

Produkte
 Products


Prüfbericht - Nr.: 14028296 001		Seite 1 von 9	
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Auftraggeber: <i>Client:</i>	Supra Foto-Elektronik-Vertriebs-GmbH Denisstraße 28A 67663 Kaiserslautern Germany		
Gegenstand der Prüfung: <i>Test Item:</i>	Short Range Device - 2.4GHz Wireless Camera		
Bezeichnung: <i>Identification:</i>	SC FR-W304C	Serien-Nr.: <i>Serial No.:</i>	Engineering sample
Wareneingangs-Nr.: <i>Receipt No.:</i>	00111012105-001	Eingangsdatum: <i>Date of Receipt:</i>	12.10.2011
Prüfört: <i>Testing Location:</i>	TÜV Rheinland Hong Kong Ltd. 8/F., Niche Centre, 14 Wang Tai Road, Kowloon Bay, Kowloon, Hong Kong Hong Kong Productivity Council HKPC Building, 78 Tat Chee Avenue, Kowloon, Hong Kong		
Prüfgrundlage: <i>Test Specification:</i>	FCC Part 15 Subpart C ANSI C63.4-2003 CISPR 22:1997		
Prüfergebnis: <i>Test Results:</i>	Das vorstehend beschriebene Gerät wurde geprüft und entspricht oben genannter Prüfgrundlage. The above mentioned product was tested and passed .		
Prüflaboratorium: <i>Testing Laboratory:</i>	TÜV Rheinland Hong Kong Ltd. 8-10/F., Goldin Financial Global Square , 7 Wang Tai Road, Kowloon Bay, Kowloon, Hong Kong		
geprüft/ tested by:	kontrolliert/ reviewed by:		
27.10.2011	Mika Chan Senior Project Engineer		27.10.2011
			Sharon Li Assistant Manager
Datum <i>Date</i>	Name/Stellung <i>Name/Position</i>	Unterschrift <i>Signature</i>	Datum <i>Date</i>
			Name/Stellung <i>Name/Position</i>
			Unterschrift <i>Signature</i>
Sonstiges: Other Aspects	FCCID: Z5CSUSC1-122011		
Abkürzungen:	<i>P(ass) = entspricht Prüfgrundlage</i>	Abbreviations:	<i>P(ass) = passed</i>
	<i>F(ail) = entspricht nicht Prüfgrundlage</i>		<i>F(ail) = failed</i>
	<i>N/A = nicht anwendbar</i>		<i>N/A = not applicable</i>
	<i>N/T = nicht getestet</i>		<i>N/T = not tested</i>
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. <i>This test report relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any safety mark on this or similar products.</i>			

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Product information

Manufacturers declarations

	Transmitter
Operating frequency range	2414-2468 MHz Channel 1: 2414MHz, Channel 2: 2432MHz Channel 3: 2450MHz, Channel 4: 2468MHz
Type of modulation	FM
Number of channels	4
Type of antenna	Monopole Antenna
Power level	fix
Connection to public utility power line	No
Nominal voltage	V _{nom} : 12.0 V

Product function and intended use

The equipment under test (EUT) is a 2.4GHz wireless security camera with audio transmission is solely intended for the audio and image surveillance of interiors. Up to four security cameras can be connected to the receiver.

Submitted documents

Circuit Diagram
Block Diagram
Bill of material
User manual
Rating Label

Remarks

The product has been tested together with the following additional accessory:

AC/DC adaptor:
Model: HL-12/2-8E6S
Input rating: 100-240VAC 50/60Hz 200mA Max
Output rating: 12VDC, 0.5A

List of Test and Measurement Instruments

	Equipment used	Manufacturer	Model No.	S/N	Due Date
<input checked="" type="checkbox"/>	Semi-anechoic Chamber	Frankonia	Nil	Nil	25-May-12
<input checked="" type="checkbox"/>	Test Receiver	R & S	ESU40	100190	26-May-12
<input checked="" type="checkbox"/>	Bi-conical Antenna	R & S	HK116	100241	05-May-13
<input checked="" type="checkbox"/>	Log Periodic Antenna	R & S	HL223	841516/020	06-May-13
<input checked="" type="checkbox"/>	Coaxial cable 50ohm	Rosenberger	RTK081-05S-05S-10m	LA2-001-10M / 001	08-Dec-11
<input checked="" type="checkbox"/>	Microwave amplifier 0.5-26.5GHz, 25dB gain	HP	83017A	3950M00241	03-Oct-13
<input checked="" type="checkbox"/>	High Pass Filter (cutoff freq. =1000MHz)	Trilithic	23042	9829213	30-Oct-11
<input checked="" type="checkbox"/>	Horn Antenna	EMCO	3115	9002-3351	11-May-13
<input checked="" type="checkbox"/>	Active Loop Antenna	EMCO	6502	9107-2651	19-Apr-12
<input checked="" type="checkbox"/>	FSP 30 Spectrum Analyser	R & S	FSP 30	100007	17-Sep-12
<input checked="" type="checkbox"/>	LISN	R & S	ESH3-Z5	849876/026	21-Dec-12

Measurement Uncertainty

The estimated combined standard uncertainty for radiated emissions measurements is ± 5.10 dB (30MHz to 200MHz), ± 5.08 dB (200MHz to 1000MHz) and ± 5.00 dB (above 1000MHz).

Results FCC Part 15 – Subpart C

Subclause 15.207 – Disturbance Voltage on AC Mains						Pass
Test Port: AC mains input port of the charger Applied voltage: 100VAC Applicable only to equipment designed to be connected to the public utility power line. Adaptor Model: HL-12/2-8E6S 1) Mode of operation: Transmitting						
Live measurement						
Frequency range (MHz)	Frequency (MHz)	Quasi-peak dB μ V	Average dB μ V	Limit QP (dB μ V)	Limit AV (dB μ V)	Verdict
0,15 – 0,5	0.192	44.3	25.7	66 - 56	56 - 46	Pass
	0.330	38.6	28.5	66 - 56	56 - 46	Pass
> 0,5 - 5	2.046	29.8	20.0	56	46	Pass
> 5 - 30	-	-	-	60	50	Pass
Neutral measurement						
Frequency range (MHz)	Frequency (MHz)	Quasi-peak dB μ V	Average dB μ V	Limit QP (dB μ V)	Limit AV (dB μ V)	Verdict
0,15 – 0,5	0.194	43.4	24.8	66 - 56	56 - 46	Pass
> 0,5 - 5	0.666	34.4	15.5	56	46	Pass
	1.974	32.5	15.1	56	46	Pass
> 5 - 30	-	-	-	60	50	Pass
Results:	The radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150kHz to 30MHz does not exceed the limits. For test Results plots refer to Appendix 1, page 2-3.					

Subclause 15.205 – Band edge compliance of radiated emissions		Pass
Test Specification : ANSI C63.4 – 2003 Mode of operation : Tx mode Port of testing : Enclosure Detector : Peak RBW/VBW : 100 kHz / 300 kHz for f < 1 GHz 1 MHz / 3 MHz for f > 1 GHz Supply voltage : 100VAC Temperature : 23°C Humidity : 50%		
Requirement:	Radiated emissions which fall in the restricted bands, as defined in 15.205 (a), must also comply with the radiated emission limits specified in 15.209(a).	
Results:	There is no peak found in the restricted bands. For test protocols refer to Appendix 1, page 4-7.	

Subclause 15.215 (c) – 20 dB Bandwidth		Pass		
Requirement:	The intentional radiators must be designed to ensure that the 20dB bandwidth of the emission, is contained within the frequency band designated in the rule section under which the equipment is operated.			
Test Specification	: ANSI C63.4 – 2003			
Mode of operation	: Tx mode			
Port of testing	: Enclosure			
RBW/VBW	: 100 kHz / 300 kHz for f < 1 GHz 1 MHz / 3 MHz for f > 1 GHz			
Supply voltage	: 100VAC			
Temperature	: 23°C			
Humidity	: 50%			
Results:	For test protocols refer to Appendix 1, page 8-9.			
Frequency (MHz)	20 dB left (MHz)	Limit (MHz)	20 dB right (MHz)	Limit (MHz)
2414	2402.360	> 2400	2424.380	< 2483.5
2450	2438.300	> 2400	2460.080	< 2483.5
2468	2456.720	> 2400	2478.26	< 2483.5

Subclause 15.249 (a) – Radiated Emission (Fundamental and Harmonics)		Pass
Test Specification : ANSI C63.4 – 2003 Mode of operation : Tx mode Port of testing : Enclosure Frequency Range : 30 – 25000MHz RBW/VBW : 100 kHz / 300 kHz for f < 1 GHz 1 MHz / 3 MHz for f > 1 GHz Supply voltage : 100VAC Temperature : 23°C Humidity : 50%		
Requirement: The field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following limit.		
Results: PASS		
Fundamental Frequency 2414MHz		Vertical Polarization
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2410.016	95.38	114.0 / P
2413.301	80.62	94.0 / A
Fundamental Frequency 2414MHz		Horizontal Polarization
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2417.548	88.89	114.0 / P
2413.621	75.47	94.0 / A
Harmonics 2414MHz		Vertical Polarization
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
no peak found	---	74.0 / P
no peak found	---	54.0 / A
Harmonics 2414MHz		Horizontal Polarization
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
no peak found	---	74.0 / P
no peak found	---	54.0 / A
Fundamental Frequency 2450MHz		Vertical Polarization
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2451.842	96.42	114.0 / P
2449.679	84.59	94.0 / A
Fundamental Frequency 2450MHz		Horizontal Polarization
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2446.955	90.30	114.0 / P
2449.919	79.25	94.0 / A

Harmonics 2450MHz			Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m			
no peak found	---	74.0 / P			
no peak found	---	54.0 / A			
Harmonics 2450MHz			Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m			
no peak found	---	74.0 / P			
no peak found	---	54.0 / A			
Fundamental Frequency 2468MHz			Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m			
2465.304	96.42	114.0 / P			
2467.948	86.25	94.0 / A			
Fundamental Frequency 2468MHz			Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m			
2465.384	89.87	114.0 / P			
2468.028	79.91	94.0 / A			
Harmonics 2468MHz			Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m			
no peak found	---	74.0 / P			
no peak found	---	54.0 / A			
Harmonics 2468MHz			Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m			
no peak found	---	74.0 / P			
no peak found	---	54.0 / A			

Remark: There is no spurious emission found between 9kHz to 30 MHz.

Subclause 15.249 (d) – Spurious Radiated Emissions		Pass
Test Specification : ANSI C63.4 - 2003 Mode of operation : Tx mode Port of testing : Enclosure Frequency Range : 30 – 25000MHz Detector : Peak RBW/VBW : 100 kHz / 300 kHz for f < 1 GHz 1 MHz / 3 MHz for f > 1 GHz Supply voltage : 100VAC Temperature : 23°C Humidity : 50%		
Requirement: Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.		
Results: All three transmit frequency modes comply with the field strength within the restricted bands. There is no spurious found below 30MHz.		
Tx frequency 2414MHz		Vertical Polarization
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
47.370	25.00	40.0 / QP
302.240	31.30	46.0 / QP
Tx frequency 2414MHz		Horizontal Polarization
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
304.683	28.50	46.0 / QP
Tx frequency 2450MHz		Vertical Polarization
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
47.231	24.00	40.0 / QP
302.181	32.30	46.0 / QP
Tx frequency 2450MHz		Horizontal Polarization
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
394.880	33.10	46.0 / QP
Tx frequency 2468MHz		Vertical Polarization
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
32.100	23.50	40.0 / QP
304.760	31.70	46.0 / QP
Tx frequency 2468MHz		Horizontal Polarization
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
394.910	27.00	46.0 / QP

Remark: There is no spurious emission found between 9kHz to 30 MHz.