

5 TEST CONDITIONS AND RESULTS

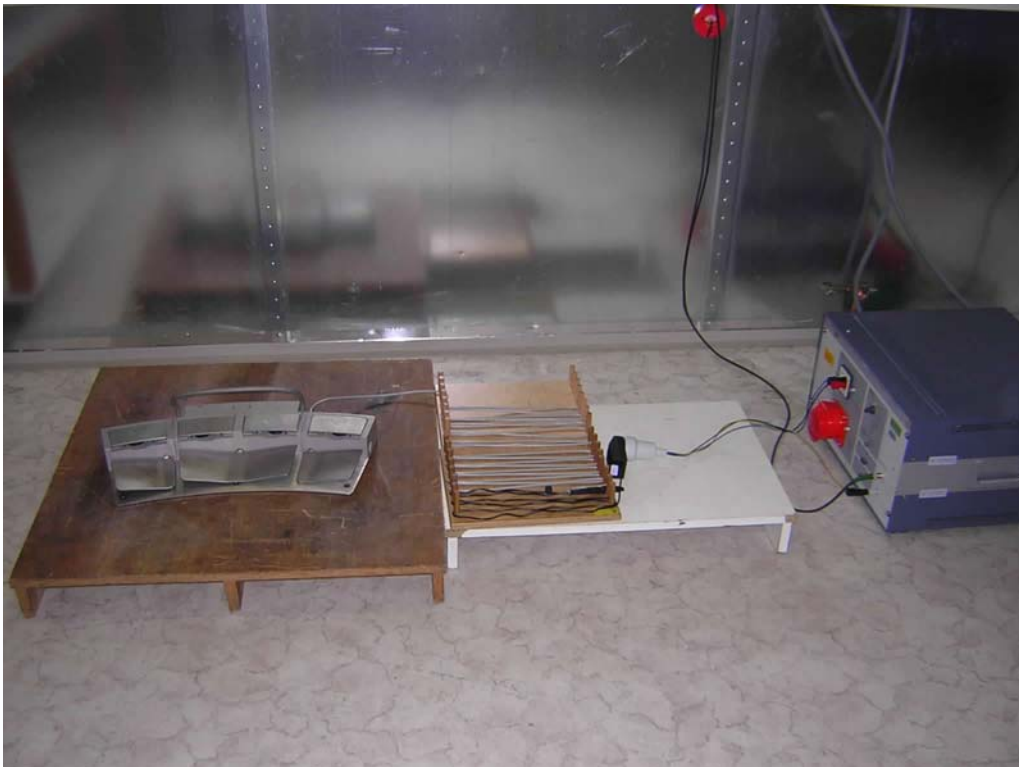
5.1 Conducted emissions

For test instruments and accessories used see section 6 Part A 4.

5.1.1 Description of the test location

Test location: Shielded Room S2

5.1.2 Photo documentation of the test set-up



5.1.3 Description of Measurement

The final level, expressed in dB μ V, is arrived at by taking the reading directly from the EMI receiver. This level is compared directly to the FCC Limit or to the CISPR limit, which is equivalent to the Australian AS 3548 limit.

To convert between dB μ V and μ V, the following conversions apply:

$$\text{dB}\mu\text{V} = 20(\log \mu\text{V})$$

$$\mu\text{V} = \text{Inverse log}(\text{dB}\mu\text{V}/20)$$

Conducted emissions on the 50 Hz and/or 60 Hz power interface of the EuT are measured in the frequency range of 150 kHz to 30 MHz. The measurements are performed using a receiver, which has CISPR characteristic bandwidth and quasi-peak detection, and a Line Impedance Stabilization Network (LISN), with 50 Ω /50 μ H (CISPR 16) characteristics. Table top equipment is placed on a non-conducting table 80 centimeter's above the floor and is positioned 40 centimeter's from the vertical ground plane (wall) of the screen room. If the minimum passing margin appears to be less than 20 dB with a peak mode measurement, the emissions are remeasured using a tuned receiver with quasi-peak and average detection and recorded on the data sheets.

5.2 Maximum Peak Output Power

For test instruments and accessories used see section 6 Part CPC 3.

5.2.1 Description of the test location

Test location: AREA4

5.2.2 Photo documentation of the test set-up



5.2.3 Test result

Channel No.	Frequency [MHz]	Peak Power Output (dBm)	Peak Power Limit (dBm)	Delta [dB]
1	2402	-1.7	30	31.7
40	2441	-2.0	30	32.0
79	2480	-2.0	30	32.0

Peak Power Limit according to FCC Subpart 15.247(b)(1)

Frequency (MHz)	Peak Power Limit	
	(dBm)	(Watt)
902-928	30	1,0
2400-2483.5	30	1,0
5725-5850	30	1,0

5.3 Band edge test

For test instruments and accessories used see section 6 Part MB.

5.3.1 Description of the test location

Test location: Area 4

5.3.2 Photo documentation of the test set-up



5.3.3 Test result

Frequency [MHz]	Peak Power Output [dBm]	Spurious emission read value [dBm]	Result of Band edge [dBc]	Band edge LIMIT [dBc]
< 2400	-13,53	< -60	> 46,47	> 20
> 2483,5	-13,55	< -58	> 44,45	> 20

Peak-Limit according to FCC Subpart 15.247(c)

In any 100 kHz bandwidth outside the frequency band 2400 – 2483.50 MHz, 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 §15.209(a) is not required.

In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limit specified in §15.209(a) (see §15.205(c)).

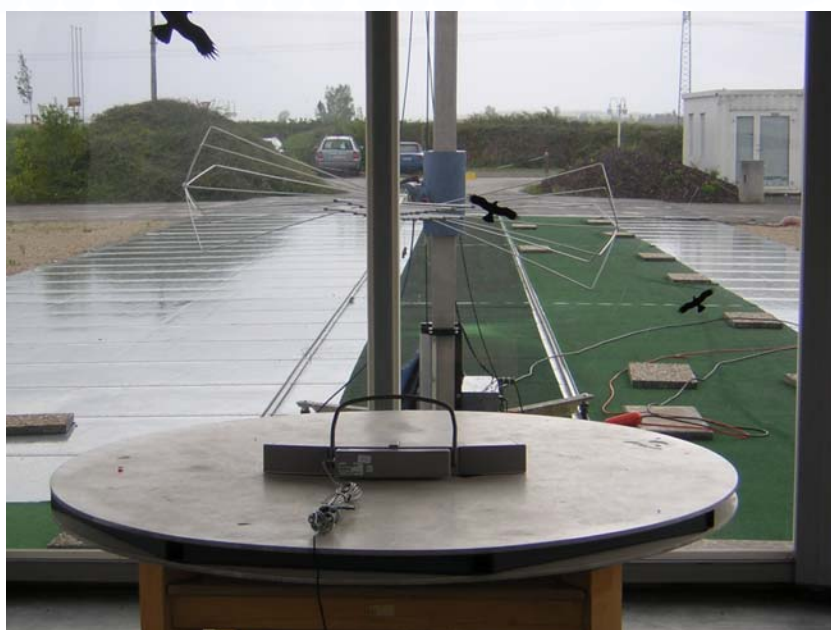
5.4 Radiated emissions (electric field) 30 MHz – 40 GHz

For test instruments and accessories used see section 6 Part SER 2, SER 3.

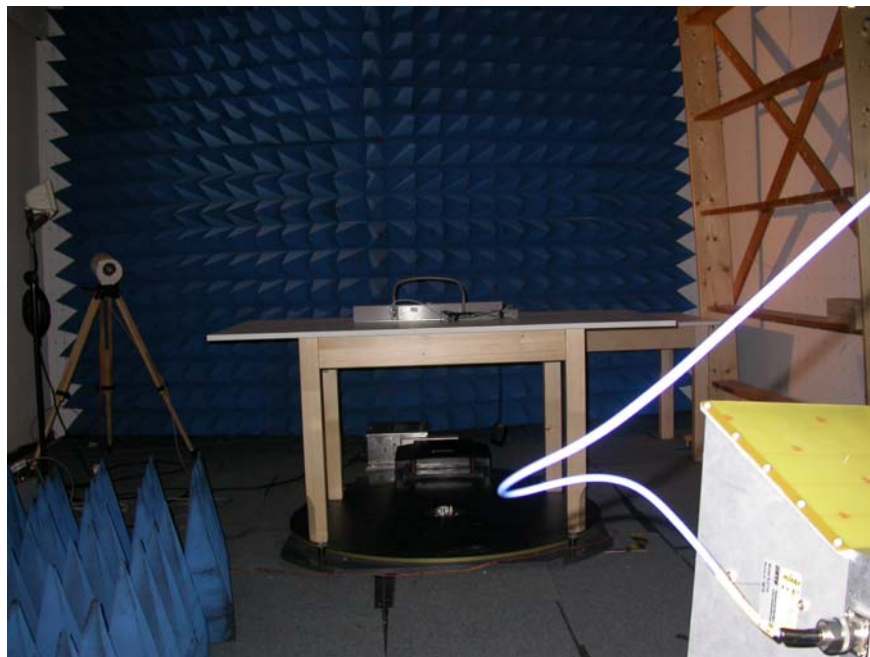
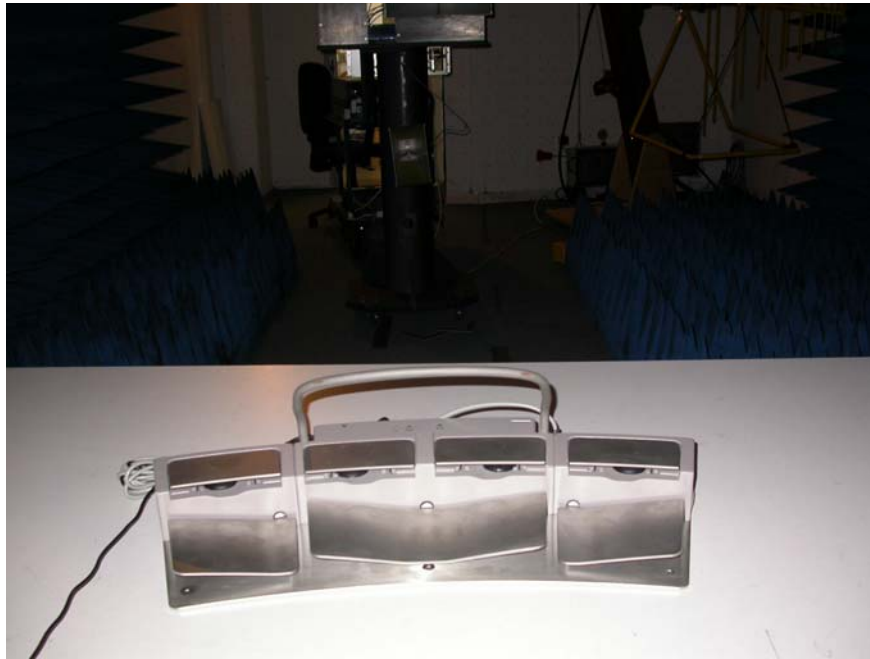
5.4.1 Description of the test location

Test location: OATS1
Test location: Anechoic Chamber A2
Test distance: 3 metres

5.4.2 Photo documentation of the test set-up



FCC ID: S5H-WFSW



5.4.3 Test result

Testresult in detail:(<1GHz)

Transmission on Channel No.1, 40 and 79

Frequency [MHz]	L: QP [dBμV]	L: AV [dBμV]	Bandwidth [kHz]	Correct. [dB]	L: QP [dBμV/m]	L: AV [dBμV/m]	Limit [dBμV/m]	Delta [dB]
25-1000	<30		120					

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5.5 Time of occupancy (Dwell Time)

For test instruments and accessories used see section 6 Part DC.

5.5.1 Description of the test location

Test location: AREA4

5.5.2 Photo documentation of the test set-up



5.5.3 Test result

Channel frequency [MHz]	Pulse Time [μs]	Bursts (in 1 second)	Time of occupancy (Dwell time) [ms]	Average time of Occupancy LIMIT [ms]
2441	125,85	100	397,69	400

Limit according to FCC Subpart 15.247 (1)(iii)

Frequency hopping systems shall be used at least 15 non-overlapping channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems which use fewer than 75 hopping frequencies may employ intelligent hopping techniques to avoid interference to other transmissions. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 non-overlapping channels are used.

The requirements are **FULFILLED**.

Remarks: The values of this test are taken from test report 4_MITSU_0104_BTT_FCCc from 7Layer for the already tested technical identical Module WML-C29 series. According to the Statement of "Siemens AG, Medical Solutions" the installation of the module does not have any influence to this test result neither from software point of view nor from hardware point of view.

5.6 Bandwidth Measurement

For test instruments and accessories used see section 6 Part MB.

5.6.1 Description of the test location

Test location: AREA4

5.6.2 Photo documentation of the test set-up



5.6.3 Test result

Channel Number	Channel Frequency [MHz]	20 dB Bandwidth [kHz]
1	2402	830,41
40	2441	859,04
79	2480	902,00

Remarks: The EuT is a FHSS system and it is not required to measured the 20dB Bandwidth, therefore exists no limits in the table above.

5.7 Channel separation test

For test instruments and accessories used see section 6 Part MB.

5.7.1 Description of the test location

Test location: AREA4

5.7.2 Photo documentation of the test set-up



5.7.3 Test result

Channel Number	Channel Frequency [MHz]	Separation Value [kHz]	Separation LIMIT [kHz]
1	2402	1000	>25
40	2441	1000	>25
79	2480	1000	>25

Limit according to FCC Subpart 15.247 (1)

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

5.8 Quantity of Hopping Channel test

For test instruments and accessories used see section 6 Part MB.

5.8.1 Description of the test location

Test location: AREA4

5.8.2 Photo documentation of the test set-up



5.8.3 Test result

Hopping Channel Frequency range	Quantitiy of hopping Channel value	Quantitiy of hopping Channel MINIMUM LIMIT
2402 - 2480	79	75

Limit according to FCC Subpart 15.247 (1)(iii)

Frequency range [MHz]	LIMIT (Quantity of Hopping Channel)			
	20dB Bandwidth < 250kHz	20dB Bandwidth > 250kHz	20dB Bandwidth < 1 MHz	20dB Bandwidth > 1MHz
902 - 928	50	25	n.A	n.A
2400 – 2483,5	n.A	n.A	75	15
5725 - 5850	n.A	n.A	75	n.A

5.10 Receiver conducted disturbances 0.15 - 30 MHz

For test instruments and accessories used see section 6 Part A 4.

5.10.1 Description of the test location

Test location: Shielded Room S2

5.10.2 Photo documentation of the test set-up



5.10.3 Test result

Frequency range: 0.15 MHz - 30 MHz

Min. limit margin 15.1 dB at 3.381 MHz

The requirements are **FULFILLED**.

Remarks:

5.11 Receiver radiated emissions (electric field) 30 MHz - 40 GHz

For test instruments and accessories used see section 6 Part SER2 and SER3.

5.11.1 Description of the test location

Test location: OATS1
Test location: Anechoic Chamber A2
Test distance: 3 metres

5.11.2 Photo documentation of the test set-up

