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## TEST REPORT

Number  
Composition of document

## RADIO

112624-622708-G-Cr2012-09-24  
19 pages

### Standards

ETSI EN 300328 V1.7.1  
FCC RULES PART 15  
IC RADIO STANDARDS RSS-210  
ARIB STD-T66 V2.1

### Issued to

SORIN CRM  
Parc d'affaires NOVEOS  
4, Avenue Réaumur  
92140 Clamart Cedex , FRANCE

Mme DE JESO

### Apparatus under test

Trade mark  
Manufacturer  
Type  
Serial number

Syndeli RF implantable cardioverter defibrillator  
SORIN Group  
SORIN BIOMEDICA CRM  
PARADYM RF — CRT-D model 9750  
148YY028

### Test date

2012/03/19 & 2012/03/26

### Tests performed by

Stéphane PHOUDIAH & Laurent DENEUX

### Test site

Fontenay Aux Roses & Ecuelles

File issued on  
File corrected on  
File initially issued on

2012/09/24  
2012/09/24  
2012/04/18

Written by :  
**Stéphane PHOUDIAH & Laurent DENEUX**  
Tests operator



Approved by  
**Marc CANCOUET**  
Technical manager

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**SUMMARY**

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**1. TEST PROGRAM**

• **References**

Standards: ETSI EN 300328 V1.7.1  
 ERC Recommendation 70-03  
 ARIB STD-T66 V2.1  
 FCC RULES PART 15  
 IC RADIO STANDARDS RSS-210

• **Transmitter requirement:**

| Clause (ETSI EN 300 328)<br>Test Description | TEST RESULT - Comments   |
|--|--------------------------|
| 4.2.1 – FHSS modulation                      | N/A (Receiver Equipment) |
| 5.7.2 – Equivalent Isotropic Radiated Power  | N/A (Receiver Equipment) |
| 5.7.3 – Maximum EIRP spectral density        | N/A (Receiver Equipment) |
| 5.7.4 – Frequency Range                      | N/A (Receiver Equipment) |
| 5.7.5 – Transmitter Spurious Emissions       | N/A (Receiver Equipment) |

| Clause (ARIB STD-T66)<br>Test Description                  | TEST RESULT - Comments   |
|--|--------------------------|
| 3.1 (1) – Communication method                             | PASS                     |
| 3.1 (2) – Contents of communication                        | PASS                     |
| 3.1 (3) – Frequency band                                   | PASS                     |
| 3.1 (4) – Environmental operating conditions               | PASS                     |
| 3.2 (1) – Modulation system                                | N/A (Receiver Equipment) |
| 3.2 (2) – Antenna power                                    | N/A (Receiver Equipment) |
| 3.2 (4) – Frequency tolerance                              | N/A (Receiver Equipment) |
| 3.2 (6) – Spurious emissions intensity                     | N/A (Receiver Equipment) |
| 3.2 (7) – Occupied bandwidth                               | N/A (Receiver Equipment) |
| 3.2 (8) – Spread bandwidth                                 | N/A (Receiver Equipment) |
| 3.2 (9) – Process gain                                     | N/A (Receiver Equipment) |
| 3.2 (10) – Number of carrier within 1MHz bandwidth in OFDM | N/A (Receiver Equipment) |
| 3.2 (11) – Dwell time                                      | N/A (Receiver Equipment) |
| 3.6 (2) – Antenna Characteristics                          | N/A (Receiver Equipment) |

| Clause (FCC PART 15)<br>Test Description | TEST RESULT - Comments   |
|--|--------------------------|
| Power line conducted emissions           | N/A (Receiver Equipment) |
| Channel separation                       | N/A (Receiver Equipment) |
| Time of Occupancy                        | N/A (Receiver Equipment) |
| 20dB Occupied bandwidth                  | N/A (Receiver Equipment) |
| Peak Power Output                        | N/A (Receiver Equipment) |
| Radiated emissions                       | N/A (Receiver Equipment) |



| Clause (RSS 210)<br>Test Description | TEST RESULT - Comments   |
|--------------------------------------|--------------------------|
| Power line conducted emissions       | N/A (Receiver Equipment) |
| Channel separation                   | N/A (Receiver Equipment) |
| Time of Occupancy                    | N/A (Receiver Equipment) |
| 20dB Occupied bandwidth              | N/A (Receiver Equipment) |
| Peak Power Output                    | N/A (Receiver Equipment) |
| Radiated emissions                   | N/A (Receiver Equipment) |

• **Receiver requirement:**

| Clause (ETSI EN 300 328)<br>Test Description | TEST RESULT - Comments |
|--|------------------------|
| 8.6 –Receiver Spurious Emissions             | PASS                   |

| Clause (ARIB STD-T66)<br>Test Description | TEST RESULT - Comments |
|---|------------------------|
| 3.3 (1) – Receiver spurious radiation     | PASS                   |

| Clause (FCC 15.109)<br>Test Description | TEST RESULT - Comments |
|---|------------------------|
| Radiated emissions                      | PASS                   |

| Clause (RSS 210)<br>Test Description | TEST RESULT - Comments |
|--------------------------------------|------------------------|
| Radiated emissions                   | PASS                   |

PASS: EUT complies with standard's requirement  
FAIL: EUT does not comply with standard's requirement  
N/A: Not Applicable  
N/P: Test Not Performed

## 2. EQUIPMENT DESCRIPTION

### 2.1. HARDWARE IDENTIFICATION

- **Equipment under test (EUT):**



The EUT is housed in a single cabinet that cannot be readily opened because the enclosure is hermetically sealed.

- **Input/output:**

- Human torso simulator
- Fluid corresponding to human tissue characteristics at that frequency.
- Lead IS-1 LV
- Lead IS-1 A
- Lead IS-1 RV
- Lead DF-1 SVC
- Lead DF-1 RV

- **Equipment information:**

- Modulation technology: FHSS modulation
- Modulation type: OOK
- Operating frequency range: 2400MHz to 2483,5MHz
- Type of the equipment: stand-alone equipment
- Extreme temperature range: -Tmin: 25°C  
-Tnom: 37°C  
-Tmax: 45°C
- Extreme test source voltage: -Vnom: BOL: 3.25 V. ERI: 2.66 V. EOL: 2.5 V (Internal Battery)
- Antenna type: Integrated

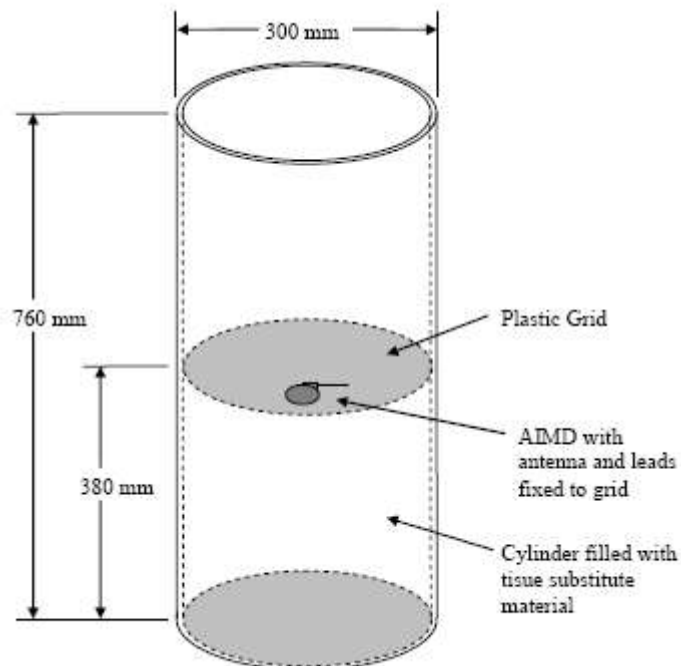
## 2.2. RUNNING MODE

Permanent reception

## 2.1. EQUIPEMENT SET UP AND TESTING CONFIGURATION

Equipment (ULP-AMIs) intended to be implanted in a human body shall be tested in a simulated man constructed as follows in order to simulate operation of the ULP-AMI under actual operation conditions as shown in figure A.2 of EN 301 489-1.

An appropriate simulator for testing ULP-AMI consists of a cylindrical acrylic container with an outside diameter of 300 mm, a sidewall thickness of 6 mm, and a fluid-filled height of 760 mm. It shall be filled with a material that is sufficiently fluid that it will flow around the AIMD without any voids. The dielectric and conductivity properties of this material shall match the dielectric and conductivity properties of human muscle tissue at 403,5 MHz (conductivity = 0,93 and relative permittivity = 57,2). Simple saline solutions do not meet the dielectric and conductivity requirements for use as a substitute for human tissue. All emissions measurements will be made using the above specification with the tissue substitute material at a nominal temperature between 22 °C and 38 °C.



For the testing, the equipment under test (EUT) was suspended in a Plexiglas torso simulator as specified above. The simulator used was constructed in accordance with FCC 95.627(g)(3)(i), EN 301 839-1 (A.113) and EN 301 489-27 annex B.

During the test, the EUT was centred vertically in Plexiglas cylinder. The torso simulator was filled with a fluid formulated in accordance with the specification by using tissue material corresponding to human tissue characteristics at that frequency. The fluid temperature was maintained between 20° to 25° C. There are also the reference for simulator fluid (see annex 2).



## 2.2. EQUIPEMENT LABELLING



## 2.3. EQUIPMENT MODIFICATIONS

No equipment modification has been necessary during testing.



### 3. RECEIVER SPURIOUS EMISSIONS

#### 3.1. TEST CONDITIONS

Test performed by : Stéphane PHOUDIAH  
Date of test : 2012/03/26  
Ambient temperature : 23°C  
Relative humidity : 30%

#### 3.2. TEST SETUP

ETSI EN 300 328 §8.6  
ARIB STD-T66 §3.3 (1)

- **Method of measurement**

- Effective Radiated Power, cabinet radiation
- Effective Radiated Power, cabinet and antenna radiation

- **Qualification measurements on an open test site (30MHz to 200MHz):**

The setup is 1.5m above the ground reference plane.

Distance between measuring antenna and the EUT is 10 meters for frequency 30MHz to 200MHz.

Test is performed in horizontal (H) and vertical (V) polarization with a bilog antenna. Measurement bandwidth was 100kHz. Continuous linear turntable azimuth search was performed with 360 degrees range. Vertical search was performed between 1m and 4m with the measuring antenna.

The Substitution Method is applied on the maximum values observed during the azimuth and vertical search in order to obtain the spurious radiated emission.

- **Qualification measurements in full anechoic chamber (200MHz to 12,75GHz):**

The setup is 1.5m above the ground reference plane.

Distance between measuring antenna and the EUT is 3meters for frequency 200MHz to 12,75GHz.

Test is performed in horizontal (H) and vertical (V) polarization with a bilog antenna below 1GHz and with a horn antenna above 1GHz. Measurement bandwidth was 100kHz. Continuous linear turntable azimuth search was performed with 360 degrees range.

The Normalized Site Attenuation (NSA) is added to the maximum values observed during the azimuth search in order to obtain the spurious radiated emission.



**3.3. RESULTS**

- Characterization on open test site chamber (30MHz to 200MHz):

Vertical antenna

| Receiver Mode   |               |             |
|-----------------|---------------|-------------|
| Frequency (MHz) | Measure (dBm) | Limit (dBm) |
| 32.2            | -64           | -57         |
| 33.3            | -65           | -57         |
| 34.5            | -65           | -57         |
| 35.3            | -66           | -57         |
| 36.1            | -65           | -57         |
| 37.4            | -67           | -57         |
| 39              | -66           | -57         |
| 40              | -65           | -57         |
| 41.3            | -70           | -57         |
| 44.7            | -67           | -57         |
| 48              | -65           | -57         |
| 49.9            | -68           | -57         |
| 52.9            | -67           | -57         |
| 60              | -62           | -57         |
| 64              | -65           | -57         |
| 67.1            | -67           | -57         |
| 72              | -66           | -57         |
| 77.1            | -68           | -57         |
| 80              | -65           | -57         |
| 116             | -64           | -57         |
| 120             | -64           | -57         |
| 144.4           | -66           | -57         |
| 156.4           | -67           | -57         |
| 166.6           | -69           | -57         |
| 175.9           | -65           | -57         |
| 199.8           | -65           | -57         |

**Horizontal antenna**

| Receiver Mode   |               |             |
|-----------------|---------------|-------------|
| Frequency (MHz) | Measure (dBm) | Limit (dBm) |
| 32.9            | -65           | -57         |
| 40              | -64           | -57         |
| 50.3            | -68           | -57         |
| 59.3            | -69           | -57         |
| 67.1            | -65           | -57         |
| 74.5            | -69           | -57         |
| 133             | -64           | -57         |
| 144             | -64           | -57         |
| 166             | -69           | -57         |
| 200.3           | -64           | -57         |

- **Characterization in a full anechoic chamber (200MHz to 12,75GHz):**

| Receiver Mode   |               |             |
|-----------------|---------------|-------------|
| Frequency (MHz) | Measure (dBm) | Limit (dBm) |
| 984,3           | -68,56        | -57         |
| 4989,1          | -54,42        | -47         |
| 5929,3          | -53,18        | -47         |

**Result: PASS**

**Limit:** → 30MHz to 1GHz: -57dBm  
1GHz to 12,75GHz: -47dBm

**See annex 1 for graphics**



## 4. RADIATION EMISSIONS

### 4.1. TEST CONDITIONS

Test performed by : Laurent DENEUX  
Date of test : 2012/03/19  
Ambient temperature : 21°C  
Relative humidity : 48%

### 4.2. TEST SETUP

FCC 15.109 (a)  
RSS 210 §2.6

The test is performed on EUT in reception mode.

- **Method of measurement**

- Effective Radiated Power, cabinet radiation
- Effective Radiated Power, cabinet and antenna radiation

- **Qualification measurements on an open test site (30MHz to 25GHz):**

The setup is 1.5m above the ground reference plane.

Distance between measuring antenna and the EUT is 10 meters for frequency 30MHz to 25GHz.

Test is performed in horizontal (H) and vertical (V) polarization with a bilog antenna below 1GHz and with 2 horns antenna above 1GHz . Measurement bandwidth was 100kHz and 1MHz for measurement above 1GHz. Continuous linear turntable azimuth search was performed with 360 degrees range. Vertical and horizontal search was performed between 1m and 4m with the measuring antenna.

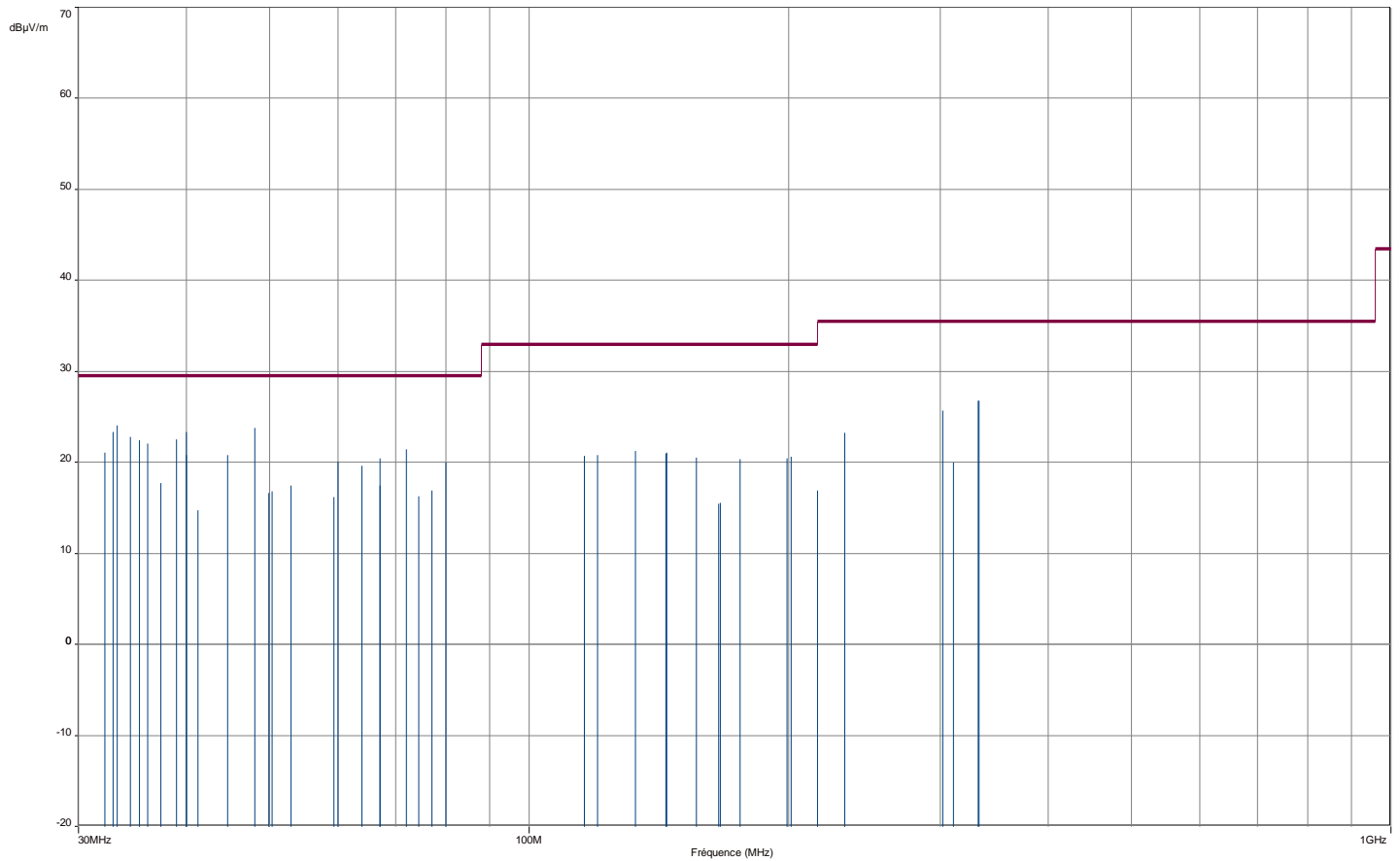


**4.3. RESULTS**

Fcc Part.15 CLASS B

SORIN  
IMPLANT  
MODEL : PARADYM RF CRT D 9750  
2.4 Rx mode

Quasi peak measurement



— Limit level

**Remark:** During the Scan, no radiated emission has been detected in the frequency range 1 GHz to 25 GHz.

**Result:** **PASS**

**Limit:** → 30MHz to 88MHz: 29.5BµV/m or 100µV/m  
88MHz to 216MHz: 33dBµV/m or 150µV/m  
216MHz to 960MHz: 35.5dBµV/m or 200µV/m  
Above 960MHz: 43.5dBµV/m or 500µV/m



**5. TEST EQUIPMENT LIST**

| Test                        | Apparatus             | Trade Mark         | Type            | Registration number |
|-----------------------------|-----------------------|--------------------|-----------------|---------------------|
| Receiver Spurious Emissions |                       |                    |                 |                     |
| X                           | Full anechoic chamber | SIEPEL             | S36             | D3044019            |
| X                           | EMI Test Receiver     | ROHDE & SCHWARZ    | ESMI            | A2642009            |
| X                           | EMI Test Receiver     | ROHDE & SCHWARZ    | ESIB26          | A2642021            |
| X                           | Preamplifier          | BONN Elektronik    | BLNA 3018-8F30S | A7080053            |
| X                           | Horn Antenna          | A.H. SYSTEMS       | SAS-571         | C2042041            |
| X                           | Logperiodic antenna   | AMPLIFIER RESEARCH | ATR80M6G        | C2040149            |
| X                           | Signal Generator      | ROHDE & SCHWARZ    | SMR             | A5444002            |
| X                           | Signal Generator      | ROHDE & SCHWARZ    | SMIQ03b         | A5442039            |
| X                           | Bilog Antenna         | CHASE              | CBL 6111C       | C2040124            |
| X                           | Dipole Antenna        | SCHWARZBECK        | VHAP            | C2040020            |
| X                           | Dipole Antenna        | SCHWARZBECK        | UHAP            | C2040022            |
| X                           | Semi anechoic chamber | SIEPEL             | C01             | D3044008            |
| X                           | EMI Test receiver     | RHODE & SCHWARZ    | ESI40           | A2642010            |
| X                           | Bilog Antenna         | SCHWARZBECK        | VULB9160        | C2040150            |
| X                           | Horn Antenna          | EMCO               | 3115            | C2042018            |
| X                           | Signal Generator      | RHODE & SCHWARZ    | SMP02           | B2163020            |
| X                           | Signal Generator      | RHODE & SCHWARZ    | SMT02           | A5442018            |
| X                           | Preamplifier          | LCIE               | -               | A7080012            |
| X                           | Dipole Antenna        | SCHWARZBECK        | VHAP            | C2040020            |
| X                           | Dipole Antenna        | SCHWARZBECK        | UHAP            | C2040022            |
| X                           | Open test site        | LCIE               | -               | F2000400            |
| X                           | EMI Test Receiver     | ROHDE & SCHWARZ    | ESU             | A2642018            |
| X                           | AnSpectrum analyseur  | HEWLETT PACKARD    | 8566B           | A4060004            |
| X                           | Preselector           | HEWLETT PACKARD    | 85685A          | A4069001            |
| X                           | Quas-Peak adaptator   | HEWLETT PACKARD    | 85650A          | A4069003            |
| X                           | Preamplifier          | HEWLETT PACKARD    | 8449B           | A4069002            |
| X                           | Bilog antenna         | CHASE              | CBL 6112A       | C2040040            |
| X                           | Bilog antenna         | AH SYSTEM          | SAS-2001251     | C2040025            |
| X                           | Dipole                | ROHDE & SCHWARZ    | HUF-Z1          | C2040011            |
| X                           | Logperiodic antenna   | ROHDE & SCHWARZ    | HL 023 A2       | C2040001            |
| X                           | Horn antenna          | EMV                | 3115            | C2040023            |
| X                           | Horn antenna          | AH SYSTEMS         | SAS-572         | C2042026 ,C2042025  |
| X                           | Horn antenna          | EMCO               | .3115           | C2042016            |
| X                           | Signal Generator      | ROHDE & SCHWARZ    | SMP02           | B2163019            |
| X                           | Signal Generator      | ROHDE & SCHWARZ    | SMY02           | A5442014            |

**6. UNCERTAINTIES CHART**

| <b>ETSI EN 300 328</b><br>Kind of test   | <b>Measurement uncertainties</b><br><b>(k=2) ±x(dB) / (Hz)</b> | <b>Limit for uncertainties</b><br><b>±y(dB)</b> |
|--|--|---|
| Temperature  | ±0.5°C   | ±1°C  |
| Humidity   | ±2.5 %   | ±5 %  |
| <b>RECEIVER REQUIREMENTS</b>   |  |   |
| Spurious emissions <ul style="list-style-type: none"><li>• Frequency &lt; 1000 MHz</li><li>• Frequency &gt; 1000 MHz</li></ul> | ±3.9 dB<br>±3.1 dB   | ±6 dB   |



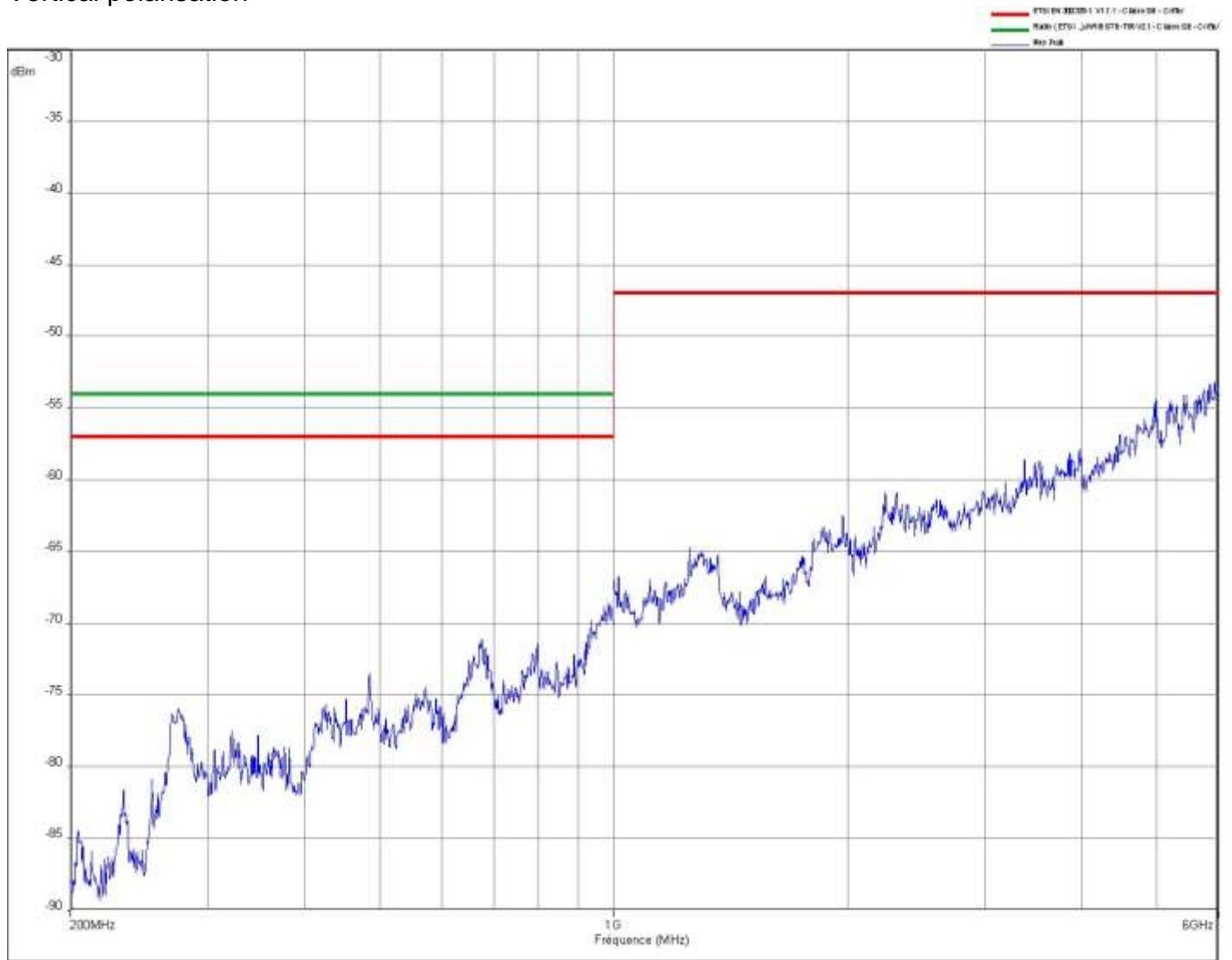
**7. ANNEX 1 (GRAPHICS)**

Receiver Spurious Emission  
Horizontal polarisation





### Receiver Spurious Emission Vertical polarisation





**8. ANNEX 2 (FLUID DATA SHEET MSL 450)**

Schmid &amp; Partner Engineering AG

**s p e a g**

Zeughausstrasse 43, 8004 Zurich, Switzerland  
Phone +41 44 245 9700, Fax +41 44 245 9779  
info@speag.com, http://www.speag.com

**Material Safety Data Sheet****1 Identification of the substance and of the manufacturer / origin**

|                       |   |
|-----------------------|---|
| Item                  | Brain Tissue Simulation Liquids B900<br>Head Tissue Simulation Liquids HSL 175, HSL300, HSL450, HSL750,<br>HSL900<br>Muscle Tissue Simulation Liquids MBL450, MBL 750, MBL900 |
| Type No               | SL AAB 090<br>SL AAH 017, SL AAH 030, SL AAH 045, SL AAH 075, SL AAH 090<br>SL AAM 045, SL AAM 075, SL AAM 090  |
| Series No             | N/A   |
| Manufacturer / Origin | Schmid & Partner Engineering AG<br>Zeughausstrasse 43<br>8004 Zürich<br>Switzerland<br>Phone +41 44 245 9700, Fax +41 44 245 9779, support@speag.com                          |

Use of the substance:

Liquid simulating physical parameters of Brain, Head or Muscle Tissue in the RF range below 2GHz.

**2 Composition / Information on ingredients**

The Item is composed of the following ingredients:

|                        |   |
|------------------------|---|
| H <sub>2</sub> O       | Water, 35 – 55%   |
| Sucrose                | Sugar, white, refined, 40 – 60%   |
| NaCl                   | Sodium Chloride, 0 – 6%   |
| Hydroxyethyl-cellulose | Medium Viscosity (CAS# 9004-62-0), <0.3%  |
| Preventol-D7           | Preservative: aqueous preparation, (CAS# 55965-84-9), containing<br>5-chloro-2-methyl-3(2H)-isothiazolone and 2-methyl-3(2H)-isothiazolone,<br>0.1 – 0.7% |

Relevant for safety; Refer to the respective Safety Data Sheet".

**3 Hazards identification**

|            |       |   |
|------------|-------|---|
| Symbol     | XI    | Irritant                                |
| R-phrases: | 36/38 | Irritating to eyes and skin             |
|            | 43    | May cause sensitization by skin contact |

**4 First aid measures**

|                     |   |
|---------------------|---|
| After skin contact: | Wash off with plenty of water and soap  |
| After eye contact:  | Rinse out with plenty of water with the eyelid held open, call an ophthalmologist                           |
| After swallowing:   | Make victim drink plenty of water, the mouth should be rinsed out several times.<br>Do not induce vomiting. |

**5 Fire-fighting measures**

Not required

**6 Accidental release measures**

Do not allow to enter sewerage system in large quantities, clean up affected area, forward for disposal. The preservative can be destroyed with sodiumhydrogensulfite. Add plenty of water if spilled.

**7 Handling and storage**

Handling: Keep in open container only for minimum required time in order to avoid water evaporation.  
Storage: No special measures against fire or explosion required.



## 8 Exposure controls / personal protection

Eye protection: goggles

Hand protection: e.g. rubber or plastic gloves

Avoid contact with skin and eyes. Wash hands after working with substance.

## 9 Physical and chemical properties

Form: liquid  
Colour: yellowish to light brown, transparent  
Odour: odourless  
pH-Value: neutral, with tendency to lower pH values.  
Boiling point: 100°C  
Density: 1.2 - 1.4 g/cm<sup>3</sup>

## 10 Stability and reactivity

No hazardous decomposition products expected.

## 11 Toxicological information

Irritation to skin and eyes: tendency to corrosive reaction.

In susceptible people, sensitization is possible.

## 12 Ecological information

Do not allow to enter waters, waste water, or soil.

In order to avoid adverse effects on the degradation activity of a sewage plant due to the preservative contained, the preservative concentration must not exceed 3mg/l, which up to 1000 times lower than the amount contained. Considerable amounts of water must therefore be added to amounts spilled into sewers or waste water.

## 13 Disposal considerations

Product: Chemicals must be disposed of in compliance with the respective national regulations.

Packing: Product packing must be disposed of in compliance with respect national regulations.

## 14 Transport information

Not subject to transport regulations.

No UN number is applicable

Avoid temperatures below 0°C. Keep separated from foodstuffs.

## 15 Regulatory information

Labeling according to EC Directives

|            |             |  |
|------------|-------------|--|
| Symbol     | Xn          | Irritant   |
| R-phrases: | 36/38<br>43 | Irritating to eyes and skin<br>May cause sensitization by skin contact |

MAK value for the preservative is 0.05mg/m<sup>3</sup>, corresponding to a concentration of <25mg/m<sup>3</sup> of the final product.

## 16 Other information

\* Safety relevant information bases on:

[1] MSDS for Preventol D7 (Art.Nr.: 329049/08 by Bayer AG, Leverkusen, Germany )

Release date: 11.09.2009  
Responsible: FB



Schmid & Partner Engineering AG

**s p e a g**

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 info@speag.com, http://www.speag.com

**Measurement Certificate / Material Test**

|              |   |
|--------------|---|
| Item Name    | Body Tissue Simulating Liquid (MSL 450) |
| Product No.  | SL AAM 045 BC-A (Charge: 120206-1)      |
| Manufacturer | SPEAG                                   |

**Measurement Method**

TSL dielectric parameters measured using calibrated OCP probe (type DAK).

**Target Parameters**

Target parameters as defined in the IEEE 1528 and IEC 62209 compliance standards.

**Test Condition**

Ambient Condition 22°C ; 30% humidity  
 TSL Temperature 22°C  
 Test Date 8-Feb-12

**Additional Information**

TSL Density 1.226 g/cm<sup>3</sup>  
 TSL Heat-capacity 3.001 kJ/(kg\*K)

**Results**

| f [MHz]    | Measured    |              |             | Target      |             | Diff. to Target [%] |            |
|------------|-------------|--------------|-------------|-------------|-------------|---------------------|------------|
|            | HP-e'       | HP-e''       | sigma       | eps         | sigma       | Δ-eps               | Δ-sigma    |
| 300        | 58.6        | 51.08        | 0.85        | 58.2        | 0.92        | 0.7                 | -7.3       |
| 325        | 58.1        | 48.44        | 0.87        | 58.0        | 0.92        | 0.2                 | -5.5       |
| 350        | 57.5        | 45.81        | 0.89        | 57.7        | 0.93        | -0.3                | -3.8       |
| 363        | 57.3        | 44.81        | 0.90        | 57.6        | 0.93        | -0.5                | -2.9       |
| 375        | 57.1        | 43.81        | 0.91        | 57.5        | 0.93        | -0.6                | -2.0       |
| 386        | 56.9        | 42.81        | 0.92        | 57.3        | 0.93        | -0.6                | -1.2       |
| 400        | 56.5        | 41.82        | 0.93        | 57.2        | 0.93        | -1.0                | -0.3       |
| 413        | 56.4        | 41.08        | 0.94        | 57.1        | 0.93        | -1.1                | 0.7        |
| 425        | 56.2        | 40.34        | 0.95        | 57.0        | 0.94        | -1.3                | 1.6        |
| 438        | 56.0        | 39.60        | 0.95        | 56.8        | 0.94        | -1.5                | 2.6        |
| <b>450</b> | <b>55.8</b> | <b>38.86</b> | <b>0.97</b> | <b>56.7</b> | <b>0.94</b> | <b>-1.6</b>         | <b>3.5</b> |
| 463        | 55.6        | 38.28        | 0.98        | 56.7        | 0.94        | -1.8                | 4.5        |
| 475        | 55.4        | 37.70        | 0.99        | 56.6        | 0.94        | -2.1                | 5.6        |
| 488        | 55.2        | 37.11        | 1.01        | 56.6        | 0.94        | -2.3                | 6.6        |
| 500        | 55.0        | 36.53        | 1.02        | 56.5        | 0.94        | -2.6                | 7.7        |
| 513        | 54.9        | 36.04        | 1.03        | 56.5        | 0.94        | -2.8                | 8.7        |
| 525        | 54.7        | 35.56        | 1.04        | 56.4        | 0.95        | -3.1                | 9.7        |
| 538        | 54.5        | 35.07        | 1.05        | 56.4        | 0.95        | -3.3                | 10.6       |
| 550        | 54.3        | 34.58        | 1.06        | 56.3        | 0.95        | -3.6                | 11.6       |
| 563        | 54.1        | 34.20        | 1.07        | 56.3        | 0.95        | -3.8                | 12.7       |
| 575        | 54.0        | 33.82        | 1.08        | 56.2        | 0.95        | -4.0                | 13.8       |
| 600        | 53.6        | 33.05        | 1.10        | 56.1        | 0.95        | -4.4                | 15.9       |

