Artin Industrial Co., Ltd.

Application
For
Certification
(FCC ID: L9G646100SP-VT)

Transmitter

Sample Description : VDO Ranger
Model : 646100SP

We hereby certify that the sample of the above item is considered to comply with the requirements of FCC Part 15, Subpart C for Intentional Radiator, mention 47 CFR [4-5-2007]

HK08071246-1
BH/at
October 10, 2008

FCC ID : L9G646100SP-VT

LIST OF EXHIBITS

MEASUREMENT/TECHNICAL REPORT

Artin Industrial Co., Ltd. - MODEL: 646100SP
FCC ID: L9G646100SP-VT

October 10, 2008

This report concerns (check one:) Original Grant X Class II Change ___

Equipment Type: Low Power Transmitter

Deferred grant requested per 47 CFR 0.457(d)(1)(ii)? Yes ___ No X

If yes, defer until: _____ date

Company Name agrees to notify the Commission by: _____ date

of the intended date of announcement of the product so that the grant can be issued on that date.

Transition Rules Request per 15.37? Yes _____ No X

If no, assumed Part 15, Subpart C for intentional radiator - the new 47 CFR [4-5-2007 Edition] provision.

Report prepared by: Ho Wai Kin, Ben
Intertek Testing Services
2/F., Garment Center,
576, Castle Peak Road,
HONG KONG
Phone: 852-2173-8517
Fax: 852-2742-9149

Table of Contents

List of attached file

Exhibit type	File Description	filename
Test Report	Test Report	report.pdf
Cover Letter	Letter of Agency	letter.pdf
Operation Description	Technical Description	descri.pdf
Test Setup Photo	Radiated Emission	radiated photos.pdf
Test Report	Bandedge Plot	bw.pdf
External Photo	External Photo	external photos.pdf
Internal Photo	Internal Photo	internal photos.pdf
Block Diagram	Block Diagram	block.pdf
Schematics	Circuit Diagram	circuit.pdf
ID Label/Location	Label Artwork and Location	label.pdf
User Manual	User Manual	manual.pdf

EXHIBIT 1

GENERAL DESCRIPTION

1.0 General Description

1.1 Product Description

The equipment under test (EUT) is a standalone transmitter for a video camera on a RC Car operating at single channel 2468 MHz which is controlled by RF module, and no channel can be selected by user. The EUT is powered by 2 x AAA batteries. The EUT has an ON/OFF switch. After switched ON the EUT, the camera is turn ON and transmit the video to the associated receiver continuously.

The brief circuit description is saved with filename : descri.pdf

1.2 Related Submittal(s) Grants

The receiver for this transmitter is exempted from the Part 15 technical rules per 15.101(b).

1.3 Test Methodology

The radiated emission measurements were performed according to the procedures in ANSI C63.4 (2003). All measurements were performed in Open Area Test Sites. Preliminary scans were performed in the Open Area Test Sites only to determine worst case modes. All Radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the "**Justification Section"** of this Application.

1.4 Test Facility

The open area test site and conducted measurement facility used to collect the emission data is located at Garment Centre, 576 Castle Peak Road, Kowloon, Hong Kong. This test facility and site measurement data have been fully placed on file with the FCC.

EXHIBIT 2

SYSTEM TEST CONFIGURATION

2.0 System Test Configuration

2.1 Justification

The system was configured for testing in a typical fashion (as a customer would normally use it), and in the confines as outlined in ANSI C63.4 (2003).

The EUT was powered by 2 new AAA batteries during test.

For maximizing emissions, the EUT was rotated through 360°, the antenna height was varied from 1 meter to 4 meters above the ground plane, and the antenna polarization was changed. This step by step procedure for maximizing emissions led to the data reported in Exhibit 3.0.

The unit was operated standalone and placed in the center of the turntable.

The equipment under test (EUT) was configured for testing in a typical fashion (as a customer would normally use it). The EUT was placed on a turn table, and the Antenna of EUT was fully extended, which enabled the engineer to maximize emissions through its placement in the three orthogonal axes.

For simplicity of testing, the unit was wired to transmit continuously.

2.2 EUT Exercising Software

There was no special software to exercise the device.

2.3 Special Accessories

There are no special accessories necessary for compliance of this product.

2.4 Equipment Modification

Any modifications installed previous to testing by Artin Industrial Co., Ltd. will be incorporated in each production model sold/leased in the United States.

No modifications were installed by Intertek Testing Services.

2.5 Measurement Uncertainty

When determining the test conclusion, the measurement uncertainty of test has been considered.

2.6 Support Equipment List and Description

This product was tested in a standalone configuration.

All the items listed under section 2.0 of this report are

Confirmed by:

Ho Wai Kin, Ben
Senior Supervisor
Intertek Testing Services
Agent for Artin Industrial Co., Ltd.

Signature

October 10, 2008 Date

EXHIBIT 3

EMISSION RESULTS

3.0 **Emission Results**

Data is included worst case configuration (the configuration which resulted in the highest emission levels). A sample calculation, configuration photographs and data tables of the emissions are included.

3.1 Field Strength Calculation

The field strength is calculated by adding the reading on the Spectrum Analyzer to the factors associated with preamplifiers (if any), antennas, cables, pulse desensitization and average factors (when specified limit is in average and measurements are made with peak detectors). A sample calculation is included below.

FS = RA + AF + CF - AG + PD + AV

where FS = Field Strength in dBμV/m
RA = Receiver Amplitude (including preamplifier) in dBμV
CF = Cable Attenuation Factor in dB
AF = Antenna Factor in dB
AG = Amplifier Gain in dB
PD = Pulse Desensitization in dB
AV = Average Factor in -dB

In the radiated emission table which follows, the reading shown on the data table may reflect the preamplifier gain. An example of the calculations, where the reading does not reflect the preamplifier gain, follows:

FS = RA + AF + CF - AG + PD + AV

3.1 Field Strength Calculation (cont'd)

Example

Assume a receiver reading of 62.0 dBμV is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted. The pulse desensitization factor of the spectrum analyzer was 0 dB, and the resultant average factor was -10 dB. The net field strength for comparison to the appropriate emission limit is 32 dBμV/m. This value in dBμV/m was converted to its corresponding level in μV/m.

RA = 62.0 dBμV
AF = 7.4 dB
CF = 1.6 dB
AG = 29.0 dB
PD = 0 dB

AV = -10 dB

FS = 62 + 7.4 + 1.6 - 29 + 0 + (-10) = 32 dBμV/m

Level in μV/m = Common Antilogarithm [(32 dBμV/m)/20] = 39.8 μV/m

3.2 Radiated Emission Configuration Photograph

Worst Case Radiated Emission

4936.000 MHz

For electronic filing, the worst case radiated emission configuration photograph is saved with filename: radiated photos.pdf

3.3 Radiated Emission Data

The data on the following page lists the significant emission frequencies, the limit and the margin of compliance. Numbers with a minus sign are below the limit.

Judgement: Passed by 4.6 dB

TEST PERSONNEL:

Signature

Terry Chan, Compliance Engineer
Typed/Printed Name

October 10, 2008
Date

Company: Artin Industrial Co., Ltd. Date of Test: July 21, 2008
Model: 646100SP
Mode: TX
Sample: 1/1

Table 1

Radiated Emissions

Polari-zation	Frequency	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Average Factor (-dB)	Calculated at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
V	2468.000	89.0	33	29.4	0	85.4	114.0	-28.6
V	2468.000	89.0	33	29.4	0	85.4	94.0	-8.6
H	*4936.000	47.5	33	34.9	0	49.4	74.0	-24.6
H	*4936.000	47.5	33	34.9	0	49.4	54.0	-4.6
H	*7404.000	41.5	33	37.9	0	46.4	74.0	-27.6
H	*7404.000	41.5	33	37.9	0	46.4	54.0	-7.6
H	9872.000	38.2	33	40.4	0	45.6	74.0	-28.4
H	9872.000	38.2	33	40.4	0	45.6	54.0	-8.4
H	*12340.000	37.7	33	40.5	0	45.2	74.0	-28.8
H	*12340.000	37.7	33	40.5	0	45.2	54.0	-8.8

Notes: 1. Peak Detector Data unless otherwise stated.

2. All measurements were made at 3 meter. Harmonic emissions not detected at the 3 meter distance were measured at 0.3 meter and an inverse proportional extrapolation was performed to compare the signal level to the 3 meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3 meter.

3. Negative value in the margin column shows emission below limit.

4. Horn antenna is used for the emissions over 1000MHz.

*Emission within the restricted band meets the requirement of part 15.205. The corresponding limit as per 15.209 is based on Quasi peak detector data for frequencies below 1000 MHz and peak detector data with average factor for frequencies over 1000 MHz.

Test Engineer: Terry Chan

Company: Artin Industrial Co., Ltd. Date of Test: July 21, 2008
Model: 646100SP
Mode: Digital Camera
Sample: 1/1

Table 2

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
V	35.453	37.4	16	10.0	31.4	40.0	-8.6
V	48.653	35.6	16	11.0	30.6	40.0	-9.4
V	57.106	35.4	16	11.0	30.4	40.0	-9.6
V	60.345	36.2	16	10.0	30.2	40.0	-9.8
V	75.209	39.6	16	6.0	29.6	40.0	-10.4
V	120.306	30.6	16	14.0	28.6	43.5	-14.9

Notes: Negative signs (-) in the margin column signify levels below the limit.

Test Engineer: Terry Chan

EXHIBIT 4

EQUIPMENT PHOTOGRAPHS

4.0 Equipment Photographs

For electronic filing, the photographs are saved with filename:
external photos.pdf and internal photos.pdf

EXHIBIT 5

PRODUCT LABELLING

5.0 **Product Labelling**

For electronic filing, the FCC ID label artwork and the label location are saved with filename: label.pdf

EXHIBIT 6

TECHNICAL SPECIFICATIONS

6.0 Technical Specifications

For electronic filing, the block diagram and schematics are saved with filename: block.pdf and circuit.pdf

EXHIBIT 7

INSTRUCTION MANUAL

7.0 Instruction Manual

For electronic filing, a preliminary copy of the Instruction Manual is saved with filename: manual.pdf

This manual will be provided to the end-user with each unit sold/leased in the United States.

EXHIBIT 8

MISCELLANEOUS INFORMATION

8.0 **Miscellaneous Information**

This miscellaneous information includes details of the measured bandwidth.

8.1 **Bandedge Plot**

For electronic filing, the plot shows the fundamental emission when modulated is saved with filename: bw.pdf. From the plot, the field strength of any emissions outside of the specified frequency band are attenuated to the general radiated emission limits in Section 15.209. It fulfil the requirement of 15.249(d).

Peak Measurement

Bandedge compliance is determined by applying marker-delta method, i.e (Bandedge Plot A and Plot B).

Resultant field strength = Fundamental emissions (peak value) – delta from the Plot B (worse case)

= 85.40 dBµV/m – 50.36 dB

= 35.04 dBµV/m

The resultant field strength meets the general radiated emission limit in section 15.209, which does not exceed 74 dBµV/m (Peak Limit) and 54 dBµV/m (Average Limit).

Figure 8.1 Bandedge

8.2 Emissions Test Procedures

The following is a description of the test procedure used by Intertek Testing Services in the measurements of transmitters operating under Part 15, Subpart C rules.

The test set-up and procedures described below are designed to meet the requirements of ANSI C63.4 - 2003.

The transmitting equipment under test (EUT) is placed on a wooden turntable which is four feet in diameter and approximately one meter in height above the ground plane. During the radiated emissions test, the turntable is rotated and any cables leaving the EUT are manipulated to find the configuration resulting in maximum emissions. The EUT is adjusted through all three orthogonal axes to obtain maximum emission levels. The antenna height and polarization are varied during the testing to search for maximum signal levels.

Detector function for radiated emissions is in peak mode. Average readings, when required, are taken by measuring the duty cycle of the equipment under test and subtracting the corresponding amount in dB from the measured peak readings.

The frequency range scanned is from the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or 40 GHz, whichever is lower. For line conducted emissions, the range scanned is 150 kHz to 30 MHz.

8.2 Emissions Test Procedures (cont'd)

The EUT is warmed up for 15 minutes prior to the test.

AC power to the unit is varied from 85% to 115% nominal and variation in the fundamental emission field strength is recorded. If battery powered, a new, fully charged battery is used.

Conducted measurements are made as described in ANSI C63.4 - 2003.

The IF bandwidth used for measurement of radiated signal strength was 10 kHz for emission below 30 MHz and 120 kHz for emission from 30 MHz to 1000 MHz.

Transmitter measurements are normally conducted at a measurement distance of three meters. However, to assure low enough noise floor in the restricted bands and above 1 GHz, signals are acquired at a distance of one meter or less. All measurements are extrapolated to three meters using inverse scaling, but those measurements taken at a closer distance are so marked.