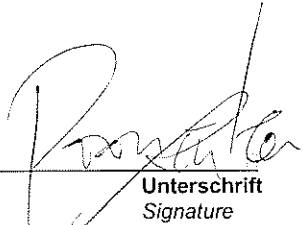


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<i>Test Report No.</i>																	
Auftraggeber: <i>Client:</i>		Traxon Group Ltd. 1702 Westin Centre, 26 Hung To Road, Kwun Tung, Kowloon, Hong Kong															
Gegenstand der Prüfung: <i>Test item:</i>		Superregenerative Receiver															
Bezeichnung: <i>Identification:</i>		Serien-Nr.: <i>Serial No.</i>		Engineering Sample													
Mood- Light Panel ML-1050 (FCCID:RKMMML1050)																	
Wareneingangs-Nr.: <i>Receipt No.:</i>		Eingangsdatum: <i>Date of receipt:</i>		07.08.2003													
070803001																	
Prüfart: <i>Testing location:</i>		Refer to section 2.1															
Prüfgrundlage: <i>Test specification:</i>		FCC Part 15, Subpart B															
Prüfresultat: <i>Test Result</i>		Der vorstehend beschriebene Prüfgegenstand wurde geprüft und entspricht oben genannter Prüfgrundlage. The a. m. test item passed.															
geprüft / tested by: P.Poon		kontrolliert / reviewed by S.Wald															
 20.10.2003 Datum Date		 20.10.2003 Datum Date															
Unterschrift Signature		Unterschrift Signature															
Sonstiges / Other Aspects: ---																	
<table style="width: 100%; border: none;"> <tr> <td style="width: 33%;">Abkürzungen:</td> <td style="width: 33%;">OK, Pass = entspricht Prüfgrundlage</td> <td style="width: 33%;">Abbreviations:</td> <td style="width: 33%;">OK, Pass = passed</td> </tr> <tr> <td></td> <td>Fail = entspricht nicht Prüfgrundlage</td> <td></td> <td>Fail = failed</td> </tr> <tr> <td></td> <td>N/A = nicht anwendbar</td> <td></td> <td>N/A = not applicable</td> </tr> </table>						Abkürzungen:	OK, Pass = entspricht Prüfgrundlage	Abbreviations:	OK, Pass = passed		Fail = entspricht nicht Prüfgrundlage		Fail = failed		N/A = nicht anwendbar		N/A = not applicable
Abkürzungen:	OK, Pass = entspricht Prüfgrundlage	Abbreviations:	OK, Pass = passed														
	Fail = entspricht nicht Prüfgrundlage		Fail = failed														
	N/A = nicht anwendbar		N/A = not applicable														
Dieser Prüfbericht bezieht sich nur auf den o.g. Prüfgegenstand und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. This test report relates to the a. m. test item. 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 test mark on this or similar products. Authorized format 16.12.1996, R.M.																	

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TEST SUMMARY

7.1.1 SPURIOUS RADIATED EMISSIONS

Result: Pass

7.1.2 CONDUCTED EMISSIONS

Result: Pass

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1 General Remarks

1.1 Complementary Materials

All attachments are integral parts of this test report. This applies especially to the following appendix:

Appendix 1: Test Results

Appendix 2: Test Setup

Appendix 3: External Photographs of EUT

Appendix 4: Internal Photographs of EUT

Appendix 5: FCCID Label, Block Diagram and Schematics

2 Test Sites

2.1 Test Facilities

Hong Kong Productivity Council
HKPC Building
78 Tat Chee Avenue
Kowloon
Hong Kong

2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

	Kind of Equipment	Manufacturer	Type	S/N
☒	Test Receiver	Rohde & Schwarz	ESH-3	890173/033
☒	L/I/S/N	Rohde & Schwarz	ESH 3-Z5	849876/026
☐	Oscilloscope	HP	54713B	US34510455
☐	Test Receiver	Rohde & Schwarz	ESVP	882402/033
☐	Absorbing Clamp	Rohde & Schwarz	MDS-21	979 3/4
☒	Test Receiver	Rohde & Schwarz	ESVS30	842807/009
☒	Biconical Antenna	Rohde & Schwarz	HK116	841489/015
☒	Log.-Periodic Antenna	Rohde & Schwarz	HL223	841516/017
☐	Universal Power Analyzer	Voltech	PM3000A	9915
☐	Reference Impedance Network	Voltech	IEC 555 Standard	9946
☐	AC Power Source	California Instr.	4500L	HK51895
☐	Trip-Loop Antenna	Chase	LLA6142	1019
☒	Double Ridge Horn Antenna	EMCO	3115	9002-3351
☐	Double Ridge Horn Antenna	EMCO	3116	9002-3347
☐	RF Comms Test Set	HP	8920B	US36492628
☒	Spectrum Analyser + Tracking Gen.	HP	8596E	3639A00758
☐	Signal Generator	Rohde & Schwarz	SMY 01	844146/024
☒	Signal Generator	Rohde & Schwarz	SMY 01	844146/023
☐	BiLog Antenna	EMCO	3143	9607-1287
☐	Isotropic Field Probe	Holladay	HI-4422	90956
☐	Power Amplifier	Kalmus	757-LC	7620-1
☐	Power Amplifier	Kalmus	122-FC	7620-2
☐	Coupling Clamp	Schaffner	CDN 126	312
☐	Couple Device Network	Fischer	CDN-M2	9604
☐	Spectrum Analyzer	Rohde & Schwarz	FSP30	1093.4495K30
☐	Temperature Chamber	Binder	MK 240	9020-0028
☐	EFT,ESD,SURGE, DIPS tester	Schaffner	Best 96	IN3796-011

3 General Product Information

3.1 Product Function and Intended Use

The equipment under test (EUT) is a mood light panel operating at 433MHz.. The sequence of lighting mode is controlled by the associated transmitter.

3.2 Circuit Description

1. The whole panel is powered up by an external connected 5V switching power supply.
2. When the receiver module using LC as local oscillator receives the On-off keyed modulation signal and demodulated to digital signal to the MCU W742.
3. MCU W741 decode the code received and send out a STB to MCU W742 if the code is valid, then W741 will send command to MCU W742 through the data lines.
4. MCU W742 will send out the corresponding control sequence to the I/O ports for driving the RGB LEDs on the 4 LED boards according to the received command from MCU W741.
5. When the 5V supply is cut off, the MCUs will go into the sleep mode which is backup by the rechargeable 3.6V NiMH battery.

3.3 Ratings and System Details

	Receiver
Frequency range	: 433.910MHz
Number of channels	: 1
Type of antenna	: Permanently attached receiving antenna.
Power supply	: AC 120V/ DC 5V adaptor
Ports	: none
Protection Class	: I

3.4 Independent Operation Modes

The basic operation modes are:

- Power: On and Off
- Flash / fix Colour lighting

For further information refer to User Manual

3.5 Submitted Documents

The submitted documents are listed as follow:

- Circuit diagram
- Block diagram
- Rating lable
- User manual

3.6 Related Submittal(s) Grants

This is a single application for certification of the receiver, the transmitter for this receiver is authorized by the Certification procedure.

4 Test Set-up and Operation Mode

4.1 Principle of Configuration Selection

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the instructions for use.

4.2 Test Operation and Test Software

Test operation should refer to Section 5 and 7.

- There was no special software to exercise the device.

4.3 Special Accessories and Auxiliary Equipment

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

-none

4.4 Countermeasures to achieve EMC Compliance

The test sample, which has been tested, contained the noise suppression parts as described in the Circuit Diagram or the Technical Construction File. No additional measures were employed to achieve compliance.

5 Test Methodology

Radiated Emission

The radiated emission measurements were performed according to the procedures in ANSI C63.4-1992.

The equipment under test (EUT) was placed at the middle of the 80cm height turntable, and the turntable is 3 meters far from the measuring antenna. During the testing, the EUT was operated standalone and arranged for maximum emissions. The EUT was tested in three orthogonal planes.

The investigation is performed with the EUT rotated 360° , the antenna height scanned between 1m and 4m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations. Repeat the measurement steps until the maximum emissions were obtained.

The frequency range scanned is from the lowest radio frequency signal generated in the device which greater than 9 KHz to the tenth harmonic of the highest fundamental frequency or 40GHz, whichever is lower.

All radiated tests were performed at an antenna to EUT with 3 meters distance, unless stated otherwise in section 7.1.1 of this test report.

6 Field Strength Calculation

The field strength at 3m was established by adding the meter reading of the spectrum analyzer to the factors associated with antenna correction factor, cable loss, preamplifiers and filter attenuation.

The equation is expressed as follow:

$$FS = R + AF + CF + FA - PA$$

Where FS = Field Strength in dBuV/m at 3 meters.

R = Reading of Spectrum Analyzer in dBuV.

AF = Antenna Factor in dB/m.

CF = Cable Attenuation Factor in dB.

FA = Filter Attenuation Factor in dB.

PA = Preamplifier Factor in dB.

FA and PA are only be used for the measuring frequency above 1 GHz.

7 Test Results

7.1.1 Spurious Radiated Emissions

RESULT:

Pass

Test Specification : FCC Part 15 section 15.109
 Test Method : ANSI 63.4-1992
 Measurement Location : Semi Anechoic Chamber
 Measurement Distance : 3m
 Detector Function : Quasi Peak
 Measurement BW : 100KHz
 Supply Voltage : AC 120V
 Measuring Frequency Range : 30-1000MHz
 :
 Class of EUT : B

Polarization: Vertical

Frequency	Reading	Antenna Factor	Attenuation of cable	Field strength at 3m	Limit at 3m	Delta to Limit
(MHz)	(dBuV)	(dB/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
40.22	18.00	15.00	0.40	33.4	40.0	-6.60
56.12	19.60	11.95	0.55	32.1	40.0	-7.90
75.08	19.30	9.80	0.6	29.7	40.0	-10.30
87.38	26.75	10.10	0.65	37.5	40.0	-2.50
105.08	26.30	11.15	0.75	38.2	43.5	-5.30
126.08	21.30	12.65	0.85	34.8	43.5	-8.70
206.18	1.20	10.40	1.10	12.7	43.5	-30.80
289.70	0.30	12.80	1.30	14.4	46.0	-31.60
293.78	0.30	13.00	1.30	14.6	46.0	-31.40
436.08	26.00	16.30	1.80	44.1	46.0	-1.90
719.48	0.20	20.80	2.40	23.4	46.0	-22.60
954.08	0.15	22.30	2.75	25.2	46.0	-20.80

For test results refer to Appendix 1, page 1-4

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Polarization: Horizontal

Frequency	Reading	Antenna Factor	Attenuation of cable	Field strength at 3m	Limit at 3m	Delta to Limit
(MHz)	(dBuV)	(dB/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
40.28	7.10	15.00	0.40	22.50	40.00	-17.50
56.60	11.50	11.95	0.55	24.00	40.00	-16.00
79.40	23.40	9.70	0.60	33.70	40.00	-6.30
86.72	27.45	9.90	0.65	38.00	40.00	-2.00
103.52	22.57	11.00	0.73	34.30	43.50	-9.20
151.52	3.20	14.30	0.90	18.40	43.50	-25.10
225.38	0.60	10.40	1.10	12.10	46.00	-33.90
239.18	0.90	11.50	1.10	13.50	46.00	-32.50
277.76	0.00	12.60	1.30	13.90	46.00	-32.10
536.03	20.30	17.70	2.00	40.00	46.00	-6.00
720.26	0.30	20.80	2.40	23.50	46.00	-22.50
905.78	0.20	22.70	2.60	25.50	46.00	-20.50

For test results refer to Appendix 1, page 1-4

Limit

Subclause 15.109

The field strength of radiated emissions from unintentional radiators at a distance of 3 meters :

Frequency (MHz)	Field strength (microvolts/meter)	Field strength (dBμV/m)	Measurement distance (meters)
30-88	100	$20 \cdot \log(100) = 40.0$	3
88-216	150	$20 \cdot \log(150) = 43.5$	3
216-960	200	$20 \cdot \log(200) = 46.0$	3
Above 960	500	$20 \cdot \log(500) = 54.0$	3

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7.1.2 Conducted Emissions

RESULT:

Pass

Test Specification : FCC Part 15 section 15.107
 Test Method : ANSI 63.4-1992
 Measurement Location : Shield Room
 Detector Function : Quasi Peak and Average
 Measurement BW : 9KHz
 Supply Voltage : AC 120V
 Measuring Frequency Range : 0.15-30.0MHz
 :
 Class of EUT : B

Terminal under test: Line

Frequency	Detector	Field Strength	Limit	Delta to Limit
(MHz)		(dBuV)	(dBuV)	(dB)
0.262	QP	47.6	61.4	-13.80
0.262	AV	41.6	51.4	-9.80
0.394	QP	43.1	58.0	-14.90
0.394	AV	32.9	48.0	-15.10
0.511	QP	44.0	56.0	-12.00
0.511	AV	29.5	46.0	-16.50
0.804	QP	40.4	56.0	-15.60
0.804	AV	26.3	46.0	-19.70
1.062	QP	40.5	56.0	-15.50
1.062	AV	26.7	46.0	-19.30
15.114	QP	39.9	60.0	-20.10
15.114	AV	20.4	50.0	-29.60

Terminal under test: Neutral

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Frequency	Detector	Field strength	Limit	Delta to Limit
(MHz)		(dBuV)	(dBuV)	(dB)
0.262	QP	47.1	61.3	-14.20
0.262	AV	42.3	51.3	-9.00
0.396	QP	48.9	57.9	-9.00
0.396	AV	40.1	47.9	-7.80
0.525	QP	47.3	56.0	-8.70
0.525	AV	37.3	46.0	-8.70
0.657	QP	51.2	56.0	-4.80
0.657	AV	38.2	46.0	-7.80
0.918	QP	46.3	56.0	-9.70
0.918	AV	31.7	46.0	-14.30
15.186	QP	41.2	60.0	-18.80
15.186	AV	20.1	50.0	-29.90

For test results refer to Appendix 1, page 5-6.

Limit

Subclause 15.107

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

* Decrease with the logarithm of the frequency.