



BUREAU  
VERITAS

TEST REPORT N°: (5210)004-0124

## TEST REPORT

To:	ADVANCED CONTROL TECHNOLOGIES, INC.	To:	-
Attn:	Kevin Shelow	Attn:	-
Address:	8076 Woodland Drive, Indianapolis, IN 46278	Address:	-
Fax:	--	Fax:	-
E-mail:	<a href="mailto:kshelow@act-solutions.com">kshelow@act-solutions.com</a>	E-mail:	-
Folder No.:	MEW-09NO168ATHS-B		
Factory name:	MEGA WORLD HOLDINGS LTD.		
Location:	Unit J, 13/F., World Tech Centre, 95 How Ming Street, Kwun Tong, Hong Kong		
Product:	RF Controlled Duplex Receptacle Model No.: ZRR150W Additional Model: ZRR150A / ZRR150I / LOM-15W / LOM-15A / LOM-15I		
		Sample No:	(5209)323-0771
		Test date:	November 25, 2009
		Test Requested:	FCC Part 15 - 2008
		Test Method:	ANSI C63.4 - 2003
		FCC ID:	QIE0738-02
The results given in this report are related to the tested specimen of the described electrical apparatus.			
CONCLUSION: The submitted sample was found to COMPLY with requirement of FCC Part 15 Subpart C.			
Authorized Signature:			
Reviewed by: Keith Yeung	Approved by: Steven Tsang		
Date: January 7, 2010	Date: January 7, 2010		

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### Location of the test site

Radiated and Conducted emissions measurements are investigated and taken pursuant to the procedures of ANSI C63.4 – 2003. An Open Area Test Site and Full Anechoic Chamber (FCC Listed Site, Registration No. 642151) are set up for investigation and located at :

### BUREAU VERITAS HONG KONG LIMITED, EMC CENTRE

No. 2106-2107, 21/F., Westin Centre,  
26 Hung To Road,  
Kwun Tong, Kowloon,  
Hong Kong

### List of measuring equipment

#### Radiated Emission

EQUIPMENT	MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATION DUE
EMI TEST RECEIVER	R&S	ESCI	100379	24-AUG-2010
BILOG ANTENNA	SCHAFFNER	CBL6112D	25229	31-MAY-2010
OPEN AREA TEST SITE	BVCPS	N/A	N/A	03-JULY-2010
ANECHOIC CHAMBER	ALBATROSS	M-CDC	80374004499B	07-JULY-2010
HORN ANTENNA	SCHWARZBECK	BBHA9120D	9120D-692	21-JULY-2010
PREAMPLIFIER	SCHWARZBECK	BBV9718	9718-152	27-JULY-2010
COAXIAL CABLE	SUHNER	N/A	N/A	11-MAY-2010
SPECTRUM ANALYZER	ADVANTEST	R3127	111000909	17-DEC-2010

#### Conducted Emission

EQUIPMENT	MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATION DUE
EMI TEST RECEIVER	R&S	ESCS30	830986/030	26-SEP-2010
LISN	R&S	ENV216	100024	25-MAR-2010

#### Remarks:-

N/A : Not Applicable or Not Available

The measurement instrumentation uncertainty would be taking into consideration on each of the test result

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## TEST REPORT N°: (5210)004-0124

### Equipment Under Test [EUT]

#### Description of Sample:

Model Name: RF Controlled Duplex Receptacle

Model Number: ZRR150W / ZRR150I / ZRR150A / LOM-15W / LOM-15I / LOM-15A  
ZRR150W, ZRR150I, ZRR150A, LOM-15W, LOM-15I, LOM-15A are using the same circuit, PCB layout and components, the differences are only on the label and user manual with different model number and colour of the outlook.

Rating: 120Va.c, 60Hz

#### Description of EUT Operation:

The Equipment Under Test (EUT) is an ADVANCED CONTROL TECHNOLOGIES, INC. of RF Controlled Receptacle. The transceiver is 1 button on/off function and operating at 908.42MHz. The transmission occurs briefly in response to one of two events: 1) A manually issued command initiated by the User via a remote control, or 2) An automated command that is initiated when the internal time of day clock matches a previously User-programmed time. Modulation by IC, and type is FSK modulation.

The transmitter has different control:

1. On/Off button – on/off control

#### Antenna Requirement (Section 15.203)

The EUT is use of a permanently antenna. It is soldered on the PCB. The antenna is not replaceable or user serviceable. The requirements of S15.203 are met. There are no deviations or exceptions to the specifications.



## TEST REPORT N°: (5210)004-0124

### Test Results

#### Emission

##### Conducted Emissions (150kHz to 30MHz)

Test Requirement: FCC Part 15 Section 15.207  
Test Method: ANSI C63.4  
Test Limits: Class B  
Test Date(s): 2009-11-23  
Temperature: 25.0 °C  
Humidity: 38.0 %  
Atmospheric Pressure: 101.4 kPa  
Mode of Operation: Transmission mode (with load) & Receiver mode (with load)  
Tested Voltage: 117V a.c., 60Hz

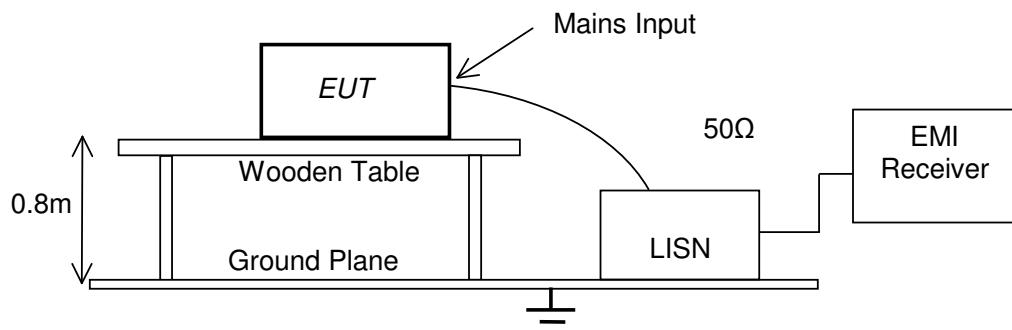
#### Test Procedure:

Conducted emissions measurements are investigated and also taken pursuant to the procedures of ANSI C63.4 – 2003. The EUT was setup as described in the procedures, and both lines were measured.

Initial measurements were performed in peak and average detection modes on the live and neutral line, any emissions recorded within 30dB of the relevant limit lines were re-measured using quasi-peak and average detection on the live and neutral lines with the worst case recorded in the table of results.

Location: Shielding Room, No. 603, 6/F., Westin Centre, 26 Hung To Road, Kwun Tong, Kowloon, Hong Kong

#### Test Setup:



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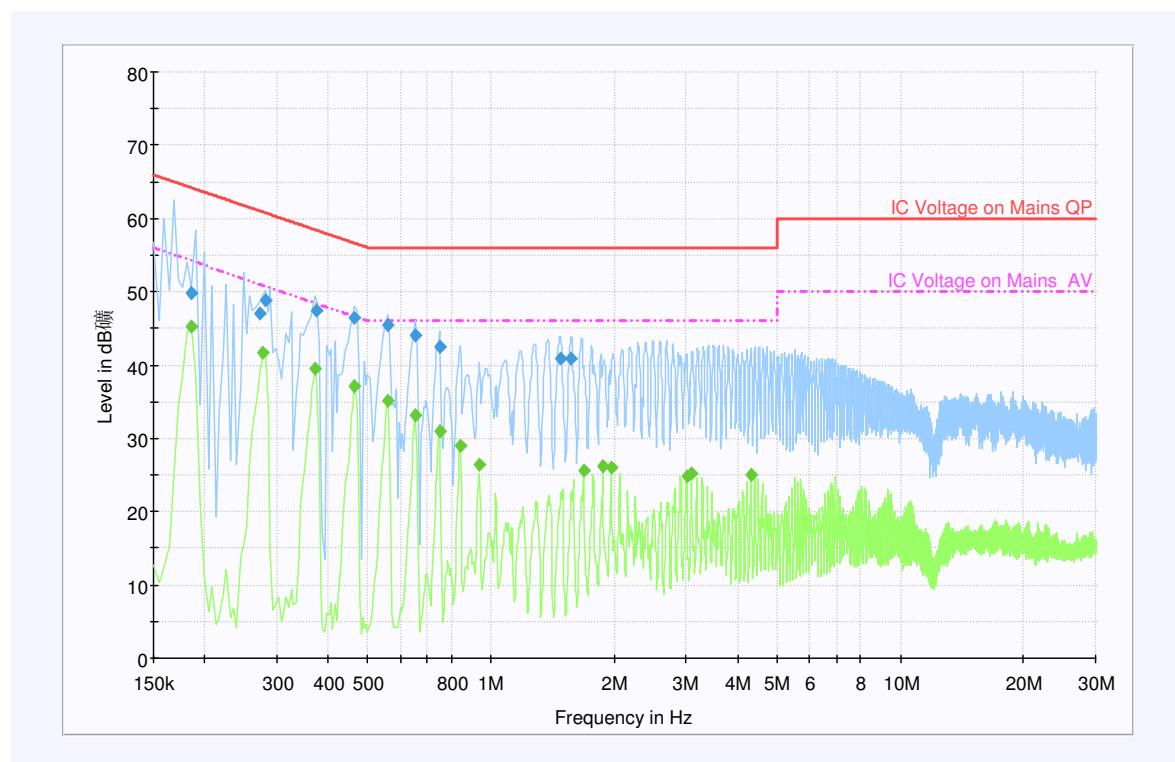
## TEST REPORT N°: (5210)004-0124

### Measurement Data: Live

#### Test Result of (Transmission mode, with load): PASS

##### Results and limit lines for Conducted Emission:

Limits for Conducted Emission Test, please refer to limit lines (Quasi-Peak and Average) in the following diagram.





## TEST REPORT N°: (5210)004-0124

### Results and limit lines for Conducted Emission:

Limits for Conducted Emission Test, please refer to limit lines (Quasi-Peak and Average) in the following tables.

Frequency (MHz)	QuasiPeak (dB $\mu$ V)	Bandwidth (kHz)	Line	Margin (dB)	Limit (dB $\mu$ V)
0.186000	49.9	9.000	L1	14.3	64.2
0.271500	47.1	9.000	L1	14.0	61.1
0.280500	48.9	9.000	L1	11.9	60.8
0.375000	47.5	9.000	L1	10.9	58.4
0.465000	46.5	9.000	L1	10.1	56.6
0.559500	45.4	9.000	L1	10.6	56.0
0.654000	44.1	9.000	L1	11.9	56.0
0.748500	42.5	9.000	L1	13.5	56.0
1.477500	41.0	9.000	L1	15.0	56.0
1.572000	41.0	9.000	L1	15.0	56.0

Frequency (MHz)	Average (dB $\mu$ V)	Bandwidth (kHz)	Line	Margin (dB)	Limit (dB $\mu$ V)
0.186000	45.3	9.000	L1	8.9	54.2
0.276000	41.7	9.000	L1	9.2	50.9
0.370500	39.4	9.000	L1	9.1	48.5
0.465000	37.2	9.000	L1	9.4	46.6
0.559500	35.1	9.000	L1	10.9	46.0
0.654000	33.1	9.000	L1	12.9	46.0
0.748500	31.0	9.000	L1	15.0	46.0
0.843000	28.9	9.000	L1	17.1	46.0
0.937500	26.4	9.000	L1	19.6	46.0
1.689000	25.5	9.000	L1	20.5	46.0
1.878000	26.2	9.000	L1	19.8	46.0
1.972500	26.0	9.000	L1	20.0	46.0
3.003000	24.9	9.000	L1	21.1	46.0
3.097500	25.3	9.000	L1	20.7	46.0
4.321500	24.9	9.000	L1	21.1	46.0



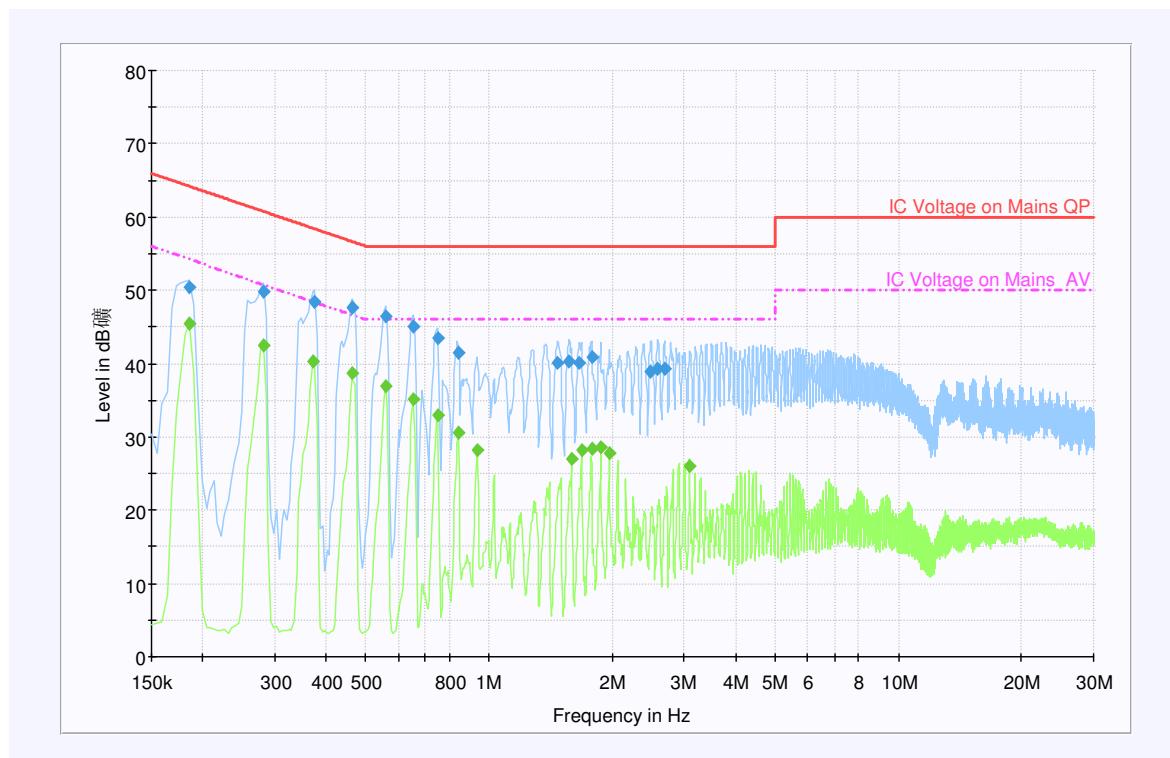
## TEST REPORT N°: (5210)004-0124

### Measurement Data: Neutral

### Test Result of (Transmission mode, with load): PASS

#### Results and limit lines for Conducted Emission:

Limits for Conducted Emission Test, please refer to limit lines (Quasi-Peak and Average) in the following diagram.





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### Results and limit lines for Conducted Emission:

Limits for Conducted Emission Test, please refer to limit lines (Quasi-Peak and Average) in the following tables.

Frequency (MHz)	QuasiPeak (dB $\mu$ V)	Bandwidth (kHz)	Line	Margin (dB)	Limit (dB $\mu$ V)
0.186000	50.5	9.000	N	13.7	64.2
0.280500	49.7	9.000	N	11.1	60.8
0.375000	48.4	9.000	N	10.0	58.4
0.465000	47.6	9.000	N	9.0	56.6
0.559500	46.4	9.000	N	9.6	56.0
0.654000	45.1	9.000	N	10.9	56.0
0.748500	43.4	9.000	N	12.6	56.0
0.843000	41.4	9.000	N	14.6	56.0
1.473000	40.1	9.000	N	15.9	56.0
1.572000	40.3	9.000	N	15.7	56.0
1.666500	40.1	9.000	N	15.9	56.0
1.783500	41.0	9.000	N	15.0	56.0
2.485500	38.8	9.000	N	17.2	56.0
2.589000	39.3	9.000	N	16.7	56.0
2.688000	39.4	9.000	N	16.6	56.0

Frequency (MHz)	Average (dB $\mu$ V)	Bandwidth (kHz)	Line	Margin (dB)	Limit (dB $\mu$ V)
0.186000	45.5	9.000	N	8.8	54.2
0.280500	42.5	9.000	N	8.3	50.8
0.370500	40.3	9.000	N	8.2	48.5
0.465000	38.7	9.000	N	7.9	46.6
0.559500	37.0	9.000	N	9.0	46.0
0.654000	35.0	9.000	N	11.0	46.0
0.748500	33.0	9.000	N	13.0	46.0
0.843000	30.6	9.000	N	15.4	46.0
0.937500	28.2	9.000	N	17.8	46.0
1.594500	27.1	9.000	N	18.9	46.0
1.689000	28.1	9.000	N	17.9	46.0
1.783500	28.4	9.000	N	17.6	46.0
1.878000	28.5	9.000	N	17.5	46.0
1.972500	27.9	9.000	N	18.1	46.0
3.097500	26.0	9.000	N	20.0	46.0

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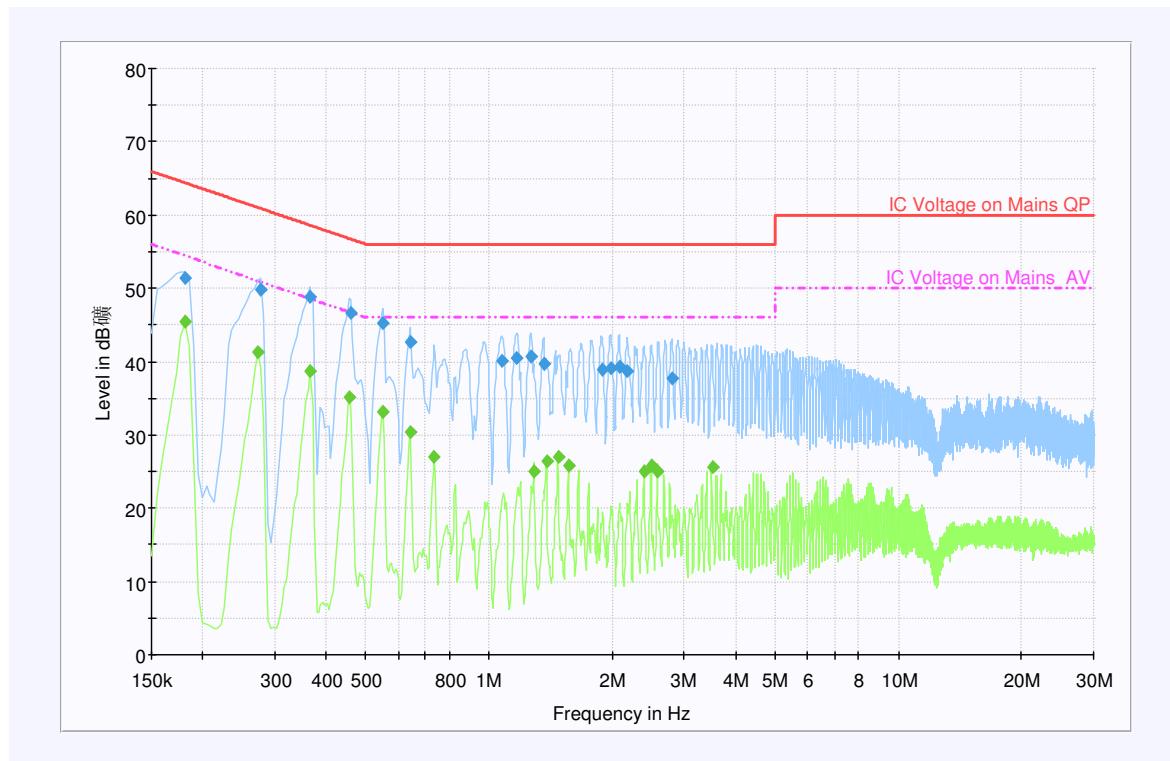
## TEST REPORT N°: (5210)004-0124

### Measurement Data: Live

**Test Result of (Receiver mode, with load): PASS**

#### Results and limit lines for Conducted Emission:

Limits for Conducted Emission Test, please refer to limit lines (Quasi-Peak and Average) in the following diagram.



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Frequency (MHz)	QuasiPeak (dB $\mu$ V)	Bandwidth (kHz)	Line	Margin (dB)	Limit (dB $\mu$ V)
0.181500	51.3	9.000	L1	13.1	64.4
0.276000	49.9	9.000	L1	11.0	60.9
0.366000	48.8	9.000	L1	9.8	58.6
0.460500	46.7	9.000	L1	10.0	56.7
0.550500	45.2	9.000	L1	10.8	56.0
0.645000	42.7	9.000	L1	13.3	56.0
1.072500	40.0	9.000	L1	16.0	56.0
1.171500	40.5	9.000	L1	15.5	56.0
1.270500	40.8	9.000	L1	15.2	56.0
1.360500	39.8	9.000	L1	16.2	56.0
1.887000	38.9	9.000	L1	17.1	56.0
1.986000	39.2	9.000	L1	16.8	56.0
2.085000	39.3	9.000	L1	16.7	56.0
2.179500	38.8	9.000	L1	17.2	56.0
2.800500	37.6	9.000	L1	18.4	56.0

Frequency (MHz)	Average (dB $\mu$ V)	Bandwidth (kHz)	Line	Margin (dB)	Limit (dB $\mu$ V)
0.181500	45.4	9.000	L1	9.0	54.4
0.271500	41.3	9.000	L1	9.8	51.1
0.366000	38.7	9.000	L1	9.9	48.6
0.456000	35.2	9.000	L1	11.6	46.8
0.550500	33.2	9.000	L1	12.8	46.0
0.645000	30.4	9.000	L1	15.6	46.0
0.735000	27.1	9.000	L1	18.9	46.0
1.288500	25.0	9.000	L1	21.0	46.0
1.383000	26.4	9.000	L1	19.6	46.0
1.477500	26.9	9.000	L1	19.1	46.0
1.567500	25.8	9.000	L1	20.2	46.0
2.400000	25.1	9.000	L1	20.9	46.0
2.494500	25.8	9.000	L1	20.2	46.0
2.584500	25.0	9.000	L1	21.0	46.0
3.511500	25.6	9.000	L1	20.4	46.0



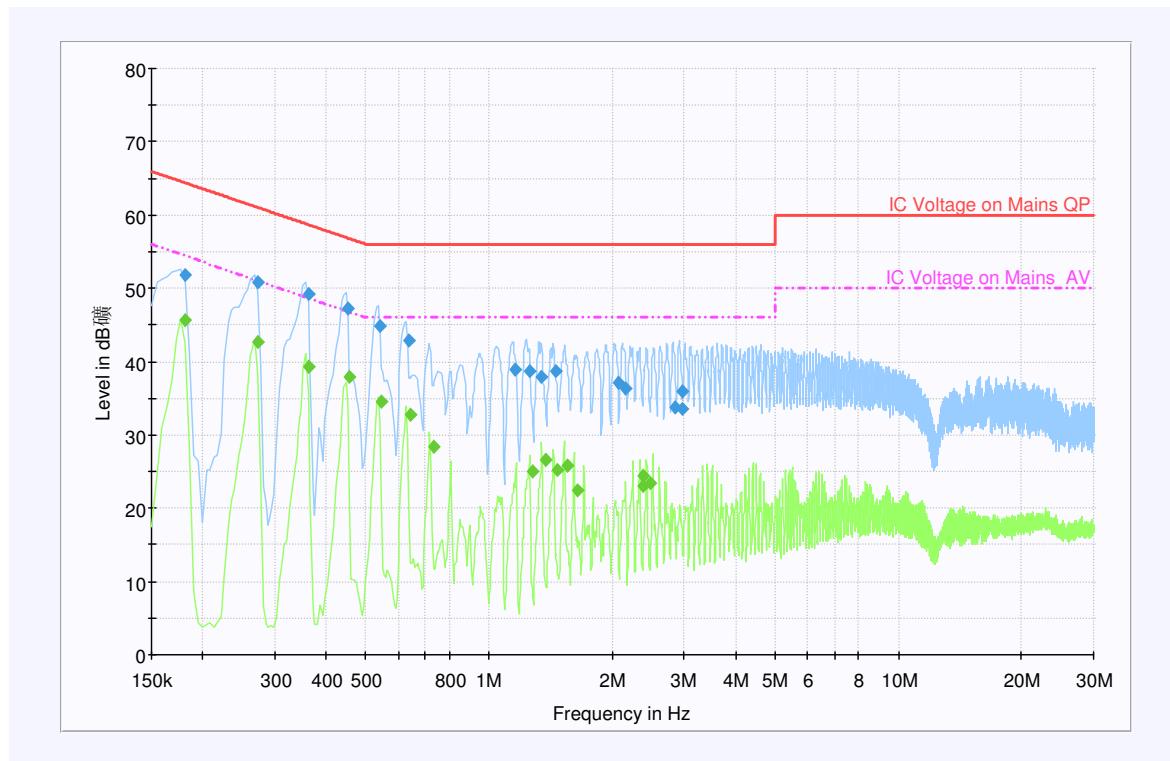
## TEST REPORT N°: (5210)004-0124

### Measurement Data: Neutral

### Test Result of (Receiver mode, with load): PASS

#### Results and limit lines for Conducted Emission:

Limits for Conducted Emission Test, please refer to limit lines (Quasi-Peak and Average) in the following diagram.





## TEST REPORT N°: (5210)004-0124

### Results and limit lines for Conducted Emission:

Limits for Conducted Emission Test, please refer to limit lines (Quasi-Peak and Average) in the following tables.

Frequency (MHz)	QuasiPeak (dB $\mu$ V)	Bandwidth (kHz)	Line	Margin (dB)	Limit (dB $\mu$ V)
0.181500	51.9	9.000	N	12.5	64.4
0.271500	50.8	9.000	N	10.3	61.1
0.361500	49.2	9.000	N	9.5	58.7
0.451500	47.3	9.000	N	9.5	56.8
0.541500	44.9	9.000	N	11.1	56.0
0.636000	43.0	9.000	N	13.0	56.0
1.158000	39.0	9.000	N	17.0	56.0
1.252500	38.7	9.000	N	17.3	56.0
1.347000	38.0	9.000	N	18.0	56.0
1.459500	38.7	9.000	N	17.3	56.0
2.062500	37.2	9.000	N	18.8	56.0
2.157000	36.3	9.000	N	19.7	56.0
2.859000	33.8	9.000	N	22.2	56.0
2.962500	33.6	9.000	N	22.4	56.0
2.971500	35.9	9.000	N	20.1	56.0

Frequency (MHz)	Average (dB $\mu$ V)	Bandwidth (kHz)	Line	Margin (dB)	Limit (dB $\mu$ V)
0.181500	45.7	9.000	N	8.7	54.4
0.271500	42.6	9.000	N	8.5	51.1
0.361500	39.2	9.000	N	9.5	48.7
0.456000	37.9	9.000	N	8.9	46.8
0.546000	34.6	9.000	N	11.4	46.0
0.640500	32.7	9.000	N	13.3	46.0
0.730500	28.4	9.000	N	17.6	46.0
1.279500	25.1	9.000	N	20.9	46.0
1.374000	26.7	9.000	N	19.3	46.0
1.464000	25.2	9.000	N	20.8	46.0
1.558500	25.8	9.000	N	20.2	46.0
1.648500	22.5	9.000	N	23.5	46.0
2.382000	23.1	9.000	N	22.9	46.0
2.386500	24.5	9.000	N	21.5	46.0
2.476500	23.4	9.000	N	22.6	46.0

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## TEST REPORT N°: (5210)004-0124

### Radiated Emissions (Fundamental)

Test Requirement: FCC Part 15 Section 15.249  
Test Method: ANSI C63.4  
Test Date(s): 2009-11-25  
Temperature: 28.0 °C  
Humidity: 52.0 %  
Atmospheric Pressure: 102.1 kPa  
Mode of Operation: Transmission mode (with load)  
Tested Voltage: 117V a.c., 60Hz

### Test Procedure:

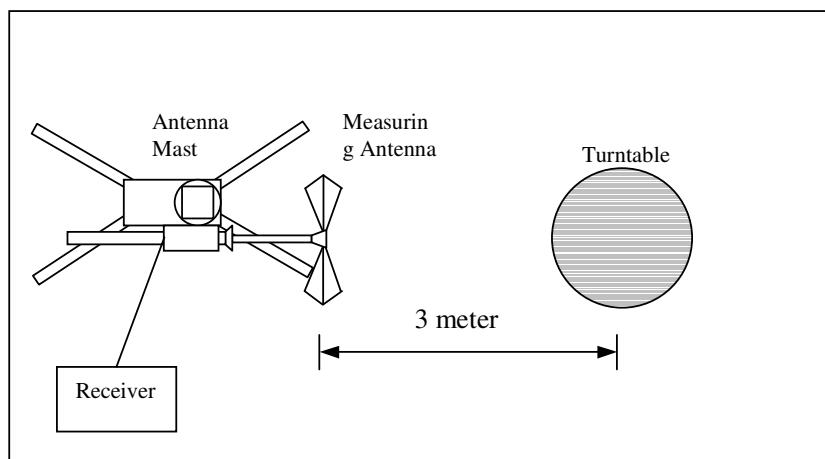
Radiated emissions measurements are investigated and taken pursuant to the procedures of ANSI C63.4 – 2003.

The equipment under test (EUT) was placed on a non-conductive turntable with dimensions of 1.5m x 1m and 0.8m high above the ground. 3m from the EUT, a broadband antenna mounting on the mast received the signal strength. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, For battery operated equipment, the equipment tests shall be perform using new battery. The turntable was rotated to maximize the emission level. The antenna was then moving along the mast from 1m up to 4m until no more higher value was found. Both horizontal and vertical polarization of the antenna were placed and investigated.

For below 30MHz, a loop antenna with its vertical plane is place 3m from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. And the centre of the loop shall be 1m above the ground.

Location: The Roof, Westin Centre, 26 Hung To Road, Kwun Tong, Kowloon, Hong Kong

### Test Setup: Open Area Test Site



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## TEST REPORT N°: (5210)004-0124

### Limits for Field Strength of Fundamental Emissions [FCC 47CFR 15.249]:

Frequency Range of Fundamental [MHz]	Field Strength of Fundamental Emission (Quasi-Peak) [mV/m]	Field Strength of Harmonics Emission (Average) [μV/m]
902-928	50	500

### Measurement Data

#### Test Result of (Transmission mode, with load): PASS

#### Detection mode: Quasi-Peak

Frequency (MHz)	Polarity (H/V) and degree	EUT Orientation	Antenna Factor and Cable Loss (dB/m)	Field Strength at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
908.396	V	Front side	25.1	88.9	94.0	-5.1

Note: EUT Orientation is shown as Set up photo.

Field Strength includes Antenna Factor and Cable Loss.

Receiver setting: RBW = 100KHz

VBW = 300KHz

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## TEST REPORT N°: (5210)004-0124

### Radiated Emissions (Spurious Emission)

Test Requirement: FCC Part 15 Section 15.249  
Test Method: ANSI C63.4  
Test Date(s): 2009-11-25  
Temperature: 28.0 °C  
Humidity: 52.0 %  
Atmospheric Pressure: 102.1 kPa  
Mode of Operation: Transmission mode (with load)  
Tested Voltage: 117V a.c., 60Hz

### Measurement Data

#### Test Result of (Transmission mode, with load): PASS

#### Detection mode: Peak

Frequency (MHz)	Polarity (H/V)	Antenna Factor and Cable Loss (dB/m)	Field Strength at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
1816.792	V	-5.7	41.8	74.0	-32.2
2725.188	H	-3.1	42.6	74.0	-31.4
3633.584	H	-0.9	41.2	74.0	-32.8
4541.980	V	1.7	41.5	74.0	-32.5
5450.376	V	4.1	43.4	74.0	-30.6
6358.772	V	6.8	46.8	74.0	-27.2
7267.168	H	10.0	52.2	74.0	-21.8
8175.564	V	11.2	52.4	74.0	-21.6
9083.960	H	12.4	53.3	74.0	-20.7

Note: Field Strength includes Antenna Factor and Cable Loss.

Receiver setting: RBW = 1MHz  
VBW = 1MHz

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## TEST REPORT N°: (5210)004-0124

### Measurement Data

**Test Result of (Transmission mode, with load): PASS**

**Detection mode: Average**

Frequency (MHz)	Polarity (H/V)	Antenna Factor and Cable Loss (dB/m)	Field Strength at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
1816.792	V	-5.7	36.3	54.0	-17.7
2725.188	H	-3.1	36.1	54.0	-17.9
3633.584	V	-0.9	30.6	54.0	-23.4
4541.980	V	1.7	32.1	54.0	-21.9
5450.376	V	4.1	33.8	54.0	-20.2
6358.772	H	6.8	36.9	54.0	-17.1
7267.168	V	10.0	41.6	54.0	-12.4
8175.564	V	11.2	43.0	54.0	-11.0
9083.960	V	12.4	43.8	54.0	-10.2

Note: Field Strength includes Antenna Factor and Cable Loss.

Receiver setting: RBW = 1MHz  
VBW = 10Hz



## TEST REPORT N°: (5210)004-0124

### Radiated Emissions (30MHz – 5GHz)

Test Requirement: FCC Part 15 Section 15.209  
Test Method: ANSI C63.4  
Test Date(s): 2009-11-25  
Temperature: 28.0 °C  
Humidity: 52.0 %  
Atmospheric Pressure: 102.1 kPa  
Mode of Operation: Transmission mode (with load), Receiver mode (with load) and Standby mode  
Tested Voltage: 117V a.c., 60Hz

#### Limits for Radiated Emissions [FCC 47 CFR 15.209]:

Frequency Range [MHz]	Quasi-Peak Limits [ $\mu$ V/m]
1.705-30	300
30-88	100
88-216	150
216-960	200
Above 960	500

### Measurement Data

**Test Result of (Transmission mode, with load and Standby mode): PASS**

#### Detection mode: Quasi-Peak

Frequency (MHz)	Polarity (H/V)	Field Strength at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
Emissions detected are more than 20dB below the limit line(s).				

Note: Field Strength includes Antenna Factor and Cable Loss.

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## TEST REPORT N°: (5210)004-0124

### Measurement Data

**Test Result of (Receiver mode, with load): PASS**

**Detection mode: Quasi-Peak**

Frequency (MHz)	Polarity (H/V)	Field Strength at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
51.88	V	24.0	40.0	-16.0
172.92	H	24.1	43.5	-19.4
220.88	H	26.3	46.0	-19.7
293.08	V	27.6	46.0	-18.4
360.92	H	28.1	46.0	-17.9
909.76	H	37.1	46.0	-8.9

Note: Field Strength includes Antenna Factor and Cable Loss.

During the test shall be used to radiate an unmodulated CW signal to a superregenerative receiver at its operating frequency in order to "cohere" or to resolve the individual components of the characteristic broadband emissions from such a receiver. The level of the signal may need to be increased for this to occur.

Receiver setting (30-1000MHz) :RBW = 100KHz  
:VBW = 300KHz

Receiver setting (1-18GHz) :RBW = 1MHz  
:VBW = 1MHz



## TEST REPORT N°: (5210)004-0124

### Frequency range of Fundamental Emission

Test Requirement: FCC 47 CFR 15.249  
Test Method: ANSI C63.4:2003 (Section 13.1.7)  
Test Date(s): 2009-11-25  
Temperature: 28.0 °C  
Humidity: 52.0 %  
Atmospheric Pressure: 102.1 kPa  
Mode of Operation: Transmission mode (with load)  
Tested Voltage: 117V a.c., 60Hz

#### Test Method:

The bandwidth is measured at an amplitude level reduced from the reference level by a specified ratio. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst-case (i.e. the widest) bandwidth.

#### **Limits for Frequency range of Fundamental Emission:**

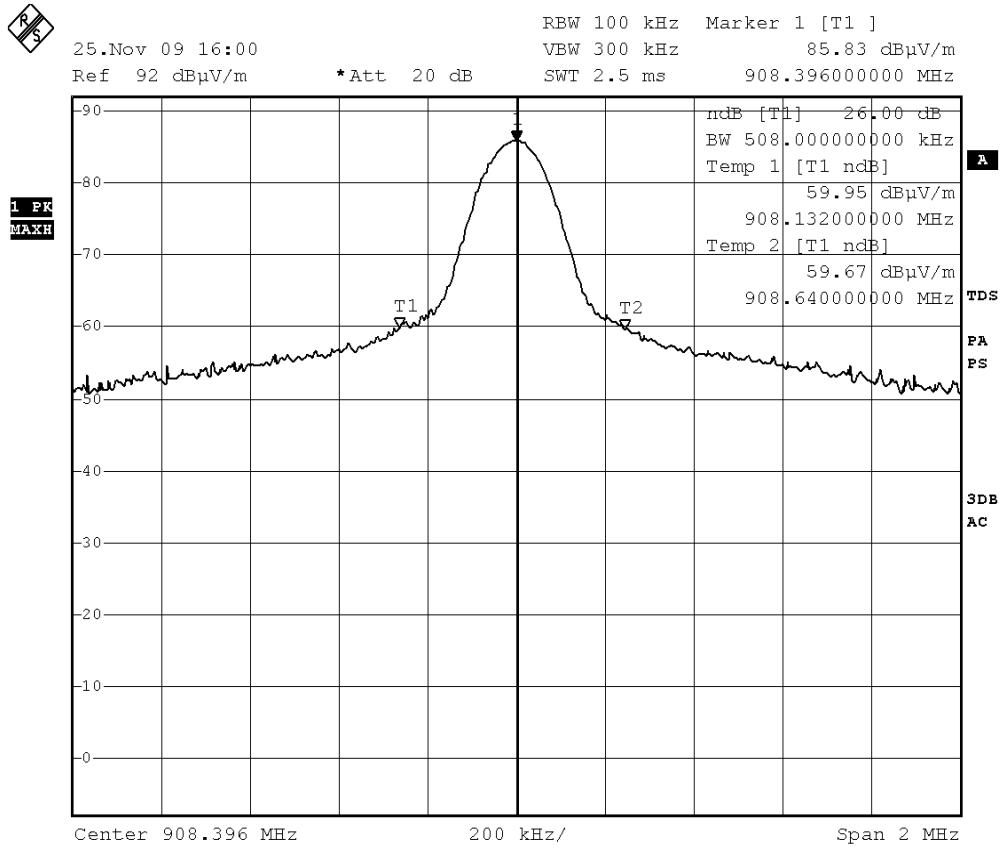
Frequency [MHz]	FCC Limits [MHz]
908.396	902-928



## TEST REPORT N°: (5210)004-0124

## Measurement Data :

## Test Result of Frequency Range of Fundamental Emission: PASS



Date: 25.NOV.2009 16:00:07

\*\*\*\*\* End of Report \*\*\*\*\*

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