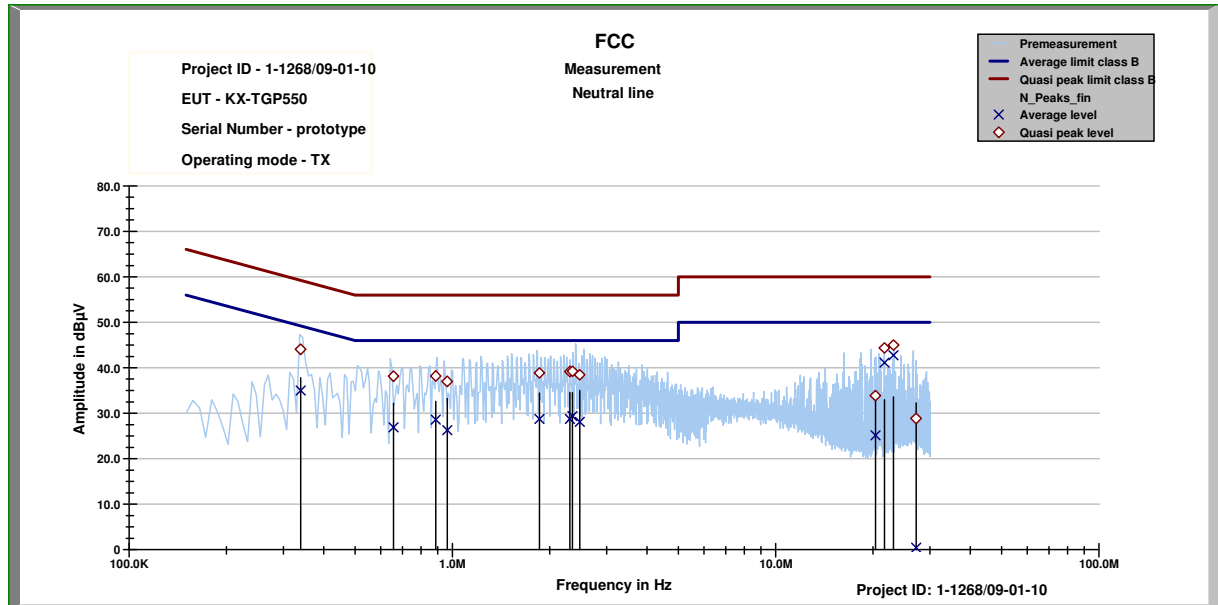
Requirement: FCC 15.207 (a)

AC Adaptor:

Model: PQLV219

Marker's ID: None

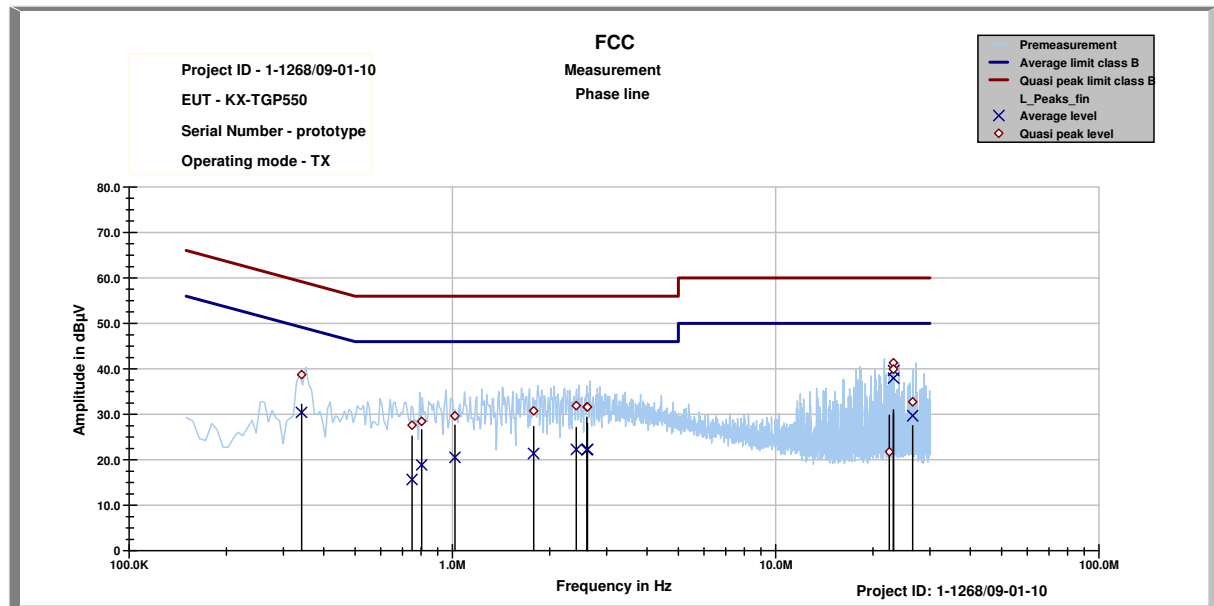
Tx mode, neutral line



05:55:39 PM, Thursday, April 30, 2009

Frequency	Quasi peak level	Margin quasi peak	Average level	Margin average
MHz	dBµV	dBµV	dBµV	dBµV
0.33884	44.04	15.19	35.01	15.59
0.65663	38.13	17.87	26.86	19.14
0.88732	38.19	17.81	28.59	17.41
0.96288	36.97	19.03	26.30	19.70
1.8583	38.86	17.14	28.70	17.30
2.3063	39.16	16.84	28.69	17.31
2.3514	39.20	16.80	29.34	16.66
2.4745	38.43	17.57	28.09	17.91
20.324	33.86	26.14	25.12	24.88
21.664	44.34	15.66	41.12	8.88
23.13	44.97	15.03	42.71	7.29
27.166	28.84	31.16	0.40	49.60

Tx mode, phase line



05:55:39 PM, Thursday, April 30, 2009

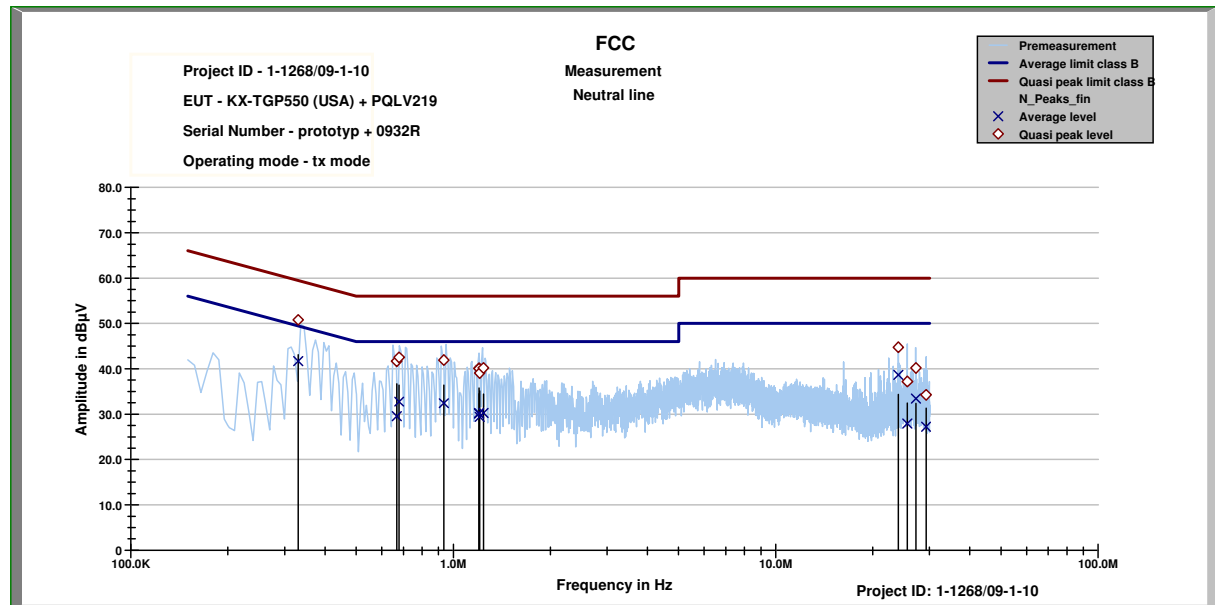
Frequency	Quasi peak level	Margin quasi peak	Average level	Margin average
MHz	dBµV	dBµV	dBµV	dBµV
0.34144	38.72	20.45	30.40	20.13
0.74982	27.58	28.42	15.64	30.36
0.80261	28.41	27.59	18.86	27.14
1.0175	29.64	26.36	20.53	25.47
1.7818	30.76	25.24	21.39	24.61
2.4152	31.90	24.10	22.26	23.74
2.6057	31.64	24.36	22.17	23.83
2.616	31.59	24.41	22.27	23.73
22.466	21.74	38.26	-4.54	54.54
23.13	41.31	18.69	39.63	10.37
23.131	39.91	20.09	37.94	12.06
26.491	32.72	27.28	29.69	20.31

AC Adaptor:

Model: PQLV219

Marker's ID: "LJ" in a circle

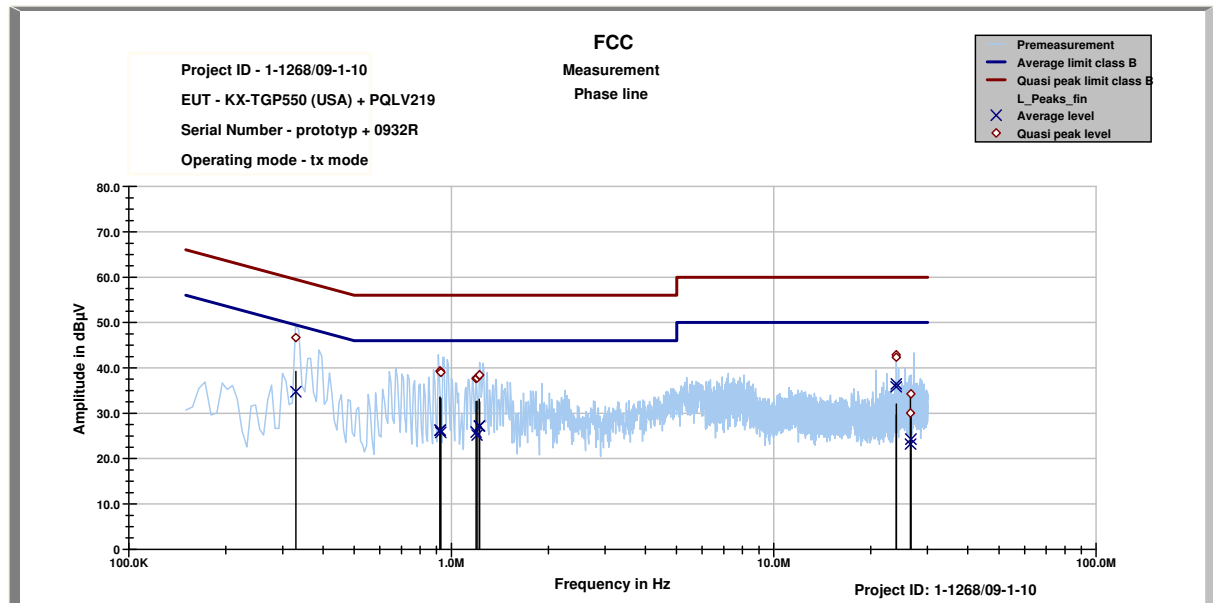
Tx mode, neutral line



10:15:52 AM, Tuesday, August 25, 2009

Frequency	Quasi peak level	Margin quasi peak	Average level	Margin average
□				
MHz	dBµV	dBµV	dBµV	dBµV
0.33052	50.78	8.66	41.69	9.15
0.66705	41.64	14.36	29.54	16.46
0.67935	42.49	13.51	32.75	13.25
0.93455	41.91	14.09	32.41	13.59
1.20133	40.13	15.87	30.27	15.73
1.20264	40.04	15.96	30.08	15.92
1.20738	39.05	16.95	29.43	16.57
1.2403	40.18	15.82	30.26	15.74
23.986	44.76	15.24	38.62	11.38
25.592	37.18	22.82	27.91	22.09
27.187	40.18	19.82	33.43	16.57
29.24	34.24	25.76	27.20	22.80

Tx mode, phase line



10:15:51 AM, Tuesday, August 25, 2009

Frequency	Quasi peak level	Margin quasi peak	Average level	Margin average
□				
MHz	dBµV	dBµV	dBµV	dBµV
0.32963	46.66	12.80	34.74	16.13
0.92287	39.29	16.71	26.24	19.76
0.92407	39.30	16.70	26.22	19.78
0.92739	38.96	17.04	25.78	20.22
1.19354	37.66	18.34	25.82	20.18
1.20183	37.76	18.24	25.16	20.84
1.22148	38.36	17.64	27.15	18.85
1.22372	38.45	17.55	27.21	18.79
23.976	42.89	17.11	35.81	14.19
23.983	42.36	17.64	36.45	13.55
26.556	30.03	29.97	23.18	26.82
26.618	34.27	25.73	24.28	25.72

5.2 Antenna Requirements

Does the EUT have detachable antenna(s)? ☐ Yes ☒ No

If detachable, is the antenna connector(s) non-standard? ☐ Yes ☐ No

The tested equipment has only integral antennas. The conducted tests were performed on a sample with a temporary antenna connector.

Requirements: FCC 15.203, 14.204, 15.317

5.3 Channel Frequencies

UPCS CHANNEL	FREQUENCY (MHz)
Upper Band Edge	1930.000
0 (Highest)	1928.448
1	1926.720
2	1924.992
3	1923.264
4 (Lowest)	1921.536
Lower Band Edge	1920.000

Requirement: FCC 15.303(d), (g)

Within 1920-1930 MHz band for isochronous devices.

5.4 Peak Power Output

Measurement Procedure:

ANSI C63.17, clause 6.1.2.

Test Results: Pass

Measurement Data:

Maximum Output Power

Channel No.	Frequency (MHz)	Maximum Conducted Output Power (dBm)	Maximum Radiated Output Power (dBm)	Maximum Antenna Gain (dBi)
4	1921.536	17.3	18.0	0.7
2	1924.992	17.2	18.1	0.9
0	1928.448	17.3	17.8	0.5

For this test it was also checked that the input voltage variation of 85 and 115% of nominal value did not have any effect on the measured output power, neither radiated nor conducted.

Limit:

Conducted: $100 \mu\text{W} \times \text{SQRT}(B)$ where B is the measured Emission Bandwidth in Hz

FCC 15.319(c)(e): /

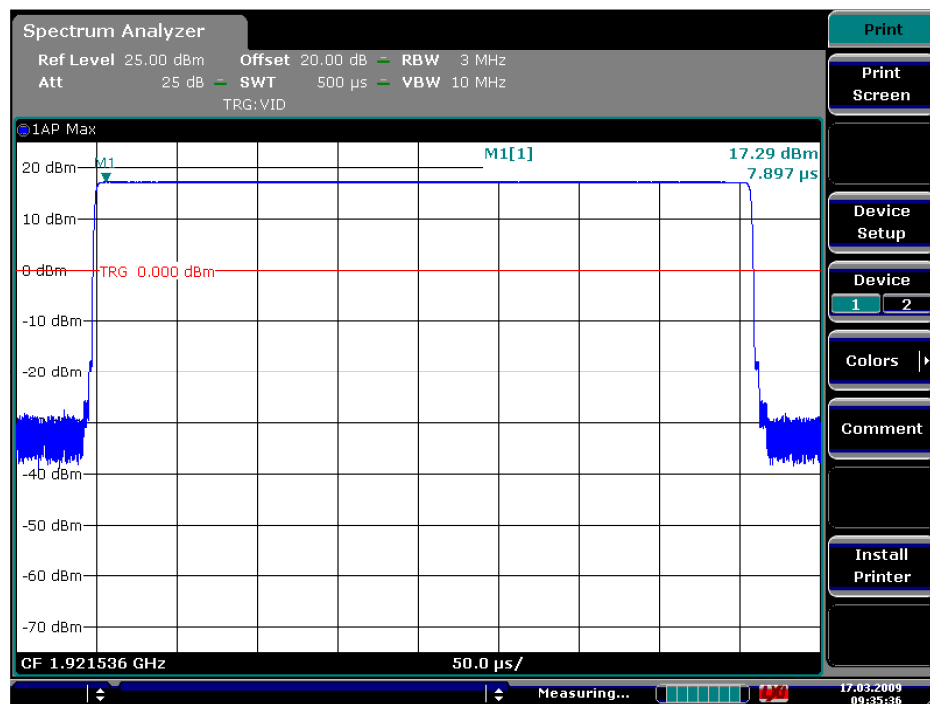
RSS-213, Issue 2: /

Requirements: FCC 15.319(f). RSS-213, Issue 2

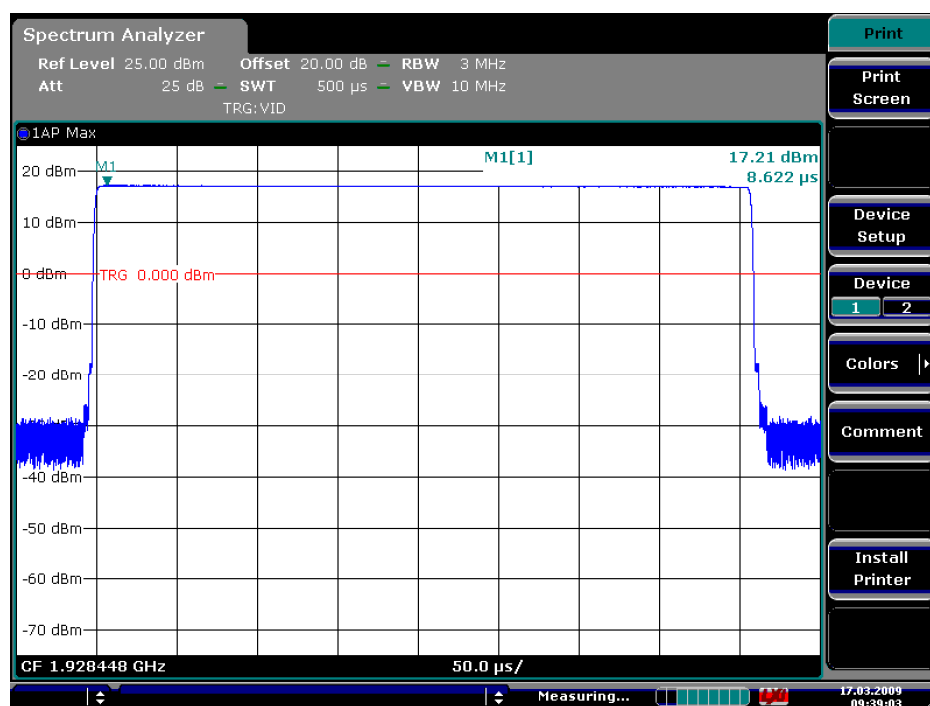
Peak transmit power shall not exceed 100 microwatts multiplied by the square root of the emission bandwidth in Hertz.

The peak transmit power shall be reduced by the amount in decibels that the maximum directional gain of the antenna exceeds 3 dBi.

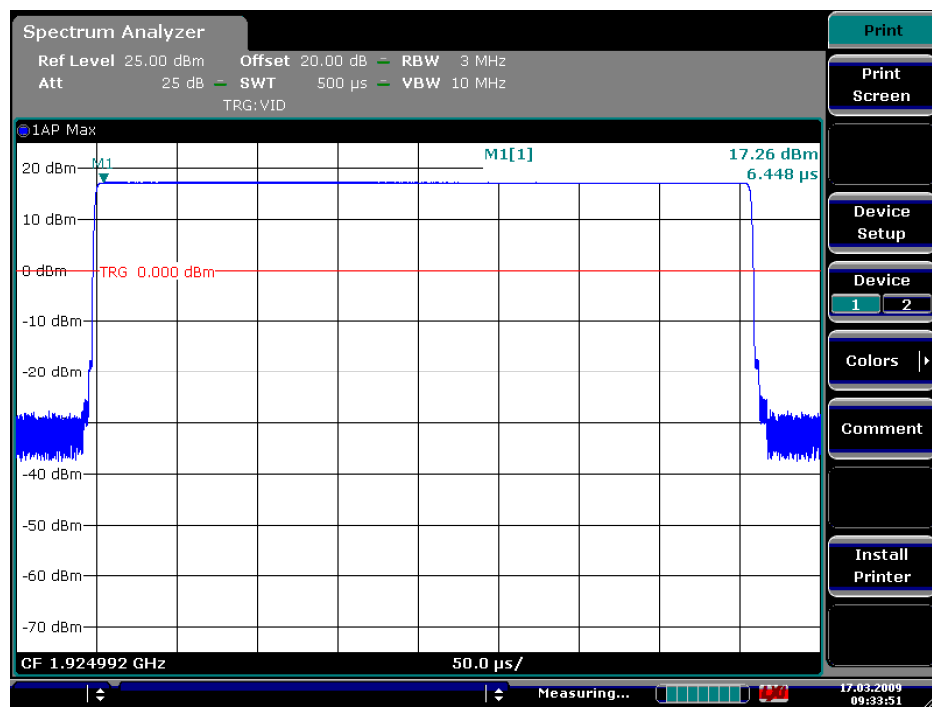
Conducted Peak Output Power



Lower Channel

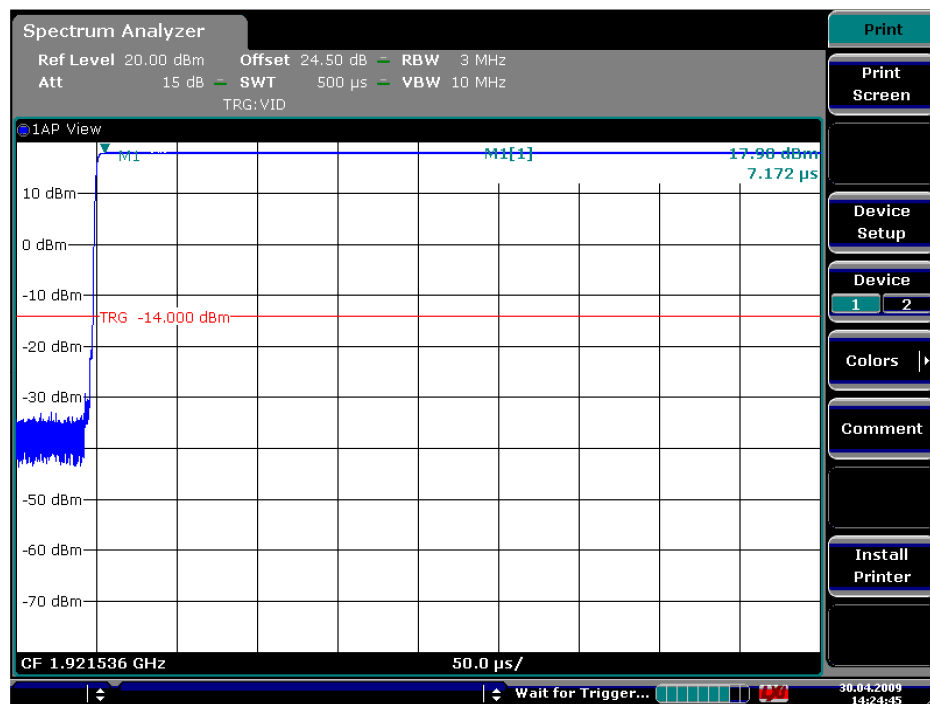


Upper Channel

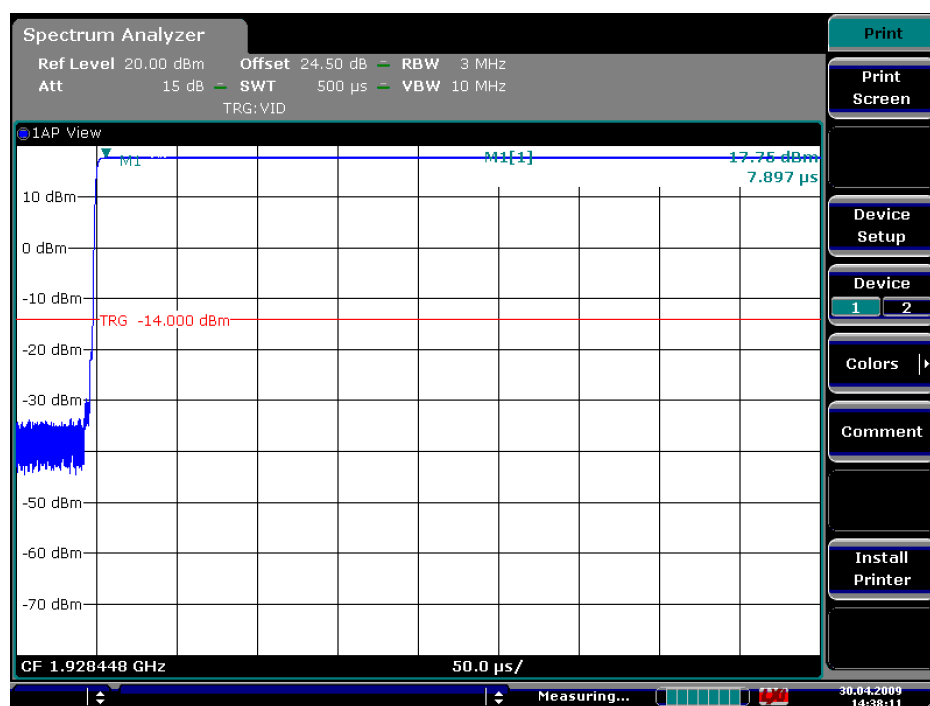


Middle Channel

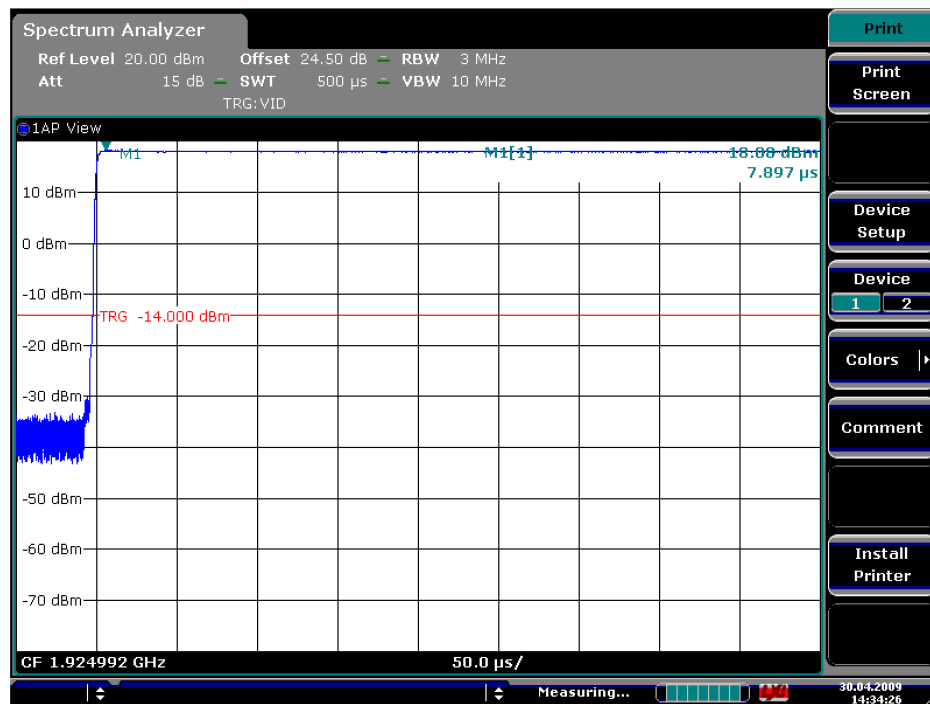
Radiated Peak Output Power



Lower Channel



Upper Channel

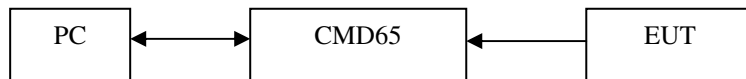


Middle Channel

6 Test Setups

6.1 Frequency Measurements

Test Set-up 1:

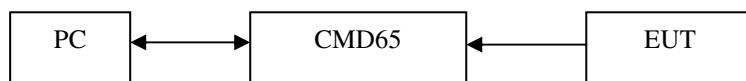


This setup is used for measuring Carrier Frequency Stability at nominal and extreme temperatures.

For long term Frequency Stability, the EUT was in loopback-mode and was controlled with the CMD65, the modulation pattern was set to 01010101....

6.2 Timing Measurements

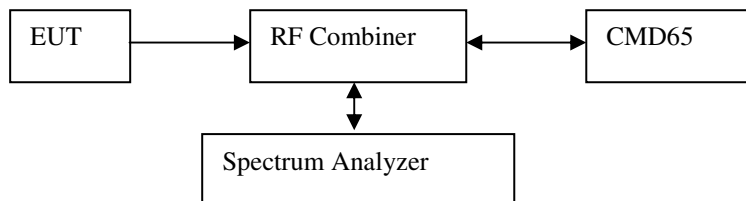
Test Set-up 2:



This setup is used for measuring Frame Repetition Stability, Frame Period and Jitter.

6.3 Conducted Emission Test

Test Set-up 3:



This setup is used for all conducted emission tests.

The EUT was in loopback-mode and was controlled with the CMD65, the modulation pattern was set to Pseudo-Random bit sequence to simulate normal speech.

6.4 Radiated Emission Test

Test Set-up 4:

The radiated measurements are performed in vertical and horizontal plane in the frequency range from 9 kHz to 20 GHz in semi-anechoic chambers. The EUT is positioned on a non-conductive support with a height of 0.80 m above a conductive ground plane that covers the whole chamber. The receiving antennas are conform with specifications ANSI C63.2-1987 clause 15 and ANSI C63.4-2003 clause 4.1.5. These antennas can be moved over the height range between 1.0 m and 4.0 m in order to search for maximum field strength emitted from EUT. The measurement distances between EUT and receiving antennas are indicated in the test setups for the various frequency ranges. For each measurement, the EUT is rotated in all three axes until the maximum field strength is received. The wanted and unwanted emissions are received by spectrum analysers where the detector modes and resolution bandwidths over various frequency ranges are set according to requirement ANSI C63-4-2003 clause 4.2.

Antennas are conform with ANSI C63.2-1996 item 15.

9 kHz - 150 MHz: Quasi Peak measurement, 200 Hz Bandwidth, passive loop antenna.

150 kHz - 30 MHz: Quasi Peak measurement, 9 kHz Bandwidth, passive loop antenna.

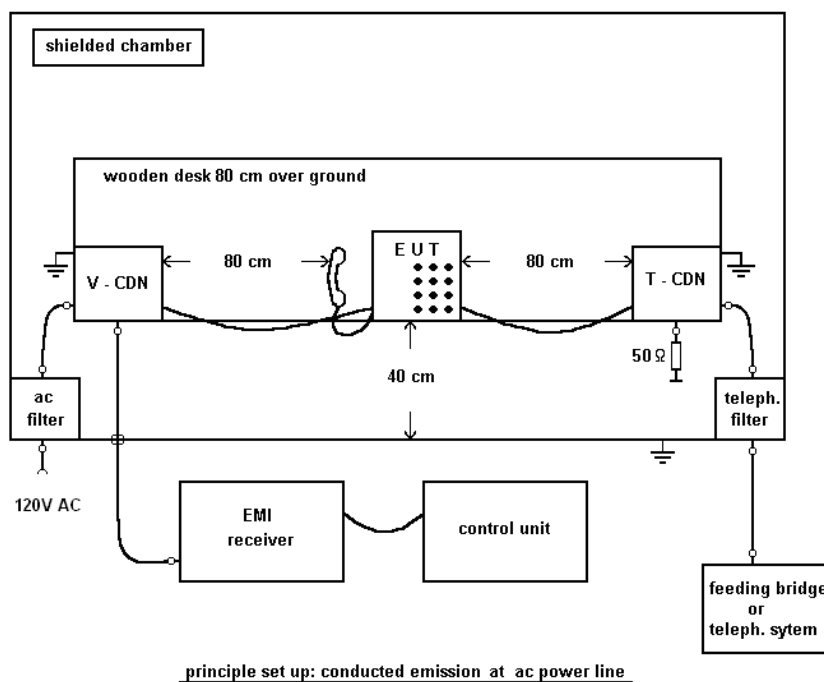
30 MHz - 200 MHz: Quasi Peak measurement, 120 KHz Bandwidth, bilog antenna

200MHz - 1GHz: Quasi Peak measurement, 120 KHz Bandwidth, bilog antenna

1GHz: Average, RBW 1MHz, VBW 10 MHz, waveguide horn

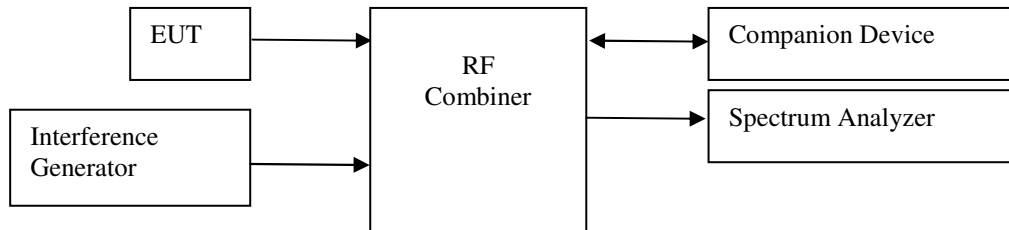
6.5 Power Line Conducted Emissions Test

Test Set-up 5:



6.6 Monitoring Tests

Test Set-up 6:

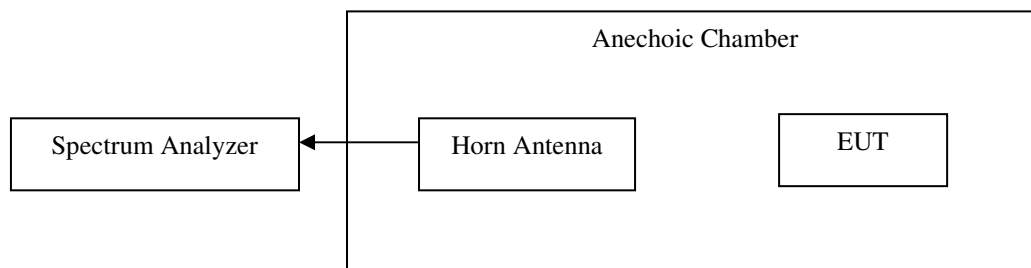


This test setup is used for all Monitoring and Time and Spectrum Access Procedure tests. The path loss from the signal generator to the EUT is measured with a power meter before the testing is started.

A clock signal is used to synchronize the Interference Generator to the start of the DECT frame, this signal always comes from the base station. If the EUT is a DECT Portable Part (i.e. a handset) the clock signal will come from the Companion Device.

6.7 Radiated Output Power Test

Test Set-up 7:



This setup is used for measuring the radiated output power in a fully anechoic chamber with a measurement distance of 1m.

7 Used Test Equipment

No.	Instrument/Ancillary	Manufacturer	Type	Serial-No.	Internal identification
<u>Radiated Emission</u>					
F-1	Control Computer	F+W		FW0502032	300003303
F-2	Trilog antenna	Schwarzbeck	VULB 9163	9163-295	---
F-3a	Amplifier	Veritech Microwave Inc.	0518C-138	- / -	- / -
F-4b	Switch	HP	3488A	- / -	300000368
F-5	EMI Test receiver	R&S	ESCI	100083	300003312
F-6	Turntable Controller	EMCO	1061 3M	1218	300000661
F-7	Tower Controller	EMCO	1051 Controller	1262	300000625
F-8	Tower	EMCO	1051 Tower	1262	300000625
F-9	EMI Test receiver	R&S	ESU	- / -	300003555
F-10	Horn Antenna	EMCO	3115	- / -	300000307
<u>Power Line Conducted Emission</u>					
I-1	Spectrum Analyzer	Agilent	E4440A	MY48250080	300003812
I-2	RF Preselector	Agilent	N9039A	MY48260003	300003825
I-3	Signal Generator	Agilent	N5183A	MY47420220	300003813
I-4	Relay Matrix	R&S	PSU	890167/024	300001168
I-5	Computer	Medion	- / -	- / -	300002898
I-6	Software	ETC Lindgren	Tile!	- / -	- / -
I-7	AC power supply	Grundig	RT 5A	- / -	300001263
I-8	Two Line V-Network	R&S	ESH3-Z5	- / -	300001210
<u>Conducted</u>					
1	Spectrum Analyzer	R&S	FSV30	100763	- / -
2	Signal Generator	R&S	SMU200A	101633	300003496
3	Oscilloscope	Tektronix	DPO 7254	B022702	300003573
4	Oscilloscope	Tektronix	DPO 4034	C020330	300003740
5	Counter	Philips	PM 6654C	316568/002	- / -
6	Signaling Unit	R&S	CMD 65	825486/005	300000103
7	Combiner	R&S	1025.3400.02	- / -	- / -
80	Combiner	Suhner	4901.19A	- / -	- / -
9	Combiner	Weinschel	1515	KW438	- / -
10	Step Attenuator	R&S	DPSP	860898/005	- / -
11	Detector	Hewlett Packard	HP 8473C	03690	- / -
12	Attenuator	Narda	4779-50	9101	- / -
13	Attenuator	Narda	4779-30	9305	- / -
14	Attenuator	Narda	4779-20	9310	- / -
15	Control PC	F+W	/	FW0712052	300003735