



Valued Quality. Delivered.

Issuing Laboratory:
Intertek Testing Services Hong Kong Limited

HKAS has accredited this laboratory (HOKLAS 005 – TEST) under HOKLAS for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories.



TEST REPORT

Report No.: 15020775HKG-002R1

Gatekeeper Systems (HK) Ltd.

Application
For
Certification
(Original Grant)
(FCC ID: W3Z-E7033)
(IC: 6817C-E7033)

Transceiver

This report supersedes previous report with report number 15020775HKG-002 dated April 27, 2015

Prepared and Checked by:

Approved by:

Wong Kwok Yeung, Kenneth
Lead Engineer

Chan Chi Hung, Terry
Senior Supervisor
Date: June 08, 2015

Intertek's standard Terms and Conditions can be obtained at our website <http://www.intertek.com/terms/>.
This report shall not be reproduced, except in full.
This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to permit copying or distribution of this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.

Intertek Testing Services Hong Kong Ltd.

2/F., Garment Centre, 576 Castle Peak Road, Kowloon, Hong Kong.

Tel: (852) 2173 8888 Fax: (852) 2785 5487 Website: www.hk.intertek-ettsemko.com



Valued Quality. Delivered.

Issuing Laboratory:
Intertek Testing Services Hong Kong Limited

HKAS has accredited this laboratory (HOKLAS 005 – TEST) under HOKLAS for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories.



GENERAL INFORMATION

Grantee:	Gatekeeper Systems (HK) Ltd.
Grantee Address:	Unit 2305, Level 23, Tower 2, Metroplaza, No. 223 Hing Fong Road, Kwai Fong, N.T., Hong Kong.
Contact Person:	Steve Hannah
Tel:	(852) 2413 3050
Fax:	(852) 2413 3051
e-mail:	shannah@gatekeepersystems.com
Manufacturer:	All Win Plastic & Electronic Co., Ltd.
Manufacturer Address:	Qingshuiao Village, Jianshazhou, Wanjiang District, Dongguan, Guandong, China.
Brand Name:	Gatekeeper Systems
Model:	E7033
Type of EUT:	Transceiver
Description of EUT:	Digital Throttle
Serial Number:	N/A
FCC ID / IC:	W3Z-E7033 / 6817C-E7033
Date of Sample Submitted:	February 24, 2015
Date of Test:	February 24, 2015 to April 15, 2015
Report No.:	15020775HKG-002R1
Report Date:	June 08, 2015
Environmental Conditions:	Temperature: +10 to 40°C Humidity: 10 to 90%

Report No.: 15020775HKG-002R1

FCC ID: W3Z-E7033

IC: 6817C-E7033

i

Intertek Testing Services Hong Kong Ltd.

2/F., Garment Centre, 576 Castle Peak Road, Kowloon, Hong Kong.

Tel: (852) 2173 8888 Fax: (852) 2785 5487 Website: www.hk.intertek-ettsemko.com



Valued Quality. Delivered.

Issuing Laboratory:
Intertek Testing Services Hong Kong Limited

HKAS has accredited this laboratory (HOKLAS 005 – TEST) under HOKLAS for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories.



SUMMARY OF TEST RESULT

TEST SPECIFICATION	REFERENCE	RESULTS
Radiated Emission Radiated Emission on the Bandedge	15.249, 15.209 / RSS-210 A2.9, RSS-210 2.5	Pass
Radiated Emission in Restricted Bands	15.205 / RSS-210 2.2	Pass

The equipment under test is found to be complying with the following standards:
FCC Part 15, October 1, 2013 Edition
RSS-210 Issue 8, December 2010
RSS-Gen Issue 4, December 2014

- Note: 1. The EUT uses a permanently attached antenna which, in accordance to section 15.203, is considered sufficient to comply with the provisions of this section.
2. Pursuant to FCC part 15 Section 15.215(c), the 20 dB bandwidth of the emission was contained within the frequency band designated (mentioned as above) which the EUT operated. The effects, if any, from frequency sweeping, frequency hopping, other modulation techniques and frequency stability over expected variations in temperature and supply voltage were considered.

Report No.: 15020775HKG-002R1
FCC ID: W3Z-E7033
IC: 6817C-E7033

ii



Valued Quality. Delivered.

Issuing Laboratory:
Intertek Testing Services Hong Kong Limited

HKAS has accredited this laboratory (HOKLAS 005 – TEST) under HOKLAS for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories.



Table of Contents

1.0	<u>General Description</u>	1
1.1	Product Description	1
1.2	Related Submittal(s) Grants.....	1
1.3	Test Methodology	1
1.4	Test Facility	1
2.0	<u>System Test Configuration</u>	2
2.1	Justification.....	2
2.2	EUT Exercising Software.....	2
2.3	Special Accessories	2
2.4	Measurement Uncertainty.....	2
2.5	Support Equipment List and Description.....	2
3.0	<u>Emission Results</u>	3
3.1	Field Strength Calculation.....	3
3.2	Radiated Emission Configuration Photograph	4
3.3	Radiated Emission Data	4
4.0	<u>Equipment Photographs</u>	15
5.0	<u>Product Labelling</u>	15
6.0	<u>Technical Specifications</u>	15
7.0	<u>Instruction Manual</u>	15
8.0	<u>Miscellaneous Information</u>	16
8.1	Radiated Emission on the Bandedge.....	16
8.2	Discussion of Pulse Desensitization	23
8.3	Calculation of Average Factor.....	23
8.4	Emissions Test Procedures	26
8.5	Occupied Bandwidth.....	29
9.0	<u>Confidentiality Request</u>	31
10.0	<u>Equipment List</u>	31



Valued Quality. Delivered.

Issuing Laboratory:
Intertek Testing Services Hong Kong Limited

HKAS has accredited this laboratory (HOKLAS 005 – TEST) under HOKLAS for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories.



1.0 General Description

1.1 Product Description

The Equipment Under Test (EUT) is a plug in 2.4GHz transceiver for a digital throttle. The EUT is powered by a 12VDC battery. The EUT contains 2 x 2.4 GHz modules. The 20FSK Control radio (operating frequency range from 2452.2MHz to 2482.2MHz) is used to receive commands from and send acknowledges to the Gatekeeper Systems CM Remote. The Announce radio is used to respond to the Status Requests while the CM is not moving. The 500MSK Announce radio (operating frequency range from 2401MHz to 2481.121MHz) is used to communicate with the CM. The 20FSK Announce radio (operating frequency range from 2401MHz to 2452MHz) is used for the status respond with the corresponding CM remote.

Antenna Type: Internal, Integral

For electronic filing, the brief circuit description is saved with filename: descri.pdf.

1.2 Related Submittal(s) Grants

This is a single application for certification of a transceiver.

1.3 Test Methodology

Radiated emission measurements was performed according to the procedures in ANSI C63.4 (2009). All radiated measurements were performed in an 3m Chamber. Preliminary scans were performed in the 3m Chamber 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 3m Chamber measurement facility used to collect the radiated data is located at Workshop No. 3, G/F., World-Wide Industrial Centre, 43-47 Shan Mei Street, Fo Tan, Sha Tin, N.T., Hong Kong. This test facility and site measurement data have been placed on file with the FCC and IC.

Report No.: 15020775HKG-002R1

FCC ID: W3Z-E7033

IC: 6817C-E7033

1

Intertek Testing Services Hong Kong Ltd.

2/F., Garment Centre, 576 Castle Peak Road, Kowloon, Hong Kong.

Tel: (852) 2173 8888 Fax: (852) 2785 5487 Website: www.hk.intertek-ettsemko.com

Issuing Laboratory:
Intertek Testing Services Hong Kong Limited

HKAS has accredited this laboratory (HOKLAS 005 – TEST) under HOKLAS for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories.



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 (2009).

The device was powered by 12.0VDC (1 x 12.0V battery).

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 mounted to a plastic stand if necessary and placed on the wooden turntable, which enabled the engineer to maximize emissions through its placement in the three orthogonal axes.

2.2 EUT Exercising Software

There was no special software to exercise the device. Once the unit is powered up, it transmits the RF signal continuously.

2.3 Special Accessories

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

2.4 Measurement Uncertainty

When determining of the test conclusion, the Measurement Uncertainty of test has been considered.

2.5 Support Equipment List and Description

1. Gatekeeper Systems (Model: K-9400), (FCC ID: SOX-K9400, IC: 6817A-K9400), (Provided by Applicant)
2. CM Remote (Provided by Applicant)
3. 1 x 12VDC Car Battery (Provided by Intertek)
4. 36VDC (4 x 9V Alkaline Batteries, for termination) (Provided by Intertek)

Issuing Laboratory:
Intertek Testing Services Hong Kong Limited

HKAS has accredited this laboratory (HOKLAS 005 – TEST) under HOKLAS for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories.



3.0 Emission Results

Data is included of the 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 Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any), Average Factor (optional) from the measured reading. The basic equation with a sample calculation is as follows:

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

where FS = Field Strength in dB μ V/m
 RA = Receiver Amplitude (including preamplifier) in dB μ V
 CF = Cable Attenuation Factor in dB
 AF = Antenna Factor in dB
 AG = Amplifier Gain in dB
 AV = Average Factor in dB

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows:

$$FS = RR + LF$$

where FS = Field Strength in dB μ V/m
 RR = RA - AG - AV in dB μ V
 LF = CF + AF in dB

Assume a receiver reading of 52.0 dB μ V is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB are added. The amplifier gain of 29 dB and average factor of 5 dB are subtracted, giving a field strength of 27 dB μ V/m. This value in dB μ V/m was converted to its corresponding level in μ V/m.

RA = 52.0 dB μ V/m
AF = 7.4 dB
CF = 1.6 dB
AG = 29.0 dB
AV = 5.0 dB
FS = RR + LF
FS = 18 + 9 = 27 dB μ V/m
RR = 18.0 dB μ V
LF = 9.0 dB

Level in μ V/m = Common Antilogarithm [(27 dB μ V/m)/20] = 22.4 μ V/m



Valued Quality. Delivered.

Issuing Laboratory:
Intertek Testing Services Hong Kong Limited

HKAS has accredited this laboratory (HOKLAS 005 – TEST) under HOKLAS for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories.



3.2 Radiated Emission Configuration Photograph

The worst case in radiated emission was found at 191.999 MHz

For electronic filing, the worst case radiated emission configuration photographs are 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.

Judgment: Passed by 3.6 dB



Valued Quality. Delivered.

Issuing Laboratory:
Intertek Testing Services Hong Kong Limited

HKAS has accredited this laboratory (HOKLAS 005 – TEST) under HOKLAS for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories.



Applicant: Gatekeeper Systems (HK) Ltd.

Date of Test: April 15, 2015

Model: E7033

Worst-Case Operating Mode: Transmitting (Control Radio) – 20FSK

Table 1
Radiated Emissions
Pursuant to FCC Part 15 Section 15.249 Requirement

Lowest Channel

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dB μ V/m)	Average Factor (dB)	Calculated at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
V	2400.000	50.2	33	29.4	46.6	17.8	28.8	54.0	-25.2
V	2452.200	92.1	33	29.4	88.5	17.8	70.7	94.0	-23.3
V	4904.400	58.7	33	34.9	60.6	17.8	42.8	54.0	-11.2
V	7356.600	50.4	33	37.9	55.3	17.8	37.5	54.0	-16.5
H	9808.800	43.8	33	40.4	51.2	17.8	33.4	54.0	-20.6
H	12261.000	45.0	33	40.5	52.5	17.8	34.7	54.0	-19.3
H	14713.200	48.9	33	38.4	54.3	17.8	36.5	54.0	-17.5

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
V	2400.000	50.2	33	29.4	46.6	74.0	-27.4
V	2452.200	92.1	33	29.4	88.5	114.0	-25.5
V	4904.400	58.7	33	34.9	60.6	74.0	-13.4
V	7356.600	50.4	33	37.9	55.3	74.0	-18.7
H	9808.800	43.8	33	40.4	51.2	74.0	-22.8
H	12261.000	45.0	33	40.5	52.5	74.0	-21.5
H	14713.200	48.9	33	38.4	54.3	74.0	-19.7

- NOTES: 1. Peak Detector Data unless otherwise stated.
2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances 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 sign in the column shows value below limit.
4. Horn antenna is used for the emission over 1000MHz.
5. Emission (the row indicated by **bold italic**) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.
6. Measurement Uncertainty is ± 5.3 dB at a level of confidence of 95%.



Valued Quality. Delivered.

Issuing Laboratory:
Intertek Testing Services Hong Kong Limited

HKAS has accredited this laboratory (HOKLAS 005 – TEST) under HOKLAS for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories.



Applicant: Gatekeeper Systems (HK) Ltd.

Date of Test: April 15, 2015

Model: E7033

Worst-Case Operating Mode: Transmitting (Control Radio) – 20FSK

Table 2
Radiated Emissions
Pursuant to FCC Part 15 Section 15.249 Requirement

Middle Channel

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Average Factor (dB)	Calculated at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
V	2467.200	92.5	33	29.4	88.9	17.8	71.1	94.0	-22.9
V	4934.400	56.5	33	34.9	58.4	17.8	40.6	54.0	-13.4
V	7401.600	49.5	33	37.9	54.4	17.8	36.6	54.0	-17.4
H	9868.800	44.2	33	40.4	51.6	17.8	33.8	54.0	-20.2
H	12336.000	45.2	33	40.5	52.7	17.8	34.9	54.0	-19.1
H	14803.200	49.4	33	38.4	54.8	17.8	37.0	54.0	-17.0

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
V	2467.200	92.5	33	29.4	88.9	114.0	-25.1
V	4934.400	56.5	33	34.9	58.4	74.0	-15.6
V	7401.600	49.5	33	37.9	54.4	74.0	-19.6
H	9868.800	44.2	33	40.4	51.6	74.0	-22.4
H	12336.000	45.2	33	40.5	52.7	74.0	-21.3
H	14803.200	49.4	33	38.4	54.8	74.0	-19.2

- NOTES: 1. Peak Detector Data unless otherwise stated.
2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances 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 sign in the column shows value below limit.
4. Horn antenna is used for the emission over 1000MHz.
5. Emission (the row indicated by **bold italic**) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.
6. Measurement Uncertainty is ±5.3dB at a level of confidence of 95%.



Valued Quality. Delivered.

Issuing Laboratory:
Intertek Testing Services Hong Kong Limited

HKAS has accredited this laboratory (HOKLAS 005 – TEST) under HOKLAS for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories.



Applicant: Gatekeeper Systems (HK) Ltd.

Date of Test: April 15, 2015

Model: E7033

Worst-Case Operating Mode: Transmitting (Control Radio) – 20FSK

Table 3
Radiated Emissions
Pursuant to FCC Part 15 Section 15.249 Requirement

Highest Channel

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Average Factor (dB)	Calculated at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
V	2482.190	91.2	33	29.4	87.6	17.8	69.8	94.0	-24.2
V	4964.380	53.7	33	34.9	55.6	17.8	37.8	54.0	-16.2
V	7446.570	49.0	33	37.9	53.9	17.8	36.1	54.0	-17.9
H	9928.760	44.1	33	40.4	51.5	17.8	33.7	54.0	-20.3
H	12410.950	45.2	33	40.5	52.7	17.8	34.9	54.0	-19.1
H	14893.140	49.4	33	38.4	54.8	17.8	37.0	54.0	-17.0

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
V	2482.190	91.2	33	29.4	87.6	114.0	-26.4
V	4964.380	53.7	33	34.9	55.6	74.0	-18.4
V	7446.570	49.0	33	37.9	53.9	74.0	-20.1
H	9928.760	44.1	33	40.4	51.5	74.0	-22.5
H	12410.950	45.2	33	40.5	52.7	74.0	-21.3
H	14893.140	49.4	33	38.4	54.8	74.0	-19.2

- NOTES:
1. Peak Detector Data unless otherwise stated.
 2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances 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 sign in the column shows value below limit.
 4. Horn antenna is used for the emission over 1000MHz.
 5. Emission (the row indicated by **bold italic**) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.
 6. Measurement Uncertainty is ±5.3dB at a level of confidence of 95%.

Issuing Laboratory:
Intertek Testing Services Hong Kong Limited

HKAS has accredited this laboratory (HOKLAS 005 – TEST) under HOKLAS for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories.



Applicant: Gatekeeper Systems (HK) Ltd.

Date of Test: April 15, 2015

Model: E7033

Worst-Case Operating Mode: Transmitting (Announce Radio) – 20FSK

Table 4
Radiated Emissions
Pursuant to FCC Part 15 Section 15.249 Requirement

Lowest Channel

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dB μ V/m)	Average Factor (dB)	Calculated at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
V	2401.000	91.4	33	29.4	87.8	11.8	76.0	94.0	-18.0
V	4802.000	58.7	33	34.9	60.6	11.8	48.8	54.0	-5.2
V	7203.000	47.9	33	37.9	52.8	11.8	41.0	54.0	-13.0
H	9604.000	53.8	33	40.4	61.2	11.8	49.4	54.0	-4.6
H	12005.000	45.0	33	40.5	52.5	11.8	40.7	54.0	-13.3
H	14406.000	47.3	33	40.0	54.3	11.8	42.5	54.0	-11.5

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
V	2401.000	91.4	33	29.4	87.8	114.0	-26.2
V	4802.000	58.7	33	34.9	60.6	74.0	-13.4
V	7203.000	47.9	33	37.9	52.8	74.0	-21.2
H	9604.000	53.8	33	40.4	61.2	74.0	-12.8
H	12005.000	45.0	33	40.5	52.5	74.0	-21.5
H	14406.000	47.3	33	40.0	54.3	74.0	-19.7

NOTES: 1. Peak Detector Data unless otherwise stated.

2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances 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 sign in the column shows value below limit.
4. Horn antenna is used for the emission over 1000MHz.
5. Emission (the row indicated by **bold italic**) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.
6. Measurement Uncertainty is ± 5.3 dB at a level of confidence of 95%.

Issuing Laboratory:
Intertek Testing Services Hong Kong Limited

HKAS has accredited this laboratory (HOKLAS 005 – TEST) under HOKLAS for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories.



Applicant: Gatekeeper Systems (HK) Ltd.

Date of Test: April 15, 2015

Model: E7033

Worst-Case Operating Mode: Transmitting (Announce Radio) – 20FSK

Table 5
Radiated Emissions
Pursuant to FCC Part 15 Section 15.249 Requirement

Middle Channel

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBμV/m)	Average Factor (dB)	Calculated at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
V	2426.180	89.1	33	29.4	85.5	11.8	73.7	94.0	-20.3
V	4852.360	56.0	33	34.9	57.9	11.8	46.1	54.0	-7.9
V	7278.540	47.3	33	37.9	52.2	11.8	40.4	54.0	-13.6
H	9704.720	44.3	33	40.4	51.7	11.8	39.9	54.0	-14.1
H	12130.900	45.3	33	40.5	52.8	11.8	41.0	54.0	-13.0
H	14557.080	49.3	33	38.4	54.7	11.8	42.9	54.0	-11.1

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBμV/m)	Peak Limit at 3m (dBμV/m)	Margin (dB)
V	2426.180	89.1	33	29.4	85.5	114.0	-28.5
V	4852.360	56.0	33	34.9	57.9	74.0	-16.1
V	7278.540	47.3	33	37.9	52.2	74.0	-21.8
H	9704.720	44.3	33	40.4	51.7	74.0	-22.3
H	12130.900	45.3	33	40.5	52.8	74.0	-21.2
H	14557.080	49.3	33	38.4	54.7	74.0	-19.3

NOTES: 1. Peak Detector Data unless otherwise stated.

- All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances 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.
- Negative sign in the column shows value below limit.
- Horn antenna is used for the emission over 1000MHz.
- Emission (the row indicated by **bold italic**) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.
- Measurement Uncertainty is ±5.3dB at a level of confidence of 95%.



Valued Quality. Delivered.

Issuing Laboratory:
Intertek Testing Services Hong Kong Limited

HKAS has accredited this laboratory (HOKLAS 005 – TEST) under HOKLAS for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories.



Applicant: Gatekeeper Systems (HK) Ltd.

Date of Test: April 15, 2015

Model: E7033

Worst-Case Operating Mode: Transmitting (Announce Radio) – 20FSK

Table 6
Radiated Emissions
Pursuant to FCC Part 15 Section 15.249 Requirement

Highest Channel

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBμV/m)	Average Factor (dB)	Calculated at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
V	2451.950	89.0	33	29.4	85.4	11.8	73.6	94.0	-20.4
V	2483.500	51.1	33	29.4	47.5	11.8	35.7	54.0	-18.3
V	4903.900	55.1	33	34.9	57.0	11.8	45.2	54.0	-8.8
V	7355.850	48.5	33	37.9	53.4	11.8	41.6	54.0	-12.4
H	9807.800	44.2	33	40.4	51.6	11.8	39.8	54.0	-14.2
H	12259.750	45.4	33	40.5	52.9	11.8	41.1	54.0	-12.9
H	14711.700	49.2	33	38.4	54.6	11.8	42.8	54.0	-11.2

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBμV/m)	Peak Limit at 3m (dBμV/m)	Margin (dB)
V	2451.950	89.0	33	29.4	85.4	114.0	-28.6
V	2483.500	51.1	33	29.4	47.5	74.0	-26.5
V	4903.900	55.1	33	34.9	57.0	74.0	-17.0
V	7355.850	48.5	33	37.9	53.4	74.0	-20.6
H	9807.800	44.2	33	40.4	51.6	74.0	-22.4
H	12259.750	45.4	33	40.5	52.9	74.0	-21.1
H	14711.700	49.2	33	38.4	54.6	74.0	-19.4

NOTES: 1. Peak Detector Data unless otherwise stated.

- All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances 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.
- Negative sign in the column shows value below limit.
- Horn antenna is used for the emission over 1000MHz.
- Emission (the row indicated by **bold italic**) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.
- Measurement Uncertainty is ±5.3dB at a level of confidence of 95%.

Report No.: 15020775HKG-002R1

10

FCC ID: W3Z-E7033

IC: 6817C-E7033

Intertek Testing Services Hong Kong Ltd.

2/F., Garment Centre, 576 Castle Peak Road, Kowloon, Hong Kong.

Tel: (852) 2173 8888 Fax: (852) 2785 5487 Website: www.hk.intertek-ettsemko.com

Issuing Laboratory:
Intertek Testing Services Hong Kong Limited

HKAS has accredited this laboratory (HOKLAS 005 – TEST) under HOKLAS for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories.



Applicant: Gatekeeper Systems (HK) Ltd.

Date of Test: April 15, 2015

Model: E7033

Worst-Case Operating Mode: Transmitting (Announce Radio) – 500MSK

Table 7
Radiated Emissions
Pursuant to FCC Part 15 Section 15.249 Requirement

Lowest Channel

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBμV/m)	Average Factor (dB)	Calculated at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
V	2401.000	90.1	33	29.4	86.5	11.8	74.7	94.0	-19.3
V	4802.000	57.6	33	34.9	59.5	11.8	47.7	54.0	-6.3
V	7203.000	48.4	33	37.9	53.3	11.8	41.5	54.0	-12.5
H	9604.000	44.1	33	40.4	51.5	11.8	39.7	54.0	-14.3
H	12005.000	46.2	33	40.5	53.7	11.8	41.9	54.0	-12.1
H	14406.000	47.9	33	40.0	54.9	11.8	43.1	54.0	-10.9

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBμV/m)	Peak Limit at 3m (dBμV/m)	Margin (dB)
V	2401.000	90.1	33	29.4	86.5	114.0	-27.5
V	4802.000	57.6	33	34.9	59.5	74.0	-14.5
V	7203.000	48.4	33	37.9	53.3	74.0	-20.7
H	9604.000	44.1	33	40.4	51.5	74.0	-22.5
H	12005.000	46.2	33	40.5	53.7	74.0	-20.3
H	14406.000	47.9	33	40.0	54.9	74.0	-19.1

- NOTES:
1. Peak Detector Data unless otherwise stated.
 2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances 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 sign in the column shows value below limit.
 4. Horn antenna is used for the emission over 1000MHz.
 5. Emission (the row indicated by **bold italic**) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.
 6. Measurement Uncertainty is ±5.3dB at a level of confidence of 95%.



Valued Quality. Delivered.

Issuing Laboratory:
Intertek Testing Services Hong Kong Limited

HKAS has accredited this laboratory (HOKLAS 005 – TEST) under HOKLAS for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories.



Applicant: Gatekeeper Systems (HK) Ltd.

Date of Test: April 15, 2015

Model: E7033

Worst-Case Operating Mode: Transmitting (Announce Radio) – 500MSK

Table 8
Radiated Emissions
Pursuant to FCC Part 15 Section 15.249 Requirement

Middle Channel

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Average Factor (dB)	Calculated at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
V	2440.000	89.7	33	29.4	86.1	11.8	74.3	94.0	-19.7
V	4880.000	57.4	33	34.9	59.3	11.8	47.5	54.0	-6.5
V	7320.000	48.6	33	37.9	53.5	11.8	41.7	54.0	-12.3
H	9760.000	44.4	33	40.4	51.8	11.8	40.0	54.0	-14.0
H	12200.000	45.9	33	40.5	53.4	11.8	41.6	54.0	-12.4
H	14640.000	49.2	33	38.4	54.6	11.8	42.8	54.0	-11.2

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
V	2440.000	89.7	33	29.4	86.1	114.0	-27.9
V	4880.000	57.4	33	34.9	59.3	74.0	-14.7
V	7320.000	48.6	33	37.9	53.5	74.0	-20.5
H	9760.000	44.4	33	40.4	51.8	74.0	-22.2
H	12200.000	45.9	33	40.5	53.4	74.0	-20.6
H	14640.000	49.2	33	38.4	54.6	74.0	-19.4

- NOTES: 1. Peak Detector Data unless otherwise stated.
2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances 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 sign in the column shows value below limit.
4. Horn antenna is used for the emission over 1000MHz.
5. Emission (the row indicated by **bold italic**) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.
6. Measurement Uncertainty is ±5.3dB at a level of confidence of 95%.



Valued Quality. Delivered.

Issuing Laboratory:
Intertek Testing Services Hong Kong Limited

HKAS has accredited this laboratory (HOKLAS 005 – TEST) under HOKLAS for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories.



Applicant: Gatekeeper Systems (HK) Ltd.

Date of Test: April 15, 2015

Model: E7033

Worst-Case Operating Mode: Transmitting (Announce Radio) – 500MSK

Table 9
Radiated Emissions
Pursuant to FCC Part 15 Section 15.249 Requirement

Highest Channel

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBμV/m)	Average Factor (dB)	Calculated at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
V	2481.140	89.9	33	29.4	86.3	11.8	74.5	94.0	-19.5
V	4962.280	57.1	33	34.9	59.0	11.8	47.2	54.0	-6.8
V	7443.420	48.4	33	37.9	53.3	11.8	41.5	54.0	-12.5
H	9924.560	44.1	33	40.4	51.5	11.8	39.7	54.0	-14.3
H	12405.700	45.4	33	40.5	52.9	11.8	41.1	54.0	-12.9
H	14886.840	48.8	33	38.4	54.2	11.8	42.4	54.0	-11.6

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBμV/m)	Peak Limit at 3m (dBμV/m)	Margin (dB)
V	2481.140	89.9	33	29.4	86.3	114.0	-27.7
V	4962.280	57.1	33	34.9	59.0	74.0	-15.0
V	7443.420	48.4	33	37.9	53.3	74.0	-20.7
H	9924.560	44.1	33	40.4	51.5	74.0	-22.5
H	12405.700	45.4	33	40.5	52.9	74.0	-21.1
H	14886.840	48.8	33	38.4	54.2	74.0	-19.8

- NOTES: 1. Peak Detector Data unless otherwise stated.
2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances 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 sign in the column shows value below limit.
4. Horn antenna is used for the emission over 1000MHz.
5. Emission (the row indicated by **bold italic**) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.
6. Measurement Uncertainty is ±5.3dB at a level of confidence of 95%.

Issuing Laboratory:
Intertek Testing Services Hong Kong Limited

HKAS has accredited this laboratory (HOKLAS 005 – TEST) under HOKLAS for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories.



Applicant: Gatekeeper Systems (HK) Ltd.
Model: E7033
Worst-Case Operating Mode: Operating

Date of Test: April 15, 2015

Table 10
Radiated Emissions
Pursuant to FCC Part 15 Section 15.209 Requirement

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Limit at 3m (dB μ V/m)	Margin (dB)
H	95.887	35.4	16	12.0	31.4	43.5	-12.1
H	127.833	30.9	16	14.0	28.9	43.5	-14.6
H	159.999	36.5	16	16.0	36.5	43.5	-7.0
H	191.999	39.9	16	16.0	39.9	43.5	-3.6
H	250.171	35.8	16	20.0	39.8	46.0	-6.2
H	270.604	33.6	16	22.0	39.6	46.0	-6.4
V	294.363	27.1	16	22.0	33.1	46.0	-12.9
H	324.885	29.5	16	24.0	37.5	46.0	-8.5
V	360.233	33.3	16	24.0	41.3	46.0	-4.7
V	403.305	28.4	16	24.0	36.4	46.0	-9.6
V	564.031	24.1	16	28.0	36.1	46.0	-9.9
H	692.900	21.8	16	30.0	35.8	46.0	-10.2
H	769.763	22.7	16	31.0	37.7	46.0	-8.3
V	887.600	19.3	16	32.0	35.3	46.0	-10.7

- NOTES: 1. Peak Detector Data unless otherwise stated.
- All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances 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.
 - Negative sign in the column shows value below limit.
 - Horn antenna is used for the emission over 1000MHz.
 - Emission (the row indicated by **bold italic**) within the restricted band meets the requirement of FCC Part 15 Section 15.205.
 - Measurement Uncertainty is ± 5.3 dB at a level of confidence of 95%.



Valued Quality. Delivered.

Issuing Laboratory:
Intertek Testing Services Hong Kong Limited

HKAS has accredited this laboratory (HOKLAS 005 – TEST) under HOKLAS for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories.



4.0 **Equipment Photographs**

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

5.0 **Product Labelling**

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

6.0 **Technical Specifications**

For electronic filing, the block diagram and schematic of the tested EUT are saved with filename: block.pdf and circuit.pdf respectively.

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 and Canada.



Valued Quality. Delivered.

Issuing Laboratory:
Intertek Testing Services Hong Kong Limited

HKAS has accredited this laboratory (HOKLAS 005 – TEST) under HOKLAS for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories.



8.0 **Miscellaneous Information**

The miscellaneous information includes details of the test procedure and measured bandwidth / calculation of factor such as pulse desensitization and averaging factor (calculation and timing diagram).

8.1 Radiated Emission on the Bandedge

From the following plots, they show that the fundamental emissions are confined in the specified band (2400MHz to 2483.5MHz). In case of the fundamental emissions are within two standard bandwidths from the bandedge, the delta measurement technique is used for determining bandedge compliance. Standard bandwidth is the bandwidth specified by ANSI C63.4 (2009) for frequency being measured.

Emissions radiated outside of the specified frequency bands, except harmonics, are attenuated by 50dB below the level of the fundamental or to the general radiated emissions limits in Section 15.209 / RSS-210 2.5, whichever is the lesser attenuation, which meet the requirement of part 15.249(d) / RSS-210 A2.9.



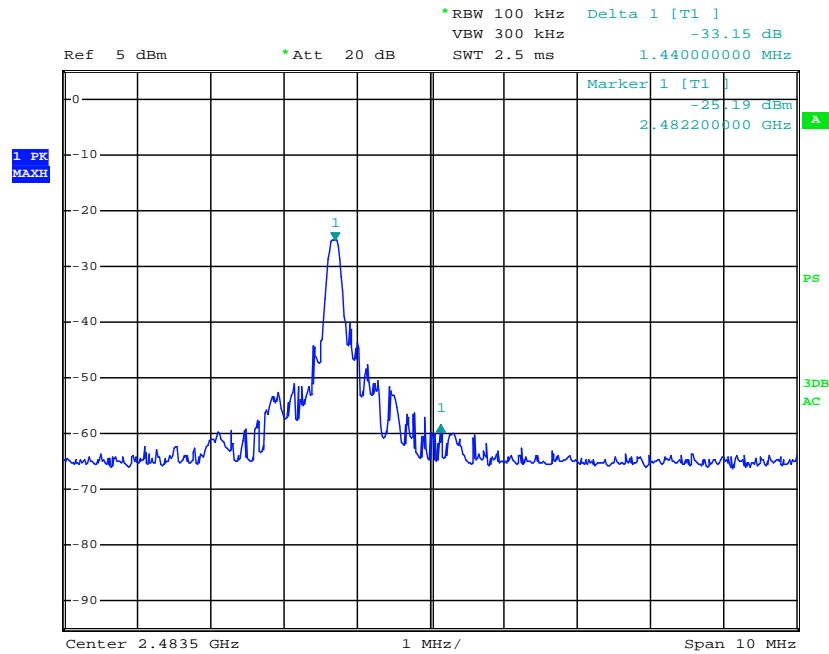
Valued Quality. Delivered.

Issuing Laboratory:
Intertek Testing Services Hong Kong Limited

HKAS has accredited this laboratory (HOKLAS 005 – TEST) under HOKLAS for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories.



Peak Measurement (Control Radio) – 20FSK



Report No.: 15020775HKG-002R1

FCC ID: W3Z-E7033

IC: 6817C-E7033

17

Intertek Testing Services Hong Kong Ltd.

2/F., Garment Centre, 576 Castle Peak Road, Kowloon, Hong Kong.

Tel: (852) 2173 8888 Fax: (852) 2785 5487 Website: www.hk.intertek-ettsemko.com



Valued Quality. Delivered.

Issuing Laboratory:
Intertek Testing Services Hong Kong Limited

HKAS has accredited this laboratory (HOKLAS 005 – TEST) under HOKLAS for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories.



Peak Measurement (Control Radio) – 20FSK

Lower bandedge

The test data of lower bandedge emission is shown on above table 1 of page 5

Upper bandedge

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

Peak Resultant field strength = Fundamental emissions (peak value) – delta from the plot

=88.5 dB μ V/m - 33.2 dB

=55.3 dB μ V/m

Average Resultant field strength = Fundamental emissions (average value) – delta from the plot

=70.7 dB μ V/m - 33.2 dB

=37.5 dB μ V/m

The resultant field strength meets the general radiated emission limit in Section 15.209 / RSS-210 2.5, which does not exceed 74 dB μ V/m (Peak Limit) and 54 dB μ V/m (Average Limit).



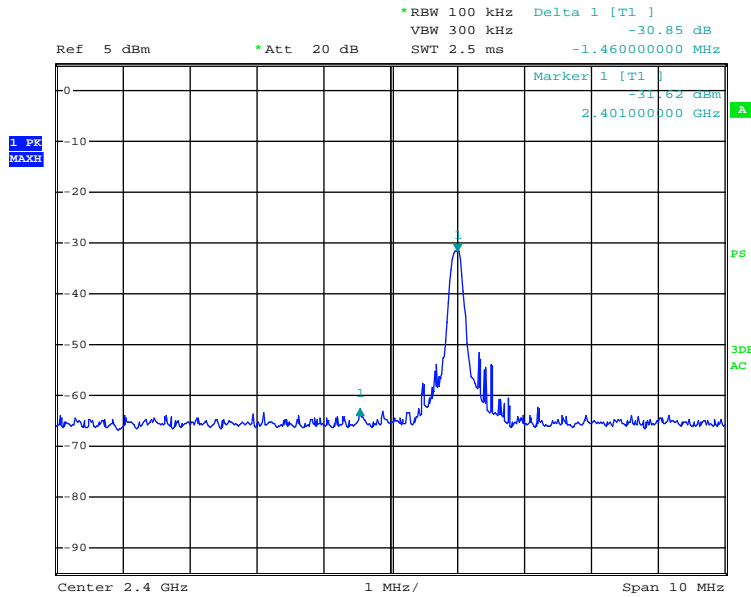
Valued Quality. Delivered.

Issuing Laboratory:
Intertek Testing Services Hong Kong Limited

HKAS has accredited this laboratory (HOKLAS 005 – TEST) under HOKLAS for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories.



Peak Measurement (Announce Radio) – 20FSK



Report No.: 15020775HKG-002R1

FCC ID: W3Z-E7033

IC: 6817C-E7033

19

Intertek Testing Services Hong Kong Ltd.

2/F., Garment Centre, 576 Castle Peak Road, Kowloon, Hong Kong.

Tel: (852) 2173 8888 Fax: (852) 2785 5487 Website: www.hk.intertek-ettsemko.com

Issuing Laboratory:
Intertek Testing Services Hong Kong Limited

HKAS has accredited this laboratory (HOKLAS 005 – TEST) under HOKLAS for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories.



Peak Measurement (Announce Radio) – 20FSK

Lower bandedge

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

Peak Resultant field strength = Fundamental emissions (peak value) – delta from the plot

$$\begin{aligned} &= 87.8 \text{ dB}\mu\text{V/m} - \underline{30.9} \text{ dB} \\ &= \underline{56.9} \text{ dB}\mu\text{V/m} \end{aligned}$$

Average Resultant field strength = Fundamental emissions (average value) – delta from the plot

$$\begin{aligned} &= 76.0 \text{ dB}\mu\text{V/m} - \underline{30.9} \text{ dB} \\ &= \underline{45.1} \text{ dB}\mu\text{V/m} \end{aligned}$$

Upper bandedge

The test data of lower bandedge emission is shown on above table 6 of page 10

The resultant field strength meets the general radiated emission limit in Section 15.209 / RSS-210 2.5, which does not exceed 74 dB μ V/m (Peak Limit) and 54 dB μ V/m (Average Limit).



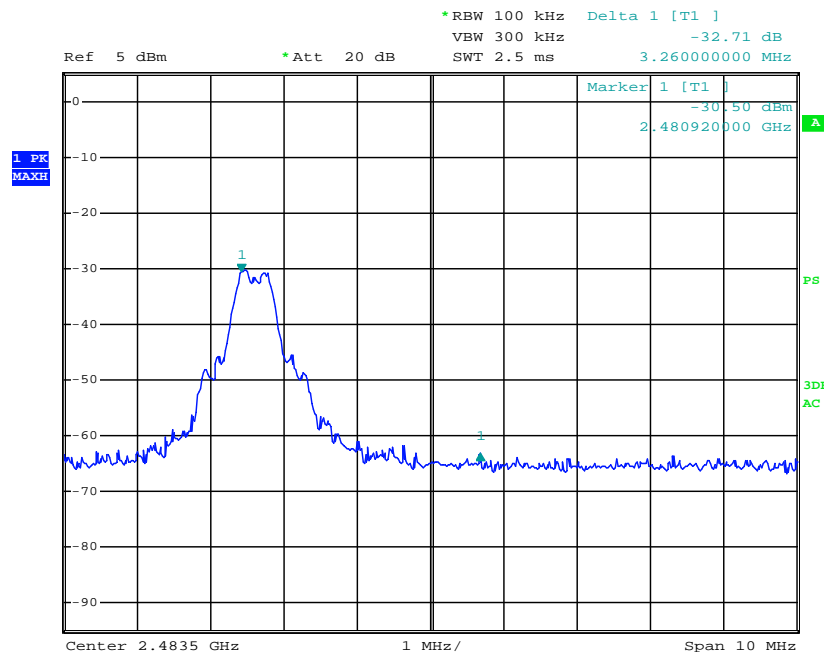
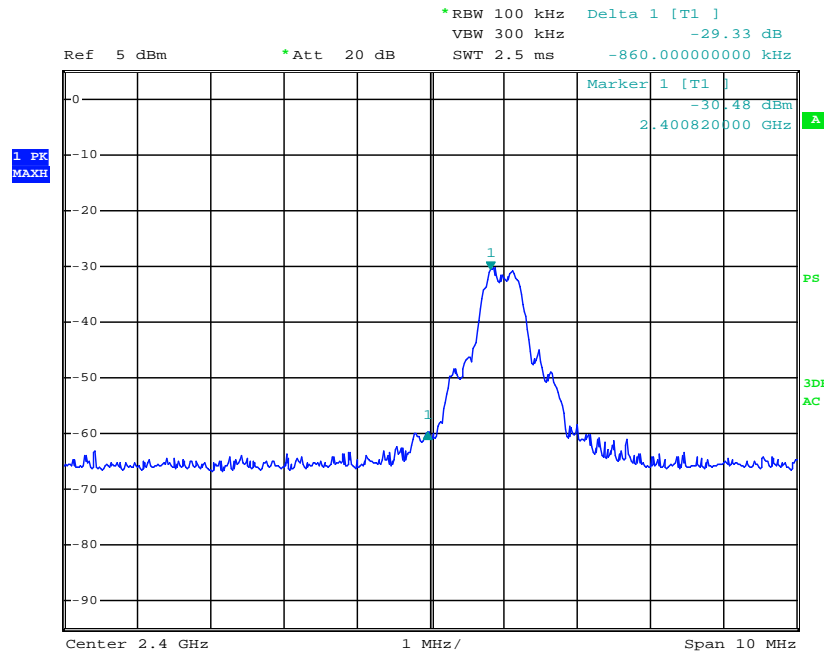
Valued Quality. Delivered.

Issuing Laboratory:
Intertek Testing Services Hong Kong Limited

HKAS has accredited this laboratory (HOKLAS 005 – TEST) under HOKLAS for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories.



Peak Measurement (Announce Radio) – 500MSK



Issuing Laboratory:
Intertek Testing Services Hong Kong Limited

HKAS has accredited this laboratory (HOKLAS 005 – TEST) under HOKLAS for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories.



Peak Measurement (Announce Radio) – 500MSK

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

Lower bandedge

Peak Resultant field strength = Fundamental emissions (peak value) – delta from the plot

=86.5 dB μ V/m - 29.3 dB
=57.2 dB μ V/m

Average Resultant field strength = Fundamental emissions (average value) – delta from the plot

=74.7 dB μ V/m - 29.3 dB
=45.4 dB μ V/m

Upper bandedge

Peak Resultant field strength = Fundamental emissions (peak value) – delta from the plot

=86.3 dB μ V/m - 32.7 dB
=53.6 dB μ V/m

Average Resultant field strength = Fundamental emissions (average value) – delta from the plot

=74.5 dB μ V/m - 32.7 dB
=41.8 dB μ V/m

The resultant field strength meets the general radiated emission limit in Section 15.209 / RSS-210 2.5, which does not exceed 74 dB μ V/m (Peak Limit) and 54 dB μ V/m (Average Limit).

Issuing Laboratory:
Intertek Testing Services Hong Kong Limited

HKAS has accredited this laboratory (HOKLAS 005 – TEST) under HOKLAS for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories.



8.2 Discussion of Pulse Desensitization

(Control Radio)

Pulse desensitivity is not applicable for this device. The effective period (Teff) is approximately 0.38ms for a digital “1” bit which illustrated on technical specification, with a resolution bandwidth (3dB) of 1MHz, so the pulse desensitivity factor is 0dB.

(Announce Radio)

Pulse desensitivity is not applicable for this device. The effective period (Teff) is approximately 12.8ms for a digital “1” bit which illustrated on technical specification, with a resolution bandwidth (3dB) of 1MHz, so the pulse desensitivity factor is 0dB.

8.3 Calculation of Average Factor

(Control Radio)

The duty cycle is simply the on-time divided by the period:

The duration of one cycle = 100 ms

Effective period of the cycle = $34 \times 0.38 = 12.92$ ms

DC = $12.92 / 100 = 0.1292$

Therefore, the averaging factor is found by $20\log 0.1292 = -17.8\text{dB}$.

(Announce Radio)

The duty cycle is simply the on-time divided by the period:

The duration of one cycle = 100 ms

Effective period of the cycle = $2 \times 12.8 = 25.6$ ms

DC = $25.6 / 100 = 0.256$

Therefore, the averaging factor is found by $20\log 0.256 = -11.8\text{dB}$.



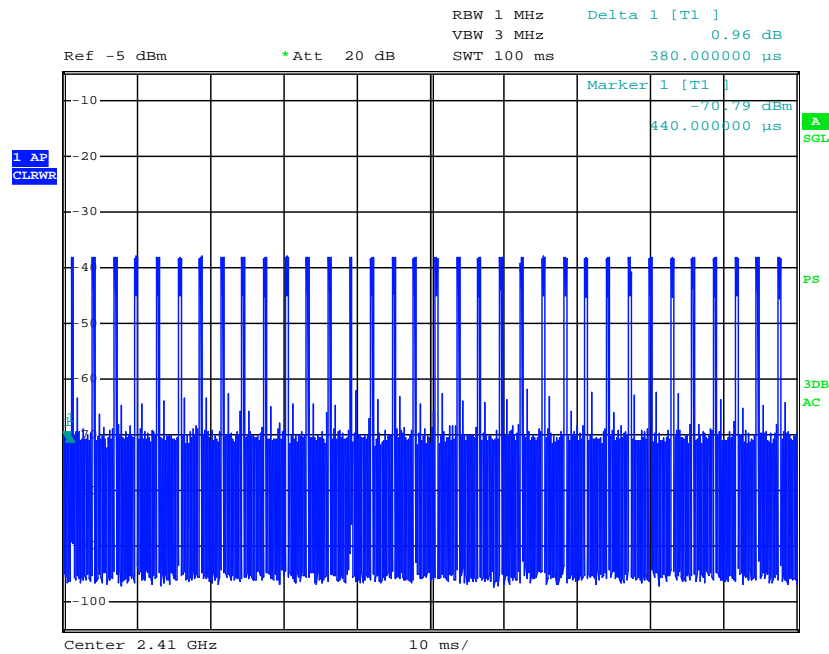
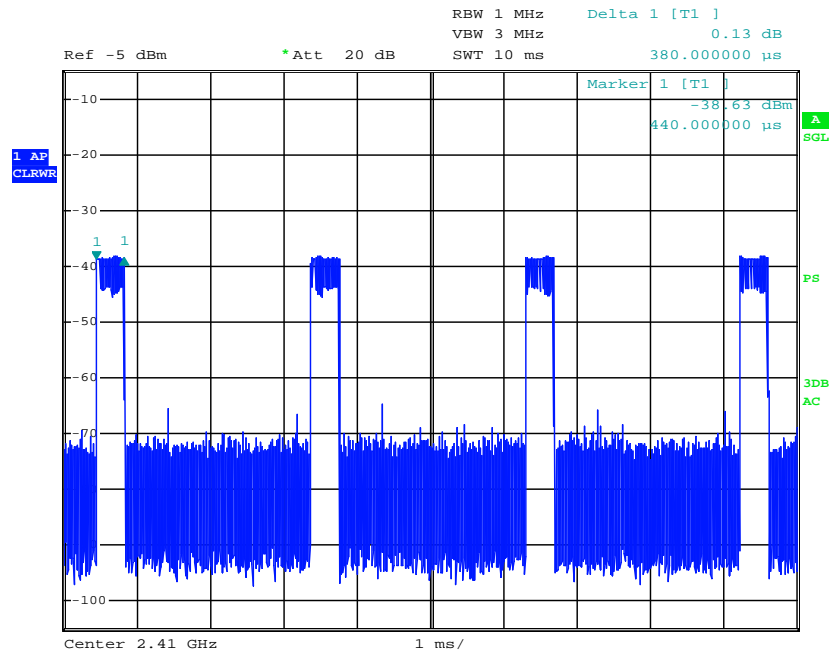
Valued Quality. Delivered.

Issuing Laboratory:
Intertek Testing Services Hong Kong Limited

HKAS has accredited this laboratory (HOKLAS 005 – TEST) under HOKLAS for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories.



Average Factor (Control Radio)





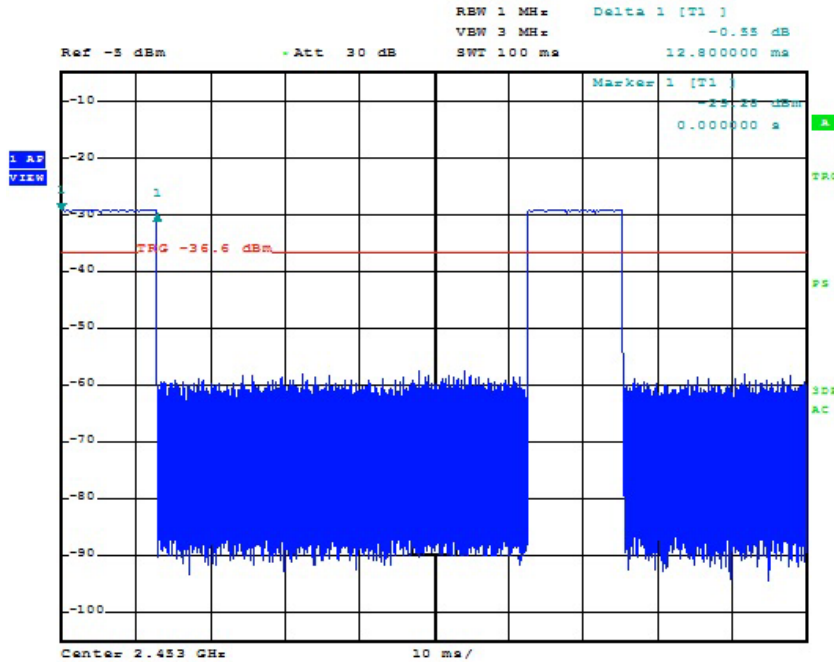
Valued Quality. Delivered.

Issuing Laboratory:
Intertek Testing Services Hong Kong Limited

HKAS has accredited this laboratory (HOKLAS 005 – TEST) under HOKLAS for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories.



Average Factor (Announce Radio)





Valued Quality. Delivered.

Issuing Laboratory:
Intertek Testing Services Hong Kong Limited

HKAS has accredited this laboratory (HOKLAS 005 – TEST) under HOKLAS for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories.



8.4 Emissions Test Procedures

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

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 axis to obtain maximum emission levels. The antenna height and polarization are also varied during the testing to search for maximum signal levels. The height of the antenna is varied from one to four meters.

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. A detailed description for the calculation of the average factor can be found in Exhibit 8.3.

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.



Valued Quality. Delivered.

Issuing Laboratory:
Intertek Testing Services Hong Kong Limited

HKAS has accredited this laboratory (HOKLAS 005 – TEST) under HOKLAS for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories.



8.4 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.

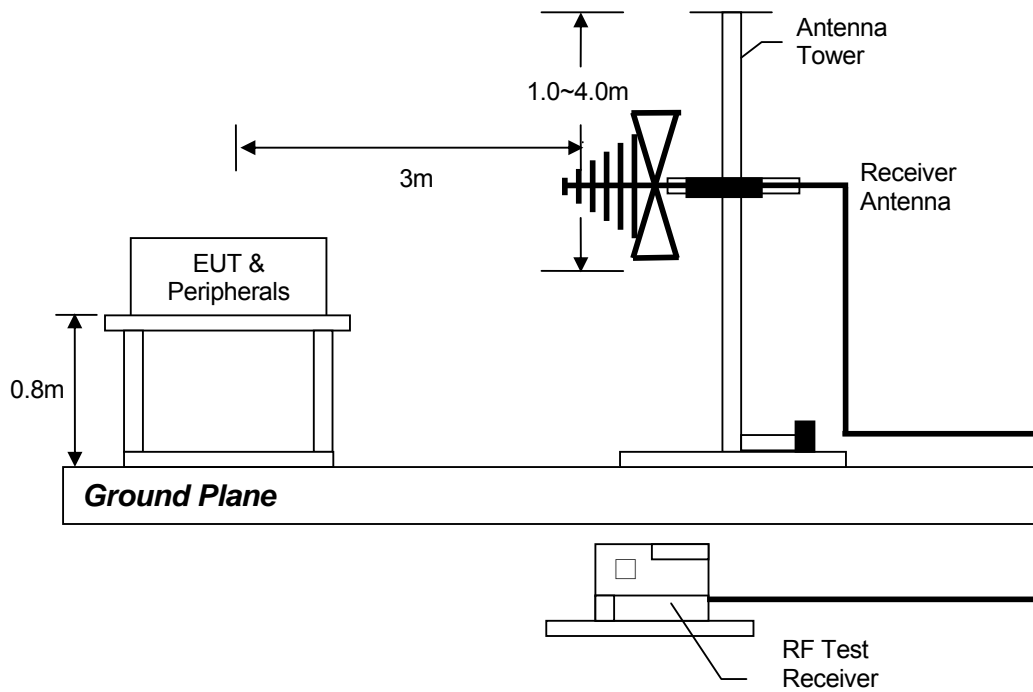
Conducted measurements were made as described in ANSI C63.4 (2009).

The IF bandwidth used for measurement of radiated signal strength was 100 kHz or greater when frequency is below 1000 MHz. Where pulsed transmissions of short enough pulse duration warrant, a greater bandwidth is selected according to the recommendations of Hewlett Packard Application Note 150-2. A discussion of whether pulse desensitivity is applicable to this unit is included in this report (See Exhibit 8.1). Above 1000 MHz, a resolution bandwidth of 3 MHz is used.

Transmitter measurements are normally conducted at a measurement distance of three meters. However, to assure low enough noise floor in the forbidden 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, unless otherwise reported. Measurements taken at a closer distance are so marked.

8.4.1 Radiated Emission Test Setup

The figure below shows the test setup, which is utilized to make these measurements.





Valued Quality. Delivered.

Issuing Laboratory:
Intertek Testing Services Hong Kong Limited

HKAS has accredited this laboratory (HOKLAS 005 – TEST) under HOKLAS for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories.

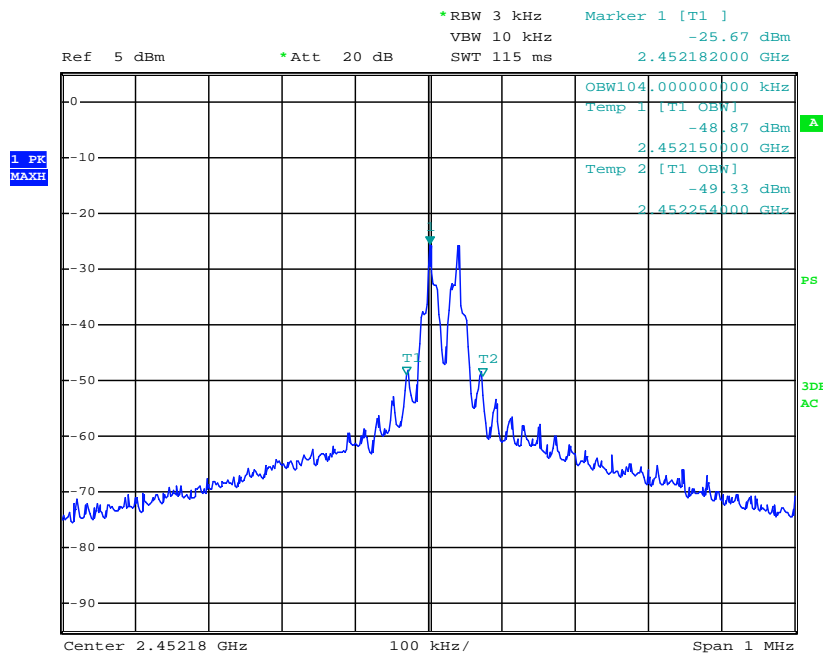


8.5 Occupied Bandwidth

Occupied Bandwidth Results: (Control Radio) – 20FSK

	Occupied Bandwidth (kHz)
Low Channel: 2452.2	104
Middle Channel: 2467.2	102
High Channel: 2482.2	98

The worst case is shown as below:





Valued Quality. Delivered.

Issuing Laboratory:
Intertek Testing Services Hong Kong Limited

HKAS has accredited this laboratory (HOKLAS 005 – TEST) under HOKLAS for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories.



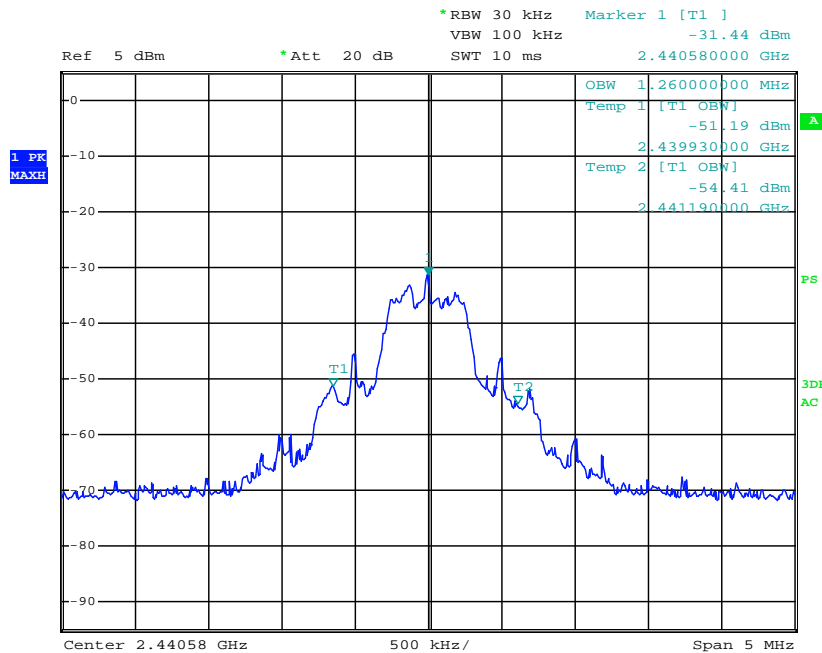
Occupied Bandwidth Results: (Announce Radio) – 500MSK

	Occupied Bandwidth (kHz)
Low Channel: 2401	1230
Middle Channel: 2440	1260
High Channel: 2481.121	1230

Occupied Bandwidth Results: (Announce Radio) – 20FSK

	Occupied Bandwidth (kHz)
Low Channel: 2401	100
Middle Channel: 2426	100
High Channel: 2452	100

The worst case is shown as below:





Valued Quality. Delivered.

Issuing Laboratory:
Intertek Testing Services Hong Kong Limited

HKAS has accredited this laboratory (HOKLAS 005 – TEST) under HOKLAS for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories.



9.0 **Confidentiality Request**

For electronic filing, a preliminary copy of the confidentiality request is saved with filename: request.pdf.

10.0 **Equipment List**

1) Radiated Emissions Test

Equipment	EMI Test Receiver	Spectrum Analyzer
Registration No.	EW-3095	EW-2253
Manufacturer	R&S	R&S
Model No.	ESCI	FSP40
Calibration Date	Oct. 16, 2014	May 08, 2014
Calibration Due Date	Oct. 16, 2015	May 08, 2015

Equipment	BiConiLog Antenna	Pyramidal Horn Antenna	Double Ridged Guide Antenna
Registration No.	EW-3061	EW-0905	EW-1133
Manufacturer	EMCO	EMCO	EMCO
Model No.	3412E	3160-09	3115
Calibration Date	Jul. 17, 2014	Jan. 28, 2014	Apr. 30, 2014
Calibration Due Date	Jul. 17, 2015	Jul. 28, 2015	Oct. 30, 2015

2) Bandedge & Average Factor Measurement

Equipment	Spectrum Analyzer
Registration No.	EW-2329
Manufacturer	R&S
Model No.	FSP3
Calibration Date	Jun. 19, 2014
Calibration Due Date	Jun. 19, 2015

END OF TEST REPORT