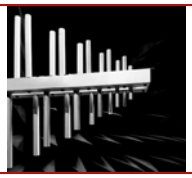
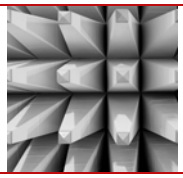




CETECOM™
CETECOM ICT Services
consulting - testing - certification

PERFORMANCE REPORT

Test Report No.: 1-2066-1-2/10

Deutscher Akkreditierungs Rat DAR

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
Internet: http://www.cetecom-ict.de
e-mail: info@ict.cetecom.de

Accredited Test Laboratory:
The test laboratory (area of testing) is accredited according to DIN EN ISO/IEC 17025
DAR registration number: DAT-P-176/94-D1

Area of Testing: Radio Satellite Communications

Applicant

SEW-EURODRIVE GmbH & Co KG
Ernst-Blickle-Str. 42
76646 Bruchsal/Germany
Phone: + 49 7251 75 - 0
Fax: + 49 7251 75 - 1970

Contact: Dr. Thomas Schäfer
e-mail: thomas.schaefer@sew-eurodrive.de
Phone: + 49 7251 75 - 5192

Manufacturer

SEW-EURODRIVE GmbH & Co KG
Ernst-Blickle-Str. 42
76646 Bruchsal/Germany

Test Standard/s

Customer Specific: Over The Air Performance, 3D radiation pattern on passive antenna (15° resolution)

Conclusion

The performed measurements prove that the slotted waveguide system "NKI1xx-SH5" from SEW-EURODRIVE GmbH & Co KG shows a low radiation outside the waveguide. When the same power is induced into the waveguide than into an isotropic radiator (0 dBi), the "Total Radiated Power" (TRP) is more than 10 dB lower than that of an isotropic radiator.
This result means that the shielding properties of the waveguide system are better than that of an enclosed building. The shielding properties of an enclosed building are given by different references in a range between 3 dB and 10dB. This shielding is a requirement for the operation of a "Wireless Local Area Network" (WLAN) in the frequency range from 5150 to 5350 MHz.

Test Item

Kind of test item:	Slotted waveguide system
Model name:	NKI1xx-SH5
S/N serial number:	Prototype, length approx 1m
HW hardware status:	--
SW software status:	--
Frequency [MHz]:	5100 – 5600
Type of Modulation:	--
Number of channels:	--
Antenna:	--
Power Supply:	--
Temperature Range:	--

Test performed:

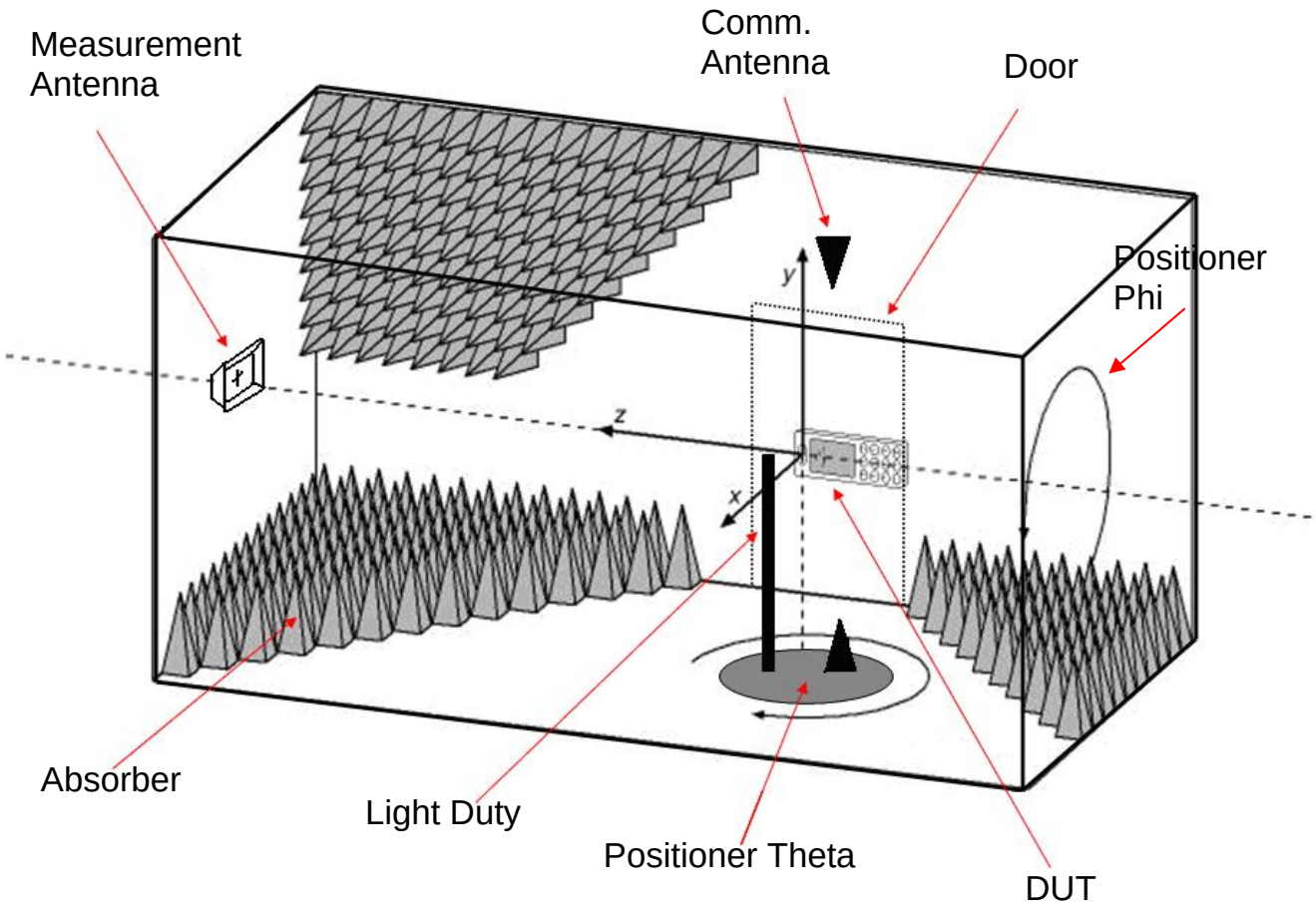
2010-05-19 Jörg Warken

Test Report authorised:

2010-05-19 Frank Salvamoser

1 Testsite

Coordinate system anechoic chamber (OTA)

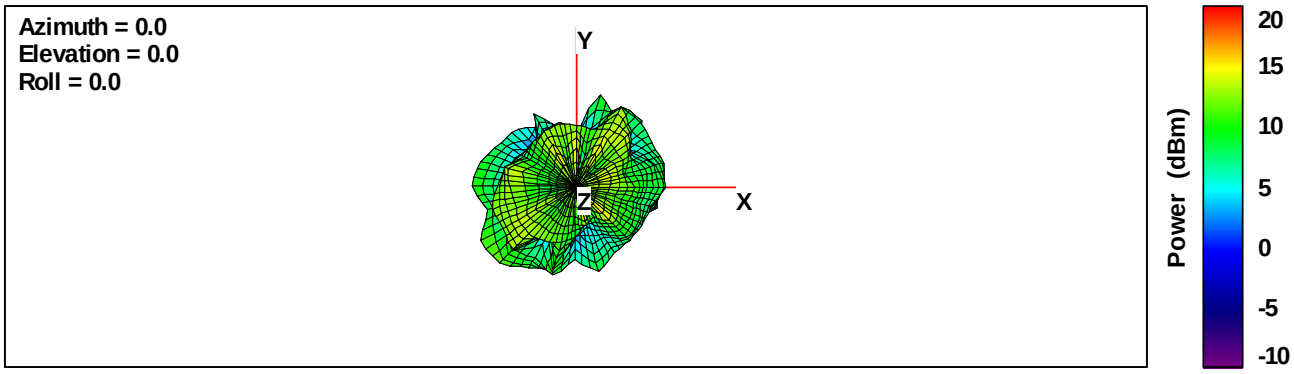


Setup B:

Length	approx 1m
Tag	Generator power: 20 dBm, Freq. 5.2 GHz
Antenna connector 1	50 Ohm
Antenna connector 2	50 Ohm

Result:

Total



Theta Angle (°)	0	15	30	45	60	75	90	105	120	135	150	165	180
Phi Angle (°)	P (dBm)	P (dBm)	P (dBm)	P (dBm)	P (dBm)	P (dBm)	P (dBm)	P (dBm)	P (dBm)	P (dBm)	P (dBm)	P (dBm)	P (dBm)
0	12,39	13,20	11,54	8,85	9,87	7,98	6,60	2,18	-0,99	-3,29	3,30	1,25	1,51
15	12,39	14,70	8,73	9,22	8,47	8,86	3,76	1,26	-2,98	2,79	2,95	0,13	1,51
30	12,39	13,85	11,93	5,94	5,77	8,25	0,59	4,51	-0,66	2,71	1,35	2,81	1,51
45	12,39	8,36	14,63	10,58	1,73	9,03	8,96	8,01	-0,60	-6,04	0,42	0,94	1,51
60	12,39	16,21	13,38	13,99	7,39	9,04	9,07	7,29	8,30	-0,83	0,87	6,11	1,51
75	12,39	5,81	11,32	2,35	11,38	3,04	-6,19	5,49	8,05	5,80	-2,47	0,37	1,51
90	12,39	16,01	12,14	3,41	0,66	-4,28	-4,14	-5,76	1,36	1,76	-5,64	2,56	1,51
105	12,39	9,49	13,12	6,97	3,19	-1,19	0,62	2,18	-2,83	1,89	-2,66	0,76	1,51
120	12,39	15,45	12,86	5,37	9,02	3,82	6,39	3,74	9,99	3,84	-1,65	-4,66	1,51
135	12,39	10,18	10,92	6,74	-1,58	7,14	1,11	5,81	-2,09	-1,18	-2,17	-3,76	1,51
150	12,39	9,87	8,89	6,64	4,76	7,95	-1,51	1,81	1,60	-5,87	1,57	-5,98	1,51
165	12,39	9,49	15,07	8,98	5,34	10,27	8,87	2,24	1,70	-0,54	2,32	-5,28	1,51
180	12,39	7,60	13,56	10,60	6,32	11,50	10,67	-0,79	2,65	-3,39	2,76	2,01	1,51
195	12,39	8,47	12,42	12,66	6,55	8,71	8,49	2,81	6,49	4,69	3,64	2,89	1,51
210	12,39	13,89	13,86	11,91	3,90	12,72	4,60	7,04	7,03	6,63	6,03	2,51	1,51
225	12,39	9,22	13,70	13,49	9,85	12,23	11,53	7,19	8,46	8,33	1,50	5,95	1,51
240	12,39	10,82	12,59	0,24	8,31	9,42	3,58	10,31	10,80	7,84	2,81	0,21	1,51
255	12,39	11,70	10,86	11,83	10,45	6,95	-2,63	5,38	-0,29	7,24	3,00	1,40	1,51
270	12,39	10,16	8,60	1,69	6,54	-0,08	0,38	-3,44	-3,74	3,58	0,74	0,64	1,51
285	12,39	15,08	2,96	6,31	9,66	2,04	2,18	-1,54	7,54	2,18	3,18	1,58	1,51
300	12,39	8,91	6,98	5,48	7,36	4,46	-2,87	5,13	-1,66	3,37	-1,45	-0,67	1,51
315	12,39	15,83	10,61	9,31	6,91	4,58	5,83	6,99	-0,76	1,71	-2,67	-2,09	1,51
330	12,39	12,47	10,20	9,10	7,10	2,75	2,29	3,34	-0,41	1,05	3,10	1,98	1,51
345	12,39	11,33	9,85	7,80	7,47	6,40	7,33	2,71	1,47	0,62	-1,19	3,51	1,51
360	12,39	13,20	11,54	8,85	9,87	7,98	6,60	2,18	-0,99	-3,29	3,30	1,25	1,51

Point Values	
Ant. Port Input Pwr. (dBm)	20
Tot. Rad. Pwr. (dBm)	7,32941
Peak EIRP (dBm)	16,2087

Directivity (dBi)	8,87931												
Efficiency (dB)	-12,6706												
Efficiency (%)	5,40681												
Gain (dBi)	-3,79127												
NHPRP ±Pi/4 (dBm)	4,97183												
NHPRP ±Pi/6 (dBm)	3,35255												
NHPRP ±Pi/8 (dBm)	2,18626												
Upper Hem. PRP (dBm)	6,10599												
Lower Hem. PRP (dBm)	1,22998												
NHPRP4 / TRP Ratio (dB)	-2,35758												
NHPRP4 / TRP Ratio (%)	58,1088												
NHPRP6 / TRP Ratio (dB)	-3,97687												
NHPRP6 / TRP Ratio (%)	40,0233												
NHPRP8 / TRP Ratio (dB)	-5,14315												
NHPRP8 / TRP Ratio (%)	30,5974												
UHPRP / TRP Ratio (dB)	-1,22343												
UHPRP / TRP Ratio (%)	75,4497												
LHPRP / TRP Ratio (dB)	-6,09943												
LHPRP / TRP Ratio (%)	24,5503												
Front/Back Ratio (dB)	15,9983												
Maximum Power (dBm)	16,2087												
Minimum Power (dBm)	-6,19262												
Average Power (dBm)	8,28675												
Max/Min Ratio (dB)	22,4013												
Max/Avg Ratio (dB)	7,92197												
Min/Avg Ratio (dB)	-14,4794												
Average Gain (dB)	-12,6706												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Setup B: