

# TEST REPORT FROM RFI GLOBAL SERVICES LTD

Test of: CCM

FCC ID: U6VCCM

To: FCC Part 15.247(d) & 15.207

**Test Report Serial No:**  
RFI-RPT-RP77787JD08A

This Test Report Is Issued Under The Authority  
Of Chris Guy, Head of Global Approvals:



Checked By:	A. Henriques
Signature:	
Date of Issue:	08 November 2010

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## **1. Customer Information**

<b>Company Name:</b>	SHL Telemedicine International Ltd
<b>Address:</b>	90 Yigal Alon Tel Aviv 67891 Israel

## 2. Summary of Testing

### 2.1. General Information

<b>Specification Reference:</b>	47CFR15.247(d)
<b>Specification Title:</b>	Code of Federal Regulations Volume 47 (Telecommunications) 2010: Part 15 Subpart C (Intentional Radiators) - Section 15.247(d)
<b>Specification Reference:</b>	47CFR15.207 and 47CFR15.209
<b>Specification Title:</b>	Code of Federal Regulations Volume 47 (Telecommunications) 2010: Part 15 Subpart C (Intentional Radiators) - Sections 15.207 and 15.209
<b>Site Registration:</b>	FCC: 209735
<b>Location of Testing:</b>	RFI Global Services Ltd, Wade Road, Basingstoke, Hampshire, RG24 8AH.
<b>Test Dates:</b>	6 October to 26 October 2010

### 2.2. Summary of Test Results

FCC Reference (47CFR)	Measurement	Result
Part 15.207	Transmitter AC Conducted Emissions	✓
Part 15.247(d) & 15.209(a)	Transmitter Radiated Emissions	✓
<b>Key to Results</b>		
✓ = Complied		✗ = Did not comply

### 2.3. Methods and Procedures

<b>Reference:</b>	ANSI C63.4 (2009)
<b>Title:</b>	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
<b>Reference:</b>	ANSI C63.10 (2009)
<b>Title:</b>	American National Standard for Testing Unlicensed Wireless Devices

### 2.4. Deviations from the Test Specification

For the measurements contained within this test report, there were no deviations from, additions to, or exclusions from the test specification identified above.

### **3. Equipment Under Test (EUT)**

#### **3.1. Identification of Equipment Under Test (EUT)**

<b>Brand Name:</b>	SHL Telemedicine
<b>Model Name or Number:</b>	CCM
<b>Serial Number(s):</b>	1001019; 1001011
<b>IMEI Number:</b>	357460032903218; 357460032901717
<b>Hardware Version Number:</b>	2.0
<b>Software Version Number:</b>	2.0
<b>FCC ID:</b>	U6VCCM

<b>Description:</b>	AC/DC adapter
<b>Brand Name:</b>	EDACPOWER Electronics
<b>Model Name or Number:</b>	EA1020CR

#### **3.2. Description of EUT**

The equipment under test was a communication system for medical devices. The EUT has an integral antenna and is powered from a 120 VAC 60 Hz AC adapter supplying a 15 Volt DC output.

#### **3.3. Modifications Incorporated in the EUT**

No modifications were applied to the EUT during testing.

### **3.4. Additional Information Related to Testing**

<b>Tested Technology:</b>	<i>Bluetooth</i>				
<b>Power Supply Requirement:</b>	Nominal	15 VDC via AC adapter			
<b>Type of Unit:</b>	Transceiver				
<b>Channel Spacing:</b>	1 MHz				
<b>Mode:</b>	Basic Rate	Enhanced Data Rate			
<b>Modulation:</b>	GFSK	$\pi/4$ -DQPSK	8DQPSK		
<b>Packet Type: (Maximum Payload)</b>	DH5	2DH5	3DH5		
<b>Data Rate (Mbit/s):</b>	1	2	3		
<b>Transmit Frequency Range:</b>	2402 MHz to 2480 MHz				
<b>Transmit Channels Tested:</b>	<b>Channel ID</b>	<b>Channel Number</b>	<b>Channel Frequency (MHz)</b>		
	Bottom	0	2402		
	Middle	39	2441		
	Top	78	2480		

### **3.5. Support Equipment**

The following support equipment was used to exercise the EUT during testing:

<b>Description:</b>	Laptop PC (radiated emissions testing)
<b>Brand Name:</b>	Lenovo
<b>Model Name or Number:</b>	SL510
<b>Serial Number:</b>	Not Stated

<b>Description:</b>	Laptop PC (AC mains conducted radiated emissions testing)
<b>Brand Name:</b>	Dell
<b>Model Name or Number:</b>	Latitude D620
<b>Serial Number:</b>	609XD25

<b>Description:</b>	Hub
<b>Brand Name:</b>	D-Link
<b>Model Name or Number:</b>	DGS-1005D
<b>Serial Number:</b>	DR8SB92000451

<b>Description:</b>	USB cable
<b>Brand Name:</b>	Not Stated
<b>Model Name or Number:</b>	Not Stated
<b>Serial Number:</b>	Not Stated

## **4. Operation and Monitoring of the EUT during Testing**

### **4.1. Operating Modes**

The EUT was tested in the following operating mode(s):

- Transmit mode with Basic Rate (DH5 packet) or EDR (2DH5 or 3DH5 packets) as required.
- Transmitting on the bottom, middle and top channels at maximum power.

### **4.2. Configuration and Peripherals**

The EUT was tested in the following configuration(s):

- Connected via a radio link to a CBT Bluetooth tester in order to place the EUT into Bluetooth test mode. The laptop PC with the Client's bespoke application was used to place the EUT into Bluetooth mode.
- Both EDR/Basic rate modes were compared and tests were performed with the mode that presented the worst case result i.e. EDR mode (3DH5).
- EUT powered via the supplied 120 VAC 60 Hz AC/DC adapter
- A SIM card was fitted in the EUT and all ports were terminated into a hub via RJ45 cables during all testing.
- The supplied USB cable was connected to the EUT and terminated into a laptop PC for all tests.

## **5. Measurements, Examinations and Derived Results**

### **5.1. General Comments**

Measurement uncertainties are evaluated in accordance with current best practice. Our reported expanded uncertainties are based on standard uncertainties, which are multiplied by an appropriate coverage factor to provide a statistical confidence level of approximately 95%. Please refer to *Section 6. Measurement Uncertainty* for details.

## **5.2. Test Results**

### **5.2.1. Transmitter AC Conducted Spurious Emissions**

#### **Test Summary:**

<b>Test Engineer:</b>	Fara Razally	<b>Test Date:</b>	26 October 2010
<b>Test Sample Serial No:</b>	1001011		

<b>FCC Part:</b>	15.207
<b>Test Method Used:</b>	As detailed in ANSI C63.10 Section 6.2 referencing ANSI C63.4

#### **Environmental Conditions:**

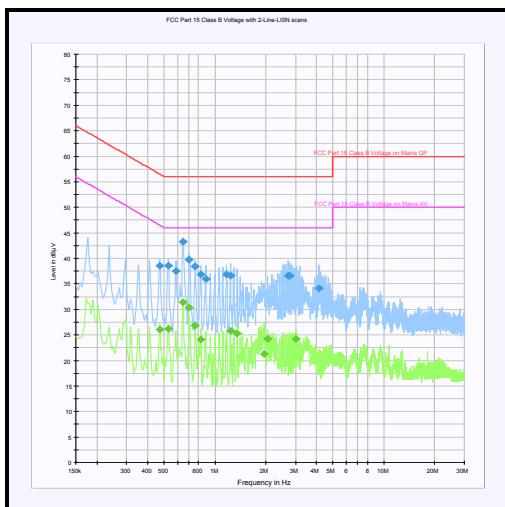
<b>Temperature (°C):</b>	24
<b>Relative Humidity (%):</b>	25

#### **Results: Quasi Peak**

Frequency (MHz)	Line	Level (dB $\mu$ V)	Limit (dB $\mu$ V)	Margin (dB)	Result
0.469500	Live	38.6	56.5	17.9	Complied
0.528000	Live	38.6	56.0	17.4	Complied
0.586500	Neutral	37.6	56.0	18.4	Complied
0.645000	Live	43.3	56.0	12.7	Complied
0.703500	Live	39.8	56.0	16.2	Complied
0.762000	Live	38.4	56.0	17.6	Complied
0.820500	Neutral	36.8	56.0	19.2	Complied
0.883500	Live	35.9	56.0	20.1	Complied
1.176000	Live	36.9	56.0	19.1	Complied
1.234500	Live	36.7	56.0	19.3	Complied
2.701500	Live	36.6	56.0	19.4	Complied
2.760000	Live	36.7	56.0	19.3	Complied
4.110000	Live	34.2	56.0	21.8	Complied

**Transmitter AC Conducted Spurious Emissions (continued)****Results: Average**

Frequency (MHz)	Line	Level (dB $\mu$ V)	Limit (dB $\mu$ V)	Margin (dB)	Result
0.469500	Live	26.1	46.5	20.4	Complied
0.528000	Live	26.2	46.0	19.8	Complied
0.645000	Live	31.4	46.0	14.6	Complied
0.703500	Live	30.3	46.0	15.7	Complied
0.762000	Live	26.9	46.0	19.1	Complied
0.825000	Neutral	24.1	46.0	21.9	Complied
1.234500	Live	25.8	46.0	20.2	Complied
1.351500	Live	25.3	46.0	20.7	Complied
1.954500	Neutral	21.2	46.0	24.8	Complied
2.053500	Live	24.3	46.0	21.7	Complied
2.998500	Live	24.2	46.0	21.8	Complied



*Note: This plot is a pre-scan and for indication purposes only. For final measurements, see accompanying tables.*

**5.2.2. Transmitter Radiated Emissions****Test Summary:**

<b>Test Engineer:</b>	Fara Razally	<b>Test Date:</b>	06 October 2010
<b>Test Sample Serial No:</b>	1001019		

<b>FCC Part:</b>	15.247(d) & 15.209(a)
<b>Test Method Used:</b>	As detailed in ANSI C63.10 Sections 6.3 and 6.5 referencing ANSI C63.4
<b>Frequency Range</b>	30 MHz to 1000 MHz

**Environmental Conditions:**

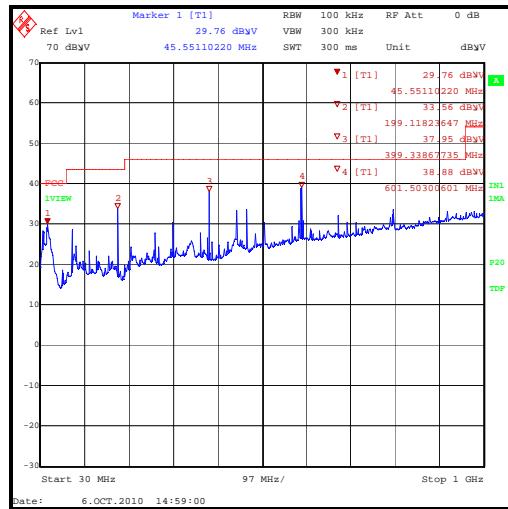
<b>Temperature (°C):</b>	28
<b>Relative Humidity (%):</b>	28

**Results: 3DH5**

Frequency (MHz)	Antenna Polarity	Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Result
45.158	Vertical	30.2	40.0	9.8	Complied
99.994	Vertical	29.5	43.5	14.0	Complied
200.000	Horizontal	34.3	43.5	9.2	Complied
319.993	Vertical	35.1	46.0	10.9	Complied
458.790	Horizontal	37.8	46.0	8.2	Complied
479.985	Horizontal	37.8	46.0	8.2	Complied
599.988	Horizontal	44.3	46.0	1.7	Complied
679.985	Horizontal	35.0	46.0	11.0	Complied
800.002	Horizontal	36.5	46.0	9.5	Complied

**Note(s):**

1. The preliminary scans showed similar emission levels below 1 GHz, for each channel of operation. Therefore final radiated emissions measurements were performed with the EUT set to the top channel only.
2. The final measured value, for the given emission, in the table above incorporates the calibrated antenna factor and cable loss

**Transmitter Radiated Emissions (continued)**

*Note: This plot is a pre-scan and for indication purposes only. For final measurements, see accompanying table.*

**Transmitter Radiated Emissions (continued)****Test Summary:**

<b>Test Engineer:</b>	Fara Razally	<b>Test Date:</b>	6 October 2010
<b>Test Sample Serial No:</b>	1001019		

<b>FCC Part:</b>	15.247(d) & 15.209(a)
<b>Test Method Used:</b>	As detailed in ANSI C63.10 Sections 6.3 and 6.6 referencing ANSI C63.4
<b>Frequency Range</b>	1 GHz to 26.5 GHz

**Environmental Conditions:**

<b>Temperature (°C):</b>	26
<b>Relative Humidity (%):</b>	31

**Results: Peak Bottom Channel 3DH5**

Frequency (MHz)	Antenna Polarity	Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Result
4804.060	Horizontal	66.1	74.0	7.9	Complied

**Results: Average Bottom Channel 3DH5**

Frequency (MHz)	Antenna Polarity	Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Result
4804.028	Horizontal	50.5	54.0	3.5	Complied

**Results: Peak Middle Channel 3DH5**

Frequency (MHz)	Antenna Polarity	Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Result
4882.004	Horizontal	67.4	74.0	6.6	Complied

**Results: Average Middle Channel 3DH5**

Frequency (MHz)	Antenna Polarity	Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Result
4881.980	Horizontal	51.0	54.0	3.0	Complied

**Transmitter Radiated Emissions (continued)****Results: Peak Top Channel 3DH5**

Frequency (MHz)	Antenna Polarity	Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Result
4960.170	Horizontal	67.7	74.0	6.3	Complied

**Results: Average Top Channel 3DH5**

Frequency (MHz)	Antenna Polarity	Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Result
4874.192	Horizontal	34.1	54.0	19.9	Complied

**Results: Peak Hopping Mode 3DH5**

Frequency (MHz)	Antenna Polarity	Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Result
4843.796	Horizontal	64.2	74.0	9.8	Complied

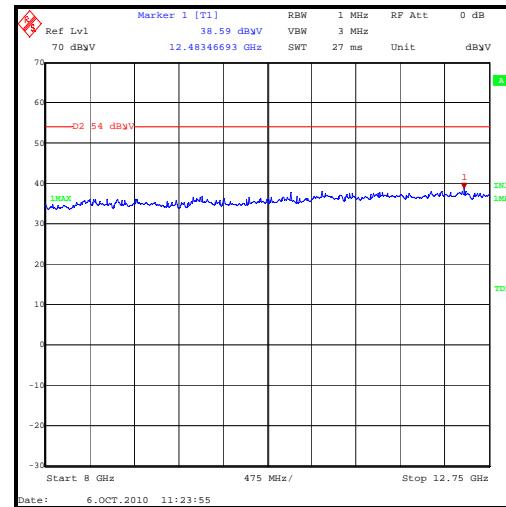
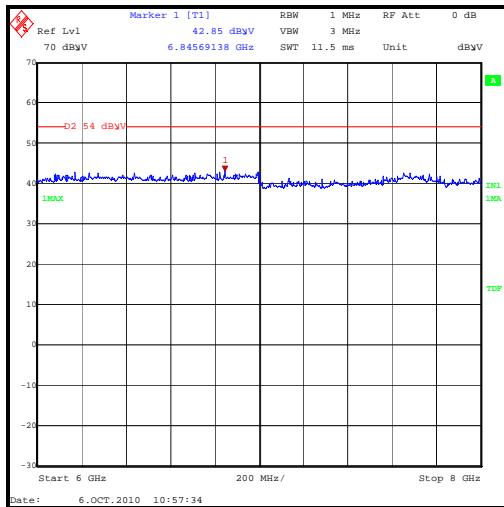
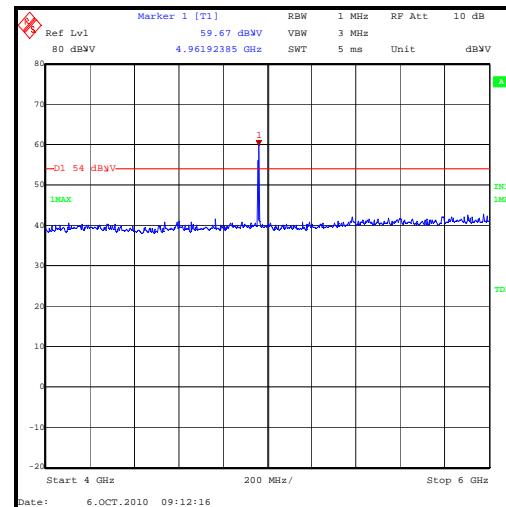
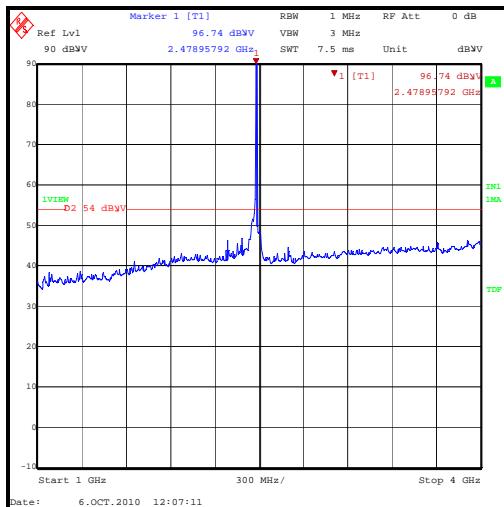
**Results: Average Hopping Mode 3DH5**

Frequency (MHz)	Antenna Polarity	Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Result
4874.192	Horizontal	34.1	54.0	19.9	Complied

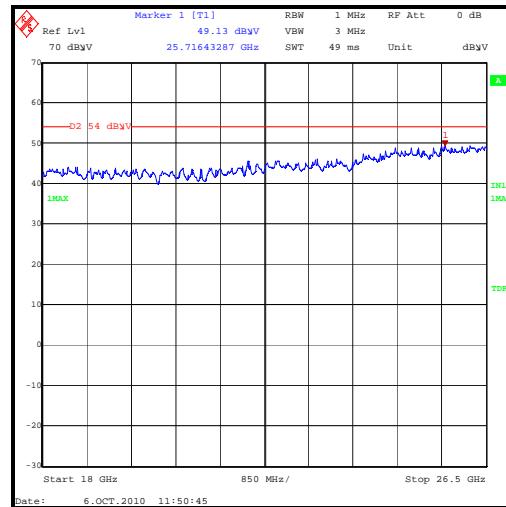
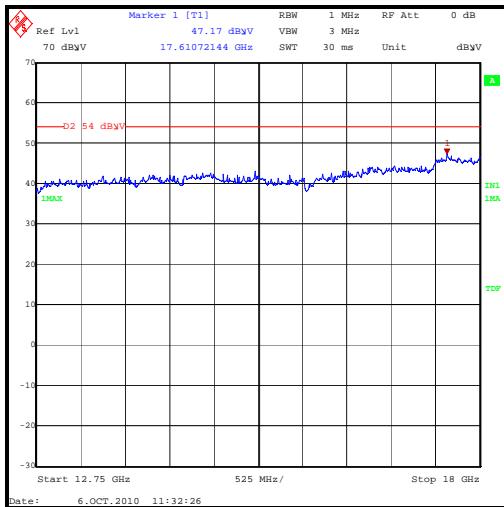
**Note(s):**

1. The final measured value, for the given emission, in the table above incorporates the calibrated antenna factor and cable loss
2. The emission shown on the 1 GHz to 4 GHz plot is the EUT carrier at 2480 MHz

## Transmitter Radiated Emissions (continued)



Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying table.

**Transmitter Radiated Emissions (continued)**

*Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying table.*

## **6. Measurement Uncertainty**

No measurement or test can ever be perfect and the imperfections give rise to error of measurement in the results. Consequently the result of a measurement is only an approximation to the value of the measurand (the specific quantity subject to measurement) and is only complete when accompanied by a statement of the uncertainty of the approximation.

The expression of uncertainty of a measurement result allows realistic comparison of results with reference values and limits given in specifications and standards.

The uncertainty of the result may need to be taken into account when interpreting the measurement results.

The reported expanded uncertainties below are based on a standard uncertainty multiplied by an appropriate coverage factor such that a confidence level of approximately 95% is maintained. For the purposes of this document "approximately" is interpreted as meaning "effectively" or "for most practical purposes".

Measurement Type	Range	Confidence Level (%)	Calculated Uncertainty
AC Conducted Spurious Emissions	0.15 MHz to 30 MHz	95%	±3.25 dB
Radiated Spurious Emissions	30 MHz to 26.5 GHz	95%	±2.94 dB

The methods used to calculate the above uncertainties are in line with those recommended within the various measurement specifications. Where measurement specifications do not include guidelines for the evaluation of measurement uncertainty the published guidance of the appropriate accreditation body is followed.

## **Appendix 1. Test Equipment Used**

RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
A1069	LISN	Rohde & Schwarz	ESH3-Z5	837469/012	13 Apr 2011	12
A1830	Pulse Limiter	Rhode & Schwarz	ESH3-Z2	100668	01 Mar 2011	12
A1534	Pre Amplifier	Hewlett Packard	8449B	3008A00405	06 Jun 2011	12
A1818	Antenna	EMCO	3115	00075692	05 Sep 2011	12
A1975	High Pass Filter	AtlanTecRF	AFH-03000	090424010	22 Jan 2011	12
A253	Antenna	Flann Microwave	12240-20	128	05 Sep 2011	12
A254	Antenna	Flann Microwave	14240-20	139	05 Sep 2011	12
A255	Antenna	Flann Microwave	16240-20	519	05 Sep 2011	12
A256	Antenna	Flann Microwave	18240-20	400	05 Sep 2011	12
A288	Antenna	Chase	CBL6111A	1589	05 Sep 2011	12
A436	Antenna	Flann Microwave	20240-20	330	05 Sep 2011	12
K0002	3m RSE Chamber	Rainford EMC	N/A	N/A	05 Sep 2011	12
M1124	Spectrum Analyser	Rohde & Schwarz	ESI26	100046K	22 Apr 2011	12
M1263	Test Receiver	Rohde & Schwarz	ESIB7	100265	28 Jun 2011	12
M1447	Bluetooth Tester	Rohde & Schwarz	CBT	100329	02 Feb 2011	12

**NB** In accordance with UKAS requirements all the measurement equipment is on a calibration schedule.