

# TEST REPORT



Your Ref: 56Q0500956

Date: 2 Sep 2005

Our Ref: 56S050782/01

Page: 1 of 21

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FORMAL REPORT ON TESTING IN ACCORDANCE WITH  
FCC Parts 15B & C : 2005  
OF AN  
**INFRARED / RF REMOTE CONTROL**  
[ Model : RC1704701/00 ]  
[ FCC ID : RCSR1704701A ]

**TEST FACILITY**

Telecoms & EMC, Testing Group, PSB Corporation Pte Ltd  
1 Science Park Drive, Singapore 118221

**FCC REG. NO.**

90937 (3m & 10m OATS)  
99142 (10m Anechoic Chamber)  
871638 (5m Anechoic Chamber)  
325572 (10m Anechoic Chamber)  
IC 4257 (10m Anechoic Chamber)

**IND. CANADA REG. NO.**

**PREPARED FOR**

Philips Electronics Singapore Pte Ltd  
Remote Control Systems  
620A Lorong 1 Toa Payoh  
Singapore 319762

Tel : 6882 3321

Fax : 6254 1691

**JOB NUMBER**

56S050782

**TEST PERIOD**

29 Aug 2005 – 2 Sep 2005

**PREPARED BY**

Quek Keng Huat  
Associate Engineer

**APPROVED BY**

Lim Cher Hwee  
Product Manager



LA-2001-0212-A  
LA-2001-0213-F  
LA-2001-0214-E  
LA-2001-0215-B  
LA-2001-0216-G  
LA-2001-0217-G

The results reported herein have been performed in accordance with the laboratory's terms of accreditation under the Singapore Accreditation Council - Singapore Laboratory Accreditation Scheme. Tests marked "Not SAC-SINGLAS Accredited" in this Report are not included in the SAC-SINGLAS Accreditation Schedule for our laboratory.

TEST SUMMARY

PRODUCT DESCRIPTION

SUPPORTING EQUIPMENT DESCRIPTION

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## TEST SUMMARY

The product was tested in accordance with the customer's specifications.

### Test Results Summary

Test Standard	Description	Pass / Fail
FCC Part 15: 2005		
15.107(a), 15.207	Conducted Emissions	Not Applicable *See Note 2
15.109(a), 15.205, 15.209	Radiated Emissions (Spurious Emissions inclusive Restricted Bands Requirement)	Pass
15.231(b)	Radiated Emissions (Fundamental and Harmonics)	Pass
15.231(c)	20dB Bandwidth	Pass
15.231(d)	Band Edge Compliance	Not Applicable *See Note 3
15.231(d)	Frequency Stability Versus Temperature	Not Applicable *See Note 3
15.231(d)	Frequency Stability Versus Input Voltage	Not Applicable *See Note 3
15.35(c)	Duty Cycle Factor Computation	Refer to page 19-20 for details

### Notes

1. The EUT is a Class B device when in non-transmitting state and meets the FCC Part15B Class B requirements.
2. The Equipment Under Test (EUT) is a battery-operated device and contains no provision for public utility connections.
3. The Band Edge and Frequency Tolerance tests are not applicable, as the carrier of the Equipment Under Test (EUT) is no in 40.66MHz - 40.70MHz band.

### Modifications

1. No modifications were made.

## PRODUCT DESCRIPTION

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Description	: The Equipment Under Test (EUT) is an <b>Infrared / RF Remote Control.</b>
Manufacturer	: Philips Electronics Singapore Pte Ltd – Remote Control Systems
Model Number	: RC1704701/00
FCC ID	: RCSRC1704701A
Serial Number	: 3139 228 65651
Microprocessor	: Samsung Micro Controller
Operating / Transmitting Frequency	: IR Carrier – 38kHz $\pm$ 2% RF – 433.92MHz $\pm$ 14kHz
Clock / Oscillator Frequency	: 8MHz & 13.56MHz
Modulation	: Frequency Shift Keying (FSK)
Port / Connectors	: Refer to manufacturers' user manual / operating manual.
Rated Input Power	: 2.4VDC – 3.3VDC
Accessories	: Nil

**SUPPORTING EQUIPMENT DESCRIPTION**

The EUT was tested as a stand-alone unit without any supporting equipment.

## EUT OPERATING CONDITIONS

### FCC Part 15

1. Radiated Emissions (Spurious Emissions inclusive Restricted Bands Requirement)
2. Radiated Emissions (Fundamental and Harmonics)
3. 20dB Bandwidth
4. Duty Cycle Factor Computation

The EUT was exercised by operating in following modes:

1. IR mode maximum continuous transmission in test mode, i.e transmitting at 38kHz
2. RF mode with maximum continuous transmission in test mode, i.e transmitting at 433.92MHz

## RADIATED EMISSION TEST

### FCC Part 15.205 Restricted Bands

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	Above 38.6
13.36 - 13.41			

### FCC Parts 15.109(a) and 15.209 Radiated Emission Limits

Frequency Range (MHz)	Quasi-Peak Limit Values (dBμV/m) @ 3m
30 - 88	40.0
88 - 216	43.5
216 - 960	46.0
Above 960	54.0*

\* Above 1GHz, average detector was used. A peak limit of 20dB above the average limit does apply.

### FCC Parts 15.109(a) and 15.209 Radiated Emission Test Instrumentation

Instrument	Model	S/No	Cal Due Date
R&S Test Receiver (20Hz-26.5GHz) – ESMIE	ESMI	829214/006 829550/001	18 APR 2006
Agilent Preamplifier (0.01-4GHz) – PA6	87405B	MY39500338	02 AUG 2006
Schaffner Bilog Antenna – BL9	CBL6143	5045	19 May 2006

**FCC Parts 15.109(a) and 15.209 Radiated Emission Test Setup**

1. The EUT and supporting equipment were set up in accordance with the requirements of the standard on top of a 1.5m X 1.0m X 0.8m high, non-metallic table.
2. The filtered power supply for the EUT and supporting equipment were tapped from the appropriate power sockets located on the turntable.
3. The relevant broadband antenna was set at the required test distance away from the EUT and supporting equipment boundary.

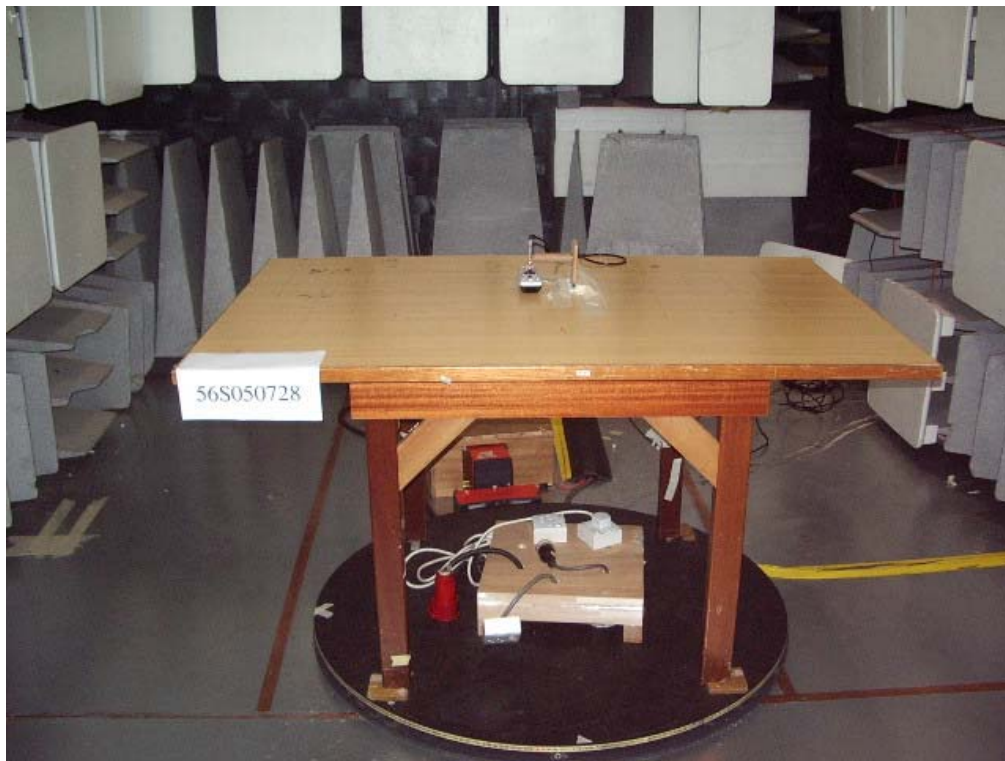
**FCC Parts 15.109(a) and 15.209 Radiated Emission Test Method**

1. The EUT was switched on and allowed to warm up to its normal operating condition.
2. A prescan was carried out to pick the worst emission frequencies from the EUT. For EUT which is a portable device, the prescan was carried out by rotating the EUT through three orthogonal axes to determine which attitude and equipment arrangement produces such emissions.
3. The test was carried out at the selected frequency points obtained from the prescan in step 2. Maximization of the emissions, was carried out by rotating the EUT, changing the antenna polarization, and adjusting the antenna height in the following manner:
  - a. Vertical or horizontal polarisation (whichever gave the higher emission level over a full rotation of the EUT) was chosen.
  - b. The EUT was then rotated to the direction that gave the maximum emission.
  - c. Finally, the antenna height was adjusted to the height that gave the maximum emission.
4. A Quasi-peak measurement was made for that frequency point if it was less than or equal to 1GHz. For frequency point that above 1GHz, both Peak and Average measurements were carried out.
5. Steps 3 and 4 were repeated for the next frequency point, until all selected frequency points were measured.
6. The frequency range covered was from 30MHz to 10<sup>th</sup> harmonics of the EUT fundamental frequency, using the Bi-log antenna for frequencies from 30MHz up to 3GHz, and the Horn antenna above 3GHz.

**Sample Calculation Example**

At 300 MHz	Q-P limit (Class B) = 200 $\mu$ V/m = 46.0 dB $\mu$ V/m
Log-periodic antenna factor & cable loss at 300 MHz = 18.5 dB	
Q-P reading obtained directly from EMI Receiver = 40.0 dB $\mu$ V/m (Calibrated level including antenna factors & cable losses)	
Therefore, Q-P margin = 40.0 - 46.0 = -6.0	<b>i.e. 6 dB below Q-P limit</b>





**Radiated Emissions Test Setup (Front View)**



**Radiated Emissions Test Setup (Rear View)**

## RADIATED EMISSION TEST

### **FCC Parts 15.109(a), 15.205 and 15.209 Radiated Emission Results**

Test Input Power	2 x 1.5V DC Battery	Temperature	22°C
Test Distance	3m	Relative Humidity	58%
Operating Mode	RF Mode	Atmospheric Pressure	1030mbar
		Tested By	Kenneth Ler

Spurious Emissions ranging from 30MHz – 1GHz

Frequency (MHz)	Q-P Value (dB $\mu$ V/m)	Q-P Margin (dB)	Azimuth (Degrees)	Height (cm)	Polarisation (H/V)
30.8819	16.9	-23.0	62	100	H
53.1872	7.1	-32.9	2	101	H
58.9840	11.7	-28.3	6	100	V
66.7131	9.7	-30.3	0	101	V
86.0358	19.6	-20.4	0	100	V
115.0199	16.6	-26.4	3	100	V

### **FCC Parts 15.109(a), 15.205 and 15.209 Radiated Emission Results**

Test Input Power	2x1.5V DC Battery	Temperature	22°C
Test Distance	3m	Relative Humidity	58%
Operating Mode	IR Mode	Atmospheric Pressure	1030mbar
		Tested By	Kenneth Ler

Spurious Emissions ranging from 30MHz – 1GHz

Frequency (MHz)	Q-P Value (dB $\mu$ V/m)	Q-P Margin (dB)	Azimuth (Degrees)	Height (cm)	Polarisation (H/V)
451.2350	27.6	-18.4	1	100	V
646.3944	25.3	-20.7	0	100	V
741.0756	25.9	-20.1	4	100	V
808.7051	26.6	-19.4	0	100	V
928.5059	26.9	-19.1	0	100	V
957.4900	27.9	-18.1	0	100	V

Notes:

1. All possible modes of operation were investigated. Only the worst case emissions measured, using the correct CISPR detectors, are reported. All other emissions were relatively insignificant.
2. Quasi-peak measurement was used for frequency measurement up to 1GHz. Average and peak measurements were used for emissions above 1GHz. The average measurement was done by averaging over a complete cycle of the pulse train, including the blanking interval as the pulse train duration does not exceed 0.1 second.
3. A "-ve" margin indicates a PASS as it refers to the margin present below the limit line at the particular frequency.

4. EMI receiver Resolution Bandwidth (RBW) and Video Bandwidth (VBW) settings:  
30MHz - 1GHz  
 RBW: 120kHz                      VBW: 1MHz  
>1GHz  
 RBW: 1MHz                      VBW: 1MHz
5. The upper frequency of radiated emission investigations was according to requirements stated in Section 15.33(a) for intentional radiators & Section 15.33(b) for unintentional radiators.
6. Radiated Emissions Measurement Uncertainty  
 All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95%, with a coverage factor of 2, in the range 30MHz – 25GHz (QP only @ 3m & 10m) is  $\pm 4.3\text{dB}$  (for EUTs < 0.5m X 0.5m X 0.5m).

## RADIATED EMISSION (FUNDAMENTAL AND HARMONICS) TEST

### FCC Part 15.231(b) Radiated Emission (Fundamental and Harmonics) Limits

Fundamental Frequency (MHz)	Field Strength of Fundamental Limit Values @ 3m (dBµV/m) *	Field Strength of Harmonics Limit Values @ 3m (dBµV/m) *
40.66 - 40.70	67.0	47.0
70 - 130	62.0	42.0
130 - 174	62.0 to 71.5 **	42.0 to 51.5 **
174 - 260	71.5	51.5
260 - 470	71.5 to 82.0 **	51.5 to 62.0 **
Above 470	82.0	62.0
* Average detector employed. A peak limit of 20dB above the average limit does apply.		
** Liner interpolations (in µV/m).		
<p>Note:</p> <p>Where F is the frequency in MHz, the formulas for calculating the maximum permitted fundamental field strengths are as follows. The maximum permitted unwanted emission level (harmonic) is 20dB below the maximum permitted fundamental level.</p> <ul style="list-style-type: none"> <li>- Band 130MHz - 174MHz 20 log [56.81818(F) - 6136.3636]</li> <li>- Band 260MHz - 470MHz 20 log [41.6667(F) - 7083.3333]</li> </ul>		

### FCC Parts 15.231(b) Radiated Emission (Fundamental and Harmonics) Test Instrumentation

Instrument	Model	S/No	Cal Due Date
R&S Test Receiver (20Hz-26.5GHz) – ESMIE	ESMI	829214/006 829550/001	18 Apr 2006
Agilent Preamplifier (0.01-4GHz) – PA6	87405B	MY39500338	02 Aug 2006
Schaffner Bilog Antenna – BL9	CBL6143	5045	19 May 2006
MITEQ Preamplifier (0.1-26.5GHz) – PA11	NSP2650-N	728231	01 Apr 2006
EMCO Horn Antenna – H15	3115	0003-6088	19 May 2006

## RADIATED EMISSION (FUNDAMENTAL AND HARMONICS) TEST

### FCC Part 15.231(b) Radiated Emission (Fundamental and Harmonics) Test Setup

1. The EUT and supporting equipment were set up in accordance with the requirements of the standard on top of a 1.5m X 1.0m X 0.8m high, non-metallic table.
2. The filtered power supply for the EUT and supporting equipment were tapped from the appropriate power sockets located on the turntable.
3. The relevant broadband antenna was set at the required test distance away from the EUT and supporting equipment boundary.

### FCC Part 15.231(b) Radiated Emission (Fundamental and Harmonics) Test Method

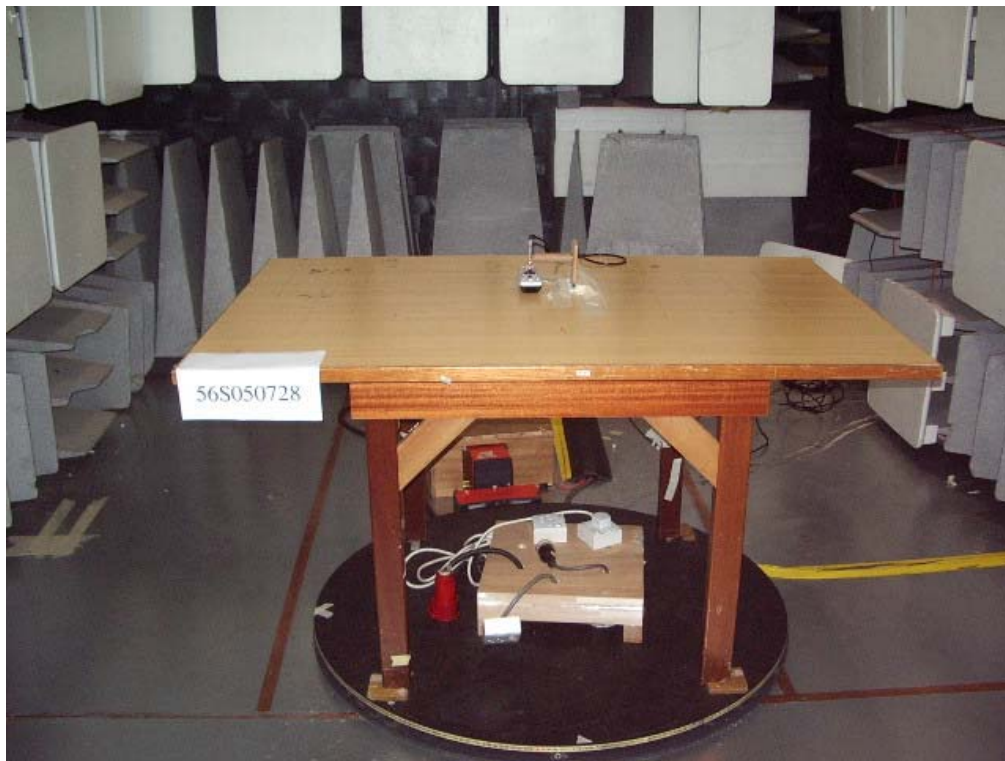
1. The EUT was switched on and allowed to warm up to its normal operating condition.
2. A prescan was carried out to pick the fundamental and harmonics emission frequencies from the EUT. For EUT which is a portable device, the prescan was carried out by rotating the EUT through three orthogonal axes to determine which attitude and equipment arrangement produces such emissions.
3. The test was carried out at the selected frequency points obtained from the prescan in step 2. Maximization of the emissions, was carried out by rotating the EUT, changing the antenna polarization, and adjusting the antenna height in the following manner:
  - a. Vertical or horizontal polarisation (whichever gave the higher emission level over a full rotation of the EUT) was chosen.
  - b. The EUT was then rotated to the direction that gave the maximum emission.
  - c. Finally, the antenna height was adjusted to the height that gave the maximum emission.
4. A Quasi-peak measurement was made for that frequency point if it was less than or equal to 1GHz. For frequency point that above 1GHz, both Peak and Average measurements were carried out.
5. Steps 3 and 4 were repeated for the next frequency point, until all selected frequency points were measured.
6. The frequency range covered was from the EUT fundamental frequency until its 10<sup>th</sup> harmonics, using the Bi-log antenna for frequencies from 30MHz up to 3GHz, and the Horn antenna above 3GHz.

### **Sample Calculation Example**

At 300 MHz	Q-P limit (Class B) = 200 $\mu$ V/m = 46.0 dB $\mu$ V/m
Log-periodic antenna factor & cable loss at 300 MHz = 18.5 dB	
Q-P reading obtained directly from EMI Receiver = 40.0 dB $\mu$ V/m (Calibrated level including antenna factors & cable losses)	
Therefore, Q-P margin = 40.0 - 46.0 = -6.0	<b>i.e. 6 dB below Q-P limit</b>



**RADIATED EMISSION (FUNDAMENTAL AND HARMONICS) TEST**



**Radiated Emissions Test Setup (Front View)**



**Radiated Emissions Test Setup (Rear View)**

## RADIATED EMISSION (FUNDAMENTAL AND HARMONICS) TEST

### FCC Part 15.231(b) Radiated Emission (Fundamental and Harmonics) Results

Test Input Power	2 x 1.5V DC Battery	Temperature	22°C
Test Distance	3m	Relative Humidity	58%
Operating Mode	RF mode	Atmospheric Pressure	1030mbar
		Tested By	Kenneth Ler

Frequency (GHz)	Peak Value (dBμV/m)	Average Value (dBμV/m)	Average Margin (dB)	Azimuth (Degrees)	Height (cm)	Pol (H/V)	Note
0.4339	61.8	47.9	-32.9	0	100	H	Fundamental
0.8679	49.0	35.1	-25.7	0	100	H	Harmonics
1.3016	51.1	37.2	-23.6	0	100	H	Harmonics
1.7351	48.1	34.2	-26.6	0	100	H	Harmonics
2.1694	42.6	28.7	-32.1	0	100	H	Harmonics
2.6033	42.6	28.7	-32.1	0	100	H	Harmonics

**Notes:**

- All possible modes of operation were investigated. Only the worst case emissions measured, using the average and peak detectors, are reported. All other emissions were relatively insignificant.
- As the measured peak shows compliance to the average limit, as such no average measurement was required.
- The average measurement was done averaging over a complete cycle of the pulse train, including the blanking interval as the pulse train duration does not exceed 0.1 second.
- A "-ve" margin indicates a PASS as it refers to the margin present below the limit line at the particular frequency.
- EMI receiver Resolution Bandwidth (RBW) and Video Bandwidth (VBW) settings:  
30MHz - 1GHz  
 RBW: 120kHz                      VBW: 1MHz  
>1GHz  
 RBW: 1MHz                      VBW: 1MHz
- The upper frequency of radiated emission investigations was according to requirements stated in Section 15.33(a) for intentional radiators & Section 15.33(b) for unintentional radiators.
- Radiated Emissions Measurement Uncertainty  
 All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95%, with a coverage factor of 2, in the range 30MHz – 25GHz (QP only @ 3m & 10m) is ±4.3dB (for EUTs < 0.5m X 0.5m X 0.5m).

**FCC Part 15.231(c) 20dB Bandwidth Limits**

The EUT shows compliance to the requirements of this section, which states that the bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70MHz and below 900MHz. For devices operating above 900MHz, the emission shall be no wider than 0.5% of the center frequency. Bandwidth is determined at the points 20dB down from the modulated carrier.

**FCC Part 15.231(c) 20dB Bandwidth Test Instrumentation**

Instrument	Model	S/No	Cal Due Date
R&S Test Receiver (20Hz-26.5GHz) – ESMIE	ESMI	829214/006 829550/001	18 Apr 2006
Agilent Preamplifier (0.01-4GHz) – PA6	87405B	MY39500338	02 Aug 2006
Schaffner Bilog Antenna – BL9	CBL6143	5045	19 May 2006

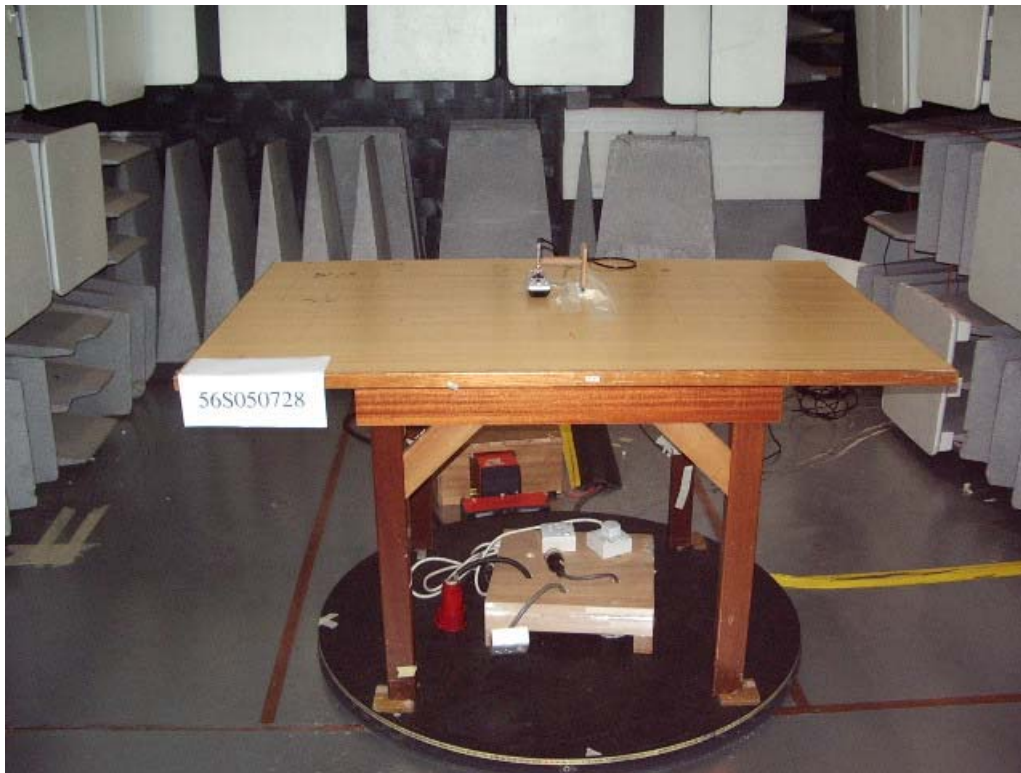
**FCC Part 15.231(c) 20dB Bandwidth Test Setup**

1. The EUT and supporting equipment were set up as shown in the setup photo.
2. The power supply for the EUT was connected to a filtered mains.
3. The resolution bandwidth (RBW) and the video bandwidth (VBW) of the spectrum analyser were respectively set to 120kHz and 1MHz.
4. All other supporting equipment were powered separately from another filtered mains.

**FCC Part 15.231(c) 20dB Bandwidth Test Method**

1. The EUT was switched on and allowed to warm up to its normal operating condition. The EUT was then configured to operate in the test mode, non-hopping with transmitting frequency at Channel 433.92Mhz.
2. The center frequency of the spectrum analyser was set to the transmitting frequency with the frequency span wide enough to capture the 20dB bandwidth of the transmitting frequency.
3. The spectrum analyser was set to max hold to capture the transmitting frequency. The signal capturing was continuous until no further changes were observed.
4. The peak of the transmitting frequency was detected with the marker peak function of the spectrum analyser. The frequencies below the 20dB peak frequency at lower ( $f_L$ ) and upper ( $f_H$ ) sides of the transmitting frequency were marked and measured by using the marker-delta function of the spectrum analyser.
5. The 20dB bandwidth of the transmitting frequency is the frequency difference between the marked lower and upper frequencies,  $|f_H - f_L|$ .





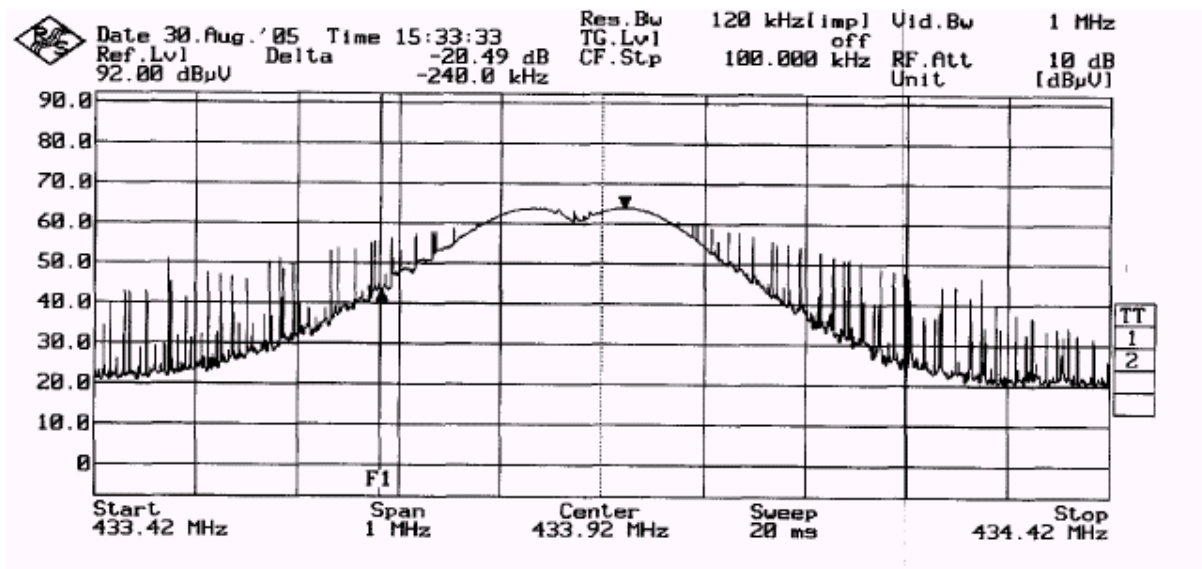
20dB Bandwidth Test Setup

**FCC Part 15.231(c) 20dB Bandwidth Results**

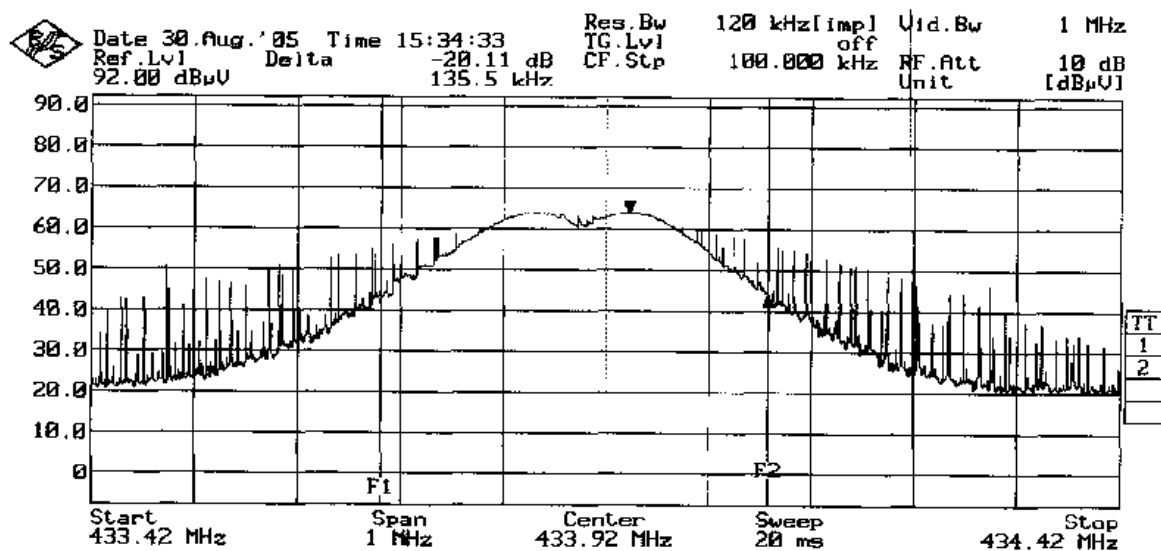
Test Input Power	2 x 1.5V DC Battery	Temperature	22°C
Attached Plots	1 - 2	Relative Humidity	58%
		Atmospheric Pressure	1030mbar
		Tested By	Kenneth Ler

Channel Frequency (MHz)	20dB Bandwidth (MHz)
433.92MHz	375.5kHz

# 20dB Bandwidth Plots



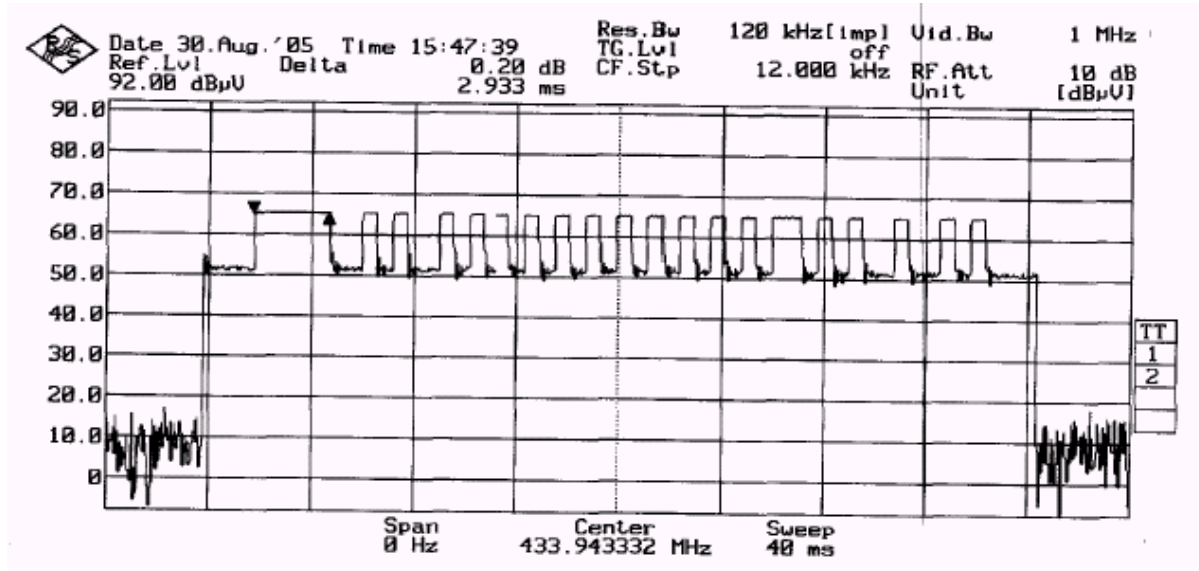
Plot 1 for Channel 433.92MHz at 20dB Bandwidth (Left side)



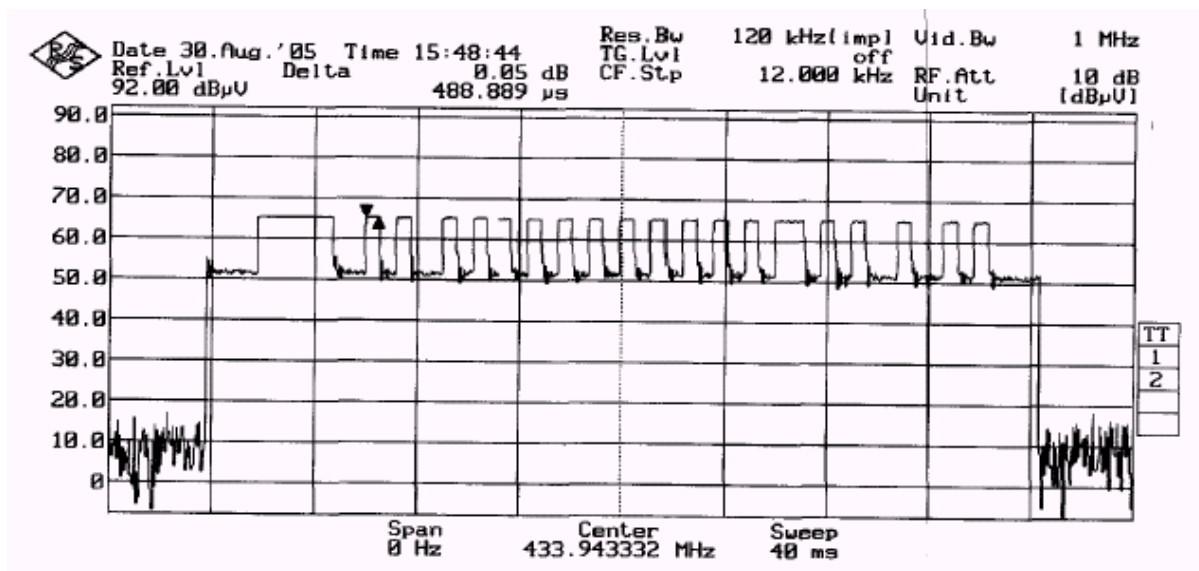
Plot 2 for Channel 433.92MHz at 20dB Bandwidth (Right side)

DUTY CYCLE FACTOR COMPUTATION

FCC Part 15.35(c) Duty Cycle Correction Factor



On Time (Part 1)



On Time (Part 2)

Date 30.Aug.'05 Time 15:49:50 Res.Bw 120 kHz[imp] Vid.Bw 1 MHz  
 Ref.Lvl Delta 0.23 dB TG.Lvl off  
 92.00 dBμV 1.111 ms CF.Stp 12.000 kHz RF.Att 10 dB  
 Unit [dBμV]

Span 0 Hz Center 433.943332 MHz Sweep 40 ms

TT  
 1  
 2

Date 30.Aug.'05 Time 15:43:53 Res.Bw 120 kHz [imp] Vid.Bw 1 MHz  
 Ref.Lvl 92.00 dBμ Delta 0 dB TG.Lvl off  
 92.00 dBμ 63.466 ms CF.Stp 12.000 kHz RF.Att 10 dB  
 Unit [dBμV]

Span 0 Hz Center 433.943332 MHz Sweep 120 ms

TT  
 1  
 2

Duty Cycle Factor (worst- case) = 20 log [Total On time / Period]  
 = 20 log [(2.933 + 18 (0.488889) + 1.111) / 63.466]  
 = **-13.9dB**

**This Report is issued under the following conditions:**

1. Results of the testing/calibration in the form of a report will be issued immediately after the service has been completed or terminated.
2. Unless otherwise requested, a report shall contain only technical results. Analysis and interpretation of the results and professional opinion and recommendations expressed thereupon, if required, shall be clearly indicated and additional fee paid for, by the Client.
3. This report applies to the sample of the specific product/equipment given at the time of its testing/calibration. The results are not used to indicate or imply that they are applicable to other similar items. In addition, such results must not be used to indicate or imply that PSB Corporation approves, recommends or endorses the manufacturer, supplier or user of such product/equipment, or that PSB Corporation in any way "guarantees" the later performance of the product/equipment.
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10. Unless otherwise stated, the tests are carried out in PSB Corporation Pte Ltd, No.1 Science Park Drive Singapore 118221.

May 2005

**ANNEX A**

**EUT PHOTOGRAPHS / DIAGRAMS**

EUT PHOTOGRAPHS



**56S050710**

Front View

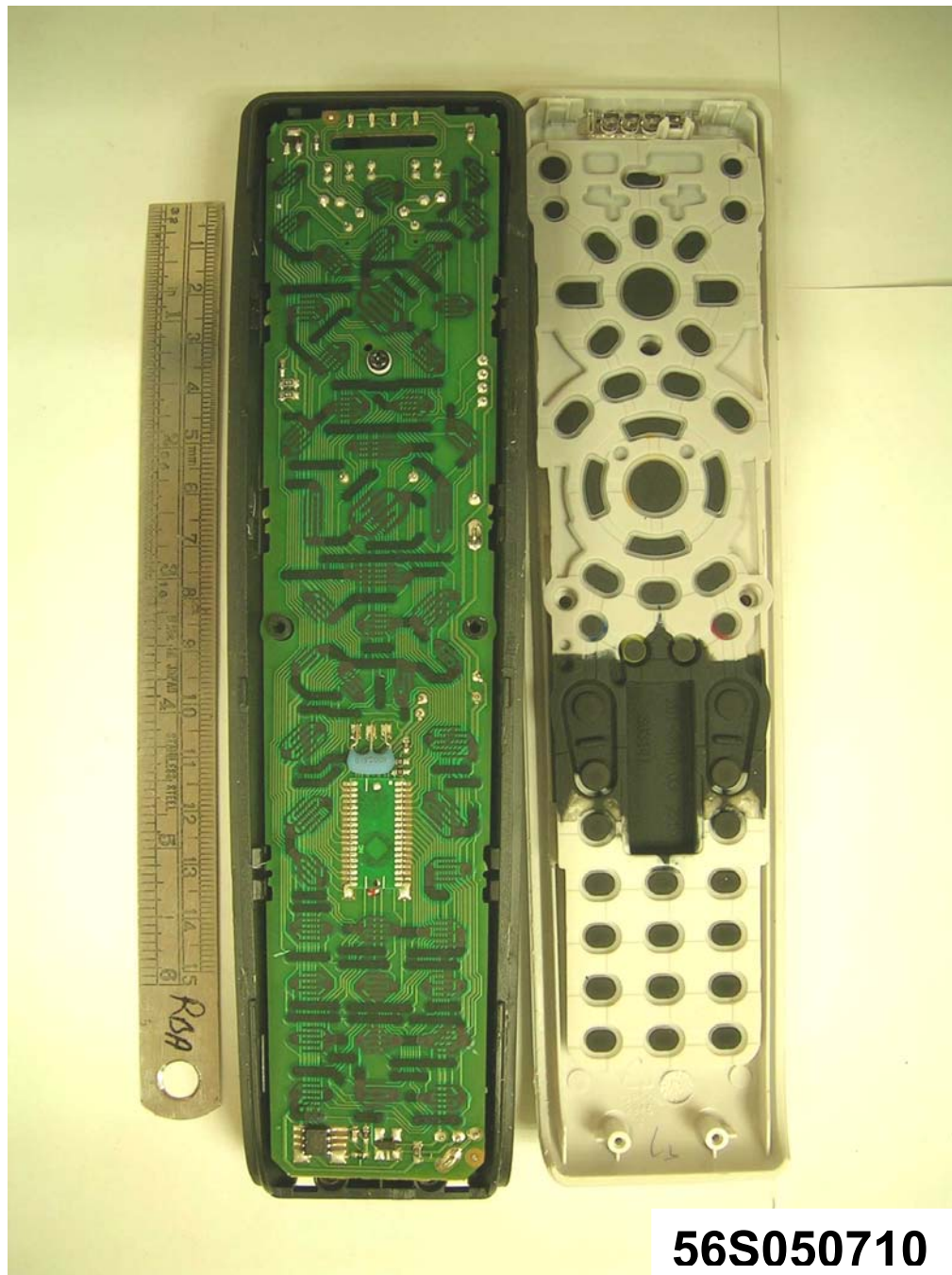


**56S050710**

Rear View



## EUT PHOTOGRAPHS



EUT Layout View



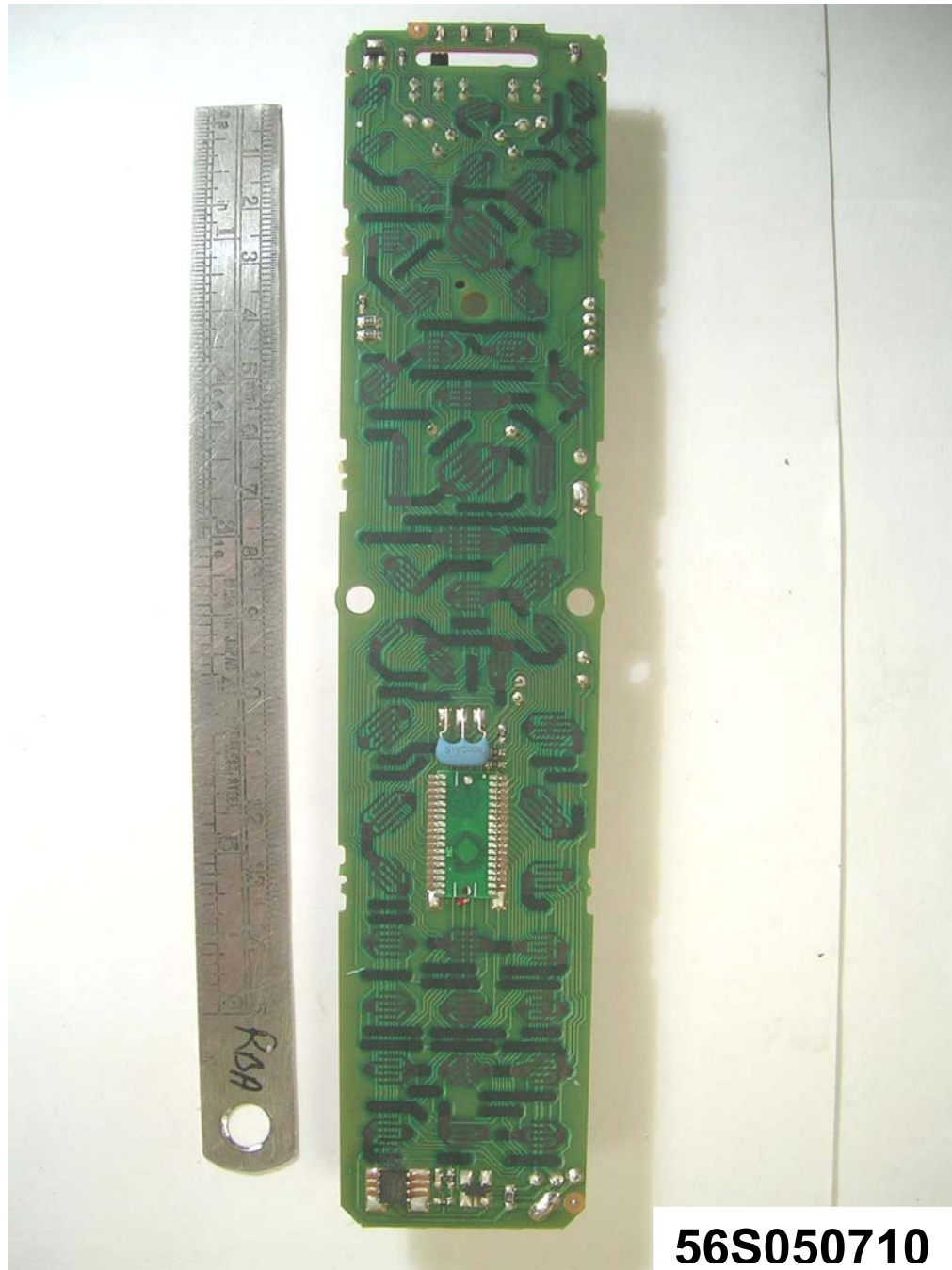
EUT PHOTOGRAPHS



**56S050710**

EUT PCB Component Side

EUT PHOTOGRAPHS



EUT PCB Trace Side

EUT PHOTOGRAPHS



RF Module Circuit

**ANNEX B**

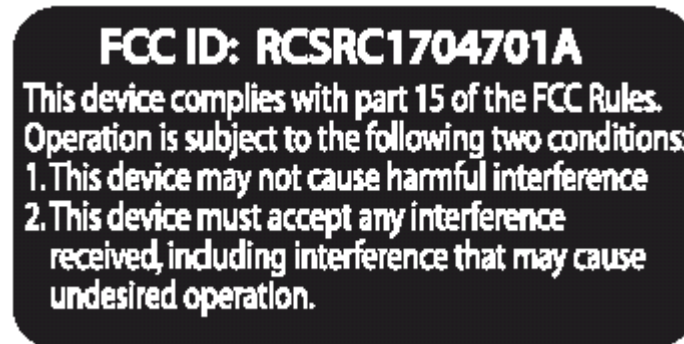
**FCC LABEL & POSITION**

## FCC LABEL & POSITION

## ANNEX B

Labelling requirements per Section 2.925 & 15.19

The label shown will be permanently affixed at a conspicuous location on the device and be readily visible to the user at the time of purchase.



Sample Label



Physical Location of FCC Label on EUT

**ANNEX C**

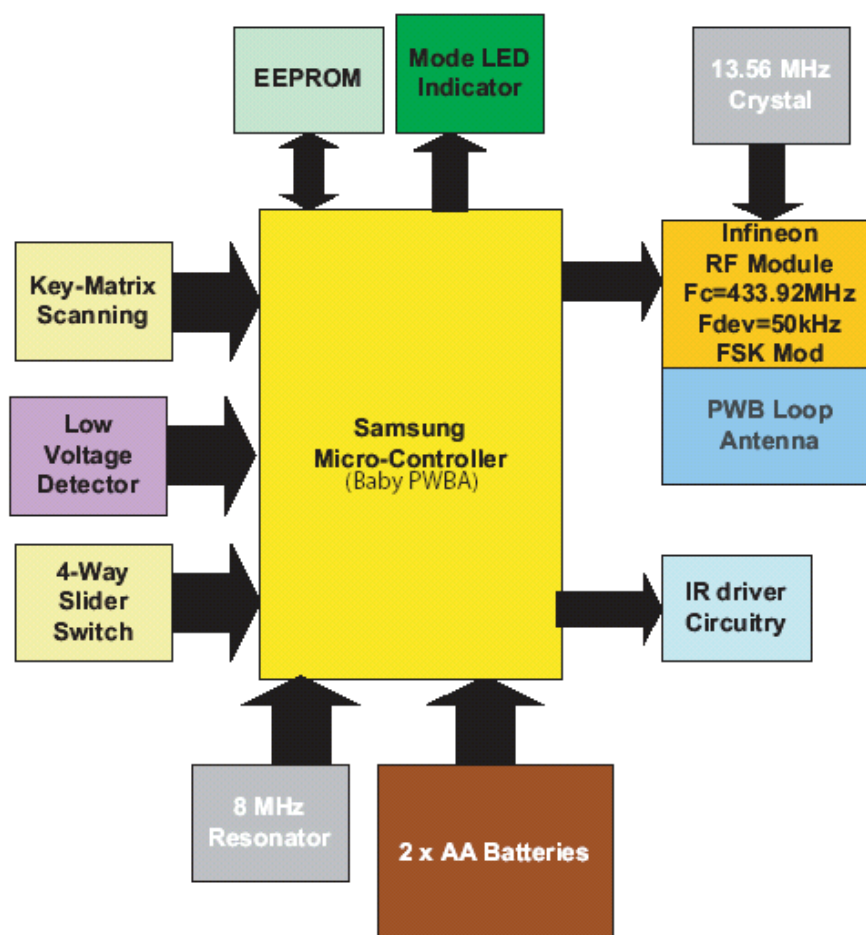
**USER MANUAL  
TECHNICAL DESCRIPTION  
BLOCK & CIRCUIT DIAGRAMS**



# RC1704701-COB

## DirecTv RF remote control

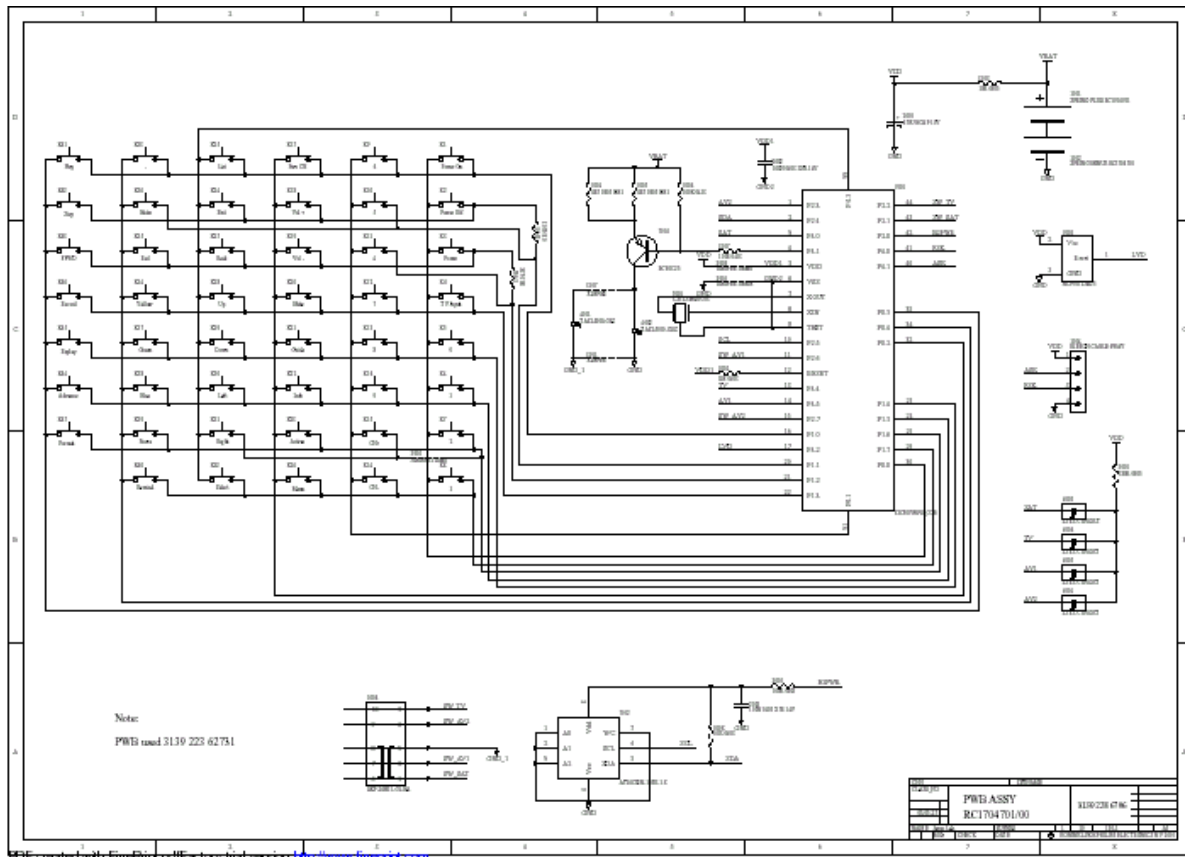
### Electrical Logic Block Diagram



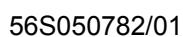
Philips Remote Control System  
Singapore

# USER MANUAL TECHINICAL DESCRIPTION BLOCK & CIRCUIT DIAGRAMS

## ANNEX C







# **USER MANUAL TECHINICAL DESCRIPTION BLOCK & CIRCUIT DIAGRAMS**

## **ANNEX C**

### **3139 228 67061 PWB ASSY RC1704701(COB) Main**

Item	Article	Description	Qty	UoM
1001	3139 221 21581	Spring Plus RC1704701	1	PC
1002	3139 221 21591	Spring Minus Rc1704701	1	PC
1003	3139 228 67581	SMD ASSY RC1704701(COB)	1	PC
1004	2422 127 00569	SWI SLID 1P 4POS 30V H 3MM7 Y	1	PC
1006	3139 221 00201	RIBBON CABLE 4 RIBS	1	PC
2001	2020 012 93776	ELCAP VR 10V S 470U PM20 A	1	PC
3907	2422 015 00512	WIRE 0.6MM JUMP. JPW-06A	1	PC
3908	2422 015 00512	WIRE 0.6MM JUMP. JPW-06A	1	PC
3909	2422 015 00512	WIRE 0.6MM JUMP. JPW-06A	1	PC
3910	2422 015 00512	WIRE 0.6MM JUMP. JPW-06A	1	PC
3911	2422 015 00512	WIRE 0.6MM JUMP. JPW-06A	1	PC
5001	2422 540 98444	RES CER 8MHZ CSTS*MG03 B	1	PC
6001	9322 127 27678	LED IR TSAL5300(VISH) A	1	PC
6002	9322 127 27678	LED IR TSAL5300(VISH) A	1	PC
7001	3139 228 67561	PWB ASSY RC1704701(COB) Baby	1	PC
7002	9322 219 99668	IC SM AT24C02N-10SU-1.8(ATMEL)	1	PC

### **3139 228 67561 PWB ASSY RC1704701(COB) Baby**

	3139 223 62841	PWB RC1704701(COB) Baby	1	PC
	3139 227 03281	Die RC1704701 - S3C80F9BRR	1	PC

### **3139 228 67581 SMD ASSY RC1704701(COB) Main**

Item	Article	Description	Qty	UoM
21	3139 223 62731	PWB RC1704701(COB) Main	1	PC
2002	2238 786 15649	CER2 0603 X7R 16V 100N PM10 R	1	PC
2003	2238 786 15649	CER2 0603 X7R 16V 100N PM10 R	1	PC
3001	2322 730 61181	RST SM 0805 RC11 180R PM5 R	1	PC
3002	2322 702 60105	RST SM 0603 RC21 1M PM5 R	1	PC
3003	2322 730 61109	RST SM 0805 RC11 10R PM5 R	1	PC
3004	2322 702 60104	RST SM 0603 RC21 100K PM5 R	1	PC
3005	2322 734 64708	RST SM 0805 RC21H 4R7 PM1 R	1	PC
3006	2322 734 64708	RST SM 0805 RC21H 4R7 PM1 R	1	PC
3007	2322 702 60101	RST SM 0603 RC21 100R PM5 R	1	PC
3008	2322 702 60103	RST SM 0603 RC21 10K PM5 R	1	PC
3009	2322 702 60101	RST SM 0603 RC21 100R PM5 R	1	PC
3905	2322 702 96001	RST SM 0603 JUMP.MAX 0R05 R	1	PC
3906	2322 702 96001	RST SM 0603 JUMP.MAX 0R05 R	1	PC
6003	9322 189 24685	LED VS SM LTST-C190GK(LITO) T	1	PC
6004	9322 189 24685	LED VS SM LTST-C190GK(LITO) T	1	PC
6005	9322 189 24685	LED VS SM LTST-C190GK(LITO) T	1	PC
6006	9322 189 24685	LED VS SM LTST-C190GK(LITO) T	1	PC
7003	9322 219 28685	IC SM NCP301LSN25G(ONSE) R	1	PC
7004	9336 285 70215	TRA SIG SM BC807-25(PHSE) R	1	PC