



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.: 3462C-1 (IC)

Certification ID: DE 0001

Accreditation ID: DE 0002

Accredited Bluetooth® Test Facility (BQTF)

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Test report no. : 1-0951-01-11/08-B
Type identification : SCD600
Applicant : Philips Consumer Lifestyle B.V.
FCC ID : BOUSCD600
IC Certification No : 135M-SCD600
Test standards : 47 CFR Part 15
RSS - 210 Issue 7

Table of contents

1	General information.....	3
1.1	Notes	3
1.2	Testing laboratory	4
1.3	Details of applicant	4
1.4	Application details	4
2	Test standard/s	5
3	Technical tests.....	6
3.1	Details of manufacturer.....	6
3.1.1	Test item.....	6
3.1.2	Additional EUT information For IC Canada (appendix 2).....	7
3.1.3	RF Technical Brief Cover Sheet acc. To RSS-102	8
3.1.4	EUT operating modes.....	10
3.1.5	Extreme conditions testing values	10
4	Summary of Measurement Results and list of all performed test cases	11
5	RF measurement testing	12
5.1	Description of test set-up	12
5.1.1	Radiated measurements.....	12
5.1.2	Conducted measurements.....	12
5.2	Referenced documents	13
5.3	Additional comments	14
5.4	Antenna gain	15
5.5	Carrier frequency separation §15.247(a)(1)	16
5.6	Number of hopping channels §15.247(a)(1)	17
5.7	Time of occupancy (dwell time) §15.247(a)(1)(iii)	18
5.8	Power Spectral density (Hybrid system in Inquiry mode/Page scan) §15.247(e)	20
5.9	Spectrum Bandwidth of a FHSS System / 20dB Bandwidth §15.247(a)(1).....	21
5.10	Maximum output power (conducted) § 15.247 (b)(1).....	23
5.11	Max. peak output power (radiated) § 15.247 (b)(1)	25
5.12	Band-edge compliance of conducted emissions §15.247 (d)	26
5.13	Band-edge compliance of radiated emissions §15.205	29
5.14	Spurious Emissions - conducted (Transmitter) § 15.247 (c)(1)	30
5.15	Spurious Emissions > 30 MHz- radiated (Transmitter) § 15.247 (c)(1).....	32
5.16	Spurious Emissions - radiated (Receiver) § 15.109	40
5.17	Spurious Emissions < 30 MHz - Transmitter radiated § 15.209	43
5.18	Conducted Emissions <30 MHz § 15.107/207.....	44
6	Test equipment and ancillaries used for tests	45
7	Photographs of the Test Set-up	48
8	Photographs of the EUT	50

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 generalisations 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:

2009-12-23

Jakob Reschke

Date

Name

Signature

A black ink signature of Jakob Reschke, written in a cursive style.

Technical responsibility for area of testing:

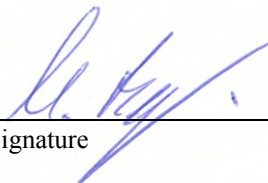
2009-12-23

Michael Berg

Date

Name

Signature

A blue ink signature of Michael Berg, written in a cursive style.

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:	Philips Consumer Lifestyle B.V.
Street:	Tussendiepen 4
Town:	9206 AD Drachten
Country:	NETHERLANDS
Telephone:	+31 512 594 329
Fax:	
Contact:	Frans Mous
E-mail:	frans.mous@philips.com
Telephone:	+31 512 594 329

1.4 Application details

Date of receipt of order:	2009-09-28
Date of receipt of test item:	2009-11-30
Date of start test:	2009-11-30
Date of end test	2009-12-23
Persons(s) who have been present during the test:	-/-

2 Test standard/s

47 CFR Part 15	2008-07	Title 47 of the Code of Federal Regulations; Chapter I- Federal Communications Commission subchapter A - general, Part 15-Radio frequency devices
RSS - 210 Issue 7	2007-06	Spectrum Management and Telecommunications - Radio Standards Specification Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment

3 Technical tests

3.1 Details of manufacturer

Name:	Tranwo Technology (Suzhou) Co. Ltd.
Street:	No. 128, Songsshan Road Suzhou New District-Jiangsu Province
Town:	
Country:	CHINA

3.1.1 Test item

Kind of test item	:	Baby Cam
Type identification	:	SCD600
S/N serial number	:	Unknown
HW hardware status	:	Unknown
SW software status	:	Unknown
Frequency Band [MHz]	:	ISM 2.400 - 2.483,5
Type of Modulation	:	FHSS - GFSK
Number of channels	:	18
Antenna	:	Integrated antenna For more information, please take a look at the sub clause 8 (Photos of the EUT)
Power Supply	:	110 V AC powered from power supply
Temperature Range	:	-20 °C to +55 °C

Baby Unit:

Max. power radiated: 18.79 dBm
Max. power conducted: 16.04 dBm

FCC ID: BOUSCD600
IC: 135M-SCD600

3.1.2 Additional EUT information For IC Canada (appendix 2)

IC Registration Number:	135M-SCD600
Model Name:	SCD600
Manufacturer (complete Address):	Tranwo Technology (Suzhou) Co. Ltd. No. 128, Songshan Road Suzhou New District-Jiangsu Province CHINA
Tested to Radio Standards Specification (RSS) No.:	RSS-210 Issue 7
Open Area Test Site Industry Canada Number:	IC 3462C-1
Frequency Range (or fixed frequency) [MHz]:	2400 – 2483.5 MHz
RF: Power [W] (max):	<u>Baby Unit:</u> Rad. EIRP: 75.68 mW Conducted : 40.18 mW
Antenna Type:	Integrated antenna
Occupied Bandwidth (99% BW) [kHz]:	3750 (Baby Unit)
Type of Modulation:	FHSS – GFSK
Emission Designator (TRC-43):	3M75FXW (Baby Unit)
Transmitter Spurious (worst case) [μ V/m in 3m]:	233
Receiver Spurious (worst case) [μ V/m in 3m]:	84

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:



Test engineer: Jakob Reschke

Date: 2009-12-02

3.1.3 RF Technical Brief Cover Sheet acc. To RSS-102

All Fields must be completed with the requested information or the following codes: N/A for Not Applicable, N/P for Not Performed or N/V for Not Available. Where applicable, check appropriate box.

1. COMPANY NUMBER: **135M**
2. MODEL NUMBER: **SCD600**
3. MANUFACTURER: **Tranwo Technology (Suzhou) Co. Ltd.**
4. TYPE OF EVALUATION: **N/A**

- Evaluated against exposure limits: General Public Use ☐ Controlled Use ☐
- Duty cycle used in evaluation: 99%
- Standard used for evaluation: RSS-102 Issue 2 (2005-11)
- Measurement distance:
- RF value: _____ V/m ☐ A/m ☐ W/m² ☐

Measured ☐ Computed ☐ Calculated ☐

Declaration of RF Exposure Compliance

ATTESTATION:

I attest that the information provided in this test report are correct; that a Technical Brief was prepared and the information it contains is correct; that the device evaluation was performed or supervised by me; that applicable measurement methods and evaluation methodologies have been followed and that the device meets the SAR and/or RF exposure limits of RSS-102.



Name: Jakob Reschke
Title: Testing Manager
Company: Cetecom ICT Services GmbH

MPE calculation

These equations are generally accurate in the far field of an antenna but will over predict power density in the near field, where they could be used for making a “worst case” prediction.

$$S = PG/4\pi R^2$$

where S = power density (in appropriate units, e.g. mW/cm²)

P = power input to the antenna (in appropriate units e.g. mW)

G = power gain of the antenna in the direction of interest relative to the isotropic radiator

R = distance to the centre of radiation of the antenna (appropriate units e.g. cm)

Or

$$S = \text{EIRP}/4\pi R^2$$

where EIRP = equivalent isotropically radiated power

Calculation:

(Calculated for max. EIRP)

EIRP: 18.80 dBm (75.68 mW)

calculated at distance of 20 cm:

$$\text{power density} = 75.68/4\pi 20^2 = 0.015 \text{ mW/cm}^2$$

Limit:

1mW/cm² is the reference level for general public exposure according to the OET Bulletin 65,
Edition 97-01 Table 1.

3.1.4 EUT operating modes

EUT operating mode no. *)	Description of operating modes	Additional information
Op. 0	Normal mode	normal temperature and power source conditions
Op. 1		low temperature, low power source conditions
Op. 2		low temperature, high power source conditions
Op. 3		high temperature, low power source conditions
Op. 4		high temperature, high power source conditions

*) EUT operating mode no. is used to simplify the test plan

3.1.5 Extreme conditions testing values

Description	Shortcut	Unit	Value
Nominal Temperature	T _{nom}	°C	22
Nominal Humidity	H _{nom}	%	52
Nominal Power Source	V _{nom}	V	110

Type of power source: **AC from Power Supply**

Deviations from these values are reported in chapter 2

4 Summary of Measurement Results and list of all performed test cases

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

TC identifier	Description	verdict	date	Remark
RF-Testing	FCC Part 15 §15.247 - CANADA RSS-210	PASS	2009-12-02	-/-

Test Specification Clause	Test Case	Pass	Fail	Not applicable	Not performed
None	Antenna Gain	Yes			
§15.247(a1)	Carrier frequency separation	Yes			
§15.247(a1)	Number of hopping channels	Yes			
§15.247(a)(1)(iii)	Time of occupancy (dwell time)	Yes			
§15.247(e)	Power Spectral density (Hybrid system in Inquiry mode/Page scan)			Yes	
§15.247(a)(1)	Spectrum Bandwidth of a FHSS System / 20dB Bandwidth	Yes			
§ 15.247 (b)(1)	Maximum output power (conducted)	Yes			
§ 15.247 (b)(1)	Max. peak output power (radiated)	Yes			
§ 15.247 (d)	Band-edge compliance of conducted emissions	Yes			
§ 15.205	Band-edge compliance of radiated emissions	Yes			
§ 15.247 (d)	Spurious Emission - conducted (Transmitter)	Yes			
§ 15.247 (d)	Spurious Emission - radiated (Transmitter) >30 MHz	Yes			
§ 15.109	Spurious Emissions - radiated (Receiver)	Yes			
§ 15.209	Spurious Emissions - radiated (Transmitter) <30 MHz	Yes			
§ 15.107/207	Conducted Emissions <30 MHz	Yes			

5 RF measurement testing

5.1 Description of test set-up

5.1.1 Radiated measurements

The radiated measurements are performed in vertical and horizontal plane in the frequency range from 9 kHz to 25 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 confirmed with specifications ANSI C63.2-1996 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 confirmed with ANSI C63.2-1996 item 15.

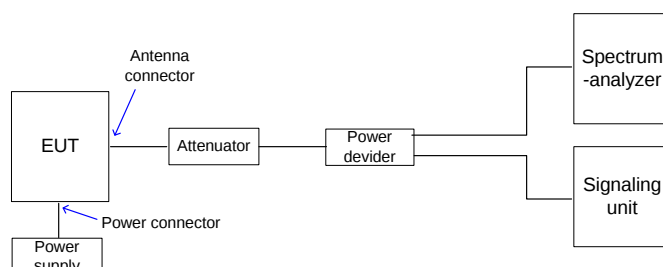
9 kHz - 150 kHz: Quasi Peak measurement, 200 Hz Bandwidth, passive loop antenna.
150 kHz - 30 MHz: Quasi Peak measurement, 9 kHz Bandwidth, passive loop antenna.
30 MHz - 200 MHz: Quasi Peak measurement, 120 kHz Bandwidth, bi-conical antenna
200MHz - 1GHz: Quasi Peak measurement, 120 kHz Bandwidth, log periodic antenna
>1GHz: Average, RBW 1MHz, VBW 10 Hz, waveguide horn

All measurements are done in accordance with the Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems DA 00-705 and Appendix A "BLUETOOTH APPROVALS"

The EUT is powered by an external power supply with nominal voltage. The signalling is performed from outside the chamber with a signalling unit (CMU200 or other) by air link using signalling antenna.

5.1.2 Conducted measurements

The EUT's RF signal is coupled out by the antenna connector which is supplied by the manufacturer. The signal is first 10dB attenuated before it is power divided (~6dB loss per branch). One of the signal paths is connected to the communication base Station (CMU200 or other), the other one is connected to the spectrum analyzer. The specific losses for both signal paths are first checked within a calibration. The measurement readings on the signalling unit/spectrum analyzer are corrected by the specific test set-up loss. The attenuator, power divider, signalling unit and the spectrum analyzer are impedance matched on 50 Ohm.



5.2 Referenced documents



FCC Channel Table :

For FCC, we use 18 frequencies as below.

No	Channel	TX Freq
1	1	2408.625 MHz
2	4	2412 MHz
3	10	2415.375 MHz
4	13	2418.75 MHz
5	17	2423.25 MHz
6	21	2426.625 MHz
7	24	2430 MHz
8	27	2433.375 MHz
9	30	2436.75 MHz
10	33	2440.125 MHz
11	37	2444.625 MHz
12	41	2448 MHz
13	45	2451.375 MHz
14	48	2454.75 MHz
15	51	2458.125 MHz
16	54	2462.625 MHz
17	57	2466 MHz
18	62	2469.375 MHz

5.3 Additional comments

Parent Unit:



Baby Unit:



5.4 Antenna gain

The antenna gain of the complete system is calculated by the difference of radiated power in EIRP and the conducted power of the module.

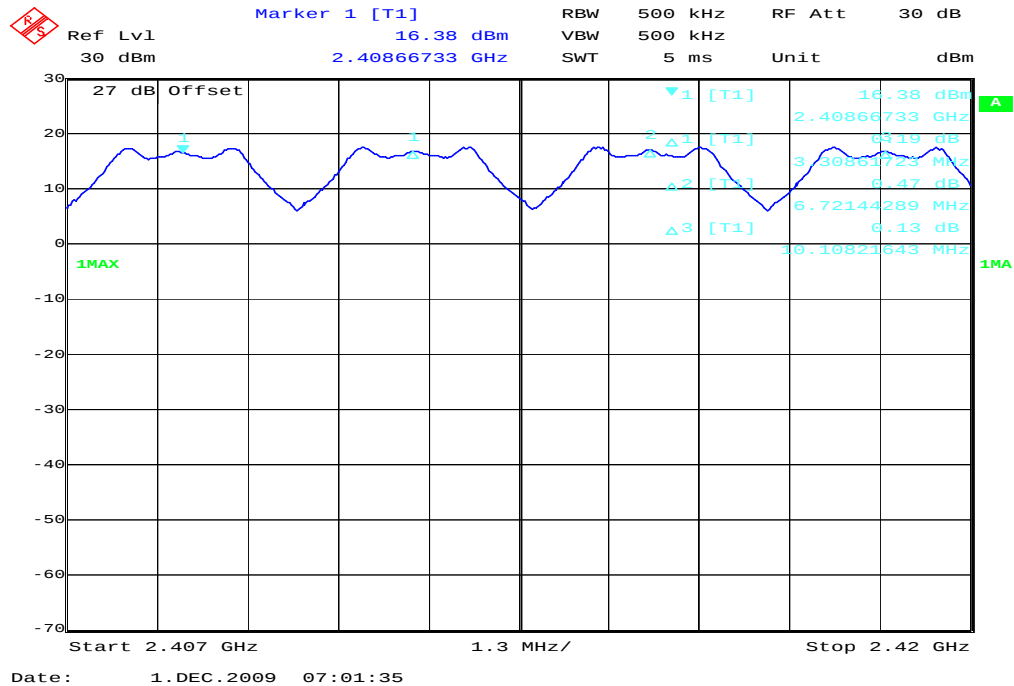
Baby Unit:

	low channel 2408.625 MHz	mid channel 2436.750 MHz	high channel 2469.375 MHz
Conducted power [dBm] Measured, GFSK modulation	16.04	15.91	15.09
Radiated power [dBm] Measured, GFSK modulation	18.79	18.11	18.17
Gain [dBi] Calculated	2.75	2.20	3.08

5.5 Carrier frequency separation §15.247(a)(1)

Valid for Parent Unit and Baby Unit:

Plot 1 of 1:



Result: Channel separation is: ~ 3.75 MHz

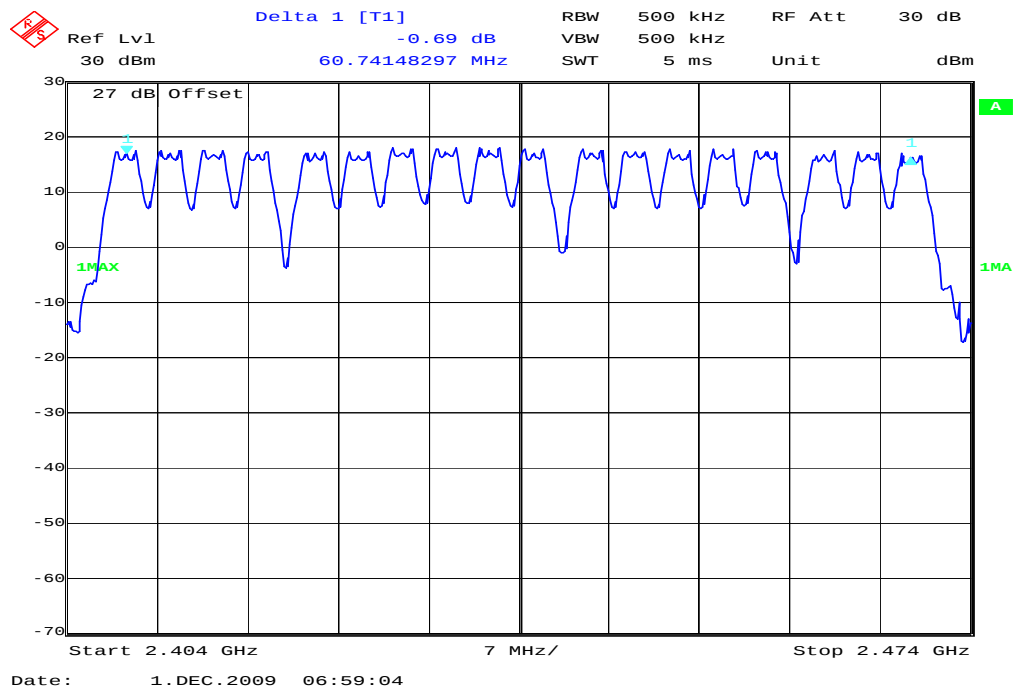
Limits:

Under normal test conditions only	Minimum 25 kHz or 20 dB Bandwidth of the hopping system
-----------------------------------	---

5.6 Number of hopping channels §15.247(a)(1)

Valid for Parent Unit and Baby Unit:

Plot 1:



Result: The number of hopping channels is: 18

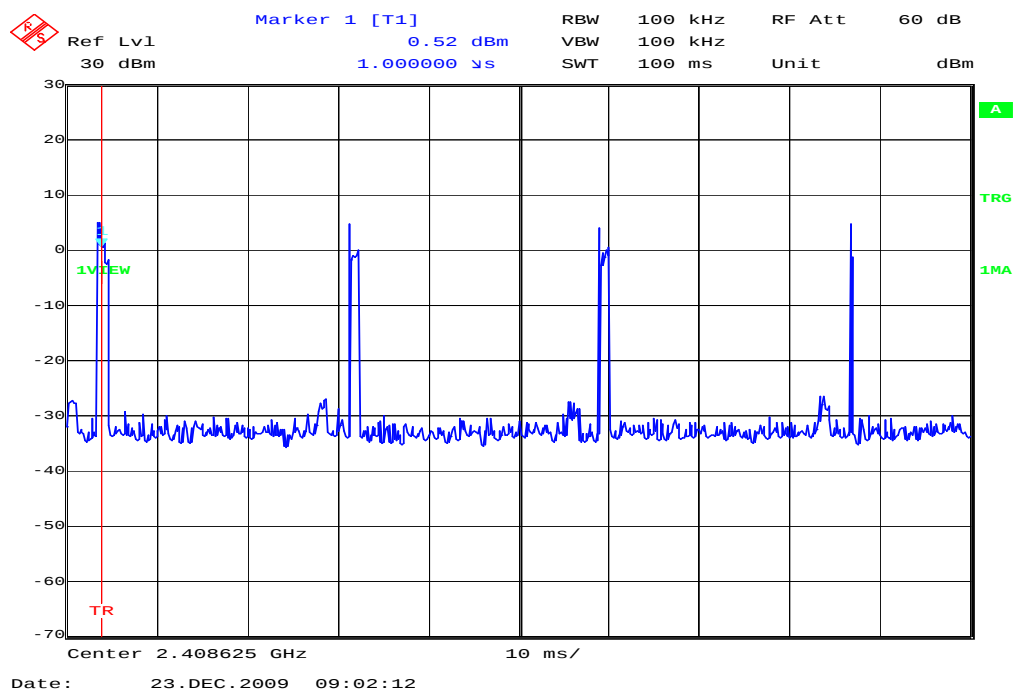
Limits:

Under normal test conditions only	at least 15 non-overlapping channels
-----------------------------------	--------------------------------------

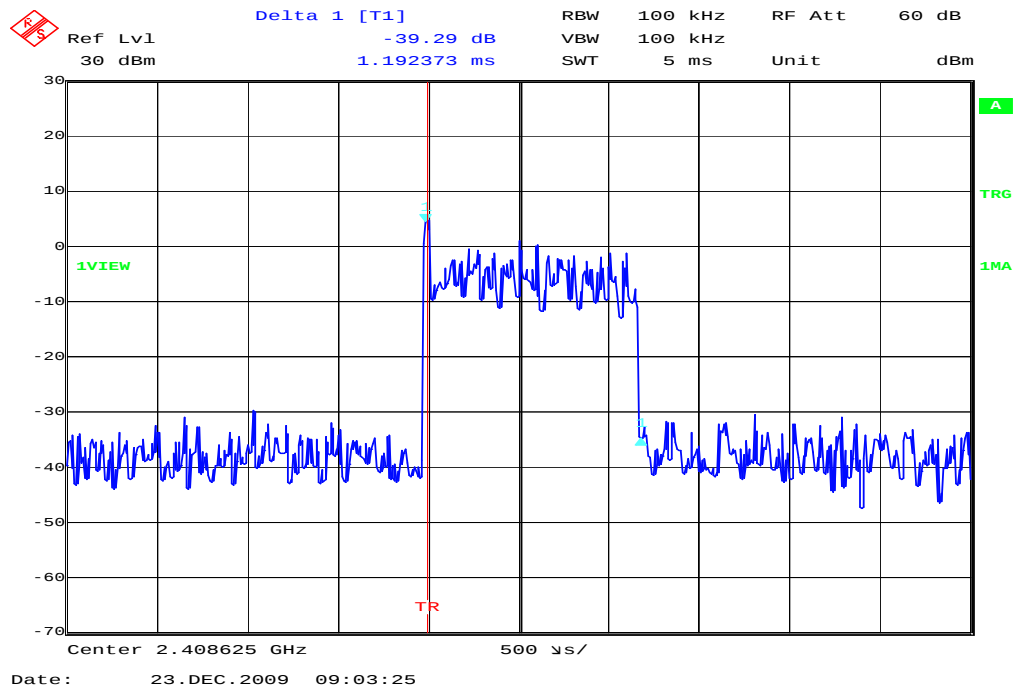
5.7 Time of occupancy (dwell time) §15.247(a)(1)(iii)

Baby Unit:

Plot 1: Used channel during 100ms



Plot 2: Burst zoomed (video transmission)



Calculation:

In 100 ms the EUT is transmitting four times.
 A burst has the length of 1.19 ms.
 $1.19 \text{ ms} * 4 = 4.76 \text{ ms}$ in 100 ms

The period under consideration:
 $18 \text{ channels} * 0.4 \text{ sec.} = 7.2 \text{ sec.}$

Actual transmission:
 $4.76 \text{ ms} * (7.2 \text{ sec} / 100 \text{ ms}) = 342.72 \text{ ms}$

$342.72 \text{ ms} < 400 \text{ ms} \rightarrow \text{pass}$

Limits:

Under normal test conditions only	0.4 sec
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5.8 Power Spectral density (Hybrid system in Inquiry mode/Page scan) §15.247(e)

Not applicable!

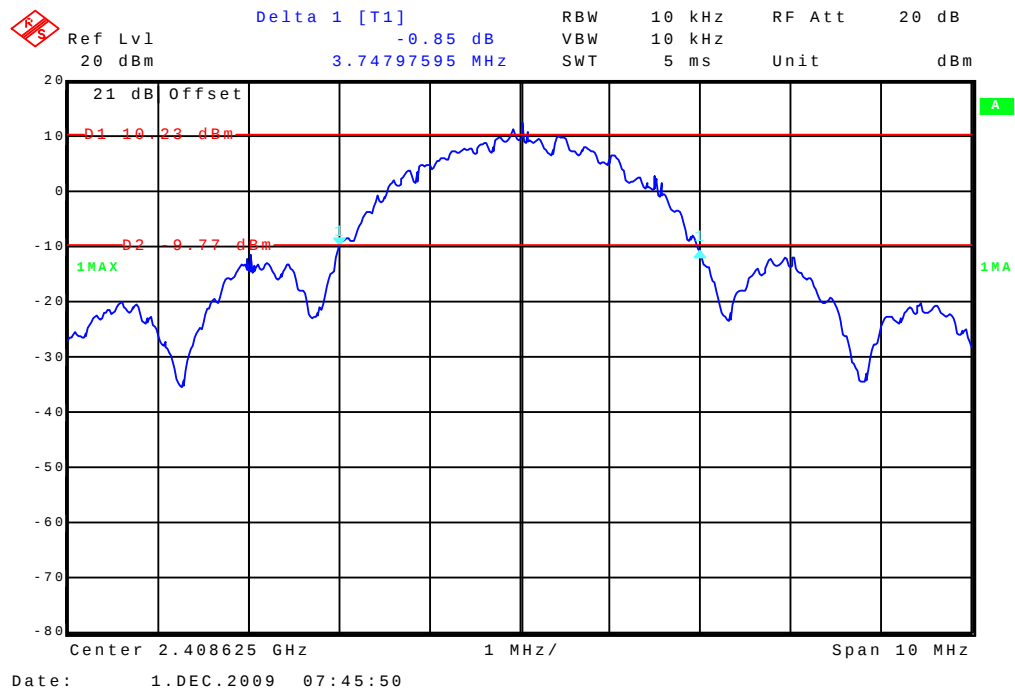
Result: Power density: - dBm/Hz = - dBm / 3 kHz
Correction factor from dBm/Hz to dBm / 3 kHz is +34.8 dB

Limits:

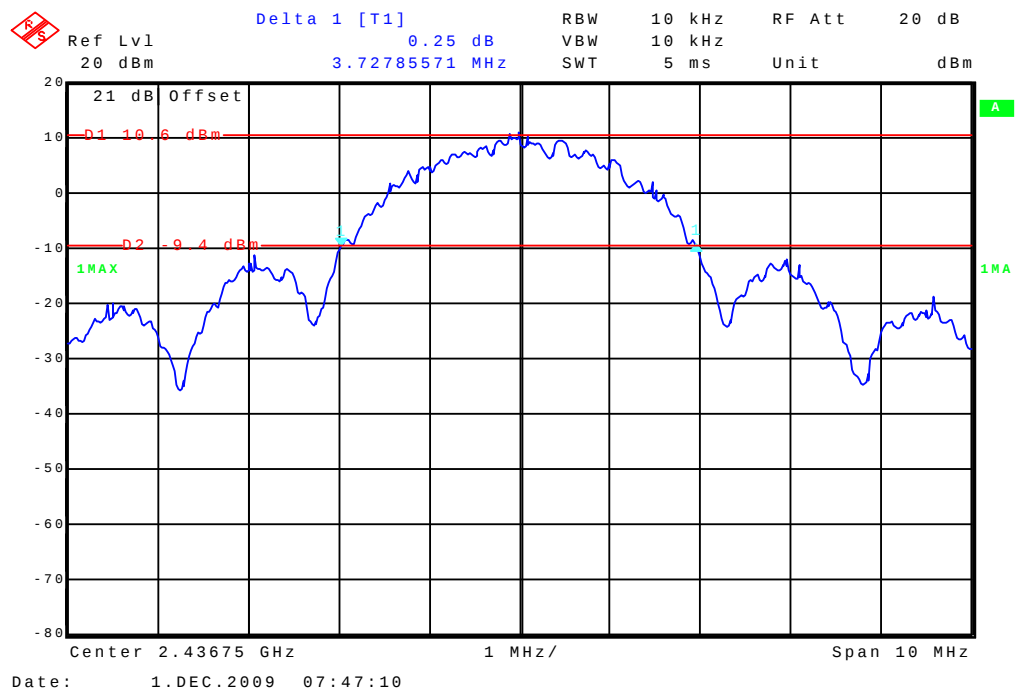
Under normal test conditions only	For digitally modulated systems, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission
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5.9 Spectrum Bandwidth of a FHSS System / 20dB Bandwidth §15.247(a)(1)**Baby Unit:**

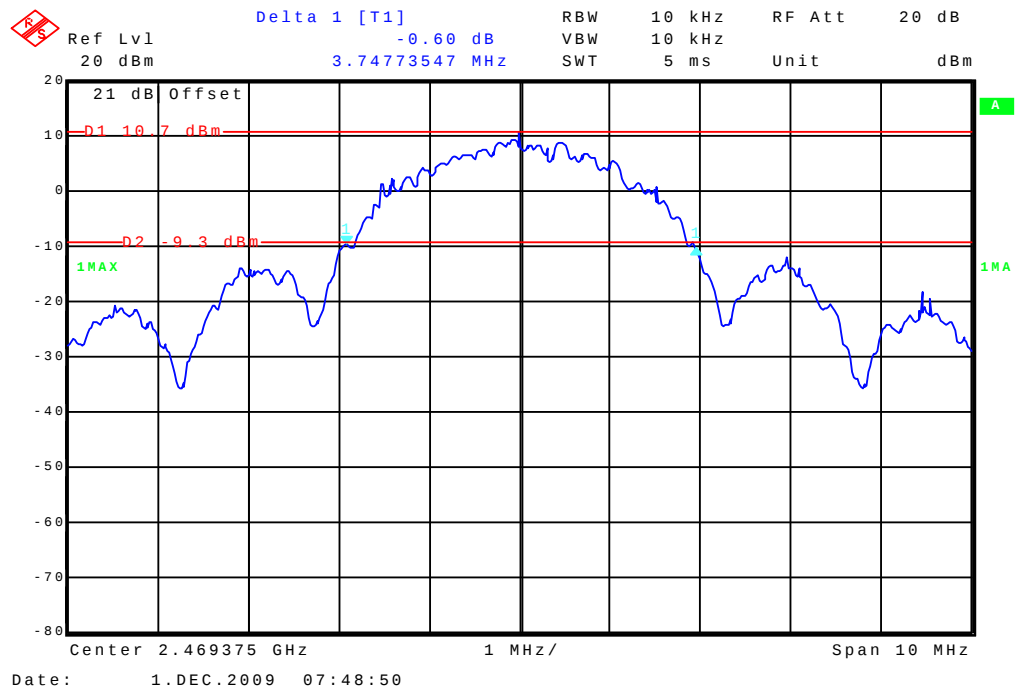
Plot 1 of 3



Plot 2 of 3



Plot 3 of 3



Result:

Test conditions		20 dB BANDWIDTH [MHz]		
Frequency [MHz]		2408.625 MHz	2436.750 MHz	2469.375 MHz
T_{nom}	V_{nom}	3.75	3.73	3.75
Measurement uncertainty		$\pm 1\text{kHz}$		

RBW / VBW as provided in the „Measurement Guidelines“ (DA 00-705, March 30, 2000)

RBW: 10 kHz / VBW 10 kHz

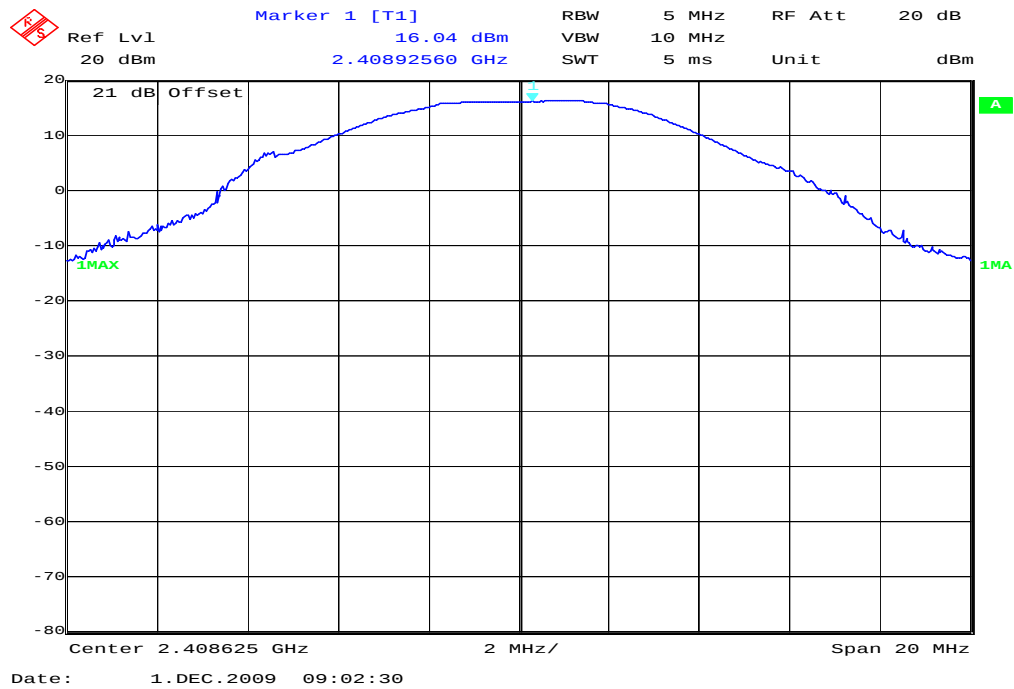
Limits:

Under normal test conditions only	< 1000 kHz
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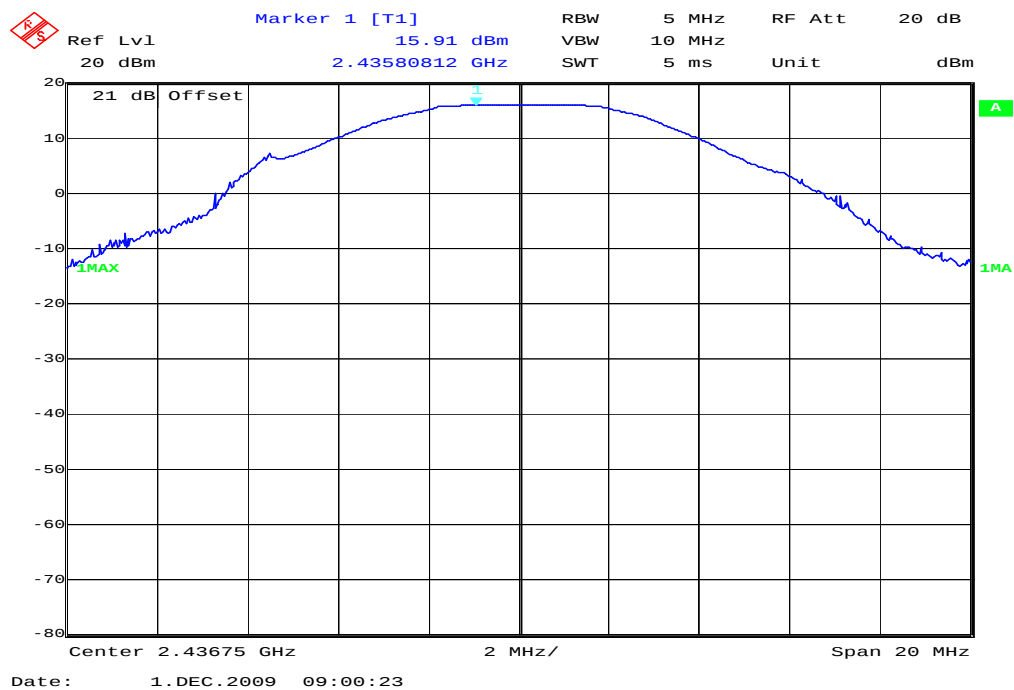
5.10 Maximum output power (conducted) § 15.247 (b)(1)

Baby Unit:

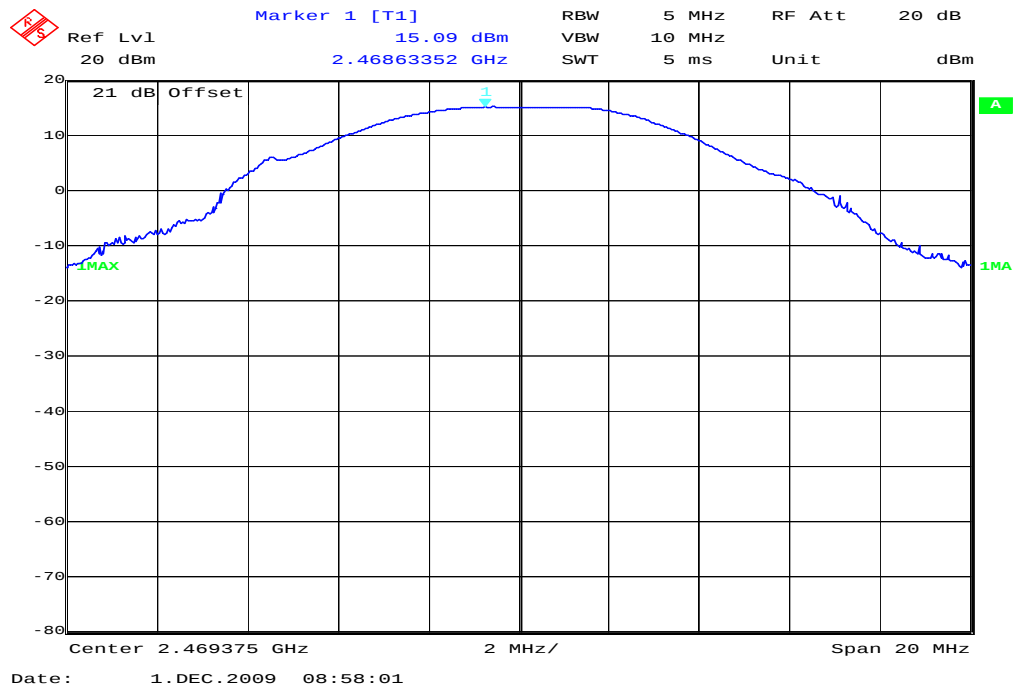
Plot 1 of 3



Plot 2 of 3



Plot 3 of 3



Results:

Test conditions		Max. peak output power [dBm]					
		2408.625 MHz		2436.750 MHz		2469.375 MHz	
T _{nom}	V _{nom}	PK	16.04	PK	15.91	PK	15.09
Measurement uncertainty		±3dB					

RBW: 5 MHz

VBW: 10 MHz

Limits:

Under normal test conditions only, for frequency range 2400-2483.5 MHz	Max. 1.0 Watt
--	---------------

5.11 Max. peak output power (radiated) § 15.247 (b)(1)**Baby Unit:****Results:**

Test conditions		Max. peak output power EIRP [dBm]		
Frequency [MHz]		2408.625 MHz	2436.750 MHz	2469.375 MHz
T _{nom}	V _{nom}	18.79	18.11	18.17
Measurement uncertainty		±3dB		

RBW: 5 MHz

VBW: 10 MHz

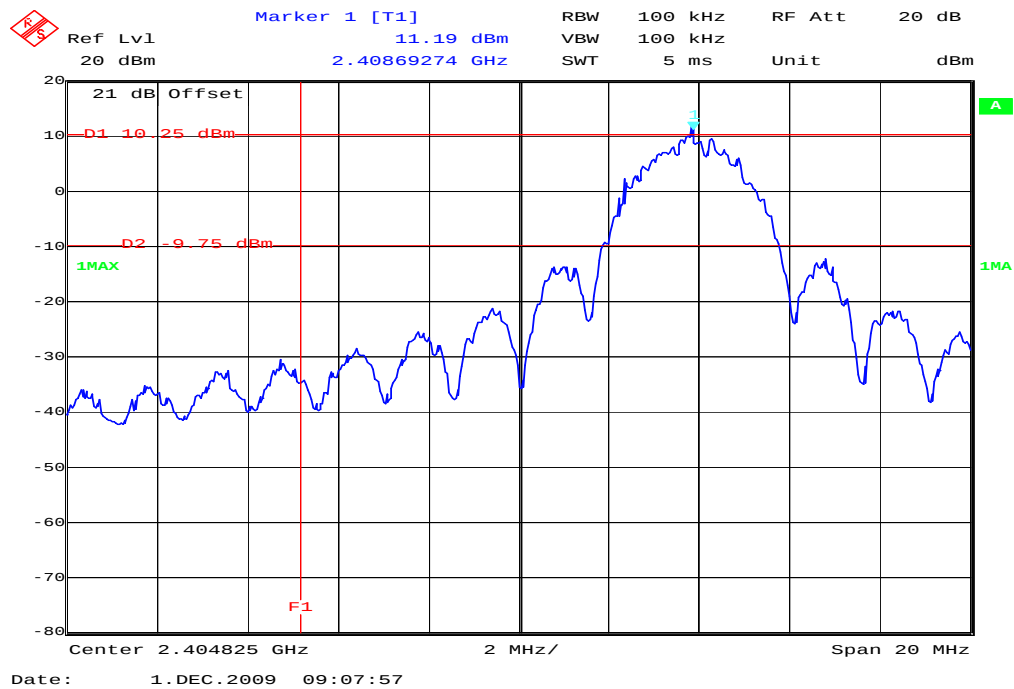
Limits:

Under normal test conditions only, for frequency range 2400-2483.5 MHz	Max. 1.0 Watt
--	---------------

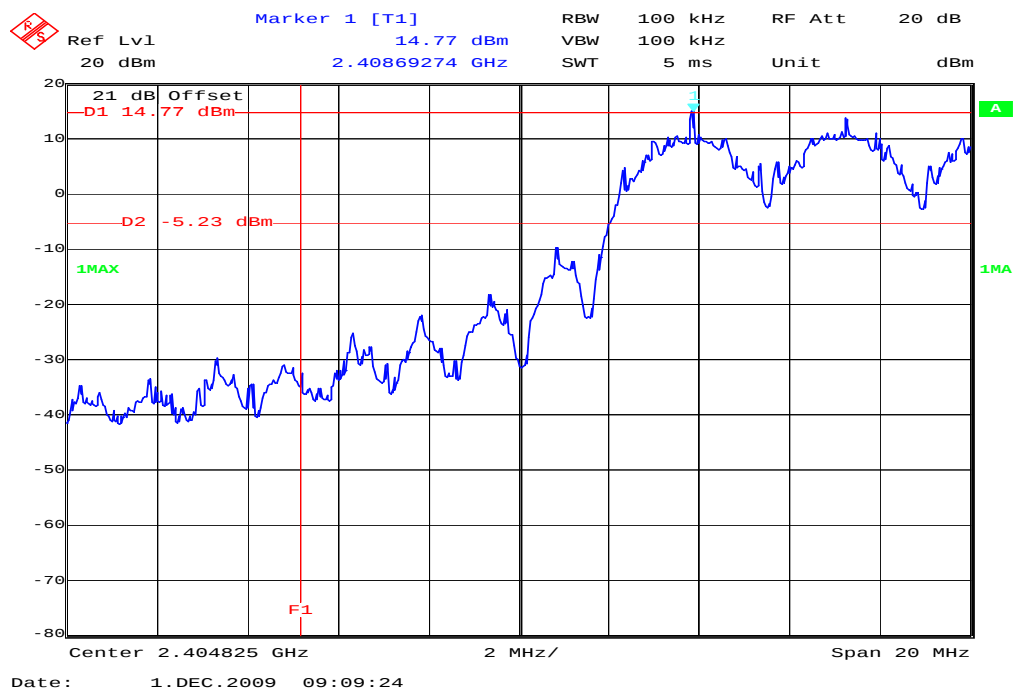
5.12 Band-edge compliance of conducted emissions §15.247 (d)

Baby Unit:

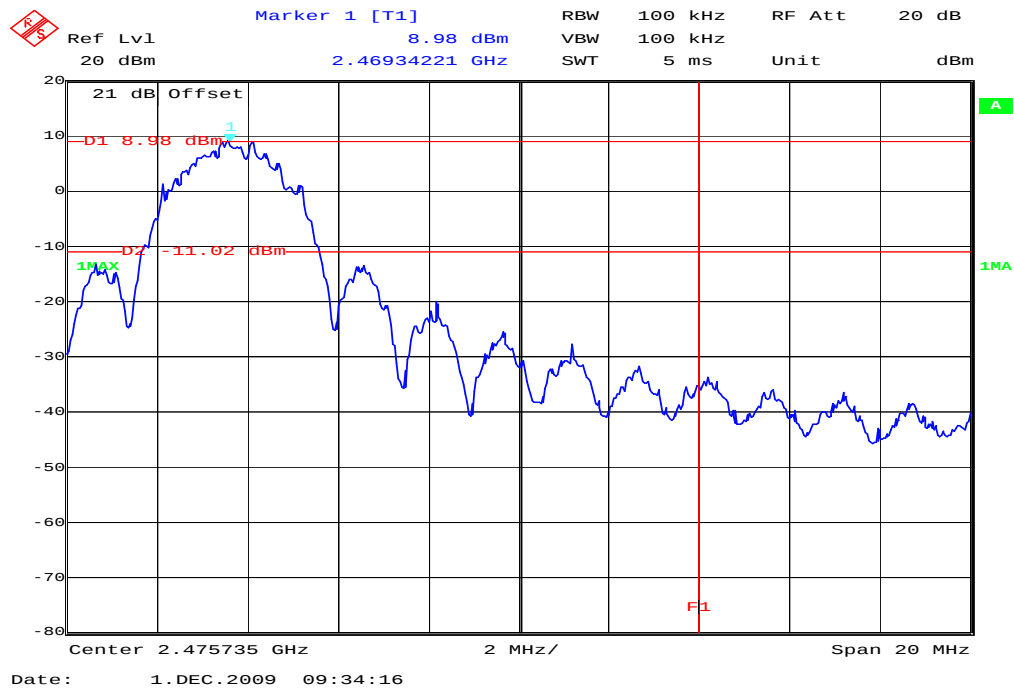
Plot 1 of 4 (hopping off, lowest frequency):



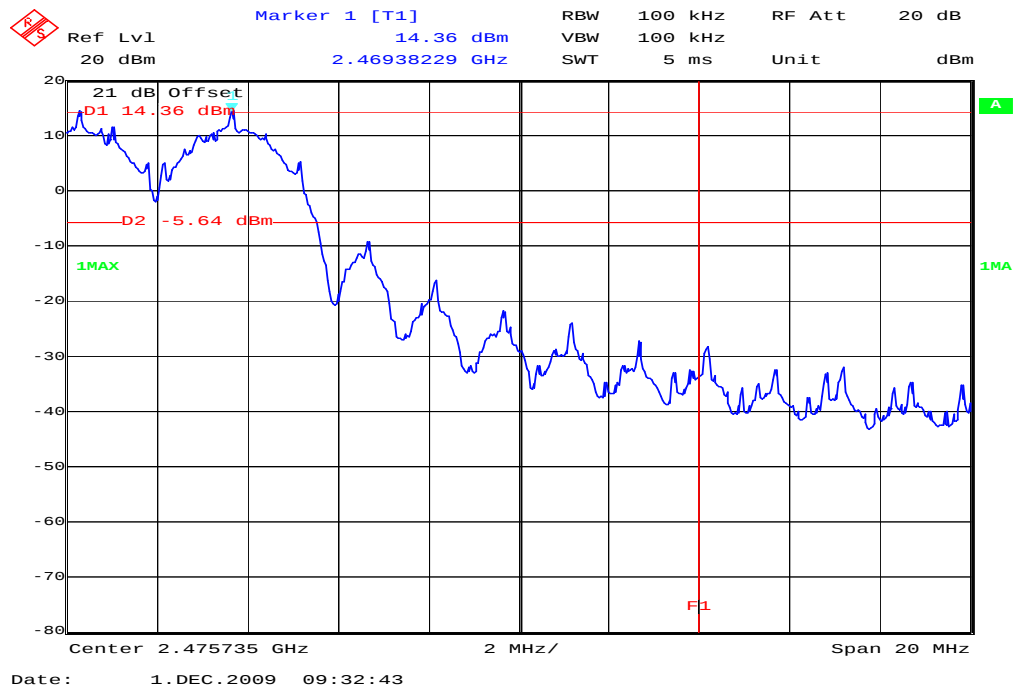
Plot 2 of 4 (hopping on, lowest frequency):



Plot 3 of 4 (hopping off, highest frequency):



Plot 4 of 4 (hopping on, highest frequency):



Results:

SZENARIO	DELTA VALUE [DB]
hopping off, lowest frequency	> 20 dB
hopping on, lowest frequency	> 20 dB
hopping off, highest frequency	> 20 dB
hopping on, highest frequency	> 20 dB
Measurement uncertainty	±1,5dB

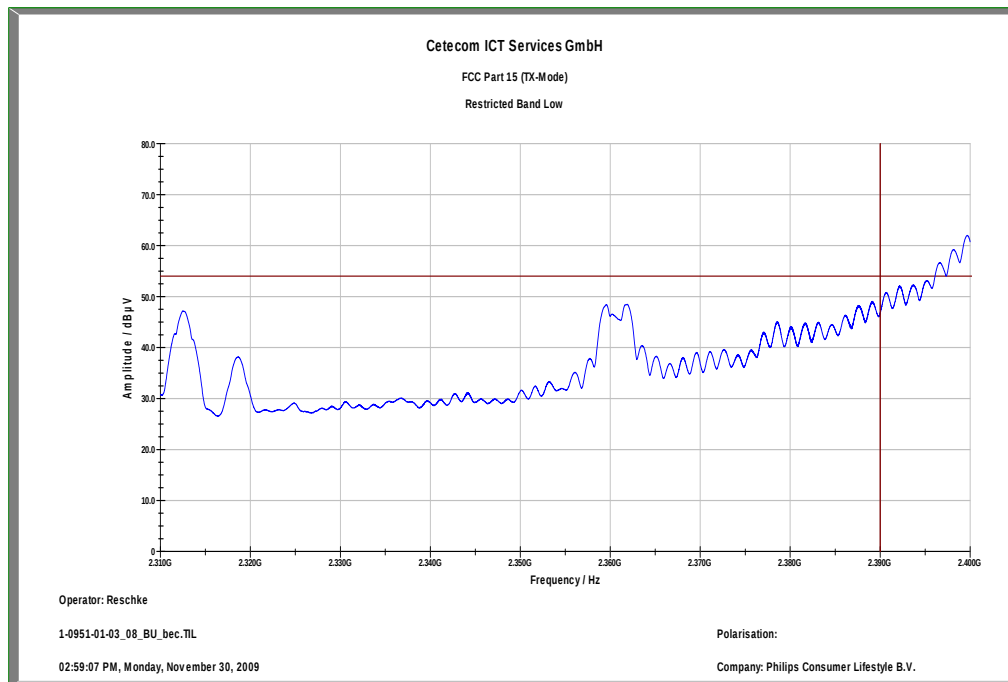
Limits:

Under normal test conditions only	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 5.205(c)).
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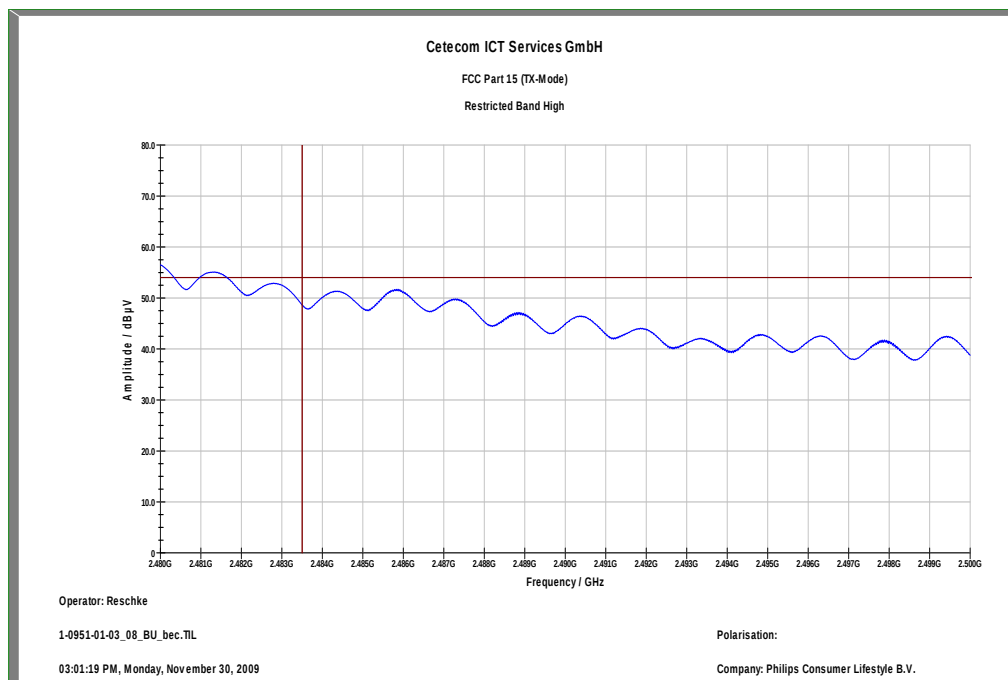
5.13 Band-edge compliance of radiated emissions §15.205

Baby Unit:

Plot 1: Lowest Frequency



Plot 2: Highest Frequency



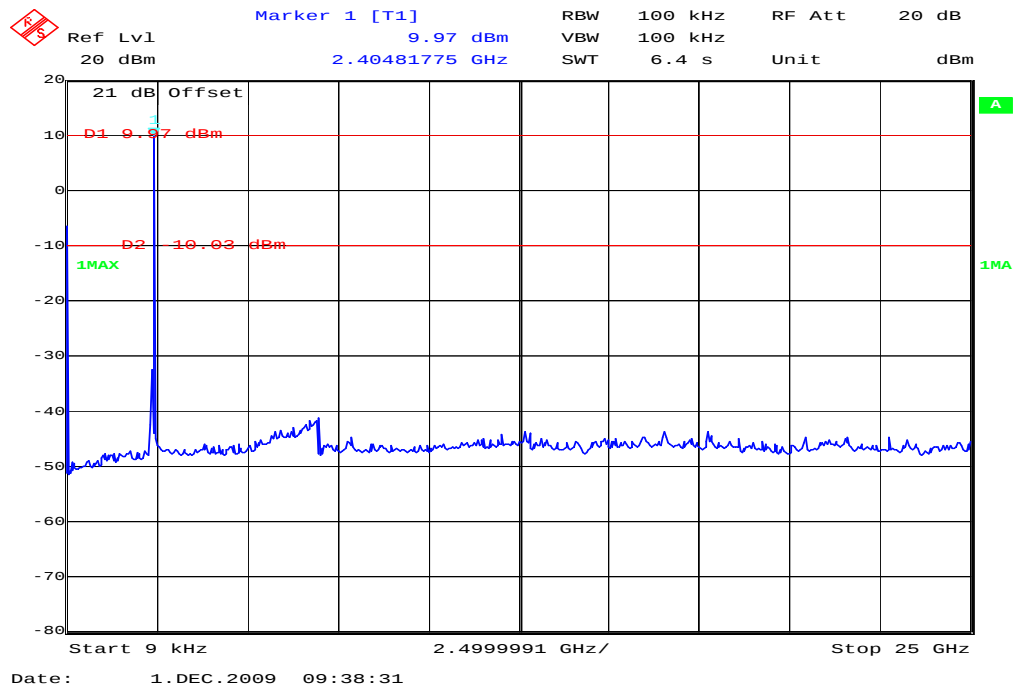
Limit: 54 dBµV/m

Complies

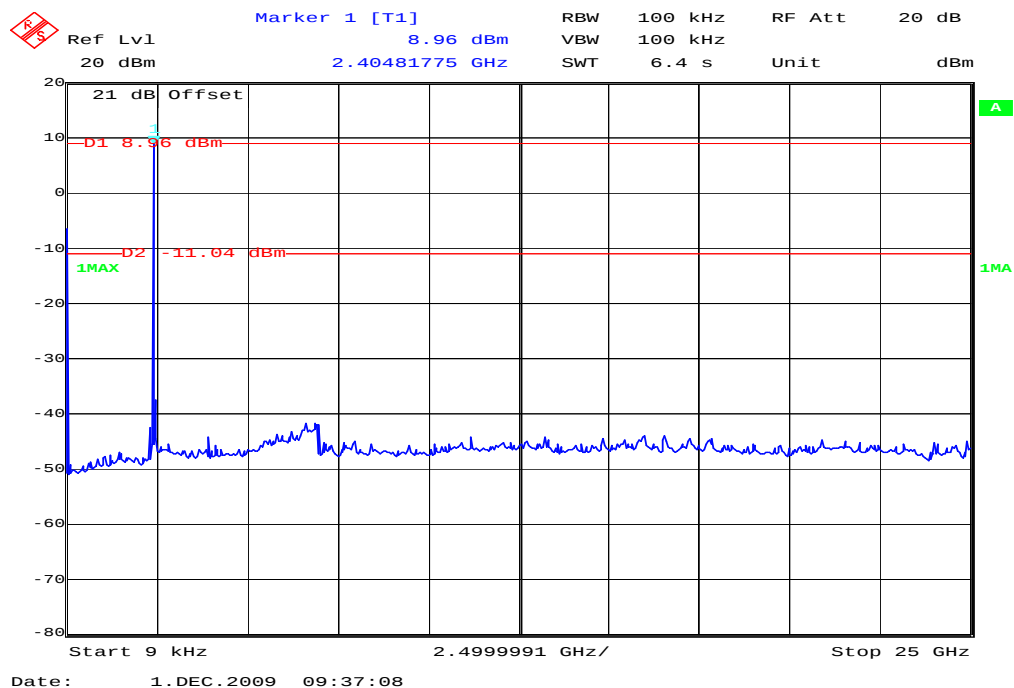
5.14 Spurious Emissions - conducted (Transmitter) § 15.247 (c)(1)

Baby Unit:

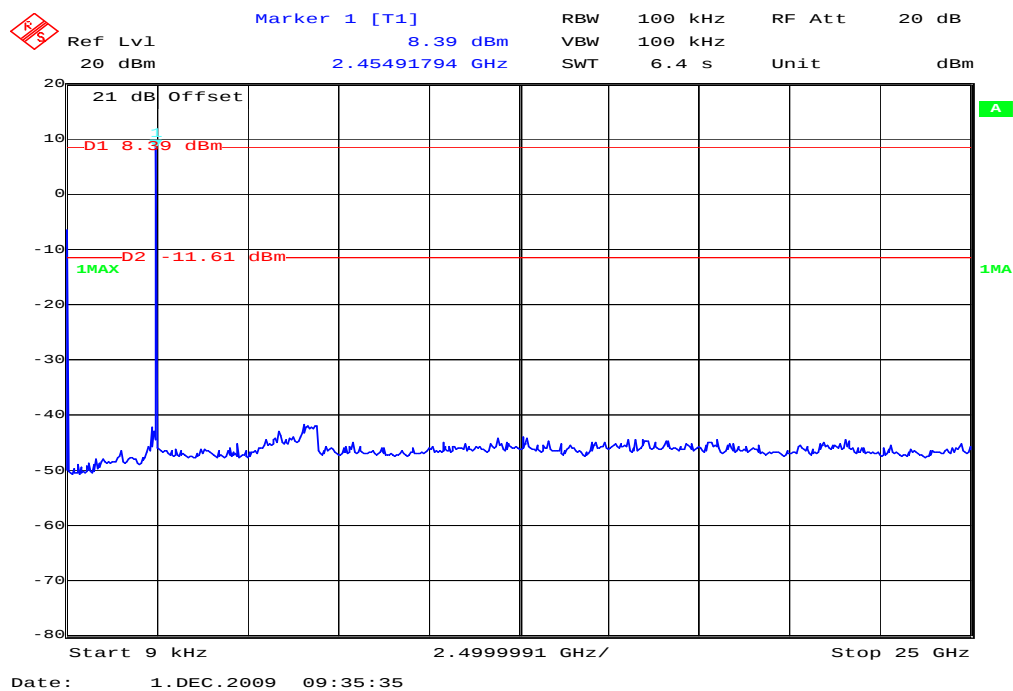
Plot 1 of 3: lowest channel



Plot 2 of 3: middle channel



Plot 3 of 3: highest channel



The peak at the beginning of the Plot is the LO from the Spectrum Analyzer

Result & Limits:

Emission Limitation					
Frequency [MHz]		amplitude of emission [dBm]	limit max. allowed emission power	actual attenuation below frequency of operation [dB]	results
2408.625		9.97	30 dBm		Operating frequency
No critical peaks found			-20 dBc		complies
2436.750		8.96	30 dBm		Operating frequency
No critical peaks found			-20 dBc		complies
2469.375		8.39	30 dBm		Operating frequency
No critical peaks found			-20 dBc		complies
Measurement uncertainty		± 3dB			

F < 1 GHz: RBW: 100 kHz VBW: 100 kHz
F > 1 GHz: RBW: 1 MHz VBW: 1 MHz

Under normal test conditions only	In any 100 kHz bandwidth outside the frequency band at least 20dB below the highest level of the desired power. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).
-----------------------------------	--

Note: For emissions that fall into restricted bands you find the radiated emissions later in the report.

5.15 Spurious Emissions > 30 MHz- radiated (Transmitter) § 15.247 (c)(1)

Baby Unit:

Plot 1: 0.03 - 1 GHz, antenna vertical worst case (lowest channel) @ 10m

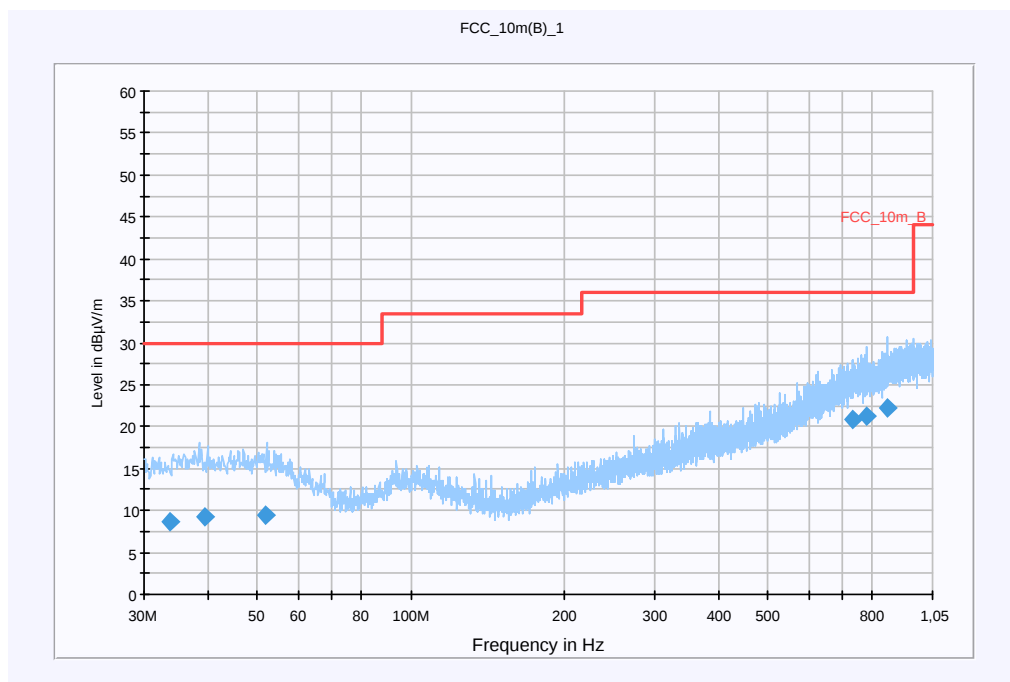
Information

EUT:	SCD600 + OH-1048A0600800U1
Serial Number:	GP091000007 + 0939
Test Description:	FCC part 15 class B @ 10 m
Operating Conditions:	TX – Mode, Ch. 1
Operator Name:	Hennemann
Comment:	AC: 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup:	Electric Field (NOS)
Level Unit:	dB μ V/m

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30 MHz - 1,05 GHz	QuasiPeak	120 kHz	15 s	Receiver

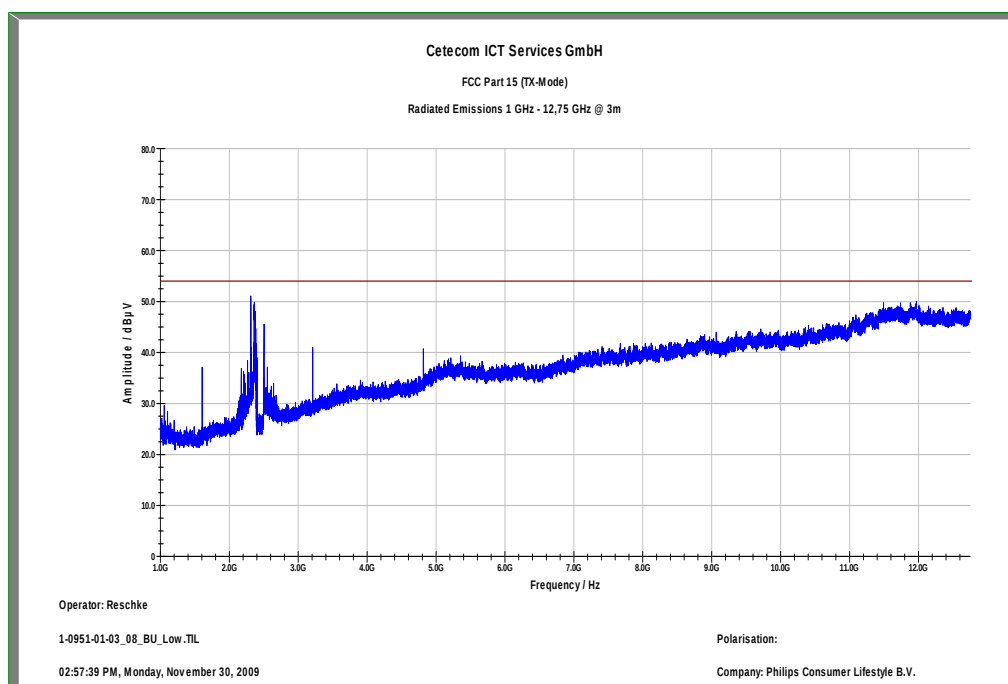


Frequency (MHz)	QuasiPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
33.782850	8.7	15000.000	120.000	198.0	V	258.0	13.0	21.3	30.0
39.406200	9.3	15000.000	120.000	161.0	H	36.0	13.5	20.7	30.0
52.061700	9.4	15000.000	120.000	213.0	H	160.0	13.3	20.6	30.0
730.512000	20.9	15000.000	120.000	198.0	H	104.0	23.7	15.1	36.0
782.452650	21.2	15000.000	120.000	198.0	V	146.0	24.2	14.8	36.0
856.811400	22.2	15000.000	120.000	400.0	V	243.0	25.1	13.8	36.0

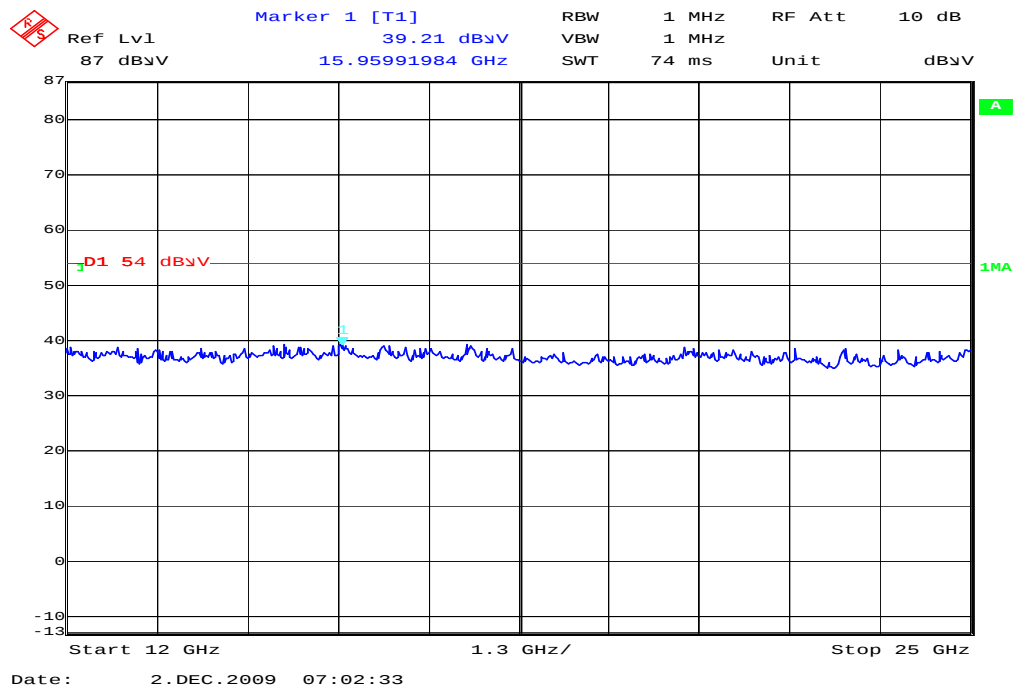
Hardware Setup: EMI radiated\Electric Field (NOS) - [EMI radiated]

Subrange 1		
	Frequency Range:	30 MHz - 2 GHz
	Receiver:	Receiver [ESCI 3]
		@ GPIB0 (ADR 20), SN 100083/003, FW 4.32
	Signal Path:	without Notch
		FW 1.0
	Antenna:	VULB 9163
		SN 9163-295, FW ---
		Correction Table (vertical): VULP6113
		Correction Table (horizontal): VULP6113
		Correction Table: Cable EN 1GHz (0909)
	Antenna Tower:	Tower [EMCO 2090 Antenna Tower]
		@ GPIB0 (ADR 8), FW REV 3.12
	Turntable:	Turntable [EMCO Turntable]
		@ GPIB0 (ADR 9), FW REV 3.12

Plot 2: 1 - 12 GHz, antenna vertical worst case (lowest channel) @ 3m

*Carrier notched with 2.4 GHz rejection filter*

Plot 3: 12 - 25 GHz, antenna vertical/horizontal (valid for all channels)



Plot 4: 0.03 - 1 GHz, antenna vertical/horizontal (middle channel) @ 10m

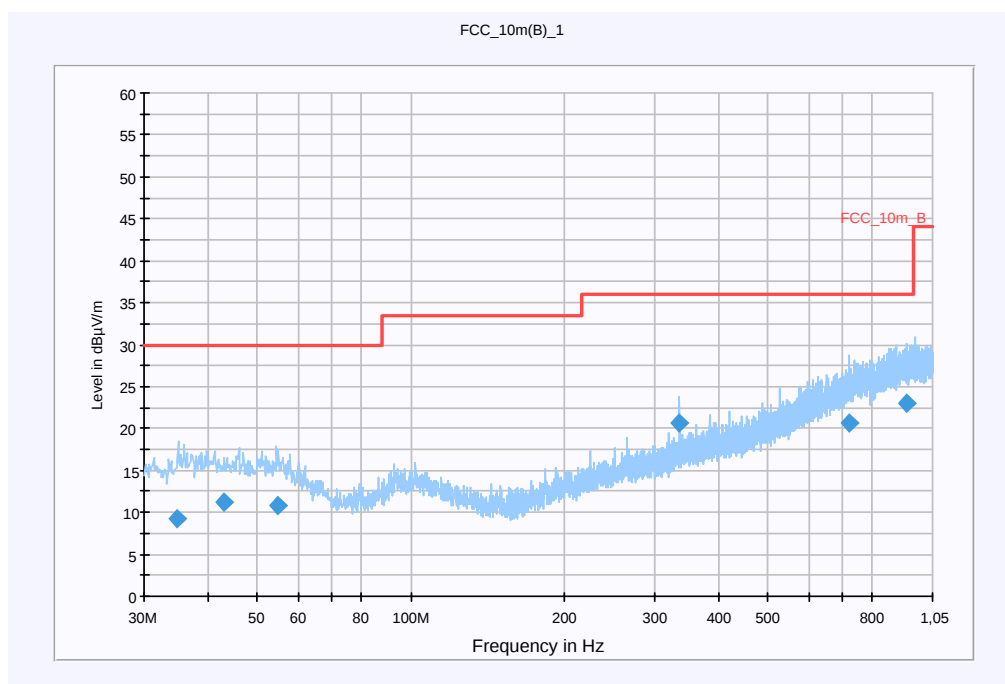
Information

EUT:	SCD600 + OH-1048A0600800U1
Serial Number:	GP091000007 + 0939
Test Description:	FCC part 15 class B @ 10 m
Operating Conditions:	TX – Mode, Ch. 30
Operator Name:	Hennemann
Comment:	AC: 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup:	Electric Field (NOS)
Level Unit:	dB μ V/m

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30 MHz - 1,05 GHz	QuasiPeak	120 kHz	15 s	Receiver

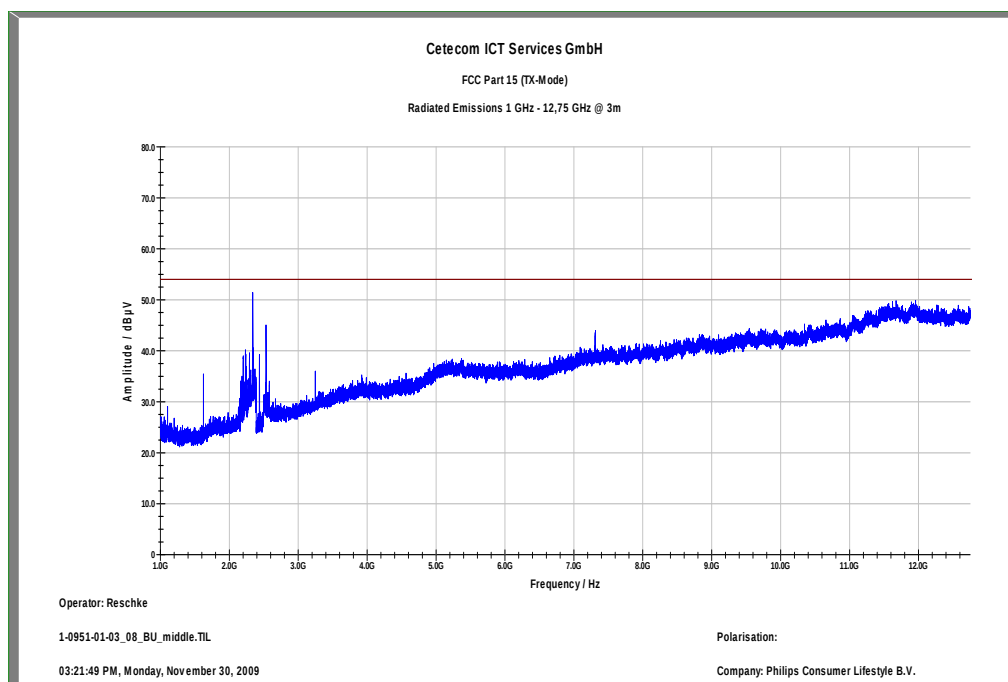


Frequency (MHz)	QuasiPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
34.720200	9.2	15000.000	120.000	200.0	V	197.0	13.1	20.8	30.0
42.994500	11.3	15000.000	120.000	200.0	V	95.0	13.5	18.7	30.0
54.943800	10.9	15000.000	120.000	268.0	V	324.0	13.1	19.1	30.0
335.988600	20.7	15000.000	120.000	100.0	V	118.0	16.0	15.3	36.0
721.099800	20.6	15000.000	120.000	110.0	V	324.0	23.5	15.4	36.0
935.313300	22.9	15000.000	120.000	108.0	V	77.0	25.8	13.1	36.0

Hardware Setup: EMI radiated\Electric Field (NOS) - [EMI radiated]

Subrange 1		
Frequency Range:	30 MHz - 2 GHz	
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/003, FW 4.32	
Signal Path:	without Notch FW 1.0	
Antenna:	VULB 9163 SN 9163-295, FW --- Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table: Cable EN 1GHz (0909)	
Antenna Tower:	Tower [EMCO 2090 Antenna Tower] @ GPIB0 (ADR 8), FW REV 3.12	
Turntable:	Turntable [EMCO Turntable] @ GPIB0 (ADR 9), FW REV 3.12	

Plot 5: 1 - 12 GHz, antenna vertical/horizontal (middle channel) @ 3m



Carrier notched with 2.4 GHz rejection filter

Plot 6: 0.03 - 1 GHz, antenna vertical/horizontal (highest channel) @ 10m

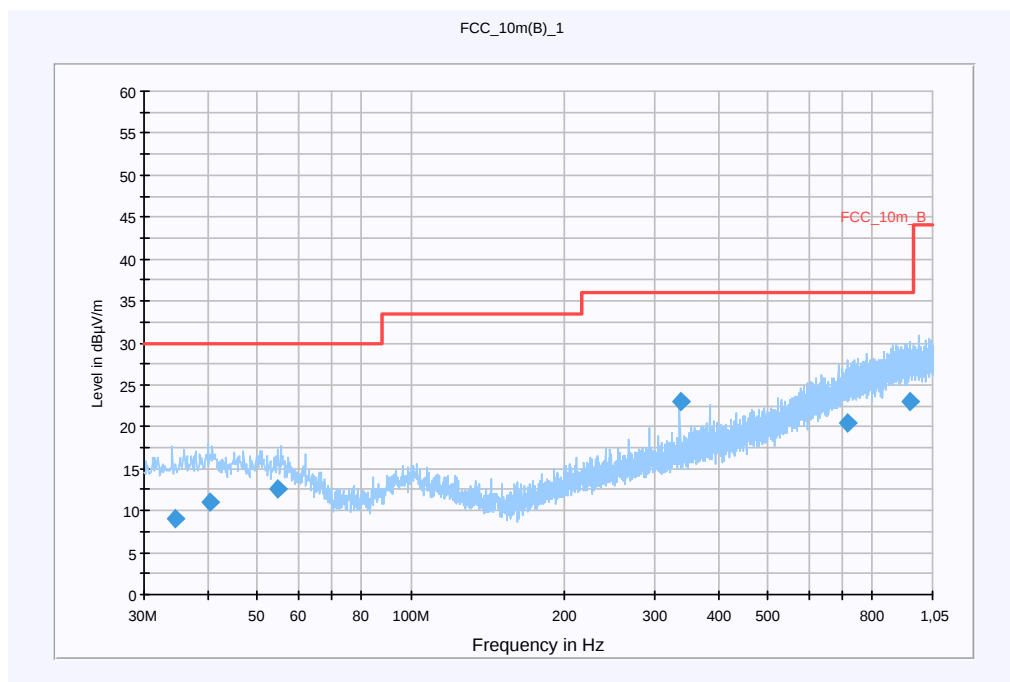
Information

EUT:	SCD600 + OH-1048A0600800U1
Serial Number:	GP091000007 + 0939
Test Description:	FCC part 15 class B @ 10 m
Operating Conditions:	TX – Mode, Ch. 62
Operator Name:	Hennemann
Comment:	AC: 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup:	Electric Field (NOS)
Level Unit:	dB μ V/m

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30 MHz - 1,05 GHz	QuasiPeak	120 kHz	15 s	Receiver

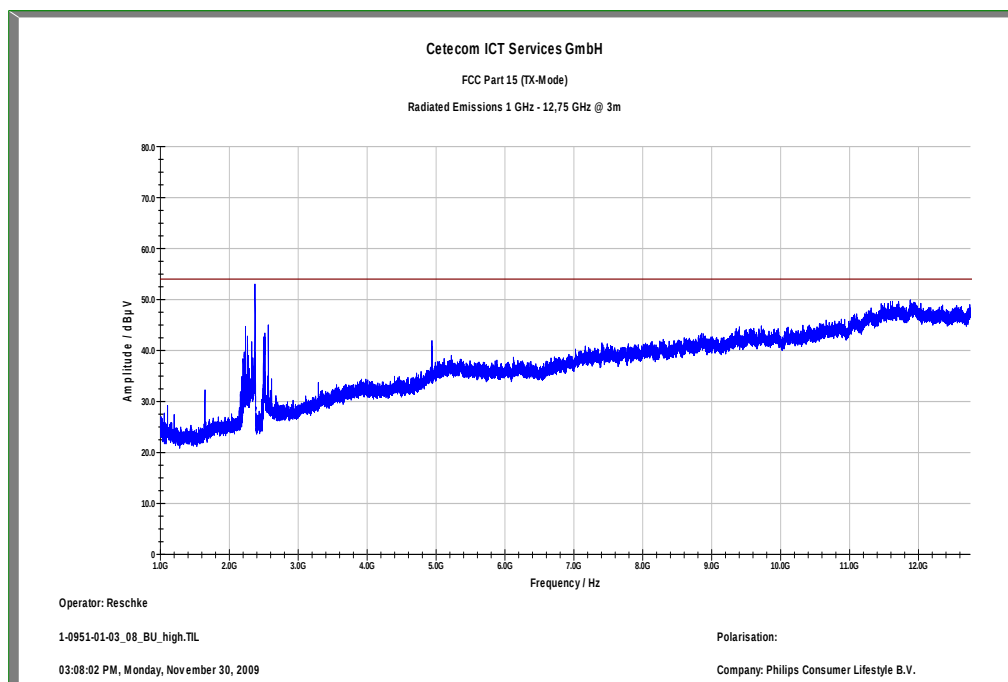


Frequency (MHz)	QuasiPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
34.561950	9.0	15000.000	120.000	267.0	V	48.0	13.1	21.0	30.0
40.441650	11.1	15000.000	120.000	100.0	V	209.0	13.6	18.9	30.0
55.014150	12.5	15000.000	120.000	200.0	V	147.0	13.1	17.5	30.0
336.002100	23.1	15000.000	120.000	323.0	H	127.0	16.0	12.9	36.0
714.948150	20.5	15000.000	120.000	155.0	V	163.0	23.4	15.5	36.0
946.384800	23.0	15000.000	120.000	200.0	H	106.0	25.8	13.0	36.0

Hardware Setup: EMI radiated\Electric Field (NOS) - [EMI radiated]

Subrange 1		
	Frequency Range:	30 MHz - 2 GHz
	Receiver:	Receiver [ESCI 3]
		@ GPIB0 (ADR 20), SN 100083/003, FW 4.32
	Signal Path:	without Notch
		FW 1.0
	Antenna:	VULB 9163
		SN 9163-295, FW ---
		Correction Table (vertical): VULP6113
		Correction Table (horizontal): VULP6113
		Correction Table: Cable EN 1GHz (0909)
	Antenna Tower:	Tower [EMCO 2090 Antenna Tower]
		@ GPIB0 (ADR 8), FW REV 3.12
	Turntable:	Turntable [EMCO Turntable]
		@ GPIB0 (ADR 9), FW REV 3.12

Plot 7: 1 - 12 GHz, antenna vertical/horizontal (highest channel) @ 3m

*Carrier notched with 2.4 GHz rejection filter*

Note:

The harmonic spurious were remeasured as described in the FCC-DTS Measurement Guide 03-2005 with RBW 1 MHz and VBW = 10 Hz.

Results:

SPURIOUS EMISSIONS LEVEL [dB μ V/m]								
2408.625 MHz			2436.750 MHz			2469.375 MHz		
Frequency [MHz]	Detector	Level [dB μ V/m]	Frequency [MHz]	Detector	Level [dB μ V/m]	Frequency [MHz]	Detector	Level [dB μ V/m]
7225	Average	47.36	7310	Average	46.82	7408	Average	47.10
No other critical peaks found			No other critical peaks found			No other critical peaks found		
Measurement uncertainty			± 3 dB					

$f < 1$ GHz : RBW/VBW: 100 kHz

$f \geq 1$ GHz : RBW/VBW: 1 MHz

Limits:

§ 15.247 (c)

In any 100 kHz bandwidth outside the frequency band at least 20dB below the highest level of the desired power. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

Limits:

§ 15.209

Frequency (MHz)	Field strength (dB μ V/m)	Measurement distance (m)
30 - 88	30.0	10
88 - 216	33.5	10
216 - 960	36.0	10
above 960	54.0	3

5.16 Spurious Emissions - radiated (Receiver) § 15.109

Valid for Parent Unit and Baby Unit:

Plot 1: 0.03 - 1 GHz, antenna vertical/horizontal (receiver) @ 10m

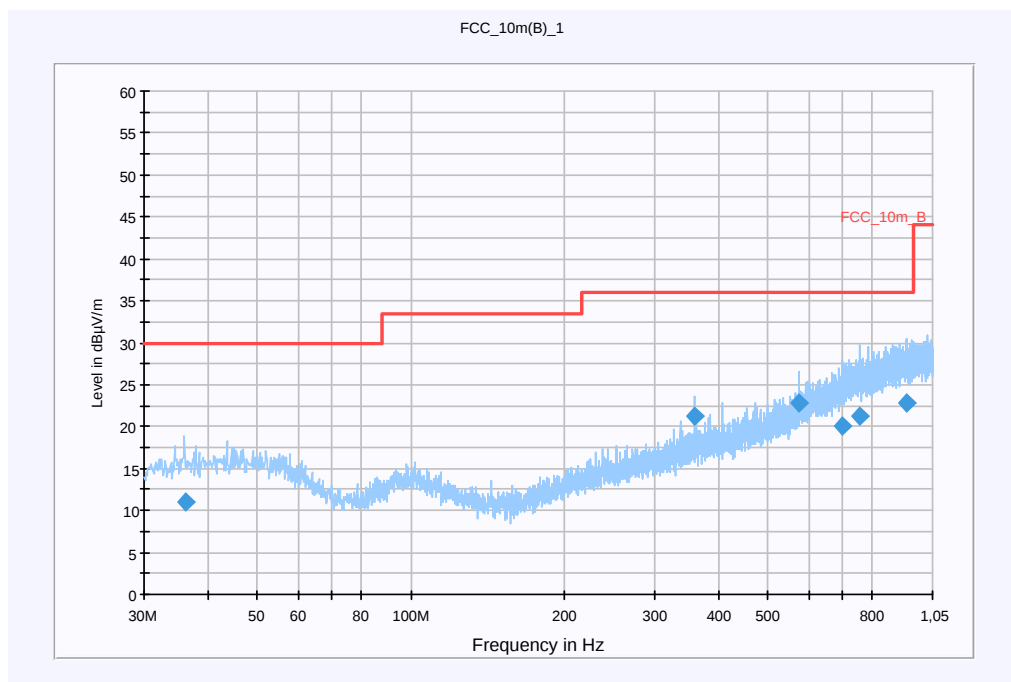
Information

EUT:	SCD600 + OH-1048A0600800U1
Serial Number:	GP091000007 + 0939
Test Description:	FCC part 15 class B @ 10 m
Operating Conditions:	RX - Mode
Operator Name:	Hennemann
Comment:	AC: 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup:	Electric Field (NOS)
Level Unit:	dB μ V/m

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30 MHz - 1,05 GHz	QuasiPeak	120 kHz	15 s	Receiver

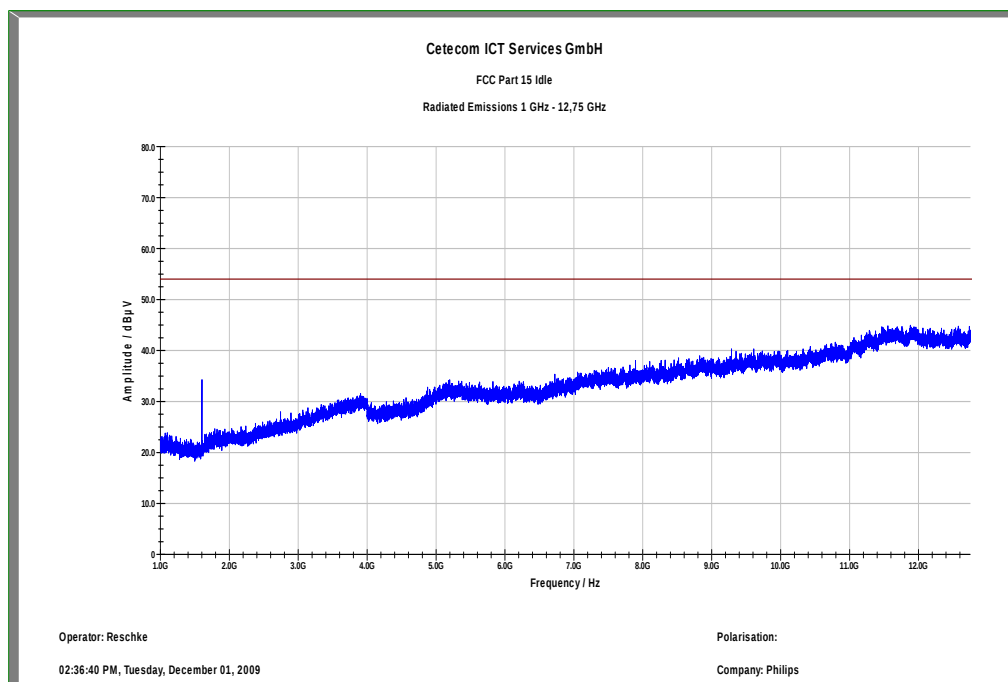


Frequency (MHz)	QuasiPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
36.064650	11.0	15000.000	120.000	98.0	V	99.0	13.2	19.0	30.0
360.017400	21.3	15000.000	120.000	247.0	H	98.0	16.6	14.7	36.0
575.970450	22.7	15000.000	120.000	161.0	H	295.0	20.7	13.3	36.0
697.244850	20.0	15000.000	120.000	142.0	V	144.0	22.9	16.0	36.0
755.149050	21.2	15000.000	120.000	151.0	H	238.0	24.2	14.8	36.0
930.213600	22.8	15000.000	120.000	210.0	H	282.0	25.8	13.2	36.0

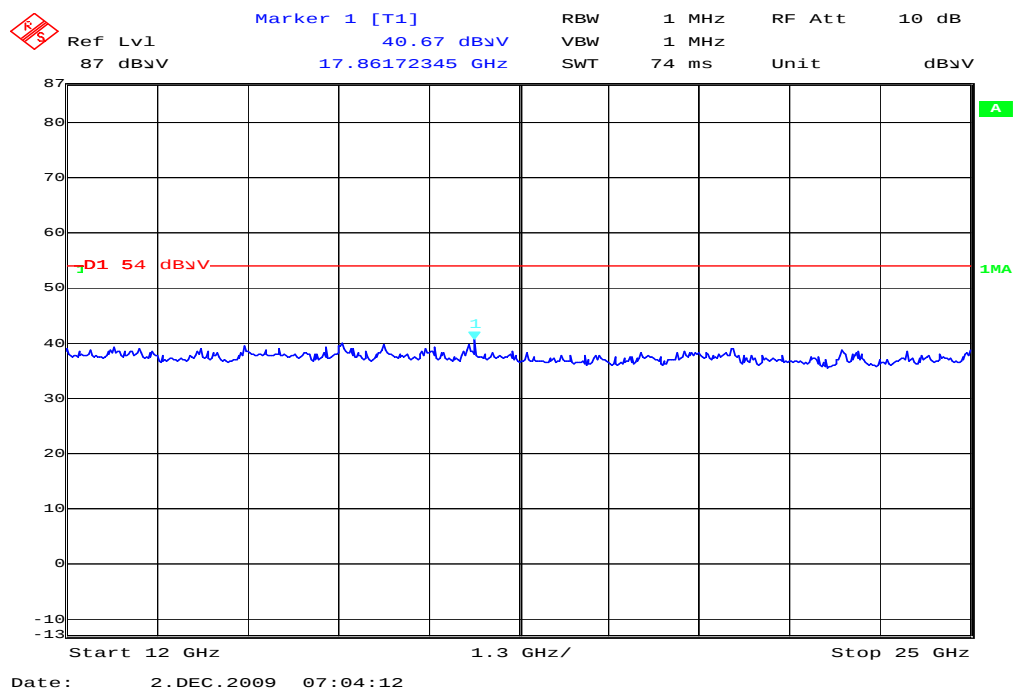
Hardware Setup: EMI radiated\Electric Field (NOS) - [EMI radiated]

Subrange 1		
Frequency Range:	30 MHz - 2 GHz	
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/003, FW 4.32	
Signal Path:	without Notch FW 1.0	
Antenna:	VULB 9163 SN 9163-295, FW --- Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table: Cable EN 1GHz (0909)	
Antenna Tower:	Tower [EMCO 2090 Antenna Tower] @ GPIB0 (ADR 8), FW REV 3.12	
Turntable:	Turntable [EMCO Turntable] @ GPIB0 (ADR 9), FW REV 3.12	

Plot 2: 1 - 12 GHz, antenna vertical/horizontal (receiver) @ 3m



Plot 3: 12 - 25 GHz vertical/horizontal (receiver)



Spurious Emissions level [dBμV/m]		
Frequency [MHz]	Detector	Level [dBμV/m]
1600	Peak	38.45
Measurement uncertainty		±3 dB

f < 1 GHz: RBW/VBW: 100 kHz

f ≥ 1GHz : RBW/VBW: 1 MHz

See above plots

Measurement distance see table

Limits:

§ 15.109

Frequency (MHz)	Field strength (dBμV/m)	Measurement distance (m)
30 - 88	30.0	10
88 - 216	33.5	10
216 - 960	36.0	10
above 960	54.0	3

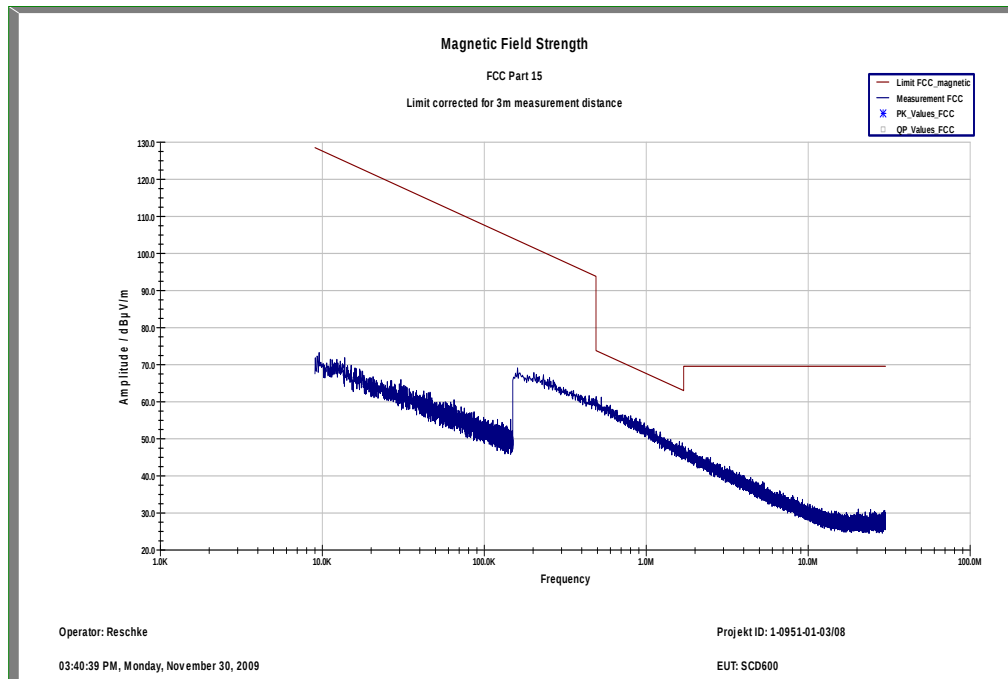
5.17 Spurious Emissions < 30 MHz - Transmitter radiated § 15.209

Measured at 3 m distance.

Values recalculated with 40 dB/decade according to FCC rules.

Baby Unit:

Plot 1:



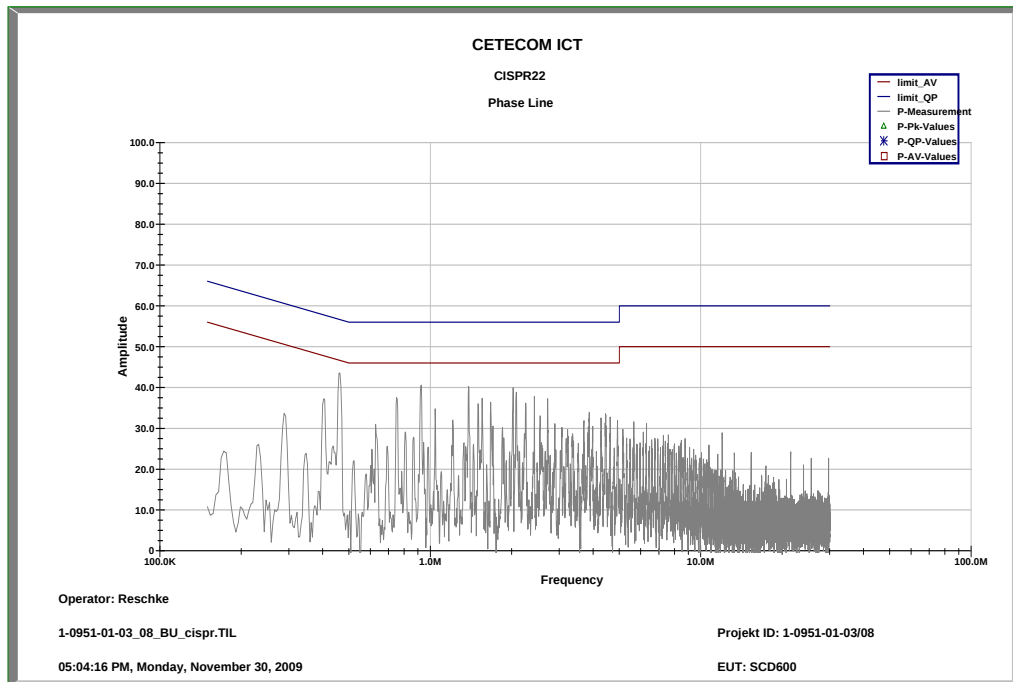
Limits:

Frequency (MHz)	Field strength (µV/m)	Measurement distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30 / 29.5 dBµV/m	30

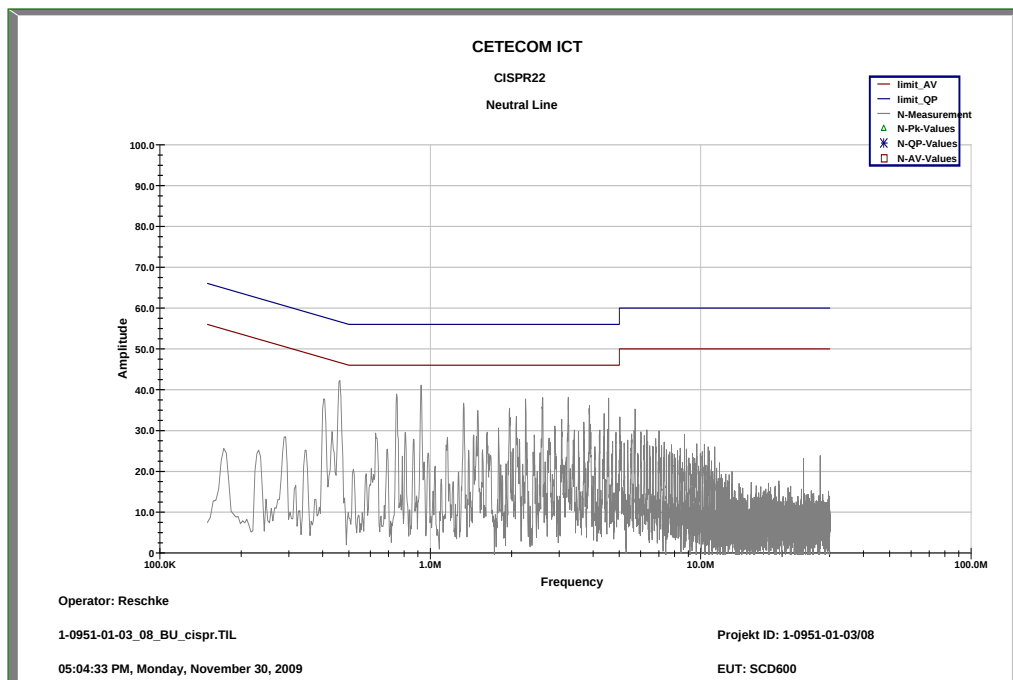
5.18 Conducted Emissions <30 MHz § 15.107/207

Baby Unit: Valid for RX and TX

Plot 1: Phase Line



Plot 2: Neutral Line



Limits:

Under normal test conditions only

See plots

6 Test equipment and ancillaries used for tests

To simplify the identification on each page of the test equipment used, on each page of the test report, each item of test equipment and ancillaries such as cables are identified (numbered) by the Test Laboratory, below.

All reported calibration intervals are calibrations according to the EN/ISO/IEC 17025 standard. These calibrations were performed from an accredited external calibration laboratory.

Additional to these calibrations the laboratory performed comparison measurements with other calibrated systems and performed a weekly chamber inspection.

All used devices are connected with a 10 MHz external reference.

According to the manufacturers' instruction is it possible to establish a calibration interval for the FSP unit of 24 month, if the device has an external 10 MHz reference.

Anechoic chamber C:

No	Equipment/Type	Manuf.	Serial Nr.	Inv. No. Cetecom	Last Calibration	Frequency (months)	Next Calibration
1	Anechoic chamber	MWB	87400/02	300000996	Monthly verification		
2	System-Rack 85900	HP I.V.	*	300000222	n.a.		
3	Measurement System 1						
4	PSA-Spektrumanalysator 3 Hz - 26.5 GHz (E4440A)	Agilent	MY48250080	300003812	05.08.2008	24	05.08.2010
5	EMI Preselector 9 kHz - 1 GHz (N9039A)	Agilent	MY48260003	300003825	19.08.2008	24	19.08.2010
6	Microwave Analog Signal Generator (N5183A)	Agilent	MY47420220	300003813	06.08.2008	24	06.08.2010
7	PC	F+W			n.a.		
8	TILE	TILE			n.a.		
9	TRILOG Super Broadband Antenna (VULB9163)	Schwarzbeck	371	300003854	Monthly verification (System cal.)		
10	Double Ridged Antenna 3115	EMCO	3088	300001032	Monthly verification (System cal.)		
11	Active Loop Antenna 6502	EMCO	2210	300001015	Monthly verification (System cal.)		
12	Switch / Control Unit 3488A	HP	2719A15013	300001156	n.a.		
13	Power Supply 6032A	HP	2818A03450	300001040	08.01.2009	36	08.01.2012
14	Busisolator	Kontron		300001056	n.a.		
15	Leitungsteiler 11850C	HP		300000997	Monthly verification (System cal.)		
16	Power attenuator 8325	Byrd	1530	300001595	Monthly verification (System cal.)		
17	Band reject filter WRCG1855/1910	Wainwright	7	300003350	Monthly verification (System cal.)		
18	Band reject filter WRCG2400/2483	Wainwright	11	300003351	Monthly verification (System cal.)		
19	Hochpassfilter WHK1.1/15G-10SS	Wainwright	3	300003255	Monthly verification (System cal.)		
20	Hochpassfilter WHKX2.9/18G-12SS	Wainwright	1	300003492	Monthly verification (System cal.)		
21	Hochpassfilter WHKX7.0/18G-8SS	Wainwright	18	300003789	Monthly verification (System cal.)		
22	Switch / Control Unit 3488A	HP	2605e08770	300001443	n.a.		
23	Trenntrafo RT5A	Grundig	9242	300001263	n.a.		
24	Relais Matrix PSU	R&S	890167/024	300001168	n.a.		
25	Netznachbildung ESH3-Z5	R&S	828576/020	300001210	n.a.		

SRD Laboratory Room 002:

No	Equipment/Type	Manuf.	Serial Nr.	Inv. No. Cetecom	Last Calibration	Frequency (months)	Next Calibration
1	System Controller PSM 12	R&S	835259/007	300002681-00xx	n.a.		
2	Memory Extension PSM-K10	R&S	To 1	300002681	n.a.		
3	Operating Software PSM-B2	R&S	To 1	300002681	n.a.		
4	19" Monitor		22759020-ED	300002681	n.a.		
5	Mouse		LZE 0095/6639	300002681	n.a.		
6	Keyboard		G00013834L461	300002681	n.a.		
7	Spectrum Analyser FSIQ 26	R&S	835540/018	300002681-0005	10.01.2008	24	10.01.2010
8	Tracking Generator FSIQ-B10	R&S	835107/015	300002681	s.No.7		
10	RF-Generator SMIQ03 (B1 Signal)	R&S	835541/056	300002681-0002	26.08.2008	36	26.08.2011
11	Modulation Coder SMIQ-B20	R&S	To 10	300002681	s.No.10		
12	Data Generator SMIQ-B11	R&S	To 10	300002681	s.No.10		
13	RF Rear Connection SMIQ-B19	R&S	To 10	300002681	s.No.10		
14	Broadband horn antenna (1-18 GHz)	EMCO	9107-3696	300001604	16.04.2008	24	16.04.2010
15	Broadband horn antenna (1-18 GHz)	EMCO	9107-3697	300001605	21.08.2008	24	21.08.2010
16	Std gain horn antenna (18- 26.5 GHz)	Narda	Model no. 638	300000486	n.a.		
17	Std gain horn antenna (18- 26.5 GHz)	Narda	Model no. 638	300000487	n.a.		
18	Sleeve dipole antenna Model 3126-880	ETS-Lindgren	00040887	3000000	n.a.		
19	Fast CPU SM-B50	R&S	To 10	300002681	s.No.10		
20	FM Modulator SM-B5	R&S	835676/033	300002681	s.No.10		
21	RF-Generator SMIQ03 (B2 Signal)	R&S	835541/055	300002681-0001	25.08.2008	36	25.08.2011
22	Modulation Coder SMIQ-B20	R&S	To 21	300002681	s.No.21		
23	Data Generator SMIQ-B11	R&S	To 21	300002681	s.No.21		
24	RF Rear Connection SMIQ-B19	R&S	To 21	300002681	s.No.21		
25	Fast CPU SM-B50	R&S	To 21	300002681	s.No.21		
26	FM Modulator SM-B5	R&S	836061/022	300002681	s.No.21		
27	RF-Generator SMP03 (B3 Signal)	R&S	835133/011	300002681-0003	26.08.2008	36	26.08.2011
28	Attenuator SMP-B15	R&S	835136/014	300002681	S.No.27		
29	RF Rear Connection SMP-B19	R&S	834745/007	300002681	S.No.27		
30	Power Meter NRVD	R&S	835430/044	300002681-0004	26.08.2008	24	26.08.2010
31	Power Sensor NRVD-Z1	R&S	833894/012	300002681-0013	26.08.2008	24	26.08.2010
32	Power Sensor NRVD-Z1	R&S	833894/011	300002681-0010	26.08.2008	24	26.08.2010
33	Rubidium Standard RUB	R&S		300002681-0009	27.08.2008	24	27.08.2010
34	Switching and Signal Conditioning Unit SSCU	R&S	338864/003	300002681-0006	Verified with path compensation		
35	Laser Printer HP Deskjet 2100	HP	N/A	300002681-0011	n.a.		
36	19" Rack	R&S	11138363000004	300002681	n.a.		
37	RF-cable set	R&S	N/A	300002681	n.a.		
39	IEEE-cables	R&S	N/A	300002681	n.a.		
40	Sampling System FSIQ-B70	R&S	835355/009	300002681	s.No.7		
41	RSP programmable attenuator	R&S	834500/010	300002681-0007	26.08.2008	24	26.08.2010
42	Signalling Unit	R&S	838312/011	300002681	n.a.		
43	NGPE programmable Power Supply for EUT	R&S	192.033.41	300002681			
44	Power Splitter 6005-3	Inmet Corp.	none	300002841	n.a.		
45	SMA Cables SPS-1151-985-SPS	Insulated Wire	different	different	n.a.		
46	CBT32 with EDR Signaling Unit	R&S					
47	Coupling unit	Narda	N/A	--	n.a.		
48	2xSwitch Matrix PSU	R&S	872584/021	300001329	n.a.		
49	RF-cable set	R&S	N/A	different	n.a.		
50	IEEE-cables	R&S	N/A	--	n.a.		

Note: 3000002681-00xx inventoried as a system

Anechoic chamber F:

No	Equipment/Type	Manuf.	Serial Nr.	Inv. No. Cetecom	Last Calibration	Frequency (months)	Next Calibration
1	Control Computer	F+W	FW0502032	300003303	-/-	-/-	-/-
2	Trilog Antenna VULB 9163	Schwarzbeck	295	300003787	01.04.2008	24	01.04.2010
3	Amplifier - 0518C-138	Veritech Micro- wave Inc.	-/-	-/-	-/-	-/-	-/-
4	Switch - 3488A	HP		300000368	-/-	-/-	-/-
5	EMI Test receiver - ESCI	R&S	100083	300003312	01.06.2009	24	01.06.2011
6	Turntable Controller - 1061 3M	EMCO	1218	300000661	-/-	-/-	-/-
7	Tower Controller 1051 Controller	EMCO	1262	300000625	-/-	-/-	-/-
8	Tower - 1051	EMCO	1262	300000625	-/-	-/-	-/-
10	Ultra Notch-Filter Rejected band Ch. 62	WRCD	9	-/-	-/-	-/-	-/-

7 Photographs of the Test Set-up

Photo 1:



Photo 2:

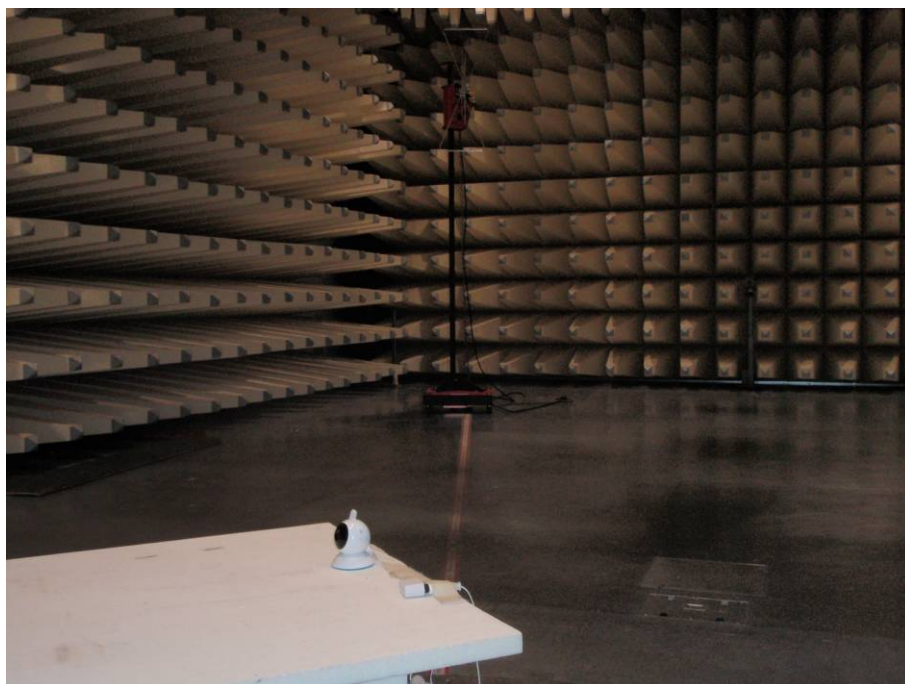


Photo 3:



8 Photographs of the EUT

Photo 1: Baby Unit



Photo 2: Baby Unit



Photo 3: Baby Unit



Photo 4: Baby Unit



Photo 5: Baby Unit



Photo 6: Baby Unit



Photo 7: Baby Unit



Photo 8: Baby Unit

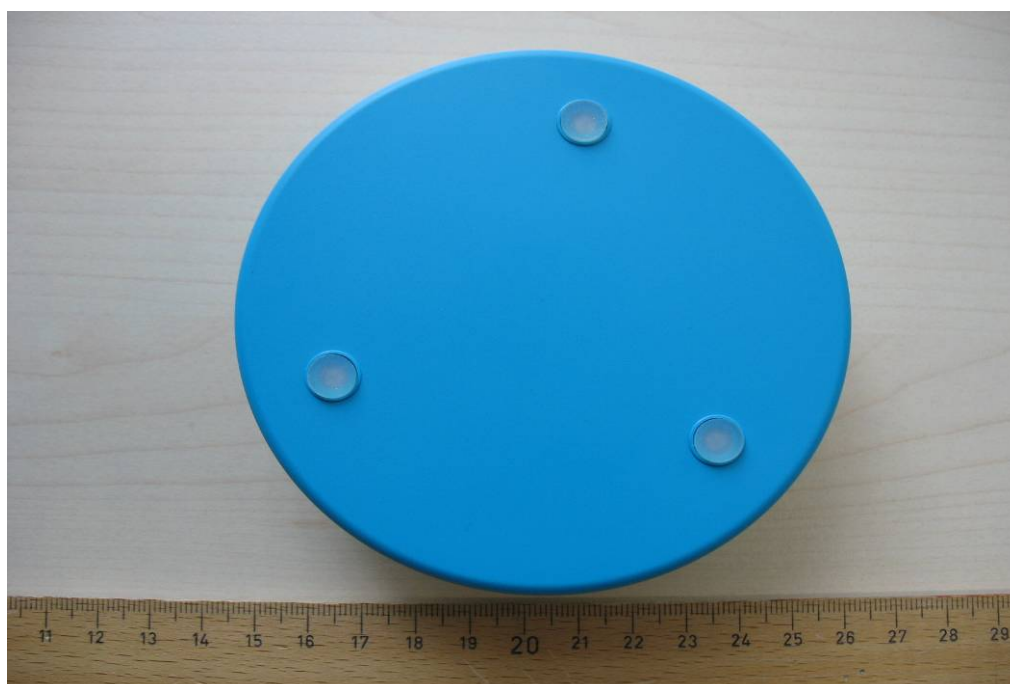


Photo 9: Baby Unit



Photo 10: Baby Unit

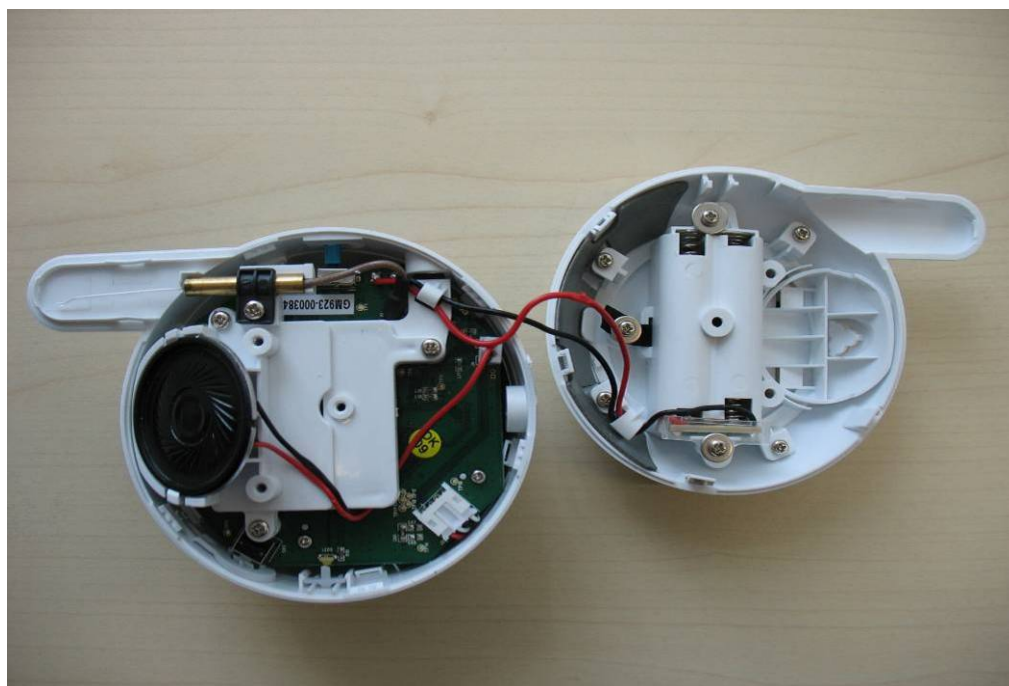


Photo 11: Baby Unit

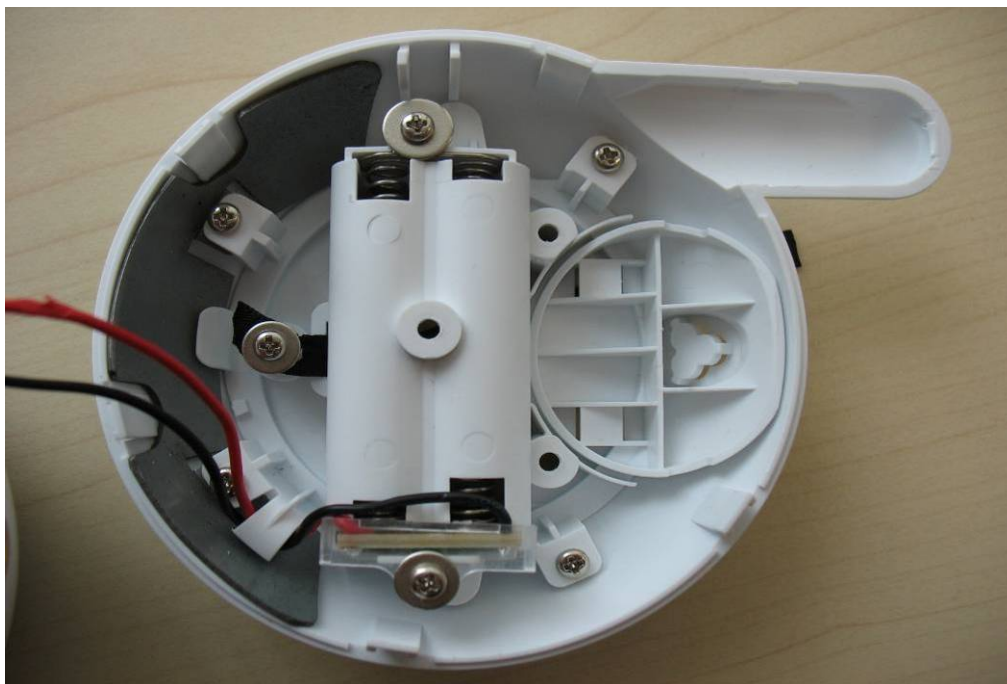


Photo 12: Baby Unit

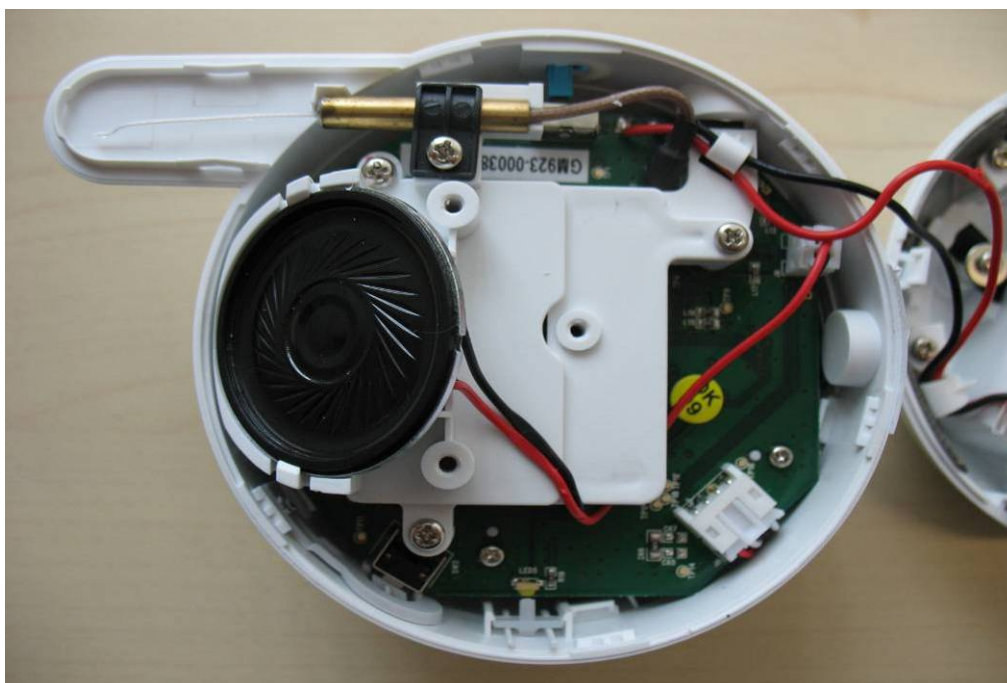


Photo 13: Baby Unit

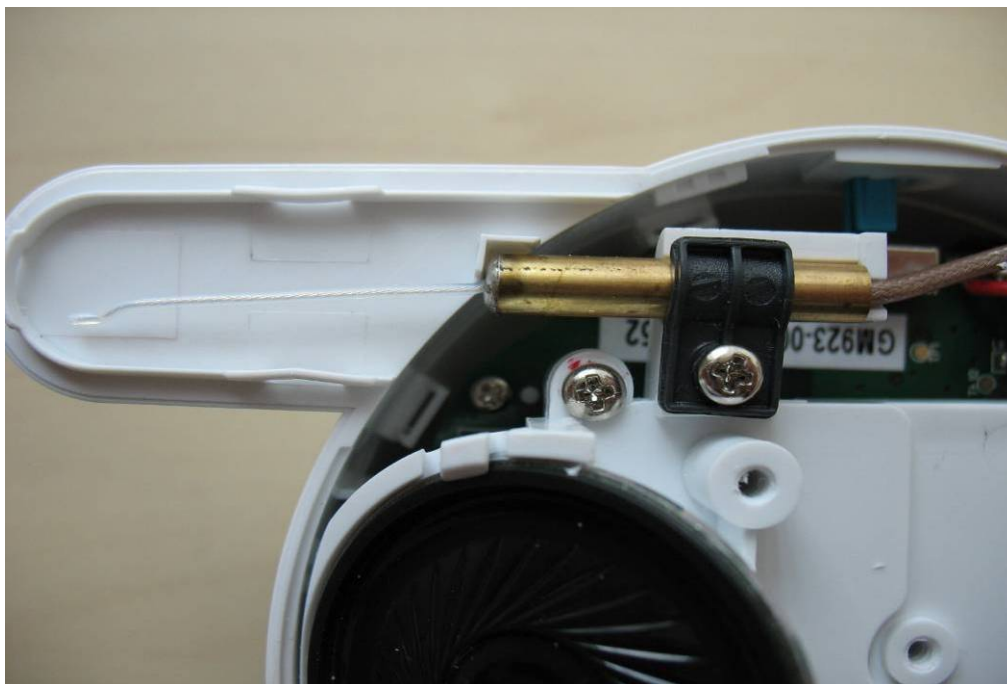


Photo 14: Baby Unit



Photo 15: Baby Unit

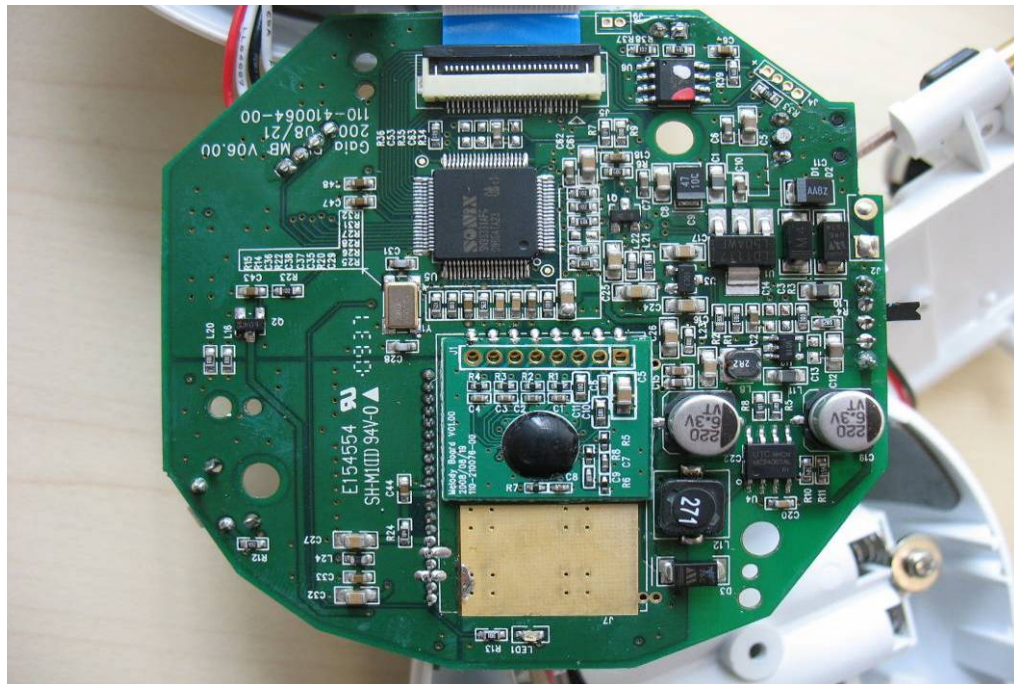


Photo 16: Baby Unit

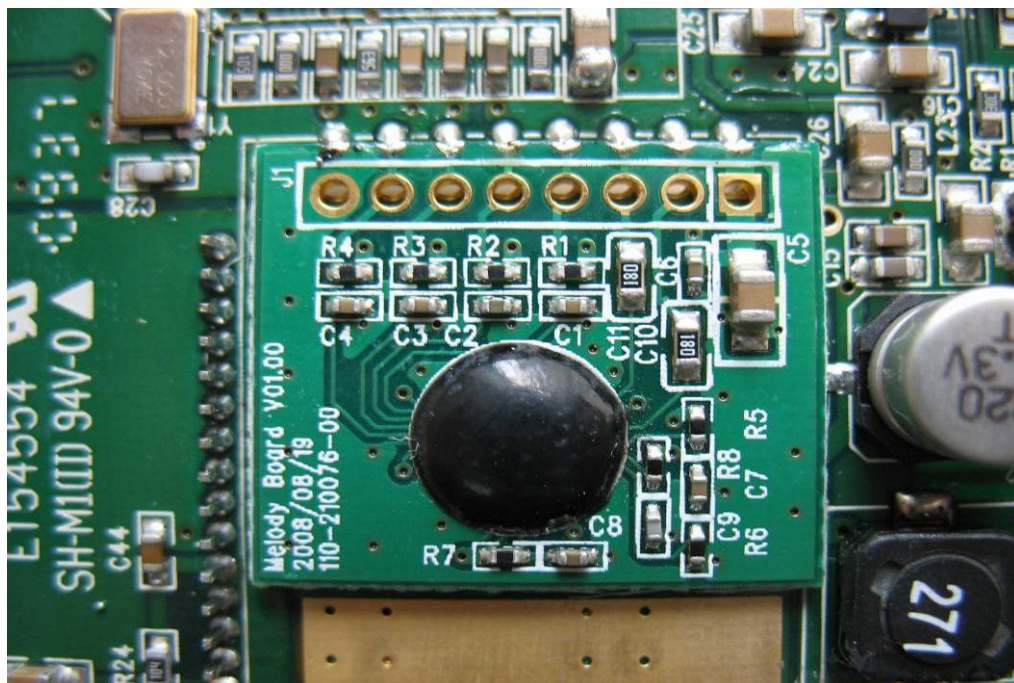


Photo 17: Baby Unit



Photo 18: Baby Unit

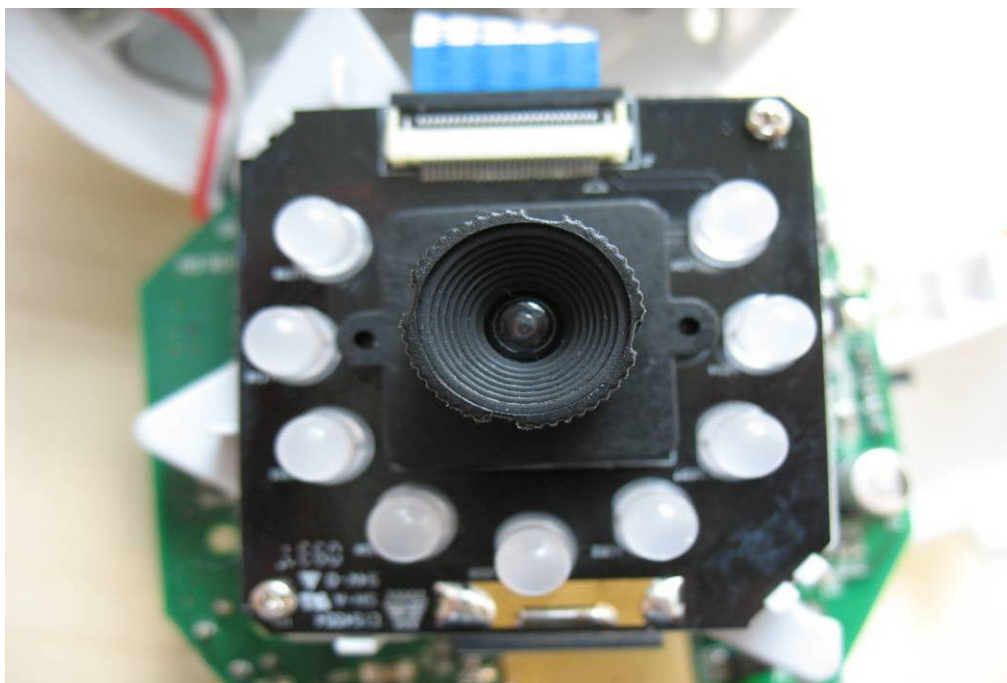


Photo 19: Baby Unit

