





TEST REPORT No: (5210)221-0123

TEST REPORT

To:	ADVANCED CONTROL TECHNOLOGIES, INC.	To:	-
Attn:	Kevin Shelow	Attn:	-
Address:	6805 Hillsdale Ct. Indianapolis, IN. 46250, USA	Address:	-
Fax:	--	Fax:	-
E-mail:	kshelow@act-solutions.com	E-mail:	-
Folder No.:	MEW-10MA114ATHS-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 Wall Mount 3-Way Switch Model No.: ZDW103W		
(Please see Exhibit: External Photo)	Sample No:	HK100301/003	
	Test date:	March 16, 2010 To March 18, 2010	
	Test Requested:	FCC Part 15 - 2008	
	Test Method:	ANSI C63.4 - 2003	
	FCC ID:	QIE0792-01	
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: August 10, 2010		Date: August 10, 2010	

BUREAU VERITAS HONG KONG LIMITED –
Kowloon Bay Office
1/F Pacific Trade Centre,
2 Kai Hing Road, Kowloon Bay,
Kowloon,HONG KONG
Tel: +852 2331 0888
Fax: +852 2331 0889
www.cps.bureauveritas.com

This report is intended for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. Our report is limited to the test samples identified herein. The results set forth in this report are not necessarily indicative or representative of the statistical quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof. You shall have thirty days from receipt of this report to request additional testing of the samples or to notify us of any errors or omissions relating to our report, provided, however, such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents.



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Location of the test laboratory

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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Equipment Under Test [EUT]

Description of Sample:

Model Name: RF Wall Mount 3-Way Switch

Model Number: **ZDW103W**

Additional model: RF Wall Mount 3-Way Switch:
ZDW103I / ZDW103A / LRM-20A / LRM-20I / LRM-20W
RF Wall Mount 2-Wire Dimmer:
ZDW120A V3 / ZDW120I V3 / ZDW120W V3

Additional model information: **ZDW103I / ZDW103A / LRM-20A / LRM-20I / LRM-20W** are using the same circuit, PCB layout and components with **ZDW103W**, the differences are only on the label and user manual with different model number and colour of the outlook.

ZDW120A V3 / ZDW120I V3 / ZDW120W V3 are using the same circuit, PCB layout and components with the RF board of **ZDW103W**, the differences are on:

- 1.) colour of the outlook
- 2.) without "auxiliary switch inputs", no difference on the RF board.

Rating: 120Va.c, 60Hz

Description of EUT Operation:

The Equipment Under Test (EUT) is an ADVANCED CONTROL TECHNOLOGIES, INC. of RF Wall Mount 3-Way Switch. The transceiver is 1 button on/off function and operating at 908.40MHz. The transmission occurs briefly in response to a manually issued command initiated by the User via a remote control. Modulation by IC, and type is FSK modulation.

The transmitter has different control:

1. On/Off button – on/off & dimmer control
2. A.G. Switch – Main power on/off control

Antenna Requirement (Section 15.203)

The EUT is use of a permanently antenna. The antenna consists of 7cm long wire. The antenna is not replaceable or user serviceable. The requirements of S15.203 are met. There are no deviations or exceptions to the specifications.

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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):	2010-03-17
Temperature:	24.0 °C
Humidity:	50.0 %
Atmospheric Pressure:	102.0 kPa
Mode of Operation:	Transmission mode (with load) & Receiver mode (with load)
Tested Voltage:	117Va.c., 60Hz

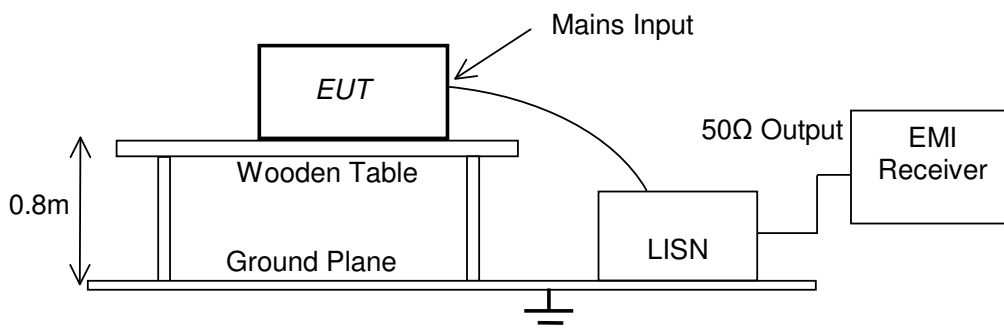
Test Procedure:

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:



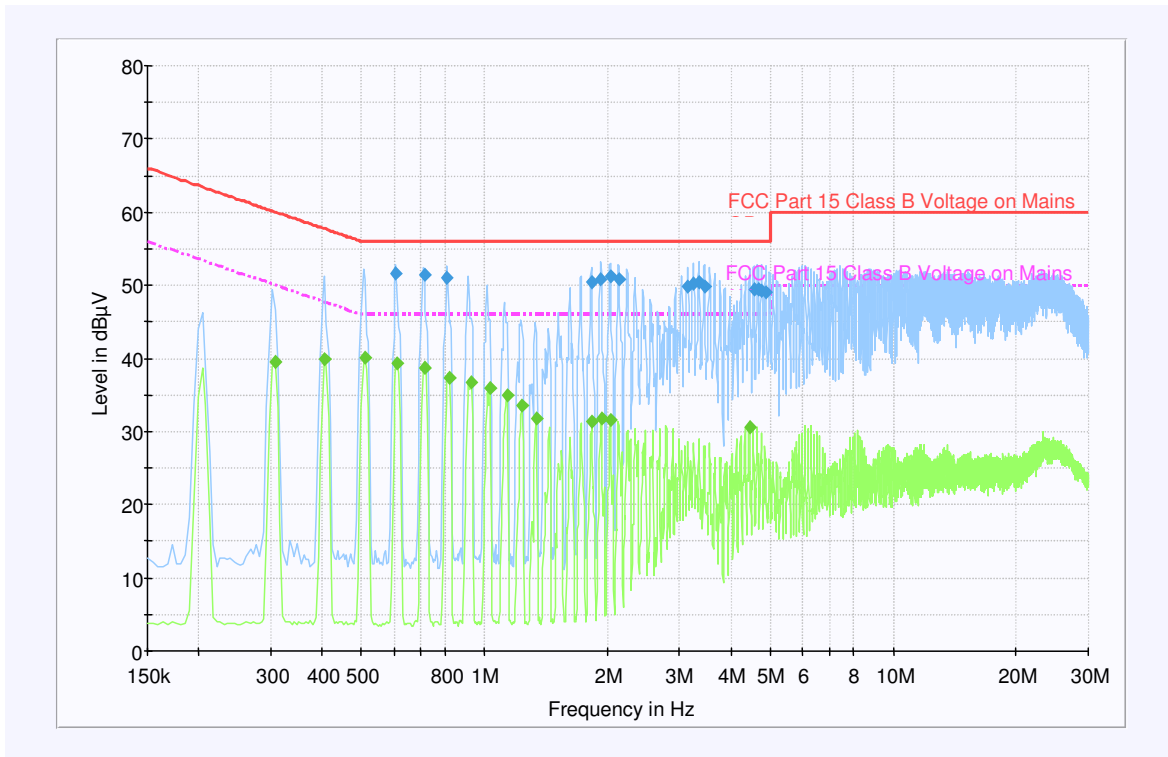
TEST REPORT No: (5210)221-0123

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.



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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 (dBμV)	Bandwidth (kHz)	Line	Margin (dB)	Limit (dBμV)
0.609000	51.7	9.000	L1	4.3	56.0
0.712500	51.3	9.000	L1	4.7	56.0
0.811500	51.0	9.000	L1	5.0	56.0
1.828500	50.5	9.000	L1	5.5	56.0
1.927500	50.9	9.000	L1	5.2	56.0
2.031000	51.2	9.000	L1	4.8	56.0
2.134500	50.8	9.000	L1	5.2	56.0
3.147000	49.8	9.000	L1	6.2	56.0
3.250500	50.3	9.000	L1	5.7	56.0
3.354000	50.4	9.000	L1	5.6	56.0
3.453000	49.9	9.000	L1	6.1	56.0
4.569000	49.4	9.000	L1	6.6	56.0
4.672500	49.4	9.000	L1	6.6	56.0
4.776000	49.3	9.000	L1	6.7	56.0
4.884000	49.1	9.000	L1	6.9	56.0

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Margin (dB)	Limit (dBμV)
0.307500	39.5	9.000	L1	10.5	50.0
0.406500	39.8	9.000	L1	7.9	47.7
0.510000	40.0	9.000	L1	6.0	46.0
0.613500	39.2	9.000	L1	6.8	46.0
0.712500	38.7	9.000	L1	7.3	46.0
0.825000	37.3	9.000	L1	8.7	46.0
0.928500	36.8	9.000	L1	9.2	46.0
1.032000	36.0	9.000	L1	10.0	46.0
1.135500	34.9	9.000	L1	11.1	46.0
1.239000	33.5	9.000	L1	12.5	46.0
1.342500	31.7	9.000	L1	14.3	46.0
1.828500	31.3	9.000	L1	14.7	46.0
1.932000	31.7	9.000	L1	14.3	46.0
2.035500	31.5	9.000	L1	14.5	46.0
4.452000	30.6	9.000	L1	15.4	46.0

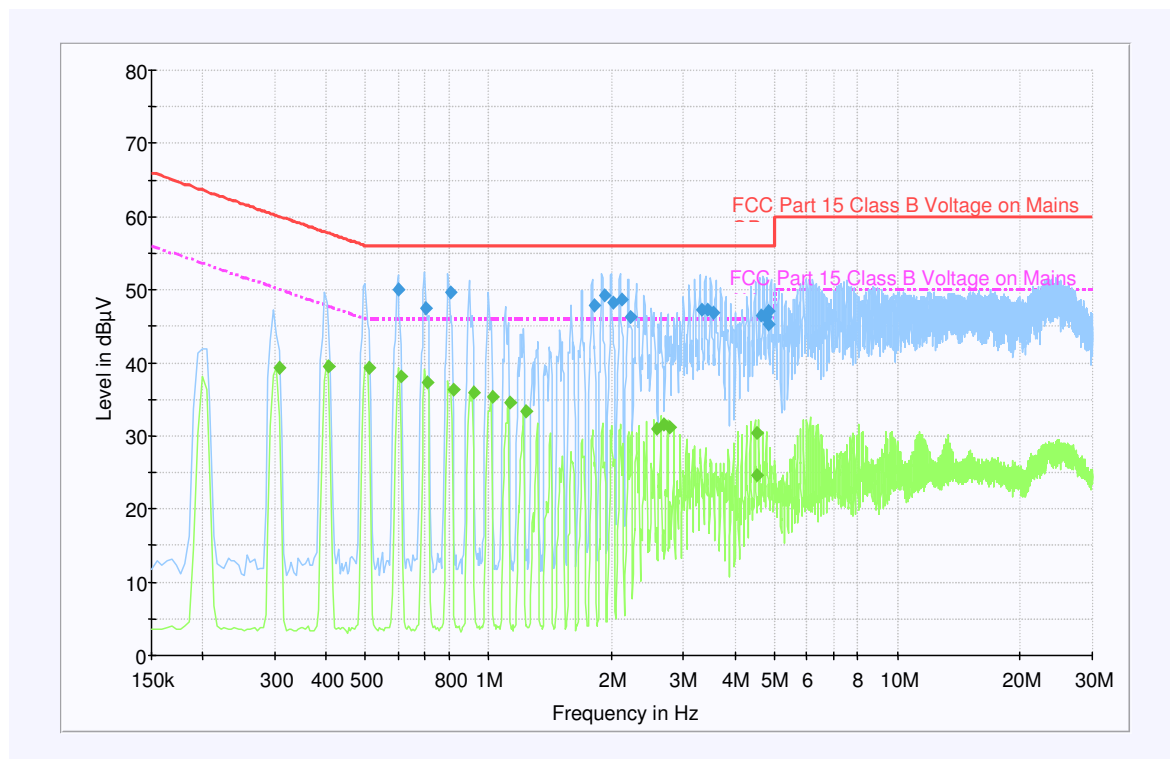
TEST REPORT No: (5210)221-0123

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.



TEST REPORT No: (5210)221-0123

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 (dBμV)	Bandwidth (kHz)	Line	Margin (dB)	Limit (dBμV)
0.604500	50.0	9.000	N	6.0	56.0
0.703500	47.5	9.000	N	8.5	56.0
0.807000	49.6	9.000	N	6.4	56.0
1.815000	47.9	9.000	N	8.1	56.0
1.918500	49.3	9.000	N	6.7	56.0
2.017500	48.2	9.000	N	7.8	56.0
2.121000	48.7	9.000	N	7.4	56.0
2.220000	46.3	9.000	N	9.7	56.0
3.331500	47.3	9.000	N	8.7	56.0
3.435000	47.2	9.000	N	8.8	56.0
3.538500	46.8	9.000	N	9.2	56.0
4.645500	46.5	9.000	N	9.5	56.0
4.749000	46.3	9.000	N	9.7	56.0
4.852500	45.2	9.000	N	10.8	56.0
4.861500	47.1	9.000	N	8.9	56.0

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Margin (dB)	Limit (dBμV)
0.307500	39.4	9.000	N	10.6	50.0
0.406500	39.5	9.000	N	8.2	47.7
0.510000	39.3	9.000	N	6.7	46.0
0.613500	38.2	9.000	N	7.8	46.0
0.708000	37.3	9.000	N	8.7	46.0
0.820500	36.4	9.000	N	9.6	46.0
0.924000	36.0	9.000	N	10.0	46.0
1.027500	35.4	9.000	N	10.6	46.0
1.131000	34.5	9.000	N	11.5	46.0
1.234500	33.3	9.000	N	12.7	46.0
2.575500	31.1	9.000	N	14.9	46.0
2.679000	31.5	9.000	N	14.5	46.0
2.782500	31.1	9.000	N	14.9	46.0
4.528500	24.5	9.000	N	21.5	46.0
4.537500	30.3	9.000	N	15.7	46.0

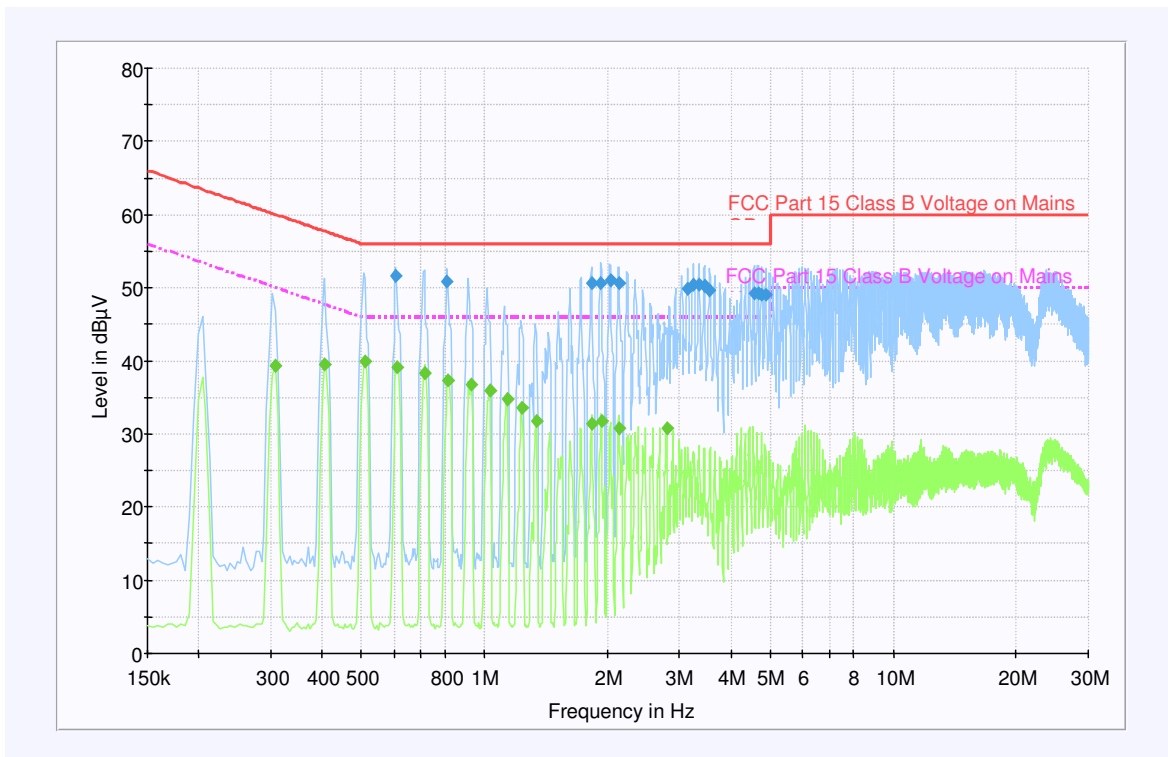
TEST REPORT No: (5210)221-0123

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.



TEST REPORT No: (5210)221-0123

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 (dBμV)	Bandwidth (kHz)	Line	Margin (dB)	Limit (dBμV)
0.609000	51.6	9.000	L1	4.4	56.0
0.811500	50.8	9.000	L1	5.2	56.0
1.828500	50.6	9.000	L1	5.4	56.0
1.927500	50.7	9.000	L1	5.3	56.0
2.031000	51.1	9.000	L1	5.0	56.0
2.134500	50.7	9.000	L1	5.3	56.0
3.147000	49.8	9.000	L1	6.2	56.0
3.250500	50.4	9.000	L1	5.6	56.0
3.354000	50.5	9.000	L1	5.5	56.0
3.457500	50.2	9.000	L1	5.8	56.0
3.561000	49.6	9.000	L1	6.4	56.0
4.569000	49.3	9.000	L1	6.7	56.0
4.672500	49.3	9.000	L1	6.7	56.0
4.776000	49.0	9.000	L1	7.0	56.0
4.884000	49.0	9.000	L1	7.0	56.0

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Margin (dB)	Limit (dBμV)
0.307500	39.3	9.000	L1	10.7	50.0
0.406500	39.6	9.000	L1	8.1	47.7
0.510000	39.8	9.000	L1	6.2	46.0
0.613500	39.2	9.000	L1	6.8	46.0
0.712500	38.4	9.000	L1	7.6	46.0
0.816000	37.4	9.000	L1	8.6	46.0
0.928500	36.8	9.000	L1	9.2	46.0
1.032000	35.9	9.000	L1	10.1	46.0
1.135500	34.8	9.000	L1	11.2	46.0
1.239000	33.5	9.000	L1	12.5	46.0
1.342500	31.7	9.000	L1	14.3	46.0
1.828500	31.3	9.000	L1	14.7	46.0
1.932000	31.8	9.000	L1	14.2	46.0
2.134500	30.8	9.000	L1	15.2	46.0
2.796000	30.7	9.000	L1	15.3	46.0

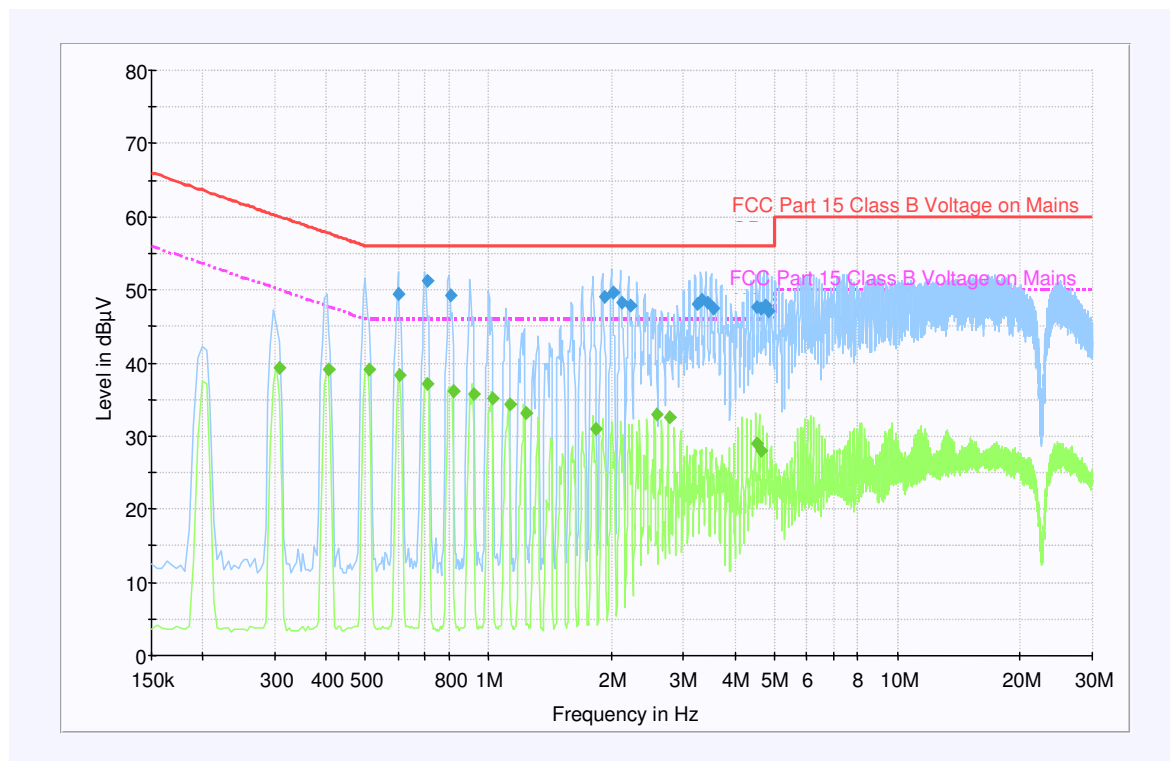
TEST REPORT No: (5210)221-0123

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 No: (5210)221-0123

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 (dBμV)	Bandwidth (kHz)	Line	Margin (dB)	Limit (dBμV)
0.604500	49.5	9.000	N	6.5	56.0
0.708000	51.1	9.000	N	4.9	56.0
0.807000	49.3	9.000	N	6.7	56.0
1.918500	49.0	9.000	N	7.0	56.0
2.022000	49.6	9.000	N	6.4	56.0
2.121000	48.2	9.000	N	7.8	56.0
2.224500	47.8	9.000	N	8.2	56.0
3.232500	48.0	9.000	N	8.0	56.0
3.336000	48.6	9.000	N	7.4	56.0
3.439500	48.2	9.000	N	7.8	56.0
3.543000	47.5	9.000	N	8.5	56.0
4.546500	47.6	9.000	N	8.4	56.0
4.650000	47.5	9.000	N	8.5	56.0
4.758000	47.8	9.000	N	8.2	56.0
4.861500	47.0	9.000	N	9.0	56.0

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Margin (dB)	Limit (dBμV)
0.307500	39.3	9.000	N	10.7	50.0
0.406500	39.2	9.000	N	8.5	47.7
0.510000	39.1	9.000	N	6.9	46.0
0.609000	38.3	9.000	N	7.7	46.0
0.708000	37.2	9.000	N	8.8	46.0
0.820500	36.1	9.000	N	9.9	46.0
0.924000	35.7	9.000	N	10.3	46.0
1.027500	35.1	9.000	N	10.9	46.0
1.131000	34.3	9.000	N	11.7	46.0
1.234500	33.1	9.000	N	12.9	46.0
1.824000	31.1	9.000	N	15.0	46.0
2.580000	32.9	9.000	N	13.1	46.0
2.787000	32.6	9.000	N	13.4	46.0
4.537500	29.0	9.000	N	17.0	46.0
4.641000	28.0	9.000	N	18.0	46.0

TEST REPORT No: (5210)221-0123

Radiated Emissions (Fundamental)

Test Requirement: FCC Part 15 Section 15.249
Test Method: ANSI C63.4
Test Date(s): 2010-03-18
Temperature: 22.0 °C
Humidity: 72.0 %
Atmospheric Pressure: 102.1 kPa
Mode of Operation: Transmission mode (with load)
Tested Voltage: 117Va.c., 60Hz

Test Procedure:

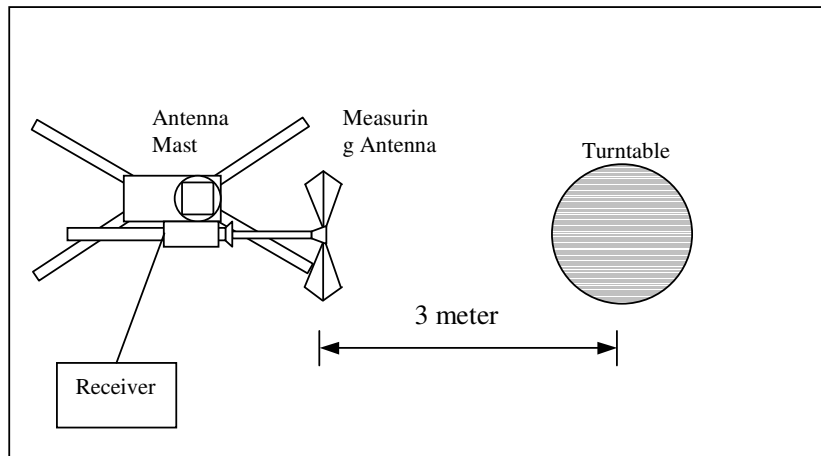
Radiated emissions measurements are investigated and taken pursuant to the procedures of ANSI C63.4 – 2003.

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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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)
908.40	V	Front side	25.1	85.6	94.0	-8.4

Note: Field Strength includes Antenna Factor and Cable Loss.

Receiver setting: RBW = 100KHz
VBW = 300KHz



TEST REPORT No: (5210)221-0123

Radiated Emissions (Spurious Emission)

Test Requirement: FCC Part 15 Section 15.249
Test Method: ANSI C63.4
Test Date(s): 2010-03-18
Temperature: 22.0 °C
Humidity: 72.0 %
Atmospheric Pressure: 102.1 kPa
Mode of Operation: Transmission mode (with load)
Tested Voltage: 117Va.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 μ V/m)	Limit at 3m (dB μ V/m)	Margin (dB)
1816.80	H	-5.8	38.0	74.0	-36.0
2725.20	H	-3.1	39.5	74.0	-34.5
3633.60	V	-1.1	41.0	74.0	-33.0
4542.00	H	1.7	42.7	74.0	-31.3
5450.40	H	4.1	43.7	74.0	-30.3
6358.80	V	6.7	46.4	74.0	-27.6
7267.20	V	10.1	51.3	74.0	-22.7
8175.60	V	11.2	53.3	74.0	-20.7
9084.00	H	12.4	53.3	74.0	-20.7
9992.40	V	11.8	52.0	74.0	-22.0

Note: Field Strength includes Antenna Factor and Cable Loss.

Receiver setting: RBW = 1MHz
VBW = 1MHz



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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 (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
1816.80	H	-5.8	28.4	54.0	-25.6
2725.20	H	-3.1	27.6	54.0	-26.4
3633.60	V	-1.1	29.8	54.0	-24.2
4542.00	V	1.7	31.4	54.0	-22.6
5450.40	V	4.1	33.3	54.0	-20.7
6358.80	V	6.7	36.5	54.0	-17.5
7267.20	V	10.1	41.6	54.0	-12.4
8175.60	V	11.2	42.9	54.0	-11.1
9084.00	H	12.4	43.7	54.0	-10.3
9992.40	H	11.8	42.0	54.0	-12.0

Note: Field Strength includes Antenna Factor and Cable Loss.

Receiver setting: RBW = 1MHz
VBW = 10Hz



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Radiated Emissions (30MHz – 5GHz)

Test Requirement: FCC Part 15 Section 15.209
Test Method: ANSI C63.4
Test Date(s): 2010-03-18
Temperature: 22.0 °C
Humidity: 72.0 %
Atmospheric Pressure: 102.1 kPa
Mode of Operation: Transmission mode (with load), Receiver mode (with load) and Standby mode
Tested Voltage: 117Va.c., 60Hz

Limits for Radiated Emissions [FCC 47 CFR 15.209]:

Frequency Range [MHz]	Quasi-Peak Limits [μV/m]
1.705-30	300
30-88	100
88-216	150
216-960	200
Above960	500



TEST REPORT No: (5210)221-0123

Measurement Data

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

Detection mode: Quasi-Peak

Frequency (MHz)	Polarity (H/V)	Field Strength at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
56.76	H	24.4	40.0	-15.6
159.12	H	26.1	43.5	-17.4
173.40	H	27.1	43.5	-16.5
615.60	H	36.2	46.0	-9.8
767.76	V	34.5	46.0	-11.5
907.32	V	36.1	46.0	-9.9

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 No: (5210)221-0123

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): 2010-03-16
Temperature: 22.0 °C
Humidity: 72.0 %
Atmospheric Pressure: 102.1 kPa
Mode of Operation: Transmission mode (with load)
Tested Voltage: 117Va.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.

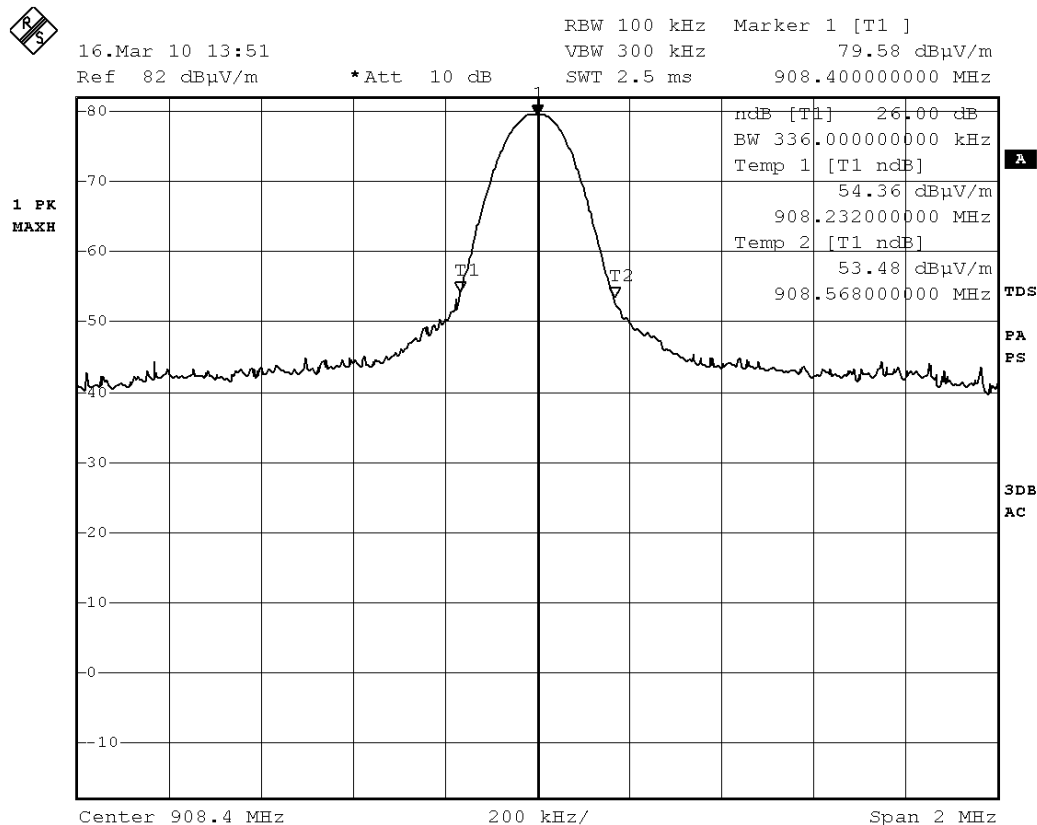
Limits for Frequency range of Fundamental Emission:

Frequency [MHz]	FCC Limits [MHz]
908.400	902-928

TEST REPORT No: (5210)221-0123

Measurement Data :

Test Result of Frequency Range of Fundamental Emission: PASS



Date: 16.MAR.2010 13:51:48

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