



Federal Communications Commission
Authorization and Evaluation Division
Equipment Authorization Branch
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Columbia, MD 21046

IHR ZEICHEN / YOUR REF. IHR SCHREIBEN / YOUR INFORM. UNSER ZEICHEN / OUR REF.

DATUM / DATE
18-Feb-02

Subject: Applicant: KIRK telecom A/S
FCC ID: PXARFP4-2G4
731 Confirmation number: EA706679
Correspondence Reference Number: 21639

Dear Sir,

Submitted herewith, on behalf of our customer is an amendment to the subject application, provided in response to your request for technical information:

Q1. The Base Unit was tested with Antenna 1 and then Antenna 2 separately for SAR and all radiated measurements (EIRP and spurious). Explain how the antenna system works. Do both antennas transmit simultaneously?

Answer:

During the SAR-measurement the EUT transmitted in a test-mode where you could change the transmitting antenna and measure the corresponding SAR-value.

The manufactures declares (see attachment) that antenna 1 and antenna 2 also in normal use are diversity selected in such a way that the antennas do not transmit simultaneously but are controlled separate by the signals "SEL_ANT1" and "SEL_ANT2" selecting only one antenna at any time.

Q2. The test report indicates a duty cycle of 4.3%. Provide the duty cycle used for SAR testing and provide the Crest Factor.

Answer:

The SAR-measurements were done using the test-mode of the EUT.

The parameters of the test-mode could be controlled via an interface and a laptop.

We used a duty cycle of 5% resulting in a Crest Factor of 20.

Q3. If available please provide Z-axis scan SAR data for the highest SAR test points.

Answer:

Z-axis scans of SAR data are not available at the moment.

Q4. Liquid temperatures during all tests and validations. Per Supplement C Appendix B I.

Answer:

The liquid temperature during all tests and validation was 22° C.

Q5. Power consistency during the test.

Answer:

Power consistency during test:

Summary of the measured SAR-values and power drift

Device	Position	2440 MHz		Power Drift
		SAR 1g	SAR 10g	
portable part	intended use	0.16	0.076	+0.02 dB
	touching	0.12	0.063	+0.04 dB
	100°	0.15	0.073	-0.04 dB
	tilted	0.17	0.082	+0.02 dB
fixed part, ant.1	head,center	0.085	0.047	-0.28 dB
fixed part, ant.2		0.09	0.049	-0.02 dB
fixed part, ant.1	head, antenna	0.13	0.067	+0.03 dB
fixed part, ant.2		0.24	0.110	-0.14 dB
fixed part, ant.1	flat, center	0.12	0.065	+0.31 dB
fixed part, ant.2		0.11	0.055	+0.87 dB
fixed part, ant.1	flat, antenna	0.18	0.083	+0.17 dB
fixed part, ant.2		0.13	0.072	+0.12 dB
		2400 MHz		
		SAR 1g	SAR 10g	
portable part	tilted	0.21	0.1	-0.14 dB
		2480 MHz		
		SAR 1g	SAR 10g	
portable part	tilted	0.18	0.086	-0.66 dB
all SAR values in mW/g				

Q6. The dielectric parameters are not within the 5% tolerance specified in Supplement C. Recalculated SAR values and SAR plots for all test points using measured liquid parameters if possible without additional testing. Targets parameters were apparently used as noted on the provided SAR plots. If not possible please provide analysis showing the expected effects on the SAR values if the measured parameters had been used.

Answer:

To achieve the necessary dielectric parameters above 1 GHz, glycol has to be used in the measurement liquid. As glycol reacts with our phantom-shell and E-field probe we use a liquid without any chemical agents, which results in a lower dielectric constant and a higher conductivity. Numerical calculations with the Maxwell-equation-solver MAFIA (CST Darmstadt) have shown that using our measurement liquid will overestimate the SAR-values by more than 25 %. This guarantees that our measurements comply with the FCC limits.

Q7. Confirmation that the phantom used is 2 mm thick. It is understood that some phantoms SPEAG sent out were actually 3.2 mm thick.

Answer:

The phantom used is the "Generic Twin Phantom V3.0" from ETH Zürich.

The shell of fibre glass has a thickness of 2 ± 0.1 mm (specification of the manufacturer)

Q8. SAR system validation.

SAR system validation

The measurement had been performed with the same probe and DASY system as the SAR measurements at a frequency of 1800 MHz with the following measurement parameters:

Used dipole:	SPEAG D1800V2, serial number 292
Dipole input power	250 mW \pm 1.5 %
Distance from dipole to surface of liquid	10 mm
Coarse grid spacing	12 mm
Relative dielectric constant	$\epsilon_r = 40$
Conductivity	$\sigma = 1.75$ mho/m
Validation, averaged over 1g / 10g	10.0 / 5.09 mW/g
Specification for validation	10.1 / 5.18 mW/g

As the results of the validation measurement are close to specification a correct performance at 2.4 GHz is assumed

We hope this information is sufficient to issue the grant. If you have further questions please do not hesitate to contact us.

Sincerely,

A handwritten signature in black ink, appearing to read 'J. Baschin', with a long horizontal stroke extending to the right.

Jürgen Baschin

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15-02-02

RFP4-2G4

We hereby declare that the RFP4-2G4 Antenna 1 and then Antenna 2 is done for Diversity selection in such a way that the antennas do not transmit simultaneously but are controlled separate by the signals "SEL_ANT1" and "SEL_ANT2" selecting only one antenna at a time.

Horsens

15-02-02

Dion Nielsen

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