



BUREAU  
VERITAS

TEST REPORT No.: (5210)180-0241

## TEST REPORT

To:	J. BRASCH CO.	To:	-
Attn:	Patricia Carlson	Attn:	-
Address:	140 N. 8 <sup>th</sup> Street, Suite 430, Lincoln, NE 68508, United States	Address:	-
Fax:	--	Fax:	-
E-mail:	--	E-mail:	-
Folder No.:	ECL-10JU355ETHS-B-B		

Factory name:	--
Location:	--
Product:	Wireless Remote Receiver with Audio MODEL: SP200RX



Sample No:	HK101109/004
Test date:	October 4, 2010 To November 11, 2010
Test Requested:	FCC Part 15 - 2009
Test Method:	ANSI C63.4 - 2003
FCC ID:	YJZ20072010

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  
Date: November 22, 2010

Approved by: Steven Tsang  
Date: November 22, 2010

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## TEST REPORT No.: (5210)180-0241

### 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
BILOG ANTENNA	SCHAFFNER	CBL6112D	25229	02-AUG-2011
OPEN AREA TEST SITE	BVCPS	N/A	N/A	05-JULY-2011
ANECHOIC CHAMBER	ALBATROSS	M-CDC	80374004499B	06-JULY-2011
HORN ANTENNA	SCHWARZBECK	BBHA9120D	9120D-692	20-JULY-2011
PREAMPLIFIER	SCHWARZBECK	BBV9718	9718-152	26-JULY-2011
COAXIAL CABLE	SUHNER	N/A	N/A	07-DEC-2010

#### Conducted Emission

EQUIPMENT	MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATION DUE
EMI TEST RECEIVER	R&S	ESCI	100379	06-SEP-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)180-0241

### Equipment Under Test [EUT]

#### Description of Sample:

Model Name: Wireless Remote Receiver with Audio  
Model Number: SP200RX  
Rating: 100-240V a.c. 50/60Hz – 6V d.c. (AC/DC adaptor)  
3.6V d.c. ("1.2V d.c. rechargeable battery" x 3)

#### Description of EUT Operation:

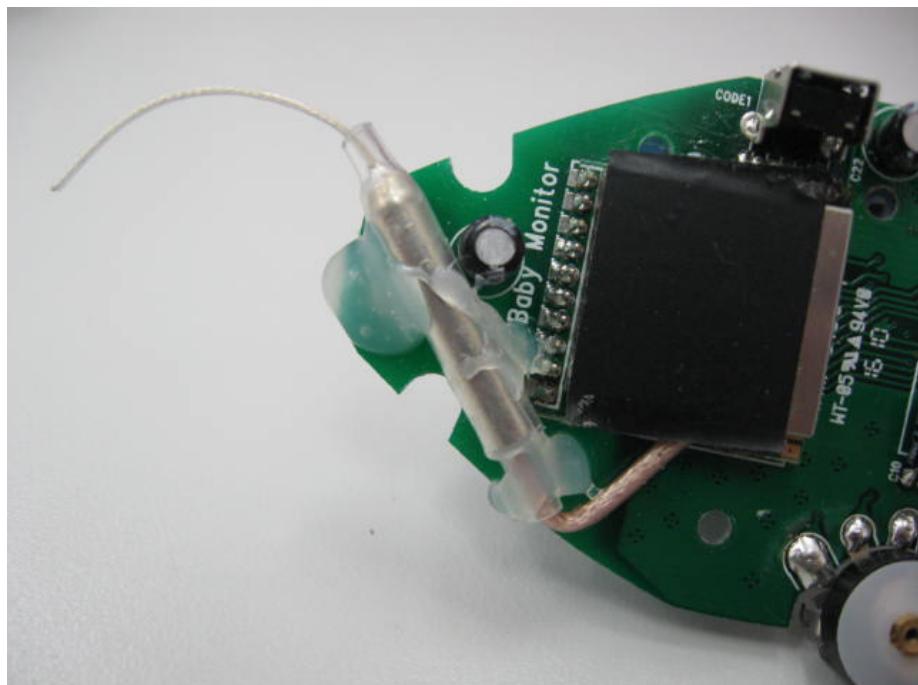
The Equipment Under Test (EUT) is a J. BRASCH CO. of Remote Transceiver. It is a one knob and two buttons transceiver and operating at 2422MHz to 2451MHz. The EUT continues to transmit while Talk button is being pressed. It is using FHSS, total 30 channels, and Modulation by IC, type is pulse modulation. The lowest, middle & highest frequency had tested and the results are shown in the report.

The transmitter has different control:

1. Power/Vol. knob – Control power on / off and adjust volume
2. Talk button – Control Transmission on / off
3. ID code setting button – ID code setting

#### Antenna Requirement (Section 15.203)

The EUT is use of a permanently antenna. The antenna consists of 7.5cm long metal wire. 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 No.: (5210)180-0241

### 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): 2010-10-04  
Temperature: 25.0 °C  
Humidity: 50.0 %  
Atmospheric Pressure: 101.1 kPa  
Mode of Operation: Charge and Transmission mode  
Tested Voltage: 117V a.c., 60Hz – 6V d.c. (AC/DC adaptor)  
3.6V d.c. ("1.2V d.c. rechargeable battery" x 3)

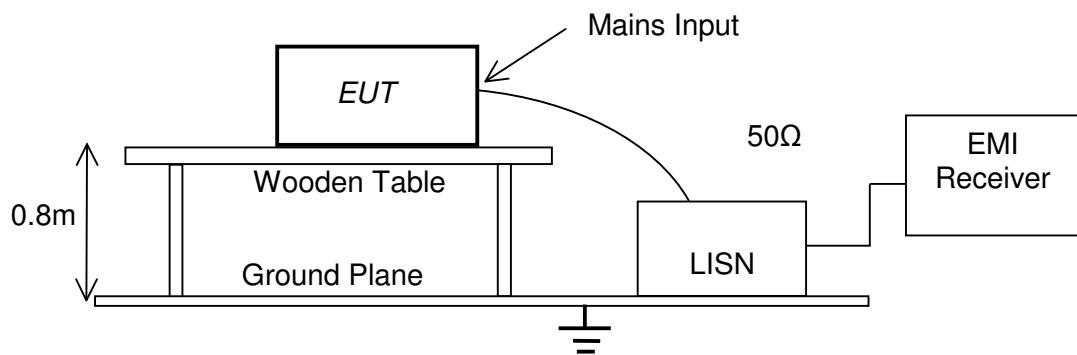
#### Test Procedure:

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:





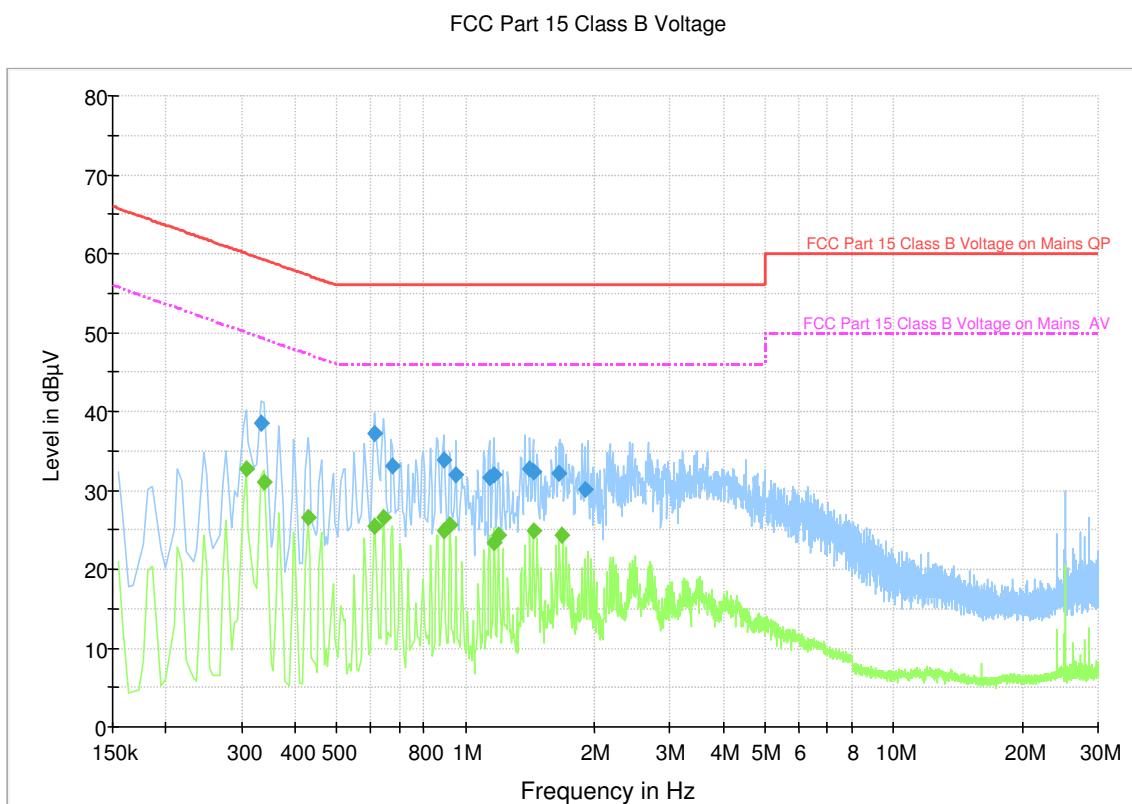
## TEST REPORT No.: (5210)180-0241

### Measurement Data: Live

### Test Result of (Charge and 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.





## TEST REPORT No.: (5210)180-0241

### 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)
0.334500	38.6	9.000	L1	20.7	59.3
0.613500	37.1	9.000	L1	18.9	56.0
0.676500	33.0	9.000	L1	23.0	56.0
0.888000	33.9	9.000	L1	22.1	56.0
0.951000	31.9	9.000	L1	24.1	56.0
1.135500	31.6	9.000	L1	24.4	56.0
1.162500	32.0	9.000	L1	24.0	56.0
1.410000	32.7	9.000	L1	23.4	56.0
1.441500	32.4	9.000	L1	23.6	56.0
1.653000	32.2	9.000	L1	23.8	56.0
1.900500	30.2	9.000	L1	25.8	56.0

Frequency (MHz)	Average (dB $\mu$ V)	Bandwidth (kHz)	Line	Margin (dB)	Limit (dB $\mu$ V)
0.307500	32.7	9.000	L1	17.3	50.0
0.339000	31.1	9.000	L1	18.1	49.2
0.429000	26.5	9.000	L1	20.8	47.3
0.613500	25.4	9.000	L1	20.6	46.0
0.645000	26.6	9.000	L1	19.4	46.0
0.888000	24.8	9.000	L1	21.2	46.0
0.919500	25.6	9.000	L1	20.4	46.0
1.162500	23.4	9.000	L1	22.6	46.0
1.194000	24.3	9.000	L1	21.7	46.0
1.441500	24.9	9.000	L1	21.1	46.0
1.684500	24.4	9.000	L1	21.6	46.0



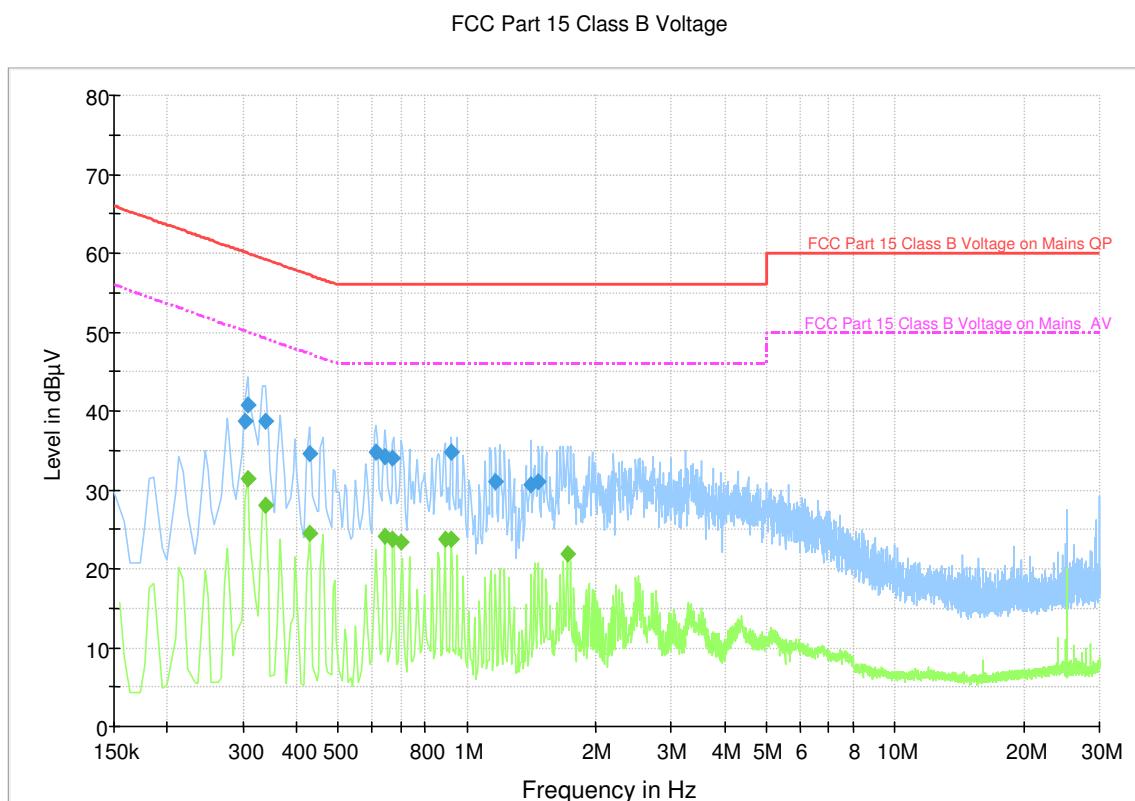
## TEST REPORT No.: (5210)180-0241

**Measurement Data: Neutral**

**Test Result of (Charge and 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.





## TEST REPORT No.: (5210)180-0241

### 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)
0.303000	38.6	9.000	N	21.6	60.2
0.307500	40.7	9.000	N	19.3	60.0
0.339000	38.7	9.000	N	20.5	59.2
0.429000	34.6	9.000	N	22.7	57.3
0.613500	34.7	9.000	N	21.3	56.0
0.645000	34.1	9.000	N	21.9	56.0
0.672000	33.9	9.000	N	22.1	56.0
0.919500	34.7	9.000	N	21.3	56.0
1.162500	31.1	9.000	N	24.9	56.0
1.410000	30.6	9.000	N	25.4	56.0
1.473000	31.1	9.000	N	24.9	56.0

Frequency (MHz)	Average (dB $\mu$ V)	Bandwidth (kHz)	Line	Margin (dB)	Limit (dB $\mu$ V)
0.307500	31.5	9.000	N	18.6	50.0
0.339000	28.1	9.000	N	21.1	49.2
0.429000	24.5	9.000	N	22.8	47.3
0.645000	24.2	9.000	N	21.8	46.0
0.672000	23.7	9.000	N	22.3	46.0
0.703500	23.4	9.000	N	22.6	46.0
0.888000	23.7	9.000	N	22.3	46.0
0.919500	23.8	9.000	N	22.2	46.0
1.716000	22.0	9.000	N	24.0	46.0



## TEST REPORT No.: (5210)180-0241

### Test Results

#### Radiated Emissions (Fundamental)

Test Requirement: FCC Part 15 Section 15.249  
Test Method: ANSI C63.4  
Test Date(s): 2010-11-11  
Temperature: 25.0 °C  
Humidity: 62.0 %  
Atmospheric Pressure: 100.7 kPa  
Mode of Operation: Charge and Transmission mode  
Tested Voltage 117V<sub>a.c.</sub>, 60Hz – 6V<sub>d.c.</sub> (AC/DC adaptor)  
3.6V<sub>d.c.</sub> ("1.2V<sub>d.c.</sub> rechargeable battery" x 3)

#### Test Procedure:

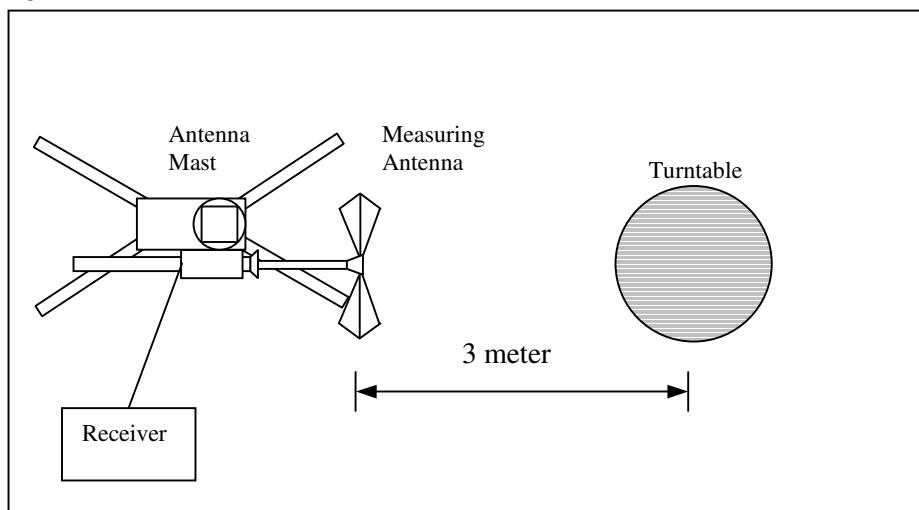
Radiated emissions measurements are investigated and taken pursuant to the procedures of ANSI C63.4 – 2003.

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]
2400-2483.5	50	500

### Measurement Data

#### Test Result of (Charge and Transmission mode, Lowest frequency): PASS

##### Detection mode: 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)
2422.02	V	90°	-3.2	103.1	114.0	-10.9

##### Detection mode: # Average

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)
2422.02	V	90°	-3.2	**92.6	94.0	-1.4

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

\*\*Duty Cycle Correction = 20Log(0.3) =-10.5dB

Note: Field Strength includes Antenna Factor and Cable Loss.

Receiver setting: RBW = 1MHz  
VBW = 1MHz



## TEST REPORT No.: (5210)180-0241

### Measurement Data

#### Test Result of (Charge and Transmission mode, Middle frequency): PASS

##### Detection mode: Peak

Frequency (MHz)	Polarity (H/V) and degree	EUT Orientation	Antenna Factor and Cable Loss (dB/m)	Field Strength at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
2437.02	V	90°	-3.3	102.8	114.0	-11.2

##### Detection mode: # Average

Frequency (MHz)	Polarity (H/V) and degree	EUT Orientation	Antenna Factor and Cable Loss (dB/m)	Field Strength at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
2437.02	V	90°	-3.3	**92.3	94.0	-1.7

#### Test Result of (Charge and Transmission mode, Highest frequency): PASS

##### Detection mode: Peak

Frequency (MHz)	Polarity (H/V) and degree	EUT Orientation	Antenna Factor and Cable Loss (dB/m)	Field Strength at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
2451.02	V	90°	-3.3	102.5	114.0	-11.5

##### Detection mode: # Average

Frequency (MHz)	Polarity (H/V) and degree	EUT Orientation	Antenna Factor and Cable Loss (dB/m)	Field Strength at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
2451.02	V	90°	-3.3	**92.0	94.0	-2.0

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

\*\*Duty Cycle Correction = 20Log(0.3) =-10.5dB

Note: Field Strength includes Antenna Factor and Cable Loss.

Receiver setting: RBW = 1MHz  
VBW = 1MHz



## TEST REPORT No.: (5210)180-0241

### Radiated Emissions (Spurious Emission)

Test Requirement: FCC Part 15 Section 15.249  
Test Method: ANSI C63.4  
Test Date(s): 2010-11-11  
Temperature: 25.0 °C  
Humidity: 62.0 %  
Atmospheric Pressure: 100.7 kPa  
Mode of Operation: Charge and Transmission mode  
Tested Voltage 117V<sub>a.c.</sub>, 60Hz – 6V<sub>d.c.</sub> (AC/DC adaptor)  
3.6V<sub>d.c.</sub> ("1.2V<sub>d.c.</sub> rechargeable battery" x 3)

### Measurement Data

#### Test Result of (Charge and Transmission mode, Lowest frequency): 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)
4844.04	V	2.9	56.7	74.0	-17.3
7266.06	V	10.2	46.6	74.0	-27.4
9688.08	H	11.1	51.2	74.0	-22.8
12110.10	V	16.5	52.6	74.0	-21.4
14532.12	H	23.6	56.1	74.0	-17.9
16954.14	H	21.9	58.5	74.0	-15.5
19376.16	H	23.7	58.7	74.0	-15.3
21798.18	H	25.2	59.0	74.0	-15.0
24220.20	H	26.3	59.2	74.0	-14.8

Note: Field Strength includes Antenna Factor and Cable Loss.

Receiver setting: RBW = 1MHz  
VBW = 1MHz



## TEST REPORT No.: (5210)180-0241

### Measurement Data

**Test Result of (Charge and Transmission mode, Lowest frequency): 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)
4844.04	V	2.9	**46.2	54.0	-7.8
7266.06	V	10.2	**36.1	54.0	-17.9
9688.08	H	11.1	**40.7	54.0	-13.3
12110.10	V	16.5	**42.1	54.0	-11.9
14532.12	H	23.6	**45.6	54.0	-8.4
16954.14	H	21.9	**48.0	54.0	-6.0
19376.16	H	23.7	**48.2	54.0	-5.8
21798.18	H	25.2	**48.5	54.0	-5.5
24220.20	H	26.3	**48.7	54.0	-5.3

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

\*\*Duty Cycle Correction =  $20\log(0.3) = -10.5\text{dB}$

Note: Field Strength includes Antenna Factor and Cable Loss.

Receiver setting: RBW = 1MHz  
VBW = 1MHz



## TEST REPORT No.: (5210)180-0241

### Measurement Data

**Test Result of (Charge and Transmission mode, Middle frequency): 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)
4874.04	V	2.9	56.2	74.0	-17.8
7311.06	V	10.7	47.7	74.0	-26.3
9748.08	H	11.4	49.6	74.0	-24.4
12185.10	H	16.5	53.6	74.0	-20.4
14622.12	H	23.5	55.6	74.0	-18.4
17059.14	V	22.1	57.9	74.0	-16.1
19496.16	H	23.9	58.1	74.0	-15.9
21933.18	H	25.3	58.3	74.0	-15.7
24370.20	V	26.6	58.6	74.0	-15.4

#### 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)
4874.04	V	2.9	**45.7	54.0	-8.3
7311.06	V	10.7	**37.2	54.0	-16.8
9748.08	H	11.4	**39.1	54.0	-14.9
12185.10	H	16.5	**43.1	54.0	-10.9
14622.12	H	23.5	**45.1	54.0	-8.9
17059.14	V	22.1	**47.4	54.0	-6.6
19496.16	H	23.9	**47.6	54.0	-6.4
21933.18	H	25.3	**47.8	54.0	-6.2
24370.20	V	26.6	**48.1	54.0	-5.9

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

\*\*Duty Cycle Correction = 20Log(0.3) =-10.5dB

Note: Field Strength includes Antenna Factor and Cable Loss.

Receiver setting: RBW = 1MHz  
VBW = 1MHz

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## TEST REPORT No.: (5210)180-0241

### Measurement Data

**Test Result of (Charge and Transmission mode, Highest frequency): 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)
4902.04	V	3.0	56.9	74.0	-17.1
7353.06	H	10.7	48.9	74.0	-25.1
9804.08	H	11.9	51.2	74.0	-22.8
12255.10	H	15.6	52.8	74.0	-21.2
14706.12	H	23.0	56.9	74.0	-17.1
17157.14	H	23.1	58.1	74.0	-15.9
19608.16	H	24.1	58.6	74.0	-15.4
22059.18	H	25.2	58.5	74.0	-15.5
24510.20	V	27.0	58.9	74.0	-15.1

#### 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)
4902.04	V	3.0	**46.4	54.0	-7.6
7353.06	H	10.7	**38.4	54.0	-15.6
9804.08	H	11.9	**40.7	54.0	-13.3
12255.10	H	15.6	**42.3	54.0	-11.7
14706.12	H	23.0	**46.4	54.0	-7.6
17157.14	H	23.1	**47.6	54.0	-6.4
19608.16	H	24.1	**48.1	54.0	-5.9
22059.18	H	25.2	**48.0	54.0	-6.0
24510.20	V	27.0	**48.4	54.0	-5.6

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

\*\*Duty Cycle Correction = 20Log(0.3) =-10.5dB

Note: Field Strength includes Antenna Factor and Cable Loss.

Receiver setting: RBW = 1MHz  
VBW = 1MHz

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## TEST REPORT No.: (5210)180-0241

### Radiated Emissions (30MHz – 18GHz)

Test Requirement: FCC Part 15 Section 15.209  
Test Method: ANSI C63.4  
Test Date(s): 2010-11-11  
Temperature: 25.0 °C  
Humidity: 62.0 %  
Atmospheric Pressure: 100.7 kPa  
Mode of Operation: Charge and Transmission mode / Charge and Receiver mode  
Tested Voltage 117V<sub>a.c.</sub>, 60Hz – 6V<sub>d.c.</sub> (AC/DC adaptor)  
3.6V<sub>d.c.</sub> ("1.2V<sub>d.c.</sub> rechargeable battery" x 3)

#### 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

### Measurement Data

**Test Result of (Charge and Transmission 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)
62.88	V	25.2	40.0	-14.8
125.36	V	24.9	43.5	-18.6
192.12	H	23.5	43.5	-20.0
217.26	H	22.9	46.0	-23.1
356.82	H	28.1	46.0	-17.9
572.46	H	30.5	46.0	-15.5

Note: Field Strength includes Antenna Factor and Cable Loss.

Receiver setting: RBW = 120KHz  
VBW = 120KHz



**TEST REPORT No.: (5210)180-0241**  
**Measurement Data**

**Test Result of (Charge and Receiver mode, Lowest frequency): 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)
2422.02	V	37.7	74.0	-36.3
4844.04	V	42.9	74.0	-31.1
7266.06	H	51.9	74.0	-22.1
9688.08	V	50.2	74.0	-23.8
12110.10	V	56.5	74.0	-17.5
14532.12	H	63.2	74.0	-10.8

**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)
2422.02	V	20.9	54.0	-33.1
4844.04	V	27.1	54.0	-26.9
7266.06	V	37.2	54.0	-16.8
9688.08	V	35.6	54.0	-18.4
12110.10	H	42.2	54.0	-11.8
14532.12	H	48.7	54.0	-5.3

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= 120KHz  
VBW= 120KHz

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



**TEST REPORT No.: (5210)180-0241**  
**Measurement Data**

**Test Result of (Charge and Receiver mode, Middle frequency): 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)
2437.02	H	36.7	74.0	-37.3
4874.04	V	43.2	74.0	-30.8
7311.06	H	53.1	74.0	-20.9
9748.08	V	51.2	74.0	-22.8
12185.10	V	56.5	74.0	-17.5
14622.12	H	62.5	74.0	-11.5

**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)
2437.02	V	20.9	54.0	-33.1
4874.04	H	27.4	54.0	-26.6
7311.06	H	37.5	54.0	-16.5
9748.08	V	38.0	54.0	-16.0
12185.10	H	42.8	54.0	-11.2
14622.12	H	48.9	54.0	-5.1

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 (30-1000MHz): RBW= 120KHz  
VBW= 120KHz

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



**TEST REPORT No.: (5210)180-0241**  
**Measurement Data**

**Test Result of (Charge and Receiver mode, Highest frequency): 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)
2451.02	H	37.4	74.0	-36.6
4902.04	V	41.6	74.0	-32.4
7353.06	H	52.5	74.0	-21.5
9804.08	V	52.6	74.0	-21.4
12255.10	H	55.9	74.0	-18.1
14706.12	V	63.6	74.0	-10.4

**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)
2451.02	H	21.0	54.0	-33.0
4902.04	V	28.6	54.0	-25.4
7353.06	V	37.4	54.0	-16.6
9804.08	H	38.0	54.0	-16.0
12255.10	V	41.1	54.0	-12.9
14706.12	H	48.3	54.0	-5.7

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= 120KHz  
VBW= 120KHz

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



## TEST REPORT No.: (5210)180-0241

### 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): 2010-11-  
Temperature: 24.0 °C  
Humidity: 71.0 %  
Atmospheric Pressure: 100.6 kPa  
Mode of Operation: Transmission mode  
Tested Voltage 117Va.c., 60Hz – 6Vd.c. (AC/DC adaptor)  
3.6Vd.c. ("1.2Vd.c. rechargeable battery" x 3)

#### 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:

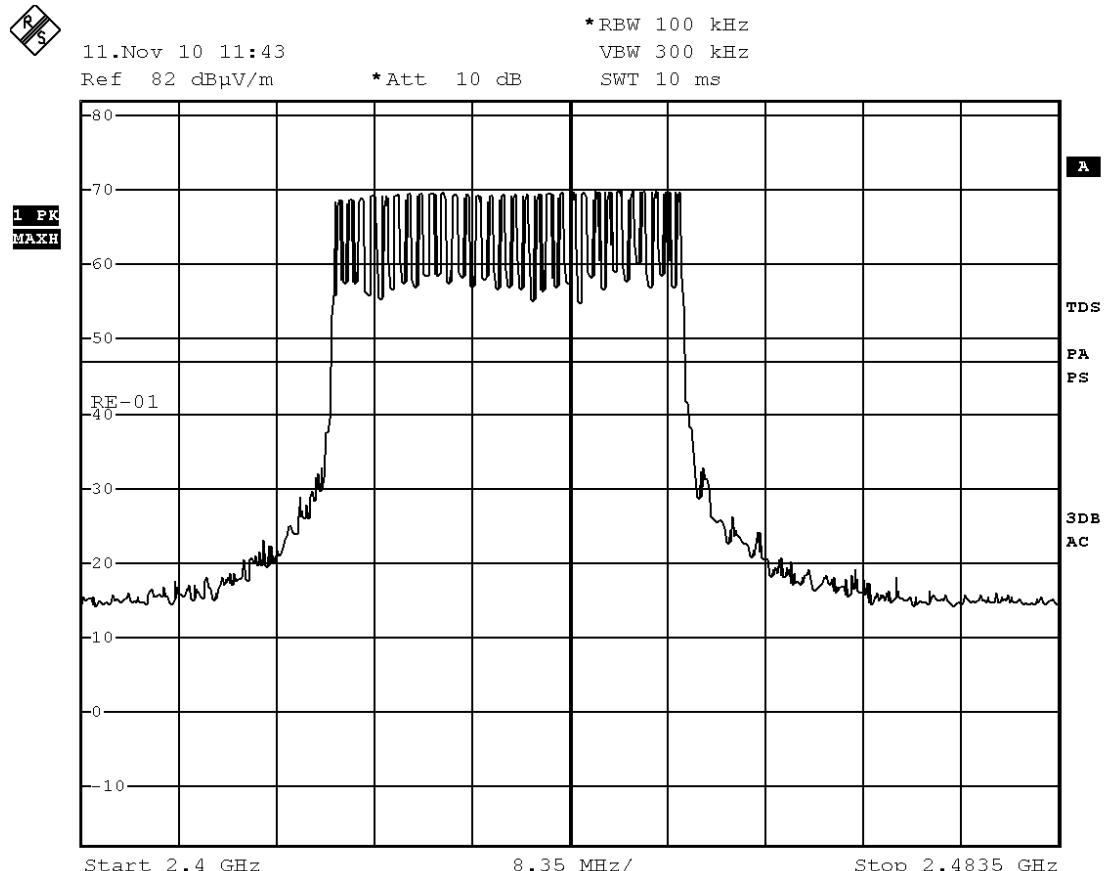
Frequency [MHz]	FCC Limits [MHz]
2422.02 – 2451.02	2400 – 2483.5



## TEST REPORT No.: (5210)180-0241

### Measurement Data :

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



Date: 11.NOV.2010 11:43:44

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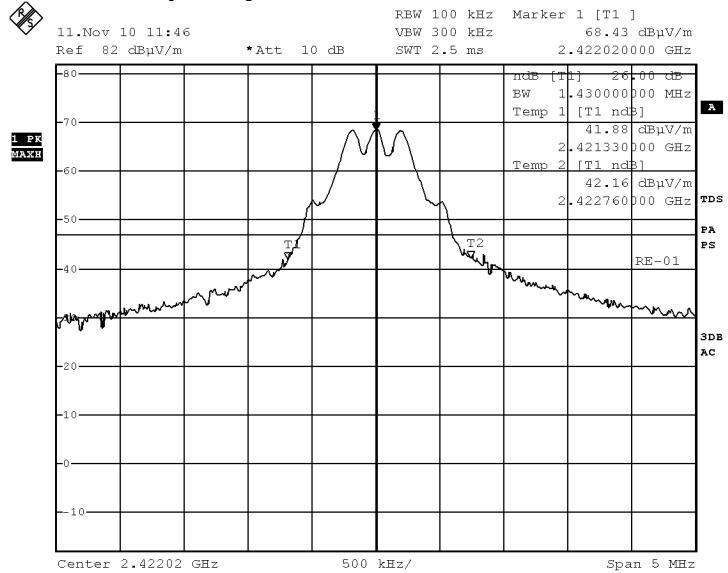


## TEST REPORT No.: (5210)180-0241

### Measurement Data :

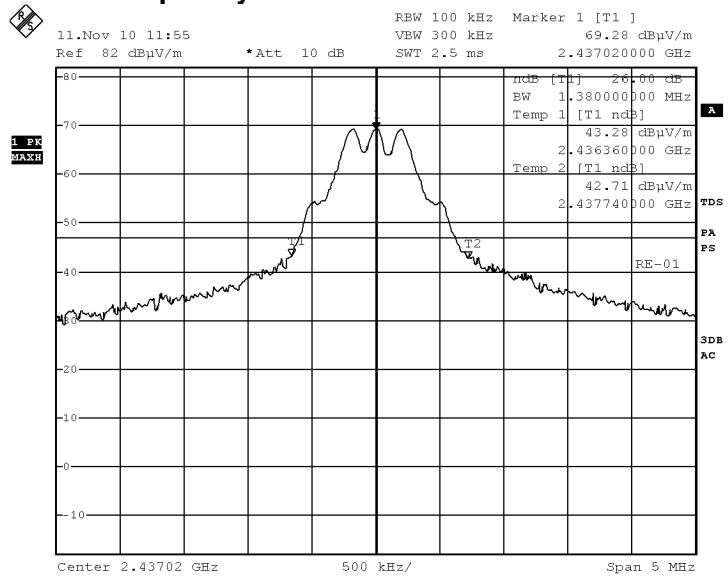
#### Test Result of 26dB bandwidth of Fundamental Emission: PASS

##### Lowest frequency:



Date: 11.NOV.2010 11:46:06

##### Middle frequency:



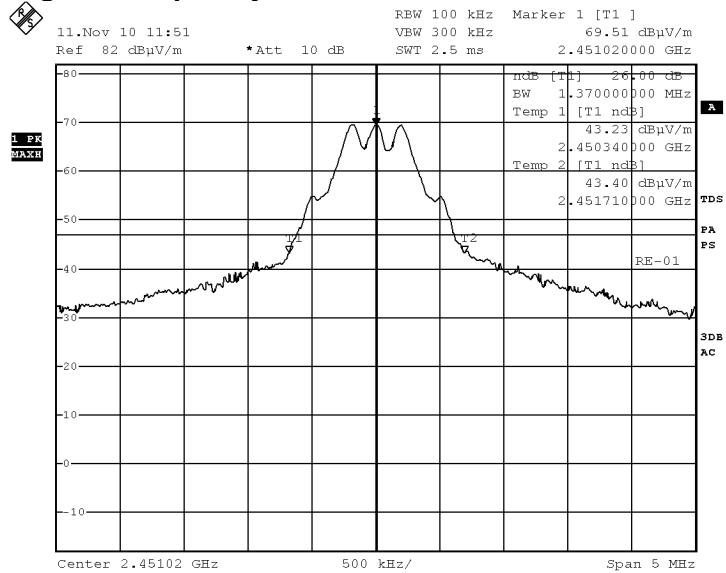
Date: 11.NOV.2010 11:55:56



**TEST REPORT No.: (5210)180-0241**  
**Measurement Data :**

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

**Highest frequency:**



Date: 11.NOV.2010 11:51:20



## TEST REPORT No.: (5210)180-0241

### Duty Cycle Correction During 100msec:

Each function key sends a different series of characters, but each packet period (100msec) never exceeds a series of 25 pulses (1.2msec). Assuming any combination of short or long pulses may be obtained due to encoding the worst case transmit duty cycle would be considered (25\*1.2)msec per 100msec=30% duty cycle. Figure A to C show the characteristics of the pulse train for one of these functions.

Remarks:

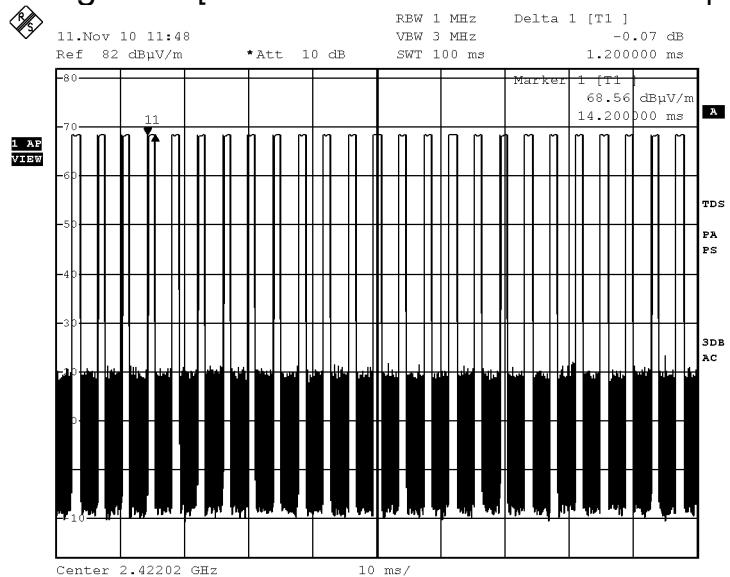
Duty Cycle Correction =  $20\log(0.3) = -10.5\text{dB}$

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



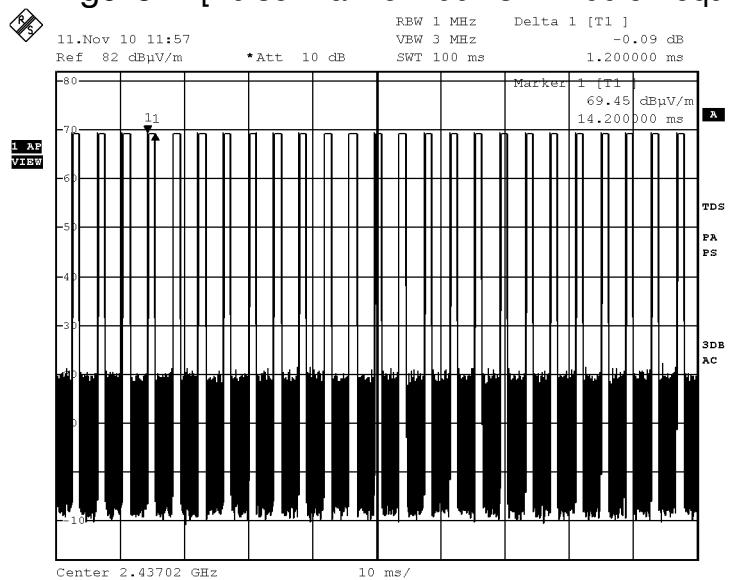
## TEST REPORT No.: (5210)180-0241

Figure A [Pulse Train of 100ms – Lowest frequency]



Date: 11.NOV.2010 11:48:23

Figure B [Pulse Train of 100ms – Middle frequency]

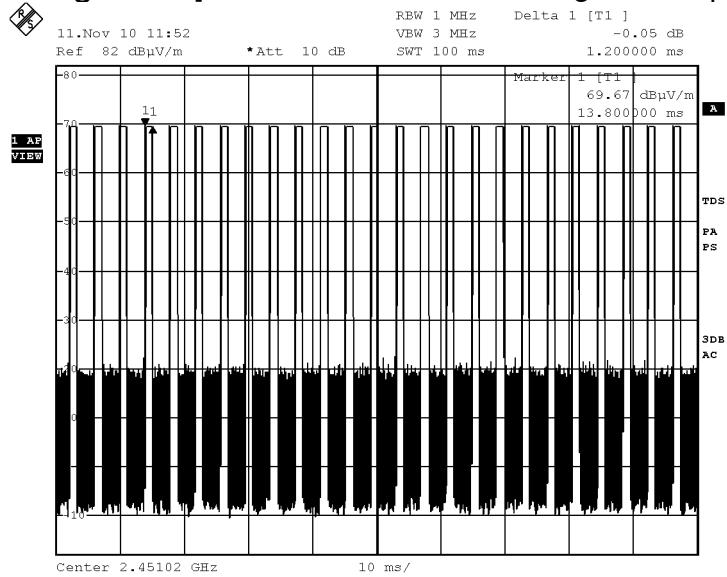


Date: 11.NOV.2010 11:57:20



## TEST REPORT No.: (5210)180-0241

Figure A [Pulse Train of 100ms – Highest frequency]



Date: 11.NOV.2010 11:52:28

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## TEST REPORT No.: (5210)180-0241

### Photographs of EUT

Front View of the product



Rear View of the product



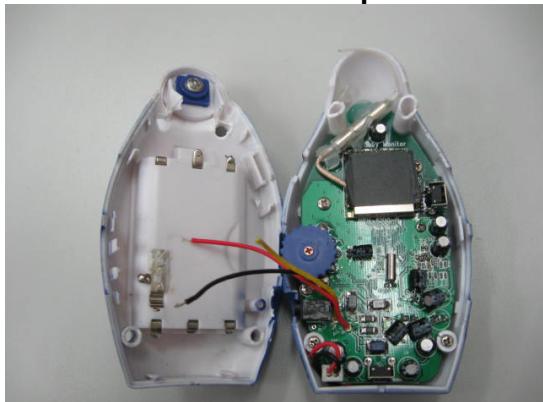
Battery Compartment



Battery Cover



Internal View of the product



Internal View of the product

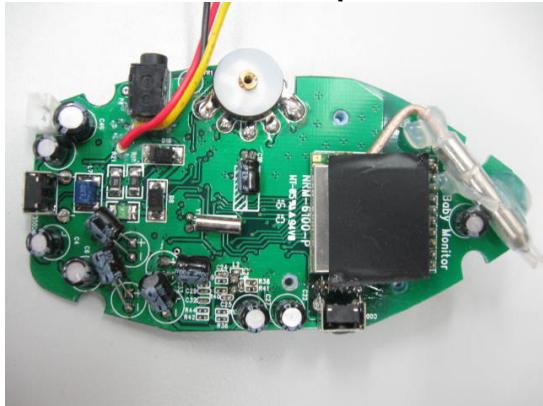




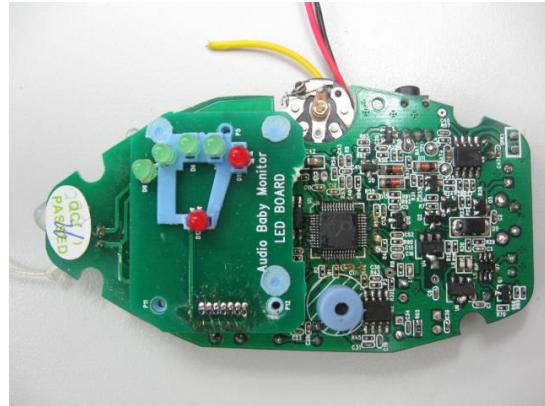
## TEST REPORT No.: (5210)180-0241

### Photographs of EUT

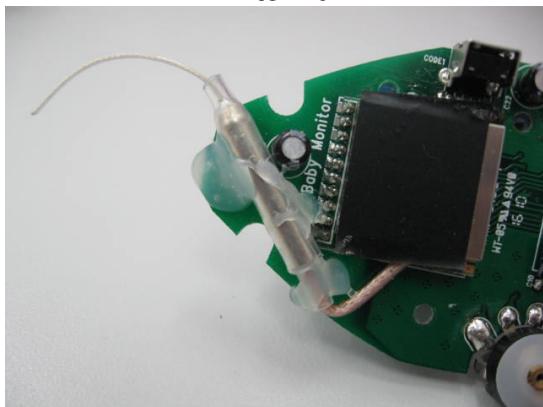
Inner Circuit Top View



Inner Circuit Bottom View



Antenna



AC/DC adaptor





**TEST REPORT No.: (5210)180-0241**

**Measurement of Conducted Emission Test Set Up**



**Measurement of Radiated Emission Test Set Up**



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

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