



TEST REPORT No.: (5210)350-0812

## TEST REPORT

To:	REMOTEC TECHNOLOGY LTD.	To:	-
Attn:	Matthew Tse	Attn:	-
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Fax:	23141006	Fax:	-
E-mail:	<a href="mailto:matthew_tse@remotec.com.hk">matthew_tse@remotec.com.hk</a>	E-mail:	-
Folder No.:	RMC-10DE143ETHS-B		

Factory name:	Dongguan Qingxi Songgang Mega World Manufactory Company
Location:	Jintian Industrial Park, Songgang, Qingxi Town, 523659, Dongguan, Guangdong, P.R. China
Product:	Z-Extender™ MODEL: BW8370US



Sample No:	HK101214/016 HK101214/018 HK101214/020
Test date:	December 21, 2010 To January 18, 2011
Test Requested:	FCC Part 15 – 2009
Test Method:	ANSI C63.4 – 2003
FCC ID:	M7N-BW8370

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 25, 2011

Date: January 25, 2011

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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	06-SEP-2011
LOOP ANTENNA	ETS-LINDGREN	6502	00102266	17-MAY-2011
BILOG ANTENNA	SCHAFFNER	CBL6112D	25229	02-AUG-2011
OPEN AREA TEST SITE	BVCPS	N/A	N/A	05-JUL-2011
ANECHOIC CHAMBER	ALBATROSS	M-CDC	80374004499B	26-OCT-2011
COAXIAL CABLE	SUHNER	N/A	N/A	19-SEP-2011

#### Conducted Emission

EQUIPMENT	MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATION DUE
EMI TEST RECEIVER	R&S	ESCS30	830986/030	13-DEC-2011
LISN	R&S	ENV216	100024	09-MAR-2011

#### Remarks:-

N/A : Not Applicable or Not Available

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



## TEST REPORT No.: (5210)350-0812

### Equipment Under Test [EUT]

#### Description of Sample:

Model Name: Z-Extender<sup>TM</sup>  
Model Number: BW8370US  
Additional Model Name: BW8371US, BW8372US, BW8373US, BW8374US  
Additional Model Information: Declare the Circuit, PCB layout and Electrical parts of the products are identical to the basic model, except the model number.  
Rating: 100-240Va.c., 50/60Hz – 5Vd.c. (AC/DC adaptor)

#### Description of EUT Operation:

The Equipment Under Test (EUT) is a **REMOTEC TECHNOLOGY LTD.** of Remote Control Transceiver. It is a 1-button transceiver and operating at 908MHz. The EUT continues to transmit while buttons is being pressed, Modulation by IC, and type is pulse modulation.

The transceiver has different control:

1. PROG button – transmission on

#### 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 requirement of S15.203 are met. There are no deviations or exceptions to the specifications.

Photo of Antenna





## TEST REPORT No.: (5210)350-0812

### Test Results

#### 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): 2010-12-21  
Temperature: 22.0 °C  
Humidity: 50.0 %  
Atmospheric Pressure: 101.4 kPa

Mode of Operation: Transmission mode & Receiver mode  
Tested Voltage: 117V a.c., 60Hz – 5V d.c. (AC/DC adaptor)

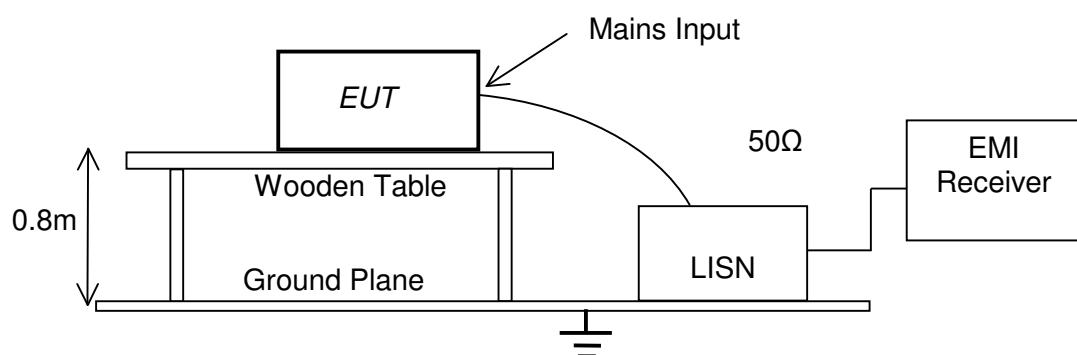
#### Test Method:

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 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)350-0812

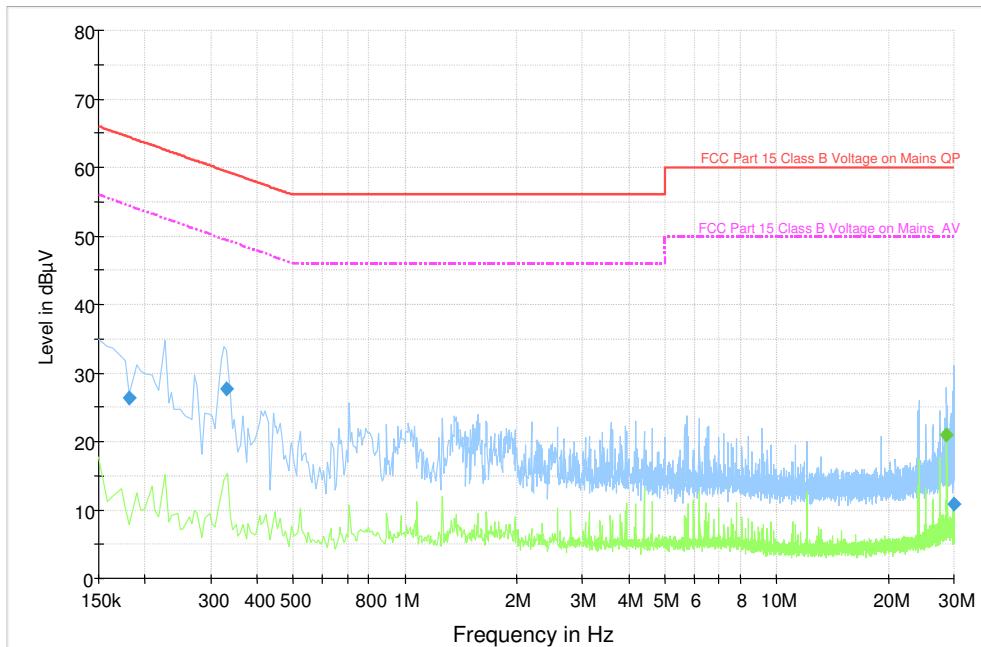
### Measurement Data: Live

#### Test Result of (Transmission mode): 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 & table.

FCC Part 15 Class B Voltage



Frequency (MHz)	QuasiPeak (dB $\mu$ V)	Bandwidth (kHz)	Line	Margin (dB)	Limit (dB $\mu$ V)
0.150000	30.7	9.000	L1	35.3	66.0
0.181500	26.3	9.000	L1	38.1	64.4
0.330000	27.7	9.000	L1	31.8	59.5
3.435000	11.7	9.000	L1	44.3	56.0
24.148500	22.8	9.000	L1	37.2	60.0
29.998500	10.9	9.000	L1	49.1	60.0

Frequency (MHz)	Average (dB $\mu$ V)	Bandwidth (kHz)	Line	Margin (dB)	Limit (dB $\mu$ V)
24.148500	15.6	9.000	L1	34.4	50.0
28.707000	21.0	9.000	L1	29.0	50.0
28.765500	17.2	9.000	L1	32.8	50.0
28.819500	8.9	9.000	L1	41.1	50.0
28.932000	9.0	9.000	L1	41.0	50.0
29.998500	9.2	9.000	L1	40.8	50.0

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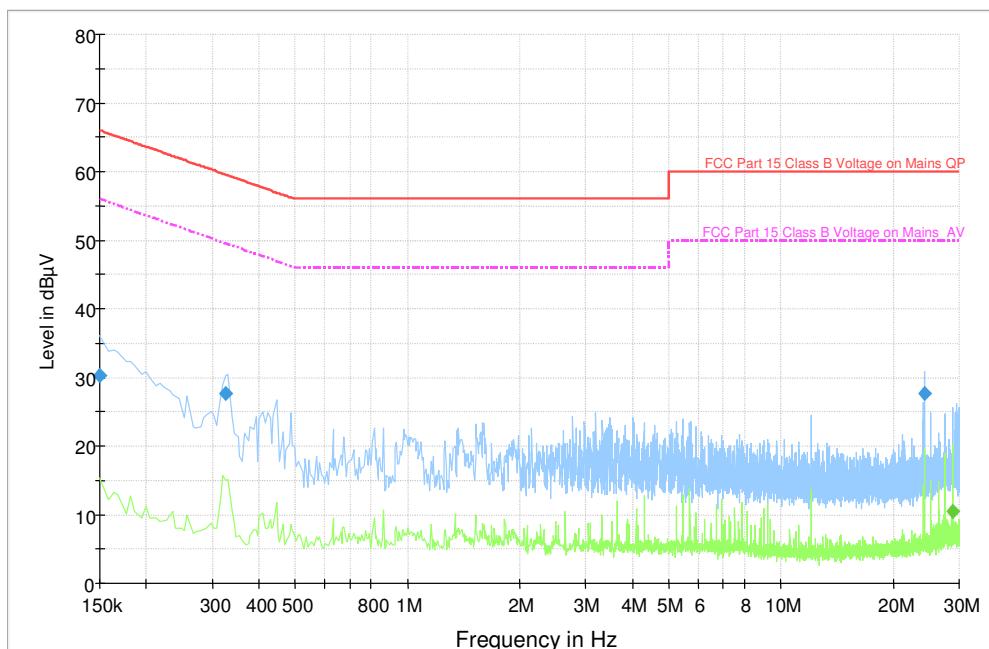
### Measurement Data: Neutral

### Test Result of (Transmission mode): 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 & table.

FCC Part 15 Class B Voltage



Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Margin (dB)	Limit (dBμV)
0.150000	30.3	9.000	N	35.7	66.0
0.181500	28.7	9.000	N	35.7	64.4
0.325500	27.6	9.000	N	32.0	59.6
3.435000	12.3	9.000	N	43.7	56.0
24.148500	27.7	9.000	N	32.3	60.0
29.998500	14.6	9.000	N	45.4	60.0

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Margin (dB)	Limit (dBμV)
24.148500	17.9	9.000	N	32.1	50.0
28.707000	9.0	9.000	N	41.0	50.0
28.765500	10.5	9.000	N	39.5	50.0
28.819500	9.2	9.000	N	40.8	50.0
28.932000	9.4	9.000	N	40.6	50.0
29.998500	9.5	9.000	N	40.5	50.0

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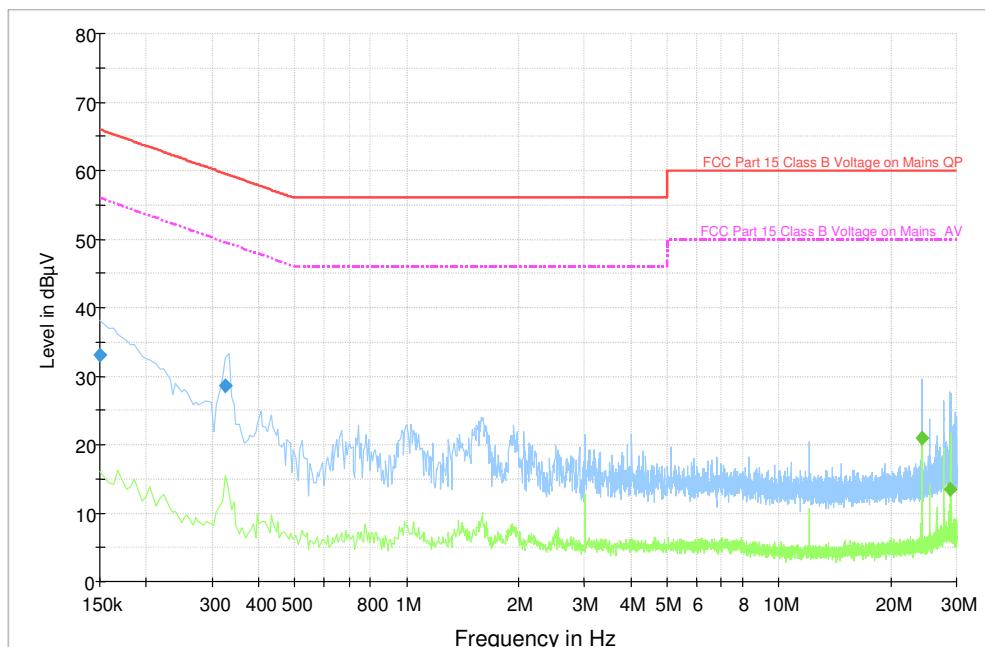
### Measurement Data: Live

#### Test Result of (Receiver mode): 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 & table.

FCC Part 15 Class B Voltage



Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Margin (dB)	Limit (dBμV)
0.150000	33.0	9.000	L1	33.0	66.0
0.325500	28.7	9.000	L1	30.9	59.6
0.330000	29.0	9.000	L1	30.5	59.5
3.435000	12.2	9.000	L1	43.8	56.0
24.148500	28.5	9.000	L1	31.5	60.0
29.998500	24.7	9.000	L1	35.3	60.0

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Margin (dB)	Limit (dBμV)
24.148500	20.9	9.000	L1	29.1	50.0
28.707000	8.8	9.000	L1	41.2	50.0
28.765500	8.9	9.000	L1	41.1	50.0
28.819500	9.1	9.000	L1	40.9	50.0
28.932000	13.4	9.000	L1	36.6	50.0
29.998500	9.6	9.000	L1	40.4	50.0

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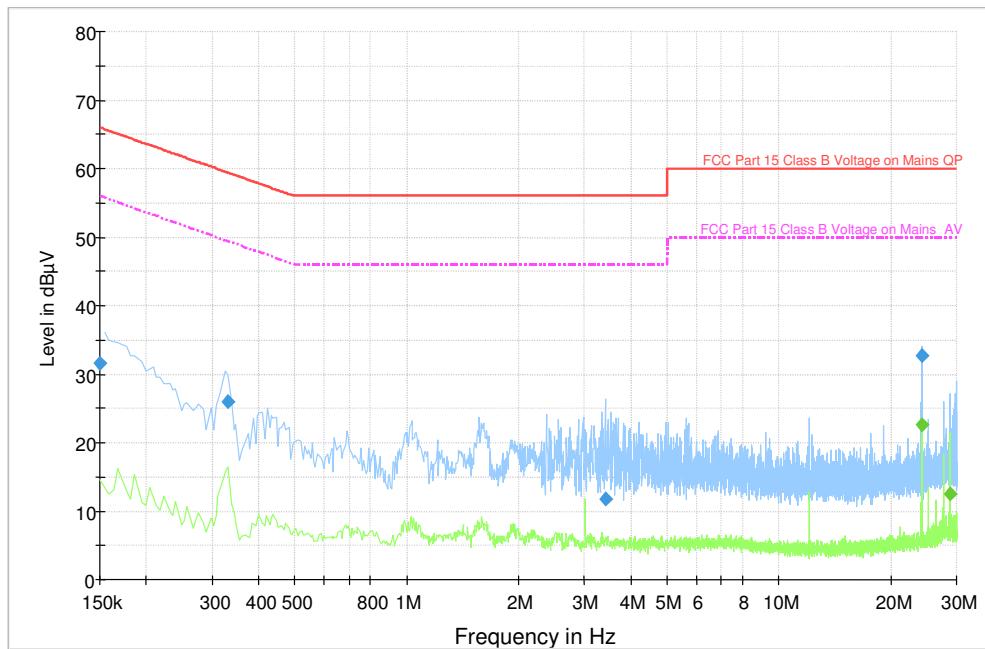
### Measurement Data: Neutral

#### Test Result of (Receiver mode): 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 & table.

FCC Part 15 Class B Voltage



Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Margin (dB)	Limit (dBμV)
0.150000	31.6	9.000	N	34.4	66.0
0.181500	28.1	9.000	N	36.3	64.4
0.330000	26.0	9.000	N	33.5	59.5
3.435000	11.9	9.000	N	44.1	56.0
24.148500	32.7	9.000	N	27.3	60.0
29.998500	13.9	9.000	N	46.1	60.0

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Margin (dB)	Limit (dBμV)
24.148500	22.6	9.000	N	27.4	50.0
28.707000	11.0	9.000	N	39.0	50.0
28.765500	10.5	9.000	N	39.5	50.0
28.819500	12.6	9.000	N	37.4	50.0
28.932000	9.4	9.000	N	40.6	50.0
29.998500	9.9	9.000	N	40.1	50.0

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## TEST REPORT No.: (5210)350-0812

### Radiated Emissions (Fundamental)

Test Requirement: FCC Part 15 Section 15.249  
Test Method: ANSI C63.4  
Test Date(s): 2011-01-18  
Temperature: 13.0 °C  
Humidity: 56.0 %  
Atmospheric Pressure: 102.3 kPa  
Mode of Operation: Transmission mode  
Tested Voltage: 117V a.c., 60Hz – 5V d.c. (AC/DC adaptor)

### Test Procedure:

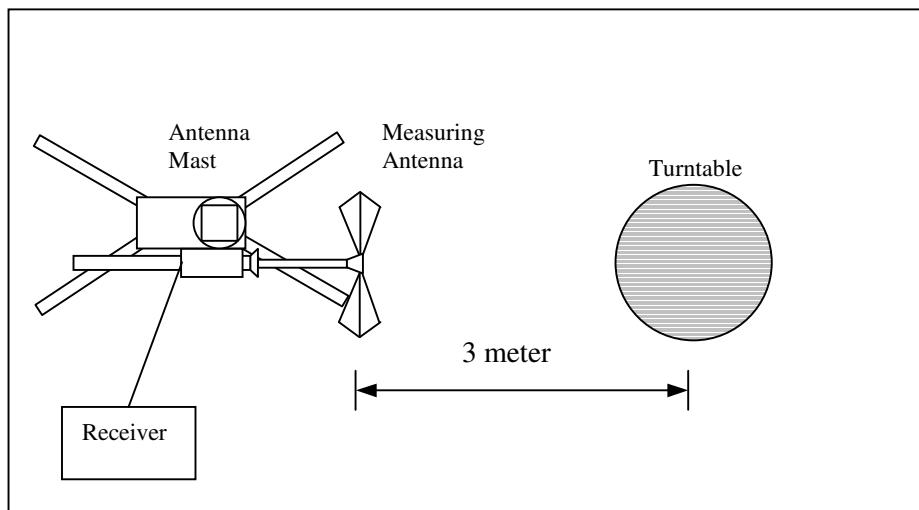
Radiated emissions measurements are investigated and taken pursuant to the procedures of ANSI C63.4 – 2003.

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): 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	H	240°	22.7	92.7	94.0	-1.3

Note: Field Strength includes Antenna Factor and Cable Loss.

Receiver setting: RBW = 100KHz  
VBW = 300KHz

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## TEST REPORT No.: (5210)350-0812

### Radiated Emissions (Spurious Emission)

Test Requirement: FCC Part 15 Section 15.249  
Test Method: ANSI C63.4  
Test Date(s): 2011-01-18  
Temperature: 13.0 °C  
Humidity: 56.0 %  
Atmospheric Pressure: 102.3 kPa  
Mode of Operation: Transmission mode  
Tested Voltage: 117V a.c., 60Hz – 5V d.c. (AC/DC adaptor)

### Measurement Data

#### Test Result of (Transmission mode): 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)
1816.80	H	-5.8	39.2	74.0	-34.8
2725.20	H	-3.1	39.2	74.0	-34.8
3633.60	V	-0.9	40.1	74.0	-33.9
4542.00	H	1.7	42.4	74.0	-31.6
5450.40	V	4.2	43.5	74.0	-30.5
6358.80	V	6.8	47.0	74.0	-27.0
7267.20	H	9.8	51.0	74.0	-23.0
8175.60	V	11.2	52.8	74.0	-21.2
9084.00	V	12.4	53.2	74.0	-20.8
9992.40	H	11.9	52.6	74.0	-21.4

Note: Field Strength includes Antenna Factor and Cable Loss.

Receiver setting: RBW = 1MHz  
VBW = 1MHz



## TEST REPORT No.: (5210)350-0812

### Measurement Data

**Test Result of (Transmission mode): 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)
1816.80	H	-5.8	**25.7	54.0	-28.3
2725.20	H	-3.1	**25.7	54.0	-28.3
3633.60	V	-0.9	**26.6	54.0	-27.4
4542.00	H	1.7	**28.8	54.0	-25.1
5450.40	V	4.2	**30.0	54.0	-24.0
6358.80	V	6.8	**33.5	54.0	-20.5
7267.20	H	9.8	**37.5	54.0	-16.5
8175.60	V	11.2	**39.3	54.0	-14.7
9084.00	V	12.4	**39.7	54.0	-14.3
9992.40	H	11.9	**39.1	54.0	-14.9

# For pulse modulated devices and using measuring equipment employing a peak detection mode, properly adjusted for such factor as pulse desensitisation.

\*\*Duty Cycle Correction =  $20\log(0.212) = -13.5\text{dB}$

Note: Field Strength includes Antenna Factor and Cable Loss.

Receiver setting: RBW = 1MHz  
VBW = 1MHz



## TEST REPORT No.: (5210)350-0812

### Radiated Emissions (30MHz – 5GHz)

Test Requirement: FCC Part 15 Section 15.209  
Test Method: ANSI C63.4  
Test Date(s): 2010-12-22  
Temperature: 21.0 °C  
Humidity: 52.0 %  
Atmospheric Pressure: 100.8 kPa  
Mode of Operation: Receiver mode  
Tested Voltage 117V<sub>a.c.</sub>, 60Hz – 5V<sub>d.c.</sub> (AC/DC adaptor)

#### 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
Above 960	500

### Measurement Data

#### Test Result of (Receiver mode): PASS

#### Detection mode: Quasi-Peak

Frequency (MHz)	Polarity (H/V)	Field Strength at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
908.61	H	35.6	46.0	-10.4

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: RBW = 120KHz  
: VBW = 120KHz

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## TEST REPORT No.: (5210)350-0812

### Measurement Data

**Test Result of (Receiver mode): PASS**

**Detection mode: Peak**

Frequency (MHz)	Polarity (H/V)	Field Strength at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
1817.22	H	39.5	74.0	-34.5
2725.83	H	38.1	74.0	-35.9
3634.44	H	40.4	74.0	-33.6
4543.05	H	41.4	74.0	-32.6

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 Result of (Receiver mode): PASS**

**Detection mode: Average**

Frequency (MHz)	Polarity (H/V)	Field Strength at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
1817.22	H	34.5	54.0	-19.5
2725.83	H	28.3	54.0	-25.7
3634.44	V	30.4	54.0	-23.6
4543.05	V	31.9	54.0	-22.1

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: RBW = 1MHz  
VBW = 10Hz

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## TEST REPORT No.: (5210)350-0812

### 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): 2011-01-17  
Temperature: 13.0 °C  
Humidity: 56.0 %  
Atmospheric Pressure: 102.3 kPa  
Mode of Operation: Transmission mode  
Tested Voltage 117V a.c., 60Hz – 5V d.c. (AC/DC adaptor)

#### 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:

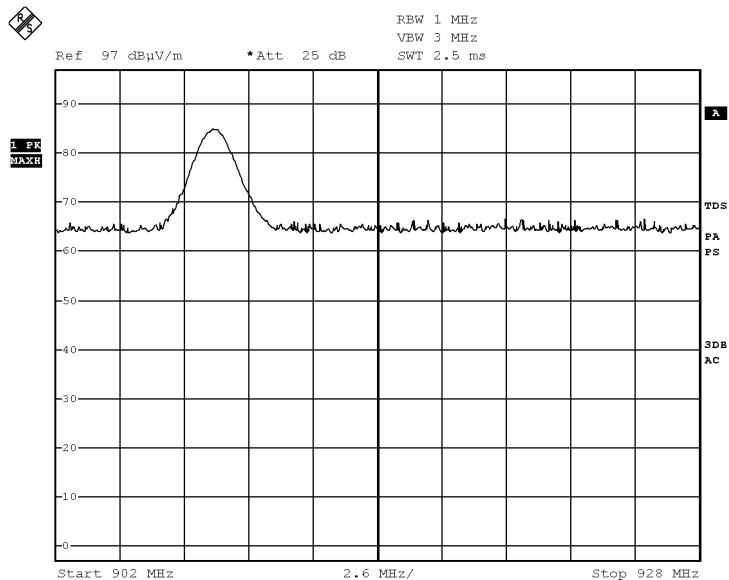
Frequency [MHz]	FCC Limits [MHz]
908.4	902-928



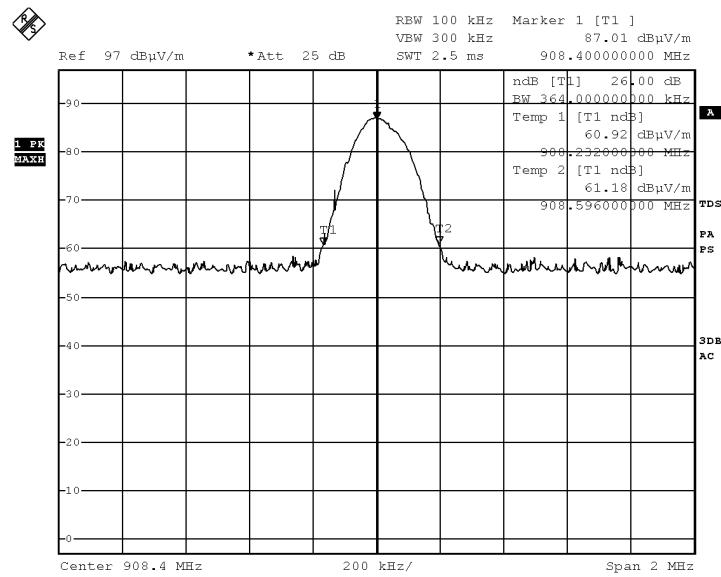
## TEST REPORT No.: (5210)350-0812

### Measurement Data :

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



#### Test Result of 26dB bandwidth of Fundamental Emission: PASS



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## TEST REPORT No.: (5210)350-0812

### Duty Cycle Correction During 100msec:

Each function key sends a different series of characters, but each packet period (100msec) never exceeds a series of 1 pulse (21.2msec). Assuming any combination of short or long pulses may be obtained due to encoding the worst case transmit duty cycle would be considered 2.12msec per 100msec=21.2% duty cycle. Figure A show the characteristics of the pulse train for one of these functions.

Remarks:

Duty Cycle Correction =  $20\log(0.212) = -13.5\text{dB}$

The following figures [Figure A] show the characteristics of the pulse train for one of these functions.

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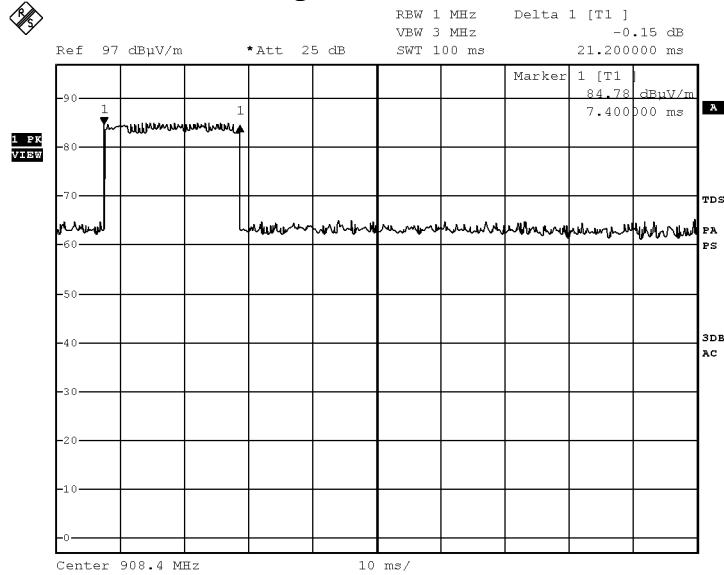
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## TEST REPORT No.: (5210)350-0812

Figure A [Pulse Train]



Date: 17.JAN.2011 18:00:26

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## TEST REPORT No.: (5210)350-0812

### Photographs of EUT

Top View of the product



Bottom View of the product



Front View of the product



Rear View of the product



Left view of the product



Right view of the product



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### Photographs of EUT

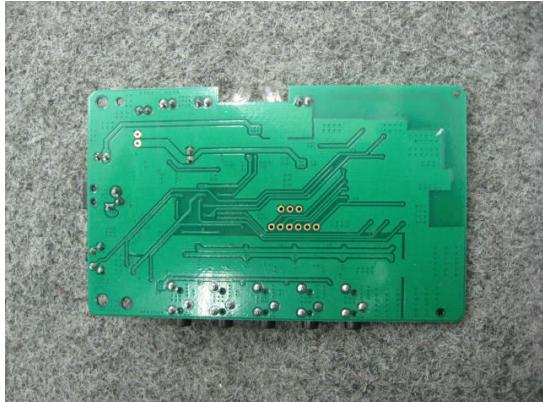
Internal view of the product



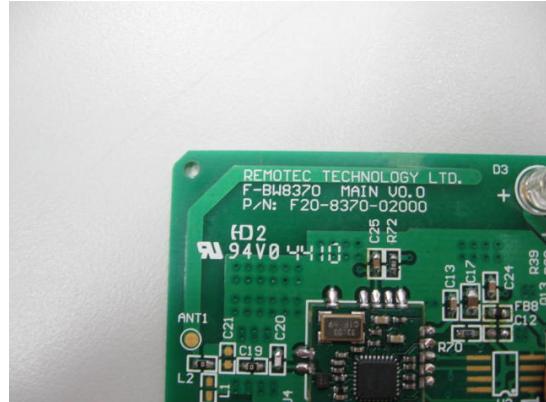
Inner Circuit Top View



Inner Circuit Bottom View



Antenna



IR Emitting Cable



AC/DC adaptor



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**TEST REPORT No.: (5210)350-0812**

**Measurement of Radiated Emission Test Set Up**



**Measurement of Conducted Emission Test Set Up**



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

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